

Town of Manlius

Planning Board Meeting

June 13, 2022

6:30PM

1. Zoom Meeting Instructions

Documents:

[ZOOM PLANNING BOARD MEETING INSTRUCTIONS JUNE 13, 2022.PDF](#)

2. Pledge Of Allegiance

3. Approval Of Minutes June 13, 2022

4. Guy Pitman - 6430 North Manlius Road, Kirkville, NY 13082 - Decision - Site Plan Amendment - Add 30'x50' Barn To Existing Site Plan - 6985 Collamer Road, East Syracuse, NY 13057 - Tax Map # 036.-01-04.0

Documents:

[6985 COLLAMER RD - APPLICATION.PDF](#)

[6985 COLLAMER RD E. - MAP.PDF](#)

[OCPB REFERAL - 6985 COLLAMER ROAD-POLE BARN.PDF](#)

[OCPB RESOLUTION - 6985 COLLAMER ROAD - POLE BARN.PDF](#)

[UPDATED - 6985 COLLAMER ROAD - MAP.PDF](#)

5. Danielle & Ryan Ewert - 8291 East Seneca Turnpike, Manlius NY 13104 - Public Hearing - Zone Change Recommendation To Town Board - R1 To RA - Same Address - Tax Map # 099.-01-27.4

Documents:

[8291 EAST SENECA TURNPIKE - BUILDING PLANS.PDF](#)

[8291 EAST SENECA TURNPIKE - MAP.PDF](#)

[8291 EAST SENECA TURNPIKE - PLANNING BOARD APPLICATION.PDF](#)

[8291 EAST SENECA TURNPIKE - SPECIAL USE PERMIT APPLICATION.PDF](#)

[8291 EAST SENECA TURNPIKE - ZONE CHANGE APPLICATION.PDF](#)

6. Harrington Homes - 3848 Henneberry Road, Jamesville, NY 13078 - Discussion - 34 Lot Subdivision & Site Plan - Harrington Homes At Brandywine - Brandywine Off Of Henneberry Road - Tax Map # 109.-02-07.1

Documents:

[OCPB REFERAL -HARRINGTON HOMES - BRANDYWINE - 34 LOT SUBDIVISION.PDF](#)

[OCPB RESPONSE - HARRINGTON HOMES - BRANDYWINE - 34 - LOT SUBDIVISION.PDF](#)

[OCPB RESPONSE - HARRINGTON HOMES - BRANDYWINE 34-LOT SUBDIVISION.PDF](#)

[UPDATED - 20-1906 SITE PLANS 2022-03-09.PDF](#)

[UPDATED - 20-1906 SWPPP 2022-03-09.PDF](#)
[UPDATED - BRANDYWINE - 34 - LOT - SUBDIVISION - 2021-12-01 SITE PLAN SET.PDF](#)
[UPDATED - BRANDYWINE - 34 - LOT - SUBDIVISION - LETTER REPORT HARRINGTON REPOSE TO GOULD NOV 2021.PDF](#)
[UPDATED - BRANDYWINE - 34 - LOT SUBDIVISION - SITE PLANS.PDF](#)
[UPDATED - BRANDYWINE - 34 - LOT SUBDIVISION - SWPPP 2021-12-01.PDF](#)
[UPDATED - BRANDYWINE 34 - LOT SUBDIVISION - REPLY LETTER TO ENGINEER COMMENTS.PDF](#)
[UPDATED - BRANDYWINE 34 - LOT SUBDIVISION - SWPPP.PDF](#)
[UPDATED - REPLY LETTER TO ENGINEER COMMENTS 2022-03-03.PDF](#)

7. Fayetteville Veterinary Hospital - 8122 East Genesee Street, Fayetteville, NY 13066 - Discussion - Site Plan - New Veterinary Hospital - Same Address - Tax Map # 091.-01-0.2

Documents:

[8122 EAST GENESEE STREET - FVH - ELEVATIONS.PDF](#)
[8122 EAST GENESEE STREET - FVH - FLOOR PLAN.PDF](#)
[8122 EAST GENESEE STREET - FVH - SHORT FORM EAF-SIGNED.PDF](#)
[8122 EAST GENESEE STREET - FVH SITE PLANS.PDF](#)
[8122 EAST GENESEE STREET - LOT LINE ADJUSTMENT MAP.PDF](#)
[8122 EAST GENESEE STREET - SIGNED APPLICATION AND DISCLOSURE AFFADAVIT.PDF](#)
[OCPB - RESOLUTION - FAYETTEVILLE VET HOSPITAL.PDF](#)
[UPDATED - 8122 EAST GENESEE STREET - FVH PB SUBMISSION.PDF](#)

8. A&E & SNY Center - Suite 38, 5781 Bridge Street, East Syracuse, NY 13057 -Initial Presentation - Site Plan - Medical Center Drive - Behind Resort Lifestyles - Tax Map # 086.-01-03.9

Documents:

[MANLIUS SUBDIVISION RECORDED MAP.PDF](#)
[UPDATED - AE AND SNY CENTER SHORT EAF.PDF](#)
[UPDATED - AE INITIAL SITE PLAN SUBMISSION 2022-06-01.PDF](#)

9. Other Business

- 9.I. Set Special Meeting Date - July 18, 2022 At 6:30PM - Comprehensive Planning, Possible Zoning Code Changes And Land Use Planning

10. Adjournment



June 13, 2022

Virtual Planning Board Meeting

Instructions to attend the June 13, 2022 virtual Planning Board meeting:

The easiest way to join is to go to our website www.TownOfManlius.org and click on the link that is located on the homepage. You can also watch on our Facebook page by searching for "Town of Manlius"

Enter the meeting url web address as listed below:

<https://us02web.zoom.us/j/81237660216?>

Password to join when prompted:

Password: 858273

Enter your email address and name and join the meeting!

Join by telephone by dialing the number below:

1-(929) -436-2866

When prompted to enter the Webinar ID, use the number below followed by #

Webinar ID: 812 3766 0216

Press # again to skip the personal id and enter the password below followed by #

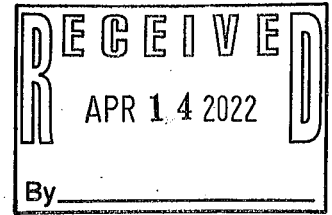
Password: 858273

Commercial

Expected

Fee: _____

TOWN OF MANLIUS
PLANNING DEPARTMENT
INITIAL APPEARANCE APPLICATION



DATE: 4/13/22

Name of Project: Woodworth - New Barn

Applicant must submit 12 copies of all site plans, surveys, and supporting data with the final application before a planning board meeting can be scheduled.

Location of Project: ~~6430 Manlius Road - N~~ 6985 Collamer Rd 13057

Type of Project:

☐ Division of Land ☐ Subdivision ☐ Accessory Use ☐ Zone Change ☐ Site Review ☒ Other

Developer: Guy Pitman

Phone: 315-247-4006

Address: ~~6430~~ 6430 Manlius Road - N

Zip: 13082

Tax Map Number(s): 056.-01-07.0, 036.-01-04.0

Present Zoning:

CA

Desired Zoning: _____

Total Acreage:

2.32, 2.81 (5.13)

Total Number of Lots:

1 2

Property Owner/s: Joe Woodworth

Phone: _____

Address: 6430 Manlius Rd. N

Zip: 13082

Tax Map(s): 056.-01-07.0 Owner's Signature: [Signature]

Printed Name: Joe Woodworth

Property Owner/s: Joe Woodworth

Phone: _____

Address: 6985 Collamer Road

Zip: 13057

Tax Map(s): 036.01-04.0

Owner's Signature: [Signature]

Printed Name: Joe Woodworth

Use next page for additional known property owners' information

Planning Board Meeting Date Assignment: _____

Fee: _____

Paid: _____

Per: ☐ Credit/Debit Card

☐ Check

☐ Cash

Planning Board - Initial

617.20
Appendix B
Short Environmental Assessment Form

Instructions for Completing

Part 1 - Project Information. The applicant or project sponsor is responsible for the completion of Part 1. Responses become part of the application for approval or funding, are subject to public review, and may be subject to further verification. Complete Part 1 based on information currently available. If additional research or investigation would be needed to fully respond to any item, please answer as thoroughly as possible based on current information.

Complete all items in Part 1. You may also provide any additional information which you believe will be needed by or useful to the lead agency; attach additional pages as necessary to supplement any item.

Part 1 - Project and Sponsor Information			
Name of Action or Project: 6485 Collamer Road			
Project Location (describe, and attach a location map): Near the intersection of Tremont Rd and Collamer Rd			
Brief Description of Proposed Action: Constructing new barn 30' x 50' at the back of USA Racing.			
Name of Applicant or Sponsor: Joe Woodward		Telephone: 315-420-8422	
Address: 6485 Collamer Rd		E-Mail: Joe@CSA-Racing.com	
City/PO: E. Syracuse		State: NY	Zip Code: 13057
1. Does the proposed action only involve the legislative adoption of a plan, local law, ordinance, administrative rule, or regulation? If Yes, attach a narrative description of the intent of the proposed action and the environmental resources that may be affected in the municipality and proceed to Part 2. If no, continue to question 2.		NO ☒	YES ☐
2. Does the proposed action require a permit, approval or funding from any other governmental Agency? If Yes, list agency(s) name and permit or approval: Town of Manlius		NO ☐	YES ☒
3.a. Total acreage of the site of the proposed action?		2.81 acres	
b. Total acreage to be physically disturbed?		1500 sq ft	
c. Total acreage (project site and any contiguous properties) owned or controlled by the applicant or project sponsor?		_____ acres	
4. Check all land uses that occur on, adjoining and near the proposed action. ☐ Urban ☐ Rural (non-agriculture) ☐ Industrial ☒ Commercial ☐ Residential (suburban) ☐ Forest ☐ Agriculture ☐ Aquatic ☐ Other (specify): _____ ☐ Parkland			

5. Is the proposed action, a. A permitted use under the zoning regulations?	NO ☐	YES ☒	N/A ☐
b. Consistent with the adopted comprehensive plan?	☐	☒	☐
6. Is the proposed action consistent with the predominant character of the existing built or natural landscape?	NO ☐	YES ☐	
7. Is the site of the proposed action located in, or does it adjoin, a state listed Critical Environmental Area? If Yes, identify: _____	NO ☐	YES ☒	
8. a. Will the proposed action result in a substantial increase in traffic above present levels?	NO ☒	YES ☐	
b. Are public transportation service(s) available at or near the site of the proposed action?	☒	☐	
c. Are any pedestrian accommodations or bicycle routes available on or near site of the proposed action?	☒	☐	
9. Does the proposed action meet or exceed the state energy code requirements? If the proposed action will exceed requirements, describe design features and technologies: _____	NO ☐	YES ☐	
10. Will the proposed action connect to an existing public/private water supply? If No, describe method for providing potable water: _____	NO ☒	YES ☐	
11. Will the proposed action connect to existing wastewater utilities? If No, describe method for providing wastewater treatment: _____	NO ☒	YES ☐	
12. a. Does the site contain a structure that is listed on either the State or National Register of Historic Places? b. Is the proposed action located in an archeological sensitive area?	NO ☒	YES ☐	
13. a. Does any portion of the site of the proposed action, or lands adjoining the proposed action, contain wetlands or other waterbodies regulated by a federal, state or local agency? b. Would the proposed action physically alter, or encroach into, any existing wetland or waterbody? If Yes, identify the wetland or waterbody and extent of alterations in square feet or acres: _____	NO ☒	YES ☐	
14. Identify the typical habitat types that occur on, or are likely to be found on the project site. Check all that apply: ☐ Shoreline ☐ Forest ☐ Agricultural/grasslands ☐ Early mid-successional ☐ Wetland ☐ Urban ☒ Suburban			
15. Does the site of the proposed action contain any species of animal, or associated habitats, listed by the State or Federal government as threatened or endangered?	NO ☒	YES ☐	
16. Is the project site located in the 100 year flood plain?	NO ☒	YES ☐	
17. Will the proposed action create storm water discharge, either from point or non-point sources? If Yes, a. Will storm water discharges flow to adjacent properties? ☒ NO ☐ YES b. Will storm water discharges be directed to established conveyance systems (runoff and storm drains)? If Yes, briefly describe: _____	NO ☒	YES ☐	

18. Does the proposed action include construction or other activities that result in the impoundment of water or other liquids (e.g. retention pond, waste lagoon, dam)? If Yes, explain purpose and size: _____	NO	YES
	☒	☐
19. Has the site of the proposed action or an adjoining property been the location of an active or closed solid waste management facility? If Yes, describe: _____	NO	YES
	☒	☐
20. Has the site of the proposed action or an adjoining property been the subject of remediation (ongoing or completed) for hazardous waste? If Yes, describe: _____	NO	YES
	☒	☐
I AFFIRM THAT THE INFORMATION PROVIDED ABOVE IS TRUE AND ACCURATE TO THE BEST OF MY KNOWLEDGE		
Applicant/sponsor name: <u>Cleen Pitrn</u>		Date: <u>4/14/22</u>
Signature: <u>Cleen Pitrn</u>		

STOP

Part 2 - Impact Assessment. The Lead Agency is responsible for the completion of Part 2. Answer all of the following questions in Part 2 using the information contained in Part 1 and other materials submitted by the project sponsor or otherwise available to the reviewer. When answering the questions the reviewer should be guided by the concept "Have my responses been reasonable considering the scale and context of the proposed action?"

	No, or small impact may occur	Moderate to large impact may occur
1. Will the proposed action create a material conflict with an adopted land use plan or zoning regulations?	☐	☐
2. Will the proposed action result in a change in the use or intensity of use of land?	☐	☐
3. Will the proposed action impair the character or quality of the existing community?	☐	☐
4. Will the proposed action have an impact on the environmental characteristics that caused the establishment of a Critical Environmental Area (CEA)?	☐	☐
5. Will the proposed action result in an adverse change in the existing level of traffic or affect existing infrastructure for mass transit, biking or walkway?	☐	☐
6. Will the proposed action cause an increase in the use of energy and it fails to incorporate reasonably available energy conservation or renewable energy opportunities?	☐	☐
7. Will the proposed action impact existing:		
a. public / private water supplies?	☐	☐
b. public / private wastewater treatment utilities?	☐	☐
8. Will the proposed action impair the character or quality of important historic, archaeological, architectural or aesthetic resources?	☐	☐
9. Will the proposed action result in an adverse change to natural resources (e.g., wetlands, waterbodies, groundwater, air quality, flora and fauna)?	☐	☐

	No, or small impact may occur	Moderate to large impact may occur
10. Will the proposed action result in an increase in the potential for erosion, flooding or drainage problems?	☐	☐
11. Will the proposed action create a hazard to environmental resources or human health?	☐	☐

Part 3 - Determination of significance. The Lead Agency is responsible for the completion of Part 3. For every question in Part 2 that was answered "moderate to large impact may occur", or if there is a need to explain why a particular element of the proposed action may or will not result in a significant adverse environmental impact, please complete Part 3. Part 3 should, in sufficient detail, identify the impact, including any measures or design elements that have been included by the project sponsor to avoid or reduce impacts. Part 3 should also explain how the lead agency determined that the impact may or will not be significant. Each potential impact should be assessed considering its setting, probability of occurring, duration, irreversibility, geographic scope and magnitude. Also consider the potential for short-term, long-term and cumulative impacts.

☐	Check this box if you have determined, based on the information and analysis above, and any supporting documentation, that the proposed action may result in one or more potentially large or significant adverse impacts and an environmental impact statement is required.
☐	Check this box if you have determined, based on the information and analysis above, and any supporting documentation, that the proposed action will not result in any significant adverse environmental impacts.
Name of Lead Agency Date	
Print or Type Name of Responsible Officer in Lead Agency Title of Responsible Officer	
Signature of Responsible Officer in Lead Agency Signature of Preparer (if different from Responsible Officer)	

PRINT

TOWN OF MANLIUS

DISCLOSURE AFFIDAVIT

This affidavit is a part of and must be completed and attached to every application, petition, request submitted for a *site plan, variance, amendment, change of zoning, approval of a plat, exemption from a plat or official map, license or permit.*

STATE OF NEW YORK)

) SS:

COUNTY OF ONONDAGA)

I. Joe Woodworth, being duly sworn, deposes and says that (s) he is:

property owner

(applicant, petitioner, corporation officer, property owner, etc.)

II. That deponent has read and is familiar with the provisions of the General Municipal Law, Section 809 which states:

- A. Every application, petition or request submitted for a site plan, variance, amendment, change of zoning, approval of a plat, exemption from a plat or official map, license or permit, pursuant to the provisions or any ordinance, local law, rule or regulation constituting the zoning and planning regulations of a municipality shall state the name, residence and the nature and extent of the interest of any state officer or any officer or employee of such municipality is a part, in the person, partnership or association making such application, petition or request (hereinafter called the applicant) to the extent known to such applicant.
- B. For the purpose of this action an officer or employee shall be deemed to have an interest in the applicant when (s)he, his/her spouse, or their brothers, sisters, parents, children, grandchildren, or the spouse of any of them:
 - 1) is the applicant, or
 - 2) is an officer, director, partner or employee of the applicant, or
 - 3) legally or beneficially owns or controls stock of a corporate applicant or is a member of a partnership or association applicant, or
 - 4) is a party to an agreement with such an applicant, express or implied, whereby (s) he may receive any payment or other benefit, whether or not for services rendered, or contingent upon the favorable approval of such application, petition or request.
- C. Ownership of less than five percent (5%) of the stock of a corporation whose stock is listed on the New York or American Stock Exchanges shall not constitute an interest for the purposes of this section.
- D. A person who knowingly and intentionally violates this section shall be guilty of a misdemeanor.

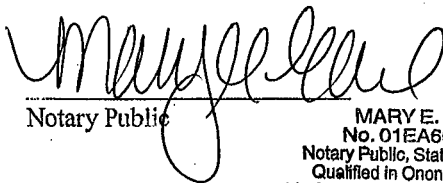
CORPORATE ACKNOWLEDGEMENT

STATE OF NEW YORK)
) SS:
COUNTY OF ONONDAGA)

Joe Woodward, being duly sworn, deposes and says the
s(he) is the Owner of USA RACING
corporation named in the within Application/Petition, that s(he) has read the foregoing affidavit and
knows the contents thereof; that the same is true of s(he) own knowledge, except as to those matters
therein stated to be alleged upon information and belief, and as to those matters s(he) believes it to be
true.


Applicant Signature

Subscribed to me before this day 14th
Of April, 20 22


Notary Public

MARY E. EARL
No. 01EA6048054
Notary Public, State of New York
Qualified in Onondaga County
My Commission Expires 09/18/ 2028

III. That no Town of Manlius officer, employee or a relative of either, as defined in Section 809 General Municipal Law has any interest in this application.

-OR-

If a Town of Manlius officer, employee or relative of either as defined in Section 809 General Municipal law has any interest in this application, the full particulars are provided on an attached sheet.

Date: 4, 14, 2022

Date: _____, 20____.

Joe Woodward
(Print Name)

(Print Name)

x [Signature]
(Signature)

(Signature)

USA RACING
(Entity Name)

(Entity Name)

x [Signature] Owner
By (Officer) (Title)

By (Officer) (Title)

6855 Collamer Rd, E. Syracuse NY
(Mailing Address of Applicant)

(Mailing Address of Applicant)

315-420-8422
(Telephone Number)

(Telephone Number)

ACKNOWLEDGEMENTS

STATE OF NEW YORK)

) SS:

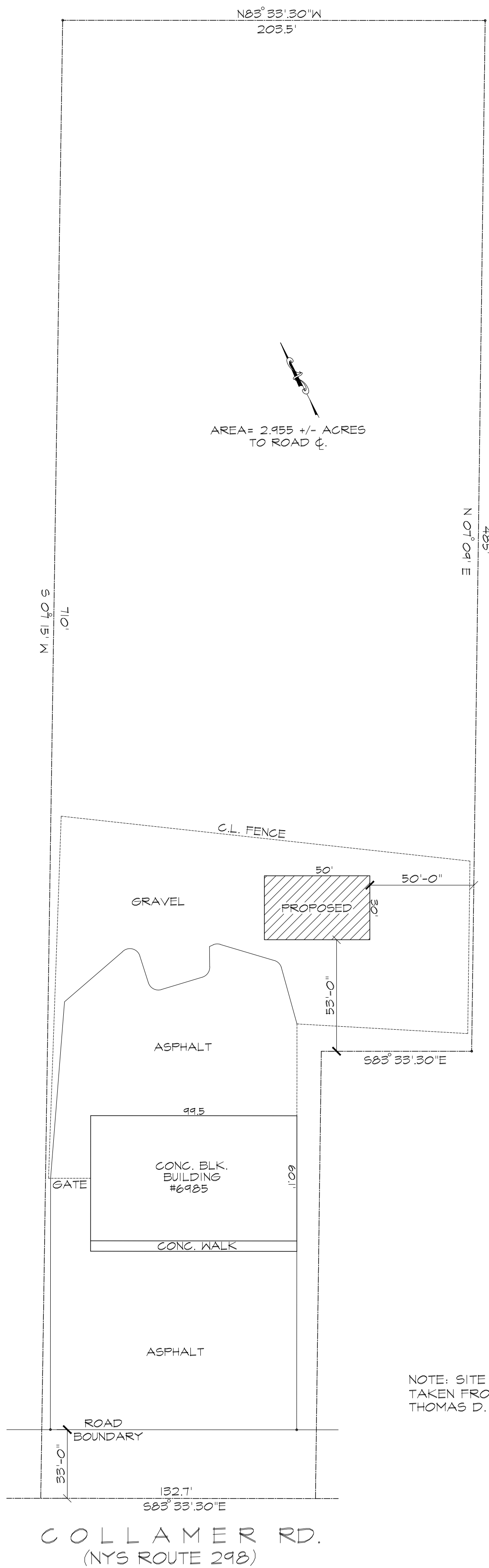
COUNTY OF ONONDAGA)

On this 14th day of April in the year 2022, before me, the undersigned, a notary public in and for said state, personally appeared Joseph Woodward and _____ personally known to

me or proved to me on the basis of satisfactory evidence to be the individual whose name is subscribed to the within Petition and acknowledged to me the he/she/they executed the same in his/her/their capacity, and that by his/her/their signature(s) on the Petition, the individual or the persons upon behalf of which the individual acted executed the instrument.

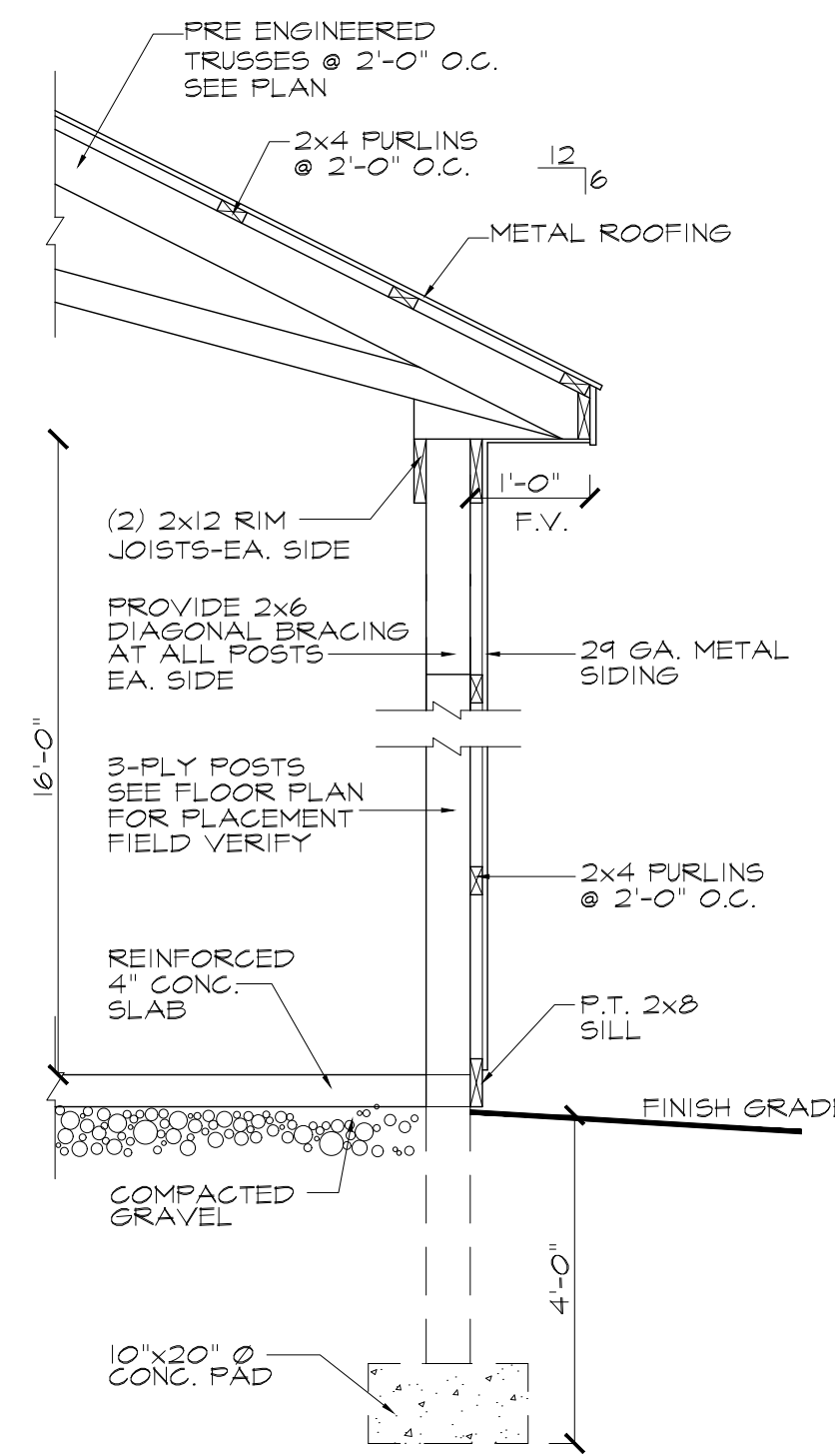
Mary E. Earl
Notary Public

MARY E. EARL
No. 01EA6048054
Notary Public, State of New York
Qualified in Onondaga County
My Commission Expires 09/18/2028



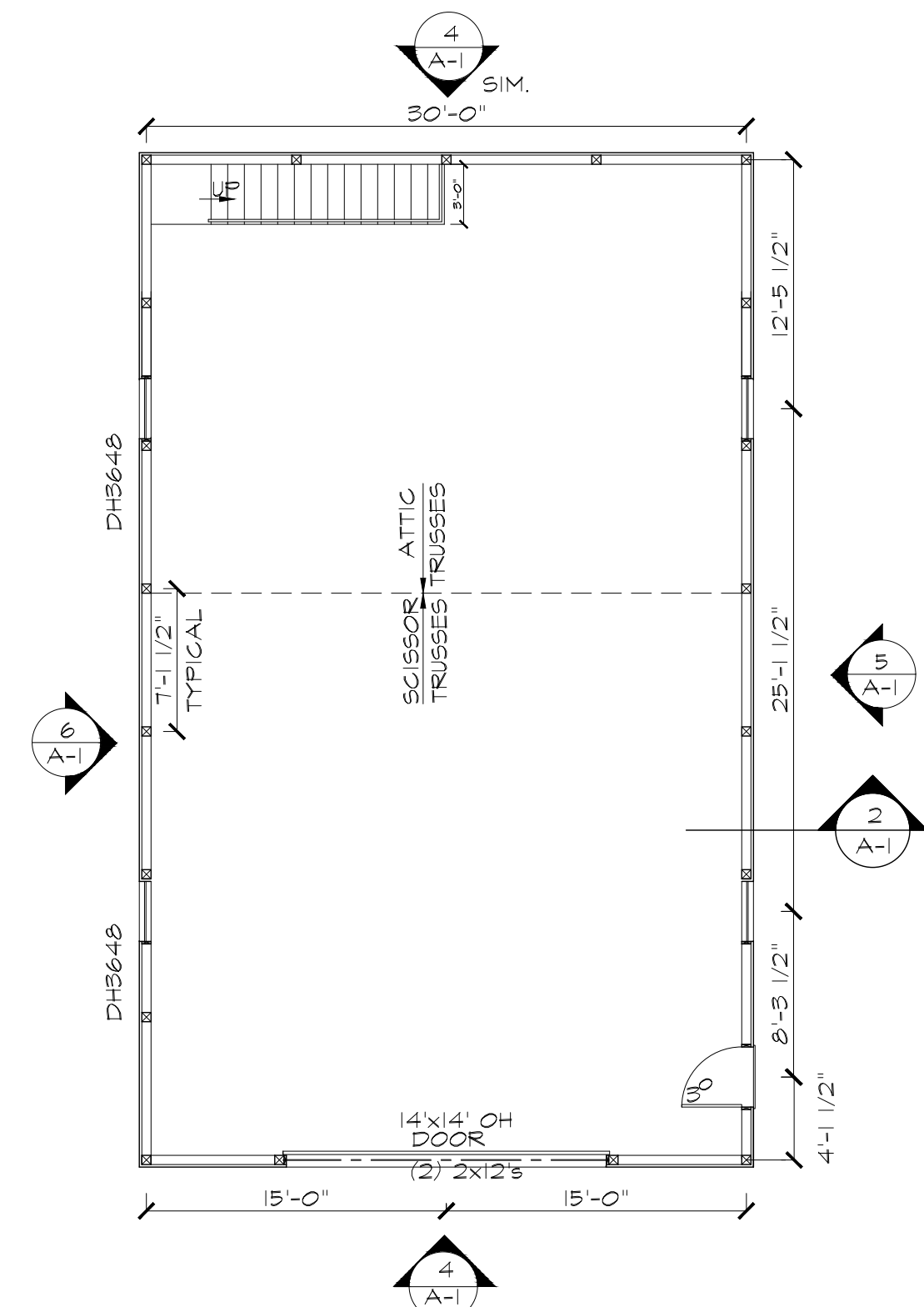
1 SITE PLAN
A-1 SCALE: 1"=40'-0"

NOTE: SITE PLAN INFORMATION
TAKEN FROM SURVEY BY
THOMAS D. JONES, DATED 11/27/19

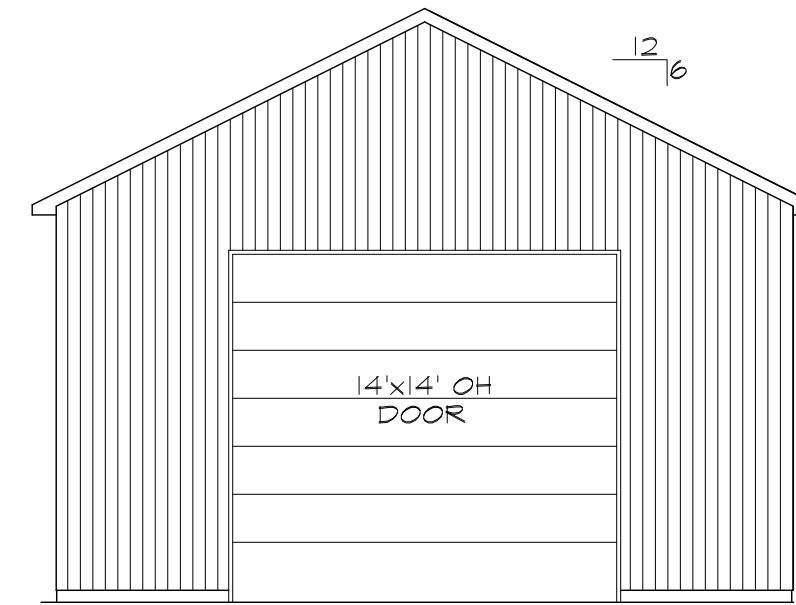


NOTE:
1. TRUSSES TO BE DESIGNED AND STAMPED
BY NYS LICENSED ENGINEER.
2. ALTER THE TOP PLATE HEIGHT AT ATTIC TRUSS
TO ALLOW FOR THE BOTTOM CHORD/FLOOR.
3. ALL LUMBER IN CONTACT W/ THE GROUND
OR CONCRETE TO BE PRESSURE TREATED

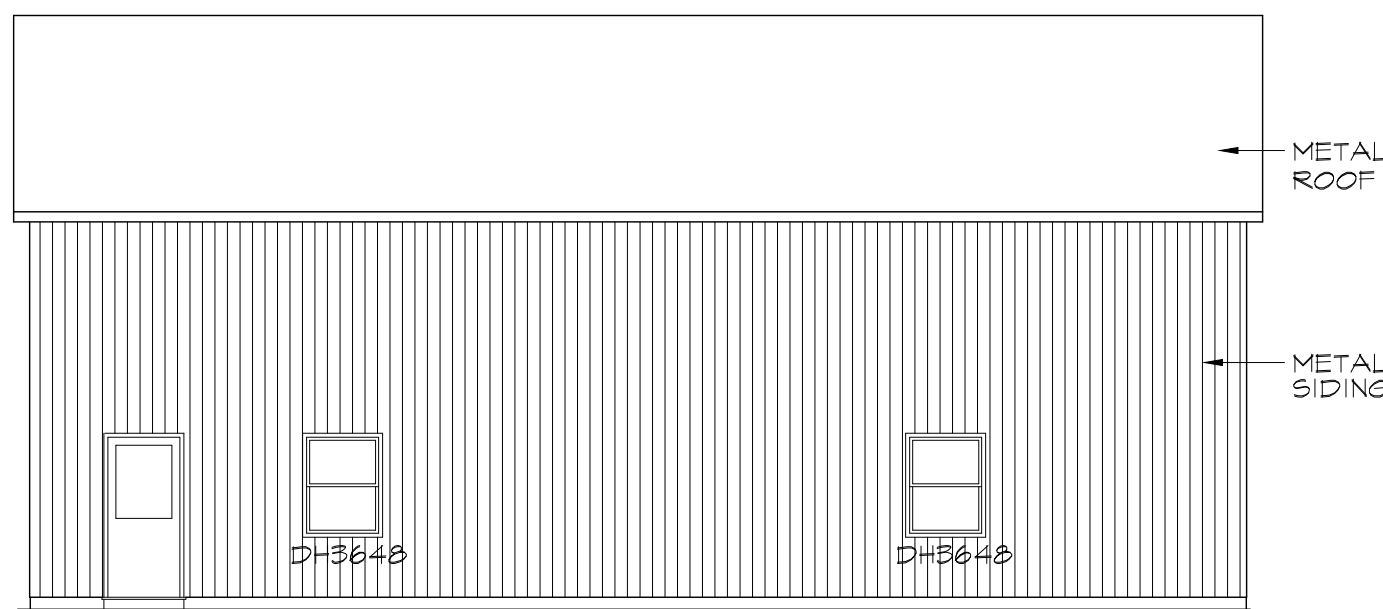
2 WALL SECTION
A-1 SCALE: 1/2"=1'-0"



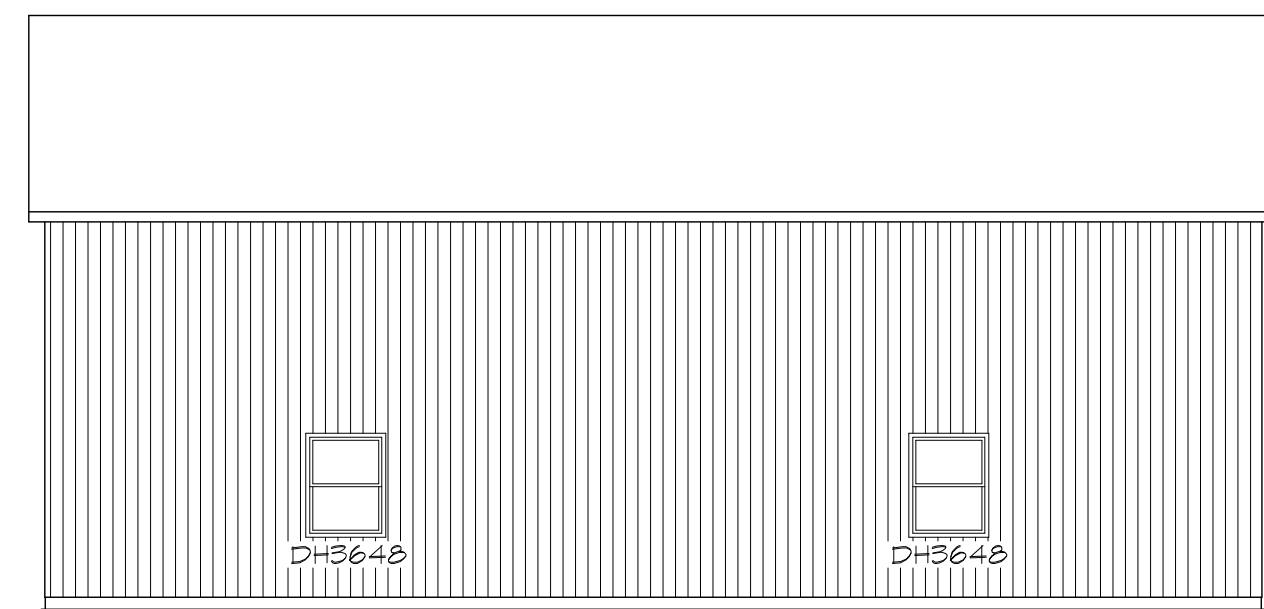
3 FLOOR PLAN
A-1 SCALE: 1/8"=1'-0"



4 FRONT ELEVATION
A-1 SCALE: 1/8"=1'-0"



5 SIDE ELEVATION
A-1 SCALE: 1/8"=1'-0"



6 SIDE ELEVATION
A-1 SCALE: 1/8"=1'-0"

JANICE
M.
MILLER
ARCHITECT

4357 JORDAN ROAD
SKANEATELES, NY
(315) 382-2924
jmillerarch@gmail.com

IT IS A VIOLATION OF THE NEW YORK STATE
EDUCATION LAW FOR ANY PERSON, UNLESS
ACTING UNDER THE DIRECTION OF A
LICENSED PROFESSIONAL ARCHITECT TO ALTER
AN ITEM ON THIS DOCUMENT IN ANY WAY.

DATE: 4/12/22

PROJECT FOR:
WOODNORTH PROPERTY
6985 COLLAMER RD.
MANLIUS, NY

SHEET TITLE:
FLOOR PLAN
ELEVATIONS
WALL SECTION
SITE PLAN

PROJECT NUMBER:

022-14

SHEET NUMBER:

A=1



Onondaga County Planning Board

GML 239 Referral Notice

Referring Municipality/Board: Town of Manlius Planing Board

Referral Contact: Lisa Beeman

Contact Email/Phone: lbeeman/315-637-8619

Type of Referral: ☒ General Municipal Law §239 Review ☐ Informal Review ☐ 3-Mile Limit Review

1. Project Applicant: Guy Pitman 2. Site Address: 6985 Collamer Road 13057

3. Tax ID Number(s): 036.-01-04.0 4. Total Acres: 2.81

5. Current Zoning: CA 6. Current Land Use: _____

7. Project Description: Build a Pole Barn

Please indicate the existing AND proposed water and wastewater service. The notes field is available to provide further details which may better describe the proposed conditions, particularly for projects with multiple lots/structures.

Water Service

8a. Existing: ☐ Municipal
☒ Individual Well
☐ None

Provider: _____

8b. Proposed: ☐ New or Additional Municipal Connection
☐ New or Additional Individual Well
☒ No Change

Wastewater Service

9a. Existing: ☐ Municipal Sanitary Sewer
☒ Individual Septic System
☐ None

Provider: _____

9b. Proposed: ☐ New or Additional Municipal Connection
☐ New or Additional Individual Septic System
☒ No Change

Notes: _____

10. ☒ OCPB Jurisdiction (check ALL that apply and specify)

- ☐ Text Adoption/Amendment -or- ☒ Site is located within 500 feet of:
- ☐ a municipal boundary: _____
 - ☒ a state or county thruway/highway/roadway: State Route 298
 - ☐ an existing or proposed state or county park/recreation area: _____
 - ☐ an existing or proposed county-owned stream or drainage channel: _____
 - ☐ a parcel containing a state or county-owned building/institution: _____
 - ☐ a farm operation located in a New York State Agricultural District (include Ag Data Statement pursuant to AML §305-a)

Referred Action(s)

If referring multiple actions related to the same project, identify the referring municipal board if different from above.

11. ☐ Text Adoption -or- ☐ Text Amendment Referring Board: _____

(Includes: adoption of and amendments to comprehensive plans, local laws, zoning ordinances, subdivision regulations)

Please enclose a document with changes tracked OR the existing and proposed text with a summary of the proposed change(s).

Summary of the proposed additions/changes: _____

12. ☐ Zone Change (Includes map amendments)

Referring Board: _____

Proposed Zoning District: _____ Number of Acres Affected: _____

Purpose and Proposed Use: _____

13. ☒ Site Plan -or- ☐ Project Site Review**Referring Board:** Town of Manlius Planning BoardProposed Use/Improvements: Build a Pole Barn**14. ☐ Special Permit****Referring Board:**

Section of local zoning code that requires a special permit for this use: _____

Purpose: _____

15. ☐ Preliminary Subdivision -or- ☐ Final Subdivision **Referring Board:**

Name of Subdivision: _____

Number of Proposed Lots and Use Type (residential and/or commercial): _____

Is this a cluster subdivision pursuant to Section 278 of the New York State Town Law? ☐ Yes ☐ No**16. ☐ Use Variance****Referring Board:**

Section(s) of local zoning code to which the variance is being sought: _____

Describe how the proposed project varies from the above code section: _____

17. ☐ Area Variance**Referring Board:**

Section(s) of local zoning code to which the variance is being sought: _____

Describe how the proposed project varies from the above code section: _____

18. ☐ Other Authorization**Referring Board:**

Indicate the referable action and provide any other applicable details: _____

SEQR Information**Action (check one):**

- ☐ Type I
☐ Type II
☐ Unlisted Action

Determination of Significance (if known):

- ☐ Positive Declaration – Draft EIS Required
☐ Conditional Negative Declaration (for Unlisted Actions only)
☐ Negative Declaration
☐ No Finding (Type II Actions only)

Lead Agency (if known): _____ **Date Lead Agency Assigned:** _____

In order for a referral to be considered complete, the Type of Action must be classified, and the appropriate EAF (Short or Long EAF) must be filled out as required under SEQR, except in the case of Type II Actions which do not require an EAF. If the municipality possesses or will be requiring additional materials in order to make a determination under SEQR, or if a determination has been made, those materials are also required for the referral to be considered complete.

Attachments

- | | | | |
|---|--|---|--------------------------------------|
| ☒ Survey | ☒ Subdivision Plat | ☒ EAF/Related Materials | ☐ Laws/Texts |
| ☒ Site Plan | ☒ Local Application Form | ☐ Ag Data Statement | ☐ Other _____ |

This referral, as required by NYS GML §239 l, m & n, includes all materials required by and submitted to the referring body as an application on the proposed action, including all materials required by the referring body in order to make its determination of significance pursuant to SEQRA.

Lisa Beeman/ Clerk

315-637-8619 lbeeman@townofmanlius.org

04-25-22

Name/Title of Person Completing This Form

Phone/Email

Transmittal Date



Joanne M. Mahoney
County Executive

Onondaga County Planning Board

RESOLUTION OF THE ONONDAGA COUNTY PLANNING BOARD

Meeting Date: May 25, 2022

OCPB Case # Z-22-116

- WHEREAS, the Onondaga County Planning Board, pursuant to General Municipal Law, Section 239 l, m and n, has considered and reviewed the referral for a SITE PLAN from the Town of Manlius Planning Board at the request of Guy Pitman / Joe Woodworth for the property located at 6985 Collamer Road; and
- WHEREAS, General Municipal Law Section 239-m allows the County Planning Board to review approval of site plans and the site is located within 500 feet of Collamer Road (Route 298), a state highway; and
- WHEREAS, the applicant is proposing to construct a 30' X 50' pole barn on a 2.81-acre parcel in a Commercial (CA) zoning district; and
- WHEREAS, the site is located along Collamer Road, a state road, with surrounding single-family residential uses, an assisted living facility, and vacant, wooded areas; aerial imagery dated May 2021 shows the site contains an existing one-story building, currently USA Racing, with a sidewalk in front; more than 1.5 acres at the rear of the site appears to be vacant and undeveloped; and
- WHEREAS, per aerial imagery, there is an asphalt parking lot at the front of the building with two driveways onto Collamer Road; aerial imagery shows an existing sign at the front of the site within a planting island between the two driveways; the Site Plan dated April 12, 2022, shows an existing asphalt and gravel area enclosed by a chain link fence in the rear of the building; and
- WHEREAS, per the Site Plan, the applicant is proposing to construct the pole barn behind the building in the existing gravel area within the fenced in area; per the Floor Plan dated April 12, 2022, part of the building will have an attic; and
- WHEREAS, per the Onondaga County Department of Finance Office of Real Property Services, the site is served by public drinking water and an individual septic system and is outside the sanitary district; no changes to the existing infrastructure are proposed; and
- WHEREAS, per the Environmental Assessment Form dated April 14, 2022, the proposed pole barn will not create storm water discharge; and
- WHEREAS, GIS mapping shows an area of potential state wetlands located on the rear half of the site in an area that is primarily undeveloped; a small portion of the wetland appears to coincide with the rear gravel area; the proposed pole barn and a portion of the existing building may be within the 100' wetland buffer;
ADVISORY NOTE: The applicant is advised to contact the NYS Department of Environmental Conservation to confirm the presence of state wetlands and/or the 100-foot state wetland buffer on the site, and to obtain any necessary permits for any proposed development or placement of fill in a wetland, or drainage of any confirmed wetlands and buffers; all confirmed wetlands should be shown on the plans for the site; and

WHEREAS, the site may contain the Indiana bat, or its associated habitat, which has been listed by the state or federal government as a threatened or endangered animal species (per EAF Mapper); impacts to bat species are often associated with tree clearing and it appears that no trees will be removed as part of the proposed project; and

NOW THEREFORE BE IT RESOLVED, that the Onondaga County Planning Board recommends the following MODIFICATION(S) to the proposed action prior to local board approval of the proposed action:

1. The applicant must contact the Onondaga County Health Department's Bureau of Public Health Engineering to confirm the location of the existing sewage disposal system to ensure it will not be impacted by the proposed pole barn.
2. The applicant must complete a wetland delineation or other analysis to determine the buildable area prior to approval of the site plan.

The Board offers the following comment:

Every municipal review provides the opportunity to improve community appearance and the applicant and the municipality are encouraged to improve site design by incorporating more vegetative buffering for adjacent residential properties.



Martin E. Voss, Chairman
Onondaga County Planning Board

GML 239 Report of Final Action

NYS GML § 239-m.6. and n.6. require the referring body to file a report of the final action it has taken on a referred matter with the county planning agency within 30 days after the final action (separate from the minutes taken at the meeting). A referring body which acts contrary to a County Planning Board recommendation of MODIFICATION or DISAPPROVAL of a referred matter shall also set forth the reasons for the contrary action in such report.

This section to be completed by the Syracuse-Onondaga County Planning Agency

To: Onondaga County Planning Board **From:** Town of Manlius Planning Board

Fax: 435-2439 **Phone:** 435-2611

Re: Applicant: Guy Pitman / Joe Woodworth

Address: at 6985 Collamer Road

Referral Type: SITE PLAN

OCPB Date: May 25, 2022

OCPB Action: Modification

OCPB Case #: Z-22-116

The local board took the following action regarding the above referenced referral (Check one box. If checking Other, please specify the final action taken. Use the space at the bottom of the report to identify reasons if acting contrary to the OCPB recommendation.):

- ☐ Approved the proposed action with regard to the OCPB's No Position or No Position with Comment.
- ☐ Approved the proposed action as modified by the OCPB.
- ☐ Approved the proposed action contrary to some of the modifications recommended by the OCPB.*
- ☐ Approved the proposed action contrary to all of the modifications recommended by the OCPB.*
- ☐ Approved the proposed action contrary to the disapproval recommended by the OCPB.*

- ☐ Disapproved the proposed action with regard to the OCPB's no position or no position with comment.
- ☐ Disapproved the proposed action with regard to the recommended modification(s) by the OCPB.
- ☐ Disapproved the proposed action as recommended and for reasons set forth by the OCPB.
- ☐ Disapproved the proposed action as recommended but for reasons other than those set forth by the OCPB. (Please list reasons below for local disapproval.)

☐ Other _____

Local Board Date: _____

*List reasons for acting contrary to the OCPB recommendation and include a copy of the local board resolution. Attach additional reasons on a separate sheet of paper as necessary.

IT IS A VIOLATION OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ARCHITECT TO ALTER AN ITEM ON THIS DOCUMENT IN ANY WAY.

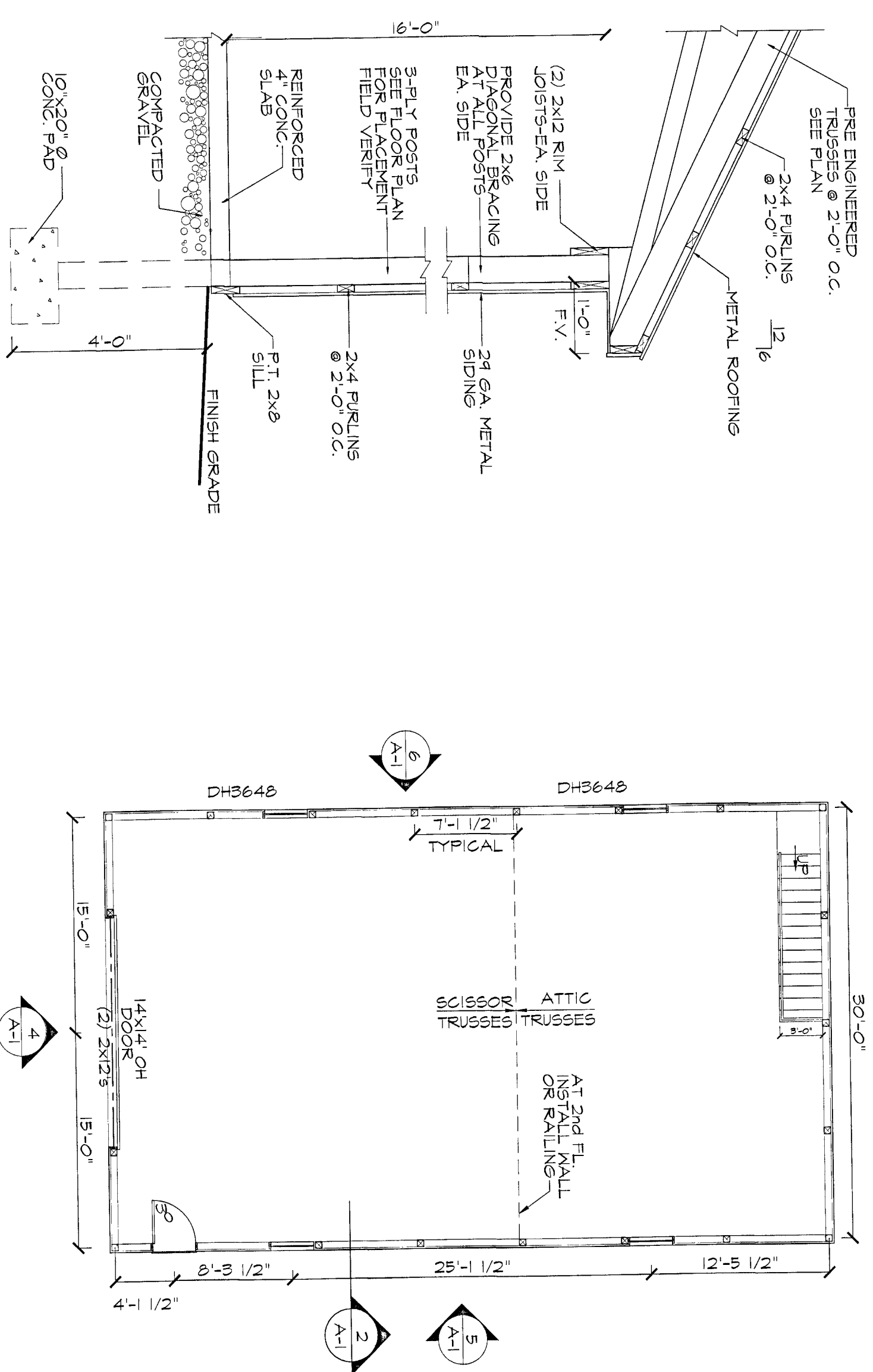
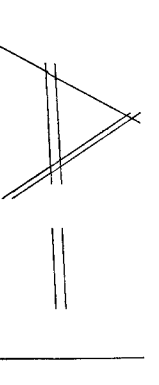
REV. DATE: 5/04/22

PROJECT FOR:
WOODWORTH PROPERTY
6430 MANLIUS ROAD N.
MANLIUS, NY

PROJECT NUMBER:	SHEET TITLE:
	FLOOR PLAN
	ELEVATIONS
	WALL SECTION
	SITE PLAN

SHEET NUMBER:

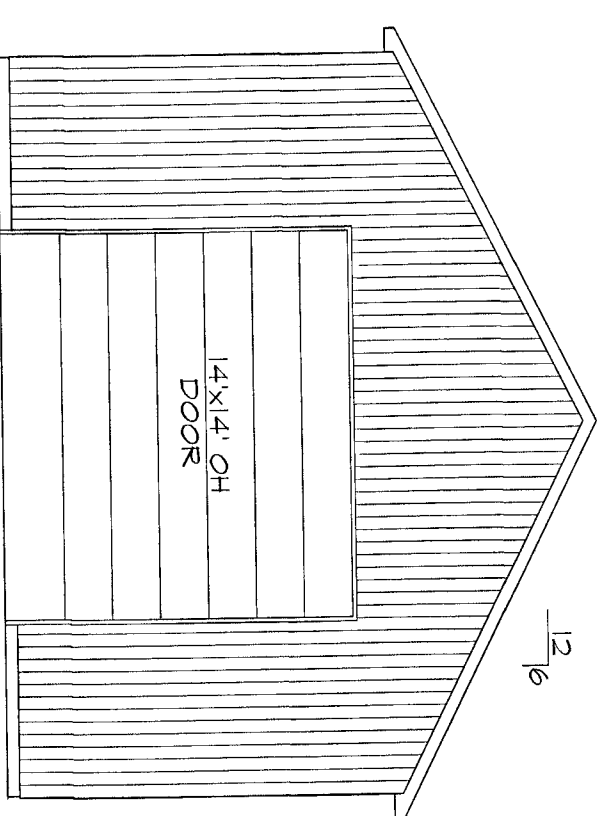
RECEIVED
MAY 09 2022
By _____



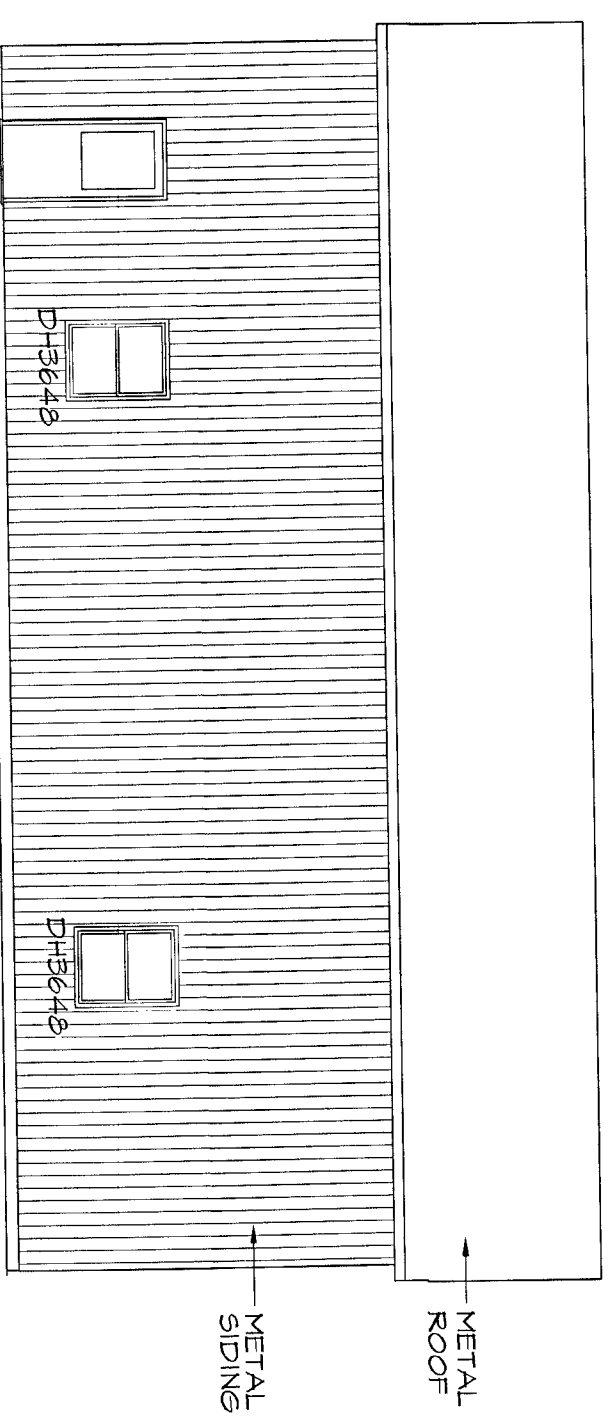
NOTE:

1. TRUSSES TO BE DESIGNED AND STAMPED BY NYS LICENSED ENGINEER.
2. ALTER THE TOP PLATE HEIGHT AT ATTIC TRUSSES TO ALLOW FOR THE BOTTOM CHORD/FLOOR.
3. ALL LUMBER IN CONTACT W/ THE GROUND OR CONCRETE TO BE PRESURE TREATED

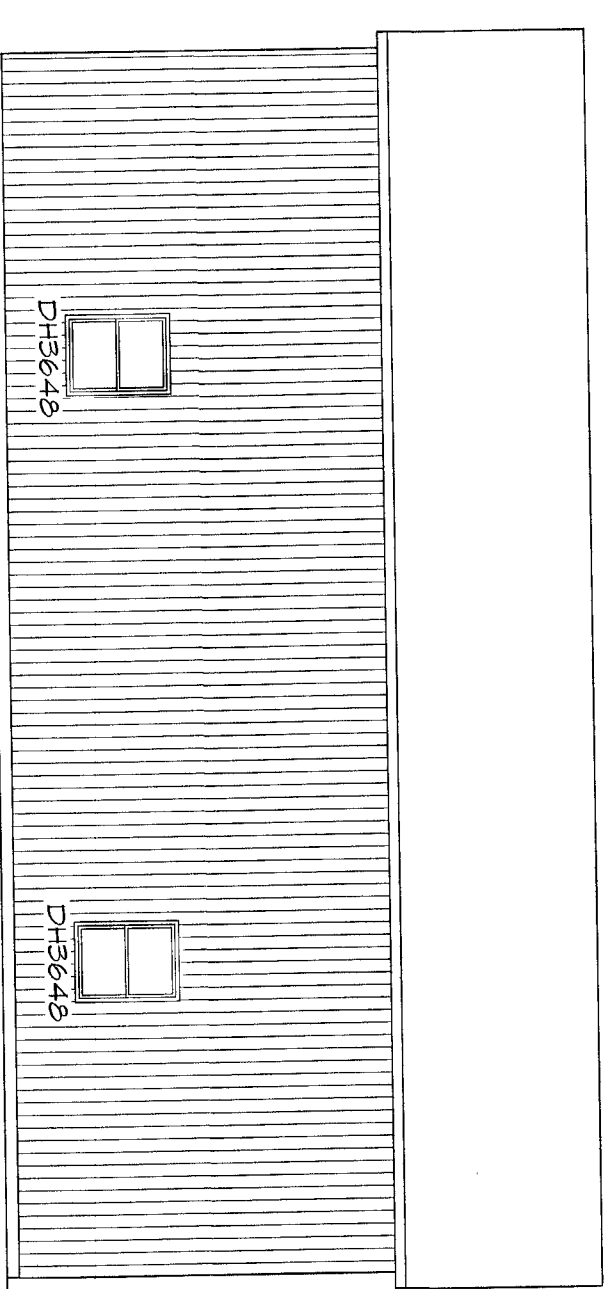
2 WALL SECTION
A-1 SCALE: 1/2"=1'-0"



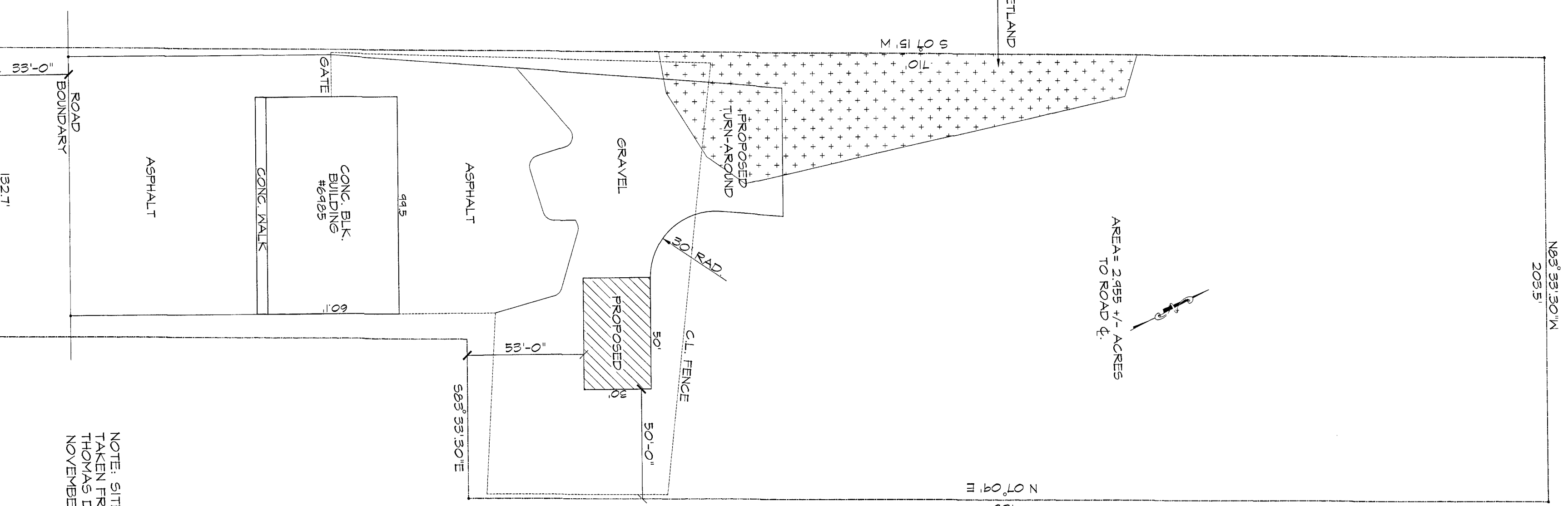
4
A-1 FRONT ELEVATION
SCALE: 1/8" = 1'-0"



5 SIDE ELEVATION
A-1 SCALE: 1/8"=1'-0"



6 SIDE ELEVATION
A-1 SCALE: 1/8"=1'-0"



1
A-1 SITE PLAN
SCALE: 1"=40'-0"

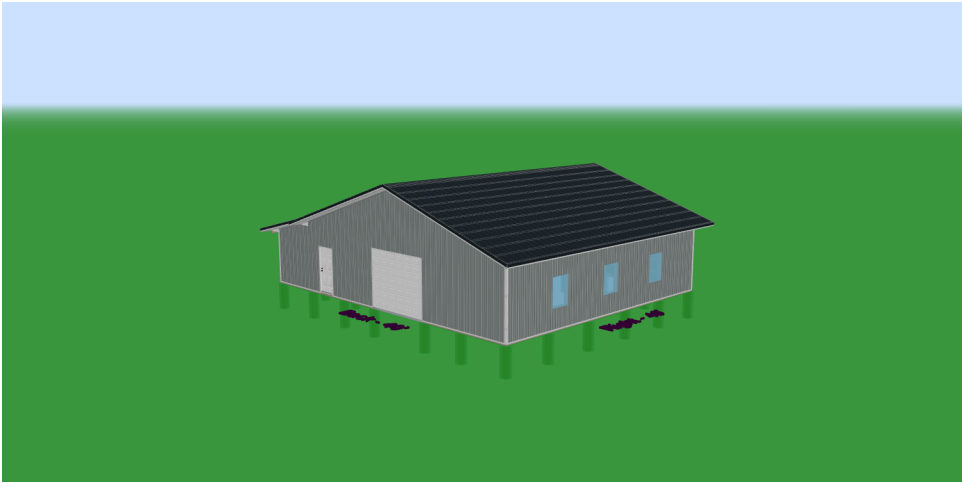
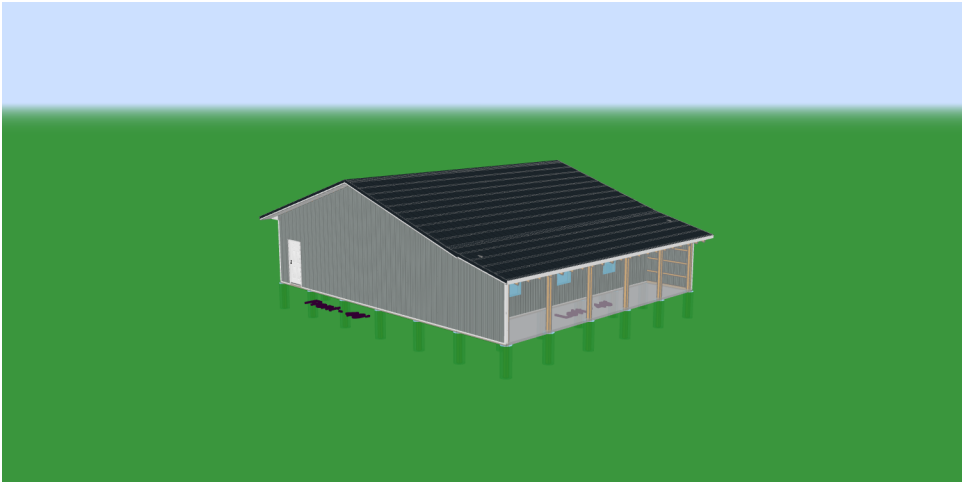
NOTE: SITE PLAN INFORMATION
TAKEN FROM SURVEY BY
THOMAS D. JONES, DATED
NOVEMBER 27, 2019

COLLAMER RD.
(NYS ROUTE 298)

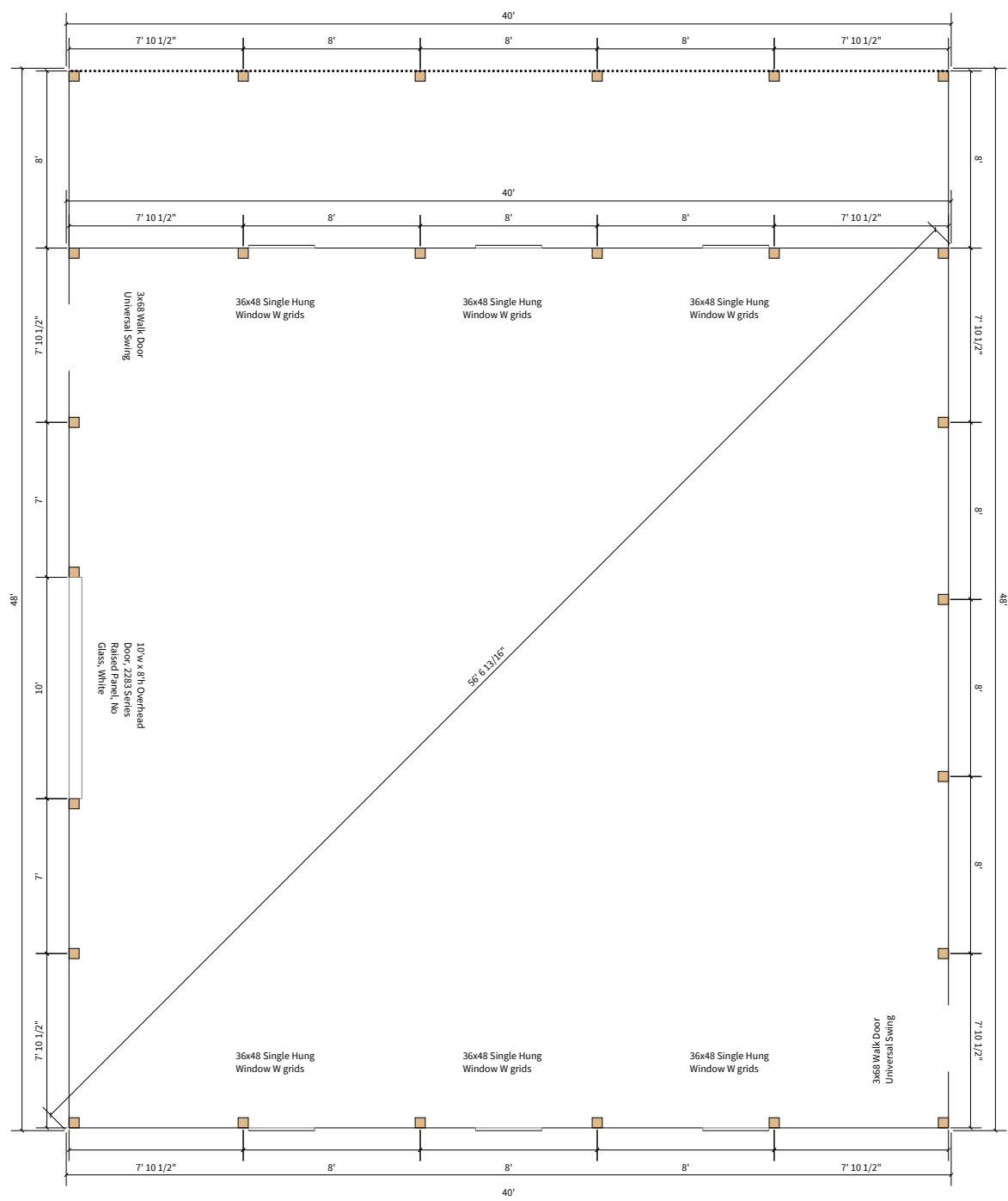
Cover Sheet

Summary	
Width	40'
Length	40'
Ceiling Height	10'
Slab Depth	0.333333333333333'
Overhangs	4
Roof Pitch	4/12

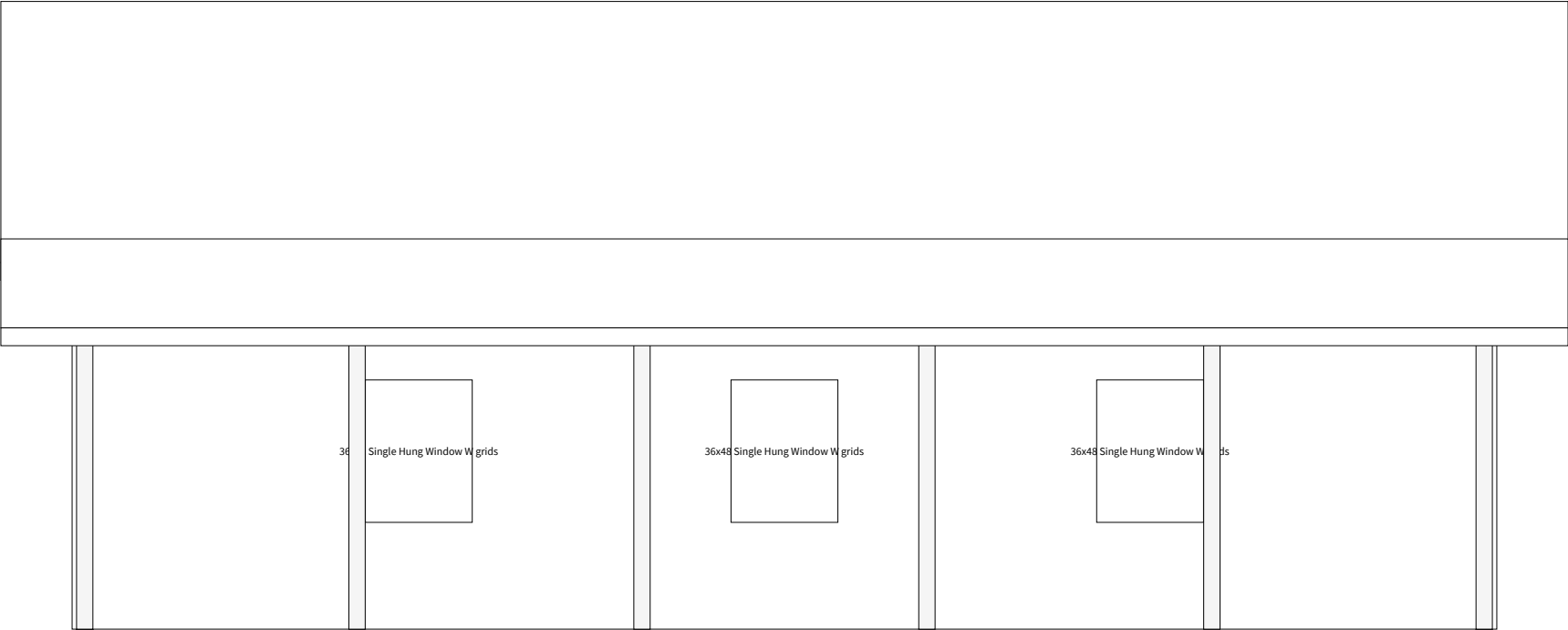
Job Information	
Project Name	Ryan Ewert
Company Name	rls structures
Contact	
Email	
Phone	
Delivery Address	8291 E. Seneca Tpke, Manlius
ZIP code	
Desired Date	
Comments	



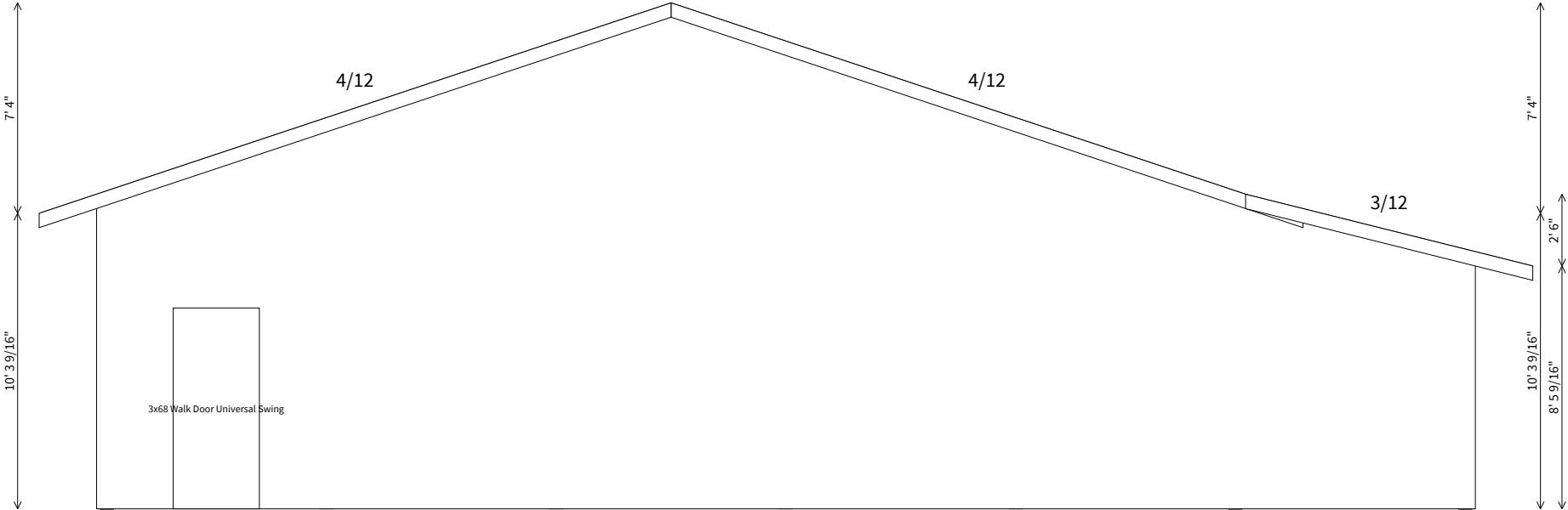
Post Layout



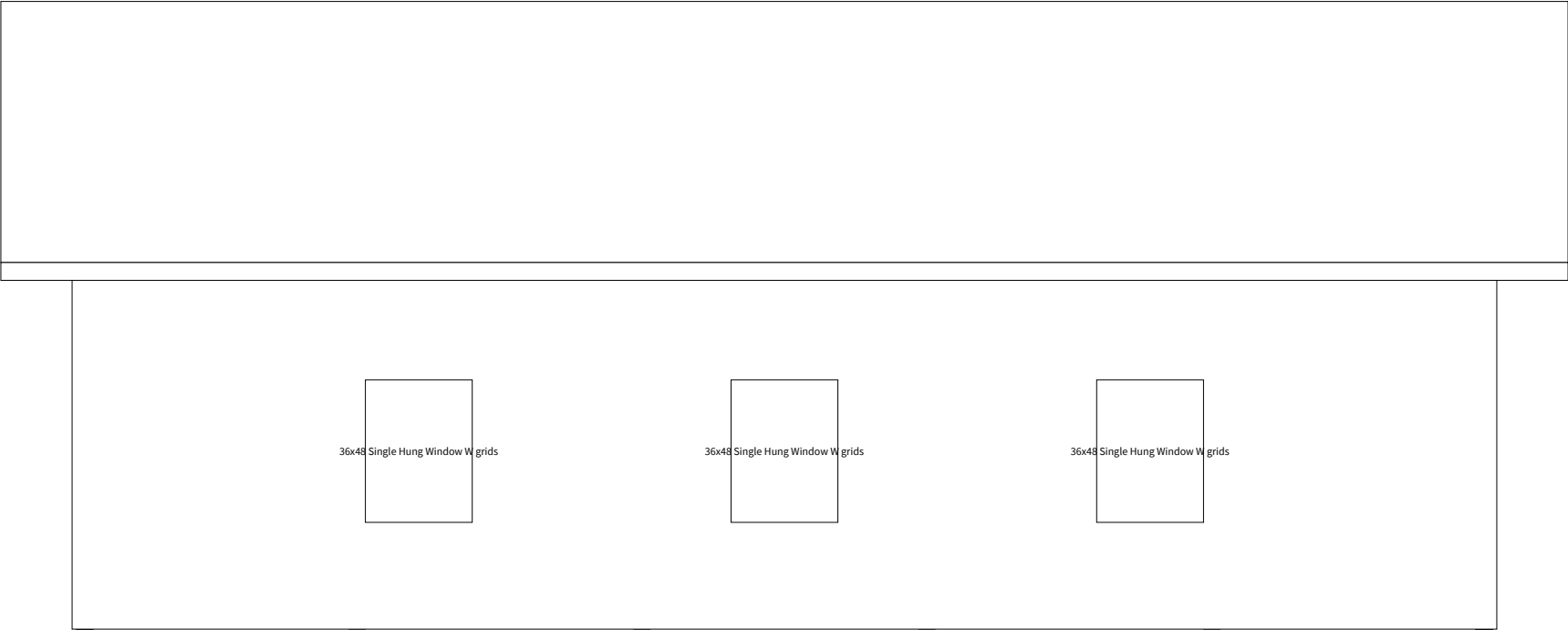
Left Elevation



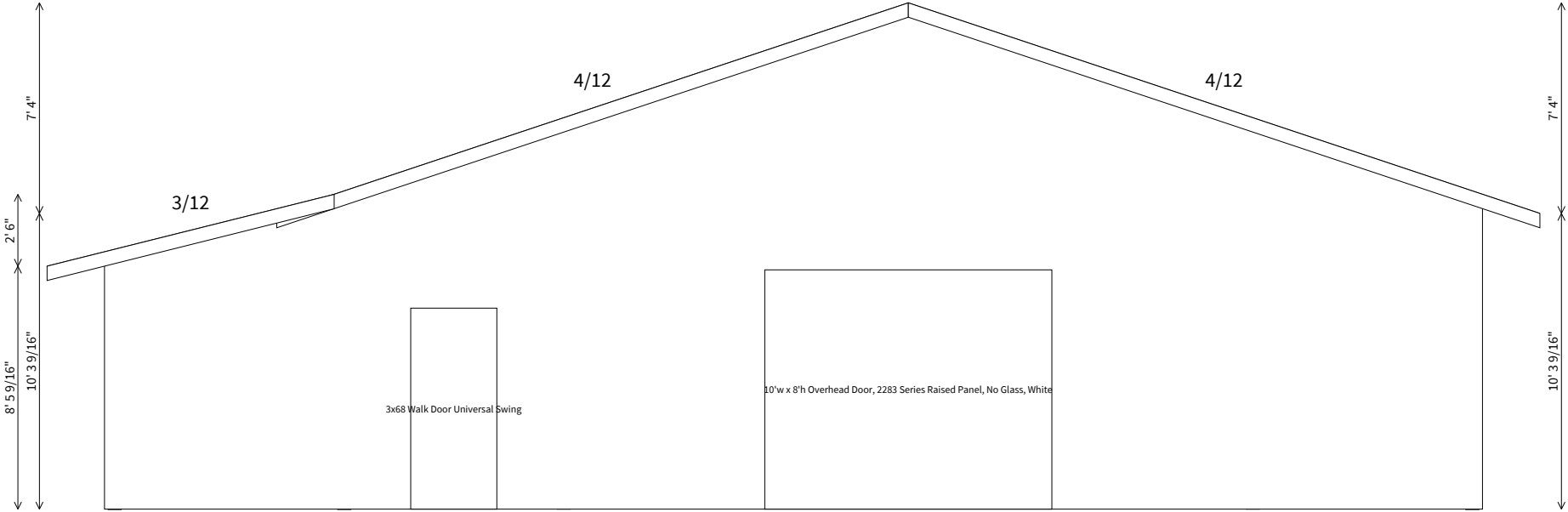
Front Elevation

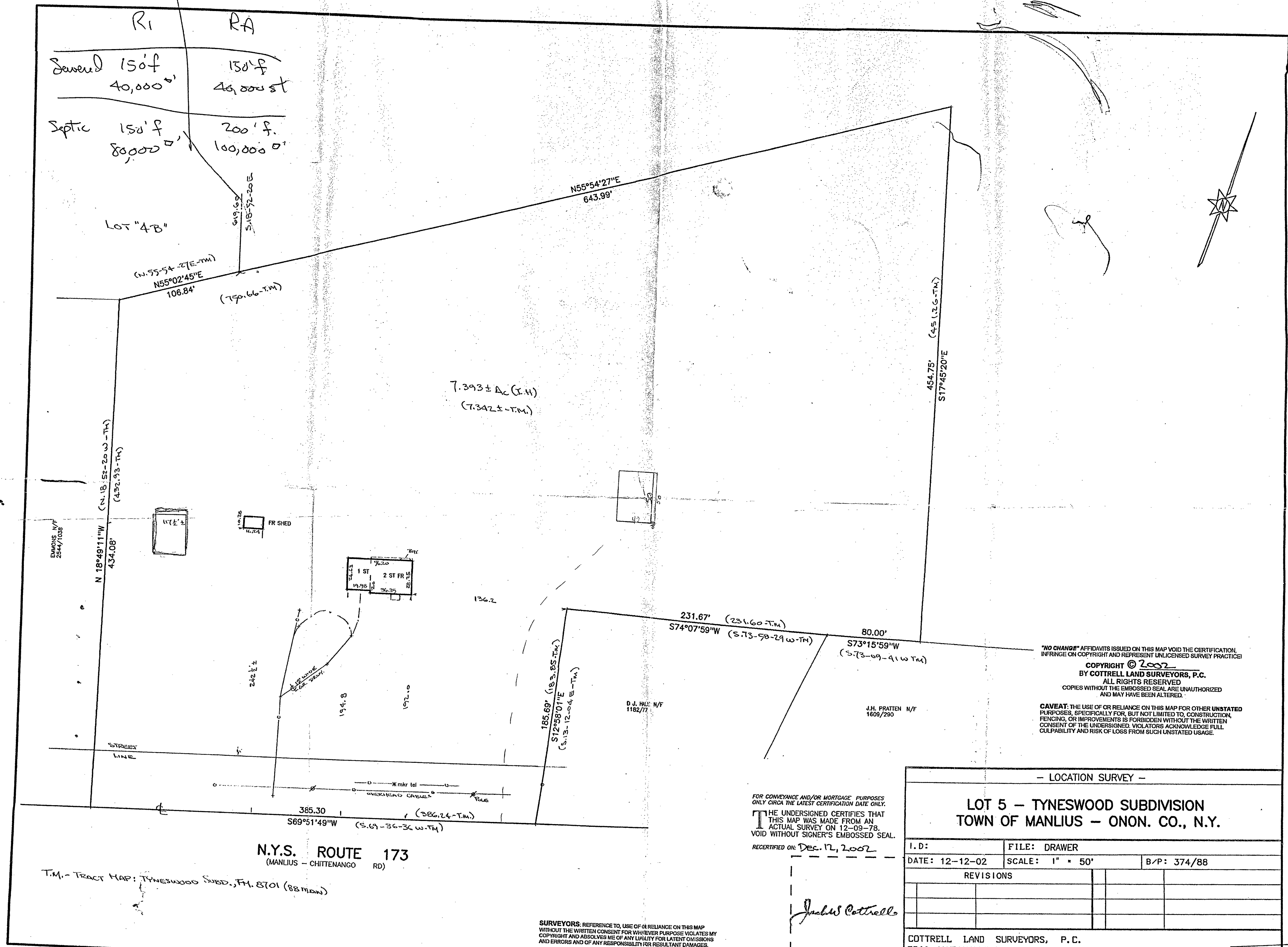


Right Elevation



Back Elevation





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FOR CONVEYANCE AND/OR MORTGAGE PURPOSES ONLY CIRCA THE LATEST CERTIFICATION DATE ONLY.
THE UNDERSIGNED CERTIFIES THAT THIS MAP WAS MADE FROM AN ACTUAL SURVEY ON 12-09-78. VOID WITHOUT SIGNER'S EMBOSSED SEAL.
RECERTIFIED ON: Dec. 12, 2002

James Cottrell
SEAL

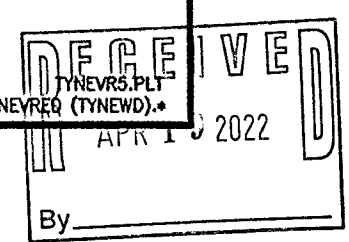
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- LOCATION SURVEY -

LOT 5 - TYNESWOOD SUBDIVISION
TOWN OF MANLIUS - ONON. CO., N.Y.

I.D:	FILE: DRAWER
DATE: 12-12-02	SCALE: 1" = 50'
B/P: 374/88	
REVISIONS	

COTTRELL LAND SURVEYORS, P.C.
7308 JAMESVILLE ROAD
MANLIUS, N.Y. 13104 PHONE (315) 682-8121



Expected

Fee: _____

PLANNING DEPARTMENT

INITIAL APPEARANCE APPLICATION

DATE: 3/12/2022

Name of Project: "Pawson's Doggy Daycare"

Applicant must submit 12 copies of all site plans, surveys, and supporting data with the final application before a planning board meeting can be scheduled.

Location of Project: 8291 East Seneca Turnpike Manlius, NY 13104

Type of Project:

☐ Division of Land ☐ Subdivision ☐ Accessory Use ☒ Zone Change ☐ Site Review ☐ Other _____

Developer: _____

Phone: _____

Address: _____

Zip: _____

Tax Map Number(s): Map # 8701 lot 5 Tynswood

Present Zoning: R1

Desired Zoning: RA

Total Acreage: 7.342 Acres

Total Number of Lots: 1

Property Owner/s: Danielle and Ryan Ewert

Phone: 315-263-5154

Address: 8291 East Seneca Turnpike Manlius, NY

Zip: 13104

Tax Map#(s): 8701

Owner's Signature: Danielle Ewert

Printed Name: Danielle Ewert

Property Owner/s: _____

Phone: _____

Address: _____

Zip: _____

Tax Map#(s): _____

Owner's Signature: _____

Printed Name: _____

Use next page for additional known property owners' information

Planning Board Meeting Date Assignment: _____

Fee: _____

Paid: _____

Per: ☐ Credit/Debit Card ☐ Check ☐ Cash

Planning Board Initial: _____

Appendix B Short Environmental Assessment Form

Instructions for Completing

Part 1 - Project Information. The applicant or project sponsor is responsible for the completion of Part 1. Responses become part of the application for approval or funding, are subject to public review, and may be subject to further verification. Complete Part 1 based on information currently available. If additional research or investigation would be needed to fully respond to any item, please answer as thoroughly as possible based on current information.

Complete all items in Part 1. You may also provide any additional information which you believe will be needed by or useful to the lead agency; attach additional pages as necessary to supplement any item.

Part 1 - Project and Sponsor Information			
Name of Action or Project: Build Pole barn /structure for upscale doggy daycare			
Project Location (describe, and attach a location map): Map # 8701 on 8291 E. Seneca turnpike Manlius, NY 13104			
Brief Description of Proposed Action: To have a pole barn built approximately 40x50 to create a clean, safe, fun, upscale doggy daycare for people to bring their fur babies while at work or busy. To play + interact with dogs to enrich their lives and their owners.			
Name of Applicant or Sponsor: Danielle and Ryan Ewert		Telephone: 315-263-5154 E-Mail: ewert13104@yahoo.com	
Address: 8291 E. Seneca turnpike			
City/PO: Manlius		State: NY	Zip Code: 13104
1. Does the proposed action only involve the legislative adoption of a plan, local law, ordinance, administrative rule, or regulation?		NO	YES
If Yes, attach a narrative description of the intent of the proposed action and the environmental resources that may be affected in the municipality and proceed to Part 2. If no, continue to question 2.		☒	☐
2. Does the proposed action require a permit, approval or funding from any other governmental Agency?		NO	YES
If Yes, list agency(s) name and permit or approval:		☒	☐
3.a. Total acreage of the site of the proposed action?		<u>2</u> acres	
b. Total acreage to be physically disturbed?		<u>2</u> acres	
c. Total acreage (project site and any contiguous properties) owned or controlled by the applicant or project sponsor?		<u> </u> acres We own 7.34 acres	
4. Check all land uses that occur on, adjoining and near the proposed action.			
☐ Urban ☒ Rural (non-agriculture) ☐ Industrial ☐ Commercial ☒ Residential (suburban) ☐ Forest ☒ Agriculture ☐ Aquatic ☐ Other (specify): _____ ☐ Parkland			

5. Is the proposed action,		NO	YES	N/A
a. A permitted use under the zoning regulations?		☐	☒	☐
b. Consistent with the adopted comprehensive plan?		☐	☐	☒
6. Is the proposed action consistent with the predominant character of the existing built or natural landscape?			NO	YES
		☐	☒	
7. Is the site of the proposed action located in, or does it adjoin, a state listed Critical Environmental Area?			NO	YES
If Yes, identify: _____		☒	☐	
8. a. Will the proposed action result in a substantial increase in traffic above present levels?			NO	YES
		☒	☐	
b. Are public transportation service(s) available at or near the site of the proposed action?		☒	☐	
c. Are any pedestrian accommodations or bicycle routes available on or near site of the proposed action?		☒	☐	
9. Does the proposed action meet or exceed the state energy code requirements?			NO	YES
If the proposed action will exceed requirements, describe design features and technologies: _____		☒	☐	
10. Will the proposed action connect to an existing public/private water supply?			NO	YES
If No, describe method for providing potable water: <u>Not sure yet if we are able to connect to our home or if we will need another line ran</u>		☐	☐	
11. Will the proposed action connect to existing wastewater utilities?			NO	YES
If No, describe method for providing wastewater treatment: _____		☒	☐	
12. a. Does the site contain a structure that is listed on either the State or National Register of Historic Places?			NO	YES
		☒	☐	
b. Is the proposed action located in an archeological sensitive area?		☒	☐	
13. a. Does any portion of the site of the proposed action, or lands adjoining the proposed action, contain wetlands or other waterbodies regulated by a federal, state or local agency?			NO	YES
		☒	☐	
b. Would the proposed action physically alter, or encroach into, any existing wetland or waterbody?		☒	☐	
If Yes, identify the wetland or waterbody and extent of alterations in square feet or acres: _____				
14. Identify the typical habitat types that occur on, or are likely to be found on the project site. Check all that apply:				
☒ Shoreline ☐ Forest ☐ Agricultural/grasslands ☐ Early mid-successional ☒ Wetland ☐ Urban ☐ Suburban				
15. Does the site of the proposed action contain any species of animal, or associated habitats, listed by the State or Federal government as threatened or endangered?			NO	YES
		☒	☐	
16. Is the project site located in the 100 year flood plain?			NO	YES
		☒	☐	
17. Will the proposed action create storm water discharge, either from point or non-point sources?			NO	YES
If Yes,		☒	☐	
a. Will storm water discharges flow to adjacent properties?		☒	☐	
b. Will storm water discharges be directed to established conveyance systems (runoff and storm drains)?		☒	☐	
If Yes, briefly describe: _____		☒	☐	

18. Does the proposed action include construction or other activities that result in the impoundment of water or other liquids (e.g. retention pond, waste lagoon, dam)? If Yes, explain purpose and size: _____	NO	YES
☒	☒	☐
19. Has the site of the proposed action or an adjoining property been the location of an active or closed solid waste management facility? If Yes, describe: _____	NO	YES
☒	☒	☐
20. Has the site of the proposed action or an adjoining property been the subject of remediation (ongoing or completed) for hazardous waste? If Yes, describe: _____	NO	YES
☒	☒	☐
I AFFIRM THAT THE INFORMATION PROVIDED ABOVE IS TRUE AND ACCURATE TO THE BEST OF MY KNOWLEDGE		
Applicant/sponsor name: <u>Danielle and Ryan Ewert</u> Date: <u>3/12/2000</u> Signature: <u>Danielle Ewert and Ryan Ewert</u>		

STOP

Part 2 - Impact Assessment. The Lead Agency is responsible for the completion of Part 2. Answer all of the following questions in Part 2 using the information contained in Part 1 and other materials submitted by the project sponsor or otherwise available to the reviewer. When answering the questions the reviewer should be guided by the concept "Have my responses been reasonable considering the scale and context of the proposed action?"

	No, or small impact may occur	Moderate to large impact may occur
1. Will the proposed action create a material conflict with an adopted land use plan or zoning regulations?	☐	☐
2. Will the proposed action result in a change in the use or intensity of use of land?	☐	☐
3. Will the proposed action impair the character or quality of the existing community?	☐	☐
4. Will the proposed action have an impact on the environmental characteristics that caused the establishment of a Critical Environmental Area (CEA)?	☐	☐
5. Will the proposed action result in an adverse change in the existing level of traffic or affect existing infrastructure for mass transit, biking or walkway?	☐	☐
6. Will the proposed action cause an increase in the use of energy and it fails to incorporate reasonably available energy conservation or renewable energy opportunities?	☐	☐
7. Will the proposed action impact existing:		
a. public / private water supplies?	☐	☐
b. public / private wastewater treatment utilities?	☐	☐
8. Will the proposed action impair the character or quality of important historic, archaeological, architectural or aesthetic resources?	☐	☐
9. Will the proposed action result in an adverse change to natural resources (e.g., wetlands, waterbodies, groundwater, air quality, flora and fauna)?	☐	☐

	No, or small impact may occur	Moderate to large impact may occur
10. Will the proposed action result in an increase in the potential for erosion, flooding or drainage problems?	☐	☐
11. Will the proposed action create a hazard to environmental resources or human health?	☐	☐

Part 3 - Determination of significance. The Lead Agency is responsible for the completion of Part 3. For every question in Part 2 that was answered "moderate to large impact may occur", or if there is a need to explain why a particular element of the proposed action may or will not result in a significant adverse environmental impact, please complete Part 3. Part 3 should, in sufficient detail, identify the impact, including any measures or design elements that have been included by the project sponsor to avoid or reduce impacts. Part 3 should also explain how the lead agency determined that the impact may or will not be significant. Each potential impact should be assessed considering its setting, probability of occurring, duration, irreversibility, geographic scope and magnitude. Also consider the potential for short-term, long-term and cumulative impacts.

- ☐ Check this box if you have determined, based on the information and analysis above, and any supporting documentation, that the proposed action may result in one or more potentially large or significant adverse impacts and an environmental impact statement is required.
- ☐ Check this box if you have determined, based on the information and analysis above, and any supporting documentation, that the proposed action will not result in any significant adverse environmental impacts.

Name of Lead Agency

Date

Print or Type Name of Responsible Officer in Lead Agency

Title of Responsible Officer

Signature of Responsible Officer in Lead Agency

Signature of Preparer (if different from Responsible Officer)

**TOWN OF MANLIUS
SPECIAL PERMIT APPLICATION
(Original or Renewal)**

DATE: 3/11/2022

Tax Map # 8701 (Lot 5 Tyneswood)

I Danielle and Ryan Ewert as applicant relative to property located at 8291 East Seneca turnpike Manlius, NY 1304 hereby request/apply for issuance/renewal (CIRCLE ONE) of a **SPECIAL PERMIT** from the Town of Manlius Town Board as required by the Town of Manlius Code, submit the following application and documentary evidence and/or information, including comprising the Exhibits in support of this request and certify that it is correct, true and accurate to the best of my/our knowledge and after reasonable due diligence and investigation. I further knowledge and agree that should any such evidence or information be later determined as false or not credible in any material respect, any special permit issued/renewed based thereon may be determined by the Town Board as void from the start or revocable.

Danielle Ewert Ryan Ewert
Applicant's Signature

A 1. Owner(s) of property: Danielle and Ryan Ewert

A 2. Status (Owner, Lessee) of each applicant: OWNER, OWNER

A 3. Present Zoning of Property: R1 changing to RA

A.4. Present Use of Property (describe in detail as best as reasonably possible- add additional pages as needed): Our home

A5 Describe property condition at present: Excellent condition . 7.34 acres

B 1. Proposed use of property: To add a pole barn about 400 yards from home for a potential doggy daycare. (currently have 7.34 acres)

B 2. Anticipated number of employees, guests, customers on property:

only family employees maybe 1 to 2 at most.
Customers limited to drop off + pick up of dogs/pups allowed.

B 3. Hours of Proposed Operation: 7am - 6pm

B 4. Anticipated Automobile Parking: We will provide a small area for up to 10 cars and a pick up + drop off area (omin)

B 5. Parking Area Buffer/Screening: We will have parking lot buffers

B 6. Anticipated Vehicle Traffic Volume/Flow: We are back about 200 ft off the road so we do not anticipate any traffic change.

B 7. Proposed Site Lighting: Electrical ran

B 8. Anticipated noise sources, known decibel levels: This will be an indoor + outdoor dog daycare. Dogs will not be left out to bark. We do not anticipate any noise source except an occasional bar

B 9. Landscape:

a) Existing landscaping: Natural grass + trees

b) Proposed landscaping: small landscape bed in front and walkway.

B 10. Proposed Signage: A sign on building and small sized sign at road maybe 3x5, 4x6, 5x6

B 11. Level of municipal and other services required to support the proposed activity (i.e., water supply sanitary sewage facilities) Septic tank installed, public water

B 12. Specific Requirements:

Town Code (District) Requirement: Proposal:

Parking Spaces

Lot Coverage

Front Yard Setback

Side Yard Setback

Rear Yard Setback

Maximum Height of Building

TOWN OF MANLIUS

SPECIAL PERMIT APPLICATION - EXHIBIT "G"

PROFESSIONAL FEES REIMBURSEMENT AGREEMENT

As a condition of the application(s) to the Town of Manlius, its Zoning Board of Appeals, Planning Board, codes administration/planning office, and/or Town Board (the "Town") for various zoning, land use, construction and related reviews, approvals, certificates, permits and related consideration(s) (including for any local governmental assisted funding) related to the request of Danielle and Ryan Ewert (the "Application"),

[name], [legal address] ("Applicant") relative to proposed development at 8291 East Seneca Trk Manlius, NY 13104 [project address], Tax Parcel # lot 5 Tyneswood, Manlius, New York, and related matters (the "Project") agrees as follows:

The Application and Project may or will likely entail that the Town incur legal, engineering, architectural, administrative and related expense(s) including, without limitation, for both on staff and third party consultants involved in the consideration of the Application and Project, and including, without limitation, attendance at Zoning Board of Appeals, Planning Board, and Town Board meetings, consultation with the Applicant, its or the Town's engineer, architect, attorney, and/or other Town officers and employees, or consultants or professional service providers, incidental to the Application from the earlier of the filing of the Application for and/or first presentation of the Project to Town, and through final completion and issuance of all Town and other governmental permits, certifications and approvals.

In connection with and consideration of the foregoing, Applicant agrees to bear all cost and expense for such administrative, legal, engineering, architect and other professional and consulting assistance to the Town incidental to the Application and Project, and including that expense incurred by the Town for Town employees and officers performing reasonable and necessary work on behalf of the Town incident to the Application or Project.

In connection with the foregoing, Applicant shall reimburse the Town for time spent by outside consultants and professionals at the usual rate charged by them to private clientele, or if none, then the usual rate charged to municipalities. Reimbursement for the cost of Town employees and officers shall be based upon the cost to Town for the services of such persons, including salary and fringe benefits, reduced to an hourly rate and including overtime where directly attributable to the Application or Project.

Should the Town determine, in its sole discretion, that additional services are required to represent, supervise, inspect, evaluate and/or consult, including in order to protect the rights and/or interests of the Town such as relative to an enforcement or violation proceeding, the Applicant shall likewise bear all costs associated with such services.

This Agreement shall be effective as of _____, 20___. The Applicant shall deposit an initial sum of \$ _____, and such other amounts as from time to time the Town may determine, payable to and deposited with the Town and which sum or sums shall be applied against those sums reimbursable to the Town pursuant to the terms of this Agreement (the "Deposit"). Upon completion or discontinuance of the Application and Project and payment of all fees incurred, any unused Deposit shall be returned to the Applicant.

The Applicant shall receive periodically, one or more statements detailing charges for which reimbursement has been made against the Deposit, detailing unpaid amounts, if any, and setting forth any additional Deposit required by the Town. Failure to pay any amounts due the Town of Manlius within twenty (20) days of the date of statement may result in the termination of work/services by Town relative to the Application, the non-issuance suspension or revocation of any certificates, permits or approvals, and/or denial of applications, the Town's commencement of collection efforts, and/or the exercise of any other rights or remedies available to Town hereunder or pursuant to applicable law, including under the Town Code. No certificates, approvals or permits, including, without limitation, Certificates of Occupancy/Compliance, may be issued until all fees due hereunder are paid or sufficient Deposit for same made.

Notwithstanding any provision hereof to the contrary or otherwise, the intent of this Agreement is to subject all of those subject matter areas under applicable provisions of Federal, State, and County laws, rules and regulations whatsoever, the Town Code including as any of same may be amended from time to time, and without limitation, those provisions under Chapters 59, 63, 72, 83, 95, 96, 104, 119, 123, 125, 126, 127, 131, 147, and 155 of the Town Code to the provisions hereof; in addition any financing or funding applications incidental to the Application or Project and requiring sponsorship or support of Town, and review under the State Environmental Quality Review Act or other State or Federal environmental, historical or related laws, rules or regulations shall likewise be subject to the provisions hereof.

In addition, and notwithstanding any provisions hereof to the contrary or otherwise, any provisions of the Town Code or other laws, rules or regulations providing rights more favorable to and protective of Town shall be deemed incorporated herein by reference, and shall not be deemed superseded by less protective provisions herein.

In the event of a breach or default by Applicant, Town shall be entitled to pursue any and all legal rights and remedies pursuant to applicable law including, without limitation, the Town Code and shall be entitled to recover, in addition to any sums due, reasonable attorney's fees, costs and disbursements incurred in any such efforts.

If any part of this Agreement or the application thereof to any person or entity or circumstance is adjudged invalid, illegal or unconstitutional by any court of competent jurisdiction, such order or judgment shall be confined in its operation to the part of this law or in its application directly involved in the controversy in which such judgment shall have been rendered and shall not affect or impair the validity of the remainder of this Agreement or the application thereof to other persons, entities or circumstances. Further, in adjudging such invalid, illegal or unconstitutional provision or part thereof, the court shall attempt to modify same to a provision or part which is not illegal, invalid or unconstitutional and which best achieves the intent of such illegal, invalid or unconstitutional provision or part thereof.

The Town Supervisor has executed this agreement pursuant to a blanket Resolution adopted by the Town Board at a meeting thereof held on _____, 20____, and is duly authorized and empowered to execute this instrument and enter into this Agreement on behalf of the Town of Manlius.

In the event Applicant is a closely held corporation, partnership or limited liability company, its three (3) largest principals shall be signatories to this Agreement, as joint and severable parties with Applicant and Town.

This instrument shall be executed in triplicate. At least one original shall be permanently filed, after execution thereof, in the office of the Town Clerk and one in the Code Enforcement Office.

Dated: 3/12/2000 Danielle Ewert Danielle Ewert
Print Applicant Name Applicant's Authorized Signature/Title

Applicant Address: 8291 East Seneca Turnpike
Manlius, NY 13104

Danielle Ewert Danielle Ewert
Print Applicant (Principal) Name Applicant's Principal Signature

Ryan Ewert Ryan Ewert
Print Applicant (Principal) Name Applicant's Principal Signature

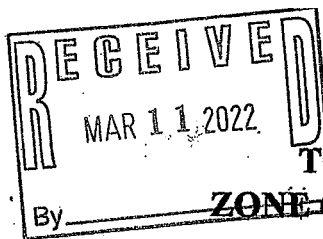
Print Applicant (Principal) Name Applicant's Principal Signature

TOWN OF MANLIUS

By: _____

Name: _____

Title: _____



\$300

TOWN OF MANLIUS
ZONE CHANGE APPLICATION

1. Name of Person applying for Zone Change Danielle and Ryan Ewert
Address of person applying 8291 East Seneca tpk Manlius, NY 13104
Cell Number 315-263-5154 Danielle Phone Number 315-263-2530 (Ryan cell)
2. Name: (owner of record) of land where Zone Change would occur Danielle and Ryan Ewert
Address (owner of record) 8291 East Seneca turnpike Manlius, NY 13104
Cell Number (owner of record) 315-263-5154 Phone Number _____
3. Tax Map Number of property where Zone Change would occur No 8701 (lot 5, Turnswood)
4. Is this property located in a flood hazard area? No > 099. - 01-27.4
If so, what flood area is the property in it?

5. Present zoning classification of property R 1
6. Desired zoning classification RA
Reason for Change of Zone (use additional sheets if necessary) Trying to be approved to have a structure professionally built by a company to have an upscale dog daycare + boarding (short term).
7. What is lot size? 7.342 acres
8. If the Zone Change is granted, will the use of the property conform to the District regulations as stated in Chapter 155 Article III of the Town of Manlius Municipal Code? I believe so
9. Is the property within the protectively zoned area of a housing project authorized under the public housing law? No
10. Is the property within five hundred (500) feet of the boundaries of any city, village, town, county, state park or parkway? No
If yes, please specify _____
11. Is the property within five hundred (500) feet from the boundary of any existing or proposed County or State park or other recreation area, or from the right-of-way of any existing or proposed county or state parkway, thruway, expressway, road or highway, or from the existing or proposed right-of-way of any stream or drainage channel owned by the county or for which the county has established channel lines, or from the existing or proposed boundary of any county or state owned land on which a public building or institution is situated? No

If yes, please specify _____

12. List the uses of all abutting property We have residential with apartments being rented on one side and a commercial vet to the left (other side of us) Behind us ~~we~~ there is 42 acres of horse trails.

13. The following must be included with your 12 application packets unless otherwise specified and/or specifically waived by the Town Board:

- An environmental assessment form which can be obtained from the Town Clerk, or an environmental impact statement.
- Copy of a survey of the premises certified by a New York State licensed surveyor.
- Legal description of the premises.
- This application must be signed by both the owner of record of the property and the applicant.

The failure to answer any question on this application, the failure to submit any item as specified or the failure to execute this application will result in a delay in the processing of the application.

Date 3/9/2022

Danielle Ewert
Applicant 1

Date 3/9/2022

Ryan Ewert
Applicant 2

Date _____

Applicant

TOWN OF MANLIUS

DISCLOSURE AFFIDAVIT

This affidavit is a part of and must be completed and attached to every application, petition, request submitted for a *site plan, variance, amendment, change of zoning, approval of a plat, exemption from a plat or official map, license or permit.*

STATE OF NEW YORK)
) SS:
COUNTY OF ONONDAGA)

I. Danielle Ewert, being duly sworn, deposes and says that (s) he is:

Application

(applicant, petitioner, corporation officer, property owner, etc.)

II. That deponent has read and is familiar with the provisions of the General Municipal Law, Section 809 which states:

- A. Every application, petition or request submitted for a site plan, variance, amendment, change of zoning, approval of a plat, exemption from a plat or official map, license or permit, pursuant to the provisions or any ordinance, local law, rule or regulation constituting the zoning and planning regulations of a municipality shall state the name, residence and the nature and extent of the interest of any state officer or any officer or employee of such municipality is a part, in the person, partnership or association making such application, petition or request (hereinafter called the applicant) to the extent known to such applicant.
- B. For the purpose of this action an officer or employee shall be deemed to have an interest in the applicant when (s) he, his/her spouse, or their brothers, sisters, parents, children, grandchildren, or the spouse of any of them:
 - 1) is the applicant, or
 - 2) is an officer, director, partner or employee of the applicant, or
 - 3) legally or beneficially owns or controls stock of a corporate applicant or is a member of a partnership or association applicant, or
 - 4) is a party to an agreement with such an applicant, express or implied, whereby (s) he may receive any payment or other benefit, whether or not for services rendered, or contingent upon the favorable approval of such application, petition or request.
- C. Ownership of less than five percent (5%) of the stock of a corporation whose stock is listed on the New York or American Stock Exchanges shall not constitute an interest for the purposes of this section.
- D. A person who knowingly and intentionally violates this section shall be guilty of a misdemeanor.

III. That no Town of Manlius officer, employee or a relative of either, as defined in Section 809 General Municipal Law has any interest in this application.

-OR-

If a Town of Manlius officer, employee or relative of either as defined in Section 809 General Municipal law has any interest in this application, the full particulars are provided on an attached sheet.

Date: 03/10, 2022.

Danielle Ewert
(Print Name)

Danielle Ewert
(Signature)

(Entity Name)

By (Officer) (Title)

(Mailing Address of Applicant)

(Telephone Number)

Date: 03/10, 2022.

Ryan Ewert
(Print Name)

Ryan Ewert
(Signature)

(Entity Name)

By (Officer) (Title)

(Mailing Address of Applicant)

(Telephone Number)

ACKNOWLEDGEMENTS

STATE OF NEW YORK)
) SS:
COUNTY OF ONONDAGA)

On this 10 day of March in the year 2022, before me, the undersigned, a notary public in and for said state, personally appeared Ryan Ewert, and Danielle Ewert personally known to me or proved to me on the basis of satisfactory evidence to be the individual whose name is subscribed to the within Petition and acknowledged to me the he/she/they executed the same in his/her/their capacity, and that by his/her/their signature(s) on the Petition, the individual or the persons upon behalf of which the individual acted executed the instrument.

[Signature]
Notary Public

LISA M WELCH
NOTARY PUBLIC STATE OF NEW YORK
ONONDAGA
LIC. #01WE6060394
COMM. EXP. 06/25/2023

617.20
Appendix C
State Environmental Quality Review
SHORT ENVIRONMENTAL ASSESSMENT FORM
For UNLISTED ACTIONS Only

PART I - PROJECT INFORMATION (TO BE COMPLETED BY APPLICANT OR PROJECT SPONSOR)

1. APPLICANT/SPONSOR: <u>Danielle and Ryan Ewert</u>	2. PROJECT NAME:
3. PROJECT LOCATION: <u>8291 East Seneca turnpike Manlius, NY 13104</u> MUNICIPALITY _____ COUNTY <u>Onondaga</u>	
4. PRECISE LOCATION: (Street address and road intersections, prominent landmarks, etc., or provide map) <u>8291 East Seneca turnpike Manlius, NY 13104</u>	
5. PROPOSED ACTION IS: ☒ NEW ☐ EXPANSION ☐ MODIFICATION/ALTERATION	
6. DESCRIBE PROJECT BRIEFLY: <u>To have a company build a polebarn, to create an upscale doggy daycare. To be able to provide a clean, safe, fun environment for people to be able to leave their fur babies while at work or busy.</u>	
7. AMOUNT OF LAND AFFECTED: Initially <u>1</u> Acres Ultimately _____ Acres	
8. WILL PROPOSED ACTION COMPLY WITH EXISTING ZONING OR OTHER EXISTING LAND USE RESTRICTIONS? ☒ Yes ☐ No If no, describe briefly:	
9. WHAT IS THE PRESENT LAND USE IN THE VICINITY OF THE PROJECT? ☒ RESIDENTIAL ☐ INDUSTRIAL ☒ COMMERCIAL ☒ AGRICULTURAL ☐ PARK/FOREST/OPEN SPACE ☐ OTHER Describe: <u>There is a commercial vet to the left of us + a homeowner renting to the right</u>	
10. DOES ACTION INVOLVE A PERMIT APPROVAL, OR FUNDING, NOW OR ULTIMATELY FROM ANY OTHER GOVERNMENTAL AGENCY (FEDERAL, STATE OR LOCAL)? ☐ Yes ☐ No If yes, list agency(s) name and permit/approvals:	
11. DOES ANY ASPECT OF THE ACTION HAVE A CURRENTLY VALID PERMIT OR APPROVAL? ☐ Yes ☒ No If yes, list agency(s) name and permit/approvals:	
12. AS A RESULT OF PROPOSED ACTION, WILL EXISTING PERMIT/APPROVAL REQUIRE MODIFICATION? ☐ Yes ☐ No	
I CERTIFY THAT THE INFORMATION PROVIDED ABOVE IS TRUE TO THE BEST OF MY KNOWLEDGE	
APPLICANT/SPONSOR NAME: <u>Danielle Ewert</u> DATE: <u>3/9/2022</u>	
SIGNATURE: <u>Danielle Ewert</u>	

IF THE ACTION IS IN A COASTAL AREA, AND YOU ARE A STATE AGENCY, COMPLETE A COASTAL ASSESSMENT FORM BEFORE PROCEEDING WITH THIS ASSESSMENT.

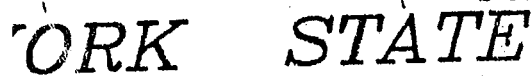
PART II – ENVIRONMENTAL ASSESSMENT (TO BE COMPLETED BY AGENCY)

A. DOES ACTION EXCEED ANY TYPE 1 THRESHOLD IN 6 NYCRR, PART 617.4? IF YES, COORDINATE THE REVIEW PROCESS AND USE THE FULL EAF. ☐ YES ☒ NO
B. WILL ACTION RECEIVE COORDINATED REVIEW AS PROVIDED FOR UNLISTED ACTIONS IN 6 NYCRR, PART 617.6? IF NO, A NEGATIVE DECLARATION MAY BE SUPERSEDED BY ANOTHER INVOLVED AGENCY. ☐ YES ☐ NO
C. COULD ACTION RESULT IN ANY ADVERSE EFFECTS ASSOCIATED WITH THE FOLLOWING: (ANSWERS MAY BE HANDWRITTEN, IF LEGIBLE). C1. EXISTING AIR QUALITY, SURFACE OR GROUNDWATER QUALITY OR QUANTITY, NOISE LEVELS, EXISTING TRAFFIC PATTERNS, SOLID WASTE PRODUCTION OR DISPOSAL, POTENTIAL FOR EROSION, DRAINAGE OR FLOODING PROBLEMS? EXPLAIN BRIEFLY: <i>No</i>
C2. AESTHETIC, AGRICULTURAL, ARCHAEOLOGICAL, HISTORIC, OR OTHER NATURAL OR CULTURAL RESOURCES; OR COMMUNITY OR NEIGHBORHOOD CHARACTER: EXPLAIN BRIEFLY: <i>No</i>
C3. VEGETATION OR FAUNA, FISH, SHELLFISH OR WILDLIFE SPECIES, SIGNIFICANT HABITATS, OR THREATENED OR ENDANGERED SPECIES? EXPLAIN BRIEFLY: <i>No</i>
C4. A COMMUNITY'S EXISTING PLANS OR GOALS AS OFFICIALLY ADOPTED, OR A CHANGE IN USE OR INTENSITY OF USE OF LAND OR OTHER NATURAL RESOURCES? EXPLAIN BRIEFLY: <i>No</i>
C5. GROWTH, SUBSEQUENT DEVELOPMENT, OR RELATED ACTIVITIES LIKELY TO BE INDUCED BY THE PROPOSED ACTION: EXPLAIN BRIEFLY: <i>No</i>
C6. LONG TERM, SHORT TERM, CUMULATIVE, OR OTHER EFFECTS NOT IDENTIFIED IN C1-C5? EXPLAIN BRIEFLY: <i>No</i>
C7. OTHER IMPACTS (INCLUDING CHANGES IN USE OF EITHER QUANTITY OR TYPE OF ENERGY)? EXPLAIN BRIEFLY: <i>No</i>
D. WILL THE PROJECT HAVE AN IMPACT ON THE ENVIRONMENTAL CHARACTERISTICS THAT CAUSED THE ESTABLISHMENT OF A CRITICAL ENVIRONMENTAL AREA (CEA)? ☐ YES ☒ NO. IF YES, EXPLAIN BRIEFLY:
E. IS THERE, OR IS THERE LIKELY TO BE, CONTROVERSY RELATED TO POTENTIAL ADVERSE ENVIRONMENTAL IMPACTS? ☒ YES ☐ NO. IF YES, EXPLAIN BRIEFLY: <i>Possibly by a neighbor that we do not get along with.</i>

PART III – DETERMINATION OF SIGNIFICANCE (TO BE COMPLETED BY AGENCY)

Instructions: For each adverse effect identified above, determine whether it is substantial, large, important or otherwise significant. Each effect should be assessed in connection with its (a) setting (i.e., urban or rural); (b) probability of occurring; (c) duration; (d) irreversibility; (e) geographic scope; and (f) magnitude. If necessary, add attachments or reference supporting materials. Ensure that explanations contain sufficient detail to show that all relevant adverse impacts have been identified and adequately addressed. If question D or Part II was checked yes, the determination of significance must evaluate the potential impact of the proposed action on the environmental characteristics of the CEA.

☐ CHECK THIS BOX IF YOU HAVE IDENTIFIED ONE OR MORE POTENTIALLY LARGE OR SIGNIFICANT ADVERSE IMPACTS WHICH MAY OCCUR. THEN PROCEED DIRECTLY TO THE FULL EAF AND/OR PREPARE A POSITIVE DECLARATION.	
☒ CHECK THIS BOX IF YOU HAVE DETERMINED, BASED ON THE INFORMATION AND ANALYSIS ABOVE AND ANY SUPPORTING DOCUMENTATION, THAT THE PROPOSED ACTION WILL NOT RESULT IN ANY SIGNIFICANT ADVERSE ENVIRONMENTAL IMPACTS AND PROVIDE ON ATTACHMENTS AS NECESSARY. THE REASONS SUPPORTING THIS DETERMINATION:	
_____ Name of Lead Agency	_____ Date
_____ Print or Type Name of Responsible Officer in Lead Agency	_____ Title of Responsible Officer
_____ Signature of Responsible Officer in Lead Agency	_____ Signature of Preparer (if different from responsible officer)



Route 173.
y exist and are available for connection to lots 1-5 without main extension.
private well, as the public water main does not extend to lot 6.

OWNER:

BOOK 4437 PAGE 260
BARGAIN AND SALE DEED

This **Indenture**, made the 11TH day of June, 2000, between

014748	RECEIVED
	\$..... <u>5</u>
	REAL ESTATE
	JUL 13 2000
TRANSFER TAX	
ONONDAGA	
COUNTY	

DANIELLE J. EWERT AND RYAN EWERT,

MANLIUS
3138

of **8291 EAST SENECA STREET, MANLIUS NEW YORK 13104**, party of the second part:

Witnesseth, that the party of the first part, in consideration of ONE AND 00/100 dollars (\$1.00), lawful money of the United States, paid by the party of the second part, does hereby remise, release, and quitclaim unto the party of the second part, theirs heirs and assigns forever, all

THAT TRACT OR PARCEL OF LAND situate in the Town of Manlius, County of Onondaga and State of New York, being part of Farm Lot 88 in said Town and more particularly described as Lot 5 of the Tyneswood Subdivision according to a map of said Tract made by David A. Vredenburg, L.L.S., filed in the Onondaga County Clerk's Office on November 6, 1998 as Map No. 8701.

Subject to easements, covenants and restrictions of record.

Being the same premises conveyed by Allied Realty Corporation to John Frateschi and Julie Frateschi by deed dated December 3, 1998 and recorded in the Onondaga County Clerk's Office on December 3, 1998 in Book 4285 of Deeds at Page 165.

Together with the appurtenances and all the estate and rights of the party of the first part in and to said premises.

To have and to hold the premises herein granted unto the party of the second part, his heirs and assigns forever. And the party of the first part covenants that he has not done or suffered anything whereby the said premises have been incumbered in any way whatever.

In witness whereof, the party of the first part has hereunto set his hand and seal the day and year first written above written. In presence of:

John Frateschi L.S.
Julie Frateschi L.S.

STATE OF NEW YORK }
COUNTY OF ONONDAGA } ss.:

On the 11TH day of June, 2000 before me, the undersigned, personally appeared **JOHN FRATESCHI** and **JULIE FRATESCHI** personally known to me or proved to me on the basis of satisfactory evidence to be the individuals whose names are subscribed to the within instrument and acknowledged to me that they executed the same in their capacities, and that by their signatures on the instrument, the individuals, or the person upon behalf of which the individuals acted, executed the instrument.

LAURA L. SPRING
Notary Public, State of New York
Qualified in Onondaga County, No. 02SP4888675
Commission Expires March 16, 2007

Laura L. Spring

12:53 07/13/00 0793000 D B-04437 P-259

mu



Onondaga County Planning Board

GML 239 Referral Notice

Referring Municipality/Board: Town of Manlius Planning Board

Referral Contact: Lisa Beeman

Contact Email/Phone: lbeeman@townofmanlius.org 315-637-8619

Type of Referral: ☒ General Municipal Law §239 Review ☐ Informal Review ☐ 3-Mile Limit Review

1. Project Applicant: Harrington Homes 2. Site Address: Brandywine off of Henneberry Road

3. Tax ID Number(s): 109.-02-07.1 4. Total Acres: 54

5. Current Zoning: R-1 6. Current Land Use: Vacant

7. Project Description: Create a 34 - Lot Subdivision of single family homes

Please indicate the existing AND proposed water and wastewater service. The notes field is available to provide further details which may better describe the proposed conditions, particularly for projects with multiple lots/structures.

Water Service

8a. Existing: ☐ Municipal
☐ Individual Well
☒ None

Provider: _____

8b. Proposed: ☐ New or Additional Municipal Connection
☒ New or Additional Individual Well
☐ No Change

Wastewater Service

9a. Existing: ☐ Municipal Sanitary Sewer
☐ Individual Septic System
☒ None

Provider: _____

9b. Proposed: ☒ New or Additional Municipal Connection
☐ New or Additional Individual Septic System
☐ No Change

Notes: _____

10. ☒ OCPB Jurisdiction (check ALL that apply and specify)

- ☐ Text Adoption/Amendment -or- ☒ Site is located within 500 feet of:
- ☒ a municipal boundary: Town of Pompey
 - ☒ a state or county thruway/highway/roadway: State Route 173
 - ☐ an existing or proposed state or county park/recreation area: _____
 - ☐ an existing or proposed county-owned stream or drainage channel: _____
 - ☐ a parcel containing a state or county-owned building/institution: _____
 - ☐ a farm operation located in a New York State Agricultural District (include Ag Data Statement pursuant to AML §305-a)

Referred Action(s)

If referring multiple actions related to the same project, identify the referring municipal board if different from above.

11. ☐ Text Adoption -or- ☐ Text Amendment Referring Board: _____

(Includes: adoption of and amendments to comprehensive plans, local laws, zoning ordinances, subdivision regulations)

Please enclose a document with changes tracked OR the existing and proposed text with a summary of the proposed change(s).

Summary of the proposed additions/changes: _____

12. ☐ Zone Change (Includes map amendments)

Referring Board: _____

Proposed Zoning District: _____ Number of Acres Affected: _____

Purpose and Proposed Use: _____

13. ☐ Site Plan -or- ☐ Project Site Review

Referring Board:

Proposed Use/Improvements: _____

14. ☐ Special Permit

Referring Board:

Section of local zoning code that requires a special permit for this use: _____

Purpose: _____

15. ☒ Preliminary Subdivision -or- ☐ Final Subdivision

Referring Board: Town of Manlius Planning Board

Name of Subdivision: Harrington Homes at Brandywine

Number of Proposed Lots and Use Type (residential and/or commercial): 34 Lots

Is this a cluster subdivision pursuant to Section 278 of the New York State Town Law? ☐ Yes ☒ No

16. ☐ Use Variance

Referring Board:

Section(s) of local zoning code to which the variance is being sought: _____

Describe how the proposed project varies from the above code section: _____

17. ☐ Area Variance

Referring Board:

Section(s) of local zoning code to which the variance is being sought: _____

Describe how the proposed project varies from the above code section: _____

18. ☐ Other Authorization

Referring Board:

Indicate the referable action and provide any other applicable details: _____

SEQR Information

Action (check one):

- ☐ Type I
☐ Type II
☐ Unlisted Action

Determination of Significance (if known):

- ☐ Positive Declaration – Draft EIS Required
☐ Conditional Negative Declaration (for Unlisted Actions only)
☐ Negative Declaration
☐ No Finding (Type II Actions only)

Lead Agency (if known): _____ Date Lead Agency Assigned: _____

In order for a referral to be considered complete, the Type of Action must be classified, and the appropriate EAF (Short or Long EAF) must be filled out as required under SEQR, except in the case of Type II Actions which do not require an EAF. If the municipality possesses or will be requiring additional materials in order to make a determination under SEQR, or if a determination has been made, those materials are also required for the referral to be considered complete.

Attachments

- ☒ Survey ☒ Subdivision Plat ☒ EAF/Related Materials ☐ Laws/Texts
☒ Site Plan ☒ Local Application Form ☐ Ag Data Statement ☐ Other _____

This referral, as required by NYS GML §239 l, m & n, includes all materials required by and submitted to the referring body as an application on the proposed action, including all materials required by the referring body in order to make its determination of significance pursuant to SEQRA.

Lisa Beeman/ Clerk

315-637-8619 lbeeman@townofmanlius.org

09-23-2020

Name/Title of Person Completing This Form

Phone/Email

Transmittal Date



J.Ryan McMahon II
County Executive

Onondaga County Planning Board

RESOLUTION OF THE ONONDAGA COUNTY PLANNING BOARD

Meeting Date: October 14, 2020

OCPB Case # S-20-51

- WHEREAS, the Onondaga County Planning Board, pursuant to General Municipal Law, Section 239 l, m and n, has considered and reviewed the referral for a PRELIMINARY SUBDIVISION from the Town of Manlius Planning Board at the request of Harrington Homes for the property located at Brandywine Drive off Henneberry Road; and
- WHEREAS, General Municipal Law Section 239-n allows the County Planning Board to review the approval of subdivisions and the site is located within 500 feet of Route 173, a state highway, Henneberry Road (Route 182), a county highway, and the municipal boundary between the Town of Manlius and the Town of Pompey; and
- WHEREAS, the applicant is proposing to subdivide a 54-acre parcel into 34 single-family residential lots in a Residential (R-1) zoning district; and
- WHEREAS, the site is located along the boundary between the Towns of Manlius and Pompey and just southwest of the Village boundary; surrounding land uses include low-density residential and large wooded lots to the west and south transitioning to higher density residential subdivisions occurring at the outskirts of the Village; the site abuts single-family dwellings on roughly 1-acre lots to the north; these lots have frontage on Brandywine Drive, a local road that dead ends at a hammerhead on the site; and
- WHEREAS, aerial imagery dated May 2020 shows the vacant site has additional frontage on Henneberry Road, a county road, and appears to contain open fields and some wooded areas; there is an existing farm access road onto Henneberry Road; ADVISORY NOTE: per the Onondaga County Department of Transportation, all existing or proposed driveways on Henneberry Road must meet Department requirements; and
- WHEREAS, the Preliminary Plan dated April 28, 2020 shows the proposed 34-lot subdivision for Harrington Homes at Brandywine will include (12) proposed lots ranging in size from 1.04 to 1.55 acres as part of Phase 1, (10) proposed lots ranging in size from 1.10 to 3.30 acres as part of Phase 2, and (12) proposed lots ranging in size from 0.98 to 1.29 acres as part of Phase 3; and
- WHEREAS, the submitted Preliminary Overall Grading Plan dated September 17, 2020 shows 3,000 sf building footprints on all lots except (1) 5,000 sf building footprint on Lot 10 (2.3 acres); the hammerhead at the end of Brandywine Drive will be converted to a circle; proposed Lots 8 and 9 are shown to have frontage on the circle; all other lots will front on a proposed u-shaped road with two access points onto Henneberry Road; no connections between Brandywine Drive and Henneberry Road are shown; and
- WHEREAS, per the submitted Environmental Assessment Form (EAF) dated September 11, 2020, 20 acres of the site will be physically disturbed by the proposed project; stormwater management systems will be designed to current standards; a

Stormwater Pollution Prevention Plan (SWPPP) was included with the referral materials; the plans show a proposed storm sewer network with outlet to three proposed detention basins, one near the northern lot line and two at the interior of the new road; two of the detention basins will have an adjacent bioretention area; the storm sewer lines appear to occur within a utility easement or the road right-of-way; detention basins and bioretention areas are shown to occur within access and maintenance easements on the proposed lots;

ADVISORY NOTES: per the Onondaga County Department of Transportation, additional stormwater runoff into the county's drainage system is prohibited; any project that cumulatively disturbs one acre or more of land must be covered under the NYS SPDES Permit, and the municipality is advised to ensure that the applicant has obtained the appropriate permits from the NYS Department of Environmental Conservation prior to municipal approval; and

WHEREAS, per the plans, drinking water services for each proposed lot will be provided by an individual well, except for Lots 8 and 9, which have access to public drinking water provided by OCWA; per OCWA and the Onondaga County Health Department, public drinking water service to the remaining lots is restricted by the elevation of the site, which would require an increase in water pressure via a pumping station or a new water tank;

ADVISORY NOTE: the applicant is advised to contact OCWA's Engineering Department to determine the activities and structures permitted within OCWA easements/right-of-ways, water availability and service options, obtain hydrant flow test information, evaluate backflow prevention requirements, and/or request that the Authority conduct hydrant flow testing to assess fire flow availability; and

WHEREAS, the plans show a Town sewer line along Brandywine Drive that will be extended to serve the new parcels; new sewer lines are shown to occur in a sanitary sewer easement or the road right-of-way; the site is located in the Meadowbrook-Limestone Wastewater Treatment Plant service area; per the Onondaga County Department of Water Environment Protection, the submitted project is located in an area designated as flow constrained or impacted by excessive wet weather flow or is tributary to a Combined Sewer Overflow (CSO);

ADVISORY NOTES: the Onondaga County Department of Water Environment Protection asks that the applicant contact the Department's Flow Control office to determine sewer availability and capacity; the applicant is also advised to develop a 2 gallon to 1 gallon sanitary flow offset plan/project in coordination with the municipal engineer; and

WHEREAS, the site may contain the Indiana bat or Northern long-eared bat, or their associated habitats, which have been listed by the state or federal government as threatened or endangered animal species (per EAF Mapper); impacts to bat species are often associated with tree clearing and from aerial imagery it appears that there are some wooded areas on the site;

ADVISORY NOTE: per the NYS Department of Environmental Conservation (DEC), if the site contains a threatened or endangered species and/or associated habitat, and the project requires review under the State Environmental Quality Review Act (SEQRA), a request for a project screening should be submitted to the New York Natural Heritage Program or to the regional DEC Division of Environmental Permits office; and

WHEREAS, the site or a portion of it is located in or adjacent to an area designated as sensitive for archaeological sites on the NYS Historic Preservation Office archaeological site inventory (per EAF Mapper);

ADVISORY NOTE: the applicant and/or municipality is advised to contact the NYS Historic Preservation Office to determine if the project should be submitted to the Office for review as part of the State Environmental Quality Review (SEQR) process; and

WHEREAS, ADVISORY NOTE: per GML § 239-nn, the legislative body or other authorized body having jurisdiction in a municipality shall give notice to an adjacent municipality when a hearing is held by such body relating to a subdivision, site plan, special use permit, or a use variance on property that is within five hundred feet of an adjacent municipality; such notice shall be given by mail or electronic transmission to the clerk of the adjacent municipality at least ten days prior to any such hearing; and

NOW THEREFORE BE IT RESOLVED, that the Onondaga County Planning Board recommends the following MODIFICATION(S) to the proposed action prior to local board approval of the proposed action:

Per the Onondaga County Department of Transportation, all access to the proposed lots must come from Brandywine Drive or the proposed access road. No driveways on Henneberry Road will be permitted for individual lots. The applicant must coordinate plans for the new access road with the Department, and submit a copy of the Stormwater Pollution Prevention Plan (SWPPP) for review. The municipality must ensure any mitigation as may be determined by the Department is reflected on the project plans prior to, or as a condition of, municipal approval.

The Board also offers the following comments:

1. The Town and applicant are encouraged to cluster the proposed lots to help minimize infrastructure costs and allow for the retention of existing wooded areas for shared green space, which may help to preserve open space, protect habitats, screen the development from Henneberry Road, and ensure buffering for neighboring residential lots.
2. For better access management and to better meet the needs of local emergency service providers, the Town is encouraged to require an interconnected road network to allow for vehicle and pedestrian movement between the new development and Brandywine Drive to the north. The Town may also wish to consider opportunities for future connections to parcels to the south and west given any potential for development.
3. The Town and applicant are advised that compliance with Section 10 of the Onondaga County Right of Way Designation Law (Local Law # 5-1972) is required for any new streets/street names, and the subdivision map must be modified to reflect approved street names prior to subdivision filing. The applicant should contact Rachel Woods at the Syracuse-Onondaga County Planning Agency at

rachelwoods@ongov.net for approval of street names and addresses prior to filing the subdivision.

4. The Board recommends that the Town ensure appropriate and sustained maintenance and funding mechanisms are in place for future ownership and care of stormwater management facilities to serve the subdivision. Potential strategies may include separating such areas onto non-residential parcels, to be owned and maintained by a Homeowner's Association (HOA), land trust, or the Town.

5. Per the Onondaga County Health Department, establishment of individual wells will require a series of well tests to be drilled and tested prior to the Department endorsing the proposed subdivision plan.

A handwritten signature in black ink, appearing to read 'Daniel Cupoli', with a stylized flourish at the end.

Daniel Cupoli, Chairman
Onondaga County Planning Board
Transmittal Date: 10-14-2020

GML 239 Report of Final Action

NYS GML § 239-m.6. and n.6. require the referring body to file a report of the final action it has taken on a referred matter with the county planning agency within 30 days after the final action (separate from the minutes taken at the meeting). A referring body which acts contrary to a County Planning Board recommendation of MODIFICATION or DISAPPROVAL of a referred matter shall also set forth the reasons for the contrary action in such report.

This section to be completed by the Syracuse-Onondaga County Planning Agency

To: Onondaga County Planning Board **From:** Town of Manlius Planning Board

Fax: 435-2439 **Phone:** 435-2611

Re: Applicant: Harrington Homes
Address: at Brandywine Drive off Henneberry Road
Referral Type: PRELIMINARY SUBDIVISION
OCPB Date: October 14, 2020
OCPB Action: Modification
OCPB Case #: S-20-51

The local board took the following action regarding the above referenced referral (Check one box. If checking Other, please specify the final action taken. Use the space at the bottom of the report to identify reasons if acting contrary to the OCPB recommendation.):

- ☐ Approved the proposed action with regard to the OCPB's No Position or No Position with Comment.
- ☐ Approved the proposed action as modified by the OCPB.
- ☐ Approved the proposed action contrary to some of the modifications recommended by the OCPB.*
- ☐ Approved the proposed action contrary to all of the modifications recommended by the OCPB.*
- ☐ Approved the proposed action contrary to the disapproval recommended by the OCPB.*

- ☐ Disapproved the proposed action with regard to the OCPB's no position or no position with comment.
- ☐ Disapproved the proposed action with regard to the recommended modification(s) by the OCPB.
- ☐ Disapproved the proposed action as recommended and for reasons set forth by the OCPB.
- ☐ Disapproved the proposed action as recommended but for reasons other than those set forth by the OCPB. (Please list reasons below for local disapproval.)

- ☐ Other _____

Local Board Date: _____

*List reasons for acting contrary to the OCPB recommendation and include a copy of the local board resolution. Attach additional reasons on a separate sheet of paper as necessary.



Joanne M. Mahoney
County Executive

Onondaga County Planning Board

RESOLUTION OF THE ONONDAGA COUNTY PLANNING BOARD

Meeting Date: January 19, 2022

OCPB Case # S-22-1

- WHEREAS, the Onondaga County Planning Board, pursuant to General Municipal Law, Section 239 l, m and n, has considered and reviewed the referral for a PRELIMINARY SUBDIVISION from the Town of Manlius Planning Board at the request of Harrington Homes for the property located at Brandywine off Henneberry Road; and
- WHEREAS, General Municipal Law Section 239-n allows the County Planning Board to review the approval of subdivisions and the site is located within 500 feet of Henneberry Road (Route 182), a county highway, East Seneca Turnpike (Route 173), a state highway, and the municipal boundary between the Town of Manlius and the Town of Pompey; and
- WHEREAS, the applicant is proposing to subdivide a 54-acre parcel into 34 new residential parcels in a Residential (R-1) zoning district; and
- WHEREAS, in 2020, the Board recommended modification of a preliminary subdivision (S-20-51) for a previous iteration of the proposed subdivision; the plan currently under review appears to have minimal changes from the 2020 iteration; and
- WHEREAS, the site is located along the boundary between the Towns of Manlius and Pompey and just southwest of the Village boundary; surrounding land uses include low-density residential and large wooded lots to the west and south transitioning to higher density residential subdivisions occurring at the outskirts of the Village; the site abuts single-family dwellings on roughly 1-acre lots to the north; these lots have frontage on Brandywine Drive, a local road that dead ends at a hammerhead on the site; and
- WHEREAS, aerial imagery dated May 2021 shows the vacant site has additional frontage on Henneberry Road and appears to contain open fields and some wooded areas; there is an existing farm access road onto Henneberry Road;
ADVISORY NOTE: per the Onondaga County Department of Transportation, all existing or proposed driveways on Henneberry Road must meet Department requirements; and
- WHEREAS, the submitted Overall Grading Plan dated September 17, 2020 shows the subdivision for Harrington Homes at Brandywine will include 34 proposed lots ranging in size from 43,000 SF (0.99 acres) to 143,000 SF (3.28 acres); the plan shows 3,000 sf building footprints on all lots; proposed Lots 9 and 10 will have frontage on the hammerhead at the end of Brandywine Drive; all other lots will front on a proposed u-shaped road with two access points onto Henneberry Road; no connections between Brandywine Drive and Henneberry Road are shown; and
- WHEREAS, per the submitted Environmental Assessment Form (EAF) dated September 11, 2020, 20 acres of the site will be physically disturbed by the proposed project; stormwater management systems will be designed to current standards; a revised Stormwater Pollution Prevention Plan (SWPPP) was included with the referral materials; the plans show a proposed storm sewer network with outlet to a proposed detention basin on Lot 11; the detention basin will have two adjacent

bioretention areas, one on Lot 11 and one on Lot 8; the storm sewer lines appear to occur within a utility easement or the road right-of-way; the detention basin and bioretention areas appear to also occur within easements on the proposed lots;

ADVISORY NOTES: per the Onondaga County Department of Transportation, additional stormwater runoff into the county's drainage system is prohibited; any project that cumulatively disturbs one acre or more of land must be covered under the NYS SPDES Permit, and the municipality is advised to ensure that the applicant has obtained the appropriate permits from the NYS Department of Environmental Conservation prior to municipal approval; and

WHEREAS, per the EAF, drinking water services for each proposed lot will be provided by an individual well; per OCWA and the Onondaga County Health Department, public drinking water service to the remaining lots is restricted by the elevation of the site, which would require an increase in water pressure via a pumping station or a new water tank; a letter to the Town of Manlius, dated August 31, 2021, indicates concerns were raised by the Town Planning Board regarding water availability and sustainability on-site for the proposed subdivision; a Well Report dated August 31, 2021 was subsequently completed by DW Stoner & Associates, LLC and provided to the Town;

ADVISORY NOTE: the applicant is advised to contact OCWA's Engineering Department to determine the activities and structures permitted within OCWA easements/right-of-ways, water availability and service options, obtain hydrant flow test information, evaluate backflow prevention requirements, and/or request that the Authority conduct hydrant flow testing to assess fire flow availability; and

WHEREAS, the plans show a Town sewer line along Brandywine Drive that will be extended to serve the new parcels; new sewer lines are shown to occur in a sanitary sewer easement or the road right-of-way; the submitted project is located in the Meadowbrook Limestone Waste Water Treatment Plant service area, an area designated as flow constrained and impacted by excessive wet weather flow; and

WHEREAS, the site may contain the Indiana bat or Northern long-eared bat, or their associated habitats, which have been listed by the state or federal government as threatened or endangered animal species (per EAF Mapper); impacts to bat species are often associated with tree clearing and from aerial imagery it appears that there are some wooded areas on the site; the revised SWPPP includes a letter from the NYS Department of Environmental Conservation (DEC) indicating the project site is within 2.5 miles of a documented winter hibernaculum of both bat species and that further information from on-site surveys or other resources may be required to fully assess impacts on biological resources; and

WHEREAS, the site or a portion of it is located in or adjacent to an area designated as sensitive for archaeological sites on the NYS Historic Preservation Office archaeological site inventory (per EAF Mapper); the revised SWPPP includes a letter from the State historic Preservation Office/Office of Parks, Recreation and Historic Preservation noting that a Phase IA/IB archaeological survey is recommended for components of the project that will involve ground disturbance, unless substantial prior ground disturbance can be documented; and

WHEREAS, ADVISORY NOTE: per GML § 239-nn, the legislative body or other authorized body having jurisdiction in a municipality shall give notice to an adjacent municipality when a hearing is held by such body relating to a subdivision, site plan, special use permit, or a use variance on property that is within five hundred feet of an adjacent municipality; such notice shall be given by mail or electronic

transmission to the clerk of the adjacent municipality at least ten days prior to any such hearing; and

NOW THEREFORE BE IT RESOLVED, that the Onondaga County Planning Board recommends the following MODIFICATION(S) to the proposed action prior to local board approval of the proposed action:

1. Per the Onondaga County Department of Transportation, all access to the proposed lots must come from Brandywine Drive or the proposed subdivision road. No driveways on Henneberry Road will be permitted for individual lots. The applicant must coordinate plans for the new subdivision road with the Department, and submit a copy of the Stormwater Pollution Prevention Plan (SWPPP) for review. The municipality must ensure any mitigation as may be determined by the Department is reflected on the project plans prior to, or as a condition of, municipal approval.
2. Any extension of the public wastewater infrastructure must be approved by the Onondaga County Health Department and Onondaga County Department of Water Environment Protection prior to, or as a condition of, municipal approval.

The Board also offers the following comments:

1. Prior to approval of infrastructure plans for this development, the Town is strongly advised to coordinate this proposal with the adjacent Town of Pompey, to ensure that development is well-considered, efficient and orderly. Decisions on individual well service and a closed loop road to serve this development may impact the ability to efficiently allow for continued development on Henneberry Road in future years. In conducting this coordination, the towns should consider whether the infrastructure as planned is appropriate for the area if any future development is anticipated, even in the long term. Conversely, the towns should consider if there are any existing protections in place that will minimize urban development in this area, or if any protections should be established.
2. The Town and applicant are encouraged to cluster the proposed lots to help minimize infrastructure costs and allow for the retention of existing wooded areas for shared green space, which may help to preserve open space, protect habitats, screen the development from Henneberry Road, and ensure buffering for neighboring residential lots.
3. For better access management and to better meet the needs of local emergency service providers, the Town is encouraged to require an interconnected road network to allow for vehicle and pedestrian movement between the new development and Brandywine Drive to the north.
4. The Town and applicant are advised that compliance with Section 10 of the Onondaga County Right of Way Designation Law (Local Law # 5-1972) is required for any new streets/street names, and the subdivision map must be modified to reflect approved street names prior to subdivision filing. The applicant should contact Rachel Woods at the Syracuse-Onondaga County Planning Agency at rachelwoods@ongov.net for approval of street names and addresses prior to filing the subdivision.
5. The Board recommends that the Town ensure appropriate and sustained

maintenance and funding mechanisms are in place for future ownership and care of stormwater management facilities to serve the subdivision. Potential strategies may include separating such areas onto non-residential parcels, to be owned and maintained by a Homeowner's Association (HOA), land trust, or the Town.

A handwritten signature in black ink, appearing to read 'M. E. Voss', with a stylized flourish at the end.

Martin E. Voss, Chairman
Onondaga County Planning Board

GML 239 Report of Final Action

NYS GML § 239-m.6. and n.6. require the referring body to file a report of the final action it has taken on a referred matter with the county planning agency within 30 days after the final action (separate from the minutes taken at the meeting). A referring body which acts contrary to a County Planning Board recommendation of MODIFICATION or DISAPPROVAL of a referred matter shall also set forth the reasons for the contrary action in such report.

This section to be completed by the Syracuse-Onondaga County Planning Agency

To: Onondaga County Planning Board **From:** Town of Manlius Planning Board

Fax: 435-2439 **Phone:** 435-2611

Re: Applicant: Harrington Homes
Address: at Brandywine off Henneberry Road
Referral Type: PRELIMINARY SUBDIVISION
OCPB Date: January 19, 2022
OCPB Action: Modification
OCPB Case #: S-22-1

The local board took the following action regarding the above referenced referral (Check one box. If checking Other, please specify the final action taken. Use the space at the bottom of the report to identify reasons if acting contrary to the OCPB recommendation.):

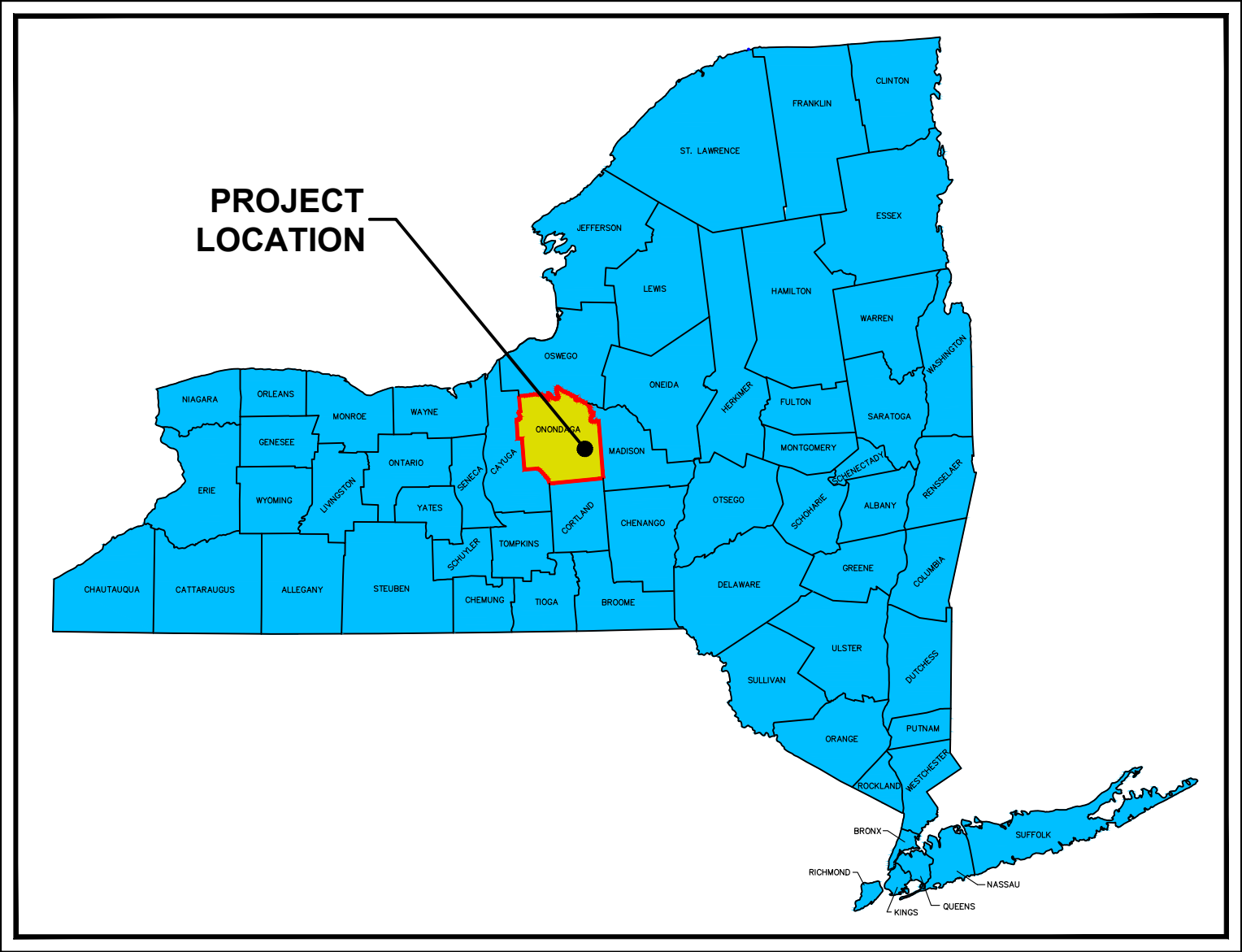
- ☐ Approved the proposed action with regard to the OCPB's No Position or No Position with Comment.
- ☐ Approved the proposed action as modified by the OCPB.
- ☐ Approved the proposed action contrary to some of the modifications recommended by the OCPB.*
- ☐ Approved the proposed action contrary to all of the modifications recommended by the OCPB.*
- ☐ Approved the proposed action contrary to the disapproval recommended by the OCPB.*

- ☐ Disapproved the proposed action with regard to the OCPB's no position or no position with comment.
- ☐ Disapproved the proposed action with regard to the recommended modification(s) by the OCPB.
- ☐ Disapproved the proposed action as recommended and for reasons set forth by the OCPB.
- ☐ Disapproved the proposed action as recommended but for reasons other than those set forth by the OCPB. (Please list reasons below for local disapproval.)

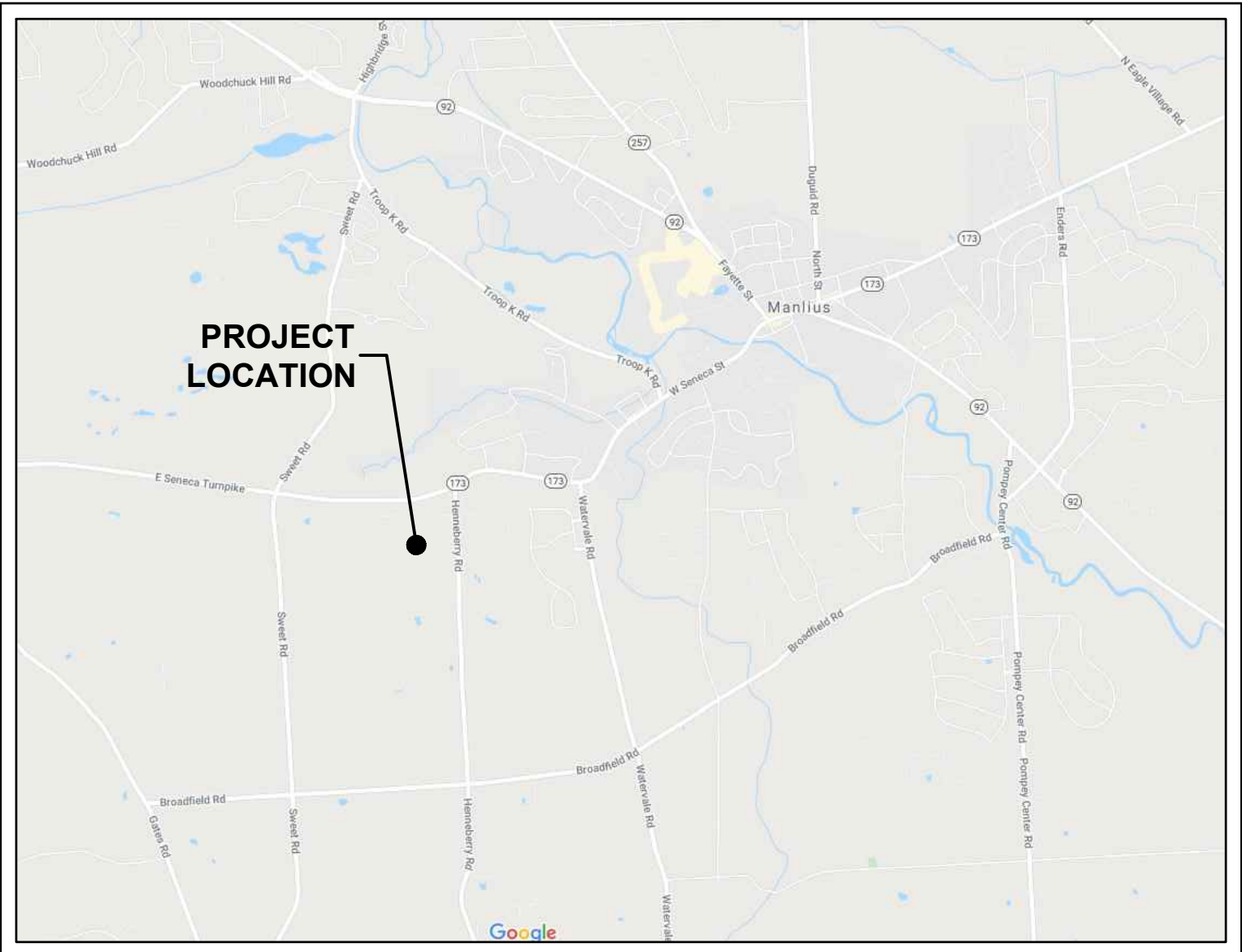
☐ Other _____

Local Board Date: _____

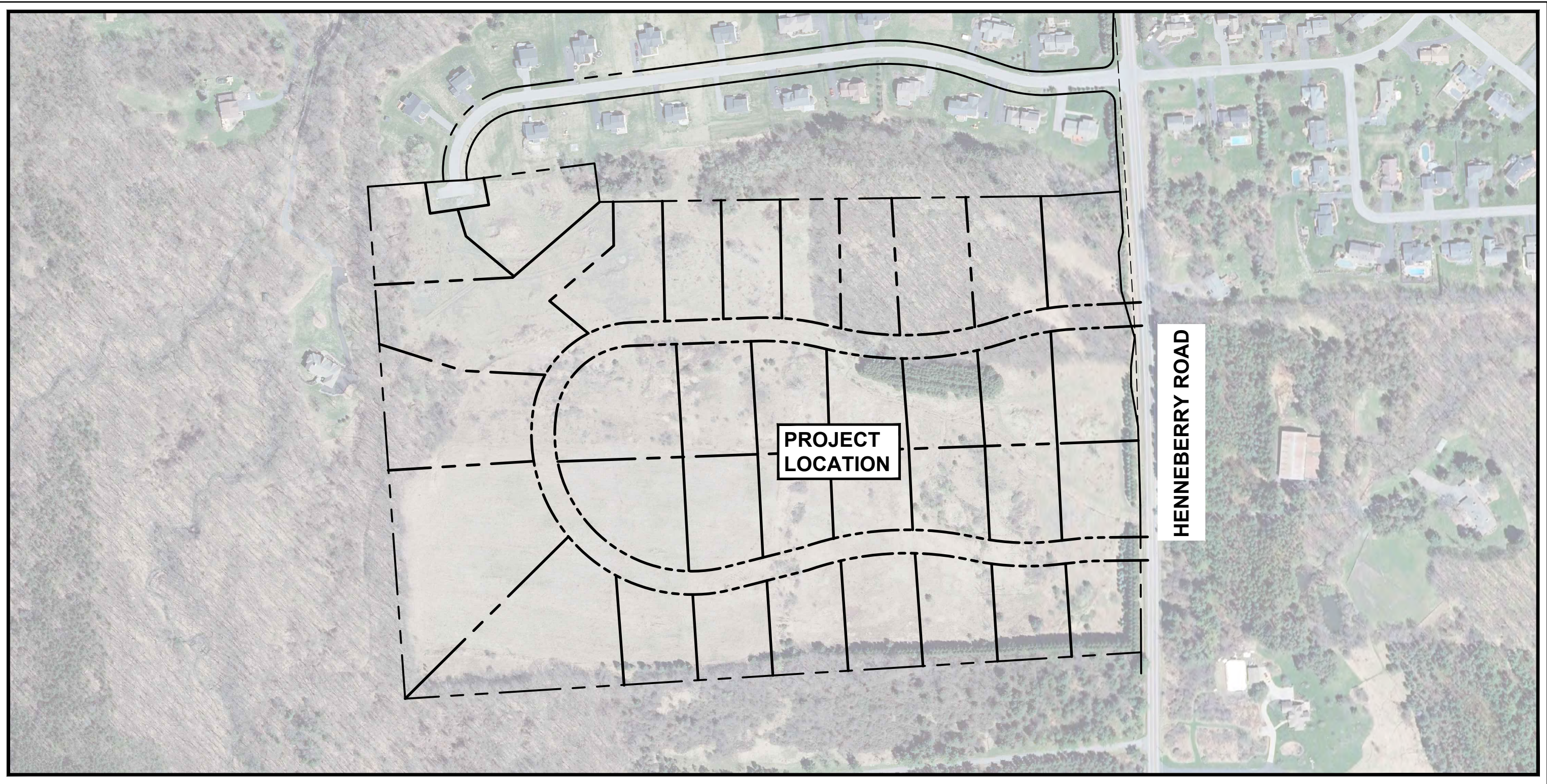
*List reasons for acting contrary to the OCPB recommendation and include a copy of the local board resolution. Attach additional reasons on a separate sheet of paper as necessary.



SITE LOCATION MAP
NOT TO SCALE



PROJECT LOCATION MAP
NOT TO SCALE



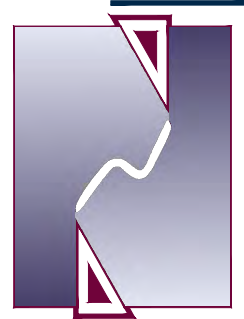
AERIAL MAP
1"=250'

PROPOSED BRANDYWINE ESTATES PHASE 2 - 34 LOT SUBDIVISION

HENNEBERRY ROAD
TAX ID: 109.-02-07.1

TOWN OF MANLIUS
ONONDAGA COUNTY
NEW YORK STATE

PREPARED BY:



**NAPIERALA
CONSULTING**
PROFESSIONAL ENGINEER, P.C.
SITE • DESIGN • ENGINEERING

110 FAYETTE STREET
MANLIUS, NEW YORK 13104

email: MNAP@NAPCON.COM
PH: (315) 682-5580 FAX: (315) 682-5544

PREPARED FOR:



**HARRINGTON
HOMES**

Your Builder for Life

3848 HENNEBERRY ROAD
JAMESVILLE, NY 13078

SHEET INDEX:

TITLE SHEET	C-0
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SEWER PROFILE PLANS	C-6.0 THRU C-6.1
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PRELIMINARY PLANS - FINAL APPROVAL
REQUIRED BY ALL JURISDICTIONS



APPROVED BY OWNER

SHEET TITLE:

TITLE SHEET

NAME DATE

NO.	REVISION/ISSUE	DATE
4	REVISED AS PER TOWN ENGINEER'S COMMENTS	03/09/2022
3	REVISED AS PER TOWN ENGINEER'S COMMENTS	02/16/2022
2	GENERAL REVISIONS	02/09/2022
1	GENERAL REVISIONS	12/01/2021

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IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS
ACTING UNDER THE DIRECTION OF A LICENSED
ARCHITECT, PROFESSIONAL ENGINEER, LANDSCAPE
ARCHITECT, OR LAND SURVEYOR TO ALTER ANY ITEM ON
THIS DOCUMENT IN ANY WAY.
ANY LICENSEE WHO ALTERS THIS DOCUMENT IS
REQUIRED BY LAW TO AFFIX HIS OR HER SEAL AND THE
NOTATION "ALTERED BY" FOLLOWED BY HIS OR HER
SIGNATURE AND SPECIFIC DESCRIPTION OF THE
ALTERATIONS.

PRELIMINARY
NOT FOR CONSTRUCTION

PROJECT NO. 20-1906	DATE 17 SEP 2020
PROPOSED BRANDYWINE ESTATES PHASE 2	
HENNEBERRY ROAD TOWN OF MANLIUS ONONDAGA COUNTY, NY	

C-0

PROPERTY LINE INFORMATION TAKEN FROM A PLAN ENTITLED "TOPOGRAPHIC SURVEY, BRANDYME
PHASE 3 - SECTION 1 PART OF FARM LOT NUMBER 96, TOWN OF MANLIUS" PREPARED BY JANUZI &
ROMANS LAND SURVEYING, P.C.

THE PLANS SHOW SUBSURFACE STRUCTURES, ABOVEGROUND STRUCTURES, AND/OR UTILITIES FROM
FIELD LOCATION AND RECORD MAPPING. EXACT LOCATION MAY VARY FROM THE LOCATIONS
INDICATED. IN PARTICULAR, THE CONTRACTOR IS WARNED THAT THE EXACT OR EVEN APPROXIMATE
LOCATION OF SUCH PIPELINES, SUBSURFACE STRUCTURES AND/OR UTILITIES IN THE AREA MAY BE
DIFFERENT FROM THAT SHOWN OR MAY NOT BE SHOWN AND IT SHALL BE HIS RESPONSIBILITY TO
PROCEED WITH GREAT CARE IN EXECUTING ANY WORK. THE CONTRACTOR IS TO CALL DIG SAFELY NY
AT 1-800-962-7962 A MINIMUM OF 72 HOURS BEFORE DIGGING, DRILLING, OR BLASTING.

THE ENGINEER SHALL BE NOTIFIED IN WRITING OF ANY CONDITIONS THAT VARY FROM THOSE SHOWN
ON THE PLANS. THE CONTRACTOR'S WORK SHALL NOT VARY FROM THE PLANS WITHOUT THE
EXPRESSED APPROVAL OF THE ENGINEER.

THE CONTRACTOR IS INSTRUCTED TO COOPERATE WITH ANY AND ALL OTHER CONTRACTORS
PERFORMING WORK ON THIS JOB SITE DURING THE PERFORMANCE OF THIS CONTRACT.

THE CONTRACTOR SHALL RESTORE LAWNS, DRIVEWAYS, CULVERTS, SIGNS, AND OTHER PUBLIC OR
PRIVATE PROPERTY DAMAGED OR REMOVED TO AT LEAST AS GOOD A CONDITION AS BEFORE BEING
DISTURBED AS DETERMINED BY THE ENGINEER. ANY DAMAGED TREES, SHRUBS, AND/OR HEDGES
SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AND INCURRING THE COST OF ALL
REQUIRED PERMITS, INSPECTIONS, CERTIFICATES, ETC. AND SHALL COMPLY WITH ALL PERMITS.

ALL WORK SHALL BE DONE IN STRICT COMPLIANCE WITH ALL APPLICABLE NATIONAL, STATE, AND
LOCAL CODES, STANDARDS, ORDINANCES, RULES, AND REGULATIONS.

ALL PROPOSED UTILITIES AND APPURTENANCES ARE TO BE CONSTRUCTED IN COMPLIANCE WITH THE
LOCAL MUNICIPALITY'S CODES AND REGULATIONS GOVERNING THE INSTALLATION OF SUCH UTILITIES.

THE ENGINEER RESERVES THE RIGHT TO EXAMINE ANY WORK DONE ON THIS PROJECT AT ANY TIME
TO DETERMINE CONFORMANCE WITH THE REQUIREMENTS OF THE CONTRACT DOCUMENTS OF THIS
PROJECT AS INTENDED AND INTERPRETED BY THE ENGINEER.

MISCELLANEOUS WORK NOT SPECIFICALLY SHOWN ON THE CONTRACT DRAWINGS SUCH AS PATCHING,
BLOCKING, TRIMMING, ETC. SHALL BE PERFORMED AS REQUIRED TO MAKE THE WORK COMPLETE.

THE CONTRACTOR SHALL PROTECT EXISTING PROPERTY LINE INFORMATION. ANY MONUMENTATION
DISTURBED OR DESTROYED, AS JUDGED BY THE ENGINEER OR OWNER, SHALL BE REPLACED AT THE
CONTRACTOR'S EXPENSE UNDER THE SUPERVISION OF A NEW YORK STATE LICENSED LAND SURVEYOR.

IT IS THE CONTRACTOR'S RESPONSIBILITY TO EXAMINE ALL PLAN SHEETS AND COORDINATE WORK
WITH ALL OTHER CONTRACTS FOR THE SITE.

THE CONTRACTOR SHALL:

- VERIFY ALL CONDITIONS IN THE FIELD PRIOR TO COMMENCEMENT OF WORK AND NOTIFY THE
ENGINEER OF ANY DISCREPANCIES.
- EXAMINE THE SITE AND INCLUDE IN HIS WORK THE EFFECT OF ALL EXISTING CONDITIONS ON THE
WORK.
- PROVIDE AND INSTALL ALL MATERIALS AND PERFORM ALL WORK IN ACCORDANCE WITH THE
RECOGNIZED GOOD STANDARD PRACTICE.
- HOLD THE OWNER HARMLESS AGAINST ANY AND ALL CLAIMS ARISING FROM WORK DONE BY THE
CONTRACTOR ON THE SITE.

ALL TRENCH EXCAVATION AND ANY REQUIRED SHEETING AND SHORING SHALL BE DONE IN
ACCORDANCE WITH THE LATEST REVISIONS OF NEW YORK STATE INDUSTRIAL CODE RULE 23 AND
SEALD BY A NEW YORK STATE PROFESSIONAL ENGINEER. SHEET PILING SHALL BE DESIGNED AND SEALD BY A NEW
YORK STATE PROFESSIONAL ENGINEER.

CONTRACTOR SHALL BE RESPONSIBLE FOR DEWATERING AND THE MAINTENANCE OF SURFACE
DRAINAGE DURING THE COURSE OF WORK. HE SHALL SUBMIT A DEWATERING PLAN DESIGNED AND
SEALD BY A NEW YORK STATE PROFESSIONAL ENGINEER. CONTRACTOR SHALL MAINTAIN EXISTING
SITE DRAINAGE PATTERNS THROUGHOUT CONSTRUCTION.

ALL BACKFILL USED IN TRENCHES EXCAVATED IN EXISTING ROADWAYS SHALL BE PLACED IN MAXIMUM
6-INCH LIFTS AND COMPACTED BY MEANS OF A MECHANICAL COMPACTOR BETWEEN LIFTS TO 90%
STANDARD PROCTOR COMPACTION.

WHEN BACKFILLING AROUND PROPOSED OR EXISTING STRUCTURES, MATERIAL SHALL BE PLACED IN
MAXIMUM 6-INCH LIFTS AND COMPACTED BY MEANS OF A MECHANICAL COMPACTOR BETWEEN LIFTS
TO 90% STANDARD PROCTOR COMPACTION.

ALL UTILITY WORK INVOLVING CONNECTIONS TO EXISTING SYSTEMS SHALL BE COORDINATED WITH THE
ENGINEER AND THE UTILITY OWNER. NOTIFY THE ENGINEER AND THE UTILITY OWNER 72 HOURS
BEFORE EACH AND EVERY CONNECTION TO AN EXISTING SYSTEM IS MADE.

CONSTRUCTION OF ALL PROPOSED UTILITIES MUST BEGIN AT ITS POINT OF CONNECTION TO THE
EXISTING UTILITY OR AT THE LOWEST POINT IN THE SYSTEM. RIMS, GRATES, INVERTS, CLEARANCES,
AND LOCATION AT CROSSINGS MUST BE VERIFIED PRIOR TO THE BEGINNING OF CONSTRUCTION.

MAINTAIN FLOW FOR ALL EXISTING UTILITIES.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR PLANNING ANY FIELD LAYOUT. THE CONTRACTOR
SHALL TAKE TIES TO ALL UTILITY CONNECTIONS AND PROVIDE MARKED-UP AS-BUILT PLANS FOR ALL
UTILITIES SHOWING TIES TO CONNECTIONS, BENDS, VALVES, LENGTHS OF LINES, AND INVERTS. THE
OWNER AND HIS REPRESENTATIVES SHALL REVIEW AS-BUILT PLANS SHOWING ALL UNDERGROUND
UTILITIES INSTALLED OR ENCOUNTERED. THE CONTRACTOR SHALL PROVIDE ANY CORRECTION OR
OMISSIONS TO THE SATISFACTION OF THE OWNER AND HIS REPRESENTATIVES BEFORE UTILITIES WILL
BE ACCEPTED.

THE CONTRACTOR SHALL MAINTAIN ALL TRAFFIC IN ALL AREAS IN ACCORDANCE WITH THE NYSDOT
MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.

THE CONTRACTOR SHALL MAINTAIN ACCESS TO ALL COMMERCIAL, RESIDENTIAL, AND PUBLIC
PROPERTIES OR AS DIRECTED BY THE ENGINEER.

ALL EXCAVATIONS SHALL BE BACKFILLED TO EXISTING GRADE AT THE END OF EACH WORKDAY.

THE CONTRACTOR SHALL TAKE CARE TO PREVENT DAMAGE TO EXISTING UTILITIES. DAMAGED
UTILITIES SHALL BE IMMEDIATELY REPAIRED BY THE CONTRACTOR AT THE CONTRACTOR'S EXPENSE.

1. THE GENERAL CONSTRUCTION CONTRACTOR RESPONSIBLE FOR ANY CLEARING OR DEMOLITION WORK AS NOTED ON THIS PLAN.
2. EXISTING FEATURES ARE BASED ON A SURVEY BY IANUZI & ROMANS LAND SURVEYING, P.C.
3. OWNER WILL PROVIDE AN 'ALL CLEAR' PRIOR TO ANY CLEARING OR DEMOLITION.
4. THE CONTRACTOR SHALL CONTACT DIG SAFELY NEW YORK AT 811 FOR UTILITY STAKEOUTS A MINIMUM OF THREE (3) BUSINESS DAYS PRIOR TO ANY DEMOLITION WORK, SITE WORK, OR EXCAVATION.
5. THE CONTRACTOR SHALL COORDINATE WITH ALL PUBLIC AND PRIVATE UTILITIES FOR RESPECTIVE REQUIREMENTS FOR THE REMOVAL/ABANDONMENT OF UTILITY MAINS/LATERALS SERVICING THE SITE.

1. MAXIMUM SLOPE FOR ALL CUT AND FILL LAWN AREAS SHALL BE 3H:1V UNLESS SHOWN OTHERWISE ON PLANS.
2. SLOPES GREATER THAN 4H:1V SHALL BE STABILIZED IMMEDIATELY AFTER GRADING OCCURS IN ACCORDANCE WITH THE NEW YORK STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL.
3. CONTRACTOR SHALL OBTAIN A COPY OF THE GEOTECHNICAL REPORT AND BECOME FAMILIAR WITH THE SOIL CONDITIONS ON THE SITE. CONTRACTOR SHALL FOLLOW ALL RECOMMENDATIONS AND REQUIREMENTS FROM THE GEOTECHNICAL ENGINEER.
4. UNLESS OTHERWISE NOTED, LIMITS OF DISTURBANCE ARE AS REPRESENTED BY PROPOSED GRADES. NO GRADING SHALL TAKE PLACE BEYOND LIMITS SHOWN.
5. ALL SLOPES STEEPER THAN 3H:1V SHALL BE TREATED WITH AN EROSION CONTROL PRACTICE SUCH AS A ROLLED EROSION CONTROL BLANKET OR RIPRAP. SEE DESIGNATED AREAS ON PLANS.

1. ALL CONSTRUCTION SHALL CONFORM WITH APPROPRIATE CODE AND REGULATORY REQUIREMENTS.
2. ALL UTILITIES SHALL BE INSTALLED IN ACCORDANCE WITH MUNICIPAL REGULATIONS AND THE STANDARDS OF THE PRIVATE UTILITY COMPANIES.
3. PRIVATE UTILITY SERVICE FINAL LOCATION, SIZE AND DEPTH ARE SUBJECT TO THE APPROVAL OF THE UTILITY COMPANY.
4. EXTERIOR BUILDING LIGHTING LUMINAIRES SHALL BE OF SIZE AND TYPE, AND AT LOCATIONS SPECIFIED BY THE ARCHITECTS ELECTRICAL SITE PLAN AND SHALL CONFORM TO THE MUNICIPAL ZONING REQUIREMENTS.
5. WATER
WATER LINES, FITTINGS AND APPURTENANCES TO BE IN CONFORMANCE WITH APPROPRIATE CODE AND REGULATORY REQUIREMENTS. VERIFY EXISTING LINE SIZE AND LOCATION PRIOR TO CONSTRUCTION. ALL WATER LINES MUST MAINTAIN A MINIMUM 10' HORIZONTAL SEPARATION WITH SANITARY SEWER AND STORM SEWER LINES. ALL WATER MAIN AND SERVICE WORK MUST BE COORDINATED WITH THE MUNICIPAL WATER DEPARTMENT.
6. SOME LOTS SHALL BE SERVED BY INDIVIDUAL WATER SUPPLY WELLS, WITH THE EXCEPTION OF LOTS #8 AND #9 WHICH CAN BE SERVED BY OCWA PUBLIC WATER SUPPLY.
7. SANITARY SEWER
SANITARY SEWERS SHALL BE PVC PER ASTM D3034 SDR 35 UNLESS OTHERWISE NOTED. SUITABLE COUPLINGS AND ADAPTERS SHALL BE PROVIDED AT BUILDING CONNECTIONS.
8. STORM DRAINAGE
STORM DRAINAGE PIPING SHALL BE SMOOTH INTERIOR CORRUGATED PLASTIC PIPE (SICPP) UNLESS OTHERWISE NOTED (SICPP). PIPE JOINTS AND FITTINGS SHALL CONFORM TO AASHTO M252 OF AASHTO M294.
9. ELECTRIC AND GAS
ALL ELECTRIC AND GAS INSTALLATION SHALL BE COORDINATED WITH NATIONAL GRID.

	----- PROPOSED BUILDING
	----- PROPERTY LINE
	----- PROPOSED EASEMENT LINE
	----- PROPOSED STORM INLET
	----- PROPOSED MANHOLE (STORM OR S
	----- PROPOSED SANITARY PIPE
	----- PROPOSED STORM PIPE
	----- PROPOSED WATER PIPE
	----- PROPOSED GAS PIPE
	----- PROPOSED UNDERGROUND ELECTRIC

TEMPORARY SEEDING MIXTURES			PERMANENT SEEDING MIXTURES		
	LBS./ACRE	LBS./1000	SEED MIXTURE NO. 1	LBS./ACRE	
FOR SPRING, SUMMER OR EARLY FALL SEEDINGS:		SQ. FT.			
A. ANNUAL RYEGRASS—OR—	30	0.70	CREeping RED FESCUE (var. ENSYLAVA)	10	
B. PERENNIAL RYEGRASS	30	0.70	PERENNIAL RYE GRASS (var. PENNFINE)	10	
			SEED MIXTURE NO. 2		
FOR LATE FALL OR EARLY WINTER			SWITCHGRASS (var. SHELTER, PATHFINDER,	20	
A. WINTER RYE (AROSTOOK)	100	2.50	TRAILBLAZER, OR BLACKWELL)		
MULCH THE AREA WITH HAY OR STRAW AT 2 TONS/ACRE			SEED MIXTURE NO. 3		
(APPROXIMATELY 2 LARGE ROLLED BALES/ACRE).			BIRDFOOT TREFOIL (var. EMPIRE, PARDEE)	10	
			REDTOP	2	
			TALL FESCUE (var. KY 31, REBEL)	20	
MULCH ANCHORING IS REQUIRED WHERE WIND OR AREAS OF			SEED MIXTURE NO. 4		
CONCENTRATED WATER ARE OF CONCERN.			CREeping RED FESCUE (var. ENSYLAVA)	20	
			CHEWINGS FESCUE (COMMON)	20	
PERMANENT SEEDINGS SHOULD TAKE PLACE IN EARLY			PERENNIAL RYE GRASS (var. PENNFINE)	5	
SPRING. PROPER MULCHING AND ADEQUATE MOISTURE			RED CLOVER (COMMON)	10	
MUST BE PROVIDED FOR PERMANENT SEEDING. RESEEDING					
OF FAILED AREAS SHALL TAKE PLACE DURING LATE			SEED MIXTURE 1 TO BE APPLIED TO SHADED AREAS.		
SUMMER/EARLY FALL OR DURING THE FOLLOWING SPRING.					
FERTILIZER:			SEED MIXTURE 2 IS IN PURE LIVE SEED. TO BE APPLIED TO AREAS		
5% NITROGEN			UPLAND OF WETLANDS AND ALONG STORMWATER MITIGATION BASIN		
0% PHOSPHORUS			BANKS.		
5% POTASH			SEED MIXTURE 3 TO BE APPLIED TO ALL SWALES AND WATERWAYS		
HYDROMULCH			WHITE FLOVER OR LADINO CLOVER MAY BE SUBSTITUTED FOR		
HYDROMULCH SHALL BE A WOOD-FIBER COMPOSITION			BIRDFOOT TREFOIL AND SEEDS AT THE SAME RATE		
(50% PAPER, 50% WOOD)			PERENNIAL RYEGRASS MAY BE SUBSTITUTED FOR REDTOP BUT		
IF MULCHING IS NOT APPLIED WITH HYDROSEED MIXTURE,			INCREASE SEEDING RATE TO 5 LBS./ACRE (0.1 LBS./1000 SQ. FT.)		
APPROVED MULCHING, CONSISTING OF STALKS OF WHEAT,					
OATS, OR RYE, SHALL BE SPREAD EVENLY AT A RATE OF 2			SEED MIXTURE 4 TO BE APPLIED TO ALL AREAS. (NOT FOR USE IN		
TONS PER ACRE. MULCH IS TO BE TACKED INTO PLACE.			PLAYGROUNDS OR AS TURF)		

1. FERTILIZER APPLICATION RATE TO BE BASED ON SOIL TESTS.
2. IN NO CASE SHALL FERTILIZER BE APPLIED BETWEEN DECEMBER 1 AND APRIL 1 ANNUALLY.
3. FERTILIZER SHALL NOT BE SPREAD WITHIN 20 FEET OF A SURFACE WATER.
4. ANY FERTILIZER FALLING OR SPILLED INTO IMPERVIOUS SURFACE AREAS SUCH AS PARKING LOTS, ROADWAYS, AND SIDEWALKS SHALL BE IMMEDIATELY CONTAINED AND LEGALLY APPLIED OR PLACED IN AN APPROPRIATE CONTAINER.
5. INCORPORATE THE FERTILIZER, AND LIME IF SPECIFIED, INTO THE TOP 2 - 4 INCHES OF THE TOPSOIL OR SOIL PROFILE.
6. WHEN APPLYING FERTILIZER BY HYDROSEEDING CARE SHOULD BE TAKEN TO APPLY MIX ONLY TO SEED BED AREAS AT AN APPROPRIATE FLOW RATE TO PREVENT EROSION AND SPRAYING ON IMPERVIOUS AREAS.

[illegible]

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20-1906

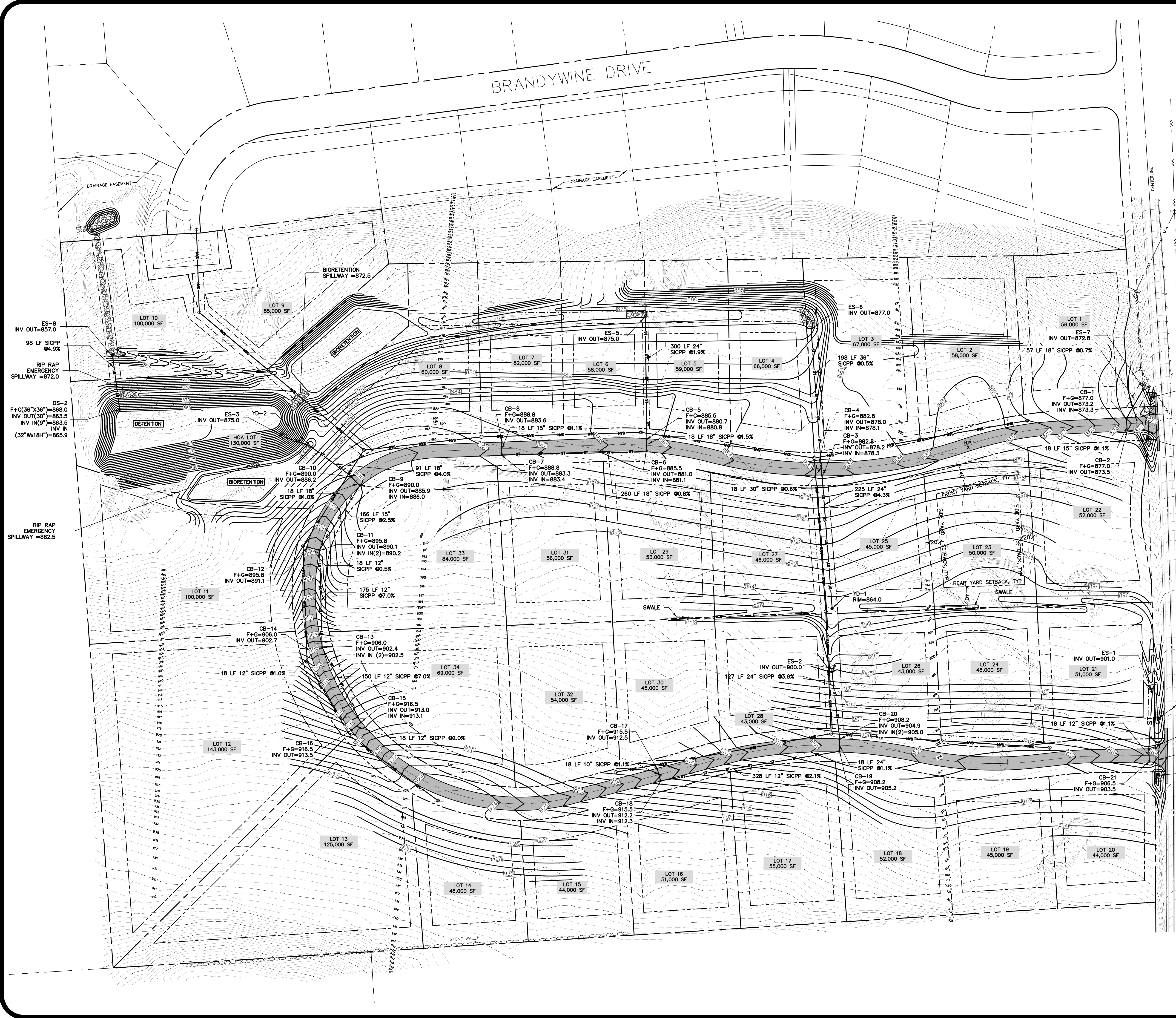
JECT NO.

17

3

1

SHE



SITE CRITERIA CHECKLIST		
PROJECT SITE INFORMATION		
ADDRESS	HENNEBERRY ROAD (COUNTY ROUTE 182)	
TAX MAP ID NO.	109.-02.-07.1	
BOUNDARY SURVEY	PROPERTY LINE INFORMATION TAKEN FROM SURVEY BY IANUZI AND ROMANS	
TOTAL SITE AREA	54.746 ACRES	
LAND USE	SINGLE FAMILY RESIDENTIAL - 34 LOTS	
ZONING INFORMATION		
ZONING DISTRICT	R-1, RESIDENTIAL DISTRICT	
	REQUIRED	PROVIDED
MIN. LOT FRONTAGE	150'	150' MIN.
MIN. LOT AREA	40,000 SF	40,000 SF MIN.
MINIMUM FRONT YARD	40'	40' MIN.
MINIMUM REAR YARD	40'	40' MIN.
MINIMUM SIDE YARD	20'	20' MIN.

- NOTES:**
- PHASING PLAN REFERS ONLY TO THE PHASING OF HOME CONSTRUCTION WITHIN INDIVIDUAL LOTS TO BE SUBDIVIDED AND DOES NOT SPECIFY THE OVERALL LIMITS OF DISTURBANCE, CONSTRUCTION OF STORMWATER MITIGATION FACILITIES AND UTILITY SERVICES SHALL OCCUR AS NEEDED TO SERVE THE LOTS WITHIN THE PHASE UNDER CONSTRUCTION.
 - THE OWNER OR OPERATOR SHALL HAVE A QUALIFIED INSPECTOR CONDUCT AT LEAST TWO (2) SITE INSPECTIONS IN ACCORDANCE WITH PART IV.C. OF THIS PERMIT EVERY SEVEN (7) CALENDAR DAYS, FOR AS LONG AS GREATER THAN FIVE (5) ACRES OF SOIL REMAIN DISTURBED. THE TWO (2) INSPECTIONS SHALL BE SEPARATED BY A MINIMUM OF TWO (2) FULL CALENDAR DAYS.
 - IN AREAS WHERE SOIL DISTURBANCE ACTIVITY HAS TEMPORARILY OR PERMANENTLY CEASED, THE APPLICATION OF SOIL STABILIZATION MEASURES MUST BE INITIATED BY THE END OF THE NEXT BUSINESS DAY AND COMPLETED WITHIN SEVEN (7) DAYS FROM THE DATE THE CURRENT SOIL DISTURBANCE ACTIVITY CEASED. THE SOIL STABILIZATION MEASURES SELECTED SHALL BE IN CONFORMANCE WITH THE TECHNICAL STANDARD, NEW YORK STATE STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL, DATED NOVEMBER 2016.
 - THE OWNER OR OPERATOR SHALL INSTALL ANY ADDITIONAL SITE-SPECIFIC PRACTICES NEEDED TO PROTECT WATER QUALITY.

PROJECT TITLE:

BRANDYWINE ESTATES PHASE 2

HENNEBERRY ROAD

TOWN OF MANLIUS

ONONDAGA COUNTY, NY

PREPARED FOR:

HARRINGTON HOMES

3848 HENNEBERRY ROAD

JAMESVILLE, NY 13078

SHEET TITLE:

OVERALL GRADING PLAN

NO.	REVISION/ISSUE	DATE
4	REVISED AS PER TOWN ENGINEER'S COMMENTS	3/09/2022
3	REVISED AS PER TOWN ENGINEER'S COMMENTS	2/16/2022
2	GENERAL REVISIONS	02/09/2022
1	GENERAL REVISIONS	12/01/2021

PREPARED BY:

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PROJECT NO.

20-1906

DATE

17 SEP 2020

SCALE

1" = 80'

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NEA J. J. J.

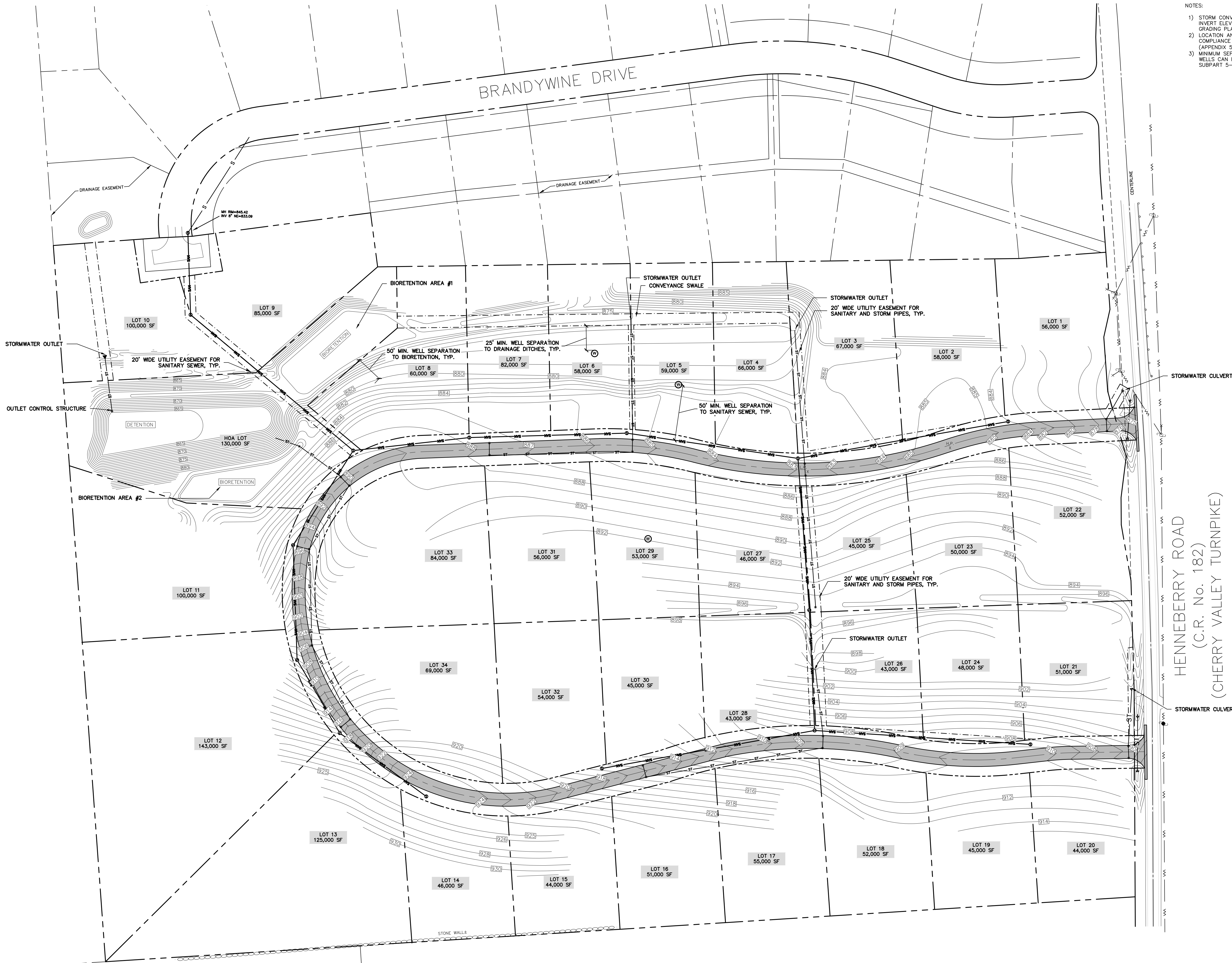
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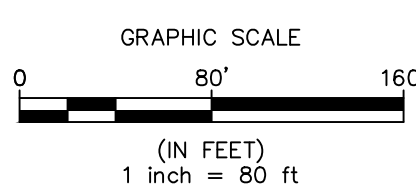
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C-2



- NOTES:
- 1) STORM CONVEYANCE SYSTEM PIPE SLOPE, RIM, AND INVERT ELEVATIONS CAN BE SEEN ON THE OVERALL GRADING PLAN, SHEET C-2.
 - 2) LOCATION AND INSTALLATION OF WELLS SHALL BE IN COMPLIANCE WITH NEW YORK STATE REGULATIONS (APPENDIX 5-B OF 10 NYORR PART 5).
 - 3) MINIMUM SEPARATION DISTANCES TO PROTECT WATER WELLS CAN BE FOUND IN TABLE 1 OF PART 5, SUBPART 5-1 OF APPENDIX 5-B.



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PROJECT TITLE:
**BRANDYWINE ESTATES PHASE 2
HENNEBERRY ROAD**

TOWN OF MANLIUS
ONONDAGA COUNTY, NY

PREPARED FOR:
HARRINGTON HOMES
3848 HENNEBERRY ROAD
JAMESVILLE, NY 13078

OVERALL UTILITY PLAN

NO.	REVISION/ISSUE	DATE
1	GENERAL REVISIONS	12/01/2021
2	GENERAL REVISIONS	02/09/2022
3	REVISED AS PER TOWN ENGINEER'S COMMENTS	2/16/2022
4	REVISED AS PER TOWN ENGINEER'S COMMENTS	3/09/2022

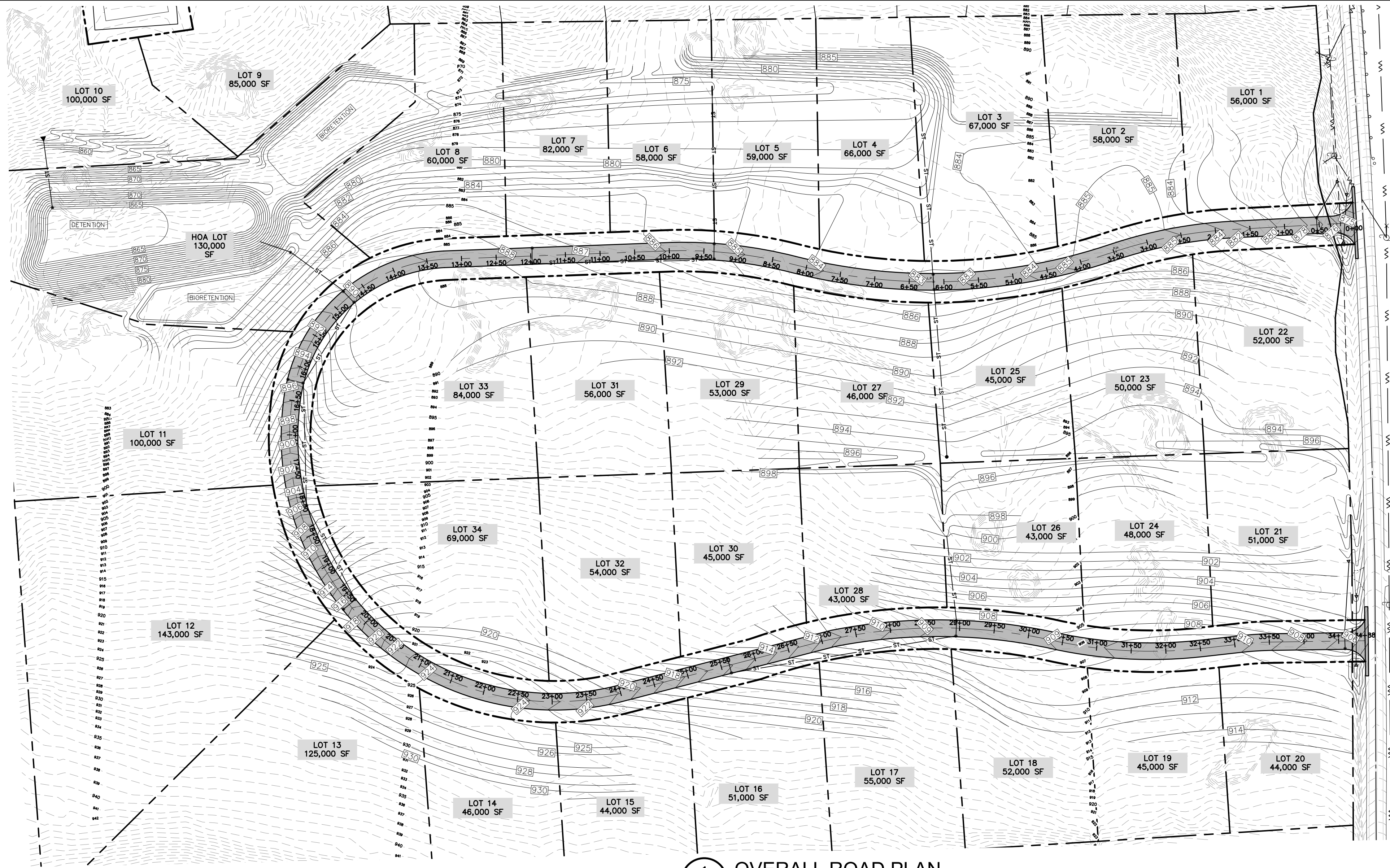
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20-1906

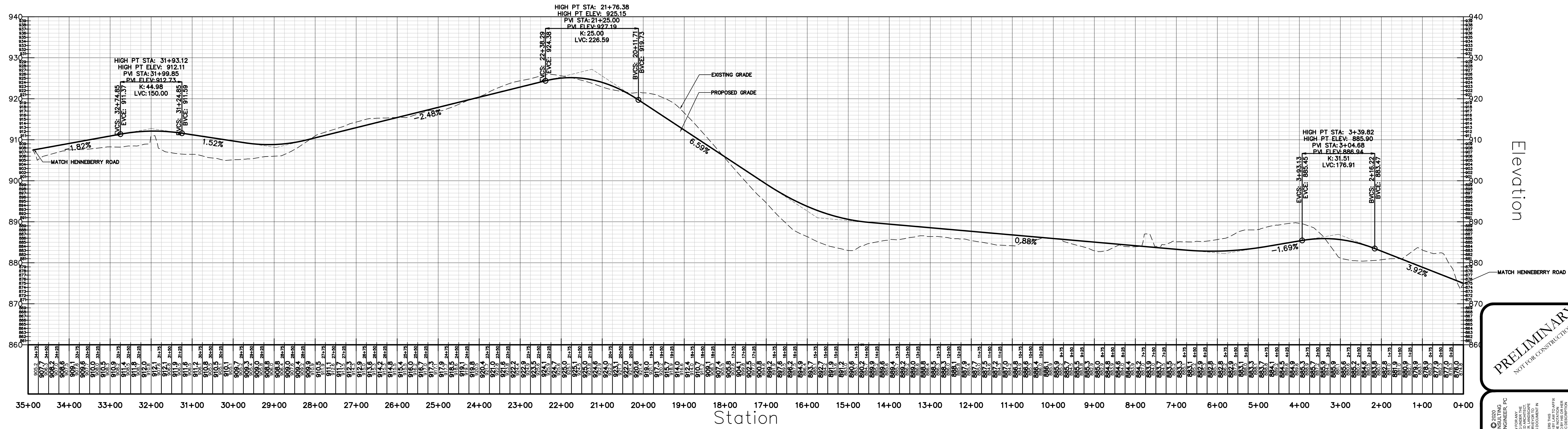
DATE
17 SEP 2020

SCALE
1" = 80'

SHEET
C-3



1 OVERALL ROAD PLAN
C-4 SCALE: 1"=100'



2 OVERALL ROAD PROFILE
C-4 SCALE: H: 1"=120' V: 1"=12'

HENNEBERRY ROAD
(C.R. No. 182)
(CHERRY VALLEY TURNPIKE)

PROJECT TITLE: BRANDYWINE ESTATES PHASE 2
HENNEBERRY ROAD
TOWN OF MANLIUS ONONDAGA COUNTY, NY
PREPARED FOR: HARRINGTON HOMES
3848 HENNEBERRY ROAD
JAMESVILLE, NY 13078

OVERALL ROAD PROFILE

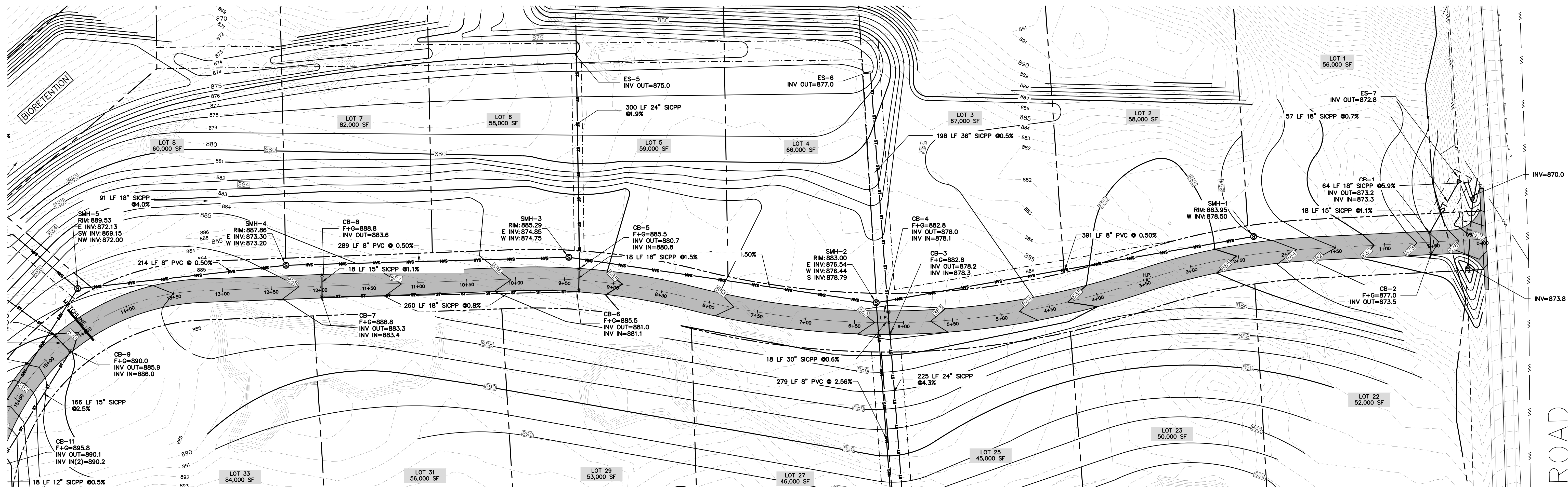
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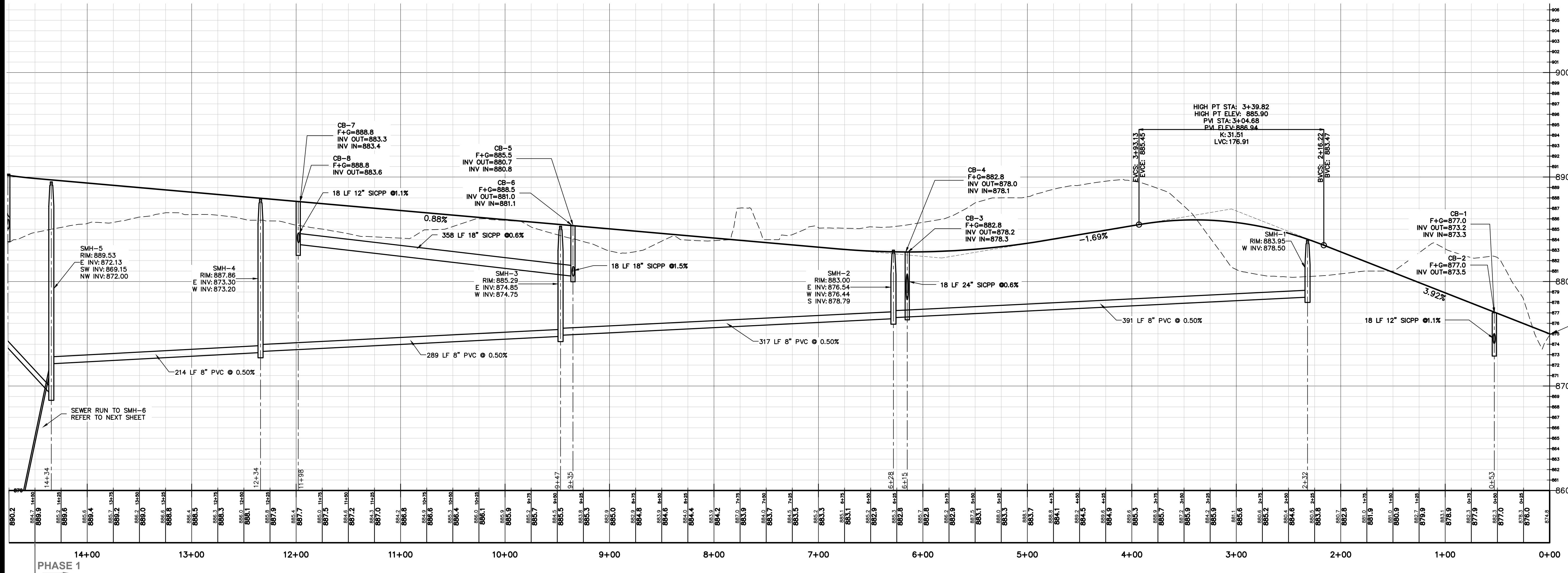
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DATE 17 SEP 2020
SCALE AS NOTED
SHEET C-4

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1 ROAD A
C-5.0 SCALE: 1"=50'



2 ROAD A PROFILE - SUBDIVISION PHASE 1
C-5.0 SCALE: H: 1"=50' V: 1"=5'

ROAD

PROJECT TITLE:
**BRANDYWINE ESTATES PHASE 2
HENNEBERRY ROAD**
TOWN OF MANLIUS ONONDAGA COUNTY, NY

PREPARED FOR:
HARRINGTON HOMES
3848 HENNEBERRY ROAD
JAMESVILLE, NY 13078

ROAD PROFILE PLAN

NO.	REVISION/ISSUE	DATE
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3	REVISED AS PER TOWN ENGINEER'S COMMENTS	2/16/2022
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1	GENERAL REVISIONS	12/01/2021

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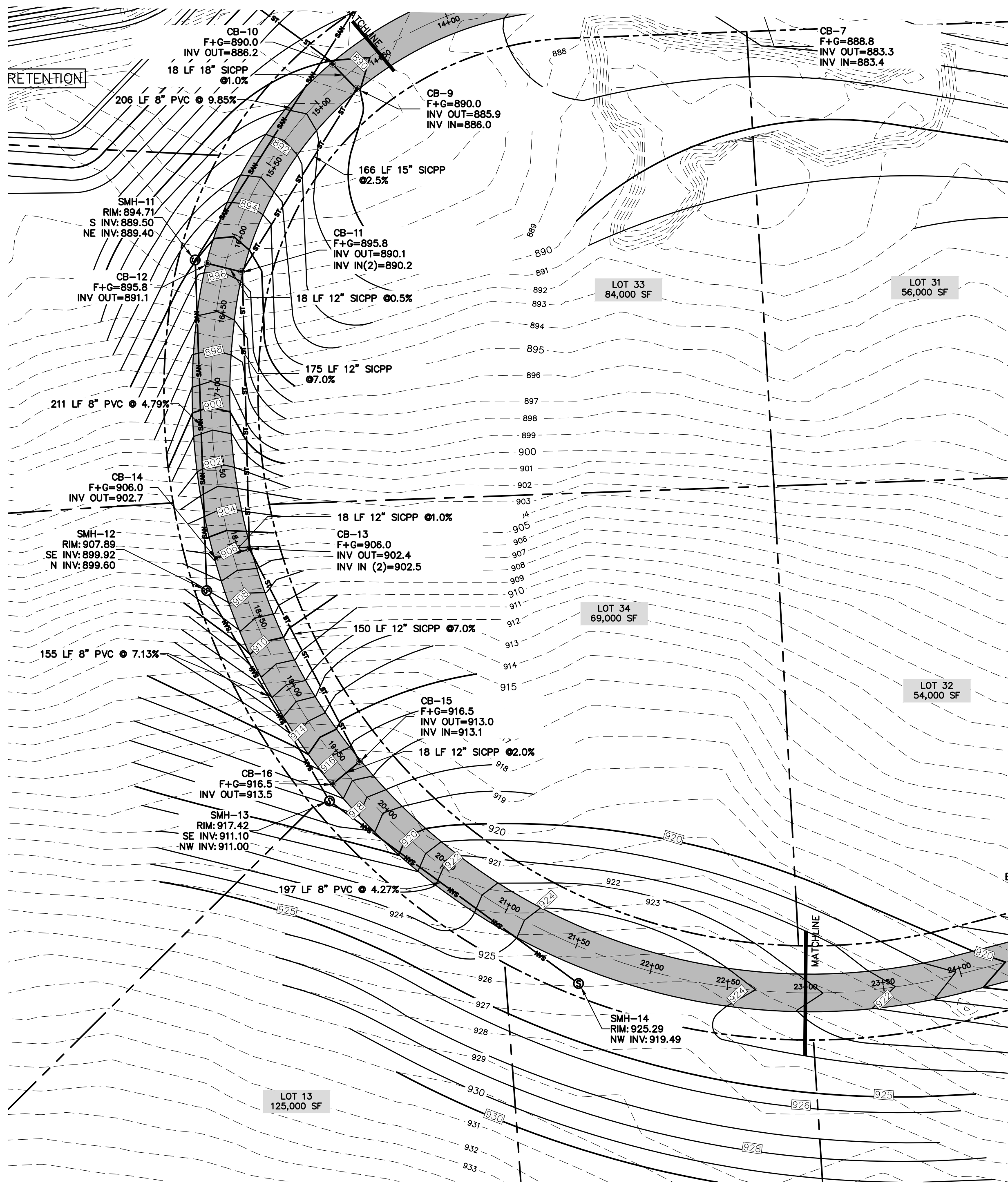
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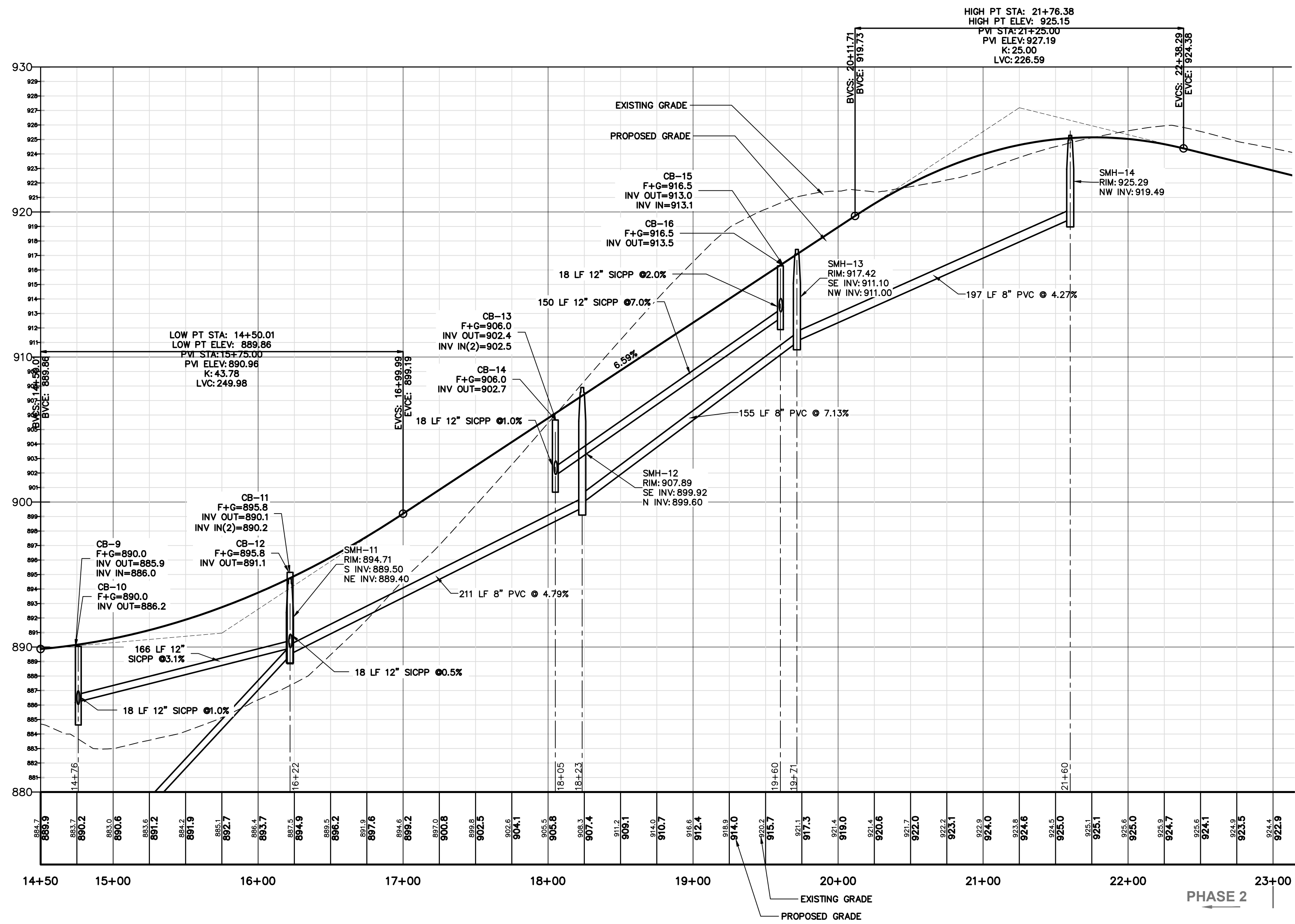
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SCALE
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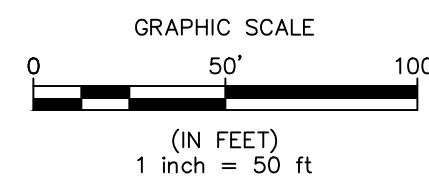
C-5.0



1 ROAD A PLAN
C-5.1 SCALE: 1"=50'



2 ROAD A PROFILE - SUBDIVISION PHASE 2
C-5.1 SCALE: H:1"=50' V:1"=5'



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NYS REGISTRATION NO. 20711

PROJECT TITLE:
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HENNEBERRY ROAD**
TOWN OF MANLIUS ONONDAGA COUNTY, NY
PREPARED FOR:
HARRINGTON HOMES
3848 HENNEBERRY ROAD
JAMESVILLE, NY 13078

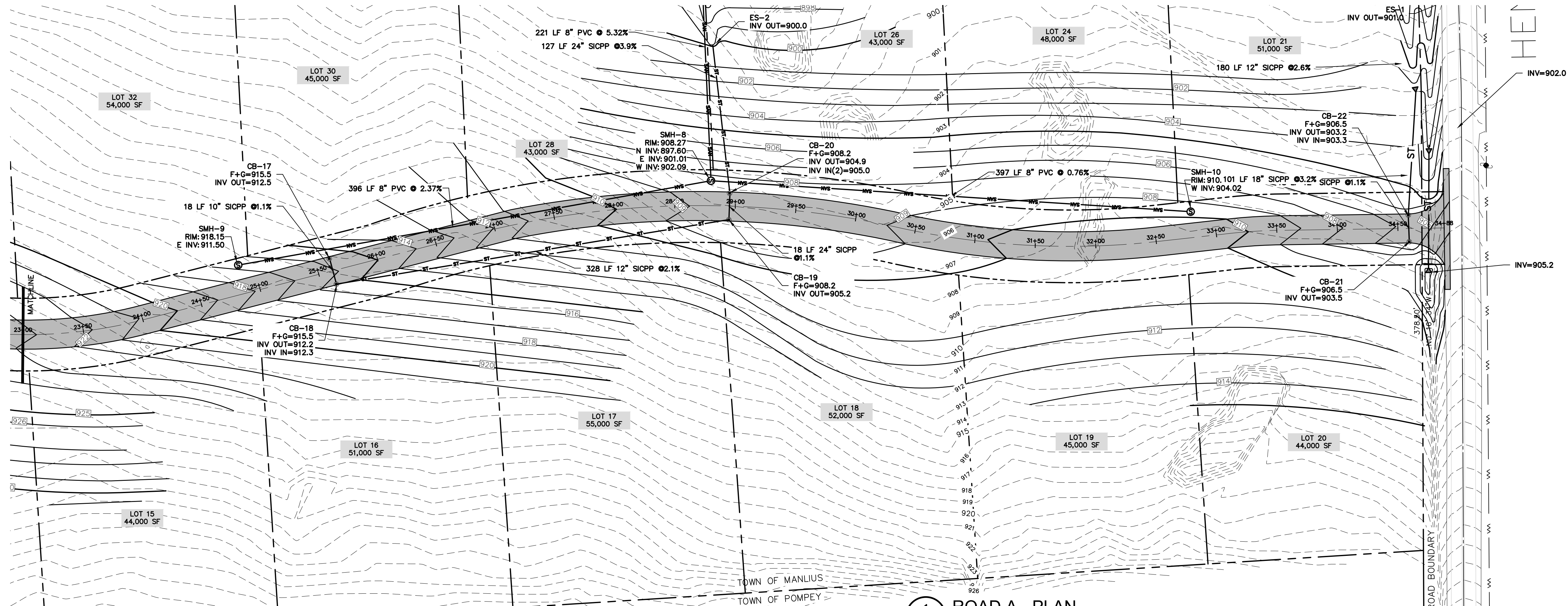
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ROAD PROFILE PLAN

NO.	REVISIONS	DATE
4	REVISED AS PER TOWN ENGINEER'S COMMENTS	3/09/2022
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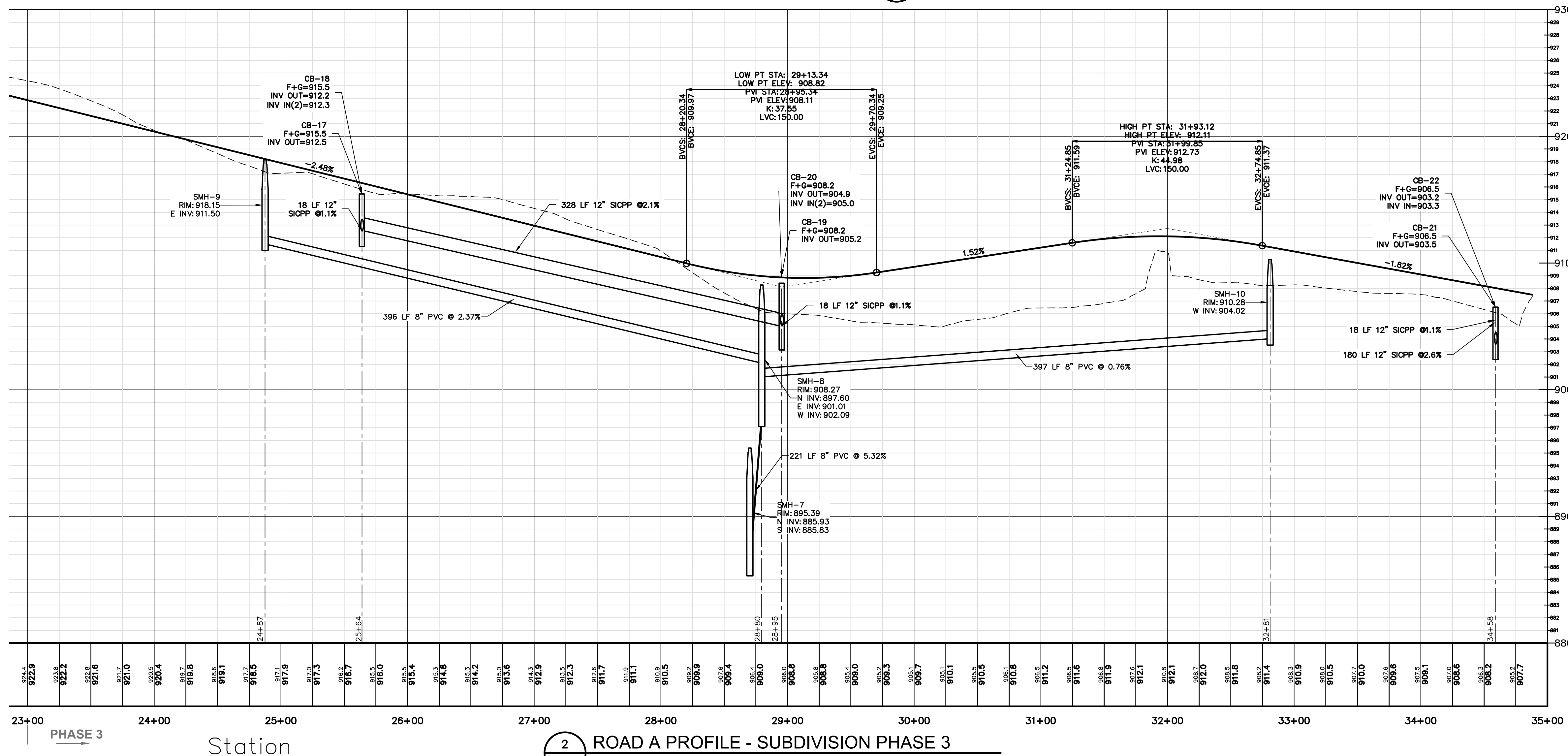
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PROJECT NO.
20-1906
DATE
17 SEP 2020
SCALE
1" = 50'

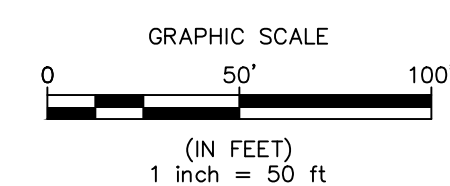
C-5.1



1 ROAD A - PLAN
C-5.2 SCALE: 1"=50'



2 ROAD A PROFILE - SUBDIVISION PHASE 3
C-5.2 SCALE: H: 1"=50' V: 1"=5'



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HENNEBERRY ROAD
TOWN OF MANLIUS ONONDAGA COUNTY, NY
PREPARED FOR: HARRINGTON HOMES
3848 HENNEBERRY ROAD
JAMESVILLE, NY 13078

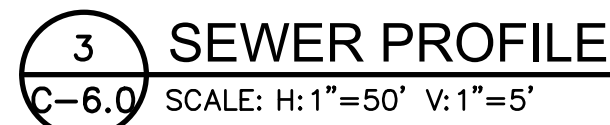
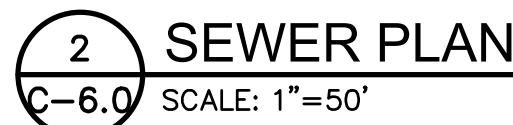
SHEET TITLE: ROAD PROFILE PLAN

NO.	REVISIONS	DATE
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PROJECT NO. 20-1906
DATE 17 SEP 2020
SCALE 1" = 50'

C-5.2



SEWER PROFILE PLAN

[illegible]

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	20-1906

DATE 15 SEP 2020

C-6.0

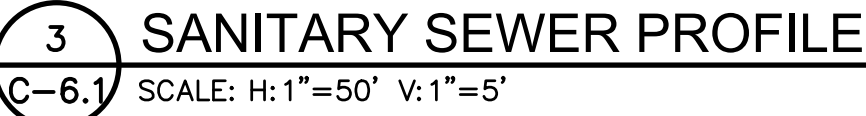
1" = 50'

SCALE

19 SEP 2020

SHEET

C-6.0



SEWER PROFILE PLAN

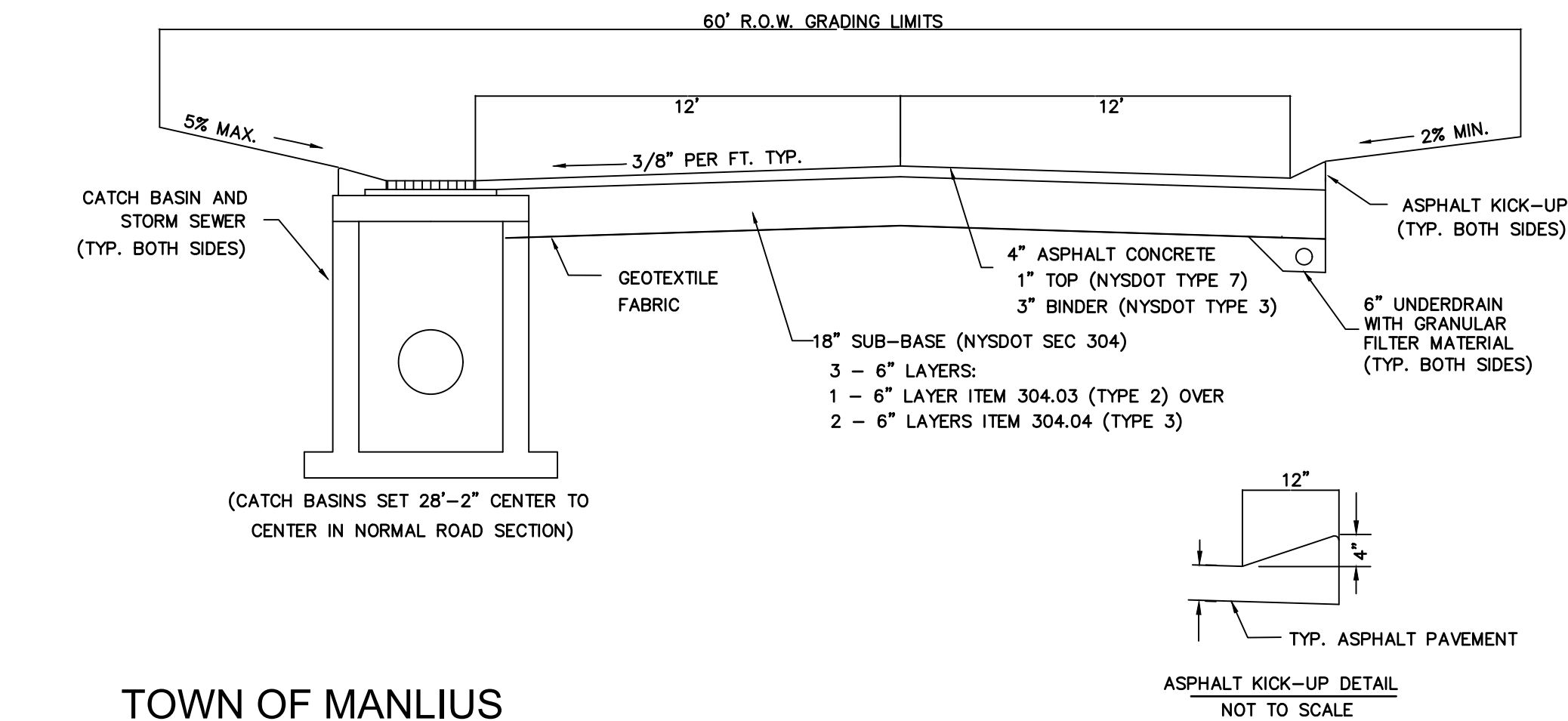
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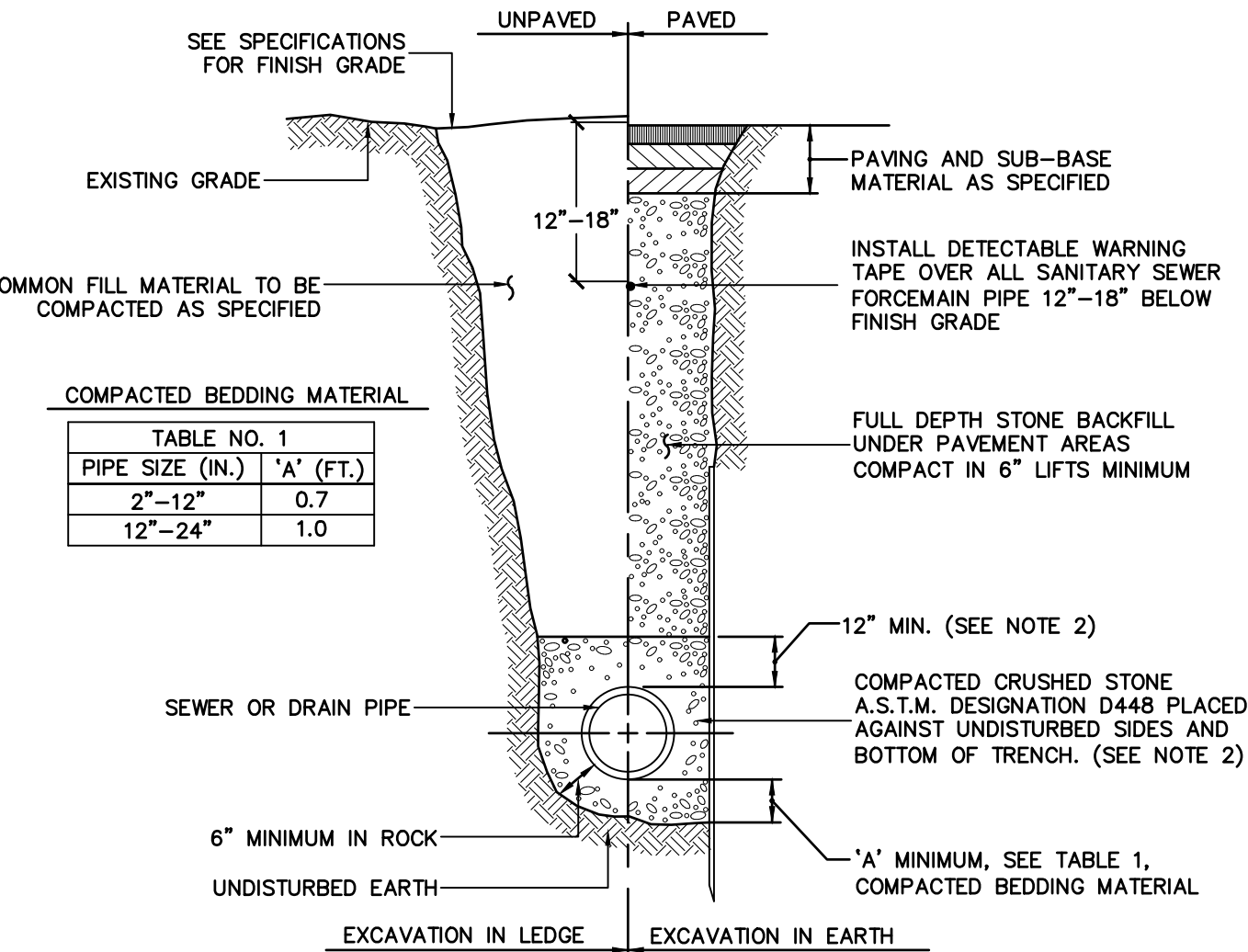
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	SCALE	1" = 50'

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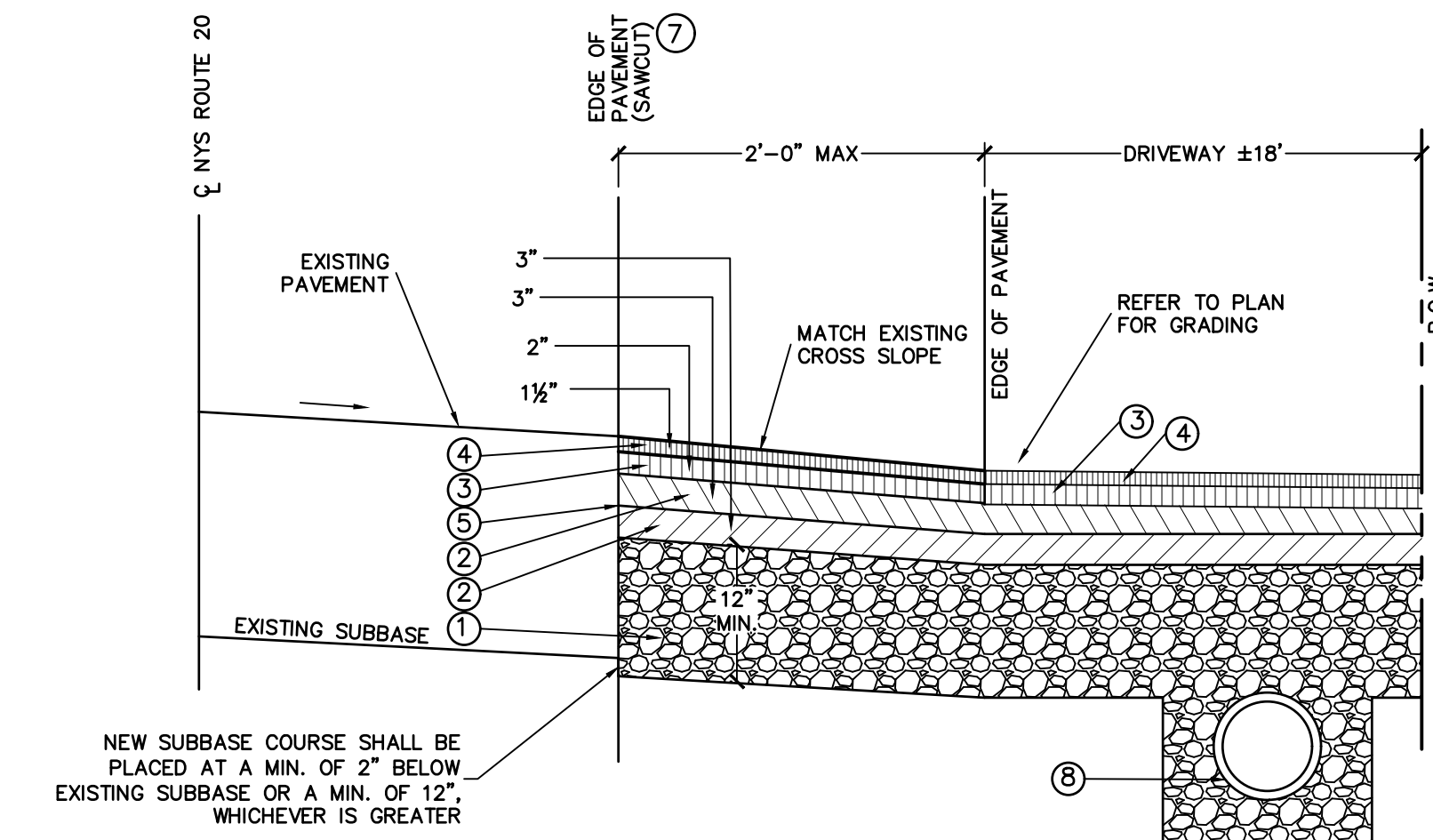


1 TOWN OF MANLIUS
RESIDENTIAL STREET CROSS SECTION
C-7.0 SCALE: NTS

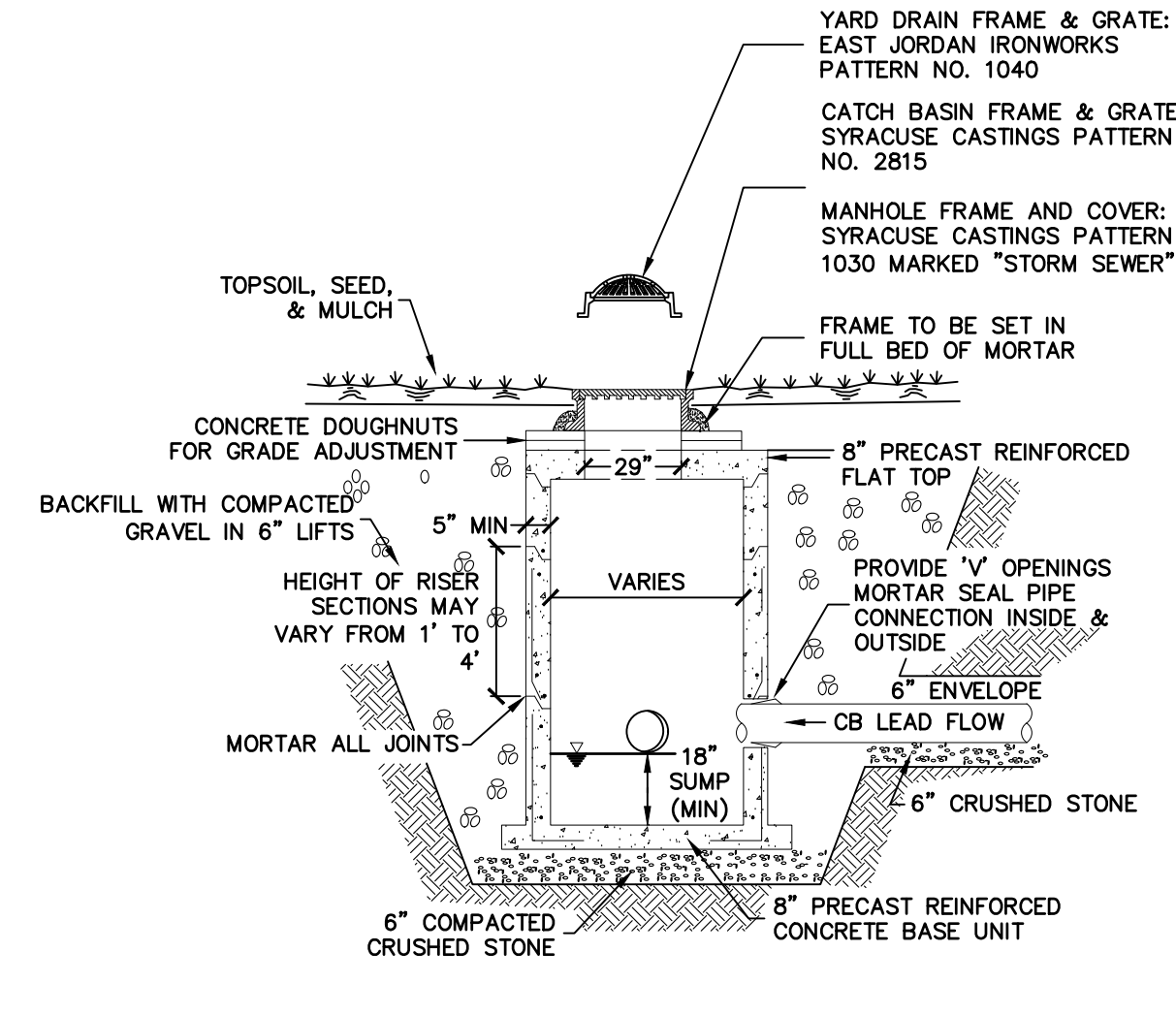


- NOTES:
1. SHEETING, WHEN REQUIRED, TO BE CUT OFF AT LEAST 5 FEET BELOW STREET AND A MINIMUM OF 1 FOOT ABOVE TOP OF PIPE. WOOD SHEETING DRIVEN BELOW MID-DIAMETER OF THE PIPE SHALL BE LEFT IN PLACE. STEEL SHEETING DRIVEN BELOW MID-DIAMETER MAY BE WITHDRAWN IF APPROVED IN WRITING BY THE ENGINEER. FOR PVC PIPE ALL SHEETING DRIVEN BELOW MID-DIAMETER SHALL BE LEFT IN PLACE. WHEN APPROVED BY THE ENGINEER FOR PIPES OTHER THAN PVC SELECTED GRAVEL FILL MATERIAL MAY BE USED FROM MID-DIAMETER OF PIPE TO 12" ABOVE TOP OF PIPE. NO STONES LARGER THAN 2 INCHES IN ANY DIMENSION WILL BE PERMITTED IN THIS AREA.
 2. TRENCHES LOCATED ON THE ROAD SHOULDER SHALL BE TREATED THE SAME AS EXCEPT FOR PAVING.
 3. PROVIDE AT LEAST ONE IMPERVIOUS DAM IN GRAVEL BEDDING BETWEEN EACH MANHOLE WHERE DIRECTED, OR EVERY 300 FEET, WHICHEVER IS LESS. SEE DETAIL.
 4. BEDDING MATERIAL FOR PVC PIPE SHALL MEET THE REQUIREMENTS OF ASTM D2321 CLASS I OR CLASS II EMBEDMENT MATERIALS.

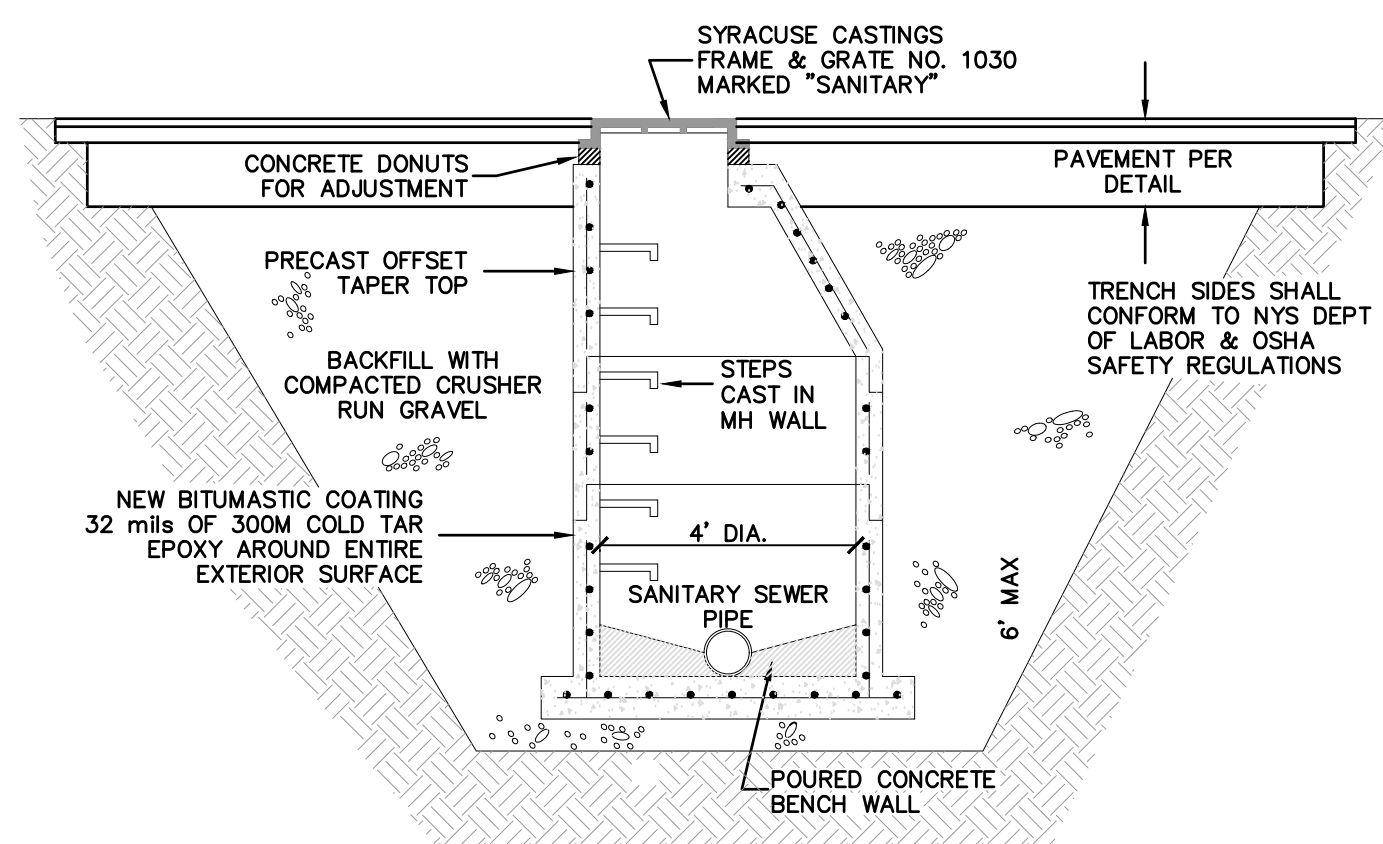
4 TYPICAL SEWER AND DRAIN TRENCH
C-7.0 SCALE: NTS



7 TYPICAL SECTION AT ENTRANCE
C-7.0 SCALE: NTS
TO BE USED WITHIN NYS DOT R.O.W.



2 CATCH BASIN
C-7.0 SCALE: NTS



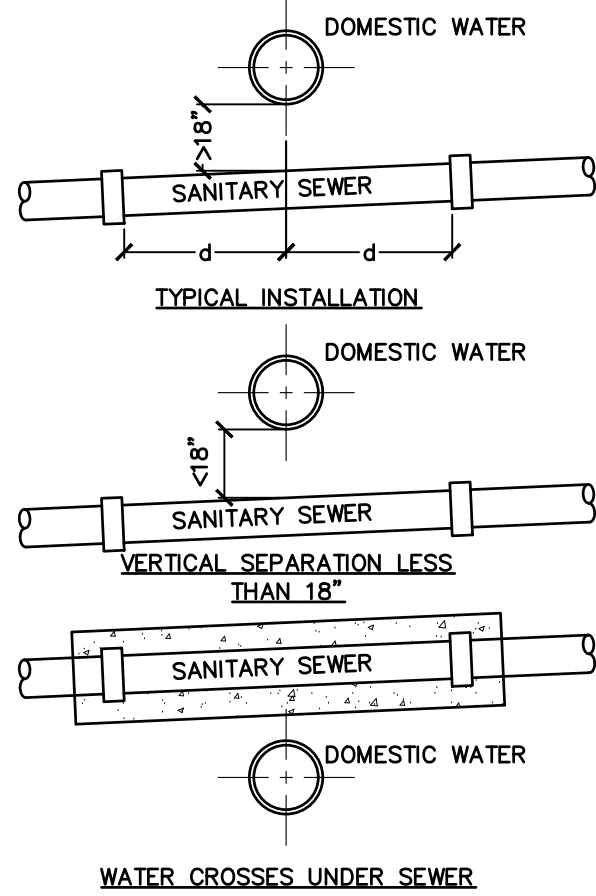
SANITARY MANHOLE GENERAL NOTES

1. ALL SANITARY SEWER MANHOLES TO BE RATED FOR H-20 LOADING
2. PRECAST REINFORCED CONCRETE OFFSET TAPER TOP TO BE MANUFACTURED IN ACCORDANCE WITH ASTM C-478. TOP SECTION IS TO BE 3' LONG.
3. PRECAST REINFORCED CONCRETE MANHOLE RISER SECTIONS ARE TO BE MANUFACTURED IN ACCORDANCE WITH ASTM C-478. RISER SECTIONS ARE TO HAVE A 48" INSIDE DIAMETER X 5' WALL AVAILABLE IN 2', 3', OR 4' LENGTHS.
4. PRECAST REINFORCED CONCRETE MANHOLE BASE IS TO BE MANUFACTURED IN ACCORDANCE WITH ASTM C-478. BASE IS TO HAVE A 48" INSIDE DIAMETER X 5' WALL WITH RUBBER BOOTS AS REQUIRED.
5. REINFORCING FOR ALL SECTIONS SHALL BE 2X4, 5/8 W.W. MESH.
6. ALL REINFORCEMENT SHALL BE PLACED SO IT WILL HAVE A MINIMUM COVER OF 2" AND BE LOCATED APPROXIMATELY WITHIN THE CENTER OF THE SECTION.
7. COURSES OF BRICK OR CONCRETE DONUTS ARE TO BE USED FOR RIM GRADE ADJUSTMENTS.
8. BASE OF PRECAST MANHOLE SHALL REST ON UNDISTURBED UNIFORM VIRGIN SOIL OR COMPACTED GRAVEL, COMPACTED IN PLACE WITH VIBRATORY MECHANICAL TAMPERS IN LIFTS NOT TO EXCEED 6" AT A TIME.
9. TRENCH SIDES SHALL CONFORM TO NYS LABOR DEPARTMENT SAFETY REGULATIONS.

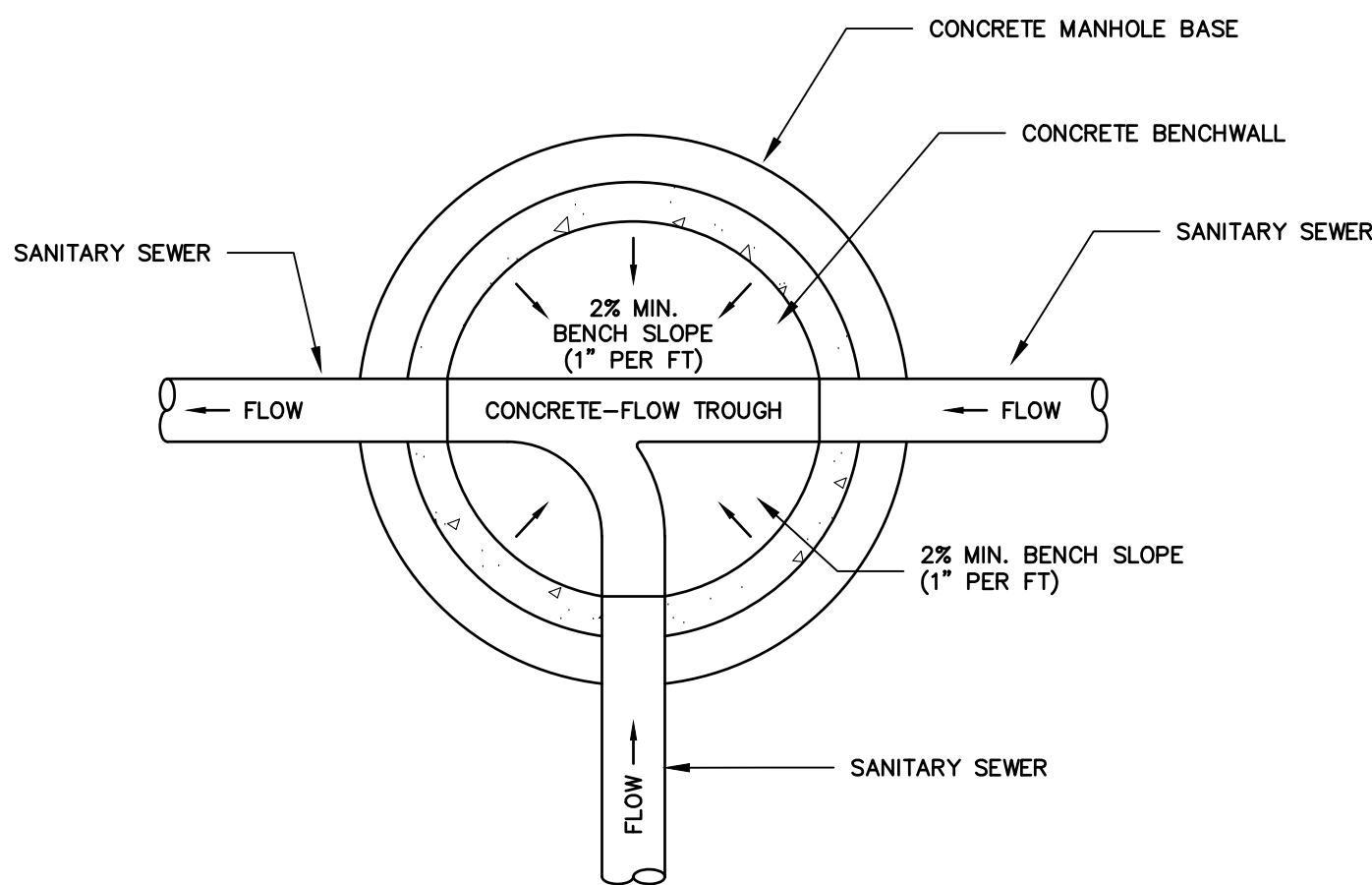
5 SANITARY MANHOLE STRUCTURE
C-7.0 SCALE: NTS

DRAINAGE STRUCTURE GENERAL NOTES

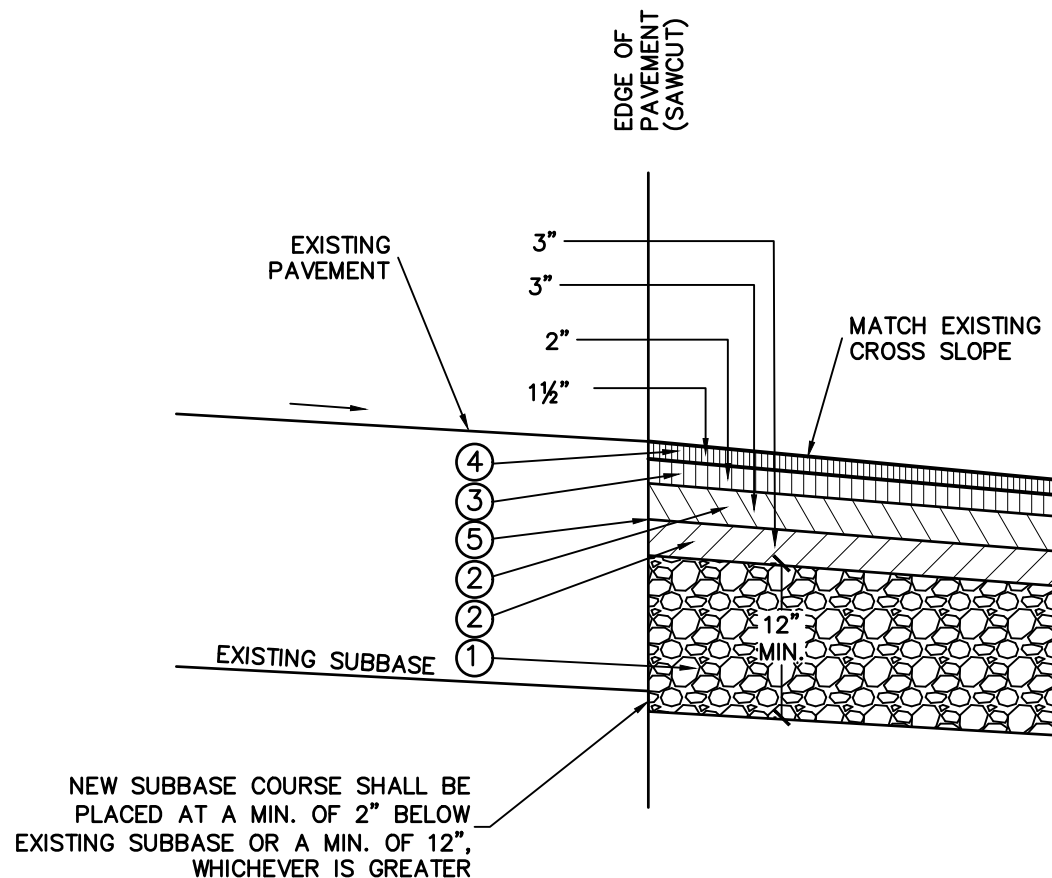
1. ALL STRUCTURES SHALL BE RATED FOR H-20 LOADING
2. REINFORCING FOR ALL SECTIONS SHALL BE AS FOLLOWS:
TOP: #3 BARS SPACED AT 4" IN BOTH DIRECTIONS.
BOTTOM: #3 BARS SPACED AT 4" IN BOTH DIRECTIONS.
3. ALL REINFORCEMENT SHALL BE PLACED SO IT WILL HAVE A MINIMUM COVER OF 2" AND BE LOCATED APPROXIMATELY WITHIN THE CENTER OF THE SECTION.
4. TOP SLAB AND/OR FRAME ADJUSTMENT: FOR ALL DRAINAGE STRUCTURES A MAXIMUM OF 6 INCHES OF BRICK AND MORTAR OR A MAXIMUM OF 2 INCHES OF MORTAR ALONE SHALL BE USED FOR TOP SLAB AND/OR FRAME & GRATE ADJUSTMENT. FOR ADJUSTMENTS OVER 6 INCHES AND NOT TO EXCEED 12 INCHES, PRECAST CONCRETE ADJUSTMENT ELEMENT(S) MANUFACTURED IN ACCORDANCE WITH NYS-DOT STANDARD SPEC SUB-SECTION #706-04 SHALL BE USED; A MAXIMUM OF 2 INCHES OF MORTAR SHALL BE ALLOWED ON BOTH THE TOP AND BOTTOM OF THE PRECAST DEVICES. BRICK SHALL BE PRECAST PAVERS CONFORMING TO NYS-DOT STANDARD SPEC SUB-SECTION #704-13 AND MORTAR SHALL BE MORTAR FOR CONCRETE MASONRY CONFORMING TO NYS-DOT STANDARD SPEC SUB-SECTION #705-21.
5. MANHOLE STEPS SHALL BE REQUIRED IN ALL DRAINAGE STRUCTURES DEEPER THAN 4 FEET. STEPS SHALL CONFORM TO NYS-DOT STANDARD SPEC SUB-SECTION #725-02.
6. BASE OF PRECAST CATCH BASIN SHALL REST ON BASE MATERIAL COMPACTED IN PLACE WITH A VIBRATORY MECHANICAL TAMPER IN LIFTS NOT TO EXCEED 6" AT A TIME.
7. TRENCH SIDES SHALL CONFORM TO NYS DEPT OF LABOR AND OSHA SAFETY REGULATIONS.
8. MANHOLE INLET AND OUTLET PIPE CONNECTIONS MUST BE JOINED TO THE MANHOLE WITH A GASKETED, FLEXIBLE, WATER TIGHT CONNECTION OR IN ANY WATER TIGHT ARRANGEMENT THAT ALLOWS DIFFERENTIAL SETTLING OF THE MANHOLE WALL AND PIPE TO TAKE PLACE.



3 WATER AND SEWER SEPARATION
C-7.0 SCALE: NTS



6 SANITARY SEWER MANHOLE BENCH
C-7.0 SCALE: NTS



8 ASPHALT PAVEMENT (SHOULDER) SECTION
C-7.0 SCALE: NTS
TO BE USED WITHIN NYS DOT R.O.W.

KEY NO.	NO. ITEM NO.	DESCRIPTION
1	304.15	SUBBASE COURSE, TYPE 2
2	402.258903	37.5 MM F9 SUPERPAVE HMA, 80 SERIES COMPACTION
3	402.198903	19 MM F9 SUPERPAVE HMA, 80 SERIES COMPACTION
4	402.098303	9.5 MM F2 SUPERPAVE HMA, 80 SERIES COMPACTION
5	407.0102	TACK COAT

- NOTES:
1. TACK COAT (NYS DOT ITEM 407.0102) SHALL BE APPLIED BETWEEN ALL ASPHALT LIFTS AND ON ALL SAWCUT SURFACES
 2. REFER TO PLAN FOR ALL ELEVATIONS

PROJECT TITLE: BRANDYWINE ESTATES PHASE 2
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3848 HENNEBERRY ROAD
JAMESVILLE, NY 13078

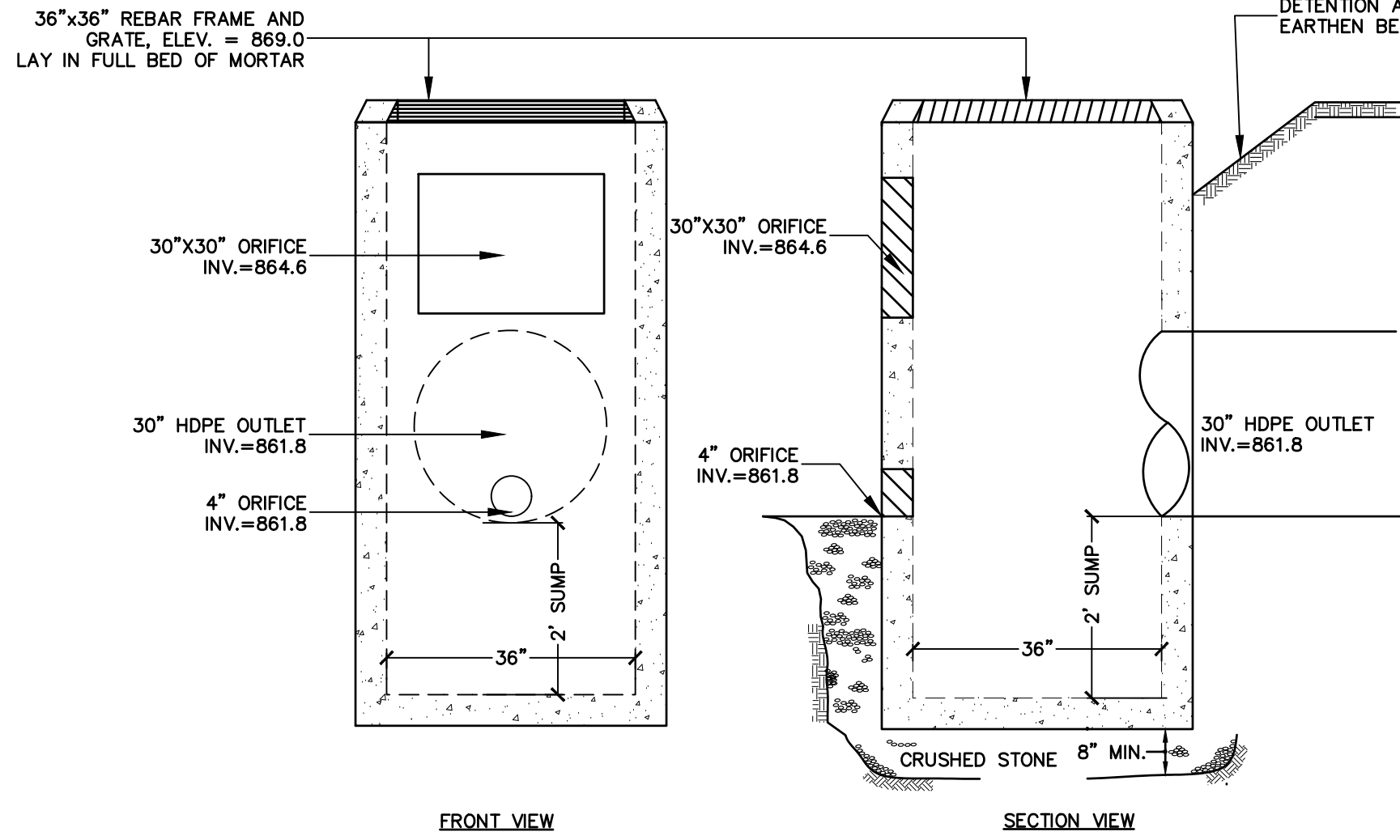
SITE DETAILS

NO.	REVISION/ISSUE	DATE
4	REVISED AS PER TOWN ENGINEER'S COMMENTS	3/09/2022
3	REVISED AS PER TOWN ENGINEER'S COMMENTS	2/16/2022
2	GENERAL REVISIONS	02/09/2022
1	GENERAL REVISIONS	12/01/2021

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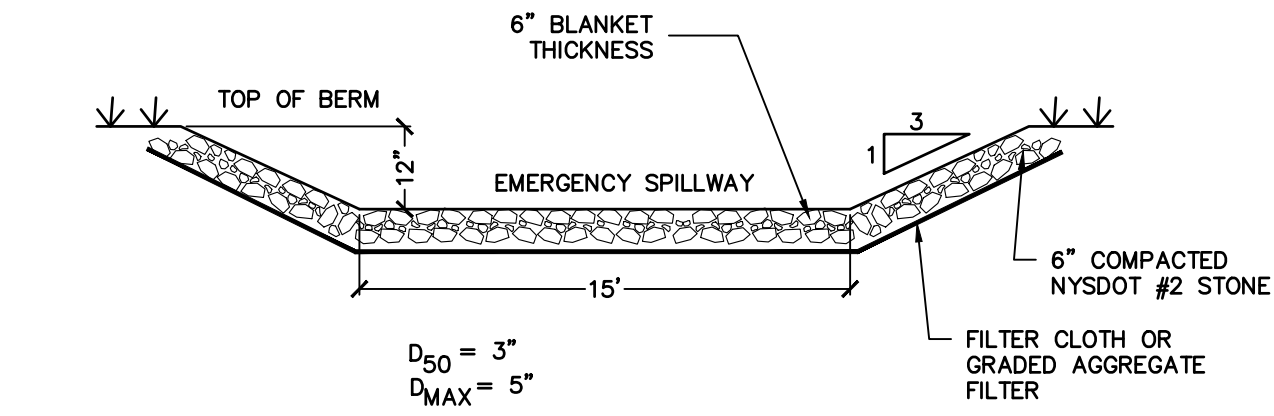
PROJECT NO. 20-1906
DATE 17 SEP 2020
SCALE NTS
SHEET

C-7.0

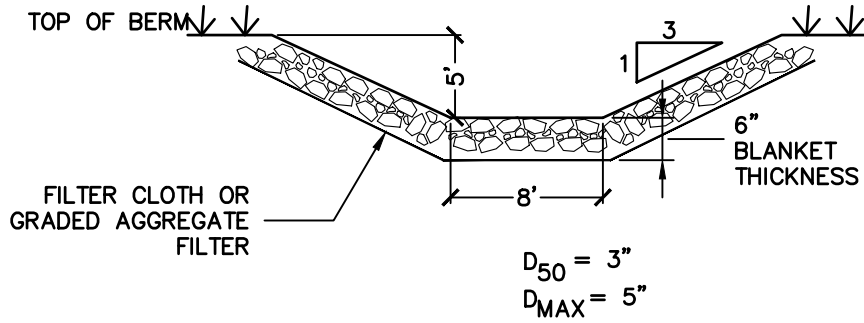


DETENTION BASIN #1
PRECAST CONCRETE OUTLET STRUCTURE

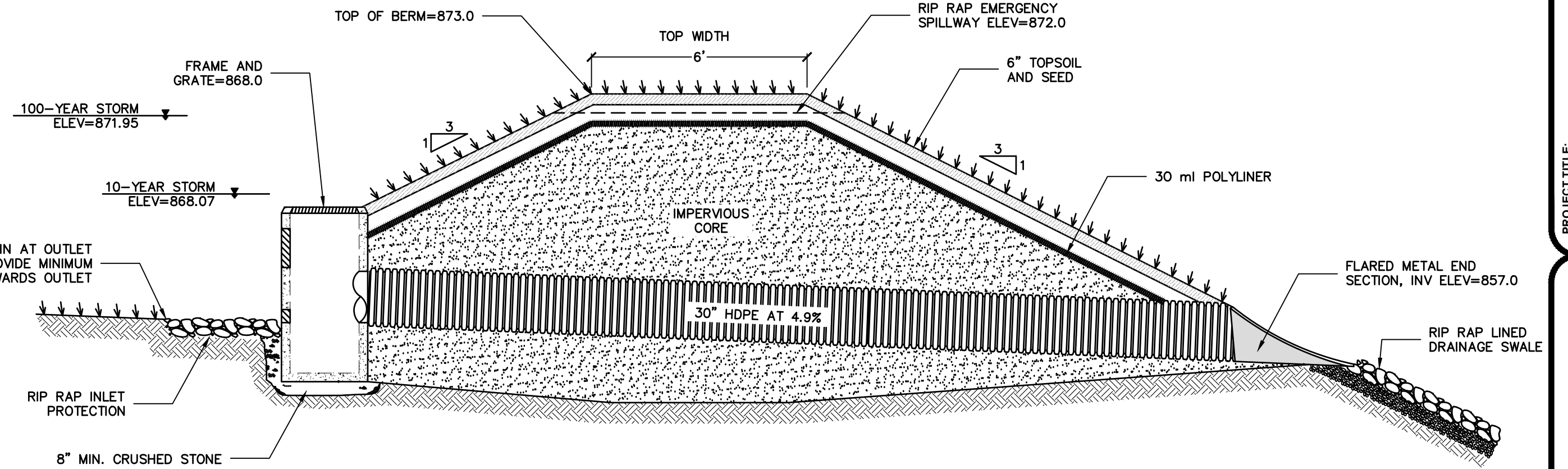
1
C-7.1
SCALE: NTS



2
C-7.1
RIP RAP EMERGENCY SPILLWAY
SCALE: NTS

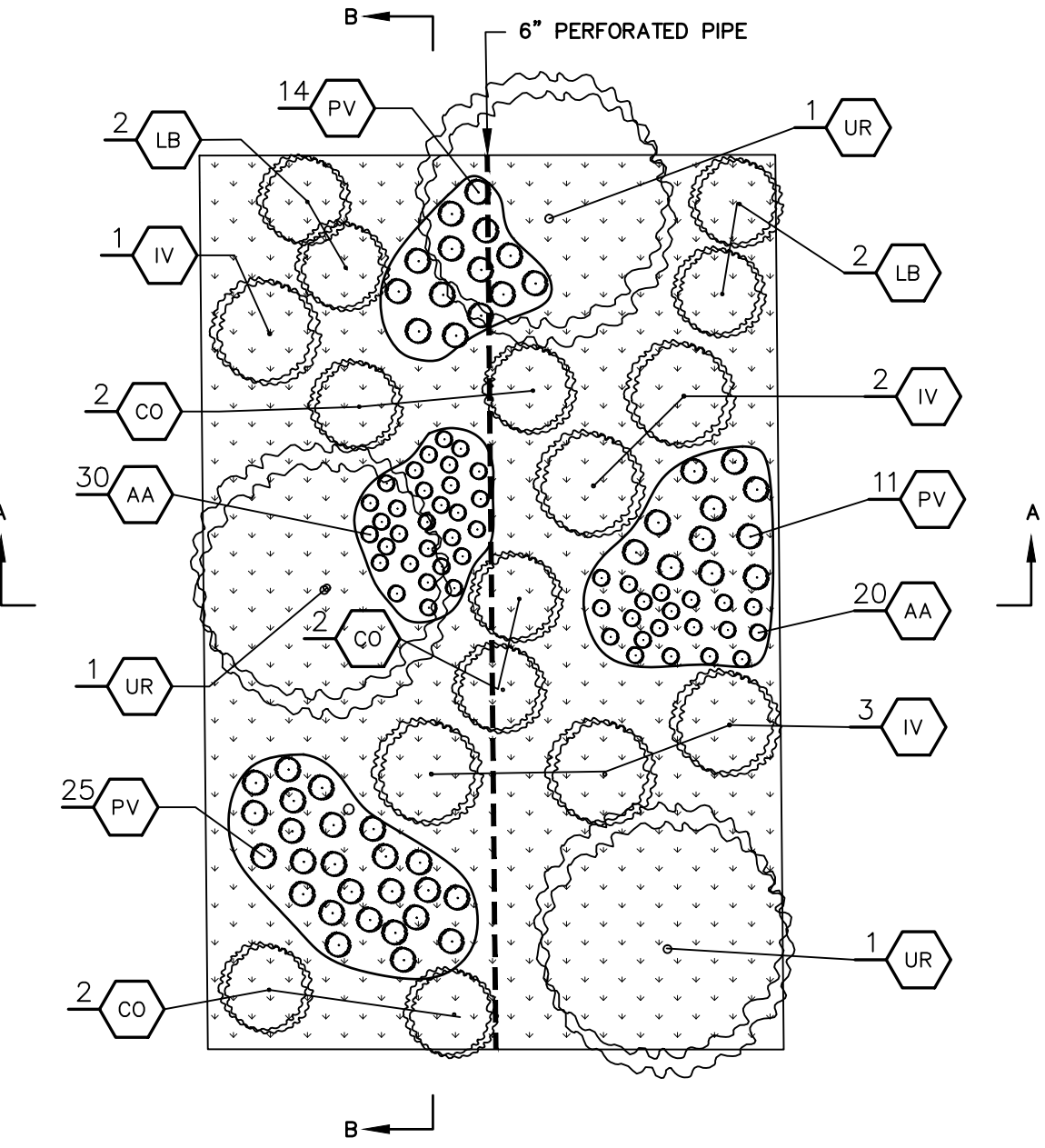


3
C-7.1
RIP RAP BIORETENTION SPILLWAY
SCALE: NTS



NOTES:

- ALL TREES SHALL BE CLEARED AND GRUBBED WITHIN 15 FEET OF THE TOE OF THE EMBANKMENT.
- AREAS COVERED BY THE BASIN WILL BE CLEARED OF ALL TREES, BRUSH, LOGS, FENCES, RUBBISH AND OTHER OBJECTIONABLE MATERIAL UNLESS OTHERWISE DESIGNATED ON THE PLANS. TREES, BRUSH, AND STUMPS SHALL BE CUT APPROXIMATELY LEVEL WITH THE GROUND SURFACE. A MINIMUM OF A 25-FOOT RADIUS AROUND THE OUTLET STRUCTURE SHALL BE CLEARED.
- ALL CLEARED AND GRUBBED MATERIAL SHALL BE DISPOSED OF OUTSIDE THE LIMITS OF THE EMBANKMENT AS DIRECTED BY THE OWNER OR OWNER'S REPRESENTATIVE. WHEN SPECIFIED, A SUFFICIENT QUANTITY OF TOPSOIL WILL BE STOCKPILED IN A SUITABLE LOCATION FOR USE ON THE EMBANKMENT AND OTHER DESIGNATED AREAS.
- FILL MATERIAL SHALL BE TAKEN FROM APPROVED DESIGNATED BORROW AREAS. IT SHALL BE FREE OF ROOTS, STUMPS, WOOD, RUBBISH, STONES GREATER THAN 6", FROZEN OR OTHER OBJECTIONABLE MATERIALS. FILL MATERIAL FOR THE CENTER OF THE EMBANKMENT SHALL CONFORM TO UNIFIED SOIL CLASSIFICATION GC, SC, CH, OR CL AND MUST HAVE AT LEAST 30% PASSING THE NO. 200 SIEVE.
- A 6-INCH LAYER OF TOPSOIL SHALL BE PLACED ON ALL DISTURBED AREAS OF THE MITIGATION BASIN AND EMBANKMENT. SEEDING, LIMING, FERTILIZING, MULCHING, ETC. SHALL BE IN ACCORDANCE WITH NRCS SOIL STANDARDS AND SPECIFICATIONS OR NEW YORK STATE STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL.
- AREAS ON WHICH FILL IS TO BE PLACED SHALL BE SCARIFIED PRIOR TO PLACEMENT OF FILL. FILL MATERIALS SHALL BE PLACED IN MAXIMUM 8" THICK (BEFORE COMPACTION) LAYERS WHICH ARE TO BE CONTINUOUS OVER THE ENTIRE LENGTH OF THE FILL. THE MOST PERMEABLE BORROW MATERIAL SHALL BE PLACED IN THE DOWNSTREAM PORTIONS OF THE EMBANKMENT.
- THE MOVEMENT OF THE HAULING AND SPREADING EQUIPMENT OVER THE FILL SHALL BE CONTROLLED SO THAT THE ENTIRE SURFACE OF EACH LIFT SHALL BE TRAVERSED BY NOT LESS THAN ONE TREAD TRACK OF HEAVY EQUIPMENT OR COMPACTION SHALL BE ACHIEVED BY A MINIMUM OF FOUR COMPLETE PASSES OF A SHEEPSFOOT, RUBBER TIERED, OR VIBRATORY ROLLER. THE MINIMUM REQUIRED DENSITY USING THE MODIFIED PROCTOR TEST METHOD SHALL BE AT LEAST 92% OF MAXIMUM DRY DENSITY WITH A MOISTURE CONTENT OF 2% OF THE OPTIMUM. A GEOTECHNICAL ENGINEER MUST BE PRESENT TO VERIFY COMPACTION. THIS INFORMATION NEEDS TO BE PROVIDED IN A REPORT TO THE DESIGN ENGINEER SO THAT AS-BUILT CERTIFICATION OF THE FACILITY CAN BE MADE.
- THE EMBANKMENT CORE SHALL BE PARALLEL TO THE CENTERLINE OF THE EMBANKMENT AS SHOWN ON THE PLANS. THE TOP WIDTH OF THE CORE SHALL BE A MINIMUM OF FOUR FEET. THE HEIGHT SHALL EXTEND TO THE 10-YEAR WATER ELEVATION. THE SIDE SLOPES SHALL BE 1 TO 1 OR FLATTER. THE CORE SHALL BE COMPACTED WITH CONSTRUCTION EQUIPMENT, ROLLERS, OR HAND TAMPERS TO ASSURE MAXIMUM DENSITY AND MINIMUM PERMEABILITY. IN ADDITION, THE CORE SHALL BE PLACED CONCURRENTLY WITH THE OUTER SHELL OF THE EMBANKMENT.
- BACKFILL ADJACENT TO PIPES OR STRUCTURES SHALL BE OF THE TYPE AND QUALITY CONFORMING TO THAT SPECIFIED FOR THE ADJOINING FILL. THE FILL SHALL BE PLACED IN HORIZONTAL LAYERS NOT TO EXCEED 4" IN THICKNESS AND COMPACTED BY HAND TAMPERS OR OTHER MANUALLY DIRECTED COMPACTION EQUIPMENT. THE MATERIAL NEED TO FILL COMPLETELY ALL SPACES UNDER AND ADJACENT TO THE PIPE. AT NO TIME DURING THE BACKFILLING OPERATION SHALL DRIVEN EQUIPMENT BE ALLOWED TO OPERATE CLOSER THAN FOUR FEET, MEASURED HORIZONTALLY, TO ANY PART OF A STRUCTURE. UNDER NO CIRCUMSTANCES SHALL EQUIPMENT BE DRIVEN OVER ANY PART OF A CONCRETE STRUCTURE OR PIPE, UNLESS THERE IS A COMPACTED FILL OF 24" OR GREATER OVER THE STRUCTURE OR PIPE.
- CORRUGATED HIGH DENSITY POLYETHYLENE (HDPE) PIPE, COUPLINGS, AND FITTINGS SHALL CONFORM TO THE FOLLOWING: 4" THROUGH 10" PIPE SHALL MEET THE REQUIREMENTS OF AASHTO M252 TYPE S, AND 12" THROUGH 24" PIPE SHALL MEET THE REQUIREMENTS OF AASHTO M284 TYPE S.
- JOINTS AND CONNECTIONS TO ANTI-SEEP COLLARS SHALL BE WATERTIGHT.
- THE PIPE SHALL BE FIRMLY AND UNIFORMLY BEDDED THROUGHOUT ITS ENTIRE LENGTH. WHERE ROCK OR SOFT, SPONGY, OR OTHER UNSTABLE SOIL IS ENCOUNTERED, ALL SUCH MATERIAL SHALL BE REMOVED AND REPLACED WITH SUITABLE EARTH COMPACTED TO PROVIDE ADEQUATE SUPPORT.
- PIPE BACKFILLING SHALL CONFORM TO STRUCTURE BACKFILLING REQUIREMENTS.
- IMPERVIOUS CORE TO CONSIST OF A CLAY SOIL WITH A PERMEABILITY LESS THAN 0.0001 MM/SEC. CORE MATERIAL TO BE PLACED IN 6" LIFTS AND COMPACTED TO 92% DENSITY.

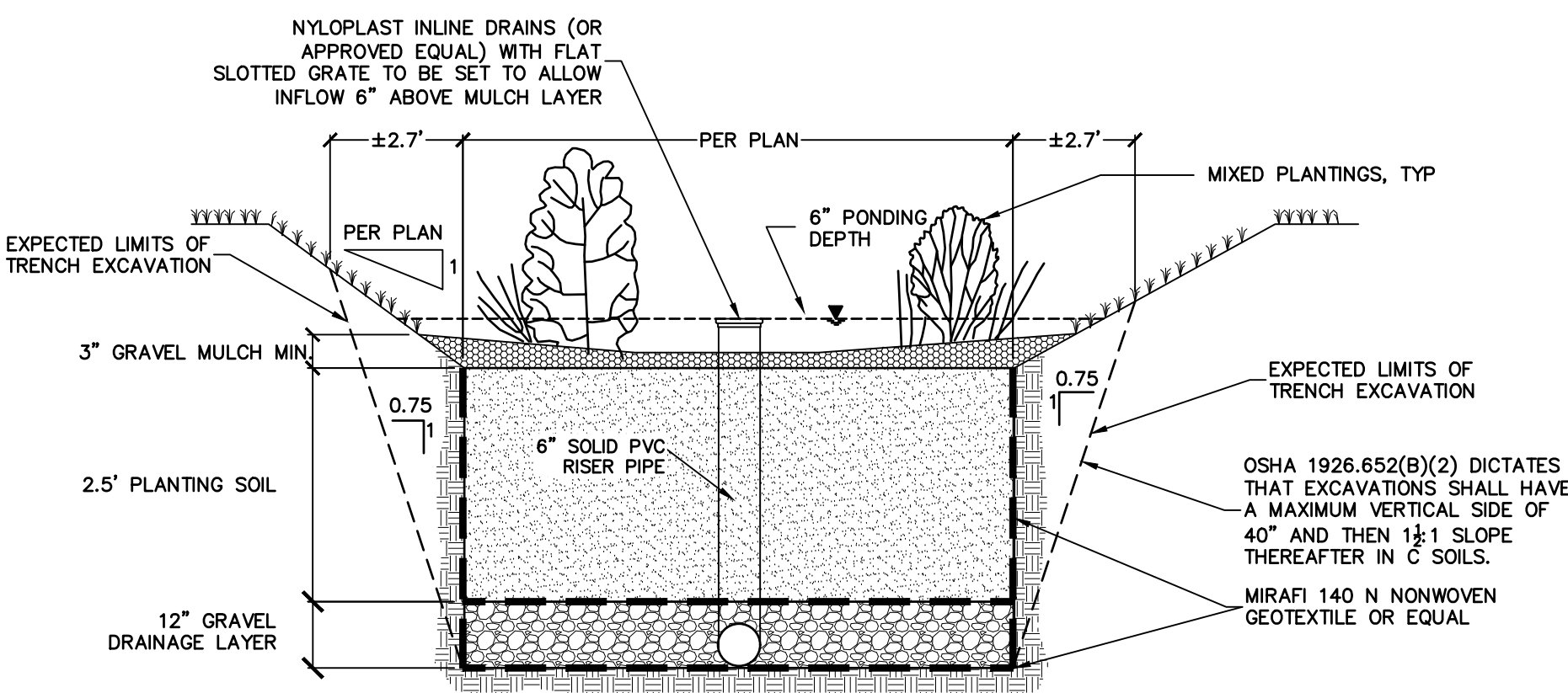


KEY	QUANTITY*	LATIN NAME	COMMON NAME	CALIPER	HEIGHT
TREES					
UR	16	ULMUS RUBRA	SLIPPERY ELM	6'-8'	B&B
SHRUBS					
LB	45	LINDERA BENZOIN	COMMON SPICE	18"-24"	B&B
IV	65	ILEX VERTICILLATA	WINTER BERRY	2'-3'	B&B
CO	65	CEPHALANTHUS OCCIDENTALIS	BUTTONBUSH	18"-24"	B&B
HERBACEOUS PLANTS					
PV	600	PANICUM VIRGATUM	SWITCH GRASS		
AA	600	AGROSTIS ALBA	REDTOP		

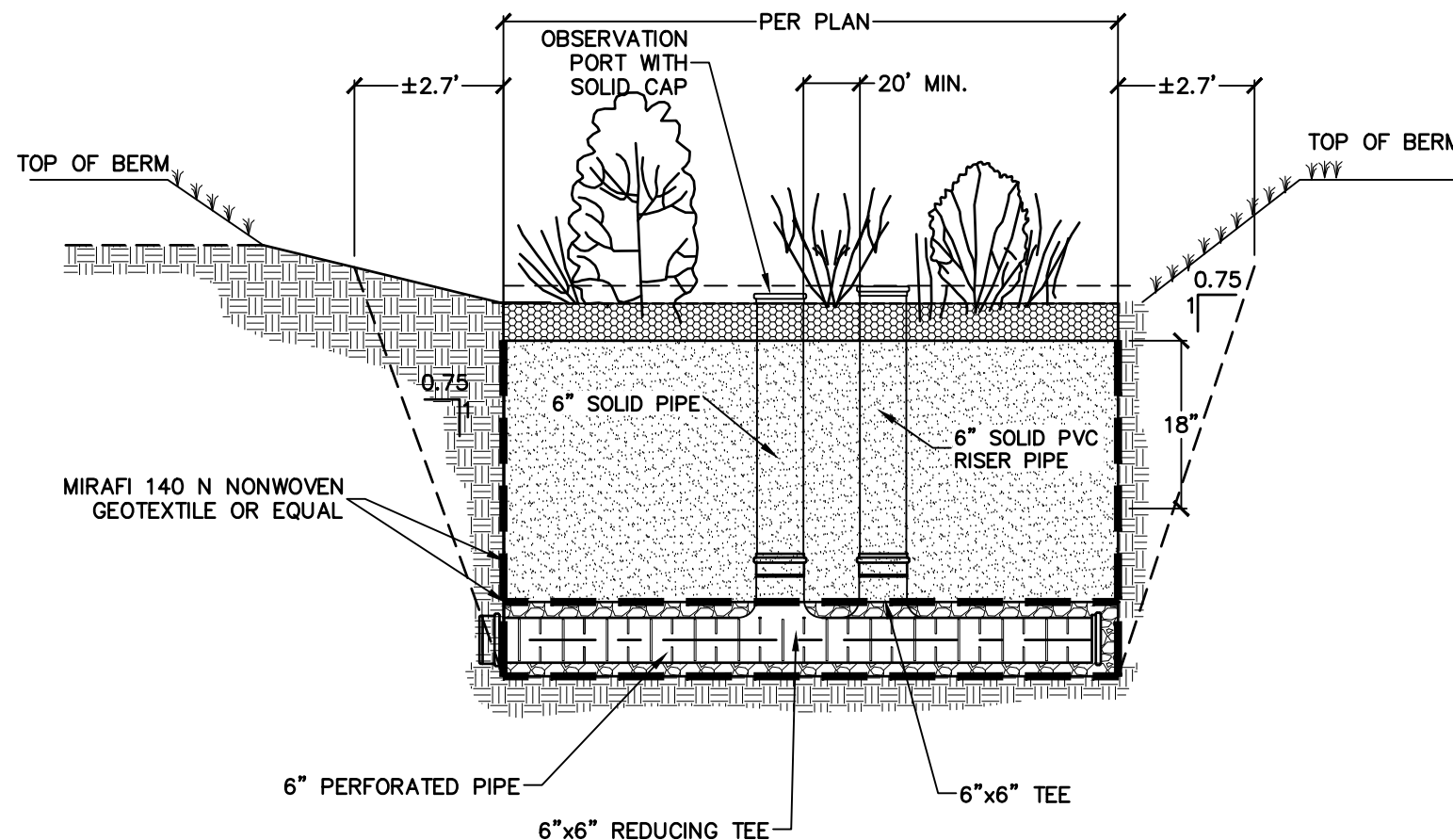
KEY	QUANTITY*	LATIN NAME	COMMON NAME	CALIPER	HEIGHT
TREES					
UR	8	ULMUS RUBRA	SLIPPERY ELM	6'-8'	B&B
SHRUBS					
LB	25	LINDERA BENZOIN	COMMON SPICE	18"-24"	B&B
IV	35	ILEX VERTICILLATA	WINTER BERRY	2'-3'	B&B
CO	30	CEPHALANTHUS OCCIDENTALIS	BUTTONBUSH	18"-24"	B&B
HERBACEOUS PLANTS					
PV	300	PANICUM VIRGATUM	SWITCH GRASS		
AA	300	AGROSTIS ALBA	REDTOP		

*PLANTING QUANTITIES SHOWN IN THE GRAPHIC ABOVE ARE FOR A TYPICAL 1,000 SF BIORETENTION AREA. SPECIFIC QUANTITIES FOR THE BIORETENTION AREA ARE PROVIDED IN THE CORRESPONDING LANDSCAPING TABLE.

4
C-7.1
BIORETENTION FILTER SPECIES
SCALE: NTS



PROFILE VIEW SECTION A-A



PROFILE VIEW SECTION B-B

6
C-7.1
BIORETENTION FILTER CROSS SECTIONS
SCALE: NTS

5
C-7.1
DETENTION BASIN BERM AND OUTLET STRUCTURE CROSS SECTION
SCALE: NTS

BIORETENTION NOTES:

- PLANTING SOIL MEDIA SHALL BE:
 - 85% TO 88% COARSE TO MEDIUM SAND
 - 12%-15% LEAF COMPOST OR TOPSOIL
- PEA GRAVEL MULCH CONFORMING TO ASTM D 448 No. 6.
- UNDERDRAIN GRAVEL TO BE AASHTO M-43 No. 67, 0.25" TO 0.75".
- GEOTEXTILE FILTER FABRIC (SEPARATION LAYER):
 - ASTM D-751 (PUNCTURE STRENGTH - 125 LB)
 - ASTM D-1117 (MULLEN BURST STRENGTH - 400 PSI)
 - ASTM D-1682 (TENSILE STRENGTH - 300 LB)
 - SIZE - 0.08" THICK; EQUIVALENT OPENING SIZE OF #80 SIEVE
- COMPACT WITH WATER-FILLED HAND ROLLER. COMPACTION TO BE FIRM BUT EASY (UTILIZE PENCIL TEST).
- ENGINEER TO TEST IN PLACE COMPACTION AND INFILTRATION OF PLANTING SOIL.
- ENGINEER TO PERFORM INSPECTION OF BIORETENTION PLANTING SOIL IMMEDIATELY FOLLOWING PLACEMENT AND PERFORM AN IN PLACE PERCOLATION TEST TO CONFIRM THAT THE IN PLACE MATERIAL PERCOLATES AT A RATE FASTER THAN 10 MIN/INCH.

PROJECT TITLE:
**BRANDYWINE ESTATES PHASE 2
HENNEBERRY ROAD**
TOWN OF MANLIUS
ONONDAGA COUNTY, NY

PREPARED FOR:
HARRINGTON HOMES
3848 HENNEBERRY ROAD
JAMESVILLE, NY 13078

SITE DETAILS

SHEET TITLE:

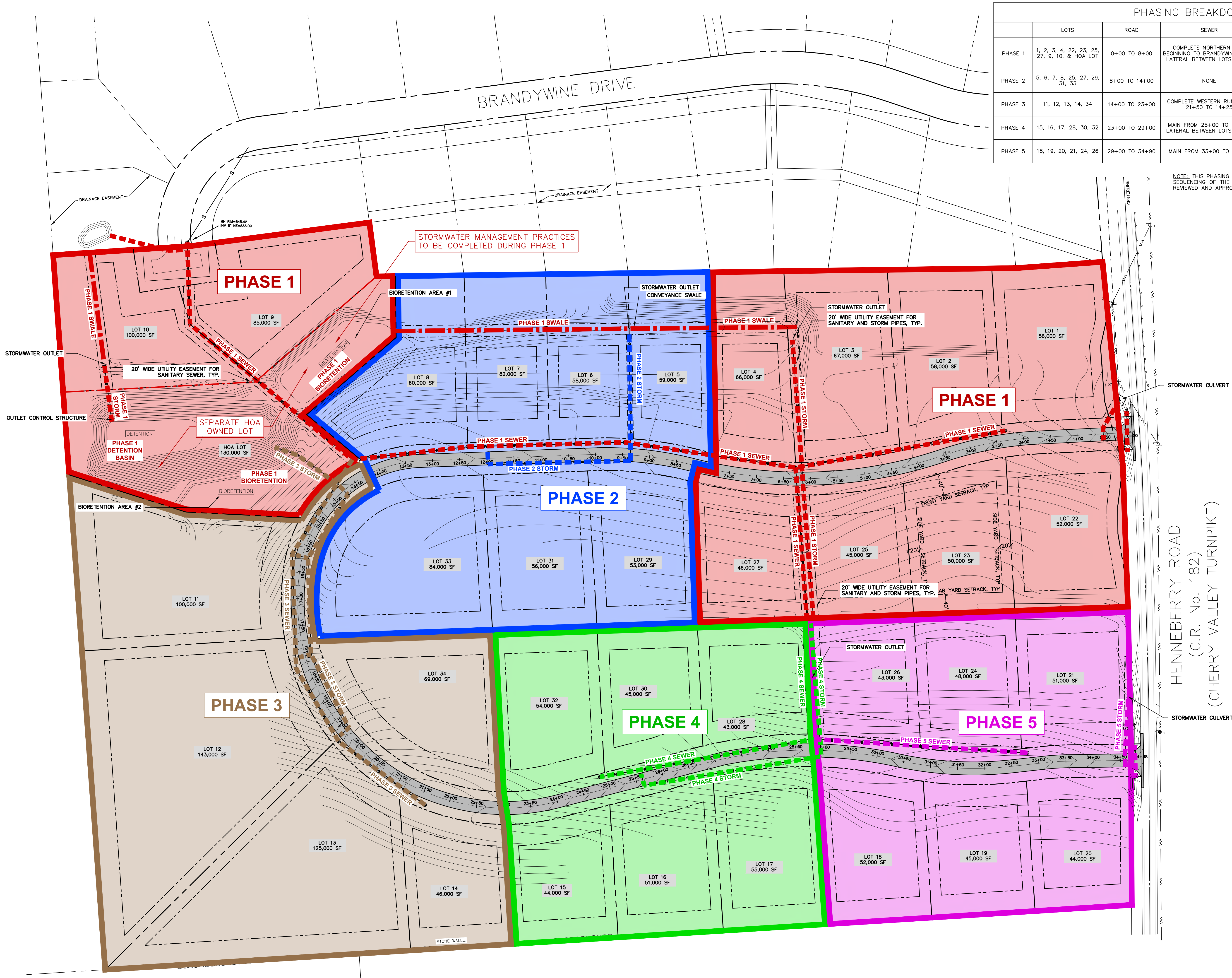
NO.	REVISIONS/ISSUE	DATE
4	REVISED AS PER TOWN ENGINEER'S COMMENTS	3/09/2022
3	REVISED AS PER TOWN ENGINEER'S COMMENTS	2/16/2022
2	GENERAL REVISIONS	02/09/2022
1	GENERAL REVISIONS	12/01/2021

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PRELIMINARY
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PROJECT NO.
20-1906
DATE
17 SEP 2020
SCALE
AS SHOWN

C-7.1



PHASING BREAKDOWN			
	LOTS	ROAD	SEWER
PHASE 1	1, 2, 3, 4, 22, 23, 25, 27, 9, 10, & HOA LOT	0+00 TO 8+00	COMPLETE NORTHERN RUN, BEGINNING TO BRANDYWINE DRIVE, LATERAL BETWEEN LOTS 25-27
PHASE 2	5, 6, 7, 8, 25, 27, 29, 31, 33	8+00 TO 14+00	NONE
PHASE 3	11, 12, 13, 14, 34	14+00 TO 23+00	COMPLETE WESTERN RUN FROM 21+50 TO 14+25
PHASE 4	15, 16, 17, 28, 30, 32	23+00 TO 29+00	MAIN FROM 25+00 TO 29+00, LATERAL BETWEEN LOTS 26-28
PHASE 5	18, 19, 20, 21, 24, 26	29+00 TO 34+90	MAIN FROM 33+00 TO 29+00
			STORMWATER
			ALL STORMWATER MANAGEMENT BASINS, NORTHERN DRIVEWAY CULVERTS, NORTHERN DRAINAGE SWALE, AND CONVEYANCE BETWEEN LOTS 3-4 AND 25-27.
			CONVEYANCE FROM 9+25 TO 12+00 AND BETWEEN LOTS 5-6
			COMPLETE WESTERN RUN FROM 19+75 TO MITIGATION BASINS
			CONVEYANCE FROM 25+50 TO 29+00 AND LATERAL BETWEEN LOTS 26-28
			SOUTHERN DRIVEWAY CULVERTS

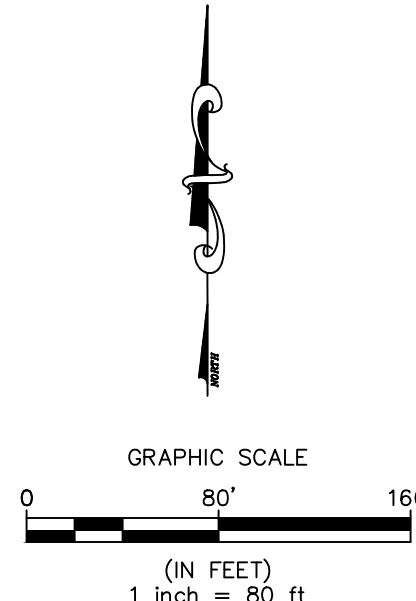
NOTE: THIS PHASING PLAN IS TO BE USED AS A GUIDE TO THE POTENTIAL SEQUENCING OF THE DEVELOPMENT. THE ENTIRE DEVELOPMENT HAS BEEN REVIEWED AND APPROVED BY THE TOWN OF MANLIUS.

PROJECT TITLE: **BRANDYWINE ESTATES PHASE 2**
HENNEBERRY ROAD
TOWN OF MANLIUS
ONONDAGA COUNTY, NY
PREPARED FOR: **HARRINGTON HOMES**
3848 HENNEBERRY ROAD
JAMESVILLE, NY 13078

PHASING PLAN
SHEET TITLE:

NO.	REVISION/ISSUE	DATE
4	REVISED AS PER PLANNING BOARD COMMENTS	3/09/2022
3	REVISED AS PER TOWN ENGINEER'S COMMENTS	2/16/2022
2	GENERAL REVISIONS	02/09/2022
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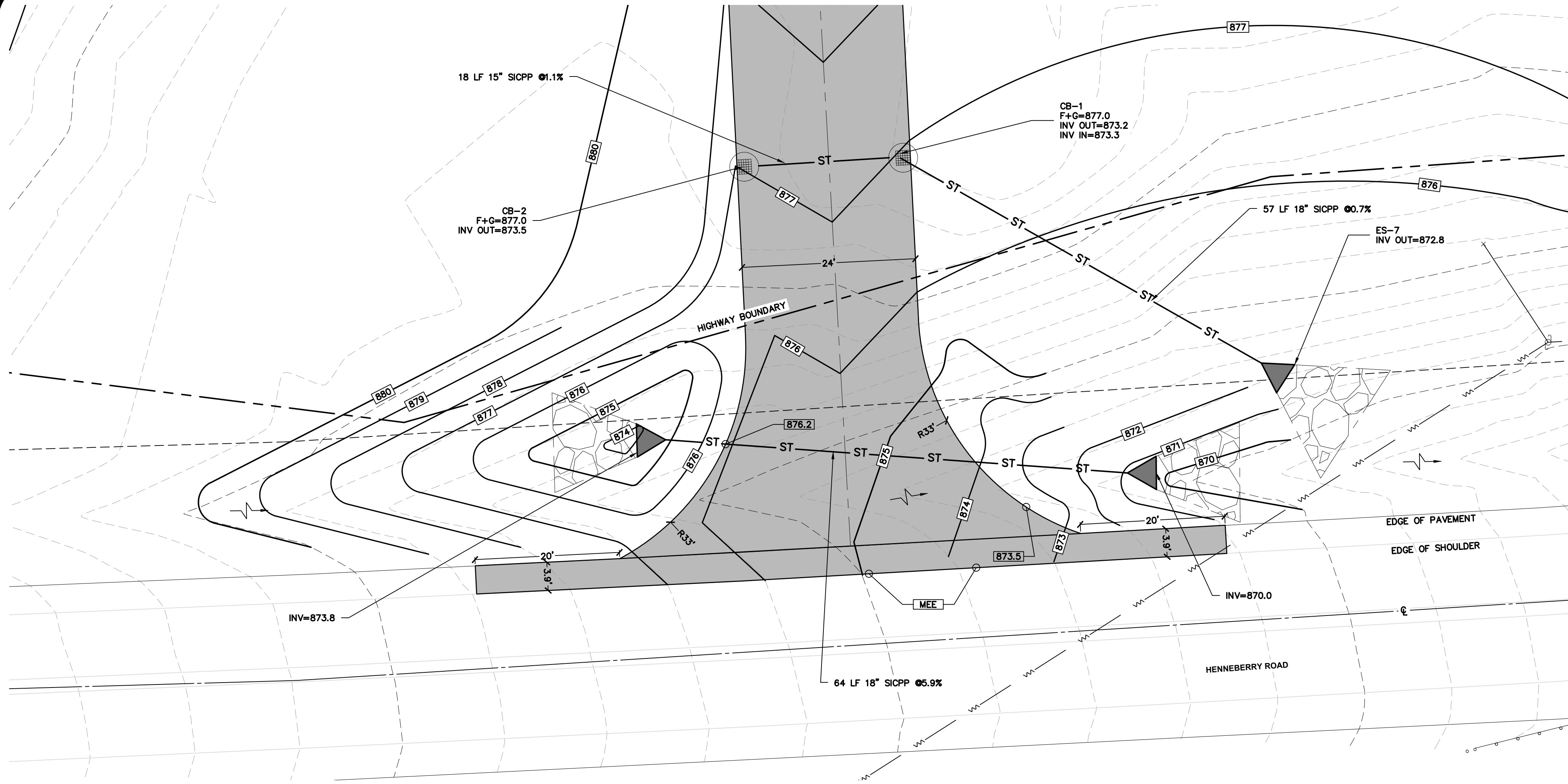
PREPARED BY: **NAPIERALA CONSULTING**
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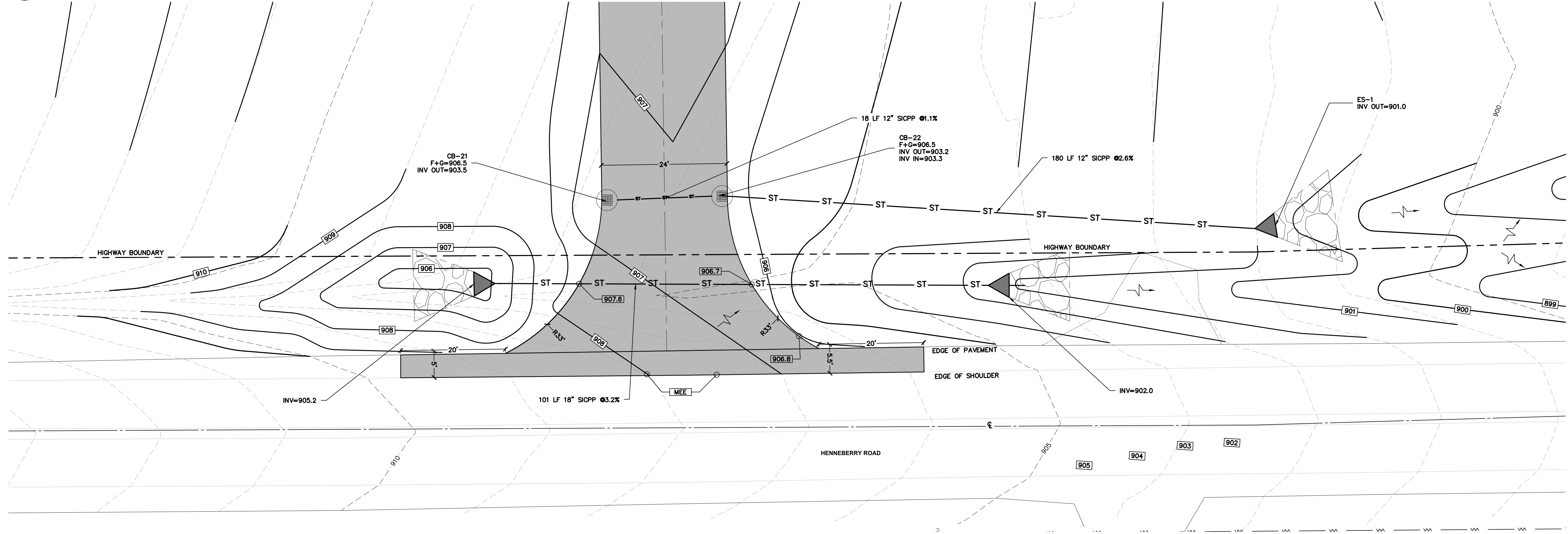
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PLAN SEAL BY: **NEA, L.L.C.**
NYS REGISTRATION # 00711

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PROJECT NO. **20-1906**
DATE **17 SEP 2020**
SCALE **1" = 80'**
C-8

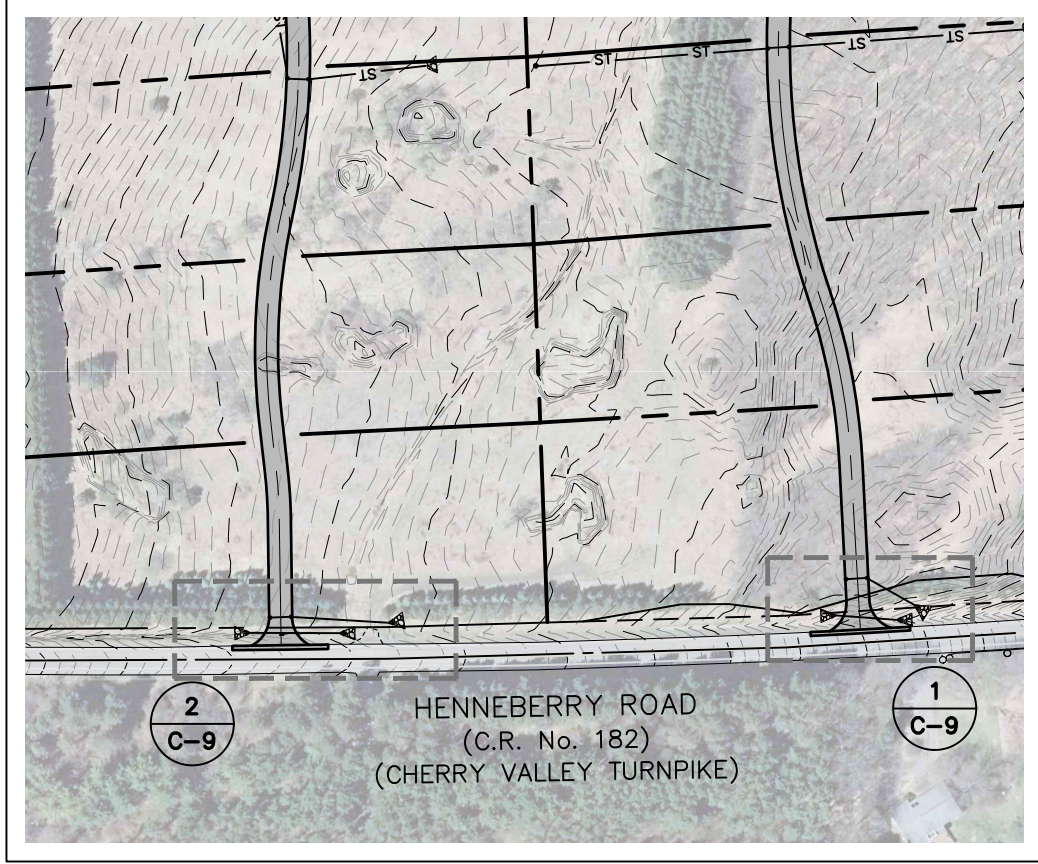


1 NORTHERN DRIVEWAY LAYOUT
C-9 SCALE: NTS



2 SOUTHERN DRIVEWAY LAYOUT
C-9 SCALE: NTS

KEY PLAN



COUNTY DOT - NORTHERN CULVERT SIZING
25-YEAR STORM= 6.36 IN/HR
DRAINAGE AREA= 2.88 AC
 $C = ((2.35)0.4 + (0.53)0.95) / 2.88$
 $C = 1.44 / 2.88 = 0.50$
RATIONAL EQUATION: $Q = CIA$
 $Q = 0.50 * 6.36 * 2.88 = 9.16$ CFS
18" SICPP @ 5.3% (FULL CAPACITY)= 27.64 CFS /

COUNTY DOT - SOUTHERN CULVERT SIZING
25-YEAR STORM= 6.36 IN/HR
DRAINAGE AREA= 3.48 AC
 $C = ((2.75)0.4 + (0.73)0.95) / 3.48$
 $C = 2.07 / 3.48 = 0.59$
RATIONAL EQUATION: $Q = CIA$
 $Q = 0.59 * 6.36 * 3.48 = 13.06$ CFS
18" SICPP @ 3.2% (FULL CAPACITY)= 20.35 CFS /

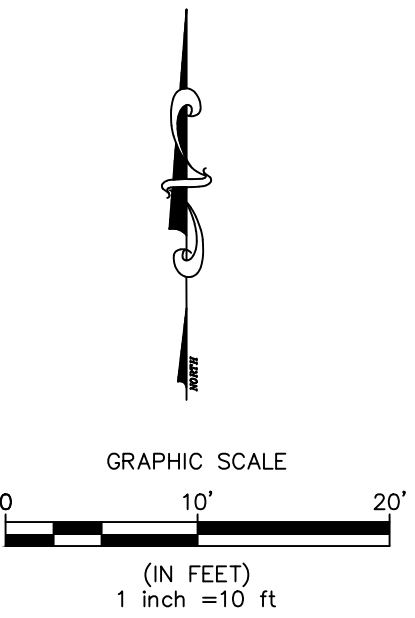
GRADING PLAN LEGEND

- 458- EXISTING CONTOUR GRADES
- 459- PROPOSED CONTOUR GRADES
- 459.8- PROPOSED FINISHED SPOT ELEVATION
- TC=459.8 BC=459.3- PROPOSED TOP OF CURB AND BOTTOM OF CURB ELEVATIONS
- MEE- MATCH/MEET EXISTING ELEVATION
- DRAINAGE DIRECTION
- FLARED METAL END SECTION WITH RIP RAP OUTLET PROTECTION

NOTE:
ANY PROPOSED STREET SIGNS, PAVEMENT MARKINGS, AND WARNING DEVICES WITHIN THE COUNTY ROW MUST BE DESIGNED IN ACCORDANCE WITH THE 2009 FHWA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), THE 2009 NEW YORK STATE SUPPLEMENT TO THE 2009 FHWA MUTCD, AND THE NYS 2008 STANDARD SPECIFICATIONS, INCLUDING ALL CURRENT ADDITIONS AND MODIFICATIONS.

STOPPING SIGHT DISTANCE MEASUREMENTS

NORTHERN DRIVEWAY: LOOKING NORTH: 1,175'
LOOKING SOUTH: 1,180'
SOUTHERN DRIVEWAY: LOOKING NORTH: 650'
LOOKING SOUTH: 725'



PRELIMINARY
NOT FOR CONSTRUCTION

PLAN SEAL BY:
NYS REGISTRATION #02711

PROJECT TITLE:
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HENNEBERRY ROAD**
TOWN OF MANLIUS
ONONDAGA COUNTY, NY
PREPARED FOR:
HARRINGTON HOMES
3848 HENNEBERRY ROAD
JAMESVILLE, NY 13078

DRIVEWAY GRADING PLAN

NO.	REVISION/ISSUE	DATE
1	REVISED AS PER TOWN ENGINEER'S COMMENTS	3/09/2022

PREPARED BY:
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PROJECT NO.
20-1906
DATE
22 FEB 2022
SCALE
1" = 10'

SHEET
C-9

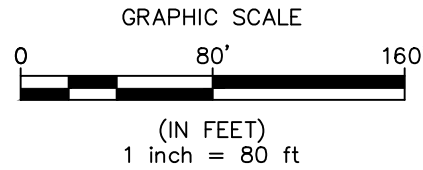
WORK ZONE TRAFFIC CONTROL LEGEND	
SYMBOL	DESCRIPTION
	CHANNELIZING DEVICE
	WORK SPACE
	SIGN, TEMPORARY
	DIRECTION OF TRAFFIC
	BARRICADE

SPEED LIMIT
55
POSTED SPEED LIMIT



NOTE:

ANY PROPOSED STREET SIGNS, PAVEMENT MARKINGS, AND WARNING DEVICES WITHIN THE COUNTY ROW MUST BE DESIGNED IN ACCORDANCE WITH THE 2009 FHWA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), THE 2009 NEW YORK STATE SUPPLEMENT TO THE 2009 FHWA MUTCD, AND THE NYS 2008 STANDARD SPECIFICATIONS, INCLUDING ALL CURRENT ADDITIONS AND MODIFICATIONS.



1 TRAFFIC CONTROL PLAN

REFERENCE: NYSDOT STANDARD SHEET 619-20

TCP-1 SCALE: 1"=80'

1. WORK ZONE TRAFFIC CONTROL REVISIONS

PROPOSED REVISIONS TO THE WORK ZONE TRAFFIC CONTROL (WZTC) PLAN SHALL BE SUBMITTED TO THE ENGINEER FOR THE REVIEW AND APPROVAL BY THE REGIONAL TRAFFIC ENGINEER PRIOR TO THE PLANNED IMPLEMENTATION OF SUCH REVISIONS. THE CONTRACTOR SHALL NOT IMPLEMENT THE PROPOSED REVISIONS WITHOUT APPROVAL FROM THE REGIONAL TRAFFIC ENGINEER.

2. TRAVEL LANE WIDTHS IN WORK ZONES

WHERE NOT SHOWN IN THE WZTC PLANS OR OTHERWISE AUTHORIZED BY NYS DOT (OR THE ENGINEER), TRAVEL LANE WIDTHS IN WORK ZONES SHALL BE A MINIMUM OF 11 FT ON FREEWAYS, RAMPS, EXPRESSWAYS AND MULTI-LANE* CONVENTIONAL ROADWAYS AND 10 FT ON ALL OTHER CONVENTIONAL ROADWAYS.
*(MULTI-LANE ROADWAYS ARE THOSE WITH TWO OR MORE THRU LANES IN ONE OR BOTH DIRECTIONS.)

3. DAILY LANE, RAMP AND SHOULDER CLOSURE RESTRICTIONS

WORK ZONES SHALL BE RESTRICTED TO ONE SIDE OF THE ROADWAY AT A TIME IN EACH DIRECTION ON DIVIDED ROADWAYS, UNLESS APPROVED BY THE ENGINEER.

THE CONTRACTOR SHALL SCHEDULE WORK SO THAT ALL TRAVEL LANES AND RAMPS IN EACH DIRECTION ARE OPEN WHEN THE CONTRACTOR'S OPERATIONS ARE CLOSED DOWN OR SUBSTANTIALLY CLOSED DOWN.

DAILY CLOSURES MAY OCCUR OFF OF LONG-TERM CLOSURES AND SHALL BE SUBJECT TO DAILY CLOSURE RESTRICTIONS.

WORK ZONES SHALL BE RESTRICTED TO ONE SIDE OF THE ROADWAY AT A TIME ON UNDIVIDED HIGHWAYS.

DESIGNER NOTE: FOR CONVENTIONAL ROADWAYS, TRAFFIC VOLUMES SHOULD BE CHECKED TO SEE IF AM AND PM LANE CLOSURE RESTRICTIONS ARE NECESSARY.

4. FLAGGING OPERATIONS

WHEN A PEDESTRIAN APPROACHES A FLAGGER STATION, THE FLAGGER SHALL STOP TRAFFIC AND DIRECT THE PEDESTRIAN TO A SAFE ROUTE THROUGH THE WORK AREA. FLAGGERS SHALL COORDINATE THE FLAGGING OF THE WORK ZONE TO ENSURE PEDESTRIANS CAN SAFELY PROCEED THROUGH THE AREA. IF THERE IS MORE THAN THE OCCASIONAL PEDESTRIAN WITHIN THE PROJECT LIMITS, REFER TO THE SITE SPECIFIC PEDESTRIAN WZTC PLAN.

5. HOLIDAY CLOSURE RESTRICTIONS

DAILY LANE, RAMP AND SHOULDER CLOSURES SHALL NOT BE PERMITTED ON DATES LISTED BELOW DURING THE FOLLOWING HOLIDAY PERIODS:

2022

THURSDAY, DECEMBER 30, 2021 THRU SUNDAY, JANUARY 3, 2022 - (NEW YEAR'S HOLIDAY)

FRIDAY, MAY 27, 2022 THRU TUESDAY, MAY 31, 2022 - (MEMORIAL DAY HOLIDAY)

FRIDAY, JULY 1, 2022 THRU TUESDAY, JULY 5, 2022 - (JULY 4TH HOLIDAY)

FRIDAY, SEPTEMBER 2, 2022 THRU TUESDAY, SEPTEMBER 6, 2022 - (LABOR DAY HOLIDAY)

WEDNESDAY, NOVEMBER 23, 2022 THRU SUNDAY, NOVEMBER 28, 2022 - (THANKSGIVING HOLIDAY)

FRIDAY, DECEMBER 23, 2022 THRU MONDAY, DECEMBER 26, 2022 - (CHRISTMAS HOLIDAY)

FRIDAY, DECEMBER 30, 2022 THRU MONDAY, JANUARY 2, 2023 - (NEW YEAR'S HOLIDAY)

6. CHANNELIZING DEVICES

ALL CHANNELIZING DEVICES SHALL BE PLACED SO AS TO PROVIDE A 2 FOOT LATERAL CLEARANCE TO THE TRAVELED WAY UNLESS OTHERWISE SHOWN ON THE PLANS. WHERE POSSIBLE A LATERAL BUFFER SPACE OF 2 FOOT MINIMUM SHALL BE PROVIDED BETWEEN THE WORK SPACE AND THE CHANNELIZING DEVICES.

CHANNELIZING DEVICE SPACING (CENTER TO CENTER) SHALL BE 20' MAXIMUM FOR POSTED SPEED LIMITS 35 MPH OR LESS.

STANDARD CONES AND TUBULAR MARKERS SHALL NOT BE USED FOR CHANNELIZATION AND DELINEATION DURING THE HOURS OF DARKNESS, WHICH IS DEFINED AS THE PERIOD BETWEEN SUNSET AND SUNRISE.

7. SIGNS

ALL CONSTRUCTION SIGNS SHALL BE MOUNTED AT A HEIGHT OF 7 FEET ABOVE THE EDGE OF TRAVEL LANE.

SIGNS SHALL NOT ENCROACH MORE THAN 4" INTO SHOULDERS USED BY PEDESTRIANS OR BICYCLES.

WHERE SHOULDER WIDTHS ARE LIMITED AND SIGNS CANNOT BE ERECTED BEYOND THE SHOULDER, CONSTRUCTION SIGNS MAY NEED TO BE MOUNTED ON CONCRETE MEDIAN BARRIERS, BRIDGE PARAPETS, ETC. PRIOR TO ERECTING THOSE SIGNS THE CONTRACTOR SHALL PROVIDE MOUNTING DETAILS TO THE ENGINEER FOR APPROVAL SEVEN (7) DAYS PRIOR TO ERECTING THE CONSTRUCTION SIGNS.

NOTES:

- WHEN THE MINIMUM LANE WIDTH OF 10' CANNOT BE MAINTAINED DUE TO A SHOULDER CLOSURE, USE THE DETAIL FOR SHORT OR INTERMEDIATE TERM STATIONARY FLAGGING OPERATION FROM NYSDOT STANDARD SHEETS.
- NO WORK ACTIVITY OR STORAGE EQUIPMENT, VEHICLES, OR MATERIAL SHOULD OCCUR WITHIN A BUFFER SPACE.
- WHEN THE DISTANCE BETWEEN THE ADVANCE WARNING SIGNS AND WORK IS 2 MILES TO 5 MILES, A SUPPLEMENTAL DISTANCE PLAQUE (W7-3a) SHOULD BE USED WITH THE SHOULDER WORK SIGN (W21-5).
- THE ROAD WORK NEXT XX MILES SIGN (G20-1) MAY BE USED INSTEAD OF THE ROAD WORK AHEAD SIGN (W20-1) IF WORK LOCATIONS OCCUR OVER A DISTANCE OF MORE THAN 2 MILES.
- FOR BARRIER VEHICLE USE REQUIREMENTS SEE TABLES NY1A AND NY2-A ON THE STANDARD SHEET TITLED "WORK ZONE TRAFFIC CONTROL LEGENDS AND NOTES".
- IN THOSE SITUATIONS WHERE MULTIPLE WORK LOCATIONS EXIST WITHIN A LIMITED DISTANCE MAKE IT PRACTICAL TO PLACE STATIONARY SIGNS, THE DISTANCE BETWEEN THE ADVANCED WARNING SIGN AND WORK SHALL NOT EXCEED 5 MILES.
- CHANNELIZING DEVICE SPACING (CENTER TO CENTER) SHALL NOT EXCEED 40' IN THE ACTIVITY WORK SPACE.
- TRAVERSE DEVICES SHALL BE REQUIRED (AS PER 619 STANDARD SPECIFICATIONS) WHEN A PAVED SHOULDER HAVING A WIDTH OF 8' OR GREATER IS CLOSED FOR A DISTANCE GREATER THAN 1500'.

STANDARD GENERAL PLAN NOTES:

- ROAD TO BE KEPT CLEAN OF MUD AND DEBRIS AT ALL TIMES.
- ROADSIDE DRAINAGE TO BE MAINTAINED AT ALL TIMES.
- MATERIALS, EQUIPMENT AND VEHICLES ARE NOT TO BE STORED OR PARKED WITHIN THE NEW YORK STATE RIGHT-OF-WAY.
- WORK ZONE TRAFFIC CONTROL SHALL COMPLY WITH THE 2009 EDITION OF THE NATIONAL MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS AND THE NEW YORK STATE SUPPLEMENT.
- NOTIFY ONONDAGA COUNTY DOT RESIDENT ENGINEER THREE (3) WORKING DAYS PRIOR TO WORKING IN THE STATE RIGHT OF WAY.
- NOTIFY DIG SAFELY NEW YORK THREE (3) WORKING DAYS PRIOR TO DIGGING, DRILLING OR BLASTING AT 1-800-962-7962 FOR A UTILITY STAKE OUT.
- QUALITY CONTROL OF ASPHALT CONCRETE SHALL MEET THE REQUIREMENTS OF SECTION 402 OF THE STANDARD SPECIFICATIONS. ASPHALT COURSE DEPTHS SHOWN ON THE PLANS ARE COMPACTED DEPTHS.
- OPEN CUTTING OF THE ROADWAY SHALL NOT BE ALLOWED UNLESS PERMISSION IS GRANTED IN WRITING BY THE TRAFFIC ENGINEER.

PROJECT TITLE:
**BRANDYWINE ESTATES PHASE 2
HENNEBERRY ROAD**
TOWN OF MANLIUS
ONONDAGA COUNTY, NY

PREPARED FOR:
HARRINGTON HOMES

3848 HENNEBERRY ROAD
JAMESVILLE, NY 13078

**WORK ZONE
TRAFFIC CONTROL PLAN**

SHEET TITLE:

NO.	REVISION/ISSUE	DATE
1	REVISED AS PER TOWN ENGINEER'S COMMENTS	3/09/2022

PREPARED BY:
NAPIERALA CONSULTING
PROFESSIONAL ENGINEER, P.E.
SITE • DESIGN • ENGINEERING
110 FAYETTE STREET
MANLIUS, NEW YORK 13104
email: MNAP@NAPCON.COM
PH: (315) 682-5560 FAX: (315) 682-5544

SARS ID # 20210016

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NOT FOR CONSTRUCTION

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OR MECHANICAL, INCLUDING PHOTOCOPYING,
RECORDING, OR BY ANY INFORMATION
SYSTEM, WITHOUT PERMISSION IN
WRITING FROM THE AUTHOR OR
PUBLISHER.

PROJECT NO.
20-1906

DATE
22 FEB 2022

SCALE
1" = 80'

SHEET

TCP-1

STORMWATER POLLUTION PREVENTION PLAN

For the:

**Proposed Brandywine Estates – Phase 2
Henneberry Road
Town of Manlius**

Prepared for:



Your Builder for Life

**Harrington Homes, Inc
3848 Henneberry Road
Jamesville, NY 13078**

Prepared by:



110 FAYETTE STREET
MANLIUS, NEW YORK 13104

Telephone: (315) 682-5580

Fax: (315) 682-5544

Project No. 20-1906

Revised February 2022



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EXECUTIVE SUMMARY

A. Purpose

The following Stormwater Pollution Prevention Plan (SWPPP) has been developed to control stormwater runoff and pollutants from a site during and after construction activities. The objective of this SWPPP is to comply with the NYSDEC SPDES Stormwater Permit from Construction Activities by planning and implementing standard design practices.

B. Project Description

The ±54 acre property is located on the west side of Henneberry Road in the Town of Manlius, Onondaga County, NY. This project consists of the subdivision and development of 34 single family homes. The development will also include necessary amenities such as public street(s), public/private utility extensions/connections, and applicable stormwater management facilities.

C. Stormwater Practices

Stormwater practices are categorized as either temporary construction measures or permanent operation measures. The temporary measures that will be used on this site for erosion and sediment control include (but are not limited to): stabilized construction entrance, silt fencing, and temporary sediment basins. The permanent stormwater practices to be installed are a series of two bioretention areas, and an above ground grass-line detention basin which will provide water quality, runoff reduction, and storage for quantity control. All practices, both the temporary construction measures and the permanent operation measures, have been designed in accordance with the established standards.

D. Water Quality Treatment

The water quality volume treatment characteristics are summarized below. The entire water quality descriptions and calculations are further detailed in Section III.E and F.

Water Quality Volume	
Required WQv (ac-ft)	Total Provided WQv (ac-ft)
0.498	0.498

E. Runoff Reduction Volume (RRv)

The NYSDEC regulation requires all construction projects that disturb greater than one acre of land to provide runoff reduction through the implementation of green infrastructure practices. Runoff reduction volume for this project is achieved using bioretention areas. This volume is summarized below and further detailed in Section III.D, E, and F.

Runoff Reduction Volume	
Required RRv (ac-ft)	Total Provided RRv (ac-ft)
0.060	0.199



F. Stormwater Quantity

The impacts to stormwater runoff quantity (i.e. peak flows) will be mitigated in the aboveground grass-lined detention basins throughout the site. The detention basins will be constructed with sufficient volume to store additional runoff from the site and discharge it in a controlled manner. The chart below summarizes the stormwater discharges from the site and is further detailed in Section III.G and H.

	Existing Peak Runoff Rate (cfs)			Proposed Peak Runoff Rate (cfs)		
Point of Study	Pt. 1B	Pt. 2	Pt. 3	Pt. 1B	Pt. 2	Pt. 3
10-Year Storm	67.61	7.68	9.35	32.92	2.07	9.31
100-Year Storm	165.93	18.46	22.06	80.24	4.70	21.06



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Section I. SCOPE

A. PURPOSE

Napierala Consulting, Professional Engineer, P.C., has prepared this Stormwater Pollution Prevention Plan (SWPPP) in compliance with the New York State Department of Environmental Conservation (NYSDEC) State Pollutant Discharge Elimination System (SPDES) Construction General Permit governing stormwater discharges during construction. The contractor's participation and adherence to this plan is mandatory. Non-compliance with the plan is subject to various remedies including, without limitation, monetary set-offs, withholding payments, reimbursement for costs, expenses (including reasonable attorney's fees), fines and civil penalties incurred and/or liquidated damages. This section provides a descriptive explanation of the Stormwater Pollution Prevention Plan and required contractor participation.

B. SPDES GENERAL PERMIT GP-0-20-001

Regulations enacted by the New York State Department of Environmental Conservation require permitting for the discharge of stormwater from construction activities on sites where an area of one acre or more of soil disturbance is proposed. To comply with these regulations, the developer of the site must request coverage under the NYSDEC SPDES General Permit for Stormwater Discharges from Construction Activity (GP-0-20-001). In order to obtain coverage under the General Permit a Stormwater Pollution Prevention Plan (SWPPP) for the site must be prepared following the requirements of the New York State Stormwater Management Design Manual and the New York State Standards and Specifications for Erosion and Sediment Control.

The NOI, the SWPPP, and any amendments to the SWPPP, as well as any reports required by the SPDES General Permit for Stormwater Discharges from Construction Activity, must also be submitted concurrently to the local governing body and any other authorized agency having jurisdiction or regulatory control over the construction project.

C. RESPONSIBILITIES OF THE OWNER

The owner/operator shall identify the contractor(s) and subcontractor(s) that will be responsible for installing, constructing, repairing, replacing, inspecting and maintaining the erosion and sediment control practices included in the SWPPP. The owner/operator shall identify the contractor(s) and subcontractor(s) that will be responsible for constructing the post-construction stormwater management practices included in the SWPPP. The owner/operator shall have each of the contractors and subcontractors identify at least one person from their company that will be responsible for implementation of the SWPPP. The owner/operator shall ensure that at least one trained contractor is on site on a daily basis when soil disturbance activities are being performed. The owner/operator shall have a qualified inspector conduct site inspections.

D. RESPONSIBILITIES OF THE CONTRACTOR

The contractor shall manage the discharge of stormwater from the site in accordance with the NYSDEC SPDES General Permit for Stormwater Discharges from Construction Activity. The owner shall be responsible for conducting the stormwater management practices in accordance with the permit. The contractor shall be responsible for providing qualified inspectors to conduct the inspections required by the SWPPP. The contractor shall be responsible for any enforcement action taken or imposed by federal, state, or local agencies, including the cost of fines, construction delays, and remedial actions resulting from the contractor's failure to comply with the permit provisions. It shall be the responsibility of the contractor to make any changes to the SWPPP necessary when the contractor or any of his subcontractors elects to use borrow or fill or material storage sites, either contiguous to or remote from the construction



site, when such sites are used solely for this construction site. Such sites are considered to be part of the construction site covered by the permit and this SWPPP. Off-site borrow, fill, or material storage sites which are used for multiple construction projects are not subject to this requirement, unless specifically required by state or local jurisdictional entity regulations. The contractor should consider this requirement in negotiating with earthwork subcontractors, since the choice of an off-site borrow, fill, or material storage site may impact their duty to implement, make changes to, and perform inspections required by the SWPPP for the site.

The SWPPP shall provide forms for both the general contractor and subcontractor(s) identifying the company name, business address and telephone number along with the responsible person for the contractor and all subcontractors' who will implement the measures identified in the SWPPP. **The general contractor shall sign the "General Contractor's Certification" and all subcontractors shall sign the "Subcontractor's Certification",** verifying they have been instructed on how to comply with and fully understand the requirements of the NYSDEC and SWPPP. **This certification must be signed, by a fully qualified individual on behalf of each entity, prior to the beginning of any construction activities and shall be filed in the projects SWPPP.**

The SWPPP is meant to be a working document that shall be maintained at the site of the construction activities at all times throughout the project, shall be readily available upon request by the operator's personnel or NYSDEC or any other agency with regulatory authority over storm water issues, and shall be kept on-site until the site complies with the Final Stabilization section of this document. **A sign or other notice must be posted near the main entrance of the construction site which contains a completed NOI, the location of the SWPPP and the name and phone number of a contact person responsible for scheduling SWPPP viewing times, and any other state specific requirements.**

E. NOTICE OF INTENT

The operator has petitioned the NYSDEC for the stormwater discharges during construction at this site to be covered by the NYSDEC SPDES General Permit for Stormwater Discharges from Construction Activity. A **Notice of Intent (NOI)** to be covered under this permit has been filed by the operator. The signatory on the NOI must sign all documents (i.e., inspection reports) associated with the SWPPP. If the signatory chooses not to sign all documents, he/she must designate a duly authorized representative to sign all relevant documents. This designation must be made in writing and be included in the SWPPP. The duly authorized representative may be either a named individual or any individual occupying a named position. Additionally, the written designation must be submitted to the NYSDEC.

F. STORMWATER INSPECTIONS

1. Inspection Procedures

Inspections of the erosion control practices are required every seven days by a qualified professional. All inspections will continue until the site complies with the final stabilization section of this document. **Weekly Inspections must be conducted by a "Qualified Professional". "Qualified Professional" means a person knowledgeable in the principles and practice of erosion and sediment controls, such as a licensed Professional Engineer (PE), Certified Professional in Erosion and Sediment Control (CPESC), or soil scientist.** Each inspection must be followed up by a report documenting the inspector's findings and request the required maintenance and/or repair for the erosion and sedimentation control measures. It is imperative that the contractor documents the inspection and maintenance of all erosion and sedimentation control measures as soon as possible after the inspection and/or maintenance have been completed. These records are used to prove that the required inspection and maintenance were performed. The records shall be placed in the SWPPP. In addition to inspection and maintenance reports, records should be kept of the construction activities that occur on the site. The operator shall post at the site, in a publicly-accessible location, a summary of the site inspection activities on a monthly basis.

2. Record Keeping

The operator shall also prepare a written summary of its status with respect to compliance with this



general permit at a minimum frequency of every three months during which coverage under the NYSDEC SPDES General Permit for Stormwater Discharges from Construction Activity exists. The summary should address the status of achieving each component of the SWPPP. The reports shall be signed by the signatory of the NOI or a duly-authorized person and be retained at the construction site.

The contractor shall retain copies of the SWPPP, all reports and data for a minimum of five (5) years after the project. The following list identifies the required inspection and maintenance documentation that must be maintained by the contractor under this SWPPP.

- Inspection Report
- Stabilization Schedule
- Implementation Schedule
- Status Report

G. SWPPP MODIFICATIONS

The inspection report should also identify if any revisions to the SWPPP are warranted due to unexpected conditions. The SWPPP is meant to be a dynamic working guide that is to be kept current and amended whenever:

- The NYSDEC provides notification that the SWPPP does not comply with the minimum permit requirements.
- The design, construction, operation, or maintenance of the site changes in a way which significantly affects the potential for the discharge of pollutants or when the plan proves to be ineffective in eliminating or significantly minimizing pollutant discharges
- Within seven (7) calendar days of knowledge of a reportable release.

Any such changes to the SWPPP must be made in writing within seven (7) days of the date such modification or amendment is made. The contractor's failure to monitor or report deficiencies to the operator will result in the contractor being liable for fines and construction delays resulting from any federal, state, or local agency enforcement action.

H. FINAL STABILIZATION AND TERMINATION OF PERMIT COVERAGE

A site can be considered stabilized when all soil disturbing activities have been completed and a uniform perennial vegetative cover with a density of 80% over the unpaved areas and areas not covered by permanent structures has been established or equivalent permanent stabilization measures have been established and the facility no longer discharges stormwater associated with construction activities, and a **Notice of Termination** (NOT) form has been filed by the operator(s) with the NYSDEC. Prior to filing of the Notice of Termination, the operator shall have the qualified professional perform a final site inspection. The qualified professional shall certify that the site has undergone final stabilization using either vegetative or structural stabilization methods and that all temporary erosion and sediment controls (such as silt fence) not needed for long-term erosion control have been removed. The filing of the NOT terminates coverage under the General Permit and terminates the contractor's responsibility to implement the SWPPP, but the requirements of the SWPPP, including periodic inspections, must be continued until the NOT is filed. Upon achieving this milestone, the contractor shall also submit "Final Stabilization Certification/Termination Checklist". Final payment and/or the release of any retainer will be withheld until all provisions of the SWPPP have been submitted, completed and accepted by the operator.



Section II. SITE DESCRIPTION

A. PROJECT NAME AND LOCATION

Harrington Homes, Inc
Brandywine Estates, Phase 2
Henneberry Road
Town of Manlius
Onondaga County, New York

UTM Coordinates from NYSDEC Interactive Map: E: 417962; N: 4759972
NYSDEC Region 7

The ±54 acre property is located on the west side of Henneberry Road in the Town of Manlius, Onondaga County, NY. Figure 1 shows the project location on a street map and Figure 2 shows an aerial image of the proposed site in its existing condition.

B. OWNER/OPERATOR NAME AND ADDRESS

Harrington Homes, Inc
3848 Henneberry Road
Jamesville, NY 10378

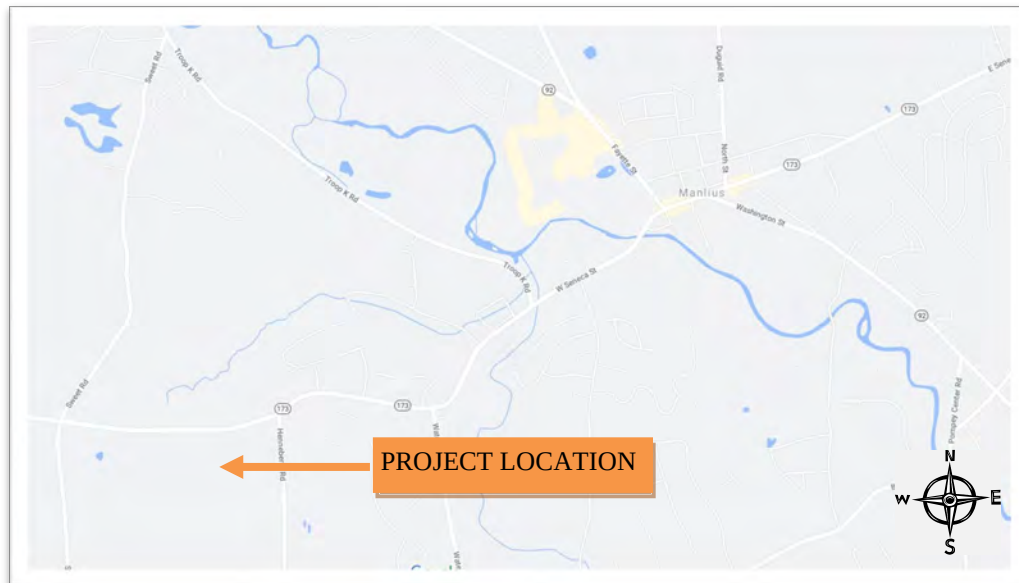


Figure 1: Site Location Map

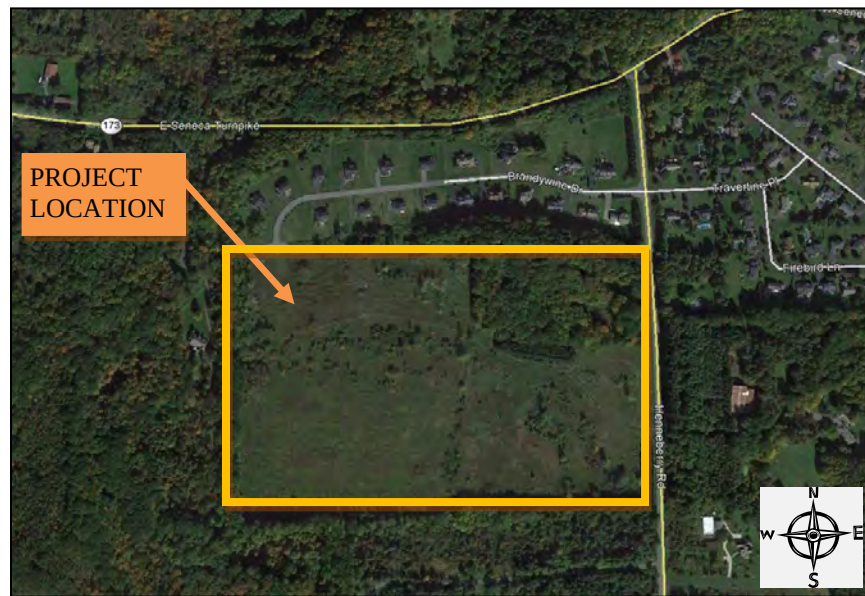


Figure 2: Proposed Site Aerial Image - Google Earth

C. PROJECT DESCRIPTION

The ±54 acre property is located on the west side of Henneberry Road in the Town of Manlius, Onondaga County, NY. This project consists of the subdivision and development of 34 single family homes. The development will also include necessary amenities such as public street(s), public/private utility extensions/connections, and applicable stormwater management facilities.

D. RECEIVING WATERS

Runoff from the site generally flows to the north toward Limestone Creek. This site is within a regulated MS4 (municipal separate storm sewer system). Figure 3 shows the project site location in relation to certain environmental boundaries using the NYSDEC Environmental Resource Mapper. The NYSDEC Environmental Resource Mapper shows that no regulated wetlands are within the vicinity of the project.

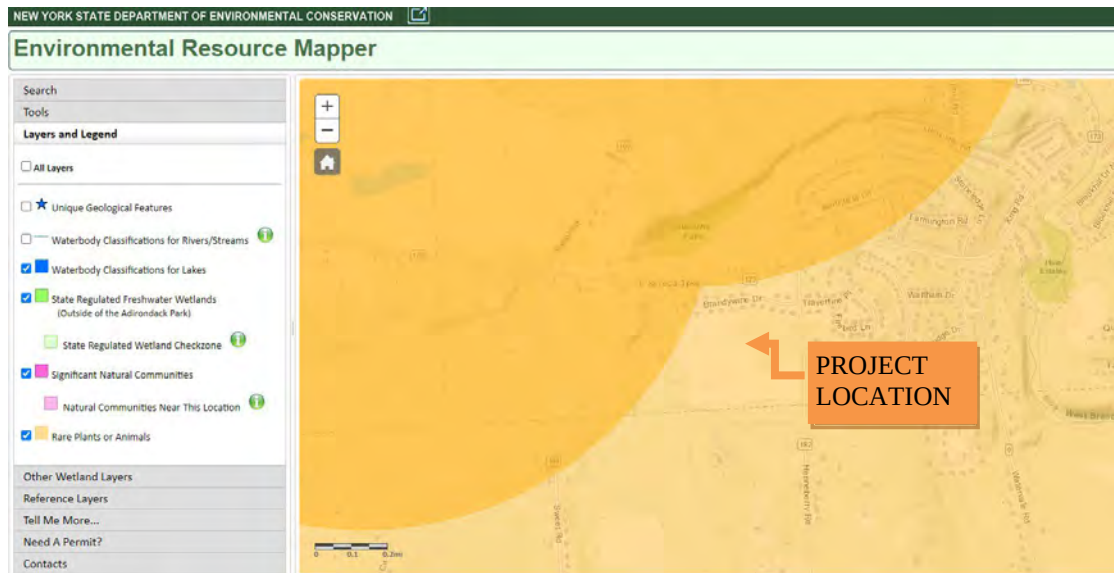


Figure 3: NYS DEC Environmental Resource Mapper

E. ENDANGERED OR THREATENED SPECIES

The NYS DEC Environmental Resource Mapper does not identify the site as containing any rare significant natural communities but is within the check zone for rare plants or animals. We have received a letter from the DEC which states that hibernacula of the Indiana Bat and the Northern Long-Eared Bat exist within 2.5 miles of the site. Due to this, there is a seasonal restriction on tree clearing: trees can only be cut down between October 15 and March 31 in order to protect potential roosting trees.

F. FEDERAL AND STATE HISTORIC PRESERVATION

The SPDES (State Pollutant Discharge Elimination System) GP-0-20-001 requires that the discharge from construction activities shall not influence properties listed as or eligible for listing on the State or National Register of Historic Places. Figure 4 shows the SHPO (State Historic Preservation) map which indicates the project is within an archeological check zone. The project will be further investigated accordingly.

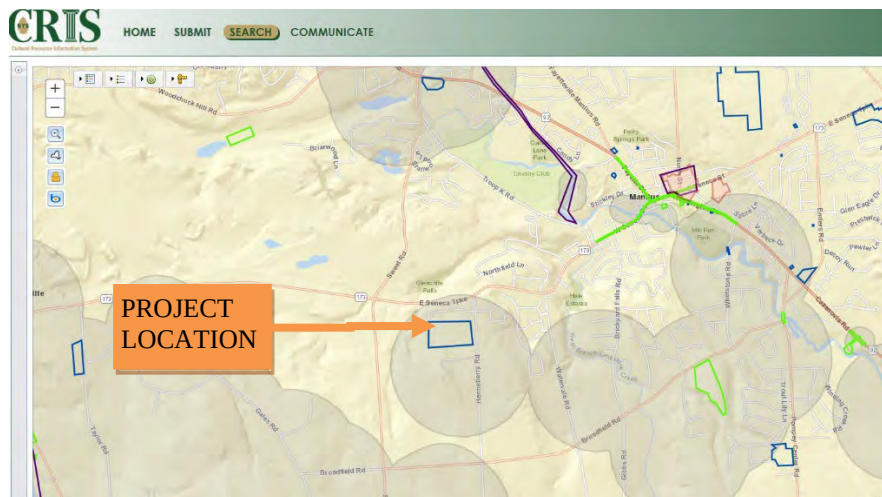


Figure 4: State Historic Preservation Office Map



G. FEMA

Based on local GIS mapping, there are no floodplain/floodway boundaries on this property, as shown on Figure 5 below. This is also confirmed on the site survey by Ianuzi and Romans Land Surveying, P.C., noting the project is in Zone X.

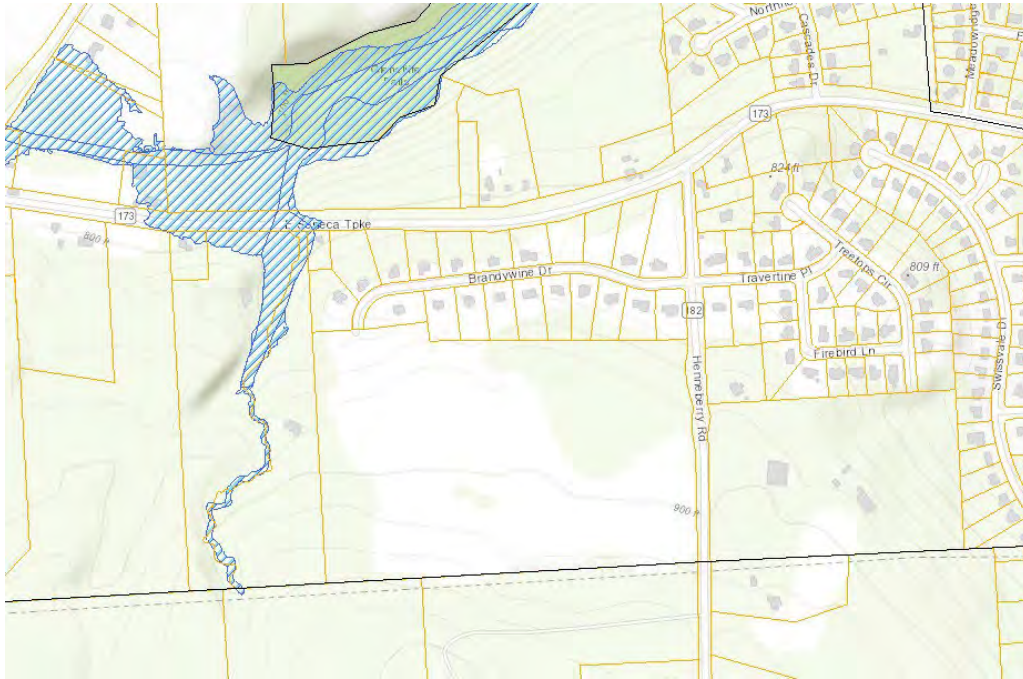


Figure 5: Onondaga County GIS Mapping



Section III. STORMWATER MANAGEMENT

A. METHODOLOGY

1. Hydrologic Conditions

The peak runoff rates for the site were calculated for the existing and proposed hydrologic conditions using HydroCAD software. The HydroCAD program uses the standard SCS TR-55 Curve Number Method for calculation of the time of concentration, composite curve number, and peak runoff rates for the drainage area(s) based on input by the user. The input data was taken from soil maps, detailed topographic and utility survey information, rainfall distribution maps, and aerial images. The required Water Quality Volume (WQ_v) was calculated in accordance with the New York State Stormwater Management Design Manual. The Channel Protection Volume (Cp_v) was calculated based on the release of the 1-year storm runoff volume over a 24-hour period. The hydrologic conditions are used to assess the impacts to the runoff characteristics and to design appropriate measures to mitigate these impacts. The NYS SPDES General Permit for Stormwater Discharges from Construction Activity requires that a stormwater mitigation system meet the following five design criteria.

- a. Water Quality Volume: The system must capture and treat 90% of the average annual runoff volume.
- b. Runoff Reduction Volume: The system must apply green infrastructure techniques and Stormwater Management Practices to replicate pre-development hydrology.
- c. Provide 24-hour extended detention of the runoff from the one-year, 24-hour rainfall event.
- d. Attenuation of the post-development 10-year, 24-hour peak discharge rate to predevelopment levels.
- e. Attenuation of the post-development 100-year, 24-hour peak discharge rate to predevelopment levels.

2. Rainfall Information

The following table shows the rainfall values used in the design of the stormwater mitigation basin. These values are taken from rainfall distribution maps provided by the Northeast Regional Climate Center and the New York State Stormwater Management Design Manual, which can be seen on the following page. These values are applied to a Type II 24-hour rainfall distribution in the modeling of the watersheds using the HydroCAD program.

Table 1: Rainfall Information

Precipitation Event	Rainfall in inches
90% Rainfall (WQ_v)	1.0
1-Yr, 24-Hr (Cp_v)	2.04
10-Yr, 24-Hr (Q_p)	3.43
50-Yr, 24-Hr	4.94
100-Yr, 24-Hr (Q_t)	5.78

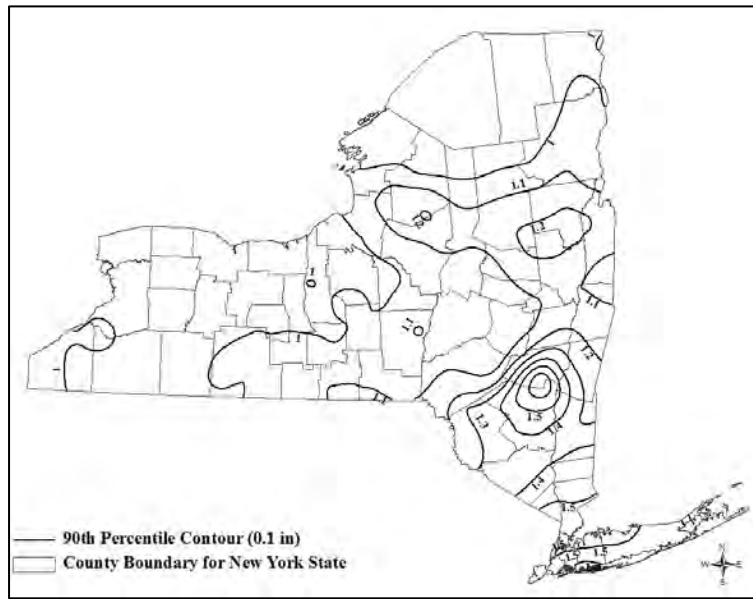


Figure 6: New York State 90% Rainfall Map

Extreme Precipitation Tables

Northeast Regional Climate Center

Data represents point estimates calculated from partial duration series. All precipitation amounts are displayed in inches.

Smoothing Yes
State New York
Location
Longitude 76.007 degrees West
Latitude 42.988 degrees North
Elevation 0 feet
Date/Time Thu, 20 Aug 2020 10:25:27 -0400

Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr
1yr	0.28	0.43	0.53	0.69	0.86	1.06	1yr	0.75	0.96	1.21	1.45	1.73	2.04	2.29
2yr	0.33	0.50	0.63	0.82	1.04	1.28	2yr	0.89	1.16	1.44	1.73	2.04	2.39	2.68
5yr	0.39	0.61	0.76	1.02	1.31	1.61	5yr	1.13	1.44	1.83	2.17	2.54	2.93	3.31
10yr	0.44	0.70	0.88	1.20	1.55	1.93	10yr	1.34	1.69	2.19	2.59	3.00	3.43	3.88
25yr	0.53	0.84	1.07	1.48	1.96	2.44	25yr	1.69	2.10	2.76	3.25	3.73	4.22	4.80
50yr	0.60	0.97	1.24	1.74	2.34	2.93	50yr	2.02	2.48	3.32	3.88	4.41	4.94	5.63
100yr	0.70	1.13	1.46	2.06	2.80	3.51	100yr	2.42	2.94	3.96	4.60	5.21	5.78	6.62
200yr	0.80	1.31	1.69	2.43	3.35	4.20	200yr	2.89	3.47	4.74	5.48	6.15	6.77	7.78
500yr	0.98	1.61	2.09	3.04	4.25	5.33	500yr	3.67	4.35	5.99	6.88	7.65	8.35	9.65

Figure 7: Northeast Regional Climate Center Design Storms



DA-1 includes a significant amount of off-site wooded area to the south and west of the project site. This area sheet flows to the existing grass area on-site before being channelized in a drainage ditch that flows from east to west across the width of the project site. This ditch discharges to an offsite creek to the west of the subject site before reaching point of study #1.

Table 2: Existing Drainage Area 1 Curve Number Calculation

Area (ac)	CN	Description
21.210	77	Woods, Good, HSG D
17.420	80	>75% Grass cover, Good, HSG D
18.000	73	Brush, Good, HSG D
56.630	77	Weighted Average
56.630		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.0	100	0.0600	0.10		Sheet Flow, Sheet Flow Woods: Light underbrush n= 0.400 P2= 2.39"
4.6	410	0.0900	1.50		Shallow Concentrated Flow, Shallow Woodland Kv= 5.0 fps
6.7	840	0.0900	2.10		Shallow Concentrated Flow, Shallow Short Grass Pasture Kv= 7.0 fps
1.3	1,405	0.0750	17.78	213.31	Channel Flow, Swale Area= 12.0 sf Perim= 8.0' r= 1.50' n= 0.030 Earth, clean & winding
28.6	2,755	Total			

DA-2 includes wooded, grass, and brush area that drain to the north towards point of study #2. There is a series of existing drainage swales that channelize flow towards this point of study. This area is located to the north of the existing drainage ditch that cuts through the site.

Table 3: Existing Drainage Area 2 Curve Number Calculation

Area (ac)	CN	Description
3.330	77	Woods, Good, HSG D
2.740	80	>75% Grass cover, Good, HSG D
6.070	78	Weighted Average
6.070		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.5	100	0.0400	0.13		Sheet Flow, Sheet Flow Grass: Dense n= 0.240 P2= 2.39"
14.2	555	0.0170	0.65		Shallow Concentrated Flow, Shallow Woodland Kv= 5.0 fps
1.5	281	0.0360	3.05		Shallow Concentrated Flow, Shallow Unpaved Kv= 16.1 fps
0.2	280	0.1210	20.51	205.13	Channel Flow, Swale Area= 10.0 sf Perim= 5.0' r= 2.00' n= 0.040 Earth, dense weeds
28.4	1,216	Total			



DA-3 consists of wooded and shrub area in the northeast corner of the subject site and is tributary to point of study # 3 which is located within the Henneberry Road right-of-way.

Table 4: Existing Drainage Area 3 Curve Number Calculation

Area (ac)	CN	Description
3.480	77	Woods, Good, HSG D
1.540	80	>75% Grass cover, Good, HSG D
5.020	78	Weighted Average
5.020		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	100	0.0500	0.15		Sheet Flow, Sheet Flow Grass: Dense n= 0.240 P2= 2.39"
1.5	287	0.0380	3.14		Shallow Concentrated Flow, Shallow Unpaved Kv= 16.1 fps
1.7	150	0.0870	1.47		Shallow Concentrated Flow, Shallow Woodland Kv= 5.0 fps
14.6	537	Total			

Figure 9 on the following page summarizes the hydrology of the existing condition watershed.

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C. PROPOSED CONDITIONS

This project consists of the construction of a 34-lot subdivision of single-family homes. The impervious area on each lot will consist of rooftop area, which will be properly disconnected via gutter discharge to grass buffer strips, and asphalt driveway area, which is assumed to be approximately 1,800 square-feet (about 0.04 acres) for each individual lot. The development will also include necessary amenities such as public street(s), public/private utility extensions/connections, and applicable stormwater management facilities. The stormwater mitigation area will collect and treat runoff in order to meet the objectives of the SPDES General Permit for Stormwater Discharges from Construction Activity and local regulations.

The stormwater management system includes several management practices to capture, treat and control the release of runoff from the site. Runoff from the impervious areas, both rooftop and asphalt, will be directed to practices to provide infiltration/runoff reduction, water quality treatment and water quantity storage. The following stormwater management practices will be constructed:

- **Bioretention Areas:** Bioretention filters are considered a standard stormwater management practice with runoff reduction capacity to decrease stormwater quantity and improve water quality (NYSDEC Stormwater Management Design Manual, p. 5-97)¹. The filters collect runoff from rainfall events, temporarily store it, and filter it through the root structure of the plants and the planting soil media. Through the plants' uptake of runoff and the filtering through the soil media, the amount of runoff the site generates is reduced and the remaining runoff from these frequent, but less intense, rainfall events is treated to remove pollutants such as suspended solids and phosphorus. The runoff in excess of the water quality event (the 90th-percentile rain event) will discharge to the downstream detention basin.
- **Detention Basin:** The detention basin will collect runoff from the more intense but less frequent rainfall events and temporarily store and released in a controlled manner such that the peak rates of runoff to the downstream design points will not be adversely impacted.

DA-1A includes a large off-site, upland wooded area and a majority of the proposed development on the subject property. This area is collected via conveyance systems in the roadway and is ultimately tributary to Bioretention Area #1 and Detention Basin #1.

Table 5: Proposed Drainage Area 1A Curve Number Calculations

Area (ac)	CN	Description			
2.470	98	Paved parking, HSG D			
1.870	98	Unconnected roofs, HSG D			
24.080	80	>75% Grass cover, Good, HSG D			
8.960	77	Woods, Good, HSG D			
37.380	81	Weighted Average			
33.040		88.39% Pervious Area			
4.340		11.61% Impervious Area			
1.870		43.09% Unconnected			
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.9	100	0.0600	0.06		Sheet Flow, SHEET FLOW Woods: Dense underbrush n= 0.800 P2= 2.39"
4.8	370	0.0650	1.27		Shallow Concentrated Flow, SCF Woodland Kv= 5.0 fps
1.9	200	0.0650	1.78		Shallow Concentrated Flow, SCF Short Grass Pasture Kv= 7.0 fps
0.2	295	0.0300	19.80	79.19	Channel Flow, curb and gutter flow Area= 4.0 sf Perim= 4.0' r= 1.00' n= 0.013 Asphalt, smooth
1.7	1,100	0.0345	11.04	19.51	Pipe Channel, Pipe Flow 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
3.8	955	0.0050	4.20	50.44	Channel Flow, Area= 12.0 sf Perim= 12.0' r= 1.00' n= 0.025 Earth, grassed & winding
40.3	3,020	Total			

¹ The "biogeochemical process" in terms of stormwater management is the pathway by which water is recycled through plant material where the plant can consume it or return it to the atmosphere through evapotranspiration.



DA-1B includes the western portion of the proposed development and a section of wooded area upland and to the south of the subject property. This area is ultimately tributary to Bioretention Area #2 and Detention Basin #1.

Table 6: Proposed Drainage Area 1B Curve Number Calculations

Area (ac)	CN	Adj	Description		
0.870	98		Paved parking, HSG D		
0.410	98		Unconnected roofs, HSG D		
4.000	80		>75% Grass cover, Good, HSG D		
2.040	77		Woods, Good, HSG D		
1.600	73		Brush, Good, HSG D		
8.920	81	80	Weighted Average, UI Adjusted		
7.640			85.65% Pervious Area		
1.280			14.35% Impervious Area		
0.410			32.03% Unconnected		
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	100	0.0600	0.16		Sheet Flow, SHEET FLOW Grass: Dense n= 0.240 P2= 2.39"
4.6	410	0.0900	1.50		Shallow Concentrated Flow, SCF Woodland Kv= 5.0 fps
5.6	710	0.0920	2.12		Shallow Concentrated Flow, SCF Short Grass Pasture Kv= 7.0 fps
0.3	170	0.0200	9.55	76.42	Channel Flow, swale flow Area= 8.0 sf Perim= 8.0' r= 1.00' n= 0.022 Earth, clean & straight
21.1	1,390	Total			

DA-1C consists of the grassy area within the detention basin and is not tributary to a bioretention area.

Table 7: Proposed Drainage Area 1C Curve Number Calculations

Area (ac)	CN	Description			
0.960	80	>75% Grass cover, Good, HSG D			
0.120	77	Woods, Good, HSG D			
1.080	80	Weighted Average			
1.080		100.00% Pervious Area			
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Min TR 55 Value



DA-1D consists largely of wooded area and lawn area that is located on the western part of the subject site and just off-site to the west. This drainage area is not tributary to any on-site stormwater management practices and is directly tributary to point of study #1.

Table 8: Proposed Drainage Area 1D Curve Number Calculations

Area (ac)	CN	Description
3.230	80	>75% Grass cover, Good, HSG D
8.910	77	Woods, Good, HSG D
0.200	98	Paved parking, HSG D
2.660	73	Brush, Good, HSG D
15.000	77	Weighted Average
14.800		98.67% Pervious Area
0.200		1.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.9	100	0.0600	0.06		Sheet Flow, SHEET FLOW Woods: Dense underbrush n= 0.800 P2= 2.39"
5.4	485	0.0900	1.50		Shallow Concentrated Flow, SCF Woodland Kv= 5.0 fps
4.1	517	0.0900	2.10		Shallow Concentrated Flow, SCF Short Grass Pasture Kv= 7.0 fps
1.2	1,155	0.0750	16.28	260.45	Channel Flow, SWALE Area= 16.0 sf Perim= 16.0' r= 1.00' n= 0.025 Earth, clean & winding

38.6	2,257	Total
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DA-2 consists of the small amount of wooded and lawn area that is still tributary to point of study #2 to the north of the subject site.

Table 9: Proposed Drainage Area 2 Curve Number Calculations

Area (ac)	CN	Description
0.690	80	>75% Grass cover, Good, HSG D
0.140	77	Woods, Good, HSG D
0.830	79	Weighted Average
0.830		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	100	0.1500	0.23		Sheet Flow, SHEET FLOW Grass: Dense n= 0.240 P2= 2.39"
0.7	104	0.1300	2.52		Shallow Concentrated Flow, SCF Short Grass Pasture Kv= 7.0 fps
8.1	204	Total			



DA-3A includes a small amount of off-site wooded area and the southeastern-most proposed house within the development. The runoff from this area is collected by the loop road conveyance system, discharges into the drainage ditch within the right-of-way, and is ultimately tributary to point of study #3.

Table 10: Proposed Drainage Area 3A Curve Number Calculations

Area (ac)	CN	Adj	Description		
0.920	80		>75% Grass cover, Good, HSG D		
0.180	98		Paved parking, HSG D		
0.070	98		Unconnected roofs, HSG D		
1.030	77		Woods, Good, HSG D		
2.200	81	80	Weighted Average, UI Adjusted		
1.950			88.64% Pervious Area		
0.250			11.36% Impervious Area		
0.070			28.00% Unconnected		
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.9	100	0.0450	0.14		Sheet Flow, SHEET FLOW Grass: Dense n= 0.240 P2= 2.39"
2.5	188	0.0650	1.27		Shallow Concentrated Flow, SCF Woodland Kv= 5.0 fps
1.9	202	0.0650	1.78		Shallow Concentrated Flow, SCF Short Grass Pasture Kv= 7.0 fps
0.2	232	0.0220	16.95	50.86	Channel Flow, curb flow Area= 3.0 sf Perim= 3.0' r= 1.00' n= 0.013 Asphalt, smooth
16.5	722	Total			

DA-3B includes a small portion of the northeastern portion of the proposed development. This area is directly tributary to point of study #3 within the right-of-way.

Table 11: Proposed Drainage Area 3B Curve Number Calculations

Area (ac)	CN	Adj	Description		
2.230	80		>75% Grass cover, Good, HSG D		
0.230	98		Paved parking, HSG D		
0.140	98		Unconnected roofs, HSG D		
2.600	83	82	Weighted Average, UI Adjusted		
2.230			85.77% Pervious Area		
0.370			14.23% Impervious Area		
0.140			37.84% Unconnected		
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	100	0.0500	0.15		Sheet Flow, SHEET FLOW Grass: Dense n= 0.240 P2= 2.39"
5.1	475	0.0500	1.57		Shallow Concentrated Flow, SCF Short Grass Pasture Kv= 7.0 fps
0.2	82	0.0200	6.42	5.04	Pipe Channel, pipe flow 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
16.7	657	Total			

Figure 10 on the following page summarizes the hydrology of the proposed condition watershed.

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D. RUNOFF REDUCTION VOLUME (RRV)

The NYSDEC implemented regulations effective March 1, 2011 that requires all construction projects that disturb greater than one acre of land to provide runoff reduction through the implementation of green infrastructure practices. The goal of the runoff reduction volume criteria is to implement stormwater management practices and green infrastructure techniques to replicate pre-development hydrology. The NYS Stormwater Management Design Manual provides the acceptable green planning techniques and green infrastructure techniques to meet the runoff reduction volume criteria. The following narrative and calculations detail the implementation of the planning and infrastructure techniques on the site to achieve the minimum runoff reduction volume. The narrative follows the Design Manual, Chapter 5.

PLANNING

1. Plan to preserve, avoid, and minimize:

	<u>Applicable</u>	<u>Not Applicable</u>
a. Preserve undisturbed, natural buffer, and critical environmental areas.	☐	☒
b. Employ open space, conservation, and clustering site design techniques.	☒	☐
c. Avoid developing in environmentally sensitive areas: floodplain, steep slopes, habitat, ecosystems, bedrock, wetlands, shorelines, shallow groundwater, impervious soils and unstable soils.	☒	☐
d. Minimize impervious surfaces: building footprints, parking, roads, sidewalks, and driveways.	☒	☐
e. Minimize clearing and grading	☒	☐

Discussion:

- The project does not have any critical environmental areas.
- Open space is used in projects on tracts of land where the development can be concentrated in a portion of the site while maintaining large portions of undisturbed land. Open space design was taking into consideration when planning the subdivision of the property. Town code requires lot sizes to be a minimum of 40,000 square feet and this plan proposes lots between 43,000 sf and 100,000 sf.
- The project does not have any critical environmental areas with the exception of steep slopes. Development in steep slopes will be minimized as much as possible and is limited to areas of the individual homes.
- The NYS Stormwater Design Manual discusses building footprint reduction in terms of building multiple floors to achieve the same, or comparable, square footage as a single-floor footprint. The majority of these house are expected to be two-story homes to reduce the footprint and achieve more square foot area of the house.
- The proposed grading plan for the project minimizes the amount of grading to the maximum extent practicable. Grade requirements for a functional site, including slopes to meet the buildable lots, were taken into account during the design phase. The off-grading was designed to catch up to the existing grade in the shortest distance possible (i.e., minimize off-grading) while still meeting acceptable standards for slope stabilization and erosion control.

Disconnection of Rooftop Runoff

All direct runoff from residential rooftop areas has been designed to be distributed to surrounding pervious areas to promote overland vegetative filtering and infiltration. As such, all rooftop impervious area is treated as pervious lawn area when calculating the required water quality volume and runoff reduction volume. The rooftop impervious area is not deducted when calculating the water quantity mitigation in the detention basin.



E. WATER QUALITY VOLUME (WQ_v) REQUIRED:

1. Calculate the required water quality volume for new impervious area within drainage areas DA-1A.

$$WQ_v = \frac{PR_v A}{12}$$

90-th Percentile Rainfall (P) = 1.0 inch

Drainage Area (A) = 37.38 acres

Impervious Area (A_I) = 2.47 acres

$$R_v = 0.05 + 0.9 \left(\frac{A_I}{A} \right)$$

$$R_v = 0.05 + 0.9(0.066)$$

$$R_v = 0.109$$

therefore:

$$WQ_v = \frac{1.0 \cdot 0.109 \cdot 37.38}{12}$$

$$\text{Total WQ}_v \text{ Required} = 0.340 \text{ ac} \cdot \text{ft (14,800 cf)}$$

2. Minimum RR_v requirements

Calculate minimum required Runoff Reduction Volume (RR_v) for DA-1A, 1B, & 1C using:

$$RR_v = \frac{P \cdot R_v \cdot S \cdot A_I}{12}$$

A_I = total impervious area

S = 0.55 (A Soils), 0.40 (B Soils), 0.30 (C Soils), 0.20 (D Soils), or weighted HSG average in drainage area

$$RR_v = \frac{1.0(0.95)(0.20)(2.47)}{12}$$

$$\text{Total Minimum RR}_v \text{ required} = 0.039 \text{ ac} \cdot \text{ft (1,705 cf)}$$

3. Calculate the required water quality volume for the remaining new impervious area within drainage areas DA-1B, DA-3A, & DA-3B. The impervious area within DA-3 cannot feasibly be captured and treated due to steep slopes, therefore the bioretention area collecting runoff from DA-1B will be oversized to compensate for the required water quality treatment volume of DA-3.

$$WQ_v = \frac{PR_v A}{12}$$

90-th Percentile Rainfall (P) = 1.0 inch

Drainage Area (A) = 13.72 acres

Impervious Area (A_I) = 1.34 acres (Total from DA-1B and DA-3)

$$R_v = 0.05 + 0.9 \left(\frac{A_I}{A} \right)$$

$$R_v = 0.05 + 0.9(0.098)$$

$$R_v = 0.138$$

therefore:

$$WQ_v = \frac{1.0 \cdot 0.138 \cdot 13.72}{12}$$

$$\text{Total WQ}_v \text{ Required} = 0.158 \text{ ac} \cdot \text{ft (6,870 cf)}$$



4. Minimum RR_v requirements

Calculate minimum required Runoff Reduction Volume (RR_v) for DA-1A, 1B, & 1C using:

$$RR_v = \frac{P \cdot R_v \cdot S \cdot A_I}{12}$$

A_I = total impervious area

S = 0.55 (A Soils), 0.40 (B Soils), 0.30 (C Soils), 0.20 (D Soils), or weighted HSG average in drainage area

$$RR_v = \frac{1.0(0.95)(0.20)(1.34)}{12}$$

Total Minimum RR_v required = 0.021 ac·ft (925 cf)

F. WATER QUALITY VOLUME (WQV) PROVIDED

Water quality treatment for the runoff from proposed impervious surfaces will be provided by a combination of two bioretention areas. Rooftop area is assumed to be properly disconnected from nearby impervious surfaces and is therefore treated as pervious area in analysis.

Bioretention Basin #1 (DA-1A)

$$A_f = \frac{(WQ_v)(d_f)}{(k)(h_f + d_f)(t_f)}$$

Where,

A_f = Area of the filter (ft²)

WQ_v = Water Quality Volume (ft³)

d_f = depth of the bioretention soil media (2.5 ft as required in NYS Design Manual)

k = coefficient of permeability (0.5 ft/day per NYS Design Manual)

h_f = average height of water above the filter bed (0.125 ft)

t_f = design filter bed drain time (2 days per NYS Design Manual)

$$A_f = \frac{(14,800 \text{ ft}^3)(2.5 \text{ ft})}{\left(0.5 \frac{\text{ft}}{\text{day}}\right)(0.25 \text{ ft} + 2.5 \text{ ft})(2 \text{ days})}$$

Total A_f = 13,455 ft² *required*

Total A_f provided = 13,500 ft²

Therefore,

$WQ_v = 14,800 \text{ ft}^3$ (0.340 ac·ft) *Provided*

The RR_v provided is calculated as follows:

Bioretention areas in C and D soils have a RR_v factor of $0.4 \cdot WQ_v$.

$$RR_v = 0.4 \cdot 14,800 \text{ ft}^3$$

RR_v provided = 5,920 ft³ = 0.136 ac·ft



Bioretention Basin #2 (DA-1B, 3A, & 3B)

$$A_f = \frac{(WQ_v)(d_f)}{(k)(h_f + d_f)(t_f)}$$

Where,

- A_f = Area of the filter (ft²)
- WQ_v = Water Quality Volume (ft³)
- d_f = depth of the bioretention soil media (2.5 ft as required in NYS Design Manual)
- k = coefficient of permeability (0.5 ft/day per NYS Design Manual)
- h_f = average height of water above the filter bed (0.125 ft)
- t_f = design filter bed drain time (2 days per NYS Design Manual)

$$A_f = \frac{(6,870 \text{ ft}^3)(2.5 \text{ ft})}{\left(0.5 \frac{\text{ft}}{\text{day}}\right)(0.25 \text{ ft} + 2.5 \text{ ft})(2 \text{ days})}$$

Total A_f = 6,245 ft² *required*

Total A_f provided = 6,250 ft²

Therefore,

$WQ_v = 6,870 \text{ ft}^3$ (0.158 ac·ft) Provided

The RR_v provided is calculated as follows:

Bioretention areas in C and D soils have a RR_v factor of $0.4 \cdot WQ_v$.

$$RR_v = 0.4 \cdot 6,870 \text{ ft}^3$$

$$\text{RR}_v \text{ provided} = 2,750 \text{ ft}^3 = 0.063 \text{ ac} \cdot \text{ft}$$

Diversion Structure Design

Peak Runoff Rate During WQ_v Event

Using the methodology outlined in Appendix D.10 of the Stormwater Manual :

$$CN = \frac{1000}{10 + 5P + 10Q_a - 10\sqrt{Q_a^2 + 1.25Q_aP}}$$

Where,

- CN = the computed runoff curve number
- P = rainfall, in inches (P=1.0")
- Q = runoff volume (= P R_v), in inches

$$P = 1.00''$$

$$R_v = 0.114 \text{ (from above)}$$

$$CN = \frac{1000}{10 + (5 \cdot 1.00) + (10 \cdot 1.00 \cdot 0.114) - 10\sqrt{(0.114 \cdot 1.00)^2 + 1.25(0.114 \cdot 1.00 \cdot 1.00)}}$$

$$CN = 82$$



Time of Concentration, t_c , is 21.1 minutes

From Table 4-1 of the SCS TR-55, the initial abstraction, I_a , for a watershed with a curve number of 82 is 0.439.

$$\frac{I_a}{P} = \frac{0.439}{1.00}$$

$$\frac{I_a}{P} = 0.439$$

Using the I_a/P and the time of concentration, the unit peak discharge, q_u , is found to be 400 csm/in (from Exhibit 4-II, TR-55).

The peak rate of runoff is then calculated using the following formula:

$$Q_p = q_u \times A \times WQ_v$$

Where,

Q_p = the peak discharge, in cfs

q_u = the unit peak discharge, in cfs/mi²/inch

A = drainage area, in square miles (acres/640)

WQ_v = water quality volume, in watershed inches ($P \cdot R_v$)

$$Q_p = 400 \frac{\text{csm}}{\text{in}} \times \frac{8.92 \text{ acres}}{\frac{640 \text{ ac}}{\text{mi}^2}} \times (1.00 \cdot 0.109)$$

$$Q_p = 0.61 \text{ cfs}$$

Inverts of Structure

$$Q = C_d \cdot A \sqrt{2gH}$$

$$0.61 \text{ cfs} = 0.6 \cdot \frac{\pi \left(\frac{6}{12}\right)^2}{4} \sqrt{2 \left(32.2 \frac{\text{ft}}{\text{sec}^2}\right) H}$$

$$H = 0.42 \text{ ft}$$

G. CHANNEL PROTECTION VOLUME (CP_v)

The proposed project must provide sufficient storage of the channel protection volume (CP_v), which is accomplished by providing 24-hour extended detention of the one-year, 24-hour storm event, remained from runoff reduction. The NYS Stormwater Design Manual methodology for determining the storage volume was used (Appendix B.1) and is discussed below. Below is a summary of the calculations for DA-1.

Proposed Detention Basin 1

Tributary Area = 47.38 acres, CN = 81, & t_c = 35 minutes

$$I_a = 0.469, P = 1.0''$$

$$\frac{I_a}{P} = 0.469$$

Using I_a/P and T_c , q_u = 260 csm/in (TR-55, Exhibit 4-II)

Using q_u and T = 24 hr, q_o/q_i = 0.07 (Design Manual, Figure B.1)



Using formula 2.1.16 (Design Manual, Appendix B.1), calculate V_s/V_r

$$\frac{V_s}{V_r} = 0.590$$

Using formula 2.1.17 (Design Manual, Appendix B.1), calculate V_s

$$V_s = \frac{\left(\frac{V_s}{V_r}\right) Q_d A}{12}$$

$$V_s = (0.59)2.450 \text{ ac} \cdot \text{ft} \text{ (total tributary from HydroCAD)}$$

$$V_s = 1.44 \text{ ac} \cdot \text{ft} \text{ (62,725 cf)}$$

CPv required = CPv - RRv Provided

$$\text{CPv required} = 62,725 \text{ ft}^3 - 8,670 \text{ ft}^3 = \mathbf{54,055 \text{ ft}^3 \text{ required}}$$

CPv Provided in Bioretention #1 = 11,608 ft³

CPv Provided in Bioretention #2 = 4,491 ft³

CPv Provided in Detention #1 = 40,512 ft³

Total CPv = 56,610 ft³ Provided



H. PEAK FLOW MITIGATION (Q_{p10} and Q_{p100})

The remaining two requirements of the NYSDEC SPDES General Permit for Stormwater Discharges from Construction Activity are that the stormwater system cannot discharge runoff from the site during the 10-year and 100-year, 24-hour rainfall events at rates higher than the existing condition peak rates of runoff during the correlating rainfall events. To meet these requirements, the underground stormwater chamber system will act as a detention basin that capture the runoff, temporarily store it, and release the runoff in a controlled manner to the existing drainage ditch such that the proposed project will not adversely impact the downstream areas. The following tables summarize the HydroCAD results for the 10-year and 100-year rainfall events.

Table 12: Peak Flow Rates for 10-Year & 100-Year Rainfall Events

Point of Study	Existing Peak Runoff Rate (cfs)			Proposed Peak Runoff Rate (cfs)		
	Pt. 1	Pt. 2	Pt. 3	Pt. 1	Pt. 2	Pt. 3
10-Year Storm	67.61	7.68	9.35	32.92	2.07	9.31
100-Year Storm	165.93	18.46	22.06	80.24	4.70	21.06

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
863.50	1,285	0	0
864.00	11,100	3,096	3,096
865.00	18,820	14,960	18,056
866.00	21,020	19,920	37,976
867.00	23,280	22,150	60,126
868.00	25,590	24,435	84,561
869.00	27,960	26,775	111,336
870.00	30,390	29,175	140,511
871.00	32,875	31,633	172,144
872.00	35,415	34,145	206,289
873.00	38,010	36,713	243,001

Device	Routing	Invert	Outlet Devices
#1	Secondary	872.00'	30.0' long x 12.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#2	Primary	863.50'	30.0" Round Culvert L= 98.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 863.50' / 857.00' S= 0.0663 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf
#3	Device 2	863.50'	7.0" Vert. Orifice1 C= 0.600 Limited to weir flow at low heads
#4	Device 2	866.00'	32.0" W x 18.0" H Vert. Orifice2 C= 0.600 Limited to weir flow at low heads
#5	Device 2	868.10'	36.0" x 36.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads

Figure 11: Proposed Detention Basin #1 Summary



Section IV. CONTROLS

A. EROSION AND SEDIMENT CONTROLS

Prior to the commencement of construction, the operator will identify the contractor(s) and subcontractor(s) that will implement each erosion and sediment control measure identified in this SWPPP. All contractors and subcontractors identified in the SWPPP must sign a copy of the certification statement in Part III.E. of the NYS DEC SPDES General Permit for Stormwater Discharges from Construction Activities in accordance with Part V.H. of the SPDES General Permit.

1. Stabilization Practices (Permanent)

Permanent stabilization practices for this site include:

- a. Land clearing activities shall be done only in areas where earthwork will be performed and shall progress as earthwork is needed.
- b. Permanent seeding and planting of all unpaved areas.

2. Stabilization Practices (Temporary) Temporary stabilization practices for this site include:

- a. Temporary seeding and planting of all unpaved areas when construction activity has ceased, or will cease, in an area for 14 days. Seeding mixtures and application rates are listed in the erosion and sediment control notes on the plans.
- b. Mulching exposed areas. Mulching rates are listed in the erosion and sediment control notes on the plan sheet C-15.
- c. Frequent watering to minimize wind erosion during construction.

3. Structural Practices (Permanent) Permanent structural practices for this site include:

- a. Bioretention Areas. Bioretention filters are considered a standard stormwater management practice with runoff reduction capacity to decrease stormwater quantity and improve water quality.
- b. Land grading. Land grading is the reshaping of the existing land surface in accordance with a plan as determined by the engineering survey and layout. The purpose of a land grading specification is to provide erosion control and vegetative establishment on areas where the existing land is to be reshaped according to the plan.

4. Structural Practices (Temporary)

Temporary structural practices for this site include:

- a. Silt fence. Silt fence is a temporary barrier of geotextile fabric installed on the contours across from a slope used to intercept sediment laden runoff from small drainage areas of disturbed soil. The purpose of silt fence is to reduce runoff velocity and effect deposition of transported sediment load.
- b. Stabilized construction entrance/exit. A stabilized construction entrance/exit is a stabilized pad of aggregate underlain with geotextile located at any point where traffic will be entering or leaving a construction site to or from a public right-of-way, street, alley, sidewalk, or parking area. The purpose of the stabilized construction entrance is to reduce or eliminate the tracking of sediment onto public rights-of-way or streets
 1. Aggregate size: Use a matrix of one to four-inch stone, or reclaimed or recycled equivalent
 2. Thickness: Not less than six inches
 3. Width: 24-foot minimum
 4. Length: As required, but not less than 50 feet
 5. Geotextile: To be placed over the entire area to be covered with aggregate. Piping of surface water under entrance shall be provided as necessary.



- c. Sediment trap. The detention basins will be used as a sediment trap during construction. The sediment basin will have a riprap outlet sediment trap in place of the emergency spillway. Upon completion of construction, the sediment basin will be cleaned of all sediment buildup and the basin shall be finalized per plans.
- d. Concrete washout area. A temporary excavated or above ground lined constructed pit where concrete truck mixers and equipment can be washed after their loads have been discharged to prevent highly alkaline runoff from entering storm drainage systems or leaching into the soil.
 1. The washout facility is sized to contain solids, wash water and rainfall. The maximum size shall be eight feet by eight feet at the bottom and two feet deep. If excavated, then the side slopes shall be 2:1 (horizontal to vertical).
 2. The facility shall be located a minimum of 100 feet from drainage swales, storm drain inlets, wetlands, streams, and other surface waters. Surface waters shall be prevented from entering the structure except got the access road. Appropriate access shall be provided with a gravel access road sloped down to the structure. Signs shall be placed to direct drivers to the facility after their load is discharged.
 3. All washout facilities will be lined to prevent leaching of liquids into the ground. The liner shall be plastic sheeting with a minimum thickness of 10 mils with no holes or tears, and anchored beyond the top of the pit with an earthen berm, sand bags, stone, or other structural appurtenance except at the access point.

5. Sequence of Major Activities

The contractor will be responsible for implementing the above listed erosion and sediment control practices. The contractor may designate these tasks to certain subcontractors as is seen fit, but the ultimate responsibility for implementing these controls and ensuring their proper function remains with the contractor. The order of activities shall be as follows:

- a. Conduct a preconstruction meeting with all involved parties
- b. Delineate boundaries of disturbance as per the layout and grading plans
- c. Construct construction entrance at the location shown on the erosion and sediment control plan
- d. Install silt fence in locations shown on the layout and grading plans
- e. Establish staging areas on the project site
- f. Construct sediment trap(s) and overflow spillways for use during construction
- g. Excavate detention basin and install overflow spillway
- h. Remove topsoil, stockpile and stabilize
- i. Rough grade site including swales and provide temporary stabilization when idle for more than 7 days
- j. Building foundation excavation
- k. Install underground stormwater management system
- l. Compact gravel along driveways and parking areas
- m. Utility installations.
- n. Install concrete washout, complete concrete site work.
- o. Complete final grading of the site
- p. Restore all compacted soils in accordance with section 5.1.6 of the NYS Stormwater Design Manual
- q. Provide final stabilization and landscaping of new area
- r. Site Paving
- s. Provide final stabilization of disturbed areas via seeding mulching.
- t. Construct bioretention basins and outlet controls upon upstream stabilization
- u. Remove all temporary stabilization control practices

Disturbed areas of the site where construction activity has ceased for more than seven (7) days shall be temporarily seeded and mulched. The Erosion & Sediment Control plan is shown in Appendix F.



B. INSPECTION AND MAINTENANCE REQUIREMENTS

Best management practices, both construction and operational, must be inspected and maintained on a routine basis to ensure continued compliance with the NYS SPDES General Permit for Stormwater Discharges from Construction Activity. The contractor is responsible for inspecting the erosion and sediment control practices, the operator/owner is responsible for providing a qualified professional, as defined in the SPDES General Permit, to perform the required weekly inspections of the construction site from the time earth-disturbing activities begin until final stabilization is achieved and the Notice of Termination is filed. The contractor will obtain copies of all local and state regulations that are applicable to stormwater management, erosion control, and pollution minimization at this job site and will comply fully with such regulations. The contractor will submit written evidence of such compliance if requested by the operator or any agent of a regulatory body. The contractor will comply with all conditions of the NYSDEC SPDES General Permit for Stormwater Discharges from Construction Activity, including the conditions related to maintaining the SWPPP and evidence of compliance with the SWPPP at the job site and allowing regulatory personnel access to the job site and to records to determine compliance.

C. CONSTRUCTION MAINTENANCE/INSPECTION PROCEDURES

The operator shall maintain a record of all inspection reports in a site logbook. The logbook shall be maintained on site and be made available to the permitting authority upon request. Prior to the commencement of construction, the operator shall certify in the site logbook that the SWPPP, prepared in accordance with Part III.D. of the NYS DEC SPDES General Permit for Discharges from Construction Activities, meets all Federal, State and local erosion and sediment control requirements. The operator shall post at the site, in a publicly accessible location, a summary of the site inspection activities monthly. The following inspection and maintenance practices will be used to maintain erosion and sediment controls and stabilization measures.

1. Inspection and Maintenance Practices
 - a. Inspections shall occur once every seven calendar days.
 - b. At a minimum, the qualified inspector shall inspect all erosion and sediment control practices to ensure integrity and effectiveness, all post-construction stormwater management practices under construction to ensure that they are constructed in conformance with the SWPPP, all areas of disturbance that have not achieved final stabilization, all points of discharge to natural surface waterbodies located within or immediately adjacent to the property boundaries of the construction site, and all points of discharge from the construction site.
 - c. The qualified inspector shall prepare an inspection report subsequent to each and every inspection. At a minimum, the inspection report shall include and/or address the following:
 - i. Date and time of inspection;
 - ii. Name and title of person(s) performing inspection;
 - iii. A description of the weather and soil conditions (e.g. dry, wet, saturated) at the time of the inspection;
 - iv. A description of the condition of the runoff at all points of discharge from the construction site. This shall include identification of any discharges of sediment from the construction site. Include discharges from conveyance systems (i.e. pipes, culverts, ditches, etc.) and overland flow;
 - v. A description of the condition of all natural surface water bodies located within, or immediately adjacent to, the property boundaries of the construction site which receive runoff from disturbed areas. This shall include identification of any discharges of sediment to the surface water body;
 - vi. Identification of all erosion and sediment control practices that need repair or maintenance;
 - vii. Identification of all erosion and sediment control practices that were not installed or are not functioning as designed and need to be reinstalled or replaced;
 - viii. Description and sketch of areas that are disturbed at the time of the inspection and areas that have been stabilized (temporarily and/or final) since the last inspection;



- ix. Current phase of construction of all post-construction stormwater management practices and identification of all construction that is not in conformance with the SWPPP and technical standards;
 - x. Corrective action(s) that must be taken to install, repair, replace, or maintain erosion and sediment control practices; and to correct deficiencies identified with the construction of the post-construction stormwater management practice(s); and
 - xi. Digital photographs, with date stamp, that clearly show the condition of all practices that have been identified as needing corrective actions. The qualified inspector shall attach paper color copies of the digital photographs to the inspection report being maintained onsite within seven (7) calendar days of the date of the inspection. The qualified inspector shall also take digital photographs, with date stamp, that clearly show the condition of the practice(s) after the corrective action has been completed. The qualified inspector shall attach paper color copies of the digital photographs to the inspection report that documents the completion of the corrective action work within seven (7) calendar days of that inspection.
- d. Within one business day of the completion of an inspection, the qualified inspector shall notify the owner or operator and appropriate contractor or subcontractor of any corrective actions that need to be taken. The contractor or subcontractor shall begin implementing the corrective actions within one business day of this notification and shall complete the corrective actions in a reasonable time frame.
- e. All inspection reports shall be signed by the qualified inspector. The inspection reports shall be maintained on the site.
- f. Erosion and Sediment Control Inspection/Maintenance
- i. Silt Fence: Silt fence shall be inspected for depth of sediment, tears, etc., to see if the fabric is securely attached to the fence posts, and to see that the fence posts are securely in the ground. Built up sediment will be removed from silt fence when it has reached one-third the height of the fence.
 - ii. Stabilized Construction Entrance/Exit: The entrance shall be maintained in a condition which will prevent tracking of sediment onto public rights-of-way. This may require periodic top dressing with additional aggregate. All sediment spilled, dropped, or washed onto public rights-of-way must be removed immediately. When necessary, wheels must be cleaned to remove sediment prior to entrance onto public rights-of-way. When washing is required, it shall be done on an area stabilized with aggregate, which drains into an approved sediment-trapping device. All sediment shall be prevented from entering storm drains, ditches, or water courses.
 - iii. Seeding: Temporary and permanent seeding and all other stabilization measures will be inspected for bare spots, washouts, and healthy growth.
2. Inspection and Maintenance Report Forms
- Once installation of any required or optional erosion control device or measure has been implemented, at least twice every seven calendar days a Qualified Professional shall inspect each practice. The inspector shall use the forms found in this SWPPP to inventory and report the condition of each measure to assist in maintaining the erosion and sediment control measures in good working order.
 - These report forms shall become an integral part of the SWPPP and shall be made readily accessible to governmental inspection officials, the operator's engineer, and the operator for review upon request during visits to the project site. In addition, copies of the reports shall be provided to any of these persons upon request, via mail or facsimile transmission. Inspection and maintenance report forms are to be maintained by the permittee for three years following the final stabilization of the site.
 - The operator shall also prepare a written summary of its status with respect to compliance with the NYSDEC SPDES General Permit for Stormwater Discharges from Construction Activity at a minimum frequency of every three months during which coverage under the SPDES General Permit exists. The summary should address the status of achieving each



component of the SWPPP. The reports shall be signed by the signatory of the NOI or a duly authorized person and be retained at the construction site.

1. Other Record Keeping Requirements

The contractor shall keep the following records related to construction activities at the site:

- Dates when major grading activities occur and the areas which were graded.
- Dates and details concerning the installation of structural controls.
- Dates when construction activities cease in an area.
- Dates when an area is stabilized, either temporarily or permanently.
- Dates of rainfall and the amount of rainfall.
- Dates and descriptions of the character and amount of any spills of hazardous materials.
- Records of reports filed with regulatory agencies if reportable quantities of hazardous materials are spilled.

D. OPERATION MAINTENANCE AND INSPECTION PROCEDURES

Long-term maintenance of the stormwater mitigation basins and swales will be the responsibility of the owner and/or the tenant. Maintenance and inspection check lists have been included in Appendix D.

1. Embankments and emergency spillways will be inspected annually and after major storm events. Items to be inspected include:
 - a. Vegetation and ground cover is adequate to prevent erosion.
 - b. No embankment erosion has occurred.
 - c. No animal burrows into embankments.
 - d. No unauthorized planting.
 - e. No cracking, bulging or sliding of dam.
 - f. Emergency spillway is in good condition, free of silt buildup and debris.
 - g. No leaks or seepage is occurring on downstream face.
 - h. All slope protection and riprap is intact and no failure has occurred.
2. Bioretention basins will be inspected monthly and after major storm events. Items to be inspected include:
 - a. Debris and undesirable vegetative growth shall be removed.
 - b. Sediment depth shall be noted. Sediment shall be removed prior to reaching 50% of the design depth.
 - c. No visible pollution within basins.
3. Grass lined swales shall be inspected and maintained as follows:
 - a. All channels are free of debris on monthly basis.
 - b. No visible evidence of erosion.
 - c. Mowing shall be performed as needed. Inspect to ensure minimum mowing depth has not been exceeded.
 - d. Dewatering of swales between storms. Inspect monthly or as necessary.
 - e. Inspect swales for sediment deposition annually and clean as necessary.



Section V. MATERIALS MANAGEMENT PLAN

A. MATERIALS COVERED

The following materials or substances are expected to be present onsite during construction:

Concrete/Additives/Wastes	Cleaning Solvents
Detergents	Petroleum Based Products
Paints/Solvents	Pesticides
Acids	Solid and Construction Wastes
Sanitary Wastes	Soil Stabilization Additives

B. MATERIAL MANAGEMENT PRACTICES

The following are the material management practices that will be used to reduce the risk of spills or other accidental exposure of materials and substances to stormwater runoff. The job site superintendent will be responsible for ensuring that these procedures are followed.

1. Good Housekeeping

The following good housekeeping practices will be followed onsite during the construction project.

- a. An effort will be made to store only enough products required to do the job.
- b. All materials stored onsite will be stored in a neat, orderly manner and, if possible, under a roof or in a containment area. At a minimum, all containers will be stored with their lids on when not in use. Drip pans shall be provided under all dispensers.
- c. Products will be kept in their original containers with the original manufacturer's label in legible condition.
- d. Substances will not be mixed with one another unless recommended by the manufacturer.
- e. Whenever possible, all of a product will be used up before disposing of the container.
- f. Manufacturer's recommendations for proper use and disposal will be followed.
- g. The job site superintendent will be responsible for daily inspections to ensure proper use and disposal of materials.

2. Hazardous Products

These practices will be used to reduce the risks associated with hazardous materials. Material Safety Data Sheets (MSDS's) for each substance with hazardous properties that is used on the job site will be obtained and used for the proper management of potential wastes that may result from these products. An MSDS will be posted in the immediate area where such product is stored and/or used and another copy of each MSDS will be maintained in the SWPPP file at the job site construction trailer office. Each employee who must handle a substance with hazardous properties will be instructed on the use of MSDS sheets and the specific information in the applicable MSDS for the product he/she is using, particularly regarding spill control techniques.

- a. Products will be kept in original containers with the original labels in legible condition.
- b. Original labels and material safety data sheets (MSDS's) will be procured and used for each material.
- c. If surplus product must be disposed of, manufacturer's or local/state/federal recommended methods for proper disposal will be followed.

3. Hazardous Waste

All hazardous waste materials will be disposed of by the contractor in the manner specified by local, state, and/or federal regulations and by the manufacturer of such products. Site personnel will be instructed in these practices by the job site superintendent, who will also be responsible for seeing that these practices are followed.



4. Product Specific Practices

The following product specific practices will be followed on the job site.

a. Petroleum Products

All onsite vehicles will be monitored for leaks and receive regular preventative maintenance to reduce the chance of leakage. Petroleum products will be stored in tightly sealed containers, which are clearly labeled. Any petroleum storage tanks used onsite will have a dike or berm containment structure constructed around it to contain any spills, which may occur. Drip pans shall be provided for all dispensers. Any asphalt substances used onsite will be applied per the manufacturer's recommendations.

b. Fertilizers

Due to the onsite public water supply that will be constructed as part of this project, the use of fertilizers is not allowed without the written authorization of the operator. Authorization will be based on the specific product's possible contaminants and impacts to the groundwater.

c. Paints, Paint Solvents, and Cleaning Solvents

All containers will be tightly sealed and stored when not in use. Excess paint and solvents will not be discharged to the storm sewer system but will be properly disposed of per manufacturer's instructions or state and federal regulations.

5. Concrete Wastes

Concrete trucks will be allowed to wash out or discharge surplus concrete or drum wash water on the site, but only in either (1) specifically designated area which has been prepared to prevent contact between the concrete and/or washout and stormwater which will be discharged from the site or (2) in locations where waste concrete can be poured into forms to make riprap or other useful concrete products.

The hardened residue from the concrete washout areas will be disposed of in the same manner as other non-hazardous construction waste materials or may be broken up and used on site as deemed appropriate by the contractor. The job site superintendent will be responsible for seeing that these procedures are followed.

All concrete washout areas will be in an area where the likelihood of the area contributing to storm water discharges is negligible. If required, additional BMPs must be implemented to prevent concrete wastes from contributing to storm water discharges.

6. Solid and Construction Wastes

All waste materials will be collected and stored in a securely lidded metal dumpster rented from a local waste management company which must be a solid waste management company licensed to do business in New York State. The dumpster will comply with all local and state solid waste management regulations.

All trash and construction debris from the site will be deposited in the dumpster. The dumpster will be emptied a minimum of twice per week or more often if necessary, and the trash will be hauled to a landfill approved by New York State. No construction waste materials will be buried on site. All personnel will be instructed regarding the correct procedures for waste disposal.

All waste dumpsters and roll-off containers will be in an area where the likelihood of the containers contributing to storm water discharges is negligible. If required, additional BMPs must be implemented, such as sandbags around the base, to prevent wastes from contributing to storm water discharges.

7. Sanitary Wastes

All sanitary waste will be collected from the portable units a minimum of three times per week by a licensed portable facility provider in complete compliance with local and state regulation.

All sanitary waste units will be in an area where the likelihood of the unit contributing to storm water discharges is negligible. If required, additional BMPs must be implemented, such as sandbags around the base, to prevent wastes from contributing to storm water discharges.



Section VI. SPILL PREVENTION AND RESPONSE PROCEDURES

The contractor will train all personnel in the proper handling and cleanup of spilled materials. No spilled hazardous materials or hazardous wastes will be allowed to come in contact with storm water discharges. If such contact occurs, the storm water discharge will be contained on site until appropriate measures in compliance with state and federal regulations are taken to dispose of such contaminated storm water. It shall be the responsibility of the job site superintendent to properly train all personnel in spill prevention and clean up procedures.

In order to minimize the potential for a spill of hazardous materials to come into contact with storm water, the following steps will be implemented:

1. All materials with hazardous properties (such as pesticides, petroleum products, fertilizers, detergents, construction chemicals, acids, paints, paint solvents, cleaning solvents, additives for soil stabilization, concrete curing compounds and additives, etc.) will be stored in a secure location, with their lids on, preferably under cover, when not in use.
2. The minimum practical quantity of all such materials will be kept on the job site.
3. A spill control and containment kit (containing, for example, absorbent materials, acid neutralizing powder, brooms, dust pans, mops, rags, gloves, goggles, plastic and metal trash containers, etc.) will be provided at the storage site.
4. Manufacturer's recommended methods for spill cleanup will be clearly posted and site personnel will be trained regarding these procedures and the location of the information and cleanup supplies.

In the event of a spill, the following procedures should be followed

1. All spills will be cleaned up immediately after discovery.
2. The spill area will be kept well ventilated and personnel will wear appropriate protective clothing to prevent injury from contact with the hazardous substances.
3. The project manager and the Engineer of Record will be notified immediately.

Spills of toxic or hazardous materials will be reported to the appropriate federal, state, and/or local government agency, regardless of the size of the spill. Spills of amounts that exceed Reportable Quantities of certain substances specifically mentioned in federal regulations (40 CFR 110, 40 CFR 117, and 40 CFR 302) must be immediately reported to the NYSDEC 24-Hour Spill Hotline at **1-800-457-7362**.

4. If the spill exceeds a Reportable Quantity, the SWPPP must be modified within seven (7) calendar days of knowledge of the discharge to provide a description of the release, the circumstances leading to the release, and the date of the release. The plans must identify measures to prevent the recurrence of such releases and to respond to such releases.

The job site superintendent will be the spill prevention and response coordinator. He will designate the individuals who will receive spill prevention and response training. These individuals will each become responsible for a particular phase of prevention and response. The names of these personnel will be posted in the material storage area and in the office trailer onsite.



Section VII. CONTROL OF NON-STORMWATER DISCHARGES

Certain types of discharges are allowable under the NYS-DEC SPDES General Permit for Stormwater Discharges from Construction Activity, and it is the intent of this SWPPP to allow such discharges. These types of discharges will be allowed under the conditions that no pollutants will be allowed to come in contact with the water prior to or after its discharge. The control measures, which have been outlined previously in this SWPPP, will be strictly followed to ensure that no contamination of these non-stormwater discharges takes place. The following non-storm water discharges are allowed by the NYS-DEC and may occur at the job site:

1. Discharges from firefighting activities
2. Fire hydrant flushing
3. Waters to which cleansers or other components have not been added that are used to wash vehicles or control dust
4. Routine external building wash down which does not use detergents
5. Pavement wash waters where spills or leaks of toxic or hazardous materials have not occurred (unless all spilled material has been removed) and where detergents are not used
6. Air conditioning condensate
7. Springs
8. Foundation or footing drains where flows are not contaminated with process materials such as solvents.

Section VIII. CERTIFICATION AND NOTIFICATION

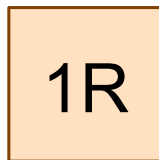
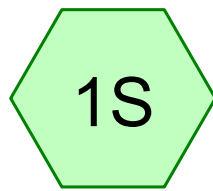
The New York State Department of Environmental Conservation requires that the operator and the contractor make certifications of knowledge of the contents of this SWPPP and agreement to follow the SWPPP. The terms of the General Permit also require that each contractor sign the SWPPP plan, thereby making them co-permittees and acknowledging their responsibility for certain operational aspects of the plan. These certifications should be signed before the contractor begins activities and should be filed with the site's SWPPP at the jobsite.



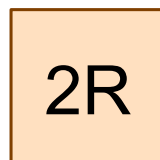
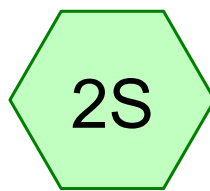
APPENDIX A: HYDRO CAD – EXISTING CONDITIONS



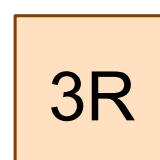
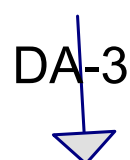
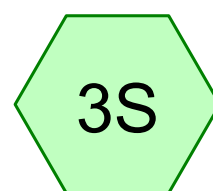
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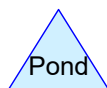
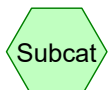
Pt of Study 1



Pt of Study 2



Pt of Study 3



Routing Diagram for Existing Drainage Areas

Prepared by Napierala Consulting, P.C., Printed 2/15/2022
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Existing Drainage Areas

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Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-yr	Type II 24-hr		Default	24.00	1	2.04	2
2	10-yr	Type II 24-hr		Default	24.00	1	3.43	2
3	100-yr	Type II 24-hr		Default	24.00	1	5.78	2

Existing Drainage Areas

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Type II 24-hr 1-yr Rainfall=2.04"

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Page 3

Summary for Subcatchment 1S: DA-1

Runoff = 19.91 cfs @ 12.27 hrs, Volume= 1.941 af, Depth> 0.41"
 Routed to Reach 1R : Pt of Study 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type II 24-hr 1-yr Rainfall=2.04"

Area (ac)	CN	Description
21.210	77	Woods, Good, HSG D
17.420	80	>75% Grass cover, Good, HSG D
18.000	73	Brush, Good, HSG D
56.630	77	Weighted Average
56.630		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.0	100	0.0600	0.10		Sheet Flow, Sheet Flow Woods: Light underbrush n= 0.400 P2= 2.39"
4.6	410	0.0900	1.50		Shallow Concentrated Flow, Shallow Woodland Kv= 5.0 fps
6.7	840	0.0900	2.10		Shallow Concentrated Flow, Shallow Short Grass Pasture Kv= 7.0 fps
1.3	1,405	0.0750	17.78	213.31	Channel Flow, Swale Area= 12.0 sf Perim= 8.0' r= 1.50' n= 0.030 Earth, clean & winding
28.6	2,755	Total			

Existing Drainage Areas

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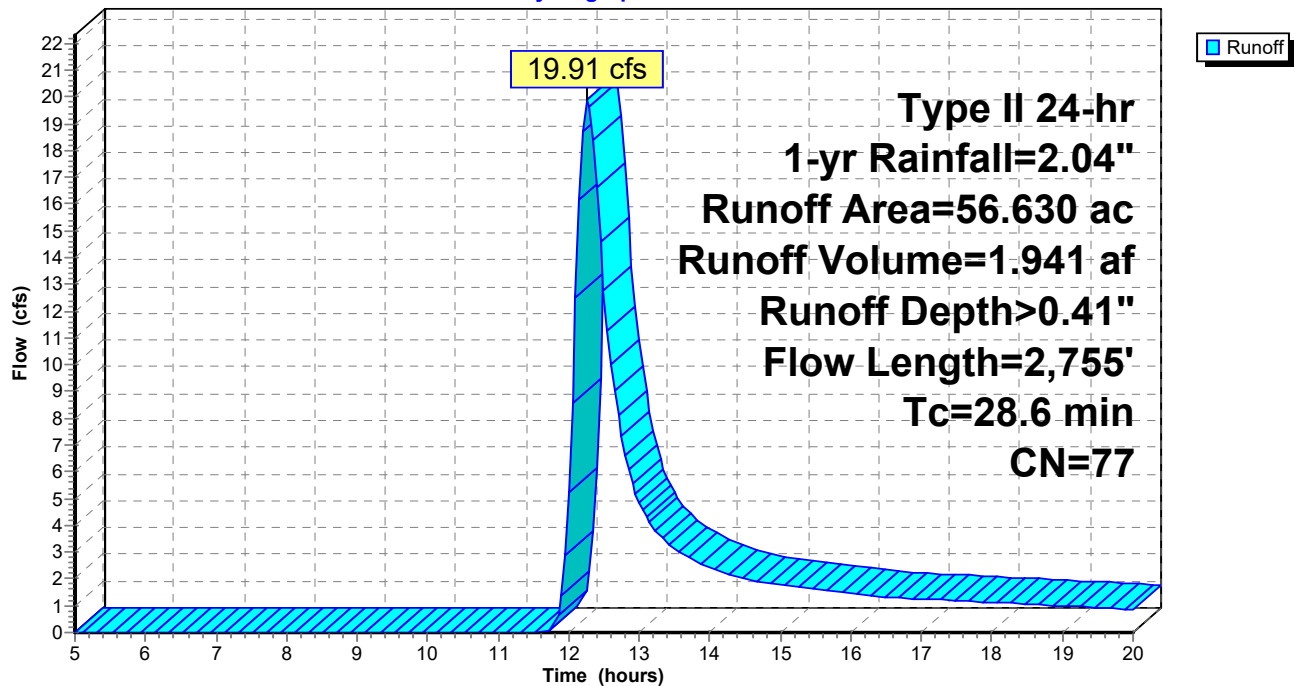
Type II 24-hr 1-yr Rainfall=2.04"

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Page 4

Subcatchment 1S: DA-1

Hydrograph



Existing Drainage Areas

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Type II 24-hr 1-yr Rainfall=2.04"

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Summary for Subcatchment 2S: DA-2

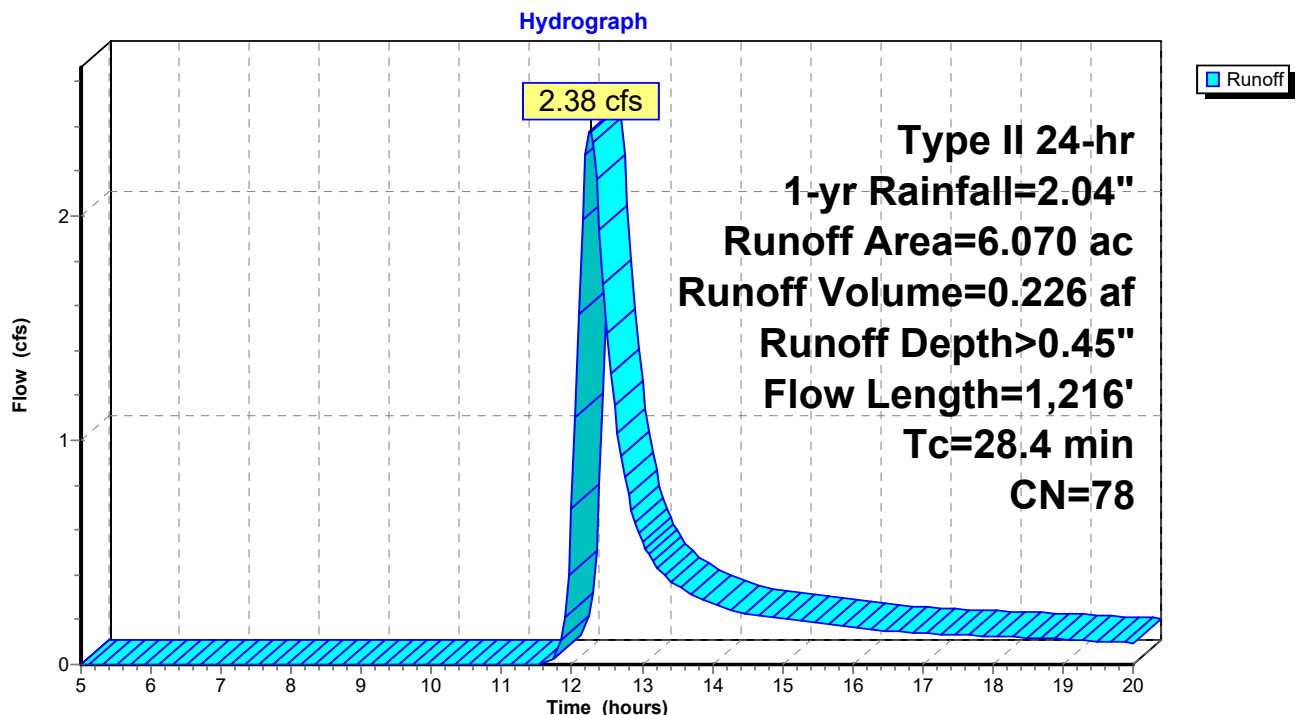
Runoff = 2.38 cfs @ 12.26 hrs, Volume= 0.226 af, Depth> 0.45"
Routed to Reach 2R : Pt of Study 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-yr Rainfall=2.04"

Area (ac)	CN	Description
3.330	77	Woods, Good, HSG D
2.740	80	>75% Grass cover, Good, HSG D
6.070	78	Weighted Average
6.070		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.5	100	0.0400	0.13		Sheet Flow, Sheet Flow Grass: Dense n= 0.240 P2= 2.39"
14.2	555	0.0170	0.65		Shallow Concentrated Flow, Shallow Woodland Kv= 5.0 fps
1.5	281	0.0360	3.05		Shallow Concentrated Flow, Shallow Unpaved Kv= 16.1 fps
0.2	280	0.1210	20.51	205.13	Channel Flow, Swale Area= 10.0 sf Perim= 5.0' r= 2.00' n= 0.040 Earth, dense weeds
28.4	1,216	Total			

Subcatchment 2S: DA-2



Existing Drainage Areas

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Type II 24-hr 1-yr Rainfall=2.04"

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Summary for Subcatchment 3S: DA-3

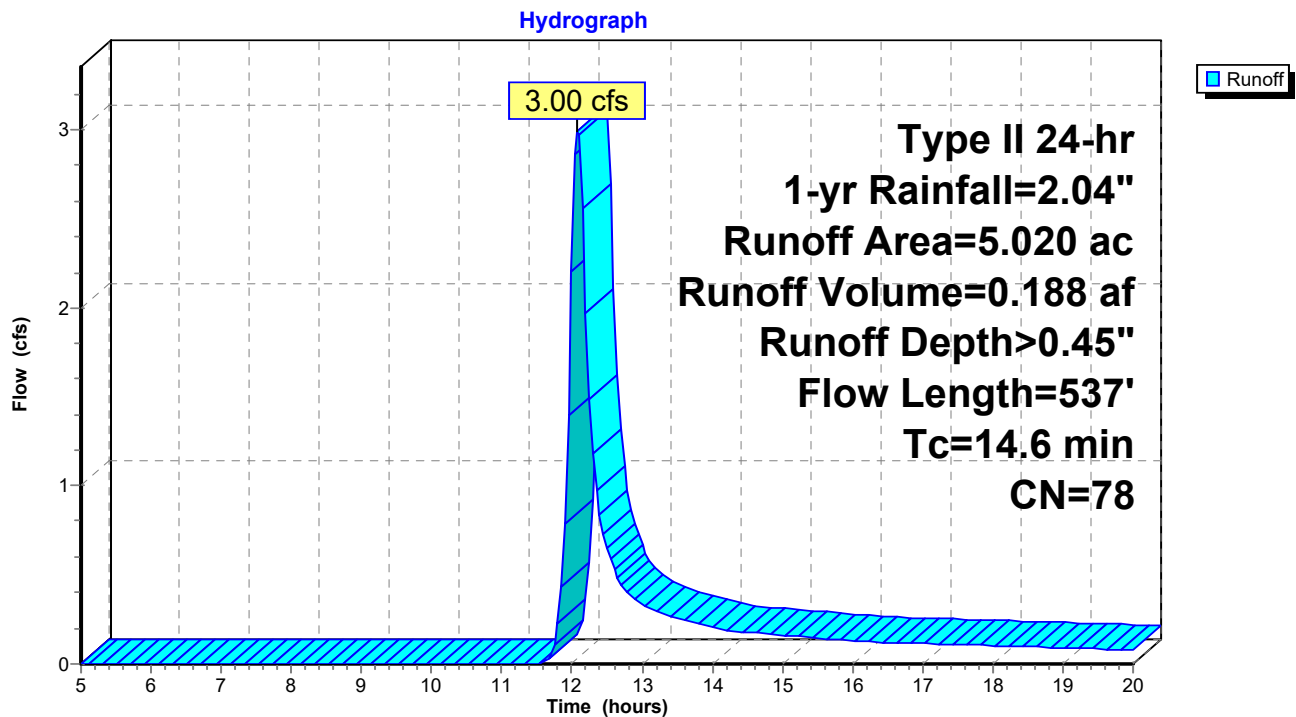
Runoff = 3.00 cfs @ 12.09 hrs, Volume= 0.188 af, Depth> 0.45"
Routed to Reach 3R : Pt of Study 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-yr Rainfall=2.04"

Area (ac)	CN	Description
3.480	77	Woods, Good, HSG D
1.540	80	>75% Grass cover, Good, HSG D
5.020	78	Weighted Average
5.020		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	100	0.0500	0.15		Sheet Flow, Sheet Flow Grass: Dense n= 0.240 P2= 2.39"
1.5	287	0.0380	3.14		Shallow Concentrated Flow, Shallow Unpaved Kv= 16.1 fps
1.7	150	0.0870	1.47		Shallow Concentrated Flow, Shallow Woodland Kv= 5.0 fps
14.6	537	Total			

Subcatchment 3S: DA-3



Existing Drainage Areas

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Type II 24-hr 1-yr Rainfall=2.04"

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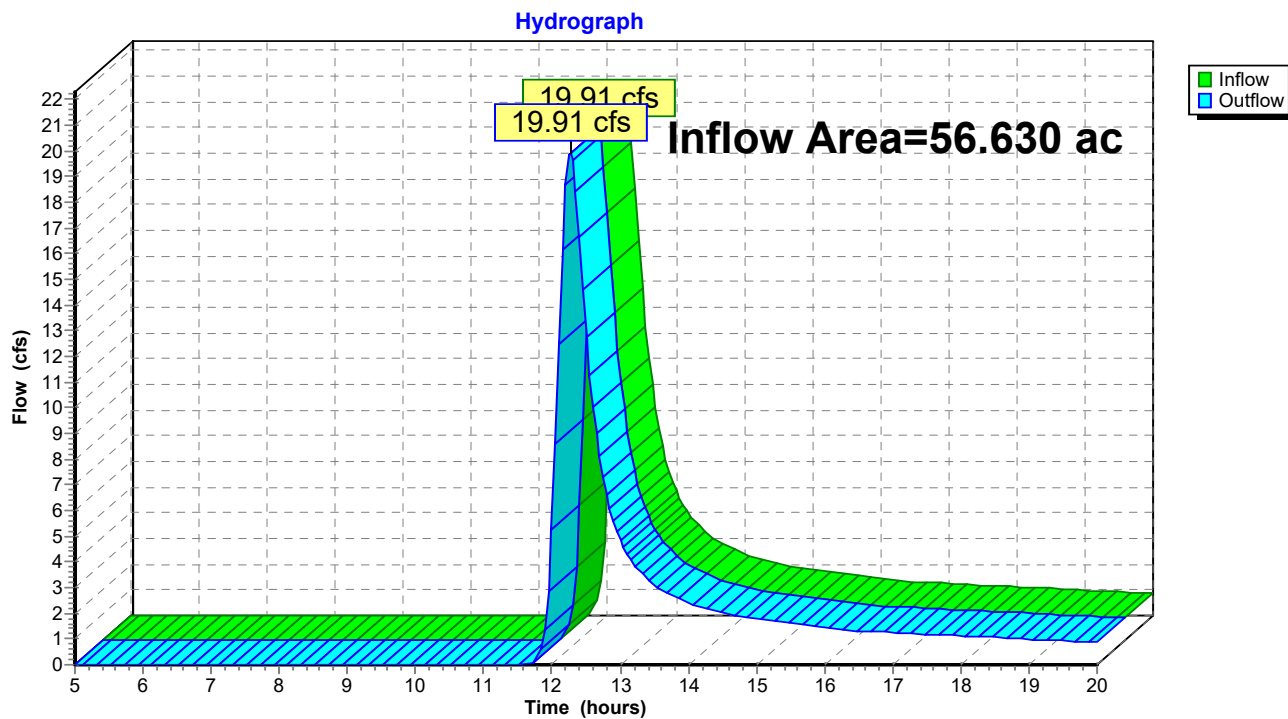
Page 7

Summary for Reach 1R: Pt of Study 1

Inflow Area = 56.630 ac, 0.00% Impervious, Inflow Depth > 0.41" for 1-yr event
Inflow = 19.91 cfs @ 12.27 hrs, Volume= 1.941 af
Outflow = 19.91 cfs @ 12.27 hrs, Volume= 1.941 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 1R: Pt of Study 1



Existing Drainage Areas

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Type II 24-hr 1-yr Rainfall=2.04"

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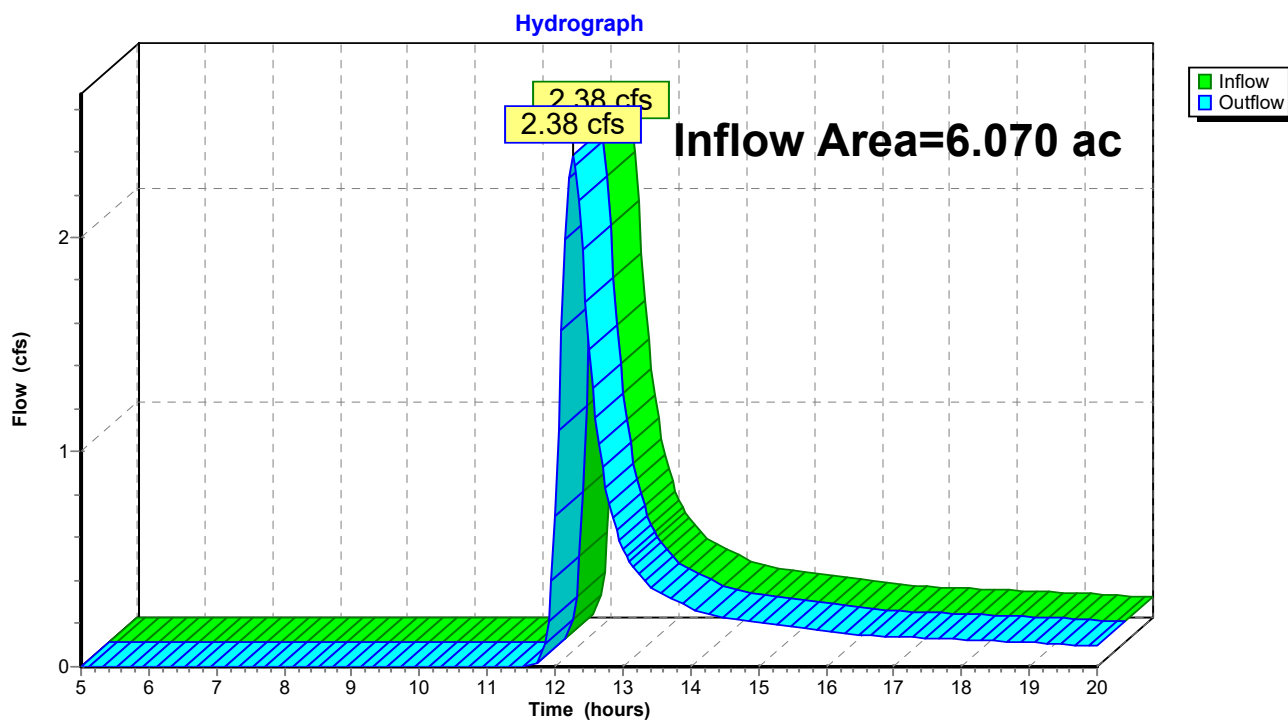
Page 8

Summary for Reach 2R: Pt of Study 2

Inflow Area = 6.070 ac, 0.00% Impervious, Inflow Depth > 0.45" for 1-yr event
Inflow = 2.38 cfs @ 12.26 hrs, Volume= 0.226 af
Outflow = 2.38 cfs @ 12.26 hrs, Volume= 0.226 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 2R: Pt of Study 2



Existing Drainage Areas

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Type II 24-hr 1-yr Rainfall=2.04"

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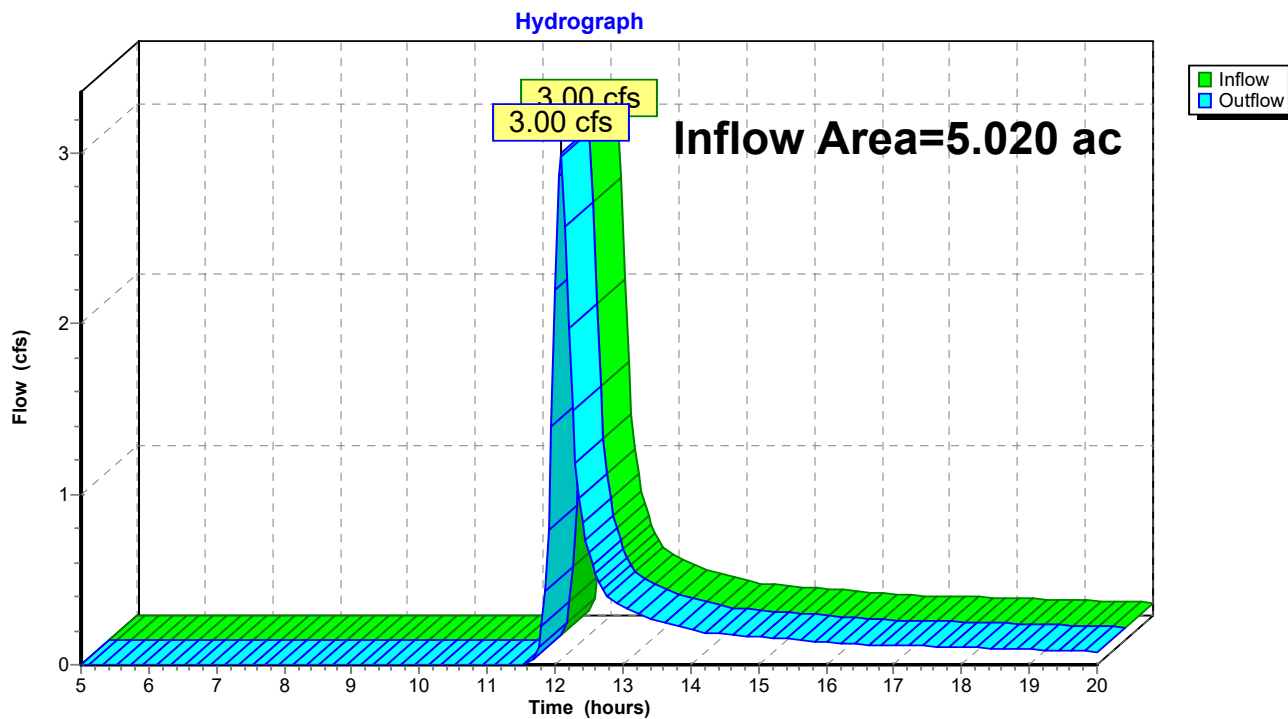
Page 9

Summary for Reach 3R: Pt of Study 3

Inflow Area = 5.020 ac, 0.00% Impervious, Inflow Depth > 0.45" for 1-yr event
Inflow = 3.00 cfs @ 12.09 hrs, Volume= 0.188 af
Outflow = 3.00 cfs @ 12.09 hrs, Volume= 0.188 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 3R: Pt of Study 3



Existing Drainage Areas

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Type II 24-hr 10-yr Rainfall=3.43"

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Summary for Subcatchment 1S: DA-1

Runoff = 67.61 cfs @ 12.24 hrs, Volume= 5.874 af, Depth> 1.24"
Routed to Reach 1R : Pt of Study 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=3.43"

Area (ac)	CN	Description
21.210	77	Woods, Good, HSG D
17.420	80	>75% Grass cover, Good, HSG D
18.000	73	Brush, Good, HSG D
56.630	77	Weighted Average
56.630		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.0	100	0.0600	0.10		Sheet Flow, Sheet Flow Woods: Light underbrush n= 0.400 P2= 2.39"
4.6	410	0.0900	1.50		Shallow Concentrated Flow, Shallow Woodland Kv= 5.0 fps
6.7	840	0.0900	2.10		Shallow Concentrated Flow, Shallow Short Grass Pasture Kv= 7.0 fps
1.3	1,405	0.0750	17.78	213.31	Channel Flow, Swale Area= 12.0 sf Perim= 8.0' r= 1.50' n= 0.030 Earth, clean & winding
28.6	2,755	Total			

Existing Drainage Areas

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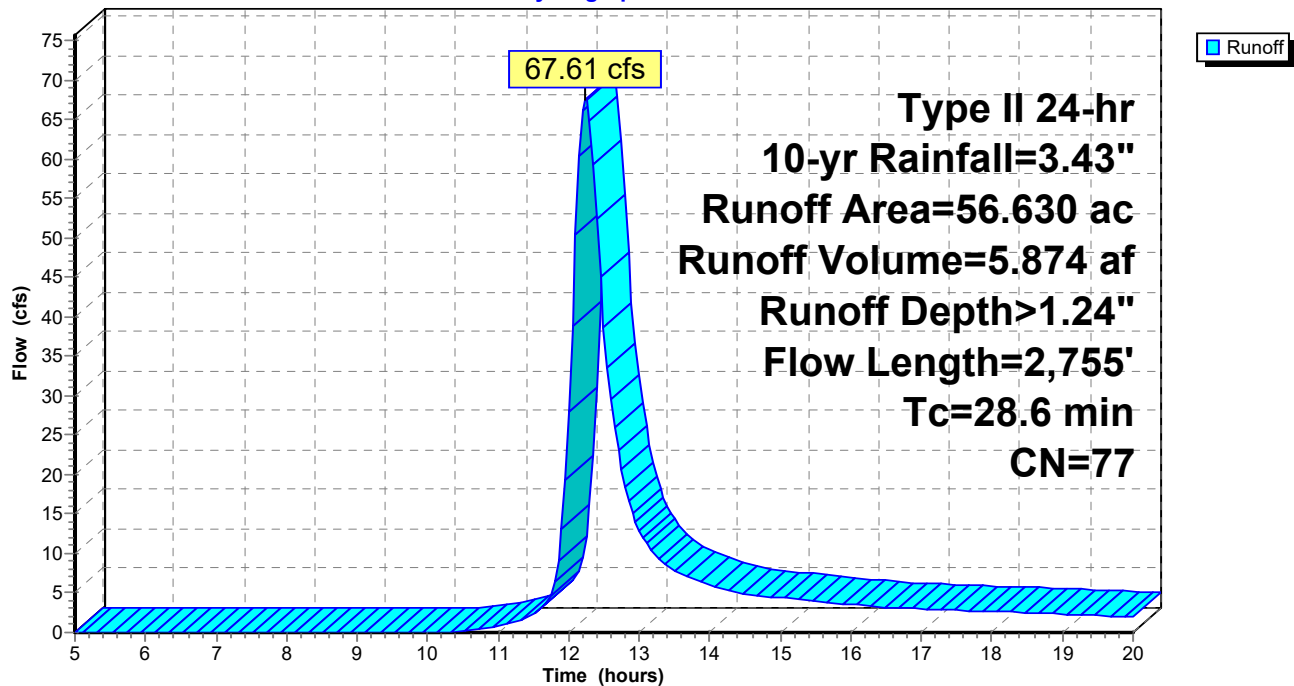
Type II 24-hr 10-yr Rainfall=3.43"

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Subcatchment 1S: DA-1

Hydrograph



Existing Drainage Areas

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Type II 24-hr 10-yr Rainfall=3.43"

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Summary for Subcatchment 2S: DA-2

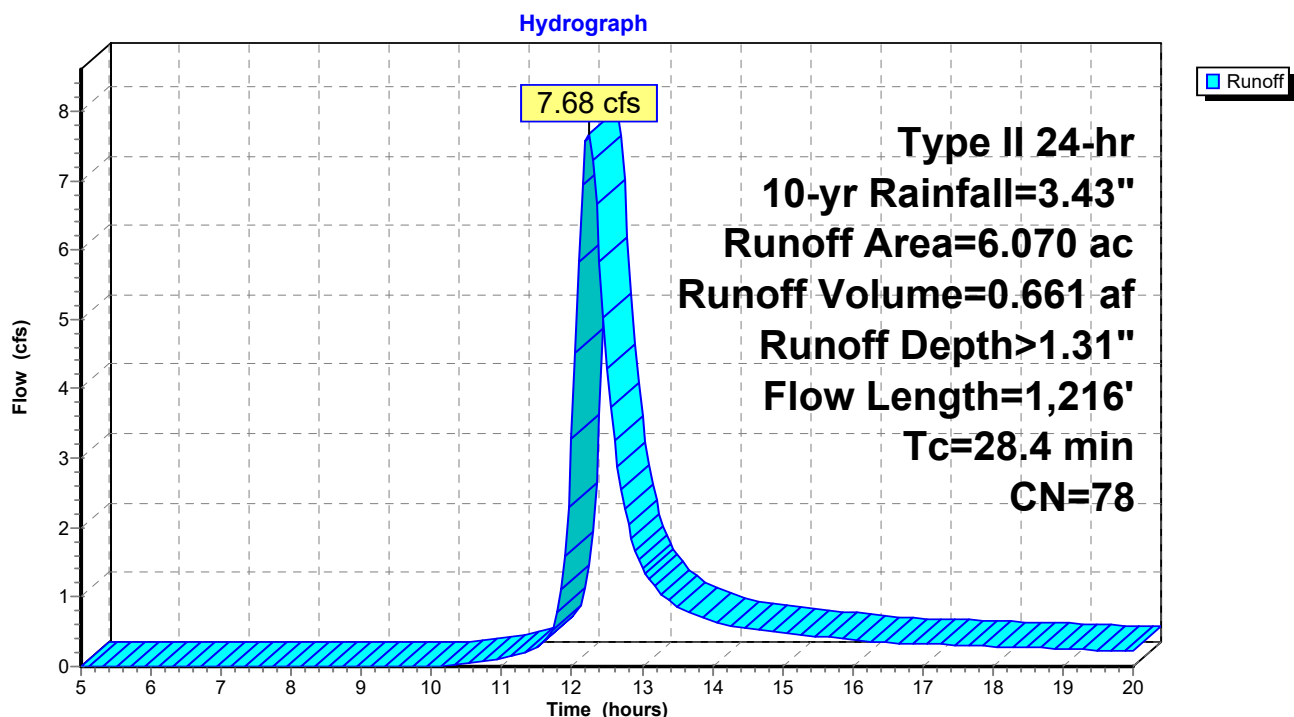
Runoff = 7.68 cfs @ 12.23 hrs, Volume= 0.661 af, Depth> 1.31"
Routed to Reach 2R : Pt of Study 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=3.43"

Area (ac)	CN	Description
3.330	77	Woods, Good, HSG D
2.740	80	>75% Grass cover, Good, HSG D
6.070	78	Weighted Average
6.070		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.5	100	0.0400	0.13		Sheet Flow, Sheet Flow Grass: Dense n= 0.240 P2= 2.39"
14.2	555	0.0170	0.65		Shallow Concentrated Flow, Shallow Woodland Kv= 5.0 fps
1.5	281	0.0360	3.05		Shallow Concentrated Flow, Shallow Unpaved Kv= 16.1 fps
0.2	280	0.1210	20.51	205.13	Channel Flow, Swale Area= 10.0 sf Perim= 5.0' r= 2.00' n= 0.040 Earth, dense weeds
28.4	1,216	Total			

Subcatchment 2S: DA-2



Existing Drainage Areas

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Type II 24-hr 10-yr Rainfall=3.43"

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Summary for Subcatchment 3S: DA-3

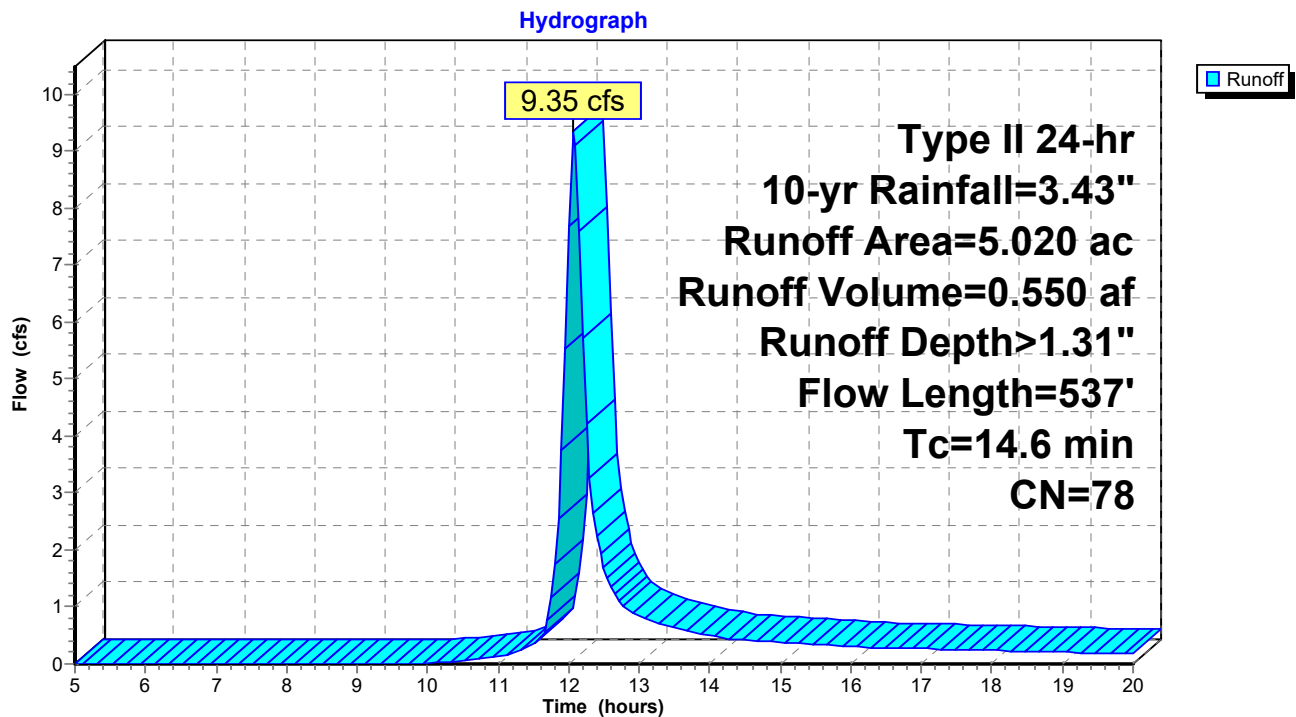
Runoff = 9.35 cfs @ 12.07 hrs, Volume= 0.550 af, Depth> 1.31"
Routed to Reach 3R : Pt of Study 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=3.43"

Area (ac)	CN	Description
3.480	77	Woods, Good, HSG D
1.540	80	>75% Grass cover, Good, HSG D
5.020	78	Weighted Average
5.020		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	100	0.0500	0.15		Sheet Flow, Sheet Flow Grass: Dense n= 0.240 P2= 2.39"
1.5	287	0.0380	3.14		Shallow Concentrated Flow, Shallow Unpaved Kv= 16.1 fps
1.7	150	0.0870	1.47		Shallow Concentrated Flow, Shallow Woodland Kv= 5.0 fps
14.6	537	Total			

Subcatchment 3S: DA-3



Existing Drainage Areas

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Type II 24-hr 10-yr Rainfall=3.43"

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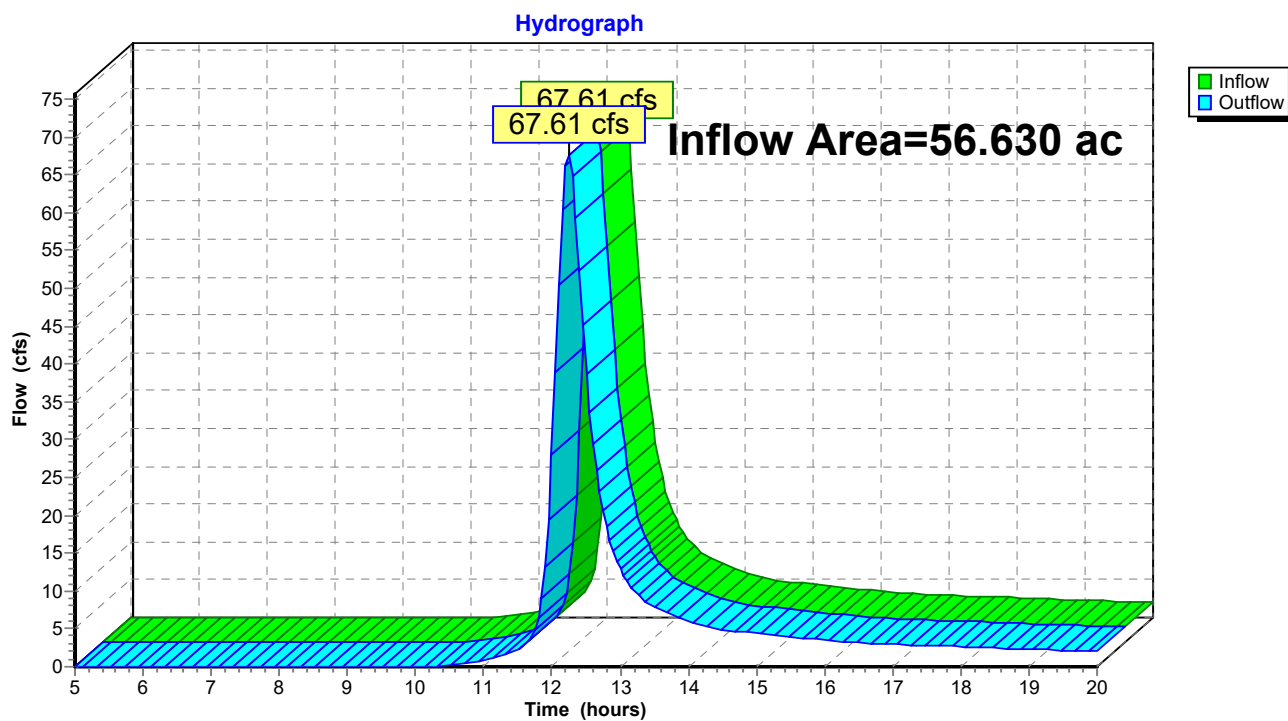
Page 14

Summary for Reach 1R: Pt of Study 1

Inflow Area = 56.630 ac, 0.00% Impervious, Inflow Depth > 1.24" for 10-yr event
Inflow = 67.61 cfs @ 12.24 hrs, Volume= 5.874 af
Outflow = 67.61 cfs @ 12.24 hrs, Volume= 5.874 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 1R: Pt of Study 1



Existing Drainage Areas

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Type II 24-hr 10-yr Rainfall=3.43"

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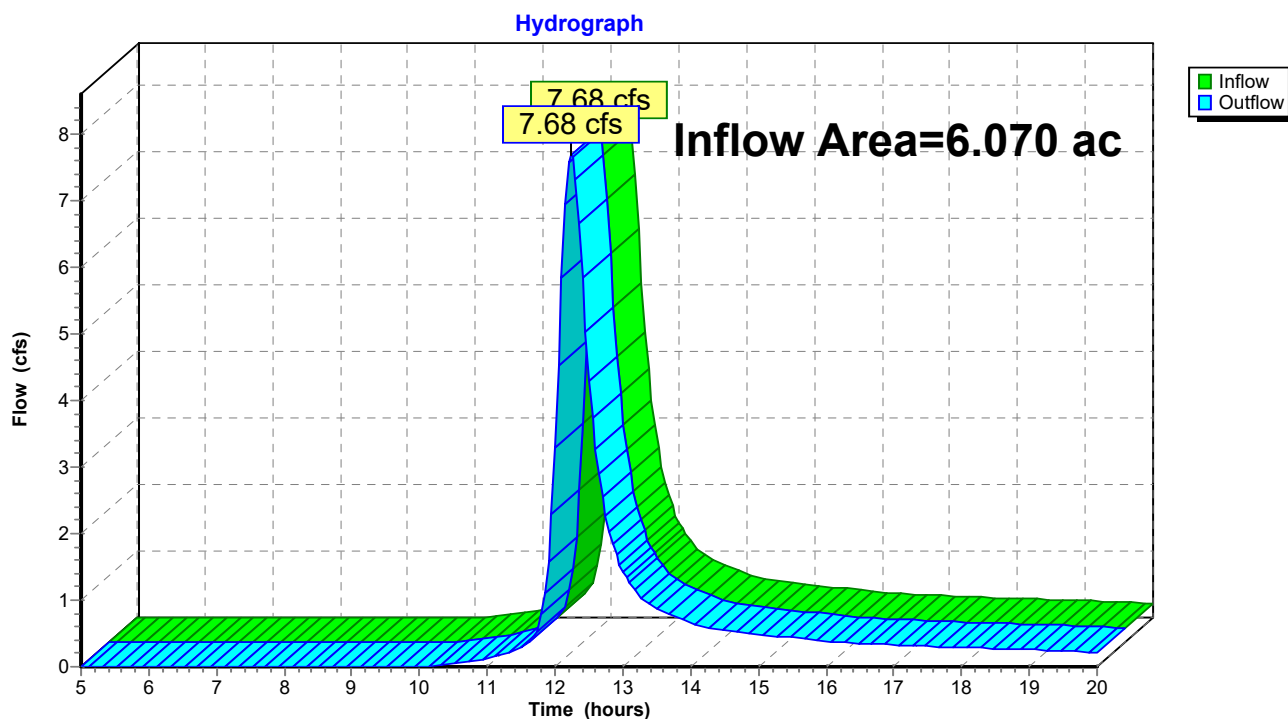
Page 15

Summary for Reach 2R: Pt of Study 2

Inflow Area = 6.070 ac, 0.00% Impervious, Inflow Depth > 1.31" for 10-yr event
Inflow = 7.68 cfs @ 12.23 hrs, Volume= 0.661 af
Outflow = 7.68 cfs @ 12.23 hrs, Volume= 0.661 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 2R: Pt of Study 2



Existing Drainage Areas

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Type II 24-hr 10-yr Rainfall=3.43"

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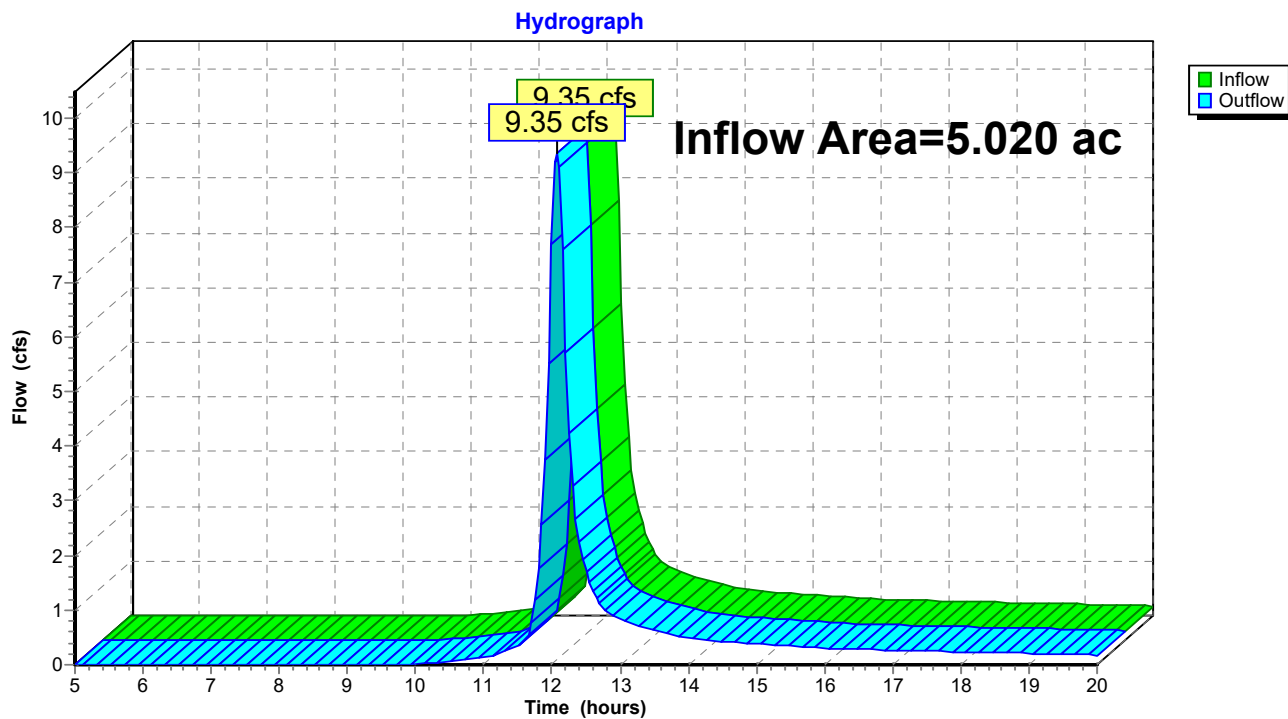
Page 16

Summary for Reach 3R: Pt of Study 3

Inflow Area = 5.020 ac, 0.00% Impervious, Inflow Depth > 1.31" for 10-yr event
Inflow = 9.35 cfs @ 12.07 hrs, Volume= 0.550 af
Outflow = 9.35 cfs @ 12.07 hrs, Volume= 0.550 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 3R: Pt of Study 3



Existing Drainage Areas

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Type II 24-hr 100-yr Rainfall=5.78"

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Summary for Subcatchment 1S: DA-1

Runoff = 165.93 cfs @ 12.23 hrs, Volume= 14.254 af, Depth> 3.02"
 Routed to Reach 1R : Pt of Study 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type II 24-hr 100-yr Rainfall=5.78"

Area (ac)	CN	Description
21.210	77	Woods, Good, HSG D
17.420	80	>75% Grass cover, Good, HSG D
18.000	73	Brush, Good, HSG D
56.630	77	Weighted Average
56.630		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.0	100	0.0600	0.10		Sheet Flow, Sheet Flow Woods: Light underbrush n= 0.400 P2= 2.39"
4.6	410	0.0900	1.50		Shallow Concentrated Flow, Shallow Woodland Kv= 5.0 fps
6.7	840	0.0900	2.10		Shallow Concentrated Flow, Shallow Short Grass Pasture Kv= 7.0 fps
1.3	1,405	0.0750	17.78	213.31	Channel Flow, Swale Area= 12.0 sf Perim= 8.0' r= 1.50' n= 0.030 Earth, clean & winding
28.6	2,755	Total			

Existing Drainage Areas

Prepared by Napierala Consulting, P.C.

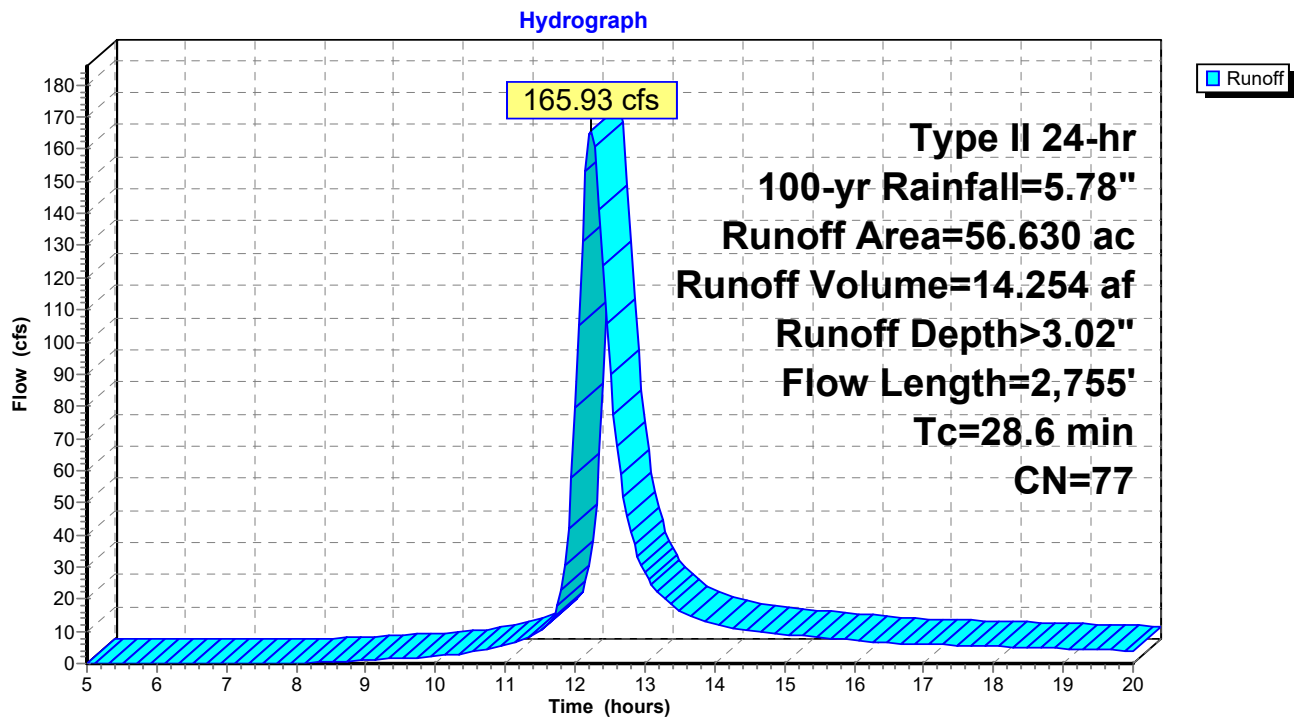
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Type II 24-hr 100-yr Rainfall=5.78"

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Subcatchment 1S: DA-1



Existing Drainage Areas

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Type II 24-hr 100-yr Rainfall=5.78"

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Summary for Subcatchment 2S: DA-2

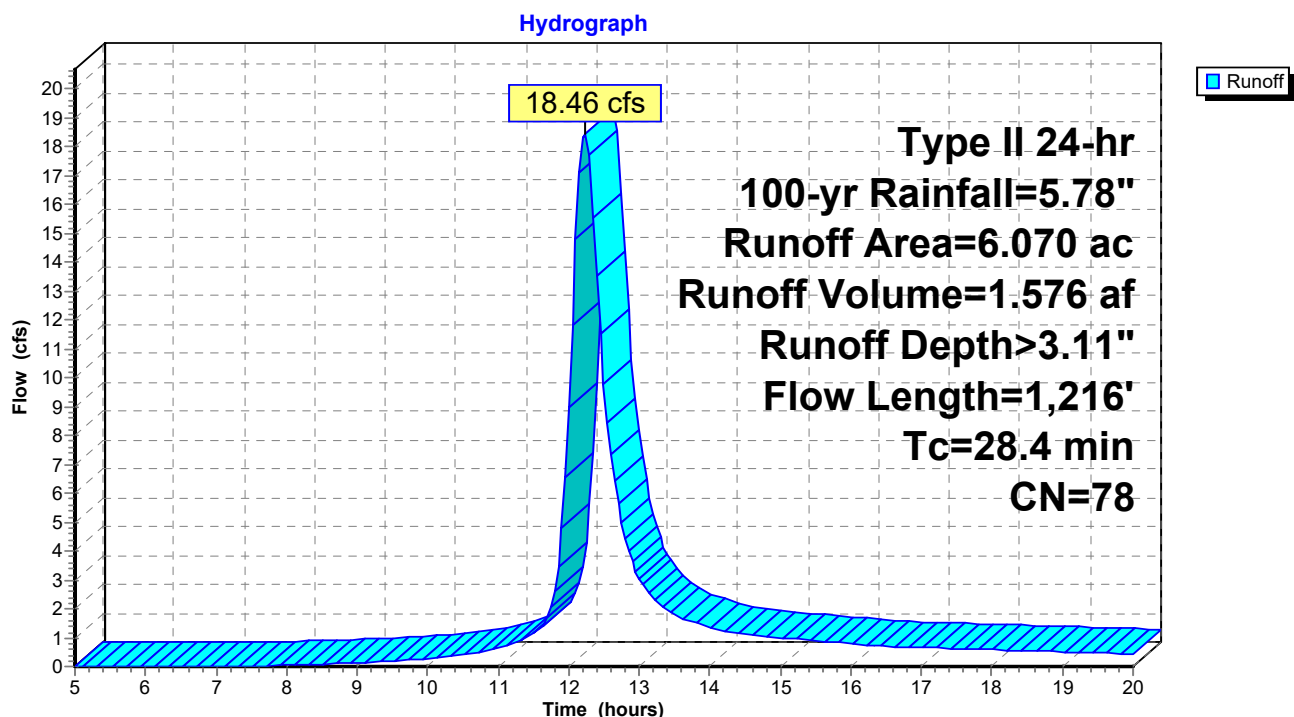
Runoff = 18.46 cfs @ 12.22 hrs, Volume= 1.576 af, Depth> 3.11"
Routed to Reach 2R : Pt of Study 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=5.78"

Area (ac)	CN	Description
3.330	77	Woods, Good, HSG D
2.740	80	>75% Grass cover, Good, HSG D
6.070	78	Weighted Average
6.070		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.5	100	0.0400	0.13		Sheet Flow, Sheet Flow Grass: Dense n= 0.240 P2= 2.39"
14.2	555	0.0170	0.65		Shallow Concentrated Flow, Shallow Woodland Kv= 5.0 fps
1.5	281	0.0360	3.05		Shallow Concentrated Flow, Shallow Unpaved Kv= 16.1 fps
0.2	280	0.1210	20.51	205.13	Channel Flow, Swale Area= 10.0 sf Perim= 5.0' r= 2.00' n= 0.040 Earth, dense weeds
28.4	1,216	Total			

Subcatchment 2S: DA-2



Existing Drainage Areas

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Type II 24-hr 100-yr Rainfall=5.78"

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Summary for Subcatchment 3S: DA-3

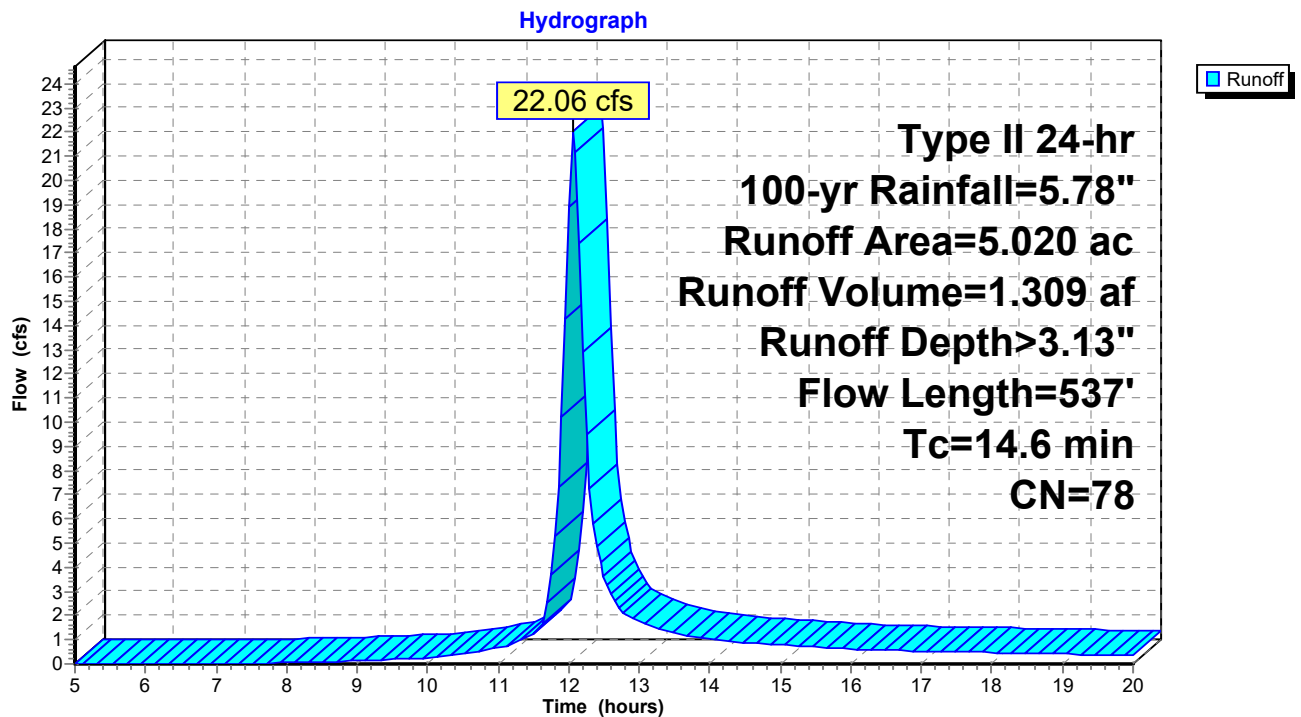
Runoff = 22.06 cfs @ 12.07 hrs, Volume= 1.309 af, Depth> 3.13"
Routed to Reach 3R : Pt of Study 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=5.78"

Area (ac)	CN	Description
3.480	77	Woods, Good, HSG D
1.540	80	>75% Grass cover, Good, HSG D
5.020	78	Weighted Average
5.020		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	100	0.0500	0.15		Sheet Flow, Sheet Flow Grass: Dense n= 0.240 P2= 2.39"
1.5	287	0.0380	3.14		Shallow Concentrated Flow, Shallow Unpaved Kv= 16.1 fps
1.7	150	0.0870	1.47		Shallow Concentrated Flow, Shallow Woodland Kv= 5.0 fps
14.6	537	Total			

Subcatchment 3S: DA-3



Existing Drainage Areas

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Type II 24-hr 100-yr Rainfall=5.78"

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Summary for Reach 1R: Pt of Study 1

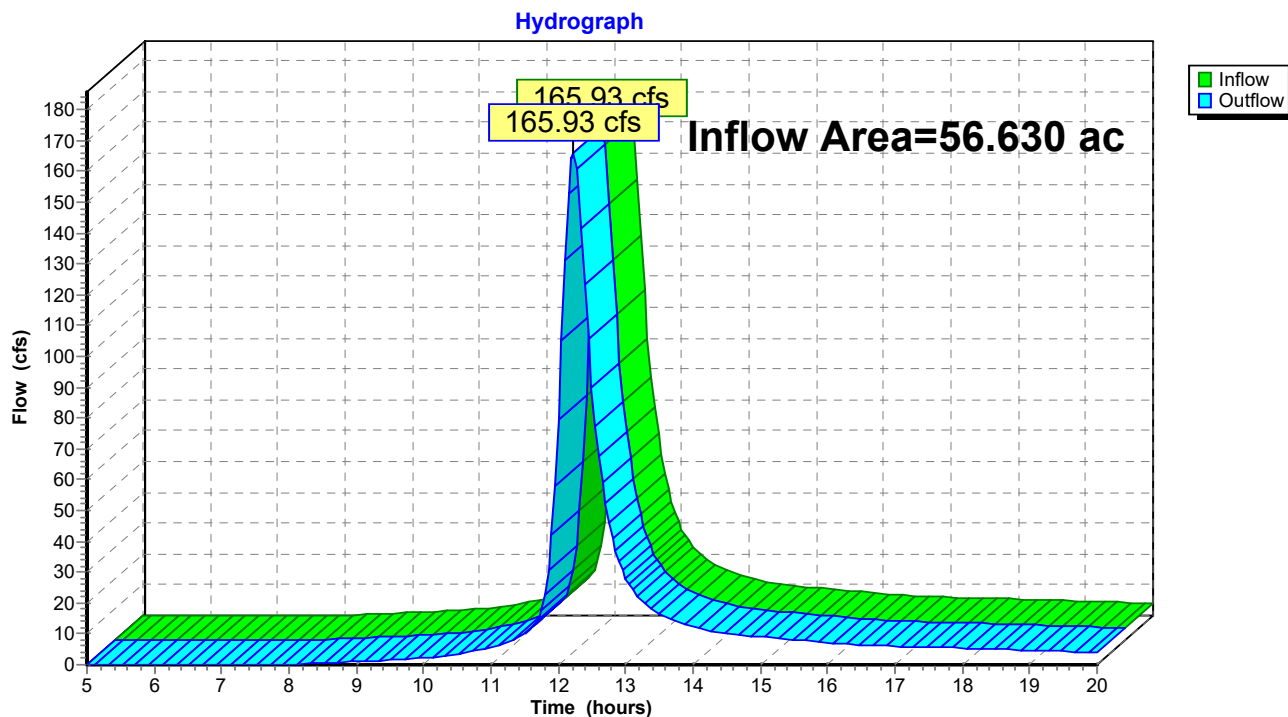
Inflow Area = 56.630 ac, 0.00% Impervious, Inflow Depth > 3.02" for 100-yr event

Inflow = 165.93 cfs @ 12.23 hrs, Volume= 14.254 af

Outflow = 165.93 cfs @ 12.23 hrs, Volume= 14.254 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 1R: Pt of Study 1



Existing Drainage Areas

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Type II 24-hr 100-yr Rainfall=5.78"

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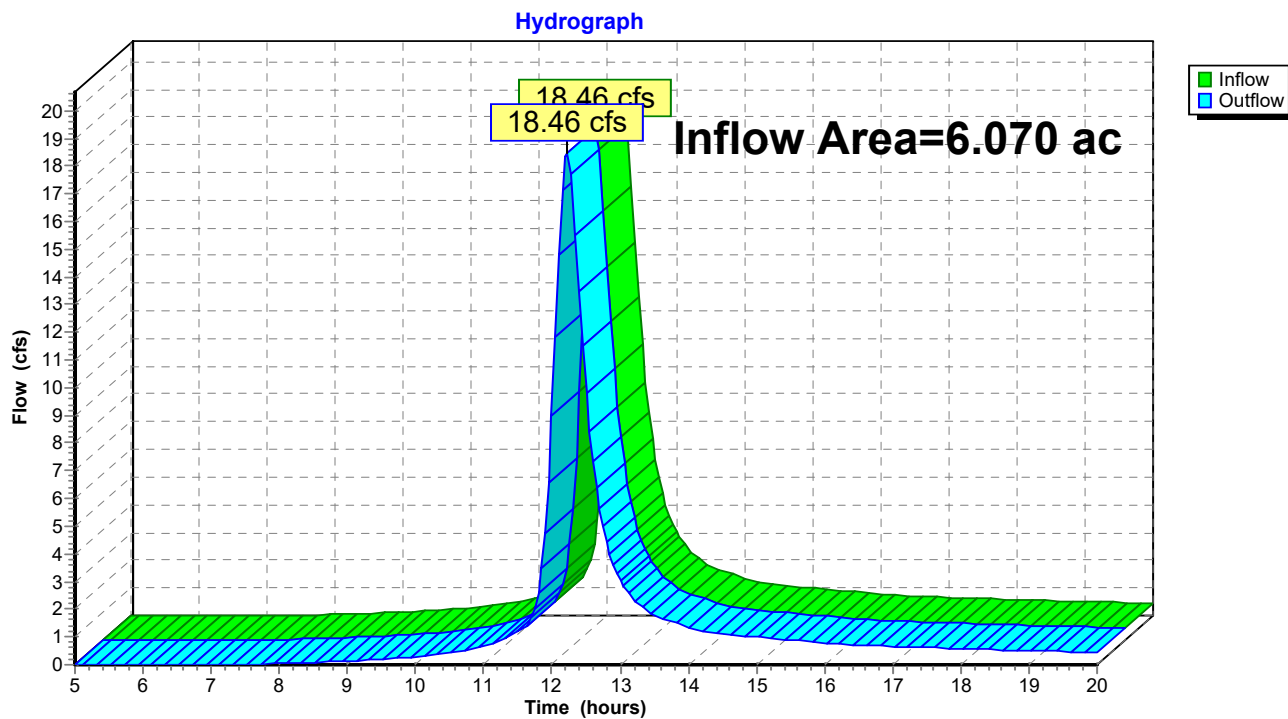
Page 22

Summary for Reach 2R: Pt of Study 2

Inflow Area = 6.070 ac, 0.00% Impervious, Inflow Depth > 3.11" for 100-yr event
Inflow = 18.46 cfs @ 12.22 hrs, Volume= 1.576 af
Outflow = 18.46 cfs @ 12.22 hrs, Volume= 1.576 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 2R: Pt of Study 2



Existing Drainage Areas

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Type II 24-hr 100-yr Rainfall=5.78"

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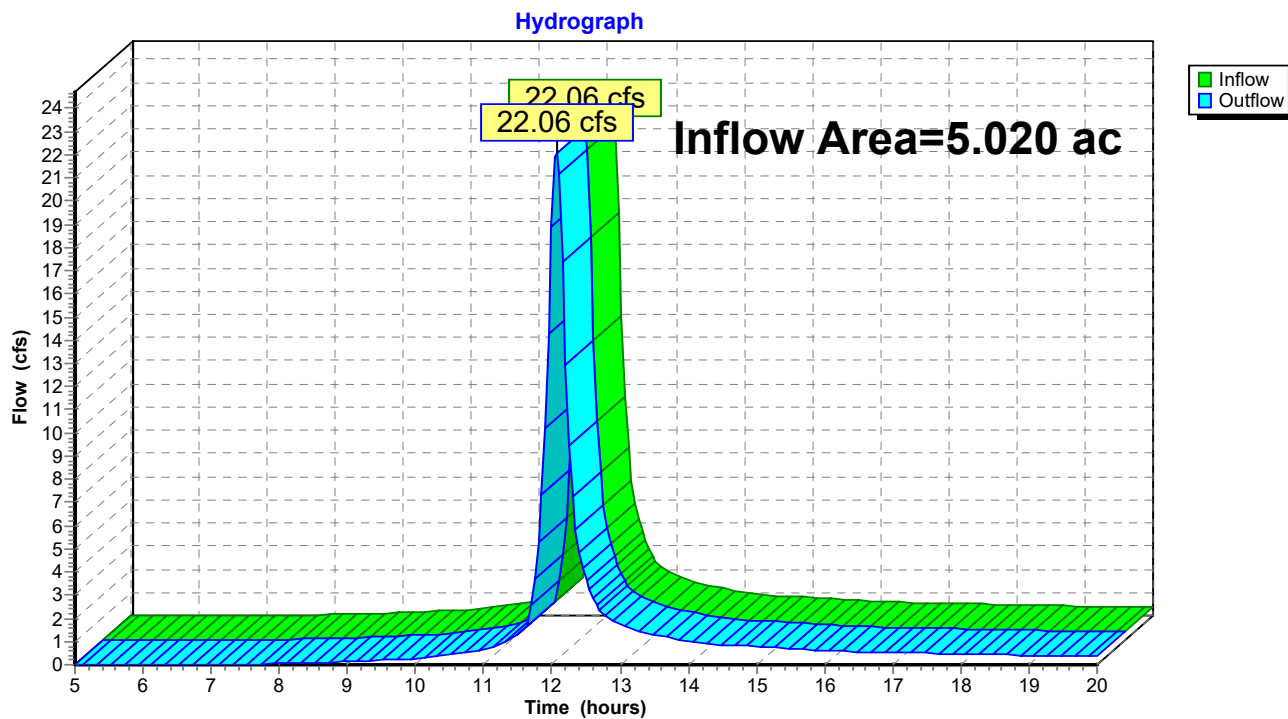
Page 23

Summary for Reach 3R: Pt of Study 3

Inflow Area = 5.020 ac, 0.00% Impervious, Inflow Depth > 3.13" for 100-yr event
Inflow = 22.06 cfs @ 12.07 hrs, Volume= 1.309 af
Outflow = 22.06 cfs @ 12.07 hrs, Volume= 1.309 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 3R: Pt of Study 3





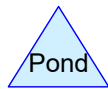
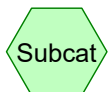
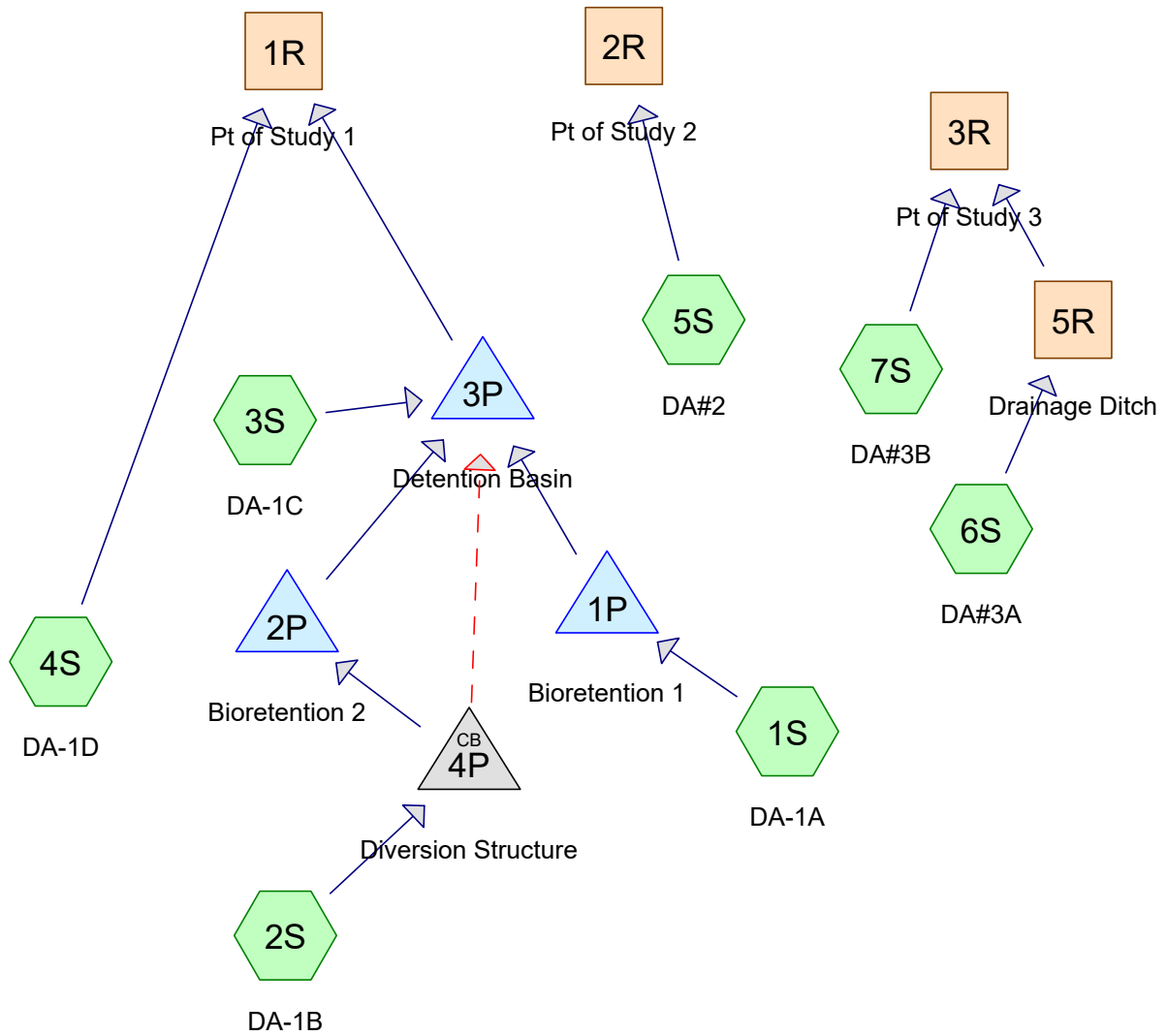
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APPENDIX B: HYDRO CAD – PROPOSED CONDITIONS



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Proposed Drainage Areas

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Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-yr	Type II 24-hr		Default	24.00	1	2.04	2
2	10-yr	Type II 24-hr		Default	24.00	1	3.43	2
3	100-yr	Type II 24-hr		Default	24.00	1	5.78	2

Proposed Drainage Areas

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Type II 24-hr 1-yr Rainfall=2.04"

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Summary for Subcatchment 1S: DA-1A

Runoff = 15.26 cfs @ 12.40 hrs, Volume= 1.963 af, Depth= 0.63"
Routed to Pond 1P : Bioretention 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Type II 24-hr 1-yr Rainfall=2.04"

Area (ac)	CN	Description
2.470	98	Paved parking, HSG D
1.870	98	Unconnected roofs, HSG D
24.080	80	>75% Grass cover, Good, HSG D
8.960	77	Woods, Good, HSG D
37.380	81	Weighted Average
33.040		88.39% Pervious Area
4.340		11.61% Impervious Area
1.870		43.09% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.9	100	0.0600	0.06		Sheet Flow, SHEET FLOW Woods: Dense underbrush n= 0.800 P2= 2.39"
4.8	370	0.0650	1.27		Shallow Concentrated Flow, SCF Woodland Kv= 5.0 fps
1.9	200	0.0650	1.78		Shallow Concentrated Flow, SCF Short Grass Pasture Kv= 7.0 fps
0.2	295	0.0300	19.80	79.19	Channel Flow, curb and gutter flow Area= 4.0 sf Perim= 4.0' r= 1.00' n= 0.013 Asphalt, smooth
1.7	1,100	0.0345	11.04	19.51	Pipe Channel, Pipe Flow 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
3.8	955	0.0050	4.20	50.44	Channel Flow, Area= 12.0 sf Perim= 12.0' r= 1.00' n= 0.025 Earth, grassed & winding
40.3	3,020	Total			

Proposed Drainage Areas

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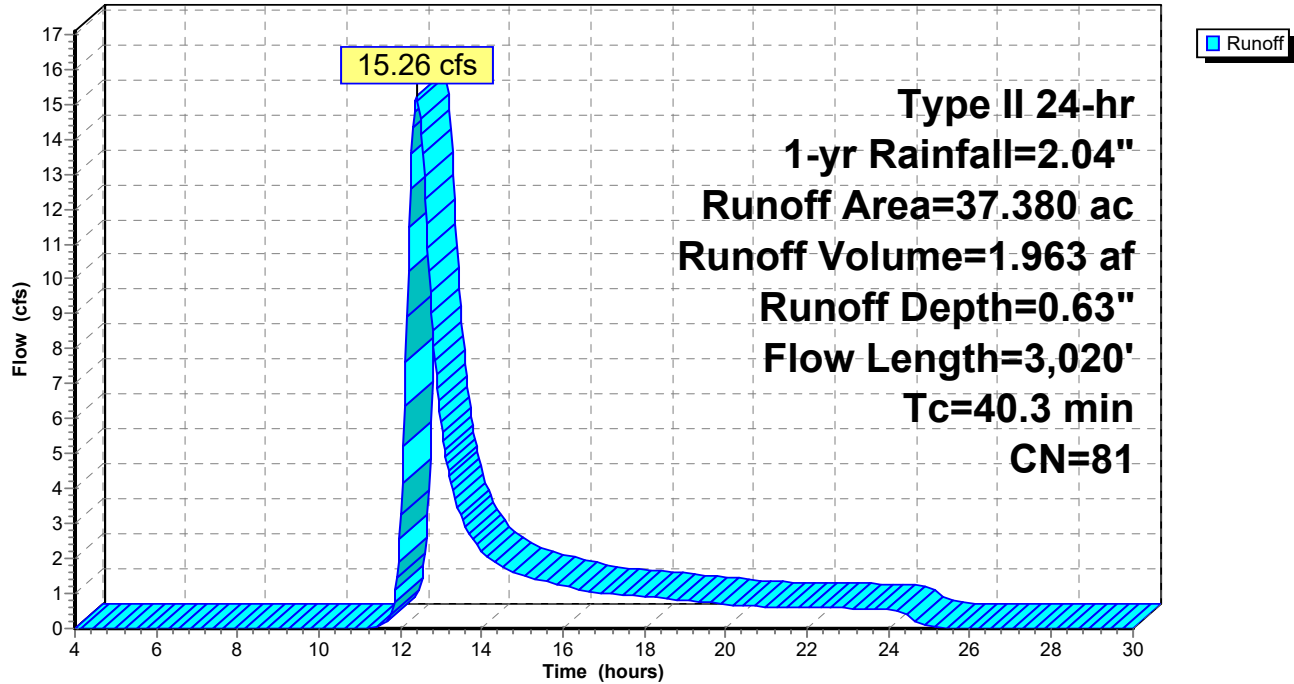
Type II 24-hr 1-yr Rainfall=2.04"

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Subcatchment 1S: DA-1A

Hydrograph



Proposed Drainage Areas

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Type II 24-hr 1-yr Rainfall=2.04"

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Summary for Subcatchment 2S: DA-1B

Runoff = 5.19 cfs @ 12.16 hrs, Volume= 0.436 af, Depth= 0.59"
Routed to Pond 4P : Diversion Structure

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Type II 24-hr 1-yr Rainfall=2.04"

Area (ac)	CN	Adj	Description
0.870	98		Paved parking, HSG D
0.410	98		Unconnected roofs, HSG D
4.000	80		>75% Grass cover, Good, HSG D
2.040	77		Woods, Good, HSG D
1.600	73		Brush, Good, HSG D
8.920	81	80	Weighted Average, UI Adjusted
7.640			85.65% Pervious Area
1.280			14.35% Impervious Area
0.410			32.03% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	100	0.0600	0.16		Sheet Flow, SHEET FLOW Grass: Dense n= 0.240 P2= 2.39"
4.6	410	0.0900	1.50		Shallow Concentrated Flow, SCF Woodland Kv= 5.0 fps
5.6	710	0.0920	2.12		Shallow Concentrated Flow, SCF Short Grass Pasture Kv= 7.0 fps
0.3	170	0.0200	9.55	76.42	Channel Flow, swale flow Area= 8.0 sf Perim= 8.0' r= 1.00' n= 0.022 Earth, clean & straight
21.1	1,390	Total			

Proposed Drainage Areas

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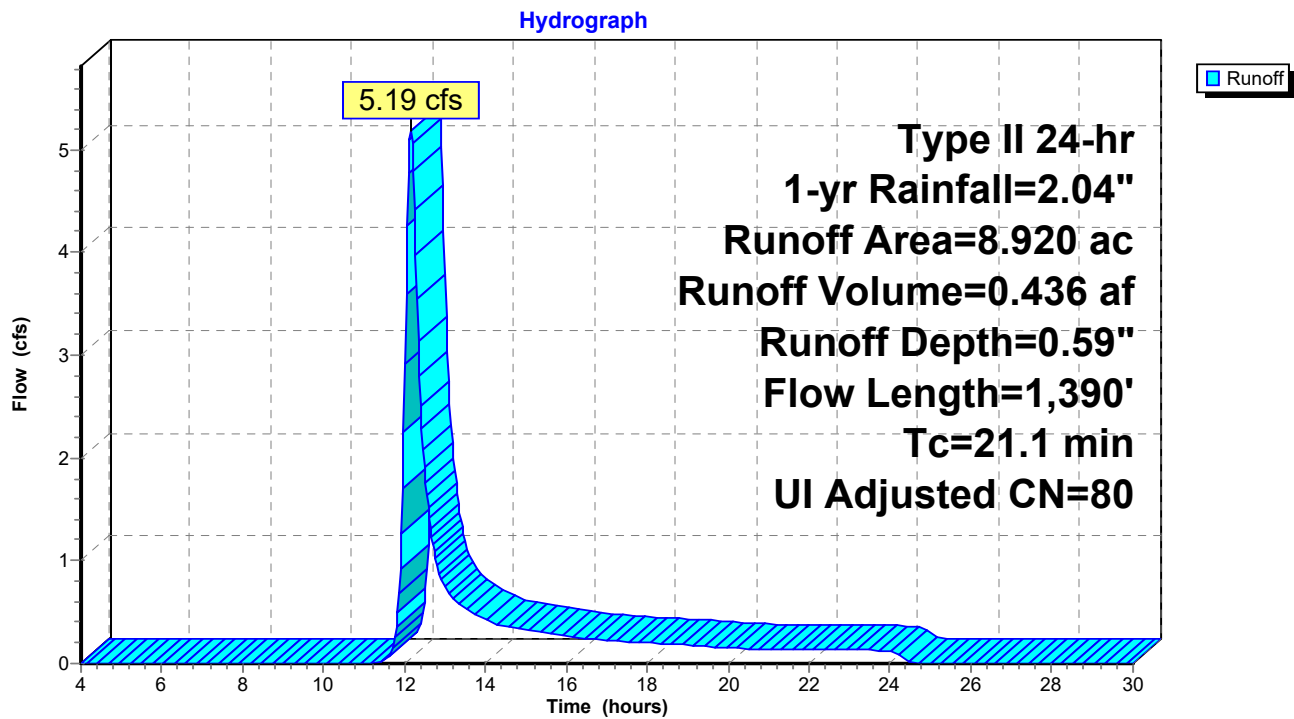
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Type II 24-hr 1-yr Rainfall=2.04"

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Subcatchment 2S: DA-1B



Proposed Drainage Areas

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Type II 24-hr 1-yr Rainfall=2.04"

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Summary for Subcatchment 3S: DA-1C

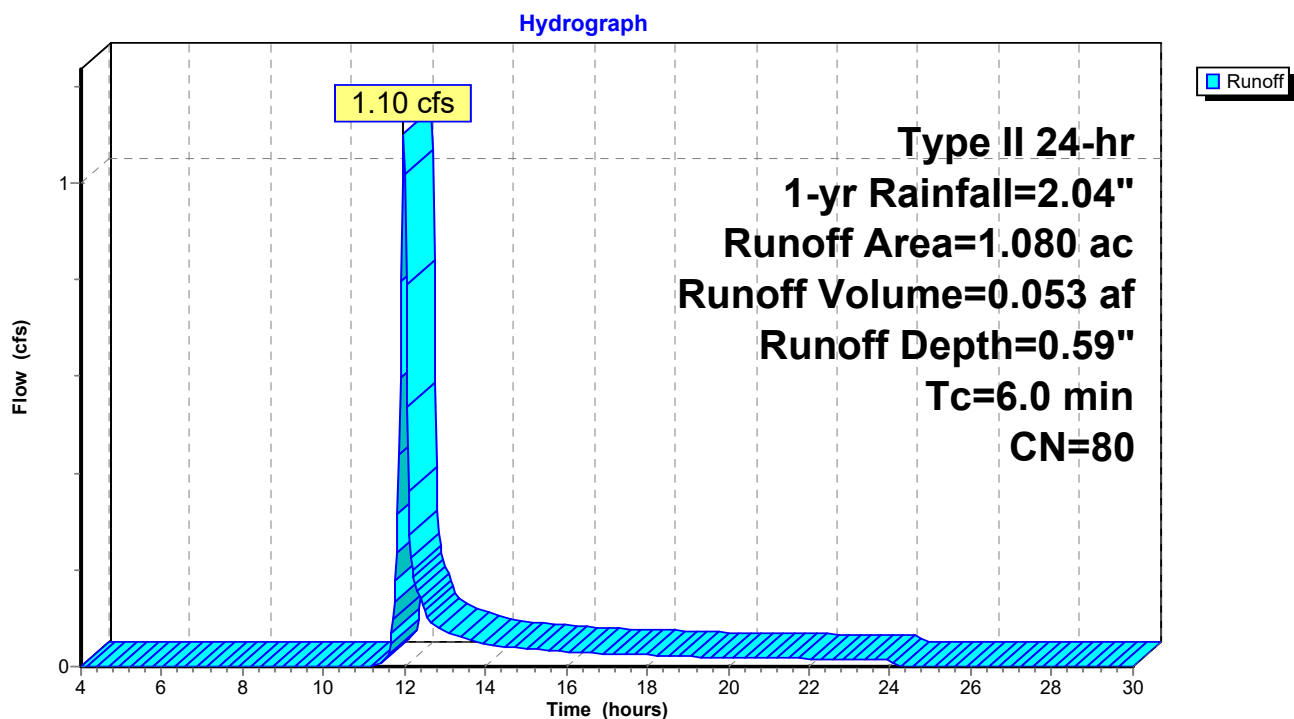
Runoff = 1.10 cfs @ 11.98 hrs, Volume= 0.053 af, Depth= 0.59"
Routed to Pond 3P : Detention Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Type II 24-hr 1-yr Rainfall=2.04"

Area (ac)	CN	Description
0.960	80	>75% Grass cover, Good, HSG D
0.120	77	Woods, Good, HSG D
1.080	80	Weighted Average
1.080		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Min TR 55 Value

Subcatchment 3S: DA-1C



Proposed Drainage Areas

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Type II 24-hr 1-yr Rainfall=2.04"

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Summary for Subcatchment 4S: DA-1D

Runoff = 4.26 cfs @ 12.40 hrs, Volume= 0.587 af, Depth= 0.47"
Routed to Reach 1R : Pt of Study 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Type II 24-hr 1-yr Rainfall=2.04"

Area (ac)	CN	Description
3.230	80	>75% Grass cover, Good, HSG D
8.910	77	Woods, Good, HSG D
0.200	98	Paved parking, HSG D
2.660	73	Brush, Good, HSG D
15.000	77	Weighted Average
14.800		98.67% Pervious Area
0.200		1.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.9	100	0.0600	0.06		Sheet Flow, SHEET FLOW Woods: Dense underbrush n= 0.800 P2= 2.39"
5.4	485	0.0900	1.50		Shallow Concentrated Flow, SCF Woodland Kv= 5.0 fps
4.1	517	0.0900	2.10		Shallow Concentrated Flow, SCF Short Grass Pasture Kv= 7.0 fps
1.2	1,155	0.0750	16.28	260.45	Channel Flow, SWALE Area= 16.0 sf Perim= 16.0' r= 1.00' n= 0.025 Earth, clean & winding
38.6	2,257	Total			

Proposed Drainage Areas

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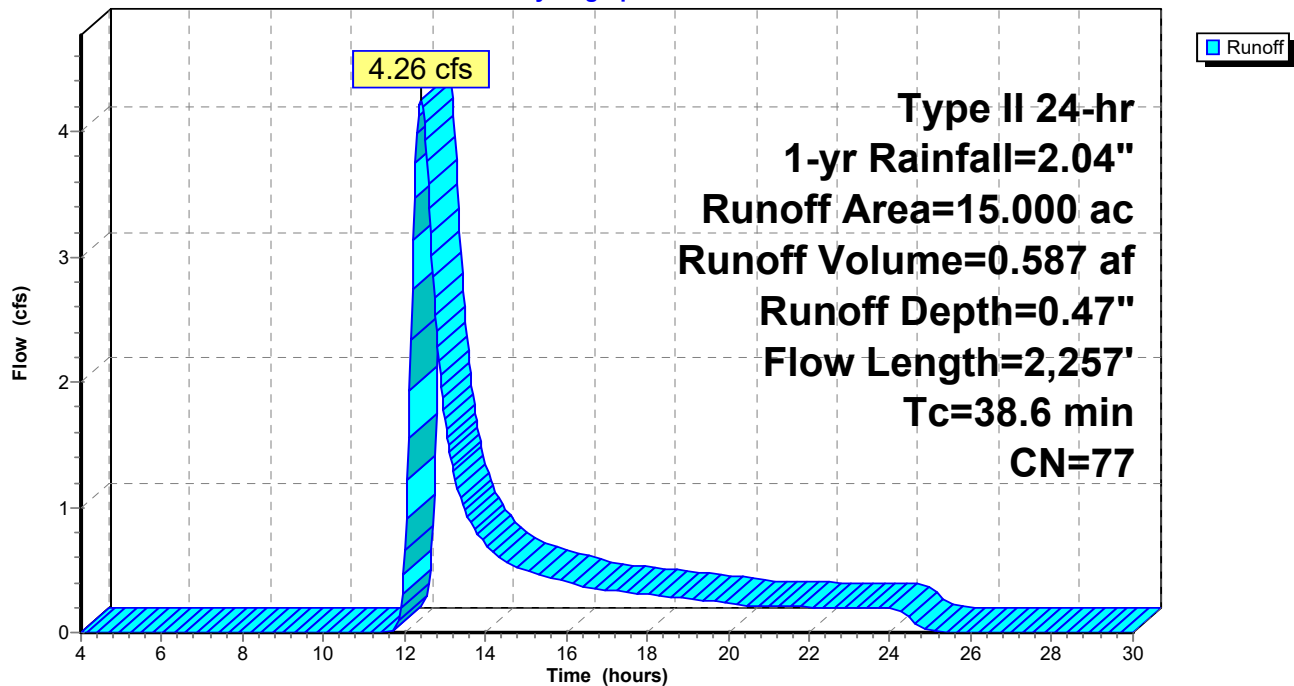
Type II 24-hr 1-yr Rainfall=2.04"

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Subcatchment 4S: DA-1D

Hydrograph



Proposed Drainage Areas

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Type II 24-hr 1-yr Rainfall=2.04"

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Summary for Subcatchment 5S: DA#2

Runoff = 0.72 cfs @ 12.01 hrs, Volume= 0.038 af, Depth= 0.55"
Routed to Reach 2R : Pt of Study 2

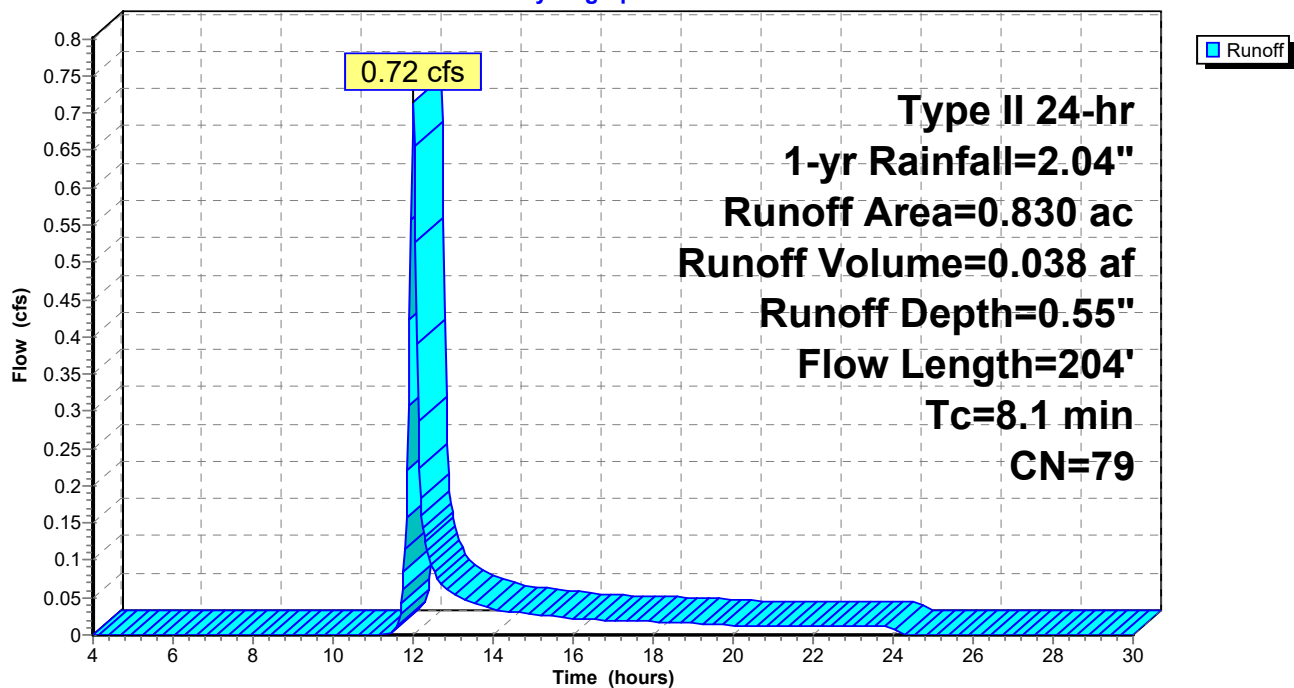
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Type II 24-hr 1-yr Rainfall=2.04"

Area (ac)	CN	Description
0.690	80	>75% Grass cover, Good, HSG D
0.140	77	Woods, Good, HSG D
0.830	79	Weighted Average
0.830		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	100	0.1500	0.23		Sheet Flow, SHEET FLOW Grass: Dense n= 0.240 P2= 2.39"
0.7	104	0.1300	2.52		Shallow Concentrated Flow, SCF Short Grass Pasture Kv= 7.0 fps
8.1	204	Total			

Subcatchment 5S: DA#2

Hydrograph



Proposed Drainage Areas

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Type II 24-hr 1-yr Rainfall=2.04"

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Summary for Subcatchment 6S: DA#3A

Runoff = 1.49 cfs @ 12.10 hrs, Volume= 0.108 af, Depth= 0.59"

Routed to Reach 5R : Drainage Ditch

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs

Type II 24-hr 1-yr Rainfall=2.04"

Area (ac)	CN	Adj	Description
0.900	80		>75% Grass cover, Good, HSG D
0.200	98		Paved parking, HSG D
0.070	98		Unconnected roofs, HSG D
1.030	77		Woods, Good, HSG D
2.200	81	80	Weighted Average, UI Adjusted
1.930			87.73% Pervious Area
0.270			12.27% Impervious Area
0.070			25.93% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.9	100	0.0450	0.14		Sheet Flow, SHEET FLOW Grass: Dense n= 0.240 P2= 2.39"
2.5	188	0.0650	1.27		Shallow Concentrated Flow, SCF Woodland Kv= 5.0 fps
1.9	202	0.0650	1.78		Shallow Concentrated Flow, SCF Short Grass Pasture Kv= 7.0 fps
0.2	232	0.0220	16.95	50.86	Channel Flow, curb flow Area= 3.0 sf Perim= 3.0' r= 1.00' n= 0.013 Asphalt, smooth
16.5	722	Total			

Proposed Drainage Areas

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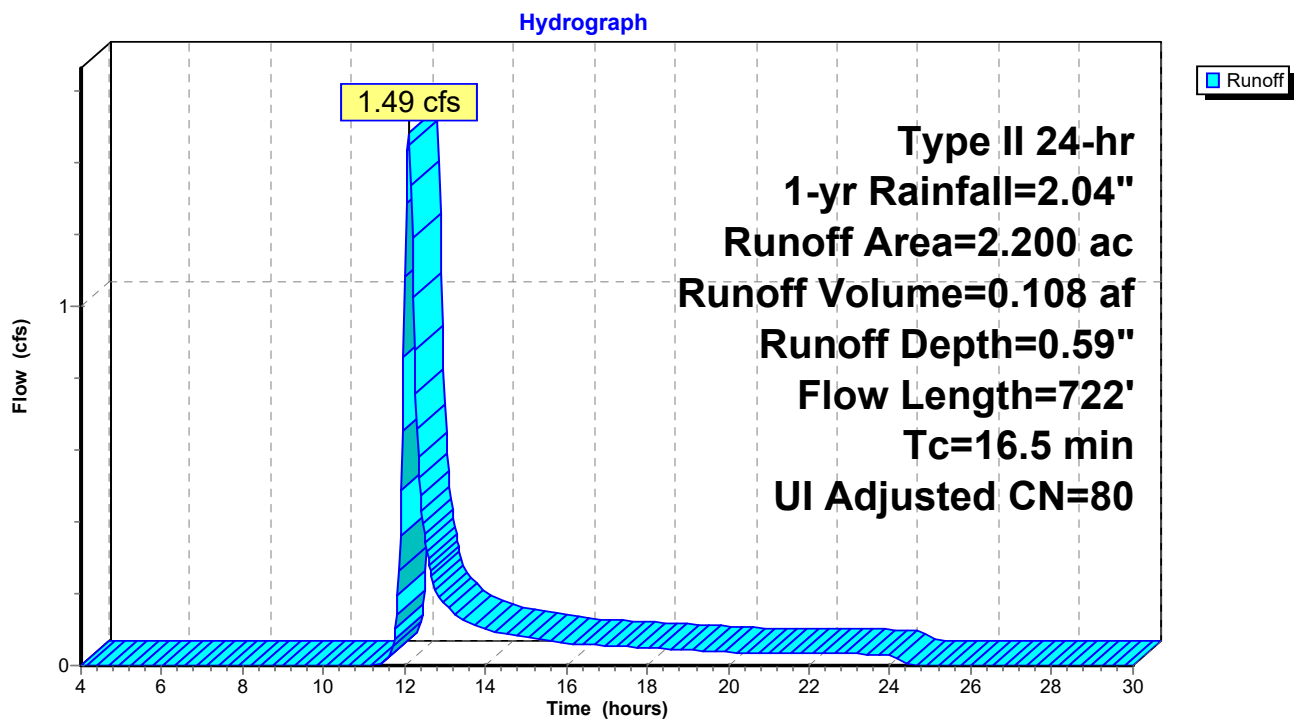
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Type II 24-hr 1-yr Rainfall=2.04"

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Subcatchment 6S: DA#3A



Proposed Drainage Areas

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Type II 24-hr 1-yr Rainfall=2.04"

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Summary for Subcatchment 7S: DA#3B

Runoff = 2.06 cfs @ 12.10 hrs, Volume= 0.146 af, Depth= 0.68"
Routed to Reach 3R : Pt of Study 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Type II 24-hr 1-yr Rainfall=2.04"

Area (ac)	CN	Adj	Description
2.190	80		>75% Grass cover, Good, HSG D
0.270	98		Paved parking, HSG D
0.140	98		Unconnected roofs, HSG D
2.600	83	82	Weighted Average, UI Adjusted
2.190			84.23% Pervious Area
0.410			15.77% Impervious Area
0.140			34.15% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	100	0.0500	0.15		Sheet Flow, SHEET FLOW Grass: Dense n= 0.240 P2= 2.39"
5.1	475	0.0500	1.57		Shallow Concentrated Flow, SCF Short Grass Pasture Kv= 7.0 fps
0.2	82	0.0200	6.42	5.04	Pipe Channel, pipe flow 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
16.7	657	Total			

Proposed Drainage Areas

Prepared by Napierala Consulting, P.C.

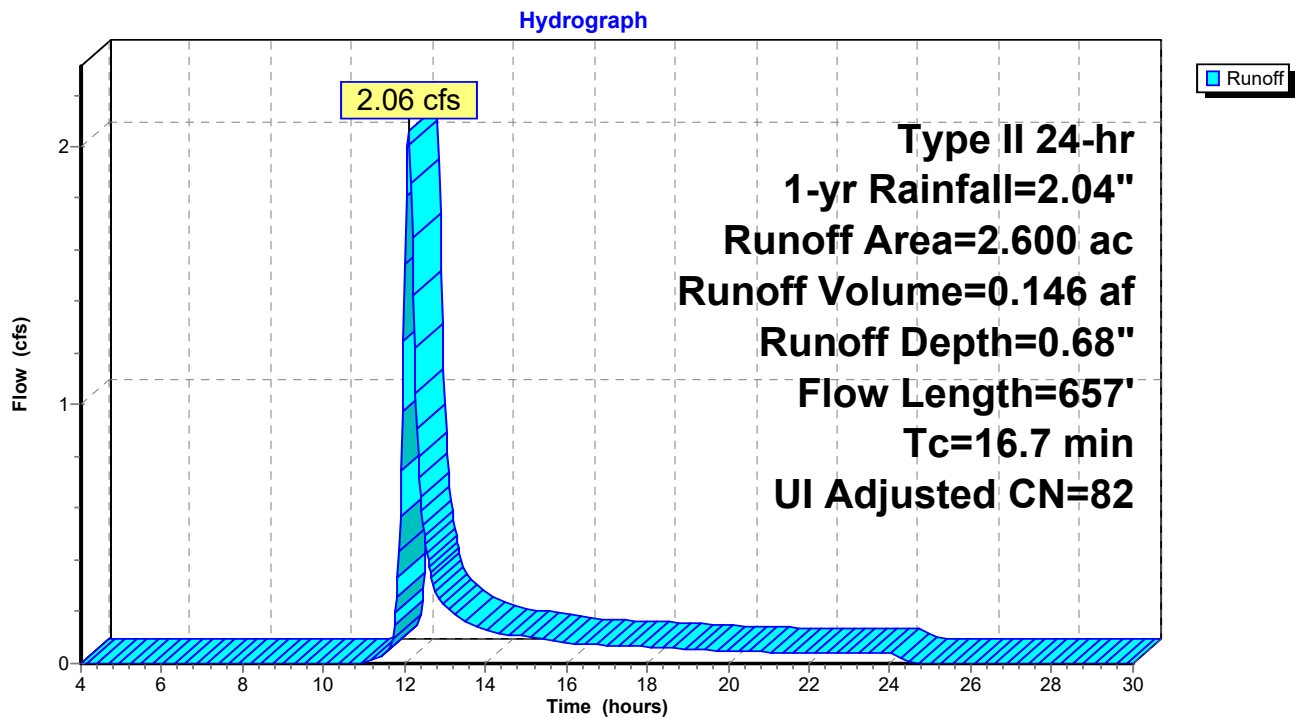
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Type II 24-hr 1-yr Rainfall=2.04"

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Subcatchment 7S: DA#3B



Proposed Drainage Areas

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Type II 24-hr 1-yr Rainfall=2.04"

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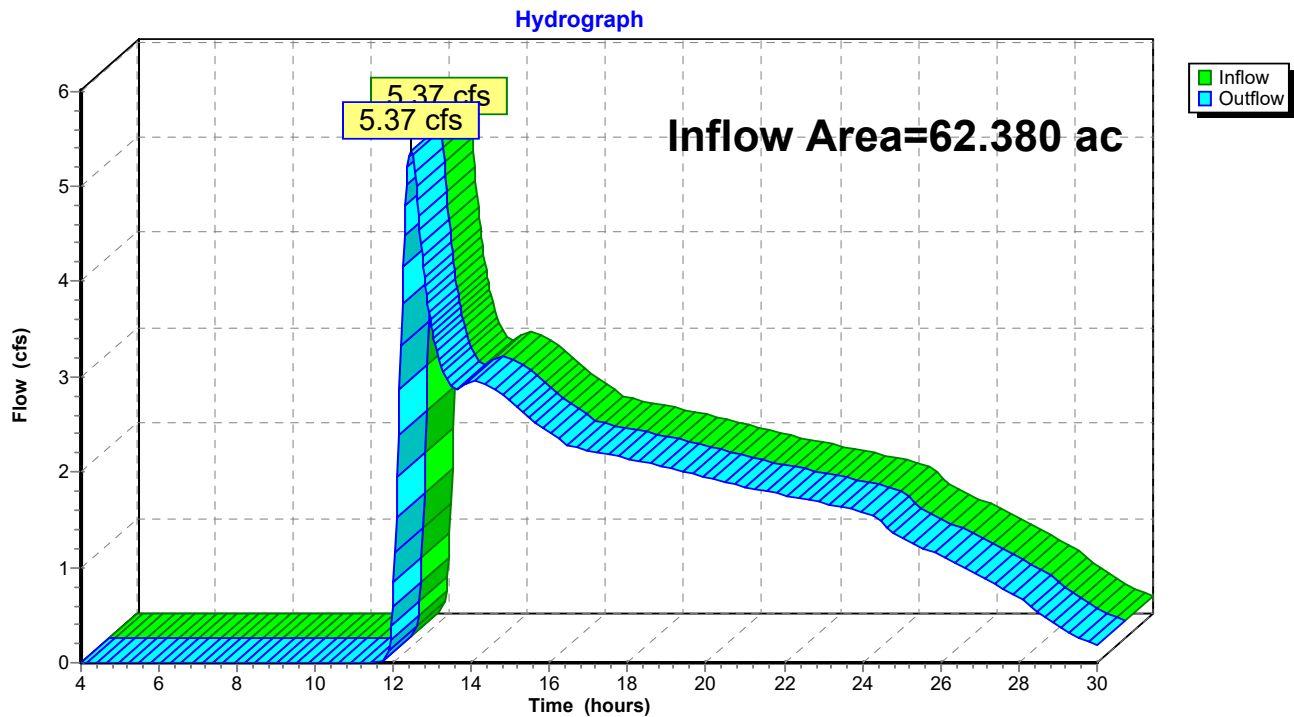
Page 15

Summary for Reach 1R: Pt of Study 1

Inflow Area = 62.380 ac, 9.33% Impervious, Inflow Depth > 0.53" for 1-yr event
Inflow = 5.37 cfs @ 12.45 hrs, Volume= 2.764 af
Outflow = 5.37 cfs @ 12.45 hrs, Volume= 2.764 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs

Reach 1R: Pt of Study 1



Proposed Drainage Areas

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Type II 24-hr 1-yr Rainfall=2.04"

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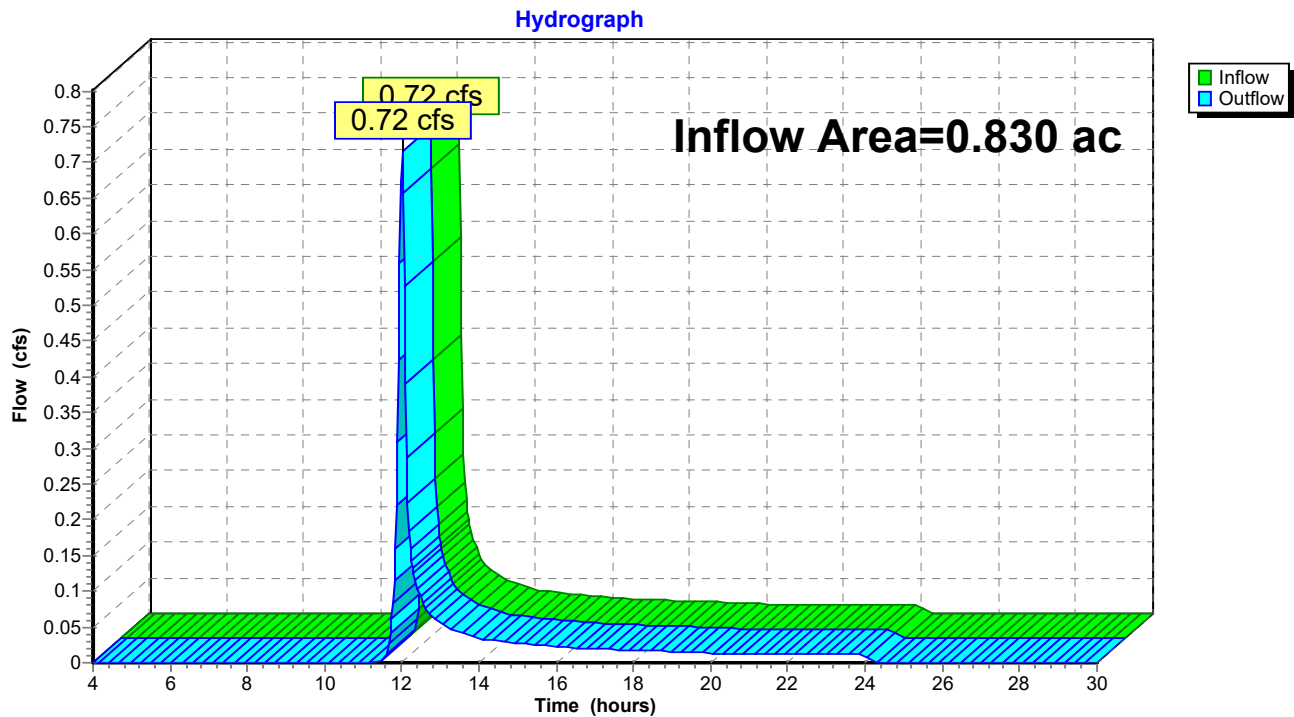
Page 16

Summary for Reach 2R: Pt of Study 2

Inflow Area = 0.830 ac, 0.00% Impervious, Inflow Depth = 0.55" for 1-yr event
Inflow = 0.72 cfs @ 12.01 hrs, Volume= 0.038 af
Outflow = 0.72 cfs @ 12.01 hrs, Volume= 0.038 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs

Reach 2R: Pt of Study 2



Proposed Drainage Areas

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Type II 24-hr 1-yr Rainfall=2.04"

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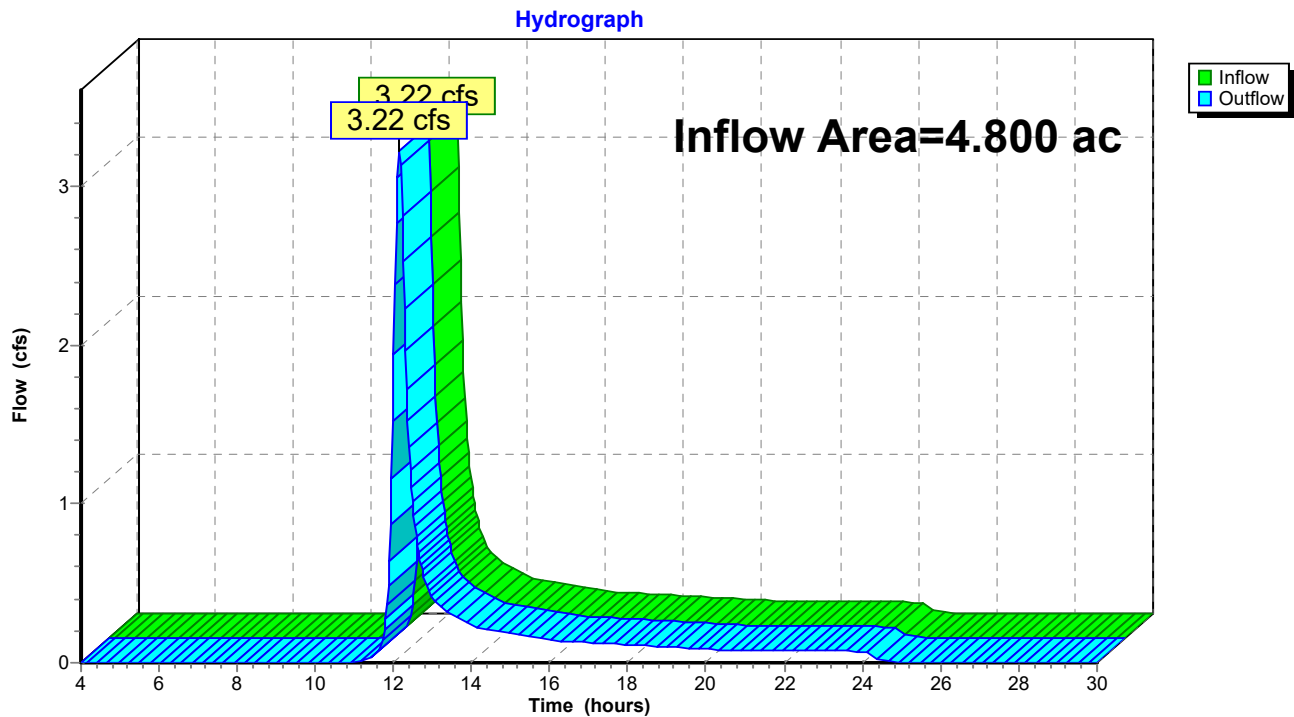
Page 17

Summary for Reach 3R: Pt of Study 3

Inflow Area = 4.800 ac, 14.17% Impervious, Inflow Depth = 0.63" for 1-yr event
Inflow = 3.22 cfs @ 12.14 hrs, Volume= 0.254 af
Outflow = 3.22 cfs @ 12.14 hrs, Volume= 0.254 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs

Reach 3R: Pt of Study 3



Proposed Drainage Areas

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Type II 24-hr 1-yr Rainfall=2.04"

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Summary for Reach 5R: Drainage Ditch

Inflow Area = 2.200 ac, 12.27% Impervious, Inflow Depth = 0.59" for 1-yr event
Inflow = 1.49 cfs @ 12.10 hrs, Volume= 0.108 af
Outflow = 1.42 cfs @ 12.20 hrs, Volume= 0.108 af, Atten= 5%, Lag= 5.8 min
Routed to Reach 3R : Pt of Study 3

Routing by Stor-Ind+Trans method, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Max. Velocity= 3.17 fps, Min. Travel Time= 3.4 min
Avg. Velocity= 1.11 fps, Avg. Travel Time= 9.7 min

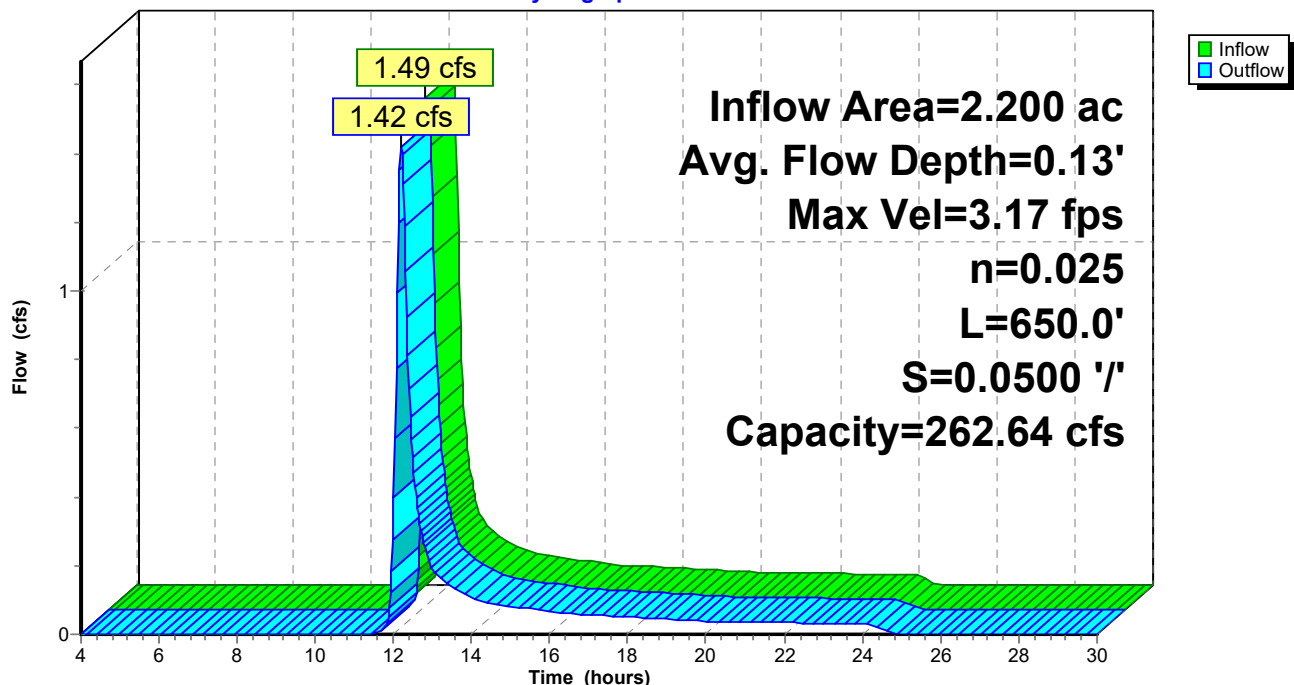
Peak Storage= 290 cf @ 12.14 hrs
Average Depth at Peak Storage= 0.13' , Surface Width= 3.79'
Bank-Full Depth= 2.00' Flow Area= 18.0 sf, Capacity= 262.64 cfs

3.00' x 2.00' deep channel, n= 0.025 Earth, clean & straight
Side Slope Z-value= 3.0 ' / ' Top Width= 15.00'
Length= 650.0' Slope= 0.0500 ' / '
Inlet Invert= 0.00', Outlet Invert= -32.50'



Reach 5R: Drainage Ditch

Hydrograph



Proposed Drainage Areas

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Type II 24-hr 1-yr Rainfall=2.04"

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Summary for Pond 1P: Bioretention 1

Inflow Area = 37.380 ac, 11.61% Impervious, Inflow Depth = 0.63" for 1-yr event
Inflow = 15.26 cfs @ 12.40 hrs, Volume= 1.963 af
Outflow = 14.54 cfs @ 12.50 hrs, Volume= 1.803 af, Atten= 5%, Lag= 5.6 min
Primary = 14.54 cfs @ 12.50 hrs, Volume= 1.803 af
Routed to Pond 3P : Detention Basin

Routing by Stor-Ind method, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Peak Elev= 872.81' @ 12.50 hrs Surf.Area= 15,794 sf Storage= 11,608 cf

Plug-Flow detention time= 66.9 min calculated for 1.801 af (92% of inflow)
Center-of-Mass det. time= 24.5 min (918.0 - 893.5)

Volume	Invert	Avail.Storage	Storage Description
#1	872.00'	14,715 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
872.00	13,500	0	0
872.50	14,330	6,958	6,958
873.00	16,700	7,758	14,715

Device	Routing	Invert	Outlet Devices
#1	Primary	872.50'	15.0' long + 3.0 ' SideZ x 15.0' breadth Broad-Crested Rectangular Weir X 2 Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=14.52 cfs @ 12.50 hrs HW=872.81' (Free Discharge)
↑1=**Broad-Crested Rectangular Weir** (Weir Controls 14.52 cfs @ 1.48 fps)

Proposed Drainage Areas

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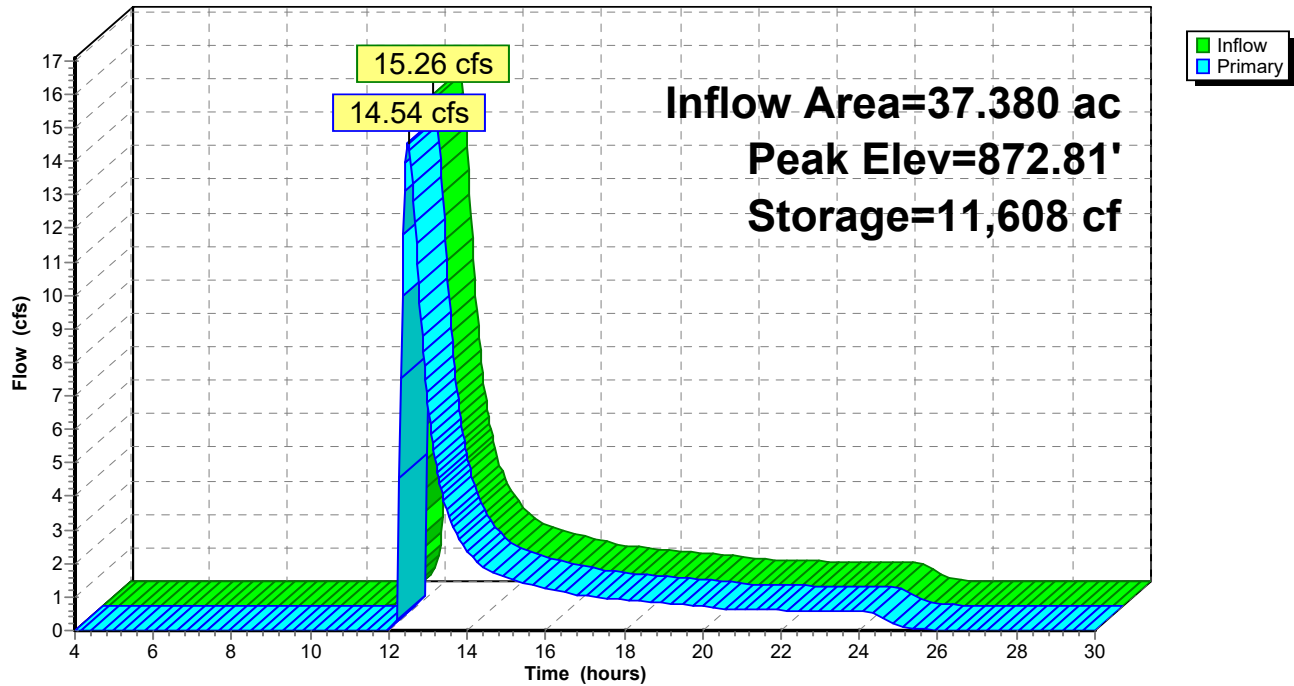
Type II 24-hr 1-yr Rainfall=2.04"

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Pond 1P: Bioretention 1

Hydrograph



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Type II 24-hr 1-yr Rainfall=2.04"

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Summary for Pond 2P: Bioretention 2

Inflow Area = 8.920 ac, 14.35% Impervious, Inflow Depth = 0.42" for 1-yr event
Inflow = 1.20 cfs @ 12.16 hrs, Volume= 0.316 af
Outflow = 0.61 cfs @ 13.26 hrs, Volume= 0.221 af, Atten= 49%, Lag= 66.0 min
Primary = 0.61 cfs @ 13.26 hrs, Volume= 0.221 af
Routed to Pond 3P : Detention Basin

Routing by Stor-Ind method, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Peak Elev= 882.54' @ 13.26 hrs Surf.Area= 9,571 sf Storage= 4,491 cf

Plug-Flow detention time= 218.4 min calculated for 0.221 af (70% of inflow)
Center-of-Mass det. time= 97.6 min (1,033.8 - 936.2)

Volume	Invert	Avail.Storage	Storage Description
#1	882.00'	9,105 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
882.00	7,000	0	0
882.50	9,500	4,125	4,125
883.00	10,420	4,980	9,105

Device	Routing	Invert	Outlet Devices
#1	Primary	882.50'	15.0' long + 3.0 ' SideZ x 15.0' breadth Broad-Crested Rectangular Weir X 2 Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=0.61 cfs @ 13.26 hrs HW=882.54' (Free Discharge)
↑1=**Broad-Crested Rectangular Weir** (Weir Controls 0.61 cfs @ 0.52 fps)

Proposed Drainage Areas

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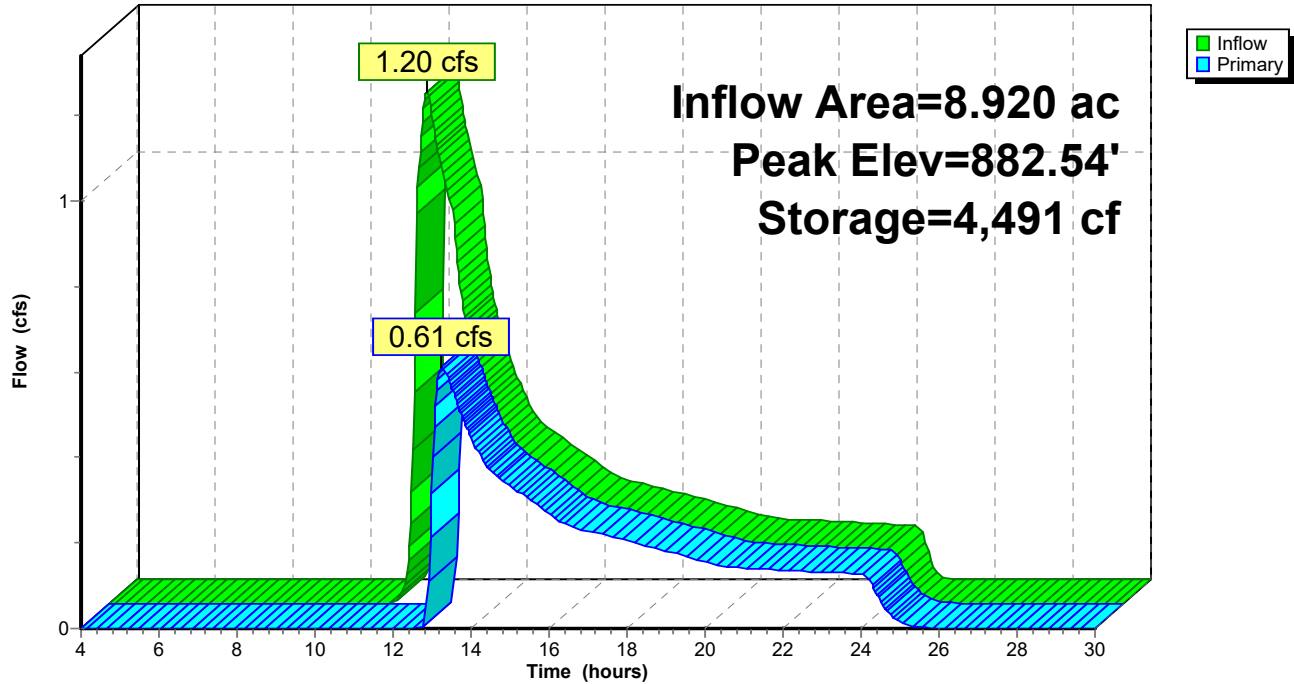
Type II 24-hr 1-yr Rainfall=2.04"

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Pond 2P: Bioretention 2

Hydrograph



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Type II 24-hr 1-yr Rainfall=2.04"

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Summary for Pond 3P: Detention Basin

Inflow Area = 47.380 ac, 11.86% Impervious, Inflow Depth = 0.56" for 1-yr event
Inflow = 15.57 cfs @ 12.47 hrs, Volume= 2.197 af
Outflow = 2.34 cfs @ 14.40 hrs, Volume= 2.176 af, Atten= 85%, Lag= 115.3 min
Primary = 2.34 cfs @ 14.40 hrs, Volume= 2.176 af
Routed to Reach 1R : Pt of Study 1
Secondary = 0.00 cfs @ 4.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Peak Elev= 866.12' @ 14.40 hrs Surf.Area= 21,291 sf Storage= 40,512 cf

Plug-Flow detention time= 255.4 min calculated for 2.176 af (99% of inflow)
Center-of-Mass det. time= 249.8 min (1,168.0 - 918.3)

Volume	Invert	Avail.Storage	Storage Description
#1	863.50'	243,001 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
863.50	1,285	0	0
864.00	11,100	3,096	3,096
865.00	18,820	14,960	18,056
866.00	21,020	19,920	37,976
867.00	23,280	22,150	60,126
868.00	25,590	24,435	84,561
869.00	27,960	26,775	111,336
870.00	30,390	29,175	140,511
871.00	32,875	31,633	172,144
872.00	35,415	34,145	206,289
873.00	38,010	36,713	243,001

Device	Routing	Invert	Outlet Devices
#1	Secondary	872.00'	30.0' long x 12.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#2	Primary	863.50'	30.0" Round Culvert L= 98.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 863.50' / 857.00' S= 0.0663 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf
#3	Device 2	863.50'	7.0" Vert. Orifice1 C= 0.600 Limited to weir flow at low heads
#4	Device 2	866.00'	32.0" W x 18.0" H Vert. Orifice2 C= 0.600 Limited to weir flow at low heads
#5	Device 2	868.10'	36.0" x 36.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads

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Type II 24-hr 1-yr Rainfall=2.04"

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Primary OutFlow Max=2.32 cfs @ 14.40 hrs HW=866.12' (Free Discharge)

↑ **2=Culvert** (Passes 2.32 cfs of 21.84 cfs potential flow)

↑ **3=Orifice1** (Orifice Controls 1.96 cfs @ 7.35 fps)

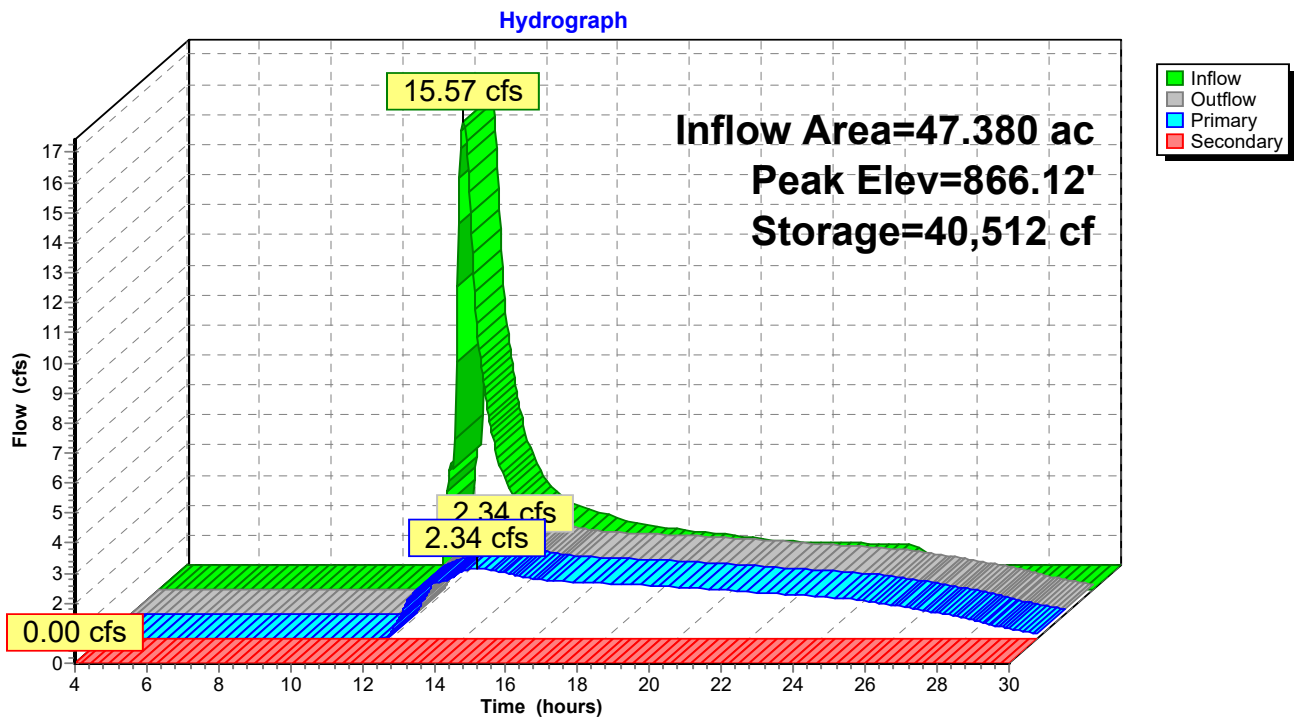
↑ **4=Orifice2** (Orifice Controls 0.36 cfs @ 1.11 fps)

↑ **5=Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 4.00 hrs HW=863.50' (Free Discharge)

↑ **1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 3P: Detention Basin



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Type II 24-hr 1-yr Rainfall=2.04"

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Summary for Pond 4P: Diversion Structure

Inflow Area = 8.920 ac, 14.35% Impervious, Inflow Depth = 0.59" for 1-yr event
Inflow = 5.19 cfs @ 12.16 hrs, Volume= 0.436 af
Outflow = 5.19 cfs @ 12.16 hrs, Volume= 0.436 af, Atten= 0%, Lag= 0.0 min
Primary = 1.20 cfs @ 12.16 hrs, Volume= 0.316 af
Routed to Pond 2P : Bioretention 2
Secondary = 4.00 cfs @ 12.16 hrs, Volume= 0.121 af
Routed to Pond 3P : Detention Basin

Routing by Stor-Ind method, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs

Peak Elev= 885.01' @ 12.16 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	882.20'	6.0" Round Bioretention Culvert L= 10.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 882.20' / 882.10' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#2	Secondary	883.90'	18.0" Round Detention Culvert L= 45.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 883.90' / 875.00' S= 0.1978 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=1.20 cfs @ 12.16 hrs HW=885.01' (Free Discharge)

↑**1=Bioretention Culvert** (Inlet Controls 1.20 cfs @ 6.09 fps)

Secondary OutFlow Max=3.99 cfs @ 12.16 hrs HW=885.01' (Free Discharge)

↑**2=Detention Culvert** (Inlet Controls 3.99 cfs @ 2.84 fps)

Proposed Drainage Areas

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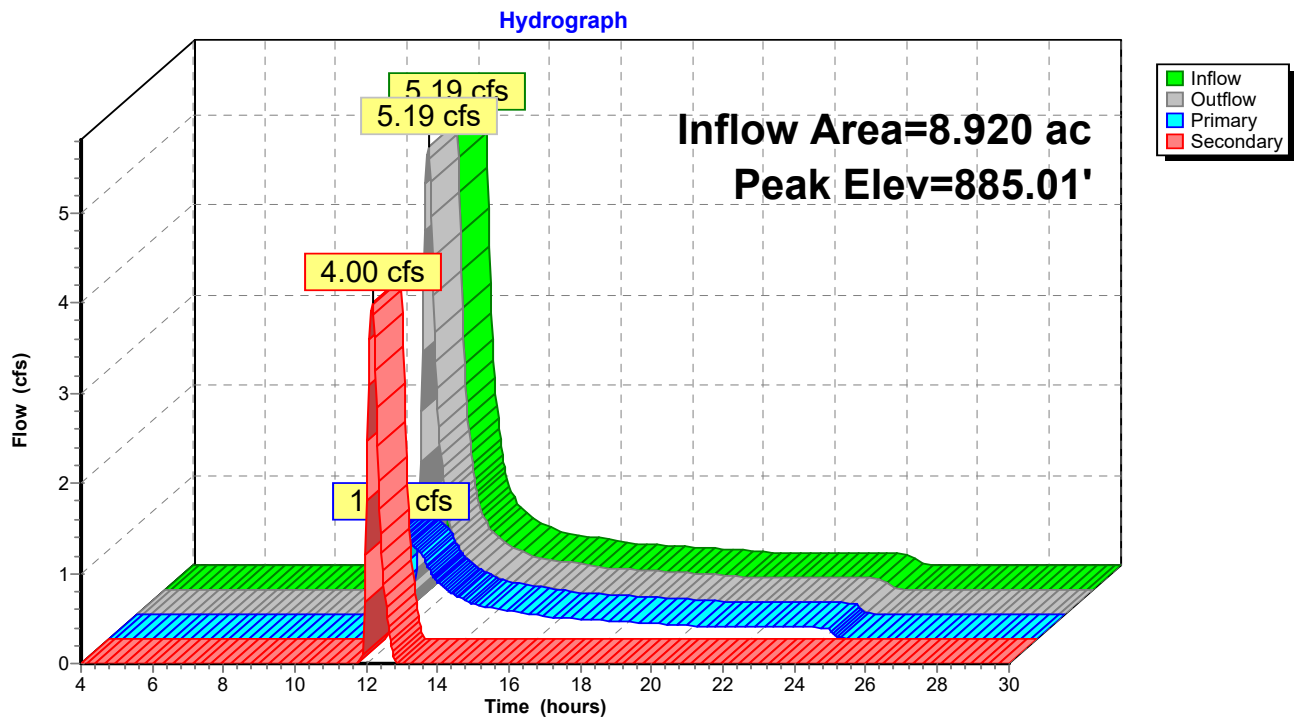
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Type II 24-hr 1-yr Rainfall=2.04"

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Pond 4P: Diversion Structure



Proposed Drainage Areas

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Type II 24-hr 10-yr Rainfall=3.43"

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Summary for Subcatchment 1S: DA-1A

Runoff = 43.33 cfs @ 12.38 hrs, Volume= 5.146 af, Depth= 1.65"
Routed to Pond 1P : Bioretention 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Type II 24-hr 10-yr Rainfall=3.43"

Area (ac)	CN	Description
2.470	98	Paved parking, HSG D
1.870	98	Unconnected roofs, HSG D
24.080	80	>75% Grass cover, Good, HSG D
8.960	77	Woods, Good, HSG D
37.380	81	Weighted Average
33.040		88.39% Pervious Area
4.340		11.61% Impervious Area
1.870		43.09% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.9	100	0.0600	0.06		Sheet Flow, SHEET FLOW Woods: Dense underbrush n= 0.800 P2= 2.39"
4.8	370	0.0650	1.27		Shallow Concentrated Flow, SCF Woodland Kv= 5.0 fps
1.9	200	0.0650	1.78		Shallow Concentrated Flow, SCF Short Grass Pasture Kv= 7.0 fps
0.2	295	0.0300	19.80	79.19	Channel Flow, curb and gutter flow Area= 4.0 sf Perim= 4.0' r= 1.00' n= 0.013 Asphalt, smooth
1.7	1,100	0.0345	11.04	19.51	Pipe Channel, Pipe Flow 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
3.8	955	0.0050	4.20	50.44	Channel Flow, Area= 12.0 sf Perim= 12.0' r= 1.00' n= 0.025 Earth, grassed & winding
40.3	3,020	Total			

Proposed Drainage Areas

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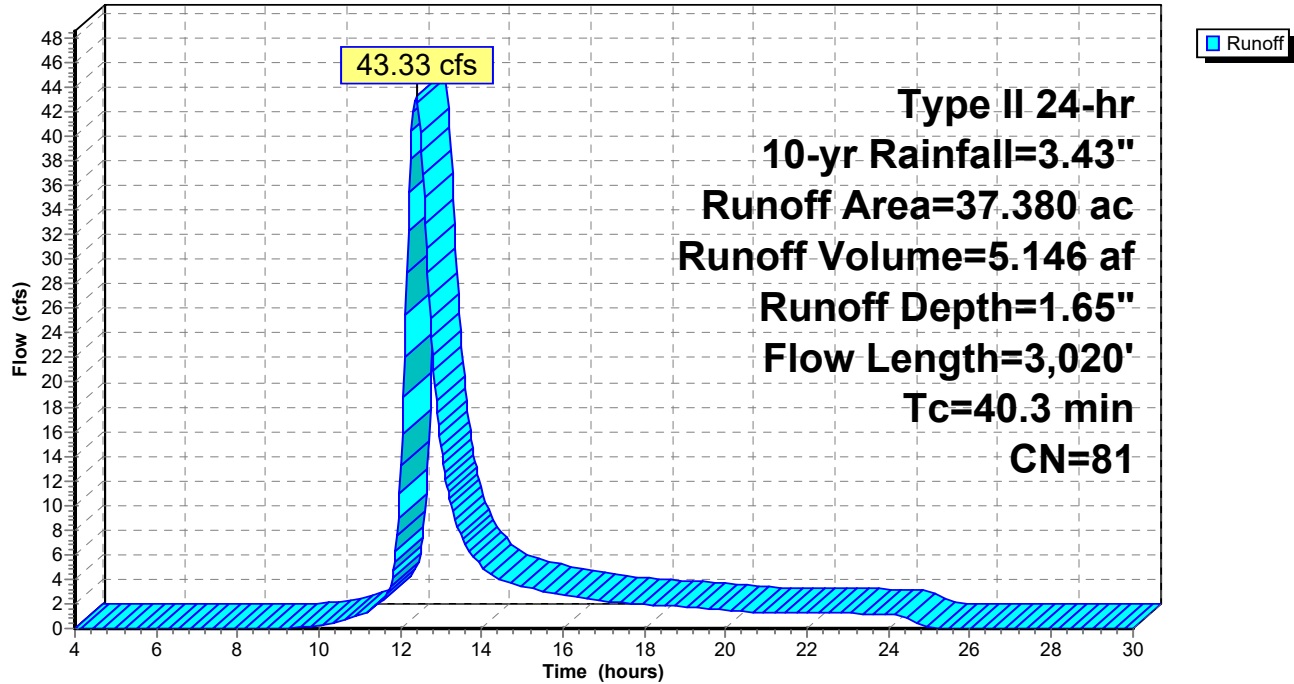
Type II 24-hr 10-yr Rainfall=3.43"

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Subcatchment 1S: DA-1A

Hydrograph



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Type II 24-hr 10-yr Rainfall=3.43"

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Summary for Subcatchment 2S: DA-1B

Runoff = 15.08 cfs @ 12.14 hrs, Volume= 1.175 af, Depth= 1.58"
Routed to Pond 4P : Diversion Structure

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Type II 24-hr 10-yr Rainfall=3.43"

Area (ac)	CN	Adj	Description
0.870	98		Paved parking, HSG D
0.410	98		Unconnected roofs, HSG D
4.000	80		>75% Grass cover, Good, HSG D
2.040	77		Woods, Good, HSG D
1.600	73		Brush, Good, HSG D
8.920	81	80	Weighted Average, UI Adjusted
7.640			85.65% Pervious Area
1.280			14.35% Impervious Area
0.410			32.03% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	100	0.0600	0.16		Sheet Flow, SHEET FLOW Grass: Dense n= 0.240 P2= 2.39"
4.6	410	0.0900	1.50		Shallow Concentrated Flow, SCF Woodland Kv= 5.0 fps
5.6	710	0.0920	2.12		Shallow Concentrated Flow, SCF Short Grass Pasture Kv= 7.0 fps
0.3	170	0.0200	9.55	76.42	Channel Flow, swale flow Area= 8.0 sf Perim= 8.0' r= 1.00' n= 0.022 Earth, clean & straight
21.1	1,390	Total			

Proposed Drainage Areas

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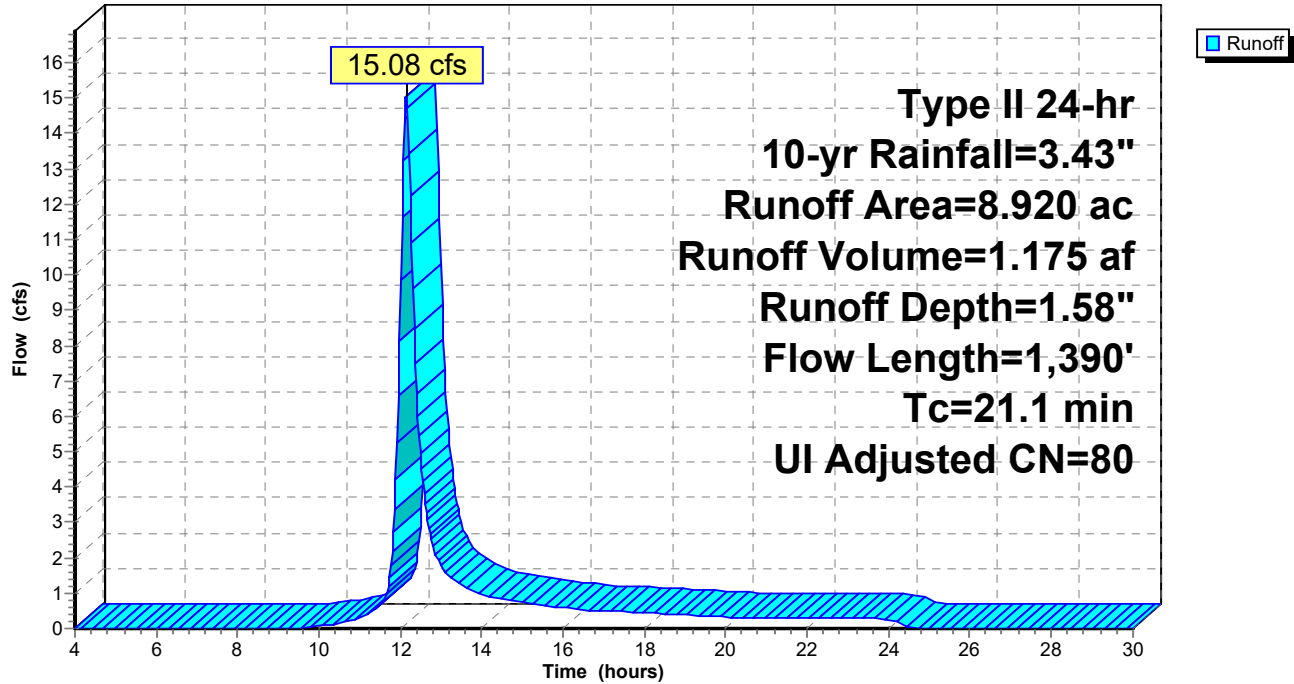
Type II 24-hr 10-yr Rainfall=3.43"

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Subcatchment 2S: DA-1B

Hydrograph



Proposed Drainage Areas

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Type II 24-hr 10-yr Rainfall=3.43"

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Summary for Subcatchment 3S: DA-1C

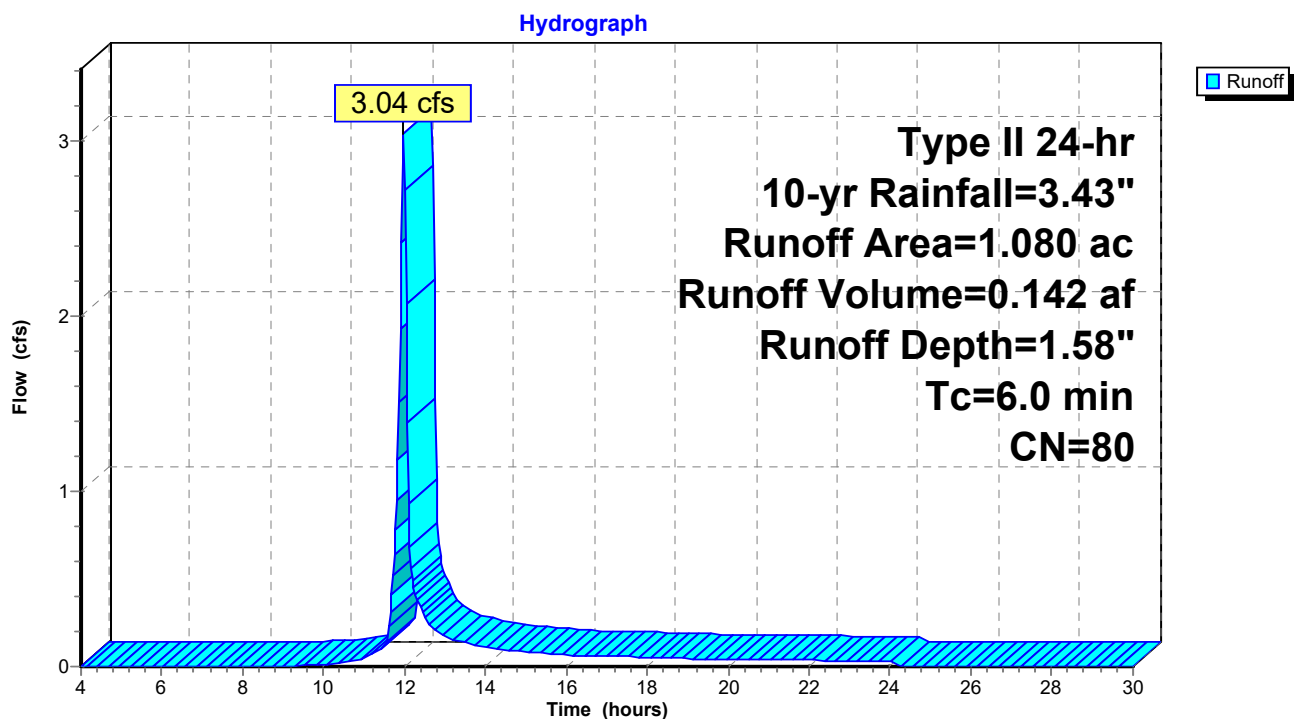
Runoff = 3.04 cfs @ 11.97 hrs, Volume= 0.142 af, Depth= 1.58"
Routed to Pond 3P : Detention Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Type II 24-hr 10-yr Rainfall=3.43"

Area (ac)	CN	Description
0.960	80	>75% Grass cover, Good, HSG D
0.120	77	Woods, Good, HSG D
1.080	80	Weighted Average
1.080		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Min TR 55 Value

Subcatchment 3S: DA-1C



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Type II 24-hr 10-yr Rainfall=3.43"

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Summary for Subcatchment 4S: DA-1D

Runoff = 14.59 cfs @ 12.37 hrs, Volume= 1.723 af, Depth= 1.38"
Routed to Reach 1R : Pt of Study 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Type II 24-hr 10-yr Rainfall=3.43"

Area (ac)	CN	Description
3.230	80	>75% Grass cover, Good, HSG D
8.910	77	Woods, Good, HSG D
0.200	98	Paved parking, HSG D
2.660	73	Brush, Good, HSG D
15.000	77	Weighted Average
14.800		98.67% Pervious Area
0.200		1.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.9	100	0.0600	0.06		Sheet Flow, SHEET FLOW Woods: Dense underbrush n= 0.800 P2= 2.39"
5.4	485	0.0900	1.50		Shallow Concentrated Flow, SCF Woodland Kv= 5.0 fps
4.1	517	0.0900	2.10		Shallow Concentrated Flow, SCF Short Grass Pasture Kv= 7.0 fps
1.2	1,155	0.0750	16.28	260.45	Channel Flow, SWALE Area= 16.0 sf Perim= 16.0' r= 1.00' n= 0.025 Earth, clean & winding
38.6	2,257	Total			

Proposed Drainage Areas

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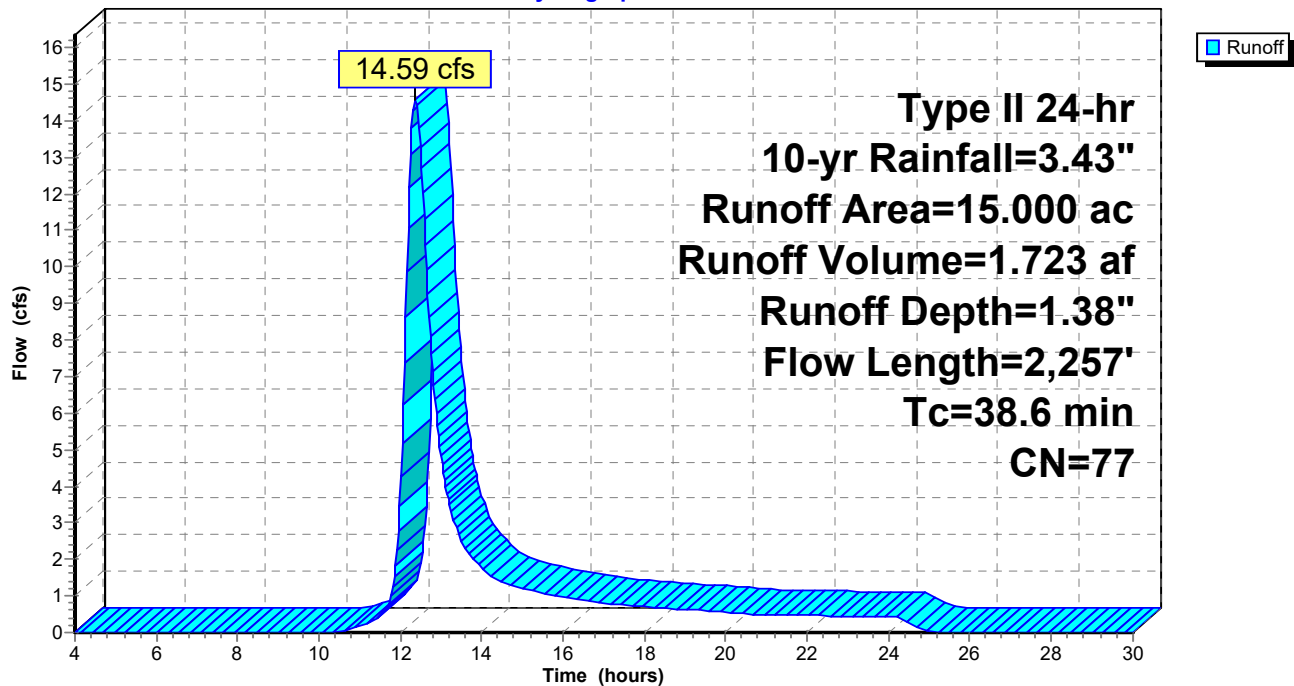
Type II 24-hr 10-yr Rainfall=3.43"

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Subcatchment 4S: DA-1D

Hydrograph



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Type II 24-hr 10-yr Rainfall=3.43"

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Summary for Subcatchment 5S: DA#2

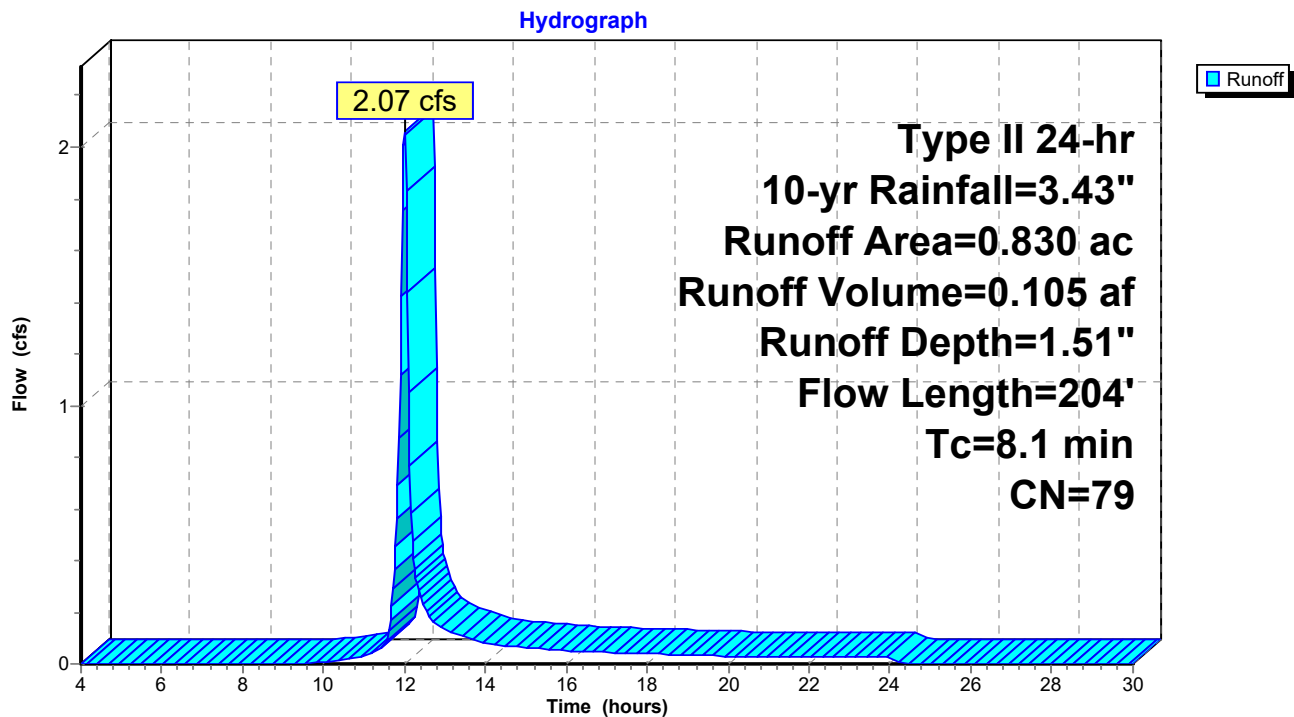
Runoff = 2.07 cfs @ 12.00 hrs, Volume= 0.105 af, Depth= 1.51"
Routed to Reach 2R : Pt of Study 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Type II 24-hr 10-yr Rainfall=3.43"

Area (ac)	CN	Description
0.690	80	>75% Grass cover, Good, HSG D
0.140	77	Woods, Good, HSG D
0.830	79	Weighted Average
0.830		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	100	0.1500	0.23		Sheet Flow, SHEET FLOW Grass: Dense n= 0.240 P2= 2.39"
0.7	104	0.1300	2.52		Shallow Concentrated Flow, SCF Short Grass Pasture Kv= 7.0 fps
8.1	204	Total			

Subcatchment 5S: DA#2



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Type II 24-hr 10-yr Rainfall=3.43"

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Summary for Subcatchment 6S: DA#3A

Runoff = 4.27 cfs @ 12.09 hrs, Volume= 0.290 af, Depth= 1.58"
Routed to Reach 5R : Drainage Ditch

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Type II 24-hr 10-yr Rainfall=3.43"

Area (ac)	CN	Adj	Description
0.900	80		>75% Grass cover, Good, HSG D
0.200	98		Paved parking, HSG D
0.070	98		Unconnected roofs, HSG D
1.030	77		Woods, Good, HSG D
2.200	81	80	Weighted Average, UI Adjusted
1.930			87.73% Pervious Area
0.270			12.27% Impervious Area
0.070			25.93% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.9	100	0.0450	0.14		Sheet Flow, SHEET FLOW Grass: Dense n= 0.240 P2= 2.39"
2.5	188	0.0650	1.27		Shallow Concentrated Flow, SCF Woodland Kv= 5.0 fps
1.9	202	0.0650	1.78		Shallow Concentrated Flow, SCF Short Grass Pasture Kv= 7.0 fps
0.2	232	0.0220	16.95	50.86	Channel Flow, curb flow Area= 3.0 sf Perim= 3.0' r= 1.00' n= 0.013 Asphalt, smooth
16.5	722	Total			

Proposed Drainage Areas

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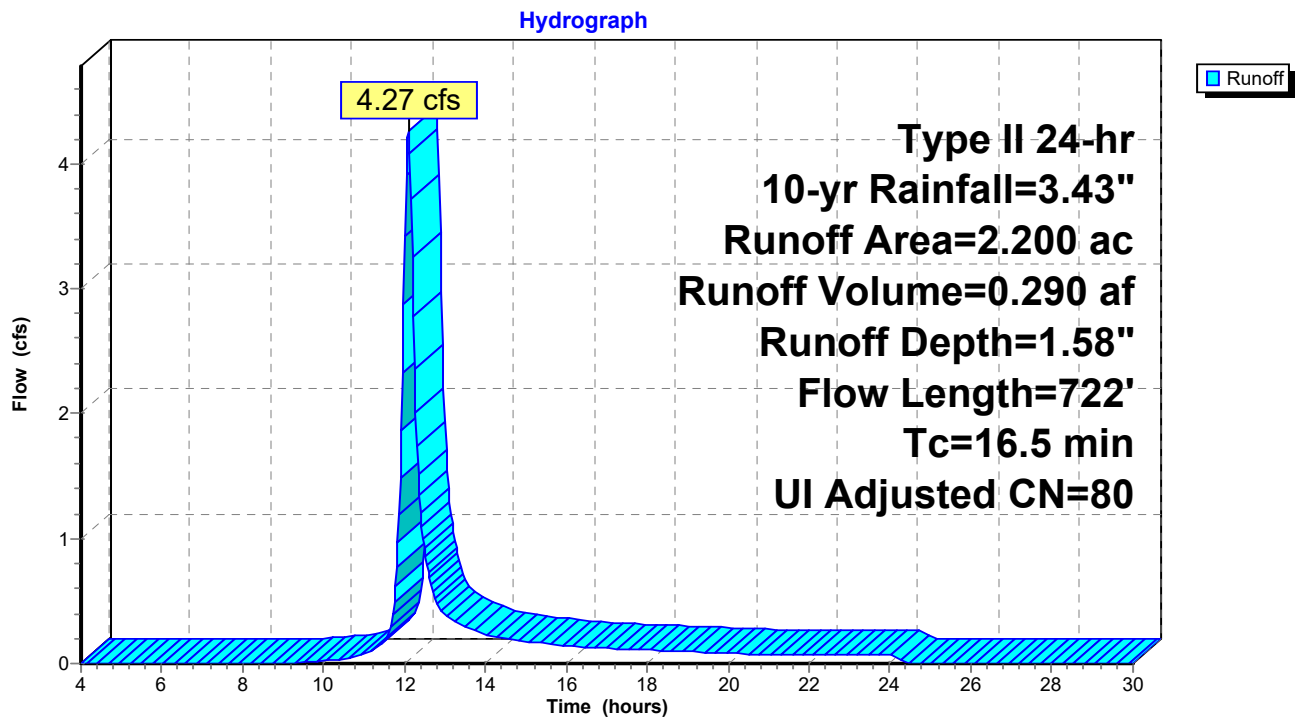
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Type II 24-hr 10-yr Rainfall=3.43"

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Subcatchment 6S: DA#3A



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Type II 24-hr 10-yr Rainfall=3.43"

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Summary for Subcatchment 7S: DA#3B

Runoff = 5.49 cfs @ 12.09 hrs, Volume= 0.374 af, Depth= 1.72"
Routed to Reach 3R : Pt of Study 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Type II 24-hr 10-yr Rainfall=3.43"

Area (ac)	CN	Adj	Description		
2.190	80		>75% Grass cover, Good, HSG D		
0.270	98		Paved parking, HSG D		
0.140	98		Unconnected roofs, HSG D		
2.600	83	82	Weighted Average, UI Adjusted		
2.190			84.23% Pervious Area		
0.410			15.77% Impervious Area		
0.140			34.15% Unconnected		
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	100	0.0500	0.15		Sheet Flow, SHEET FLOW Grass: Dense n= 0.240 P2= 2.39"
5.1	475	0.0500	1.57		Shallow Concentrated Flow, SCF Short Grass Pasture Kv= 7.0 fps
0.2	82	0.0200	6.42	5.04	Pipe Channel, pipe flow 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
16.7	657	Total			

Proposed Drainage Areas

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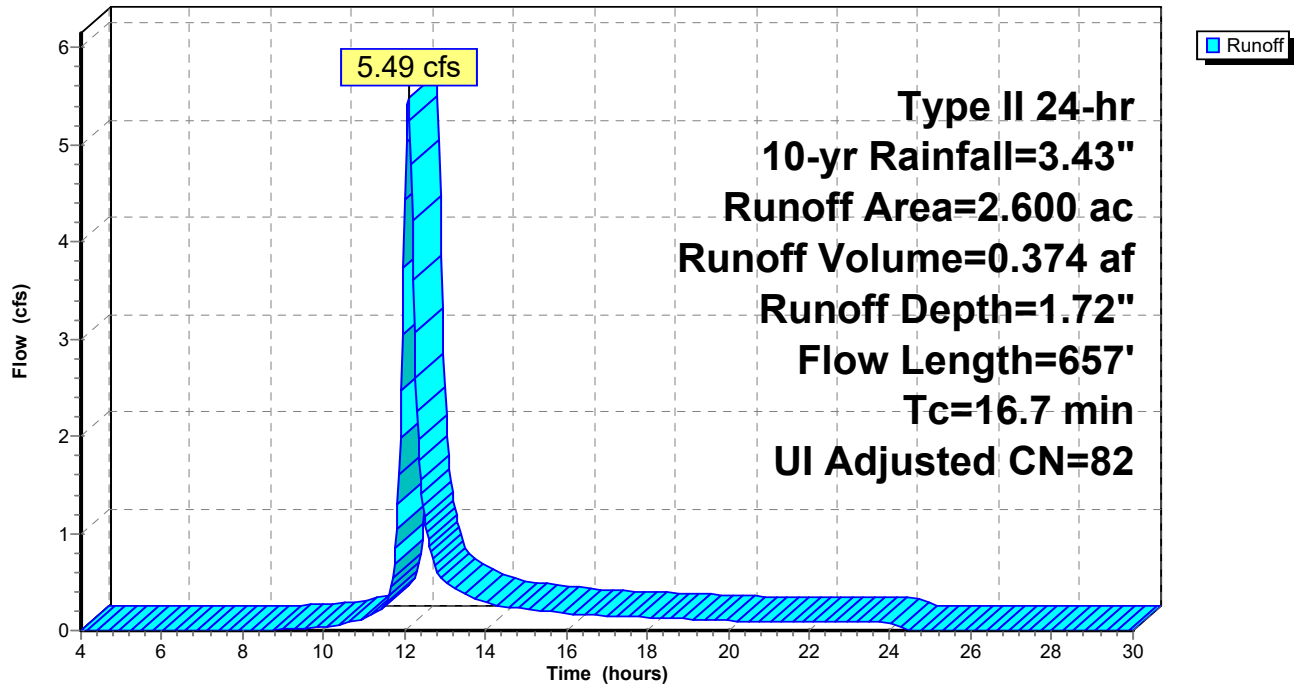
Type II 24-hr 10-yr Rainfall=3.43"

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Subcatchment 7S: DA#3B

Hydrograph



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Type II 24-hr 10-yr Rainfall=3.43"

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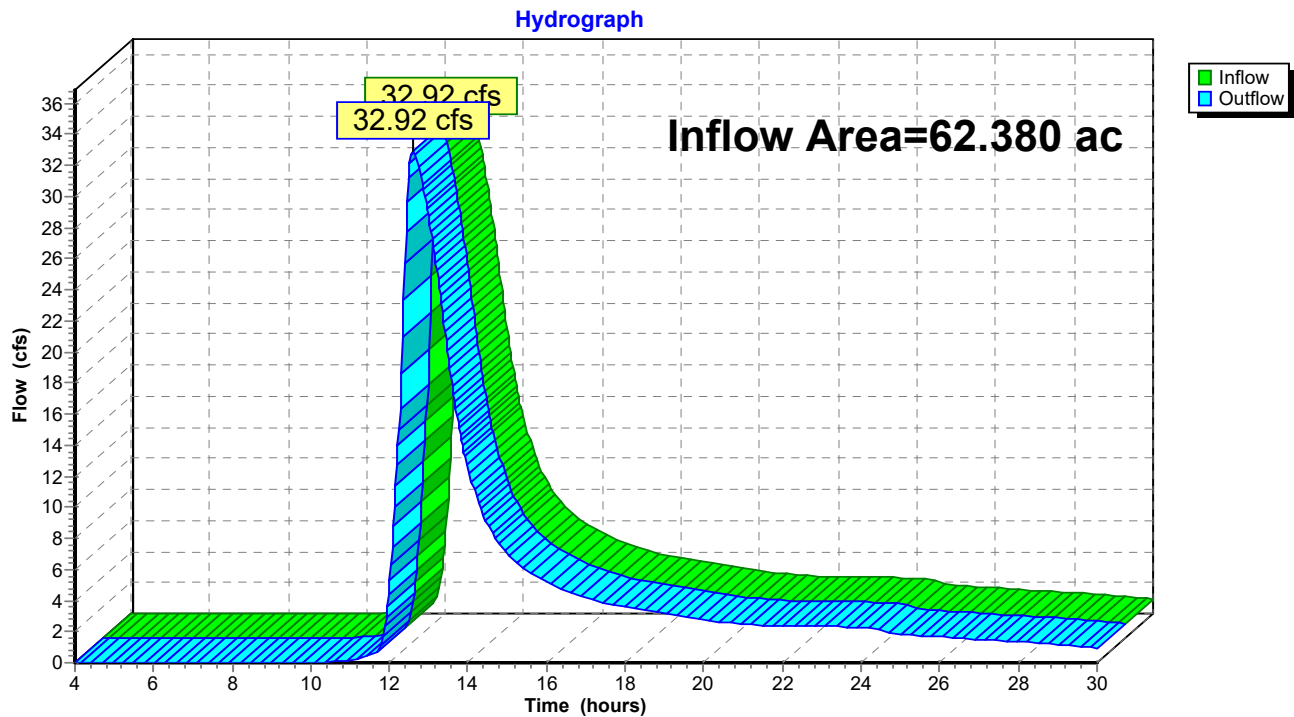
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Summary for Reach 1R: Pt of Study 1

Inflow Area = 62.380 ac, 9.33% Impervious, Inflow Depth > 1.49" for 10-yr event
Inflow = 32.92 cfs @ 12.59 hrs, Volume= 7.765 af
Outflow = 32.92 cfs @ 12.59 hrs, Volume= 7.765 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs

Reach 1R: Pt of Study 1



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Type II 24-hr 10-yr Rainfall=3.43"

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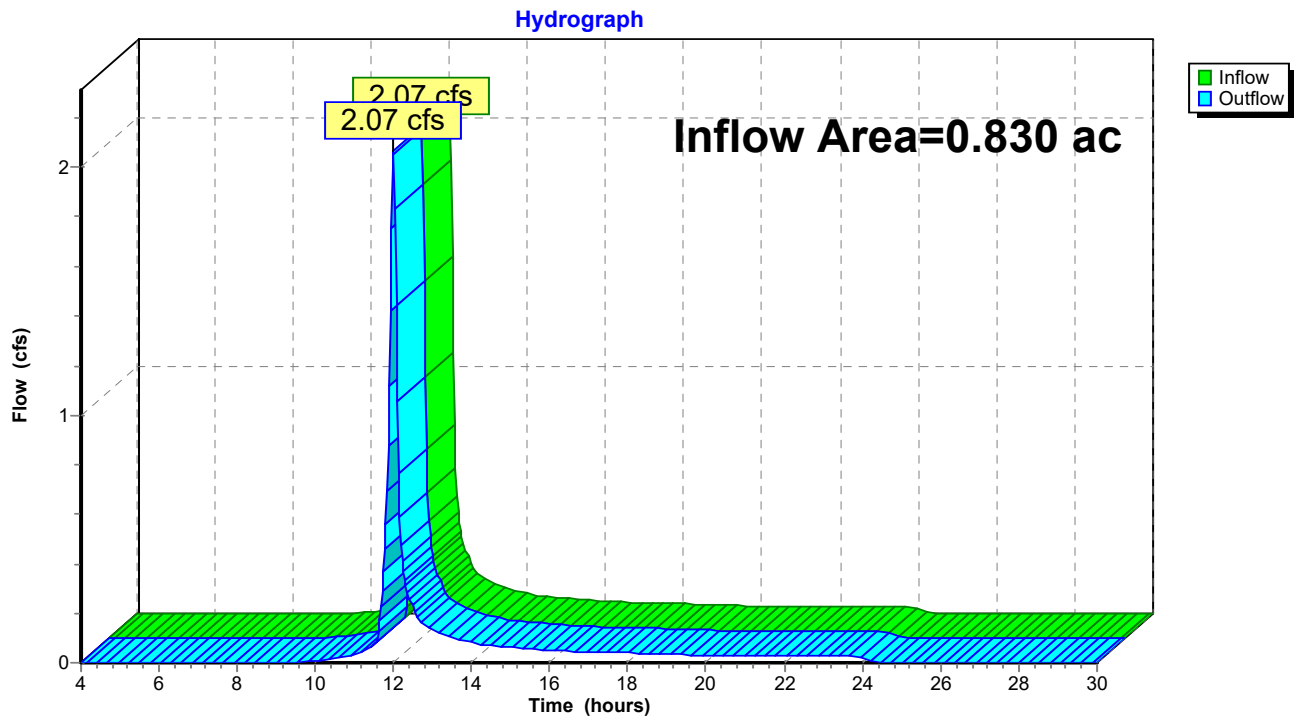
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Summary for Reach 2R: Pt of Study 2

Inflow Area = 0.830 ac, 0.00% Impervious, Inflow Depth = 1.51" for 10-yr event
Inflow = 2.07 cfs @ 12.00 hrs, Volume= 0.105 af
Outflow = 2.07 cfs @ 12.00 hrs, Volume= 0.105 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs

Reach 2R: Pt of Study 2



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Type II 24-hr 10-yr Rainfall=3.43"

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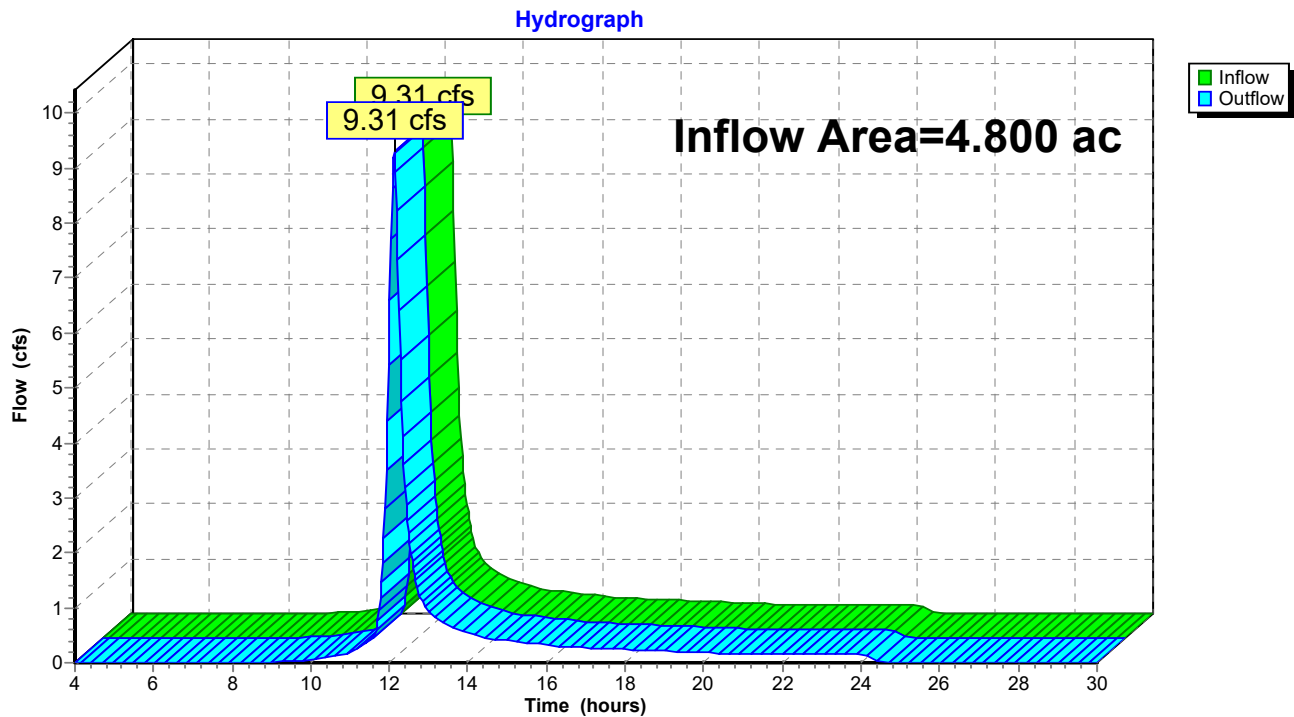
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Summary for Reach 3R: Pt of Study 3

Inflow Area = 4.800 ac, 14.17% Impervious, Inflow Depth = 1.66" for 10-yr event
Inflow = 9.31 cfs @ 12.12 hrs, Volume= 0.664 af
Outflow = 9.31 cfs @ 12.12 hrs, Volume= 0.664 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs

Reach 3R: Pt of Study 3



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Type II 24-hr 10-yr Rainfall=3.43"

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Summary for Reach 5R: Drainage Ditch

Inflow Area = 2.200 ac, 12.27% Impervious, Inflow Depth = 1.58" for 10-yr event
Inflow = 4.27 cfs @ 12.09 hrs, Volume= 0.290 af
Outflow = 4.15 cfs @ 12.16 hrs, Volume= 0.290 af, Atten= 3%, Lag= 4.1 min
Routed to Reach 3R : Pt of Study 3

Routing by Stor-Ind+Trans method, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Max. Velocity= 4.56 fps, Min. Travel Time= 2.4 min
Avg. Velocity= 1.36 fps, Avg. Travel Time= 8.0 min

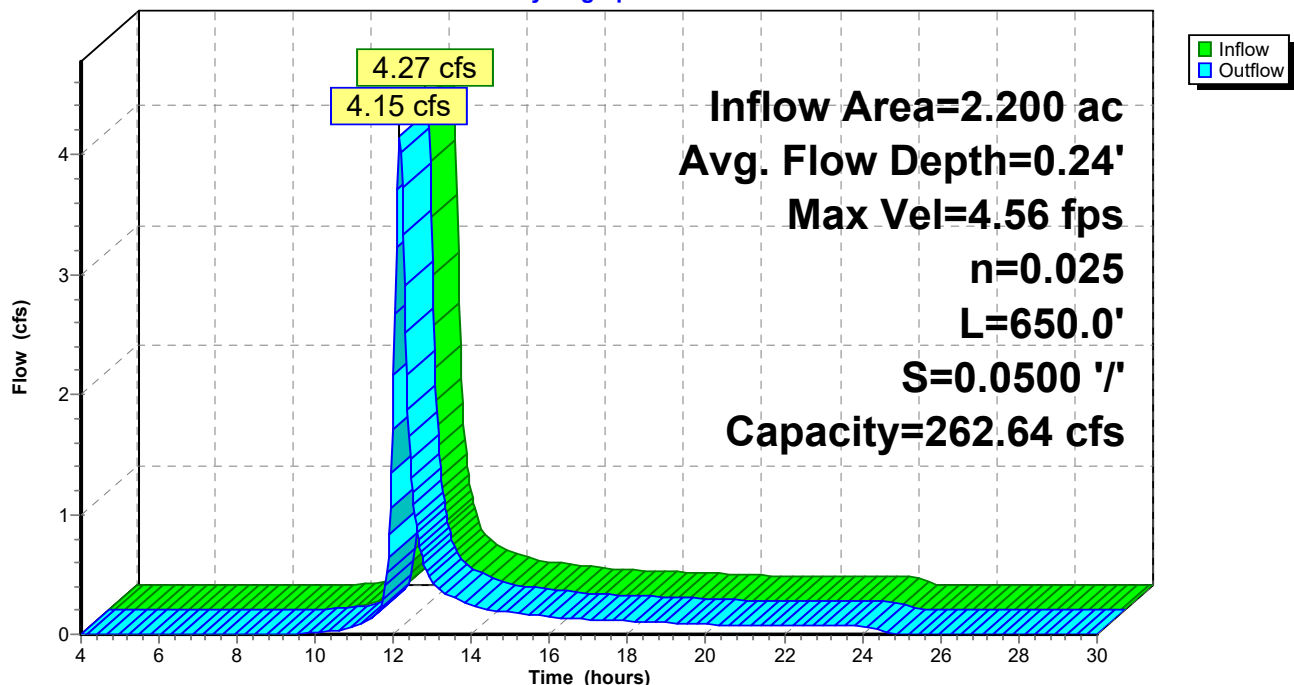
Peak Storage= 594 cf @ 12.12 hrs
Average Depth at Peak Storage= 0.24' , Surface Width= 4.47'
Bank-Full Depth= 2.00' Flow Area= 18.0 sf, Capacity= 262.64 cfs

3.00' x 2.00' deep channel, n= 0.025 Earth, clean & straight
Side Slope Z-value= 3.0 '/' Top Width= 15.00'
Length= 650.0' Slope= 0.0500 '/'
Inlet Invert= 0.00', Outlet Invert= -32.50'



Reach 5R: Drainage Ditch

Hydrograph



Proposed Drainage Areas

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Type II 24-hr 10-yr Rainfall=3.43"

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Summary for Pond 1P: Bioretention 1

Inflow Area = 37.380 ac, 11.61% Impervious, Inflow Depth = 1.65" for 10-yr event
Inflow = 43.33 cfs @ 12.38 hrs, Volume= 5.146 af
Outflow = 45.49 cfs @ 12.37 hrs, Volume= 4.986 af, Atten= 0%, Lag= 0.0 min
Primary = 45.49 cfs @ 12.37 hrs, Volume= 4.986 af
Routed to Pond 3P : Detention Basin

Routing by Stor-Ind method, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Peak Elev= 873.14' @ 12.37 hrs Surf.Area= 16,700 sf Storage= 14,715 cf

Plug-Flow detention time= 30.8 min calculated for 4.981 af (97% of inflow)
Center-of-Mass det. time= 12.9 min (877.6 - 864.7)

Volume	Invert	Avail.Storage	Storage Description
#1	872.00'	14,715 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
872.00	13,500	0	0
872.50	14,330	6,958	6,958
873.00	16,700	7,758	14,715

Device	Routing	Invert	Outlet Devices
#1	Primary	872.50'	15.0' long + 3.0 ' SideZ x 15.0' breadth Broad-Crested Rectangular Weir X 2 Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=45.39 cfs @ 12.37 hrs HW=873.14' (Free Discharge)
↑1=**Broad-Crested Rectangular Weir** (Weir Controls 45.39 cfs @ 2.10 fps)

Proposed Drainage Areas

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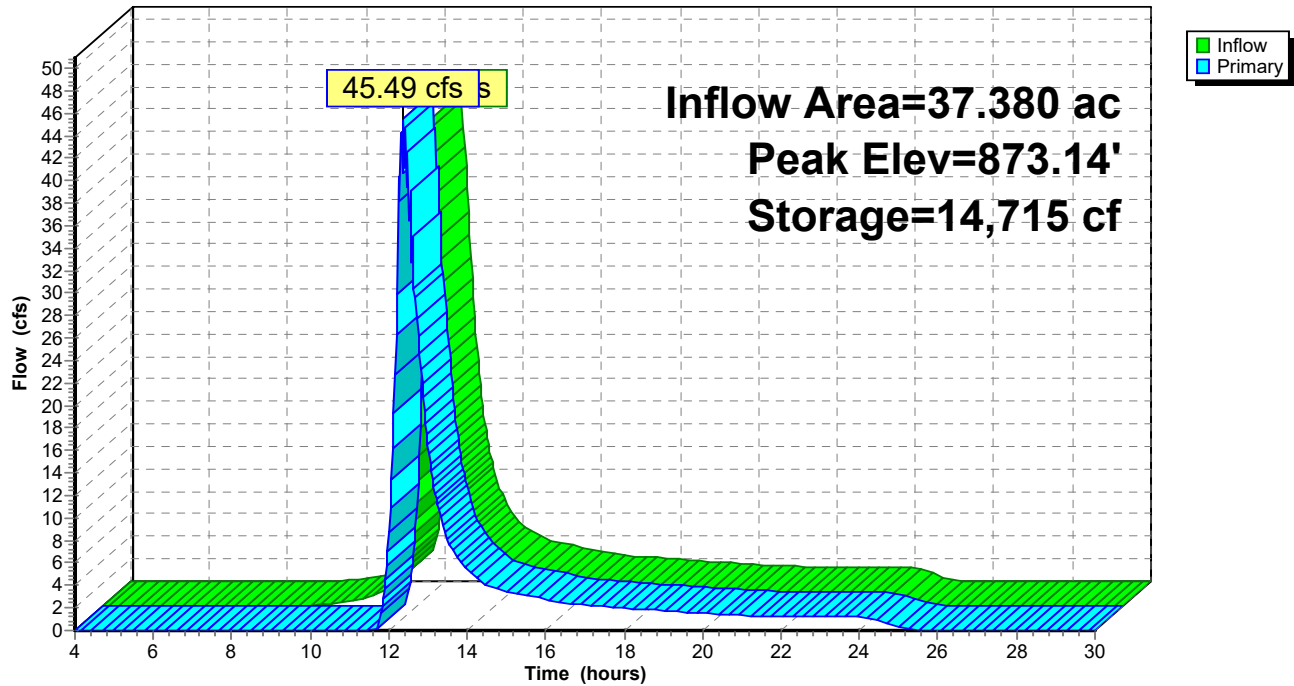
Type II 24-hr 10-yr Rainfall=3.43"

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Pond 1P: Bioretention 1

Hydrograph



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Type II 24-hr 10-yr Rainfall=3.43"

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Summary for Pond 2P: Bioretention 2

Inflow Area = 8.920 ac, 14.35% Impervious, Inflow Depth = 0.86" for 10-yr event
Inflow = 1.84 cfs @ 12.14 hrs, Volume= 0.637 af
Outflow = 1.29 cfs @ 12.38 hrs, Volume= 0.542 af, Atten= 30%, Lag= 14.1 min
Primary = 1.29 cfs @ 12.38 hrs, Volume= 0.542 af
Routed to Pond 3P : Detention Basin

Routing by Stor-Ind method, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Peak Elev= 882.56' @ 12.38 hrs Surf.Area= 9,616 sf Storage= 4,729 cf

Plug-Flow detention time= 122.7 min calculated for 0.541 af (85% of inflow)
Center-of-Mass det. time= 54.4 min (999.7 - 945.3)

Volume	Invert	Avail.Storage	Storage Description
#1	882.00'	9,105 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
882.00	7,000	0	0
882.50	9,500	4,125	4,125
883.00	10,420	4,980	9,105

Device	Routing	Invert	Outlet Devices
#1	Primary	882.50'	15.0' long + 3.0 ' SideZ x 15.0' breadth Broad-Crested Rectangular Weir X 2 Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=1.29 cfs @ 12.38 hrs HW=882.56' (Free Discharge)
↑1=**Broad-Crested Rectangular Weir** (Weir Controls 1.29 cfs @ 0.67 fps)

Proposed Drainage Areas

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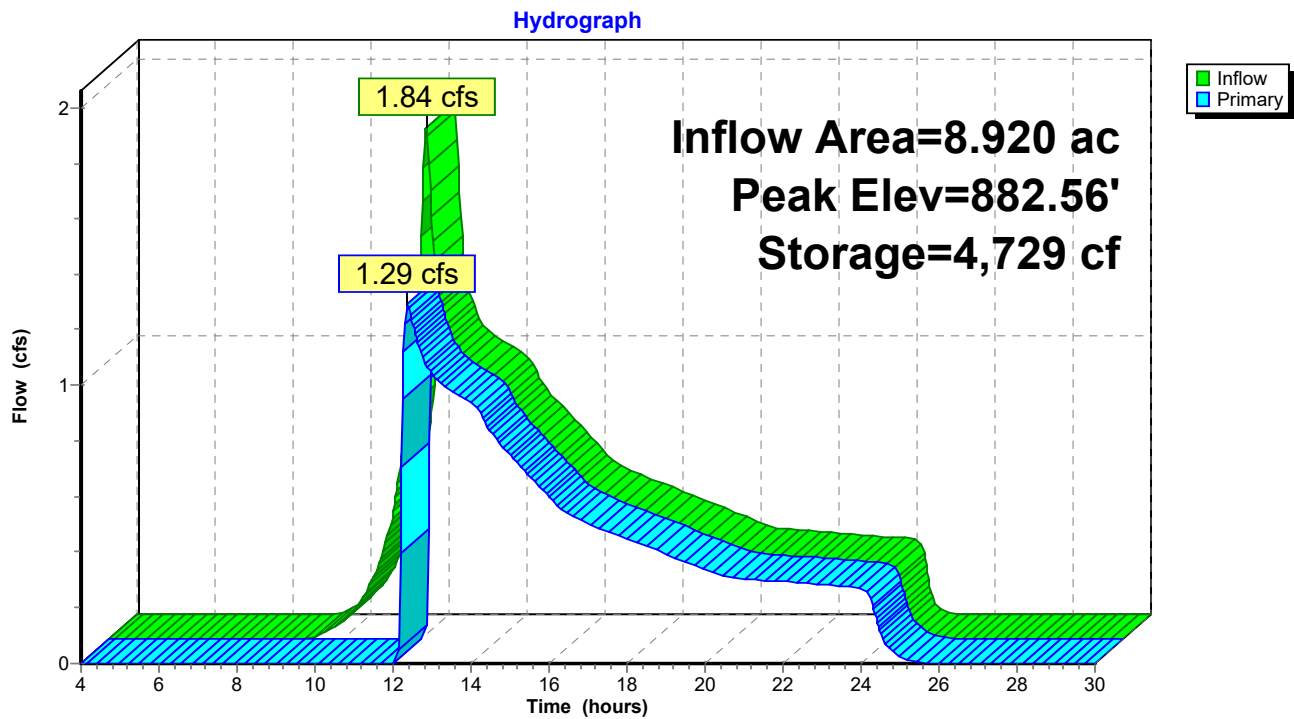
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Type II 24-hr 10-yr Rainfall=3.43"

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Pond 2P: Bioretention 2



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Type II 24-hr 10-yr Rainfall=3.43"

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Summary for Pond 3P: Detention Basin

Inflow Area = 47.380 ac, 11.86% Impervious, Inflow Depth = 1.57" for 10-yr event
Inflow = 54.02 cfs @ 12.31 hrs, Volume= 6.209 af
Outflow = 24.46 cfs @ 12.85 hrs, Volume= 6.041 af, Atten= 55%, Lag= 32.2 min
Primary = 24.46 cfs @ 12.85 hrs, Volume= 6.041 af
Routed to Reach 1R : Pt of Study 1
Secondary = 0.00 cfs @ 4.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Peak Elev= 868.07' @ 12.85 hrs Surf.Area= 25,753 sf Storage= 86,322 cf

Plug-Flow detention time= 146.4 min calculated for 6.041 af (97% of inflow)
Center-of-Mass det. time= 130.5 min (1,005.7 - 875.2)

Volume	Invert	Avail.Storage	Storage Description
#1	863.50'	243,001 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
863.50	1,285	0	0
864.00	11,100	3,096	3,096
865.00	18,820	14,960	18,056
866.00	21,020	19,920	37,976
867.00	23,280	22,150	60,126
868.00	25,590	24,435	84,561
869.00	27,960	26,775	111,336
870.00	30,390	29,175	140,511
871.00	32,875	31,633	172,144
872.00	35,415	34,145	206,289
873.00	38,010	36,713	243,001

Device	Routing	Invert	Outlet Devices
#1	Secondary	872.00'	30.0' long x 12.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#2	Primary	863.50'	30.0" Round Culvert L= 98.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 863.50' / 857.00' S= 0.0663 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf
#3	Device 2	863.50'	7.0" Vert. Orifice1 C= 0.600 Limited to weir flow at low heads
#4	Device 2	866.00'	32.0" W x 18.0" H Vert. Orifice2 C= 0.600 Limited to weir flow at low heads
#5	Device 2	868.10'	36.0" x 36.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads

Proposed Drainage Areas

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Type II 24-hr 10-yr Rainfall=3.43"

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Primary OutFlow Max=24.46 cfs @ 12.85 hrs HW=868.07' (Free Discharge)

↳ **2=Culvert** (Passes 24.46 cfs of 33.99 cfs potential flow)

↳ **3=Orifice1** (Orifice Controls 2.66 cfs @ 9.96 fps)

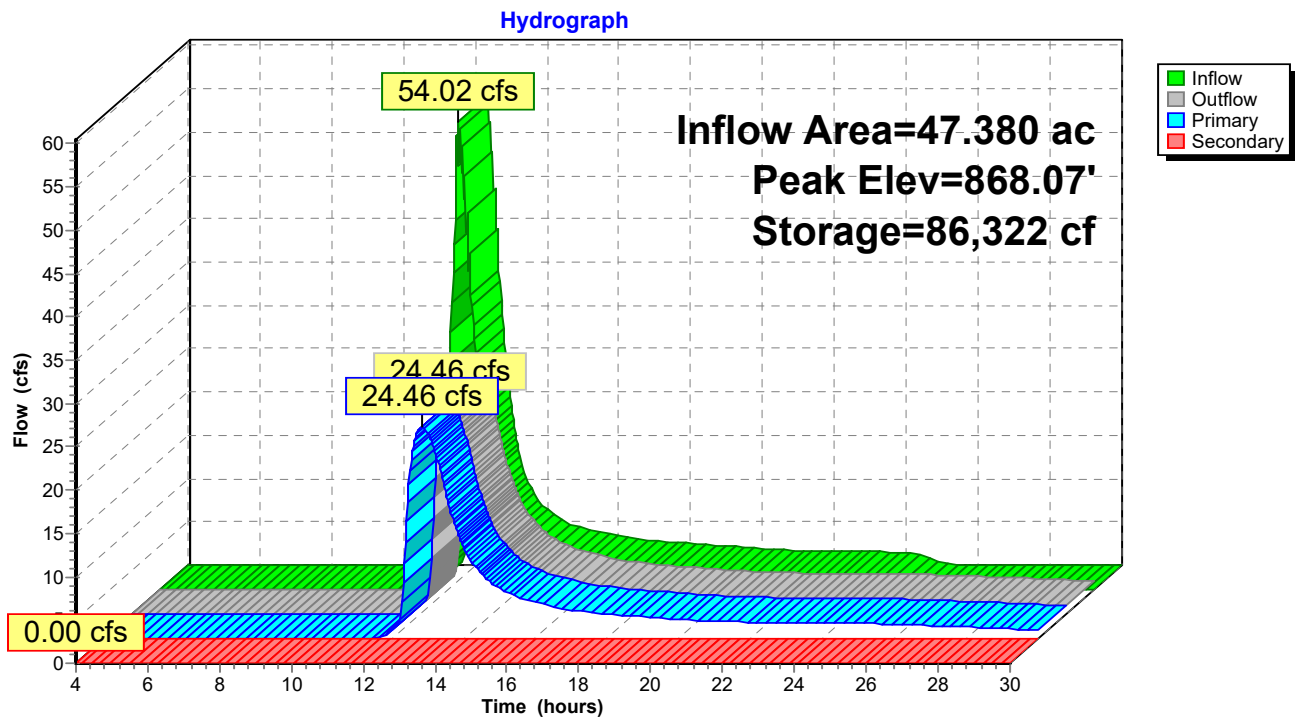
↳ **4=Orifice2** (Orifice Controls 21.79 cfs @ 5.45 fps)

↳ **5=Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 4.00 hrs HW=863.50' (Free Discharge)

↳ **1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 3P: Detention Basin



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Type II 24-hr 10-yr Rainfall=3.43"

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Summary for Pond 4P: Diversion Structure

Inflow Area = 8.920 ac, 14.35% Impervious, Inflow Depth = 1.58" for 10-yr event
Inflow = 15.08 cfs @ 12.14 hrs, Volume= 1.175 af
Outflow = 15.08 cfs @ 12.14 hrs, Volume= 1.175 af, Atten= 0%, Lag= 0.0 min
Primary = 1.84 cfs @ 12.14 hrs, Volume= 0.637 af
Routed to Pond 2P : Bioretention 2
Secondary = 13.24 cfs @ 12.14 hrs, Volume= 0.538 af
Routed to Pond 3P : Detention Basin

Routing by Stor-Ind method, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs

Peak Elev= 888.54' @ 12.14 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	882.20'	6.0" Round Bioretention Culvert L= 10.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 882.20' / 882.10' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#2	Secondary	883.90'	18.0" Round Detention Culvert L= 45.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 883.90' / 875.00' S= 0.1978 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=1.84 cfs @ 12.14 hrs HW=888.49' (Free Discharge)

↑1=Bioretention Culvert (Inlet Controls 1.84 cfs @ 9.35 fps)

Secondary OutFlow Max=13.17 cfs @ 12.14 hrs HW=888.49' (Free Discharge)

↑2=Detention Culvert (Inlet Controls 13.17 cfs @ 7.45 fps)

Proposed Drainage Areas

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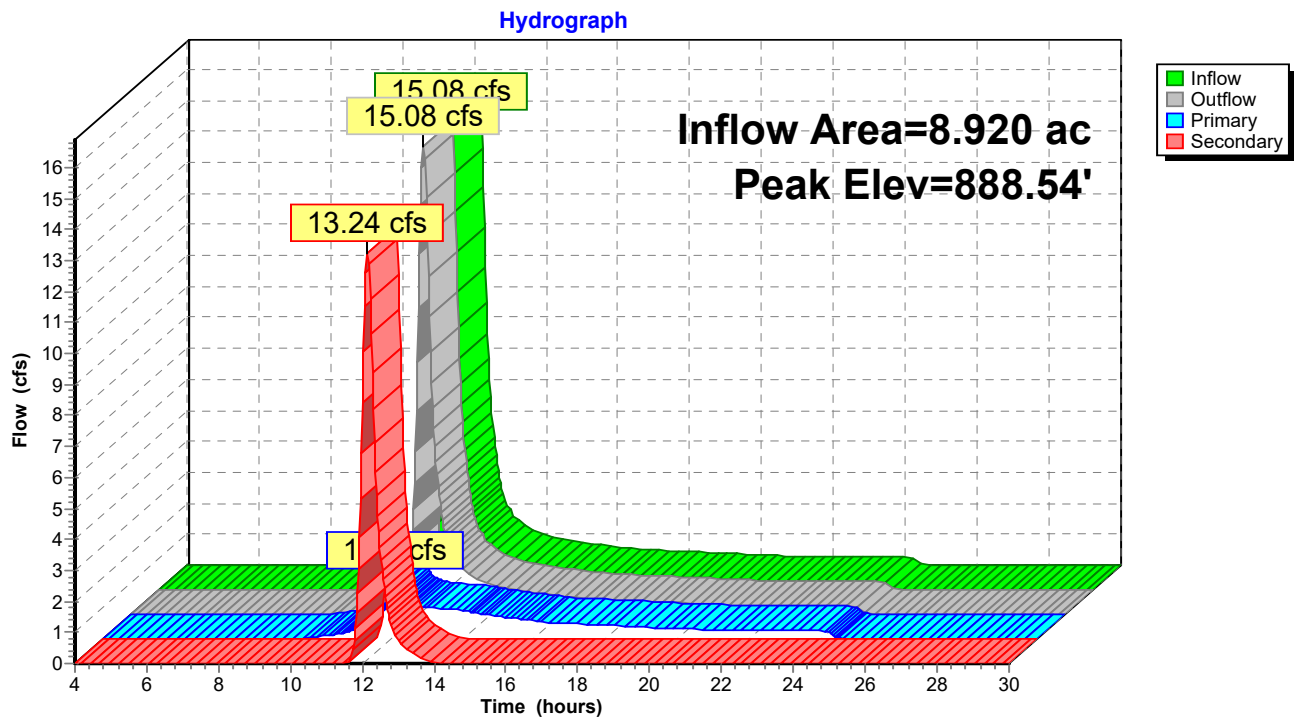
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Type II 24-hr 10-yr Rainfall=3.43"

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Pond 4P: Diversion Structure



Proposed Drainage Areas

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Type II 24-hr 100-yr Rainfall=5.78"

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Summary for Subcatchment 1S: DA-1A

Runoff = 97.78 cfs @ 12.37 hrs, Volume= 11.475 af, Depth= 3.68"
Routed to Pond 1P : Bioretention 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Type II 24-hr 100-yr Rainfall=5.78"

Area (ac)	CN	Description
2.470	98	Paved parking, HSG D
1.870	98	Unconnected roofs, HSG D
24.080	80	>75% Grass cover, Good, HSG D
8.960	77	Woods, Good, HSG D
37.380	81	Weighted Average
33.040		88.39% Pervious Area
4.340		11.61% Impervious Area
1.870		43.09% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.9	100	0.0600	0.06		Sheet Flow, SHEET FLOW Woods: Dense underbrush n= 0.800 P2= 2.39"
4.8	370	0.0650	1.27		Shallow Concentrated Flow, SCF Woodland Kv= 5.0 fps
1.9	200	0.0650	1.78		Shallow Concentrated Flow, SCF Short Grass Pasture Kv= 7.0 fps
0.2	295	0.0300	19.80	79.19	Channel Flow, curb and gutter flow Area= 4.0 sf Perim= 4.0' r= 1.00' n= 0.013 Asphalt, smooth
1.7	1,100	0.0345	11.04	19.51	Pipe Channel, Pipe Flow 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
3.8	955	0.0050	4.20	50.44	Channel Flow, Area= 12.0 sf Perim= 12.0' r= 1.00' n= 0.025 Earth, grassed & winding
40.3	3,020	Total			

Proposed Drainage Areas

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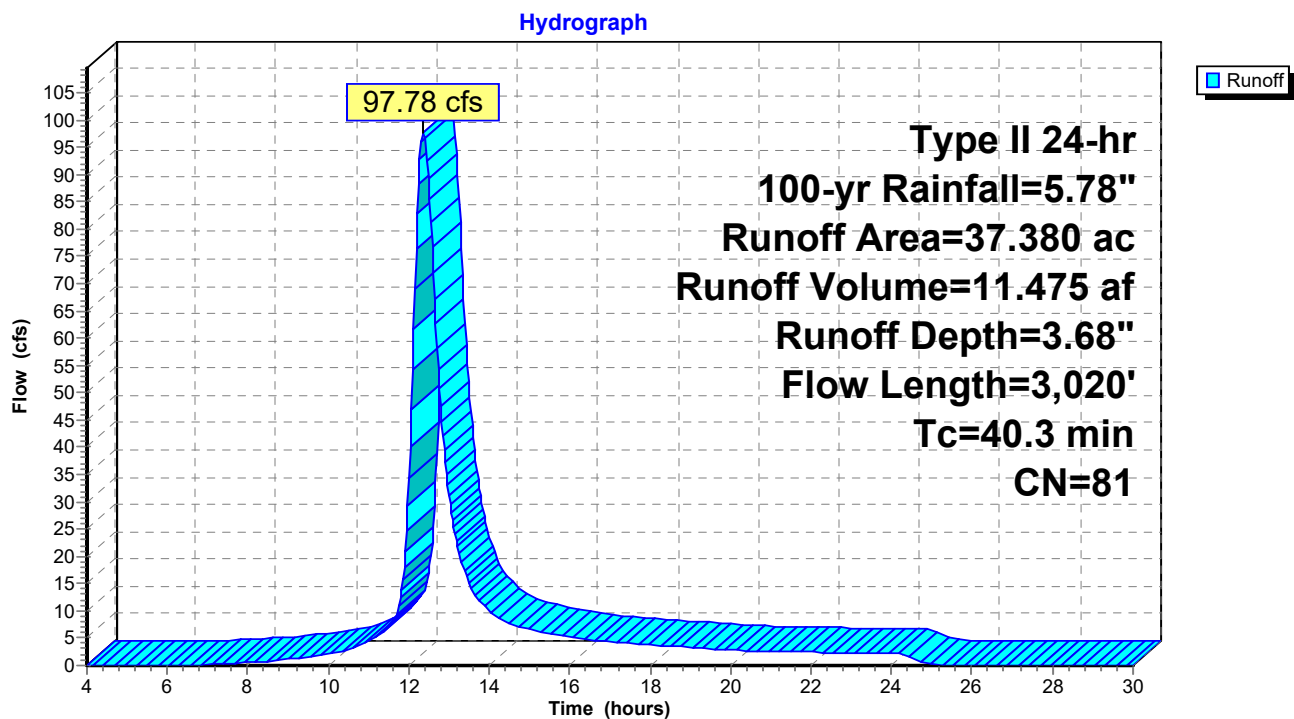
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Type II 24-hr 100-yr Rainfall=5.78"

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Subcatchment 1S: DA-1A



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Type II 24-hr 100-yr Rainfall=5.78"

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Summary for Subcatchment 2S: DA-1B

Runoff = 34.39 cfs @ 12.14 hrs, Volume= 2.664 af, Depth= 3.58"
Routed to Pond 4P : Diversion Structure

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Type II 24-hr 100-yr Rainfall=5.78"

Area (ac)	CN	Adj	Description
0.870	98		Paved parking, HSG D
0.410	98		Unconnected roofs, HSG D
4.000	80		>75% Grass cover, Good, HSG D
2.040	77		Woods, Good, HSG D
1.600	73		Brush, Good, HSG D
8.920	81	80	Weighted Average, UI Adjusted
7.640			85.65% Pervious Area
1.280			14.35% Impervious Area
0.410			32.03% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	100	0.0600	0.16		Sheet Flow, SHEET FLOW Grass: Dense n= 0.240 P2= 2.39"
4.6	410	0.0900	1.50		Shallow Concentrated Flow, SCF Woodland Kv= 5.0 fps
5.6	710	0.0920	2.12		Shallow Concentrated Flow, SCF Short Grass Pasture Kv= 7.0 fps
0.3	170	0.0200	9.55	76.42	Channel Flow, swale flow Area= 8.0 sf Perim= 8.0' r= 1.00' n= 0.022 Earth, clean & straight
21.1	1,390	Total			

Proposed Drainage Areas

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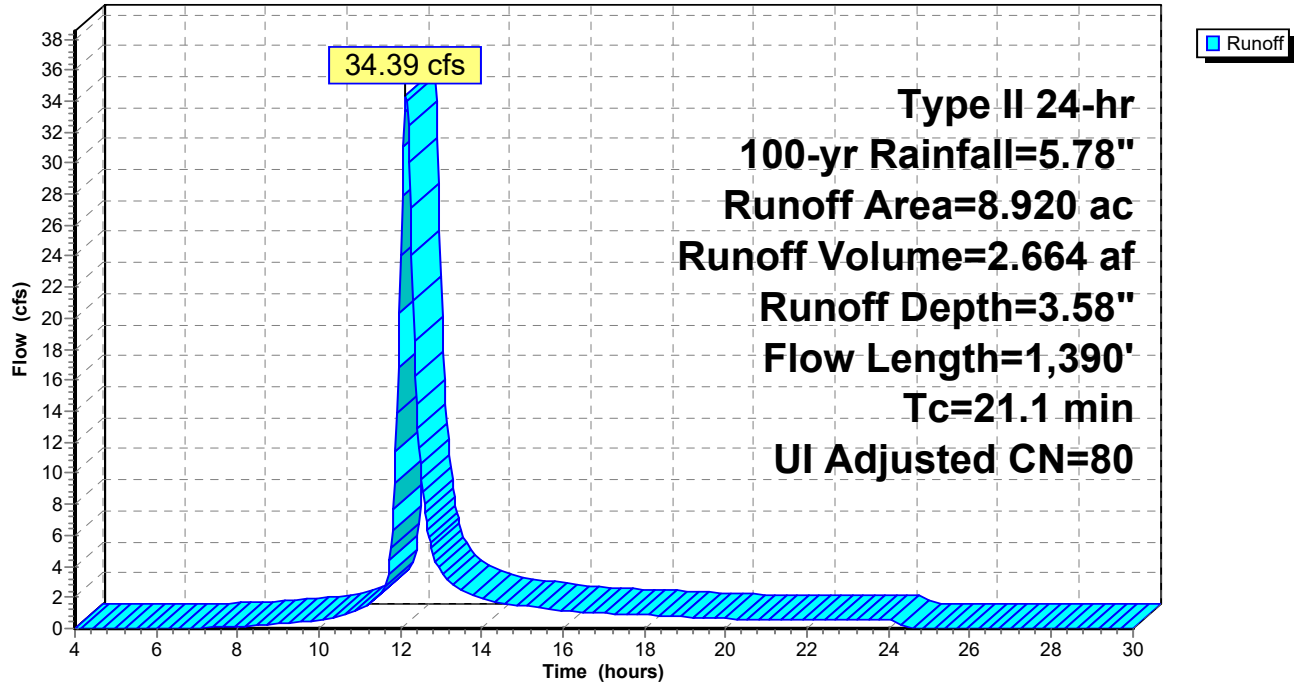
Type II 24-hr 100-yr Rainfall=5.78"

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Subcatchment 2S: DA-1B

Hydrograph



Proposed Drainage Areas

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Summary for Subcatchment 3S: DA-1C

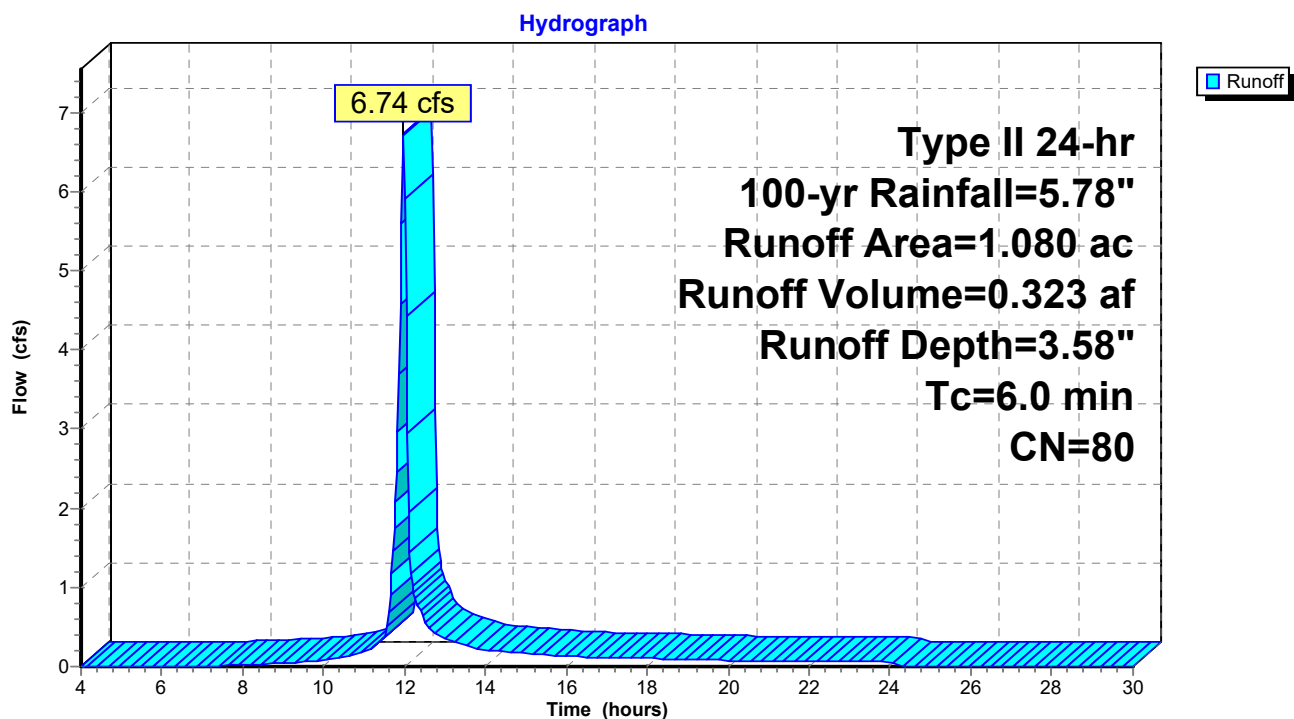
Runoff = 6.74 cfs @ 11.97 hrs, Volume= 0.323 af, Depth= 3.58"
Routed to Pond 3P : Detention Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Type II 24-hr 100-yr Rainfall=5.78"

Area (ac)	CN	Description
0.960	80	>75% Grass cover, Good, HSG D
0.120	77	Woods, Good, HSG D
1.080	80	Weighted Average
1.080		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Min TR 55 Value

Subcatchment 3S: DA-1C



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Type II 24-hr 100-yr Rainfall=5.78"

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Summary for Subcatchment 4S: DA-1D

Runoff = 36.02 cfs @ 12.35 hrs, Volume= 4.110 af, Depth= 3.29"
Routed to Reach 1R : Pt of Study 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Type II 24-hr 100-yr Rainfall=5.78"

Area (ac)	CN	Description
3.230	80	>75% Grass cover, Good, HSG D
8.910	77	Woods, Good, HSG D
0.200	98	Paved parking, HSG D
2.660	73	Brush, Good, HSG D
15.000	77	Weighted Average
14.800		98.67% Pervious Area
0.200		1.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.9	100	0.0600	0.06		Sheet Flow, SHEET FLOW Woods: Dense underbrush n= 0.800 P2= 2.39"
5.4	485	0.0900	1.50		Shallow Concentrated Flow, SCF Woodland Kv= 5.0 fps
4.1	517	0.0900	2.10		Shallow Concentrated Flow, SCF Short Grass Pasture Kv= 7.0 fps
1.2	1,155	0.0750	16.28	260.45	Channel Flow, SWALE Area= 16.0 sf Perim= 16.0' r= 1.00' n= 0.025 Earth, clean & winding
38.6	2,257	Total			

Proposed Drainage Areas

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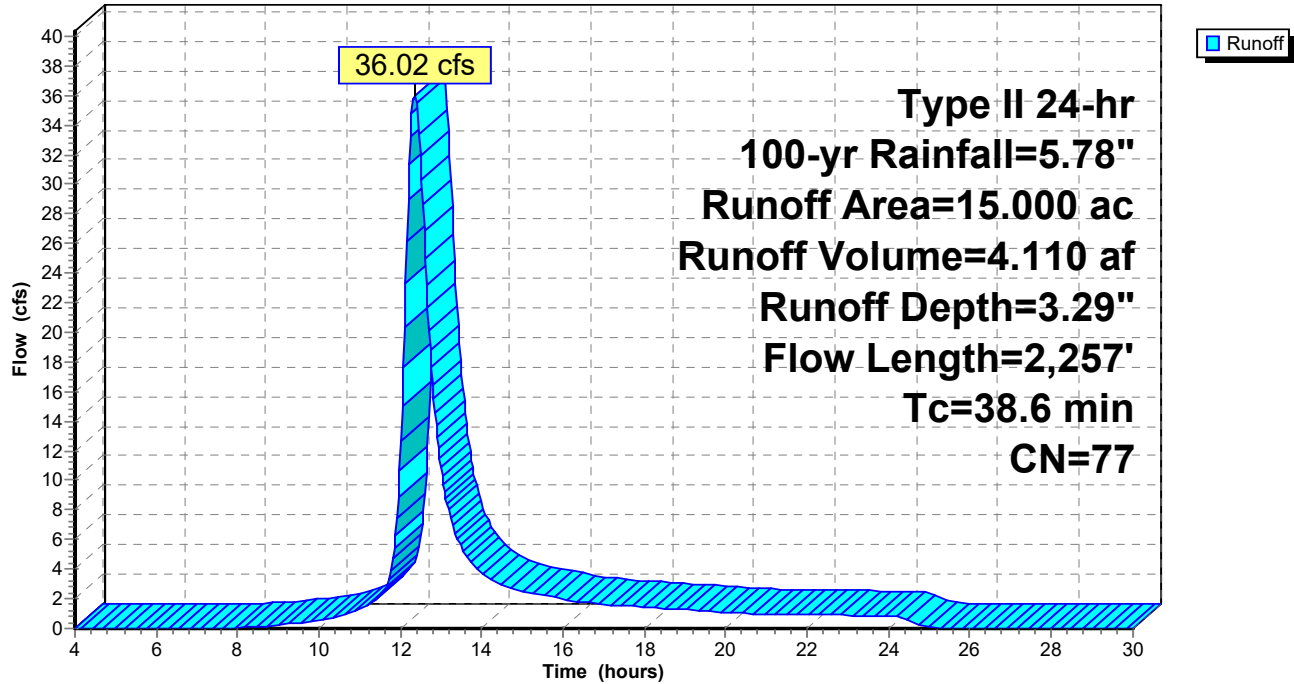
Type II 24-hr 100-yr Rainfall=5.78"

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Subcatchment 4S: DA-1D

Hydrograph



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Type II 24-hr 100-yr Rainfall=5.78"

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Summary for Subcatchment 5S: DA#2

Runoff = 4.70 cfs @ 12.00 hrs, Volume= 0.241 af, Depth= 3.48"
Routed to Reach 2R : Pt of Study 2

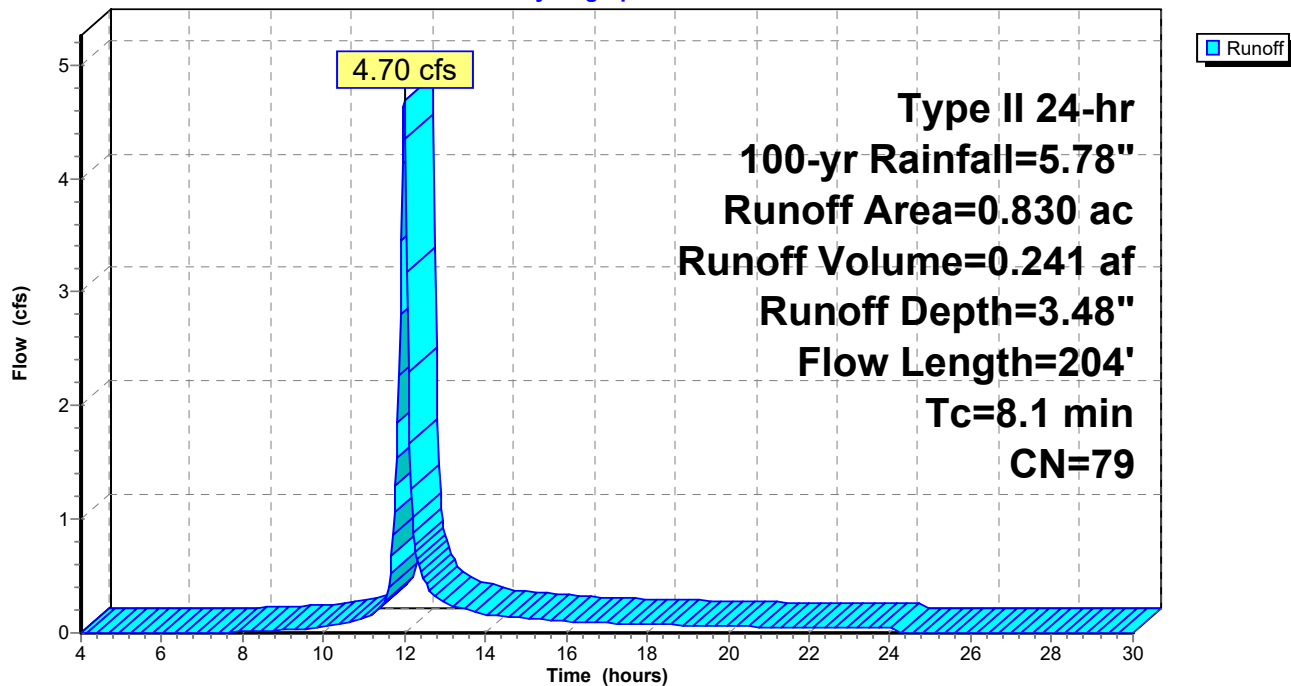
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Type II 24-hr 100-yr Rainfall=5.78"

Area (ac)	CN	Description
0.690	80	>75% Grass cover, Good, HSG D
0.140	77	Woods, Good, HSG D
0.830	79	Weighted Average
0.830		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	100	0.1500	0.23		Sheet Flow, SHEET FLOW Grass: Dense n= 0.240 P2= 2.39"
0.7	104	0.1300	2.52		Shallow Concentrated Flow, SCF Short Grass Pasture Kv= 7.0 fps
8.1	204	Total			

Subcatchment 5S: DA#2

Hydrograph



Proposed Drainage Areas

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Type II 24-hr 100-yr Rainfall=5.78"

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Summary for Subcatchment 6S: DA#3A

Runoff = 9.68 cfs @ 12.08 hrs, Volume= 0.657 af, Depth= 3.58"

Routed to Reach 5R : Drainage Ditch

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs

Type II 24-hr 100-yr Rainfall=5.78"

Area (ac)	CN	Adj	Description
0.900	80		>75% Grass cover, Good, HSG D
0.200	98		Paved parking, HSG D
0.070	98		Unconnected roofs, HSG D
1.030	77		Woods, Good, HSG D
2.200	81	80	Weighted Average, UI Adjusted
1.930			87.73% Pervious Area
0.270			12.27% Impervious Area
0.070			25.93% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.9	100	0.0450	0.14		Sheet Flow, SHEET FLOW Grass: Dense n= 0.240 P2= 2.39"
2.5	188	0.0650	1.27		Shallow Concentrated Flow, SCF Woodland Kv= 5.0 fps
1.9	202	0.0650	1.78		Shallow Concentrated Flow, SCF Short Grass Pasture Kv= 7.0 fps
0.2	232	0.0220	16.95	50.86	Channel Flow, curb flow Area= 3.0 sf Perim= 3.0' r= 1.00' n= 0.013 Asphalt, smooth
16.5	722	Total			

Proposed Drainage Areas

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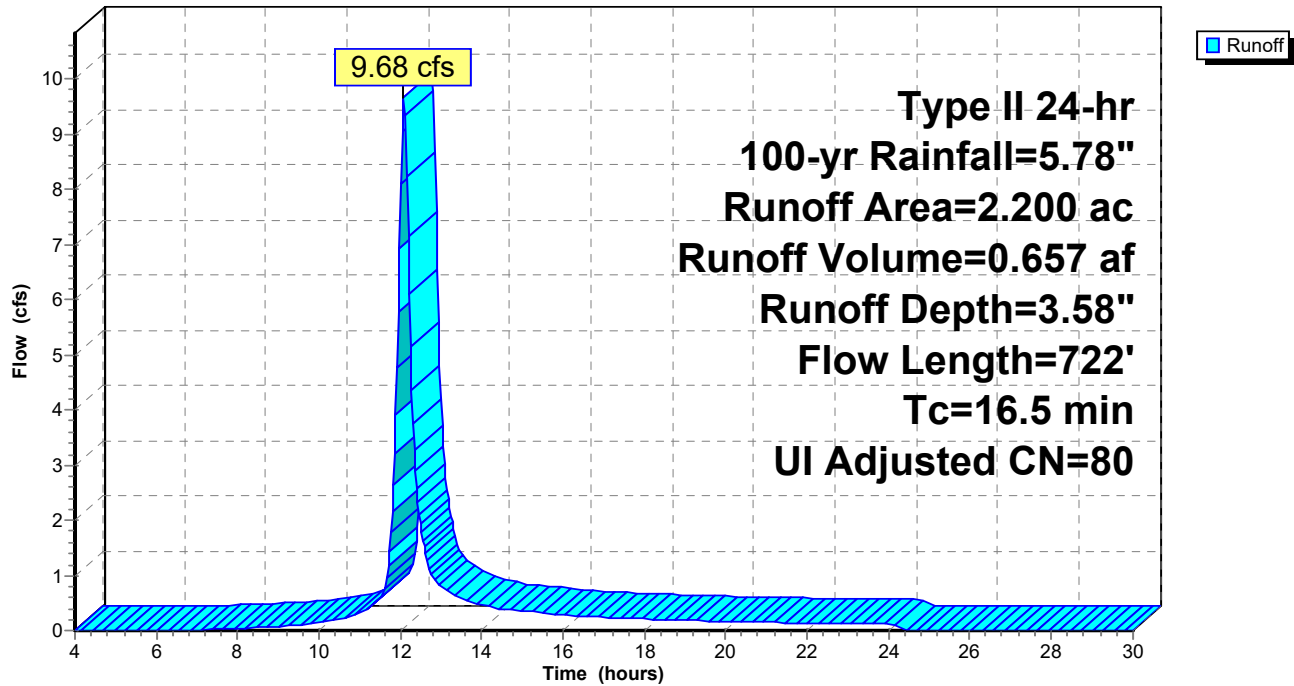
Type II 24-hr 100-yr Rainfall=5.78"

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Subcatchment 6S: DA#3A

Hydrograph



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Summary for Subcatchment 7S: DA#3B

Runoff = 11.95 cfs @ 12.09 hrs, Volume= 0.820 af, Depth= 3.79"
Routed to Reach 3R : Pt of Study 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Type II 24-hr 100-yr Rainfall=5.78"

Area (ac)	CN	Adj	Description		
2.190	80		>75% Grass cover, Good, HSG D		
0.270	98		Paved parking, HSG D		
0.140	98		Unconnected roofs, HSG D		
2.600	83	82	Weighted Average, UI Adjusted		
2.190			84.23% Pervious Area		
0.410			15.77% Impervious Area		
0.140			34.15% Unconnected		
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	100	0.0500	0.15		Sheet Flow, SHEET FLOW Grass: Dense n= 0.240 P2= 2.39"
5.1	475	0.0500	1.57		Shallow Concentrated Flow, SCF Short Grass Pasture Kv= 7.0 fps
0.2	82	0.0200	6.42	5.04	Pipe Channel, pipe flow 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
16.7	657	Total			

Proposed Drainage Areas

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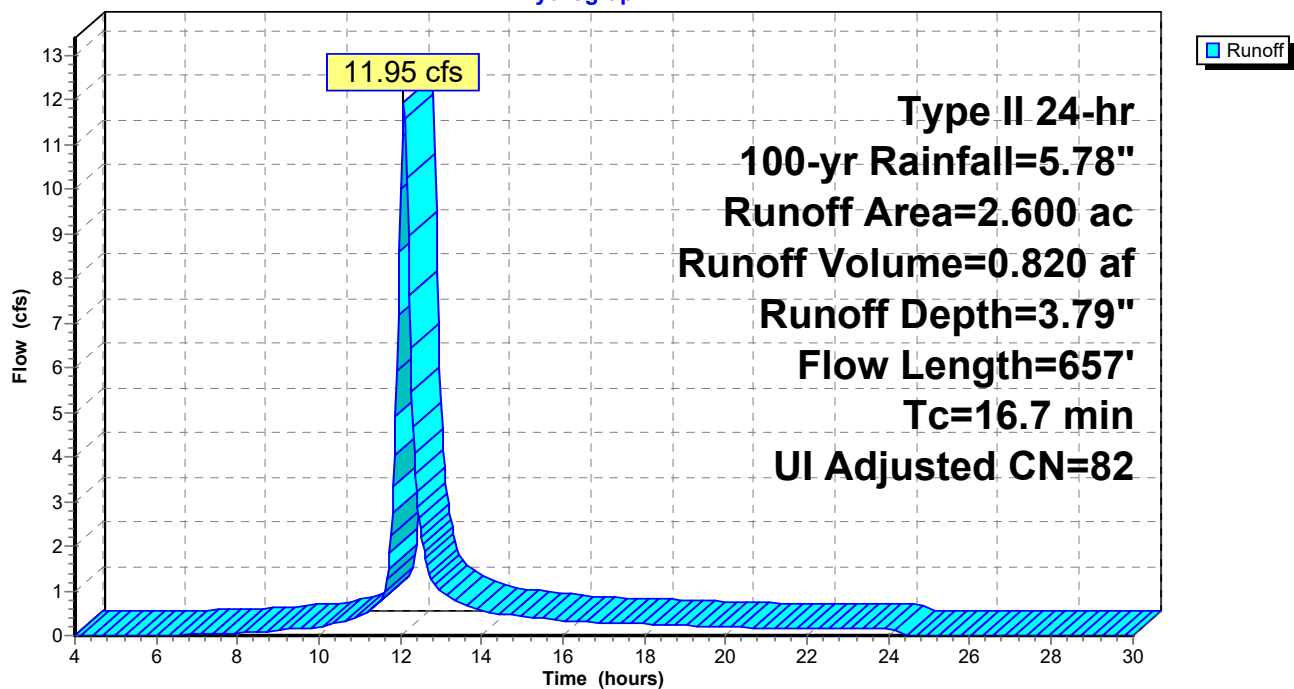
Type II 24-hr 100-yr Rainfall=5.78"

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Subcatchment 7S: DA#3B

Hydrograph



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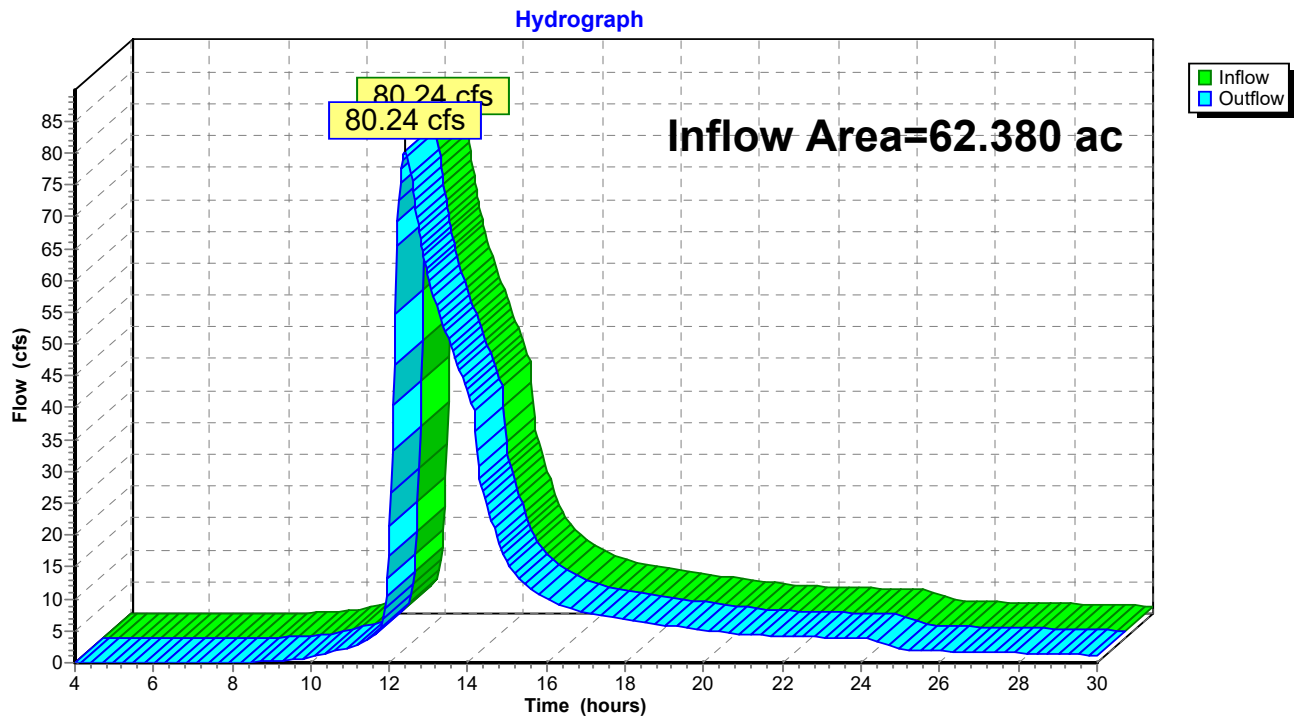
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Summary for Reach 1R: Pt of Study 1

Inflow Area = 62.380 ac, 9.33% Impervious, Inflow Depth > 3.47" for 100-yr event
Inflow = 80.24 cfs @ 12.41 hrs, Volume= 18.049 af
Outflow = 80.24 cfs @ 12.41 hrs, Volume= 18.049 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs

Reach 1R: Pt of Study 1



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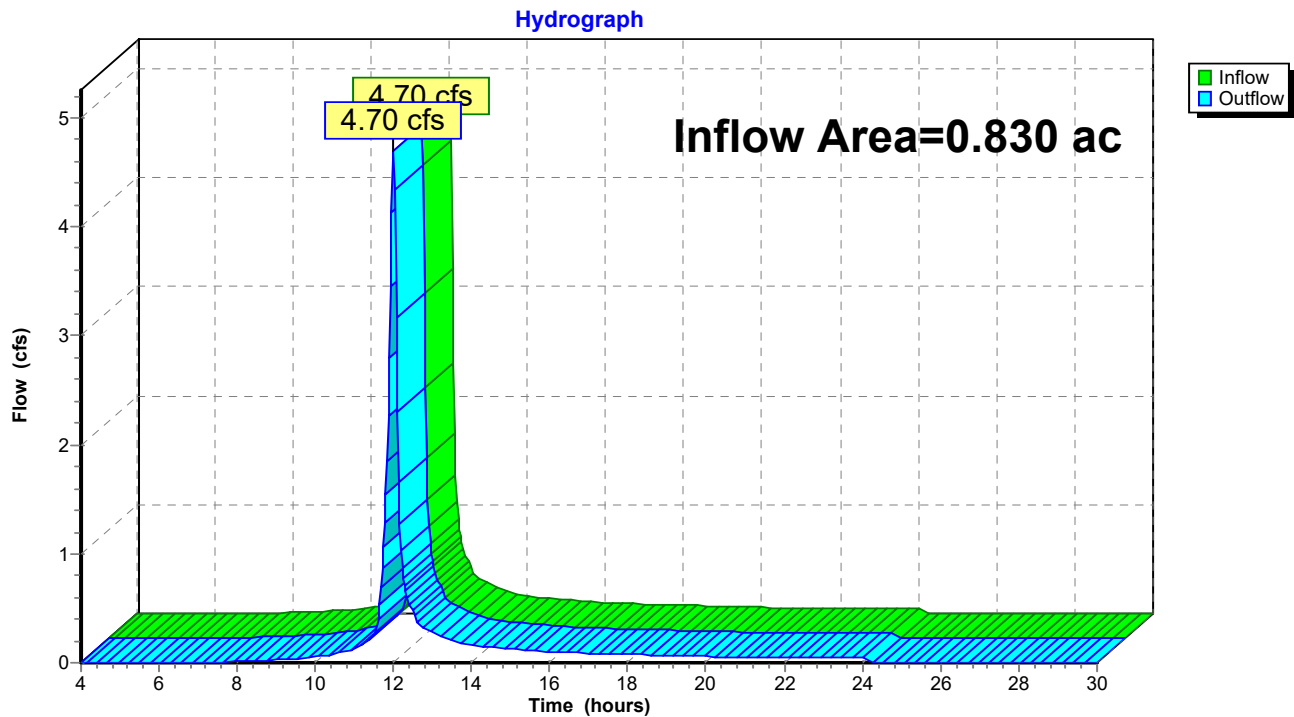
Page 64

Summary for Reach 2R: Pt of Study 2

Inflow Area = 0.830 ac, 0.00% Impervious, Inflow Depth = 3.48" for 100-yr event
Inflow = 4.70 cfs @ 12.00 hrs, Volume= 0.241 af
Outflow = 4.70 cfs @ 12.00 hrs, Volume= 0.241 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs

Reach 2R: Pt of Study 2



Proposed Drainage Areas

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Type II 24-hr 100-yr Rainfall=5.78"

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Summary for Reach 3R: Pt of Study 3

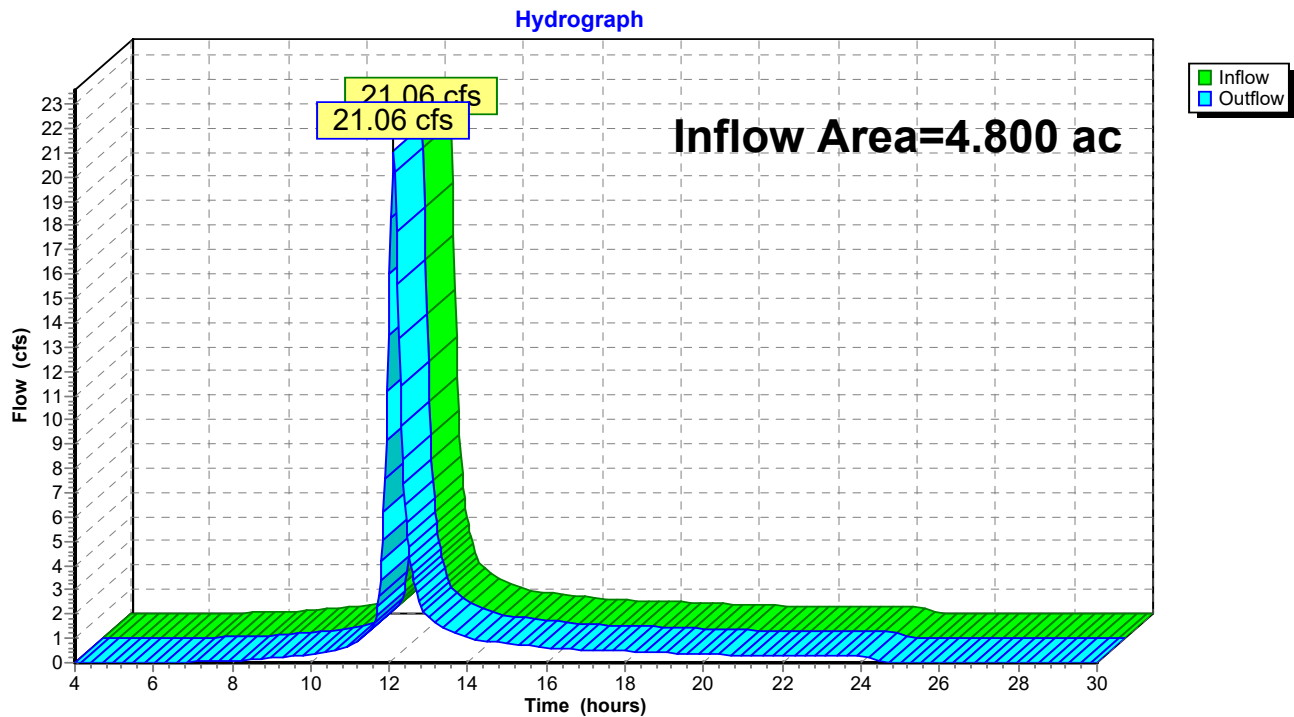
Inflow Area = 4.800 ac, 14.17% Impervious, Inflow Depth = 3.69" for 100-yr event

Inflow = 21.06 cfs @ 12.11 hrs, Volume= 1.477 af

Outflow = 21.06 cfs @ 12.11 hrs, Volume= 1.477 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs

Reach 3R: Pt of Study 3



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Type II 24-hr 100-yr Rainfall=5.78"

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Summary for Reach 5R: Drainage Ditch

Inflow Area = 2.200 ac, 12.27% Impervious, Inflow Depth = 3.58" for 100-yr event
Inflow = 9.68 cfs @ 12.08 hrs, Volume= 0.657 af
Outflow = 9.54 cfs @ 12.14 hrs, Volume= 0.657 af, Atten= 1%, Lag= 3.2 min
Routed to Reach 3R : Pt of Study 3

Routing by Stor-Ind+Trans method, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Max. Velocity= 5.90 fps, Min. Travel Time= 1.8 min
Avg. Velocity= 1.66 fps, Avg. Travel Time= 6.5 min

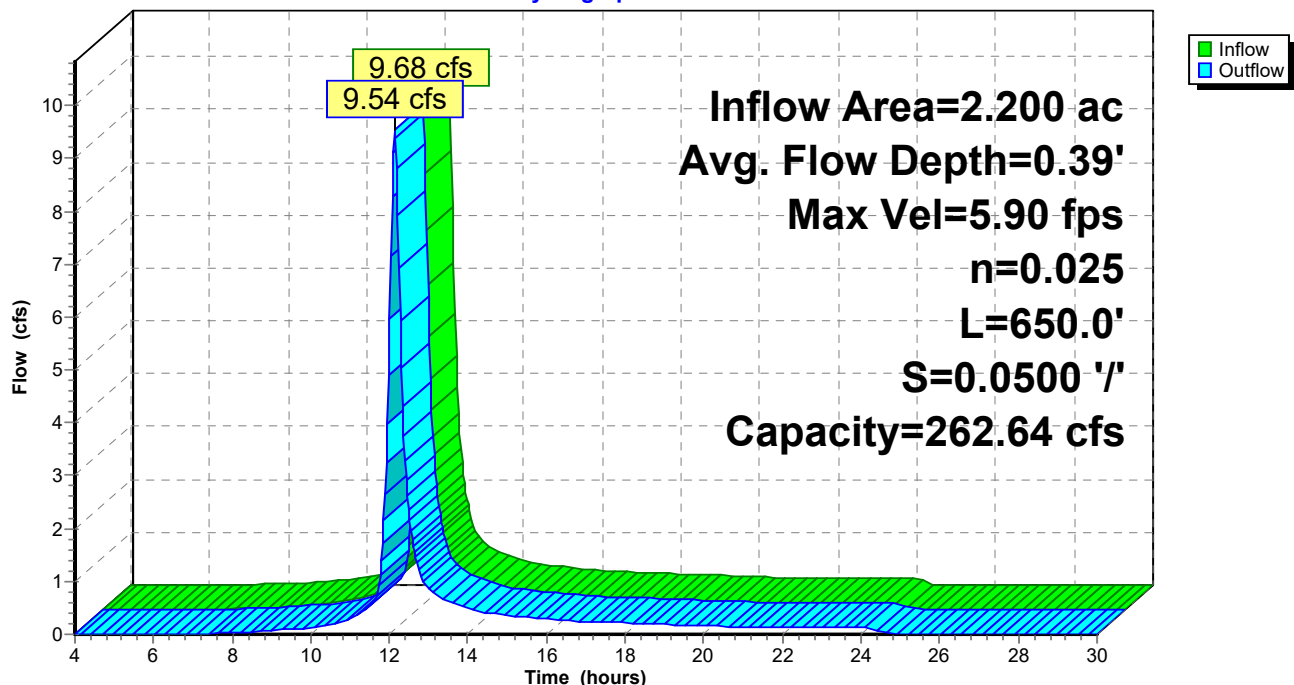
Peak Storage= 1,050 cf @ 12.11 hrs
Average Depth at Peak Storage= 0.39' , Surface Width= 5.33'
Bank-Full Depth= 2.00' Flow Area= 18.0 sf, Capacity= 262.64 cfs

3.00' x 2.00' deep channel, n= 0.025 Earth, clean & straight
Side Slope Z-value= 3.0 '/' Top Width= 15.00'
Length= 650.0' Slope= 0.0500 '/'
Inlet Invert= 0.00', Outlet Invert= -32.50'



Reach 5R: Drainage Ditch

Hydrograph



Proposed Drainage Areas

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Type II 24-hr 100-yr Rainfall=5.78"

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Summary for Pond 1P: Bioretention 1

Inflow Area = 37.380 ac, 11.61% Impervious, Inflow Depth = 3.68" for 100-yr event
Inflow = 97.78 cfs @ 12.37 hrs, Volume= 11.475 af
Outflow = 103.86 cfs @ 12.37 hrs, Volume= 11.315 af, Atten= 0%, Lag= 0.2 min
Primary = 103.86 cfs @ 12.37 hrs, Volume= 11.315 af
Routed to Pond 3P : Detention Basin

Routing by Stor-Ind method, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Peak Elev= 873.58' @ 12.37 hrs Surf.Area= 16,700 sf Storage= 14,715 cf

Plug-Flow detention time= 17.6 min calculated for 11.302 af (98% of inflow)
Center-of-Mass det. time= 9.2 min (851.0 - 841.8)

Volume	Invert	Avail.Storage	Storage Description
#1	872.00'	14,715 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
872.00	13,500	0	0
872.50	14,330	6,958	6,958
873.00	16,700	7,758	14,715

Device	Routing	Invert	Outlet Devices
#1	Primary	872.50'	15.0' long + 3.0 ' SideZ x 15.0' breadth Broad-Crested Rectangular Weir X 2 Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=103.82 cfs @ 12.37 hrs HW=873.58' (Free Discharge)
↑1=**Broad-Crested Rectangular Weir** (Weir Controls 103.82 cfs @ 2.64 fps)

Proposed Drainage Areas

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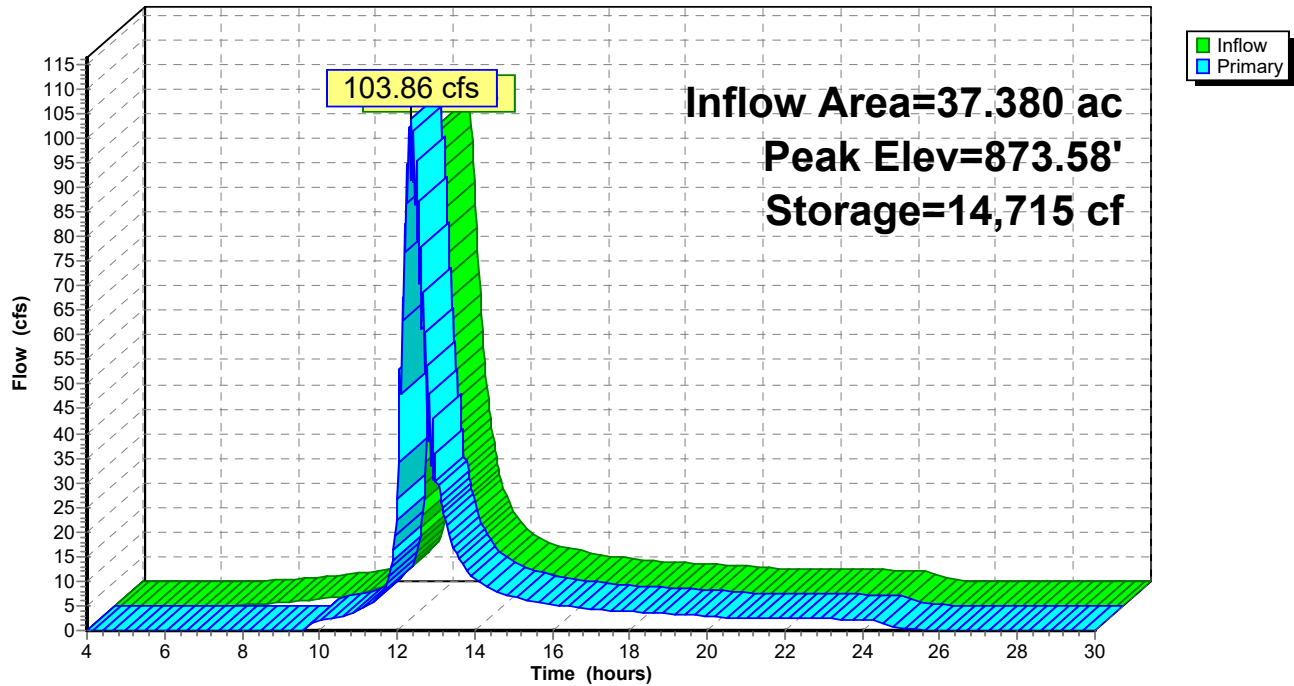
Type II 24-hr 100-yr Rainfall=5.78"

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Pond 1P: Bioretention 1

Hydrograph



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Summary for Pond 2P: Bioretention 2

Inflow Area = 8.920 ac, 14.35% Impervious, Inflow Depth = 1.49" for 100-yr event
Inflow = 3.60 cfs @ 12.14 hrs, Volume= 1.110 af
Outflow = 3.37 cfs @ 12.20 hrs, Volume= 1.015 af, Atten= 6%, Lag= 3.6 min
Primary = 3.37 cfs @ 12.20 hrs, Volume= 1.015 af
Routed to Pond 3P : Detention Basin

Routing by Stor-Ind method, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Peak Elev= 882.62' @ 12.20 hrs Surf.Area= 9,719 sf Storage= 5,269 cf

Plug-Flow detention time= 85.0 min calculated for 1.014 af (91% of inflow)
Center-of-Mass det. time= 42.7 min (980.6 - 937.9)

Volume	Invert	Avail.Storage	Storage Description
#1	882.00'	9,105 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
882.00	7,000	0	0
882.50	9,500	4,125	4,125
883.00	10,420	4,980	9,105

Device	Routing	Invert	Outlet Devices
#1	Primary	882.50'	15.0' long + 3.0 ' SideZ x 15.0' breadth Broad-Crested Rectangular Weir X 2 Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=3.36 cfs @ 12.20 hrs HW=882.62' (Free Discharge)
↑1=**Broad-Crested Rectangular Weir** (Weir Controls 3.36 cfs @ 0.92 fps)

Proposed Drainage Areas

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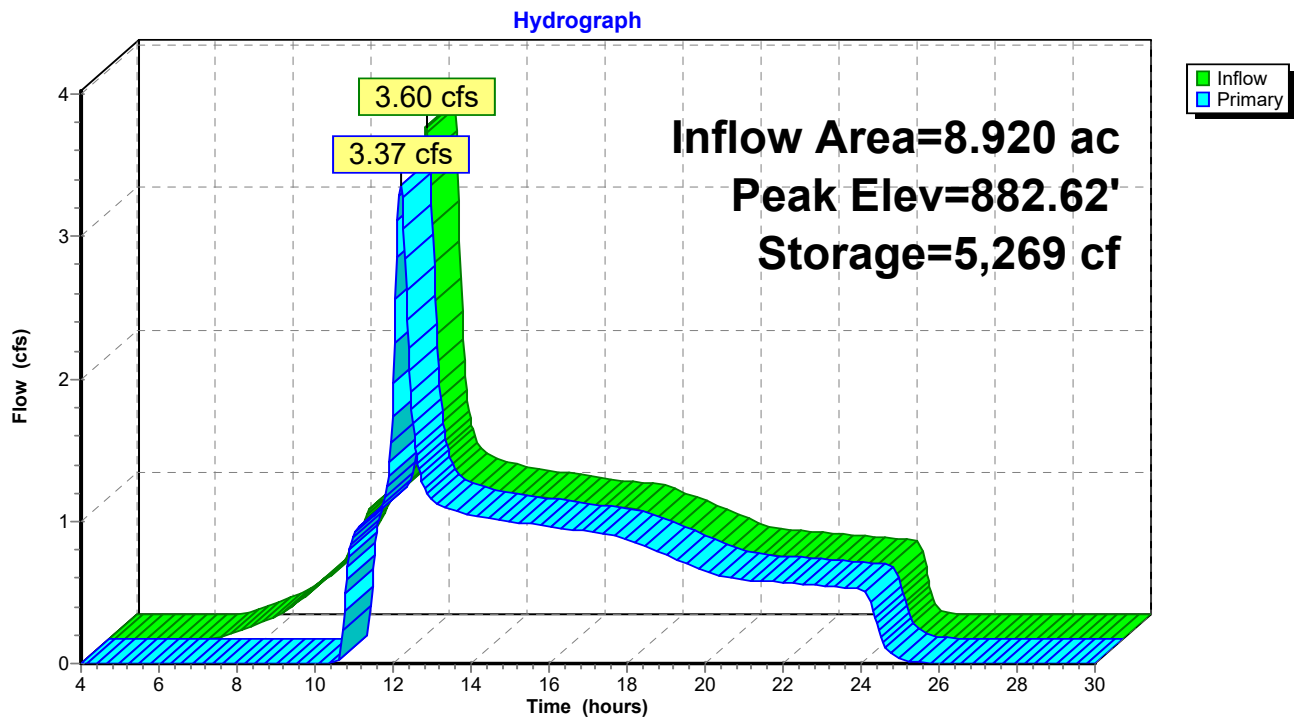
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Pond 2P: Bioretention 2



Proposed Drainage Areas

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Type II 24-hr 100-yr Rainfall=5.78"

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Summary for Pond 3P: Detention Basin

Inflow Area = 47.380 ac, 11.86% Impervious, Inflow Depth = 3.60" for 100-yr event
Inflow = 124.54 cfs @ 12.31 hrs, Volume= 14.207 af
Outflow = 50.05 cfs @ 12.82 hrs, Volume= 13.939 af, Atten= 60%, Lag= 30.5 min
Primary = 50.05 cfs @ 12.82 hrs, Volume= 13.939 af
Routed to Reach 1R : Pt of Study 1
Secondary = 0.00 cfs @ 4.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Peak Elev= 871.95' @ 12.82 hrs Surf.Area= 35,277 sf Storage= 204,367 cf

Plug-Flow detention time= 94.7 min calculated for 13.939 af (98% of inflow)
Center-of-Mass det. time= 83.1 min (931.1 - 848.0)

Volume	Invert	Avail.Storage	Storage Description
#1	863.50'	243,001 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
863.50	1,285	0	0
864.00	11,100	3,096	3,096
865.00	18,820	14,960	18,056
866.00	21,020	19,920	37,976
867.00	23,280	22,150	60,126
868.00	25,590	24,435	84,561
869.00	27,960	26,775	111,336
870.00	30,390	29,175	140,511
871.00	32,875	31,633	172,144
872.00	35,415	34,145	206,289
873.00	38,010	36,713	243,001

Device	Routing	Invert	Outlet Devices
#1	Secondary	872.00'	30.0' long x 12.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#2	Primary	863.50'	30.0" Round Culvert L= 98.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 863.50' / 857.00' S= 0.0663 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf
#3	Device 2	863.50'	7.0" Vert. Orifice1 C= 0.600 Limited to weir flow at low heads
#4	Device 2	866.00'	32.0" W x 18.0" H Vert. Orifice2 C= 0.600 Limited to weir flow at low heads
#5	Device 2	868.10'	36.0" x 36.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads

Proposed Drainage Areas

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Type II 24-hr 100-yr Rainfall=5.78"

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Primary OutFlow Max=50.05 cfs @ 12.82 hrs HW=871.95' (Free Discharge)

↳ **2=Culvert** (Inlet Controls 50.05 cfs @ 10.20 fps)

↳ **3=Orifice1** (Passes < 3.67 cfs potential flow)

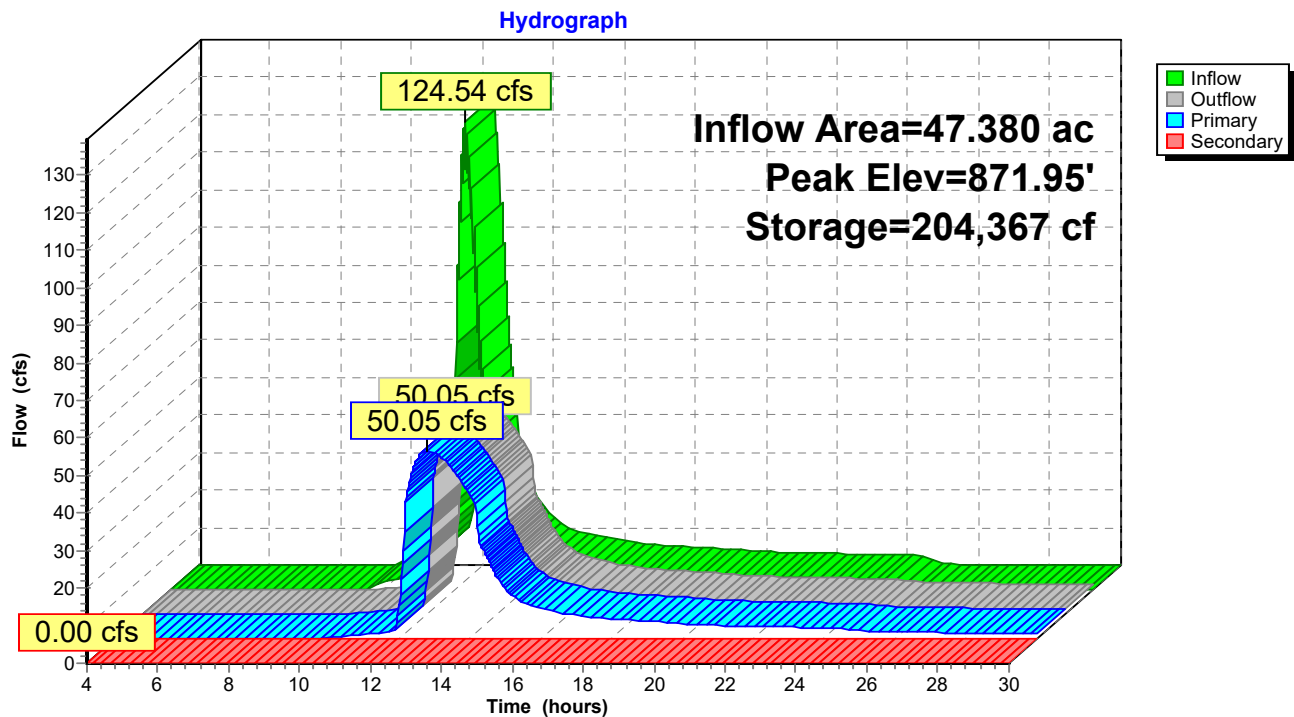
↳ **4=Orifice2** (Passes < 43.86 cfs potential flow)

↳ **5=Grate** (Passes < 84.98 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 4.00 hrs HW=863.50' (Free Discharge)

↳ **1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 3P: Detention Basin



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Summary for Pond 4P: Diversion Structure

Inflow Area = 8.920 ac, 14.35% Impervious, Inflow Depth = 3.58" for 100-yr event
Inflow = 34.39 cfs @ 12.14 hrs, Volume= 2.664 af
Outflow = 34.39 cfs @ 12.14 hrs, Volume= 2.664 af, Atten= 0%, Lag= 0.0 min
Primary = 3.60 cfs @ 12.14 hrs, Volume= 1.110 af
Routed to Pond 2P : Bioretention 2
Secondary = 30.79 cfs @ 12.14 hrs, Volume= 1.553 af
Routed to Pond 3P : Detention Basin

Routing by Stor-Ind method, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs

Peak Elev= 905.66' @ 12.14 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	882.20'	6.0" Round Bioretention Culvert L= 10.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 882.20' / 882.10' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#2	Secondary	883.90'	18.0" Round Detention Culvert L= 45.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 883.90' / 875.00' S= 0.1978 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=3.58 cfs @ 12.14 hrs HW=905.51' (Free Discharge)

↑**1=Bioretention Culvert** (Inlet Controls 3.58 cfs @ 18.26 fps)

Secondary OutFlow Max=30.68 cfs @ 12.14 hrs HW=905.51' (Free Discharge)

↑**2=Detention Culvert** (Inlet Controls 30.68 cfs @ 17.36 fps)

Proposed Drainage Areas

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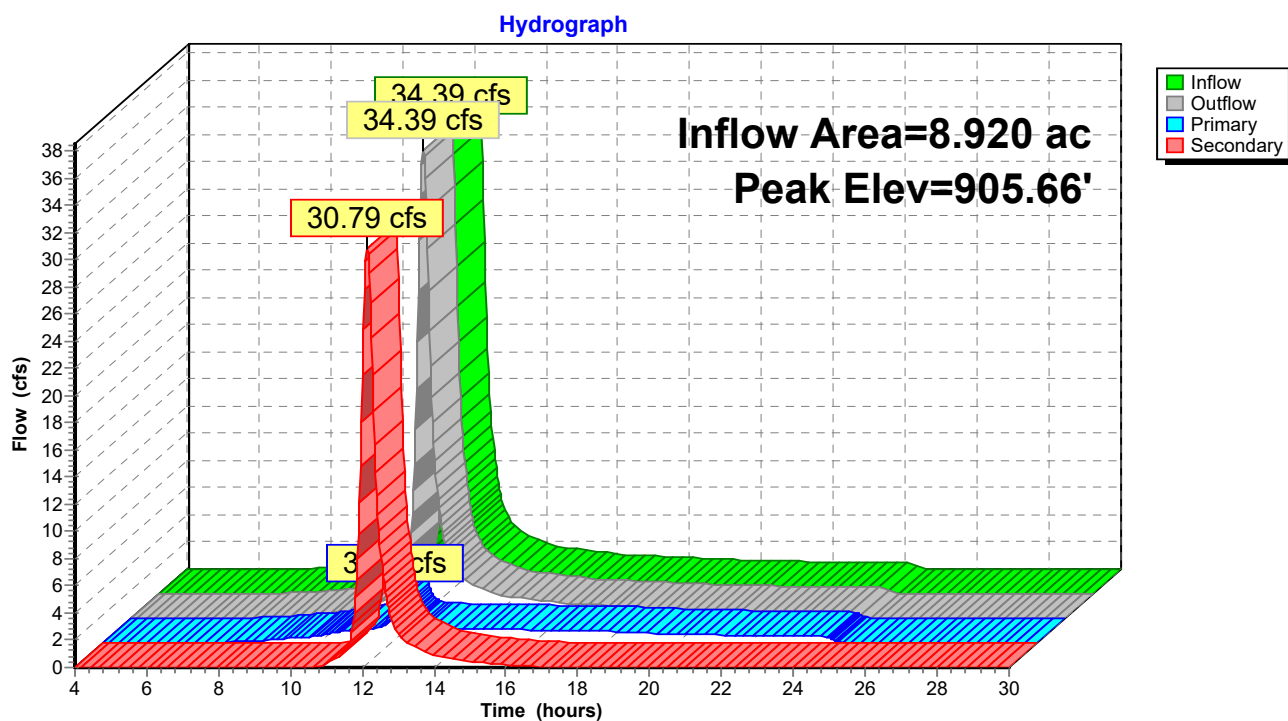
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Pond 4P: Diversion Structure



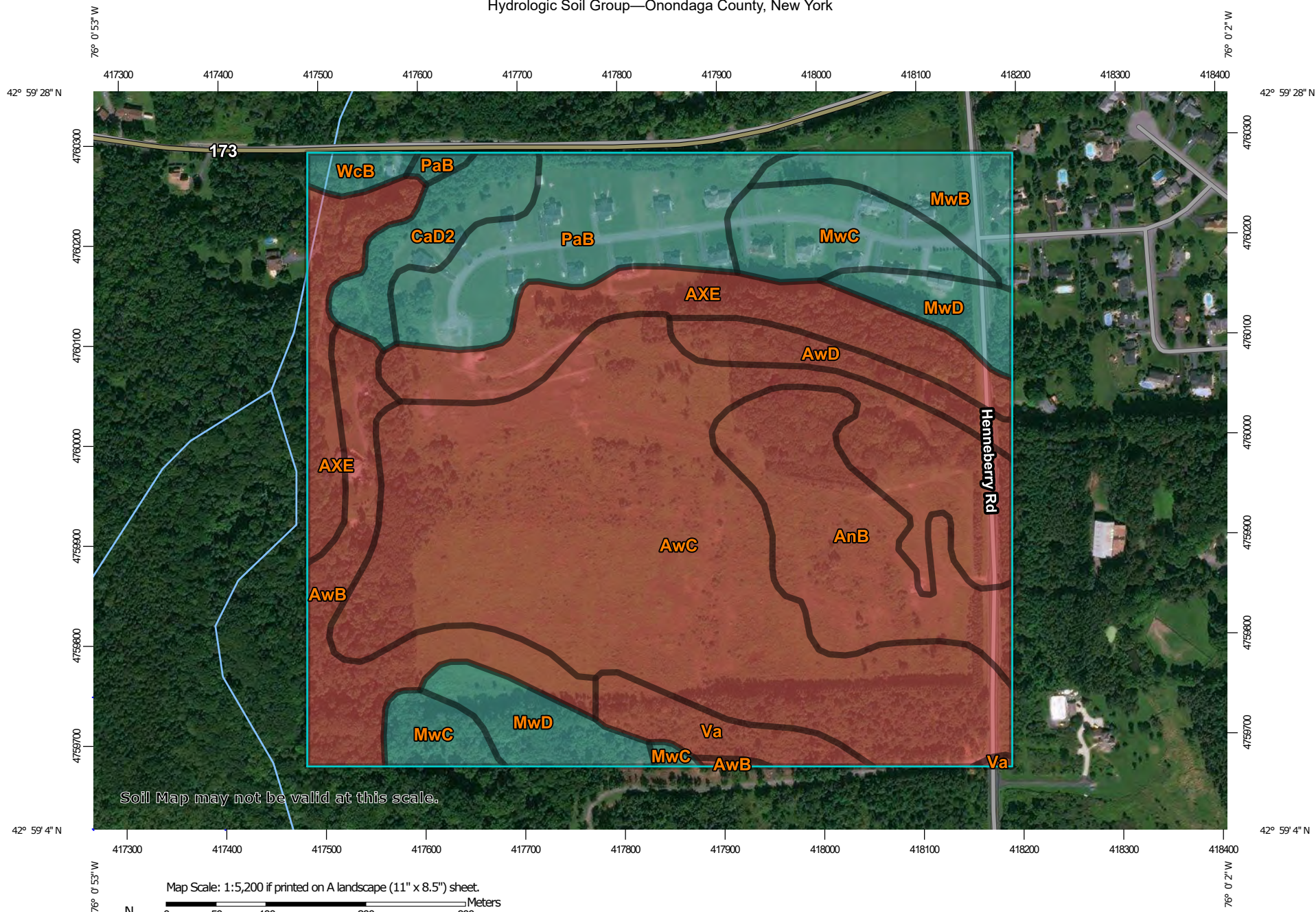


APPENDIX C: SOIL DESCRIPTIONS



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Hydrologic Soil Group—Onondaga County, New York



Map Scale: 1:5,200 if printed on A landscape (11" x 8.5") sheet.

0 50 100 200 300 Meters

0 250 500 1000 1500 Feet

Map projection: Web Mercator Corner coordinates: WGS84 Edge ticks: UTM Zone 18N WGS84



**Natural Resources
Conservation Service**

Web Soil Survey
National Cooperative Soil Survey

8/3/2020
Page 1 of 4

MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

Soil Rating Polygons

 A
 A/D
 B
 B/D
 C
 C/D
 D
 Not rated or not available

Soil Rating Lines

 A
 A/D
 B
 B/D
 C
 C/D
 D
 Not rated or not available

Soil Rating Points

 A
 A/D
 B
 B/D

 C
 C/D
 D
 Not rated or not available

Water Features

 Streams and Canals

Transportation

 Rails
 Interstate Highways
 US Routes
 Major Roads
 Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL:
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Onondaga County, New York
 Survey Area Data: Version 15, Jun 11, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 18, 2011—Oct 10, 2016

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
AnB	Angola-Darien silt loams, 0 to 6 percent slopes	D	10.0	9.3%
AwB	Aurora silt loam, 0 to 6 percent slopes	D	7.7	7.1%
AwC	Aurora silt loam, 6 to 12 percent slopes	D	41.7	38.7%
AwD	Aurora silt loam, 12 to 18 percent slopes	D	2.9	2.7%
AXE	Aurora-Farmington-Rock outcrop association, steep	D	12.5	11.6%
CaD2	Camillus silt loam, 12 to 18 percent slopes eroded	C	3.7	3.4%
MwB	Mohawk silt loam, 2 to 8 percent slopes	C	3.7	3.4%
MwC	Mohawk silt loam, 8 to 15 percent slopes	C	6.6	6.1%
MwD	Mohawk silt loam, 15 to 25 percent slopes	C	5.3	4.9%
PaB	Palatine shaly silt loam, 2 to 6 percent slopes	C	9.9	9.2%
Va	Varick silt loam	D	2.9	2.6%
WcB	Wassaic silt loam, 0 to 8 percent slopes	C	0.9	0.9%
Totals for Area of Interest			107.8	100.0%

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher



APPENDIX D: BIORETENTION BASIN CONSTRUCTION AND MAINTENANCE



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Bioretention Stormwater Management Practices Level 1 Inspection Checklist

SMP ID #		SMP Owner		☐ Private ☐ Public
SMP Location (Address; Latitude & Longitude)				
	Latitude		Longitude	
Party Responsible for Maintenance		System Type		Type of Site
☐ Same as SMP Owner ☐ Other _____		☐ Seasonal ☐ Continuous Use ☐ Other	☐ Above Ground ☐ Below Ground	☐ Commercial ☐ Industrial ☐ Residential ☐ State
Inspection Date			Inspection Time	
Inspector				
Date of Last Inspection				

BR Drainage Area

Look for areas that are uphill from the Bioretention cell.

Problem (Check if Present)	Follow-Up Actions
 ☐ Bare soil, erosion of the ground (rills washing out the dirt)	☐ Seed and mulch areas of bare soil to establish vegetation. ☐ Fill in erosion areas with soil, compact, and seed and straw to establish vegetation. ☐ If a rill or small channel is forming, try to redirect water flowing to this area by creating a small berm or adding topsoil to areas that are heavily compacted. ☐ Other:

BR Drainage Area

Look for areas that are uphill from the Bioretention cell.

Problem (Check if Present)	Follow-Up Actions
	☐ Kick-Out to Level 2 Inspection: Large areas of soil have been eroded, or larger channels are forming. May require rerouting of flow paths.
 ☐ Piles of grass clippings, mulch, dirt, salt, or other materials	☐ Remove or cover piles of grass clippings, mulch, dirt, etc. ☐ Other:
 ☐ Open containers of oil, grease, paint, or other substances	☐ Cover or properly dispose of materials; consult your local solid waste authority for guidance on materials that may be toxic or hazardous. ☐ Other:

BR Inlets

Stand in the Bioretention cell itself and look for all the places where water flows in. Often there will be multiple points of inflow to the practice.

Problem (Check if Present)	Follow-Up Actions
 ☐ Inlets collect grit and debris or grass/weeds. Some water may not be getting into the Bioretention cell. The objective is to have a clear pathway for water to flow into the cell.	☐ Use a flat shovel to remove grit and debris (especially at curb inlets or openings). Parking lots generate fine grit that will accumulate at these spots. ☐ Pull out clumps of growing grass or weeds and scoop out the soil or grit that the plants are growing in. ☐ Remove any grass clippings, leaves, sticks, and other debris that is collecting at inlets. ☐ For pipes and ditches, remove sediment and debris that is partially blocking the pipe or ditch opening where it enters the Bioretention cell. ☐ Dispose of all material properly where it will not re-enter the Bioretention cell. ☐ Other:
	☐ Kick-Out to Level 2 Inspection: Inlets are blocked to the extent that most of the water does not seem to be entering the Bioretention cell.
 ☐ Some or all of the inlets are eroding so that rills, gullies, and other erosion is present, or there is bare dirt that is washing into the Bioretention cell.	☐ For small areas of erosion, smooth out the eroded part and apply rock or stone (e.g., river cobble) to prevent further erosion. Usually, filter fabric is placed under the rock or stone. ☐ In some cases, reseeding and applying erosion-control matting can be used to prevent further erosion. Some of these materials may be available at a garden center, but it may be best to consult a landscape contractor. ☐ Other:
	☐ Kick-Out to Level 2 Inspection: Erosion is occurring at most of the inlets, and it looks like there is too much water that is concentrating at these points. The inlet design may have to be modified.

BR Ponding Area

Examine the entire Bioretention surface and side slopes

Problem (Check if Present)



- ☐ Mulch (if used) needs to be replaced or replenished. The mulch layer had decomposed or is less than 1-inch thick.

Follow-Up Actions

- ☐ Add new mulch to a total depth (including any existing mulch that is left) of 2 to 3 inches. The mulch should be shredded hardwood mulch that is less likely to float away during rainstorms.
- ☐ Avoid adding too much mulch so that inlets are obstructed or certain areas become higher than the rest of the Bioretention surface.
- ☐ Other:



- ☐ Minor areas of sediment, grit, trash, or other debris are accumulating on the bottom.

- ☐ Use a shovel to scoop out minor areas of sediment or grit, especially in the spring after winter sanding materials may wash in and accumulate. Dispose of the material where it cannot re-enter the Bioretention cell .
- ☐ If removing the material creates a hole or low area, fill with soil mix that matches original mix and cover with mulch so that the Bioretention surface area is as flat as possible.
- ☐ Remove trash, vegetative debris, and other undesirable materials.
- ☐ Other:

- ☐ Kick-Out to Level 2 Inspection: Sediment has accumulated more than 2-inches deep and covers 25% or more of the Bioretention surface.
- ☐ Kick-Out to Level 2 Inspection: The Bioretention cell is too densely vegetated to assess sediment accumulation or ponding; see BR-4, Vegetation.

BR Ponding Area

Examine the entire Bioretention surface and side slopes

Problem (Check if Present)	Follow-Up Actions
 ☐ There is erosion in the bottom or on the side slopes. Water seems to be carving out rills as it flows across the Bioretention surface or on the slopes, or sinkholes are forming in certain areas. ☐ Source: Stormwater Maintenance, LLC.	☐ Try filling the eroded areas with clean topsoil or sand, and cover with mulch. ☐ If the problem recurs, you may have to use stone (e.g., river cobble) to fill in problem areas. ☐ If the erosion is on a side slope, fill with clay that can be compacted and seed and mulch the area. ☐ Other:
 ☐ The bottom of the Bioretention cell is not flat, and the water pools at one end, along an edge, or in certain pockets. The whole bottom is not uniformly covered with water. See design plan to verify that bioretention surface is intended to be flat. Check during or immediately after a rainstorm.	☐ Kick-Out to Level 2 Inspection: The problem persists or the erosion is more than 3-inches deep and seems to be an issue with how water enters and moves through the Bioretention cell. ☐ Kick-Out to Level 2 Inspection: The problem does not seem to be caused by flowing water, but a collapse or sinking of the surface (e.g., "sinkhole") due to some underground problem.
	☐ If the problem is minor (just small, isolated areas are not covered with water), try raking the surface OR adding mulch to low spots to create a more level surface. You may need to remove and replace plantings in order to properly even off the surface. ☐ Check the surface with a string and bubble level to get the surface as flat as possible. ☐ Other:
	☐ Kick-Out to Level 2 Inspection: Ponding water is isolated to less than half of the Bioretention surface area, and there seem to be elevation differences of more than a couple of inches across the surface.

BR Ponding Area

Examine the entire Bioretention surface and side slopes

Problem (Check if Present)	Follow-Up Actions
 ☐ Water stands on the surface more than 72 hours after a rainstorm and /or wetland-type vegetation is present. The Bioretention cell does not appear to be draining properly.	☐ Kick-Out to Level 2 Inspection: This is generally a serious problem, and it will be necessary to activate a Level 2 Inspection.

BR Vegetation

Examine all Bioretention cell vegetation.

Problem (Check if Present)	Follow-Up Actions
 ☐ Vegetation requires regular maintenance—pulling weeds, removing dead and diseased plants, replacing mulch around plants, adding plants to fill in areas that are not well vegetated, etc.	☐ If you can identify which plants are weeds or not intended to be part of the planting plan, eliminate these, preferably by hand pulling. ☐ If weeds are widespread, check with the local stormwater authority and/or Extension Office about proper use of herbicides for areas connected with the flow of water. ☐ Even vegetation that is intended to be present can become large, overgrown, and/or crowd out surrounding plants. Prune and thin accordingly. ☐ If weeds or invasive plants have overtaken the whole Bioretention cell, bush-hog the entire area before seedheads form in the spring. It will be necessary to remove the root mat manually or with appropriate herbicides, as noted above. ☐ Re-plant with species that are aesthetically pleasing and seem to be doing well in the Bioretention cell. ☐ Other: ☐ Kick-Out to Level 2 Inspection: You are unsure of the original planting design, or the vegetation maintenance task is beyond your capabilities of time, expertise, or resources. If you are unsure of the health of the vegetation (e.g. salt damage, invasives, which plants are undesirable) or the appropriate season to conduct vegetation management, consult a landscape professional before undertaking any cutting, pruning, mowing, or brush hogging.

BR Vegetation

Examine all Bioretention cell vegetation.

Problem (Check if Present)	Follow-Up Actions
 ☐ Vegetation is too thin, is not healthy, and there are many spots that are not well vegetated.	☐ The original plants are likely not suited for the actual conditions within the Bioretention cell . If you are knowledgeable about plants, select and plant more appropriate vegetation (preferably native plants) so that almost the entire surface area will be covered by the end of the second growing season. ☐ Other: ☐ Kick-Out to Level 2 Inspection: For all but small practices (e.g., rain gardens), this task will likely require a landscape design professional or horticulturalist.

BR Outlets

Examine outlets that release water out of the Bioretention cell.

Problem (Check if Present)	Follow-Up Actions
☐ Erosion at outlet	☐ Add stone to reduce the impact from the water flowing out of the outlet pipe or weir during storms. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Rills have formed and erosion problem becomes more severe.
 ☐ Outlet obstructed with mulch, sediment, debris, trash, etc.	☐ Remove the debris and dispose of it where it cannot re-enter the Bioretention cell . ☐ Other: ☐ Kick-Out to Level 2 Inspection: Outlet is completely clogged or obstructed; there is too much material to remove by hand or with simple hand tools.

Additional Notes:

Inspector: _____

Date: _____

Complete the following if follow-up/corrective actions were identified during this inspection:

Certified Completion of Follow-Up Actions:

"I hereby certify that the follow-up/corrective actions identified in the inspection performed on _____ (DATE) have been completed and any required maintenance deficiencies have been adequately corrected."

Inspector/Operator: _____

Date: _____

Bioretention Stormwater Management Practices Level 2 Inspection Checklist

SMP ID #		SMP Owner		☐ Private ☐ Public
SMP Location (Address; Latitude & Longitude)				
	Latitude		Longitude	
Party Responsible for Maintenance	System Type		Type of Site	
☐ Same as SMP Owner ☐ Other _____	☐ Seasonal ☐ Continuous Use ☐ Other	☐ Above Ground ☐ Below Ground	☐ Commercial ☐ Industrial ☐ Residential ☐ State	
Inspection Date		Inspection Time		
Inspector				
Date of Last Inspection				

Level 2 Inspection: BIORETENTION
NOTE: Key Source for this Information (CSN, 2013)

Recommended Repairs	Triggers for Level 3 Inspection
Observed Condition: Water Stands on Surface for More than 72 Hours after Storm	
☐ Condition 1: Small pockets of standing water Use a soil probe or auger to examine the soil profile. If isolated areas have accumulated grit, fines, or vegetative debris or have bad soil media, try scraping off top 3 inches of media and replacing with clean material. Also check to see that surface is level and water is not ponding selectively in certain areas. ☐ Condition 2: Standing water is widespread or covers entire surface Requires diagnosis and resolution of problem: • Clogged underdrain? • Filter fabric between soil media and underdrain stone? • Need to install underdrain if not present? • Too much sediment/grit washing in from drainage area? • Too much ponding depth? • Improper soil media?	• Soil media is clogged and problem is not evident from Level 2 inspection. • Level 2 inspection identifies problem, but it cannot be resolved easily or is associated with the original design of the practice. ☐ Level 3 inspection necessary
Observed Condition: Vegetation is sparse or out of control	
☐ Condition 1: Original design planting plan seems good but has not been maintained, so there are many invasives and/or dead plants Will require some horticultural experience to restore vegetation to intended condition by weeding, pruning, removing plants, and adding new plants. ☐ Condition 2: Original design planting plan is unknown or cannot be actualized A landscape architect or horticulturalist will be needed to redo the planting plan. Will likely require analysis of soil pH, moisture, organic content, sun/shade, and other conditions to make sure plants match conditions. Plan should include invasive plant management and maintenance plan to include mulching, watering, disease intervention, periodic thinning/pruning, etc.	• Vegetation deviates significantly from original planting plan; Bioretention has been neglected and suffered from deferred maintenance. • Owner/responsible party does not know how to maintain the practice. ☐ Level 3 inspection necessary
Observed Condition: Bioretention does not conform to original design plan in surface area or storage	
☐ Condition 1: Level 2 Inspection reveals that practice is too small based on design dimension, does not have adequate storage (e.g., ponding depth) based on the plan, and/or does not treat the drainage area runoff as indicated on the plan Small areas of deviation can be corrected by the property owner or responsible party, but it is likely that a Qualified Professional will have to revisit the design and attempt a redesign that meets original objectives or that can be resubmitted to the municipality for approval.	• More than a 25% departure from the approved plan in surface area, storage, or drainage area; sometimes less than this threshold at the discretion of the Level 2 inspector. ☐ Level 3 inspection necessary

Level 2 Inspection: BIORETENTION
NOTE: Key Source for this Information (CSN, 2013)

Recommended Repairs	Triggers for Level 3 Inspection
Observed Condition: Severe erosion of filter bed, inlets, or around outlets	
☐ Condition 1: Erosion at inlets The lining (e.g., grass, matting, stone, rock) may not be adequate for the actual flow velocities coming through the inlets. First line of defense is to try a more non-erosive lining and/or to extend the lining further down to where inlet slopes meet the Bioretention surface. If problem persists, analysis by a Qualified Professional is warranted. ☐ Condition 2: Erosion of Bioretention filter bed This is often caused by “preferential flow paths” through and along the Bioretention surface. The source of flow should be analyzed and methods employed to dissipate energy and disperse the flow (e.g., check dams, rock splash pads). ☐ Condition 3: Erosion on side slopes Again, the issue is likely linked with unanticipated flow paths down the side slopes (probably overland flow that concentrates as it hits the edge of the slope). For small or isolated areas, try filling, compacting, and re-establishing healthy ground cover vegetation. If the problem is more widespread, further analysis is required to determine how to redirect the flow.	• Erosion (rills, gullies) is more than 12 inches deep at inlets or the filter bed or more than 3 inches deep on side slopes. • If the issue is not caused by moving water but some sort of subsurface defect. This may manifest as a sinkhole or linear depression and be associated with problems with the underdrain stone or pipe or underlying soil. ☐ Level 3 inspection necessary
Observed Condition: Significant sediment accumulation, indicating an uncontrolled source of sediment	
☐ Condition 1: Isolated areas of sediment accumulation, generally less than 3-inches deep Sediment source may be from a one-time or isolated event. Remove accumulated sediment and top 2 to 3 inches of Bioretention soil media; replace with clean material. Check drainage area for any ongoing sources of sediment. ☐ Condition 2: Majority of the surface is caked with “hard pan” (thin layer of clogging material) or accumulated sediment that is 3-inches deep or more This can be caused by an improper construction sequence (drainage area not fully stabilized prior to installation of Bioretention soil media) or another chronic source of sediment in the drainage area. Augering several holes down through the media can indicate how severe the problem is; often the damage is confined to the first several inches of soil media. Removing and replacing this top layer (or to the depth where sediment incursion is seen in auger holes) can be adequate, as long as the problem does not recur.	• More than 2 inches of accumulated sediment cover 25% or more of the Bioretention surface area. • “Hard pan” of thin, crusty layer covers majority of Bioretention surface area and seems to be impeding flow of water down through the soil media. • New sources of sediment seem to be accumulating with each significant rainfall event. ☐ Level 3 inspection necessary

Notes:

Inspector: _____

Date: _____

Complete the following if follow-up/corrective actions were identified during this inspection:

Certified Completion of Follow-Up Actions:

"I hereby certify that the follow-up/corrective actions identified in the inspection performed on _____ (DATE) have been completed and any required maintenance deficiencies have been adequately corrected."

Inspector/Operator: _____

Date: _____

Pond and Wetland Stormwater Management Practices Level 1 Inspection Checklist

SMP ID #		SMP Owner		☐ Private ☐ Public
SMP Location (Address; Latitude & Longitude)				
	Latitude		Longitude	
Party Responsible for Maintenance	System Type			Type of Site
☐ Same as SMP Owner ☐ Other 	☐ Seasonal ☐ Continuous Use ☐ Other	☐ Above Ground ☐ Below Ground	☐ Commercial ☐ Industrial ☐ Residential ☐ State	
Inspection Date			Inspection Time	
Inspector				
Date of Last Inspection				

PW Drainage Area

Look for areas that are uphill from the pond.

Problem (Check if Present)	Follow-Up Actions
☐ Bare soil, erosion of the ground (rills washing out the dirt)	☐ Seed and straw areas of bare soil to establish vegetation. ☐ Fill in eroded areas with soil, compact, seed and mulch with straw to establish vegetation. ☐ Other:

☐ Bare soil, erosion of the ground (rills washing out the dirt)	☐ Kick-Out to Level 2 Inspection: If a rill or small channel is forming, try to redirect water flowing to this area by creating a small berm or adding topsoil to areas that are heavily compacted. ☐ If large areas of soil have been eroded or larger channels are forming, this may require rerouting of flow paths or use of an erosion-control seed mat or blanket to reestablish acceptable ground cover or anchor sod where it is practical.
 ☐ Piles of grass clippings, mulch, dirt, salt, or other materials	☐ Remove or cover piles of grass clippings, mulch, dirt, etc. ☐ Remove excessive vegetation or woody debris that can block drainage systems. ☐ Other:
 ☐ Open containers of oil, grease, paint, or other substances exposed to rain in the drainage area	☐ Cover or properly dispose of materials; consult your local solid waste authority for guidance on materials that may be toxic or hazardous. ☐ Other:

Pond Inlets

Look for all areas where water flows into the pond during storms. Note that there may be multiple points of inflow and types of structures (e.g., pipes, open ditches, etc.).

Problem (Check if Present)	Follow-Up Actions
 ☐ Inlets are buried, covered or filled with silt, debris, or trash, or blocked by excessive vegetation.	☐ If the problem can be remedied with hand tools and done in a safe manner, remove vegetation, trash, woody debris, etc. from blocking inlet structures. ☐ Other: ☐ Kick-Out to Level 2 or 3 Inspection: If the amount of material is too large to handle OR there are ANY safety concerns about working in standing water, soft sediment, etc., the work will likely have to be performed by a qualified contractor.

Pond Inlets

Look for all areas where water flows into the pond during storms. Note that there may be multiple points of inflow and types of structures (e.g., pipes, open ditches, etc.).

Problem (Check if Present)	Follow-Up Actions
 ☐ Inlets are buried, covered or filled with silt, debris, or trash, or blocked by excessive vegetation.	☐ Kick-Out to Level 2 or 3 Inspection: If the amount of material is too large to handle OR there are ANY safety concerns about working in standing water, soft sediment, etc., the work will likely have to be performed by a qualified contractor.
 ☐ Inlets are broken, and, with pieces of pipe or concrete falling into the pond, there is erosion around the inlet, there is open space under the pipe, or there is erosion where the inlet meets the pond	☐ Kick-Out to Level 2 Inspection: These types of structural or erosion problems are more serious and will require a qualified contractor to repair.

PW Pond Area and Embankments

Examine both interior and exterior pond banks as well as the pond body. Observe from the inlet pipes to the outfall structure and emergency overflow.

Problem (Check if Present)	Follow-Up Actions
 ☐ The pretreatment area(s) or forebay(s) are filled with sediment, trash, vegetation, or other debris.	☐ If the problem can be remedied with hand tools and done in a safe manner, use a flat shovel or other equipment to remove small amounts of sediment. ☐ Remove trash and excessive vegetation from forebays if this can be done in a safe manner. ☐ Other:

PW Pond Area and Embankments

Examine both interior and exterior pond banks as well as the pond body. Observe from the inlet pipes to the outfall structure and emergency overflow.

Problem (Check if Present)		Follow-Up Actions
	☐ The pretreatment area(s) or forebay(s) are filled with sediment, trash, vegetation, or other debris.	☐ Kick-Out to Level 2 Inspection: Large amounts of sediment or debris will have to be removed by a qualified contractor. ANY condition that poses a safety concern for working in standing water or soft sediments should be referred to a Level 2 Inspection or qualified contractor.
	☐ The pond area itself has accumulated sediment, trash, debris, or excessive vegetation that is choking the flow of the water, OR the pond area is covered with algae or aquatic plants.	☐ Level 1 includes handling only small amounts of material that can be removed by hand, or with rakes or other hand tools. Do not attempt any repair that poses a safety issue. ☐ Other:
	☐ The side slopes of the pond are unstable, eroding, and have areas of bare dirt.	☐ If there are only minor areas, try filling in small rills or gullies with topsoil, compacting, and seeding and mulching all bare dirt areas with an appropriate seed. Alternatively, try using herbaceous plugs to get vegetation established in tricky areas, such as steep slopes. ☐ Other:
		☐ Kick-Out to Level 2 Inspection: Erosion and many bare dirt areas on steep side slopes will require a Level 2 Inspection and repair by a qualified contractor.

PW Pond Area and Embankments

Examine both interior and exterior pond banks as well as the pond body. Observe from the inlet pipes to the outfall structure and emergency overflow.

Problem (Check if Present)		Follow-Up Actions
	☐ The riser structure is clogged with trash, debris, sediment, vegetation, etc., OR is open, unlocked, or has a steep drop and poses a safety concern. The pond level may have dropped below its "normal" level.	☐ If you can safely access the riser on foot or with a small boat, clear minor amounts of debris and remove it from the pond area for safe disposal. ☐ Other: ☐ Kick-Out to Level 2 Inspection: The riser cannot be accessed safely, the amount of debris is substantial, or the riser seems to be completely clogged and the water level has risen too high. ☐ There are safety issues with the riser and concern about access to pipes, drops, or any other life safety concern. ☐ The riser is leaning, broken, settling or slumping, corroded, eroded or any other structural problem.
	☐ The dam/embankment is slumping, sinking, settling, eroding, or has medium or large trees growing on it.	☐ If there are small isolated areas, try to fix them by adding clean material (clay and topsoil) and seeding and mulching. ☐ Periodically mow embankments to enable inspection of the banks and to minimize establishment of woody vegetation. ☐ Remove any woody vegetation that has already established on embankments. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Most of these situations will require a Level 2 Inspection or evaluation and repair by a qualified contractor. Seepage through the dam or problems with the pipe through the dam can be a serious issue that should be addressed to avoid possible dam failure.

PW Pond Area and Embankments

Examine both interior and exterior pond banks as well as the pond body. Observe from the inlet pipes to the outfall structure and emergency overflow.

Problem (Check if Present)		Follow-Up Actions
	☐ The emergency spillway or outfall (if it exists) has ☐ Erosion, settlement, or loss of material. Rock-lined spillways have excessive debris or vegetation.	☐ Clear light debris and vegetation. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Displacement of rock lining, excessive vegetation and erosion/settlement may warrant review and decision by Level 2 Inspector to check against original plan. ☐ Any uncertainty about the integrity of the emergency spillway should be referred to a Level 2 Inspector. ☐ Erosion or settlement such that design has been compromised should be reviewed by an engineer.

PW Pond Outlet

Examine the outlet of the pipe on the downstream side of the dam/embankment where it empties into a stream, channel, or drainage system.

Problem (Check if Present)	Follow-Up Actions
 ☐ The pond outlet is clogged with sediment, trash, debris, vegetation, or is eroding, caving in, slumping, or falling apart.	☐ If there is a minor blockage, remove the debris or vegetation to allow free flow of water. ☐ Remove any accumulated trash at the outlet. ☐ Outlet: ☐ Kick-Out to Level 2 Inspection: ☐ If the area at the outlet cannot be easily accessed or if the blockage is substantial, a Level 2 Inspection is warranted. ☐ Erosion at and downstream of the outfall should be evaluated by a qualified professional. ☐ Any structural problems, such as broken pipes, structures falling into the stream, or holes or tunnels around the outfall pipe, should be evaluated by a Level 2 Inspector and will require repair by a qualified contractor. ☐ The pool of water at the outlet pipe is discolored, has an odor, or has excessive algae or vegetative growth.

Additional Notes:

Inspector: _____

Date: _____

Complete the following if follow-up/corrective actions were identified during this inspection:

Certified Completion of Follow-Up Actions:

"I hereby certify that the follow-up/corrective actions identified in the inspection performed on _____ (DATE) have been completed and any required maintenance deficiencies have been adequately corrected."

Inspector/Operator: _____

Date: _____

Pond and Wetland Stormwater Management Practices Level 2 Inspection Checklist

SMP ID #		SMP Owner		☐ Private ☐ Public
SMP Location (Address; Latitude & Longitude)				
	Latitude		Longitude	
Party Responsible for Maintenance	System Type		Type of Site	
☐ Same as SMP Owner ☐ Other _____	☐ Seasonal ☐ Continuous Use ☐ Other	☐ Above Ground ☐ Below Ground	☐ Commercial ☐ Industrial ☐ Residential ☐ State	
Inspection Date		Inspection Time		
Inspector				
Date of Last Inspection				

Level 2 Inspection: PONDS and WETLANDS

Recommended Repairs and Required Skills

Triggers for Level 3 Inspection

Observed Condition: Bare Soil or Erosion in the Drainage Area

- ☐ Condition 1: Extensive problem spots, but no channels or rills forming

Reseed problem areas. If problem persists or grass does not take, consider hiring a landscape contractor.

- ☐ Condition 2: Problem is extensive, and rills/channels are beginning to form

May be necessary to divert or redirect water that is causing the erosion problem. If it appears that simple regrading—such as installing a berm or leveling a low spot—will fix the problem, make repairs and ensure that the problem is repaired after the next storm.

- Large rills or gullies are forming in the drainage area.
- An attempt to regrade the drainage area has been unsuccessful.
- Fixing the problem would require major regrading (i.e., redirecting more than a 100-square-foot area).
- It is not clear why the problem is occurring.

- ☐ Level 3 inspection necessary

Observed Condition: Manholes or Inlet Pipe Buried or Covered with Vegetation

- ☐ Condition 1: Nearest manhole and inlet pipe not found

Consult as-built drawings to get to closest suspected location and use metal detector to search for metal manhole cover. If unsuccessful, identify nearest drain inlets and approximate pipe direction to locate next manhole.

- ☐ Condition 2: Manhole located and inspected

Never enter a manhole, except by following confined-space entry protocols.

If outlet pipe is not visible or greater than 25% full of sediment/debris or trash, it will typically require a qualified contractor to flush, clean and clear blockages.

- ☐ Condition 3: Inlet pipe not found at pond

Clear vegetation and brush that may be covering the inlet pipe. Buried inlet pipes may be found through use of a metal probe.

- ☐ Condition 4: Inlet pipe buried in sediment or blocked by vegetation

Once located, the pipe path can be cleared of vegetation with brush hook or other brush tools. Light digging may clear sediment from the end of the pipe.

- To locate buried manholes and lost storm lines, it is sometimes necessary to hire a pipeline inspection contractor with televising equipment or ground-penetrating radar and enter at the closest upstream access point.
- Locating a buried inlet pipe may require wading in the edge of the pond and using a metal probe and brush axe to find and expose the pipe.
- If other than light digging is necessary to remove accumulated sediment, a contractor with heavy equipment may be required.

- ☐ Level 3 inspection necessary

Level 2 Inspection: PONDS and WETLANDS

Recommended Repairs and Required Skills

Triggers for Level 3 Inspection

Observed Condition: Pipe or Headwall Settlement, Erosion, Corrosion or Failure

☐ Condition 1: Pipe or headwall settlement or failure

Severe sinkholes, settlement or corrosion should be kicked out to Level 3 Inspection.

☐ Condition 2: Flow not confined to pipe and visible outside pipe wall

With flashlight, observe the inside of the pipe and note its condition. Take photographs. Look for sinkholes developing that indicate pipe failure beneath the surface. Kick out to Level 3 inspection.

- Where blockages are visible, a decision is needed on whether to clear them or leave in place. If a third of the pipe is full of sediment, it should be removed by a contractor with pipe-cleaning equipment.
- Corrosion of inlet pipes that allows flow around the pipe exterior is a structural concern because it can lead to settlement, sinkholes and undermining pond embankment. Evidence of this type of failure may require specialized pipe-inspection equipment and investigation by an engineer.

☐ Level 3 inspection necessary

Observed Condition: Pond Conditions

☐ Condition 1: Pond pre-treatment zone is full of sediment or not constructed as shown on as-built drawings.

☐ Condition 2: Excessive buildup of sediment or overgrowth

If the pre-treatment area or pond pool is overgrown or filled with sediment so that the original design is compromised, corrective measures are required. If plants have died, then replanting is necessary. If none of the original design exists due to alteration or sediment, kick out to Level 3 inspection.

- It may require inspection by an engineer to determine next steps for clearing, replanting or reconstruction.
- Erosion or settlement such that design has been compromised should be reviewed by an engineer. Recurring erosion may require redesign and/or regrading to direct flow away from eroding area.
- If sediment has filled more than 50% of the pond's capacity, dredging is likely needed and should be evaluated by a qualified contractor.
- Removal or control of excessive algae or aquatic plants can be assessed by a qualified pond maintenance company.

☐ Level 3 inspection necessary

Notes:

Inspector: _____

Date: _____

Complete the following if follow-up/corrective actions were identified during this inspection:

Certified Completion of Follow-Up Actions:

"I hereby certify that the follow-up/corrective actions identified in the inspection performed on _____ (DATE) have been completed and any required maintenance deficiencies have been adequately corrected."

Inspector/Operator: _____

Date: _____

Swale Stormwater Management Practices Level 1 Inspection Checklist

SMP ID #		SMP Owner		☐ Private ☐ Public
SMP Location (Address; Latitude & Longitude)				
	Latitude		Longitude	
Party Responsible for Maintenance	System Type		Type of Site	
☐ Same as SMP Owner ☐ Other _____	☐ Seasonal ☐ Continuous Use ☐ Other	☐ Above Ground ☐ Below Ground	☐ Commercial ☐ Industrial ☐ Residential ☐ State	
Inspection Date			Inspection Time	
Inspector				
Date of Last Inspection				

SW Drainage Area

Look at areas that are uphill from the swale.

Problem (Check if Present)	Follow-Up Actions
 ☐ Bare soil, erosion of the ground (rills washing out the dirt)	☐ Seed and mulch or sod areas of bare soil to establish vegetation. ☐ Fill in erosion areas with soil, compact, and add seed and straw to establish vegetation. ☐ If a rill or small channel is forming, try to redirect water flowing to this area by creating a small berm or adding topsoil to areas that are heavily compacted. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Large areas of soil have been eroded, or larger channels are forming. May require rerouting of flow paths
 ☐ Piles of grass clippings, mulch, dirt, salt, or other materials	☐ Remove or cover piles of grass clippings, mulch, dirt, etc. ☐ Other:
 ☐ Open containers of oil, grease, paint, or other substances	☐ Cover or properly dispose of materials; consult your local solid waste authority for guidance on materials that may be toxic or hazardous.
☐ Grass dying at edge of road	☐ Seed and mulch; add topsoil or compost if needed. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Grass on edge of pavement continues to die off for unknown reasons. Swale edge may need to be replaced with other materials (e.g., stone diaphragm).

SW Inlets

Stand in the swale and look for all the places where water flows in.

Problem (Check if Present)	Follow-Up Actions
☐ Inlets or the swale edge are collecting grit, grass clippings, or debris or have grass/weeds growing. Some water may not be getting into the swale. The objective is to have a clear pathway for water to flow into the swale.	☐ Use a flat shovel to remove grit and debris (especially at curb inlets or opening). Parking lots will generate fine grit that will accumulate at these spots. ☐ Pull out clumps of growing grass or weeds, and scoop out the soil or grit that the plants are growing in. ☐ Remove any grass clippings, leaves, sticks, and other debris that is collecting at inlets or along the edge of the swale where water is supposed to enter. ☐ For pipes and ditches, remove sediment and debris that is partially blocking the pipe or ditch opening where it enters the swale. ☐ Dispose of all material properly in an area where it will not re-enter the swale. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Inlets are blocked to the extent that most of the water does not seem to be entering the swale.
 ☐ Some or all of the inlets are eroding so that rills, gullies, and other erosion are present, or there is bare dirt that is washing into the swale.	☐ For small areas of erosion, smooth out the eroded part and apply rock or stone (e.g., river cobble) to prevent further erosion. Usually, filter fabric is placed under the rock or stone. ☐ In some cases, reseeding and applying an erosion control matting can be used to prevent further erosion. Some of these materials may be available at a garden center, but it may be best to consult a landscape contractor. ☐ Other: ☐ Level 2 Inspection: Erosion is occurring at most of the inlets or along much of the swale edge. The inlet design may have to be modified.

SW Surface Area

Examine the entire swale surface and side slopes.

Problem (Check if Present)	Follow-Up Actions
☐ Minor areas of sediment, grit, trash, or other debris are accumulating in the swale.	☐ Use a shovel to scoop out minor areas of sediment or grit, especially in the spring after winter sanding materials may wash in and accumulate. Dispose of the material where it cannot re-enter the swale. ☐ If removing the material creates a hole or low area, fill with good topsoil and add seed and straw to re-vegetate. ☐ Remove trash, vegetative debris, and other undesirable materials. ☐ If the swale is densely vegetated, it may be difficult to do the maintenance; check for excessive ponding or other issues described in this section to see if the accumulated material is causing a problem. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Sediment has accumulated more than 3 inches deep and covers 25% or more of the swale surface. ☐ The source of sediment is unknown or cannot be controlled with simple measures.
 ☐ There is erosion in the bottom or on the side slopes. Water seems to be carving out rills as it flows through the swale or on the slopes.	☐ Try filling the eroded areas with clean topsoil, and then seed and mulch to establish vegetation. ☐ If the problem recurs, you may have to use some type of matting, stone (e.g., river cobble), or other material to fill in eroded areas. ☐ If the erosion is on a side slope, fill with soil and cover with erosion-control matting or at least straw mulch after re-seeding. ☐ Kick-Out to Level 2 Inspection: The problem persists or the erosion is more than 3 inches deep and seems to be an issue with how water enters and moves through the swale. ☐ Kick-Out to Level 2 Inspection: The problem does not seem to be caused by flowing water, but a collapse or sinking of the surface (e.g., "sinkhole") due to some underground problem.
☐ Water does not flow evenly down the length of the swale, but ponds in certain areas for long periods of time (e.g., 72 hours after a storm). The swale does not seem to have "positive drainage." Check during or immediately after a rain storm.	☐ If the problem is minor (just small, isolated areas), try using a metal rake or other tools to create a more even flow path; remove excessive vegetative growth, sediment, or other debris that may be blocking the flow. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Water ponds in more than 25% of the swale for three days or more after a storm. The issue may be with the underlying soil or the grade of the swale. ☐ Water ponds behind check dams for three days or more after a storm. Check dams may be clogged or not functioning properly.

SW Surface Area

Examine the entire swale surface and side slopes.

Problem (Check if Present)	Follow-Up Actions
 ☐ Check dams (if present): water is flowing around the edges of check dams, creating erosion or sinkholes on the uphill or downhill side, or the check dams are breaking apart or breaching .	☐ If the problem is isolated to just a few check dams, try simple repairs. ☐ It is very important for the center of each check dam (where most of the water flows) to be lower (by at least several inches) than the edges of the check dams where they meet the side slopes. Also, the check dams should be keyed into side slopes so water does not flow between the check dam and side slope. ☐ Use a level to check the right check-dam configuration, as noted above. Repair by moving around stone, filling and compacting soil, or adding new material so that water will be directed to the center of the check dam instead of the edges. ☐ Other:
	☐ Kick-Out to Level 2 Inspection: Many check dams are impacted and/or the problem seems to be a design issue with height, spacing, shape, or materials used to construct them.

SW Vegetation

Assess the swale vegetation.

Problem (Check if Present)	Follow-Up Actions
 ☐ Vegetation is too overgrown to access swale for maintenance activities	☐ Mow or bush-hog the path. ☐ Other:

SW Vegetation

Assess the swale vegetation.

Problem (Check if Present)	Follow-Up Actions
 ☐ Vegetation requires regular maintenance: pulling weeds, removing dead and diseased plants, adding plants to fill in areas that are not well vegetated, etc.	☐ If you can identify which plants are weeds or not intended to be part of the planting plan, eliminate these, preferably by hand pulling. ☐ If weeds are widespread, check with the local stormwater authority and/or Extension Office about proper use of herbicides for areas connected with the flow of water. ☐ Even vegetation that is intended to be present can become large, overgrown, block flow, and/or crowd out surrounding plants. Prune and thin accordingly. ☐ If weeds or invasive plants have overtaken the whole swale, bush-hog the entire area before seed heads form in the spring. It will be necessary to remove the root mat manually or with appropriate herbicides, as noted above. ☐ Replant with species that are aesthetically pleasing and seem to be doing well in the swale. ☐ Other:
☐ Vegetation is too thin, is not healthy, and there are many spots that are not well vegetated.	☐ Kick-Out to Level 2 Inspection: You are unsure of the original planting design or the vegetation maintenance task is beyond your capabilities of time, expertise, or resources. If you are unsure of the health of the vegetation (e.g. salt damage, invasives, which plants are undesirable) or the appropriate season to conduct vegetation management, consult a landscape professional before undertaking any cutting, pruning, mowing, or brush hogging.
	☐ The original plants are likely not suited for the actual conditions within the swale. If you are knowledgeable about plants, select and plant more appropriate vegetation (preferably native plants) so that almost the entire surface area will be covered by the end of the second growing season. ☐ Other:
	☐ Kick-Out to Level 2 Inspection: For all but small practices (e.g., in residential yards), this task will likely require a landscape design professional or horticulturalist.

SW Outlets

Examine outlets that release water out of the swale.

Problem (Check if Present)	Follow-Up Actions
☐ Outlet is obstructed with mulch, sediment, debris, trash, etc.	☐ Remove the debris and dispose of it where it cannot re-enter the swale. ☐ Other:
	☐ Kick-Out to Level 2 Inspection: Outlet is completely clogged or obstructed; there is too much material to remove by hand or with simple hand tools.

Additional Notes:

Inspector: _____

Date: _____

Complete the following if follow-up/corrective actions were identified during this inspection:

Certified Completion of Follow-Up Actions:

"I hereby certify that the follow-up/corrective actions identified in the inspection performed on _____ (DATE) have been completed and any required maintenance deficiencies have been adequately corrected."

Inspector/Operator: _____

Date: _____

Swale Stormwater Management Practices Level 2 Inspection Checklist

SMP ID #		SMP Owner		☐ Private ☐ Public
SMP Location (Address; Latitude & Longitude)				
	Latitude		Longitude	
Party Responsible for Maintenance	System Type		Type of Site	
☐ Same as SMP Owner ☐ Other _____	☐ Seasonal ☐ Continuous Use ☐ Other	☐ Above Ground ☐ Below Ground	☐ Commercial ☐ Industrial ☐ Residential ☐ State	
Inspection Date		Inspection Time		
Inspector				
Date of Last Inspection				

Level 2 Inspection: SWALE

Recommended Repairs

Triggers for Level 3 Inspection

Observed Condition: Water Stands on Surface for More than 72 Hours after Storm

- ☐ Condition 1: Small pockets of standing water

Use a soil probe or auger to examine the soil profile. If isolated areas have accumulated grit, fines, or vegetative debris or have compacted soil, try scraping off top 3 to 6 inches of soil and replacing with clean material. Also check to see that surface is level and water is not ponding selectively in certain areas.

- ☐ Condition 2: Standing water is widespread or covers entire surface

Requires diagnosis and resolution of problem:

- Bad or compacted soil
- Filter fabric on the swale bottom
- Too much sediment/grit washing in from drainage area?
- Too much ponding depth?
- Longitudinal slope is too flat?

- Soil is overly compacted or clogged and problem is not evident from Level 2 inspection.
- Level 2 inspection identifies problem, but it cannot be resolved easily or is associated with the original design of the practice (e.g., not enough slope down through the swale).

- ☐ Level 3 inspection necessary

Observed Condition: Vegetation is predominantly weeds and invasive species

For a small area, weed and dig up invasive plants. Replant with natives or plants from original planting plan.

If longer than 100 feet, develop a new planting plan and have it professionally reviewed.

- Vegetation deviates significantly from original planting plan; swale has been neglected and suffered from deferred maintenance.
- Owner/responsible party does not know how to maintain the practice.
- For large area, hire a professional to develop a grading plan and develop a planting plan.

- ☐ Level 3 inspection necessary

Notes:

Inspector: _____

Date: _____

Complete the following if follow-up/corrective actions were identified during this inspection:

Certified Completion of Follow-Up Actions:

"I hereby certify that the follow-up/corrective actions identified in the inspection performed on _____ (DATE) have been completed and any required maintenance deficiencies have been adequately corrected."

Inspector/Operator: _____

Date: _____



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APPENDIX E: SWPPP FORMS

Notice of Intent

Notice of Termination

Contractor Forms



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NOTICE OF INTENT



New York State Department of Environmental Conservation

Division of Water

625 Broadway, 4th Floor

Albany, New York 12233-3505

NYR
(for DEC use only)

Stormwater Discharges Associated with Construction Activity Under State Pollutant Discharge Elimination System (SPDES) General Permit # GP-0-20-001

All sections must be completed unless otherwise noted. Failure to complete all items may result in this form being returned to you, thereby delaying your coverage under this General Permit. Applicants must read and understand the conditions of the permit and prepare a Stormwater Pollution Prevention Plan prior to submitting this NOI. Applicants are responsible for identifying and obtaining other DEC permits that may be required.

**-IMPORTANT-
RETURN THIS FORM TO THE ADDRESS ABOVE**

OWNER/OPERATOR MUST SIGN FORM

Owner/Operator Information

Owner/Operator (Company Name/Private Owner Name/Municipality Name)

H A R R I N G T O N H O M E S , I N C .

Owner/Operator Contact Person Last Name (NOT CONSULTANT)

H A R R I N G T O N

Owner/Operator Contact Person First Name

M A R K

Owner/Operator Mailing Address

3 8 4 8 H E N N E B E R R Y R O A D

City

J A M E S V I L L E

State

N Y

Zip

1 3 0 7 8 -

Phone (Owner/Operator)

3 1 5 - 6 8 2 - 8 8 5 1

Fax (Owner/Operator)

- -

Email (Owner/Operator)

m i c h a e l @ h a r r i n g t o n h o m e s c n y . c o m

FED TAX ID

- (not required for individuals)

Project Site Information

Project/Site Name

B R A N D Y W I N E P H A S E 2

Street Address (NOT P.O. BOX)

H E N N E B E R R Y R O A D

Side of Street

☐ North ☐ South ☐ East ☒ West

City/Town/Village (THAT ISSUES BUILDING PERMIT)

M A N L I U S

State

N Y

Zip

1 3 1 0 4 -

County

O N O N D A G A

DEC Region

7

Name of Nearest Cross Street

B R A N D Y W I N E D R I V E

Distance to Nearest Cross Street (Feet)

8 5 0

Project In Relation to Cross Street

☒ North ☐ South ☐ East ☐ West

Tax Map Numbers

Section-Block-Parcel

Tax Map Numbers

1 0 9 . - 0 2 - 0 7 . 1

1. Provide the Geographic Coordinates for the project site in NYTM Units. To do this you **must** go to the NYSDEC Stormwater Interactive Map on the DEC website at:

www.dec.ny.gov/imsmaps/stormwater/viewer.htm

Zoom into your Project Location such that you can accurately click on the centroid of your site. Once you have located your project site, go to the tool boxes on the top and choose "i"(identify). Then click on the center of your site and a new window containing the X, Y coordinates in UTM will pop up. Transcribe these coordinates into the boxes below. For problems with the interactive map use the help function.

X Coordinates (Easting)

4 1 8 1 3 3

Y Coordinates (Northing)

4 7 5 9 9 9 2

2. What is the nature of this construction project?

☒ New Construction☐ Redevelopment with increase in impervious area☐ Redevelopment with no increase in impervious area

3. Select the predominant land use for both pre and post development conditions.

SELECT ONLY ONE CHOICE FOR EACH

**Pre-Development
Existing Land Use**

- ☐ FOREST
☒ PASTURE/OPEN LAND
☐ CULTIVATED LAND
☐ SINGLE FAMILY HOME
☐ SINGLE FAMILY SUBDIVISION
☐ TOWN HOME RESIDENTIAL
☐ MULTIFAMILY RESIDENTIAL
☐ INSTITUTIONAL/SCHOOL
☐ INDUSTRIAL
☐ COMMERCIAL
☐ ROAD/HIGHWAY
☐ RECREATIONAL/SPORTS FIELD
☐ BIKE PATH/TRAIL
☐ LINEAR UTILITY
☐ PARKING LOT
☐ OTHER

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

**Post-Development
Future Land Use**

- ☒ SINGLE FAMILY HOME
☐ SINGLE FAMILY SUBDIVISION
☐ TOWN HOME RESIDENTIAL
☐ MULTIFAMILY RESIDENTIAL
☐ INSTITUTIONAL/SCHOOL
☐ INDUSTRIAL
☐ COMMERCIAL
☐ MUNICIPAL
☐ ROAD/HIGHWAY
☐ RECREATIONAL/SPORTS FIELD
☐ BIKE PATH/TRAIL
☐ LINEAR UTILITY (water, sewer, gas, etc.)
☐ PARKING LOT
☐ CLEARING/GRADING ONLY
☐ DEMOLITION, NO REDEVELOPMENT
☐ WELL DRILLING ACTIVITY *(Oil, Gas, etc.)
☐ OTHER

Number of Lots

--	--	--	--

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

***Note:** for gas well drilling, non-high volume hydraulic fractured wells only

4. In accordance with the larger common plan of development or sale, enter the total project site area; the total area to be disturbed; existing impervious area to be disturbed (for redevelopment activities); and the future impervious area constructed within the disturbed area. (Round to the nearest tenth of an acre.)

**Total Site
Area**

			5	4	.	7
--	--	--	---	---	---	---

**Total Area To
Be Disturbed**

			3	6	.	0
--	--	--	---	---	---	---

**Existing Impervious
Area To Be Disturbed**

			0	.	0
--	--	--	---	---	---

**Future Impervious
Area Within
Disturbed Area**

			6	.	5
--	--	--	---	---	---

5. Do you plan to disturb more than 5 acres of soil at any one time? ☐ Yes ☐ No

6. Indicate the percentage of each Hydrologic Soil Group(HSG) at the site.

A

			0
--	--	--	---

 %

B

			0
--	--	--	---

 %

C

			0
--	--	--	---

 %

D

1	0	0
---	---	---

 %

7. Is this a phased project? ☐ Yes ☐ No

8. Enter the planned start and end dates of the disturbance activities.

Start Date

0	5	/	0	1	/	2	0	2	2
---	---	---	---	---	---	---	---	---	---

End Date

1	1	/	0	1	/	2	0	2	3
---	---	---	---	---	---	---	---	---	---

[illegible]

☐ Wetland / State Jurisdiction On Site (Answer 9b)
☐ Wetland / State Jurisdiction Off Site
☐ Wetland / Federal Jurisdiction On Site (Answer 9b)
☐ Wetland / Federal Jurisdiction Off Site
☐ Stream / Creek On Site
☒ Stream / Creek Off Site
☐ River On Site
☐ River Off Site
☐ Lake On Site
☐ Lake Off Site
☐ Other Type On Site
☐ Other Type Off Site

- ☐ Regulatory Map
- ☐ Delineated by Consultant
- ☐ Delineated by Army Corps of Engineers
- ☐ Other (identify)

11. Is this project located in one of the Watersheds identified in Appendix C of GP-0-20-001? ☐ Yes ☒ No

12. Is the project located in one of the watershed areas associated with AA and AA-S classified waters? ☐ Yes ☒ No

If no, skip question 13.

13. Does this construction activity disturb land with no existing impervious cover and where the Soil Slope Phase is identified as an E or F on the USDA Soil Survey? ☐ Yes ☒ No
If Yes, what is the acreage to be disturbed?

--	--	--	--	--

14. Will the project disturb soils within a State regulated wetland or the protected 100 foot adjacent area? ☐ Yes ☒ No

15. Does the site runoff enter a separate storm sewer system (including roadside drains, swales, ditches, culverts, etc)? ☒ Yes ☐ No ☐ Unknown

16. What is the name of the municipality/entity that owns the separate storm sewer system?

[illegible]

17. Does any runoff from the site enter a sewer classified as a Combined Sewer? ☐ Yes ☒ No ☐ Unknown

18. Will future use of this site be an agricultural property as defined by the NYS Agriculture and Markets Law? ☐ Yes ☒ No

19. Is this property owned by a state authority, state agency, federal government or local government? ☐ Yes ☒ No

20. Is this a remediation project being done under a Department approved work plan? (i.e. CERCLA, RCRA, Voluntary Cleanup Agreement, etc.) ☐ Yes ☒ No

21. Has the required Erosion and Sediment Control component of the SWPPP been developed in conformance with the current NYS Standards and Specifications for Erosion and Sediment Control (aka Blue Book)? ☒ Yes ☐ No

22. Does this construction activity require the development of a SWPPP that includes the post-construction stormwater management practice component (i.e. Runoff Reduction, Water Quality and Quantity Control practices/techniques)? ☒ Yes ☐ No
- If No, skip questions 23 and 27-39.**

23. Has the post-construction stormwater management practice component of the SWPPP been developed in conformance with the current NYS Stormwater Management Design Manual? ☒ Yes ☐ No

24. The Stormwater Pollution Prevention Plan (SWPPP) was prepared by:

- ☒ Professional Engineer (P.E.)
- ☐ Soil and Water Conservation District (SWCD)
- ☐ Registered Landscape Architect (R.L.A)
- ☐ Certified Professional in Erosion and Sediment Control (CPESC)
- ☐ Owner/Operator
- ☐ Other

[illegible]

SWPPP Preparer

[illegible]

Contact Name (Last, Space, First)

[illegible]

Mailing Address

[illegible]

City

[illegible]

State Zip

N	Y	1	3	1	0	4	-				
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Phone

3	1	5	-	6	8	2	-	5	5	8	0
---	---	---	---	---	---	---	---	---	---	---	---

Fax

--	--	--	--

Email

[illegible][illegible]

SWPPP Preparer Certification

I hereby certify that the Stormwater Pollution Prevention Plan (SWPPP) for this project has been prepared in accordance with the terms and conditions of the GP-0-20-001. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of this permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

First Name

[illegible]

MI

R

Last Name

[illegible]

Signature

--

Date _____

--	--

 /

--	--

 /

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☒ Yes ☐ No

26. Select **all** of the erosion and sediment control practices that will be employed on the project site:

Temporary Structural

- ☒ Check Dams
- ☐ Construction Road Stabilization
- ☐ Dust Control
- ☐ Earth Dike
- ☐ Level Spreader
- ☐ Perimeter Dike/Swale
- ☐ Pipe Slope Drain
- ☐ Portable Sediment Tank
- ☐ Rock Dam
- ☒ Sediment Basin
- ☐ Sediment Traps
- ☒ Silt Fence
- ☒ Stabilized Construction Entrance
- ☒ Storm Drain Inlet Protection
- ☐ Straw/Hay Bale Dike
- ☐ Temporary Access Waterway Crossing
- ☐ Temporary Stormdrain Diversion
- ☐ Temporary Swale
- ☐ Turbidity Curtain
- ☐ Water bars

Biotechnical

- **Brush Matting**
- **Wattling**

Other

[illegible]

Vegetative Measures

- ☒ **Brush Matting**
- ☐ **Dune Stabilization**
- ☒ **Grassed Waterway**
- ☒ **Mulching**
- ☐ **Protecting Vegetation**
- ☐ **Recreation Area Improvement**
- ☒ **Seeding**
- ☐ **Sodding**
- ☐ **Straw/Hay Bale Dike**
- ☐ **Streambank Protection**
- ☐ **Temporary Swale**
- ☒ **Topsoiling**
- ☐ **Vegetating Waterways**

Permanent Structural

- ☐ Debris Basin
- ☐ Diversion
- ☐ Grade Stabilization Structure
- ☒ Land Grading
- ☒ Lined Waterway (Rock)
- ☐ Paved Channel (Concrete)
- ☐ Paved Flume
- ☐ Retaining Wall
- ☒ Riprap Slope Protection
- ☒ Rock Outlet Protection
- ☐ Streambank Protection

Post-construction Stormwater Management Practice (SMP) Requirements

Important: Completion of Questions 27-39 is not required if response to Question 22 is No.

27. Identify all site planning practices that were used to prepare the final site plan/layout for the project.

- ☒ Preservation of Undisturbed Areas
- ☒ Preservation of Buffers
- ☒ Reduction of Clearing and Grading
- ☐ Locating Development in Less Sensitive Areas
- ☐ Roadway Reduction
- ☐ Sidewalk Reduction
- ☐ Driveway Reduction
- ☐ Cul-de-sac Reduction
- ☐ Building Footprint Reduction
- ☐ Parking Reduction

27a. Indicate which of the following soil restoration criteria was used to address the requirements in Section 5.1.6("Soil Restoration") of the Design Manual (2010 version).

- ☒ All disturbed areas will be restored in accordance with the Soil Restoration requirements in Table 5.3 of the Design Manual (see page 5-22).
- ☐ Compacted areas were considered as impervious cover when calculating the **WQv Required**, and the compacted areas were assigned a post-construction Hydrologic Soil Group (HSG) designation that is one level less permeable than existing conditions for the hydrology analysis.

28. Provide the total Water Quality Volume (WQv) required for this project (based on final site plan/layout).

Total WQv Required

. acre-feet

29. Identify the RR techniques (Area Reduction), RR techniques (Volume Reduction) and Standard SMPs with RRV Capacity in Table 1 (See Page 9) that were used to reduce the Total WQv Required (#28).

Also, provide in Table 1 the total impervious area that contributes runoff to each technique/practice selected. For the Area Reduction Techniques, provide the total contributing area (includes pervious area) and, if applicable, the total impervious area that contributes runoff to the technique/practice.

Note: Redevelopment projects shall use Tables 1 and 2 to identify the SMPs used to treat and/or reduce the WQv required. If runoff reduction techniques will not be used to reduce the required WQv, skip to question 33a after identifying the SMPs.

**Table 1 - Runoff Reduction (RR) Techniques
and Standard Stormwater Management
Practices (SMPs)**

<u>RR Techniques (Area Reduction)</u>	<u>Total Contributing Area (acres)</u>	<u>Total Contributing Impervious Area(acres)</u>
○ Conservation of Natural Areas (RR-1) ...	.	and/or .
○ Sheetflow to Riparian Buffers/Filters Strips (RR-2)	.	and/or .
○ Tree Planting/Tree Pit (RR-3)	.	and/or .
○ Disconnection of Rooftop Runoff (RR-4) ..	.	and/or 2 . 6 9
<u>RR Techniques (Volume Reduction)</u>		
○ Vegetated Swale (RR-5)	.	.
○ Rain Garden (RR-6)	.	.
○ Stormwater Planter (RR-7)	.	.
○ Rain Barrel/Cistern (RR-8)	.	.
○ Porous Pavement (RR-9)	.	.
○ Green Roof (RR-10)	.	.
<u>Standard SMPs with RRv Capacity</u>		
○ Infiltration Trench (I-1)	.	.
○ Infiltration Basin (I-2)	.	.
○ Dry Well (I-3)	.	.
○ Underground Infiltration System (I-4)	.	.
○ Bioretention (F-5)	.	3 . 8 1
○ Dry Swale (O-1)	.	.
<u>Standard SMPs</u>		
○ Micropool Extended Detention (P-1)	.	.
○ Wet Pond (P-2)	.	.
○ Wet Extended Detention (P-3)	.	.
○ Multiple Pond System (P-4)	.	.
○ Pocket Pond (P-5)	.	.
○ Surface Sand Filter (F-1)	.	.
○ Underground Sand Filter (F-2)	.	.
○ Perimeter Sand Filter (F-3)	.	.
○ Organic Filter (F-4)	.	.
○ Shallow Wetland (W-1)	.	.
○ Extended Detention Wetland (W-2)	.	.
○ Pond/Wetland System (W-3)	.	.
○ Pocket Wetland (W-4)	.	.
○ Wet Swale (O-2)	.	.

Provide the name and manufacturer of the Alternative SMPs (i.e. proprietary practice(s)) being used for WQV treatment.

[illegible]

30. Indicate the Total RRv provided by the RR techniques (Area/Volume Reduction) and Standard SMPs with RRv capacity identified in question 29.

		0	.	1	9	9	acre-feet
--	--	---	---	---	---	---	-----------

- ☐ Yes ☒ No

If Yes, go to question 36.
If No, go to question 32.

- ### Minimum RRV Required

		0	.	0	6	
--	--	---	---	---	---	--

acre-feet

- ☒ Yes ☐ No

Note: Use the space provided in question #39 to summarize the specific site limitations and justification for not reducing 100% of WQV required (#28). A detailed evaluation of the specific site limitations and justification for not reducing 100% of the WQV required (#28) must also be included in the SWPPP.

Page 10 of 14

33. Identify the Standard SMPs in Table 1 and, if applicable, the Alternative SMPs in Table 2 that were used to treat the remaining total WQv(=Total WQv Required in 28 - Total RRV Provided in 30).

Also, provide in Table 1 and 2 the total impervious area that contributes runoff to each practice selected.

Note: Use Tables 1 and 2 to identify the SMPs used on Redevelopment projects.

- 33a. Indicate the Total WQv provided (i.e. WQv treated) by the SMPs identified in question #33 and Standard SMPs with RRV Capacity identified in question 29.

WQv Provided

0 . 4 9 8 **acre-feet**

Note: For the standard SMPs with RRV capacity, the WQv provided by each practice = the WQv calculated using the contributing drainage area to the practice - RRV provided by the practice. (See Table 3.5 in Design Manual)

34. Provide the sum of the Total RRV provided (#30) and the WQv provided (#33a).

0 . 6 9 7

35. Is the sum of the RRV provided (#30) and the WQv provided (#33a) greater than or equal to the total WQv required (#28)? ☒ **Yes** ☐ **No**

If Yes, go to question 36.

If No, sizing criteria has not been met, so NOI can not be processed. SWPPP preparer must modify design to meet sizing criteria.

36. Provide the total Channel Protection Storage Volume (CPv) required and provided or select waiver (36a), if applicable.

CPv Required

1 . 2 4 **acre-feet**

CPv Provided

1 . 3 0 **acre-feet**

- 36a. The need to provide channel protection has been waived because:

- ☐ Site discharges directly to tidal waters or a fifth order or larger stream.
- ☐ Reduction of the total CPv is achieved on site through runoff reduction techniques or infiltration systems.

37. Provide the Overbank Flood (Qp) and Extreme Flood (Qf) control criteria or select waiver (37a), if applicable.

Total Overbank Flood Control Criteria (Qp)

Pre-Development

6 7 . 6 1 **CFS**

Post-development

3 2 . 9 2 **CFS**

Total Extreme Flood Control Criteria (Qf)

Pre-Development

1 6 5 . 9 3 **CFS**

Post-development

8 0 . 2 4 **CFS**

37a. The need to meet the Qp and Qf criteria has been waived because:

- ☐ Site discharges directly to tidal waters or a fifth order or larger stream.
- ☐ Downstream analysis reveals that the Qp and Qf controls are not required

- Site discharges directly to tidal waters or a fifth order or larger stream.
- Downstream analysis reveals that the Qp and Qf controls are not required

☒ Yes ☐ No

If Yes, Identify the entity responsible for the long term
Operation and Maintenance

[illegible]

39. Use this space to summarize the specific site limitations and justification for not reducing 100% of WQv required(#28). (See question 32a)
This space can also be used for other pertinent project information.

100% of the water quality volume could not be achieved due to soil conditions that are not conducive to infiltration practices.

100% of the water quality volume could not be achieved due to soil conditions that are not conducive to infiltration practices.

- ☐ Air Pollution Control
 - ☐ Coastal Erosion
 - ☐ Hazardous Waste
 - ☐ Long Island Wells
 - ☐ Mined Land Reclamation
 - ☐ Solid Waste
 - ☐ Navigable Waters Protection / Article 15
 - ☐ Water Quality Certificate
 - ☐ Dam Safety
 - ☐ Water Supply
 - ☐ Freshwater Wetlands/Article 24
 - ☐ Tidal Wetlands
 - ☐ Wild, Scenic and Recreational Rivers
 - ☐ Stream Bed or Bank Protection / Article 15
 - ☐ Endangered or Threatened Species(Incidental Take Permit)
 - ☐ Individual SPDES
 - ☐ SPDES Multi-Sector GP

N	Y	R						
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 - ☐ Other

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
 - ☒ None

☐ None

- Wetland Permit? ☐ ☐ ☐ ☐ ☐ ☐
- If Yes, Indicate Size of Impact. .

- (If No, skip question 43)

- Has the "MS4 SWPPP Acceptance" form been signed by the principal executive officer or ranking elected official and submitted along with this NOI? ☒ Yes ☐ No

- | | | | | | | | | |
|---|---|---|--|--|--|--|--|--|
| N | Y | R | | | | | | |
|---|---|---|--|--|--|--|--|--|

Owner/Operator Certification

I have read or been advised of the permit conditions and believe that I understand them. I also understand that, under the terms of the permit, there may be reporting requirements. I hereby certify that this document and the corresponding documents were prepared under my direction or supervision. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. I further understand that coverage under the general permit will be identified in the acknowledgment that I will receive as a result of submitting this NOI and can be as long as sixty (60) business days as provided for in the general permit. I also understand that, by submitting this NOI, I am acknowledging that the SWPPP has been developed and will be implemented as the first element of construction, and agreeing to comply with all the terms and conditions of the general permit for which this NOI is being submitted.

Print First Name

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MI

--

Print Last Name

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Owner/Operator Signature

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Date

		/			/				
--	--	---	--	--	---	--	--	--	--



**NYS Department of Environmental Conservation
Division of Water
625 Broadway, 4th Floor
Albany, New York 12233-3505**

**MS4 Stormwater Pollution Prevention Plan (SWPPP) Acceptance
Form**

for

Construction Activities Seeking Authorization Under SPDES General Permit

***(NOTE: Attach Completed Form to Notice Of Intent and Submit to Address Above)**

I. Project Owner/Operator Information

1. Owner/Operator Name:

2. Contact Person:

3. Street Address:

4. City/State/Zip:

II. Project Site Information

5. Project/Site Name:

6. Street Address:

7. City/State/Zip:

III. Stormwater Pollution Prevention Plan (SWPPP) Review and Acceptance Information

8. SWPPP Reviewed by:

9. Title/Position:

10. Date Final SWPPP Reviewed and Accepted:

IV. Regulated MS4 Information

11. Name of MS4:

12. MS4 SPDES Permit Identification Number: NYR20A

13. Contact Person:

14. Street Address:

15. City/State/Zip:

16. Telephone Number:

MS4 SWPPP Acceptance Form - continued

V. Certification Statement - MS4 Official (principal executive officer or ranking elected official) or Duly Authorized Representative

I hereby certify that the final Stormwater Pollution Prevention Plan (SWPPP) for the construction project identified in question 5 has been reviewed and meets the substantive requirements in the SPDES General Permit For Stormwater Discharges from Municipal Separate Storm Sewer Systems (MS4s). Note: The MS4, through the acceptance of the SWPPP, assumes no responsibility for the accuracy and adequacy of the design included in the SWPPP. In addition, review and acceptance of the SWPPP by the MS4 does not relieve the owner/operator or their SWPPP preparer of responsibility or liability for errors or omissions in the plan.

Printed Name:

Title/Position:

Signature:

Date:

VI. Additional Information

**New York State Department of Environmental Conservation
Division of Water
625 Broadway, 4th Floor
Albany, New York 12233-3505**

(NOTE: Submit completed form to address above)

NOTICE OF TERMINATION for Storm Water Discharges Authorized
under the SPDES General Permit for Construction Activity

Please indicate your permit identification number: NYR ____ _

I. Owner or Operator Information

1. Owner/Operator Name:

2. Street Address:

3. City/State/Zip:

4. Contact Person:

4a. Telephone:

4b. Contact Person E-Mail:

II. Project Site Information

5. Project/Site Name:

6. Street Address:

7. City/Zip:

8. County:

III. Reason for Termination

9a. K All disturbed areas have achieved final stabilization in accordance with the general permit and SWPPP. ***Date final stabilization completed** (month/year): _____

9b. K Permit coverage has been transferred to new owner/operator. Indicate new owner/operator's permit identification number: NYR ____ _

(Note: Permit coverage can not be terminated by owner identified in I.1. above until new owner/operator obtains coverage under the general permit)

9c. K Other (Explain on Page 2)

IV. Final Site Information:

10a. Did this construction activity require the development of a SWPPP that includes post-construction stormwater management practices? K yes K no (If no, go to question 10f.)

10b. Have all post-construction stormwater management practices included in the final SWPPP been constructed? K yes K no (If no, explain on Page 2)

10c. Identify the entity responsible for long-term operation and maintenance of practice(s)?

**NOTICE OF TERMINATION for Storm Water Discharges Authorized under the
SPDES General Permit for Construction Activity - continued**

10d. Has the entity responsible for long-term operation and maintenance been given a copy of the operation and maintenance plan required by the general permit? K yes K no

10e. Indicate the method used to ensure long-term operation and maintenance of the post-construction stormwater management practice(s):

 K Post-construction stormwater management practice(s) and any right-of-way(s) needed to maintain practice(s) have been deeded to the municipality.

 K Executed maintenance agreement is in place with the municipality that will maintain the post-construction stormwater management practice(s).

 K For post-construction stormwater management practices that are privately owned, a mechanism is in place that requires operation and maintenance of the practice(s) in accordance with the operation and maintenance plan, such as a deed covenant in the owner or operator's deed of record.

 K For post-construction stormwater management practices that are owned by a public or private institution (e.g. school, university or hospital), government agency or authority, or public utility; policy and procedures are in place that ensures operation and maintenance of the practice(s) in accordance with the operation and maintenance plan.

10f. Provide the total area of impervious surface (i.e. roof, pavement, concrete, gravel, etc.) constructed within the disturbance area? _____
(acres)

11. Is this project subject to the requirements of a regulated, traditional land use control MS4? K yes
☐ no
 (If Yes, complete section VI - "MS4 Acceptance" statement)

V. Additional Information/Explanation:

(Use this section to answer questions 9c. and 10b., if applicable)

VI. MS4 Acceptance - MS4 Official (principal executive officer or ranking elected official) or Duly Authorized Representative (Note: Not required when 9b. is checked -transfer of coverage)

I have determined that it is acceptable for the owner or operator of the construction project identified in question 5 to submit the Notice of Termination at this time.

Printed Name:

Title/Position:

Signature:

Date:

NOTICE OF TERMINATION for Storm Water Discharges Authorized under the
SPDES General Permit for Construction Activity - continued

VII. Qualified Inspector Certification - Final Stabilization:

I hereby certify that all disturbed areas have achieved final stabilization as defined in the current version of the general permit, and that all temporary, structural erosion and sediment control measures have been removed. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

Printed Name:

Title/Position:

Signature:

Date:

VIII. Qualified Inspector Certification - Post-construction Stormwater Management Practice(s):

I hereby certify that all post-construction stormwater management practices have been constructed in conformance with the SWPPP. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

Printed Name:

Title/Position:

Signature:

Date:

IX. Owner or Operator Certification

I hereby certify that this document was prepared by me or under my direction or supervision. My determination, based upon my inquiry of the person(s) who managed the construction activity, or those persons directly responsible for gathering the information, is that the information provided in this document is true, accurate and complete. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

Printed Name:

Title/Position:

Signature:

Date:

(NYS DEC Notice of Termination - January 2015)



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STORMWATER MANAGEMENT SYSTEM MAINTENANCE AGREEMENT

THIS AGREEMENT is dated as of the _____ day of _____, 2022 (the “Agreement”) and is by and between the **Town of Manlius** (the “Municipality”), having offices at 301 Brooklea Drive, Fayetteville, NY, and **Harrington Homes, Inc.** (the “Owner”), with offices at 3848 Henneberry Road, Jamesville, NY.

WHEREAS, Owner is the record owner of the property located on Henneberry Road, Manlius, New York (the “Property”) (tax parcel ID # 109.-02-07.1); and

WHEREAS, Owner intends to construct a stormwater management system (the “SMS”) on the Property, consisting of those items depicted on Schedule A annexed hereto and made a part hereof; and

WHEREAS, the agreement is to provide for the long term maintenance and continuation of stormwater management system approved by the Municipality for the below named project; and

WHEREAS, the Municipality and the Owner desire that the SMS be built in accordance with the approved project plans and thereafter be maintained, cleaned, repaired, replaced and continued in perpetuity in order to ensure optimum performance of the SMS components within the easements as identified in Schedule A; and

NOW, THEREFORE, in consideration of the mutual covenants and agreements of the parties hereto, it is hereby agreed as follows:

1. This agreement binds the Owner, its successors and assigns, to the maintenance provisions depicted in the approved project plans which are attached as Schedule A of this agreement.
2. The Owner shall maintain, clean, repair, replace and continue the SMS depicted in Schedule A as necessary to ensure optimum performance of the measures to design specifications. The SMS shall include, but shall not be limited to, the following: drainage ditches, swales, dry wells, infiltrators, drop inlets, pipes, culverts, soil absorption devices, bioretention areas, and detention/retention ponds.
3. The Owner shall be responsible for all expenses related to the maintenance of the SMS and shall establish a means for the collection and distribution of expenses among parties for any commonly owned facilities.
4. The Owner shall provide for the periodic inspection of the SMS, not less than once in every five-year period, to determine the condition and integrity of the measures. Such inspection shall be performed by a Professional Engineer licensed by the State of New York. The inspecting engineer shall prepare and submit to the Municipality within 30 days of the inspection, a written report of the findings including recommendations for those actions necessary for the continuation of the SMS.
5. The Owner shall not authorize, undertake or permit alteration, abandonment, modification or discontinuation of the SMS except in accordance with written approval of the Municipality.



6. The Owner shall undertake necessary repairs and replacement of the SMS at the direction of the Municipality or in accordance with the recommendations of the inspecting engineer.
7. The Owner shall provide to the Municipality within 30 days of the date of this agreement, a security for the maintenance and continuation of the SMS in the form of (a Bond, letter of credit or escrow account).
8. This agreement shall be recorded in the Office of the County Clerk, County of Onondaga together with the deed for the common property and shall be included in the offering plan and/or prospectus.
9. If ever the Municipality determines that the Owner has failed to construct or maintain the SMS in accordance with the project plan or has failed to undertake corrective action specified by the Municipality or by the inspecting engineer, the Municipality is authorized to undertake such steps as reasonably necessary for the preservation, continuation or maintenance of the SMS and to affix the expenses thereof as a lien against the property.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement as of the day and date first set forth above.

TOWN OF MANLIUS

Name: _____

Title: _____

Signature: _____

HARRINGTON HOMES, INC.

Name: _____

Title: _____

Signature: _____



Schedule A

Stormwater Management System Plans

Site Plan Sheets C-2, C-3, and SMP (Overall Grading Plan, Overall Utility Plan, and Stormwater Management Plan)



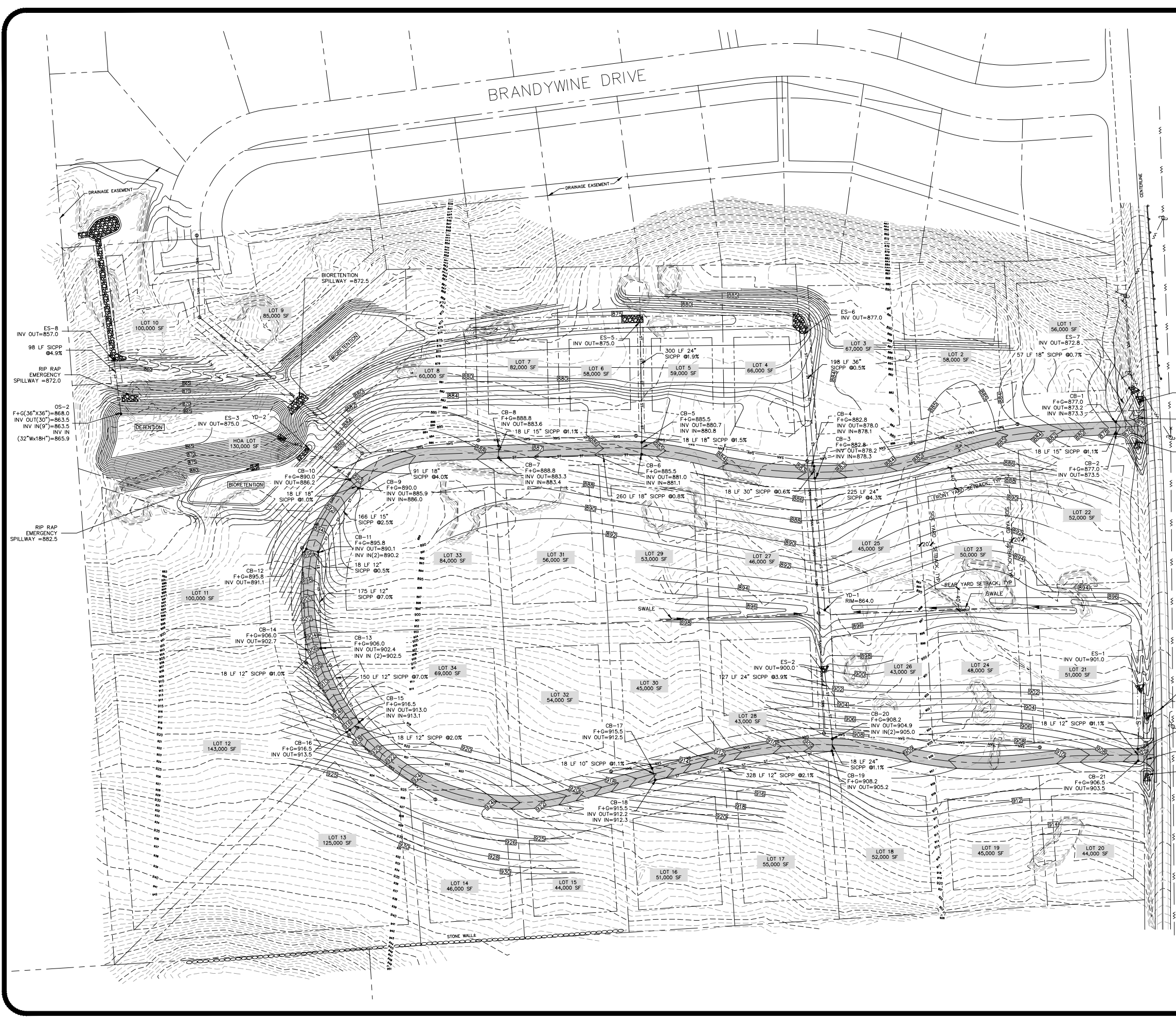
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APPENDIX F: EROSION & SEDIMENT CONTROL DETAILS AND STORMWATER MANAGEMENT PLAN



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SITE CRITERIA CHECKLIST		
PROJECT SITE INFORMATION		
ADDRESS	HENNEBERRY ROAD (COUNTY ROUTE 182)	
TAX MAP ID NO.	109--02--07.1	
BOUNDARY SURVEY	PROPERTY LINE INFORMATION TAKEN FROM SURVEY BY IANUZI AND ROMANS	
TOTAL SITE AREA	54.746 ACRES	
LAND USE	SINGLE FAMILY RESIDENTIAL - 34 LOTS	
ZONING INFORMATION		
ZONING DISTRICT	R-1, RESIDENTIAL DISTRICT	
	REQUIRED	PROVIDED
MIN. LOT FRONTAGE	150'	150' MIN.
MIN. LOT AREA	40,000 SF	40,000 SF MIN.
MINIMUM FRONT YARD	40'	40' MIN.
MINIMUM REAR YARD	40'	40' MIN.
MINIMUM SIDE YARD	20'	20' MIN.

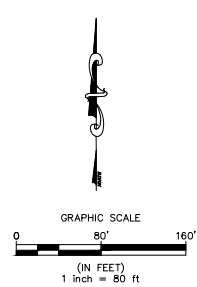
- NOTES:
- 1) PHASING PLAN REFERS ONLY TO THE PHASING OF HOME CONSTRUCTION WITHIN INDIVIDUAL LOTS TO BE SUBDIVIDED AND DOES NOT SPECIFY THE OVERALL LIMITS OF DISTURBANCE. CONSTRUCTION OF STORMWATER MITIGATION FACILITIES AND UTILITY SERVICES SHALL OCCUR AS NEEDED TO SERVE THE LOTS WITHIN THE PHASE UNDER CONSTRUCTION.
 - 2) THE OWNER OR OPERATOR SHALL HAVE A QUALIFIED INSPECTOR CONDUCT AT LEAST TWO (2) SITE INSPECTIONS IN ACCORDANCE WITH PART IV.C. OF THIS PERMIT EVERY SEVEN (7) CALENDAR DAYS, FOR AS LONG AS GREATER THAN FIVE (5) ACRES OF SOIL REMAIN DISTURBED. THE TWO (2) INSPECTIONS SHALL BE SEPARATED BY A MINIMUM OF TWO (2) FULL CALENDAR DAYS.
 - 3) IN AREAS WHERE SOIL DISTURBANCE ACTIVITY HAS TEMPORARILY OR PERMANENTLY CEASED, THE APPLICATION OF SOIL STABILIZATION MEASURES MUST BE INITIATED BY THE END OF THE NEXT BUSINESS DAY AND COMPLETED WITHIN SEVEN (7) DAYS FROM THE DATE THE CURRENT SOIL DISTURBANCE ACTIVITY CEASED. THE SOIL STABILIZATION MEASURES SELECTED SHALL BE IN CONFORMANCE WITH THE TECHNICAL STANDARD, NEW YORK STATE STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL, DATED NOVEMBER 2016.
 - 4) THE OWNER OR OPERATOR SHALL INSTALL ANY ADDITIONAL SITE-SPECIFIC PRACTICES NEEDED TO PROTECT WATER QUALITY.

PROJECT TITLE:
BRANDYWINE ESTATES PHASE 2
HENNEBERRY ROAD
TOWN OF MANLIUS
ONONDAGA COUNTY, NY

PREPARED BY:
HARRINGTON HOMES
3848 HENNEBERRY ROAD
JAMESVILLE, NY 13078

OVERALL GRADING PLAN			
SHEET TITLE:		DATE	
NO.	4	REVISED AS PER TOWN ENGINEER'S COMMENTS	3/09/2022
	3	REVISED AS PER TOWN ENGINEER'S COMMENTS	2/16/2022
	2	GENERAL REVISIONS	2/09/2022
	1	GENERAL REVISIONS	12/01/2021
		REVISION/ISSUE	

PREPARED BY:
NAPIERALA CONSULTING
PROFESSIONAL ENGINEER, P.E.
SITE DESIGN • ENGINEERING
MANLIUS, NEW YORK 13104
email: MNAT@NAPCON.COM
PH: (315) 682-5580 FAX: (315) 682-5544



PRELIMINARY
NOT FOR CONSTRUCTION

PLANESMAN BY:
NEAL H. ZIMMERMAN, JR., P.E.
EYS REGISTRATION # 097271

PROJECT NO. **20-1906**

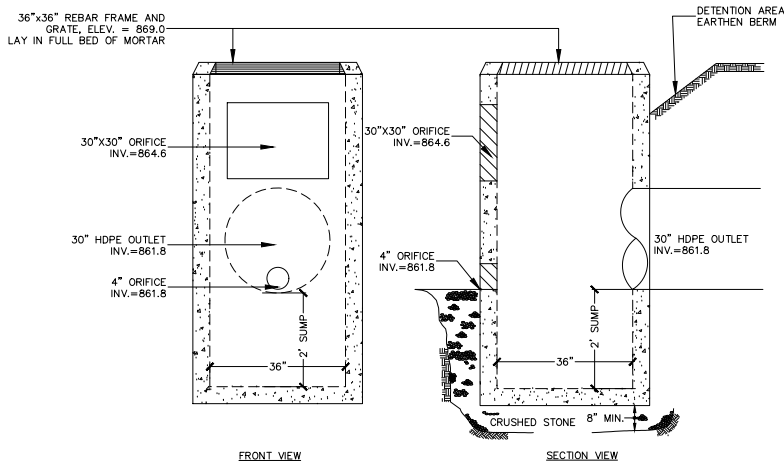
DATE **17 SEP 2020**

SCALE **1" = 80'**

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PROFESSIONAL ENGINEER, P.E.
IF A VARIATION OF LAW OR ANY
OTHER FACTS ARE DISCOVERED
WHICH MAY AFFECT THE
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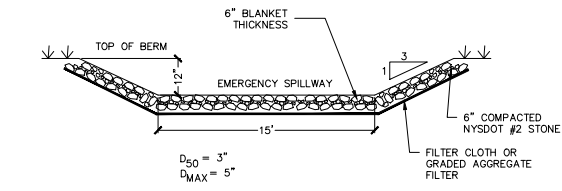
C-2

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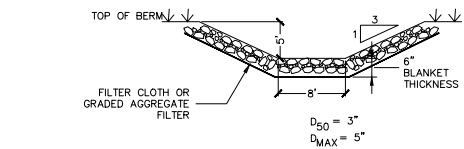
**1 DETENTION BASIN #1
PRECAST CONCRETE OUTLET STRUCTURE**

C-7.1 SCALE: NTS



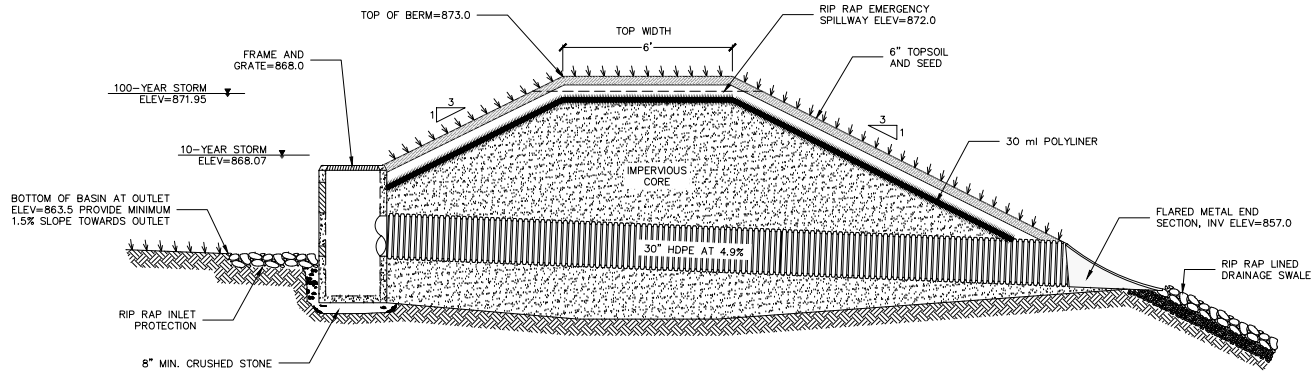
2 RIP RAP EMERGENCY SPILLWAY

C-7.1 SCALE: NTS



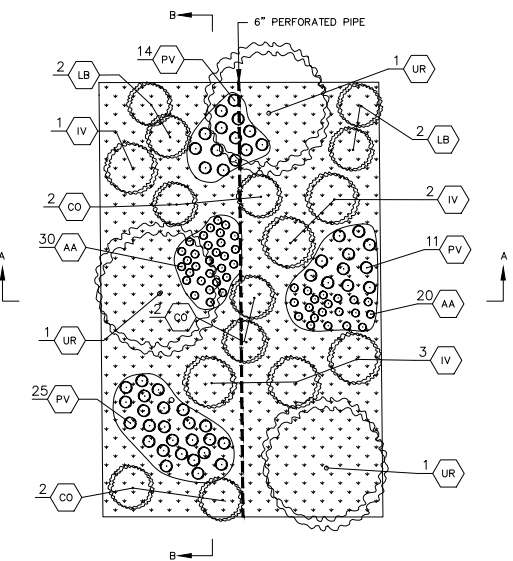
3 RIP RAP BIORETENTION SPILLWAY

C-7.1 SCALE: NTS



NOTES:

- ALL TREES SHALL BE CLEARED AND GRUBBED WITHIN 15 FEET OF THE TOE OF THE EMBANKMENT.
- AREAS COVERED BY THE BASIN WILL BE CLEARED OF ALL TREES, BRUSH, LOGS, FENCES, RUBBISH AND OTHER OBJECTIONABLE MATERIAL UNLESS OTHERWISE DESIGNATED ON THE PLANS. TREES, BRUSH, AND STUMPS SHALL BE CUT APPROXIMATELY LEVEL WITH THE GROUND SURFACE. A MINIMUM OF A 25-FOOT RADIUS AROUND THE OUTLET STRUCTURE SHALL BE CLEARED.
- ALL CLEARED AND GRUBBED MATERIAL SHALL BE DISPOSED OF OUTSIDE THE LIMITS OF THE EMBANKMENT AS DIRECTED BY THE OWNER OR OWNER'S REPRESENTATIVE. WHEN SPECIFIED, A SUFFICIENT QUANTITY OF TOPSOIL WILL BE STOCKPILED IN A SUITABLE LOCATION FOR USE ON THE EMBANKMENT AND OTHER DESIGNATED AREAS.
- FILL MATERIAL SHALL BE TAKEN FROM APPROVED DESIGNATED BORROW AREAS. IT SHALL BE FREE OF ROOTS, STUMPS, WOOD, RUBBISH, STONES GREATER THAN 6", FROZEN OR OTHER OBJECTIONABLE MATERIALS. FILL MATERIAL FOR THE CENTER OF THE EMBANKMENT SHALL CONFORM TO UNIFIED SOIL CLASSIFICATION GC, SC, CH, OR CL AND MUST HAVE AT LEAST 30% PASSING THE NO. 200 SIEVE.
- A 6-INCH LAYER OF TOPSOIL SHALL BE PLACED ON ALL DISTURBED AREAS OF THE MITIGATION BASIN AND EMBANKMENT. SEEDING, LIMING, FERTILIZING, MULCHING, ETC. SHALL BE IN ACCORDANCE WITH NRCS SOIL STANDARDS AND SPECIFICATIONS OR NEW YORK STATE STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL.
- AREAS ON WHICH FILL IS TO BE PLACED SHALL BE SCARIFIED PRIOR TO PLACEMENT OF FILL. FILL MATERIALS SHALL BE PLACED IN MAXIMUM 8" THICK (BEFORE COMPACTION) LAYERS WHICH ARE TO BE CONTINUOUS OVER THE ENTIRE LENGTH OF THE FILL. THE MOST PERMEABLE BORROW MATERIAL SHALL BE PLACED IN THE DOWNSTREAM PORTIONS OF THE EMBANKMENT.
- THE MOVEMENT OF THE HAULING AND SPREADING EQUIPMENT OVER THE FILL SHALL BE CONTROLLED SO THAT THE ENTIRE SURFACE OF EACH LIFT SHALL BE TRAVERSED BY NOT LESS THAN ONE TREAD TRACK OF HEAVY EQUIPMENT OR COMPACTION SHALL BE ACHIEVED BY A MINIMUM OF FOUR COMPLETE PASSES OF A SHEEPSFOOT, RUBBER TIED, OR VIBRATORY ROLLER. THE MINIMUM REQUIRED DENSITY USING THE MODIFIED PROCTOR TEST METHOD SHALL BE AT LEAST 92% OF MAXIMUM DRY DENSITY WITH A MOISTURE CONTENT OF 2% OF THE OPTIMUM. A GEOTECHNICAL ENGINEER MUST BE PRESENT TO VERIFY COMPACTION. THIS INFORMATION NEEDS TO BE PROVIDED IN A REPORT TO THE DESIGN ENGINEER SO THAT AS-BUILT CERTIFICATION OF THE FACILITY CAN BE MADE.
- THE EMBANKMENT CORE SHALL BE PARALLEL TO THE CENTERLINE OF THE EMBANKMENT AS SHOWN ON THE PLANS. THE TOP WIDTH OF THE CORE SHALL BE A MINIMUM OF FOUR FEET. THE HEIGHT SHALL EXTEND TO THE 10-YEAR WATER ELEVATION. THE SIDE SLOPES SHALL BE 1 TO 1 OR FLATTER. THE CORE SHALL BE COMPACTED WITH CONSTRUCTION EQUIPMENT, ROLLERS, OR HAND TAMPERS TO ASSURE MAXIMUM DENSITY AND MINIMUM PERMEABILITY. IN ADDITION, THE CORE SHALL BE PLACED CONCURRENTLY WITH THE OUTER SHELL OF THE EMBANKMENT.
- BACKFILL ADJACENT TO PIPES OR STRUCTURES SHALL BE OF THE TYPE AND QUALITY CONFORMING TO THAT SPECIFIED FOR THE ADJOINING FILL. THE FILL SHALL BE PLACED IN HORIZONTAL LAYERS NOT TO EXCEED 4" IN THICKNESS AND COMPACTED BY HAND TAMPERS OR OTHER MANUALLY DIRECTED COMPACTION EQUIPMENT. THE MATERIAL NEED TO FILL COMPLETELY ALL SPACES UNDER AND ADJACENT TO THE PIPE. AT NO TIME DURING THE BACKFILLING OPERATION SHALL DRIVEN EQUIPMENT BE ALLOWED TO OPERATE CLOSER THAN FOUR FEET, MEASURED HORIZONTALLY, TO ANY PART OF A STRUCTURE. UNDER NO CIRCUMSTANCES SHALL EQUIPMENT BE DRIVEN OVER ANY PART OF A CONCRETE STRUCTURE OR PIPE, UNLESS THERE IS A COMPACTED FILL OF 24" OR GREATER OVER THE STRUCTURE OR PIPE.
- CORRUGATED HIGH DENSITY POLYETHYLENE (HDPE) PIPE, COUPLINGS, AND FITTINGS SHALL CONFORM TO THE FOLLOWING: 4" THROUGH 10" PIPE SHALL MEET THE REQUIREMENTS OF AASHTO M252 TYPE S, AND 12" THROUGH 24" PIPE SHALL MEET THE REQUIREMENTS OF AASHTO M294 TYPE S.
- JOINTS AND CONNECTIONS TO ANTI-SEEP COLLARS SHALL BE WATERTIGHT.
- THE PIPE SHALL BE FIRMLY AND UNIFORMLY BEDDED THROUGHOUT ITS ENTIRE LENGTH. WHERE ROCK OR SOFT, SPONGY, OR OTHER UNSTABLE SOIL IS ENCOUNTERED, ALL SUCH MATERIAL SHALL BE REMOVED AND REPLACED WITH SUITABLE EARTH COMPACTED TO PROVIDE ADEQUATE SUPPORT.
- PIPE BACKFILLING SHALL CONFORM TO STRUCTURE BACKFILLING REQUIREMENTS.
- IMPERVIOUS CORE TO CONSIST OF A CLAY SOIL WITH A PERMEABILITY LESS THAN 0.0001 MM/SEC. CORE MATERIAL TO BE PLACED IN 6" LIFTS AND COMPACTED TO 92% DENSITY.



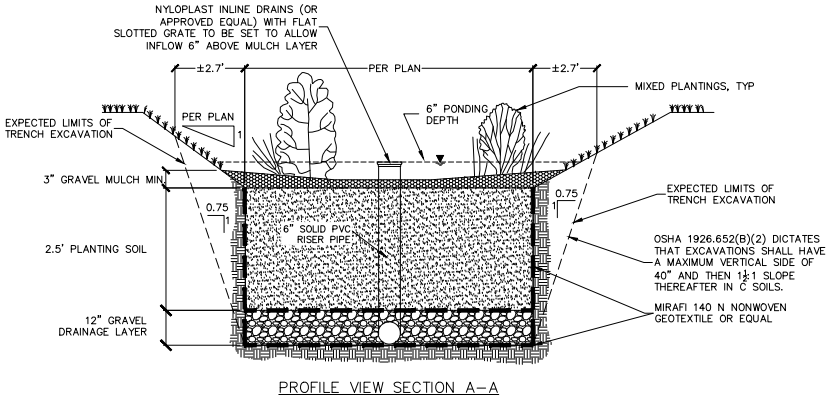
*PLANTING QUANTITIES SHOWN IN THE GRAPHIC ABOVE ARE FOR A TYPICAL 1,000 SF BIORETENTION AREA. SPECIFIC QUANTITIES FOR THE BIORETENTION AREA ARE PROVIDED IN THE CORRESPONDING LANDSCAPING TABLE.

BIORETENTION AREA #1 (±13,500 SF) - LANDSCAPE TABLE					
KEY	QUANTITY*	LATIN NAME	COMMON NAME	CALIPER	HEIGHT
TREES					
UR	16	ULMUS RUBRA	SLIPPERY ELM	6'-8'	B&B
SHRUBS					
LB	45	LINDERA BENZOIN	COMMON SPICE	18"-24"	B&B
IV	65	ILEX VERTICILLATA	WINTER BERRY	2'-3'	B&B
CO	65	CEPHALANTHUS OCCIDENTALIS	BUTTONBUSH	18"-24"	B&B
HERBACEOUS PLANTS					
PV	600	PANICUM VIRGATUM	SWITCH GRASS		
AA	600	AGROSTIS ALBA	REDFOP		

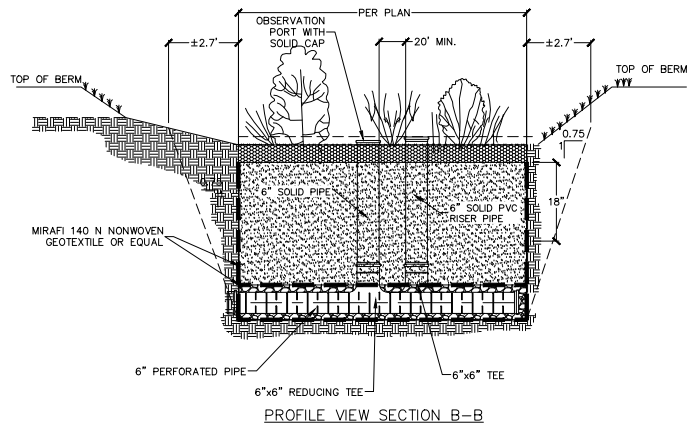
BIORETENTION AREA #2 (±6,250 SF) - LANDSCAPE TABLE					
KEY	QUANTITY*	LATIN NAME	COMMON NAME	CALIPER	HEIGHT
TREES					
UR	8	ULMUS RUBRA	SLIPPERY ELM	6'-8'	B&B
SHRUBS					
LB	25	LINDERA BENZOIN	COMMON SPICE	18"-24"	B&B
IV	35	ILEX VERTICILLATA	WINTER BERRY	2'-3'	B&B
CO	30	CEPHALANTHUS OCCIDENTALIS	BUTTONBUSH	18"-24"	B&B
HERBACEOUS PLANTS					
PV	300	PANICUM VIRGATUM	SWITCH GRASS		
AA	300	AGROSTIS ALBA	REDFOP		

4 BIORETENTION FILTER SPECIES

C-7.1 SCALE: NTS



PROFILE VIEW SECTION A-A



PROFILE VIEW SECTION B-B

6 BIORETENTION FILTER CROSS SECTIONS

C-7.1 SCALE: NTS

5 DETENTION BASIN BERM AND OUTLET STRUCTURE CROSS SECTION

C-7.1 SCALE: NTS

PROJECT TITLE:
**BRANDYWINE ESTATES PHASE 2
HENNEBERRY ROAD**
ONONDAGA COUNTY, NY

TOWN OF MANLIUS
PREPARED FOR:
HARRINGTON HOMES
3848 HENNEBERRY ROAD
JAMESVILLE, NY 13078

SITE DETAILS

NO.	REVISION/ISSUE	DATE
4	REVISED AS PER TOWN ENGINEER'S COMMENTS	3/09/2022
3	REVISED AS PER TOWN ENGINEER'S COMMENTS	2/16/2022
2	GENERAL REVISIONS	2/09/2022
1	GENERAL REVISIONS	12/01/2021

PREPARED BY:
NAPIERALA CONSULTING
PROFESSIONAL ENGINEER, P.E.
SITING • DESIGN • ENGINEERING
MANLIUS, NEW YORK 13104
email: MNAP@NAPCON.COM
PH: (315) 682-5580 FAX: (315) 682-5544

PRELIMINARY
NOT FOR CONSTRUCTION

PROJECT NO. **20-1906**

DATE **17 SEP 2020**

SCALE **AS SHOWN**

C-7.1

PLANNED BY:
NEAL H. ZIMMERMAN, JR., P.E.
EVS REGISTRATION # 09721

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CONSULTING, INC.

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EROSION CONTROL NOTES

EROSION AND SEDIMENT CONTROLS

1. STABILIZATION PRACTICES (TEMPORARY)

a) TEMPORARY SEEDING AND PLANTING OF ALL UNPAVED AREAS WHEN CONSTRUCTION ACTIVITY HAS CEASED, OR WILL CEASE, IN AN AREA FOR 14 DAYS. SEEDING MIXTURES AND APPLICATION RATES ARE LISTED ON SHEET C-2.

b) MULCHING EXPOSED AREAS.

c) FREQUENT WATERING TO MINIMIZE WIND EROSION DURING CONSTRUCTION.
2. STABILIZATION PRACTICES (PERMANENT)

a) LAND CLEARING ACTIVITIES SHALL BE DONE ONLY IN AREAS WHERE EARTHWORK WILL BE PERFORMED AND SHALL PROGRESS AS EARTHWORK IS NEEDED.

b) PERMANENT SEEDING AND PLANTING OF ALL UNPAVED AREAS.
3. STRUCTURAL MEASURES TEMPORARY

a. STABILIZED CONSTRUCTION ENTRANCE: AT THE ENTRANCE TO THE ALL DISTURBED AREAS FROM AN EXISTING ROADWAY A STABILIZED CONSTRUCTION ENTRANCE SHALL BE PROVIDED. THE PURPOSE OF THE STABILIZED CONSTRUCTION ENTRANCE IS TO REDUCE OR ELIMINATE THE TRACKING OF SEDIMENT ONTO THE PUBLIC RIGHT-OF-WAY.

b. SILT FENCE: SILT FENCE SHALL BE INSTALLED AS SHOWN ON THE EROSION CONTROL PLAN. THE FABRIC SHALL MEET THE SPECIFICATIONS NOTED ON THE DETAILS UNLESS OTHERWISE APPROVED BY THE APPROPRIATE EROSION AND SEDIMENT CONTROL PLAN APPROVAL AUTHORITY. SUCH APPROVAL SHALL NOT CONSTITUTE STATEWIDE ACCEPTANCE.

c. DUST CONTROL: DUST CONTROL IS THE CONTROL OF DUST RESULTING FROM LAND-DISTURBING ACTIVITIES. THE PURPOSE IS TO PREVENT SURFACE AND AIR MOVEMENT OF DUST FROM DISTURBED SOIL SURFACES THAT MAY CAUSE OFF-SITE DAMAGE, HEALTH HAZARDS, AND TRAFFIC SAFETY PROBLEMS.

d. SEDIMENT TRAP: SEDIMENT TRAP TO BE INSTALLED IN DETENTION BASIN AREA FOR USE DURING CONSTRUCTION. STONE OUTLET SEDIMENT TRAP TO BE INSTALLED AS PER DETAIL TO ELIMINATE SEDIMENT DISCHARGE TO DOWNSTREAM AREAS DURING CONSTRUCTION PHASE.
4. STRUCTURAL PRACTICES (PERMANENT)

a. ROCK OUTLET PROTECTION: ROCK OUTLET PROTECTION IS A SECTION OF ROCK PROTECTION PLACED AT THE OUTLET END OF CULVERTS, CONDUITS, OR CHANNELS. THE PURPOSE OF THE ROCK OUTLET PROTECTION IS TO REDUCE THE DEPTH, VELOCITY, AND ENERGY OF WATER, SUCH THAT THE FLOW WILL NOT ERODE THE RECEIVING DOWNSTREAM REACH.

b. REINFORCED SLOPE PROTECTION: A TEMPORARY PROTECTIVE COVERING PLACED ON A PREPARED PLANTING AREA THAT IS ANCHORED IN PLACE BY STAPLES OR OTHER MEANS TO AID IN CONTROLLING EROSION BY ABSORBING RAIN SPLASH ENERGY AND WITHSTAND OVERLAND FLOW AS WELL AS PROVIDE A MICROCLIMATE TO PROTECT AND PROMOTE SEED ESTABLISHMENT.
- c. LAND GRADING: PERMANENT RESHAPING OF THE EXISTING LAND SURFACE BY GRADING IN ACCORDANCE WITH AN ENGINEERING TOPOGRAPHIC PLAN AND SPECIFICATION TO PROVIDE EROSION CONTROL AND VEGETATIVE ESTABLISHMENT ON DISTURBED, RESHAPED AREAS.
5. SEQUENCE OF MAJOR ACTIVITIES

THE CONTRACTOR SHALL BE RESPONSIBLE FOR IMPLEMENTING THE ABOVE LISTED EROSION AND SEDIMENT CONTROL PRACTICES. THE CONTRACTOR MAY DESIGNATE THESE TASKS TO CERTAIN SUBCONTRACTORS AS IS SEEN FIT, BUT THE ULTIMATE RESPONSIBILITY FOR IMPLEMENTING THESE CONTROLS AND ENSURING THEIR PROPER FUNCTION REMAINS WITH THE CONTRACTOR. THE ORDER OF ACTIVITIES WILL BE AS FOLLOWS:

a) CONDUCT PRECONSTRUCTION MEETING

b) CONSTRUCT TEMPORARY CONSTRUCTION ENTRANCE/EXIT AT THE LOCATION SHOWN ON THE PLAN.

c) INSTALL PERIMETER SILT FENCE AND SECURITY CONSTRUCTION FENCE IN THE LOCATIONS SHOWN ON THE PLAN.

d) ESTABLISH STAGING AREA ON PROJECT SITE

e) CONSTRUCT TEMPORARY SEDIMENT TRAP

f) REMOVE TOPSOIL, STOCKPILE AND STABILIZE

g) SITE GRADING. IMPORT OF FILL MATERIAL TO RAISE SITE TO PROPOSED GRADE (OR SUB-GRADE, AS APPROPRIATE).

h) BUILDING FOUNDATION EXCAVATION (BUILDING CONSTRUCTION TO CONTINUE CONCURRENTLY WITH REMAINING SITE WORK).

i) DISTURBED AREAS OF THE SITE WHERE CONSTRUCTION ACTIVITY HAS CEASED FOR MORE THAN 14 DAYS SHALL BE TEMPORARILY SEEDED AND WATERED.

j) UNDERGROUND UTILITY INSTALLATIONS.

k) INSTALL FILTER FABRIC DROP INLET PROTECTION AT ALL STORM INLETS.

l) COMPACT GRAVEL ALONG ALL DRIVE AISLES AND PARKING AREAS

m) SITE CONCRETE CONSTRUCTION.

n) FINALIZE PAVEMENT SUBGRADE PREPARATION.

o) REMOVE INLET PROTECTION NO MORE THAN 24 HOURS PRIOR TO PLACING ASPHALT PAVEMENT.

p) PAVE AREAS NOTED ON PLAN.

q) DEEP RIPPING OF NON-PAVED AREAS AS REQUIRED (NON-PAVED AREAS THAT HAVE BEEN COMPACTED DURING CONSTRUCTION VIA CONSTRUCTION TRAFFIC).

r) FINAL GRADING, SEEDING, AND PLANTING.

s) CONSTRUCT BIORETENTION BASINS AND OUTLET CONTROLS UPON UPSTREAM
- STABILIZATION OF SITE
- t) REMOVE SEDIMENT TRAP AND FINALIZE GRADING OF DETENTION BASIN

u) REMOVE SILT FENCE ONLY AFTER ALL PAVING IS COMPLETE AND EXPOSED SURFACES ARE STABILIZED.
- MAINTENANCE/INSPECTION PROCEDURES
- THE FOLLOWING INSPECTION AND MAINTENANCE PRACTICES WILL BE USED TO MAINTAIN EROSION AND SEDIMENT CONTROLS AND STABILIZATION MEASURES.
1. ALL CONTROL MEASURES WILL BE INSPECTED AT LEAST TWICE EVERY SEVEN (7) CALENDAR DAYS

2. ALL MEASURES WILL BE MAINTAINED IN GOOD WORKING ORDER; IF REPAIRS OR OTHER EROSION CONTROL MEASURES ARE FOUND TO BE NECESSARY, THEY WILL BE INITIATED WITHIN 24 HOURS OF REPORT.

3. BUILT UP SEDIMENT WILL BE REMOVED FROM SILT FENCE WHEN IT HAS REACHED ONE-THIRD THE HEIGHT OF THE FENCE.

4. SILT FENCES WILL BE INSPECTED FOR DEPTH OF SEDIMENT, TEARS, ETC., TO SEE IF THE FABRIC IS SECURELY ATTACHED TO THE FENCE POSTS, AND TO SEE THAT THE FENCE POSTS ARE SECURELY IN THE GROUND.

5. TEMPORARY AND PERMANENT SEEDING AND ALL OTHER STABILIZATION MEASURES WILL BE INSPECTED FOR BARE SPOTS, WASHOUTS, AND HEALTHY GROWTH.

6. A MAINTENANCE INSPECTION REPORT WILL BE MADE AFTER EACH INSPECTION. COPIES OF THE REPORT FORMS TO BE COMPLETED BY THE INSPECTOR ARE INCLUDED IN THIS SWPPP.

7. THE OPERATOR SHALL HAVE A "QUALIFIED PROFESSIONAL" CONDUCT SITE INSPECTIONS FOLLOWING THE COMMENCEMENT OF CONSTRUCTION. A "QUALIFIED PROFESSIONAL" IS A PERSON KNOWLEDGEABLE IN THE PRINCIPLES AND PRACTICE OF EROSION AND SEDIMENT CONTROLS, SUCH AS A LICENSED PROFESSIONAL ENGINEER, CERTIFIED PROFESSIONAL IN EROSION AND SEDIMENT CONTROL (CPESC), OR SOIL SCIENTIST.

8. DISTURBED AREAS AND MATERIALS STORAGE AREAS WILL BE INSPECTED FOR EVIDENCE OF OR POTENTIAL FOR POLLUTANTS ENTERING STORMWATER SYSTEMS.
9. REPORT TO NYS DEC WITHIN 24 HOURS ANY NONCOMPLIANCE WITH THE SWPPP THAT WILL ENDANGER PUBLIC HEALTH OR THE ENVIRONMENT. FOLLOW UP WITH A WRITTEN REPORT WITHIN 5 DAYS OF THE NONCOMPLIANCE EVENT. THE FOLLOWING EVENTS REQUIRE 24 HOUR REPORTING: A) ANY UNANTICIPATED BYPASS WHICH EXCEEDS ANY EFFLUENT LIMITATION IN THE PERMIT, B) ANY UPSET WHICH EXCEEDS ANY EFFLUENT LIMITATION IN THE PERMIT, AND C) A VIOLATION OF A MAXIMUM DAILY DISCHARGE LIMITATION FOR ANY OF THE POLLUTANTS LISTED BY THE EPA IN THE PERMIT TO BE REPORTED WITHIN 24 HOURS. THE WRITTEN SUBMISSION MUST CONTAIN A DESCRIPTION OF THE NON-COMPLIANCE AND ITS CAUSE; THE PERIOD OF NON-COMPLIANCE, INCLUDING EXACT DATES AND TIMES, AND IF THE NON-COMPLIANCE HAS NOT BEEN CORRECTED, THE ANTICIPATED TIME IT IS EXPECTED TO CONTINUE; AND STEPS TAKEN OR PLANNED TO REDUCE, ELIMINATE, AND PREVENT RECURRENCE OF THE NON-COMPLIANCE.
10. RELEASES OF HAZARDOUS SUBSTANCES OR OIL IN EXCESS OF REPORTABLE QUANTITIES (AS ESTABLISHED UNDER 40 CFR 110, 40 CFR 117 OR 40 CFR 302) MUST BE REPORTED. FORM G-1 PROVIDES FURTHER DETAILS ON THE NOTIFICATION AND REPORTING PROCESS.
- INSPECTION AND MAINTENANCE REPORT FORMS
- ONCE INSTALLATION OF ANY REQUIRED OR OPTIONAL EROSION CONTROL DEVICE OR MEASURE HAS BEEN IMPLEMENTED, AT LEAST ONCE EVERY SEVEN (7) CALENDAR DAYS AND SHALL BE PERFORMED BY A QUALIFIED PROFESSIONAL. THE FORMS FOUND IN THIS SWPPP SHALL BE USED BY THE INSPECTORS TO INVENTORY AND REPORT THE CONDITION OF EACH MEASURE TO ASSIST IN MAINTAINING THE EROSION AND SEDIMENT CONTROL MEASURES IN GOOD WORKING ORDER.
- THESE REPORT FORMS SHALL BECOME AN INTEGRAL PART OF THE SWPPP AND SHALL BE MADE READILY ACCESSIBLE TO GOVERNMENTAL INSPECTION OFFICIALS, THE OPERATOR'S ENGINEER, AND THE OPERATOR FOR REVIEW UPON REQUEST DURING VISITS TO THE PROJECT SITE. IN ADDITION, COPIES OF THE REPORTS SHALL BE PROVIDED TO ANY OF THESE PERSONS, UPON REQUEST, VIA MAIL OR FACSIMILE. TRANSMISSION, INSPECTION AND MAINTENANCE REPORT FORMS ARE TO BE MAINTAINED BY THE PERMITTEE FOR FIVE YEARS FOLLOWING THE FINAL STABILIZATION OF THE SITE.
- OTHER RECORD-KEEPING REQUIREMENTS
- THE CONTRACTOR SHALL KEEP THE FOLLOWING RECORDS RELATED TO CONSTRUCTION ACTIVITIES AT THE SITE:
- DATES WHEN MAJOR GRADING ACTIVITIES OCCUR AND THE AREAS WHICH WERE GRADED

- DATES AND DETAILS CONCERNING THE INSTALLATION OF STRUCTURAL CONTROLS
- DATES WHEN CONSTRUCTION ACTIVITIES CEASE IN AN AREA

- DATES WHEN AN AREAS IS STABILIZED, EITHER TEMPORARILY OR PERMANENTLY

- DATES OF RAINFALL AND THE AMOUNT OF RAINFALL

- DATES AND DESCRIPTIONS OF THE CHARACTER AND AMOUNT OF ANY SPILLS OF HAZARDOUS MATERIALS

- RECORDS OF REPORTS FILED WITH REGULATORY AGENCIES IF REPORTABLE QUANTITIES OF HAZARDOUS MATERIALS SPILLED
- EROSION CONTROL NOTES
1. LAND DISTURBING ACTIVITIES SHALL NOT COMMENCE UNTIL APPROVAL TO DO SO HAS BEEN RECEIVED BY GOVERNING AUTHORITIES. THE GENERAL CONTRACTOR SHALL STRICTLY ADHERE TO THE APPROVED SWPPP DRAWINGS DURING CONSTRUCTION OPERATIONS.

2. NO LAND CLEARING OR GRADING SHALL BEGIN UNTIL THE APPROPRIATE EROSION CONTROL MEASURES HAVE BEEN INSTALLED.

3. ALL EXPOSED AREAS SHALL BE SEEDED AS SPECIFIED WITHIN 7 DAYS OF FINAL GRADING.

4. SHOULD CONSTRUCTION STOP FOR LONGER THAN 14 DAYS, THE SITE SHALL BE SEEDED AS SPECIFIED.

5. MAINTAIN EROSION CONTROL MEASURES AFTER EACH RAIN AND AT LEAST ONCE A WEEK.

6. THIS PLAN SHALL NOT BE CONSIDERED ALL INCLUSIVE AS THE GENERAL CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PREVENT SEDIMENT FROM LEAVING THE SITE.

7. GENERAL CONTRACTOR SHALL COMPLY WITH ALL STATE AND LOCAL ORDINANCES THAT APPLY.

8. ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES WILL BE INSTALLED IF DEEMED NECESSARY BY ON SITE INSPECTION.

9. IF INSTALLATION OF STORM DRAINAGE SYSTEM SHOULD BE INTERRUPTED BY WEATHER OR NIGHTFALL, THE PIPE ENDS SHALL BE COVERED WITH FILTER FABRIC.

10. GENERAL CONTRACTOR SHALL BE RESPONSIBLE TO TAKE WHATEVER MEANS NECESSARY TO ESTABLISH PERMANENT SOIL STABILIZATION.

11. ALL WORK TO BE DONE IN STRICT ACCORDANCE WITH THE NEW YORK STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL.
-
1. STONE SIZE - USE 2" STONE, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.

2. LENGTH - NOT LESS THAN 50 FEET.

3. THICKNESS - NOT LESS THAN SIX (6) INCHES.

4. WIDTH - 24 FEET MINIMUM.

5. FILTER CLOTH - WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.

6. SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.

7. MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. ALL SEDIMENT SPILLED, DROPPED, WASHED, OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.

8. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.

9. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.
-
- POSTS: STEEL, EITHER "T" OR "U" TYPE OR 2" HARDWOOD
FENCE: WOVEN WIRE, 14 1/2 GAUGE, 6" MAX. MESH OPENING
FILTER CLOTH: FILTER X, MIRAFI 100X, STABILINKA T140N OR APPROVED EQUAL
PREFABRICATED UNIT: GEOFAB, ENVIOFENCE, OR APPROVED EQUAL
1. WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES.

2. FILTER CLOTH IS TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION.

3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER, THEY SHALL BE OVERLAPPED BY SIX INCHES AND FOLDED.

4. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.
-
- NOTES:

1. CONCRETE WASHOUT AREA SHALL BE INSTALLED PRIOR TO ANY CONCRETE PLACEMENT ON SITE.

2. CONCRETE WASHOUT OUT AREA SHALL BE LINED WITH A 10 MIL IMPERMEABLE LINER AND STAKED IN PLACE.

3. SIGNS SHALL BE PLACED AT THE CONSTRUCTION ENTRANCE, AT THE WASHOUT AREA, AND ELSEWHERE AS NECESSARY TO CLEARLY INDICATE LOCATION OF CONCRETE WASHOUT AREA TO OPERATORS OF CONCRETE TRUCKS AND PUMP RIGS.

4. THE CONCRETE WASHOUT AREA SHALL BE REPAIRED AND ENLARGED OR CLEANED OUT AS NECESSARY TO MAINTAIN CAPACITY FOR WASTED CONCRETE.

5. AT THE END OF CONSTRUCTION, ALL CONCRETE SHALL BE REMOVED FROM SITE AND DISPOSED OF AT AN ACCEPTED WASTE SITE.

6. WHEN THE CONCRETE WASHOUT AREA IS REMOVED, THE DISTURBED AREA SHALL BE SEEDED AND MULCHED OR OTHERWISE STABILIZED.
-
- CONSTRUCTION SPECIFICATIONS
1. USE TEMPORARY SOIL STABILIZATION MATTING MADE OF DEGRADABLE (LASTS 6 MONTHS MINIMUM) NATURAL OR MAN-MADE FIBERS (MOSTLY ORGANIC).

2. PERFORM FINAL GRADING, TOPSOIL APPLICATION, SEEDBED PREPARATION, AND PERMANENT SEEDING IN ACCORDANCE WITH SPECIFICATIONS. PLACE MATTING WITHIN 48 HOURS OF COMPLETING SEEDING OPERATIONS UNLESS END OF WORKDAY STABILIZATION IS SPECIFIED ON THE APPROVED EROSION & SEDIMENT CONTROL PLAN.

3. OVERLAP OR ABUT ROLL EDGES PER MANUFACTURER RECOMMENDATIONS. OVERLAP ROLL ENDS BY 6 INCHES (MINIMUM), WITH THE UPSLOPE MAT OVERLAPPING ON TOP OF THE DOWNSLOPE MAT.
- 1 CONSTRUCTION ENTRANCE
- C-7.2 SCALE: NTS
- 2 SILT FENCE
- C-7.2 SCALE: NTS
- 3 CONCRETE WASHOUT AREA
- C-7.2 SCALE: NTS
- 4 SLOPE STABILIZATION MATTING
- C-7.2 SCALE: NTS
-
- NOTES:

1. SEE EROSION CONTROL PLAN FOR LOCATION OF STOCKPILE

2. REFER TO SILT FENCE DETAIL FOR INSTALLATION OF SILT FENCE

3. IF THE STOCKPILE IS TO REMAIN FOR MORE THAN 14 DAYS IT SHALL BE TEMPORARILY SEEDED FOR STABILIZATION

4. SILT FENCES TO BE MAINTAINED IN PLACE UNTIL TOPSOIL STOCKPILE HAS BEEN REMOVED
- 5 TYPICAL TOPSOIL STOCKPILE
- C-7.2 SCALE: NTS
-
- PLAN VIEW
-
- SECTION A-A
- | DIMENSION TABLE: | |
|------------------|---------------|
| PIPE DIA. | CHANNEL WIDTH |
| 12" | 2'-6" |
| 15" | 3'-0" |
| 18" | 3'-7" |
| 24" | 4'-8" |
- ROCK RIPRAP OUTLET PROTECTION
UNCONFINED DOWNSTREAM SECTION
- 4
- SCALE: NTS
- PROJECT TITLE: BRANDYWINE ESTATES PHASE 2
HENNEBERRY ROAD
ONONDAGA COUNTY, NY
- TOWN OF MANLIUS
- HARRINGTON HOMES
- 3848 HENNEBERRY ROAD
JAMESVILLE, NY 13078
- SITE DETAILS
- SHEET TITLE:
- | NO. | REVISION/ISSUE | DATE |
|-----|---|------------|
| 4 | REVISED AS PER TOWN ENGINEER'S COMMENTS | 3/09/2022 |
| 3 | REVISED AS PER TOWN ENGINEER'S COMMENTS | 2/16/2022 |
| 2 | GENERAL REVISIONS | 02/09/2022 |
| 1 | GENERAL REVISIONS | 12/01/2021 |
- PREPARED BY: NAPIERALA CONSULTING
PROFESSIONAL ENGINEER, P.E.
SITE DESIGN • ENGINEERING
110 FAYETTE STREET
MANLIUS, NEW YORK 13104
email: MNAI@NAPCON.COM
PH: (315) 682-5560 FAX: (315) 682-5544
- | | |
|-------------|-------------|
| PROJECT NO. | 20-1906 |
| DATE | 17 SEP 2020 |
| SCALE | AS SHOWN |
- C-7.2

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APPENDIX G: SHPO AND NYSDEC LETTERS



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NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Fish and Wildlife, New York Natural Heritage Program
625 Broadway, Fifth Floor, Albany, NY 12233-4757
P: (518) 402-8935 | F: (518) 402-8925
www.dec.ny.gov

September 1, 2020

Neal Zinsmeyer
Napierala Consulting
110 Fayette Street
Manlius, NY 13104

Re: Brandywine Phase 2
County: Onondaga Town/City: Manlius

Dear Mr. Zinsmeyer:

In response to your recent request, we have reviewed the New York Natural Heritage Program database with respect to the above project.

We have no records of rare or state-listed animals or plants, or significant natural communities at the project site.

Within 2.5 miles of the project site is a documented winter hibernaculum of **Indiana Bat** (*Myotis sodalis*, state and federally listed as Endangered) and **Northern long-eared Bat** (*Myotis septentrionalis*, state and federally listed as Threatened). These bat species may travel 2.5 miles or more from documented locations. The main impact of concern for bats is the removal of potential roost trees. For information about any permit considerations for your project, please contact the Permits staff at the NYSDEC Region 7 Office, Division of Environmental Permits, at dep.r7@dec.ny.gov, 315-426-7438.

For most sites, comprehensive field surveys have not been conducted. We cannot provide a definitive statement on the presence or absence of all rare or state-listed species or significant natural communities. Depending on the nature of the project and the conditions at the project site, further information from on-site surveys or other resources may be required to fully assess impacts on biological resources.

For information regarding other permits that may be required under state law for regulated areas or activities (e.g., regulated wetlands), please contact the Permits staff at the NYSDEC Region 7 Office as described above.

Sincerely,



Nicholas Conrad
Information Resources Coordinator
New York Natural Heritage Program



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Parks, Recreation and Historic Preservation

ANDREW M. CUOMO
Governor

ERIK KULLESEID
Commissioner

ARCHAEOLOGY COMMENTS

Phase IA/IB Archaeological Survey Recommendation
Project: Harrington Homes Residential Subdivision
PR#: 20PR05587
Date: 9/18/2020

Your project is in an archaeologically sensitive location. Therefore, the State Historic Preservation Office/Office of Parks, Recreation and Historic Preservation (SHPO/OPRHP) recommends a Phase IA/IB archaeological survey for components of the project that will involve ground disturbance, unless substantial prior ground disturbance can be documented. A Phase IA/IB survey is designed to determine the presence or absence of archaeological sites or other cultural resources in the project's Area of Potential Effects (APE).

If you consider the entire project area to be disturbed, documentation of the disturbance will need to be reviewed by SHPO/OPRHP. Examples of disturbance include mining activities and multiple episodes of building construction and demolition. Documentation of ground disturbance typically consists of soil bore logs, photos, or previous project plans. Agricultural activity is not considered to be substantial ground disturbance.

Please note that in areas with alluvial soils or fill archaeological deposits may exist below the depth of superficial disturbances such as pavement or even deeper disturbances, depending on the thickness of the alluvium or fill. Evaluation of the possible impact of prior disturbance on archaeological sites must consider the depth of potentially culture-bearing deposits and the depth of planned disturbance by the proposed project.

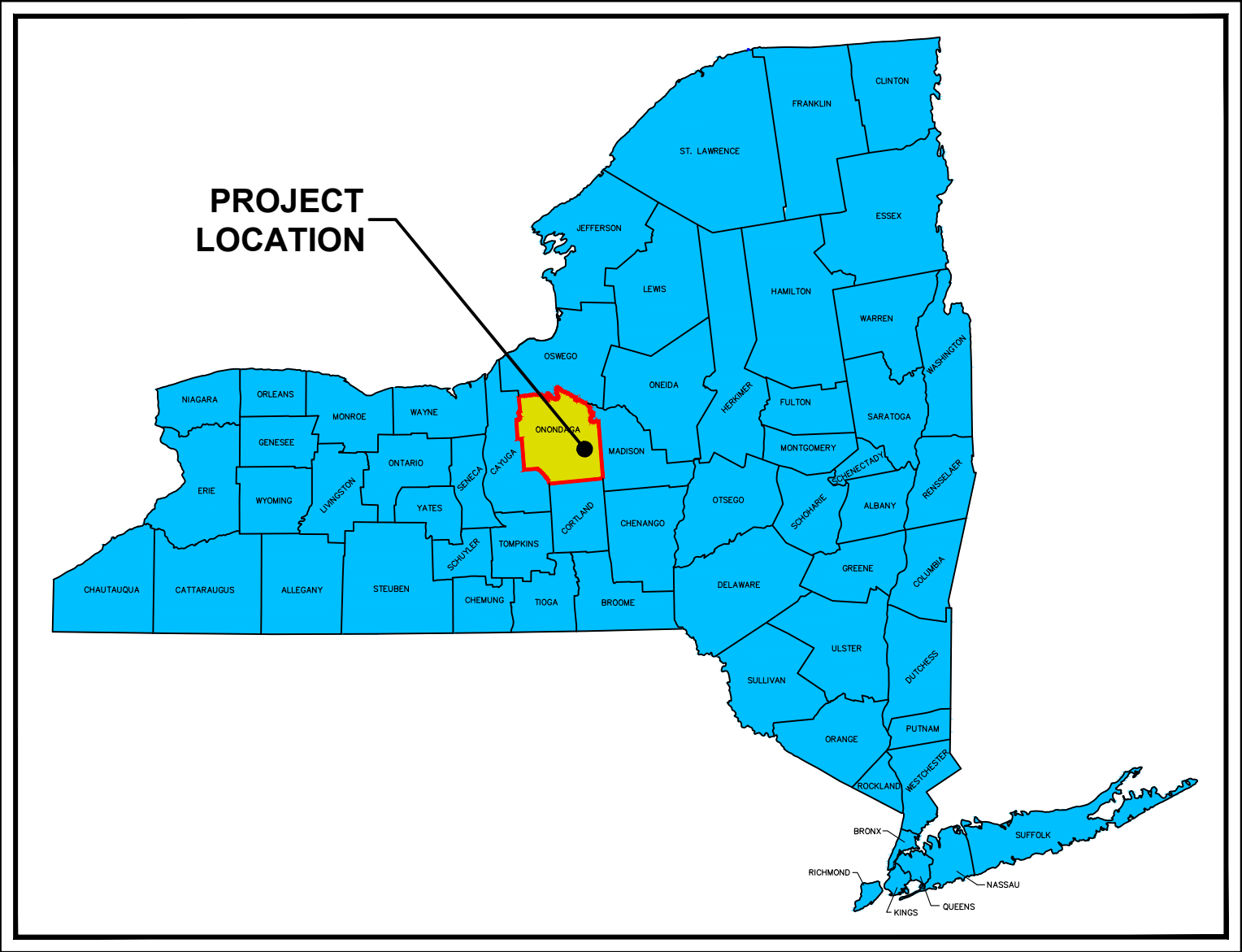
Our office does not conduct archaeological surveys. A 36 CFR 61 qualified archaeologist should be retained to conduct the Phase IA/IB survey.

Please also be aware that a Section 233 permit from the New York State Education Department (SED) may be necessary before archaeological fieldwork is conducted on State-owned land. If any portion of the project includes the lands of New York State, you should contact the SED before initiating survey activities. The SED contact is Christina Rieth and she can be reached at (518) 402-5975 or christina.rieth@nysed.gov. Section 233 permits are not required for projects on private land.

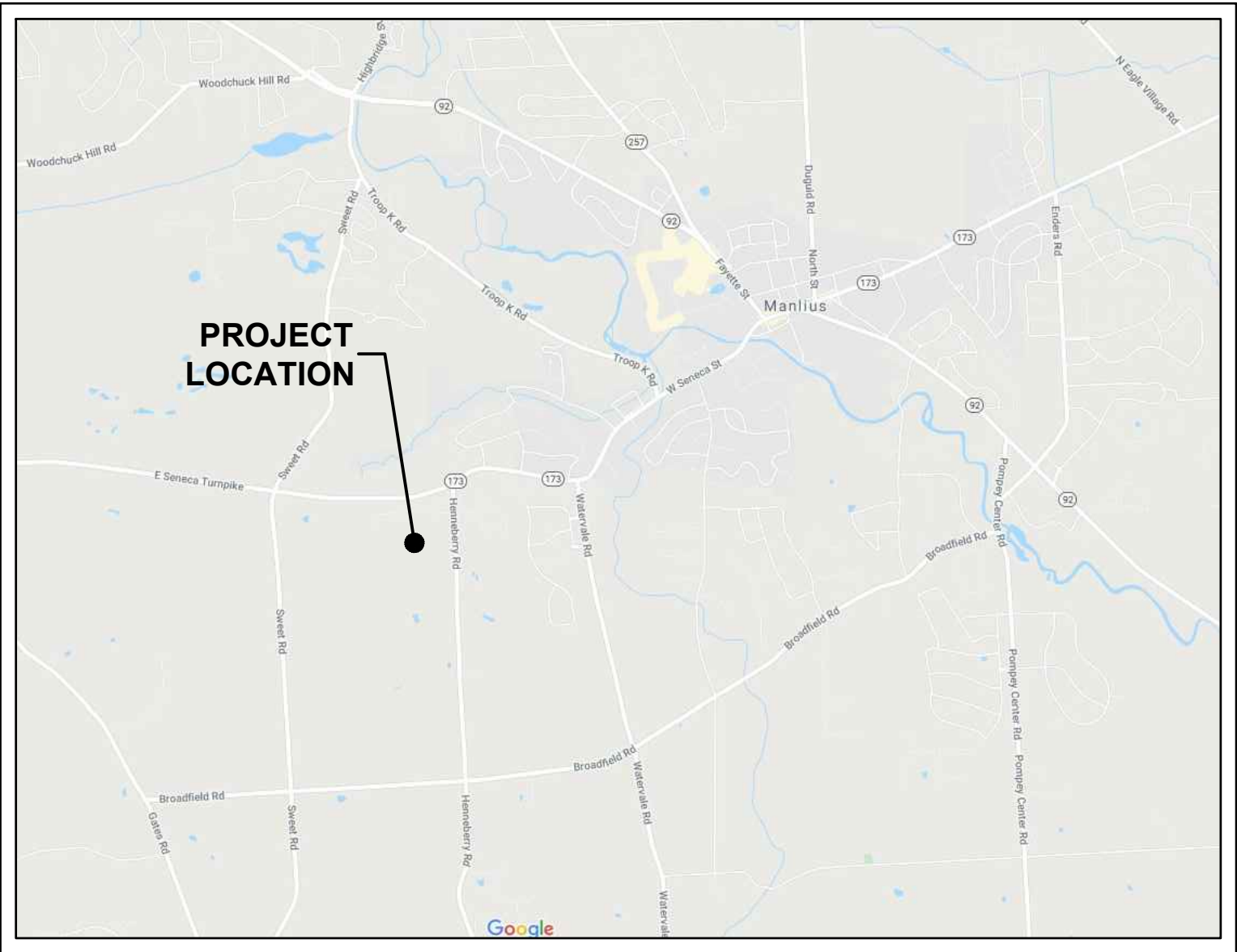
If you have any questions concerning archaeology, please contact Tim Lloyd at Timothy.Lloyd@parks.ny.gov



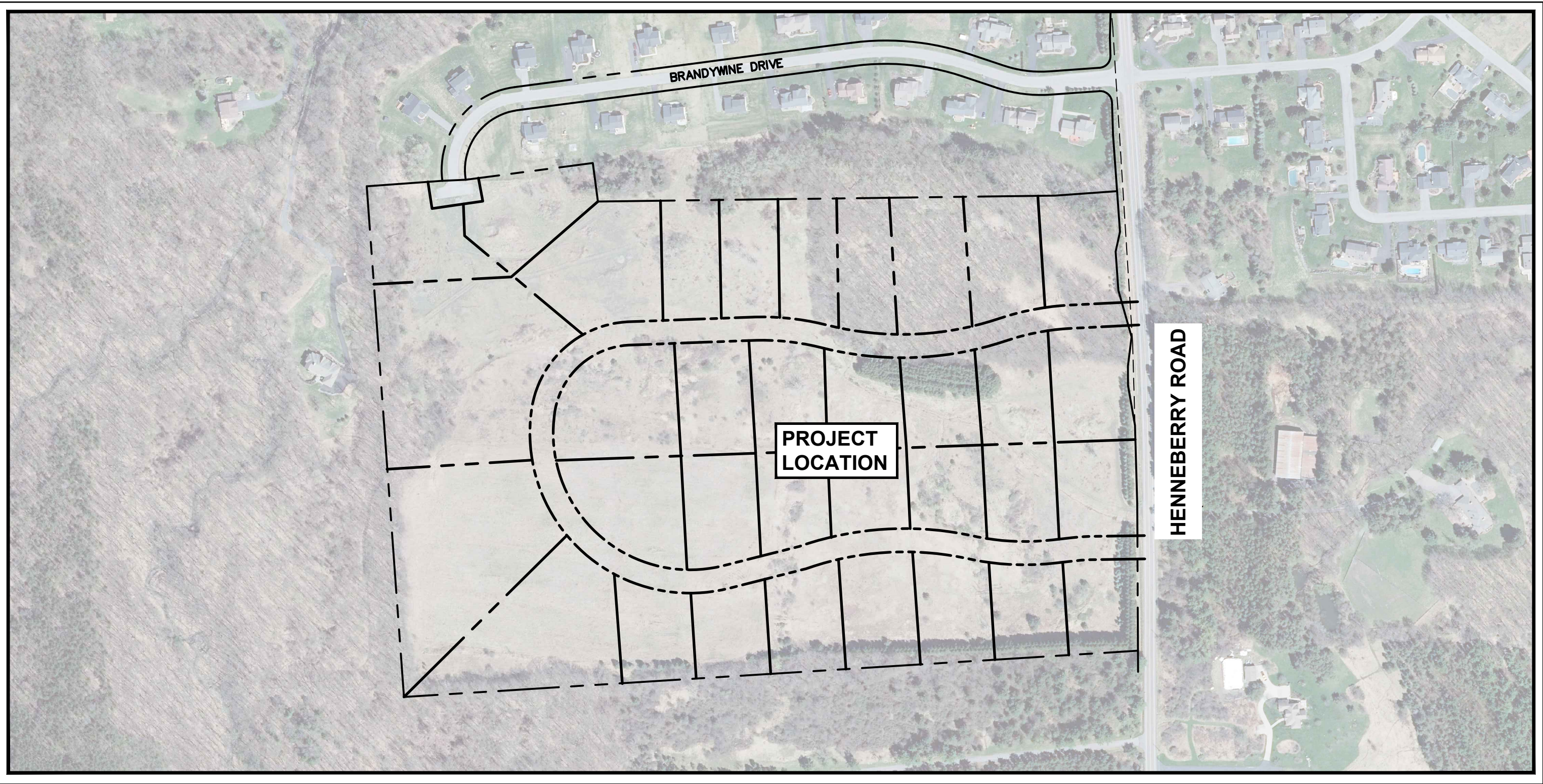
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SITE LOCATION MAP
NOT TO SCALE



PROJECT LOCATION MAP
NOT TO SCALE



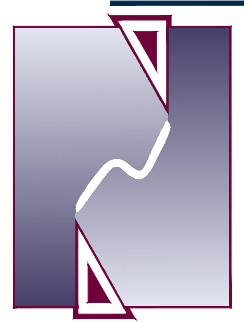
AERIAL MAP
1"=250'

PROPOSED BRANDYWINE ESTATES PHASE 2 - 34 LOT SUBDIVISION

HENNEBERRY ROAD
TAX ID: 109.-02-07.1

TOWN OF MANLIUS
ONONDAGA COUNTY
NEW YORK STATE

PREPARED BY:



**NAPIERALA
CONSULTING**
PROFESSIONAL ENGINEER, P.C.
SITE • DESIGN • ENGINEERING

110 FAYETTE STREET
MANLIUS, NEW YORK 13104
email: MNAP@NAPCON.COM
PH: (315) 682-5580 FAX: (315) 682-5544

PREPARED FOR:



**HARRINGTON
HOMES**

Your Builder for Life

3848 HENNEBERRY ROAD
JAMESVILLE, NY 13078

SHEET INDEX:

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PRELIMINARY PLANS - FINAL APPROVAL
REQUIRED BY ALL JURISDICTIONS



APPROVED BY OWNER

SHEET TITLE:

TITLE SHEET

NAME DATE

1	GENERAL REVISIONS	12/01/2021
NO.	REVISION/ISSUE	DATE

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IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS
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THIS DOCUMENT IN ANY WAY.
ANY LICENSEE WHO ALTERS THIS DOCUMENT IS
REQUIRED BY LAW TO AFFIX HIS OR HER SEAL AND THE
NOTATION "ALTERED BY" FOLLOWED BY HIS OR HER
SIGNATURE AND SPECIFIC DESCRIPTION OF THE
ALTERATIONS.

PRELIMINARY
NOT FOR CONSTRUCTION

PROJECT NO. 20-1906	DATE 17 SEP 2020
PROPOSED BRANDYWINE ESTATES PHASE 2	
HENNEBERRY ROAD TOWN OF MANLIUS ONONDAGA COUNTY, NY	

C-0

PROPERTY LINE INFORMATION TAKEN FROM A PLAN ENTITLED "TOPOGRAPHIC SURVEY, BRANDYWINE PHASE 3 - SECTION 1 PART OF FARM LOT NUMBER 96, TOWN OF MANLIUS" PREPARED BY IANUZI & ROMANS LAND SURVEYING, P.C.

THE PLANS SHOW SUBSURFACE STRUCTURES, ABOVEGROUND STRUCTURES, AND/OR UTILITIES FROM FIELD LOCATION AND RECORD MAPPING. EXACT LOCATION MAY VARY FROM THE LOCATIONS INDICATED. IN PARTICULAR, THE CONTRACTOR IS WARNED THAT THE EXACT OR EVEN APPROXIMATE LOCATION OF SUCH PIPELINES, SUBSURFACE STRUCTURES AND/OR UTILITIES IN THE AREA MAY BE DIFFERENT FROM THAT SHOWN OR MAY NOT BE SHOWN AND IT SHALL BE HIS RESPONSIBILITY TO PROCEED WITH GREAT CARE IN EXECUTING ANY WORK. THE CONTRACTOR IS TO CALL DIG SAFELY NY AT 1-800-962-7962 A MINIMUM OF 72 HOURS BEFORE DIGGING, DRILLING, OR BLASTING.

THE ENGINEER SHALL BE NOTIFIED IN WRITING OF ANY CONDITIONS THAT VARY FROM THOSE SHOWN ON THE PLANS. THE CONTRACTOR'S WORK SHALL NOT VARY FROM THE PLANS WITHOUT THE EXPRESSED APPROVAL OF THE ENGINEER.

THE CONTRACTOR IS INSTRUCTED TO COOPERATE WITH ANY AND ALL OTHER CONTRACTORS PERFORMING WORK ON THIS JOB SITE DURING THE PERFORMANCE OF THIS CONTRACT.

THE CONTRACTOR SHALL RESTORE LAWNS, DRIVEWAYS, CULVERTS, SIGNS, AND OTHER PUBLIC OR PRIVATE PROPERTY DAMAGED OR REMOVED TO AT LEAST AS GOOD A CONDITION AS BEFORE BEING DISTURBED AS DETERMINED BY THE ENGINEER. ANY DAMAGED TREES, SHRUBS, AND/OR HEDGES SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AND INCURRING THE COST OF ALL REQUIRED PERMITS, INSPECTIONS, CERTIFICATES, ETC. AND SHALL COMPLY WITH ALL PERMITS.

ALL WORK SHALL BE DONE IN STRICT COMPLIANCE WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES, STANDARDS, ORDINANCES, RULES, AND REGULATIONS.

ALL PROPOSED UTILITIES AND APPURTENANCES ARE TO BE CONSTRUCTED IN COMPLIANCE WITH THE LOCAL MUNICIPALITY'S CODES AND REGULATIONS GOVERNING THE INSTALLATION OF SUCH UTILITIES.

THE ENGINEER RESERVES THE RIGHT TO EXAMINE ANY WORK DONE ON THIS PROJECT AT ANY TIME TO DETERMINE CONFORMANCE WITH THE REQUIREMENTS OF THE CONTRACT DOCUMENTS OF THIS PROJECT AS INTENDED AND INTERPRETED BY THE ENGINEER.

MISCELLANEOUS WORK NOT SPECIFICALLY SHOWN ON THE CONTRACT DRAWINGS SUCH AS PATCHING, BLOCKING, TRIMMING, ETC. SHALL BE PERFORMED AS REQUIRED TO MAKE THE WORK COMPLETE.

THE CONTRACTOR SHALL PROTECT EXISTING PROPERTY LINE INFORMATION. ANY MONUMENTATION DISTURBED OR DESTROYED, AS JUDGED BY THE ENGINEER OR OWNER, SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE UNDER THE SUPERVISION OF A NEW YORK STATE LICENSED LAND SURVEYOR.

IT IS THE CONTRACTOR'S RESPONSIBILITY TO EXAMINE ALL PLAN SHEETS AND COORDINATE WORK WITH ALL OTHER CONTRACTS FOR THE SITE.

THE CONTRACTOR SHALL:

- A. VERIFY ALL CONDITIONS IN THE FIELD PRIOR TO COMMENCEMENT OF WORK AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES.
- B. EXAMINE THE SITE AND INCLUDE IN HIS WORK THE EFFECT OF ALL EXISTING CONDITIONS ON THE WORK.
- C. PROVIDE AND INSTALL ALL MATERIALS AND PERFORM ALL WORK IN ACCORDANCE WITH RECOGNIZED GOOD STANDARD PRACTICE.
- D. HOLD THE OWNER HARMLESS AGAINST ANY AND ALL CLAIMS ARISING FROM WORK DONE BY THE CONTRACTOR ON THE SITE.

ALL TRENCH EXCAVATION AND ANY REQUIRED SHEETING AND SHORING SHALL BE DONE IN ACCORDANCE WITH THE LATEST REVISIONS OF NEW YORK STATE INDUSTRIAL CODE RULE 23 AND OSHA REGULATIONS FOR CONSTRUCTION. SHEET PILING SHALL BE DESIGNED AND SEALED BY A NEW YORK STATE PROFESSIONAL ENGINEER.

CONTRACTOR SHALL BE RESPONSIBLE FOR DEWATERING AND THE MAINTENANCE OF SURFACE DRAINAGE DURING THE COURSE OF WORK. HE SHALL SUBMIT A DEWATERING PLAN DESIGNED AND SEALED BY A NEW YORK STATE PROFESSIONAL ENGINEER. CONTRACTOR SHALL MAINTAIN EXISTING SITE DRAINAGE PATTERNS THROUGHOUT CONSTRUCTION.

ALL BACKFILL USED IN TRENCHES EXCAVATED IN EXISTING ROADWAYS SHALL BE PLACED IN MAXIMUM 6-INCH LIFTS AND COMPACTED BY MEANS OF A MECHANICAL COMPACTOR BETWEEN LIFTS TO 90% STANDARD PROCTOR COMPACTION.

WHEN BACKFILLING AROUND PROPOSED OR EXISTING STRUCTURES, MATERIAL SHALL BE PLACED IN MAXIMUM 6-INCH LIFTS AND COMPACTED BY MEANS OF A MECHANICAL COMPACTOR BETWEEN LIFTS TO 90% STANDARD PROCTOR COMPACTION.

ALL UTILITY WORK INVOLVING CONNECTIONS TO EXISTING SYSTEMS SHALL BE COORDINATED WITH THE ENGINEER AND THE UTILITY OWNER. NOTIFY THE ENGINEER AND THE UTILITY OWNER 72 HOURS BEFORE EACH AND EVERY CONNECTION TO AN EXISTING SYSTEM IS MADE.

CONSTRUCTION OF ALL PROPOSED UTILITIES MUST BEGIN AT ITS POINT OF CONNECTION TO THE EXISTING UTILITY OR AT THE LOWEST POINT IN THE SYSTEM. RIMS, GRATES, INVERTS, CLEARANCES, AND LOCATION AT CROSSINGS MUST BE VERIFIED PRIOR TO THE BEGINNING OF CONSTRUCTION.

MAINTAIN FLOW FOR ALL EXISTING UTILITIES.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL FIELD LAYOUT. THE CONTRACTOR SHALL TAKE TIES TO ALL UTILITY CONNECTIONS AND PROVIDE MARKED-UP AS-BUILT PLANS FOR ALL UTILITIES SHOWING TIES TO CONNECTIONS, BENDS, VALVES, LENGTHS OF LINES, AND INVERTS. THE OWNER AND HIS REPRESENTATIVES SHALL REVIEW AS-BUILT PLANS SHOWING ALL UNDERGROUND UTILITIES INSTALLED OR ENCOUNTERED. THE CONTRACTOR SHALL PROVIDE ANY CORRECTION OR OMISSIONS TO THE SATISFACTION OF THE OWNER AND HIS REPRESENTATIVES BEFORE UTILITIES WILL BE ACCEPTED.

THE CONTRACTOR SHALL MAINTAIN ALL TRAFFIC IN ALL AREAS IN ACCORDANCE WITH THE NYSDOT MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.

THE CONTRACTOR SHALL MAINTAIN ACCESS TO ALL COMMERCIAL, RESIDENTIAL, AND PUBLIC PROPERTIES OR AS DIRECTED BY THE ENGINEER.

ALL EXCAVATIONS SHALL BE BACKFILLED TO EXISTING GRADE AT THE END OF EACH WORKDAY.

THE CONTRACTOR SHALL TAKE CARE TO PREVENT DAMAGE TO EXISTING UTILITIES. DAMAGED UTILITIES SHALL BE IMMEDIATELY REPAIRED BY THE CONTRACTOR AT THE CONTRACTOR'S EXPENSE.

1. THE GENERAL CONSTRUCTION CONTRACTOR RESPONSIBLE FOR ANY CLEARING OR DEMOLITION WORK AS NOTED ON THIS PLAN.
2. EXISTING FEATURES ARE BASED ON A SURVEY BY IANUZI & ROMANS LAND SURVEYING, P.C.
3. OWNER WILL PROVIDE AN 'ALL CLEAR' PRIOR TO ANY CLEARING OR DEMOLITION.
4. THE CONTRACTOR SHALL CONTACT DIG SAFELY NEW YORK AT 811 FOR UTILITY STAKEOUTS A MINIMUM OF THREE (3) BUSINESS DAYS PRIOR TO ANY DEMOLITION WORK, SITE WORK, OR EXCAVATION.
5. THE CONTRACTOR SHALL COORDINATE WITH ALL PUBLIC AND PRIVATE UTILITIES FOR RESPECTIVE REQUIREMENTS FOR THE REMOVAL/ABANDONMENT OF UTILITY MAINS/LATERALS SERVICING THE SITE.

1. MAXIMUM SLOPE FOR ALL CUT AND FILL LAWN AREAS SHALL BE 3H:1V UNLESS SHOWN OTHERWISE ON PLANS.
2. SLOPES GREATER THAN 4H:1V SHALL BE STABILIZED IMMEDIATELY AFTER GRADING OCCURS IN ACCORDANCE WITH THE NEW YORK STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL.
3. CONTRACTOR SHALL OBTAIN A COPY OF THE GEOTECHNICAL REPORT AND BECOME FAMILIAR WITH THE SOIL CONDITIONS ON THE SITE. CONTRACTOR SHALL FOLLOW ALL RECOMMENDATIONS AND REQUIREMENTS FROM THE GEOTECHNICAL ENGINEER.
4. UNLESS OTHERWISE NOTED, LIMITS OF DISTURBANCE ARE AS REPRESENTED BY PROPOSED GRADES. NO GRADING SHALL TAKE PLACE BEYOND LIMITS SHOWN.
5. ALL SLOPES STEEPER THAN 3H:1V SHALL BE TRIPPED WITH AN EROSION CONTROL PRACTICE SUCH AS A ROLLED EROSION CONTROL BLANKET OR RIRRAP. SEE DESIGNATED AREAS ON PLANS.

1. ALL CONSTRUCTION SHALL CONFORM WITH APPROPRIATE CODE AND REGULATORY REQUIREMENTS.
2. ALL UTILITIES SHALL BE INSTALLED IN ACCORDANCE WITH MUNICIPAL REGULATIONS AND THE STANDARDS OF THE PRIVATE UTILITY COMPANIES.
3. PRIVATE UTILITY SERVICE FINAL LOCATION, SIZE AND DEPTH ARE SUBJECT TO THE APPROVAL OF THE UTILITY COMPANY.
4. EXTERIOR BUILDING LIGHTING LUMINARIES SHALL BE OF SIZE AND TYPE, AND AT LOCATIONS SPECIFIED BY THE ARCHITECTS ELECTRICAL SITE PLAN AND SHALL CONFORM TO THE MUNICIPAL ZONING REQUIREMENTS.
5. WATER
WATER LINES, FITTINGS AND APPURTENANCES TO BE IN CONFORMANCE WITH APPROPRIATE CODE AND REGULATORY REQUIREMENTS. VERIFY EXISTING LINE SIZE AND LOCATION PRIOR TO CONSTRUCTION. ALL WATER LINES MUST MAINTAIN A MINIMUM 10' HORIZONTAL SEPARATION WITH SANITARY SEWER AND STORM SEWER LINES. ALL WATER MAIN AND SERVICE WORK MUST BE COORDINATED WITH THE MUNICIPAL WATER DEPARTMENT.
6. SOME LOTS SHALL BE SERVED BY INDIVIDUAL WATER SUPPLY WELLS, WITH THE EXCEPTION OF LOTS #8 AND #9 WHICH CAN BE SERVED BY OCWA PUBLIC WATER SUPPLY.
7. SANITARY SEWER
SANITARY SEWERS SHALL BE PVC PER ASTM D3034 SDR 35 UNLESS OTHERWISE NOTED. SUITABLE COUPLINGS AND ADAPTERS SHALL BE PROVIDED AT BUILDING CONNECTIONS.
8. STORM DRAINAGE
STORM DRAINAGE PIPING SHALL BE SMOOTH INTERIOR CORRUGATED PLASTIC PIPE (SICPP) UNLESS OTHERWISE NOTED (SICPP). PIPE JOINTS AND FITTINGS SHALL CONFORM TO AASHTO M252 OR AASHTO M294.
9. ELECTRIC AND GAS
ALL ELECTRIC AND GAS INSTALLATION SHALL BE COORDINATED WITH NATIONAL GRID.

	----- PROPOSED BUILDING
	----- PROPERTY LINE
	----- PROPOSED EASEMENT LINE
	----- PROPOSED STORM INLET
	----- PROPOSED MANHOLE (STORM OR S
	----- PROPOSED SANITARY PIPE
	----- PROPOSED STORM PIPE
	----- PROPOSED WATER PIPE
	----- PROPOSED GAS PIPE
	----- PROPOSED UNDERGROUND ELECTRIC

TEMPORARY SEEDING MIXTURES			PERMANENT SEEDING MIXTURES		
	LBS./ACRE	LBS./1000 SQ. FT.	SEED MIXTURE NO. 1	LBS./ACRE	
FOR SPRING, SUMMER OR EARLY FALL SEEDINGS:					
A. ANNUAL RYEGRASS --OR--	30	0.70	CREEPING RED FESCUE (var. ENSYLVA)	10	
B. PERENNIAL RYEGRASS	30	0.70	PERENNIAL RYE GRASS (var. PENNFINE)	10	
			SEED MIXTURE NO. 2		
FOR LATE FALL OR EARLY WINTER			SWITCHGRASS (var. SHELTER, PATHFINDER, TRAILBLAZER, OR BLACKWELL)	20	
A. WINTER RYE (AROSTOOK)	100	2.50	SEED MIXTURE NO. 3		
MULCH THE AREA WITH HAY OR STRAW AT 2 TONS/ACRE (APPROXIMATELY 2 LARGE ROLLED BALES/ACRE).			BIRDSFOOT TREFOIL (var. EMPIRE, PARDEE)	10	
			REDTOP	2	
			TALL FESCUE (var. KY 31, REBEL)	10	
MULCH ANCHORING IS REQUIRED WHERE WIND OR AREAS OF CONCENTRATED WATER ARE OF CONCERN.			SEED MIXTURE NO. 4		
			CREEPING RED FESCUE (var. ENSYLVA)	20	
PERMANENT SEEDINGS SHOULD TAKE PLACE IN EARLY SPRING. PROPER MULCHING AND ADEQUATE MOISTURE MUST BE PROVIDED FOR PERMANENT SEEDING. RESEEDING OF FAILED AREAS SHALL TAKE PLACE DURING LATE SUMMER/EARLY FALL OR DURING THE FOLLOWING SPRING.			CHEWINGS FESCUE (COMMON)	20	
			PERENNIAL RYE GRASS (var. PENNFINE)	5	
			RED CLOVER (COMMON)	10	
FERTILIZER:			SEED MIXTURE 1 TO BE APPLIED TO SHADED AREAS.		
5% NITROGEN			SEED MIXTURE 2 IS IN PURE LIVE SEED. TO BE APPLIED TO AREAS UPLAND OF WETLANDS AND ALONG STORMWATER MITIGATION BASIN BANKS.		
0% PHOSPHORUS					
5% POTASH			SEED MIXTURE 3 TO BE APPLIED TO ALL SWALES AND WATERWAYS. WHITE CLOVER OR LADINO CLOVER MAY BE SUBSTITUTED FOR BRIDSFOT TREFOIL AND SEEDDED AT THE SAME RATE		
HYDROMULCH			PERENNIAL RYEGRASS MAY BE SUBSTITUTED FOR REDTOP BUT INCREASE SEEDING RATE TO 5 LBS./ACRE (0.1 LBS./1000 SQ. FT.)		
HYDROMULCH SHALL BE A WOOD--FIBER COMPOSITION (50% PAPER, 50% WOOD)			SEED MIXTURE 4 TO BE APPLIED TO ALL AREAS. (NOT FOR USE IN PLAYGROUNDS OR AS TURF)		
IF MULCHING IS NOT APPLIED WITH HYDROSEED MIXTURE, APPROVED MULCHING, CONSISTING OF STALKS OF WHEAT, OATS, OR RYE, SHALL BE SPREAD EVENLY AT A RATE OF 2 TONS PER ACRE. MULCH IS TO BE TACKED INTO PLACE.					

PROJECT TITLE: **BRANDYWINE ESTATES PHASE 2**
HENNEBERRY ROAD

TOWN OF MANLIUS **ONONDAGA COUNTY, NY**

HARRINGTON HOMES

3848 HENNEBERRY ROAD
JAMESVILLE, NY 13078

PREPARED FOR:

[illegible]

PREPARED BY:

**NAPIERALA
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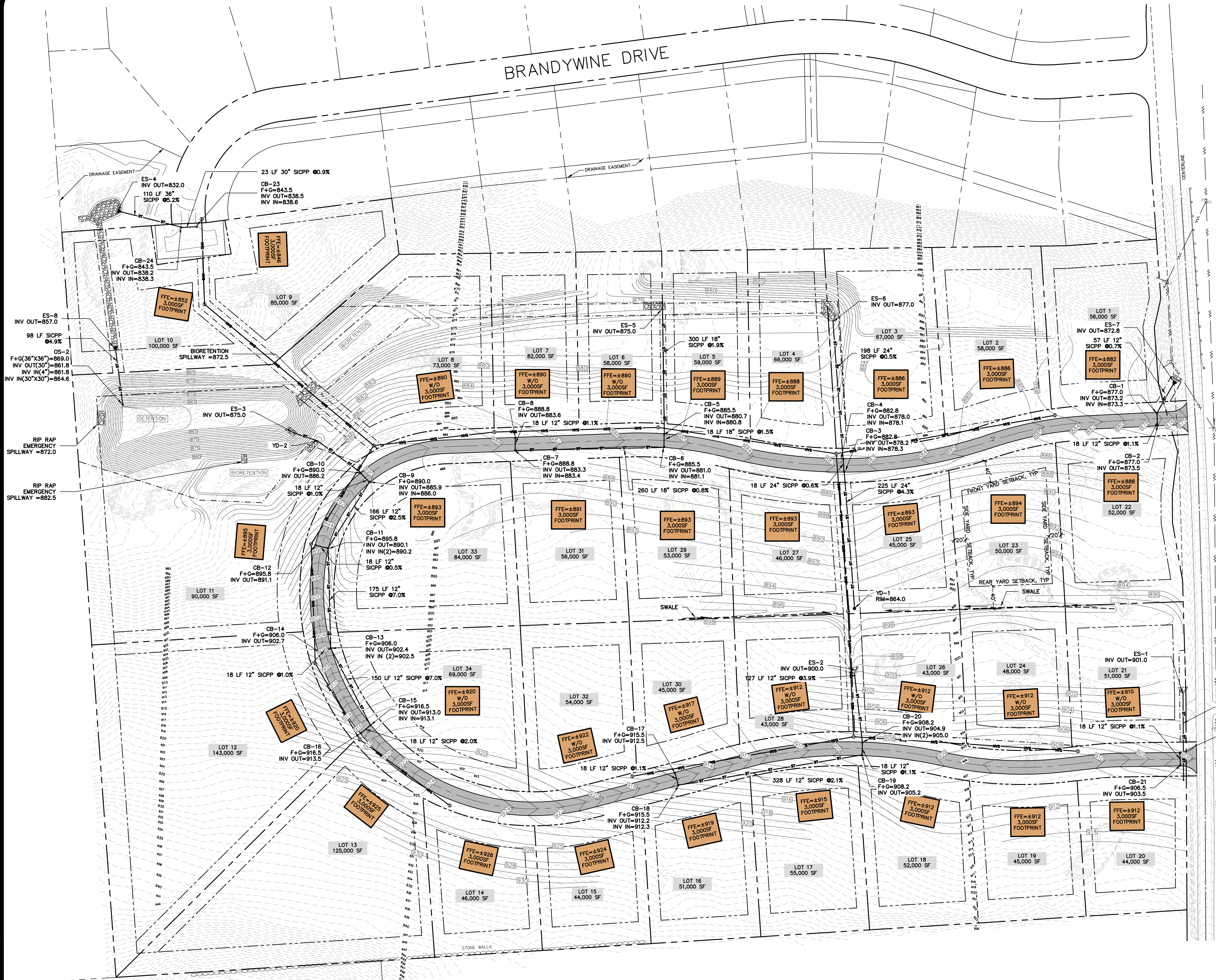
The logo for NAPIERALA CONSULTING features a stylized 'N' and 'C' intertwined within a square frame. The 'N' is formed by a thick, dark line, and the 'C' is a lighter, curved shape that fits into the negative space of the 'N'. The entire logo is set against a light background.

PROJECT NO.	20-1906
DATE	17 SEP 2020
SCALE	NTS

5

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SITE CRITERIA CHECKLIST		
PROJECT SITE INFORMATION		
ADDRESS	HENNEBERRY ROAD (COUNTY ROUTE 182)	
TAX MAP ID NO.	109.-02.-07.1	
BOUNDARY SURVEY	PROPERTY LINE INFORMATION TAKEN FROM SURVEY BY IANUZI AND ROMANS	
TOTAL SITE AREA	54.746 ACRES	
LAND USE	SINGLE FAMILY RESIDENTIAL - 34 LOTS	
ZONING INFORMATION		
ZONING DISTRICT	R-1, RESIDENTIAL DISTRICT	
	REQUIRED	PROVIDED
MIN. LOT FRONTAGE	150'	150' MIN.
MIN. LOT AREA	40,000 SF	40,000 SF MIN.
MINIMUM FRONT YARD	40'	40' MIN.
MINIMUM REAR YARD	40'	40' MIN.
MINIMUM SIDE YARD	20'	20' MIN.

PROJECT TITLE:
**BRANDYWINE ESTATES PHASE 2
HENNEBERRY ROAD**

TOWN OF MANLIUS
ONONDAGA COUNTY, NY

PREPARED FOR:
HARRINGTON HOMES
3848 HENNEBERRY ROAD
JAMESVILLE, NY 13078

SHEET TITLE:
OVERALL GRADING PLAN

NO.	REVISION/ISSUE	DATE
1	GENERAL REVISIONS	12/01/2021

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PROJECT NO.
20-1906

DATE
17 SEP 2020

SCALE
1" = 80'

SHEET
C-2

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PLAN SEAL BY:
NEW YORK STATE
NY REGISTRATION # 007211



NOTE:
STORM CONVEYANCE SYSTEM PIPE SLOPE, RIM, AND
INVERT ELEVATIONS CAN BE SEEN ON THE OVERALL
GRADING PLAN, SHEET C-2.

PROJECT TITLE:
**BRANDYWINE ESTATES PHASE 2
HENNEBERRY ROAD**
TOWN OF MANLIUS
ONONDAGA COUNTY, NY
PREPARED FOR:
HARRINGTON HOMES
3848 HENNEBERRY ROAD
JAMESVILLE, NY 13078

OVERALL UTILITY PLAN

NO.	REVISION/ISSUE	DATE
1	GENERAL REVISIONS	12/01/2021

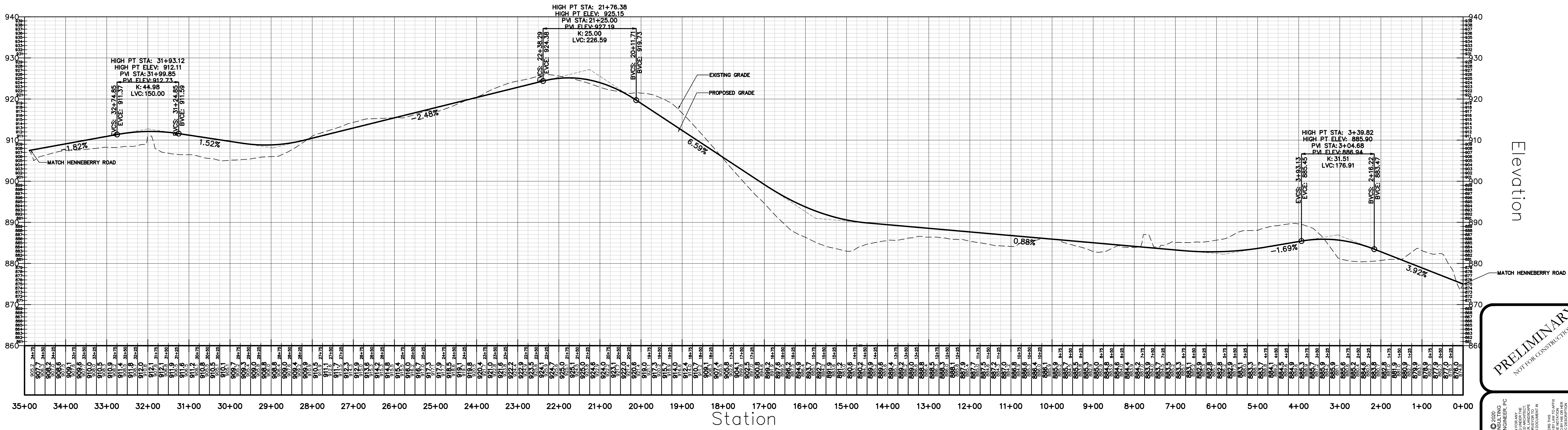
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PROJECT NO.: 20-1906
DATE: 17 SEP 2020
SCALE: 1" = 80'
C-3

PRELIMINARY
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PLAN SEAL BY:
NYS REGISTRATION # 02711



1 OVERALL ROAD PLAN
C-4 SCALE: 1"=100'



2 OVERALL ROAD PROFILE
C-4 SCALE: H: 1"=120' V: 1"=12'

HENNEBERRY ROAD
(C.R. No. 182)
(CHERRY VALLEY TURNPIKE)

PROJECT TITLE: BRANDYWINE ESTATES PHASE 2
HENNEBERRY ROAD
TOWN OF MANLIUS ONONDAGA COUNTY, NY
PREPARED FOR: HARRINGTON HOMES
3848 HENNEBERRY ROAD
JAMESVILLE, NY 13078

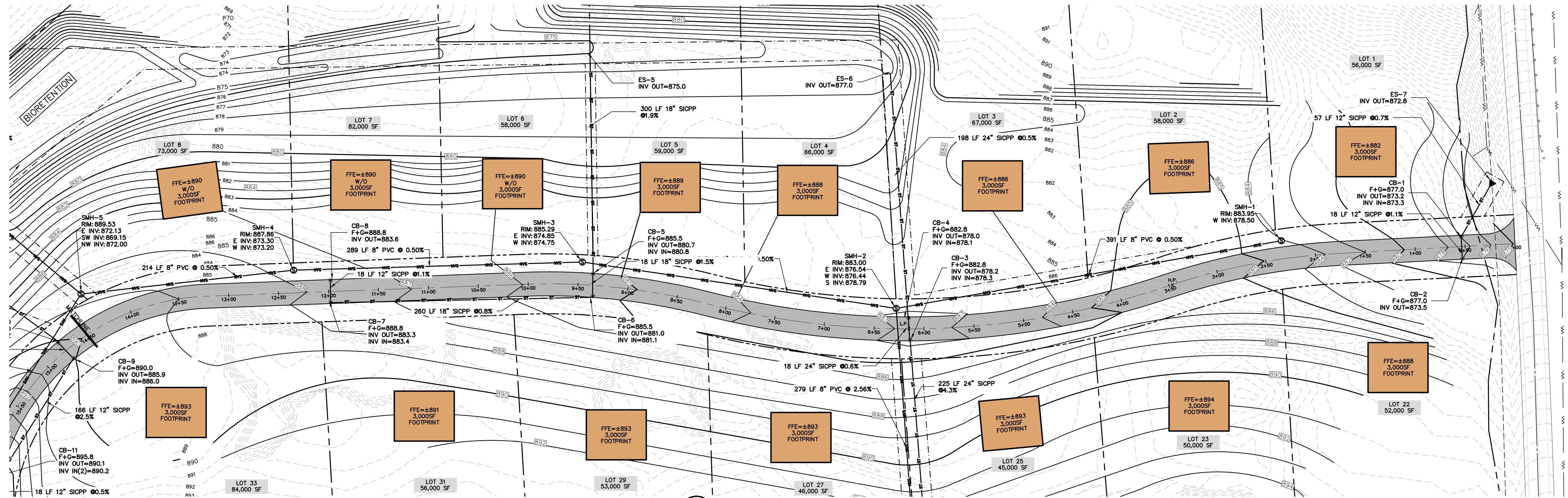
OVERALL ROAD PROFILE

NO.	REVISION/ISSUE	DATE
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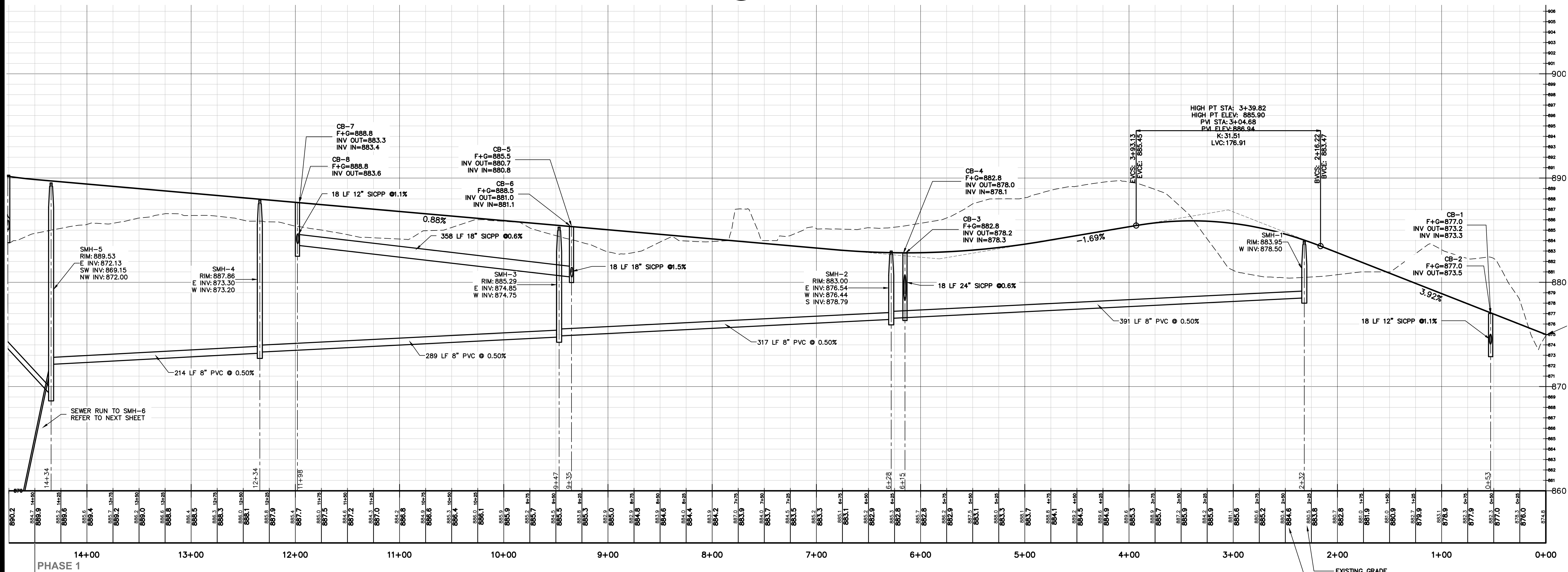
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PROJECT NO: 20-1906
DATE: 17 SEP 2020
SCALE: AS NOTED
SHEET: C-4



1 ROAD A
C-5.0 SCALE: 1"=50'



2 ROAD A PROFILE - SUBDIVISION PHASE 1
C-5.0 SCALE: H: 1"=50' V: 1"=5'

PROJECT TITLE: **BRANDYWINE ESTATES PHASE 2**
HENNEBERRY ROAD
TOWN OF MANLIUS
ONONDAGA COUNTY, NY
PREPARED FOR: **HARRINGTON HOMES**
3848 HENNEBERRY ROAD
JAMESVILLE, NY 13078

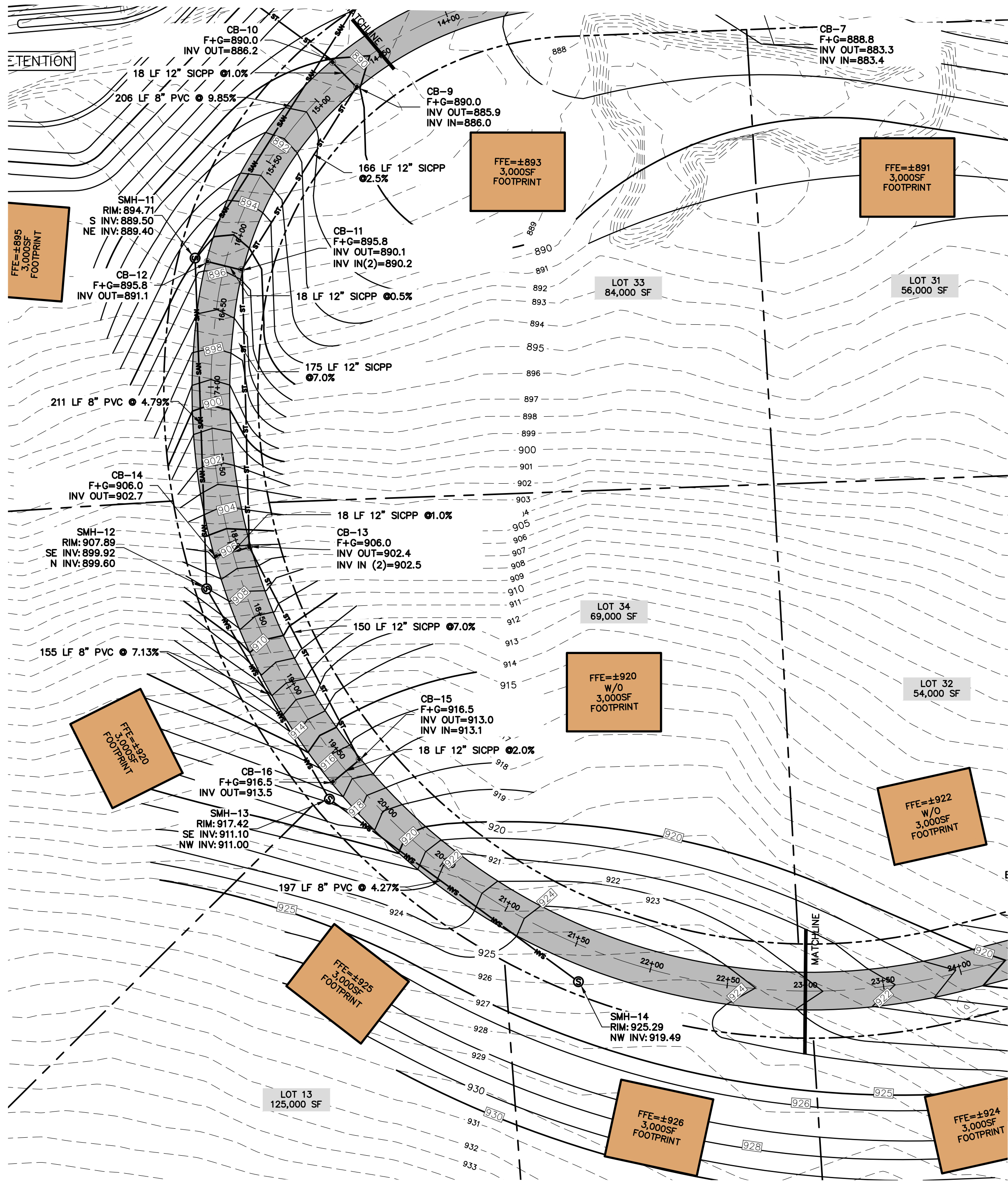
ROAD PROFILE PLAN

NO.	REVISION/ISSUE	DATE
1	GENERAL REVISIONS	12/01/2021

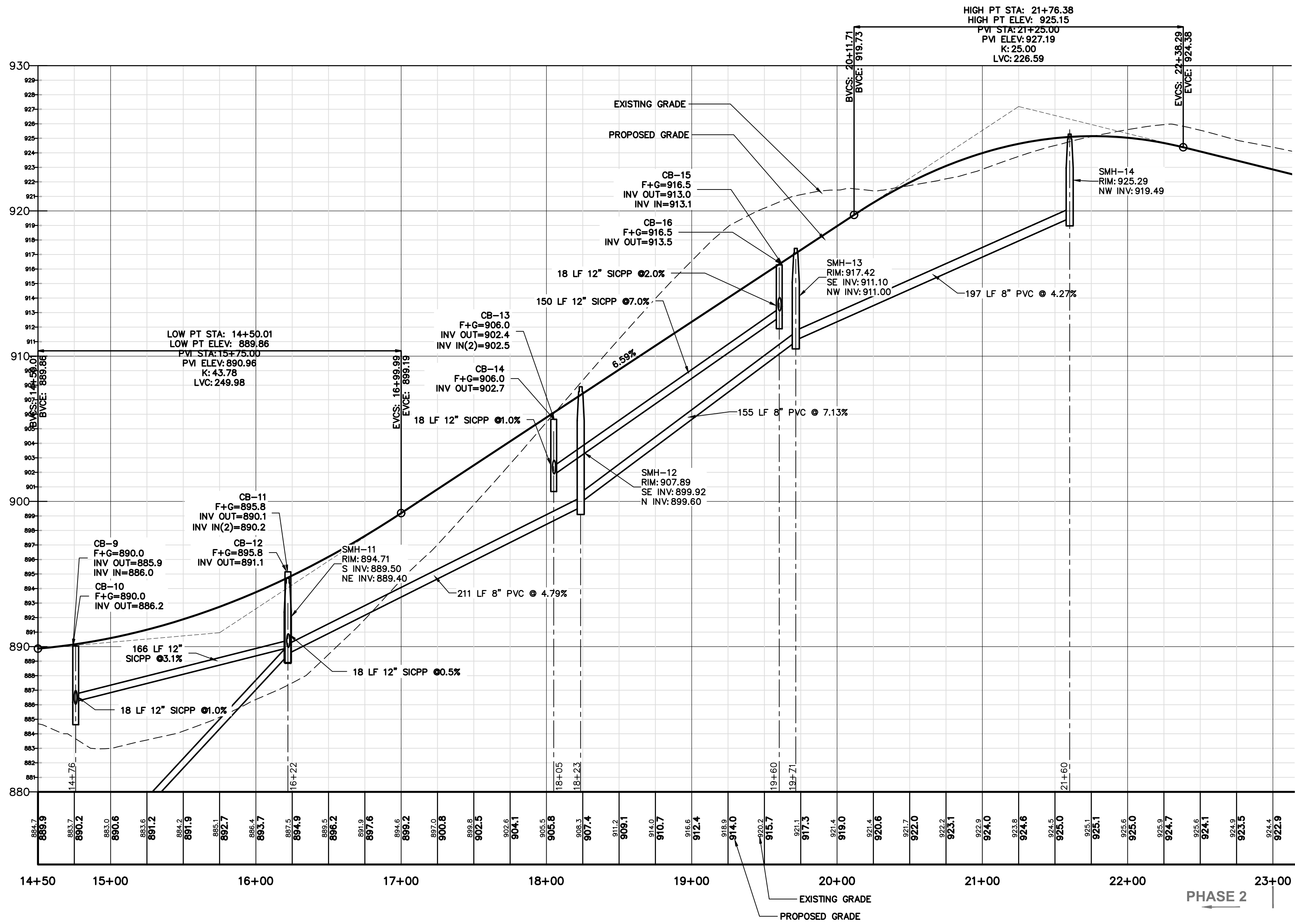
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PROJECT NO: **20-1906**
DATE: **17 SEP 2020**
SCALE: **1" = 50'**

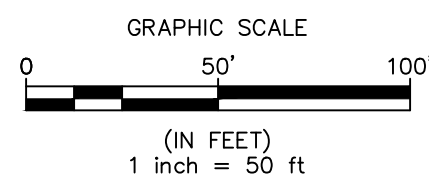
C-5.0



1 ROAD A PLAN
C-5.1 SCALE: 1"=50'



2 ROAD A PROFILE - SUBDIVISION PHASE 2
C-5.1 SCALE: H:1"=50' V:1"=5'



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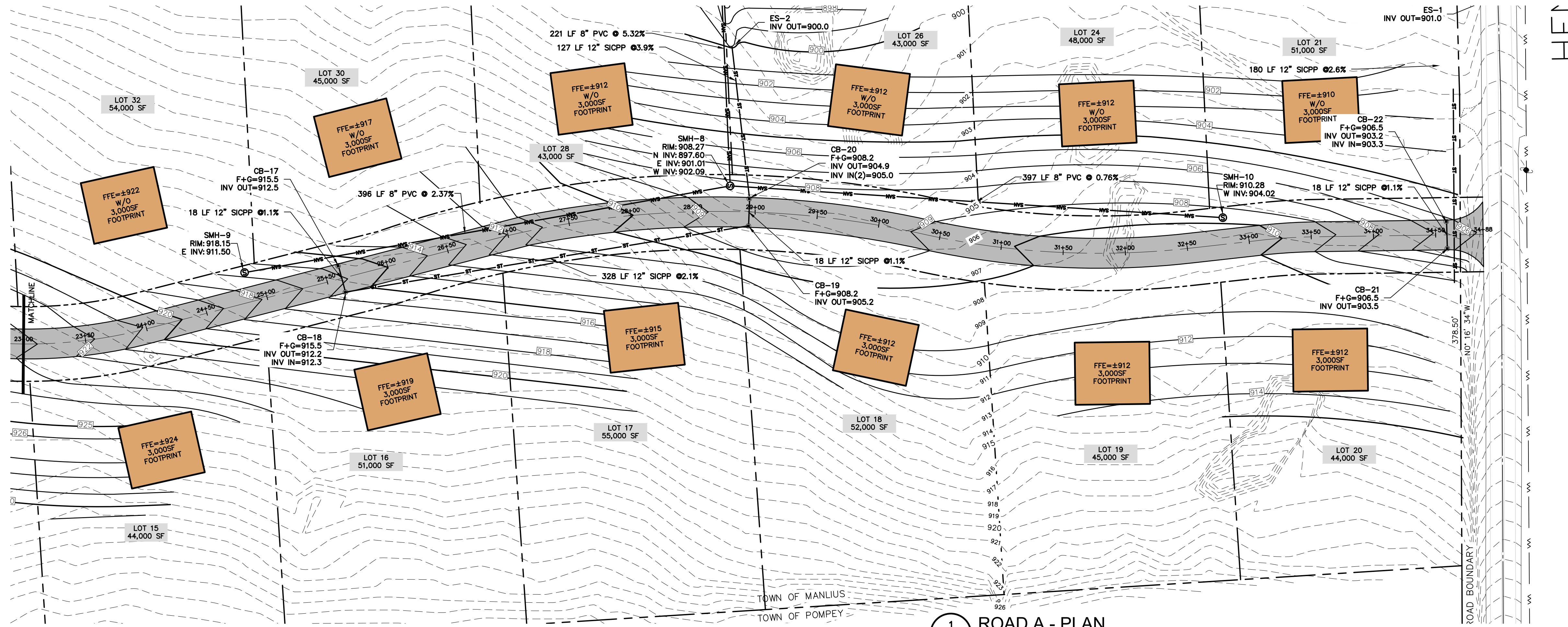
SHEET TITLE:
ROAD PROFILE PLAN

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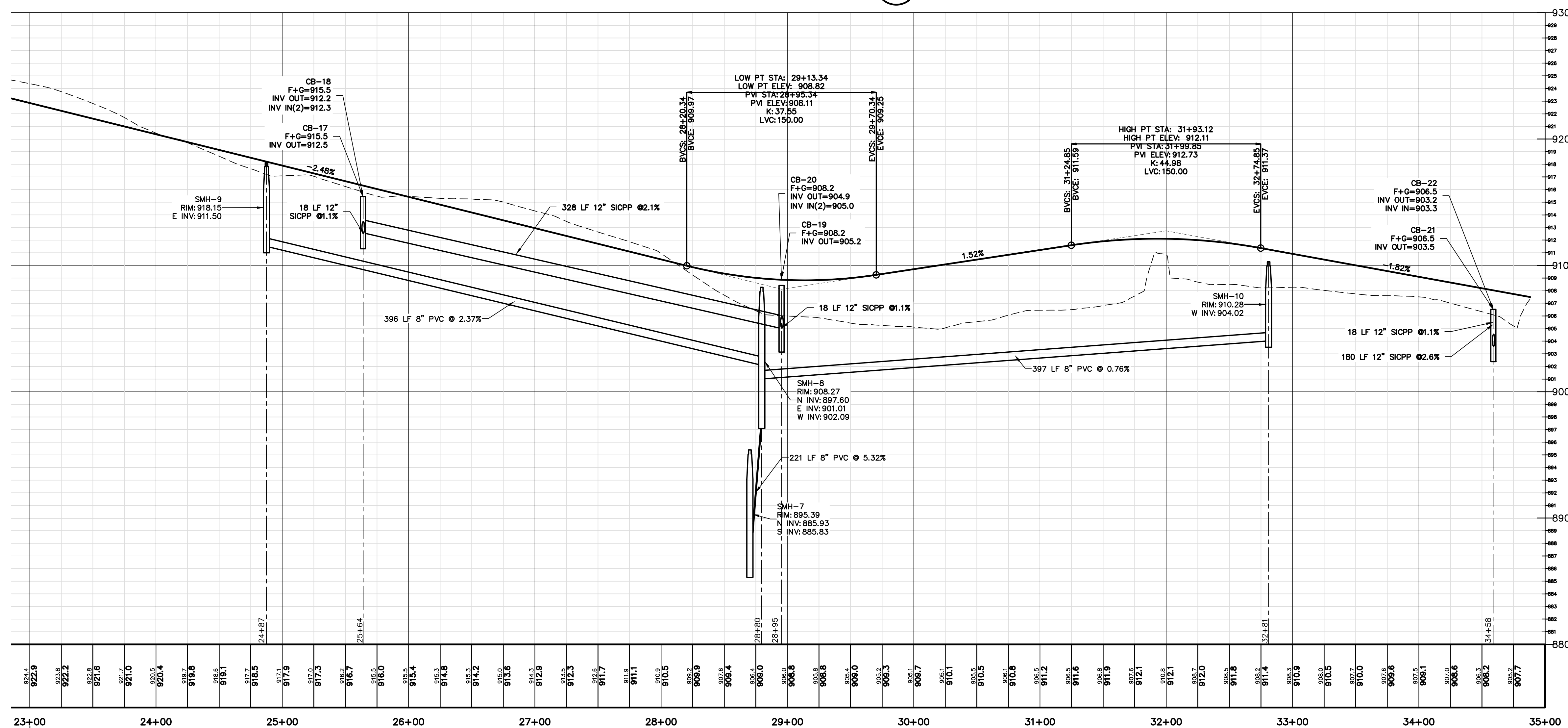
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PROJECT NO.
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SCALE
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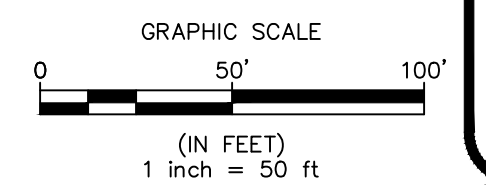
C-5.1



1 ROAD A - PLAN
C-5.2 SCALE: 1"=50'



2 ROAD A PROFILE - SUBDIVISION PHASE 3
C-5.2 SCALE: H: 1"=50' V: 1"=5'



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PROJECT TITLE:
**BRANDYWINE ESTATES PHASE 2
HENNEBERRY ROAD**

TOWN OF MANLIUS
ONONDAGA COUNTY, NY

PREPARED BY:
HARRINGTON HOMES
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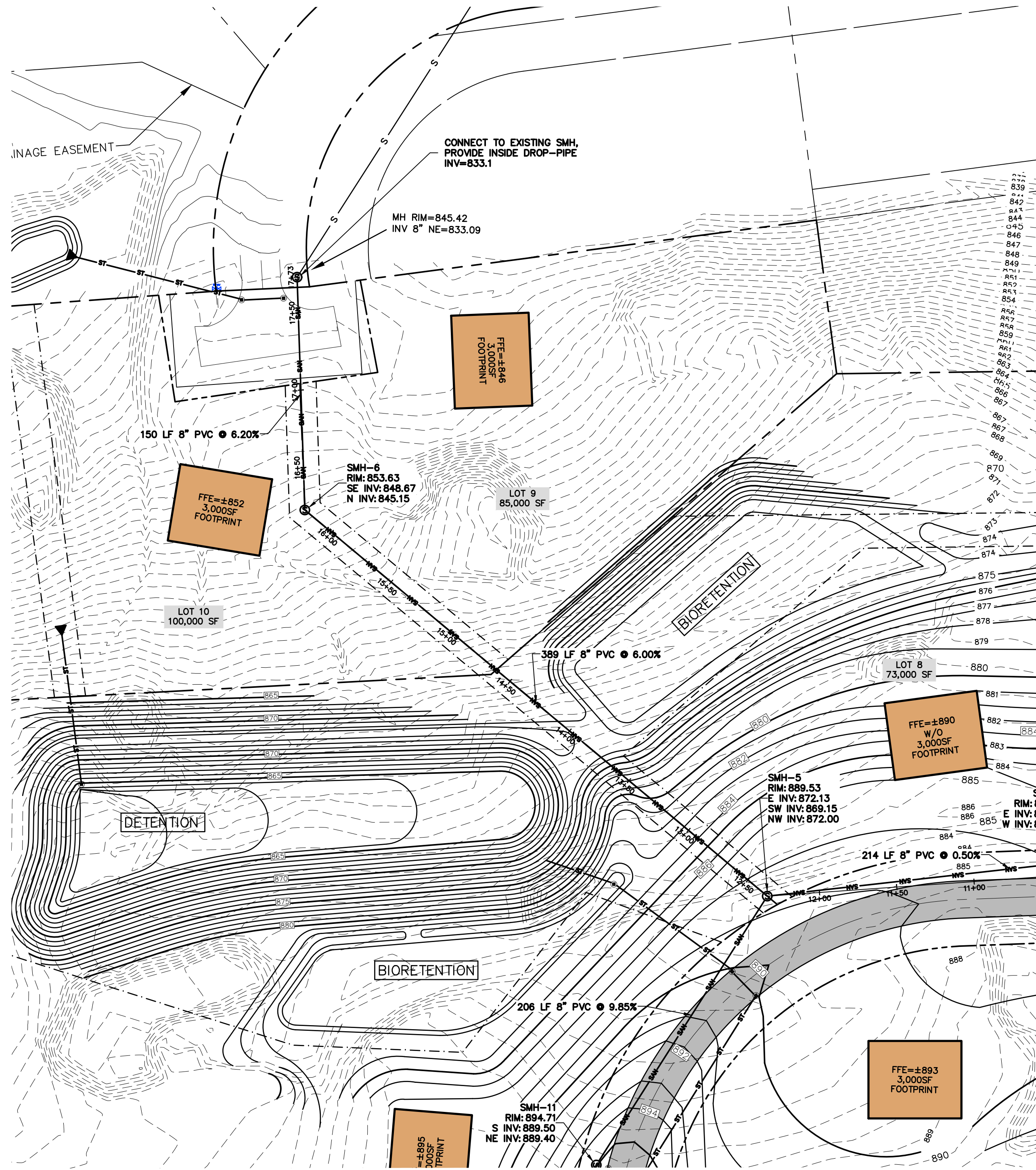
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ROAD PROFILE PLAN

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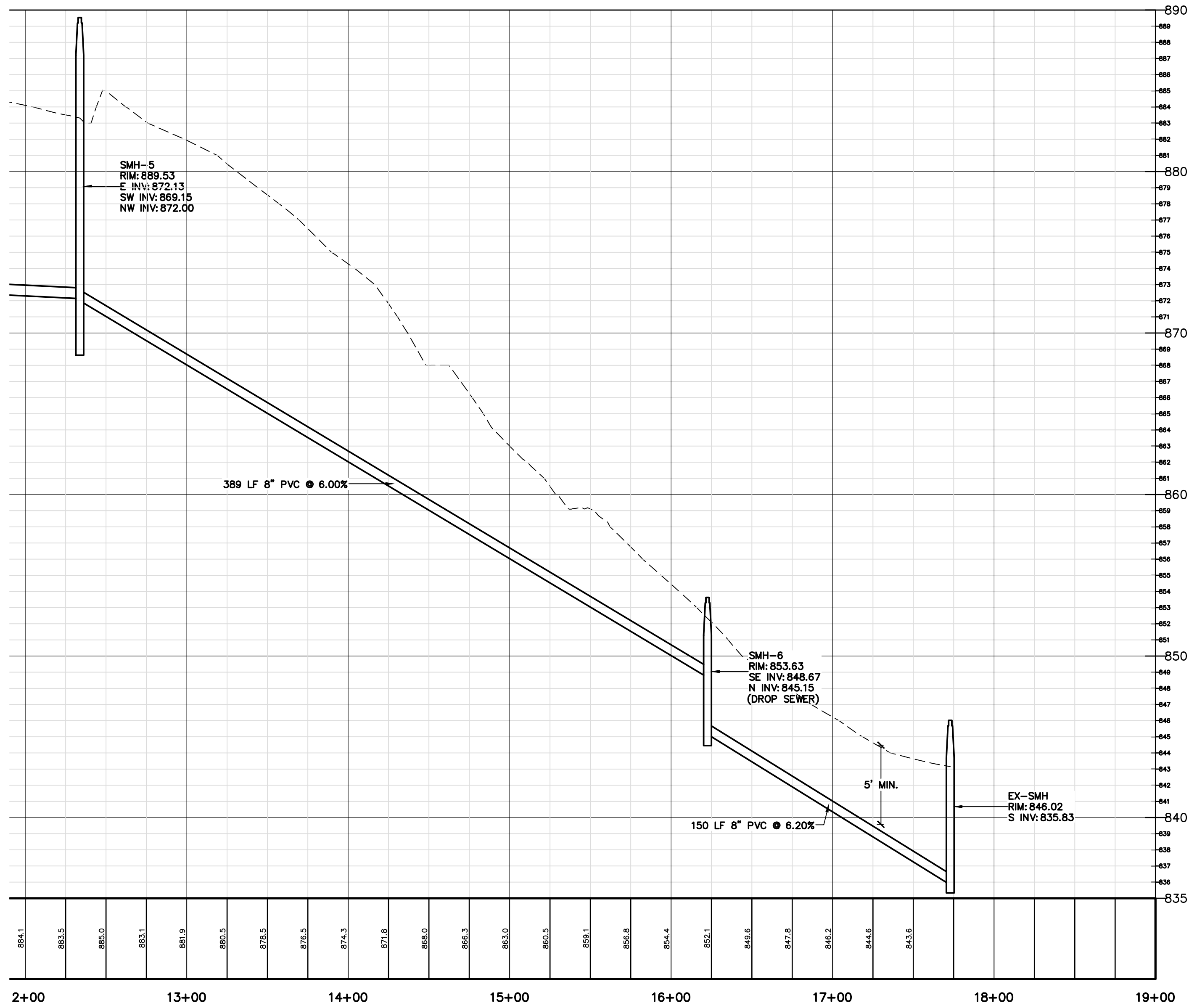
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PROJECT NO.: 20-1906
DATE: 17 SEP 2020
SCALE: 1" = 50'

C-5.2



2 SEWER PLAN
C-6.0 SCALE: 1"=50'



3 SEWER PROFILE
C-6.0 SCALE: H:1"=50' V:1"=5'



1 OVERALL SEWER LAYOUT
C-6.0 SCALE: NTS

PROJECT TITLE: BRANDYWINE ESTATES PHASE 2
HENNEBERRY ROAD
TOWN OF MANLIUS ONONDAGA COUNTY, NY
PREPARED FOR: HARRINGTON HOMES
3848 HENNEBERRY ROAD
JAMESVILLE, NY 13078

SEWER PROFILE PLAN

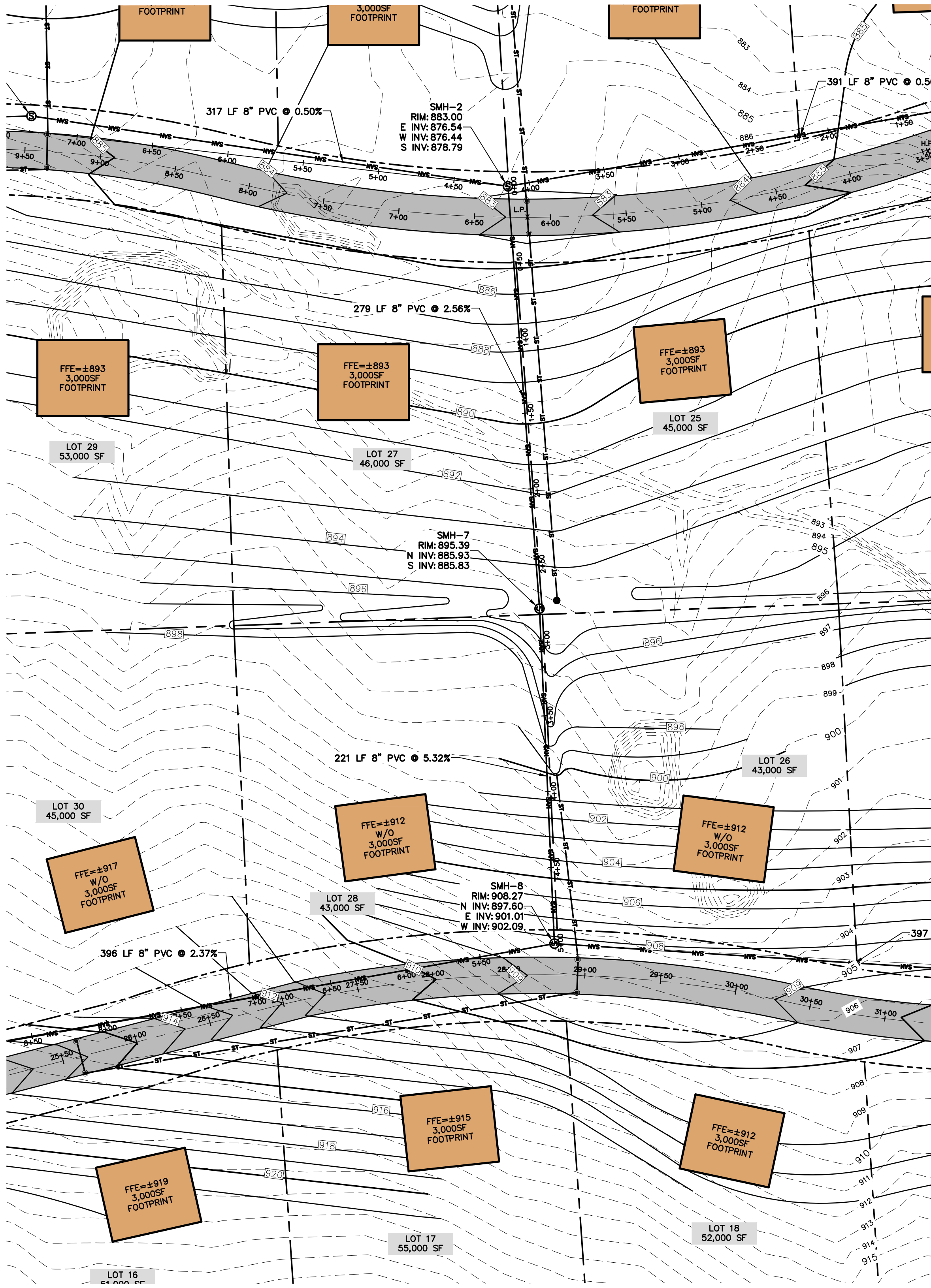
NO.	REVISION/ISSUE	DATE
1	GENERAL REVISIONS	12/01/2021

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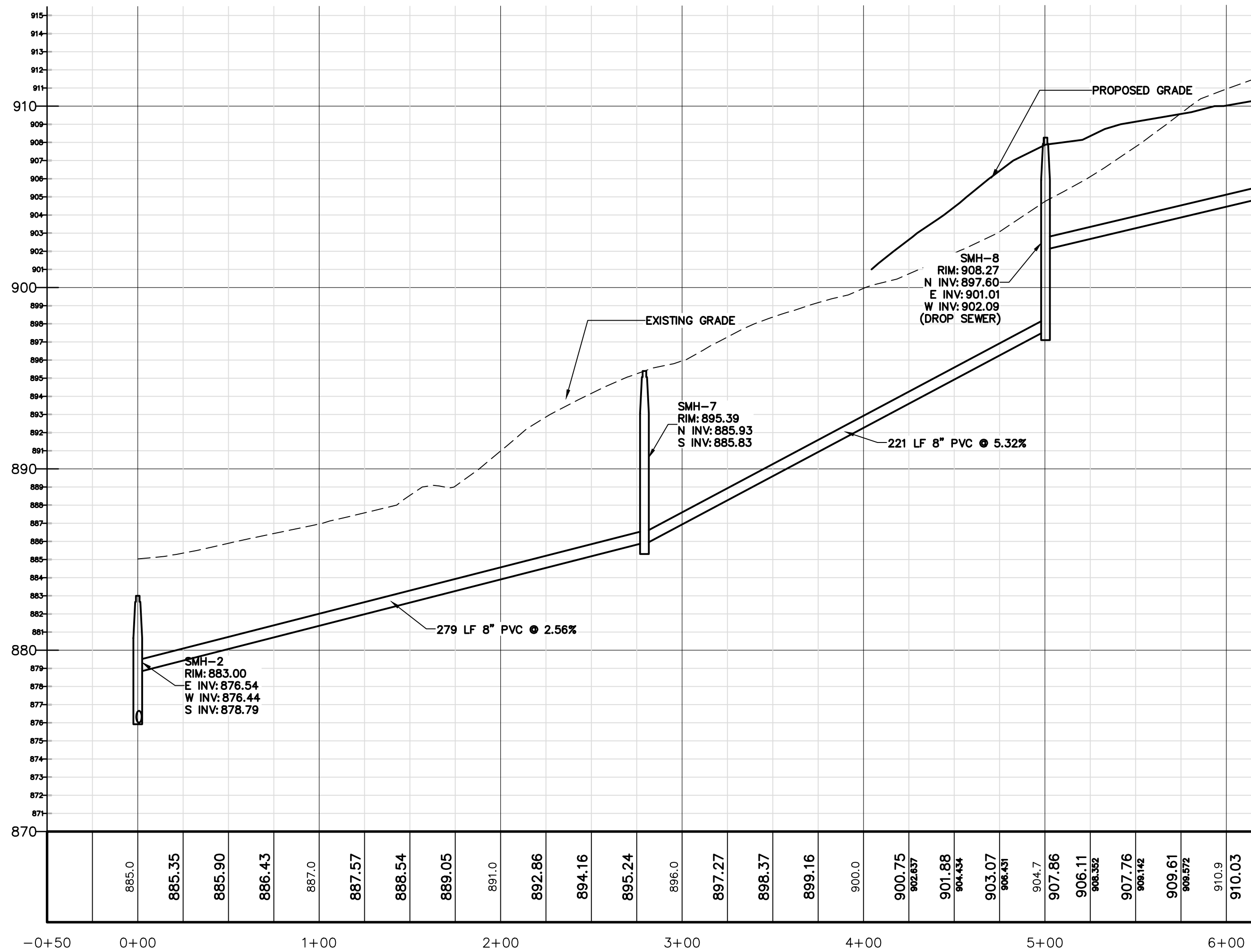
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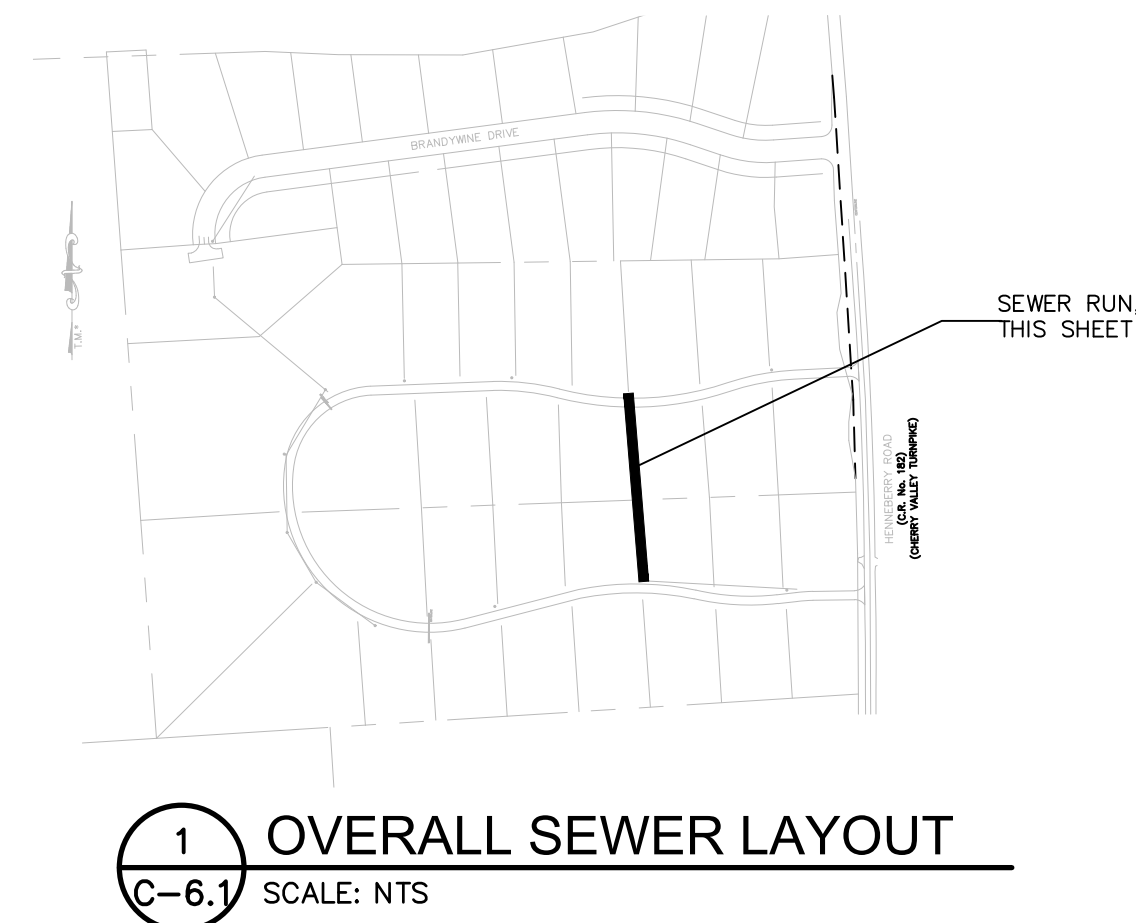
PROJECT NO. 20-1906
DATE 15 SEP 2020
SCALE 1" = 50'
SHEET C-6.0



2 SANITARY SEWER PLAN
C-6.1 SCALE: 1"=50'



3 SANITARY SEWER PROFILE
C-6.1 SCALE: H: 1"=50' V: 1"=5'



1 OVERALL SEWER LAYOUT
C-6.1 SCALE: NTS

PROJECT TITLE:
**BRANDYWINE ESTATES PHASE 2
HENNEBERRY ROAD**
TOWN OF MANLIUS ONONDAGA COUNTY, NY
PREPARED FOR:
HARRINGTON HOMES
3848 HENNEBERRY ROAD
JAMESVILLE, NY 13078

SEWER PROFILE PLAN

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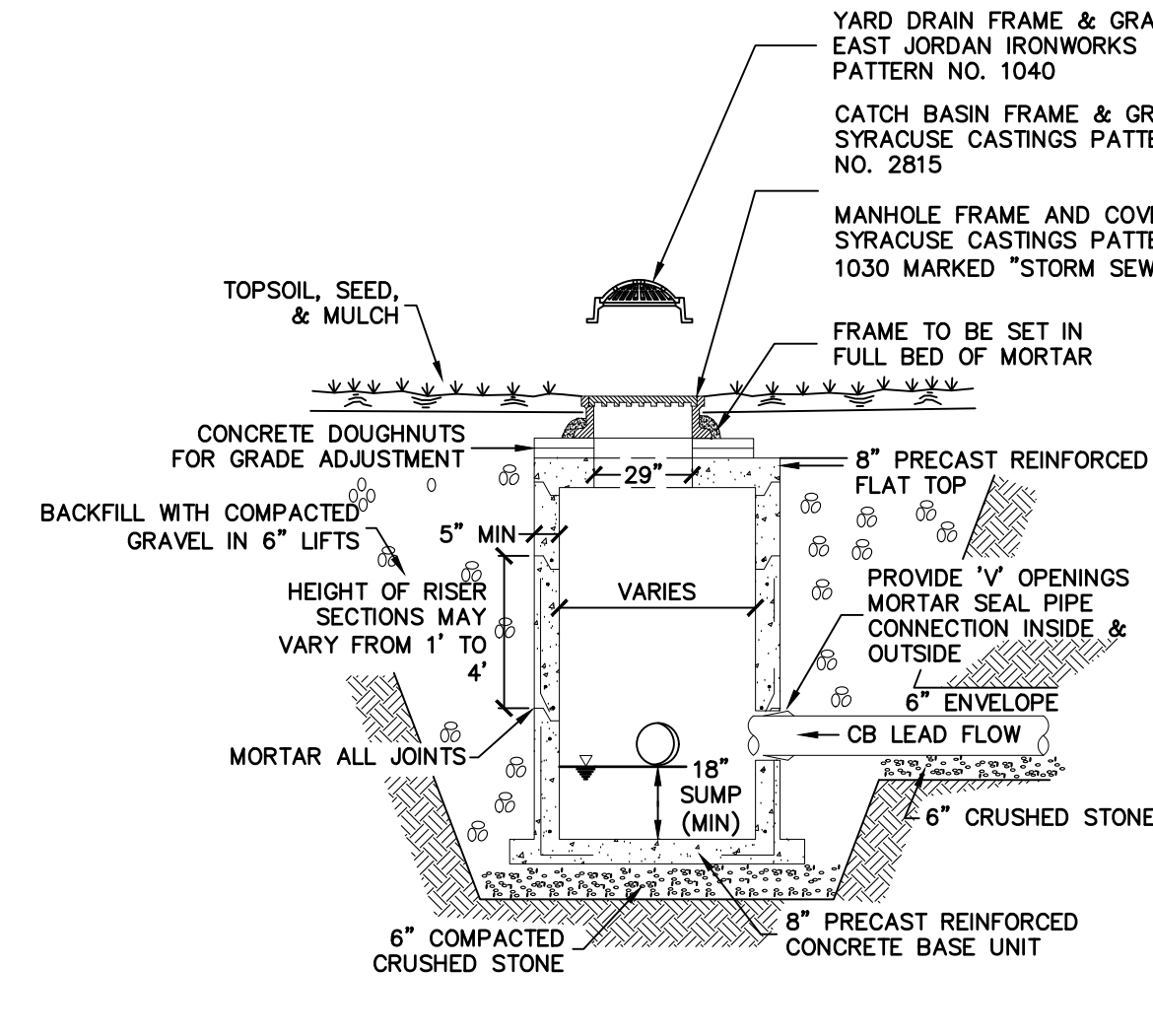
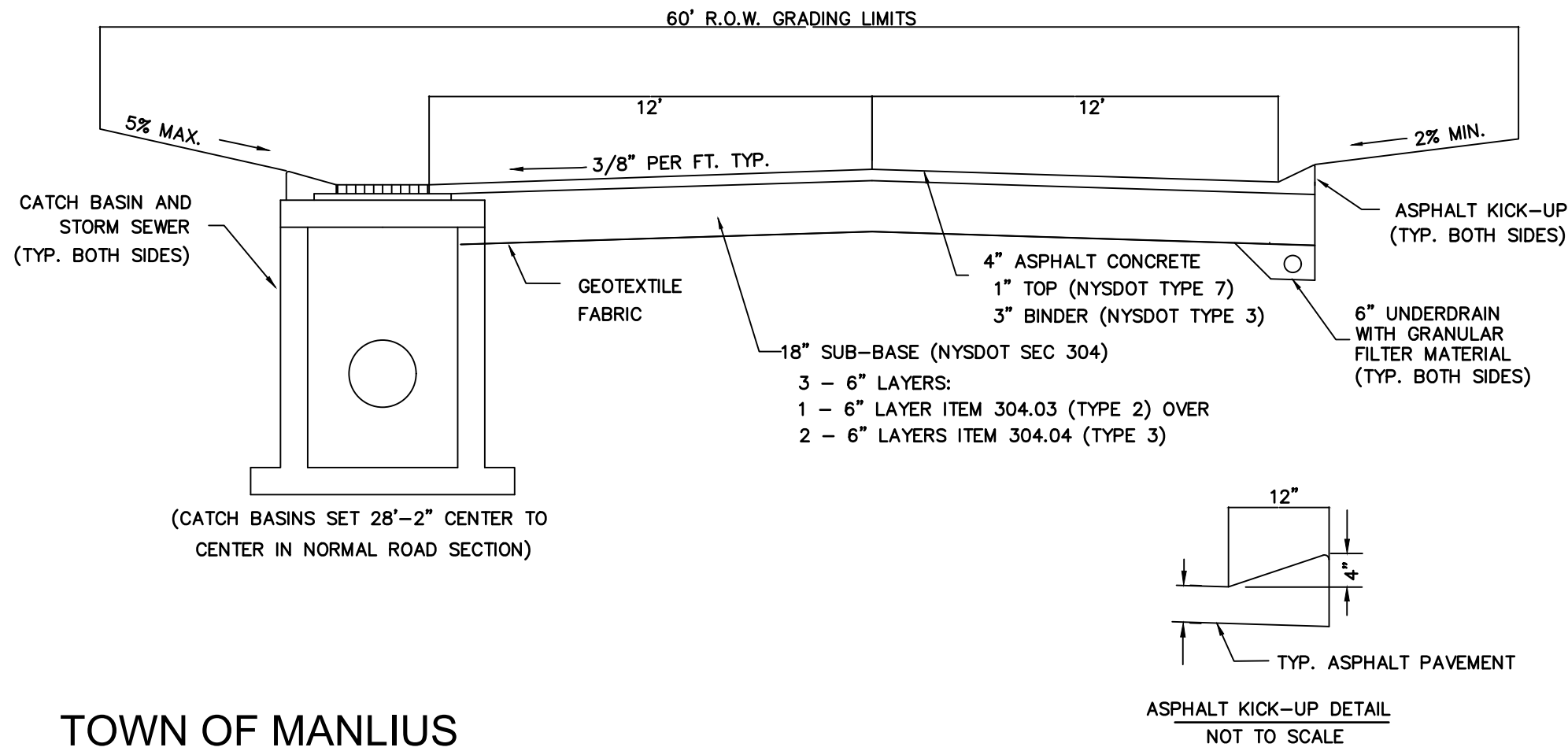
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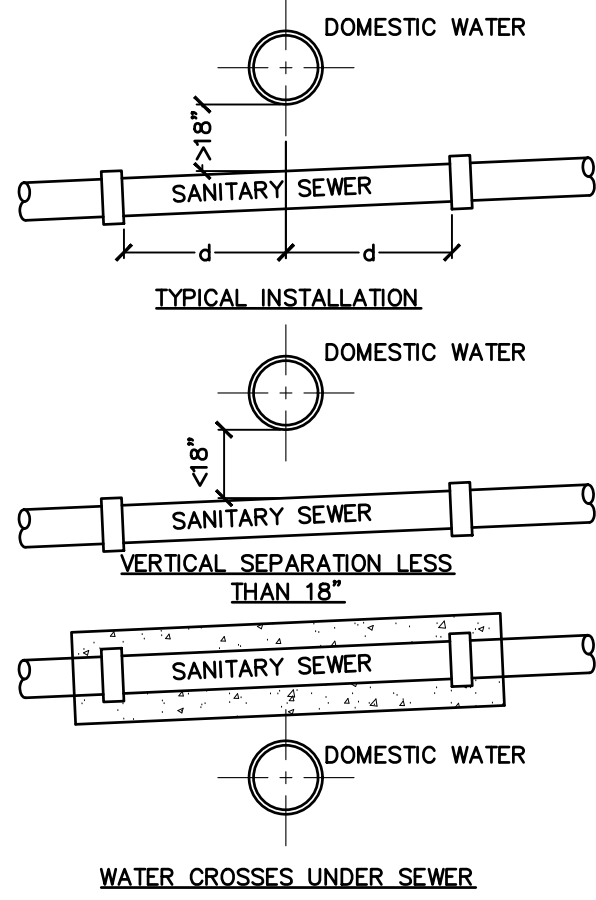
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PROJECT NO.
20-1906
DATE
15 SEP 2020
SCALE
1" = 50'

C-6.1



- DRAINAGE STRUCTURE GENERAL NOTES**
1. ALL STRUCTURES SHALL BE RATED FOR H-20 LOADING
 2. REINFORCING FOR ALL SECTIONS SHALL BE AS FOLLOWS:
TOP: #3 BARS SPACED AT 4" IN BOTH DIRECTIONS.
BOTTOM: #3 BARS SPACED AT 4" IN BOTH DIRECTIONS.
 3. ALL REINFORCEMENT SHALL BE PLACED SO IT WILL HAVE A MINIMUM COVER OF 2" AND BE LOCATED APPROXIMATELY WITHIN THE CENTER OF THE SECTION.
 4. TOP SLAB AND/OR FRAME ADJUSTMENT: FOR ALL DRAINAGE STRUCTURES A MAXIMUM OF 6 INCHES OF BRICK AND MORTAR OR A MAXIMUM OF 2 INCHES OF MORTAR ALONE SHALL BE USED FOR TOP SLAB AND/OR FRAME & GRATE ADJUSTMENT. FOR ADJUSTMENTS OVER 6 INCHES AND NOT TO EXCEED 12 INCHES, PRECAST CONCRETE ADJUSTMENT ELEMENT(S) MANUFACTURED IN ACCORDANCE WITH NYS-DOT STANDARD SPEC SUB-SECTION #706-04 SHALL BE USED; A MAXIMUM OF 2 INCHES OF MORTAR SHALL BE ALLOWED ON BOTH THE TOP AND BOTTOM OF THE PRECAST DEVICES. BRICK SHALL BE PRECAST PAVERS CONFORMING TO NYS-DOT STANDARD SPEC SUB-SECTION #704-13 AND MORTAR SHALL BE MORTAR FOR CONCRETE MASONRY CONFORMING TO NYS-DOT STANDARD SPEC SUB-SECTION #705-21.
 5. MANHOLE STEPS SHALL BE REQUIRED IN ALL DRAINAGE STRUCTURES DEEPER THAN 4 FEET. STEPS SHALL CONFORM TO NYS-DOT STANDARD SPEC SUB-SECTION #725-02.
 6. BASE OF PRECAST CATCH BASIN SHALL REST ON BASE MATERIAL COMPACTED IN PLACE WITH A VIBRATORY MECHANICAL TAMPER IN LIFTS NOT TO EXCEED 6" AT A TIME.
 7. TRENCH SIDES SHALL CONFORM TO NYS DEPT OF LABOR AND OSHA SAFETY REGULATIONS.
 8. MANHOLE INLET AND OUTLET PIPE CONNECTIONS MUST BE JOINED TO THE MANHOLE WITH A GASKETED, FLEXIBLE, WATERTIGHT CONNECTION OR IN ANY WATERTIGHT ARRANGEMENT THAT ALLOWS DIFFERENTIAL SETTLING OF THE MANHOLE WALL AND PIPE TO TAKE PLACE.



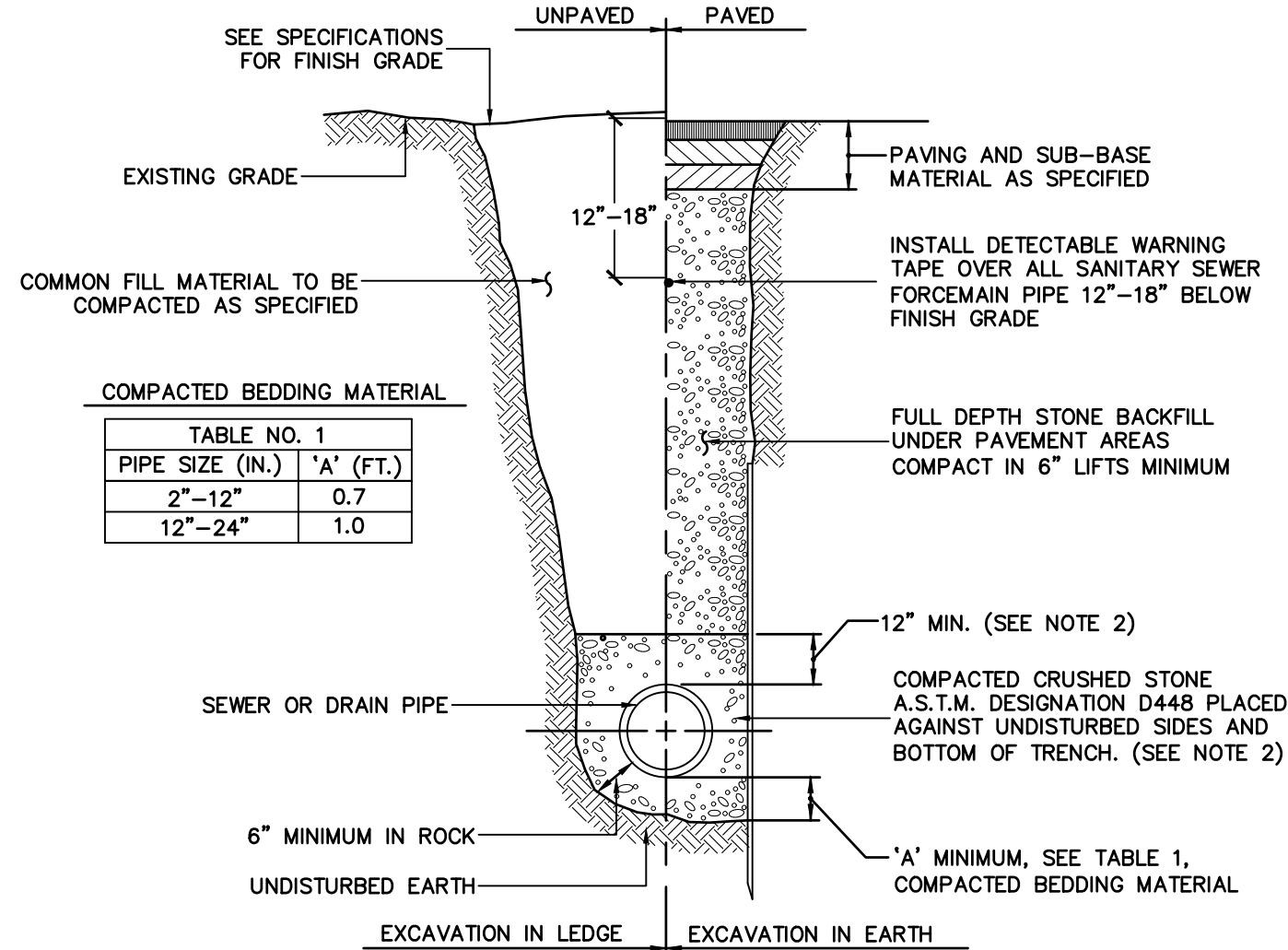
- TYPICAL INSTALLATION**
1. MINIMUM VERTICAL SEPARATION IS 18" FROM TOP OF PIPE TO BOTTOM OF PIPE.
 2. SEWER JOINTS ARE TO SPACED EQUIDISTANT AND AS FAR AS POSSIBLE FROM THE WATER MAIN JOINTS.
- VERTICAL SEPARATION LESS THAN 18"**
1. SEWER SHALL BE DESIGNED AND CONSTRUCTED EQUAL TO THE WATER PIPE, AND SHALL BE PRESSURE TESTED AT 150 PSI TO ASSURE WATER TIGHTNESS PRIOR TO BACKFILLING.
 2. SEWER JOINTS ARE TO SPACED EQUIDISTANT AND AS FAR AS POSSIBLE FROM THE WATER MAIN JOINTS.
- WATER CROSSES UNDER SEWER**
1. SEWER SHALL BE DESIGNED AND CONSTRUCTED EQUAL TO THE WATER PIPE, AND SHALL BE PRESSURE TESTED AT 150 PSI TO ASSURE WATER TIGHTNESS PRIOR TO BACKFILLING.
 2. SEWER JOINTS ARE TO SPACED EQUIDISTANT AND AS FAR AS POSSIBLE FROM THE WATER MAIN JOINTS.
 3. PROVIDE ADEQUATE STRUCTURAL SUPPORT FOR SEWER TO MAINTAIN LINE AND GRADE

TOWN OF MANLIUS RESIDENTIAL STREET CROSS SECTION

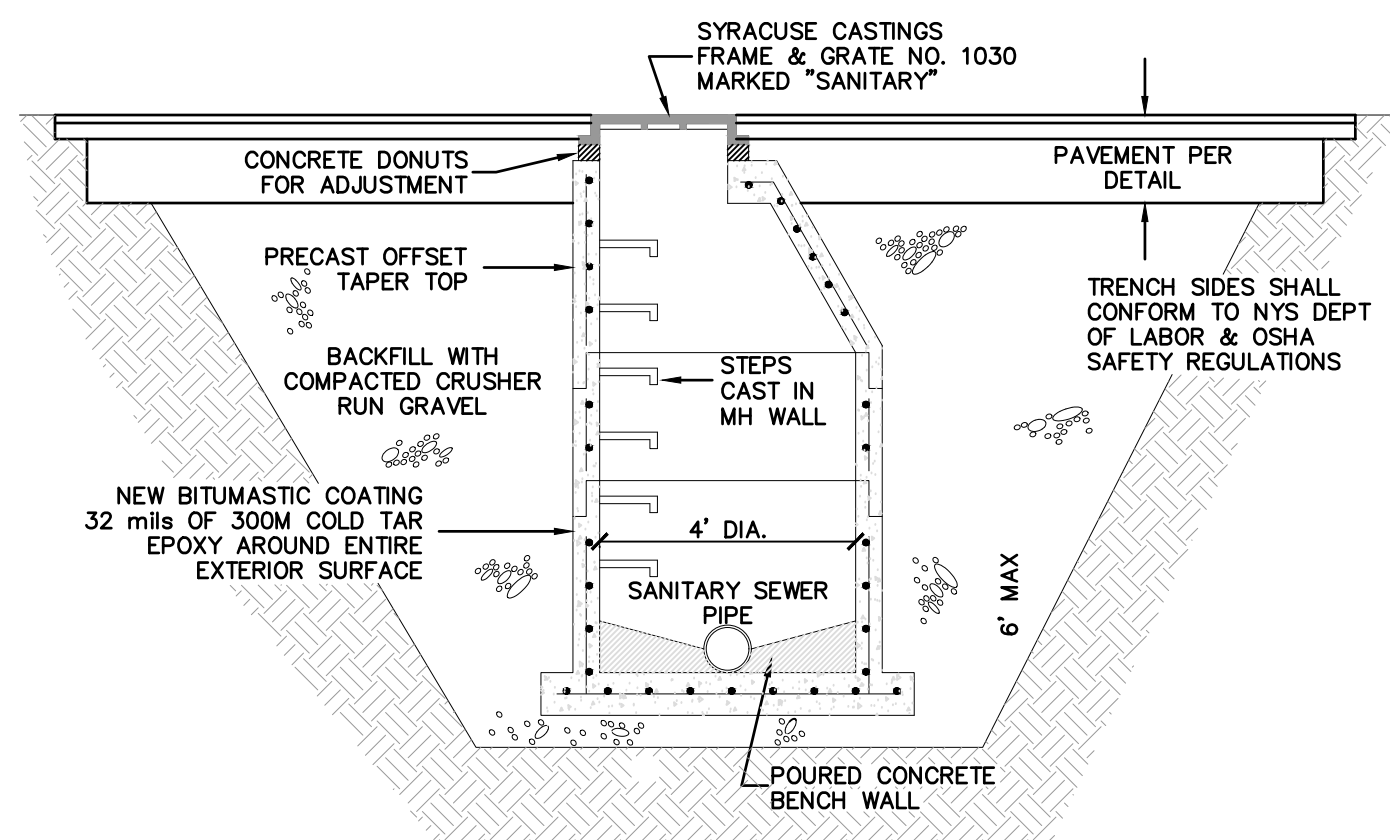
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C-7.0
SCALE: NTS

2 C-7.0 CATCH BASIN SCALE: NTS

3 C-7.0 WATER AND SEWER SEPARATION SCALE: NTS



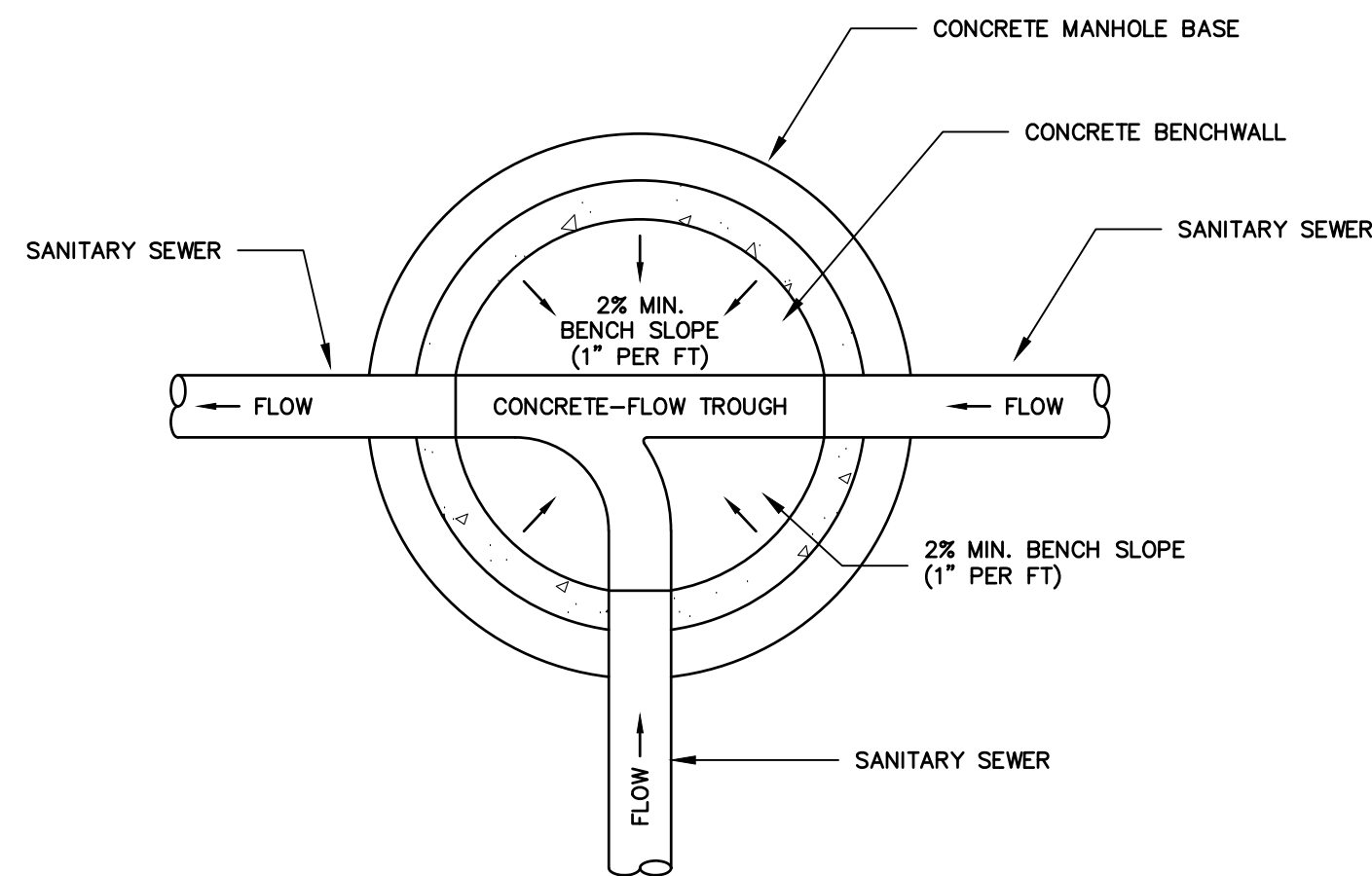
4 C-7.0 TYPICAL SEWER AND DRAIN TRENCH SCALE: NTS



SANITARY MANHOLE GENERAL NOTES

1. ALL SANITARY SEWER MANHOLES TO BE RATED FOR H-20 LOADING
2. PRECAST REINFORCED CONCRETE OFFSET TAPER TOP TO BE MANUFACTURED IN ACCORDANCE WITH ASTM C-478. TOP SECTION IS TO BE 3' LONG.
3. PRECAST REINFORCED CONCRETE MANHOLE RISER SECTIONS ARE TO BE MANUFACTURED IN ACCORDANCE WITH ASTM C-478. RISER SECTIONS ARE TO HAVE A 48" INSIDE DIAMETER X 5" WALL AVAILABLE IN 2', 3', OR 4' LENGTHS.
4. PRECAST REINFORCED CONCRETE MANHOLE BASE IS TO MANUFACTURED IN ACCORDANCE WITH ASTM C-478. BASE IS TO HAVE A 48" INSIDE DIAMETER X 5" WALL WITH RUBBER BOOTS AS REQUIRED.
5. REINFORCING FOR ALL SECTIONS SHALL BE 2X4, 3/4 W.W. MESH.
6. ALL REINFORCEMENT SHALL BE PLACED SO IT WILL HAVE A MINIMUM COVER OF 2" AND BE LOCATED APPROXIMATELY WITHIN THE CENTER OF THE SECTION.
7. COURSES OF BRICK OR CONCRETE DONUTS ARE TO BE USED FOR RIM GRADE ADJUSTMENTS.
8. BASE OF PRECAST MANHOLE SHALL REST ON UNDISTURBED UNIFORM VIRGIN SOIL OR COMPACTED GRAVEL, COMPACTED IN PLACE WITH VIBRATORY MECHANICAL TAMPERS IN LIFTS NOT TO EXCEED 6" AT A TIME.
9. TRENCH SIDES SHALL CONFORM TO NYS LABOR DEPARTMENT SAFETY REGULATIONS.

5 C-7.0 SANITARY MANHOLE STRUCTURE SCALE: NTS



6 C-7.0 SANITARY SEWER MANHOLE BENCH SCALE: NTS

PROJECT TITLE:
**BRANDYWINE ESTATES PHASE 2
HENNEBERRY ROAD**
TOWN OF MANLIUS
ONONDAGA COUNTY, NY

PREPARED FOR:
HARRINGTON HOMES

3848 HENNEBERRY ROAD
JAMESVILLE, NY 13078

SITE DETAILS

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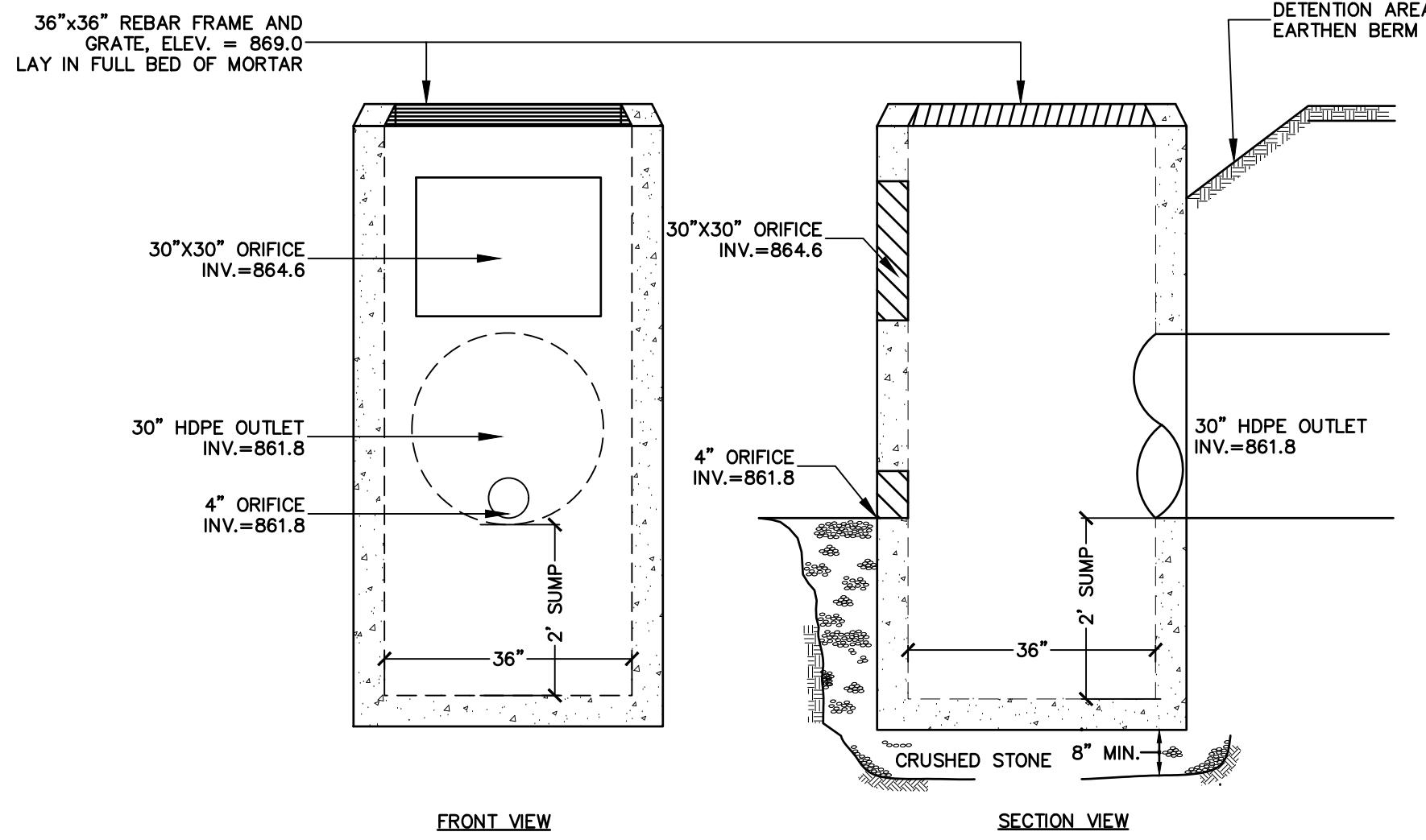
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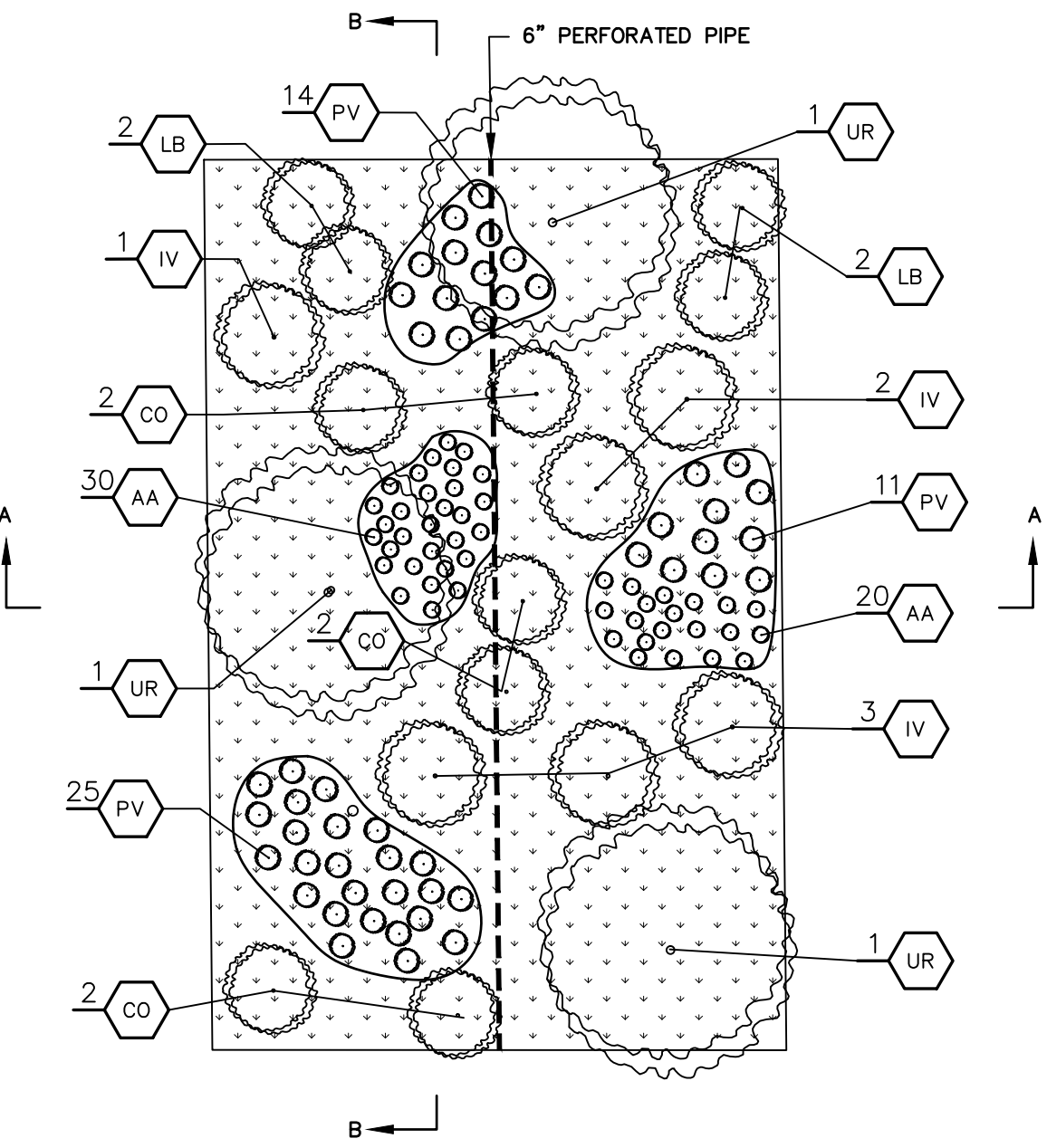
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DETENTION BASIN #1

PRECAST CONCRETE OUTLET STRUCTURE

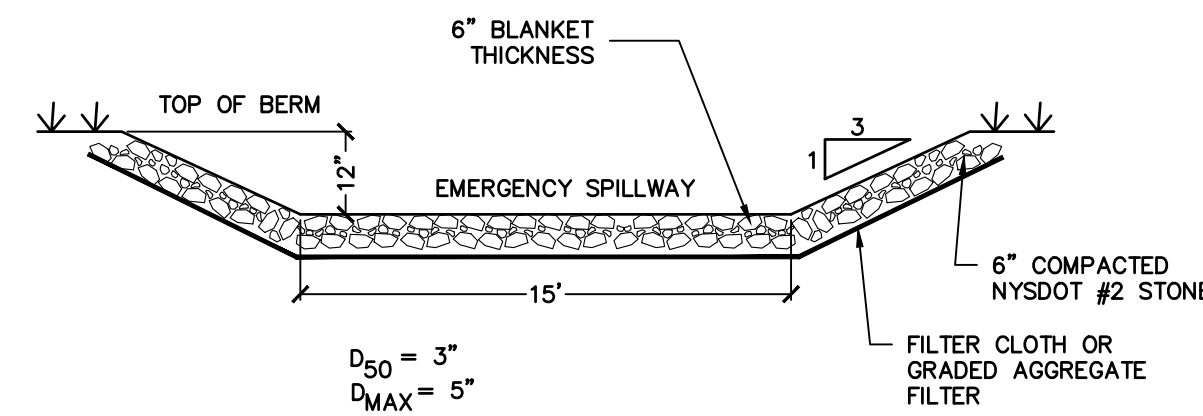
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*PLANTING QUANTITIES SHOWN IN THE GRAPHIC ABOVE ARE FOR A TYPICAL 1,000 SF BIORETENTION AREA. SPECIFIC QUANTITIES FOR THE BIORETENTION AREA ARE PROVIDED IN THE CORRESPONDING LANDSCAPING TABLE.

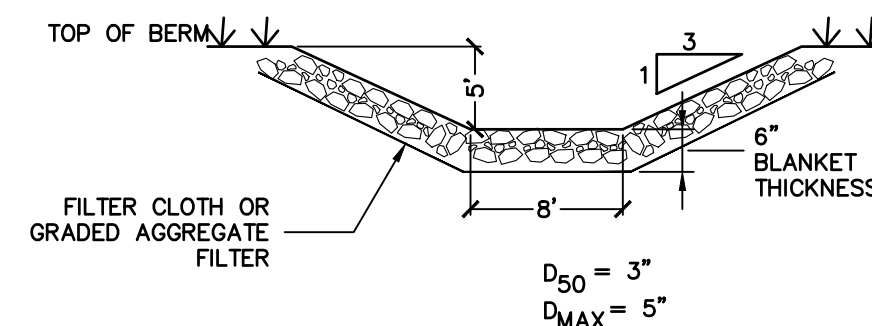
KEY	QUANTITY*	LATIN NAME	COMMON NAME	CALIPER	HEIGHT
TREES					
UR	16	ULMUS RUBRA	SLIPPERY ELM	6'–8'	B&B
SHRUBS					
LB	45	LINDERA BENZOIN	COMMON SPICE	18"–24"	B&B
IV	65	ILEX VERTICILLATA	WINTER BERRY	2'–3'	B&B
CO	65	CEPHALANTHUS OCCIDENTALIS	BUTTONBUSH	18"–24"	B&B
HERBACEOUS PLANTS					
PV	600	PANICUM VIRGATUM	SWITCH GRASS		
AA	600	AGROSTIS ALBA	REDTOP		

KEY	QUANTITY*	LATIN NAME	COMMON NAME	CALIPER	HEIGHT
TREES					
UR	8	ULMUS RUBRA	SLIPPERY ELM	6'–8'	B&B
SHRUBS					
LB	25	LINDERA BENZOIN	COMMON SPICE	18"–24"	B&B
IV	35	ILEX VERTICILLATA	WINTER BERRY	2'–3'	B&B
CO	30	CEPHALANTHUS OCCIDENTALIS	BUTTONBUSH	18"–24"	B&B
HERBACEOUS PLANTS					
PV	300	PANICUM VIRGATUM	SWITCH GRASS		
AA	300	AGROSTIS ALBA	REDTOP		



3 RIP RAP EMERGENCY SPILLWAY

SCALE: NTS

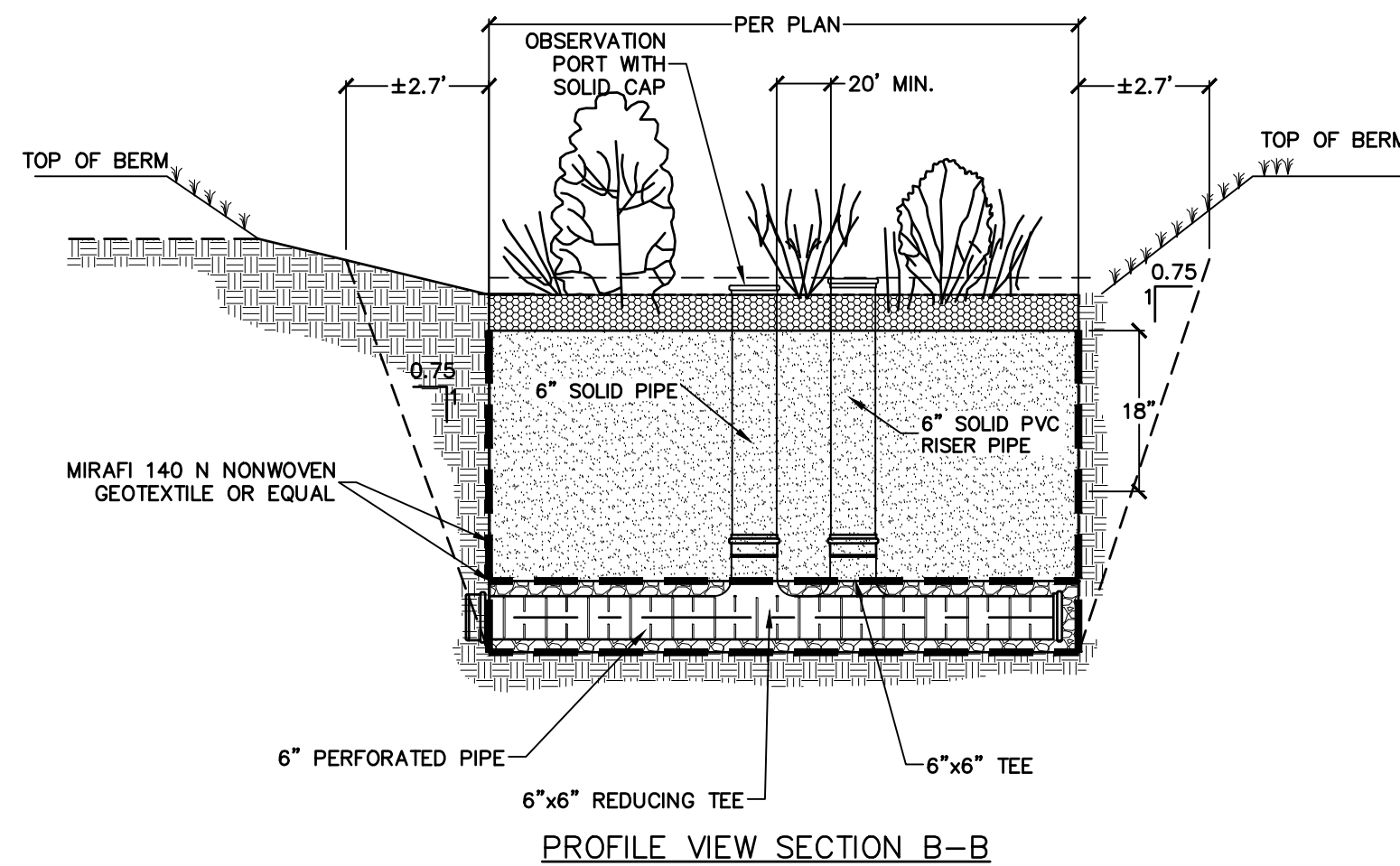
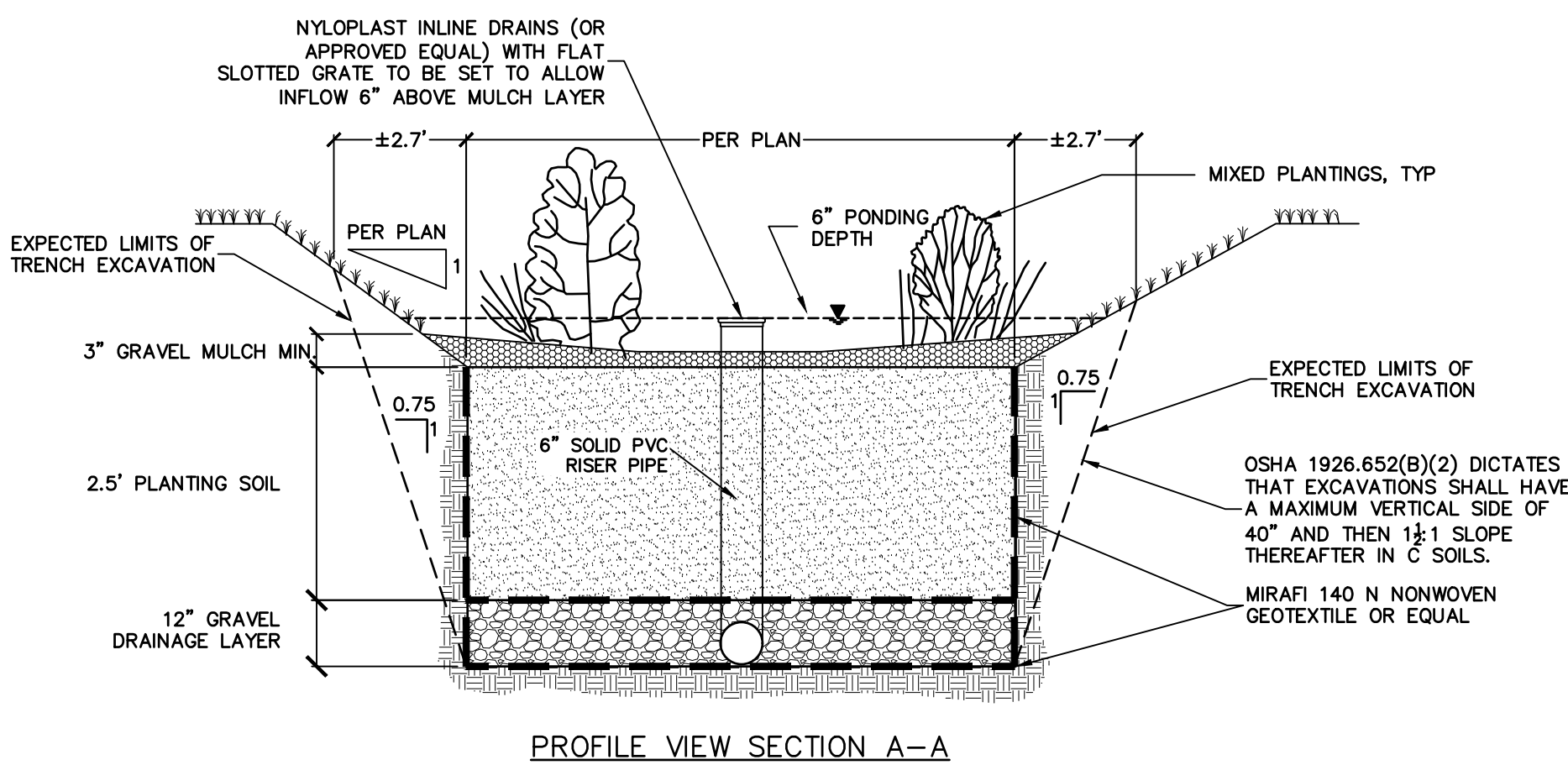


4 RIP RAP BIORETENTION SPILLWAY

SCALE: NTS

2 BIORETENTION FILTER SPECIES

SCALE: NTS



BIORETENTION NOTES:

- PLANTING SOIL MEDIA SHALL BE:
 - 85% TO 88% COARSE TO MEDIUM SAND
 - 12%–15% LEAF COMPOST OR TOPSOIL
- PEA GRAVEL MULCH CONFORMING TO ASTM D 448 No. 6.
- UNDERDRAIN GRAVEL TO BE AASHTO M–43 No. 67, 0.25" TO 0.75".
- GEOTEXTILE FILTER FABRIC (SEPARATION LAYER):
 - ASTM D–751 (PUNCTURE STRENGTH – 125 LB)
 - ASTM D–1117 (MULLEN BURST STRENGTH – 400 PSI)
 - ASTM D–1682 (TENSILE STRENGTH – 300 LB)
 - SIZE – 0.08" THICK; EQUIVALENT OPENING SIZE OF #80 SIEVE
- COMPACT WITH WATER-FILLED HAND ROLLER. COMPACTION TO BE FIRM BUT EASY (UTILIZE PENCIL TEST).
- ENGINEER TO TEST IN PLACE COMPACTION AND INFILTRATION OF PLANTING SOIL.
- ENGINEER TO PERFORM INSPECTION OF BIORETENTION PLANTING SOIL IMMEDIATELY FOLLOWING PLACEMENT AND PERFORM AN IN PLACE PERCOLATION TEST TO CONFIRM THAT THE IN PLACE MATERIAL PERCOLATES AT A RATE FASTER THAN 10 MIN/INCH.

5 BIORETENTION FILTER CROSS SECTIONS

SCALE: NTS

PROJECT TITLE:
**BRANDYWINE ESTATES PHASE 2
HENNEBERRY ROAD**

TOWN OF MANLIUS ONONDAGA COUNTY, NY

HARRINGTON HOMES

3848 HENNEBERRY ROAD
JAMESVILLE, NY 13078

SITE DETAILS

SHEET TITLE:

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PROJECT NO. 20-1906

DATE 17 SEP 2020

SCALE AS SHOWN

C-7.1

EROSION CONTROL NOTES

EROSION AND SEDIMENT CONTROLS

1. STABILIZATION PRACTICES (TEMPORARY)
 - a) TEMPORARY SEEDING AND PLANTING OF ALL UNPAVED AREAS WHEN CONSTRUCTION ACTIVITY HAS CEASED, OR WILL CEASE, IN AN AREA FOR 14 DAYS. SEEDING MIXTURES AND APPLICATION RATES ARE LISTED ON SHEET C-2.
 - b) MULCHING EXPOSED AREAS.
 - c) FREQUENT WATERING TO MINIMIZE WIND EROSION DURING CONSTRUCTION.
2. STABILIZATION PRACTICES (PERMANENT)
 - a) LAND CLEARING ACTIVITIES SHALL BE DONE ONLY IN AREAS WHERE EARTHWORK WILL BE PERFORMED AND SHALL PROGRESS AS EARTHWORK IS NEEDED.
 - b) PERMANENT SEEDING AND PLANTING OF ALL UNPAVED AREAS.
3. STRUCTURAL MEASURES TEMPORARY
 - a. STABILIZED CONSTRUCTION ENTRANCE: AT THE ENTRANCE TO THE ALL DISTURBED AREAS FROM AN EXISTING ROADWAY A STABILIZED CONSTRUCTION ENTRANCE SHALL BE PROVIDED. THE PURPOSE OF THE STABILIZED CONSTRUCTION ENTRANCE IS TO REDUCE OR ELIMINATE THE TRACKING OF SEDIMENT ONTO THE PUBLIC RIGHT-OF-WAY. SILT FENCE: SILT FENCE SHALL BE INSTALLED AS SHOWN ON THE EROSION CONTROL PLAN. THE FABRIC SHALL MEET THE SPECIFICATIONS NOTED ON THE DETAILS UNLESS OTHERWISE APPROVED BY THE APPROPRIATE EROSION AND SEDIMENT CONTROL PLAN APPROVAL AUTHORITY. SUCH APPROVAL SHALL NOT CONSTITUTE STATEWIDE ACCEPTANCE.
 - c. DUST CONTROL: DUST CONTROL IS THE CONTROL OF DUST RESULTING FROM LAND-DISTURBING ACTIVITIES. THE PURPOSE IS TO PREVENT SURFACE AND AIR MOVEMENT OF DUST FROM DISTURBED SOIL SURFACES THAT MAY CAUSE OFF-SITE DAMAGE, HEALTH HAZARDS, AND TRAFFIC SAFETY PROBLEMS.
 - d. SEDIMENT TRAP: SEDIMENT TRAP TO BE INSTALLED IN DETENTION BASIN AREA FOR USE DURING CONSTRUCTION. STONE OUTLET SEDIMENT TRAP TO BE INSTALLED AS PER DETAIL TO ELIMINATE SEDIMENT DISCHARGE TO DOWNSTREAM AREAS DURING CONSTRUCTION PHASE.
4. STRUCTURAL PRACTICES (PERMANENT)
 - a. ROCK OUTLET PROTECTION: ROCK OUTLET PROTECTION IS A SECTION OF ROCK PROTECTION PLACED AT THE OUTLET END OF CULVERTS, CONDUITS, OR CHANNELS. THE PURPOSE OF THE ROCK OUTLET PROTECTION IS TO REDUCE THE DEPTH, VELOCITY, AND ENERGY OF WATER, SUCH THAT THE FLOW WILL NOT ERODE THE RECEIVING DOWNSTREAM REACH.
 - b. REINFORCED SLOPE PROTECTION: A TEMPORARY PROTECTIVE COVERING PLACED ON A PREPARED PLANTING AREA THAT IS ANCHORED IN PLACE BY STAPLES OR OTHER MEANS TO AID IN CONTROLLING EROSION BY ABSORBING RAIN SPLASH ENERGY AND WITHSTAND OVERLAND FLOW AS WELL AS PROVIDE A MICROCLIMATE TO PROTECT AND PROMOTE SEED ESTABLISHMENT.
- c. LAND GRADING: PERMANENT RESHAPING OF THE EXISTING LAND SURFACE BY GRADING IN ACCORDANCE WITH AN ENGINEERING TOPOGRAPHIC PLAN AND SPECIFICATION TO PROVIDE EROSION CONTROL AND VEGETATIVE ESTABLISHMENT ON DISTURBED, RESHAPED AREAS.
5. SEQUENCE OF MAJOR ACTIVITIES
THE CONTRACTOR SHALL BE RESPONSIBLE FOR IMPLEMENTING THE ABOVE LISTED EROSION AND SEDIMENT CONTROL PRACTICES. THE CONTRACTOR MAY DESIGNATE THESE TASKS TO CERTAIN SUBCONTRACTORS AS IS SEEN FIT, BUT THE ULTIMATE RESPONSIBILITY FOR IMPLEMENTING THESE CONTROLS AND ENSURING THEIR PROPER FUNCTION REMAINS WITH THE CONTRACTOR. THE ORDER OF ACTIVITIES WILL BE AS FOLLOWS:
 - a) CONDUCT PRECONSTRUCTION MEETING
 - b) CONSTRUCT TEMPORARY CONSTRUCTION ENTRANCE/EXIT AT THE LOCATION SHOWN ON THE PLAN.
 - c) INSTALL PERIMETER SILT FENCE AND SECURITY CONSTRUCTION FENCE IN THE LOCATIONS SHOWN ON THE PLAN.
 - d) ESTABLISH STAGING AREA ON PROJECT SITE
 - e) CONSTRUCT TEMPORARY SEDIMENT TRAP
 - f) REMOVE TOPSOIL, STOCKPILE AND STABILIZE
 - g) SITE GRADING, IMPORT OF FILL MATERIAL TO RAISE SITE TO PROPOSED GRADE (OR SUB-GRADE, AS APPROPRIATE).
 - h) BUILDING FOUNDATION EXCAVATION (BUILDING CONSTRUCTION TO CONTINUE CONCURRENTLY WITH REMAINING SITE WORK).
 - i) DISTURBED AREAS OF THE SITE WHERE CONSTRUCTION ACTIVITY HAS CEASED FOR MORE THAN 14 DAYS SHALL BE TEMPORARILY SEEDED AND WATERED.
 - j) UNDERGROUND UTILITY INSTALLATIONS.
 - k) INSTALL FILTER FABRIC DROP INLET PROTECTION AT ALL STORM INLETS.
 - l) COMPACT GRAVEL ALONG ALL DRIVE AISLES AND PARKING AREAS
 - m) SITE CONCRETE CONSTRUCTION.
 - n) FINALIZE PAVEMENT SUBGRADE PREPARATION.
 - o) REMOVE INLET PROTECTION NO MORE THAN 24 HOURS PRIOR TO PLACING ASPHALT PAVEMENT.
 - p) PAVE AREAS NOTED ON PLAN.
 - q) DEEP RIPPING OF NON-PAVED AREAS AS REQUIRED (NON-PAVED AREAS THAT HAVE BEEN COMPACTED DURING CONSTRUCTION VIA CONSTRUCTION TRAFFIC).
 - r) FINAL GRADING, SEEDING, AND PLANTING.
 - s) CONSTRUCT BIORETENTION BASINS AND OUTLET CONTROLS UPON UPSTREAM

- STABILIZATION OF SITE
- i) REMOVE SEDIMENT TRAP AND FINALIZE GRADING OF DETENTION BASIN
 - u) REMOVE SILT FENCE ONLY AFTER ALL PAVING IS COMPLETE AND EXPOSED SURFACES ARE STABILIZED.

MAINTENANCE/INSPECTION PROCEDURES
THE FOLLOWING INSPECTION AND MAINTENANCE PRACTICES WILL BE USED TO MAINTAIN EROSION AND SEDIMENT CONTROLS AND STABILIZATION MEASURES.

1. ALL CONTROL MEASURES WILL BE INSPECTED AT LEAST TWICE EVERY SEVEN (7) CALENDAR DAYS
2. ALL MEASURES WILL BE MAINTAINED IN GOOD WORKING ORDER; IF REPAIRS OR OTHER EROSION CONTROL MEASURES ARE FOUND TO BE NECESSARY, THEY WILL BE INITIATED WITHIN 24 HOURS OF REPORT.
3. BUILT UP SEDIMENT WILL BE REMOVED FROM SILT FENCE WHEN IT HAS REACHED ONE-THIRD THE HEIGHT OF THE FENCE.
4. SILT FENCES WILL BE INSPECTED FOR DEPTH OF SEDIMENT, TEARS, ETC., TO SEE IF THE FABRIC IS SECURELY ATTACHED TO THE FENCE POSTS, AND TO SEE THAT THE FENCE POSTS ARE SECURELY IN THE GROUND.
5. TEMPORARY AND PERMANENT SEEDING AND ALL OTHER STABILIZATION MEASURES WILL BE INSPECTED FOR BARE SPOTS, WASHOUTS, AND HEALTHY GROWTH.
6. A MAINTENANCE INSPECTION REPORT WILL BE MADE AFTER EACH INSPECTION. COPIES OF THE REPORT FORMS TO BE COMPLETED BY THE INSPECTOR ARE INCLUDED IN THIS SWPPP.
7. THE OPERATOR SHALL HAVE A "QUALIFIED PROFESSIONAL" CONDUCT SITE INSPECTIONS FOLLOWING THE COMMENCEMENT OF CONSTRUCTION. A "QUALIFIED PROFESSIONAL" IS A PERSON KNOWLEDGEABLE IN THE PRINCIPLES AND PRACTICE OF EROSION AND SEDIMENT CONTROLS, SUCH AS A LICENSED PROFESSIONAL ENGINEER, CERTIFIED PROFESSIONAL IN EROSION AND SEDIMENT CONTROL (CPESC), OR SOIL SCIENTIST.
8. DISTURBED AREAS AND MATERIALS STORAGE AREAS WILL BE INSPECTED FOR EVIDENCE OF OR POTENTIAL FOR POLLUTANTS ENTERING STORMWATER SYSTEMS.

9. REPORT TO NYS DEC WITHIN 24 HOURS ANY NONCOMPLIANCE WITH THE SWPPP THAT WILL ENDANGER PUBLIC HEALTH OR THE ENVIRONMENT. FOLLOW UP WITH A WRITTEN REPORT WITHIN 5 DAYS OF THE NONCOMPLIANCE EVENT. THE FOLLOWING EVENTS REQUIRE 24 HOUR REPORTING: A) ANY UNANTICIPATED BYPASS WHICH EXCEEDS ANY EFFLUENT LIMITATION IN THE PERMIT, B) ANY UPSET WHICH EXCEEDS ANY EFFLUENT LIMITATION FOR ANY OF THE POLLUTANTS LISTED BY THE EPA IN THE PERMIT TO BE REPORTED WITHIN 24 HOURS. THE WRITTEN SUBMISSION MUST CONTAIN A DESCRIPTION OF THE NON-COMPLIANCE AND ITS CAUSE; THE PERIOD OF NON-COMPLIANCE, INCLUDING EXACT DATES AND TIMES, AND IF THE NON-COMPLIANCE HAS NOT BEEN CORRECTED, THE ANTICIPATED TIME IT IS EXPECTED TO CONTINUE; AND STEPS TAKEN OR PLANNED TO REDUCE, ELIMINATE, AND PREVENT RECURRENCE OF THE NON-COMPLIANCE.

10. RELEASES OF HAZARDOUS SUBSTANCES OR OIL IN EXCESS OF REPORTABLE QUANTITIES (AS ESTABLISHED UNDER 40 CFR 110, 40 CFR 117 OR 40 CFR 302) MUST BE REPORTED. FORM G-1 PROVIDES FURTHER DETAILS ON THE NOTIFICATION AND REPORTING PROCESS.

INSPECTION AND MAINTENANCE REPORT FORMS
ONCE INSTALLATION OF ANY REQUIRED OR OPTIONAL EROSION CONTROL DEVICE OR MEASURE HAS BEEN IMPLEMENTED, AT LEAST ONCE EVERY SEVEN (7) CALENDAR DAYS AND SHALL BE PERFORMED BY A QUALIFIED PROFESSIONAL. THE FORMS FOUND IN THIS SWPPP SHALL BE USED BY THE INSPECTORS TO INVENTORY AND REPORT THE CONDITION OF EACH MEASURE TO ASSIST IN MAINTAINING THE EROSION AND SEDIMENT CONTROL MEASURES IN GOOD WORKING ORDER.

THESE REPORT FORMS SHALL BECOME AN INTEGRAL PART OF THE SWPPP AND SHALL BE MADE READILY ACCESSIBLE TO GOVERNMENTAL INSPECTION OFFICIALS, THE OPERATOR'S ENGINEER, AND THE OPERATOR FOR REVIEW UPON REQUEST DURING VISITS TO THE PROJECT SITE. IN ADDITION, COPIES OF THE REPORTS SHALL BE PROVIDED TO ANY OF THESE PERSONS, UPON REQUEST, VIA MAIL OR FACSIMILE. TRANSMISSION, INSPECTION AND MAINTENANCE REPORT FORMS ARE TO BE MAINTAINED BY THE PERMITTEE FOR FIVE YEARS FOLLOWING THE FINAL STABILIZATION OF THE SITE.

OTHER RECORD-KEEPING REQUIREMENTS

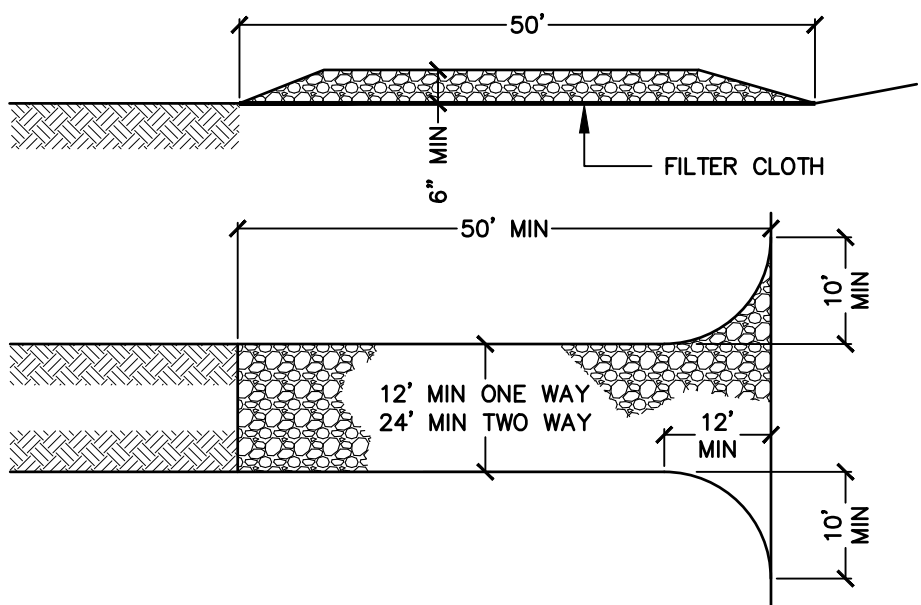
THE CONTRACTOR SHALL KEEP THE FOLLOWING RECORDS RELATED TO CONSTRUCTION ACTIVITIES AT THE SITE:

- DATES WHEN MAJOR GRADING ACTIVITIES OCCUR AND THE AREAS WHICH WERE GRADED
- DATES AND DETAILS CONCERNING THE INSTALLATION OF STRUCTURAL CONTROLS

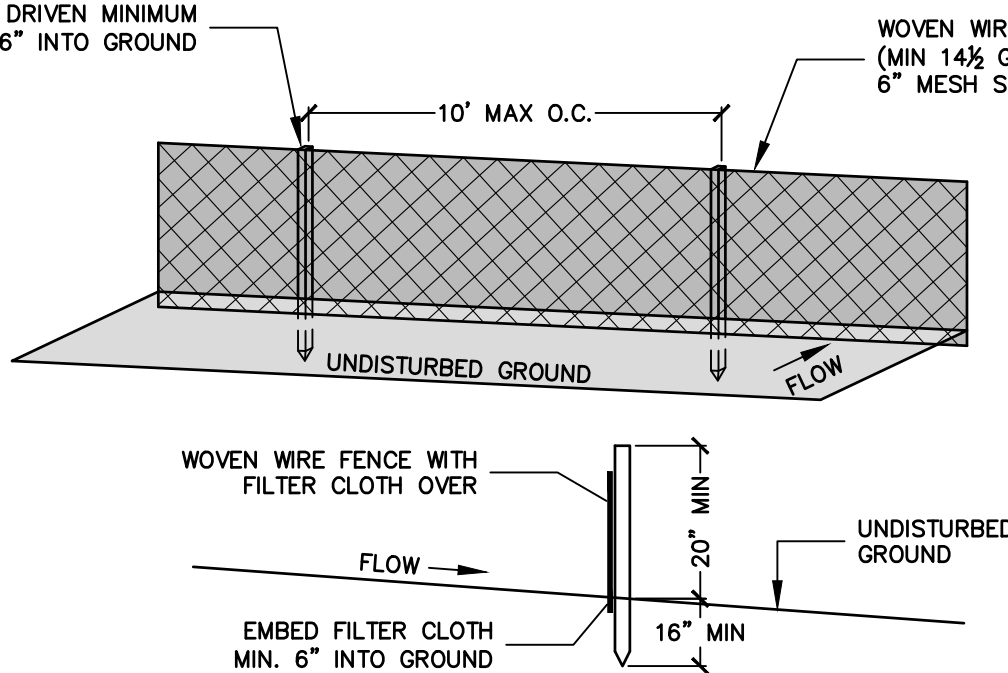
- DATES WHEN CONSTRUCTION ACTIVITIES CEASE IN AN AREA
- DATES WHEN AN AREAS IS STABILIZED, EITHER TEMPORARILY OR PERMANENTLY
- DATES OF RAINFALL AND THE AMOUNT OF RAINFALL
- DATES AND DESCRIPTIONS OF THE CHARACTER AND AMOUNT OF ANY SPILLS OF HAZARDOUS MATERIALS
- RECORDS OF REPORTS FILED WITH REGULATORY AGENCIES IF REPORTABLE QUANTITIES OF HAZARDOUS MATERIALS SPILLED

EROSION CONTROL NOTES

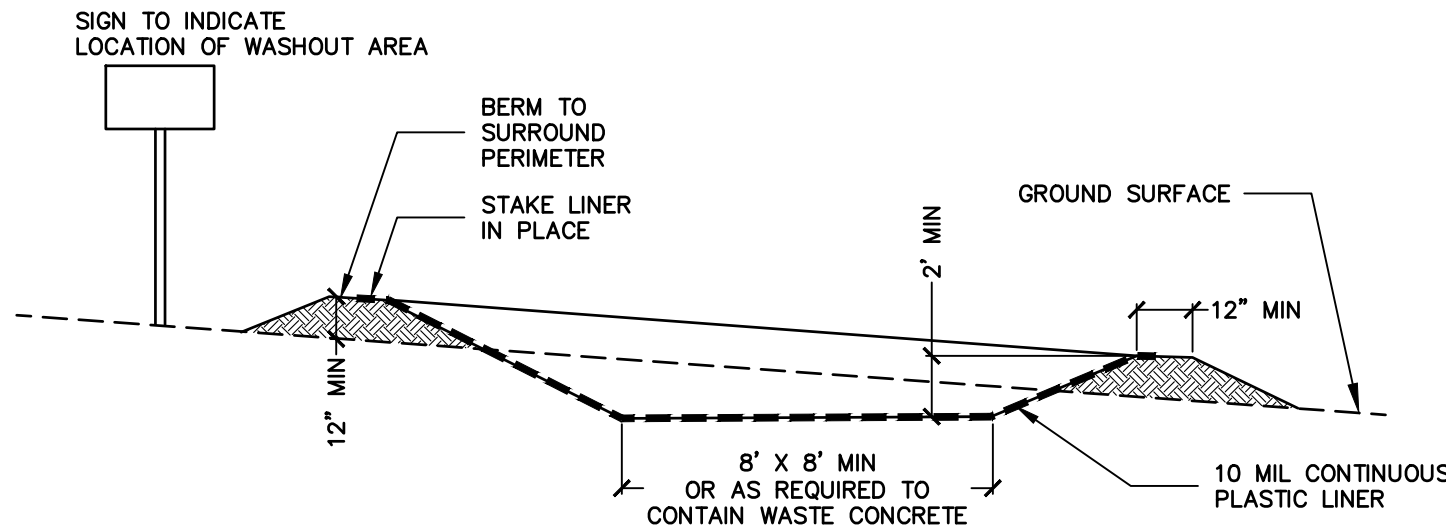
1. LAND DISTURBING ACTIVITIES SHALL NOT COMMENCE UNTIL APPROVAL TO DO SO HAS BEEN RECEIVED BY GOVERNING AUTHORITIES. THE GENERAL CONTRACTOR SHALL STRICTLY ADHERE TO THE APPROVED SWPPP DRAWINGS DURING CONSTRUCTION OPERATIONS.
2. NO LAND CLEARING OR GRADING SHALL BEGIN UNTIL THE APPROPRIATE EROSION CONTROL MEASURES HAVE BEEN INSTALLED.
3. ALL EXPOSED AREAS SHALL BE SEEDED AS SPECIFIED WITHIN 7 DAYS OF FINAL GRADING.
4. SHOULD CONSTRUCTION STOP FOR LONGER THAN 14 DAYS, THE SITE SHALL BE SEEDED AS SPECIFIED.
5. MAINTAIN EROSION CONTROL MEASURES AFTER EACH RAIN AND AT LEAST ONCE A WEEK.
6. THIS PLAN SHALL NOT BE CONSIDERED ALL INCLUSIVE AS THE GENERAL CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PREVENT SEDIMENT FROM LEAVING THE SITE.
7. GENERAL CONTRACTOR SHALL COMPLY WITH ALL STATE AND LOCAL ORDINANCES THAT APPLY.
8. ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES WILL BE INSTALLED IF DEEMED NECESSARY BY ON SITE INSPECTION.
9. IF INSTALLATION OF STORM DRAINAGE SYSTEM SHOULD BE INTERRUPTED BY WEATHER OR NIGHTFALL, THE PIPE ENDS SHALL BE COVERED WITH FILTER FABRIC.
10. GENERAL CONTRACTOR SHALL BE RESPONSIBLE TO TAKE WHATEVER MEANS NECESSARY TO ESTABLISH PERMANENT SOIL STABILIZATION.
11. ALL WORK TO BE DONE IN STRICT ACCORDANCE WITH THE NEW YORK STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL.



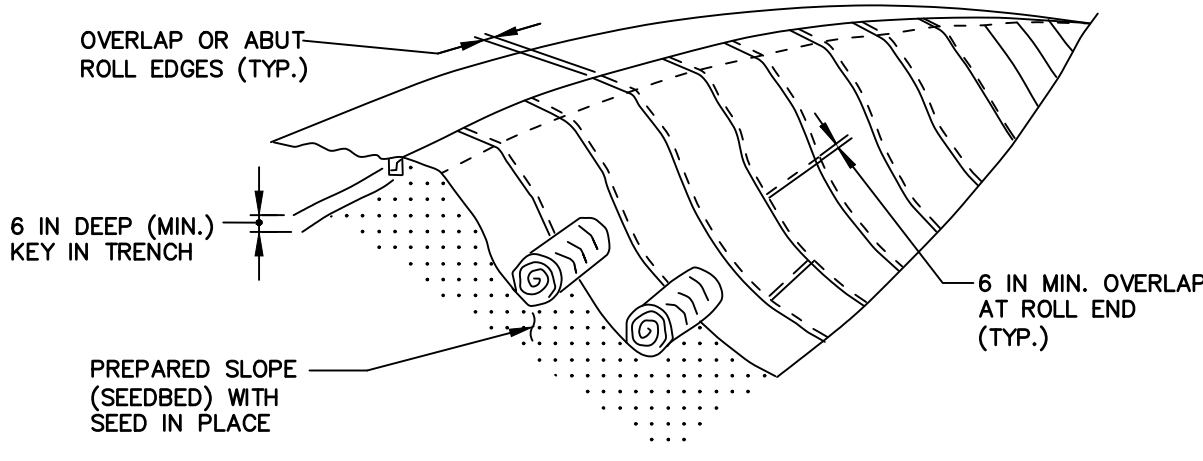
1. STONE SIZE - USE 2" STONE, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH - NOT LESS THAN 50 FEET.
3. THICKNESS - NOT LESS THAN SIX (6) INCHES.
4. WIDTH - 24 FEET MINIMUM.
5. FILTER CLOTH - WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
6. SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
7. MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. ALL SEDIMENT SPILLED, DROPPED, WASHED, OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
8. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
9. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.



- POSTS: STEEL, EITHER "T" OR "U" TYPE OR 2" HARDWOOD
FENCE: WOVEN WIRE, 14 1/2 GAUGE, 6" MAX. MESH OPENING
FILTER CLOTH: FILTER X, MIRAFI 100X, STABILINKA T140N OR APPROVED EQUAL
PREFABRICATED UNIT: GEOFAB, ENVIROFENCE, OR APPROVED EQUAL
1. WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES.
 2. FILTER CLOTH IS TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION.
 3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER, THEY SHALL BE OVERLAPPED BY SIX INCHES AND FOLDED.
 4. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.



- NOTES:
1. CONCRETE WASHOUT AREA SHALL BE INSTALLED PRIOR TO ANY CONCRETE PLACEMENT ON SITE.
 2. CONCRETE WASHOUT OUT AREA SHALL BE LINED WITH A 10 MIL IMPERMEABLE LINER AND STAKED IN PLACE.
 3. SIGNS SHALL BE PLACED AT THE CONSTRUCTION ENTRANCE, AT THE WASHOUT AREA, AND ELSEWHERE AS NECESSARY TO CLEARLY INDICATE LOCATION OF CONCRETE WASHOUT AREA TO OPERATORS OF CONCRETE TRUCKS AND PUMP RIGS.
 4. THE CONCRETE WASHOUT AREA SHALL BE REPAIRED AND ENLARGED OR CLEANED OUT AS NECESSARY TO MAINTAIN CAPACITY FOR WASTED CONCRETE.
 5. AT THE END OF CONSTRUCTION, ALL CONCRETE SHALL BE REMOVED FROM SITE AND DISPOSED OF AT AN ACCEPTED WASTE SITE.
 6. WHEN THE CONCRETE WASHOUT AREA IS REMOVED, THE DISTURBED AREA SHALL BE SEEDED AND MULCHED OR OTHERWISE STABILIZED.



CONSTRUCTION SPECIFICATIONS

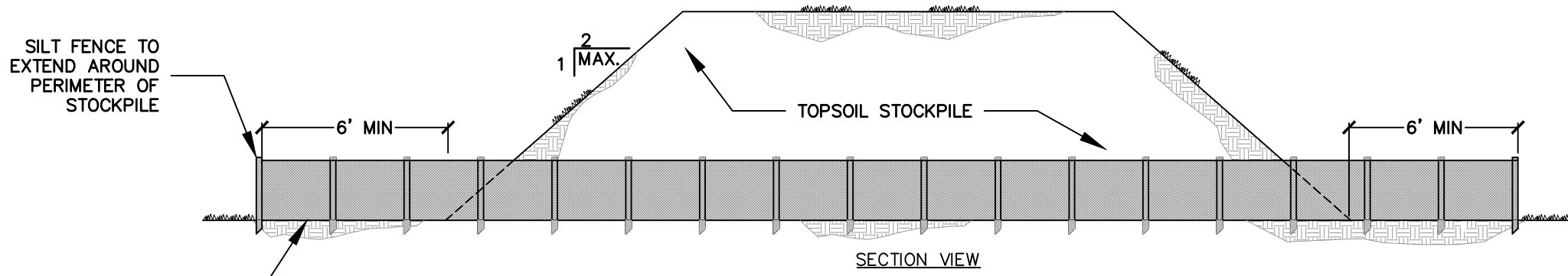
1. USE TEMPORARY SOIL STABILIZATION MATTING MADE OF DEGRADABLE (LASTS 6 MONTHS MINIMUM) NATURAL OR MAN-MADE FIBERS (MOSTLY ORGANIC).
2. PERFORM FINAL GRADING, TOPSOIL APPLICATION, SEEDBED PREPARATION, AND PERMANENT SEEDING IN ACCORDANCE WITH SPECIFICATIONS. PLACE MATTING WITHIN 48 HOURS OF COMPLETING SEEDING OPERATIONS UNLESS END OF WORKDAY STABILIZATION IS SPECIFIED ON THE APPROVED EROSION & SEDIMENT CONTROL PLAN.
3. OVERLAP OR ABUT ROLL EDGES PER MANUFACTURER RECOMMENDATIONS. OVERLAP ROLL ENDS BY 6 INCHES (MINIMUM), WITH THE UPSLOPE MAT OVERLAPPING ON TOP OF THE DOWNSLOPE MAT.

1 CONSTRUCTION ENTRANCE
C-7.2 SCALE: NTS

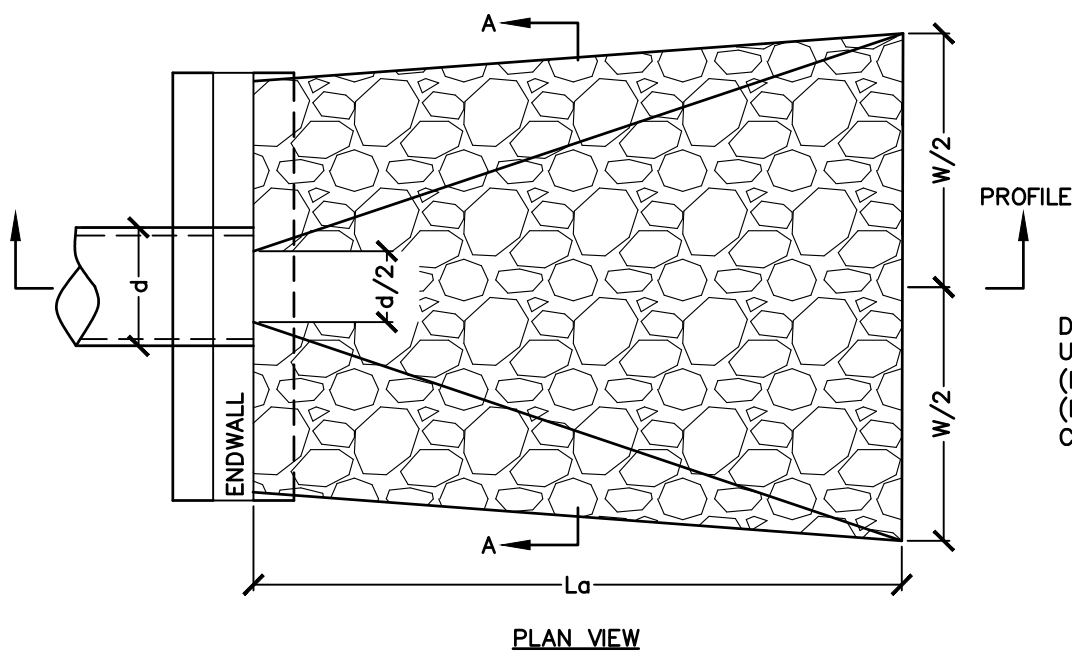
2 SILT FENCE
C-7.2 SCALE: NTS

3 CONCRETE WASHOUT AREA
C-7.2 SCALE: NTS

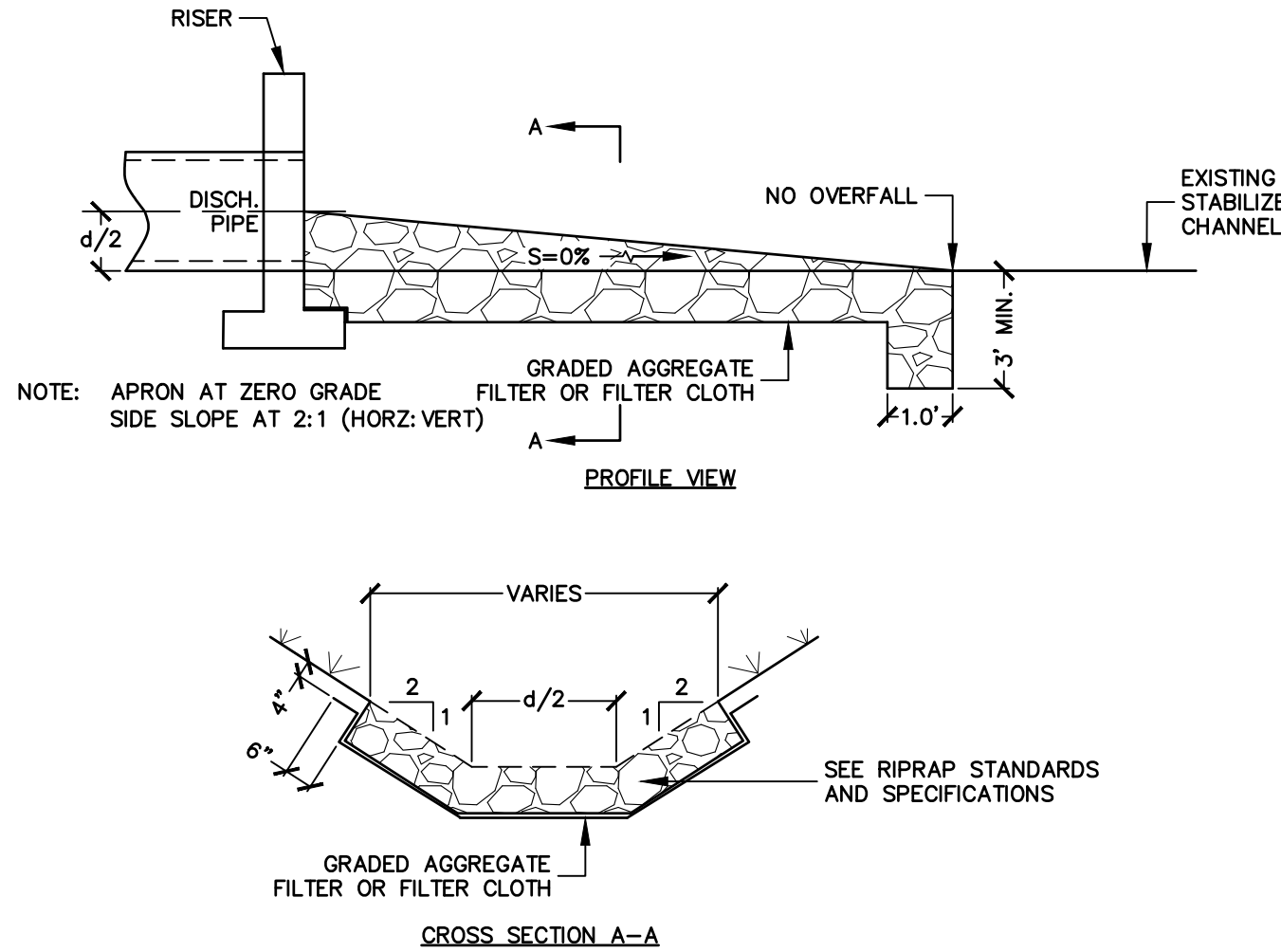
4 SLOPE STABILIZATION MATTING
C-7.2 SCALE: NTS



- NOTES:
1. SEE EROSION CONTROL PLAN FOR LOCATION OF STOCKPILE
 2. REFER TO SILT FENCE DETAIL FOR INSTALLATION OF SILT FENCE
 3. IF THE STOCKPILE IS TO REMAIN FOR MORE THAN 14 DAYS IT SHALL BE TEMPORARILY SEEDED FOR STABILIZATION
 4. SILT FENCES TO BE MAINTAINED IN PLACE UNTIL TOPSOIL STOCKPILE HAS BEEN REMOVED



**ROCK RIPRAP OUTLET PROTECTION
UNCONFINED DOWNSTREAM SECTION**



5 TYPICAL TOPSOIL STOCKPILE
C-7.2 SCALE: NTS

6
C-7.2 SCALE: NTS

PROJECT TITLE: **BRANDYWINE ESTATES PHASE 2
HENNEBERRY ROAD**
TOWN OF MANLIUS
ONONDAGA COUNTY, NY

PREPARED FOR: **HARRINGTON HOMES**
3848 HENNEBERRY ROAD
JAMESVILLE, NY 13078

SITE DETAILS

SHEET TITLE:

NO.	REVISION/ISSUE	DATE
1	GENERAL REVISIONS	12/01/2021

PREPARED BY: **NAPIERALA CONSULTING**
NAPIERALA CONSULTING
110 FAYETTE STREET
MANLIUS, NEW YORK 13104
email: MNAAP@NAPCON.COM
PH: (315) 682-5580 FAX: (315) 682-5544

PROJECT NO. **20-1906**
DATE **17 SEP 2020**
SCALE **AS SHOWN**

C-7.2

November 14, 2021

Mr. Mark Harrington, President
Harrington Homes Inc.
3848 Henneberry Road
Manlius, New York 13078

RE: Comments by G. Gould relative to Pumping test results and reporting

Dear Mr. Harrington,

The purpose of this letter is to respond to two sets of comments made by G. Gould about the pumping test and subsequent report relative to the groundwater supply underlying the proposed Brandywine Estates Phase 2 project. My responses to Mr. Gould's original comments were included in a letter prepared by Mr. Napierala and addressed to the Planning Board on October 4, 2021.

It occurred to me that we are using terms that are not necessarily familiar to the Planning Board so I am including a definition of some terms as follow:

AQUIFER

An aquifer is a groundwater bearing geologic formation sufficiently permeable to transmit and yield water in usable quantities.

DEWATERING

For an aquifer dewatering would involve a rate of removal of water that would result in the material becoming (effectively) dry.

DRAWDOWN

Drawdown is referring to the lowering of the water level in a well. The water level is measured in the well that is being pumped (the pumping well) and observation wells located at some distance from the pumping well. The drawdown produced at a certain pumping rate in the well being pumped and the observation wells (in this instance the wells installed on two adjacent lots, lots 6 and 29) can be used to calculate the permeability of the aquifer, the porosity of the aquifer and can aid in forecasting the performance of the aquifer.

MAXIMUM DAILY WATER USE

Each home uses a certain amount of water on a daily basis. The total amount has been estimated by a number of entities. The American Water Works Association

estimates the per capita use, including both indoor and outdoor use a 110 gallons/person/day. There is no regulatory standard that establishes daily household water use standard but the NYSDOH sets a standard for design of onsite wastewater disposal at 110 gallons per bedroom per day. The Brandywine Phase 2 project is planned for 3-4 bedroom homes or 330-440 gallons per day. For purposes of our calculations we are assuming that each home will use an average of 500 gallons per day and that is the daily total that is withdrawn from each well.

PEAK DEMAND

In terms of water use there are times of the day when there is zero water use (late at night) and times of the day when a number of people may be using showers, toilets, faucets and washing machines all during the same time period. The AWWA estimates that peak demand for a four bedroom house may be 110 gallons per hour. We are estimating that for short periods of time each home may be using 5-10 gallons/minute but the daily total is still less than 500 gallons per home per day.

PERMEABILITY

The permeability of any water bearing material is its ability to transmit water. For sake of illustration gravel has a high permeability and clay has a low permeability.

POROSITY/AQUIFER STORAGE

Porosity is the portion or percentage of a soil or rock material that is occupied by pores or interstices. It is possible for a material to have a low permeability but a high porosity such as a clay or a relatively high permeability but relatively low porosity such as karstic carbonate rock.

PUMPING TEST

A pumping test is a method of measuring the performance of an aquifer. It is typically carried out by installing a water well and pumping that well at a set rate while measuring both the well discharge and the drawdown over time. One or more observation wells are measured to see how much drawdown occurs. As previously mentioned the results can be used to calculate the permeability and porosity of the aquifer and those results were included in my August 11, 2021 report. Those calculations are done using one of a number of formulas. The Theim equation that I used was included in the software package referenced by Mr. Gould.

RECHARGE

Any aquifer is replenished by infiltrating water. It is challenging to determine how much recharge is occurring in any given location. Recharge can be localized or some aquifers can be recharged in areas at some distance from where the water is withdrawn.

RECOVERY

During a pumping test, at a certain time the well discharge is ceased and the water levels in the pumping well and any observation wells are measured to see how quickly the water levels rise back to the pre-pumping elevations. If a well is being pumped at a rate that is effectively dewatering the aquifer or pumping at a rate faster than recharge is occurring the well recovery will show this. If a pumping test is run for a certain period of time (say 24 hours) then the amount of recovery after the pump is turned off is the best indicator of how the aquifer is performing and whether a lack of recharge is resulting in dewatering of the aquifer. If the water level in the pumping well is lower than the pre-pumping test water level 24 hours after the pumping has ceased then the rate of withdrawal has exceeded the recharge rate of the aquifer.

Pumping test approach and procedures

There are no existing rules, regulations or standards at the state, county or local level, applicable to Individual Supply Wells, that set procedures for conducting a pumping test such as the one we conducted. We wrote a workplan to describe the approach we would take to conduct an aquifer test based on technical practices appropriate for a development of this size. That workplan, including the methods to be used were approved in a memo from Doug Miller to the Planning Board dated February 9, 2021. With the exception of the well locations that needed to be adjusted due to site access issues the workplan was carried out as proposed. Mr. Gould has suggested that the work should have been carried out in accordance with a NYSDEC document entitled "Pumping Test Procedures for Water Withdrawal Permit Applications". That document applies to groundwater withdrawals of 100,000 gallons per day or greater. The Brandywine phase 2 project will withdraw less than 17,000 gallons per day. While it is possible that individual homes may withdraw 5-10 gallons per minute during peak use times the maximum daily use will not exceed 440 gallons per day. This number is based on NYSDOH handbook for Residential onsite system design. The design standard of 110 gallons per bedroom per day is intended to conservatively estimate water use ie is unlikely to be exceeded. To add a margin of safety we will assume that the average daily use of groundwater, per home, per day will be 500 gallons. The idea, suggested by Mr. Gould that we should evaluate this project by assuming that 34 wells are pumping 5 gallons per minute, 24 hours per day is unrealistic and unfair. On average each well will be withdrawing 0.34 gallons per minute continuously.

Data Accuracy

As previously reported the pumping test was carried out by Mr. Mark Shute, a licensed and highly respected water well driller in consultation with me. Water levels were measured with a water level indicator, data loggers were used for

the duration of the drawdown and recovery. Mr. Gould has suggested that the data logger cables could have stretched and that the flow meter could have malfunctioned, that excessive rainfall could have recharged the aquifer during the pumping test and that surface water could have affected or could be affected by pumping wells. In response to these concerns we do not think that the cables stretched, or that the flow meter was malfunctioning or that surface water or recharge events could have affected the aquifer which is over 200 feet below the ground surface and protected by glacial till and shale that is fairly impermeable.

Pumping Test Results and What They Mean

There are some key facts that need to be highlighted:

1. The pumping well pumped at 12 gallons per minute for 23 hours and produced a drawdown of less than 2.5 feet out of a water column of 35 feet.
2. If 34 homes were built and each home used 500 gallons per day the total average withdrawal from the entire subdivision would be slightly less than 12 gallons per minute.
3. Mr. Gould has expressed concern that over the long term the aquifer will be depleted because the rate of withdrawal exceeds the recharge. If that were true then that depletion would show up in the well recovery data. If the water level in the pumping well did not recover to the pre-pumping elevation within 23 hours after pumping had ceased it would show that the aquifer was being depleted. However in less than 19 hours after the pumping had ceased in well #5 the water level had recovered to the pre-pumping elevation.

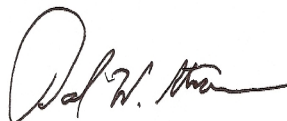
A Proposal to address Town Concerns

NYSDOH Individual Water Supply Wells Fact sheet #2 states that a water well that can produce 5 gallons per minute or more should be adequate to meet Peak Demand. It is also important that any future wells used on the Brandywine Phase 2 property perform in a similar fashion to the Well that was installed on lot #5. To account for some variability it seems reasonable to expect that each new well will produce at least 5 gallons per minute with no more than 10 feet of drawdown. As you are aware Harrington is proposing that Brandywine Phase 2 be built as a phased development. We are suggesting that each phase be approved contingent on the installation of a well on each lot that demonstrates a yield of 5 gallons per minute with no more than 10 feet of drawdown and that the well logs demonstrate that each well is

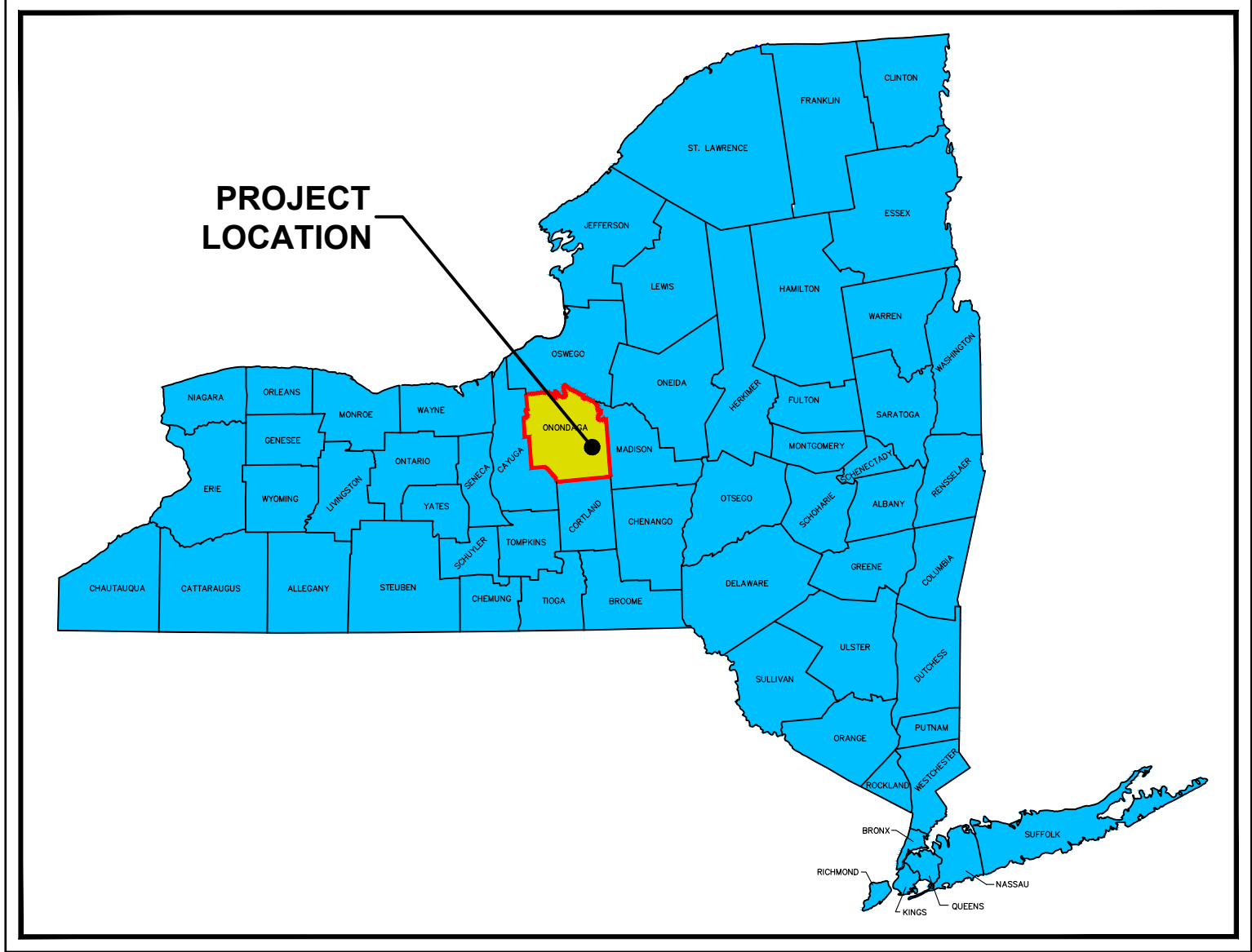
installed in geologic strata similar to that encountered during the installation of well #5. For any well that does not meet this requirement additional storage can be considered in consultation between the Town and Harrington. A contingent approval should be a way to demonstrate to the town that all 34 lots will have wells that will provide adequate sources of water supply to each home.

We look forward to moving forward with an approval that is adequately protective of future homeowners in Brandywine Phase 2.

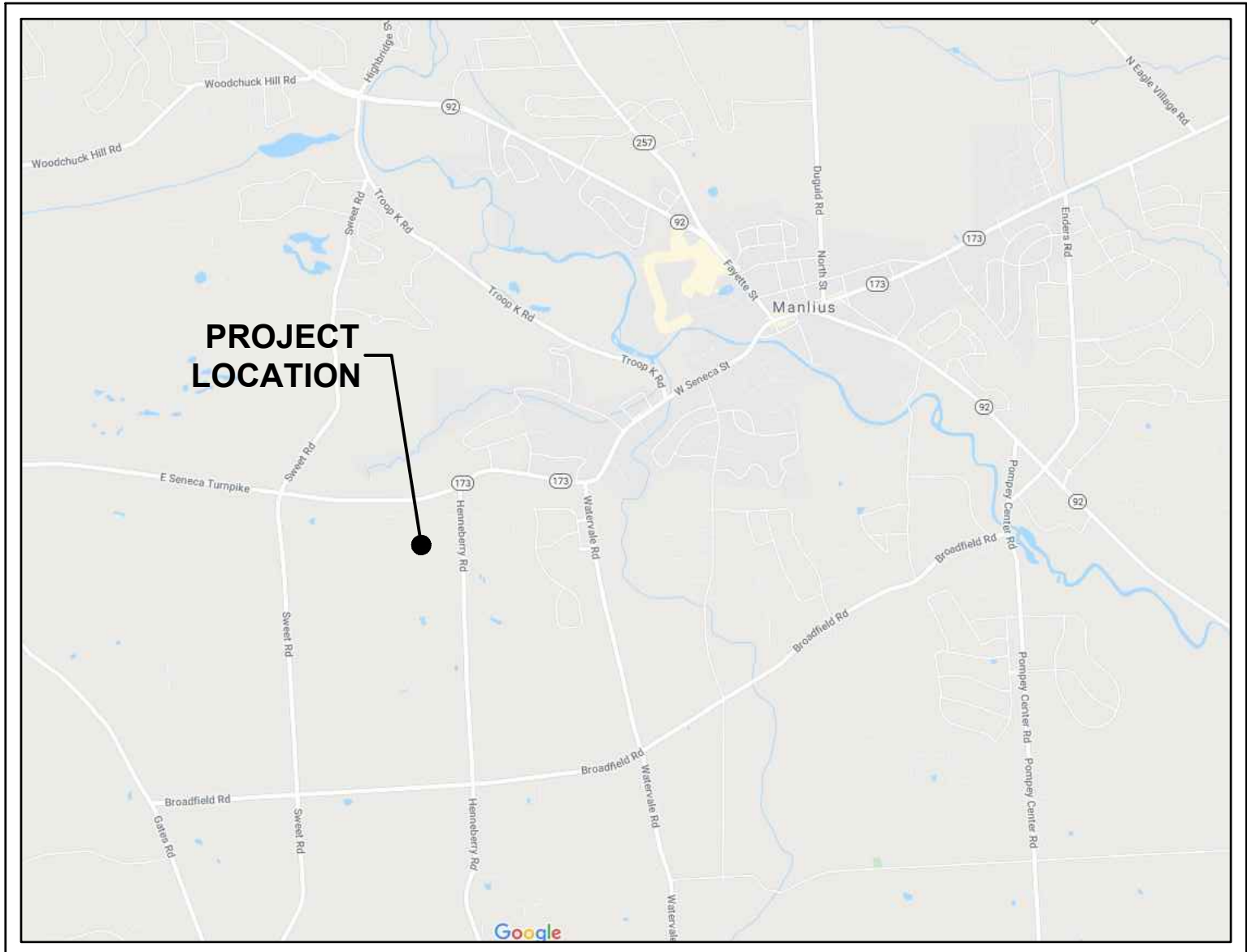
Very Truly Yours,

A handwritten signature in black ink, appearing to read "David W. Stoner". The signature is fluid and cursive, with a large initial "D" and a long, sweeping underline.

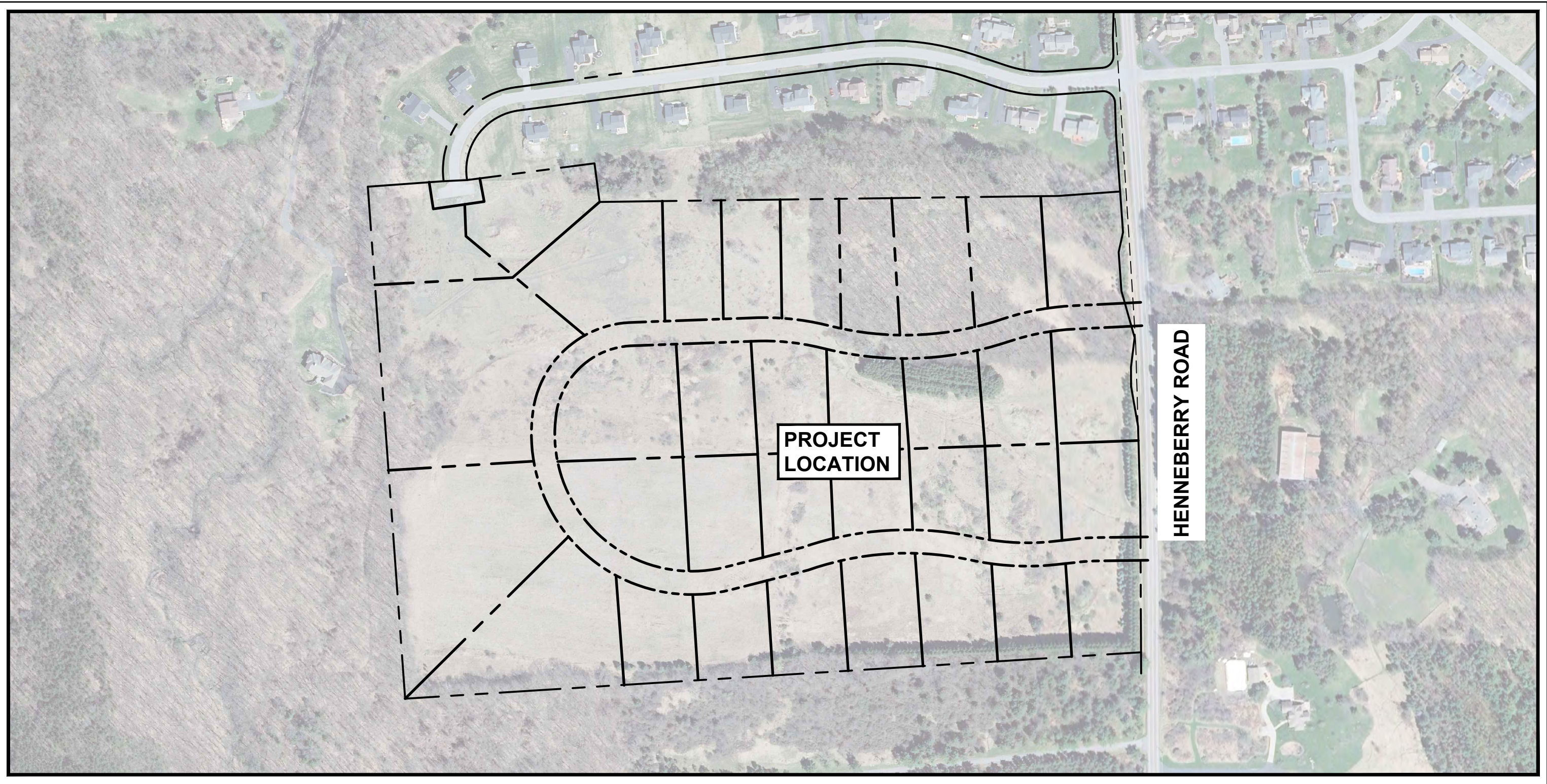
David W. Stoner, P.G.



SITE LOCATION MAP
NOT TO SCALE



PROJECT LOCATION MAP
NOT TO SCALE



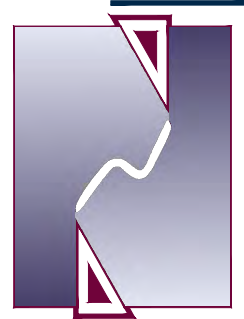
AERIAL MAP
1"=250'

PROPOSED BRANDYWINE ESTATES PHASE 2 - 34 LOT SUBDIVISION

HENNEBERRY ROAD
TAX ID: 109.-02-07.1

TOWN OF MANLIUS
ONONDAGA COUNTY
NEW YORK STATE

PREPARED BY:



**NAPIERALA
CONSULTING**
PROFESSIONAL ENGINEER, P.C.
SITE • DESIGN • ENGINEERING

110 FAYETTE STREET
MANLIUS, NEW YORK 13104

email: MNAP@NAPCON.COM
PH: (315) 682-5580 FAX: (315) 682-5544

PREPARED FOR:



**HARRINGTON
HOMES**

Your Builder for Life

3848 HENNEBERRY ROAD
JAMESVILLE, NY 13078

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SEWER PROFILE PLANS	C-6.0 THRU C-6.1
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PHASING PLAN	C-8

PRELIMINARY PLANS - FINAL APPROVAL
REQUIRED BY ALL JURISDICTIONS



APPROVED BY OWNER

SHEET TITLE:

TITLE SHEET

NAME DATE

3	REVISED AS PER TOWN ENGINEER'S COMMENTS	02/16/2022
2	GENERAL REVISIONS	02/09/2022
1	GENERAL REVISIONS	12/01/2021
NO.	REVISION/ISSUE	DATE

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NAPIERALA CONSULTING PROFESSIONAL ENGINEER, P.C.
IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS
ACTING UNDER THE DIRECTION OF A LICENSED
ARCHITECT, PROFESSIONAL ENGINEER, LANDSCAPE
ARCHITECT, OR LAND SURVEYOR TO ALTER ANY ITEM ON
THIS DOCUMENT IN ANY WAY.
ANY LICENSEE WHO ALTERS THIS DOCUMENT IS
REQUIRED BY LAW TO AFFIX HIS OR HER SEAL AND THE
NOTATION "ALTERED BY" FOLLOWED BY HIS OR HER
SIGNATURE AND SPECIFIC DESCRIPTION OF THE
ALTERATIONS.

PRELIMINARY
NOT FOR CONSTRUCTION

PROJECT NO. 20-1906	DATE 17 SEP 2020
PROPOSED BRANDYWINE ESTATES PHASE 2	
HENNEBERRY ROAD TOWN OF MANLIUS ONONDAGA COUNTY, NY	

C-0

PROPERTY LINE INFORMATION TAKEN FROM A PLAN ENTITLED "TOPOGRAPHIC SURVEY, BRANDYME
PHASE 3 - SECTION 1 PART OF FARM LOT NUMBER 96, TOWN OF MANLIUS" PREPARED BY JANUZI &
ROMANS LAND SURVEYING, P.C.

THE PLANS SHOW SUBSURFACE STRUCTURES, ABOVEGROUND STRUCTURES, AND/OR UTILITIES FROM
FIELD LOCATION AND RECORD MAPPING. EXACT LOCATION MAY VARY FROM THE LOCATIONS
INDICATED. IN PARTICULAR, THE CONTRACTOR IS WARNED THAT THE EXACT OR EVEN APPROXIMATE
LOCATION OF SUCH PIPELINES, SUBSURFACE STRUCTURES AND/OR UTILITIES IN THE AREA MAY BE
DIFFERENT FROM THAT SHOWN OR MAY NOT BE SHOWN AND IT SHALL BE HIS RESPONSIBILITY TO
PROCEED WITH GREAT CARE IN EXECUTING ANY WORK. THE CONTRACTOR IS TO CALL DIG SAFELY NY
AT 1-800-962-7962 A MINIMUM OF 72 HOURS BEFORE DIGGING, DRILLING, OR BLASTING.

THE ENGINEER SHALL BE NOTIFIED IN WRITING OF ANY CONDITIONS THAT VARY FROM THOSE SHOWN
ON THE PLANS. THE CONTRACTOR'S WORK SHALL NOT VARY FROM THE PLANS WITHOUT THE
EXPRESSED APPROVAL OF THE ENGINEER.

THE CONTRACTOR IS INSTRUCTED TO COOPERATE WITH ANY AND ALL OTHER CONTRACTORS
PERFORMING WORK ON THIS JOB SITE DURING THE PERFORMANCE OF THIS CONTRACT.

THE CONTRACTOR SHALL RESTORE LAWNS, DRIVEWAYS, CULVERTS, SIGNS, AND OTHER PUBLIC OR
PRIVATE PROPERTY DAMAGED OR REMOVED TO AT LEAST AS GOOD A CONDITION AS BEFORE BEING
DISTURBED AS DETERMINED BY THE ENGINEER. ANY DAMAGED TREES, SHRUBS, AND/OR HEDGES
SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AND INCURRING THE COST OF ALL
REQUIRED PERMITS, INSPECTIONS, CERTIFICATES, ETC. AND SHALL COMPLY WITH ALL PERMITS.

ALL WORK SHALL BE DONE IN STRICT COMPLIANCE WITH ALL APPLICABLE NATIONAL, STATE, AND
LOCAL CODES, STANDARDS, ORDINANCES, RULES, AND REGULATIONS.

ALL PROPOSED UTILITIES AND APPURTENANCES ARE TO BE CONSTRUCTED IN COMPLIANCE WITH THE
LOCAL MUNICIPALITY'S CODES AND REGULATIONS GOVERNING THE INSTALLATION OF SUCH UTILITIES.

THE ENGINEER RESERVES THE RIGHT TO EXAMINE ANY WORK DONE ON THIS PROJECT AT ANY TIME
TO DETERMINE CONFORMANCE WITH THE REQUIREMENTS OF THE CONTRACT DOCUMENTS OF THIS
PROJECT AS INTENDED AND INTERPRETED BY THE ENGINEER.

MISCELLANEOUS WORK NOT SPECIFICALLY SHOWN ON THE CONTRACT DRAWINGS SUCH AS PATCHING,
BLOCKING, TRIMMING, ETC. SHALL BE PERFORMED AS REQUIRED TO MAKE THE WORK COMPLETE.

THE CONTRACTOR SHALL PROTECT EXISTING PROPERTY LINE INFORMATION. ANY MONUMENTATION
DISTURBED OR DESTROYED, AS JUDGED BY THE ENGINEER OR OWNER, SHALL BE REPLACED AT THE
CONTRACTOR'S EXPENSE UNDER THE SUPERVISION OF A NEW YORK STATE LICENSED LAND SURVEYOR.

IT IS THE CONTRACTOR'S RESPONSIBILITY TO EXAMINE ALL PLAN SHEETS AND COORDINATE WORK
WITH ALL OTHER CONTRACTS FOR THE SITE.

THE CONTRACTOR SHALL:

- VERIFY ALL CONDITIONS IN THE FIELD PRIOR TO COMMENCEMENT OF WORK AND NOTIFY THE
ENGINEER OF ANY DISCREPANCIES.
- EXAMINE THE SITE AND INCLUDE IN HIS WORK THE EFFECT OF ALL EXISTING CONDITIONS ON THE
WORK.
- PROVIDE AND INSTALL ALL MATERIALS AND PERFORM ALL WORK IN ACCORDANCE WITH THE
RECOGNIZED GOOD STANDARD PRACTICE.
- HOLD THE OWNER HARMLESS AGAINST ANY AND ALL CLAIMS ARISING FROM WORK DONE BY THE
CONTRACTOR ON THE SITE.

ALL TRENCH EXCAVATION AND ANY REQUIRED SHEETING AND SHORING SHALL BE DONE IN
ACCORDANCE WITH THE LATEST REVISIONS OF NEW YORK STATE INDUSTRIAL CODE RULE 23 AND
SEALD BY A NEW YORK STATE PROFESSIONAL ENGINEER. SHEET PILING SHALL BE DESIGNED AND SEALD BY A NEW
YORK STATE PROFESSIONAL ENGINEER.

CONTRACTOR SHALL BE RESPONSIBLE FOR DEWATERING AND THE MAINTENANCE OF SURFACE
DRAINAGE DURING THE COURSE OF WORK. HE SHALL SUBMIT A DEWATERING PLAN DESIGNED AND
SEALD BY A NEW YORK STATE PROFESSIONAL ENGINEER. CONTRACTOR SHALL MAINTAIN EXISTING
SITE DRAINAGE PATTERNS THROUGHOUT CONSTRUCTION.

ALL BACKFILL USED IN TRENCHES EXCAVATED IN EXISTING ROADWAYS SHALL BE PLACED IN MAXIMUM
6-INCH LIFTS AND COMPACTED BY MEANS OF A MECHANICAL COMPACTOR BETWEEN LIFTS TO 90%
STANDARD PROCTOR COMPACTION.

WHEN BACKFILLING AROUND PROPOSED OR EXISTING STRUCTURES, MATERIAL SHALL BE PLACED IN
MAXIMUM 6-INCH LIFTS AND COMPACTED BY MEANS OF A MECHANICAL COMPACTOR BETWEEN LIFTS
TO 90% STANDARD PROCTOR COMPACTION.

ALL UTILITY WORK INVOLVING CONNECTIONS TO EXISTING SYSTEMS SHALL BE COORDINATED WITH THE
ENGINEER AND THE UTILITY OWNER. NOTIFY THE ENGINEER AND THE UTILITY OWNER 72 HOURS
BEFORE EACH AND EVERY CONNECTION TO AN EXISTING SYSTEM IS MADE.

CONSTRUCTION OF ALL PROPOSED UTILITIES MUST BEGIN AT ITS POINT OF CONNECTION TO THE
EXISTING UTILITY OR AT THE LOWEST POINT IN THE SYSTEM. RIMS, GRATES, INVERTS, CLEARANCES,
AND LOCATION AT CROSSINGS MUST BE VERIFIED PRIOR TO THE BEGINNING OF CONSTRUCTION.

MAINTAIN FLOW FOR ALL EXISTING UTILITIES.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR PLANNING ANY FIELD LAYOUT. THE CONTRACTOR
SHALL TAKE TIES TO ALL UTILITY CONNECTIONS AND PROVIDE MARKED-UP AS-BUILT PLANS FOR ALL
UTILITIES SHOWING TIES TO CONNECTIONS, BENDS, VALVES, LENGTHS OF LINES, AND INVERTS. THE
OWNER AND HIS REPRESENTATIVES SHALL REVIEW AS-BUILT PLANS SHOWING ALL UNDERGROUND
UTILITIES INSTALLED OR ENCOUNTERED. THE CONTRACTOR SHALL PROVIDE ANY CORRECTION OR
OMISSIONS TO THE SATISFACTION OF THE OWNER AND HIS REPRESENTATIVES BEFORE UTILITIES WILL
BE ACCEPTED.

THE CONTRACTOR SHALL MAINTAIN ALL TRAFFIC IN ALL AREAS IN ACCORDANCE WITH THE NYSDOT
MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.

THE CONTRACTOR SHALL MAINTAIN ACCESS TO ALL COMMERCIAL, RESIDENTIAL, AND PUBLIC
PROPERTIES OR AS DIRECTED BY THE ENGINEER.

ALL EXCAVATIONS SHALL BE BACKFILLED TO EXISTING GRADE AT THE END OF EACH WORKDAY.

THE CONTRACTOR SHALL TAKE CARE TO PREVENT DAMAGE TO EXISTING UTILITIES. DAMAGED
UTILITIES SHALL BE IMMEDIATELY REPAIRED BY THE CONTRACTOR AT THE CONTRACTOR'S EXPENSE.

1. THE GENERAL CONSTRUCTION CONTRACTOR RESPONSIBLE FOR ANY CLEARING OR DEMOLITION WORK AS NOTED ON THIS PLAN.
2. EXISTING FEATURES ARE BASED ON A SURVEY BY IANUZI & ROMANS LAND SURVEYING, P.C.
3. OWNER WILL PROVIDE AN 'ALL CLEAR' PRIOR TO ANY CLEARING OR DEMOLITION.
4. THE CONTRACTOR SHALL CONTACT DIG SAFELY NEW YORK AT 811 FOR UTILITY STAKEOUTS A MINIMUM OF THREE (3) BUSINESS DAYS PRIOR TO ANY DEMOLITION WORK, SITE WORK, OR EXCAVATION.
5. THE CONTRACTOR SHALL COORDINATE WITH ALL PUBLIC AND PRIVATE UTILITIES FOR RESPECTIVE REQUIREMENTS FOR THE REMOVAL/ABANDONMENT OF UTILITY MAINS/LATERALS SERVICING THE SITE.

1. MAXIMUM SLOPE FOR ALL CUT AND FILL LAWN AREAS SHALL BE 3H:1V UNLESS SHOWN OTHERWISE ON PLANS.
2. SLOPES GREATER THAN 4H:1V SHALL BE STABILIZED IMMEDIATELY AFTER GRADING OCCURS IN ACCORDANCE WITH THE NEW YORK STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL.
3. CONTRACTOR SHALL OBTAIN A COPY OF THE GEOTECHNICAL REPORT AND BECOME FAMILIAR WITH THE SOIL CONDITIONS ON THE SITE. CONTRACTOR SHALL FOLLOW ALL RECOMMENDATIONS AND REQUIREMENTS FROM THE GEOTECHNICAL ENGINEER.
4. UNLESS OTHERWISE NOTED, LIMITS OF DISTURBANCE ARE AS REPRESENTED BY PROPOSED GRADES. NO GRADING SHALL TAKE PLACE BEYOND LIMITS SHOWN.
5. ALL SLOPES STEEPER THAN 3H:1V SHALL BE TREATED WITH AN EROSION CONTROL PRACTICE SUCH AS A ROLLED EROSION CONTROL BLANKET OR RIPRAP. SEE DESIGNATED AREAS ON PLANS.

1. ALL CONSTRUCTION SHALL CONFORM WITH APPROPRIATE CODE AND REGULATORY REQUIREMENTS.
2. ALL UTILITIES SHALL BE INSTALLED IN ACCORDANCE WITH MUNICIPAL REGULATIONS AND THE STANDARDS OF THE PRIVATE UTILITY COMPANIES.
3. PRIVATE UTILITY SERVICE FINAL LOCATION, SIZE AND DEPTH ARE SUBJECT TO THE APPROVAL OF THE UTILITY COMPANY.
4. EXTERIOR BUILDING LIGHTING LUMINARIES SHALL BE OF SIZE AND TYPE, AND AT LOCATIONS SPECIFIED BY THE ARCHITECTS ELECTRICAL SITE PLAN AND SHALL CONFORM TO THE MUNICIPAL ZONING REQUIREMENTS.
5. WATER
WATER LINES, FITTINGS AND APPURTENANCES TO BE IN CONFORMANCE WITH APPROPRIATE CODE AND REGULATORY REQUIREMENTS. VERIFY EXISTING LINE SIZE AND LOCATION PRIOR TO CONSTRUCTION. ALL WATER LINES MUST MAINTAIN A MINIMUM 10' HORIZONTAL SEPARATION WITH SANITARY SEWER AND STORM SEWER LINES. ALL WATER MAIN AND SERVICE WORK MUST BE COORDINATED WITH THE MUNICIPAL WATER DEPARTMENT.
6. SOME LOTS SHALL BE SERVED BY INDIVIDUAL WATER SUPPLY WELLS, WITH THE EXCEPTION OF LOTS #8 AND #9 WHICH CAN BE SERVED BY OCWA PUBLIC WATER SUPPLY.
7. SANITARY SEWER
SANITARY SEWERS SHALL BE PVC PER ASTM D3034 SDR 35 UNLESS OTHERWISE NOTED. SUITABLE COUPLINGS AND ADAPTERS SHALL BE PROVIDED AT BUILDING CONNECTIONS.
8. STORM DRAINAGE
STORM DRAINAGE PIPING SHALL BE SMOOTH INTERIOR CORRUGATED PLASTIC PIPE (SICPP) UNLESS OTHERWISE NOTED (SICPP). PIPE JOINTS AND FITTINGS SHALL CONFORM TO AASHTO M252 OR AASHTO M294.
9. ELECTRIC AND GAS
ALL ELECTRIC AND GAS INSTALLATION SHALL BE COORDINATED WITH NATIONAL GRID.

	----- PROPOSED BUILDING
	----- PROPERTY LINE
	----- PROPOSED EASEMENT LINE
	----- PROPOSED STORM INLET
	----- PROPOSED MANHOLE (STORM OR S
	----- PROPOSED SANITARY PIPE
	----- PROPOSED STORM PIPE
	----- PROPOSED WATER PIPE
	----- PROPOSED GAS PIPE
	----- PROPOSED UNDERGROUND ELECTRIC

TEMPORARY SEEDING MIXTURES			PERMANENT SEEDING MIXTURES		
	LBS./ACRE	LBS./1000 SQ. FT	SEED MIXTURE NO. 1	LBS./ACRE	
FOR SPRING, SUMMER OR EARLY FALL SEEDINGS:					
A. ANNUAL RYEGRASS – OR –	30	0.70	CREeping RED FESCUE (var. ENSYLVA)	10	
B. PERENNIAL RYEGRASS	30	0.70	PERENNIAL RYE GRASS (var. PENNFINE)	10	
			SEED MIXTURE NO. 2		
FOR LATE FALL OR EARLY WINTER			SWITCHGRASS (var. SHELTER, PATHFINDER, TRAILBLAZER, OR BLACKWELL)	20	
A. WINTER RYE (AROSTOOK)	100	2.50	SEED MIXTURE NO. 3		
MULCH THE AREA WITH HAY OR STRAW AT 2 TONS/ACRE (APPROXIMATELY 2 LARGE ROLLED BALES/ACRE).			BIRDFOOT TREFOIL (var. EMPIRE, PARDEE)	10	
			REDTOP	2	
			TALL FESCUE (var. KY 31, REBEL)	20	
MULCH ANCHORING IS REQUIRED WHERE WIND OR AREAS OF CONCENTRATED WATER ARE OF CONCERN.			SEED MIXTURE NO. 4		
			CREeping RED FESCUE (var. ENSYLVA)	20	
			CHEWINGS FESCUE (COMMON)	20	
			PERENNIAL RYE GRASS (var. PENNFINE)	5	
			RED CLOVER (COMMON)	10	
PERMANENT SEEDINGS SHOULD TAKE PLACE IN EARLY SPRING. PROPER MULCHING AND ADEQUATE MOISTURE MUST BE PROVIDED FOR PERMANENT SEEDING. RESEEDING OF SPALLED AREAS SHALL TAKE PLACE DURING LATE SUMMER/EARLY FALL OR DURING THE FOLLOWING SPRING.			SEED MIXTURE 1 TO BE APPLIED TO SHADED AREAS.		
FERTILIZER:			SEED MIXTURE 2 IS IN PURE LIVE SEED. TO BE APPLIED TO AREAS UPLAND OF WETLANDS AND ALONG STORMWATER MITIGATION BASIN BANKS.		
5% NITROGEN					
0% PHOSPHORUS					
5% POTASH			SEED MIXTURE 3 TO BE APPLIED TO ALL SWALES AND WATERWAYS		
HYDROMULCH			WHITE CLOVER OR LADINO CLOVER MAY BE SUBSTITUTED FOR BIRDFOOT TREFOIL AND SEEDED AT THE SAME RATE		
HYDROMULCH SHALL BE A WOOD-FIBER COMPOSITION (50% PAPER + 50% WOOD)			PERENNIAL RYEGRASS MAY BE SUBSTITUTED FOR REDTOP BUT INCREASE SEEDING RATE TO 5 LBS./ACRE (0.1 LBS./1000 SQ. FT)		
IF MULCHING IS NOT APPLIED WITH HYDROSEED MIXTURE, APPROVED MULCHING, CONSISTING OF STALKS OF WHEAT, OATS, OR RYE, SHALL BE SPREAD EVENLY AT A RATE OF 2 TONS PER ACRE. MULCH IS TO BE TACKED INTO PLACE.			SEED MIXTURE 4 TO BE APPLIED TO ALL AREAS. (NOT FOR USE IN PLAYGROUNDS OR AS TURF)		

PROJECT TITLE: **BRANDYWINE ESTATES PHASE 2
HENNEBERRY ROAD**

TOWN OF MANLIUS **ONONDAGA COUNTY, NY**

HARRINGTON HOMES

3848 HENNEBERRY ROAD
JAMESVILLE, NY 13078

PREPARED FOR:

NO.	NO.	REVISION/ISSUE	DATE
1	1	GENERAL REVISIONS	12/01/2021
2	2	GENERAL REVISIONS	02/09/2022
3	3	REVISED AS PER TOWN ENGINEER'S COMMENTS	21/16/2022

PREPARED BY:

**NAPIERALA
CONSULTING**
PROFESSIONAL ENGINEER, P.C.
SITE • DESIGN • ENGINEERING
110 FAYETTE STREET
MANHATTAN, NEW YORK 1304

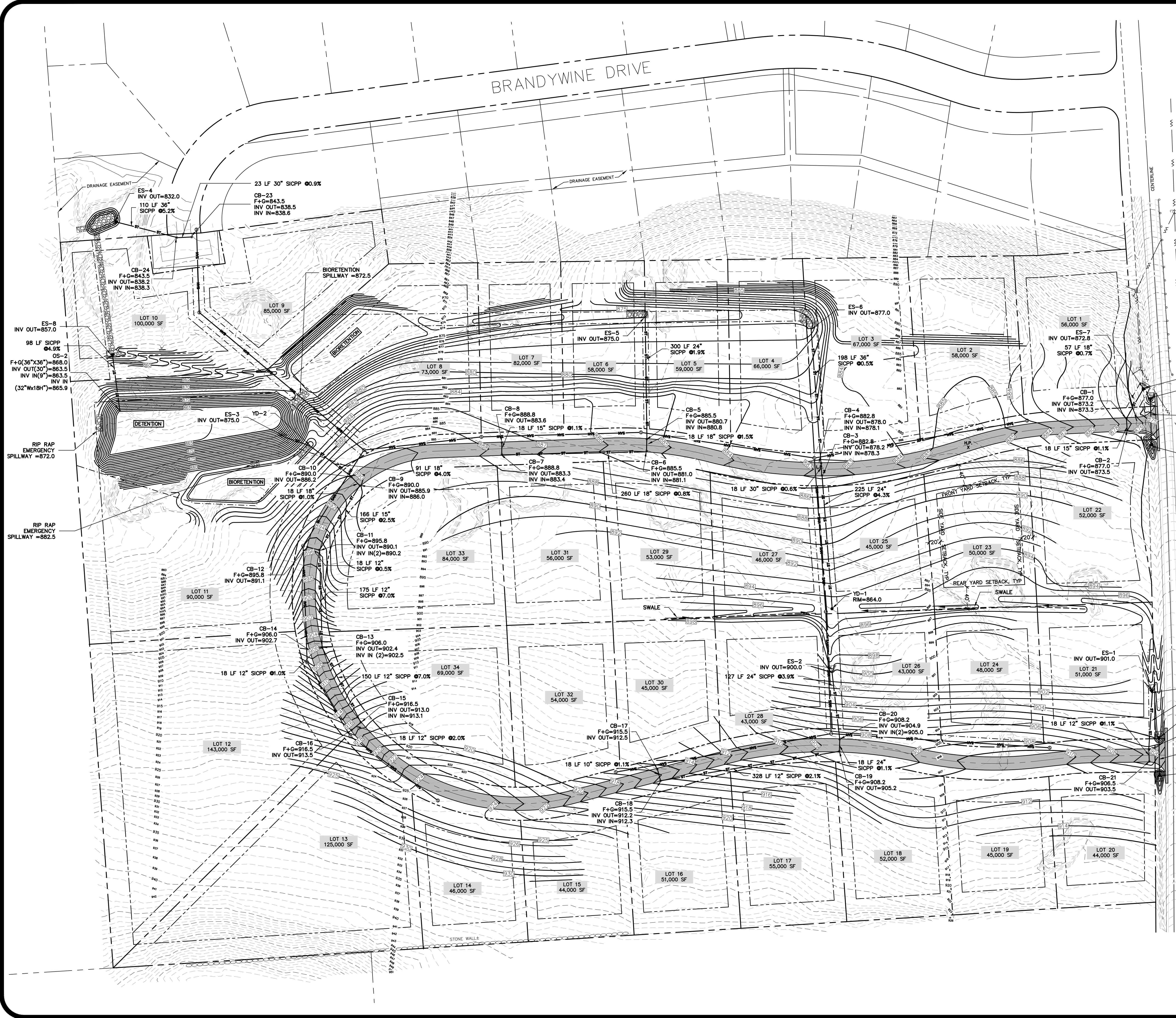
email: MNAP@NAPCON.COM
PH: (315) 682-5580 FAX: (315) 682-5544

PROJECT NO.	20-1906
DATE	17 SEP 2020
SCALE	NTS

50

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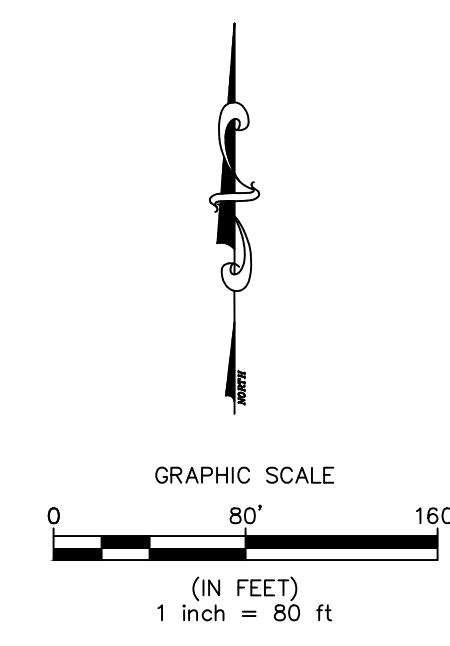
SITE CRITERIA CHECKLIST		
PROJECT SITE INFORMATION		
ADDRESS	HENNEBERRY ROAD (COUNTY ROUTE 182)	
TAX MAP ID NO.	109.-02.-07.1	
BOUNDARY SURVEY	PROPERTY LINE INFORMATION TAKEN FROM SURVEY BY IANUZI AND ROMANS	
TOTAL SITE AREA	54.746 ACRES	
LAND USE	SINGLE FAMILY RESIDENTIAL – 34 LOTS	
ZONING INFORMATION		
ZONING DISTRICT	R-1, RESIDENTIAL DISTRICT	
	REQUIRED	PROVIDED
MIN. LOT FRONTAGE	150'	150' MIN.
MIN. LOT AREA	40,000 SF	40,000 SF MIN.
MINIMUM FRONT YARD	40'	40' MIN.
MINIMUM REAR YARD	40'	40' MIN.
MINIMUM SIDE YARD	20'	20' MIN.

PROJECT TITLE: **BRANDYWINE ESTATES PHASE 2**
HENNEBERRY ROAD
 TOWN OF MANLIUS
 ONONDAGA COUNTY, NY
 PREPARED FOR: **HARRINGTON HOMES**
 3848 HENNEBERRY ROAD
 JAMESVILLE, NY 13078

OVERALL GRADING PLAN

NO.	REVISION/ISSUE	DATE
3	REVISED AS PER TOWN ENGINEER'S COMMENTS	2/16/2022
2	GENERAL REVISIONS	02/09/2022
1	GENERAL REVISIONS	12/01/2021

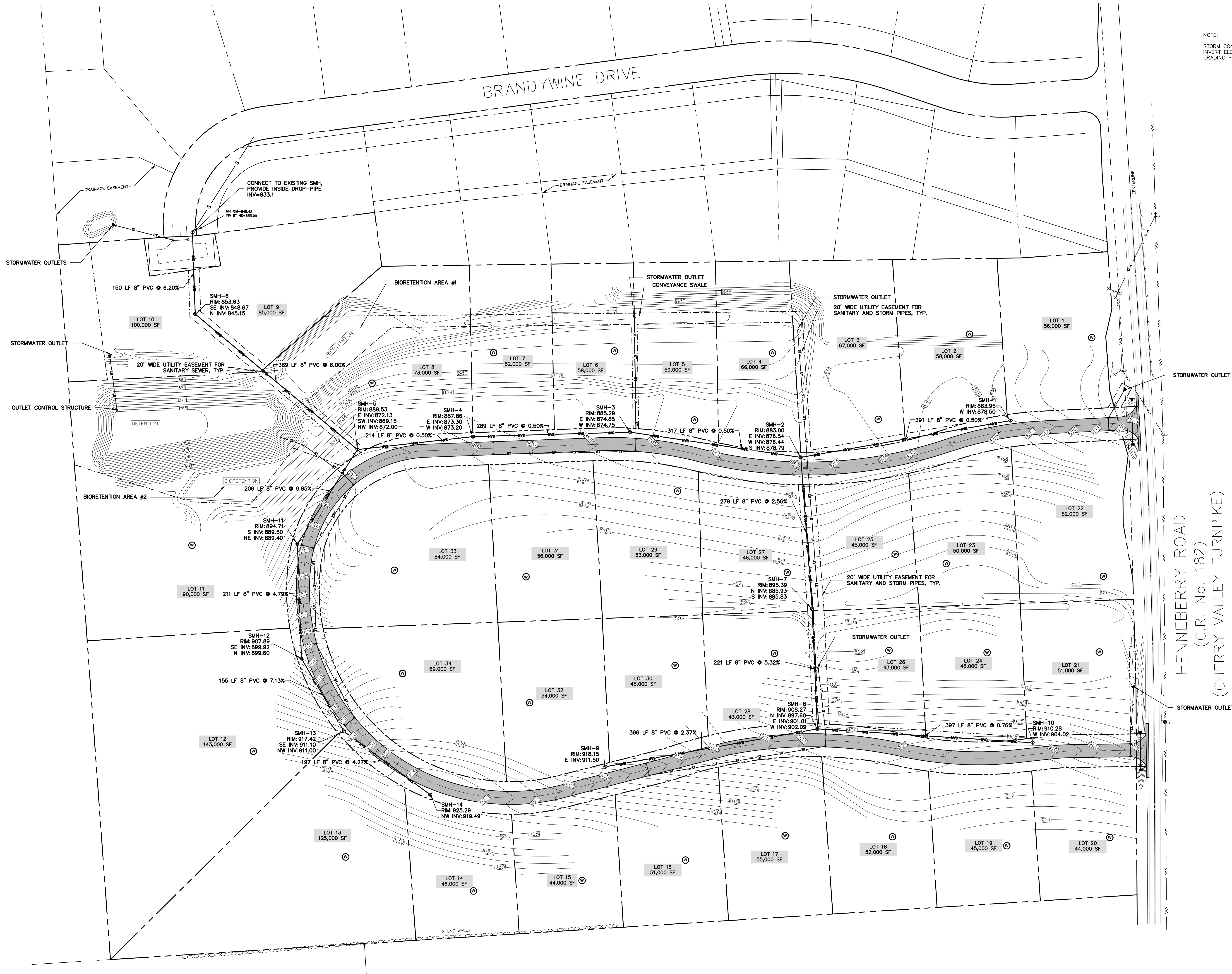
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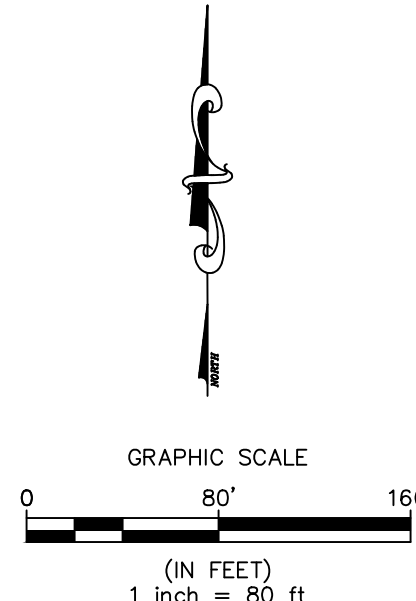
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PLAN SEAL BY: **NAPIERALA CONSULTING**
 NYS REGISTRATION NO. 00711

PROJECT NO.	20-1906
DATE	17 SEP 2020
SCALE	1" = 80'
SHEET	C-2



NOTE:
STORM CONVEYANCE SYSTEM PIPE SLOPE, RIM, AND
INVERT ELEVATIONS CAN BE SEEN ON THE OVERALL
GRADING PLAN, SHEET C-2.



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PLAN SEAL BY:
NYS REGISTRATION #02711

PROJECT TITLE:
**BRANDYWINE ESTATES PHASE 2
HENNEBERRY ROAD**

TOWN OF MANLIUS
ONONDAGA COUNTY, NY

PREPARED FOR:
HARRINGTON HOMES
3848 HENNEBERRY ROAD
JAMESVILLE, NY 13078

SHEET TITLE:
OVERALL UTILITY PLAN

NO.	REVISION/ISSUE	DATE
3	REVISED AS PER TOWN ENGINEER'S COMMENTS	2/16/2022
2	GENERAL REVISIONS	02/09/2022
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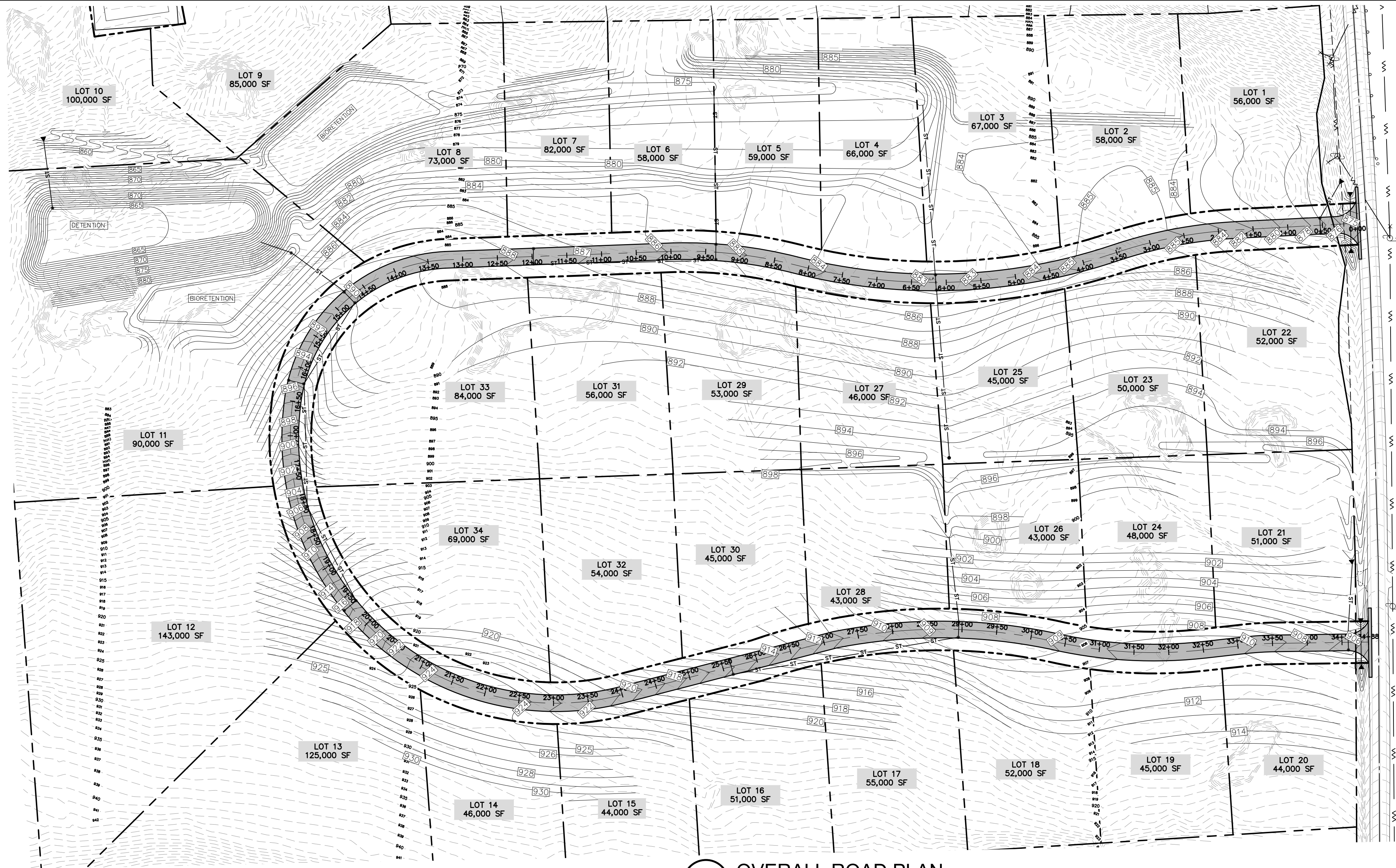
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PROJECT NO.
20-1906

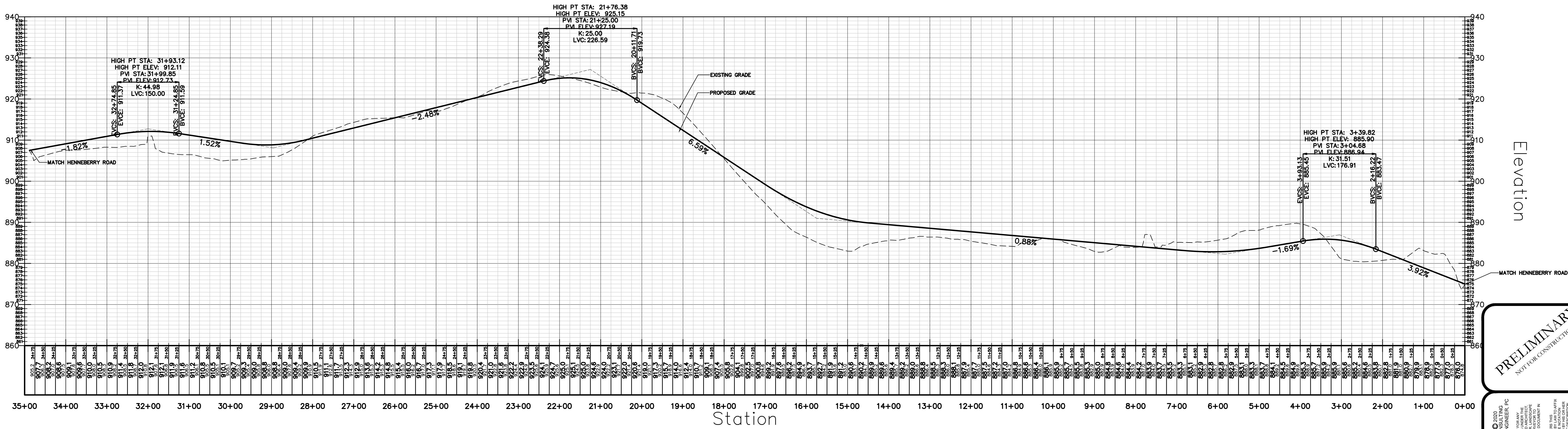
DATE
17 SEP 2020

SCALE
1" = 80'

SHEET
C-3



1 OVERALL ROAD PLAN
C-4 SCALE: 1"=100'



2 OVERALL ROAD PROFILE
C-4 SCALE: H: 1"=120' V: 1"=12'

HENNEBERRY ROAD
(C.R. No. 182)
(CHERRY VALLEY TURNPIKE)

PROJECT TITLE: BRANDYWINE ESTATES PHASE 2
HENNEBERRY ROAD
TOWN OF MANLIUS ONONDAGA COUNTY, NY
PREPARED FOR: HARRINGTON HOMES
3848 HENNEBERRY ROAD
JAMESVILLE, NY 13078

OVERALL ROAD PROFILE

NO.	REVISION/ISSUE	DATE
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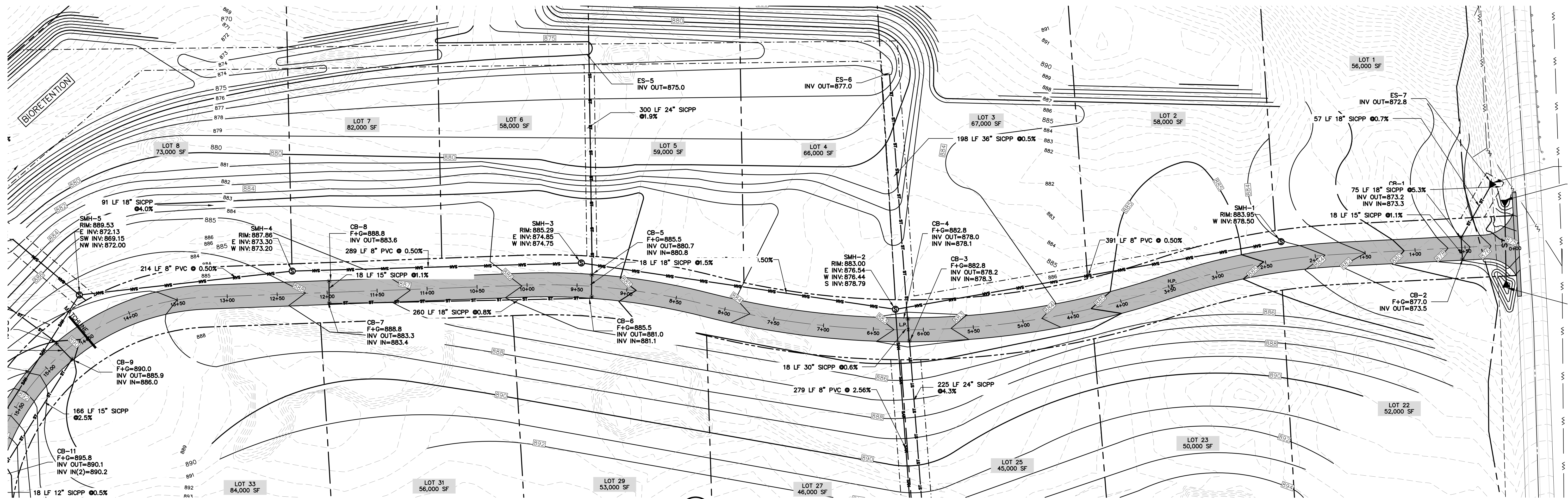
PREPARED BY: NAPIERALA CONSULTING
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Elevation

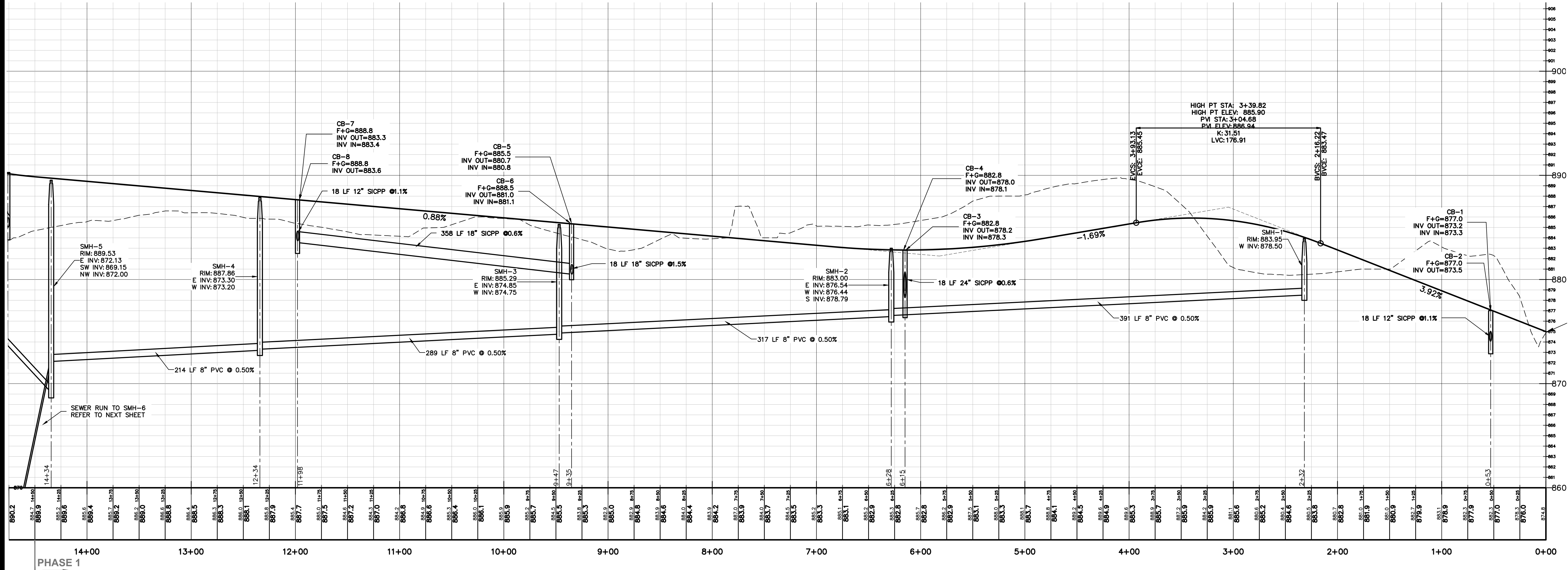
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PROJECT NO. 20-1906
DATE 17 SEP 2020
SCALE AS NOTED

C-4



1 ROAD A
C-5.0 SCALE: 1"=50'



2 ROAD A PROFILE - SUBDIVISION PHASE 1
C-5.0 SCALE: H: 1"=50' V: 1"=5'

PROJECT TITLE: **BRANDYWINE ESTATES PHASE 2**
HENNEBERRY ROAD
TOWN OF MANLIUS ONONDAGA COUNTY, NY
PREPARED FOR: **HARRINGTON HOMES**
3848 HENNEBERRY ROAD
JAMESVILLE, NY 13078

ROAD PROFILE PLAN

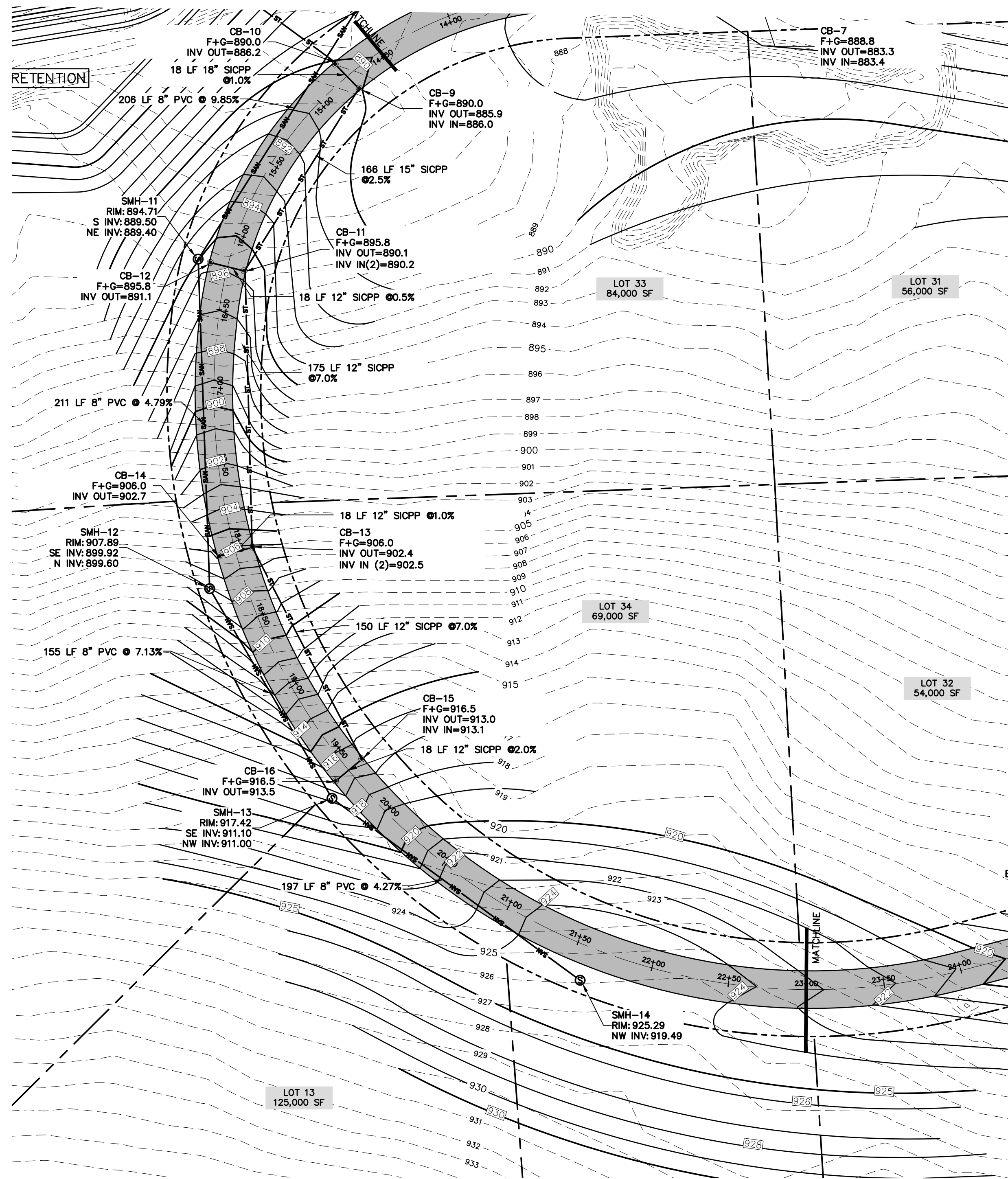
SHEET TITLE:

NO.	REVISION/ISSUE	DATE
3	REVISED AS PER TOWN ENGINEER'S COMMENTS	2/16/2022
2	GENERAL REVISIONS	02/09/2022
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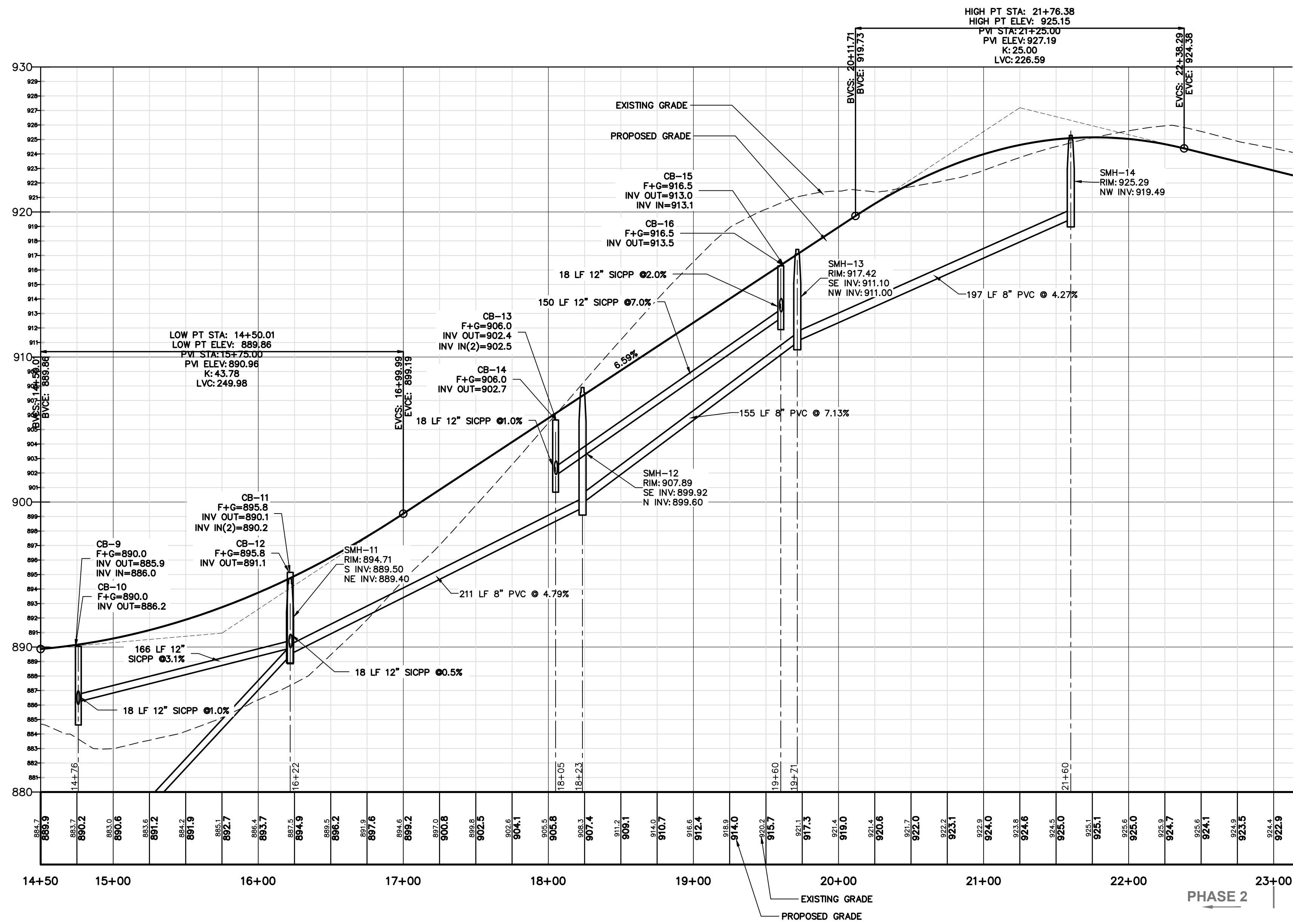
PREPARED BY: **NAPIERALA CONSULTING**
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PROJECT NO: **20-1906**
DATE: **17 SEP 2020**
SCALE: **1" = 50'**

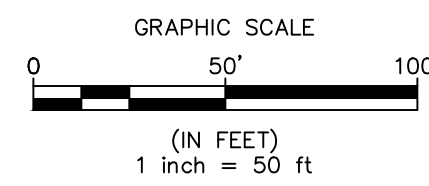
C-5.0



1 ROAD A PLAN
C-5.1 SCALE: 1"=50'



2 ROAD A PROFILE - SUBDIVISION PHASE 2
C-5.1 SCALE: H:1"=50' V:1"=5'



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PLAN SEAL BY:
NEW JERSEY
NYS REGISTRATION NO. 21711

PROJECT TITLE:
**BRANDYWINE ESTATES PHASE 2
HENNEBERRY ROAD**
TOWN OF MANLIUS ONONDAGA COUNTY, NY
PREPARED FOR:
HARRINGTON HOMES
3848 HENNEBERRY ROAD
JAMESVILLE, NY 13078

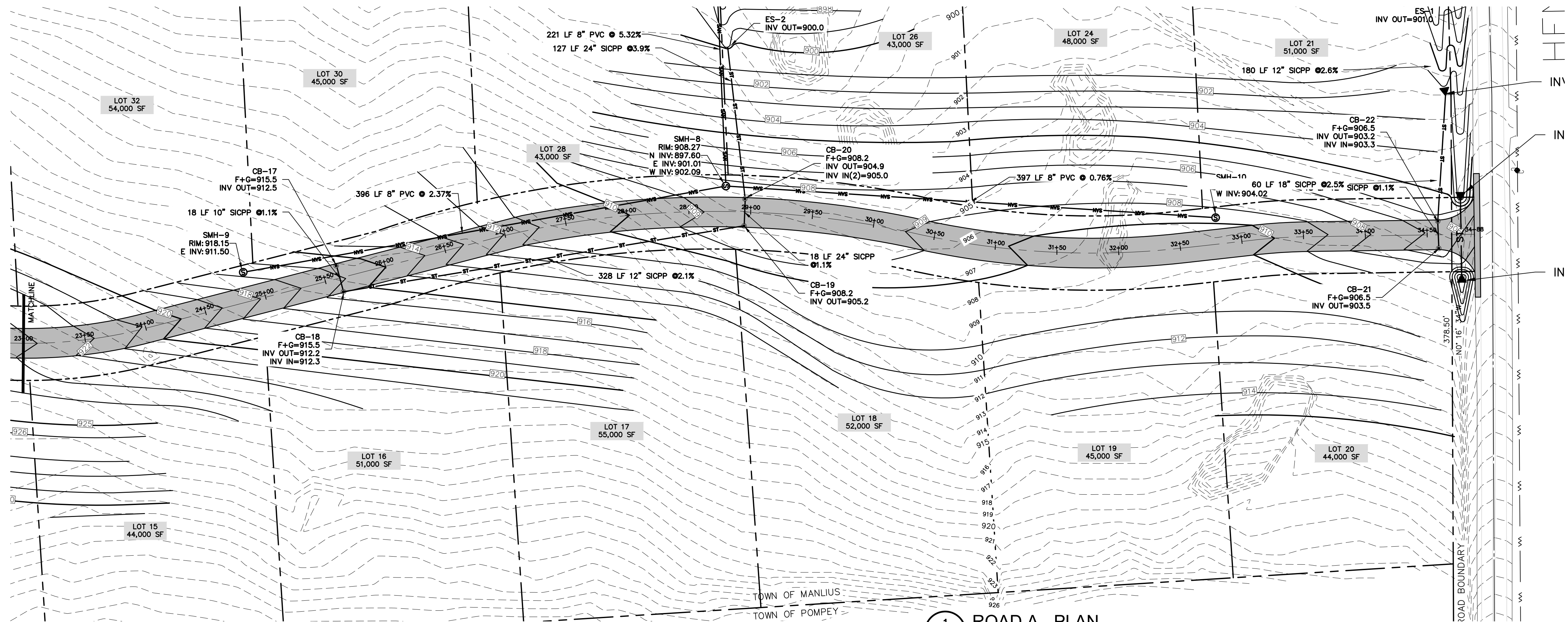
ROAD PROFILE PLAN

NO.	REVISION/ISSUE	DATE
3	REVISED AS PER TOWN ENGINEER'S COMMENTS	2/16/2022
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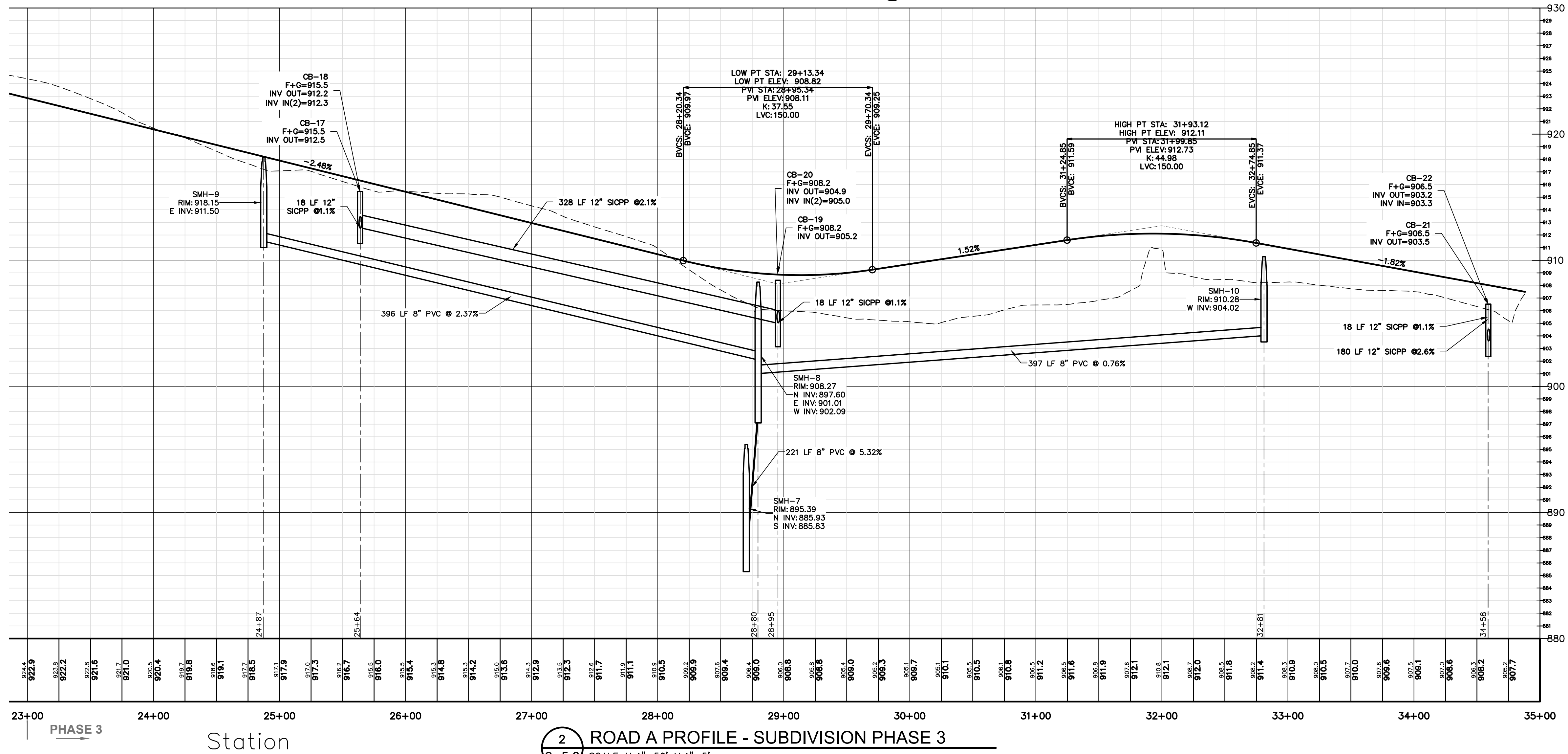
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PROJECT NO.
20-1906
DATE
17 SEP 2020
SCALE
1" = 50'

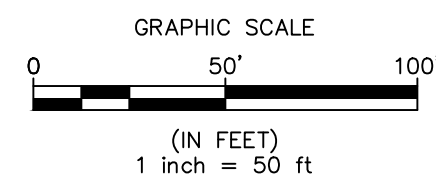
SHEET
C-5.1



1 ROAD A - PLAN
C-5.2 SCALE: 1"=50'



2 ROAD A PROFILE - SUBDIVISION PHASE 3
C-5.2 SCALE: H: 1"=50' V: 1"=5'



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PROJECT TITLE: BRANDYWINE ESTATES PHASE 2
HENNEBERRY ROAD
TOWN OF MANLIUS ONONDAGA COUNTY, NY
PREPARED FOR: HARRINGTON HOMES
3848 HENNEBERRY ROAD
JAMESVILLE, NY 13078

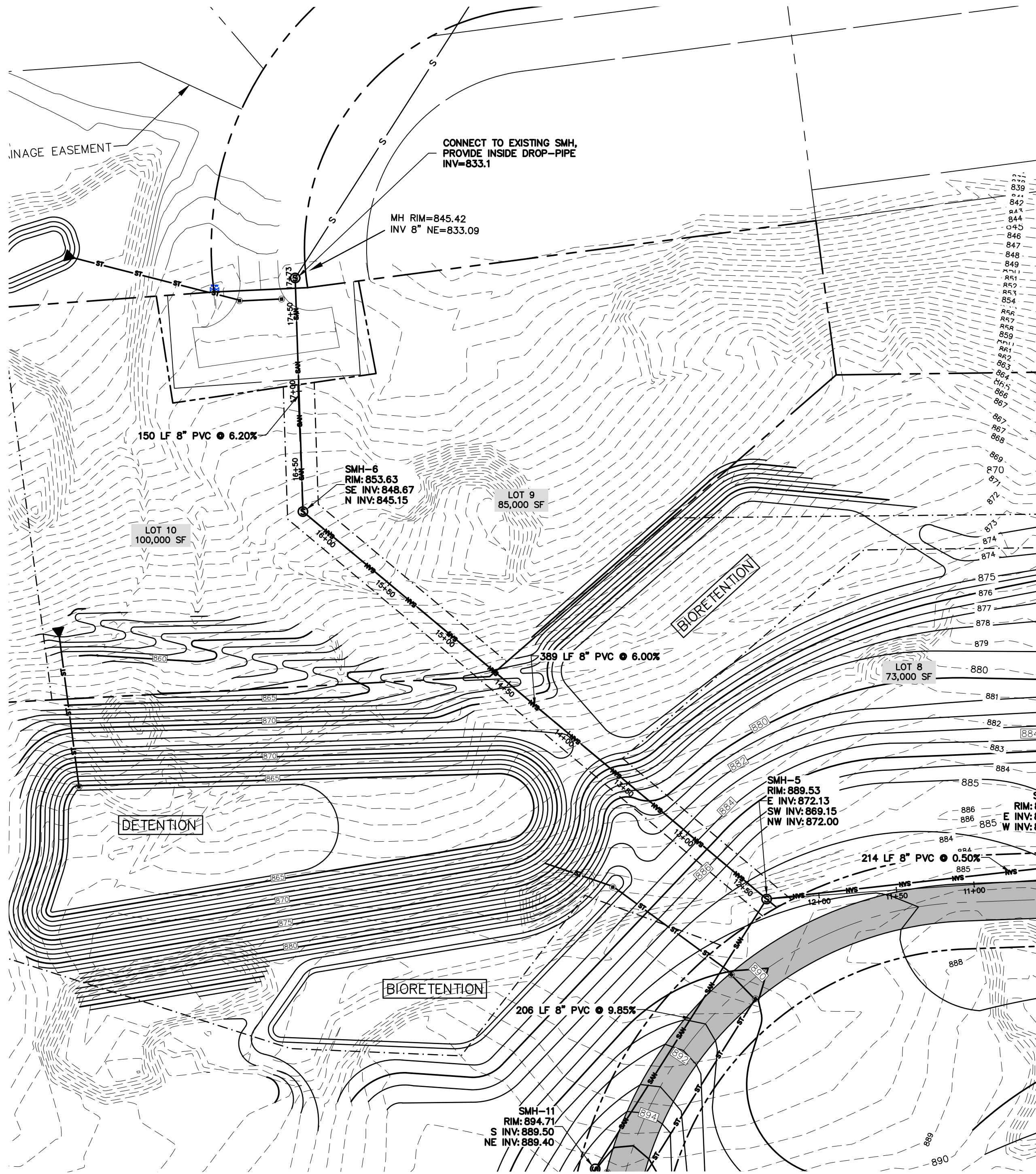
ROAD PROFILE PLAN

NO.	REVISION/ISSUE	DATE
3	REVISED AS PER TOWN ENGINEER'S COMMENTS	2/16/2022
2	GENERAL REVISIONS	02/09/2022
1	GENERAL REVISIONS	12/01/2021

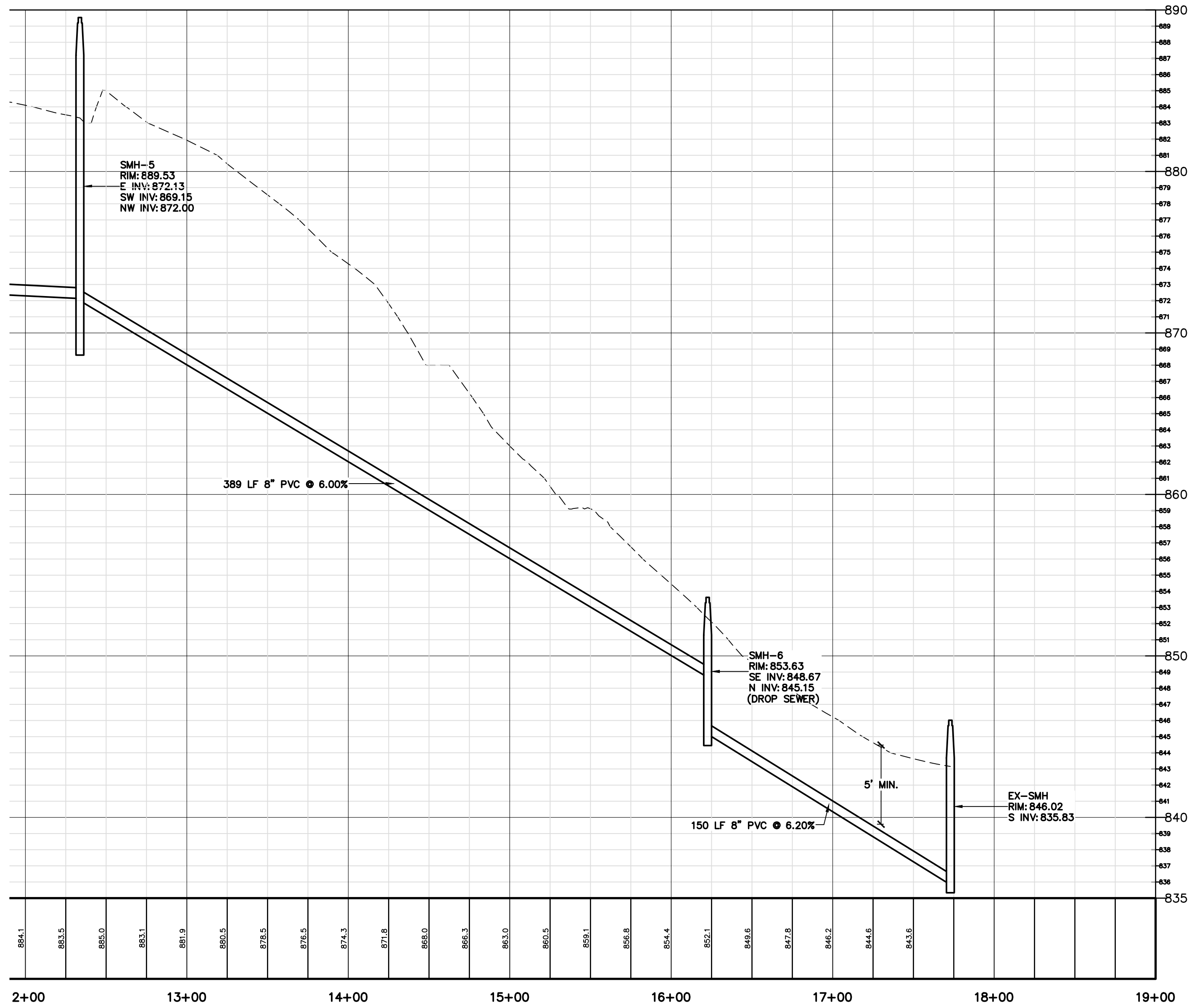
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PROJECT NO. 20-1906
DATE 17 SEP 2020
SCALE 1" = 50'

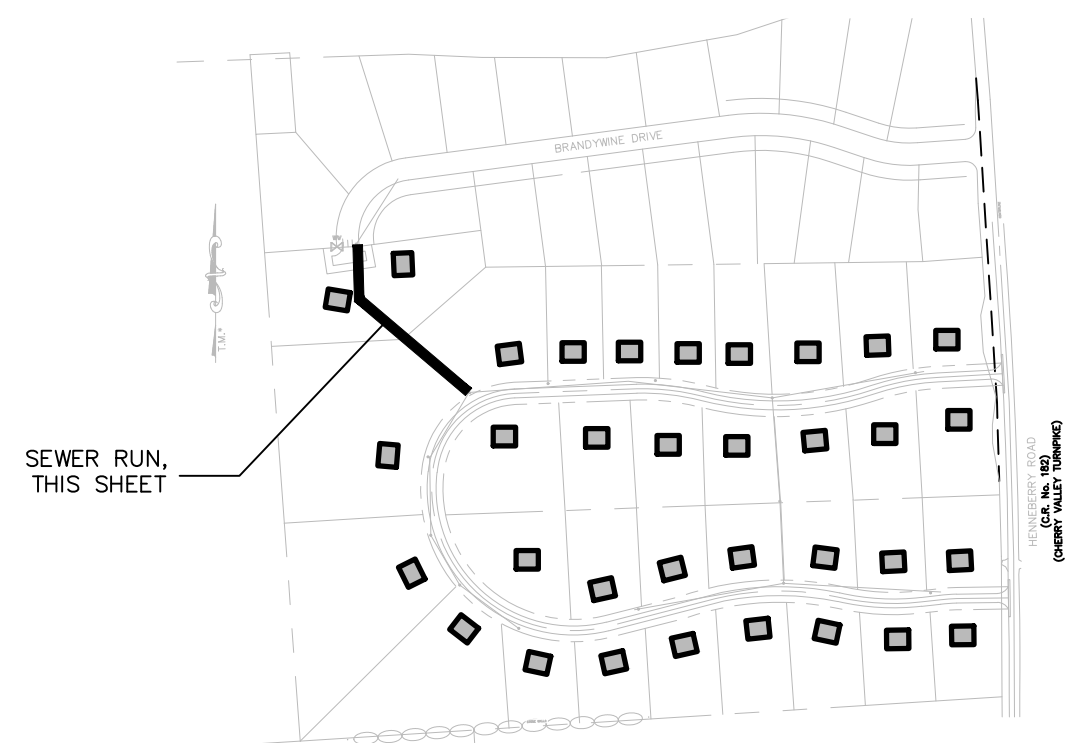
C-5.2



2 SEWER PLAN
C-6.0 SCALE: 1"=50'



3 SEWER PROFILE
C-6.0 SCALE: H: 1"=50' V: 1"=5'



1 OVERALL SEWER LAYOUT
C-6.0 SCALE: NTS

PROJECT TITLE: BRANDYWINE ESTATES PHASE 2
HENNEBERRY ROAD
TOWN OF MANLIUS ONONDAGA COUNTY, NY
PREPARED FOR: HARRINGTON HOMES
3848 HENNEBERRY ROAD
JAMESVILLE, NY 13078

SHEET TITLE: SEWER PROFILE PLAN

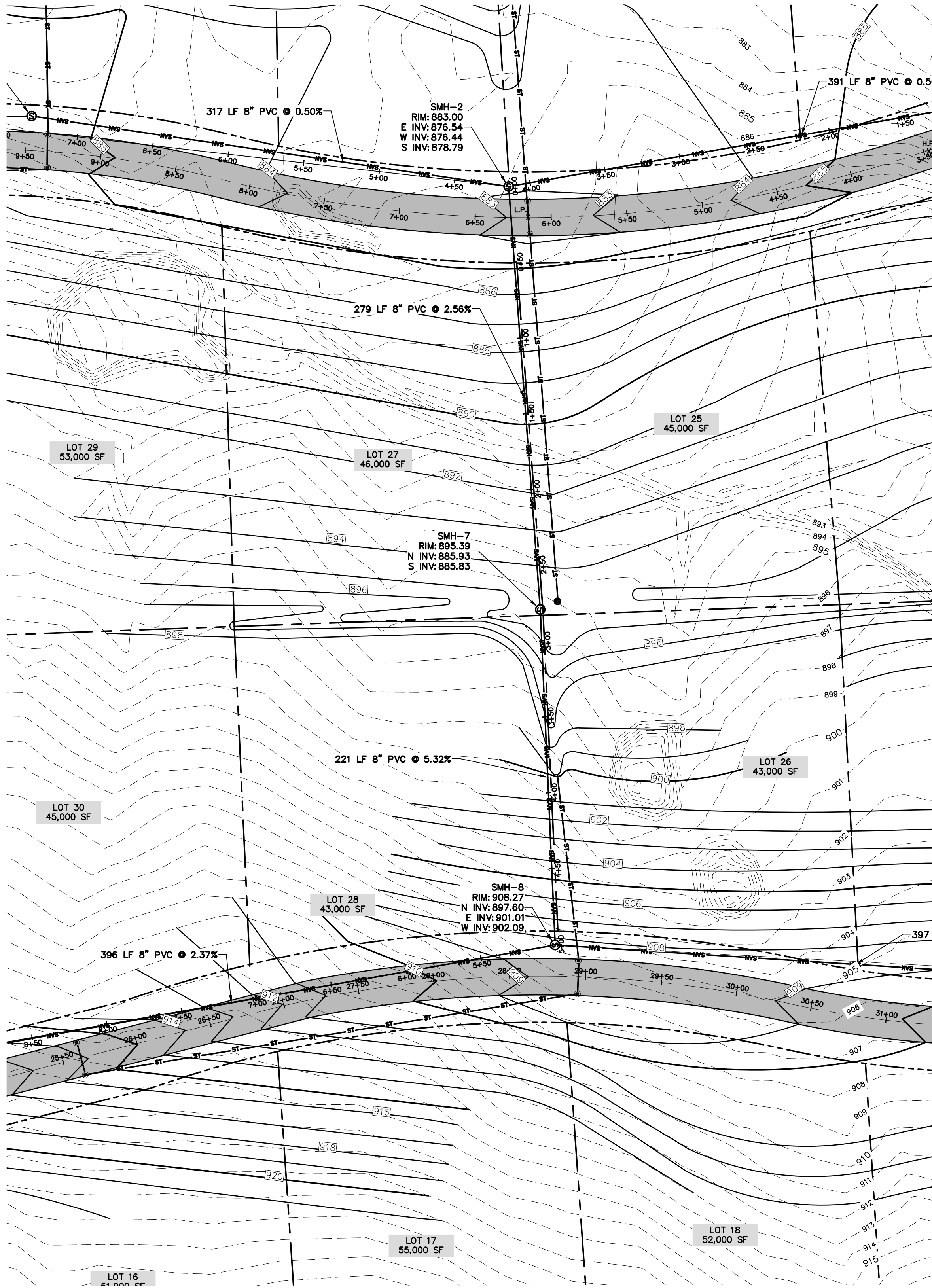
NO.	REVISION/ISSUE	DATE
3	REVISED AS PER TOWN ENGINEER'S COMMENTS	2/16/2022
2	GENERAL REVISIONS	02/09/2022
1	GENERAL REVISIONS	12/01/2021

PREPARED BY: NAPIERALA CONSULTING
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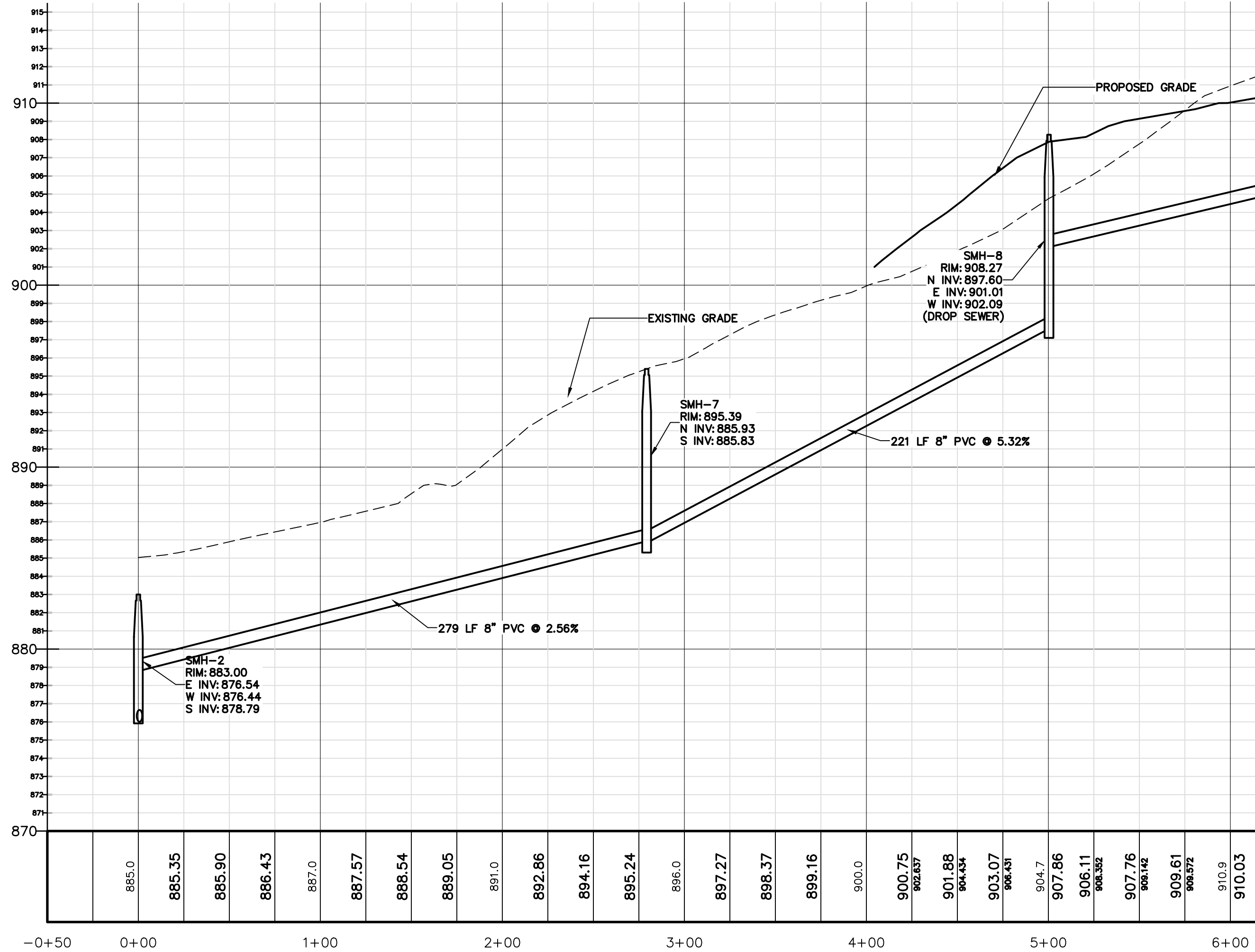
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NOT FOR CONSTRUCTION

PROJECT NO. 20-1906
DATE 15 SEP 2020
SCALE 1" = 50'

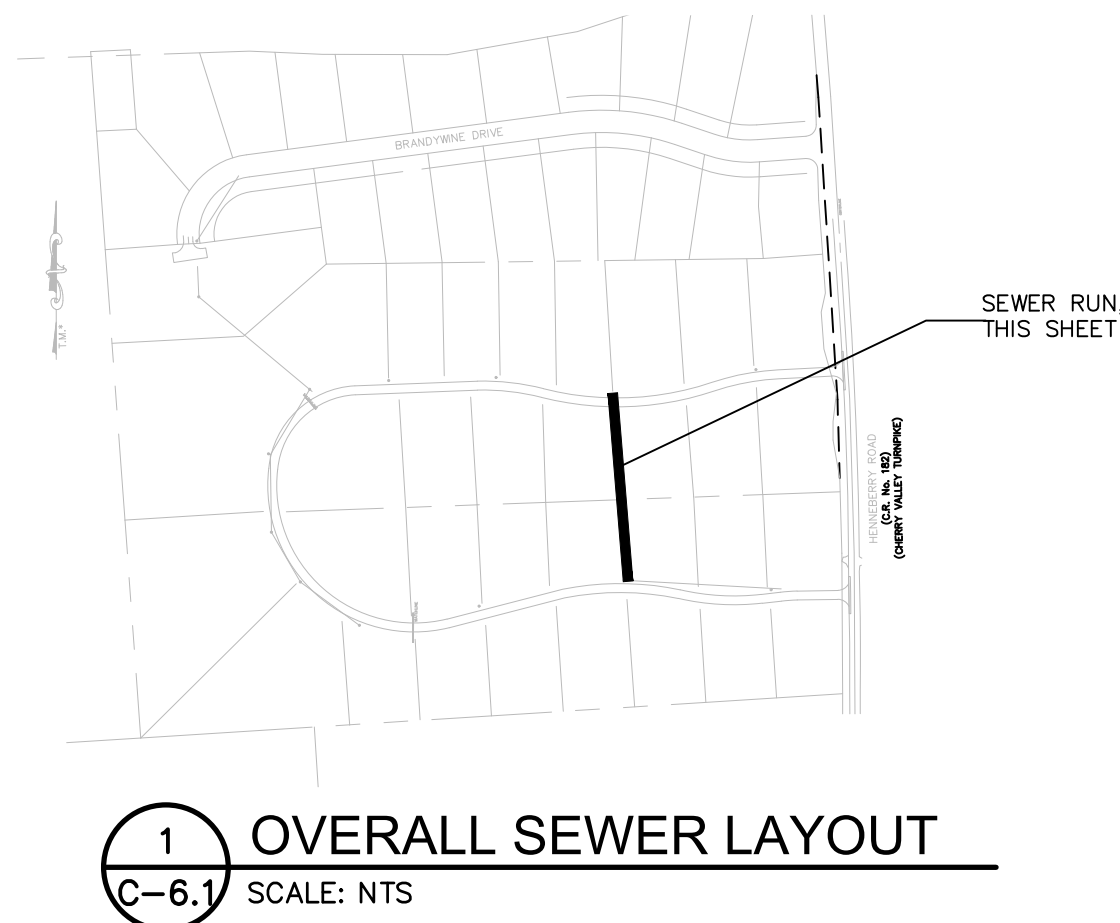
SHEET C-6.0



2 SANITARY SEWER PLAN
C-6.1 SCALE: 1"=50'



3 SANITARY SEWER PROFILE
C-6.1 SCALE: H: 1"=50' V: 1"=5'



1 OVERALL SEWER LAYOUT
C-6.1 SCALE: NTS

PROJECT TITLE: BRANDYWINE ESTATES PHASE 2
HENNEBERRY ROAD
TOWN OF MANLIUS ONONDAGA COUNTY, NY
PREPARED FOR: HARRINGTON HOMES
3848 HENNEBERRY ROAD
JAMESVILLE, NY 13078

SEWER PROFILE PLAN

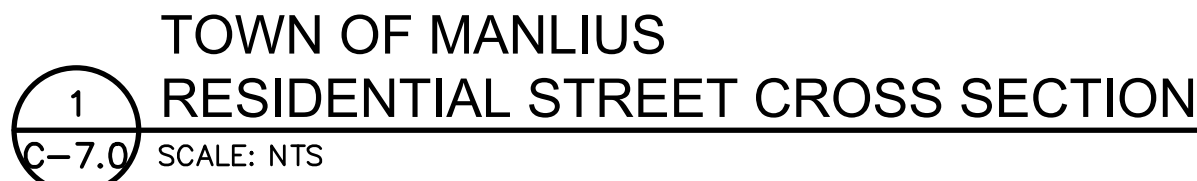
NO.	REVISION/ISSUE	DATE
3	REVISED AS PER TOWN ENGINEER'S COMMENTS	2/16/2022
2	GENERAL REVISIONS	02/09/2022
1	GENERAL REVISIONS	12/01/2021

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PLAN SEAL BY: P.E.
NYS REGISTRATION # 007211

PROJECT NO. 20-1906
DATE 15 SEP 2020
SCALE 1" = 50'
SHEET C-6.1



- TYPICAL INSTALLATION**
1. MINIMUM VERTICAL SEPARATION IS 18" FROM TOP OF PIPE TO BOTTOM OF PIPE.
 2. SEWER JOINTS ARE TO SPACED EQUIDISTANT AND AS FAR AS POSSIBLE FROM THE WATER MAIN JOINTS.
- VERTICAL SEPARATION LESS THAN 18"**
1. SEWER SHALL BE DESIGNED AND CONSTRUCTED EQUAL TO THE WATER PIPE, AND SHALL BE PRESSURE TESTED AT 150 PSI TO ASSURE WATER TIGHTNESS PRIOR TO BACKFILLING.
 2. SEWER JOINTS ARE TO SPACED EQUIDISTANT AND AS FAR AS POSSIBLE FROM THE WATER MAIN JOINTS.
- WATER CROSSES UNDER SEWER**
1. SEWER SHALL BE DESIGNED AND CONSTRUCTED EQUAL TO THE WATER PIPE, AND SHALL BE PRESSURE TESTED AT 150 PSI TO ASSURE WATER TIGHTNESS PRIOR TO BACKFILLING.
 2. SEWER JOINTS ARE TO SPACED EQUIDISTANT AND AS FAR AS POSSIBLE FROM THE WATER MAIN JOINTS.
 3. PROVIDE ADEQUATE STRUCTURAL SUPPORT FOR SEWER TO MAINTAIN LINE AND GRADE



- 6 SANITARY SEWER MANHOLE BENCH
C-7.0 SCALE: NTS

PROJECT TITLE: **BRANDYWINE ESTATES PHASE 2
HENNEBERRY ROAD**

TOWN OF MANLIUS ONONDAGA COUNTY, NY

HARRINGTON HOMES

3848 HENNEBERRY ROAD
JAMESVILLE, NY 13078

PREPARED FOR:

SITE DETAILS

[illegible]

PREPARED BY:

**NAPIERALA
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SHEET	PROJECT NO.
	20-1906

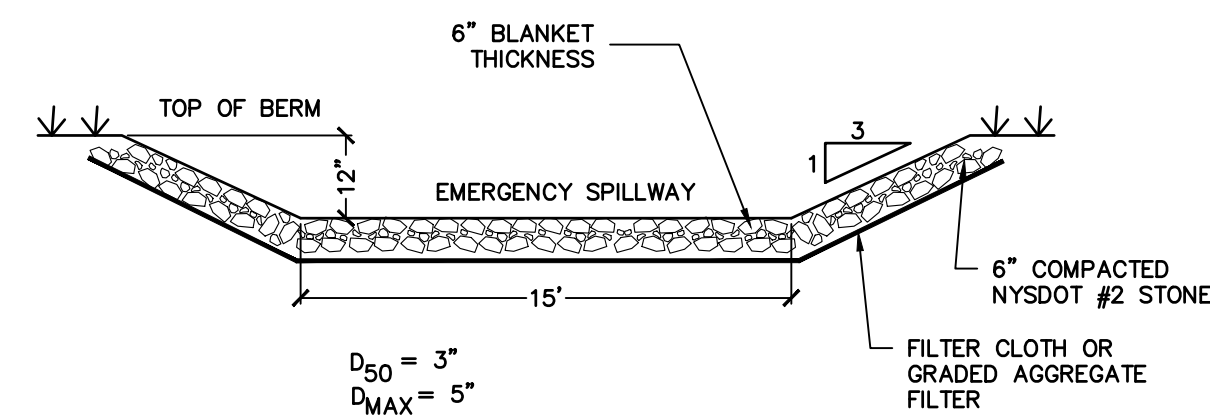
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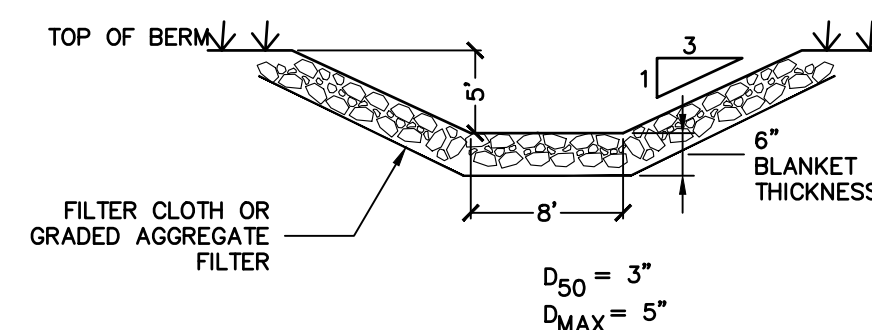
C-7.0



BIORETENTION AREA #2 (±6,200 SF) – LANDSCAPE TABLE					
KEY	QUANTITY*	LATIN NAME	COMMON NAME	CALIPER	HEIGHT
TREES					
UR	8	ULMUS RUBRA	SLIPPERY ELM	6'–8'	B&B
SHRUBS					
LB	25	LINDERA BENZOIN	COMMON SPICE	18"–24"	B&B
IV	35	ILEX VERTICILLATA	WINTER BERRY	2'–3'	B&B
CO	30	CEPHALANTHUS OCCIDENTALIS	BUTTONBUSH	18"–24"	B&B
HERBACEOUS PLANTS					
PV	300	PANICUM VIRGATUM	SWITCH GRASS		
AA	300	AGROSTIS ALBA	REDTOP		

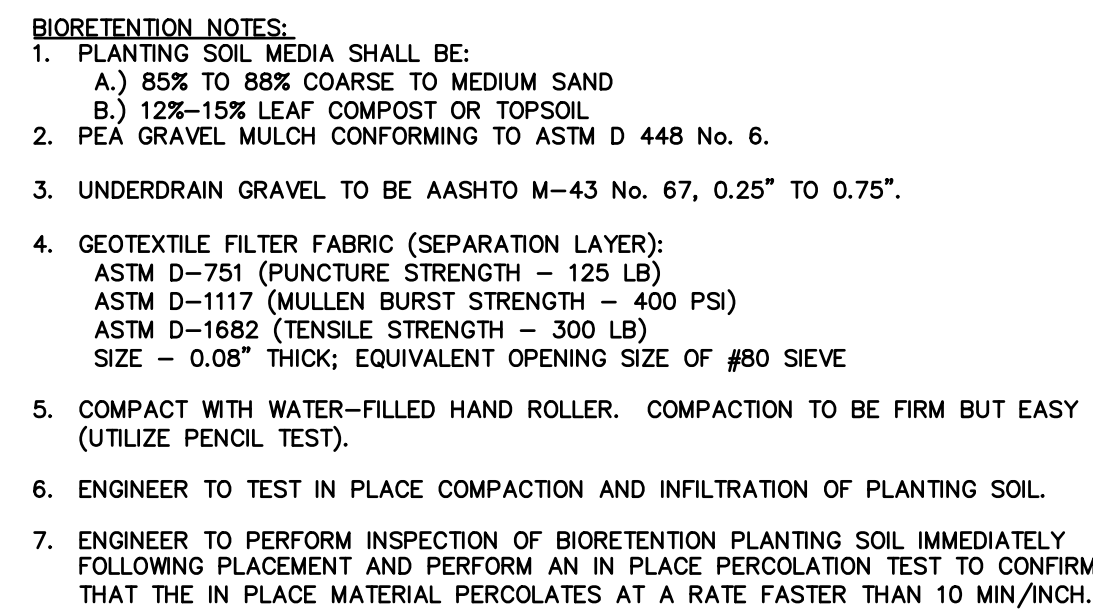


3 RIP RAP EMERGENCY SPILLWAY
C-7.1 SCALE: NTS



4 RIP RAP BIORETENTION SPILLWAY
C-7.1 SCALE: NTS

BIORETENTION FILTER SPECIES



PROJECT TITLE: **BRANDYWINE ESTATES PHASE 2**
HENNEBERRY ROAD
TOWN OF MANLIUS **ONONDAGA COUNTY, NY**

PREPARED FOR: **HARRINGTON HOMES**
3848 HENNEBERRY ROAD
JAMESVILLE, NY 13078

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		DATE	17 SEP 2020
		SCALE	AS SHOWN

C-7.1

EROSION CONTROL NOTES

EROSION AND SEDIMENT CONTROLS

1. STABILIZATION PRACTICES (TEMPORARY)

a) TEMPORARY SEEDING AND PLANTING OF ALL UNPAVED AREAS WHEN CONSTRUCTION ACTIVITY HAS CEASED, OR WILL CEASE, IN AN AREA FOR 14 DAYS. SEEDING MIXTURES AND APPLICATION RATES ARE LISTED ON SHEET C-2.

b) MULCHING EXPOSED AREAS.

c) FREQUENT WATERING TO MINIMIZE WIND EROSION DURING CONSTRUCTION.
2. STABILIZATION PRACTICES (PERMANENT)

a) LAND CLEARING ACTIVITIES SHALL BE DONE ONLY IN AREAS WHERE EARTHWORK WILL BE PERFORMED AND SHALL PROGRESS AS EARTHWORK IS NEEDED.

b) PERMANENT SEEDING AND PLANTING OF ALL UNPAVED AREAS.
3. STRUCTURAL MEASURES TEMPORARY

a. STABILIZED CONSTRUCTION ENTRANCE: AT THE ENTRANCE TO THE ALL DISTURBED AREAS FROM AN EXISTING ROADWAY A STABILIZED CONSTRUCTION ENTRANCE SHALL BE PROVIDED. THE PURPOSE OF THE STABILIZED CONSTRUCTION ENTRANCE IS TO REDUCE OR ELIMINATE THE TRACKING OF SEDIMENT ONTO THE PUBLIC RIGHT-OF-WAY.

b. SILT FENCE: SILT FENCE SHALL BE INSTALLED AS SHOWN ON THE EROSION CONTROL PLAN. THE FABRIC SHALL MEET THE SPECIFICATIONS NOTED ON THE DETAILS UNLESS OTHERWISE APPROVED BY THE APPROPRIATE EROSION AND SEDIMENT CONTROL PLAN APPROVAL AUTHORITY. SUCH APPROVAL SHALL NOT CONSTITUTE STATEWIDE ACCEPTANCE.

c. DUST CONTROL: DUST CONTROL IS THE CONTROL OF DUST RESULTING FROM LAND-DISTURBING ACTIVITIES. THE PURPOSE IS TO PREVENT SURFACE AND AIR MOVEMENT OF DUST FROM DISTURBED SOIL SURFACES THAT MAY CAUSE OFF-SITE DAMAGE, HEALTH HAZARDS, AND TRAFFIC SAFETY PROBLEMS.

d. SEDIMENT TRAP: SEDIMENT TRAP TO BE INSTALLED IN DETENTION BASIN AREA FOR USE DURING CONSTRUCTION. STONE OUTLET SEDIMENT TRAP TO BE INSTALLED AS PER DETAIL TO ELIMINATE SEDIMENT DISCHARGE TO DOWNSTREAM AREAS DURING CONSTRUCTION PHASE.
4. STRUCTURAL PRACTICES (PERMANENT)

a. ROCK OUTLET PROTECTION: ROCK OUTLET PROTECTION IS A SECTION OF ROCK PROTECTION PLACED AT THE OUTLET END OF CULVERTS, CONDUITS, OR CHANNELS. THE PURPOSE OF THE ROCK OUTLET PROTECTION IS TO REDUCE THE DEPTH, VELOCITY, AND ENERGY OF WATER, SUCH THAT THE FLOW WILL NOT ERODE THE RECEIVING DOWNSTREAM REACH.

b. REINFORCED SLOPE PROTECTION: A TEMPORARY PROTECTIVE COVERING PLACED ON A PREPARED PLANTING AREA THAT IS ANCHORED IN PLACE BY STAPLES OR OTHER MEANS TO AID IN CONTROLLING EROSION BY ABSORBING RAIN SPLASH ENERGY AND WITHSTAND OVERLAND FLOW AS WELL AS PROVIDE A MICROCLIMATE TO PROTECT AND PROMOTE SEED ESTABLISHMENT.
- c. LAND GRADING: PERMANENT RESHAPING OF THE EXISTING LAND SURFACE BY GRADING IN ACCORDANCE WITH AN ENGINEERING TOPOGRAPHIC PLAN AND SPECIFICATION TO PROVIDE EROSION CONTROL AND VEGETATIVE ESTABLISHMENT ON DISTURBED, RESHAPED AREAS.
5. SEQUENCE OF MAJOR ACTIVITIES

THE CONTRACTOR SHALL BE RESPONSIBLE FOR IMPLEMENTING THE ABOVE LISTED EROSION AND SEDIMENT CONTROL PRACTICES. THE CONTRACTOR MAY DESIGNATE THESE TASKS TO CERTAIN SUBCONTRACTORS AS IS SEEN FIT, BUT THE ULTIMATE RESPONSIBILITY FOR IMPLEMENTING THESE CONTROLS AND ENSURING THEIR PROPER FUNCTION REMAINS WITH THE CONTRACTOR. THE ORDER OF ACTIVITIES WILL BE AS FOLLOWS:

a) CONDUCT PRECONSTRUCTION MEETING

b) CONSTRUCT TEMPORARY CONSTRUCTION ENTRANCE/EXIT AT THE LOCATION SHOWN ON THE PLAN.

c) INSTALL PERIMETER SILT FENCE AND SECURITY CONSTRUCTION FENCE IN THE LOCATIONS SHOWN ON THE PLAN.

d) ESTABLISH STAGING AREA ON PROJECT SITE

e) CONSTRUCT TEMPORARY SEDIMENT TRAP

f) REMOVE TOPSOIL, STOCKPILE AND STABILIZE

g) SITE GRADING. IMPORT OF FILL MATERIAL TO RAISE SITE TO PROPOSED GRADE (OR SUB-GRADE, AS APPROPRIATE).

h) BUILDING FOUNDATION EXCAVATION (BUILDING CONSTRUCTION TO CONTINUE CONCURRENTLY WITH REMAINING SITE WORK).

i) DISTURBED AREAS OF THE SITE WHERE CONSTRUCTION ACTIVITY HAS CEASED FOR MORE THAN 14 DAYS SHALL BE TEMPORARILY SEEDED AND WATERED.

j) UNDERGROUND UTILITY INSTALLATIONS.

k) INSTALL FILTER FABRIC DROP INLET PROTECTION AT ALL STORM INLETS.

l) COMPACT GRAVEL ALONG ALL DRIVE AISLES AND PARKING AREAS

m) SITE CONCRETE CONSTRUCTION.

n) FINALIZE PAVEMENT SUBGRADE PREPARATION.

o) REMOVE INLET PROTECTION NO MORE THAN 24 HOURS PRIOR TO PLACING ASPHALT PAVEMENT.

p) PAVE AREAS NOTED ON PLAN.

q) DEEP RIPPING OF NON-PAVED AREAS AS REQUIRED (NON-PAVED AREAS THAT HAVE BEEN COMPACTED DURING CONSTRUCTION VIA CONSTRUCTION TRAFFIC).

r) FINAL GRADING, SEEDING, AND PLANTING.

s) CONSTRUCT BIORETENTION BASINS AND OUTLET CONTROLS UPON UPSTREAM
- STABILIZATION OF SITE
- t) REMOVE SEDIMENT TRAP AND FINALIZE GRADING OF DETENTION BASIN

u) REMOVE SILT FENCE ONLY AFTER ALL PAVING IS COMPLETE AND EXPOSED SURFACES ARE STABILIZED.
- MAINTENANCE/INSPECTION PROCEDURES
- THE FOLLOWING INSPECTION AND MAINTENANCE PRACTICES WILL BE USED TO MAINTAIN EROSION AND SEDIMENT CONTROLS AND STABILIZATION MEASURES.
1. ALL CONTROL MEASURES WILL BE INSPECTED AT LEAST TWICE EVERY SEVEN (7) CALENDAR DAYS

2. ALL MEASURES WILL BE MAINTAINED IN GOOD WORKING ORDER; IF REPAIRS OR OTHER EROSION CONTROL MEASURES ARE FOUND TO BE NECESSARY, THEY WILL BE INITIATED WITHIN 24 HOURS OF REPORT.

3. BUILT UP SEDIMENT WILL BE REMOVED FROM SILT FENCE WHEN IT HAS REACHED ONE-THIRD THE HEIGHT OF THE FENCE.

4. SILT FENCES WILL BE INSPECTED FOR DEPTH OF SEDIMENT, TEARS, ETC., TO SEE IF THE FABRIC IS SECURELY ATTACHED TO THE FENCE POSTS, AND TO SEE THAT THE FENCE POSTS ARE SECURELY IN THE GROUND.

5. TEMPORARY AND PERMANENT SEEDING AND ALL OTHER STABILIZATION MEASURES WILL BE INSPECTED FOR BARE SPOTS, WASHOUTS, AND HEALTHY GROWTH.

6. A MAINTENANCE INSPECTION REPORT WILL BE MADE AFTER EACH INSPECTION. COPIES OF THE REPORT FORMS TO BE COMPLETED BY THE INSPECTOR ARE INCLUDED IN THIS SWPPP.

7. THE OPERATOR SHALL HAVE A "QUALIFIED PROFESSIONAL" CONDUCT SITE INSPECTIONS FOLLOWING THE COMMENCEMENT OF CONSTRUCTION. A "QUALIFIED PROFESSIONAL" IS A PERSON KNOWLEDGEABLE IN THE PRINCIPLES AND PRACTICE OF EROSION AND SEDIMENT CONTROLS, SUCH AS A LICENSED PROFESSIONAL ENGINEER, CERTIFIED PROFESSIONAL IN EROSION AND SEDIMENT CONTROL (CPESC), OR SOIL SCIENTIST.

8. DISTURBED AREAS AND MATERIALS STORAGE AREAS WILL BE INSPECTED FOR EVIDENCE OF OR POTENTIAL FOR POLLUTANTS ENTERING STORMWATER SYSTEMS.
9. REPORT TO NYS DEC WITHIN 24 HOURS ANY NONCOMPLIANCE WITH THE SWPPP THAT WILL ENDANGER PUBLIC HEALTH OR THE ENVIRONMENT. FOLLOW UP WITH A WRITTEN REPORT WITHIN 5 DAYS OF THE NONCOMPLIANCE EVENT. THE FOLLOWING EVENTS REQUIRE 24 HOUR REPORTING: A) ANY UNANTICIPATED BYPASS WHICH EXCEEDS ANY EFFLUENT LIMITATION IN THE PERMIT, B) ANY UPSET WHICH EXCEEDS ANY EFFLUENT LIMITATION FOR ANY OF THE POLLUTANTS LISTED BY THE EPA IN THE PERMIT TO BE REPORTED WITHIN 24 HOURS. THE WRITTEN SUBMISSION MUST CONTAIN A DESCRIPTION OF THE NON-COMPLIANCE AND ITS CAUSE; THE PERIOD OF NON-COMPLIANCE, INCLUDING EXACT DATES AND TIMES, AND IF THE NON-COMPLIANCE HAS NOT BEEN CORRECTED, THE ANTICIPATED TIME IT IS EXPECTED TO CONTINUE; AND STEPS TAKEN OR PLANNED TO REDUCE, ELIMINATE, AND PREVENT RECURRENCE OF THE NON-COMPLIANCE.
10. RELEASES OF HAZARDOUS SUBSTANCES OR OIL IN EXCESS OF REPORTABLE QUANTITIES (AS ESTABLISHED UNDER 40 CFR 110, 40 CFR 117 OR 40 CFR 302) MUST BE REPORTED. FORM G-1 PROVIDES FURTHER DETAILS ON THE NOTIFICATION AND REPORTING PROCESS.
- INSPECTION AND MAINTENANCE REPORT FORMS
- ONCE INSTALLATION OF ANY REQUIRED OR OPTIONAL EROSION CONTROL DEVICE OR MEASURE HAS BEEN IMPLEMENTED, AT LEAST ONCE EVERY SEVEN (7) CALENDAR DAYS AND SHALL BE PERFORMED BY A QUALIFIED PROFESSIONAL. THE FORMS FOUND IN THIS SWPPP SHALL BE USED BY THE INSPECTORS TO INVENTORY AND REPORT THE CONDITION OF EACH MEASURE TO ASSIST IN MAINTAINING THE EROSION AND SEDIMENT CONTROL MEASURES IN GOOD WORKING ORDER.
- THESE REPORT FORMS SHALL BECOME AN INTEGRAL PART OF THE SWPPP AND SHALL BE MADE READILY ACCESSIBLE TO GOVERNMENTAL INSPECTION OFFICIALS, THE OPERATOR'S ENGINEER, AND THE OPERATOR FOR REVIEW UPON REQUEST DURING VISITS TO THE PROJECT SITE. IN ADDITION, COPIES OF THE REPORTS SHALL BE PROVIDED TO ANY OF THESE PERSONS, UPON REQUEST, VIA MAIL OR FACSIMILE. TRANSMISSION, INSPECTION AND MAINTENANCE REPORT FORMS ARE TO BE MAINTAINED BY THE PERMITTEE FOR FIVE YEARS FOLLOWING THE FINAL STABILIZATION OF THE SITE.
- OTHER RECORD-KEEPING REQUIREMENTS
- THE CONTRACTOR SHALL KEEP THE FOLLOWING RECORDS RELATED TO CONSTRUCTION ACTIVITIES AT THE SITE:
- DATES WHEN MAJOR GRADING ACTIVITIES OCCUR AND THE AREAS WHICH WERE GRADED

- DATES AND DETAILS CONCERNING THE INSTALLATION OF STRUCTURAL CONTROLS
- DATES WHEN CONSTRUCTION ACTIVITIES CEASE IN AN AREA

- DATES WHEN AN AREAS IS STABILIZED, EITHER TEMPORARILY OR PERMANENTLY

- DATES OF RAINFALL AND THE AMOUNT OF RAINFALL

- DATES AND DESCRIPTIONS OF THE CHARACTER AND AMOUNT OF ANY SPILLS OF HAZARDOUS MATERIALS

- RECORDS OF REPORTS FILED WITH REGULATORY AGENCIES IF REPORTABLE QUANTITIES OF HAZARDOUS MATERIALS SPILLED
- EROSION CONTROL NOTES
1. LAND DISTURBING ACTIVITIES SHALL NOT COMMENCE UNTIL APPROVAL TO DO SO HAS BEEN RECEIVED BY GOVERNING AUTHORITIES. THE GENERAL CONTRACTOR SHALL STRICTLY ADHERE TO THE APPROVED SWPPP DRAWINGS DURING CONSTRUCTION OPERATIONS.

2. NO LAND CLEARING OR GRADING SHALL BEGIN UNTIL THE APPROPRIATE EROSION CONTROL MEASURES HAVE BEEN INSTALLED.

3. ALL EXPOSED AREAS SHALL BE SEEDED AS SPECIFIED WITHIN 7 DAYS OF FINAL GRADING.

4. SHOULD CONSTRUCTION STOP FOR LONGER THAN 14 DAYS, THE SITE SHALL BE SEEDED AS SPECIFIED.

5. MAINTAIN EROSION CONTROL MEASURES AFTER EACH RAIN AND AT LEAST ONCE A WEEK.

6. THIS PLAN SHALL NOT BE CONSIDERED ALL INCLUSIVE AS THE GENERAL CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PREVENT SEDIMENT FROM LEAVING THE SITE.

7. GENERAL CONTRACTOR SHALL COMPLY WITH ALL STATE AND LOCAL ORDINANCES THAT APPLY.

8. ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES WILL BE INSTALLED IF DEEMED NECESSARY BY ON SITE INSPECTION.

9. IF INSTALLATION OF STORM DRAINAGE SYSTEM SHOULD BE INTERRUPTED BY WEATHER OR NIGHTFALL, THE PIPE ENDS SHALL BE COVERED WITH FILTER FABRIC.

10. GENERAL CONTRACTOR SHALL BE RESPONSIBLE TO TAKE WHATEVER MEANS NECESSARY TO ESTABLISH PERMANENT SOIL STABILIZATION.

11. ALL WORK TO BE DONE IN STRICT ACCORDANCE WITH THE NEW YORK STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL.
-
1. STONE SIZE – USE 2" STONE, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.

2. LENGTH – NOT LESS THAN 50 FEET.

3. THICKNESS – NOT LESS THAN SIX (6) INCHES.

4. WIDTH – 24 FEET MINIMUM.

5. FILTER CLOTH – WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.

6. SURFACE WATER – ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.

7. MAINTENANCE – THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. ALL SEDIMENT SPILLED, DROPPED, WASHED, OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.

8. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.

9. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.
-
- POSTS: STEEL, EITHER "T" OR "U" TYPE OR 2" HARDWOOD
FENCE: WOVEN WIRE, 14 1/2 GAUGE, 6" MAX. MESH OPENING
FILTER CLOTH: FILTER X, MIRAFI 100X, STABILINKA T140N OR APPROVED EQUAL
PREFABRICATED UNIT: GEOFAB, ENVIROFENCE, OR APPROVED EQUAL
1. WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES.

2. FILTER CLOTH IS TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION.

3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER, THEY SHALL BE OVERLAPPED BY SIX INCHES AND FOLDED.

4. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.
-
- NOTES:

1. CONCRETE WASHOUT AREA SHALL BE INSTALLED PRIOR TO ANY CONCRETE PLACEMENT ON SITE.

2. CONCRETE WASHOUT OUT AREA SHALL BE LINED WITH A 10 MIL IMPERMEABLE LINER AND STAKED IN PLACE.

3. SIGNS SHALL BE PLACED AT THE CONSTRUCTION ENTRANCE, AT THE WASHOUT AREA, AND ELSEWHERE AS NECESSARY TO CLEARLY INDICATE LOCATION OF CONCRETE WASHOUT AREA TO OPERATORS OF CONCRETE TRUCKS AND PUMP RIGS.

4. THE CONCRETE WASHOUT AREA SHALL BE REPAIRED AND ENLARGED OR CLEANED OUT AS NECESSARY TO MAINTAIN CAPACITY FOR WASTED CONCRETE.

5. AT THE END OF CONSTRUCTION, ALL CONCRETE SHALL BE REMOVED FROM SITE AND DISPOSED OF AT AN ACCEPTED WASTE SITE.

6. WHEN THE CONCRETE WASHOUT AREA IS REMOVED, THE DISTURBED AREA SHALL BE SEEDED AND MULCHED OR OTHERWISE STABILIZED.
-
- CONSTRUCTION SPECIFICATIONS
1. USE TEMPORARY SOIL STABILIZATION MATTING MADE OF DEGRADABLE (LASTS 6 MONTHS MINIMUM) NATURAL OR MAN-MADE FIBERS (MOSTLY ORGANIC).

2. PERFORM FINAL GRADING, TOPSOIL APPLICATION, SEEDED PREPARATION, AND PERMANENT SEEDING IN ACCORDANCE WITH SPECIFICATIONS. PLACE MATTING WITHIN 48 HOURS OF COMPLETING SEEDING OPERATIONS UNLESS END OF WORKDAY STABILIZATION IS SPECIFIED ON THE APPROVED EROSION & SEDIMENT CONTROL PLAN.

3. OVERLAP OR ABUT ROLL EDGES PER MANUFACTURER RECOMMENDATIONS. OVERLAP ROLL ENDS BY 6 INCHES (MINIMUM), WITH THE UPSLOPE MAT OVERLAPPING ON TOP OF THE DOWNSLOPE MAT.
- 1 CONSTRUCTION ENTRANCE
- C-7.2 SCALE: NTS
- 2 SILT FENCE
- C-7.2 SCALE: NTS
- 3 CONCRETE WASHOUT AREA
- C-7.2 SCALE: NTS
- 4 SLOPE STABILIZATION MATTING
- C-7.2 SCALE: NTS
-
- NOTES:

1. SEE EROSION CONTROL PLAN FOR LOCATION OF STOCKPILE

2. REFER TO SILT FENCE DETAIL FOR INSTALLATION OF SILT FENCE

3. IF THE STOCKPILE IS TO REMAIN FOR MORE THAN 14 DAYS IT SHALL BE TEMPORARILY SEEDED FOR STABILIZATION

4. SILT FENCES TO BE MAINTAINED IN PLACE UNTIL TOPSOIL STOCKPILE HAS BEEN REMOVED
-
- PROFILE
- DISCHARGE TO UNCONFINED SECTION (FLARED OUTLET) (MINIMUM TAILWATER CONDITION)
- PLAN VIEW
-
- PROFILE VIEW
-
- CROSS SECTION A-A
- ROCK RIPRAP OUTLET PROTECTION UNCONFINED DOWNSTREAM SECTION
- 5 TYPICAL TOPSOIL STOCKPILE
- C-7.2 SCALE: NTS
- 6
- C-7.2 SCALE: NTS
- PROJECT TITLE: BRANDYWINE ESTATES PHASE 2 HENNEBERRY ROAD ONONDAGA COUNTY, NY
- TOWN OF MANLIUS
- HARRINGTON HOMES
- 3848 HENNEBERRY ROAD JAMESVILLE, NY 13078
- SITE DETAILS
- SHEET TITLE:
- | NO. | REVISIONS | DATE |
|-----|---|------------|
| 3 | REVISED AS PER TOWN ENGINEER'S COMMENTS | 2/16/2022 |
| 2 | GENERAL REVISIONS | 02/09/2022 |
| 1 | GENERAL REVISIONS | 12/01/2021 |
- PREPARED BY: NAPIERALA CONSULTING PROFESSIONAL ENGINEERING P.C. 110 FAYETTE STREET MANLIUS, NEW YORK 13104 email: MNAI@NAPCON.COM PH: (315) 682-5560 FAX: (315) 682-5544
- PROJECT NO. 20-1906 DATE 17 SEP 2020 SCALE AS SHOWN SHEET C-7.2

STORMWATER POLLUTION PREVENTION PLAN

For the:

**Proposed Brandywine Estates – Phase 2
Henneberry Road
Town of Manlius**

Prepared for:



Your Builder for Life

**Harrington Homes, Inc
3848 Henneberry Road
Jamesville, NY 13078**

Prepared by:



110 FAYETTE STREET
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Project No. 20-1906

Revised December 2021



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EXECUTIVE SUMMARY

A. Purpose

The following Stormwater Pollution Prevention Plan (SWPPP) has been developed to control stormwater runoff and pollutants from a site during and after construction activities. The objective of this SWPPP is to comply with the NYSDEC SPDES Stormwater Permit from Construction Activities by planning and implementing standard design practices.

B. Project Description

The ±54 acre property is located on the west side of Henneberry Road in the Town of Manlius, Onondaga County, NY. This project consists of the subdivision and development of 34 single family homes. The development will also include necessary amenities such as public street(s), public/private utility extensions/connections, and applicable stormwater management facilities.

C. Stormwater Practices

Stormwater practices are categorized as either temporary construction measures or permanent operation measures. The temporary measures that will be used on this site for erosion and sediment control include (but are not limited to): stabilized construction entrance, silt fencing, and temporary sediment basins. The permanent stormwater practices to be installed are a series of two bioretention areas, and an above ground grass-line detention basin which will provide water quality, runoff reduction, and storage for quantity control. All practices, both the temporary construction measures and the permanent operation measures, have been designed in accordance with the established standards.

D. Water Quality Treatment

The water quality volume treatment characteristics are summarized below. The entire water quality descriptions and calculations are further detailed in Section III.E and F.

Water Quality Volume	
Required WQv (ac-ft)	Total Provided WQv (ac-ft)
0.469	0.469

E. Runoff Reduction Volume (RRv)

The NYSDEC regulation requires all construction projects that disturb greater than one acre of land to provide runoff reduction through the implementation of green infrastructure practices. Runoff reduction volume for this project is achieved using bioretention areas. This volume is summarized below and further detailed in Section III.D, E, and F.

Runoff Reduction Volume	
Required RRv (ac-ft)	Total Provided RRv (ac-ft)
0.054	0.188



F. Stormwater Quantity

The impacts to stormwater runoff quantity (i.e. peak flows) will be mitigated in the aboveground grass-lined detention basins throughout the site. The detention basins will be constructed with sufficient volume to store additional runoff from the site and discharge it in a controlled manner. The chart below summarizes the stormwater discharges from the site and is further detailed in Section III.G and H.

	Existing Peak Runoff Rate (cfs)			Proposed Peak Runoff Rate (cfs)		
Point of Study	Pt. 1B	Pt. 2	Pt. 3	Pt. 1B	Pt. 2	Pt. 3
10-Year Storm	75.01	7.68	9.35	45.27	2.07	9.31
100-Year Storm	175.87	18.46	22.06	86.52	4.70	21.06



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Section I. SCOPE

A. PURPOSE

Napierala Consulting, Professional Engineer, P.C., has prepared this Stormwater Pollution Prevention Plan (SWPPP) in compliance with the New York State Department of Environmental Conservation (NYSDEC) State Pollutant Discharge Elimination System (SPDES) Construction General Permit governing stormwater discharges during construction. The contractor's participation and adherence to this plan is mandatory. Non-compliance with the plan is subject to various remedies including, without limitation, monetary set-offs, withholding payments, reimbursement for costs, expenses (including reasonable attorney's fees), fines and civil penalties incurred and/or liquidated damages. This section provides a descriptive explanation of the Stormwater Pollution Prevention Plan and required contractor participation.

B. SPDES GENERAL PERMIT GP-0-20-001

Regulations enacted by the New York State Department of Environmental Conservation require permitting for the discharge of stormwater from construction activities on sites where an area of one acre or more of soil disturbance is proposed. To comply with these regulations, the developer of the site must request coverage under the NYSDEC SPDES General Permit for Stormwater Discharges from Construction Activity (GP-0-20-001). In order to obtain coverage under the General Permit a Stormwater Pollution Prevention Plan (SWPPP) for the site must be prepared following the requirements of the New York State Stormwater Management Design Manual and the New York State Standards and Specifications for Erosion and Sediment Control.

The NOI, the SWPPP, and any amendments to the SWPPP, as well as any reports required by the SPDES General Permit for Stormwater Discharges from Construction Activity, must also be submitted concurrently to the local governing body and any other authorized agency having jurisdiction or regulatory control over the construction project.

C. RESPONSIBILITIES OF THE OWNER

The owner/operator shall identify the contractor(s) and subcontractor(s) that will be responsible for installing, constructing, repairing, replacing, inspecting and maintaining the erosion and sediment control practices included in the SWPPP. The owner/operator shall identify the contractor(s) and subcontractor(s) that will be responsible for constructing the post-construction stormwater management practices included in the SWPPP. The owner/operator shall have each of the contractors and subcontractors identify at least one person from their company that will be responsible for implementation of the SWPPP. The owner/operator shall ensure that at least one trained contractor is on site on a daily basis when soil disturbance activities are being performed. The owner/operator shall have a qualified inspector conduct site inspections.

D. RESPONSIBILITIES OF THE CONTRACTOR

The contractor shall manage the discharge of stormwater from the site in accordance with the NYSDEC SPDES General Permit for Stormwater Discharges from Construction Activity. The owner shall be responsible for conducting the stormwater management practices in accordance with the permit. The contractor shall be responsible for providing qualified inspectors to conduct the inspections required by the SWPPP. The contractor shall be responsible for any enforcement action taken or imposed by federal, state, or local agencies, including the cost of fines, construction delays, and remedial actions resulting from the contractor's failure to comply with the permit provisions. It shall be the responsibility of the contractor to make any changes to the SWPPP necessary when the contractor or any of his subcontractors elects to use borrow or fill or material storage sites, either contiguous to or remote from the construction



site, when such sites are used solely for this construction site. Such sites are considered to be part of the construction site covered by the permit and this SWPPP. Off-site borrow, fill, or material storage sites which are used for multiple construction projects are not subject to this requirement, unless specifically required by state or local jurisdictional entity regulations. The contractor should consider this requirement in negotiating with earthwork subcontractors, since the choice of an off-site borrow, fill, or material storage site may impact their duty to implement, make changes to, and perform inspections required by the SWPPP for the site.

The SWPPP shall provide forms for both the general contractor and subcontractor(s) identifying the company name, business address and telephone number along with the responsible person for the contractor and all subcontractors' who will implement the measures identified in the SWPPP. **The general contractor shall sign the "General Contractor's Certification" and all subcontractors shall sign the "Subcontractor's Certification",** verifying they have been instructed on how to comply with and fully understand the requirements of the NYSDEC and SWPPP. **This certification must be signed, by a fully qualified individual on behalf of each entity, prior to the beginning of any construction activities and shall be filed in the projects SWPPP.**

The SWPPP is meant to be a working document that shall be maintained at the site of the construction activities at all times throughout the project, shall be readily available upon request by the operator's personnel or NYSDEC or any other agency with regulatory authority over storm water issues, and shall be kept on-site until the site complies with the Final Stabilization section of this document. **A sign or other notice must be posted near the main entrance of the construction site which contains a completed NOI, the location of the SWPPP and the name and phone number of a contact person responsible for scheduling SWPPP viewing times, and any other state specific requirements.**

E. NOTICE OF INTENT

The operator has petitioned the NYSDEC for the stormwater discharges during construction at this site to be covered by the NYSDEC SPDES General Permit for Stormwater Discharges from Construction Activity. A **Notice of Intent (NOI)** to be covered under this permit has been filed by the operator. The signatory on the NOI must sign all documents (i.e., inspection reports) associated with the SWPPP. If the signatory chooses not to sign all documents, he/she must designate a duly authorized representative to sign all relevant documents. This designation must be made in writing and be included in the SWPPP. The duly authorized representative may be either a named individual or any individual occupying a named position. Additionally, the written designation must be submitted to the NYSDEC.

F. STORMWATER INSPECTIONS

1. Inspection Procedures

Inspections of the erosion control practices are required every seven days by a qualified professional. All inspections will continue until the site complies with the final stabilization section of this document. **Weekly Inspections must be conducted by a "Qualified Professional". "Qualified Professional" means a person knowledgeable in the principles and practice of erosion and sediment controls, such as a licensed Professional Engineer (PE), Certified Professional in Erosion and Sediment Control (CPESC), or soil scientist.** Each inspection must be followed up by a report documenting the inspector's findings and request the required maintenance and/or repair for the erosion and sedimentation control measures. It is imperative that the contractor documents the inspection and maintenance of all erosion and sedimentation control measures as soon as possible after the inspection and/or maintenance have been completed. These records are used to prove that the required inspection and maintenance were performed. The records shall be placed in the SWPPP. In addition to inspection and maintenance reports, records should be kept of the construction activities that occur on the site. The operator shall post at the site, in a publicly-accessible location, a summary of the site inspection activities on a monthly basis.

2. Record Keeping

The operator shall also prepare a written summary of its status with respect to compliance with this



general permit at a minimum frequency of every three months during which coverage under the NYSDEC SPDES General Permit for Stormwater Discharges from Construction Activity exists. The summary should address the status of achieving each component of the SWPPP. The reports shall be signed by the signatory of the NOI or a duly-authorized person and be retained at the construction site.

The contractor shall retain copies of the SWPPP, all reports and data for a minimum of five (5) years after the project. The following list identifies the required inspection and maintenance documentation that must be maintained by the contractor under this SWPPP.

- Inspection Report
- Stabilization Schedule
- Implementation Schedule
- Status Report

G. SWPPP MODIFICATIONS

The inspection report should also identify if any revisions to the SWPPP are warranted due to unexpected conditions. The SWPPP is meant to be a dynamic working guide that is to be kept current and amended whenever:

- The NYSDEC provides notification that the SWPPP does not comply with the minimum permit requirements.
- The design, construction, operation, or maintenance of the site changes in a way which significantly affects the potential for the discharge of pollutants or when the plan proves to be ineffective in eliminating or significantly minimizing pollutant discharges
- Within seven (7) calendar days of knowledge of a reportable release.

Any such changes to the SWPPP must be made in writing within seven (7) days of the date such modification or amendment is made. The contractor's failure to monitor or report deficiencies to the operator will result in the contractor being liable for fines and construction delays resulting from any federal, state, or local agency enforcement action.

H. FINAL STABILIZATION AND TERMINATION OF PERMIT COVERAGE

A site can be considered stabilized when all soil disturbing activities have been completed and a uniform perennial vegetative cover with a density of 80% over the unpaved areas and areas not covered by permanent structures has been established or equivalent permanent stabilization measures have been established and the facility no longer discharges stormwater associated with construction activities, and a **Notice of Termination** (NOT) form has been filed by the operator(s) with the NYSDEC. Prior to filing of the Notice of Termination, the operator shall have the qualified professional perform a final site inspection. The qualified professional shall certify that the site has undergone final stabilization using either vegetative or structural stabilization methods and that all temporary erosion and sediment controls (such as silt fence) not needed for long-term erosion control have been removed. The filing of the NOT terminates coverage under the General Permit and terminates the contractor's responsibility to implement the SWPPP, but the requirements of the SWPPP, including periodic inspections, must be continued until the NOT is filed. Upon achieving this milestone, the contractor shall also submit "Final Stabilization Certification/Termination Checklist". Final payment and/or the release of any retainer will be withheld until all provisions of the SWPPP have been submitted, completed and accepted by the operator.



Section II. SITE DESCRIPTION

A. PROJECT NAME AND LOCATION

Harrington Homes, Inc
Brandywine Estates, Phase 2
Henneberry Road
Town of Manlius
Onondaga County, New York

UTM Coordinates from NYSDEC Interactive Map: E: 417962; N: 4759972
NYSDEC Region 7

The ±54 acre property is located on the west side of Henneberry Road in the Town of Manlius, Onondaga County, NY. Figure 1 shows the project location on a street map and Figure 2 shows an aerial image of the proposed site in its existing condition.

B. OWNER/OPERATOR NAME AND ADDRESS

Harrington Homes, Inc
3848 Henneberry Road
Jamesville, NY 10378

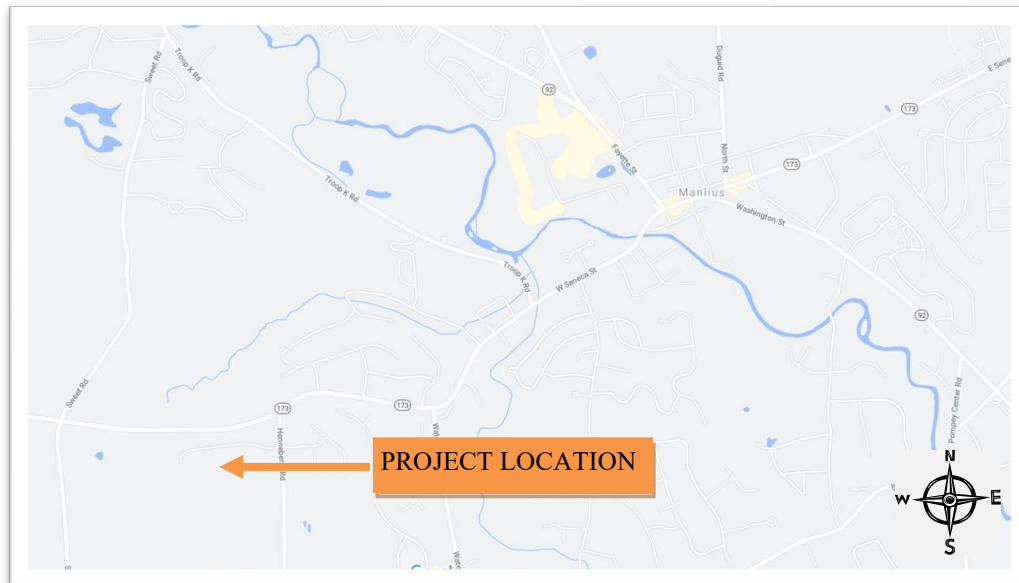


Figure 1: Site Location Map

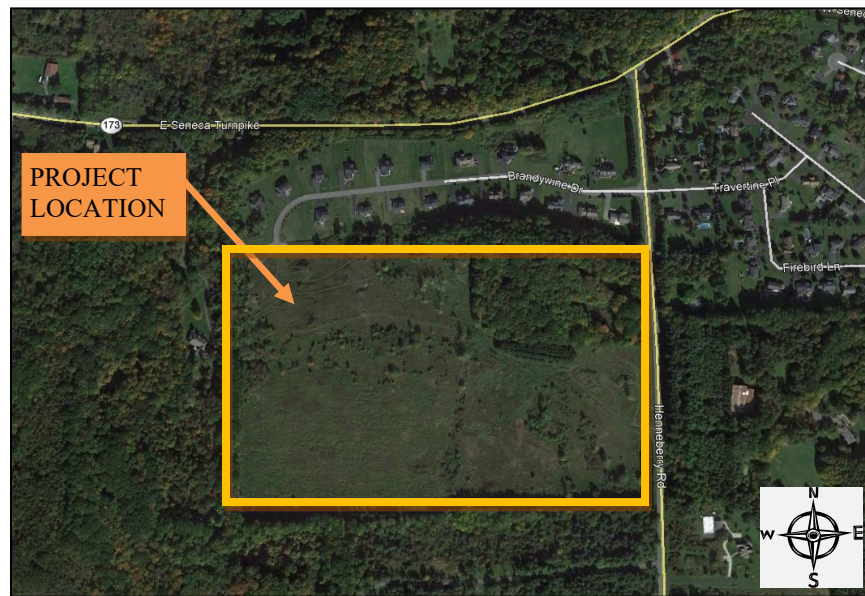


Figure 2: Proposed Site Aerial Image - Google Earth

C. PROJECT DESCRIPTION

The ±54 acre property is located on the west side of Henneberry Road in the Town of Manlius, Onondaga County, NY. This project consists of the subdivision and development of 34 single family homes. The development will also include necessary amenities such as public street(s), public/private utility extensions/connections, and applicable stormwater management facilities.

D. RECEIVING WATERS

Runoff from the site generally flows to the north toward Limestone Creek. This site is within a regulated MS4 (municipal separate storm sewer system). Figure 3 shows the project site location in relation to certain environmental boundaries using the NYSDEC Environmental Resource Mapper. The NYSDEC Environmental Resource Mapper shows that no regulated wetlands are within the vicinity of the project.

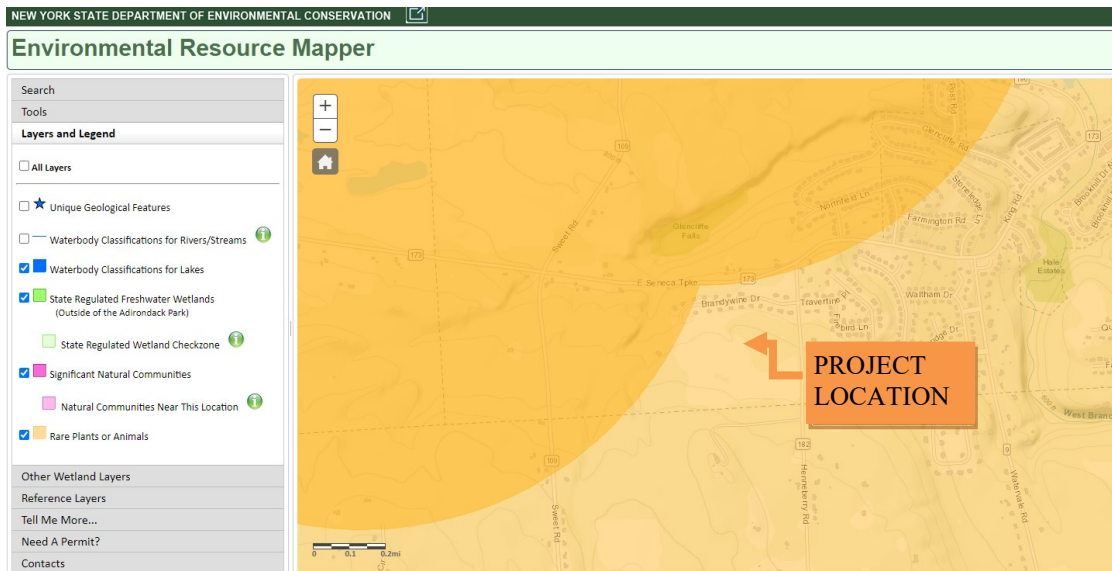


Figure 3: NYS DEC Environmental Resource Mapper

E. ENDANGERED OR THREATENED SPECIES

The NYS DEC Environmental Resource Mapper does not identify the site as containing any rare significant natural communities but is within the check zone for rare plants or animals. We have received a letter from the DEC which states that hibernacula of the Indiana Bat and the Northern Long-Eared Bat exist within 2.5 miles of the site. Due to this, there is a seasonal restriction on tree clearing: trees can only be cut down between October 15 and March 31 in order to protect potential roosting trees.

F. FEDERAL AND STATE HISTORIC PRESERVATION

The SPDES (State Pollutant Discharge Elimination System) GP-0-20-001 requires that the discharge from construction activities shall not influence properties listed as or eligible for listing on the State or National Register of Historic Places. Figure 4 shows the SHPO (State Historic Preservation) map which indicates the project is within an archeological check zone. The project will be further investigated accordingly.

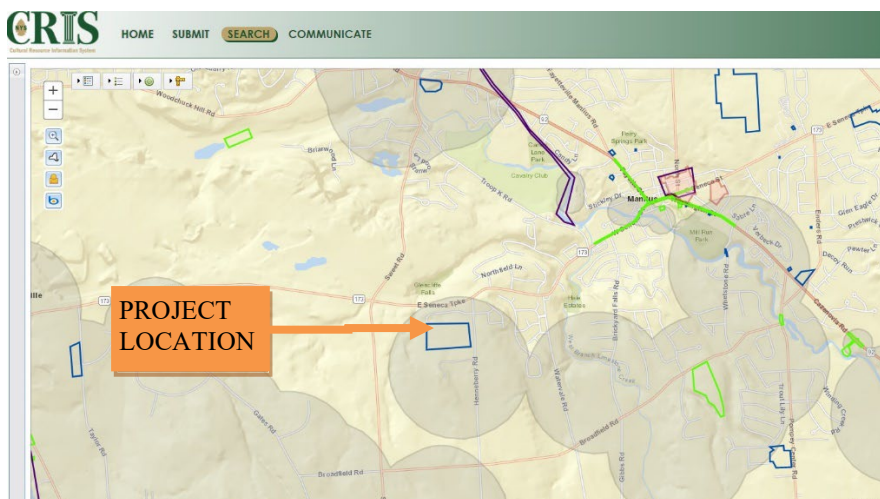


Figure 4: State Historic Preservation Office Map



G. FEMA

Based on local GIS mapping, there are no floodplain/floodway boundaries on this property, as shown on Figure 5 below. This is also confirmed on the site survey by Ianuzi and Romans Land Surveying, P.C., noting the project is in Zone X.

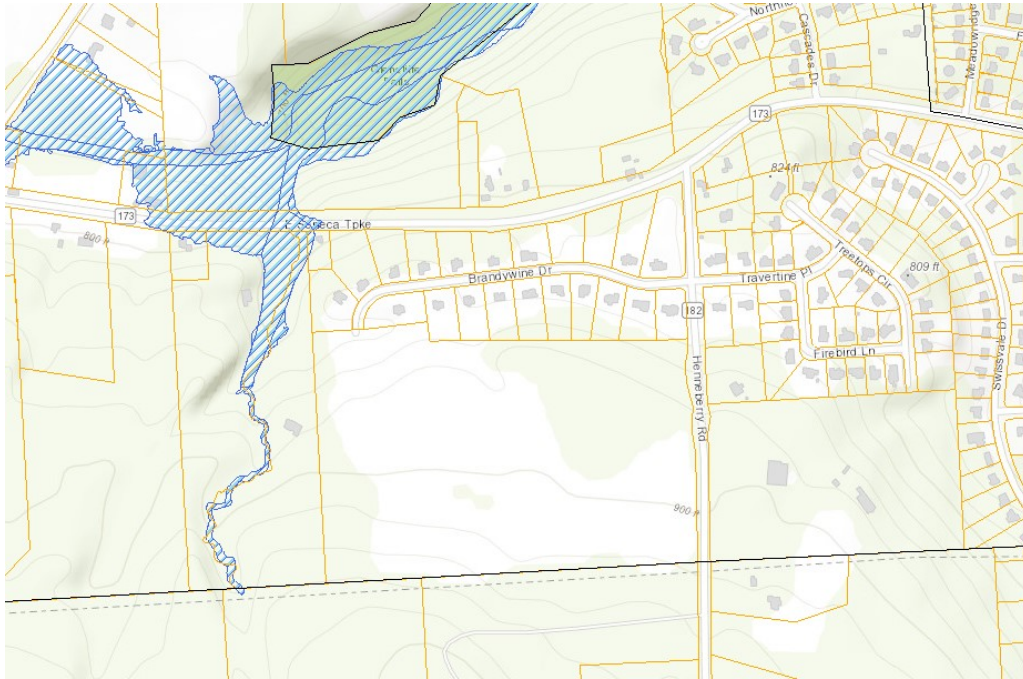


Figure 5: Onondaga County GIS Mapping



Section III. STORMWATER MANAGEMENT

A. METHODOLOGY

1. Hydrologic Conditions

The peak runoff rates for the site were calculated for the existing and proposed hydrologic conditions using HydroCAD software. The HydroCAD program uses the standard SCS TR-55 Curve Number Method for calculation of the time of concentration, composite curve number, and peak runoff rates for the drainage area(s) based on input by the user. The input data was taken from soil maps, detailed topographic and utility survey information, rainfall distribution maps, and aerial images. The required Water Quality Volume (WQ_v) was calculated in accordance with the New York State Stormwater Management Design Manual. The Channel Protection Volume (Cp_v) was calculated based on the release of the 1-year storm runoff volume over a 24-hour period. The hydrologic conditions are used to assess the impacts to the runoff characteristics and to design appropriate measures to mitigate these impacts. The NYS SPDES General Permit for Stormwater Discharges from Construction Activity requires that a stormwater mitigation system meet the following five design criteria.

- a. Water Quality Volume: The system must capture and treat 90% of the average annual runoff volume.
- b. Runoff Reduction Volume: The system must apply green infrastructure techniques and Stormwater Management Practices to replicate pre-development hydrology.
- c. Provide 24-hour extended detention of the runoff from the one-year, 24-hour rainfall event.
- d. Attenuation of the post-development 10-year, 24-hour peak discharge rate to predevelopment levels.
- e. Attenuation of the post-development 100-year, 24-hour peak discharge rate to predevelopment levels.

2. Rainfall Information

The following table shows the rainfall values used in the design of the stormwater mitigation basin. These values are taken from rainfall distribution maps provided by the Northeast Regional Climate Center and the New York State Stormwater Management Design Manual, which can be seen on the following page. These values are applied to a Type II 24-hour rainfall distribution in the modeling of the watersheds using the HydroCAD program.

Table 1: Rainfall Information

Precipitation Event	Rainfall in inches
90% Rainfall (WQ_v)	1.0
1-Yr, 24-Hr (Cp_v)	2.04
10-Yr, 24-Hr (Q_p)	3.43
50-Yr, 24-Hr	4.94
100-Yr, 24-Hr (Q_f)	5.78

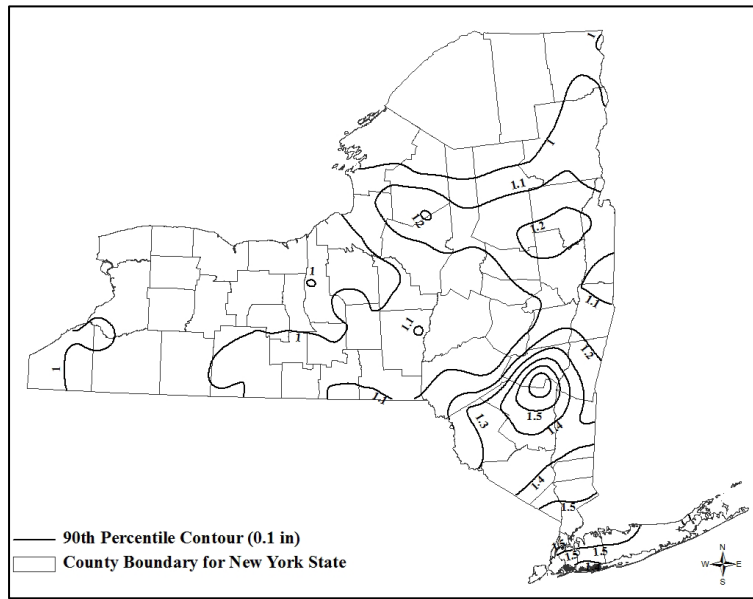


Figure 6: New York State 90% Rainfall Map

Extreme Precipitation Tables

Northeast Regional Climate Center

Data represents point estimates calculated from partial duration series. All precipitation amounts are displayed in inches.

Smoothing Yes
State New York
Location
Longitude 76.007 degrees West
Latitude 42.988 degrees North
Elevation 0 feet
Date/Time Thu, 20 Aug 2020 10:25:27 -0400

Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr
1yr	0.28	0.43	0.53	0.69	0.86	1.06	1yr	0.75	0.96	1.21	1.45	1.73	2.04	2.29
2yr	0.33	0.50	0.63	0.82	1.04	1.28	2yr	0.89	1.16	1.44	1.73	2.04	2.39	2.68
5yr	0.39	0.61	0.76	1.02	1.31	1.61	5yr	1.13	1.44	1.83	2.17	2.54	2.93	3.31
10yr	0.44	0.70	0.88	1.20	1.55	1.93	10yr	1.34	1.69	2.19	2.59	3.00	3.43	3.88
25yr	0.53	0.84	1.07	1.48	1.96	2.44	25yr	1.69	2.10	2.76	3.25	3.73	4.22	4.80
50yr	0.60	0.97	1.24	1.74	2.34	2.93	50yr	2.02	2.48	3.32	3.88	4.41	4.94	5.63
100yr	0.70	1.13	1.46	2.06	2.80	3.51	100yr	2.42	2.94	3.96	4.60	5.21	5.78	6.62
200yr	0.80	1.31	1.69	2.43	3.35	4.20	200yr	2.89	3.47	4.74	5.48	6.15	6.77	7.78
500yr	0.98	1.61	2.09	3.04	4.25	5.33	500yr	3.67	4.35	5.99	6.88	7.65	8.35	9.65

Figure 7: Northeast Regional Climate Center Design Storms



3. Soil Information

The majority of the soils within the project site area consist of Aurora silt loam and Angola-Darien silt loams which are classified as Hydrologic Soil Group D. This indicates that the site should have low transmissive soils if undeveloped. The NRCS Soil Survey Map is shown in Figure 8 below and the soil descriptions can be reviewed in Appendix C.

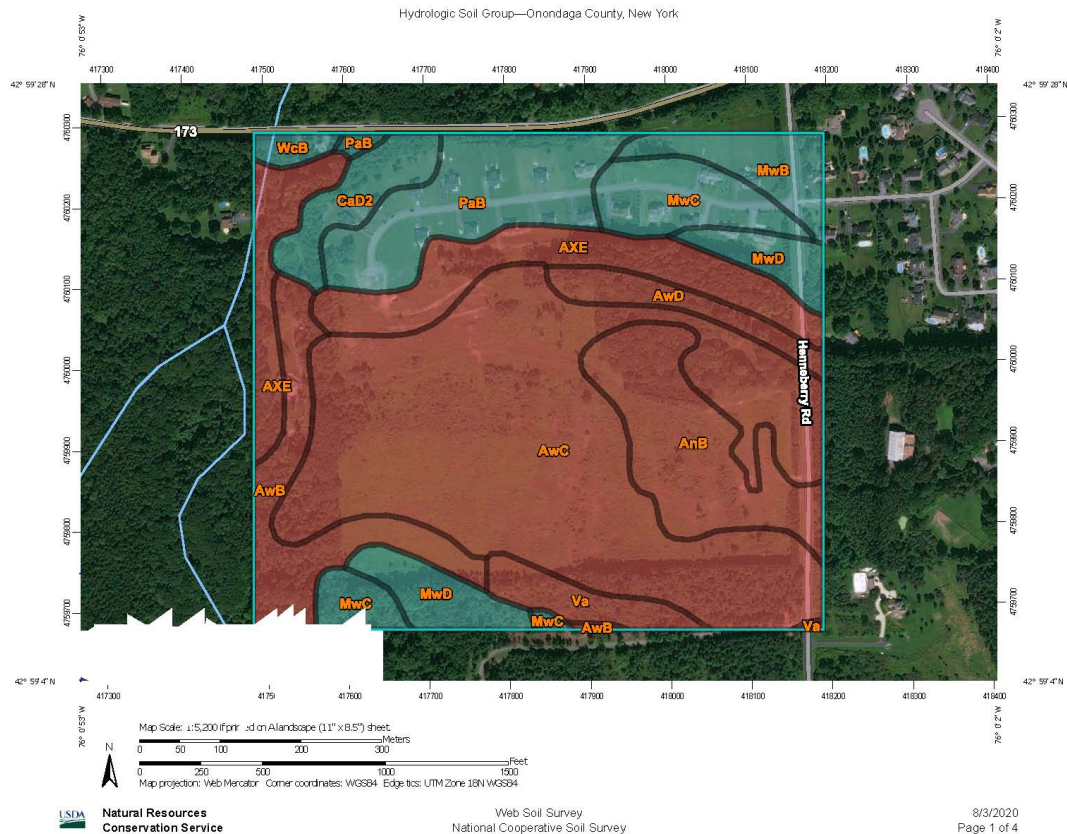


Figure 8: Project Site NRCS Soil Survey Map

B. EXISTING CONDITIONS

The existing project area consists of mixed woods, brush, and grass area located on the west side of Henneberry Road and to the south of the existing Brandywine Drive subdivision. The overall drainage area has three main points of study at which the peak runoff rates for pre and post-development conditions are analyzed. Drainage Area 1 (DA-1) is tributary to point of study #1, which is located within a small creek to the northwest of the subject site. This creek flows to the north under Route 173 and is ultimately tributary to Limestone Creek. Drainage Area 2 (DA-2) is tributary to point of study #2, located within a drainage ditch on the south side of the existing Brandywine subdivision. Drainage area 3 (DA-3) is tributary to point of study #3, located within the drainage ditch on the west side of the Henneberry Road right-of-way. The only existing impervious area is the hammerhead at the end of Brandywine Drive and is located in the northwest portion of DA-1. The entirety of the subject site slopes generally towards the north at grades varying between $\pm 3\%$ and 13%. An existing drainage ditch cuts across the entirety of the site from east to west and conveys stormwater runoff from the site towards point of study #1.



DA-1 includes a significant amount of off-site wooded area to the south and west of the project site. This area sheet flows to the existing grass area on-site before being channelized in a drainage ditch that flows from east to west across the width of the project site. This ditch discharges to an offsite creek to the west of the subject site before reaching point of study #1.

Table 2: Existing Drainage Area 1 Curve Number Calculation

Area (ac)	CN	Description
21.210	77	Woods, Good, HSG D
35.420	80	>75% Grass cover, Good, HSG D
56.630	79	Weighted Average
56.630		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.0	100	0.0600	0.10		Sheet Flow, Sheet Flow Woods: Light underbrush n= 0.400 P2= 2.39"
4.6	410	0.0900	1.50		Shallow Concentrated Flow, Shallow Woodland Kv= 5.0 fps
6.7	840	0.0900	2.10		Shallow Concentrated Flow, Shallow Short Grass Pasture Kv= 7.0 fps
1.3	1,405	0.0750	17.78	213.31	Channel Flow, Swale Area= 12.0 sf Perim= 8.0' r= 1.50' n= 0.030 Earth, clean & winding
28.6	2,755	Total			

DA-2 includes wooded, grass, and brush area that drain to the north towards point of study #2. There is a series of existing drainage swales that channelize flow towards this point of study. This area is located to the north of the existing drainage ditch that cuts through the site.

Table 3: Existing Drainage Area 2 Curve Number Calculation

Area (ac)	CN	Description
3.330	77	Woods, Good, HSG D
2.740	80	>75% Grass cover, Good, HSG D
6.070	78	Weighted Average
6.070		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.5	100	0.0400	0.13		Sheet Flow, Sheet Flow Grass: Dense n= 0.240 P2= 2.39"
14.2	555	0.0170	0.65		Shallow Concentrated Flow, Shallow Woodland Kv= 5.0 fps
1.5	281	0.0360	3.05		Shallow Concentrated Flow, Shallow Unpaved Kv= 16.1 fps
0.2	280	0.1210	20.51	205.13	Channel Flow, Swale Area= 10.0 sf Perim= 5.0' r= 2.00' n= 0.040 Earth, dense weeds
28.4	1,216	Total			



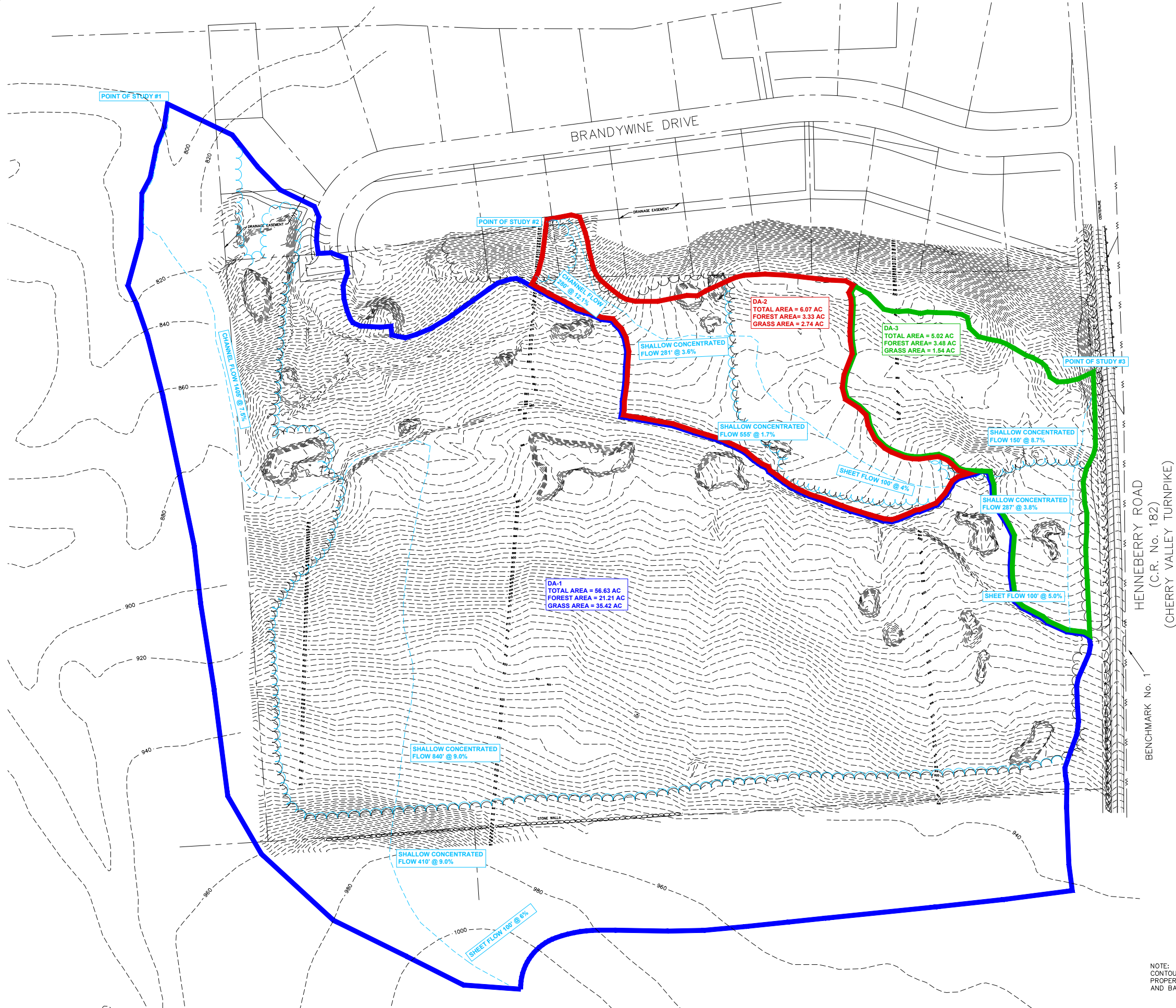
DA-3 consists of wooded and shrub area in the northeast corner of the subject site and is tributary to point of study # 3 which is located within the Henneberry Road right-of-way.

Table 4: Existing Drainage Area 3 Curve Number Calculation

Area (ac)	CN	Description
3.480	77	Woods, Good, HSG D
1.540	80	>75% Grass cover, Good, HSG D
5.020	78	Weighted Average
5.020		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	100	0.0500	0.15		Sheet Flow, Sheet Flow Grass: Dense n= 0.240 P2= 2.39"
1.5	287	0.0380	3.14		Shallow Concentrated Flow, Shallow Unpaved Kv= 16.1 fps
1.7	150	0.0870	1.47		Shallow Concentrated Flow, Shallow Woodland Kv= 5.0 fps
14.6	537	Total			

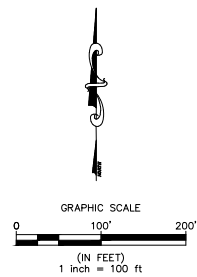
Figure 9 on the following page summarizes the hydrology of the existing condition watershed.



HENNEBERRY ROAD
(C.R. No. 182)
(CHERRY VALLEY TURNPIKE)

BENCHMARK No. 1

NOTE:
CONTOURS OUTSIDE OF THE SUBJECT
PROPERTY BOUNDARY IS APPROXIMATE
AND BASED ON USGS TOPOGRAPHY MAPS.



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OR MECHANICAL, INCLUDING
PHOTOCOPYING, RECORDING,
OR BY ANY INFORMATION
STORAGE AND RETRIEVAL
SYSTEM, WITHOUT PERMISSION
IN WRITING FROM NAPIERALA
CONSULTING, P.C.

PLANNED BY:
NEAL H. ZIMMERER, JR., P.E.
HYDROLOGIST #007211

PROJECT NO.
20-1906

DATE
29 NOV 2021

SCALE
1" = 100'

FIG-1

PREPARED BY:
NAPIERALA CONSULTING, P.C.
PROFESSIONAL ENGINEER, P.C.
SITE • DESIGN • ENGINEERING
MANLUS, NEW YORK 13104
email: MNAT@NAPCON.COM
PH: (315) 682-5580 FAX: (315) 682-5544

NO.	REVISION/ISSUE	DATE

SHEET TITLE:
EXISTING DRAINAGE AREA

PROJECT TITLE:
**BRANDYWINE ESTATES PHASE 2
HENNEBERRY ROAD**
TOWN OF MANLIUS ONONDAGA COUNTY, NY
PREPARED FOR:
HARRINGTON HOMES
3848 HENNEBERRY ROAD
JAMESVILLE, NY 13078

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C. PROPOSED CONDITIONS

This project consists of the construction of a 34-lot subdivision of single-family homes. The impervious area on each lot will consist of rooftop area, which will be properly disconnected via gutter discharge to grass buffer strips, and asphalt driveway area, which is assumed to be approximately 1,800 square-feet (about 0.04 acres) for each individual lot. The development will also include necessary amenities such as public street(s), public/private utility extensions/connections, and applicable stormwater management facilities. The stormwater mitigation area will collect and treat runoff in order to meet the objectives of the SPDES General Permit for Stormwater Discharges from Construction Activity and local regulations.

The stormwater management system includes several management practices to capture, treat and control the release of runoff from the site. Runoff from the impervious areas, both rooftop and asphalt, will be directed to practices to provide infiltration/runoff reduction, water quality treatment and water quantity storage. The following stormwater management practices will be constructed:

- **Bioretention Areas:** Bioretention filters are considered a standard stormwater management practice with runoff reduction capacity to decrease stormwater quantity and improve water quality (NYSDEC Stormwater Management Design Manual, p. 5-97)¹. The filters collect runoff from rainfall events, temporarily store it, and filter it through the root structure of the plants and the planting soil media. Through the plants' uptake of runoff and the filtering through the soil media, the amount of runoff the site generates is reduced and the remaining runoff from these frequent, but less intense, rainfall events is treated to remove pollutants such as suspended solids and phosphorus. The runoff in excess of the water quality event (the 90th-percentile rain event) will discharge to the downstream detention basin.
- **Detention Basin:** The detention basin will collect runoff from the more intense but less frequent rainfall events and temporarily store and released in a controlled manner such that the peak rates of runoff to the downstream design points will not be adversely impacted.

DA-1A includes a large off-site, upland wooded area and a majority of the proposed development on the subject property. This area is collected via conveyance systems in the roadway and is ultimately tributary to Bioretention Area #1 and Detention Basin #1.

Table 5: Proposed Drainage Area 1A Curve Number Calculations

Area (ac)	CN	Description
2.050	98	Paved parking, HSG D
1.940	98	Unconnected roofs, HSG D
22.870	80	>75% Grass cover, Good, HSG D
8.960	77	Woods, Good, HSG D
35.820	81	Weighted Average
31.830		88.86% Pervious Area
3.990		11.14% Impervious Area
1.940		48.62% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.9	100	0.0600	0.06		Sheet Flow, SHEET FLOW Woods: Dense underbrush n= 0.800 P2= 2.39"
4.8	370	0.0650	1.27		Shallow Concentrated Flow, SCF Woodland Kv= 5.0 fps
1.9	200	0.0650	1.78		Shallow Concentrated Flow, SCF Short Grass Pasture Kv= 7.0 fps
0.2	295	0.0300	19.80	79.19	Channel Flow, curb and gutter flow Area= 4.0 sf Perim= 4.0' r= 1.00' n= 0.013 Asphalt, smooth
1.7	1,100	0.0345	11.04	19.51	Pipe Channel, Pipe Flow 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
3.8	955	0.0050	4.20	50.44	Channel Flow, Area= 12.0 sf Perim= 12.0' r= 1.00' n= 0.025 Earth, grassed & winding
40.3	3,020	Total			

¹ The "biogeochemical process" in terms of stormwater management is the pathway by which water is recycled through plant material where the plant can consume it or return it to the atmosphere through evapotranspiration.



DA-1B includes the western portion of the proposed development and a section of wooded area upland and to the south of the subject property. This area is ultimately tributary to Bioretention Area #2 and Detention Basin #1.

Table 6: Proposed Drainage Area 1B Curve Number Calculations

Area (ac)	CN	Description
0.710	98	Paved parking, HSG D
0.340	98	Unconnected roofs, HSG D
7.820	80	>75% Grass cover, Good, HSG D
2.040	77	Woods, Good, HSG D
10.910	81	Weighted Average
9.860		90.38% Pervious Area
1.050		9.62% Impervious Area
0.340		32.38% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	100	0.0600	0.16		Sheet Flow, SHEET FLOW Grass: Dense n= 0.240 P2= 2.39"
4.6	410	0.0900	1.50		Shallow Concentrated Flow, SCF Woodland Kv= 5.0 fps
5.6	710	0.0920	2.12		Shallow Concentrated Flow, SCF Short Grass Pasture Kv= 7.0 fps
0.3	170	0.0200	9.55	76.42	Channel Flow, swale flow Area= 8.0 sf Perim= 8.0' r= 1.00' n= 0.022 Earth, clean & straight
21.1	1,390	Total			

DA-1C consists of the grassy area within the detention basin and is not tributary to a bioretention area.

Table 7: Proposed Drainage Area 1C Curve Number Calculations

Area (ac)	CN	Description			
0.960	80	>75% Grass cover, Good, HSG D			
0.120	77	Woods, Good, HSG D			
1.080	80	Weighted Average			
1.080		100.00% Pervious Area			
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Min TR 55 Value



DA-1D consists largely of wooded area and lawn area that is located on the western part of the subject site and just off-site to the west. This drainage area is not tributary to any on-site stormwater management practices and is directly tributary to point of study #1.

Table 8: Proposed Drainage Area 1D Curve Number Calculations

Area (ac)	CN	Description
5.930	80	>75% Grass cover, Good, HSG D
8.910	77	Woods, Good, HSG D
0.160	98	Paved parking, HSG D
15.000	78	Weighted Average
14.840		98.93% Pervious Area
0.160		1.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.9	100	0.0600	0.06		Sheet Flow, SHEET FLOW Woods: Dense underbrush n= 0.800 P2= 2.39"
5.4	485	0.0900	1.50		Shallow Concentrated Flow, SCF Woodland Kv= 5.0 fps
4.1	517	0.0900	2.10		Shallow Concentrated Flow, SCF Short Grass Pasture Kv= 7.0 fps
1.2	1,155	0.0750	16.28	260.45	Channel Flow, SWALE Area= 16.0 sf Perim= 16.0' r= 1.00' n= 0.025 Earth, clean & winding
38.6	2,257	Total			

DA-2 consists of the small amount of wooded and lawn area that is still tributary to point of study #2 to the north of the subject site.

Table 9: Proposed Drainage Area 2 Curve Number Calculations

Area (ac)	CN	Description
0.690	80	>75% Grass cover, Good, HSG D
0.140	77	Woods, Good, HSG D
0.830	79	Weighted Average
0.830		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	100	0.1500	0.23		Sheet Flow, SHEET FLOW Grass: Dense n= 0.240 P2= 2.39"
0.7	104	0.1300	2.52		Shallow Concentrated Flow, SCF Short Grass Pasture Kv= 7.0 fps
8.1	204	Total			



DA-3A includes a small amount of off-site wooded area and the southeastern-most proposed house within the development. The runoff from this area is collected by the loop road conveyance system, discharges into the drainage ditch within the right-of-way, and is ultimately tributary to point of study #3.

Table 10: Proposed Drainage Area 3A Curve Number Calculations

Area (ac)	CN	Adj	Description		
0.920	80		>75% Grass cover, Good, HSG D		
0.180	98		Paved parking, HSG D		
0.070	98		Unconnected roofs, HSG D		
1.030	77		Woods, Good, HSG D		
2.200	81	80	Weighted Average, UI Adjusted		
1.950			88.64% Pervious Area		
0.250			11.36% Impervious Area		
0.070			28.00% Unconnected		
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.9	100	0.0450	0.14		Sheet Flow, SHEET FLOW Grass: Dense n= 0.240 P2= 2.39"
2.5	188	0.0650	1.27		Shallow Concentrated Flow, SCF Woodland Kv= 5.0 fps
1.9	202	0.0650	1.78		Shallow Concentrated Flow, SCF Short Grass Pasture Kv= 7.0 fps
0.2	232	0.0220	16.95	50.86	Channel Flow, curb flow Area= 3.0 sf Perim= 3.0' r= 1.00' n= 0.013 Asphalt, smooth
16.5	722	Total			

DA-3B includes a small portion of the northeastern portion of the proposed development. This area is directly tributary to point of study #3 within the right-of-way.

Table 11: Proposed Drainage Area 3B Curve Number Calculations

Area (ac)	CN	Adj	Description		
2.230	80		>75% Grass cover, Good, HSG D		
0.230	98		Paved parking, HSG D		
0.140	98		Unconnected roofs, HSG D		
2.600	83	82	Weighted Average, UI Adjusted		
2.230			85.77% Pervious Area		
0.370			14.23% Impervious Area		
0.140			37.84% Unconnected		
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	100	0.0500	0.15		Sheet Flow, SHEET FLOW Grass: Dense n= 0.240 P2= 2.39"
5.1	475	0.0500	1.57		Shallow Concentrated Flow, SCF Short Grass Pasture Kv= 7.0 fps
0.2	82	0.0200	6.42	5.04	Pipe Channel, pipe flow 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
16.7	657	Total			

Figure 10 on the following page summarizes the hydrology of the proposed condition watershed.

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D. RUNOFF REDUCTION VOLUME (RRV)

The NYSDEC implemented regulations effective March 1, 2011 that requires all construction projects that disturb greater than one acre of land to provide runoff reduction through the implementation of green infrastructure practices. The goal of the runoff reduction volume criteria is to implement stormwater management practices and green infrastructure techniques to replicate pre-development hydrology. The NYS Stormwater Management Design Manual provides the acceptable green planning techniques and green infrastructure techniques to meet the runoff reduction volume criteria. The following narrative and calculations detail the implementation of the planning and infrastructure techniques on the site to achieve the minimum runoff reduction volume. The narrative follows the Design Manual, Chapter 5.

PLANNING

1. Plan to preserve, avoid, and minimize:

	<u>Applicable</u>	<u>Not Applicable</u>
a. Preserve undisturbed, natural buffer, and critical environmental areas.	☐	☒
b. Employ open space, conservation, and clustering site design techniques.	☒	☐
c. Avoid developing in environmentally sensitive areas: floodplain, steep slopes, habitat, ecosystems, bedrock, wetlands, shorelines, shallow groundwater, impervious soils and unstable soils.	☒	☐
d. Minimize impervious surfaces: building footprints, parking, roads, sidewalks, and driveways.	☒	☐
e. Minimize clearing and grading	☒	☐

Discussion:

- The project does not have any critical environmental areas.
- Open space is used in projects on tracts of land where the development can be concentrated in a portion of the site while maintaining large portions of undisturbed land. Open space design was taking into consideration when planning the subdivision of the property. Town code requires lot sizes to be a minimum of 40,000 square feet and this plan proposes lots between 43,000 sf and 100,000 sf.
- The project does not have any critical environmental areas with the exception of steep slopes. Development in steep slopes will be minimized as much as possible and is limited to areas of the individual homes.
- The NYS Stormwater Design Manual discusses building footprint reduction in terms of building multiple floors to achieve the same, or comparable, square footage as a single-floor footprint. The majority of these house are expected to be two-story homes to reduce the footprint and achieve more square foot area of the house.
- The proposed grading plan for the project minimizes the amount of grading to the maximum extent practicable. Grade requirements for a functional site, including slopes to meet the buildable lots, were taken into account during the design phase. The off-grading was designed to catch up to the existing grade in the shortest distance possible (i.e., minimize off-grading) while still meeting acceptable standards for slope stabilization and erosion control.

Disconnection of Rooftop Runoff

All direct runoff from residential rooftop areas has been designed to be distributed to surrounding pervious areas to promote overland vegetative filtering and infiltration. As such, all rooftop impervious area is treated as pervious lawn area when calculating the required water quality volume and runoff reduction volume. The rooftop impervious area is not deducted when calculating the water quantity mitigation in the detention basin.



E. WATER QUALITY VOLUME (WQ_v) REQUIRED:

1. Calculate the required water quality volume for new impervious area within drainage areas DA-1A.

$$WQ_v = \frac{PR_v A}{12}$$

90-th Percentile Rainfall (P) = 1.0 inch

Drainage Area (A) = 35.82 acres

Impervious Area (A_I) = 2.26 acres

$$R_v = 0.05 + 0.9 \left(\frac{A_I}{A} \right)$$

$$R_v = 0.05 + 0.9(0.063)$$

$$R_v = 0.107$$

therefore:

$$WQ_v = \frac{1.0 \cdot 0.107 \cdot 35.82}{12}$$

$$\boxed{\text{Total WQ}_v \text{ Required} = 0.319 \text{ ac} \cdot \text{ft (13,890 cf)}}$$

2. Minimum RR_v requirements

Calculate minimum required Runoff Reduction Volume (RR_v) for DA-1A, 1B, & 1C using:

$$RR_v = \frac{P \cdot R_v \cdot S \cdot A_I}{12}$$

A_I = total impervious area

S = 0.55 (A Soils), 0.40 (B Soils), 0.30 (C Soils), 0.20 (D Soils), or weighted HSG average in drainage area

$$RR_v = \frac{1.0(0.95)(0.20)(2.26)}{12}$$

$$\boxed{\text{Total Minimum RR}_v \text{ required} = 0.036 \text{ ac} \cdot \text{ft (1,560 cf)}}$$

1. Calculate the required water quality volume for the remaining new impervious area within drainage areas DA-1B, DA-3A, & DA-3B. The impervious area within DA-3 cannot feasibly be captured and treated due to steep slopes, therefore the bioretention area collecting runoff from DA-1B will be oversized to compensate for the required water quality treatment volume of DA-3.

$$WQ_v = \frac{PR_v A}{12}$$

90-th Percentile Rainfall (P) = 1.0 inch

Drainage Area (A) = 15.71 acres

Impervious Area (A_I) = 1.12 acres (Total from DA-1B and DA-3)

$$R_v = 0.05 + 0.9 \left(\frac{A_I}{A} \right)$$

$$R_v = 0.05 + 0.9(0.071)$$

$$R_v = 0.114$$

therefore:

$$WQ_v = \frac{1.0 \cdot 0.114 \cdot 15.71}{12}$$

$$\boxed{\text{Total WQ}_v \text{ Required} = 0.150 \text{ ac} \cdot \text{ft (6,510 cf)}}$$



2. Minimum RR_v requirements

Calculate minimum required Runoff Reduction Volume (RR_v) for DA-1A, 1B, & 1C using:

$$RR_v = \frac{P \cdot R_v \cdot S \cdot A_I}{12}$$

A_I = total impervious area

S = 0.55 (A Soils), 0.40 (B Soils), 0.30 (C Soils), 0.20 (D Soils), or weighted HSG average in drainage area

$$RR_v = \frac{1.0(0.95)(0.20)(1.12)}{12}$$

Total Minimum RR_v required = 0.018 ac·ft (775 cf)

F. WATER QUALITY VOLUME (WQV) PROVIDED

Water quality treatment for the runoff from proposed impervious surfaces will be provided by a combination of two bioretention areas. Rooftop area is assumed to be properly disconnected from nearby impervious surfaces and is therefore treated as pervious area in analysis.

Bioretention Basin #1 (DA-1A)

$$A_f = \frac{(WQ_v)(d_f)}{(k)(h_f + d_f)(t_f)}$$

Where,

A_f = Area of the filter (ft²)

WQ_v = Water Quality Volume (ft³)

d_f = depth of the bioretention soil media (2.5 ft as required in NYS Design Manual)

k = coefficient of permeability (0.5 ft/day per NYS Design Manual)

h_f = average height of water above the filter bed (0.125 ft)

t_f = design filter bed drain time (2 days per NYS Design Manual)

$$A_f = \frac{(13,890 \text{ ft}^3)(2.5 \text{ ft})}{\left(0.5 \frac{\text{ft}}{\text{day}}\right)(0.25 \text{ ft} + 2.5 \text{ ft})(2 \text{ days})}$$

Total A_f = 12,630 ft² *required*

Total A_f provided = 12,800 ft²

Therefore,

$WQ_v = 13,890 \text{ ft}^3$ (0.319 ac·ft) *Provided*

The RR_v provided is calculated as follows:

Bioretention areas in C and D soils have a RR_v factor of $0.4 \cdot WQ_v$.

$$RR_v = 0.4 \cdot 13,890 \text{ ft}^3$$

RR_v provided = 5,555 ft³ = 0.128 ac·ft



Bioretention Basin #2 (DA-1B, 3A, & 3B)

$$A_f = \frac{(WQ_v)(d_f)}{(k)(h_f + d_f)(t_f)}$$

Where,

- A_f = Area of the filter (ft²)
- WQ_v = Water Quality Volume (ft³)
- d_f = depth of the bioretention soil media (2.5 ft as required in NYS Design Manual)
- k = coefficient of permeability (0.5 ft/day per NYS Design Manual)
- h_f = average height of water above the filter bed (0.125 ft)
- t_f = design filter bed drain time (2 days per NYS Design Manual)

$$A_f = \frac{(6,510 \text{ ft}^3)(2.5 \text{ ft})}{\left(0.5 \frac{\text{ft}}{\text{day}}\right)(0.25 \text{ ft} + 2.5 \text{ ft})(2 \text{ days})}$$

Total A_f = 5,920 ft² *required*

Total A_f provided = 6,200 ft²

Therefore,

$$\boxed{WQ_v = 6,510 \text{ ft}^3 \text{ (0.150 ac}\cdot\text{ft) Provided}}$$

The RR_v provided is calculated as follows:

Bioretention areas in C and D soils have a RR_v factor of $0.4 \cdot WQ_v$.

$$RR_v = 0.4 * 6,510 \text{ ft}^3$$

$$\boxed{RR_v \text{ provided} = 2,605 \text{ ft}^3 = 0.060 \text{ ac}\cdot\text{ft}}$$



G. CHANNEL PROTECTION VOLUME (CP_v)

The proposed project must provide sufficient storage of the channel protection volume (CP_v), which is accomplished by providing 24-hour extended detention of the one-year, 24-hour storm event, remained from runoff reduction. The NYS Stormwater Design Manual methodology for determining the storage volume was used (Appendix B.1) and is discussed below. Below is a summary of the calculations for DA-1.

Proposed Detention Basin 1

Tributary Area = 47.70 acres, CN = 81, & t_c = 35 minutes

I_a = 0.469, P = 1.0"

$$\frac{I_a}{P} = 0.469$$

Using I_a/P and T_c, q_u = 260 csm/in (TR-55, Exhibit 4-II)

Using q_u and T = 24 hr, q_o/q_i = 0.07 (Design Manual, Figure B.1)

Using formula 2.1.16 (Design Manual, Appendix B.1), calculate V_s/V_r

$$\frac{V_s}{V_r} = 0.590$$

Using formula 2.1.17 (Design Manual, Appendix B.1), calculate V_s

$$V_s = \frac{\left(\frac{V_s}{V_r}\right) Q_d A}{12}$$

V_s = (0.59)2.268 ac · ft (total tributary from HydroCAD)

V_s = 1.33 ac · ft (57,930 cf)

CP_v required = CP_v - RR_v Provided

CP_v required = 57,930 ft³ - 8,160 ft³ = **49,770 ft³ required**

CP_v Provided in Bioretention #1 = 5,250 ft³

CP_v Provided in Bioretention #2 = 11,675 ft³

CP_v Provided in Detention #1 = 33,240 ft³

Total CP_v = 50,165 ft³ Provided



H. PEAK FLOW MITIGATION (Q_{p10} and Q_{p100})

The remaining two requirements of the NYSDEC SPDES General Permit for Stormwater Discharges from Construction Activity are that the stormwater system cannot discharge runoff from the site during the 10-year and 100-year, 24-hour rainfall events at rates higher than the existing condition peak rates of runoff during the correlating rainfall events. To meet these requirements, the underground stormwater chamber system will act as a detention basin that capture the runoff, temporarily store it, and release the runoff in a controlled manner to the existing drainage ditch such that the proposed project will not adversely impact the downstream areas. The following tables summarize the HydroCAD results for the 10-year and 100-year rainfall events.

Table 12: Peak Flow Rates for 10-Year & 100-Year Rainfall Events

Point of Study	Existing Peak Runoff Rate (cfs)			Proposed Peak Runoff Rate (cfs)		
	Pt. 1	Pt. 2	Pt. 3	Pt. 1	Pt. 2	Pt. 3
10-Year Storm	75.01	7.68	9.35	45.27	2.07	9.31
100-Year Storm	175.87	18.46	22.06	86.52	4.70	21.06

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
861.80	1,260	0	0
862.00	2,891	415	415
863.00	6,366	4,629	5,044
864.00	11,515	8,941	13,984
865.00	16,570	14,043	28,027
866.00	18,777	17,674	45,700
867.00	21,040	19,909	65,609
868.00	23,360	22,200	87,809
869.00	25,736	24,548	112,357
870.00	28,169	26,953	139,309
871.00	30,658	29,414	168,723
872.00	33,204	31,931	200,654
873.00	35,805	34,505	235,158

Device	Routing	Invert	Outlet Devices
#1	Secondary	872.00'	30.0' long x 12.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#2	Primary	861.80'	30.0" Round Culvert L= 98.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 861.80' / 857.00' S= 0.0490 ' / S= 0.0490 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf
#3	Device 2	861.80'	4.0" Vert. Orifice1 C= 0.600 Limited to weir flow at low heads
#4	Device 2	864.60'	30.0" W x 30.0" H Vert. Orifice2 C= 0.600 Limited to weir flow at low heads
#5	Device 2	869.00'	36.0" x 36.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads

Figure 11: Proposed Detention Basin #1 Summary



Section IV. CONTROLS

A. EROSION AND SEDIMENT CONTROLS

Prior to the commencement of construction, the operator will identify the contractor(s) and subcontractor(s) that will implement each erosion and sediment control measure identified in this SWPPP. All contractors and subcontractors identified in the SWPPP must sign a copy of the certification statement in Part III.E. of the NYS DEC SPDES General Permit for Stormwater Discharges from Construction Activities in accordance with Part V.H. of the SPDES General Permit.

1. Stabilization Practices (Permanent)

Permanent stabilization practices for this site include:

- a. Land clearing activities shall be done only in areas where earthwork will be performed and shall progress as earthwork is needed.
- b. Permanent seeding and planting of all unpaved areas.

2. Stabilization Practices (Temporary) Temporary stabilization practices for this site include:

- a. Temporary seeding and planting of all unpaved areas when construction activity has ceased, or will cease, in an area for 14 days. Seeding mixtures and application rates are listed in the erosion and sediment control notes on the plans.
- b. Mulching exposed areas. Mulching rates are listed in the erosion and sediment control notes on the plan sheet C-15.
- c. Frequent watering to minimize wind erosion during construction.

3. Structural Practices (Permanent) Permanent structural practices for this site include:

- a. Bioretention Areas. Bioretention filters are considered a standard stormwater management practice with runoff reduction capacity to decrease stormwater quantity and improve water quality.
- b. Land grading. Land grading is the reshaping of the existing land surface in accordance with a plan as determined by the engineering survey and layout. The purpose of a land grading specification is to provide erosion control and vegetative establishment on areas where the existing land is to be reshaped according to the plan.

4. Structural Practices (Temporary)

Temporary structural practices for this site include:

- a. Silt fence. Silt fence is a temporary barrier of geotextile fabric installed on the contours across from a slope used to intercept sediment laden runoff from small drainage areas of disturbed soil. The purpose of silt fence is to reduce runoff velocity and effect deposition of transported sediment load.
- b. Stabilized construction entrance/exit. A stabilized construction entrance/exit is a stabilized pad of aggregate underlain with geotextile located at any point where traffic will be entering or leaving a construction site to or from a public right-of-way, street, alley, sidewalk, or parking area. The purpose of the stabilized construction entrance is to reduce or eliminate the tracking of sediment onto public rights-of-way or streets
 1. Aggregate size: Use a matrix of one to four-inch stone, or reclaimed or recycled equivalent
 2. Thickness: Not less than six inches
 3. Width: 24-foot minimum
 4. Length: As required, but not less than 50 feet
 5. Geotextile: To be placed over the entire area to be covered with aggregate. Piping of surface water under entrance shall be provided as necessary.



- c. Sediment trap. The detention basins will be used as a sediment trap during construction. The sediment basin will have a riprap outlet sediment trap in place of the emergency spillway. Upon completion of construction, the sediment basin will be cleaned of all sediment buildup and the basin shall be finalized per plans.
- d. Concrete washout area. A temporary excavated or above ground lined constructed pit where concrete truck mixers and equipment can be washed after their loads have been discharged to prevent highly alkaline runoff from entering storm drainage systems or leaching into the soil.
 - 1. The washout facility is sized to contain solids, wash water and rainfall. The maximum size shall be eight feet by eight feet at the bottom and two feet deep. If excavated, then the side slopes shall be 2:1 (horizontal to vertical).
 - 2. The facility shall be located a minimum of 100 feet from drainage swales, storm drain inlets, wetlands, streams, and other surface waters. Surface waters shall be prevented from entering the structure except got the access road. Appropriate access shall be provided with a gravel access road sloped down to the structure. Signs shall be placed to direct drivers to the facility after their load is discharged.
 - 3. All washout facilities will be lined to prevent leaching of liquids into the ground. The liner shall be plastic sheeting with a minimum thickness of 10 mils with no holes or tears, and anchored beyond the top of the pit with an earthen berm, sand bags, stone, or other structural appurtenance except at the access point.

5. Sequence of Major Activities

The contractor will be responsible for implementing the above listed erosion and sediment control practices. The contractor may designate these tasks to certain subcontractors as is seen fit, but the ultimate responsibility for implementing these controls and ensuring their proper function remains with the contractor. The order of activities shall be as follows:

- a. Conduct a preconstruction meeting with all involved parties
- b. Delineate boundaries of disturbance as per the layout and grading plans
- c. Construct construction entrance at the location shown on the erosion and sediment control plan
- d. Install silt fence in locations shown on the layout and grading plans
- e. Establish staging areas on the project site
- f. Construct sediment trap(s) and overflow spillways for use during construction
- g. Excavate detention basin and install overflow spillway
- h. Remove topsoil, stockpile and stabilize
- i. Rough grade site including swales and provide temporary stabilization when idle for more than 7 days
- j. Building foundation excavation
- k. Install underground stormwater management system
- l. Compact gravel along driveways and parking areas
- m. Utility installations.
- n. Install concrete washout, complete concrete site work.
- o. Complete final grading of the site
- p. Restore all compacted soils in accordance with section 5.1.6 of the NYS Stormwater Design Manual
- q. Provide final stabilization and landscaping of new area
- r. Site Paving
- s. Provide final stabilization of disturbed areas via seeding mulching.
- t. Construct bioretention basins and outlet controls upon upstream stabilization
- u. Remove all temporary stabilization control practices

Disturbed areas of the site where construction activity has ceased for more than seven (7) days shall be temporarily seeded and mulched. The Erosion & Sediment Control plan is shown in Appendix F.



B. INSPECTION AND MAINTENANCE REQUIREMENTS

Best management practices, both construction and operational, must be inspected and maintained on a routine basis to ensure continued compliance with the NYS SPDES General Permit for Stormwater Discharges from Construction Activity. The contractor is responsible for inspecting the erosion and sediment control practices, the operator/owner is responsible for providing a qualified professional, as defined in the SPDES General Permit, to perform the required weekly inspections of the construction site from the time earth-disturbing activities begin until final stabilization is achieved and the Notice of Termination is filed. The contractor will obtain copies of all local and state regulations that are applicable to stormwater management, erosion control, and pollution minimization at this job site and will comply fully with such regulations. The contractor will submit written evidence of such compliance if requested by the operator or any agent of a regulatory body. The contractor will comply with all conditions of the NYSDEC SPDES General Permit for Stormwater Discharges from Construction Activity, including the conditions related to maintaining the SWPPP and evidence of compliance with the SWPPP at the job site and allowing regulatory personnel access to the job site and to records to determine compliance.

C. CONSTRUCTION MAINTENANCE/INSPECTION PROCEDURES

The operator shall maintain a record of all inspection reports in a site logbook. The logbook shall be maintained on site and be made available to the permitting authority upon request. Prior to the commencement of construction, the operator shall certify in the site logbook that the SWPPP, prepared in accordance with Part III.D. of the NYS DEC SPDES General Permit for Discharges from Construction Activities, meets all Federal, State and local erosion and sediment control requirements. The operator shall post at the site, in a publicly accessible location, a summary of the site inspection activities monthly. The following inspection and maintenance practices will be used to maintain erosion and sediment controls and stabilization measures.

1. Inspection and Maintenance Practices
 - a. Inspections shall occur once every seven calendar days.
 - b. At a minimum, the qualified inspector shall inspect all erosion and sediment control practices to ensure integrity and effectiveness, all post-construction stormwater management practices under construction to ensure that they are constructed in conformance with the SWPPP, all areas of disturbance that have not achieved final stabilization, all points of discharge to natural surface waterbodies located within or immediately adjacent to the property boundaries of the construction site, and all points of discharge from the construction site.
 - c. The qualified inspector shall prepare an inspection report subsequent to each and every inspection. At a minimum, the inspection report shall include and/or address the following:
 - i. Date and time of inspection;
 - ii. Name and title of person(s) performing inspection;
 - iii. A description of the weather and soil conditions (e.g. dry, wet, saturated) at the time of the inspection;
 - iv. A description of the condition of the runoff at all points of discharge from the construction site. This shall include identification of any discharges of sediment from the construction site. Include discharges from conveyance systems (i.e. pipes, culverts, ditches, etc.) and overland flow;
 - v. A description of the condition of all natural surface water bodies located within, or immediately adjacent to, the property boundaries of the construction site which receive runoff from disturbed areas. This shall include identification of any discharges of sediment to the surface water body;
 - vi. Identification of all erosion and sediment control practices that need repair or maintenance;
 - vii. Identification of all erosion and sediment control practices that were not installed or are not functioning as designed and need to be reinstalled or replaced;
 - viii. Description and sketch of areas that are disturbed at the time of the inspection and areas that have been stabilized (temporarily and/or final) since the last inspection;



- ix. Current phase of construction of all post-construction stormwater management practices and identification of all construction that is not in conformance with the SWPPP and technical standards;
 - x. Corrective action(s) that must be taken to install, repair, replace, or maintain erosion and sediment control practices; and to correct deficiencies identified with the construction of the post-construction stormwater management practice(s); and
 - xi. Digital photographs, with date stamp, that clearly show the condition of all practices that have been identified as needing corrective actions. The qualified inspector shall attach paper color copies of the digital photographs to the inspection report being maintained onsite within seven (7) calendar days of the date of the inspection. The qualified inspector shall also take digital photographs, with date stamp, that clearly show the condition of the practice(s) after the corrective action has been completed. The qualified inspector shall attach paper color copies of the digital photographs to the inspection report that documents the completion of the corrective action work within seven (7) calendar days of that inspection.
- d. Within one business day of the completion of an inspection, the qualified inspector shall notify the owner or operator and appropriate contractor or subcontractor of any corrective actions that need to be taken. The contractor or subcontractor shall begin implementing the corrective actions within one business day of this notification and shall complete the corrective actions in a reasonable time frame.
- e. All inspection reports shall be signed by the qualified inspector. The inspection reports shall be maintained on the site.
- f. Erosion and Sediment Control Inspection/Maintenance
- i. Silt Fence: Silt fence shall be inspected for depth of sediment, tears, etc., to see if the fabric is securely attached to the fence posts, and to see that the fence posts are securely in the ground. Built up sediment will be removed from silt fence when it has reached one-third the height of the fence.
 - ii. Stabilized Construction Entrance/Exit: The entrance shall be maintained in a condition which will prevent tracking of sediment onto public rights-of-way. This may require periodic top dressing with additional aggregate. All sediment spilled, dropped, or washed onto public rights-of-way must be removed immediately. When necessary, wheels must be cleaned to remove sediment prior to entrance onto public rights-of-way. When washing is required, it shall be done on an area stabilized with aggregate, which drains into an approved sediment-trapping device. All sediment shall be prevented from entering storm drains, ditches, or water courses.
 - iii. Seeding: Temporary and permanent seeding and all other stabilization measures will be inspected for bare spots, washouts, and healthy growth.
2. Inspection and Maintenance Report Forms
- Once installation of any required or optional erosion control device or measure has been implemented, at least twice every seven calendar days a Qualified Professional shall inspect each practice. The inspector shall use the forms found in this SWPPP to inventory and report the condition of each measure to assist in maintaining the erosion and sediment control measures in good working order.
 - These report forms shall become an integral part of the SWPPP and shall be made readily accessible to governmental inspection officials, the operator's engineer, and the operator for review upon request during visits to the project site. In addition, copies of the reports shall be provided to any of these persons upon request, via mail or facsimile transmission. Inspection and maintenance report forms are to be maintained by the permittee for three years following the final stabilization of the site.
 - The operator shall also prepare a written summary of its status with respect to compliance with the NYSDEC SPDES General Permit for Stormwater Discharges from Construction Activity at a minimum frequency of every three months during which coverage under the SPDES General Permit exists. The summary should address the status of achieving each



component of the SWPPP. The reports shall be signed by the signatory of the NOI or a duly authorized person and be retained at the construction site.

1. Other Record Keeping Requirements

The contractor shall keep the following records related to construction activities at the site:

- Dates when major grading activities occur and the areas which were graded.
- Dates and details concerning the installation of structural controls.
- Dates when construction activities cease in an area.
- Dates when an area is stabilized, either temporarily or permanently.
- Dates of rainfall and the amount of rainfall.
- Dates and descriptions of the character and amount of any spills of hazardous materials.
- Records of reports filed with regulatory agencies if reportable quantities of hazardous materials are spilled.

D. OPERATION MAINTENANCE AND INSPECTION PROCEDURES

Long-term maintenance of the stormwater mitigation basins and swales will be the responsibility of the owner and/or the tenant. Maintenance and inspection check lists have been included in Appendix D.

1. Embankments and emergency spillways will be inspected annually and after major storm events. Items to be inspected include:
 - a. Vegetation and ground cover is adequate to prevent erosion.
 - b. No embankment erosion has occurred.
 - c. No animal burrows into embankments.
 - d. No unauthorized planting.
 - e. No cracking, bulging or sliding of dam.
 - f. Emergency spillway is in good condition, free of silt buildup and debris.
 - g. No leaks or seepage is occurring on downstream face.
 - h. All slope protection and riprap is intact and no failure has occurred.
2. Bioretention basins will be inspected monthly and after major storm events. Items to be inspected include:
 - a. Debris and undesirable vegetative growth shall be removed.
 - b. Sediment depth shall be noted. Sediment shall be removed prior to reaching 50% of the design depth.
 - c. No visible pollution within basins.
3. Grass lined swales shall be inspected and maintained as follows:
 - a. All channels are free of debris on monthly basis.
 - b. No visible evidence of erosion.
 - c. Mowing shall be performed as needed. Inspect to ensure minimum mowing depth has not been exceeded.
 - d. Dewatering of swales between storms. Inspect monthly or as necessary.
 - e. Inspect swales for sediment deposition annually and clean as necessary.



Section V. MATERIALS MANAGEMENT PLAN

A. MATERIALS COVERED

The following materials or substances are expected to be present onsite during construction:

Concrete/Additives/Wastes	Cleaning Solvents
Detergents	Petroleum Based Products
Paints/Solvents	Pesticides
Acids	Solid and Construction Wastes
Sanitary Wastes	Soil Stabilization Additives

B. MATERIAL MANAGEMENT PRACTICES

The following are the material management practices that will be used to reduce the risk of spills or other accidental exposure of materials and substances to stormwater runoff. The job site superintendent will be responsible for ensuring that these procedures are followed.

1. Good Housekeeping

The following good housekeeping practices will be followed onsite during the construction project.

- a. An effort will be made to store only enough products required to do the job.
- b. All materials stored onsite will be stored in a neat, orderly manner and, if possible, under a roof or in a containment area. At a minimum, all containers will be stored with their lids on when not in use. Drip pans shall be provided under all dispensers.
- c. Products will be kept in their original containers with the original manufacturer's label in legible condition.
- d. Substances will not be mixed with one another unless recommended by the manufacturer.
- e. Whenever possible, all of a product will be used up before disposing of the container.
- f. Manufacturer's recommendations for proper use and disposal will be followed.
- g. The job site superintendent will be responsible for daily inspections to ensure proper use and disposal of materials.

2. Hazardous Products

These practices will be used to reduce the risks associated with hazardous materials. Material Safety Data Sheets (MSDS's) for each substance with hazardous properties that is used on the job site will be obtained and used for the proper management of potential wastes that may result from these products. An MSDS will be posted in the immediate area where such product is stored and/or used and another copy of each MSDS will be maintained in the SWPPP file at the job site construction trailer office. Each employee who must handle a substance with hazardous properties will be instructed on the use of MSDS sheets and the specific information in the applicable MSDS for the product he/she is using, particularly regarding spill control techniques.

- a. Products will be kept in original containers with the original labels in legible condition.
- b. Original labels and material safety data sheets (MSDS's) will be procured and used for each material.
- c. If surplus product must be disposed of, manufacturer's or local/state/federal recommended methods for proper disposal will be followed.

3. Hazardous Waste

All hazardous waste materials will be disposed of by the contractor in the manner specified by local, state, and/or federal regulations and by the manufacturer of such products. Site personnel will be instructed in these practices by the job site superintendent, who will also be responsible for seeing that these practices are followed.



4. Product Specific Practices

The following product specific practices will be followed on the job site.

a. Petroleum Products

All onsite vehicles will be monitored for leaks and receive regular preventative maintenance to reduce the chance of leakage. Petroleum products will be stored in tightly sealed containers, which are clearly labeled. Any petroleum storage tanks used onsite will have a dike or berm containment structure constructed around it to contain any spills, which may occur. Drip pans shall be provided for all dispensers. Any asphalt substances used onsite will be applied per the manufacturer's recommendations.

b. Fertilizers

Due to the onsite public water supply that will be constructed as part of this project, the use of fertilizers is not allowed without the written authorization of the operator. Authorization will be based on the specific product's possible contaminants and impacts to the groundwater.

c. Paints, Paint Solvents, and Cleaning Solvents

All containers will be tightly sealed and stored when not in use. Excess paint and solvents will not be discharged to the storm sewer system but will be properly disposed of per manufacturer's instructions or state and federal regulations.

5. Concrete Wastes

Concrete trucks will be allowed to wash out or discharge surplus concrete or drum wash water on the site, but only in either (1) specifically designated area which has been prepared to prevent contact between the concrete and/or washout and stormwater which will be discharged from the site or (2) in locations where waste concrete can be poured into forms to make riprap or other useful concrete products.

The hardened residue from the concrete washout areas will be disposed of in the same manner as other non-hazardous construction waste materials or may be broken up and used on site as deemed appropriate by the contractor. The job site superintendent will be responsible for seeing that these procedures are followed.

All concrete washout areas will be in an area where the likelihood of the area contributing to storm water discharges is negligible. If required, additional BMPs must be implemented to prevent concrete wastes from contributing to storm water discharges.

6. Solid and Construction Wastes

All waste materials will be collected and stored in a securely lidded metal dumpster rented from a local waste management company which must be a solid waste management company licensed to do business in New York State. The dumpster will comply with all local and state solid waste management regulations.

All trash and construction debris from the site will be deposited in the dumpster. The dumpster will be emptied a minimum of twice per week or more often if necessary, and the trash will be hauled to a landfill approved by New York State. No construction waste materials will be buried on site. All personnel will be instructed regarding the correct procedures for waste disposal.

All waste dumpsters and roll-off containers will be in an area where the likelihood of the containers contributing to storm water discharges is negligible. If required, additional BMPs must be implemented, such as sandbags around the base, to prevent wastes from contributing to storm water discharges.

7. Sanitary Wastes

All sanitary waste will be collected from the portable units a minimum of three times per week by a licensed portable facility provider in complete compliance with local and state regulation.

All sanitary waste units will be in an area where the likelihood of the unit contributing to storm water discharges is negligible. If required, additional BMPs must be implemented, such as sandbags around the base, to prevent wastes from contributing to storm water discharges.



Section VI. SPILL PREVENTION AND RESPONSE PROCEDURES

The contractor will train all personnel in the proper handling and cleanup of spilled materials. No spilled hazardous materials or hazardous wastes will be allowed to come in contact with storm water discharges. If such contact occurs, the storm water discharge will be contained on site until appropriate measures in compliance with state and federal regulations are taken to dispose of such contaminated storm water. It shall be the responsibility of the job site superintendent to properly train all personnel in spill prevention and clean up procedures.

In order to minimize the potential for a spill of hazardous materials to come into contact with storm water, the following steps will be implemented:

1. All materials with hazardous properties (such as pesticides, petroleum products, fertilizers, detergents, construction chemicals, acids, paints, paint solvents, cleaning solvents, additives for soil stabilization, concrete curing compounds and additives, etc.) will be stored in a secure location, with their lids on, preferably under cover, when not in use.
2. The minimum practical quantity of all such materials will be kept on the job site.
3. A spill control and containment kit (containing, for example, absorbent materials, acid neutralizing powder, brooms, dust pans, mops, rags, gloves, goggles, plastic and metal trash containers, etc.) will be provided at the storage site.
4. Manufacturer's recommended methods for spill cleanup will be clearly posted and site personnel will be trained regarding these procedures and the location of the information and cleanup supplies.

In the event of a spill, the following procedures should be followed

1. All spills will be cleaned up immediately after discovery.
2. The spill area will be kept well ventilated and personnel will wear appropriate protective clothing to prevent injury from contact with the hazardous substances.
3. The project manager and the Engineer of Record will be notified immediately.

Spills of toxic or hazardous materials will be reported to the appropriate federal, state, and/or local government agency, regardless of the size of the spill. Spills of amounts that exceed Reportable Quantities of certain substances specifically mentioned in federal regulations (40 CFR 110, 40 CFR 117, and 40 CFR 302) must be immediately reported to the NYSDEC 24-Hour Spill Hotline at **1-800-457-7362**.

4. If the spill exceeds a Reportable Quantity, the SWPPP must be modified within seven (7) calendar days of knowledge of the discharge to provide a description of the release, the circumstances leading to the release, and the date of the release. The plans must identify measures to prevent the recurrence of such releases and to respond to such releases.

The job site superintendent will be the spill prevention and response coordinator. He will designate the individuals who will receive spill prevention and response training. These individuals will each become responsible for a particular phase of prevention and response. The names of these personnel will be posted in the material storage area and in the office trailer onsite.



Section VII. CONTROL OF NON-STORMWATER DISCHARGES

Certain types of discharges are allowable under the NYS-DEC SPDES General Permit for Stormwater Discharges from Construction Activity, and it is the intent of this SWPPP to allow such discharges. These types of discharges will be allowed under the conditions that no pollutants will be allowed to come in contact with the water prior to or after its discharge. The control measures, which have been outlined previously in this SWPPP, will be strictly followed to ensure that no contamination of these non-stormwater discharges takes place. The following non-storm water discharges are allowed by the NYS-DEC and may occur at the job site:

1. Discharges from firefighting activities
2. Fire hydrant flushing
3. Waters to which cleansers or other components have not been added that are used to wash vehicles or control dust
4. Routine external building wash down which does not use detergents
5. Pavement wash waters where spills or leaks of toxic or hazardous materials have not occurred (unless all spilled material has been removed) and where detergents are not used
6. Air conditioning condensate
7. Springs
8. Foundation or footing drains where flows are not contaminated with process materials such as solvents.

Section VIII. CERTIFICATION AND NOTIFICATION

The New York State Department of Environmental Conservation requires that the operator and the contractor make certifications of knowledge of the contents of this SWPPP and agreement to follow the SWPPP. The terms of the General Permit also require that each contractor sign the SWPPP plan, thereby making them co-permittees and acknowledging their responsibility for certain operational aspects of the plan. These certifications should be signed before the contractor begins activities and should be filed with the site's SWPPP at the jobsite.



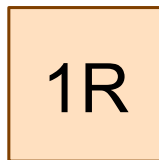
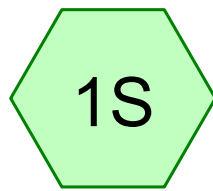
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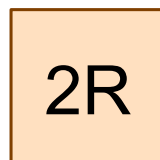
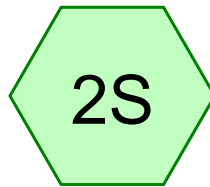
APPENDIX A: HYDRO CAD – EXISTING CONDITIONS



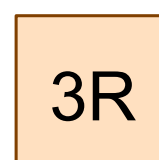
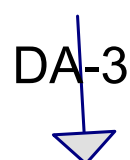
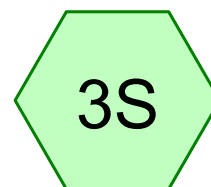
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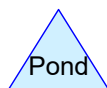
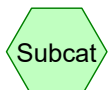
Pt of Study 1



Pt of Study 2



Pt of Study 3



Routing Diagram for Existing Drainage Areas

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Existing Drainage Areas

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Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-yr	Type II 24-hr		Default	24.00	1	2.04	2
2	10-yr	Type II 24-hr		Default	24.00	1	3.43	2
3	100-yr	Type II 24-hr		Default	24.00	1	5.78	2

Existing Drainage Areas

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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
39.700	80	>75% Grass cover, Good, HSG D (1S, 2S, 3S)
28.020	77	Woods, Good, HSG D (1S, 2S, 3S)
67.720	79	TOTAL AREA

Existing Drainage Areas

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Type II 24-hr 1-yr Rainfall=2.04"

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Summary for Subcatchment 1S: DA-1

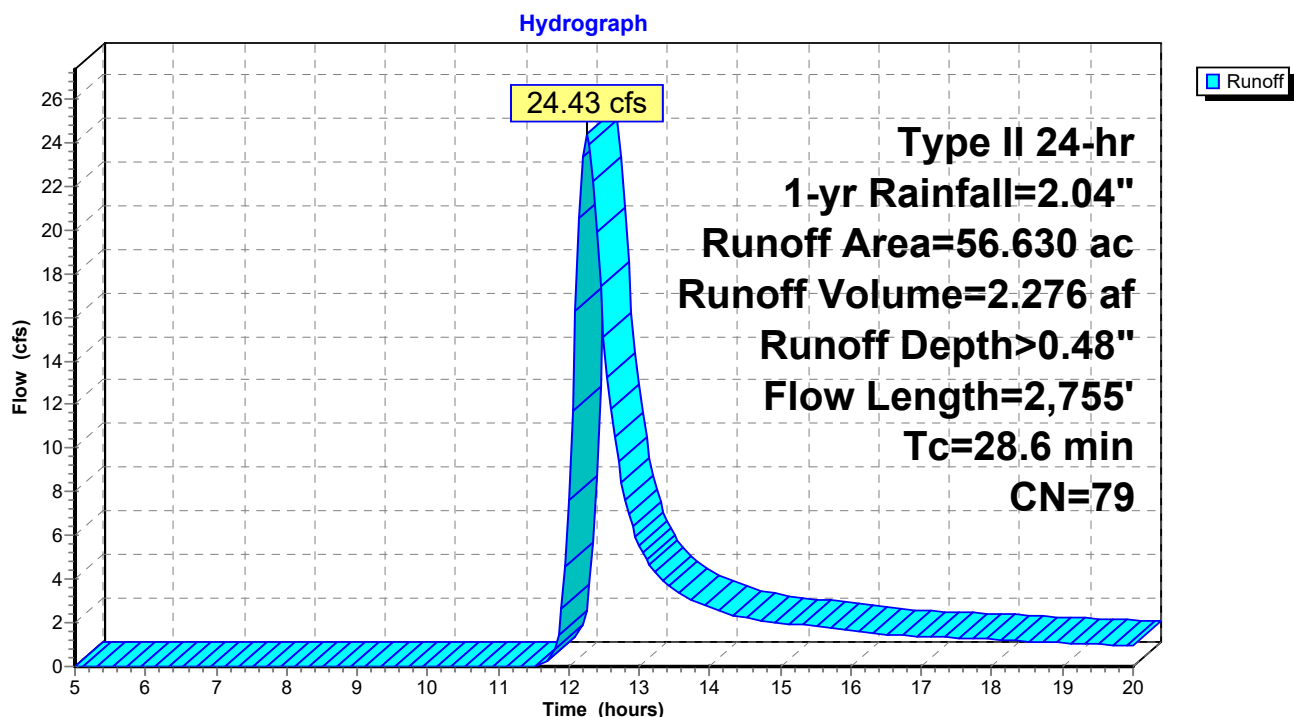
Runoff = 24.43 cfs @ 12.26 hrs, Volume= 2.276 af, Depth> 0.48"
Routed to Reach 1R : Pt of Study 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-yr Rainfall=2.04"

Area (ac)	CN	Description
21.210	77	Woods, Good, HSG D
35.420	80	>75% Grass cover, Good, HSG D
56.630	79	Weighted Average
56.630		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.0	100	0.0600	0.10		Sheet Flow, Sheet Flow Woods: Light underbrush n= 0.400 P2= 2.39"
4.6	410	0.0900	1.50		Shallow Concentrated Flow, Shallow Woodland Kv= 5.0 fps
6.7	840	0.0900	2.10		Shallow Concentrated Flow, Shallow Short Grass Pasture Kv= 7.0 fps
1.3	1,405	0.0750	17.78	213.31	Channel Flow, Swale Area= 12.0 sf Perim= 8.0' r= 1.50' n= 0.030 Earth, clean & winding
28.6	2,755	Total			

Subcatchment 1S: DA-1



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Type II 24-hr 1-yr Rainfall=2.04"

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Summary for Subcatchment 2S: DA-2

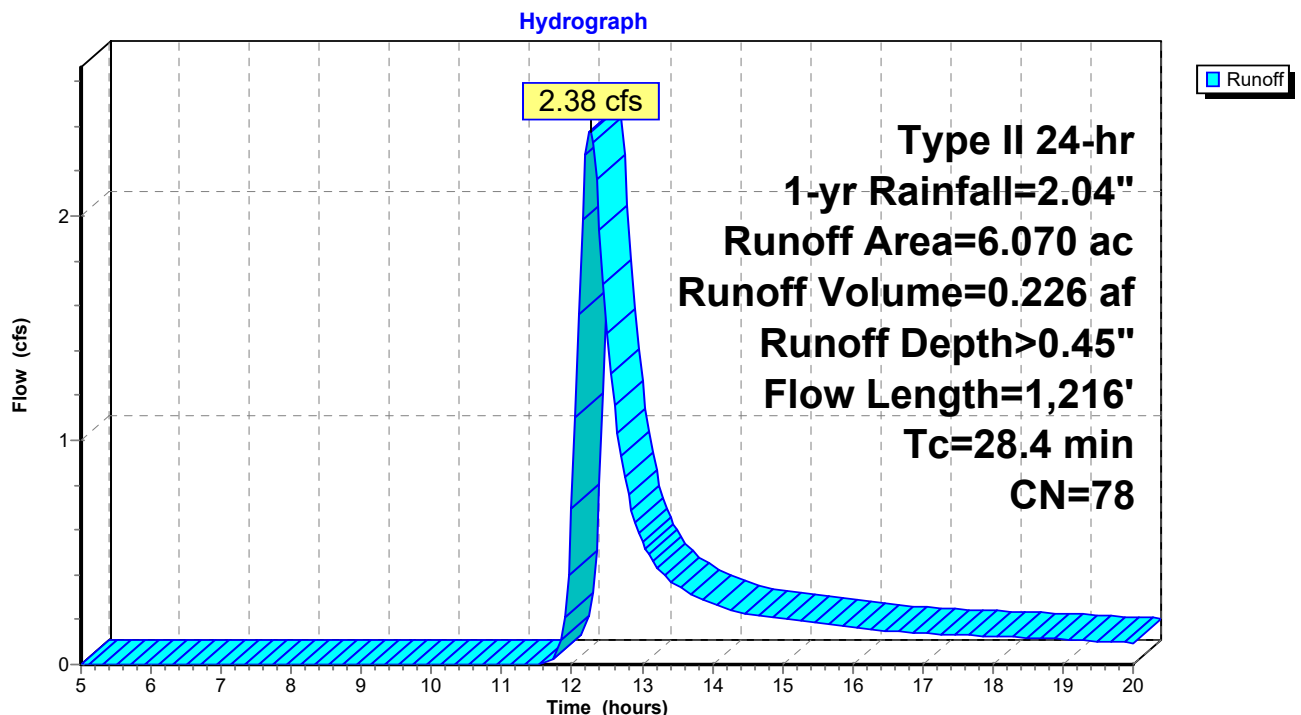
Runoff = 2.38 cfs @ 12.26 hrs, Volume= 0.226 af, Depth> 0.45"
Routed to Reach 2R : Pt of Study 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-yr Rainfall=2.04"

Area (ac)	CN	Description
3.330	77	Woods, Good, HSG D
2.740	80	>75% Grass cover, Good, HSG D
6.070	78	Weighted Average
6.070		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.5	100	0.0400	0.13		Sheet Flow, Sheet Flow Grass: Dense n= 0.240 P2= 2.39"
14.2	555	0.0170	0.65		Shallow Concentrated Flow, Shallow Woodland Kv= 5.0 fps
1.5	281	0.0360	3.05		Shallow Concentrated Flow, Shallow Unpaved Kv= 16.1 fps
0.2	280	0.1210	20.51	205.13	Channel Flow, Swale Area= 10.0 sf Perim= 5.0' r= 2.00' n= 0.040 Earth, dense weeds
28.4	1,216	Total			

Subcatchment 2S: DA-2



Existing Drainage Areas

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Type II 24-hr 1-yr Rainfall=2.04"

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Summary for Subcatchment 3S: DA-3

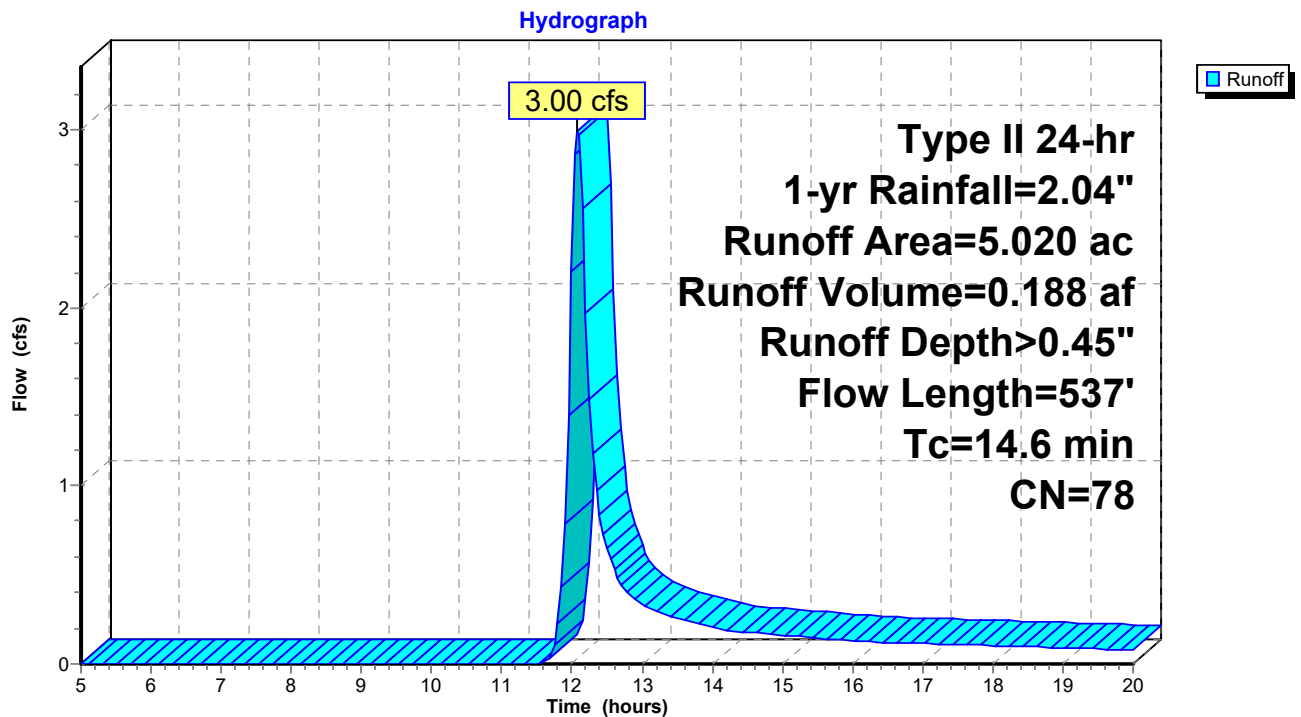
Runoff = 3.00 cfs @ 12.09 hrs, Volume= 0.188 af, Depth> 0.45"
Routed to Reach 3R : Pt of Study 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-yr Rainfall=2.04"

Area (ac)	CN	Description
3.480	77	Woods, Good, HSG D
1.540	80	>75% Grass cover, Good, HSG D
5.020	78	Weighted Average
5.020		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	100	0.0500	0.15		Sheet Flow, Sheet Flow Grass: Dense n= 0.240 P2= 2.39"
1.5	287	0.0380	3.14		Shallow Concentrated Flow, Shallow Unpaved Kv= 16.1 fps
1.7	150	0.0870	1.47		Shallow Concentrated Flow, Shallow Woodland Kv= 5.0 fps
14.6	537	Total			

Subcatchment 3S: DA-3



Existing Drainage Areas

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Type II 24-hr 1-yr Rainfall=2.04"

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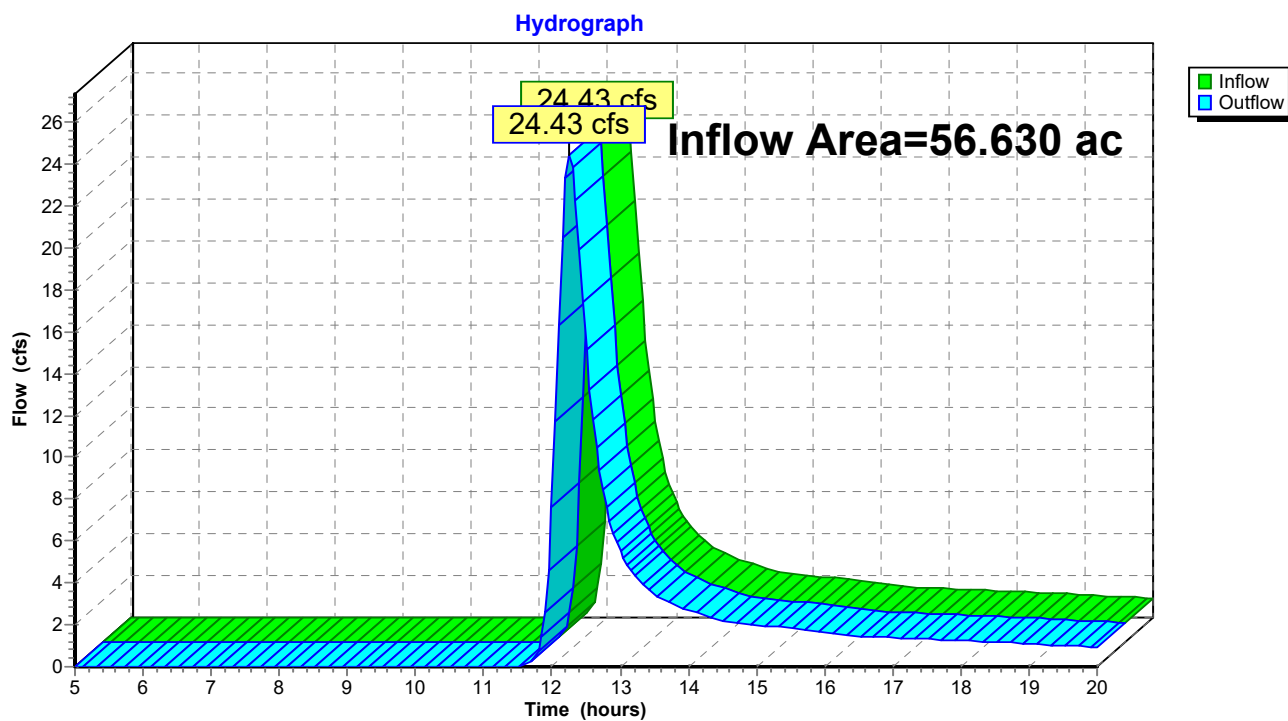
Page 7

Summary for Reach 1R: Pt of Study 1

Inflow Area = 56.630 ac, 0.00% Impervious, Inflow Depth > 0.48" for 1-yr event
Inflow = 24.43 cfs @ 12.26 hrs, Volume= 2.276 af
Outflow = 24.43 cfs @ 12.26 hrs, Volume= 2.276 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 1R: Pt of Study 1



Existing Drainage Areas

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Type II 24-hr 1-yr Rainfall=2.04"

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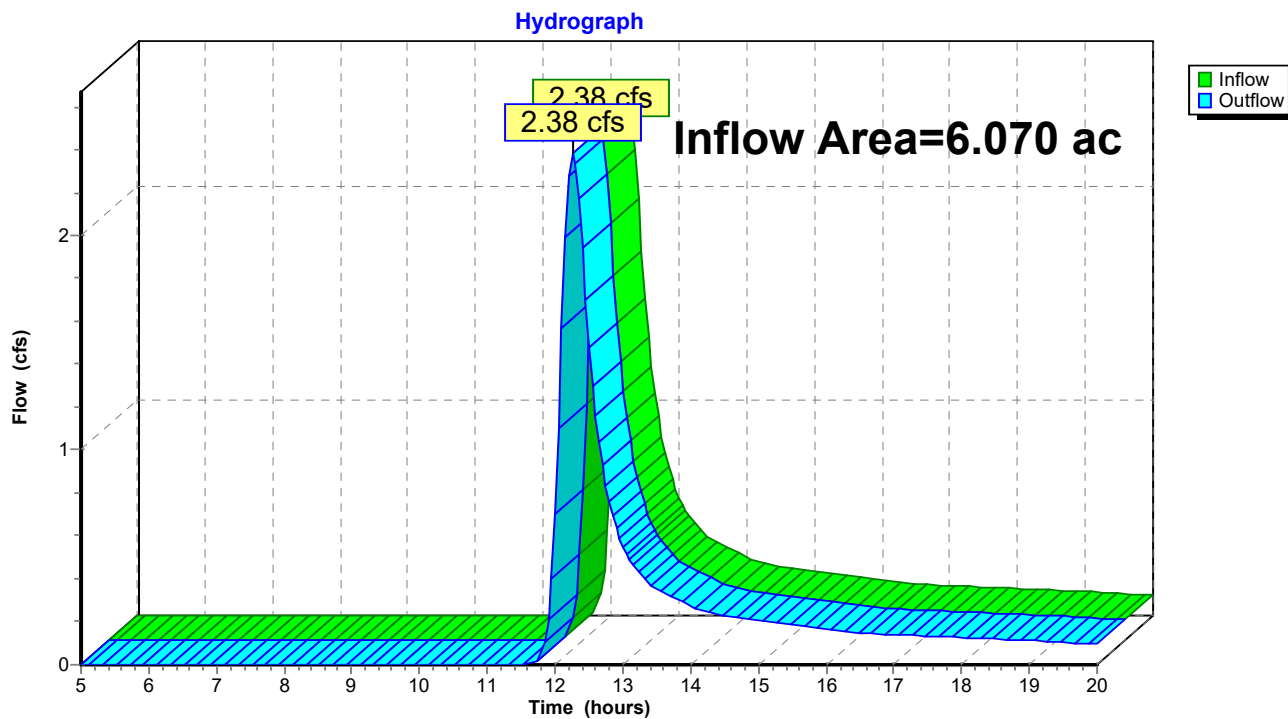
Page 8

Summary for Reach 2R: Pt of Study 2

Inflow Area = 6.070 ac, 0.00% Impervious, Inflow Depth > 0.45" for 1-yr event
Inflow = 2.38 cfs @ 12.26 hrs, Volume= 0.226 af
Outflow = 2.38 cfs @ 12.26 hrs, Volume= 0.226 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 2R: Pt of Study 2



Existing Drainage Areas

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Type II 24-hr 1-yr Rainfall=2.04"

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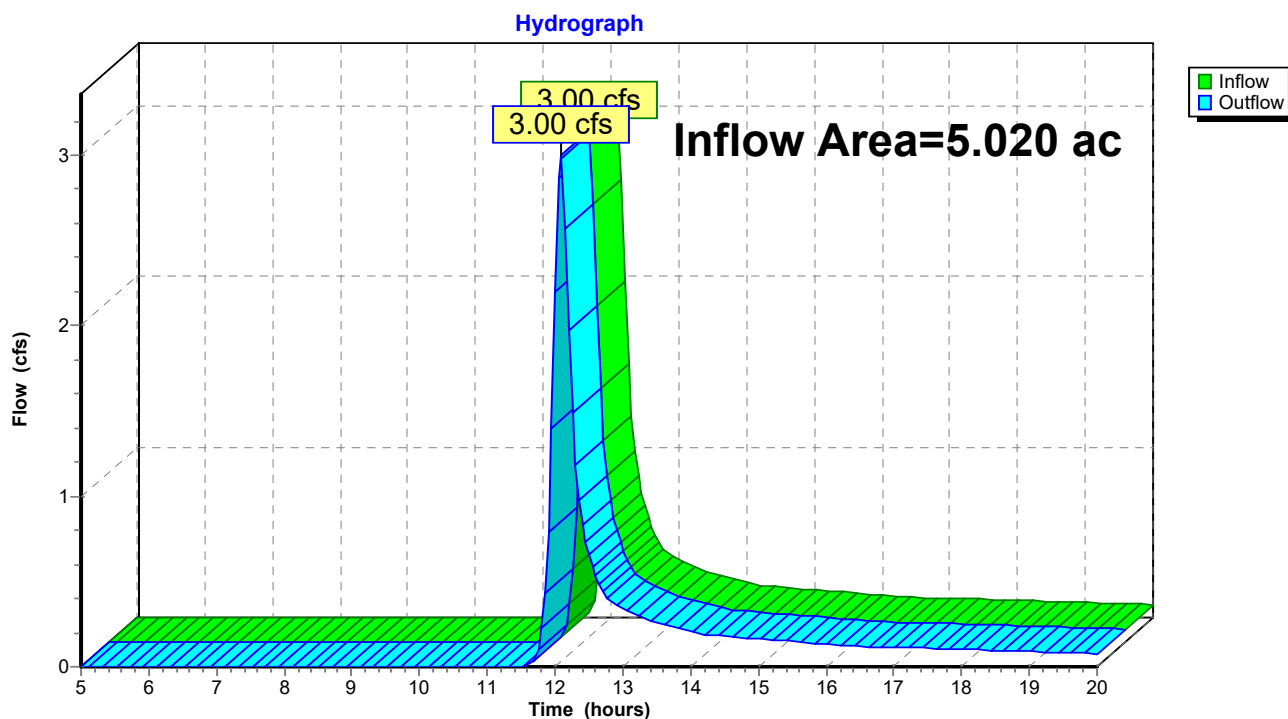
Page 9

Summary for Reach 3R: Pt of Study 3

Inflow Area = 5.020 ac, 0.00% Impervious, Inflow Depth > 0.45" for 1-yr event
Inflow = 3.00 cfs @ 12.09 hrs, Volume= 0.188 af
Outflow = 3.00 cfs @ 12.09 hrs, Volume= 0.188 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 3R: Pt of Study 3



Existing Drainage Areas

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Type II 24-hr 10-yr Rainfall=3.43"

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Summary for Subcatchment 1S: DA-1

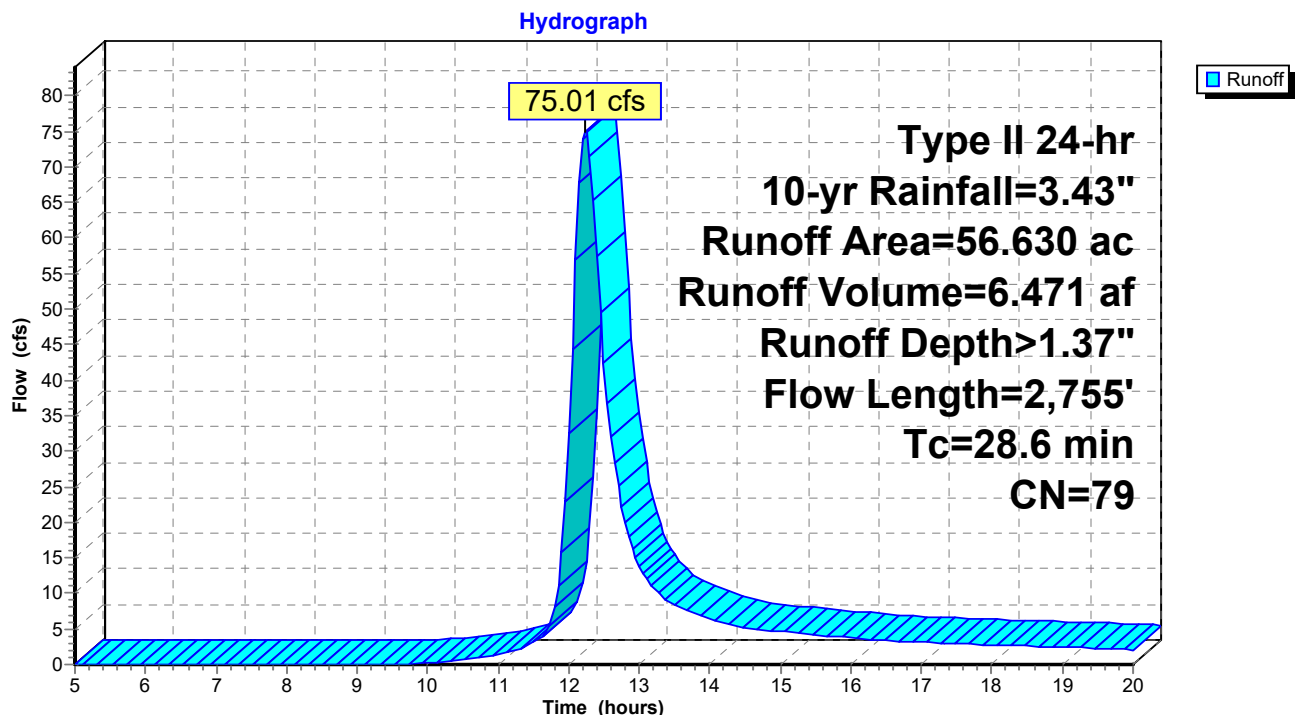
Runoff = 75.01 cfs @ 12.24 hrs, Volume= 6.471 af, Depth> 1.37"
Routed to Reach 1R : Pt of Study 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=3.43"

Area (ac)	CN	Description
21.210	77	Woods, Good, HSG D
35.420	80	>75% Grass cover, Good, HSG D
56.630	79	Weighted Average
56.630		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.0	100	0.0600	0.10		Sheet Flow, Sheet Flow Woods: Light underbrush n= 0.400 P2= 2.39"
4.6	410	0.0900	1.50		Shallow Concentrated Flow, Shallow Woodland Kv= 5.0 fps
6.7	840	0.0900	2.10		Shallow Concentrated Flow, Shallow Short Grass Pasture Kv= 7.0 fps
1.3	1,405	0.0750	17.78	213.31	Channel Flow, Swale Area= 12.0 sf Perim= 8.0' r= 1.50' n= 0.030 Earth, clean & winding
28.6	2,755	Total			

Subcatchment 1S: DA-1



Existing Drainage Areas

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Type II 24-hr 10-yr Rainfall=3.43"

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Summary for Subcatchment 2S: DA-2

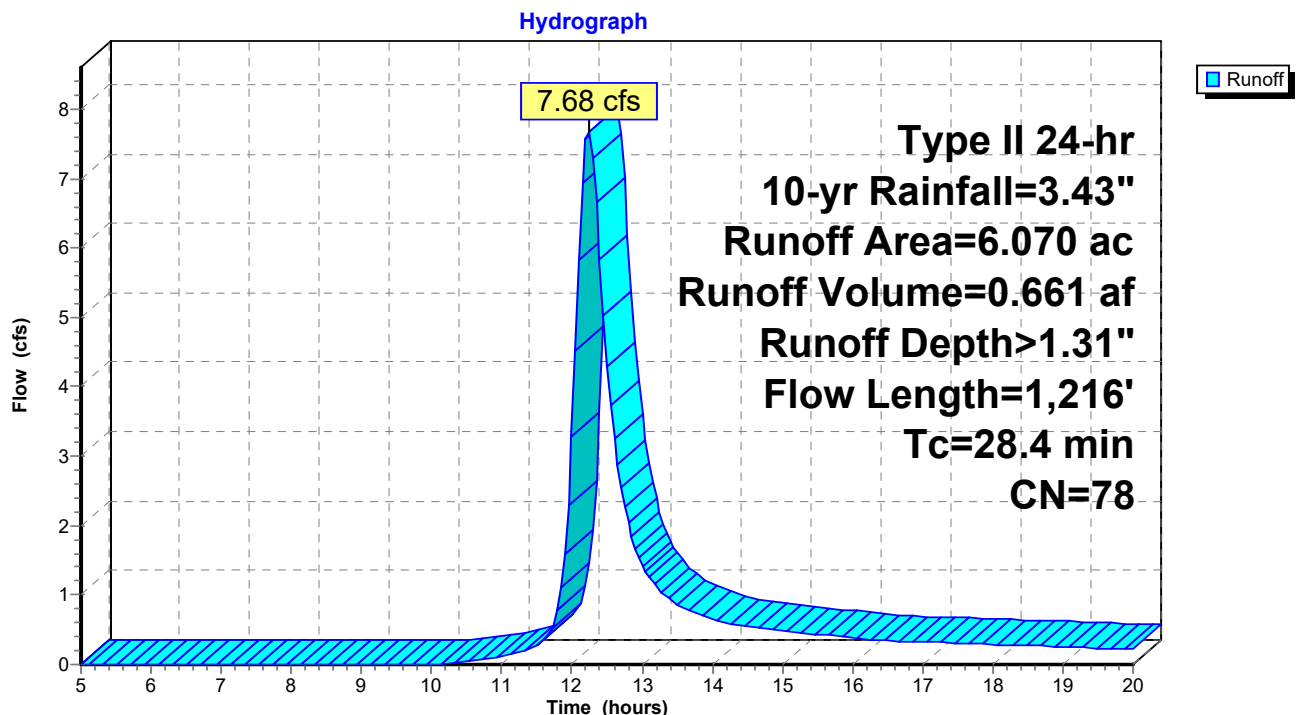
Runoff = 7.68 cfs @ 12.23 hrs, Volume= 0.661 af, Depth> 1.31"
Routed to Reach 2R : Pt of Study 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=3.43"

Area (ac)	CN	Description
3.330	77	Woods, Good, HSG D
2.740	80	>75% Grass cover, Good, HSG D
6.070	78	Weighted Average
6.070		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.5	100	0.0400	0.13		Sheet Flow, Sheet Flow Grass: Dense n= 0.240 P2= 2.39"
14.2	555	0.0170	0.65		Shallow Concentrated Flow, Shallow Woodland Kv= 5.0 fps
1.5	281	0.0360	3.05		Shallow Concentrated Flow, Shallow Unpaved Kv= 16.1 fps
0.2	280	0.1210	20.51	205.13	Channel Flow, Swale Area= 10.0 sf Perim= 5.0' r= 2.00' n= 0.040 Earth, dense weeds
28.4	1,216	Total			

Subcatchment 2S: DA-2



Existing Drainage Areas

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Type II 24-hr 10-yr Rainfall=3.43"

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Summary for Subcatchment 3S: DA-3

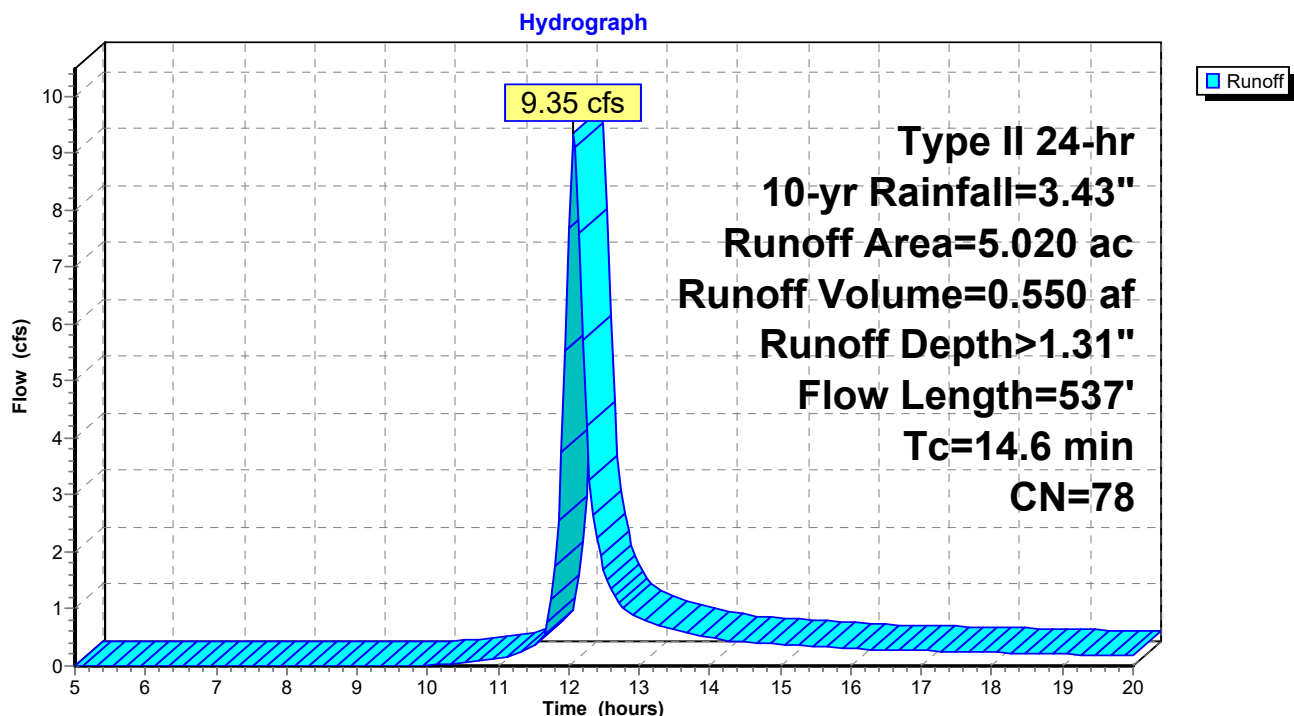
Runoff = 9.35 cfs @ 12.07 hrs, Volume= 0.550 af, Depth> 1.31"
Routed to Reach 3R : Pt of Study 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=3.43"

Area (ac)	CN	Description
3.480	77	Woods, Good, HSG D
1.540	80	>75% Grass cover, Good, HSG D
5.020	78	Weighted Average
5.020		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	100	0.0500	0.15		Sheet Flow, Sheet Flow Grass: Dense n= 0.240 P2= 2.39"
1.5	287	0.0380	3.14		Shallow Concentrated Flow, Shallow Unpaved Kv= 16.1 fps
1.7	150	0.0870	1.47		Shallow Concentrated Flow, Shallow Woodland Kv= 5.0 fps
14.6	537	Total			

Subcatchment 3S: DA-3



Existing Drainage Areas

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Type II 24-hr 10-yr Rainfall=3.43"

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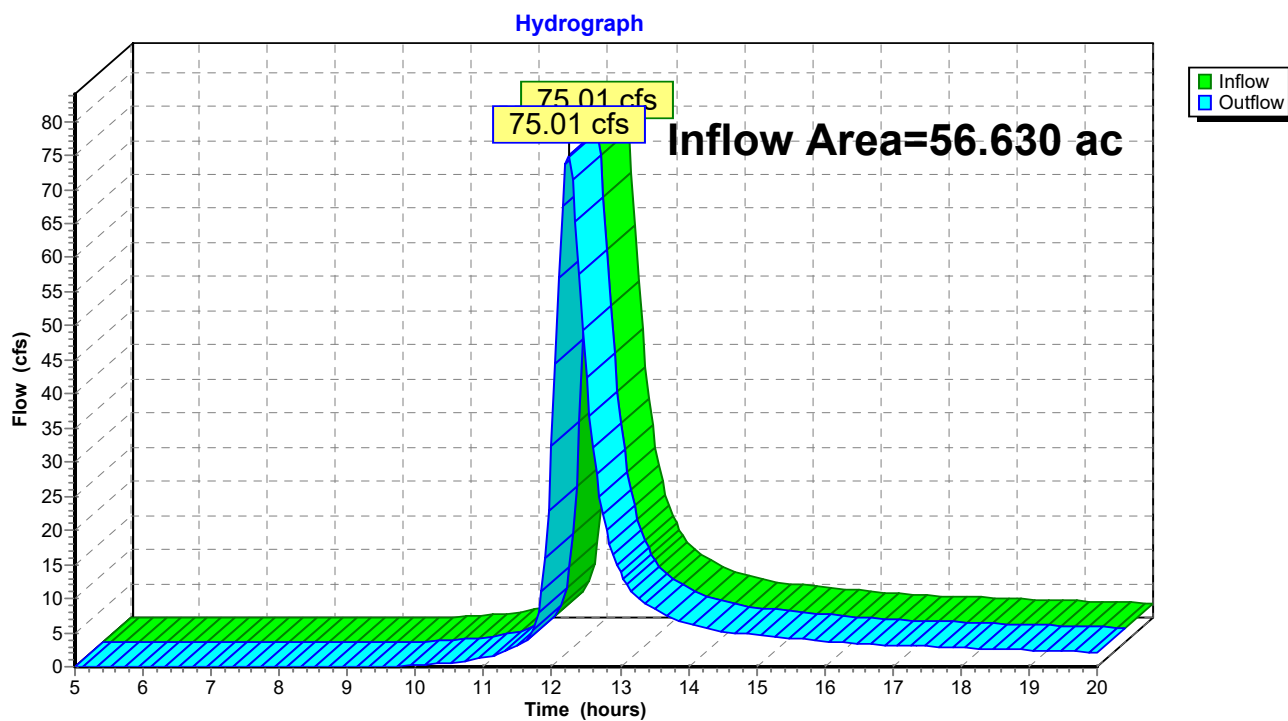
Page 13

Summary for Reach 1R: Pt of Study 1

Inflow Area = 56.630 ac, 0.00% Impervious, Inflow Depth > 1.37" for 10-yr event
Inflow = 75.01 cfs @ 12.24 hrs, Volume= 6.471 af
Outflow = 75.01 cfs @ 12.24 hrs, Volume= 6.471 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 1R: Pt of Study 1



Existing Drainage Areas

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Type II 24-hr 10-yr Rainfall=3.43"

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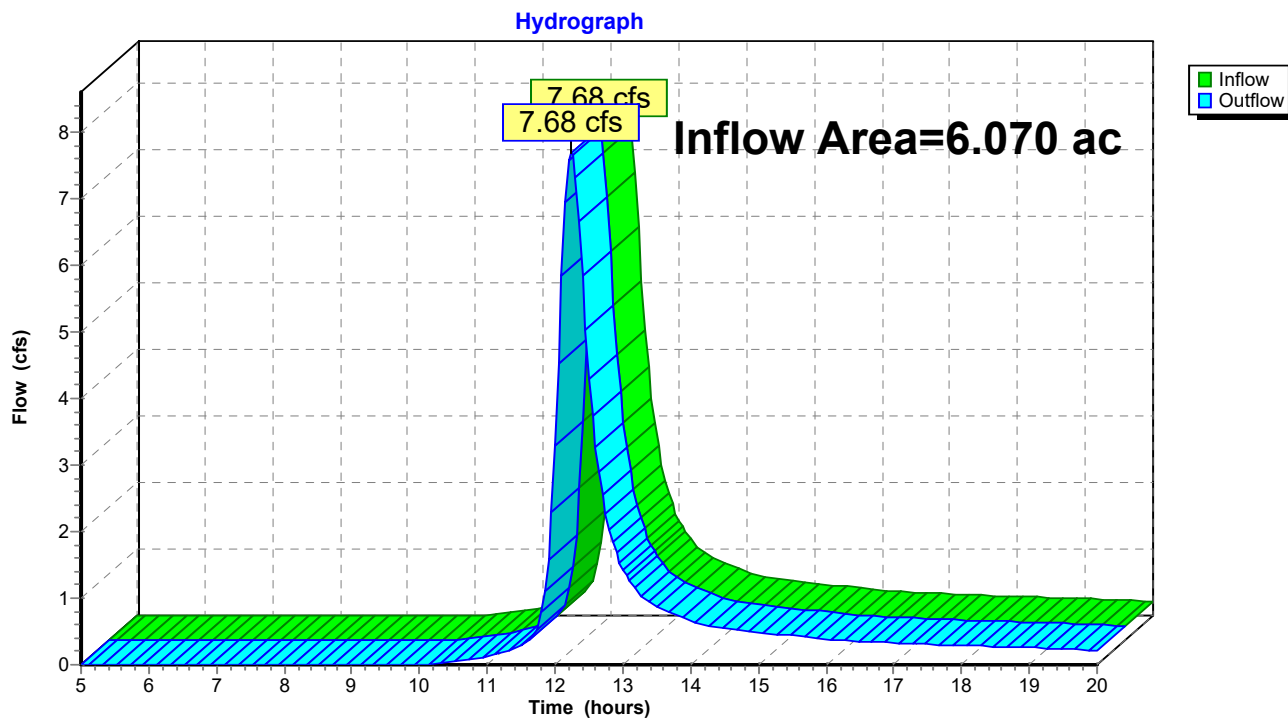
Page 14

Summary for Reach 2R: Pt of Study 2

Inflow Area = 6.070 ac, 0.00% Impervious, Inflow Depth > 1.31" for 10-yr event
Inflow = 7.68 cfs @ 12.23 hrs, Volume= 0.661 af
Outflow = 7.68 cfs @ 12.23 hrs, Volume= 0.661 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 2R: Pt of Study 2



Existing Drainage Areas

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Type II 24-hr 10-yr Rainfall=3.43"

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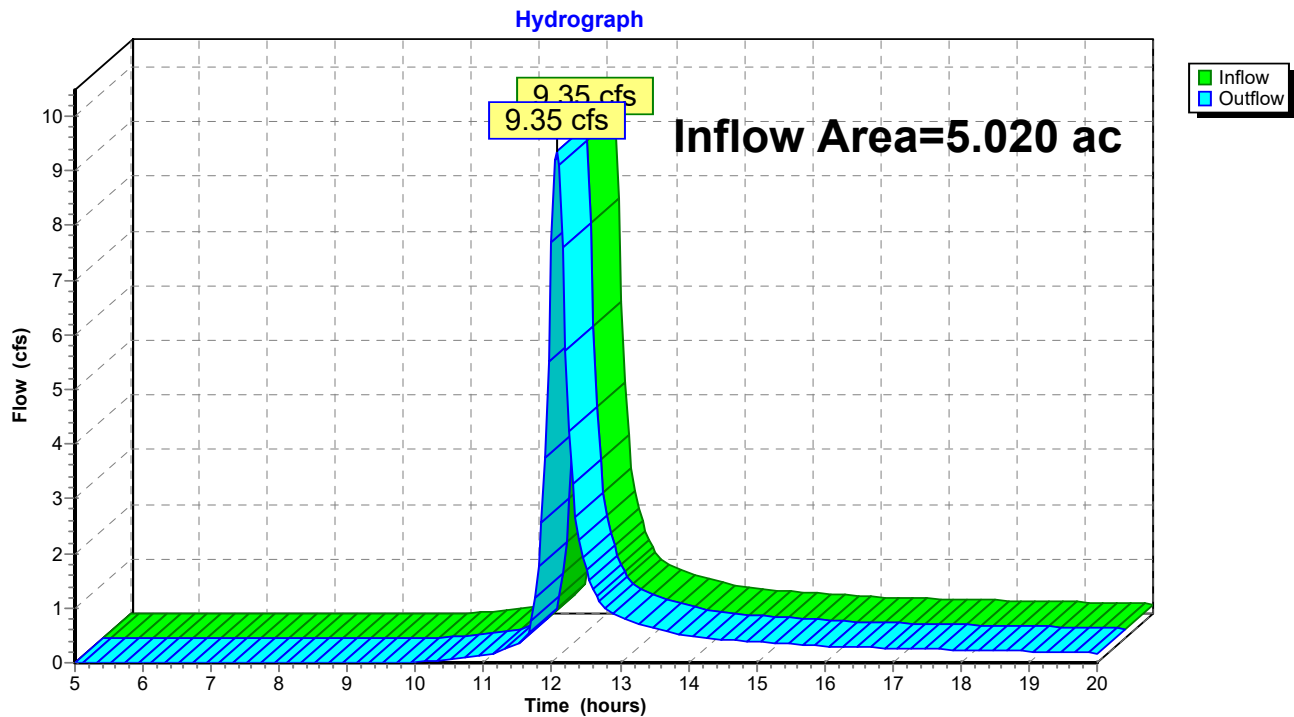
Page 15

Summary for Reach 3R: Pt of Study 3

Inflow Area = 5.020 ac, 0.00% Impervious, Inflow Depth > 1.31" for 10-yr event
Inflow = 9.35 cfs @ 12.07 hrs, Volume= 0.550 af
Outflow = 9.35 cfs @ 12.07 hrs, Volume= 0.550 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 3R: Pt of Study 3



Existing Drainage Areas

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Type II 24-hr 100-yr Rainfall=5.78"

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Summary for Subcatchment 1S: DA-1

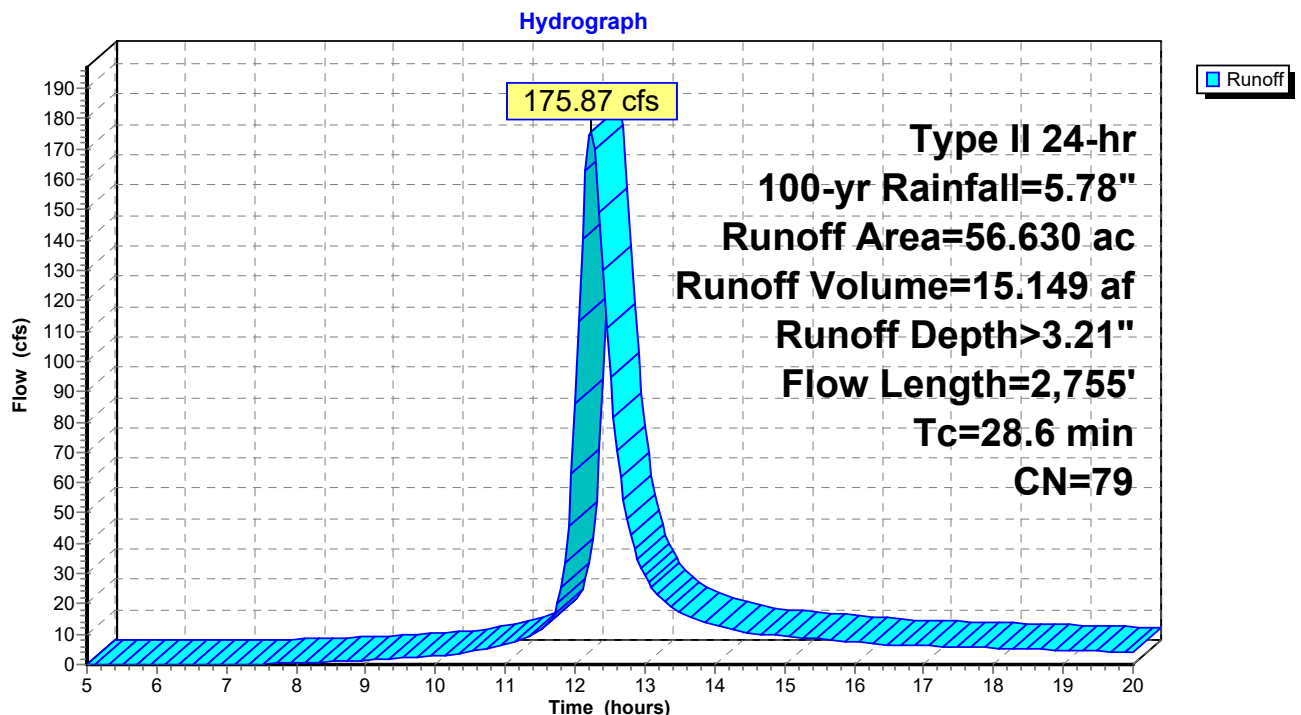
Runoff = 175.87 cfs @ 12.23 hrs, Volume= 15.149 af, Depth> 3.21"
Routed to Reach 1R : Pt of Study 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=5.78"

Area (ac)	CN	Description
21.210	77	Woods, Good, HSG D
35.420	80	>75% Grass cover, Good, HSG D
56.630	79	Weighted Average
56.630		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.0	100	0.0600	0.10		Sheet Flow, Sheet Flow Woods: Light underbrush n= 0.400 P2= 2.39"
4.6	410	0.0900	1.50		Shallow Concentrated Flow, Shallow Woodland Kv= 5.0 fps
6.7	840	0.0900	2.10		Shallow Concentrated Flow, Shallow Short Grass Pasture Kv= 7.0 fps
1.3	1,405	0.0750	17.78	213.31	Channel Flow, Swale Area= 12.0 sf Perim= 8.0' r= 1.50' n= 0.030 Earth, clean & winding
28.6	2,755	Total			

Subcatchment 1S: DA-1



Existing Drainage Areas

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Type II 24-hr 100-yr Rainfall=5.78"

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Summary for Subcatchment 2S: DA-2

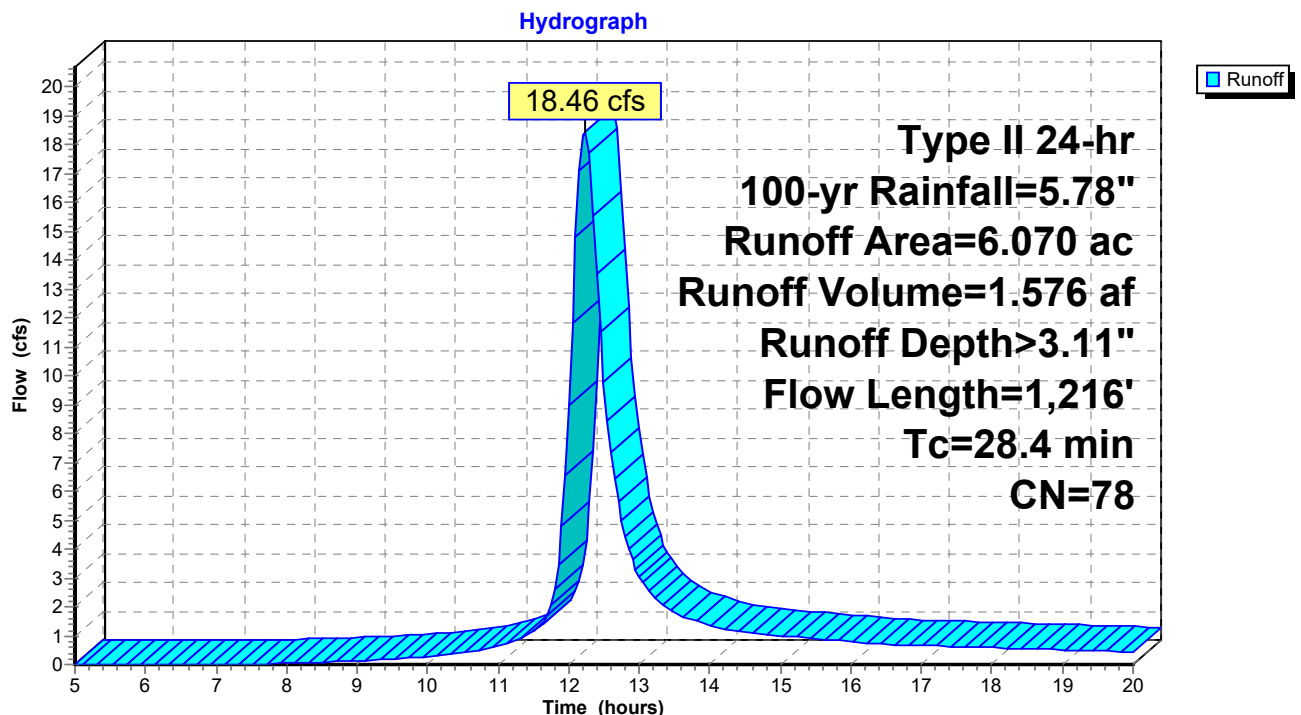
Runoff = 18.46 cfs @ 12.22 hrs, Volume= 1.576 af, Depth> 3.11"
Routed to Reach 2R : Pt of Study 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=5.78"

Area (ac)	CN	Description
3.330	77	Woods, Good, HSG D
2.740	80	>75% Grass cover, Good, HSG D
6.070	78	Weighted Average
6.070		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.5	100	0.0400	0.13		Sheet Flow, Sheet Flow Grass: Dense n= 0.240 P2= 2.39"
14.2	555	0.0170	0.65		Shallow Concentrated Flow, Shallow Woodland Kv= 5.0 fps
1.5	281	0.0360	3.05		Shallow Concentrated Flow, Shallow Unpaved Kv= 16.1 fps
0.2	280	0.1210	20.51	205.13	Channel Flow, Swale Area= 10.0 sf Perim= 5.0' r= 2.00' n= 0.040 Earth, dense weeds
28.4	1,216	Total			

Subcatchment 2S: DA-2



Existing Drainage Areas

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Type II 24-hr 100-yr Rainfall=5.78"

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Summary for Subcatchment 3S: DA-3

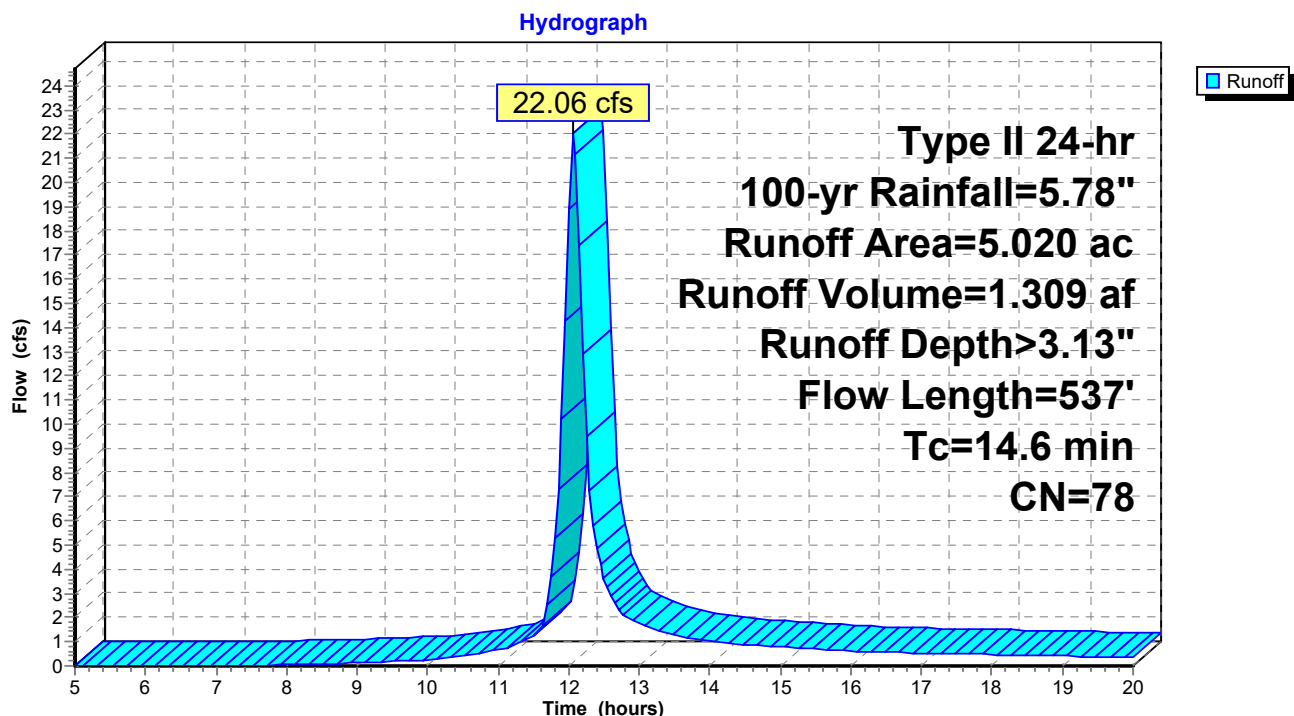
Runoff = 22.06 cfs @ 12.07 hrs, Volume= 1.309 af, Depth> 3.13"
Routed to Reach 3R : Pt of Study 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=5.78"

Area (ac)	CN	Description
3.480	77	Woods, Good, HSG D
1.540	80	>75% Grass cover, Good, HSG D
5.020	78	Weighted Average
5.020		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	100	0.0500	0.15		Sheet Flow, Sheet Flow Grass: Dense n= 0.240 P2= 2.39"
1.5	287	0.0380	3.14		Shallow Concentrated Flow, Shallow Unpaved Kv= 16.1 fps
1.7	150	0.0870	1.47		Shallow Concentrated Flow, Shallow Woodland Kv= 5.0 fps
14.6	537	Total			

Subcatchment 3S: DA-3



Existing Drainage Areas

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Type II 24-hr 100-yr Rainfall=5.78"

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Summary for Reach 1R: Pt of Study 1

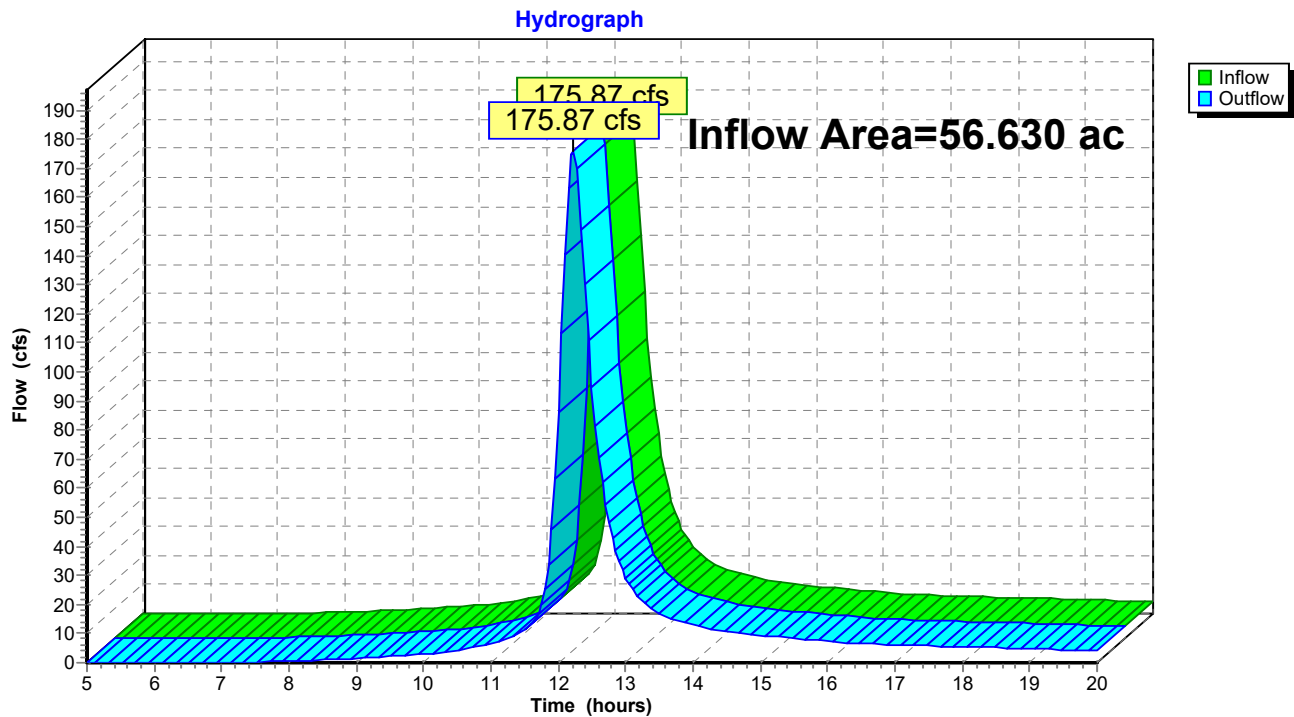
Inflow Area = 56.630 ac, 0.00% Impervious, Inflow Depth > 3.21" for 100-yr event

Inflow = 175.87 cfs @ 12.23 hrs, Volume= 15.149 af

Outflow = 175.87 cfs @ 12.23 hrs, Volume= 15.149 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 1R: Pt of Study 1



Existing Drainage Areas

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Type II 24-hr 100-yr Rainfall=5.78"

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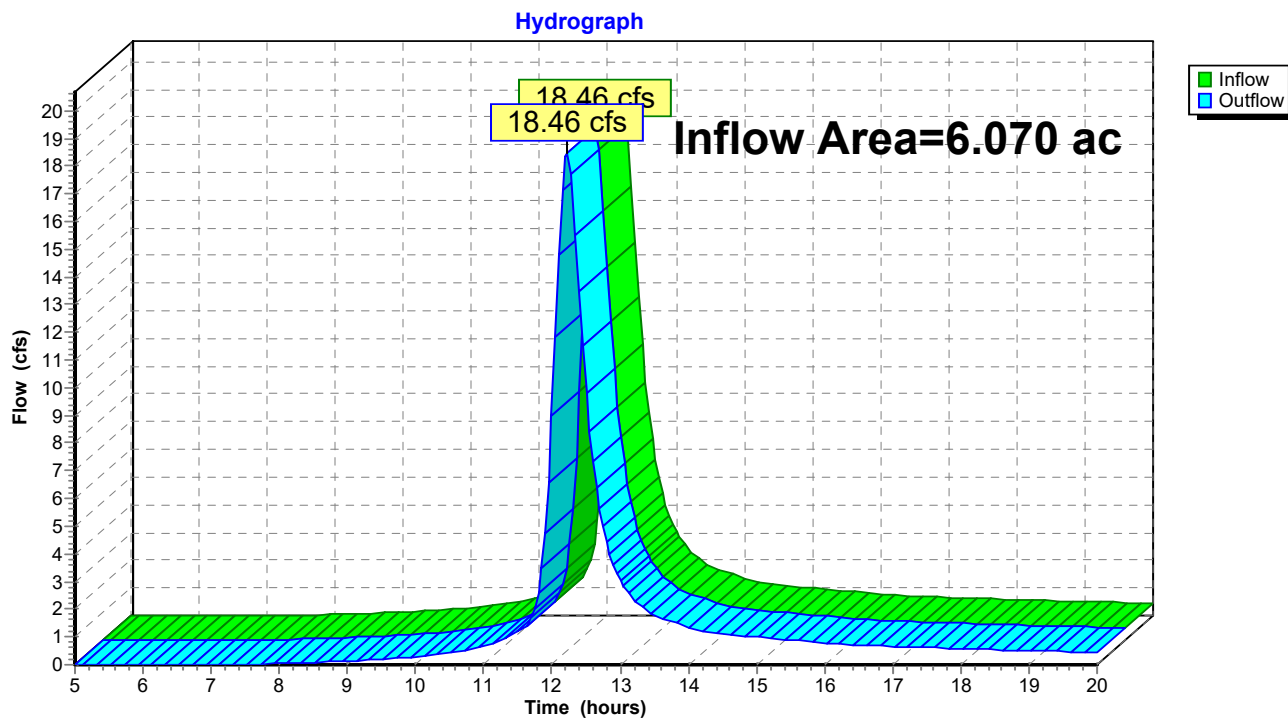
Page 20

Summary for Reach 2R: Pt of Study 2

Inflow Area = 6.070 ac, 0.00% Impervious, Inflow Depth > 3.11" for 100-yr event
Inflow = 18.46 cfs @ 12.22 hrs, Volume= 1.576 af
Outflow = 18.46 cfs @ 12.22 hrs, Volume= 1.576 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 2R: Pt of Study 2



Existing Drainage Areas

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Type II 24-hr 100-yr Rainfall=5.78"

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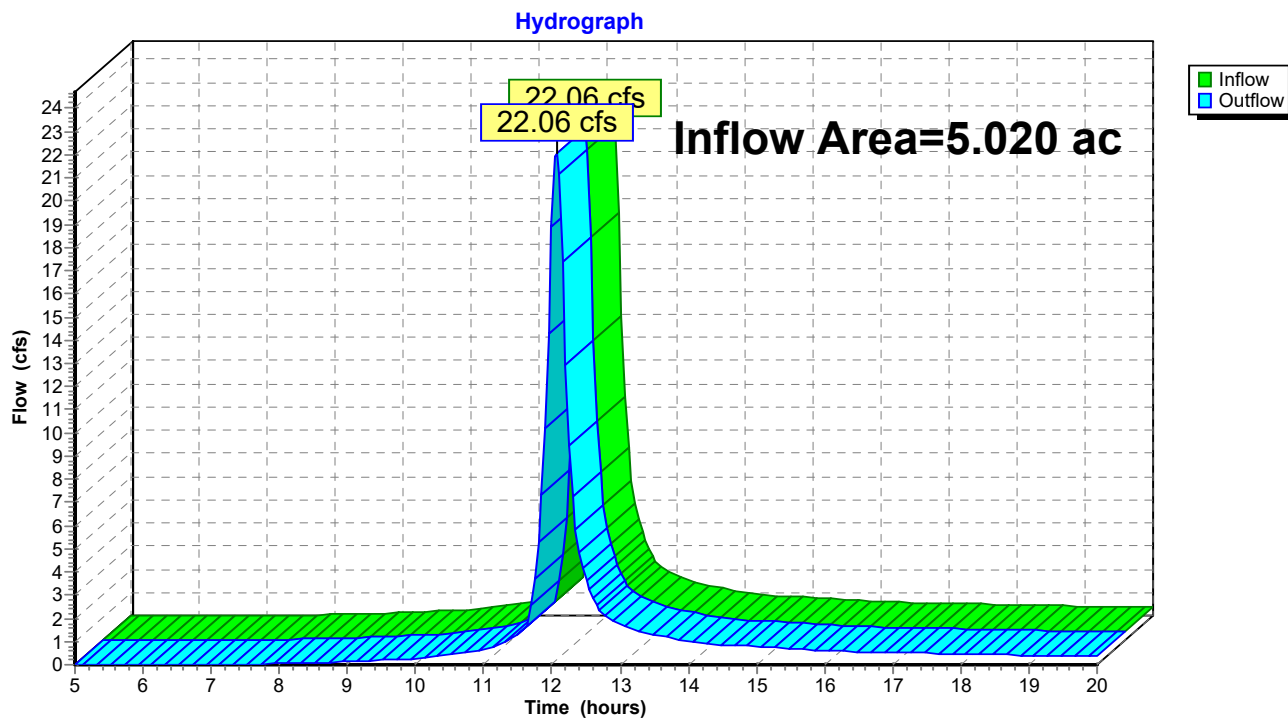
Page 21

Summary for Reach 3R: Pt of Study 3

Inflow Area = 5.020 ac, 0.00% Impervious, Inflow Depth > 3.13" for 100-yr event
Inflow = 22.06 cfs @ 12.07 hrs, Volume= 1.309 af
Outflow = 22.06 cfs @ 12.07 hrs, Volume= 1.309 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 3R: Pt of Study 3





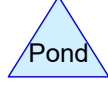
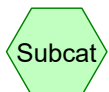
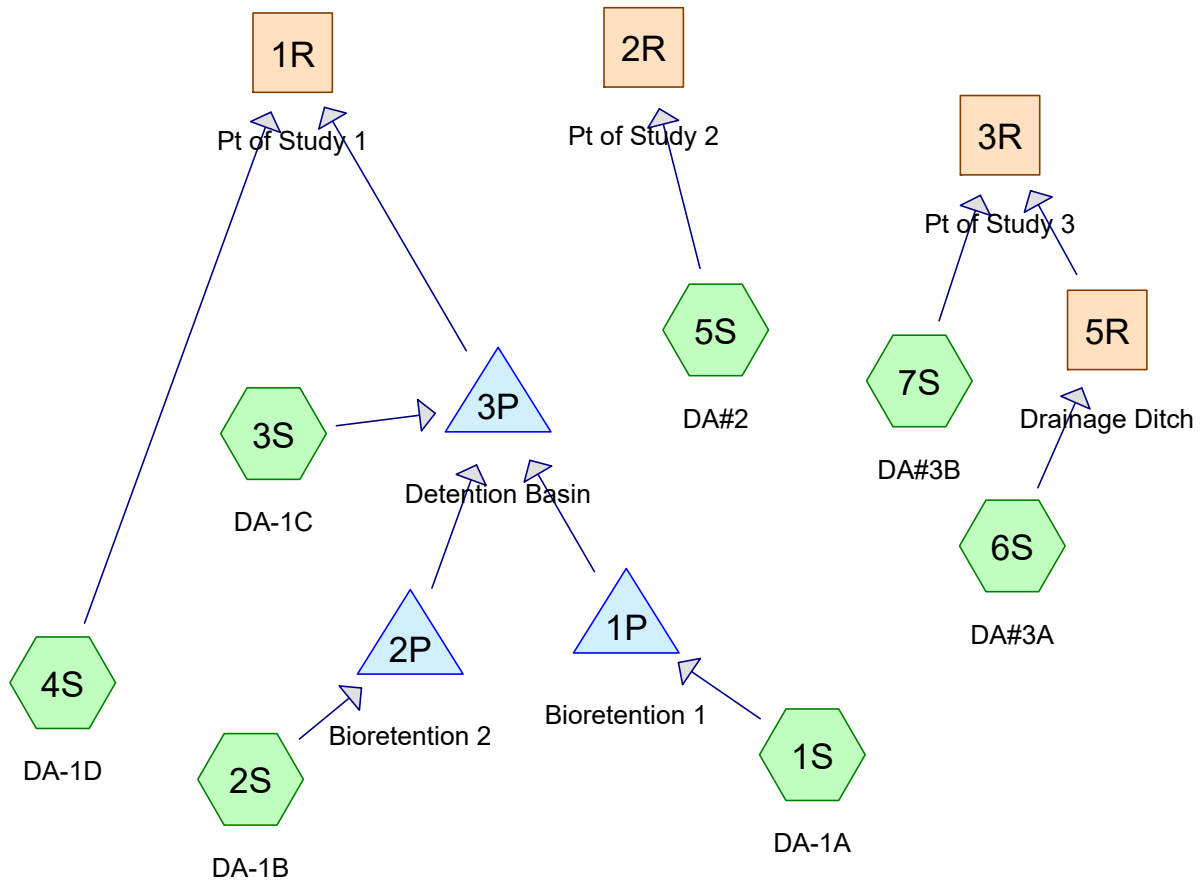
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APPENDIX B: HYDRO CAD – PROPOSED CONDITIONS



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Proposed Drainage Areas

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Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-yr	Type II 24-hr		Default	24.00	1	2.04	2
2	10-yr	Type II 24-hr		Default	24.00	1	3.43	2
3	100-yr	Type II 24-hr		Default	24.00	1	5.78	2

Proposed Drainage Areas

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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
41.420	80	>75% Grass cover, Good, HSG D (1S, 2S, 3S, 4S, 5S, 6S, 7S)
3.330	98	Paved parking, HSG D (1S, 2S, 4S, 6S, 7S)
2.490	98	Unconnected roofs, HSG D (1S, 2S, 6S, 7S)
21.200	77	Woods, Good, HSG D (1S, 2S, 3S, 4S, 5S, 6S)
68.440	81	TOTAL AREA

Proposed Drainage Areas

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Type II 24-hr 1-yr Rainfall=2.04"

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Summary for Subcatchment 1S: DA-1A

Runoff = 14.62 cfs @ 12.40 hrs, Volume= 1.881 af, Depth= 0.63"
Routed to Pond 1P : Bioretention 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Type II 24-hr 1-yr Rainfall=2.04"

Area (ac)	CN	Description
2.050	98	Paved parking, HSG D
1.940	98	Unconnected roofs, HSG D
22.870	80	>75% Grass cover, Good, HSG D
8.960	77	Woods, Good, HSG D
35.820	81	Weighted Average
31.830		88.86% Pervious Area
3.990		11.14% Impervious Area
1.940		48.62% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.9	100	0.0600	0.06		Sheet Flow, SHEET FLOW Woods: Dense underbrush n= 0.800 P2= 2.39"
4.8	370	0.0650	1.27		Shallow Concentrated Flow, SCF Woodland Kv= 5.0 fps
1.9	200	0.0650	1.78		Shallow Concentrated Flow, SCF Short Grass Pasture Kv= 7.0 fps
0.2	295	0.0300	19.80	79.19	Channel Flow, curb and gutter flow Area= 4.0 sf Perim= 4.0' r= 1.00' n= 0.013 Asphalt, smooth
1.7	1,100	0.0345	11.04	19.51	Pipe Channel, Pipe Flow 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
3.8	955	0.0050	4.20	50.44	Channel Flow, Area= 12.0 sf Perim= 12.0' r= 1.00' n= 0.025 Earth, grassed & winding
40.3	3,020	Total			

Proposed Drainage Areas

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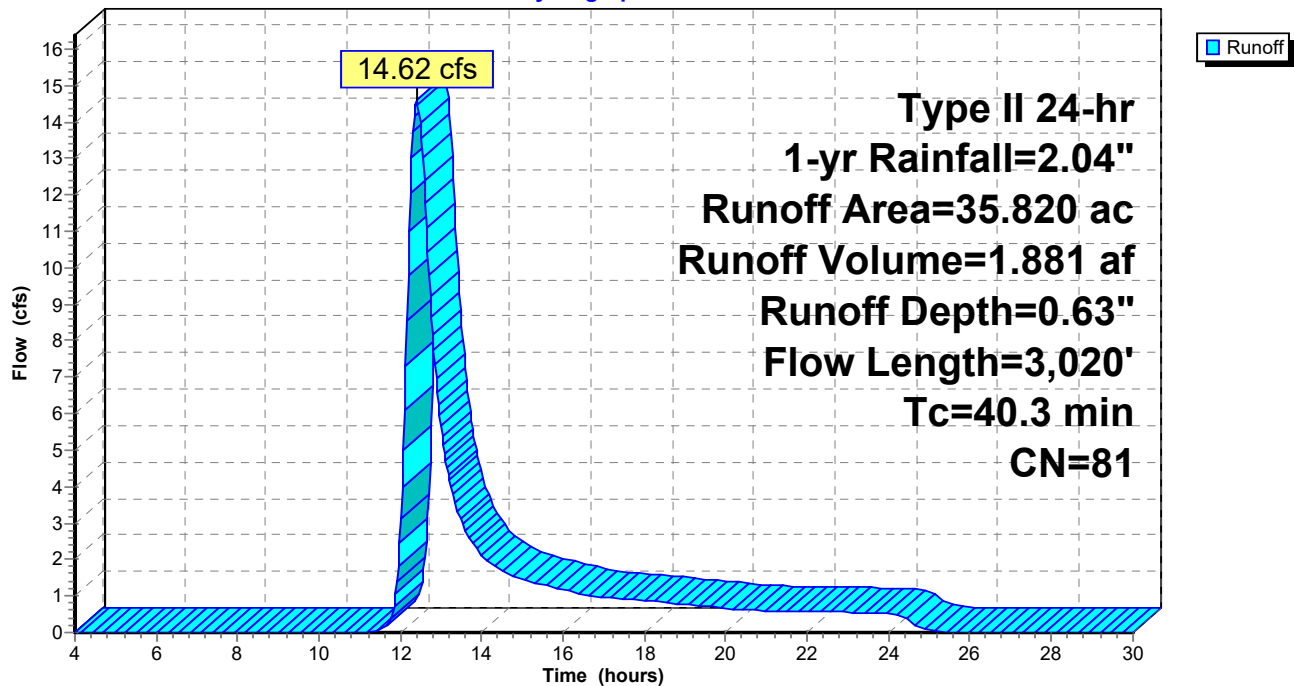
Type II 24-hr 1-yr Rainfall=2.04"

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Subcatchment 1S: DA-1A

Hydrograph



Proposed Drainage Areas

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Type II 24-hr 1-yr Rainfall=2.04"

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Summary for Subcatchment 2S: DA-1B

Runoff = 6.93 cfs @ 12.16 hrs, Volume= 0.573 af, Depth= 0.63"
Routed to Pond 2P : Bioretention 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Type II 24-hr 1-yr Rainfall=2.04"

Area (ac)	CN	Description
0.710	98	Paved parking, HSG D
0.340	98	Unconnected roofs, HSG D
7.820	80	>75% Grass cover, Good, HSG D
2.040	77	Woods, Good, HSG D
10.910	81	Weighted Average
9.860		90.38% Pervious Area
1.050		9.62% Impervious Area
0.340		32.38% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	100	0.0600	0.16		Sheet Flow, SHEET FLOW Grass: Dense n= 0.240 P2= 2.39"
4.6	410	0.0900	1.50		Shallow Concentrated Flow, SCF Woodland Kv= 5.0 fps
5.6	710	0.0920	2.12		Shallow Concentrated Flow, SCF Short Grass Pasture Kv= 7.0 fps
0.3	170	0.0200	9.55	76.42	Channel Flow, swale flow Area= 8.0 sf Perim= 8.0' r= 1.00' n= 0.022 Earth, clean & straight
21.1	1,390	Total			

Proposed Drainage Areas

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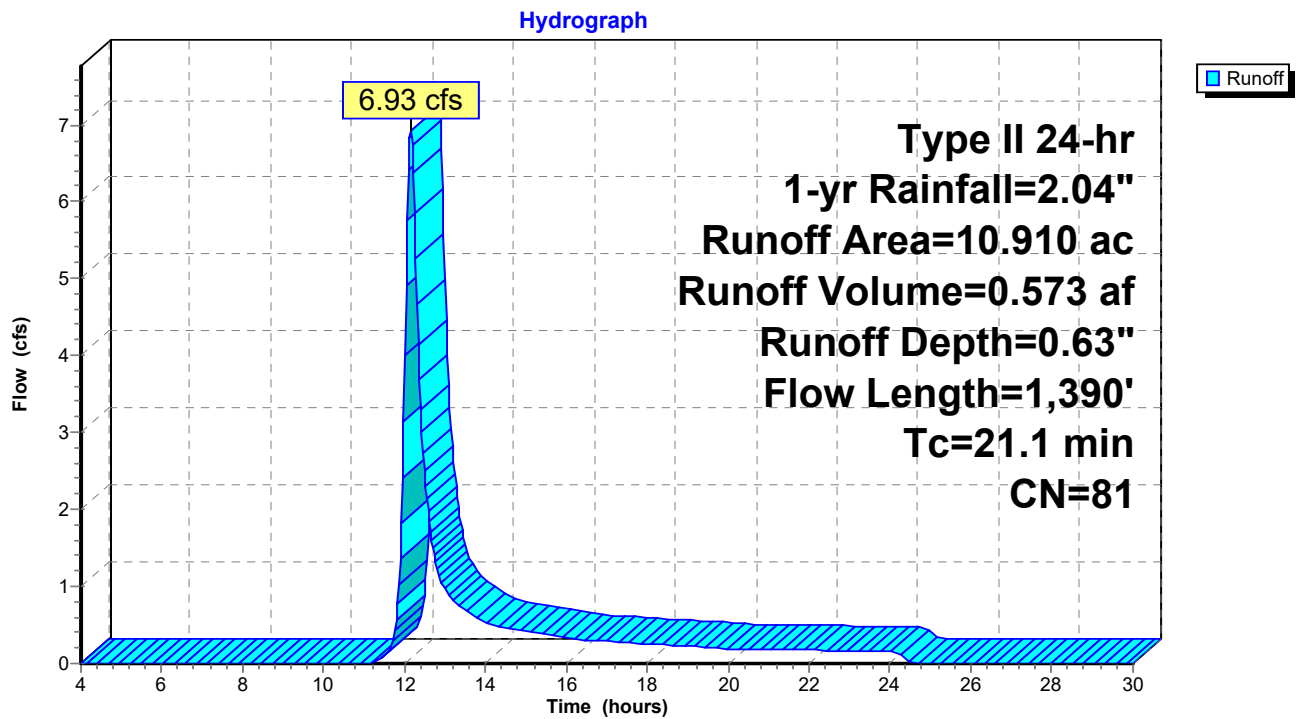
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Type II 24-hr 1-yr Rainfall=2.04"

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Subcatchment 2S: DA-1B



Proposed Drainage Areas

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Type II 24-hr 1-yr Rainfall=2.04"

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Summary for Subcatchment 3S: DA-1C

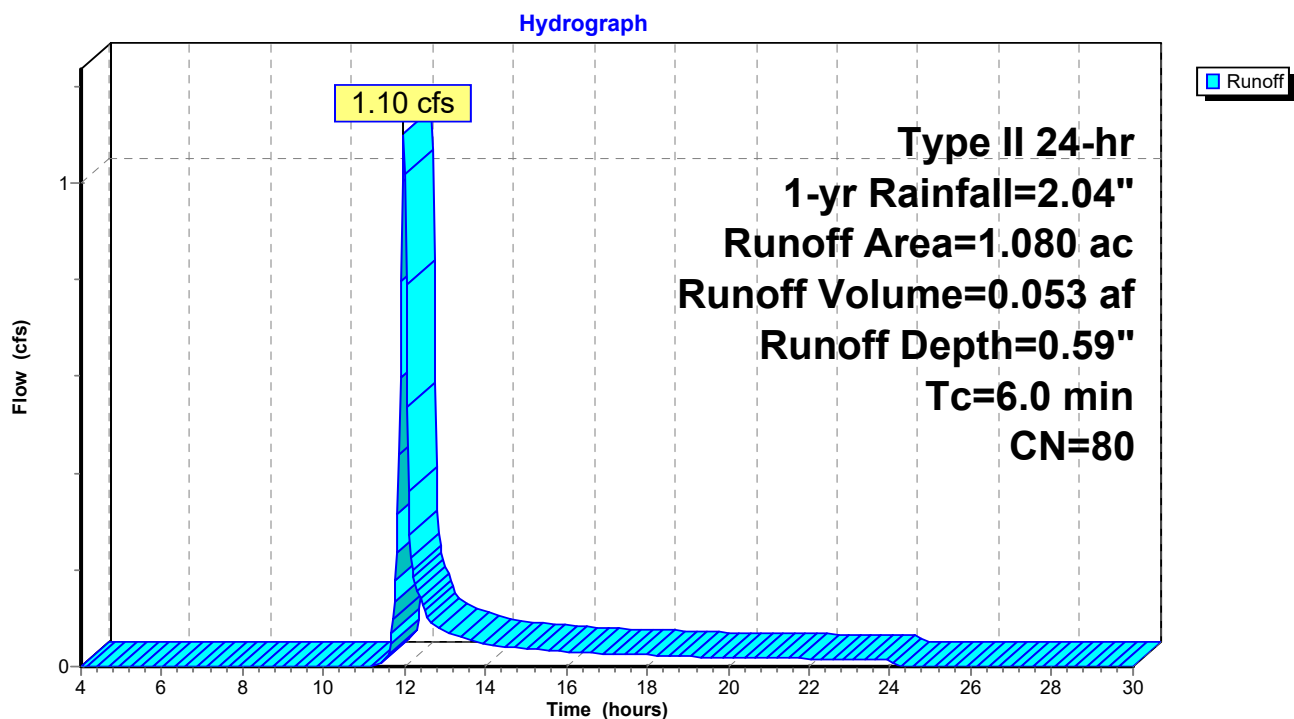
Runoff = 1.10 cfs @ 11.98 hrs, Volume= 0.053 af, Depth= 0.59"
Routed to Pond 3P : Detention Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Type II 24-hr 1-yr Rainfall=2.04"

Area (ac)	CN	Description
0.960	80	>75% Grass cover, Good, HSG D
0.120	77	Woods, Good, HSG D
1.080	80	Weighted Average
1.080		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Min TR 55 Value

Subcatchment 3S: DA-1C



Proposed Drainage Areas

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Type II 24-hr 1-yr Rainfall=2.04"

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Summary for Subcatchment 4S: DA-1D

Runoff = 4.74 cfs @ 12.40 hrs, Volume= 0.634 af, Depth= 0.51"
Routed to Reach 1R : Pt of Study 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Type II 24-hr 1-yr Rainfall=2.04"

Area (ac)	CN	Description
5.930	80	>75% Grass cover, Good, HSG D
8.910	77	Woods, Good, HSG D
0.160	98	Paved parking, HSG D
15.000	78	Weighted Average
14.840		98.93% Pervious Area
0.160		1.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.9	100	0.0600	0.06		Sheet Flow, SHEET FLOW Woods: Dense underbrush n= 0.800 P2= 2.39"
5.4	485	0.0900	1.50		Shallow Concentrated Flow, SCF Woodland Kv= 5.0 fps
4.1	517	0.0900	2.10		Shallow Concentrated Flow, SCF Short Grass Pasture Kv= 7.0 fps
1.2	1,155	0.0750	16.28	260.45	Channel Flow, SWALE Area= 16.0 sf Perim= 16.0' r= 1.00' n= 0.025 Earth, clean & winding
38.6	2,257	Total			

Proposed Drainage Areas

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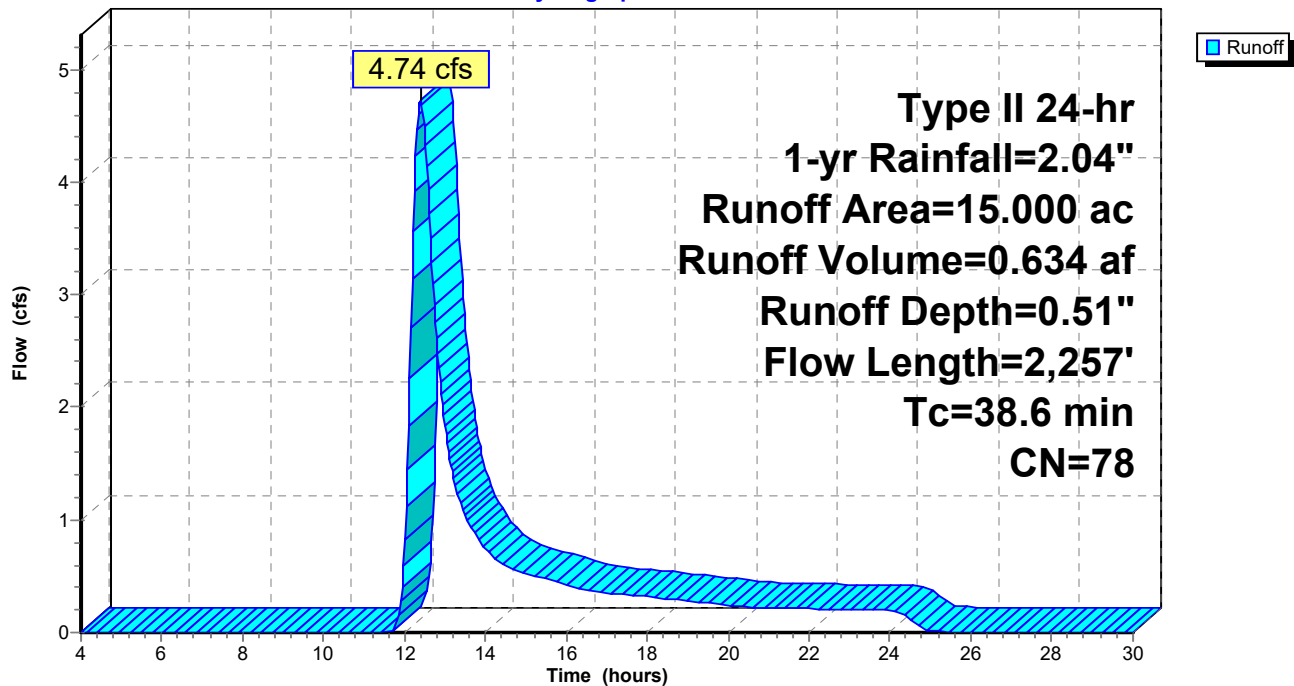
Type II 24-hr 1-yr Rainfall=2.04"

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Subcatchment 4S: DA-1D

Hydrograph



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Type II 24-hr 1-yr Rainfall=2.04"

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Summary for Subcatchment 5S: DA#2

Runoff = 0.72 cfs @ 12.01 hrs, Volume= 0.038 af, Depth= 0.55"
Routed to Reach 2R : Pt of Study 2

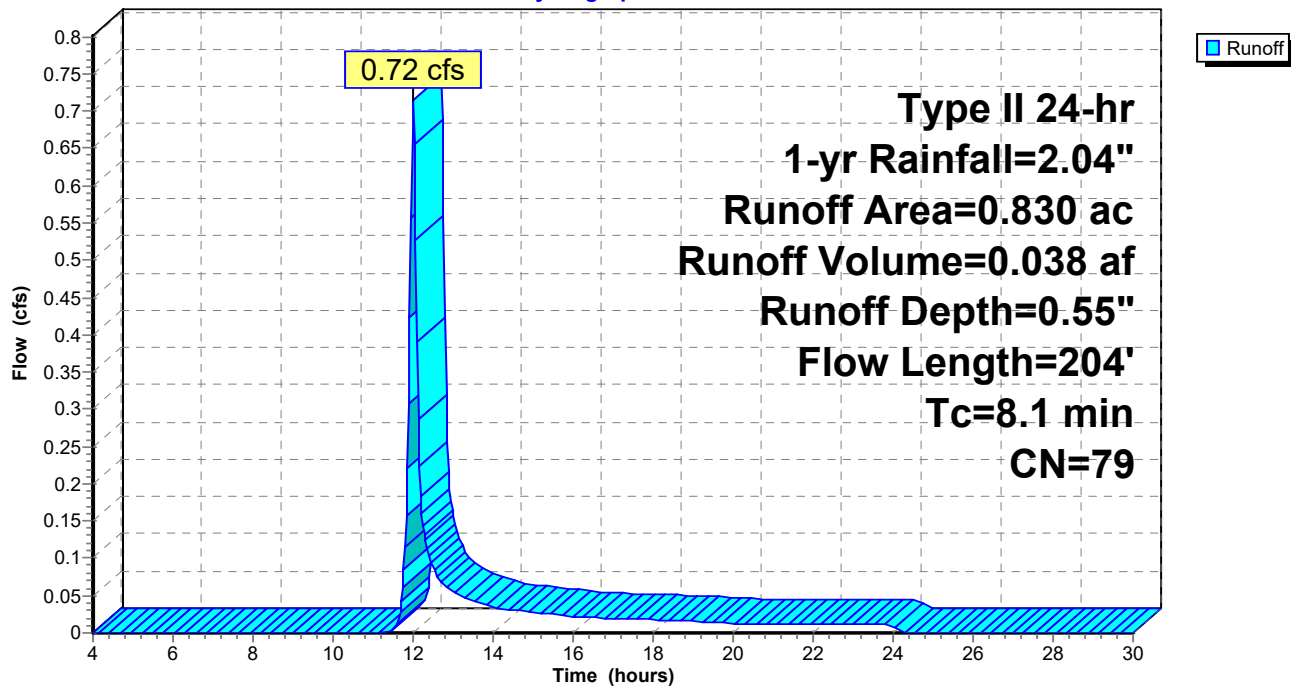
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Type II 24-hr 1-yr Rainfall=2.04"

Area (ac)	CN	Description
0.690	80	>75% Grass cover, Good, HSG D
0.140	77	Woods, Good, HSG D
0.830	79	Weighted Average
0.830		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	100	0.1500	0.23		Sheet Flow, SHEET FLOW Grass: Dense n= 0.240 P2= 2.39"
0.7	104	0.1300	2.52		Shallow Concentrated Flow, SCF Short Grass Pasture Kv= 7.0 fps
8.1	204	Total			

Subcatchment 5S: DA#2

Hydrograph



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Type II 24-hr 1-yr Rainfall=2.04"

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Summary for Subcatchment 6S: DA#3A

Runoff = 1.49 cfs @ 12.10 hrs, Volume= 0.108 af, Depth= 0.59"
Routed to Reach 5R : Drainage Ditch

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Type II 24-hr 1-yr Rainfall=2.04"

Area (ac)	CN	Adj	Description
0.920	80		>75% Grass cover, Good, HSG D
0.180	98		Paved parking, HSG D
0.070	98		Unconnected roofs, HSG D
1.030	77		Woods, Good, HSG D
2.200	81	80	Weighted Average, UI Adjusted
1.950			88.64% Pervious Area
0.250			11.36% Impervious Area
0.070			28.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.9	100	0.0450	0.14		Sheet Flow, SHEET FLOW Grass: Dense n= 0.240 P2= 2.39"
2.5	188	0.0650	1.27		Shallow Concentrated Flow, SCF Woodland Kv= 5.0 fps
1.9	202	0.0650	1.78		Shallow Concentrated Flow, SCF Short Grass Pasture Kv= 7.0 fps
0.2	232	0.0220	16.95	50.86	Channel Flow, curb flow Area= 3.0 sf Perim= 3.0' r= 1.00' n= 0.013 Asphalt, smooth
16.5	722	Total			

Proposed Drainage Areas

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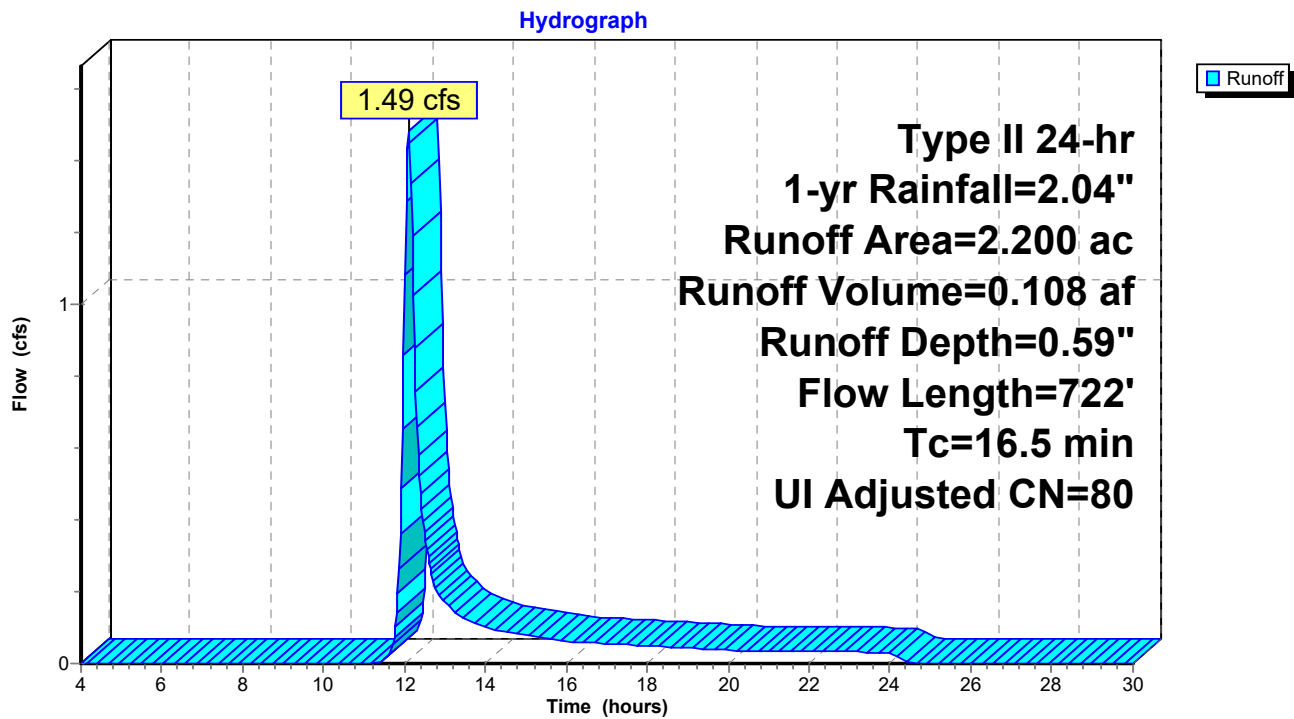
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Type II 24-hr 1-yr Rainfall=2.04"

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Subcatchment 6S: DA#3A



Proposed Drainage Areas

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Type II 24-hr 1-yr Rainfall=2.04"

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Summary for Subcatchment 7S: DA#3B

Runoff = 2.06 cfs @ 12.10 hrs, Volume= 0.146 af, Depth= 0.68"
Routed to Reach 3R : Pt of Study 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Type II 24-hr 1-yr Rainfall=2.04"

Area (ac)	CN	Adj	Description		
2.230	80		>75% Grass cover, Good, HSG D		
0.230	98		Paved parking, HSG D		
0.140	98		Unconnected roofs, HSG D		
2.600	83	82	Weighted Average, UI Adjusted		
2.230			85.77% Pervious Area		
0.370			14.23% Impervious Area		
0.140			37.84% Unconnected		
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	100	0.0500	0.15		Sheet Flow, SHEET FLOW Grass: Dense n= 0.240 P2= 2.39"
5.1	475	0.0500	1.57		Shallow Concentrated Flow, SCF Short Grass Pasture Kv= 7.0 fps
0.2	82	0.0200	6.42	5.04	Pipe Channel, pipe flow 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
16.7	657	Total			

Proposed Drainage Areas

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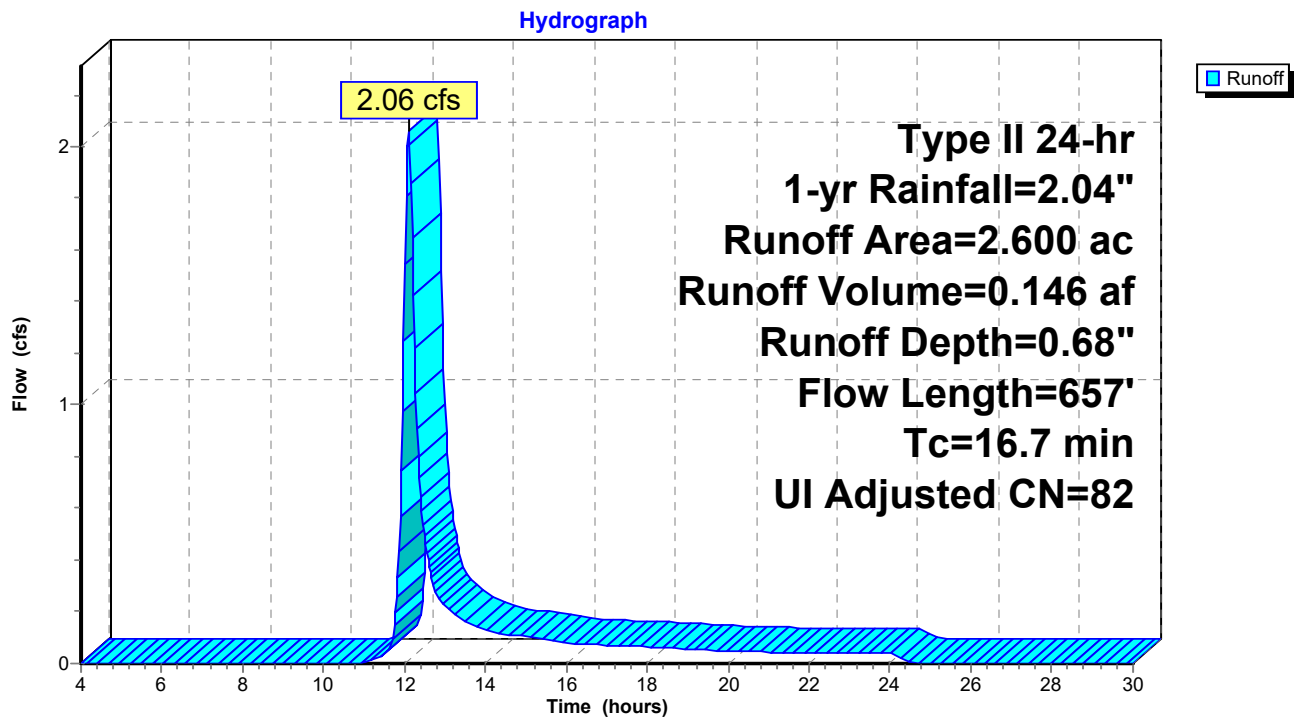
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Type II 24-hr 1-yr Rainfall=2.04"

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Subcatchment 7S: DA#3B



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Type II 24-hr 1-yr Rainfall=2.04"

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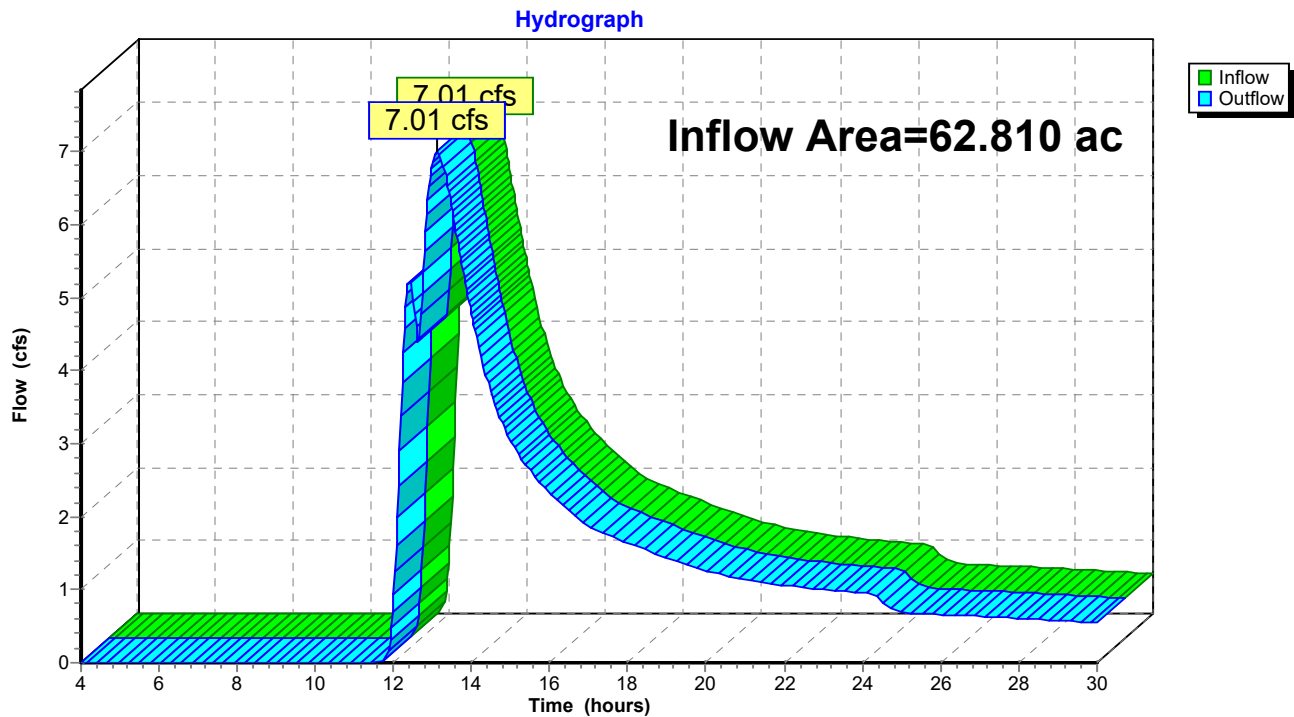
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Summary for Reach 1R: Pt of Study 1

Inflow Area = 62.810 ac, 8.28% Impervious, Inflow Depth > 0.51" for 1-yr event
Inflow = 7.01 cfs @ 13.12 hrs, Volume= 2.658 af
Outflow = 7.01 cfs @ 13.12 hrs, Volume= 2.658 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs

Reach 1R: Pt of Study 1



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Type II 24-hr 1-yr Rainfall=2.04"

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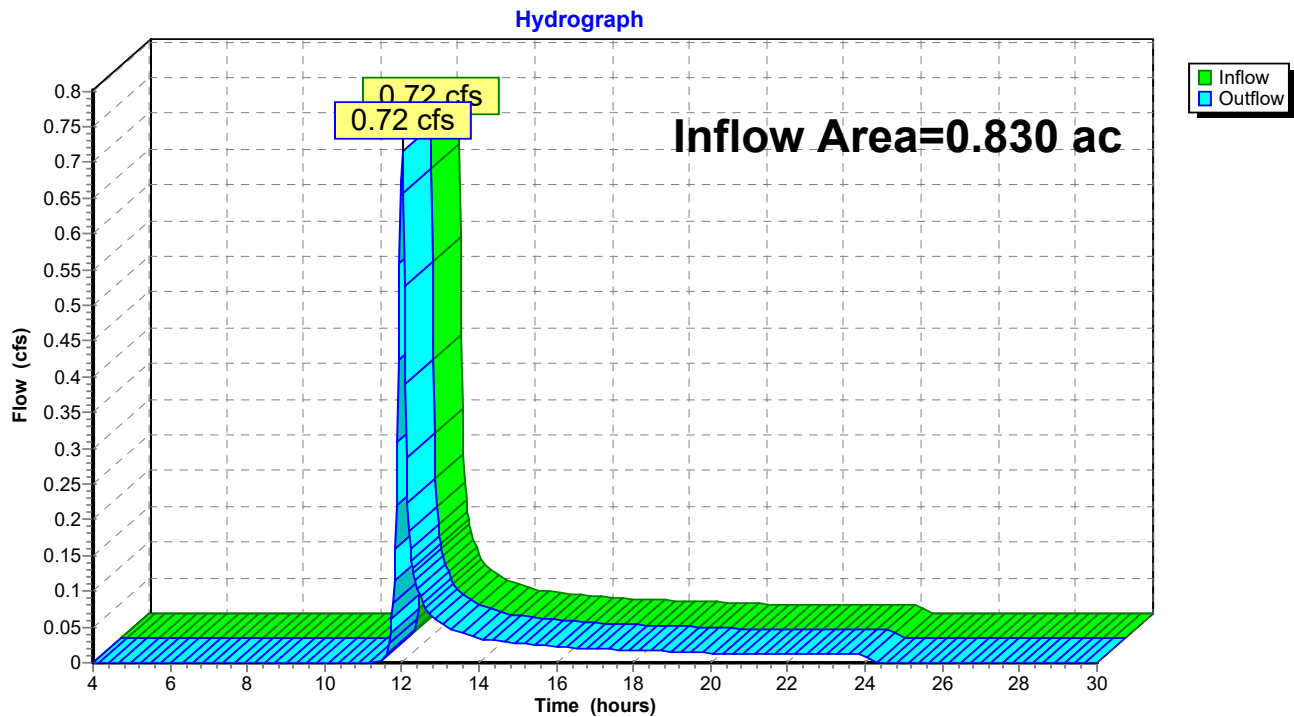
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Summary for Reach 2R: Pt of Study 2

Inflow Area = 0.830 ac, 0.00% Impervious, Inflow Depth = 0.55" for 1-yr event
Inflow = 0.72 cfs @ 12.01 hrs, Volume= 0.038 af
Outflow = 0.72 cfs @ 12.01 hrs, Volume= 0.038 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs

Reach 2R: Pt of Study 2



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Type II 24-hr 1-yr Rainfall=2.04"

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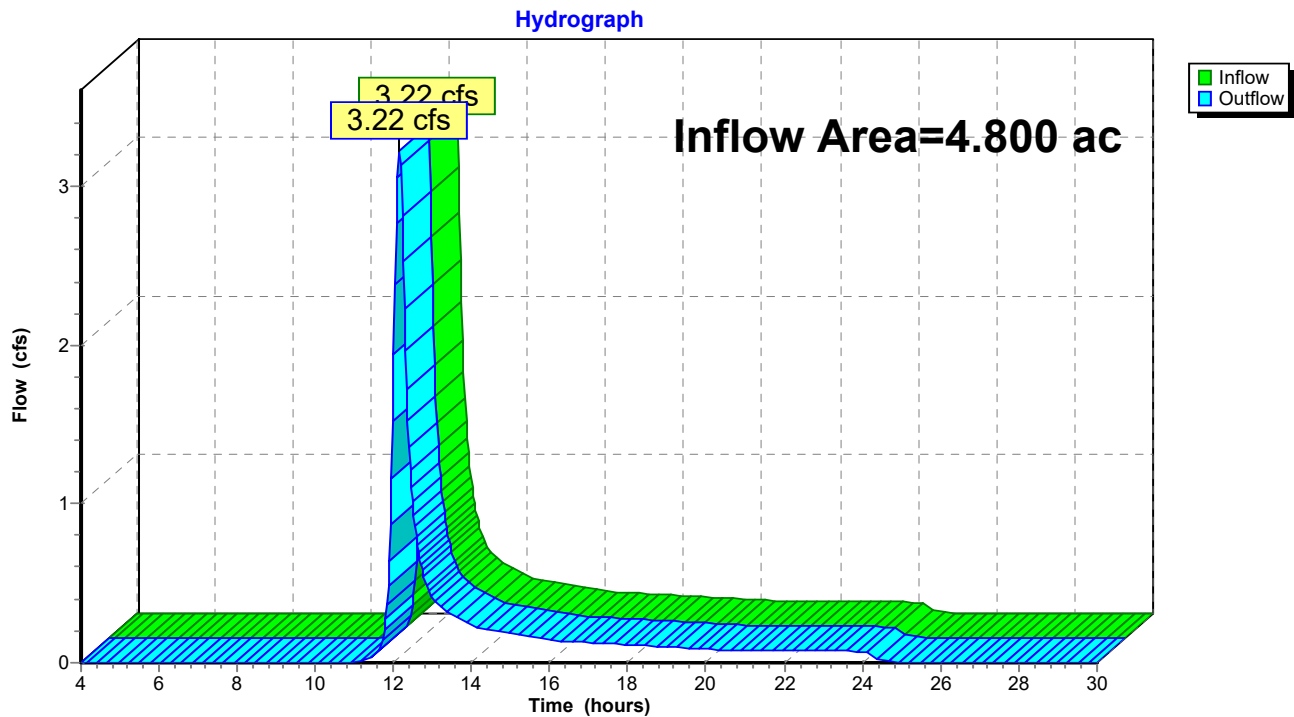
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Summary for Reach 3R: Pt of Study 3

Inflow Area = 4.800 ac, 12.92% Impervious, Inflow Depth = 0.63" for 1-yr event
Inflow = 3.22 cfs @ 12.14 hrs, Volume= 0.254 af
Outflow = 3.22 cfs @ 12.14 hrs, Volume= 0.254 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs

Reach 3R: Pt of Study 3



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Type II 24-hr 1-yr Rainfall=2.04"

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Summary for Reach 5R: Drainage Ditch

Inflow Area = 2.200 ac, 11.36% Impervious, Inflow Depth = 0.59" for 1-yr event
Inflow = 1.49 cfs @ 12.10 hrs, Volume= 0.108 af
Outflow = 1.42 cfs @ 12.20 hrs, Volume= 0.108 af, Atten= 5%, Lag= 5.8 min
Routed to Reach 3R : Pt of Study 3

Routing by Stor-Ind+Trans method, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Max. Velocity= 3.17 fps, Min. Travel Time= 3.4 min
Avg. Velocity= 1.11 fps, Avg. Travel Time= 9.7 min

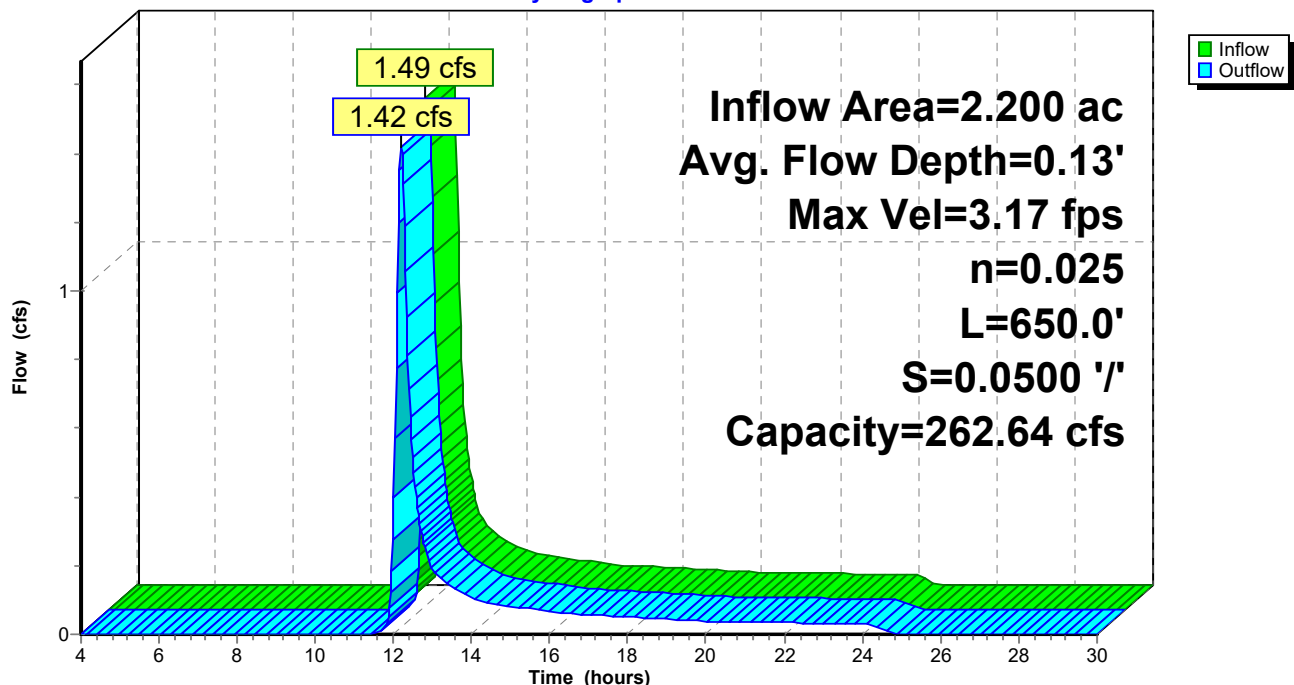
Peak Storage= 290 cf @ 12.14 hrs
Average Depth at Peak Storage= 0.13' , Surface Width= 3.79'
Bank-Full Depth= 2.00' Flow Area= 18.0 sf, Capacity= 262.64 cfs

3.00' x 2.00' deep channel, n= 0.025 Earth, clean & straight
Side Slope Z-value= 3.0 ' / ' Top Width= 15.00'
Length= 650.0' Slope= 0.0500 ' / '
Inlet Invert= 0.00', Outlet Invert= -32.50'



Reach 5R: Drainage Ditch

Hydrograph



Proposed Drainage Areas

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Type II 24-hr 1-yr Rainfall=2.04"

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Summary for Pond 1P: Bioretention 1

Inflow Area = 35.820 ac, 11.14% Impervious, Inflow Depth = 0.63" for 1-yr event
Inflow = 14.62 cfs @ 12.40 hrs, Volume= 1.881 af
Outflow = 13.89 cfs @ 12.50 hrs, Volume= 1.725 af, Atten= 5%, Lag= 5.8 min
Primary = 13.89 cfs @ 12.50 hrs, Volume= 1.725 af
Routed to Pond 3P : Detention Basin

Routing by Stor-Ind method, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Peak Elev= 872.80' @ 12.50 hrs Surf.Area= 15,752 sf Storage= 11,294 cf

Plug-Flow detention time= 68.4 min calculated for 1.725 af (92% of inflow)
Center-of-Mass det. time= 24.9 min (918.4 - 893.5)

Volume	Invert	Avail.Storage	Storage Description
#1	872.00'	14,540 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
872.00	12,800	0	0
872.50	14,330	6,783	6,783
873.00	16,700	7,758	14,540

Device	Routing	Invert	Outlet Devices
#1	Primary	872.50'	15.0' long + 3.0 ' SideZ x 15.0' breadth Broad-Crested Rectangular Weir X 2 Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=13.87 cfs @ 12.50 hrs HW=872.80' (Free Discharge)
↑1=**Broad-Crested Rectangular Weir** (Weir Controls 13.87 cfs @ 1.46 fps)

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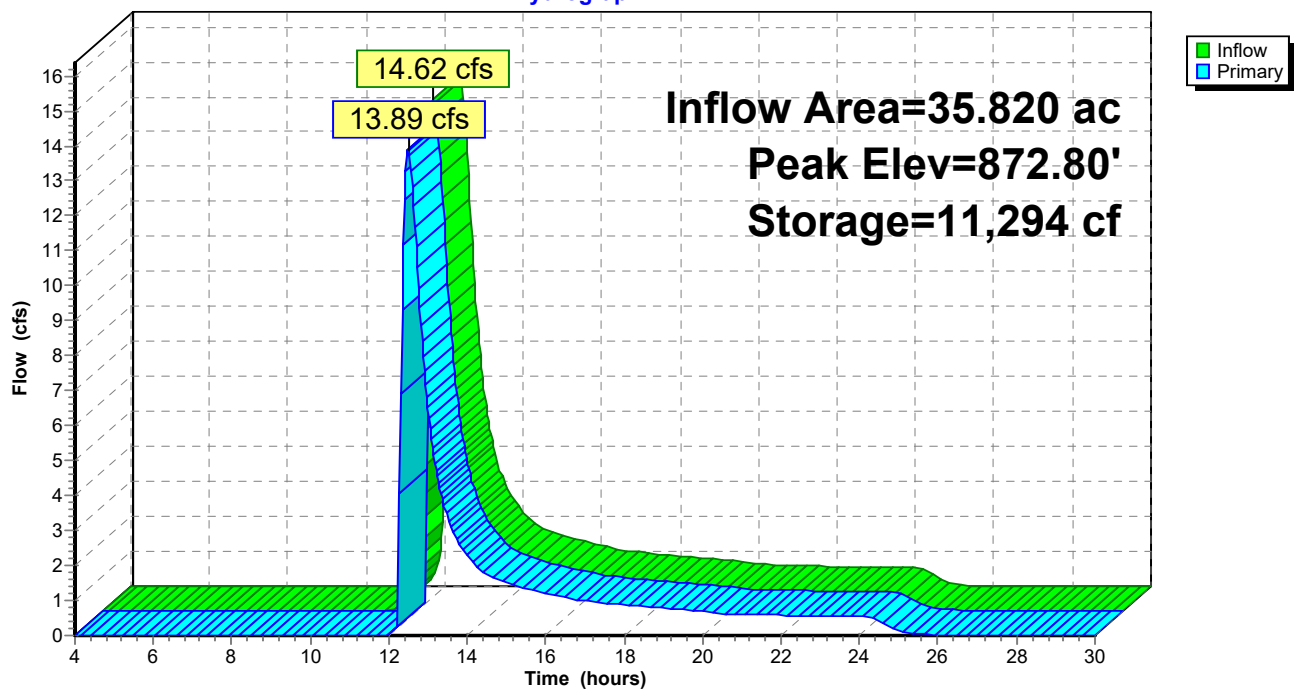
Type II 24-hr 1-yr Rainfall=2.04"

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Pond 1P: Bioretention 1

Hydrograph



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Type II 24-hr 1-yr Rainfall=2.04"

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Summary for Pond 2P: Bioretention 2

Inflow Area = 10.910 ac, 9.62% Impervious, Inflow Depth = 0.63" for 1-yr event
Inflow = 6.93 cfs @ 12.16 hrs, Volume= 0.573 af
Outflow = 5.70 cfs @ 12.26 hrs, Volume= 0.487 af, Atten= 18%, Lag= 6.3 min
Primary = 5.70 cfs @ 12.26 hrs, Volume= 0.487 af
Routed to Pond 3P : Detention Basin

Routing by Stor-Ind method, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Peak Elev= 882.67' @ 12.26 hrs Surf.Area= 9,262 sf Storage= 5,249 cf

Plug-Flow detention time= 107.4 min calculated for 0.487 af (85% of inflow)
Center-of-Mass det. time= 36.4 min (912.1 - 875.7)

Volume	Invert	Avail.Storage	Storage Description
#1	882.00'	8,493 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
882.00	6,200	0	0
882.50	8,735	3,734	3,734
883.00	10,300	4,759	8,493

Device	Routing	Invert	Outlet Devices
#1	Primary	882.50'	15.0' long + 3.0 ' SideZ x 15.0' breadth Broad-Crested Rectangular Weir X 2 Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=5.65 cfs @ 12.26 hrs HW=882.67' (Free Discharge)
↑1=**Broad-Crested Rectangular Weir** (Weir Controls 5.65 cfs @ 1.09 fps)

Proposed Drainage Areas

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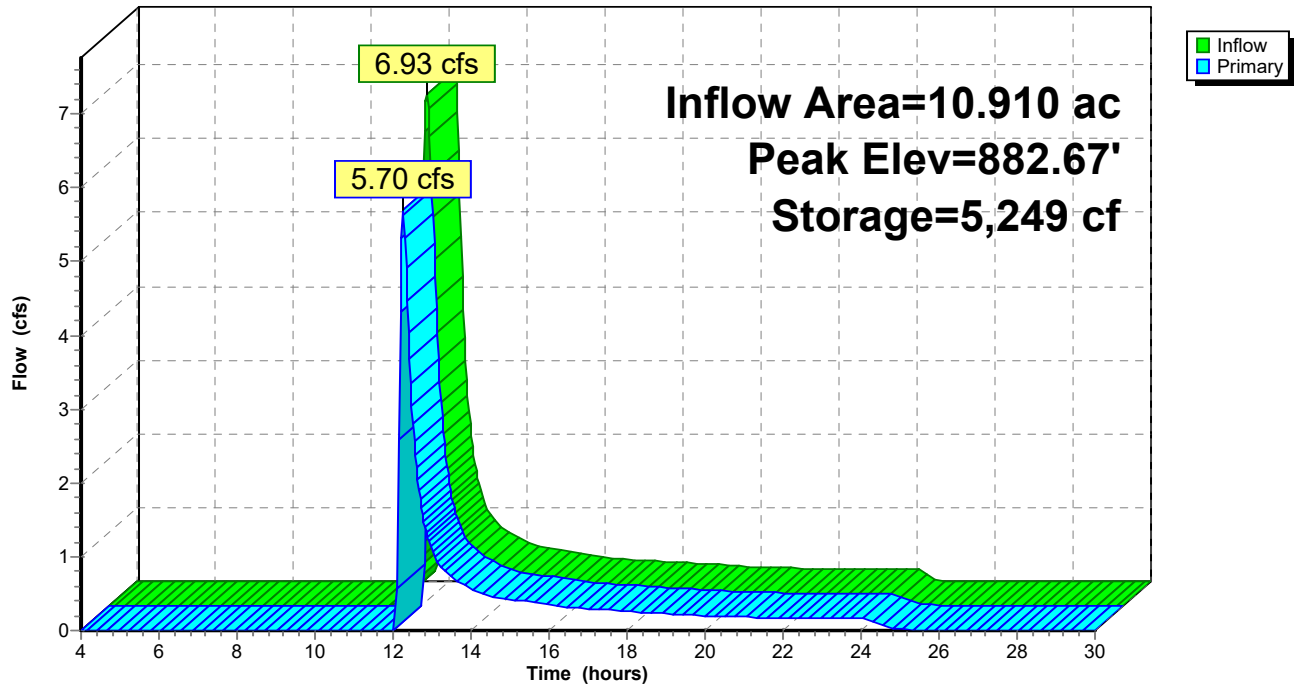
Type II 24-hr 1-yr Rainfall=2.04"

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Pond 2P: Bioretention 2

Hydrograph



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Type II 24-hr 1-yr Rainfall=2.04"

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Summary for Pond 3P: Detention Basin

Inflow Area = 47.810 ac, 10.54% Impervious, Inflow Depth = 0.57" for 1-yr event
Inflow = 17.18 cfs @ 12.46 hrs, Volume= 2.265 af
Outflow = 5.56 cfs @ 13.23 hrs, Volume= 2.025 af, Atten= 68%, Lag= 46.0 min
Primary = 5.56 cfs @ 13.23 hrs, Volume= 2.025 af
Routed to Reach 1R : Pt of Study 1
Secondary = 0.00 cfs @ 4.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Peak Elev= 865.31' @ 13.23 hrs Surf.Area= 17,251 sf Storage= 33,243 cf

Plug-Flow detention time= 216.7 min calculated for 2.025 af (89% of inflow)
Center-of-Mass det. time= 162.9 min (1,078.8 - 915.8)

Volume	Invert	Avail.Storage	Storage Description
#1	861.80'	235,158 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
861.80	1,260	0	0
862.00	2,891	415	415
863.00	6,366	4,629	5,044
864.00	11,515	8,941	13,984
865.00	16,570	14,043	28,027
866.00	18,777	17,674	45,700
867.00	21,040	19,909	65,609
868.00	23,360	22,200	87,809
869.00	25,736	24,548	112,357
870.00	28,169	26,953	139,309
871.00	30,658	29,414	168,723
872.00	33,204	31,931	200,654
873.00	35,805	34,505	235,158

Device	Routing	Invert	Outlet Devices
#1	Secondary	872.00'	30.0' long x 12.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#2	Primary	861.80'	30.0" Round Culvert L= 98.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 861.80' / 857.00' S= 0.0490 1' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf
#3	Device 2	861.80'	4.0" Vert. Orifice1 C= 0.600 Limited to weir flow at low heads
#4	Device 2	864.60'	30.0" W x 30.0" H Vert. Orifice2 C= 0.600 Limited to weir flow at low heads
#5	Device 2	869.00'	36.0" x 36.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads

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Type II 24-hr 1-yr Rainfall=2.04"

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Primary OutFlow Max=5.55 cfs @ 13.23 hrs HW=865.31' (Free Discharge)

↳ **2=Culvert** (Passes 5.55 cfs of 28.04 cfs potential flow)

↳ **3=Orifice1** (Orifice Controls 0.77 cfs @ 8.80 fps)

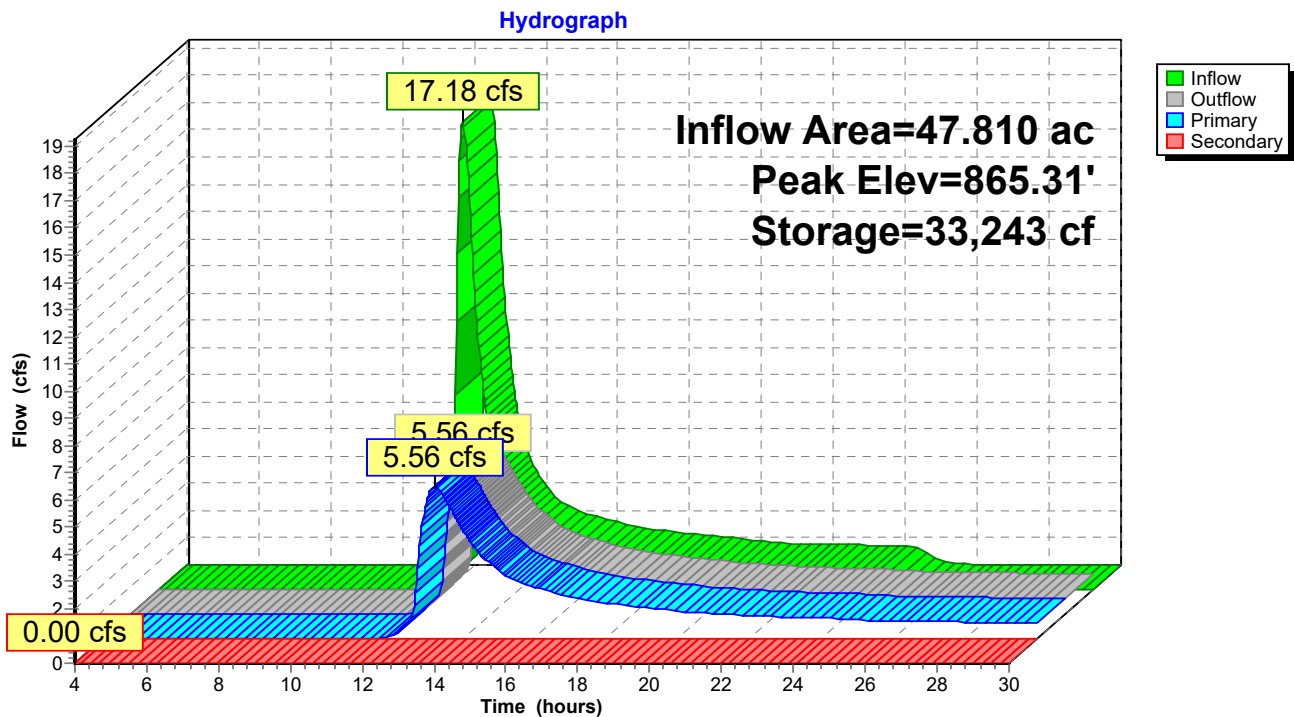
↳ **4=Orifice2** (Orifice Controls 4.78 cfs @ 2.70 fps)

↳ **5=Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 4.00 hrs HW=861.80' (Free Discharge)

↳ **1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 3P: Detention Basin



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Type II 24-hr 10-yr Rainfall=3.43"

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Summary for Subcatchment 1S: DA-1A

Runoff = 41.52 cfs @ 12.38 hrs, Volume= 4.931 af, Depth= 1.65"
Routed to Pond 1P : Bioretention 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Type II 24-hr 10-yr Rainfall=3.43"

Area (ac)	CN	Description
2.050	98	Paved parking, HSG D
1.940	98	Unconnected roofs, HSG D
22.870	80	>75% Grass cover, Good, HSG D
8.960	77	Woods, Good, HSG D
35.820	81	Weighted Average
31.830		88.86% Pervious Area
3.990		11.14% Impervious Area
1.940		48.62% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.9	100	0.0600	0.06		Sheet Flow, SHEET FLOW Woods: Dense underbrush n= 0.800 P2= 2.39"
4.8	370	0.0650	1.27		Shallow Concentrated Flow, SCF Woodland Kv= 5.0 fps
1.9	200	0.0650	1.78		Shallow Concentrated Flow, SCF Short Grass Pasture Kv= 7.0 fps
0.2	295	0.0300	19.80	79.19	Channel Flow, curb and gutter flow Area= 4.0 sf Perim= 4.0' r= 1.00' n= 0.013 Asphalt, smooth
1.7	1,100	0.0345	11.04	19.51	Pipe Channel, Pipe Flow 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
3.8	955	0.0050	4.20	50.44	Channel Flow, Area= 12.0 sf Perim= 12.0' r= 1.00' n= 0.025 Earth, grassed & winding
40.3	3,020	Total			

Proposed Drainage Areas

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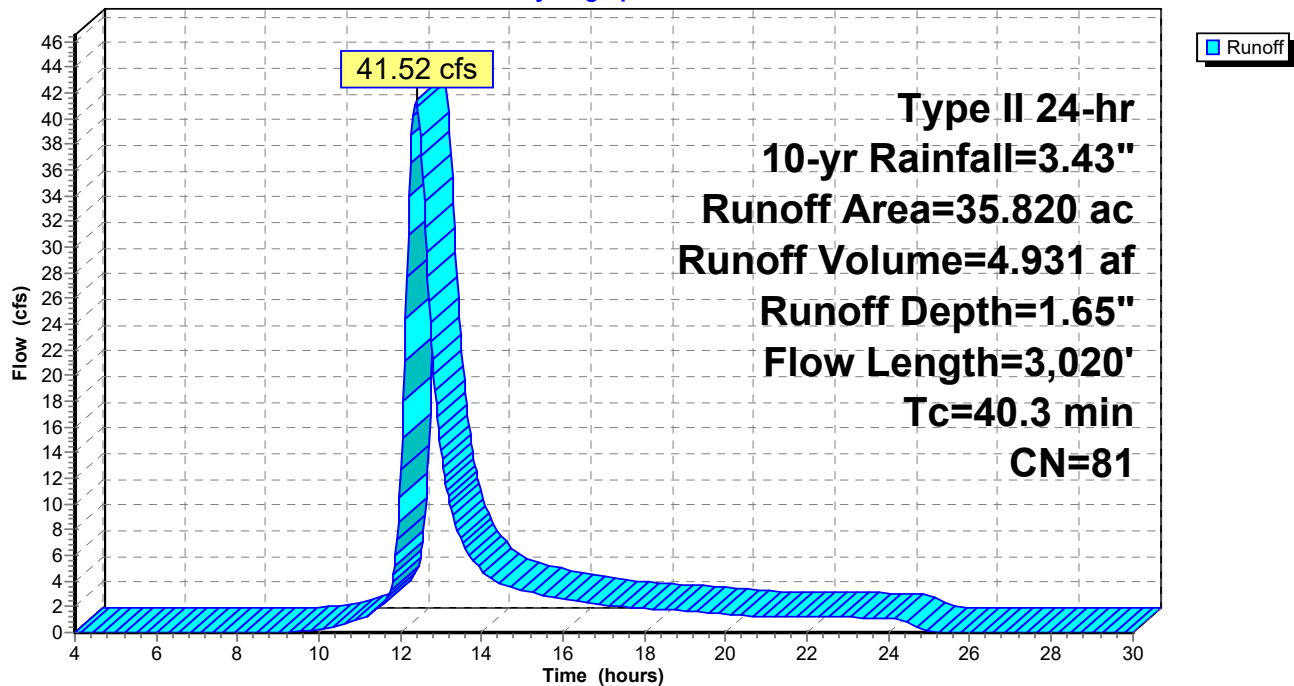
Type II 24-hr 10-yr Rainfall=3.43"

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Subcatchment 1S: DA-1A

Hydrograph



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Type II 24-hr 10-yr Rainfall=3.43"

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Summary for Subcatchment 2S: DA-1B

Runoff = 19.34 cfs @ 12.14 hrs, Volume= 1.502 af, Depth= 1.65"
Routed to Pond 2P : Bioretention 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Type II 24-hr 10-yr Rainfall=3.43"

Area (ac)	CN	Description
0.710	98	Paved parking, HSG D
0.340	98	Unconnected roofs, HSG D
7.820	80	>75% Grass cover, Good, HSG D
2.040	77	Woods, Good, HSG D
10.910	81	Weighted Average
9.860		90.38% Pervious Area
1.050		9.62% Impervious Area
0.340		32.38% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	100	0.0600	0.16		Sheet Flow, SHEET FLOW Grass: Dense n= 0.240 P2= 2.39"
4.6	410	0.0900	1.50		Shallow Concentrated Flow, SCF Woodland Kv= 5.0 fps
5.6	710	0.0920	2.12		Shallow Concentrated Flow, SCF Short Grass Pasture Kv= 7.0 fps
0.3	170	0.0200	9.55	76.42	Channel Flow, swale flow Area= 8.0 sf Perim= 8.0' r= 1.00' n= 0.022 Earth, clean & straight
21.1	1,390	Total			

Proposed Drainage Areas

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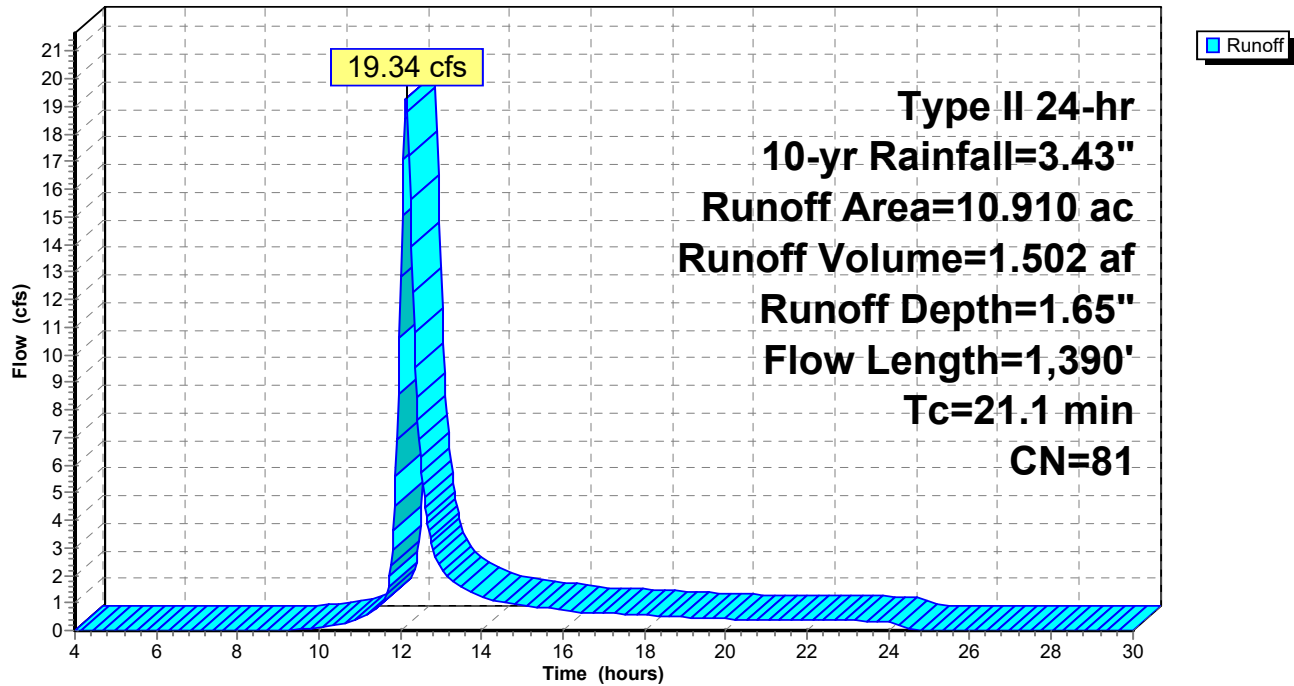
Type II 24-hr 10-yr Rainfall=3.43"

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Subcatchment 2S: DA-1B

Hydrograph



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Type II 24-hr 10-yr Rainfall=3.43"

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Summary for Subcatchment 3S: DA-1C

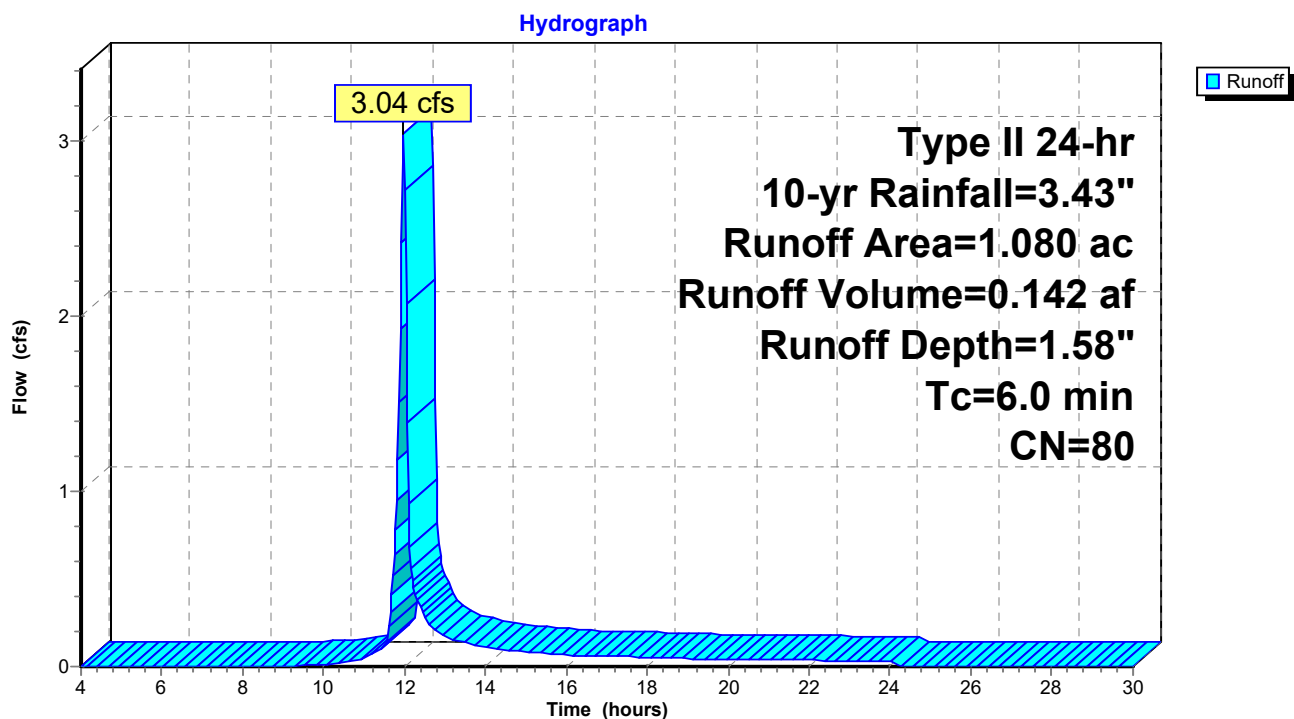
Runoff = 3.04 cfs @ 11.97 hrs, Volume= 0.142 af, Depth= 1.58"
Routed to Pond 3P : Detention Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Type II 24-hr 10-yr Rainfall=3.43"

Area (ac)	CN	Description
0.960	80	>75% Grass cover, Good, HSG D
0.120	77	Woods, Good, HSG D
1.080	80	Weighted Average
1.080		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Min TR 55 Value

Subcatchment 3S: DA-1C



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Type II 24-hr 10-yr Rainfall=3.43"

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Summary for Subcatchment 4S: DA-1D

Runoff = 15.39 cfs @ 12.37 hrs, Volume= 1.805 af, Depth= 1.44"
Routed to Reach 1R : Pt of Study 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Type II 24-hr 10-yr Rainfall=3.43"

Area (ac)	CN	Description
5.930	80	>75% Grass cover, Good, HSG D
8.910	77	Woods, Good, HSG D
0.160	98	Paved parking, HSG D
15.000	78	Weighted Average
14.840		98.93% Pervious Area
0.160		1.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.9	100	0.0600	0.06		Sheet Flow, SHEET FLOW Woods: Dense underbrush n= 0.800 P2= 2.39"
5.4	485	0.0900	1.50		Shallow Concentrated Flow, SCF Woodland Kv= 5.0 fps
4.1	517	0.0900	2.10		Shallow Concentrated Flow, SCF Short Grass Pasture Kv= 7.0 fps
1.2	1,155	0.0750	16.28	260.45	Channel Flow, SWALE Area= 16.0 sf Perim= 16.0' r= 1.00' n= 0.025 Earth, clean & winding
38.6	2,257	Total			

Proposed Drainage Areas

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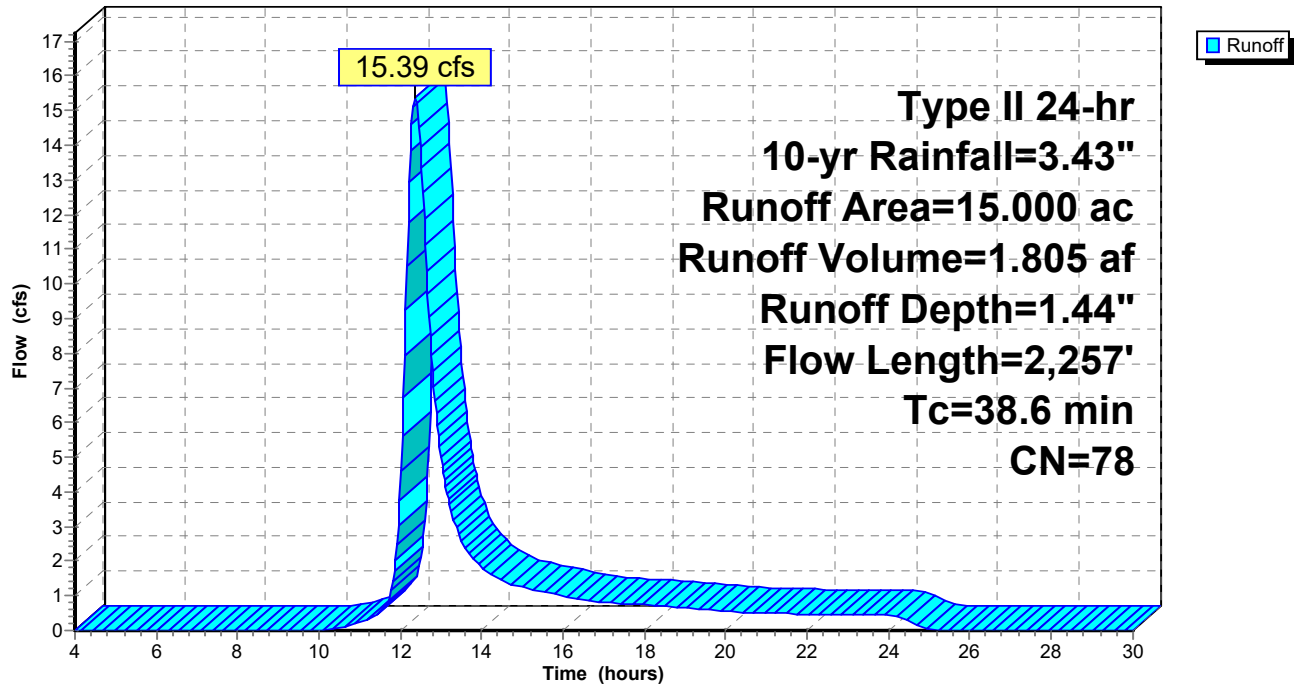
Type II 24-hr 10-yr Rainfall=3.43"

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Subcatchment 4S: DA-1D

Hydrograph



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Type II 24-hr 10-yr Rainfall=3.43"

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Summary for Subcatchment 5S: DA#2

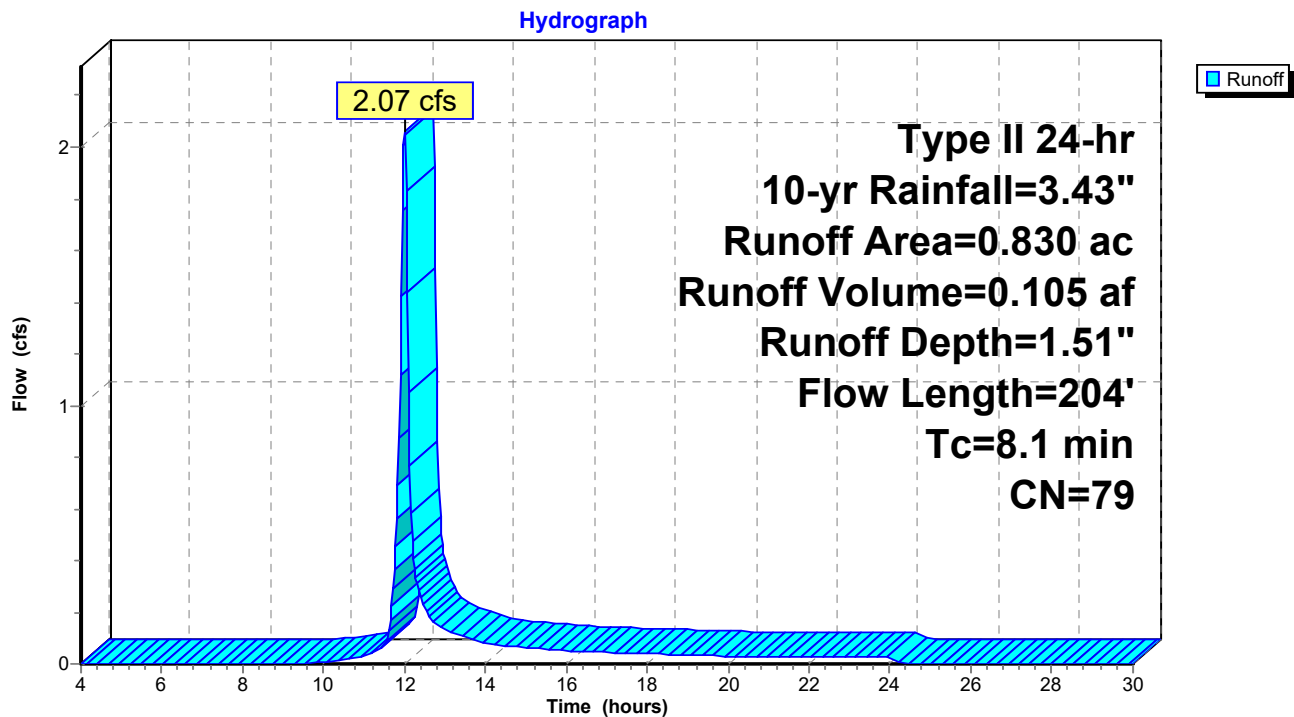
Runoff = 2.07 cfs @ 12.00 hrs, Volume= 0.105 af, Depth= 1.51"
Routed to Reach 2R : Pt of Study 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Type II 24-hr 10-yr Rainfall=3.43"

Area (ac)	CN	Description
0.690	80	>75% Grass cover, Good, HSG D
0.140	77	Woods, Good, HSG D
0.830	79	Weighted Average
0.830		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	100	0.1500	0.23		Sheet Flow, SHEET FLOW Grass: Dense n= 0.240 P2= 2.39"
0.7	104	0.1300	2.52		Shallow Concentrated Flow, SCF Short Grass Pasture Kv= 7.0 fps
8.1	204	Total			

Subcatchment 5S: DA#2



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Type II 24-hr 10-yr Rainfall=3.43"

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Summary for Subcatchment 6S: DA#3A

Runoff = 4.27 cfs @ 12.09 hrs, Volume= 0.290 af, Depth= 1.58"
Routed to Reach 5R : Drainage Ditch

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Type II 24-hr 10-yr Rainfall=3.43"

Area (ac)	CN	Adj	Description
0.920	80		>75% Grass cover, Good, HSG D
0.180	98		Paved parking, HSG D
0.070	98		Unconnected roofs, HSG D
1.030	77		Woods, Good, HSG D
2.200	81	80	Weighted Average, UI Adjusted
1.950			88.64% Pervious Area
0.250			11.36% Impervious Area
0.070			28.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.9	100	0.0450	0.14		Sheet Flow, SHEET FLOW Grass: Dense n= 0.240 P2= 2.39"
2.5	188	0.0650	1.27		Shallow Concentrated Flow, SCF Woodland Kv= 5.0 fps
1.9	202	0.0650	1.78		Shallow Concentrated Flow, SCF Short Grass Pasture Kv= 7.0 fps
0.2	232	0.0220	16.95	50.86	Channel Flow, curb flow Area= 3.0 sf Perim= 3.0' r= 1.00' n= 0.013 Asphalt, smooth
16.5	722	Total			

Proposed Drainage Areas

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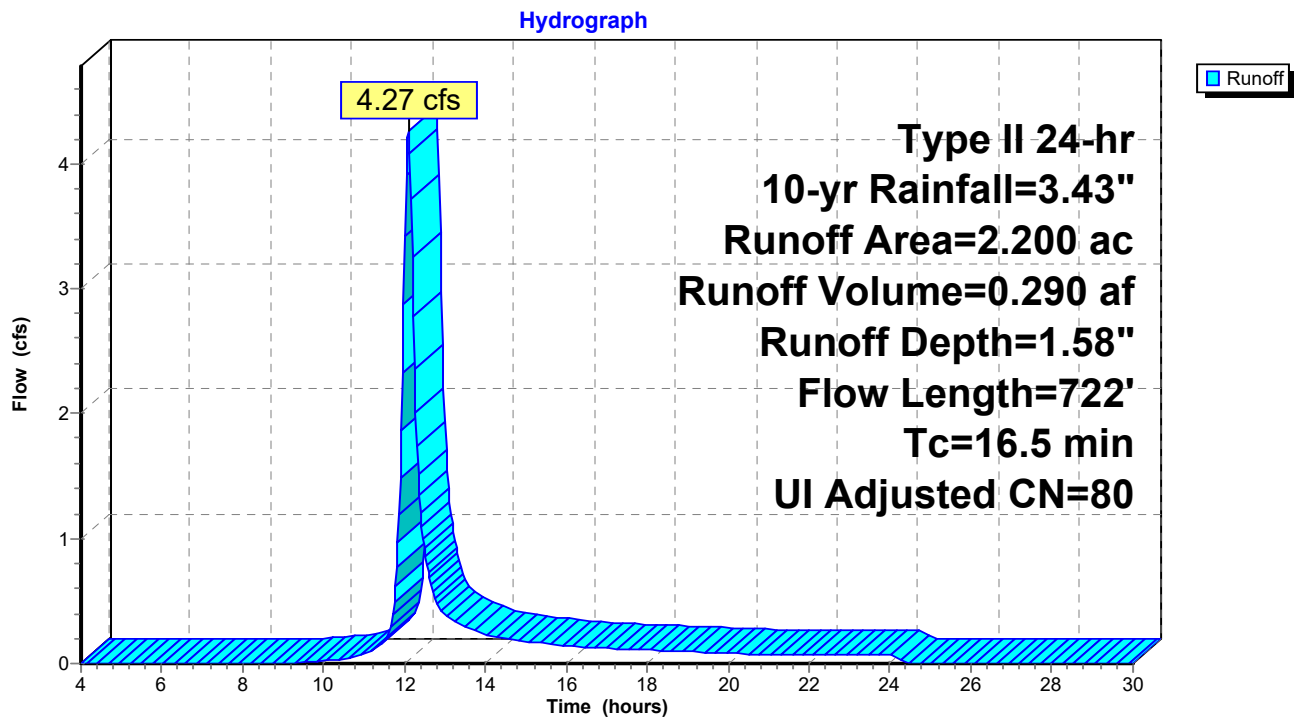
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Type II 24-hr 10-yr Rainfall=3.43"

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Subcatchment 6S: DA#3A



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Type II 24-hr 10-yr Rainfall=3.43"

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Summary for Subcatchment 7S: DA#3B

Runoff = 5.49 cfs @ 12.09 hrs, Volume= 0.374 af, Depth= 1.72"
Routed to Reach 3R : Pt of Study 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Type II 24-hr 10-yr Rainfall=3.43"

Area (ac)	CN	Adj	Description		
2.230	80		>75% Grass cover, Good, HSG D		
0.230	98		Paved parking, HSG D		
0.140	98		Unconnected roofs, HSG D		
2.600	83	82	Weighted Average, UI Adjusted		
2.230			85.77% Pervious Area		
0.370			14.23% Impervious Area		
0.140			37.84% Unconnected		
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	100	0.0500	0.15		Sheet Flow, SHEET FLOW Grass: Dense n= 0.240 P2= 2.39"
5.1	475	0.0500	1.57		Shallow Concentrated Flow, SCF Short Grass Pasture Kv= 7.0 fps
0.2	82	0.0200	6.42	5.04	Pipe Channel, pipe flow 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
16.7	657	Total			

Proposed Drainage Areas

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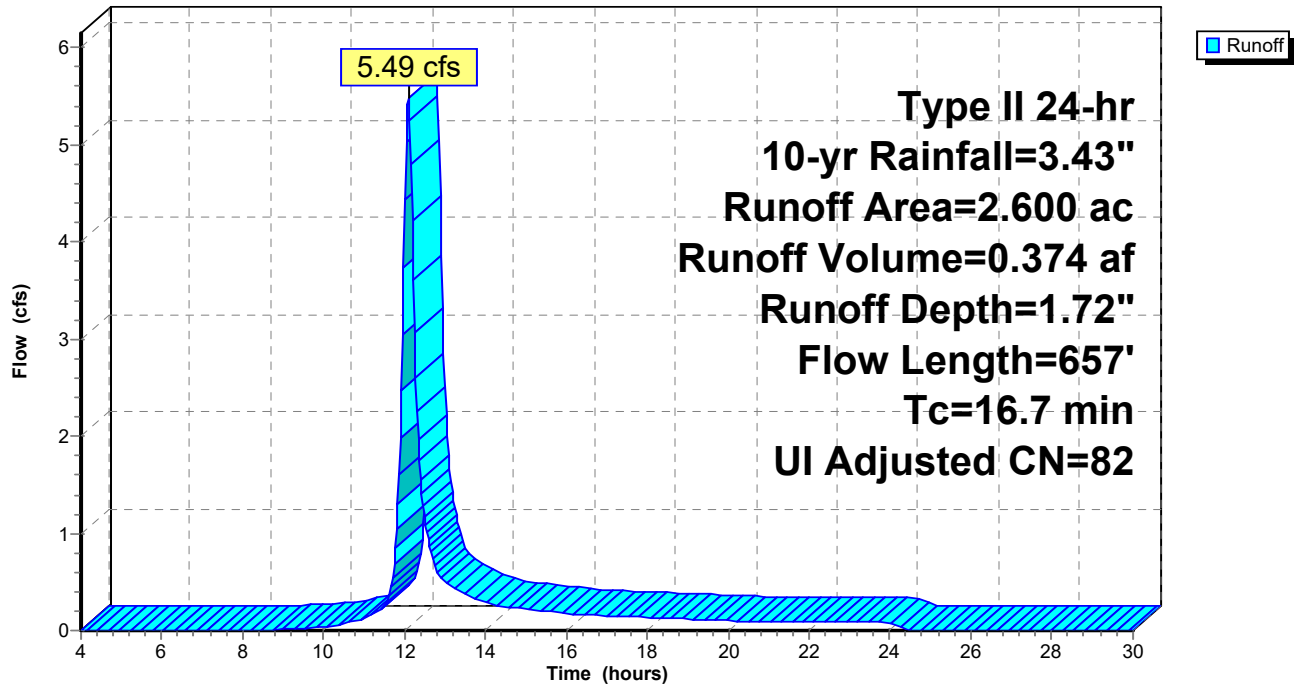
Type II 24-hr 10-yr Rainfall=3.43"

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Subcatchment 7S: DA#3B

Hydrograph



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Type II 24-hr 10-yr Rainfall=3.43"

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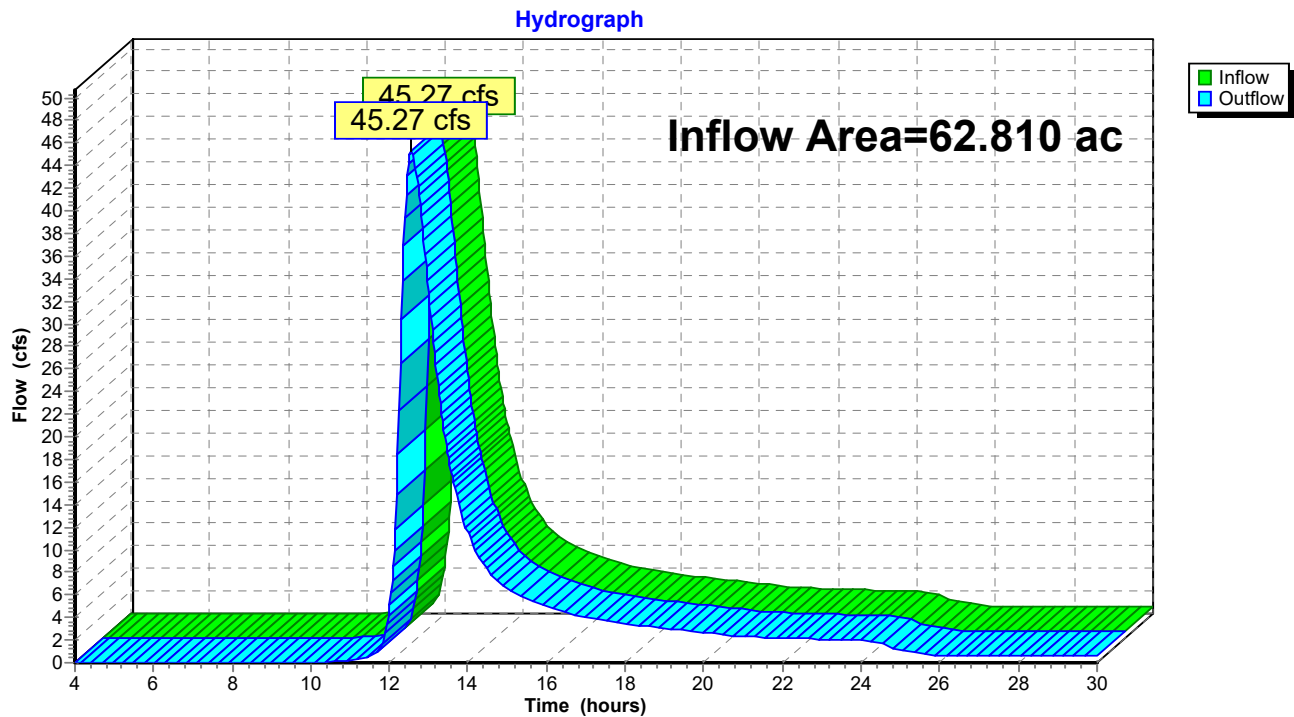
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Summary for Reach 1R: Pt of Study 1

Inflow Area = 62.810 ac, 8.28% Impervious, Inflow Depth > 1.50" for 10-yr event
Inflow = 45.27 cfs @ 12.56 hrs, Volume= 7.862 af
Outflow = 45.27 cfs @ 12.56 hrs, Volume= 7.862 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs

Reach 1R: Pt of Study 1



Proposed Drainage Areas

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Type II 24-hr 10-yr Rainfall=3.43"

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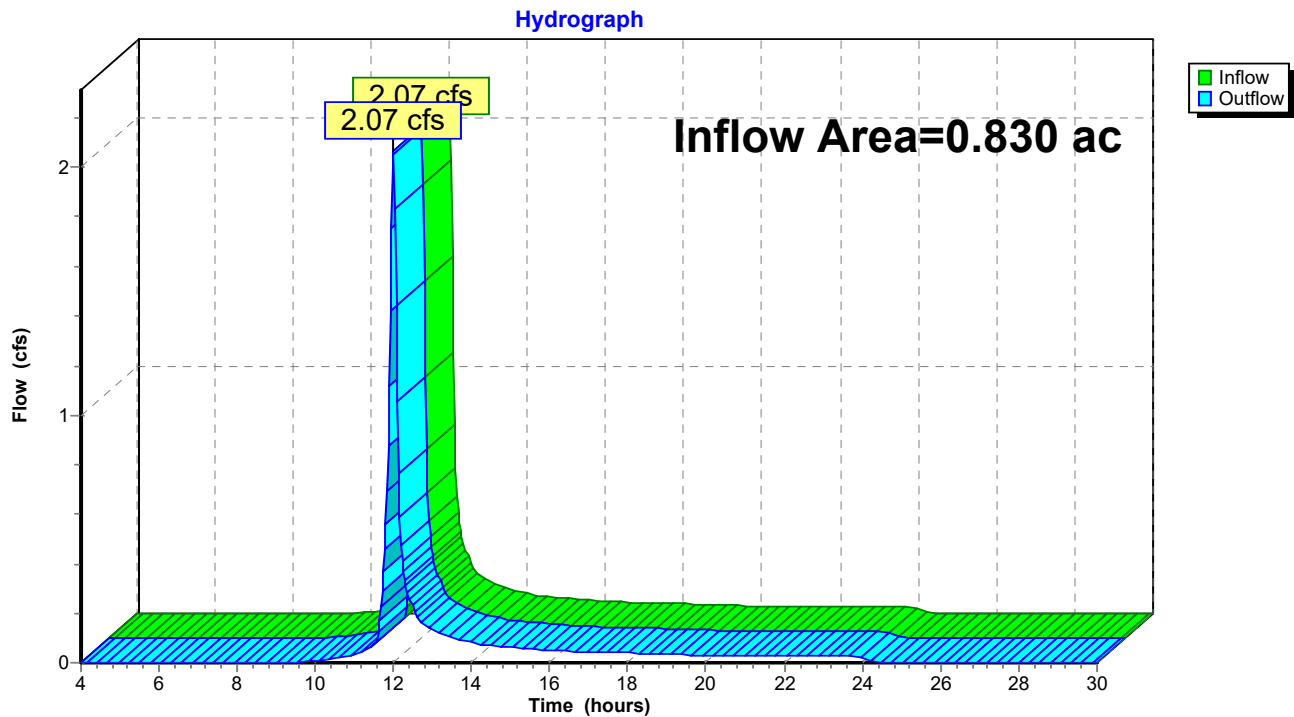
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Summary for Reach 2R: Pt of Study 2

Inflow Area = 0.830 ac, 0.00% Impervious, Inflow Depth = 1.51" for 10-yr event
Inflow = 2.07 cfs @ 12.00 hrs, Volume= 0.105 af
Outflow = 2.07 cfs @ 12.00 hrs, Volume= 0.105 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs

Reach 2R: Pt of Study 2



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Type II 24-hr 10-yr Rainfall=3.43"

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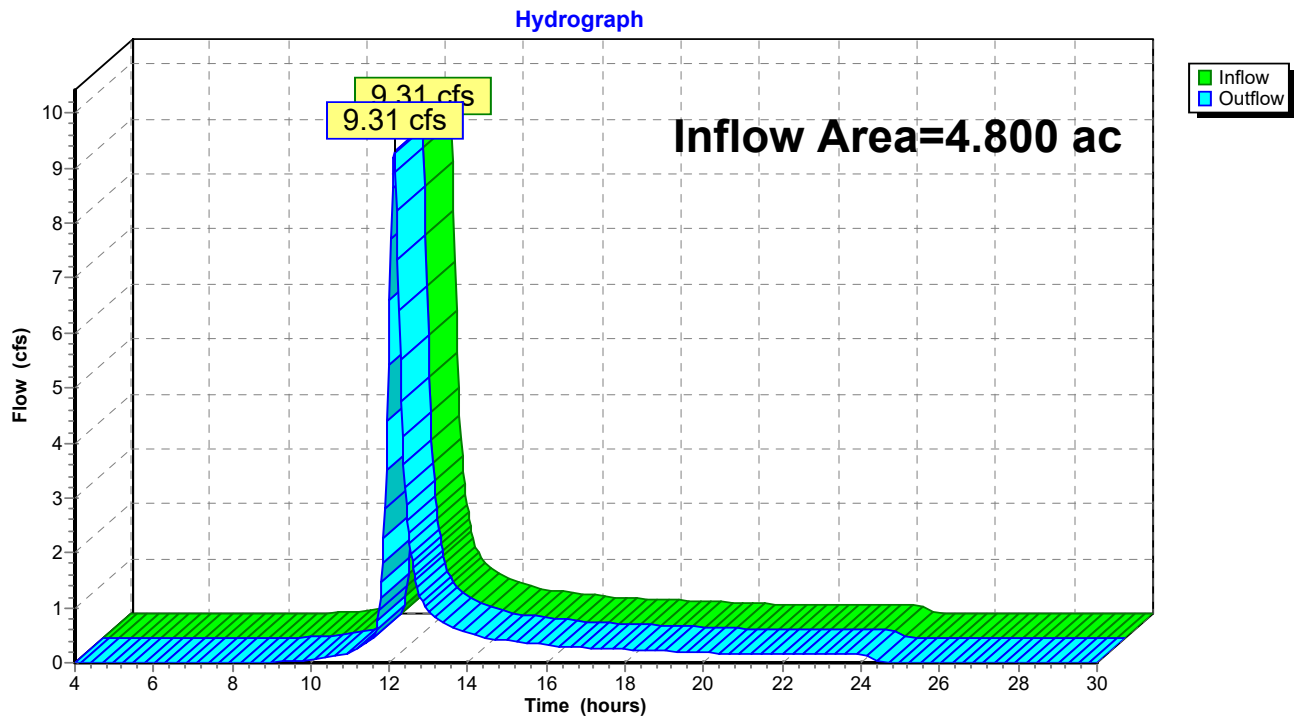
Page 40

Summary for Reach 3R: Pt of Study 3

Inflow Area = 4.800 ac, 12.92% Impervious, Inflow Depth = 1.66" for 10-yr event
Inflow = 9.31 cfs @ 12.12 hrs, Volume= 0.664 af
Outflow = 9.31 cfs @ 12.12 hrs, Volume= 0.664 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs

Reach 3R: Pt of Study 3



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Type II 24-hr 10-yr Rainfall=3.43"

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Summary for Reach 5R: Drainage Ditch

Inflow Area = 2.200 ac, 11.36% Impervious, Inflow Depth = 1.58" for 10-yr event
Inflow = 4.27 cfs @ 12.09 hrs, Volume= 0.290 af
Outflow = 4.15 cfs @ 12.16 hrs, Volume= 0.290 af, Atten= 3%, Lag= 4.1 min
Routed to Reach 3R : Pt of Study 3

Routing by Stor-Ind+Trans method, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Max. Velocity= 4.56 fps, Min. Travel Time= 2.4 min
Avg. Velocity= 1.36 fps, Avg. Travel Time= 8.0 min

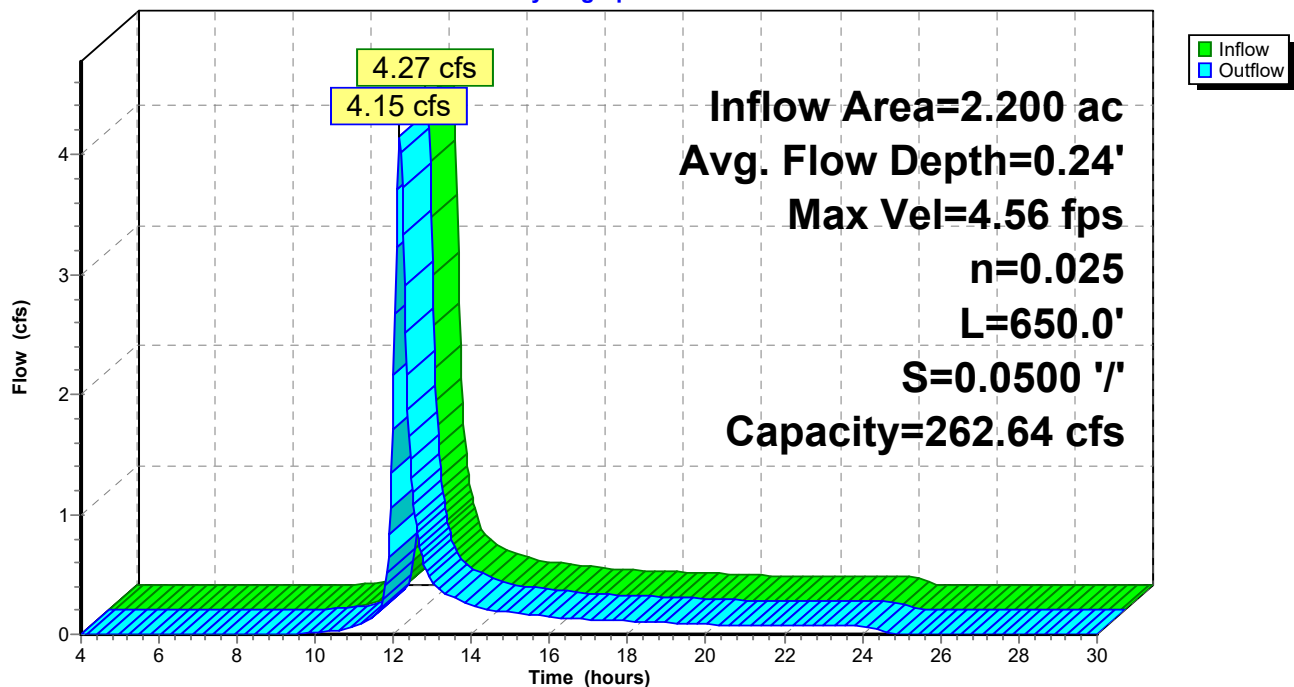
Peak Storage= 594 cf @ 12.12 hrs
Average Depth at Peak Storage= 0.24' , Surface Width= 4.47'
Bank-Full Depth= 2.00' Flow Area= 18.0 sf, Capacity= 262.64 cfs

3.00' x 2.00' deep channel, n= 0.025 Earth, clean & straight
Side Slope Z-value= 3.0 '/' Top Width= 15.00'
Length= 650.0' Slope= 0.0500 '/'
Inlet Invert= 0.00', Outlet Invert= -32.50'



Reach 5R: Drainage Ditch

Hydrograph



Proposed Drainage Areas

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Type II 24-hr 10-yr Rainfall=3.43"

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Summary for Pond 1P: Bioretention 1

Inflow Area = 35.820 ac, 11.14% Impervious, Inflow Depth = 1.65" for 10-yr event
Inflow = 41.52 cfs @ 12.38 hrs, Volume= 4.931 af
Outflow = 43.71 cfs @ 12.40 hrs, Volume= 4.776 af, Atten= 0%, Lag= 0.9 min
Primary = 43.71 cfs @ 12.40 hrs, Volume= 4.776 af
Routed to Pond 3P : Detention Basin

Routing by Stor-Ind method, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Peak Elev= 873.12' @ 12.40 hrs Surf.Area= 16,700 sf Storage= 14,540 cf

Plug-Flow detention time= 31.3 min calculated for 4.770 af (97% of inflow)
Center-of-Mass det. time= 13.2 min (877.8 - 864.7)

Volume	Invert	Avail.Storage	Storage Description
#1	872.00'	14,540 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
872.00	12,800	0	0
872.50	14,330	6,783	6,783
873.00	16,700	7,758	14,540

Device	Routing	Invert	Outlet Devices
#1	Primary	872.50'	15.0' long + 3.0 ' SideZ x 15.0' breadth Broad-Crested Rectangular Weir X 2 Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=43.54 cfs @ 12.40 hrs HW=873.12' (Free Discharge)
↑1=**Broad-Crested Rectangular Weir** (Weir Controls 43.54 cfs @ 2.08 fps)

Proposed Drainage Areas

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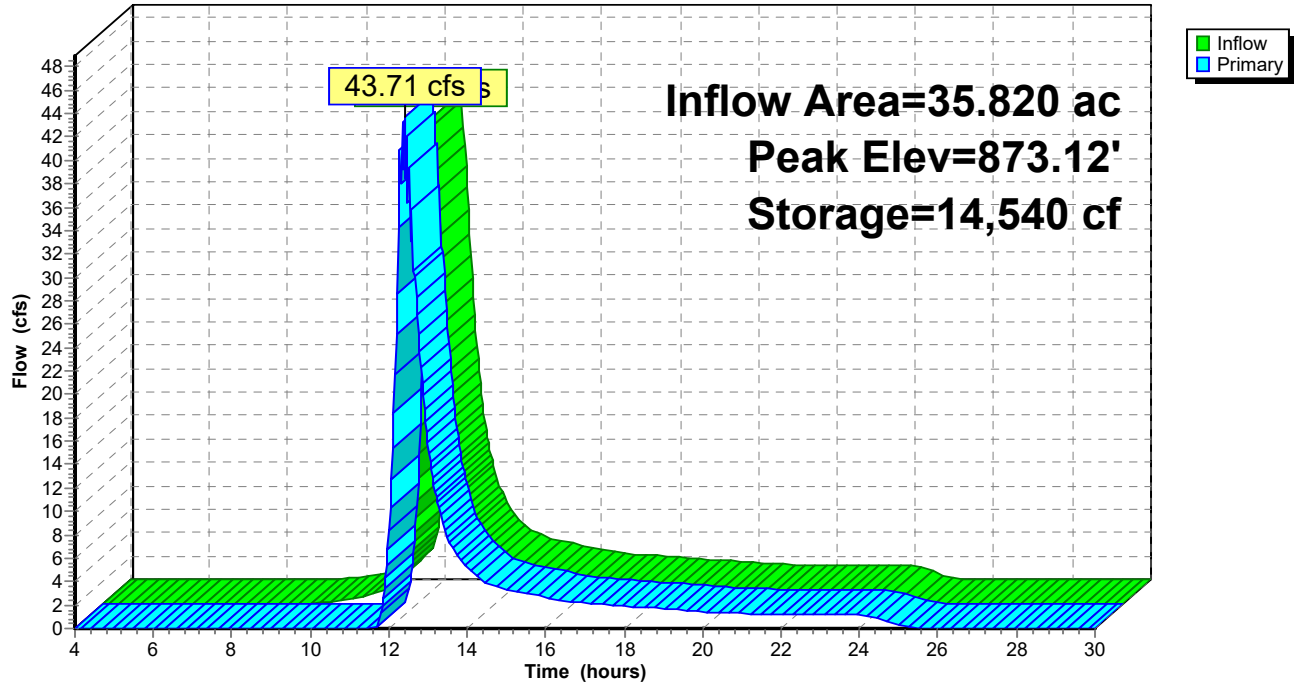
Type II 24-hr 10-yr Rainfall=3.43"

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Pond 1P: Bioretention 1

Hydrograph



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Type II 24-hr 10-yr Rainfall=3.43"

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Summary for Pond 2P: Bioretention 2

Inflow Area = 10.910 ac, 9.62% Impervious, Inflow Depth = 1.65" for 10-yr event
Inflow = 19.34 cfs @ 12.14 hrs, Volume= 1.502 af
Outflow = 18.83 cfs @ 12.18 hrs, Volume= 1.416 af, Atten= 3%, Lag= 2.1 min
Primary = 18.83 cfs @ 12.18 hrs, Volume= 1.416 af
Routed to Pond 3P : Detention Basin

Routing by Stor-Ind method, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Peak Elev= 882.86' @ 12.18 hrs Surf.Area= 9,875 sf Storage= 7,124 cf

Plug-Flow detention time= 48.3 min calculated for 1.416 af (94% of inflow)
Center-of-Mass det. time= 16.5 min (863.4 - 846.9)

Volume	Invert	Avail.Storage	Storage Description
#1	882.00'	8,493 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
882.00	6,200	0	0
882.50	8,735	3,734	3,734
883.00	10,300	4,759	8,493

Device	Routing	Invert	Outlet Devices
#1	Primary	882.50'	15.0' long + 3.0 ' SideZ x 15.0' breadth Broad-Crested Rectangular Weir X 2 Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=18.75 cfs @ 12.18 hrs HW=882.86' (Free Discharge)
↑1=**Broad-Crested Rectangular Weir** (Weir Controls 18.75 cfs @ 1.60 fps)

Proposed Drainage Areas

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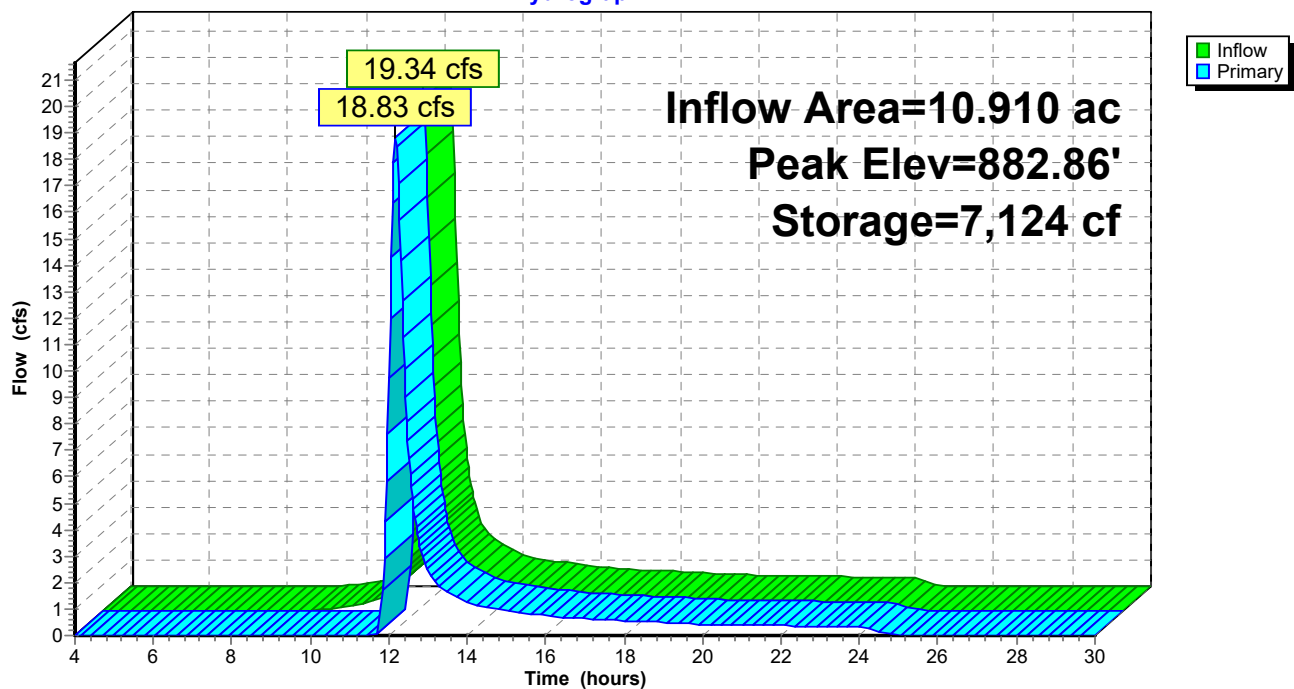
Type II 24-hr 10-yr Rainfall=3.43"

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Pond 2P: Bioretention 2

Hydrograph



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Type II 24-hr 10-yr Rainfall=3.43"

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Summary for Pond 3P: Detention Basin

Inflow Area = 47.810 ac, 10.54% Impervious, Inflow Depth = 1.59" for 10-yr event
Inflow = 57.03 cfs @ 12.28 hrs, Volume= 6.334 af
Outflow = 34.02 cfs @ 12.67 hrs, Volume= 6.056 af, Atten= 40%, Lag= 23.6 min
Primary = 34.02 cfs @ 12.67 hrs, Volume= 6.056 af
Routed to Reach 1R : Pt of Study 1
Secondary = 0.00 cfs @ 4.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Peak Elev= 867.18' @ 12.67 hrs Surf.Area= 21,457 sf Storage= 69,424 cf

Plug-Flow detention time= 95.6 min calculated for 6.056 af (96% of inflow)
Center-of-Mass det. time= 70.6 min (944.3 - 873.7)

Volume	Invert	Avail.Storage	Storage Description
#1	861.80'	235,158 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
861.80	1,260	0	0
862.00	2,891	415	415
863.00	6,366	4,629	5,044
864.00	11,515	8,941	13,984
865.00	16,570	14,043	28,027
866.00	18,777	17,674	45,700
867.00	21,040	19,909	65,609
868.00	23,360	22,200	87,809
869.00	25,736	24,548	112,357
870.00	28,169	26,953	139,309
871.00	30,658	29,414	168,723
872.00	33,204	31,931	200,654
873.00	35,805	34,505	235,158

Device	Routing	Invert	Outlet Devices
#1	Secondary	872.00'	30.0' long x 12.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#2	Primary	861.80'	30.0" Round Culvert L= 98.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 861.80' / 857.00' S= 0.0490 1' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf
#3	Device 2	861.80'	4.0" Vert. Orifice1 C= 0.600 Limited to weir flow at low heads
#4	Device 2	864.60'	30.0" W x 30.0" H Vert. Orifice2 C= 0.600 Limited to weir flow at low heads
#5	Device 2	869.00'	36.0" x 36.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads

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Type II 24-hr 10-yr Rainfall=3.43"

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Primary OutFlow Max=34.02 cfs @ 12.67 hrs HW=867.18' (Free Discharge)

2=Culvert (Passes 34.02 cfs of 37.92 cfs potential flow)

3=Orifice1 (Orifice Controls 0.96 cfs @ 10.99 fps)

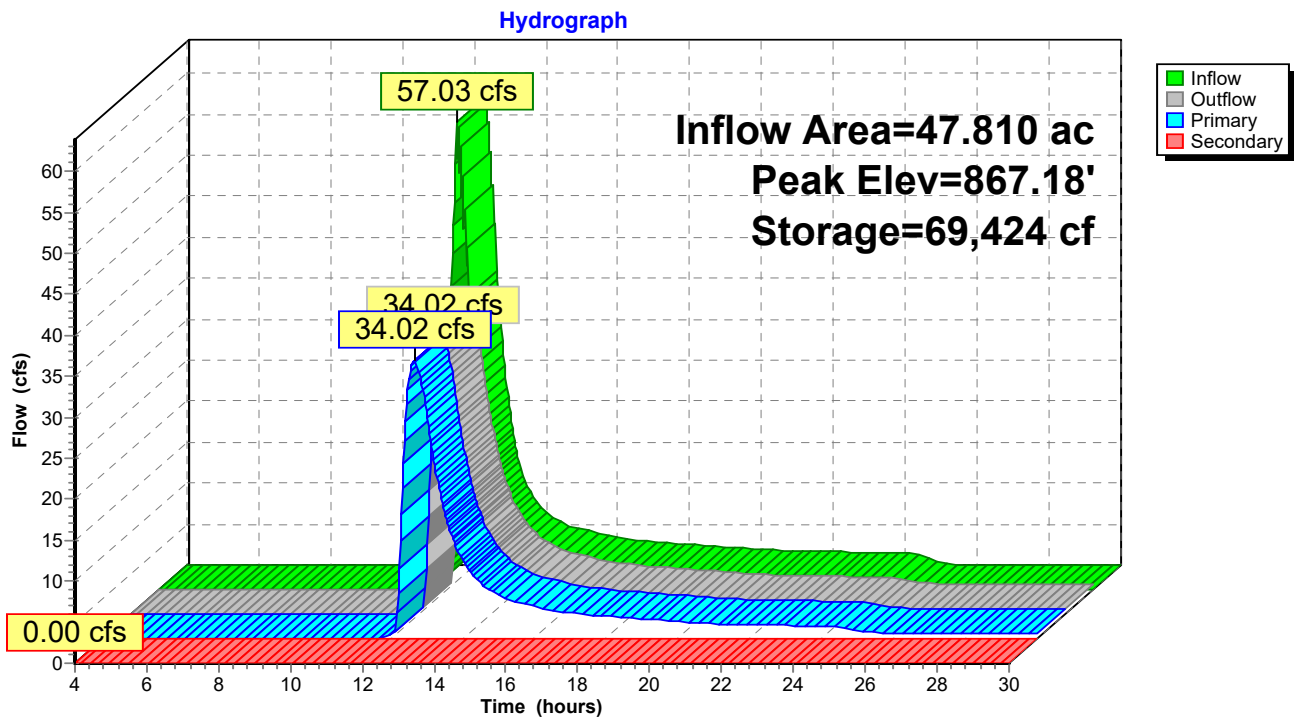
4=Orifice2 (Orifice Controls 33.06 cfs @ 5.29 fps)

5=Grate (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 4.00 hrs HW=861.80' (Free Discharge)

1=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 3P: Detention Basin



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Type II 24-hr 100-yr Rainfall=5.78"

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Summary for Subcatchment 1S: DA-1A

Runoff = 93.70 cfs @ 12.37 hrs, Volume= 10.996 af, Depth= 3.68"
Routed to Pond 1P : Bioretention 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Type II 24-hr 100-yr Rainfall=5.78"

Area (ac)	CN	Description
2.050	98	Paved parking, HSG D
1.940	98	Unconnected roofs, HSG D
22.870	80	>75% Grass cover, Good, HSG D
8.960	77	Woods, Good, HSG D
35.820	81	Weighted Average
31.830		88.86% Pervious Area
3.990		11.14% Impervious Area
1.940		48.62% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.9	100	0.0600	0.06		Sheet Flow, SHEET FLOW Woods: Dense underbrush n= 0.800 P2= 2.39"
4.8	370	0.0650	1.27		Shallow Concentrated Flow, SCF Woodland Kv= 5.0 fps
1.9	200	0.0650	1.78		Shallow Concentrated Flow, SCF Short Grass Pasture Kv= 7.0 fps
0.2	295	0.0300	19.80	79.19	Channel Flow, curb and gutter flow Area= 4.0 sf Perim= 4.0' r= 1.00' n= 0.013 Asphalt, smooth
1.7	1,100	0.0345	11.04	19.51	Pipe Channel, Pipe Flow 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
3.8	955	0.0050	4.20	50.44	Channel Flow, Area= 12.0 sf Perim= 12.0' r= 1.00' n= 0.025 Earth, grassed & winding
40.3	3,020	Total			

Proposed Drainage Areas

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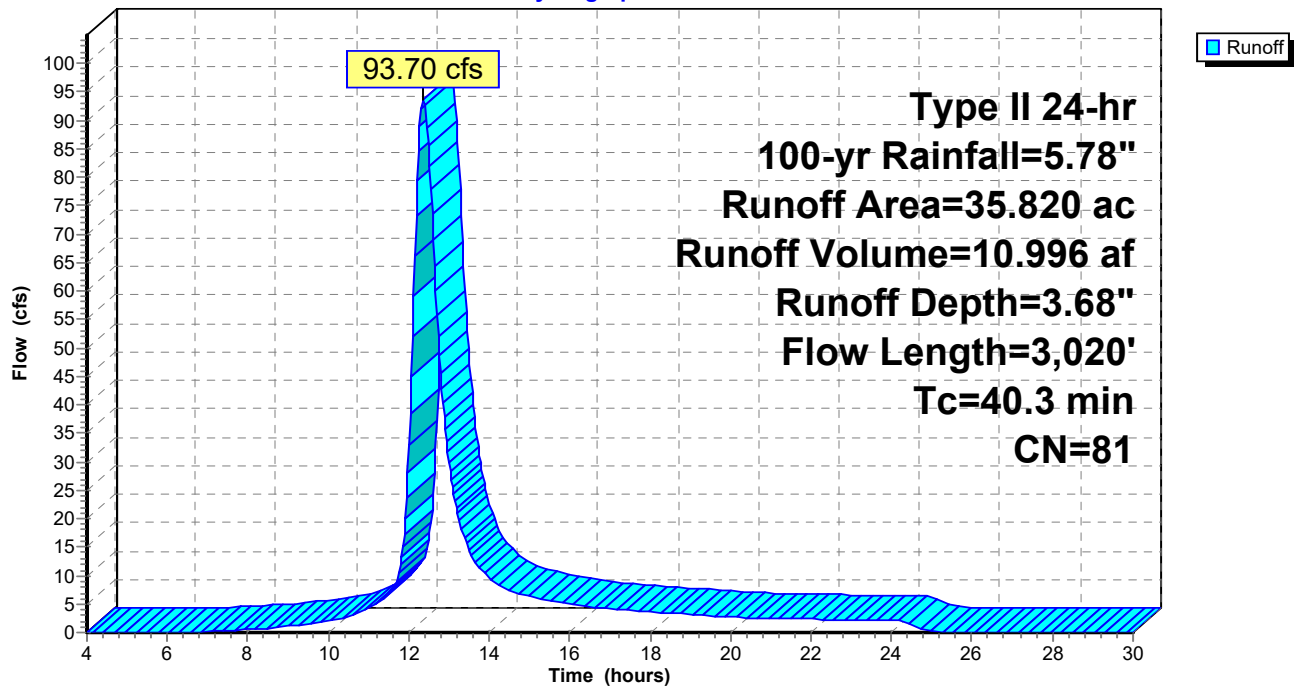
Type II 24-hr 100-yr Rainfall=5.78"

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Subcatchment 1S: DA-1A

Hydrograph



Proposed Drainage Areas

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Type II 24-hr 100-yr Rainfall=5.78"

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Summary for Subcatchment 2S: DA-1B

Runoff = 43.17 cfs @ 12.14 hrs, Volume= 3.349 af, Depth= 3.68"
Routed to Pond 2P : Bioretention 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Type II 24-hr 100-yr Rainfall=5.78"

Area (ac)	CN	Description
0.710	98	Paved parking, HSG D
0.340	98	Unconnected roofs, HSG D
7.820	80	>75% Grass cover, Good, HSG D
2.040	77	Woods, Good, HSG D
10.910	81	Weighted Average
9.860		90.38% Pervious Area
1.050		9.62% Impervious Area
0.340		32.38% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	100	0.0600	0.16		Sheet Flow, SHEET FLOW Grass: Dense n= 0.240 P2= 2.39"
4.6	410	0.0900	1.50		Shallow Concentrated Flow, SCF Woodland Kv= 5.0 fps
5.6	710	0.0920	2.12		Shallow Concentrated Flow, SCF Short Grass Pasture Kv= 7.0 fps
0.3	170	0.0200	9.55	76.42	Channel Flow, swale flow Area= 8.0 sf Perim= 8.0' r= 1.00' n= 0.022 Earth, clean & straight
21.1	1,390	Total			

Proposed Drainage Areas

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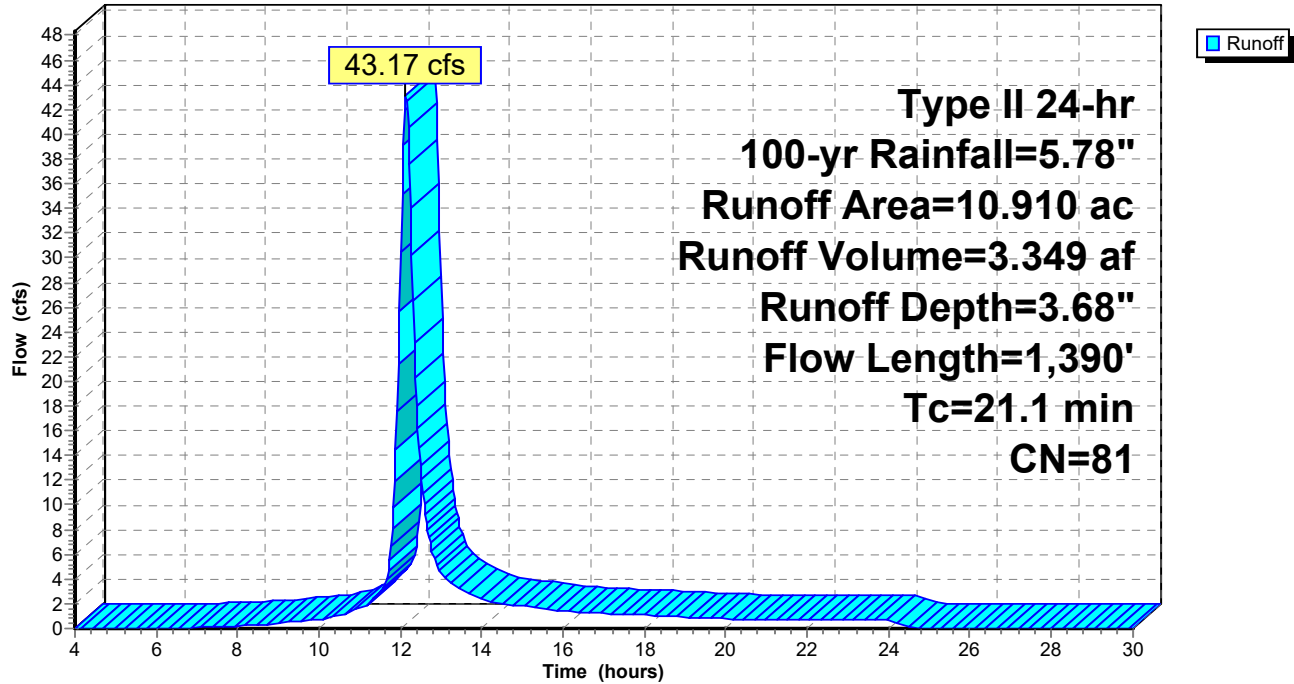
Type II 24-hr 100-yr Rainfall=5.78"

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Subcatchment 2S: DA-1B

Hydrograph



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Type II 24-hr 100-yr Rainfall=5.78"

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Summary for Subcatchment 3S: DA-1C

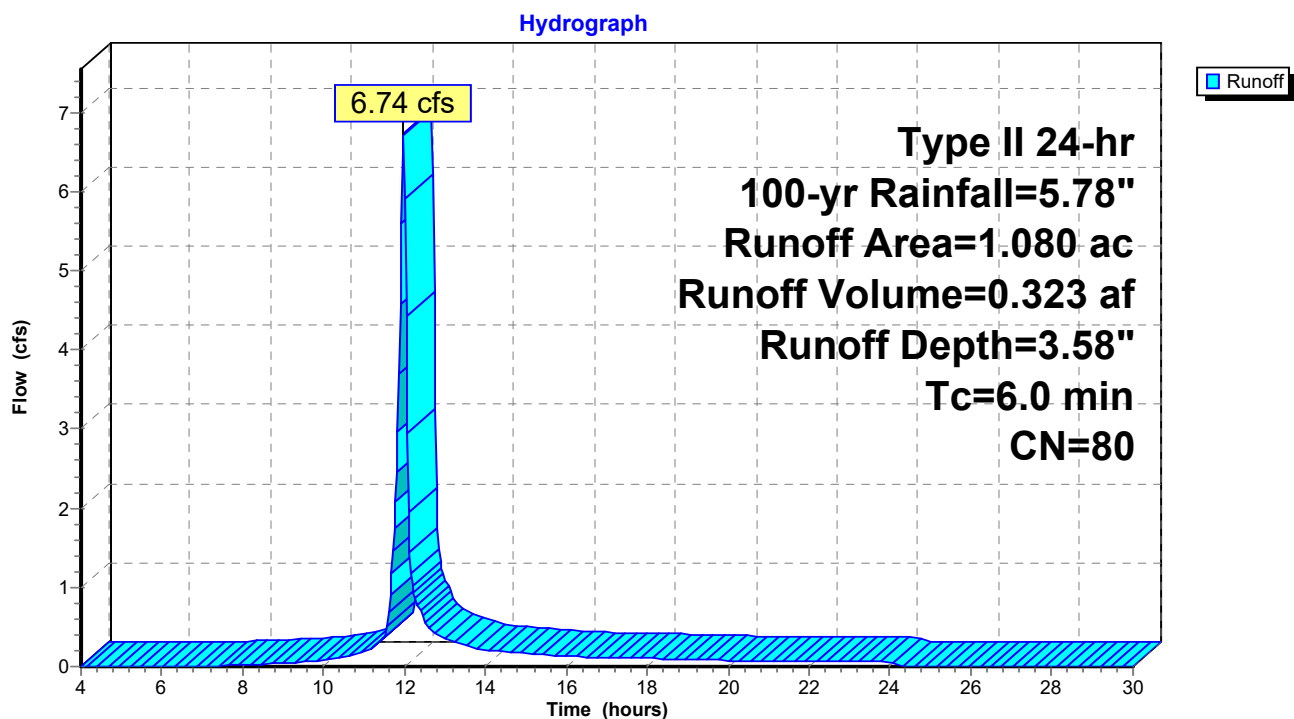
Runoff = 6.74 cfs @ 11.97 hrs, Volume= 0.323 af, Depth= 3.58"
Routed to Pond 3P : Detention Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Type II 24-hr 100-yr Rainfall=5.78"

Area (ac)	CN	Description
0.960	80	>75% Grass cover, Good, HSG D
0.120	77	Woods, Good, HSG D
1.080	80	Weighted Average
1.080		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Min TR 55 Value

Subcatchment 3S: DA-1C



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Type II 24-hr 100-yr Rainfall=5.78"

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Summary for Subcatchment 4S: DA-1D

Runoff = 37.13 cfs @ 12.35 hrs, Volume= 4.232 af, Depth= 3.39"
Routed to Reach 1R : Pt of Study 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Type II 24-hr 100-yr Rainfall=5.78"

Area (ac)	CN	Description
5.930	80	>75% Grass cover, Good, HSG D
8.910	77	Woods, Good, HSG D
0.160	98	Paved parking, HSG D
15.000	78	Weighted Average
14.840		98.93% Pervious Area
0.160		1.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.9	100	0.0600	0.06		Sheet Flow, SHEET FLOW Woods: Dense underbrush n= 0.800 P2= 2.39"
5.4	485	0.0900	1.50		Shallow Concentrated Flow, SCF Woodland Kv= 5.0 fps
4.1	517	0.0900	2.10		Shallow Concentrated Flow, SCF Short Grass Pasture Kv= 7.0 fps
1.2	1,155	0.0750	16.28	260.45	Channel Flow, SWALE Area= 16.0 sf Perim= 16.0' r= 1.00' n= 0.025 Earth, clean & winding
38.6	2,257	Total			

Proposed Drainage Areas

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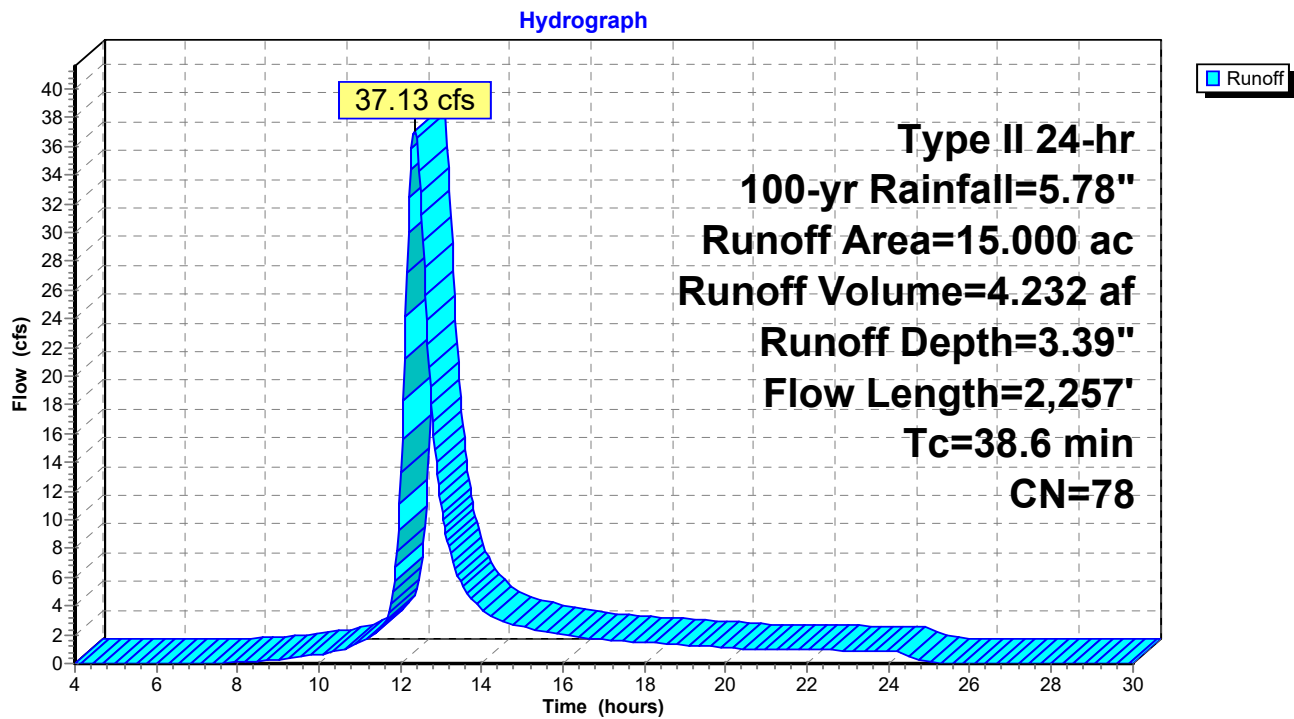
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Subcatchment 4S: DA-1D



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Type II 24-hr 100-yr Rainfall=5.78"

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Summary for Subcatchment 5S: DA#2

Runoff = 4.70 cfs @ 12.00 hrs, Volume= 0.241 af, Depth= 3.48"
Routed to Reach 2R : Pt of Study 2

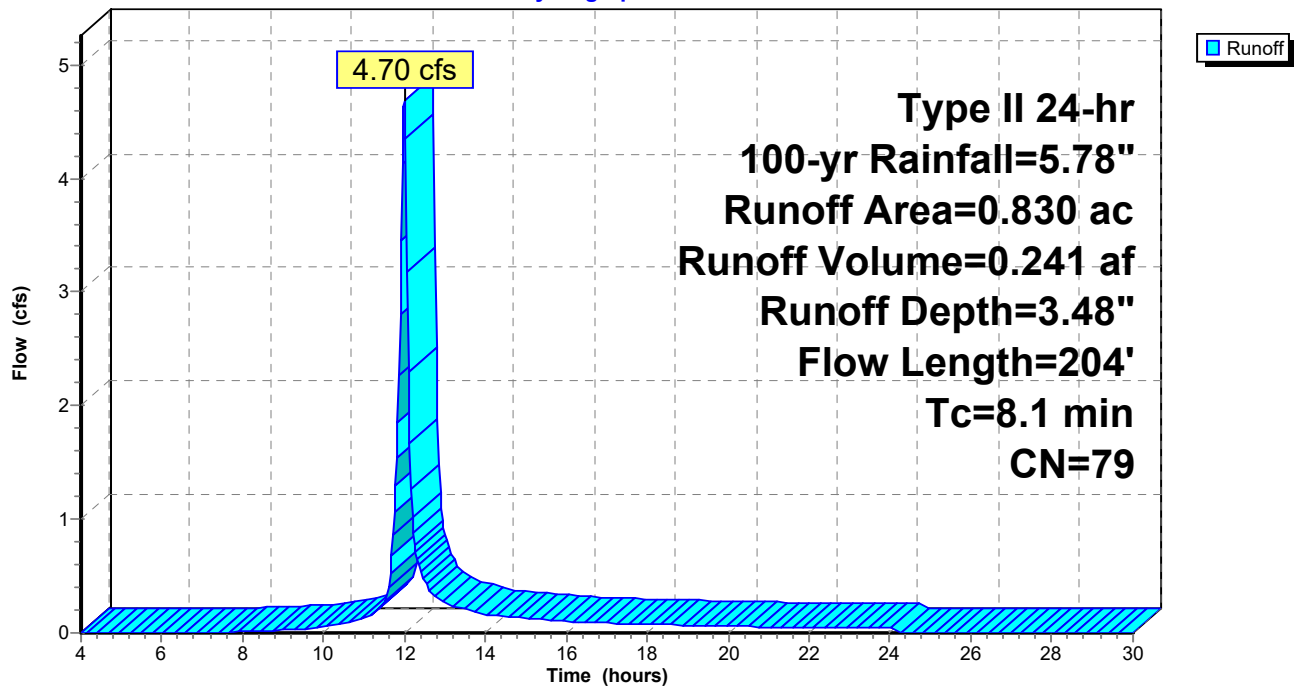
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Type II 24-hr 100-yr Rainfall=5.78"

Area (ac)	CN	Description
0.690	80	>75% Grass cover, Good, HSG D
0.140	77	Woods, Good, HSG D
0.830	79	Weighted Average
0.830		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	100	0.1500	0.23		Sheet Flow, SHEET FLOW Grass: Dense n= 0.240 P2= 2.39"
0.7	104	0.1300	2.52		Shallow Concentrated Flow, SCF Short Grass Pasture Kv= 7.0 fps
8.1	204	Total			

Subcatchment 5S: DA#2

Hydrograph



Proposed Drainage Areas

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Type II 24-hr 100-yr Rainfall=5.78"

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Summary for Subcatchment 6S: DA#3A

Runoff = 9.68 cfs @ 12.08 hrs, Volume= 0.657 af, Depth= 3.58"
Routed to Reach 5R : Drainage Ditch

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Type II 24-hr 100-yr Rainfall=5.78"

Area (ac)	CN	Adj	Description
0.920	80		>75% Grass cover, Good, HSG D
0.180	98		Paved parking, HSG D
0.070	98		Unconnected roofs, HSG D
1.030	77		Woods, Good, HSG D
2.200	81	80	Weighted Average, UI Adjusted
1.950			88.64% Pervious Area
0.250			11.36% Impervious Area
0.070			28.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.9	100	0.0450	0.14		Sheet Flow, SHEET FLOW Grass: Dense n= 0.240 P2= 2.39"
2.5	188	0.0650	1.27		Shallow Concentrated Flow, SCF Woodland Kv= 5.0 fps
1.9	202	0.0650	1.78		Shallow Concentrated Flow, SCF Short Grass Pasture Kv= 7.0 fps
0.2	232	0.0220	16.95	50.86	Channel Flow, curb flow Area= 3.0 sf Perim= 3.0' r= 1.00' n= 0.013 Asphalt, smooth
16.5	722	Total			

Proposed Drainage Areas

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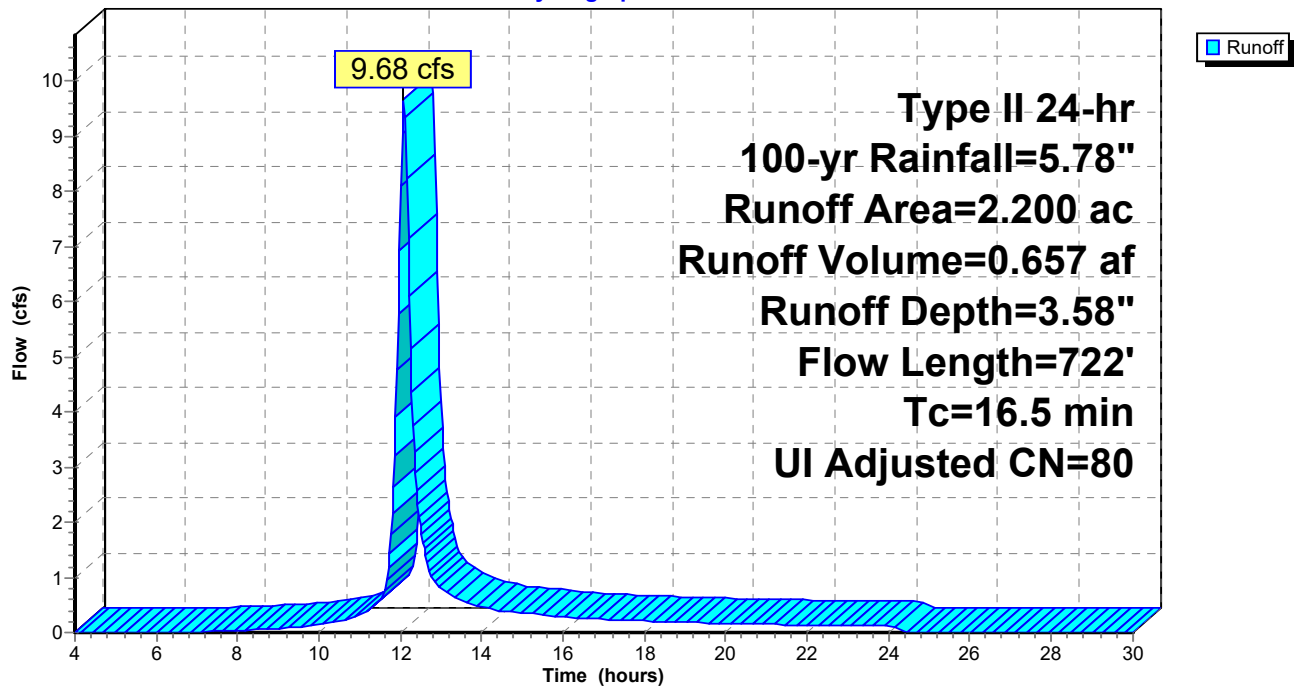
Type II 24-hr 100-yr Rainfall=5.78"

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Subcatchment 6S: DA#3A

Hydrograph



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Type II 24-hr 100-yr Rainfall=5.78"

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Summary for Subcatchment 7S: DA#3B

Runoff = 11.95 cfs @ 12.09 hrs, Volume= 0.820 af, Depth= 3.79"
Routed to Reach 3R : Pt of Study 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Type II 24-hr 100-yr Rainfall=5.78"

Area (ac)	CN	Adj	Description		
2.230	80		>75% Grass cover, Good, HSG D		
0.230	98		Paved parking, HSG D		
0.140	98		Unconnected roofs, HSG D		
2.600	83	82	Weighted Average, UI Adjusted		
2.230			85.77% Pervious Area		
0.370			14.23% Impervious Area		
0.140			37.84% Unconnected		
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	100	0.0500	0.15		Sheet Flow, SHEET FLOW Grass: Dense n= 0.240 P2= 2.39"
5.1	475	0.0500	1.57		Shallow Concentrated Flow, SCF Short Grass Pasture Kv= 7.0 fps
0.2	82	0.0200	6.42	5.04	Pipe Channel, pipe flow 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
16.7	657	Total			

Proposed Drainage Areas

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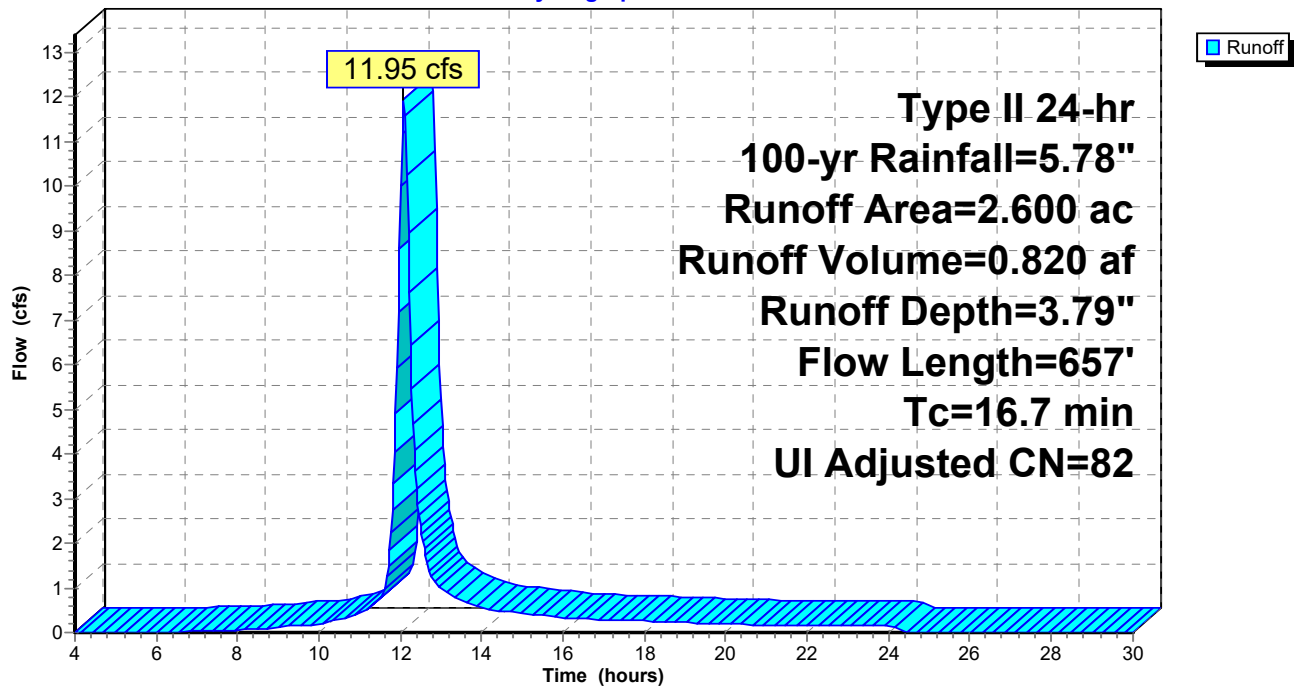
Type II 24-hr 100-yr Rainfall=5.78"

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Subcatchment 7S: DA#3B

Hydrograph



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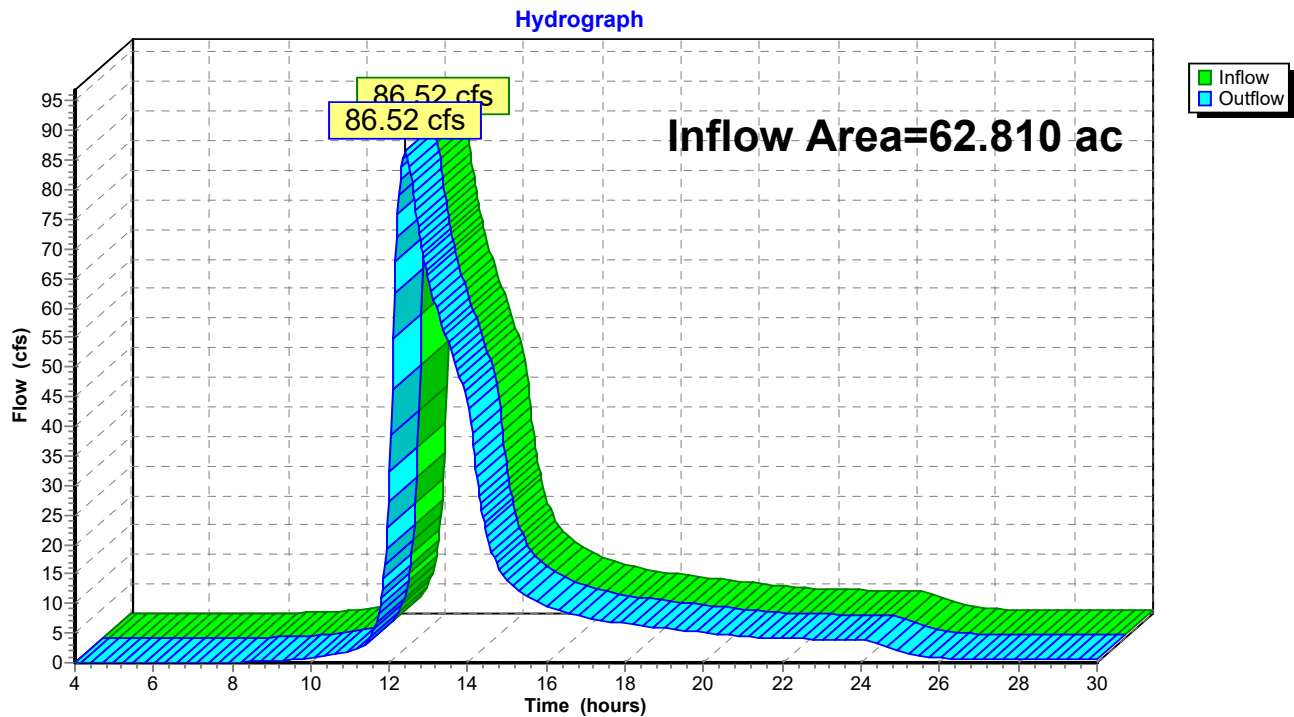
Page 60

Summary for Reach 1R: Pt of Study 1

Inflow Area = 62.810 ac, 8.28% Impervious, Inflow Depth > 3.51" for 100-yr event
Inflow = 86.52 cfs @ 12.40 hrs, Volume= 18.359 af
Outflow = 86.52 cfs @ 12.40 hrs, Volume= 18.359 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs

Reach 1R: Pt of Study 1



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Type II 24-hr 100-yr Rainfall=5.78"

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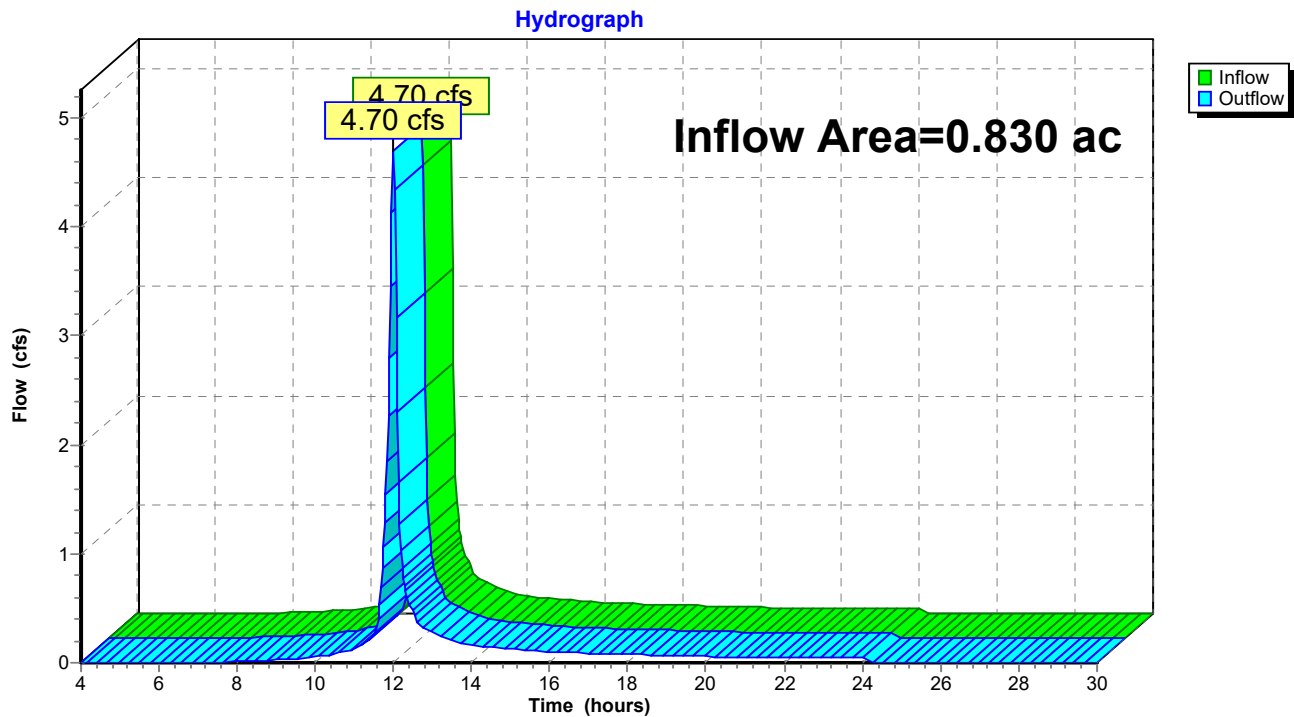
Page 61

Summary for Reach 2R: Pt of Study 2

Inflow Area = 0.830 ac, 0.00% Impervious, Inflow Depth = 3.48" for 100-yr event
Inflow = 4.70 cfs @ 12.00 hrs, Volume= 0.241 af
Outflow = 4.70 cfs @ 12.00 hrs, Volume= 0.241 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs

Reach 2R: Pt of Study 2



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Type II 24-hr 100-yr Rainfall=5.78"

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Summary for Reach 3R: Pt of Study 3

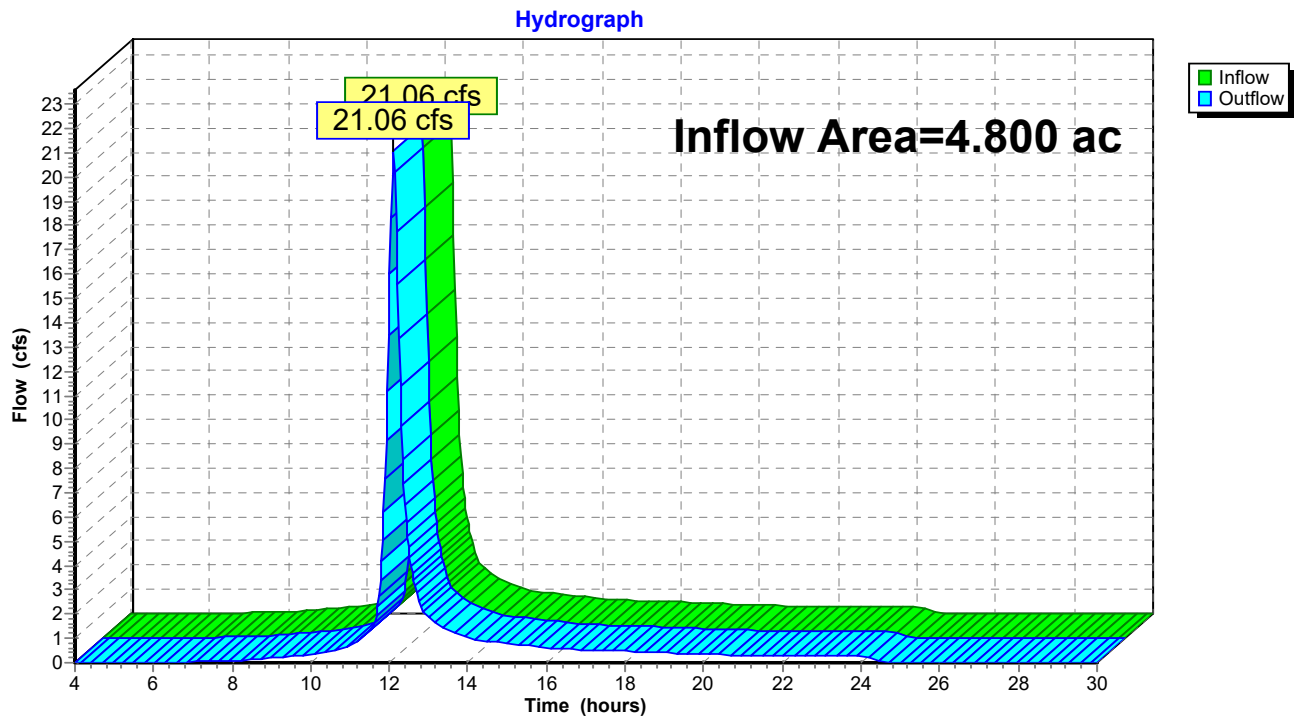
Inflow Area = 4.800 ac, 12.92% Impervious, Inflow Depth = 3.69" for 100-yr event

Inflow = 21.06 cfs @ 12.11 hrs, Volume= 1.477 af

Outflow = 21.06 cfs @ 12.11 hrs, Volume= 1.477 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs

Reach 3R: Pt of Study 3



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Type II 24-hr 100-yr Rainfall=5.78"

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Summary for Reach 5R: Drainage Ditch

Inflow Area = 2.200 ac, 11.36% Impervious, Inflow Depth = 3.58" for 100-yr event
Inflow = 9.68 cfs @ 12.08 hrs, Volume= 0.657 af
Outflow = 9.54 cfs @ 12.14 hrs, Volume= 0.657 af, Atten= 1%, Lag= 3.2 min
Routed to Reach 3R : Pt of Study 3

Routing by Stor-Ind+Trans method, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Max. Velocity= 5.90 fps, Min. Travel Time= 1.8 min
Avg. Velocity= 1.66 fps, Avg. Travel Time= 6.5 min

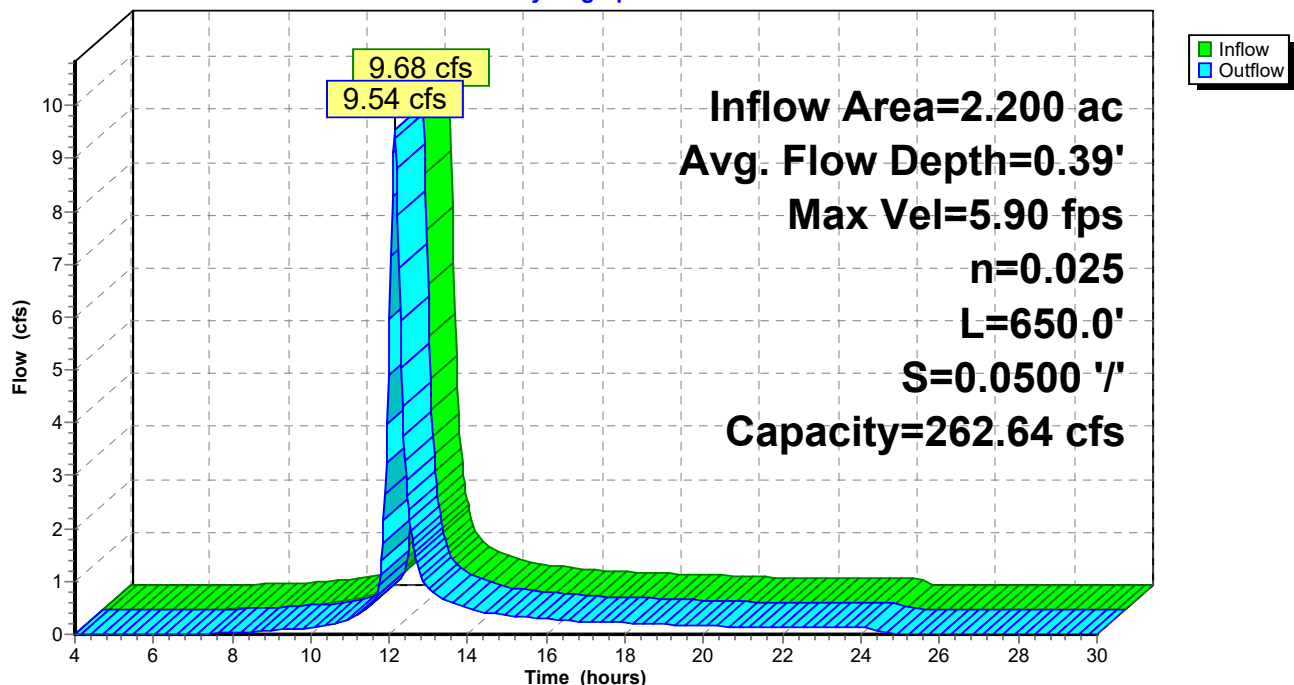
Peak Storage= 1,050 cf @ 12.11 hrs
Average Depth at Peak Storage= 0.39' , Surface Width= 5.33'
Bank-Full Depth= 2.00' Flow Area= 18.0 sf, Capacity= 262.64 cfs

3.00' x 2.00' deep channel, n= 0.025 Earth, clean & straight
Side Slope Z-value= 3.0 '/' Top Width= 15.00'
Length= 650.0' Slope= 0.0500 '/'
Inlet Invert= 0.00', Outlet Invert= -32.50'



Reach 5R: Drainage Ditch

Hydrograph



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Type II 24-hr 100-yr Rainfall=5.78"

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Summary for Pond 1P: Bioretention 1

Inflow Area = 35.820 ac, 11.14% Impervious, Inflow Depth = 3.68" for 100-yr event
Inflow = 93.70 cfs @ 12.37 hrs, Volume= 10.996 af
Outflow = 100.01 cfs @ 12.37 hrs, Volume= 10.840 af, Atten= 0%, Lag= 0.2 min
Primary = 100.01 cfs @ 12.37 hrs, Volume= 10.840 af
Routed to Pond 3P : Detention Basin

Routing by Stor-Ind method, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Peak Elev= 873.55' @ 12.37 hrs Surf.Area= 16,700 sf Storage= 14,540 cf

Plug-Flow detention time= 17.9 min calculated for 10.828 af (98% of inflow)
Center-of-Mass det. time= 9.4 min (851.1 - 841.8)

Volume	Invert	Avail.Storage	Storage Description
#1	872.00'	14,540 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
872.00	12,800	0	0
872.50	14,330	6,783	6,783
873.00	16,700	7,758	14,540

Device	Routing	Invert	Outlet Devices
#1	Primary	872.50'	15.0' long + 3.0 ' SideZ x 15.0' breadth Broad-Crested Rectangular Weir X 2 Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=99.97 cfs @ 12.37 hrs HW=873.55' (Free Discharge)
↑1=**Broad-Crested Rectangular Weir** (Weir Controls 99.97 cfs @ 2.61 fps)

Proposed Drainage Areas

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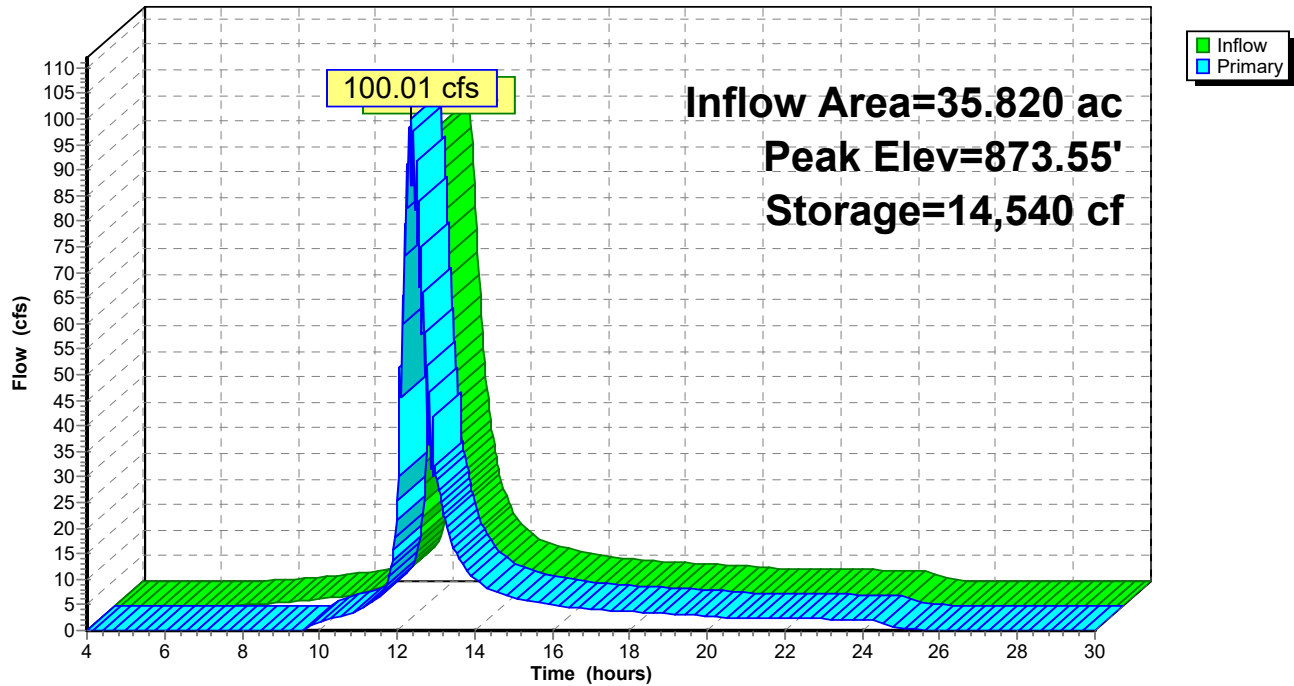
Type II 24-hr 100-yr Rainfall=5.78"

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Pond 1P: Bioretention 1

Hydrograph



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Summary for Pond 2P: Bioretention 2

Inflow Area = 10.910 ac, 9.62% Impervious, Inflow Depth = 3.68" for 100-yr event
Inflow = 43.17 cfs @ 12.14 hrs, Volume= 3.349 af
Outflow = 46.72 cfs @ 12.13 hrs, Volume= 3.263 af, Atten= 0%, Lag= 0.0 min
Primary = 46.72 cfs @ 12.13 hrs, Volume= 3.263 af
Routed to Pond 3P : Detention Basin

Routing by Stor-Ind method, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Peak Elev= 883.15' @ 12.13 hrs Surf.Area= 10,300 sf Storage= 8,493 cf

Plug-Flow detention time= 27.3 min calculated for 3.260 af (97% of inflow)
Center-of-Mass det. time= 12.1 min (836.1 - 824.0)

Volume	Invert	Avail.Storage	Storage Description
#1	882.00'	8,493 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
882.00	6,200	0	0
882.50	8,735	3,734	3,734
883.00	10,300	4,759	8,493

Device	Routing	Invert	Outlet Devices
#1	Primary	882.50'	15.0' long + 3.0 ' SideZ x 15.0' breadth Broad-Crested Rectangular Weir X 2 Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=46.55 cfs @ 12.13 hrs HW=883.15' (Free Discharge)
↑1=**Broad-Crested Rectangular Weir** (Weir Controls 46.55 cfs @ 2.11 fps)

Proposed Drainage Areas

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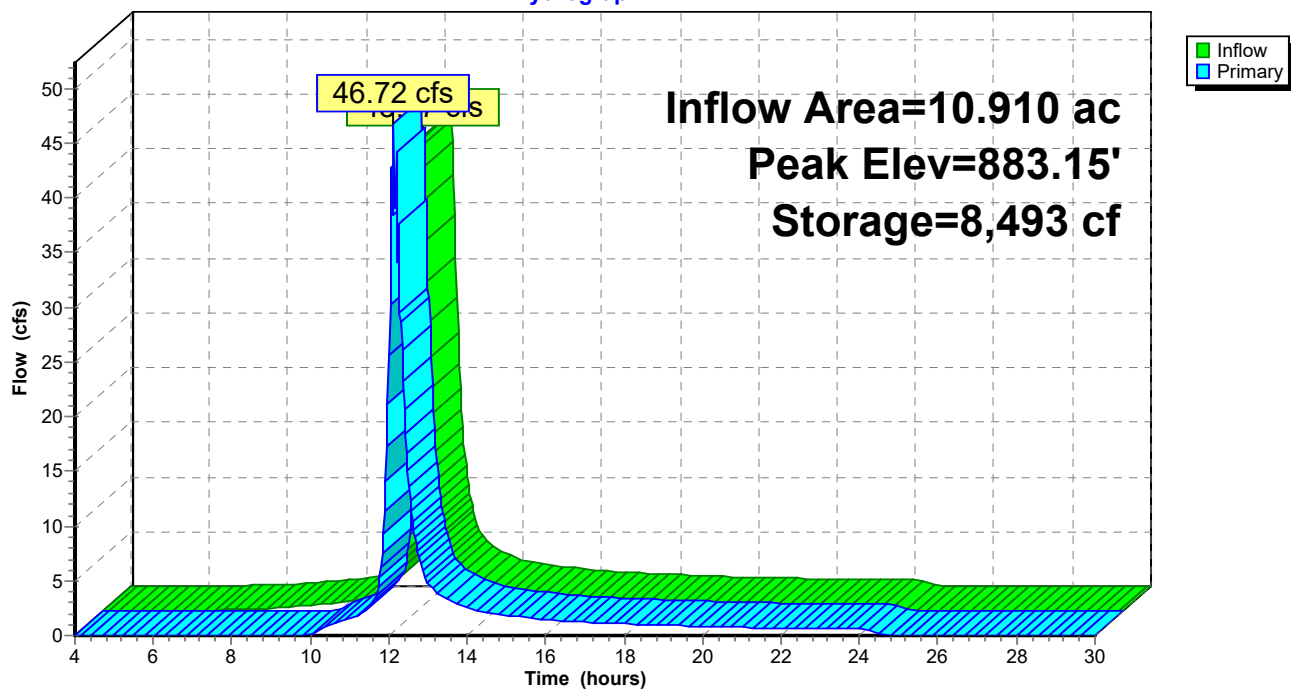
Type II 24-hr 100-yr Rainfall=5.78"

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Pond 2P: Bioretention 2

Hydrograph



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Type II 24-hr 100-yr Rainfall=5.78"

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Summary for Pond 3P: Detention Basin

Inflow Area = 47.810 ac, 10.54% Impervious, Inflow Depth = 3.62" for 100-yr event
Inflow = 129.58 cfs @ 12.25 hrs, Volume= 14.426 af
Outflow = 54.55 cfs @ 12.77 hrs, Volume= 14.128 af, Atten= 58%, Lag= 31.3 min
Primary = 54.55 cfs @ 12.77 hrs, Volume= 14.128 af
Routed to Reach 1R : Pt of Study 1
Secondary = 0.00 cfs @ 4.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Peak Elev= 871.60' @ 12.77 hrs Surf.Area= 32,177 sf Storage= 187,465 cf

Plug-Flow detention time= 67.5 min calculated for 14.111 af (98% of inflow)
Center-of-Mass det. time= 55.2 min (902.1 - 846.9)

Volume	Invert	Avail.Storage	Storage Description
#1	861.80'	235,158 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
861.80	1,260	0	0
862.00	2,891	415	415
863.00	6,366	4,629	5,044
864.00	11,515	8,941	13,984
865.00	16,570	14,043	28,027
866.00	18,777	17,674	45,700
867.00	21,040	19,909	65,609
868.00	23,360	22,200	87,809
869.00	25,736	24,548	112,357
870.00	28,169	26,953	139,309
871.00	30,658	29,414	168,723
872.00	33,204	31,931	200,654
873.00	35,805	34,505	235,158

Device	Routing	Invert	Outlet Devices
#1	Secondary	872.00'	30.0' long x 12.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#2	Primary	861.80'	30.0" Round Culvert L= 98.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 861.80' / 857.00' S= 0.0490 1' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf
#3	Device 2	861.80'	4.0" Vert. Orifice1 C= 0.600 Limited to weir flow at low heads
#4	Device 2	864.60'	30.0" W x 30.0" H Vert. Orifice2 C= 0.600 Limited to weir flow at low heads
#5	Device 2	869.00'	36.0" x 36.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads

Proposed Drainage Areas

Prepared by Napierala Consulting, P.C.

HydroCAD® 10.10-6a s/n 01332 © 2020 HydroCAD Software Solutions LLC

Type II 24-hr 100-yr Rainfall=5.78"

Printed 12/1/2021

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Primary OutFlow Max=54.55 cfs @ 12.77 hrs HW=871.59' (Free Discharge)

↳ **2=Culvert** (Inlet Controls 54.55 cfs @ 11.11 fps)

↳ **3=Orifice1** (Passes < 1.30 cfs potential flow)

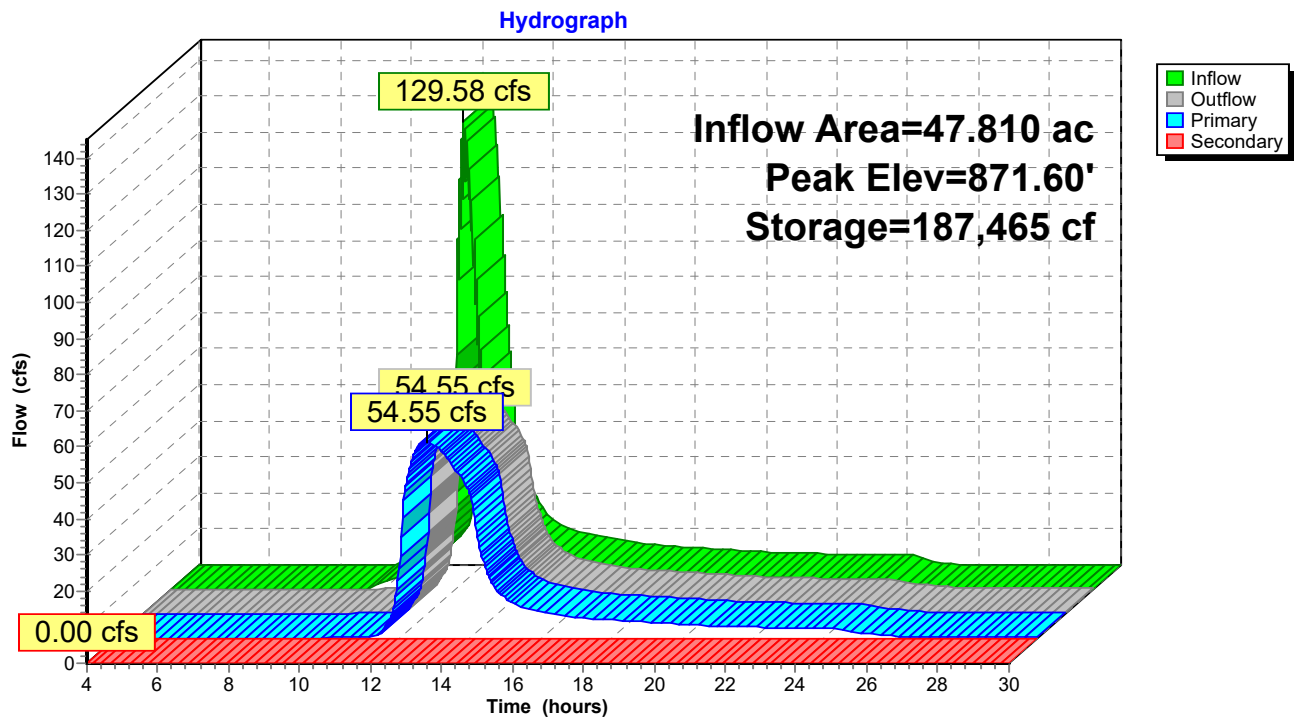
↳ **4=Orifice2** (Passes < 71.99 cfs potential flow)

↳ **5=Grate** (Passes < 69.81 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 4.00 hrs HW=861.80' (Free Discharge)

↳ **1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 3P: Detention Basin





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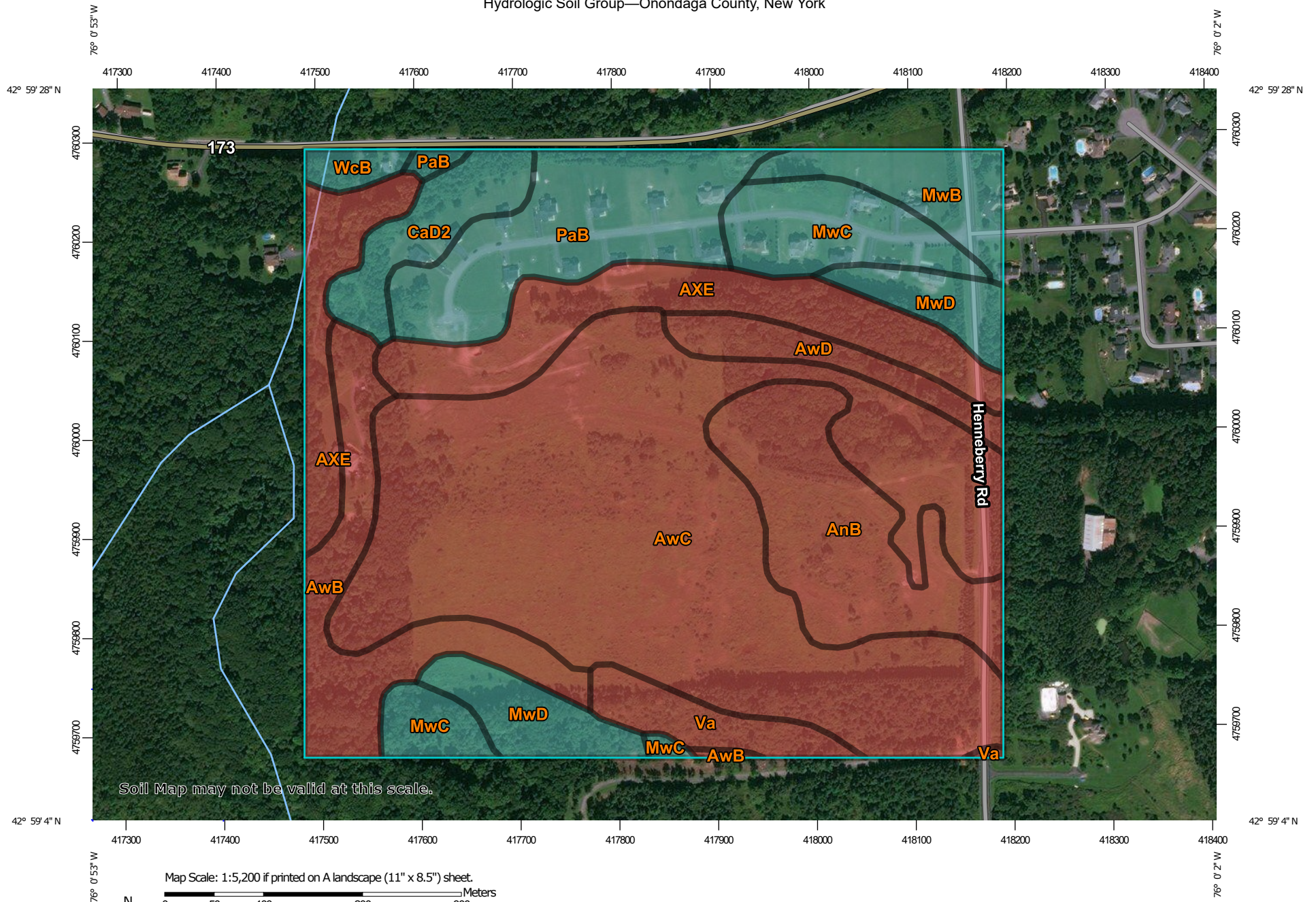


APPENDIX C: SOIL DESCRIPTIONS



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Hydrologic Soil Group—Onondaga County, New York



Soil Map may not be valid at this scale.

Map Scale: 1:5,200 if printed on A landscape (11" x 8.5") sheet.

0 50 100 200 300 Meters

0 250 500 1000 1500 Feet

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84



**Natural Resources
Conservation Service**

Web Soil Survey
National Cooperative Soil Survey

8/3/2020
Page 1 of 4

MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

Soil Rating Polygons

 A
 A/D
 B
 B/D
 C
 C/D
 D
 Not rated or not available

Soil Rating Lines

 A
 A/D
 B
 B/D
 C
 C/D
 D
 Not rated or not available

Soil Rating Points

 A
 A/D
 B
 B/D

 C
 C/D
 D
 Not rated or not available

Water Features

 Streams and Canals

Transportation

 Rails
 Interstate Highways
 US Routes
 Major Roads
 Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL:
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Onondaga County, New York
 Survey Area Data: Version 15, Jun 11, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 18, 2011—Oct 10, 2016

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
AnB	Angola-Darien silt loams, 0 to 6 percent slopes	D	10.0	9.3%
AwB	Aurora silt loam, 0 to 6 percent slopes	D	7.7	7.1%
AwC	Aurora silt loam, 6 to 12 percent slopes	D	41.7	38.7%
AwD	Aurora silt loam, 12 to 18 percent slopes	D	2.9	2.7%
AXE	Aurora-Farmington-Rock outcrop association, steep	D	12.5	11.6%
CaD2	Camillus silt loam, 12 to 18 percent slopes eroded	C	3.7	3.4%
MwB	Mohawk silt loam, 2 to 8 percent slopes	C	3.7	3.4%
MwC	Mohawk silt loam, 8 to 15 percent slopes	C	6.6	6.1%
MwD	Mohawk silt loam, 15 to 25 percent slopes	C	5.3	4.9%
PaB	Palatine shaly silt loam, 2 to 6 percent slopes	C	9.9	9.2%
Va	Varick silt loam	D	2.9	2.6%
WcB	Wassaic silt loam, 0 to 8 percent slopes	C	0.9	0.9%
Totals for Area of Interest			107.8	100.0%

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher



APPENDIX D: BIORETENTION BASIN CONSTRUCTION AND MAINTENANCE



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Bioretention Stormwater Management Practices Level 1 Inspection Checklist

SMP ID #		SMP Owner		☐ Private ☐ Public
SMP Location (Address; Latitude & Longitude)				
	Latitude		Longitude	
Party Responsible for Maintenance	System Type			Type of Site
☐ Same as SMP Owner ☐ Other 	☐ Seasonal ☐ Continuous Use ☐ Other	☐ Above Ground ☐ Below Ground	☐ Commercial ☐ Industrial ☐ Residential ☐ State	
Inspection Date			Inspection Time	
Inspector				
Date of Last Inspection				

BR Drainage Area

Look for areas that are uphill from the Bioretention cell.

Problem (Check if Present)	Follow-Up Actions
 ☐ Bare soil, erosion of the ground (rills washing out the dirt)	☐ Seed and mulch areas of bare soil to establish vegetation. ☐ Fill in erosion areas with soil, compact, and seed and straw to establish vegetation. ☐ If a rill or small channel is forming, try to redirect water flowing to this area by creating a small berm or adding topsoil to areas that are heavily compacted. ☐ Other:

BR Drainage Area

Look for areas that are uphill from the Bioretention cell.

Problem (Check if Present)

Follow-Up Actions



- ☐ Kick-Out to Level 2 Inspection: Large areas of soil have been eroded, or larger channels are forming. May require rerouting of flow paths.



- ☐ Piles of grass clippings, mulch, dirt, salt, or other materials

- ☐ Remove or cover piles of grass clippings, mulch, dirt, etc.
- ☐ Other:



- ☐ Open containers of oil, grease, paint, or other substances

- ☐ Cover or properly dispose of materials; consult your local solid waste authority for guidance on materials that may be toxic or hazardous.
- ☐ Other:

BR Inlets

Stand in the Bioretention cell itself and look for all the places where water flows in. Often there will be multiple points of inflow to the practice.

Problem (Check if Present)	Follow-Up Actions
 ☐ Inlets collect grit and debris or grass/weeds. Some water may not be getting into the Bioretention cell. The objective is to have a clear pathway for water to flow into the cell.	☐ Use a flat shovel to remove grit and debris (especially at curb inlets or openings). Parking lots generate fine grit that will accumulate at these spots. ☐ Pull out clumps of growing grass or weeds and scoop out the soil or grit that the plants are growing in. ☐ Remove any grass clippings, leaves, sticks, and other debris that is collecting at inlets. ☐ For pipes and ditches, remove sediment and debris that is partially blocking the pipe or ditch opening where it enters the Bioretention cell. ☐ Dispose of all material properly where it will not re-enter the Bioretention cell. ☐ Other:
	☐ Kick-Out to Level 2 Inspection: Inlets are blocked to the extent that most of the water does not seem to be entering the Bioretention cell.
 ☐ Some or all of the inlets are eroding so that rills, gullies, and other erosion is present, or there is bare dirt that is washing into the Bioretention cell.	☐ For small areas of erosion, smooth out the eroded part and apply rock or stone (e.g., river cobble) to prevent further erosion. Usually, filter fabric is placed under the rock or stone. ☐ In some cases, reseeding and applying erosion-control matting can be used to prevent further erosion. Some of these materials may be available at a garden center, but it may be best to consult a landscape contractor. ☐ Other:
	☐ Kick-Out to Level 2 Inspection: Erosion is occurring at most of the inlets, and it looks like there is too much water that is concentrating at these points. The inlet design may have to be modified.

BR Ponding Area

Examine the entire Bioretention surface and side slopes

Problem (Check if Present)



- ☐ Mulch (if used) needs to be replaced or replenished. The mulch layer had decomposed or is less than 1-inch thick.

Follow-Up Actions

- ☐ Add new mulch to a total depth (including any existing mulch that is left) of 2 to 3 inches. The mulch should be shredded hardwood mulch that is less likely to float away during rainstorms.
- ☐ Avoid adding too much mulch so that inlets are obstructed or certain areas become higher than the rest of the Bioretention surface.
- ☐ Other:



- ☐ Minor areas of sediment, grit, trash, or other debris are accumulating on the bottom.

- ☐ Use a shovel to scoop out minor areas of sediment or grit, especially in the spring after winter sanding materials may wash in and accumulate. Dispose of the material where it cannot re-enter the Bioretention cell .
- ☐ If removing the material creates a hole or low area, fill with soil mix that matches original mix and cover with mulch so that the Bioretention surface area is as flat as possible.
- ☐ Remove trash, vegetative debris, and other undesirable materials.
- ☐ Other:

- ☐ Kick-Out to Level 2 Inspection: Sediment has accumulated more than 2-inches deep and covers 25% or more of the Bioretention surface.
- ☐ Kick-Out to Level 2 Inspection: The Bioretention cell is too densely vegetated to assess sediment accumulation or ponding; see BR-4, Vegetation.

BR Ponding Area

Examine the entire Bioretention surface and side slopes

Problem (Check if Present)	Follow-Up Actions
 ☐ There is erosion in the bottom or on the side slopes. Water seems to be carving out rills as it flows across the Bioretention surface or on the slopes, or sinkholes are forming in certain areas. ☐ Source: Stormwater Maintenance, LLC.	☐ Try filling the eroded areas with clean topsoil or sand, and cover with mulch. ☐ If the problem recurs, you may have to use stone (e.g., river cobble) to fill in problem areas. ☐ If the erosion is on a side slope, fill with clay that can be compacted and seed and mulch the area. ☐ Other: ☐ Kick-Out to Level 2 Inspection: The problem persists or the erosion is more than 3-inches deep and seems to be an issue with how water enters and moves through the Bioretention cell. ☐ Kick-Out to Level 2 Inspection: The problem does not seem to be caused by flowing water, but a collapse or sinking of the surface (e.g., "sinkhole") due to some underground problem.
 ☐ The bottom of the Bioretention cell is not flat, and the water pools at one end, along an edge, or in certain pockets. The whole bottom is not uniformly covered with water. See design plan to verify that bioretention surface is intended to be flat. Check during or immediately after a rainstorm.	☐ If the problem is minor (just small, isolated areas are not covered with water), try raking the surface OR adding mulch to low spots to create a more level surface. You may need to remove and replace plantings in order to properly even off the surface. ☐ Check the surface with a string and bubble level to get the surface as flat as possible. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Ponding water is isolated to less than half of the Bioretention surface area, and there seem to be elevation differences of more than a couple of inches across the surface.

BR Ponding Area

Examine the entire Bioretention surface and side slopes

Problem (Check if Present)	Follow-Up Actions
 ☐ Water stands on the surface more than 72 hours after a rainstorm and /or wetland-type vegetation is present. The Bioretention cell does not appear to be draining properly.	☐ Kick-Out to Level 2 Inspection: This is generally a serious problem, and it will be necessary to activate a Level 2 Inspection.

BR Vegetation

Examine all Bioretention cell vegetation.

Problem (Check if Present)	Follow-Up Actions
 ☐ Vegetation requires regular maintenance—pulling weeds, removing dead and diseased plants, replacing mulch around plants, adding plants to fill in areas that are not well vegetated, etc.	☐ If you can identify which plants are weeds or not intended to be part of the planting plan, eliminate these, preferably by hand pulling. ☐ If weeds are widespread, check with the local stormwater authority and/or Extension Office about proper use of herbicides for areas connected with the flow of water. ☐ Even vegetation that is intended to be present can become large, overgrown, and/or crowd out surrounding plants. Prune and thin accordingly. ☐ If weeds or invasive plants have overtaken the whole Bioretention cell, bush-hog the entire area before seedheads form in the spring. It will be necessary to remove the root mat manually or with appropriate herbicides, as noted above. ☐ Re-plant with species that are aesthetically pleasing and seem to be doing well in the Bioretention cell. ☐ Other: ☐ Kick-Out to Level 2 Inspection: You are unsure of the original planting design, or the vegetation maintenance task is beyond your capabilities of time, expertise, or resources. If you are unsure of the health of the vegetation (e.g. salt damage, invasives, which plants are undesirable) or the appropriate season to conduct vegetation management, consult a landscape professional before undertaking any cutting, pruning, mowing, or brush hogging.

BR Vegetation

Examine all Bioretention cell vegetation.

Problem (Check if Present)	Follow-Up Actions
 ☐ Vegetation is too thin, is not healthy, and there are many spots that are not well vegetated.	☐ The original plants are likely not suited for the actual conditions within the Bioretention cell . If you are knowledgeable about plants, select and plant more appropriate vegetation (preferably native plants) so that almost the entire surface area will be covered by the end of the second growing season. ☐ Other: ☐ Kick-Out to Level 2 Inspection: For all but small practices (e.g., rain gardens), this task will likely require a landscape design professional or horticulturalist.

BR Outlets

Examine outlets that release water out of the Bioretention cell.

Problem (Check if Present)	Follow-Up Actions
☐ Erosion at outlet	☐ Add stone to reduce the impact from the water flowing out of the outlet pipe or weir during storms. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Rills have formed and erosion problem becomes more severe.
 ☐ Outlet obstructed with mulch, sediment, debris, trash, etc.	☐ Remove the debris and dispose of it where it cannot re-enter the Bioretention cell . ☐ Other: ☐ Kick-Out to Level 2 Inspection: Outlet is completely clogged or obstructed; there is too much material to remove by hand or with simple hand tools.

Additional Notes:

Inspector: _____

Date: _____

Complete the following if follow-up/corrective actions were identified during this inspection:

Certified Completion of Follow-Up Actions:

"I hereby certify that the follow-up/corrective actions identified in the inspection performed on _____ (DATE) have been completed and any required maintenance deficiencies have been adequately corrected."

Inspector/Operator: _____

Date: _____

Bioretention Stormwater Management Practices Level 2 Inspection Checklist

SMP ID #		SMP Owner		☐ Private ☐ Public
SMP Location (Address; Latitude & Longitude)				
	Latitude		Longitude	
Party Responsible for Maintenance	System Type		Type of Site	
☐ Same as SMP Owner ☐ Other _____	☐ Seasonal ☐ Continuous Use ☐ Other	☐ Above Ground ☐ Below Ground	☐ Commercial ☐ Industrial ☐ Residential ☐ State	
Inspection Date		Inspection Time		
Inspector				
Date of Last Inspection				

Level 2 Inspection: BIORETENTION
NOTE: Key Source for this Information (CSN, 2013)

Recommended Repairs	Triggers for Level 3 Inspection
Observed Condition: Water Stands on Surface for More than 72 Hours after Storm	
☐ Condition 1: Small pockets of standing water Use a soil probe or auger to examine the soil profile. If isolated areas have accumulated grit, fines, or vegetative debris or have bad soil media, try scraping off top 3 inches of media and replacing with clean material. Also check to see that surface is level and water is not ponding selectively in certain areas. ☐ Condition 2: Standing water is widespread or covers entire surface Requires diagnosis and resolution of problem: • Clogged underdrain? • Filter fabric between soil media and underdrain stone? • Need to install underdrain if not present? • Too much sediment/grit washing in from drainage area? • Too much ponding depth? • Improper soil media?	• Soil media is clogged and problem is not evident from Level 2 inspection. • Level 2 inspection identifies problem, but it cannot be resolved easily or is associated with the original design of the practice. ☐ Level 3 inspection necessary
Observed Condition: Vegetation is sparse or out of control	
☐ Condition 1: Original design planting plan seems good but has not been maintained, so there are many invasives and/or dead plants Will require some horticultural experience to restore vegetation to intended condition by weeding, pruning, removing plants, and adding new plants. ☐ Condition 2: Original design planting plan is unknown or cannot be actualized A landscape architect or horticulturalist will be needed to redo the planting plan. Will likely require analysis of soil pH, moisture, organic content, sun/shade, and other conditions to make sure plants match conditions. Plan should include invasive plant management and maintenance plan to include mulching, watering, disease intervention, periodic thinning/pruning, etc.	• Vegetation deviates significantly from original planting plan; Bioretention has been neglected and suffered from deferred maintenance. • Owner/responsible party does not know how to maintain the practice. ☐ Level 3 inspection necessary
Observed Condition: Bioretention does not conform to original design plan in surface area or storage	
☐ Condition 1: Level 2 Inspection reveals that practice is too small based on design dimension, does not have adequate storage (e.g., ponding depth) based on the plan, and/or does not treat the drainage area runoff as indicated on the plan Small areas of deviation can be corrected by the property owner or responsible party, but it is likely that a Qualified Professional will have to revisit the design and attempt a redesign that meets original objectives or that can be resubmitted to the municipality for approval.	• More than a 25% departure from the approved plan in surface area, storage, or drainage area; sometimes less than this threshold at the discretion of the Level 2 inspector. ☐ Level 3 inspection necessary

Level 2 Inspection: BIORETENTION
NOTE: Key Source for this Information (CSN, 2013)

Recommended Repairs	Triggers for Level 3 Inspection
Observed Condition: Severe erosion of filter bed, inlets, or around outlets ☐ Condition 1: Erosion at inlets The lining (e.g., grass, matting, stone, rock) may not be adequate for the actual flow velocities coming through the inlets. First line of defense is to try a more non-erosive lining and/or to extend the lining further down to where inlet slopes meet the Bioretention surface. If problem persists, analysis by a Qualified Professional is warranted. ☐ Condition 2: Erosion of Bioretention filter bed This is often caused by “preferential flow paths” through and along the Bioretention surface. The source of flow should be analyzed and methods employed to dissipate energy and disperse the flow (e.g., check dams, rock splash pads). ☐ Condition 3: Erosion on side slopes Again, the issue is likely linked with unanticipated flow paths down the side slopes (probably overland flow that concentrates as it hits the edge of the slope). For small or isolated areas, try filling, compacting, and re-establishing healthy ground cover vegetation. If the problem is more widespread, further analysis is required to determine how to redirect the flow.	
Observed Condition: Significant sediment accumulation, indicating an uncontrolled source of sediment ☐ Condition 1: Isolated areas of sediment accumulation, generally less than 3-inches deep Sediment source may be from a one-time or isolated event. Remove accumulated sediment and top 2 to 3 inches of Bioretention soil media; replace with clean material. Check drainage area for any ongoing sources of sediment. ☐ Condition 2: Majority of the surface is caked with “hard pan” (thin layer of clogging material) or accumulated sediment that is 3-inches deep or more This can be caused by an improper construction sequence (drainage area not fully stabilized prior to installation of Bioretention soil media) or another chronic source of sediment in the drainage area. Augering several holes down through the media can indicate how severe the problem is; often the damage is confined to the first several inches of soil media. Removing and replacing this top layer (or to the depth where sediment incursion is seen in auger holes) can be adequate, as long as the problem does not recur.	

- Erosion (rills, gullies) is more than 12 inches deep at inlets or the filter bed or more than 3 inches deep on side slopes.
 - If the issue is not caused by moving water but some sort of subsurface defect. This may manifest as a sinkhole or linear depression and be associated with problems with the underdrain stone or pipe or underlying soil.
- ☐ Level 3 inspection necessary

- More than 2 inches of accumulated sediment cover 25% or more of the Bioretention surface area.
 - “Hard pan” of thin, crusty layer covers majority of Bioretention surface area and seems to be impeding flow of water down through the soil media.
 - New sources of sediment seem to be accumulating with each significant rainfall event.
- ☐ Level 3 inspection necessary

Notes:

Inspector: _____

Date: _____

Complete the following if follow-up/corrective actions were identified during this inspection:

Certified Completion of Follow-Up Actions:

"I hereby certify that the follow-up/corrective actions identified in the inspection performed on _____ (DATE) have been completed and any required maintenance deficiencies have been adequately corrected."

Inspector/Operator: _____

Date: _____

Pond and Wetland Stormwater Management Practices Level 1 Inspection Checklist

SMP ID #		SMP Owner		☐ Private ☐ Public
SMP Location (Address; Latitude & Longitude)				
	Latitude		Longitude	
Party Responsible for Maintenance	System Type		Type of Site	
☐ Same as SMP Owner ☐ Other _____	☐ Seasonal ☐ Continuous Use ☐ Other	☐ Above Ground ☐ Below Ground	☐ Commercial ☐ Industrial ☐ Residential ☐ State	
Inspection Date			Inspection Time	
Inspector				
Date of Last Inspection				

PW Drainage Area

Look for areas that are uphill from the pond.

Problem (Check if Present)	Follow-Up Actions
☐ Bare soil, erosion of the ground (rills washing out the dirt)	☐ Seed and straw areas of bare soil to establish vegetation. ☐ Fill in eroded areas with soil, compact, seed and mulch with straw to establish vegetation. ☐ Other:

☐ Bare soil, erosion of the ground (rills washing out the dirt)	☐ Kick-Out to Level 2 Inspection: If a rill or small channel is forming, try to redirect water flowing to this area by creating a small berm or adding topsoil to areas that are heavily compacted. ☐ If large areas of soil have been eroded or larger channels are forming, this may require rerouting of flow paths or use of an erosion-control seed mat or blanket to reestablish acceptable ground cover or anchor sod where it is practical.
 ☐ Piles of grass clippings, mulch, dirt, salt, or other materials	☐ Remove or cover piles of grass clippings, mulch, dirt, etc. ☐ Remove excessive vegetation or woody debris that can block drainage systems. ☐ Other:
 ☐ Open containers of oil, grease, paint, or other substances exposed to rain in the drainage area	☐ Cover or properly dispose of materials; consult your local solid waste authority for guidance on materials that may be toxic or hazardous. ☐ Other:

Pond Inlets

Look for all areas where water flows into the pond during storms. Note that there may be multiple points of inflow and types of structures (e.g., pipes, open ditches, etc.).

Problem (Check if Present)	Follow-Up Actions
 ☐ Inlets are buried, covered or filled with silt, debris, or trash, or blocked by excessive vegetation.	☐ If the problem can be remedied with hand tools and done in a safe manner, remove vegetation, trash, woody debris, etc. from blocking inlet structures. ☐ Other: ☐ Kick-Out to Level 2 or 3 Inspection: If the amount of material is too large to handle OR there are ANY safety concerns about working in standing water, soft sediment, etc., the work will likely have to be performed by a qualified contractor.

Pond Inlets

Look for all areas where water flows into the pond during storms. Note that there may be multiple points of inflow and types of structures (e.g., pipes, open ditches, etc.).

Problem (Check if Present)	Follow-Up Actions
 ☐ Inlets are buried, covered or filled with silt, debris, or trash, or blocked by excessive vegetation.	☐ Kick-Out to Level 2 or 3 Inspection: If the amount of material is too large to handle OR there are ANY safety concerns about working in standing water, soft sediment, etc., the work will likely have to be performed by a qualified contractor.
 ☐ Inlets are broken, and, with pieces of pipe or concrete falling into the pond, there is erosion around the inlet, there is open space under the pipe, or there is erosion where the inlet meets the pond	☐ Kick-Out to Level 2 Inspection: These types of structural or erosion problems are more serious and will require a qualified contractor to repair.

PW Pond Area and Embankments

Examine both interior and exterior pond banks as well as the pond body. Observe from the inlet pipes to the outfall structure and emergency overflow.

Problem (Check if Present)	Follow-Up Actions
 ☐ The pretreatment area(s) or forebay(s) are filled with sediment, trash, vegetation, or other debris.	☐ If the problem can be remedied with hand tools and done in a safe manner, use a flat shovel or other equipment to remove small amounts of sediment. ☐ Remove trash and excessive vegetation from forebays if this can be done in a safe manner. ☐ Other:

PW Pond Area and Embankments

Examine both interior and exterior pond banks as well as the pond body. Observe from the inlet pipes to the outfall structure and emergency overflow.

Problem (Check if Present)	Follow-Up Actions	
	☐ The pretreatment area(s) or forebay(s) are filled with sediment, trash, vegetation, or other debris.	☐ Kick-Out to Level 2 Inspection: Large amounts of sediment or debris will have to be removed by a qualified contractor. ANY condition that poses a safety concern for working in standing water or soft sediments should be referred to a Level 2 Inspection or qualified contractor.
	☐ The pond area itself has accumulated sediment, trash, debris, or excessive vegetation that is choking the flow of the water, OR the pond area is covered with algae or aquatic plants.	☐ Level 1 includes handling only small amounts of material that can be removed by hand, or with rakes or other hand tools. Do not attempt any repair that poses a safety issue. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Most cases will call for a Level 2 Inspection and/or a qualified contractor. ☐ You are not sure what type and amount of vegetation is supposed to be in the pond. ☐ The algae or aquatic plants should be identified so that proper control techniques can be applied.
	☐ The side slopes of the pond are unstable, eroding, and have areas of bare dirt.	☐ If there are only minor areas, try filling in small rills or gullies with topsoil, compacting, and seeding and mulching all bare dirt areas with an appropriate seed. Alternatively, try using herbaceous plugs to get vegetation established in tricky areas, such as steep slopes. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Erosion and many bare dirt areas on steep side slopes will require a Level 2 Inspection and repair by a qualified contractor.

PW Pond Area and Embankments

Examine both interior and exterior pond banks as well as the pond body. Observe from the inlet pipes to the outfall structure and emergency overflow.

Problem (Check if Present)		Follow-Up Actions
	☐ The riser structure is clogged with trash, debris, sediment, vegetation, etc., OR is open, unlocked, or has a steep drop and poses a safety concern. The pond level may have dropped below its "normal" level.	☐ If you can safely access the riser on foot or with a small boat, clear minor amounts of debris and remove it from the pond area for safe disposal. ☐ Other: ☐ Kick-Out to Level 2 Inspection: The riser cannot be accessed safely, the amount of debris is substantial, or the riser seems to be completely clogged and the water level has risen too high. ☐ There are safety issues with the riser and concern about access to pipes, drops, or any other life safety concern. ☐ The riser is leaning, broken, settling or slumping, corroded, eroded or any other structural problem.
	☐ The dam/embankment is slumping, sinking, settling, eroding, or has medium or large trees growing on it.	☐ If there are small isolated areas, try to fix them by adding clean material (clay and topsoil) and seeding and mulching. ☐ Periodically mow embankments to enable inspection of the banks and to minimize establishment of woody vegetation. ☐ Remove any woody vegetation that has already established on embankments. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Most of these situations will require a Level 2 Inspection or evaluation and repair by a qualified contractor. Seepage through the dam or problems with the pipe through the dam can be a serious issue that should be addressed to avoid possible dam failure.

PW Pond Area and Embankments

Examine both interior and exterior pond banks as well as the pond body. Observe from the inlet pipes to the outfall structure and emergency overflow.

Problem (Check if Present)		Follow-Up Actions
	☐ The emergency spillway or outfall (if it exists) has ☐ Erosion, settlement, or loss of material. Rock-lined spillways have excessive debris or vegetation.	☐ Clear light debris and vegetation. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Displacement of rock lining, excessive vegetation and erosion/settlement may warrant review and decision by Level 2 Inspector to check against original plan. ☐ Any uncertainty about the integrity of the emergency spillway should be referred to a Level 2 Inspector. ☐ Erosion or settlement such that design has been compromised should be reviewed by an engineer.

PW Pond Outlet

Examine the outlet of the pipe on the downstream side of the dam/embankment where it empties into a stream, channel, or drainage system.

Problem (Check if Present)	Follow-Up Actions
 ☐ The pond outlet is clogged with sediment, trash, debris, vegetation, or is eroding, caving in, slumping, or falling apart.	☐ If there is a minor blockage, remove the debris or vegetation to allow free flow of water. ☐ Remove any accumulated trash at the outlet. ☐ Outlet: ☐ Kick-Out to Level 2 Inspection: ☐ If the area at the outlet cannot be easily accessed or if the blockage is substantial, a Level 2 Inspection is warranted. ☐ Erosion at and downstream of the outfall should be evaluated by a qualified professional. ☐ Any structural problems, such as broken pipes, structures falling into the stream, or holes or tunnels around the outfall pipe, should be evaluated by a Level 2 Inspector and will require repair by a qualified contractor. ☐ The pool of water at the outlet pipe is discolored, has an odor, or has excessive algae or vegetative growth.

Additional Notes:

Inspector: _____

Date: _____

Complete the following if follow-up/corrective actions were identified during this inspection:

Certified Completion of Follow-Up Actions:

"I hereby certify that the follow-up/corrective actions identified in the inspection performed on _____ (DATE) have been completed and any required maintenance deficiencies have been adequately corrected."

Inspector/Operator: _____

Date: _____

Pond and Wetland Stormwater Management Practices Level 2 Inspection Checklist

SMP ID #		SMP Owner		☐ Private ☐ Public
SMP Location (Address; Latitude & Longitude)				
	Latitude		Longitude	
Party Responsible for Maintenance	System Type		Type of Site	
☐ Same as SMP Owner ☐ Other _____	☐ Seasonal ☐ Continuous Use ☐ Other	☐ Above Ground ☐ Below Ground	☐ Commercial ☐ Industrial ☐ Residential ☐ State	
Inspection Date		Inspection Time		
Inspector				
Date of Last Inspection				

Level 2 Inspection: PONDS and WETLANDS

Recommended Repairs and Required Skills

Triggers for Level 3 Inspection

Observed Condition: Bare Soil or Erosion in the Drainage Area

- ☐ Condition 1: Extensive problem spots, but no channels or rills forming

Reseed problem areas. If problem persists or grass does not take, consider hiring a landscape contractor.

- ☐ Condition 2: Problem is extensive, and rills/channels are beginning to form

May be necessary to divert or redirect water that is causing the erosion problem. If it appears that simple regrading—such as installing a berm or leveling a low spot—will fix the problem, make repairs and ensure that the problem is repaired after the next storm.

- Large rills or gullies are forming in the drainage area.
- An attempt to regrade the drainage area has been unsuccessful.
- Fixing the problem would require major regrading (i.e., redirecting more than a 100-square-foot area).
- It is not clear why the problem is occurring.

- ☐ Level 3 inspection necessary

Observed Condition: Manholes or Inlet Pipe Buried or Covered with Vegetation

- ☐ Condition 1: Nearest manhole and inlet pipe not found

Consult as-built drawings to get to closest suspected location and use metal detector to search for metal manhole cover. If unsuccessful, identify nearest drain inlets and approximate pipe direction to locate next manhole.

- ☐ Condition 2: Manhole located and inspected

Never enter a manhole, except by following confined-space entry protocols.

If outlet pipe is not visible or greater than 25% full of sediment/debris or trash, it will typically require a qualified contractor to flush, clean and clear blockages.

- ☐ Condition 3: Inlet pipe not found at pond

Clear vegetation and brush that may be covering the inlet pipe. Buried inlet pipes may be found through use of a metal probe.

- ☐ Condition 4: Inlet pipe buried in sediment or blocked by vegetation

Once located, the pipe path can be cleared of vegetation with brush hook or other brush tools. Light digging may clear sediment from the end of the pipe.

- To locate buried manholes and lost storm lines, it is sometimes necessary to hire a pipeline inspection contractor with televising equipment or ground-penetrating radar and enter at the closest upstream access point.
- Locating a buried inlet pipe may require wading in the edge of the pond and using a metal probe and brush axe to find and expose the pipe.
- If other than light digging is necessary to remove accumulated sediment, a contractor with heavy equipment may be required.

- ☐ Level 3 inspection necessary

Level 2 Inspection: PONDS and WETLANDS

Recommended Repairs and Required Skills	Triggers for Level 3 Inspection
Observed Condition: Pipe or Headwall Settlement, Erosion, Corrosion or Failure	
☐ Condition 1: Pipe or headwall settlement or failure Severe sinkholes, settlement or corrosion should be kicked out to Level 3 Inspection. ☐ Condition 2: Flow not confined to pipe and visible outside pipe wall With flashlight, observe the inside of the pipe and note its condition. Take photographs. Look for sinkholes developing that indicate pipe failure beneath the surface. Kick out to Level 3 inspection.	- Where blockages are visible, a decision is needed on whether to clear them or leave in place. If a third of the pipe is full of sediment, it should be removed by a contractor with pipe-cleaning equipment. - Corrosion of inlet pipes that allows flow around the pipe exterior is a structural concern because it can lead to settlement, sinkholes and undermining pond embankment. Evidence of this type of failure may require specialized pipe-inspection equipment and investigation by an engineer. ☐ Level 3 inspection necessary
Observed Condition: Pond Conditions	
☐ Condition 1: Pond pre-treatment zone is full of sediment or not constructed as shown on as-built drawings. ☐ Condition 2: Excessive buildup of sediment or overgrowth If the pre-treatment area or pond pool is overgrown or filled with sediment so that the original design is compromised, corrective measures are required. If plants have died, then replanting is necessary. If none of the original design exists due to alteration or sediment, kick out to Level 3 inspection.	- It may require inspection by an engineer to determine next steps for clearing, replanting or reconstruction. - Erosion or settlement such that design has been compromised should be reviewed by an engineer. Recurring erosion may require redesign and/or regrading to direct flow away from eroding area. - If sediment has filled more than 50% of the pond's capacity, dredging is likely needed and should be evaluated by a qualified contractor. - Removal or control of excessive algae or aquatic plants can be assessed by a qualified pond maintenance company. ☐ Level 3 inspection necessary

Notes:

Inspector: _____

Date: _____

Complete the following if follow-up/corrective actions were identified during this inspection:

Certified Completion of Follow-Up Actions:

"I hereby certify that the follow-up/corrective actions identified in the inspection performed on _____ (DATE) have been completed and any required maintenance deficiencies have been adequately corrected."

Inspector/Operator: _____

Date: _____

Swale Stormwater Management Practices Level 1 Inspection Checklist

SMP ID #		SMP Owner		☐ Private ☐ Public
SMP Location (Address; Latitude & Longitude)				
	Latitude		Longitude	
Party Responsible for Maintenance	System Type		Type of Site	
☐ Same as SMP Owner ☐ Other _____	☐ Seasonal ☐ Continuous Use ☐ Other	☐ Above Ground ☐ Below Ground	☐ Commercial ☐ Industrial ☐ Residential ☐ State	
Inspection Date		Inspection Time		
Inspector				
Date of Last Inspection				

SW Drainage Area

Look at areas that are uphill from the swale.

Problem (Check if Present)	Follow-Up Actions
 ☐ Bare soil, erosion of the ground (rills washing out the dirt)	☐ Seed and mulch or sod areas of bare soil to establish vegetation. ☐ Fill in erosion areas with soil, compact, and add seed and straw to establish vegetation. ☐ If a rill or small channel is forming, try to redirect water flowing to this area by creating a small berm or adding topsoil to areas that are heavily compacted. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Large areas of soil have been eroded, or larger channels are forming. May require rerouting of flow paths
 ☐ Piles of grass clippings, mulch, dirt, salt, or other materials	☐ Remove or cover piles of grass clippings, mulch, dirt, etc. ☐ Other:
 ☐ Open containers of oil, grease, paint, or other substances	☐ Cover or properly dispose of materials; consult your local solid waste authority for guidance on materials that may be toxic or hazardous.
☐ Grass dying at edge of road	☐ Seed and mulch; add topsoil or compost if needed. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Grass on edge of pavement continues to die off for unknown reasons. Swale edge may need to be replaced with other materials (e.g., stone diaphragm).

SW Inlets

Stand in the swale and look for all the places where water flows in.

Problem (Check if Present)	Follow-Up Actions
☐ Inlets or the swale edge are collecting grit, grass clippings, or debris or have grass/weeds growing. Some water may not be getting into the swale. The objective is to have a clear pathway for water to flow into the swale.	☐ Use a flat shovel to remove grit and debris (especially at curb inlets or opening). Parking lots will generate fine grit that will accumulate at these spots. ☐ Pull out clumps of growing grass or weeds, and scoop out the soil or grit that the plants are growing in. ☐ Remove any grass clippings, leaves, sticks, and other debris that is collecting at inlets or along the edge of the swale where water is supposed to enter. ☐ For pipes and ditches, remove sediment and debris that is partially blocking the pipe or ditch opening where it enters the swale. ☐ Dispose of all material properly in an area where it will not re-enter the swale. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Inlets are blocked to the extent that most of the water does not seem to be entering the swale.
 ☐ Some or all of the inlets are eroding so that rills, gullies, and other erosion are present, or there is bare dirt that is washing into the swale.	☐ For small areas of erosion, smooth out the eroded part and apply rock or stone (e.g., river cobble) to prevent further erosion. Usually, filter fabric is placed under the rock or stone. ☐ In some cases, reseeding and applying an erosion control matting can be used to prevent further erosion. Some of these materials may be available at a garden center, but it may be best to consult a landscape contractor. ☐ Other: ☐ Level 2 Inspection: Erosion is occurring at most of the inlets or along much of the swale edge. The inlet design may have to be modified.

SW Surface Area

Examine the entire swale surface and side slopes.

Problem (Check if Present)	Follow-Up Actions
☐ Minor areas of sediment, grit, trash, or other debris are accumulating in the swale.	☐ Use a shovel to scoop out minor areas of sediment or grit, especially in the spring after winter sanding materials may wash in and accumulate. Dispose of the material where it cannot re-enter the swale. ☐ If removing the material creates a hole or low area, fill with good topsoil and add seed and straw to re-vegetate. ☐ Remove trash, vegetative debris, and other undesirable materials. ☐ If the swale is densely vegetated, it may be difficult to do the maintenance; check for excessive ponding or other issues described in this section to see if the accumulated material is causing a problem. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Sediment has accumulated more than 3 inches deep and covers 25% or more of the swale surface. ☐ The source of sediment is unknown or cannot be controlled with simple measures.
 ☐ There is erosion in the bottom or on the side slopes. Water seems to be carving out rills as it flows through the swale or on the slopes.	☐ Try filling the eroded areas with clean topsoil, and then seed and mulch to establish vegetation. ☐ If the problem recurs, you may have to use some type of matting, stone (e.g., river cobble), or other material to fill in eroded areas. ☐ If the erosion is on a side slope, fill with soil and cover with erosion-control matting or at least straw mulch after re-seeding. ☐ Kick-Out to Level 2 Inspection: The problem persists or the erosion is more than 3 inches deep and seems to be an issue with how water enters and moves through the swale. ☐ Kick-Out to Level 2 Inspection: The problem does not seem to be caused by flowing water, but a collapse or sinking of the surface (e.g., "sinkhole") due to some underground problem.
☐ Water does not flow evenly down the length of the swale, but ponds in certain areas for long periods of time (e.g., 72 hours after a storm). The swale does not seem to have "positive drainage." Check during or immediately after a rain storm.	☐ If the problem is minor (just small, isolated areas), try using a metal rake or other tools to create a more even flow path; remove excessive vegetative growth, sediment, or other debris that may be blocking the flow. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Water ponds in more than 25% of the swale for three days or more after a storm. The issue may be with the underlying soil or the grade of the swale. ☐ Water ponds behind check dams for three days or more after a storm. Check dams may be clogged or not functioning properly.

SW Surface Area

Examine the entire swale surface and side slopes.

Problem (Check if Present)	Follow-Up Actions
 ☐ Check dams (if present): water is flowing around the edges of check dams, creating erosion or sinkholes on the uphill or downhill side, or the check dams are breaking apart or breaching .	☐ If the problem is isolated to just a few check dams, try simple repairs. ☐ It is very important for the center of each check dam (where most of the water flows) to be lower (by at least several inches) than the edges of the check dams where they meet the side slopes. Also, the check dams should be keyed into side slopes so water does not flow between the check dam and side slope. ☐ Use a level to check the right check-dam configuration, as noted above. Repair by moving around stone, filling and compacting soil, or adding new material so that water will be directed to the center of the check dam instead of the edges. ☐ Other:
	☐ Kick-Out to Level 2 Inspection: Many check dams are impacted and/or the problem seems to be a design issue with height, spacing, shape, or materials used to construct them.

SW Vegetation

Assess the swale vegetation.

Problem (Check if Present)	Follow-Up Actions
 ☐ Vegetation is too overgrown to access swale for maintenance activities	☐ Mow or bush-hog the path. ☐ Other:

SW Vegetation

Assess the swale vegetation.

Problem (Check if Present)	Follow-Up Actions
 ☐ Vegetation requires regular maintenance: pulling weeds, removing dead and diseased plants, adding plants to fill in areas that are not well vegetated, etc.	☐ If you can identify which plants are weeds or not intended to be part of the planting plan, eliminate these, preferably by hand pulling. ☐ If weeds are widespread, check with the local stormwater authority and/or Extension Office about proper use of herbicides for areas connected with the flow of water. ☐ Even vegetation that is intended to be present can become large, overgrown, block flow, and/or crowd out surrounding plants. Prune and thin accordingly. ☐ If weeds or invasive plants have overtaken the whole swale, bush-hog the entire area before seed heads form in the spring. It will be necessary to remove the root mat manually or with appropriate herbicides, as noted above. ☐ Replant with species that are aesthetically pleasing and seem to be doing well in the swale. ☐ Other:
☐ Vegetation is too thin, is not healthy, and there are many spots that are not well vegetated.	☐ Kick-Out to Level 2 Inspection: You are unsure of the original planting design or the vegetation maintenance task is beyond your capabilities of time, expertise, or resources. If you are unsure of the health of the vegetation (e.g. salt damage, invasives, which plants are undesirable) or the appropriate season to conduct vegetation management, consult a landscape professional before undertaking any cutting, pruning, mowing, or brush hogging.
	☐ The original plants are likely not suited for the actual conditions within the swale. If you are knowledgeable about plants, select and plant more appropriate vegetation (preferably native plants) so that almost the entire surface area will be covered by the end of the second growing season. ☐ Other:
	☐ Kick-Out to Level 2 Inspection: For all but small practices (e.g., in residential yards), this task will likely require a landscape design professional or horticulturalist.

SW Outlets

Examine outlets that release water out of the swale.

Problem (Check if Present)	Follow-Up Actions
☐ Outlet is obstructed with mulch, sediment, debris, trash, etc.	☐ Remove the debris and dispose of it where it cannot re-enter the swale. ☐ Other:
	☐ Kick-Out to Level 2 Inspection: Outlet is completely clogged or obstructed; there is too much material to remove by hand or with simple hand tools.

Additional Notes:

Inspector: _____

Date: _____

Complete the following if follow-up/corrective actions were identified during this inspection:

Certified Completion of Follow-Up Actions:

"I hereby certify that the follow-up/corrective actions identified in the inspection performed on _____ (DATE) have been completed and any required maintenance deficiencies have been adequately corrected."

Inspector/Operator: _____

Date: _____

Swale Stormwater Management Practices Level 2 Inspection Checklist

SMP ID #		SMP Owner		☐ Private ☐ Public
SMP Location (Address; Latitude & Longitude)				
	Latitude		Longitude	
Party Responsible for Maintenance	System Type		Type of Site	
☐ Same as SMP Owner ☐ Other _____	☐ Seasonal ☐ Continuous Use ☐ Other	☐ Above Ground ☐ Below Ground	☐ Commercial ☐ Industrial ☐ Residential ☐ State	
Inspection Date		Inspection Time		
Inspector				
Date of Last Inspection				

Level 2 Inspection: SWALE

Recommended Repairs

Triggers for Level 3 Inspection

Observed Condition: Water Stands on Surface for More than 72 Hours after Storm

- ☐ Condition 1: Small pockets of standing water

Use a soil probe or auger to examine the soil profile. If isolated areas have accumulated grit, fines, or vegetative debris or have compacted soil, try scraping off top 3 to 6 inches of soil and replacing with clean material. Also check to see that surface is level and water is not ponding selectively in certain areas.

- ☐ Condition 2: Standing water is widespread or covers entire surface

Requires diagnosis and resolution of problem:

- Bad or compacted soil
- Filter fabric on the swale bottom
- Too much sediment/grit washing in from drainage area?
- Too much ponding depth?
- Longitudinal slope is too flat?

- Soil is overly compacted or clogged and problem is not evident from Level 2 inspection.
- Level 2 inspection identifies problem, but it cannot be resolved easily or is associated with the original design of the practice (e.g., not enough slope down through the swale).

- ☐ Level 3 inspection necessary

Observed Condition: Vegetation is predominantly weeds and invasive species

For a small area, weed and dig up invasive plants. Replant with natives or plants from original planting plan.

If longer than 100 feet, develop a new planting plan and have it professionally reviewed.

- Vegetation deviates significantly from original planting plan; swale has been neglected and suffered from deferred maintenance.
- Owner/responsible party does not know how to maintain the practice.
- For large area, hire a professional to develop a grading plan and develop a planting plan.

- ☐ Level 3 inspection necessary

Notes:

Inspector: _____

Date: _____

Complete the following if follow-up/corrective actions were identified during this inspection:

Certified Completion of Follow-Up Actions:

"I hereby certify that the follow-up/corrective actions identified in the inspection performed on _____ (DATE) have been completed and any required maintenance deficiencies have been adequately corrected."

Inspector/Operator: _____

Date: _____



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APPENDIX E: SWPPP FORMS

Notice of Intent

Notice of Termination

Contractor Forms



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NOTICE OF INTENT



New York State Department of Environmental Conservation

Division of Water

625 Broadway, 4th Floor

Albany, New York 12233-3505

NYR

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(for DEC use only)

Stormwater Discharges Associated with Construction Activity Under State Pollutant Discharge Elimination System (SPDES) General Permit # GP-0-20-001

All sections must be completed unless otherwise noted. Failure to complete all items may result in this form being returned to you, thereby delaying your coverage under this General Permit. Applicants must read and understand the conditions of the permit and prepare a Stormwater Pollution Prevention Plan prior to submitting this NOI. Applicants are responsible for identifying and obtaining other DEC permits that may be required.

- IMPORTANT -

RETURN THIS FORM TO THE ADDRESS ABOVE

OWNER/OPERATOR MUST SIGN FORM

Owner/Operator Information

Owner/Operator (Company Name/Private Owner Name/Municipality Name)

[illegible]

Owner/Operator Contact Person Last Name (NOT CONSULTANT)

[illegible]

Owner/Operator Contact Person First Name

[illegible]

Owner/Operator Mailing Address

[illegible]

City

[illegible]

State

--	--

Zip

					-				
--	--	--	--	--	---	--	--	--	--

Phone (Owner/Operator)

--	--	--	--

Fax (Owner/Operator)

--	--	--

Email (Owner/Operator)

[illegible][illegible]

FED TAX ID

		-							
--	--	---	--	--	--	--	--	--	--

(not required for individuals)

Project Site Information

Project/Site Name

[illegible]

Street Address (NOT P.O. BOX)

[illegible]

Side of Street

☐ North ☐ South ☐ East ☐ West

City/Town/Village (THAT ISSUES BUILDING PERMIT)

[illegible]

State

Zip

County

DEC Region

N	Y
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—

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[illegible]

--	--

Name of Nearest Cross Street

[illegible]

Distance to Nearest Cross Street (Feet)

--	--	--	--	--

Project In Relation to Cross Street

☐ North ☐ South ☐ East ☐ West

Tax Map Numbers
Section-Block-Parcel

[illegible]

Tax Map Numbers

[illegible]

1. Provide the Geographic Coordinates for the project site in NYTM Units. To do this you **must** go to the NYSDEC Stormwater Interactive Map on the DEC website at:

www.dec.ny.gov/imsmaps/stormwater/viewer.htm

Zoom into your Project Location such that you can accurately click on the centroid of your site. Once you have located your project site, go to the tool boxes on the top and choose "i"(identify). Then click on the center of your site and a new window containing the X, Y coordinates in UTM will pop up. Transcribe these coordinates into the boxes below. For problems with the interactive map use the help function.

X Coordinates (Easting)

--	--	--	--	--	--

Y Coordinates (Northing)

4						
---	--	--	--	--	--	--

2. What is the nature of this construction project?

- New Construction

- Redevelopment with increase in impervious area

- Redevelopment with no increase in impervious area

3. Select the predominant land use for both pre and post development conditions.

SELECT ONLY ONE CHOICE FOR EACH

Pre-Development
Existing Land Use

- ☐ FOREST
- ☐ PASTURE/OPEN LAND
- ☐ CULTIVATED LAND
- ☐ SINGLE FAMILY HOME
- ☐ SINGLE FAMILY SUBDIVISION
- ☐ TOWN HOME RESIDENTIAL
- ☐ MULTIFAMILY RESIDENTIAL
- ☐ INSTITUTIONAL/SCHOOL
- ☐ INDUSTRIAL
- ☐ COMMERCIAL
- ☐ ROAD/HIGHWAY
- ☐ RECREATIONAL/SPORTS FIELD
- ☐ BIKE PATH/TRAIL
- ☐ LINEAR UTILITY
- ☐ PARKING LOT
- ☐ OTHER

[illegible]

Post-Development Future Land Use

- | | Number of Lots | | |
|--|----------------|--|--|
| ☐ SINGLE FAMILY HOME | | | |
| ☐ SINGLE FAMILY SUBDIVISION | | | |
| ☐ TOWN HOME RESIDENTIAL | | | |
| ☐ MULTIFAMILY RESIDENTIAL | | | |
| ☐ INSTITUTIONAL/SCHOOL | | | |
| ☐ INDUSTRIAL | | | |
| ☐ COMMERCIAL | | | |
| ☐ MUNICIPAL | | | |
| ☐ ROAD/HIGHWAY | | | |
| ☐ RECREATIONAL/SPORTS FIELD | | | |
| ☐ BIKE PATH/TRAIL | | | |
| ☐ LINEAR UTILITY (water, sewer, gas, etc.) | | | |
| ☐ PARKING LOT | | | |
| ☐ CLEARING/GRADING ONLY | | | |
| ☐ DEMOLITION, NO REDEVELOPMENT | | | |
| ☐ WELL DRILLING ACTIVITY *(Oil, Gas, etc.) | | | |
| ☐ OTHER | | | |

[illegible]

***Note:** for gas well drilling, non-high volume hydraulic fractured wells only

4. In accordance with the larger common plan of development or sale, enter the total project site area; the total area to be disturbed; existing impervious area to be disturbed (for redevelopment activities); and the future impervious area constructed within the disturbed area. (Round to the nearest tenth of an acre.)

Total Site
Area

--	--	--	--	--	--

Total Area To
Be Disturbed

--	--	--	--	--	--

Existing Impervious
Area To Be Disturbed

--	--	--	--	--	--

Future Impervious
Area Within
Disturbed Area

--	--	--	--	--	--

5. Do you plan to disturb more than 5 acres of soil at any one time? ☐ **Yes** ☐ **No**

6. Indicate the percentage of each Hydrologic Soil Group (HSG) at the site.

A			%

B			%

C			%

D			%

7. Is this a phased project? ☐ Yes ☐ No

8. Enter the planned start and end dates of the disturbance activities.

Start Date

		/			/				
--	--	---	--	--	---	--	--	--	--

End Date

	/		/	
--	---	--	---	--

[illegible]

☐ Wetland / State Jurisdiction On Site (Answer 9b)
☐ Wetland / State Jurisdiction Off Site
☐ Wetland / Federal Jurisdiction On Site (Answer 9b)
☐ Wetland / Federal Jurisdiction Off Site
☐ Stream / Creek On Site
☐ Stream / Creek Off Site
☐ River On Site
☐ River Off Site
☐ Lake On Site
☐ Lake Off Site
☐ Other Type On Site
☐ Other Type Off Site

- ☐ Regulatory Map
- ☐ Delineated by Consultant
- ☐ Delineated by Army Corps of Engineers
- ☐ Other (identify)

[illegible][illegible]

11. Is this project located in one of the Watersheds identified in Appendix C of GP-0-20-001? ☐ **Yes** ☐ **No**

13. Does this construction activity disturb land with no existing impervious cover and where the Soil Slope Phase is identified as an E or F on the USDA Soil Survey? ☐ Yes ☐ No

If Yes, what is the acreage to be disturbed?

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15. Does the site runoff enter a separate storm sewer system (including roadside drains, swales, ditches, culverts, etc)? ☐ **Yes** ☐ **No** ☐ **Unknown**

- [illegible]

17. Does any runoff from the site enter a sewer classified as a Combined Sewer? ☐ **Yes** ☐ **No** ☐ **Unknown**

18. Will future use of this site be an agricultural property as defined by the NYS Agriculture and Markets Law? ☐ **Yes** ☐ **No**

19. Is this property owned by a state authority, state agency, federal government or local government? ☐ Yes ☐ No

20. Is this a remediation project being done under a Department approved work plan? (i.e. CERCLA, RCRA, Voluntary Cleanup Agreement, etc.) ☐ **Yes** ☐ **No**

21. Has the required Erosion and Sediment Control component of the SWPPP been developed in conformance with the current NYS Standards and Specifications for Erosion and Sediment Control (aka Blue Book)? ☐ Yes ☐ No

22. Does this construction activity require the development of a SWPPP that includes the post-construction stormwater management practice component (i.e. Runoff Reduction, Water Quality and Quantity Control practices/techniques)? ☐ **Yes** ☐ **No**
- If No, skip questions 23 and 27-39.**

23. Has the post-construction stormwater management practice component of the SWPPP been developed in conformance with the current NYS Stormwater Management Design Manual? ☐ Yes ☐ No

24. The Stormwater Pollution Prevention Plan (SWPPP) was prepared by:

- ☐ Professional Engineer (P.E.)
- ☐ Soil and Water Conservation District (SWCD)
- ☐ Registered Landscape Architect (R.L.A.)
- ☐ Certified Professional in Erosion and Sediment Control (CPESC)
- ☐ Owner/Operator
- ☐ Other

[illegible]

SWPPP Preparer

[illegible]

Contact Name (Last, Space, First)

[illegible]

Mailing Address

[illegible]

City

[illegible]

State Zip

						-					
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Phone

		-			-				
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Fax

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Email

[illegible][illegible]

SWPPP Preparer Certification

I hereby certify that the Stormwater Pollution Prevention Plan (SWPPP) for this project has been prepared in accordance with the terms and conditions of the GP-0-20-001. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of this permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

First Name

[illegible]

MI

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Last Name

[illegible]

Signature

Date _____

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25. Has a construction sequence schedule for the planned management practices been prepared? ☐ Yes ☐ No

☐ Yes ☐ No

26. Select **all** of the erosion and sediment control practices that will be employed on the project site:

Temporary Structural

- ☐ Check Dams
- ☐ Construction Road Stabilization
- ☐ Dust Control
- ☐ Earth Dike
- ☐ Level Spreader
- ☐ Perimeter Dike/Swale
- ☐ Pipe Slope Drain
- ☐ Portable Sediment Tank
- ☐ Rock Dam
- ☐ Sediment Basin
- ☐ Sediment Traps
- ☐ Silt Fence
- ☐ Stabilized Construction Entrance
- ☐ Storm Drain Inlet Protection
- ☐ Straw/Hay Bale Dike
- ☐ Temporary Access Waterway Crossing
- ☐ Temporary Stormdrain Diversion
- ☐ Temporary Swale
- ☐ Turbidity Curtain
- ☐ Water bars

Biotechnical

- Brush Matting
- Wattling

Other

[illegible]

Vegetative Measures

- ☐ Brush Matting
- ☐ Dune Stabilization
- ☐ Grassed Waterway
- ☐ Mulching
- ☐ Protecting Vegetation
- ☐ Recreation Area Improvement
- ☐ Seeding
- ☐ Sodding
- ☐ Straw/Hay Bale Dike
- ☐ Streambank Protection
- ☐ Temporary Swale
- ☐ Topsoiling
- ☐ Vegetating Waterways

Permanent Structural

- ☐ Debris Basin
- ☐ Diversion
- ☐ Grade Stabilization Structure
- ☐ Land Grading
- ☐ Lined Waterway (Rock)
- ☐ Paved Channel (Concrete)
- ☐ Paved Flume
- ☐ Retaining Wall
- ☐ Riprap Slope Protection
- ☐ Rock Outlet Protection
- ☐ Streambank Protection

Post-construction Stormwater Management Practice (SMP) Requirements

**Important: Completion of Questions 27-39 is not required
if response to Question 22 is No.**

27. Identify all site planning practices that were used to prepare the final site plan/layout for the project.

- ☐ **Preservation of Undisturbed Areas**
- ☐ **Preservation of Buffers**
- ☐ **Reduction of Clearing and Grading**
- ☐ **Locating Development in Less Sensitive Areas**
- ☐ **Roadway Reduction**
- ☐ **Sidewalk Reduction**
- ☐ **Driveway Reduction**
- ☐ **Cul-de-sac Reduction**
- ☐ **Building Footprint Reduction**
- ☐ **Parking Reduction**

27a. Indicate which of the following soil restoration criteria was used to address the requirements in Section 5.1.6("Soil Restoration") of the Design Manual (2010 version).

- ☐ All disturbed areas will be restored in accordance with the Soil Restoration requirements in Table 5.3 of the Design Manual (see page 5-22).
- ☐ Compacted areas were considered as impervious cover when calculating the **WQv Required**, and the compacted areas were assigned a post-construction Hydrologic Soil Group (HSG) designation that is one level less permeable than existing conditions for the hydrology analysis.

28. Provide the total Water Quality Volume (WQv) required for this project (based on final site plan/layout).

Total WQv Required

. **acre-feet**

29. Identify the RR techniques (Area Reduction), RR techniques (Volume Reduction) and Standard SMPs with RRv Capacity in Table 1 (See Page 9) that were used to reduce the Total WQv Required(#28).

Also, provide in Table 1 the total impervious area that contributes runoff to each technique/practice selected. For the Area Reduction Techniques, provide the total contributing area (includes pervious area) and, if applicable, the total impervious area that contributes runoff to the technique/practice.

Note: Redevelopment projects shall use Tables 1 and 2 to identify the SMPs used to treat and/or reduce the WQv required. If runoff reduction techniques will not be used to reduce the required WQv, skip to question 33a after identifying the SMPs.

Table 1 - Runoff Reduction (RR) Techniques
and Standard Stormwater Management
Practices (SMPs)

RR Techniques (Area Reduction)	Total Contributing Area (acres)	Total Contributing Impervious Area (acres)
☐ Conservation of Natural Areas (RR-1) ...	.	and/or .
☐ Sheetflow to Riparian Buffers/Filters Strips (RR-2)	.	and/or .
☐ Tree Planting/Tree Pit (RR-3)	.	and/or .
☐ Disconnection of Rooftop Runoff (RR-4) ..	.	and/or .
RR Techniques (Volume Reduction)		
☐ Vegetated Swale (RR-5)	.	.
☐ Rain Garden (RR-6)	.	.
☐ Stormwater Planter (RR-7)	.	.
☐ Rain Barrel/Cistern (RR-8)	.	.
☐ Porous Pavement (RR-9)	.	.
☐ Green Roof (RR-10)	.	.
Standard SMPs with RRv Capacity		
☐ Infiltration Trench (I-1)	.	.
☐ Infiltration Basin (I-2)	.	.
☐ Dry Well (I-3)	.	.
☐ Underground Infiltration System (I-4)	.	.
☐ Bioretention (F-5)	.	.
☐ Dry Swale (O-1)	.	.
Standard SMPs		
☐ Micropool Extended Detention (P-1)	.	.
☐ Wet Pond (P-2)	.	.
☐ Wet Extended Detention (P-3)	.	.
☐ Multiple Pond System (P-4)	.	.
☐ Pocket Pond (P-5)	.	.
☐ Surface Sand Filter (F-1)	.	.
☐ Underground Sand Filter (F-2)	.	.
☐ Perimeter Sand Filter (F-3)	.	.
☐ Organic Filter (F-4)	.	.
☐ Shallow Wetland (W-1)	.	.
☐ Extended Detention Wetland (W-2)	.	.
☐ Pond/Wetland System (W-3)	.	.
☐ Pocket Wetland (W-4)	.	.
☐ Wet Swale (O-2)	.	.

[illegible][illegible][illegible]

30. Indicate the Total RRv provided by the RR techniques (Area/Volume Reduction) and Standard SMPs with RRv capacity identified in question 29.

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 acre-feet

- If Yes, go to question 36.
If No, go to question 32.

- | | | |
|--|--|--|
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 acre-feet

- If No, sizing criteria has not been met, so NOI can not be processed. SWPPP preparer must modify design to meet sizing criteria.

33. Identify the Standard SMPs in Table 1 and, if applicable, the Alternative SMPs in Table 2 that were used to treat the remaining total WQv(=Total WQv Required in 28 - Total RRv Provided in 30).

Also, provide in Table 1 and 2 the total impervious area that contributes runoff to each practice selected.

Note: Use Tables 1 and 2 to identify the SMPs used on Redevelopment projects.

- 33a. Indicate the Total WQv provided (i.e. WQv treated) by the SMPs identified in question #33 and Standard SMPs with RRv Capacity identified in question 29.

WQv Provided

. acre-feet

Note: For the standard SMPs with RRv capacity, the WQv provided by each practice = the WQv calculated using the contributing drainage area to the practice - RRv provided by the practice. (See Table 3.5 in Design Manual)

34. Provide the sum of the Total RRv provided (#30) and the WQv provided (#33a).

.

35. Is the sum of the RRv provided (#30) and the WQv provided (#33a) greater than or equal to the total WQv required (#28)? ☐ Yes ☐ No

If Yes, go to question 36.

If No, sizing criteria has not been met, so NOI can not be processed. SWPPP preparer must modify design to meet sizing criteria.

36. Provide the total Channel Protection Storage Volume (CPv) required and provided or select waiver (36a), if applicable.

CPv Required

. acre-feet

CPv Provided

. acre-feet

- 36a. The need to provide channel protection has been waived because:

- ☐ Site discharges directly to tidal waters or a fifth order or larger stream.
- ☐ Reduction of the total CPv is achieved on site through runoff reduction techniques or infiltration systems.

37. Provide the Overbank Flood (Qp) and Extreme Flood (Qf) control criteria or select waiver (37a), if applicable.

Total Overbank Flood Control Criteria (Qp)

Pre-Development

. CFS

Post-development

. CFS

Total Extreme Flood Control Criteria (Qf)

Pre-Development

. CFS

Post-development

. CFS

37a. The need to meet the Qp and Qf criteria has been waived because:

- ☐ Site discharges directly to tidal waters or a fifth order or larger stream.
- ☐ Downstream analysis reveals that the Qp and Qf controls are not required

- Site discharges directly to tidal waters or a fifth order or larger stream.
- Downstream analysis reveals that the Qp and Qf controls are not required

☐ Yes ☐ No

If Yes, Identify the entity responsible for the long term
Operation and Maintenance

[illegible]

39. Use this space to summarize the specific site limitations and justification for not reducing 100% of WQv required(#28). (See question 32a)
This space can also be used for other pertinent project information.

40. Identify other DEC permits, existing and new, that are required for this project/facility.

○ Air Pollution Control

○ Coastal Erosion

☐ Hazardous Waste

○ Long Island Wells

○ Mined Land Reclamation

☐ Solid Waste

○ Navigable Waters Protection / Article 15

○ Water Quality Certificate

○ Dam Safety

○ Water Supply

○ Freshwater Wetlands/Article 24

○ Tidal Wetlands

☐ Wild, Scenic and Recreational Rivers

○ Stream Bed or Bank Protection / Article 15

☐ Endangered or Threatened Species (Incidental Take Permit)

- Individual SPDES

○ SPDES Multi-Sector GP	N	Y	R						
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[illegible]

☐ None

41. Does this project require a US Army Corps of Engineers Wetland Permit? ☐ ☐ ☐ ☐ ☐ ☐

☐ Yes ☐ No

If Yes, Indicate Size of Impact.					.
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42. Is this project subject to the requirements of a regulated, traditional land use control MS4?
(If No, skip question 43)

☐ Yes ☐ No

43. Has the "MS4 SWPPP Acceptance" form been signed by the principal executive officer or ranking elected official and submitted along with this NOI?

☐ Yes ☐ No

44. If this NOI is being submitted for the purpose of continuing or transferring coverage under a general permit for stormwater runoff from construction activities, please indicate the former SPDES number assigned.

N	Y	D				
---	---	---	--	--	--	--

N	Y	R						
---	---	---	--	--	--	--	--	--

Owner/Operator Certification	
I have read or been advised of the permit conditions and believe that I understand them. I also understand that, under the terms of the permit, there may be reporting requirements. I hereby certify that this document and the corresponding documents were prepared under my direction or supervision. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. I further understand that coverage under the general permit will be identified in the acknowledgment that I will receive as a result of submitting this NOI and can be as long as sixty (60) business days as provided for in the general permit. I also understand that, by submitting this NOI, I am acknowledging that the SWPPP has been developed and will be implemented as the first element of construction, and agreeing to comply with all the terms and conditions of the general permit for which this NOI is being submitted.	
Print First Name 	MI
Print Last Name 	
Owner/Operator Signature 	
Date / /	

--	--

/

--	--

/

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Department of
Environmental
Conservation

NYS Department of Environmental Conservation
Division of Water
625 Broadway, 4th Floor
Albany, New York 12233-3505

MS4 Stormwater Pollution Prevention Plan (SWPPP) Acceptance Form

for

Construction Activities Seeking Authorization Under SPDES General Permit

*(NOTE: Attach Completed Form to Notice Of Intent and Submit to Address Above)

I. Project Owner/Operator Information

1. Owner/Operator Name:

2. Contact Person:

3. Street Address:

4. City/State/Zip:

II. Project Site Information

5. Project/Site Name:

6. Street Address:

7. City/State/Zip:

III. Stormwater Pollution Prevention Plan (SWPPP) Review and Acceptance Information

8. SWPPP Reviewed by:

9. Title/Position:

10. Date Final SWPPP Reviewed and Accepted:

IV. Regulated MS4 Information

11. Name of MS4:

12. MS4 SPDES Permit Identification Number: NYR20A

13. Contact Person:

14. Street Address:

15. City/State/Zip:

16. Telephone Number:

MS4 SWPPP Acceptance Form - continued

V. Certification Statement - MS4 Official (principal executive officer or ranking elected official) or Duly Authorized Representative

I hereby certify that the final Stormwater Pollution Prevention Plan (SWPPP) for the construction project identified in question 5 has been reviewed and meets the substantive requirements in the SPDES General Permit For Stormwater Discharges from Municipal Separate Storm Sewer Systems (MS4s). Note: The MS4, through the acceptance of the SWPPP, assumes no responsibility for the accuracy and adequacy of the design included in the SWPPP. In addition, review and acceptance of the SWPPP by the MS4 does not relieve the owner/operator or their SWPPP preparer of responsibility or liability for errors or omissions in the plan.

Printed Name:

Title/Position:

Signature:

Date:

VI. Additional Information

**New York State Department of Environmental Conservation
Division of Water
625 Broadway, 4th Floor
Albany, New York 12233-3505**

(NOTE: Submit completed form to address above)

NOTICE OF TERMINATION for Storm Water Discharges Authorized
under the SPDES General Permit for Construction Activity

Please indicate your permit identification number: NYR ____ _

I. Owner or Operator Information

1. Owner/Operator Name:

2. Street Address:

3. City/State/Zip:

4. Contact Person:

4a. Telephone:

4b. Contact Person E-Mail:

II. Project Site Information

5. Project/Site Name:

6. Street Address:

7. City/Zip:

8. County:

III. Reason for Termination

9a. ☐ All disturbed areas have achieved final stabilization in accordance with the general permit and SWPPP. ***Date final stabilization completed** (month/year): _____

9b. ☐ Permit coverage has been transferred to new owner/operator. Indicate new owner/operator's permit identification number: NYR ____ _

(Note: Permit coverage can not be terminated by owner identified in I.1. above until new owner/operator obtains coverage under the general permit)

9c. ☐ Other (Explain on Page 2)

IV. Final Site Information:

10a. Did this construction activity require the development of a SWPPP that includes post-construction stormwater management practices? ☐ yes ☐ no (If no, go to question 10f.)

10b. Have all post-construction stormwater management practices included in the final SWPPP been constructed? ☐ yes ☐ no (If no, explain on Page 2)

10c. Identify the entity responsible for long-term operation and maintenance of practice(s)?

**NOTICE OF TERMINATION for Storm Water Discharges Authorized under the
SPDES General Permit for Construction Activity - continued**

10d. Has the entity responsible for long-term operation and maintenance been given a copy of the operation and maintenance plan required by the general permit? ☐ yes ☐ no

10e. Indicate the method used to ensure long-term operation and maintenance of the post-construction stormwater management practice(s):

- ☐ Post-construction stormwater management practice(s) and any right-of-way(s) needed to maintain practice(s) have been deeded to the municipality.
- ☐ Executed maintenance agreement is in place with the municipality that will maintain the post-construction stormwater management practice(s).
- ☐ For post-construction stormwater management practices that are privately owned, a mechanism is in place that requires operation and maintenance of the practice(s) in accordance with the operation and maintenance plan, such as a deed covenant in the owner or operator's deed of record.
- ☐ For post-construction stormwater management practices that are owned by a public or private institution (e.g. school, university or hospital), government agency or authority, or public utility; policy and procedures are in place that ensures operation and maintenance of the practice(s) in accordance with the operation and maintenance plan.

10f. Provide the total area of impervious surface (i.e. roof, pavement, concrete, gravel, etc.) constructed within the disturbance area? _____
(acres)

11. Is this project subject to the requirements of a regulated, traditional land use control MS4? ☐ yes
☐ no
(If Yes, complete section VI - "MS4 Acceptance" statement)

V. Additional Information/Explanation:
(Use this section to answer questions 9c. and 10b., if applicable)

VI. MS4 Acceptance - MS4 Official (principal executive officer or ranking elected official) or Duly Authorized Representative (Note: Not required when 9b. is checked -transfer of coverage)

I have determined that it is acceptable for the owner or operator of the construction project identified in question 5 to submit the Notice of Termination at this time.

Printed Name:

Title/Position:

Signature:

Date:

NOTICE OF TERMINATION for Storm Water Discharges Authorized under the
SPDES General Permit for Construction Activity - continued

VII. Qualified Inspector Certification - Final Stabilization:

I hereby certify that all disturbed areas have achieved final stabilization as defined in the current version of the general permit, and that all temporary, structural erosion and sediment control measures have been removed. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

Printed Name:

Title/Position:

Signature:

Date:

VIII. Qualified Inspector Certification - Post-construction Stormwater Management Practice(s):

I hereby certify that all post-construction stormwater management practices have been constructed in conformance with the SWPPP. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

Printed Name:

Title/Position:

Signature:

Date:

IX. Owner or Operator Certification

I hereby certify that this document was prepared by me or under my direction or supervision. My determination, based upon my inquiry of the person(s) who managed the construction activity, or those persons directly responsible for gathering the information, is that the information provided in this document is true, accurate and complete. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

Printed Name:

Title/Position:

Signature:

Date:

(NYS DEC Notice of Termination - January 2015)



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APPENDIX F: EROSION & SEDIMENT CONTROL DETAILS AND STORMWATER MANAGEMENT PLAN

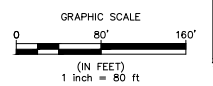


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SITE CRITERIA CHECKLIST		
PROJECT SITE INFORMATION		
ADDRESS	HENNEBERRY ROAD (COUNTY ROUTE 182)	
TAX MAP ID NO.	109--02--07.1	
BOUNDARY SURVEY	PROPERTY LINE INFORMATION TAKEN FROM SURVEY BY IANUZI AND ROMANS	
TOTAL SITE AREA	54.746 ACRES	
LAND USE	SINGLE FAMILY RESIDENTIAL -- 34 LOTS	
ZONING INFORMATION		
ZONING DISTRICT	R-1, RESIDENTIAL DISTRICT	
	REQUIRED	PROVIDED
MIN. LOT FRONTAGE	150'	150' MIN.
MIN. LOT AREA	40,000 SF	40,000 SF MIN.
MINIMUM FRONT YARD	40'	40' MIN.
MINIMUM REAR YARD	40'	40' MIN.
MINIMUM SIDE YARD	20'	20' MIN.

HENNEBERRY ROAD
(C.R. No. 182)
(CHERRY VALLEY TURNPIKE)



PRELIMINARY
NOT FOR CONSTRUCTION

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PROJECT TITLE:
BRANDYWINE ESTATES PHASE 2
HENNEBERRY ROAD
TOWN OF MANLIUS
ONONDAGA COUNTY, NY

PREPARED FOR:
HARRINGTON HOMES
3848 HENNEBERRY ROAD
JAMESVILLE, NY 13078

OVERALL GRADING PLAN

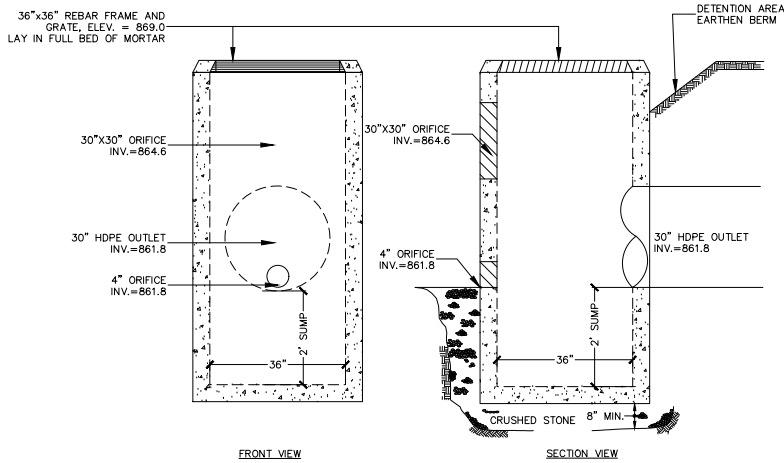
NO.	REVISION/ISSUE	DATE
1	GENERAL REVISIONS	12/15/2021

PREPARED BY:
NAPIERALA CONSULTING
PROFESSIONAL ENGINEER, P.E.
SITE DESIGN • ENGINEERING
MANLIUS, NEW YORK 13104
email: MNAP@NAPCON.COM
PH: (315) 682-5580 FAX: (315) 682-5544

PROJECT NO. **20-1906**
DATE **17 SEP 2020**
SCALE **1" = 80'**

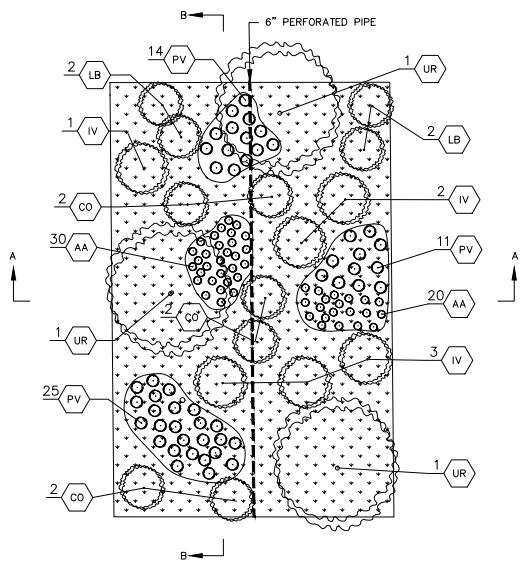
C-2

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DETENTION BASIN #1 PRECAST CONCRETE OUTLET STRUCTURE

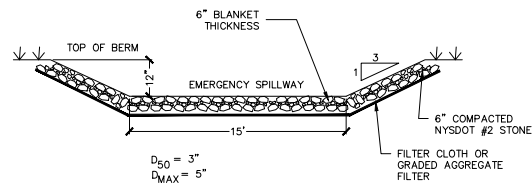
1
C-7.1
SCALE: NTS



*PLANTING QUANTITIES SHOWN IN THE GRAPHIC ABOVE ARE FOR A TYPICAL 1,000 SF BIORETENTION AREA. SPECIFIC QUANTITIES FOR THE BIORETENTION AREA ARE PROVIDED IN THE CORRESPONDING LANDSCAPING TABLE.

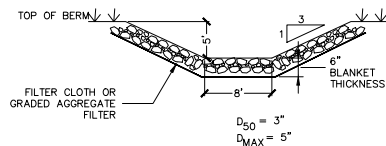
KEY	QUANTITY*	LATIN NAME	COMMON NAME	CALIPER	HEIGHT
TREES					
UR	16	ULMUS RUBRA	SLIPPERY ELM	6'-8'	B&B
SHRUBS					
LB	45	LINDERA BENZOIN	COMMON SPICE	18"-24"	B&B
IV	65	ILEX VERTICILLATA	WINTER BERRY	2'-3'	B&B
CO	65	CEPHALANTHUS OCCIDENTALIS	BUTTONBUSH	18"-24"	B&B
HERBACEOUS PLANTS					
PV	600	PANICUM VIRGATUM	SWITCH GRASS		
AA	600	AGROSTIS ALBA	REDFOP		

KEY	QUANTITY*	LATIN NAME	COMMON NAME	CALIPER	HEIGHT
TREES					
UR	8	ULMUS RUBRA	SLIPPERY ELM	6'-8'	B&B
SHRUBS					
LB	25	LINDERA BENZOIN	COMMON SPICE	18"-24"	B&B
IV	35	ILEX VERTICILLATA	WINTER BERRY	2'-3'	B&B
CO	30	CEPHALANTHUS OCCIDENTALIS	BUTTONBUSH	18"-24"	B&B
HERBACEOUS PLANTS					
PV	300	PANICUM VIRGATUM	SWITCH GRASS		
AA	300	AGROSTIS ALBA	REDFOP		



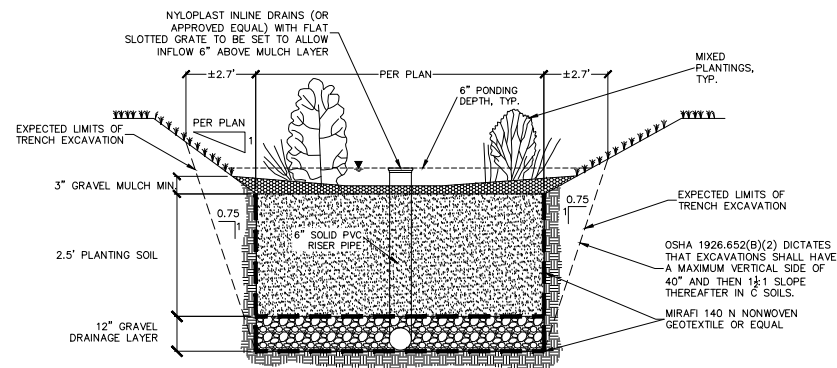
3 RIP RAP EMERGENCY SPILLWAY

C-7.1
SCALE: NTS

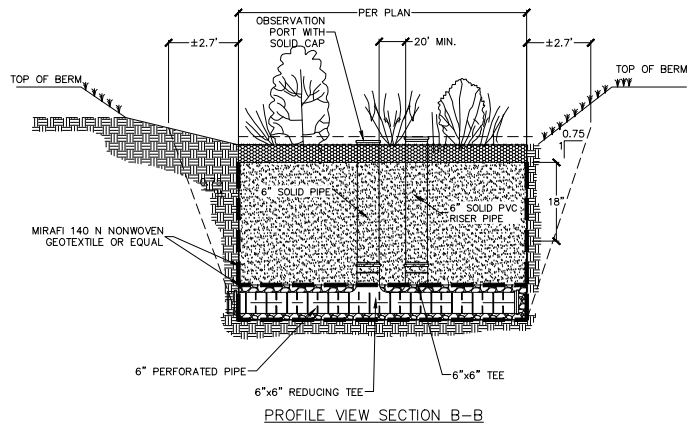


4 RIP RAP BIORETENTION SPILLWAY

C-7.1
SCALE: NTS



PROFILE VIEW SECTION A-A



PROFILE VIEW SECTION B-B

- BIORETENTION NOTES:**
- PLANTING SOIL MEDIA SHALL BE:
 - 85% TO 88% COARSE TO MEDIUM SAND
 - 12%-15% LEAF COMPOST OR TOPSOIL
 - PEA GRAVEL MULCH CONFORMING TO ASTM D 448 No. 6.
 - UNDERDRAIN GRAVEL TO BE AASHTO M-43 No. 67, 0.25" TO 0.75".
 - GEOTEXTILE FILTER FABRIC (SEPARATION LAYER):
 - ASTM D-751 (PUNCTURE STRENGTH - 125 LB)
 - ASTM D-1117 (MULLEN BURST STRENGTH - 400 PSI)
 - ASTM D-1682 (TENSILE STRENGTH - 300 LB)
 - SIZE - 0.08" THICK; EQUIVALENT OPENING SIZE OF #80 SIEVE
 - COMPACT WITH WATER-FILLED HAND ROLLER. COMPACTION TO BE FIRM BUT EASY (UTILIZE PENCIL TEST).
 - ENGINEER TO TEST IN PLACE COMPACTION AND INFILTRATION OF PLANTING SOIL.
 - ENGINEER TO PERFORM INSPECTION OF BIORETENTION PLANTING SOIL IMMEDIATELY FOLLOWING PLACEMENT AND PERFORM AN IN PLACE PERCOLATION TEST TO CONFIRM THAT THE IN PLACE MATERIAL PERCOLATES AT A RATE FASTER THAN 10 MIN/INCH.

5 BIORETENTION FILTER CROSS SECTIONS

C-7.1
SCALE: NTS

PROJECT TITLE:
BRANDYWINE ESTATES PHASE 2
HENNEBERRY ROAD
TOWN OF MANLIUS
ONONDAGA COUNTY, NY

PREPARED FOR:
HARRINGTON HOMES
3848 HENNEBERRY ROAD
JAMESVILLE, NY 13078

SITE DETAILS

SHEET TITLE:

NO.	REVISION/ISSUE	DATE
1	GENERAL REVISIONS	12/15/2021

PREPARED BY:
NAPIERALA CONSULTING
PROFESSIONAL ENGINEER, P.E.
SITE • DESIGN • ENGINEERING
MANLIUS, NEW YORK 13104
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SYSTEM, WITHOUT PERMISSION
IN WRITING FROM NAPIERALA
CONSULTING, P.C.

PROJECT NO.
20-1906

DATE
17 SEP 2020

SCALE
AS SHOWN

C-7.1

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EROSION CONTROL NOTES

EROSION AND SEDIMENT CONTROLS

1. STABILIZATION PRACTICES (TEMPORARY)
 - a) TEMPORARY SEEDING AND PLANTING OF ALL UNPAVED AREAS WHEN CONSTRUCTION ACTIVITY HAS CEASED, OR WILL CEASE, IN AN AREA FOR 14 DAYS. SEEDING MIXTURES AND APPLICATION RATES ARE LISTED ON SHEET C-2.
 - b) MULCHING EXPOSED AREAS.
 - c) FREQUENT WATERING TO MINIMIZE WIND EROSION DURING CONSTRUCTION.
2. STABILIZATION PRACTICES (PERMANENT)
 - a) LAND CLEARING ACTIVITIES SHALL BE DONE ONLY IN AREAS WHERE EARTHWORK WILL BE PERFORMED AND SHALL PROGRESS AS EARTHWORK IS NEEDED.
 - b) PERMANENT SEEDING AND PLANTING OF ALL UNPAVED AREAS.
3. STRUCTURAL MEASURES TEMPORARY
 - a) STABILIZED CONSTRUCTION ENTRANCE: AT THE ENTRANCE TO THE ALL DISTURBED AREAS FROM AN EXISTING ROADWAY A STABILIZED CONSTRUCTION ENTRANCE SHALL BE PROVIDED. THE PURPOSE OF THE STABILIZED CONSTRUCTION ENTRANCE IS TO REDUCE OR ELIMINATE THE TRACKING OF SEDIMENT ONTO THE PUBLIC RIGHT-OF-WAY.
 - b) SILT FENCE: SILT FENCE SHALL BE INSTALLED AS SHOWN ON THE EROSION CONTROL PLAN. THE FABRIC SHALL MEET THE SPECIFICATIONS NOTED ON THE DETAILS UNLESS OTHERWISE APPROVED BY THE APPROPRIATE EROSION AND SEDIMENT CONTROL PLAN APPROVAL AUTHORITY. SUCH APPROVAL SHALL NOT CONSTITUTE STATEWIDE ACCEPTANCE.
 - c) DUST CONTROL: DUST CONTROL IS THE CONTROL OF DUST RESULTING FROM LAND-DISTURBING ACTIVITIES. THE PURPOSE IS TO PREVENT SURFACE AND AIR MOVEMENT OF DUST FROM DISTURBED SOIL SURFACES THAT MAY CAUSE OFF-SITE DAMAGE, HEALTH HAZARDS, AND TRAFFIC SAFETY PROBLEMS.
 - d) SEDIMENT TRAP: SEDIMENT TRAP TO BE INSTALLED IN DETENTION BASIN AREA FOR USE DURING CONSTRUCTION. STONE OUTLET SEDIMENT TRAP TO BE INSTALLED AS PER DETAIL TO ELIMINATE SEDIMENT DISCHARGE TO DOWNSTREAM AREAS DURING CONSTRUCTION PHASE.
4. STRUCTURAL PRACTICES (PERMANENT)
 - a) ROCK OUTLET PROTECTION: ROCK OUTLET PROTECTION IS A SECTION OF ROCK PROTECTION PLACED AT THE OUTLET END OF CULVERTS, CONDUITS, OR CHANNELS. THE PURPOSE OF THE ROCK OUTLET PROTECTION IS TO REDUCE THE DEPTH, VELOCITY, AND ENERGY OF WATER, SUCH THAT THE FLOW WILL NOT ERODE THE RECEIVING DOWNSTREAM REACH.
 - b) REINFORCED SLOPE PROTECTION: A TEMPORARY PROTECTIVE COVERING PLACED ON A PREPARED PLANTING AREA THAT IS ANCHORED IN PLACE BY STAPLES OR OTHER MEANS TO AID IN CONTROLLING EROSION BY ABSORBING RAIN SPLASH ENERGY AND WITHSTAND OVERLAND FLOW AS WELL AS PROVIDE A MICROCLIMATE TO PROTECT AND PROMOTE SEED ESTABLISHMENT.

- c. LAND GRADING: PERMANENT RESHAPING OF THE EXISTING LAND SURFACE BY GRADING IN ACCORDANCE WITH AN ENGINEERING TOPOGRAPHIC PLAN AND SPECIFICATION TO PROVIDE EROSION CONTROL AND VEGETATIVE ESTABLISHMENT ON DISTURBED, RESHAPED AREAS.
5. SEQUENCE OF MAJOR ACTIVITIES
THE CONTRACTOR SHALL BE RESPONSIBLE FOR IMPLEMENTING THE ABOVE LISTED EROSION AND SEDIMENT CONTROL PRACTICES. THE CONTRACTOR MAY DESIGNATE THESE TASKS TO CERTAIN SUBCONTRACTORS AS IS SEEN FIT, BUT THE ULTIMATE RESPONSIBILITY FOR IMPLEMENTING THESE CONTROLS AND ENSURING THEIR PROPER FUNCTION REMAINS WITH THE CONTRACTOR. THE ORDER OF ACTIVITIES WILL BE AS FOLLOWS:
 - a) CONDUCT PRECONSTRUCTION MEETING
 - b) CONSTRUCT TEMPORARY CONSTRUCTION ENTRANCE/EXIT AT THE LOCATION SHOWN ON THE PLAN.
 - c) INSTALL PERIMETER SILT FENCE AND SECURITY CONSTRUCTION FENCE IN THE LOCATIONS SHOWN ON THE PLAN.
 - d) ESTABLISH STAGING AREA ON PROJECT SITE
 - e) CONSTRUCT TEMPORARY SEDIMENT TRAP
 - f) REMOVE TOPSOIL, STOCKPILE AND STABILIZE
 - g) SITE GRADING. IMPORT OF FILL MATERIAL TO RAISE SITE TO PROPOSED GRADE (OR SUB-GRADE, AS APPROPRIATE).
 - h) BUILDING FOUNDATION EXCAVATION (BUILDING CONSTRUCTION TO CONTINUE CONCURRENTLY WITH REMAINING SITE WORK).
 - i) DISTURBED AREAS OF THE SITE WHERE CONSTRUCTION ACTIVITY HAS CEASED FOR MORE THAN 14 DAYS SHALL BE TEMPORARILY SEEDED AND WATERED.
 - j) UNDERGROUND UTILITY INSTALLATIONS.
 - k) INSTALL FILTER FABRIC DROP INLET PROTECTION AT ALL STORM INLETS.
 - l) COMPACT GRAVEL ALONG ALL DRIVE AISLES AND PARKING AREAS
 - m) SITE CONCRETE CONSTRUCTION.
 - n) FINALIZE PAVEMENT SUBGRADE PREPARATION.
 - o) DEEP RIPPING OF NON-PAVED AREAS MORE THAN 24 HOURS PRIOR TO PLACING ASPHALT PAVEMENT.
 - p) PAVE AREAS NOTED ON PLAN.
 - q) DEEP RIPPING OF NON-PAVED AREAS AS REQUIRED (NON-PAVED AREAS THAT HAVE BEEN COMPACTED DURING CONSTRUCTION VIA CONSTRUCTION TRAFFIC).
 - r) FINAL GRADING, SEEDING, AND PLANTING.
 - s) CONSTRUCT BIORETENTION BASINS AND OUTLET CONTROLS UPON UPSTREAM

- STABILIZATION OF SITE
- 1) REMOVE SEDIMENT TRAP AND FINALIZE GRADING OF DETENTION BASIN
 - 2) REMOVE SILT FENCE ONLY AFTER ALL PAVING IS COMPLETE AND EXPOSED SURFACES ARE STABILIZED.
- MAINTENANCE/INSPECTION PROCEDURES**
- THE FOLLOWING INSPECTION AND MAINTENANCE PRACTICES WILL BE USED TO MAINTAIN EROSION AND SEDIMENT CONTROLS AND STABILIZATION MEASURES.
1. ALL CONTROL MEASURES WILL BE INSPECTED AT LEAST TWICE EVERY SEVEN (7) CALENDAR DAYS
 2. ALL MEASURES WILL BE MAINTAINED IN GOOD WORKING ORDER; IF REPAIRS OR OTHER EROSION CONTROL MEASURES ARE FOUND TO BE NECESSARY, THEY WILL BE INITIATED WITHIN 24 HOURS OF REPORT.
 3. BUILT UP SEDIMENT WILL BE REMOVED FROM SILT FENCE WHEN IT HAS REACHED ONE-THIRD THE HEIGHT OF THE FENCE.
 4. SILT FENCES WILL BE INSPECTED FOR DEPTH OF SEDIMENT, TEARS, ETC., TO SEE IF THE FABRIC IS SECURELY ATTACHED TO THE FENCE POSTS, AND TO SEE THAT THE FENCE POSTS ARE SECURELY IN THE GROUND.
 5. TEMPORARY AND PERMANENT SEEDING AND ALL OTHER STABILIZATION MEASURES WILL BE INSPECTED FOR BARE SPOTS, WASHOUTS, AND HEALTHY GROWTH.
 6. A MAINTENANCE INSPECTION REPORT WILL BE MADE AFTER EACH INSPECTION. COPIES OF THE REPORT FORMS TO BE COMPLETED BY THE INSPECTOR ARE INCLUDED IN THIS SWPPP.
 7. THE OPERATOR SHALL HAVE A "QUALIFIED PROFESSIONAL" CONDUCT SITE INSPECTIONS FOLLOWING THE COMMENCEMENT OF CONSTRUCTION. A "QUALIFIED PROFESSIONAL" IS A PERSON KNOWLEDGEABLE IN THE PRINCIPLES AND PRACTICE OF EROSION AND SEDIMENT CONTROLS, SUCH AS A LICENSED PROFESSIONAL ENGINEER, CERTIFIED PROFESSIONAL IN EROSION AND SEDIMENT CONTROL (CPESC), OR SOIL SCIENTIST.
 8. DISTURBED AREAS AND MATERIALS STORAGE AREAS WILL BE INSPECTED FOR EVIDENCE OF OR POTENTIAL FOR POLLUTANTS ENTERING STORMWATER SYSTEMS.

9. REPORT TO NYS DEC WITHIN 24 HOURS ANY NONCOMPLIANCE WITH THE SWPPP THAT WILL ENDANGER PUBLIC HEALTH OR THE ENVIRONMENT FOLLOW UP WITH A WRITTEN REPORT WITHIN 5 DAYS OF THE NONCOMPLIANCE EVENT. THE FOLLOWING EVENTS REQUIRE 24 HOUR REPORTING: A) ANY UNANTICIPATED BYPASS WHICH EXCEEDS ANY EFFLUENT LIMITATION IN THE PERMIT, B) ANY UPSET WHICH EXCEEDS ANY EFFLUENT LIMITATION IN THE PERMIT, AND C) A VIOLATION OF A MAXIMUM DAILY DISCHARGE LIMITATION FOR ANY OF THE POLLUTANTS LISTED BY THE EPA IN THE PERMIT TO BE REPORTED WITHIN 24 HOURS. THE WRITTEN SUBMISSION MUST CONTAIN A DESCRIPTION OF THE NON-COMPLIANCE AND ITS CAUSE; THE PERIOD OF NON-COMPLIANCE, INCLUDING EXACT DATES AND TIMES, AND IF THE NON-COMPLIANCE HAS NOT BEEN CORRECTED, THE ANTICIPATED TIME IT IS EXPECTED TO CONTINUE; AND STEPS TAKEN OR PLANNED TO REDUCE, ELIMINATE, AND PREVENT REOCCURRENCE OF THE NON-COMPLIANCE.
10. RELEASES OF HAZARDOUS SUBSTANCES OR OIL IN EXCESS OF REPORTABLE QUANTITIES (AS ESTABLISHED UNDER 40 CFR 110, 40 CFR 117 OR 40 CFR 302) MUST BE REPORTED. FORM G-1 PROVIDES FURTHER DETAILS ON THE NOTIFICATION AND REPORTING PROCESS.

INSPECTION AND MAINTENANCE REPORT FORMS

ONCE INSTALLATION OF ANY REQUIRED OR OPTIONAL EROSION CONTROL DEVICE OR MEASURE HAS BEEN IMPLEMENTED, AT LEAST ONCE EVERY SEVEN (7) CALENDAR DAYS AND SHALL BE PERFORMED BY A QUALIFIED PROFESSIONAL. THE FORMS FOUND IN THIS SWPPP SHALL BE USED BY THE INSPECTORS TO INVENTORY AND REPORT THE CONDITION OF EACH MEASURE TO ASSIST IN MAINTAINING THE EROSION AND SEDIMENT CONTROL MEASURES IN GOOD WORKING ORDER.

THESE REPORT FORMS SHALL BECOME AN INTEGRAL PART OF THE SWPPP AND SHALL BE MADE READILY ACCESSIBLE TO GOVERNMENTAL INSPECTION OFFICIALS, THE OPERATOR'S ENGINEER, AND THE OPERATOR FOR REVIEW UPON REQUEST DURING VISITS TO THE PROJECT SITE. IN ADDITION, COPIES OF THE REPORTS SHALL BE PROVIDED TO ANY OF THESE PERSONS, UPON REQUEST, VIA MAIL OR FACSIMILE TRANSMISSION. INSPECTION AND MAINTENANCE REPORT FORMS ARE TO BE MAINTAINED BY THE PERMITTEE FOR FIVE YEARS FOLLOWING THE FINAL STABILIZATION OF THE SITE.

OTHER RECORD-KEEPING REQUIREMENTS

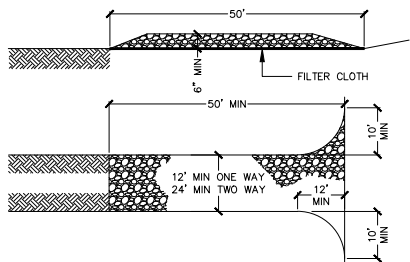
THE CONTRACTOR SHALL KEEP THE FOLLOWING RECORDS RELATED TO CONSTRUCTION ACTIVITIES AT THE SITE:

- DATES WHEN MAJOR GRADING ACTIVITIES OCCUR AND THE AREAS WHICH WERE GRADED
- DATES AND DETAILS CONCERNING THE INSTALLATION OF STRUCTURAL CONTROLS

- DATES WHEN CONSTRUCTION ACTIVITIES CEASE IN AN AREA
- DATES WHEN AN AREAS IS STABILIZED, EITHER TEMPORARILY OR PERMANENTLY
- DATES OF RAINFALL AND THE AMOUNT OF RAINFALL
- DATES AND DESCRIPTIONS OF THE CHARACTER AND AMOUNT OF ANY SPILLS OF HAZARDOUS MATERIALS
- RECORDS OF REPORTS FILED WITH REGULATORY AGENCIES IF REPORTABLE QUANTITIES OF HAZARDOUS MATERIALS SPILLED

EROSION CONTROL NOTES

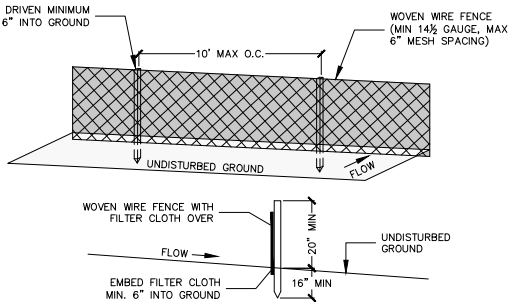
1. LAND DISTURBING ACTIVITIES SHALL NOT COMMENCE UNTIL APPROVAL TO DO SO HAS BEEN RECEIVED BY GOVERNING AUTHORITIES. THE GENERAL CONTRACTOR SHALL STRICTLY ADHERE TO THE APPROVED SWPPP DRAWINGS DURING CONSTRUCTION OPERATIONS.
2. NO LAND CLEARING OR GRADING SHALL BEGIN UNTIL THE APPROPRIATE EROSION CONTROL MEASURES HAVE BEEN INSTALLED.
3. ALL EXPOSED AREAS SHALL BE SEEDED AS SPECIFIED WITHIN 7 DAYS OF FINAL GRADING.
4. SHOULD CONSTRUCTION STOP FOR LONGER THAN 14 DAYS, THE SITE SHALL BE SEEDED AS SPECIFIED.
5. MAINTAIN EROSION CONTROL MEASURES AFTER EACH RAIN AND AT LEAST ONCE A WEEK.
6. THIS PLAN SHALL NOT BE CONSIDERED ALL INCLUSIVE AS THE GENERAL CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PREVENT SEDIMENT FROM LEAVING THE SITE.
7. GENERAL CONTRACTOR SHALL COMPLY WITH ALL STATE AND LOCAL ORDINANCES THAT APPLY.
8. ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES WILL BE INSTALLED IF DEEMED NECESSARY BY ON SITE INSPECTION.
9. IF INSTALLATION OF STORM DRAINAGE SYSTEM SHOULD BE INTERRUPTED BY WEATHER OR NIGHTFALL, THE PIPE ENDS SHALL BE COVERED WITH FILTER FABRIC.
10. GENERAL CONTRACTOR SHALL BE RESPONSIBLE TO TAKE WHATEVER MEANS NECESSARY TO ESTABLISH PERMANENT SOIL STABILIZATION.
11. ALL WORK TO BE DONE IN STRICT ACCORDANCE WITH THE NEW YORK STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL.



1. STONE SIZE - USE 2" STONE, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH - NOT LESS THAN 50 FEET.
3. THICKNESS - NOT LESS THAN SIX (6) INCHES.
4. WIDTH - 24 FEET MINIMUM.
5. FILTER CLOTH - WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
6. SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
7. MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. ALL SEDIMENT SPILLED, DROPPED, WASHED, OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
8. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
9. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.

1 CONSTRUCTION ENTRANCE

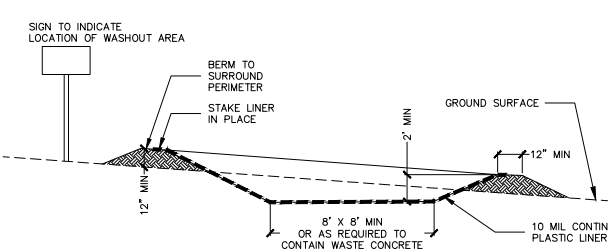
C-7.2 SCALE: NTS



- POSTS: STEEL, EITHER "I" OR "U" TYPE OR 2" HARDWOOD
- FENCE: WOVEN WIRE, 14 1/2 GAUGE, 6" MAX. MESH OPENING
- FILTER CLOTH: FILTER X, MIRAFI 100X, STABILINKA T140N OR APPROVED EQUAL
- PREFABRICATED UNIT: GEOTAB, ENVIROFENCE, OR APPROVED EQUAL
1. WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES.
 2. FILTER CLOTH IS TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION.
 3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER, THEY SHALL BE OVERLAPPED BY SIX INCHES AND FOLDED.
 4. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.

2 SILT FENCE

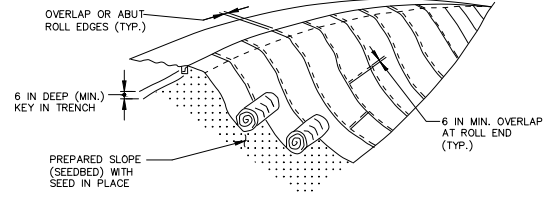
C-7.2 SCALE: NTS



- NOTES:
1. CONCRETE WASHOUT AREA SHALL BE INSTALLED PRIOR TO ANY CONCRETE PLACEMENT ON SITE.
 2. CONCRETE WASHOUT AREA SHALL BE LINED WITH A 10 MIL IMPERMEABLE LINER AND STAKED IN PLACE.
 3. SIGNS SHALL BE PLACED AT THE CONSTRUCTION ENTRANCE, AT THE WASHOUT AREA, AND ELSEWHERE AS NECESSARY TO CLEARLY INDICATE LOCATION OF CONCRETE WASHOUT AREA TO OPERATORS OF CONCRETE TRUCKS AND PUMP RIGS.
 4. THE CONCRETE WASHOUT AREA SHALL BE REPAIRED AND ENLARGED OR CLEANED OUT AS NECESSARY TO MAINTAIN CAPACITY FOR WASTED CONCRETE.
 5. AT THE END OF CONSTRUCTION, ALL CONCRETE SHALL BE REMOVED FROM SITE AND DISPOSED OF AT AN ACCEPTED WASTE SITE.
 6. WHEN THE CONCRETE WASHOUT AREA IS REMOVED, THE DISTURBED AREA SHALL BE SEEDED AND MULCHED OR OTHERWISE STABILIZED.

3 CONCRETE WASHOUT AREA

C-7.2 SCALE: NTS

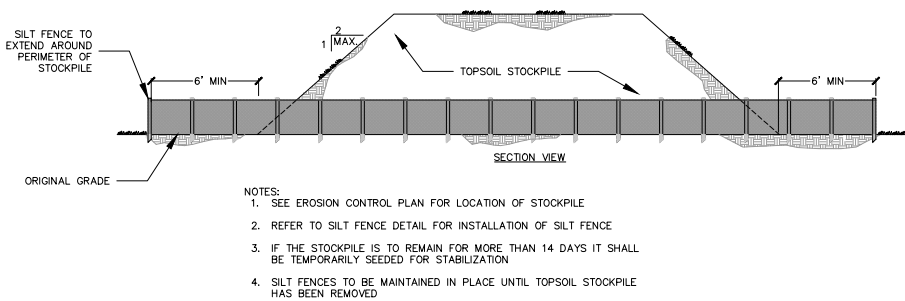


CONSTRUCTION SPECIFICATIONS

1. USE TEMPORARY SOIL STABILIZATION MATTING MADE OF DEGRADABLE (LASTS 6 MONTHS MINIMUM) NATURAL OR MAN-MADE FIBERS (MOSTLY ORGANIC).
2. PERFORM FINAL GRADING, TOPSOIL APPLICATION, SEEDBED PREPARATION, AND PERMANENT SEEDING IN ACCORDANCE WITH SPECIFICATIONS. PLACE MATTING WITHIN 48 HOURS OF COMPLETING SEEDING OPERATIONS UNLESS END OF WORKDAY STABILIZATION IS SPECIFIED ON THE APPROVED EROSION & SEDIMENT CONTROL PLAN.
3. OVERLAP OR ABUT ROLL EDGES PER MANUFACTURER RECOMMENDATIONS. OVERLAP ROLL ENDS BY 6 INCHES (MINIMUM), WITH THE UPSLOPE MAT OVERLAPPING ON TOP OF THE DOWNSLOPE MAT.

4 SLOPE STABILIZATION MATTING

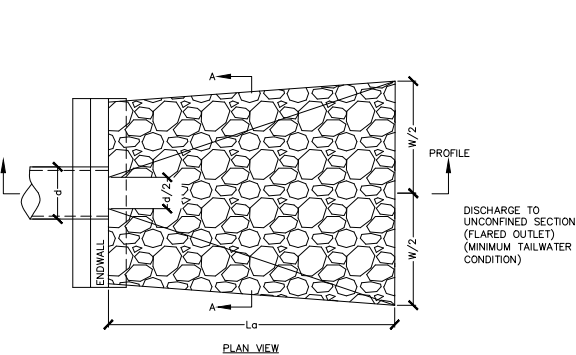
C-7.2 SCALE: NTS



- NOTES:
1. SEE EROSION CONTROL PLAN FOR LOCATION OF STOCKPILE
 2. REFER TO SILT FENCE DETAIL FOR INSTALLATION OF SILT FENCE
 3. IF THE STOCKPILE IS TO REMAIN FOR MORE THAN 14 DAYS IT SHALL BE TEMPORARILY SEEDED FOR STABILIZATION
 4. SILT FENCES TO BE MAINTAINED IN PLACE UNTIL TOPSOIL STOCKPILE HAS BEEN REMOVED

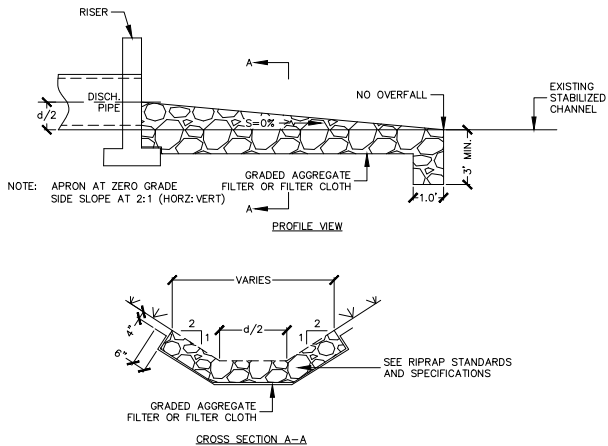
5 TYPICAL TOPSOIL STOCKPILE

C-7.2 SCALE: NTS



ROCK RIPRAP OUTLET PROTECTION UNCONFINED DOWNSTREAM SECTION

C-7.2 SCALE: NTS



- NOTE: APRON AT ZERO GRADE SIDE SLOPE AT 2:1 (HORZ:VERT)
- GRATED AGGREGATE FILTER OR FILTER CLOTH
- SEE RIPRAP STANDARDS AND SPECIFICATIONS

SHEET TITLE:

NO.	REVISIONS	DATE
1	12/15/2021	

PREPARED BY: NAPIERALA CONSULTING PROFESSIONAL ENGINEER, P.C. SITE DESIGN & ENGINEERING MANULUS, NEW YORK 13104 email: MNAT@NAPCON.COM PH: (315) 682-5580 FAX: (315) 682-5544

PROJECT NO. 20-1906 DATE 17 SEP 2020 SCALE AS SHOWN SHEET C-7.2

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APPENDIX G: SHPO AND NYSDEC LETTERS



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NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Fish and Wildlife, New York Natural Heritage Program
625 Broadway, Fifth Floor, Albany, NY 12233-4757
P: (518) 402-8935 | F: (518) 402-8925
www.dec.ny.gov

September 1, 2020

Neal Zinsmeyer
Napierala Consulting
110 Fayette Street
Manlius, NY 13104

Re: Brandywine Phase 2
County: Onondaga Town/City: Manlius

Dear Mr. Zinsmeyer:

In response to your recent request, we have reviewed the New York Natural Heritage Program database with respect to the above project.

We have no records of rare or state-listed animals or plants, or significant natural communities at the project site.

Within 2.5 miles of the project site is a documented winter hibernaculum of **Indiana Bat** (*Myotis sodalis*, state and federally listed as Endangered) and **Northern long-eared Bat** (*Myotis septentrionalis*, state and federally listed as Threatened). These bat species may travel 2.5 miles or more from documented locations. The main impact of concern for bats is the removal of potential roost trees. For information about any permit considerations for your project, please contact the Permits staff at the NYSDEC Region 7 Office, Division of Environmental Permits, at dep.r7@dec.ny.gov, 315-426-7438.

For most sites, comprehensive field surveys have not been conducted. We cannot provide a definitive statement on the presence or absence of all rare or state-listed species or significant natural communities. Depending on the nature of the project and the conditions at the project site, further information from on-site surveys or other resources may be required to fully assess impacts on biological resources.

For information regarding other permits that may be required under state law for regulated areas or activities (e.g., regulated wetlands), please contact the Permits staff at the NYSDEC Region 7 Office as described above.

Sincerely,



Nicholas Conrad
Information Resources Coordinator
New York Natural Heritage Program



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Parks, Recreation and Historic Preservation

ANDREW M. CUOMO
Governor

ERIK KULLESEID
Commissioner

ARCHAEOLOGY COMMENTS

Phase IA/IB Archaeological Survey Recommendation
Project: Harrington Homes Residential Subdivision
PR#: 20PR05587
Date: 9/18/2020

Your project is in an archaeologically sensitive location. Therefore, the State Historic Preservation Office/Office of Parks, Recreation and Historic Preservation (SHPO/OPRHP) recommends a Phase IA/IB archaeological survey for components of the project that will involve ground disturbance, unless substantial prior ground disturbance can be documented. A Phase IA/IB survey is designed to determine the presence or absence of archaeological sites or other cultural resources in the project's Area of Potential Effects (APE).

If you consider the entire project area to be disturbed, documentation of the disturbance will need to be reviewed by SHPO/OPRHP. Examples of disturbance include mining activities and multiple episodes of building construction and demolition. Documentation of ground disturbance typically consists of soil bore logs, photos, or previous project plans. Agricultural activity is not considered to be substantial ground disturbance.

Please note that in areas with alluvial soils or fill archaeological deposits may exist below the depth of superficial disturbances such as pavement or even deeper disturbances, depending on the thickness of the alluvium or fill. Evaluation of the possible impact of prior disturbance on archaeological sites must consider the depth of potentially culture-bearing deposits and the depth of planned disturbance by the proposed project.

Our office does not conduct archaeological surveys. A 36 CFR 61 qualified archaeologist should be retained to conduct the Phase IA/IB survey.

Please also be aware that a Section 233 permit from the New York State Education Department (SED) may be necessary before archaeological fieldwork is conducted on State-owned land. If any portion of the project includes the lands of New York State, you should contact the SED before initiating survey activities. The SED contact is Christina Rieth and she can be reached at (518) 402-5975 or christina.rieth@nysed.gov. Section 233 permits are not required for projects on private land.

If you have any questions concerning archaeology, please contact Tim Lloyd at Timothy.Lloyd@parks.ny.gov



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February 17, 2022

Mr. Douglas A. Miller, P.E.
Miller Engineers
Seneca Turnpike; Suite B
Box 311
Manlius, NY 13104

**Re: Brandywine Estates Subdivision – Phase 2
Preliminary Stormwater Review
Henneberry Road, Town of Manlius, Onondaga County, NY**

Dear Mr. Miller,

Attached for your review is a revised site plan set and SWPPP for the proposed Brandywine Estates Subdivision Phase 2 project in the Town of Manlius, NY. Below are responses to the your comments from an email dated February 9th, 2022.

1. *Drainage boundaries require confirmation and detail limits from the applicant. It looks like there are quite a few cutoff ditches on the property, probably to redirect water away from the Phase 1 homes. You can see them on the aerial but not the topo very well. We are in the process of scheduling a site visit to better confirm plan details.*
Drainage boundaries were delineated using topography provided by the surveyor. Several diversion ditches are present on the property and are depicted within the drainage area maps.
2. *Existing runoff numbers seem high and proposed runoff numbers seem low. Just one point difference is a big issue. Suggest to add brush (good) for some of the existing land cover. For proposed would just use a CN for one acres lots which is 84 or two points higher than what has been calculated.*
The SWPPP has been revised to include brush area within DA-1 in the existing and proposed conditions. The average lot size within the subdivision is about 1.5 acres. The curve number value that was calculated for the development is based on the expected impervious cover for each individual lot. The impervious cover has been increased in the revised analysis to match the requested value more closely. These changes are reflected in the SWPPP.
3. *Main outfall to the west is on private property across a driveway and to a stream. Not sure if the facilities on the private property can handle the flows. No discussion in the report about this or the size of the culvert on Seneca Turnpike that has been noted as overtopping during recent storm events.*
The current drainage conditions of the property in exist in such a manner that a 56-acre portion of the subject property are tributary to the point of study, which is located upstream of the culvert on Seneca Turnpike. The NYSDEC stormwater regulations require that the development mitigate all peak runoff flow rates to the point of study so as to not adversely impact the downstream area. According to the prepared stormwater analysis, the provided detention basin and outlet control structure will reduce the peak flow during both the 10-year and 100-year precipitation events.



4. *More than 5 acres will be openly graded at one time. Need a phasing plan and Town signoff for this request. Phasing approach should be coordinated with overall phasing approach for entire project.*
A phasing plan has been included with this submittal on sheet C-8. Written authorization will be required from the MS4 in order to disturb more than 5-acres at any one time.
5. *House FF's do not accurately reflect contours. There will be significantly more grading than shown. Building first-floor elevations have been removed from the plan. The intent of the provided grading plan is to show an overall site grading plan for the project. Lot-specific grading plans have not been prepared.*
6. *Looks like cuts and fills in the road will exceed 5 feet at some locations.*
Noted. Earthwork is required to balance the site in preparation for construction of the stormwater mitigation basins, the proposed houses, and the road as per the town standards.
7. *Some runoff runs directly to Henneberry with no provision for stormwater management at all. Requires attention to address the situation.*
The stormwater mitigation facilities provided on site have been oversized to overcompensate for the stormwater runoff on the far east end of the development. The site plans and project SWPPP has been sent to Onondaga County DOT for their review; discharge to the right-of-way will be coordinated with OCDOT.
8. *Based upon spoil descriptions, bedrock is anywhere from 24 to 48 inches. Need a soils investigation and a report to confirm the entire proposed site activities. Rock was present along the Brandywine subdivision located immediately to the North.*
Additional soil investigations will be coordinated with the applicant in areas of proposed deep excavation to ensure that there will be minimal issues with bedrock.
9. *A NYSDEC Dam permit may be required for the proposed site plan. Hard to read the contours, but it will be close.*
The stage-storage for the proposed detention basin has been lowered to 8.5' from outlet to the emergency spillway. Therefore, a dam permit will not be required for a 10' impoundment of water.
10. *NOI is blank, but at this point it should be.*
Noted.
11. *Cadd files would be helpful as the drawings are too small to read accurately.*
Both hard copies and PDFs of full-size design drawings have been provided and are sufficient for review.
12. *Ownership of facilities and need for HOA may be required*
A draft of the stormwater maintenance agreement has been provided and will be coordinated with the Town prior to construction.

Any and all future comments will be addressed accordingly. If you have any questions or if you need any other additional information, please contact us.



Respectfully submitted,

NAPIERALA CONSULTING
Professional Engineer, P.C.

Christian Hill

Christian Hill
Design Engineer

STORMWATER POLLUTION PREVENTION PLAN

For the:

**Proposed Brandywine Estates – Phase 2
Henneberry Road
Town of Manlius**

Prepared for:



Your Builder for Life

**Harrington Homes, Inc
3848 Henneberry Road
Jamesville, NY 13078**

Prepared by:



110 FAYETTE STREET
MANLIUS, NEW YORK 13104

Telephone: (315) 682-5580

Fax: (315) 682-5544

Project No. 20-1906

Revised February 2022



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EXECUTIVE SUMMARY

A. Purpose

The following Stormwater Pollution Prevention Plan (SWPPP) has been developed to control stormwater runoff and pollutants from a site during and after construction activities. The objective of this SWPPP is to comply with the NYSDEC SPDES Stormwater Permit from Construction Activities by planning and implementing standard design practices.

B. Project Description

The ±54 acre property is located on the west side of Henneberry Road in the Town of Manlius, Onondaga County, NY. This project consists of the subdivision and development of 34 single family homes. The development will also include necessary amenities such as public street(s), public/private utility extensions/connections, and applicable stormwater management facilities.

C. Stormwater Practices

Stormwater practices are categorized as either temporary construction measures or permanent operation measures. The temporary measures that will be used on this site for erosion and sediment control include (but are not limited to): stabilized construction entrance, silt fencing, and temporary sediment basins. The permanent stormwater practices to be installed are a series of two bioretention areas, and an above ground grass-line detention basin which will provide water quality, runoff reduction, and storage for quantity control. All practices, both the temporary construction measures and the permanent operation measures, have been designed in accordance with the established standards.

D. Water Quality Treatment

The water quality volume treatment characteristics are summarized below. The entire water quality descriptions and calculations are further detailed in Section III.E and F.

Water Quality Volume	
Required WQv (ac-ft)	Total Provided WQv (ac-ft)
0.498	0.498

E. Runoff Reduction Volume (RRv)

The NYSDEC regulation requires all construction projects that disturb greater than one acre of land to provide runoff reduction through the implementation of green infrastructure practices. Runoff reduction volume for this project is achieved using bioretention areas. This volume is summarized below and further detailed in Section III.D, E, and F.

Runoff Reduction Volume	
Required RRv (ac-ft)	Total Provided RRv (ac-ft)
0.060	0.199



F. Stormwater Quantity

The impacts to stormwater runoff quantity (i.e. peak flows) will be mitigated in the aboveground grass-lined detention basins throughout the site. The detention basins will be constructed with sufficient volume to store additional runoff from the site and discharge it in a controlled manner. The chart below summarizes the stormwater discharges from the site and is further detailed in Section III.G and H.

	Existing Peak Runoff Rate (cfs)			Proposed Peak Runoff Rate (cfs)		
Point of Study	Pt. 1B	Pt. 2	Pt. 3	Pt. 1B	Pt. 2	Pt. 3
10-Year Storm	67.61	7.68	9.35	32.92	2.07	9.31
100-Year Storm	165.93	18.46	22.06	80.24	4.70	21.06



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Section I. SCOPE

A. PURPOSE

Napierala Consulting, Professional Engineer, P.C., has prepared this Stormwater Pollution Prevention Plan (SWPPP) in compliance with the New York State Department of Environmental Conservation (NYSDEC) State Pollutant Discharge Elimination System (SPDES) Construction General Permit governing stormwater discharges during construction. The contractor's participation and adherence to this plan is mandatory. Non-compliance with the plan is subject to various remedies including, without limitation, monetary set-offs, withholding payments, reimbursement for costs, expenses (including reasonable attorney's fees), fines and civil penalties incurred and/or liquidated damages. This section provides a descriptive explanation of the Stormwater Pollution Prevention Plan and required contractor participation.

B. SPDES GENERAL PERMIT GP-0-20-001

Regulations enacted by the New York State Department of Environmental Conservation require permitting for the discharge of stormwater from construction activities on sites where an area of one acre or more of soil disturbance is proposed. To comply with these regulations, the developer of the site must request coverage under the NYSDEC SPDES General Permit for Stormwater Discharges from Construction Activity (GP-0-20-001). In order to obtain coverage under the General Permit a Stormwater Pollution Prevention Plan (SWPPP) for the site must be prepared following the requirements of the New York State Stormwater Management Design Manual and the New York State Standards and Specifications for Erosion and Sediment Control.

The NOI, the SWPPP, and any amendments to the SWPPP, as well as any reports required by the SPDES General Permit for Stormwater Discharges from Construction Activity, must also be submitted concurrently to the local governing body and any other authorized agency having jurisdiction or regulatory control over the construction project.

C. RESPONSIBILITIES OF THE OWNER

The owner/operator shall identify the contractor(s) and subcontractor(s) that will be responsible for installing, constructing, repairing, replacing, inspecting and maintaining the erosion and sediment control practices included in the SWPPP. The owner/operator shall identify the contractor(s) and subcontractor(s) that will be responsible for constructing the post-construction stormwater management practices included in the SWPPP. The owner/operator shall have each of the contractors and subcontractors identify at least one person from their company that will be responsible for implementation of the SWPPP. The owner/operator shall ensure that at least one trained contractor is on site on a daily basis when soil disturbance activities are being performed. The owner/operator shall have a qualified inspector conduct site inspections.

D. RESPONSIBILITIES OF THE CONTRACTOR

The contractor shall manage the discharge of stormwater from the site in accordance with the NYSDEC SPDES General Permit for Stormwater Discharges from Construction Activity. The owner shall be responsible for conducting the stormwater management practices in accordance with the permit. The contractor shall be responsible for providing qualified inspectors to conduct the inspections required by the SWPPP. The contractor shall be responsible for any enforcement action taken or imposed by federal, state, or local agencies, including the cost of fines, construction delays, and remedial actions resulting from the contractor's failure to comply with the permit provisions. It shall be the responsibility of the contractor to make any changes to the SWPPP necessary when the contractor or any of his subcontractors elects to use borrow or fill or material storage sites, either contiguous to or remote from the construction



site, when such sites are used solely for this construction site. Such sites are considered to be part of the construction site covered by the permit and this SWPPP. Off-site borrow, fill, or material storage sites which are used for multiple construction projects are not subject to this requirement, unless specifically required by state or local jurisdictional entity regulations. The contractor should consider this requirement in negotiating with earthwork subcontractors, since the choice of an off-site borrow, fill, or material storage site may impact their duty to implement, make changes to, and perform inspections required by the SWPPP for the site.

The SWPPP shall provide forms for both the general contractor and subcontractor(s) identifying the company name, business address and telephone number along with the responsible person for the contractor and all subcontractors' who will implement the measures identified in the SWPPP. **The general contractor shall sign the "General Contractor's Certification" and all subcontractors shall sign the "Subcontractor's Certification",** verifying they have been instructed on how to comply with and fully understand the requirements of the NYSDEC and SWPPP. **This certification must be signed, by a fully qualified individual on behalf of each entity, prior to the beginning of any construction activities and shall be filed in the projects SWPPP.**

The SWPPP is meant to be a working document that shall be maintained at the site of the construction activities at all times throughout the project, shall be readily available upon request by the operator's personnel or NYSDEC or any other agency with regulatory authority over storm water issues, and shall be kept on-site until the site complies with the Final Stabilization section of this document. **A sign or other notice must be posted near the main entrance of the construction site which contains a completed NOI, the location of the SWPPP and the name and phone number of a contact person responsible for scheduling SWPPP viewing times, and any other state specific requirements.**

E. NOTICE OF INTENT

The operator has petitioned the NYSDEC for the stormwater discharges during construction at this site to be covered by the NYSDEC SPDES General Permit for Stormwater Discharges from Construction Activity. A **Notice of Intent (NOI)** to be covered under this permit has been filed by the operator. The signatory on the NOI must sign all documents (i.e., inspection reports) associated with the SWPPP. If the signatory chooses not to sign all documents, he/she must designate a duly authorized representative to sign all relevant documents. This designation must be made in writing and be included in the SWPPP. The duly authorized representative may be either a named individual or any individual occupying a named position. Additionally, the written designation must be submitted to the NYSDEC.

F. STORMWATER INSPECTIONS

1. Inspection Procedures

Inspections of the erosion control practices are required every seven days by a qualified professional. All inspections will continue until the site complies with the final stabilization section of this document. **Weekly Inspections must be conducted by a "Qualified Professional". "Qualified Professional" means a person knowledgeable in the principles and practice of erosion and sediment controls, such as a licensed Professional Engineer (PE), Certified Professional in Erosion and Sediment Control (CPESC), or soil scientist.** Each inspection must be followed up by a report documenting the inspector's findings and request the required maintenance and/or repair for the erosion and sedimentation control measures. It is imperative that the contractor documents the inspection and maintenance of all erosion and sedimentation control measures as soon as possible after the inspection and/or maintenance have been completed. These records are used to prove that the required inspection and maintenance were performed. The records shall be placed in the SWPPP. In addition to inspection and maintenance reports, records should be kept of the construction activities that occur on the site. The operator shall post at the site, in a publicly-accessible location, a summary of the site inspection activities on a monthly basis.

2. Record Keeping

The operator shall also prepare a written summary of its status with respect to compliance with this



general permit at a minimum frequency of every three months during which coverage under the NYSDEC SPDES General Permit for Stormwater Discharges from Construction Activity exists. The summary should address the status of achieving each component of the SWPPP. The reports shall be signed by the signatory of the NOI or a duly-authorized person and be retained at the construction site.

The contractor shall retain copies of the SWPPP, all reports and data for a minimum of five (5) years after the project. The following list identifies the required inspection and maintenance documentation that must be maintained by the contractor under this SWPPP.

- Inspection Report
- Stabilization Schedule
- Implementation Schedule
- Status Report

G. SWPPP MODIFICATIONS

The inspection report should also identify if any revisions to the SWPPP are warranted due to unexpected conditions. The SWPPP is meant to be a dynamic working guide that is to be kept current and amended whenever:

- The NYSDEC provides notification that the SWPPP does not comply with the minimum permit requirements.
- The design, construction, operation, or maintenance of the site changes in a way which significantly affects the potential for the discharge of pollutants or when the plan proves to be ineffective in eliminating or significantly minimizing pollutant discharges
- Within seven (7) calendar days of knowledge of a reportable release.

Any such changes to the SWPPP must be made in writing within seven (7) days of the date such modification or amendment is made. The contractor's failure to monitor or report deficiencies to the operator will result in the contractor being liable for fines and construction delays resulting from any federal, state, or local agency enforcement action.

H. FINAL STABILIZATION AND TERMINATION OF PERMIT COVERAGE

A site can be considered stabilized when all soil disturbing activities have been completed and a uniform perennial vegetative cover with a density of 80% over the unpaved areas and areas not covered by permanent structures has been established or equivalent permanent stabilization measures have been established and the facility no longer discharges stormwater associated with construction activities, and a **Notice of Termination** (NOT) form has been filed by the operator(s) with the NYSDEC. Prior to filing of the Notice of Termination, the operator shall have the qualified professional perform a final site inspection. The qualified professional shall certify that the site has undergone final stabilization using either vegetative or structural stabilization methods and that all temporary erosion and sediment controls (such as silt fence) not needed for long-term erosion control have been removed. The filing of the NOT terminates coverage under the General Permit and terminates the contractor's responsibility to implement the SWPPP, but the requirements of the SWPPP, including periodic inspections, must be continued until the NOT is filed. Upon achieving this milestone, the contractor shall also submit "Final Stabilization Certification/Termination Checklist". Final payment and/or the release of any retainer will be withheld until all provisions of the SWPPP have been submitted, completed and accepted by the operator.



Section II. SITE DESCRIPTION

A. PROJECT NAME AND LOCATION

Harrington Homes, Inc
Brandywine Estates, Phase 2
Henneberry Road
Town of Manlius
Onondaga County, New York

UTM Coordinates from NYSDEC Interactive Map: E: 417962; N: 4759972
NYSDEC Region 7

The ± 54 acre property is located on the west side of Henneberry Road in the Town of Manlius, Onondaga County, NY. Figure 1 shows the project location on a street map and Figure 2 shows an aerial image of the proposed site in its existing condition.

B. OWNER/OPERATOR NAME AND ADDRESS

Harrington Homes, Inc
3848 Henneberry Road
Jamesville, NY 10378

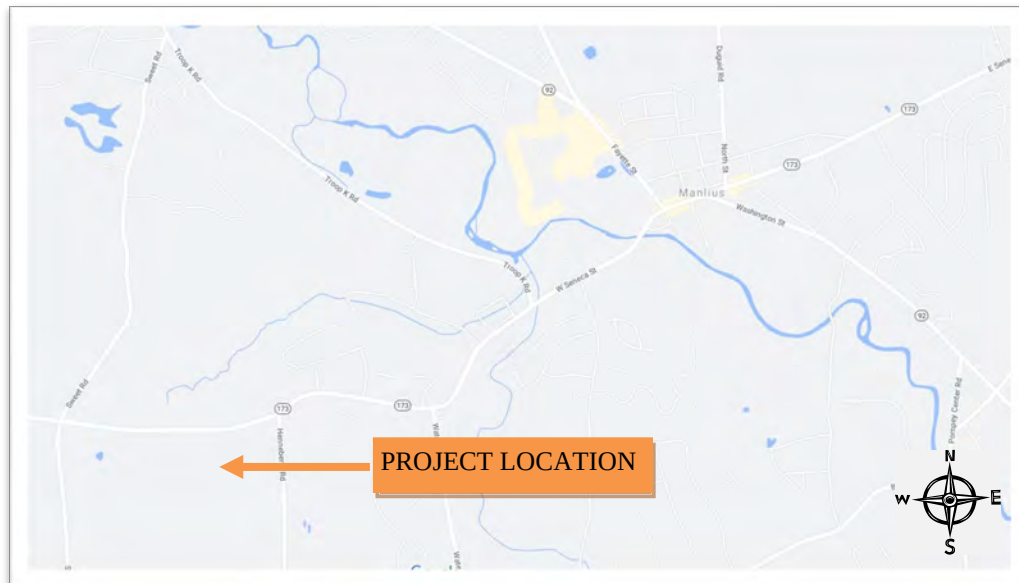


Figure 1: Site Location Map

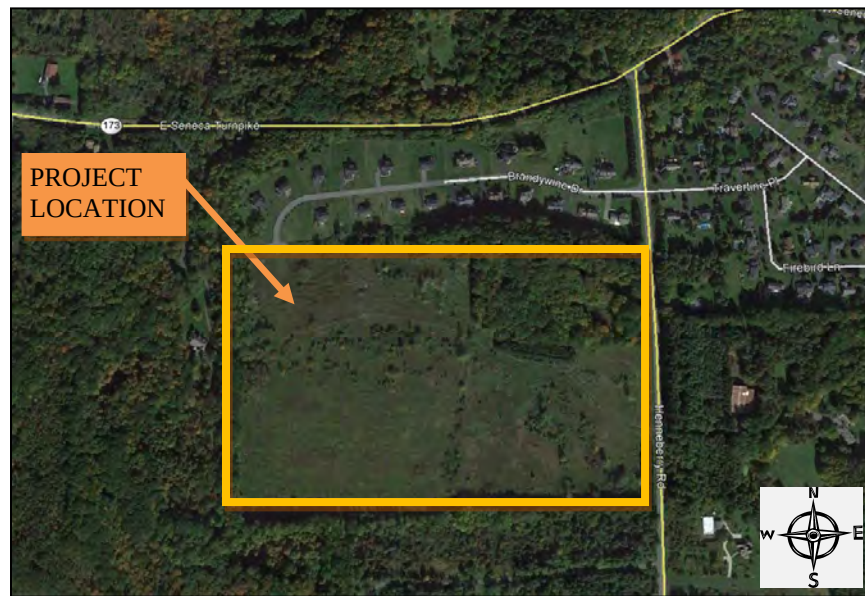


Figure 2: Proposed Site Aerial Image - Google Earth

C. PROJECT DESCRIPTION

The ±54 acre property is located on the west side of Henneberry Road in the Town of Manlius, Onondaga County, NY. This project consists of the subdivision and development of 34 single family homes. The development will also include necessary amenities such as public street(s), public/private utility extensions/connections, and applicable stormwater management facilities.

D. RECEIVING WATERS

Runoff from the site generally flows to the north toward Limestone Creek. This site is within a regulated MS4 (municipal separate storm sewer system). Figure 3 shows the project site location in relation to certain environmental boundaries using the NYSDEC Environmental Resource Mapper. The NYSDEC Environmental Resource Mapper shows that no regulated wetlands are within the vicinity of the project.

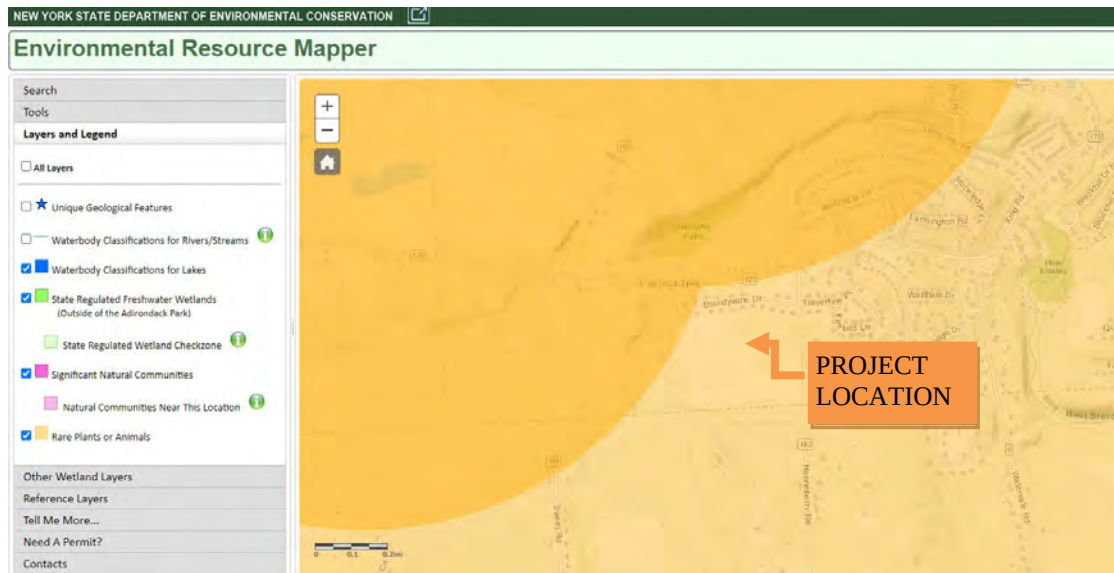


Figure 3: NYS DEC Environmental Resource Mapper

E. ENDANGERED OR THREATENED SPECIES

The NYS DEC Environmental Resource Mapper does not identify the site as containing any rare significant natural communities but is within the check zone for rare plants or animals. We have received a letter from the DEC which states that hibernacula of the Indiana Bat and the Northern Long-Eared Bat exist within 2.5 miles of the site. Due to this, there is a seasonal restriction on tree clearing: trees can only be cut down between October 15 and March 31 in order to protect potential roosting trees.

F. FEDERAL AND STATE HISTORIC PRESERVATION

The SPDES (State Pollutant Discharge Elimination System) GP-0-20-001 requires that the discharge from construction activities shall not influence properties listed as or eligible for listing on the State or National Register of Historic Places. Figure 4 shows the SHPO (State Historic Preservation) map which indicates the project is within an archeological check zone. The project will be further investigated accordingly.

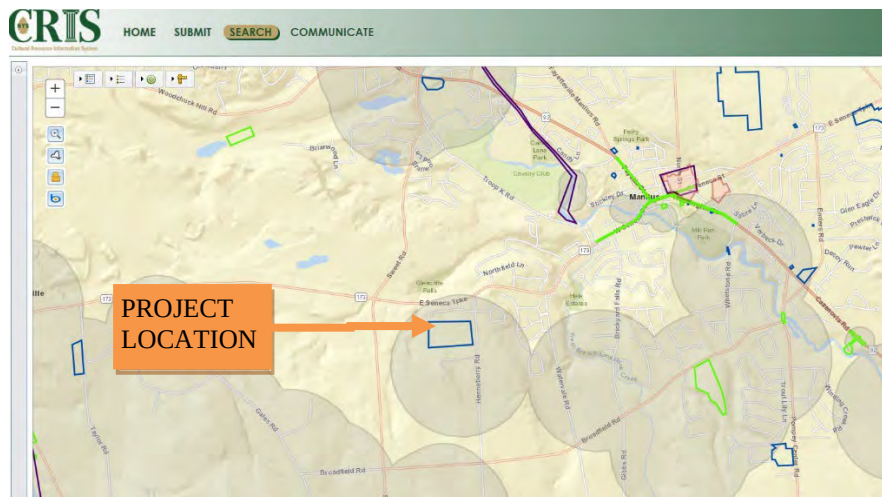


Figure 4: State Historic Preservation Office Map



G. FEMA

Based on local GIS mapping, there are no floodplain/floodway boundaries on this property, as shown on Figure 5 below. This is also confirmed on the site survey by Ianuzi and Romans Land Surveying, P.C., noting the project is in Zone X.

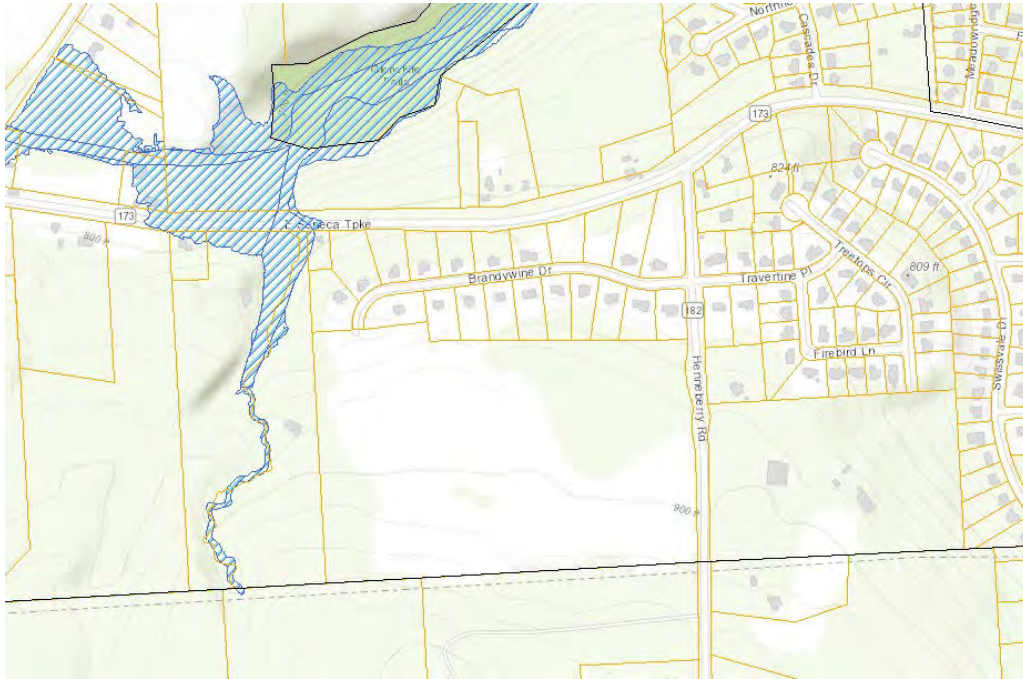


Figure 5: Onondaga County GIS Mapping



Section III. STORMWATER MANAGEMENT

A. METHODOLOGY

1. Hydrologic Conditions

The peak runoff rates for the site were calculated for the existing and proposed hydrologic conditions using HydroCAD software. The HydroCAD program uses the standard SCS TR-55 Curve Number Method for calculation of the time of concentration, composite curve number, and peak runoff rates for the drainage area(s) based on input by the user. The input data was taken from soil maps, detailed topographic and utility survey information, rainfall distribution maps, and aerial images. The required Water Quality Volume (WQ_v) was calculated in accordance with the New York State Stormwater Management Design Manual. The Channel Protection Volume (Cp_v) was calculated based on the release of the 1-year storm runoff volume over a 24-hour period. The hydrologic conditions are used to assess the impacts to the runoff characteristics and to design appropriate measures to mitigate these impacts. The NYS SPDES General Permit for Stormwater Discharges from Construction Activity requires that a stormwater mitigation system meet the following five design criteria.

- Water Quality Volume: The system must capture and treat 90% of the average annual runoff volume.
- Runoff Reduction Volume: The system must apply green infrastructure techniques and Stormwater Management Practices to replicate pre-development hydrology.
- Provide 24-hour extended detention of the runoff from the one-year, 24-hour rainfall event.
- Attenuation of the post-development 10-year, 24-hour peak discharge rate to predevelopment levels.
- Attenuation of the post-development 100-year, 24-hour peak discharge rate to predevelopment levels.

2. Rainfall Information

The following table shows the rainfall values used in the design of the stormwater mitigation basin. These values are taken from rainfall distribution maps provided by the Northeast Regional Climate Center and the New York State Stormwater Management Design Manual, which can be seen on the following page. These values are applied to a Type II 24-hour rainfall distribution in the modeling of the watersheds using the HydroCAD program.

Table 1: Rainfall Information

Precipitation Event	Rainfall in inches
90% Rainfall (WQ_v)	1.0
1-Yr, 24-Hr (Cp_v)	2.04
10-Yr, 24-Hr (Q_p)	3.43
50-Yr, 24-Hr	4.94
100-Yr, 24-Hr (Q_t)	5.78

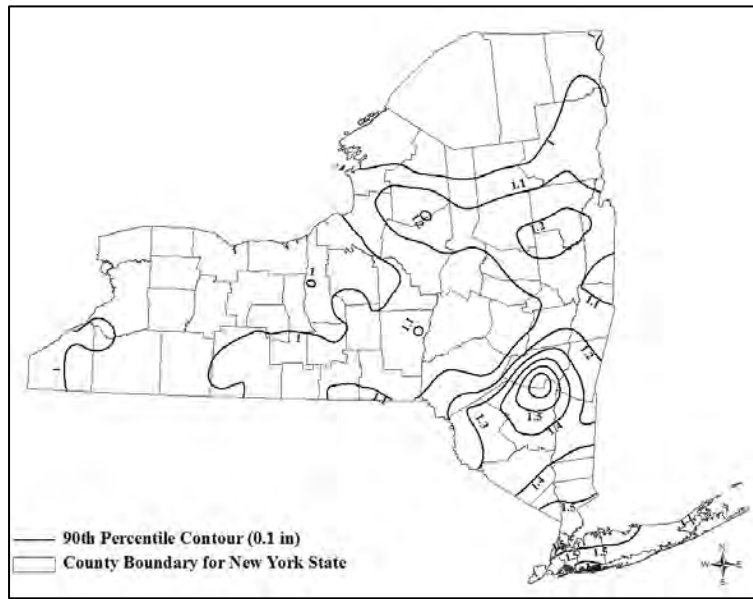


Figure 6: New York State 90% Rainfall Map

Extreme Precipitation Tables

Northeast Regional Climate Center

Data represents point estimates calculated from partial duration series. All precipitation amounts are displayed in inches.

Smoothing Yes
State New York
Location
Longitude 76.007 degrees West
Latitude 42.988 degrees North
Elevation 0 feet
Date/Time Thu, 20 Aug 2020 10:25:27 -0400

Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr
1yr	0.28	0.43	0.53	0.69	0.86	1.06	1yr	0.75	0.96	1.21	1.45	1.73	2.04	2.29
2yr	0.33	0.50	0.63	0.82	1.04	1.28	2yr	0.89	1.16	1.44	1.73	2.04	2.39	2.68
5yr	0.39	0.61	0.76	1.02	1.31	1.61	5yr	1.13	1.44	1.83	2.17	2.54	2.93	3.31
10yr	0.44	0.70	0.88	1.20	1.55	1.93	10yr	1.34	1.69	2.19	2.59	3.00	3.43	3.88
25yr	0.53	0.84	1.07	1.48	1.96	2.44	25yr	1.69	2.10	2.76	3.25	3.73	4.22	4.80
50yr	0.60	0.97	1.24	1.74	2.34	2.93	50yr	2.02	2.48	3.32	3.88	4.41	4.94	5.63
100yr	0.70	1.13	1.46	2.06	2.80	3.51	100yr	2.42	2.94	3.96	4.60	5.21	5.78	6.62
200yr	0.80	1.31	1.69	2.43	3.35	4.20	200yr	2.89	3.47	4.74	5.48	6.15	6.77	7.78
500yr	0.98	1.61	2.09	3.04	4.25	5.33	500yr	3.67	4.35	5.99	6.88	7.65	8.35	9.65

Figure 7: Northeast Regional Climate Center Design Storms



3. Soil Information

The majority of the soils within the project site area consist of Aurora silt loam and Angola-Darien silt loams which are classified as Hydrologic Soil Group D. This indicates that the site should have low transmissive soils if undeveloped. The NRCS Soil Survey Map is shown in Figure 8 below and the soil descriptions can be reviewed in Appendix C.



Figure 8: Project Site NRCS Soil Survey Map

B. EXISTING CONDITIONS

The existing project area consists of mixed woods, brush, and grass area located on the west side of Henneberry Road and to the south of the existing Brandywine Drive subdivision. The overall drainage area has three main points of study at which the peak runoff rates for pre and post-development conditions were analyzed. Drainage Area 1 (DA-1) is tributary to point of study #1, which is located within a small creek to the northwest of the subject site. This creek flows to the north under Route 173 and is ultimately tributary to Limestone Creek. Drainage Area 2 (DA-2) is tributary to point of study #2, located within a drainage ditch on the south side of the existing Brandywine subdivision. Drainage area 3 (DA-3) is tributary to point of study #3, located within the drainage ditch on the west side of the Henneberry Road right-of-way. The only existing impervious area is the hammerhead at the end of Brandywine Drive and is located in the northwest portion of DA-1. The entirety of the subject site slopes generally towards the north at grades varying between $\pm 3\%$ and 13%. An existing drainage ditch cuts across the entirety of the site from east to west and conveys stormwater runoff from the site towards point of study #1.



DA-1 includes a significant amount of off-site wooded area to the south and west of the project site. This area sheet flows to the existing grass area on-site before being channelized in a drainage ditch that flows from east to west across the width of the project site. This ditch discharges to an offsite creek to the west of the subject site before reaching point of study #1.

Table 2: Existing Drainage Area 1 Curve Number Calculation

Area (ac)	CN	Description
21.210	77	Woods, Good, HSG D
17.420	80	>75% Grass cover, Good, HSG D
18.000	73	Brush, Good, HSG D
56.630	77	Weighted Average
56.630		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.0	100	0.0600	0.10		Sheet Flow, Sheet Flow Woods: Light underbrush n= 0.400 P2= 2.39"
4.6	410	0.0900	1.50		Shallow Concentrated Flow, Shallow Woodland Kv= 5.0 fps
6.7	840	0.0900	2.10		Shallow Concentrated Flow, Shallow Short Grass Pasture Kv= 7.0 fps
1.3	1,405	0.0750	17.78	213.31	Channel Flow, Swale Area= 12.0 sf Perim= 8.0' r= 1.50' n= 0.030 Earth, clean & winding
28.6	2,755	Total			

DA-2 includes wooded, grass, and brush area that drain to the north towards point of study #2. There is a series of existing drainage swales that channelize flow towards this point of study. This area is located to the north of the existing drainage ditch that cuts through the site.

Table 3: Existing Drainage Area 2 Curve Number Calculation

Area (ac)	CN	Description
3.330	77	Woods, Good, HSG D
2.740	80	>75% Grass cover, Good, HSG D
6.070	78	Weighted Average
6.070		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.5	100	0.0400	0.13		Sheet Flow, Sheet Flow Grass: Dense n= 0.240 P2= 2.39"
14.2	555	0.0170	0.65		Shallow Concentrated Flow, Shallow Woodland Kv= 5.0 fps
1.5	281	0.0360	3.05		Shallow Concentrated Flow, Shallow Unpaved Kv= 16.1 fps
0.2	280	0.1210	20.51	205.13	Channel Flow, Swale Area= 10.0 sf Perim= 5.0' r= 2.00' n= 0.040 Earth, dense weeds
28.4	1,216	Total			



DA-3 consists of wooded and shrub area in the northeast corner of the subject site and is tributary to point of study # 3 which is located within the Henneberry Road right-of-way.

Table 4: Existing Drainage Area 3 Curve Number Calculation

Area (ac)	CN	Description
3.480	77	Woods, Good, HSG D
1.540	80	>75% Grass cover, Good, HSG D
5.020	78	Weighted Average
5.020		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	100	0.0500	0.15		Sheet Flow, Sheet Flow Grass: Dense n= 0.240 P2= 2.39"
1.5	287	0.0380	3.14		Shallow Concentrated Flow, Shallow Unpaved Kv= 16.1 fps
1.7	150	0.0870	1.47		Shallow Concentrated Flow, Shallow Woodland Kv= 5.0 fps
14.6	537	Total			

Figure 9 on the following page summarizes the hydrology of the existing condition watershed.

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C. PROPOSED CONDITIONS

This project consists of the construction of a 34-lot subdivision of single-family homes. The impervious area on each lot will consist of rooftop area, which will be properly disconnected via gutter discharge to grass buffer strips, and asphalt driveway area, which is assumed to be approximately 1,800 square-feet (about 0.04 acres) for each individual lot. The development will also include necessary amenities such as public street(s), public/private utility extensions/connections, and applicable stormwater management facilities. The stormwater mitigation area will collect and treat runoff in order to meet the objectives of the SPDES General Permit for Stormwater Discharges from Construction Activity and local regulations.

The stormwater management system includes several management practices to capture, treat and control the release of runoff from the site. Runoff from the impervious areas, both rooftop and asphalt, will be directed to practices to provide infiltration/runoff reduction, water quality treatment and water quantity storage. The following stormwater management practices will be constructed:

- **Bioretention Areas:** Bioretention filters are considered a standard stormwater management practice with runoff reduction capacity to decrease stormwater quantity and improve water quality (NYSDEC Stormwater Management Design Manual, p. 5-97)¹. The filters collect runoff from rainfall events, temporarily store it, and filter it through the root structure of the plants and the planting soil media. Through the plants' uptake of runoff and the filtering through the soil media, the amount of runoff the site generates is reduced and the remaining runoff from these frequent, but less intense, rainfall events is treated to remove pollutants such as suspended solids and phosphorus. The runoff in excess of the water quality event (the 90th-percentile rain event) will discharge to the downstream detention basin.
- **Detention Basin:** The detention basin will collect runoff from the more intense but less frequent rainfall events and temporarily store and released in a controlled manner such that the peak rates of runoff to the downstream design points will not be adversely impacted.

DA-1A includes a large off-site, upland wooded area and a majority of the proposed development on the subject property. This area is collected via conveyance systems in the roadway and is ultimately tributary to Bioretention Area #1 and Detention Basin #1.

Table 5: Proposed Drainage Area 1A Curve Number Calculations

Area (ac)	CN	Description
2.470	98	Paved parking, HSG D
1.870	98	Unconnected roofs, HSG D
24.080	80	>75% Grass cover, Good, HSG D
8.960	77	Woods, Good, HSG D
37.380	81	Weighted Average
33.040		88.39% Pervious Area
4.340		11.61% Impervious Area
1.870		43.09% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.9	100	0.0600	0.06		Sheet Flow, SHEET FLOW Woods: Dense underbrush n= 0.800 P2= 2.39"
4.8	370	0.0650	1.27		Shallow Concentrated Flow, SCF Woodland Kv= 5.0 fps
1.9	200	0.0650	1.78		Shallow Concentrated Flow, SCF Short Grass Pasture Kv= 7.0 fps
0.2	295	0.0300	19.80	79.19	Channel Flow, curb and gutter flow Area= 4.0 sf Perim= 4.0' r= 1.00' n= 0.013 Asphalt, smooth
1.7	1,100	0.0345	11.04	19.51	Pipe Channel, Pipe Flow 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
3.8	955	0.0050	4.20	50.44	Channel Flow, Area= 12.0 sf Perim= 12.0' r= 1.00' n= 0.025 Earth, grassed & winding
40.3	3,020	Total			

¹ The "biogeochemical process" in terms of stormwater management is the pathway by which water is recycled through plant material where the plant can consume it or return it to the atmosphere through evapotranspiration.



DA-1B includes the western portion of the proposed development and a section of wooded area upland and to the south of the subject property. This area is ultimately tributary to Bioretention Area #2 and Detention Basin #1.

Table 6: Proposed Drainage Area 1B Curve Number Calculations

Area (ac)	CN	Adj	Description
0.870	98		Paved parking, HSG D
0.410	98		Unconnected roofs, HSG D
4.000	80		>75% Grass cover, Good, HSG D
2.040	77		Woods, Good, HSG D
1.600	73		Brush, Good, HSG D
8.920	81	80	Weighted Average, UI Adjusted
7.640			85.65% Pervious Area
1.280			14.35% Impervious Area
0.410			32.03% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	100	0.0600	0.16		Sheet Flow, SHEET FLOW Grass: Dense n= 0.240 P2= 2.39"
4.6	410	0.0900	1.50		Shallow Concentrated Flow, SCF Woodland Kv= 5.0 fps
5.6	710	0.0920	2.12		Shallow Concentrated Flow, SCF Short Grass Pasture Kv= 7.0 fps
0.3	170	0.0200	9.55	76.42	Channel Flow, swale flow Area= 8.0 sf Perim= 8.0' r= 1.00' n= 0.022 Earth, clean & straight
21.1	1,390	Total			

DA-1C consists of the grassy area within the detention basin and is not tributary to a bioretention area.

Table 7: Proposed Drainage Area 1C Curve Number Calculations

Area (ac)	CN	Description			
0.960	80	>75% Grass cover, Good, HSG D			
0.120	77	Woods, Good, HSG D			
1.080	80	Weighted Average			
1.080		100.00% Pervious Area			
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Min TR 55 Value



DA-1D consists largely of wooded area and lawn area that is located on the western part of the subject site and just off-site to the west. This drainage area is not tributary to any on-site stormwater management practices and is directly tributary to point of study #1.

Table 8: Proposed Drainage Area 1D Curve Number Calculations

Area (ac)	CN	Description
3.230	80	>75% Grass cover, Good, HSG D
8.910	77	Woods, Good, HSG D
0.200	98	Paved parking, HSG D
2.660	73	Brush, Good, HSG D
15.000	77	Weighted Average
14.800		98.67% Pervious Area
0.200		1.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.9	100	0.0600	0.06		Sheet Flow, SHEET FLOW Woods: Dense underbrush n= 0.800 P2= 2.39"
5.4	485	0.0900	1.50		Shallow Concentrated Flow, SCF Woodland Kv= 5.0 fps
4.1	517	0.0900	2.10		Shallow Concentrated Flow, SCF Short Grass Pasture Kv= 7.0 fps
1.2	1,155	0.0750	16.28	260.45	Channel Flow, SWALE Area= 16.0 sf Perim= 16.0' r= 1.00' n= 0.025 Earth, clean & winding

38.6	2,257	Total
------	-------	-------

DA-2 consists of the small amount of wooded and lawn area that is still tributary to point of study #2 to the north of the subject site.

Table 9: Proposed Drainage Area 2 Curve Number Calculations

Area (ac)	CN	Description
0.690	80	>75% Grass cover, Good, HSG D
0.140	77	Woods, Good, HSG D
0.830	79	Weighted Average
0.830		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	100	0.1500	0.23		Sheet Flow, SHEET FLOW Grass: Dense n= 0.240 P2= 2.39"
0.7	104	0.1300	2.52		Shallow Concentrated Flow, SCF Short Grass Pasture Kv= 7.0 fps
8.1	204	Total			



DA-3A includes a small amount of off-site wooded area and the southeastern-most proposed house within the development. The runoff from this area is collected by the loop road conveyance system, discharges into the drainage ditch within the right-of-way, and is ultimately tributary to point of study #3.

Table 10: Proposed Drainage Area 3A Curve Number Calculations

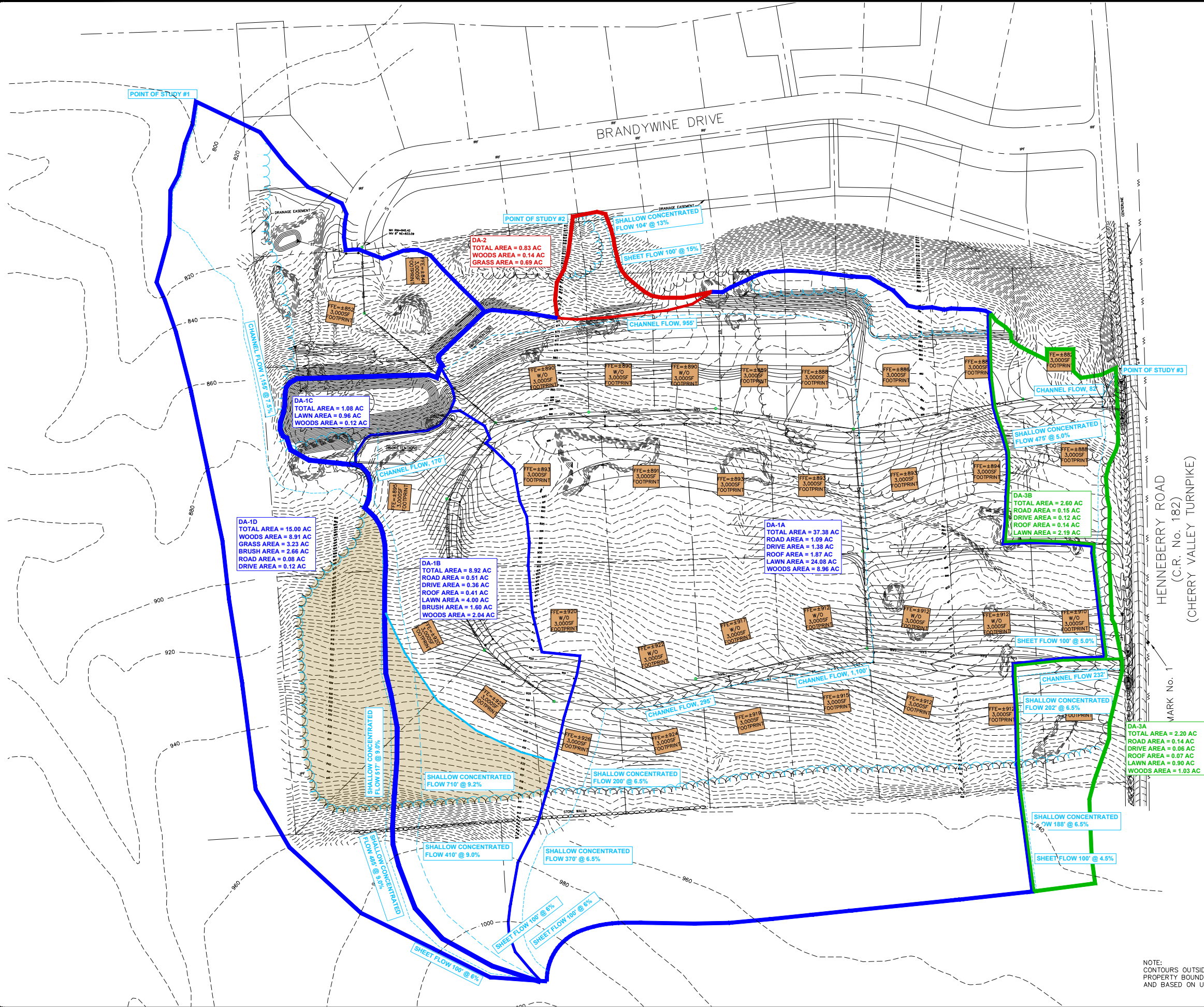
Area (ac)	CN	Adj	Description		
0.920	80		>75% Grass cover, Good, HSG D		
0.180	98		Paved parking, HSG D		
0.070	98		Unconnected roofs, HSG D		
1.030	77		Woods, Good, HSG D		
2.200	81	80	Weighted Average, UI Adjusted		
1.950			88.64% Pervious Area		
0.250			11.36% Impervious Area		
0.070			28.00% Unconnected		
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.9	100	0.0450	0.14		Sheet Flow, SHEET FLOW Grass: Dense n= 0.240 P2= 2.39"
2.5	188	0.0650	1.27		Shallow Concentrated Flow, SCF Woodland Kv= 5.0 fps
1.9	202	0.0650	1.78		Shallow Concentrated Flow, SCF Short Grass Pasture Kv= 7.0 fps
0.2	232	0.0220	16.95	50.86	Channel Flow, curb flow Area= 3.0 sf Perim= 3.0' r= 1.00' n= 0.013 Asphalt, smooth
16.5	722	Total			

DA-3B includes a small portion of the northeastern portion of the proposed development. This area is directly tributary to point of study #3 within the right-of-way.

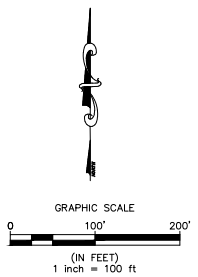
Table 11: Proposed Drainage Area 3B Curve Number Calculations

Area (ac)	CN	Adj	Description		
2.230	80		>75% Grass cover, Good, HSG D		
0.230	98		Paved parking, HSG D		
0.140	98		Unconnected roofs, HSG D		
2.600	83	82	Weighted Average, UI Adjusted		
2.230			85.77% Pervious Area		
0.370			14.23% Impervious Area		
0.140			37.84% Unconnected		
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	100	0.0500	0.15		Sheet Flow, SHEET FLOW Grass: Dense n= 0.240 P2= 2.39"
5.1	475	0.0500	1.57		Shallow Concentrated Flow, SCF Short Grass Pasture Kv= 7.0 fps
0.2	82	0.0200	6.42	5.04	Pipe Channel, pipe flow 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
16.7	657	Total			

Figure 10 on the following page summarizes the hydrology of the proposed condition watershed.



HENNEBERRY ROAD
(C.R. No. 182)
MARK No. 1
(CHERRY VALLEY TURNPIKE)



NOTE:
CONTOURS OUTSIDE OF THE SUBJECT
PROPERTY BOUNDARY IS APPROXIMATE
AND BASED ON USGS TOPOGRAPHY MAPS.

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CONSULTING, INC.

PLANNED BY:
NEAL H. ZIMMERMAN, JR., P.E.
EVS REGISTRATION # 09721

PROJECT NO.
20-1906

DATE
29 NOV 2021

SCALE
1" = 100'



PREPARED BY:
email: MNAT@NAPCON.COM
PH: (315) 682-5580 FAX: (315) 682-5544

SHEET TITLE:

PROPOSED
DRAINAGE AREA

PROJECT TITLE:
BRANDYWINE ESTATES PHASE 2
HENNEBERRY ROAD
TOWN OF MANLIUS ONONDAGA COUNTY, NY
PREPARED FOR:
HARRINGTON HOMES
3848 HENNEBERRY ROAD
JAMESVILLE, NY 13078

FIG-2

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D. RUNOFF REDUCTION VOLUME (RRV)

The NYSDEC implemented regulations effective March 1, 2011 that requires all construction projects that disturb greater than one acre of land to provide runoff reduction through the implementation of green infrastructure practices. The goal of the runoff reduction volume criteria is to implement stormwater management practices and green infrastructure techniques to replicate pre-development hydrology. The NYS Stormwater Management Design Manual provides the acceptable green planning techniques and green infrastructure techniques to meet the runoff reduction volume criteria. The following narrative and calculations detail the implementation of the planning and infrastructure techniques on the site to achieve the minimum runoff reduction volume. The narrative follows the Design Manual, Chapter 5.

PLANNING

1. Plan to preserve, avoid, and minimize:

	<u>Applicable</u>	<u>Not Applicable</u>
a. Preserve undisturbed, natural buffer, and critical environmental areas.	☐	☒
b. Employ open space, conservation, and clustering site design techniques.	☒	☐
c. Avoid developing in environmentally sensitive areas: floodplain, steep slopes, habitat, ecosystems, bedrock, wetlands, shorelines, shallow groundwater, impervious soils and unstable soils.	☒	☐
d. Minimize impervious surfaces: building footprints, parking, roads, sidewalks, and driveways.	☒	☐
e. Minimize clearing and grading	☒	☐

Discussion:

- The project does not have any critical environmental areas.
- Open space is used in projects on tracts of land where the development can be concentrated in a portion of the site while maintaining large portions of undisturbed land. Open space design was taking into consideration when planning the subdivision of the property. Town code requires lot sizes to be a minimum of 40,000 square feet and this plan proposes lots between 43,000 sf and 100,000 sf.
- The project does not have any critical environmental areas with the exception of steep slopes. Development in steep slopes will be minimized as much as possible and is limited to areas of the individual homes.
- The NYS Stormwater Design Manual discusses building footprint reduction in terms of building multiple floors to achieve the same, or comparable, square footage as a single-floor footprint. The majority of these house are expected to be two-story homes to reduce the footprint and achieve more square foot area of the house.
- The proposed grading plan for the project minimizes the amount of grading to the maximum extent practicable. Grade requirements for a functional site, including slopes to meet the buildable lots, were taken into account during the design phase. The off-grading was designed to catch up to the existing grade in the shortest distance possible (i.e., minimize off-grading) while still meeting acceptable standards for slope stabilization and erosion control.

Disconnection of Rooftop Runoff

All direct runoff from residential rooftop areas has been designed to be distributed to surrounding pervious areas to promote overland vegetative filtering and infiltration. As such, all rooftop impervious area is treated as pervious lawn area when calculating the required water quality volume and runoff reduction volume. The rooftop impervious area is not deducted when calculating the water quantity mitigation in the detention basin.



E. WATER QUALITY VOLUME (WQ_v) REQUIRED:

1. Calculate the required water quality volume for new impervious area within drainage areas DA-1A.

$$WQ_v = \frac{PR_v A}{12}$$

90-th Percentile Rainfall (P) = 1.0 inch

Drainage Area (A) = 37.38 acres

Impervious Area (A_I) = 2.47 acres

$$R_v = 0.05 + 0.9 \left(\frac{A_I}{A} \right)$$

$$R_v = 0.05 + 0.9(0.066)$$

$$R_v = 0.109$$

therefore:

$$WQ_v = \frac{1.0 \cdot 0.109 \cdot 37.38}{12}$$

$$\text{Total WQ}_v \text{ Required} = 0.340 \text{ ac} \cdot \text{ft (14,800 cf)}$$

2. Minimum RR_v requirements

Calculate minimum required Runoff Reduction Volume (RR_v) for DA-1A, 1B, & 1C using:

$$RR_v = \frac{P \cdot R_v \cdot S \cdot A_I}{12}$$

A_I = total impervious area

S = 0.55 (A Soils), 0.40 (B Soils), 0.30 (C Soils), 0.20 (D Soils), or weighted HSG average in drainage area

$$RR_v = \frac{1.0(0.95)(0.20)(2.47)}{12}$$

$$\text{Total Minimum RR}_v \text{ required} = 0.039 \text{ ac} \cdot \text{ft (1,705 cf)}$$

3. Calculate the required water quality volume for the remaining new impervious area within drainage areas DA-1B, DA-3A, & DA-3B. The impervious area within DA-3 cannot feasibly be captured and treated due to steep slopes, therefore the bioretention area collecting runoff from DA-1B will be oversized to compensate for the required water quality treatment volume of DA-3.

$$WQ_v = \frac{PR_v A}{12}$$

90-th Percentile Rainfall (P) = 1.0 inch

Drainage Area (A) = 13.72 acres

Impervious Area (A_I) = 1.34 acres (Total from DA-1B and DA-3)

$$R_v = 0.05 + 0.9 \left(\frac{A_I}{A} \right)$$

$$R_v = 0.05 + 0.9(0.098)$$

$$R_v = 0.138$$

therefore:

$$WQ_v = \frac{1.0 \cdot 0.138 \cdot 13.72}{12}$$

$$\text{Total WQ}_v \text{ Required} = 0.158 \text{ ac} \cdot \text{ft (6,870 cf)}$$



4. Minimum RR_v requirements

Calculate minimum required Runoff Reduction Volume (RR_v) for DA-1A, 1B, & 1C using:

$$RR_v = \frac{P \cdot R_v \cdot S \cdot A_I}{12}$$

A_I = total impervious area

S = 0.55 (A Soils), 0.40 (B Soils), 0.30 (C Soils), 0.20 (D Soils), or weighted HSG average in drainage area

$$RR_v = \frac{1.0(0.95)(0.20)(1.34)}{12}$$

Total Minimum RR_v required = 0.021 ac·ft (925 cf)

F. WATER QUALITY VOLUME (WQV) PROVIDED

Water quality treatment for the runoff from proposed impervious surfaces will be provided by a combination of two bioretention areas. Rooftop area is assumed to be properly disconnected from nearby impervious surfaces and is therefore treated as pervious area in analysis.

Bioretention Basin #1 (DA-1A)

$$A_f = \frac{(WQ_v)(d_f)}{(k)(h_f + d_f)(t_f)}$$

Where,

A_f = Area of the filter (ft²)

WQ_v = Water Quality Volume (ft³)

d_f = depth of the bioretention soil media (2.5 ft as required in NYS Design Manual)

k = coefficient of permeability (0.5 ft/day per NYS Design Manual)

h_f = average height of water above the filter bed (0.125 ft)

t_f = design filter bed drain time (2 days per NYS Design Manual)

$$A_f = \frac{(14,800 \text{ ft}^3)(2.5 \text{ ft})}{\left(0.5 \frac{\text{ft}}{\text{day}}\right)(0.25 \text{ ft} + 2.5 \text{ ft})(2 \text{ days})}$$

Total A_f = 13,455 ft² *required*

Total A_f provided = 13,500 ft²

Therefore,

$WQ_v = 14,800 \text{ ft}^3$ (0.340 ac·ft) *Provided*

The RR_v provided is calculated as follows:

Bioretention areas in C and D soils have a RR_v factor of $0.4 \cdot WQ_v$.

$$RR_v = 0.4 \cdot 14,800 \text{ ft}^3$$

RR_v provided = 5,920 ft³ = 0.136 ac·ft



Bioretention Basin #2 (DA-1B, 3A, & 3B)

$$A_f = \frac{(WQ_v)(d_f)}{(k)(h_f + d_f)(t_f)}$$

Where,

- A_f = Area of the filter (ft²)
- WQ_v = Water Quality Volume (ft³)
- d_f = depth of the bioretention soil media (2.5 ft as required in NYS Design Manual)
- k = coefficient of permeability (0.5 ft/day per NYS Design Manual)
- h_f = average height of water above the filter bed (0.125 ft)
- t_f = design filter bed drain time (2 days per NYS Design Manual)

$$A_f = \frac{(6,870 \text{ ft}^3)(2.5 \text{ ft})}{\left(0.5 \frac{\text{ft}}{\text{day}}\right)(0.25 \text{ ft} + 2.5 \text{ ft})(2 \text{ days})}$$

Total A_f = 6,245 ft² *required*

Total A_f provided = 6,250 ft²

Therefore,

$WQ_v = 6,870 \text{ ft}^3$ (0.158 ac·ft) Provided

The RR_v provided is calculated as follows:

Bioretention areas in C and D soils have a RR_v factor of $0.4 \cdot WQ_v$.

$$RR_v = 0.4 \cdot 6,870 \text{ ft}^3$$

$$\text{RR}_v \text{ provided} = 2,750 \text{ ft}^3 = 0.063 \text{ ac} \cdot \text{ft}$$

Diversion Structure Design

Peak Runoff Rate During WQ_v Event

Using the methodology outlined in Appendix D.10 of the Stormwater Manual :

$$CN = \frac{1000}{10 + 5P + 10Q_a - 10\sqrt{Q_a^2 + 1.25Q_aP}}$$

Where,

- CN = the computed runoff curve number
- P = rainfall, in inches (P=1.0")
- Q = runoff volume (= P R_v), in inches

$$P = 1.00''$$

$$R_v = 0.114 \text{ (from above)}$$

$$CN = \frac{1000}{10 + (5 \cdot 1.00) + (10 \cdot 1.00 \cdot 0.114) - 10\sqrt{(0.114 \cdot 1.00)^2 + 1.25(0.114 \cdot 1.00 \cdot 1.00)}}$$

$$CN = 82$$



Time of Concentration, t_c , is 21.1 minutes

From Table 4-1 of the SCS TR-55, the initial abstraction, I_a , for a watershed with a curve number of 82 is 0.439.

$$\frac{I_a}{P} = \frac{0.439}{1.00}$$

$$\frac{I_a}{P} = 0.439$$

Using the I_a/P and the time of concentration, the unit peak discharge, q_u , is found to be 400 csm/in (from Exhibit 4-II, TR-55).

The peak rate of runoff is then calculated using the following formula:

$$Q_p = q_u \times A \times WQ_v$$

Where,

Q_p = the peak discharge, in cfs

q_u = the unit peak discharge, in cfs/mi²/inch

A = drainage area, in square miles (acres/640)

WQ_v = water quality volume, in watershed inches ($P \cdot R_v$)

$$Q_p = 400 \frac{\text{csm}}{\text{in}} \times \frac{8.92 \text{ acres}}{\frac{640 \text{ ac}}{\text{mi}^2}} \times (1.00 \cdot 0.109)$$

$$Q_p = 0.61 \text{ cfs}$$

Inverts of Structure

$$Q = C_d \cdot A \sqrt{2gH}$$

$$0.61 \text{ cfs} = 0.6 \cdot \frac{\pi \left(\frac{6}{12}\right)^2}{4} \sqrt{2 \left(32.2 \frac{\text{ft}}{\text{sec}^2}\right) H}$$

$$H = 0.42 \text{ ft}$$

G. CHANNEL PROTECTION VOLUME (CP_v)

The proposed project must provide sufficient storage of the channel protection volume (CP_v), which is accomplished by providing 24-hour extended detention of the one-year, 24-hour storm event, remained from runoff reduction. The NYS Stormwater Design Manual methodology for determining the storage volume was used (Appendix B.1) and is discussed below. Below is a summary of the calculations for DA-1.

Proposed Detention Basin 1

Tributary Area = 47.38 acres, CN = 81, & t_c = 35 minutes

$$I_a = 0.469, P = 1.0''$$

$$\frac{I_a}{P} = 0.469$$

Using I_a/P and T_c , q_u = 260 csm/in (TR-55, Exhibit 4-II)

Using q_u and T = 24 hr, q_o/q_i = 0.07 (Design Manual, Figure B.1)



Using formula 2.1.16 (Design Manual, Appendix B.1), calculate V_s/V_r

$$\frac{V_s}{V_r} = 0.590$$

Using formula 2.1.17 (Design Manual, Appendix B.1), calculate V_s

$$V_s = \frac{\left(\frac{V_s}{V_r}\right) Q_d A}{12}$$

$$V_s = (0.59) 2.450 \text{ ac} \cdot \text{ft} \text{ (total tributary from HydroCAD)}$$

$$V_s = 1.44 \text{ ac} \cdot \text{ft} \text{ (62,725 cf)}$$

CPv required = CPv - RRv Provided

$$\text{CPv required} = 62,725 \text{ ft}^3 - 8,670 \text{ ft}^3 = \mathbf{54,055 \text{ ft}^3 \text{ required}}$$

$$\text{CPv Provided in Bioretention \#1} = 11,608 \text{ ft}^3$$

$$\text{CPv Provided in Bioretention \#2} = 4,491 \text{ ft}^3$$

$$\text{CPv Provided in Detention \#1} = 40,512 \text{ ft}^3$$

$$\mathbf{\boxed{\text{Total CPv} = 56,610 \text{ ft}^3 \text{ Provided}}}$$



H. PEAK FLOW MITIGATION (Q_{p10} and Q_{p100})

The remaining two requirements of the NYSDEC SPDES General Permit for Stormwater Discharges from Construction Activity are that the stormwater system cannot discharge runoff from the site during the 10-year and 100-year, 24-hour rainfall events at rates higher than the existing condition peak rates of runoff during the correlating rainfall events. To meet these requirements, the underground stormwater chamber system will act as a detention basin that capture the runoff, temporarily store it, and release the runoff in a controlled manner to the existing drainage ditch such that the proposed project will not adversely impact the downstream areas. The following tables summarize the HydroCAD results for the 10-year and 100-year rainfall events.

Table 12: Peak Flow Rates for 10-Year & 100-Year Rainfall Events

Point of Study	Existing Peak Runoff Rate (cfs)			Proposed Peak Runoff Rate (cfs)		
	Pt. 1	Pt. 2	Pt. 3	Pt. 1	Pt. 2	Pt. 3
10-Year Storm	67.61	7.68	9.35	32.92	2.07	9.31
100-Year Storm	165.93	18.46	22.06	80.24	4.70	21.06

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
863.50	1,285	0	0
864.00	11,100	3,096	3,096
865.00	18,820	14,960	18,056
866.00	21,020	19,920	37,976
867.00	23,280	22,150	60,126
868.00	25,590	24,435	84,561
869.00	27,960	26,775	111,336
870.00	30,390	29,175	140,511
871.00	32,875	31,633	172,144
872.00	35,415	34,145	206,289
873.00	38,010	36,713	243,001

Device	Routing	Invert	Outlet Devices
#1	Secondary	872.00'	30.0' long x 12.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#2	Primary	863.50'	30.0" Round Culvert L= 98.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 863.50' / 857.00' S= 0.0663 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf
#3	Device 2	863.50'	7.0" Vert. Orifice1 C= 0.600 Limited to weir flow at low heads
#4	Device 2	866.00'	32.0" W x 18.0" H Vert. Orifice2 C= 0.600 Limited to weir flow at low heads
#5	Device 2	868.10'	36.0" x 36.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads

Figure 11: Proposed Detention Basin #1 Summary



Section IV. CONTROLS

A. EROSION AND SEDIMENT CONTROLS

Prior to the commencement of construction, the operator will identify the contractor(s) and subcontractor(s) that will implement each erosion and sediment control measure identified in this SWPPP. All contractors and subcontractors identified in the SWPPP must sign a copy of the certification statement in Part III.E. of the NYS DEC SPDES General Permit for Stormwater Discharges from Construction Activities in accordance with Part V.H. of the SPDES General Permit.

1. Stabilization Practices (Permanent)

Permanent stabilization practices for this site include:

- a. Land clearing activities shall be done only in areas where earthwork will be performed and shall progress as earthwork is needed.
- b. Permanent seeding and planting of all unpaved areas.

2. Stabilization Practices (Temporary) Temporary stabilization practices for this site include:

- a. Temporary seeding and planting of all unpaved areas when construction activity has ceased, or will cease, in an area for 14 days. Seeding mixtures and application rates are listed in the erosion and sediment control notes on the plans.
- b. Mulching exposed areas. Mulching rates are listed in the erosion and sediment control notes on the plan sheet C-15.
- c. Frequent watering to minimize wind erosion during construction.

3. Structural Practices (Permanent) Permanent structural practices for this site include:

- a. Bioretention Areas. Bioretention filters are considered a standard stormwater management practice with runoff reduction capacity to decrease stormwater quantity and improve water quality.
- b. Land grading. Land grading is the reshaping of the existing land surface in accordance with a plan as determined by the engineering survey and layout. The purpose of a land grading specification is to provide erosion control and vegetative establishment on areas where the existing land is to be reshaped according to the plan.

4. Structural Practices (Temporary)

Temporary structural practices for this site include:

- a. Silt fence. Silt fence is a temporary barrier of geotextile fabric installed on the contours across from a slope used to intercept sediment laden runoff from small drainage areas of disturbed soil. The purpose of silt fence is to reduce runoff velocity and effect deposition of transported sediment load.
- b. Stabilized construction entrance/exit. A stabilized construction entrance/exit is a stabilized pad of aggregate underlain with geotextile located at any point where traffic will be entering or leaving a construction site to or from a public right-of-way, street, alley, sidewalk, or parking area. The purpose of the stabilized construction entrance is to reduce or eliminate the tracking of sediment onto public rights-of-way or streets
 1. Aggregate size: Use a matrix of one to four-inch stone, or reclaimed or recycled equivalent
 2. Thickness: Not less than six inches
 3. Width: 24-foot minimum
 4. Length: As required, but not less than 50 feet
 5. Geotextile: To be placed over the entire area to be covered with aggregate. Piping of surface water under entrance shall be provided as necessary.



- c. Sediment trap. The detention basins will be used as a sediment trap during construction. The sediment basin will have a riprap outlet sediment trap in place of the emergency spillway. Upon completion of construction, the sediment basin will be cleaned of all sediment buildup and the basin shall be finalized per plans.
- d. Concrete washout area. A temporary excavated or above ground lined constructed pit where concrete truck mixers and equipment can be washed after their loads have been discharged to prevent highly alkaline runoff from entering storm drainage systems or leaching into the soil.
 1. The washout facility is sized to contain solids, wash water and rainfall. The maximum size shall be eight feet by eight feet at the bottom and two feet deep. If excavated, then the side slopes shall be 2:1 (horizontal to vertical).
 2. The facility shall be located a minimum of 100 feet from drainage swales, storm drain inlets, wetlands, streams, and other surface waters. Surface waters shall be prevented from entering the structure except got the access road. Appropriate access shall be provided with a gravel access road sloped down to the structure. Signs shall be placed to direct drivers to the facility after their load is discharged.
 3. All washout facilities will be lined to prevent leaching of liquids into the ground. The liner shall be plastic sheeting with a minimum thickness of 10 mils with no holes or tears, and anchored beyond the top of the pit with an earthen berm, sand bags, stone, or other structural appurtenance except at the access point.

5. Sequence of Major Activities

The contractor will be responsible for implementing the above listed erosion and sediment control practices. The contractor may designate these tasks to certain subcontractors as is seen fit, but the ultimate responsibility for implementing these controls and ensuring their proper function remains with the contractor. The order of activities shall be as follows:

- a. Conduct a preconstruction meeting with all involved parties
- b. Delineate boundaries of disturbance as per the layout and grading plans
- c. Construct construction entrance at the location shown on the erosion and sediment control plan
- d. Install silt fence in locations shown on the layout and grading plans
- e. Establish staging areas on the project site
- f. Construct sediment trap(s) and overflow spillways for use during construction
- g. Excavate detention basin and install overflow spillway
- h. Remove topsoil, stockpile and stabilize
- i. Rough grade site including swales and provide temporary stabilization when idle for more than 7 days
- j. Building foundation excavation
- k. Install underground stormwater management system
- l. Compact gravel along driveways and parking areas
- m. Utility installations.
- n. Install concrete washout, complete concrete site work.
- o. Complete final grading of the site
- p. Restore all compacted soils in accordance with section 5.1.6 of the NYS Stormwater Design Manual
- q. Provide final stabilization and landscaping of new area
- r. Site Paving
- s. Provide final stabilization of disturbed areas via seeding mulching.
- t. Construct bioretention basins and outlet controls upon upstream stabilization
- u. Remove all temporary stabilization control practices

Disturbed areas of the site where construction activity has ceased for more than seven (7) days shall be temporarily seeded and mulched. The Erosion & Sediment Control plan is shown in Appendix F.



B. INSPECTION AND MAINTENANCE REQUIREMENTS

Best management practices, both construction and operational, must be inspected and maintained on a routine basis to ensure continued compliance with the NYS SPDES General Permit for Stormwater Discharges from Construction Activity. The contractor is responsible for inspecting the erosion and sediment control practices, the operator/owner is responsible for providing a qualified professional, as defined in the SPDES General Permit, to perform the required weekly inspections of the construction site from the time earth-disturbing activities begin until final stabilization is achieved and the Notice of Termination is filed. The contractor will obtain copies of all local and state regulations that are applicable to stormwater management, erosion control, and pollution minimization at this job site and will comply fully with such regulations. The contractor will submit written evidence of such compliance if requested by the operator or any agent of a regulatory body. The contractor will comply with all conditions of the NYSDEC SPDES General Permit for Stormwater Discharges from Construction Activity, including the conditions related to maintaining the SWPPP and evidence of compliance with the SWPPP at the job site and allowing regulatory personnel access to the job site and to records to determine compliance.

C. CONSTRUCTION MAINTENANCE/INSPECTION PROCEDURES

The operator shall maintain a record of all inspection reports in a site logbook. The logbook shall be maintained on site and be made available to the permitting authority upon request. Prior to the commencement of construction, the operator shall certify in the site logbook that the SWPPP, prepared in accordance with Part III.D. of the NYS DEC SPDES General Permit for Discharges from Construction Activities, meets all Federal, State and local erosion and sediment control requirements. The operator shall post at the site, in a publicly accessible location, a summary of the site inspection activities monthly. The following inspection and maintenance practices will be used to maintain erosion and sediment controls and stabilization measures.

1. Inspection and Maintenance Practices
 - a. Inspections shall occur once every seven calendar days.
 - b. At a minimum, the qualified inspector shall inspect all erosion and sediment control practices to ensure integrity and effectiveness, all post-construction stormwater management practices under construction to ensure that they are constructed in conformance with the SWPPP, all areas of disturbance that have not achieved final stabilization, all points of discharge to natural surface waterbodies located within or immediately adjacent to the property boundaries of the construction site, and all points of discharge from the construction site.
 - c. The qualified inspector shall prepare an inspection report subsequent to each and every inspection. At a minimum, the inspection report shall include and/or address the following:
 - i. Date and time of inspection;
 - ii. Name and title of person(s) performing inspection;
 - iii. A description of the weather and soil conditions (e.g. dry, wet, saturated) at the time of the inspection;
 - iv. A description of the condition of the runoff at all points of discharge from the construction site. This shall include identification of any discharges of sediment from the construction site. Include discharges from conveyance systems (i.e. pipes, culverts, ditches, etc.) and overland flow;
 - v. A description of the condition of all natural surface water bodies located within, or immediately adjacent to, the property boundaries of the construction site which receive runoff from disturbed areas. This shall include identification of any discharges of sediment to the surface water body;
 - vi. Identification of all erosion and sediment control practices that need repair or maintenance;
 - vii. Identification of all erosion and sediment control practices that were not installed or are not functioning as designed and need to be reinstalled or replaced;
 - viii. Description and sketch of areas that are disturbed at the time of the inspection and areas that have been stabilized (temporarily and/or final) since the last inspection;



- ix. Current phase of construction of all post-construction stormwater management practices and identification of all construction that is not in conformance with the SWPPP and technical standards;
 - x. Corrective action(s) that must be taken to install, repair, replace, or maintain erosion and sediment control practices; and to correct deficiencies identified with the construction of the post-construction stormwater management practice(s); and
 - xi. Digital photographs, with date stamp, that clearly show the condition of all practices that have been identified as needing corrective actions. The qualified inspector shall attach paper color copies of the digital photographs to the inspection report being maintained onsite within seven (7) calendar days of the date of the inspection. The qualified inspector shall also take digital photographs, with date stamp, that clearly show the condition of the practice(s) after the corrective action has been completed. The qualified inspector shall attach paper color copies of the digital photographs to the inspection report that documents the completion of the corrective action work within seven (7) calendar days of that inspection.
- d. Within one business day of the completion of an inspection, the qualified inspector shall notify the owner or operator and appropriate contractor or subcontractor of any corrective actions that need to be taken. The contractor or subcontractor shall begin implementing the corrective actions within one business day of this notification and shall complete the corrective actions in a reasonable time frame.
- e. All inspection reports shall be signed by the qualified inspector. The inspection reports shall be maintained on the site.
- f. Erosion and Sediment Control Inspection/Maintenance
- i. Silt Fence: Silt fence shall be inspected for depth of sediment, tears, etc., to see if the fabric is securely attached to the fence posts, and to see that the fence posts are securely in the ground. Built up sediment will be removed from silt fence when it has reached one-third the height of the fence.
 - ii. Stabilized Construction Entrance/Exit: The entrance shall be maintained in a condition which will prevent tracking of sediment onto public rights-of-way. This may require periodic top dressing with additional aggregate. All sediment spilled, dropped, or washed onto public rights-of-way must be removed immediately. When necessary, wheels must be cleaned to remove sediment prior to entrance onto public rights-of-way. When washing is required, it shall be done on an area stabilized with aggregate, which drains into an approved sediment-trapping device. All sediment shall be prevented from entering storm drains, ditches, or water courses.
 - iii. Seeding: Temporary and permanent seeding and all other stabilization measures will be inspected for bare spots, washouts, and healthy growth.
2. Inspection and Maintenance Report Forms
- Once installation of any required or optional erosion control device or measure has been implemented, at least twice every seven calendar days a Qualified Professional shall inspect each practice. The inspector shall use the forms found in this SWPPP to inventory and report the condition of each measure to assist in maintaining the erosion and sediment control measures in good working order.
 - These report forms shall become an integral part of the SWPPP and shall be made readily accessible to governmental inspection officials, the operator's engineer, and the operator for review upon request during visits to the project site. In addition, copies of the reports shall be provided to any of these persons upon request, via mail or facsimile transmission. Inspection and maintenance report forms are to be maintained by the permittee for three years following the final stabilization of the site.
 - The operator shall also prepare a written summary of its status with respect to compliance with the NYSDEC SPDES General Permit for Stormwater Discharges from Construction Activity at a minimum frequency of every three months during which coverage under the SPDES General Permit exists. The summary should address the status of achieving each



component of the SWPPP. The reports shall be signed by the signatory of the NOI or a duly authorized person and be retained at the construction site.

1. Other Record Keeping Requirements

The contractor shall keep the following records related to construction activities at the site:

- Dates when major grading activities occur and the areas which were graded.
- Dates and details concerning the installation of structural controls.
- Dates when construction activities cease in an area.
- Dates when an area is stabilized, either temporarily or permanently.
- Dates of rainfall and the amount of rainfall.
- Dates and descriptions of the character and amount of any spills of hazardous materials.
- Records of reports filed with regulatory agencies if reportable quantities of hazardous materials are spilled.

D. OPERATION MAINTENANCE AND INSPECTION PROCEDURES

Long-term maintenance of the stormwater mitigation basins and swales will be the responsibility of the owner and/or the tenant. Maintenance and inspection check lists have been included in Appendix D.

1. Embankments and emergency spillways will be inspected annually and after major storm events. Items to be inspected include:
 - a. Vegetation and ground cover is adequate to prevent erosion.
 - b. No embankment erosion has occurred.
 - c. No animal burrows into embankments.
 - d. No unauthorized planting.
 - e. No cracking, bulging or sliding of dam.
 - f. Emergency spillway is in good condition, free of silt buildup and debris.
 - g. No leaks or seepage is occurring on downstream face.
 - h. All slope protection and riprap is intact and no failure has occurred.
2. Bioretention basins will be inspected monthly and after major storm events. Items to be inspected include:
 - a. Debris and undesirable vegetative growth shall be removed.
 - b. Sediment depth shall be noted. Sediment shall be removed prior to reaching 50% of the design depth.
 - c. No visible pollution within basins.
3. Grass lined swales shall be inspected and maintained as follows:
 - a. All channels are free of debris on monthly basis.
 - b. No visible evidence of erosion.
 - c. Mowing shall be performed as needed. Inspect to ensure minimum mowing depth has not been exceeded.
 - d. Dewatering of swales between storms. Inspect monthly or as necessary.
 - e. Inspect swales for sediment deposition annually and clean as necessary.



Section V. MATERIALS MANAGEMENT PLAN

A. MATERIALS COVERED

The following materials or substances are expected to be present onsite during construction:

Concrete/Additives/Wastes	Cleaning Solvents
Detergents	Petroleum Based Products
Paints/Solvents	Pesticides
Acids	Solid and Construction Wastes
Sanitary Wastes	Soil Stabilization Additives

B. MATERIAL MANAGEMENT PRACTICES

The following are the material management practices that will be used to reduce the risk of spills or other accidental exposure of materials and substances to stormwater runoff. The job site superintendent will be responsible for ensuring that these procedures are followed.

1. Good Housekeeping

The following good housekeeping practices will be followed onsite during the construction project.

- a. An effort will be made to store only enough products required to do the job.
- b. All materials stored onsite will be stored in a neat, orderly manner and, if possible, under a roof or in a containment area. At a minimum, all containers will be stored with their lids on when not in use. Drip pans shall be provided under all dispensers.
- c. Products will be kept in their original containers with the original manufacturer's label in legible condition.
- d. Substances will not be mixed with one another unless recommended by the manufacturer.
- e. Whenever possible, all of a product will be used up before disposing of the container.
- f. Manufacturer's recommendations for proper use and disposal will be followed.
- g. The job site superintendent will be responsible for daily inspections to ensure proper use and disposal of materials.

2. Hazardous Products

These practices will be used to reduce the risks associated with hazardous materials. Material Safety Data Sheets (MSDS's) for each substance with hazardous properties that is used on the job site will be obtained and used for the proper management of potential wastes that may result from these products. An MSDS will be posted in the immediate area where such product is stored and/or used and another copy of each MSDS will be maintained in the SWPPP file at the job site construction trailer office. Each employee who must handle a substance with hazardous properties will be instructed on the use of MSDS sheets and the specific information in the applicable MSDS for the product he/she is using, particularly regarding spill control techniques.

- a. Products will be kept in original containers with the original labels in legible condition.
- b. Original labels and material safety data sheets (MSDS's) will be procured and used for each material.
- c. If surplus product must be disposed of, manufacturer's or local/state/federal recommended methods for proper disposal will be followed.

3. Hazardous Waste

All hazardous waste materials will be disposed of by the contractor in the manner specified by local, state, and/or federal regulations and by the manufacturer of such products. Site personnel will be instructed in these practices by the job site superintendent, who will also be responsible for seeing that these practices are followed.



4. Product Specific Practices

The following product specific practices will be followed on the job site.

a. Petroleum Products

All onsite vehicles will be monitored for leaks and receive regular preventative maintenance to reduce the chance of leakage. Petroleum products will be stored in tightly sealed containers, which are clearly labeled. Any petroleum storage tanks used onsite will have a dike or berm containment structure constructed around it to contain any spills, which may occur. Drip pans shall be provided for all dispensers. Any asphalt substances used onsite will be applied per the manufacturer's recommendations.

b. Fertilizers

Due to the onsite public water supply that will be constructed as part of this project, the use of fertilizers is not allowed without the written authorization of the operator. Authorization will be based on the specific product's possible contaminants and impacts to the groundwater.

c. Paints, Paint Solvents, and Cleaning Solvents

All containers will be tightly sealed and stored when not in use. Excess paint and solvents will not be discharged to the storm sewer system but will be properly disposed of per manufacturer's instructions or state and federal regulations.

5. Concrete Wastes

Concrete trucks will be allowed to wash out or discharge surplus concrete or drum wash water on the site, but only in either (1) specifically designated area which has been prepared to prevent contact between the concrete and/or washout and stormwater which will be discharged from the site or (2) in locations where waste concrete can be poured into forms to make riprap or other useful concrete products.

The hardened residue from the concrete washout areas will be disposed of in the same manner as other non-hazardous construction waste materials or may be broken up and used on site as deemed appropriate by the contractor. The job site superintendent will be responsible for seeing that these procedures are followed.

All concrete washout areas will be in an area where the likelihood of the area contributing to storm water discharges is negligible. If required, additional BMPs must be implemented to prevent concrete wastes from contributing to storm water discharges.

6. Solid and Construction Wastes

All waste materials will be collected and stored in a securely lidded metal dumpster rented from a local waste management company which must be a solid waste management company licensed to do business in New York State. The dumpster will comply with all local and state solid waste management regulations.

All trash and construction debris from the site will be deposited in the dumpster. The dumpster will be emptied a minimum of twice per week or more often if necessary, and the trash will be hauled to a landfill approved by New York State. No construction waste materials will be buried on site. All personnel will be instructed regarding the correct procedures for waste disposal.

All waste dumpsters and roll-off containers will be in an area where the likelihood of the containers contributing to storm water discharges is negligible. If required, additional BMPs must be implemented, such as sandbags around the base, to prevent wastes from contributing to storm water discharges.

7. Sanitary Wastes

All sanitary waste will be collected from the portable units a minimum of three times per week by a licensed portable facility provider in complete compliance with local and state regulation.

All sanitary waste units will be in an area where the likelihood of the unit contributing to storm water discharges is negligible. If required, additional BMPs must be implemented, such as sandbags around the base, to prevent wastes from contributing to storm water discharges.



Section VI. SPILL PREVENTION AND RESPONSE PROCEDURES

The contractor will train all personnel in the proper handling and cleanup of spilled materials. No spilled hazardous materials or hazardous wastes will be allowed to come in contact with storm water discharges. If such contact occurs, the storm water discharge will be contained on site until appropriate measures in compliance with state and federal regulations are taken to dispose of such contaminated storm water. It shall be the responsibility of the job site superintendent to properly train all personnel in spill prevention and clean up procedures.

In order to minimize the potential for a spill of hazardous materials to come into contact with storm water, the following steps will be implemented:

1. All materials with hazardous properties (such as pesticides, petroleum products, fertilizers, detergents, construction chemicals, acids, paints, paint solvents, cleaning solvents, additives for soil stabilization, concrete curing compounds and additives, etc.) will be stored in a secure location, with their lids on, preferably under cover, when not in use.
2. The minimum practical quantity of all such materials will be kept on the job site.
3. A spill control and containment kit (containing, for example, absorbent materials, acid neutralizing powder, brooms, dust pans, mops, rags, gloves, goggles, plastic and metal trash containers, etc.) will be provided at the storage site.
4. Manufacturer's recommended methods for spill cleanup will be clearly posted and site personnel will be trained regarding these procedures and the location of the information and cleanup supplies.

In the event of a spill, the following procedures should be followed

1. All spills will be cleaned up immediately after discovery.
2. The spill area will be kept well ventilated and personnel will wear appropriate protective clothing to prevent injury from contact with the hazardous substances.
3. The project manager and the Engineer of Record will be notified immediately.

Spills of toxic or hazardous materials will be reported to the appropriate federal, state, and/or local government agency, regardless of the size of the spill. Spills of amounts that exceed Reportable Quantities of certain substances specifically mentioned in federal regulations (40 CFR 110, 40 CFR 117, and 40 CFR 302) must be immediately reported to the NYSDEC 24-Hour Spill Hotline at **1-800-457-7362**.

4. If the spill exceeds a Reportable Quantity, the SWPPP must be modified within seven (7) calendar days of knowledge of the discharge to provide a description of the release, the circumstances leading to the release, and the date of the release. The plans must identify measures to prevent the recurrence of such releases and to respond to such releases.

The job site superintendent will be the spill prevention and response coordinator. He will designate the individuals who will receive spill prevention and response training. These individuals will each become responsible for a particular phase of prevention and response. The names of these personnel will be posted in the material storage area and in the office trailer onsite.



Section VII. CONTROL OF NON-STORMWATER DISCHARGES

Certain types of discharges are allowable under the NYS-DEC SPDES General Permit for Stormwater Discharges from Construction Activity, and it is the intent of this SWPPP to allow such discharges. These types of discharges will be allowed under the conditions that no pollutants will be allowed to come in contact with the water prior to or after its discharge. The control measures, which have been outlined previously in this SWPPP, will be strictly followed to ensure that no contamination of these non-stormwater discharges takes place. The following non-storm water discharges are allowed by the NYS-DEC and may occur at the job site:

1. Discharges from firefighting activities
2. Fire hydrant flushing
3. Waters to which cleansers or other components have not been added that are used to wash vehicles or control dust
4. Routine external building wash down which does not use detergents
5. Pavement wash waters where spills or leaks of toxic or hazardous materials have not occurred (unless all spilled material has been removed) and where detergents are not used
6. Air conditioning condensate
7. Springs
8. Foundation or footing drains where flows are not contaminated with process materials such as solvents.

Section VIII. CERTIFICATION AND NOTIFICATION

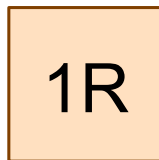
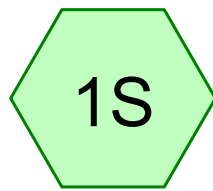
The New York State Department of Environmental Conservation requires that the operator and the contractor make certifications of knowledge of the contents of this SWPPP and agreement to follow the SWPPP. The terms of the General Permit also require that each contractor sign the SWPPP plan, thereby making them co-permittees and acknowledging their responsibility for certain operational aspects of the plan. These certifications should be signed before the contractor begins activities and should be filed with the site's SWPPP at the jobsite.



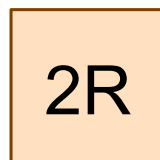
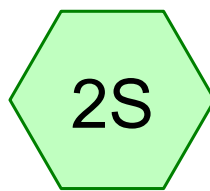
APPENDIX A: HYDRO CAD – EXISTING CONDITIONS



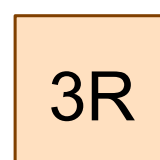
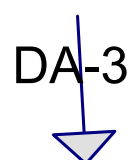
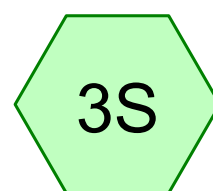
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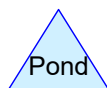
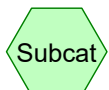
Pt of Study 1



Pt of Study 2



Pt of Study 3



Routing Diagram for Existing Drainage Areas

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Existing Drainage Areas

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Page 2

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-yr	Type II 24-hr		Default	24.00	1	2.04	2
2	10-yr	Type II 24-hr		Default	24.00	1	3.43	2
3	100-yr	Type II 24-hr		Default	24.00	1	5.78	2

Existing Drainage Areas

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Type II 24-hr 1-yr Rainfall=2.04"

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Page 3

Summary for Subcatchment 1S: DA-1

Runoff = 19.91 cfs @ 12.27 hrs, Volume= 1.941 af, Depth> 0.41"
 Routed to Reach 1R : Pt of Study 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type II 24-hr 1-yr Rainfall=2.04"

Area (ac)	CN	Description
21.210	77	Woods, Good, HSG D
17.420	80	>75% Grass cover, Good, HSG D
18.000	73	Brush, Good, HSG D
56.630	77	Weighted Average
56.630		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.0	100	0.0600	0.10		Sheet Flow, Sheet Flow Woods: Light underbrush n= 0.400 P2= 2.39"
4.6	410	0.0900	1.50		Shallow Concentrated Flow, Shallow Woodland Kv= 5.0 fps
6.7	840	0.0900	2.10		Shallow Concentrated Flow, Shallow Short Grass Pasture Kv= 7.0 fps
1.3	1,405	0.0750	17.78	213.31	Channel Flow, Swale Area= 12.0 sf Perim= 8.0' r= 1.50' n= 0.030 Earth, clean & winding
28.6	2,755	Total			

Existing Drainage Areas

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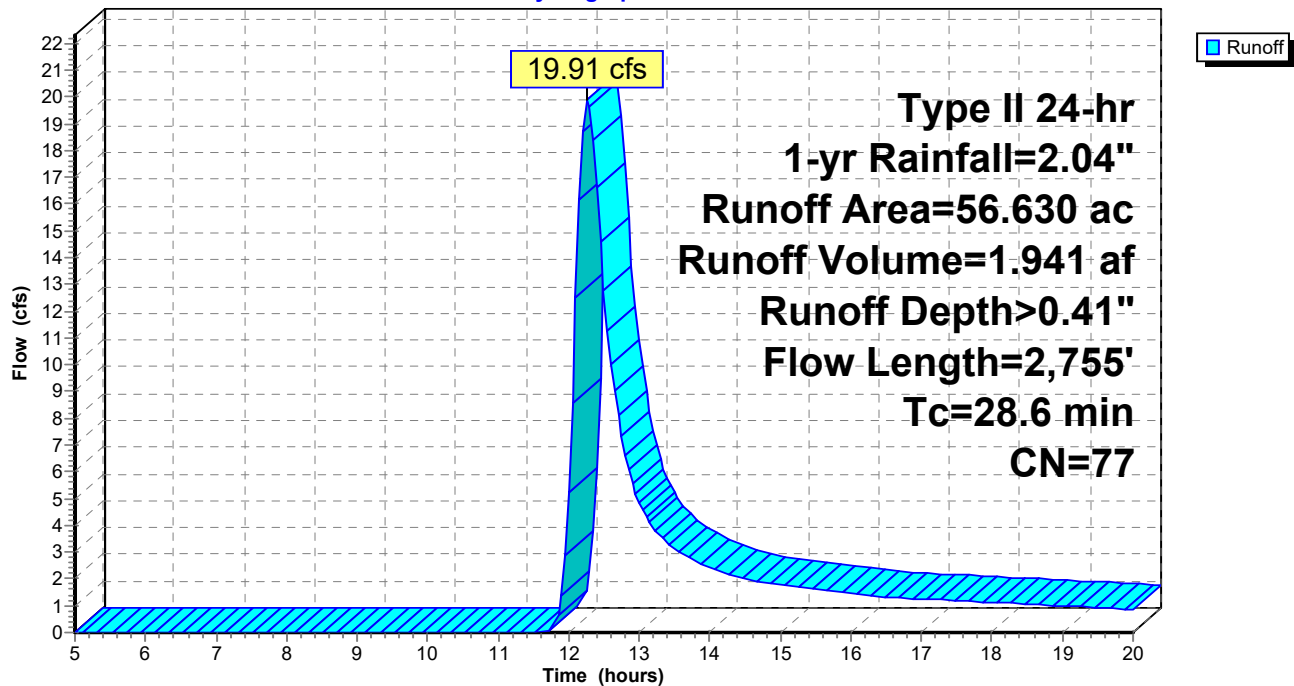
Type II 24-hr 1-yr Rainfall=2.04"

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Page 4

Subcatchment 1S: DA-1

Hydrograph



Existing Drainage Areas

Prepared by Napierala Consulting, P.C.

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Type II 24-hr 1-yr Rainfall=2.04"

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Page 5

Summary for Subcatchment 2S: DA-2

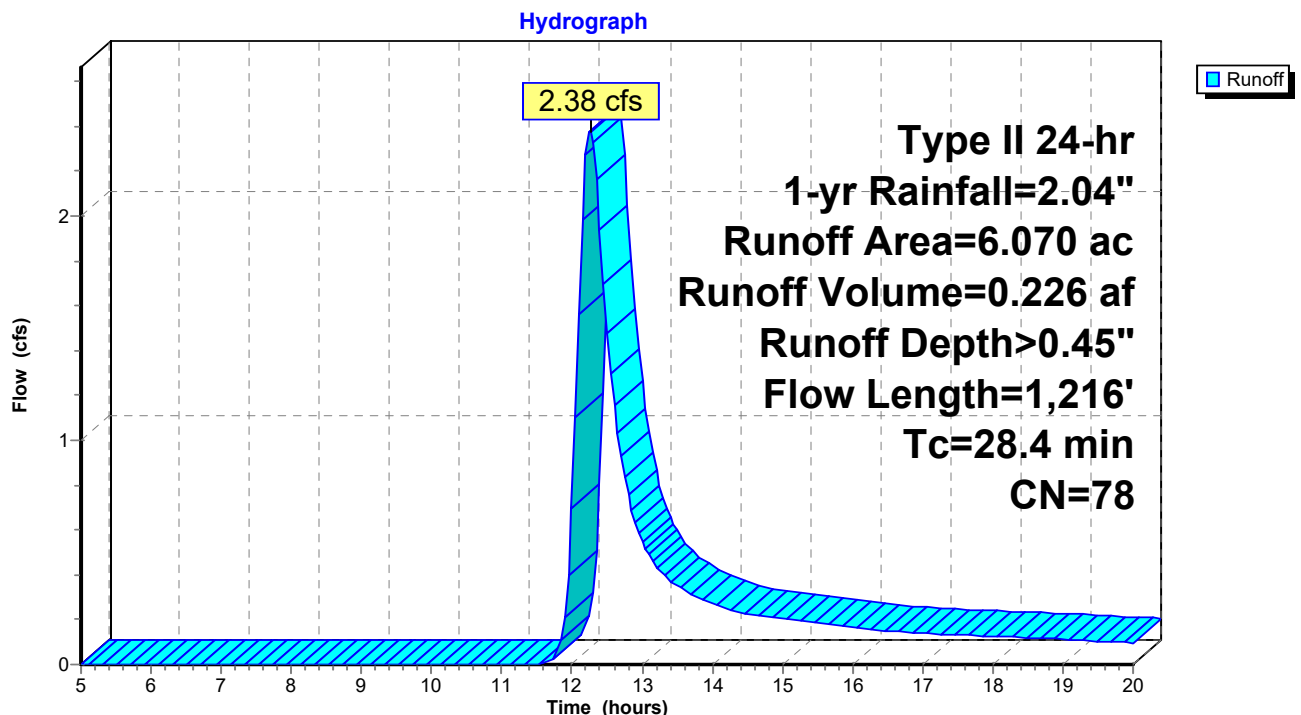
Runoff = 2.38 cfs @ 12.26 hrs, Volume= 0.226 af, Depth> 0.45"
Routed to Reach 2R : Pt of Study 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-yr Rainfall=2.04"

Area (ac)	CN	Description
3.330	77	Woods, Good, HSG D
2.740	80	>75% Grass cover, Good, HSG D
6.070	78	Weighted Average
6.070		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.5	100	0.0400	0.13		Sheet Flow, Sheet Flow Grass: Dense n= 0.240 P2= 2.39"
14.2	555	0.0170	0.65		Shallow Concentrated Flow, Shallow Woodland Kv= 5.0 fps
1.5	281	0.0360	3.05		Shallow Concentrated Flow, Shallow Unpaved Kv= 16.1 fps
0.2	280	0.1210	20.51	205.13	Channel Flow, Swale Area= 10.0 sf Perim= 5.0' r= 2.00' n= 0.040 Earth, dense weeds
28.4	1,216	Total			

Subcatchment 2S: DA-2



Existing Drainage Areas

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Type II 24-hr 1-yr Rainfall=2.04"

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Page 6

Summary for Subcatchment 3S: DA-3

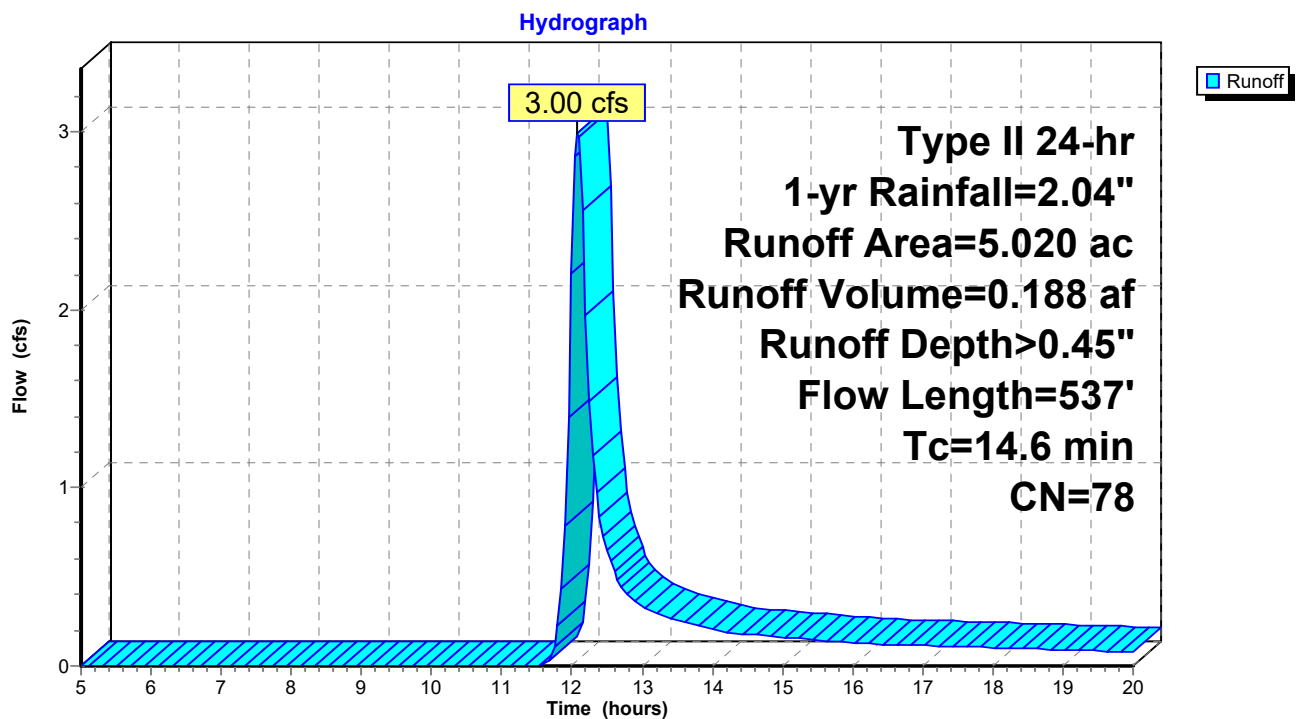
Runoff = 3.00 cfs @ 12.09 hrs, Volume= 0.188 af, Depth> 0.45"
Routed to Reach 3R : Pt of Study 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-yr Rainfall=2.04"

Area (ac)	CN	Description
3.480	77	Woods, Good, HSG D
1.540	80	>75% Grass cover, Good, HSG D
5.020	78	Weighted Average
5.020		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	100	0.0500	0.15		Sheet Flow, Sheet Flow Grass: Dense n= 0.240 P2= 2.39"
1.5	287	0.0380	3.14		Shallow Concentrated Flow, Shallow Unpaved Kv= 16.1 fps
1.7	150	0.0870	1.47		Shallow Concentrated Flow, Shallow Woodland Kv= 5.0 fps
14.6	537	Total			

Subcatchment 3S: DA-3



Existing Drainage Areas

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Type II 24-hr 1-yr Rainfall=2.04"

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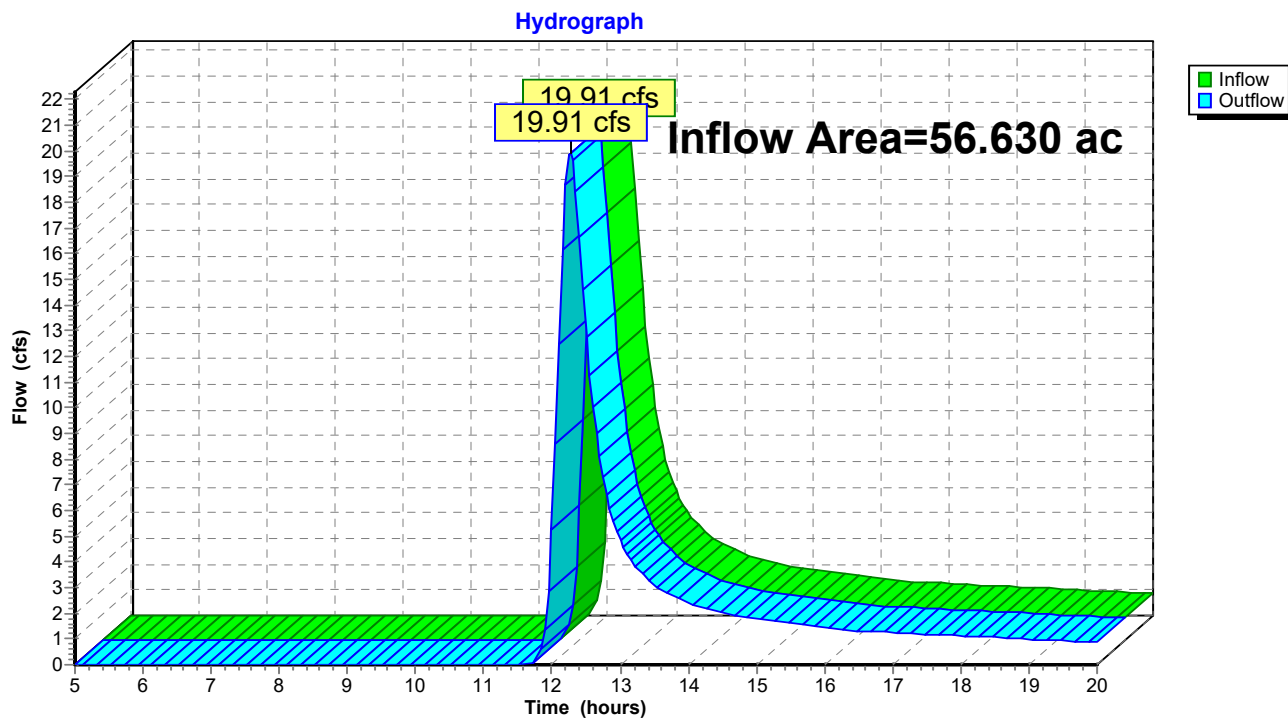
Page 7

Summary for Reach 1R: Pt of Study 1

Inflow Area = 56.630 ac, 0.00% Impervious, Inflow Depth > 0.41" for 1-yr event
Inflow = 19.91 cfs @ 12.27 hrs, Volume= 1.941 af
Outflow = 19.91 cfs @ 12.27 hrs, Volume= 1.941 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 1R: Pt of Study 1



Existing Drainage Areas

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Type II 24-hr 1-yr Rainfall=2.04"

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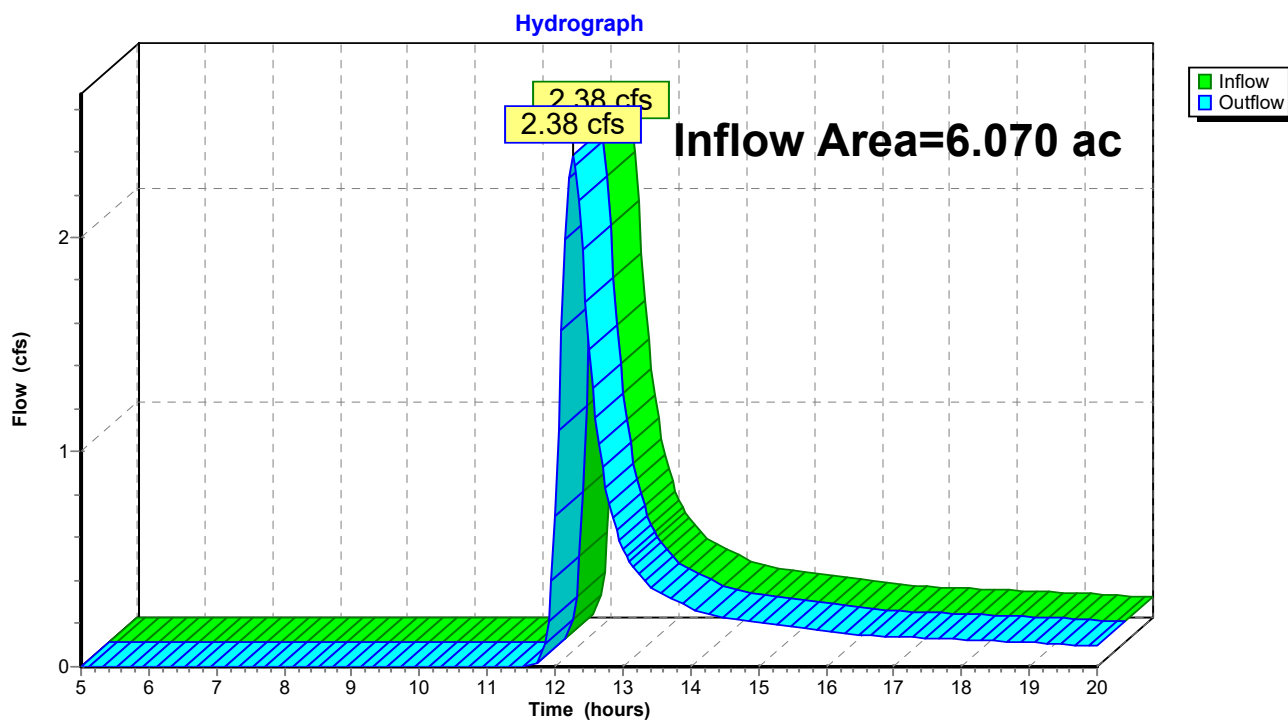
Page 8

Summary for Reach 2R: Pt of Study 2

Inflow Area = 6.070 ac, 0.00% Impervious, Inflow Depth > 0.45" for 1-yr event
Inflow = 2.38 cfs @ 12.26 hrs, Volume= 0.226 af
Outflow = 2.38 cfs @ 12.26 hrs, Volume= 0.226 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 2R: Pt of Study 2



Existing Drainage Areas

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Type II 24-hr 1-yr Rainfall=2.04"

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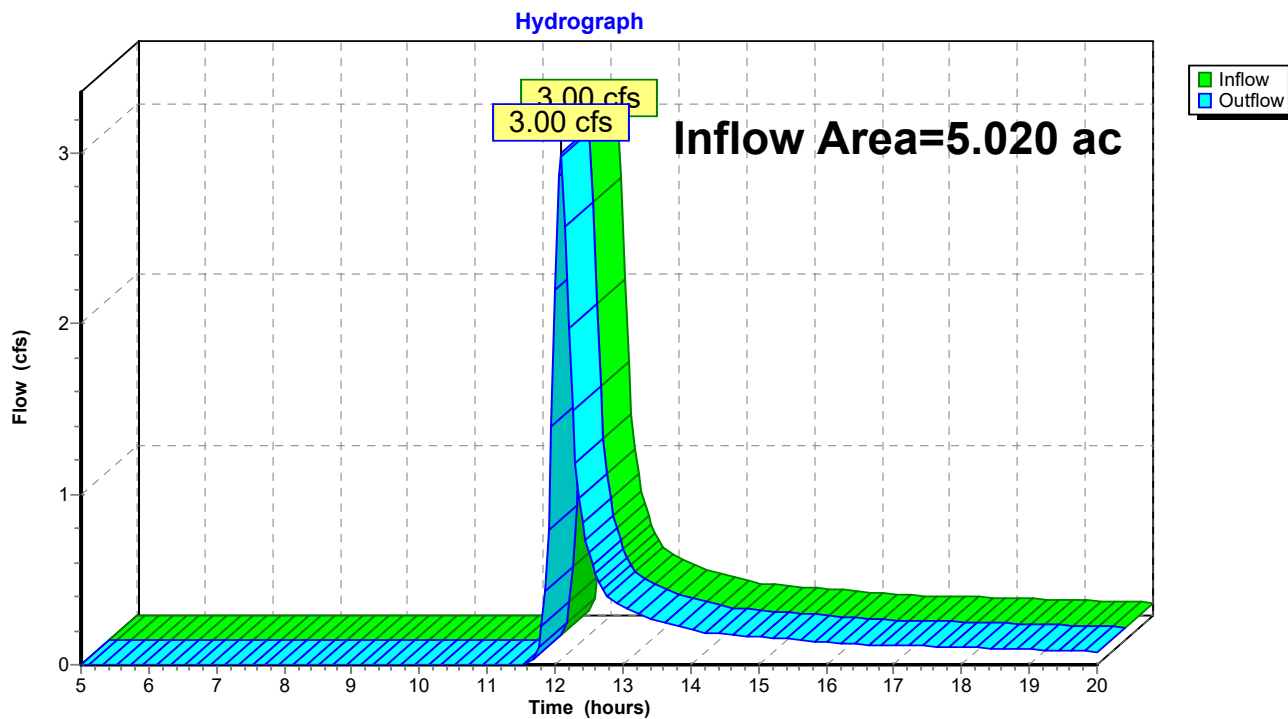
Page 9

Summary for Reach 3R: Pt of Study 3

Inflow Area = 5.020 ac, 0.00% Impervious, Inflow Depth > 0.45" for 1-yr event
Inflow = 3.00 cfs @ 12.09 hrs, Volume= 0.188 af
Outflow = 3.00 cfs @ 12.09 hrs, Volume= 0.188 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 3R: Pt of Study 3



Existing Drainage Areas

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Type II 24-hr 10-yr Rainfall=3.43"

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Page 10

Summary for Subcatchment 1S: DA-1

Runoff = 67.61 cfs @ 12.24 hrs, Volume= 5.874 af, Depth> 1.24"
 Routed to Reach 1R : Pt of Study 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type II 24-hr 10-yr Rainfall=3.43"

Area (ac)	CN	Description
21.210	77	Woods, Good, HSG D
17.420	80	>75% Grass cover, Good, HSG D
18.000	73	Brush, Good, HSG D
56.630	77	Weighted Average
56.630		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.0	100	0.0600	0.10		Sheet Flow, Sheet Flow Woods: Light underbrush n= 0.400 P2= 2.39"
4.6	410	0.0900	1.50		Shallow Concentrated Flow, Shallow Woodland Kv= 5.0 fps
6.7	840	0.0900	2.10		Shallow Concentrated Flow, Shallow Short Grass Pasture Kv= 7.0 fps
1.3	1,405	0.0750	17.78	213.31	Channel Flow, Swale Area= 12.0 sf Perim= 8.0' r= 1.50' n= 0.030 Earth, clean & winding
28.6	2,755	Total			

Existing Drainage Areas

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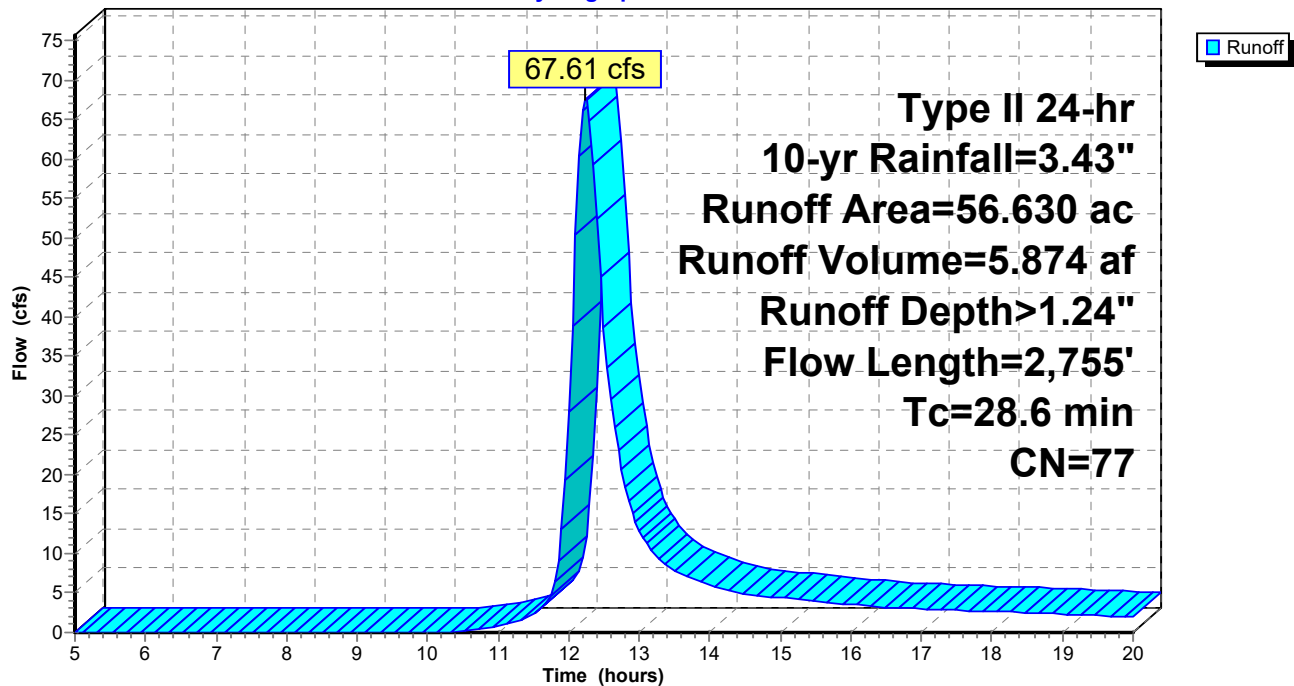
Type II 24-hr 10-yr Rainfall=3.43"

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Subcatchment 1S: DA-1

Hydrograph



Existing Drainage Areas

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Type II 24-hr 10-yr Rainfall=3.43"

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Summary for Subcatchment 2S: DA-2

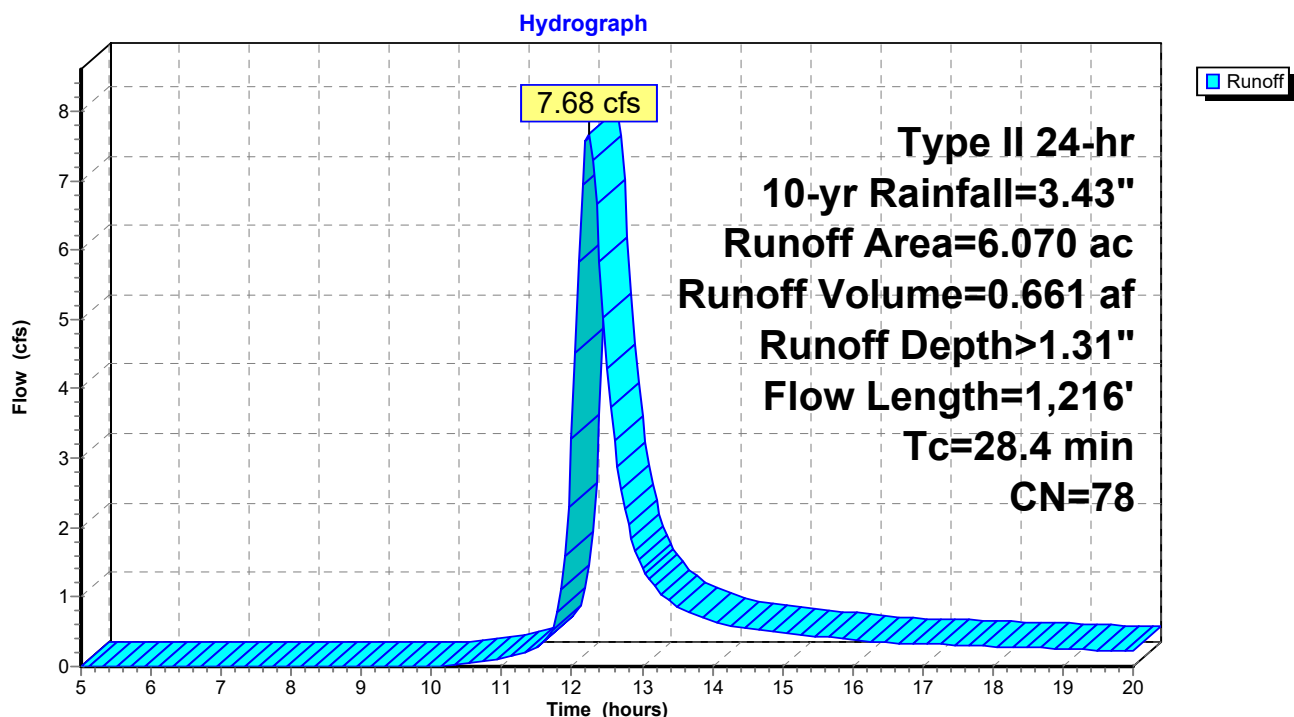
Runoff = 7.68 cfs @ 12.23 hrs, Volume= 0.661 af, Depth> 1.31"
Routed to Reach 2R : Pt of Study 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=3.43"

Area (ac)	CN	Description
3.330	77	Woods, Good, HSG D
2.740	80	>75% Grass cover, Good, HSG D
6.070	78	Weighted Average
6.070		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.5	100	0.0400	0.13		Sheet Flow, Sheet Flow Grass: Dense n= 0.240 P2= 2.39"
14.2	555	0.0170	0.65		Shallow Concentrated Flow, Shallow Woodland Kv= 5.0 fps
1.5	281	0.0360	3.05		Shallow Concentrated Flow, Shallow Unpaved Kv= 16.1 fps
0.2	280	0.1210	20.51	205.13	Channel Flow, Swale Area= 10.0 sf Perim= 5.0' r= 2.00' n= 0.040 Earth, dense weeds
28.4	1,216	Total			

Subcatchment 2S: DA-2



Existing Drainage Areas

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Type II 24-hr 10-yr Rainfall=3.43"

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Summary for Subcatchment 3S: DA-3

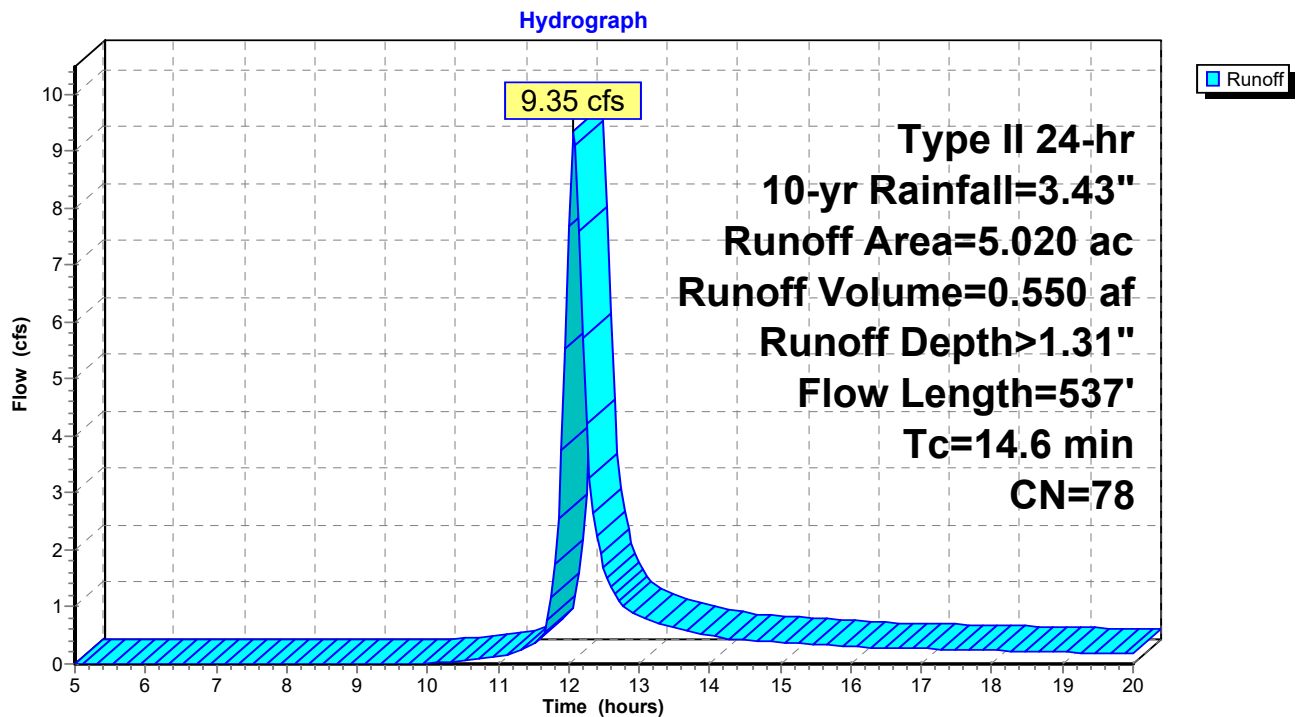
Runoff = 9.35 cfs @ 12.07 hrs, Volume= 0.550 af, Depth> 1.31"
Routed to Reach 3R : Pt of Study 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=3.43"

Area (ac)	CN	Description
3.480	77	Woods, Good, HSG D
1.540	80	>75% Grass cover, Good, HSG D
5.020	78	Weighted Average
5.020		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	100	0.0500	0.15		Sheet Flow, Sheet Flow Grass: Dense n= 0.240 P2= 2.39"
1.5	287	0.0380	3.14		Shallow Concentrated Flow, Shallow Unpaved Kv= 16.1 fps
1.7	150	0.0870	1.47		Shallow Concentrated Flow, Shallow Woodland Kv= 5.0 fps
14.6	537	Total			

Subcatchment 3S: DA-3



Existing Drainage Areas

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Type II 24-hr 10-yr Rainfall=3.43"

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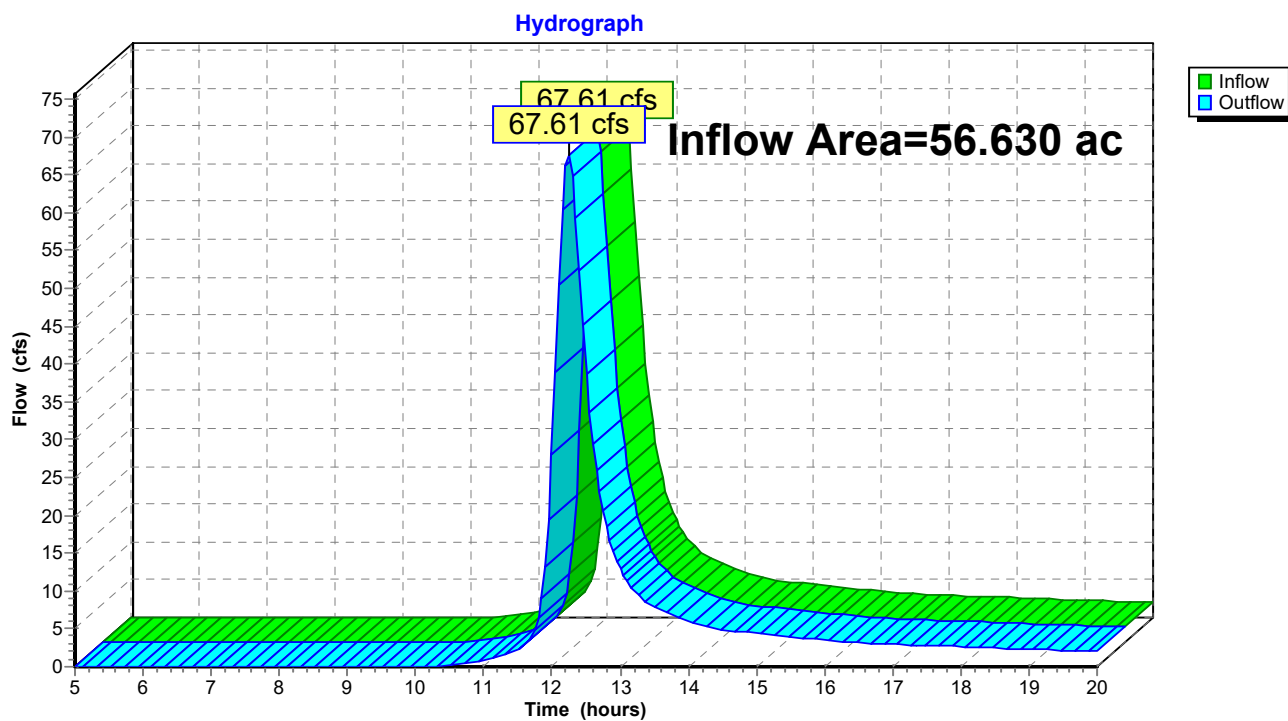
Page 14

Summary for Reach 1R: Pt of Study 1

Inflow Area = 56.630 ac, 0.00% Impervious, Inflow Depth > 1.24" for 10-yr event
Inflow = 67.61 cfs @ 12.24 hrs, Volume= 5.874 af
Outflow = 67.61 cfs @ 12.24 hrs, Volume= 5.874 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 1R: Pt of Study 1



Existing Drainage Areas

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Type II 24-hr 10-yr Rainfall=3.43"

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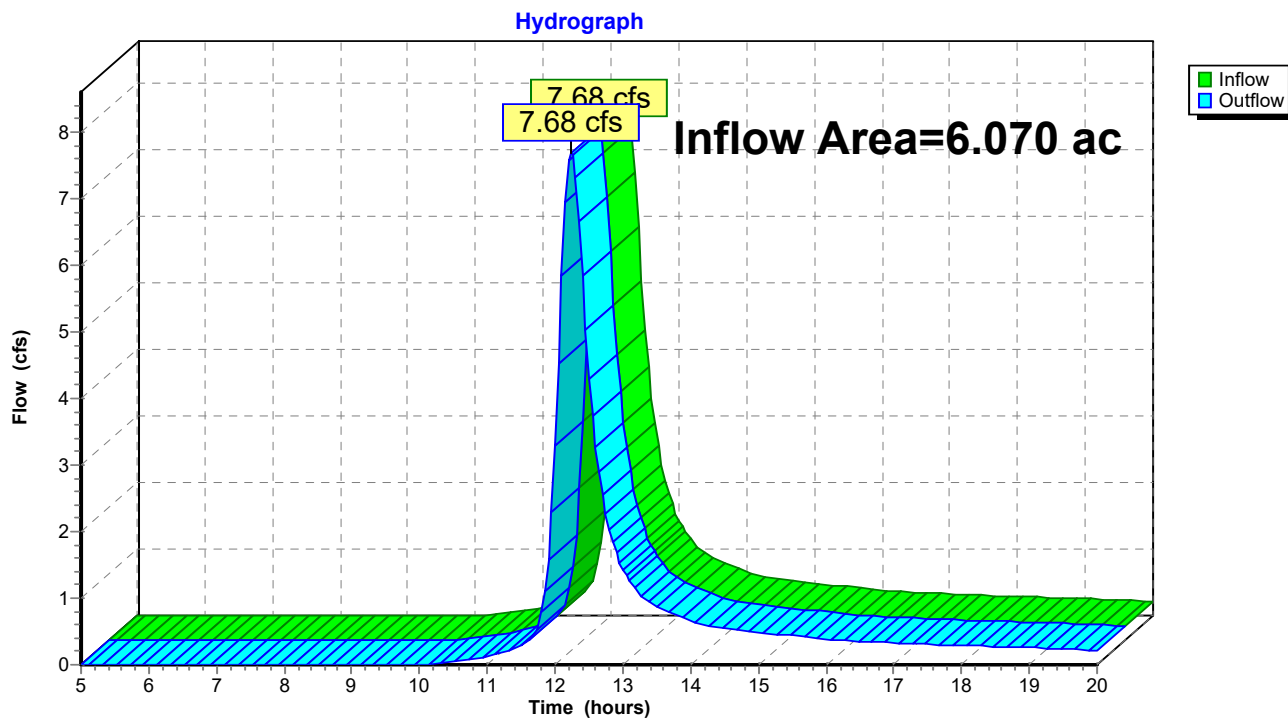
Page 15

Summary for Reach 2R: Pt of Study 2

Inflow Area = 6.070 ac, 0.00% Impervious, Inflow Depth > 1.31" for 10-yr event
Inflow = 7.68 cfs @ 12.23 hrs, Volume= 0.661 af
Outflow = 7.68 cfs @ 12.23 hrs, Volume= 0.661 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 2R: Pt of Study 2



Existing Drainage Areas

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Type II 24-hr 10-yr Rainfall=3.43"

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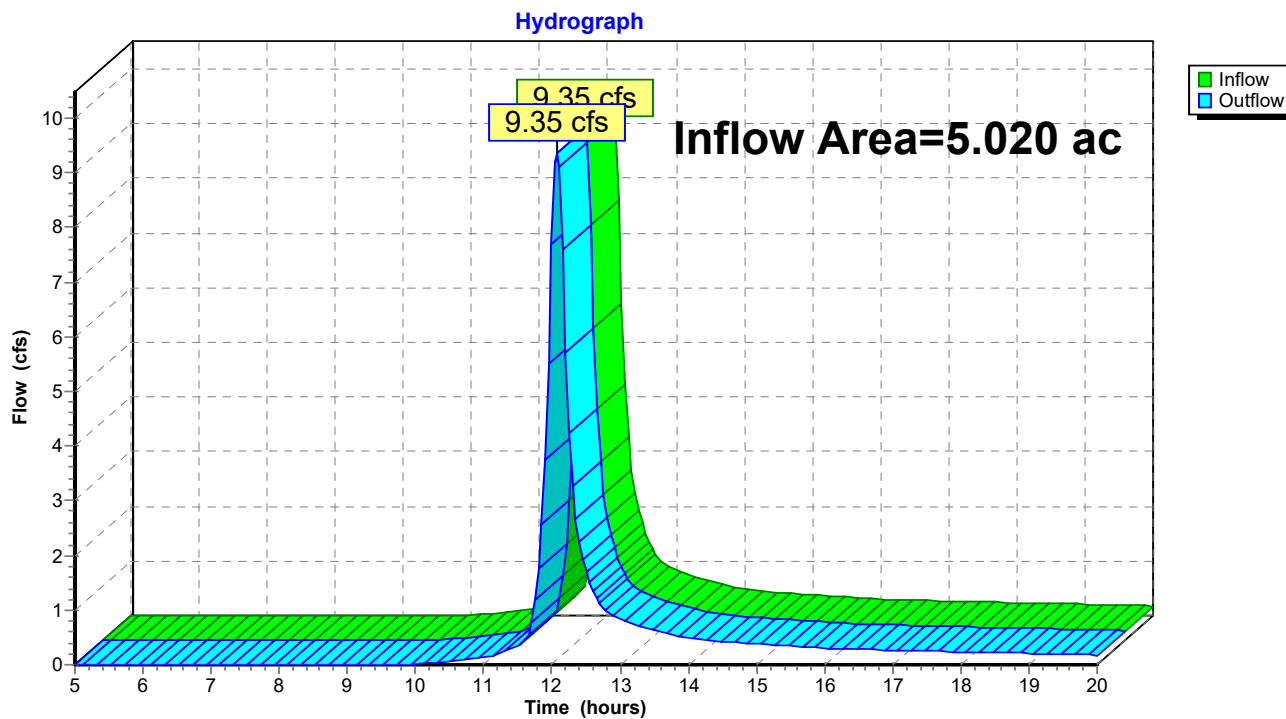
Page 16

Summary for Reach 3R: Pt of Study 3

Inflow Area = 5.020 ac, 0.00% Impervious, Inflow Depth > 1.31" for 10-yr event
Inflow = 9.35 cfs @ 12.07 hrs, Volume= 0.550 af
Outflow = 9.35 cfs @ 12.07 hrs, Volume= 0.550 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 3R: Pt of Study 3



Existing Drainage Areas

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Type II 24-hr 100-yr Rainfall=5.78"

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Summary for Subcatchment 1S: DA-1

Runoff = 165.93 cfs @ 12.23 hrs, Volume= 14.254 af, Depth> 3.02"
 Routed to Reach 1R : Pt of Study 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type II 24-hr 100-yr Rainfall=5.78"

Area (ac)	CN	Description
21.210	77	Woods, Good, HSG D
17.420	80	>75% Grass cover, Good, HSG D
18.000	73	Brush, Good, HSG D
56.630	77	Weighted Average
56.630		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.0	100	0.0600	0.10		Sheet Flow, Sheet Flow Woods: Light underbrush n= 0.400 P2= 2.39"
4.6	410	0.0900	1.50		Shallow Concentrated Flow, Shallow Woodland Kv= 5.0 fps
6.7	840	0.0900	2.10		Shallow Concentrated Flow, Shallow Short Grass Pasture Kv= 7.0 fps
1.3	1,405	0.0750	17.78	213.31	Channel Flow, Swale Area= 12.0 sf Perim= 8.0' r= 1.50' n= 0.030 Earth, clean & winding
28.6	2,755	Total			

Existing Drainage Areas

Prepared by Napierala Consulting, P.C.

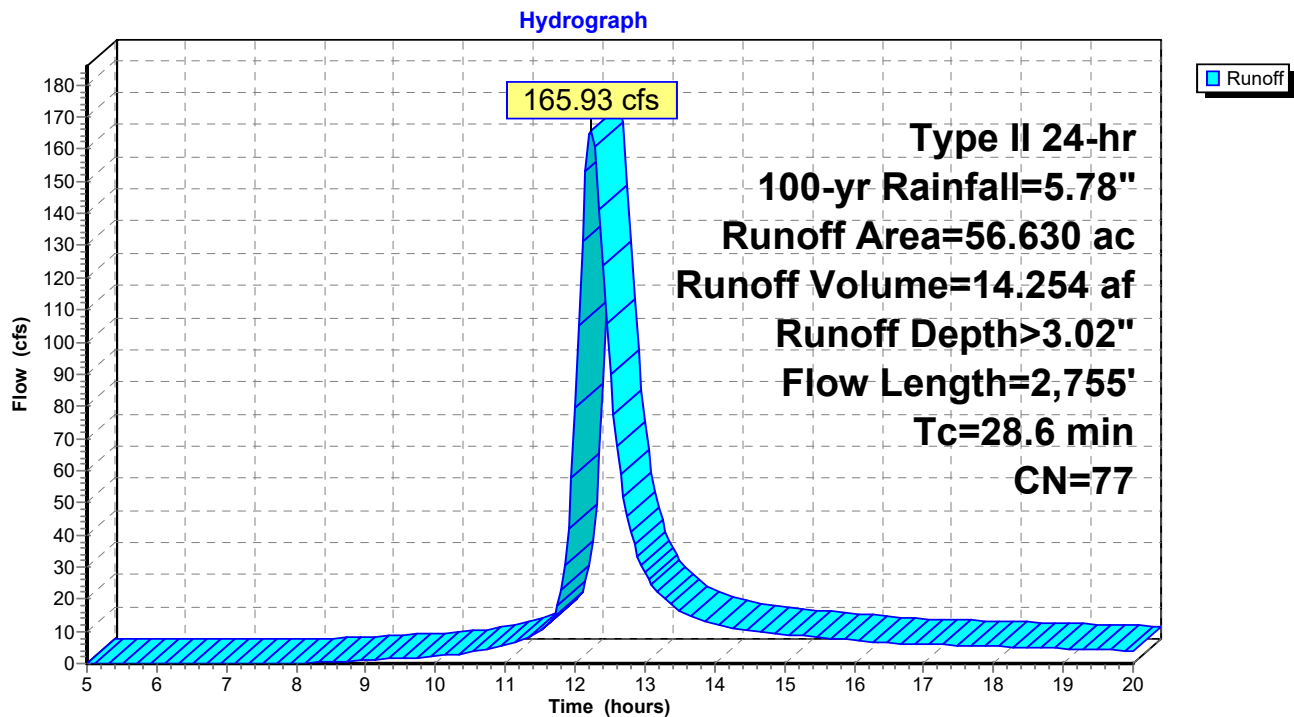
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Type II 24-hr 100-yr Rainfall=5.78"

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Subcatchment 1S: DA-1



Existing Drainage Areas

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Type II 24-hr 100-yr Rainfall=5.78"

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Summary for Subcatchment 2S: DA-2

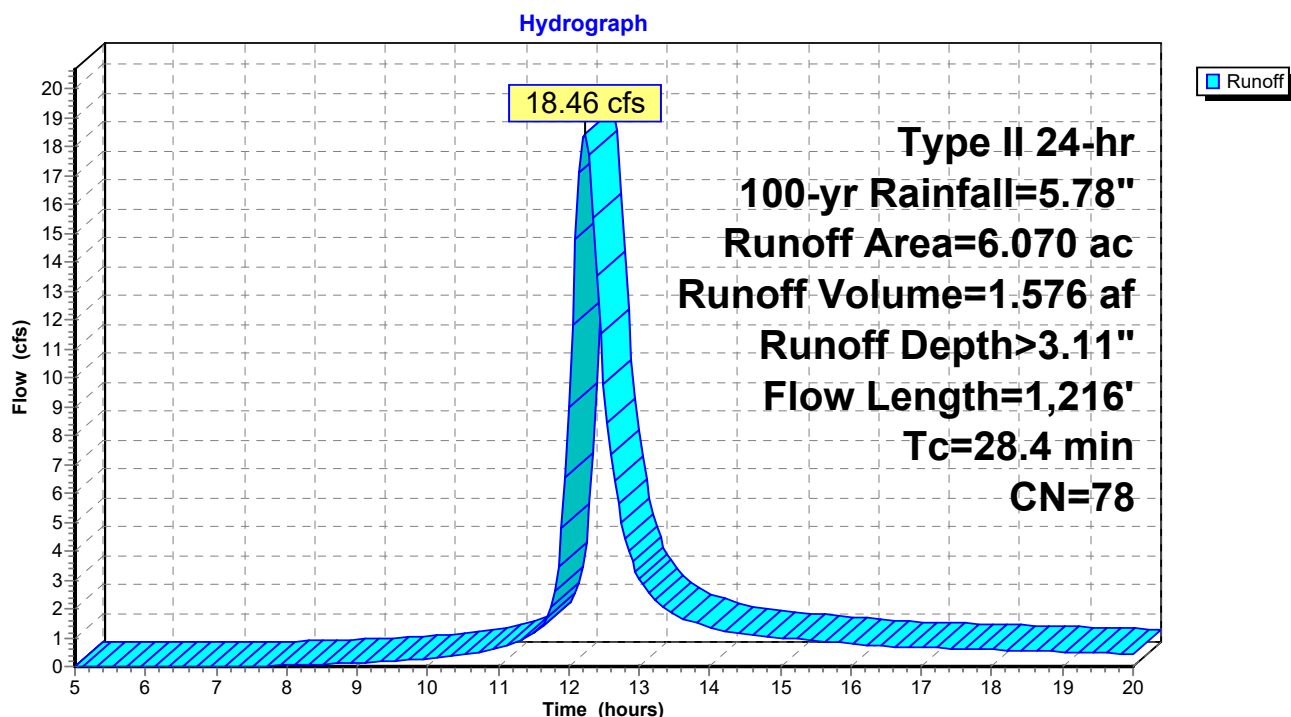
Runoff = 18.46 cfs @ 12.22 hrs, Volume= 1.576 af, Depth> 3.11"
Routed to Reach 2R : Pt of Study 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=5.78"

Area (ac)	CN	Description
3.330	77	Woods, Good, HSG D
2.740	80	>75% Grass cover, Good, HSG D
6.070	78	Weighted Average
6.070		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.5	100	0.0400	0.13		Sheet Flow, Sheet Flow Grass: Dense n= 0.240 P2= 2.39"
14.2	555	0.0170	0.65		Shallow Concentrated Flow, Shallow Woodland Kv= 5.0 fps
1.5	281	0.0360	3.05		Shallow Concentrated Flow, Shallow Unpaved Kv= 16.1 fps
0.2	280	0.1210	20.51	205.13	Channel Flow, Swale Area= 10.0 sf Perim= 5.0' r= 2.00' n= 0.040 Earth, dense weeds
28.4	1,216	Total			

Subcatchment 2S: DA-2



Existing Drainage Areas

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Type II 24-hr 100-yr Rainfall=5.78"

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Summary for Subcatchment 3S: DA-3

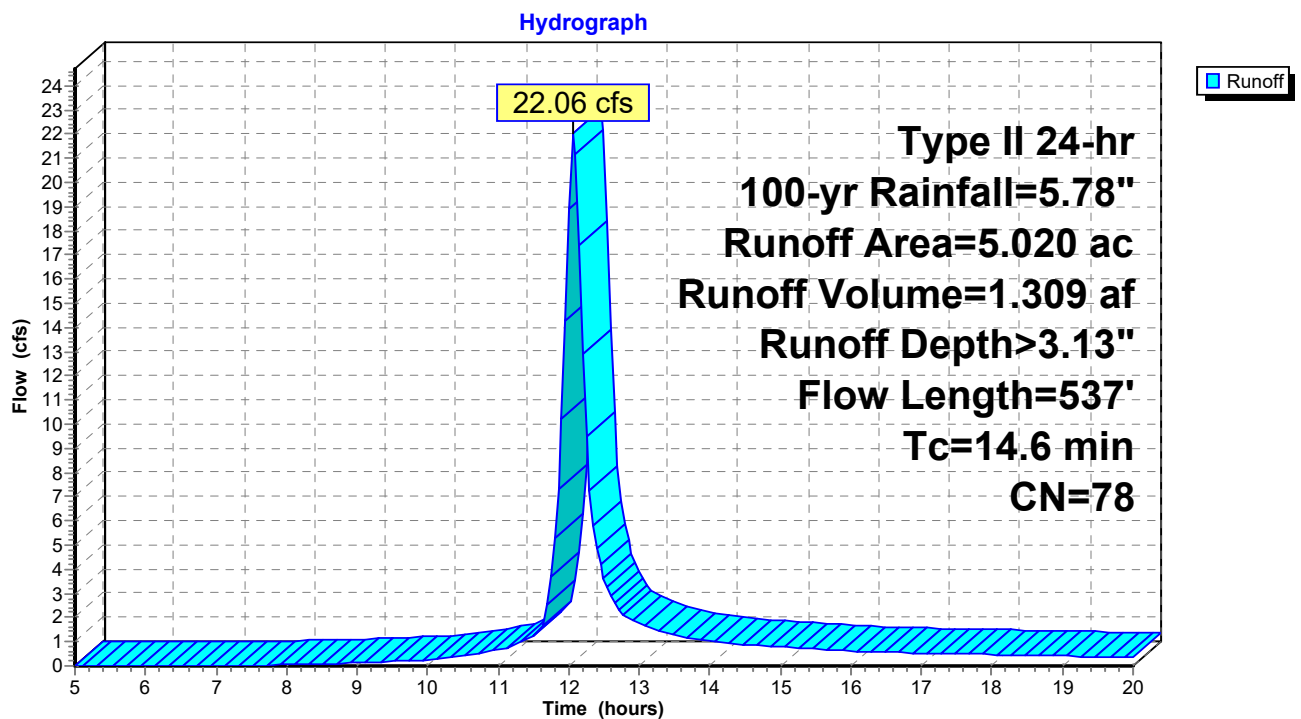
Runoff = 22.06 cfs @ 12.07 hrs, Volume= 1.309 af, Depth> 3.13"
Routed to Reach 3R : Pt of Study 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=5.78"

Area (ac)	CN	Description
3.480	77	Woods, Good, HSG D
1.540	80	>75% Grass cover, Good, HSG D
5.020	78	Weighted Average
5.020		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	100	0.0500	0.15		Sheet Flow, Sheet Flow Grass: Dense n= 0.240 P2= 2.39"
1.5	287	0.0380	3.14		Shallow Concentrated Flow, Shallow Unpaved Kv= 16.1 fps
1.7	150	0.0870	1.47		Shallow Concentrated Flow, Shallow Woodland Kv= 5.0 fps
14.6	537	Total			

Subcatchment 3S: DA-3



Existing Drainage Areas

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Type II 24-hr 100-yr Rainfall=5.78"

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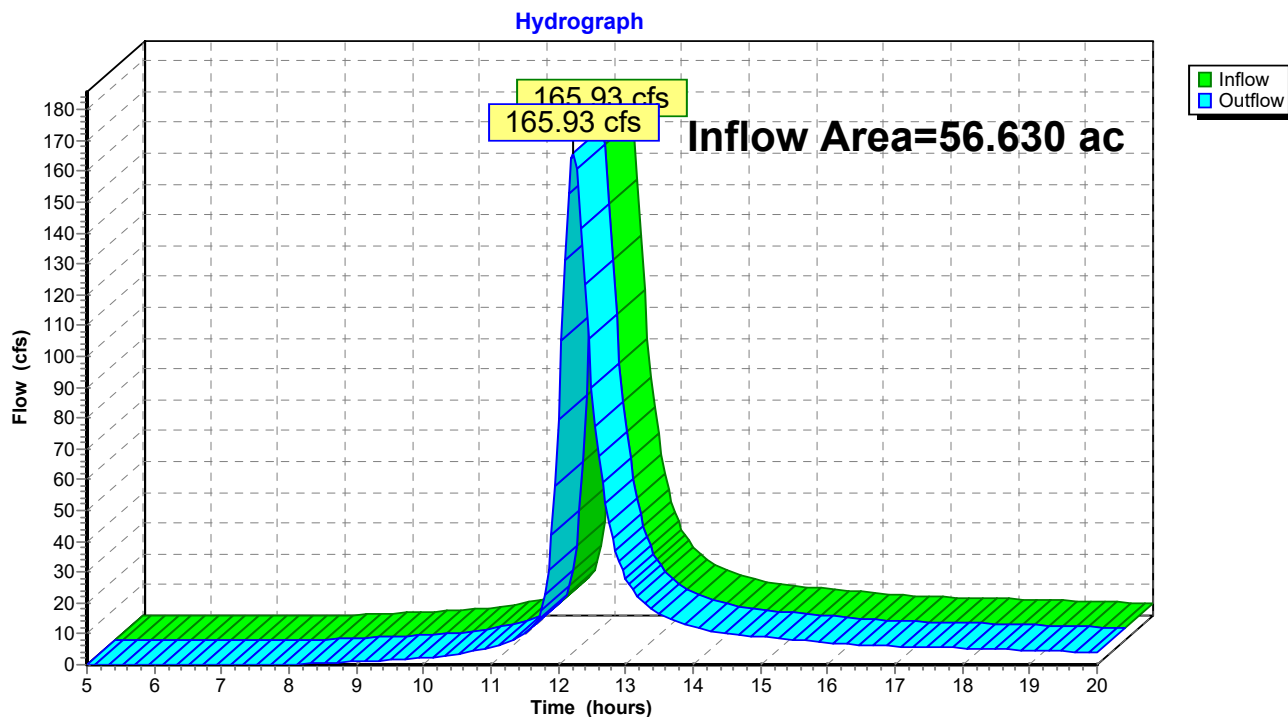
Page 21

Summary for Reach 1R: Pt of Study 1

Inflow Area = 56.630 ac, 0.00% Impervious, Inflow Depth > 3.02" for 100-yr event
Inflow = 165.93 cfs @ 12.23 hrs, Volume= 14.254 af
Outflow = 165.93 cfs @ 12.23 hrs, Volume= 14.254 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 1R: Pt of Study 1



Existing Drainage Areas

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Type II 24-hr 100-yr Rainfall=5.78"

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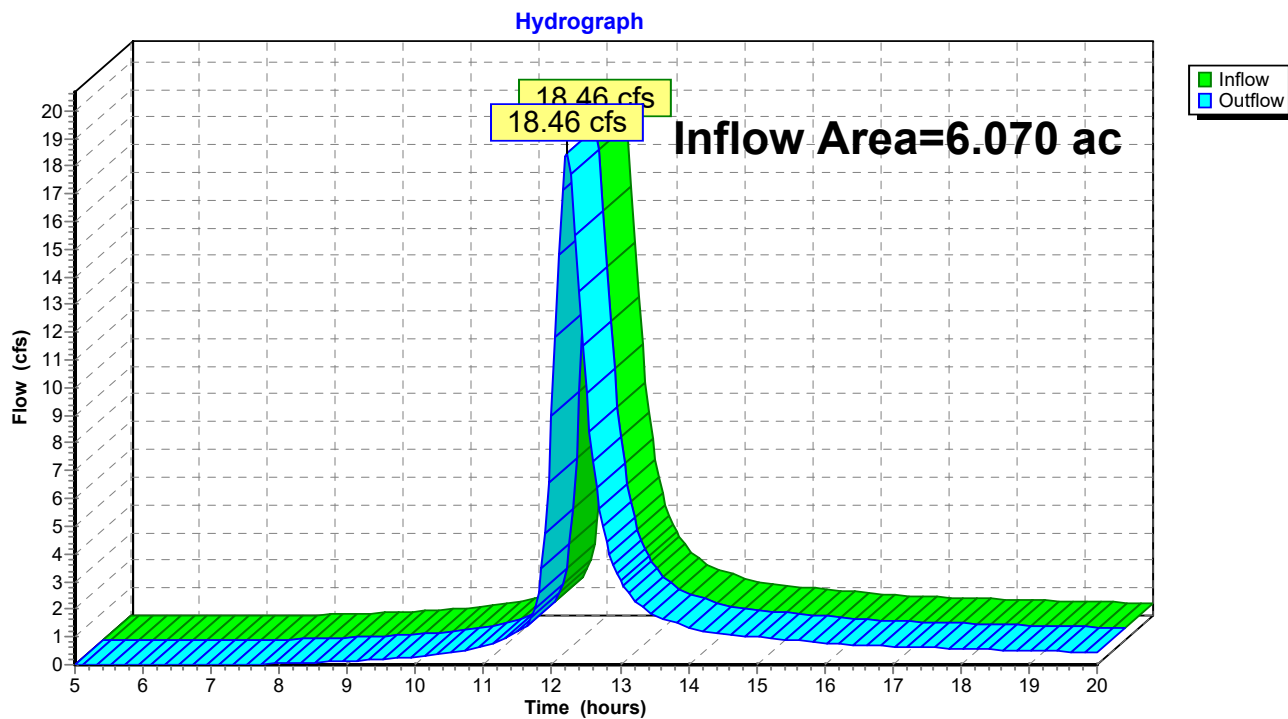
Page 22

Summary for Reach 2R: Pt of Study 2

Inflow Area = 6.070 ac, 0.00% Impervious, Inflow Depth > 3.11" for 100-yr event
Inflow = 18.46 cfs @ 12.22 hrs, Volume= 1.576 af
Outflow = 18.46 cfs @ 12.22 hrs, Volume= 1.576 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 2R: Pt of Study 2



Existing Drainage Areas

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Type II 24-hr 100-yr Rainfall=5.78"

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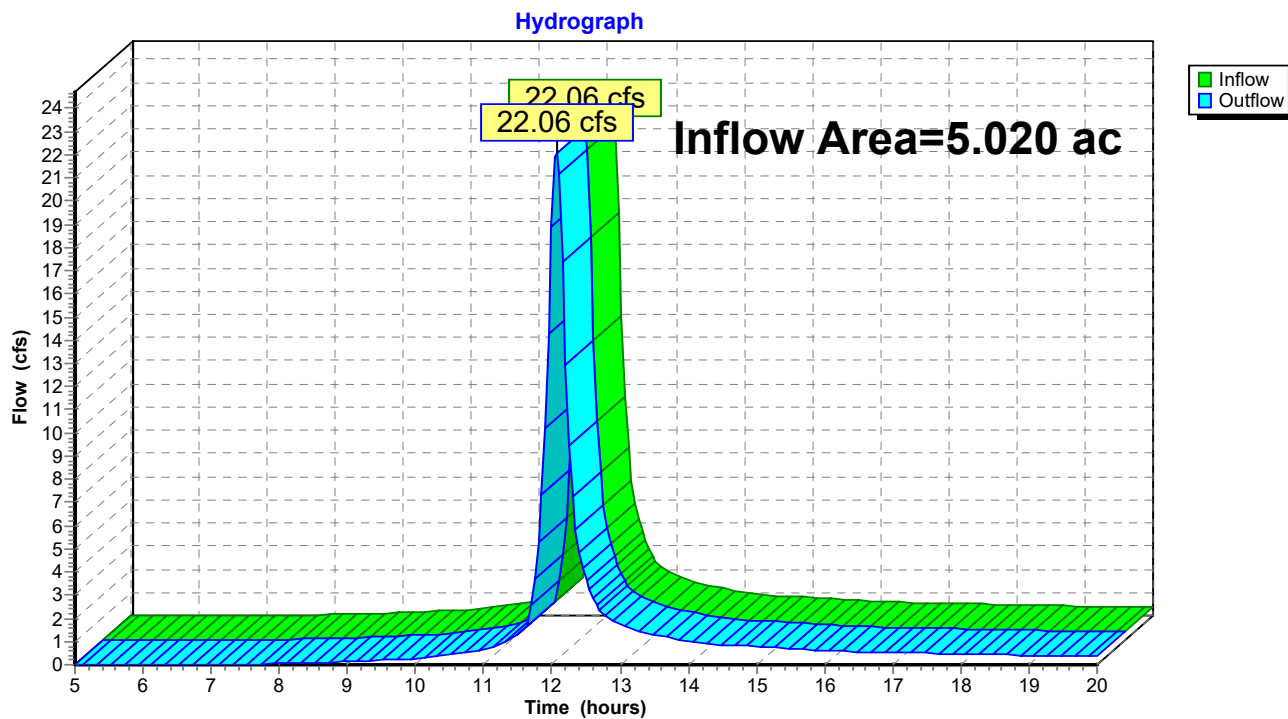
Page 23

Summary for Reach 3R: Pt of Study 3

Inflow Area = 5.020 ac, 0.00% Impervious, Inflow Depth > 3.13" for 100-yr event
Inflow = 22.06 cfs @ 12.07 hrs, Volume= 1.309 af
Outflow = 22.06 cfs @ 12.07 hrs, Volume= 1.309 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 3R: Pt of Study 3





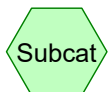
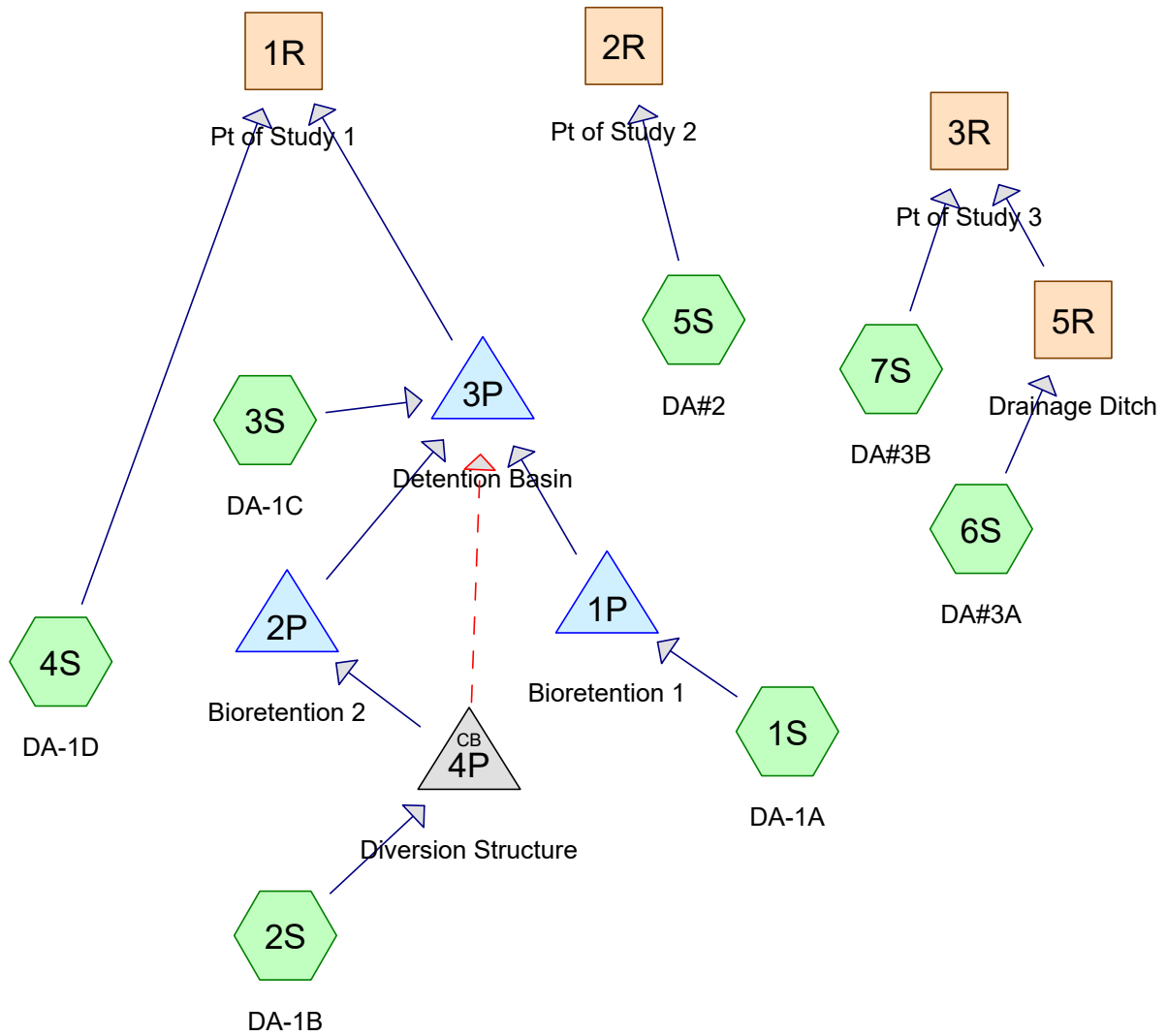
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APPENDIX B: HYDRO CAD – PROPOSED CONDITIONS



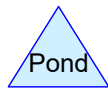
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Subcat



Reach



Pond



Link

Routing Diagram for Proposed Drainage Areas

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Proposed Drainage Areas

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Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-yr	Type II 24-hr		Default	24.00	1	2.04	2
2	10-yr	Type II 24-hr		Default	24.00	1	3.43	2
3	100-yr	Type II 24-hr		Default	24.00	1	5.78	2

Proposed Drainage Areas

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Type II 24-hr 1-yr Rainfall=2.04"

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Summary for Subcatchment 1S: DA-1A

Runoff = 15.26 cfs @ 12.40 hrs, Volume= 1.963 af, Depth= 0.63"
Routed to Pond 1P : Bioretention 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Type II 24-hr 1-yr Rainfall=2.04"

Area (ac)	CN	Description
2.470	98	Paved parking, HSG D
1.870	98	Unconnected roofs, HSG D
24.080	80	>75% Grass cover, Good, HSG D
8.960	77	Woods, Good, HSG D
37.380	81	Weighted Average
33.040		88.39% Pervious Area
4.340		11.61% Impervious Area
1.870		43.09% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.9	100	0.0600	0.06		Sheet Flow, SHEET FLOW Woods: Dense underbrush n= 0.800 P2= 2.39"
4.8	370	0.0650	1.27		Shallow Concentrated Flow, SCF Woodland Kv= 5.0 fps
1.9	200	0.0650	1.78		Shallow Concentrated Flow, SCF Short Grass Pasture Kv= 7.0 fps
0.2	295	0.0300	19.80	79.19	Channel Flow, curb and gutter flow Area= 4.0 sf Perim= 4.0' r= 1.00' n= 0.013 Asphalt, smooth
1.7	1,100	0.0345	11.04	19.51	Pipe Channel, Pipe Flow 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
3.8	955	0.0050	4.20	50.44	Channel Flow, Area= 12.0 sf Perim= 12.0' r= 1.00' n= 0.025 Earth, grassed & winding
40.3	3,020	Total			

Proposed Drainage Areas

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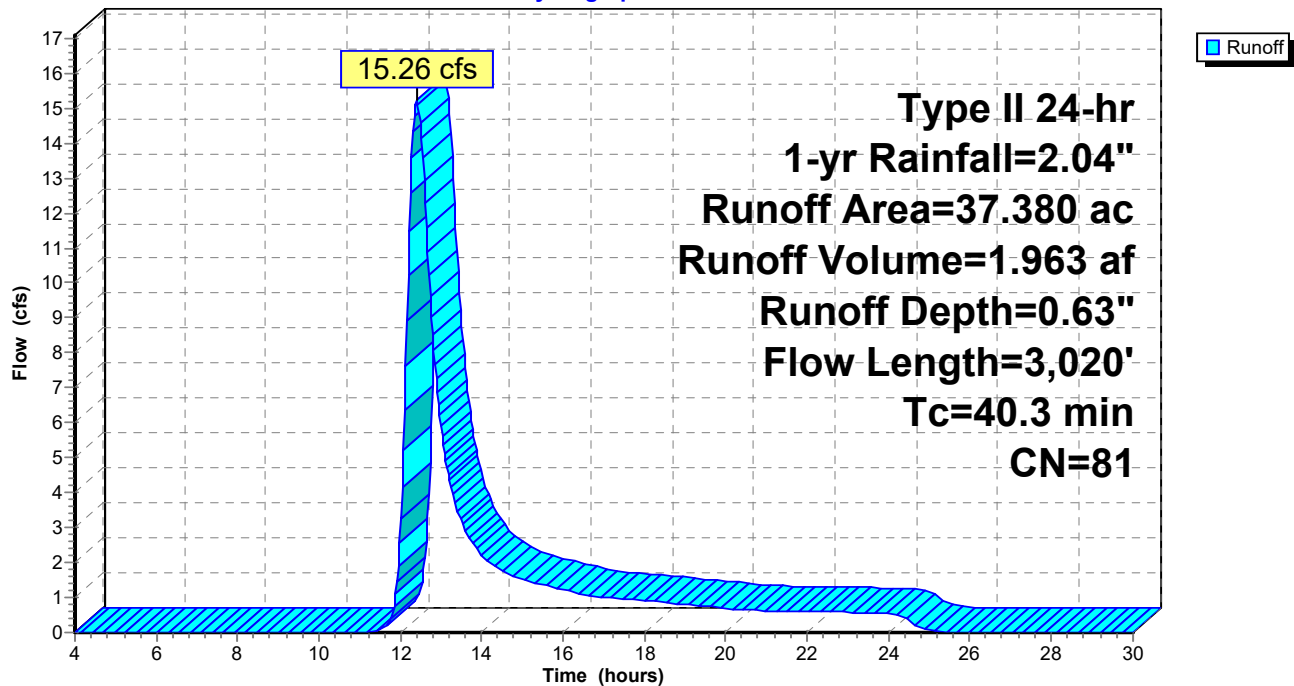
Type II 24-hr 1-yr Rainfall=2.04"

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Subcatchment 1S: DA-1A

Hydrograph



Proposed Drainage Areas

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Type II 24-hr 1-yr Rainfall=2.04"

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Summary for Subcatchment 2S: DA-1B

Runoff = 5.19 cfs @ 12.16 hrs, Volume= 0.436 af, Depth= 0.59"
Routed to Pond 4P : Diversion Structure

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Type II 24-hr 1-yr Rainfall=2.04"

Area (ac)	CN	Adj	Description
0.870	98		Paved parking, HSG D
0.410	98		Unconnected roofs, HSG D
4.000	80		>75% Grass cover, Good, HSG D
2.040	77		Woods, Good, HSG D
1.600	73		Brush, Good, HSG D
8.920	81	80	Weighted Average, UI Adjusted
7.640			85.65% Pervious Area
1.280			14.35% Impervious Area
0.410			32.03% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	100	0.0600	0.16		Sheet Flow, SHEET FLOW Grass: Dense n= 0.240 P2= 2.39"
4.6	410	0.0900	1.50		Shallow Concentrated Flow, SCF Woodland Kv= 5.0 fps
5.6	710	0.0920	2.12		Shallow Concentrated Flow, SCF Short Grass Pasture Kv= 7.0 fps
0.3	170	0.0200	9.55	76.42	Channel Flow, swale flow Area= 8.0 sf Perim= 8.0' r= 1.00' n= 0.022 Earth, clean & straight
21.1	1,390	Total			

Proposed Drainage Areas

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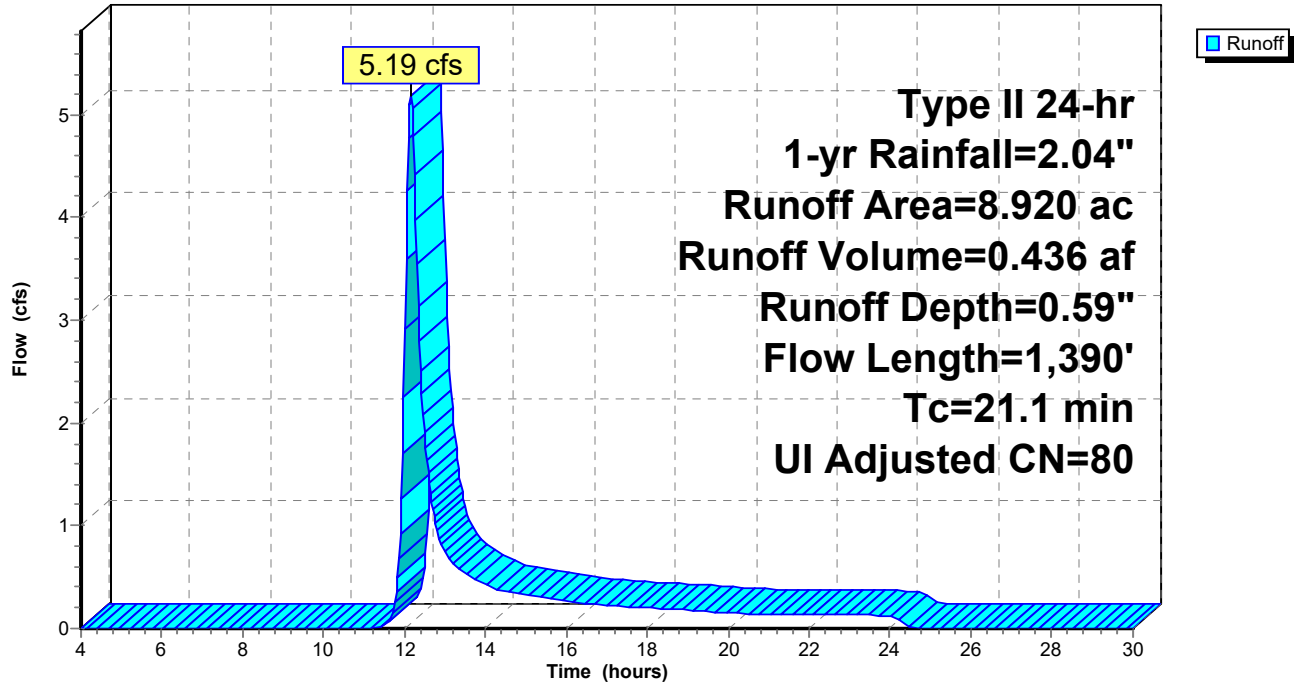
Type II 24-hr 1-yr Rainfall=2.04"

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Subcatchment 2S: DA-1B

Hydrograph



Proposed Drainage Areas

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Type II 24-hr 1-yr Rainfall=2.04"

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Summary for Subcatchment 3S: DA-1C

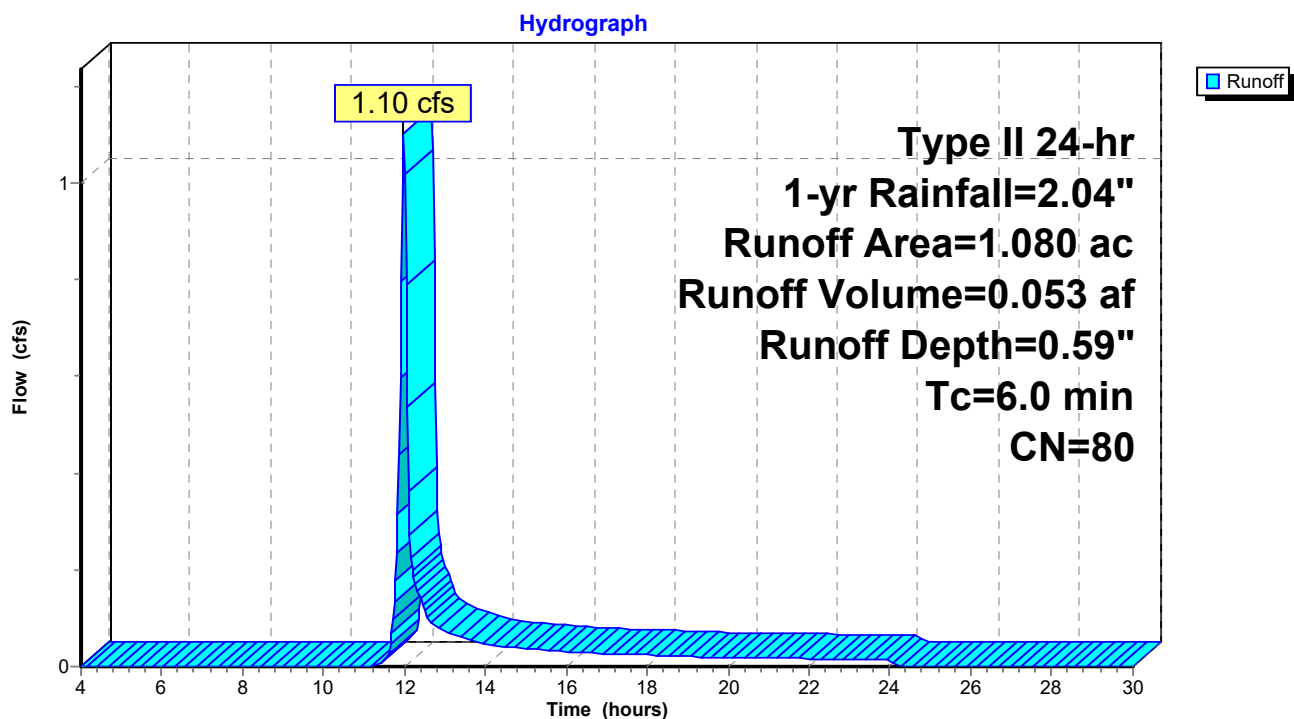
Runoff = 1.10 cfs @ 11.98 hrs, Volume= 0.053 af, Depth= 0.59"
Routed to Pond 3P : Detention Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Type II 24-hr 1-yr Rainfall=2.04"

Area (ac)	CN	Description
0.960	80	>75% Grass cover, Good, HSG D
0.120	77	Woods, Good, HSG D
1.080	80	Weighted Average
1.080		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Min TR 55 Value

Subcatchment 3S: DA-1C



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Type II 24-hr 1-yr Rainfall=2.04"

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Summary for Subcatchment 4S: DA-1D

Runoff = 4.26 cfs @ 12.40 hrs, Volume= 0.587 af, Depth= 0.47"
Routed to Reach 1R : Pt of Study 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Type II 24-hr 1-yr Rainfall=2.04"

Area (ac)	CN	Description
3.230	80	>75% Grass cover, Good, HSG D
8.910	77	Woods, Good, HSG D
0.200	98	Paved parking, HSG D
2.660	73	Brush, Good, HSG D
15.000	77	Weighted Average
14.800		98.67% Pervious Area
0.200		1.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.9	100	0.0600	0.06		Sheet Flow, SHEET FLOW Woods: Dense underbrush n= 0.800 P2= 2.39"
5.4	485	0.0900	1.50		Shallow Concentrated Flow, SCF Woodland Kv= 5.0 fps
4.1	517	0.0900	2.10		Shallow Concentrated Flow, SCF Short Grass Pasture Kv= 7.0 fps
1.2	1,155	0.0750	16.28	260.45	Channel Flow, SWALE Area= 16.0 sf Perim= 16.0' r= 1.00' n= 0.025 Earth, clean & winding
38.6	2,257	Total			

Proposed Drainage Areas

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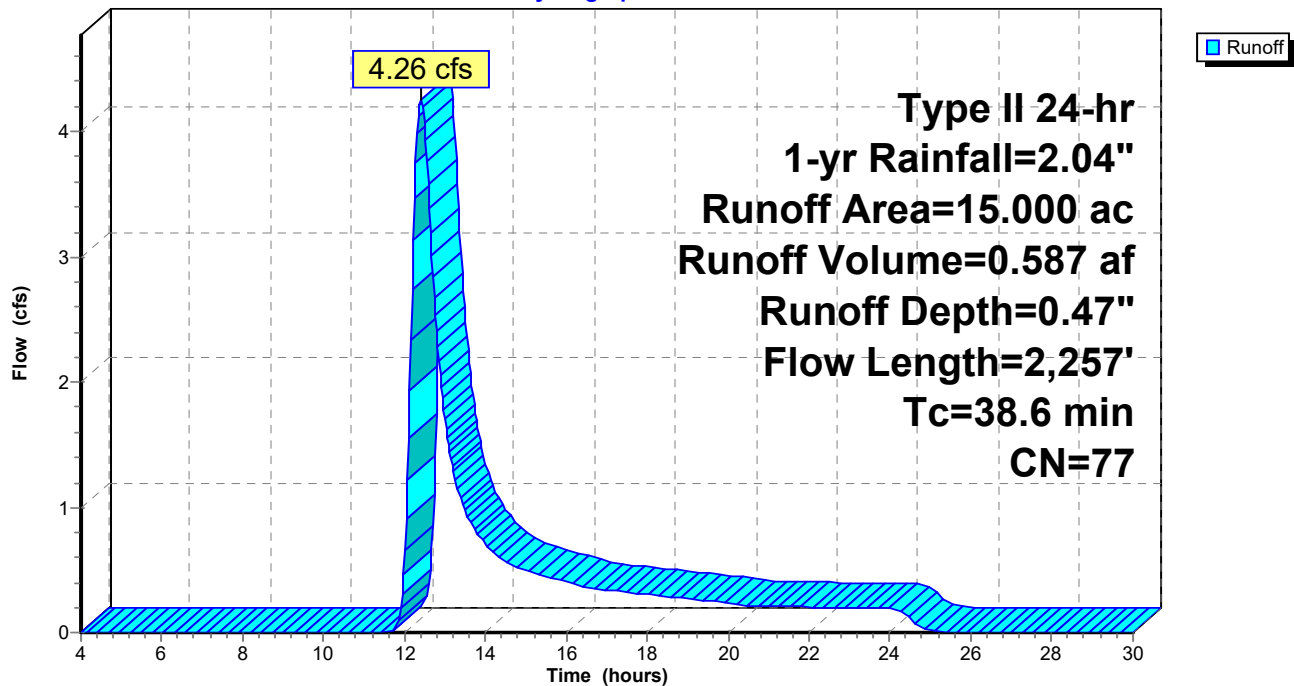
Type II 24-hr 1-yr Rainfall=2.04"

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Subcatchment 4S: DA-1D

Hydrograph



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Type II 24-hr 1-yr Rainfall=2.04"

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Summary for Subcatchment 5S: DA#2

Runoff = 0.72 cfs @ 12.01 hrs, Volume= 0.038 af, Depth= 0.55"
Routed to Reach 2R : Pt of Study 2

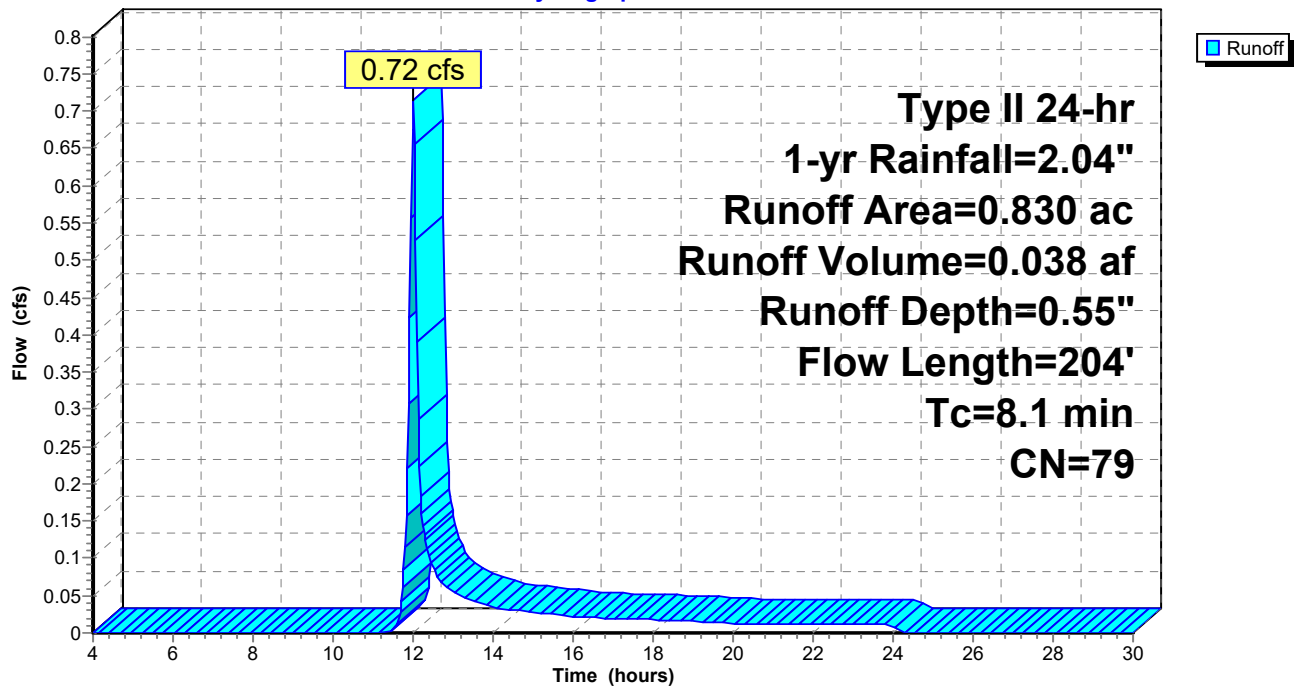
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Type II 24-hr 1-yr Rainfall=2.04"

Area (ac)	CN	Description
0.690	80	>75% Grass cover, Good, HSG D
0.140	77	Woods, Good, HSG D
0.830	79	Weighted Average
0.830		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	100	0.1500	0.23		Sheet Flow, SHEET FLOW Grass: Dense n= 0.240 P2= 2.39"
0.7	104	0.1300	2.52		Shallow Concentrated Flow, SCF Short Grass Pasture Kv= 7.0 fps
8.1	204	Total			

Subcatchment 5S: DA#2

Hydrograph



Proposed Drainage Areas

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Type II 24-hr 1-yr Rainfall=2.04"

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Summary for Subcatchment 6S: DA#3A

Runoff = 1.49 cfs @ 12.10 hrs, Volume= 0.108 af, Depth= 0.59"
Routed to Reach 5R : Drainage Ditch

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Type II 24-hr 1-yr Rainfall=2.04"

Area (ac)	CN	Adj	Description
0.900	80		>75% Grass cover, Good, HSG D
0.200	98		Paved parking, HSG D
0.070	98		Unconnected roofs, HSG D
1.030	77		Woods, Good, HSG D
2.200	81	80	Weighted Average, UI Adjusted
1.930			87.73% Pervious Area
0.270			12.27% Impervious Area
0.070			25.93% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.9	100	0.0450	0.14		Sheet Flow, SHEET FLOW Grass: Dense n= 0.240 P2= 2.39"
2.5	188	0.0650	1.27		Shallow Concentrated Flow, SCF Woodland Kv= 5.0 fps
1.9	202	0.0650	1.78		Shallow Concentrated Flow, SCF Short Grass Pasture Kv= 7.0 fps
0.2	232	0.0220	16.95	50.86	Channel Flow, curb flow Area= 3.0 sf Perim= 3.0' r= 1.00' n= 0.013 Asphalt, smooth
16.5	722	Total			

Proposed Drainage Areas

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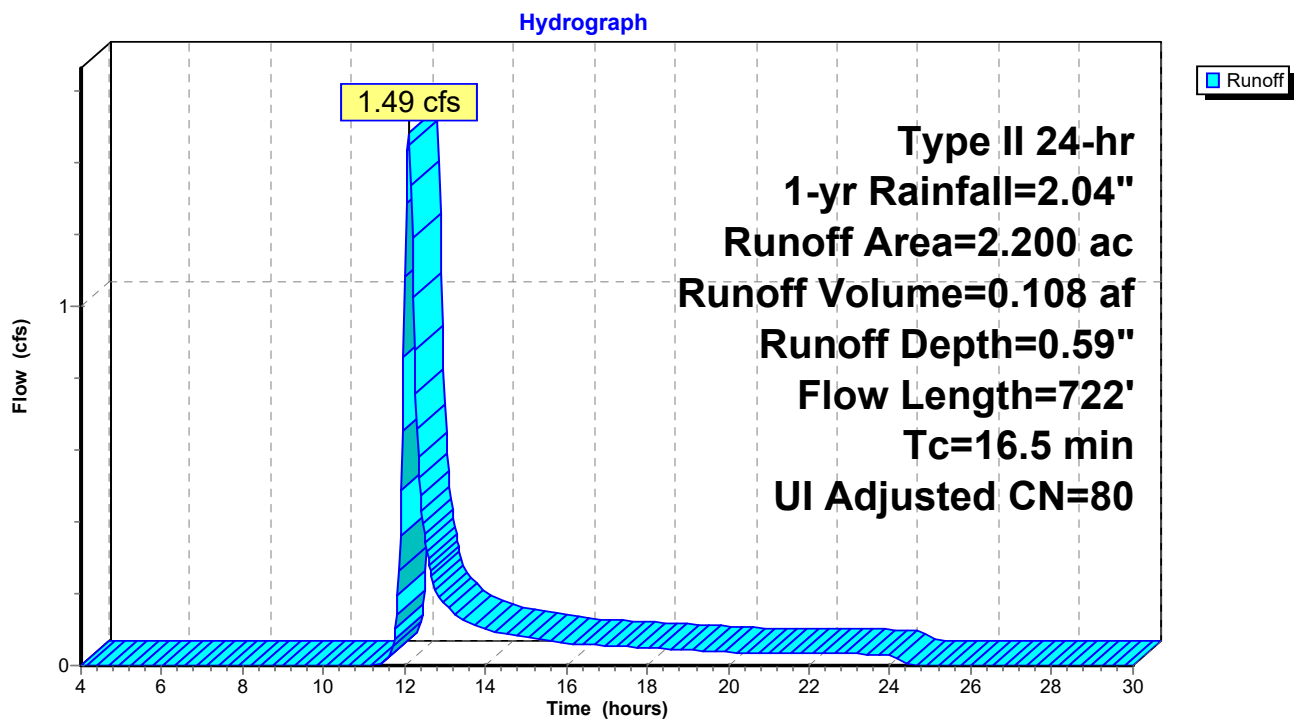
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Subcatchment 6S: DA#3A



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Summary for Subcatchment 7S: DA#3B

Runoff = 2.06 cfs @ 12.10 hrs, Volume= 0.146 af, Depth= 0.68"
Routed to Reach 3R : Pt of Study 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Type II 24-hr 1-yr Rainfall=2.04"

Area (ac)	CN	Adj	Description
2.190	80		>75% Grass cover, Good, HSG D
0.270	98		Paved parking, HSG D
0.140	98		Unconnected roofs, HSG D
2.600	83	82	Weighted Average, UI Adjusted
2.190			84.23% Pervious Area
0.410			15.77% Impervious Area
0.140			34.15% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	100	0.0500	0.15		Sheet Flow, SHEET FLOW Grass: Dense n= 0.240 P2= 2.39"
5.1	475	0.0500	1.57		Shallow Concentrated Flow, SCF Short Grass Pasture Kv= 7.0 fps
0.2	82	0.0200	6.42	5.04	Pipe Channel, pipe flow 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
16.7	657	Total			

Proposed Drainage Areas

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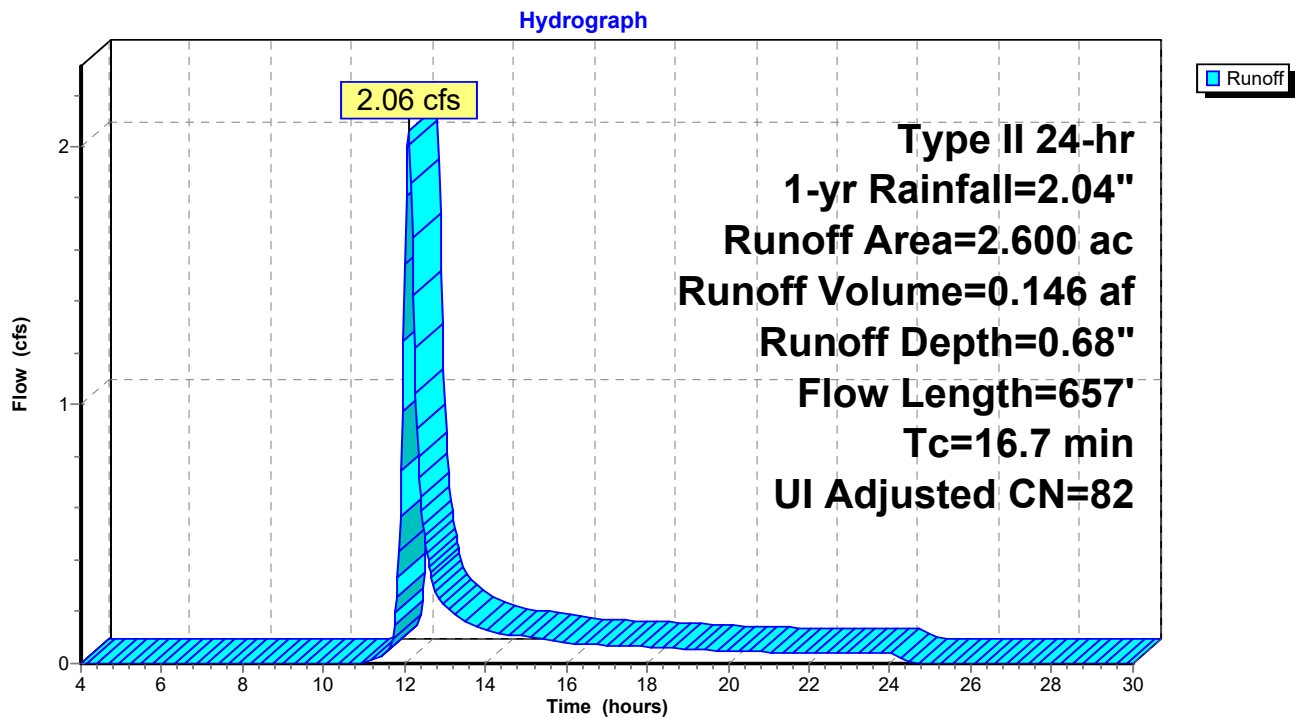
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Subcatchment 7S: DA#3B



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Type II 24-hr 1-yr Rainfall=2.04"

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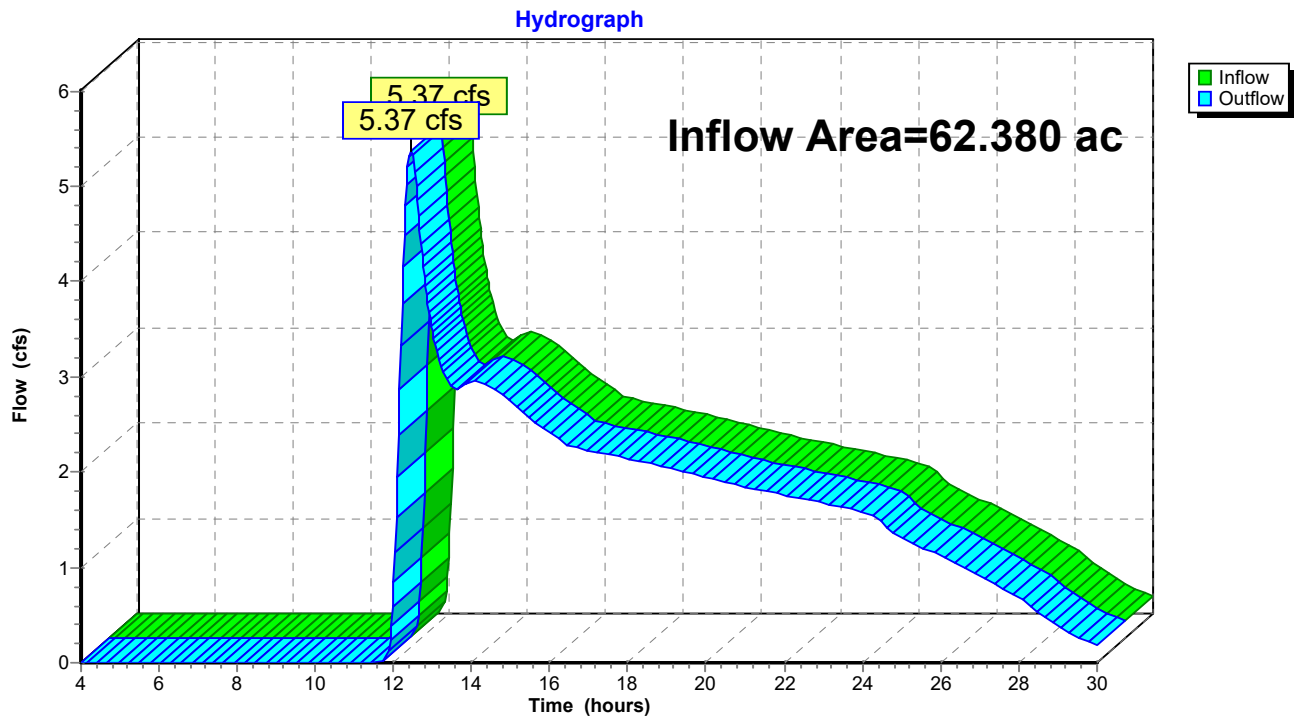
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Summary for Reach 1R: Pt of Study 1

Inflow Area = 62.380 ac, 9.33% Impervious, Inflow Depth > 0.53" for 1-yr event
Inflow = 5.37 cfs @ 12.45 hrs, Volume= 2.764 af
Outflow = 5.37 cfs @ 12.45 hrs, Volume= 2.764 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs

Reach 1R: Pt of Study 1



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Type II 24-hr 1-yr Rainfall=2.04"

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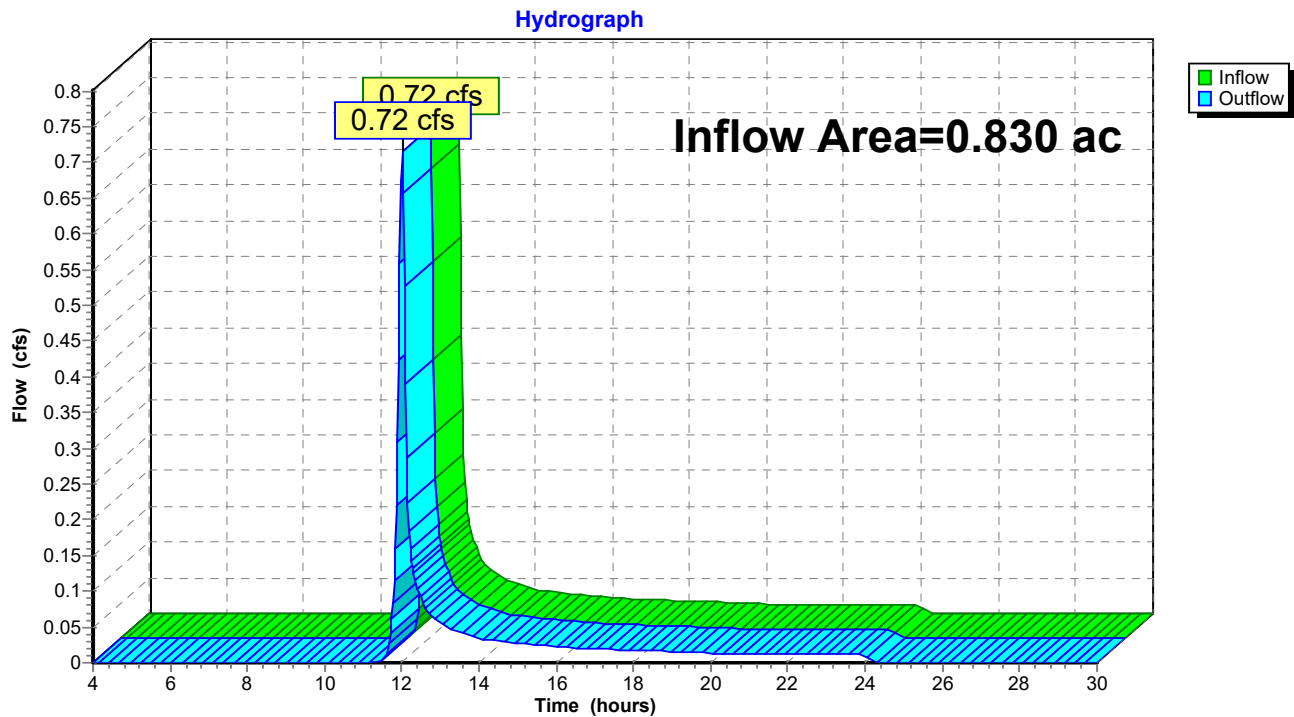
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Summary for Reach 2R: Pt of Study 2

Inflow Area = 0.830 ac, 0.00% Impervious, Inflow Depth = 0.55" for 1-yr event
Inflow = 0.72 cfs @ 12.01 hrs, Volume= 0.038 af
Outflow = 0.72 cfs @ 12.01 hrs, Volume= 0.038 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs

Reach 2R: Pt of Study 2



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Type II 24-hr 1-yr Rainfall=2.04"

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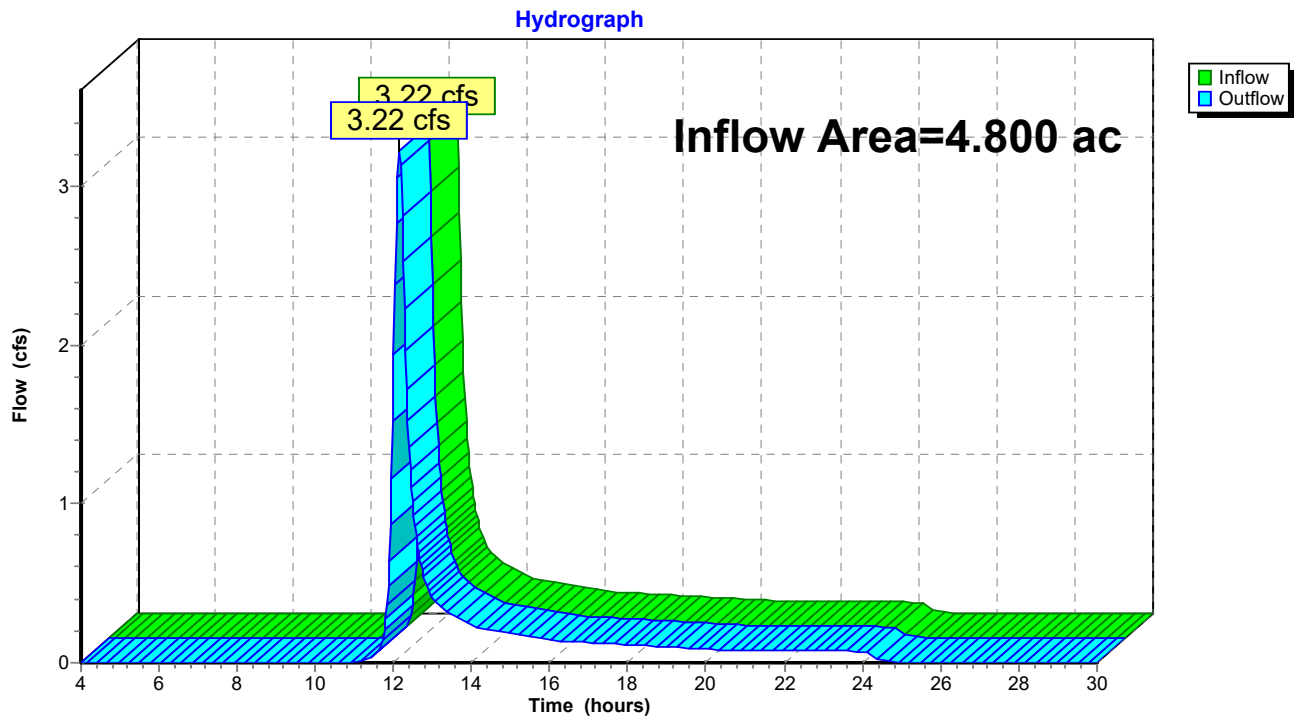
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Summary for Reach 3R: Pt of Study 3

Inflow Area = 4.800 ac, 14.17% Impervious, Inflow Depth = 0.63" for 1-yr event
Inflow = 3.22 cfs @ 12.14 hrs, Volume= 0.254 af
Outflow = 3.22 cfs @ 12.14 hrs, Volume= 0.254 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs

Reach 3R: Pt of Study 3



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Type II 24-hr 1-yr Rainfall=2.04"

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Summary for Reach 5R: Drainage Ditch

Inflow Area = 2.200 ac, 12.27% Impervious, Inflow Depth = 0.59" for 1-yr event
Inflow = 1.49 cfs @ 12.10 hrs, Volume= 0.108 af
Outflow = 1.42 cfs @ 12.20 hrs, Volume= 0.108 af, Atten= 5%, Lag= 5.8 min
Routed to Reach 3R : Pt of Study 3

Routing by Stor-Ind+Trans method, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Max. Velocity= 3.17 fps, Min. Travel Time= 3.4 min
Avg. Velocity= 1.11 fps, Avg. Travel Time= 9.7 min

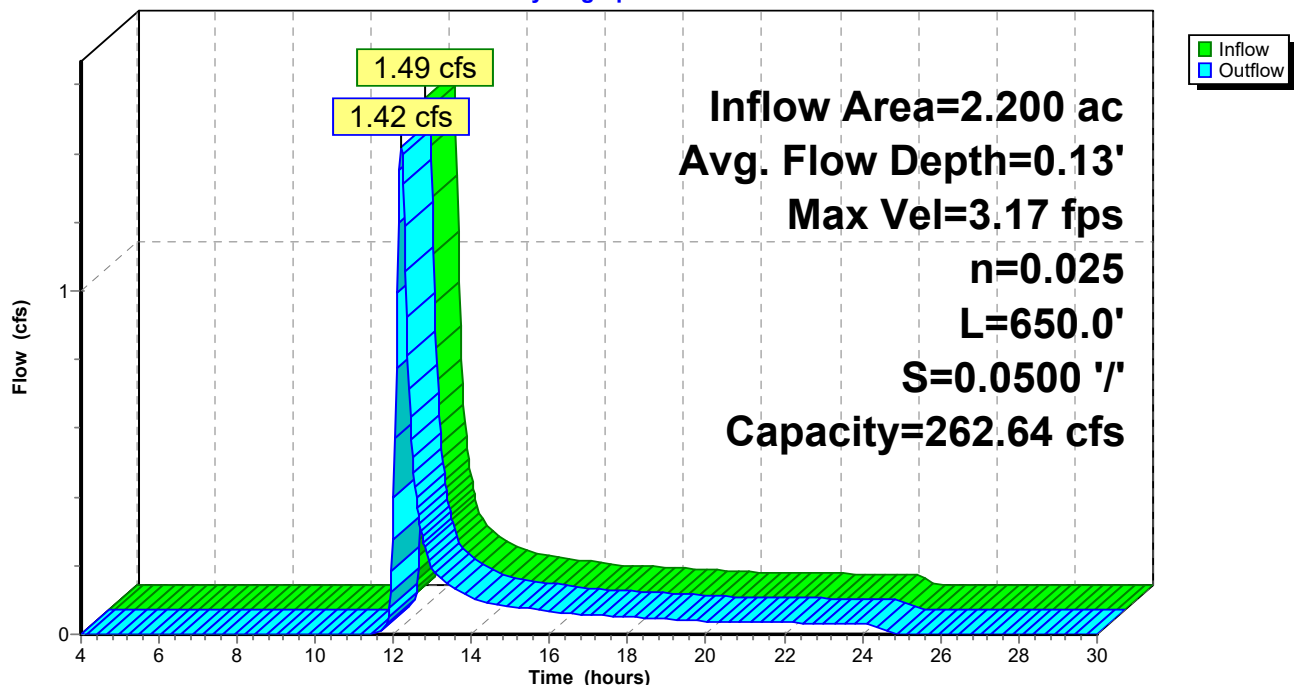
Peak Storage= 290 cf @ 12.14 hrs
Average Depth at Peak Storage= 0.13' , Surface Width= 3.79'
Bank-Full Depth= 2.00' Flow Area= 18.0 sf, Capacity= 262.64 cfs

3.00' x 2.00' deep channel, n= 0.025 Earth, clean & straight
Side Slope Z-value= 3.0 ' / ' Top Width= 15.00'
Length= 650.0' Slope= 0.0500 ' / '
Inlet Invert= 0.00', Outlet Invert= -32.50'



Reach 5R: Drainage Ditch

Hydrograph



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Type II 24-hr 1-yr Rainfall=2.04"

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Summary for Pond 1P: Bioretention 1

Inflow Area = 37.380 ac, 11.61% Impervious, Inflow Depth = 0.63" for 1-yr event
Inflow = 15.26 cfs @ 12.40 hrs, Volume= 1.963 af
Outflow = 14.54 cfs @ 12.50 hrs, Volume= 1.803 af, Atten= 5%, Lag= 5.6 min
Primary = 14.54 cfs @ 12.50 hrs, Volume= 1.803 af
Routed to Pond 3P : Detention Basin

Routing by Stor-Ind method, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Peak Elev= 872.81' @ 12.50 hrs Surf.Area= 15,794 sf Storage= 11,608 cf

Plug-Flow detention time= 66.9 min calculated for 1.801 af (92% of inflow)
Center-of-Mass det. time= 24.5 min (918.0 - 893.5)

Volume	Invert	Avail.Storage	Storage Description
#1	872.00'	14,715 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
872.00	13,500	0	0
872.50	14,330	6,958	6,958
873.00	16,700	7,758	14,715

Device	Routing	Invert	Outlet Devices
#1	Primary	872.50'	15.0' long + 3.0 ' SideZ x 15.0' breadth Broad-Crested Rectangular Weir X 2 Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=14.52 cfs @ 12.50 hrs HW=872.81' (Free Discharge)
↑1=**Broad-Crested Rectangular Weir** (Weir Controls 14.52 cfs @ 1.48 fps)

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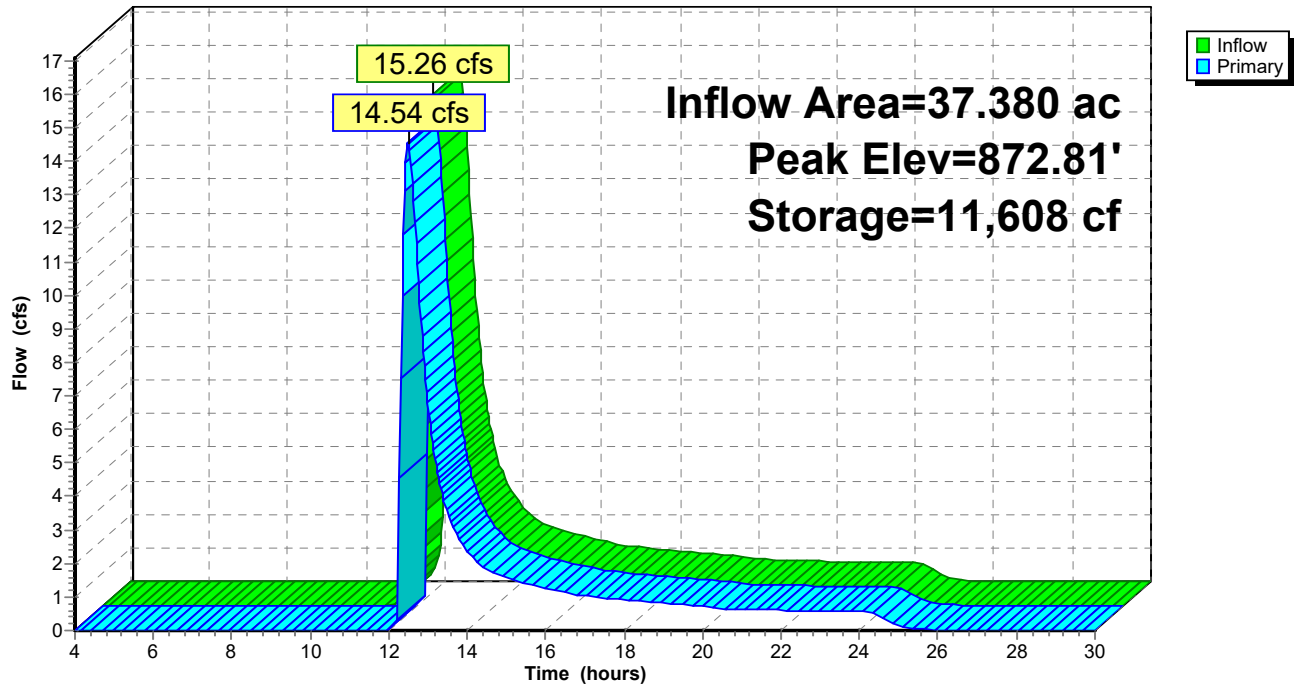
Type II 24-hr 1-yr Rainfall=2.04"

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Pond 1P: Bioretention 1

Hydrograph



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Type II 24-hr 1-yr Rainfall=2.04"

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Summary for Pond 2P: Bioretention 2

Inflow Area = 8.920 ac, 14.35% Impervious, Inflow Depth = 0.42" for 1-yr event
Inflow = 1.20 cfs @ 12.16 hrs, Volume= 0.316 af
Outflow = 0.61 cfs @ 13.26 hrs, Volume= 0.221 af, Atten= 49%, Lag= 66.0 min
Primary = 0.61 cfs @ 13.26 hrs, Volume= 0.221 af
Routed to Pond 3P : Detention Basin

Routing by Stor-Ind method, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Peak Elev= 882.54' @ 13.26 hrs Surf.Area= 9,571 sf Storage= 4,491 cf

Plug-Flow detention time= 218.4 min calculated for 0.221 af (70% of inflow)
Center-of-Mass det. time= 97.6 min (1,033.8 - 936.2)

Volume	Invert	Avail.Storage	Storage Description
#1	882.00'	9,105 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
882.00	7,000	0	0
882.50	9,500	4,125	4,125
883.00	10,420	4,980	9,105

Device	Routing	Invert	Outlet Devices
#1	Primary	882.50'	15.0' long + 3.0 ' SideZ x 15.0' breadth Broad-Crested Rectangular Weir X 2 Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=0.61 cfs @ 13.26 hrs HW=882.54' (Free Discharge)
↑1=**Broad-Crested Rectangular Weir** (Weir Controls 0.61 cfs @ 0.52 fps)

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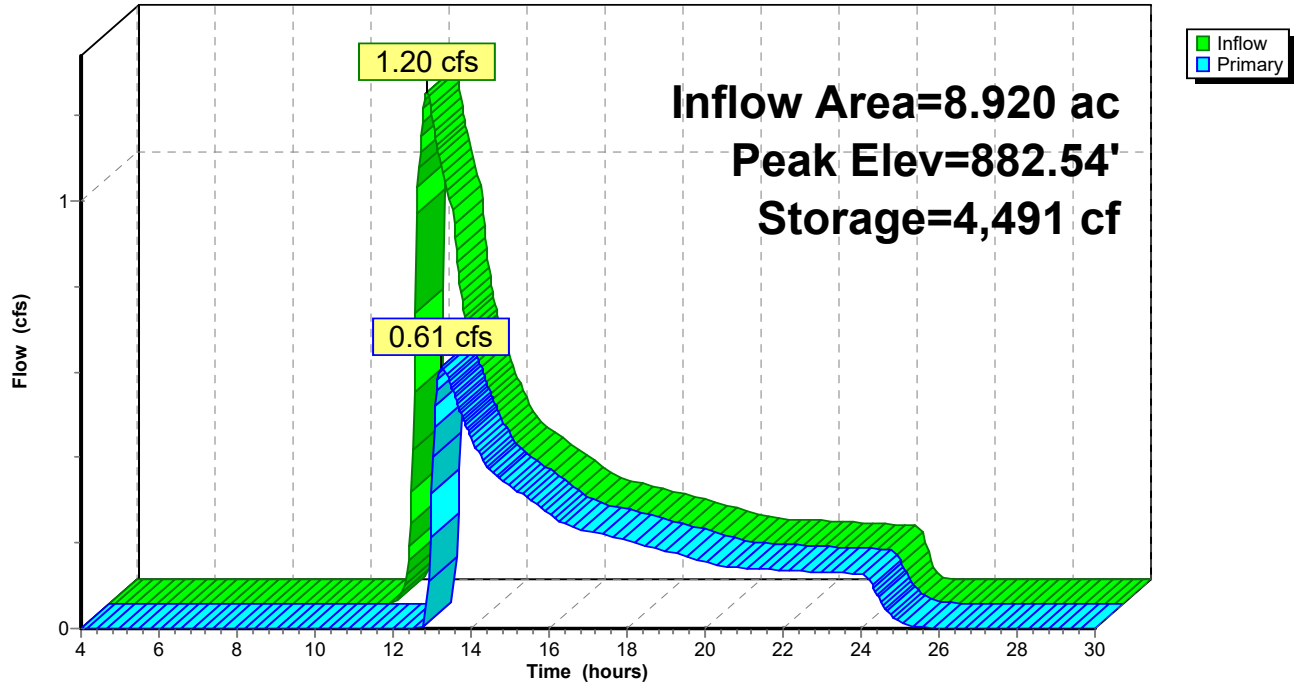
Type II 24-hr 1-yr Rainfall=2.04"

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Pond 2P: Bioretention 2

Hydrograph



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Type II 24-hr 1-yr Rainfall=2.04"

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Summary for Pond 3P: Detention Basin

Inflow Area = 47.380 ac, 11.86% Impervious, Inflow Depth = 0.56" for 1-yr event
Inflow = 15.57 cfs @ 12.47 hrs, Volume= 2.197 af
Outflow = 2.34 cfs @ 14.40 hrs, Volume= 2.176 af, Atten= 85%, Lag= 115.3 min
Primary = 2.34 cfs @ 14.40 hrs, Volume= 2.176 af
Routed to Reach 1R : Pt of Study 1
Secondary = 0.00 cfs @ 4.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Peak Elev= 866.12' @ 14.40 hrs Surf.Area= 21,291 sf Storage= 40,512 cf

Plug-Flow detention time= 255.4 min calculated for 2.176 af (99% of inflow)
Center-of-Mass det. time= 249.8 min (1,168.0 - 918.3)

Volume	Invert	Avail.Storage	Storage Description
#1	863.50'	243,001 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
863.50	1,285	0	0
864.00	11,100	3,096	3,096
865.00	18,820	14,960	18,056
866.00	21,020	19,920	37,976
867.00	23,280	22,150	60,126
868.00	25,590	24,435	84,561
869.00	27,960	26,775	111,336
870.00	30,390	29,175	140,511
871.00	32,875	31,633	172,144
872.00	35,415	34,145	206,289
873.00	38,010	36,713	243,001

Device	Routing	Invert	Outlet Devices
#1	Secondary	872.00'	30.0' long x 12.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#2	Primary	863.50'	30.0" Round Culvert L= 98.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 863.50' / 857.00' S= 0.0663 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf
#3	Device 2	863.50'	7.0" Vert. Orifice1 C= 0.600 Limited to weir flow at low heads
#4	Device 2	866.00'	32.0" W x 18.0" H Vert. Orifice2 C= 0.600 Limited to weir flow at low heads
#5	Device 2	868.10'	36.0" x 36.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads

Proposed Drainage Areas

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Type II 24-hr 1-yr Rainfall=2.04"

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Primary OutFlow Max=2.32 cfs @ 14.40 hrs HW=866.12' (Free Discharge)

↳ **2=Culvert** (Passes 2.32 cfs of 21.84 cfs potential flow)

↳ **3=Orifice1** (Orifice Controls 1.96 cfs @ 7.35 fps)

↳ **4=Orifice2** (Orifice Controls 0.36 cfs @ 1.11 fps)

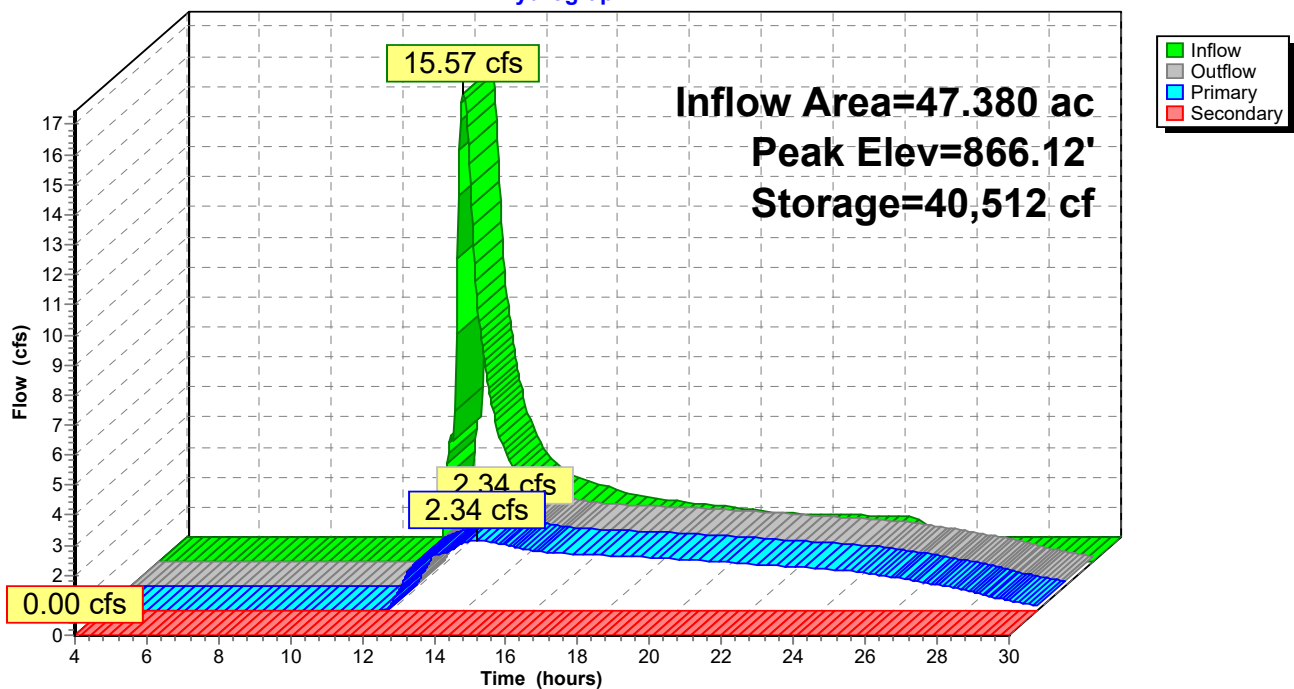
↳ **5=Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 4.00 hrs HW=863.50' (Free Discharge)

↳ **1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 3P: Detention Basin

Hydrograph



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Type II 24-hr 1-yr Rainfall=2.04"

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Summary for Pond 4P: Diversion Structure

Inflow Area = 8.920 ac, 14.35% Impervious, Inflow Depth = 0.59" for 1-yr event
Inflow = 5.19 cfs @ 12.16 hrs, Volume= 0.436 af
Outflow = 5.19 cfs @ 12.16 hrs, Volume= 0.436 af, Atten= 0%, Lag= 0.0 min
Primary = 1.20 cfs @ 12.16 hrs, Volume= 0.316 af
Routed to Pond 2P : Bioretention 2
Secondary = 4.00 cfs @ 12.16 hrs, Volume= 0.121 af
Routed to Pond 3P : Detention Basin

Routing by Stor-Ind method, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs

Peak Elev= 885.01' @ 12.16 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	882.20'	6.0" Round Bioretention Culvert L= 10.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 882.20' / 882.10' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#2	Secondary	883.90'	18.0" Round Detention Culvert L= 45.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 883.90' / 875.00' S= 0.1978 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=1.20 cfs @ 12.16 hrs HW=885.01' (Free Discharge)

↑1=Bioretention Culvert (Inlet Controls 1.20 cfs @ 6.09 fps)

Secondary OutFlow Max=3.99 cfs @ 12.16 hrs HW=885.01' (Free Discharge)

↑2=Detention Culvert (Inlet Controls 3.99 cfs @ 2.84 fps)

Proposed Drainage Areas

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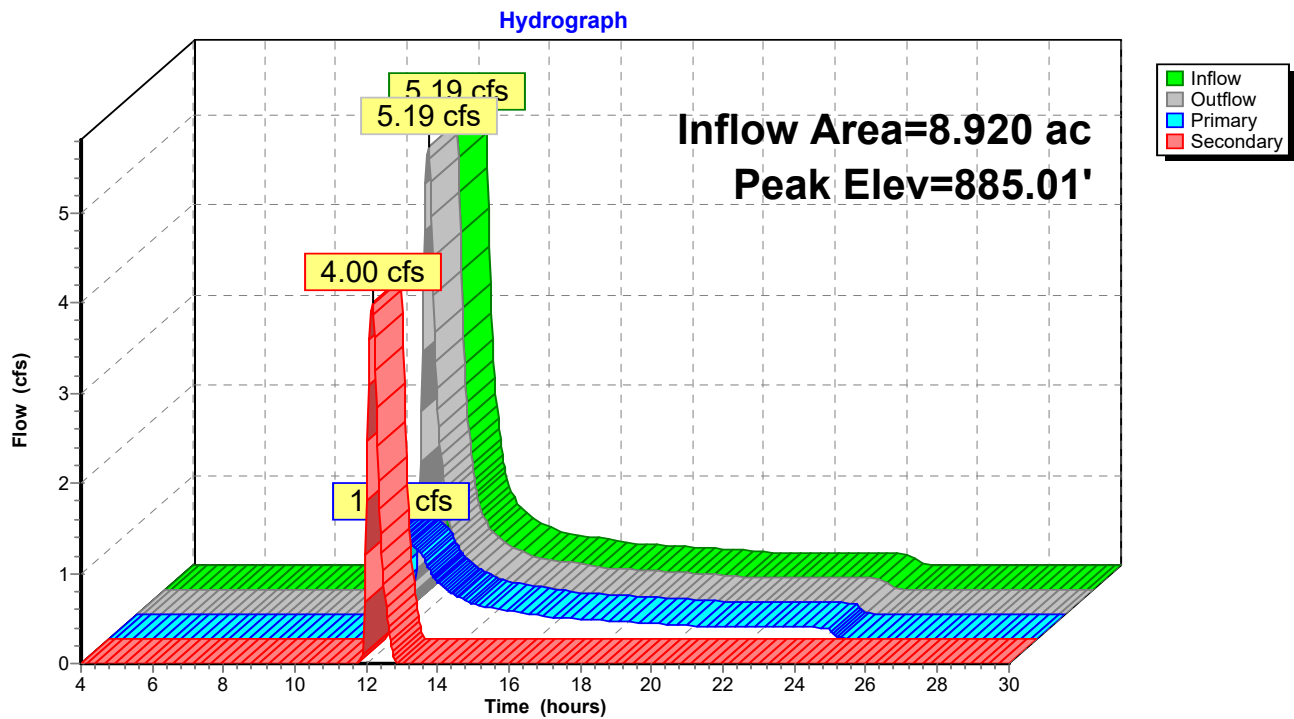
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Type II 24-hr 1-yr Rainfall=2.04"

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Pond 4P: Diversion Structure



Proposed Drainage Areas

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Type II 24-hr 10-yr Rainfall=3.43"

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Summary for Subcatchment 1S: DA-1A

Runoff = 43.33 cfs @ 12.38 hrs, Volume= 5.146 af, Depth= 1.65"
Routed to Pond 1P : Bioretention 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Type II 24-hr 10-yr Rainfall=3.43"

Area (ac)	CN	Description
2.470	98	Paved parking, HSG D
1.870	98	Unconnected roofs, HSG D
24.080	80	>75% Grass cover, Good, HSG D
8.960	77	Woods, Good, HSG D
37.380	81	Weighted Average
33.040		88.39% Pervious Area
4.340		11.61% Impervious Area
1.870		43.09% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.9	100	0.0600	0.06		Sheet Flow, SHEET FLOW Woods: Dense underbrush n= 0.800 P2= 2.39"
4.8	370	0.0650	1.27		Shallow Concentrated Flow, SCF Woodland Kv= 5.0 fps
1.9	200	0.0650	1.78		Shallow Concentrated Flow, SCF Short Grass Pasture Kv= 7.0 fps
0.2	295	0.0300	19.80	79.19	Channel Flow, curb and gutter flow Area= 4.0 sf Perim= 4.0' r= 1.00' n= 0.013 Asphalt, smooth
1.7	1,100	0.0345	11.04	19.51	Pipe Channel, Pipe Flow 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
3.8	955	0.0050	4.20	50.44	Channel Flow, Area= 12.0 sf Perim= 12.0' r= 1.00' n= 0.025 Earth, grassed & winding
40.3	3,020	Total			

Proposed Drainage Areas

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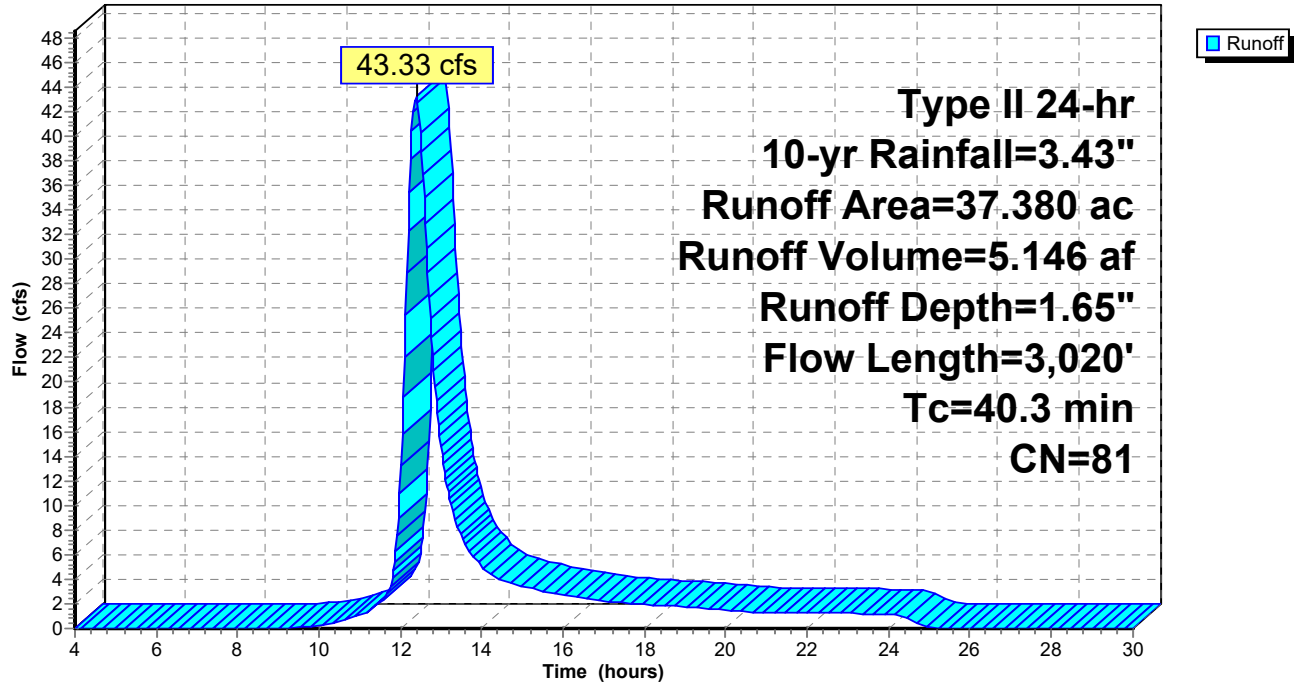
Type II 24-hr 10-yr Rainfall=3.43"

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Subcatchment 1S: DA-1A

Hydrograph



Proposed Drainage Areas

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Type II 24-hr 10-yr Rainfall=3.43"

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Summary for Subcatchment 2S: DA-1B

Runoff = 15.08 cfs @ 12.14 hrs, Volume= 1.175 af, Depth= 1.58"
Routed to Pond 4P : Diversion Structure

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Type II 24-hr 10-yr Rainfall=3.43"

Area (ac)	CN	Adj	Description
0.870	98		Paved parking, HSG D
0.410	98		Unconnected roofs, HSG D
4.000	80		>75% Grass cover, Good, HSG D
2.040	77		Woods, Good, HSG D
1.600	73		Brush, Good, HSG D
8.920	81	80	Weighted Average, UI Adjusted
7.640			85.65% Pervious Area
1.280			14.35% Impervious Area
0.410			32.03% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	100	0.0600	0.16		Sheet Flow, SHEET FLOW Grass: Dense n= 0.240 P2= 2.39"
4.6	410	0.0900	1.50		Shallow Concentrated Flow, SCF Woodland Kv= 5.0 fps
5.6	710	0.0920	2.12		Shallow Concentrated Flow, SCF Short Grass Pasture Kv= 7.0 fps
0.3	170	0.0200	9.55	76.42	Channel Flow, swale flow Area= 8.0 sf Perim= 8.0' r= 1.00' n= 0.022 Earth, clean & straight
21.1	1,390	Total			

Proposed Drainage Areas

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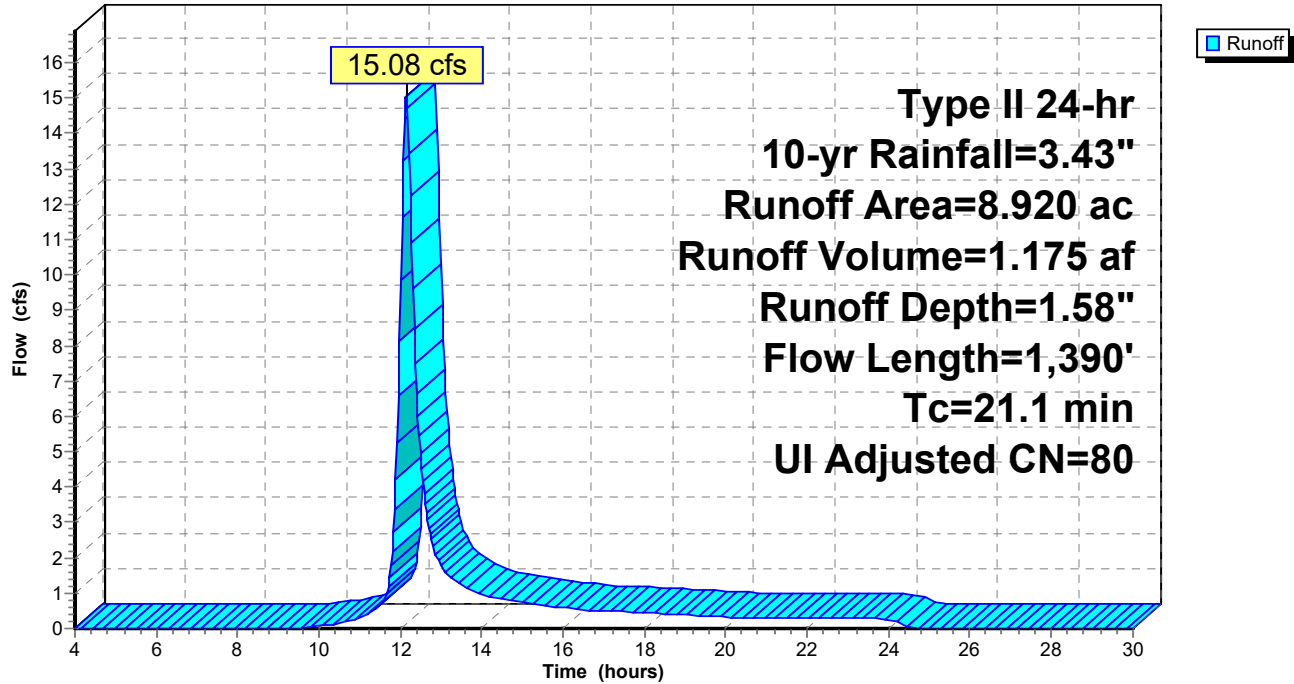
Type II 24-hr 10-yr Rainfall=3.43"

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Subcatchment 2S: DA-1B

Hydrograph



Proposed Drainage Areas

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Type II 24-hr 10-yr Rainfall=3.43"

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Summary for Subcatchment 3S: DA-1C

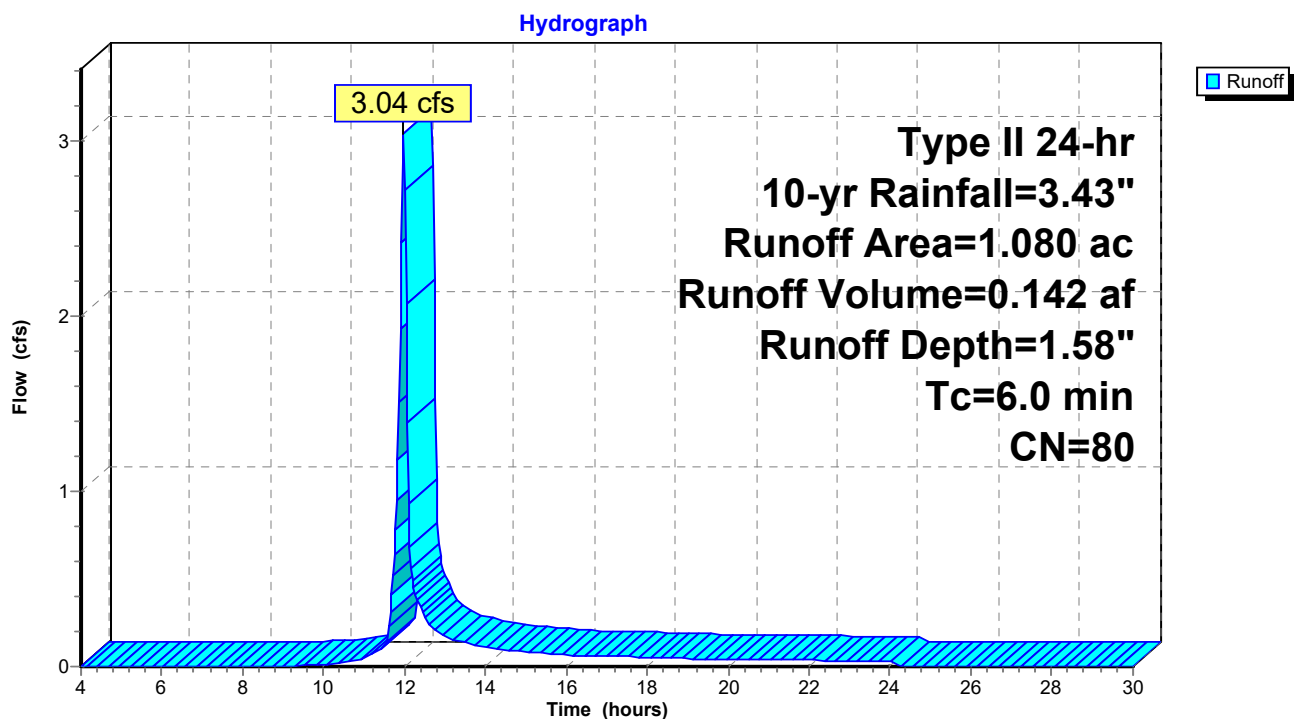
Runoff = 3.04 cfs @ 11.97 hrs, Volume= 0.142 af, Depth= 1.58"
Routed to Pond 3P : Detention Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Type II 24-hr 10-yr Rainfall=3.43"

Area (ac)	CN	Description
0.960	80	>75% Grass cover, Good, HSG D
0.120	77	Woods, Good, HSG D
1.080	80	Weighted Average
1.080		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Min TR 55 Value

Subcatchment 3S: DA-1C



Proposed Drainage Areas

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Type II 24-hr 10-yr Rainfall=3.43"

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Summary for Subcatchment 4S: DA-1D

Runoff = 14.59 cfs @ 12.37 hrs, Volume= 1.723 af, Depth= 1.38"
Routed to Reach 1R : Pt of Study 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Type II 24-hr 10-yr Rainfall=3.43"

Area (ac)	CN	Description
3.230	80	>75% Grass cover, Good, HSG D
8.910	77	Woods, Good, HSG D
0.200	98	Paved parking, HSG D
2.660	73	Brush, Good, HSG D
15.000	77	Weighted Average
14.800		98.67% Pervious Area
0.200		1.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.9	100	0.0600	0.06		Sheet Flow, SHEET FLOW Woods: Dense underbrush n= 0.800 P2= 2.39"
5.4	485	0.0900	1.50		Shallow Concentrated Flow, SCF Woodland Kv= 5.0 fps
4.1	517	0.0900	2.10		Shallow Concentrated Flow, SCF Short Grass Pasture Kv= 7.0 fps
1.2	1,155	0.0750	16.28	260.45	Channel Flow, SWALE Area= 16.0 sf Perim= 16.0' r= 1.00' n= 0.025 Earth, clean & winding
38.6	2,257	Total			

Proposed Drainage Areas

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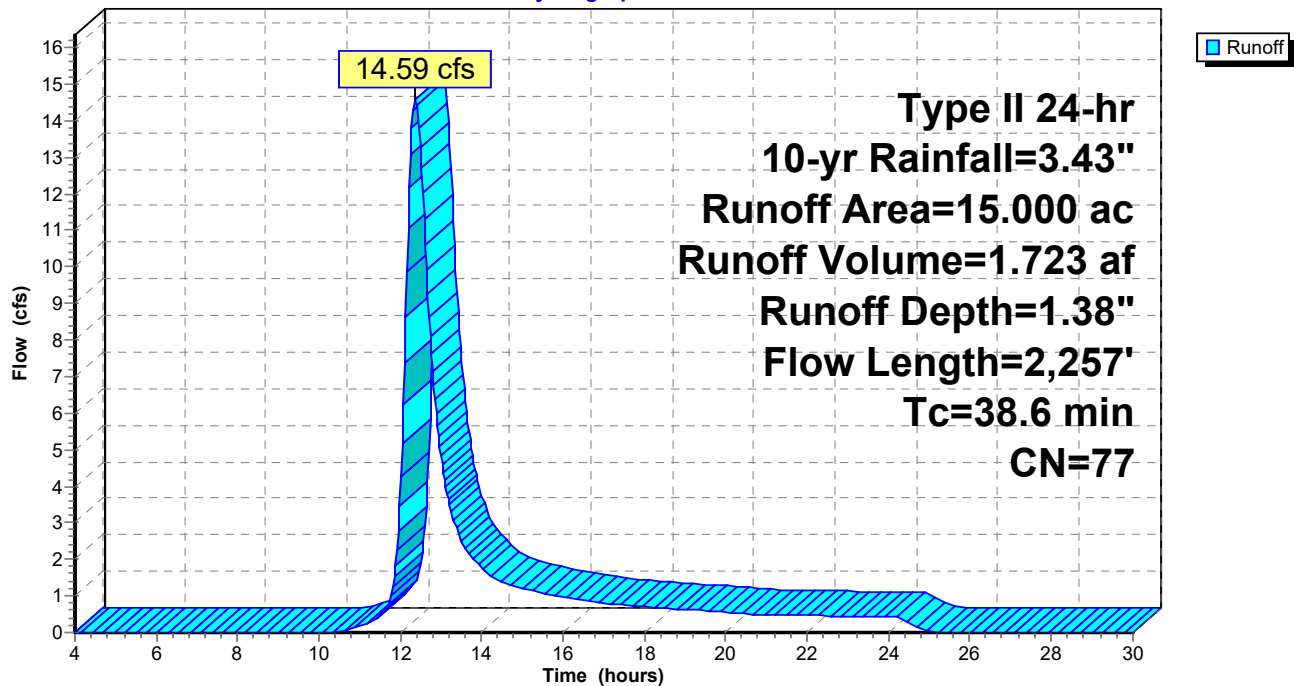
Type II 24-hr 10-yr Rainfall=3.43"

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Subcatchment 4S: DA-1D

Hydrograph



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Type II 24-hr 10-yr Rainfall=3.43"

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Summary for Subcatchment 5S: DA#2

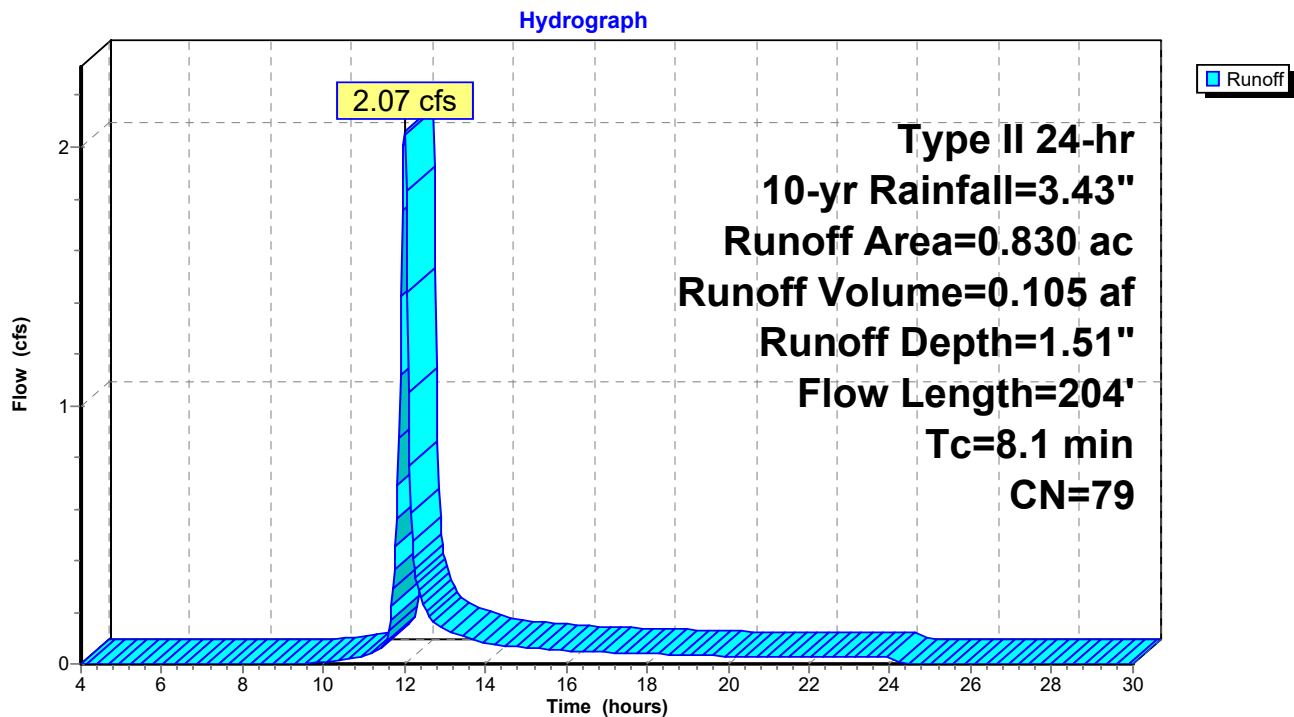
Runoff = 2.07 cfs @ 12.00 hrs, Volume= 0.105 af, Depth= 1.51"
Routed to Reach 2R : Pt of Study 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Type II 24-hr 10-yr Rainfall=3.43"

Area (ac)	CN	Description
0.690	80	>75% Grass cover, Good, HSG D
0.140	77	Woods, Good, HSG D
0.830	79	Weighted Average
0.830		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	100	0.1500	0.23		Sheet Flow, SHEET FLOW Grass: Dense n= 0.240 P2= 2.39"
0.7	104	0.1300	2.52		Shallow Concentrated Flow, SCF Short Grass Pasture Kv= 7.0 fps
8.1	204	Total			

Subcatchment 5S: DA#2



Proposed Drainage Areas

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Type II 24-hr 10-yr Rainfall=3.43"

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Summary for Subcatchment 6S: DA#3A

Runoff = 4.27 cfs @ 12.09 hrs, Volume= 0.290 af, Depth= 1.58"
Routed to Reach 5R : Drainage Ditch

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Type II 24-hr 10-yr Rainfall=3.43"

Area (ac)	CN	Adj	Description
0.900	80		>75% Grass cover, Good, HSG D
0.200	98		Paved parking, HSG D
0.070	98		Unconnected roofs, HSG D
1.030	77		Woods, Good, HSG D
2.200	81	80	Weighted Average, UI Adjusted
1.930			87.73% Pervious Area
0.270			12.27% Impervious Area
0.070			25.93% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.9	100	0.0450	0.14		Sheet Flow, SHEET FLOW Grass: Dense n= 0.240 P2= 2.39"
2.5	188	0.0650	1.27		Shallow Concentrated Flow, SCF Woodland Kv= 5.0 fps
1.9	202	0.0650	1.78		Shallow Concentrated Flow, SCF Short Grass Pasture Kv= 7.0 fps
0.2	232	0.0220	16.95	50.86	Channel Flow, curb flow Area= 3.0 sf Perim= 3.0' r= 1.00' n= 0.013 Asphalt, smooth
16.5	722	Total			

Proposed Drainage Areas

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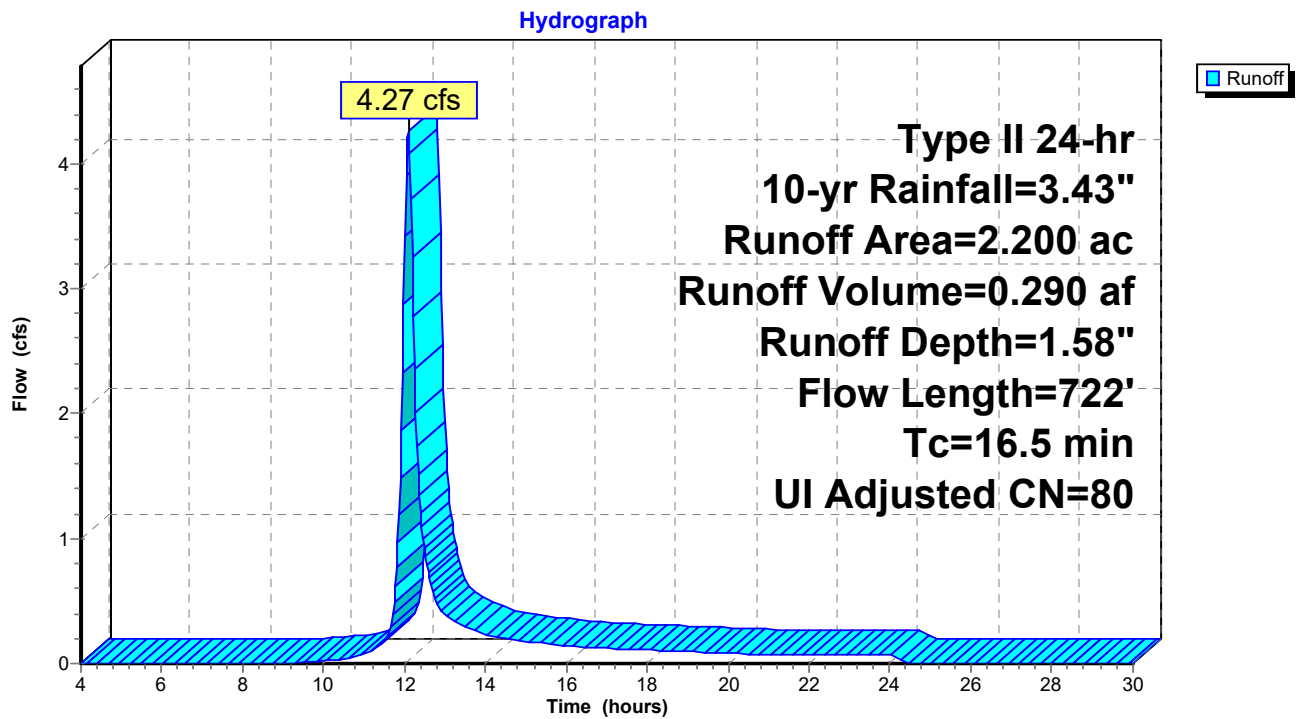
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Type II 24-hr 10-yr Rainfall=3.43"

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Subcatchment 6S: DA#3A



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Type II 24-hr 10-yr Rainfall=3.43"

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Summary for Subcatchment 7S: DA#3B

Runoff = 5.49 cfs @ 12.09 hrs, Volume= 0.374 af, Depth= 1.72"
Routed to Reach 3R : Pt of Study 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Type II 24-hr 10-yr Rainfall=3.43"

Area (ac)	CN	Adj	Description		
2.190	80		>75% Grass cover, Good, HSG D		
0.270	98		Paved parking, HSG D		
0.140	98		Unconnected roofs, HSG D		
2.600	83	82	Weighted Average, UI Adjusted		
2.190			84.23% Pervious Area		
0.410			15.77% Impervious Area		
0.140			34.15% Unconnected		
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	100	0.0500	0.15		Sheet Flow, SHEET FLOW Grass: Dense n= 0.240 P2= 2.39"
5.1	475	0.0500	1.57		Shallow Concentrated Flow, SCF Short Grass Pasture Kv= 7.0 fps
0.2	82	0.0200	6.42	5.04	Pipe Channel, pipe flow 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
16.7	657	Total			

Proposed Drainage Areas

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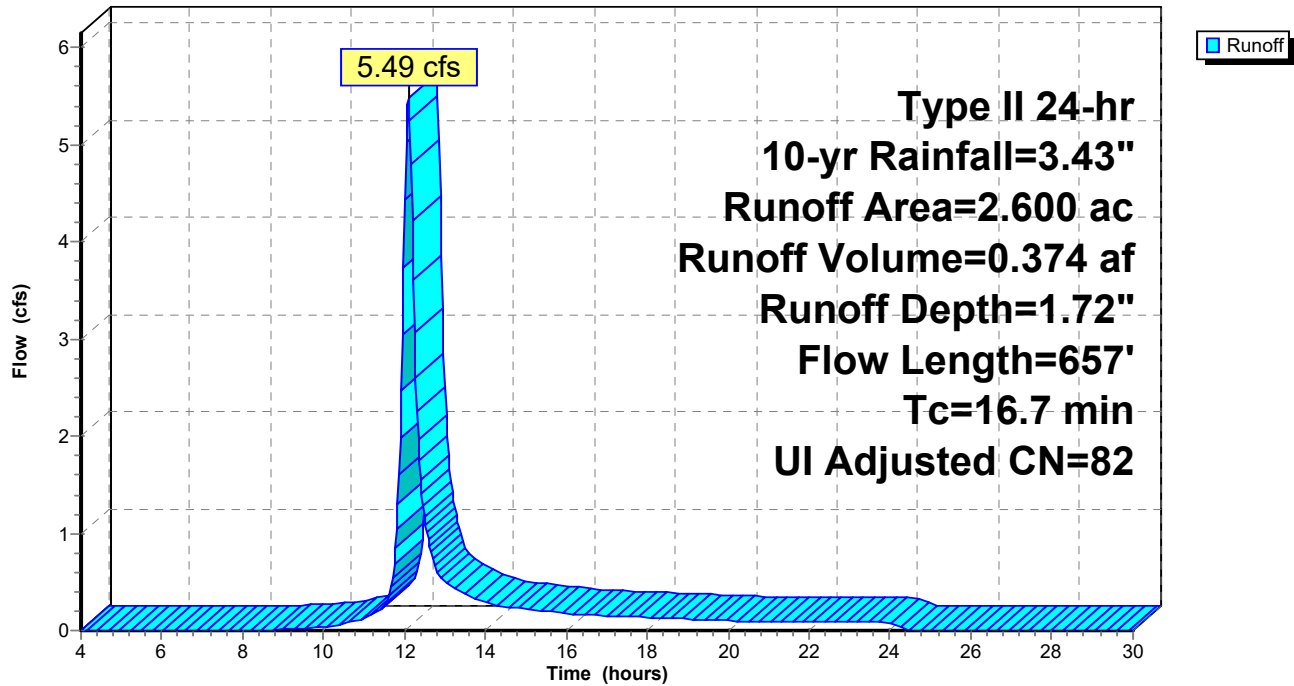
Type II 24-hr 10-yr Rainfall=3.43"

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Subcatchment 7S: DA#3B

Hydrograph



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Type II 24-hr 10-yr Rainfall=3.43"

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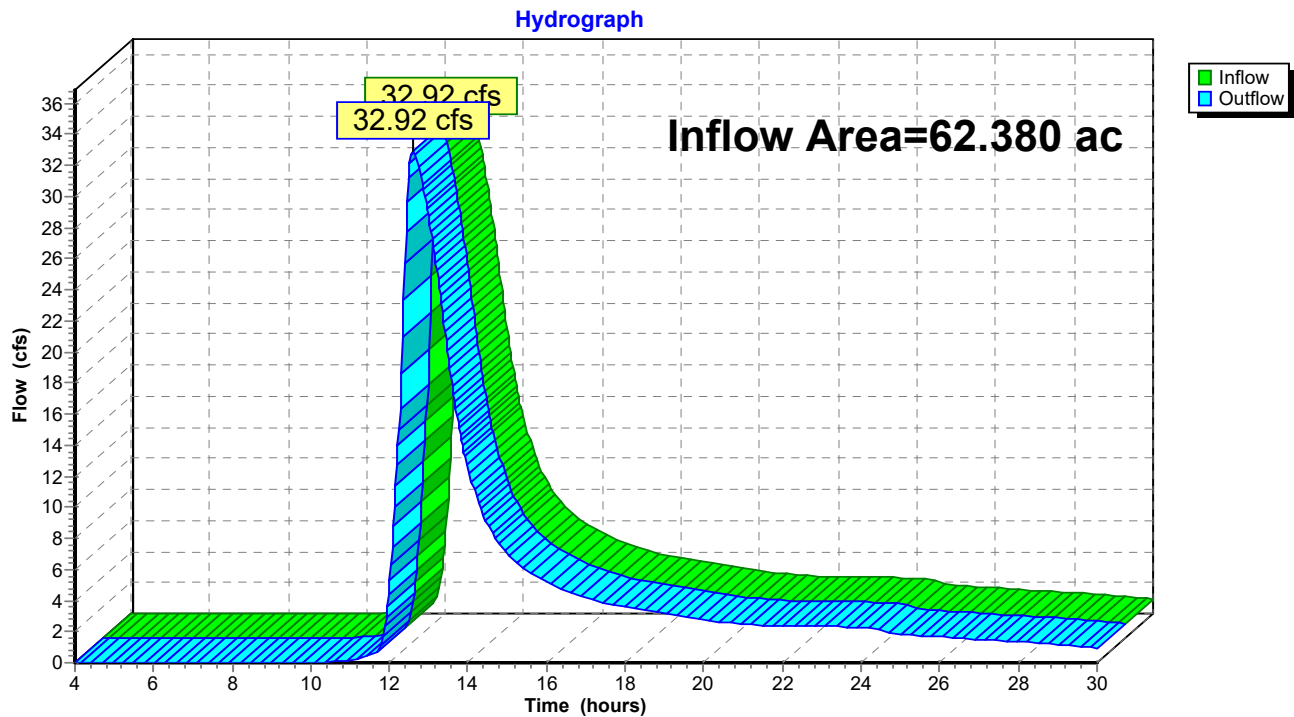
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Summary for Reach 1R: Pt of Study 1

Inflow Area = 62.380 ac, 9.33% Impervious, Inflow Depth > 1.49" for 10-yr event
Inflow = 32.92 cfs @ 12.59 hrs, Volume= 7.765 af
Outflow = 32.92 cfs @ 12.59 hrs, Volume= 7.765 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs

Reach 1R: Pt of Study 1



Proposed Drainage Areas

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Type II 24-hr 10-yr Rainfall=3.43"

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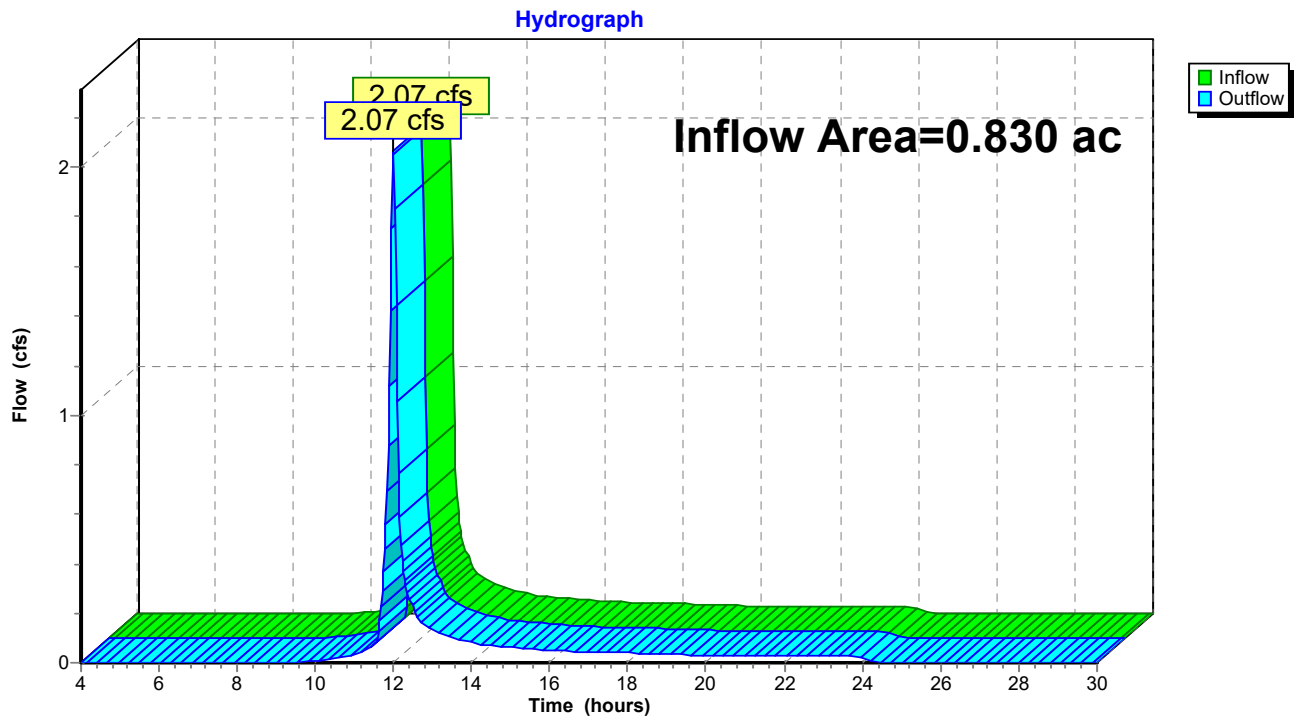
Page 40

Summary for Reach 2R: Pt of Study 2

Inflow Area = 0.830 ac, 0.00% Impervious, Inflow Depth = 1.51" for 10-yr event
Inflow = 2.07 cfs @ 12.00 hrs, Volume= 0.105 af
Outflow = 2.07 cfs @ 12.00 hrs, Volume= 0.105 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs

Reach 2R: Pt of Study 2



Proposed Drainage Areas

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Type II 24-hr 10-yr Rainfall=3.43"

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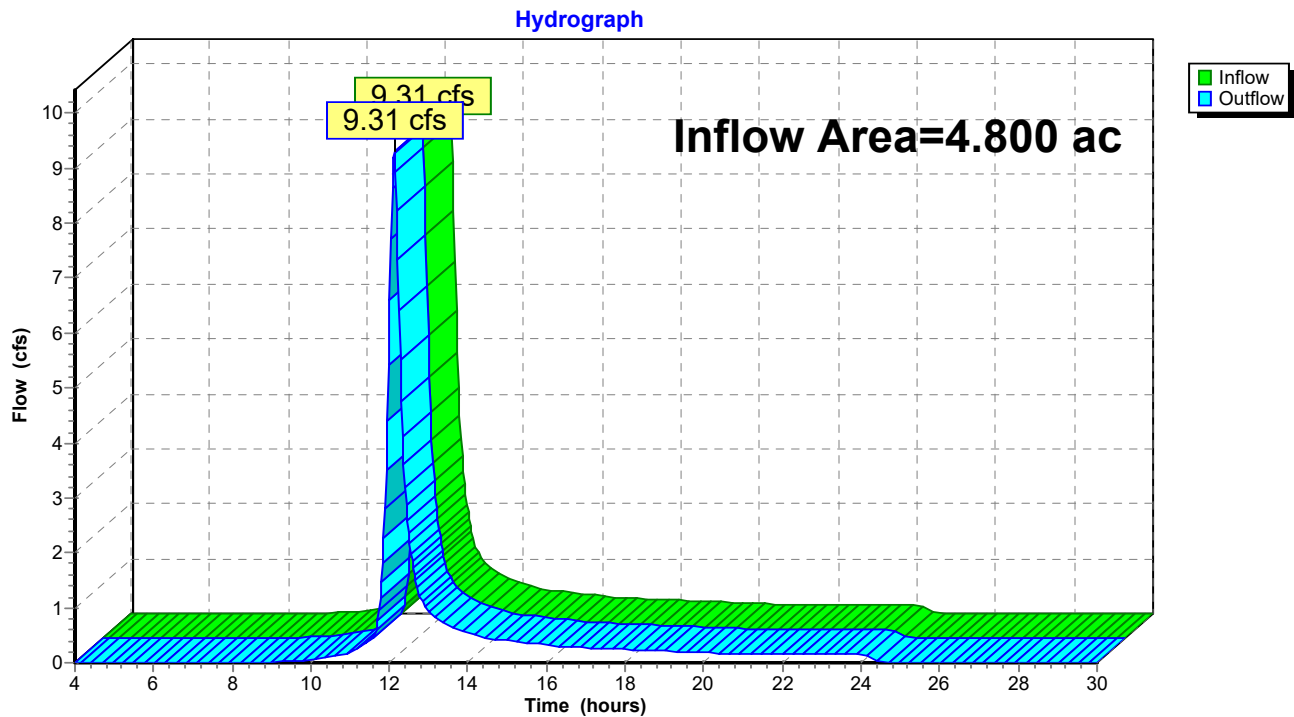
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Summary for Reach 3R: Pt of Study 3

Inflow Area = 4.800 ac, 14.17% Impervious, Inflow Depth = 1.66" for 10-yr event
Inflow = 9.31 cfs @ 12.12 hrs, Volume= 0.664 af
Outflow = 9.31 cfs @ 12.12 hrs, Volume= 0.664 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs

Reach 3R: Pt of Study 3



Proposed Drainage Areas

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Type II 24-hr 10-yr Rainfall=3.43"

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Summary for Reach 5R: Drainage Ditch

Inflow Area = 2.200 ac, 12.27% Impervious, Inflow Depth = 1.58" for 10-yr event
Inflow = 4.27 cfs @ 12.09 hrs, Volume= 0.290 af
Outflow = 4.15 cfs @ 12.16 hrs, Volume= 0.290 af, Atten= 3%, Lag= 4.1 min
Routed to Reach 3R : Pt of Study 3

Routing by Stor-Ind+Trans method, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Max. Velocity= 4.56 fps, Min. Travel Time= 2.4 min
Avg. Velocity= 1.36 fps, Avg. Travel Time= 8.0 min

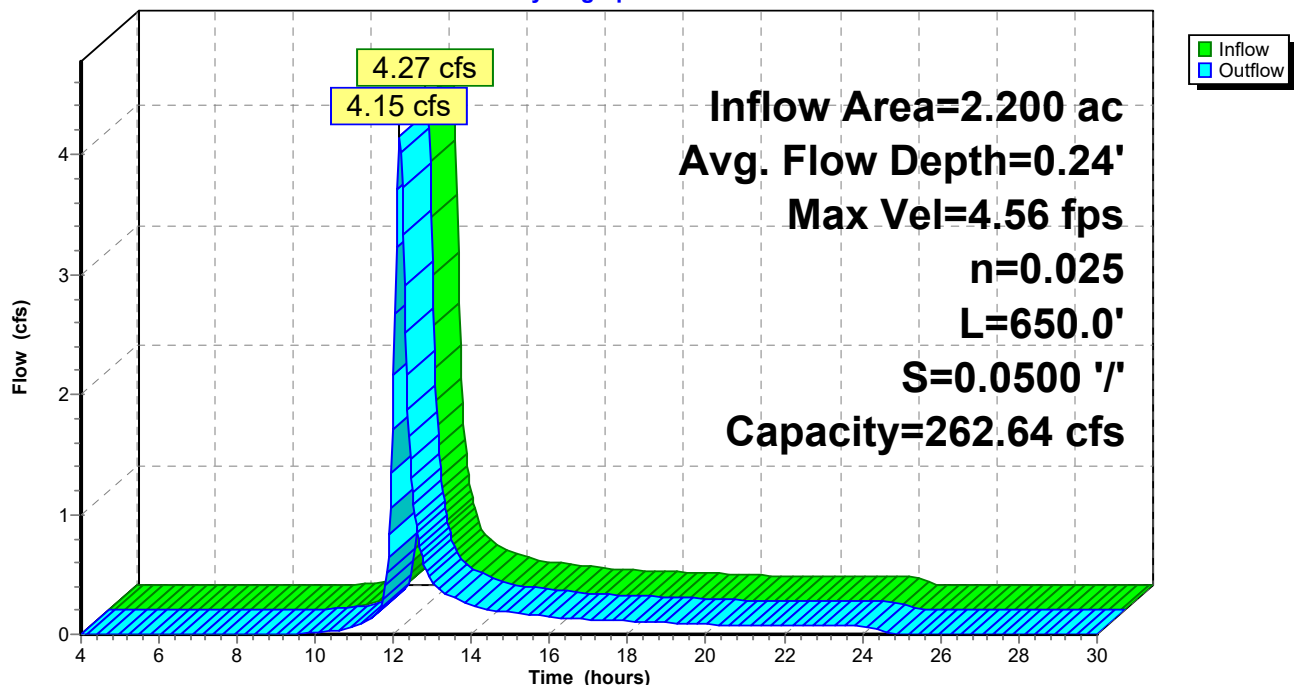
Peak Storage= 594 cf @ 12.12 hrs
Average Depth at Peak Storage= 0.24' , Surface Width= 4.47'
Bank-Full Depth= 2.00' Flow Area= 18.0 sf, Capacity= 262.64 cfs

3.00' x 2.00' deep channel, n= 0.025 Earth, clean & straight
Side Slope Z-value= 3.0 '/' Top Width= 15.00'
Length= 650.0' Slope= 0.0500 '/'
Inlet Invert= 0.00', Outlet Invert= -32.50'



Reach 5R: Drainage Ditch

Hydrograph



Proposed Drainage Areas

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Type II 24-hr 10-yr Rainfall=3.43"

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Summary for Pond 1P: Bioretention 1

Inflow Area = 37.380 ac, 11.61% Impervious, Inflow Depth = 1.65" for 10-yr event
Inflow = 43.33 cfs @ 12.38 hrs, Volume= 5.146 af
Outflow = 45.49 cfs @ 12.37 hrs, Volume= 4.986 af, Atten= 0%, Lag= 0.0 min
Primary = 45.49 cfs @ 12.37 hrs, Volume= 4.986 af
Routed to Pond 3P : Detention Basin

Routing by Stor-Ind method, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Peak Elev= 873.14' @ 12.37 hrs Surf.Area= 16,700 sf Storage= 14,715 cf

Plug-Flow detention time= 30.8 min calculated for 4.981 af (97% of inflow)
Center-of-Mass det. time= 12.9 min (877.6 - 864.7)

Volume	Invert	Avail.Storage	Storage Description
#1	872.00'	14,715 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
872.00	13,500	0	0
872.50	14,330	6,958	6,958
873.00	16,700	7,758	14,715

Device	Routing	Invert	Outlet Devices
#1	Primary	872.50'	15.0' long + 3.0 ' SideZ x 15.0' breadth Broad-Crested Rectangular Weir X 2 Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=45.39 cfs @ 12.37 hrs HW=873.14' (Free Discharge)
↑1=**Broad-Crested Rectangular Weir** (Weir Controls 45.39 cfs @ 2.10 fps)

Proposed Drainage Areas

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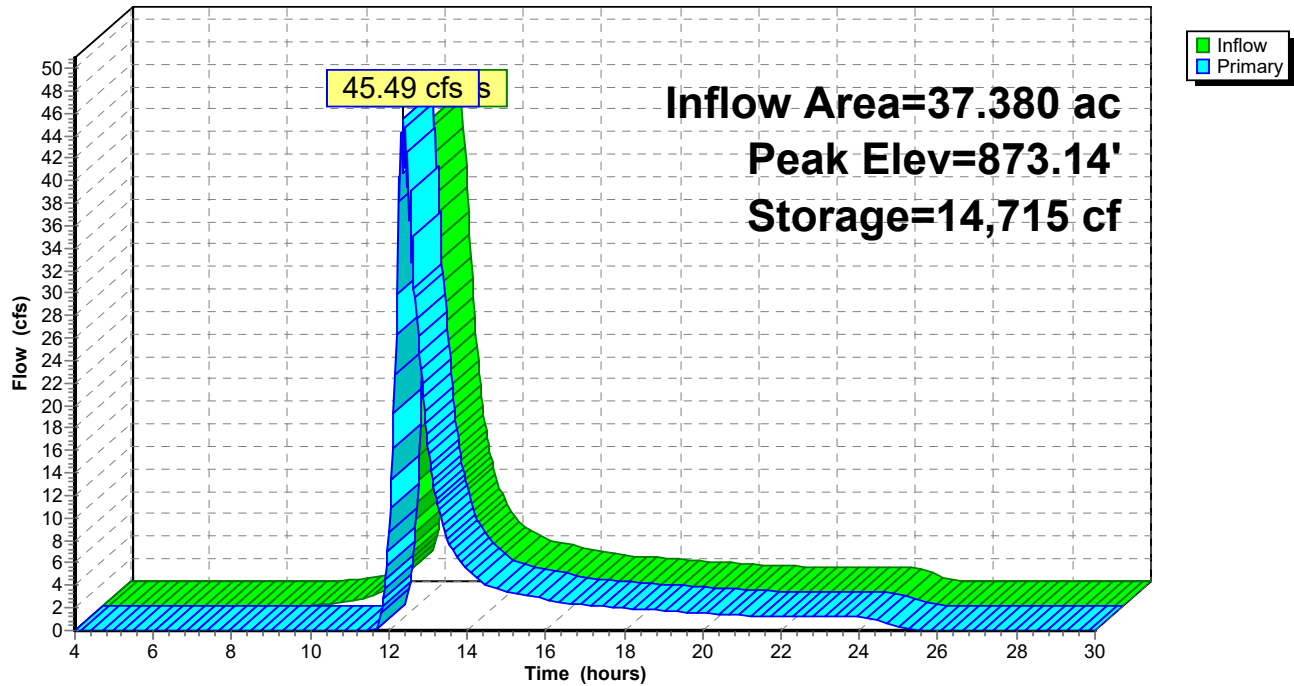
Type II 24-hr 10-yr Rainfall=3.43"

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Pond 1P: Bioretention 1

Hydrograph



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Type II 24-hr 10-yr Rainfall=3.43"

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Summary for Pond 2P: Bioretention 2

Inflow Area = 8.920 ac, 14.35% Impervious, Inflow Depth = 0.86" for 10-yr event
Inflow = 1.84 cfs @ 12.14 hrs, Volume= 0.637 af
Outflow = 1.29 cfs @ 12.38 hrs, Volume= 0.542 af, Atten= 30%, Lag= 14.1 min
Primary = 1.29 cfs @ 12.38 hrs, Volume= 0.542 af
Routed to Pond 3P : Detention Basin

Routing by Stor-Ind method, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Peak Elev= 882.56' @ 12.38 hrs Surf.Area= 9,616 sf Storage= 4,729 cf

Plug-Flow detention time= 122.7 min calculated for 0.541 af (85% of inflow)
Center-of-Mass det. time= 54.4 min (999.7 - 945.3)

Volume	Invert	Avail.Storage	Storage Description
#1	882.00'	9,105 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
882.00	7,000	0	0
882.50	9,500	4,125	4,125
883.00	10,420	4,980	9,105

Device	Routing	Invert	Outlet Devices
#1	Primary	882.50'	15.0' long + 3.0 ' SideZ x 15.0' breadth Broad-Crested Rectangular Weir X 2 Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=1.29 cfs @ 12.38 hrs HW=882.56' (Free Discharge)
↑1=**Broad-Crested Rectangular Weir** (Weir Controls 1.29 cfs @ 0.67 fps)

Proposed Drainage Areas

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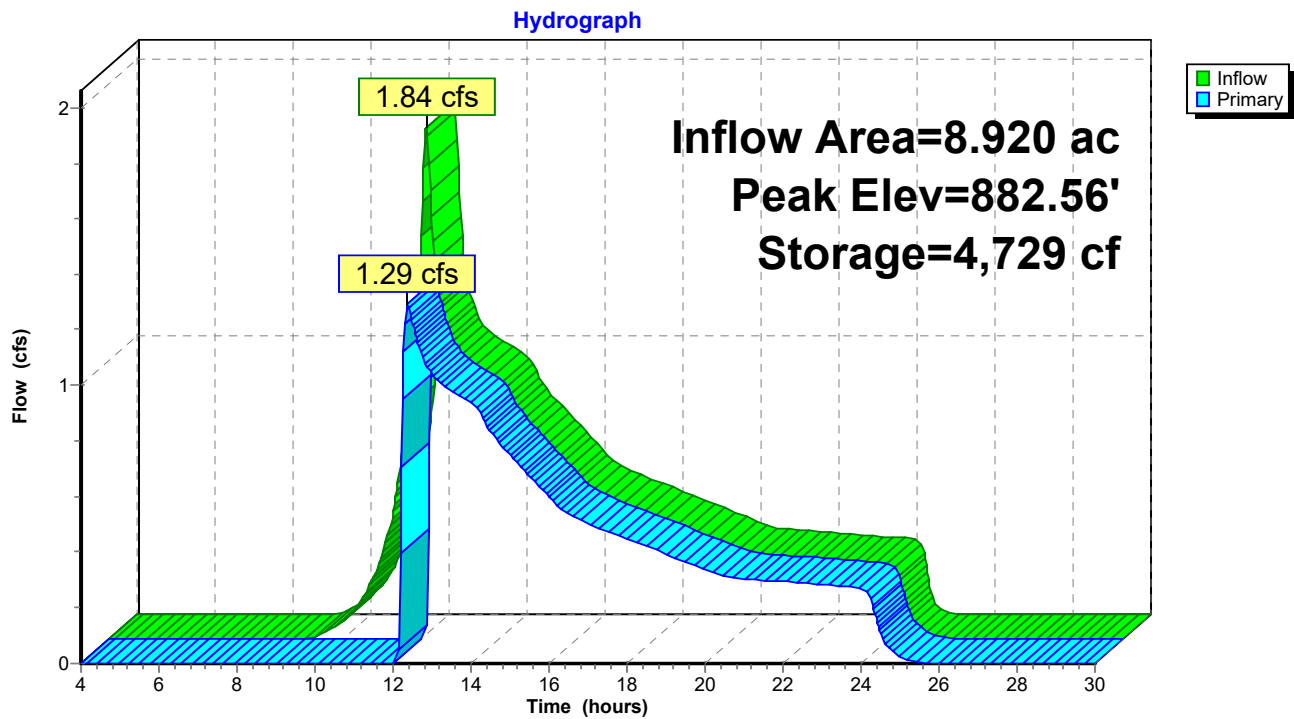
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Type II 24-hr 10-yr Rainfall=3.43"

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Pond 2P: Bioretention 2



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Type II 24-hr 10-yr Rainfall=3.43"

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Summary for Pond 3P: Detention Basin

Inflow Area = 47.380 ac, 11.86% Impervious, Inflow Depth = 1.57" for 10-yr event
Inflow = 54.02 cfs @ 12.31 hrs, Volume= 6.209 af
Outflow = 24.46 cfs @ 12.85 hrs, Volume= 6.041 af, Atten= 55%, Lag= 32.2 min
Primary = 24.46 cfs @ 12.85 hrs, Volume= 6.041 af
Routed to Reach 1R : Pt of Study 1
Secondary = 0.00 cfs @ 4.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Peak Elev= 868.07' @ 12.85 hrs Surf.Area= 25,753 sf Storage= 86,322 cf

Plug-Flow detention time= 146.4 min calculated for 6.041 af (97% of inflow)
Center-of-Mass det. time= 130.5 min (1,005.7 - 875.2)

Volume	Invert	Avail.Storage	Storage Description
#1	863.50'	243,001 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
863.50	1,285	0	0
864.00	11,100	3,096	3,096
865.00	18,820	14,960	18,056
866.00	21,020	19,920	37,976
867.00	23,280	22,150	60,126
868.00	25,590	24,435	84,561
869.00	27,960	26,775	111,336
870.00	30,390	29,175	140,511
871.00	32,875	31,633	172,144
872.00	35,415	34,145	206,289
873.00	38,010	36,713	243,001

Device	Routing	Invert	Outlet Devices
#1	Secondary	872.00'	30.0' long x 12.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#2	Primary	863.50'	30.0" Round Culvert L= 98.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 863.50' / 857.00' S= 0.0663 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf
#3	Device 2	863.50'	7.0" Vert. Orifice1 C= 0.600 Limited to weir flow at low heads
#4	Device 2	866.00'	32.0" W x 18.0" H Vert. Orifice2 C= 0.600 Limited to weir flow at low heads
#5	Device 2	868.10'	36.0" x 36.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads

Proposed Drainage Areas

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Type II 24-hr 10-yr Rainfall=3.43"

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Primary OutFlow Max=24.46 cfs @ 12.85 hrs HW=868.07' (Free Discharge)

↳ **2=Culvert** (Passes 24.46 cfs of 33.99 cfs potential flow)

↳ **3=Orifice1** (Orifice Controls 2.66 cfs @ 9.96 fps)

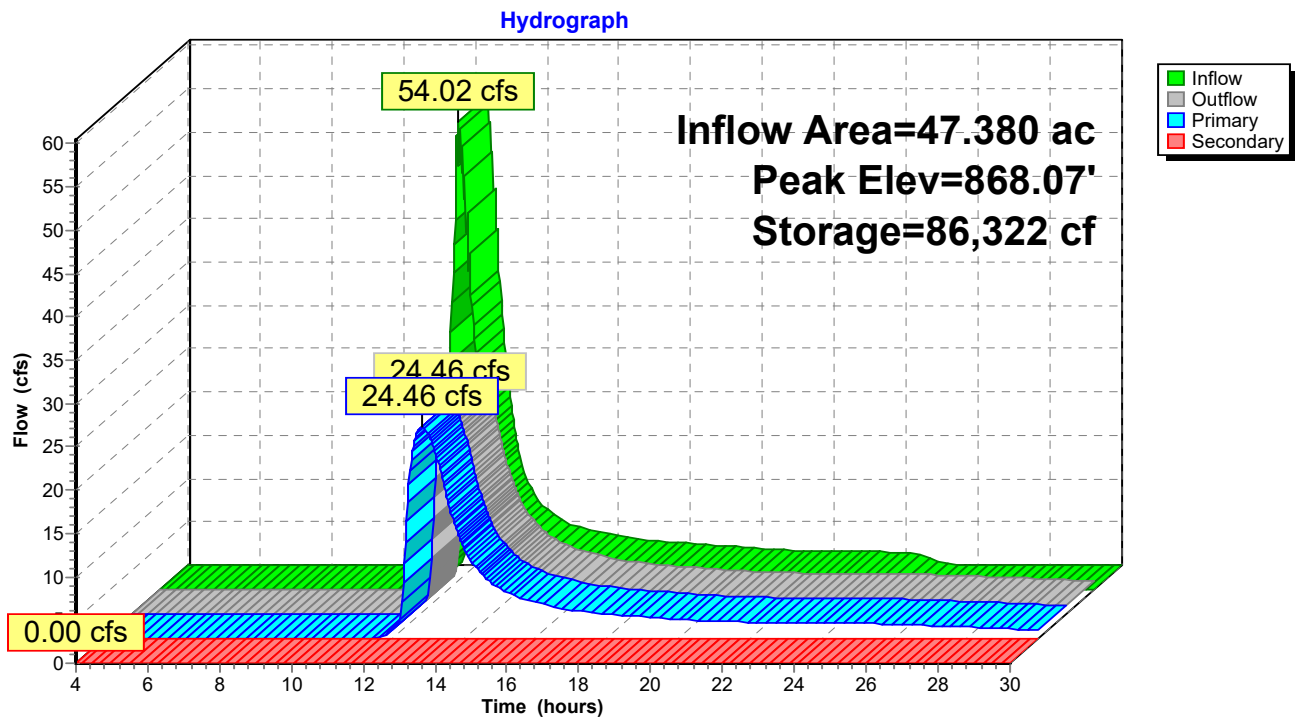
↳ **4=Orifice2** (Orifice Controls 21.79 cfs @ 5.45 fps)

↳ **5=Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 4.00 hrs HW=863.50' (Free Discharge)

↳ **1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 3P: Detention Basin



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Type II 24-hr 10-yr Rainfall=3.43"

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Summary for Pond 4P: Diversion Structure

Inflow Area = 8.920 ac, 14.35% Impervious, Inflow Depth = 1.58" for 10-yr event
Inflow = 15.08 cfs @ 12.14 hrs, Volume= 1.175 af
Outflow = 15.08 cfs @ 12.14 hrs, Volume= 1.175 af, Atten= 0%, Lag= 0.0 min
Primary = 1.84 cfs @ 12.14 hrs, Volume= 0.637 af
Routed to Pond 2P : Bioretention 2
Secondary = 13.24 cfs @ 12.14 hrs, Volume= 0.538 af
Routed to Pond 3P : Detention Basin

Routing by Stor-Ind method, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs

Peak Elev= 888.54' @ 12.14 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	882.20'	6.0" Round Bioretention Culvert L= 10.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 882.20' / 882.10' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#2	Secondary	883.90'	18.0" Round Detention Culvert L= 45.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 883.90' / 875.00' S= 0.1978 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=1.84 cfs @ 12.14 hrs HW=888.49' (Free Discharge)

↑**1=Bioretention Culvert** (Inlet Controls 1.84 cfs @ 9.35 fps)

Secondary OutFlow Max=13.17 cfs @ 12.14 hrs HW=888.49' (Free Discharge)

↑**2=Detention Culvert** (Inlet Controls 13.17 cfs @ 7.45 fps)

Proposed Drainage Areas

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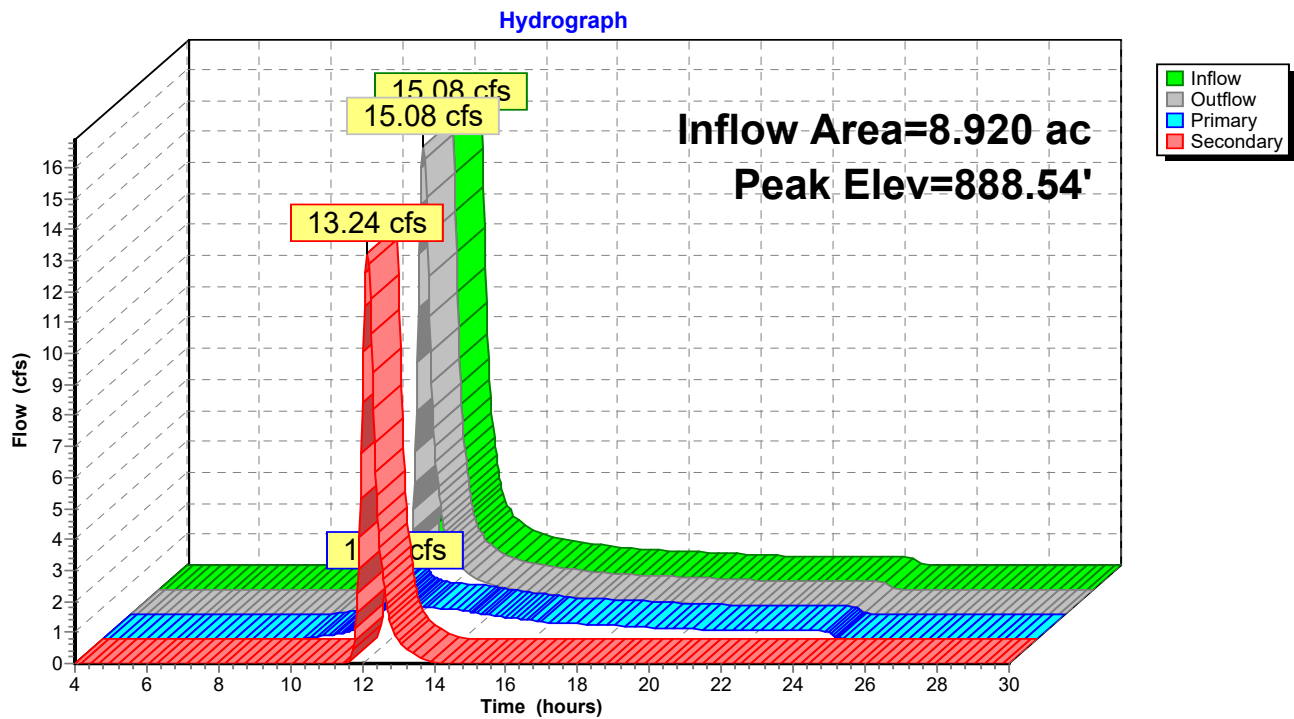
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Type II 24-hr 10-yr Rainfall=3.43"

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Pond 4P: Diversion Structure



Proposed Drainage Areas

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Type II 24-hr 100-yr Rainfall=5.78"

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Summary for Subcatchment 1S: DA-1A

Runoff = 97.78 cfs @ 12.37 hrs, Volume= 11.475 af, Depth= 3.68"
Routed to Pond 1P : Bioretention 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Type II 24-hr 100-yr Rainfall=5.78"

Area (ac)	CN	Description
2.470	98	Paved parking, HSG D
1.870	98	Unconnected roofs, HSG D
24.080	80	>75% Grass cover, Good, HSG D
8.960	77	Woods, Good, HSG D
37.380	81	Weighted Average
33.040		88.39% Pervious Area
4.340		11.61% Impervious Area
1.870		43.09% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.9	100	0.0600	0.06		Sheet Flow, SHEET FLOW Woods: Dense underbrush n= 0.800 P2= 2.39"
4.8	370	0.0650	1.27		Shallow Concentrated Flow, SCF Woodland Kv= 5.0 fps
1.9	200	0.0650	1.78		Shallow Concentrated Flow, SCF Short Grass Pasture Kv= 7.0 fps
0.2	295	0.0300	19.80	79.19	Channel Flow, curb and gutter flow Area= 4.0 sf Perim= 4.0' r= 1.00' n= 0.013 Asphalt, smooth
1.7	1,100	0.0345	11.04	19.51	Pipe Channel, Pipe Flow 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
3.8	955	0.0050	4.20	50.44	Channel Flow, Area= 12.0 sf Perim= 12.0' r= 1.00' n= 0.025 Earth, grassed & winding
40.3	3,020	Total			

Proposed Drainage Areas

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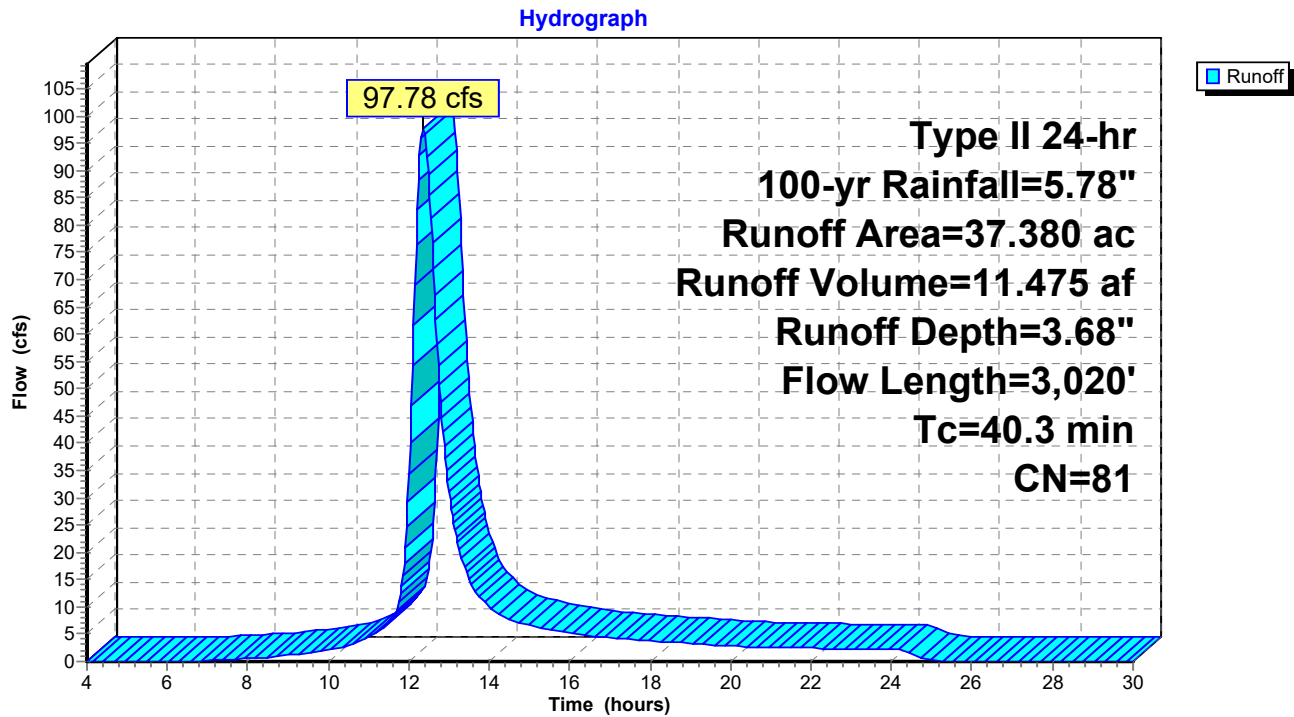
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Type II 24-hr 100-yr Rainfall=5.78"

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Subcatchment 1S: DA-1A



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Type II 24-hr 100-yr Rainfall=5.78"

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Summary for Subcatchment 2S: DA-1B

Runoff = 34.39 cfs @ 12.14 hrs, Volume= 2.664 af, Depth= 3.58"
Routed to Pond 4P : Diversion Structure

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Type II 24-hr 100-yr Rainfall=5.78"

Area (ac)	CN	Adj	Description
0.870	98		Paved parking, HSG D
0.410	98		Unconnected roofs, HSG D
4.000	80		>75% Grass cover, Good, HSG D
2.040	77		Woods, Good, HSG D
1.600	73		Brush, Good, HSG D
8.920	81	80	Weighted Average, UI Adjusted
7.640			85.65% Pervious Area
1.280			14.35% Impervious Area
0.410			32.03% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	100	0.0600	0.16		Sheet Flow, SHEET FLOW Grass: Dense n= 0.240 P2= 2.39"
4.6	410	0.0900	1.50		Shallow Concentrated Flow, SCF Woodland Kv= 5.0 fps
5.6	710	0.0920	2.12		Shallow Concentrated Flow, SCF Short Grass Pasture Kv= 7.0 fps
0.3	170	0.0200	9.55	76.42	Channel Flow, swale flow Area= 8.0 sf Perim= 8.0' r= 1.00' n= 0.022 Earth, clean & straight
21.1	1,390	Total			

Proposed Drainage Areas

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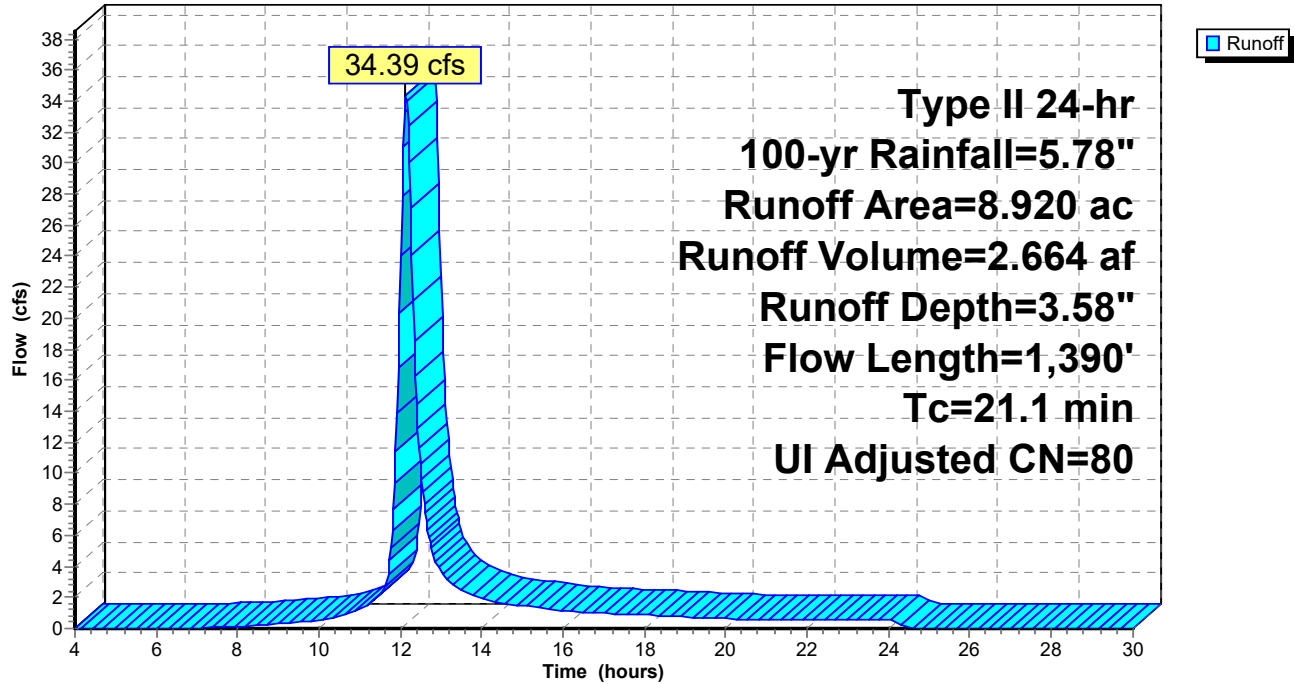
Type II 24-hr 100-yr Rainfall=5.78"

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Subcatchment 2S: DA-1B

Hydrograph



Proposed Drainage Areas

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Type II 24-hr 100-yr Rainfall=5.78"

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Summary for Subcatchment 3S: DA-1C

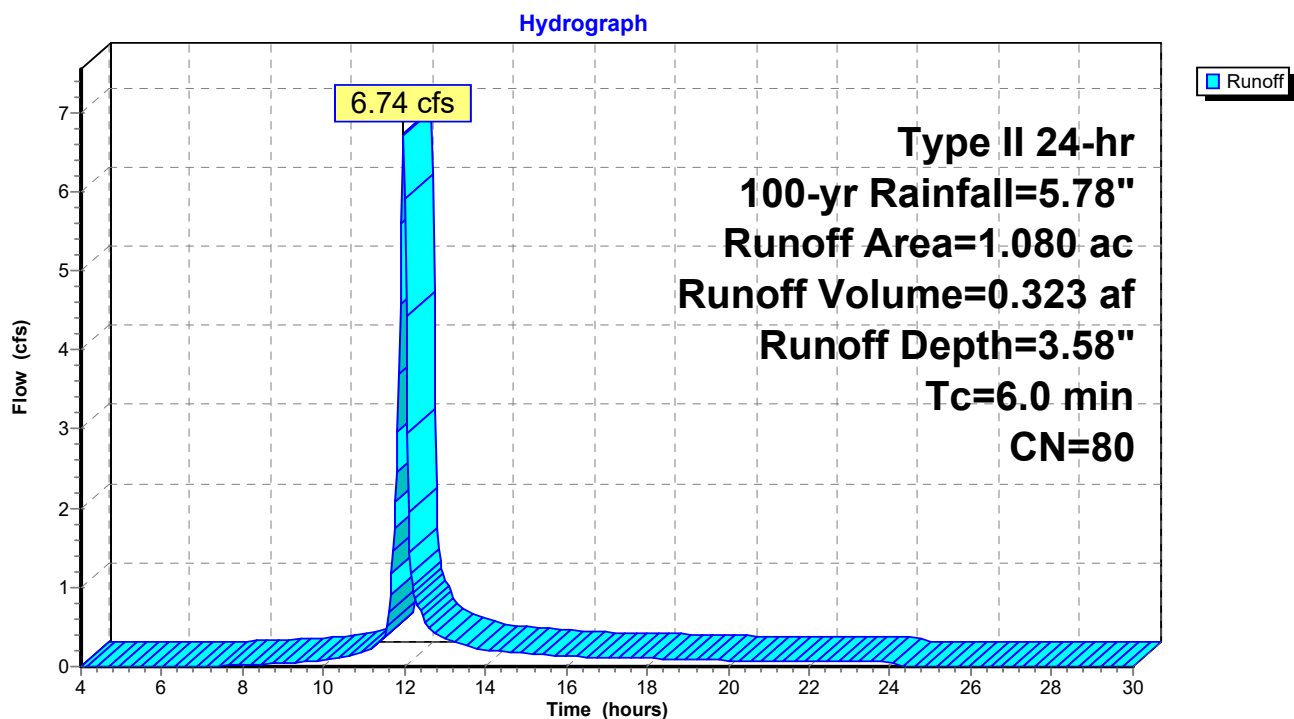
Runoff = 6.74 cfs @ 11.97 hrs, Volume= 0.323 af, Depth= 3.58"
Routed to Pond 3P : Detention Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Type II 24-hr 100-yr Rainfall=5.78"

Area (ac)	CN	Description
0.960	80	>75% Grass cover, Good, HSG D
0.120	77	Woods, Good, HSG D
1.080	80	Weighted Average
1.080		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Min TR 55 Value

Subcatchment 3S: DA-1C



Proposed Drainage Areas

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Type II 24-hr 100-yr Rainfall=5.78"

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Summary for Subcatchment 4S: DA-1D

Runoff = 36.02 cfs @ 12.35 hrs, Volume= 4.110 af, Depth= 3.29"
Routed to Reach 1R : Pt of Study 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Type II 24-hr 100-yr Rainfall=5.78"

Area (ac)	CN	Description
3.230	80	>75% Grass cover, Good, HSG D
8.910	77	Woods, Good, HSG D
0.200	98	Paved parking, HSG D
2.660	73	Brush, Good, HSG D
15.000	77	Weighted Average
14.800		98.67% Pervious Area
0.200		1.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.9	100	0.0600	0.06		Sheet Flow, SHEET FLOW Woods: Dense underbrush n= 0.800 P2= 2.39"
5.4	485	0.0900	1.50		Shallow Concentrated Flow, SCF Woodland Kv= 5.0 fps
4.1	517	0.0900	2.10		Shallow Concentrated Flow, SCF Short Grass Pasture Kv= 7.0 fps
1.2	1,155	0.0750	16.28	260.45	Channel Flow, SWALE Area= 16.0 sf Perim= 16.0' r= 1.00' n= 0.025 Earth, clean & winding
38.6	2,257	Total			

Proposed Drainage Areas

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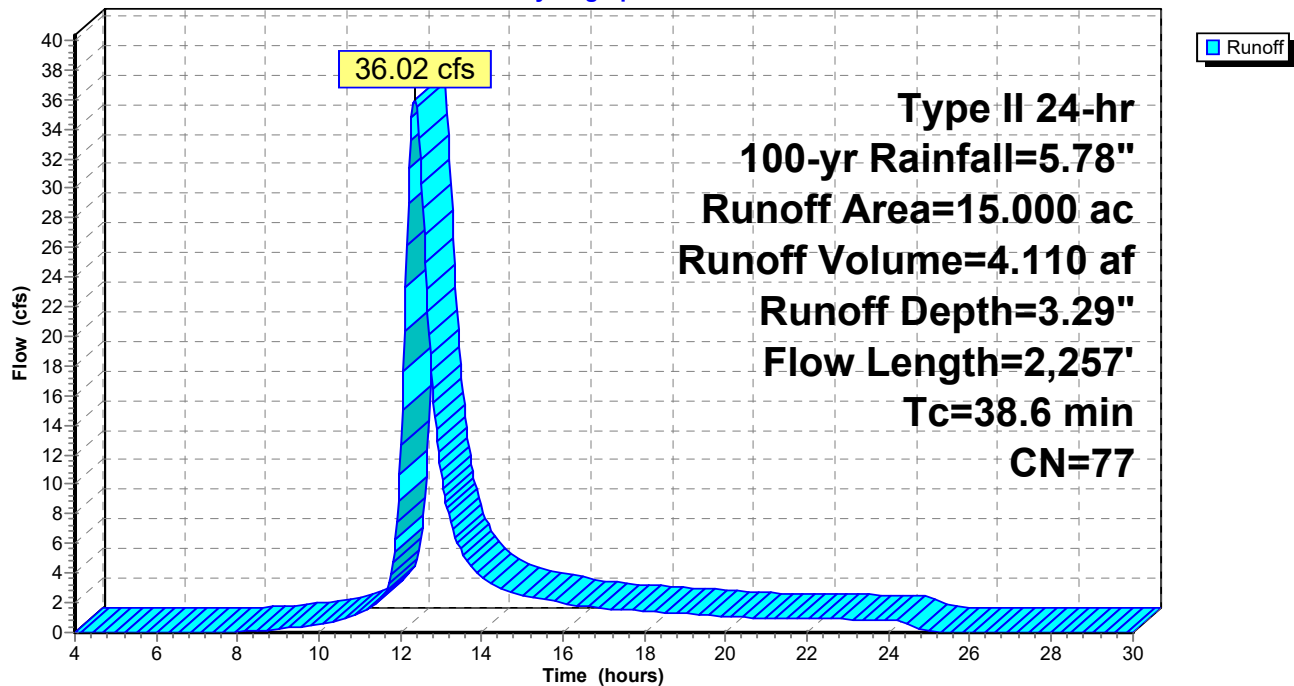
Type II 24-hr 100-yr Rainfall=5.78"

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Subcatchment 4S: DA-1D

Hydrograph



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Summary for Subcatchment 5S: DA#2

Runoff = 4.70 cfs @ 12.00 hrs, Volume= 0.241 af, Depth= 3.48"
Routed to Reach 2R : Pt of Study 2

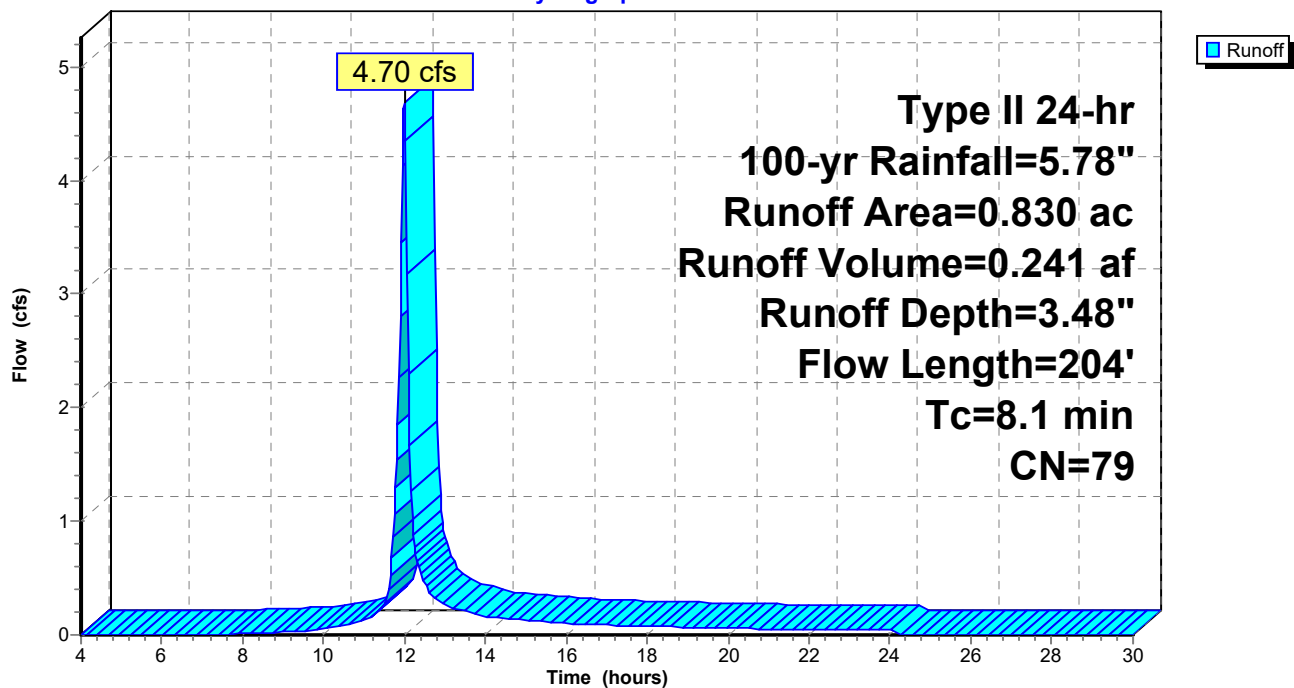
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Type II 24-hr 100-yr Rainfall=5.78"

Area (ac)	CN	Description
0.690	80	>75% Grass cover, Good, HSG D
0.140	77	Woods, Good, HSG D
0.830	79	Weighted Average
0.830		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	100	0.1500	0.23		Sheet Flow, SHEET FLOW Grass: Dense n= 0.240 P2= 2.39"
0.7	104	0.1300	2.52		Shallow Concentrated Flow, SCF Short Grass Pasture Kv= 7.0 fps
8.1	204	Total			

Subcatchment 5S: DA#2

Hydrograph



Proposed Drainage Areas

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Type II 24-hr 100-yr Rainfall=5.78"

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Summary for Subcatchment 6S: DA#3A

Runoff = 9.68 cfs @ 12.08 hrs, Volume= 0.657 af, Depth= 3.58"
Routed to Reach 5R : Drainage Ditch

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Type II 24-hr 100-yr Rainfall=5.78"

Area (ac)	CN	Adj	Description
0.900	80		>75% Grass cover, Good, HSG D
0.200	98		Paved parking, HSG D
0.070	98		Unconnected roofs, HSG D
1.030	77		Woods, Good, HSG D
2.200	81	80	Weighted Average, UI Adjusted
1.930			87.73% Pervious Area
0.270			12.27% Impervious Area
0.070			25.93% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.9	100	0.0450	0.14		Sheet Flow, SHEET FLOW Grass: Dense n= 0.240 P2= 2.39"
2.5	188	0.0650	1.27		Shallow Concentrated Flow, SCF Woodland Kv= 5.0 fps
1.9	202	0.0650	1.78		Shallow Concentrated Flow, SCF Short Grass Pasture Kv= 7.0 fps
0.2	232	0.0220	16.95	50.86	Channel Flow, curb flow Area= 3.0 sf Perim= 3.0' r= 1.00' n= 0.013 Asphalt, smooth
16.5	722	Total			

Proposed Drainage Areas

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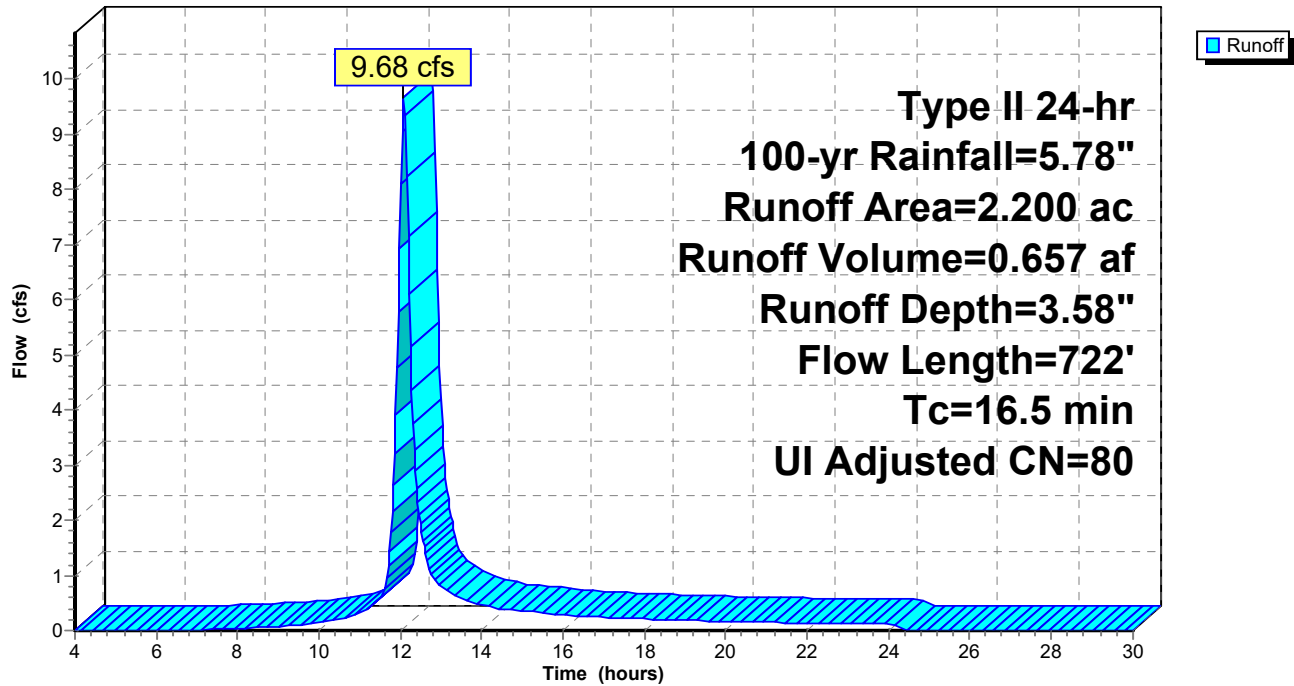
Type II 24-hr 100-yr Rainfall=5.78"

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Subcatchment 6S: DA#3A

Hydrograph



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Type II 24-hr 100-yr Rainfall=5.78"

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Summary for Subcatchment 7S: DA#3B

Runoff = 11.95 cfs @ 12.09 hrs, Volume= 0.820 af, Depth= 3.79"
Routed to Reach 3R : Pt of Study 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Type II 24-hr 100-yr Rainfall=5.78"

Area (ac)	CN	Adj	Description		
2.190	80		>75% Grass cover, Good, HSG D		
0.270	98		Paved parking, HSG D		
0.140	98		Unconnected roofs, HSG D		
2.600	83	82	Weighted Average, UI Adjusted		
2.190			84.23% Pervious Area		
0.410			15.77% Impervious Area		
0.140			34.15% Unconnected		
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	100	0.0500	0.15		Sheet Flow, SHEET FLOW Grass: Dense n= 0.240 P2= 2.39"
5.1	475	0.0500	1.57		Shallow Concentrated Flow, SCF Short Grass Pasture Kv= 7.0 fps
0.2	82	0.0200	6.42	5.04	Pipe Channel, pipe flow 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
16.7	657	Total			

Proposed Drainage Areas

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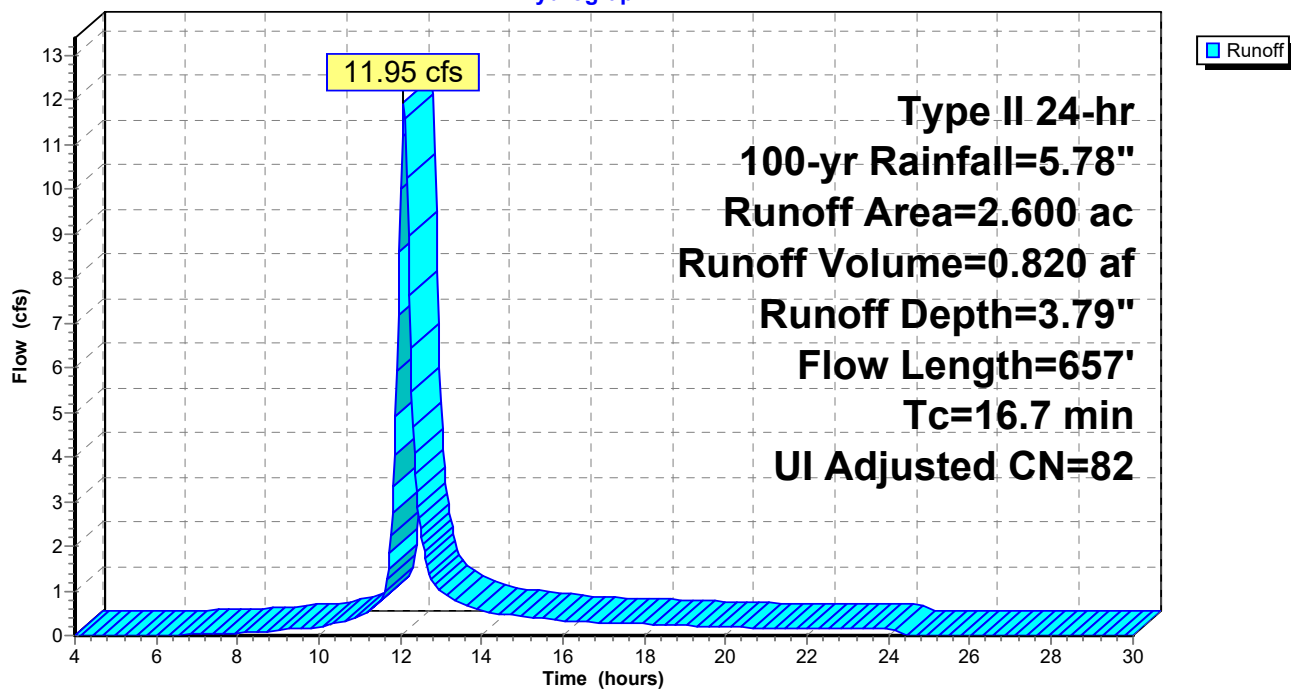
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Subcatchment 7S: DA#3B

Hydrograph



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Type II 24-hr 100-yr Rainfall=5.78"

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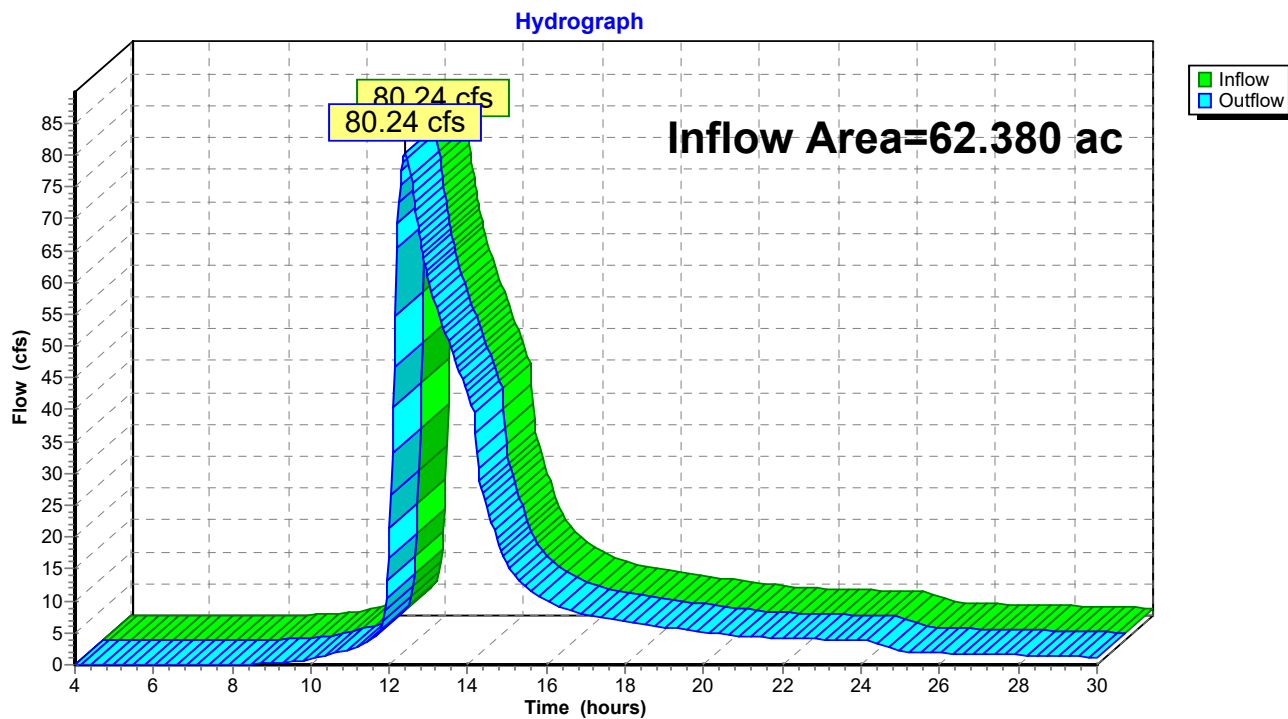
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Summary for Reach 1R: Pt of Study 1

Inflow Area = 62.380 ac, 9.33% Impervious, Inflow Depth > 3.47" for 100-yr event
Inflow = 80.24 cfs @ 12.41 hrs, Volume= 18.049 af
Outflow = 80.24 cfs @ 12.41 hrs, Volume= 18.049 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs

Reach 1R: Pt of Study 1



Proposed Drainage Areas

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Type II 24-hr 100-yr Rainfall=5.78"

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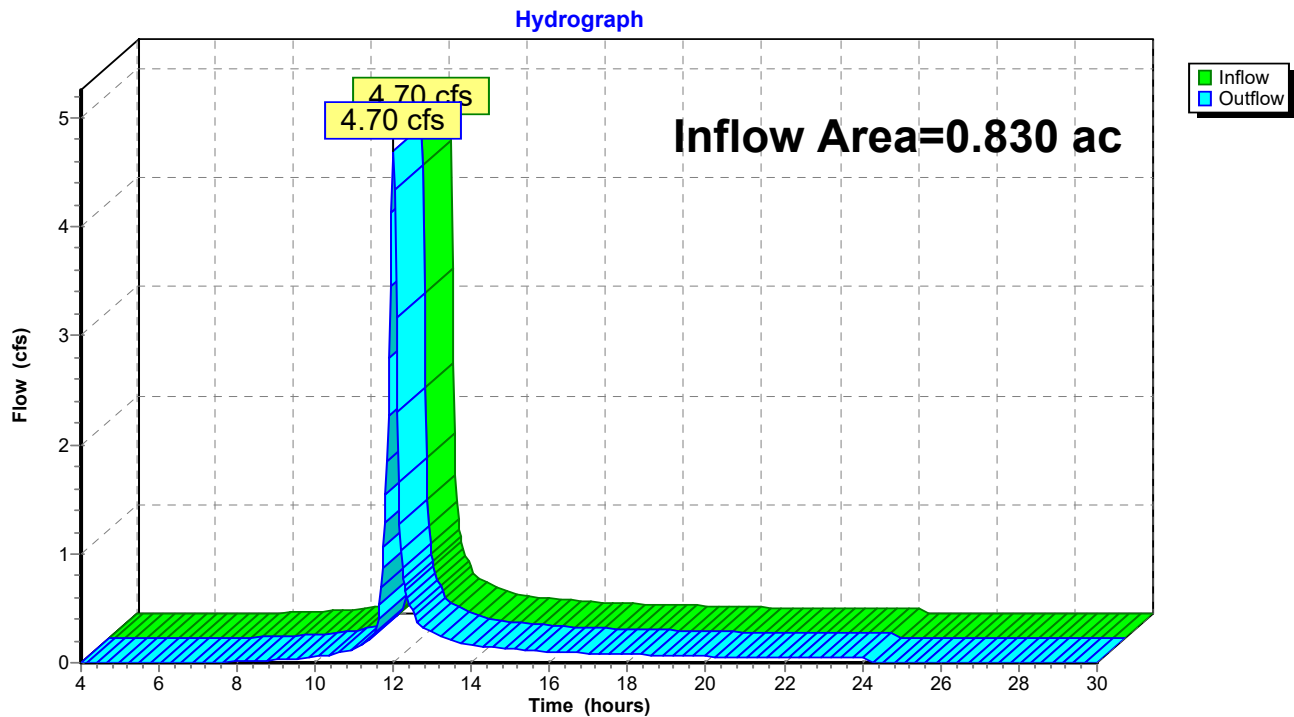
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Summary for Reach 2R: Pt of Study 2

Inflow Area = 0.830 ac, 0.00% Impervious, Inflow Depth = 3.48" for 100-yr event
Inflow = 4.70 cfs @ 12.00 hrs, Volume= 0.241 af
Outflow = 4.70 cfs @ 12.00 hrs, Volume= 0.241 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs

Reach 2R: Pt of Study 2



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Summary for Reach 3R: Pt of Study 3

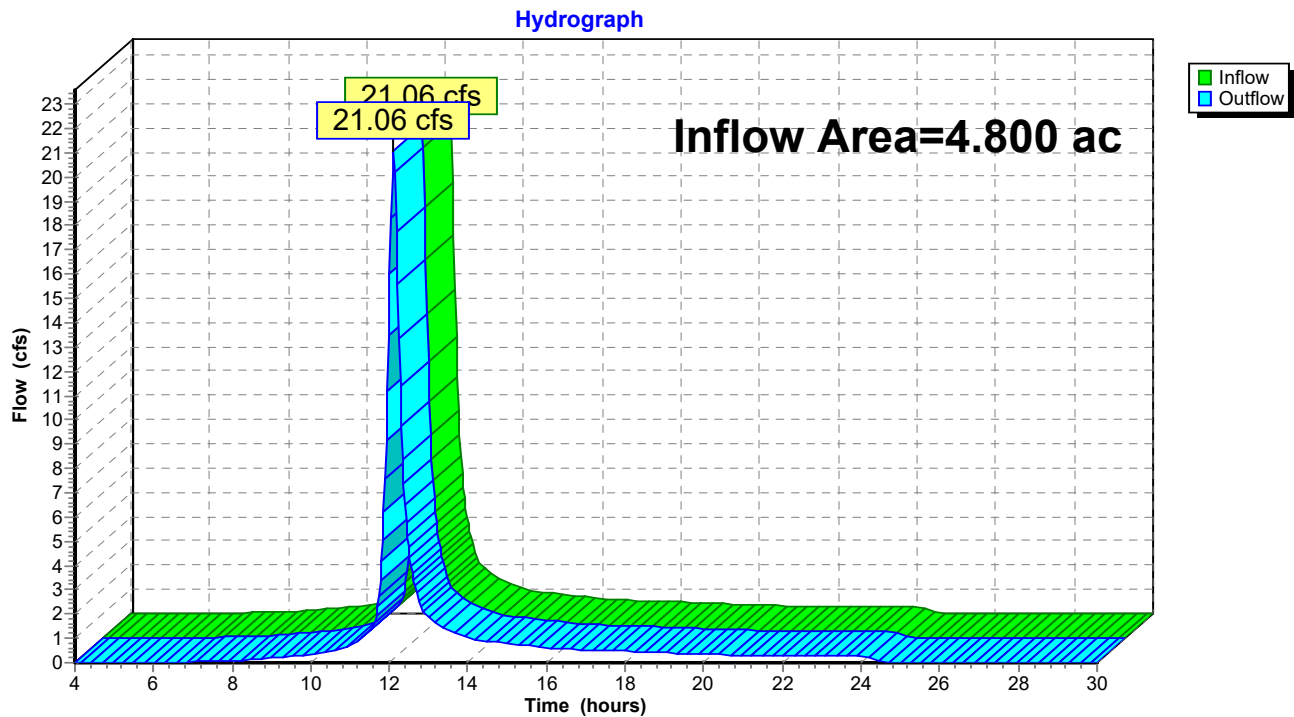
Inflow Area = 4.800 ac, 14.17% Impervious, Inflow Depth = 3.69" for 100-yr event

Inflow = 21.06 cfs @ 12.11 hrs, Volume= 1.477 af

Outflow = 21.06 cfs @ 12.11 hrs, Volume= 1.477 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs

Reach 3R: Pt of Study 3



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Summary for Reach 5R: Drainage Ditch

Inflow Area = 2.200 ac, 12.27% Impervious, Inflow Depth = 3.58" for 100-yr event
Inflow = 9.68 cfs @ 12.08 hrs, Volume= 0.657 af
Outflow = 9.54 cfs @ 12.14 hrs, Volume= 0.657 af, Atten= 1%, Lag= 3.2 min
Routed to Reach 3R : Pt of Study 3

Routing by Stor-Ind+Trans method, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Max. Velocity= 5.90 fps, Min. Travel Time= 1.8 min
Avg. Velocity= 1.66 fps, Avg. Travel Time= 6.5 min

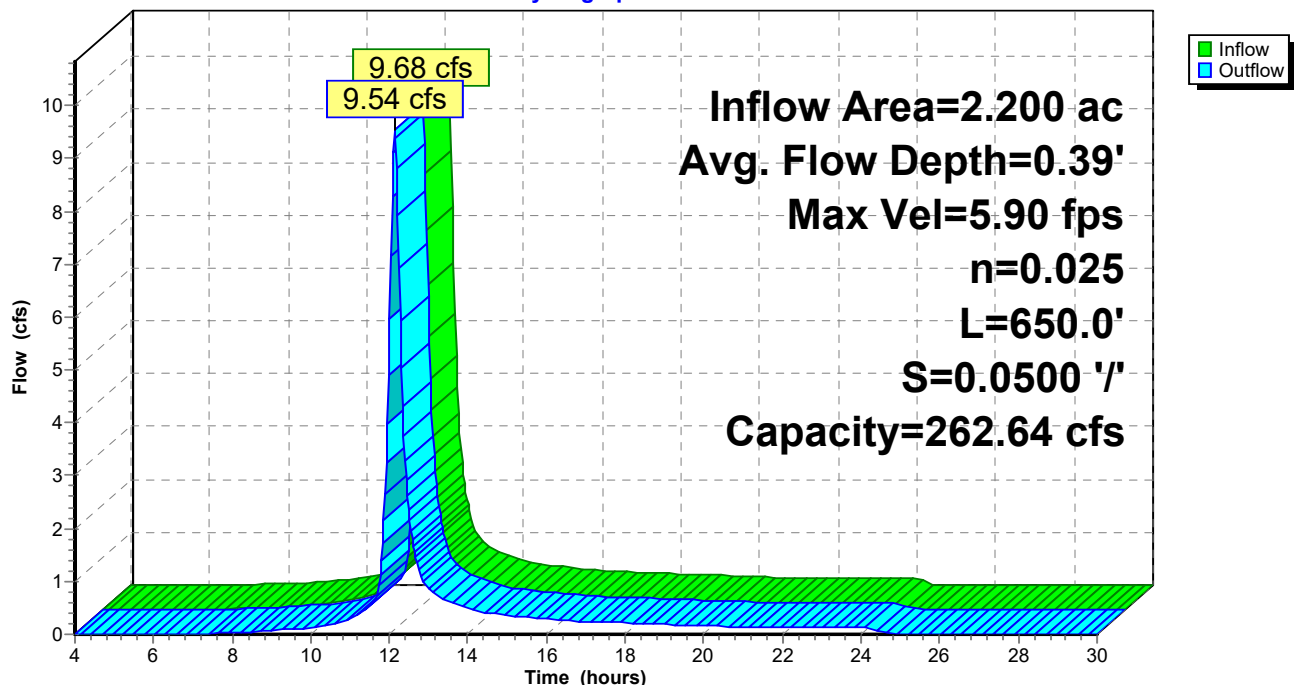
Peak Storage= 1,050 cf @ 12.11 hrs
Average Depth at Peak Storage= 0.39' , Surface Width= 5.33'
Bank-Full Depth= 2.00' Flow Area= 18.0 sf, Capacity= 262.64 cfs

3.00' x 2.00' deep channel, n= 0.025 Earth, clean & straight
Side Slope Z-value= 3.0 ' / ' Top Width= 15.00'
Length= 650.0' Slope= 0.0500 ' / '
Inlet Invert= 0.00', Outlet Invert= -32.50'



Reach 5R: Drainage Ditch

Hydrograph



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Summary for Pond 1P: Bioretention 1

Inflow Area = 37.380 ac, 11.61% Impervious, Inflow Depth = 3.68" for 100-yr event
Inflow = 97.78 cfs @ 12.37 hrs, Volume= 11.475 af
Outflow = 103.86 cfs @ 12.37 hrs, Volume= 11.315 af, Atten= 0%, Lag= 0.2 min
Primary = 103.86 cfs @ 12.37 hrs, Volume= 11.315 af
Routed to Pond 3P : Detention Basin

Routing by Stor-Ind method, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Peak Elev= 873.58' @ 12.37 hrs Surf.Area= 16,700 sf Storage= 14,715 cf

Plug-Flow detention time= 17.6 min calculated for 11.302 af (98% of inflow)
Center-of-Mass det. time= 9.2 min (851.0 - 841.8)

Volume	Invert	Avail.Storage	Storage Description
#1	872.00'	14,715 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
872.00	13,500	0	0
872.50	14,330	6,958	6,958
873.00	16,700	7,758	14,715

Device	Routing	Invert	Outlet Devices
#1	Primary	872.50'	15.0' long + 3.0 ' SideZ x 15.0' breadth Broad-Crested Rectangular Weir X 2 Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=103.82 cfs @ 12.37 hrs HW=873.58' (Free Discharge)

↑1=**Broad-Crested Rectangular Weir** (Weir Controls 103.82 cfs @ 2.64 fps)

Proposed Drainage Areas

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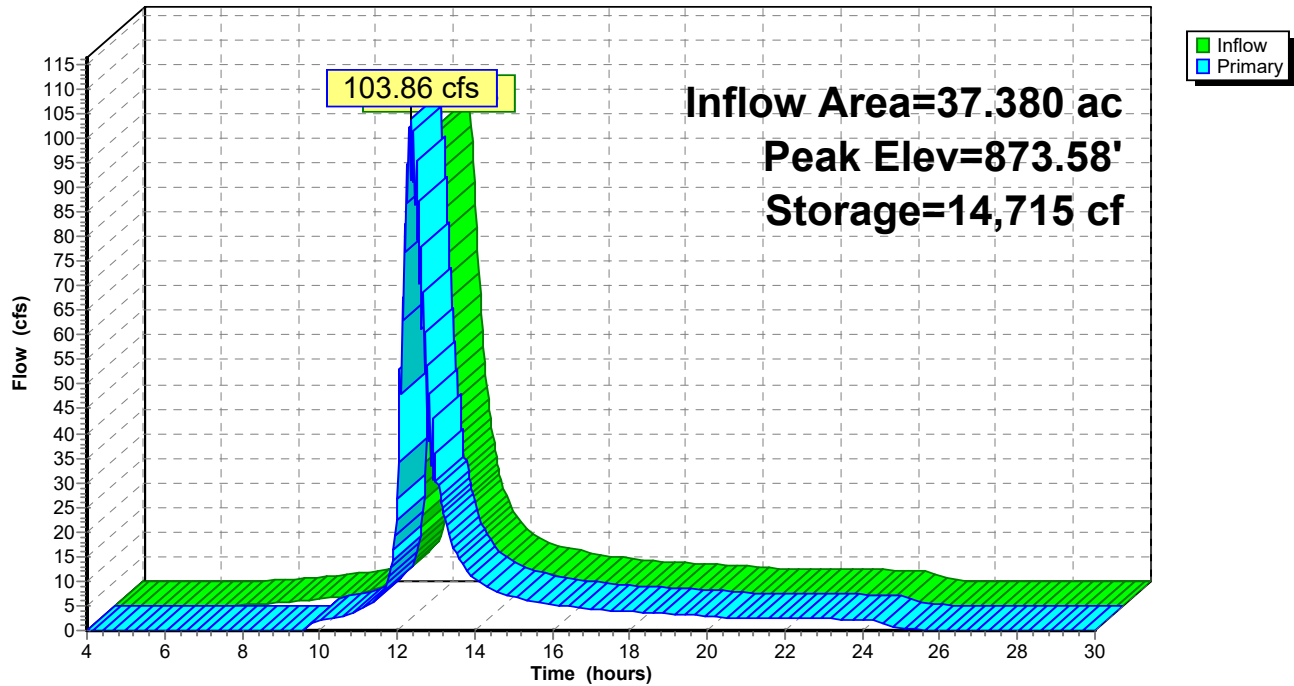
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Pond 1P: Bioretention 1

Hydrograph



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Summary for Pond 2P: Bioretention 2

Inflow Area = 8.920 ac, 14.35% Impervious, Inflow Depth = 1.49" for 100-yr event
Inflow = 3.60 cfs @ 12.14 hrs, Volume= 1.110 af
Outflow = 3.37 cfs @ 12.20 hrs, Volume= 1.015 af, Atten= 6%, Lag= 3.6 min
Primary = 3.37 cfs @ 12.20 hrs, Volume= 1.015 af
Routed to Pond 3P : Detention Basin

Routing by Stor-Ind method, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Peak Elev= 882.62' @ 12.20 hrs Surf.Area= 9,719 sf Storage= 5,269 cf

Plug-Flow detention time= 85.0 min calculated for 1.014 af (91% of inflow)
Center-of-Mass det. time= 42.7 min (980.6 - 937.9)

Volume	Invert	Avail.Storage	Storage Description
#1	882.00'	9,105 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
882.00	7,000	0	0
882.50	9,500	4,125	4,125
883.00	10,420	4,980	9,105

Device	Routing	Invert	Outlet Devices
#1	Primary	882.50'	15.0' long + 3.0 ' SideZ x 15.0' breadth Broad-Crested Rectangular Weir X 2 Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=3.36 cfs @ 12.20 hrs HW=882.62' (Free Discharge)
↑1=**Broad-Crested Rectangular Weir** (Weir Controls 3.36 cfs @ 0.92 fps)

Proposed Drainage Areas

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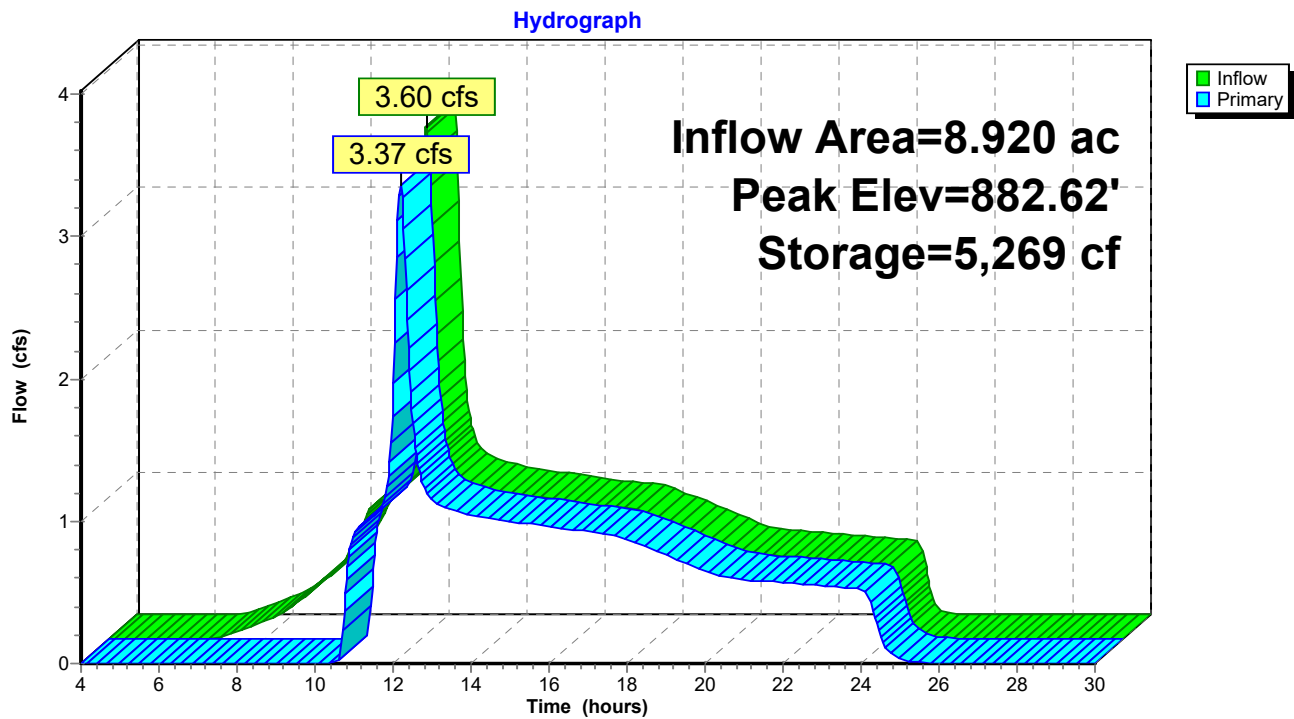
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Pond 2P: Bioretention 2



Proposed Drainage Areas

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Type II 24-hr 100-yr Rainfall=5.78"

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Summary for Pond 3P: Detention Basin

Inflow Area = 47.380 ac, 11.86% Impervious, Inflow Depth = 3.60" for 100-yr event
Inflow = 124.54 cfs @ 12.31 hrs, Volume= 14.207 af
Outflow = 50.05 cfs @ 12.82 hrs, Volume= 13.939 af, Atten= 60%, Lag= 30.5 min
Primary = 50.05 cfs @ 12.82 hrs, Volume= 13.939 af
Routed to Reach 1R : Pt of Study 1
Secondary = 0.00 cfs @ 4.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Peak Elev= 871.95' @ 12.82 hrs Surf.Area= 35,277 sf Storage= 204,367 cf

Plug-Flow detention time= 94.7 min calculated for 13.939 af (98% of inflow)
Center-of-Mass det. time= 83.1 min (931.1 - 848.0)

Volume	Invert	Avail.Storage	Storage Description
#1	863.50'	243,001 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
863.50	1,285	0	0
864.00	11,100	3,096	3,096
865.00	18,820	14,960	18,056
866.00	21,020	19,920	37,976
867.00	23,280	22,150	60,126
868.00	25,590	24,435	84,561
869.00	27,960	26,775	111,336
870.00	30,390	29,175	140,511
871.00	32,875	31,633	172,144
872.00	35,415	34,145	206,289
873.00	38,010	36,713	243,001

Device	Routing	Invert	Outlet Devices
#1	Secondary	872.00'	30.0' long x 12.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#2	Primary	863.50'	30.0" Round Culvert L= 98.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 863.50' / 857.00' S= 0.0663 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf
#3	Device 2	863.50'	7.0" Vert. Orifice1 C= 0.600 Limited to weir flow at low heads
#4	Device 2	866.00'	32.0" W x 18.0" H Vert. Orifice2 C= 0.600 Limited to weir flow at low heads
#5	Device 2	868.10'	36.0" x 36.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads

Proposed Drainage Areas

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Primary OutFlow Max=50.05 cfs @ 12.82 hrs HW=871.95' (Free Discharge)

↳ **2=Culvert** (Inlet Controls 50.05 cfs @ 10.20 fps)

↳ **3=Orifice1** (Passes < 3.67 cfs potential flow)

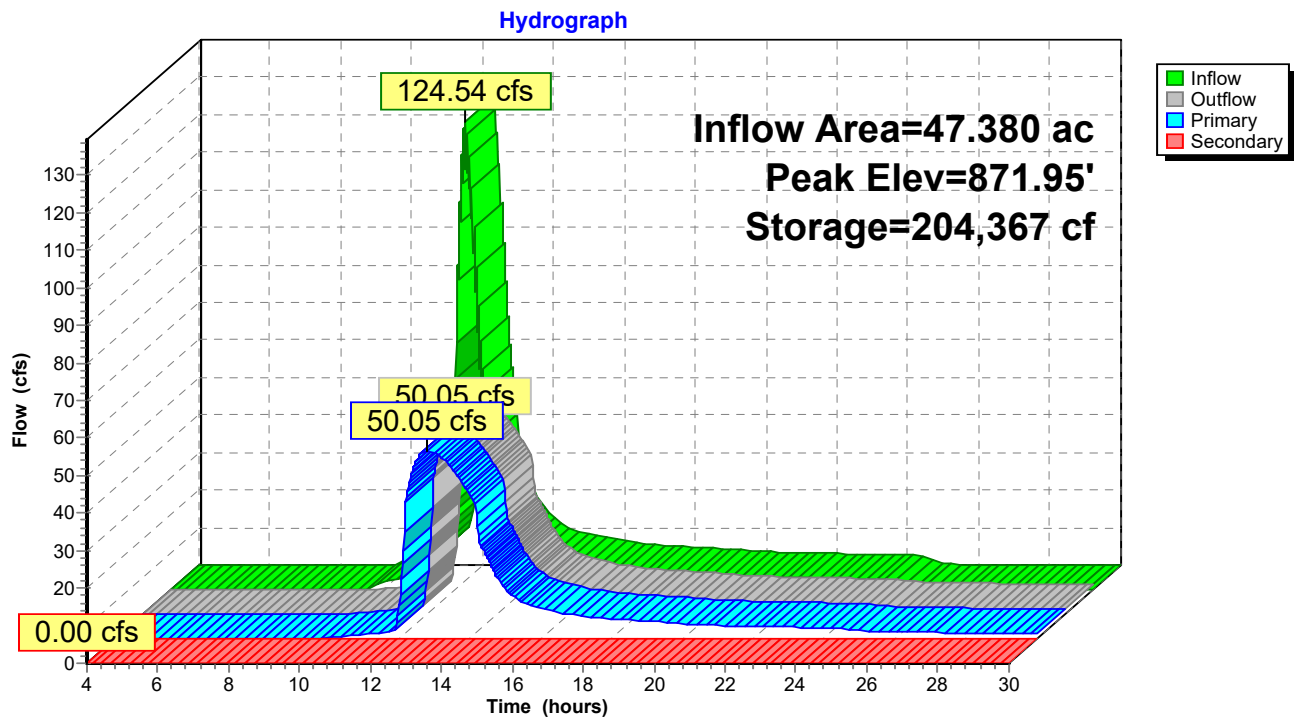
↳ **4=Orifice2** (Passes < 43.86 cfs potential flow)

↳ **5=Grate** (Passes < 84.98 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 4.00 hrs HW=863.50' (Free Discharge)

↳ **1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 3P: Detention Basin



Proposed Drainage Areas

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Summary for Pond 4P: Diversion Structure

Inflow Area = 8.920 ac, 14.35% Impervious, Inflow Depth = 3.58" for 100-yr event
Inflow = 34.39 cfs @ 12.14 hrs, Volume= 2.664 af
Outflow = 34.39 cfs @ 12.14 hrs, Volume= 2.664 af, Atten= 0%, Lag= 0.0 min
Primary = 3.60 cfs @ 12.14 hrs, Volume= 1.110 af
Routed to Pond 2P : Bioretention 2
Secondary = 30.79 cfs @ 12.14 hrs, Volume= 1.553 af
Routed to Pond 3P : Detention Basin

Routing by Stor-Ind method, Time Span= 4.00-30.01 hrs, dt= 0.03 hrs
Peak Elev= 905.66' @ 12.14 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	882.20'	6.0" Round Bioretention Culvert L= 10.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 882.20' / 882.10' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#2	Secondary	883.90'	18.0" Round Detention Culvert L= 45.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 883.90' / 875.00' S= 0.1978 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=3.58 cfs @ 12.14 hrs HW=905.51' (Free Discharge)

↑**1=Bioretention Culvert** (Inlet Controls 3.58 cfs @ 18.26 fps)

Secondary OutFlow Max=30.68 cfs @ 12.14 hrs HW=905.51' (Free Discharge)

↑**2=Detention Culvert** (Inlet Controls 30.68 cfs @ 17.36 fps)

Proposed Drainage Areas

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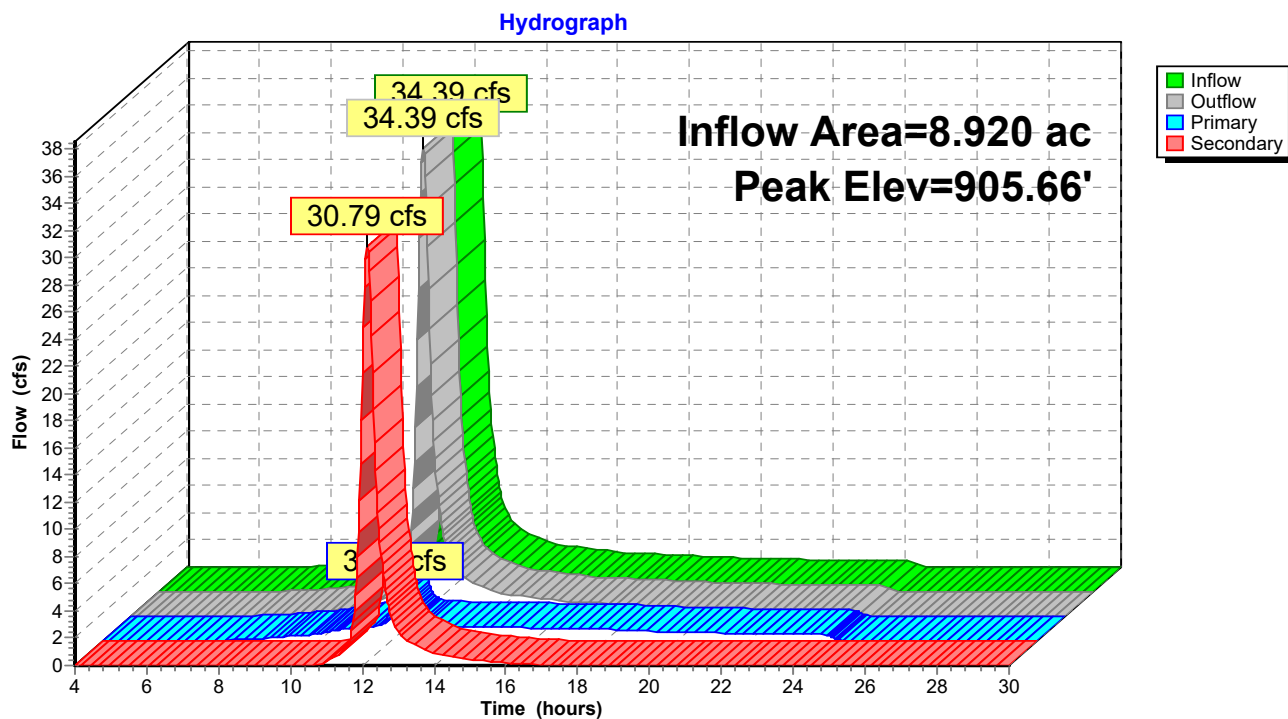
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Pond 4P: Diversion Structure



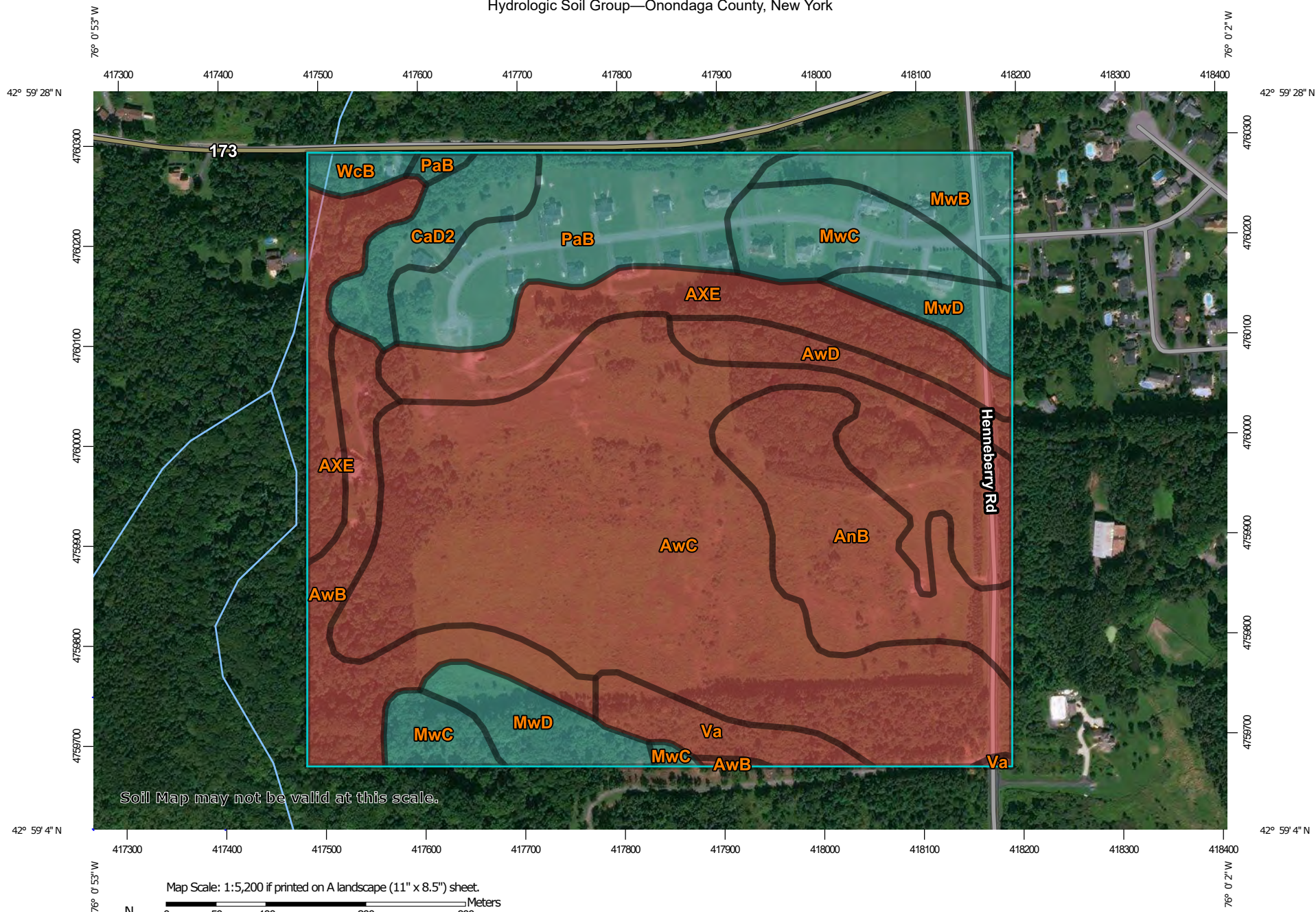


APPENDIX C: SOIL DESCRIPTIONS



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Hydrologic Soil Group—Onondaga County, New York



Map Scale: 1:5,200 if printed on A landscape (11" x 8.5") sheet.

0 50 100 200 300 Meters

0 250 500 1000 1500 Feet

Map projection: Web Mercator Corner coordinates: WGS84 Edge ticks: UTM Zone 18N WGS84



**Natural Resources
Conservation Service**

Web Soil Survey
National Cooperative Soil Survey

8/3/2020
Page 1 of 4

MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

Soil Rating Polygons

 A
 A/D
 B
 B/D
 C
 C/D
 D
 Not rated or not available

Soil Rating Lines

 A
 A/D
 B
 B/D
 C
 C/D
 D
 Not rated or not available

Soil Rating Points

 A
 A/D
 B
 B/D

 C
 C/D
 D
 Not rated or not available

Water Features

 Streams and Canals

Transportation

 Rails
 Interstate Highways
 US Routes
 Major Roads
 Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL:
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Onondaga County, New York
 Survey Area Data: Version 15, Jun 11, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 18, 2011—Oct 10, 2016

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
AnB	Angola-Darien silt loams, 0 to 6 percent slopes	D	10.0	9.3%
AwB	Aurora silt loam, 0 to 6 percent slopes	D	7.7	7.1%
AwC	Aurora silt loam, 6 to 12 percent slopes	D	41.7	38.7%
AwD	Aurora silt loam, 12 to 18 percent slopes	D	2.9	2.7%
AXE	Aurora-Farmington-Rock outcrop association, steep	D	12.5	11.6%
CaD2	Camillus silt loam, 12 to 18 percent slopes eroded	C	3.7	3.4%
MwB	Mohawk silt loam, 2 to 8 percent slopes	C	3.7	3.4%
MwC	Mohawk silt loam, 8 to 15 percent slopes	C	6.6	6.1%
MwD	Mohawk silt loam, 15 to 25 percent slopes	C	5.3	4.9%
PaB	Palatine shaly silt loam, 2 to 6 percent slopes	C	9.9	9.2%
Va	Varick silt loam	D	2.9	2.6%
WcB	Wassaic silt loam, 0 to 8 percent slopes	C	0.9	0.9%
Totals for Area of Interest			107.8	100.0%

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher



APPENDIX D: BIORETENTION BASIN CONSTRUCTION AND MAINTENANCE



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Bioretention Stormwater Management Practices Level 1 Inspection Checklist

SMP ID #		SMP Owner		☐ Private ☐ Public
SMP Location (Address; Latitude & Longitude)				
	Latitude		Longitude	
Party Responsible for Maintenance	System Type			Type of Site
☐ Same as SMP Owner ☐ Other 	☐ Seasonal ☐ Continuous Use ☐ Other	☐ Above Ground ☐ Below Ground	☐ Commercial ☐ Industrial ☐ Residential ☐ State	
Inspection Date			Inspection Time	
Inspector				
Date of Last Inspection				

BR Drainage Area

Look for areas that are uphill from the Bioretention cell.

Problem (Check if Present)	Follow-Up Actions
 ☐ Bare soil, erosion of the ground (rills washing out the dirt)	☐ Seed and mulch areas of bare soil to establish vegetation. ☐ Fill in erosion areas with soil, compact, and seed and straw to establish vegetation. ☐ If a rill or small channel is forming, try to redirect water flowing to this area by creating a small berm or adding topsoil to areas that are heavily compacted. ☐ Other:

BR Drainage Area

Look for areas that are uphill from the Bioretention cell.

Problem (Check if Present)

Follow-Up Actions



- ☐ Kick-Out to Level 2 Inspection: Large areas of soil have been eroded, or larger channels are forming. May require rerouting of flow paths.



- ☐ Piles of grass clippings, mulch, dirt, salt, or other materials

- ☐ Remove or cover piles of grass clippings, mulch, dirt, etc.
- ☐ Other:



- ☐ Open containers of oil, grease, paint, or other substances

- ☐ Cover or properly dispose of materials; consult your local solid waste authority for guidance on materials that may be toxic or hazardous.
- ☐ Other:

BR Inlets

Stand in the Bioretention cell itself and look for all the places where water flows in. Often there will be multiple points of inflow to the practice.

Problem (Check if Present)	Follow-Up Actions
 ☐ Inlets collect grit and debris or grass/weeds. Some water may not be getting into the Bioretention cell. The objective is to have a clear pathway for water to flow into the cell.	☐ Use a flat shovel to remove grit and debris (especially at curb inlets or openings). Parking lots generate fine grit that will accumulate at these spots. ☐ Pull out clumps of growing grass or weeds and scoop out the soil or grit that the plants are growing in. ☐ Remove any grass clippings, leaves, sticks, and other debris that is collecting at inlets. ☐ For pipes and ditches, remove sediment and debris that is partially blocking the pipe or ditch opening where it enters the Bioretention cell. ☐ Dispose of all material properly where it will not re-enter the Bioretention cell. ☐ Other:
	☐ Kick-Out to Level 2 Inspection: Inlets are blocked to the extent that most of the water does not seem to be entering the Bioretention cell.
 ☐ Some or all of the inlets are eroding so that rills, gullies, and other erosion is present, or there is bare dirt that is washing into the Bioretention cell.	☐ For small areas of erosion, smooth out the eroded part and apply rock or stone (e.g., river cobble) to prevent further erosion. Usually, filter fabric is placed under the rock or stone. ☐ In some cases, reseeding and applying erosion-control matting can be used to prevent further erosion. Some of these materials may be available at a garden center, but it may be best to consult a landscape contractor. ☐ Other:
	☐ Kick-Out to Level 2 Inspection: Erosion is occurring at most of the inlets, and it looks like there is too much water that is concentrating at these points. The inlet design may have to be modified.

BR Ponding Area

Examine the entire Bioretention surface and side slopes

Problem (Check if Present)



- ☐ Mulch (if used) needs to be replaced or replenished. The mulch layer had decomposed or is less than 1-inch thick.

Follow-Up Actions

- ☐ Add new mulch to a total depth (including any existing mulch that is left) of 2 to 3 inches. The mulch should be shredded hardwood mulch that is less likely to float away during rainstorms.
- ☐ Avoid adding too much mulch so that inlets are obstructed or certain areas become higher than the rest of the Bioretention surface.
- ☐ Other:



- ☐ Minor areas of sediment, grit, trash, or other debris are accumulating on the bottom.

- ☐ Use a shovel to scoop out minor areas of sediment or grit, especially in the spring after winter sanding materials may wash in and accumulate. Dispose of the material where it cannot re-enter the Bioretention cell .
- ☐ If removing the material creates a hole or low area, fill with soil mix that matches original mix and cover with mulch so that the Bioretention surface area is as flat as possible.
- ☐ Remove trash, vegetative debris, and other undesirable materials.
- ☐ Other:

- ☐ Kick-Out to Level 2 Inspection: Sediment has accumulated more than 2-inches deep and covers 25% or more of the Bioretention surface.
- ☐ Kick-Out to Level 2 Inspection: The Bioretention cell is too densely vegetated to assess sediment accumulation or ponding; see BR-4, Vegetation.

BR Ponding Area

Examine the entire Bioretention surface and side slopes

Problem (Check if Present)	Follow-Up Actions
 ☐ There is erosion in the bottom or on the side slopes. Water seems to be carving out rills as it flows across the Bioretention surface or on the slopes, or sinkholes are forming in certain areas. ☐ Source: Stormwater Maintenance, LLC.	☐ Try filling the eroded areas with clean topsoil or sand, and cover with mulch. ☐ If the problem recurs, you may have to use stone (e.g., river cobble) to fill in problem areas. ☐ If the erosion is on a side slope, fill with clay that can be compacted and seed and mulch the area. ☐ Other:
 ☐ The bottom of the Bioretention cell is not flat, and the water pools at one end, along an edge, or in certain pockets. The whole bottom is not uniformly covered with water. See design plan to verify that bioretention surface is intended to be flat. Check during or immediately after a rainstorm.	☐ Kick-Out to Level 2 Inspection: The problem persists or the erosion is more than 3-inches deep and seems to be an issue with how water enters and moves through the Bioretention cell. ☐ Kick-Out to Level 2 Inspection: The problem does not seem to be caused by flowing water, but a collapse or sinking of the surface (e.g., "sinkhole") due to some underground problem. ☐ If the problem is minor (just small, isolated areas are not covered with water), try raking the surface OR adding mulch to low spots to create a more level surface. You may need to remove and replace plantings in order to properly even off the surface. ☐ Check the surface with a string and bubble level to get the surface as flat as possible. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Ponding water is isolated to less than half of the Bioretention surface area, and there seem to be elevation differences of more than a couple of inches across the surface.

BR Ponding Area

Examine the entire Bioretention surface and side slopes

Problem (Check if Present)	Follow-Up Actions
 ☐ Water stands on the surface more than 72 hours after a rainstorm and /or wetland-type vegetation is present. The Bioretention cell does not appear to be draining properly.	☐ Kick-Out to Level 2 Inspection: This is generally a serious problem, and it will be necessary to activate a Level 2 Inspection.

BR Vegetation

Examine all Bioretention cell vegetation.

Problem (Check if Present)	Follow-Up Actions
 ☐ Vegetation requires regular maintenance—pulling weeds, removing dead and diseased plants, replacing mulch around plants, adding plants to fill in areas that are not well vegetated, etc.	☐ If you can identify which plants are weeds or not intended to be part of the planting plan, eliminate these, preferably by hand pulling. ☐ If weeds are widespread, check with the local stormwater authority and/or Extension Office about proper use of herbicides for areas connected with the flow of water. ☐ Even vegetation that is intended to be present can become large, overgrown, and/or crowd out surrounding plants. Prune and thin accordingly. ☐ If weeds or invasive plants have overtaken the whole Bioretention cell, bush-hog the entire area before seedheads form in the spring. It will be necessary to remove the root mat manually or with appropriate herbicides, as noted above. ☐ Re-plant with species that are aesthetically pleasing and seem to be doing well in the Bioretention cell. ☐ Other: ☐ Kick-Out to Level 2 Inspection: You are unsure of the original planting design, or the vegetation maintenance task is beyond your capabilities of time, expertise, or resources. If you are unsure of the health of the vegetation (e.g. salt damage, invasives, which plants are undesirable) or the appropriate season to conduct vegetation management, consult a landscape professional before undertaking any cutting, pruning, mowing, or brush hogging.

BR Vegetation

Examine all Bioretention cell vegetation.

Problem (Check if Present)	Follow-Up Actions
 ☐ Vegetation is too thin, is not healthy, and there are many spots that are not well vegetated.	☐ The original plants are likely not suited for the actual conditions within the Bioretention cell . If you are knowledgeable about plants, select and plant more appropriate vegetation (preferably native plants) so that almost the entire surface area will be covered by the end of the second growing season. ☐ Other:
	☐ Kick-Out to Level 2 Inspection: For all but small practices (e.g., rain gardens), this task will likely require a landscape design professional or horticulturalist.

BR Outlets

Examine outlets that release water out of the Bioretention cell.

Problem (Check if Present)	Follow-Up Actions
☐ Erosion at outlet	☐ Add stone to reduce the impact from the water flowing out of the outlet pipe or weir during storms. ☐ Other:
	☐ Kick-Out to Level 2 Inspection: Rills have formed and erosion problem becomes more severe.
 ☐ Outlet obstructed with mulch, sediment, debris, trash, etc.	☐ Remove the debris and dispose of it where it cannot re-enter the Bioretention cell . ☐ Other:
	☐ Kick-Out to Level 2 Inspection: Outlet is completely clogged or obstructed; there is too much material to remove by hand or with simple hand tools.

Additional Notes:

Inspector: _____

Date: _____

Complete the following if follow-up/corrective actions were identified during this inspection:

Certified Completion of Follow-Up Actions:

"I hereby certify that the follow-up/corrective actions identified in the inspection performed on _____ (DATE) have been completed and any required maintenance deficiencies have been adequately corrected."

Inspector/Operator: _____

Date: _____

Bioretention Stormwater Management Practices Level 2 Inspection Checklist

SMP ID #		SMP Owner		☐ Private ☐ Public
SMP Location (Address; Latitude & Longitude)				
	Latitude		Longitude	
Party Responsible for Maintenance	System Type		Type of Site	
☐ Same as SMP Owner ☐ Other _____	☐ Seasonal ☐ Continuous Use ☐ Other	☐ Above Ground ☐ Below Ground	☐ Commercial ☐ Industrial ☐ Residential ☐ State	
Inspection Date			Inspection Time	
Inspector				
Date of Last Inspection				

Level 2 Inspection: BIORETENTION
NOTE: Key Source for this Information (CSN, 2013)

Recommended Repairs	Triggers for Level 3 Inspection
Observed Condition: Water Stands on Surface for More than 72 Hours after Storm	
☐ Condition 1: Small pockets of standing water Use a soil probe or auger to examine the soil profile. If isolated areas have accumulated grit, fines, or vegetative debris or have bad soil media, try scraping off top 3 inches of media and replacing with clean material. Also check to see that surface is level and water is not ponding selectively in certain areas. ☐ Condition 2: Standing water is widespread or covers entire surface Requires diagnosis and resolution of problem: • Clogged underdrain? • Filter fabric between soil media and underdrain stone? • Need to install underdrain if not present? • Too much sediment/grit washing in from drainage area? • Too much ponding depth? • Improper soil media?	• Soil media is clogged and problem is not evident from Level 2 inspection. • Level 2 inspection identifies problem, but it cannot be resolved easily or is associated with the original design of the practice. ☐ Level 3 inspection necessary
Observed Condition: Vegetation is sparse or out of control	
☐ Condition 1: Original design planting plan seems good but has not been maintained, so there are many invasives and/or dead plants Will require some horticultural experience to restore vegetation to intended condition by weeding, pruning, removing plants, and adding new plants. ☐ Condition 2: Original design planting plan is unknown or cannot be actualized A landscape architect or horticulturalist will be needed to redo the planting plan. Will likely require analysis of soil pH, moisture, organic content, sun/shade, and other conditions to make sure plants match conditions. Plan should include invasive plant management and maintenance plan to include mulching, watering, disease intervention, periodic thinning/pruning, etc.	• Vegetation deviates significantly from original planting plan; Bioretention has been neglected and suffered from deferred maintenance. • Owner/responsible party does not know how to maintain the practice. ☐ Level 3 inspection necessary
Observed Condition: Bioretention does not conform to original design plan in surface area or storage	
☐ Condition 1: Level 2 Inspection reveals that practice is too small based on design dimension, does not have adequate storage (e.g., ponding depth) based on the plan, and/or does not treat the drainage area runoff as indicated on the plan Small areas of deviation can be corrected by the property owner or responsible party, but it is likely that a Qualified Professional will have to revisit the design and attempt a redesign that meets original objectives or that can be resubmitted to the municipality for approval.	• More than a 25% departure from the approved plan in surface area, storage, or drainage area; sometimes less than this threshold at the discretion of the Level 2 inspector. ☐ Level 3 inspection necessary

Level 2 Inspection: BIORETENTION
NOTE: Key Source for this Information (CSN, 2013)

Recommended Repairs	Triggers for Level 3 Inspection
Observed Condition: Severe erosion of filter bed, inlets, or around outlets	
☐ Condition 1: Erosion at inlets The lining (e.g., grass, matting, stone, rock) may not be adequate for the actual flow velocities coming through the inlets. First line of defense is to try a more non-erosive lining and/or to extend the lining further down to where inlet slopes meet the Bioretention surface. If problem persists, analysis by a Qualified Professional is warranted. ☐ Condition 2: Erosion of Bioretention filter bed This is often caused by “preferential flow paths” through and along the Bioretention surface. The source of flow should be analyzed and methods employed to dissipate energy and disperse the flow (e.g., check dams, rock splash pads). ☐ Condition 3: Erosion on side slopes Again, the issue is likely linked with unanticipated flow paths down the side slopes (probably overland flow that concentrates as it hits the edge of the slope). For small or isolated areas, try filling, compacting, and re-establishing healthy ground cover vegetation. If the problem is more widespread, further analysis is required to determine how to redirect the flow.	- Erosion (rills, gullies) is more than 12 inches deep at inlets or the filter bed or more than 3 inches deep on side slopes. - If the issue is not caused by moving water but some sort of subsurface defect. This may manifest as a sinkhole or linear depression and be associated with problems with the underdrain stone or pipe or underlying soil. ☐ Level 3 inspection necessary
Observed Condition: Significant sediment accumulation, indicating an uncontrolled source of sediment	
☐ Condition 1: Isolated areas of sediment accumulation, generally less than 3-inches deep Sediment source may be from a one-time or isolated event. Remove accumulated sediment and top 2 to 3 inches of Bioretention soil media; replace with clean material. Check drainage area for any ongoing sources of sediment. ☐ Condition 2: Majority of the surface is caked with “hard pan” (thin layer of clogging material) or accumulated sediment that is 3-inches deep or more This can be caused by an improper construction sequence (drainage area not fully stabilized prior to installation of Bioretention soil media) or another chronic source of sediment in the drainage area. Augering several holes down through the media can indicate how severe the problem is; often the damage is confined to the first several inches of soil media. Removing and replacing this top layer (or to the depth where sediment incursion is seen in auger holes) can be adequate, as long as the problem does not recur.	- More than 2 inches of accumulated sediment cover 25% or more of the Bioretention surface area. “Hard pan” of thin, crusty layer covers majority of Bioretention surface area and seems to be impeding flow of water down through the soil media. - New sources of sediment seem to be accumulating with each significant rainfall event. ☐ Level 3 inspection necessary

Notes:

Inspector: _____

Date: _____

Complete the following if follow-up/corrective actions were identified during this inspection:

Certified Completion of Follow-Up Actions:

"I hereby certify that the follow-up/corrective actions identified in the inspection performed on _____ (DATE) have been completed and any required maintenance deficiencies have been adequately corrected."

Inspector/Operator: _____

Date: _____

Pond and Wetland Stormwater Management Practices Level 1 Inspection Checklist

SMP ID #		SMP Owner		☐ Private ☐ Public
SMP Location (Address; Latitude & Longitude)				
	Latitude		Longitude	
Party Responsible for Maintenance	System Type		Type of Site	
☐ Same as SMP Owner ☐ Other _____	☐ Seasonal ☐ Continuous Use ☐ Other	☐ Above Ground ☐ Below Ground	☐ Commercial ☐ Industrial ☐ Residential ☐ State	
Inspection Date			Inspection Time	
Inspector				
Date of Last Inspection				

PW Drainage Area

Look for areas that are uphill from the pond.

Problem (Check if Present)	Follow-Up Actions
☐ Bare soil, erosion of the ground (rills washing out the dirt)	☐ Seed and straw areas of bare soil to establish vegetation. ☐ Fill in eroded areas with soil, compact, seed and mulch with straw to establish vegetation. ☐ Other:

☐ Bare soil, erosion of the ground (rills washing out the dirt)	☐ Kick-Out to Level 2 Inspection: If a rill or small channel is forming, try to redirect water flowing to this area by creating a small berm or adding topsoil to areas that are heavily compacted. ☐ If large areas of soil have been eroded or larger channels are forming, this may require rerouting of flow paths or use of an erosion-control seed mat or blanket to reestablish acceptable ground cover or anchor sod where it is practical.
 ☐ Piles of grass clippings, mulch, dirt, salt, or other materials	☐ Remove or cover piles of grass clippings, mulch, dirt, etc. ☐ Remove excessive vegetation or woody debris that can block drainage systems. ☐ Other:
 ☐ Open containers of oil, grease, paint, or other substances exposed to rain in the drainage area	☐ Cover or properly dispose of materials; consult your local solid waste authority for guidance on materials that may be toxic or hazardous. ☐ Other:

Pond Inlets

Look for all areas where water flows into the pond during storms. Note that there may be multiple points of inflow and types of structures (e.g., pipes, open ditches, etc.).

Problem (Check if Present)	Follow-Up Actions
 ☐ Inlets are buried, covered or filled with silt, debris, or trash, or blocked by excessive vegetation.	☐ If the problem can be remedied with hand tools and done in a safe manner, remove vegetation, trash, woody debris, etc. from blocking inlet structures. ☐ Other: ☐ Kick-Out to Level 2 or 3 Inspection: If the amount of material is too large to handle OR there are ANY safety concerns about working in standing water, soft sediment, etc., the work will likely have to be performed by a qualified contractor.

Pond Inlets

Look for all areas where water flows into the pond during storms. Note that there may be multiple points of inflow and types of structures (e.g., pipes, open ditches, etc.).

Problem (Check if Present)	Follow-Up Actions
 ☐ Inlets are buried, covered or filled with silt, debris, or trash, or blocked by excessive vegetation.	☐ Kick-Out to Level 2 or 3 Inspection: If the amount of material is too large to handle OR there are ANY safety concerns about working in standing water, soft sediment, etc., the work will likely have to be performed by a qualified contractor.
 ☐ Inlets are broken, and, with pieces of pipe or concrete falling into the pond, there is erosion around the inlet, there is open space under the pipe, or there is erosion where the inlet meets the pond	☐ Kick-Out to Level 2 Inspection: These types of structural or erosion problems are more serious and will require a qualified contractor to repair.

PW Pond Area and Embankments

Examine both interior and exterior pond banks as well as the pond body. Observe from the inlet pipes to the outfall structure and emergency overflow.

Problem (Check if Present)	Follow-Up Actions
 ☐ The pretreatment area(s) or forebay(s) are filled with sediment, trash, vegetation, or other debris.	☐ If the problem can be remedied with hand tools and done in a safe manner, use a flat shovel or other equipment to remove small amounts of sediment. ☐ Remove trash and excessive vegetation from forebays if this can be done in a safe manner. ☐ Other:

PW Pond Area and Embankments

Examine both interior and exterior pond banks as well as the pond body. Observe from the inlet pipes to the outfall structure and emergency overflow.

Problem (Check if Present)		Follow-Up Actions
	☐ The pretreatment area(s) or forebay(s) are filled with sediment, trash, vegetation, or other debris.	☐ Kick-Out to Level 2 Inspection: Large amounts of sediment or debris will have to be removed by a qualified contractor. ANY condition that poses a safety concern for working in standing water or soft sediments should be referred to a Level 2 Inspection or qualified contractor.
	☐ The pond area itself has accumulated sediment, trash, debris, or excessive vegetation that is choking the flow of the water, OR the pond area is covered with algae or aquatic plants.	☐ Level 1 includes handling only small amounts of material that can be removed by hand, or with rakes or other hand tools. Do not attempt any repair that poses a safety issue. ☐ Other:
	☐ The side slopes of the pond are unstable, eroding, and have areas of bare dirt.	☐ If there are only minor areas, try filling in small rills or gullies with topsoil, compacting, and seeding and mulching all bare dirt areas with an appropriate seed. Alternatively, try using herbaceous plugs to get vegetation established in tricky areas, such as steep slopes. ☐ Other:
		☐ Kick-Out to Level 2 Inspection: Erosion and many bare dirt areas on steep side slopes will require a Level 2 Inspection and repair by a qualified contractor.

PW Pond Area and Embankments

Examine both interior and exterior pond banks as well as the pond body. Observe from the inlet pipes to the outfall structure and emergency overflow.

Problem (Check if Present)		Follow-Up Actions
	☐ The riser structure is clogged with trash, debris, sediment, vegetation, etc., OR is open, unlocked, or has a steep drop and poses a safety concern. The pond level may have dropped below its "normal" level.	☐ If you can safely access the riser on foot or with a small boat, clear minor amounts of debris and remove it from the pond area for safe disposal. ☐ Other: ☐ Kick-Out to Level 2 Inspection: The riser cannot be accessed safely, the amount of debris is substantial, or the riser seems to be completely clogged and the water level has risen too high. ☐ There are safety issues with the riser and concern about access to pipes, drops, or any other life safety concern. ☐ The riser is leaning, broken, settling or slumping, corroded, eroded or any other structural problem.
	☐ The dam/embankment is slumping, sinking, settling, eroding, or has medium or large trees growing on it.	☐ If there are small isolated areas, try to fix them by adding clean material (clay and topsoil) and seeding and mulching. ☐ Periodically mow embankments to enable inspection of the banks and to minimize establishment of woody vegetation. ☐ Remove any woody vegetation that has already established on embankments. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Most of these situations will require a Level 2 Inspection or evaluation and repair by a qualified contractor. Seepage through the dam or problems with the pipe through the dam can be a serious issue that should be addressed to avoid possible dam failure.

PW Pond Area and Embankments

Examine both interior and exterior pond banks as well as the pond body. Observe from the inlet pipes to the outfall structure and emergency overflow.

Problem (Check if Present)		Follow-Up Actions
	☐ The emergency spillway or outfall (if it exists) has ☐ Erosion, settlement, or loss of material. Rock-lined spillways have excessive debris or vegetation.	☐ Clear light debris and vegetation. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Displacement of rock lining, excessive vegetation and erosion/settlement may warrant review and decision by Level 2 Inspector to check against original plan. ☐ Any uncertainty about the integrity of the emergency spillway should be referred to a Level 2 Inspector. ☐ Erosion or settlement such that design has been compromised should be reviewed by an engineer.

PW Pond Outlet

Examine the outlet of the pipe on the downstream side of the dam/embankment where it empties into a stream, channel, or drainage system.

Problem (Check if Present)	Follow-Up Actions
 ☐ The pond outlet is clogged with sediment, trash, debris, vegetation, or is eroding, caving in, slumping, or falling apart.	☐ If there is a minor blockage, remove the debris or vegetation to allow free flow of water. ☐ Remove any accumulated trash at the outlet. ☐ Outlet: ☐ Kick-Out to Level 2 Inspection: ☐ If the area at the outlet cannot be easily accessed or if the blockage is substantial, a Level 2 Inspection is warranted. ☐ Erosion at and downstream of the outfall should be evaluated by a qualified professional. ☐ Any structural problems, such as broken pipes, structures falling into the stream, or holes or tunnels around the outfall pipe, should be evaluated by a Level 2 Inspector and will require repair by a qualified contractor. ☐ The pool of water at the outlet pipe is discolored, has an odor, or has excessive algae or vegetative growth.

Additional Notes:

Inspector: _____

Date: _____

Complete the following if follow-up/corrective actions were identified during this inspection:

Certified Completion of Follow-Up Actions:

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Inspector/Operator: _____

Date: _____

Pond and Wetland Stormwater Management Practices Level 2 Inspection Checklist

SMP ID #		SMP Owner		☐ Private ☐ Public
SMP Location (Address; Latitude & Longitude)				
	Latitude		Longitude	
Party Responsible for Maintenance		System Type		Type of Site
☐ Same as SMP Owner ☐ Other _____		☐ Seasonal ☐ Continuous Use ☐ Other	☐ Above Ground ☐ Below Ground	☐ Commercial ☐ Industrial ☐ Residential ☐ State
Inspection Date			Inspection Time	
Inspector				
Date of Last Inspection				

Level 2 Inspection: PONDS and WETLANDS

Recommended Repairs and Required Skills

Triggers for Level 3 Inspection

Observed Condition: Bare Soil or Erosion in the Drainage Area

- ☐ Condition 1: Extensive problem spots, but no channels or rills forming

Reseed problem areas. If problem persists or grass does not take, consider hiring a landscape contractor.

- ☐ Condition 2: Problem is extensive, and rills/channels are beginning to form

May be necessary to divert or redirect water that is causing the erosion problem. If it appears that simple regrading—such as installing a berm or leveling a low spot—will fix the problem, make repairs and ensure that the problem is repaired after the next storm.

- Large rills or gullies are forming in the drainage area.
- An attempt to regrade the drainage area has been unsuccessful.
- Fixing the problem would require major regrading (i.e., redirecting more than a 100-square-foot area).
- It is not clear why the problem is occurring.

- ☐ Level 3 inspection necessary

Observed Condition: Manholes or Inlet Pipe Buried or Covered with Vegetation

- ☐ Condition 1: Nearest manhole and inlet pipe not found

Consult as-built drawings to get to closest suspected location and use metal detector to search for metal manhole cover. If unsuccessful, identify nearest drain inlets and approximate pipe direction to locate next manhole.

- ☐ Condition 2: Manhole located and inspected

Never enter a manhole, except by following confined-space entry protocols.

If outlet pipe is not visible or greater than 25% full of sediment/debris or trash, it will typically require a qualified contractor to flush, clean and clear blockages.

- ☐ Condition 3: Inlet pipe not found at pond

Clear vegetation and brush that may be covering the inlet pipe. Buried inlet pipes may be found through use of a metal probe.

- ☐ Condition 4: Inlet pipe buried in sediment or blocked by vegetation

Once located, the pipe path can be cleared of vegetation with brush hook or other brush tools. Light digging may clear sediment from the end of the pipe.

- To locate buried manholes and lost storm lines, it is sometimes necessary to hire a pipeline inspection contractor with televising equipment or ground-penetrating radar and enter at the closest upstream access point.
- Locating a buried inlet pipe may require wading in the edge of the pond and using a metal probe and brush axe to find and expose the pipe.
- If other than light digging is necessary to remove accumulated sediment, a contractor with heavy equipment may be required.

- ☐ Level 3 inspection necessary

Level 2 Inspection: PONDS and WETLANDS

Recommended Repairs and Required Skills

Triggers for Level 3 Inspection

Observed Condition: Pipe or Headwall Settlement, Erosion, Corrosion or Failure

☐ Condition 1: Pipe or headwall settlement or failure

Severe sinkholes, settlement or corrosion should be kicked out to Level 3 Inspection.

☐ Condition 2: Flow not confined to pipe and visible outside pipe wall

With flashlight, observe the inside of the pipe and note its condition. Take photographs. Look for sinkholes developing that indicate pipe failure beneath the surface. Kick out to Level 3 inspection.

- Where blockages are visible, a decision is needed on whether to clear them or leave in place. If a third of the pipe is full of sediment, it should be removed by a contractor with pipe-cleaning equipment.
- Corrosion of inlet pipes that allows flow around the pipe exterior is a structural concern because it can lead to settlement, sinkholes and undermining pond embankment. Evidence of this type of failure may require specialized pipe-inspection equipment and investigation by an engineer.

☐ Level 3 inspection necessary

Observed Condition: Pond Conditions

☐ Condition 1: Pond pre-treatment zone is full of sediment or not constructed as shown on as-built drawings.

☐ Condition 2: Excessive buildup of sediment or overgrowth

If the pre-treatment area or pond pool is overgrown or filled with sediment so that the original design is compromised, corrective measures are required. If plants have died, then replanting is necessary. If none of the original design exists due to alteration or sediment, kick out to Level 3 inspection.

- It may require inspection by an engineer to determine next steps for clearing, replanting or reconstruction.
- Erosion or settlement such that design has been compromised should be reviewed by an engineer. Recurring erosion may require redesign and/or regrading to direct flow away from eroding area.
- If sediment has filled more than 50% of the pond's capacity, dredging is likely needed and should be evaluated by a qualified contractor.
- Removal or control of excessive algae or aquatic plants can be assessed by a qualified pond maintenance company.

☐ Level 3 inspection necessary

Notes:

Inspector: _____

Date: _____

Complete the following if follow-up/corrective actions were identified during this inspection:

Certified Completion of Follow-Up Actions:

"I hereby certify that the follow-up/corrective actions identified in the inspection performed on _____ (DATE) have been completed and any required maintenance deficiencies have been adequately corrected."

Inspector/Operator: _____

Date: _____

Swale Stormwater Management Practices Level 1 Inspection Checklist

SMP ID #		SMP Owner		☐ Private ☐ Public
SMP Location (Address; Latitude & Longitude)				
	Latitude		Longitude	
Party Responsible for Maintenance	System Type		Type of Site	
☐ Same as SMP Owner ☐ Other _____	☐ Seasonal ☐ Continuous Use ☐ Other	☐ Above Ground ☐ Below Ground	☐ Commercial ☐ Industrial ☐ Residential ☐ State	
Inspection Date			Inspection Time	
Inspector				
Date of Last Inspection				

SW Drainage Area

Look at areas that are uphill from the swale.

Problem (Check if Present)	Follow-Up Actions
 ☐ Bare soil, erosion of the ground (rills washing out the dirt)	☐ Seed and mulch or sod areas of bare soil to establish vegetation. ☐ Fill in erosion areas with soil, compact, and add seed and straw to establish vegetation. ☐ If a rill or small channel is forming, try to redirect water flowing to this area by creating a small berm or adding topsoil to areas that are heavily compacted. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Large areas of soil have been eroded, or larger channels are forming. May require rerouting of flow paths
 ☐ Piles of grass clippings, mulch, dirt, salt, or other materials	☐ Remove or cover piles of grass clippings, mulch, dirt, etc. ☐ Other:
 ☐ Open containers of oil, grease, paint, or other substances	☐ Cover or properly dispose of materials; consult your local solid waste authority for guidance on materials that may be toxic or hazardous.
☐ Grass dying at edge of road	☐ Seed and mulch; add topsoil or compost if needed. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Grass on edge of pavement continues to die off for unknown reasons. Swale edge may need to be replaced with other materials (e.g., stone diaphragm).

SW Inlets

Stand in the swale and look for all the places where water flows in.

Problem (Check if Present)	Follow-Up Actions
☐ Inlets or the swale edge are collecting grit, grass clippings, or debris or have grass/weeds growing. Some water may not be getting into the swale. The objective is to have a clear pathway for water to flow into the swale.	☐ Use a flat shovel to remove grit and debris (especially at curb inlets or opening). Parking lots will generate fine grit that will accumulate at these spots. ☐ Pull out clumps of growing grass or weeds, and scoop out the soil or grit that the plants are growing in. ☐ Remove any grass clippings, leaves, sticks, and other debris that is collecting at inlets or along the edge of the swale where water is supposed to enter. ☐ For pipes and ditches, remove sediment and debris that is partially blocking the pipe or ditch opening where it enters the swale. ☐ Dispose of all material properly in an area where it will not re-enter the swale. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Inlets are blocked to the extent that most of the water does not seem to be entering the swale.
 ☐ Some or all of the inlets are eroding so that rills, gullies, and other erosion are present, or there is bare dirt that is washing into the swale.	☐ For small areas of erosion, smooth out the eroded part and apply rock or stone (e.g., river cobble) to prevent further erosion. Usually, filter fabric is placed under the rock or stone. ☐ In some cases, reseeding and applying an erosion control matting can be used to prevent further erosion. Some of these materials may be available at a garden center, but it may be best to consult a landscape contractor. ☐ Other: ☐ Level 2 Inspection: Erosion is occurring at most of the inlets or along much of the swale edge. The inlet design may have to be modified.

SW Surface Area

Examine the entire swale surface and side slopes.

Problem (Check if Present)	Follow-Up Actions
☐ Minor areas of sediment, grit, trash, or other debris are accumulating in the swale.	☐ Use a shovel to scoop out minor areas of sediment or grit, especially in the spring after winter sanding materials may wash in and accumulate. Dispose of the material where it cannot re-enter the swale. ☐ If removing the material creates a hole or low area, fill with good topsoil and add seed and straw to re-vegetate. ☐ Remove trash, vegetative debris, and other undesirable materials. ☐ If the swale is densely vegetated, it may be difficult to do the maintenance; check for excessive ponding or other issues described in this section to see if the accumulated material is causing a problem. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Sediment has accumulated more than 3 inches deep and covers 25% or more of the swale surface. ☐ The source of sediment is unknown or cannot be controlled with simple measures.
 ☐ There is erosion in the bottom or on the side slopes. Water seems to be carving out rills as it flows through the swale or on the slopes.	☐ Try filling the eroded areas with clean topsoil, and then seed and mulch to establish vegetation. ☐ If the problem recurs, you may have to use some type of matting, stone (e.g., river cobble), or other material to fill in eroded areas. ☐ If the erosion is on a side slope, fill with soil and cover with erosion-control matting or at least straw mulch after re-seeding. ☐ Kick-Out to Level 2 Inspection: The problem persists or the erosion is more than 3 inches deep and seems to be an issue with how water enters and moves through the swale. ☐ Kick-Out to Level 2 Inspection: The problem does not seem to be caused by flowing water, but a collapse or sinking of the surface (e.g., "sinkhole") due to some underground problem.
☐ Water does not flow evenly down the length of the swale, but ponds in certain areas for long periods of time (e.g., 72 hours after a storm). The swale does not seem to have "positive drainage." Check during or immediately after a rain storm.	☐ If the problem is minor (just small, isolated areas), try using a metal rake or other tools to create a more even flow path; remove excessive vegetative growth, sediment, or other debris that may be blocking the flow. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Water ponds in more than 25% of the swale for three days or more after a storm. The issue may be with the underlying soil or the grade of the swale. ☐ Water ponds behind check dams for three days or more after a storm. Check dams may be clogged or not functioning properly.

SW Surface Area

Examine the entire swale surface and side slopes.

Problem (Check if Present)	Follow-Up Actions
 ☐ Check dams (if present): water is flowing around the edges of check dams, creating erosion or sinkholes on the uphill or downhill side, or the check dams are breaking apart or breaching .	☐ If the problem is isolated to just a few check dams, try simple repairs. ☐ It is very important for the center of each check dam (where most of the water flows) to be lower (by at least several inches) than the edges of the check dams where they meet the side slopes. Also, the check dams should be keyed into side slopes so water does not flow between the check dam and side slope. ☐ Use a level to check the right check-dam configuration, as noted above. Repair by moving around stone, filling and compacting soil, or adding new material so that water will be directed to the center of the check dam instead of the edges. ☐ Other:
	☐ Kick-Out to Level 2 Inspection: Many check dams are impacted and/or the problem seems to be a design issue with height, spacing, shape, or materials used to construct them.

SW Vegetation

Assess the swale vegetation.

Problem (Check if Present)	Follow-Up Actions
 ☐ Vegetation is too overgrown to access swale for maintenance activities	☐ Mow or bush-hog the path. ☐ Other:

SW Vegetation

Assess the swale vegetation.

Problem (Check if Present)	Follow-Up Actions
 ☐ Vegetation requires regular maintenance: pulling weeds, removing dead and diseased plants, adding plants to fill in areas that are not well vegetated, etc.	☐ If you can identify which plants are weeds or not intended to be part of the planting plan, eliminate these, preferably by hand pulling. ☐ If weeds are widespread, check with the local stormwater authority and/or Extension Office about proper use of herbicides for areas connected with the flow of water. ☐ Even vegetation that is intended to be present can become large, overgrown, block flow, and/or crowd out surrounding plants. Prune and thin accordingly. ☐ If weeds or invasive plants have overtaken the whole swale, bush-hog the entire area before seed heads form in the spring. It will be necessary to remove the root mat manually or with appropriate herbicides, as noted above. ☐ Replant with species that are aesthetically pleasing and seem to be doing well in the swale. ☐ Other:
☐ Vegetation is too thin, is not healthy, and there are many spots that are not well vegetated.	☐ Kick-Out to Level 2 Inspection: You are unsure of the original planting design or the vegetation maintenance task is beyond your capabilities of time, expertise, or resources. If you are unsure of the health of the vegetation (e.g. salt damage, invasives, which plants are undesirable) or the appropriate season to conduct vegetation management, consult a landscape professional before undertaking any cutting, pruning, mowing, or brush hogging.
	☐ The original plants are likely not suited for the actual conditions within the swale. If you are knowledgeable about plants, select and plant more appropriate vegetation (preferably native plants) so that almost the entire surface area will be covered by the end of the second growing season. ☐ Other:
	☐ Kick-Out to Level 2 Inspection: For all but small practices (e.g., in residential yards), this task will likely require a landscape design professional or horticulturalist.

SW Outlets

Examine outlets that release water out of the swale.

Problem (Check if Present)	Follow-Up Actions
☐ Outlet is obstructed with mulch, sediment, debris, trash, etc.	☐ Remove the debris and dispose of it where it cannot re-enter the swale. ☐ Other:
	☐ Kick-Out to Level 2 Inspection: Outlet is completely clogged or obstructed; there is too much material to remove by hand or with simple hand tools.

Additional Notes:

Inspector: _____

Date: _____

Complete the following if follow-up/corrective actions were identified during this inspection:

Certified Completion of Follow-Up Actions:

"I hereby certify that the follow-up/corrective actions identified in the inspection performed on _____ (DATE) have been completed and any required maintenance deficiencies have been adequately corrected."

Inspector/Operator: _____

Date: _____

Swale Stormwater Management Practices Level 2 Inspection Checklist

SMP ID #		SMP Owner		☐ Private ☐ Public
SMP Location (Address; Latitude & Longitude)				
	Latitude		Longitude	
Party Responsible for Maintenance	System Type		Type of Site	
☐ Same as SMP Owner ☐ Other _____	☐ Seasonal ☐ Continuous Use ☐ Other	☐ Above Ground ☐ Below Ground	☐ Commercial ☐ Industrial ☐ Residential ☐ State	
Inspection Date		Inspection Time		
Inspector				
Date of Last Inspection				

Level 2 Inspection: SWALE

Recommended Repairs

Triggers for Level 3 Inspection

Observed Condition: Water Stands on Surface for More than 72 Hours after Storm

- ☐ Condition 1: Small pockets of standing water

Use a soil probe or auger to examine the soil profile. If isolated areas have accumulated grit, fines, or vegetative debris or have compacted soil, try scraping off top 3 to 6 inches of soil and replacing with clean material. Also check to see that surface is level and water is not ponding selectively in certain areas.

- ☐ Condition 2: Standing water is widespread or covers entire surface

Requires diagnosis and resolution of problem:

- Bad or compacted soil
- Filter fabric on the swale bottom
- Too much sediment/grit washing in from drainage area?
- Too much ponding depth?
- Longitudinal slope is too flat?

- Soil is overly compacted or clogged and problem is not evident from Level 2 inspection.
- Level 2 inspection identifies problem, but it cannot be resolved easily or is associated with the original design of the practice (e.g., not enough slope down through the swale).

- ☐ Level 3 inspection necessary

Observed Condition: Vegetation is predominantly weeds and invasive species

For a small area, weed and dig up invasive plants. Replant with natives or plants from original planting plan.

If longer than 100 feet, develop a new planting plan and have it professionally reviewed.

- Vegetation deviates significantly from original planting plan; swale has been neglected and suffered from deferred maintenance.
- Owner/responsible party does not know how to maintain the practice.
- For large area, hire a professional to develop a grading plan and develop a planting plan.

- ☐ Level 3 inspection necessary

Notes:

Inspector: _____

Date: _____

Complete the following if follow-up/corrective actions were identified during this inspection:

Certified Completion of Follow-Up Actions:

"I hereby certify that the follow-up/corrective actions identified in the inspection performed on _____ (DATE) have been completed and any required maintenance deficiencies have been adequately corrected."

Inspector/Operator: _____

Date: _____



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APPENDIX E: SWPPP FORMS

Notice of Intent

Notice of Termination

Contractor Forms



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NOTICE OF INTENT



New York State Department of Environmental Conservation

Division of Water

625 Broadway, 4th Floor

Albany, New York 12233-3505

NYR
(for DEC use only)

Stormwater Discharges Associated with Construction Activity Under State Pollutant Discharge Elimination System (SPDES) General Permit # GP-0-20-001

All sections must be completed unless otherwise noted. Failure to complete all items may result in this form being returned to you, thereby delaying your coverage under this General Permit. Applicants must read and understand the conditions of the permit and prepare a Stormwater Pollution Prevention Plan prior to submitting this NOI. Applicants are responsible for identifying and obtaining other DEC permits that may be required.

**-IMPORTANT-
RETURN THIS FORM TO THE ADDRESS ABOVE**

OWNER/OPERATOR MUST SIGN FORM

Owner/Operator Information

Owner/Operator (Company Name/Private Owner Name/Municipality Name)

Owner/Operator Contact Person Last Name (NOT CONSULTANT)

Owner/Operator Contact Person First Name

Owner/Operator Mailing Address

City

State

Zip

 -

Phone (Owner/Operator)

 - -

Fax (Owner/Operator)

 - -

Email (Owner/Operator)

FED TAX ID

 - (not required for individuals)

Project Site Information

Project/Site Name

[illegible]

Street Address (NOT P.O. BOX)

[illegible]

Side of Street

☐ North ☐ South ☐ East ☐ West

City/Town/Village (THAT ISSUES BUILDING PERMIT)

[illegible]

State

Zip

County

DEC Region

N	Y
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—

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[illegible]

7

Name of Nearest Cross Street

[illegible]

Distance to Nearest Cross Street (Feet)

--	--	--	--	--

Project In Relation to Cross Street

☐ North ☐ South ☐ East ☐ West

Tax Map Numbers Section-Block-Parcel

[illegible]

Tax Map Numbers

[illegible]

1. Provide the Geographic Coordinates for the project site in NYTM Units. To do this you **must** go to the NYSDEC Stormwater Interactive Map on the DEC website at:

www.dec.ny.gov/imsmaps/stormwater/viewer.htm

Zoom into your Project Location such that you can accurately click on the centroid of your site. Once you have located your project site, go to the tool boxes on the top and choose "i"(identify). Then click on the center of your site and a new window containing the X, Y coordinates in UTM will pop up. Transcribe these coordinates into the boxes below. For problems with the interactive map use the help function.

X Coordinates (Easting)

--	--	--	--	--	--

Y Coordinates (Northing)

4						
---	--	--	--	--	--	--

2. What is the nature of this construction project?

- **New Construction**

- Redevelopment with increase in impervious area

- Redevelopment with no increase in impervious area

3. Select the predominant land use for both pre and post development conditions.

SELECT ONLY ONE CHOICE FOR EACH

**Pre-Development
Existing Land Use**

- ☐ FOREST
☐ PASTURE/OPEN LAND
☐ CULTIVATED LAND
☐ SINGLE FAMILY HOME
☐ SINGLE FAMILY SUBDIVISION
☐ TOWN HOME RESIDENTIAL
☐ MULTIFAMILY RESIDENTIAL
☐ INSTITUTIONAL/SCHOOL
☐ INDUSTRIAL
☐ COMMERCIAL
☐ ROAD/HIGHWAY
☐ RECREATIONAL/SPORTS FIELD
☐ BIKE PATH/TRAIL
☐ LINEAR UTILITY
☐ PARKING LOT
☐ OTHER

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

**Post-Development
Future Land Use**

- ☐ SINGLE FAMILY HOME
☐ SINGLE FAMILY SUBDIVISION
☐ TOWN HOME RESIDENTIAL
☐ MULTIFAMILY RESIDENTIAL
☐ INSTITUTIONAL/SCHOOL
☐ INDUSTRIAL
☐ COMMERCIAL
☐ MUNICIPAL
☐ ROAD/HIGHWAY
☐ RECREATIONAL/SPORTS FIELD
☐ BIKE PATH/TRAIL
☐ LINEAR UTILITY (water, sewer, gas, etc.)
☐ PARKING LOT
☐ CLEARING/GRADING ONLY
☐ DEMOLITION, NO REDEVELOPMENT
☐ WELL DRILLING ACTIVITY *(Oil, Gas, etc.)
☐ OTHER

Number of Lots

--	--	--	--

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

***Note:** for gas well drilling, non-high volume hydraulic fractured wells only

4. In accordance with the larger common plan of development or sale, enter the total project site area; the total area to be disturbed; existing impervious area to be disturbed (for redevelopment activities); and the future impervious area constructed within the disturbed area. (Round to the nearest tenth of an acre.)

**Total Site
Area**

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

**Total Area To
Be Disturbed**

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

**Existing Impervious
Area To Be Disturbed**

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

**Future Impervious
Area Within
Disturbed Area**

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

5. Do you plan to disturb more than 5 acres of soil at any one time? ☐ Yes ☐ No

6. Indicate the percentage of each Hydrologic Soil Group(HSG) at the site.

A

--	--	--	--

 %

B

--	--	--	--

 %

C

--	--	--	--

 %

D

--	--	--	--

 %

7. Is this a phased project? ☐ Yes ☐ No

8. Enter the planned start and end dates of the disturbance activities.

Start Date

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

End Date

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

[illegible][illegible]

9a. Type of waterbody identified in Question 9?

- ☐ Wetland / State Jurisdiction On Site (Answer 9b)
- ☐ Wetland / State Jurisdiction Off Site
- ☐ Wetland / Federal Jurisdiction On Site (Answer 9b)
- ☐ Wetland / Federal Jurisdiction Off Site
- ☐ Stream / Creek On Site
- ☐ Stream / Creek Off Site
- ☐ River On Site
- ☐ River Off Site
- ☐ Lake On Site
- ☐ Lake Off Site
- ☐ Other Type On Site
- ☐ Other Type Off Site

9b. How was the wetland identified?

- ☐ Regulatory Map
- ☐ Delineated by Consultant
- ☐ Delineated by Army Corps of Engineers
- ☐ Other (identify)

9b. How was the wetland identified?

[illegible]

10. Has the surface waterbody(ies) in question 9 been identified as a 303(d) segment in Appendix E of GP-0-20-001? ☐ Yes ☐ No

11. Is this project located in one of the Watersheds identified in Appendix C of GP-0-20-001? ☐ Yes ☐ No

11. Is this project located in one of the Watersheds identified in Appendix C of GP-0-20-001? ☐ Yes ☐ No

12. Is the project located in one of the watershed areas associated with AA and AA-S classified waters? ☐ Yes ☐ No

If no, skip question 13.

13. Does this construction activity disturb land with no existing impervious cover and where the Soil Slope Phase is identified as an E or F on the USDA Soil Survey? ☐ Yes ☐ No

If Yes, what is the acreage to be disturbed?

.

14. Will the project disturb soils within a State regulated wetland or the protected 100 foot adjacent area? ☐ Yes ☐ No

15. Does the site runoff enter a separate storm sewer system (including roadside drains, swales, ditches, culverts, etc)? ☐ Yes ☐ No ☐ Unknown

- [illegible]

17. Does any runoff from the site enter a sewer classified as a Combined Sewer? ☐ Yes ☐ No ☐ Unknown

18. Will future use of this site be an agricultural property as defined by the NYS Agriculture and Markets Law? ☐ Yes ☐ No

19. Is this property owned by a state authority, state agency, federal government or local government? ☐ Yes ☐ No

20. Is this a remediation project being done under a Department approved work plan? (i.e. CERCLA, RCRA, Voluntary Cleanup Agreement, etc.) ☐ Yes ☐ No

21. Has the required Erosion and Sediment Control component of the SWPPP been developed in conformance with the current NYS Standards and Specifications for Erosion and Sediment Control (aka Blue Book)? ☐ Yes ☐ No

22. Does this construction activity require the development of a SWPPP that includes the post-construction stormwater management practice component (i.e. Runoff Reduction, Water Quality and Quantity Control practices/techniques)? ☐ Yes ☐ No
- If No, skip questions 23 and 27-39.**

23. Has the post-construction stormwater management practice component of the SWPPP been developed in conformance with the current NYS Stormwater Management Design Manual? ☐ Yes ☐ No

24. The Stormwater Pollution Prevention Plan (SWPPP) was prepared by:

- ☐ Professional Engineer (P.E.)
- ☐ Soil and Water Conservation District (SWCD)
- ☐ Registered Landscape Architect (R.L.A)
- ☐ Certified Professional in Erosion and Sediment Control (CPESC)
- ☐ Owner/Operator
- ☐ Other

[illegible]

SWPPP Preparer

[illegible]

Contact Name (Last, Space, First)

[illegible]

Mailing Address

[illegible]

City

[illegible]

State Zip

						-				
--	--	--	--	--	--	---	--	--	--	--

Phone

--	--	--	--

Fax

--	--	--	--	--	--	--

Email

[illegible][illegible]

SWPPP Preparer Certification

I hereby certify that the Stormwater Pollution Prevention Plan (SWPPP) for this project has been prepared in accordance with the terms and conditions of the GP-0-20-001. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of this permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

First Name

[illegible]

MI

7

Last Name

[illegible]

Signature

Date _____

--	--

/

--	--

/

--	--	--	--

25. Has a construction sequence schedule for the planned management practices been prepared? ☐ Yes ☐ No

☐ Yes ☐ No

26. Select **all** of the erosion and sediment control practices that will be employed on the project site:

Temporary Structural

- ☐ Check Dams
- ☐ Construction Road Stabilization
- ☐ Dust Control
- ☐ Earth Dike
- ☐ Level Spreader
- ☐ Perimeter Dike/Swale
- ☐ Pipe Slope Drain
- ☐ Portable Sediment Tank
- ☐ Rock Dam
- ☐ Sediment Basin
- ☐ Sediment Traps
- ☐ Silt Fence
- ☐ Stabilized Construction Entrance
- ☐ Storm Drain Inlet Protection
- ☐ Straw/Hay Bale Dike
- ☐ Temporary Access Waterway Crossing
- ☐ Temporary Stormdrain Diversion
- ☐ Temporary Swale
- ☐ Turbidity Curtain
- ☐ Water bars

Biotechnical

- **Brush Matting**
- **Wattling**

Other

[illegible]

Vegetative Measures

- ☐ **Brush Matting**
- ☐ **Dune Stabilization**
- ☐ **Grassed Waterway**
- ☐ **Mulching**
- ☐ **Protecting Vegetation**
- ☐ **Recreation Area Improvement**
- ☐ **Seeding**
- ☐ **Sodding**
- ☐ **Straw/Hay Bale Dike**
- ☐ **Streambank Protection**
- ☐ **Temporary Swale**
- ☐ **Topsoiling**
- ☐ **Vegetating Waterways**

Permanent Structural

- ☐ Debris Basin
- ☐ Diversion
- ☐ Grade Stabilization Structure
- ☐ Land Grading
- ☐ Lined Waterway (Rock)
- ☐ Paved Channel (Concrete)
- ☐ Paved Flume
- ☐ Retaining Wall
- ☐ Riprap Slope Protection
- ☐ Rock Outlet Protection
- ☐ Streambank Protection

Post-construction Stormwater Management Practice (SMP) Requirements

Important: Completion of Questions 27-39 is not required if response to Question 22 is No.

27. Identify all site planning practices that were used to prepare the final site plan/layout for the project.

- ☐ Preservation of Undisturbed Areas
- ☐ Preservation of Buffers
- ☐ Reduction of Clearing and Grading
- ☐ Locating Development in Less Sensitive Areas
- ☐ Roadway Reduction
- ☐ Sidewalk Reduction
- ☐ Driveway Reduction
- ☐ Cul-de-sac Reduction
- ☐ Building Footprint Reduction
- ☐ Parking Reduction

27a. Indicate which of the following soil restoration criteria was used to address the requirements in Section 5.1.6("Soil Restoration") of the Design Manual (2010 version).

- ☐ All disturbed areas will be restored in accordance with the Soil Restoration requirements in Table 5.3 of the Design Manual (see page 5-22).
- ☐ Compacted areas were considered as impervious cover when calculating the **WQv Required**, and the compacted areas were assigned a post-construction Hydrologic Soil Group (HSG) designation that is one level less permeable than existing conditions for the hydrology analysis.

28. Provide the total Water Quality Volume (WQv) required for this project (based on final site plan/layout).

Total WQv Required

. acre-feet

29. Identify the RR techniques (Area Reduction), RR techniques(Volume Reduction) and Standard SMPs with RRV Capacity in Table 1 (See Page 9) that were used to reduce the Total WQv Required(#28).

Also, provide in Table 1 the total impervious area that contributes runoff to each technique/practice selected. For the Area Reduction Techniques, provide the total contributing area (includes pervious area) and, if applicable, the total impervious area that contributes runoff to the technique/practice.

Note: Redevelopment projects shall use Tables 1 and 2 to identify the SMPs used to treat and/or reduce the WQv required. If runoff reduction techniques will not be used to reduce the required WQv, skip to question 33a after identifying the SMPs.

**Table 1 - Runoff Reduction (RR) Techniques
and Standard Stormwater Management
Practices (SMPs)**

<u>RR Techniques (Area Reduction)</u>	<u>Total Contributing Area (acres)</u>	<u>Total Contributing Impervious Area(acres)</u>
○ Conservation of Natural Areas (RR-1) ...	<table border="1" style="display: inline-table; width: 60px; height: 20px;"></table> · <table border="1" style="display: inline-table; width: 60px; height: 20px;"></table>	and/or <table border="1" style="display: inline-table; width: 60px; height: 20px;"></table> · <table border="1" style="display: inline-table; width: 60px; height: 20px;"></table>
○ Sheetflow to Riparian Buffers/Filters Strips (RR-2)	<table border="1" style="display: inline-table; width: 60px; height: 20px;"></table> · <table border="1" style="display: inline-table; width: 60px; height: 20px;"></table>	and/or <table border="1" style="display: inline-table; width: 60px; height: 20px;"></table> · <table border="1" style="display: inline-table; width: 60px; height: 20px;"></table>
○ Tree Planting/Tree Pit (RR-3)	<table border="1" style="display: inline-table; width: 60px; height: 20px;"></table> · <table border="1" style="display: inline-table; width: 60px; height: 20px;"></table>	and/or <table border="1" style="display: inline-table; width: 60px; height: 20px;"></table> · <table border="1" style="display: inline-table; width: 60px; height: 20px;"></table>
○ Disconnection of Rooftop Runoff (RR-4) ..	<table border="1" style="display: inline-table; width: 60px; height: 20px;"></table> · <table border="1" style="display: inline-table; width: 60px; height: 20px;"></table>	and/or <table border="1" style="display: inline-table; width: 60px; height: 20px;"></table> · <table border="1" style="display: inline-table; width: 60px; height: 20px;"></table>
<u>RR Techniques (Volume Reduction)</u>		
○ Vegetated Swale (RR-5)		<table border="1" style="display: inline-table; width: 60px; height: 20px;"></table> · <table border="1" style="display: inline-table; width: 60px; height: 20px;"></table>
○ Rain Garden (RR-6)		<table border="1" style="display: inline-table; width: 60px; height: 20px;"></table> · <table border="1" style="display: inline-table; width: 60px; height: 20px;"></table>
○ Stormwater Planter (RR-7)		<table border="1" style="display: inline-table; width: 60px; height: 20px;"></table> · <table border="1" style="display: inline-table; width: 60px; height: 20px;"></table>
○ Rain Barrel/Cistern (RR-8)		<table border="1" style="display: inline-table; width: 60px; height: 20px;"></table> · <table border="1" style="display: inline-table; width: 60px; height: 20px;"></table>
○ Porous Pavement (RR-9)		<table border="1" style="display: inline-table; width: 60px; height: 20px;"></table> · <table border="1" style="display: inline-table; width: 60px; height: 20px;"></table>
○ Green Roof (RR-10)		<table border="1" style="display: inline-table; width: 60px; height: 20px;"></table> · <table border="1" style="display: inline-table; width: 60px; height: 20px;"></table>
<u>Standard SMPs with RRv Capacity</u>		
○ Infiltration Trench (I-1)		<table border="1" style="display: inline-table; width: 60px; height: 20px;"></table> · <table border="1" style="display: inline-table; width: 60px; height: 20px;"></table>
○ Infiltration Basin (I-2)		<table border="1" style="display: inline-table; width: 60px; height: 20px;"></table> · <table border="1" style="display: inline-table; width: 60px; height: 20px;"></table>
○ Dry Well (I-3)		<table border="1" style="display: inline-table; width: 60px; height: 20px;"></table> · <table border="1" style="display: inline-table; width: 60px; height: 20px;"></table>
○ Underground Infiltration System (I-4)		<table border="1" style="display: inline-table; width: 60px; height: 20px;"></table> · <table border="1" style="display: inline-table; width: 60px; height: 20px;"></table>
○ Bioretention (F-5)		<table border="1" style="display: inline-table; width: 60px; height: 20px;"></table> · <table border="1" style="display: inline-table; width: 60px; height: 20px;"></table>
○ Dry Swale (O-1)		<table border="1" style="display: inline-table; width: 60px; height: 20px;"></table> · <table border="1" style="display: inline-table; width: 60px; height: 20px;"></table>
<u>Standard SMPs</u>		
○ Micropool Extended Detention (P-1)		<table border="1" style="display: inline-table; width: 60px; height: 20px;"></table> · <table border="1" style="display: inline-table; width: 60px; height: 20px;"></table>
○ Wet Pond (P-2)		<table border="1" style="display: inline-table; width: 60px; height: 20px;"></table> · <table border="1" style="display: inline-table; width: 60px; height: 20px;"></table>
○ Wet Extended Detention (P-3)		<table border="1" style="display: inline-table; width: 60px; height: 20px;"></table> · <table border="1" style="display: inline-table; width: 60px; height: 20px;"></table>
○ Multiple Pond System (P-4)		<table border="1" style="display: inline-table; width: 60px; height: 20px;"></table> · <table border="1" style="display: inline-table; width: 60px; height: 20px;"></table>
○ Pocket Pond (P-5)		<table border="1" style="display: inline-table; width: 60px; height: 20px;"></table> · <table border="1" style="display: inline-table; width: 60px; height: 20px;"></table>
○ Surface Sand Filter (F-1)		<table border="1" style="display: inline-table; width: 60px; height: 20px;"></table> · <table border="1" style="display: inline-table; width: 60px; height: 20px;"></table>
○ Underground Sand Filter (F-2)		<table border="1" style="display: inline-table; width: 60px; height: 20px;"></table> · <table border="1" style="display: inline-table; width: 60px; height: 20px;"></table>
○ Perimeter Sand Filter (F-3)		<table border="1" style="display: inline-table; width: 60px; height: 20px;"></table> · <table border="1" style="display: inline-table; width: 60px; height: 20px;"></table>
○ Organic Filter (F-4)		<table border="1" style="display: inline-table; width: 60px; height: 20px;"></table> · <table border="1" style="display: inline-table; width: 60px; height: 20px;"></table>
○ Shallow Wetland (W-1)		<table border="1" style="display: inline-table; width: 60px; height: 20px;"></table> · <table border="1" style="display: inline-table; width: 60px; height: 20px;"></table>
○ Extended Detention Wetland (W-2)		<table border="1" style="display: inline-table; width: 60px; height: 20px;"></table> · <table border="1" style="display: inline-table; width: 60px; height: 20px;"></table>
○ Pond/Wetland System (W-3)		<table border="1" style="display: inline-table; width: 60px; height: 20px;"></table> · <table border="1" style="display: inline-table; width: 60px; height: 20px;"></table>
○ Pocket Wetland (W-4)		<table border="1" style="display: inline-table; width: 60px; height: 20px;"></table> · <table border="1" style="display: inline-table; width: 60px; height: 20px;"></table>
○ Wet Swale (O-2)		<table border="1" style="display: inline-table; width: 60px; height: 20px;"></table> · <table border="1" style="display: inline-table; width: 60px; height: 20px;"></table>

**Table 2 - Alternative SMPs
(DO NOT INCLUDE PRACTICES BEING
USED FOR PRETREATMENT ONLY)**

Alternative SMP												Total Contributing Impervious Area(acres)						
☐ Hydrodynamic															•			
☐ Wet Vault															•			
☐ Media Filter															•			
☐ Other															•			

Provide the name and manufacturer of the Alternative SMPs (i.e. proprietary practice(s)) being used for WQV treatment.

[illegible][illegible]

Note: Redevelopment projects which do not use RR techniques, shall use questions 28, 29, 33 and 33a to provide SMPs used, total WQv required and total WQv provided for the project.

30. Indicate the Total RRv provided by the RR techniques (Area/Volume Reduction) and Standard SMPs with RRv capacity identified in question 29.

Total RRv provided

. acre-feet

31. Is the Total RRV provided (#30) greater than or equal to the total WQV required (#28).

☐ Yes ☐ No

If Yes, go to question 36.

If No, go to question 32.

32. Provide the Minimum RRv required based on HSG.
[Minimum RRv Required = (P)(0.95)(Ai)/12, Ai=(S)(Aic)]

Minimum RRV Required

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 .

--	--	--

acre-feet

- 32a. Is the Total RRV provided (#30) greater than or equal to the Minimum RRV Required (#32)?

☐ Yes ☐ No

If Yes, go to question 33.

Note: Use the space provided in question #39 to summarize the specific site limitations and justification for not reducing 100% of WQV required (#28). A detailed evaluation of the specific site limitations and justification for not reducing 100% of the WQV required (#28) must also be included in the SWPPP.

If No, sizing criteria has not been met, so NOI can not be processed. SWPPP preparer must modify design to meet sizing criteria.

33. Identify the Standard SMPs in Table 1 and, if applicable, the Alternative SMPs in Table 2 that were used to treat the remaining total WQv(=Total WQv Required in 28 - Total RRV Provided in 30).

Also, provide in Table 1 and 2 the total impervious area that contributes runoff to each practice selected.

Note: Use Tables 1 and 2 to identify the SMPs used on Redevelopment projects.

- 33a. Indicate the Total WQv provided (i.e. WQv treated) by the SMPs identified in question #33 and Standard SMPs with RRV Capacity identified in question 29.

WQv Provided

. acre-feet

Note: For the standard SMPs with RRV capacity, the WQv provided by each practice = the WQv calculated using the contributing drainage area to the practice - RRV provided by the practice. (See Table 3.5 in Design Manual)

34. Provide the sum of the Total RRV provided (#30) and the WQv provided (#33a).

.

35. Is the sum of the RRV provided (#30) and the WQv provided (#33a) greater than or equal to the total WQv required (#28)? ☐ Yes ☐ No

If Yes, go to question 36.

If No, sizing criteria has not been met, so NOI can not be processed. SWPPP preparer must modify design to meet sizing criteria.

36. Provide the total Channel Protection Storage Volume (CPv) required and provided or select waiver (36a), if applicable.

CPv Required

. acre-feet

CPv Provided

. acre-feet

- 36a. The need to provide channel protection has been waived because:

- ☐ Site discharges directly to tidal waters or a fifth order or larger stream.
- ☐ Reduction of the total CPv is achieved on site through runoff reduction techniques or infiltration systems.

37. Provide the Overbank Flood (Qp) and Extreme Flood (Qf) control criteria or select waiver (37a), if applicable.

Total Overbank Flood Control Criteria (Qp)

Pre-Development

. CFS

Post-development

. CFS

Total Extreme Flood Control Criteria (Qf)

Pre-Development

. CFS

Post-development

. CFS

37a. The need to meet the Qp and Qf criteria has been waived because:

- ☐ Site discharges directly to tidal waters or a fifth order or larger stream.
- ☐ Downstream analysis reveals that the Qp and Qf controls are not required

- Site discharges directly to tidal waters or a fifth order or larger stream.
- Downstream analysis reveals that the Qp and Qf controls are not required

☐ Yes ☐ No

If Yes, Identify the entity responsible for the long term
Operation and Maintenance

[illegible]

39. Use this space to summarize the specific site limitations and justification for not reducing 100% of WQv required(#28). (See question 32a)
This space can also be used for other pertinent project information.

40. Identify other DEC permits, existing and new, that are required for this project/facility.

- Air Pollution Control

- Coastal Erosion

☐ Hazardous Waste

○ Long Island Wells

○ Mined Land Reclamation

○ Solid Waste

○ Navigable Waters Protection / Article 15

○ Water Quality Certificate

- Dam Safety

○ Water Supply

○ Freshwater Wetlands/Article 24

- Tidal Wetlands

○ Wild, Scenic and Recreational Rivers

○ Stream Bed or Bank Protection / Article 15

○ Endangered or Threatened Species(Incidental Take Permit)

- Individual SPDES

☐ SPDES Multi-Sector GP

N	Y	R					
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☐ Other

☐ None

41. Does this project require a US Army Corps of Engineers Wetland Permit? ☐ ☐ ☐ ☐ ☐ ☐

☐ Yes ☐ No

Wetland Permit:					
If Yes, Indicate Size of Impact.					.
1. Wetland Delineation					
2. Wetland Use					
3. Wetland Restoration					
4. Wetland Mitigation					
5. Wetland Management					
6. Wetland Monitoring					
7. Wetland Assessment					
8. Wetland Inventory					
9. Wetland Mapping					
10. Wetland Research					
11. Wetland Education					
12. Wetland Policy					
13. Wetland Legislation					
14. Wetland Enforcement					
15. Wetland Compliance					
16. Wetland Reporting					
17. Wetland Recordkeeping					
18. Wetland Data Management					
19. Wetland Data Analysis					
20. Wetland Data Visualization					
21. Wetland Data Archiving					
22. Wetland Data Sharing					
23. Wetland Data Security					
24. Wetland Data Backup					
25. Wetland Data Recovery					
26. Wetland Data Migration					
27. Wetland Data Integration					
28. Wetland Data Interoperability					
29. Wetland Data Accessibility					
30. Wetland Data Usability					
31. Wetland Data Reliability					
32. Wetland Data Validity					
33. Wetland Data Accuracy					
34. Wetland Data Precision					
35. Wetland Data Completeness					
36. Wetland Data Timeliness					
37. Wetland Data Consistency					
38. Wetland Data Integrity					
39. Wetland Data Availability					
40. Wetland Data Portability					
41. Wetland Data Scalability					
42. Wetland Data Flexibility					
43. Wetland Data Adaptability					
44. Wetland Data Resilience					
45. Wetland Data Sustainability					
46. Wetland Data Longevity					
47. Wetland Data Endurance					
48. Wetland Data Persistence					
49. Wetland Data Stability					
50. Wetland Data Security					
51. Wetland Data Privacy					
52. Wetland Data Confidentiality					
53. Wetland Data Transparency					
54. Wetland Data Accountability					
55. Wetland Data Responsibility					
56. Wetland Data Ethics					
57. Wetland Data Governance					
58. Wetland Data Policy					
59. Wetland Data Legislation					
60. Wetland Data Enforcement					
61. Wetland Data Compliance					
62. Wetland Data Reporting					
63. Wetland Data Recordkeeping					
64. Wetland Data Data Management					
65. Wetland Data Data Analysis					
66. Wetland Data Data Visualization					
67. Wetland Data Data Archiving					
68. Wetland Data Data Sharing					
69. Wetland Data Data Security					
70. Wetland Data Data Backup					
71. Wetland Data Data Recovery					
72. Wetland Data Data Migration					
73. Wetland Data Data Integration					
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77. Wetland Data Data Reliability					
78. Wetland Data Data Validity					
79. Wetland Data Data Accuracy					
80. Wetland Data Data Precision					
81. Wetland Data Data Completeness					
82. Wetland Data Data Timeliness					
83. Wetland Data Data Consistency					
84. Wetland Data Data Integrity					
85. Wetland Data Data Availability					
86. Wetland Data Data Portability					
87. Wetland Data Data Scalability					
88. Wetland Data Data Flexibility					

42. Is this project subject to the requirements of a regulated, traditional land use control MS4?
(If No, skip question 43)

☐ Yes ☐ No

43. Has the "MS4 SWPPP Acceptance" form been signed by the principal executive officer or ranking elected official and submitted along with this NOI?

☐ Yes ☐ No

44. If this NOI is being submitted for the purpose of continuing or transferring coverage under a general permit for stormwater runoff from construction activities, please indicate the former SPDES number assigned.

N	Y	D							
---	---	---	--	--	--	--	--	--	--

N	Y	R						
---	---	---	--	--	--	--	--	--

Owner/Operator Certification	
I have read or been advised of the permit conditions and believe that I understand them. I also understand that, under the terms of the permit, there may be reporting requirements. I hereby certify that this document and the corresponding documents were prepared under my direction or supervision. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. I further understand that coverage under the general permit will be identified in the acknowledgment that I will receive as a result of submitting this NOI and can be as long as sixty (60) business days as provided for in the general permit. I also understand that, by submitting this NOI, I am acknowledging that the SWPPP has been developed and will be implemented as the first element of construction, and agreeing to comply with all the terms and conditions of the general permit for which this NOI is being submitted.	
Print First Name 	MI
Print Last Name 	
Owner/Operator Signature 	
Date 	

/

/



NYS Department of Environmental Conservation
Division of Water
625 Broadway, 4th Floor
Albany, New York 12233-3505

MS4 Stormwater Pollution Prevention Plan (SWPPP) Acceptance Form

for
Construction Activities Seeking Authorization Under SPDES General Permit
 *(NOTE: Attach Completed Form to Notice Of Intent and Submit to Address Above)

I. Project Owner/Operator Information

1. Owner/Operator Name:

2. Contact Person:

3. Street Address:

4. City/State/Zip:

II. Project Site Information

5. Project/Site Name:

6. Street Address:

7. City/State/Zip:

III. Stormwater Pollution Prevention Plan (SWPPP) Review and Acceptance Information

8. SWPPP Reviewed by:

9. Title/Position:

10. Date Final SWPPP Reviewed and Accepted:

IV. Regulated MS4 Information

11. Name of MS4:

12. MS4 SPDES Permit Identification Number: NYR20A

13. Contact Person:

14. Street Address:

15. City/State/Zip:

16. Telephone Number:

MS4 SWPPP Acceptance Form - continued

V. Certification Statement - MS4 Official (principal executive officer or ranking elected official) or Duly Authorized Representative

I hereby certify that the final Stormwater Pollution Prevention Plan (SWPPP) for the construction project identified in question 5 has been reviewed and meets the substantive requirements in the SPDES General Permit For Stormwater Discharges from Municipal Separate Storm Sewer Systems (MS4s). Note: The MS4, through the acceptance of the SWPPP, assumes no responsibility for the accuracy and adequacy of the design included in the SWPPP. In addition, review and acceptance of the SWPPP by the MS4 does not relieve the owner/operator or their SWPPP preparer of responsibility or liability for errors or omissions in the plan.

Printed Name:

Title/Position:

Signature:

Date:

VI. Additional Information

**New York State Department of Environmental Conservation
Division of Water
625 Broadway, 4th Floor
Albany, New York 12233-3505**

(NOTE: Submit completed form to address above)

NOTICE OF TERMINATION for Storm Water Discharges Authorized
under the SPDES General Permit for Construction Activity

Please indicate your permit identification number: NYR ____ _

I. Owner or Operator Information

1. Owner/Operator Name:

2. Street Address:

3. City/State/Zip:

4. Contact Person:

4a. Telephone:

4b. Contact Person E-Mail:

II. Project Site Information

5. Project/Site Name:

6. Street Address:

7. City/Zip:

8. County:

III. Reason for Termination

9a. K All disturbed areas have achieved final stabilization in accordance with the general permit and SWPPP. ***Date final stabilization completed** (month/year): _____

9b. K Permit coverage has been transferred to new owner/operator. Indicate new owner/operator's permit identification number: NYR ____ _

(Note: Permit coverage can not be terminated by owner identified in I.1. above until new owner/operator obtains coverage under the general permit)

9c. K Other (Explain on Page 2)

IV. Final Site Information:

10a. Did this construction activity require the development of a SWPPP that includes post-construction stormwater management practices? K yes K no (If no, go to question 10f.)

10b. Have all post-construction stormwater management practices included in the final SWPPP been constructed? K yes K no (If no, explain on Page 2)

10c. Identify the entity responsible for long-term operation and maintenance of practice(s)?

**NOTICE OF TERMINATION for Storm Water Discharges Authorized under the
SPDES General Permit for Construction Activity - continued**

10d. Has the entity responsible for long-term operation and maintenance been given a copy of the operation and maintenance plan required by the general permit? K yes K no

10e. Indicate the method used to ensure long-term operation and maintenance of the post-construction stormwater management practice(s):

 K Post-construction stormwater management practice(s) and any right-of-way(s) needed to maintain practice(s) have been deeded to the municipality.

 K Executed maintenance agreement is in place with the municipality that will maintain the post-construction stormwater management practice(s).

 K For post-construction stormwater management practices that are privately owned, a mechanism is in place that requires operation and maintenance of the practice(s) in accordance with the operation and maintenance plan, such as a deed covenant in the owner or operator's deed of record.

 K For post-construction stormwater management practices that are owned by a public or private institution (e.g. school, university or hospital), government agency or authority, or public utility; policy and procedures are in place that ensures operation and maintenance of the practice(s) in accordance with the operation and maintenance plan.

10f. Provide the total area of impervious surface (i.e. roof, pavement, concrete, gravel, etc.) constructed within the disturbance area? _____
(acres)

11. Is this project subject to the requirements of a regulated, traditional land use control MS4? K yes
☐ no
 (If Yes, complete section VI - "MS4 Acceptance" statement)

V. Additional Information/Explanation:

(Use this section to answer questions 9c. and 10b., if applicable)

VI. MS4 Acceptance - MS4 Official (principal executive officer or ranking elected official) or Duly Authorized Representative (Note: Not required when 9b. is checked -transfer of coverage)

I have determined that it is acceptable for the owner or operator of the construction project identified in question 5 to submit the Notice of Termination at this time.

Printed Name:

Title/Position:

Signature:

Date:

NOTICE OF TERMINATION for Storm Water Discharges Authorized under the
SPDES General Permit for Construction Activity - continued

VII. Qualified Inspector Certification - Final Stabilization:

I hereby certify that all disturbed areas have achieved final stabilization as defined in the current version of the general permit, and that all temporary, structural erosion and sediment control measures have been removed. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

Printed Name:

Title/Position:

Signature:

Date:

VIII. Qualified Inspector Certification - Post-construction Stormwater Management Practice(s):

I hereby certify that all post-construction stormwater management practices have been constructed in conformance with the SWPPP. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

Printed Name:

Title/Position:

Signature:

Date:

IX. Owner or Operator Certification

I hereby certify that this document was prepared by me or under my direction or supervision. My determination, based upon my inquiry of the person(s) who managed the construction activity, or those persons directly responsible for gathering the information, is that the information provided in this document is true, accurate and complete. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

Printed Name:

Title/Position:

Signature:

Date:

(NYS DEC Notice of Termination - January 2015)



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STORMWATER MANAGEMENT SYSTEM MAINTENANCE AGREEMENT

THIS AGREEMENT is dated as of the _____ day of _____, 2022 (the “Agreement”) and is by and between the **Town of Manlius** (the “Municipality”), having offices at 301 Brooklea Drive, Fayetteville, NY, and **Harrington Homes, Inc.** (the “Owner”), with offices at 3848 Henneberry Road, Jamesville, NY.

WHEREAS, Owner is the record owner of the property located on Henneberry Road, Manlius, New York (the “Property”) (tax parcel ID # 109.-02-07.1); and

WHEREAS, Owner intends to construct a stormwater management system (the “SMS”) on the Property, consisting of those items depicted on Schedule A annexed hereto and made a part hereof; and

WHEREAS, the agreement is to provide for the long term maintenance and continuation of stormwater management system approved by the Municipality for the below named project; and

WHEREAS, the Municipality and the Owner desire that the SMS be built in accordance with the approved project plans and thereafter be maintained, cleaned, repaired, replaced and continued in perpetuity in order to ensure optimum performance of the SMS components within the easements as identified in Schedule A; and

NOW, THEREFORE, in consideration of the mutual covenants and agreements of the parties hereto, it is hereby agreed as follows:

1. This agreement binds the Owner, its successors and assigns, to the maintenance provisions depicted in the approved project plans which are attached as Schedule A of this agreement.
2. The Owner shall maintain, clean, repair, replace and continue the SMS depicted in Schedule A as necessary to ensure optimum performance of the measures to design specifications. The SMS shall include, but shall not be limited to, the following: drainage ditches, swales, dry wells, infiltrators, drop inlets, pipes, culverts, soil absorption devices, bioretention areas, and detention/retention ponds.
3. The Owner shall be responsible for all expenses related to the maintenance of the SMS and shall establish a means for the collection and distribution of expenses among parties for any commonly owned facilities.
4. The Owner shall provide for the periodic inspection of the SMS, not less than once in every five-year period, to determine the condition and integrity of the measures. Such inspection shall be performed by a Professional Engineer licensed by the State of New York. The inspecting engineer shall prepare and submit to the Municipality within 30 days of the inspection, a written report of the findings including recommendations for those actions necessary for the continuation of the SMS.
5. The Owner shall not authorize, undertake or permit alteration, abandonment, modification or discontinuation of the SMS except in accordance with written approval of the Municipality.



6. The Owner shall undertake necessary repairs and replacement of the SMS at the direction of the Municipality or in accordance with the recommendations of the inspecting engineer.
7. The Owner shall provide to the Municipality within 30 days of the date of this agreement, a security for the maintenance and continuation of the SMS in the form of (a Bond, letter of credit or escrow account).
8. This agreement shall be recorded in the Office of the County Clerk, County of Onondaga together with the deed for the common property and shall be included in the offering plan and/or prospectus.
9. If ever the Municipality determines that the Owner has failed to construct or maintain the SMS in accordance with the project plan or has failed to undertake corrective action specified by the Municipality or by the inspecting engineer, the Municipality is authorized to undertake such steps as reasonably necessary for the preservation, continuation or maintenance of the SMS and to affix the expenses thereof as a lien against the property.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement as of the day and date first set forth above.

TOWN OF MANLIUS

Name: _____

Title: _____

Signature: _____

HARRINGTON HOMES, INC.

Name: _____

Title: _____

Signature: _____



Schedule A

Stormwater Management System Plans

Site Plan Sheets C-2, C-3, and SMP (Overall Grading Plan, Overall Utility Plan, and Stormwater Management Plan)



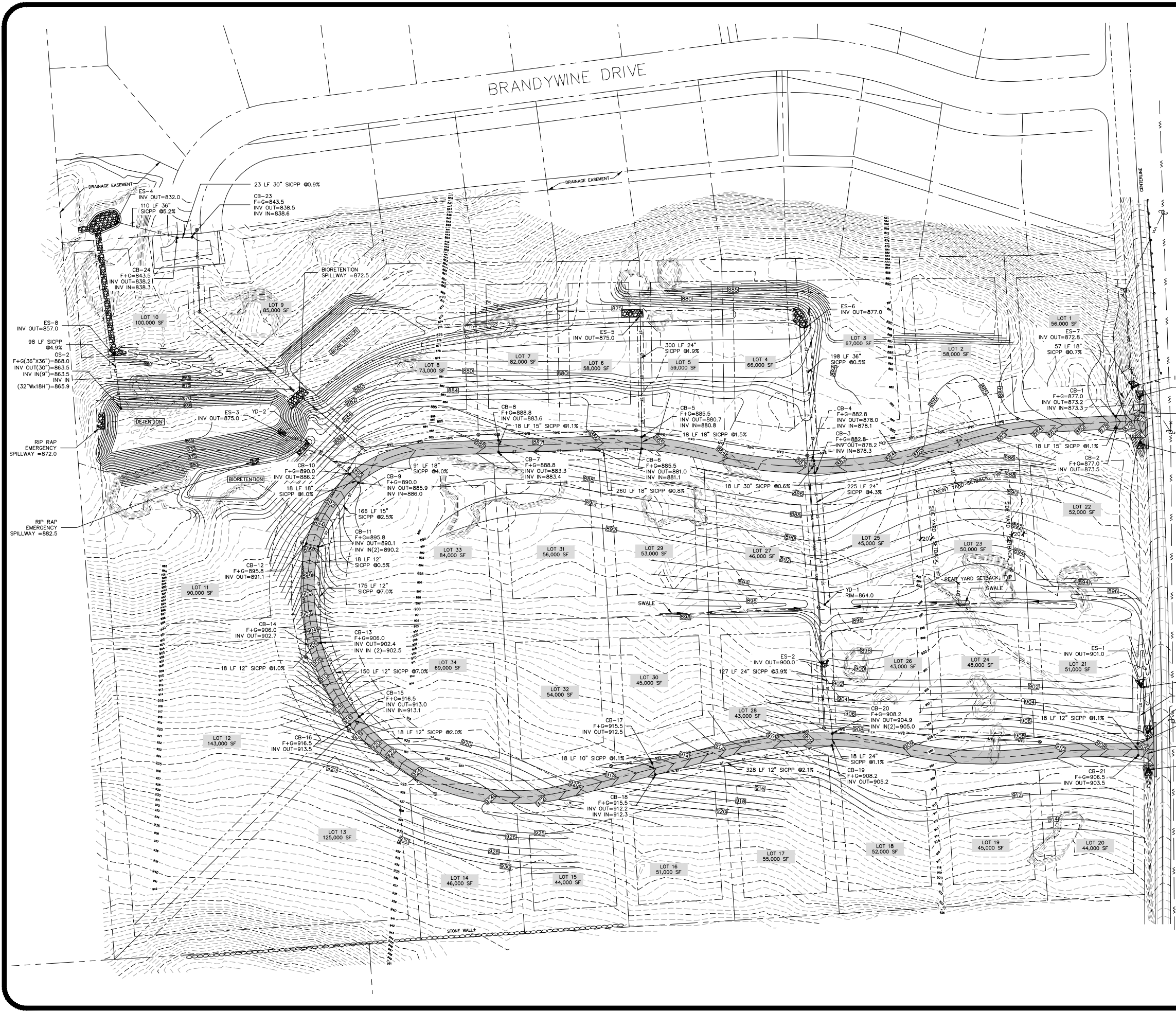
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APPENDIX F: EROSION & SEDIMENT CONTROL DETAILS AND STORMWATER MANAGEMENT PLAN



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SITE CRITERIA CHECKLIST		
PROJECT SITE INFORMATION		
ADDRESS	HENNEBERRY ROAD (COUNTY ROUTE 182)	
TAX MAP ID NO.	109-02-07.1	
BOUNDARY SURVEY	PROPERTY LINE INFORMATION TAKEN FROM SURVEY BY IANUZI AND ROMANS	
TOTAL SITE AREA	54.746 ACRES	
LAND USE	SINGLE FAMILY RESIDENTIAL - 34 LOTS	
ZONING INFORMATION		
ZONING DISTRICT	R-1, RESIDENTIAL DISTRICT	
	REQUIRED	PROVIDED
MIN. LOT FRONTAGE	150'	150' MIN.
MIN. LOT AREA	40,000 SF	40,000 SF MIN.
MINIMUM FRONT YARD	40'	40' MIN.
MINIMUM REAR YARD	40'	40' MIN.
MINIMUM SIDE YARD	20'	20' MIN.

PROJECT TITLE:
BRANDYWINE ESTATES PHASE 2
HENNEBERRY ROAD
 TOWN OF MANLIUS
 ONONDAGA COUNTY, NY

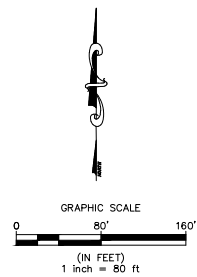
PREPARED FOR:
 HARRINGTON HOMES
 3848 HENNEBERRY ROAD
 JAMESVILLE, NY 13078

OVERALL GRADING PLAN

SHEET TITLE:

NO.	REVISION/ISSUE	DATE
3	REVISED AS PER TOWN ENGINEER'S COMMENTS	2/16/2022
2	GENERAL REVISIONS	2/29/2022
1	GENERAL REVISIONS	12/01/2021

PREPARED BY:
NAPIERALA CONSULTING
 PROFESSIONAL ENGINEERING, P.C.
 SITE DESIGN • ENGINEERING
 MANLIUS, NEW YORK 13104
 email: MNAP@NAPCON.COM
 PH: (315) 682-5580 FAX: (315) 682-5544



PRELIMINARY
 NOT FOR CONSTRUCTION

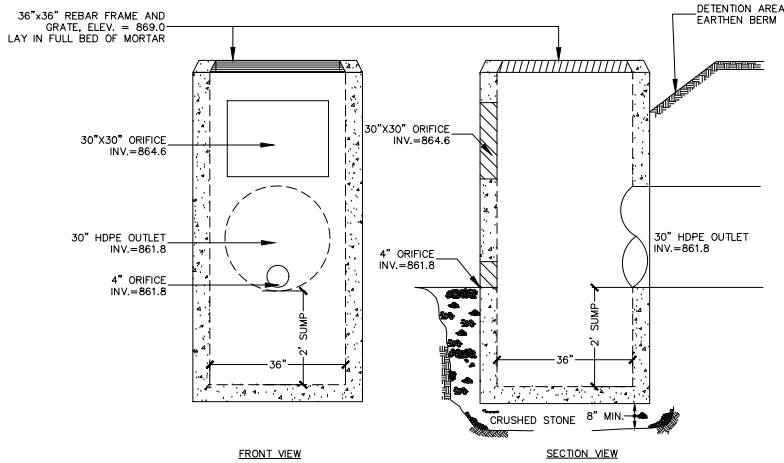
PROJECT NO. **20-1906**

DATE **17 SEP 2020**

SCALE **1" = 80'**

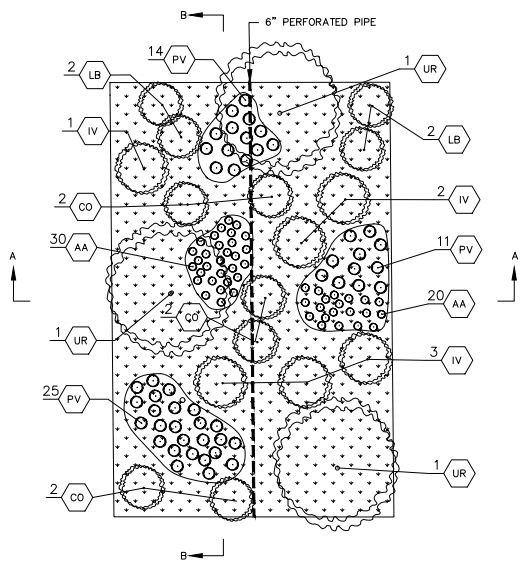
C-2

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DETENTION BASIN #1 PRECAST CONCRETE OUTLET STRUCTURE

1
C-7.1
SCALE: NTS



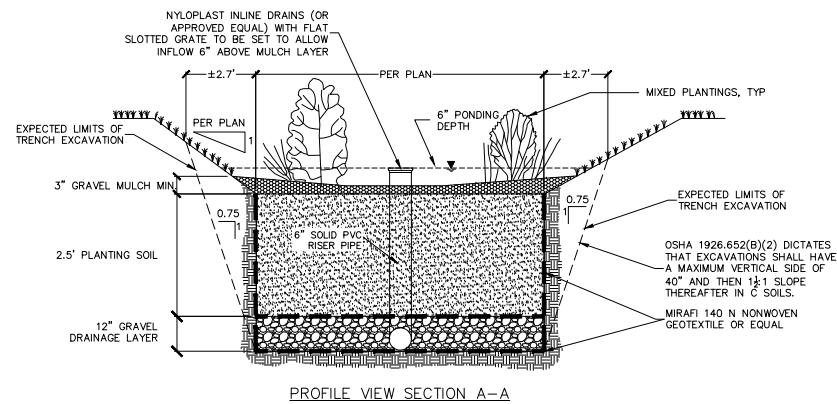
BIORETENTION AREA #1 (±13,500 SF) – LANDSCAPE TABLE					
KEY	QUANTITY*	LATIN NAME	COMMON NAME	CALIPER	HEIGHT
TREES					
UR	16	ULMUS RUBRA	SLIPPERY ELM	6'-8'	B&B
SHRUBS					
LB	45	LINDERA BENZOIN	COMMON SPICE	18"-24"	B&B
IV	65	ILEX VERTICILLATA	WINTER BERRY	2'-3'	B&B
CO	65	CEPHALANTHUS OCCIDENTALIS	BUTTONBUSH	18"-24"	B&B
HERBACEOUS PLANTS					
PV	600	PANICUM VIRGATUM	SWITCH GRASS		
AA	600	AGROSTIS ALBA	REDTOP		

BIORETENTION AREA #2 (±6,250 SF) – LANDSCAPE TABLE					
KEY	QUANTITY*	LATIN NAME	COMMON NAME	CALIPER	HEIGHT
TREES					
UR	8	ULMUS RUBRA	SLIPPERY ELM	6'-8'	B&B
SHRUBS					
LB	25	LINDERA BENZOIN	COMMON SPICE	18"-24"	B&B
IV	35	ILEX VERTICILLATA	WINTER BERRY	2'-3'	B&B
CO	30	CEPHALANTHUS OCCIDENTALIS	BUTTONBUSH	18"-24"	B&B
HERBACEOUS PLANTS					
PV	300	PANICUM VIRGATUM	SWITCH GRASS		
AA	300	AGROSTIS ALBA	REDTOP		

*PLANTING QUANTITIES SHOWN IN THE GRAPHIC ABOVE ARE FOR A TYPICAL 1,000 SF BIORETENTION AREA. SPECIFIC QUANTITIES FOR THE BIORETENTION AREA ARE PROVIDED IN THE CORRESPONDING LANDSCAPING TABLE.

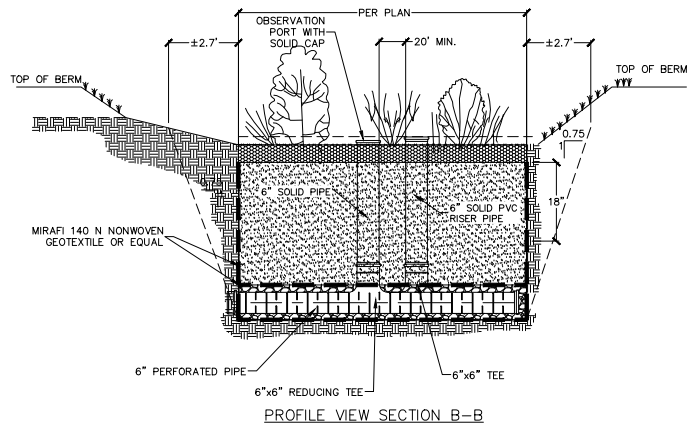
2 BIORETENTION FILTER SPECIES

C-7.1
SCALE: NTS

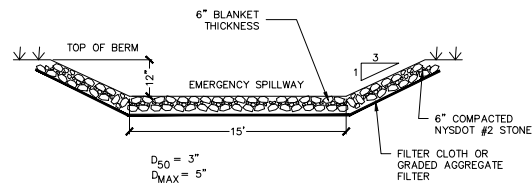


5 BIORETENTION FILTER CROSS SECTIONS

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SCALE: NTS

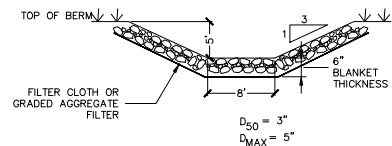


- BIORETENTION NOTES:**
- PLANTING SOIL MEDIA SHALL BE:
 - 85% TO 88% COARSE TO MEDIUM SAND
 - 12%-15% LEAF COMPOST OR TOPSOIL
 - PEA GRAVEL MULCH CONFORMING TO ASTM D 448 No. 6.
 - UNDERDRAIN GRAVEL TO BE AASHTO M-43 No. 67, 0.25" TO 0.75".
 - GEOTEXTILE FILTER FABRIC (SEPARATION LAYER):
 - ASTM D-751 (PUNCTURE STRENGTH – 125 LB)
 - ASTM D-1117 (MULLEN BURST STRENGTH – 400 PSI)
 - ASTM D-1682 (TENSILE STRENGTH – 300 LB)
 - SIZE – 0.08" THICK; EQUIVALENT OPENING SIZE OF #80 SIEVE
 - COMPACT WITH WATER-FILLED HAND ROLLER. COMPACTION TO BE FIRM BUT EASY (UTILIZE PENCIL TEST).
 - ENGINEER TO TEST IN PLACE COMPACTION AND INFILTRATION OF PLANTING SOIL.
 - ENGINEER TO PERFORM INSPECTION OF BIORETENTION PLANTING SOIL IMMEDIATELY FOLLOWING PLACEMENT AND PERFORM AN IN PLACE PERCOLATION TEST TO CONFIRM THAT THE IN PLACE MATERIAL PERCOLATES AT A RATE FASTER THAN 10 MIN/INCH.



3 RIP RAP EMERGENCY SPILLWAY

C-7.1
SCALE: NTS



4 RIP RAP BIORETENTION SPILLWAY

C-7.1
SCALE: NTS

PROJECT TITLE:
BRANDYWINE ESTATES PHASE 2
HENNEBERRY ROAD
TOWN OF MANLIUS
ONONDAGA COUNTY, NY

PREPARED FOR:
HARRINGTON HOMES
3848 HENNEBERRY ROAD
JAMESVILLE, NY 13078

SITE DETAILS

SHEET TITLE:

NO.	REVISION/ISSUE	DATE
3	REVISED AS PER TOWN ENGINEER'S COMMENTS	2/16/2022
2	GENERAL REVISIONS	2/09/2022
1	GENERAL REVISIONS	12/01/2021

PREPARED BY:
NAPIERALA CONSULTING
PROFESSIONAL ENGINEER, P.E.
SITING • DESIGN • ENGINEERING
MANLIUS, NEW YORK 13104
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STORAGE AND RETRIEVAL
SYSTEM, WITHOUT PERMISSION
IN WRITING FROM NAPIERALA
CONSULTING, P.C.

PROJECT NO.
20-1906

DATE
17 SEP 2020

SCALE
AS SHOWN

C-7.1

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EROSION CONTROL NOTES

EROSION AND SEDIMENT CONTROLS

1. STABILIZATION PRACTICES (TEMPORARY)
 - a) TEMPORARY SEEDING AND PLANTING OF ALL UNPAVED AREAS WHEN CONSTRUCTION ACTIVITY HAS CEASED, OR WILL CEASE, IN AN AREA FOR 14 DAYS. SEEDING MIXTURES AND APPLICATION RATES ARE LISTED ON SHEET C-2.
 - b) MULCHING EXPOSED AREAS.
 - c) FREQUENT WATERING TO MINIMIZE WIND EROSION DURING CONSTRUCTION.
2. STABILIZATION PRACTICES (PERMANENT)
 - a) LAND CLEARING ACTIVITIES SHALL BE DONE ONLY IN AREAS WHERE EARTHWORK WILL BE PERFORMED AND SHALL PROGRESS AS EARTHWORK IS NEEDED.
 - b) PERMANENT SEEDING AND PLANTING OF ALL UNPAVED AREAS.
3. STRUCTURAL MEASURES TEMPORARY
 - a) STABILIZED CONSTRUCTION ENTRANCE: AT THE ENTRANCE TO THE ALL DISTURBED AREAS FROM AN EXISTING ROADWAY A STABILIZED CONSTRUCTION ENTRANCE SHALL BE PROVIDED. THE PURPOSE OF THE STABILIZED CONSTRUCTION ENTRANCE IS TO REDUCE OR ELIMINATE THE TRACKING OF SEDIMENT ONTO THE PUBLIC RIGHT-OF-WAY.
 - b) SILT FENCE: SILT FENCE SHALL BE INSTALLED AS SHOWN ON THE EROSION CONTROL PLAN. THE FABRIC SHALL MEET THE SPECIFICATIONS NOTED ON THE DETAILS UNLESS OTHERWISE APPROVED BY THE APPROPRIATE EROSION AND SEDIMENT CONTROL PLAN APPROVAL AUTHORITY. SUCH APPROVAL SHALL NOT CONSTITUTE STATEWIDE ACCEPTANCE.
 - c) DUST CONTROL: DUST CONTROL IS THE CONTROL OF DUST RESULTING FROM LAND-DISTURBING ACTIVITIES. THE PURPOSE IS TO PREVENT SURFACE AND AIR MOVEMENT OF DUST FROM DISTURBED SOIL SURFACES THAT MAY CAUSE OFF-SITE DAMAGE, HEALTH HAZARDS, AND TRAFFIC SAFETY PROBLEMS.
 - d) SEDIMENT TRAP: SEDIMENT TRAP TO BE INSTALLED IN DETENTION BASIN AREA FOR USE DURING CONSTRUCTION. STONE OUTLET SEDIMENT TRAP TO BE INSTALLED AS PER DETAIL TO ELIMINATE SEDIMENT DISCHARGE TO DOWNSTREAM AREAS DURING CONSTRUCTION PHASE.
4. STRUCTURAL PRACTICES (PERMANENT)
 - a) ROCK OUTLET PROTECTION: ROCK OUTLET PROTECTION IS A SECTION OF ROCK PROTECTION PLACED AT THE OUTLET END OF CULVERTS, CONDUITS, OR CHANNELS. THE PURPOSE OF THE ROCK OUTLET PROTECTION IS TO REDUCE THE DEPTH, VELOCITY, AND ENERGY OF WATER, SUCH THAT THE FLOW WILL NOT ERODE THE RECEIVING DOWNSTREAM REACH.
 - b) REINFORCED SLOPE PROTECTION: A TEMPORARY PROTECTIVE COVERING PLACED ON A PREPARED PLANTING AREA THAT IS ANCHORED IN PLACE BY STAPLES OR OTHER MEANS TO AID IN CONTROLLING EROSION BY ABSORBING RAIN SPLASH ENERGY AND WITHSTAND OVERLAND FLOW AS WELL AS PROVIDE A MICROCLIMATE TO PROTECT AND PROMOTE SEED ESTABLISHMENT.

- c. LAND GRADING: PERMANENT RESHAPING OF THE EXISTING LAND SURFACE BY GRADING IN ACCORDANCE WITH AN ENGINEERING TOPOGRAPHIC PLAN AND SPECIFICATION TO PROVIDE EROSION CONTROL AND VEGETATIVE ESTABLISHMENT ON DISTURBED, RESHAPED AREAS.
5. SEQUENCE OF MAJOR ACTIVITIES
THE CONTRACTOR SHALL BE RESPONSIBLE FOR IMPLEMENTING THE ABOVE LISTED EROSION AND SEDIMENT CONTROL PRACTICES. THE CONTRACTOR MAY DESIGNATE THESE TASKS TO CERTAIN SUBCONTRACTORS AS IS SEEN FIT, BUT THE ULTIMATE RESPONSIBILITY FOR IMPLEMENTING THESE CONTROLS AND ENSURING THEIR PROPER FUNCTION REMAINS WITH THE CONTRACTOR. THE ORDER OF ACTIVITIES WILL BE AS FOLLOWS:
 - a) CONDUCT PRECONSTRUCTION MEETING
 - b) CONSTRUCT TEMPORARY CONSTRUCTION ENTRANCE/EXIT AT THE LOCATION SHOWN ON THE PLAN.
 - c) INSTALL PERIMETER SILT FENCE AND SECURITY CONSTRUCTION FENCE IN THE LOCATIONS SHOWN ON THE PLAN.
 - d) ESTABLISH STAGING AREA ON PROJECT SITE
 - e) CONSTRUCT TEMPORARY SEDIMENT TRAP
 - f) REMOVE TOPSOIL, STOCKPILE AND STABILIZE
 - g) SITE GRADING. IMPORT OF FILL MATERIAL TO RAISE SITE TO PROPOSED GRADE (OR SUB-GRADE, AS APPROPRIATE).
 - h) BUILDING FOUNDATION EXCAVATION (BUILDING CONSTRUCTION TO CONTINUE CONCURRENTLY WITH REMAINING SITE WORK).
 - i) DISTURBED AREAS OF THE SITE WHERE CONSTRUCTION ACTIVITY HAS CEASED FOR MORE THAN 14 DAYS SHALL BE TEMPORARILY SEEDED AND WATERED.
 - j) UNDERGROUND UTILITY INSTALLATIONS.
 - k) INSTALL FILTER FABRIC DROP INLET PROTECTION AT ALL STORM INLETS.
 - l) COMPACT GRAVEL ALONG ALL DRIVE AISLES AND PARKING AREAS
 - m) SITE CONCRETE CONSTRUCTION.
 - n) FINALIZE PAVEMENT SUBGRADE PREPARATION.
 - o) DEEP RIPPING OF NON-PAVED AREAS NOT MORE THAN 24 HOURS PRIOR TO PLACING ASPHALT PAVEMENT.
 - p) PAVE AREAS NOTED ON PLAN.
 - q) DEEP RIPPING OF NON-PAVED AREAS AS REQUIRED (NON-PAVED AREAS THAT HAVE BEEN COMPACTED DURING CONSTRUCTION VIA CONSTRUCTION TRAFFIC).
 - r) FINAL GRADING, SEEDING, AND PLANTING.
 - s) CONSTRUCT BIORETENTION BASINS AND OUTLET CONTROLS UPON UPSTREAM

- STABILIZATION OF SITE
- a) REMOVE SEDIMENT TRAP AND FINALIZE GRADING OF DETENTION BASIN
 - u) REMOVE SILT FENCE ONLY AFTER ALL PAVING IS COMPLETE AND EXPOSED SURFACES ARE STABILIZED.
- MAINTENANCE/INSPECTION PROCEDURES**
- THE FOLLOWING INSPECTION AND MAINTENANCE PRACTICES WILL BE USED TO MAINTAIN EROSION AND SEDIMENT CONTROLS AND STABILIZATION MEASURES.
1. ALL CONTROL MEASURES WILL BE INSPECTED AT LEAST TWICE EVERY SEVEN (7) CALENDAR DAYS
 2. ALL MEASURES WILL BE MAINTAINED IN GOOD WORKING ORDER; IF REPAIRS OR OTHER EROSION CONTROL MEASURES ARE FOUND TO BE NECESSARY, THEY WILL BE INITIATED WITHIN 24 HOURS OF REPORT.
 3. BUILT UP SEDIMENT WILL BE REMOVED FROM SILT FENCE WHEN IT HAS REACHED ONE-THIRD THE HEIGHT OF THE FENCE.
 4. SILT FENCES WILL BE INSPECTED FOR DEPTH OF SEDIMENT, TEARS, ETC., TO SEE IF THE FABRIC IS SECURELY ATTACHED TO THE FENCE POSTS, AND TO SEE THAT THE FENCE POSTS ARE SECURELY IN THE GROUND.
 5. TEMPORARY AND PERMANENT SEEDING AND ALL OTHER STABILIZATION MEASURES WILL BE INSPECTED FOR BARE SPOTS, WASHOUTS, AND HEALTHY GROWTH.
 6. A MAINTENANCE INSPECTION REPORT WILL BE MADE AFTER EACH INSPECTION. COPIES OF THE REPORT FORMS TO BE COMPLETED BY THE INSPECTOR ARE INCLUDED IN THIS SWPPP.
 7. THE OPERATOR SHALL HAVE A "QUALIFIED PROFESSIONAL" CONDUCT SITE INSPECTIONS FOLLOWING THE COMMENCEMENT OF CONSTRUCTION. A "QUALIFIED PROFESSIONAL" IS A PERSON KNOWLEDGEABLE IN THE PRINCIPLES AND PRACTICE OF EROSION AND SEDIMENT CONTROLS, SUCH AS A LICENSED PROFESSIONAL ENGINEER, CERTIFIED PROFESSIONAL IN EROSION AND SEDIMENT CONTROL (CPESC), OR SOIL SCIENTIST.
 8. DISTURBED AREAS AND MATERIALS STORAGE AREAS WILL BE INSPECTED FOR EVIDENCE OF OR POTENTIAL FOR POLLUTANTS ENTERING STORMWATER SYSTEMS.

9. REPORT TO NYS DEC WITHIN 24 HOURS ANY NONCOMPLIANCE WITH THE SWPPP THAT WILL ENDANGER PUBLIC HEALTH OR THE ENVIRONMENT FOLLOW UP WITH A WRITTEN REPORT WITHIN 5 DAYS OF THE NONCOMPLIANCE EVENT. THE FOLLOWING EVENTS REQUIRE 24 HOUR REPORTING: A) ANY UNANTICIPATED BYPASS WHICH EXCEEDS ANY EFFLUENT LIMITATION IN THE PERMIT, B) ANY UPSET WHICH EXCEEDS ANY EFFLUENT LIMITATION IN THE PERMIT, AND C) A VIOLATION OF A MAXIMUM DAILY DISCHARGE LIMITATION FOR ANY OF THE POLLUTANTS LISTED BY THE EPA IN THE PERMIT TO BE REPORTED WITHIN 24 HOURS. THE WRITTEN SUBMISSION MUST CONTAIN A DESCRIPTION OF THE NON-COMPLIANCE AND ITS CAUSE; THE PERIOD OF NON-COMPLIANCE, INCLUDING EXACT DATES AND TIMES, AND IF THE NON-COMPLIANCE HAS NOT BEEN CORRECTED, THE ANTICIPATED TIME IT IS EXPECTED TO CONTINUE; AND STEPS TAKEN OR PLANNED TO REDUCE, ELIMINATE, AND PREVENT REOCCURRENCE OF THE NON-COMPLIANCE.
10. RELEASES OF HAZARDOUS SUBSTANCES OR OIL IN EXCESS OF REPORTABLE QUANTITIES (AS ESTABLISHED UNDER 40 CFR 110, 40 CFR 117 OR 40 CFR 302) MUST BE REPORTED. FORM G-1 PROVIDES FURTHER DETAILS ON THE NOTIFICATION AND REPORTING PROCESS.

INSPECTION AND MAINTENANCE REPORT FORMS

ONCE INSTALLATION OF ANY REQUIRED OR OPTIONAL EROSION CONTROL DEVICE OR MEASURE HAS BEEN IMPLEMENTED, AT LEAST ONCE EVERY SEVEN (7) CALENDAR DAYS AND SHALL BE PERFORMED BY A QUALIFIED PROFESSIONAL. THE FORMS FOUND IN THIS SWPPP SHALL BE USED BY THE INSPECTORS TO INVENTORY AND REPORT THE CONDITION OF EACH MEASURE TO ASSIST IN MAINTAINING THE EROSION AND SEDIMENT CONTROL MEASURES IN GOOD WORKING ORDER.

THESE REPORT FORMS SHALL BECOME AN INTEGRAL PART OF THE SWPPP AND SHALL BE MADE READILY ACCESSIBLE TO GOVERNMENTAL INSPECTION OFFICIALS, THE OPERATOR'S ENGINEER, AND THE OPERATOR FOR REVIEW UPON REQUEST DURING VISITS TO THE PROJECT SITE. IN ADDITION, COPIES OF THE REPORTS SHALL BE PROVIDED TO ANY OF THESE PERSONS, UPON REQUEST, VIA MAIL OR FACSIMILE TRANSMISSION. INSPECTION AND MAINTENANCE REPORT FORMS ARE TO BE MAINTAINED BY THE PERMITTEE FOR FIVE YEARS FOLLOWING THE FINAL STABILIZATION OF THE SITE.

OTHER RECORD-KEEPING REQUIREMENTS

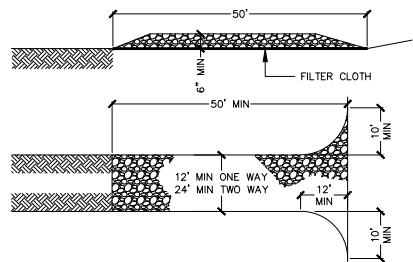
THE CONTRACTOR SHALL KEEP THE FOLLOWING RECORDS RELATED TO CONSTRUCTION ACTIVITIES AT THE SITE:

- DATES WHEN MAJOR GRADING ACTIVITIES OCCUR AND THE AREAS WHICH WERE GRADED
- DATES AND DETAILS CONCERNING THE INSTALLATION OF STRUCTURAL CONTROLS

- DATES WHEN CONSTRUCTION ACTIVITIES CEASE IN AN AREA
- DATES WHEN AN AREAS IS STABILIZED, EITHER TEMPORARILY OR PERMANENTLY
- DATES OF RAINFALL AND THE AMOUNT OF RAINFALL
- DATES AND DESCRIPTIONS OF THE CHARACTER AND AMOUNT OF ANY SPILLS OF HAZARDOUS MATERIALS
- RECORDS OF REPORTS FILED WITH REGULATORY AGENCIES IF REPORTABLE QUANTITIES OF HAZARDOUS MATERIALS SPILLED

EROSION CONTROL NOTES

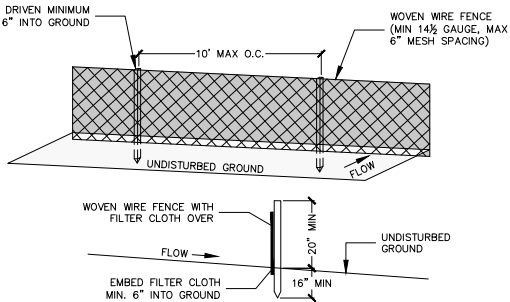
1. LAND DISTURBING ACTIVITIES SHALL NOT COMMENCE UNTIL APPROVAL TO DO SO HAS BEEN RECEIVED BY GOVERNING AUTHORITIES. THE GENERAL CONTRACTOR SHALL STRICTLY ADHERE TO THE APPROVED SWPPP DRAWINGS DURING CONSTRUCTION OPERATIONS.
2. NO LAND CLEARING OR GRADING SHALL BEGIN UNTIL THE APPROPRIATE EROSION CONTROL MEASURES HAVE BEEN INSTALLED.
3. ALL EXPOSED AREAS SHALL BE SEEDED AS SPECIFIED WITHIN 7 DAYS OF FINAL GRADING.
4. SHOULD CONSTRUCTION STOP FOR LONGER THAN 14 DAYS, THE SITE SHALL BE SEEDED AS SPECIFIED.
5. MAINTAIN EROSION CONTROL MEASURES AFTER EACH RAIN AND AT LEAST ONCE A WEEK.
6. THIS PLAN SHALL NOT BE CONSIDERED ALL INCLUSIVE AS THE GENERAL CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PREVENT SEDIMENT FROM LEAVING THE SITE.
7. GENERAL CONTRACTOR SHALL COMPLY WITH ALL STATE AND LOCAL ORDINANCES THAT APPLY.
8. ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES WILL BE INSTALLED IF DEEMED NECESSARY BY ON SITE INSPECTION.
9. IF INSTALLATION OF STORM DRAINAGE SYSTEM SHOULD BE INTERRUPTED BY WEATHER OR NIGHTFALL, THE PIPE ENDS SHALL BE COVERED WITH FILTER FABRIC.
10. GENERAL CONTRACTOR SHALL BE RESPONSIBLE TO TAKE WHATEVER MEANS NECESSARY TO ESTABLISH PERMANENT SOIL STABILIZATION.
11. ALL WORK TO BE DONE IN STRICT ACCORDANCE WITH THE NEW YORK STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL.



1. STONE SIZE - USE 2" STONE, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH - NOT LESS THAN 50 FEET.
3. THICKNESS - NOT LESS THAN SIX (6) INCHES.
4. WIDTH - 24 FEET MINIMUM.
5. FILTER CLOTH - WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
6. SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
7. MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. ALL SEDIMENT SPILLED, DROPPED, WASHED, OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
8. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
9. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.

1 CONSTRUCTION ENTRANCE

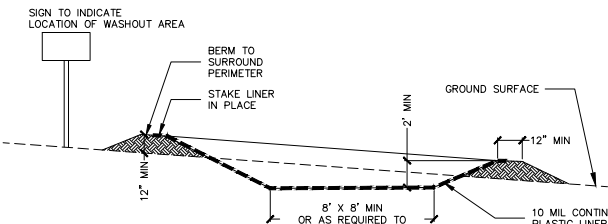
C-7.2 SCALE: NTS



- POSTS: STEEL, EITHER "I" OR "U" TYPE OR 2" HARDWOOD
- FENCE: WOVEN WIRE, 1 1/2 GAUGE, 6" MAX. MESH OPENING
- FILTER CLOTH: FILTER X, MIRAFI 100X, STABILINKA T140N OR APPROVED EQUAL
- PREFABRICATED UNIT: GEOTAB, ENVIROFENCE, OR APPROVED EQUAL
1. WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES.
 2. FILTER CLOTH IS TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION.
 3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER, THEY SHALL BE OVERLAPPED BY SIX INCHES AND FOLDED.
 4. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.

2 SILT FENCE

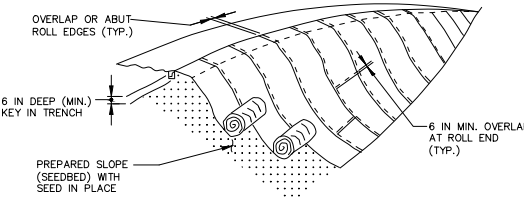
C-7.2 SCALE: NTS



- NOTES:
1. CONCRETE WASHOUT AREA SHALL BE INSTALLED PRIOR TO ANY CONCRETE PLACEMENT ON SITE.
 2. CONCRETE WASHOUT AREA SHALL BE LINED WITH A 10 MIL IMPERMEABLE LINER AND STAKED IN PLACE.
 3. SIGNS SHALL BE PLACED AT THE CONSTRUCTION ENTRANCE, AT THE WASHOUT AREA, AND ELSEWHERE AS NECESSARY TO CLEARLY INDICATE LOCATION OF CONCRETE WASHOUT AREA TO OPERATORS OF CONCRETE TRUCKS AND PUMP RIGS.
 4. THE CONCRETE WASHOUT AREA SHALL BE REPAIRED AND ENLARGED OR CLEANED OUT AS NECESSARY TO MAINTAIN CAPACITY FOR WASTED CONCRETE.
 5. AT THE END OF CONSTRUCTION, ALL CONCRETE SHALL BE REMOVED FROM SITE AND DISPOSED OF AT AN ACCEPTED WASTE SITE.
 6. WHEN THE CONCRETE WASHOUT AREA IS REMOVED, THE DISTURBED AREA SHALL BE SEEDED AND MULCHED OR OTHERWISE STABILIZED.

3 CONCRETE WASHOUT AREA

C-7.2 SCALE: NTS

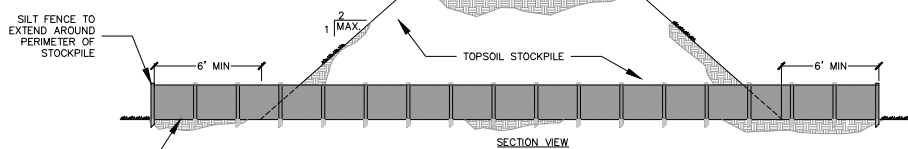


CONSTRUCTION SPECIFICATIONS

1. USE TEMPORARY SOIL STABILIZATION MATTING MADE OF DEGRADABLE (LASTS 6 MONTHS MINIMUM) NATURAL OR MAN-MADE FIBERS (MOSTLY ORGANIC).
2. PERFORM FINAL GRADING, TOPSOIL APPLICATION, SEEDED PREPARATION, AND PERMANENT SEEDING IN ACCORDANCE WITH SPECIFICATIONS. PLACE MATTING WITHIN 48 HOURS OF COMPLETING SEEDING OPERATIONS UNLESS END OF WORKDAY STABILIZATION IS SPECIFIED ON THE APPROVED EROSION & SEDIMENT CONTROL PLAN.
3. OVERLAP OR ABUT ROLL EDGES PER MANUFACTURER RECOMMENDATIONS. OVERLAP ROLL ENDS BY 6 INCHES (MINIMUM), WITH THE UPSLOPE MAT OVERLAPPING ON TOP OF THE DOWNSLOPE MAT.

4 SLOPE STABILIZATION MATTING

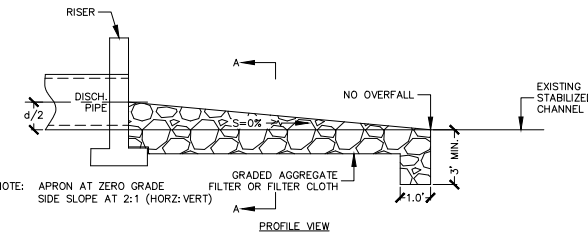
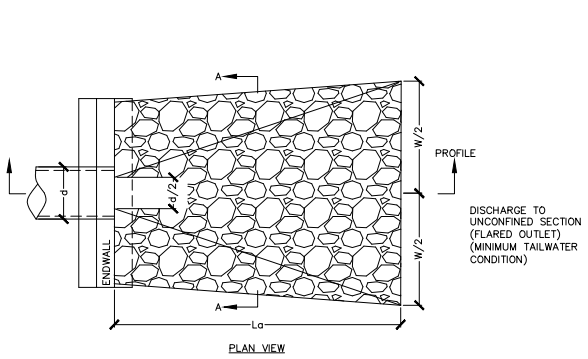
C-7.2 SCALE: NTS



- NOTES:
1. SEE EROSION CONTROL PLAN FOR LOCATION OF STOCKPILE
 2. REFER TO SILT FENCE DETAIL FOR INSTALLATION OF SILT FENCE
 3. IF THE STOCKPILE IS TO REMAIN FOR MORE THAN 14 DAYS IT SHALL BE TEMPORARILY SEEDED FOR STABILIZATION
 4. SILT FENCES TO BE MAINTAINED IN PLACE UNTIL TOPSOIL STOCKPILE HAS BEEN REMOVED

5 TYPICAL TOPSOIL STOCKPILE

C-7.2 SCALE: NTS



ROCK RIPRAP OUTLET PROTECTION UNCONFINED DOWNSTREAM SECTION

C-7.2 SCALE: NTS

PROJECT TITLE: BRANDYWINE ESTATES PHASE 2
HENNEBERRY ROAD
ONONDAGA COUNTY, NY

TOWN OF MANLIUS

PREPARED BY: HARRINGTON HOMES
3848 HENNEBERRY ROAD
JAMESVILLE, NY 13078

SITE DETAILS			
SHEET TITLE:			
NO.			
3	REVISED AS PER TOWN ENGINEER'S COMMENTS	2/16/2022	DATE
2	GENERAL REVISIONS	2/09/2022	
1	GENERAL REVISIONS	12/01/2021	
	REVISION/ISSUE		

PREPARED BY: NAPIERALA CONSULTING
PROFESSIONAL ENGINEER, P.E.
SITE DESIGN • ENGINEERING
MANLIUS, NEW YORK 13104
email: MNAT@NAPCON.COM
PH: (315) 682-5580 FAX: (315) 682-5544

PRELIMINARY NOT FOR CONSTRUCTION

PROJECT NO. 20-1906

DATE 17 SEP 2020

SCALE AS SHOWN

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APPENDIX G: SHPO AND NYSDEC LETTERS



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NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Fish and Wildlife, New York Natural Heritage Program
625 Broadway, Fifth Floor, Albany, NY 12233-4757
P: (518) 402-8935 | F: (518) 402-8925
www.dec.ny.gov

September 1, 2020

Neal Zinsmeyer
Napierala Consulting
110 Fayette Street
Manlius, NY 13104

Re: Brandywine Phase 2
County: Onondaga Town/City: Manlius

Dear Mr. Zinsmeyer:

In response to your recent request, we have reviewed the New York Natural Heritage Program database with respect to the above project.

We have no records of rare or state-listed animals or plants, or significant natural communities at the project site.

Within 2.5 miles of the project site is a documented winter hibernaculum of **Indiana Bat** (*Myotis sodalis*, state and federally listed as Endangered) and **Northern long-eared Bat** (*Myotis septentrionalis*, state and federally listed as Threatened). These bat species may travel 2.5 miles or more from documented locations. The main impact of concern for bats is the removal of potential roost trees. For information about any permit considerations for your project, please contact the Permits staff at the NYSDEC Region 7 Office, Division of Environmental Permits, at dep.r7@dec.ny.gov, 315-426-7438.

For most sites, comprehensive field surveys have not been conducted. We cannot provide a definitive statement on the presence or absence of all rare or state-listed species or significant natural communities. Depending on the nature of the project and the conditions at the project site, further information from on-site surveys or other resources may be required to fully assess impacts on biological resources.

For information regarding other permits that may be required under state law for regulated areas or activities (e.g., regulated wetlands), please contact the Permits staff at the NYSDEC Region 7 Office as described above.

Sincerely,



Nicholas Conrad
Information Resources Coordinator
New York Natural Heritage Program



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Parks, Recreation and Historic Preservation

ANDREW M. CUOMO
Governor

ERIK KULLESEID
Commissioner

ARCHAEOLOGY COMMENTS

Phase IA/IB Archaeological Survey Recommendation
Project: Harrington Homes Residential Subdivision
PR#: 20PR05587
Date: 9/18/2020

Your project is in an archaeologically sensitive location. Therefore, the State Historic Preservation Office/Office of Parks, Recreation and Historic Preservation (SHPO/OPRHP) recommends a Phase IA/IB archaeological survey for components of the project that will involve ground disturbance, unless substantial prior ground disturbance can be documented. A Phase IA/IB survey is designed to determine the presence or absence of archaeological sites or other cultural resources in the project's Area of Potential Effects (APE).

If you consider the entire project area to be disturbed, documentation of the disturbance will need to be reviewed by SHPO/OPRHP. Examples of disturbance include mining activities and multiple episodes of building construction and demolition. Documentation of ground disturbance typically consists of soil bore logs, photos, or previous project plans. Agricultural activity is not considered to be substantial ground disturbance.

Please note that in areas with alluvial soils or fill archaeological deposits may exist below the depth of superficial disturbances such as pavement or even deeper disturbances, depending on the thickness of the alluvium or fill. Evaluation of the possible impact of prior disturbance on archaeological sites must consider the depth of potentially culture-bearing deposits and the depth of planned disturbance by the proposed project.

Our office does not conduct archaeological surveys. A 36 CFR 61 qualified archaeologist should be retained to conduct the Phase IA/IB survey.

Please also be aware that a Section 233 permit from the New York State Education Department (SED) may be necessary before archaeological fieldwork is conducted on State-owned land. If any portion of the project includes the lands of New York State, you should contact the SED before initiating survey activities. The SED contact is Christina Rieth and she can be reached at (518) 402-5975 or christina.rieth@nysed.gov. Section 233 permits are not required for projects on private land.

If you have any questions concerning archaeology, please contact Tim Lloyd at Timothy.Lloyd@parks.ny.gov



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March 9, 2022

Mr. Douglas A. Miller, P.E.
Miller Engineers
Seneca Turnpike; Suite B
Box 311
Manlius, NY 13104

**Re: Brandywine Estates Subdivision – Phase 2
Preliminary Stormwater Review
Henneberry Road, Town of Manlius, Onondaga County, NY**

Dear Mr. Miller,

Attached for your review is a revised site plan set and SWPPP for the proposed Brandywine Estates Subdivision Phase 2 project in the Town of Manlius, NY. Below are responses to your comments from an email dated March 3rd, 2022.

1. Response Letter

- a) *Main outfall for stormwater exits to the west onto private property. Confirm acceptance with the adjoining property owner and easement for this discharge on to the property*

The offsite discharge replicates the runoff course of the existing conditions with significantly reduced rates. No discharge easement should be required as water has always flowed in this location. The main outfall from the detention basin outlet control structure is located on the west side of proposed Lot 10 and flows through a rip-rap lined drainage swale into an existing drainage easement on the property to the north. A proposed rip-rap lined forebay and spillway will be constructed within this drainage easement in order to replicate the existing drainage conditions as the runoff flows to the west.

The peak runoff flow rate for this drainage area (DA-1) is being reduced from 67.61 cfs to 32.92 cfs during the 10-year precipitation event. The peak runoff flow rate for DA-1 is being reduced from 165.93 cfs to 80.24 cfs during the 100-year precipitation event. These values represent a significant reduction in the peak runoff flow rate to the point of study downstream. Additionally, no new point discharge is being created on the property to the west. Therefore, there should be no need for a new drainage easement.

- b) *Run-off to Henneberry Rd runs to Henneberry Road without any provision for stormwater management and requires attention. Applicant also indicates they are coordinating this issue with OCDOT. Confirm status*

Runoff to Henneberry Road is at a significantly reduced rate due to the reduction of the watershed area in this location. The stormwater quality treatment basins on the west side of the site have been oversized to compensate for the impervious area that is not collected on the far east side of the site. This is discussed in Section III.E.3 of the SWPPP. The project site plans, SWPPP, stormwater mitigation, and response to comments have been reviewed by Onondaga County DOT and they have taken no issue with the SWPPP or the drainage patterns tributary to Henneberry Road.



- c) *Soils investigations remain open and required to confirm entire proposed site activities including any need for blasting*

The greatest depth of cut is located in the proposed basin and is approximately 14 ft. Based on preliminary borings on site, the depth to bedrock is approximately 21 ft. At this time, we feel the detention basin can be constructed without the use of extraordinary construction methods such as blasting. If bedrock is discovered for some unforeseen reason during construction of the stormwater basin, alternative construction methods will be coordinated with the Town Engineer.

- d) *Confirm need for NYSDEC dam permit with details and cross sections for proposed stormwater management activities*

A NYSDEC dam permit will not be required. A cross section of the stormwater detention basin can be seen in detail 5 on sheet C-7.1. During any storm event, the impoundment of runoff water is less than 10 feet deep, has a storage volume of less than 3.07 acre-feet, and has a drainage area less than 1 square mile.

- e) *Ownership requirements of facilities and need for HOA may be required*

The water quality and water quantity basins have been separated out into a separate lot. The ownership of this lot will be held by Harrington Homes for operation and maintenance throughout all phases of construction. Following the completion of construction, Harrington Homes may set up a separate entity to keep up with the operation and maintenance of the stormwater management system.

- f) *Confirm carrying capacity of culvert under route 173 directly down stream of discharge area during storm events with NYSDOT and its ability to carry additional stormwater loadings from this site as currently designed*

There will be no additional flow contributed to the culvert. The peak runoff flow rate for this drainage area (DA-1) is being reduced from 67.61 cfs to 32.92 cfs during the 10-year precipitation event. The peak runoff flow rate for DA-1 is being reduced from 165.93 cfs to 80.24 cfs during the 100-year precipitation event. These values represent a significant reduction in the peak runoff flow rate to the point of study downstream; no additional stormwater runoff from the site is added to the culvert as currently designed. The culvert will not be adversely impacted during precipitation events.

2. Drawings

- a) *Phasing to be coordinated with previous discussions for phasing and confirmation of drinking water well impacts for the development and surrounding/neighborhood well impacts. Discussion and detailed description of future well draw down program and correlation to building permits and building activity of the same to be incorporated into preliminary plat requirements as previously discussed with planning board. Previous planning board discussions indicated smaller phasing plans than currently depicted on drawings*

Each individual well from Phase 1 will be reviewed and approved by the Onondaga County DOH as a part of the application for a building permit. The well capacity of each well to be constructed during Phase 1 will be submitted to the Town of Manlius upon completion of Phase 1. The well capacity for the wells constructed in each subsequent phase will be reviewed and approved by the Onondaga County DOH and will be provided to the Town of Manlius upon completion of each individual phase. This information has been added to a note on the phasing plan.



- b) *Utility requirements such as stormwater facilities, roads and sewers do not match phasing requirement of item 2a above*

This has been revised on the phasing plan, sheet C-8.

- c) *Details are lacking for construction of retention pond structures (ie depth to rock and need for potential lining)*

A cross section of the stormwater detention basin can be seen in detail 5 on sheet C-7.1. The greatest depth of cut in the proposed basin is 14 ft. Based on preliminary borings on site, the depth to bedrock is approximately 21 ft. At this time, we feel the detention basin can be constructed without the use of extraordinary construction methods. If bedrock is discovered during construction, alternative construction methods will be coordinated with the Town Engineer.

- d) *Ownership of stormwater management facilities remains unclear*

Please refer to response to question 1.e.

- e) *Lots 9& 10 do not appear to have proper road frontage*

Lots 9&10 have legal lot frontage off the right-of-way for the existing hammerhead. This has been updated on the plat map by Ianuzi and Romans and on the site plans.

- f) *Building envelopes depicted on sheet C2 interfere with proposed stormwater management facilities and swales. Some lots appear to be unbuildable lots.*

This has been revised on sheet C-2 and the phasing plan, sheet C-8.

- g) *Confirm swale configuration on Lot 6 of the proposed subdivision and any potential for stormwater discharges to the lower existing homes*

Confirmed, the drainage swale is graded to flow from east to west (with a berm on the north side) towards the proposed bioretention area.

- h) *Confirm easement/ownership for drainage structure north of lot 10 and its inclusion into maintenance and ownership program for stormwater management to be included in HOA*

After reviewing the stormwater runoff conditions in this location, the catch basins are not required; stormwater runoff will follow the existing runoff patterns. As such, these structures have been removed from the site plan.

- i) *Any spacing requirements for wells shall be depicted and described on drawings*

The well setbacks for a typical well are depicted on sheet C-3 and described in notes 2&3 on sheet C-3.

- j) *OCDOH approval of well program may be desired*

Wells are to be located and constructed as per the provisions set forth in NYS Standards for Water Wells (Part 5 of 10NYCRR Appendix 5-B) and will be reviewed and approved by the OCDOH as required.

- k) *Drinking water report should be considered to be referenced on preliminary plat drawing*

A note regarding the well data has been provided on the preliminary plat map.



Any and all future comments will be addressed accordingly. If you have any questions or if you need any other additional information, please contact us.

Respectfully submitted,

NAPIERALA CONSULTING
Professional Engineer, P.C.

Christian Hill

Christian Hill
Design Engineer

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3/22/2022 10:53:27 AM

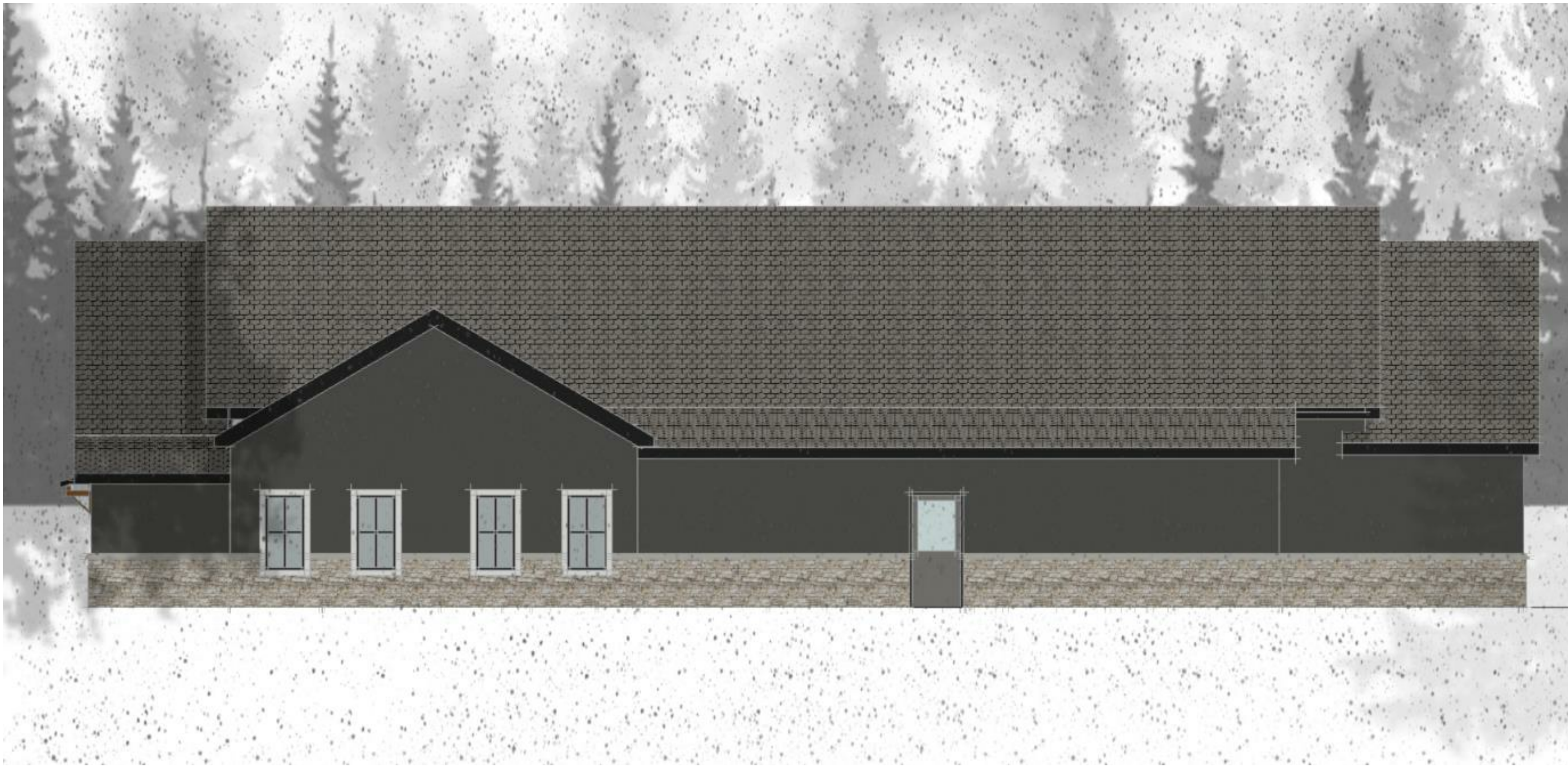
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3D VIEW



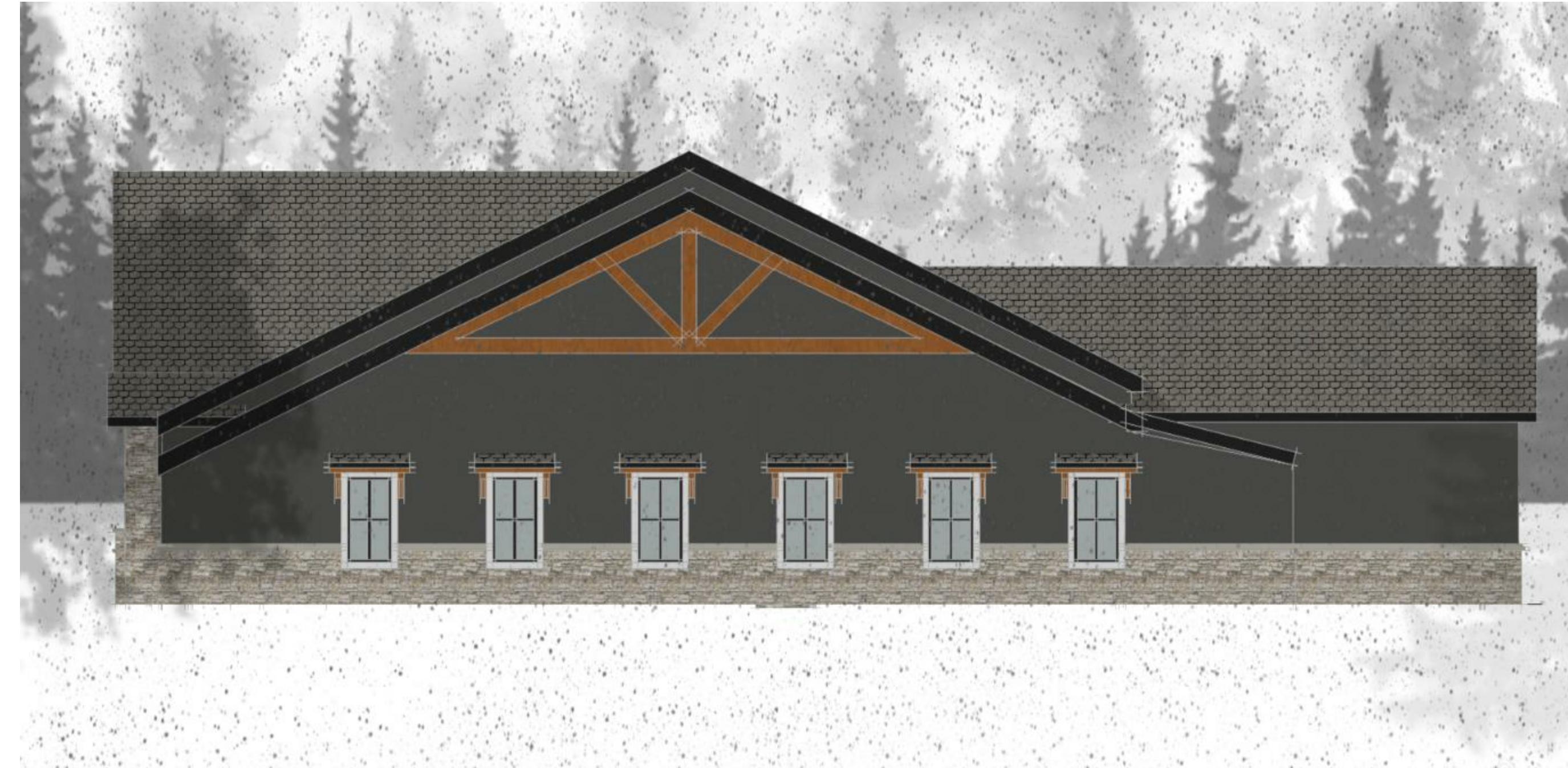
FRONT ELEVATION



REAR ELEVATION



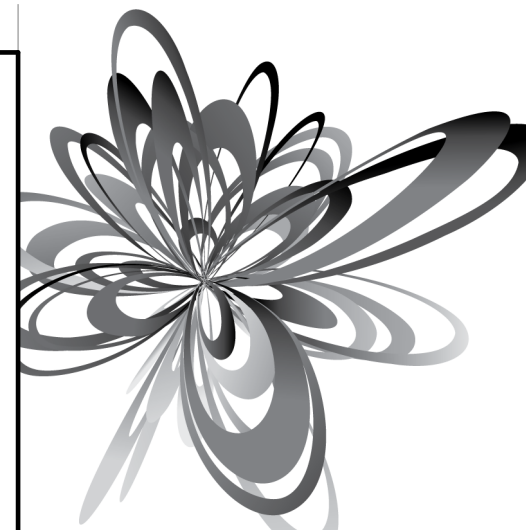
3D VIEW



RIGHT ELEVATION



LEFT ELEVATION



ASHLEY MCGRAW

125 EAST JEFFERSON STREET
SYRACUSE, NEW YORK 13202

CONSULTANT:

SEAL:



OWNER:

FAYETTEVILLE VETERINARY HOSPITAL
8122 E GENESEE ST
FAYETTEVILLE, NY 13066

NEW BUILDING

FAYETTEVILLE VETERINARY HOSPITAL

8122 E GENESEE ST, FAYETTEVILLE, NY 13066

AM JOB NO.

17012

REV. NO.

DATE

DATE ISSUED:

3/2/22

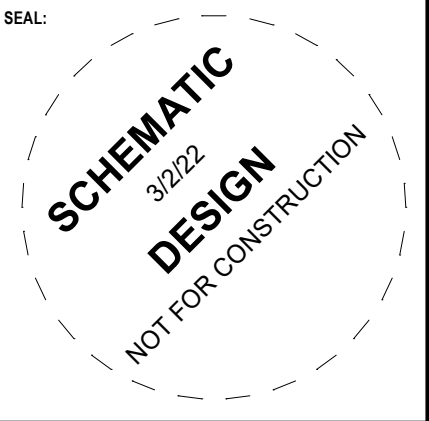
BUILDING
ELEVATIONS

A201

C:\Users\lamar\OneDrive\Documents\7012-FVH-21_rachael bush.rvt



CONSULTANT



OWNER:

NEW BUILDING

FAYETTEVILLE VETERINARY HOSPITAL

8122 E GENESEE ST, FAYETTEVILLE, NY 13066

AM JOB NO.

17012

REV. NO.	DATE
DATE ISSUED:	
	3/2/22

FLOOR PLANS

A101

Short Environmental Assessment Form

Part 1 - Project Information

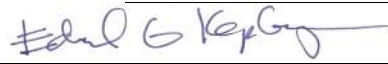
Instructions for Completing

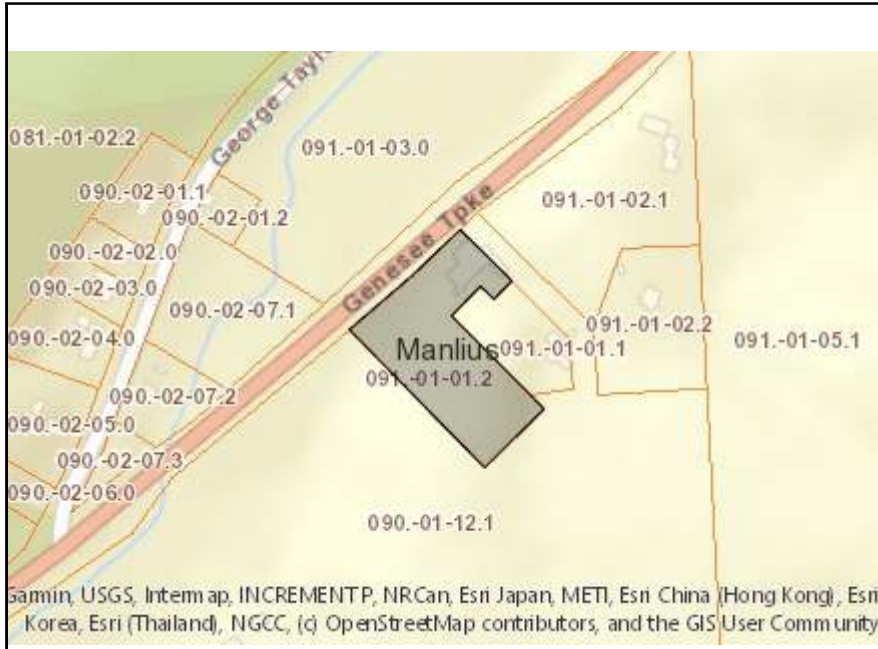
Part 1 – Project Information. The applicant or project sponsor is responsible for the completion of Part 1. Responses become part of the application for approval or funding, are subject to public review, and may be subject to further verification. Complete Part 1 based on information currently available. If additional research or investigation would be needed to fully respond to any item, please answer as thoroughly as possible based on current information.

Complete all items in Part 1. You may also provide any additional information which you believe will be needed by or useful to the lead agency; attach additional pages as necessary to supplement any item.

Part 1 – Project and Sponsor Information			
Name of Action or Project: Fayetteville Veterinary Hospital			
Project Location (describe, and attach a location map): 8122 E. Genesee Street, Fayetteville, NY 13066			
Brief Description of Proposed Action: To build new Veterinary Hospital and demolish the existing building. The project will include parking, site utilities, and storm water mitigation. The project site will also include site amenities such as sidewalks and landscaping.			
Name of Applicant or Sponsor: Mike Bunnell		Telephone: 315-637-9801	
		E-Mail:	
Address: 8122 E. Genesee Street			
City/PO: Fayetteville		State: NY	Zip Code: 13066
1. Does the proposed action only involve the legislative adoption of a plan, local law, ordinance, administrative rule, or regulation? If Yes, attach a narrative description of the intent of the proposed action and the environmental resources that may be affected in the municipality and proceed to Part 2. If no, continue to question 2.		NO ☒	YES ☐
2. Does the proposed action require a permit, approval or funding from any other government Agency? If Yes, list agency(s) name and permit or approval:		NO ☒	YES ☐
3. a. Total acreage of the site of the proposed action?		_____ 2.89 acres	
b. Total acreage to be physically disturbed?		_____ 2.89 acres	
c. Total acreage (project site and any contiguous properties) owned or controlled by the applicant or project sponsor?		_____ 2.89 acres	
4. Check all land uses that occur on, are adjoining or near the proposed action:			
5. ☐ Urban ☒ Rural (non-agriculture) ☐ Industrial ☐ Commercial ☐ Residential (suburban)			
☒ Forest ☒ Agriculture ☐ Aquatic ☐ Other(Specify):			
☐ Parkland			

5. Is the proposed action,	NO	YES	N/A
a. A permitted use under the zoning regulations?	☐	☒	☐
b. Consistent with the adopted comprehensive plan?	☐	☒	☐
6. Is the proposed action consistent with the predominant character of the existing built or natural landscape?	NO	YES	
	☐	☒	
7. Is the site of the proposed action located in, or does it adjoin, a state listed Critical Environmental Area?	NO	YES	
If Yes, identify: _____	☒	☐	
8. a. Will the proposed action result in a substantial increase in traffic above present levels?	NO	YES	
b. Are public transportation services available at or near the site of the proposed action?	☒	☐	
c. Are any pedestrian accommodations or bicycle routes available on or near the site of the proposed action?	☒	☐	
9. Does the proposed action meet or exceed the state energy code requirements?	NO	YES	
If the proposed action will exceed requirements, describe design features and technologies: _____ _____	☐	☒	
10. Will the proposed action connect to an existing public/private water supply?	NO	YES	
If No, describe method for providing potable water: _____ _____	☐	☒	
11. Will the proposed action connect to existing wastewater utilities?	NO	YES	
If No, describe method for providing wastewater treatment: _____ _____	☐	☒	
12. a. Does the project site contain, or is it substantially contiguous to, a building, archaeological site, or district which is listed on the National or State Register of Historic Places, or that has been determined by the Commissioner of the NYS Office of Parks, Recreation and Historic Preservation to be eligible for listing on the State Register of Historic Places?	NO	YES	
	☒	☐	
b. Is the project site, or any portion of it, located in or adjacent to an area designated as sensitive for archaeological sites on the NY State Historic Preservation Office (SHPO) archaeological site inventory?	☒	☐	
13. a. Does any portion of the site of the proposed action, or lands adjoining the proposed action, contain wetlands or other waterbodies regulated by a federal, state or local agency?	NO	YES	
	☐	☒	
b. Would the proposed action physically alter, or encroach into, any existing wetland or waterbody?	☒	☐	
If Yes, identify the wetland or waterbody and extent of alterations in square feet or acres: _____ _____ _____			

14. Identify the typical habitat types that occur on, or are likely to be found on the project site. Check all that apply: ☐ Shoreline ☒ Forest ☒ Agricultural/grasslands ☐ Early mid-successional ☐ Wetland ☐ Urban ☐ Suburban		
15. Does the site of the proposed action contain any species of animal, or associated habitats, listed by the State or Federal government as threatened or endangered?	NO	YES
	☒	☐
16. Is the project site located in the 100-year flood plan?	NO	YES
	☒	☐
17. Will the proposed action create storm water discharge, either from point or non-point sources? If Yes,	NO	YES
a. Will storm water discharges flow to adjacent properties?	☐	☒
b. Will storm water discharges be directed to established conveyance systems (runoff and storm drains)? If Yes, briefly describe:	☒	☐
Stormwater will be conveyed to existing swale located withing NYS Route 5 Right-of-Way.		
18. Does the proposed action include construction or other activities that would result in the impoundment of water or other liquids (e.g., retention pond, waste lagoon, dam)? If Yes, explain the purpose and size of the impoundment:	NO	YES
	☒	☐
19. Has the site of the proposed action or an adjoining property been the location of an active or closed solid waste management facility? If Yes, describe:	NO	YES
	☒	☐
20. Has the site of the proposed action or an adjoining property been the subject of remediation (ongoing or completed) for hazardous waste? If Yes, describe:	NO	YES
	☒	☐
I CERTIFY THAT THE INFORMATION PROVIDED ABOVE IS TRUE AND ACCURATE TO THE BEST OF MY KNOWLEDGE Applicant/sponsor/name: <u>Edward G. Keplinger , RLA</u> Date: <u>3/2/2022</u> Signature: <u></u> Title: <u>Partner</u>		



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



Part 1 / Question 7 [Critical Environmental Area]	No
Part 1 / Question 12a [National or State Register of Historic Places or State Eligible Sites]	No
Part 1 / Question 12b [Archeological Sites]	No
Part 1 / Question 13a [Wetlands or Other Regulated Waterbodies]	Yes - Digital mapping information on local and federal wetlands and waterbodies is known to be incomplete. Refer to EAF Workbook.
Part 1 / Question 15 [Threatened or Endangered Animal]	No
Part 1 / Question 16 [100 Year Flood Plain]	No
Part 1 / Question 20 [Remediation Site]	No

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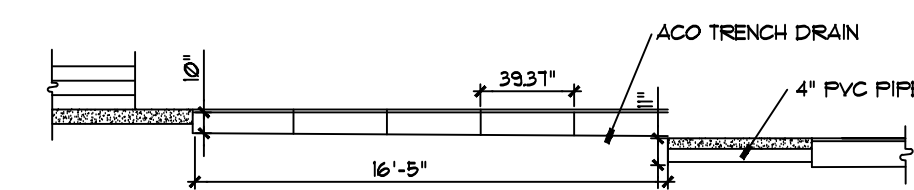
X-FAY ANIMAL-GEN NOTES

LIJ-SITE-PREP-NOTES

X-FAY, ANIMAL HOSF

X-PARKING DATA

L1.1



L2.0-GDU-NOTES

- ## GRADING and UTILITY GENERAL NOTES

- SEAL:
- NOT FOR CONSTRUCTION

Rev. No.	Date	Desc.
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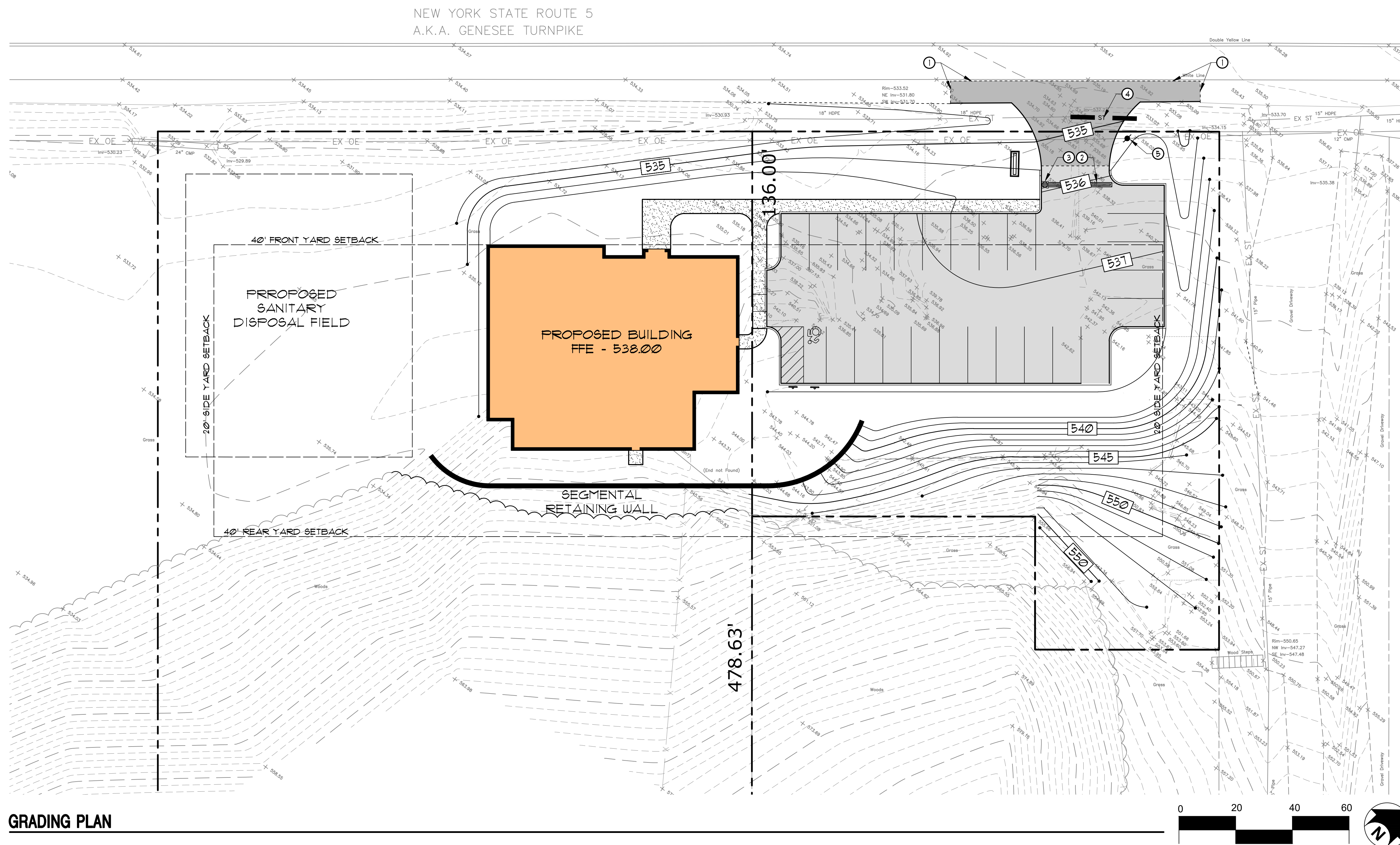
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GRADING, DRAINAGE and UTILITY PLAN

DATE ISSUED: 03/03/22

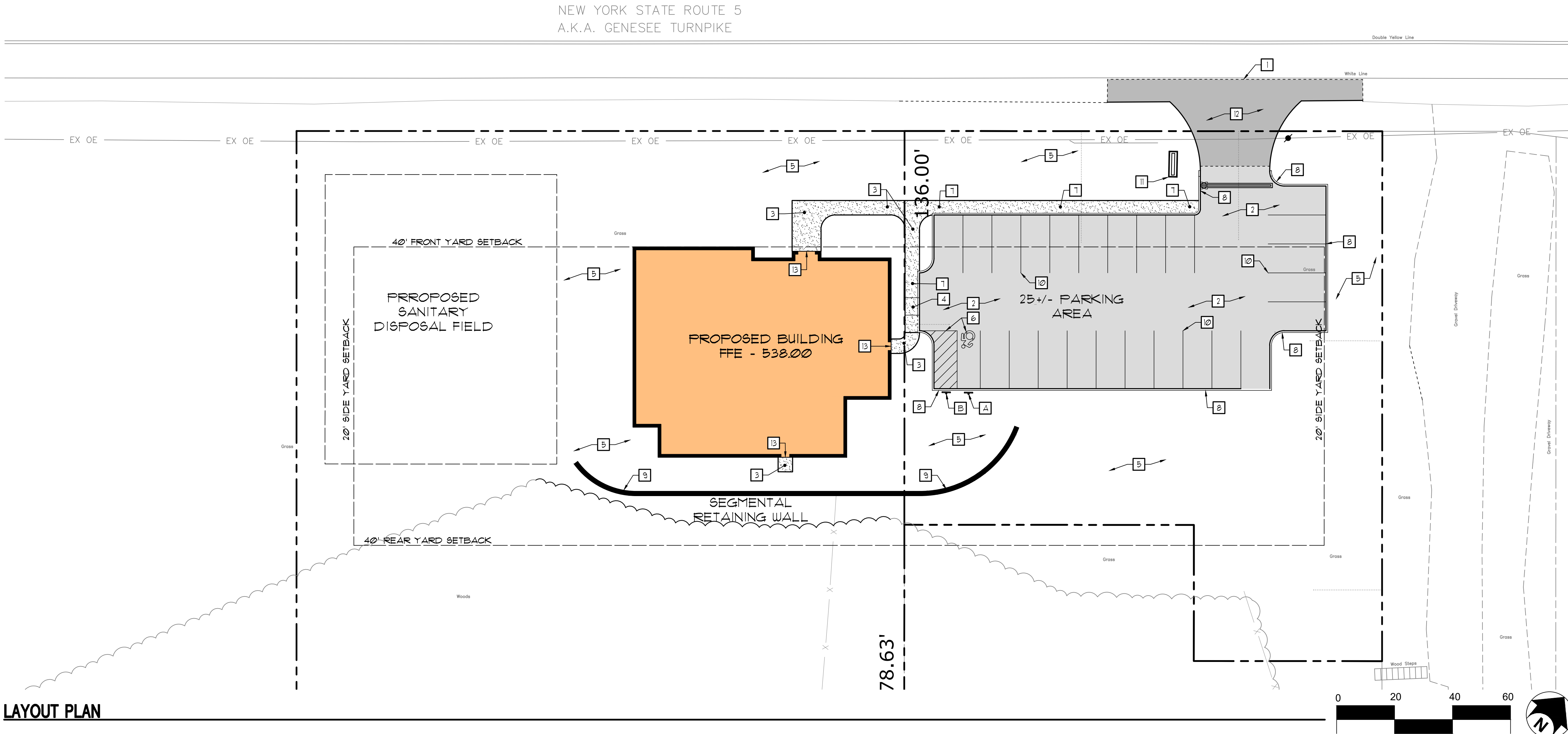
L2.1

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LAYOUT PLAN

SIGN SCHEDULE			
L3.0-SIGN-SCHEDULE			
KEY	SIGN PLATE	SIGN SIZE MOUNTING HT.	NYSDOT MUTCD NO. / COMMENTS
A	 RESERVED PARKING W/ ACCESSIBLE SYMBOL	12" X 18" 7'-0" HT.	SIGN NO.: P4-6 COLORS: WHITE BACKGROUND, BLUE ICON, GREEN TEXT/ BORDER COMMENTS:
B	 NO PARKING ANY TIME	12" X 18" 7'-0" HT.	SIGN NO.: - R7-1 COLORS: WHITE BACKGROUND, RED TEXT AND BORDER
NOTES: 1. REFER TO TRAFFIC CONTROL SIGN DETAIL 11/L5.1 FOR INSTALLATION. 2. ALL REGULATORY SIGNS SHALL CONFORM TO THE MOST CURRENT NYSDOT "MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES."			

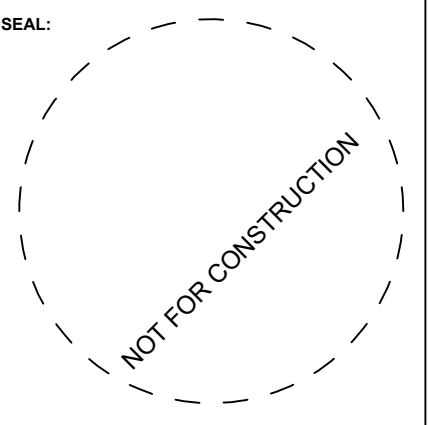
LAYOUT CONSTRUCTION NOTES	
L3.0-LAYOUT-NOTES	
1	MEET EXISTING LINE AND GRADE OF ADJACENT SURFACE.
2	INSTALL ASPHALT PARKING PAVEMENT PER DETAIL 11/L5.1.
3	INSTALL CONCRETE PAVEMENT PER DETAIL 3/L5.1.
4	INSTALL ACCESSIBLE RAMP PER DETAIL 9/L5.1.
5	INSTALL SEEDED LAWN PER DETAIL 13/L5.1.
6	INSTALL RESERVED PARKING STALL PER DETAIL 10/L5.1.
7	INSTALL INTEGRAL CONCRETE CURB AND PAVEMENT PER DETAIL 7/L5.1.
8	INSTALL CONCRETE CURB PER DETAIL 6/L5.1.
9	INSTALL RETAINING WALL A PER DETAIL 17/L5.1.
10	4" WIDE PAINTED LINES, (TYP.).
11	PROPOSED LOCATION OF STOCKPILED SIGN AND PLANTER.
12	INSTALL NYSDOT RIGHT-OF-WAY PAVEMENT PER DETAIL 2/L5.1.
13	INSTALL CONCRETE DOUELING AT DOORWAY PER DETAIL 8/L5.1.



ASHLEY MCGRAW

125 EAST JEFFERSON STREET
SYRACUSE, NEW YORK 13202

CONSULTANT:
 KEPLINGER
FREEMAN
ASSOCIATES
LANDSCAPE ARCHITECTURE & LAND PLANNING
6200 RY ROAD, SUITE 100, EAST SYRACUSE, NEW YORK 13057
PHONE: (315) 445-7980 FAX: (315) 445-7981



FAYETTEVILLE VETERINARY
HOSPITAL
8122 E. GENESEE ST.
TOWN OF MANLIUS, NY

Rev. No.	Date	Desc.
AW JOB NO.		

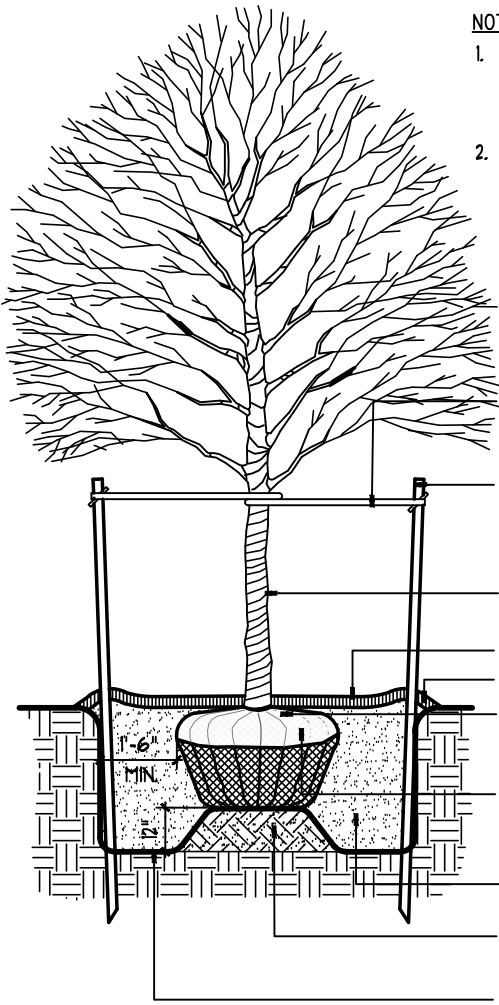
SITE LAYOUT

DATE ISSUED:
03/03/22

L3.1

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2/20/2017 3:38:15 PM



NOTES:

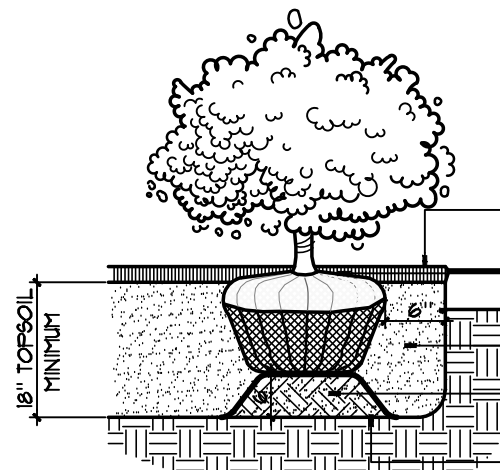
1. REMOVE ALL NONBIODEGRADABLE MATERIAL FROM THE ROOT BALL AND TREE PIT.
2. PRUNE TOP 1/3 OF CROWN BY THINNING AND SPACING BRANCHES. DO NOT CUT THE LEADER.

TREE GUYING - INSTALL WITH ARBORTIE (www.arbortie.com) OR APPROVED EQUAL PER MANUFACTURER'S SPECIFICATIONS
TWO 3/4" DIA. CEDAR, 1-1/2" GALV. PIPE OR PLASTIC TREE STAKES-8" MIN. LENGTH (ALIGN IN ROWS WITH CUES OR PAVING LINES)
TREE WRAP TO HOSE GUARDS
3" DEPTH MULCH
SOIL SAUCER
INSTALL ROOT FLARE FLUSH WITH ADJACENT FINISH GRADE
REMOVE TOP 1/3 OF BURLAP FROM ROOT BALL AND ALL SOIL MATERIAL ABOVE ROOT FLARE
PLANTING SOIL MIX
COMPACTED PLANTING SOIL MIX
UNDISTURBED SUBGRADE OR SOIL FILL

SECTION

2
L32 TREE PLANTING
NOT TO SCALE

32-9300-01



NOTES:

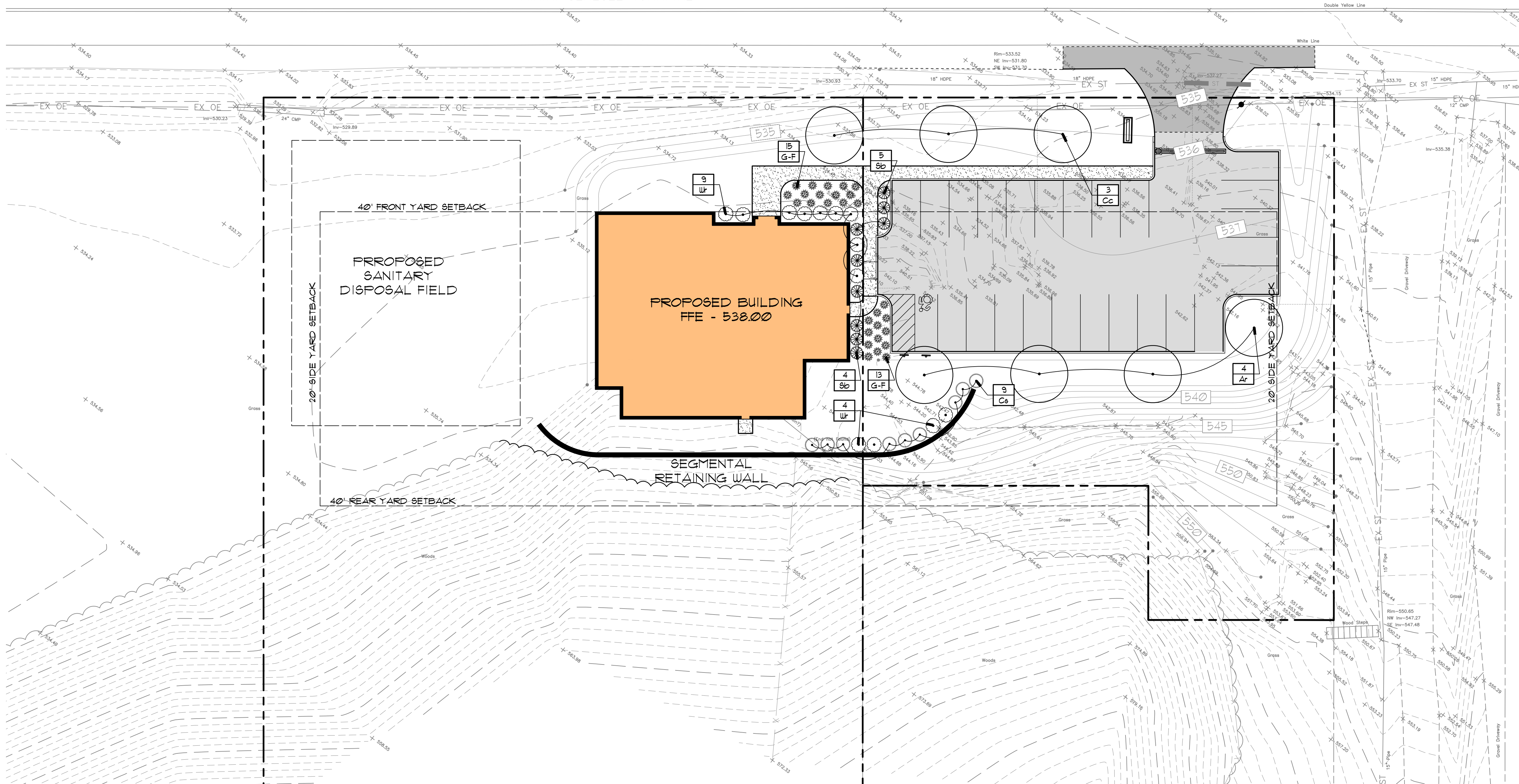
1. REMOVE ALL NONBIODEGRADABLE MATERIAL FROM THE ROOT BALL AND TREE PIT.
2. PRUNE TOP 1/3 OF ALL TOP GROWTH INCLUDING ALL BROKEN BRANCHES.
3. SPACE PLANTS WITHIN SHRUB BED AS SHOWN AND BASED ON NUMBER OF PLANTS REQUIRED.
- 3" DEPTH MULCH BED TO LIMITS SHOWN FLUSH TO ADJONING SURFACES
- INSTALL ROOT FLARE FLUSH WITH ADJACENT FINISH GRADE
- PLANTING SOIL MIX
- COMPACTED PLANTING SOIL MIX
- UNDISTURBED SUBGRADE

SECTION

1
L32 SHRUB PLANTING
NOT TO SCALE

32-9300-02

NEW YORK STATE ROUTE 5
A.K.A. GENESEE TURNPIKE



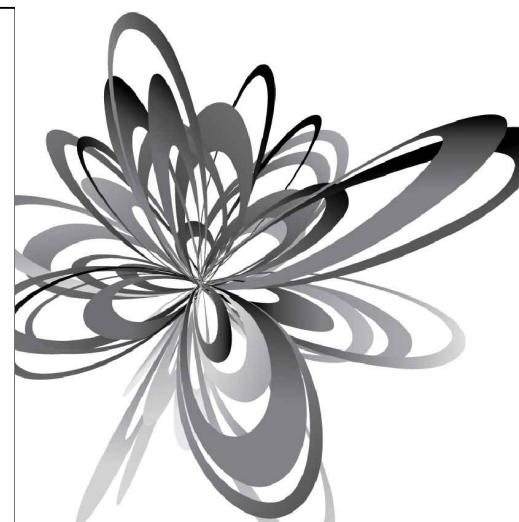
LAYOUT PLAN

PLANT LIST

KEY	COMMON NAME	BOTANICAL NAME	CALIPER	HEIGHT	CONDITION
TREES					
Ar	AUTUMN BLAZE RED MAPLE	ACER FREEMANI	3" CAL.	-	B4B
Cc	AMERICAN REDBUD	CERCIS CANADENSIS	2.5" CAL.	-	B4B
EVERGREENS					
SHRUBS					
S	GOLD FLAME SPIREA	SPIREA BUMALDA 'GOLD FLAME'	-	18"-24"	-
W	WINE & ROSES WEIGELA	WEIGELA FLORIDA	-	-	5 GAL
C	Arctic Fire Dogwood	CORNUS STOLONIFERA	-	-	5 GAL
PERENNIALS and GRASSES					
G-F	DWARF FOUNTAIN GRASS	PENNISETUM 'HAMELN'	--	-	1 GAL

PLANT NOTES

- 1 3" DEPTH SHREDDED BARK MULCH WITH 18" OF SCREENED TOPSOIL.
- 2 INSTALL LANDSCAPE EDGING AS SPECIFIED.
- GENERAL NOTE: ALL LANDSCAPING AND LAWN AREAS SHALL BE MAINTAINED BY OWNER. DEAD MATERIAL SHALL BE REGULARLY PRUNED AND NOURISHED TO MAINTAIN HEALTH.



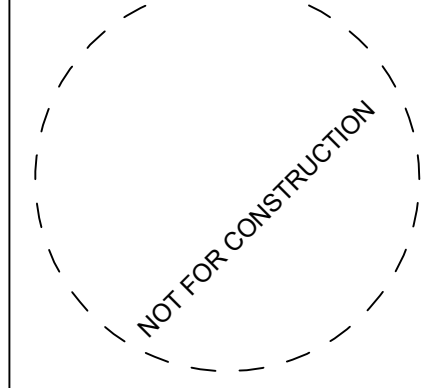
ASHLEY MCGRAW

125 EAST JEFFERSON STREET
SYRACUSE, NEW YORK 13202

CONSULTANT:

KEPLINGER
FREEMAN
ASSOCIATES
LANDSCAPE ARCHITECTURE & LAND PLANNING
6200 RY ROAD, SUITE 100, EAST SYRACUSE, NEW YORK 13057
PHONE: (315) 445-7980 FAX: (315) 445-7981

SEAL:



FAYETTEVILLE VETERINARY
HOSPITAL
8122 E. GENESEE ST.
TOWN OF MANLIUS, NY

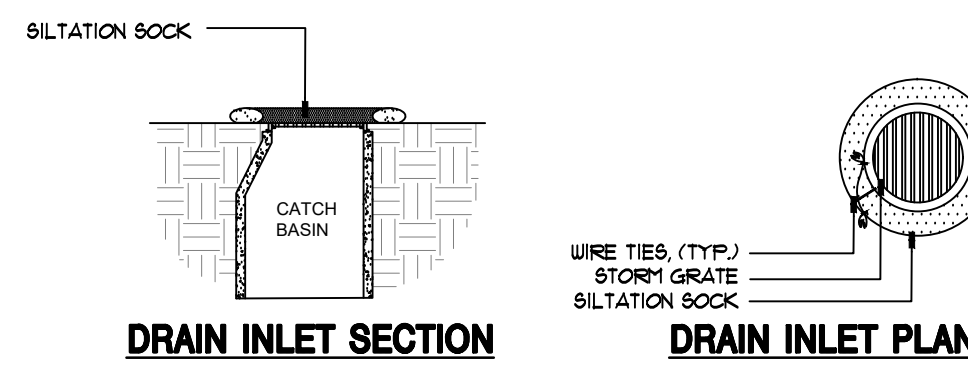
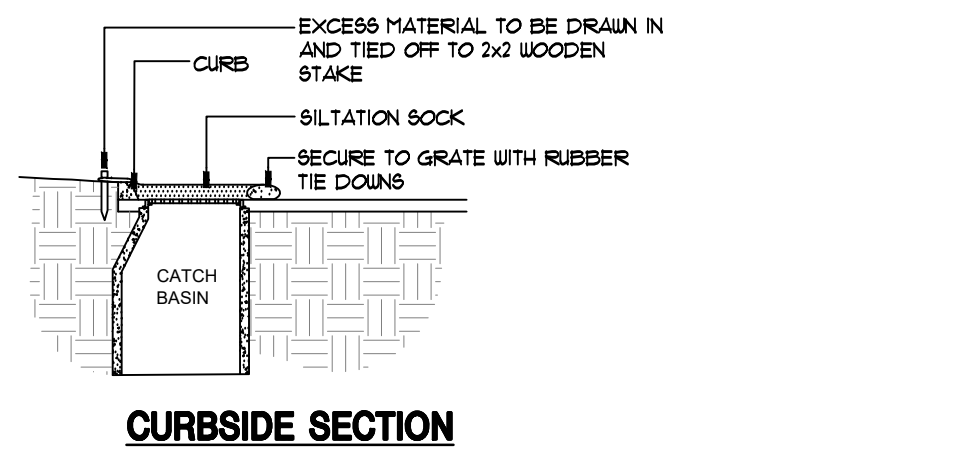
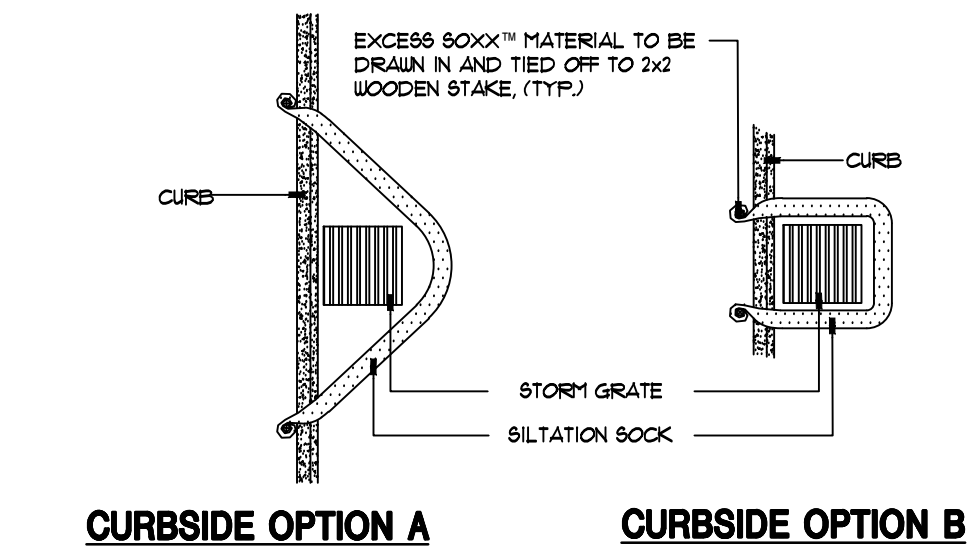
Rev. No. Date Desc.

AM JOB NO.

PLANTING PLAN

DATE ISSUED: 03/03/22

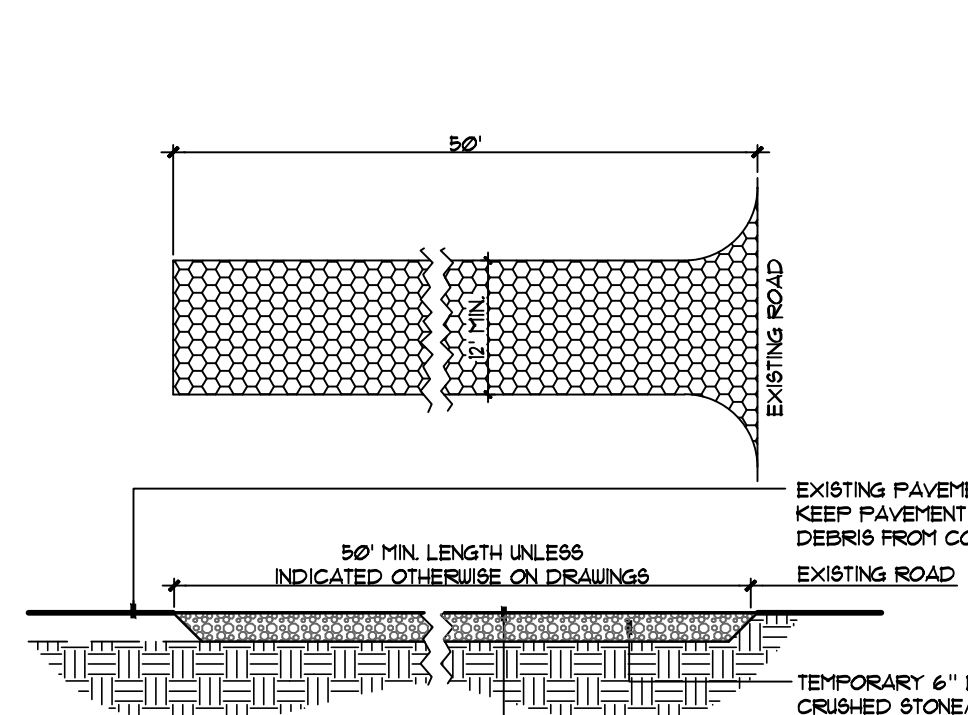
L3.2



NOTES:
1. ALL MATERIAL TO MEET MANUFACTURER SPECIFICATIONS.
2. FILL TO MEET APPLICATION REQUIREMENTS.
3. COMPOST MATERIAL TO BE DISPERSED ON SITE, AS DETERMINED BY ENGINEER.

19 SILTATION SOCK INLET PROTECTION

NOT TO SCALE

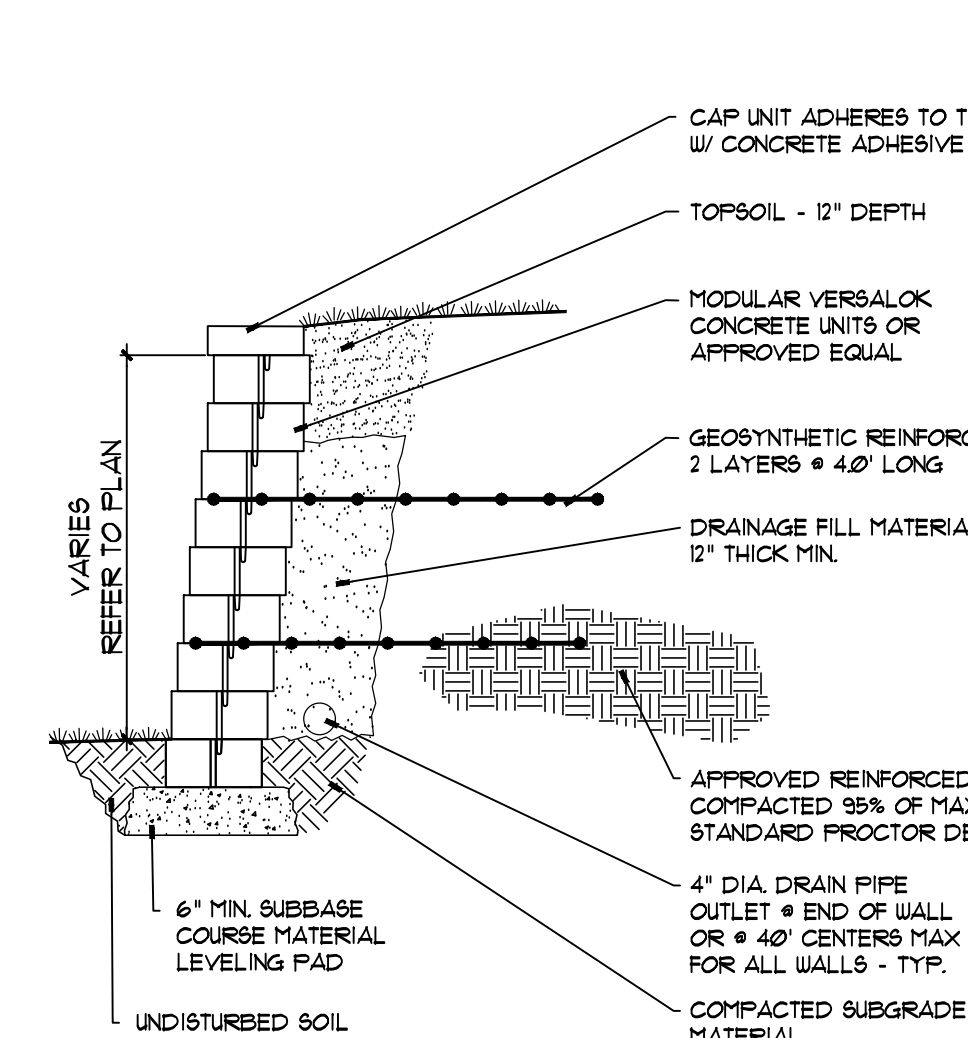


NOTE: UNLESS OTHERWISE INDICATED ON THE DRAWINGS, INSTALL IN AREAS WHERE FREQUENT ON-SITE OFF-SITE TRAFFIC OCCURS.

NOTES:
1. WIDTH-TWELVE (12) FOOT MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS, TWENTY-FOUR (24) FOOT IF SINGLE ENTRANCE TO SITE.
2. FILTER CLOTH SHALL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
3. SURFACE WATER-ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERT WITH 5:1 SLOPES WILL BE PERMITTED.
4. MAINTENANCE-THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT-OF-WAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
5. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.
6. REFER TO SUPPLY SECTION 1 FOR NY'S STANDARDS AND SPECIFICATIONS FOR STABILIZED CONSTRUCTION ENTRANCE.

18 CONSTRUCTION ENTRANCE (MUDRACK)

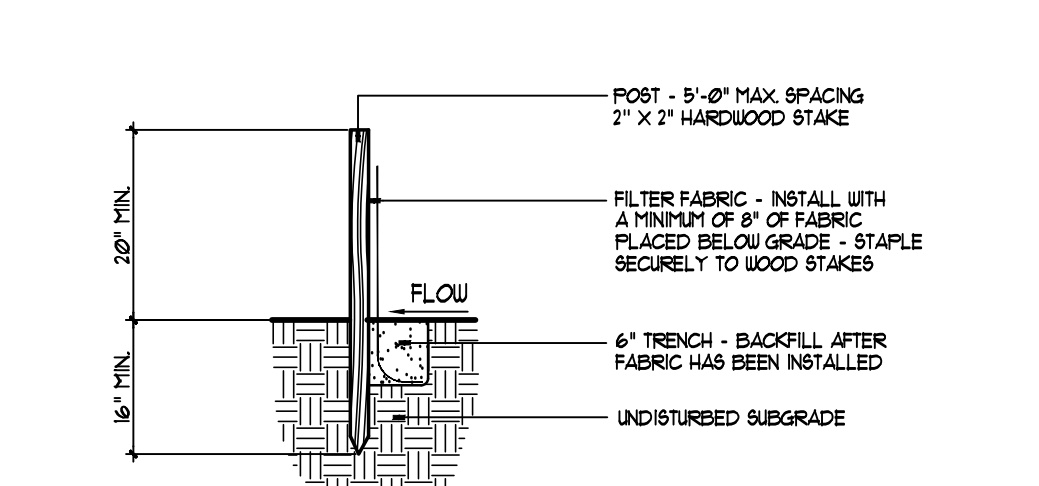
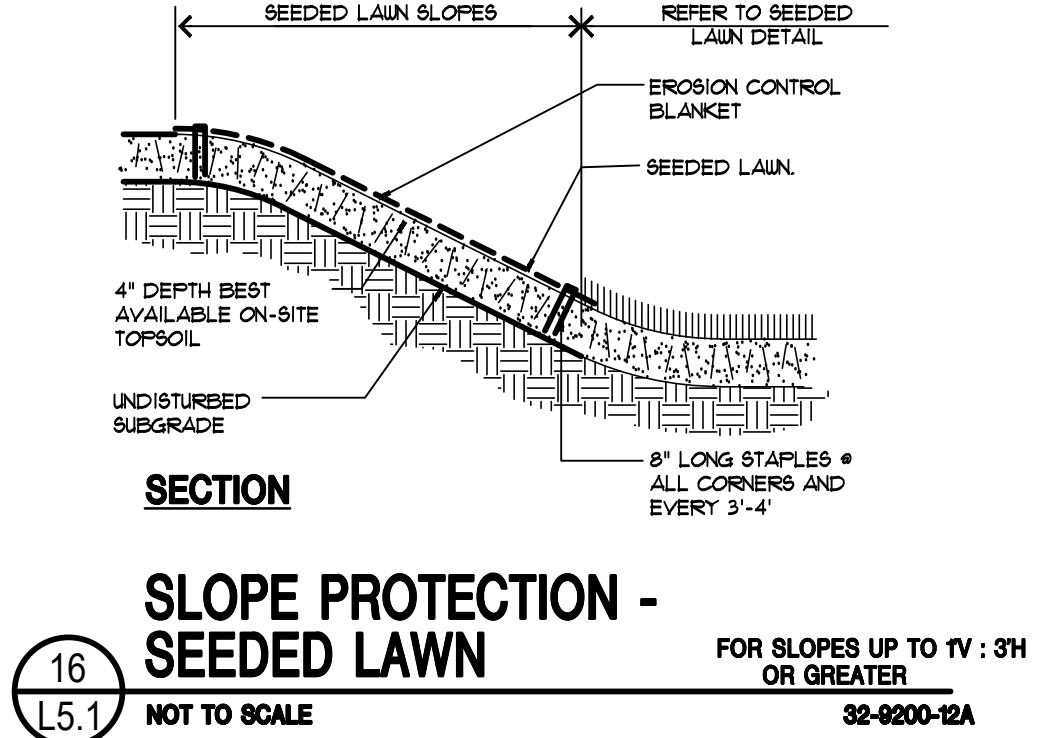
NOT TO SCALE



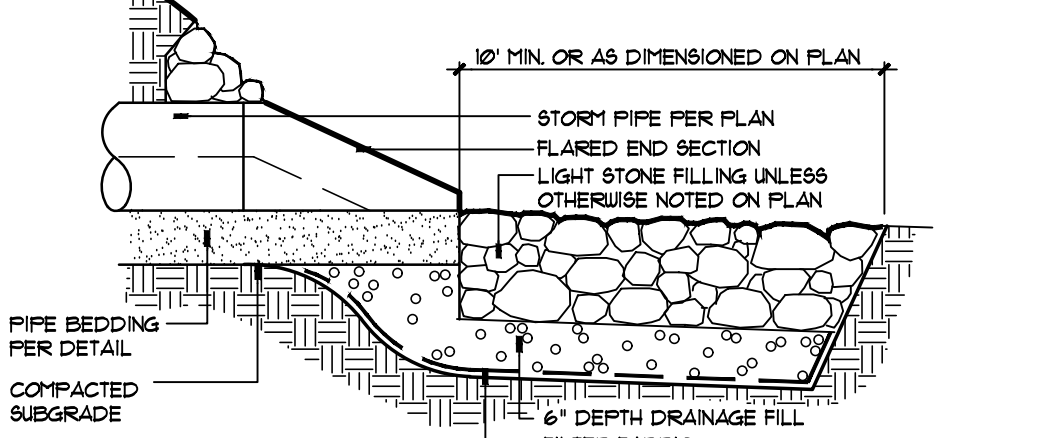
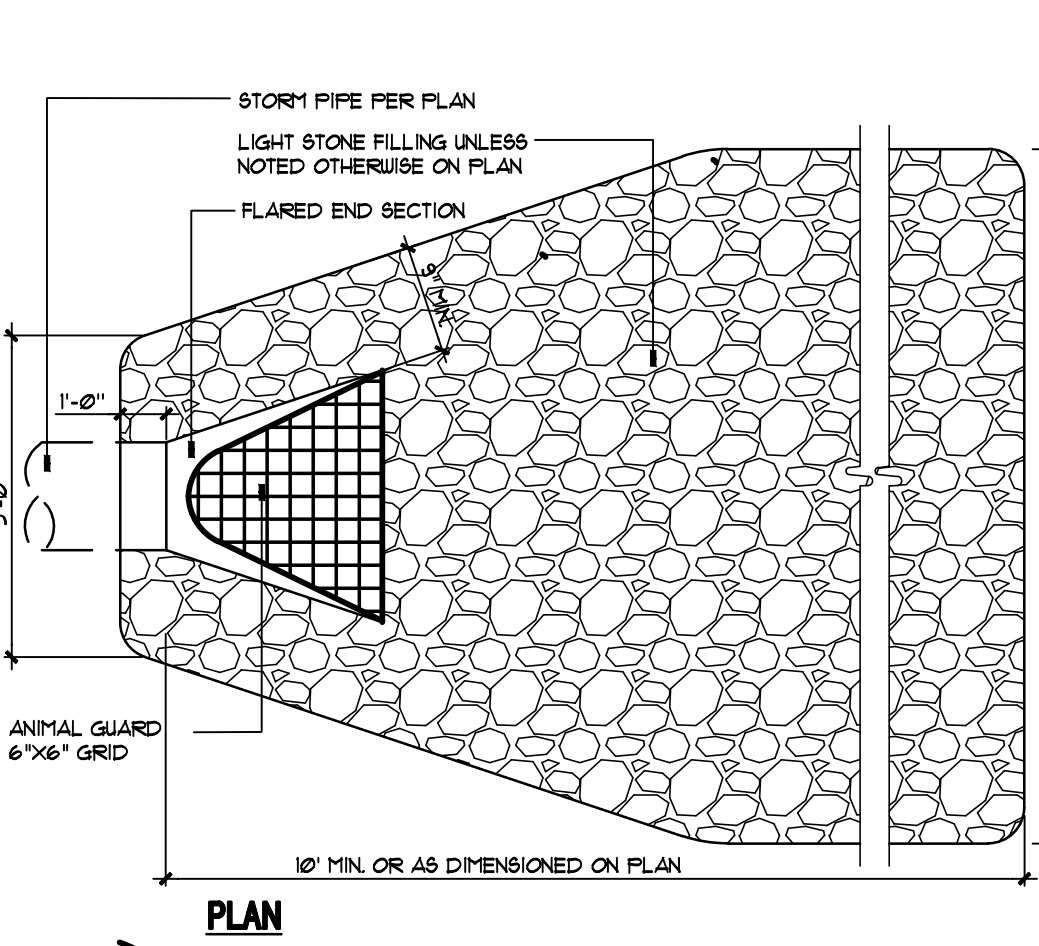
17 RETAINING WALL

NOT TO SCALE

NOTE: PROVIDE ENGINEERED AND PE STAMPED DRAWINGS OF RETAINING WALL FOR APPROVAL PRIOR TO CONSTRUCTION.



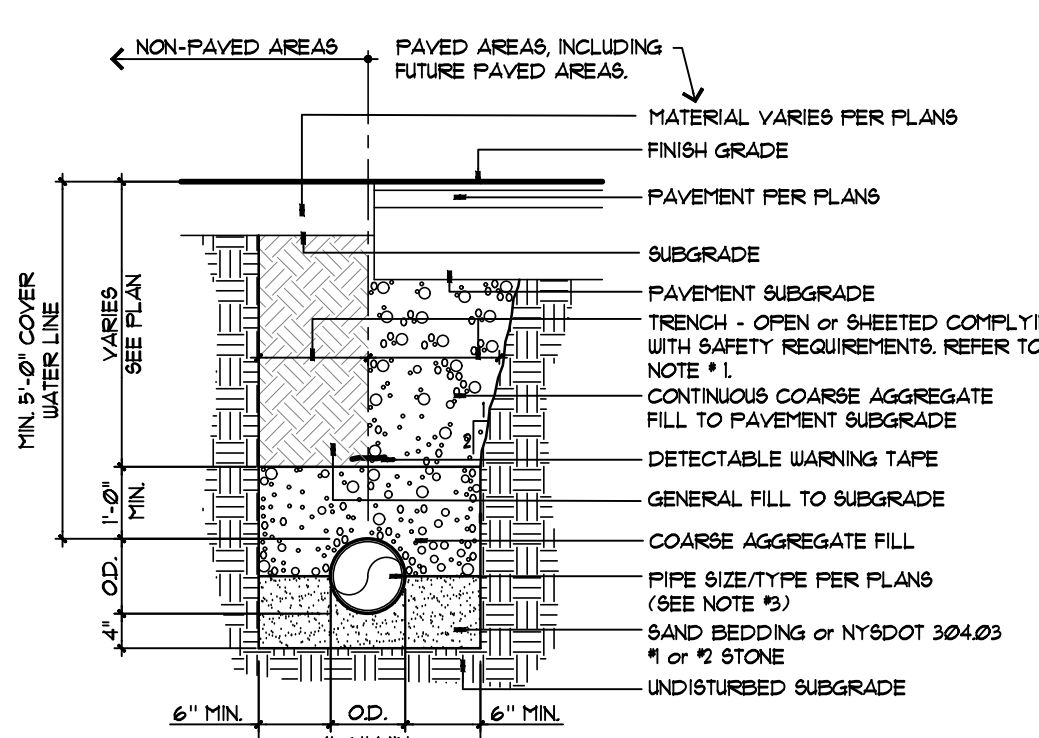
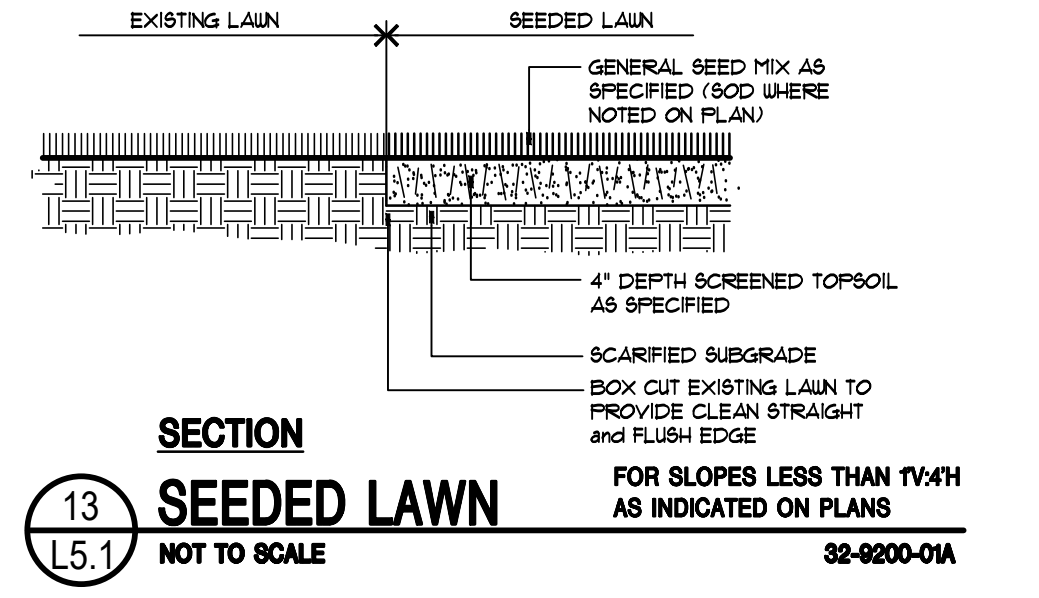
NOTES:
1. WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES.
2. FILTER CLOTH TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED 24" AT TOP AND MID SECTION.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVERLAPPED BY SIX (6) INCHES AND FOLDED.
4. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE. FENCING SHALL BE INSPECTED MONTHLY, AND FOLLOWING MAJOR RAINFALLS.
5. THE FOLLOWING MATERIALS SHALL BE USED FOR CONSTRUCTION OF THE SILT FENCE:
POSTS: STEEL EITHER 1" OR 1 1/2" TYPE OR 2" HARDWOOD FENCE: WOVEN WIRE 4-1/2 GA. 6" MAX MESH OPENING. FILTER CLOTH: FILTER X, TIRAFIL 100X, STABILINKA TADON OR APPROVED EQUAL.
6. REFER TO NY'S STANDARDS & SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROLS FOR ADDITIONAL GUIDANCE.



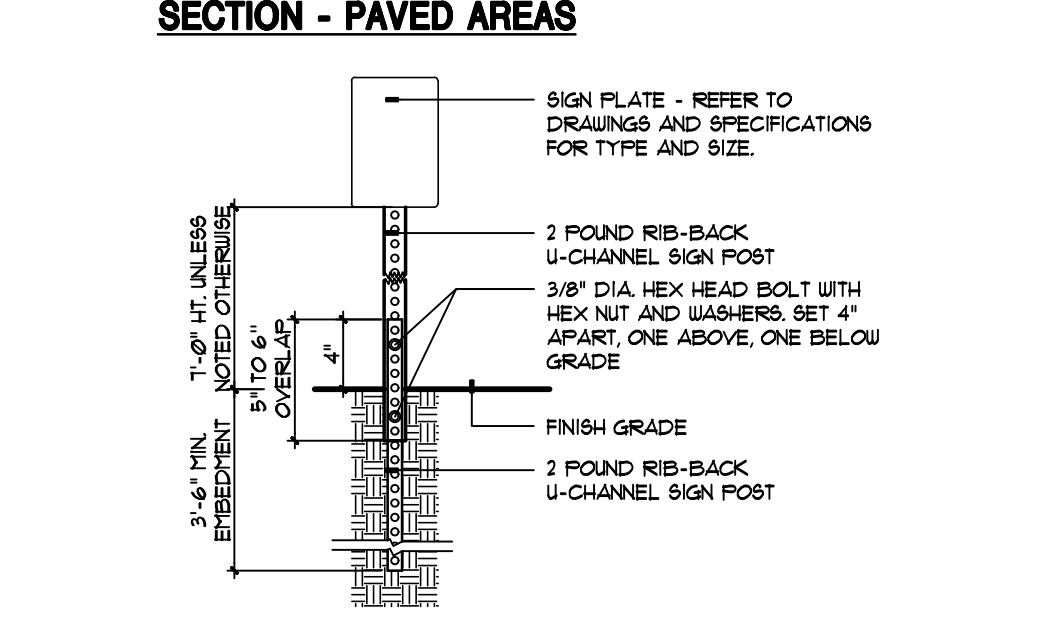
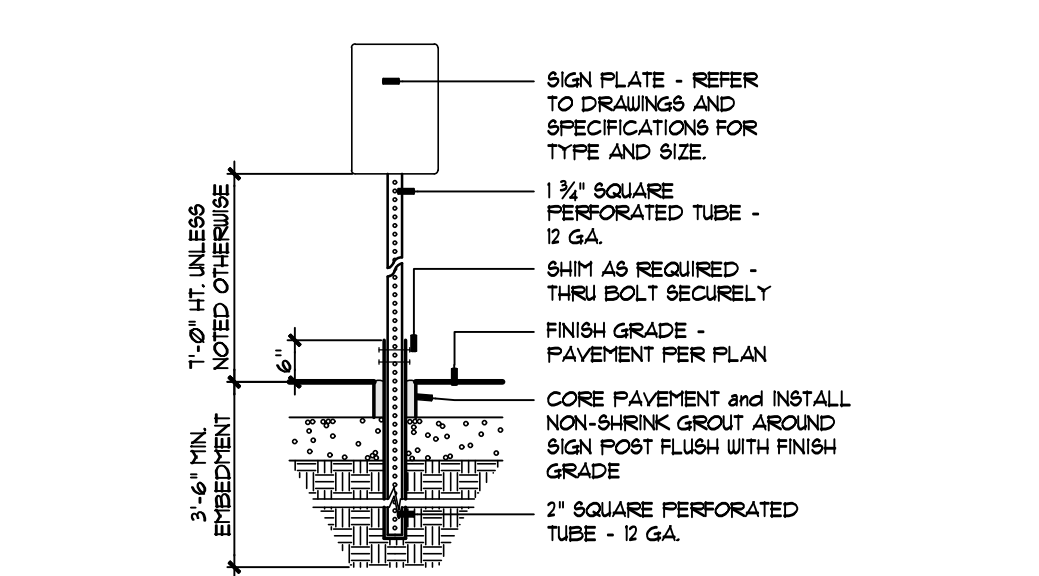
14 FLARED END SECTION

NOT TO SCALE

NOTE: FLARED END SECTION SHALL BE CONSTRUCTED OF GALVANIZED STEEL OR ALUMINUM WITH SAFETY BAR SYSTEM ON END SECTIONS 15" OR LARGER.



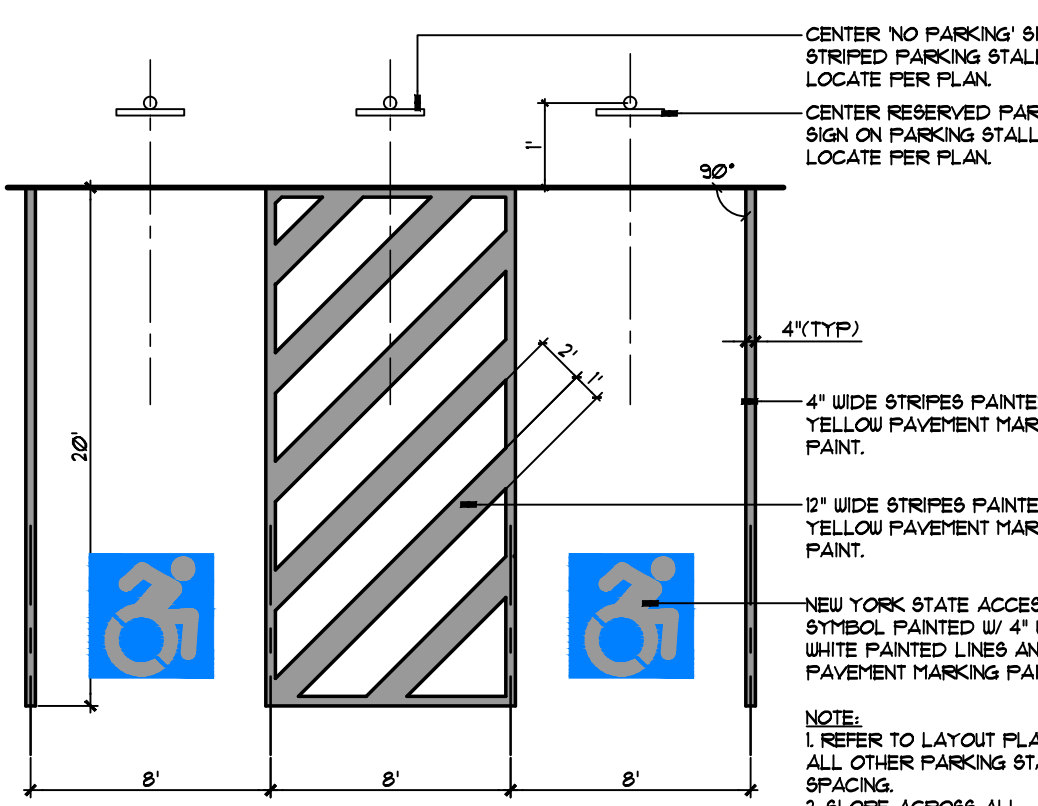
NOTES:
1. TRENCH DEPTHS, WIDTHS, SHEETING, SHORING, BRACING AND CUTBACK SLOPES TO BE DETERMINED BY THE CONTRACTOR AND COMPLY WITH OSHA, NEW YORK STATE DEPARTMENT OF LABOR, NEW YORK STATE INDUSTRIAL CODE AND ALL OTHER APPLICABLE SAFETY STANDARDS.
2. REFER TO PLAN FOR PAVED AND NON PAVED DETAILS.
3. INSTALL TRACER WIRE AROUND WATER LINE. TRACER WIRE SHALL BE #2 AWG COPPER CLAD STEEL, HIGH STRENGTH, WITH MINIMUM 450 LB BREAK LOAD WITH MINIMUM 30 MIL. HDPE INSULATION THICKNESS.



NOTES:
1. PROVIDE SCORE CONTROL JOINT EVERY 10'-0".

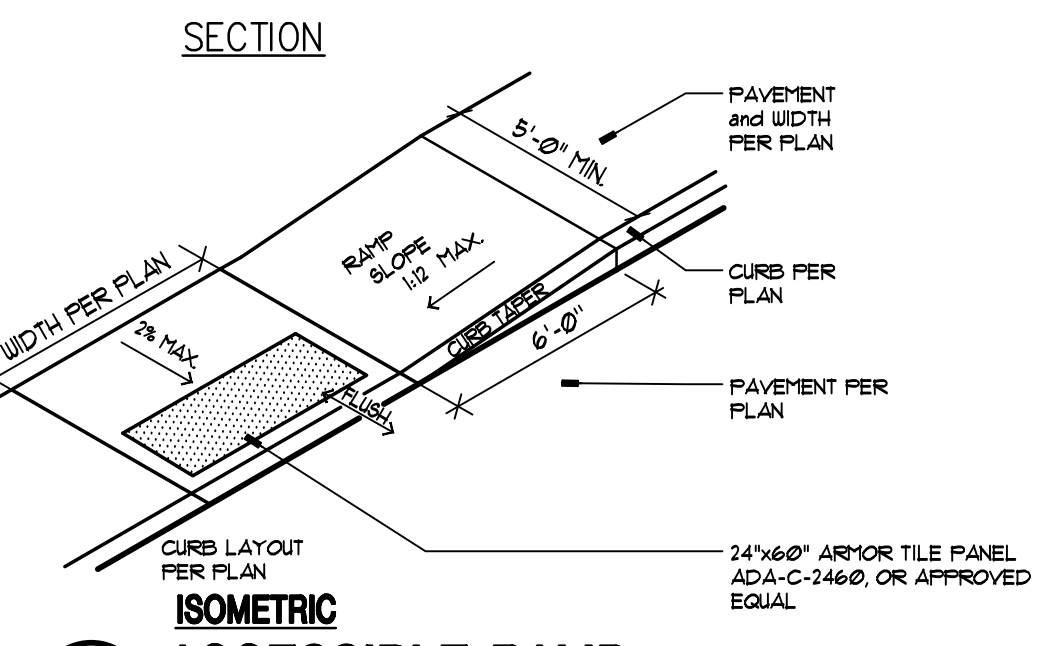
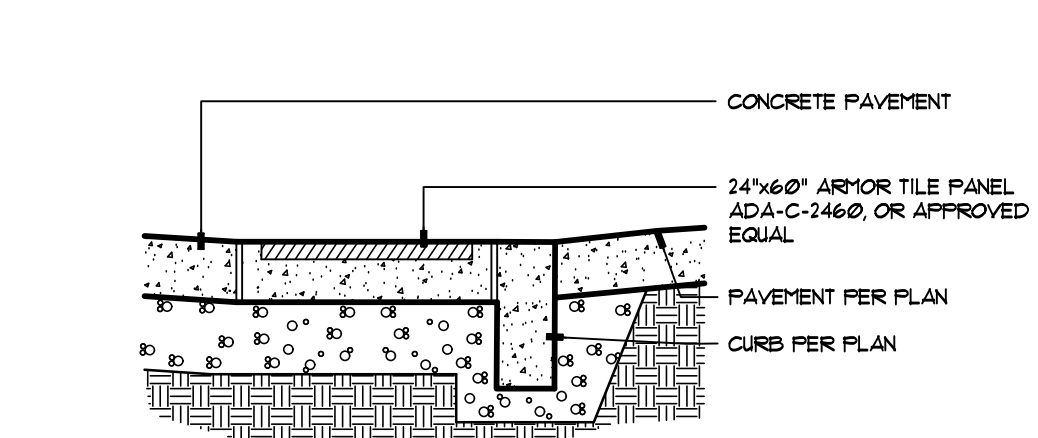
6 CONCRETE CURB

NOT TO SCALE



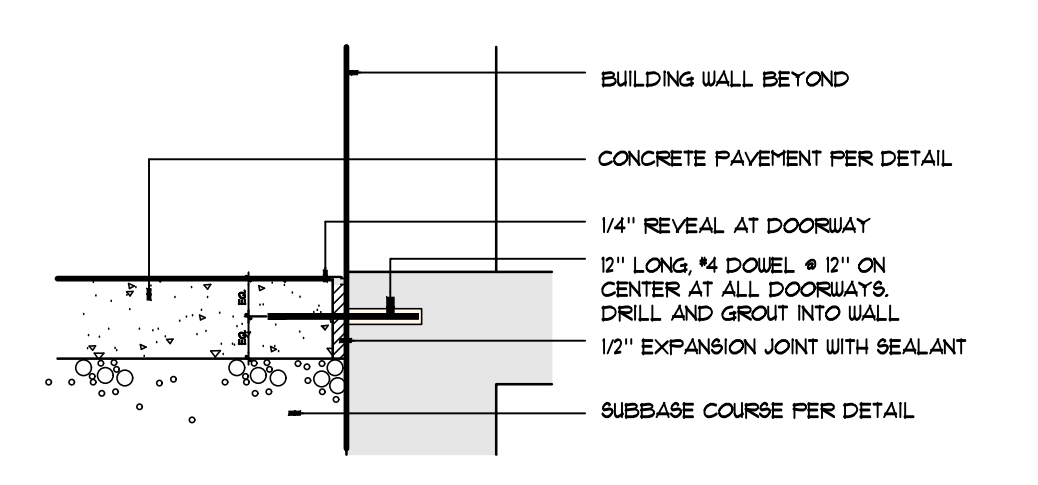
10 RESERVED PARKING STALL

NOT TO SCALE



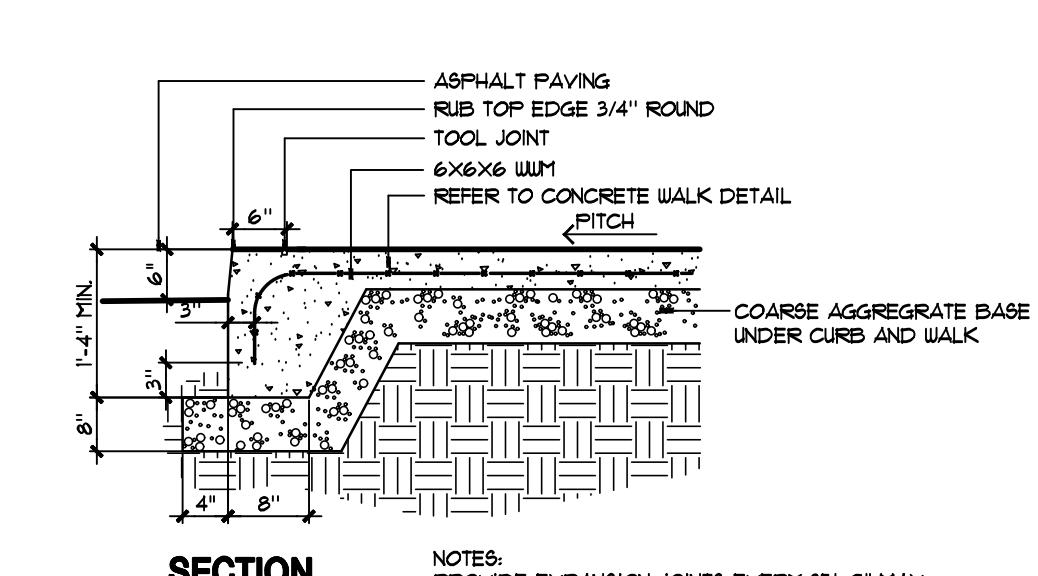
9 ACCESSIBLE RAMP

NOT TO SCALE



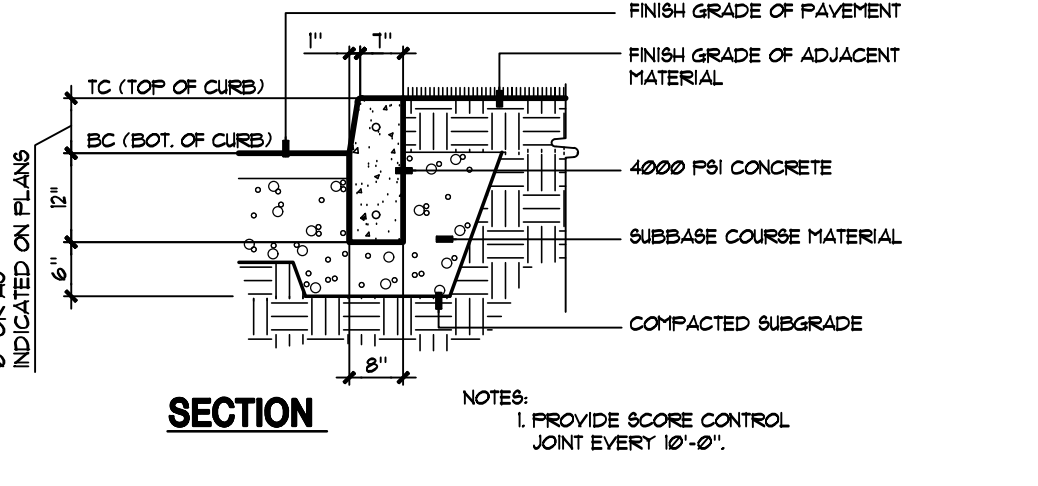
8 CONCRETE DOWELING @ DOORWAY

NOT TO SCALE



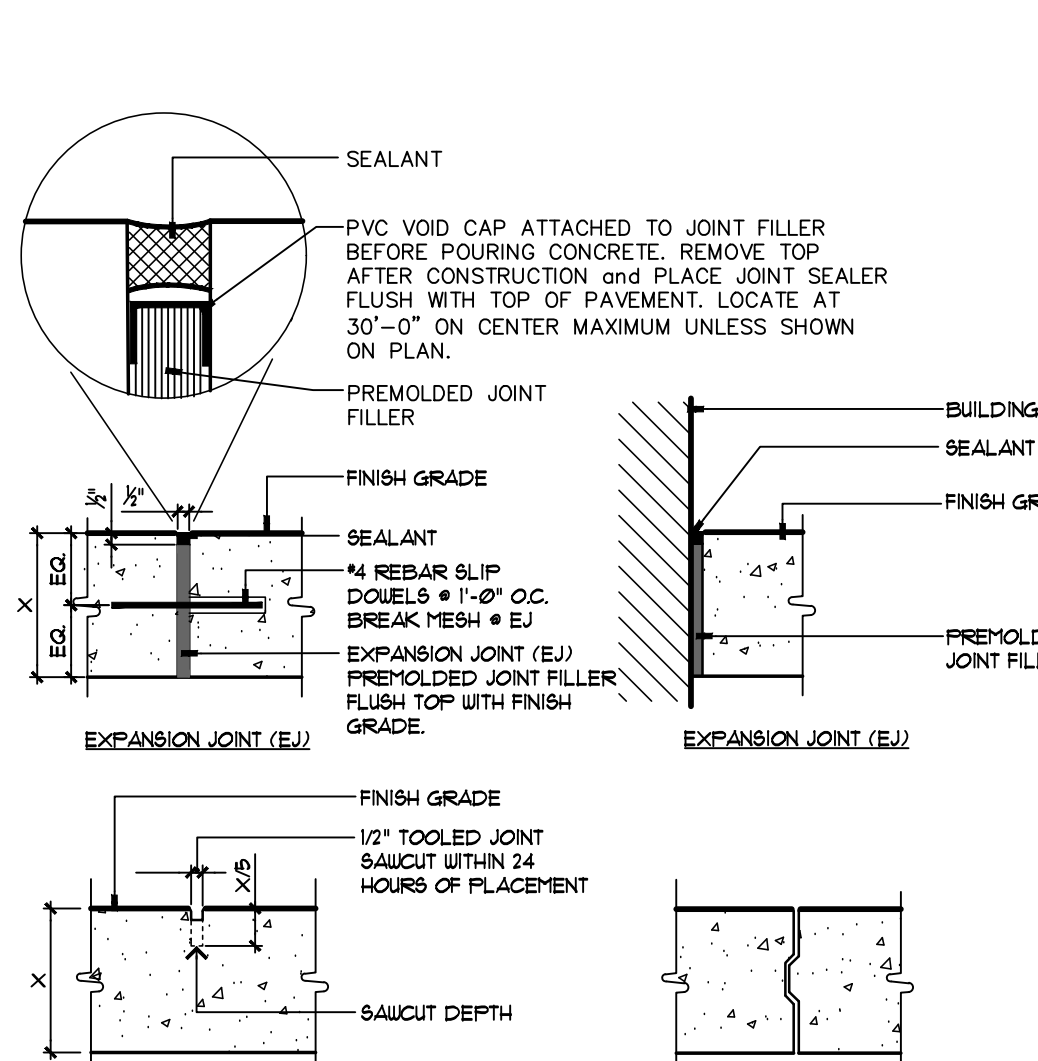
7 CONCRETE CURB - INTEGRAL

NOT TO SCALE



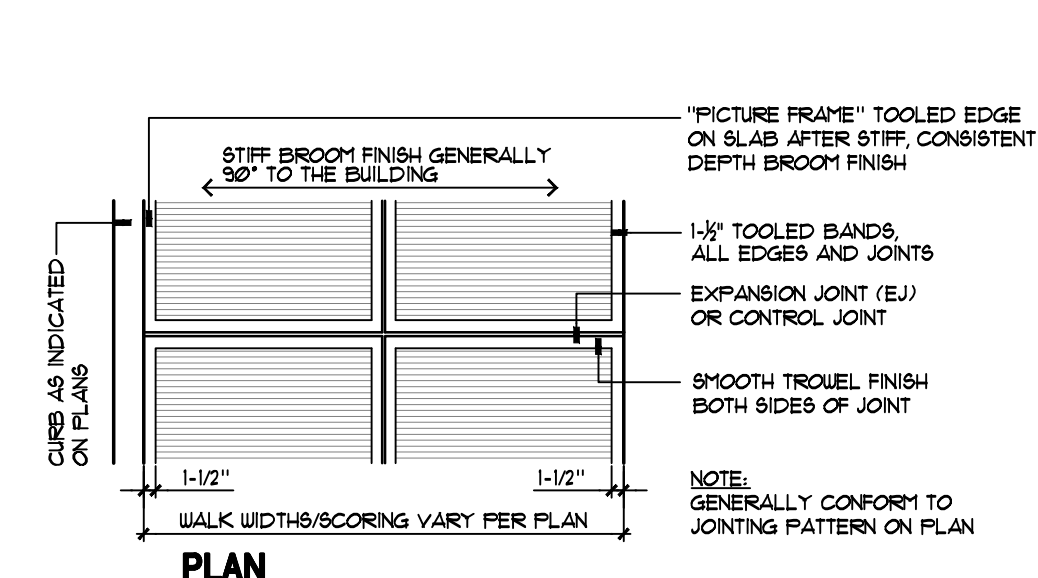
6 CONCRETE CURB

NOT TO SCALE



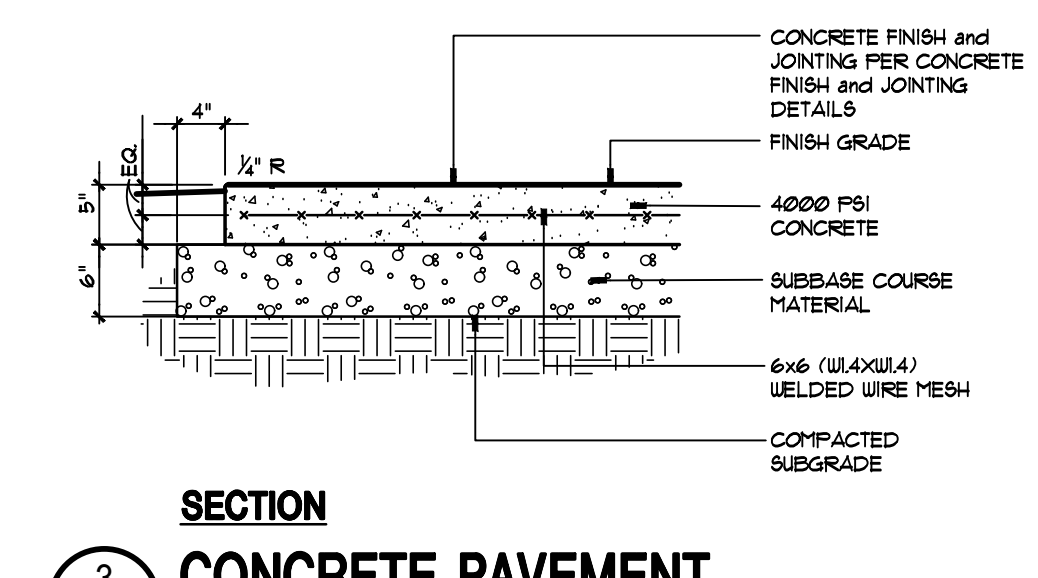
5 CONCRETE JOINT DETAILS

NOT TO SCALE



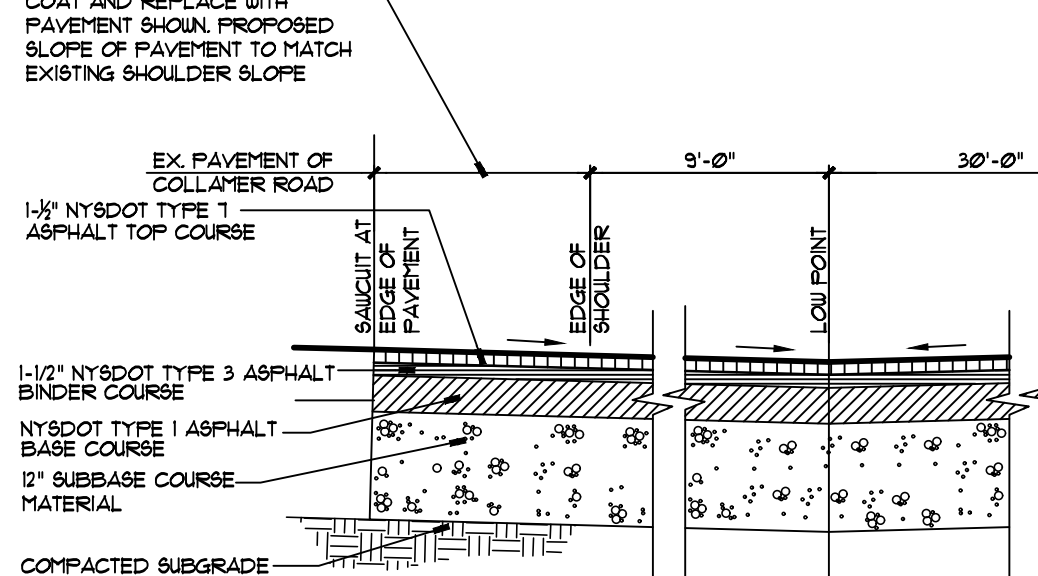
4 CONCRETE FINISH

NOT TO SCALE



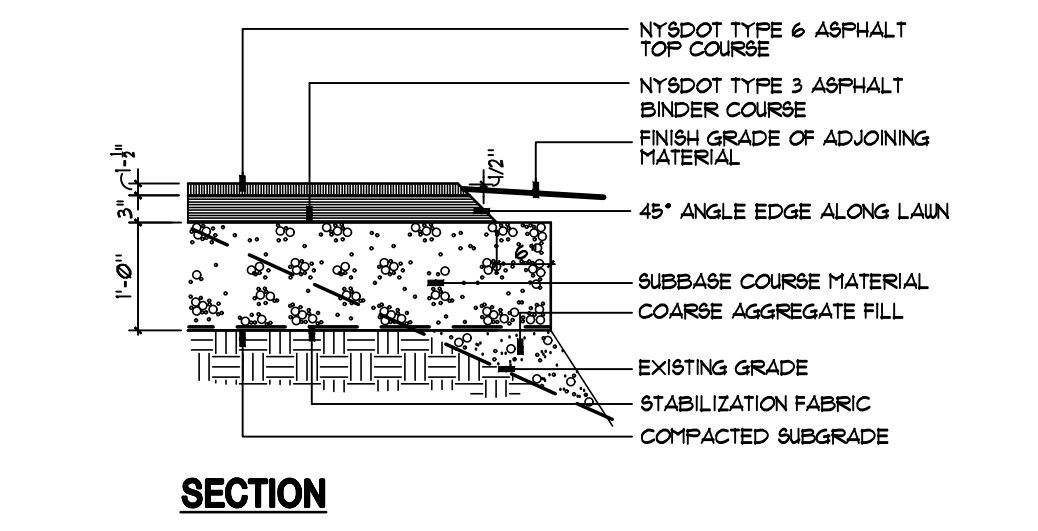
3 CONCRETE PAVEMENT

NOT TO SCALE



2 NYS DOT ASPHALT R.O.W. PAVEMENT

NOT TO SCALE



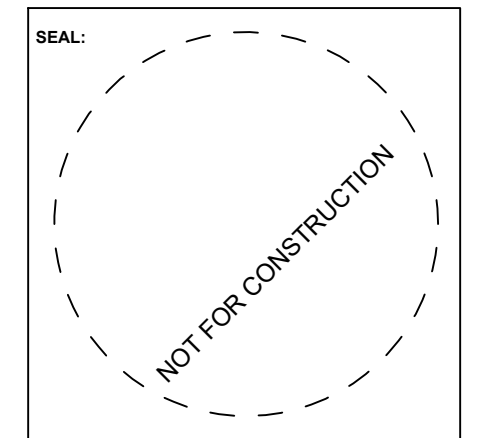
1 ASPHALT PAVEMENT - PARKING

NOT TO SCALE



ASHLEY MCGRAW
25 EAST JEFFERSON STREET
SYRACUSE, NEW YORK 13202

CONSULTANT:
KEPLINGER
FREEMAN
ASSOCIATES
LANDSCAPE ARCHITECTURE & LAND PLANNING
6320 FLY ROAD, SUITE 209 EAST SYRACUSE, NEW YORK 13207
PHONE: (315) 445-7980 FAX: (315) 445-7981



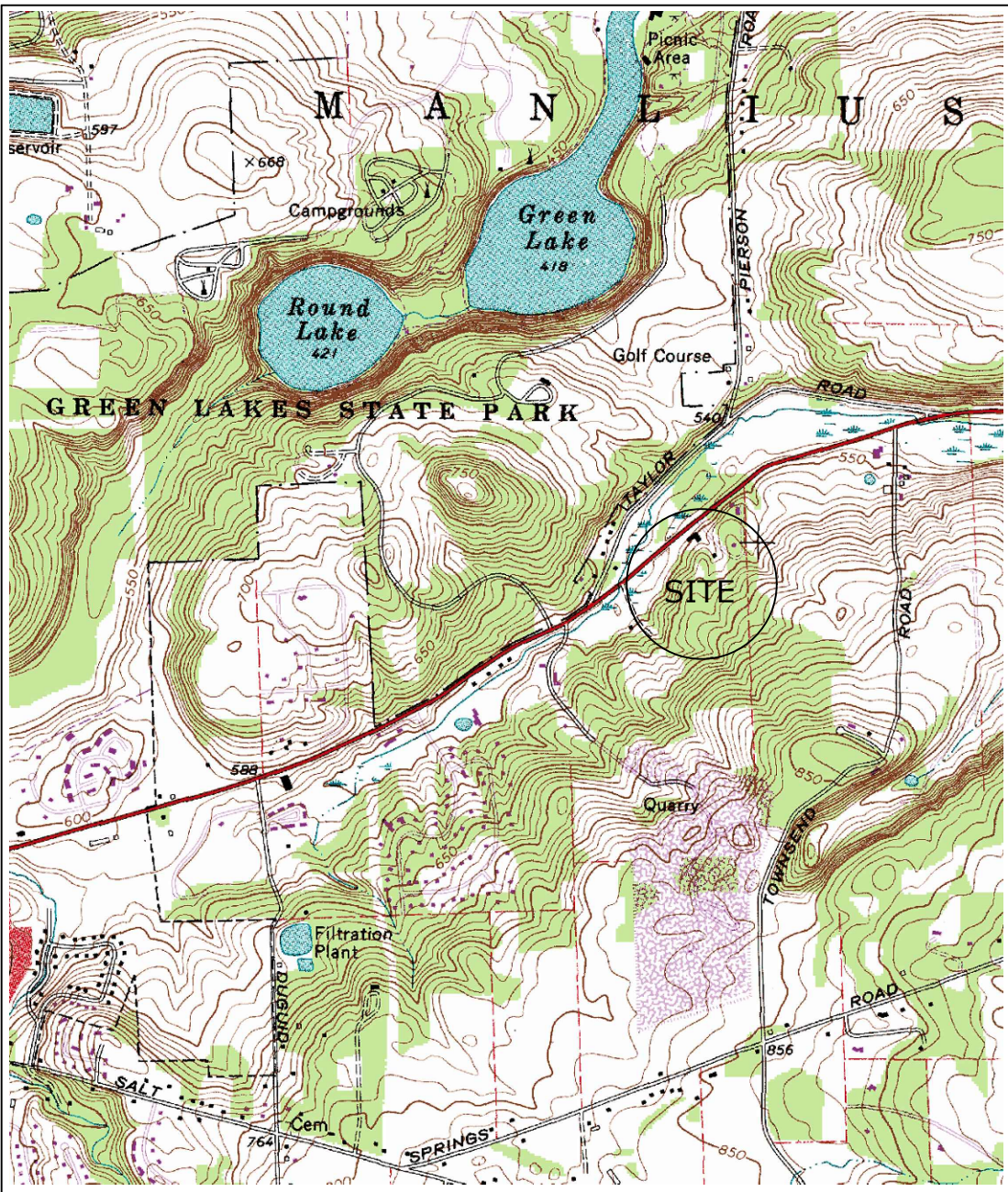
FAYETTEVILLE VETERINARY
HOSPITAL
8122 E. GENESEE ST.
TOWN OF MANLIUS, NY

Rev. No.	Date	Desc.
AM JOB NO.		

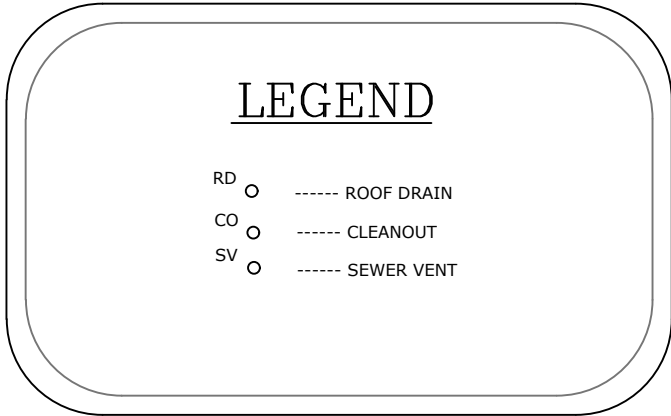
DETAILS

DATE ISSUED:
03/03/22

L5.1

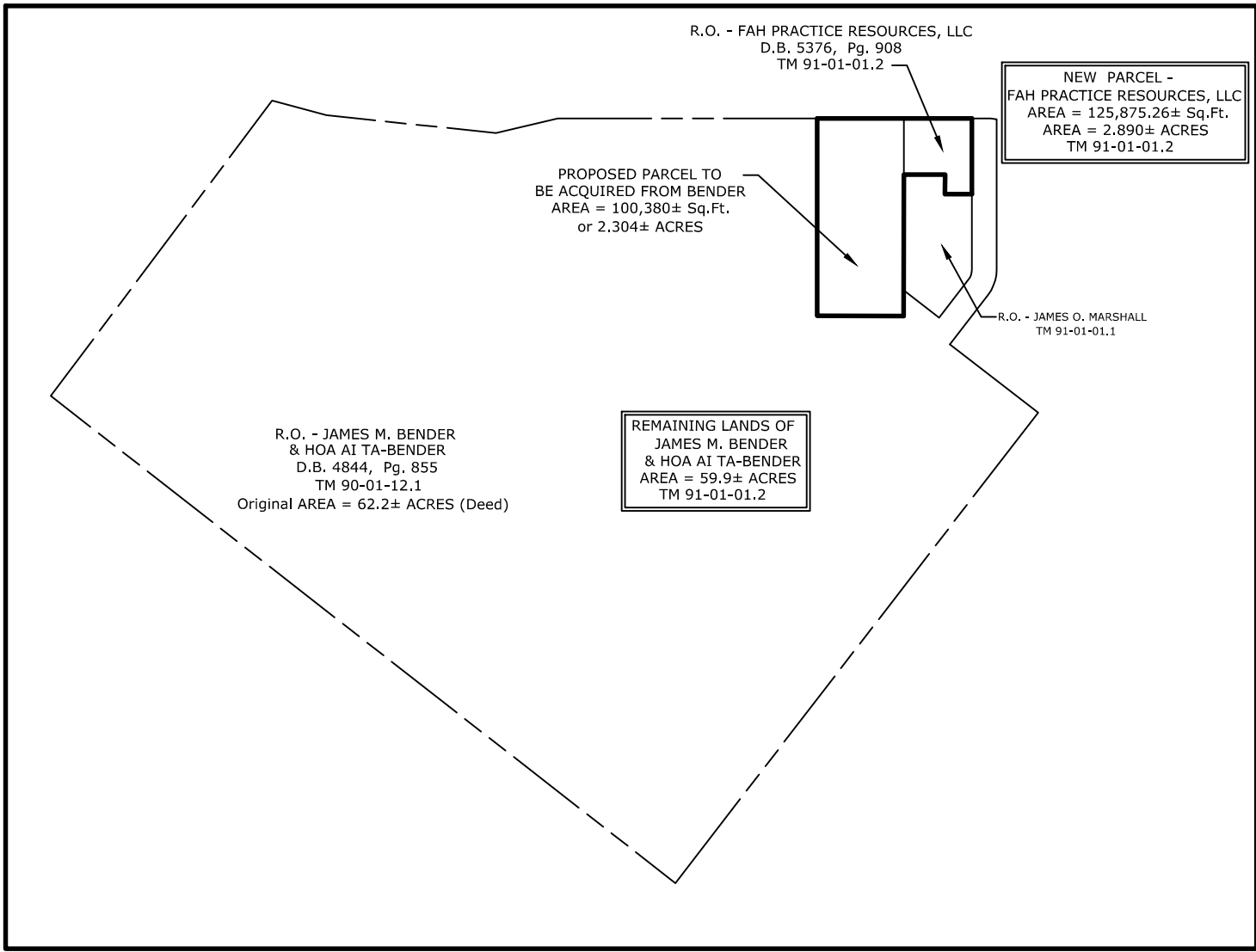


LOCATION MAP (NOT TO SCALE)



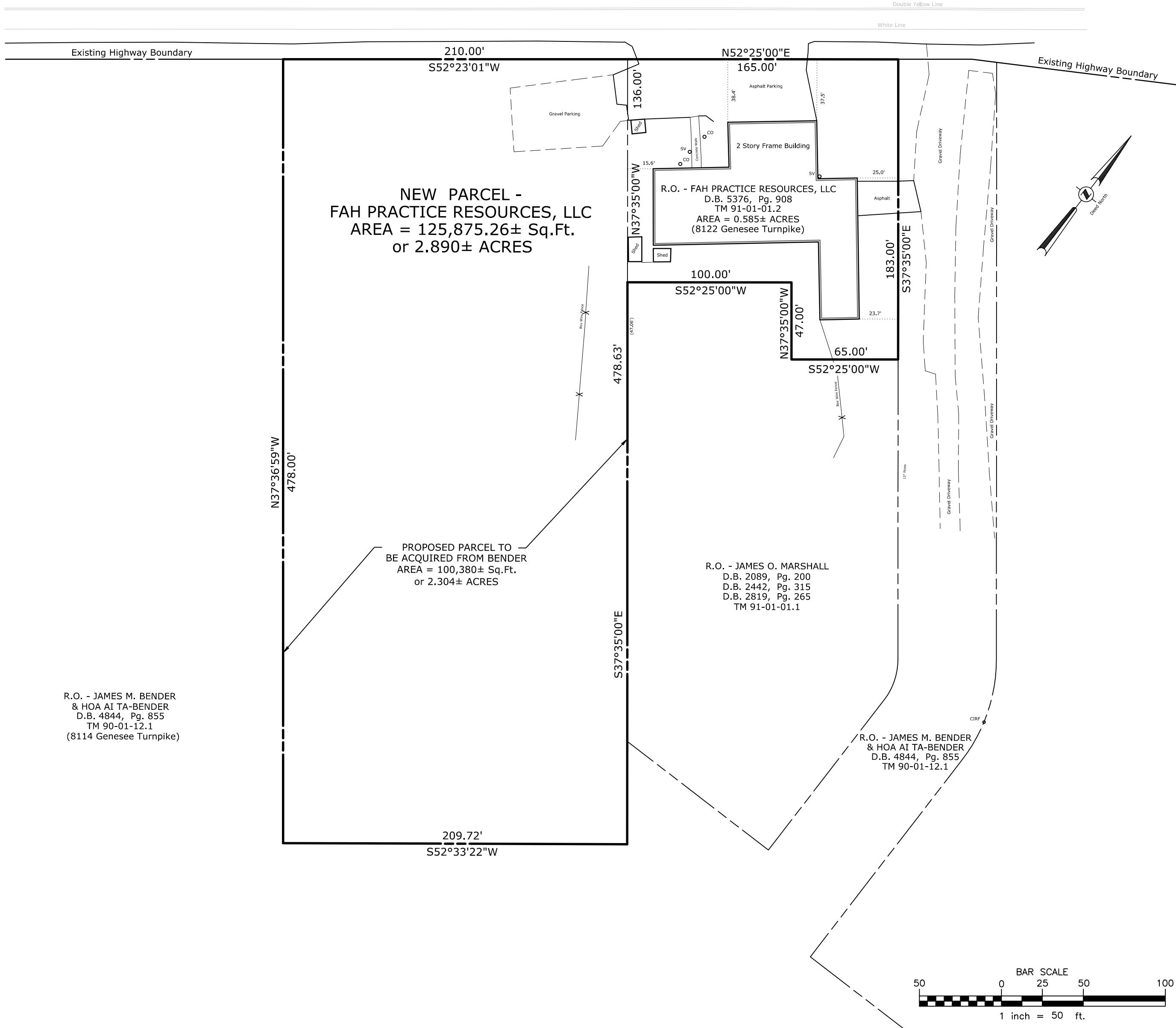
Miscellaneous Notes

- 1.) NORTH ORIENTATION IS BASED ON DEED NORTH PER D.B. 5376, Pg. 908.
- 2.) VERTICAL DATUM BASED ON NAVD 1988 DATUM PER RTK GPS OBSERVATIONS.
- 3.) THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF AN ABSTRACT OR UP TO DATE TITLE REPORT AND IS THEREFORE SUBJECT TO ANY EASEMENTS, RESTRICTIONS, COVENANTS OR ANY STATEMENT OF FACTS THAT SUCH DOCUMENTS MAY DISCLOSE.
- 4.) UNDERGROUND FACILITIES, STRUCTURES AND UTILITIES HAVE BEEN PLOTTED FROM DATA OBTAINED BY FIELD SURVEY, PREVIOUS MAPS AND RECORDS, (AND PAROL TESTIMONY), THEREFORE THEIR LOCATIONS MUST BE CONSIDERED APPROXIMATE ONLY. THERE MAY BE OTHER UNDERGROUND UTILITIES, THE EXISTENCE OF WHICH ARE NOT KNOWN TO THE UNDERSIGNED. SIZE AND LOCATION OF ALL UNDERGROUND UTILITIES AND STRUCTURES MUST BE VERIFIED BY THE APPROPRIATE AUTHORITIES PRIOR TO ANY CONSTRUCTION.
- 5.) SURVEY WAS PERFORMED IN THE FIELD ON FEBRUARY 2 & 7, 2017.
- 6.) SUBJECT TO A 20 FOOT UTILITY EASEMENT RESERVED EDWARD B. CHAPMAN, HIS SUCCESSORS AND ASSIGNS, PER D.B. 5376, Pg. 908. EASEMENT TO CENTER ON EXISTING UTILITY LINES.



New York State Route 5 (East Genesee Street)

(S.H. 8025 - Fayetteville- Chittenango, Part 1)
(a.k.a. Genesee Turnpike)
(Width Varies)



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APPROVED: TOWN OF MANLIUS

NAME _____ DATE _____

I HEREBY CERTIFY THAT THIS SUBDIVISION PLAT WAS PREPARED BY ME AND WAS MADE FROM AN ACTUAL FIELD SURVEY ORIGINALLY COMPLETED BY US ON FEBRUARY 7, 2018.

David M. Sliski
DAVID M. SLISKI, P.L.S. #50105

August 28, 2018
DATE

DAVID M. SLISKI
P.L.S. NO. 50105



DATE	REVISIONS RECORD/DESCRIPTION		DRAFTER	CHECK	APPR.	UNAUTHORIZED ALTERATION OR ADDITION TO THIS DOCUMENT IS A VIOLATION OF THE NEW YORK STATE EDUCATION LAW. © 2018 C.T. MALE ASSOCIATES APPROVED: DRAFTED : DMS CHECKED : DMS PROJ. NO : 16.6687 SCALE : 1" = 50 FT. DATE : JULY 25, 2018
8/28/18		Fix address in Title Block	dms	dms	dms	
						
						
						
						
						
						
						
						

LOT LINE ADJUSTMENT MAP

FOR THE LANDS OF

FAYETTEVILLE ANIMAL HOSPITALITY & JAMES M. & HOA AI TA-BENDER

8114 & 8122 GENESEE TURNPIKE

PART OF LOT 67

TOWN OF MANLIUS

ONONDAGA COUNTY, NEW YORK

C.T. MALE ASSOCIATES

Engineering, Surveying, Architecture, Landscape Architecture & Geology, D.P.C.

200 GATEWAY PARK DRIVE, BLDG. C, P.O. BOX 3246
SYRACUSE, NY 13209-3246
315.458.6498 * FAX 315.458.4427



SHEET 1 OF 1

DWG. NO: 17-0158

Expected
Fee: _____

TOWN OF MANLIUS
PLANNING DEPARTMENT
INITIAL APPEARANCE APPLICATION

DATE: 01/27/22

Name of Project: Fayetteville Veterinary Hospital

Applicant must submit 12 copies of all site plans, surveys, and supporting data with the final application before a planning board meeting can be scheduled.

Location of Project: 8122 E. Genesee St. Fayetteville, NY 13066

Type of Project:

☐ Division of Land ☐ Subdivision ☐ Accessory Use ☐ Zone Change ☒ Site Review ☐ Other _____

Developer: Fayetteville Veterinary Hospital

Phone: 315-637-9801

Address: 8122 E. Genesee St. Fayetteville, NY

Zip: 13066

Tax Map Number(#)/s: 091.-01-01.2

Present Zoning: (RA) Restricted Ag

Desired Zoning: _____

Total Acreage: 2.890

Total Number of Lots: 1

Property Owner/s: Fayetteville Veterinary Hospital

Phone: _____

Address: 8122 E. Genesee St. Fayetteville, NY

Zip: 13066

Tax Map#(s): 091.-01-01.2

Owner's Signature: Mike Bunnell

Printed Name: Mike Bunnell

Property Owner/s: _____

Phone: _____

Address: _____

Zip: _____

Tax Map#(s): _____

Owner's Signature: _____

Printed Name: _____

Use next page for additional known property owners' information

Planning Board Meeting Date Assignment: _____

Fee: _____

Paid: _____

Per: ☐

redit/Debit Card

☐

check

☐

ash

Planning Board - Initial

TOWN OF MANLIUS
PLANNING DEPARTMENT
INITIAL APPEARANCE APPLICATION
(continued)

Property Owner/s: _____ Phone: _____

Address: _____ Zip: _____

Tax Map#(s): _____ Owner's Signature: _____

Printed Name: _____

Property Owner/s: _____ Phone: _____

Address: _____ Zip: _____

Tax Map#(s): _____ Owner's Signature: _____

Printed Name: _____

Property Owner/s: _____ Phone: _____

Address: _____ Zip: _____

Tax Map#(s): _____ Owner's Signature: _____

Printed Name: _____

Property Owner/s: _____ Phone: _____

Address: _____ Zip: _____

Tax Map#(s): _____ Owner's Signature: _____

Printed Name: _____

Property Owner/s: _____ Phone: _____

Address: _____ Zip: _____

Tax Map#(s): _____ Owner's Signature: _____

Printed Name: _____

Property Owner/s: _____ Phone: _____

Address: _____ Zip: _____

Tax Map#(s): _____ Owner's Signature: _____

Printed Name: _____

TOWN OF MANLIUS

DISCLOSURE AFFIDAVIT

This affidavit is a part of and must be completed and attached to every application, petition, request submitted for a *site plan, variance, amendment, change of zoning, approval of a plat, exemption from a plat or official map, license or permit.*

STATE OF NEW YORK)
) SS:
COUNTY OF ONONDAGA)

I. Michael Bunnell, being duly sworn, deposes and says that (s) he is:

applicant, corporation officer, & property owner
(applicant, petitioner, corporation officer, property owner, etc.)

II. That deponent has read and is familiar with the provisions of the General Municipal Law, Section 809 which states:

- A. Every application, petition or request submitted for a site plan, variance, amendment, change of zoning, approval of a plat, exemption from a plat or official map, license or permit, pursuant to the provisions or any ordinance, local law, rule or regulation constituting the zoning and planning regulations of a municipality shall state the name, residence and the nature and extent of the interest of any state officer or any officer or employee of such municipality is a part, in the person, partnership or association making such application, petition or request (hereinafter called the applicant) to the extent known to such applicant.
- B. For the purpose of this action an officer or employee shall be deemed to have an interest in the applicant when (s)he, his/her spouse, or their brothers, sisters, parents, children, grandchildren, or the spouse of any of them:
 - 1) is the applicant, or
 - 2) is an officer, director, partner or employee of the applicant, or
 - 3) legally or beneficially owns or controls stock of a corporate applicant or is a member of a partnership or association applicant, or
 - 4) is a party to an agreement with such an applicant, express or implied, whereby (s) he may receive any payment or other benefit, whether or not for services rendered, or contingent upon the favorable approval of such application, petition or request.
- C. Ownership of less than five percent (5%) of the stock of a corporation whose stock is listed on the New York or American Stock Exchanges shall not constitute an interest for the purposes of this section.
- D. A person who knowingly and intentionally violates this section shall be guilty of a misdemeanor.

CORPORATE ACKNOWLEDGEMENT

STATE OF NEW YORK)

) SS:

COUNTY OF ONONDAGA)

Michael Bunneil, being duly sworn, deposes and says the
s(he) is the managing member / President of Fayetteville Animal Hospital
corporation named in the within Application/Petition, that s(he) has read the foregoing affidavit and
knows the contents thereof; that the same is true of s(he) own knowledge, except as to those matters
therein stated to be alleged upon information and belief, and as to those matters s(he) believes it to be
true.

Michael Bunneil
Applicant Signature

Subscribed to me before this day 1st
day Of march, 20 22


Notary Public

LOURDES PILAR ROSARIO
Notary Public, State of New York
Qual. in Onon. Co. No. 02R06232755
My Commission Expires Dec. 13, 2022

III. That no Town of Manlius officer, employee or a relative of either, as defined in Section 809 General Municipal Law has any interest in this application.

-OR-

If a Town of Manlius officer, employee or relative of either as defined in Section 809 General Municipal law has any interest in this application, the full particulars are provided on an attached sheet.

Date: March 1, 20 22.

Date: _____, 20____.

Michael Bunnell
(Print Name)

(Print Name)

Michael Bunnell
(Signature)

(Signature)

Fayetteville Animal Hospital
(Entity Name)

(Entity Name)

Managing Member & President
By (Officer) (Title)

By (Officer) (Title)

8122 E. Genesee St., Fayetteville, NY 13064
(Mailing Address of Applicant)

(Mailing Address of Applicant)

315-637-9801
(Telephone Number)

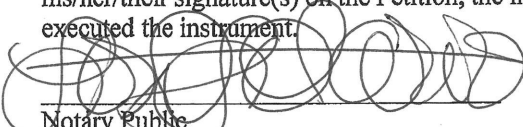
(Telephone Number)

ACKNOWLEDGEMENTS

STATE OF NEW YORK)
) SS:
COUNTY OF ONONDAGA)

On this 1st day of March in the year 20 22, before me, the undersigned, a notary public in and for said state, personally appeared Michael Bunnell,

_____, and _____ personally known to me or proved to me on the basis of satisfactory evidence to be the individual whose name is subscribed to the within Petition and acknowledged to me the he/she/they executed the same in his/her/their capacity, and that by his/her/their signature(s) on the Petition, the individual or the persons upon behalf of which the individual acted executed the instrument.


Notary Public

LOURDES PILAR ROSARIO
Notary Public, State of New York
Qual. in Onon. Co. No. 02R06232755
My Commission Expires Dec. 13, 2022



Joanne M. Mahoney
County Executive

Onondaga County Planning Board

RESOLUTION OF THE ONONDAGA COUNTY PLANNING BOARD

Meeting Date: March 23, 2022

OCPB Case # Z-22-52

- WHEREAS, the Onondaga County Planning Board, pursuant to General Municipal Law, Section 239 l, m and n, has considered and reviewed the referral for a SITE PLAN from the Town of Manlius Planning Board at the request of Fayetteville Veterinary Hospital for the property located at 8122 East Genesee Street; and
- WHEREAS, General Municipal Law Section 239-m allows the County Planning Board to review approval of site plans and the site is located within 500 feet of East Genesee Street (Route 5), a state highway, and a farm operation located in a NYS Agricultural District; and
- WHEREAS, the applicant is proposing to demolish an existing building and construct a new Veterinary Hospital facility with associated amenities on a 2.89-acre parcel in a Restricted Agriculture (RA) zoning district; and
- WHEREAS, the site is located to the southeast of Green Lakes State Park in a mostly wooded rural area with frontage on East Genesee Street; surrounding land uses include agricultural uses and residential uses, with sporadic commercial uses along East Genesee Street; and
- WHEREAS, per the Site Preparation Plan dated March 3, 2022, the site contains an existing two-story building that serves as the current Fayetteville Veterinary Hospital, a freestanding sign in front of the building, several stone walls and a retaining wall behind the building, and a concrete sidewalk to a small parking lot, all to be demolished; the remainder of the parcel contains a steep undeveloped hillside that slopes down to Route 5, and approximately half of an acre of farmland in the western corner of the parcel along Route 5; and
- WHEREAS, per the Site Layout plan dated March 3, 2022, the applicant proposes to remove all structures and construct a new 4,767 sf building to serve as the new animal hospital, with a new parking area, driveway and associated retaining walls in a new location at the front of the site; and
- WHEREAS, per the Site Layout plan, a new asphalt parking area for approximately 25 spaces is proposed where the existing building is located, connected with a new sidewalk; a new 20' wide driveway is proposed onto NYS Route 5 (E Genesee Street); per aerial photography, an informal field drive, presumed to remain, appears to the west on the parcel accessing the remainder of the parcel;
ADVISORY NOTE: Per the NYS Department of Transportation, all existing or proposed driveways on East Genesee Street must meet Department requirements and any proposed work within the state right-of-way is subject to a work permit; and
- WHEREAS, the applicant proposes to remove topsoil in strategic locations to level out the site; there is an existing segmental retaining wall to the southwest of the building that will remain; the applicant proposes to remove the vegetation in front of the wall; and
- WHEREAS, per the Planting Plan dated March 3, 2022, trees will be planted on the front and back sides of the parking lot and shrubs will be planted in front of part of the

segmental retaining wall and as landscaping on the front and side of the building; a sign is proposed in between the parking lot and the State right-of-way; ADVISORY NOTE: Per the NYS Department of Transportation, any existing or proposed signage must not obstruct sight distance and signage is not permitted in the state right-of-way; and

WHEREAS, per the referral notice, the site is served by an individual well and septic system; per the Environmental Assessment Form dated March 2, 2022 no new connections are proposed; per the Site Layout plan dated March 3, 2022, a new sanitary disposal field is proposed for the western corner of the property; the current septic field is not shown on any referral materials; and

WHEREAS, per the EAF, 2.89 acres of the site will be disturbed by the proposed project; the EAF states that stormwater will be conveyed to an existing swale located within the NYS Route 5 right-of-way; the Grading, Drainage and Utility Plan shows a trench drain and storm inlet to be installed in the entrance of the parking lot and an 18" culvert to be extended under the proposed driveway within the State right-of-way; the Site Erosion Control Plan dated March 3, 2022, shows silt fences, siltation socks, and slope protection will be used for erosion control; ADVISORY NOTE: Per the NYS Department of Transportation, additional stormwater runoff into the state's drainage system is prohibited; ADVISORY NOTE: Any project that cumulatively disturbs one acre or more of land must be covered under the NYS SPDES Permit; the municipality is advised to ensure that the applicant has obtained the appropriate permits from the NYS Department of Environmental Conservation prior to municipal approval; and

WHEREAS, surrounding lands are enrolled in NYS Agricultural District 3 and appear to contain active farmland; ADVISORY NOTE: Any application for a special use permit, site plan approval, use variance, or subdivision approval requiring municipal review and approval that would occur on or within 500 feet of a property within a NYS Certified Agricultural District is required by the NYS Agricultural and Markets Law to include an Agricultural Data Statement; and

WHEREAS, the site may contain the following natural communities: Maple-Basswood Rich Mesic Forest (per EAF Mapper); ADVISORY NOTE: Per the NYS Department of Environmental Conservation (DEC), a careful on-site evaluation should be done to confirm the size, status, and specific locations of any natural communities on the parcel, and to document the presence of any significant plants or wildlife; The applicant is advised to contact the DEC to determine if the project should be reviewed as part of the State Environmental Quality Review (SEQR) process; and

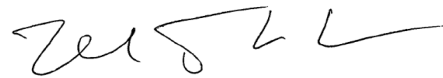
NOW THEREFORE BE IT RESOLVED, that the Onondaga County Planning Board recommends the following MODIFICATION(S) to the proposed action prior to local board approval of the proposed action:

1. Per the New York State Department of Transportation, a drainage study or Stormwater Pollution Prevention Plan (SWPPP) is required to show that the proposed development would not create additional stormwater runoff into the state's drainage system. The applicant must contact the Department to determine the scope of the study. The municipality must ensure any mitigation as may be determined by the Department is reflected on the project plans prior to, or as a condition of, municipal approval.

2. The applicant must contact the Onondaga County Health Department's Bureau of Public Health Engineering to confirm the location of the existing sewage disposal system to ensure it will not be impacted by the proposed animal hospital and parking lot. The Department must also formally accept or approve, respectively, any existing or proposed septic system to service this property prior to, or as a condition of, municipal approval of the site plan.

The Board also offers the following comment:

The applicant and municipality are encouraged to consider the use of green infrastructure, such as bioswales, permeable pavement, and planting islands to further reduce stormwater runoff and improve stormwater quality and avoid drainage into the Route 5 right-of-way.

A handwritten signature in black ink, appearing to read 'Martin E. Voss', with a stylized flourish at the end.

Martin E. Voss, Chairman
Onondaga County Planning Board

GML 239 Report of Final Action

NYS GML § 239-m.6. and n.6. require the referring body to file a report of the final action it has taken on a referred matter with the county planning agency within 30 days after the final action (separate from the minutes taken at the meeting). A referring body which acts contrary to a County Planning Board recommendation of MODIFICATION or DISAPPROVAL of a referred matter shall also set forth the reasons for the contrary action in such report.

This section to be completed by the Syracuse-Onondaga County Planning Agency

To: Onondaga County Planning Board **From:** Town of Manlius Planning Board

Fax: 435-2439 **Phone:** 435-2611

Re: Applicant: Fayetteville Veterinary Hospital

Address: at 8122 East Genesee Street

Referral Type: SITE PLAN

OCPB Date: March 23, 2022

OCPB Action: Modification

OCPB Case #: Z-22-52

The local board took the following action regarding the above referenced referral (Check one box. If checking Other, please specify the final action taken. Use the space at the bottom of the report to identify reasons if acting contrary to the OCPB recommendation.):

- ☐ Approved the proposed action with regard to the OCPB's No Position or No Position with Comment.
- ☐ Approved the proposed action as modified by the OCPB.
- ☐ Approved the proposed action contrary to some of the modifications recommended by the OCPB.*
- ☐ Approved the proposed action contrary to all of the modifications recommended by the OCPB.*
- ☐ Approved the proposed action contrary to the disapproval recommended by the OCPB.*

- ☐ Disapproved the proposed action with regard to the OCPB's no position or no position with comment.
- ☐ Disapproved the proposed action with regard to the recommended modification(s) by the OCPB.
- ☐ Disapproved the proposed action as recommended and for reasons set forth by the OCPB.
- ☐ Disapproved the proposed action as recommended but for reasons other than those set forth by the OCPB. (Please list reasons below for local disapproval.)

☐ Other _____

Local Board Date: _____

*List reasons for acting contrary to the OCPB recommendation and include a copy of the local board resolution. Attach additional reasons on a separate sheet of paper as necessary.

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X-FAY ANIMAL-GEN NOTES

LIJ-SITE-PREP-NOTES

PROTECT FIELD AREA FROM CONSTRUCTION ACTIVITIES.

X-FAY, ANIMAL HOSF

	<u>REQUIRED</u>	<u>PROVIDED</u>
PARKING STALL DIMENSIONS	10 FT. X 20 FT.	10 FT. X 20 FT.
OFFICES (1 SPACE/ 300 SQ. FT.)	20 SPACES	25 SPACES

AM JOB NO.

L1.1



**KEPLINGER
FREEMAN
ASSOCIATES**
LANDSCAPE ARCHITECTURE & LAND PLANNING
6320 FLY ROAD, SUITE 109 EAST SYRACUSE, NEW YORK 13057
PHONE: (315) 445-7980 FAX: (315) 445-7981

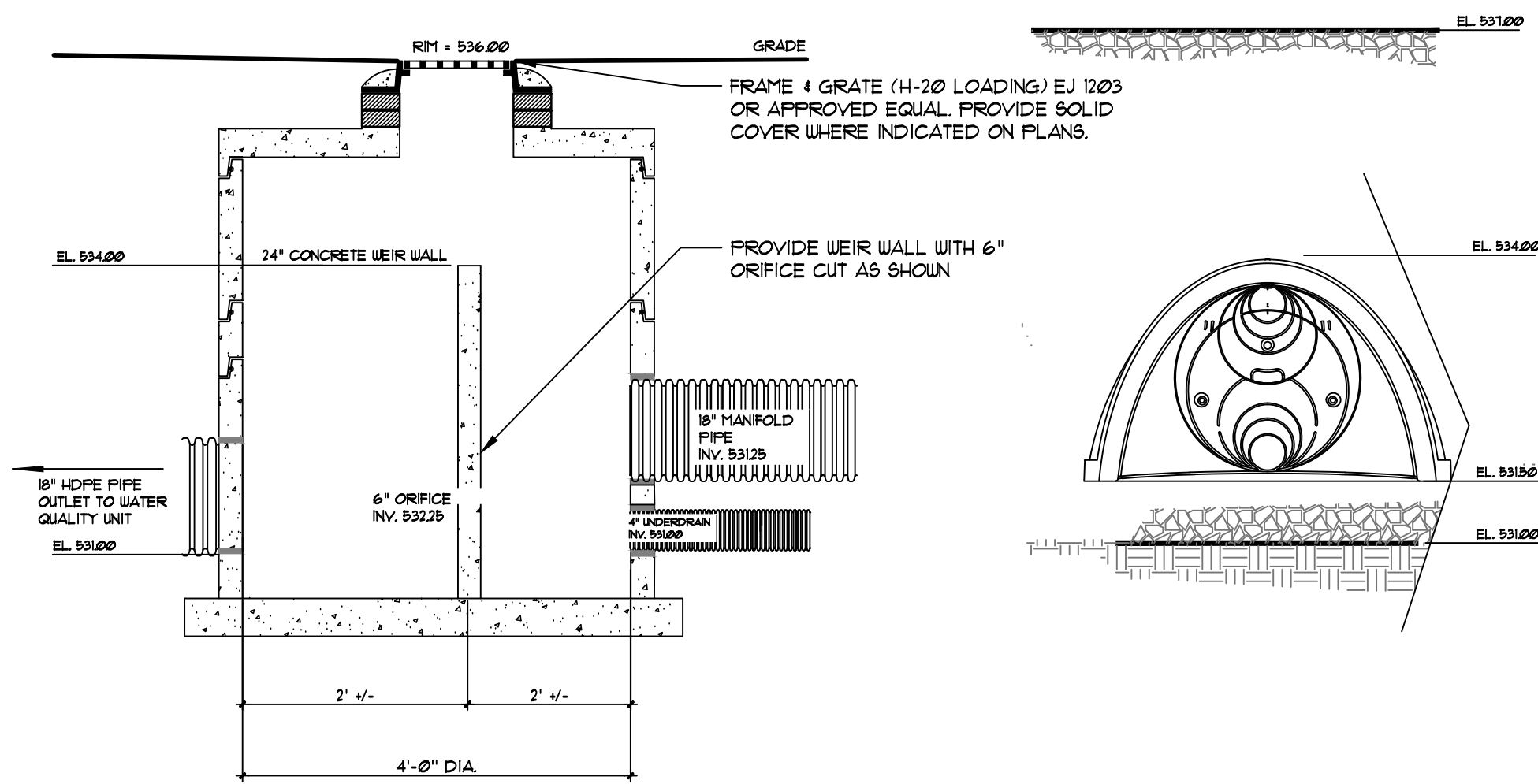
SEAL:

**PLANNING
BOARD
SUBMISSION
6/1/2022**

**TEVILLE VETERINARY
HOSPITAL**
8122 E. GENESEE ST.
TOWN OF MANLIUS, NY

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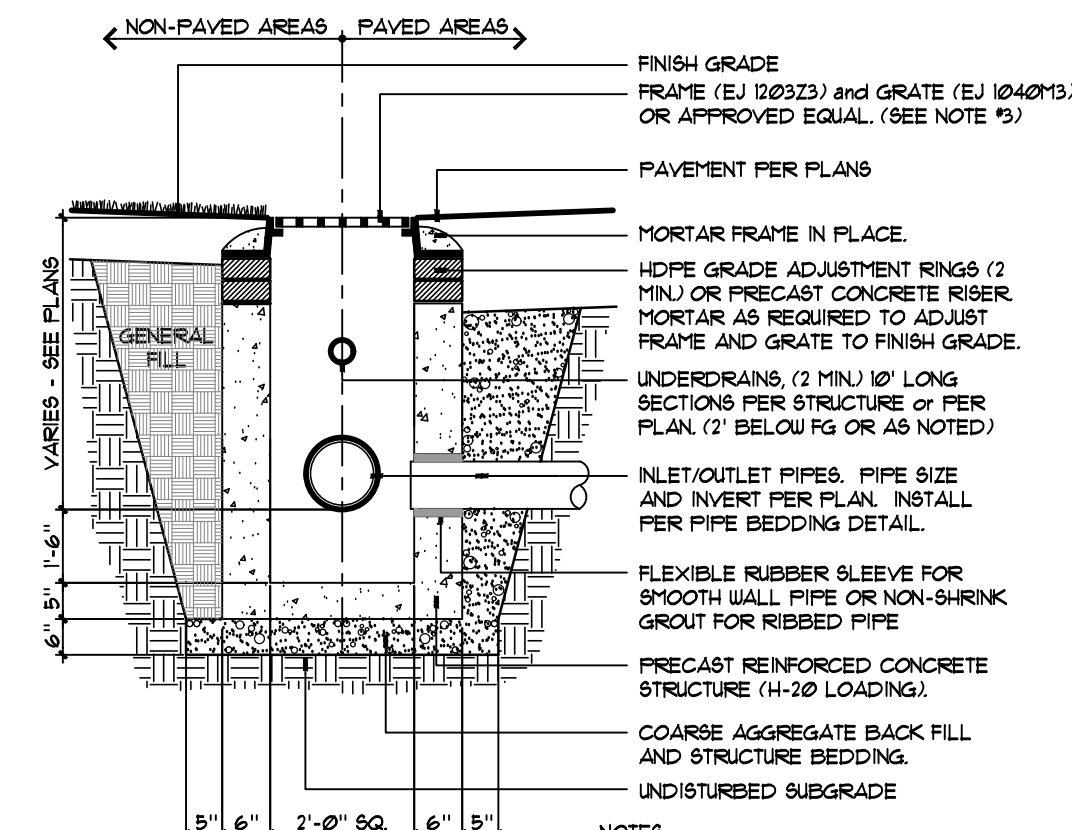
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NOTE: SECTION SHOWN FOR SCHEMATIC PURPOSES ONLY

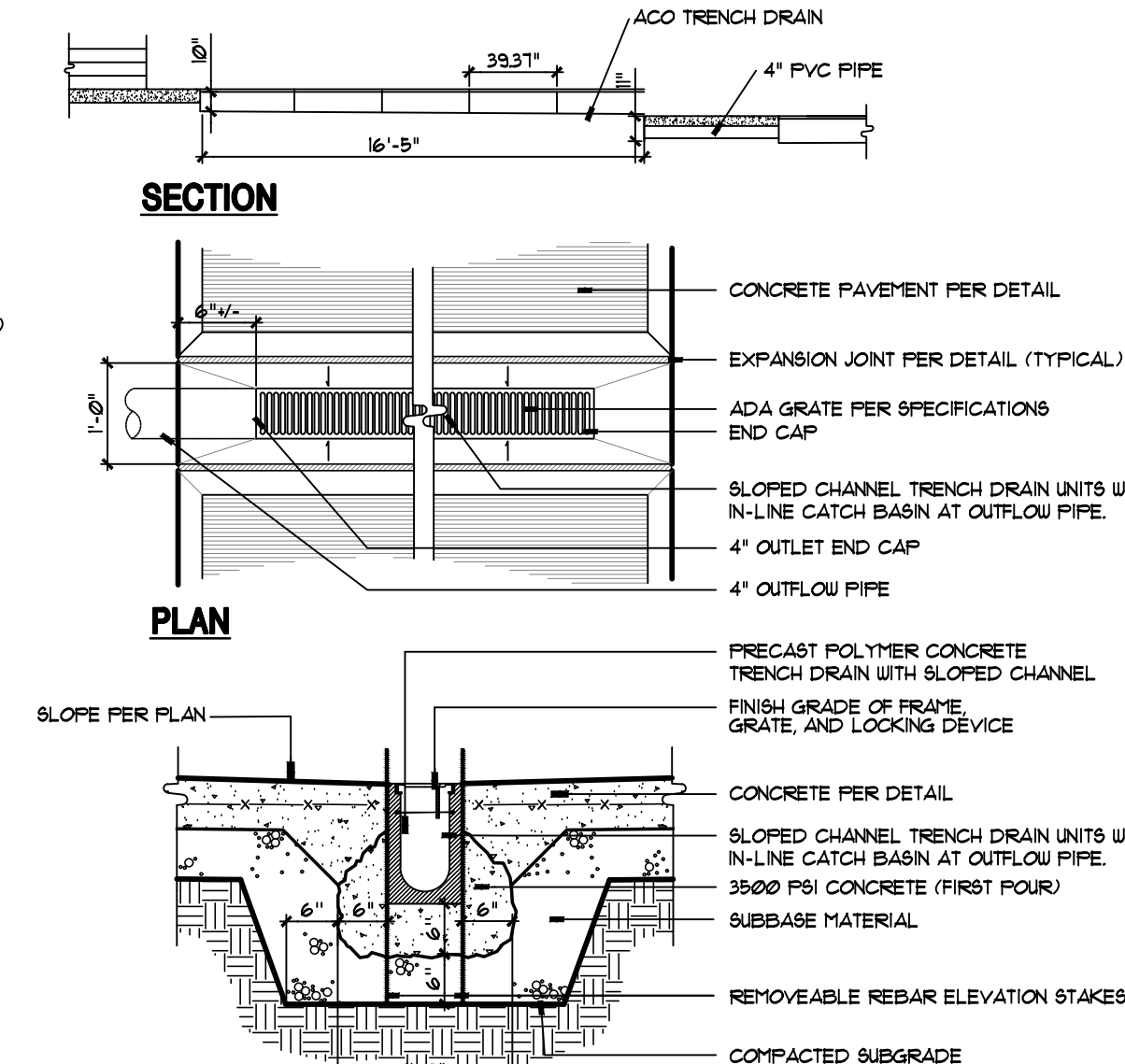
SECTION

3 OUTFLOW STRUCTURE NOT TO SCALE



SECTION

2 STORM INLET (SI) NOT TO SCALE



SECTION

1 TRENCH DRAIN NOT TO SCALE

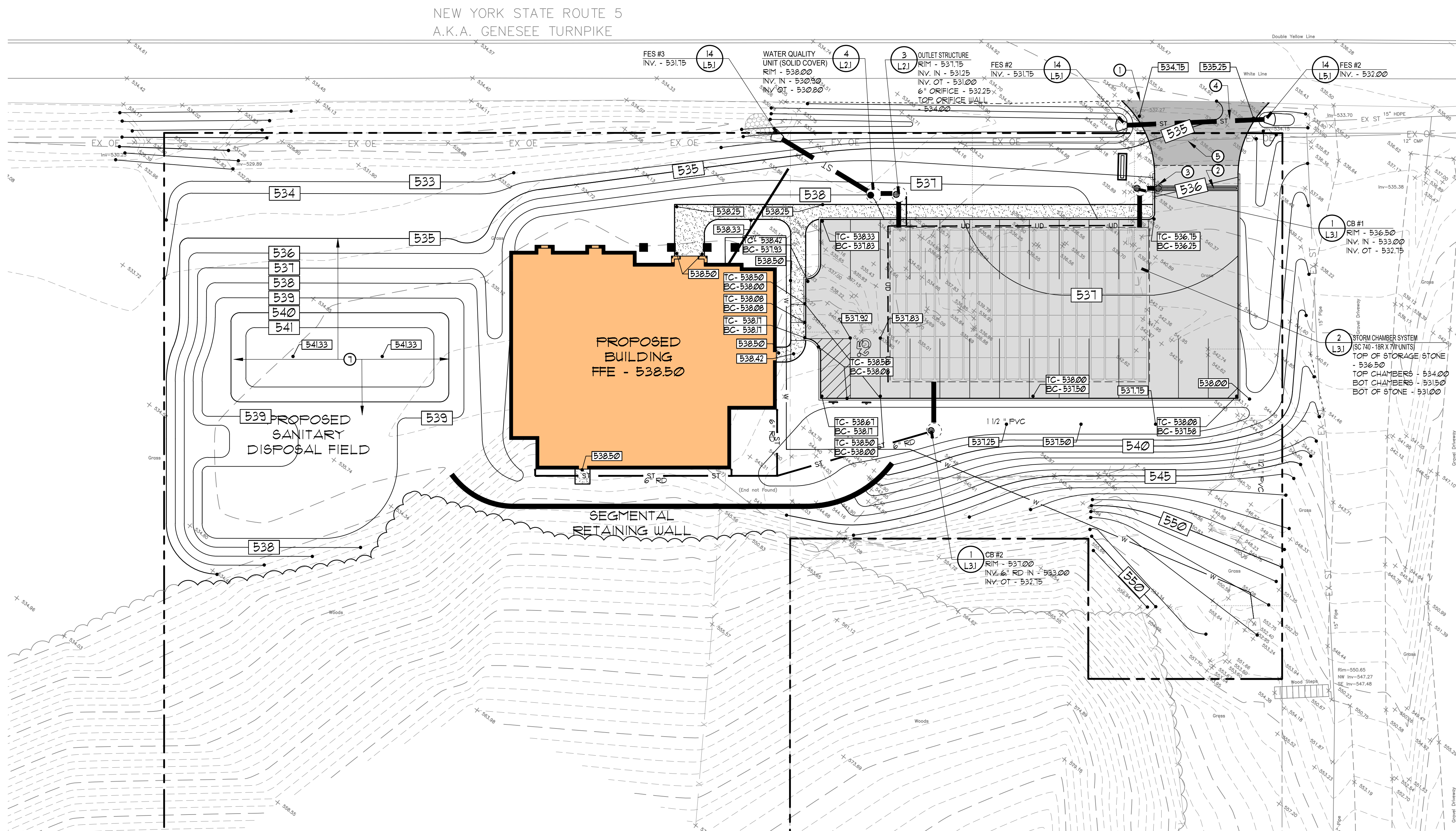
GRADING and UTILITY GENERAL NOTES

1. ANY/ALL FILL REQUIRED BELOW PAVING SUBGRADE SHALL ONLY BE COARSE AGGREGATE FILL OR SUBBASE COARSE MATERIALS.
2. WHEREVER EXISTING STORM STRUCTURES ARE TO BE ABANDONED AND REMOVED, CUT AND PLUG CONNECTING PIPES AND/OR REMOVE PORTIONS OF PIPES WHICH MAY INTERFERE WITH OTHER WORK.
3. ALL CONCRETE PAVING AT ALL DOORS SHALL BE FLUSH WITH BUILDING FLOOR ELEVATION. CONCRETE PAVEMENT SHALL BE COULED TO FOUNDATION WALL PER DETAILS.
4. ALL GRAVITY SANITARY SEWER LINES SHALL BE SDR-35 PVC WITH 48" MIN. COVER.
5. CONTRACTOR SHALL COORDINATE ANY DISRUPTIONS TO EXISTING UTILITY SERVICES WITH ADJACENT PROPERTY OWNERS.
6. ALL ELECTRIC AND TELEPHONE EXTENSIONS INCLUDING SERVICE LINES SHALL BE CONSTRUCTED TO THE APPROPRIATE UTILITY COMPANY SPECIFICATIONS. ALL UTILITY DISCONNECTIONS SHALL BE COORDINATED WITH THE DESIGNATED UTILITY COMPANIES.
7. CONSTRUCTION SHALL NOT START ON ANY PUBLIC UTILITY SYSTEM UNTIL WRITTEN APPROVAL HAS BEEN RECEIVED BY THE ENGINEER FROM THE APPROPRIATE GOVERNING AUTHORITY AND THE CONTRACTOR HAS BEEN NOTIFIED BY THE ENGINEER.
8. PRIOR TO THE CONSTRUCTION OF OR CONNECTION TO ANY STORM DRAIN, SANITARY SEWER, WATER MAIN OR ANY OF THE DRY UTILITIES, THE CONTRACTOR SHALL EXCAVATE, VERIFY AND CALCULATE ALL POINTS OF CONNECTION AND ALL UTILITY CROSSINGS AND INFORM KEPLINGER FREEMAN ASSOCIATES (KFA/RZ ENGINEERING AND THE OWNER/DEVELOPER OF ANY CONFLICT OR REQUIRED DEVIATIONS FROM THE PLAN. NOTIFICATION SHALL BE MADE A MINIMUM OF 48 HOURS PRIOR TO CONSTRUCTION. KFA AND ITS CLIENTS SHALL BE HELD HARMLESS IN THE EVENT THAT THE CONTRACTOR FAILS TO MAKE SUCH NOTIFICATION.
9. ANY ELECTRIC AND LIGHT POLES AND/OR EQUIPMENT IS SHOWN FOR COORDINATION PURPOSES ONLY. LOCATIONS ARE APPROXIMATE ONLY. REFER TO ELECTRICAL DRAWINGS FOR EXACT LOCATIONS AND DETAILED INFORMATION.
10. PROVIDE BENDS ON WATER LINE AS NECESSARY TO ACHIEVE PROPOSED LAYOUT. ALL BENDS TO BE INSTALLED WITH A THRUST BLOCK. REFER TO DETAIL.

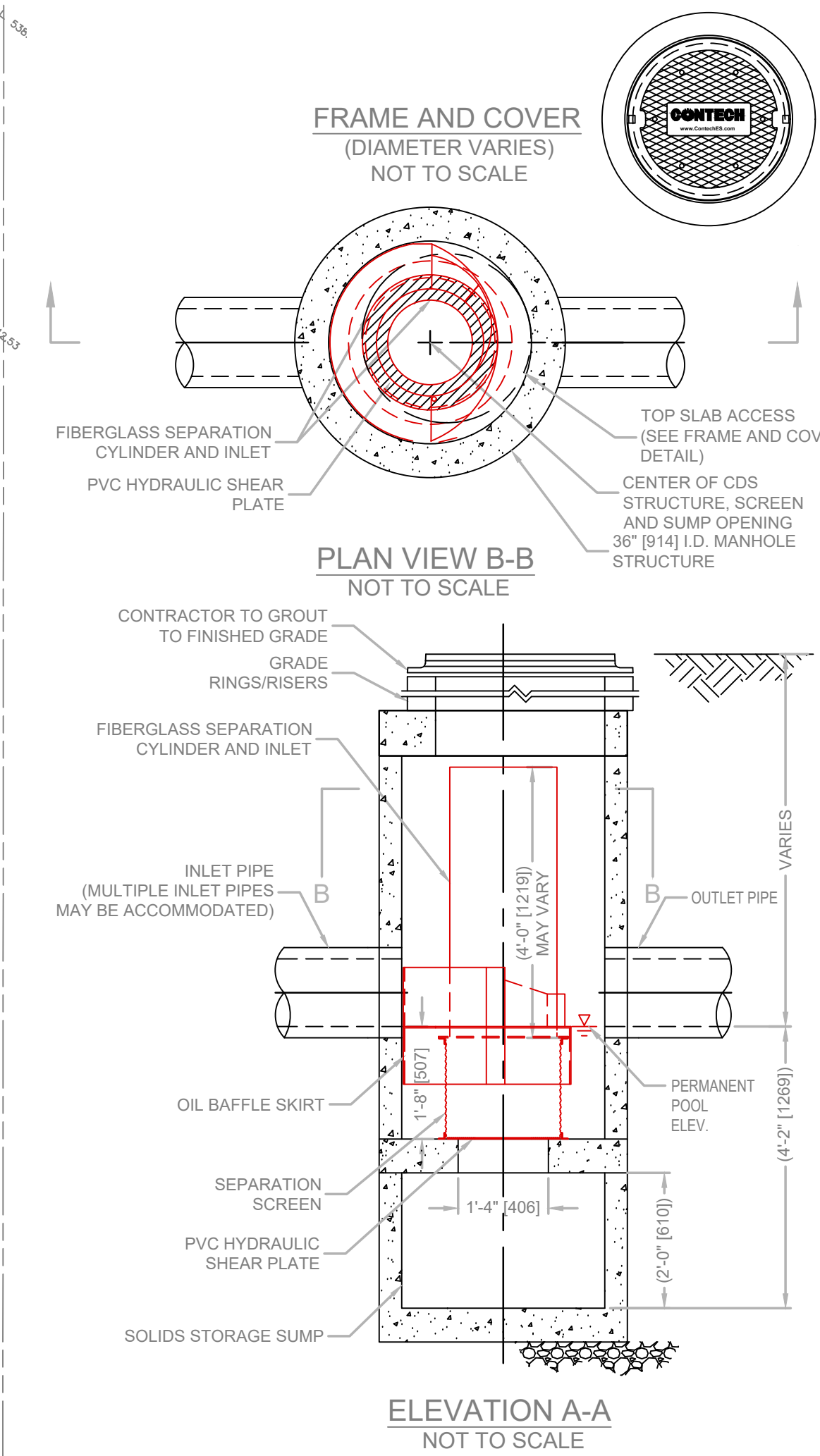
GRADING, DRAINAGE AND UTILITY NOTES

L20-GDU-NOTES

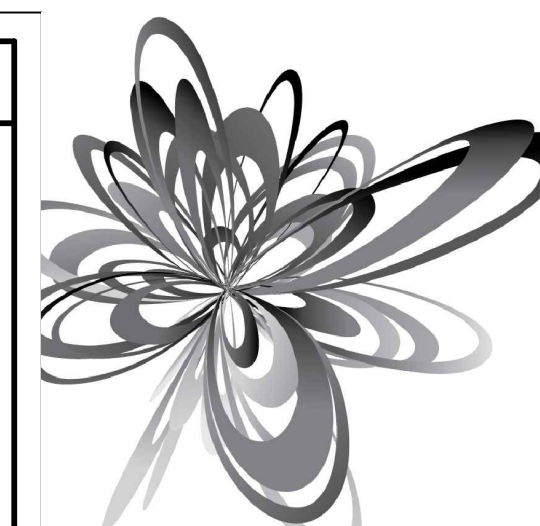
1. MEET EXISTING LINE AND GRADE OF ADJACENT MATERIAL.
2. INSTALL TRENCH DRAIN PER DETAIL 1/2.1.
3. INSTALL STORM INLET PER DETAIL 2/L2.1.
4. INSTALL 18" CULVERT UNDER PROPOSED DRIVEWAY.
5. PROPOSED RELOCATION OF UTILITY POLE. CONTRACTOR TO COORDINATE WITH PROPER UTILITY FOR WORK.
6. INSTALL PIPE BEDDING PER DETAIL 12/L5.1.
7. LOCATION OF MODIFIED MOUND ON-SITE SEWAGE DISPOSAL SYSTEM REFER TO DRAWINGS S-1 AND S-2 PREPARED BY RZ ENGINEERING FOR SPECIFIC DESIGN DETAILING AND REQUIREMENTS.



GRADING PLAN



4 WATER QUALITY UNIT NOT TO SCALE



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SEAL:
PLANNING BOARD SUBMISSION
6/1/2022

FAYETTEVILLE VETERINARY HOSPITAL
8122 E. GENESEE ST.
TOWN OF MANLIUS, NY

Rev. No.	Date	Desc.
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AW JOB NO.

GRADING, DRAINAGE and UTILITY PLAN

DATE ISSUED: 05/02/22

L2.1

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2 CROSS SECTION - SC 740
L3.1 NOT TO SCALE



NOTES:

1. REFER TO TRAFFIC CONTROL SIGN DETAIL 11/L5.1 FOR INSTALLATION
2. ALL REGULATORY SIGNS SHALL CONFORM TO THE MOST CURRENT M
"MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.

11. INSTALL MONUMENT SIGN PER TOWN CODE.
12. INSTALL NYSDOT RIGHT-OF-WAY PAVEMENT PER DETAIL 2/L5.1.
13. INSTALL CONCRETE DOWELING AT DOORWAY PER DETAIL 8/L5.



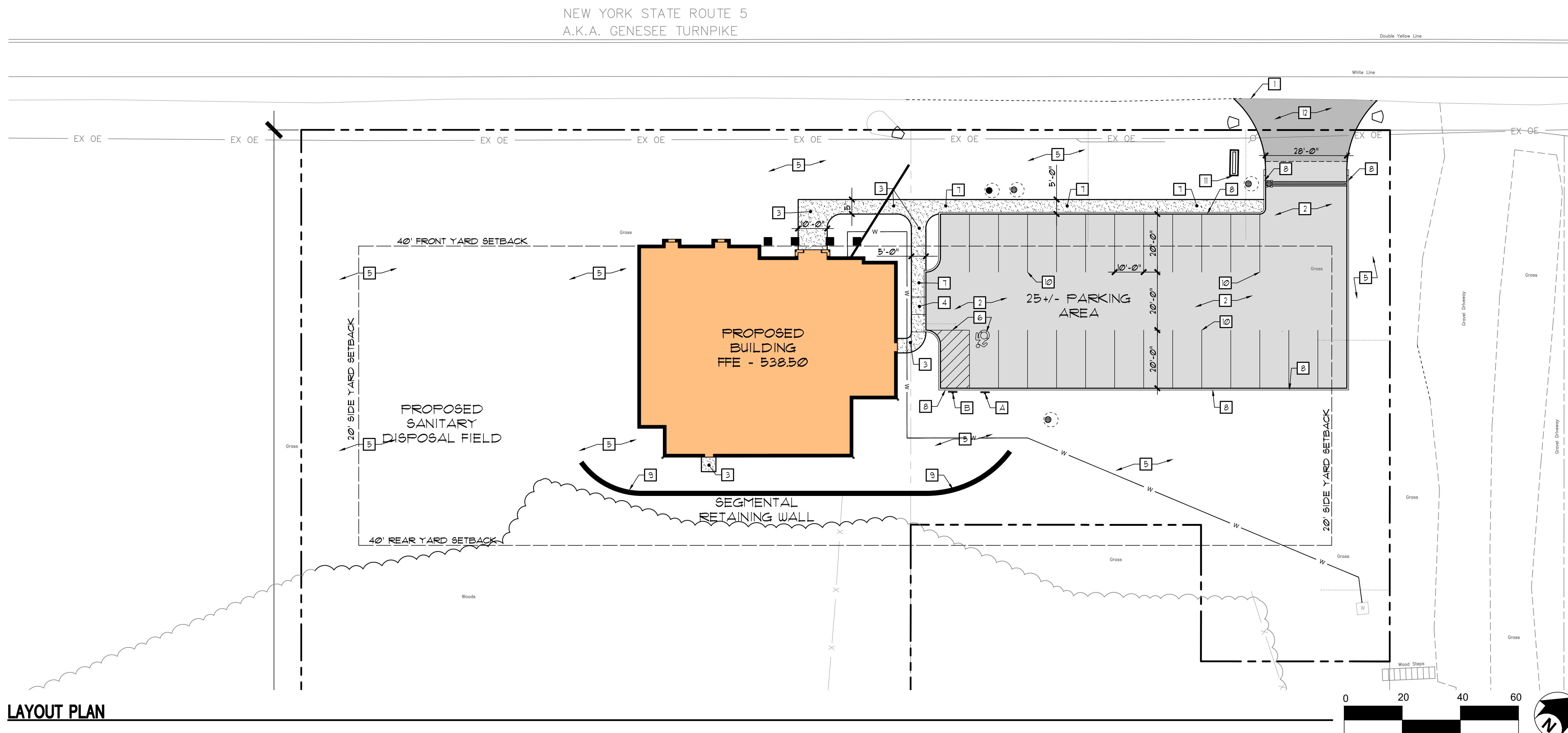
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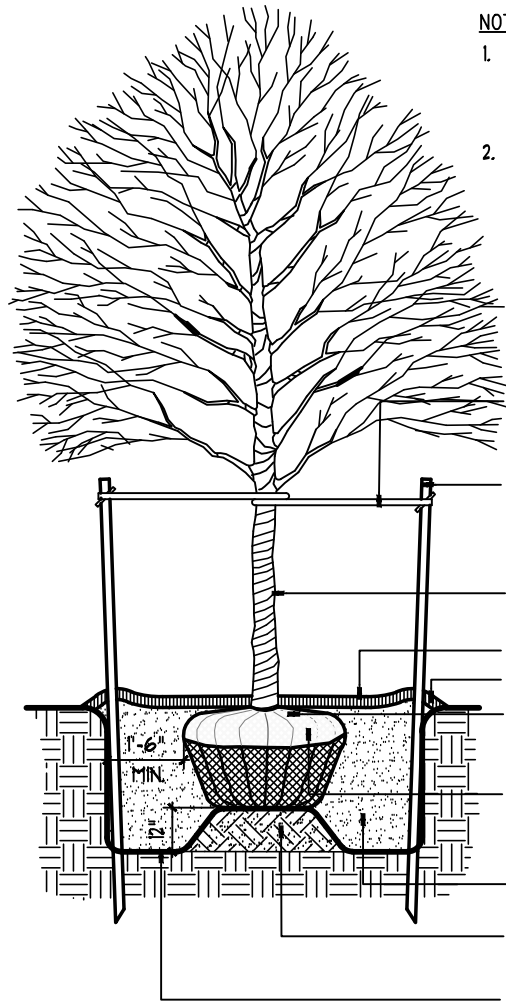
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NOTES:

1. REMOVE ALL NONBIODEGRADABLE MATERIAL FROM THE ROOT BALL AND TREE PIT.
2. PRUNE TOP 1/3 OF CROWN BY THINNING AND SPACING BRANCHES, DO NOT CUT THE LEADER.

TREE GUYING - INSTALL WITH ARBORTREES (www.arbortrees.com) OR APPROVED EQUAL PER MANUFACTURER'S SPECIFICATIONS

TWO 3/4\"/>

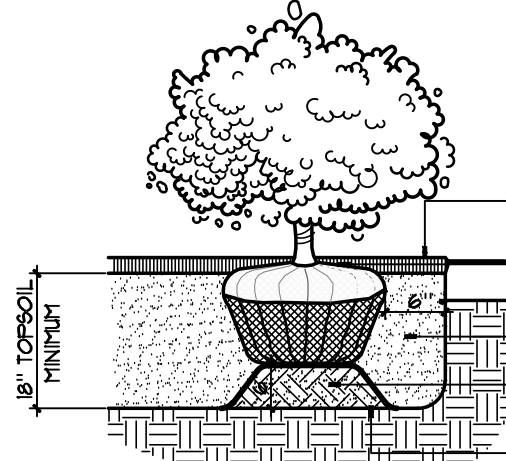
3\"/>

REMOVE TOP 1/3 OF BURLAP FROM ROOT BALL AND ALL SOIL MATERIAL ABOVE ROOT FLARE

PLANTING SOIL MIX

COMPACTED PLANTING SOIL MIX

UNDISTURBED SUBGRADE OR SOIL FILL



NOTES:

1. REMOVE ALL NONBIODEGRADABLE MATERIAL FROM THE ROOT BALL AND TREE PIT.
2. PRUNE TOP 1/3 OF ALL TOP GROWTH INCLUDING ALL BROKEN BRANCHES.
3. SPACE PLANTS WITHIN SHRUB BED AS SHOWN AND BASED ON NUMBER OF PLANTS REQUIRED.

3\"/>

INSTALL ROOT FLARE FLUSH WITH ADJACENT FINISH GRADE

PLANTING SOIL MIX

COMPACTED PLANTING SOIL MIX

UNDISTURBED SUBGRADE

SECTION

2
L3.2 **TREE PLANTING**
NOT TO SCALE

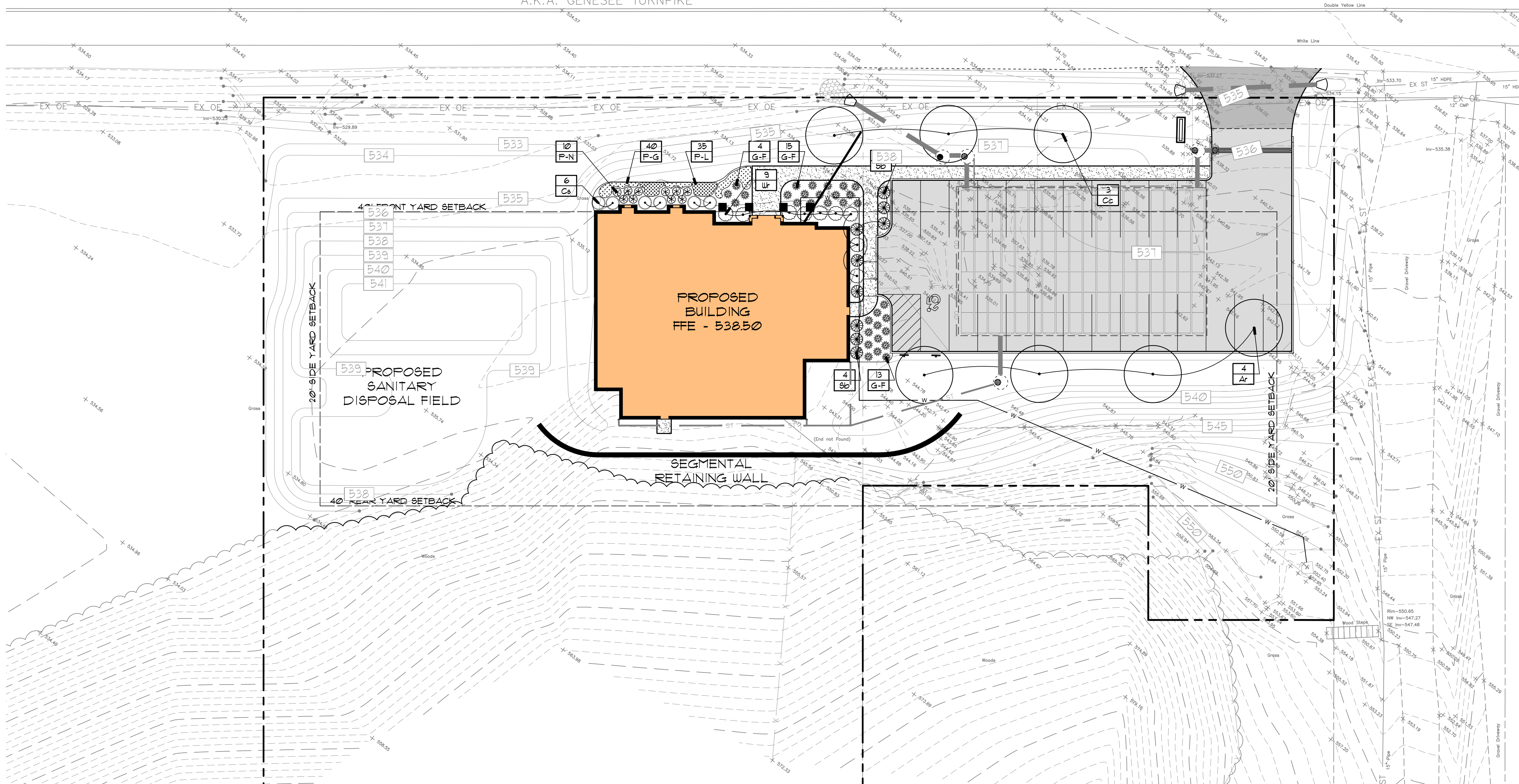
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SECTION

1
L3.2 **SHRUB PLANTING**
NOT TO SCALE

32-9300-02

NEW YORK STATE ROUTE 5
A.K.A. GENESEE TURNPIKE



LAYOUT PLAN

PLANT LIST

KEY	COMMON NAME	BOTANICAL NAME	CALIPER	HEIGHT	CONDITION
TREES					
Ar	AUTUMN BLAZE RED MAPLE	ACER FREEMANI	3" CAL.	-	B4B
Cc	AMERICAN REDBUD	CERCIS CANADENSIS	2.5" CAL.	-	B4B
SHRUBS					
Sb	GOLD FLAME SPIREA	SPIREA BUMALDA 'GOLD FLAME'	-	18"-24"	-
W	WINE & ROSES WEIGELA	WEIGELA FLORIDA	-	-	5 GAL
Cs	MIDWINTER FIRE BLOODTWIG DOGWOOD	CORNUS SANGUINEA 'MIDWINTER FIRE'	2-3'	3 CONT.	4 CANES MIN.
PERENNIALS and GRASSES					
G-F	DWARF FOUNTAIN GRASS	FENISTETUM 'HAEMEL'	-	-	1 GAL
P-G	RED BLANKET FLOWER	GAILLARDIA ARISTATA 'BARBICAN'	-	-	1 CONT.
P-L	BIG BLUE LIRIOPE	LIRIOPE MUSCARI 'BIG BLUE'	-	-	1 GAL
P-N	WALKER'S LOW CATMINT	NEPETA RACEMOSA 'WALKER'S LOW'	12"-18"	-	2 CONT.

PLANT NOTES

- 3" DEPTH SHREDDDED BARK MULCH WITH 18" OF SCREENED TOPSOIL.
- INSTALL LANDSCAPE EDGING AS SPECIFIED.
- GENERAL NOTE: ALL LANDSCAPING AND LAWN AREAS SHALL BE MAINTAINED BY OWNER. DEAD MATERIAL SHALL BE REGULARLY PRUNED AND NOURISHED TO MAINTAIN HEALTH.



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AM JOB NO.

PLANTING PLAN

DATE ISSUED:
05/02/22

L3.2

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NYSDOT WORK ZONE GENERAL NOTES

- GENERAL**
1. THE CONTRACTOR SHALL MAINTAIN TRAFFIC THROUGHOUT THE LENGTH AND DURATION OF THE CONTRACT IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION 618 OF THE STANDARD SPECIFICATIONS AND THE WORK ZONE TRAFFIC DETAILS IN THE PLANS AND PROPOSAL OR ADOBE.
 2. FOR TYPICAL APPLICATIONS OF TRAFFIC CONTROL DEVICES IN CONSTRUCTION AREA NOT SPECIFIED IN THE PROPOSAL, THE PROVISIONS OF THE MUTCD AND THE NEW YORK STATE SUPPLEMENT, INCLUDING ALL APPLICABLE REVISIONS, SHALL APPLY. THE STANDARDS OF APPLICATIONS NOTED THEREIN AND ON THE PROPOSAL ARE TO BE CONSIDERED MINIMAL STANDARDS. WHERE OPTIONS EXIST FOR SIGN SHAPE, THE DIAMOND SHAPE SHALL BE USED.
 3. PRIOR TO ANY WORK ZONE SET-UP THE ENGINEER SHALL DETERMINE THE ACCEPTABILITY OF ALL SIGNS, TRAFFIC CONTROL DEVICES AND WORK ZONE TRAFFIC CONTROL DEVICES.
 4. PRIOR TO THE START OF ANY WORK OPERATIONS, ALL RELATED WORK FOR PROPOSED WORK ZONE TRAFFIC CONTROL, AS DETERMINED BY THE ENGINEER, SHALL BE COMPLETE. THIS INCLUDES, BUT IS NOT LIMITED TO, ALL SIGNS, SIGNALS, PAVEMENT MARKINGS, BARRIERS, DELINEATION (CONES, DRUMS, ETC.), FLAGGERS, PAVEMENT MODIFICATIONS, AND ANY OTHER RELATED WORK.
 5. PROPOSED REVISIONS TO THE WORK ZONE TRAFFIC CONTROL (WZTC) PLAN OR MODIFICATIONS TO THE 618 STANDARD SHEETS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL BY THE REGIONAL TRAFFIC ENGINEER PRIOR TO THE PLANNED IMPLEMENTATION OF SUCH REVISIONS OR MODIFICATIONS. THE CONTRACTOR SHALL NOT IMPLEMENT THE PROPOSED REVISIONS WITHOUT APPROVAL FROM THE REGIONAL TRAFFIC ENGINEER WHEN APPLICABLE.
 6. ANY AND ALL WORK RELATED TO WORK ZONE TRAFFIC CONTROL IS CONSIDERED SKILLED AND SPECIALIZED WORK. ALL WORKERS ENGAGED IN WORK ZONE TRAFFIC CONTROL WORK SHALL HAVE THE FOLLOWING REQUIREMENTS TO SATISFACTORILY PERFORM IT: IDENTIFICATION OF EACH WORKER, ALONG WITH DOCUMENTATION OF EXPERIENCE, SHALL BE PROVIDED TO THE ENGINEER PRIOR TO THE WORKER ENGAGING IN WORK ZONE TRAFFIC CONTROL WORK. THE TRAFFIC CONTROL SUPERVISOR SHALL BE IN COMPLIANCE WITH SECTION 618-3.20 OF THE STANDARD SPECIFICATIONS. DETERMINATION OF COMPETENCY AND DISCHARGING OF INDIVIDUALS SHALL BE AS PER SECTION 105-02 OF THE STANDARD SPECIFICATION.

LANE AND RAMP CLOSURES

1. THE CONTRACTOR SHALL SCHEDULE WORK SO THAT ALL TRAVEL LANES IN EACH DIRECTION ARE AVAILABLE FOR CONTRACTOR'S OPERATIONS ARE CLOSED DOWN OR SUBSTANTIALLY CLOSED DOWN.
2. NO WORK REQUIRING THE CLOSING OF LANES, RAMPS OR SHOULDERS SHALL BE PERMITTED ON THE FOLLOWING HOLIDAYS:

6:00 AM FRIDAY, SEPTEMBER 3, 2021 THRU 6:00 AM TUESDAY, SEPTEMBER 1, 2021 - (LABOR DAY HOLIDAY)
6:00 AM WEDNESDAY, NOVEMBER 24, 2021 THRU 6:00 AM MONDAY, NOVEMBER 29, 2021 - (THANKSGIVING HOLIDAY)
6:00 AM THURSDAY, DECEMBER 23, 2021 THRU 6:00 AM MONDAY, DECEMBER 21, 2021 - (CHRISTMAS HOLIDAY)
6:00 AM THURSDAY, DECEMBER 30, 2021 THRU 6:00 AM MONDAY, JANUARY 3, 2022 - (NEW YEAR'S HOLIDAY)
6:00 AM THURSDAY, DECEMBER 30, 2021 THRU 6:00 AM MONDAY, JANUARY 3, 2022 - (NEW YEAR'S HOLIDAY)
6:00 AM FRIDAY, MAY 21, 2022 THRU 6:00 AM TUESDAY, MAY 31, 2022 - (MEMORIAL DAY HOLIDAY)
6:00 AM FRIDAY, JULY 1, 2022 THRU 6:00 AM TUESDAY, JULY 5, 2022 - (JULY 4TH HOLIDAY)
6:00 AM FRIDAY, SEPTEMBER 2, 2022 THRU 6:00 AM TUESDAY, SEPTEMBER 6, 2022 - (LABOR DAY HOLIDAY)
6:00 AM WEDNESDAY, NOVEMBER 23, 2022 THRU 6:00 AM MONDAY, NOVEMBER 28, 2022 - (THANKSGIVING HOLIDAY)
6:00 AM FRIDAY, DECEMBER 23, 2022 THRU 6:00 AM TUESDAY, DECEMBER 21, 2022 - (CHRISTMAS HOLIDAY)
6:00 AM THURSDAY, DECEMBER 30, 2022 THRU 6:00 AM MONDAY, JANUARY 3, 2023 - (NEW YEAR'S HOLIDAY)

3. IF, IN THE OPINION OF THE ENGINEER, LANE CLOSURES ARE CREATING SIGNIFICANT DELAYS TO TRAFFIC OR ARE CREATING A SAFETY CONCERN DUE TO SLOWED OR STOPPED TRAFFIC, AFFECTED LANE CLOSURES SHALL BE REMOVED AND THE ROADWAY OPENED TO TRAFFIC AS DIRECTED BY THE ENGINEER.
4. UNLESS OTHERWISE AUTHORIZED BY THE ENGINEER OR SHOWN IN THE WZTC PLANS, THE MINIMUM LANE WIDTHS FOR WORK ZONE TRAVEL LANES SHALL BE AS FOLLOWS: 11 FEET FOR FREEWAYS AND/OR EXPRESSWAYS AND 10 FEET FOR ALL OTHER TYPES OF ROADWAYS.
5. WORK ZONES SHALL BE RESTRICTED TO ONE SIDE OF THE ROADWAY AT A TIME ON DIVIDED ROADWAYS UNLESS APPROVED BY THE ENGINEER.
6. WORK ZONES SHALL BE RESTRICTED TO ONE SIDE OF THE ROADWAY AT A TIME ON UNDIVIDED HIGHWAYS.
7. DAILY CLOSURES MAY OCCUR OFF OF LONG-TERM CLOSURES AND SHALL BE SUBJECT TO DAILY CLOSURE RESTRICTIONS.
8. PEAK HOUR RESTRICTION: THERE SHALL BE NO LANE CLOSURE DURING THE AM (6:00-8:00) OR PM (4:00-6:00)

WORK AREA COORDINATION

1. WHEN TWO OR MORE WORK AREAS ARE ADJACENT, OVERLAP, OR ARE IN CLOSE PROXIMITY AS DETERMINED BY THE ENGINEER, THE CONTRACTOR SHALL COORDINATE ALL CONTRACT WORK WITH ANY UTILITY WORK, SUBCONTRACTOR WORK, PUBLIC MAINTENANCE OPERATIONS OR OTHER CONSTRUCTION ACTIVITIES IN THE AREA TO ENSURE THAT THERE ARE NO WORK ZONE TRAFFIC CONTROL, CONFLICTS, SIGNS, AND LANE CONTINUITY, AND THAT WORK ZONE TRAFFIC CONTROL IS PER STANDARDS.
2. ALL VEHICLES, EQUIPMENT, WORKERS AND ACTIVITIES SHALL BE RESTRICTED TO ONE SIDE OF THE ROADWAY AT A TIME.

CHANNELIZING DEVICES

1. ALL CHANNELIZING DEVICES ARE TO BE PLACED SO AS TO PROVIDE A MINIMUM 2 FT OF CLEARANCE TO THE TRAVELED WAY UNLESS OTHERWISE SHOWN ON THE PLANS. WHERE POSSIBLE, A LATERAL BUFFER SPACED OF 2 FEET MINIMUM SHOULD BE PROVIDED BETWEEN THE WORK SPACE AND THE LINE OFF DELINEATION DEVICES.
2. LONGITUDINAL SPACING SHALL BE 40 FEET FOR POSTED SPEED LIMITS OVER 40 MPH AND 20 FEET FOR SPEED LIMITS 35 MPH OR LESS, THROUGHOUT THE WORK ZONE. REDUCED SPACING MAY BE REQUIRED AS SHOWN IN THE PLANS, SPECIFICATIONS OR ADOBE. INTERSECTIONS AND DRIVEWAYS SHALL BE CHANNELIZED AT 5 FT SPACING.
3. WHEN CLOSING A ROADWAY, TYPE III BARRICADES SHALL BE PLACED CONTINUOUSLY FROM EDGE OF CURB/SHOULDER TO EDGE OF CURB/SHOULDER, COMPLETELY CLOSING THE ROADWAY. BARRICADES TO THE RIGHT OF THE ROADWAY CENTERLINE SHALL BE STRIPPED DOWNWARD TO THE LEFT AND BARRICADES TO THE LEFT OF THE ROADWAY CENTERLINE SHALL BE STRIPPED DOWNWARD TO THE RIGHT. FOR OVERNIGHT USE, EACH BARRICADE SHALL BE EQUIPPED WITH "TYPE A" LIGHTING. PVC BARRICADES SHALL HAVE THE BATTERY PACKS LOCATED AT GROUND LEVEL. WHEN CLOSING A ROADWAY THROUGH TRAFFIC, TYPE III BARRICADES SHALL BE STRIPPED DOWNWARD TO THE SIDE LOCAL TRAFFIC IS TO PASS.
4. DRUMS OR VERTICAL PANELS (8" x 36" OR 12" x 24") SHALL BE USED DURING THE HOURS OF DARKNESS. "TYPE B" LIGHTS SHALL BE REQUIRED ON THE FIRST DEVICE AND ON THE FIRST DEVICE AFTER EACH INTERSECTION.
5. STANDARD CONES AND TUBULAR MARKERS SHALL NOT BE USED FOR CHANNELIZATION AND DELINEATION DURING THE HOURS OF DARKNESS, WHICH IS DEFINED AS THE PERIOD BETWEEN SUNSET AND SUNRISE.
6. THE COST OF ANY DELINEATION AND GUIDING DEVICES (CONES, DRUMS, ETC.) SHALL BE INCLUDED IN THE PRICE BID FOR ITEM 618.01, BASIC WORK ZONE TRAFFIC CONTROL.

SHOULDER AND BARRIER VEHICLES

1. THE SHOULDER AND BARRIER VEHICLES SHALL BE PROVIDED AS PER TABLES NY1-A, NY1-B AND LOCATED AS PER TABLES NY2-A AND NY2-B AS APPROPRIATE. IF THE WORK SPACE MOVES WITHIN A STATIONARY LANE OR SHOULDER CLOSURE, SHADOW OR BARRIER VEHICLE SHALL BE REPOSITIONED ACCORDINGLY.
 2. EACH SHOULDER AND BARRIER VEHICLE SHALL BE EQUIPPED WITH AN ARROU PANEL WHICH SHALL OPERATE IN THE "CAUTION MODE", AND WHEN IN USE ON A BARRIER VEHICLE PER SECTION 725-15 OF THE STANDARD SPECIFICATIONS.
 3. PAYMENT FOR BARRIER VEHICLES SHALL BE INCLUDED IN THE PRICE BID FOR ITEM 618.01, BASIC WORK ZONE TRAFFIC CONTROL.
- SHOULDER BACK-UP**
1. UNTIL SUCH TIME AS THE SHOULDER BACK-UP MATERIAL IS PLACED, ANY DROP-OFF OF 2 INCHES OR MORE SHALL BE PROTECTED AS PER SECTION 618.02.2K OF THE STANDARD SPECIFICATIONS. 18" SA "SHOULDER DROP-OFF" SIGNS SHALL BE THE ONLY ONES PERMITTED. IN THE EVENT THAT SOLID WHITE EDGE OF PAVEMENT LINES ARE NOT INSTALLED, THE SHOULDER SHALL BE CLOSED IN ACCORDANCE WITH THE SHOULDER CLOSURE TRAFFIC CONTROL PLAN. FAILURE TO COMPLY WITH THE INSTALLATION OF THE SOLID WHITE EDGE LINE WILL RESULT IN THE WITHHOLDING OF ONE DAY'S PAYMENT FOR ITEM 618.01, AS PER SECTION 618-5.01 OF THE STANDARD SPECIFICATIONS TABLE 618-6 FOR EACH DAY THE EDGE LINES ARE NOT IN PLACE.

SIGNS

1. BLANK COVERS USED TO COVER PORTIONS OF EXISTING SIGNS SHALL BE OF A COLOR AND REFLECTORIZED MATERIAL MATCHING THAT OF THE SIGN BEING PARTIALLY COVERED.
2. WHERE SHOULDER WIDTHS ARE LIMITED AND SIGNS CANNOT BE ERECTED BEYOND THE SHOULDER, TEMPORARY SIGNS MAY NEED TO BE MOUNTED ON CONCRETE MEDIAN BARRIERS OR BRIDGE PARAPETS, ETC. PRIOR TO ERECTING THOSE SIGNS THE CONTRACTOR SHALL PROVIDE MOUNTING DETAILS TO AND RECEIVE APPROVAL FROM THE ENGINEER.
3. SIGNS SHALL NOT ENCRUMBER MORE THAN 4 INCHES INTO SHOULDERS USED BY PEDESTRIANS OR BICYCLES.
4. ANY CONSTRUCTION SIGNS DEEMED NECESSARY BY THE ENGINEER AND ARE NOT IN THE PLAN OR PROPOSAL, SHALL BE INCLUDED IN THE PRICE BID FOR ITEM 618.01, BASIC WORK ZONE TRAFFIC CONTROL.
5. ALL CONSTRUCTION SIGNS SHALL BE MOUNTED AT A HEIGHT OF 7 FEET ABOVE THE EDGE OF THE TRAVEL LANE.
6. SIGNS NECESSARY FOR THE WORK ZONE TRAFFIC CONTROL (INCLUDING RELOCATIONS AND/OR MODIFICATIONS AND/OR RESTORATION OF EXISTING) AS NOTED IN THE PLANS, STANDARD SPECIFICATIONS, MUTCD, NEW YORK STATE SUPPLEMENT OR ADOBE SHALL BE INCLUDED IN THE PRICE BID FOR ITEM 618.01, BASIC WORK ZONE TRAFFIC CONTROL.

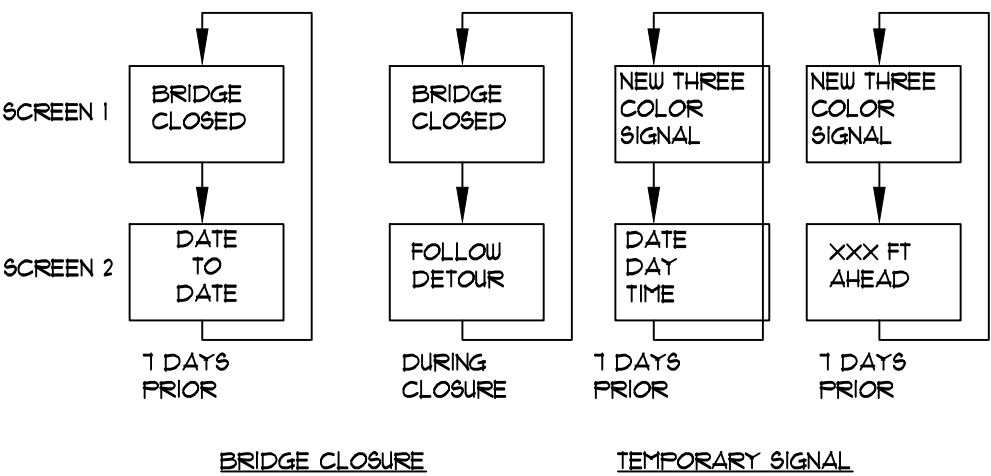
ACCESS

1. THE CONTRACTOR SHALL ENSURE THAT ACTIVE LANES OF TRAFFIC ON FREEWAYS ARE NOT CROSSED BY PEDESTRIAN WORKERS, FOR ALL OTHER HIGHWAYS, THE CONTRACTOR SHALL ENSURE THAT PEDESTRIAN WORKERS DO NOT CROSS ACTIVE LANES OF TRAFFIC ONLY AT PROPERLY MARKED OR UNMARKED CROSSEWALKS AND/OR DEDICATED PEDESTRIAN WALKWAYS. IT IS REQUIRED THAT THE PROJECT SAFETY AND HEALTH PLAN ADDRESS ACCESS TO EACH WORK AND STAGING AREA.
2. WHERE IT IS FEASIBLE, VEHICLES AND EQUIPMENT USED FOR WORK AND TRANSPORTING OF MATERIALS TO/FROM WORK SITE SHALL ENTER AND LEAVE THE AREA CLOSED BY CHANNELIZING DEVICES WITHIN THE TERMINATION AREA OF THE TEMPORARY TRAFFIC CONTROL ZONE, WHERE SUCH ACCESS WITHIN THE TERMINATIONS AREA IS NOT FEASIBLE, OTHER AREAS FOR ENTRY AND EXIT SHALL BE DETERMINED AND INCLUDED IN THE PROJECT SAFETY AND HEALTH PLAN, INCLUDING ILLUSTRATED EXAMPLES (TYPICALS) TO CLEARLY SHOW THE TEMPORARY TRAFFIC CONTROL ELEMENTS THAT WILL BE PROVIDED.

VARIABLE MESSAGE SIGN

1. THE USE OF PORTABLE VARIABLE MESSAGE SIGNS (PVMS) IS INTENDED TO ADVISE TRAFFIC OF UPCOMING AND ACTUAL CHANGES TO REGULAR TRAFFIC PATTERNS.
2. THE PVMS SHALL BE PLACED AT THE LOCATIONS SHOWN ON THE WORK ZONE TRAFFIC CONTROL (WZTC) PLANS AND OTHER LOCATIONS SPECIFIED BY THE ENGINEER. THE PVMS SHALL BE PLACED SEVEN (7) DAYS BEFORE ANY BRIDGE/ROAD CLOSURE AND/OR ANY TEMPORARY SIGNAL PLACEMENT IS TO BEGIN AND WILL REMAIN IN PLACE UNTIL ALL WORK WITHIN A DESIGNATED WZTC PHASE HAS BEEN COMPLETED. SEVEN (7) DAYS PRIOR TO A CLOSURE TAKING PLACE, AND/OR ANY TEMPORARY SIGNAL PLACEMENT, THE INITIAL MESSAGE SHOWN IN THE CONTRACT PLANS SHALL BE DISPLAYED. ONCE CLOSURE HAS TAKEN PLACE AND/OR TEMPORARY SIGNAL IS ACTIVATED, THE PVMS'S SHALL REMAIN ON FOR THE DURATION OF THE CLOSURE AND/OR ACTIVATED TEMPORARY SIGNAL DISPLAYED WITH THE MESSAGE SHOWN IN THE PLANS.
3. PVMS UNITS TO BE LOCATED WITHIN SHOULDER CLOSURE PER STANDARD SHEET 618-22 WHEN LOCATED WITHIN CLEAR ZONE.
4. PVMS UNITS LOCATED BEHIND GUIDE RAIL SHALL NOT BE LOCATED WITHIN RAIL DEFLECTION DISTANCE. SEE SECTION 618 OF THE STANDARD SPECIFICATIONS.
5. PVMS UNITS SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH SECTION 618 OF THE STANDARD SPECIFICATION AND ITEM 618.10XX.
6. SEE DRAWING NOS. XX-XX FOR PORTABLE VARIABLE MESSAGE SIGN (PVMS) LOCATIONS.
7. THE CONTRACTOR SHALL PROVIDE THE EIC WITH THE MODEL, MANUFACTURER DATE AND MANUFACTURER OF WHICH THE NATIONAL TRANSPORTATION COMMUNICATION FOR ITS PROTOCOL (NTCIP) COMPLIANT PVMS THE CONTRACTOR PLANS TO USE FROM THE DEPARTMENTS "APPROVED" LIST. THE PVMS WILL NEED TO ACCEPT ANY COMMUNICATIONS FROM THE NYSDOT REGIONAL TRANSPORTATION MANAGEMENT CENTER (RTMC) IN SYRACUSE, NY.

NOTE TO DESIGNER: THE FOLLOWING MESSAGE AND DURATIONS ARE EXAMPLES OF WHAT SHOULD BE SHOWN ON THE PLANS AT THE PVMS LOCATIONS.



PAVEMENT MARKINGS

1. PAVEMENT MARKINGS TO BE DEACTIVATED SHALL BE COVERED WITH A TAPE DESIGNED FOR PURPOSE. THE COST OF COVERING EXISTING PAVEMENT MARKING LINES SHALL BE PAID UNDER ITEM 618.02.03. LETTER/SYMBOL MARKINGS SHALL BE PAID UNDER ITEM 618.02.04.
2. THE CONTRACTOR SHALL PROVIDE PAVEMENT MARKINGS AT ALL TIMES, ON ALL PAVEMENT, WHETHER EXISTING, TEMPORARY OR NEW, UNTIL PERMANENT MARKINGS ARE INSTALLED OR RESTORED. THIS SHALL INCLUDE AT ALL LOCATIONS, EDGE LINES, CENTERLINE, LANE LINES (SOLID OR BROKEN), CHANNELIZING LINES, DOTTED LINES, PLUS ANY MARKINGS ORDERED BY THE ENGINEER. ALL MARKINGS SHALL BE APPLIED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS AND THE MUTCD AND NEW YORK STATE SUPPLEMENT AND SHALL INDICATE ACTUAL CONDITIONS AT ALL TIMES. THESE MARKINGS SHALL BE PAID FOR AS SHOWN IN THE CONTRACT PLANS.
3. TEMPORARY OR INTERIM PAVEMENT MARKINGS COMPRISED OF TRAFFIC MARKING PAINT SHALL BE REPAINTED AT NO ADDITIONAL COST WHEN 10% OF THE UNDERLYING PAVEMENT IS VISIBLE THROUGH THE PAVEMENT MARKING OR WHEN THE ENGINEER DEEMS REFLECTIVITY IS INADEQUATE.
4. PAVEMENT MARKINGS TO BE MAINTAINED OVER THE WINTER SHALL BE PERMANENT MARKINGS, PAID UNDER ITEM 618.05, REFLECTORIZED PAINT MARKINGS.

PUBLIC INGRESS AND EGRESS

1. THE CONTRACTOR SHALL PROVIDE PROPERTY OWNERS WITH PROPER ACCESS, AS SHOWN IN THE PLANS AND ADOBE TO THEIR DRIVEWAYS AND SHALL MAINTAIN THEM THROUGH ALL PHASE WORK AREAS AND SHALL DELINEATE THEM BY MEANS OF SIGNS AND CHANNELIZING DEVICES. ADOBE, THE COST FOR SIGNS AND OTHER WORK ZONE TRAFFIC CONTROL (CONES, DRUMS, ETC.) SHALL BE INCLUDED IN THE PRICE BID FOR ITEM 618.01, BASIC WORK ZONE TRAFFIC CONTROL.
2. WHERE DIRECT ACCESS TO DRIVEWAYS IS NOT POSSIBLE DUE TO NECESSARY CONSTRUCTION OPERATIONS, THE CONTRACTOR SHALL PLAN ALTERNATE MEANS OF ACCESS AND SUBMIT SUCH PLANS TO THE ENGINEER FOR APPROVAL. PROPERTY OWNERS/OCCUPANTS SHALL HAVE 24 HOURS NOTICE OF ANY CHANGES. COST OF THIS NOTICE SHALL BE INCLUDED IN THE PRICE BID FOR ITEM 618.01, BASIC WORK ZONE TRAFFIC CONTROL.
3. WHEN A SIDE ROAD OR DRIVEWAY INTERSECTS THE HIGHWAY WITHIN THE TEMPORARY TRAFFIC CONTROL ZONE, ADDITIONAL TRAFFIC CONTROL DEVICES SHALL BE ERECTED AND FLAGGERS STATIONED AT APPROPRIATE LOCATIONS FOR THE PHASES INVOLVED. FLAGGERS SHALL BE INCLUDED IN THE PRICE BID FOR ITEM 618.01, BASIC WORK ZONE TRAFFIC CONTROL.

FLAGGERS

1. STOP/BLANK PADDLES SHALL BE USED FOR FLAGGING AND SHALL BE FABRICATED WITH ASTM TYPE IX SHEETING, SHALL BE A MINIMUM OF 24 INCHES AND SHALL CONFORM TO THE REQUIREMENTS OF STANDARD SPECIFICATION 179-05. THE COST OF THE PADDLES AND ALL FLAGGERS SHALL BE INCLUDED IN THE PRICE BID FOR ITEM 618.01, BASIC WORK ZONE TRAFFIC CONTROL.
2. FLAGGERS SHALL NOT POSITION THEMSELVES DIRECTLY IN THE PATH OF ONCOMING TRAFFIC. THE FLAGGER SHALL STAND EITHER ON THE SHOULDER ADJACENT TO THE TRAFFIC BEING CONTROLLED OR IN THE CLOSED/CHANNELIZED LANE. AT ALL TIMES THE CONTRACTOR SHALL PROVIDE FLAGGERS WITH A CLEAR ESCAPE PATH FREE OF PARKED VEHICLES, EQUIPMENT OR OTHER OBSTACLES.
3. WHEN THE CONTRACTOR FLAGGER PROVIDES FLAGGERS, RIGHT OF WAY IS IMPAIRED BY THE OPERATIONS OR ANY OTHER SITUATION DUE TO THE PROJECT, ADOBE.
4. FLAGGERS SHALL BE REQUIRED TO USE TWO-WAY RADIOS, WALKIE-TALKIES OR OTHER FORMS OF ENHANCED COMMUNICATION WHEN ONE FLAGGER IS NOT VISIBLE TO THE OTHER OR IF THE ENGINEER DEEMS IT NECESSARY. ALL COSTS SHALL BE INCLUDED IN THE PRICE BID FOR ITEM 618.01, BASIC WORK ZONE TRAFFIC CONTROL.
5. FLAGGERS SHALL USE THE FREE HAND FOR EMPHASIS AS SHOWN IN CHAPTER 6E OF THE MUTCD AND THE NEW YORK STATE SUPPLEMENT. UNDER CERTAIN GEOMETRIC AND TRAFFIC SITUATIONS, MORE THAN ONE FLAGGER MAY BE REQUIRED. EACH FLAGGER SHALL CONTROL NO MORE THAN AN APPROACH OF TRAFFIC. MULTIPLE LANE APPROACHES SHALL BE REDUCED TO A SINGLE LANE PRIOR TO THE FLAGGER STATION.
6. FLAGGER STATIONS SHOULD BE VISIBLE FAR ENOUGH AHEAD TO ALLOW ALL VEHICLES TO STOP AS PER TABLE 6A-2 OF THE MUTCD. FLAGGERS SHALL BE EQUIPPED WITH AN EMERGENCY AIRHORN TO ALERT WORKERS TO AN ERRANT VEHICLE OR ANY OTHER DANGEROUS SITUATION.
7. PRIOR TO USING A FLAGGER, THE CONTRACTOR SHALL PROVIDE THE DOCUMENTATION OF THE FLAGGER TRAINING, PER SECTION 618-3.02 OF THE STANDARD SPECIFICATION.
8. WHEN A PEDESTRIAN APPROACHES A FLAGGER STATION, THE FLAGGER SHALL STOP TRAFFIC AND DIRECT THE PEDESTRIAN TO A SAFE ROUTE THROUGH THE WORK AREA. FLAGGERS SHALL COORDINATE THE FLAGGING OF THE WORK ZONE TO ENSURE PEDESTRIANS CAN SAFELY PROCEED THROUGH THE WORK AREA. IF THERE IS MORE THAN ONE OCCASIONAL PEDESTRIAN WITHIN THE PROJECT LIMITS, REFER TO THE SITE SPECIFIC PEDESTRIAN WZTC PLAN.

PEDESTRIANS

1. WHENEVER FEASIBLE, MAINTAIN SAFE PEDESTRIAN ACCESS ON EXISTING WALKWAYS.
2. IF A TEMPORARY PEDESTRIAN WALKWAY IS LESS THAN 5 FEET WIDE AND OVER 200 FEET IN LENGTH, THE CONTRACTOR SHALL FURNISH A 5 FT AREA WHERE WHEELCHAIRS CAN PASS EVERY 200 FEET. THESE WALKWAYS SHALL BE A MINIMUM OF 4 FEET UNLESS OTHERWISE SHOWN ON THE PLANS.
3. WHERE IT IS DETERMINED BY THE ENGINEER THAT THERE IS A LIKELIHOOD OF PEDESTRIANS LEAVING THE DEDICATED WALKWAY TO CROSS THE ACTIVE LANE OF TRAFFIC, THE CHANNELIZING DEVICES SHALL BE SUPPLEMENTED WITH A R3-38 "NO PEDESTRIAN CROSSING" SYMBOL SIGN TO RESTRICT THE PEDESTRIAN MOVEMENT.

WORK ZONE TRAFFIC CONTROL NOTIFICATION REQUIREMENTS

1. REGION 3 HAS A WORK ZONE TRAFFIC CONTROL (WZTC) NOTIFICATION POLICY WHICH REQUIRES ENGINEERS/CONTRACTOR TO NOTIFY THE REGIONAL TRANSPORTATION MANAGEMENT CENTER (RTMC) PRIOR TO ALLOWING A CONTRACTOR TO IMPLEMENT WORK ZONE TRAFFIC CONTROL ACTIVITIES WITHIN THE HIGHWAY RIGHT-OF-WAY. WORK ZONE NOTIFICATION IS REQUIRED FOR THE FOLLOWING:
2. **FREEWAYS AND EXPRESSWAYS:** ALL LANE, SHOULDER, ROAD, RAMP OR BRIDGE CLOSURES. (THIS INCLUDES MOBILE OPERATIONS WHICH OCCUPY THE LANE OR SHOULDERS.)
3. **ALL OTHER STATE HIGHWAYS:** ALL LANE CLOSURES WHERE DURATION WILL BE GREATER THAN 1 HOUR AND ALL ROAD/BRIDGE CLOSURES.
4. THE CONTRACTOR SHALL REPORT PROPOSED WZTC ACTIVITIES NOTED ABOVE TO THE RTMC BY NOON OF THE BUSINESS DAY (IE MONDAY THROUGH FRIDAY EXCLUDING HOLIDAYS) PRECEDING THE PROPOSED WZTC ACTIVITY. FAILURE TO DO SO WILL RESULT IN DISAPPROVAL TO PERFORM THE UNREPORTED WZTC ACTIVITY UNTIL THE ABOVE NOTIFICATIONS REQUIREMENTS ARE SATISFIED.
5. NO PLANNED WZTC ACTIVITY SHALL BE IMPLEMENTED WITHOUT FIRST RECEIVING CLEARANCE FROM THE RTMC.

EMERGENCY ACCESS

1. DURING WORK OPERATIONS ON OR NEAR SIDE ROADS AND DRIVEWAYS, THE CONTRACTOR SHALL MAINTAIN ACCESS TO THOSE SIDE ROADS AND DRIVEWAYS FOR EMERGENCY VEHICLES.
- OVERSIZE VEHICLE RESTRICTIONS**
1. THE CONTRACTOR SHALL REPORT ANY RESTRICTION (AS DEFINED BELOW) ON STATE HIGHWAYS, RAMPS OR BRIDGES AT LEAST SIX (6) BUSINESS DAYS (IE MONDAY THROUGH FRIDAY EXCLUDING HOLIDAY) IN ADVANCE OF THE RESTRICTION SIX (6) DAYS LEAD TIME IS NECESSARY TO PROVIDE THE RTMC ADEQUATE TIME TO PREVENT ISSUANCE OF SPECIAL HAULING PERMITS THAT WOULD ROUTE OVERSIZE VEHICLES OVER THE RESTRICTED SECTION OF THIS CONTRACT. RESTRICTIONS SHALL BE DEFINED AS ONE OR MORE OF THE FOLLOWING:
 - a. A COMPLETE CLOSURE OF A HIGHWAY, RAMP OR BRIDGE.
 - b. THE INSTALLATION OF BARRIER OR CHANNELIZING DEVICES THAT RESULT IN AN UNOBSTRUCTED WIDTH LESS THAN 18 FT ALONG A HIGHWAY, RAMP OR BRIDGE.
 - c. SUITABLE DRIVING SURFACES OF LESS THAN 18 FT IN WIDTH.
 - d. AVAILABLE VERTICAL CLEARANCE ABOVE THE HIGHWAY IS LESS THAN 14 FT IN HEIGHT.
 - e. WORK WOULD LIMIT VEHICLE LENGTH (IE TURNING ABILITY).
 - f. CHANGING THE LOAD CAPACITY OF A HIGHWAY, RAMP OR BRIDGE.
 2. NO PLANNED WORK ACTIVITY RESULTING IN A RESTRICTION SHALL BE IMPLEMENTED WITHOUT FIRST RECEIVING CLEARANCE FROM THE RTMC.
 3. THE COST OF THIS RESTRICTION REPORTING/NOTIFICATION SHALL BE INCLUDED IN THE PRICE BID FOR ITEM 618.01, BASIC WORK ZONE TRAFFIC CONTROL.
 4. THE CONTRACTOR SHALL GIVE VERBAL NOTIFICATION AT LEAST SEVEN (7) BUSINESS DAYS (IE MONDAY THROUGH FRIDAY EXCLUDING HOLIDAYS) PRIOR TO AND AT THE END OF A RESTRICTION ON ANY ROADWAY TO THE ONONDAGA COUNTY EMERGENCY MANAGEMENT CENTER (315) 435-2525.

SIGNALIZED INTERSECTIONS

1. WHEN CONSTRUCTION OPERATIONS EFFECT SIGNALIZED INTERSECTIONS, THE TRAFFIC SIGNAL SHALL BE TURNED OFF BEFORE PROCEEDING WITH THE FLAGGING OPERATION, AND ANY EXISTING W3-3 SIGNS COVERED.
2. THE CONTRACTOR SHALL OBTAIN A POLICE PANEL KEY FROM, AND RETURN IT TO, THE REGIONAL POLICE DEPARTMENT.
3. THE CONTRACTOR MUST RETURN THE SIGNAL TO 3-COLOR OPERATION AT THE END OF THE WORK OPERATION. IF THE SIGNAL DOES NOT RETURN TO 3-COLOR OPERATION, THE CONTRACTOR SHALL NOTIFY THE REGION 3 SIGNAL CREW AND MUST CONTINUE FLAGGING UNTIL THE SIGNAL IS RESTORED.
4. THE NYSDOT SIGNAL CREW EIC CAN BE REACHED AT (315) 428-4064 or (315) 428-2191.

MISCELLANEOUS

1. THE PERMITTEE SHALL BE AWARE THAT THE WORK ZONE TRAFFIC CONTROL IS A VERY CRITICAL ITEM OF THE PERMIT AND SHALL BE PROVIDED IN ACCORDANCE WITH SECTION 618 WORK ZONE TRAFFIC CONTROL OF THE STANDARD SPECIFICATIONS, THE 2009 EDITION OF THE NATIONAL MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS AND THE NEW YORK STATE SUPPLEMENT. THE PERMITTEE SHALL BE RESPONSIBLE FOR WORK ZONE TRAFFIC CONTROL AT ALL TIMES FOR THE DURATION OF THE PERMITTED WORK.
2. ACTUAL FIELD CONDITIONS MAY REQUIRE OTHER SIGNS AND OTHER ARRANGEMENTS OF SIGNS. DISTANCES SHALL BE ADAPTED TO PREVAILING CONDITIONS. SIGNS SHALL BE LOCATED TO PROVIDE OPTIMUM VISIBILITY. SIGNS THAT ARE NOT APPLICABLE SHALL BE COVERED OR OBSCURED FROM SIGHT. ALL SIGN NUMBERS REFER TO THE 2009 EDITIONS OF THE NATIONAL MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS AND THE NEW YORK SUPPLEMENT.
3. PEDESTRIAN ACCOMMODATIONS SHALL BE MAINTAINED FOR THE DURATION OF THE PROPOSED WORK. ANY DISTURBED AREAS WITH THE STATE RIGHT-OF-WAY SHALL BE ADEQUATELY FENCED TO PREVENT PEDESTRIAN ACCESS WHEN THE CONTRACTOR'S OPERATIONS ARE SHUT DOWN.
4. MATERIALS, EQUIPMENT AND WORK VEHICLES SHALL NOT BE STORED OR PARKED WITHIN THE STATE RIGHT-OF-WAY BEFORE WORK BEGINS OR AFTER CONTRACTOR'S OPERATIONS ARE SHUT DOWN. STAGING AREAS OUTSIDE THE RIGHT-OF-WAY SHALL BE USED TO STOCKPILE ALL CONSTRUCTION MATERIALS. DURING WORKING HOURS, NO CONSTRUCTION MATERIAL MAY BE STORED OR PLACED ON THE ROADWAY OR ROADBED EXCEPT WITHIN A PROTECTED WORK AREA.
5. VEHICLES BELONGING TO THE PERMITTEE OR WORKERS SHALL NOT BE PARKED WITHIN 30 FEET OF THE EDGE OF PAVEMENT ALONG A ROADWAY BEING USED BY THE GENERAL PUBLIC, UNLESS THEY ARE PARKED WITHIN A PROTECTED WORK AREA. DURING NON WORKING HOURS, CONSTRUCTION EQUIPMENT AND MATERIALS SHALL NOT BE STORED WITH 30 FEET OF THE EDGE OF PAVEMENT.
6. W30-1A "FLAGGER" SIGNS SHALL BE USED WHENEVER FLAGGING OCCURS FOR MORE THAN A BRIEF PERIOD OF TIME. THE SIGNS SHALL BE PROMPTLY REMOVED, COVERED, OR FACED AWAY FROM TRAFFIC WHEN THE FLAGGING OPERATION CEASES. ALL FLAGGING STATIONS AND LANE CLOSURES SHOULD BE LOCATED TO ENSURE MAXIMUM VISIBILITY.
7. NO DROP OFF GREATER THAN SIX INCHES SHALL BE LEFT OVERNIGHT WITHIN 30 FEET OF THE EDGE OF PAVEMENT. DROP-OFFS LESS THAN SIX INCHES WILL BE PERMITTED IF PROPER DELINEATION AND SIGNING IS PROVIDED, AND PRIOR PERMISSION IS GRANTED IN WRITING BY A REPRESENTATIVE OF THE DEPARTMENT. A DROP OFF IS CONSIDERED ELIMINATED IF TAPERED AWAY BY A 1 ON 6 SLOPE OR FLATTER.
8. CARE SHALL BE TAKEN TO INSURE THAT NO DAMAGE OCCURS TO THE EXISTING PAVEMENT/SHOULDER/CURBS AREAS AS A RESULT OF CONSTRUCTION EQUIPMENT MOVEMENT.
9. THE PERMITTEE MAY SUBMIT REVISIONS TO THE PLAN FOR APPROVAL, BUT ANY CHANGE THAT ALTERS THE BASIC CONCEPTS OF THE PLAN MUST BE APPROVED BY THE REGIONAL DIRECTOR OR HIS DESIGNEE.

NYSDOT STANDARD GENERAL PLAN NOTES

1. THE ROADWAY SHALL BE KEPT CLEAN OF MUD AND DEBRIS AT ALL TIMES.
2. ROADSIDE DRAINAGE SHALL BE MAINTAINED AT ALL TIMES.
3. MATERIALS, EQUIPMENT AND VEHICLES SHALL NOT BE STORED OR PARKED WITHIN THE NEW YORK STATE RIGHT-OF-WAY.
4. WORK ZONE TRAFFIC CONTROL SHALL COMPLY WITH THE 2009 EDITION OF THE NATIONAL MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS AND THE NEW YORK STATE SUPPLEMENT, AND SHALL BE IN ACCORDANCE WITH THE NYSDOT CONTRACT OR HIGHWAY WORK PERMIT DOCUMENTS AND AS DEEMED NECESSARY BY THE NY'S ENGINEER IN CHARGE.

ONONDAGA EAST 315-458-1910 ONONDAGA WEST 315-672-8151 CORTLAND/TOMPKINS 607-756-1072 OSWEGO 315-563-3730 CATTARAUGUS/GENEVA 315-539-3172
5. NOTIFY NEW YORK STATE DEPARTMENT OF TRANSPORTATION RESIDENT ENGINEER AT THE APPLICABLE RESIDENCY, THREE WORKING DAYS PRIOR TO WORKING IN THE STATE RIGHT-OF-WAY.
6. NOTIFY DIG SAFELY NEW YORK THREE WORKING DAYS PRIOR TO DIGGING, DRILLING OR BLASTING AT 1-800-962-7362, FOR A UTILITY STAKE-OUT.
7. ALL WORK CONTINGENT AND MATERIALS USED WITHIN THE NY'S RIGHT-OF-WAY SHALL BE COVERED BY AND IN CONFORMITY WITH THE NY'S DEPARTMENT OF TRANSPORTATION MAY 1, 2008 SPECIFICATIONS BOOK AND ANY SUBSEQUENT ADDENDA ALONG WITH ANY APPROPRIATE CURRENT NY'S DEPARTMENT OF TRANSPORTATION STANDARD SHEETS, EXCEPT AS MODIFIED IN THESE PLANS AND IN THE ITEMIZED PROPOSAL. METRIC UNITS MAY BE CONVERTED TO ENGLISH.
8. QUALITY CONTROL OF ASPHALT CONCRETE SHALL MEET THE REQUIREMENTS OF SECTION 402 OF THE STANDARD SPECIFICATIONS. ASPHALT COURSE DEPTHS SHOWN ON THE PLANS ARE COMPACTED DEPTHS.
9. NO NIGHT WORK WILL BE ALLOWED UNLESS PRIOR APPROVAL IS GIVEN BY THE DEPARTMENT. ADDITIONAL MAINTENANCE AND PROTECTION OF TRAFFIC WILL BE REQUIRED INCLUDING THE ADDITION OF REFLECTIVE MATERIALS AND LIGHTING.
10. HAZARDOUS WASTE NOTIFICATION - THE PERMITTEE ACCEPTS THE RIGHT-OF-WAY OF THE STATE HIGHWAY IN ITS AS IS CONDITION. THE DEPARTMENT OF TRANSPORTATION MAKES NO REPRESENTATION AS TO THE ABSENCE OF UNDERGROUND TANKS, STRUCTURES, FEATURES OR SIMILAR IMPEDIMENTS TO THE COMPLETION OF THE WORK PERMITTED HEREUNDER. SHOULD PERMITTEE FIND SOME PREVIOUSLY UNKNOWN UNDERGROUND IMPEDIMENTS TO ITS WORK, THE DEPARTMENT OF TRANSPORTATION SHALL HAVE NO OBLIGATION TO CURE, REMOVE, REMEDY OR OTHERWISE DEAL WITH SUCH PREVIOUSLY UNKNOWN UNDERGROUND IMPEDIMENTS. THE DEPARTMENT WILL PERMIT THE PERMITTEE TO REMOVE, MODIFY OR OTHERWISE DEAL WITH SUCH UNDERGROUND TANKS, STRUCTURE FEATURE OR IMPEDIMENT IF SUCH IS DONE IN A MANNER WHICH MEETS ACCEPTABLE ENGINEERING PRACTICE AND IS PRE-APPROVED BY THE DEPARTMENT OF TRANSPORTATION. SHOULD PERMITTEE DETERMINE THAT SUCH UNOBTAINED UNDERGROUND IMPEDIMENT RENDERS PERMITTEE'S WORK AS AUTHORIZED BY THIS PERMIT UNFEASIBLE, PERMITTEE SHALL HAVE THE OPTION OF RESTORING THE HIGHWAY TO ITS ORIGINAL CONDITION AND NOT PERFORMING SUCH WORK.
11. OPEN CUTTING OF THE ROADWAY SHALL NOT BE ALLOWED UNLESS PERMISSION IS GRANTED IN WRITING, BY THE REGIONAL TRAFFIC ENGINEER.



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SEAL:

**PLANNING
BOARD
SUBMISSION
6/1/2022**

**FAYETTEVILLE VETERINARY
HOSPITAL**

8122 E. GENESEE ST.
TOWN OF MANLIUS, NY

Rev. No.	Date	Desc.
1.	3/14/22	PB SUBMISSION
2.	6/1/22	PB SUBMISSION

AM JOB NO.

**MPT
PLAN**

DATE ISSUED:

05/02/22

L4.2

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TABLE NY1-A
BARRIER VEHICLE USE REQUIREMENTS
(LONG TERM, INTERMEDIATE TERM, AND SHORT TERM STATIONARY CLOSURES)

CLOSURE TYPE	EXPOSURE CONDITION ¹	USE REQUIREMENTS ^{4,5}			
		FREEMAN	NON-FREEMAN	PRECONSTRUCTION POSTED SPEED LIMIT ¹	POSTED SPEED LIMIT ¹
LANE CLOSURE	WORKERS ON FOOT OR IN VEHICLES EXPOSED TO TRAFFIC	REQUIRED ³	REQUIRED ³	REQUIRED ³	OPTIONAL ²
	NON-TRAVERSABLE HAZARD (E.G. EQUIPMENT, MATERIALS, EXCAVATION ONLY) NO WORKERS EXPOSED	REQUIRED ³	REQUIRED ³	OPTIONAL ²	OPTIONAL ²
SHOULDER CLOSURE	WORKERS ON FOOT OR IN VEHICLES EXPOSED TO TRAFFIC	REQUIRED ³	REQUIRED ³	OPTIONAL ²	OPTIONAL ²
	NON-TRAVERSABLE HAZARD (E.G. EQUIPMENT, MATERIALS, EXCAVATION ONLY) NO WORKERS EXPOSED	REQUIRED ³	OPTIONAL ²	OPTIONAL ²	OPTIONAL ²

1. THE EXPOSURE CONDITIONS DESCRIBED IN TABLE NY1-A ASSUMES THERE IS NO POSITIVE PROTECTION (TEMPORARY TRAFFIC BARRIER PRESENT, MOBILE WORKERS OR HAZARDS ARE PROTECTED BY A TEMPORARY TRAFFIC BARRIER, BARRIER VEHICLES ARE NOT REQUIRED).

2. WHERE THE REQUIREMENT IS "OPTIONAL", EITHER A BARRIER VEHICLE OR THE STANDARD LONGITUDINAL BUFFER SPACE (TABLE 60-2) SHALL BE PROVIDED.

3. REQUIREMENTS SHALL INCLUDE PROVIDING A SEPARATE BARRIER VEHICLE FOR EACH CLOSED LANE AND EACH CLOSED SHOULDER IF OR GREATER IN WIDTH, IF THE WORK SPACE MOVES WITHIN THE STATIONARY CLOSURE, THE BARRIER VEHICLE SHALL BE REPOSITIONED ACCORDINGLY. BARRIER VEHICLES PROTECTING NON-TRAVERSABLE HAZARDS SHALL REMAIN IN PLACE DURING ALL WORKING AND NON-WORKING HOURS UNTIL THE HAZARD NO LONGER EXISTS. EXCEPTIONS TO THESE REQUIREMENTS MAY BE MADE, AS APPROVED BY THE REGIONAL DIRECTOR OR HIS/HER DESIGNEE, WHERE BARRIER VEHICLE PLACEMENT WOULD BE INEFFECTIVE OR WOULD INTERFERE WITH THE SAFE OPERATION OF TRAFFIC.

4. BARRIER VEHICLES ARE NOT REQUIRED FOR MILLING AND/OR PAVING OPERATIONS, BUT THE STANDARD LONGITUDINAL BUFFER SPACE (TABLE 60-2) SHALL BE PROVIDED.

5. BARRIER VEHICLES ARE NOT REQUIRED FOR FLAGGING OPERATIONS, BUT THE STANDARD LONGITUDINAL BUFFER SPACE (TABLE 60-2) SHALL BE PROVIDED.

TABLE NY1-B
SHADOW VEHICLE USE REQUIREMENTS
(MOBILE CLOSURES)

CLOSURE TYPE	EXPOSURE CONDITION	USE REQUIREMENTS			
		FREEMAN	NON-FREEMAN	PRECONSTRUCTION POSTED SPEED LIMIT ¹	POSTED SPEED LIMIT ¹
LANE CLOSURE	WHEN ANY WORKER, VEHICLE, OR OTHER HAZARD IS EXPOSED TO TRAFFIC	REQUIRED ^{3,4}	REQUIRED ^{3,4}	REQUIRED ^{3,4}	REQUIRED ^{3,4}
	WHEN ANY WORKER, VEHICLE, OR OTHER HAZARD IS EXPOSED TO TRAFFIC	REQUIRED ^{3,4}	REQUIRED ^{3,4}	REQUIRED ^{3,4}	REQUIRED ^{3,4}

1. A MOBILE CLOSURE SHALL BE USED FOR ANY WORK ACTIVITY THAT MOVES CONTINUOUSLY OR INTERMITTENTLY ALONG THE TRAVELED WAY OR SHOULDER SLOWER THAN THE PREVAILING SPEED OF TRAFFIC. CHANNELIZING DEVICES ARE NOT USED FOR MOBILE CLOSURES.

2. SHADOW VEHICLES SHALL BE EQUIPPED WITH AN APPROVED REAR MOUNTED ATTENUATOR (TRUCK MOUNTED OR TRAILER MOUNTED) FOR THE FOLLOWING MOBILE CLOSURES: LANE CLOSURES ON FREEWAYS, LANE CLOSURES ON NON-FREEMAN ROADWAYS HAVING A PRE-CONSTRUCTION POSTED SPEED LIMIT OF 50 MPH OR MORE, SHOULDER CLOSURES ON FREEWAYS, AND SHOULDER CLOSURES ON NON-FREEMAN ROADWAYS HAVING A PRE-CONSTRUCTION POSTED SPEED LIMIT OF 45 MPH OR MORE.

3. FOR MOBILE LANE CLOSURES ON NON-FREEMAN ROADWAYS HAVING A PRE-CONSTRUCTION POSTED SPEED LIMIT OF 50 MPH OR LESS AND MOBILE SHOULDER CLOSURES ON NON-FREEMAN ROADWAYS HAVING A PRE-CONSTRUCTION POSTED SPEED LIMIT OF 45 MPH OR LESS, SHADOW VEHICLES ARE NOT REQUIRED TO BE EQUIPPED WITH A REAR MOUNTED ATTENUATOR.

4. A SHADOW VEHICLE IS USED TO PROTECT EXPOSED WORKERS ON FOOT OR IN A VEHICLE AND SHALL BE REQUIRED FOR ALL MOBILE CLOSURES. SHADOW VEHICLE REQUIREMENTS SHALL INCLUDE PROVIDING A SEPARATE SHADOW VEHICLE FOR EACH CLOSED LANE AND EACH CLOSED SHOULDER IF OR GREATER IN WIDTH. ADDITIONAL SHADOW VEHICLES MAY BE REQUIRED TO PROTECT THE SAFE OPERATION OF TRAFFIC AND THE INDIVIDUAL PROTECTION OF EXPOSED WORKERS, AS DIRECTED BY THE REGIONAL DIRECTOR OR HIS/HER DESIGNEE.

TABLE 61-4 FORMULAS FOR DETERMINING TAPER LENGTHS

SPEED LIMIT (S) MPH	TAPER LENGTH (L) FT	L = WS ² / 160	L = WS
140 MPH OR LESS			
145 MPH OR MORE			

STANDARD TAPER LENGTHS

LATERAL SHIFT OF TRAFFIC FLOW PATH	125 MPH	130 MPH	135 MPH	140 MPH	145 MPH	150 MPH	155 MPH	160 MPH	165 MPH	170 MPH
4	45	60	85	110	130	200	220	240	260	280
5	55	75	105	135	225	250	275	300	325	350
6	65	90	125	160	210	300	330	360	390	420
7	75	105	140	180	240	330	365	400	435	470
8	85	120	165	215	280	400	440	480	520	560
9	95	135	185	240	320	450	495	540	585	630
10	105	150	205	270	350	500	550	600	650	700
11	115	165	225	295	385	550	605	660	715	770
12	125	180	245	320	420	600	660	720	780	840

TABLE 61-3
TAPER LENGTH FOR TEMPORARY TRAFFIC CONTROL ZONES

TYPE OF TAPER	TAPER LENGTH (L) FT
MERGING TAPER	L
SHOULDER TAPER	L/2
ONE-LANE, TWO-WAY TRAFFIC TAPER	100 FT. MAXIMUM
DOWNGRADE TAPER	100 FT. PER LANE

WORK ZONE TRAFFIC CONTROL LEGEND

SYMBOL	DESCRIPTION
[Symbol]	ARROW PANEL
[Symbol]	ARROW PANEL, CAUTION MODE
[Symbol]	ARROW PANEL, TRAILER OR SUPPORT
[Symbol]	CHANGEABLE MESSAGE SIGN (PMS)
[Symbol]	CHANNELIZING DEVICE
[Symbol]	CRASH CUSHION/TEMPORARY IMPACT ATTENUATOR
[Symbol]	DIRECTION OF TEMPORARY TRAFFIC DETOUR
[Symbol]	FLAGGER
[Symbol]	FLAG TREE
[Symbol]	LUMINAIRE
[Symbol]	PAVEMENT MARKINGS THAT SHALL BE REMOVED FOR A LONG TERM PROJECT
[Symbol]	ROAD TEMPORARY
[Symbol]	TEMPORARY BARRIER
[Symbol]	TEMPORARY BARRIER WITH WARNING LIGHTS
[Symbol]	TRAFFIC OR PEDESTRIAN SIGNAL
[Symbol]	TYPE III BARRICADE
[Symbol]	WARNING LIGHTS
[Symbol]	WORK SPACE
[Symbol]	WORK VEHICLE
[Symbol]	WORK VEHICLE WITH TRUCK MOUNTED ATTENUATOR

TABLE 61-2
FLARE RATES FOR POSITIVE BARRIER

TYPE OF POSITIVE BARRIER	30	40	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240	245	250	255	260	265	270	275	280	285	290	295	300																																																																																																																																																																																																																																																																																																																																																																																																																																																											
TEMPORARY CONCRETE BARRIER	80	110	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560	580	600	620	640	660	680	700	720	740	760	780	800	820	840	860	880	900	920	940	960	980	1000	1020	1040	1060	1080	1100	1120	1140	1160	1180	1200	1220	1240	1260	1280	1300	1320	1340	1360	1380	1400	1420	1440	1460	1480	1500	1520	1540	1560	1580	1600	1620	1640	1660	1680	1700	1720	1740	1760	1780	1800	1820	1840	1860	1880	1900	1920	1940	1960	1980	2000	2020	2040	2060	2080	2100	2120	2140	2160	2180	2200	2220	2240	2260	2280	2300	2320	2340	2360	2380	2400	2420	2440	2460	2480	2500	2520	2540	2560	2580	2600	2620	2640	2660	2680	2700	2720	2740	2760	2780	2800	2820	2840	2860	2880	2900	2920	2940	2960	2980	3000	3020	3040	3060	3080	3100	3120	3140	3160	3180	3200	3220	3240	3260	3280	3300	3320	3340	3360	3380	3400	3420	3440	3460	3480	3500	3520	3540	3560	3580	3600	3620	3640	3660	3680	3700	3720	3740	3760	3780	3800	3820	3840	3860	3880	3900	3920	3940	3960	3980	4000	4020	4040	4060	4080	4100	4120	4140	4160	4180	4200	4220	4240	4260	4280	4300	4320	4340	4360	4380	4400	4420	4440	4460	4480	4500	4520	4540	4560	4580	4600	4620	4640	4660	4680	4700	4720	4740	4760	4780	4800	4820	4840	4860	4880	4900	4920	4940	4960	4980	5000	5020	5040	5060	5080	5100	5120	5140	5160	5180	5200	5220	5240	5260	5280	5300	5320	5340	5360	5380	5400	5420	5440	5460	5480	5500	5520	5540	5560	5580	5600	5620	5640	5660	5680	5700	5720	5740	5760	5780	5800	5820	5840	5860	5880	5900	5920	5940	5960	5980	6000	6020	6040	6060	6080	6100	6120	6140	6160	6180	6200	6220	6240	6260	6280	6300	6320	6340	6360	6380	6400	6420	6440	6460	6480	6500	6520	6540	6560	6580	6600	6620	6640	6660	6680	6700	6720	6740	6760	6780	6800	6820	6840	6860	6880	6900	6920	6940	6960	6980	7000	7020	7040	7060	7080	7100	7120	7140	7160	7180	7200	7220	7240	7260	7280	7300	7320	7340	7360	7380	7400	7420	7440	7460	7480	7500	7520	7540	7560	7580	7600	7620	7640	7660	7680	7700	7720	7740	7760	7780	7800	7820	7840	7860	7880	7900	7920	7940	7960	7980	8000	8020	8040	8060	8080	8100	8120	8140	8160	8180	8200	8220	8240	8260	8280	8300	8320	8340	8360	8380	8400	8420	8440	8460	8480	8500	8520	8540	8560	8580	8600	8620	8640	8660	8680	8700	8720	8740	8760	8780	8800	8820	8840	8860	8880	8900	8920	8940	8960	8980	9000	9020	9040	9060	9080	9100	9120	9140	9160	9180	9200	9220	9240	9260	9280	9300	9320	9340	9360	9380	9400	9420	9440	9460	9480	9500	9520	9540	9560	9580	9600	9620	9640	9660	9680	9700	9720	9740	9760	9780	9800	9820	9840	9860	9880	9900	9920	9940	9960	9980	10000

TABLE NY1-3
ADVANCE WARNING SIGN SPACING

ROAD TYPE	A (FT)	B (FT)	C (FT)	XX	YY
URBAN (30 MPH)	100	100	100	AHEAD	AHEAD
URBAN (35-40 MPH)	200	200	200	AHEAD	AHEAD
URBAN (45 MPH)	350	350	350	1000 FT.	AHEAD
RURAL	500	500	500	1500 FT.	1000 FT.
EXPRESSWAY / FREEWAY	1000	1500	2500	1 MILE	1/2 MILE

• PRECONSTRUCTION POSTED SPEED LIMIT

URBAN: MEETS MORE THAN 1 OF THE FOLLOWING CRITERIA:
1. SIGNALS, TRAFFIC SIGNALS, SIGNALING SYSTEMS, OR OTHER TRAFFIC CONTROL DEVICES.
2. COMMERCIAL TRUCKS OR TRAILERS EXCEEDING 100,000 LBS.
3. COMMERCIAL TRUCKS OR TRAILERS EXCEEDING 100,000 LBS.
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99. COMMERCIAL TRUCKS OR TRAILERS EXCEEDING 100,000 LBS.
100. COMMERCIAL TRUCKS OR TRAILERS EXCEEDING 100,000 LBS.

TABLE 310-01: PROTECTIVE VEHICLE REQUIREMENTS				
CLOSURE TYPE	ROAD TYPE & SPEED	NON-FREEMAN		
		≥ 45 MPH	35 - 40 MPH	≤ 30 MPH
LANE CLOSURE OR ENCROACHMENT	EXPOSURE CONDITIONS ¹			

2/2/2017 3:08:13 PM



25 EAST JEFFERSON STREET
SYRACUSE, NEW YORK 13202

CONSULTANT



SEAL:

**PLANNING
BOARD
SUBMISSION
6/1/2022**

**FAYETTEVILLE VETERINARY
HOSPITAL**
8122 E. GENESEE ST.
TOWN OF MANLIUS, NY

Rev. No.	Date	Desc.
1.	3/14/22	PB SUBMISSION
2.	6/1/22	PB SUBMISSION

AM JOB NO

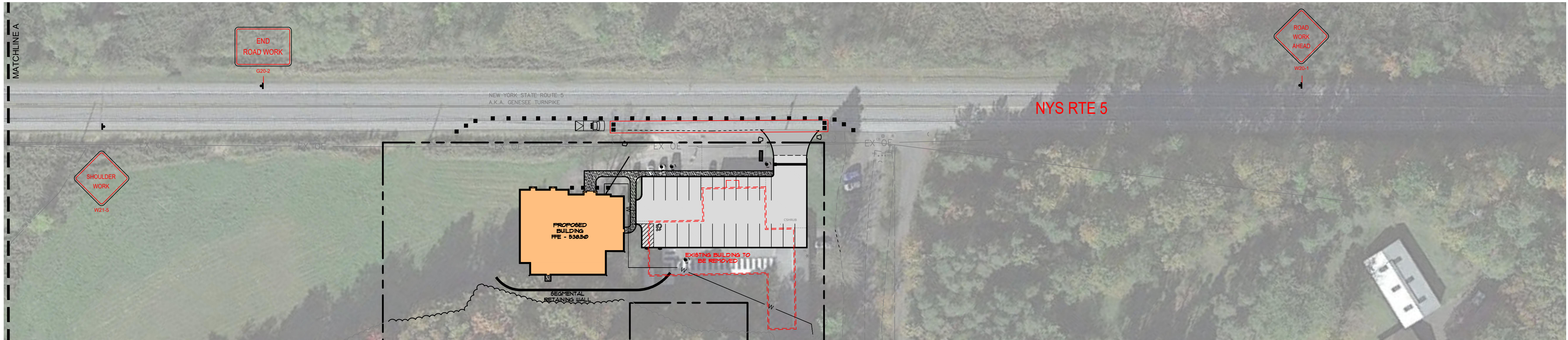
WORK ZONE TRAFFIC CONTROL PLAN

DATE ISSUED:

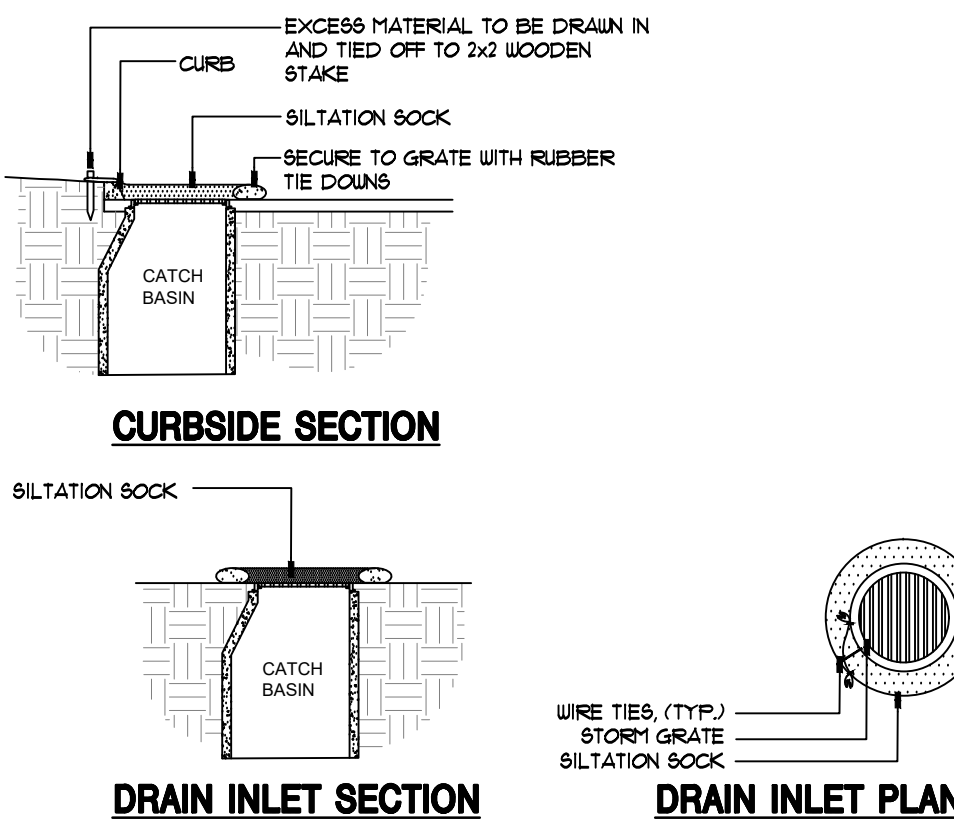
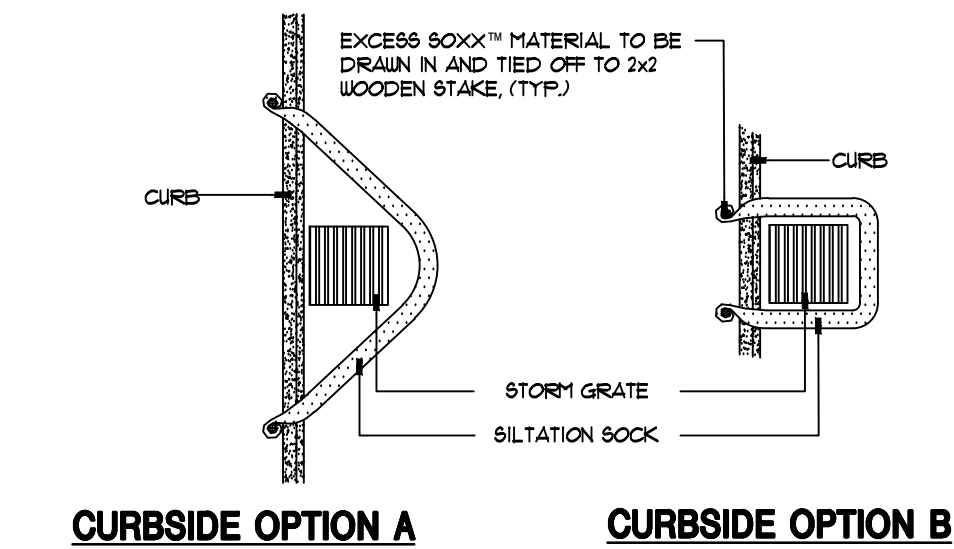
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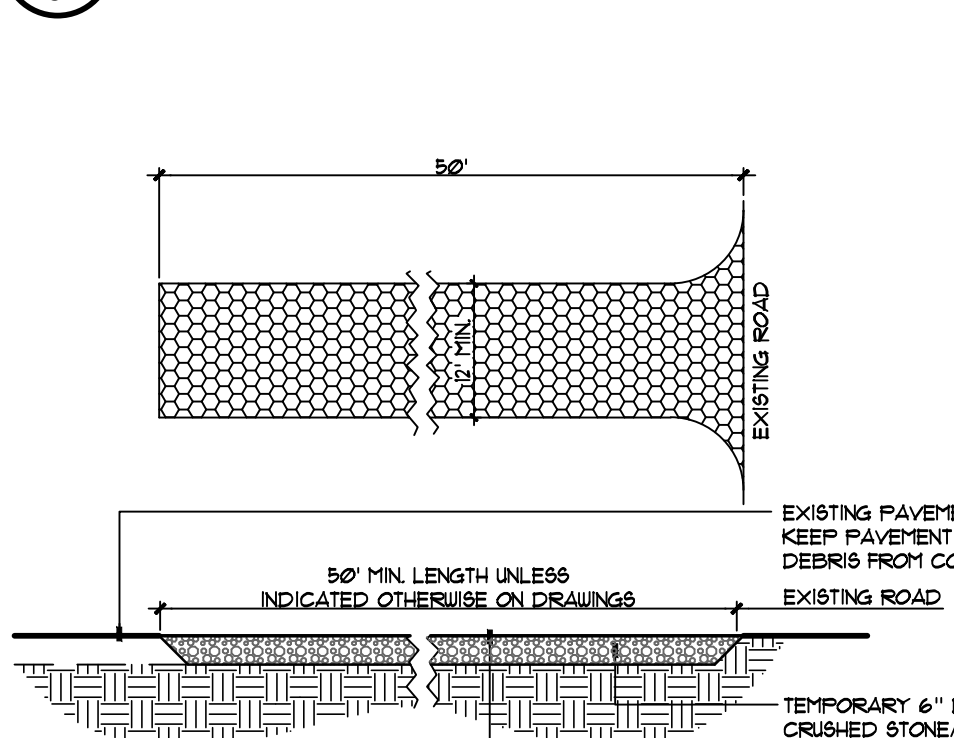
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NOTES:
1. ALL MATERIAL TO MEET MANUFACTURER SPECIFICATIONS.
2. FILL TO MEET APPLICATION REQUIREMENTS.
3. COMPOST MATERIAL TO BE DISPERSED ON SITE, AS DETERMINED BY ENGINEER.

19 SILTATION SOCK INLET PROTECTION

NOT TO SCALE

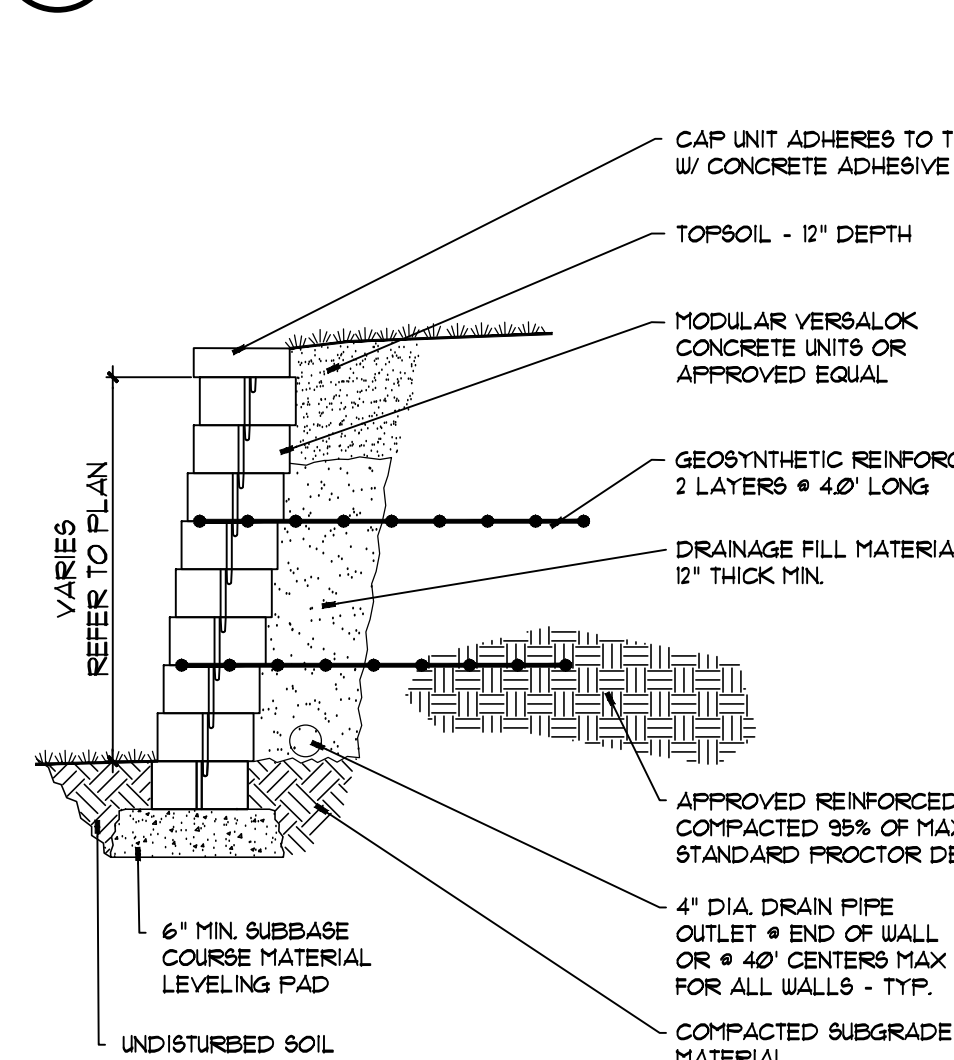


NOTE: UNLESS OTHERWISE INDICATED ON THE DRAWINGS, INSTALL IN AREAS WHERE FREQUENT ON-SITE OFF-SITE TRAFFIC OCCURS.

NOTES:
1. WIDTH-TWELVE (12) FOOT MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS, TWENTY-FOUR (24) FOOT IF SINGLE ENTRANCE TO SITE.
2. FILTER CLOTH SHALL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
3. SURFACE WATER-ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERT WITH 5:1 SLOPES WILL BE PERMITTED.
4. MAINTENANCE-THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT-OF-WAY.
5. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
6. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.
7. REFER TO SUPPLY SECTION 1 FOR NY'S STANDARDS AND SPECIFICATIONS FOR STABILIZED CONSTRUCTION ENTRANCE.

18 CONSTRUCTION ENTRANCE (MUDRACK)

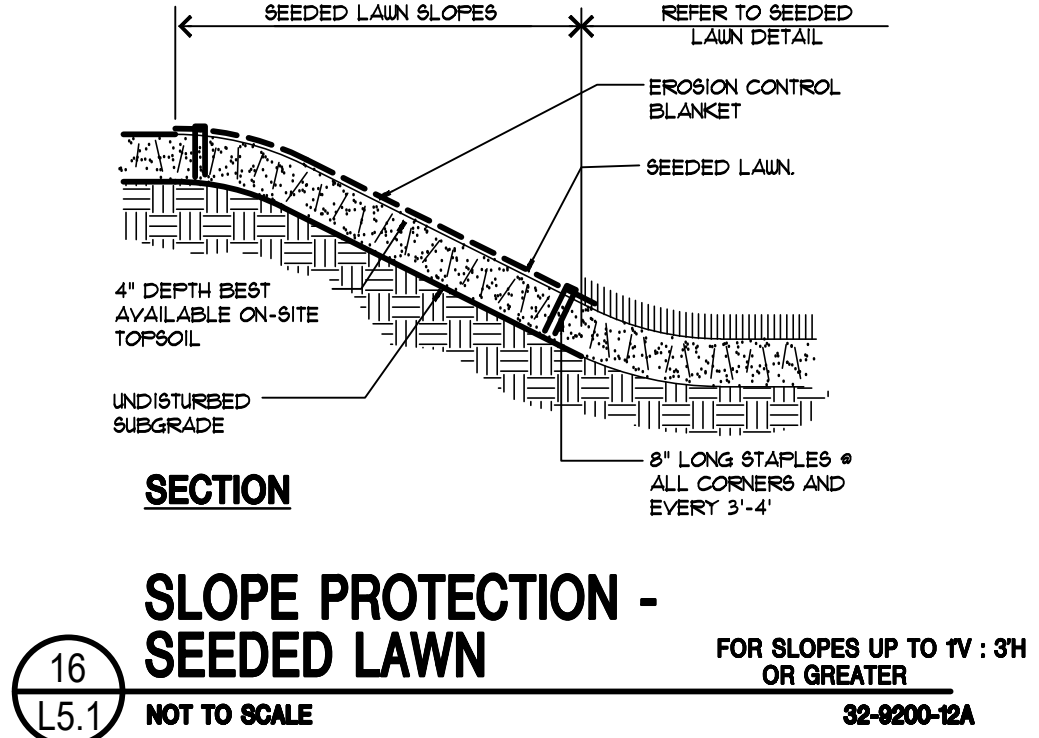
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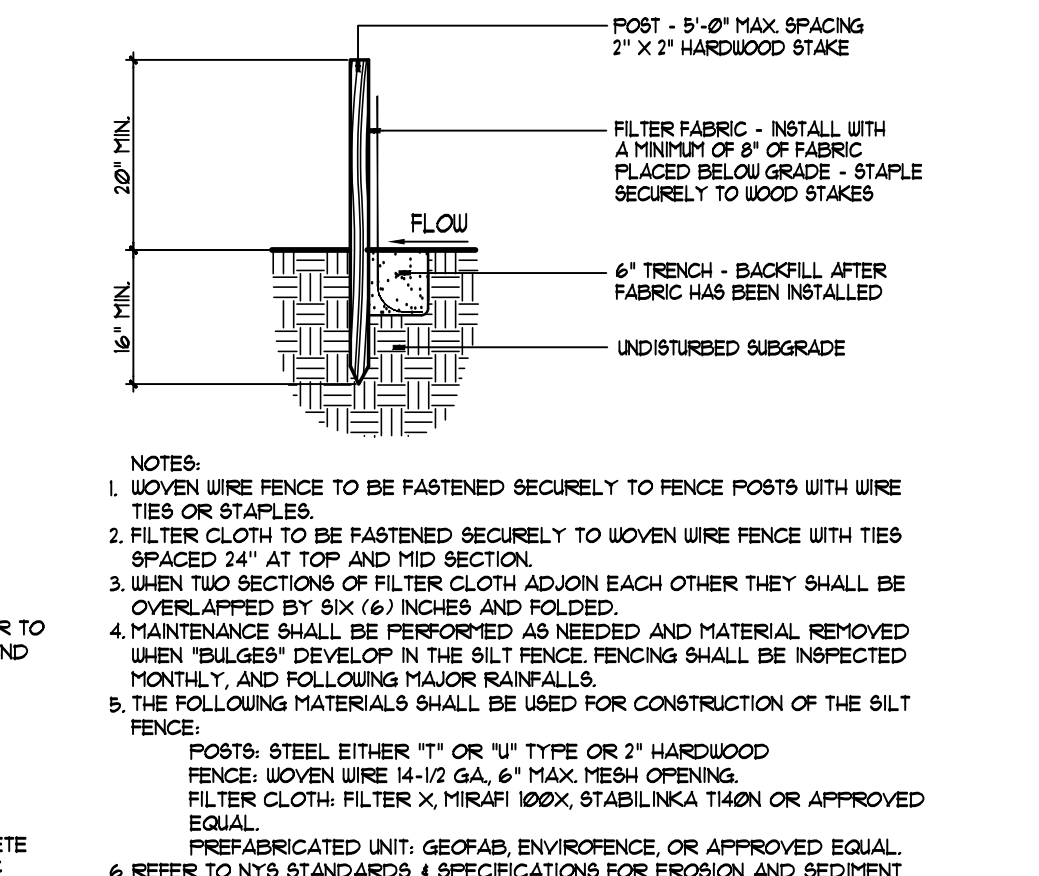
NOTE: PROVIDE ENGINEERED AND PE STAMPED DRAWINGS OF RETAINING WALL FOR APPROVAL PRIOR TO CONSTRUCTION.

17 RETAINING WALL

NOT TO SCALE



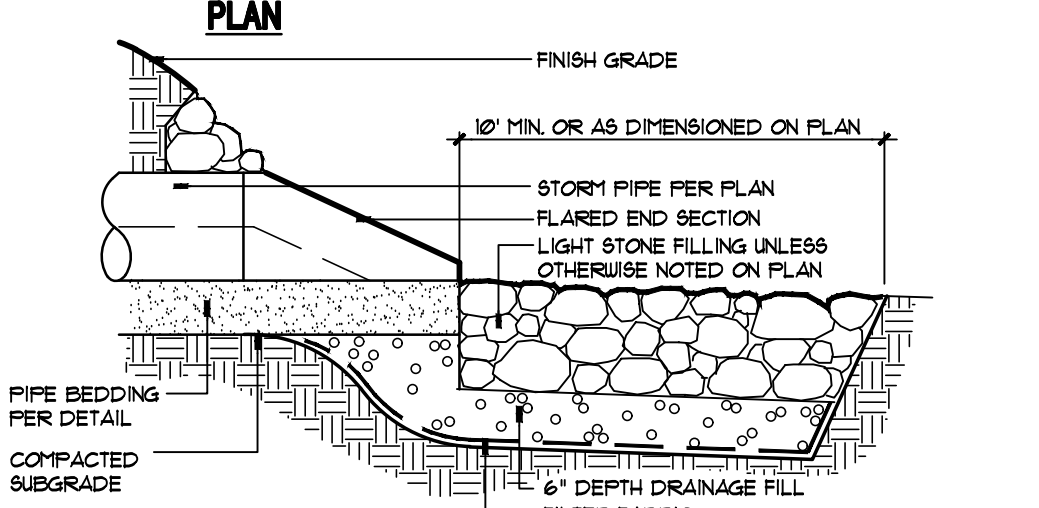
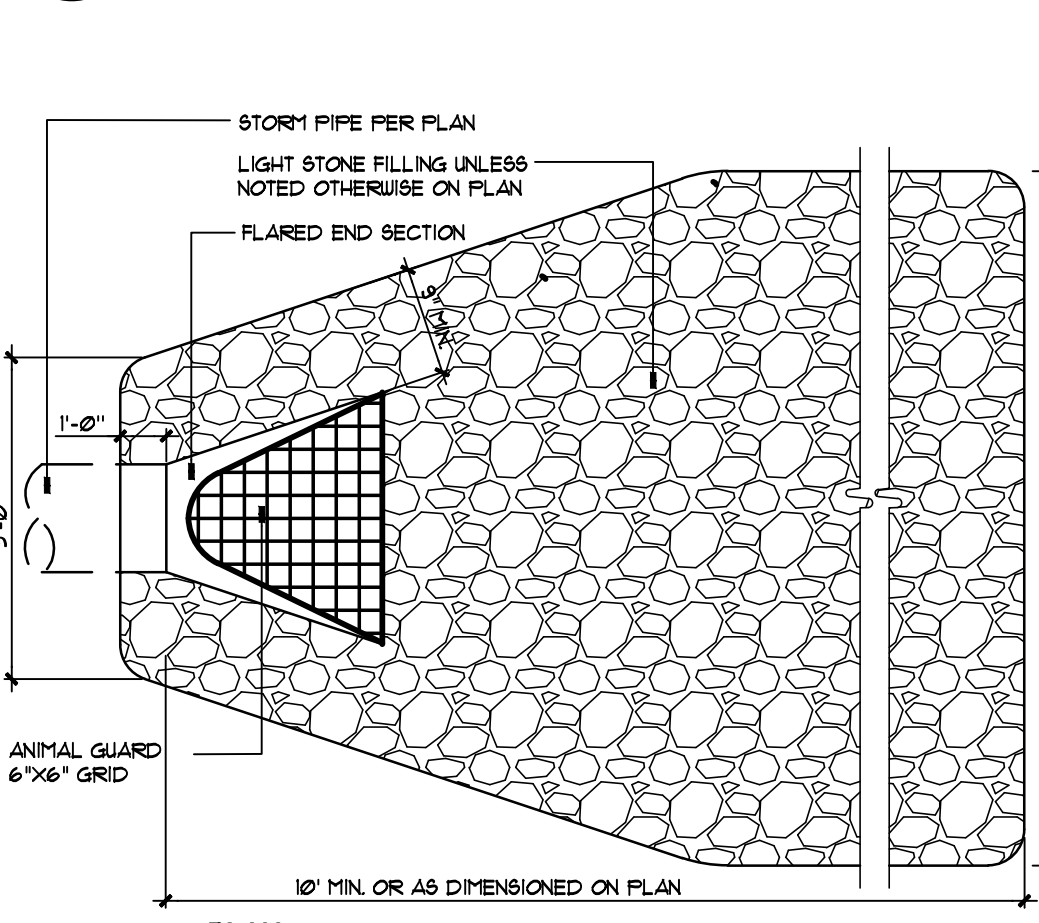
FOR SLOPES UP TO 1V: 3H OR GREATER



NOTES:
1. TRENCH DEPTHS, WIDTHS, SHEETING, SHORING, BRACING AND CUTBACK SLOPES TO BE DETERMINED BY THE CONTRACTOR AND COMPLY WITH OSHA, NEW YORK STATE DEPARTMENT OF LABOR, NEW YORK STATE INDUSTRIAL CODE AND ALL OTHER APPLICABLE SAFETY STANDARDS.
2. REFER TO PLAN FOR PAVED AND NON PAVED DETAILS.
3. INSTALL TRACER WIRE AROUND WATER LINE. TRACER WIRE SHALL BE #2 AWG COPPER CLAD STEEL, HIGH STRENGTH, WITH MINIMUM 450 LB BREAK LOAD WITH MINIMUM 30 MIL HDPE INSULATION THICKNESS.

15 SILT FENCE (SF)

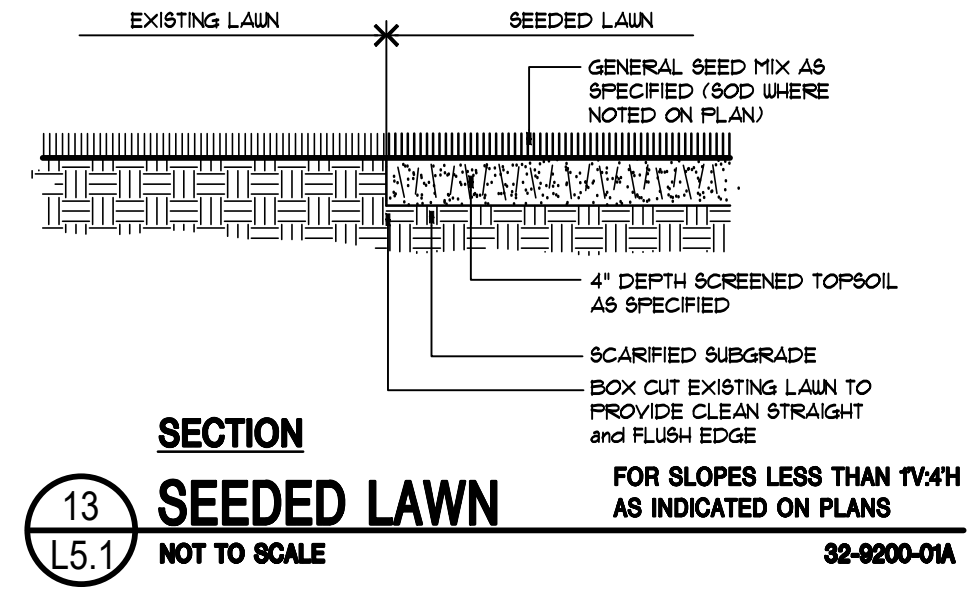
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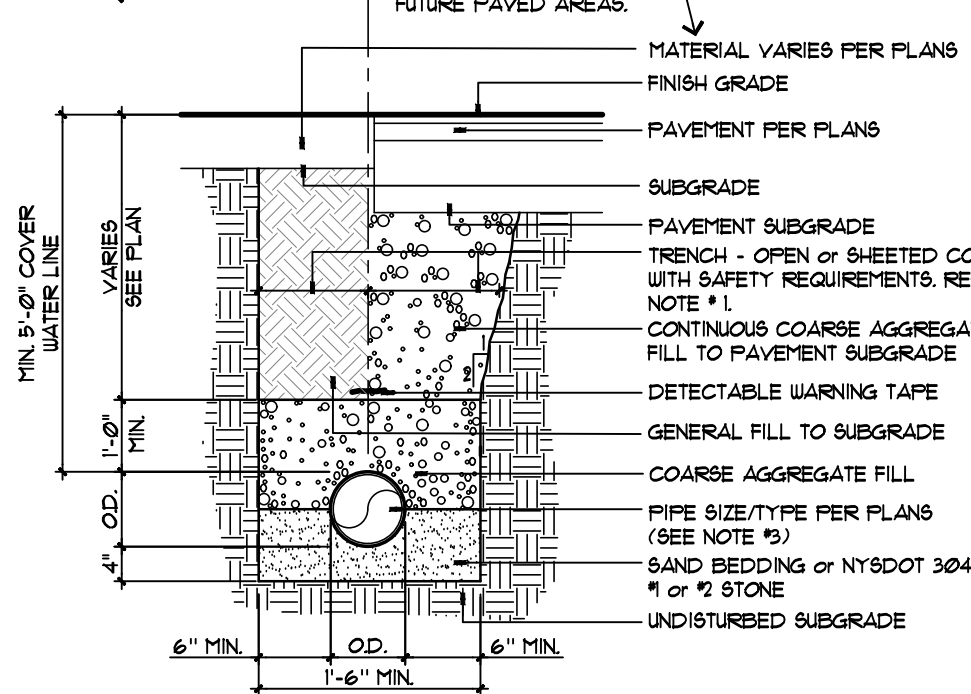
NOTE: FLARED END SECTION SHALL BE CONSTRUCTED OF GALVANIZED STEEL OR ALUMINUM WITH SAFETY BAR SYSTEM ON END SECTIONS 15' OR LARGER.

14 FLARED END SECTION

NOT TO SCALE



FOR SLOPES LESS THAN 1V:4H AS INDICATED ON PLANS

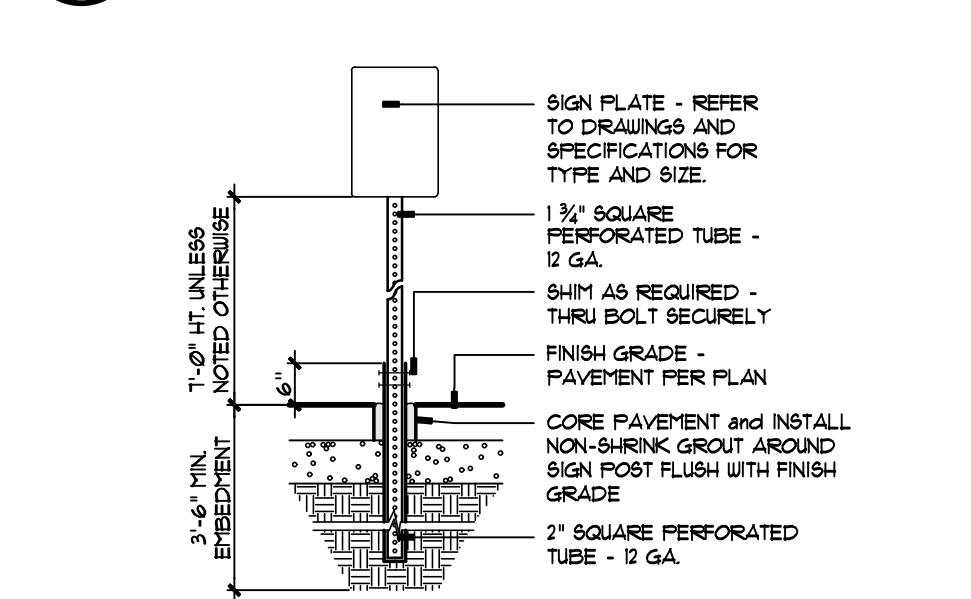


FOR STORM, SANITARY, AND WATER PIPE

NOTES:
1. FABRICATE SIGN PANELS OF 3000 ALUMINUM.
2. ALL SIGNS SHALL BE FASTENED TO OR MOUNTED ON POST WITH GALVANIZED BOLTS, NUTS AND WASHERS.
3. FOR FURTHER INFORMATION REFER TO THE LATEST EDITION OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS, U.S. DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION.
4. COORDINATE SIGN LOCATION TO AVOID UTILITIES.

12 PIPE BEDDING

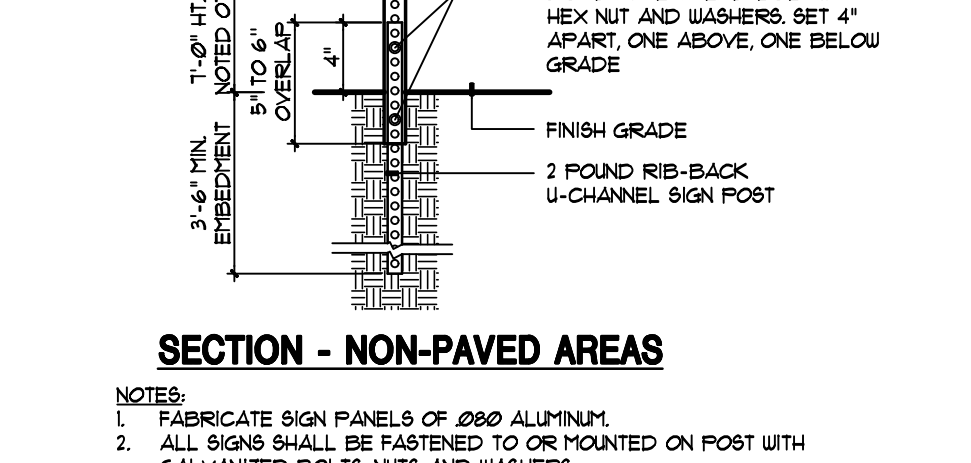
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NOTES:
1. PROVIDE SCORE CONTROL JOINT EVERY 10'-0".

8 CONCRETE DOWELING @ DOORWAY

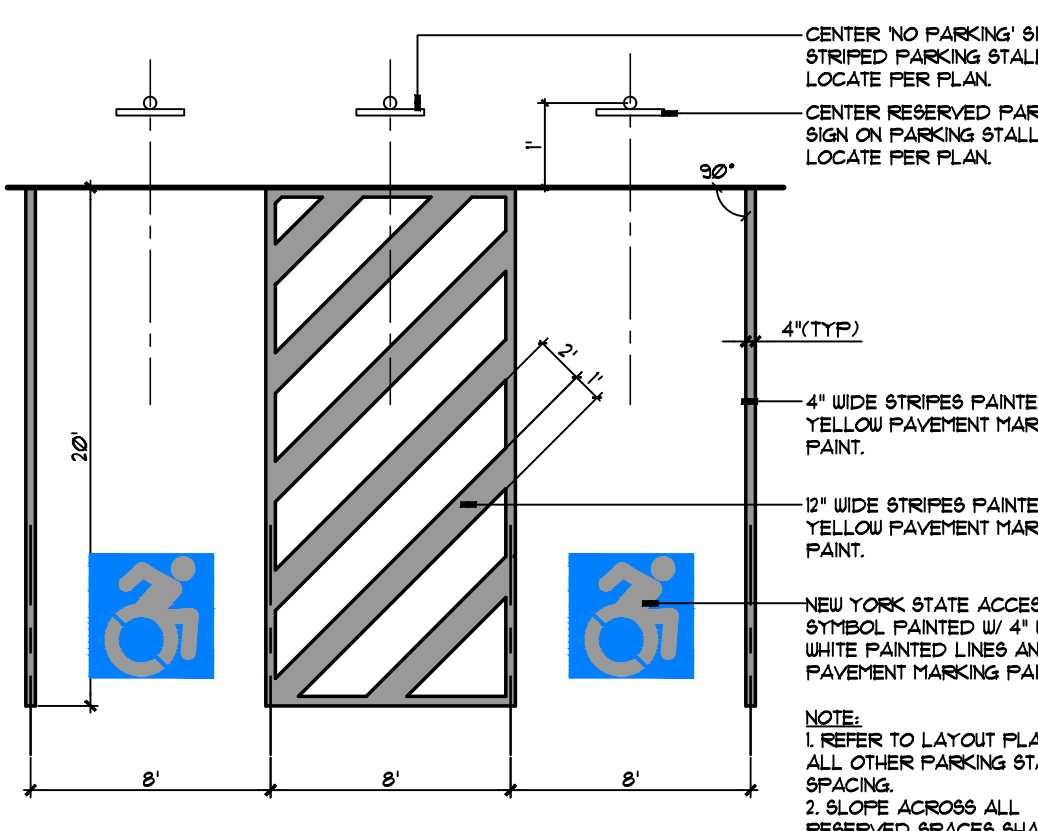
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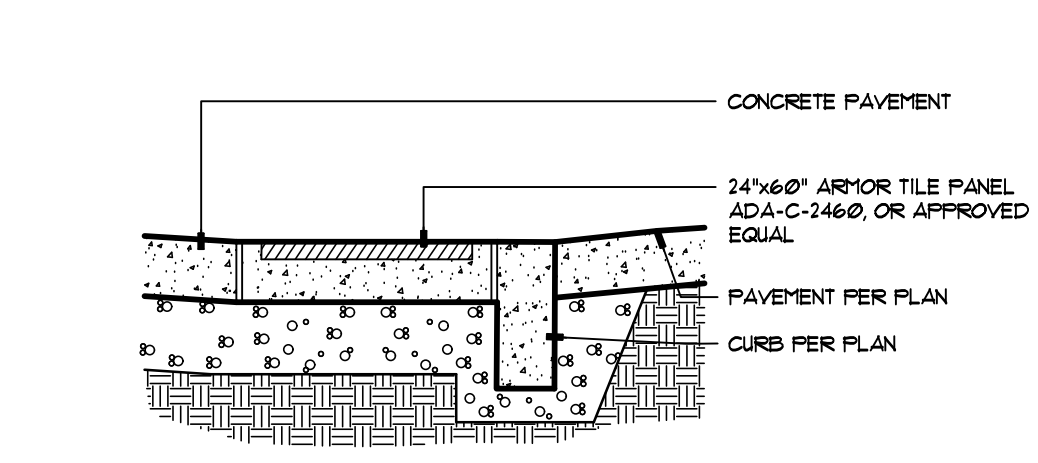
NOTES:
1. PROVIDE SCORE CONTROL JOINT EVERY 10'-0".

7 CONCRETE CURB - INTEGRAL

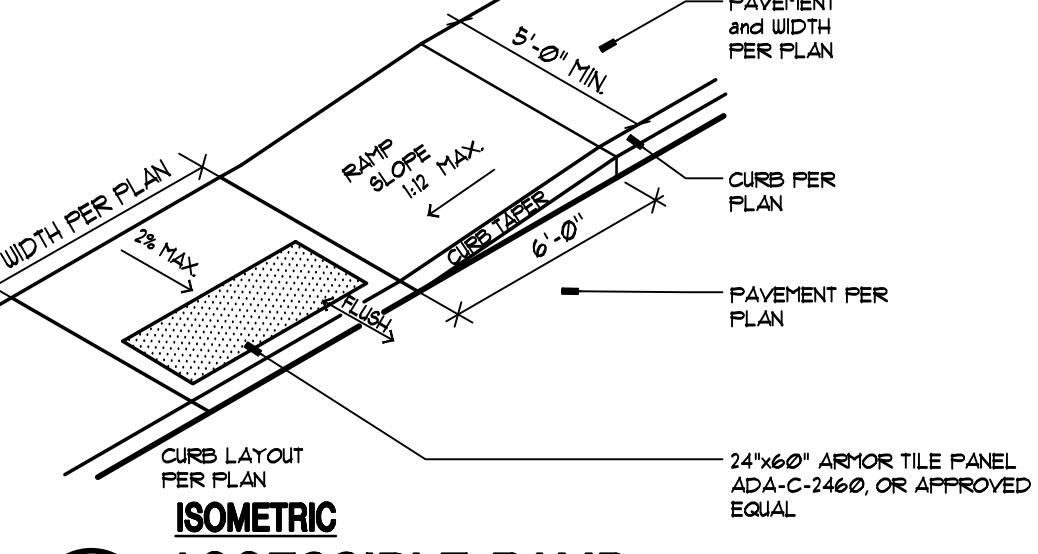
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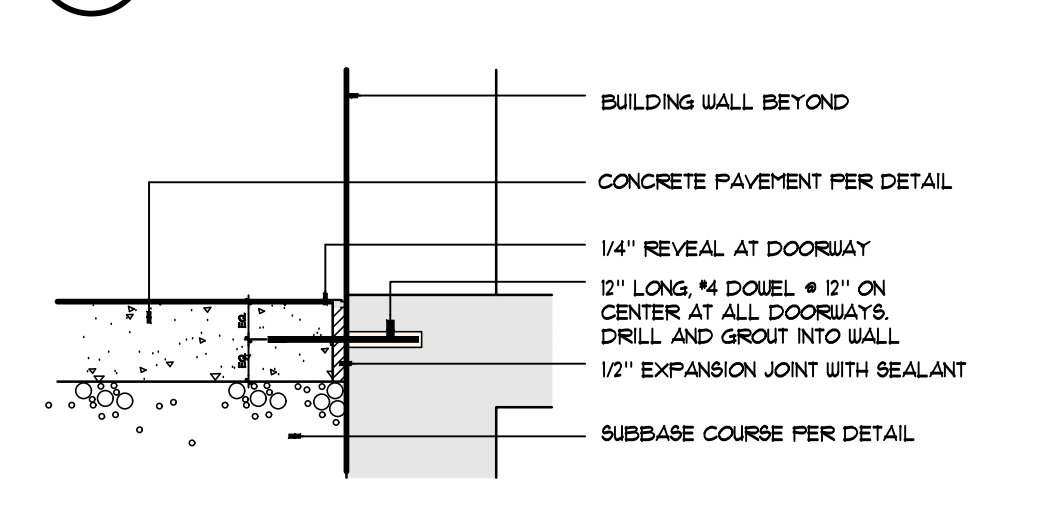
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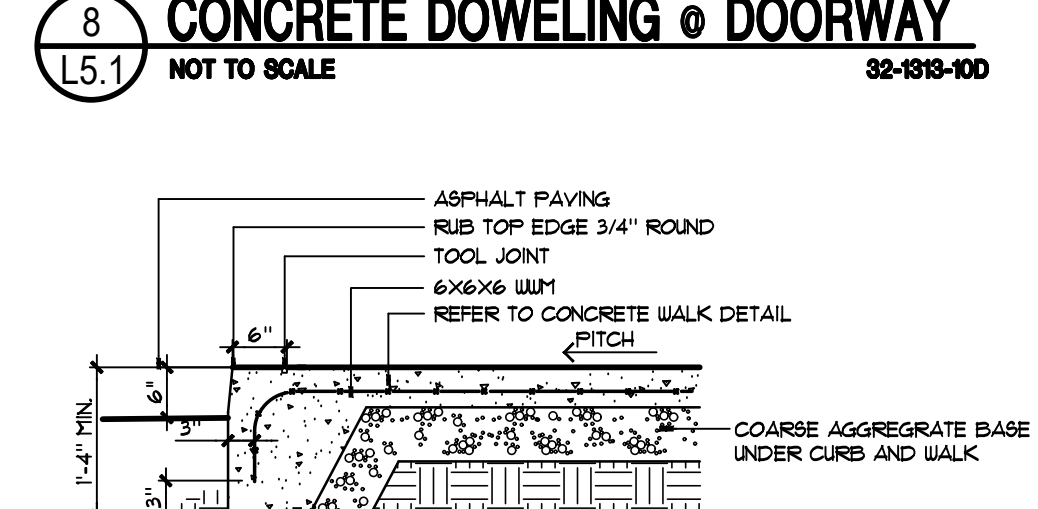
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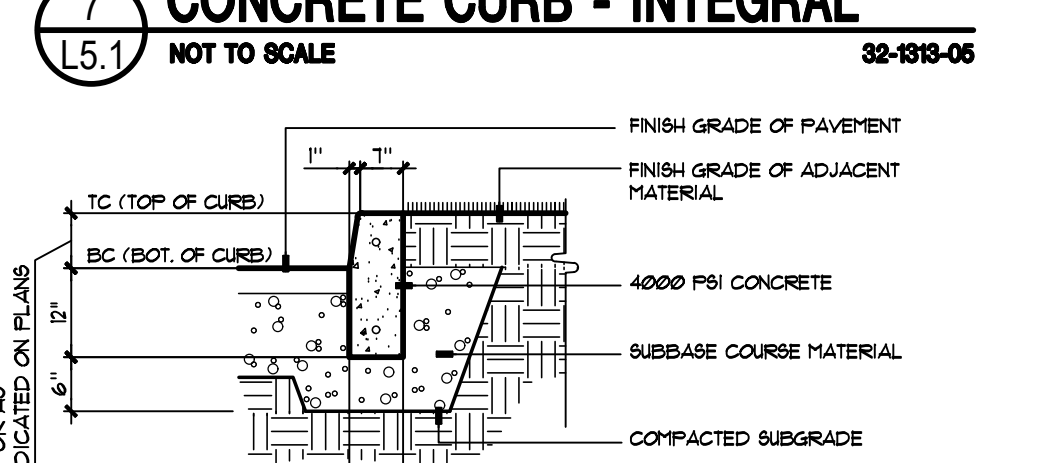
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NOTES:
1. PROVIDE SCORE CONTROL JOINT EVERY 10'-0".

3 CONCRETE PAVEMENT

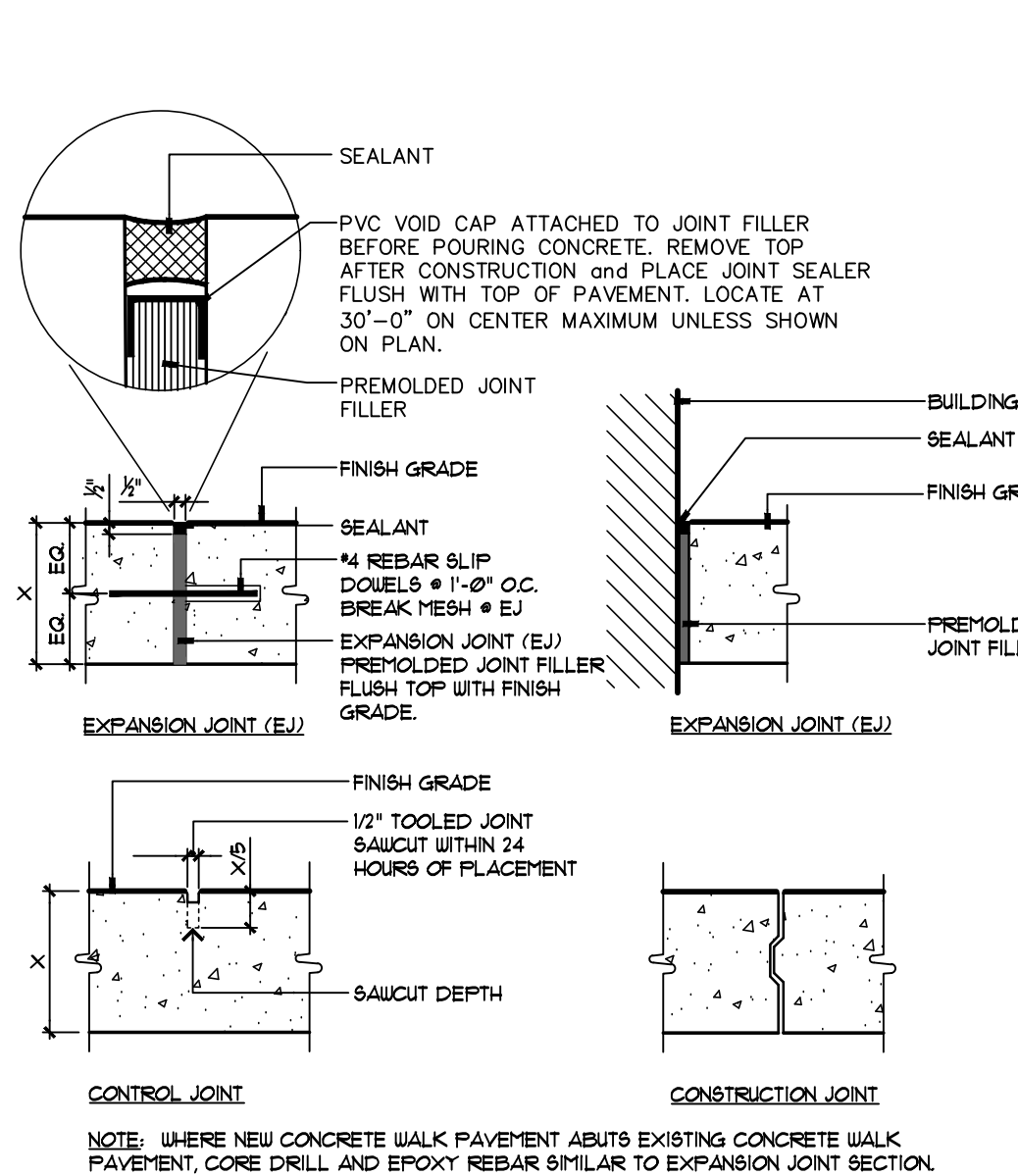
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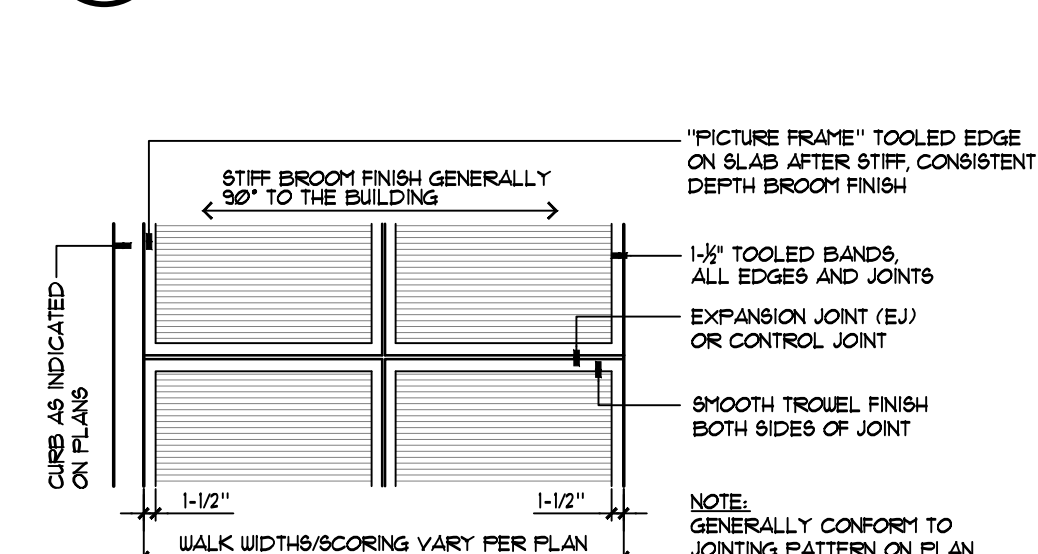
NOTES:
1. PROVIDE SCORE CONTROL JOINT EVERY 10'-0".

2 NYS DOT ASPHALT R.O.W. PAVEMENT

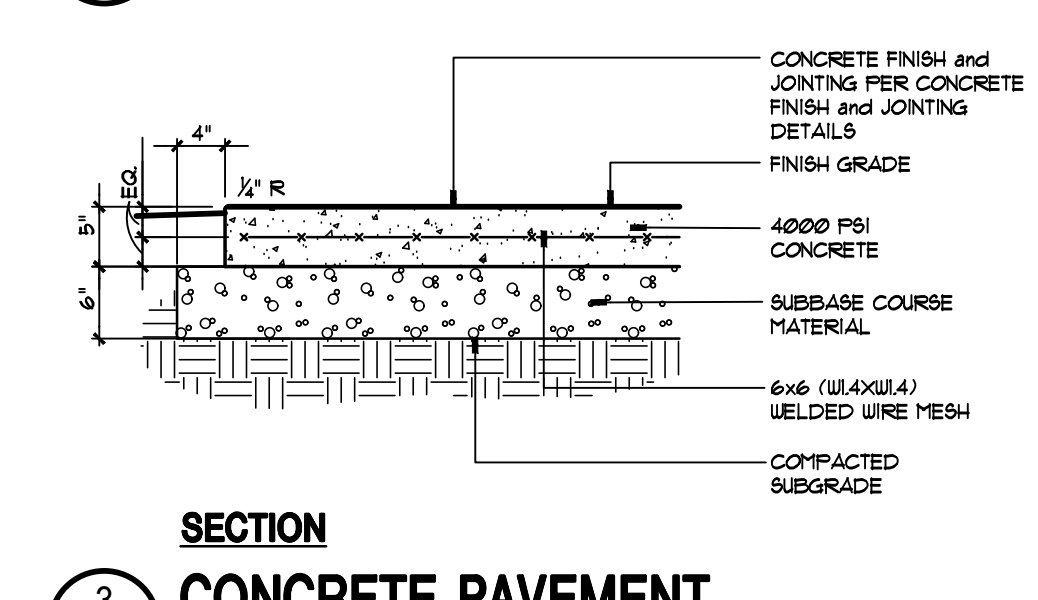
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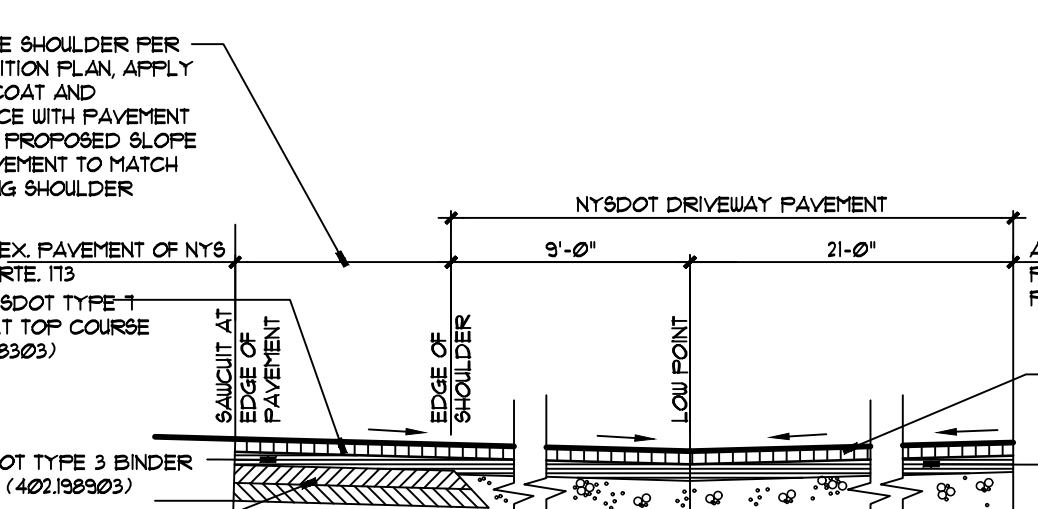
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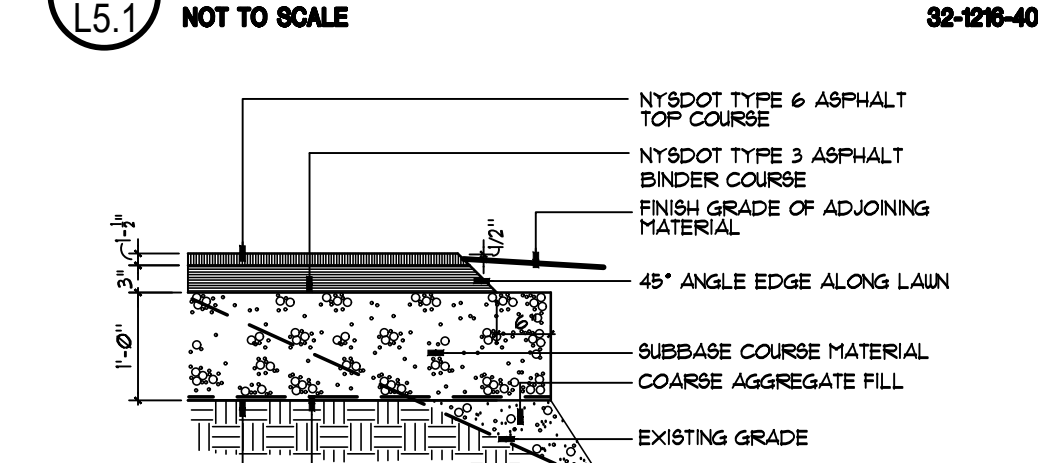
NOT TO SCALE



NOTES:
1. PROVIDE SCORE CONTROL JOINT EVERY 10'-0".

3 CONCRETE PAVEMENT

NOT TO SCALE



NOTES:
1. PROVIDE SCORE CONTROL JOINT EVERY 10'-0".

2 NYS DOT ASPHALT R.O.W. PAVEMENT

NOT TO SCALE



ASHLEY MCGRAW
25 EAST JEFFERSON STREET
SYRACUSE, NEW YORK 13202

CONSULTANT:
KEPLINGER FREEMAN ASSOCIATES
LANDSCAPE ARCHITECTURE & LAND PLANNING
6320 FLY ROAD, SUITE 209 EAST SYRACUSE, NEW YORK 13207
PHONE: (315) 445-7980 FAX: (315) 445-7981

SEAL:
PLANNING BOARD SUBMISSION
6/1/2022

FAYETTEVILLE VETERINARY HOSPITAL
8122 E. GENESEE ST.
TOWN OF MANLIUS, NY

Rev. No.	Date	Desc.
1.	3/14/22	PB SUBMISSION
2.	6/1/22	PB SUBMISSION

AM JOB NO.

DETAILS

DATE ISSUED:
05/02/22

L5.1

NOTES:
BOUNDARY SURVEY AND TOPOGRAPHIC INFORMATION PROVIDED BY C.T. MALE ASSOCIATES, DATED 02/17/2017.

- SURVEY SUBJECT TO ANY STATE OF FACTS AN ACCURATE AND UP TO DATE ABSTRACT OF TITLE WOULD SHOWN.
- THE LOCATION OF UNDERGROUND IMPROVEMENTS OR ENCRoACHMENTS ARE NOT ALWAYS KNOWN AND OFTEN MUST BE ESTIMATED. IF ANY UNDERGROUND IMPROVEMENTS OR ENCRoACHMENTS EXIST OR ARE NOT SHOWN, THE IMPROVEMENTS OR ENCRoACHMENTS ARE NOT COVERED BY THIS DRAWING. IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONTACT DIG SAFELY NEW YORK AT 1-800-462-7462 BEFORE ANY EXCAVATION OCCURS FOR LOCATION VERIFICATION OF UNDERGROUND UTILITIES.
- THIS DRAWING PROVIDES DESIGN DATA FOR SEPTIC SYSTEM ONLY.
- CONSTRUCTION SHALL NOT OCCUR WHEN THE GROUND IS FROZEN OR THE SOIL MOISTURE CONTENT IS HIGH.
- THE CONTRACTOR MUST NOTIFY THE ENGINEER PRIOR TO THE COMMENCEMENT OF CONSTRUCTION IN ORDER TO ARRANGE FOR INSPECTION OF THE PROPOSED FILL MATERIAL AND ITS PLACEMENT AND STABILIZATION.
- IF FIELD CONDITIONS VARY FROM THE DESIGN, NOTIFY THE ENGINEER IMMEDIATELY.

SANITARY SYSTEM DESIGN CRITERIA:

DATA:-
A. PERCOLATION AND DEEP HOLE TESTING WAS CONDUCTED BY A REPRESENTATIVE OF RZ ENGINEERING ON 03/21/2022.

DHT #1 -
0" - 18" FINE GRAVELLY SILT
18" - 48" GRAVELLY CLAY
48" - 72" CLAY
GROUNDWATER WITNESSED @ 66"
NO MOTTLING WITNESSED
NO BEDROCK WITNESSED

DHT #2 -
0" - 24" FINE GRAVELLY SILT
24" - 36" GRAVELLY CLAY
36" - 66" CLAY
GROUNDWATER WITNESSED @ 36"
NO MOTTLING WITNESSED
NO BEDROCK WITNESSED

PT#1 (24" DEPTH)
STABILIZED PERCOLATION RATE = 60 MIN/INCH
PT#2 (12" DEPTH)
STABILIZED PERCOLATION RATE = 60 MIN/INCH
PT#3 (6" DEPTH)
STABILIZED PERCOLATION RATE = 60 MIN/INCH
PT#4 (6" DEPTH)
STABILIZED PERCOLATION RATE = 60 MIN/INCH

DESIGN:-

- SEWER GENERATION - VETERINARY
VETERINARY LOAD RATE:
LOAD RATE = 600 GPD
DESIGN FLOW = 600 GPD
(PEAK = 5 * AVERAGE = 21 GPM)
- SEPTIC TANK SIZE
DETAIL 4/5-2 OR EQUIVALENT 2500 GALLON TANK MINIMUM
- UTILITY TANK #1 SIZE
DETAIL 3/5-2 OR EQUIVALENT 2,000 GALLON MINIMUM
- UTILITY TANK #2 SIZE
DETAIL 3/5-2 OR EQUIVALENT 1,500 GALLON MINIMUM
- MOUND SIZE - SEE CALCULATIONS BELOW

SANITARY SYSTEM SPECIFICATIONS
THE CONTRACTOR WILL SUPPLY SHOP DRAWINGS PRIOR TO CONSTRUCTION AT THE OWNERS REQUEST.

PIPING

- ALL SOLID PIPING FROM THE HOUSE TO THE PUMP STATION SHALL BE SCHEDULE 40 PVC OR CAST IRON, INSTALLED AT A MINIMUM SLOPE OF 1/4" PER FT.
- ALL PIPE, SOLID OR PERFORATED, FROM THE DISTRIBUTION BOX TO END OF LEACH LINE SHALL BE 4" SDR-38 SANITARY SEWER LINE WITH ENDS CAPPED.
- ALL SOLID PIPING FROM THE PUMP STATION TO THE DISTRIBUTION BOX SHALL BE 15" OR 21" PRESSURE PIPE SHALL BE SCHEDULE 40 PVC WITH RUBBER RING GASKETS OR JOINED WITH PVC SOLVENT, AND HYDROSTATICALLY PRESSURE TESTED TO 60 PSI, WITH A MINIMUM OF 4' OF COVER.

SAND FILTER DESIGN

- ALLOWABLE APPLICATION RATE = 1.15 GPD/SF
1.1. DESIGN FLOW = 600 GPD
- SAND FILTER SIZE = 600 GPD / 1.15 GPD/SF =
2.1. USE SF
2.2. DIMENSIONS ARE 18" WIDE X 29" LONG
- PER FILTER SIZE ESTABLISHED IN SECTION 2 ABOVE. 6 DISTRIBUTORS AND 3 COLLECTORS ARE PROPOSED.

CONSTRUCTION NOTES:

- HEAVY CONSTRUCTION EQUIPMENT MUST NOT BE ALLOWED WITHIN THE FILL AREA OF THE SYSTEM OR IMMEDIATELY DOWNSLOPE OF THE SYSTEM. DRIVEWAY SHALL BE INSTALLED FIRST & USED FOR ACCESS DURING CONSTRUCTION.
- PLACEMENT OF FILL MATERIAL OR CONSTRUCTION OF ABSORPTION FACILITIES IN FILL SHOULD NOT OCCUR WHEN THE SOIL MOISTURE CONTENT IS HIGH. IF A FRAGMENT OF SOIL FROM APPROXIMATELY NINE INCHES BELOW THE SURFACE (I.E., BORROW PIT, FILL PLACEMENT SITE, OR STABILIZED FILL) CAN EASILY BE ROLLED INTO A RIBBON INSTEAD OF CRUMBLING, THE SOIL MOISTURE CONTENT IS TOO HIGH FOR PLACEMENT/CONSTRUCTION. THE ENGINEER SHALL BE PRESENT AT THE START OF CONSTRUCTION TO VERIFY FAVORABLE SOIL CONDITIONS.
- IN AREAS WHICH ARE SUITABLE, ALL TREES AND STUMPS SHALL BE CUT AT GRADE AND REMOVED. OTHER VEGETATION (I.E., BRUSH, VINES, WEEDS, GRASS) SHALL BE CUT AS CLOSE TO GRADE AS POSSIBLE AND REMOVED. ALL LEAVES, LIMBS AND BOULDERS ABOVE GRADE SHALL BE REMOVED. ROOT STRUCTURE BELOW GRADE SHOULD NOT BE REMOVED. ROTOTILLING OR SOIL SCARIFICATION WITH CONSTRUCTION EQUIPMENT IS NOT RECOMMENDED. THE PROPOSED MAIN FILL AND TAPER AREAS SHALL BE PLOWED TO A DEPTH OF SEVEN OR EIGHT INCHES WITH A DOUBLE BOTTOMED BLADE/FURROW PLOW AND THE FURROW TURNED UPSLOPE.
- THE FILL MUST BE STABILIZED PRIOR TO CONDUCTING FINAL PERCOLATION TESTS, PLACEMENT OF THE MOUND FILL AND CONSTRUCTION OF THE MOUND SYSTEM. SOILS SHOULD BE PERMITTED TO SETTLE NATURALLY AFTER PLACEMENT THROUGH ONE FREEZE THAW WEATHER CYCLE OR MAY BE MECHANICALLY COMPACTED. MECHANICAL COMPACTION SHALL BE ACHIEVED VIA TRACK TYPE MACHINES (I.E., BULLDOZER OR FRONT END LOADER WITH DOWNWARD BLADE/BUCKET PRESSURE) OR STEEL WHEELED ROLLER. MECHANICAL COMPACTION SHALL BE ACCOMPLISHED IN SHALLOW LIFTS (APPROXIMATELY 6"-8").
- THE MOUND FILL SHOULD THEN BE PLACED IN THE AREAS DESIGNATED ON SHEET S-1 IMMEDIATELY AFTER THE SITE IS PREPARED TO AVOID UNDESIRABLE CHANGES TO THE SITE, (I.E., TRAFFIC, COMPACTION, EROSION). MOUND FILL MATERIALS CAN THEN BE PLACED ON THE SITE WITH A FRONT END LOADER OR PUSHED ON FROM THE SIDE (I.E., PREFERABLY THE UPSLOPE SIDE) USING A TRACK TYPE MACHINE WITH AT LEAST SIX INCHES OF FILL BENEATH THE TRACKS. AT NO TIME SHOULD RUTS BE MADE IN THE PLOWED AREA.
- THE MOUND FILL MUST BE STABILIZED PRIOR TO CONDUCTING FINAL PERCOLATION TESTS AND CONSTRUCTION OF THE MOUND SYSTEM. SOILS SHOULD BE PERMITTED TO SETTLE NATURALLY AFTER PLACEMENT THROUGH ONE FREEZE THAW WEATHER CYCLE OR MAY BE MECHANICALLY COMPACTED. MECHANICAL COMPACTION SHALL BE ACHIEVED VIA TRACK TYPE MACHINES (I.E., BULLDOZER OR FRONT END LOADER WITH DOWNWARD BLADE/BUCKET PRESSURE) OR STEEL WHEELED ROLLER. MECHANICAL COMPACTION SHALL BE ACCOMPLISHED IN SHALLOW LIFTS (APPROXIMATELY 6"-8"). **ONCE IN PLACE, THE MOUND FILL MUST BE TESTED FOR PERCOLATION AND WITNESSED BY THE ENGINEER PRIOR TO PLACEMENT OF AGGREGATE BED, DISTRIBUTION LATERALS AND CLAY LOAM CAP.**

- THE FILL MATERIALS SHALL COVER THE ENTIRE FILL AREAS AND BE PLACED TO DEPTHS AS SHOWN ON DRAWINGS S-1 AND S-2. THE REQUIRED ABSORPTION BED SHALL BE CONSTRUCTED IN THE FILL. CONSTRUCTION OF THE ABSORPTION BED IN THE FILL MATERIAL SHALL BE IN ACCORDANCE WITH NYSDOH STANDARDS INCLUDING DISTRIBUTION LATERALS BEING INSTALLED PARALLEL TO CONTOUR LINES FOR THE NATIVE SOIL PRIOR TO INSTALLING FILL.
- THE BOTTOM OF THE TRENCH AREA SHALL BE LEVEL. THE BOTTOM AND SIDEWALLS OF THE TRENCH AREA SHALL BE RAKED PRIOR TO INSTALLING AGGREGATE.
- DISTRIBUTION LATERALS SHALL BE INSTALLED ON AT LEAST SIX INCHES OF AGGREGATE AND BE COVERED BY AT LEAST TWO INCHES OF AGGREGATE. THE AGGREGATE IN THE TRENCH AREA SHALL BE COMPLETELY COVERED WITH A PERMEABLE GEOTEXTILE TO PREVENT INFILTRATION OF FINE SOIL INTO THE AGGREGATE.
- PERCOLATION TESTS FOR THE FILL MATERIAL SHALL BE CONDUCTED AT THE BORROW PIT IN AREAS REPRESENTATIVE OF THE SOIL TO BE OBTAINED. ONLY SOILS WITH A PERCOLATION RATE BETWEEN 5 AND 30 MINUTES PER INCH SHALL BE USED FOR THE MOUND FILL MATERIAL AREAS. SANDS WITH GREATER THAN FIVE PERCENT BY WEIGHT FINER THAN 0.075 mm (I.E., NUMBER 200 SIEVE) MUST BE AVOIDED. AT LEAST 25 PERCENT OF THE MATERIAL WEIGHT SHALL BE IN THE RANGE OF 0.50 TO 2.0 mm. LESS THAN 15 PERCENT OF THE MATERIAL BY WEIGHT SHALL BE RETAINED ON A HALF-INCH SIEVE. A SIEVE ANALYSIS IS NECESSARY TO VERIFY COMPLIANCE WITH THE SOIL SPECIFICATIONS. ONLY SOILS WITH A PERCOLATION RATE OF 5-30 MINUTES PER INCH MAY BE UTILIZED FOR SUPPLEMENTAL FILL. **PERCOLATION TESTING RESULTS OF FILLS TO BE UTILIZED AS MOUND FILL TAKEN AT THE BORROW PIT AND AFTER PLACEMENT SHALL BE CERTIFIED TO THE HEALTH DEPARTMENT. SIEVE ANALYSES OF ALL FILL MATERIALS MUST BE SUPPLIED BY CONTRACTOR TO ENGINEER PRIOR TO CONSTRUCTION OF MOUND.**
- CONSTRUCTION SHALL NOT OCCUR WHEN THE GROUND IS FROZEN OR THE SOIL MOISTURE CONTENT IS HIGH.
- CERTIFICATION SEQUENCING:
THE ENGINEER MUST BE NOTIFIED AND MUST WITNESS MULTIPLE STEPS IN THE CONSTRUCTION PROCESS.

- FILL PRODUCTS: FOR ALL IMPORTED FILL PRODUCTS (MOUND FILL, SUPPLEMENTAL FILL, RAISED FILL, INTERMITTENT SAND FILTER FILL, ETC.), A SIEVE ANALYSIS SHALL BE PROVIDED TO THE ENGINEER PRIOR TO INSTALLATION. FAILURE TO DO SO WILL DELAY THE INSTALLATION FILL CERTIFICATIONS.
- SITE PREPARATION: THE ENGINEER SHALL BE NOTIFIED BEFORE PLACEMENT OF ANY FILL AND SHALL WITNESS THE SITE EXISTING CONDITIONS IMMEDIATELY PRIOR TO FILL PLACEMENT. UPON SATISFACTORY CONDITIONS BEING WITNESSED, THE FILL SHALL THEN BE PLACED IN ACCORDANCE WITH THE CONSTRUCTION NOTES.
- MOUND FILL INSTALLATION CERTIFICATION: A REPRESENTATIVE OF THE ENGINEER SHALL BE ON SITE TO CERTIFY THE MOUND FILL BEFORE THE AGGREGATE LAYER IS INSTALLED. THIS INCLUDES BUT IS NOT LIMITED TO PERCOLATION TESTING, DEPTH OF FILL MEASUREMENT, AND LOCATION MEASUREMENT. SHOULD ANY OF THESE REQUIREMENTS BE DEFICIENT, THE CONTRACTOR SHALL MAKE THE NECESSARY ADJUSTMENTS AND REQUEST THE ENGINEER AND ANY OTHER REQUIRED PERSONNEL RETURN TO THE SITE AT AN APPROPRIATE TIME.

MOUND SYSTEM DESIGN:

- DESIGN CRITERIA
A. VETERINARY LOAD RATE = 600 GPD
B. DESIGN FLOW Q = 600 GPD
C. PEAK FLOW = 5 * DESIGN FLOW = 21 GPM
- SUPPLEMENTAL FILL CRITERIA
A. REQUIRED PERCOLATION RATE = 5 - 30 MPI
B. APPROXIMATE APPLICATION RATE = 12 GPD/SF
- MOUND CRITERIA
A. ABSORPTION AREA
A1. DESIGN FLOW / APPLICATION RATE FOR FILL
A2. 600 GPD / 12 GPD/SF = 50 SF USE 50 SF
B. ABSORPTION AREA WIDTH (A) = 15 FT
C. TOTAL TRENCH LENGTH (B)
C1. TRENCH LENGTH = TRENCH AREA / 2 FT
C2. TRENCH LENGTH = 50 SF / 2 FT = 25 FT USE 25 FT
D. ABSORPTION AREA LENGTH (B)
D1. (B) = TRENCH LENGTH / # TRENCH LINES
D2. (B) = 25 FT / 4 LINES = 6.4 FT
E. DEPTHS (D), (F), (G), (H) & SLOPE
E1. UPSLOPE DEPTH (D) = 2 FT
E2. AGGREGATE DEPTH IN BED (F) = 0.15 FT
E3. COVER SOIL + TOPSOIL EDGE DEPTH (G) = 1 FT
E4. COVER SOIL + TOPSOIL CENTER DEPTH (H) = 15 FT
E5. SLOPE = 0.0375 FT/FT
F. DOWNSLOPE DEPTH (E)
F1. (E) = D + (SLOPE * A)
F2. (E) = 2 + (0.0375 * 15) = 2.5625 FT USE 2.60 FT
G. UPSLOPE SETBACK (J)
G1. (J) = (1 - SLOPE) * ((D * F * G) * 3)
G2. (J) = (1 - 0.0375) * ((2 * 0.15 * 1) * 3) = 10.83 FT
G3. USE 11 FT
H. SIDE SLOPE SETBACK (K)
H1. (K) = (((D * E) / 2) + (F * H)) * 3
H2. (K) = (((2 * 2.60) / 2) + (0.15 * 15)) * 3 = 13.65 FT
H3. USE 14 FT

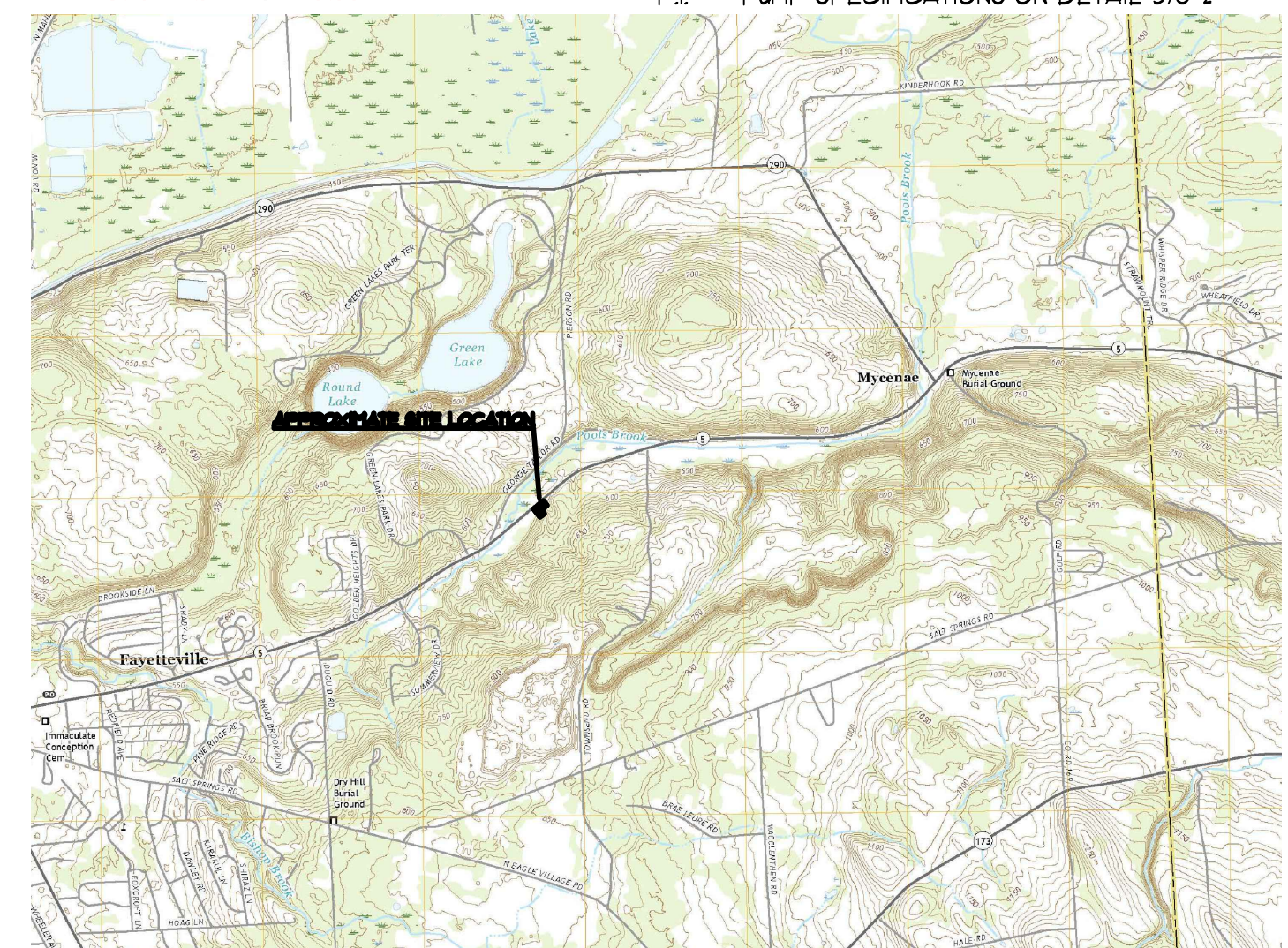
- BASAL AREA REQUIRED
I1. BAR = DESIGN FLOW / EXISTING APPLICATION RATE
I2. BAR = 600 GPD / 0.2 GPD/SF = 3,000 SF
- MOUND LENGTH (L)
J1. MOUND LENGTH (L) = (B) * 2(K)
J2. (L) = 6.4 * 2(14)
J3. (L) = 92 FT

- DOWNSLOPE SETBACK (C)
K1. (C) = (2 * (BAR - (A * B))) / (B + L)
K2. (C) = (2 * (3,000 - (15 * 6.4))) / (6.4 + 92)
K3. (C) = 26.15 FT
K4. (C) = 3 * (E + F + G)
K5. (C) = 3 * (2.6 + 0.15 + 1) = 8.91 FT
K6. USE LARGER (C), USE 26 FT

- MOUND WIDTH (W)
L1. (W) = (J) + (A) + (C)
L2. (W) = (11) + (15) + (26)
L3. (W) = 52 FT

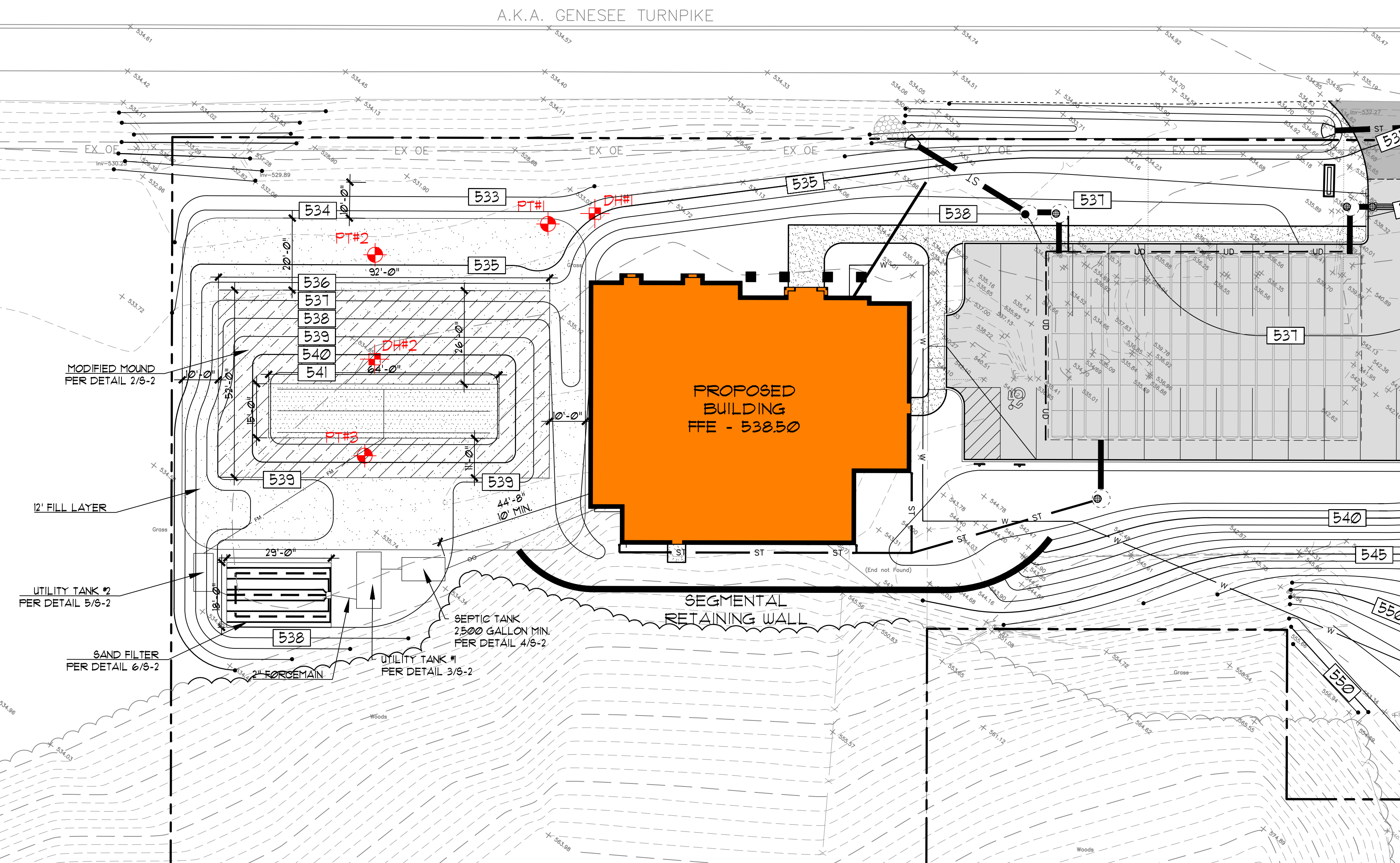
MOUND PRESSURE SYSTEM DESIGN:

- NUM. OF LATERALS = 6
LATERAL LENGTH = 29.5 FT
HOLE DIAMETER = 1/2 IN.
HOLE SPACING FOR 125 IN. LINE = 4 FT
- LATERAL DISCHARGE RATE
M1. 1/2 IN. HOLES WITH 2.10 FT HEAD = 111 GPM/HOLE
M2. NUM. HOLES/LATERAL = 29.5 FT/4 FT = 7.4 USE 8
M3. DISCHARGE RATE = 6 * 111 = 666 GPM/LATERAL
M4. MIN. DISCHARGE RATE = 6 LATERALS * 666 GPM/LATERAL = 3996 GPM
- MANIFOLD SIZE
N1. LENGTH = 13.5 FT
N2. USE 3 IN. CENTRAL MANIFOLD
N3. ONE MANIFOLD WITH 3 LATERALS ON EACH SIDE SPACED 6 FT ON CENTER OF DISTRIBUTOR PIPE
- DOSING
O1. VOLUME = 600 GPD / 4 DOSES/DAY = 150 GAL/DOSE
P. PUMP STATION TO MOUND SYSTEM
P1. PUMP SPECIFICATIONS ON DETAIL 5/5-2



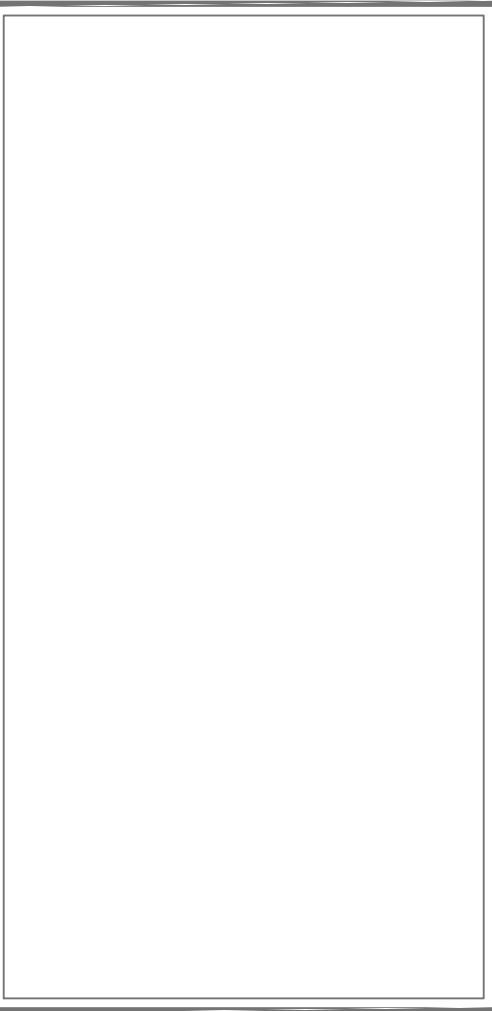
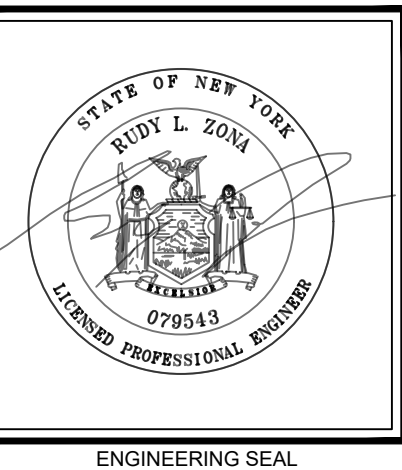
LOCATION MAP (USGS)
SCALE 12000

0 2000 4000 6000
SCALE IN FEET



SITE SEPTIC PLAN
SCALE 120

0 20 40 60
SCALE IN FEET



FAYETTEVILLE VET. SEPTIC
8122 E. GENESEE STREET
TOWN OF FAYETTEVILLE
ONONDAGA COUNTY, NY

REVISIONS

Drawn By: L.C.F.
Checked By: R.L.Z.
Proj. No.: 22012
Date: 05/05/2022
Scale: AS NOTED

SEPTIC
PLAN

S-1



Short Environmental Assessment Form

Part 1 - Project Information

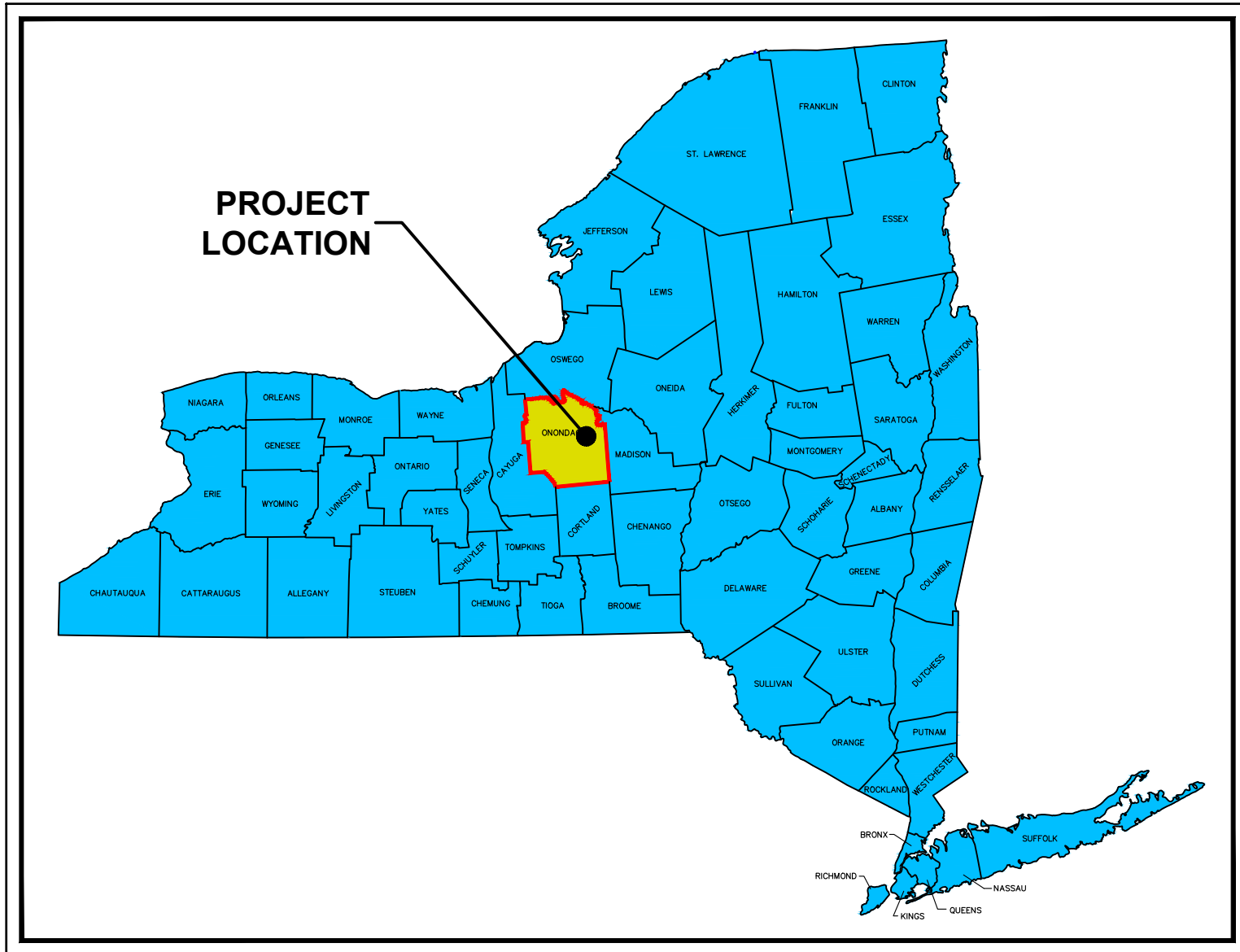
Instructions for Completing

Part 1 – Project Information. The applicant or project sponsor is responsible for the completion of Part 1. Responses become part of the application for approval or funding, are subject to public review, and may be subject to further verification. Complete Part 1 based on information currently available. If additional research or investigation would be needed to fully respond to any item, please answer as thoroughly as possible based on current information.

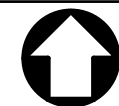
Complete all items in Part 1. You may also provide any additional information which you believe will be needed by or useful to the lead agency; attach additional pages as necessary to supplement any item.

Part 1 – Project and Sponsor Information			
Name of Action or Project: A&E & SNY Center			
Project Location (describe, and attach a location map): Medical Center Drive at Avriel Drive (Tax Parcel 086.-01-03.9), Town of Manlius, Onondaga County			
Brief Description of Proposed Action: A two-phase development of a medical office / personal services center. The construction includes a 30,000 sf building with an additional 10,000 usable square feet in a basement for a total of 40,000 sf. Associated construction includes a 124-vehicle parking lot and associated utilities (water, sewer, stormwater management, electric, natural gas, communications).			
Name of Applicant or Sponsor: A&E & SNY CENTER		Telephone: (315) 445-1177 E-Mail: papam42020@gmail.com	
Address: Suite 38, 5781 Bridge Street			
City/PO: East Syracuse		State: New York	Zip Code: 13057
1. Does the proposed action only involve the legislative adoption of a plan, local law, ordinance, administrative rule, or regulation? If Yes, attach a narrative description of the intent of the proposed action and the environmental resources that may be affected in the municipality and proceed to Part 2. If no, continue to question 2.		NO ☒	YES ☐
2. Does the proposed action require a permit, approval or funding from any other government Agency? If Yes, list agency(s) name and permit or approval: Manlius Planning Board - Site Plan Approval		NO ☐	YES ☒
3. a. Total acreage of the site of the proposed action?		4.038 acres	
b. Total acreage to be physically disturbed?		3.050 acres	
c. Total acreage (project site and any contiguous properties) owned or controlled by the applicant or project sponsor?		4.038 acres	
4. Check all land uses that occur on, are adjoining or near the proposed action:			
5. ☐ Urban ☐ Rural (non-agriculture) ☐ Industrial ☒ Commercial ☒ Residential (suburban) ☐ Forest ☐ Agriculture ☐ Aquatic ☒ Other(Specify): Undeveloped ☐ Parkland			

5. Is the proposed action, a. A permitted use under the zoning regulations? b. Consistent with the adopted comprehensive plan?	NO ☐ ☐	YES ☒ ☒	N/A ☐ ☐
6. Is the proposed action consistent with the predominant character of the existing built or natural landscape?	NO ☐	YES ☒	
7. Is the site of the proposed action located in, or does it adjoin, a state listed Critical Environmental Area? If Yes, identify: _____	NO ☒	YES ☐	
8. a. Will the proposed action result in a substantial increase in traffic above present levels? b. Are public transportation services available at or near the site of the proposed action? c. Are any pedestrian accommodations or bicycle routes available on or near the site of the proposed action?	NO ☒ ☐ ☐	YES ☐ ☒ ☒	
9. Does the proposed action meet or exceed the state energy code requirements? If the proposed action will exceed requirements, describe design features and technologies: _____ _____	NO ☐	YES ☒	
10. Will the proposed action connect to an existing public/private water supply? If No, describe method for providing potable water: _____ _____	NO ☐	YES ☒	
11. Will the proposed action connect to existing wastewater utilities? If No, describe method for providing wastewater treatment: _____ _____	NO ☐	YES ☒	
12. a. Does the project site contain, or is it substantially contiguous to, a building, archaeological site, or district which is listed on the National or State Register of Historic Places, or that has been determined by the Commissioner of the NYS Office of Parks, Recreation and Historic Preservation to be eligible for listing on the State Register of Historic Places? b. Is the project site, or any portion of it, located in or adjacent to an area designated as sensitive for archaeological sites on the NY State Historic Preservation Office (SHPO) archaeological site inventory?	NO ☒ ☒	YES ☐ ☐	
13. a. Does any portion of the site of the proposed action, or lands adjoining the proposed action, contain wetlands or other waterbodies regulated by a federal, state or local agency? b. Would the proposed action physically alter, or encroach into, any existing wetland or waterbody? If Yes, identify the wetland or waterbody and extent of alterations in square feet or acres: _____ _____ _____	NO ☒ ☒	YES ☐ ☐	



SITE LOCATION MAP
NOT TO SCALE



A&E & SNY CENTER

MEDICAL CENTER DRIVE

TAX PARCEL No. 086.-01-03.9

TOWN OF MANLIUS

ONONDAGA COUNTY

STATE OF NEW YORK

PREPARED BY:



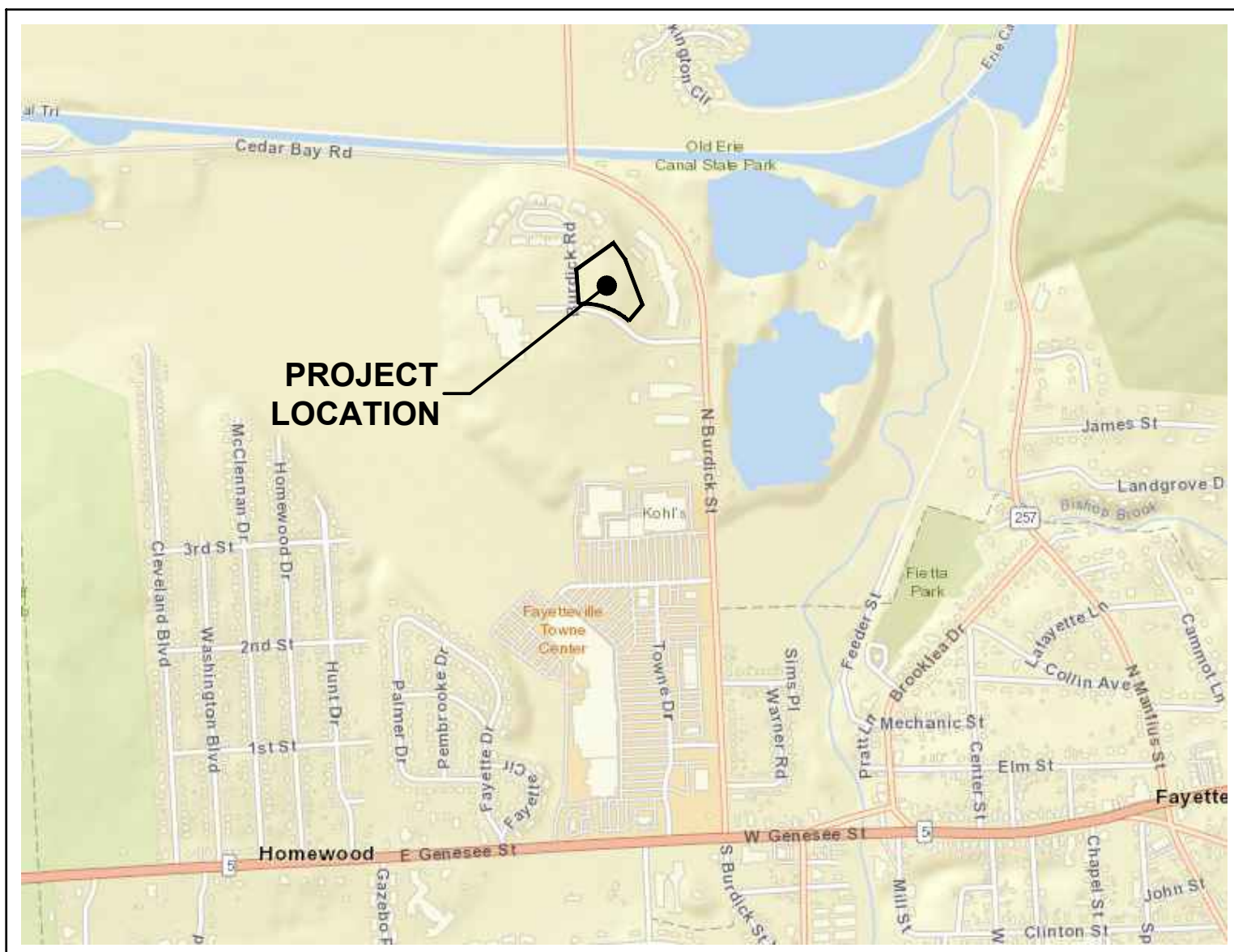
110 FAYETTE STREET
MANLIUS, NEW YORK 13104

email: MNAP@NAPCON.COM
PH: (315) 682-5580 FAX: (315) 682-5544

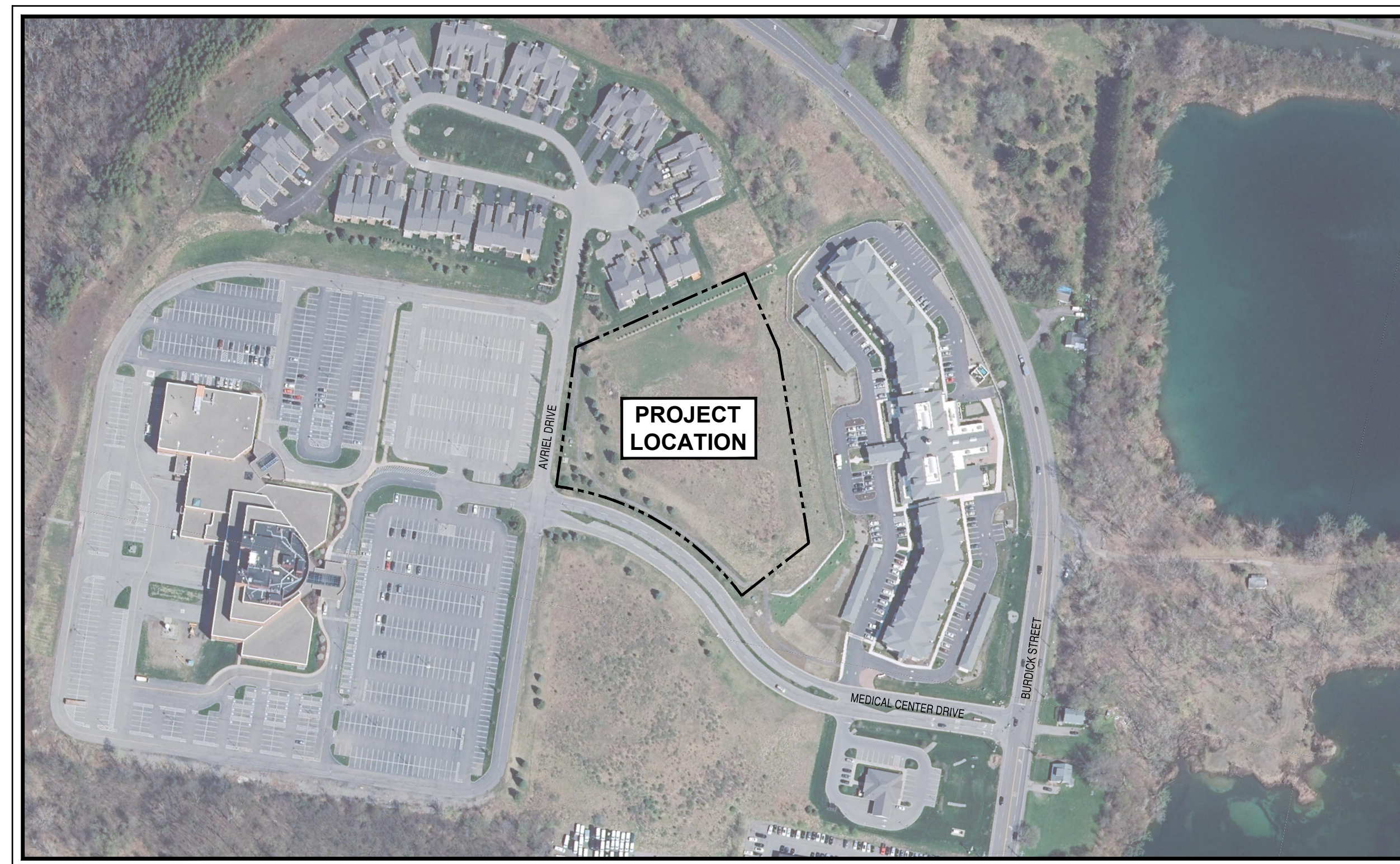
PREPARED FOR:

A&E & SNY CENTER

SUITE 38
5781 BRIDGE STREET
EAST SYRACUSE, NY 13057



PROJECT LOCATION MAP
NOT TO SCALE



AERIAL MAP
1"=200'



SHEET INDEX:

TITLE SHEET	C-1
NEIGHBORHOOD PLAN	C-2
SITE PLAN	C-3
GRADING PLAN	C-4
UTILITY PLAN	C-5

SHEET

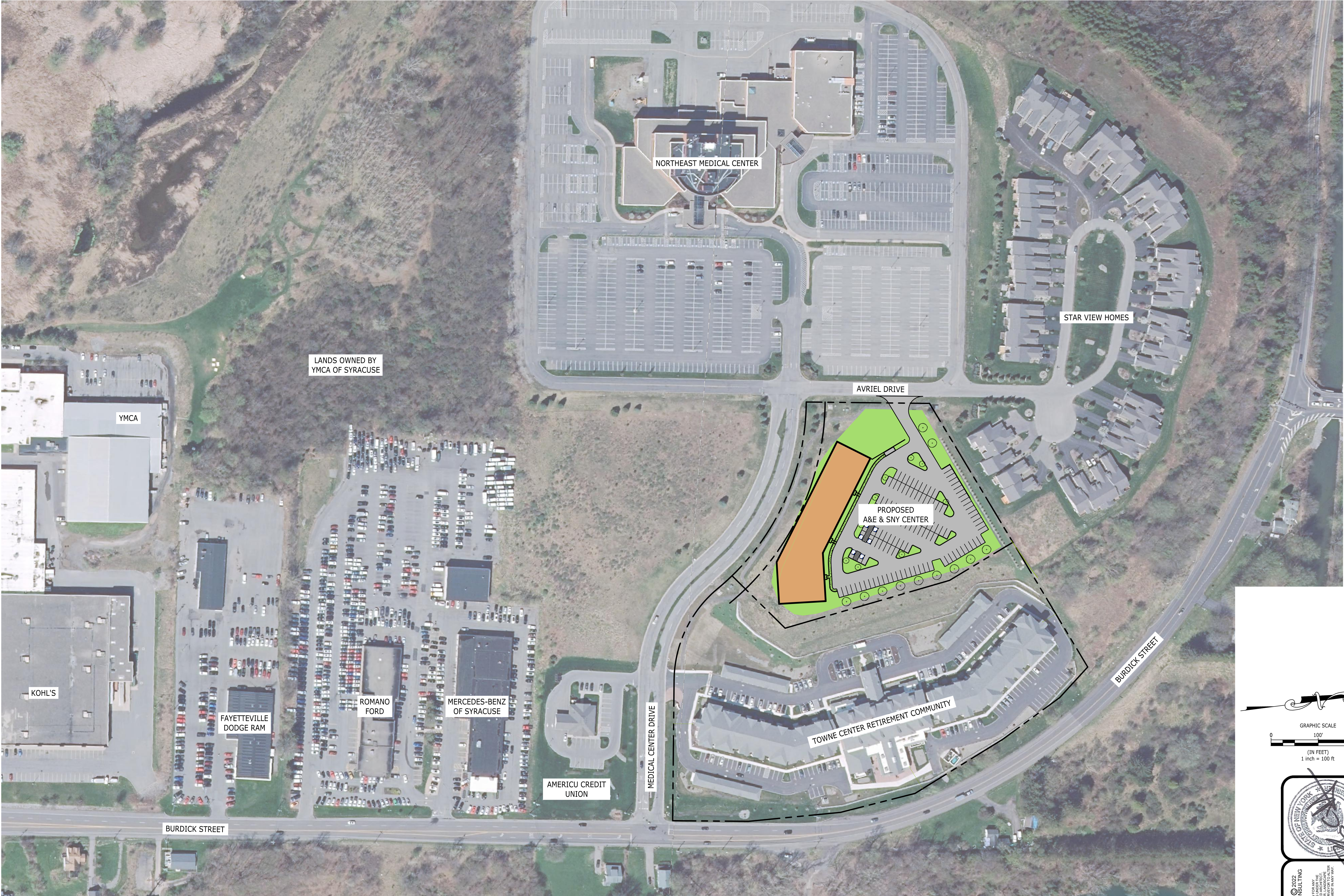
C-1

PROJECT NO.

21-2022

DATE

06/01/2022



LANDS OWNED BY
YMCA OF SYRACUSE

NORTHEAST MEDICAL CENTER

STAR VIEW HOMES

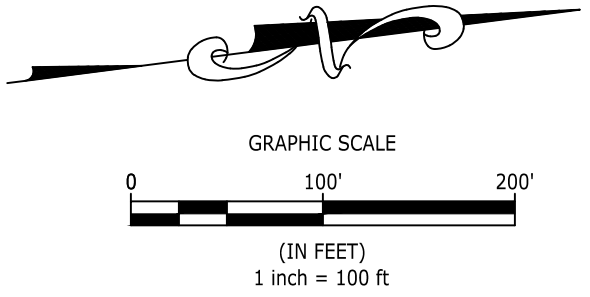
AVRIEL DRIVE

PROPOSED
A&E & SNY CENTER

TOWNE CENTER RETIREMENT COMMUNITY

BURDICK STREET

MEDICAL CENTER DRIVE



GRAPHIC SCALE
0 100' 200'
(IN FEET)
1 inch = 100 ft



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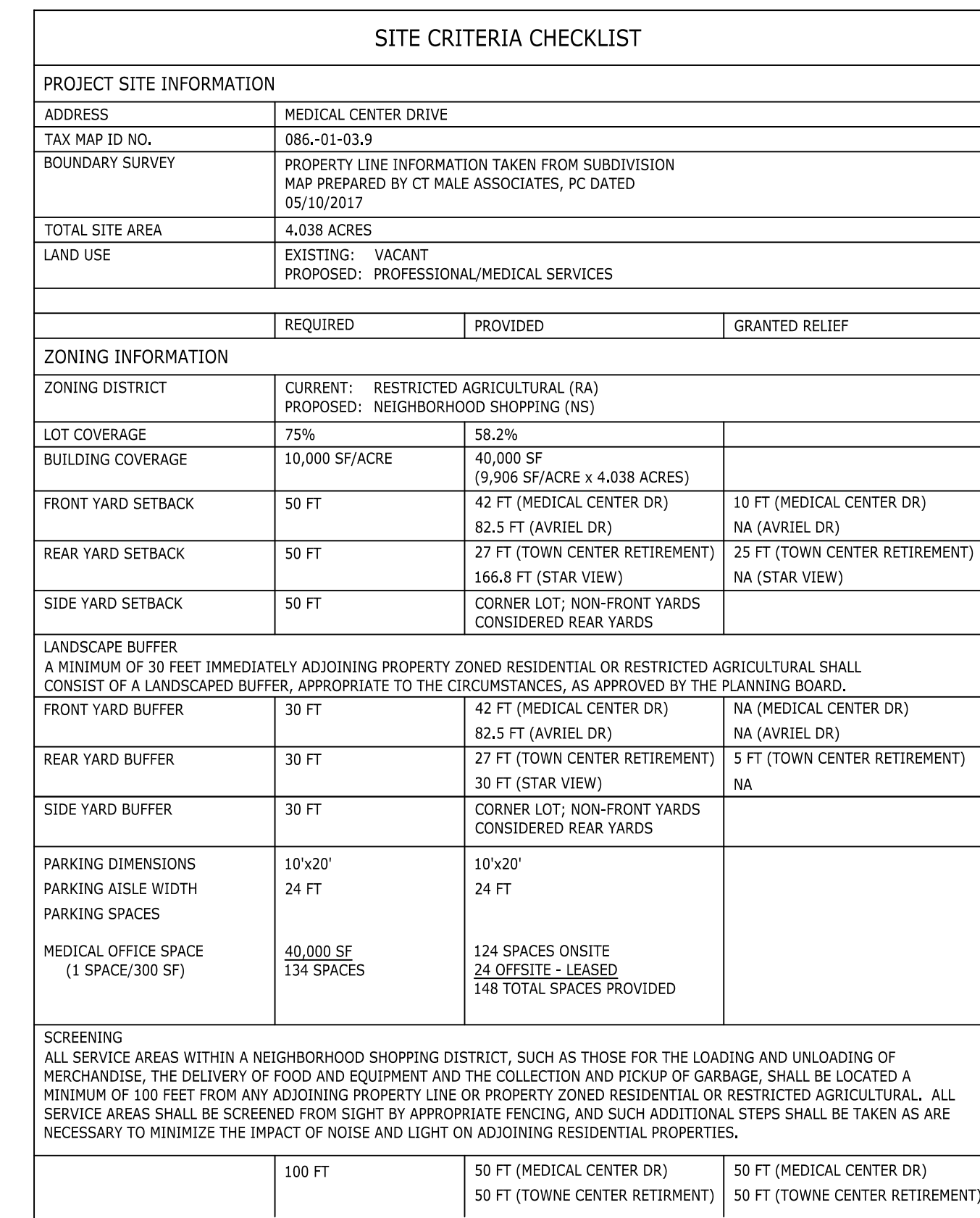
PROJECT TITLE:
**A&E & SNY CENTER
MEDICAL CENTER DRIVE**
TOWN OF MANLIUS ONONDAGA COUNTY, NEW YORK
PREPARED FOR:
A&E & SNY CENTER
SUITE 38
5781 BRIDGE STREET
EAST SYRACUSE, NY 13057

SHEET TITLE:
NEIGHBORHOOD PLAN

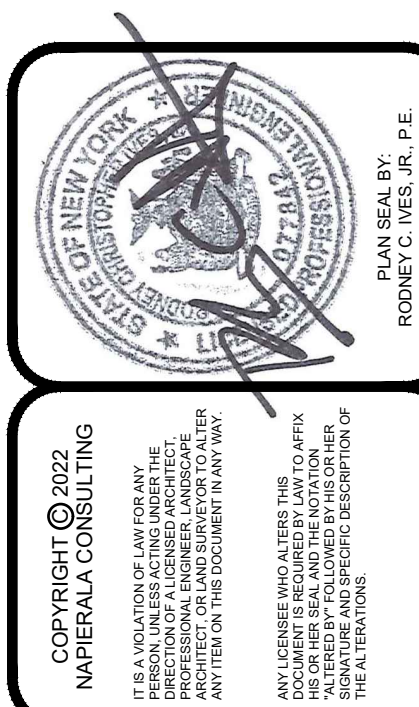
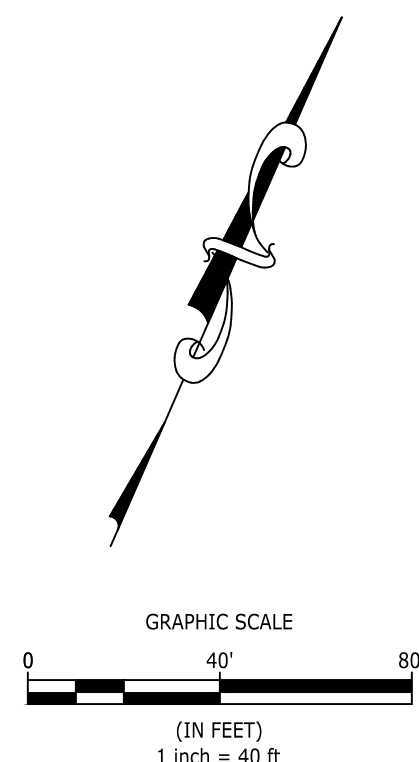
NO.	REVISION/ISSUE	DATE

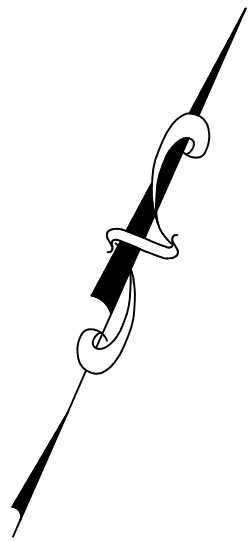
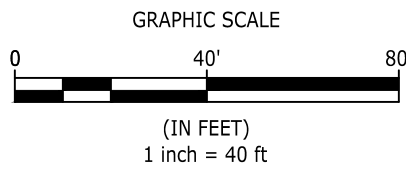
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110 FAYETTE STREET
MANLIUS, NEW YORK 13104
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SHEET
PROJECT NO.
21-2022
DATE
06/10/2022
SCALE
1"=100'
C-2

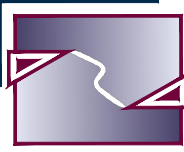


- 1 BUILDING ENTRANCE
- 2 INTEGRAL CONCRETE CURB (6" WIDE) AND SIDEWALK (5' WIDE)
- 3 BIORETENTION FILTER
- 4 SEGMENTAL BLOCK RETAINING WALL
- 5 STORMWATER INFILTRATION BASIN
- 6 ADA ACCESSIBLE PARKING
- 7 DUMPSTER ENCLOSURE
- 8 RAISED CURB LANDSCAPED ISLAND





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PROJECT NO.	21-2022
DATE	06/01/2022
SCALE	1"=40'

NO.	REVISION/ISSUE	DATE

SHEET TITLE:

UTILITY PLAN

PROJECT TITLE:

A&E & SNY CENTER
MEDICAL CENTER DRIVE
TOWN OF MANLIUS ONONDAGA COUNTY, NEW YORK

PREPARED FOR:

A&E & SNY CENTER
SUITE 38
5781 BRIDGE STREET
EAST SYRACUSE, NY 13057