Town of Manlius

Planning Board Agenda

January 9, 2023

6:30PM

1. Zoom Meeting Instructions

   Documents:

   ZOOM PLANNING BOARD MEETING INSTRUCTIONS JANUARY 9, 2023.PDF

2. Pledge Of Allegiance
3. Approval Of Minutes December 12, 2022
4. Organizational Meeting
5. Ron Dimon - 4911 Palmer Road, Manlius, NY 13104 - Public Hearing - 2-Lot Subdivision - Same Address - Tax Map #'s 116.-01-22.4 & 116.-01-22.2

   Documents:

   4911 PALMER ROAD - APPLICATION.PDF
   4911 PALMER ROAD - SUBDIVISION MAP.PDF

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

   Documents:

   AANDE SWPPP 2022-11-15.PDF
   AANDE AND SNY PLANS.PDF
   OCPB RESOLUTION - MED SPA.PDF
   OCPB REFERAL - MED SPA - AANDE.PDF
   2022-09-30_22038 FAYETTEVILLE MEDSPA - PLANNING BOARD.PDF
   AANDE SITE PLAN SUBMISSION 2022-10-13.PDF
   UPDATED - AANDE SITE PLAN SUBMISSION 2022-12-27.PDF

7. Brolex Enterprises - 5912 North Burdick Street, East Syracuse, NY 13057 - Decision - Zone Change Recommendation To Town Board - RA And Commercial To R3 - Megnin Farms - Route 5 At East Genesee Street And Strawmount Trail - Tax Map #'s 082.2-01-02.0 And 082.2-01-03.0

   Documents:

   TOWN OF MANLIUS PLANNING DEPARTMENT INITIAL APPEARANCE APPLICATION.PDF
   MAPS FOR MEGNIN FARMS.PDF

8. CVE North America, Inc. - 109 West 27th Street, 8th Floor, New York, NY 1001 - Site Plan Amendment - Duguid Road Solar Array - Duguid Road - Tax Map # 099.-01-03

Documents:

PLANNING BOARD - AMENDMENT APPLICATION - 12-20-22.PDF
MANLIUS_SOL_ISSUED_FOR_PERMIT_SET_FA_20221220 (1).PDF
MANLIUS_SWPPP_FA_20221209.PDF
2022-12-09 - MANLIUS EAST - IFP SEALED.PDF
2022-12-09 - MANLIUS NORTH - IFP SEALED.PDF
2022-12-09 - MANLIUS WEST - IFP SEALED.PDF

9. Twin Ponds Housing LLC. - PO Box 515 Syracuse, NY 13205 - Initial Presentation - Twin Ponds Housing - 5440 North Burdick Street, Fayetteville, NY 13066 - Tax Map # 086.-02-06.1

    Documents:

    0 - COVER LETTER-TWIN PONDS-12-21-22.PDF
    1 - PLANNING BOARD APPLICATION-12-23-22-SIGNED.PDF
    2 - 2021-12-28 BOUNDARY SURVEY.PDF
    3 - 080118_C-100 CONCEPT SITE PLAN 12-19-2022.PDF
    4 - 080118_C-101 USABLE SPACE PLAN 12-19-2022.PDF
    5 - 080118_C-102 SECTION PLAN 12-19-2022.PDF
    6 - 17X11 TWIN PONDS HOUSING - 36 UNIT APARTMENT 12-21-22.PDF

10. Other Business

11. Adjournment

Town of
MANLIUS
New York

January 9, 2023

Virtual Planning Board Meeting

Instructions to attend the January 9, 2023 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/85213923201?

Password to join when prompted:

Password: 344520

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: 852 1392 3201

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

Password: 344520

Expected Fee: _____

TOWN OF MANLIUS

PLANNING DEPARTMENT

INITIAL APPEARANCE APPLICATION

DATE: 11/03/2022

Name of Project: DIMON HILL SUBDIVISION

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: 4911 PALMER ROAD

Type of Project:

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

Developer: RONALD L. DIMON Phone: (315) 345-4408

Address: 4911 PALMER ROAD, MANLIUS, NY Zip: 13104

Tax Map Number(#)/s: ORIGINALLY 116-1-22.4 & 116-1-22.2

Present Zoning: RA Desired Zoning: RA

Total Acreage: 34.907 AC. Total Number of Lots: 2

Property Owner/s: RONALD L. DIMON Phone: (315) 345-4408

Address: 4911 PALMER ROAD, MANLIUS, NY Zip: 13104

Tax Map#(s): 116-1-22.4 Owner's Signature: Ronald L Dimon

Printed Name: Ronald L. Dimon

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

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: _____

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:
Dimon Hills Subdivision

Project Location (describe, and attach a location map):
West side Palmer Rd., approximately 2550' from the centerline of Peck Hill Road

Brief Description of Proposed Action:
Subdivide an existing residential parcel to create a lot for new building construction.

Name of Applicant or Sponsor:	Telephone: 315-345-4408
Ronald L. Dimon	E-Mail:

Address:
4911 Palmer Rd.

City/PO:	State:	Zip Code:
Manlius	NY	13104

	NO	YES
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.	☑	☐
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: OCHD: Sewage Disposal;	☑	☐

3. a. Total acreage of the site of the proposed action? 34.907 acres
   b. Total acreage to be physically disturbed? 0 acres
   c. Total acreage (project site and any contiguous properties) owned or controlled by the applicant or project sponsor? 34.907 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

	NO	YES	N/A
5. Is the proposed action,			
a. A permitted use under the zoning regulations?	☐	☑	☐
b. Consistent with the adopted comprehensive plan?	☐	☑	☐

	NO	YES
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: Individual dug well. _____	☑	☐

	NO	YES
11. Will the proposed action connect to existing wastewater utilities?		
If No, describe method for providing wastewater treatment: Individual sewage disposal system. _____	☑	☐

	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: _____ _____		

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

	NO	YES
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?	☑	☐
16. Is the project site located in the 100-year flood plan?	☐	☑
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?	☐	☐
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 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: _____	☑	☐
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: _____	☑	☐
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: _____	☑	☐

I CERTIFY THAT THE INFORMATION PROVIDED ABOVE IS TRUE AND ACCURATE TO THE BEST OF MY KNOWLEDGE

Applicant/sponsor/name: Ronald L. Dimon Date: 11-16-22

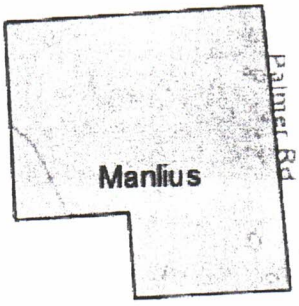
Signature: Ronald L Dimon Title: Owner

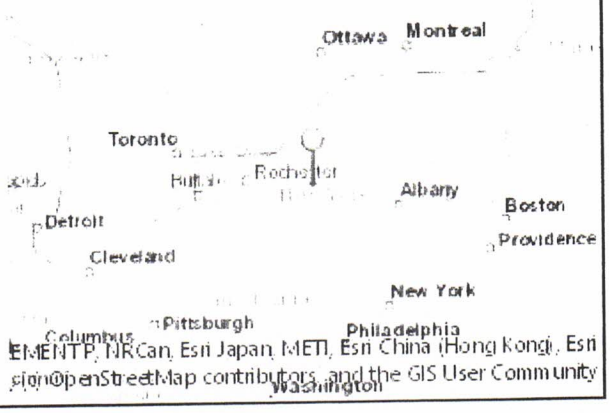
PRINT FORM

EAF Mapper Summary Report

Thursday, November 3, 2022 11:51 AM

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.

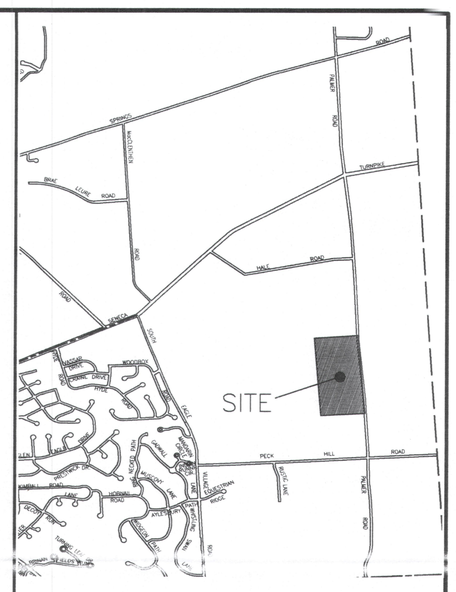




Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

EMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri ...on@OpenStreetMap contributors, and the GIS User Community

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]	Yes
Part 1 / Question 20 [Remediation Site]	No



SITE LOCATION

N.L. LOT 89
S.L. LOT 90
N82°40'35"W
1017.70'

N./F.
RUSSELL A. KING
5246/770
TM #116-1-19.2

1160 1170 1180 1190 1200 1210 1220 1230

FEDERAL WETLANDS±

S7°38'48"W
999.98'

N./F.
EAGLE VILLAGE PROPERTIES, LLC.
4172/108
TM #116-1-8.1

SORRENTINO FARM – F.M. #9485

1150 1160 1170

APPROX. FEMA FLOODPLAIN±

BISHOPS BROOK±

FEDERAL WETLANDS±

LOT 2
AREA = 32.317± ACRES
(1,407,720 S.F.)
(EXCLUDING ROADS)

582.49'
N83°04'48"W

N./F.
GL ASSETS, LLC
5315/117
TM #116-1-1

N5°58'55"E
453.66'

POND±

FEDERAL WETLANDS±

APPROX. FEMA FLOODPLAIN±

S81°52'36"E 834.94'

N./F.
DAVID N. & SHIRLEY H. WARE
4118/177
TM #116-1-22.3

989.73'
PETER A. COLMAN –/F

S5°25'30"W

N84°34'30"W 356.00'

LOT 1
AREA = 2.590± ACRES
(112,800 S.F.)
(EXCLUDING ROADS)

SEWAGE DISPOSIL PLAN PENDING

337.70'

40' SETBACK LINE

344.48'

CENTERLINE

356.06'
S83°29'00"E

S5°25'30"W

24.75'

CENTERLINE± OF FUTURE DRIVEWAY FOR LOT 1 AND 20' WIDE EASEMENT

477.14'

1½ STORY FRAME HOUSE No. 4911

GRAVEL DRIVE±

FRAME BARN

STREETLINE

CENTERLINE

PALMER ROAD

1230 1240 1250

FLOOD ZONE INFORMATION OBTAINED FROM THE ONONDAGA COUNTY GIS SITE

CONTOURS FROM THE ONONDAGA COUNTY GIS SITE
CONTOUR INTERVAL = 10'

ZONED: RA – RESTRICTED AGRICULTURAL
MINIMUM FRONTAGE W/ SEPTIC – 200'
MINIMUM AREA W/ SEPTIC – 100,000 S.F.
MINIMUM FRONT YARD SETBACK – 40'
MINIMUM REAR YARD SETBACK – 40'
MINIMUM SIDE YARD SETBACK – 20'

TOTAL AREA = 34.907± ACRES (EXCLUDING ROADS)

100 0 100 200 300
GRAPHIC SCALE – FEET

DIMON HILL SUBD MAN90 (PALMER HILL $4911){STAR.}[R.116-1-22 B. 2TT]@20221101SUB-R#.DWG

SUBDIVISION OF LAND

PLANNING BOARD CHAIRPERSON
TOWN OF MANLIUS

COUNTY HEALTH DEPARTMENT APPROVAL

I HEREBY APPROVE THIS TRACT MAP.

RONALD L. DIMON, OWNER
4911 PALMER ROAD
MANLIUS, N.Y. 13104
(315) 345-4408

APPROVAL OF THIS PLAN IS INDICATIVE ONLY THAT LOTS SHOWN HEREON SATISFY MINIMUM TOWN SUBDIVISION AND ZONING REQUIREMENTS. THEY ARE NOT BUILDING LOTS UNDER ONONDAGA COUNTY HEALTH REGULATIONS. CONSTRUCTION PERMITS WILL NOT BE ISSUED UNTIL INDIVIDUAL LOT SEWAGE DISPOSAL PLANS ARE SUBMITTED TO AND APPROVED BY THE ONONDAGA COUNTY HEALTH DEPARTMENT.

NOT A VALID SUBDIVISION WITHOUT THE RECORDING DATA OF THE MAP FILING WITH THE COUNTY CLERK'S OFFICE.

THE UNDERSIGNED CERTIFIES THAT THIS MAP WAS MADE FROM AN ACTUAL SURVEY ON 11-16-1985
VOID WITHOUT SIGNER'S EMBOSSED SEAL.

STATE OF NEW YORK
GARY ENSIGN COTTRELL
049310
REGISTERED LAND SURVEYOR

– PRELIMINARY PLAN –

DIMON HILL SUBDIVISION
PART OF LOT 90 – TOWN OF MANLIUS
ONONDAGA COUNTY, NEW YORK

I.D: 116-01-22.2	FILE: ROLL: 116-1-22 BIN: 2TT	
DATE: 11-01-2022	SCALE: 1" = 100'	B/P:

REVISIONS

COTTRELL LAND SURVEYORS, PC.
7308 STATE RTE 173, MANLIUS, NY 13104
(315)682-8121, WWW.COTTRELLSURVEYORS.COM

RECEIVED
NOV 17 2022
By

L:\SurvData\Bob 2 Server\DIMON HILL EDT\DIMON HILL SUBD MAN90 (PALMER HILL $4911){STAR.}[R.116-1-22 B. 2TT]@20221101SUB.DWG, 24x36P, 11/16/2022 2:56:58 PM

STORMWATER POLLUTION PREVENTION PLAN

for

A&E and SNY Center
Medical Center Drive
Town of Manlius, Onondaga County, NY

Prepared for:

A&E and SNY
Suite 38
5781 Bridge Street
East Syracuse, NY 13057

Prepared by

NAPIERALA CONSULTING
PROFESSIONAL ENGINEER, P.C.
SITE • DESIGN • ENGINEERING
110 FAYETTE STREET
MANLIUS, NEW YORK 13104
Telephone: (315) 682-5580
Fax: (315) 682-5544

November 15, 2022

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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) General Permit for Stormwater Discharges from Construction Activity. 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)

The New York State Department of Environmental Conservation enacted regulations that 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. In order 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 SWPPP for the site must be prepared following the requirements of the New York State Standards and Specifications for Erosion and Sediment Control and the New York State Stormwater Management Design Manual.

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, if required, 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 the 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 contractor shall be responsible for installing and maintaining the stormwater management practices in accordance with the permit. The contractor is responsible for having at least one person onsite during construction activity that has taken the DEC erosion and sediment control class. The owner/operator and contractor shall be responsible for any enforcement action federal, state, or local agencies take or impose, 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, fill or material storage sites, either contiguous to or remote from the construction site, when such sites are used solely for this construction project.*** Such sites are considered to be part of the construction site that the permit and this SWPPP cover. Off-site borrow, fill, or material storage sites which are used for multiple construction projects are not subject to this requirement, unless state or local regulations specifically require that the SWPPP include such sites. 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, makes changes to, and perform inspections the SWPPP for the site requires.

The SWPPP provides forms for both the general contractor and subcontractor(s) that indentify 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. **A fully qualified individual on behalf of each entity must sign this certification prior to the beginning of any construction activities and the certification shall be filed in the project's 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 the operator's personnel, NYSDEC or any other agency with regulatory authority over stormwater issues requests to review the SWPPP, 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 will [has] petition[ed] 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. The owner/operator will be filing [has filed] a **Notice of Intent** (NOI) to be covered under this permit. 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 on a routine basis. A qualified professional shall perform these inspections once a week. All inspections will continue until the site complies with the final stabilization section of this document. "Qualified Professional" means a person knowledgeable in the principles and practices of erosion and sediment controls, such as a licensed Professional Engineer (PE), Certified Professional in Erosion and Sediment Control (CPESC), or soil scientist. A report documenting the inspector's findings shall follow the inspection; the report shall document 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
- Project Rainfall Log

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 document 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 minimized 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 the operator(s) has filed a **Notice of Termination** (NOT) form 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 retainage 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

A & E and SNY Center
Medical Center Drive
Town of Manlius, Onondaga County, NY

UTM Coordinates from NYSDEC Interactive Map: E: 416883; N: 4765816

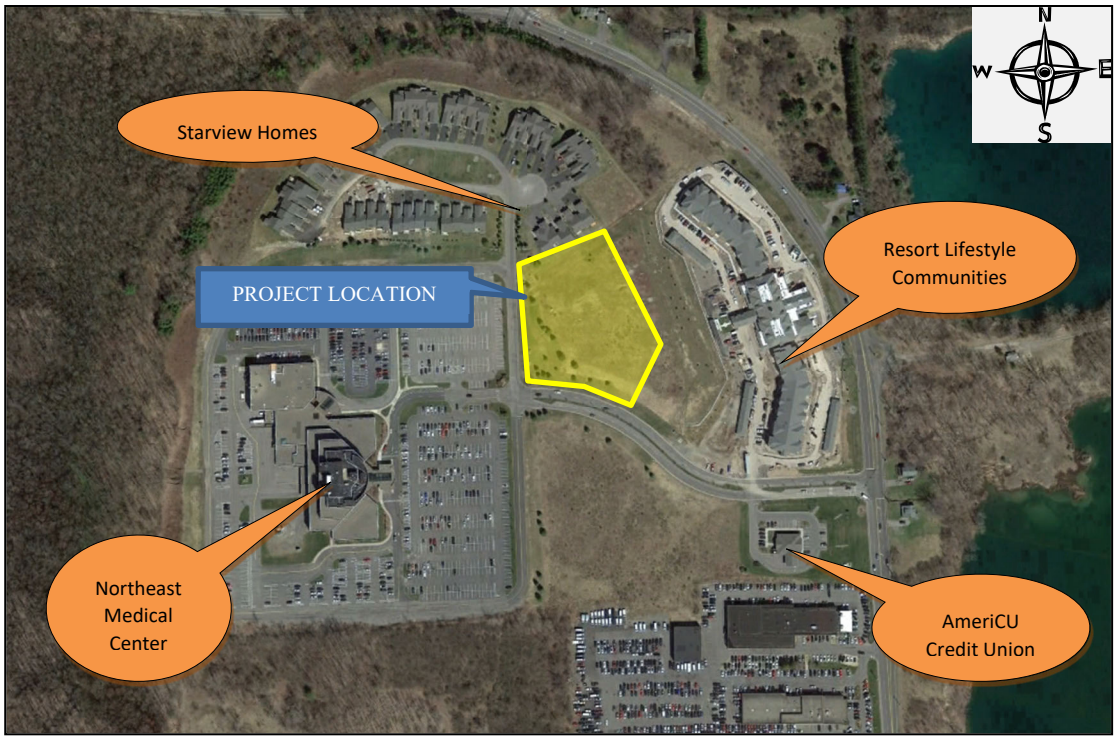


Figure 1. Project Location Map

The project is located on Medical Center Drive at the northeast corner of the intersection of Medical Center Drive and Avriel Drive.

B. OWNER/OPERATOR NAME AND ADDRESS

A & E and SNY Center
5781 Bridge Street, Suite 38
East Syracuse, NY 13057

C. PROJECT DESCRIPTION

The existing parcel of land is approximately 4.038 acres located on the north side of Medical Center Drive to the east of the Northeast Medical Center. The site is currently vacant and has a consistent grass/brush cover throughout the lot. The property generally drains as sheet flow in the west, south, and east directions from a highpoint generally in the middle of the property.

The proposed development is a building with an upper level that has a footprint of 24,595 square feet and a lower level, that is similar to a walk-out basement, with a footprint of 15,400 square feet. The building will have 36,000 square feet of medical office space and a 3,995 square foot salon. Associated construction includes asphalt parking and driveways, concrete sidewalks, a dumpster enclosure, underground utilities, and stormwater mitigation facilities. One curb-cut is proposed for access to the site at the northwest corner of the property along Avriel Drive.

The project is located in Region 7 of the New York State Department of Environmental Conservation. The Town of Manlius, in which the project is situated, is a regulated MS4 (municipal separate storm sewer system).

D. RECEIVING WATERS

Runoff from the project site flows in several directions. Runoff in a westerly direction enters a roadside ditch, crosses under Medical Center Drive, and continues to the south, eventually flowing into a wetland that is to the west of the Northeast Medical Center complex. Sheet flow to the south flows into the Medical Center Drive drainage system that discharges into the Burdick Street (Onondaga County DOT) drainage system. Runoff flowing as sheet flow to the east flows down the hill and enters into the drainage system for the Towne Center Retirement Community, which eventually discharges into the Burdick Street drainage system.

The NYS DEC Environmental Resource Mapper shows that no DEC-regulated wetlands are within the vicinity of the project site. The National Wetlands Inventory Mapper also shows that no regulated wetlands are within the vicinity of the project site.



Figure 2: NYSDEC Wetlands Mapping



Figure 3: National Wetlands Inventory Mapping



SITE CRITERIA CHECKLIST			
PROJECT SITE INFORMATION			
ADDRESS	MEDICAL CENTER DRIVE		
TAX MAP ID NO.	086.-01-03.9		
BOUNDARY SURVEY	PROPERTY LINE INFORMATION TAKEN FROM SUBDIVISION MAP PREPARED BY CT MALE ASSOCIATES, PC DATED 05/10/2017		
TOTAL SITE AREA	4.038 ACRES		
LAND USE	EXISTING: VACANT PROPOSED: PROFESSIONAL/MEDICAL SERVICES		
	REQUIRED	PROVIDED	GRANTED RELIEF
ZONING INFORMATION			
ZONING DISTRICT	CURRENT: RESTRICTED AGRICULTURAL (RA) PROPOSED: NEIGHBORHOOD SHOPPING (NS)		
IMPERVIOUS LOT COVERAGE	75%	56.0% (2.26 ACRES)	
BUILDING COVERAGE	10,000 SF/ACRE	39,995 SF (9,905 SF/ACRE x 4.038 ACRES)	
FRONT YARD SETBACK	50 FT	40 FT (MEDICAL CENTER DR) 88.7 FT (AVRIEL DR)	10 FT (MEDICAL CENTER DR) NA (AVRIEL DR)
REAR YARD SETBACK	50 FT	40.2 FT (TOWN CENTER RETIREMENT) 117.6 FT (STAR VIEW)	25 FT (TOWN CENTER RETIREMENT) NA (STAR VIEW)
SIDE YARD SETBACK	50 FT	CORNER LOT; NON-FRONT YARDS CONSIDERED REAR YARDS	
LANDSCAPE BUFFER A MINIMUM OF 30 FEET IMMEDIATELY ADJOINING PROPERTY ZONED RESIDENTIAL OR RESTRICTED AGRICULTURAL SHALL CONSIST OF A LANDSCAPED BUFFER, APPROPRIATE TO THE CIRCUMSTANCES, AS APPROVED BY THE PLANNING BOARD.			
FRONT YARD BUFFER	30 FT	40 FT (MEDICAL CENTER DR) 88.7 FT (AVRIEL DR)	NA (MEDICAL CENTER DR) NA (AVRIEL DR)
REAR YARD BUFFER	30 FT	25.5 FT (TOWN CENTER RETIREMENT) 30 FT (STAR VIEW)	5 FT (TOWN CENTER RETIREMENT) NA
SIDE YARD BUFFER	30 FT	CORNER LOT; NON-FRONT YARDS CONSIDERED REAR YARDS	
PARKING DIMENSIONS	10'x20'	10'x20'	
PARKING AISLE WIDTH	24 FT	24 FT	
PARKING SPACES			
MEDICAL OFFICE SPACE 32,685 SF	1 SPACE/300 SF 109 SPACES		
PERSONAL SERVICES SPACE 3,995 SF	1 SPACE/200 SF 20 SPACES		
MEDICAL OFFICE SPACE 3,315 SF	1 SPACE/300 SF 11 SPACES		
	TOTAL: 140 SPACES	140 TOTAL SPACES PROVIDED	
SCREENING ALL SERVICE AREAS WITHIN A NEIGHBORHOOD SHOPPING DISTRICT, SUCH AS THOSE FOR THE LOADING AND UNLOADING OF MERCHANDISE, THE DELIVERY OF FOOD AND EQUIPMENT AND THE COLLECTION AND PICKUP OF GARBAGE, SHALL BE LOCATED A MINIMUM OF 100 FEET FROM ANY ADJOINING PROPERTY LINE OR PROPERTY ZONED RESIDENTIAL OR RESTRICTED AGRICULTURAL. ALL SERVICE AREAS SHALL BE SCREENED FROM SIGHT BY APPROPRIATE FENCING, AND SUCH ADDITIONAL STEPS SHALL BE TAKEN AS ARE NECESSARY TO MINIMIZE THE IMPACT OF NOISE AND LIGHT ON ADJOINING RESIDENTIAL PROPERTIES.			

LAYOUT PLAN KEYED NOTES:

1. BUILDING MAIN ENTRANCE
2. BUILDING SECONDARY ENTRANCE
3. NOT USED
4. SEGMENTAL BLOCK RETAINING WALL
5. STORMWATER INFILTRATION BASIN
6. ADA ACCESSIBLE PARKING
7. DUMPSTER ENCLOSURE
8. LANDSCAPED ISLAND
9. CONCRETE CURB (6" WIDE) AND SIDEWALK (5.5' WIDE)

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:
LAYOUT PLAN

NO.	REVISION/ISSUE	DATE
A	PLANNING BOARD SUBMITTAL	08/25/22
B	PLANNING BOARD SUBMITTAL	10/13/22
C	PLANNING BOARD SUBMITTAL	11/15/22

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

FOR PERMITTING PURPOSES ONLY
NOT FOR CONSTRUCTION

PLAN SEAL BY:
RODNEY C. IVES, JR., P.E.
NYS REGISTRATION # 077842

PROJECT NO.	DATE	SCALE
21-2022	25 AUG 2022	1"=30'

SHEET
C-4

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NAPIERALA CONSULTING

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 SEAL TO THE DOCUMENT AND TO INCLUDE THE NOTATION "ALTERED BY" FOLLOWED BY HIS OR HER SIGNATURE AND THE DATE OF SUCH ALTERATION. THE ALTERATIONS.

E. ENDANGERED OR THREATENED SPECIES

The NYSDEC Environmental Resource Mapper identifies the site as being in the vicinity of bats listed as endangered or threatened. However, the project site does not include the specific habitat for either the Indiana bat or the Northern Long-eared bat; these bats require mature tree stands for spring and summer roosting and hibernate in caves during the winter. The project site is currently a brush-grass-weed mixture with a few "specimen" (stand-alone) trees.

The US Fish & Wildlife Service identifies four species as either threatened, endangered, or a candidate that are known to or are believed to occur in the vicinity of the project site. Two are the Indiana bat and the Northern Long-eared bat; as stated, the project site does not consist of the habitat that either species favors. The Massassauga rattlesnake is identified as a threatened reptile that may occur in the vicinity of the site. Massasaugas live in wet areas including wet prairies, marshes, fens, sedge meadows, peatlands, and low areas along rivers and lakes; the project site cannot be classified as any of these habitats. The monarch butterfly is a candidate species for listing under section 7 of the Endangered Species Act; no provisions must be undertaken under the Endangered Species Act at this time and the listing as a candidate species does not preclude the project from coverage under the SPDES General Permit for Stormwater Discharges from Construction Activity.

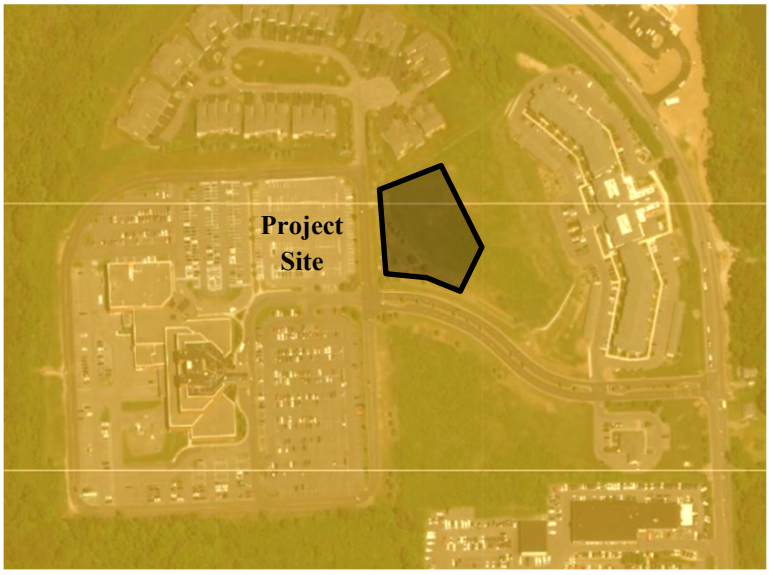


Figure 5: NYSDEC Rare and Endangered Species Mapping

F. FEDERAL AND STATE HISTORIC PRESERVATION

The project site is not located within an archeo-sensitive area according to the NYS SHPO GIS mapping.

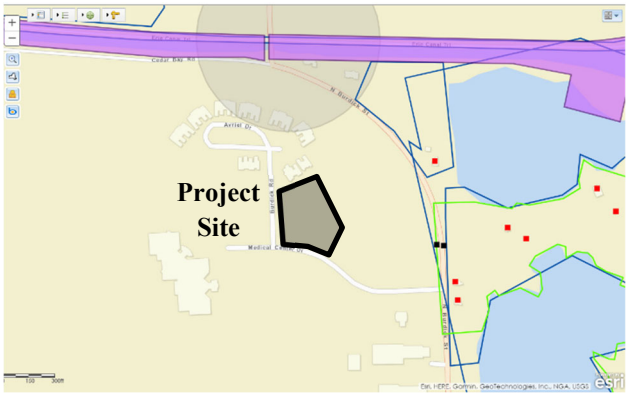


Figure 6: NYS SHiPO GIS Map

SECTION III 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 NYSDEC SPDES General Permit for Stormwater Discharges from Construction Activity in accordance with Part V.H. of the SPDES General Permit.

A. EROSION CONTROL PLANNING AND SITE MANAGEMENT

1. Concrete Truck Washout:

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 soil.

a. The washout facility is sized to contain solids, wash water, and rainfall. The minimum 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).

b. The facility shall be located a minimum of 100 feet from drainage swales, storm drain inlets, wetlands, streams, and other surface waters. Surface water shall be prevented from entering the structure except for 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.

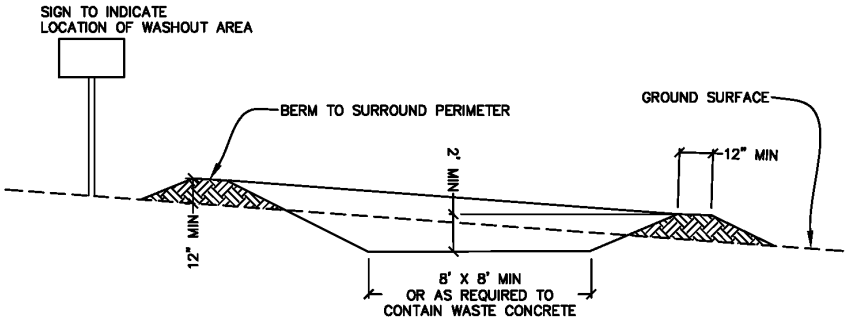


Figure 7: Concrete Washout Area

c. 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.

2. Dust Control:

The control of dust resulting from land-disturbing activities is required in order to prevent surface and air movement of dust from disturbed soil surfaces that may cause off-site damage, health hazards, and traffic safety concerns.

a. Non-driving areas - These areas shall use products and materials applied or placed on soil surfaces to prevent airborne migration of soil particles.

i. Vegetative Cover - For disturbed areas not subject to traffic, vegetation provided the most practical method of dust control.

ii. Mulch (including gravel mulch) - Mulch offers a fast effective means of controlling dust. This can also include rolled erosion control blankets.

b. Driving areas - These areas utilize water and barriers to prevent dust movement from the traffic surface into the air.

i. Sprinkling - The site may be sprayed with water until the surface is wet. This is especially effective on haul roads and access routes to provide short term limited dust control.

ii. Barriers - Woven geotextiles can be placed on the driving surface to effectively reduce dust throw and particle migration on haul roads. Stone can also be used for construction roads for effective dust control.

c. Windbreak - A silt fence or similar barrier can control air currents at intervals equal to ten times the barrier height. Preserve existing wind barrier vegetation as much as practical.

3. Site Pollution Prevention:

A collection of management practices intended to control non-sediment pollutants associated with construction activities to prevent the generation of pollutants due to improper handling, storage, and spills and prevent the movement of toxic substances from the site into surface waters.

a. All state and federal regulations shall be followed for the storage, handling, application, usage, and disposal of pesticides, fertilizers, and petroleum products.

b. Vehicle and construction equipment staging and maintenance areas will be located away from all drainage ways with their parking areas graded so the runoff from these areas is collected, contained and treated prior to discharge from the site.

c. Provide sanitary facilities for on-site personnel.

d. Store, cover, and isolate construction materials, including topsoil and chemicals, to prevent runoff of pollutants and contamination of groundwater and surface waters.

e. Develop and implement a spill prevention and control plan.

f. Provide adequate disposal for solid waste including woody debris, stumps, and other construction waste. Fill, woody debris, stumps, and construction waste shall not be placed in regulated wetlands, streams, or other surface waters.

g. Distribute or post informational material regarding proper handling, spill response, spill kit location, and emergency actions to be taken, to all construction personnel.

h. Refueling equipment shall be located at least 100 feet from all wetlands, streams and other surface waters.

4. Stabilized construction access:

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 stabilized construction access is to reduce or eliminate the tracking of sediment onto public rights-of-way or streets.

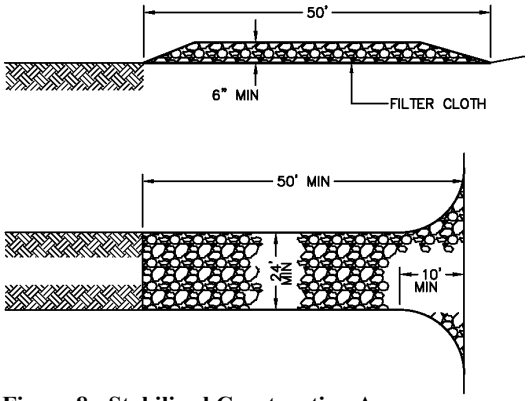


Figure 8: Stabilized Construction Access

a. Aggregate size: Use a matrix of one- to four-inch stone, or reclaimed or recycled equivalent.

b. Thickness: Not less than six inches.

c. Width: 24-foot minimum.

d. Length: As required, but not less than 50 feet.

e. Geotextile: To be placed over the entire area to be covered with aggregate. Piping of surface water under entrance shall be provided as required.

5. Winter Stabilization:

A temporary site specific, enhanced erosion and sediment control plan to manage runoff and sediment at the site during construction activities in the winter months to protect off-site water resources. Winter stabilization applies to all construction activities involved with ongoing land disturbance and exposure between November 15th to the following April 1st.

a. Prepare a snow management plan with adequate storage for snow and control of melt water, required cleared snow to be stored in a manner not affecting ongoing construction activities.

b. Enlarge and stabilize access points to provide for snow management and stockpiling. Snow management activities must not destroy or degrade installed erosion and sediment control practices.

c. A minimum 25-foot buffer shall be maintained from all perimeter controls such as silt fence. Mark silt fence with tall stakes that are visible above the snow pack.

d. Edges of disturbed areas that drain to a water body within 100 feet will have 2 rows of silt fence, 5 feet apart, installed on the contour.

e. Drainage structures must be kept open and free of snow and ice dams. All debris, ice dams, or debris from plowing operations, that restrict the flow of runoff and snow melt, shall be removed.

f. Sediment barriers must be installed at all appropriate perimeter and sensitive locations. Silt fence and other practices requiring earth disturbance must be installed before the ground freezes.

g. Soil stockpiles must be protected by the use of established vegetation, anchored straw mulch, rolled stabilization matting, or other durable covering. A barrier must be installed at least 15 feet from the toe of the stockpile to prevent soil migration and to capture loose soil.

h. All slopes must be stabilized as soon as practicable but in no case left unprotected for more than three days. Rolled erosion control blankets must be used on all slopes 3 horizontal to 1 vertical or steeper.

i. If straw mulch alone is used for temporary stabilization, it shall be applied at double the standard rate of 2 tons per acre, making the application rate 4 tons per acre. Other manufactured mulches should be applied at double the manufacturer's recommended rate.

j. To ensure cover of disturbed soil in advance of a melt event, areas of disturbed soil must be stabilized at the end of each work day unless:

i. work will resume with 24 hours in the same area and no precipitation is forecast or;

ii. the work is in disturbed areas that collect and retain runoff, such as open utility trenches, foundation excavations, or water management areas.

k. Use stone to stabilize perimeters of buildings under construction and areas where construction vehicle traffic is anticipated. Stone paths should be a minimum 10 feet in width but wider as necessary to accommodate equipment.

B. TEMPORARY RUNOFF CONTROL

1. Dewatering Sump Pit

A dewatering sump pit is a temporary pit which is constructed using pipe and stone for pumping excessive water from excavations to a suitable discharge area. Sump pits are constructed when water collects during the excavation phase of construction. The site contractor shall determine the number of sump pits and their locations. A design is not required but construction should conform generally to Figure 8.

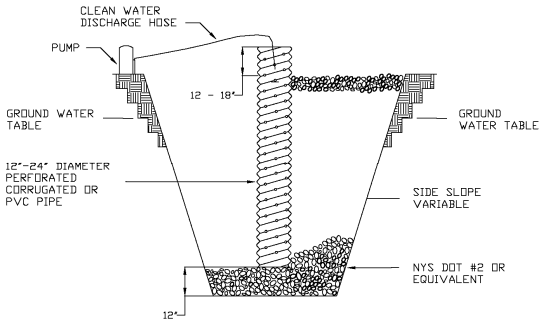


Figure 9: Dewatering Sump Pit

Discharge of turbid water from a sump pit should be to a sediment trap, sediment basin, or stabilized area such as a filter strip. If water from the sump pit will be pumped directly to a storm drain system, filter cloth with an equivalent sieve size between 40 and 80 should be wrapped around the standpipe to ensure clean water discharge. It is recommended that ¼ to ½ inch hardware cloth be wrapped around and secured to the standpipe prior to attaching the filter cloth.

C. PERMANENT RUNOFF CONTROL

1. Rock Outlet Protection

A permanent section of rock protection placed at the outlet end of the culverts, conduits, or channels to reduce the depth, velocity, and energy of water such that the flow will not erode the receiving downstream reach. The outlet protection shall be constructed with no slope along its length. The elevation of the downstream end of the apron shall be equal to the elevation of the receiving channel or adjacent ground.

2. Subsurface Drain (if required)

A permanent conduit, such as tile, pipe, or tubing, installed beneath the ground surface, which intercepts, collects, and/or conveys drainage water to serve one or more of the following purposes:

- Improve the environment for vegetative growth by regulating the water table and groundwater flow.
- Intercept and prevent water movement into a wet area.
- Relieve artesian pressures.
- Remove surface runoff.
- Provide internal drainage of slopes to improve their stability and reduce erosion.
- Provide internal drainage behind bulkheads, retaining walls, etc.
- Replace existing subsurface drains that are interrupted or destroyed by construction operations.
- Provide subsurface drainage for dry storm water management structures.
- Improve dewatering of sediment in sediment basins.

a. Size of Subsurface Drain: All subsurface drains shall have a nominal diameter equal to or greater than six inches.

b. Depth and Spacing: The minimum depth of cover of subsurface drains shall be 24 inches where possible. The spacing of drain laterals will be dependent on the permeability of the soil, the depth of installation of the drains, and degree of drainage required. Generally, drains installed 36 inches deep and spaced 50 feet center-to-center will be adequate.

c. Minimum Velocity and Grade: The minimum grade for subsurface drains shall be 0.10%. Where surface water enters the system a velocity of not less than 2 feet per second shall be used to establish the minimum grades. Provisions shall be made for preventing debris or sediment from entering the system by means of filters or collection and periodic removal of sediment from installed traps.

d. Materials for Subsurface Drains: Acceptable subsurface drain materials include perforated, continuous closed joint conduits of polyethylene plastic, concrete, corrugated metal, polyvinyl chloride, and clay tile. The conduit shall meet strength and durability requirements of the site.

e. Loading: The allowable loads on subsurface drain conduits shall be based on the trench and bedding conditions specified for the job. A factor of safety of not less than 1.5 shall be used in computing the maximum allowable depth of cover for a particular type fo conduit.

f. Envelopes and Envelope Materials: Envelopes shall be used around subsurface drains for proper bedding and to provide better flow into the conduit. Not less than three inches of envelope material shall be used for sand/gravel envelopes. Where necessary to improve the characteristics of flow of groundwater into the conduit, more envelope material may be required.

Where county regulations do not allow sand/gravel envelopes, but require a special type and size of envelope material, they shall be followed.

Envelope material shall be placed to the height of the upper-most seepage strata. Behind bulkheads and retaining walls, it shall go to within 12 inches of the top of the structure. This standard does not cover the design of filter materials where needed.

Materials used for envelopes shall not contain materials which will cause an accumulation of sediment in the conduit or render the envelope unsuitable for bedding of the conduit. Envelope materials shall consist of either filter cloth or sand/gravel material, which shall pass a 1 ½ inch sieve, 90 to 100% shall pass a ¾ inch sieve, and not more than 10% shall pass a No. 60 sieve.

Filter cloth envelope can be either woven or non-woven monofilament yarns and shall have a sieve opening ranging from 40 to 80. The envelope shall be placed in such a manner that once the conduit is installed, it shall completely encase the conduit.

The conduit shall be placed and bedded in a sand/gravel envelope. A minimum of three inches depth of envelope materials shall be placed on the bottom of a conventional trench. The conduit shall be placed on this and the trench completely filled with envelope material to minimum depth of three inches above the conduit.

Soft or yielding soils under the drain shall be stabilized where required and lines protected from settlement by adding gravel or other suitable material to the trench, by placing the conduit on plank or other rigid support, or by using long sections of perforated or watertight pipe with adequate strength to ensure satisfactory subsurface drain performance.

g. Use of Heavy Duty Corrugated Plastic Drainage Tubing: Heavy duty corrugated drainage tubing shall be specified where rocky or gravelly soils are expected to be encountered during installation operations. The quality of tubing will also be specified when cover over this tubing is expected to exceed 24 inches for 6- or 8-inch tubing.

h. Auxiliary Structure and Subsurface Drain Protection: The outlet shall be protected against erosion and undermining of the conduit, against damaging periods of submergence, and against entry of rodents or other animals into the subsurface drain. An animal guard shall be installed on the outlet end of the pipe. A swinging animal guard shall be used if surface water enters the pipe.

A continuous 10-foot section of corrugated metal, cast iron, polyvinyl chloride, or steel pipe without perforations shall be used at the outlet end of the line and shall outlet 1.0 foot above the normal elevation of low flow in the outlet ditch. No envelope material shall be used around the 10-foot section of pipe. Two-thirds of the pipe shall be buried in the ditch bank and the cantilevered section shall extend to a point above the toe of the ditch side slope. If not possible, the side slope shall be protected from erosion.

Conduits under roadways and embankments shall be watertight and designed to exclude debris and prevent sediment from entering the conduit. Lines flowing under pressure shall be designed to withstand the resulting pressures and velocity of flow. Surface waterways shall be used where feasible.

The upper end of each subsurface drain line shall be capped with a tight fitting cap of the same material as the conduit or other durable material unless connected to a structure.

D. TEMPORARY SOIL STABILIZATION CONTROL

1. Temporary Construction Area Seeding

Providing temporary erosion control protection to disturbed areas and/or localized critical areas for an interim period by covering all bare ground that exists as a result of construction activities or a natural event. Critical areas may include but are not limited to steep excavated cut or fill slopes and any disturbed, denuded natural slopes subject to erosion.

a. Water management practices must be installed as appropriate for site conditions. The area must be rough graded and slopes physically stable. Large debris and rocks are to be removed. Seedbed must be seeded within 24 hours of disturbance or scarification of the soil surface will be necessary prior to seeding.

b. IF: Spring or summer or early fall, then seed the area with ryegrass (annual or perennial) at 30 lbs. per acre (approximately 1 lb/1000 square feet).

c. IF: Late fall or early winter, then seed with certified 'Aroostook' winter rye (cereal rye) at 100 lbs. per acre (2.5 lbs/ 1000 square feet).

d. Any seeding method may be used that will provide uniform application of seed to the area and result in relatively good soil to seed contact.

e. Mulch the area with hay or straw at two tons/acre (approximately 90 lbs./1000 square feet). Quality of the hay or straw mulch allowed will be determined based on long term use and visual concerns. Mulch anchoring will be required where wind or areas of concentrated water are of concern. Wood fiber hydromulch or other sprayable products approved for erosion control (nylon web or mesh) may be used if applied in accordance with manufacturers' specifications.

Caution is advised when using nylon or other synthetic products; they may be difficult to remove prior to final seeding and can be a hazard to young wildlife species.

E. PERMANENT SOIL STABILIZATION CONTROL

1. Anchored Stabilization Matting

A permanent 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. Anchored stabilization mats are required for earthen slopes steeper than three horizontal to one vertical; in vegetated channels where the velocity of the design flow exceeds the allowable velocity for vegetation alone (usually greater than five feet per second); and in areas where wind prevents standard mulching with straw.

2. Landgrading: Permanent reshaping of the existing land surface by grading in accordance with the grading plan and specification to provide for erosion control and vegetative establishment on disturbed, reshaped areas.

a. All graded or disturbed areas, including slopes, shall be protected during clearing and construction in accordance with the erosion and sediment control plan until they are adequately stabilized.

b. All erosion and sediment control practices and measures shall be constructed, applied, and maintained in accordance with the erosion and sediment control plan and these standards.

c. Topsoil required for the establishment of vegetation shall be stockpiled in the amount necessary to complete finished grading of all exposed areas.

d. Areas to be filled shall be cleared, grubbed, and stripped of topsoil to remove trees, vegetation, roots, or other objectionable material.

e. Areas that are to be topsoiled shall be scarified to a minimum depth of four inches prior to placement of topsoil.

f. All fills shall be compacted as required to reduce erosion, slippage, settlement, subsidence, or other related problems. Fill intended to support buildings, structures, conduits, etc. shall be compacted in accordance with local requirements or codes.

g. All fill shall be placed and compacted in layers not to exceed nine inches in thickness.

h. Fill material shall be free of frozen particles, brush, roots, sod, or other objectionable materials that would interfere with, or prevent, construction of satisfactory fills.

i. Frozen material or soft, mucky or highly compressible materials shall not be incorporated into fill slopes or structural fills.

j. Fill shall not be placed on saturated or frozen surfaces.

k. All benches shall be kept free of sediment during all phases of development.

l. Seeps or springs encountered during construction shall be handled in accordance with "Subsurface Drain" (see III.C.4).

3. Soil Restoration

The decompaction of areas of a development site or construction project where soils have been disturbed to recover the original properties and porosity of the soil thus providing a sustainable growth medium for vegetation, reduction of runoff and filtering of pollutants from stormwater runoff.

Soil restoration shall be completed in accordance with the following table:

Table 1: Soil Restoration Requirements

Type of Soil Disturbance	Soil Restoration Requirement		Comments/Examples
No soil disturbance	Restoration not permitted		Preservation of Natural Features
Minimal soil disturbance	Restoration not required		Clearing and grubbing
Areas where topsoil is stripped only - no change in grade	HSG A & B	HSG C & D	
	Apply 6 inches of topsoil	Aerate* and apply 6 inches of topsoil	
Areas of cut or fill	HSG A & B	HSG C & D	
	Aerate* and apply 6 inches of topsoil	Apply full Soil Restoration**	
Heavy traffic areas on site (especially in a zone 5 - 25 feet around buildings but not within a 5-foot perimeter around foundation walls)	Apply full soil restoration (decompaction and compost enhancement)		

Type of Soil Disturbance	Soil Restoration Requirement	Comments/Examples
Areas where Runoff Reduction and/or Infiltration practices are applied	Restoration not required, but may be applied to enhance the reduction specified for appropriate practices.	Keep construction equipment from crossing these areas. To protect newly installed practice from any ongoing construction activities construct a single phase operation fence area.
Redevelopment projects	Soil Restoration is required on redevelopment projects in areas where existing impervious area will be converted to pervious area.	

* Aeration includes the use of machines such as tractor-drawn implements with coulters making a narrow slit in the soil, a roller with many spikes making indentations in the soil, or prongs which function like a mini-subsoiler.

** Per "Deep Ripping and De-compaction, DEC 2008" - Provided in Appendix C

During periods of relatively low to moderate subsoil moisture, the disturbed subsoils are returned to rough grade and the following Soil Restoration steps applied:

a. Apply three inches of compost over the subsoil. The compost shall be well decomposed (matured at least three months), weed-free, organic matter. It shall be aerobically composted, possess no objectionable odors, and contain less than 1%, by dry weight, of man-made foreign matter. The physical parameters of the compact shall meet the following standards:
   - Organic matter content: 25% to 100% (dry weight)
   - Organic portion: Fibrous and elongated
   - pH: 6.0 to 8.0
   - Moisture content: 30% to 60%
   - Particle Size: 100% passing a 2" screen and 10 to 50% passing a 3/8" screen
   - Soluble salt concentration: 5.0 dS/m maximum

   Note: All biosolids compost produced in New York State (or approved for importation) must meet NYS DEC's 6NYCRR Part 360 (Solid Waste Management Facilities) requirements. The Part 360 requirements are equal to or more stringent than 40 CFR Part 503 which ensure safe standards for pathogen reduction and heavy metal content.

b. Till compost into subsoil to a depth of at least 12 inches using a cat-mounted ripper, tractor mounted disc, or tiller, to mix and circulate air and compost into the subsoil.

c. Rock-pick until uplifted stone/rock materials of four inches and larger size are cleaned off the site.

d. Apply topsoil to a depth of six inches.

e. Vegetate as required by the seeding plan. Use appropriate ground cover with deep roots to maintain the soil structure.

f. Topsoil may be manufactured as a mixture or a mineral component and organic material such as compost.

4. Topsoiling

Spreading a specified quality and quantity of topsoil materials on graded or constructed subsoil areas to provide acceptable plant cover growing conditions, thereby reducing erosion; to reduce irrigation water needs; and to reduce the need for nitrogen fertilizer application.

a. Site Preparation

   i. As needed, install erosion and sediment control practices such as diversions, channels, sediment traps, and stabilizing measures, or maintain if already installed.

   ii. Complete rough grading and final grade, allowing for depth of topsoil to be added.

   iii. Scarify all compact, slowly permeable, medium and fine textured subsoil areas. Scarify at approximately right angles to the slope direction in soil areas that are steeper than 5

percent. Areas that have been overly compacted shall be decompacted in accordance with the Soil Restoration Standard.

iv. Remove refuse, woody plant parts, stones over three inches in diameter, and other litter.

b. Topsoil Materials

i. Topsoil shall have at least 6% by weight of fine textured stable organic material, and no greater than 20%. Muck soil shall not be considered topsoil.

ii. Topsoil shall have not less than 20% fine textured material (passing the No. 200 sieve) and not more than 15% clay.

iii. Topsoil treated with soil sterilants or herbicides shal be so identified to the purchaser.

iv. Topsoil shall be relatively free of stones over 1 ½ inches in diameter, trash, noxious weeds such as nut sedge and quackgrass, and will have less than 10% gravel.

v. Topsoil containing soluble salts greater than 500 parts per million shall not be used.

vi. Topsoil may be manufactured as a mixture of a mineral component and organic material such as compost.

c. Application and Grading

i. Topsoil shall be distributed to a uniform depth over the area. It shall not be placed when it is partly frozen, muddy, or on frozen slopes or over ice, snow, or standing water puddles.

ii. Topsoil placed and graded on slopes steeper than 5% shall be promptly fertilized, seeded, mulched, and stabilized by "tracking" with suitable equipment.

iii. Apply topsoil in the amounts shown below:

Table 2: Topsoil Application Depth

Site Conditions	Intended Use	Minimum Topsoil Depth
Deep sand or loamy sand	Mowed lawn	6 inches
	Tall legumes, unmowed	2 inches
	Tall grass, unmowed	1 inch
Deep sandy loam	Mowed lawn	5 inches
	Tall legumes, unmowed	2 inches
	Tall grass, unmowed	None
Six inches or more: silt loam, clay loam, loam, or silt	Mowed lawn	4 inches
	Tall legumes, unmowed	1 inches
	Tall grass, unmowed	1 inch

F. TEMPORARY SEDIMENT CONTROL

1. Silt Fence

A temporary barrier of geotextile fabric installed on the contours across a slope used to intercept sediment laden runoff from small drainage areas of disturbed soil by temporarily ponding the sediment laden runoff allowing settling to occur. The maximum period of use is limited by the ultraviolet stability of the fabric (approximately one year).

G. 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:

1. Install stabilized construction access.
2. Install stabilized staging area.
3. Install silt fence perimeter.
4. Excavate temporary sediment trap.
5. Mass grading (cuts and fills).
6. Building foundation excavation.
7. Parking lot grading and stabilization.
8. Utility installations.
9. Concrete site work.
10. Paving.
11. Final grading, topsoiling, and seeding.
12. Remove temporary sediment trap.
13. Construction of stormwater management practices.

SECTION IV 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 user input. The input data was taken from soil maps, detailed topographic and utility survey information, rainfall distribution maps, and aerial images. 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 rates.
- Attenuation of the post-development 100-year, 24-hour peak discharge rate to predevelopment rates.

2. Rainfall Information

The following table shows the rainfall values used in the analysis of the stormwater runoff. These values are taken from rainfall distribution models that the Northeast Regional Climate Center (www.precip.net).

Table 3: Rainfall Data

Precipitation Event	24-Hour Rainfall in inches
Water Quality Volume (WQ_v)	1.00
1-Year, 24-Hour (Cp_v)	2.04
10-Year, 24-Hour (Qp_{10})	3.43
100-Year, 24-Hour (Qp_{100})	5.78

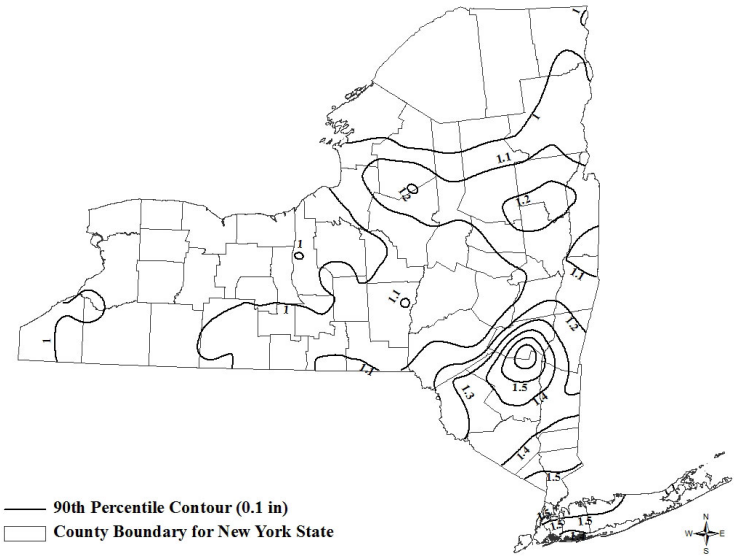


Figure 10: New York State 90% Rainfall Map

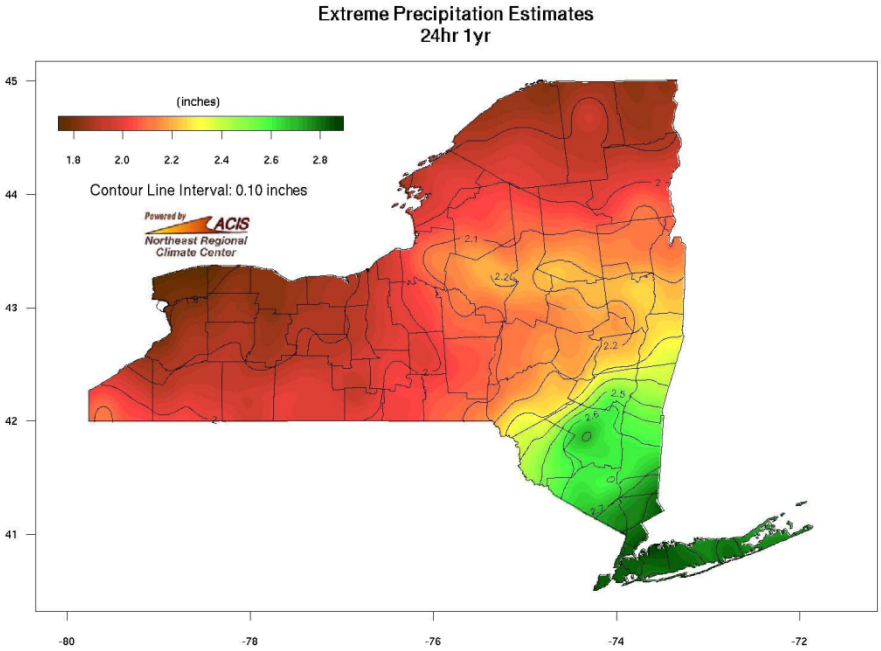


Figure 11: New York State One-Year Design Storm Map

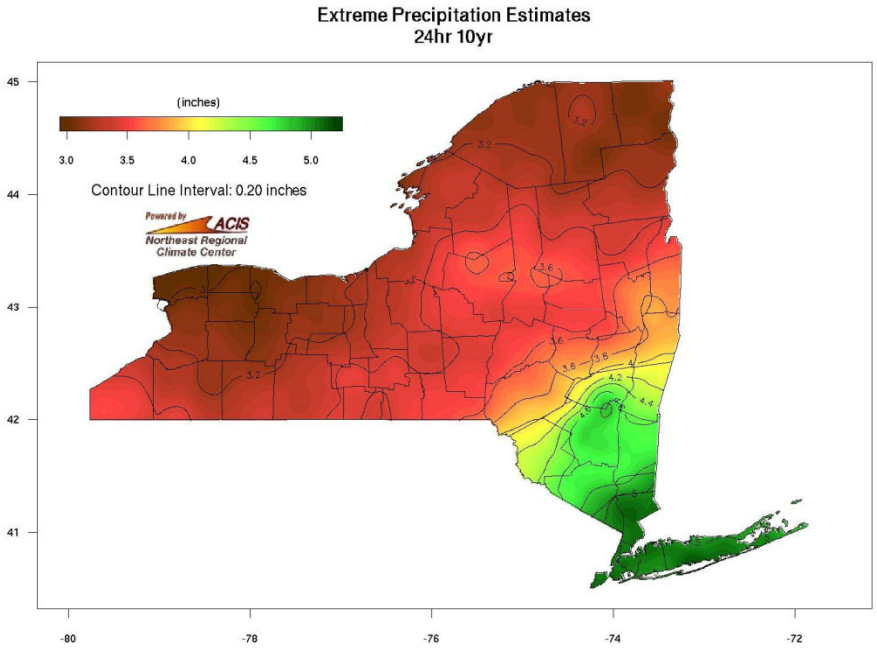


Figure 12: New York State 10-Year Design Storm Map

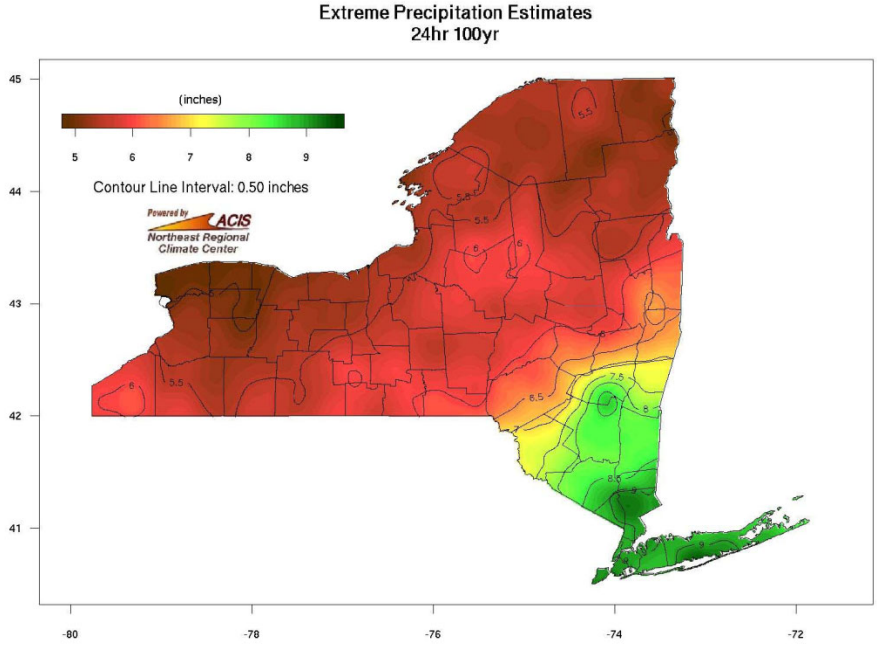


Figure 13: New York State 100-Year Design Storm

3. Soils Information

Soils information for the watershed was collected from the Natural Resource Conservation Service soils mapping database. The watershed consists of one distinct mapping unit, Ontario gravelly loam which belongs to hydrologic soil group B. Group B soils have a moderate infiltration rate and are moderately well-drained. See Appendix B for the NRCS soils map within the project area.

B. EXISTING CONDITIONS

The project site is located at the crest of a hill along Medical Center Drive in the Town of Manlius. The high point of the site is a north-south ridge through the central portion of the site. Areas to the west of the ridge-line flow towards a road-side ditch along Avriel Drive that is tributary to a culvert that conveys runoff under Medical Center Road and then to the south. Areas along the southern portions of the site are tributary to Medical Center Road and discharge into the drainage system within the roadway. To the east of the ridge-line, stormwater runoff flows down the hill and is captured in the stormwater management system that was constructed as part of the Towne Center Retirement Community project.

In order to eliminate any impacts to the Medical Center Drive or Towne Center Retirement Community drainage systems, the stormwater management system for the proposed project will discharge to the 15" culvert at the intersection of Medical Center Drive and Avriel Drive. In order to properly design and manage the runoff, the existing drainage area tributary to the 15" culvert is mapped and compared to the proposed condition drainage area, which includes stormwater management practices that will attenuate the runoff. Under the existing conditions, the tributary area includes grass areas immediately upstream of the culvert; uphill of this grass/lawn area is an area of brush-weed-grass mixture. The different land covers and the topography of the drainage area requires that the two areas be modeled separately and then combined at the culvert. Otherwise, the hydrologic modeling under-estimates the peak flows to the culverts as runoff from the lawn/grass area immediately surrounding the culvert gets to the culvert ahead of the runoff from the uphill brush-weed-grass area.

The following tables summarize the hydrologic characteristics of the existing condition drainage area tributary to the culvert.

Table 4: Existing Conditions DA 1.1

Area (ac)	CN	Description
0.436	48	Brush, Good, HSG B
0.436		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0	100	0.0100	0.11		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
0.4	69	0.0277	2.68		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.2	70	0.2000	7.20		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
15.6	239	Total			

Table 5: Existing Condition DA 1.2

Area (ac)	CN	Description
0.306	61	>75% Grass cover, Good, HSG B
0.306		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	77	0.0320	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
0.4	60		2.50		**Direct Entry,**
8.0	137	Total			

SHEET FLOW
77' AT 0.0320 FT/FT

CHANNEL FLOW
60 FT AT 2.5 FPS

DESIGN POINT
15" CULVERT

GRASS/OPEN SPACE
B SOILS
0.306 Ac

SHALLOW CONCENTRATED FLOW
69' AT 0.0277 FT/FT

SHEET FLOW
100' AT 0.0100 FT/FT

BRUSH-WEED-GRASS MIXTURE
B SOILS
0.436 Ac

SHALLOW CONCENTRATED FLOW
70' AT 0.2000 FT/FT

AVRIEL DRIVE
(FORMERLY ERIED 'B' ROAD)

MEDICAL CENTER DRIVE

GRAPHIC SCALE
0 40' 80'
(IN FEET)
1 inch = 40 ft

FOR PERMITTING PURPOSES ONLY
NOT FOR CONSTRUCTION

PLAN SEAL BY:
RODNEY C. IVES, JR., P.E.
NYS REGISTRATION # 077842

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SHEET

PROJECT NO. 21-2022

DATE 01/14/2022

SCALE 1"=40'

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

NO.	REVISION/ISSUE	DATE
A	PLANNING BOARD SUBMITTAL	08/25/22
B	PLANNING BOARD SUBMITTAL	10/13/22
C	PLANNING BOARD SUBMITTAL	11/15/22

SHEET TITLE:
EXISTING CONDITION DRAINAGE AREA MAP

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

C. PROPOSED CONDITIONS

The proposed project consists of the clearing and grading of approximately 3.32 acres of land to construct a building with a footprint of the 25,918± square foot building and the asphalt parking and court yard areas. Other site construction includes the installation of an a stormwater management area to meet the current stormwater regulations. Due to the development of the land from its existing grass field to a commercial property and the associated grading, the stormwater runoff characteristics of the watershed will change. In order to minimize the impact to offsite properties through the concentration of stormwater runoff, the grading and associated stormwater management system has been designed to collect runoff from the project site and direct it to the existing ditch along Avriel Drive. The stormwater management system will mitigate the increase in stormwater runoff to the ditch that the increase in tributary area and the conversion of land creates. The stormwater management system includes an underground stormwater storage system and a downstream infiltration basin. These practices act in concert with each other in order to effectively mitigate the impacts to the stormwater runoff characteristics that the development creates.

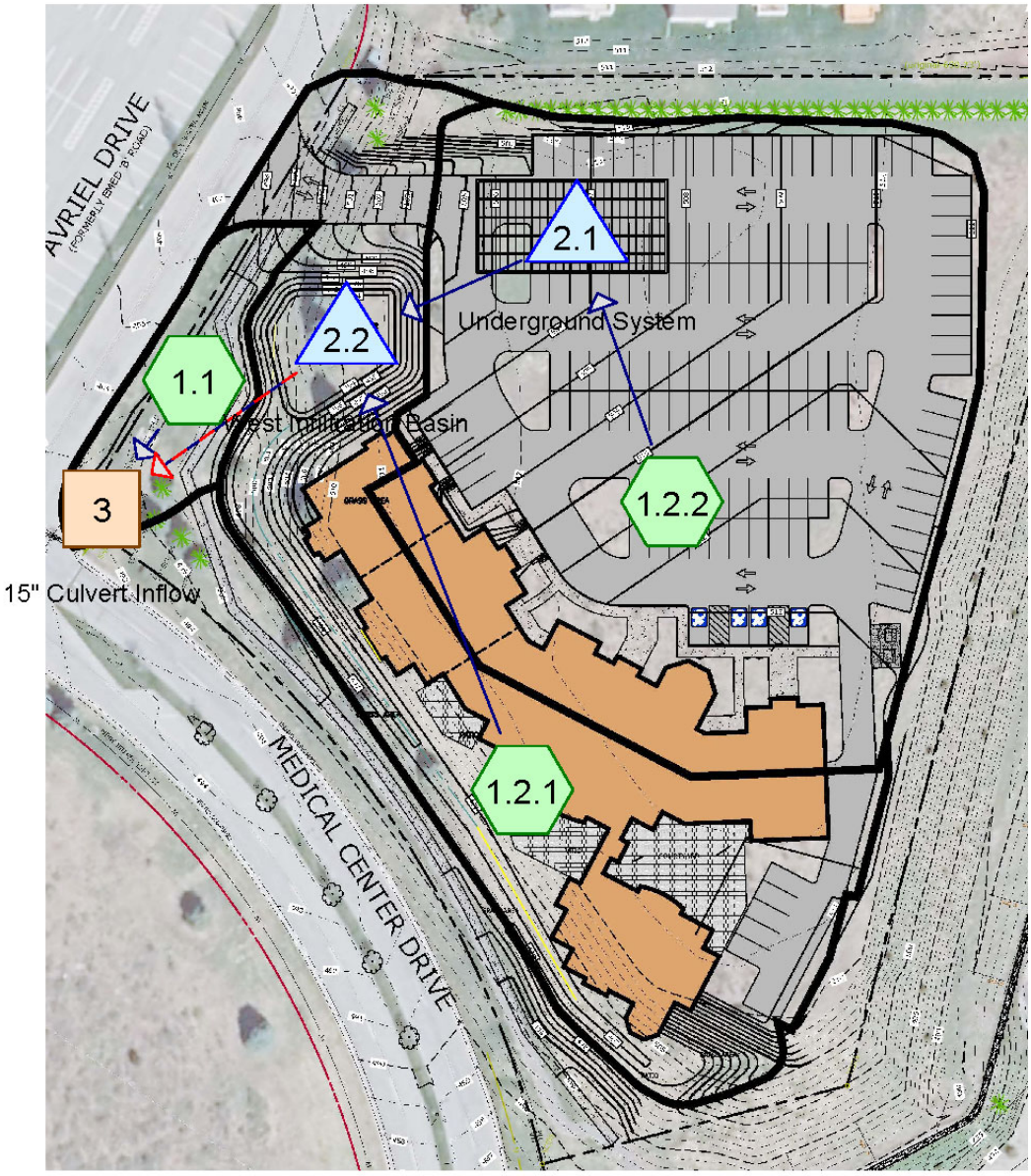


Figure 15: HydroCAD Proposed Condition Model



GRADING PLAN LEGEND

- EXISTING CONTOUR GRADES — 458
- PROPOSED CONTOUR GRADES — 459
- PROPOSED FINISHED SPOT ELEVATION — 459.2
- PROPOSED TOP OF CURB AND BOTTOM OF CURB ELEVATIONS — TC= XXX.XX / BC= XXX.XX
- MATCH/MEET EXISTING ELEVATION — MEE

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FOR PERMITTING PURPOSES ONLY
NOT FOR CONSTRUCTION

PLAN SEAL BY:
RODNEY C. IVES, JR., P.E.
NYS REGISTRATION # 077842

GRAPHIC SCALE
0 30' 60'
(IN FEET)
1 INCH = 30 ft.

SHEET
C-6

PROJECT NO.
21-2022

DATE
25 AUG 2022

SCALE
1"=30'

PREPARED BY:
NAPIERALA CONSULTING
PROFESSIONAL ENGINEER, P.C.
SITE • DESIGN • ENGINEERING
110 FAYETTE STREET
MANLIUS, NEW YORK 13104
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NO.	REVISION/ISSUE	DATE
C	PLANNING BOARD SUBMITTAL	11/15/22
B	PLANNING BOARD SUBMITTAL	10/13/22
A	PLANNING BOARD SUBMITTAL	08/25/22

SHEET TITLE:
GRADING 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

The proposed condition drainage area is divided into three sub-areas that are tributary to the 15" culvert. Drainage Area 1.1 represents the area downstream of the stormwater management practices that is tributary to the culvert; this area is undisturbed lawn area. Drainage Area 1.2.1 models the portion of the building roof area and other impervious areas that flow into a vegetated swale along the south property line that discharges into the surface infiltration basin. Drainage Area 1.2.2 models the remainder of the building roof area and the parking lot that is tributary to the underground stormwater storage system.

Table 6: Proposed Conditions DA-1.1

Area (ac)	CN	Description
0.203	61	>75% Grass cover, Good, HSG B
0.203		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.2	100	0.0350	0.13		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.38"
0.4	61		2.50		**Direct Entry, Channel Flow**
13.6	161	Total			

Table 7: Proposed Conditions DA-1.2.1

Area (ac)	CN	Description
0.664	98	Paved parking, HSG B
0.624	61	>75% Grass cover, Good, HSG B
1.288	80	Weighted Average
0.624		48.45% Pervious Area
0.664		51.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Table 8: Proposed Conditions DA-1.2.2

Area (ac)	CN	Description
1.596	98	Paved parking, HSG B
0.300	61	>75% Grass cover, Good, HSG B
1.896	92	Weighted Average
0.300		15.82% Pervious Area
1.596		84.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

The first of two stormwater management practices on the site is an underground stormwater storage system that is located in the northerly portion of the parking lot. The underground system will collect stormwater runoff from the parking lot as well as the building area that is on the northside of the roof's apex. The underground system will consist of a drainage stone envelope that surrounds 110 StormTech MC-4500 storage chambers. The underground system has been designed to allow the water volume (WQ_v) from the drainage area to infiltrate into the ground versus



Figure 17: Typical StormTech Chamber

discharging to downstream surface waters; this will improve the quality of downstream water bodies. Upon reaching a depth of 2.0 feet in the system (a slightly greater volume than the required WQ_v) stormwater runoff will begin to discharge to the downstream infiltration/detention basin for additional peak flow attenuation prior to discharging to the road culvert at Medical Center Drive. The underground system has a total depth of 6.75 feet; the five-foot high chambers will set on a nine-inch stone base with 12" of stone above the chambers. The storage capacity of the system is 17,729 ft^3 (0.407 ac·ft) at a depth of 6.75 feet. The following table summarizes the stage-storage-discharge characteristics of the underground system.

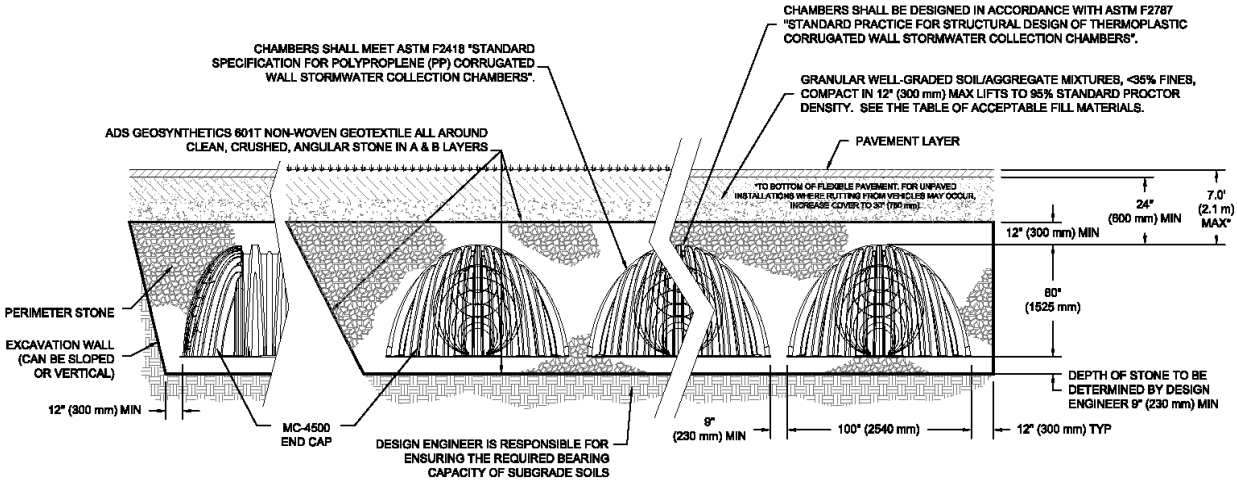


Figure 18: Standard StormTech Cross Section

Table 9: Stage-Storage-Characteristics, Surface Infiltration Basin

Volume	Invert	Avail.Storage	Storage Description
#1	497.00'	0.153 af	**46.67'W x 87.97'L x 6.75'H Stone Envelope** 0.636 af Overall - 0.254 af Embedded= 0.382 af x 40.0% Voids
#2	497.75'	0.254 af	**ADS_StormTech MC-4500 b +Cap @ 4.03' L** x 100 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.6 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 100 Chambers in 5 Rows Cap Storage= 39.5 cf x 2 x 5 rows = 395.0 cf
		0.407 af	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	497.00'	**3.000 in/hr Exfiltration over Surface area**
#2	Primary	497.00'	**4.0" Round Culvert** L= 35.0' Ke= 0.500 Inlet / Outlet Invert= 497.00' / 496.00' S= 0.0286 '/' Cc= 0.900 n= 0.012
#3	Device 2	499.00'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 2	502.75'	**12.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

The second stormwater management practice in the system is an infiltration/detention basin located in the northwest corner of the property adjacent to the driveway into the site. The basin collects runoff from the building area that is on the southside of the roof's apex as well the patio areas and the patient pick-up/parking area located on the east side of the building. Runoff from these areas flows into a vegetated swale that discharges into the basin. The basin also collects the discharge from the underground system to provide attenuation and controlled discharge to the Medical Center Drive culvert in order to meet the SPDES General Permit discharge requirements. The basin has a peak storage depth of three feet and a capacity of 15,163 ft^3 (0.348 ac·ft). In order to provide WQ_v treatment of the runoff directly tributary to it, the basin's outlet control

is set 0.9 feet above the bottom of the basin in order to allow 2,614 ft^3 (0.060 ac·ft) to infiltrate into the ground versus discharging to the culvert.

Table 10: Detention Basin Stage-Storage

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
494.00	0.060	0.000	0.000
495.00	0.075	0.068	0.068
496.00	0.133	0.104	0.171
497.00	0.220	0.176	0.348

Device	Routing	Invert	Outlet Devices
#1	Discarded	494.00'	**3.000 in/hr Exfiltration over Surface area**
#2	Primary	494.00'	**12.0" Round Culvert** L= 100.0' Ke= 0.500 Inlet / Outlet Invert= 494.00' / 493.00' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#3	Device 2	494.90'	**5.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	496.10'	**5.0' long + 4.0 '/' SideZ x 8.0' breadth Broad-Crested Rectangular Weir**

D. RUNOFF REDUCTION VOLUME (RR_V)

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

Plan to preserve, avoid and minimize

	Applicable	Not Applicable
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, unstable soils.	☐	☒
d. Minimize impervious surfaces: building footprints, parking, roads, sidewalks, and driveways.	☒	☐
e. Minimize clearing and grading	☒	☐

Discussion:

a. These areas do not exist within the property.

b. This project is a single-user development. Open space design, as discussed in the Stormwater Management Design Manual, is not applicable to this project. Open space is used in projects on large tracts of land where the development can be concentrated in a portion of the site while maintaining large portions of undisturbed land. Clustering is typically incorporated in subdivision projects involving the creation of multiple lots with multiple buildings.

c. The project is located at the top of the hill, as far back as possible from the steep slopes of the site.

d. The building is multiple floors in order to reduce the footprint and reduce earthwork.

e. The proposed grading plan for the project minimizes the amount of grading to the maximum extent practicable. Grade requirements for a functional site were taken into account during the initial design phases.

WATER QUALITY VOLUME (before runoff reduction)

2. Calculate the water quality volume (WQ_v):

$$\mathbf{WQ_v = \frac{PR_vA}{12}}$$

90-th Percentile Rainfall (P) = 1.00 inch

WQ_V Drainage Area (A) = 3.184 acres

Impervious Area (A_I) = 2.260 acres

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

$$R_v = 0.05 + 0.9\left(\frac{2.260\ ac}{3.184\ ac}\right)$$

$R_v = 0.69$

Original WQ_v = 0.183 ac·ft

3. Minimum RRv requirements (when 100% WQv reduction cannot be achieved)

Calculate minimum required Runoff Reduction Volume (RRv) using:

$$\mathbf{RR_v = \frac{0.95\ P\ \cdot S\ \cdot\ A_I}{12}}$$

A_I = total impervious area from #2

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

B Soils = 100% of area

$$RR_v = \frac{0.95\ \cdot 1.00\ \cdot 0.40\ \cdot\ 2.260\ ac}{12}$$

Minimum RRv required = 0.072 ac·ft

AREA REDUCTION PRACTICES

4. Incorporate area reduction practices (complete for all applicable practices): (area includes practice and contributing area)

	Contributing A_I	Area
a. Conservation of natural areas	0	0
b. Riparian buffers/filter strips	0	0
c. Tree planting/tree preservation	0	0
Total area reduction	0	0

Total impervious area within area reduction	0	0

Discussion:

a. The site is currently an open brush-meadow that was previously disturbed during the original construction of the medical center complex.

b. The project site does not encompass any riparian areas therefore it is not possible to incorporate riparian buffers or filter strips into the project.

c. The site does not contain significant tree communities as the site was previously disturbed.

5. Subtract total area reduction from drainage area:
   Remaining drainage area: (#2 area - #4 area) Remaining Drainage Area = 3.184 ac

   Remaining impervious area: (#2 A_I - #4 A_I) Remaining A_I = 2.260 ac

6. Recalculate WQv for site are remaining after area reductions:
   Drainage Area (A) = 3.184 acres

   Impervious Area (A_I) = 2.260 acres

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

$$R_v = 0.05 + 0.9\left(\frac{2.260\ ac}{3.184\ ac}\right)$$

$R_v = 0.69$

Area Reduced WQv = 0.183 ac·ft

7. Runoff Reduction Volume (RRv) from #2 (#2 WQv - #6 WQv):

RRv = 0 ac·ft

ROOFTOP DISCONNECTION

Roof top disconnection was not utilized on this project. Alternative green infrastructure practices for the rooftop areas were implemented; the rooftop downspouts discharge into infiltration areas that allow runoff from the 90th-percentile rainfall event to infiltrate into the ground. The discussion of these practices is found under the "Source Control" practices.

SOURCE CONTROL WQv TREATMENT PRACTICES

The project includes the construction of two infiltration practices, one a surface infiltration basin and the other an underground infiltration basin, to collect stormwater runoff from the impervious surfaces. Both practices are designed to capture runoff from tributary areas, temporarily store it, and allow the runoff from the 90th-percentile storm to infiltrate into the ground.

Infiltration Practice No. 1 (Drainage Area DA-1.1)

Drainage Area Tributary to Practice (A) = 1.288 acres
Impervious Areas (A_I) = 0.664 acre

$R_v = 0.51$

$WQ_v = 0.055\ ac \cdot ft$ *required*

The storage and discharge characteristics of the practice are designed such that the required WQ_V will infiltrate into the ground versus discharging to surface areas downstream. With the outlet control set at 0.9 feet above the bottom of the basin, 2,614 ft^3 (0.060 ac · ft) will infiltrate. Therefore, 0.060 ac · ft of runoff will be removed from the runoff volume.

RR_v = 0.060 ac·ft

Infiltration Practice No. 2 (Drainage Area DA-1.2)

Drainage Area Tributary to Practice (A) = 1.896 acreS
Impervious Areas (A_I) = 1.596 acres

R_v = 0.81

$WQ_v = 0.128\ ac \cdot ft$ *required*

The storage and discharge characteristics of the practice are designed such that the required WQ_V will infiltrate into the ground versus discharging to surface areas downstream. With the outlet control set at 2.0 feet above the bottom of the basin, 5,837 ft^3 (0.134 ac·ft) will infiltrate. Therefore, 0.134 ac·ft of runoff will be removed from the runoff volume.

RR_v = 0.134 ac·ft

TOTAL SOURCE CONTROL RRv

RRv = 0.194 ac·ft

Required Minimum RR_v = 0.072 ac·ft

PROVIDED RR_V = 0.194 ac·ft

E. WATER QUALITY VOLUME TREATMENT

As the provided RR_v exceeds the WQ_v, no further water quality treatment is required.

F. WATER QUANTITY

As discussed previously in the report, the proposed project alters the hydrologic characteristics of the existing drainage area. Changes in land cover, grading, and the time of concentration due to the proposed project will increase the amount of runoff and the peak flow rates from the site. The stormwater management system must collect, store, and release the runoff such that the discharge from the site complies with the requirements established in the NYSDEC SPDES General Permit for Stormwater Discharges from Construction Activity. In order to comply with current stormwater regulations, the stormwater system must:

- Control the release of the runoff from the one-year, 24-hour rainfall event such that it is released over a 24-hour period (Channel Protection Volume).
- The peak rate of discharge from the site during the 10-year, 24-hour rainfall event cannot exceed the peak rate of discharge prior to construction (Overbank Flood Control)
- The peak rate of discharge from the site during the 100-year, 24-hour rainfall event cannot exceed the peak rate of discharge prior to construction (Extreme Flood Control).

The HydroCAD computations for the stormwater modeling can be found in Appendices C (Existing Conditions) and D (Proposed Conditions). The following is a summary of the computations and discussion of the results.

1. CHANNEL PROTECTION VOLUME (Cp_v)

The project site must provide sufficient storage of the 1-year, 24-hour runoff event such that the volume is released over a 24-hour period. The NYS Stormwater Design Manual methodology for determining the storage volume was used (Appendix B.1) and is discussed below.

Tributary Area = 3.184 acres

CN = 87

t_c = 6.0 mins

I_a = 0.299

P = 2.04”

$\frac{I_a}{P} = 0.147$

Using I_a/P and T_c, q_u = 1000 csm/in (TR-55, Exhibit 4-II)

Using q_u and T = 24 hr, q_o/q_i = .020 (Design Manual, Figure B.1)

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

$$\frac{V_s}{V_r} = 0.654$$

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

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

HydroCAD provides the volume of runoff ($Q_dA/12$) = 0.249 ac·ft

$V_s = 0.654 \cdot 0.249 \text{ ac} \cdot \text{ft}$

$V_s = 0.163 \text{ ac} \cdot \text{ft}$ *Required*

The provided RR_v is subtracted from V_s to determine the required Cp_v. As the RR_v exceeds the Cp_v, no additional Cp_v management is required.

2. PEAK FLOW MITIGATION ($Q_{P10\text{-}Year}$ and $Q_{P100\text{-}Year}$)

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. The following table summarizes the HydroCAD results for the 10-year and 100-year rainfall events. Complete HydroCAD calculations are presented in Appendix D.

Table 11: Underground Stormwater Storage System

Rainfall Event	Peak Water Surface Elevation (503.75 Max)	Peak Storage (0.407 ac·ft max)	Peak Discharge
10-Year	499.7	0.183 ac·ft	0.31 cfs
100-Year	502.8	0.369 ac·ft	0.68 cfs

Table 12: Surface Basin

Rainfall Event	Peak Water Surface Elevation (497.0 Max)	Peak Storage (0.348 ac·ft max)	Peak Discharge
10-Year	495.2	0.087 ac·ft	0.21 cfs
100-Year	496.1	0.189 ac·ft	0.71 cfs

Table 13: Water Quantity Calculations at Design Point

Rainfall Event	24-Hour Rainfall	Existing Condition Peak Rate of Runoff	Total Proposed Condition Peak Rate of Runoff
10-Year	3.43”	0.22 cfs	0.22 cfs
100-Year	5.78”	1.13 cfs	1.07 cfs

SECTION V INSPECTION AND MAINTENANCE REQUIREMENTS

Best management practices, both construction and operational, must be inspected and maintained on a routine basis in order 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 daily and after every runoff-producing rainfall event. The operator/owner is responsible for providing a qualified professional, as defined in the SPDES General Permit, to perform the required 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 inspections shall occur twice a week while the site disturbance is greater than five acres. Once the disturbance is less than five acres, inspection frequency can be reduced to once every seven days. 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 in order to determine compliance.

A. 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 NYSDEC SPDES General Permit for Stormwater Discharges from Construction Activity, 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 on a monthly basis.

1. Inspection and Maintenance Practices

   a. Inspections shall occur at least 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 waterbodies 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 waterbody;

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. ESC Inspection/Maintenance

i. Concrete Truck Washout:
All concrete washout facilities shall be inspected daily. Damaged or leaking facilities shall be deactivated and repaired or replaced immediately.

Accumulated material shall be removed when 75% of the storage capacity of the structure is filled.

Dispose of hardened material off-site in a construction/demolition landfill. Hardened material can also be recycled or buried and covered with a minimum cover of two feet of clean compacted earthfill that is permanently stabilized to prevent erosion.

The plastic liner shall be replaced with each cleaning of the washout facility.

Inspect the project site frequently to ensure that no concrete discharges are taking place in non-designated areas.

ii. Dust Control - Maintain dust control measures through dry weather periods until all disturbed areas are stabilized.

iii. Stabilized Construction Access:
The access shall be maintained in a condition which will prevent tracking of sediment onto public rights-of-way or streets. 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 watercourses.

iv. Winter Stabilization
The site shall be inspected frequently to ensure that the erosion and sediment control plan is performing its winter stabilization function. If the site will not have earth disturbing activities ongoing during the "winter season", all bare exposed soil must be stabilized by established vegetation, straw, or other acceptable mulch, matting, rock, or other approved material such as rolled erosion control products. Seeding of areas with mulch cover is preferred but seeding alone is not acceptable for proper stabilization.

Compliance inspections must be performed and reports filed properly in accordance with the SWPPP for all sites under winter shutdown.

v. Check Dams:
The check dams should be inspected after each runoff event. Correct all damage immediately. If significant erosion has occurred between structures, a liner of stone or other suitable material should be installed in that portion of the channel or additional check dams added.

Remove sediment accumulated behind the dam as needed to allow channel to drain through the stone check dam and prevent large flows from carrying sediment over the dam. Replace stones as needed to maintain the design cross section of the structures.

vi. Sediment Trap
Sediment shall be removed and the trap restored to the original dimensions when the sediment has accumulated to ½ of the design depth. Sediment removed from the trap shall be deposited in a protected area and in such a manner that it will not erode.

vii. Seeding: Temporary and permanent seeding and all other stabilization measures will be inspected for bare spots, washouts, and healthy growth.

g. 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 requires, 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.

h. 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.

B. OPERATION MAINTENANCE AND INSPECTIONS PROCEDURES

Long-term maintenance of the stormwater management system will be the responsibility of the property owner. Maintenance and inspection check lists have been included in Appendix F and are summarized below:

1. Infiltration basin
   a. Monthly Inspections
      i. Debris Cleanout
         1) Basin surface and contributing areas clean of debris
         2) Inflow pipes clear of debris
         3) No dumping of yard wastes into practice
         4) Litter (branches, dead vegetation, etc.) has been removed
      ii. Vegetation
         1) No placement of inappropriate plants
         2) Grass height no greater than six inches
         3) No evidence of erosion
      iii. Dewatering
         1) Dewaters between storms
         2) No evidence of standing water
   b. Annual, After Major Storms
      i. Outlet/overflow
         1) Good condition, no need for repair
         2) No evidence of erosion
         3) No evidence of blockages
2. Underground Storage
   a. Monthly Inspections
      i. Debris Cleanout
         1. Sediment and/or trash accumulation removed
         2. Contributing areas clean of debris
         3. No dumping of yard wastes into practice
      ii. Dewatering
         1. Dewaters between storms
         2. No evidence of standing water
   b. Annual, After Major Storms
      i. Outlet/overflow
         1. Good condition, no need for repair
         2. No evidence of blockages

SECTION VI 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 that may occur. Drip pans shall be provided for all dispensers. Any asphalt substances used onsite will be applied according to the manufacturer's recommendations.

b. 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 according to manufacturer's instructions or state and federal regulations.

C. 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 stormwater discharges. If such contact occurs, the stormwater discharge will be contained on site until appropriate measures in compliance with state and federal regulations are taken to dispose of such contaminated stormwater. 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 stormwater, 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.
4. 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 NYS DEC 24-Hour Spill Hotline at 1-800-457-7362.
5. 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.

6. 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.

D. CONTROL OF NON-STORMWATER DISCHARGES

Certain types of discharges are allowable under the NYSDEC 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 it is discharged. 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-stormwater discharges are allowed by the NYSDEC and may occur at the job site:

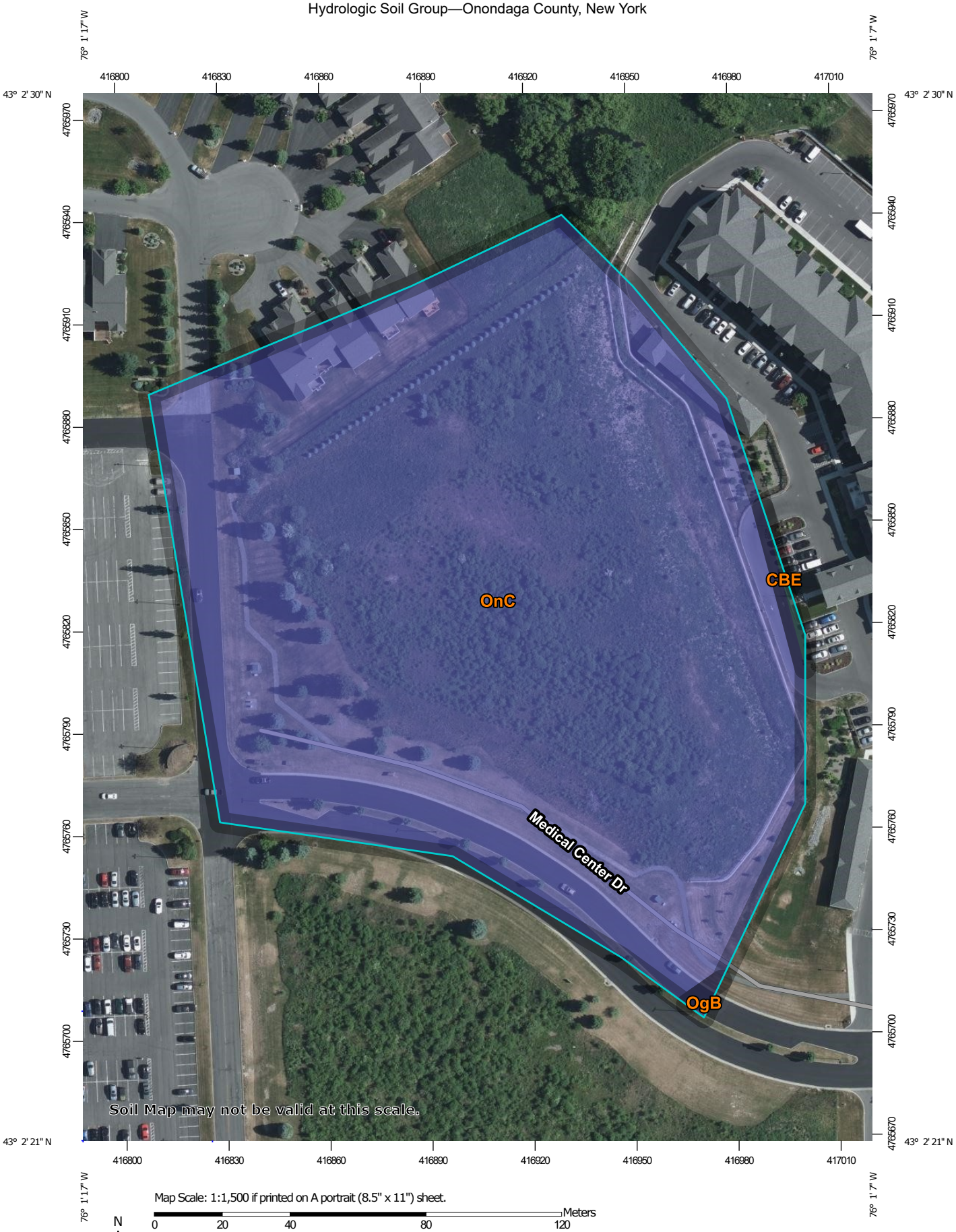
1. Discharges from fire fighting activities
2. Fire hydrant flushing
3. Waters to which cleansers or other components have not been added that are used to wash vehicles or control duct.
4. Routine external building washdown which does not use detergents
5. Pavement washwaters where spills or leaks of 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 VII 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 operation 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.

Upon completion of the work, a representative of StormTech will provide the engineer with a certification that the installation of the underground storage system is in compliance with the approved plans and that the manner of installation meets StormTech's specifications. This certification will be submitted to the Town with the Engineer's certification of that the entire stormwater system has been constructed in compliance with the approved plans, specifications, and SWPPP.

APPENDIX A
Background Data



Map Scale: 1:1,500 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 20 40 80 120

Feet: 0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

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 16, Sep 1, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 21, 2020—Jun 17, 2020

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
CBE	Camillus and Lairdsville channery soils, steep	C	0.0	0.2%
OgB	Ontario loam, 3 to 8 percent slopes	B	0.0	0.1%
OnC	Ontario gravelly loam, 8 to 15 percent slopes	B	7.4	99.7%
Totals for Area of Interest			**7.4**	**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

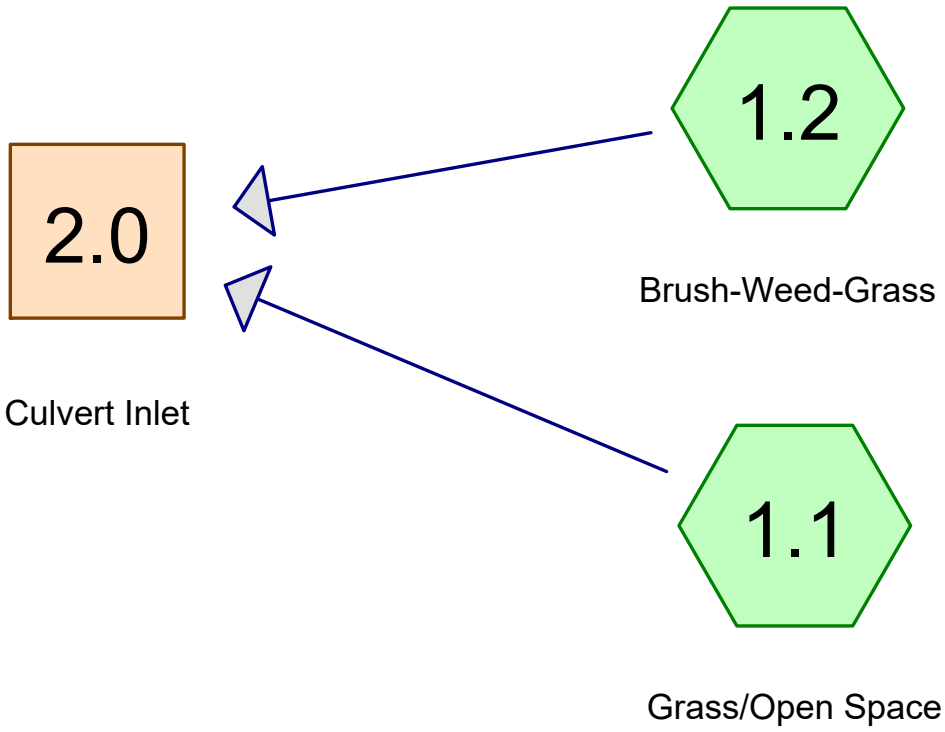
Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

APPENDIX B

HydroCAD Output - Existing Conditions



Subcat Reach Pond Link

Routing Diagram for EXISTING CONDITION
Prepared by Napierala Consulting
HydroCAD® 10.10-6a s/n 01332 © 2020 HydroCAD Software Solutions LLC

Summary for Subcatchment 1.1: Grass/Open Space

Runoff = 0.22 cfs @ 12.02 hrs, Volume= 0.014 af, Depth= 0.54"
Routed to Reach 2.0 : Culvert Inlet

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 2.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=3.43"

Area (ac)	CN	Description
0.306	61	>75% Grass cover, Good, HSG B
0.306		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	77	0.0320	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
0.4	60		2.50		**Direct Entry,**
8.0	137	Total			

Summary for Subcatchment 1.2: Brush-Weed-Grass

Runoff = 0.01 cfs @ 12.53 hrs, Volume= 0.005 af, Depth= 0.13"
Routed to Reach 2.0 : Culvert Inlet

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 2.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=3.43"

Area (ac)	CN	Description
0.436	48	Brush, Good, HSG B
0.436		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0	100	0.0100	0.11		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
0.4	69	0.0277	2.68		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.2	70	0.2000	7.20		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
15.6	239	Total			

Summary for Reach 2.0: Culvert Inlet

Inflow Area = 0.742 ac, 0.00% Impervious, Inflow Depth = 0.30" for 10-yr event
Inflow = 0.22 cfs @ 12.02 hrs, Volume= 0.019 af
Outflow = 0.22 cfs @ 12.02 hrs, Volume= 0.019 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 2.00-30.00 hrs, dt= 0.05 hrs

Summary for Subcatchment 1.1: Grass/Open Space

Runoff = 0.91 cfs @ 12.00 hrs, Volume= 0.047 af, Depth= 1.86"
Routed to Reach 2.0 : Culvert Inlet

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 2.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=5.78"

Area (ac)	CN	Description
0.306	61	>75% Grass cover, Good, HSG B
0.306		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	77	0.0320	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
0.4	60		2.50		**Direct Entry,**
8.0	137	Total			

Summary for Subcatchment 1.2: Brush-Weed-Grass

Runoff = 0.37 cfs @ 12.11 hrs, Volume= 0.033 af, Depth= 0.90"
Routed to Reach 2.0 : Culvert Inlet

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 2.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=5.78"

Area (ac)	CN	Description
0.436	48	Brush, Good, HSG B
0.436		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0	100	0.0100	0.11		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
0.4	69	0.0277	2.68		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.2	70	0.2000	7.20		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
15.6	239	Total			

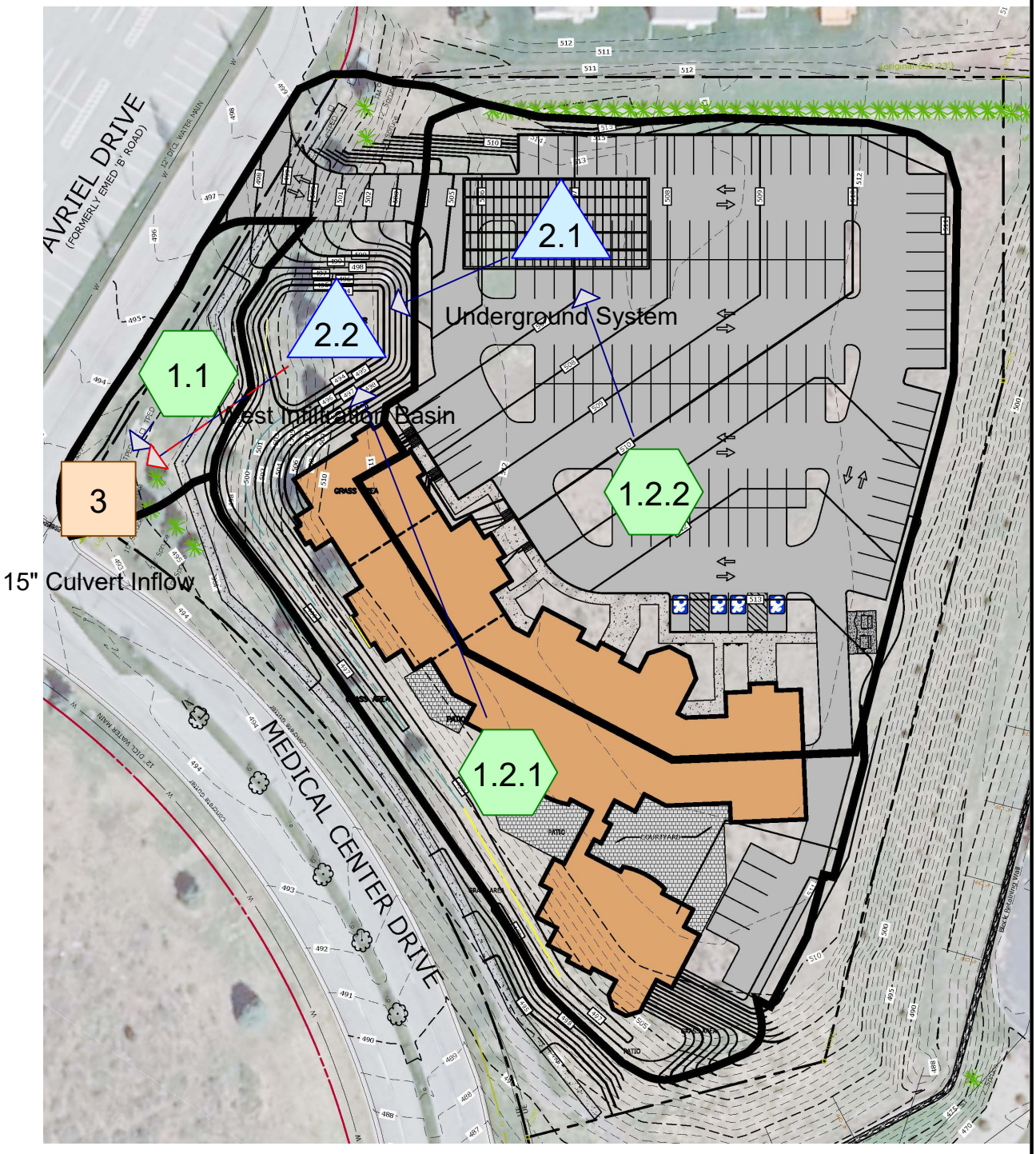
Summary for Reach 2.0: Culvert Inlet

Inflow Area = 0.742 ac, 0.00% Impervious, Inflow Depth = 1.30" for 100-yr event
Inflow = 1.13 cfs @ 12.02 hrs, Volume= 0.080 af
Outflow = 1.13 cfs @ 12.02 hrs, Volume= 0.080 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 2.00-30.00 hrs, dt= 0.05 hrs

APPENDIX C

HydroCAD Output - Proposed Conditions



Subcat Reach Pond Link

Routing Diagram for PROPOSED CONDITION
Prepared by Napierala Consulting
HydroCAD® 10.10-6a s/n 01332 © 2020 HydroCAD Software Solutions LLC

Summary for Subcatchment 1.1:

Runoff = 0.11 cfs @ 12.09 hrs, Volume= 0.009 af, Depth= 0.54"
Routed to Reach 3 : 15" Culvert Inflow

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 2.00-36.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=3.43"

Area (ac)	CN	Description
0.203	61	>75% Grass cover, Good, HSG B
0.203		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.2	100	0.0350	0.13		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.38"
0.4	61		2.50		**Direct Entry, Channel Flow**
13.6	161	Total			

Summary for Subcatchment 1.2.1:

Runoff = 3.51 cfs @ 11.97 hrs, Volume= 0.170 af, Depth= 1.58"
Routed to Pond 2.2 : West Infiltration Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 2.00-36.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=3.43"

Area (ac)	CN	Description
0.664	98	Paved parking, HSG B
0.624	61	>75% Grass cover, Good, HSG B
1.288	80	Weighted Average
0.624		48.45% Pervious Area
0.664		51.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 1.2.2:

Runoff = 7.95 cfs @ 11.96 hrs, Volume= 0.406 af, Depth= 2.57"
Routed to Pond 2.1 : Underground System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 2.00-36.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=3.43"

Area (ac)	CN	Description
1.596	98	Paved parking, HSG B
0.300	61	>75% Grass cover, Good, HSG B
1.896	92	Weighted Average
0.300		15.82% Pervious Area
1.596		84.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Pond 2.1: Underground System

Inflow Area = 1.896 ac, 84.18% Impervious, Inflow Depth = 2.57" for 10-yr event
Inflow = 7.95 cfs @ 11.96 hrs, Volume= 0.406 af
Outflow = 0.60 cfs @ 12.55 hrs, Volume= 0.406 af, Atten= 93%, Lag= 35.1 min
Discarded = 0.29 cfs @ 11.10 hrs, Volume= 0.348 af
Primary = 0.31 cfs @ 12.55 hrs, Volume= 0.058 af
Routed to Pond 2.2 : West Infiltration Basin

Routing by Stor-Ind method, Time Span= 2.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 499.71' @ 12.55 hrs Surf.Area= 0.094 ac Storage= 0.183 af

Plug-Flow detention time=181.3 min calculated for 0.406 af (100% of inflow)
Center-of-Mass det. time=181.2 min (973.3 - 792.1)

Volume	Invert	Avail.Storage	Storage Description
#1	497.00'	0.153 af	**46.67'W x 87.97'L x 6.75'H Stone Envelope** 0.636 af Overall - 0.254 af Embedded= 0.382 af x 40.0% Voids
#2	497.75'	0.254 af	**ADS_StormTech MC-4500 b +Cap @ 4.03' L** x 100 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.6 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 100 Chambers in 5 Rows Cap Storage= 39.5 cf x 2 x 5 rows = 395.0 cf
		0.407 af	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	497.00'	**3.000 in/hr Exfiltration over Surface area**
#2	Primary	497.00'	**4.0" Round Culvert** L= 46.0' Ke= 0.500 Inlet / Outlet Invert= 497.00' / 496.00' S= 0.0217 '/' Cc= 0.900 n= 0.012, Flow Area= 0.09 sf
#3	Device 2	499.00'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 2	502.75'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 5.7' Crest Height

Discarded OutFlow Max=0.29 cfs @ 11.10 hrs HW=497.07' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.29 cfs)

Primary OutFlow Max=0.31 cfs @ 12.55 hrs HW=499.71' (Free Discharge)
└**2=Culvert** (Passes 0.31 cfs of 0.49 cfs potential flow)
  └**3=Orifice/Grate** (Orifice Controls 0.31 cfs @ 3.55 fps)
  └**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 2.2: West Infiltration Basin

Inflow Area = 3.184 ac, 70.98% Impervious, Inflow Depth = 0.86" for 10-yr event
Inflow = 3.51 cfs @ 11.97 hrs, Volume= 0.228 af
Outflow = 0.47 cfs @ 13.17 hrs, Volume= 0.228 af, Atten= 87%, Lag= 71.5 min
Discarded = 0.26 cfs @ 13.17 hrs, Volume= 0.190 af
Primary = 0.21 cfs @ 13.17 hrs, Volume= 0.038 af
Routed to Reach 3 : 15" Culvert Inflow
Secondary = 0.00 cfs @ 2.00 hrs, Volume= 0.000 af
Routed to Reach 3 : 15" Culvert Inflow

Routing by Stor-Ind method, Time Span= 2.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 495.21' @ 13.17 hrs Surf.Area= 0.087 ac Storage= 0.085 af

Plug-Flow detention time=122.4 min calculated for 0.228 af (100% of inflow)
Center-of-Mass det. time=122.3 min (949.3 - 827.1)

Volume	Invert	Avail.Storage	Storage Description
#1	494.00'	0.348 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
494.00	0.060	0.000	0.000
495.00	0.075	0.068	0.068
496.00	0.133	0.104	0.171
497.00	0.220	0.176	0.348

Device	Routing	Invert	Outlet Devices
#1	Discarded	494.00'	**3.000 in/hr Exfiltration over Surface area**
#2	Primary	494.00'	**12.0" Round Culvert** L= 100.0' Ke= 0.500 Inlet / Outlet Invert= 494.00' / 493.00' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#3	Device 2	494.90'	**5.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	496.10'	**5.0' long + 4.0 '/' SideZ x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Discarded OutFlow Max=0.26 cfs @ 13.17 hrs HW=495.21' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.26 cfs)

Primary OutFlow Max=0.21 cfs @ 13.17 hrs HW=495.21' (Free Discharge)
└**2=Culvert** (Passes 0.21 cfs of 3.19 cfs potential flow)
└**3=Orifice/Grate** (Orifice Controls 0.21 cfs @ 1.90 fps)

Secondary OutFlow Max=0.00 cfs @ 2.00 hrs HW=494.00' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Reach 3: 15" Culvert Inflow

Inflow Area = 3.387 ac, 66.73% Impervious, Inflow Depth = 0.17" for 10-yr event
Inflow = 0.22 cfs @ 13.11 hrs, Volume= 0.047 af
Outflow = 0.22 cfs @ 13.11 hrs, Volume= 0.047 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 2.00-36.00 hrs, dt= 0.05 hrs

Summary for Subcatchment 1.1:

Runoff = 0.49 cfs @ 12.07 hrs, Volume= 0.031 af, Depth= 1.86"
Routed to Reach 3 : 15" Culvert Inflow

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 2.00-36.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=5.78"

Area (ac)	CN	Description
0.203	61	>75% Grass cover, Good, HSG B
0.203		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.2	100	0.0350	0.13		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.38"
0.4	61		2.50		**Direct Entry, Channel Flow**
13.6	161	Total			

Summary for Subcatchment 1.2.1:

Runoff = 7.81 cfs @ 11.97 hrs, Volume= 0.385 af, Depth= 3.58"
Routed to Pond 2.2 : West Infiltration Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 2.00-36.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=5.78"

Area (ac)	CN	Description
0.664	98	Paved parking, HSG B
0.624	61	>75% Grass cover, Good, HSG B
1.288	80	Weighted Average
0.624		48.45% Pervious Area
0.664		51.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 1.2.2:

Runoff = 14.42 cfs @ 11.96 hrs, Volume= 0.767 af, Depth= 4.85"
Routed to Pond 2.1 : Underground System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 2.00-36.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=5.78"

Area (ac)	CN	Description
1.596	98	Paved parking, HSG B
0.300	61	>75% Grass cover, Good, HSG B
1.896	92	Weighted Average
0.300		15.82% Pervious Area
1.596		84.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Pond 2.1: Underground System

Inflow Area = 1.896 ac, 84.18% Impervious, Inflow Depth = 4.85" for 100-yr event
Inflow = 14.42 cfs @ 11.96 hrs, Volume= 0.767 af
Outflow = 0.96 cfs @ 12.60 hrs, Volume= 0.767 af, Atten= 93%, Lag= 38.2 min
Discarded = 0.29 cfs @ 9.90 hrs, Volume= 0.475 af
Primary = 0.68 cfs @ 12.60 hrs, Volume= 0.292 af
Routed to Pond 2.2 : West Infiltration Basin

Routing by Stor-Ind method, Time Span= 2.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 502.75' @ 12.60 hrs Surf.Area= 0.094 ac Storage= 0.369 af

Plug-Flow detention time=206.4 min calculated for 0.766 af (100% of inflow)
Center-of-Mass det. time=206.4 min (981.2 - 774.8)

Volume	Invert	Avail.Storage	Storage Description
#1	497.00'	0.153 af	**46.67'W x 87.97'L x 6.75'H Stone Envelope** 0.636 af Overall - 0.254 af Embedded= 0.382 af x 40.0% Voids
#2	497.75'	0.254 af	**ADS_StormTech MC-4500 b +Cap @ 4.03' L** x 100 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.6 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 100 Chambers in 5 Rows Cap Storage= 39.5 cf x 2 x 5 rows = 395.0 cf
		0.407 af	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	497.00'	**3.000 in/hr Exfiltration over Surface area**
#2	Primary	497.00'	**4.0" Round Culvert** L= 46.0' Ke= 0.500 Inlet / Outlet Invert= 497.00' / 496.00' S= 0.0217 '/' Cc= 0.900 n= 0.012, Flow Area= 0.09 sf
#3	Device 2	499.00'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 2	502.75'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 5.7' Crest Height

Discarded OutFlow Max=0.29 cfs @ 9.90 hrs HW=497.07' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.29 cfs)

Primary OutFlow Max=0.68 cfs @ 12.60 hrs HW=502.75' (Free Discharge)
└**2=Culvert** (Barrel Controls 0.68 cfs @ 7.78 fps)
  └**3=Orifice/Grate** (Passes < 0.80 cfs potential flow)
  └**4=Sharp-Crested Rectangular Weir** (Passes < 0.00 cfs potential flow)

Summary for Pond 2.2: West Infiltration Basin

Inflow Area = 3.184 ac, 70.98% Impervious, Inflow Depth = 2.55" for 100-yr event
Inflow = 8.30 cfs @ 11.97 hrs, Volume= 0.676 af
Outflow = 1.15 cfs @ 12.83 hrs, Volume= 0.676 af, Atten= 86%, Lag= 51.5 min
Discarded = 0.44 cfs @ 12.83 hrs, Volume= 0.362 af
Primary = 0.66 cfs @ 12.83 hrs, Volume= 0.311 af
Routed to Reach 3 : 15" Culvert Inflow
Secondary = 0.05 cfs @ 12.83 hrs, Volume= 0.003 af
Routed to Reach 3 : 15" Culvert Inflow

Routing by Stor-Ind method, Time Span= 2.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 496.12' @ 12.83 hrs Surf.Area= 0.144 ac Storage= 0.189 af

Plug-Flow detention time=116.9 min calculated for 0.675 af (100% of inflow)
Center-of-Mass det. time=116.9 min (963.2 - 846.3)

Volume	Invert	Avail.Storage	Storage Description
#1	494.00'	0.348 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
494.00	0.060	0.000	0.000
495.00	0.075	0.068	0.068
496.00	0.133	0.104	0.171
497.00	0.220	0.176	0.348

Device	Routing	Invert	Outlet Devices
#1	Discarded	494.00'	**3.000 in/hr Exfiltration over Surface area**
#2	Primary	494.00'	**12.0" Round Culvert** L= 100.0' Ke= 0.500 Inlet / Outlet Invert= 494.00' / 493.00' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#3	Device 2	494.90'	**5.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	496.10'	**5.0' long + 4.0 '/' SideZ x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Discarded OutFlow Max=0.44 cfs @ 12.83 hrs HW=496.12' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.44 cfs)

Primary OutFlow Max=0.66 cfs @ 12.83 hrs HW=496.12' (Free Discharge)
└**2=Culvert** (Passes 0.66 cfs of 4.50 cfs potential flow)
└**3=Orifice/Grate** (Orifice Controls 0.66 cfs @ 4.85 fps)

Secondary OutFlow Max=0.05 cfs @ 12.83 hrs HW=496.12' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Weir Controls 0.05 cfs @ 0.38 fps)

Summary for Reach 3: 15" Culvert Inflow

Inflow Area = 3.387 ac, 66.73% Impervious, Inflow Depth = 1.23" for 100-yr event
Inflow = 1.07 cfs @ 12.09 hrs, Volume= 0.346 af
Outflow = 1.07 cfs @ 12.09 hrs, Volume= 0.346 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 2.00-36.00 hrs, dt= 0.05 hrs

APPENDIX D

Inspection, Operation, and Maintenance

Isolator® Row
O&M Manual



ADS StormTech™

The Isolator® Row

Introduction

An important component of any Stormwater Pollution Prevention Plan is inspection and maintenance. The StormTech Isolator Row is a technique to inexpensively enhance Total Suspended Solids (TSS) and Total Phosphorus (TP) removal with easy access for inspection and maintenance.

The Isolator Row

The Isolator Row is a row of StormTech chambers, either SC-160, SC-310, SC-310-3, SC-740, DC-780, MC-3500 or MC-7200 models, that is surrounded with filter fabric and connected to a closely located manhole for easy access. The fabric-wrapped chambers provide for sediment settling and filtration as stormwater rises in the Isolator Row and passes through the filter fabric. The open bottom chambers and perforated sidewalls (SC-310, SC- 310-3 and SC-740 models) allow stormwater to flow both vertically and horizontally out of the chambers. Sediments are captured in the Isolator Row protecting the adjacent stone and chambers storage areas from sediment accumulation.

ADS geotextile fabric is placed between the stone and the Isolator Row chambers. The woven geotextile provides a media for stormwater filtration, a durable surface for maintenance, prevents scour of the underlying stone and remains intact during high pressure jetting. A non-woven fabric is placed over the chambers to provide a filter media for flows passing through the chamber's sidewall. The non-woven fabric is not required over the SC-160, DC-780, MC-3500 or MC-7200 models as these chambers do not have perforated side walls.

The Isolator Row is designed to capture the "first flush" runoff and offers the versatility to be sized on a volume basis or a flow-rate basis. An upstream manhole provides access to the Isolator Row and includes a high/low concept such that stormwater flow rates or volumes that exceed the capacity of the Isolator Row bypass through a manifold to the other chambers. This is achieved with an elevated bypass manifold or a high-flow weir. This creates a differential between the Isolator Row row of chambers and the manifold to the rest of the system, thus allowing for settlement time in the Isolator Row. After Stormwater flows through the Isolator Row and into the rest of the chamber system it is either exfiltrated into the soils below or passed at a controlled rate through an outlet manifold and outlet control structure.

The Isolator Row may be part of a treatment train system. The treatment train design and pretreatment device selection by the design engineer is often driven by regulatory requirements. Whether pretreatment is used or not, StormTech recommend using the Isolator Row to minimize maintenance requirements and maintenance costs.

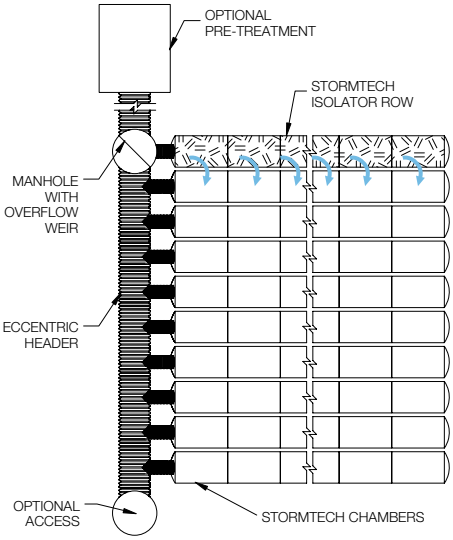
Note: *See the StormTech Design Manual for detailed information on designing inlets for a StormTech system, including the Isolator Row.*



Looking down the Isolator Row from the manhole opening, woven geotextile Fabric is shown between the chamber and stone base.



StormTech Isolator Row with Overflow Spillway (*not to scale*)



Isolator Row Inspection/Maintenance

Inspection

The frequency of inspection and maintenance varies by location. A routine inspection schedule needs to be established for each individual location based upon site specific variables. The type of land use (i.e. industrial, commercial, residential), anticipated pollutant load, percent imperviousness, climate, etc. all play a critical role in determining the **actual frequency of inspection and maintenance practices.**

At a minimum, StormTech recommends annual inspections. Initially, the Isolator Row should be inspected every 6 months for the first year of operation. For subsequent years, the inspection should be adjusted based upon previous observation of sediment deposition.

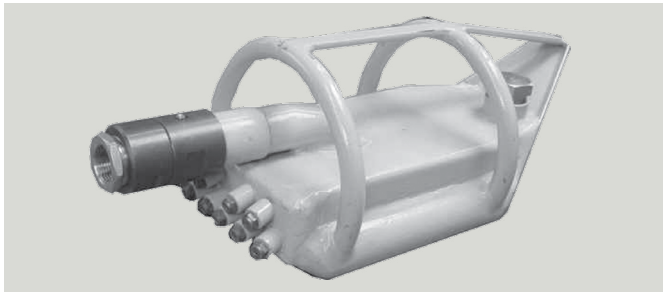
The Isolator Row incorporates a combination of standard manhole(s) and strategically located inspection ports (as needed). The inspection ports allow for easy access to the system from the surface, eliminating the need to perform a confined space entry for inspection purposes.

If upon visual inspection it is found that sediment has accumulated, a stadia rod should be inserted to determine the depth of sediment. When the average depth of sediment exceeds 3 inches throughout the length of the Isolator Row, clean-out should be performed.

Maintenance

The Isolator Row was designed to reduce the cost of periodic maintenance. By “isolating” sediments to just one row, costs are dramatically reduced by eliminating the need to clean out each row of the entire storage bed. If inspection indicates the potential need for maintenance, access is provided via a manhole(s) located on the end(s) of the row for cleanout. If entry into the manhole is required, please follow local and OSHA rules for a confined space entries.

Maintenance is accomplished with the JetVac process. The JetVac process utilizes a high pressure water nozzle to propel itself down the Isolator Row while scouring and suspending sediments. As the nozzle is retrieved, the captured pollutants are flushed back into the manhole for vacuuming. Most sewer and pipe maintenance companies have vacuum/JetVac combination vehicles. Selection of an appropriate JetVac nozzle will improve maintenance efficiency. Fixed nozzles designed for culverts or large diameter pipe cleaning are preferable. Rear facing jets with an effective spread of at least 45” are best. JetVac reels can vary in length. For ease of maintenance, ADS recommends Isolator Row lengths up to 200" (61 m). **The JetVac process shall only be performed on StormTech Isolator Rows that have AASHTO class 1 woven geotextile (as specified by StormTech) over their angular base stone.**

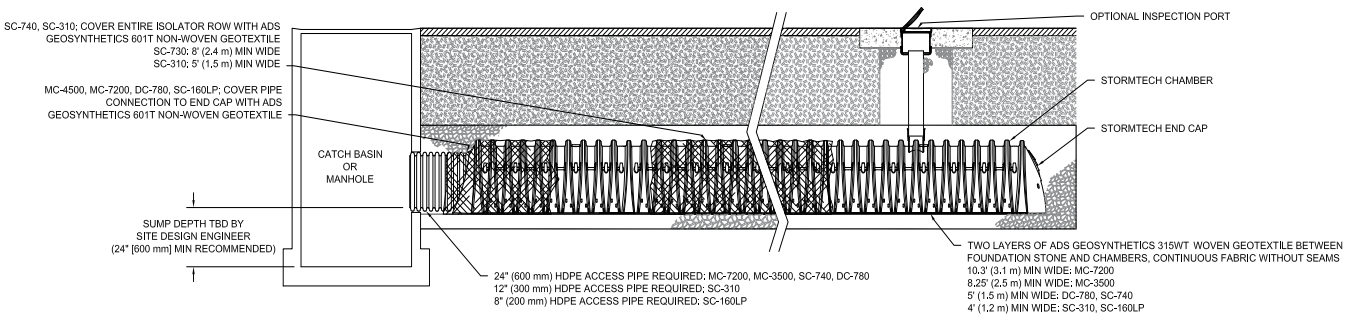






StormTech Isolator Row (not to scale)

Note: *Non-woven fabric is only required over the inlet pipe connection into the end cap for SC-160LP, DC-780, MC-3500 and MC-7200 chamber models and is not required over the entire Isolator Row.*



Isolator Row Step By Step Maintenance Procedures

Step 1

Inspect Isolator Row for sediment.

A) Inspection ports (if present)
   i. Remove lid from floor box frame
   ii. Remove cap from inspection riser
   iii. Using a flashlight and stadia rod,measure depth of sediment and record results on maintenance log.
   iv. If sediment is at or above 3 inch depth, proceed to Step 2. If not, proceed to Step 3.

B) All Isolator Row
   i. Remove cover from manhole at upstream end of Isolator Row
   ii. Using a flashlight, inspect down Isolator Row through outlet pipe
      1. Mirrors on poles or cameras may be used to avoid a confined space entry
      2. Follow OSHA regulations for confined space entry if entering manhole
   iii. If sediment is at or above the lower row of sidewall holes (approximately 3 inches), proceed to Step 2. If not, proceed to Step 3.

Step 2

Clean out Isolator Row using the JetVac process.

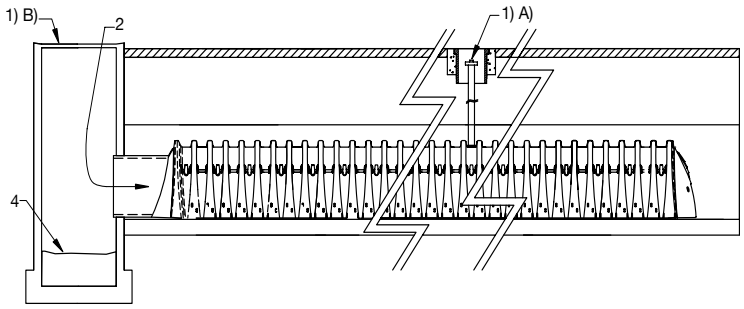
A) A fixed floor cleaning nozzle with rear facing nozzle spread of 45 inches or more is preferable
B) Apply multiple passes of JetVac until backflush water is clean
C) Vacuum manhole sump as required

Step 3

Replace all caps, lids and covers, record observations and actions.

Step 4

Inspect & clean catch basins and manholes upstream of the StormTech system.



Sample Maintenance Log

Date	Stadia Rod Readings		Sedi-ment Depth (1)–(2)	Observations/Actions	Inspector
	Fixed point to chamber bottom (1)	Fixed point to top of sediment (2)			
3/15/11	6.3 ft	none		New installation. Fixed point is CI frame at grade	DJM
9/24/11		6.2	0.1 ft	Some grit felt	SM
6/20/13		5.8	0.5 ft	Mucky feel, debris visible in manhole and in Isolator Row, maintenance due	NV
7/7/13	6.3 ft		0	System jetted and vacuumed	DJM

adspipe.com
800-821-6710

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The ADS logo and the Green Stripe are registered trademarks of Advanced Drainage Systems, Inc.
Stormtech® and the Isolator® Row are registered trademarks of StormTech, Inc.
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NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Infiltration 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			

IN Drainage Area

Look for both pervious and impervious areas that are uphill from the Infiltration cell.

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 erosion areas with soil, compact, and seed and straw to get vegetation established. ☐ 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:

IN Drainage Area

Look for both pervious and impervious areas that are uphill from the Infiltration 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.
☐ For Dry Wells: Leaves, sticks, or other debris in gutters and downspouts		☐ Remove all debris by hand. ☐ Other:
	☐ 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:

IN Inlets

Look for all the places where water flows into the Infiltration practice.

Problem (Check if Present)	Follow-Up Actions
 ☐ Inlets are collecting grit and debris or grass/weeds are growing. Some water may not be getting into the Infiltration practice.	☐ 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 Infiltration practice. ☐ Dispose of all material properly in an area where it will not re-enter the practice. ☐ 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 Infiltration practice.
☐ 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 Infiltration practice.	☐ 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.

IN Infiltration Area

Examine the surface of the infiltration area and the observation well. Note: The following Problem and Follow-Up Actions apply to infiltration practice pretreatment areas also.

Problem (Check if Present)	Follow-Up Actions
 ☐ For grass-covered Infiltration practices: grass has grown very tall, *Photo credit: Stormwater Maintenance, LLC*	☐ Mow infiltration area at least twice per year. ☐ Other:
 ☐ For grass-covered Infiltration practices: sparse vegetation cover or bare spots	☐ Add topsoil (as needed), grass seed, straw, and water during the growing season to re-establish consistent grass coverage. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Sparse vegetation cover can be a sign that the infiltration area is not infiltrating at the proper rate and water is standing too long after a storm. The surface may be saturated or squishy, and the conditions do not enable grass to grow. This situation should be evaluated by a Level 2 Inspection and likely corrected by a qualified contractor.
☐ Minor areas of sediment, grit, trash, or other debris are accumulating on the surface.	☐ 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 Infiltration practice. ☐ If removing the material creates a hole or low area, rake the surface smooth and level. ☐ Remove trash, 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 surface of the Infiltration area.

IN Infiltration Area

Examine the surface of the infiltration area and the observation well. Note: The following Problem and Follow-Up Actions apply to infiltration practice pretreatment areas also.

Problem (Check if Present)	Follow-Up Actions
 ☐ There is erosion on the surface; water seems to be carving out rills as it flows across the surface of the Infiltration area or sinkholes are forming in certain areas.	☐ For minor areas of erosion, try filling the eroded areas with clean topsoil, sand, or stone (whatever the existing cover is). ☐ If the problem recurs, you may have to use larger stone (e.g., river cobble) to fill in problem areas. ☐ 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 infiltration area. ☐ 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.
 ☐ Observation well is damaged or cap is missing	☐ Kick-Out to Level 2 Inspection: Requires replacing pipes or caps.

IN Infiltration Area

Examine the surface of the infiltration area and the observation well. Note: The following Problem and Follow-Up Actions apply to infiltration practice pretreatment areas also.

Problem (Check if Present)	Follow-Up Actions
 ☐ Water still visible in the observation well more than 72 hours after a rain storm. The Infiltration practice 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.

IN Outlets

Locate and inspect all outlets.

Problem (Check if Present)	Follow-Up Actions
 ☐ Outlet obstructed with sediment, debris, trash, etc.	☐ Remove the debris and dispose of it where it cannot re-enter the infiltration area. ☐ Other:
	☐ Kick-Out to Level 2 Inspection: Outlet is completely obstructed; there is too much material to remove by hand or with simple hand tools.
☐ Rills or gullies are forming at outlet.	☐ For minor rills, fill in with soil, compact, and seed and straw to establish vegetation. ☐ Other:
	☐ Kick-Out to Level 2 Inspection: Rills are more than 2" to 3" deep and require more than just hand raking and re-seeding.

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: _____

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Infiltration 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: INFILTRATION

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 For infiltration basins with soil, use a soil probe or auger to examine the soil profile. For gravel infiltration trenches or basins, use a shovel to dig into the gravel layer where the problem is occurring. If isolated areas have accumulated grit, fine silt, or vegetative debris or have bad soil or clogged gravel, try removing and replacing with clean material. If the practice is supposed to have grass cover, it will likely be necessary to replant once the problem is resolved. ☐ Condition 2: Standing water is widespread or covers entire surface Look in the observation well (if it exists) and use a tape measure to estimate the depth of water standing in the soil or gravel. Requires diagnosis and resolution of problem: • Too much sediment/grit washing in from drainage area? • Too much ponding depth? • Improper infiltration media? • Underlying soil not suitable for infiltration? As above, the resolution will likely require replanting and re-establishment of good grass cover if this is part of the design.	• Infiltration media is clogged and problem cannot be diagnosed from Level 2 inspection. • Level 2 inspection identifies problem, but it cannot be resolved easily or it is associated with the original design of the practice. ☐ Level 3 Inspection necessary
Observed Condition: Severe erosion of infiltration 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 less erosive lining and/or extending the lining further down to where inlet slopes meet the infiltration surface. If problem persists, analysis by a Qualified Professional is warranted. ☐ Condition 2: Erosion of infiltration bed This is often caused by “preferential flow paths” along the 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).	• Erosion (rills, gullies) is more than 12 inches deep • The issue is not caused by moving water but some sort of subsurface defect, which may manifest as a sinkhole or linear depression and be associated with problems with the underlying stone or soil. ☐ 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:

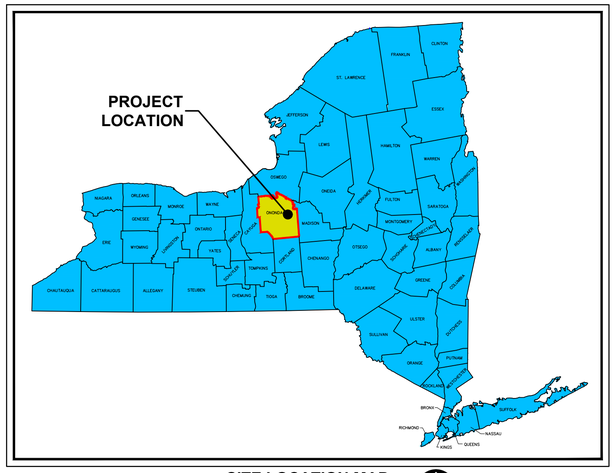
"I hereby certify that the follow-up/corrective actions identified in the inspection performed on _____ (DATE) have been completed and any required maintenance deficiencies have been adequately corrected."

Inspector/Operator: _____ Date: _____

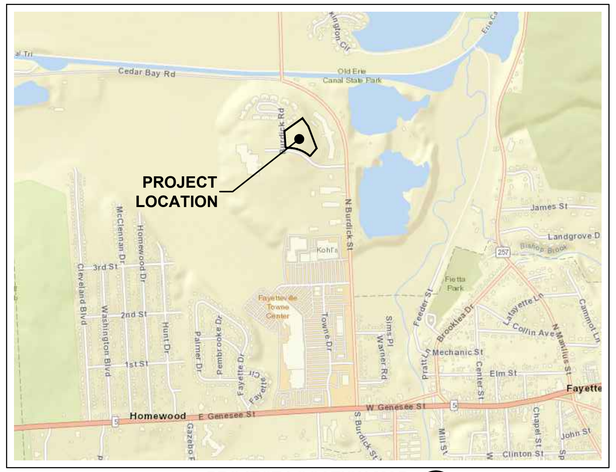
A&E & SNY CENTER

MEDICAL CENTER DRIVE
TAX PARCEL No. 086.-01-03.9

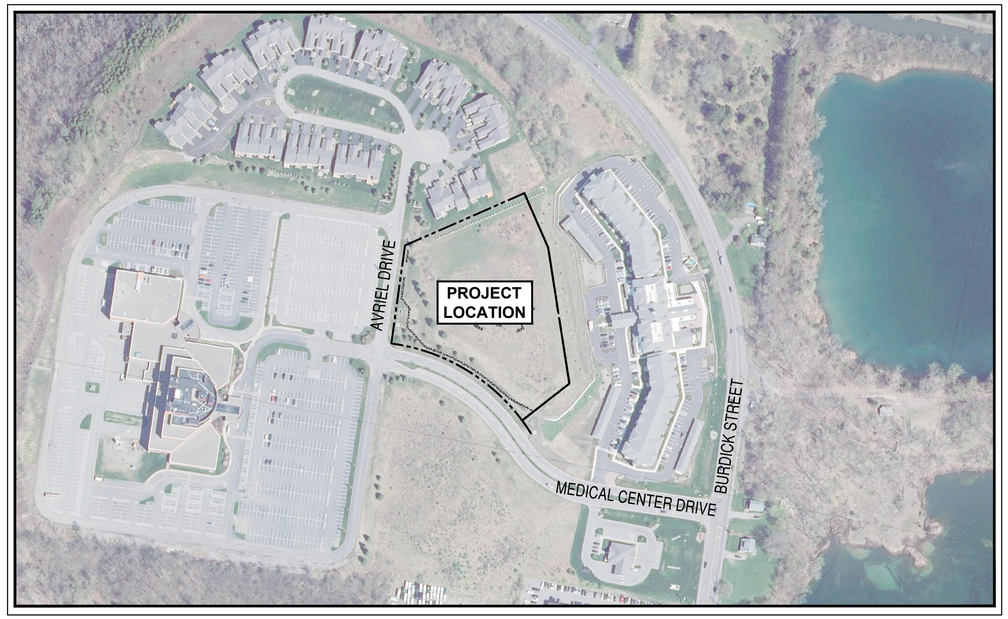
TOWN OF MANLIUS
ONONDAGA COUNTY
STATE OF NEW YORK



SITE LOCATION MAP
NOT TO SCALE



PROJECT LOCATION MAP
NOT TO SCALE



AERIAL MAP
1"=200'

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:

A&E & SNY CENTER

SUITE 38
5781 BRIDGE STREET
EAST SYRACUSE, NY 13057

SHEET INDEX:

TITLE SHEET	C-1
SITE SURVEY (BY OTHERS)	
GENERAL NOTES	C-2
SITE PREPARATION PLAN	C-3
LAYOUT PLAN	C-4
UTILITY PLAN	C-5
GRADING PLAN	C-6
EROSION CONTROL PLAN	C-7
LIGHTING AND LANDSCAPING PLAN	C-8
DETAILS	C-9 THRU 15

NO.	REVISION/ISSUE	DATE
C	PLANNING BOARD SUBMITTAL	11/15/22
B	PLANNING BOARD SUBMITTAL	10/13/22
A	PLANNING BOARD SUBMITTAL	08/25/22

SHEET
C-1

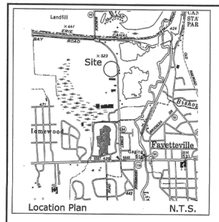
PROJECT NO.
21-2022

DATE
25 AUG 2022

XREFS: NONE

PROJECT NUMBER: 14.4342

CAD DWG. FILE NAME: Subdivision Plat.dwg



MAP NOTES

1.) NORTH ORIENTATION IS BASED ON FILED MAP 8583.

2.) ELEVATIONS BASED ON NAVD 1988 DATUM.

3.) UNDERGROUND FACILITIES, STRUCTURES AND UTILITIES HAVE BEEN PLOTTED FROM DATA OBTAINED BY FIELD SURVEY, PREVIOUS MAPS AND RECORDS, (AND PARCELS 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.

4.) FIELD WORK PERFORMED ON JUNE 17-18, 2014. LAST FIELD UPDATE - MAY 2, 2017.

5.) PARCEL IS WITHIN ZONE X (AREA OF OUTSIDE OF 500 YEAR FLOOD) AS SHOWN ON FEDERAL EMERGENCY MANAGEMENT AGENCY (F.E.M.A.) FLOOD INSURANCE MAP FOR TOWN OF MANLIUS COMMUNITY PANEL #3603840310D, MAP REVISED DATE OF FEBRUARY 5, 1992.

6.) THIS SURVEY DOES NOT CONSTITUTE A TITLE SEARCH BY C. T. MALE ASSOCIATES, D.P.C., TO DETERMINE OWNERSHIP OR EASEMENTS OF RECORD. FOR ALL INFORMATION REGARDING EASEMENTS, RIGHTS OF WAY, AND TITLE REFERENCE IS MADE TO TITLE COMMITMENT PROVIDED BY CLIENT (FIRM NOT LISTED): TITLE COMMITMENT No. DA-2014, EFFECTIVE DATE OF AUGUST 04, 2015. THIS SURVEY IS SUBJECT TO ALL EASEMENTS, COVENANTS, AND RESTRICTIONS AS RECITED THEREIN AND IS FURTHER SUBJECT TO ANY FINDINGS OR TRANSACTION REVEALED OR CONDUCTED FROM THE DATE OF SAID CONTINUATION TO THE PRESENT.

7.) SURVEYED PARCEL MAY BE SUBJECT TO THE FOLLOWING EASEMENTS/RIGHT-OF-WAYS:
   1. NEW YORK TELEPHONE COMPANY POLE LINE R.O.W. (WITH RIGHT TO TRIM AT LEAST 4'), BOOK 430/PAGE 535.
   2. N.M.P.C. GAS LINE EASEMENT (NO BUILDINGS WITHIN 5'), BOOK 2446/PAGE 10.

8.) THERE ARE NO STRIPED PARKING SPACES ON THE SUBJECT PARCEL.

9.) SITE HAS NO OBSERVABLE EVIDENCE OF RECENT EARTH MOVING WORK, BUILDING CONSTRUCTION OR ADDITIONS.

10.) NO EVIDENCE OF SITE USE AS A SOLID WASTE DUMP, SUMP OR SANITARY LANDFILL WAS NOTED.

11.) NO PROPOSED CHANGES TO STREET RIGHT OF WAY OR RECENT REPAIRS TO STREET WERE FOUND.

12.) NORTH BURDICK STREET IS A PUBLIC HIGHWAY ESTABLISHED BY PRESCRIPTIVE EASEMENT RIGHTS AND FEE APPROPRIATION. ACCESS GRANTED TO MEDICAL CENTER DRIVE AND AVRIEL DRIVE BY D.B. 4216, Pg. 102.

13.) THIS PARCEL IS ZONED FOR RA (RESTRICTED AGRICULTURAL DISTRICT) USE WITHIN THE TOWN OF MANLIUS.

Notes to Title Commitment No. DA-2014

5. Covenants, conditions, restrictions, easements, agreements of record, etc.:

(i) Reciprocal Easement (and Related Covenants and Restrictions) Agreement recorded in Book 4216 Page 102. (Affects Entire property)

(ii) Water Easements(s) recorded in Book 4154 Page 17 and Book 2512 Page 933. (Plotted - Book 4154, Pg 17 Parcels 4-6 tie off property and do not affect parcel)

(iii) Grant of Easement recorded in Book 4148 Page 315 and Book 4140 Page 35. (Plotted)

(iv) Street Widening by deeds to the County of Onondaga recorded in Book 2538 Page 702 and Book 2538 Page 700. (Plotted)

(v) Street widening recorded in Book 2531 Page 238 and Book 2831 Page 235. (Plotted -refer to same parcels inquired by County of Onondaga in exception 5iv above as options)

(vi) Gas Easement recorded in Book 2446 Page 10. (Plotted)

(vii) Notice of Appropriation recorded in Book 5275 Page 634. (Plotted)

(viii) Supplemental Appropriation recorded in Book 5289 Page 111. (Plotted)

MAP REFERENCES

1.) A MAP ENTITLED, "BOUNDARY SURVEY, DELLAS PROPERTY, PART OF MILITARY LOT 64, TOWN OF MANLIUS, ONONDAGA COUNTY, N.Y." PREPARED BY SEAR-BROWN ASSOCIATES, P.C...

2.) 1974 COUNTY OF ONONDAGA HIGHWAY APPROPRIATION MAPS AS SHOWN.

3.) FINAL PLAN NORTHEAST MEDICAL CENTER SUBDIVISION - FILED MAP No. 8583.

4.) NEW YORK STATE ACQUISITION MAP No. 17 - N. BURDICK ST. C.R. 94

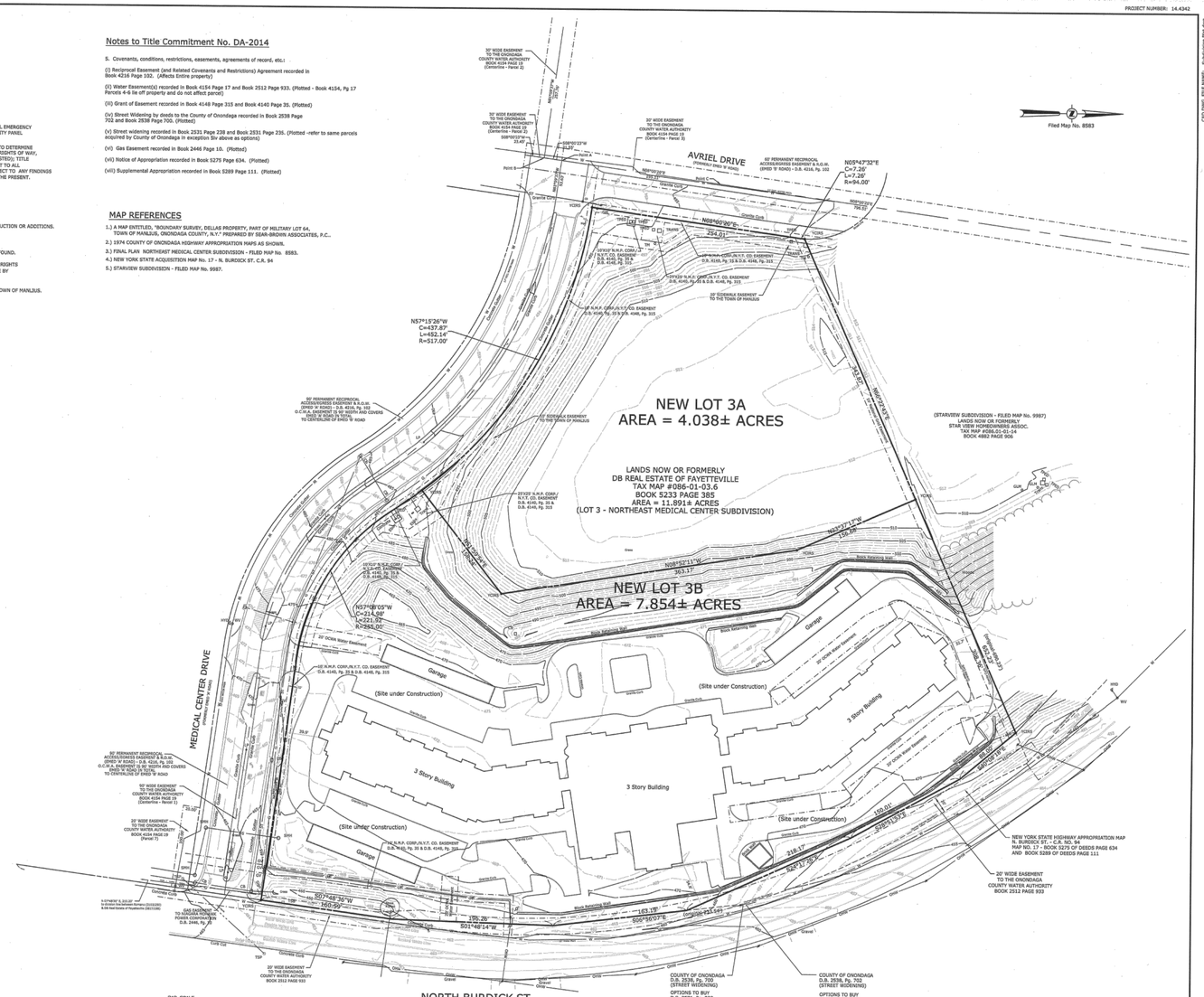
5.) STARVIEW SUBDIVISION - FILED MAP No. 9987.

Zoning Information

DISTRICT	RA - RESTRICTED AGRICULTURAL DISTRICT
ITEM	REQUIRED
MINIMUM SETBACKS: FRONT	40 ft.
SIDE	20 ft.
REAR	40 ft.
MINIMUM FRONTAGE: WITH PUBLIC SEWER / WITHOUT PUBLIC SEWER	150 ft. / 200 ft.
MINIMUM LOT SIZE: WITH PUBLIC SEWER / WITHOUT PUBLIC SEWER	40,000 sq.ft. / 100,000 sq.ft.
PARKING:	VARIES BY USE (SITE IS VACANT)

Legend of Symbols & Abbreviations

GUY WIRE
SIGN
HYDRANT
WATER VALVE
TELEPHONE PEDESTAL
CATCH BASIN
SANITARY MANHOLE
UTILITY POLE
GAS VALVE
GAS LINE MARKER
LIGHT POLE
TRAFFIC SIGNAL POLE
TRAFFIC SIGNAL BOX
WATER LINE
GAS LINE
STORM SEWER LINE
SANITARY SEWER LINE
OVERHEAD WIRES
TOP OF CURB
BOTTOM OF CURB
POLYVINYL CHLORIDE PIPE
REINFORCED CONCRETE PIPE
CORRUGATED PLASTIC PIPE
YELLOW CAPPED 5N2N ROD SET


Filed Map No. 8583
AVRIEL DRIVE
(formerly 200' 'A' ROAD)
60' PERMANENT RECIPROCAL ACCESS/SERVICE EASEMENT & N.G.H.W. (EMED 'B' ROAD) - D.B. 4216, Pg. 102
N05°47'32"E C=7.26' L=7.26' R=94.00'
N89°46'00"E 294.01'
N57°15'26"W C=437.87' L=452.14' R=517.00'
NEW LOT 3A
AREA = 4.038± ACRES
LANDS NOW OR FORMERLY
DB REAL ESTATE OF FAYETTEVILLE
TAX MAP #086-01-03.6
BOOK 5233 PAGE 385
AREA = 11.891± ACRES
(LOT 3 - NORTHEAST MEDICAL CENTER SUBDIVISION)
(STARVIEW SUBDIVISION - FILED MAP No. 9987)
LANDS NOW OR FORMERLY
STAR VIEW HOMEOWNERS ASSOC.
TAX MAP #086.01-01-14
BOOK 4882 PAGE 906
N03°27'17"W 156.38'
N08°52'11"W 363.17'
NEW LOT 3B
AREA = 7.854± ACRES
N57°08'05"W C=214.00' L=221.97' R=204.00'
MEDICAL CENTER DRIVE
(formerly known as Burdick Drive)
(Site under Construction)
3 Story Building
Garage
Brick Retaining Wall
Concrete Curb
Gravel
Grass
Trees
Shrubs
Fence
Guide Rail
Utility Pole
Guy Wire
Sign
Hydrant
Water Valve
Gas Valve
Gas Line Marker
Light Pole
Traffic Signal Pole
Traffic Signal Box
Catch Basin
Sanitary Manhole
Storm Sewer Line
Sanitary Sewer Line
Overhead Wires
Top of Curb
Bottom of Curb
Polyvinyl Chloride Pipe
Reinforced Concrete Pipe
Corrugated Plastic Pipe
Yellow Capped 5N2N Rod Set
S07°48'30"W 160.99'
S01°48'14"W 170.26'
S00°16'07"E 150.11'
S89°51'23"E 218.17'
S84°17'26"E 150.11'
N89°46'00"E 150.11'
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GENERAL NOTES

1. PROPERTY LINE INFORMATION TAKEN FROM A SURVEY BY C.T. MALE ASSOCIATES

2. 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.

3. 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.

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

5. 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.

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

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

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

9. 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.

10. 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.

11. 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.

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

13. 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.

14. 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.

15. 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.

16. 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.

17. 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.

18. 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.

19. 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.

20. MAINTAIN FLOW FOR ALL EXISTING UTILITIES.

21. 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.

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

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

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

25. 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.

GRADING NOTES

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.

UTILITY NOTES

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. THESE PLANS SHOW PUBLIC UTILITY CONNECTION ONLY. PRIVATE UTILITY SERVICE FINAL LOCATION, SIZE AND DEPTH ARE SUBJECT TO THE APPROVAL OF THE UTILITY COMPANY.

4. EXTERIOR BUILDING LIGHTING LUMINARES 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. 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.

7. 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.

8. ELECTRIC AND GAS
   ALL ELECTRIC AND GAS INSTALLATION SHALL BE COORDINATED WITH NATIONAL GRID. ALL SITE ELECTRIC IS TO BE PROVIDED BY THE BUILDING ELECTRICAL ENGINNEER. THESE DRAWINGS DO NOT SHOW CIRCUITING OR SITE WIRING. REFER TO SITE ELECTRICAL PLANS MY ELECTRICAL ENGINEER.

LEGEND: PROPOSED
(SEE EXISTING CONDITION SURVEY FOR LEGEND OF EXISTING ELEMENTS)

----- PROPOSED BUILDING

----- PROPERTY LINE

----- SETBACK LINE

GC ----- GRANITE CURB

----- PROPOSED PAVEMENT

----- PROPOSED CONCRETE SIDEWALK/PAD/APRON

----- PROPOSED CATCH BASIN

----- PROPOSED SANITARY SEWER MANHOLE

SAN ----- PROPOSED SANITARY PIPE

ST ----- PROPOSED STORM PIPE

W ----- PROPOSED WATER PIPE

G ----- PROPOSED GAS PIPE

UGE ----- PROPOSED UNDERGROUND ELECTRIC

----- PROPOSED GUARDRAIL/FENCE

----- PROPOSED DESIGNATED ACCESSIBLE PARKING SPACE

----- PROPOSED NO PARKING

418 ----- PROPOSED CONTOUR/LABEL

----- PROPOSED RIPRAP

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:
GENERAL NOTES

NO.	REVISION/ISSUE	DATE
C	PLANNING BOARD SUBMITTAL	11/15/22
B	PLANNING BOARD SUBMITTAL	10/13/22
A	PLANNING BOARD SUBMITTAL	08/25/22

PREPARED BY:
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FOR PERMITTING PURPOSES ONLY
NOT FOR CONSTRUCTION

PLAN SEAL BY:
RODNEY C. IKES, JR., P.E.
NYS REGISTRATION # 077842

PROJECT NO. 21-2022
DATE 25 AUG 2022
SCALE AS NOTED

SHEET **C-2**

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NOT FOR CONSTRUCTION

PLAN SEAL BY:
RODNEY C. IVES, JR., P.E.
NYS REGISTRATION # 077842

SHEET
C-3

PROJECT NO.
21-2022

DATE
25 AUG 2022

SCALE
1"=30'

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NO.	REVISION/ISSUE	DATE
C	PLANNING BOARD SUBMITTAL	11/15/22
B	PLANNING BOARD SUBMITTAL	10/13/22
A	PLANNING BOARD SUBMITTAL	08/25/22

SHEET TITLE:
SITE PREPRATION 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



SITE CRITERIA CHECKLIST

PROJECT SITE INFORMATION			
ADDRESS	MEDICAL CENTER DRIVE		
TAX MAP ID NO.	086.-01-03.9		
BOUNDARY SURVEY	PROPERTY LINE INFORMATION TAKEN FROM SUBDIVISION MAP PREPARED BY CT MALE ASSOCIATES, PC DATED 05/10/2017		
TOTAL SITE AREA	4.038 ACRES		
LAND USE	EXISTING: VACANT PROPOSED: PROFESSIONAL/MEDICAL SERVICES		
	REQUIRED	PROVIDED	GRANTED RELIEF
ZONING INFORMATION			
ZONING DISTRICT	CURRENT: RESTRICTED AGRICULTURAL (RA) PROPOSED: NEIGHBORHOOD SHOPPING (NS)		
IMPERVIOUS LOT COVERAGE	75%	56.0% (2.26 ACRES)	
BUILDING COVERAGE	10,000 SF/ACRE	39,995 SF (9,905 SF/ACRE x 4.038 ACRES)	
FRONT YARD SETBACK	50 FT	40 FT (MEDICAL CENTER DR) 88.7 FT (AVRIEL DR)	10 FT (MEDICAL CENTER DR) NA (AVRIEL DR)
REAR YARD SETBACK	50 FT	40.2 FT (TOWN CENTER RETIREMENT) 117.6 FT (STAR VIEW)	25 FT (TOWN CENTER RETIREMENT) NA (STAR VIEW)
SIDE YARD SETBACK	50 FT	CORNER LOT; NON-FRONT YARDS CONSIDERED REAR YARDS	
LANDSCAPE BUFFER A MINIMUM OF 30 FEET IMMEDIATELY ADJOINING PROPERTY ZONED RESIDENTIAL OR RESTRICTED AGRICULTURAL SHALL CONSIST OF A LANDSCAPED BUFFER, APPROPRIATE TO THE CIRCUMSTANCES, AS APPROVED BY THE PLANNING BOARD.			
FRONT YARD BUFFER	30 FT	40 FT (MEDICAL CENTER DR) 88.7 FT (AVRIEL DR)	NA (MEDICAL CENTER DR) NA (AVRIEL DR)
REAR YARD BUFFER	30 FT	25.5 FT (TOWN CENTER RETIREMENT) 30 FT (STAR VIEW)	5 FT (TOWN CENTER RETIREMENT) NA
SIDE YARD BUFFER	30 FT	CORNER LOT; NON-FRONT YARDS CONSIDERED REAR YARDS	
PARKING DIMENSIONS	10'x20'	10'x20'	
PARKING AISLE WIDTH	24 FT	24 FT	
PARKING SPACES			
MEDICAL OFFICE SPACE 32,685 SF	1 SPACE/300 SF 109 SPACES		
PERSONAL SERVICES SPACE 3,995 SF	1 SPACE/200 SF 20 SPACES		
MEDICAL OFFICE SPACE 3,315 SF	1 SPACE/300 SF 11 SPACES		
	TOTAL: 140 SPACES	140 TOTAL SPACES PROVIDED	
SCREENING ALL SERVICE AREAS WITHIN A NEIGHBORHOOD SHOPPING DISTRICT, SUCH AS THOSE FOR THE LOADING AND UNLOADING OF MERCHANDISE, THE DELIVERY OF FOOD AND EQUIPMENT AND THE COLLECTION AND PICKUP OF GARBAGE, SHALL BE LOCATED A MINIMUM OF 100 FEET FROM ANY ADJOINING PROPERTY LINE OR PROPERTY ZONED RESIDENTIAL OR RESTRICTED AGRICULTURAL. ALL SERVICE AREAS SHALL BE SCREENED FROM SIGHT BY APPROPRIATE FENCING, AND SUCH ADDITIONAL STEPS SHALL BE TAKEN AS ARE NECESSARY TO MINIMIZE THE IMPACT OF NOISE AND LIGHT ON ADJOINING RESIDENTIAL PROPERTIES.			

LAYOUT PLAN KEYED NOTES:

1. BUILDING MAIN ENTRANCE
2. BUILDING SECONDARY ENTRANCE
3. NOT USED
4. SEGMENTAL BLOCK RETAINING WALL
5. STORMWATER INFILTRATION BASIN
6. ADA ACCESSIBLE PARKING
7. DUMPSTER ENCLOSURE
8. LANDSCAPED ISLAND
9. CONCRETE CURB (6" WIDE) AND SIDEWALK (5,5' WIDE)

GRAPHIC SCALE
0 30' 60'
(IN FEET)
1 inch = 30 ft

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:
LAYOUT PLAN

NO.	REVISION/ISSUE	DATE
A	PLANNING BOARD SUBMITTAL	08/25/22
B	PLANNING BOARD SUBMITTAL	10/13/22
C	PLANNING BOARD SUBMITTAL	11/15/22

PREPARED BY:

NAPIERALA CONSULTING
PROFESSIONAL ENGINEER, P.C.
SITE • DESIGN • ENGINEERING
110 FAYETTE STREET
MANLIUS, New York 13104
email MNAP@NAPCON.COM
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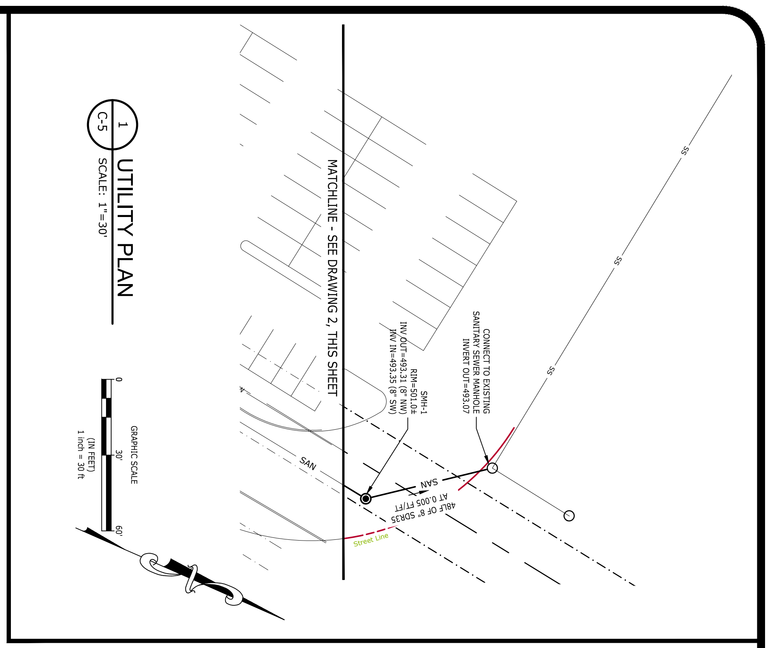
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PLAN SEAL BY:
RODNEY C. INES, JR., P.E.
NYS REGISTRATION # 077842

PROJECT NO. 21-2022
DATE 25 AUG 2022
SCALE 1"=30'

SHEET **C-4**

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2
C-5
UTILITY PLAN
SCALE: 1"=30'

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RODNEY C. IVES, JR., P.E.
NYS REGISTRATION # 077842

SHEET
C-5

PROJECT NO.
21-2022

DATE
25 AUG 2022

SCALE
1"=30'

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NO.	REVISION/ISSUE	DATE
C	PLANNING BOARD SUBMITTAL	11/15/22
B	PLANNING BOARD SUBMITTAL	10/13/22
A	PLANNING BOARD SUBMITTAL	08/25/22

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



GRADING PLAN LEGEND

- EXISTING CONTOUR GRADES
- PROPOSED CONTOUR GRADES
- PROPOSED FINISHED SPOT ELEVATION
- PROPOSED TOP OF CURB AND BOTTOM OF CURB ELEVATIONS
- MATCH/MEET EXISTING ELEVATION

GRAPHIC SCALE
1 INCH = 30 ft. (IN FEET)
0 30' 60'

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SHEET C-6

PROJECT NO. 21-2022

DATE 25 AUG 2022

SCALE 1"=30'

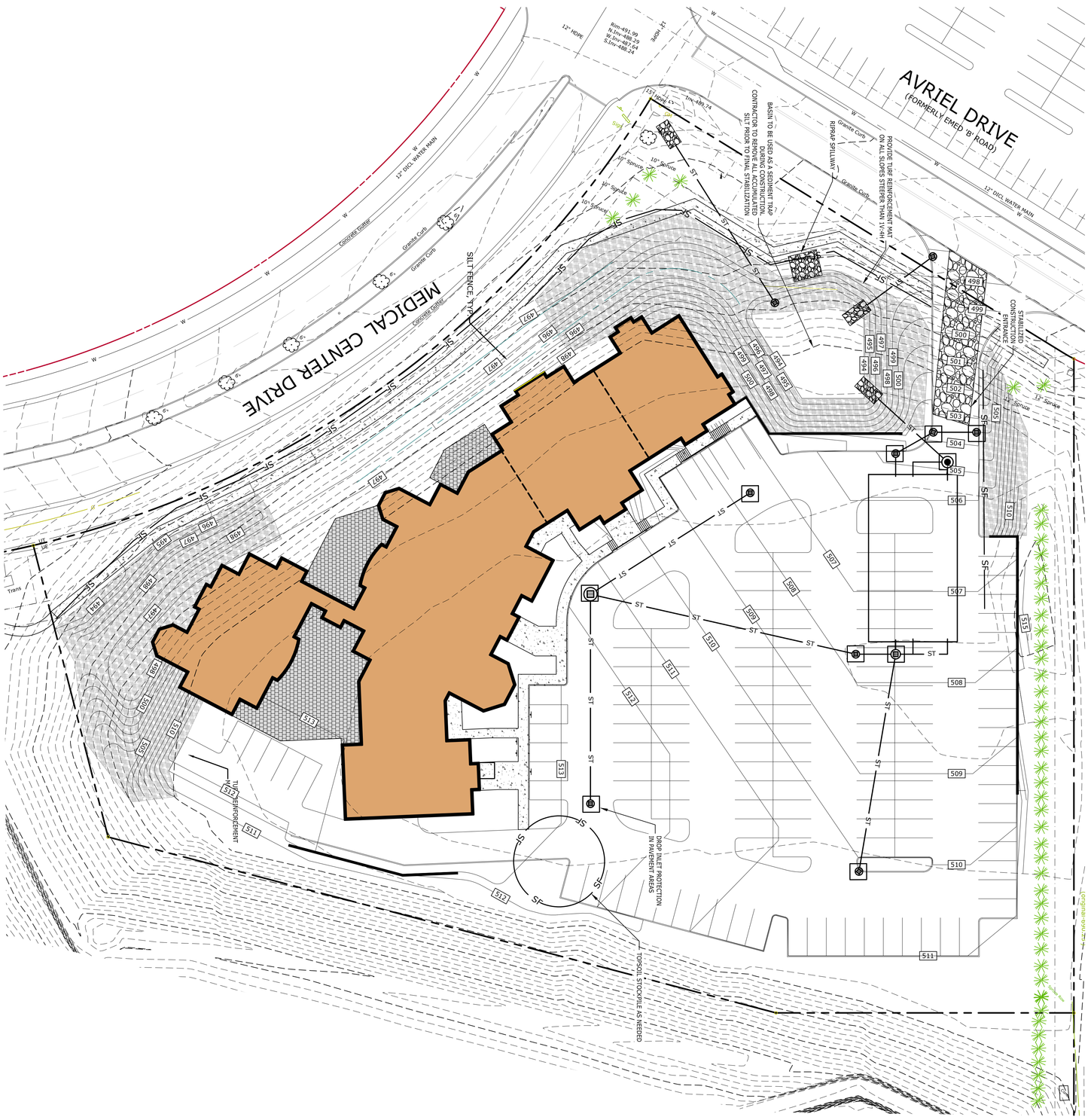
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B	PLANNING BOARD SUBMITTAL	10/13/22
A	PLANNING BOARD SUBMITTAL	08/25/22

SHEET TITLE:
GRADING PLAN

PROJECT TITLE:
A&E & SNY CENTER
MEDICAL CENTER DRIVE
TOWN OF MANLIUS ONONDAGA COUNTY, NEW YORK

PREPARED FOR:
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EAST SYRACUSE, NY 13057



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PLAN SEAL BY:
RODNEY C. IVES, JR., P.E.
NYS REGISTRATION # 077842

GRAPHIC SCALE
0
30'
60'
(IN FEET)
1 INCH = 30 ft.

SHEET
C-7

PROJECT NO.
21-2022

DATE
25 AUG 2022

SCALE
1"=30'

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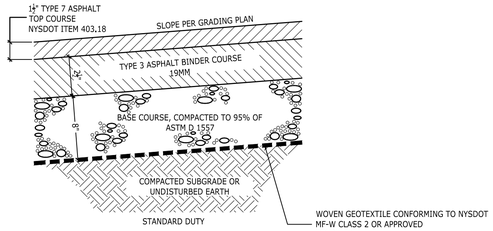
NO.	REVISION/ISSUE	DATE
C	PLANNING BOARD SUBMITTAL	11/15/22
B	PLANNING BOARD SUBMITTAL	10/13/22
A	PLANNING BOARD SUBMITTAL	08/25/22

SHEET TITLE:
EROSION CONTROL 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

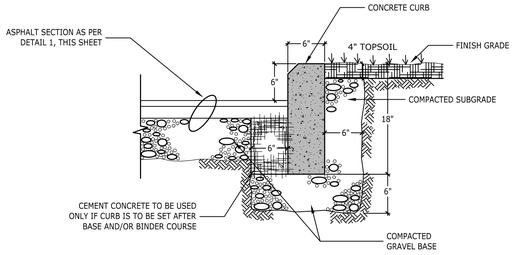
AVRIEL DRIVE
(FORMERLY EMED 'B' ROAD)
MEDICAL CENTER DRIVE
EXISTING TREES TO REMAIN
EXISTING TREES TO REMAIN
EXISTING TREES TO REMAIN
STORMWATER AREA
GRASS AREA
GRASS AREA
GRASS AREA
GRASS AREA
GRASS AREA
PATIO
PATIO
COURTYARD
PATIO
Granite Curb
Granite Curb
Granite Curb



1 C-9 STANDARD PAVEMENT SECTION

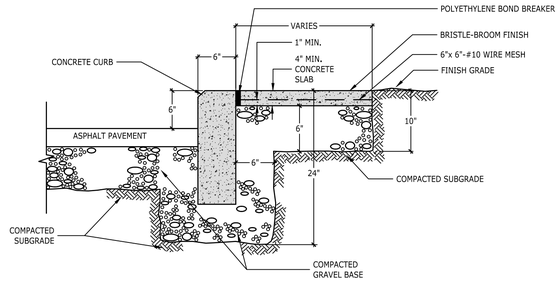
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ALL PAVEMENT SECTIONS TO BE CONFIRMED WITH THE GEOTECHNICAL REPORT



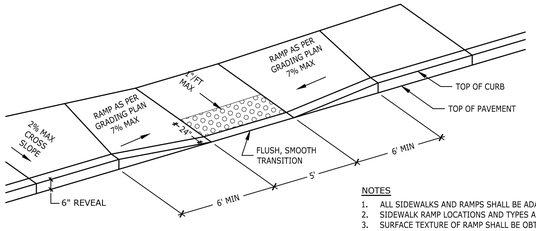
2 C-9 CONCRETE CURB

SCALE: NTS



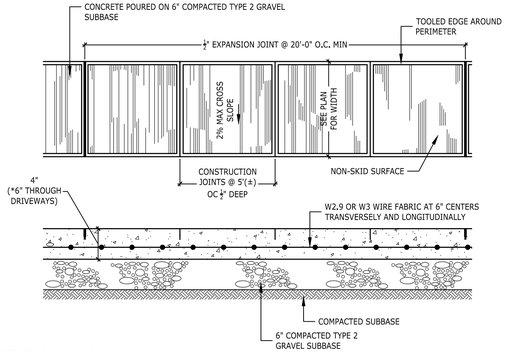
3 C-9 INTEGRAL CONCRETE CURB & SIDEWALK

SCALE: NTS



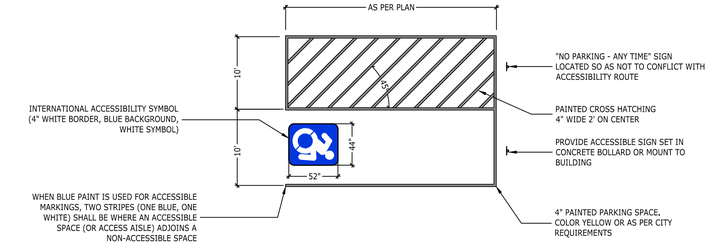
NOTES

1. ALL SIDEWALKS AND RAMPS SHALL BE ADA AND PROWAG COMPLIANT
2. SIDEWALK RAMP LOCATIONS AND TYPES ARE TO BE AS SHOWN ON THE PLANS.
3. SURFACE TEXTURE OF RAMP SHALL BE OBTAINED BY A COURSE BROOMING, TRANSVERSE TO THE SLOPE OF THE RAMP.
4. NORMAL PAVEMENT EDGE PROFILE IS TO BE MAINTAINED THROUGH THE AREA OF THE RAMP, LONG
5. TRANSITION CURB FOR RAMPS SHALL BE 6-0"
6. MAXIMUM DESIRABLE RAMP SLOPE 1:12.
7. PROVIDE TOOLED TACTILE GROVES ON ALL SURFACES AS INDICATED
8. INSTALL ADA COMPLIANT DETECTABLE WARNING UNITS 2' BY WIDTH OF THE DROP CURB OPENING



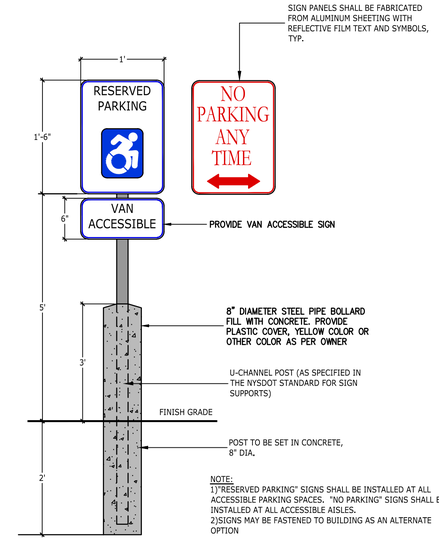
4 C-9 SIDEWALK

SCALE: NTS



5 C-9 ACCESSIBLE PARKING PAVEMENT MARKING DETAIL

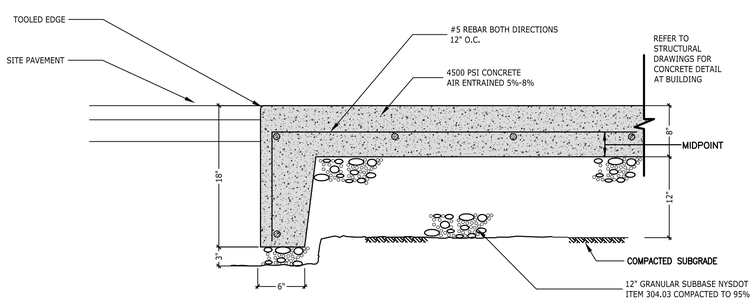
SCALE: NTS



NOTE:
1)"RESERVED PARKING" SIGNS SHALL BE INSTALLED AT ALL ACCESSIBLE PARKING SPACES. "NO PARKING" SIGNS SHALL BE INSTALLED AT ALL ACCESSIBLE AISLES.
2)SIGNS MAY BE FASTENED TO BUILDING AS AN ALTERNATE OPTION

6 C-9 ACCESSIBLE PARKING SIGNS

SCALE: NTS



7 C-9 CONCRETE PAD

SCALE: NTS

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:
DETAILS

NO.	REVISION/ISSUE	DATE
A	PLANNING BOARD SUBMITTAL	08/25/22
B	PLANNING BOARD SUBMITTAL	10/13/22
C	PLANNING BOARD SUBMITTAL	11/15/22

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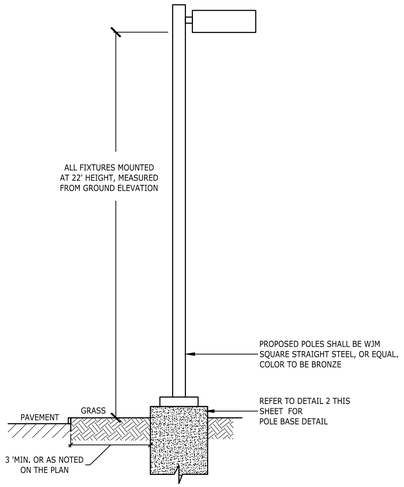
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PLAN SEAL BY:
RODNEY C. WES, JR., P.E.
NYS REGISTRATION # 077942

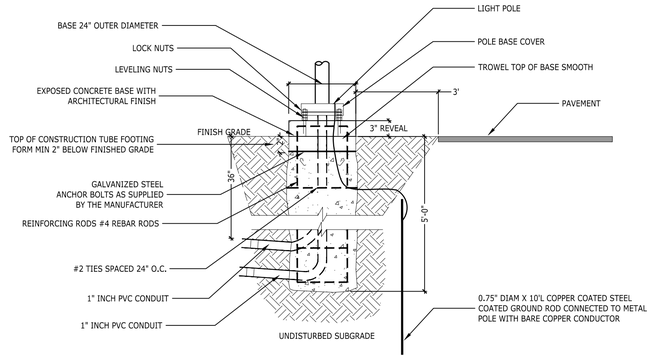
PROJECT NO.	DATE	SCALE
21-2022	25 AUG 2022	1"=30'

SHEET
C-9

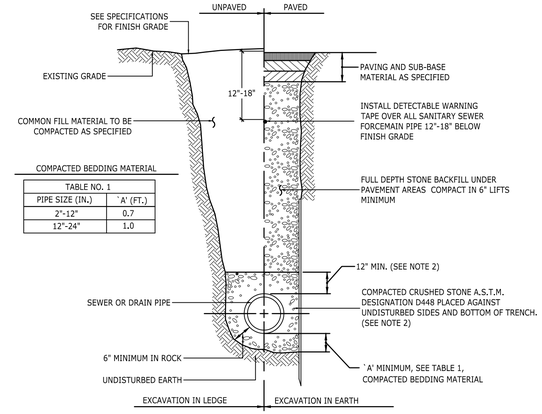
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1 C-10 LIGHT POLE ELEVATION
SCALE: NTS



2 C-10 LIGHT POLE BASE
SCALE: NTS

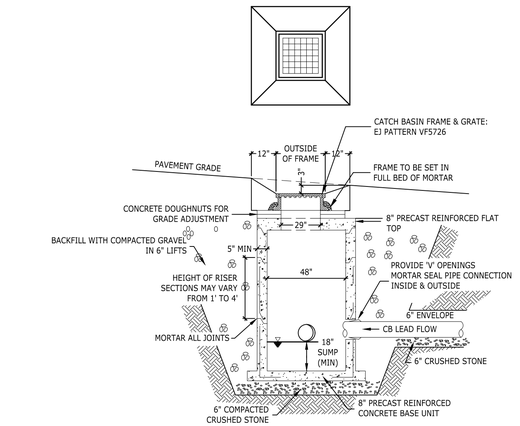


COMPACTED BEDDING MATERIAL

TABLE NO. 1	
PIPE SIZE (IN.)	'A' (FT.)
2"-12"	0.7
12"-24"	1.0

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.
2. 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 3. TRENCHES LOCATED ON THE ROAD SHOULDER SHALL BE TREATED THE SAME AS EXCEPT FOR PAVING.
4. PROVIDE AT LEAST ONE IMPERVIOUS DAM IN GRAVEL BEDDING BETWEEN EACH MANHOLE WHERE DIRECTED, OR EVERY 300 FEET, WHICHEVER IS LESS. SEE DETAIL.
5. BEDDING MATERIAL FOR PVC PIPE SHALL MEET THE REQUIREMENTS OF ASTM D2321 CLASS I OR CLASS II EMBEDMENT MATERIALS.

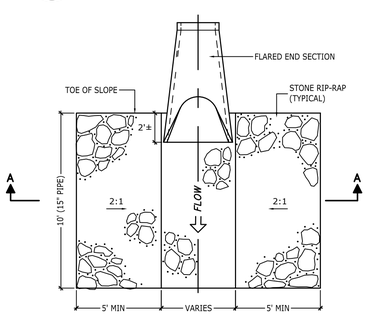
3 C-10 TYPICAL SEWER AND DRAIN TRENCH
SCALE: NTS



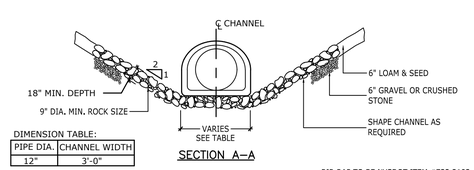
DRAINAGE STRUCTURE GENERAL NOTES

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.
   SIDES: #3 BARS SPACED AT 8" IN BOTH HORIZONTAL AND VERTICAL.
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.

4 C–10 CATCH BASIN
SCALE: NTS



PLAN VIEW



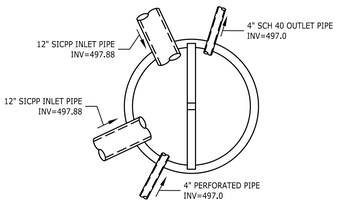
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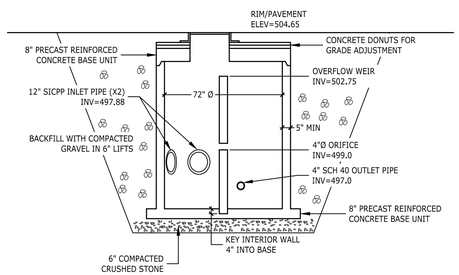
PIPE DIA.	CHANNEL WIDTH
12"	3'-0"

SECTION A–A

RIP-RAP TO BE NYSDOT ITEM #733.2102

5 C-10 STORM PIPE END SECTION
SCALE: NTS





6 C-10 OUTLET CONTROL STRUCTURE CB-9
SCALE: NTS

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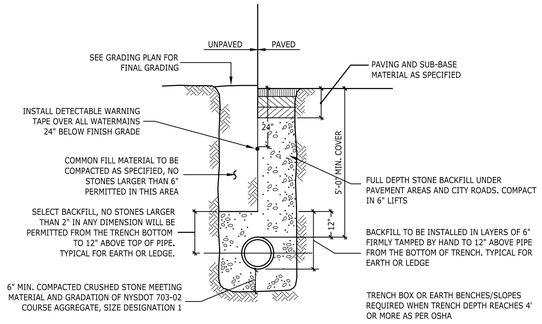
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NYS REGISTRATION # 077842

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DATE 25 AUG 2022
SCALE 1"=30'

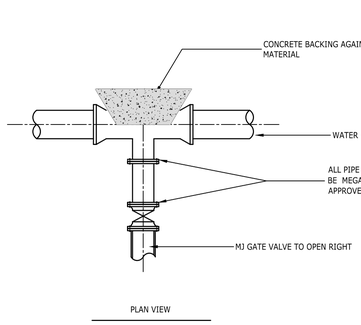
SHEET C-10

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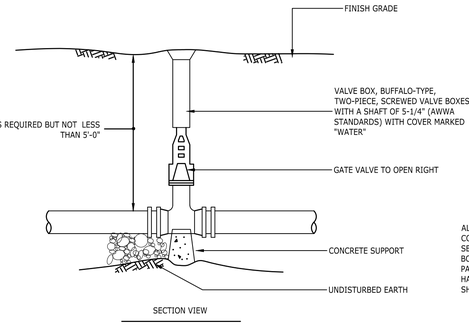


1 C-11 WATERLINE TRENCH - DUCTILE IRON

SCALE: NTS



PLAN VIEW

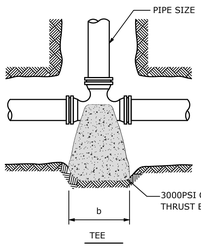


SECTION VIEW

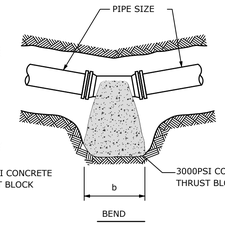
ALL WATER MAIN VALVES SHALL BE EITHER GATE VALVES CONFORMING TO AWWA SPECIFICATION C509 OR RESILIENT SEATED GATE VALVES. GATE VALVES SHALL HAVE A CAST-IRON BODY AND SHALL BE A FULLY BRONZE MOUNTED, DOUBLE DISK, PARALLEL SEAT TYPE WITH O-RING PACKING. GATE VALVES SHALL HAVE A NONRISING STEM WITH A TWO-INCH OPERATING NUT AND SHALL OPEN LEFT (COUNTERCLOCKWISE).

2 C-11 WATER SERVICE VALVE

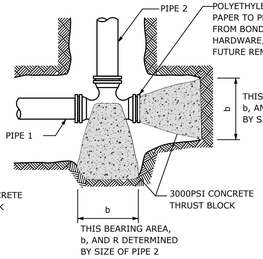
SCALE: NTS



TEE



BEND



TEE WITH PLUG

NOTES:

1. CONCRETE NOT TO OVERLAP ANY JOINT.
2. CONCRETE TO BE PLACED SO AS NOT TO INTERFERE WITH REMOVING OR INSTALLING ANY OF THE JOINTING HARDWARE.
3. FOR REDUCERS USE MECHANICAL JOINT FITTINGS WITH RETAINER GLANDS.

*FACTOR OF SAFETY=1.5
SOIL BEARING OF 3,000 PSF
225 PSI DESIGN PRESSURE

NOTES:

1. VALUES FOR TEE APPLY TO TEES, END PLUGS, CAPS, AND TAPPING SLEEVES.
2. REQUIRED BEARING AREAS ARE DUE TO THRUSTS CAUSED BY 150PSI WORKING PRESSURE PLUS 50%(75 PSI) SURGE ALLOWANCE RESULTING IN 225 PSI TOTAL INTERNAL PRESSURE.
3. REQUIRED BEARING AREAS ARE BASED ON ALLOWABLE SOIL BEARING CAPACITY OF 3,000 POUNDS PER SQUARE FOOT. DUE TO OTHER SOIL CONDITIONS ENCOUNTERED, BEARING AREAS MAY BE MODIFIED BY THE ENGINEER.

SOIL	BEARING STRENGTH R_B (LB/SQ FT)
MUCK	0
SOFT CLAY	1,000
SILT	1,500
SANDY SILT	3,000
SAND	4,000
SANDY CLAY	6,000
HARD CLAY	9,000

4. IN MUCK, PEAT, OR RECENTLY PLACED FILL ALL THRUSTS SHALL BE RESISTED BY PILES OR TIE RODS TO SOLID FOUNDATIONS, OR BY REMOVAL OF SUCH UNSTABLE MATERIAL AND REPLACEMENT WITH BALLAST OF SUFFICIENT STABILITY TO RESIST THE THRUSTS, ALL AS REQUIRED BY THE ENGINEER.

FOR DIMENSIONS AND THRUST REACTIONS SEE TABLE THIS SHEET

THRUST REACTIONS-R(LB) PER 100PSI INTERNAL PRESSURE

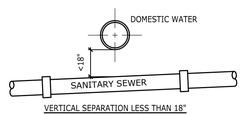
NOM PIPE DIA IN.	DEAD END	90° BEND	45° BEND	22 1/2° BEND	11 1/4° BEND
4	1,810	2,559	1,385	706	355
6	3,739	5,288	2,862	1,459	733
8	6,433	9,097	4,923	2,510	1,261
10	9,677	13,685	7,406	3,776	1,897
12	13,685	19,353	10,474	5,340	2,683

REQUIRED BEARING AREAS -b (SQFT) FOR BEARING BLOCKS*

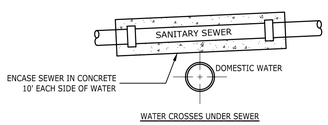
PIPE SIZE (INCHES)	TEE	90° BEND	45° BEND	22 1/2 ° BEND	11 1/4 ° BEND
4	2.0	2.8	1.5	0.8	0.4
6	4.2	5.9	3.2	1.6	0.8
8	7.2	10.1	5.5	2.8	1.4
10	10.9	15.4	8.3	4.2	2.1
12	15.4	21.8	11.8	6.0	3.0

3 C-11 THRUST BLOCK SPECIFICATIONS

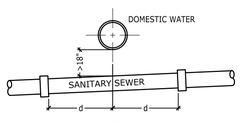
SCALE: NTS



VERTICAL SEPARATION LESS THAN 18"



WATER CROSSES UNDER SEWER



TYPICAL INSTALLATION

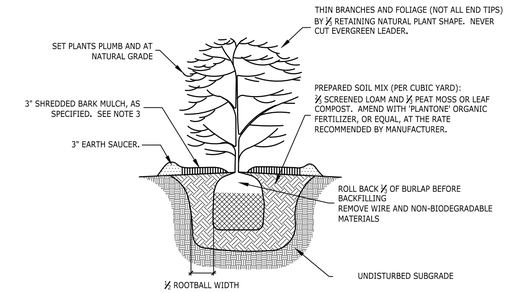
TYPICAL INSTALLATION
1. MINIMUM VERTICAL SEPARATION IS 18" FROM TOP OF PIPE TO BOTTOM OF PIPE.
2. SEWER JOINTS ARE TO SPACED EQUIDISTANT AND AS FAR AS POSSIBLE FROM THE WATER MAIN JOINTS.

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

4 C-11 WATER AND SEWER SEPARATION

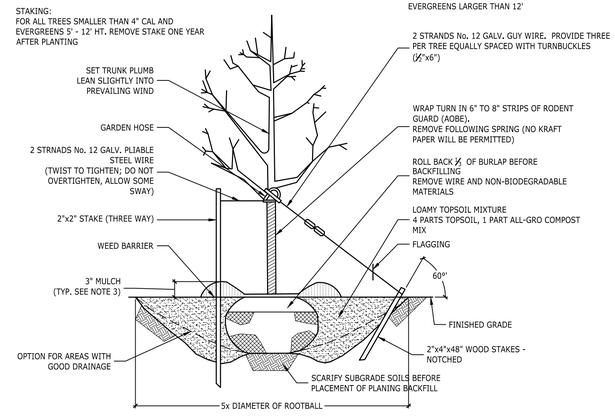
SCALE: NTS



NOTES
1. IF ROOT BALL IS COVERED IN BURLAP, REMOVE TOP ½ OF THE BURLAP.
2. PRUNE BROKEN BRANCHES TO RETAIN NATUAL FORM OF THE SHRUB.
3. MULCH IS TO BE PLACED 6" AWAY FROM TRUNK

5 C-11 SHRUB PLANTING

SCALE: NTS



NOTES
1. USE 8' STAKES - DRIVE 48" BELOW GROUND
2. ROOT COLLAR TO BE SLIGHTLY ABOVE SURROUNDING GRADE.
3. MULCH IS TO BE PLACED 6" AWAY FROM TRUNK.

6 C–11 TREE PLANTING DETAIL

SCALE: NTS

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: DETAILS

NO.	REVISION/ISSUE	DATE
A	PLANNING BOARD SUBMITTAL	08/25/22
B	PLANNING BOARD SUBMITTAL	10/13/22
C	PLANNING BOARD SUBMITTAL	11/15/22

PREPARED BY:
NAPIERALA CONSULTING
PROFESSIONAL ENGINEER, P.C.
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MANLIUS, NEW YORK 13104
email: MNAP@NAPCON.COM
PH: (315) 682-5580 FAX: (315) 682-5544

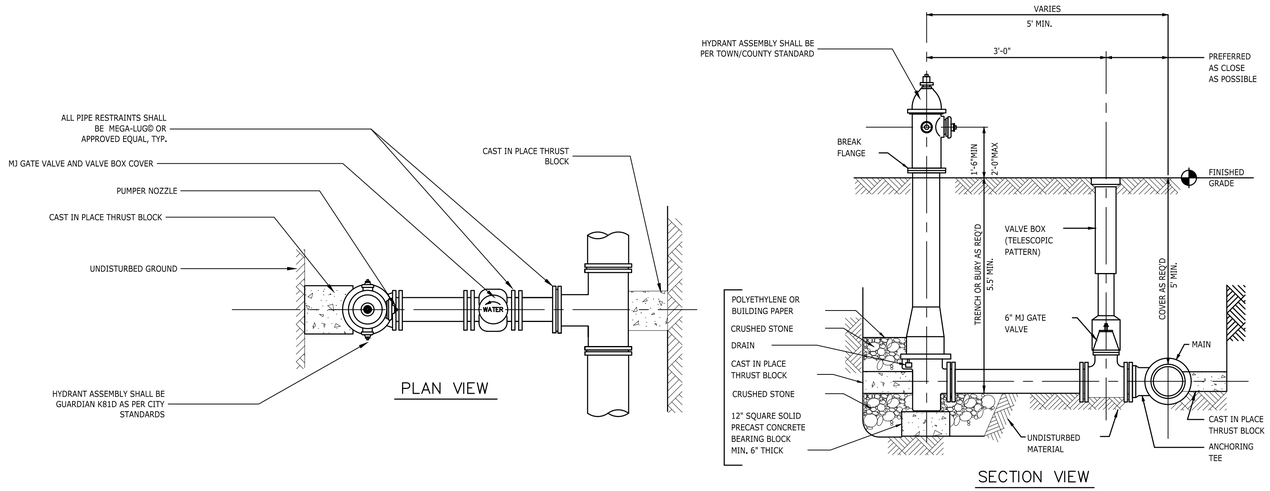
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PLAN SEAL BY:
RODNEY C. IVES, JR., P.E.
NYS REGISTRATION #077842

PROJECT NO. 21-2022
DATE 25 AUG 2022
SCALE 1"=30'

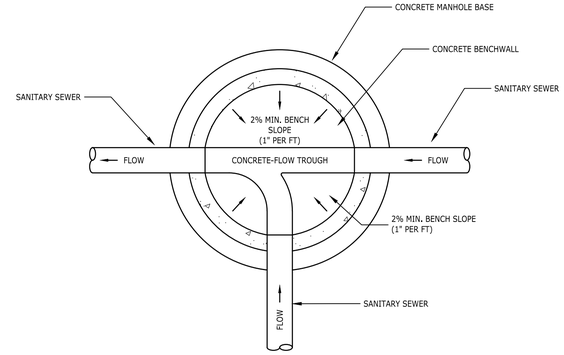
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SHEET C-11



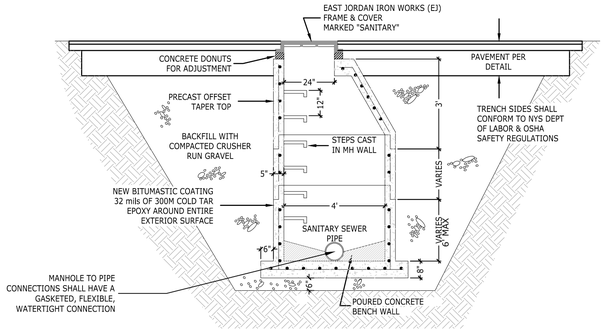
1 C–12 TYPICAL HYDRANT INSTALLATION

SCALE: NTS



2 C–12 SANITARY SEWER MANHOLE BENCH

SCALE: NTS

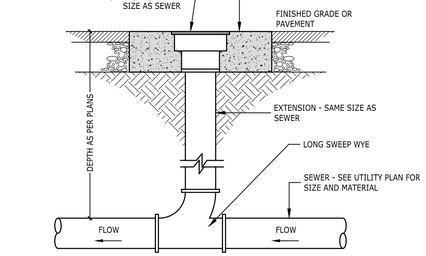


SANITARY MANHOLE GENERAL NOTES

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, ½ 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.

3 C–12 SANITARY MANHOLE STRUCTURE

SCALE: NTS



4 C-12 TYPICAL SEWER CLEANOUT

SCALE: NTS

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

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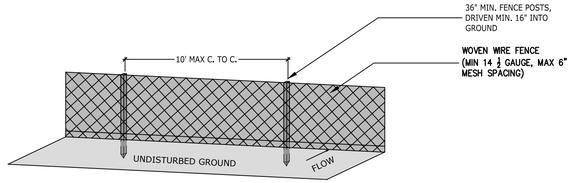
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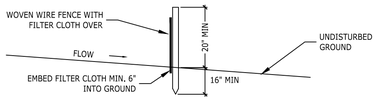
PLAN SEAL BY:
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NYS REGISTRATION # 077842

PROJECT NO. 21-2022
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SHEET C-12

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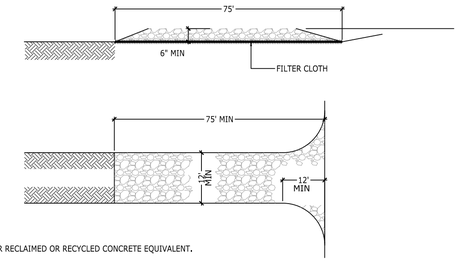




POSTS:	STEEL, EITHER "T" OR "U" TYPE OR 2" HARDWOOD
FENCE:	WOVEN WIRE, 14 1/2 GAUGE, 6" MAX. MESH OPENING
FILTER CLOTH:	FILTER X., MIRAFI 100X, STABILINKA T140N OR APPROVED EQUAL
PREFABRICATED UNIT:	GEOFAB, ENVIROFENCE, OR APPROVED EQUAL

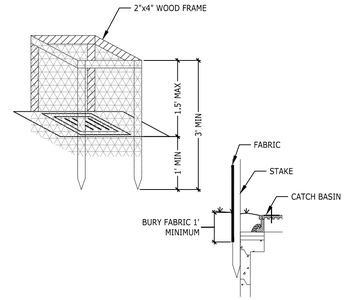
1. WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES.
2. FILTER CLOTH IS TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER, THEY SHALL BE OVERLAPPED BY SIX INCHES AND FOLDED.
4. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.

1 C-13 SILT FENCE
SCALE: NTS



1. STONE SIZE - USE 2" STONE, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH - NOT LESS THAN 75 FEET.
3. THICKNESS - NOT LESS THAN SIX (6) INCHES.
4. 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.
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 STONEAND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
9. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.

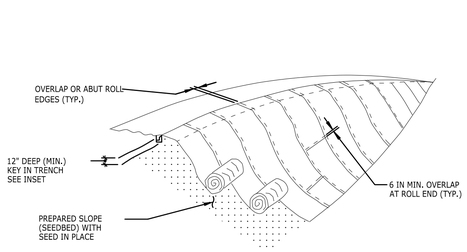
2 C-13 CONSTRUCTION ENTRANCE
SCALE: NTS



CONSTRUCTION SPECIFICATIONS

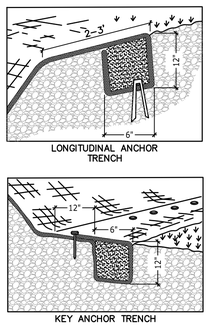
1. FILTER FABRIC SHALL HAVE AN EOS OF 40-85.
2. CUT FABRIC FROM A CONTINUOUS ROLL TO ELIMINATE JOINTS. IF JOINTS ARE NEEDED THEY WILL BE OVERLAPPED TO THE NEXT STAKE.
3. STAKE MATERIALS WILL BE STANDARD 2"x4" WOOD OR EQUIVALENT METAL WITH A MINIMUM LENGTH OF 3 FEET.
4. SPACE STAKES EVENLY AROUND INLET 3 FEET APART AND DRIVE A MINIMUM 18 INCHES DEEP. SPANS GREATER THAN 3 FEET MAY BE BRIDGED WITH THE USE OF WIRE MESH BEHIND THE FILTER FABRIC FOR SUPPORT.
5. FABRIC SHALL BE EMBEDDED 1 FOOT MINIMUM BELOW GROUND AND BACKFILLED. IT SHALL BE SECURELY FASTENED TO THE STAKES AND FRAME.
6. A 2"x4" WOOD FRAME SHALL BE COMPLETED AROUND THE CREST OF THE FABRIC FOR OVER FLOW STABILITY.

3 C–13 INLET PROTECTION - VARIATIONS
SCALE: NTS



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 WAHSOUT 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.

4 C-13 CONCRETE WASHOUT AREA
SCALE: NTS

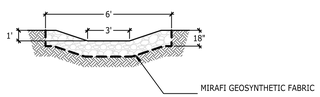


CONSTRUCTION SPECIFICATIONS

1. USE MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLANS.
2. USE TEMPORARY SOIL STABILIZATION MATTING MADE OF DEGRADABLE (LASTS 6 MONTHS MINIMUM) NATURAL OR MAN-MADE FIBERS (MOSTLY ORGANIC), MAT MUST HAVE UNIFORM THICKNESS AND DISTRIBUTION OF FIBERS THROUGHOUT AND BE SMOLDER RESISTANT. CHEMICALS USED IN THE MAT MUST BE NON-LEACHING AND NON-TOXIC TO VEGETATION AND SEED GERMINATION AND NON-INJURIOUS TO THE SKIN. IF PRESENT, NETTING MUST BE EXTRUDED PLASTIC WITH A MAXIMUM MESH OPENING OF 2x2 INCHES AND SUFFICIENTLY BONDED OR SEWN ON 2 INCH CENTERS ALONG LONGITUDINAL AXIS OF THE MATERIAL TO PREVENT SEPARATION OF THE NET FROM THE PARENT MATERIAL.
3. SECURE MATTING USING STEEL STAPLES, WOOD STAKES, OR BIODEGRADABLE EQUIVALENT. STAPLES MUST BE "U" OR "T" SHAPED STEEL WIRE HAVING A MINIMUM GAUGE OF NO. 11 AND NO. 8 RESPECTIVELY. "U" SHAPED STAPLES MUST AVERAGE 1 TO 1½ INCHES WIDE AND BE A MINIMUM OF 6 INCHES LONG. "T" SHAPED STAPLES MUST HAVE A MINIMUM 8 INCH MAIN LEG, A MINIMUM 1 INCH SECONDARY LEG, AND A MINIMUM 4 INCH HEAD. WOOD STAKES MUST BE ROUGH-SAWN HARDWOOD, 12 TO 24 INCHES IN LENGTH, 1x3 INCH IN CROSS SECTION, AND WEDGE SHAPED AT THE BOTTOM.
4. 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.
5. UNROLL MATTING DOWNSLOPE. LAY MAT SMOOTHLY AND FIRMLY UPON THE SEEDED SURFACE. AVOID STRETCHING THE MATTING.
6. 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.
7. KEY IN THE UPSLOPE END OF MAT 6 INCHES (MINIMUM) BY DIGGING A TRENCH, PLACING THE MATTING ROLL END IN THE TRENCH, STAPLING THE MAT IN PLACE, REPLACING THE EXCAVATED MATERIAL, AND TAMPING TO SECURE THE MAT END IN THE KEY.
8. STAPLE/STAKE MAT IN A STAGGERED PATTERN ON 4 FOOT (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS.
9. ESTABLISH AND MAINTAIN VEGETATION SO THAT REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION 8-4 VEGETATIVE STABILIZATION.

5 C–13 SLOPE STABILIZATION
SCALE: NTS

SLOPE STABILIZATION MAT SHALL BE PROPEX LANDLOCK© 450 TURF REINFORCEMENT MAT, OR EQUAL



6 C–13 RIP-RAP SWALE
SCALE: NTS

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:
DETAILS

NO.	REVISION/ISSUE	DATE
A	PLANNING BOARD SUBMITTAL	08/25/22
B	PLANNING BOARD SUBMITTAL	10/13/22
C	PLANNING BOARD SUBMITTAL	11/15/22

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FOR PERMITTING PURPOSES ONLY
NOT FOR CONSTRUCTION

PLAN SEAL BY:
RODNEY C. IKES, JR., P.E.
NYS REGISTRATION # 077842

PROJECT NO. 21-2022
DATE 25 AUG 2022
SCALE AS SHOWN

SHEET C-13

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ANY ALTERED ITEM IN THIS TYPE DOCUMENT IS REQUIRED BY LAW TO AFFIX THE SEAL AND THE NOTATION "ALTERED" ALTERED BY" FOLLOWED BY HIS OR HER SIGNATURE AND A SPECIFIC DESCRIPTION OF THE ALTERATIONS.

EROSION CONTROL NOTES

EROSION AND SEDIMENT CONTROLS

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. FREQUENT WATERING OF EXCAVATION AND FILL AREAS TO MINIMIZE WIND EROSION DURING CONSTRUCTION.
   C. USE OF STABILIZATION FABRIC FOR ALL SLOPES HAVING A SLOPE OF 1V:3H OR GREATER.
   D. 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
   B. MULCHING EXPOSED AREAS.
   C. FREQUENT WATERING TO MINIMIZE WIND EROSION DURING CONSTRUCTION.

3. STRUCTURAL PRACTICES (PERMANENT)
   PERMANENT STRUCTURAL PRACTICES FOR THIS SITE INCLUDE:

   A. 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.

4. STRUCTURAL PRACTICES (TEMPORARY)
   STRUCTURAL PRACTICES FOR THIS SITE INCLUDE:

   A. PERIMETER PROTECTION USING SILT FENCE. SILT FENCE WILL BE PLACED ALONG THE PERIMETER OF ALL DISTURBED AREAS AND AT KEY LOCATIONS THROUGHOUT THE SITE. SILT FENCE WILL ALSO BE PLACED ALONG THE EDGES OF ALL WETLAND AREAS THAT ARE NOT TO BE DISTURBED.
   B. STABILIZED CONSTRUCTION EXIT POINTS AND GRAVEL LAYDOWN AREA.

5. SEQUENCE OF MAJOR ACTIVITIES
   THE CONTRACTOR WILL BE RESPONSIBLE FOR IMPLEMENTING THE FOLLOWING EROSION CONTROL AND STORMWATER MANAGEMENT CONTROL STRUCTURES. THE CONTRACTOR MAY DESIGNATE THESE TASKS TO CERTAIN SUBCONTRACTORS AS HE SEES FIT, BUT THE ULTIMATE RESPONSIBILITY FOR IMPLEMENTING THESE CONTROLS AND ENSURING THEIR PROPER FUNCTIONING REMAINS WITH THE CONTRACTOR. THE ORDER OF ACTIVITIES WILL BE AS FOLLOWS (REFER TO THE EROSION AND SEDIMENT CONTROL PLAN SHEET CONTAINED IN THIS SWPPP FOR DETAILS):

   A. CONDUCT A PRE-CONSTRUCTION MEETING WITH ALL INVOLVED PARTIES
   B. DELINEATE BOUNDARIES OF DISTURBANCE AS PER THE GRADING PLAN
   C. CONSTRUCT TEMPORARY CONSTRUCTION EXITS AT LOCATIONS SHOWN
   D. INSTALL PERIMETER SILT FENCE
   E. INSTALL STABILIZED STAGING AREAS
   F. COMMENCE ROUGH SITE GRADING. DISTURBED AREAS OF THE SITE WHERE CONSTRUCTION ACTIVITY HAS CEASED FOR MORE THAN SEVEN DAYS SHALL BE TEMPORARILY SEEDED
   G. BUILDING FOUNDATION EXCAVATION
   H. UTILITY INSTALLATION
   I. ESTABLISH SUBGRADE OF ASPHALT PAVEMENT
   J. PLACE STONE BASE MATERIAL FOR ASPHALT PAVEMENT AND COMPACT
   K. PAVE PARKING LOT
   L. SOIL RESTORATION PER NYS STORMWATER DESIGN MANUAL TABLE 5.3
   M. FINAL SITE GRADING
   N. SEEDING AND PLANTING
   O. RESTORE AND STABILIZE ANY DISTURBED AREAS REMAINING UPON REMOVAL OF ESC MEASURES

OTHER CONTROLS

1. OFF-SITE VEHICLE TRACKING
   A STABILIZED CONSTRUCTION EXIT WILL BE PROVIDED TO HELP REDUCE VEHICLE TRACKING OF SEDIMENTS. A STABILIZED EXIT, CONSISTING OF STONE, WILL BE CONSTRUCTED AS PER THE PLAN AND DETAILS. THE PAVED STREETS ADJACENT TO THE SITE ENTRANCE WILL BE INSPECTED DAILY AND SWEPT AS NECESSARY TO REMOVE ANY EXCESS MUD, DIRT, OR ROCK TRACKED FROM THE SITE. DUMP TRUCKS HAULING MATERIAL FROM THE CONSTRUCTION SITE WILL BE COVERED WITH A TARPAULIN. THE JOB SITE SUPERINTENDENT WILL BE RESPONSIBLE FOR SEEING THAT THESE PROCEDURES ARE FOLLOWED.

2. EXCAVATION SPOIL MATERIALS
   EXCAVATION SPOIL MATERIALS ARE GENERATED DURING THE GRADING OF THE SITE AND THE EXCAVATION OF THE FACILITY'S FOOTINGS. THESE MATERIALS MUST BE PROPERLY MANAGED TO PREVENT THEM FROM CONTRIBUTING TO STORM WATER DISCHARGES. THE MATERIALS GENERATED FROM THE DEVELOPMENT OF THIS PROJECT SHALL BE STABILIZED BY VEGETATIVE AND STRUCTURAL MEANS, DEPENDING ON LOCATION WITHIN THE PROJECT SITE.

3. DUST CONTROL
   MINIMIZING WIND EROSION AND CONTROLLING DUST WILL BE ACCOMPLISHED BY ONE OR MORE OF THE FOLLOWING METHODS:

   A. COVERING 30% OR MORE OF THE SOIL SURFACE WITH A NON-ERODIBLE MATERIAL.
   B. FREQUENT WATERING OF EXCAVATION AND FILL AREAS.
   C. PROVIDING GRAVEL OR PAVING AT ENTRANCE/EXIT DRIVES, PARKING AREAS AND TRANSIT PATHS.

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 ONCE 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.
6. TEMPORARY AND PERMANENT SEEDING AND ALL OTHER STABILIZATION MEASURES WILL BE INSPECTED FOR BARE SPOTS, WASHOUTS, AND HEALTHY GROWTH.
7. A MAINTENANCE INSPECTION REPORT WILL BE MADE AFTER EACH INSPECTION AND DISTRIBUTED VIA EMAIL TO THE OWNER, CONTRACTOR AND CITY REPRESENTATIVE WITHIN 24 HOURS OF THE INSPECTION. EXAMPLE COPIES OF THE REPORT FORMS TO BE COMPLETED BY THE INSPECTOR ARE INCLUDED IN THIS SWPPP.
8. 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.
9. DISTURBED AREAS AND MATERIALS STORAGE AREAS WILL BE INSPECTED FOR EVIDENCE OF OR POTENTIAL FOR POLLUTANTS ENTERING STORMWATER SYSTEMS.
10. 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.
11. 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 IMMEDIATELY REPORTED TO THE NYSDEC 24-HOUR SPILL HOTLINE AT 1-800-457-7362.
12. LONG TERM MAINTENANCE: THE SITE CONTRACTOR IS TO REMOVE ALL ACCUMULATED SEDIMENT FROM THE FOREBAYS ONCE CONSTRUCTION IS COMPLETE AND ALL EXPOSED SURFACES ARE STABILIZED. REMOVED SEDIMENT CAN BE DISPOSED BY EITHER LAND APPLICATION OR LAND FILLING. IN EITHER CASE, SEDIMENT SHALL BE STABILIZED BY EITHER STRUCTURAL OR VEGETATIVE PRACTICES TO PREVENT EROSION.

    THEREAFTER, THE PROPERTY OWNER IS RESPONSIBLE FOR THE LONG TERM MAINTENANCE AND OPERATION OF THE STORMWATER MANAGEMENT SYSTEM. MAINTENANCE SHALL INCLUDE:

- MONTHLY INSPECTION OF THE DETENTION BASIN OUTLET. TRASH, DEBRIS, SEDIMENTS, AND OTHER IMPEDIMENTS TO FLOW THROUGH THE OUTLETS SHALL BE REMOVED AND DISPOSED IN AN ACCEPTABLE MANNER.
- SEASONAL INSPECTION OF THE VEGETATIVE GROWTH IN THE BIORETNETION BASIN. BARE SPOTS ARE TO BE SEEDED AND MULCHED. WOODY VEGETATION IS TO BE REMOVED. WEED GROWTH IS TO BE CONTROLLED BY PHYSICAL MEANS ONLY; NO CHEMICALS ARE TO BE APPLIED IN THE BASIN. THE BASIN AND EMBANKMENT ARE TO BE MOWED ANNUALLY.
- DETENTION BASIN OUTLET AND OTHER AREAS DOWNSTREAM OF THE SYSTEM ARE TO BE INSPECTED MONTHLY. AREAS OF EROSION AND/OR SCOUR ARE TO BE STABILIZED.

INSPECTION AND MAINTENANCE REPORT FORMS
ONCE INSTALLATION OF ANY REQUIRED OR OPTIONAL EROSION CONTROL DEVICE OR MEASURE HAS BEEN IMPLEMENTED, INSPECTIONS SHALL BE PERFORMED AT LEAST ONCE EVERY SEVEN (7) CALENDAR DAYS AND SHALL BE PERFORMED BY A QUALIFIED PROFESSIONAL. INSPECTIONS SHALL BE PERFORMED TWICE EVERY SEVEN (7) DAYS WHEN THE DISTURBED AREA IS GREATER THAN 5 ACRES. THE FORMS FOUND IN THIS SWPPP (OR SIMILAR) SHALL BE USED BY THE INSPECTOR 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 SPDES SWPPP DRAWINGS DURING CONSTRUCTION OPERATIONS.
2. NO LAND CLEARING OR GRADING SHALL BEGIN UNTIL ALL 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 7 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 SOIL 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. COMPACT & MAINTAIN 10,000 SQ. FT. OF 6" THICK STONE MATERIAL LAYDOWN AREA & 15' WIDE GRAVEL ACCESS ROAD TO SITE.
11. GENERAL CONTRACTOR SHALL BE RESPONSIBLE TO ESTABLISH PERMANENT SOIL STABILIZATION.
12. ALL WORK TO BE DONE IN STRICT ACCORDANCE WITH THE NEW YORK STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL.
13. THE GENERAL CONTRACTOR SHALL STRICTLY ADHERE TO THE STORMWATER POLLUTION PREVENTION PLAN DURING CONSTRUCTION OPERATIONS.

TEMPORARY SEEDING MIXTURES

	LBS./ACRE	LBS./1000 SQ. FT
FOR SPRING, SUMMER OR EARLY FALL SEEDINGS:		
	30	0.70
	30	0.70
A. ANNUAL RYEGRASS		
B. PERENNIAL RYEGRASS		
FOR LATE FALL OR EARLY WINTER		
A. WINTER RYE (AROOSTOOK)	100	2.50

PERMANENT SEEDINGS SHOULD TAKE PLACE IN EARLY SPRING. PROPER MULCHING AND ADAQUATE MOISTURE MUST BE PROVIDED FOR PERMANENT SEEDING. RESEEDING OF FAILED AREAS SHALL TAKE PLACE DURING LATE SUMMER/EARLY FALL OR DURING THE FOLLOWING SPRING.

FERTILIZER:
10% NITROGEN
0% PHOSPHORUS
4% POTASH
HYDROMULCH
HYDROMULCH SHALL BE A WOOD-FIBER COMPOSITION (50% PAPER - 50% WOOD)
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.

PERMANENT SEEDING MIXTURES

	LBS./ACRE	LBS./1000 SQ. FT
SEED MIXTURE NO. 1		
CREEPING RED FESCUE (var. ENSYLVA)	10	0.25
PERENNIAL RYE GRASS (var. PENNFINE)	10	0.25
SEED MIXTURE NO. 2		
CREEPING RED FESCUE (var. ENSYLVA)	20	0.45
SAND LOVEGRASS	2	0.05
SEED MIXTURE NO. 3		
BIRDSFOOT TREFOIL (var. EMPIRE, PARDEE)	10	0.25
REDTOP	2	0.05
TALL FESCUE (var. KY 31, REBEL)	20	0.45
SEED MIXTURE NO. 4		
CREEPING RED FESCUE (var. ENSYLVA)	20	0.45
TALL FESCUE (var. KY 31, REBEL)	20	0.45
PERENNIAL RYE GRASS (var. PENNFINE)	5	0.10
BIRDSFOOT TREFOIL (var. EMPIRE, PARDEE)	10	0.25

SEED MIXTURE 1 TO BE APPLIED TO SHADED AREAS.

SEED MIXTURE 2 IS IN PURE LIVE SEED. TO BE APPLIED TO AREAS UPLAND OF WETLANDS AND ALONG STORMWATER MITIGATION BASIN BANKS.

SEED MIXTURE 3 TO BE APPLIED TO ALL SWALES AND WATERWAYS. WHITE CLOVER OR LADINO CLOVER MAY BE SUBSTITUTED FOR BRIDSFOOT TREFOIL AND SEEDED AT THE SAME RATE
PERENNIAL RYEGRASS MAY BE SUBSTITUTED FOR REDTOP BUT INCREASE SEEDING RATE TO 5 LBS./ACRE (0.1 LBS./1000 SQ. FT)

SEED MIXTURE 4 TO BE APPLIED TO ALL AREAS. (NOT FOR USE IN PLAYGROUNDS OR AS TURF)

METHOD OF SEEDING
BROADCAST, DRILLING WITH A CULTIPACK TYPE SEEDER, OR HYDROSEEDING ARE ACCEPTABLE. GOOD SOIL TO SEED CONTACT IS THE KEY TO SUCCESSFUL SEEDINGS.

MULCHING
APPLY STRAW MULCH AT A RATE OF 2 TON/ACRE (90 LBS./1,000 SF) ANCHORED WITH WOOD FIBER MULCH (HYDROMULCH) AT 500 - 750 LBS./ACRE (11 - 17 LBS./1,000 SF). THE WOOD FIBER MULCH MUST BE APPLIED THROUGH A HYDROSEEDER AFTER MULCHING.

IRRIGATION
WATERING MAY BE ESSENTIAL TO ESTABLISH TO NEW SEEDING. WEATHER CONDITIONS WILL DICTATE WHEN TO WATER. EACH APPLICATION MUST BE UNIFORMLY APPLIED AND 1 TO 2 INCHES OF WATER SHOULD BE APPLIED PER APPLICATION.

PERMANENT SEEDING TO OCCUR AFTER FINAL GRADING HAS OCCURRED. PERMANENT SEEDING WILL INCLUDE:
SITE PREPARATION
A. SCARIFY ALL COMPACT, SLOWLY PERMEABLE, MEDIUM AND FINE TEXTURED SUBSOIL AREAS. SCARIFY AT APPROXIMATELY RIGHT ANGLES TO THE SLOPE DIRECTION IN SOIL AREAS THAT ARE STEEPER THAN 5 PERCENT.
B. REMOVE REFUSE, WOOD PLANT PARTS, STONES OVER 3 INCHES IN DIAMETER, AND OTHER LITTER.

TOPSOIL MATERIALS
A. TOPSOIL SHALL HAVE AT LEAST 2 PERCENT AND NO GREATER THAN 6 PERCENT BY WEIGHT OF FINE TEXTURED STABLE ORGANIC MATERIAL.
B. TOPSOIL SHALL HAVE NOT LESS THAN 20 PERCENT FINE TEXTURED MATERIAL (PASSING THE NO. 200 SIEVE) AND NOT MORE THAN 15 PERCENT CLAY.
C. TOPSOIL TREATED WITH SOIL STERILANTS OR HERBICIDES SHALL BE SO IDENTIFIED TO THE PURCHASER.
D. TOPSOIL SHALL BE RELATIVELY FREE OF STONES OVER 1½" INCHES IN DIAMETER, TRASH, NOXIOUS WEEDS SUCH AS NUTSEDGE AND QUACKGRASS, AND WILL HAVE LESS THAN 10% GRAVEL BY VOLUME.
E. TOPSOIL CONTAINING SOLUBLE SALTS GREATER THAN 500 PPM SHALL NOT BE USED.

APPLICATION AND GRADING
A. TOPSOIL SHALL BE DISTRIBUTED TO A UNIFORM DEPTH OVER THE AREA. IT SHALL NOT BE PLACED WHEN IT IS PARTLY FROZEN, MUDDY, OR ON FROZEN SLOPES OR OVER ICE, SNOW, OR STANDING WATER PUDDLES.
B. TOPSOIL PLACED AND GRADED ON SLOPES STEEPER THAN 5% SHALL BE PROMPTLY FERTILIZED, SEEDED, MULCHED AND STABILIZED BY "TRACKING" WITH SUITABLE EQUIPMENT.
C. A MINIMUM OF 6 INCHES OF TOPSOIL IS TO BE USED IN ALL AREAS.

SOIL RESTORATION

NEW YORK STATE STORMWATER MANAGEMENT DESIGN MANUAL
CHAPTER 5: GREEN INFRASTRUCTURE PRACTICES
SECTION 5.1: PLANNING FOR GREEN INFRASTRUCTURE PRESERVATION OF NATURAL RESOURCES AND CONSERVATION DESIGN

TABLE 5.3 SOIL RESTORATION REQUIREMENTS

TYPE OF SOIL DISTURBANCE	SOIL RESTORATION REQUIREMENT		COMMENTS
NO SOIL DISTURBANCE	RESTORATION NOT PERMITTED		PRESERVATION OF NATURAL FEATURES
MINIMAL SOIL DISTURBANCE	RESTORATION NOT REQUIRED		CLEARING AND GRUBBING
AREA WHERE TOPSOIL IS STRIPPED ONLY - NO GRADE CHANGE	HSG A&B	HSG C&D APPLY 6" OF TOPSOIL	PROTECT AREA FROM ONGOING CONSTRUCTION ACTIVITIES AERATE* AND PROVIDE 6" TOPSOIL
AREAS OF CUT OR FILL	HSG A&B	HSG C&D AERATE* AND PROVIDE 6" TOPSOIL	APPLY FULL SOIL RESTORATION**
HEAVY TRAFFIC AREAS ON SITE (ESPECIALLY IN A ZONE 5-25 FEET AROUND BUILDINGS BUT NOT WITHIN A 5 FOOT PERIMETER AROUND FOUNDATION WALLS)	APPLY FULL SOIL RESTORATION (DE-COMPACTION AND COMPOST ENHANCEMENT		
AREAS WHERE RUNOFF REDUCTION AND/OR INFILTRATION PRACTICES ARE APPLIED	RESTORATION NOT REQUIRED BUT MAY BE APPLIED TO ENHANCE THE REDUCTION SPECIFIED FOR APPROPRIATE PRACTICES		KEEP CONSTRUCTION FROM CROSSING THESE AREAS, TO PROTECT NEWLY INSTALLED PRACTICE FROM ANY ONGOING CONSTRUCTION ACTIVITIES CONSTRUCT A SINGLE PHASE OPERATION FENCE AREA
REDEVELOPMENT PROJECTS	SOIL RESTORATION IS REQUIRED ON REDEVELOPMENT PROJECTS IN AREAS WHERE EXISTING IMPERVIOUS AREA WILL BE CONVERTED TO PERVIOUS AREA		

*AERATION INCLUDES THE USE OF MACHINES SUCH AS TRACTOR-DRAWN IMPLEMENTS WITH COULTERS MAKING A NARROW SLIT IN THE SOIL, A ROLLER WITH MANY SPIKES MAKING INDENTATIONS IN THE SOIL, OR PRONGS WHICH FUNCTION LIKE A MINI-SUBSOILER

**PER "DEEP RIPPING AND DE-COMPACTION, DEC 2008"

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:
DETAILS

NO.	REVISION/ISSUE	DATE
C	PLANNING BOARD SUBMITTAL	11/15/22
B	PLANNING BOARD SUBMITTAL	10/13/22
A	PLANNING BOARD SUBMITTAL	08/25/22

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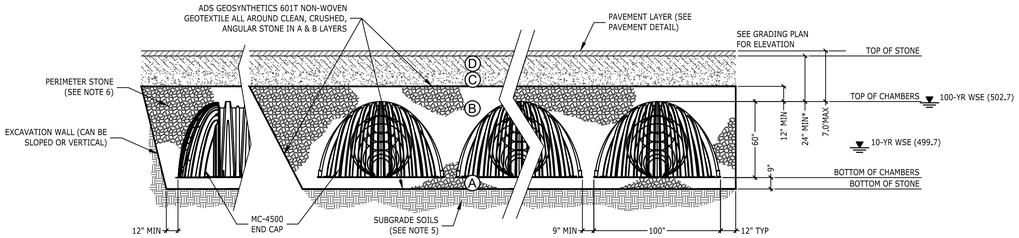
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NOT FOR CONSTRUCTION

PLAN SEAL BY:
RODNEY C. IVES, JR., P.E.
NYS REGISTRATION # 077842

PROJECT NO. 21-2022
DATE 25 AUG 2022
SCALE

SHEET C-14

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ANY ALTERED ITEM BEARS THE NOTATION "ALTERED BY" FOLLOWED BY HIS OR HER NAME AND A DESCRIPTION OF THE ALTERATIONS



NOTES:

1. MC-4500 CHAMBERS SHALL CONFORM TO THE REQUIREMENTS OF ASTM F2418 "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
2. MC-4500 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
3. "ACCEPTABLE FILL MATERIALS" TABLE ABOVE PROVIDES MATERIAL LOCATIONS, DESCRIPTIONS, GRADATIONS, AND COMPACTION REQUIREMENTS FOR FOUNDATION, EMBEDMENT, AND FILL MATERIALS.
4. THE "SITE DESIGN ENGINEER" REFERS TO THE ENGINEER RESPONSIBLE FOR THE DESIGN AND LAYOUT OF THE STORMTECH CHAMBERS FOR THIS PROJECT.
5. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
6. PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
7. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.

1 C–15 UNDERGROUND STORAGE CHAMBER CROSS SECTION, TYP.

SCALE: NTS

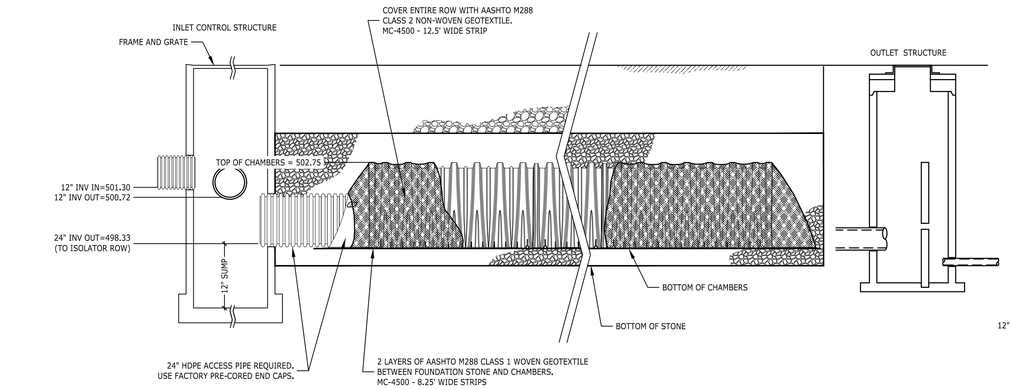
	MATERIAL LOCATION	DESCRIPTION	AASHTO M43 DESIGNATION[1]	COMPACTION/DENSITY REQUIREMENT
D	FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT. NOTE THAT PAVEMENT SUBBASE IS PART OF THE 'D' LAYER.	NYSDOT 304.03 TYPE 2		COMPACT IN 6" LIFTS TO A MIN. 95% STANDARD PROCTOR DENSITY.
C	FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 24" ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE IS TO BE A PART OF THIS LAYER.	NYSDOT 304.03 TYPE 2		BEGIN COMPACTION AFTER 24" OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 6" LIFTS TO A MIN. 95% STANDARD PROCTOR DENSITY.
B	EMBEDMENT STONE SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE TO THE 'C' LAYER ABOVE	CLEAN, CRUSHED, ANGULAR STONE, NOMINAL SIZE DISTRIBUTION BETWEEN 3/4 - 2 INCH	3, 357, 4, 467, 5, 56, 57	NO COMPACTION REQUIRED.
A	FOUNDATION STONE BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE, NOMINAL SIZE DISTRIBUTION BETWEEN 3/4 - 2 INCH	3, 35, 4, 467, 5, 56, 57	PLATE COMPACT OR ROLL TO ACHIEVE A 95% STANDARD PROCTOR DENSITY [2].

PLEASE NOTE:

1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
2. AS AN ALTERNATE TO PROCTOR TESTING AND FIELD DENSITY MEASUREMENTS ON OPEN GRADED STONE, STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 9" (MAX) LIFTS USING TWO FULL COVERAGES WITH AN APPROPRIATE COMPACTOR.

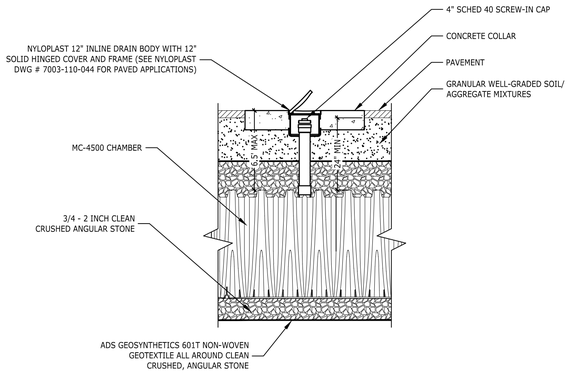
2 C–15 FILL MATERIAL SPECIFICATIONS STORMTECH MC-4500 CHAMBERS, TYP.

SCALE: NTS



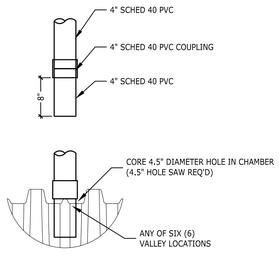
3 C–15 UNDERGROUND STORAGE PRE-TREATMENT ROW, TYP.

SCALE: NTS



NOTES:

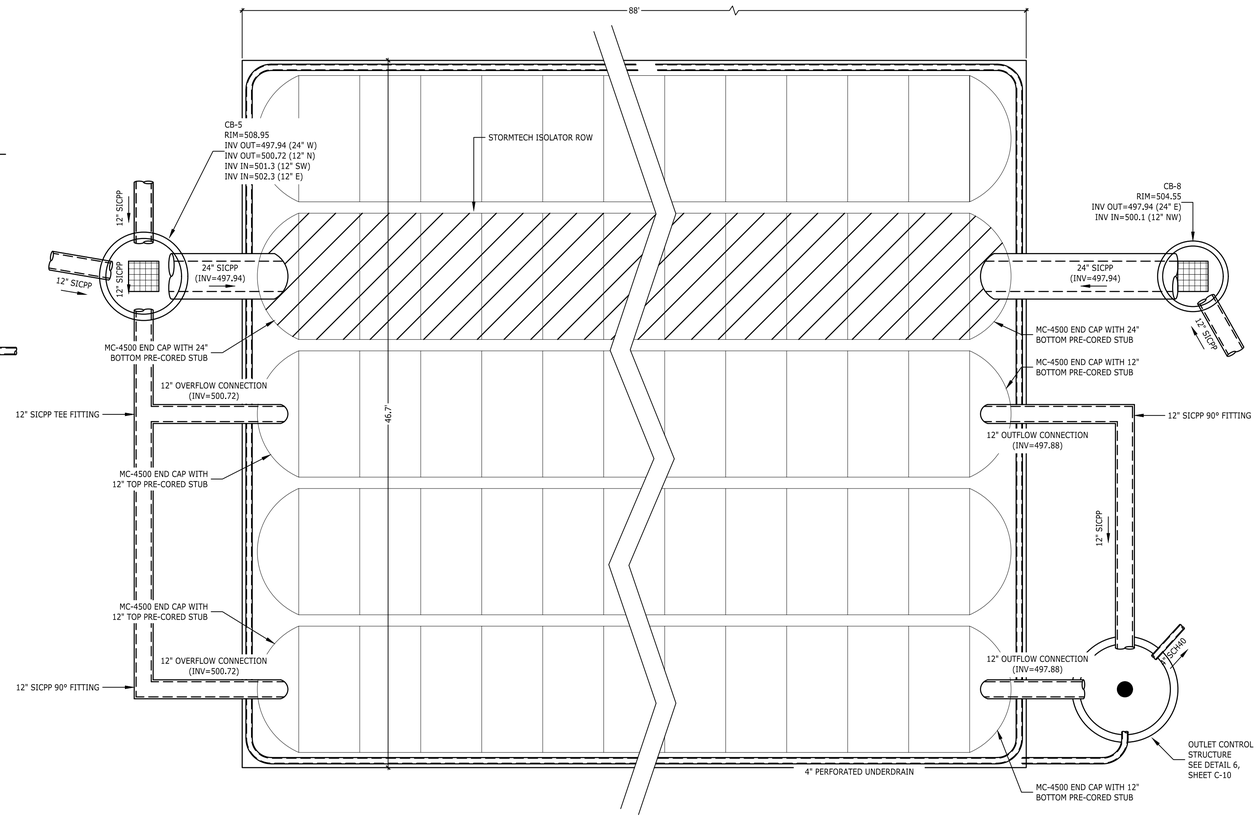
1. INSPECTION PORTS MAY BE CONNECTED THROUGH ANY OF SIX (6) CHAMBER CORRUGATION VALLEYS
2. ALL PVC FITTINGS ARE TO BE SOLVENT CEMENTED



CONNECTION DETAIL

4 C–15 ISOLATOR ROW INSPECTION PORT, TYP.

SCALE: NTS



5 C–15 MANIFOLD DETAIL, TYP.

SCALE: NTS

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:
DETAILS

NO.	REVISION/ISSUE	DATE
C	PLANNING BOARD SUBMITTAL	11/15/22
B	PLANNING BOARD SUBMITTAL	10/13/22
A	PLANNING BOARD SUBMITTAL	08/25/22

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

FOR PERMITTING PURPOSES ONLY
NOT FOR CONSTRUCTION

PLAN SEAL BY:
RODNEY C. IVES, JR., P.E.
NYS REGISTRATION # 077842

PROJECT NO. 21-2022
DATE 25 AUG 2022
SCALE

SHEET C-15

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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 LICENSED PERSON ALTERING THIS DOCUMENT IS REQUIRED BY LAW TO AFFIX HIS/HER SEAL TO THE DOCUMENT AND INCLUDE THE NOTATION "ALTERED BY" FOLLOWED BY HIS OR HER SIGNATURE AND A SPECIFIC DESCRIPTION OF THE ALTERATIONS.

Onondaga County Planning Board

Joanne M. Mahoney
County Executive

RESOLUTION OF THE
ONONDAGA COUNTY PLANNING BOARD
Meeting Date: November 09, 2022
OCPB Case # Z-22-311

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 A&E and SNY Surgery Center for the property located at Medical Center Drive; 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 North Burdick Street (Route 94), a county highway; and

WHEREAS, the applicant is seeking site plan review of a revised plan to construct an approximately 40,000 square foot medical office/personal services center (A&E SNY Center) on a 4.03-acre parcel in a Neighborhood Shopping (NS) zoning district; and

WHEREAS, earlier in 2022, the Board recommended No Position with Comment on a zone change referral (Z-22-70) and Modification of a site plan referral (Z-22-156) for the A&E SNY Surgery Center project, citing traffic and screening recommendations; and

WHEREAS, the subject parcel is located along Medical Center Drive in the Town of Manlius, which contains Medical Center East, the Towne Center Retirement Community, Starview Homes townhouse development, and a proposed memory care facility, and other commercial uses; the site is also adjacent to the Fayetteville Towne Center retail development; and

WHEREAS, per aerial imagery dated May 2021, the site is vacant land that is mostly cleared; a paved walking path along Medical Center Drive appears to connect the Towne Center Retirement Community to the housing development to the north (to remain); it appears as though there is some utility equipment on the southwest corner of the lot; and

WHEREAS, a revised Layout Plan dated August 25, 2022 shows one proposed building with a total of 39,995 sf of space at full buildout (previously 30,000 sf), to include a two-story medical office (32,685 sf), attached personal services (salon, at 3,995 sf) and a future medical office expansion (3,315 sf); the building configuration has changed, but generally remains in the same location on the parcel, with the rear of the building along Medical Center Drive and main entries at the interior of the site adjacent to the parking lot; elevation renderings indicate varied rooflines, fenestration, and materials including siding, stone and stucco; and

WHEREAS, a parking lot with landscaped islands is proposed behind the building including 140 spaces (previously 108 proposed); driveway access is shown onto Avriel Drive, a local road with access to North Burdick Street via Medical Center Drive; sidewalks are shown only in front of the building; and

WHEREAS, the Landscaping Plan shows an existing screening hedge row at the northern parcel boundary; and trees are shown in various locations surrounding the remainder of the site, particularly near the eastern, sloped border with the Towe Center retirement community; three hardscape patio areas occur at the rear of

the building; and

WHEREAS, it appears multiple small portions of the building, patio areas, several parking spaces and a loading zone area are all proposed within the required 50' front and rear yard setbacks; and

WHEREAS, the site is to be served by municipal drinking water (OCWA);
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 site is to be served by municipal wastewater service; the site is located in the Meadowbrook-Limestone Wastewater Treatment Plant service area, an area designated as
flow constrained and impacted by excessive wet weather flow;
ADVISORY NOTE: Capacity assurance approval from the Onondaga County Department of Water Environment Protection (OCDWEP) is required in advance of issuance of a plumbing permit from the County's Plumbing Control Division in order to connect into the public sewer system; the Capacity Assurance Form and approval process can now be found online:
http://www.ongov.net/wep/CapacityAssuranceReviews.html; and

WHEREAS, per the submitted EAF and preliminary SWPPP (prepared prior to site plan changes), approximately 3 acres of the site will be disturbed by the proposed project; per the revised plans dated August 25, 2022, it appears stormwater facilities have changed to include an underground storage facility in addition to a detention pond;
ADVISORY NOTE: Per the Onondaga County Department of Transportation, additional stormwater runoff into the county'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, the site may contain the Northern Long-eared 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 from the plans 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:

The Onondaga County Department of Transportation has determined that the applicant must contact the Department to discuss any required traffic data for the proposed project. Additionally, the applicant must submit a copy of the Stormwater Pollution Prevention Plan (SWPPP) and/or any drainage reports or studies to the Department 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.

Martin E. Voss, Chairman
Onondaga County Planning Board

1100 Civic Center, 421 Montgomery Street, Syracuse, NY 13202 (315) 435-2611, Fax (315) 435-2439

E-mail Address: countyplanning@ongov.ne

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:	A&E and SNY Surgery Center
Address:	at Medical Center Drive
Referral Type:	SITE PLAN
OCPB Date:	November 09, 2022
OCPB Action:	Modification
OCPB Case #:	Z-22-311

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.

_____

_____

_____

_____

1100 Civic Center, 421 Montgomery Street, Syracuse, NY 13202 (315) 435-2611, Fax (315) 435-2439

E-mail Address: countyplanning@ongov.ne

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
Type of Referral: ■ General Municipal Law §239 Review ☐ Informal Review ☐ 3-Mile Limit Review
1. Project Applicant: A&E and SNY Surgery Center **2. Site Address:** Medical Center Drive (behind Resort Lifestyle)
3. Tax ID Number(s): 086.-01-03.9 **4. Total Acres:** 4.03
5. Current Zoning: NS **6. Current Land Use:** Vacant
7. Project Description: Build a new Medical office/personal services center

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 *Provider:*
8a. Existing: ☐ Municipal ☐ Individual Well ■ None
8b. Proposed: ■ New or Additional Municipal Connection ☐ New or Additional Individual Well ☐ No Change

Wastewater Service *Provider:*
9a. Existing: ☐ Municipal Sanitary Sewer ☐ Individual Septic System ■ None
9b. Proposed: ■ New or Additional Municipal Connection ☐ New or Additional Individual Septic System ☐ No Change

Notes:

10. ☐ **OCPB Jurisdiction (c**heck 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: North Burdick Street
- ☐ 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 Board

Proposed Use/Improvements: Build a new Medical office/personal services center

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	10-28-22
Name/Title of Person Completing This Form	*Phone/Email*	*Transmittal Date*

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FAYETTEVILLE MEDSPA
TOWN OF MANLIUS, NEW YORK

PLANNING BOARD SUBMISSION

09/27/2022
PROJECT # 22038



MEDICAL CENTER DRIVE APPROACH

FAYETTEVILLE MEDSPA
TOWN OF MANLIUS, NEW YORK

DATE: 09/27/2022
SCALE: N.T.S.
SHEET NAME: EXTERIOR PERSPECTIVE
SHEET NUMBER: A1

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SOUTHERN FACADE

FAYETTEVILLE MEDSPA
TOWN OF MANLIUS, NEW YORK

DATE: 09/27/2022
SCALE: N.T.S.
SHEET NAME: EXTERIOR PERSPECTIVE
SHEET NUMBER: A2

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NORTHERN FACADE

FAYETTEVILLE MEDSPA
TOWN OF MANLIUS, NEW YORK

DATE: 09/27/2022
SCALE: N.T.S.
SHEET NAME: EXTERIOR PERSPECTIVE
SHEET NUMBER: A3

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Syracuse, New York 13202
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MAIN ENTRANCE

FAYETTEVILLE MEDSPA
TOWN OF MANLIUS, NEW YORK

DATE: 09/27/2022
SCALE: N.T.S.
SHEET NAME: EXTERIOR PERSPECTIVE
SHEET NUMBER: A4

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Syracuse, New York 13202
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SECONDARY ENTRAANCE

FAYETTEVILLE MEDSPA
TOWN OF MANLIUS, NEW YORK

DATE: 09/27/2022
SCALE: N.T.S.
SHEET NAME: EXTERIOR PERSPECTIVE
SHEET NUMBER: A5

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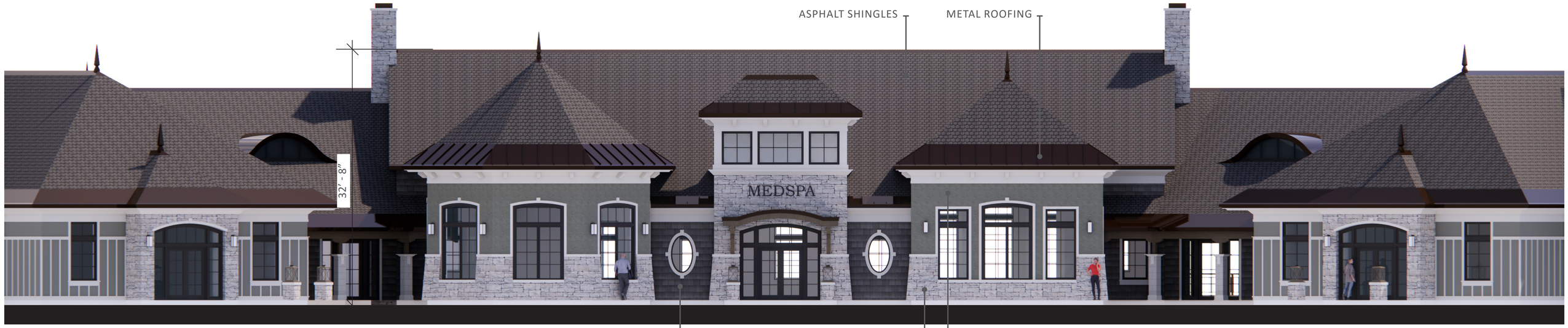


SOUTH ELEVATION

FAYETTEVILLE MEDSPA
TOWN OF MANLIUS, NEW YORK

DATE: 09/27/2022
SCALE: N.T.S.
SHEET NAME: EXTERIOR ELEVATION
SHEET NUMBER: A6

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NORTH ELEVATION

FAYETTEVILLE MEDSPA
TOWN OF MANLIUS, NEW YORK

DATE: 09/27/2022
SCALE: N.T.S.
SHEET NAME: EXTERIOR ELEVATION
SHEET NUMBER: A7

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Syracuse, New York 13202
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SITE AERIAL

FAYETTEVILLE MEDSPA
TOWN OF MANLIUS, NEW YORK

DATE: 09/27/2022
SCALE: N.T.S.
SHEET NAME: EXTERIOR PERSPECTIVE
SHEET NUMBER: A8

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Syracuse, New York 13202
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UPPER LEVEL FLOOR PLAN

FAYETTEVILLE MEDSPA
TOWN OF MANLIUS, NEW YORK

DATE: 09/27/2022
SCALE: N.T.S.
SHEET NAME: FLOOR PLAN
SHEET NUMBER: A9

in
ARCHITECTS
239 E. Water Street - 2nd Fl.
Syracuse, New York 13202
www.in-ARCHITECTS.com



LOWER LEVEL TOTAL GLA: 15,400 SF

0' 5' 10' 20'

LOWER LEVEL FLOOR PLAN

FAYETTEVILLE MEDSPA
TOWN OF MANLIUS, NEW YORK

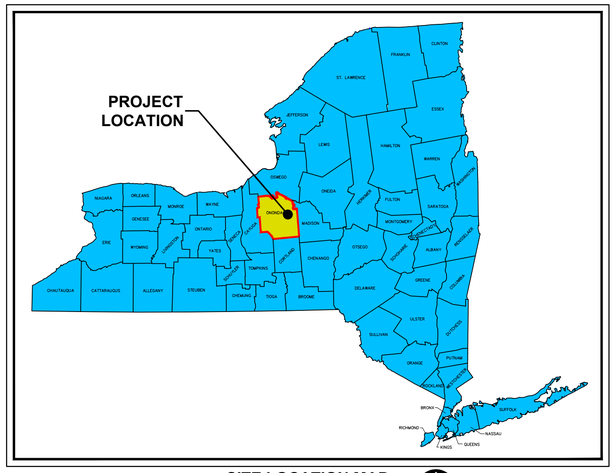
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SHEET NUMBER: A10

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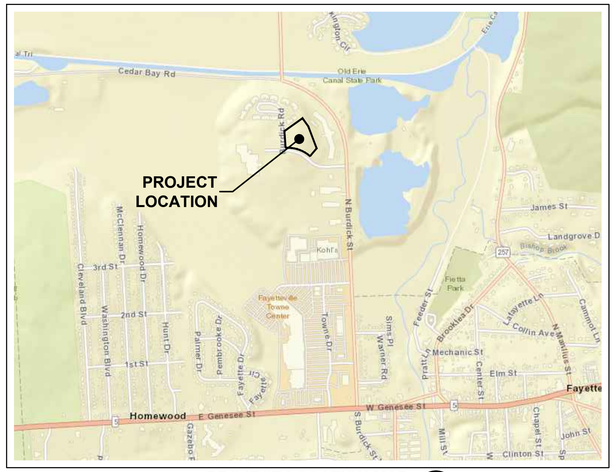
A&E & SNY CENTER

MEDICAL CENTER DRIVE
TAX PARCEL No. 086.-01-03.9

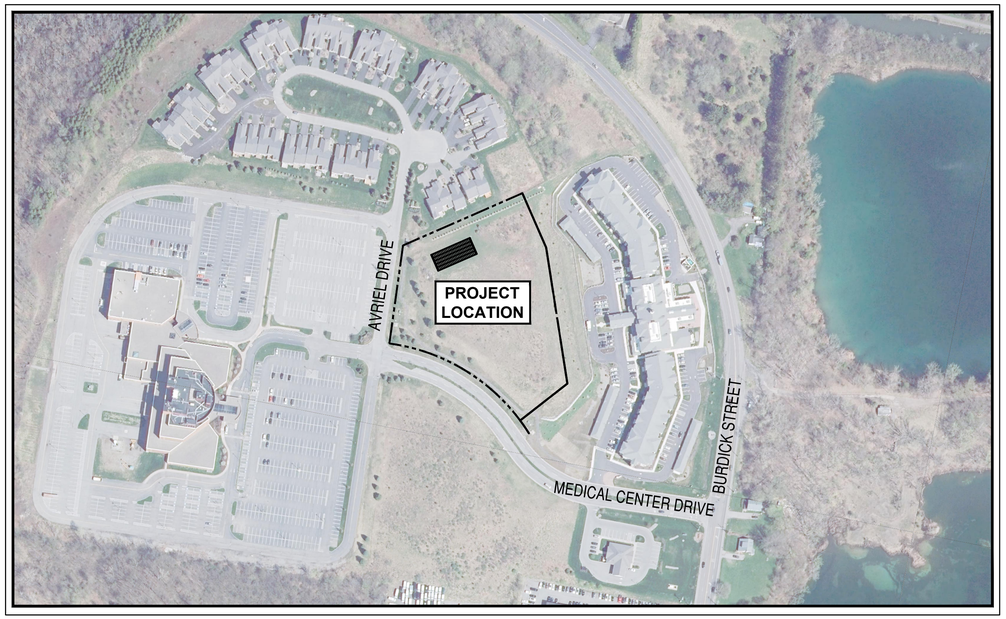
TOWN OF MANLIUS
ONONDAGA COUNTY
STATE OF NEW YORK



SITE LOCATION MAP
NOT TO SCALE



PROJECT LOCATION MAP
NOT TO SCALE



AERIAL MAP
1"=200'

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:

A&E & SNY CENTER

SUITE 38
5781 BRIDGE STREET
EAST SYRACUSE, NY 13057

SHEET INDEX:

TITLE SHEET	C-1
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UTILITY PLAN	C-5
GRADING PLAN	C-6
EROSION CONTROL PLAN	C-7
LIGHTING AND LANDSCAPING PLAN	C-8
DETAILS	C-9 THRU 14

SHEET
C-1

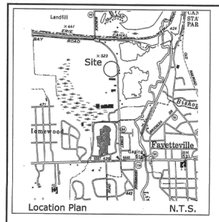
PROJECT NO.
21-2022

DATE
13 OCT 2022

XREFS: NONE

PROJECT NUMBER: 14.4342

CAD DWG. FILE NAME: Subdivision Plat.dwg



MAP NOTES

1.) NORTH ORIENTATION IS BASED ON FILED MAP 8583.

2.) ELEVATIONS BASED ON NAVD 1988 DATUM.

3.) UNDERGROUND FACILITIES, STRUCTURES AND UTILITIES HAVE BEEN PLOTTED FROM DATA OBTAINED BY FIELD SURVEY, PREVIOUS MAPS AND RECORDS, (AND PARCELS 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.

4.) FIELD WORK PERFORMED ON JUNE 17-18, 2014. LAST FIELD UPDATE - MAY 2, 2017.

5.) PARCEL IS WITHIN ZONE X (AREA OF OUTSIDE OF 500 YEAR FLOOD) AS SHOWN ON FEDERAL EMERGENCY MANAGEMENT AGENCY (F.E.M.A.) FLOOD INSURANCE MAP FOR TOWN OF MANLIUS COMMUNITY PANEL #3603840310D, MAP REVISED DATE OF FEBRUARY 5, 1992.

6.) THIS SURVEY DOES NOT CONSTITUTE A TITLE SEARCH BY C. T. MALE ASSOCIATES, D.P.C., TO DETERMINE OWNERSHIP OR EASEMENTS OF RECORD. FOR ALL INFORMATION REGARDING EASEMENTS, RIGHTS OF WAY, AND TITLE REFERENCE IS MADE TO TITLE COMMITMENT PROVIDED BY CLIENT (FIRM NOT LISTED): TITLE COMMITMENT No. DA-2014, EFFECTIVE DATE OF AUGUST 04, 2015. THIS SURVEY IS SUBJECT TO ALL EASEMENTS, COVENANTS, AND RESTRICTIONS AS RECITED THEREIN AND IS FURTHER SUBJECT TO ANY FINDINGS OR TRANSACTION REVEALED OR CONDUCTED FROM THE DATE OF SAID CONTINUATION TO THE PRESENT.

7.) SURVEYED PARCEL MAY BE SUBJECT TO THE FOLLOWING EASEMENTS/RIGHT-OF-WAYS:
   1. NEW YORK TELEPHONE COMPANY POLE LINE R.O.W. (WITH RIGHT TO TRIM AT LEAST 4'), BOOK 430/PAGE 535.
   2. N.M.P.C. GAS LINE EASEMENT (NO BUILDINGS WITHIN 5'), BOOK 2446/PAGE 10.

8.) THERE ARE NO STRIPED PARKING SPACES ON THE SUBJECT PARCEL.

9.) SITE HAS NO OBSERVABLE EVIDENCE OF RECENT EARTH MOVING WORK, BUILDING CONSTRUCTION OR ADDITIONS.

10.) NO EVIDENCE OF SITE USE AS A SOLID WASTE DUMP, SUMP OR SANITARY LANDFILL WAS NOTED.

11.) NO PROPOSED CHANGES TO STREET RIGHT OF WAY OR RECENT REPAIRS TO STREET WERE FOUND.

12.) NORTH BURDICK STREET IS A PUBLIC HIGHWAY ESTABLISHED BY PRESCRIPTIVE EASEMENT RIGHTS AND FEE APPROPRIATION. ACCESS GRANTED TO MEDICAL CENTER DRIVE AND AVRIEL DRIVE BY D.B. 4216, Pg. 102.

13.) THIS PARCEL IS ZONED FOR RA (RESTRICTED AGRICULTURAL DISTRICT) USE WITHIN THE TOWN OF MANLIUS.

Notes to Title Commitment No. DA-2014

5. Covenants, conditions, restrictions, easements, agreements of record, etc.:

(i) Reciprocal Easement (and Related Covenants and Restrictions) Agreement recorded in Book 4216 Page 102. (Affects Entire property)

(ii) Water Easements(s) recorded in Book 4154 Page 17 and Book 2512 Page 933. (Plotted - Book 4154, Pg 17 Parcels 4-6 tie off property and do not affect parcel)

(iii) Grant of Easement recorded in Book 4148 Page 315 and Book 4140 Page 35. (Plotted)

(iv) Street Widening by deeds to the County of Onondaga recorded in Book 2538 Page 702 and Book 2538 Page 700. (Plotted)

(v) Street widening recorded in Book 2531 Page 238 and Book 2831 Page 235. (Plotted -refer to same parcels inquired by County of Onondaga in exception 5iv above as options)

(vi) Gas Easement recorded in Book 2446 Page 10. (Plotted)

(vii) Notice of Appropriation recorded in Book 5275 Page 634. (Plotted)

(viii) Supplemental Appropriation recorded in Book 5289 Page 111. (Plotted)

MAP REFERENCES

1.) A MAP ENTITLED, "BOUNDARY SURVEY, DELLAS PROPERTY, PART OF MILITARY LOT 64, TOWN OF MANLIUS, ONONDAGA COUNTY, N.Y." PREPARED BY SEAR-BROWN ASSOCIATES, P.C...

2.) 1974 COUNTY OF ONONDAGA HIGHWAY APPROPRIATION MAPS AS SHOWN.

3.) FINAL PLAN NORTHEAST MEDICAL CENTER SUBDIVISION - FILED MAP No. 8583.

4.) NEW YORK STATE ACQUISITION MAP No. 17 - N. BURDICK ST. C.R. 94

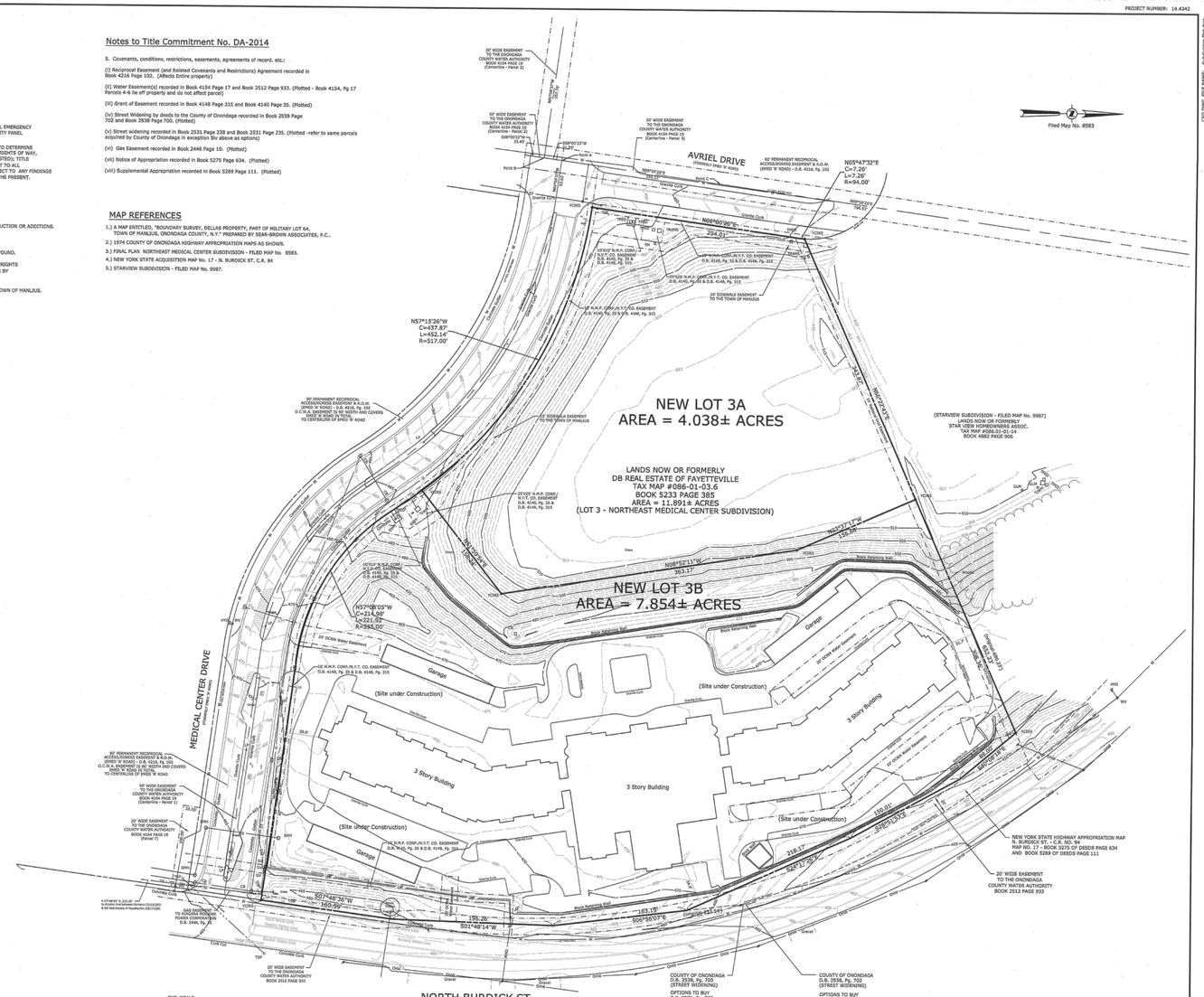
5.) STARVIEW SUBDIVISION - FILED MAP No. 9987.

Zoning Information

DISTRICT	RA - RESTRICTED AGRICULTURAL DISTRICT
ITEM	REQUIRED
MINIMUM SETBACKS: FRONT	40 ft.
SIDE	20 ft.
REAR	40 ft.
MINIMUM FRONTAGE: WITH PUBLIC SEWER / WITHOUT PUBLIC SEWER	150 ft. / 200 ft.
MINIMUM LOT SIZE: WITH PUBLIC SEWER / WITHOUT PUBLIC SEWER	40,000 sq.ft. / 100,000 sq.ft.
PARKING:	VARIES BY USE (SITE IS VACANT)

Legend of Symbols & Abbreviations

GUY WIRE
SIGN
HYDRANT
WATER VALVE
TELEPHONE PEDESTAL
CATCH BASIN
SANITARY MANHOLE
UTILITY POLE
GAS VALVE
GAS LINE MARKER
LIGHT POLE
TRAFFIC SIGNAL POLE
TRAFFIC SIGNAL BOX
WATER LINE
GAS LINE
STORM SEWER LINE
SANITARY SEWER LINE
OVERHEAD WIRES
TOP OF CURB
BOTTOM OF CURB
POLYVINYL CHLORIDE PIPE
REINFORCED CONCRETE PIPE
CORRUGATED PLASTIC PIPE
YELLOW CAPPED 5N2N ROD SET


Filed Map No. 8583
AVRIEL DRIVE
(formerly 200' 'A' ROAD)
60' PERMANENT RECIPROCAL ACCESS/SERVICE EASEMENT & N.G.H.W. (EMED 'B' ROAD) - D.B. 4216, Pg. 102
N05°47'32"E C=7.26' L=7.26' R=94.00'
N89°46'00"E 294.01'
N57°15'26"W C=437.87' L=452.14' R=517.00'
NEW LOT 3A
AREA = 4.038± ACRES
LANDS NOW OR FORMERLY
DB REAL ESTATE OF FAYETTEVILLE
TAX MAP #086-01-03.6
BOOK 5233 PAGE 385
AREA = 11.891± ACRES
(LOT 3 - NORTHEAST MEDICAL CENTER SUBDIVISION)
(STARVIEW SUBDIVISION - FILED MAP No. 9987)
LANDS NOW OR FORMERLY
STAR VIEW HOMEOWNERS ASSOC.
TAX MAP #086.01-01-14
BOOK 4882 PAGE 906
N03°27'17"W 156.38'
N08°52'11"W 363.17'
NEW LOT 3B
AREA = 7.854± ACRES
N57°08'05"W C=214.00' L=221.97' R=204.00'
MEDICAL CENTER DRIVE
(formerly known as Burdick Drive)
(Site under Construction)
3 Story Building
Garage
Brick Retaining Wall
Concrete Curb
Gravel
Grass
Trees
Shrubs
Fence
Guide Rail
Utility Pole
Guy Wire
Sign
Hydrant
Water Valve
Gas Valve
Gas Line Marker
Light Pole
Traffic Signal Pole
Traffic Signal Box
Catch Basin
Sanitary Manhole
Storm Sewer Line
Sanitary Sewer Line
Overhead Wires
Top of Curb
Bottom of Curb
Polyvinyl Chloride Pipe
Reinforced Concrete Pipe
Corrugated Plastic Pipe
Yellow Capped 5N2N Rod Set
S07°48'30"W 160.99'
S01°48'14"W 170.26'
S00°16'07"E 150.11'
S89°51'23"E 218.17'
S84°17'26"E 150.11'
N89°46'00"E 150.11'
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GENERAL NOTES

1. PROPERTY LINE INFORMATION TAKEN FROM A SURVEY BY C.T. MALE ASSOCIATES

2. 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.

3. 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.

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

5. 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.

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

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

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

9. 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.

10. 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.

11. 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.

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

13. 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.

14. 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.

15. 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.

16. 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.

17. 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.

18. 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.

19. 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.

20. MAINTAIN FLOW FOR ALL EXISTING UTILITIES.

21. 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.

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

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

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

25. 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.

GRADING NOTES

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.

UTILITY NOTES

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. THESE PLANS SHOW PUBLIC UTILITY CONNECTION ONLY. PRIVATE UTILITY SERVICE FINAL LOCATION, SIZE AND DEPTH ARE SUBJECT TO THE APPROVAL OF THE UTILITY COMPANY.

4. EXTERIOR BUILDING LIGHTING LUMINARES 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. 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.

7. 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.

8. ELECTRIC AND GAS
   ALL ELECTRIC AND GAS INSTALLATION SHALL BE COORDINATED WITH NATIONAL GRID. ALL SITE ELECTRIC IS TO BE PROVIDED BY THE BUILDING ELECTRICAL ENGINNEER. THESE DRAWINGS DO NOT SHOW CIRCUITING OR SITE WIRING. REFER TO SITE ELECTRICAL PLANS MY ELECTRICAL ENGINEER.

LEGEND: PROPOSED
(SEE EXISTING CONDITION SURVEY FOR LEGEND OF EXISTING ELEMENTS)

- ----- PROPOSED BUILDING
- ----- PROPERTY LINE
- ----- SETBACK LINE
- GC ----- GRANITE CURB
- ----- PROPOSED PAVEMENT
- ----- PROPOSED CONCRETE SIDEWALK/PAD/APRON
- ----- PROPOSED CATCH BASIN
- ----- PROPOSED SANITARY SEWER MANHOLE
- SAN ----- PROPOSED SANITARY PIPE
- ST ----- PROPOSED STORM PIPE
- W ----- PROPOSED WATER PIPE
- G ----- PROPOSED GAS PIPE
- UGE ----- PROPOSED UNDERGROUND ELECTRIC
- ----- PROPOSED GUARDRAIL/FENCE
- ----- PROPOSED DESIGNATED ACCESSIBLE PARKING SPACE
- ----- PROPOSED NO PARKING
- 418 ----- PROPOSED CONTOUR/LABEL
- ----- PROPOSED RIPRAP

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:
GENERAL NOTES

NO.	REVISION/ISSUE	DATE
B	PLANNING BOARD SUBMITTAL	10/13/22
A	PLANNING BOARD SUBMITTAL	08/25/22

PREPARED BY:
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PROFESSIONAL ENGINEER, P.C.
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FOR PERMITTING PURPOSES ONLY
NOT FOR CONSTRUCTION

PLAN SEAL BY:
RODNEY C. IKES, JR., P.E.
NYS REGISTRATION # 077842

PROJECT NO. 21-2022
DATE 25 AUG 2022
SCALE AS NOTED

SHEET **C-2**

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PLAN SEAL BY:
RODNEY C. IVES, JR., P.E.
NYS REGISTRATION # 077842

SHEET
C-3

PROJECT NO.
21-2022

DATE
25 AUG 2022

SCALE
1"=30'

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

NO.	REVISION/ISSUE	DATE
B	PLANNING BOARD SUBMITTAL	10/13/22
A	PLANNING BOARD SUBMITTAL	08/25/22

SHEET TITLE:
SITE PREPRATION 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



SITE CRITERIA CHECKLIST

PROJECT SITE INFORMATION			
ADDRESS	MEDICAL CENTER DRIVE		
TAX MAP ID NO.	086.-01-03.9		
BOUNDARY SURVEY	PROPERTY LINE INFORMATION TAKEN FROM SUBDIVISION MAP PREPARED BY CT MALE ASSOCIATES, PC DATED 05/10/2017		
TOTAL SITE AREA	4.038 ACRES		
LAND USE	EXISTING: VACANT PROPOSED: PROFESSIONAL/MEDICAL SERVICES		
	REQUIRED	PROVIDED	GRANTED RELIEF
ZONING INFORMATION			
ZONING DISTRICT	CURRENT: RESTRICTED AGRICULTURAL (RA) PROPOSED: NEIGHBORHOOD SHOPPING (NS)		
IMPERVIOUS LOT COVERAGE	75%	56.0% (2.26 ACRES)	
BUILDING COVERAGE	10,000 SF/ACRE	39,995 SF (9,905 SF/ACRE x 4.038 ACRES)	
FRONT YARD SETBACK	50 FT	40 FT (MEDICAL CENTER DR) 88.7 FT (AVRIEL DR)	10 FT (MEDICAL CENTER DR) NA (AVRIEL DR)
REAR YARD SETBACK	50 FT	40.2 FT (TOWN CENTER RETIREMENT) 117.6 FT (STAR VIEW)	25 FT (TOWN CENTER RETIREMENT) NA (STAR VIEW)
SIDE YARD SETBACK	50 FT	CORNER LOT; NON-FRONT YARDS CONSIDERED REAR YARDS	
LANDSCAPE BUFFER A MINIMUM OF 30 FEET IMMEDIATELY ADJOINING PROPERTY ZONED RESIDENTIAL OR RESTRICTED AGRICULTURAL SHALL CONSIST OF A LANDSCAPED BUFFER, APPROPRIATE TO THE CIRCUMSTANCES, AS APPROVED BY THE PLANNING BOARD.			
FRONT YARD BUFFER	30 FT	40 FT (MEDICAL CENTER DR) 88.7 FT (AVRIEL DR)	NA (MEDICAL CENTER DR) NA (AVRIEL DR)
REAR YARD BUFFER	30 FT	25.5 FT (TOWN CENTER RETIREMENT) 30 FT (STAR VIEW)	5 FT (TOWN CENTER RETIREMENT) NA
SIDE YARD BUFFER	30 FT	CORNER LOT; NON-FRONT YARDS CONSIDERED REAR YARDS	
PARKING DIMENSIONS	10'x20'	10'x20'	
PARKING AISLE WIDTH	24 FT	24 FT	
PARKING SPACES			
MEDICAL OFFICE SPACE 32,685 SF	1 SPACE/300 SF 109 SPACES		
PERSONAL SERVICES SPACE 3,995 SF	1 SPACE/200 SF 20 SPACES		
FUTURE MEDICAL OFFICE SPACE 3,315 SF	1 SPACE/300 SF 11 SPACES		
	TOTAL: 140 SPACES	140 TOTAL SPACES PROVIDED	
SCREENING ALL SERVICE AREAS WITHIN A NEIGHBORHOOD SHOPPING DISTRICT, SUCH AS THOSE FOR THE LOADING AND UNLOADING OF MERCHANDISE, THE DELIVERY OF FOOD AND EQUIPMENT AND THE COLLECTION AND PICKUP OF GARBAGE, SHALL BE LOCATED A MINIMUM OF 100 FEET FROM ANY ADJOINING PROPERTY LINE OR PROPERTY ZONED RESIDENTIAL OR RESTRICTED AGRICULTURAL. ALL SERVICE AREAS SHALL BE SCREENED FROM SIGHT BY APPROPRIATE FENCING, AND SUCH ADDITIONAL STEPS SHALL BE TAKEN AS ARE NECESSARY TO MINIMIZE THE IMPACT OF NOISE AND LIGHT ON ADJOINING RESIDENTIAL PROPERTIES.			

LAYOUT PLAN KEYED NOTES:

1. BUILDING MAIN ENTRANCE
2. BUILDING SECONDARY ENTRANCE
3. NOT USED
4. SEGMENTAL BLOCK RETAINING WALL
5. STORMWATER INFILTRATION BASIN
6. ADA ACCESSIBLE PARKING
7. DUMPSTER ENCLOSURE
8. LANDSCAPED ISLAND
9. CONCRETE CURB (6" WIDE) AND SIDEWALK (5.5' WIDE)

GRAPHIC SCALE
0 30' 60'
(IN FEET)
1 inch = 30 ft

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:
LAYOUT PLAN

NO.	REVISION/ISSUE	DATE
B	PLANNING BOARD SUBMITTAL	10/13/22
A	PLANNING BOARD SUBMITTAL	08/25/22

PREPARED BY:

NAPIERALA CONSULTING
PROFESSIONAL ENGINEER, P.C.
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PLAN SEAL BY:
RODNEY C. INES, JR., P.E.
NYS REGISTRATION # 077842

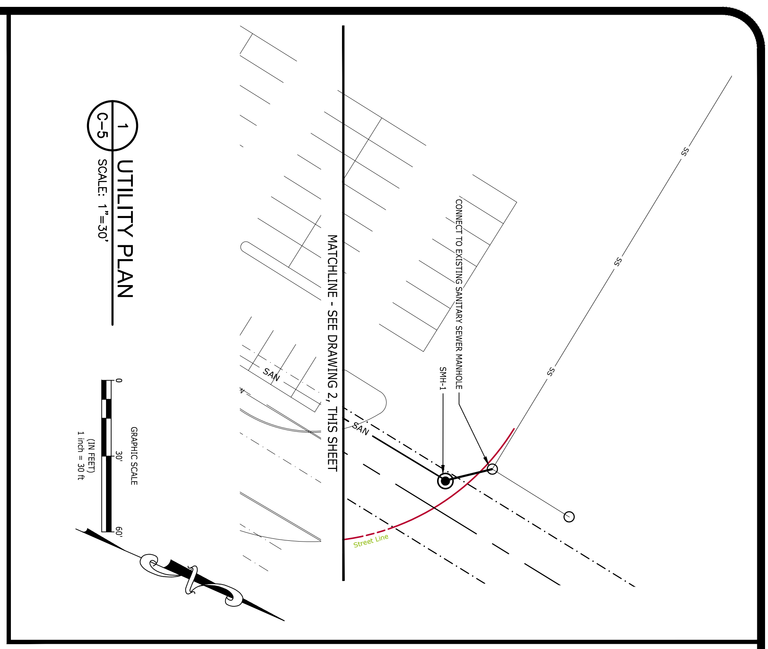
PROJECT NO. **21-2022**
DATE **25 AUG 2022**
SCALE **1"=30'**

SHEET **C-4**

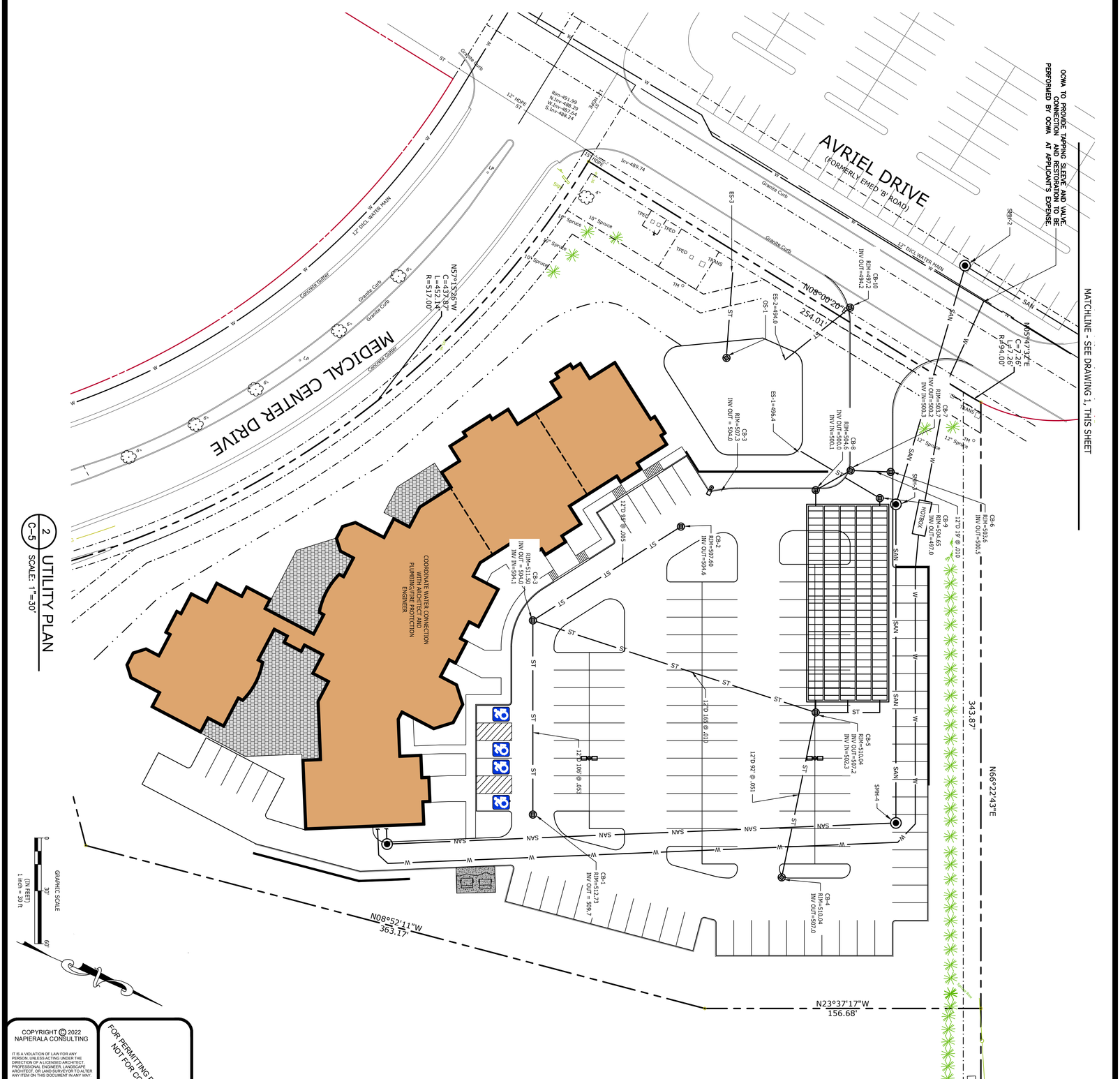
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1 C-5 SCALE: 1"=30' UTILITY PLAN



2 C-5 SCALE: 1"=30' UTILITY PLAN

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PLAN SEAL BY:
RODNEY C. IVES, JR., P.E.
NYS REGISTRATION # 077842

SHEET	C-5
PROJECT NO.	21-2022
DATE	25 AUG 2022
SCALE	1"=30'

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NO.	REVISION/ISSUE	DATE
B	PLANNING BOARD SUBMITTAL	10/13/22
A	PLANNING BOARD SUBMITTAL	08/25/22

SHEET TITLE:

UTILITY PLAN

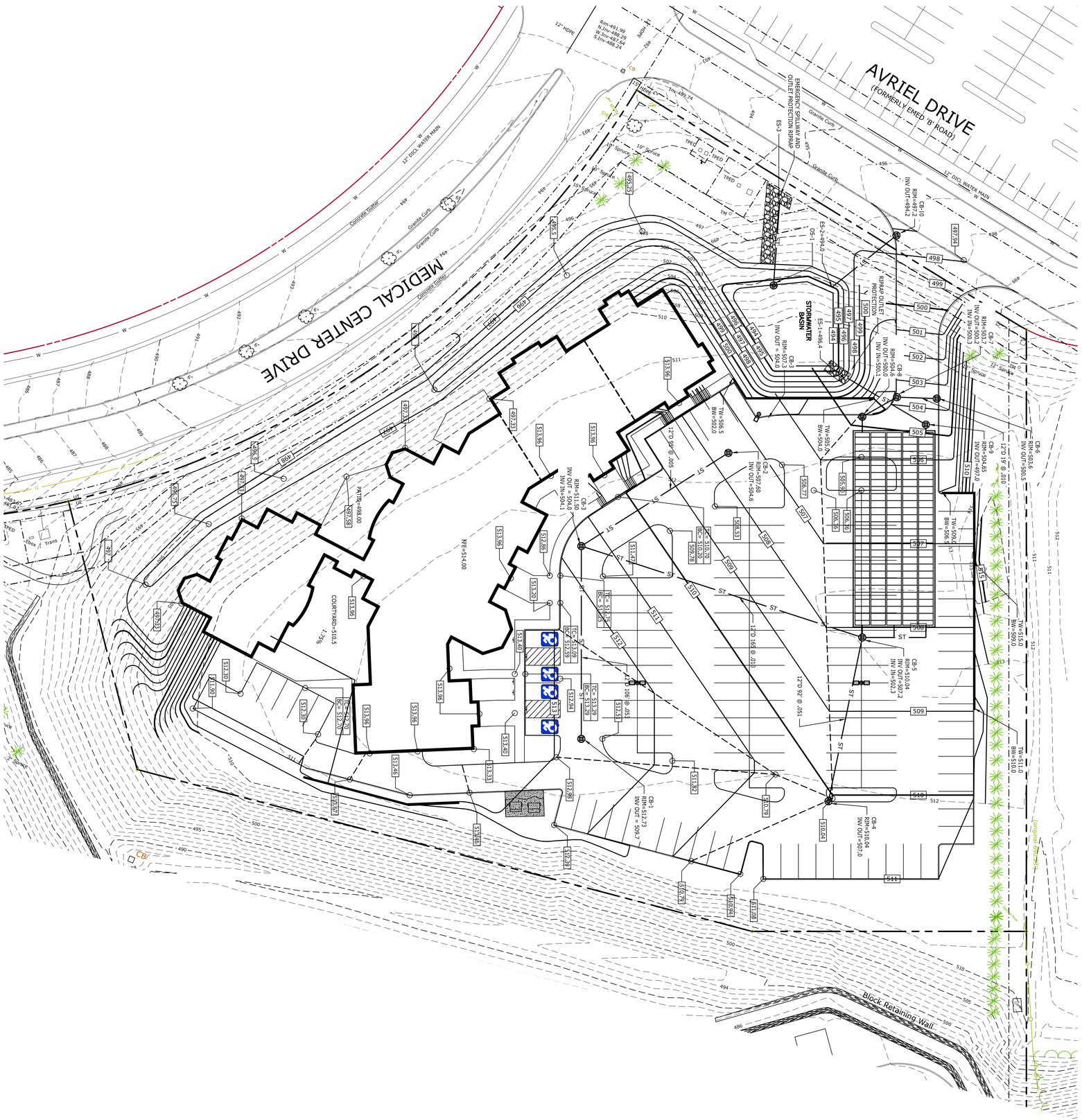
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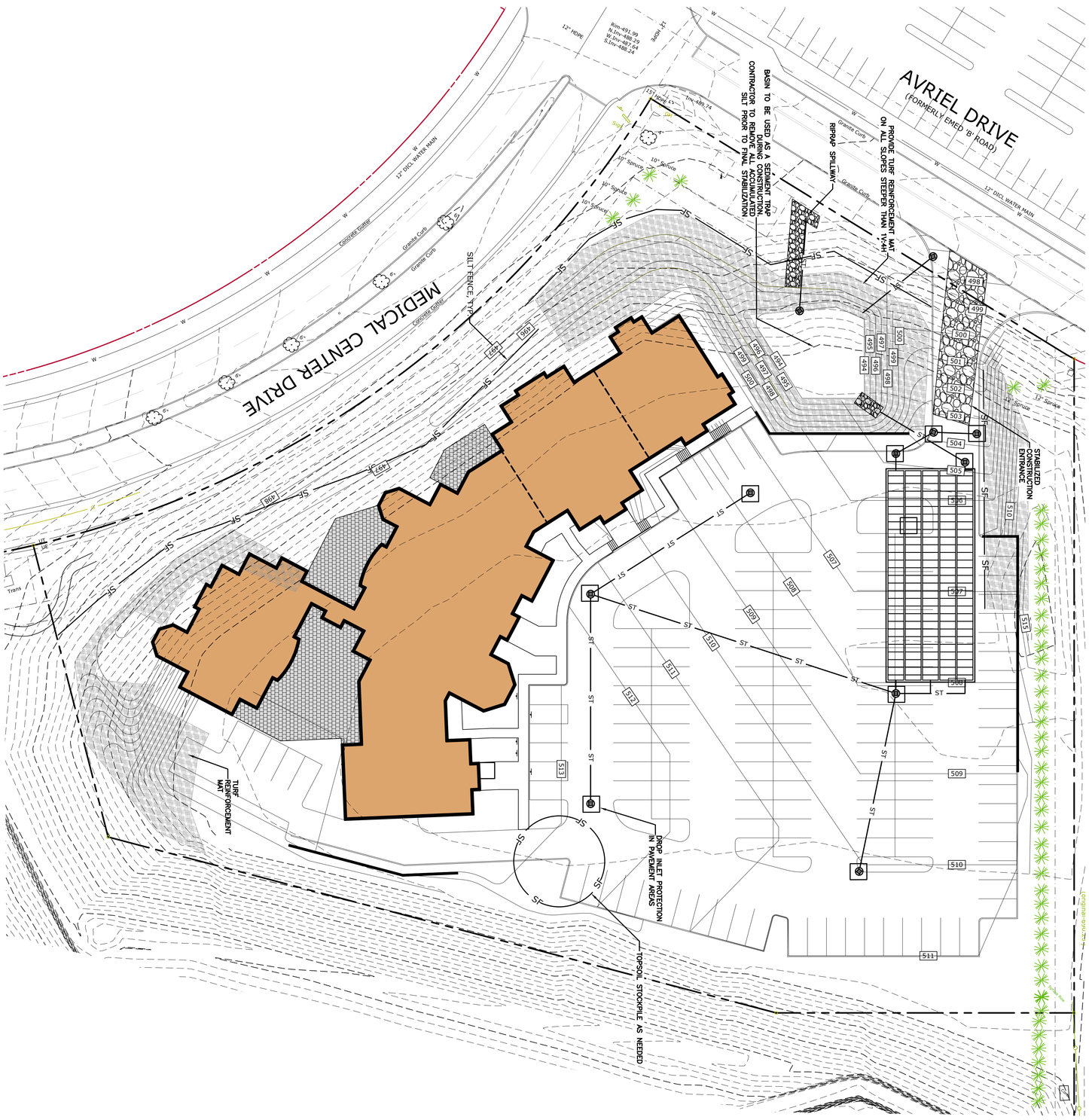
A&E & SNY CENTER
MEDICAL CENTER DRIVE

TOWN OF MANLIUS ONONDAGA COUNTY, NEW YORK

PREPARED FOR:

A&E & SNY CENTER
SUITE 38
5781 BRIDGE STREET
EAST SYRACUSE, NY 13057


AVRIEL DRIVE
(FORMERLY EMED "B" ROAD)
MEDICAL CENTER DRIVE
STORMWATER BASIN
EMERGENCY SPILLWAY AND OUTLET PROTECTION RIPRAP
RIPRAP OUTLET PROTECTION
Block Retaining Wall
12" HDPE
12" DICL WATER MAIN
Granite Curb
Concrete Curb
Gravel Curb
15" Spruce
RFE=514.00
COURTYARD=510.5
1.7%
PATIO=498.00
CB-1 RIM=513.73 INV. OUT=508.7
CB-2 RIM=507.68 INV. OUT=504.6
CB-3 RIM=511.50 INV. OUT=504.0 INV. IN=504.1
CB-4 RIM=516.04 INV. OUT=502.0
CB-5 RIM=510.83 INV. OUT=502.2 INV. IN=502.3
CB-6 RIM=503.6 INV. OUT=500.5
CB-8 RIM=504.6 INV. OUT=500.0 INV. IN=500.1
CB-9 RIM=503.7 INV. OUT=500.2 INV. IN=500.3
CB-10 RIM=497.2 INV. OUT=494.2
ES-1=496.4
ES-2=494.0
ES-3
DS-1
DS-2 RIM=502.3 INV. OUT=504.0
TW=505.4 BW=504.0
TW=505.5 BW=502.0
TW=509.0 BW=506.5
TW=516.0 BW=500.0
TW=511.0 BW=510.0
12"D @ 1.65% @ .005
12"D @ 2% @ .005
12"D @ 1.69% @ .005
12"D @ 2% @ .005
12"D @ 2% @ .005
12"D @ 2



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RODNEY C. IVES, JR., P.E.
NYS REGISTRATION # 077842

GRAPHIC SCALE
0
30'
60'
(IN FEET)
1 INCH = 30 ft.

SHEET
C-7

PROJECT NO.
21-2022

DATE
25 AUG 2022

SCALE
1"=30'

PREPARED BY:
NAPIERALA CONSULTING
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110 FAYETTE STREET
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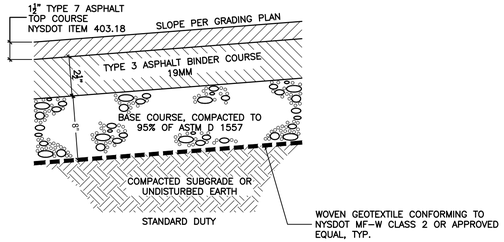
NO.	REVISION/ISSUE	DATE
B	PLANNING BOARD SUBMITTAL	10/13/22
A	PLANNING BOARD SUBMITTAL	08/25/22

SHEET TITLE:
EROSION CONTROL 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

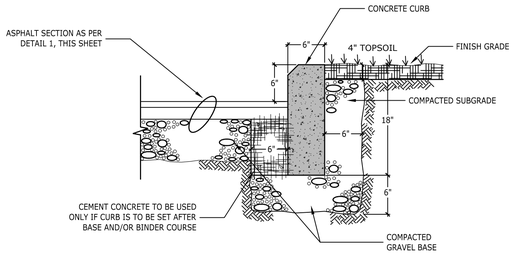
AVRIEL DRIVE
(FORMERLY EMED 'B' ROAD)
MEDICAL CENTER DRIVE
EXISTING TREES TO REMAIN
EXISTING TREES TO REMAIN
EXISTING TREES TO REMAIN
STORMWATER AREA
GRASS AREA
GRASS AREA
GRASS AREA
GRASS AREA
PATIO
PATIO
PATIO
COURTYARD
Granite Curb
Concrete Curb
Asphalt Curb
Asphalt Berm
Asphalt Swale
Asphalt Swale
Asphalt Swale



1 C–9 STANDARD PAVEMENT SECTION

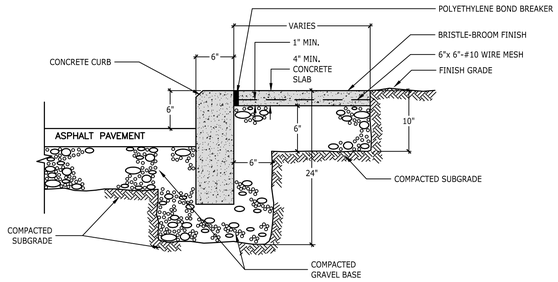
SCALE: NTS

ALL PAVEMENT SECTIONS TO BE CONFIRMED WITH THE GEOTECHNICAL REPORT



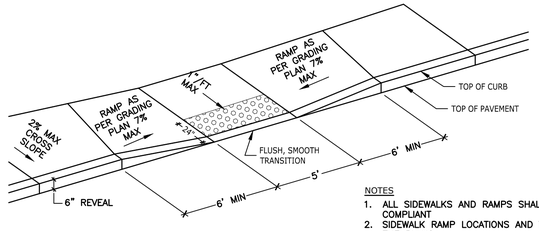
2 C–9 CONCRETE CURB

SCALE: NTS



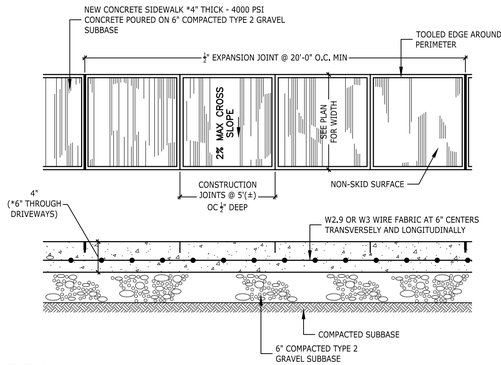
3 C–9 INTEGRAL CONCRETE CURB & SIDEWALK

SCALE: NTS



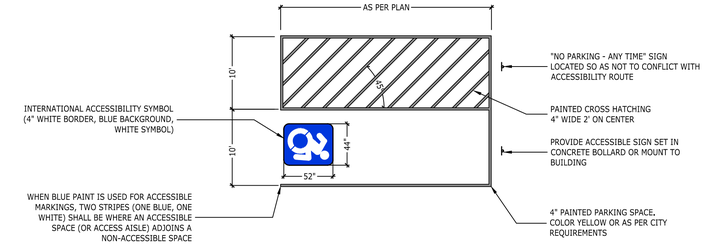
NOTES

1. ALL SIDEWALKS AND RAMPS SHALL BE ADA AND PROWAG COMPLIANT
2. SIDEWALK RAMP LOCATIONS AND TYPES ARE TO BE AS SHOWN ON THE PLANS.
3. SURFACE TEXTURE OF RAMP SHALL BE OBTAINED BY A COURSE BROOMING, TRANSVERSE TO THE SLOPE OF THE RAMP.
4. NORMAL PAVEMENT EDGE PROFILE IS TO BE MAINTAINED THROUGH THE AREA OF THE RAMP. LONG
5. TRANSITION CURB FOR RAMPS SHALL BE 6–0"
6. MAXIMUM DESIRABLE RAMP SLOPE 1:12.
7. PROVIDE TOOLED TACTILE GROVES ON ALL SURFACES AS INDICATED
8. INSTALL ADA COMPLIANT DETECTABLE WARNING UNITS 2' BY WIDTH OF THE DROP CURB OPENING



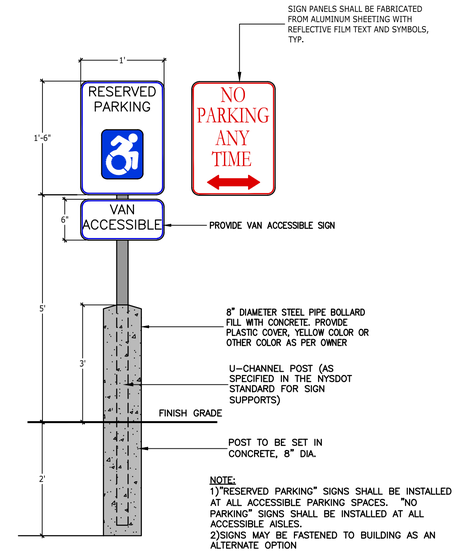
4 C–9 SIDEWALK

SCALE: NTS



5 C–9 ACCESSIBLE PARKING PAVEMENT MARKING DETAIL

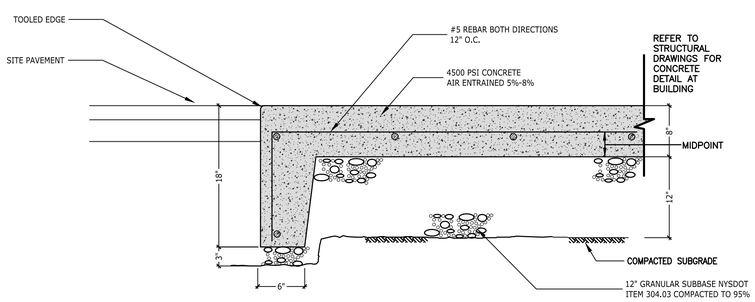
SCALE: NTS



NOTE:
1)"RESERVED PARKING" SIGNS SHALL BE INSTALLED AT ALL ACCESSIBLE PARKING SPACES. "NO PARKING" SIGNS SHALL BE INSTALLED AT ALL ACCESSIBLE AISLES.
2)SIGNS MAY BE FASTENED TO BUILDING AS AN ALTERNATE OPTION

6 C–9 ACCESSIBLE PARKING SIGNS

SCALE: NTS



7 C–9 CONCRETE PAD

SCALE: NTS

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:
DETAILS

NO.	REVISION/ISSUE	DATE
A	PLANNING BOARD SUBMITTAL	08/25/22
B	PLANNING BOARD SUBMITTAL	10/13/22

PREPARED BY:
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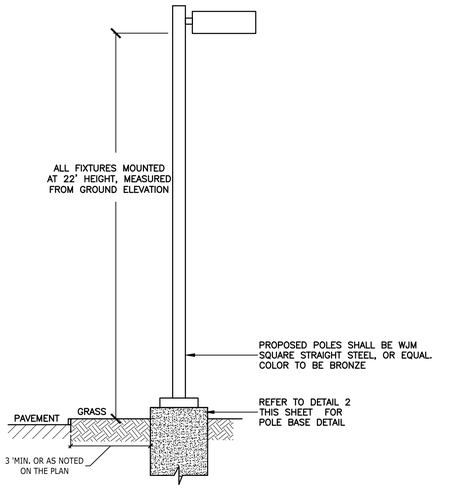
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PLAN SEAL BY:
RODNEY C. WES, JR., P.E.
NYS REGISTRATION # 077942

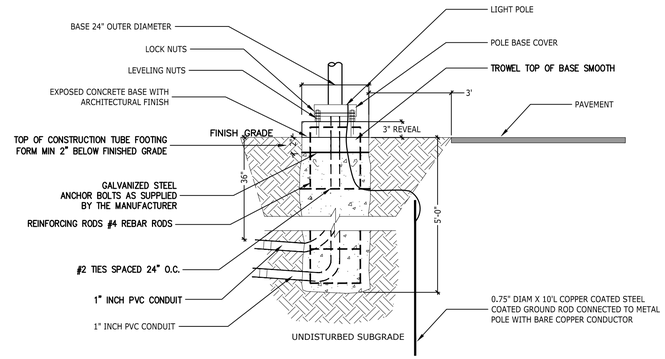
PROJECT NO. 21-2022
DATE 25 AUG 2022
SCALE 1"=30'

SHEET C-9

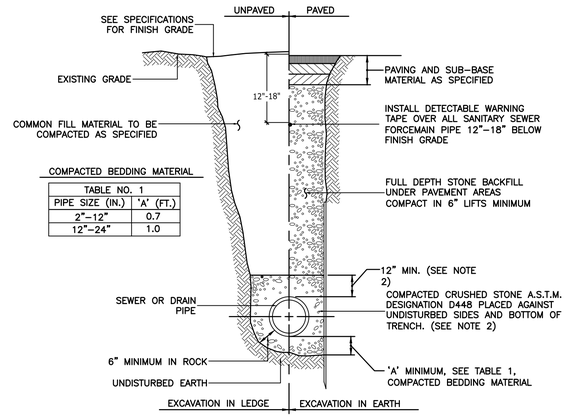
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ANY EXTENDED ANALYSIS BY THE DOCUMENT BY ANY OTHER ENGINEER WITHOUT WRITTEN AUTHORIZATION AND ADAPTATION OF THE ALTERATIONS.



1 C–10 LIGHT POLE ELEVATION
SCALE: NTS



2 C–10 LIGHT POLE BASE
SCALE: NTS

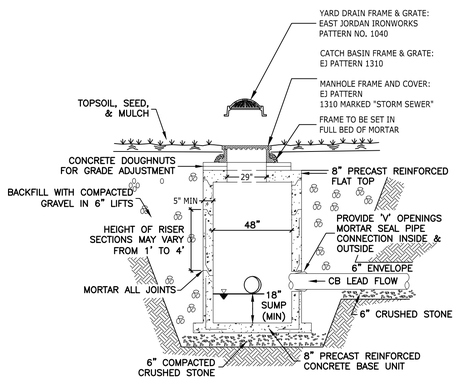


COMPACTED BEDDING MATERIAL

TABLE NO. 1	
PIPE SIZE (IN.)	'A' (FT.)
2"–12"	0.7
12"–24"	1.0

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.
2. 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 3. TRENCHES LOCATED ON THE ROAD SHOULDER SHALL BE TREATED THE SAME AS EXCEPT FOR PAVING.
4. PROVIDE AT LEAST ONE IMPERVIOUS DAM IN GRAVEL BEDDING BETWEEN EACH MANHOLE WHERE DIRECTED, OR EVERY 300 FEET, WHICHEVER IS LESS. SEE DETAIL.
5. BEDDING MATERIAL FOR PVC PIPE SHALL MEET THE REQUIREMENTS OF ASTM D2321 CLASS I OR CLASS II EMBEDMENT MATERIALS.

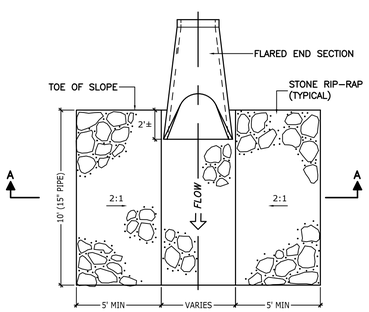
3 C–10 TYPICAL SEWER AND DRAIN TRENCH
SCALE: NTS



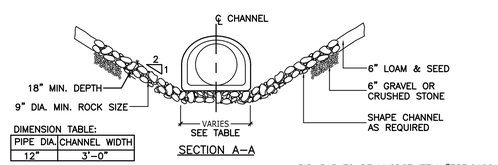
DRAINAGE STRUCTURE GENERAL NOTES

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.
   SIDES: #3 BARS SPACED AT 8" IN BOTH HORIZONTAL AND VERTICAL.
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.

4 C–10 CATCH BASIN
SCALE: NTS



PLAN VIEW



DIMENSION TABLE:

PIPE DIA	CHANNEL WIDTH
12"	3'–0"

SECTION A–A

RIP–RAP TO BE NYSDOT ITEM #733.2102

5 C–10 STORM PIPE END SECTION
SCALE: NTS

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: DETAILS

NO.	REVISION/ISSUE	DATE
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B	PLANNING BOARD SUBMITTAL	10/13/22

PREPARED BY:
NAPIERALA CONSULTING
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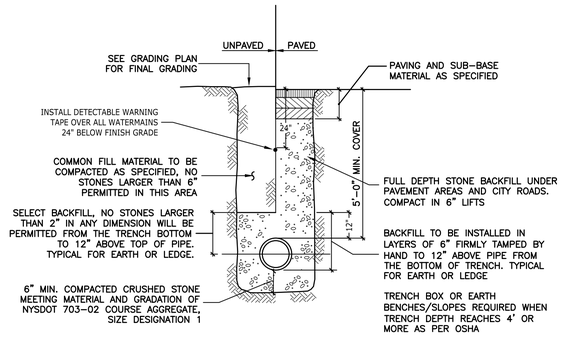
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PLAN SEAL BY:
RODNEY C. INES, JR., P.E.
NYS REGISTRATION # 077842

PROJECT NO. 21-2022
DATE 25 AUG 2022
SCALE 1"=30'

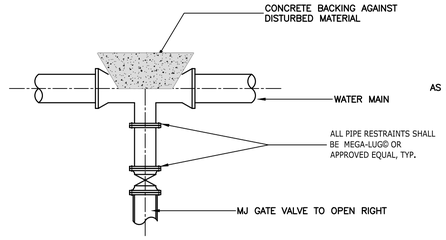
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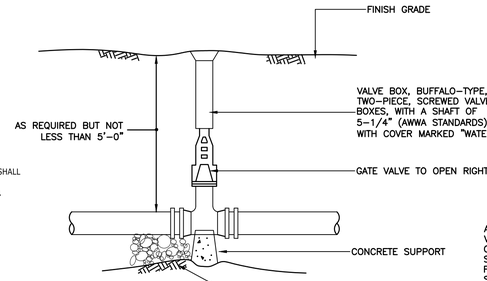


1 C-11 WATERLINE TRENCH - DUCTILE IRON

SCALE: NTS



PLAN VIEW

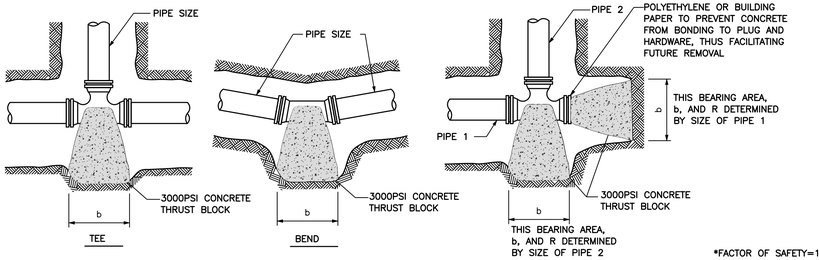


SECTION VIEW

ALL WATER MAIN VALVES SHALL BE EITHER GATE VALVES CONFORMING TO AWWA SPECIFICATION C509 OR RESILIENT SEATED GATE VALVES. GATE VALVES SHALL HAVE A CAST-IRON BODY AND SHALL BE A FULLY BRONZE MOUNTED, DOUBLE DISK, PARALLEL SEAT TYPE WITH O-RING PACKING. GATE VALVES SHALL HAVE A NONRISING STEM WITH A TWO-INCH OPERATING NUT AND SHALL OPEN LEFT (COUNTERCLOCKWISE).

2 C-11 WATER SERVICE VALVE

SCALE: NTS



NOTES:

1. CONCRETE NOT TO OVERLAP ANY JOINT.
2. CONCRETE TO BE PLACED SO AS NOT TO INTERFERE WITH REMOVING OR INSTALLING ANY OF THE JOINTING HARDWARE.
3. FOR REDUCERS USE MECHANICAL JOINT FITTINGS WITH RETAINER GLANDS.

*FACTOR OF SAFETY=1.5
SOIL BEARING OF 3,000 PSF
225 PSI DESIGN PRESSURE

NOTES:

1. VALUES FOR TEE APPLY TO TEES, END PLUGS, CAPS, AND TAPPING SLEEVES.
2. REQUIRED BEARING AREAS ARE DUE TO THRUSTS CAUSED BY 150PSI WORKING PRESSURE PLUS 50%(75 PSI) SURGE ALLOWANCE RESULTING IN 225 PSI TOTAL INTERNAL PRESSURE.
3. REQUIRED BEARING AREAS ARE BASED ON ALLOWABLE SOIL BEARING CAPACITY OF 3,000 POUNDS PER SQUARE FOOT. DUE TO OTHER SOIL CONDITIONS ENCOUNTERED, BEARING AREAS MAY BE MODIFIED BY THE ENGINEER.

SOIL	BEARING STRENGTH S (LB/SQ FT)
MUCK	0
SOFT CLAY	1,000
SILT	1,500
SANDY SILT	3,000
SAND	4,000
SANDY CLAY	6,000
HARD CLAY	9,000

4. IN MUCK, PEAT, OR RECENTLY PLACED FILL ALL THRUSTS SHALL BE RESISTED BY PILES OR TIE RODS TO SOLID FOUNDATIONS, OR BY REMOVAL OF SUCH UNSTABLE MATERIAL AND REPLACEMENT WITH BALLAST OF SUFFICIENT STABILITY TO RESIST THE THRUSTS, ALL AS REQUIRED BY THE ENGINEER.

FOR DIMENSIONS AND THRUST REACTIONS SEE TABLE THIS SHEET

THRUST REACTIONS-R(LB) PER 100PSI INTERNAL PRESSURE

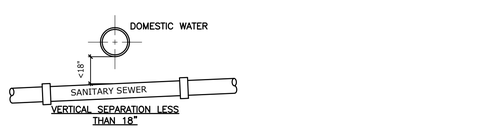
NOM PIPE DIA IN.	DEAD END	90° BEND	45° BEND	22 1/2° BEND	11 1/4° BEND
4	1,810	2,559	1,385	706	355
6	3,739	5,288	2,862	1,459	733
8	6,433	9,097	4,923	2,510	1,261
10	9,677	13,685	7,406	3,776	1,897
12	13,685	19,353	10,474	5,340	2,683

REQUIRED BEARING AREAS -b (SQFT) FOR BEARING BLOCKS*

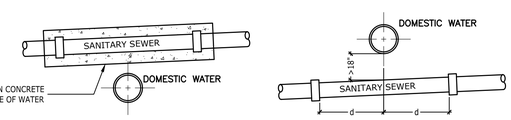
PIPE SIZE (INCHES)	TEE	90° BEND	45° BEND	22 1/2 ° BEND	11 1/4 ° BEND
4	2.0	2.8	1.5	0.8	0.4
6	4.2	5.9	3.2	1.6	0.8
8	7.2	10.1	5.5	2.8	1.4
10	10.9	15.4	8.3	4.2	2.1
12	15.4	21.8	11.8	6.0	3.0

3 C-11 THRUST BLOCK SPECIFICATIONS

SCALE: NTS



VERTICAL SEPARATION LESS THAN 18"



WATER CROSSES UNDER SEWER

TYPICAL INSTALLATION

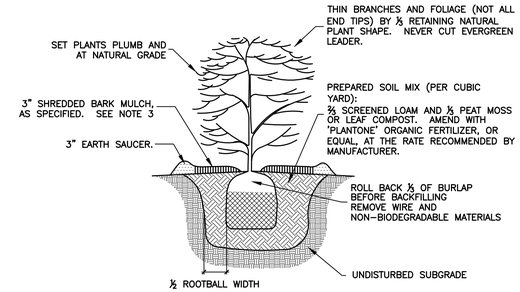
TYPICAL INSTALLATION
1. MINIMUM VERTICAL SEPARATION IS 18" FROM TOP OF PIPE TO BOTTOM OF PIPE.
2. SEWER JOINTS ARE TO SPACED EQUIDISTANT AND AS FAR AS POSSIBLE FROM THE WATER MAIN JOINTS.

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

4 C-11 WATER AND SEWER SEPARATION

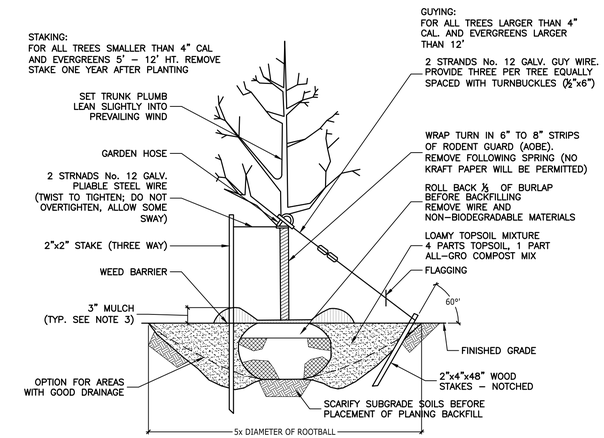
SCALE: NTS



NOTES
1. IF ROOT BALL IS COVERED IN BURLAP, REMOVE TOP ⅓ OF THE BURLAP.
2. PRUNE BROKEN BRANCHES TO RETAIN NATUAL FORM OF THE SHRUB.
3. MULCH IS TO BE PLACED 6" AWAY FROM TRUNK

5 C-11 SHRUB PLANTING

SCALE: NTS



NOTES
1. USE 8' STAKES - DRIVE 48" BELOW GROUND
2. ROOT COLLAR TO BE SLIGHTLY ABOVE SURROUNDING GRADE.
3. MULCH IS TO BE PLACED 6" AWAY FROM TRUNK.

6 C-11 TREE PLANTING DETAIL

SCALE: NTS

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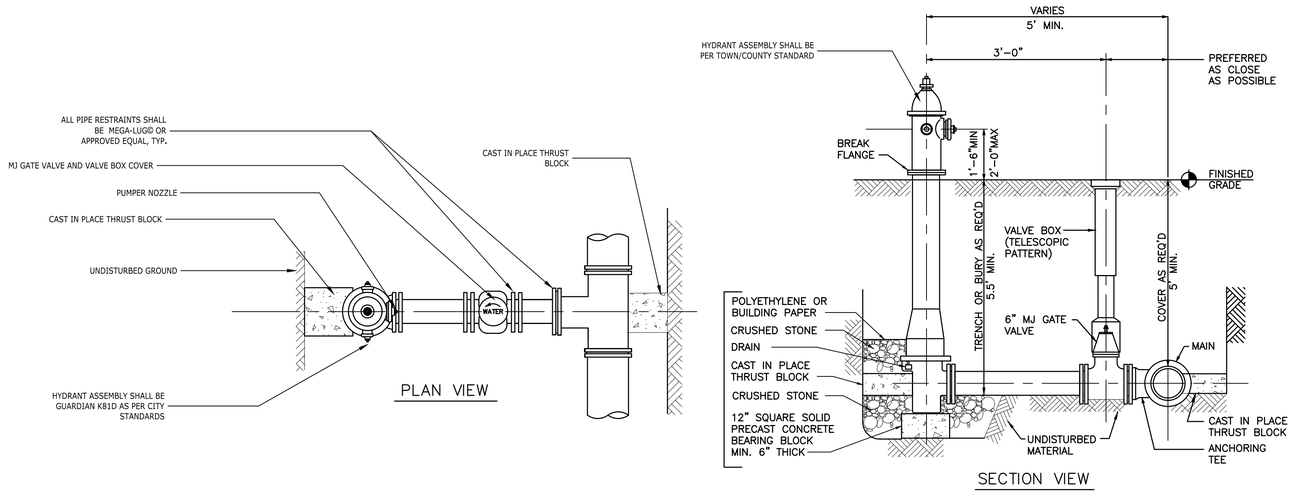
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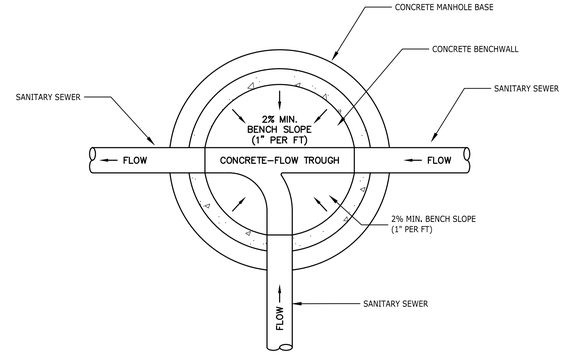
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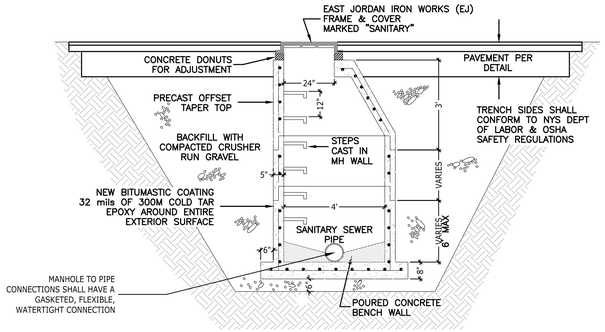
1 C–12 TYPICAL HYDRANT INSTALLATION

SCALE: NTS



2 C–12 SANITARY SEWER MANHOLE BENCH

SCALE: NTS

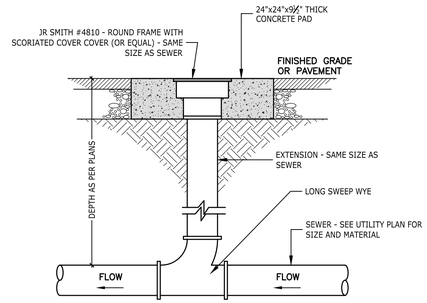


SANITARY MANHOLE GENERAL NOTES

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, 6/6 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.

3 C–12 SANITARY MANHOLE STRUCTURE

SCALE: NTS



4 C–12 TYPICAL SEWER CLEANOUT

SCALE: NTS

PROJECT TITLE:
A&E & SNY CENTER
MEDICAL CENTER DRIVE
TOWN OF MANLIUS ONONDAGA COUNTY, NEW YORK

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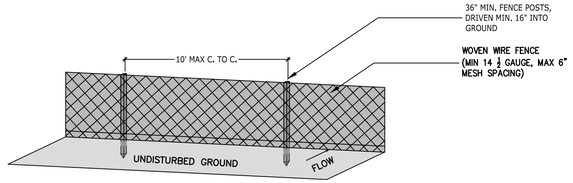
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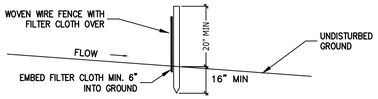
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POSTS: STEEL, EITHER "T" OR "U" TYPE OR 2" HARDWOOD

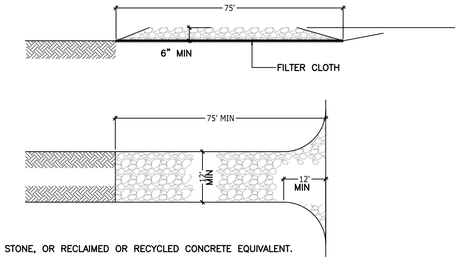
FENCE: WOVEN WIRE, 14 1/2 GAUGE, 6" MAX. MESH OPENING

FILTER CLOTH: FILTER X., MIRAFI 100X, STABILINKA T140N OR APPROVED EQUAL

PREFABRICATED UNIT: GEOFAB, ENVIROFENCE, OR APPROVED EQUAL

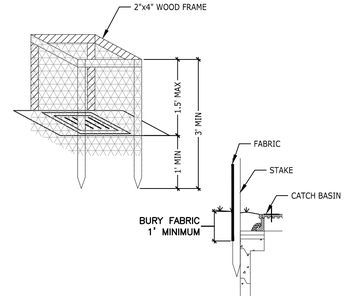
1. WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES.
2. FILTER CLOTH IS TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER, THEY SHALL BE OVERLAPPED BY SIX INCHES AND FOLDED.
4. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.

1 C–13 SILT FENCE
SCALE: NTS



1. STONE SIZE – USE 2" STONE, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH – NOT LESS THAN 75 FEET.
3. THICKNESS – NOT LESS THAN SIX (6) INCHES.
4. 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.
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.

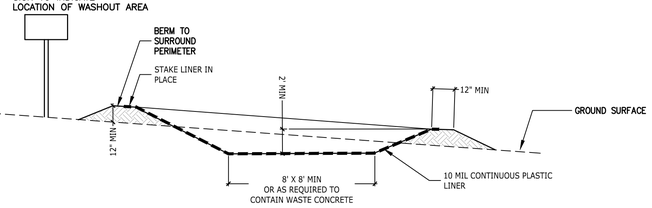
2 C–13 CONSTRUCTION ENTRANCE
SCALE: NTS



CONSTRUCTION SPECIFICATIONS

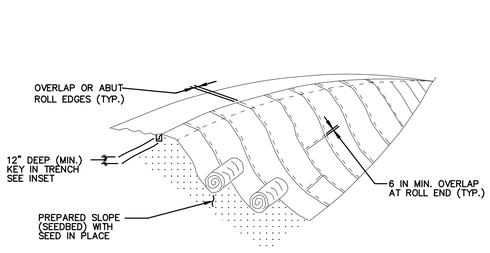
1. FILTER FABRIC SHALL HAVE AN EOS OF 40–85.
2. CUT FABRIC FROM A CONTINUOUS ROLL TO ELIMINATE JOINTS. IF JOINTS ARE NEEDED THEY WILL BE OVERLAPPED TO THE NEXT STAKE.
3. STAKE MATERIALS WILL BE STANDARD 2"x4" WOOD OR EQUIVALENT METAL WITH A MINIMUM LENGTH OF 3 FEET.
4. SPACE STAKES EVENLY AROUND INLET 3 FEET APART AND DRIVE A MINIMUM 18 INCHES DEEP. SPANS GREATER THAN 3 FEET MAY BE BRIDGED WITH THE USE OF WIRE MESH BEHIND THE FILTER FABRIC FOR SUPPORT.
5. FABRIC SHALL BE EMBEDDED 1 FOOT MINIMUM BELOW GROUND AND BACKFILLED. IT SHALL BE SECURELY FASTENED TO THE STAKES AND FRAME.
6. A 2"x4" WOOD FRAME SHALL BE COMPLETED AROUND THE CREST OF THE FABRIC FOR OVER FLOW STABILITY.

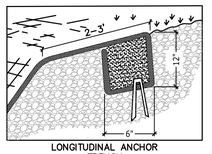
3 C–13 INLET PROTECTION - VARIATIONS
SCALE: NTS



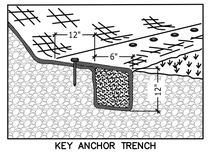
NOTES:
1. CONCRETE WASHOUT AREA SHALL BE INSTALLED PRIOR TO ANY CONCRETE PLACEMENT ON SITE.
2. CONCRETE WASHOUT OUT AREA SHALL BE LINED WITH A 10 MIL IMPERMEABLE LINER AND STAKED IN PLACE.
3. SIGNS SHALL BE PLACED AT THE CONSTRUCTION ENTRANCE, AT THE WASHOUT AREA, AND ELSEWHERE AS NECESSARY TO CLEARLY INDICATE LOCATION OF CONCRETE WASHOUT AREA TO OPERATORS OF CONCRETE TRUCKS AND PUMP RIGS.
4. THE CONCRETE WAHSOUT 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.

4 C–13 CONCRETE WASHOUT AREA
SCALE: NTS





LONGITUDINAL ANCHOR TRENCH



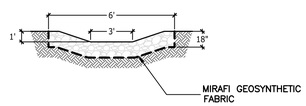
KEY ANCHOR TRENCH

CONSTRUCTION SPECIFICATIONS

1. USE MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLANS.
2. USE TEMPORARY SOIL STABILIZATION MATTING MADE OF DEGRADABLE (LASTS 6 MONTHS MINIMUM) NATURAL OR MAN–MADE FIBERS (MOSTLY ORGANIC). MAT MUST HAVE UNIFORM THICKNESS AND DISTRIBUTION OF FIBERS THROUGHOUT AND BE SMOLDER RESISTANT. CHEMICALS USED IN THE MAT MUST BE NON–LEACHING AND NON–TOXIC TO VEGETATION AND SEED GERMINATION AND NON–INJURIOUS TO THE SKIN. IF PRESENT, NETTING MUST BE EXTRUDED PLASTIC WITH A MAXIMUM MESH OPENING OF 2x2 INCHES AND SUFFICIENTLY BONDED OR SEWN ON 2 INCH CENTERS ALONG LONGITUDINAL AXIS OF THE MATERIAL TO PREVENT SEPARATION OF THE NET FROM THE PARENT MATERIAL.
3. SECURE MATTING USING STEEL STAPLES, WOOD STAKES, OR BIODEGRADABLE EQUIVALENT. STAPLES MUST BE "U" OR "T" SHAPED STEEL WIRE HAVING A MINIMUM GAUGE OF NO. 11 AND NO. 8 RESPECTIVELY. "U" SHAPED STAPLES MUST AVERAGE 1 TO 1½ INCHES WIDE AND BE A MINIMUM OF 6 INCHES LONG. "T" SHAPED STAPLES MUST HAVE A MINIMUM 8 INCH MAIN LEG, A MINIMUM 1 INCH SECONDARY LEG, AND A MINIMUM 4 INCH HEAD. WOOD STAKES MUST BE ROUGH–SAWN HARDWOOD, 12 TO 24 INCHES IN LENGTH, 1x3 INCH IN CROSS SECTION, AND WEDGE SHAPED AT THE BOTTOM.
4. 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.
5. UNROLL MATTING DOWNSLOPE. LAY MAT SMOOTHLY AND FIRMLY UPON THE SEEDED SURFACE. AVOID STRETCHING THE MATTING.
6. 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.
7. KEY IN THE UPSLOPE END OF MAT 6 INCHES (MINIMUM) BY DIGGING A TRENCH, PLACING THE MATTING ROLL END IN THE TRENCH, STAPLING THE MAT IN PLACE, REPLACING THE EXCAVATED MATERIAL, AND TAMPING TO SECURE THE MAT END IN THE KEY.
8. STAPLE/STAKE MAT IN A STAGGERED PATTERN ON 4 FOOT (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS.
9. ESTABLISH AND MAINTAIN VEGETATION SO THAT REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B–4 VEGETATIVE STABILIZATION.

5 C–13 SLOPE STABILIZATION
SCALE: NTS

SLOPE STABILIZATION MAT SHALL BE PROPEX LANDLOCK© 450 TURF REINFORCEMENT MAT, OR EQUAL



6 C–13 RIP-RAP SWALE
SCALE: NTS

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: DETAILS

NO.	REVISION/ISSUE	DATE
B	PLANNING BOARD SUBMITTAL	10/13/22
A	PLANNING BOARD SUBMITTAL	08/25/22

PREPARED BY:
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FOR PERMITTING PURPOSES ONLY
NOT FOR CONSTRUCTION

PLAN SEAL BY: P.E.
RODNEY C. IVES, JR., P.E.
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PROJECT NO. 21-2022
DATE 25 AUG 2022
SCALE AS SHOWN

SHEET C-13

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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 ENTITY WHICH ALTERS THIS DOCUMENT IS REQUIRED BY LAW TO AFFIX TO THE ALTERED DOCUMENT, A NOTATION STATING "ALTERED BY" FOLLOWED BY HIS OR HER NAME AND A DESCRIPTION OF THE ALTERATIONS.

EROSION CONTROL NOTES

EROSION AND SEDIMENT CONTROLS

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. FREQUENT WATERING OF EXCAVATION AND FILL AREAS TO MINIMIZE WIND EROSION DURING CONSTRUCTION.
   C. USE OF STABILIZATION FABRIC FOR ALL SLOPES HAVING A SLOPE OF 1V:3H OR GREATER.
   D. 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
   B. MULCHING EXPOSED AREAS.
   C. FREQUENT WATERING TO MINIMIZE WIND EROSION DURING CONSTRUCTION.

3. STRUCTURAL PRACTICES (PERMANENT)
   PERMANENT STRUCTURAL PRACTICES FOR THIS SITE INCLUDE:

   A. 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.

4. STRUCTURAL PRACTICES (TEMPORARY)
   STRUCTURAL PRACTICES FOR THIS SITE INCLUDE:

   A. PERIMETER PROTECTION USING SILT FENCE. SILT FENCE WILL BE PLACED ALONG THE PERIMETER OF ALL DISTURBED AREAS AND AT KEY LOCATIONS THROUGHOUT THE SITE. SILT FENCE WILL ALSO BE PLACED ALONG THE EDGES OF ALL WETLAND AREAS THAT ARE NOT TO BE DISTURBED.
   B. STABILIZED CONSTRUCTION EXIT POINTS AND GRAVEL LAYDOWN AREA.

5. SEQUENCE OF MAJOR ACTIVITIES
   THE CONTRACTOR WILL BE RESPONSIBLE FOR IMPLEMENTING THE FOLLOWING EROSION CONTROL AND STORMWATER MANAGEMENT CONTROL STRUCTURES. THE CONTRACTOR MAY DESIGNATE THESE TASKS TO CERTAIN SUBCONTRACTORS AS HE SEES FIT, BUT THE ULTIMATE RESPONSIBILITY FOR IMPLEMENTING THESE CONTROLS AND ENSURING THEIR PROPER FUNCTIONING REMAINS WITH THE CONTRACTOR. THE ORDER OF ACTIVITIES WILL BE AS FOLLOWS (REFER TO THE EROSION AND SEDIMENT CONTROL PLAN SHEET CONTAINED IN THIS SWPPP FOR DETAILS):

   A. CONDUCT A PRE-CONSTRUCTION MEETING WITH ALL INVOLVED PARTIES
   B. DELINEATE BOUNDARIES OF DISTURBANCE AS PER THE GRADING PLAN
   C. CONSTRUCT TEMPORARY CONSTRUCTION EXITS AT LOCATIONS SHOWN
   D. INSTALL PERIMETER SILT FENCE
   E. INSTALL STABILIZED STAGING AREAS
   F. COMMENCE ROUGH SITE GRADING. DISTURBED AREAS OF THE SITE WHERE CONSTRUCTION ACTIVITY HAS CEASED FOR MORE THAN SEVEN DAYS SHALL BE TEMPORARILY SEEDED
   G. BUILDING FOUNDATION EXCAVATION
   H. UTILITY INSTALLATION
   I. ESTABLISH SUBGRADE OF ASPHALT PAVEMENT
   J. PLACE STONE BASE MATERIAL FOR ASPHALT PAVEMENT AND COMPACT
   K. PAVE PARKING LOT
   L. SOIL RESTORATION PER NYS STORMWATER DESIGN MANUAL TABLE 5.3
   M. FINAL SITE GRADING
   N. SEEDING AND PLANTING
   O. RESTORE AND STABILIZE ANY DISTURBED AREAS REMAINING UPON REMOVAL OF ESC MEASURES

OTHER CONTROLS

1. OFF-SITE VEHICLE TRACKING
   A STABILIZED CONSTRUCTION EXIT WILL BE PROVIDED TO HELP REDUCE VEHICLE TRACKING OF SEDIMENTS. A STABILIZED EXIT, CONSISTING OF STONE, WILL BE CONSTRUCTED AS PER THE PLAN AND DETAILS. THE PAVED STREETS ADJACENT TO THE SITE ENTRANCE WILL BE INSPECTED DAILY AND SWEPT AS NECESSARY TO REMOVE ANY EXCESS MUD, DIRT, OR ROCK TRACKED FROM THE SITE. DUMP TRUCKS HAULING MATERIAL FROM THE CONSTRUCTION SITE WILL BE COVERED WITH A TARPAULIN. THE JOB SITE SUPERINTENDENT WILL BE RESPONSIBLE FOR SEEING THAT THESE PROCEDURES ARE FOLLOWED.

2. EXCAVATION SPOIL MATERIALS
   EXCAVATION SPOIL MATERIALS ARE GENERATED DURING THE GRADING OF THE SITE AND THE EXCAVATION OF THE FACILITY'S FOOTINGS. THESE MATERIALS MUST BE PROPERLY MANAGED TO PREVENT THEM FROM CONTRIBUTING TO STORM WATER DISCHARGES. THE MATERIALS GENERATED FROM THE DEVELOPMENT OF THIS PROJECT SHALL BE STABILIZED BY VEGETATIVE AND STRUCTURAL MEANS, DEPENDING ON LOCATION WITHIN THE PROJECT SITE.

3. DUST CONTROL
   MINIMIZING WIND EROSION AND CONTROLLING DUST WILL BE ACCOMPLISHED BY ONE OR MORE OF THE FOLLOWING METHODS:

   A. COVERING 30% OR MORE OF THE SOIL SURFACE WITH A NON-ERODIBLE MATERIAL.
   B. FREQUENT WATERING OF EXCAVATION AND FILL AREAS.
   C. PROVIDING GRAVEL OR PAVING AT ENTRANCE/EXIT DRIVES, PARKING AREAS AND TRANSIT PATHS.

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 ONCE 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.
6. TEMPORARY AND PERMANENT SEEDING AND ALL OTHER STABILIZATION MEASURES WILL BE INSPECTED FOR BARE SPOTS, WASHOUTS, AND HEALTHY GROWTH.
7. A MAINTENANCE INSPECTION REPORT WILL BE MADE AFTER EACH INSPECTION AND DISTRIBUTED VIA EMAIL TO THE OWNER, CONTRACTOR AND CITY REPRESENTATIVE WITHIN 24 HOURS OF THE INSPECTION. EXAMPLE COPIES OF THE REPORT FORMS TO BE COMPLETED BY THE INSPECTOR ARE INCLUDED IN THIS SWPPP.
8. 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.
9. DISTURBED AREAS AND MATERIALS STORAGE AREAS WILL BE INSPECTED FOR EVIDENCE OF OR POTENTIAL FOR POLLUTANTS ENTERING STORMWATER SYSTEMS.
10. 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.
11. 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 IMMEDIATELY REPORTED TO THE NYSDEC 24-HOUR SPILL HOTLINE AT 1-800-457-7362.
12. LONG TERM MAINTENANCE: THE SITE CONTRACTOR IS TO REMOVE ALL ACCUMULATED SEDIMENT FROM THE FOREBAYS ONCE CONSTRUCTION IS COMPLETE AND ALL EXPOSED SURFACES ARE STABILIZED. REMOVED SEDIMENT CAN BE DISPOSED BY EITHER LAND APPLICATION OR LAND FILLING. IN EITHER CASE, SEDIMENT SHALL BE STABILIZED BY EITHER STRUCTURAL OR VEGETATIVE PRACTICES TO PREVENT EROSION.

    THEREAFTER, THE PROPERTY OWNER IS RESPONSIBLE FOR THE LONG TERM MAINTENANCE AND OPERATION OF THE STORMWATER MANAGEMENT SYSTEM. MAINTENANCE SHALL INCLUDE:

- MONTHLY INSPECTION OF THE DETENTION BASIN OUTLET. TRASH, DEBRIS, SEDIMENTS, AND OTHER IMPEDIMENTS TO FLOW THROUGH THE OUTLETS SHALL BE REMOVED AND DISPOSED IN AN ACCEPTABLE MANNER.
- SEASONAL INSPECTION OF THE VEGETATIVE GROWTH IN THE BIORETNETION BASIN. BARE SPOTS ARE TO BE SEEDED AND MULCHED. WOODY VEGETATION IS TO BE REMOVED. WEED GROWTH IS TO BE CONTROLLED BY PHYSICAL MEANS ONLY; NO CHEMICALS ARE TO BE APPLIED IN THE BASIN. THE BASIN AND EMBANKMENT ARE TO BE MOWED ANNUALLY.
- DETENTION BASIN OUTLET AND OTHER AREAS DOWNSTREAM OF THE SYSTEM ARE TO BE INSPECTED MONTHLY. AREAS OF EROSION AND/OR SCOUR ARE TO BE STABILIZED.

INSPECTION AND MAINTENANCE REPORT FORMS
ONCE INSTALLATION OF ANY REQUIRED OR OPTIONAL EROSION CONTROL DEVICE OR MEASURE HAS BEEN IMPLEMENTED, INSPECTIONS SHALL BE PERFORMED AT LEAST ONCE EVERY SEVEN (7) CALENDAR DAYS AND SHALL BE PERFORMED BY A QUALIFIED PROFESSIONAL. INSPECTIONS SHALL BE PERFORMED TWICE EVERY SEVEN (7) DAYS WHEN THE DISTURBED AREA IS GREATER THAN 5 ACRES. THE FORMS FOUND IN THIS SWPPP (OR SIMILAR) SHALL BE USED BY THE INSPECTOR 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 SPDES SWPPP DRAWINGS DURING CONSTRUCTION OPERATIONS.
2. NO LAND CLEARING OR GRADING SHALL BEGIN UNTIL ALL 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 7 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 SOIL 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. COMPACT & MAINTAIN 10,000 SQ. FT. OF 6" THICK STONE MATERIAL LAYDOWN AREA & 15' WIDE GRAVEL ACCESS ROAD TO SITE.
11. GENERAL CONTRACTOR SHALL BE RESPONSIBLE TO ESTABLISH PERMANENT SOIL STABILIZATION.
12. ALL WORK TO BE DONE IN STRICT ACCORDANCE WITH THE NEW YORK STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL.
13. THE GENERAL CONTRACTOR SHALL STRICTLY ADHERE TO THE STORMWATER POLLUTION PREVENTION PLAN DURING CONSTRUCTION OPERATIONS.

TEMPORARY SEEDING MIXTURES	LBS./ACRE	LBS./1000 SQ. FT
FOR SPRING, SUMMER OR EARLY FALL SEEDINGS:		
A. ANNUAL RYEGRASS	30	0.70
B. PERENNIAL RYEGRASS	30	0.70
FOR LATE FALL OR EARLY WINTER		
A. WINTER RYE (AROOSTOOK)	100	2.50

PERMANENT SEEDINGS SHOULD TAKE PLACE IN EARLY SPRING. PROPER MULCHING AND ADAQUATE MOISTURE MUST BE PROVIDED FOR PERMANENT SEEDING. RESEEDING OF FAILED AREAS SHALL TAKE PLACE DURING LATE SUMMER/EARLY FALL OR DURING THE FOLLOWING SPRING.

FERTILIZER:
10% NITROGEN
0% PHOSPHORUS
4% POTASH

HYDROMULCH
HYDROMULCH SHALL BE A WOOD-FIBER COMPOSITION (50% PAPER - 50% WOOD)
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.

PERMANENT SEEDING MIXTURES	LBS./ACRE	LBS./1000 SQ. FT
SEED MIXTURE NO. 1		
CREEPING RED FESCUE (var. ENSYLVA)	10	0.25
PERENNIAL RYE GRASS (var. PENNFINE)	10	0.25
SEED MIXTURE NO. 2		
CREEPING RED FESCUE (var. ENSYLVA)	20	0.45
SAND LOVEGRASS	2	0.05
SEED MIXTURE NO. 3		
BIRDSFOOT TREFOIL (var. EMPIRE, PARDEE)	10	0.25
REDTOP	2	0.05
TALL FESCUE (var. KY 31, REBEL)	20	0.45
SEED MIXTURE NO. 4		
CREEPING RED FESCUE (var. ENSYLVA)	20	0.45
TALL FESCUE (var. KY 31, REBEL)	20	0.45
PERENNIAL RYE GRASS (var. PENNFINE)	5	0.10
BIRDSFOOT TREFOIL (var. EMPIRE, PARDEE)	10	0.25

SEED MIXTURE 1 TO BE APPLIED TO SHADED AREAS.

SEED MIXTURE 2 IS IN PURE LIVE SEED. TO BE APPLIED TO AREAS UPLAND OF WETLANDS AND ALONG STORMWATER MITIGATION BASIN BANKS.

SEED MIXTURE 3 TO BE APPLIED TO ALL SWALES AND WATERWAYS. WHITE CLOVER OR LADINO CLOVER MAY BE SUBSTITUTED FOR BRIDSFOOT TREFOIL AND SEEDED AT THE SAME RATE
PERENNIAL RYEGRASS MAY BE SUBSTITUTED FOR REDTOP BUT INCREASE SEEDING RATE TO 5 LBS./ACRE (0.1 LBS./1000 SQ. FT)

SEED MIXTURE 4 TO BE APPLIED TO ALL AREAS. (NOT FOR USE IN PLAYGROUNDS OR AS TURF)

METHOD OF SEEDING
BROADCAST, DRILLING WITH A CULTIPACK TYPE SEEDER, OR HYDROSEEDING ARE ACCEPTABLE. GOOD SOIL TO SEED CONTACT IS THE KEY TO SUCCESSFUL SEEDINGS.

MULCHING
APPLY STRAW MULCH AT A RATE OF 2 TON/ACRE (90 LBS./1,000 SF) ANCHORED WITH WOOD FIBER MULCH (HYDROMULCH) AT 500 - 750 LBS./ACRE (11 - 17 LBS./1,000 SF). THE WOOD FIBER MULCH MUST BE APPLIED THROUGH A HYDROSEEDER AFTER MULCHING.

IRRIGATION
WATERING MAY BE ESSENTIAL TO ESTABLISH TO NEW SEEDING. WEATHER CONDITIONS WILL DICTATE WHEN TO WATER. EACH APPLICATION MUST BE UNIFORMLY APPLIED AND 1 TO 2 INCHES OF WATER SHOULD BE APPLIED PER APPLICATION.

PERMANENT SEEDING TO OCCUR AFTER FINAL GRADING HAS OCCURRED. PERMANENT SEEDING WILL INCLUDE:
SITE PREPARATION
A. SCARIFY ALL COMPACT, SLOWLY PERMEABLE, MEDIUM AND FINE TEXTURED SUBSOIL AREAS. SCARIFY AT APPROXIMATELY RIGHT ANGLES TO THE SLOPE DIRECTION IN SOIL AREAS THAT ARE STEEPER THAN 5 PERCENT.
B. REMOVE REFUSE, WOOD PLANT PARTS, STONES OVER 3 INCHES IN DIAMETER, AND OTHER LITTER.

TOPSOIL MATERIALS
A. TOPSOIL SHALL HAVE AT LEAST 2 PERCENT AND NO GREATER THAN 6 PERCENT BY WEIGHT OF FINE TEXTURED STABLE ORGANIC MATERIAL.
B. TOPSOIL SHALL HAVE NOT LESS THAN 20 PERCENT FINE TEXTURED MATERIAL (PASSING THE NO. 200 SIEVE) AND NOT MORE THAN 15 PERCENT CLAY.
C. TOPSOIL TREATED WITH SOIL STERILANTS OR HERBICIDES SHALL BE SO IDENTIFIED TO THE PURCHASER.
D. TOPSOIL SHALL BE RELATIVELY FREE OF STONES OVER 1½" INCHES IN DIAMETER, TRASH, NOXIOUS WEEDS SUCH AS NUTSEDGE AND QUACKGRASS, AND WILL HAVE LESS THAN 10% GRAVEL BY VOLUME.
E. TOPSOIL CONTAINING SOLUBLE SALTS GREATER THAN 500 PPM SHALL NOT BE USED.

APPLICATION AND GRADING
A. TOPSOIL SHALL BE DISTRIBUTED TO A UNIFORM DEPTH OVER THE AREA. IT SHALL NOT BE PLACED WHEN IT IS PARTLY FROZEN, MUDDY, OR ON FROZEN SLOPES OR OVER ICE, SNOW, OR STANDING WATER PUDDLES.
B. TOPSOIL PLACED AND GRADED ON SLOPES STEEPER THAN 5% SHALL BE PROMPTLY FERTILIZED, SEEDED, MULCHED AND STABILIZED BY "TRACKING" WITH SUITABLE EQUIPMENT.
C. A MINIMUM OF 6 INCHES OF TOPSOIL IS TO BE USED IN ALL AREAS.

SOIL RESTORATION

NEW YORK STATE STORMWATER MANAGEMENT DESIGN MANUAL
CHAPTER 5: GREEN INFRASTRUCTURE PRACTICES
SECTION 5.1: PLANNING FOR GREEN INFRASTRUCTURE PRESERVATION OF NATURAL RESOURCES AND CONSERVATION DESIGN

TABLE 5.3 SOIL RESTORATION REQUIREMENTS

TYPE OF SOIL DISTURBANCE	SOIL RESTORATION REQUIREMENT		COMMENTS
NO SOIL DISTURBANCE	RESTORATION NOT PERMITTED		PRESERVATION OF NATURAL FEATURES
MINIMAL SOIL DISTURBANCE	RESTORATION NOT REQUIRED		CLEARING AND GRUBBING
AREA WHERE TOPSOIL IS STRIPPED ONLY — NO GRADE CHANGE	HSG A&B APPLY 6" OF TOPSOIL	HSG C&D AERATE* AND PROVIDE 6" TOPSOIL	PROTECT AREA FROM ONGOING CONSTRUCTION ACTIVITIES
AREAS OF CUT OR FILL	HSG A&B AERATE* AND PROVIDE 6" TOPSOIL	HSG C&D APPLY FULL SOIL RESTORATION**	
HEAVY TRAFFIC AREAS ON SITE (ESPECIALLY IN A ZONE 5-25 FEET AROUND BUILDINGS BUT NOT WITHIN A 5 FOOT PERIMETER AROUND FOUNDATION WALLS)	APPLY FULL SOIL RESTORATION (DE-COMPACTION AND COMPOST ENHANCEMENT		
AREAS WHERE RUNOFF REDUCTION AND/OR INFILTRATION PRACTICES ARE APPLIED	RESTORATION NOT REQUIRED BUT MAY BE APPLIED TO ENHANCE THE REDUCTION SPECIFIED FOR APPROPRIATE PRACTICES		KEEP CONSTRUCTION FROM CROSSING THESE AREAS. TO PROTECT NEWLY INSTALLED PRACTICE FROM ANY ONGOING CONSTRUCTION ACTIVITIES CONSTRUCT A SINGLE PHASE OPERATION FENCE AREA
REDEVELOPMENT PROJECTS	SOIL RESTORATION IS REQUIRED ON REDEVELOPMENT PROJECTS IN AREAS WHERE EXISTING IMPERVIOUS AREA WILL BE CONVERTED TO PERVIOUS AREA		

*AERATION INCLUDES THE USE OF MACHINES SUCH AS TRACTOR-DRAWN IMPLEMENTS WITH COULTERS MAKING A NARROW SLIT IN THE SOIL, A ROLLER WITH MANY SPIKES MAKING INDENTATIONS IN THE SOIL, OR PRONGS WHICH FUNCTION LIKE A MINI-SUBSOILER

**PER "DEEP RIPPING AND DE-COMPACTION, DEC 2008"

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:
DETAILS

NO.	REVISION/ISSUE	DATE
B	PLANNING BOARD SUBMITTAL	10/13/22
A	PLANNING BOARD SUBMITTAL	08/25/22

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

FOR PERMITTING PURPOSES ONLY
NOT FOR CONSTRUCTION

PLAN SEAL BY:
RODNEY C. IVES, JR., P.E.
NYS REGISTRATION # 077842

PROJECT NO. 21-2022
DATE 25 AUG 2022
SCALE

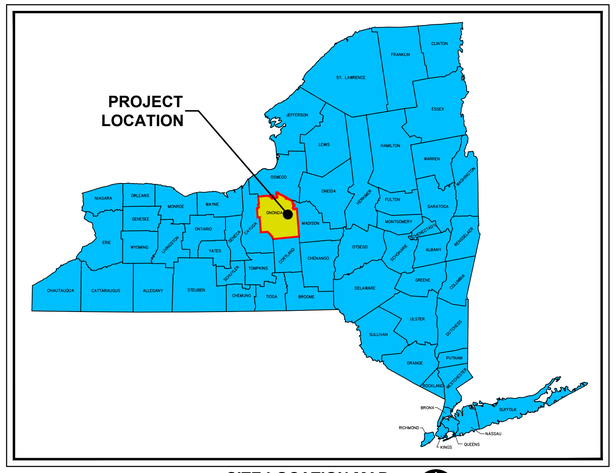
SHEET C-14

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NAPIERALA CONSULTING
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ANY ALTERED ITEM LISTED THIS DOCUMENT IS RECORDED BY LAW TO AFFIX, ADJACENT TO AND ALONG WITH THE ALTERED ITEM, THE LEGEND "ALTERED BY" FOLLOWED BY HIS OR HER NAME AND A DESCRIPTION OR EXPLANATION OF THE ALTERATIONS.

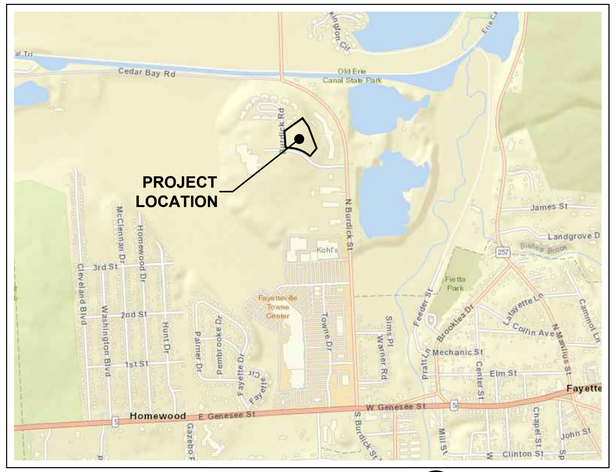
A&E & SNY CENTER

MEDICAL CENTER DRIVE
TAX PARCEL No. 086.-01-03.9

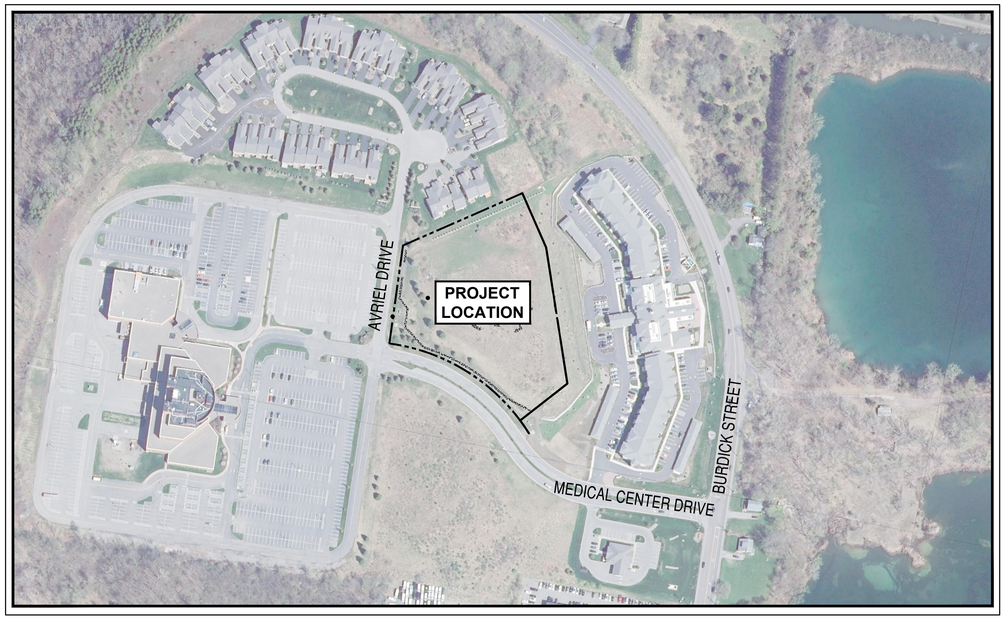
TOWN OF MANLIUS
ONONDAGA COUNTY
STATE OF NEW YORK



SITE LOCATION MAP
NOT TO SCALE



PROJECT LOCATION MAP
NOT TO SCALE



AERIAL MAP
1"=200'

PREPARED BY:

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MANLIUS, NEW YORK 13104

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PREPARED FOR:

A&E & SNY CENTER

SUITE 38
5781 BRIDGE STREET
EAST SYRACUSE, NY 13057

SHEET INDEX:

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NO.	REVISION/ISSUE	DATE
D	PLANNING BOARD SUBMITTAL	12/27/22
C	PLANNING BOARD SUBMITTAL	11/15/22
B	PLANNING BOARD SUBMITTAL	10/13/22
A	PLANNING BOARD SUBMITTAL	08/25/22

SHEET
C-1

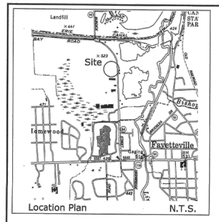
PROJECT NO.
21-2022

DATE
25 AUG 2022

XREFS: NONE

PROJECT NUMBER: 14.4342

CAD DWG. FILE NAME: Subdivision Plat.dwg



MAP NOTES

1.) NORTH ORIENTATION IS BASED ON FILED MAP 8583.

2.) ELEVATIONS BASED ON NAVD 1988 DATUM.

3.) UNDERGROUND FACILITIES, STRUCTURES AND UTILITIES HAVE BEEN PLOTTED FROM DATA OBTAINED BY FIELD SURVEY, PREVIOUS MAPS AND RECORDS, (AND PARCELS 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.

4.) FIELD WORK PERFORMED ON JUNE 17-18, 2014. LAST FIELD UPDATE - MAY 2, 2017.

5.) PARCEL IS WITHIN ZONE X (AREA OF OUTSIDE OF 500 YEAR FLOOD) AS SHOWN ON FEDERAL EMERGENCY MANAGEMENT AGENCY (F.E.M.A.) FLOOD INSURANCE MAP FOR TOWN OF MANLIUS COMMUNITY PANEL #3603840310D, MAP REVISED DATE OF FEBRUARY 5, 1992.

6.) THIS SURVEY DOES NOT CONSTITUTE A TITLE SEARCH BY C. T. MALE ASSOCIATES, D.P.C., TO DETERMINE OWNERSHIP OR EASEMENTS OF RECORD. FOR ALL INFORMATION REGARDING EASEMENTS, RIGHTS OF WAY, AND TITLE REFERENCE IS MADE TO TITLE COMMITMENT PROVIDED BY CLIENT (FIRM NOT LISTED): TITLE COMMITMENT No. DA-2014, EFFECTIVE DATE OF AUGUST 04, 2015. THIS SURVEY IS SUBJECT TO ALL EASEMENTS, COVENANTS, AND RESTRICTIONS AS RECITED THEREIN AND IS FURTHER SUBJECT TO ANY FINDINGS OR TRANSACTION REVEALED OR CONDUCTED FROM THE DATE OF SAID CONTINUATION TO THE PRESENT.

7.) SURVEYED PARCEL MAY BE SUBJECT TO THE FOLLOWING EASEMENTS/RIGHT-OF-WAYS:
   1. NEW YORK TELEPHONE COMPANY POLE LINE R.O.W. (WITH RIGHT TO TRIM AT LEAST 4'), BOOK 430/PAGE 535.
   2. N.M.P.C. GAS LINE EASEMENT (NO BUILDINGS WITHIN 5'), BOOK 2446/PAGE 10.

8.) THERE ARE NO STRIPED PARKING SPACES ON THE SUBJECT PARCEL.

9.) SITE HAS NO OBSERVABLE EVIDENCE OF RECENT EARTH MOVING WORK, BUILDING CONSTRUCTION OR ADDITIONS.

10.) NO EVIDENCE OF SITE USE AS A SOLID WASTE DUMP, SUMP OR SANITARY LANDFILL WAS NOTED.

11.) NO PROPOSED CHANGES TO STREET RIGHT OF WAY OR RECENT REPAIRS TO STREET WERE FOUND.

12.) NORTH BURDICK STREET IS A PUBLIC HIGHWAY ESTABLISHED BY PRESCRIPTIVE EASEMENT RIGHTS AND FEE APPROPRIATION. ACCESS GRANTED TO MEDICAL CENTER DRIVE AND AVRIEL DRIVE BY D.B. 4216, Pg. 102.

13.) THIS PARCEL IS ZONED FOR RA (RESTRICTED AGRICULTURAL DISTRICT) USE WITHIN THE TOWN OF MANLIUS.

Notes to Title Commitment No. DA-2014

5. Covenants, conditions, restrictions, easements, agreements of record, etc.:

(i) Reciprocal Easement (and Related Covenants and Restrictions) Agreement recorded in Book 4216 Page 102. (Affects Entire property)

(ii) Water Easements(s) recorded in Book 4154 Page 17 and Book 2512 Page 933. (Plotted - Book 4154, Pg 17 Parcels 4-6 tie off property and do not affect parcel)

(iii) Grant of Easement recorded in Book 4148 Page 315 and Book 4140 Page 35. (Plotted)

(iv) Street Widening by deeds to the County of Onondaga recorded in Book 2538 Page 702 and Book 2538 Page 700. (Plotted)

(v) Street widening recorded in Book 2531 Page 238 and Book 2831 Page 235. (Plotted -refer to same parcels inquired by County of Onondaga in exception 5iv above as options)

(vi) Gas Easement recorded in Book 2446 Page 10. (Plotted)

(vii) Notice of Appropriation recorded in Book 5275 Page 634. (Plotted)

(viii) Supplemental Appropriation recorded in Book 5289 Page 111. (Plotted)

MAP REFERENCES

1.) A MAP ENTITLED, "BOUNDARY SURVEY, DELLAS PROPERTY, PART OF MILITARY LOT 64, TOWN OF MANLIUS, ONONDAGA COUNTY, N.Y." PREPARED BY SEAR-BROWN ASSOCIATES, P.C...

2.) 1974 COUNTY OF ONONDAGA HIGHWAY APPROPRIATION MAPS AS SHOWN.

3.) FINAL PLAN NORTHEAST MEDICAL CENTER SUBDIVISION - FILED MAP No. 8583.

4.) NEW YORK STATE ACQUISITION MAP No. 17 - N. BURDICK ST. C.R. 94

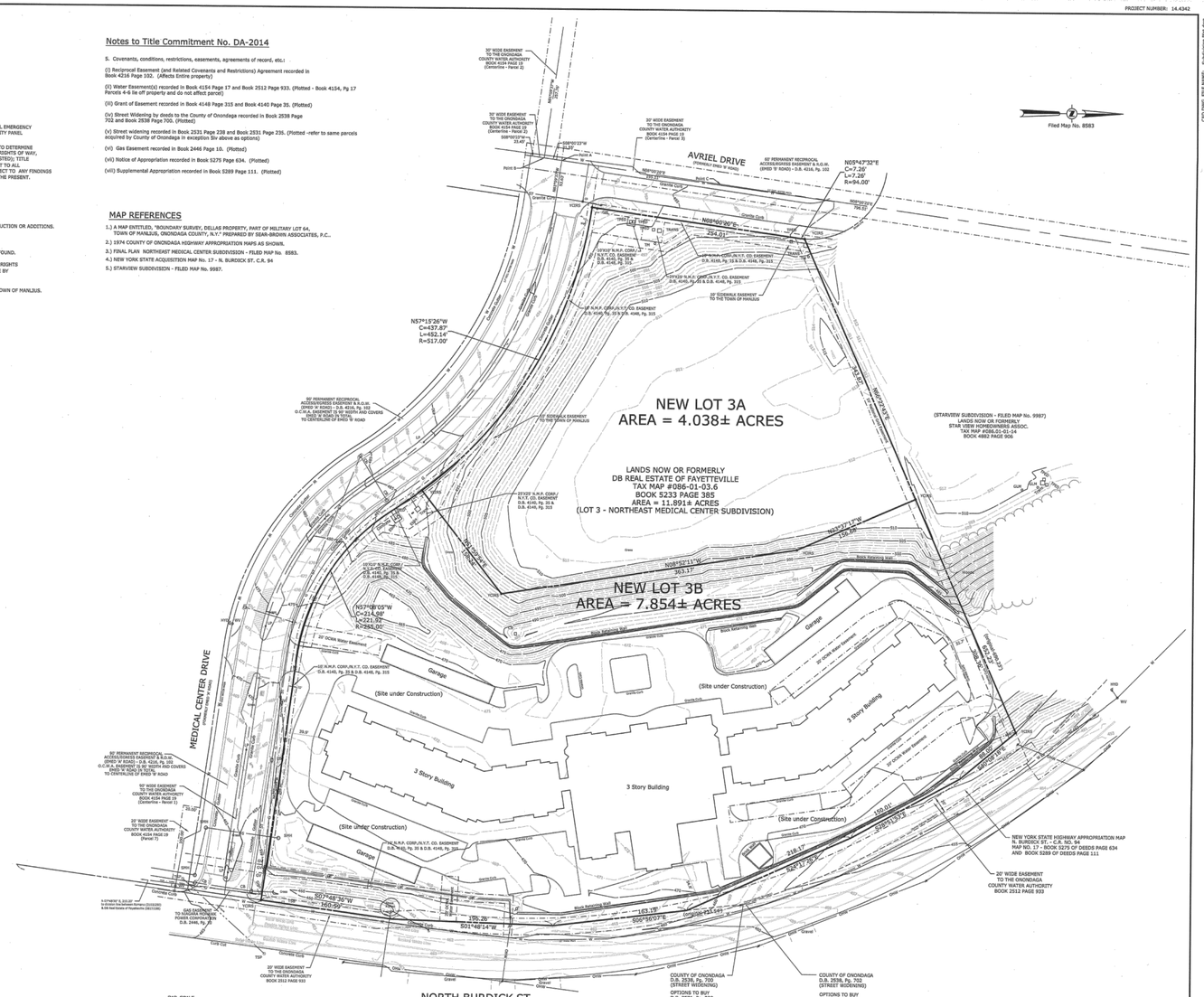
5.) STARVIEW SUBDIVISION - FILED MAP No. 9987.

Zoning Information

DISTRICT	RA - RESTRICTED AGRICULTURAL DISTRICT
ITEM	REQUIRED
MINIMUM SETBACKS: FRONT	40 ft.
SIDE	20 ft.
REAR	40 ft.
MINIMUM FRONTAGE: WITH PUBLIC SEWER / WITHOUT PUBLIC SEWER	150 ft. / 200 ft.
MINIMUM LOT SIZE: WITH PUBLIC SEWER / WITHOUT PUBLIC SEWER	40,000 sq.ft. / 100,000 sq.ft.
PARKING:	VARIES BY USE (SITE IS VACANT)

Legend of Symbols & Abbreviations

GUY WIRE
SIGN
HYDRANT
WATER VALVE
TELEPHONE PEDESTAL
CATCH BASIN
SANITARY MANHOLE
UTILITY POLE
GAS VALVE
GAS LINE MARKER
LIGHT POLE
TRAFFIC SIGNAL POLE
TRAFFIC SIGNAL BOX
WATER LINE
GAS LINE
STORM SEWER LINE
SANITARY SEWER LINE
OVERHEAD WIRES
TOP OF CURB
BOTTOM OF CURB
POLYVINYL CHLORIDE PIPE
REINFORCED CONCRETE PIPE
CORRUGATED PLASTIC PIPE
YELLOW CAPPED 5N2N ROD SET


Filed Map No. 8583
AVRIEL DRIVE
(formerly 200' 'A' ROAD)
60' PERMANENT RECIPROCAL ACCESS/SERVICE EASEMENT & N.G.H.W. (EMED 'B' ROAD) - D.B. 4216, Pg. 102
N05°47'32"E C=7.26' L=7.26' R=94.00'
N89°46'00"E 294.01'
N57°15'26"W C=437.87' L=452.14' R=517.00'
NEW LOT 3A
AREA = 4.038± ACRES
LANDS NOW OR FORMERLY
DB REAL ESTATE OF FAYETTEVILLE
TAX MAP #086-01-03.6
BOOK 5233 PAGE 385
AREA = 11.891± ACRES
(LOT 3 - NORTHEAST MEDICAL CENTER SUBDIVISION)
(STARVIEW SUBDIVISION - FILED MAP No. 9987)
LANDS NOW OR FORMERLY
STAR VIEW HOMEOWNERS ASSOC.
TAX MAP #086.01-01-14
BOOK 4882 PAGE 906
N03°27'17"W 156.38'
N08°52'11"W 363.17'
NEW LOT 3B
AREA = 7.854± ACRES
N57°08'05"W C=214.00' L=221.97' R=204.00'
MEDICAL CENTER DRIVE
(formerly known as Burdick Drive)
(Site under Construction)
3 Story Building
Garage
Brick Retaining Wall
Concrete Curb
Gravel
Grass
Trees
Shrubs
Fence
Guide Rail
Utility Pole
Guy Wire
Sign
Hydrant
Water Valve
Gas Valve
Gas Line Marker
Light Pole
Traffic Signal Pole
Traffic Signal Box
Catch Basin
Sanitary Manhole
Storm Sewer Line
Sanitary Sewer Line
Overhead Wires
Top of Curb
Bottom of Curb
Polyvinyl Chloride Pipe
Reinforced Concrete Pipe
Corrugated Plastic Pipe
Yellow Capped 5N2N Rod Set
S07°48'30"W 160.99'
S01°48'14"W 170.26'
S00°16'07"E 150.11'
S89°51'23"E 218.17'
S84°17'26"E 150.11'
N89°46'00"E 150.11'
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GENERAL NOTES

1. PROPERTY LINE INFORMATION TAKEN FROM A SURVEY BY C.T. MALE ASSOCIATES

2. 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.

3. 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.

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

5. 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.

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

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

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

9. 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.

10. 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.

11. 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.

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

13. 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.

14. 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.

15. 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.

16. 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.

17. 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.

18. 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.

19. 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.

20. MAINTAIN FLOW FOR ALL EXISTING UTILITIES.

21. 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.

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

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

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

25. 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.

GRADING NOTES

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.

UTILITY NOTES

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. THESE PLANS SHOW PUBLIC UTILITY CONNECTION ONLY. PRIVATE UTILITY SERVICE FINAL LOCATION, SIZE AND DEPTH ARE SUBJECT TO THE APPROVAL OF THE UTILITY COMPANY.

4. EXTERIOR BUILDING LIGHTING LUMINARES 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. 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.

7. 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.

8. ELECTRIC AND GAS
   ALL ELECTRIC AND GAS INSTALLATION SHALL BE COORDINATED WITH NATIONAL GRID. ALL SITE ELECTRIC IS TO BE PROVIDED BY THE BUILDING ELECTRICAL ENGINNEER. THESE DRAWINGS DO NOT SHOW CIRCUITING OR SITE WIRING. REFER TO SITE ELECTRICAL PLANS MY ELECTRICAL ENGINEER.

LEGEND: PROPOSED
(SEE EXISTING CONDITION SURVEY FOR LEGEND OF EXISTING ELEMENTS)

----- PROPOSED BUILDING
----- PROPERTY LINE
----- SETBACK LINE
GC ----- GRANITE CURB
----- PROPOSED PAVEMENT
----- PROPOSED CONCRETE SIDEWALK/PAD/APRON
----- PROPOSED CATCH BASIN
----- PROPOSED SANITARY SEWER MANHOLE
SAN ----- PROPOSED SANITARY PIPE
ST ----- PROPOSED STORM PIPE
W ----- PROPOSED WATER PIPE
G ----- PROPOSED GAS PIPE
UGE ----- PROPOSED UNDERGROUND ELECTRIC
----- PROPOSED GUARDRAIL/FENCE
----- PROPOSED DESIGNATED ACCESSIBLE PARKING SPACE
----- PROPOSED NO PARKING
418 ----- PROPOSED CONTOUR/LABEL
----- PROPOSED RIPRAP

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:
GENERAL NOTES

NO.	REVISION/ISSUE	DATE
D	PLANNING BOARD SUBMITTAL	12/27/22
C	PLANNING BOARD SUBMITTAL	11/15/22
B	PLANNING BOARD SUBMITTAL	10/13/22
A	PLANNING BOARD SUBMITTAL	08/25/22

PREPARED BY:

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FOR PERMITTING PURPOSES ONLY
NOT FOR CONSTRUCTION

PLAN SEAL BY:
RODNEY C. IKES, JR., P.E.
NYS REGISTRATION # 077842

PROJECT NO. 21-2022
DATE 25 AUG 2022
SCALE AS NOTED

SHEET **C-2**

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PLAN SEAL BY:
RODNEY C. IVES, JR., P.E.
NYS REGISTRATION # 077842

SHEET
C-3

PROJECT NO.
21-2022

DATE
25 AUG 2022

SCALE
1"=30'

PREPARED BY:
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NO.	REVISION/ISSUE	DATE
D	PLANNING BOARD SUBMITTAL	12/27/22
C	PLANNING BOARD SUBMITTAL	11/15/22
B	PLANNING BOARD SUBMITTAL	10/13/22
A	PLANNING BOARD SUBMITTAL	08/25/22

SHEET TITLE:
SITE PREPRATION 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


AVRIEL DRIVE
(FORMERLY KNOWN AS 'B' ROAD)
N05°47'32"E
C=7.26'
L=7.26'
R=94.00'
N66°22'43"E
343.87'
N23°37'17"W
156.68'
N08°52'11"W
363.17'
N57°15'26"W
C=437.87'
L=452.14'
R=517.00'
N51°05'54"E
158.24'
N10°00'20"E
254.01'
RETAINING WALL
SITE LIGHT, TYP.
STORMWATER BASIN
CONCRETE CURB,TYP.
5.5' CONCRETE SIDEWALK WITH 6" CURB
ACCESSIBLE SIGNS, TYP.
LOADING ZONE
MEDICAL OFFICE
UPPER LEVEL ONLY - 3,315 SF
PERSONAL SERVICES (SALON)
UPPER LEVEL ONLY - 3,995 SF
MEDICAL OFFICE
UPPER FLOOR - 17,285 SF
LOWER FLOOR - 15,400 SF
TOTAL - 32,685 SF
PATIO
COURTYARD
MEDICAL CENTER DRIVE
REPLACE EXISTING STONE DUST PATH WITH
FIVE FOOT-WIDE CONCRETE SIDEWALK
12" DUCTILE WATER MAIN
Granite Curb
Granite Curb
Concrete Curb
Concrete Curb
Concrete Curb
Concrete Curb
Concrete Curb
Concrete Curb
Inv=489.74
Inv=489.79
Inv=488.64
Inv=488.64
Riser @ 99
N:1,000.29
E:1,480.64
S.I.=488.64
10" Spruce
12" Spruce
14" Hdwd
17" Hdwd
24" Hdwd
TREE
TREE
TREE

1 C-5 UTILITY PLAN
SCALE: 1"=30'

2 C-5 UTILITY PLAN
SCALE: 1"=30'

GRAPHIC SCALE
0
30'
60'
(IN FEET)
1 inch = 30 ft

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PLAN SEAL BY:
RODNEY C. INES, JR., P.E.
NYS REGISTRATION # 075842

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PROJECT NO.	DATE	SCALE
21-2022	25 AUG 2022	1"=30'

SHEET C-5

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:
UTILITY PLAN

NO.	REVISION/ISSUE	DATE
D	PLANNING BOARD SUBMITTAL	12/27/22
C	PLANNING BOARD SUBMITTAL	11/15/22
B	PLANNING BOARD SUBMITTAL	10/13/22
A	PLANNING BOARD SUBMITTAL	08/25/22

PREPARED BY:
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GRADING PLAN LEGEND

- 458 — EXISTING CONTOUR GRADES
- 459 — PROPOSED CONTOUR GRADES
- 459.2 — PROPOSED FINISHED SPOT ELEVATION
- TC= XXX.XX / BC= XXX.XX — PROPOSED TOP OF CURB AND BOTTOM OF CURB ELEVATIONS
- MEE — MATCH/MEET EXISTING ELEVATION

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NYS REGISTRATION # 077842

GRAPHIC SCALE
1 INCH = 30 FT.
(IN FEET)
0
30'
60'

SHEET
C-6

PROJECT NO.
21-2022

DATE
25 AUG 2022

SCALE
1"=30'

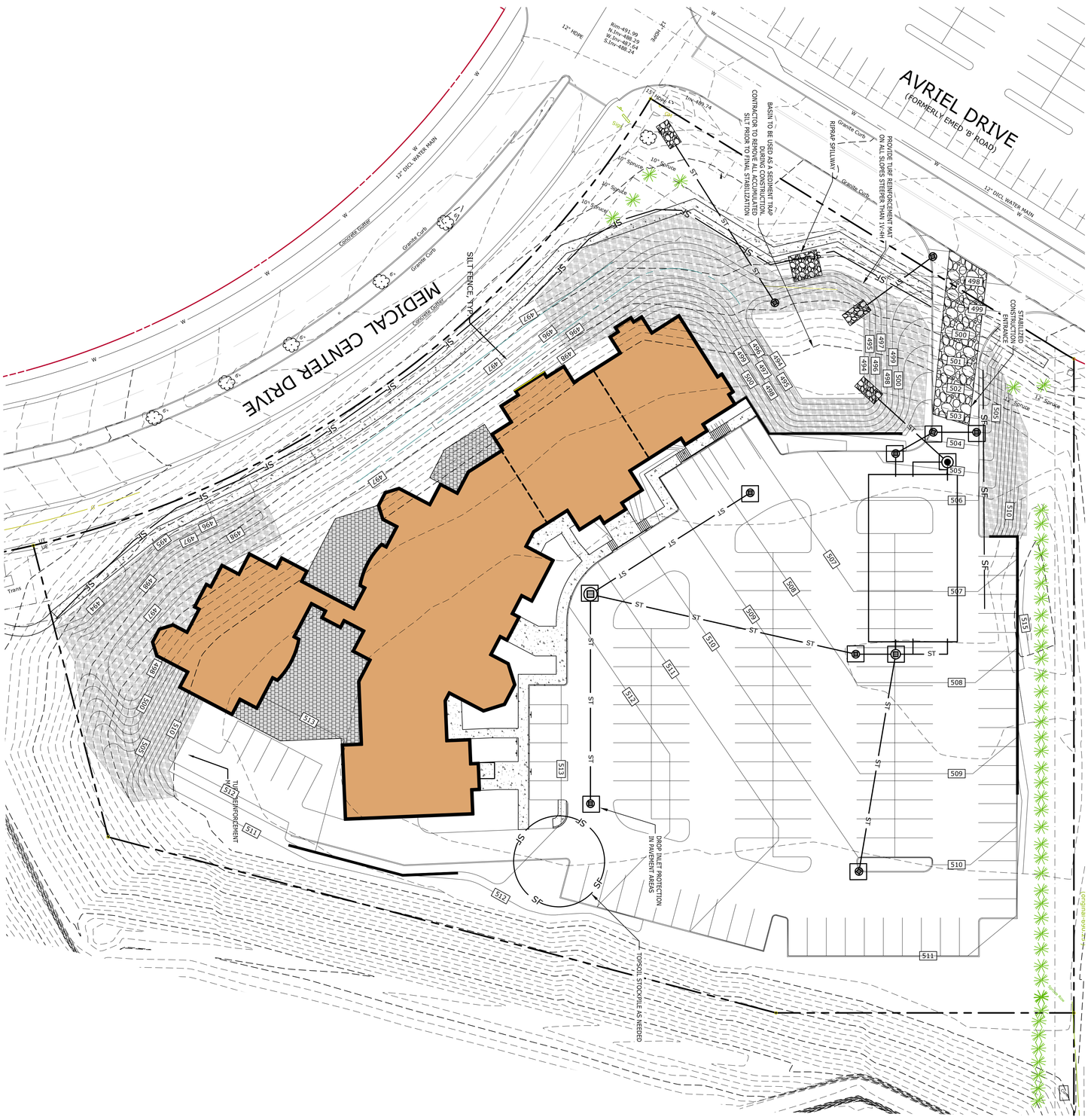
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B	PLANNING BOARD SUBMITTAL	10/13/22
A	PLANNING BOARD SUBMITTAL	08/25/22

SHEET TITLE:
GRADING 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



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RODNEY C. IVES, JR., P.E.
NYS REGISTRATION # 077842

GRAPHIC SCALE
0
30'
60'
(IN FEET)
1 INCH = 30 ft.

SHEET
C-7

PROJECT NO.
21-2022

DATE
25 AUG 2022

SCALE
1"=30'

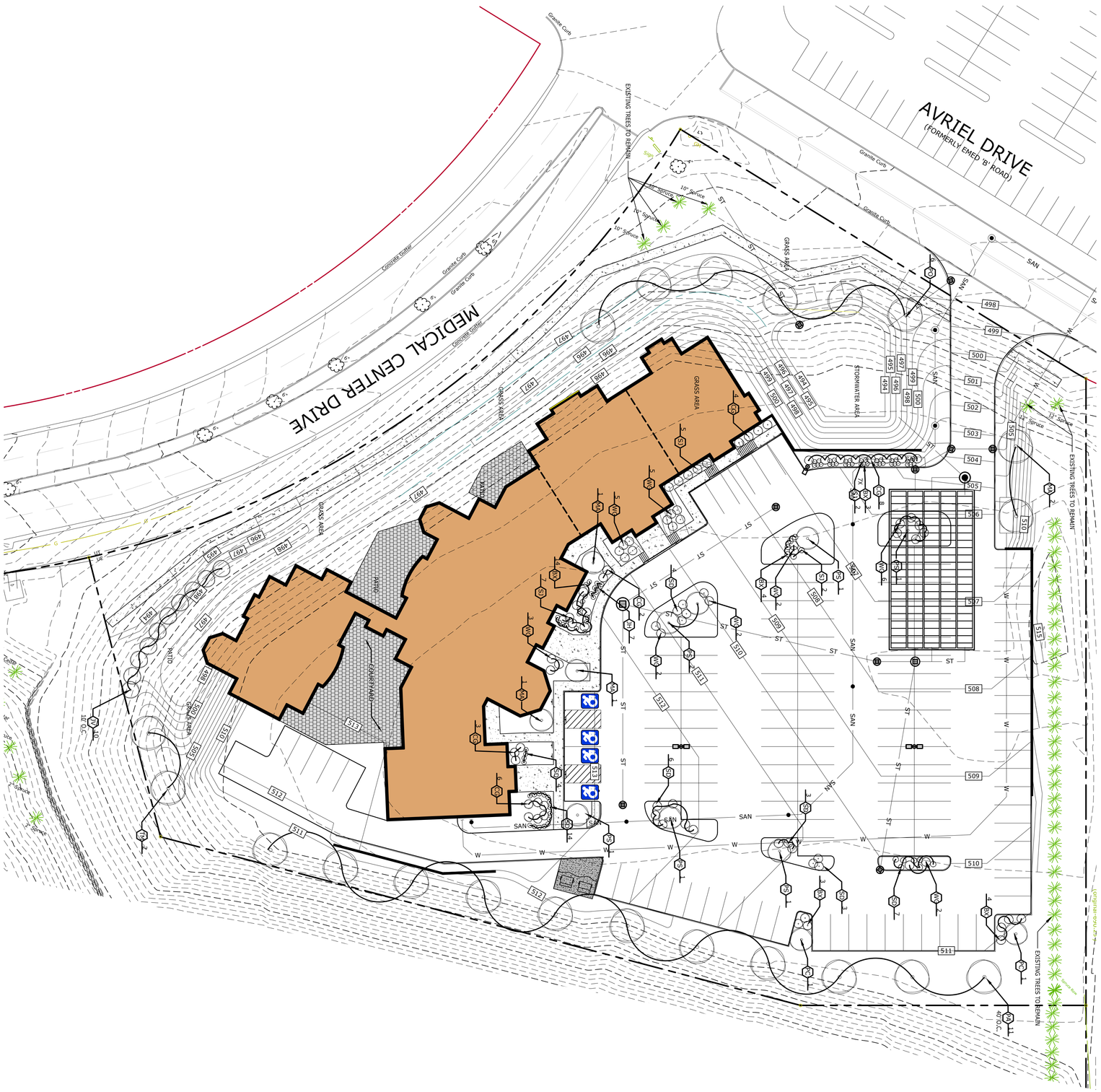
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NO.	REVISION/ISSUE	DATE
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C	PLANNING BOARD SUBMITTAL	11/15/22
B	PLANNING BOARD SUBMITTAL	10/13/22
A	PLANNING BOARD SUBMITTAL	08/25/22

SHEET TITLE:
EROSION CONTROL 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



KEY	QUANTITY	LATIN NAME	COMMON NAME	CALIPER	HEIGHT	ROOT
SHRUBS/PLANTS						
SD	45	STELLA D'ORO	DAYLILY	--	--	2 GAL
BX	42	BUXUS	GREEN VELVET	--	--	3 GAL
MF	27	MEYGELA FLORIDA	VARIETY	--	--	3 GAL
JW	7	JUNIPERUS WILTONI	CREEPING JUNIPER	--	--	1 GAL
SJ	28	SPIRAEA JAPONICA	MAGIC CARPET	--	--	3 GAL
CG	23	CALAMAGROSTIS	KARL FOERSTER GRASS	--	--	2 GAL
ORNAMENTAL TREES						
MS	5	MAGNOLIA STELLATA	STAR MAGNOLIA	--	4'--5'	--
PC	2	PRUNUS CERASIFOLIA	THUNDERCLOUD PLUM	1.5"	--	--
EVERGREEN TREES						
PA	11	PICEA ABIES	NORWAY SPRUCE	--	6'	--
PO	6	PICEA OMORIKA	SERBIAN SPRUCE	--	6'	--
JV	10	JUNIPER VIRONIANA	EASTERN RED CEDAR	--	6'	--
DECIDUOUS TREES						
TM	2	TILIA MONGOLICA	HARVEST GOLD LINDEN	4"	--	--
PC	7	PYRUS CALLERYANA	CLEVELAND SELECT	2"	--	--

LEGEND:
SD = SPECIES KEY
7 = QUANTITY

LANDSCAPING NOTES:
1) ALL TREES AND SHRUBS SHALL BE SURROUNDED BY A BED OF BARK MULCH
2) ALL PLANTING BEDS SHALL BE MAINTAINED, WEEDED, AND MULCHED REGULARLY, PRUNED AND NOURISHED TO MAINTAIN HEALTH.
3) ANY FERTILIZER USED FOR THE ESTABLISHMENT AND MAINTENANCE OF GRASS AND VEGETATION SHALL BE PHOSPHORUS FREE.
4) LANDSCAPING MAY BE SUBSTITUTED BY BASED ON AVAILABILITY AND OWNER/LANDSCAPERS PREFERENCE

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PLAN SEAL BY:
RODNEY C. IVES, JR., P.E.
NYS REGISTRATION # 077842

GRAPHIC SCALE
0
30'
60'
(IN FEET)
1 INCH = 30 ft.

SHEET
C-8

PROJECT NO.
21-2022

DATE
25 AUG 2022

SCALE
1"=30'

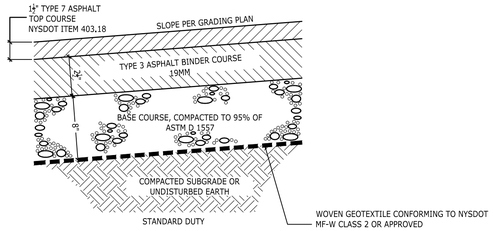
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NO.	REVISION/ISSUE	DATE
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C	PLANNING BOARD SUBMITTAL	11/15/22
B	PLANNING BOARD SUBMITTAL	10/13/22
A	PLANNING BOARD SUBMITTAL	08/25/22

SHEET TITLE:
LANDSCAPING PLAN

PROJECT TITLE:
A&E & SNY CENTER
MEDICAL CENTER DRIVE
TOWN OF MANLIUS ONONDAGA COUNTY, NEW YORK

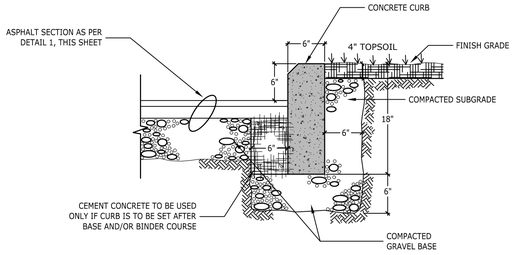
PREPARED FOR:
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SUITE 38
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EAST SYRACUSE, NY 13057



1 C-9 STANDARD PAVEMENT SECTION

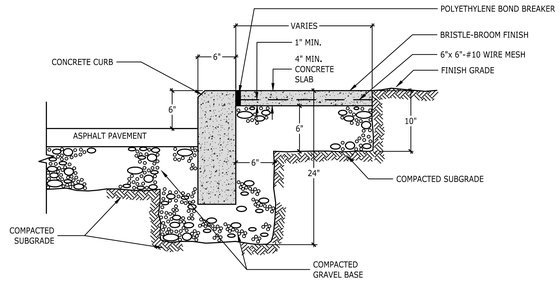
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ALL PAVEMENT SECTIONS TO BE CONFIRMED WITH THE GEOTECHNICAL REPORT



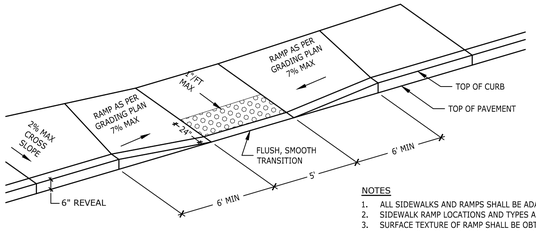
2 C-9 CONCRETE CURB

SCALE: NTS



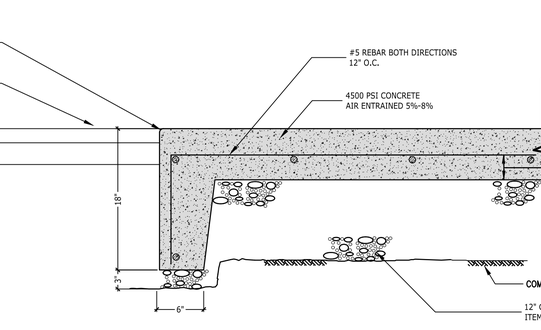
3 C-9 INTEGRAL CONCRETE CURB & SIDEWALK

SCALE: NTS



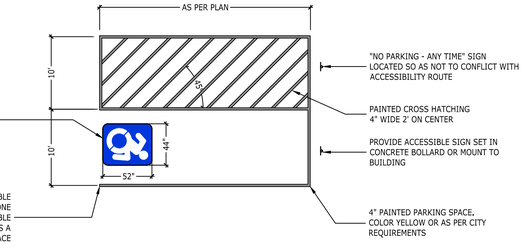
NOTES

1. ALL SIDEWALKS AND RAMPS SHALL BE ADA AND PROWAG COMPLIANT
2. SIDEWALK RAMP LOCATIONS AND TYPES ARE TO BE AS SHOWN ON THE PLANS.
3. SURFACE TEXTURE OF RAMP SHALL BE OBTAINED BY A COURSE BROOMING, TRANSVERSE TO THE SLOPE OF THE RAMP.
4. NORMAL PAVEMENT EDGE PROFILE IS TO BE MAINTAINED THROUGH THE AREA OF THE RAMP, LONG
5. TRANSITION CURB FOR RAMPS SHALL BE 6-0"
6. MAXIMUM DESIRABLE RAMP SLOPE 1:12.
7. PROVIDE TOOLED TACTILE GROVES ON ALL SURFACES AS INDICATED
8. INSTALL ADA COMPLIANT DETECTABLE WARNING UNITS 2' BY WIDTH OF THE DROP CURB OPENING



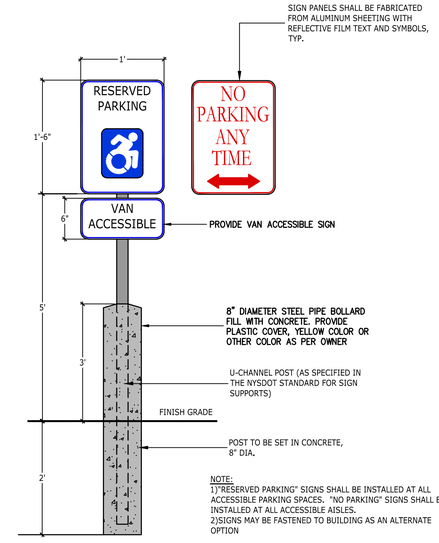
4 C-9 SIDEWALK

SCALE: NTS



5 C-9 ACCESSIBLE PARKING PAVEMENT MARKING DETAIL

SCALE: NTS



NOTE:
1)"RESERVED PARKING" SIGNS SHALL BE INSTALLED AT ALL ACCESSIBLE PARKING SPACES. "NO PARKING" SIGNS SHALL BE INSTALLED AT ALL ACCESSIBLE AISLES.
2)SIGNS MAY BE FASTENED TO BUILDING AS AN ALTERNATE OPTION

6 C-9 ACCESSIBLE PARKING SIGNS

SCALE: NTS

7 C-9 CONCRETE PAD

SCALE: NTS

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:
DETAILS

NO.	REVISION/ISSUE	DATE
A	PLANNING BOARD SUBMITTAL	08/25/22
B	PLANNING BOARD SUBMITTAL	10/13/22
C	PLANNING BOARD SUBMITTAL	11/15/22
D	PLANNING BOARD SUBMITTAL	12/27/22

PREPARED BY:
NAPIERALA CONSULTING
PROFESSIONAL ENGINEER, P.C.
SITE • DESIGN • ENGINEERING
110 FAYETTE STREET
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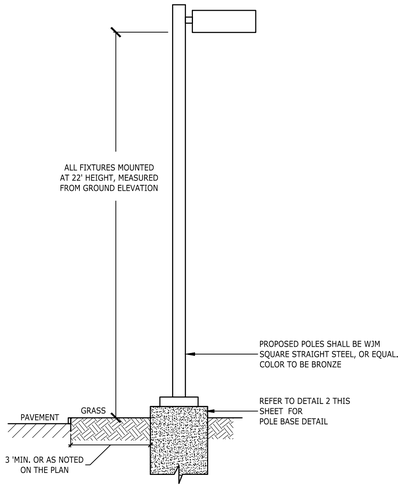
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PLAN SEAL BY:
RODNEY C. WES, JR., P.E.
NYS REGISTRATION # 077942

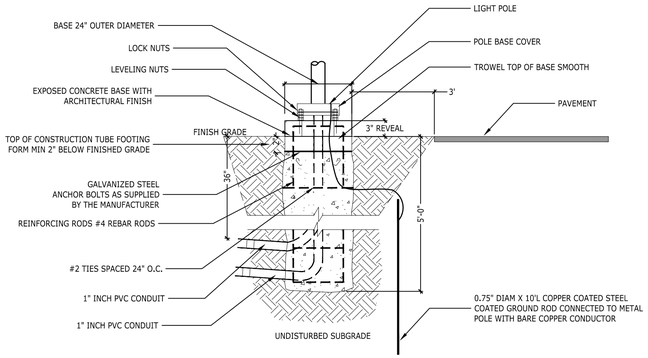
PROJECT NO. 21-2022
DATE 25 AUG 2022
SCALE 1"=30'

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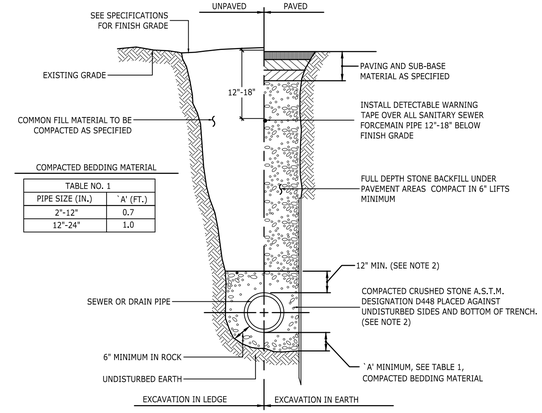
SHEET C-9



1 C-10 LIGHT POLE ELEVATION
SCALE: NTS



2 C-10 LIGHT POLE BASE
SCALE: NTS

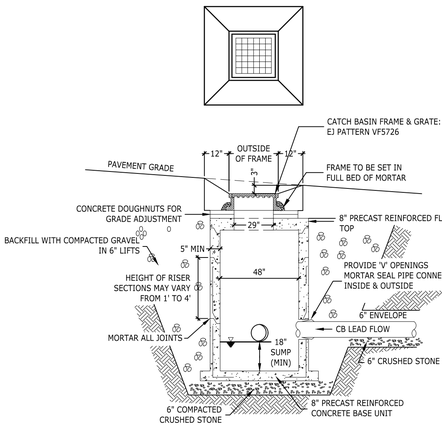


COMPACTED BEDDING MATERIAL

TABLE NO. 1	
PIPE SIZE (IN.)	'A' (FT.)
2"-12"	0.7
12"-24"	1.0

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.
2. 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 3. TRENCHES LOCATED ON THE ROAD SHOULDER SHALL BE TREATED THE SAME AS EXCEPT FOR PAVING.
4. PROVIDE AT LEAST ONE IMPERVIOUS DAM IN GRAVEL BEDDING BETWEEN EACH MANHOLE WHERE DIRECTED, OR EVERY 300 FEET, WHICHEVER IS LESS. SEE DETAIL.
5. BEDDING MATERIAL FOR PVC PIPE SHALL MEET THE REQUIREMENTS OF ASTM D2321 CLASS I OR CLASS II EMBEDMENT MATERIALS.

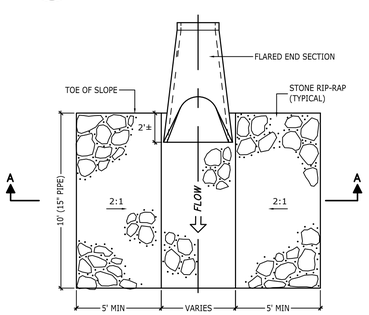
3 C-10 TYPICAL SEWER AND DRAIN TRENCH
SCALE: NTS



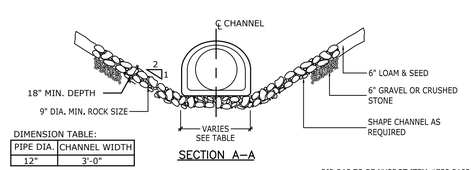
4 C–10 CATCH BASIN
SCALE: NTS

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.
   SIDES: #3 BARS SPACED AT 8" IN BOTH HORIZONTAL AND VERTICAL.
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.



PLAN VIEW



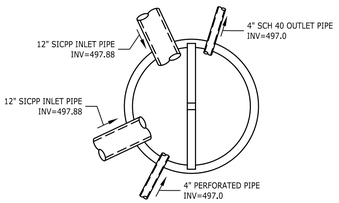
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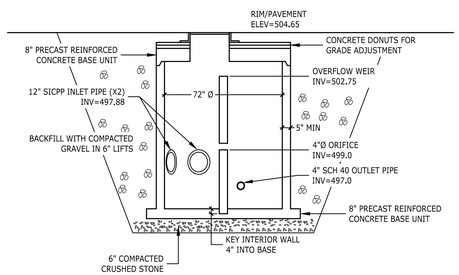
PIPE DIA.	CHANNEL WIDTH
12"	3'-0"

SECTION A–A

RIP-RAP TO BE NYSDOT ITEM #733.2102

5 C-10 STORM PIPE END SECTION
SCALE: NTS





6 C-10 OUTLET CONTROL STRUCTURE CB-9
SCALE: NTS

PROJECT TITLE:
A&E & SNY CENTER
MEDICAL CENTER DRIVE
TOWN OF MANLIUS ONONDAGA COUNTY, NEW YORK

PREPARED FOR:
A&E & SNY CENTER
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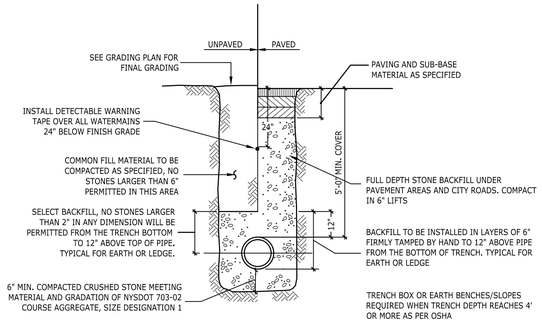
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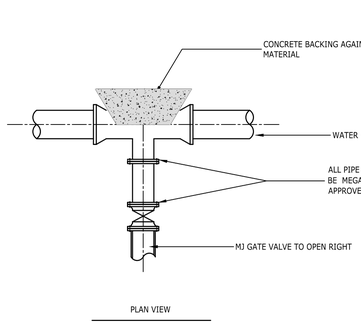
SHEET C-10

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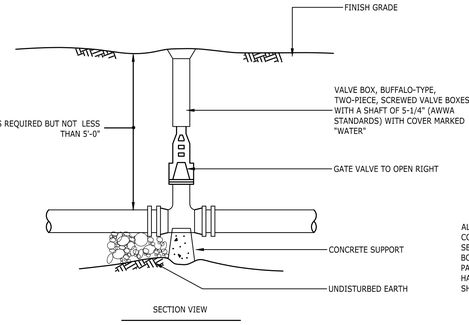


1 C-11 WATERLINE TRENCH - DUCTILE IRON

SCALE: NTS



PLAN VIEW

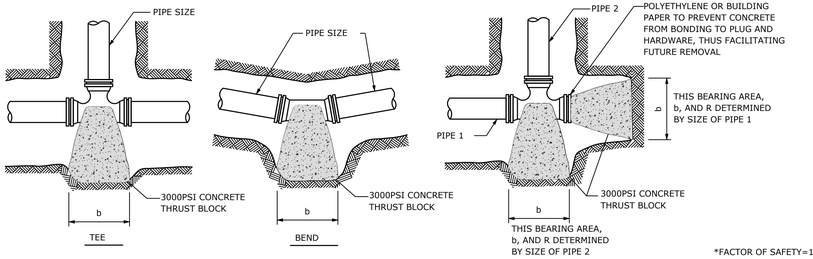


SECTION VIEW

ALL WATER MAIN VALVES SHALL BE EITHER GATE VALVES CONFORMING TO AWWA SPECIFICATION C509 OR RESILIENT SEATED GATE VALVES. GATE VALVES SHALL HAVE A CAST-IRON BODY AND SHALL BE A FULLY BRONZE MOUNTED, DOUBLE DISK, PARALLEL SEAT TYPE WITH O-RING PACKING. GATE VALVES SHALL HAVE A NONRISING STEM WITH A TWO-INCH OPERATING NUT AND SHALL OPEN LEFT (COUNTERCLOCKWISE).

2 C-11 WATER SERVICE VALVE

SCALE: NTS



TEE WITH PLUG

NOTES:

1. CONCRETE NOT TO OVERLAP ANY JOINT.
2. CONCRETE TO BE PLACED SO AS NOT TO INTERFERE WITH REMOVING OR INSTALLING ANY OF THE JOINTING HARDWARE.
3. FOR REDUCERS USE MECHANICAL JOINT FITTINGS WITH RETAINER GLANDS.

*FACTOR OF SAFETY=1.5
SOIL BEARING OF 3,000 PSF
225 PSI DESIGN PRESSURE

NOTES:

1. VALUES FOR TEE APPLY TO TEES, END PLUGS, CAPS, AND TAPPING SLEEVES.
2. REQUIRED BEARING AREAS ARE DUE TO THRUSTS CAUSED BY 150PSI WORKING PRESSURE PLUS 50%(75 PSI) SURGE ALLOWANCE RESULTING IN 225 PSI TOTAL INTERNAL PRESSURE.
3. REQUIRED BEARING AREAS ARE BASED ON ALLOWABLE SOIL BEARING CAPACITY OF 3,000 POUNDS PER SQUARE FOOT. DUE TO OTHER SOIL CONDITIONS ENCOUNTERED, BEARING AREAS MAY BE MODIFIED BY THE ENGINEER.

SOIL	BEARING STRENGTH R_B (LB/SQ FT)
MUCK	0
SOFT CLAY	1,000
SILT	1,500
SANDY SILT	3,000
SAND	4,000
SANDY CLAY	6,000
HARD CLAY	9,000

4. IN MUCK, PEAT, OR RECENTLY PLACED FILL ALL THRUSTS SHALL BE RESISTED BY PILES OR TIE RODS TO SOLID FOUNDATIONS, OR BY REMOVAL OF SUCH UNSTABLE MATERIAL AND REPLACEMENT WITH BALLAST OF SUFFICIENT STABILITY TO RESIST THE THRUSTS, ALL AS REQUIRED BY THE ENGINEER.

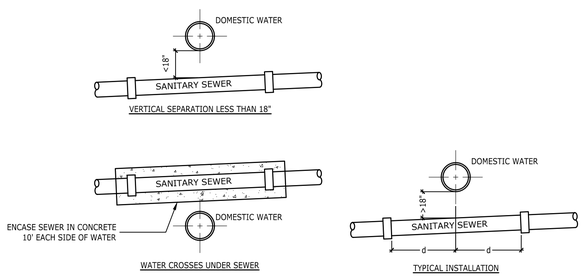
FOR DIMENSIONS AND THRUST REACTIONS SEE TABLE THIS SHEET

THRUST REACTIONS-R(LB) PER 100PSI INTERNAL PRESSURE					
NOM PIPE DIA IN.	DEAD END	90° BEND	45° BEND	22 1/2° BEND	11 1/4° BEND
4	1,810	2,559	1,385	706	355
6	3,739	5,288	2,862	1,459	733
8	6,433	9,097	4,923	2,510	1,261
10	9,677	13,685	7,406	3,776	1,897
12	13,685	19,353	10,474	5,340	2,683

REQUIRED BEARING AREAS -b (SQFT) FOR BEARING BLOCKS*					
PIPE SIZE (INCHES)	TEE	90° BEND	45° BEND	22 1/2 ° BEND	11 1/4 ° BEND
4	2.0	2.8	1.5	0.8	0.4
6	4.2	5.9	3.2	1.6	0.8
8	7.2	10.1	5.5	2.8	1.4
10	10.9	15.4	8.3	4.2	2.1
12	15.4	21.8	11.8	6.0	3.0

3 C-11 THRUST BLOCK SPECIFICATIONS

SCALE: NTS



VERTICAL SEPARATION LESS THAN 18"

WATER CROSSES UNDER SEWER

TYPICAL INSTALLATION

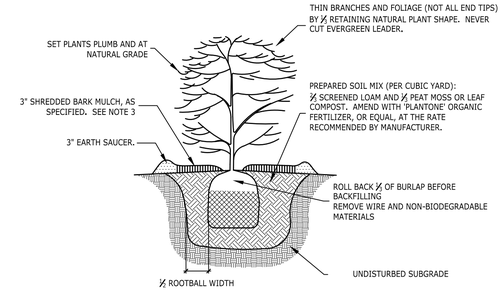
TYPICAL INSTALLATION
1. MINIMUM VERTICAL SEPARATION IS 18" FROM TOP OF PIPE TO BOTTOM OF PIPE.
2. SEWER JOINTS ARE TO SPACED EQUIDISTANT AND AS FAR AS POSSIBLE FROM THE WATER MAIN JOINTS.

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

4 C-11 WATER AND SEWER SEPARATION

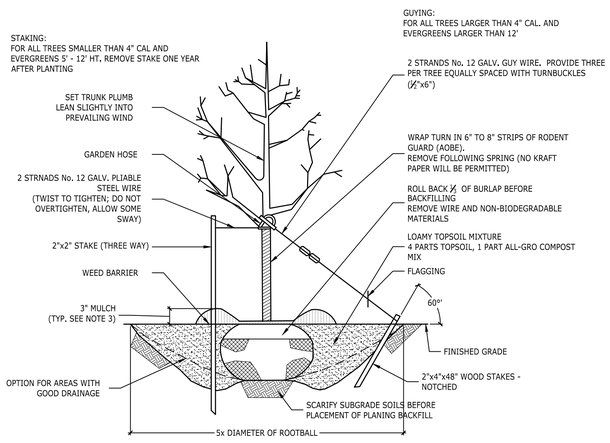
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NOTES
1. IF ROOT BALL IS COVERED IN BURLAP, REMOVE TOP ½ OF THE BURLAP.
2. PRUNE BROKEN BRANCHES TO RETAIN NATUAL FORM OF THE SHRUB.
3. MULCH IS TO BE PLACED 6" AWAY FROM TRUNK

5 C-11 SHRUB PLANTING

SCALE: NTS



NOTES
1. USE 8' STAKES - DRIVE 48" BELOW GROUND
2. ROOT COLLAR TO BE SLIGHTLY ABOVE SURROUNDING GRADE.
3. MULCH IS TO BE PLACED 6" AWAY FROM TRUNK.

6 C–11 TREE PLANTING DETAIL

SCALE: NTS

PROJECT TITLE: A&E & SNY CENTER MEDICAL CENTER DRIVE
TOWN OF MANLIUS ONONDAGA COUNTY, NEW YORK

PREPARED FOR: A&E & SNY CENTER
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EAST SYRACUSE, NY 13057

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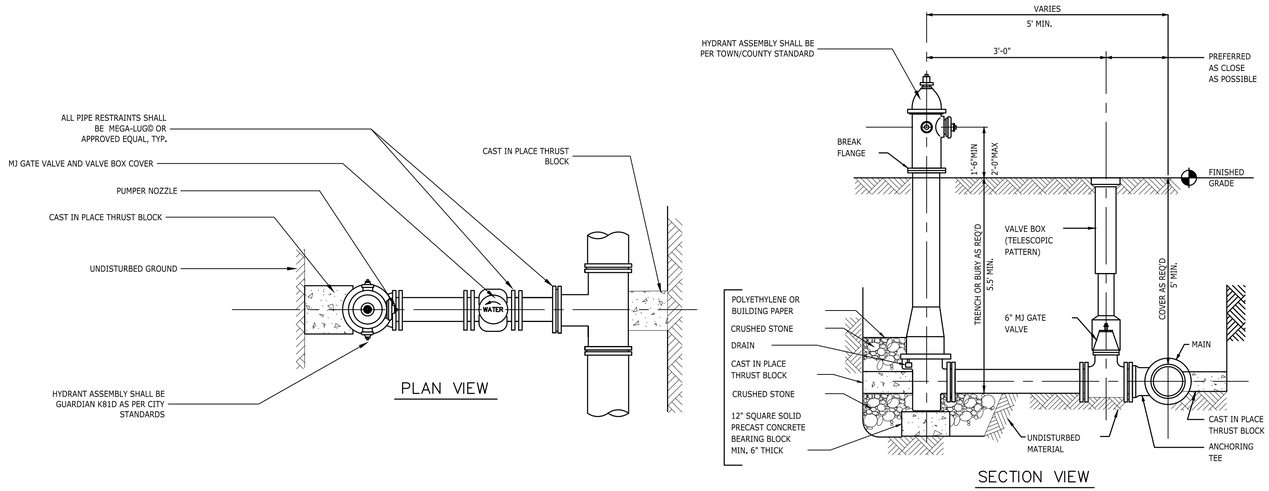
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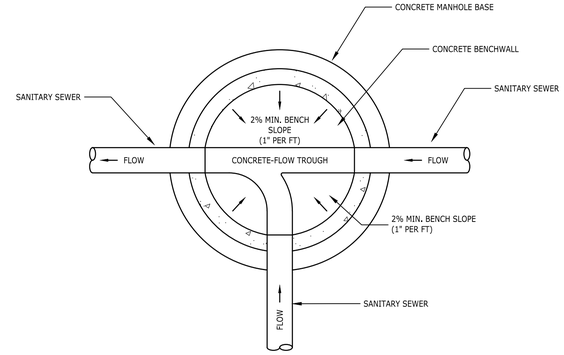
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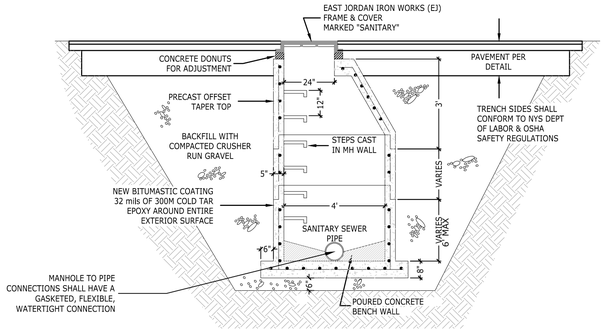
1 C–12 TYPICAL HYDRANT INSTALLATION

SCALE: NTS



2 C–12 SANITARY SEWER MANHOLE BENCH

SCALE: NTS

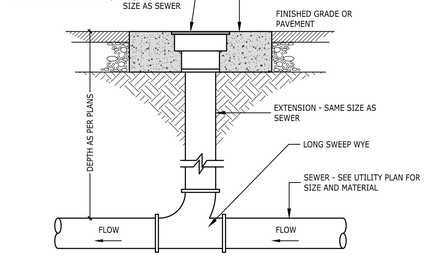


SANITARY MANHOLE GENERAL NOTES

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, ½ 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.

3 C–12 SANITARY MANHOLE STRUCTURE

SCALE: NTS



4 C-12 TYPICAL SEWER CLEANOUT

SCALE: NTS

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MEDICAL CENTER DRIVE
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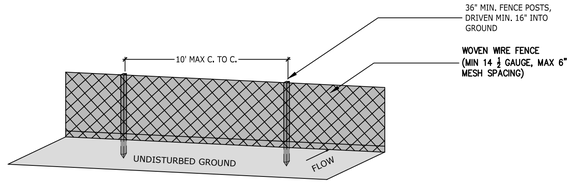
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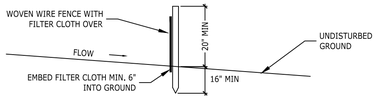
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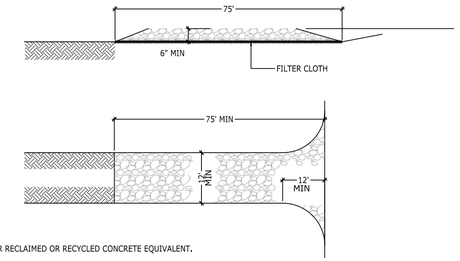




POSTS:	STEEL, EITHER "T" OR "U" TYPE OR 2" HARDWOOD
FENCE:	WOVEN WIRE, 14 1/2 GAUGE, 6" MAX. MESH OPENING
FILTER CLOTH:	FILTER X., MIRAFI 100X, STABILINKA T140N OR APPROVED EQUAL
PREFABRICATED UNIT:	GEOFAB, ENVIROFENCE, OR APPROVED EQUAL

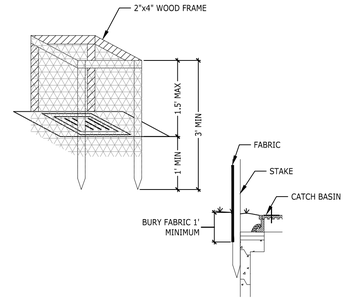
1. WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES.
2. FILTER CLOTH IS TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER, THEY SHALL BE OVERLAPPED BY SIX INCHES AND FOLDED.
4. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.

1 C-13 SILT FENCE
SCALE: NTS



1. STONE SIZE - USE 2" STONE, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH - NOT LESS THAN 75 FEET.
3. THICKNESS - NOT LESS THAN SIX (6) INCHES.
4. 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.
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 STONEAND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
9. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.

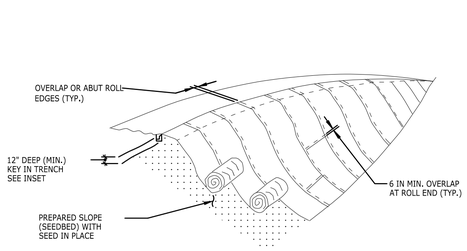
2 C-13 CONSTRUCTION ENTRANCE
SCALE: NTS



CONSTRUCTION SPECIFICATIONS

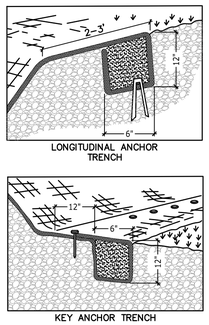
1. FILTER FABRIC SHALL HAVE AN EOS OF 40-85.
2. CUT FABRIC FROM A CONTINUOUS ROLL TO ELIMINATE JOINTS. IF JOINTS ARE NEEDED THEY WILL BE OVERLAPPED TO THE NEXT STAKE.
3. STAKE MATERIALS WILL BE STANDARD 2"x4" WOOD OR EQUIVALENT METAL WITH A MINIMUM LENGTH OF 3 FEET.
4. SPACE STAKES EVENLY AROUND INLET 3 FEET APART AND DRIVE A MINIMUM 18 INCHES DEEP. SPANS GREATER THAN 3 FEET MAY BE BRIDGED WITH THE USE OF WIRE MESH BEHIND THE FILTER FABRIC FOR SUPPORT.
5. FABRIC SHALL BE EMBEDDED 1 FOOT MINIMUM BELOW GROUND AND BACKFILLED. IT SHALL BE SECURELY FASTENED TO THE STAKES AND FRAME.
6. A 2"x4" WOOD FRAME SHALL BE COMPLETED AROUND THE CREST OF THE FABRIC FOR OVER FLOW STABILITY.

3 C–13 INLET PROTECTION - VARIATIONS
SCALE: NTS



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 WAHSOUT 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.

4 C-13 CONCRETE WASHOUT AREA
SCALE: NTS

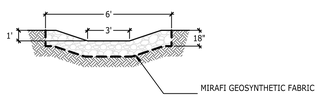


CONSTRUCTION SPECIFICATIONS

1. USE MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLANS.
2. USE TEMPORARY SOIL STABILIZATION MATTING MADE OF DEGRADABLE (LASTS 6 MONTHS MINIMUM) NATURAL OR MAN-MADE FIBERS (MOSTLY ORGANIC), MAT MUST HAVE UNIFORM THICKNESS AND DISTRIBUTION OF FIBERS THROUGHOUT AND BE SMOLDER RESISTANT. CHEMICALS USED IN THE MAT MUST BE NON-LEACHING AND NON-TOXIC TO VEGETATION AND SEED GERMINATION AND NON-INJURIOUS TO THE SKIN. IF PRESENT, NETTING MUST BE EXTRUDED PLASTIC WITH A MAXIMUM MESH OPENING OF 2x2 INCHES AND SUFFICIENTLY BONDED OR SEWN ON 2 INCH CENTERS ALONG LONGITUDINAL AXIS OF THE MATERIAL TO PREVENT SEPARATION OF THE NET FROM THE PARENT MATERIAL.
3. SECURE MATTING USING STEEL STAPLES, WOOD STAKES, OR BIODEGRADABLE EQUIVALENT. STAPLES MUST BE "U" OR "T" SHAPED STEEL WIRE HAVING A MINIMUM GAUGE OF NO. 11 AND NO. 8 RESPECTIVELY. "U" SHAPED STAPLES MUST AVERAGE 1 TO 1½ INCHES WIDE AND BE A MINIMUM OF 6 INCHES LONG. "T" SHAPED STAPLES MUST HAVE A MINIMUM 8 INCH MAIN LEG, A MINIMUM 1 INCH SECONDARY LEG, AND A MINIMUM 4 INCH HEAD. WOOD STAKES MUST BE ROUGH-SAWN HARDWOOD, 12 TO 24 INCHES IN LENGTH, 1x3 INCH IN CROSS SECTION, AND WEDGE SHAPED AT THE BOTTOM.
4. 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.
5. UNROLL MATTING DOWNSLOPE. LAY MAT SMOOTHLY AND FIRMLY UPON THE SEEDED SURFACE. AVOID STRETCHING THE MATTING.
6. 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.
7. KEY IN THE UPSLOPE END OF MAT 6 INCHES (MINIMUM) BY DIGGING A TRENCH, PLACING THE MATTING ROLL END IN THE TRENCH, STAPLING THE MAT IN PLACE, REPLACING THE EXCAVATED MATERIAL, AND TAMPING TO SECURE THE MAT END IN THE KEY.
8. STAPLE/STAKE MAT IN A STAGGERED PATTERN ON 4 FOOT (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS.
9. ESTABLISH AND MAINTAIN VEGETATION SO THAT REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION 8-4 VEGETATIVE STABILIZATION.

5 C–13 SLOPE STABILIZATION
SCALE: NTS

SLOPE STABILIZATION MAT SHALL BE PROPEX LANDLOCK© 450 TURF REINFORCEMENT MAT, OR EQUAL



6 C–13 RIP-RAP SWALE
SCALE: NTS

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:
DETAILS

NO.	REVISION/ISSUE	DATE
A	PLANNING BOARD SUBMITTAL	08/25/22
B	PLANNING BOARD SUBMITTAL	10/13/22
C	PLANNING BOARD SUBMITTAL	11/15/22
D	PLANNING BOARD SUBMITTAL	12/27/22

PREPARED BY:
NAPIERALA CONSULTING
PROFESSIONAL ENGINEER, P.C.
SITE • DESIGN • ENGINEERING
110 FAYETTE STREET
MANLIUS, NEW YORK 13104
email MNAP@NAPCON.COM
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FOR PERMITTING PURPOSES ONLY
NOT FOR CONSTRUCTION

PLAN SEAL BY:
RODNEY C. IKES, JR., P.E.
NYS REGISTRATION # 077842

PROJECT NO. 21-2022
DATE 25 AUG 2022
SCALE AS SHOWN

SHEET C-13

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EROSION CONTROL NOTES

EROSION AND SEDIMENT CONTROLS

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. FREQUENT WATERING OF EXCAVATION AND FILL AREAS TO MINIMIZE WIND EROSION DURING CONSTRUCTION.
   C. USE OF STABILIZATION FABRIC FOR ALL SLOPES HAVING A SLOPE OF 1V:3H OR GREATER.
   D. 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
   B. MULCHING EXPOSED AREAS.
   C. FREQUENT WATERING TO MINIMIZE WIND EROSION DURING CONSTRUCTION.

3. STRUCTURAL PRACTICES (PERMANENT)
   PERMANENT STRUCTURAL PRACTICES FOR THIS SITE INCLUDE:

   A. 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.

4. STRUCTURAL PRACTICES (TEMPORARY)
   STRUCTURAL PRACTICES FOR THIS SITE INCLUDE:

   A. PERIMETER PROTECTION USING SILT FENCE. SILT FENCE WILL BE PLACED ALONG THE PERIMETER OF ALL DISTURBED AREAS AND AT KEY LOCATIONS THROUGHOUT THE SITE. SILT FENCE WILL ALSO BE PLACED ALONG THE EDGES OF ALL WETLAND AREAS THAT ARE NOT TO BE DISTURBED.
   B. STABILIZED CONSTRUCTION EXIT POINTS AND GRAVEL LAYDOWN AREA.

5. SEQUENCE OF MAJOR ACTIVITIES
   THE CONTRACTOR WILL BE RESPONSIBLE FOR IMPLEMENTING THE FOLLOWING EROSION CONTROL AND STORMWATER MANAGEMENT CONTROL STRUCTURES. THE CONTRACTOR MAY DESIGNATE THESE TASKS TO CERTAIN SUBCONTRACTORS AS HE SEES FIT, BUT THE ULTIMATE RESPONSIBILITY FOR IMPLEMENTING THESE CONTROLS AND ENSURING THEIR PROPER FUNCTIONING REMAINS WITH THE CONTRACTOR. THE ORDER OF ACTIVITIES WILL BE AS FOLLOWS (REFER TO THE EROSION AND SEDIMENT CONTROL PLAN SHEET CONTAINED IN THIS SWPPP FOR DETAILS):

   A. CONDUCT A PRE-CONSTRUCTION MEETING WITH ALL INVOLVED PARTIES
   B. DELINEATE BOUNDARIES OF DISTURBANCE AS PER THE GRADING PLAN
   C. CONSTRUCT TEMPORARY CONSTRUCTION EXITS AT LOCATIONS SHOWN
   D. INSTALL PERIMETER SILT FENCE
   E. INSTALL STABILIZED STAGING AREAS
   F. COMMENCE ROUGH SITE GRADING. DISTURBED AREAS OF THE SITE WHERE CONSTRUCTION ACTIVITY HAS CEASED FOR MORE THAN SEVEN DAYS SHALL BE TEMPORARILY SEEDED
   G. BUILDING FOUNDATION EXCAVATION
   H. UTILITY INSTALLATION
   I. ESTABLISH SUBGRADE OF ASPHALT PAVEMENT
   J. PLACE STONE BASE MATERIAL FOR ASPHALT PAVEMENT AND COMPACT
   K. PAVE PARKING LOT
   L. SOIL RESTORATION PER NYS STORMWATER DESIGN MANUAL TABLE 5.3
   M. FINAL SITE GRADING
   N. SEEDING AND PLANTING
   O. RESTORE AND STABILIZE ANY DISTURBED AREAS REMAINING UPON REMOVAL OF ESC MEASURES

OTHER CONTROLS

1. OFF-SITE VEHICLE TRACKING
   A STABILIZED CONSTRUCTION EXIT WILL BE PROVIDED TO HELP REDUCE VEHICLE TRACKING OF SEDIMENTS. A STABILIZED EXIT, CONSISTING OF STONE, WILL BE CONSTRUCTED AS PER THE PLAN AND DETAILS. THE PAVED STREETS ADJACENT TO THE SITE ENTRANCE WILL BE INSPECTED DAILY AND SWEPT AS NECESSARY TO REMOVE ANY EXCESS MUD, DIRT, OR ROCK TRACKED FROM THE SITE. DUMP TRUCKS HAULING MATERIAL FROM THE CONSTRUCTION SITE WILL BE COVERED WITH A TARPAULIN. THE JOB SITE SUPERINTENDENT WILL BE RESPONSIBLE FOR SEEING THAT THESE PROCEDURES ARE FOLLOWED.

2. EXCAVATION SPOIL MATERIALS
   EXCAVATION SPOIL MATERIALS ARE GENERATED DURING THE GRADING OF THE SITE AND THE EXCAVATION OF THE FACILITY'S FOOTINGS. THESE MATERIALS MUST BE PROPERLY MANAGED TO PREVENT THEM FROM CONTRIBUTING TO STORM WATER DISCHARGES. THE MATERIALS GENERATED FROM THE DEVELOPMENT OF THIS PROJECT SHALL BE STABILIZED BY VEGETATIVE AND STRUCTURAL MEANS, DEPENDING ON LOCATION WITHIN THE PROJECT SITE.

3. DUST CONTROL
   MINIMIZING WIND EROSION AND CONTROLLING DUST WILL BE ACCOMPLISHED BY ONE OR MORE OF THE FOLLOWING METHODS:

   A. COVERING 30% OR MORE OF THE SOIL SURFACE WITH A NON-ERODIBLE MATERIAL.
   B. FREQUENT WATERING OF EXCAVATION AND FILL AREAS.
   C. PROVIDING GRAVEL OR PAVING AT ENTRANCE/EXIT DRIVES, PARKING AREAS AND TRANSIT PATHS.

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 ONCE 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.
6. TEMPORARY AND PERMANENT SEEDING AND ALL OTHER STABILIZATION MEASURES WILL BE INSPECTED FOR BARE SPOTS, WASHOUTS, AND HEALTHY GROWTH.
7. A MAINTENANCE INSPECTION REPORT WILL BE MADE AFTER EACH INSPECTION AND DISTRIBUTED VIA EMAIL TO THE OWNER, CONTRACTOR AND CITY REPRESENTATIVE WITHIN 24 HOURS OF THE INSPECTION. EXAMPLE COPIES OF THE REPORT FORMS TO BE COMPLETED BY THE INSPECTOR ARE INCLUDED IN THIS SWPPP.
8. 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.
9. DISTURBED AREAS AND MATERIALS STORAGE AREAS WILL BE INSPECTED FOR EVIDENCE OF OR POTENTIAL FOR POLLUTANTS ENTERING STORMWATER SYSTEMS.
10. 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.
11. 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 IMMEDIATELY REPORTED TO THE NYSDEC 24-HOUR SPILL HOTLINE AT 1-800-457-7362.
12. LONG TERM MAINTENANCE: THE SITE CONTRACTOR IS TO REMOVE ALL ACCUMULATED SEDIMENT FROM THE FOREBAYS ONCE CONSTRUCTION IS COMPLETE AND ALL EXPOSED SURFACES ARE STABILIZED. REMOVED SEDIMENT CAN BE DISPOSED BY EITHER LAND APPLICATION OR LAND FILLING. IN EITHER CASE, SEDIMENT SHALL BE STABILIZED BY EITHER STRUCTURAL OR VEGETATIVE PRACTICES TO PREVENT EROSION.

    THEREAFTER, THE PROPERTY OWNER IS RESPONSIBLE FOR THE LONG TERM MAINTENANCE AND OPERATION OF THE STORMWATER MANAGEMENT SYSTEM. MAINTENANCE SHALL INCLUDE:

- MONTHLY INSPECTION OF THE DETENTION BASIN OUTLET. TRASH, DEBRIS, SEDIMENTS, AND OTHER IMPEDIMENTS TO FLOW THROUGH THE OUTLETS SHALL BE REMOVED AND DISPOSED IN AN ACCEPTABLE MANNER.
- SEASONAL INSPECTION OF THE VEGETATIVE GROWTH IN THE BIORETNETION BASIN. BARE SPOTS ARE TO BE SEEDED AND MULCHED. WOODY VEGETATION IS TO BE REMOVED. WEED GROWTH IS TO BE CONTROLLED BY PHYSICAL MEANS ONLY; NO CHEMICALS ARE TO BE APPLIED IN THE BASIN. THE BASIN AND EMBANKMENT ARE TO BE MOWED ANNUALLY.
- DETENTION BASIN OUTLET AND OTHER AREAS DOWNSTREAM OF THE SYSTEM ARE TO BE INSPECTED MONTHLY. AREAS OF EROSION AND/OR SCOUR ARE TO BE STABILIZED.

INSPECTION AND MAINTENANCE REPORT FORMS
ONCE INSTALLATION OF ANY REQUIRED OR OPTIONAL EROSION CONTROL DEVICE OR MEASURE HAS BEEN IMPLEMENTED, INSPECTIONS SHALL BE PERFORMED AT LEAST ONCE EVERY SEVEN (7) CALENDAR DAYS AND SHALL BE PERFORMED BY A QUALIFIED PROFESSIONAL. INSPECTIONS SHALL BE PERFORMED TWICE EVERY SEVEN (7) DAYS WHEN THE DISTURBED AREA IS GREATER THAN 5 ACRES. THE FORMS FOUND IN THIS SWPPP (OR SIMILAR) SHALL BE USED BY THE INSPECTOR 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 SPDES SWPPP DRAWINGS DURING CONSTRUCTION OPERATIONS.
2. NO LAND CLEARING OR GRADING SHALL BEGIN UNTIL ALL 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 7 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 SOIL 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. COMPACT & MAINTAIN 10,000 SQ. FT. OF 6" THICK STONE MATERIAL LAYDOWN AREA & 15' WIDE GRAVEL ACCESS ROAD TO SITE.
11. GENERAL CONTRACTOR SHALL BE RESPONSIBLE TO ESTABLISH PERMANENT SOIL STABILIZATION.
12. ALL WORK TO BE DONE IN STRICT ACCORDANCE WITH THE NEW YORK STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL.
13. THE GENERAL CONTRACTOR SHALL STRICTLY ADHERE TO THE STORMWATER POLLUTION PREVENTION PLAN DURING CONSTRUCTION OPERATIONS.

TEMPORARY SEEDING MIXTURES

	LBS./ACRE	LBS./1000 SQ. FT
FOR SPRING, SUMMER OR EARLY FALL SEEDINGS:		
	30	0.70
	30	0.70
A. ANNUAL RYEGRASS		
B. PERENNIAL RYEGRASS		
FOR LATE FALL OR EARLY WINTER		
A. WINTER RYE (AROOSTOOK)	100	2.50

PERMANENT SEEDINGS SHOULD TAKE PLACE IN EARLY SPRING. PROPER MULCHING AND ADAQUATE MOISTURE MUST BE PROVIDED FOR PERMANENT SEEDING. RESEEDING OF FAILED AREAS SHALL TAKE PLACE DURING LATE SUMMER/EARLY FALL OR DURING THE FOLLOWING SPRING.

FERTILIZER:
10% NITROGEN
0% PHOSPHORUS
4% POTASH
HYDROMULCH
HYDROMULCH SHALL BE A WOOD-FIBER COMPOSITION (50% PAPER - 50% WOOD)
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.

PERMANENT SEEDING MIXTURES

	LBS./ACRE	LBS./1000 SQ. FT
SEED MIXTURE NO. 1		
CREEPING RED FESCUE (var. ENSYLVA)	10	0.25
PERENNIAL RYE GRASS (var. PENNFINE)	10	0.25
SEED MIXTURE NO. 2		
CREEPING RED FESCUE (var. ENSYLVA)	20	0.45
SAND LOVEGRASS	2	0.05
SEED MIXTURE NO. 3		
BIRDSFOOT TREFOIL (var. EMPIRE, PARDEE)	10	0.25
REDTOP	2	0.05
TALL FESCUE (var. KY 31, REBEL)	20	0.45
SEED MIXTURE NO. 4		
CREEPING RED FESCUE (var. ENSYLVA)	20	0.45
TALL FESCUE (var. KY 31, REBEL)	20	0.45
PERENNIAL RYE GRASS (var. PENNFINE)	5	0.10
BIRDSFOOT TREFOIL (var. EMPIRE, PARDEE)	10	0.25

SEED MIXTURE 1 TO BE APPLIED TO SHADED AREAS.

SEED MIXTURE 2 IS IN PURE LIVE SEED. TO BE APPLIED TO AREAS UPLAND OF WETLANDS AND ALONG STORMWATER MITIGATION BASIN BANKS.

SEED MIXTURE 3 TO BE APPLIED TO ALL SWALES AND WATERWAYS. WHITE CLOVER OR LADINO CLOVER MAY BE SUBSTITUTED FOR BRIDSFOOT TREFOIL AND SEEDED AT THE SAME RATE
PERENNIAL RYEGRASS MAY BE SUBSTITUTED FOR REDTOP BUT INCREASE SEEDING RATE TO 5 LBS./ACRE (0.1 LBS./1000 SQ. FT)

SEED MIXTURE 4 TO BE APPLIED TO ALL AREAS. (NOT FOR USE IN PLAYGROUNDS OR AS TURF)

METHOD OF SEEDING
BROADCAST, DRILLING WITH A CULTIPACK TYPE SEEDER, OR HYDROSEEDING ARE ACCEPTABLE. GOOD SOIL TO SEED CONTACT IS THE KEY TO SUCCESSFUL SEEDINGS.

MULCHING
APPLY STRAW MULCH AT A RATE OF 2 TON/ACRE (90 LBS./1,000 SF) ANCHORED WITH WOOD FIBER MULCH (HYDROMULCH) AT 500 - 750 LBS./ACRE (11 - 17 LBS./1,000 SF). THE WOOD FIBER MULCH MUST BE APPLIED THROUGH A HYDROSEEDER AFTER MULCHING.

IRRIGATION
WATERING MAY BE ESSENTIAL TO ESTABLISH TO NEW SEEDING. WEATHER CONDITIONS WILL DICTATE WHEN TO WATER. EACH APPLICATION MUST BE UNIFORMLY APPLIED AND 1 TO 2 INCHES OF WATER SHOULD BE APPLIED PER APPLICATION.

PERMANENT SEEDING TO OCCUR AFTER FINAL GRADING HAS OCCURRED. PERMANENT SEEDING WILL INCLUDE:
SITE PREPARATION
A. SCARIFY ALL COMPACT, SLOWLY PERMEABLE, MEDIUM AND FINE TEXTURED SUBSOIL AREAS. SCARIFY AT APPROXIMATELY RIGHT ANGLES TO THE SLOPE DIRECTION IN SOIL AREAS THAT ARE STEEPER THAN 5 PERCENT.
B. REMOVE REFUSE, WOOD PLANT PARTS, STONES OVER 3 INCHES IN DIAMETER, AND OTHER LITTER.

TOPSOIL MATERIALS
A. TOPSOIL SHALL HAVE AT LEAST 2 PERCENT AND NO GREATER THAN 6 PERCENT BY WEIGHT OF FINE TEXTURED STABLE ORGANIC MATERIAL.
B. TOPSOIL SHALL HAVE NOT LESS THAN 20 PERCENT FINE TEXTURED MATERIAL (PASSING THE NO. 200 SIEVE) AND NOT MORE THAN 15 PERCENT CLAY.
C. TOPSOIL TREATED WITH SOIL STERILANTS OR HERBICIDES SHALL BE SO IDENTIFIED TO THE PURCHASER.
D. TOPSOIL SHALL BE RELATIVELY FREE OF STONES OVER 1½" INCHES IN DIAMETER, TRASH, NOXIOUS WEEDS SUCH AS NUTSEDGE AND QUACKGRASS, AND WILL HAVE LESS THAN 10% GRAVEL BY VOLUME.
E. TOPSOIL CONTAINING SOLUBLE SALTS GREATER THAN 500 PPM SHALL NOT BE USED.

APPLICATION AND GRADING
A. TOPSOIL SHALL BE DISTRIBUTED TO A UNIFORM DEPTH OVER THE AREA. IT SHALL NOT BE PLACED WHEN IT IS PARTLY FROZEN, MUDDY, OR ON FROZEN SLOPES OR OVER ICE, SNOW, OR STANDING WATER PUDDLES.
B. TOPSOIL PLACED AND GRADED ON SLOPES STEEPER THAN 5% SHALL BE PROMPTLY FERTILIZED, SEEDED, MULCHED AND STABILIZED BY "TRACKING" WITH SUITABLE EQUIPMENT.
C. A MINIMUM OF 6 INCHES OF TOPSOIL IS TO BE USED IN ALL AREAS.

SOIL RESTORATION

NEW YORK STATE STORMWATER MANAGEMENT DESIGN MANUAL
CHAPTER 5: GREEN INFRASTRUCTURE PRACTICES
SECTION 5.1: PLANNING FOR GREEN INFRASTRUCTURE PRESERVATION OF NATURAL RESOURCES AND CONSERVATION DESIGN

TABLE 5.3 SOIL RESTORATION REQUIREMENTS

TYPE OF SOIL DISTURBANCE	SOIL RESTORATION REQUIREMENT		COMMENTS
NO SOIL DISTURBANCE	RESTORATION NOT PERMITTED		PRESERVATION OF NATURAL FEATURES
MINIMAL SOIL DISTURBANCE	RESTORATION NOT REQUIRED		CLEARING AND GRUBBING
AREA WHERE TOPSOIL IS STRIPPED ONLY - NO GRADE CHANGE	HSG A&B	HSG C&D APPLY 6" OF TOPSOIL	PROTECT AREA FROM ONGOING CONSTRUCTION ACTIVITIES AERATE* AND PROVIDE 6" TOPSOIL
AREAS OF CUT OR FILL	HSG A&B	HSG C&D AERATE* AND PROVIDE 6" TOPSOIL	APPLY FULL SOIL RESTORATION**
HEAVY TRAFFIC AREAS ON SITE (ESPECIALLY IN A ZONE 5-25 FEET AROUND BUILDINGS BUT NOT WITHIN A 5 FOOT PERIMETER AROUND FOUNDATION WALLS)	APPLY FULL SOIL RESTORATION (DE-COMPACTION AND COMPOST ENHANCEMENT		
AREAS WHERE RUNOFF REDUCTION AND/OR INFILTRATION PRACTICES ARE APPLIED	RESTORATION NOT REQUIRED BUT MAY BE APPLIED TO ENHANCE THE REDUCTION SPECIFIED FOR APPROPRIATE PRACTICES		KEEP CONSTRUCTION FROM CROSSING THESE AREAS, TO PROTECT NEWLY INSTALLED PRACTICE FROM ANY ONGOING CONSTRUCTION ACTIVITIES CONSTRUCT A SINGLE PHASE OPERATION FENCE AREA
REDEVELOPMENT PROJECTS	SOIL RESTORATION IS REQUIRED ON REDEVELOPMENT PROJECTS IN AREAS WHERE EXISTING IMPERVIOUS AREA WILL BE CONVERTED TO PERVIOUS AREA		

*AERATION INCLUDES THE USE OF MACHINES SUCH AS TRACTOR-DRAWN IMPLEMENTS WITH COULTERS MAKING A NARROW SLIT IN THE SOIL, A ROLLER WITH MANY SPIKES MAKING INDENTATIONS IN THE SOIL, OR PRONGS WHICH FUNCTION LIKE A MINI-SUBSOILER

**PER "DEEP RIPPING AND DE-COMPACTION, DEC 2008"

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:
DETAILS

NO.	REVISION/ISSUE	DATE
D	PLANNING BOARD SUBMITTAL	12/27/22
C	PLANNING BOARD SUBMITTAL	11/15/22
B	PLANNING BOARD SUBMITTAL	10/13/22
A	PLANNING BOARD SUBMITTAL	08/25/22

PREPARED BY:
NAPIERALA CONSULTING
PROFESSIONAL ENGINEER, P.C.
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email: MNAP@NAPCON.COM
PH: (315) 682-5580 FAX: (315) 682-5544

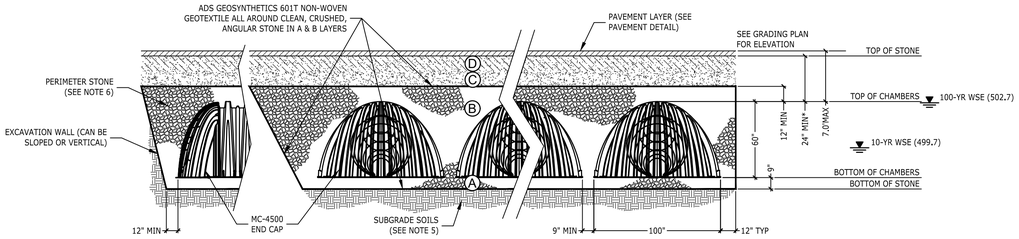
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PLAN SEAL BY:
RODNEY C. IVES, JR., P.E.
NYS REGISTRATION # 077842

PROJECT NO. 21-2022
DATE 25 AUG 2022
SCALE

SHEET C-14

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ANY ALTERED ITEM BEARS THE NOTATION "ALTERED BY" FOLLOWED BY HIS OR HER NAME AND A DESCRIPTION OF THE ALTERATIONS



NOTES:

1. MC-4500 CHAMBERS SHALL CONFORM TO THE REQUIREMENTS OF ASTM F2418 "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
2. MC-4500 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
3. "ACCEPTABLE FILL MATERIALS" TABLE ABOVE PROVIDES MATERIAL LOCATIONS, DESCRIPTIONS, GRADATIONS, AND COMPACTION REQUIREMENTS FOR FOUNDATION, EMBEDMENT, AND FILL MATERIALS.
4. THE "SITE DESIGN ENGINEER" REFERS TO THE ENGINEER RESPONSIBLE FOR THE DESIGN AND LAYOUT OF THE STORMTECH CHAMBERS FOR THIS PROJECT.
5. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
6. PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
7. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.

1 C–15 UNDERGROUND STORAGE CHAMBER CROSS SECTION, TYP.

SCALE: NTS

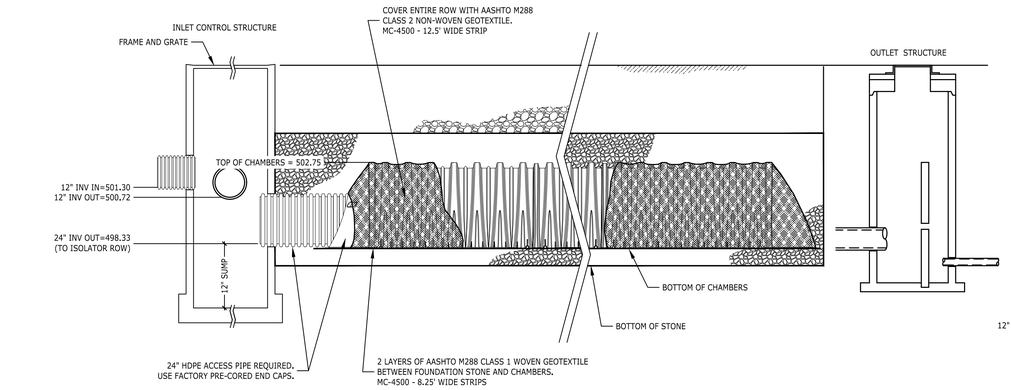
	MATERIAL LOCATION	DESCRIPTION	AASHTO M43 DESIGNATION[1]	COMPACTION/DENSITY REQUIREMENT
D	FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT. NOTE THAT PAVEMENT SUBBASE IS PART OF THE 'D' LAYER.	NYSDOT 304.03 TYPE 2		COMPACT IN 6" LIFTS TO A MIN. 95% STANDARD PROCTOR DENSITY.
C	FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 24" ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE IS TO BE A PART OF THIS LAYER.	NYSDOT 304.03 TYPE 2		BEGIN COMPACTION AFTER 24" OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 6" LIFTS TO A MIN. 95% STANDARD PROCTOR DENSITY.
B	EMBEDMENT STONE SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE TO THE 'C' LAYER ABOVE	CLEAN, CRUSHED, ANGULAR STONE, NOMINAL SIZE DISTRIBUTION BETWEEN 3/4 - 2 INCH	3, 357, 4, 467, 5, 56, 57	NO COMPACTION REQUIRED.
A	FOUNDATION STONE BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE, NOMINAL SIZE DISTRIBUTION BETWEEN 3/4 - 2 INCH	3, 35, 4, 467, 5, 56, 57	PLATE COMPACT OR ROLL TO ACHIEVE A 95% STANDARD PROCTOR DENSITY [2].

PLEASE NOTE:

1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
2. AS AN ALTERNATE TO PROCTOR TESTING AND FIELD DENSITY MEASUREMENTS ON OPEN GRADED STONE, STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 9" (MAX) LIFTS USING TWO FULL COVERAGES WITH AN APPROPRIATE COMPACTOR.

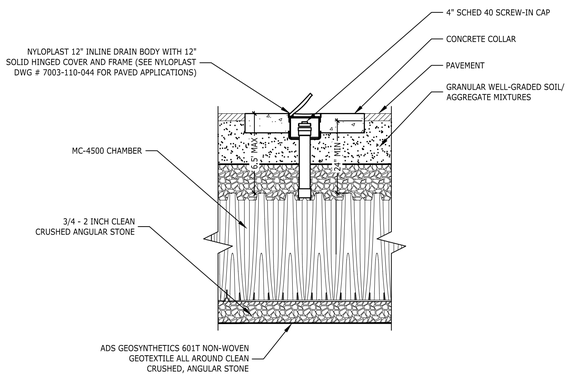
2 C–15 FILL MATERIAL SPECIFICATIONS STORMTECH MC-4500 CHAMBERS, TYP.

SCALE: NTS



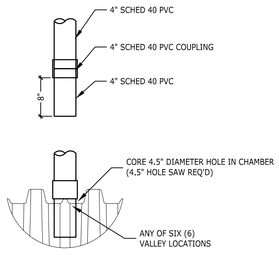
3 C–15 UNDERGROUND STORAGE PRE-TREATMENT ROW, TYP.

SCALE: NTS



NOTES:

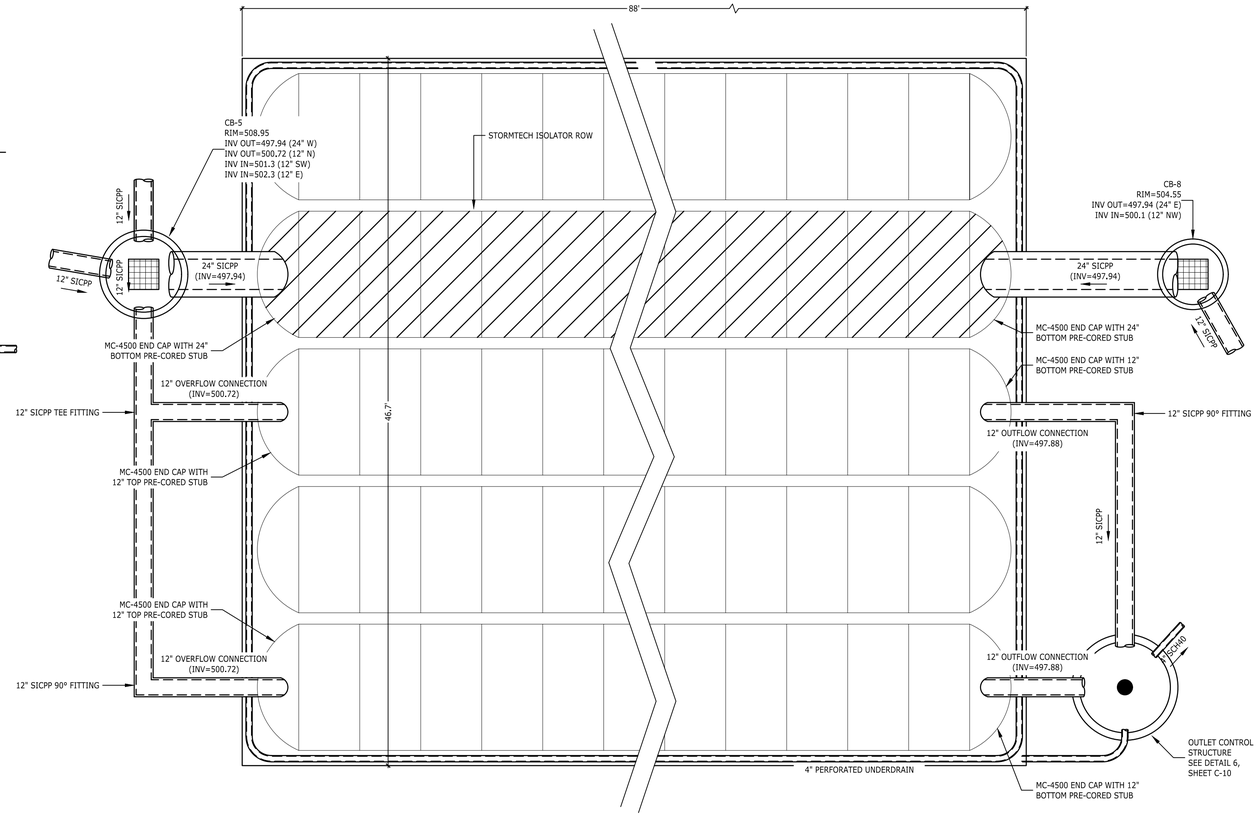
1. INSPECTION PORTS MAY BE CONNECTED THROUGH ANY OF SIX (6) CHAMBER CORRUGATION VALLEYS
2. ALL PVC FITTINGS ARE TO BE SOLVENT CEMENTED



CONNECTION DETAIL

4 C–15 ISOLATOR ROW INSPECTION PORT, TYP.

SCALE: NTS



5 C–15 MANIFOLD DETAIL, TYP.

SCALE: NTS

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:
DETAILS

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PREPARED BY:
NAPIERALA CONSULTING
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RODNEY C. IVES, JR., P.E.
NYS REGISTRATION # 077842

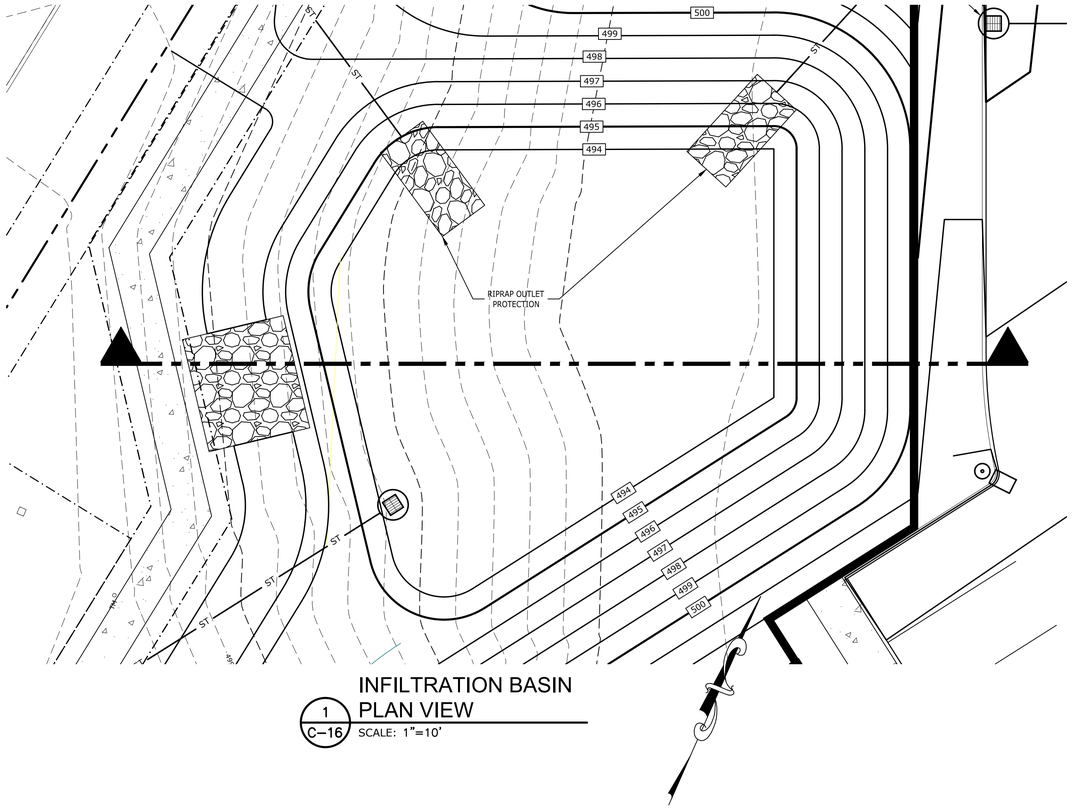
PROJECT NO. 21-2022
DATE 25 AUG 2022
SCALE

SHEET C-15

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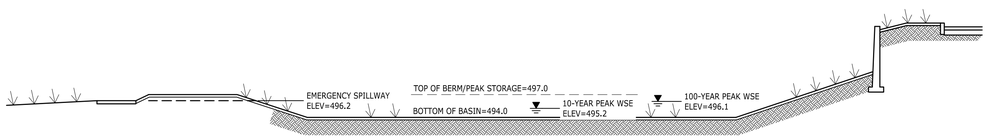
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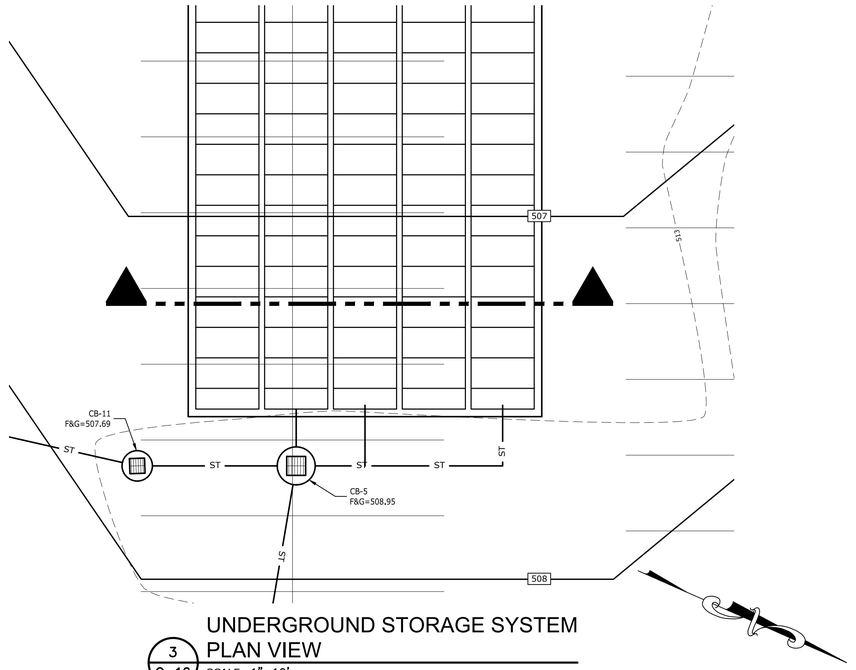
INFILTRATION BASIN
PLAN VIEW

1 C-16 SCALE: 1"=10'



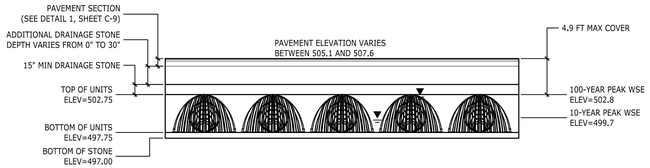
INFILTRATION BASIN
CROSS SECTION

2 C-16 SCALE: 1"=10'



UNDERGROUND STORAGE SYSTEM
PLAN VIEW

3 C-16 SCALE: 1"=10'



UNDERGROUND STORAGE SYSTEM
CROSS SECTION

4 C-16 SCALE: 1"=10'

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

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RODNEY C. IVES, JR., P.E.
NYS REGISTRATION # 077842

PROJECT NO. 21-2022
DATE 25 AUG 2022
SCALE

SHEET **C-16**

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ITEM OR DESCRIPTION OF THE ALTERATIONS



Parking and Drive Lanes
Calc. Points at grade.
Illuminance (Fc)
Average = 2.14
Maximum = 4.8
Minimum = 0.4
Avg/Min Ratio = 5.35
Max/Min Ratio = 12.00

Handicap Parking Area
Calc. Points at grade.
Illuminance (Fc)
Average = 3.38
Maximum = 3.9
Minimum = 2.7
Avg/Min Ratio = 1.25
Max/Min Ratio = 1.44

Loading Drive and Parking
Calc. Points at grade.
Illuminance (Fc)
Average = 2.15
Maximum = 3.5
Minimum = 1.4
Avg/Min Ratio = 1.54
Max/Min Ratio = 2.50

Luminaire Schedule

Symbol	Qty	Label	Arrangement	Tag	LLF	Luminaire Lumens	Luminaire Watts	Total Watts
	11	JAUTO-75W-HE-T4-Shield	Single	AL-1	0.950	13374	75	825
	6	JD-SB-60W-50K-T3	Single	AL-2	0.950	8879	60.127	360.762

GRAPHIC SCALE
0 40' 80'
(IN FEET)
1 inch = 40 ft

PROJECT TITLE:
A&E & SNY CENTER
MEDICAL CENTER DRIVE
TOWN OF MANLIUS ONONDAGA COUNTY, NEW YORK

PREPARED FOR:
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SUITE 38
5781 BRIDGE STREET
EAST SYRACUSE, NY 13057

SHEET TITLE:
LIGHTING PHOTOMETRIC

NO.	REVISION/ISSUE	DATE
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RODNEY C. WEIS, JR., P.E.
NYS REGISTRATION # 077842

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SCALE 1"=40'

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SHEET C-17

Expected Fee: _____

TOWN OF MANLIUS
PLANNING DEPARTMENT
INITIAL APPEARANCE APPLICATION

DATE: 9.23.2022

Name of Project: Donald Meginn Trust & Meginn Farms

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: 1301 Nottingham RD, Unit C211, Jamesville NY 13078

Type of Project:

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

Developer: Brodex Enterprises, LLC Phone: 315-559-0556

Address: 5912 N. Burdick St. E. Syracuse NY Zip: 13057

Tax Map Number(#)/s: 082.2-01-02.0 & 082.2-01-03.0

Present Zoning: RA-Restricted Agri. CR-Commercial Desired Zoning: R-3

Total Acreage: 14.02 acres Total Number of Lots: 25 (two family lots)

Property Owner/s: Donald Meginn Trust Phone: C/O Amy Longstreet 315-233-8263

Address: 1301 Nottingham Rd C-211, Jamesville, NY Zip: 13078

Tax Map#(s): 082.2-01-02.0 & 082.2-01-03.0 Owner's Signature: Amy Longstreet

Printed Name: Amy Longstreet, Esq POA

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

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

Brolax Properties, LLC

Name of Action or Project:
Megrin Landing

Project Location (describe, and attach a location map):
NYS Rt 5, East Genesee St & Strawmount Trail

Brief Description of Proposed Action:
Zone change from R-A and Commercial to R-3 and subdivision for (25) two family building lots and 5 218 clustering.

Name of Applicant or Sponsor:	Telephone: 315-559-0556
Brolax Properties, LLC	E-Mail: brady@probrokerage.com
Address: 5912 N. Burdick St	
City/PO: East Syracuse	State: NY. Zip Code: 13057

	NO	YES
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.	☒	☐
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:	☒	☐

3.a. Total acreage of the site of the proposed action? 16 acres
b. Total acreage to be physically disturbed? +/- 10 acres
c. Total acreage (project site and any contiguous properties) owned or controlled by the applicant or project sponsor? 16 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

	NO	YES	N/A
5. Is the proposed action, 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?	☐	☒	
7. Is the site of the proposed action located in, or does it adjoin, a state listed Critical Environmental Area? If Yes, identify: _____	☒	☐	
8. a. Will the proposed action result in a substantial increase in traffic above present levels?	☒	☐	
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: Energy Star homes or above	☐	☒	
10. Will the proposed action connect to an existing public/private water supply? OCWA If No, describe method for providing potable water: _____	☐	☒	
11. Will the proposed action connect to existing wastewater utilities? Village of Chittenango Sewer 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?	☒	☐	
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?	☐	☒	
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

	NO	YES
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?	☒	☐
16. Is the project site located in the 100 year flood plain?	☒	☐
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)? ☐ NO ☒ YES If Yes, briefly describe: Natural drainage channel to new Storm water detention basin		

	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: proposed detention/retention basin less than 1 acre in size	☐	☒
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:	☐	☒
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:	☐	☒

I AFFIRM THAT THE INFORMATION PROVIDED ABOVE IS TRUE AND ACCURATE TO THE BEST OF MY KNOWLEDGE

Applicant/sponsor name: Brandon Jacobson Brolax Properties LLC Date: 9/28/22

Signature:

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

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: Brolax Properties, LLC
2. PROJECT NAME: Megan Landing
3. PROJECT LOCATION:
   MUNICIPALITY Town of Manlius COUNTY Onondaga
4. PRECISE LOCATION: (Street address and road intersections, prominent landmarks, etc., or provide map)
   NYS Rt #5, East Genesee Street & Stonemount Trail
5. PROPOSED ACTION IS: ☒ NEW ☐ EXPANSION ☐ MODIFICATION/ALTERATION
6. DESCRIBE PROJECT BRIEFLY: Zone change from R-A to R-3 for the development of (25) two family homes, maximum 50 residential living units, utilizing §278 NY Town Law (clustering)
7. AMOUNT OF LAND AFFECTED: Initially 16 Acres Ultimately +/-10 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:
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: Town of Manlius Planning Board Subdivision Approval
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: Brolax Properties, LLC DATE: 8/22/2022

SIGNATURE: Brandon Jacobson, Managing Member

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:

C2. AESTHETIC, AGRICULTURAL, ARCHAEOLOGICAL, HISTORIC, OR OTHER NATURAL OR CULTURAL RESOURCES; OR COMMUNITY OR NEIGHBORHOOD CHARACTER: EXPLAIN BRIEFLY:

C3. VEGETATION OR FAUNA, FISH, SHELLFISH OR WILDLIFE SPECIES, SIGNIFICANT HABITATS, OR THREATENED OR ENDANGERED SPECIES? EXPLAIN BRIEFLY:

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:

C5. GROWTH, SUBSEQUENT DEVELOPMENT, OR RELATED ACTIVITIES LIKELY TO BE INDUCED BY THE PROPOSED ACTION: EXPLAIN BRIEFLY:

C6. LONG TERM, SHORT TERM, CUMULATIVE, OR OTHER EFFECTS NOT IDENTIFIED IN C1-C5? EXPLAIN BRIEFLY:

C7. OTHER IMPACTS (INCLUDING CHANGES IN USE OF EITHER QUANTITY OR TYPE OF ENERGY)? EXPLAIN BRIEFLY:

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:

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)

ALL THAT TRCT OR PARCEL OF LAND situated in the Town of Manlius, County of Onondaga, State of New York, being part of Lot 58 and 59 in said Town and being more specifically described as follows:

Beginning at a point in the northerly line of N.Y. Route #5, (a/k/a E. Genesee Street), at the intersection of said northerly line with the easterly line of Lot 59 Town of Manlius, (being also the easterly line of Onondaga County and the westerly line of Madison County),.

Running thence N81°50'02"W a distance of 60.13 feet to the point and place of beginning,

Thence S04°25'29"W a distance of 700 feet along the westerly side of Strawmount Trail,

Thence N81°49'11"W a distance of 1040.03 feet,

Thence S04°45'25"W a distance of 700 feet to a point on the north side of N.Y.Route #5,

Thence S81°50'02"E along the northerly line of N.Y. Route #5 a distance of 704.20 feet,

Thence N04°25'29"E a distance of 150 feet,

Thence S81°50'02"E a distance of 200 feet,

Thence S04°25'29"W a distance of 150 feet,

Thence S81°50'02"E a distance of 139.87 feet along the northerly line of N.Y. Route #5, to the point and place of beginning, containing 16.025+/- acres of land

Subject to easements and restrictions of record.

CORPORATE ACKNOWLEDGEMENT

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

Brandon Jordan, being duly sworn, deposes and says the s(he) is the Managing Member of Brobar Properties, LLC 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 28th day
Of September, 2022

Ann M. Oot
Notary Public

ANN M OOT
NOTARY PUBLIC State of New York
Onondaga County
Lic. #01OO4965138
Comm. Exp. 04/16/2026

06/29/16 LB

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. Brooks Jacobson, being duly sworn, deposes and says that (s) he is:

Managing Member of Brooks Properties, LLC
(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: 9/28, 2022

Brandon Jacobson
(Print Name)

(Signature)

Brolax Properties, LLC
(Entity Name)

Brandon Jacobson Manager
By (Officer) (Title) Member

Same
(Mailing Address of Applicant)

Same
(Telephone Number)

Date: _____, 20____.

(Print Name)

(Signature)

(Entity Name)

By (Officer) (Title)

(Mailing Address of Applicant)

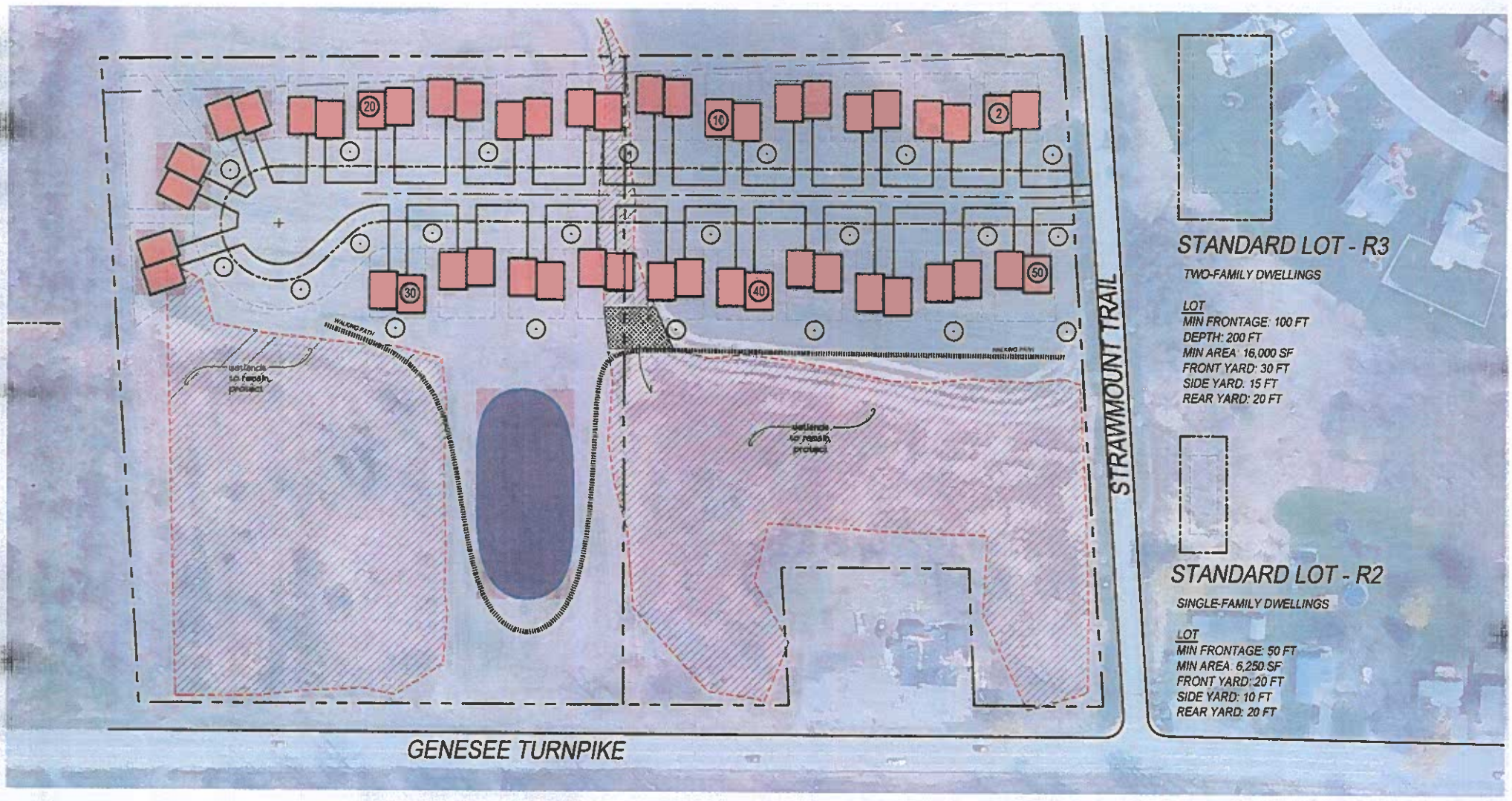
(Telephone Number)

ACKNOWLEDGEMENTS

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

On this 28 day of September in the year 2022, before me, the undersigned, a notary public in and for said state, personally appeared Brandon Jacobson, _____, 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



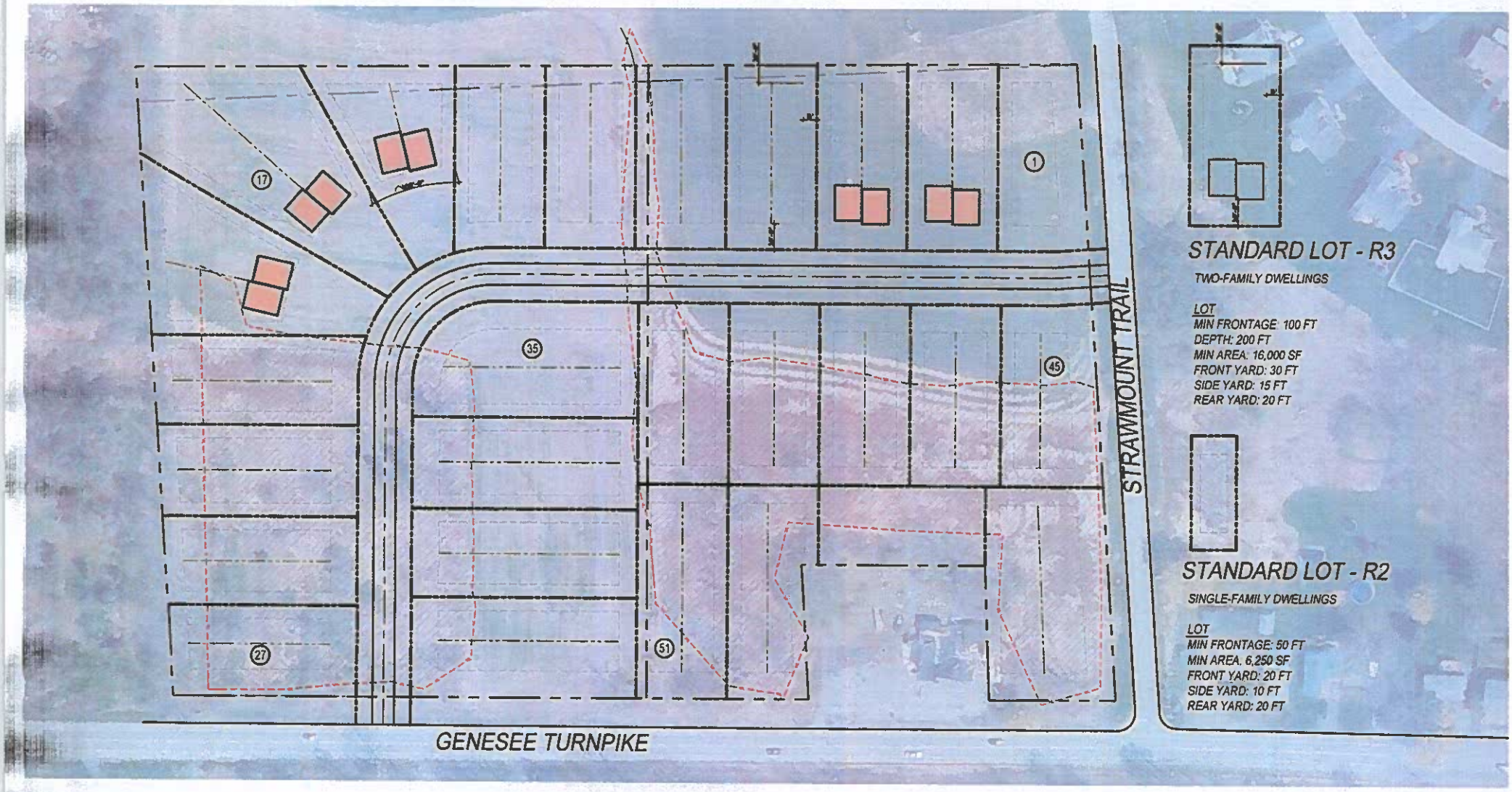
R-3 ZONING - CLUSTERING

(50) ATTACHED TOWNHOUSE UNITS (PROPOSED) USING §278 N.Y. TOWN LAW

JULY 27, 2022

0 100 200

SCALE IN FEET

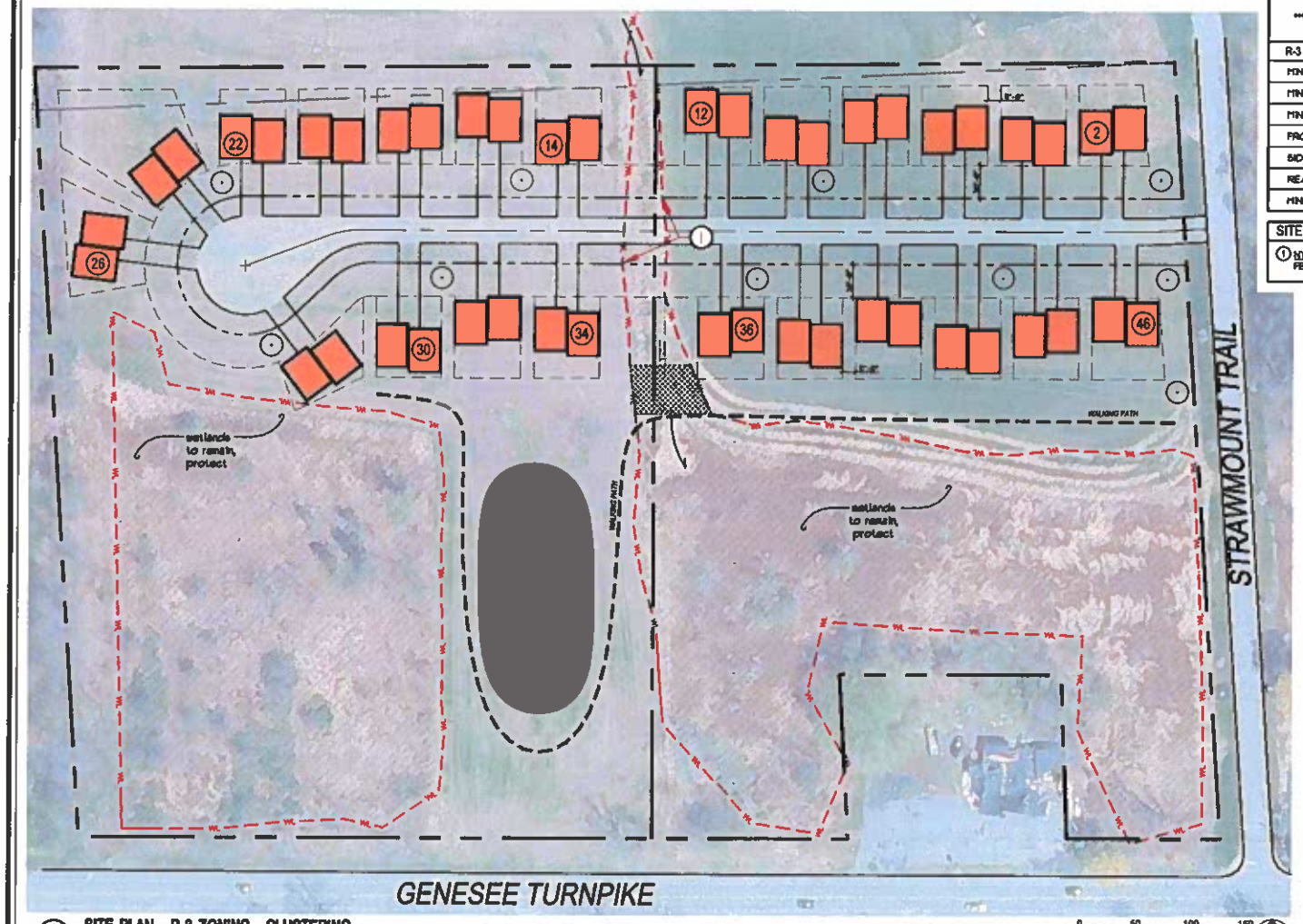


R-3 DENSITY PLAN (PROPOSED R-3 ZONING)

(26) CONFORMING, TWO FAMILY BUILDING LOTS
MAXIMUM (52) ATTACHED TWO FAMILY HOMES

JULY 27, 2022

0 100 200
SCALE IN FEET



1 SITE PLAN - R-3 ZONING - CLUSTERING
(46) ATTACHED TOWNHOUSE UNITS (PROPOSED)
USING §278 N.Y. TOWN LAW

0 50 100 150
SCALE IN FEET

TOWN OF MANLIUS ZONING CHART

X-TAN.LIS-ZONING

1. CURRENT ZONING

- TAX MAP #0812-151-121.0 & 0812-151-123.0 ARE CURRENTLY ZONED RESTRICTED AGRICULTURE (RA) DISTRICTS, TAX MAP PARCEL 0812-151-121.0 IS SPLIT ZONED RA/CB.
- THE FOLLOWING USES ARE PERMITTED IN RA DISTRICTS:
  - ANY USE PERMITTED IN RESIDENTIAL DISTRICT R-1, ACCORDING TO THE SAME RESTRICTIONS.
  - ANY USE PERMITTED IN RESIDENTIAL DISTRICT R-3, ACCORDING TO THE SAME RESTRICTIONS.

R-3 BULK REGULATIONS	
MIN. FRONTAGE	100 FT
MIN. LOT DEPTH	200 FT
MIN. LOT AREA	16,000 SF
FRONT YARD SETBACK	30 FT
SIDE YARD SETBACK	15 FT
REAR YARD SETBACK	20 FT
MIN. BUILDING SEPARATION	12 FT

SITE PROGRAMMING

1. NYSDEC/ACOE JOINT APPLICATION. DISTURBANCE OF FEDERAL WETLANDS TOTALING .85 ACRES.

EDPLINGER FREEMAN ASSOCIATES
LANDSCAPE ARCHITECTURE & LAND PLANNING

Client:
BIRCLEX PROPERTIES LLC

Contact:
5817 N. BURDICK ST., EAST SYRACUSE, NY 13057
p: 315-558-0556
e: BRANDONMINSTON.BIZ

MEGNIN FARM DEVELOPMENT
TOWN OF MANLIUS, NY

REVISIONS

Drawn By:	V.A.R.
Checked By:	S.L.F.
EFA Proj. No.:	20079
Date:	AUGUST 08, 2023
Scale:	AS NOTED

Title:

SITE PLAN

L-100

Expected Fee: $100

TOWN OF MANLIUS
PLANNING DEPARTMENT
INITIAL APPEARANCE APPLICATION

DATE: 12/20/22

Name of Project: CVE Duguid Road Community Solar Farm

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: off Duguid Rd (Tax Map No. 099.-01-03)

Type of Project: Amendment

○ Division of Land ○ Subdivision ○ Accessory Use ○ Zone Change ☑ Site Review ○ Other

Developer: CVE North America, Inc. Phone: 239-784-8080

Address: 109 W 27th St, Floor 8, New York, NY Zip: 10001

Tax Map Number(#)/s: 099.-01-03

Present Zoning: Residential Agricultura (R/A) Desired Zoning: Residential Agricultura (R/A)

Total Acreage: 230 Total Number of Lots: 1

Property Owner/s: CVE US EI4 Manlius North, LLC
CVE US EI5 Manlius East LLC
CVE US EI6 Manlius West LLC Phone: 239-784-8080

Address: 109 W 27th St, Floor 8, New York, NY Zip: 10001

Tax Map#(s): 099.-01-03 Owner's Signature: Thibaut Delespaul

Printed Name: Thibaut Delespaul

Property Owner/s: Phone:

Address: Zip:

Tax Map#(s): Owner's Signature:

Printed Name:

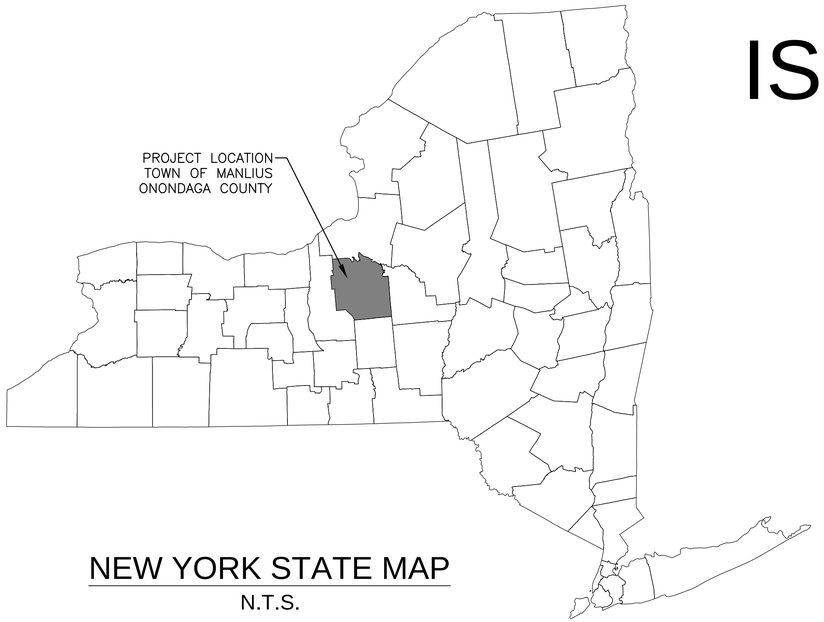
Use next page for additional known property owners' information

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Planning Board Meeting Date Assignment:

Fee: Paid: Per: ○ Credit/Debit Card ○ Check ○ Cash

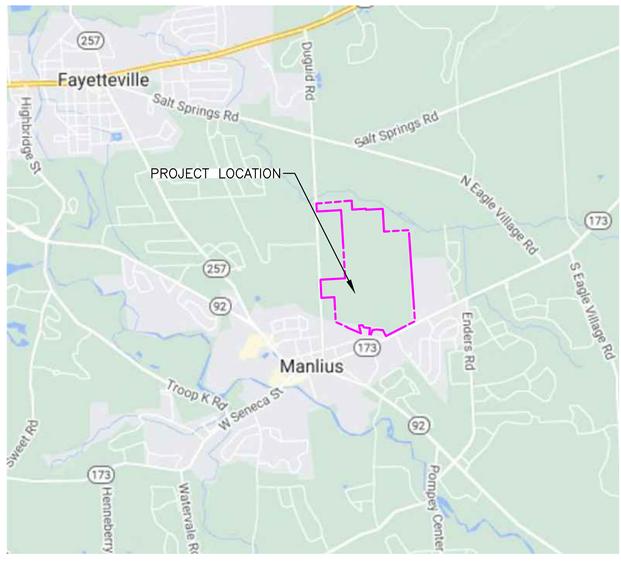
MANLIUS SOLAR
ISSUED FOR PERMIT



NEW YORK STATE MAP
N.T.S.

TOWN OF MANLIUS
ONONDAGA COUNTY, NY

PROJECT No. 220871



LOCATION MAP
N.T.S.

PREPARED BY:

FISHER ASSOCIATES
WWW.FISHERASSOC.COM

INDEX OF DRAWINGS:

DRAWING NUMBER	SHEET NUMBER	DRAWING TITLE
C-001	01	COVER SHEET
C-002	02	CONSTRUCTIONS NOTES
C-100	03	EXISTING CONDITIONS AND DEMO PLAN
C-200	04	OVERALL SITE PLAN
C-201	05	OVERALL SITE PLAN INDEX
C-202	06	CIVIL SITE PLAN – 1
C-203	07	CIVIL SITE PLAN – 2
C-204	08	CIVIL SITE PLAN – 3
C-205	09	CIVIL SITE PLAN – 4
C-206	10	CIVIL SITE PLAN – 5
C-207	11	CIVIL SITE PLAN – 6
C-300	12	OVERALL GRADING PLAN
C-301	13	CIVIL GRADING PLAN – 1
C-302	14	CIVIL GRADING PLAN – 2
C-303	15	CIVIL GRADING PLAN – 3
C-304	16	CIVIL GRADING PLAN –4
C-305	17	CIVIL GRADING PLAN – 5
C-306	18	CIVIL GRADING PLAN – 6
C-400	19	ACCESS ROAD PLAN AND PROFILE INDEX
C-401	20	ACCESS ROAD A PLAN PROFILE –1
C-402	21	ACCESS ROAD A PLAN PROFILE –2
C-403	22	ACCESS ROAD A PLAN PROFILE – 3
C-404	23	ACCESS ROAD A PLAN PROFILE – 4
C-405	24	ACCESS ROAD A PLAN PROFILE –5
C-406	25	ACCESS ROAD B PLAN PROFILE –1
C-407	26	ACCESS ROAD C PLAN PROFILE –1
C-408	27	ACCESS ROAD D PLAN PROFILE –1
C-409	28	EQUIPMENT PAD GRADING PLAN AND SECTIONS
C-410	29	EQUIPMENT PAD GRADING PLAN AND SECTIONS
C-411	30	EQUIPMENT PAD GRADING PLAN AND SECTIONS
C-412	31	EQUIPMENT PAD GRADING PLAN AND SECTIONS
C-413	32	EQUIPMENT PAD GRADING PLAN AND SECTIONS
C-700	33	ACCESS ROAD AND EQUIPMENT DETAILS
C-705	34	FENCE DETAILS
C-710	35	EROSION AND SEDIMENT CONTROL DETAILS
C-715	36	DRAINAGE AND LANDSCAPE DETAILS

PROJECT SITE INFORMATION	
SITE ADDRESS	0 DUGUID ROAD MANLIUS, NY
COUNTY PARCEL NUMBER	099.-01-03.0
GPS COORDINATES	43°0'43.20"N 75°58'1.20"W
SITE ELEVATION	880 FT
UTILITY NAME	
UTILITY ADDRESS	
UTILITY CONTACT INFORMATION	
DEVELOPER NAME	CVE NORTH AMERICA, INC.
DEVELOPER ADDRESS	109 W 37TH ST. 8TH FLOOR NY,10001
DEVELOPER CONTACT INFORMATION	519-804-9163
CIVIL ENGINEER OF RECORD (EOR) NAME	S. MELLOTT
CIVIL EOR ADDRESS	180 CHARLOTTE ST. ROCHESTER, NY
CIVIL EOR CONTACT INFORMATION	585-334-1310
APPLICABLE BUILDING PERMIT AUTHORITY	TOWN OF MANLIUS

CIVIL SITE BASIS AND QUANTITY ESTIMATES	
EXISTING LAND USE	AG (AGRICULTURAL)
SETBACK FRONT MIN. DESIGNED (FT)	50 FT
SETBACK REAR MIN. DESIGNED (FT)	112.33 FT
SETBACK SIDE MIN. DESIGNED (FT)	131.42 FT
ROAD WIDTH DESIGNED (FT)	20 FT
MAX STRUCTURE HEIGHT DESIGNED (FT)	15 FT
MAX. FENCE HEIGHT DESIGNED (FT)	8 FT
PROPERTY AREA (ACRES)	110.4 ACRES
FENCED AREA (ACRES)	67.29 ACRES
EQUIPMENT AREA (SF)	563.37 SF
ROAD AREA (SF)	7,478 SF
AGGREGATE BASE MATERIAL (CY)	4,186.75 CY
SILT FENCE (LF)	6268.04 LF
CHAIN-LINK FENCE (LF)	13,228 LF
GATE COUNT	3
LIMITS OF DISTURBANCE (ACRES)	90.31 ACRES
CUT (CY)	384.06 CY
FILL (CY)	1,114.21 CY

PROJECT SUMMARY			
	LOT 2	LOT 3	LOT 4
SYSTEM AC SIZE (MW)	5.0	5.0	5.0
SYSTEM DC SIZE (MW)	6.738	6.118	1.998
MODULE COUNT	12,714	11,544	3,770
INVERTER COUNT	40	40	12
TRANSFORMER COUNT	2	2	1
POLE COUNT			
PANEL WATTAGE	530 W	530 W	530 W

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	BY
7			
6			
5			
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3			
2			
1			

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FA PROJECT NO.
220871
PROJECT MANAGER
S. MELLOTT
DRAWN BY
D. BRUE
SCALE
AS SHOWN
ISSUE DATE
12/20/2022

STATE OF NEW YORK
STEVEN C. MELLOTT
088072
LICENSED PROFESSIONAL ENGINEER

FISHER ASSOCIATES
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PROJECT
PROPOSED MANLIUS SOLAR
TOWN OF MANLIUS
ONONDAGA COUNTY, NEW YORK

TITLE OF DRAWING
COVER SHEET

DRAWING NO.
C-001

SHEET 01 OF 36

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USER: Doug Perrotto

SEQUENCE OF CONSTRUCTION:

1. PRE-CONSTRUCTION MEETING HELD TO INCLUDE PROJECT MANAGER, OPERATOR'S ENGINEER, CONTRACTOR, TOWN MS4 REPRESENTATIVE, AND SUB-CONTRACTORS PRIOR TO LAND DISTURBING ACTIVITIES.
2. INSTALL PERIMETER SILT FENCE.
3. BEGIN CLEARING AND GRUBBING OPERATIONS. CLEARING AND GRUBBING SHALL BE DONE ONLY IN AREAS WHERE EARTHWORK WILL BE PERFORMED AND ONLY IN AREAS WHERE CONSTRUCTION IS PLANNED TO COMMENCE WITHIN 14 DAYS AFTER CLEARING AND GRUBBING.
4. STRIP TOPSOIL AND STOCKPILE IN A LOCATION ACCEPTABLE TO CONSTRUCTION MANAGER. WHEN STOCKPILE IS COMPLETE, INSTALL PERIMETER SILT FENCE, SEED SURFACE WITH 100% PERENNIAL RYEGRASS MIXTURE AT A RATE OF 2-4 LBS. PER 1000 SF. APPLY 90-100 LBS PER 1000 SF OF MULCH.
5. COMMENCE EARTHWORK CUT AND FILLS. THE WORK SHALL BE PROGRESSED TO ALLOW A REASONABLE TRANSFER OF CUT AND FILL EARTH FOR ROUGH GRADING AND EARTH MOVING. THE CONTRACTOR WILL BE GIVEN SOME LATITUDE TO VARY FROM THE FOLLOWING SCHEDULE IN ORDER TO MEET THE FIELD CONDITIONS ENCOUNTERED. CONTRACTOR SHALL REVIEW VARIATIONS TO SWPPP WITH DESIGN ENGINEER AND QUALIFIED PROFESSIONAL PRIOR TO IMPLEMENTATION.
6. AS ROADWAY AND ACCESS DRIVES ARE BROUGHT TO GRADE, THEY WILL BE STABILIZED WITH CRUSHED STONE SUBBASE AT A DEPTH SPECIFIED ON PLANS TO PREVENT EROSION AS SOON AS PRACTICABLE.
7. STABILIZE ALL AREAS AS SOON AS PRACTICABLE, IDLE IN EXCESS OF 7 DAYS AND IN WHICH CONSTRUCTION WILL NOT COMMENCE WITHIN 14 DAYS.
8. INSTALL UTILITIES. TRENCH EXCAVATION/BACKFILL AREAS SHOULD BE STABILIZED PROGRESSIVELY AT THE END OF EACH WORKDAY WITH SEED AND STRAW MULCH AT A RATE OF 100% PERENNIAL RYE GRASS AT 2-4 LBS/1000 SF MULCHED AT 90-100 LBS/1000 SF.
9. STABILIZE ALL AREAS IDLE IN EXCESS OF 7 DAYS IN WHICH CONSTRUCTION WILL NOT COMMENCE WITHIN 14 DAYS.
10. REMOVE TEMPORARY CONSTRUCTION EXITS AND PERIMETER SILT FENCE ONCE SITE HAS ACHIEVED 80% UNIFORM STABILIZATION.
11. REMOVE SILT FENCE WITHIN WETLANDS DURING CONSTRUCTION, RETURN SILT FENCE AFTER CONSTRUCTION HAS BEEN FINALIZED.

GENERAL NOTES:

1. THE EXISTING UNDERGROUND STRUCTURES AND UTILITIES SHOWN ON THIS MAP HAVE BEEN PLOTTED FROM AVAILABLE SURVEYS AND RECORD MAPS AS PROVIDED, THEY ARE NOT CERTIFIED TO THE ACCURACY OF THEIR LOCATION AND/OR COMPLETENESS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE LOCATION AND EXTENT OF ALL UNDERGROUND STRUCTURES AND UTILITIES PRIOR TO ANY DIGGING OR CONSTRUCTION ACTIVITIES IN THEIR VICINITY. THE CONTRACTOR SHALL HAVE ALL EXISTING UTILITIES FIELD STAKED BEFORE STARTING WORK BY CALLING 1-800-962-7962.
2. HIGHWAY DRAINAGE ALONG ALL ROADS AND PRIVATE DRIVES SHALL BE KEPT CLEAN OF MUD, DEBRIS ETC. AT ALL TIMES.
3. THE CONTRACTOR SHALL CONSULT THE OWNER OR THEIR REPRESENTATIVE BEFORE DEVIATING FROM THESE PLANS.
4. IN ALL TRENCH EXCAVATIONS, CONTRACTOR MUST LAY THE TRENCH SIDE SLOPES BACK TO A SAFE SLOPE, USE A TRENCH SHIELD OR PROVIDE SHEETING AND BRACING.
5. IF SUSPICIOUS AND/OR HAZARDOUS MATERIAL IS ENCOUNTERED DURING DEMOLITION/CONSTRUCTION, ALL WORK SHALL STOP AND THE COUNTY DEPARTMENT OF HEALTH AND THE NEW YORK STATE DEPARTMENT OF CONSERVATION SHALL BE NOTIFIED IMMEDIATELY. WORK SHALL NOT RESUME UNTIL THE DEVELOPER HAS OUTLINED APPROPRIATE ACTION FOR DEALING WITH THE WASTE MATERIAL AND THE DEVELOPMENT PLANS ARE MODIFIED AS MAY BE NECESSARY.
6. EXCAVATED WASTE MATERIAL REMOVED FROM THE SITE SHALL BE PLACED AT A LOCATION ACCEPTABLE TO THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION.
7. AREAS DISTURBED OR DAMAGED AS PART OF THIS PROJECTS CONSTRUCTION THAT ARE OUTSIDE OF THE PRIMARY WORK AREA SHALL BE RESTORED, AT THE CONTRACTORS EXPENSE, TO THE SATISFACTION OF THE OWNER'S REPRESENTATIVE.
8. TREES MAY BE CLEARED WITHIN THE FLOODPLAIN OR WETLAND AREAS AS LONG AS THE STUMPS ARE NOT CLEARED OR GRUBBED. LOW GROUND PRESSURE CONSTRUCTION VEHICLES OR TIMBER MATTING MAY BE UTILIZED TO CUT TREES AND TO REMOVE DEBRIS WITHIN THE FLOODPLAIN OR WETLAND AREAS. CONSTRUCTION TRAFFIC WITHIN THE FLOODPLAIN OR WETLANDS SHALL BE MINIMIZED TO THAT WHICH IS NECESSARY FOR THE INSTALLATION OF THE PANELS, RACKING, AND OTHER PROJECT COMPONENTS. THE WETLAND AREAS SHALL BE PROTECTED AT ALL TIMES AS SHOWN ON THE PLANS WHEN INSTALLATION OF THE PROJECT COMPONENTS IS NOT ONGOING.

WASTE/HAZARDOUS MATERIAL PRACTICES:

1. WHENEVER POSSIBLE COVERED TRASH CONTAINERS SHOULD BE USED.
2. DAILY SITE CLEANUP IS REQUIRED TO REDUCE DEBRIS AND POLLUTANTS IN THE ENVIRONMENT.
3. CONTRACTOR SHALL PROVIDE A SAFE STORAGE SPACE FOR ALL PAINTS, STAINS AND SOLVENTS INSIDE A COVERED STORAGE AREA.
4. ALL FUELS, OILS AND GREASE MUST BE KEPT IN CONTAINERS AT ALL TIMES.

EROSION & SEDIMENT CONTROL NOTES:

1. INSTALL EROSION CONTROL MEASURES AS INDICATED ON THE PLAN PRIOR TO THE START OF ANY EXCAVATION WORK. EROSION CONTROL MEASURES WILL BE IMPLEMENTED IN ACCORDANCE WITH THE NEW YORK STATE STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL, DATED NOVEMBER 2016.
2. CONTRACTOR TO LIMIT CONSTRUCTION TRAFFIC THROUGH WETLANDS.
3. REFER TO STORM WATER POLLUTION PLAN NOTES FOR EROSION CONTROL MEASURE NOTES.

SITE STABILIZATION:

1. WHEN FINAL GRADE IS ACHIEVED DURING NON-GERMINATING MONTHS, THE AREA SHOULD BE MULCHED UNTIL THE BEGINNING OF THE NEXT PLANTING SEASON.
2. MULCHES SHOULD BE APPLIED AT THE RATES SHOWN IN THE MULCH APPLICATION RATES TABLE. VERY LITTLE BARE GROUND SHOULD BE VISIBLE THROUGH THE MULCH.
3. STRAW AND HAY MULCH SHOULD BE ANCHORED OR TACKIFIED IMMEDIATELY AFTER APPLICATION TO PREVENT BEING WINDBLOWN. A TRACTOR-DRAWN IMPLEMENT MAY BE USED TO "CRIMP" THE STRAW OR HAY INTO THE SOIL – ABOUT 3 INCHES. THIS METHOD SHOULD BE LIMITED TO SLOPES NO STEEPER THAN 3H:1V. THE MACHINERY SHOULD BE OPERATED ALONG THE CONTOUR. NOTE: CRIMPING OF HAY OR STRAW BY RUNNING OVER IT WITH TRACKED MACHINERY IS NOT RECOMMENDED.
4. BEFORE SEEDING IS APPLIED THE CONTRACTOR SHALL SPREAD SOIL TO PREVENT PONDING AND CONFIRM THAT SOIL WILL SUSTAIN THE SEED GERMINATION AND ESTABLISHMENT OF VEGETATION.
5. GRADED AREAS SHOULD BE SCARIFIED OR OTHERWISE LOOSENED TO A DEPTH OF 3 TO 5 INCHES TO PERMIT BONDING OF THE TOPSOIL TO THE SURFACE AREAS AND TO PROVIDE A ROUGHENED SURFACE TO PREVENT TOPSOIL FROM SLIDING DOWN SLOPE. COMPACTED SOILS SHOULD BE SCARIFIED TO A DEPTH OF 6 TO 12 INCHES, ALONG CONTOUR WHEREVER POSSIBLE, PRIOR TO SEEDING.
6. TOPSOIL OR AMENDED SOIL SHOULD BE UNIFORMLY DISTRIBUTED ACROSS THE DISTURBED AREA TO A MINIMUM DEPTH OF 6 INCHES. SPREADING SHOULD BE DONE IN SUCH A MANNER THAT SODDING OR SEEDING CAN PROCEED WITH A MINIMUM OF ADDITIONAL PREPARATION OR TILLAGE. IRREGULARITIES IN THE SURFACE RESULTING FROM TOPSOIL PLACEMENT SHOULD BE CORRECTED IN ORDER TO PREVENT FORMATION OF DEPRESSIONS.
7. TOPSOIL SHOULD NOT BE PLACED WHILE THE TOPSOIL OR SUBSOIL IS IN A FROZEN OR MUDDY CONDITION, WHEN THE SUBSOIL IS EXCESSIVELY WET, OR IN A CONDITION THAT MAY OTHERWISE BE DETRIMENTAL TO PROPER GRADING AND SEEDBED PREPARATION.
8. WHEN USED AS A MULCH REPLACEMENT, THE APPLICATION RATE (THICKNESS) OF THE COMPOST SHOULD BE ½" TO ¾". COMPOST SHOULD BE PLACED EVENLY AND SHOULD PROVIDE 100% SOIL COVERAGE. NO SOIL SHOULD BE VISIBLE.
9. POLYMERIC AND GUM TACKIFIERS MIXED AND APPLIED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS MAY BE USED TO TACK MULCH. AVOID APPLICATION DURING RAIN AND ON WINDY DAYS. A 24-HOUR CURING PERIOD AND A SOIL TEMPERATURE HIGHER THAN 45° F ARE TYPICALLY REQUIRED. APPLICATION SHOULD GENERALLY BE HEAVIEST AT EDGES OF SEEDED AREAS AND AT CRESTS OF RIDGES AND BANKS TO PREVENT LOSS BY WIND. THE REMAINDER OF THE AREA SHOULD HAVE BINDER APPLIED UNIFORMLY. BINDERS MAY BE APPLIED AFTER MULCH IS SPREAD OR SPRAYED INTO THE MULCH AS IT IS BEING BLOWN ONTO THE SOIL. APPLYING STRAW AND BINDER TOGETHER IS GENERALLY MORE EFFECTIVE.
10. SYNTHETIC BINDERS, OR CHEMICAL BINDERS, MAY BE USED AS RECOMMENDED BY THE MANUFACTURER TO ANCHOR MULCH PROVIDED SUFFICIENT DOCUMENTATION IS PROVIDED TO SHOW THEY ARE NON-TOXIC TO NATIVE PLANT AND ANIMAL SPECIES.
11. MULCH ON SLOPES OF 8% OR STEEPER SHOULD BE HELD IN PLACE WITH NETTING. LIGHTWEIGHT PLASTIC, FIBER, OR PAPER NETS MAY BE STAPLED OVER THE MULCH ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.
12. SHREDDED PAPER HYDROMULCH SHOULD NOT BE USED ON SLOPES STEEPER THAN 5%. WOOD FIBER HYDROMULCH MAY BE APPLIED ON STEEPER SLOPES PROVIDED A TACKIFIER IS USED. THE APPLICATION RATE FOR ANY HYDROMULCH SHOULD BE 2,000 LB/ACRE AT A MINIMUM.
13. LIME, FERTILIZER, SEED, AND MULCH DISTURBED AREAS PER THE EROSION AND SEDIMENT CONTROL PLANS. IN AREAS OF STEEP SLOPES OR OBVIOUS AREAS WHERE POTENTIAL EROSION MAY OCCUR, AN EROSION CONTROL MAT OR FLEXIBLE GROWTH MEDIUM (FGM) SHALL BE USED. FGM SHALL BE APPLIED PER MANUFACTURER SPECIFICATIONS.
14. NO CONSTRUCTION TRAFFIC SHALL OCCUR TO REMOVE ANY BMPS UNTIL THE SECTION HAS ACHIEVED 80% PERENNIAL VEGETATIVE COVER. AN AREA SHALL BE CONSIDERED TO HAVE ACHIEVED FINAL STABILIZATION WHEN IT HAS A MINIMUM 80% PERENNIAL VEGETATIVE COVER OR OTHER PERMANENT NONVEGETATIVE COVER WITH A DENSITY SUFFICIENT TO RESIST ACCELERATED EROSION AND SUBSURFACE CHARACTERISTICS SUFFICIENT TO RESIST SLIDING OR OTHER MOVEMENTS.

STORM WATER POLLUTION PREVENTION PLAN NOTES:

1. REFER TO THE STORMWATER POLLUTION PREVENTION PLAN PREPARED FOR THE PROJECT FOR MORE INFORMATION.
2. THE CONTRACTOR SHALL PROVIDE A QUALIFIED INSPECTOR TO INSPECT THE PROJECT AT THE END OF EACH WORK WEEK AND PROVIDE A REPORT AT LEAST ONCE PER WEEK.
3. ALL INLETS TO THE STORM SEWER SHALL HAVE INLET PROTECTION. ADD INLET PROTECTION ON INLET NEXT TO ROAD. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE BEST MANAGEMENT PRACTICES (BMP'S) UNTIL GROUND COVER IS ESTABLISHED.
4. REMOVE AND STOCKPILE TOPSOIL AS DIRECTED BY THE CONSTRUCTION MANAGER REPLACE TOPSOIL TO A MINIMUM 4" DEPTH. ALL DISTURBED AREAS TO BE HYDROSEEDED AS DIRECTED BY THE CONSTRUCTION MANAGER TO PROMOTE VEGETATION AS SOON AS PRACTICABLE.
5. IF THE SEASONS PROHIBITS TEMPORARY SEEDING, THE DISTURBED AREAS WILL BE MULCHED WITH STRAW HAY OR EQUIVALENT AND ANCHORED IN ACCORDANCE WITH THE "STANDARDS", NETTING OR LIQUID MULCH BINDER.
6. CONTRACTOR SHALL BE RESPONSIBLE FOR THE MAINTENANCE AND REMOVAL OF TEMPORARY SEDIMENTATION CONTROLS. EROSION CONTROL MEASURES SHALL NOT BE REMOVED BEFORE 80% UNIFORM VEGETATION HAS BEEN ACHIEVED.
7. ALL EROSION CONTROL MEASURES ARE TO BE REPLACED WHENEVER THEY BECOME CLOGGED OR INOPERABLE AND SHALL BE REPLACED WHEN THEY HAVE REACHED THE DESIGN LIFE INDICATED IN THE NYS GUIDELINES FOR URBAN EROSION SEDIMENT CONTROL DESIGN MANUAL OR EVERY THREE MONTHS..
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORATION OF TOPSOIL TO ALL DISTURBED AREAS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO MAINTAIN EROSION CONTROL MEASURES AT ALL TIMES.
9. THE CONTRACTOR SHALL DESIGNATE A MEMBER OF HIS/HER FIRM TO BE RESPONSIBLE TO MONITOR EROSION CONTROL, EROSION CONTROL STRUCTURES THROUGHOUT CONSTRUCTION.
10. ALL DISTURBED AREAS SHALL BE FINISH GRADED TO PROMOTE VEGETATION ON ALL EXPOSED AREAS AS SOON AS PRACTICABLE. STABILIZATION PRACTICES (TEMPORARY/PERMANENT SEEDING, MULCHING, GEOTEXTILES, ETC.)MUST BE IMPLEMENTED WITHIN SEVEN (7) DAYS WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED, AND NOT EXPECTED TO RESUME WITHIN FOURTEEN (14) DAYS.
11. PAVED ROADWAYS MUST BE KEPT CLEAN AT ALL TIMES. ALL CONSTRUCTION DEBRIS AND SEDIMENT SPOILS, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHT-OF-WAYS MUST BE REMOVED IMMEDIATELY.
12. DUST SHALL BE CONTROLLED BY WATERING.
13. ADJOINING PROPERTY SHALL BE PROTECTED FROM EXCAVATION AND FILLING OPERATIONS ON THE PROPOSED SITE.
14. EROSION CONTROL MEASURES SHOULD BE RELOCATED INWARD AS PERIMETER SLOPE CONSTRUCTION PROGRESSES AND RECONSTRUCTED TO THE NYS STANDARDS & SPECIFICATIONS AT THE END OF EACH DAY.
15. PERIMETER AREAS SHALL BE TEMPORARILY STABILIZED WITH SEED AND MULCH PROGRESSIVELY A MINIMUMAT AT THE END OF EACH WEEK WITH 100% PERENNIAL RYEGRASS MIX AT A RATE OF 2-4 LBS PER 1000 SF AND MULCH 90-100 lbs/1000 SF OF WEED FREE STRAW.
16. SLOPE TRACKING SHALL BE IMPLEMENTED ON ALL SLOPE 1 ON 3 OR GREATER AT THE END OF EACH WORK DAY AND PRIOR TO FINAL SLOPE GRADING AND STABILIZATION.

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220871
PROJECT MANAGER
S. MELLOTT
DRAWN BY
D. BRUE
SCALE
AS SHOWN
ISSUE DATE
12/20/2022

STATE OF NEW YORK
STEVEN C. MELLOTT
088972
LICENSED PROFESSIONAL ENGINEER

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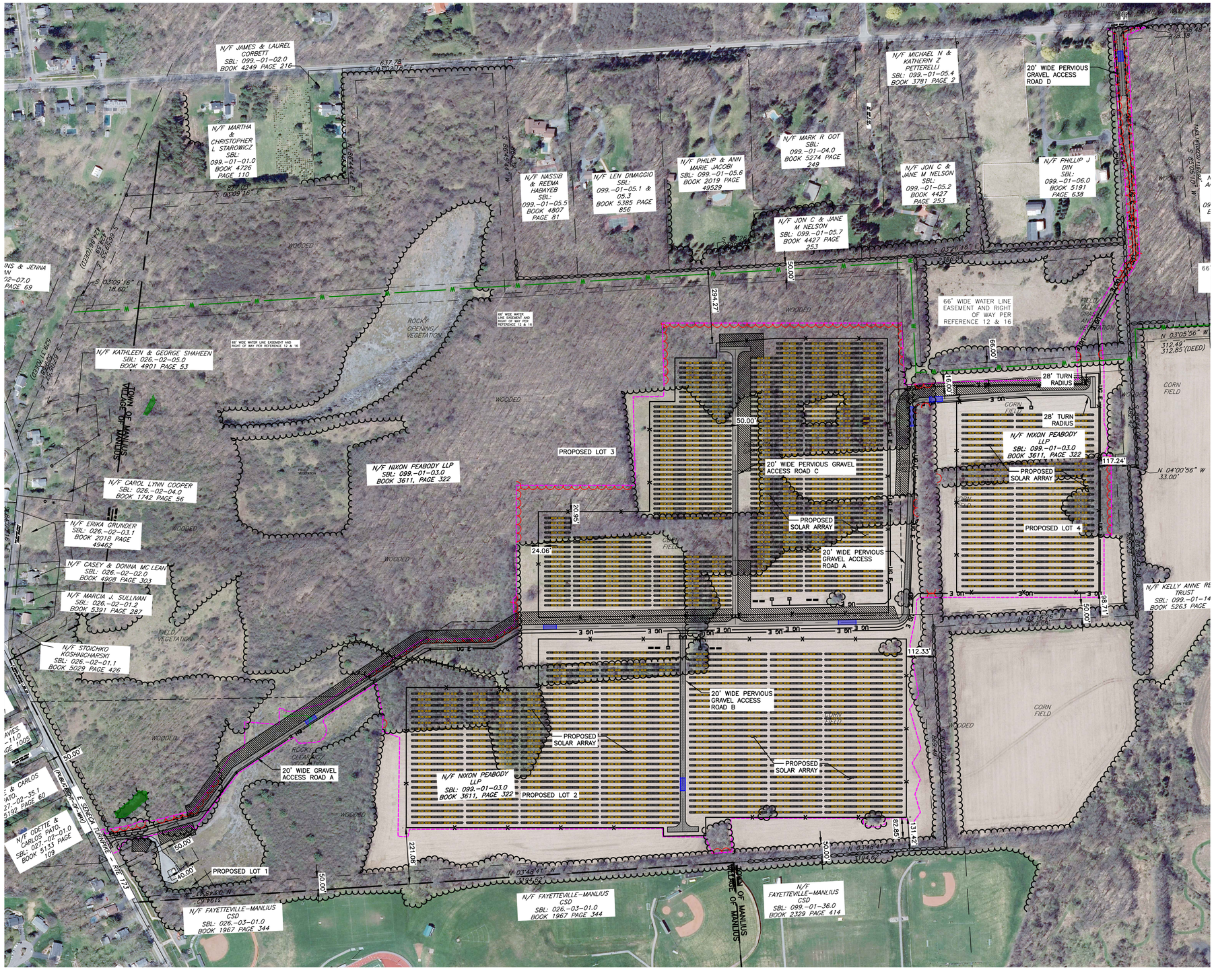
PROJECT
PROPOSED MANLIUS SOLAR
TOWN OF MANLIUS
ONONDAGA COUNTY, NEW YORK

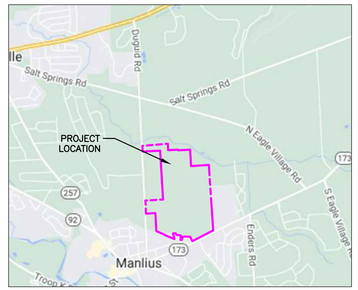
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BOOK 4807 PAGE 81
N/F LEN DIMAGGIO
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BOOK 4427 PAGE 253
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BOOK 2329 PAGE 414
N/F KELLY ANNE REV TRUST
SBL: 099.-01-14.1
BOOK 5263 PAGE 72
66' WIDE WATER LINE EASEMENT AND RIGHT OF WAY PER REFERENCE 12 & 16
66' WIDE WATER LINE EASEMENT AND RIGHT OF WAY PER REFERENCE 12 & 16
ROCKY OPENING/ VEGETATION
WOODED
CORN FIELD
FIELD/TALL GRASS AND VEGETATION
FIELD VEGETATION
E. SENECA TURNPIKE - RTE 173
TOWN OF MANLIUS VILLAGE OF MANLIUS
637.75' (DEED)
N 03°05'56" W 312.49' 312.85' (DEED)
N 04°00'56" W 33.00'
S 03°05'56" E 312.49'
S 89°19'16" W 1319.60'
S 89°19'16" W 1319.60'
S 89°19'16" W 1319.60





SITE LOCATION
SCALE: NTS

LEGEND

- PROJECT BOUNDARY
- PROPERTY SETBACK
- ADJACENT PROPERTY LINE
- PROPERTY LINE
- INTERIOR LOT LINE
- RIGHT-OF-WAY
- EASEMENT/RIGHT-OF-WAY
- EXISTING TREE LINE
- EXISTING FENCE
- EXISTING GRAVEL ROAD
- EXISTING OVERHEAD UTILITY LINES
- EXISTING UTILITY POLE
- TOP OF BANK
- PANEL ARRAY
- PROPOSED FENCE
- EXISTING WATER LINE
- PROPOSED TREELINE
- LIMIT OF DISTURBANCE
- DELINEATED WETLANDS
- PROPOSED FILTER STRIP OR RIPARIAN BUFFER
- PROPOSED SURFACE WATER CROSSING
- STANDARD GRAVEL ACCESS ROAD
- PERVIOUS GRAVEL ACCESS ROAD

200 0 200 400 600
FEET
Scale: 1"=200'

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REV	DESCRIPTION	DATE	BY
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S. MELLOTT
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D. BRUE
SCALE
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STATE OF NEW YORK
STEVEN C. MELLOTT
088072
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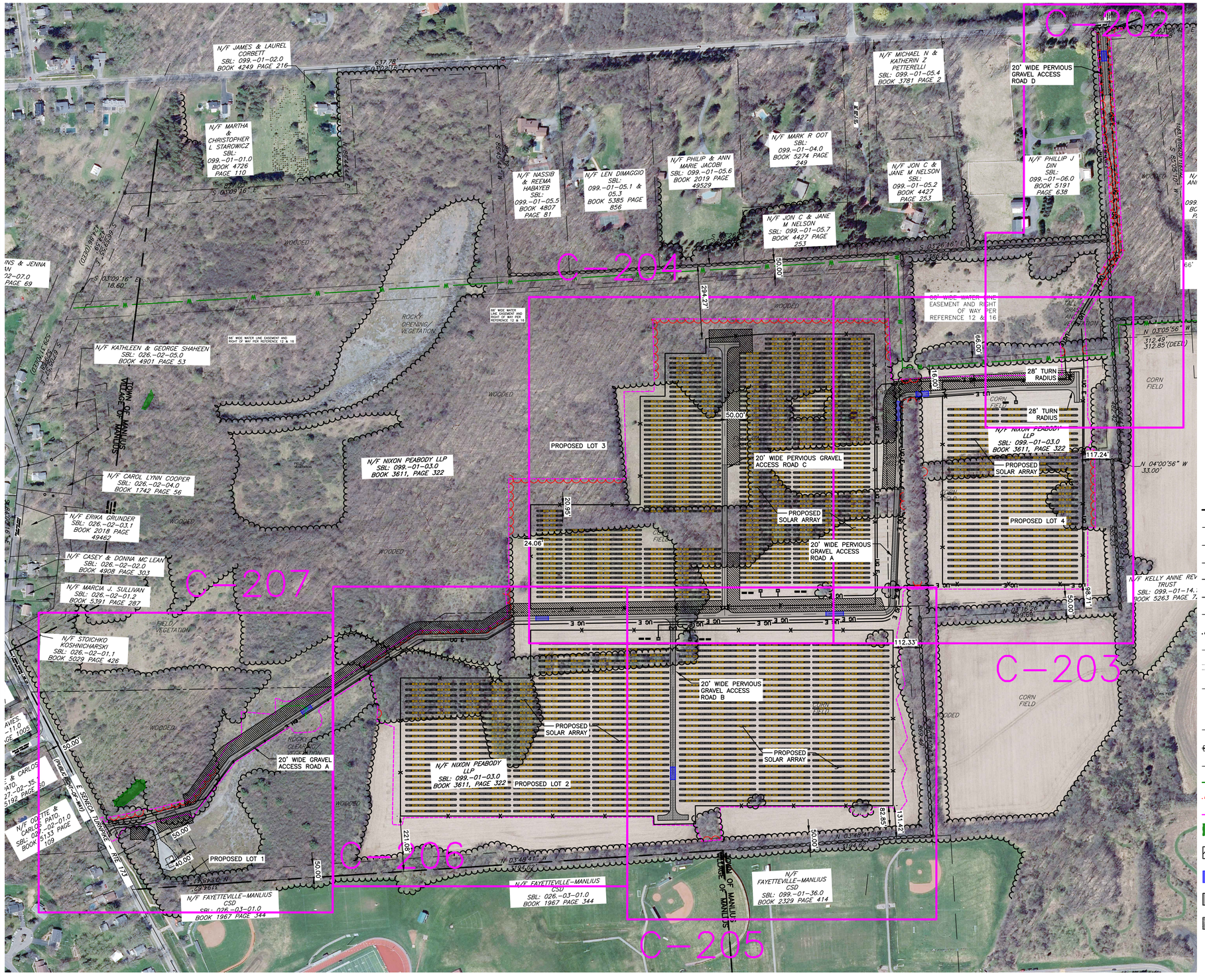
PROJECT
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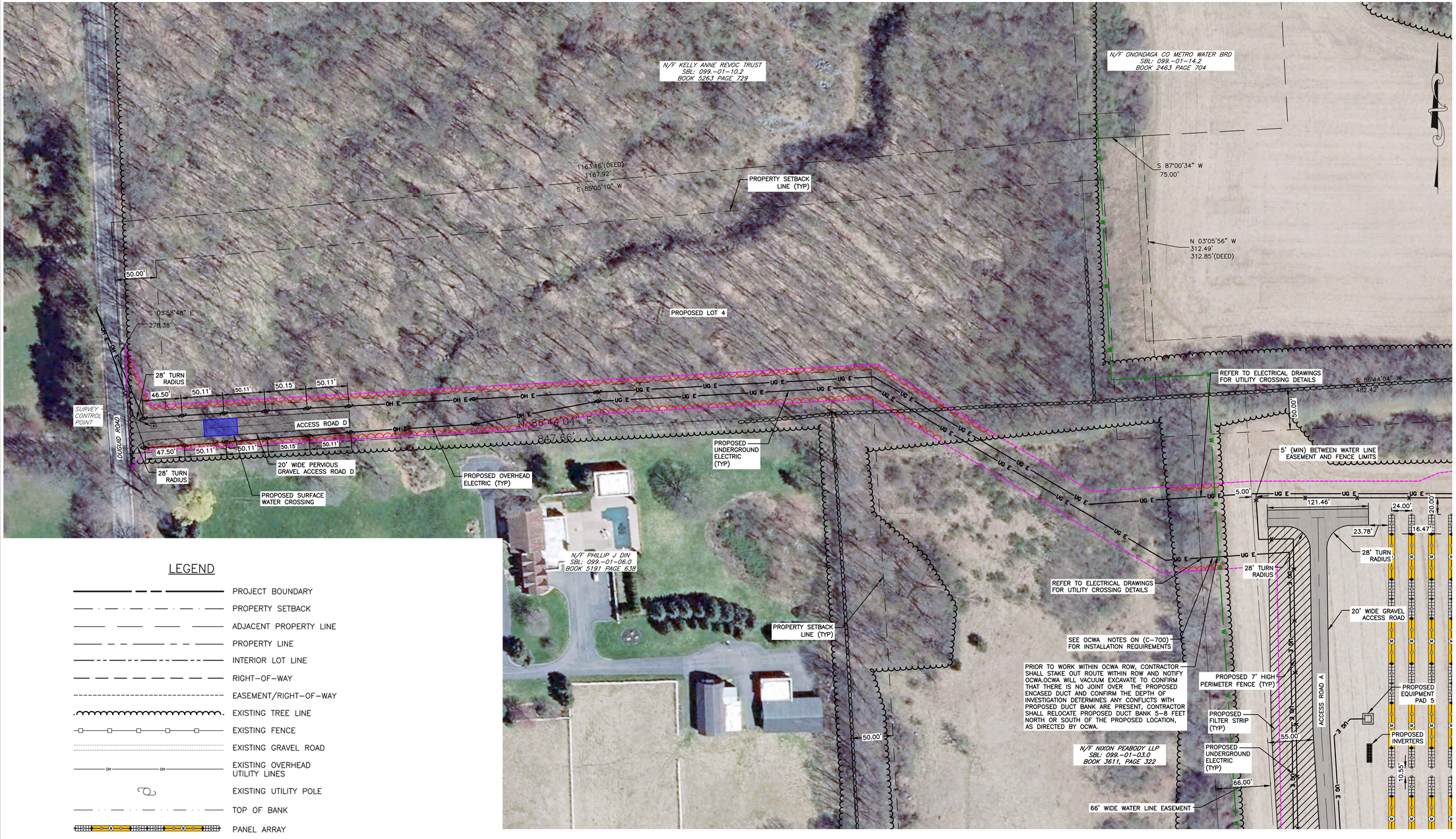
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OVERALL SITE PLAN

DRAWING NO.
C-200

SHEET 04 OF 36

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C-202
C-204
C-207
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N/F JON C & JANE M NELSON SBL: 099.-01-05.7 BOOK 4427 PAGE 253
N/F PHILLIP J DIN SBL: 099.-01-06.0 BOOK 5191 PAGE 638
20' WIDE PERVIOUS GRAVEL ACCESS ROAD D
66' WIDE WATER LINE EASEMENT AND RIGHT OF WAY PER REFERENCE 12 & 16
N/F KATHLEEN & GEORGE SHAHEEN SBL: 026.-02-05.0 BOOK 4901 PAGE 53
TOWN VILLAGE OF MANLIUS
N/F CAROL LYNN COOPER SBL: 026.-02-04.0 BOOK 1742 PAGE 56
N/F ERIKA GRUNDER SBL: 026.-02-03.1 BOOK 2018 PAGE 49462
N/F CASEY & DONNA MC LEAN SBL: 026.-02-02.0 BOOK 4908 PAGE 303
N/F MARCIA J. SULLIVAN SBL: 026.-02-01.2 BOOK 5391 PAGE 287
N/F STOICHKO KOSHNICHARSKI SBL: 026.-02-01.1 BOOK 5029 PAGE 426
N/F CARLOS & CARLOTTE PATO SBL: 026.-02-35.0 BOOK 5192 PAGE 50
N/F CARLOTTE & CARLOS PATO SBL: 026.-02-01.0 BOOK 5133 PAGE 109
N/F NIXON PEABODY LLP SBL: 099.-01-03.0 BOOK 3611, PAGE 322
N/F FAYETTEVILLE-MANLIUS CSD SBL: 026.-03-01.0 BOOK 1967 PAGE 344
N/F FAYETTEVILLE-MANLIUS CSD SBL: 099.-01-36.0 BOOK 2329 PAGE 414
N/F KELLY ANNE REV TRUST SBL: 099.-01-14.
BOOK 5263 PAGE 7
PROPOSED LOT 1
PROPOSED LOT 2
PROPOSED LOT 3
PROPOSED LOT 4
20' WIDE GRAVEL ACCESS ROAD A
20' WIDE PERVIOUS GRAVEL ACCESS ROAD B
20' WIDE PERVIOUS GRAVEL ACCESS ROAD C
20' WIDE PERVIOUS GRAVEL ACCESS ROAD A
PROPOSED SOLAR ARRAY
28' TURN RADIUS
66' WIDE WATER LINE EASEMENT AND RIGHT OF WAY PER REFERENCE 12 & 16
E SENECA TURNPIKE (PUBLIC R.O.W. VARIES)
ROCK OUTCROP/ VEGETATION
FIELD VEGETATION
WOODED
CORN FIELD
TALL GRASS AND VEGETATION
EDGE OF MANLIUS
TOP OF BANK
637.78' (DEED)
S 88°09'16" E
S 03°09'16" E 18.60'
N 03°05'56" W 312.49' 312.85'(DEED)
N 04°00'56" W 33.00'
N 03°48'41" W 1320.00'
S 03°48'41" E 1320.00'
S 86°51'19" W 117.24'
S 86°51'19" W 112.33'
S 86°51'19" W 131.42'
S 86°51'19" W 82.85'
S 03°08'41" E 50.00'
N 03°08'41" W 50.00'
S 86°51'19" W 50.00'
N 86°51'19" E 50.00'
S 86°51'19" W 50.00



LEGEND

- PROJECT BOUNDARY
- PROPERTY SETBACK
- ADJACENT PROPERTY LINE
- PROPERTY LINE
- INTERIOR LOT LINE
- RIGHT-OF-WAY
- EASEMENT/RIGHT-OF-WAY
- EXISTING TREE LINE
- EXISTING FENCE
- EXISTING GRAVEL ROAD
- EXISTING OVERHEAD UTILITY LINES
- EXISTING UTILITY POLE
- TOP OF BANK
- PANEL ARRAY
- PROPOSED FENCE
- EXISTING WATER LINE
- PROPOSED TREELINE
- LIMIT OF DISTURBANCE
- DELINEATED WETLANDS
- PROPOSED FILTER STRIP OR RIPARIAN BUFFER
- PROPOSED SURFACE WATER CROSSING
- STANDARD GRAVEL ACCESS ROAD
- PERVIOUS GRAVEL ACCESS ROAD

60 0 60 120 180
FEET
Scale: 1"=60'

NOT FOR CONSTRUCTION

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FA PROJECT NO.
220871
PROJECT MANAGER
S. MELLOTT
DRAWN BY
D. BRUE
SCALE
AS SHOWN
ISSUE DATE
12/20/2022

STATE OF NEW YORK
STEVEN C. MELLOTT
088972
LICENSED PROFESSIONAL ENGINEER

FISHER ASSOCIATES
WWW.FISHERASSOC.COM

PROJECT
PROPOSED MANLIUS SOLAR
TOWN OF MANLIUS
ONONDAGA COUNTY, NEW YORK

TITLE OF DRAWING
CIVIL SITE PLAN - 1

DRAWING NO.
C-202

SHEET 06 OF 36

REFER TO ELECTRICAL DRAWINGS FOR UTILITY CROSSING DETAILS

S 86°44'04" W 482.42'

N 04°00'56" W 33.00'

N/F KELLY ANNE REVOC TRUST SBL: 099.-01-14.1 BOOK 5263 PAGE 729

S 86°50'44" W 585.23'

50.00'

50.00'

117.24'

5' (MIN) BETWEEN WATER LINE EASEMENT AND FENCE LIMITS

UG E

5.00'

121.46'

24.00'

20.00'

23.78'

16.47'

28' TURN RADIUS

28' TURN RADIUS

24.00'

98.71'

REFER TO ELECTRICAL DRAWINGS FOR UTILITY CROSSING DETAILS

20' WIDE GRAVEL ACCESS ROAD

PROPOSED SOLAR ARRAY

SEE OCWA NOTES ON (C-700) FOR INSTALLATION REQUIREMENTS

PRIOR TO WORK WITHIN OCWA ROW, CONTRACTOR SHALL STAKE OUT ROUTE WITHIN ROW AND NOTIFY OCWA.OCWA WILL VACUUM EXCAVATE TO CONFIRM THAT THERE IS NO JOINT OVER THE PROPOSED ENCASED DUCT AND CONFIRM THE DEPTH OF INVESTIGATION DETERMINES ANY CONFLICTS WITH PROPOSED DUCT BANK ARE PRESENT, CONTRACTOR SHALL RELOCATE PROPOSED DUCT BANK 5-8 FEET NORTH OR SOUTH OF THE PROPOSED LOCATION, AS DIRECTED BY OCWA.

PROPOSED 7' HIGH PERIMETER FENCE (TYP)

ACCESS ROAD A

PROPOSED EQUIPMENT PAD 5

PROPOSED LOT 4

PROPOSED FILTER STRIP (TYP)

PROPOSED INVERTERS

55.00'

N/F NIXON PEABODY LLP SBL: 099.-01-23.0 BOOK 3611, PAGE 322

PROPOSED UNDERGROUND ELECTRIC (TYP)

10.55'

PROPERTY SETBACK LINE (TYP)

N 03°16'26" W 799.69'

66.00'

66' WIDE WATER LINE EASEMENT

NOTE: CONTRACTOR TO GRADE UNDER PANELS TO MEET RACKING MANUFACTURER SPECIFICATIONS AND REQUIREMENTS. ALL GRADED AREAS TO BE PERMANENTLY STABILIZED WITH SEED AND MULCH.

PROPOSED SOLAR ARRAY

PROPOSED GATE (TYP)

20.20'

16.47'

20.20'

20.00'

COORDINATE FENCE POST LOCATIONS WITH OCWA PRIOR TO INSTALLATION TO ENSURE FENCE IS INSTALLED OUTSIDE OF OCWA ROW. OCWA SHALL BE NOTIFIED AT LEAST THREE (3) BUSINESS DAYS PRIOR TO FENCE INSTALLATION IN VICINITY OF OCWA ROW.

16.00'

PROPOSED SURFACE WATER CROSSING

54.00'

30' TURN RADIUS

PROPOSED SURFACE WATER CROSSING

20' WIDE GRAVEL ACCESS ROAD

20' WIDE PERVIOUS GRAVEL ACCESS ROAD

ACCESS ROAD A

112.33'

PROPOSED GATE (TYP)

28' TURN RADIUS

18.15'

11.46'

19.00'

16.00'

PROPOSED FILTER STRIP (TYP)

PROPOSED LOT 3

NOTE: CONTRACTOR TO GRADE UNDER PANELS TO MEET RACKING MANUFACTURER SPECIFICATIONS AND REQUIREMENTS. ALL GRADED AREAS TO BE PERMANENTLY STABILIZED WITH SEED AND MULCH.

20.88'

24.00'

PROPOSED FILTER STRIP (TYP)

54.67'

PROPOSED SOLAR ARRAY

PROPOSED SURFACE WATER CROSSING

LEGEND

- PROJECT BOUNDARY
- PROPERTY SETBACK
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- EXISTING TREE LINE
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- PROPOSED SURFACE WATER CROSSING
- STANDARD GRAVEL ACCESS ROAD
- PERVIOUS GRAVEL ACCESS ROAD

60 FEET 0 60 120 180

Scale: 1"=60'

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	BY
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FA PROJECT NO. 220871
PROJECT MANAGER S. MELLOTT
DRAWN BY D. BRUE
SCALE AS SHOWN
ISSUE DATE 12/20/2022

STATE OF NEW YORK
STEVEN C. MELLOTT
088972
LICENSED PROFESSIONAL ENGINEER

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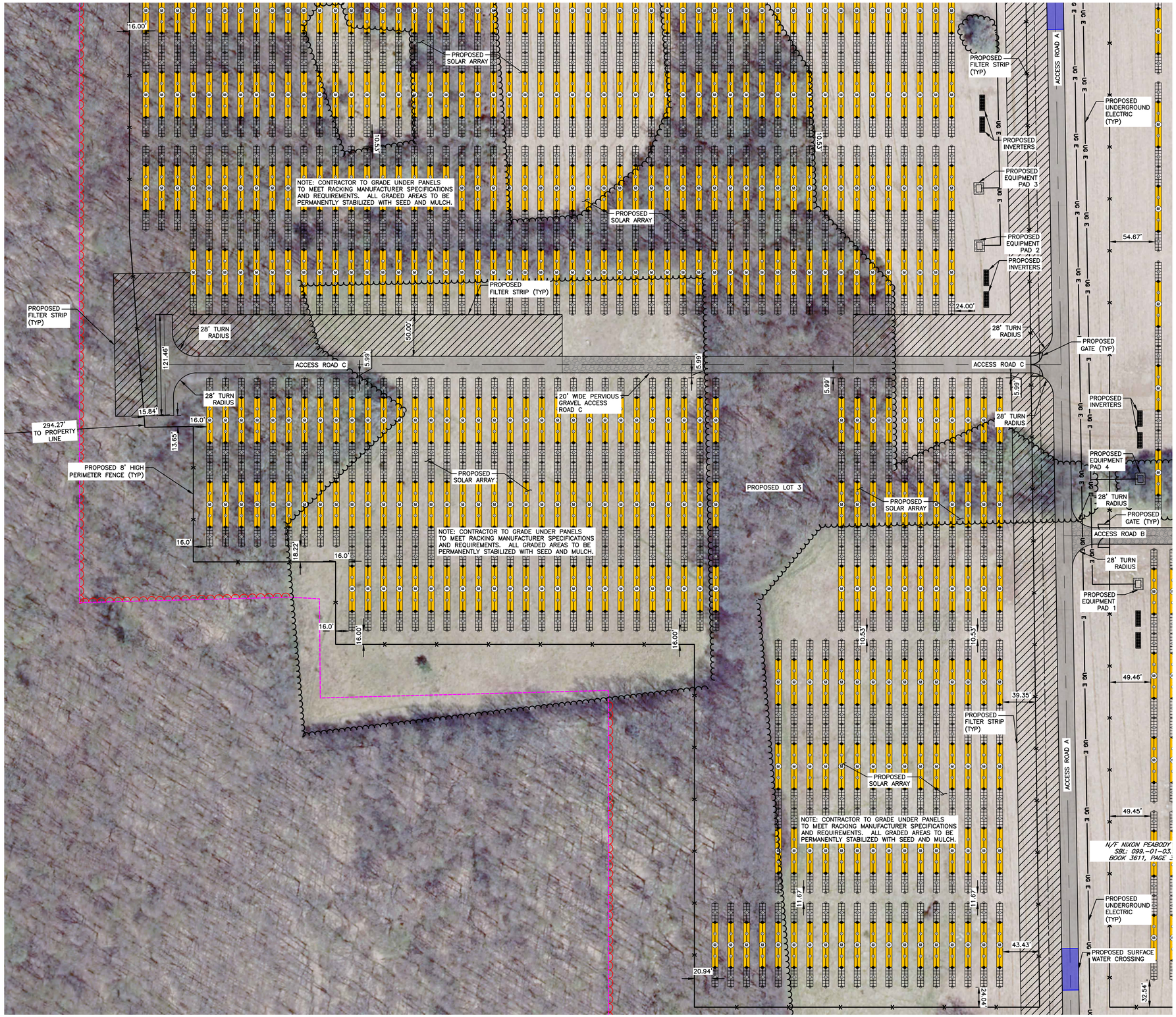
PROJECT
PROPOSED MANLIUS SOLAR
TOWN OF MANLIUS
ONONDAGA COUNTY, NEW YORK

TITLE OF DRAWING
CIVIL SITE PLAN - 2

DRAWING NO.
C-203

SHEET 07 OF 36

FILE NAME: H:\Projects\22\220871-00-CVE_Manlius_Sol\Eng\CAD\CUT\220871 C-200 Site Plans.dwg
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LEGEND

- PROJECT BOUNDARY
- PROPERTY SETBACK
- ADJACENT PROPERTY LINE
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- STANDARD GRAVEL ACCESS ROAD
- PERVIOUS GRAVEL ACCESS ROAD

NOT FOR CONSTRUCTION

60 FEET 0 60 120 180

Scale: 1"=60'

REV	DESCRIPTION	DATE	BY
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5	FILE LAYOUT UPDATES		
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FA PROJECT NO. 220871
PROJECT MANAGER S. MELLOTT
DRAWN BY D. BRUE
SCALE AS SHOWN
ISSUE DATE 12/20/2022

STATE OF NEW YORK
STEVEN C. MELLOTT
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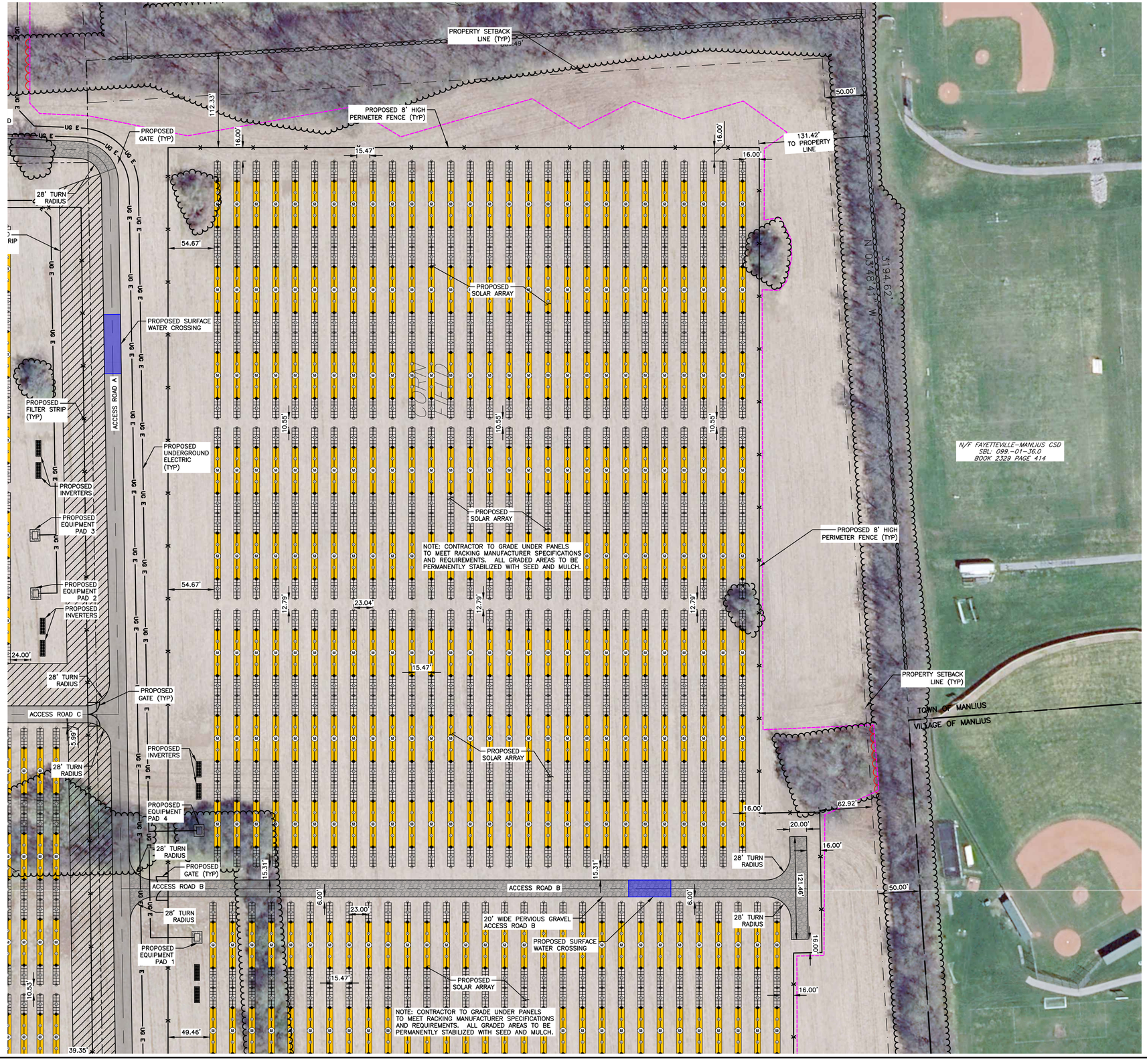
PROJECT
PROPOSED MANLIUS SOLAR
TOWN OF MANLIUS
ONONDAGA COUNTY, NEW YORK

TITLE OF DRAWING
CIVIL SITE PLAN - 3

DRAWING NO.
C-204

SHEET 08 OF 36

FILE NAME: H:\Projects\22\220871-00-CVE_Manlius_Sol\Eng\CAD\CUT\220871 C-200 Site Plans.dwg
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LEGEND

- PROJECT BOUNDARY
- PROPERTY SETBACK
- ADJACENT PROPERTY LINE
- PROPERTY LINE
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- RIGHT-OF-WAY
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- PROPOSED FILTER STRIP OR RIPARIAN BUFFER
- PROPOSED SURFACE WATER CROSSING
- STANDARD GRAVEL ACCESS ROAD
- PERVIOUS GRAVEL ACCESS ROAD

NOT FOR CONSTRUCTION

60 FEET 0 60 120 180

Scale: 1"=60'

REV	DESCRIPTION	DATE	BY
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FA PROJECT NO.
220871

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DRAWN BY
D. BRUE

SCALE
AS SHOWN

ISSUE DATE
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STEVEN C. MELLOTT
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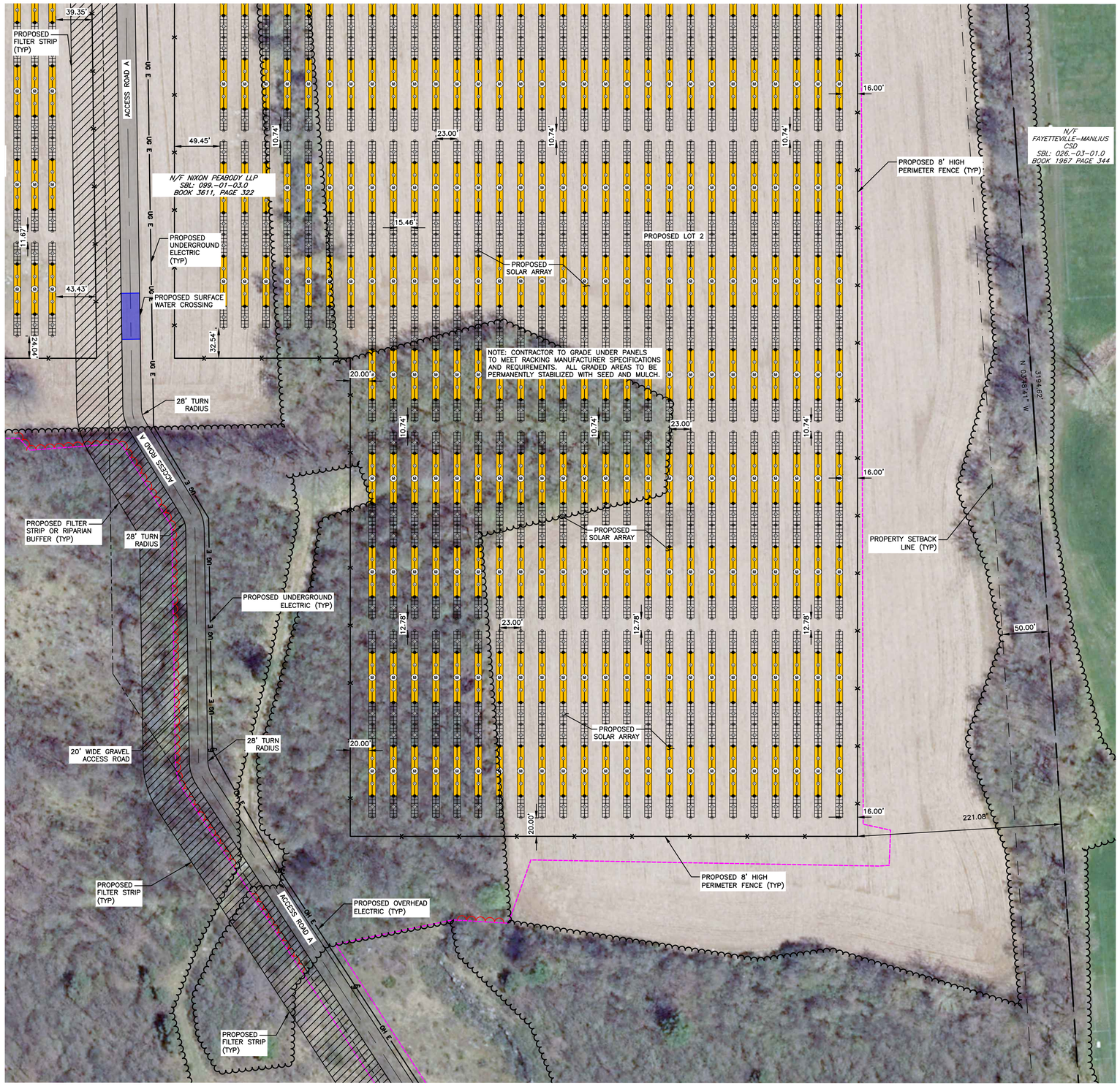
PROJECT
PROPOSED MANLIUS SOLAR
TOWN OF MANLIUS
ONONDAGA COUNTY, NEW YORK

TITLE OF DRAWING
CIVIL SITE PLAN - 4

DRAWING NO.
C-205

SHEET 09 OF 36

FILE NAME: H:\Projects\22\220871-00-CVE_Manlius_Sol\Eng\CAD\CUT\220871 C-200 Site Plans.dwg
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LEGEND

- PROJECT BOUNDARY
- PROPERTY SETBACK
- ADJACENT PROPERTY LINE
- PROPERTY LINE
- INTERIOR LOT LINE
- RIGHT-OF-WAY
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- STANDARD GRAVEL ACCESS ROAD
- PERVIOUS GRAVEL ACCESS ROAD

60 FEET 0 60 120 180

Scale: 1"=60'

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FA PROJECT NO.
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S. MELLOTT

DRAWN BY
D. BRUE

SCALE
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12/20/2022

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PROJECT
PROPOSED MANLIUS SOLAR
TOWN OF MANLIUS
ONONDAGA COUNTY, NEW YORK

TITLE OF DRAWING
CIVIL SITE PLAN - 5

DRAWING NO.
C-206

SHEET 10 OF 36

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LEGEND

- PROJECT BOUNDARY
- PROPERTY SETBACK
- ADJACENT PROPERTY LINE
- PROPERTY LINE
- INTERIOR LOT LINE
- RIGHT-OF-WAY
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- STANDARD GRAVEL ACCESS ROAD
- PERVIOUS GRAVEL ACCESS ROAD

60 FEET 0 60 120 180

Scale: 1"=60'

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FA PROJECT NO. 220871
PROJECT MANAGER S. MELLOTT
DRAWN BY D. BRUE
SCALE AS SHOWN
ISSUE DATE 12/20/2022

STATE OF NEW YORK
STEVEN C. MELLOTT
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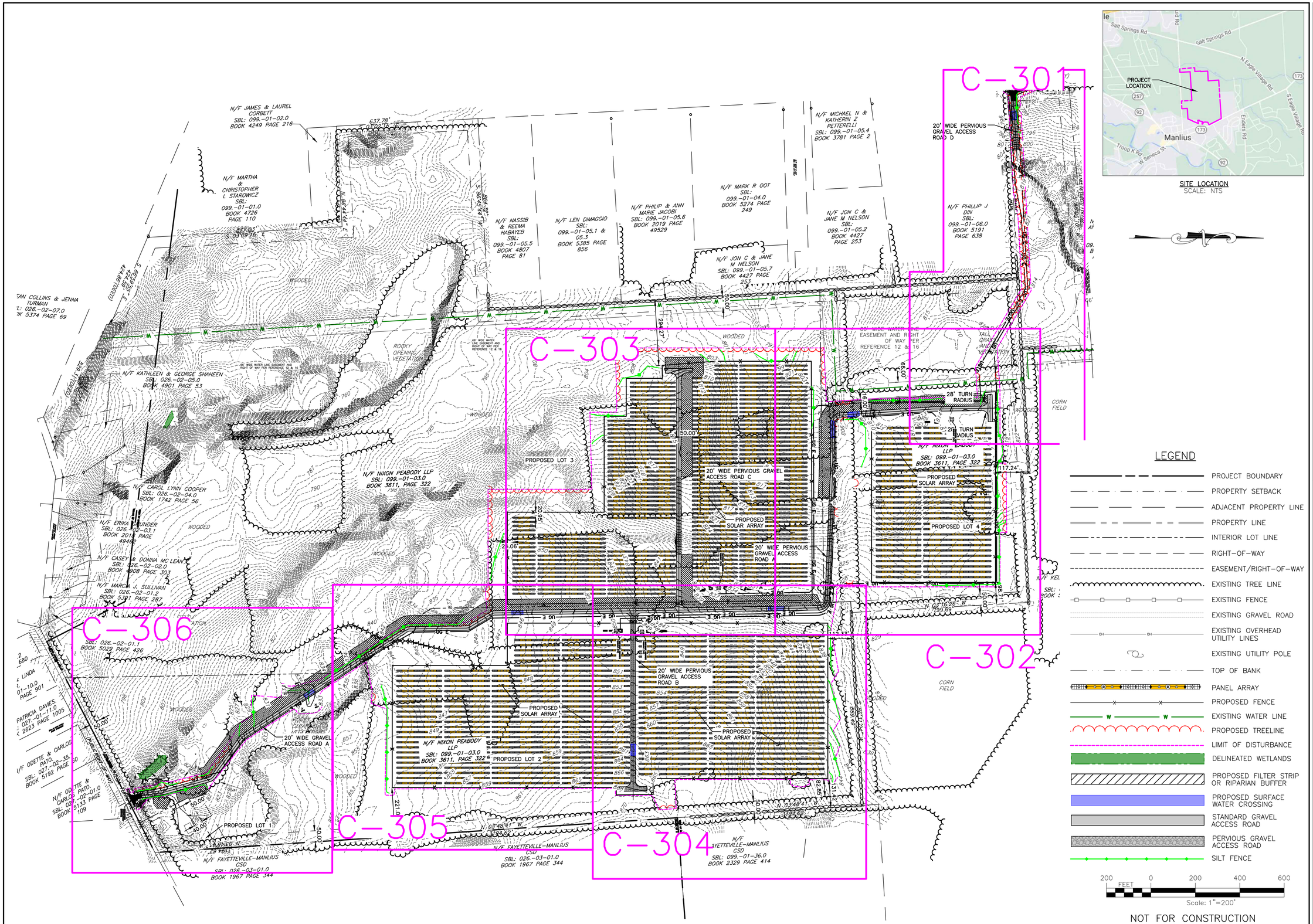
PROJECT
PROPOSED MANLIUS SOLAR
TOWN OF MANLIUS
ONONDAGA COUNTY, NEW YORK

TITLE OF DRAWING
CIVIL SITE PLAN - 6

DRAWING NO.
C-207

SHEET 11 OF 36

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SITE LOCATION
SCALE: NTS

LEGEND

- PROJECT BOUNDARY
- PROPERTY SETBACK
- ADJACENT PROPERTY LINE
- PROPERTY LINE
- INTERIOR LOT LINE
- RIGHT-OF-WAY
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- DELINEATED WETLANDS
- PROPOSED FILTER STRIP OR RIPARIAN BUFFER
- PROPOSED SURFACE WATER CROSSING
- STANDARD GRAVEL ACCESS ROAD
- PERVIOUS GRAVEL ACCESS ROAD
- SILT FENCE

200 0 200 400 600
FEET
Scale: 1"=200'

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REV	DESCRIPTION	DATE	BY
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1	PRELIMINARY PLANS		

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FA PROJECT NO.
220871
PROJECT MANAGER
S. MELLOTT
DRAWN BY
D. BRUE
SCALE
AS SHOWN
ISSUE DATE
12/20/2022

STATE OF NEW YORK
STEVEN C. MELLOTT
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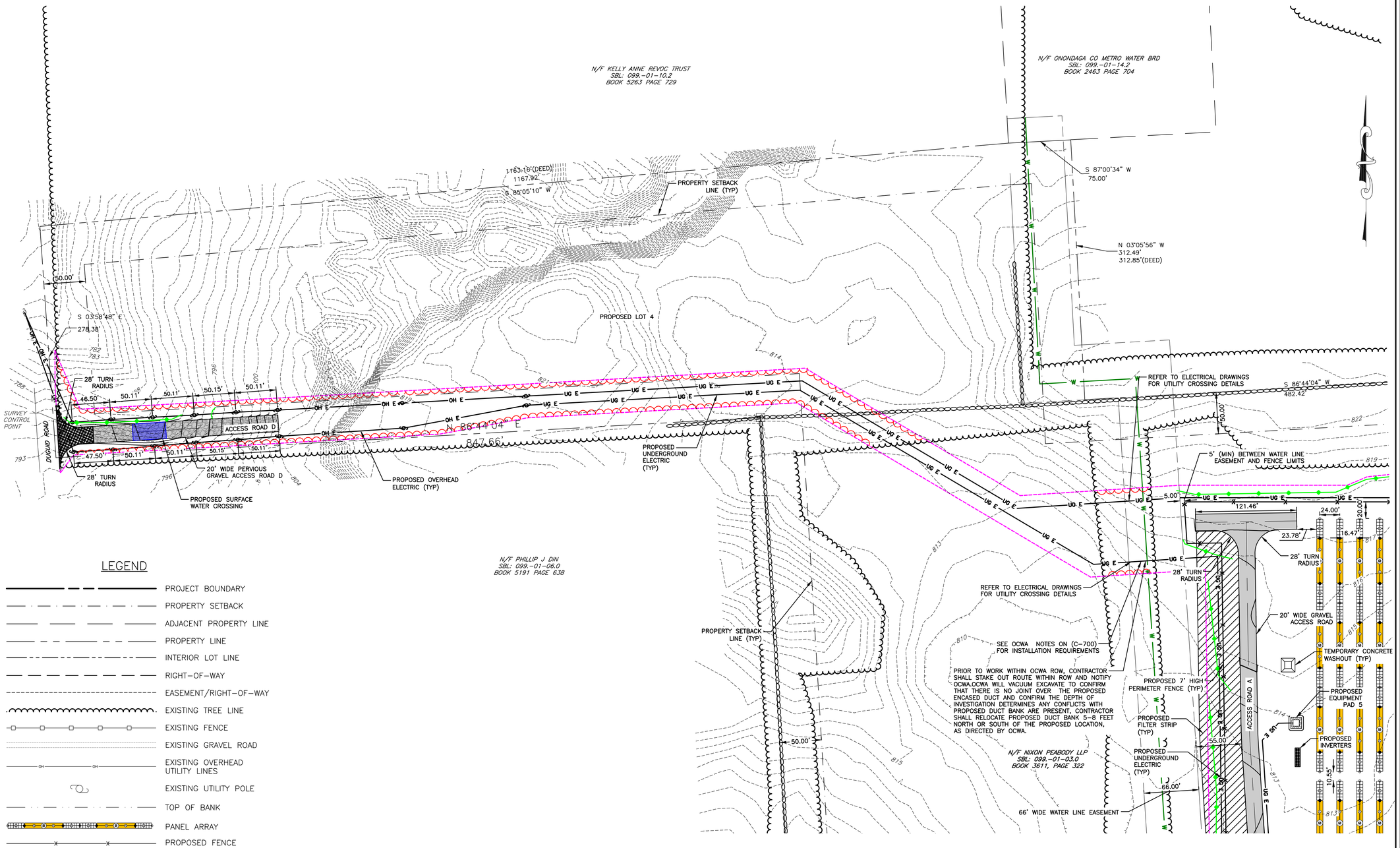
PROJECT
PROPOSED MANLIUS SOLAR
TOWN OF MANLIUS
ONONDAGA COUNTY, NEW YORK

TITLE OF DRAWING
OVERALL GRADING PLAN

DRAWING NO.
C-300

SHEET 12 OF 36

FILE NAME: H:\Projects\22\220871-00-CVE_Manlius_Sol\Eng\CAD\CUT\220871 C-300 Grading Plans.dwg
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LEGEND

- PROJECT BOUNDARY
- PROPERTY SETBACK
- ADJACENT PROPERTY LINE
- PROPERTY LINE
- INTERIOR LOT LINE
- RIGHT-OF-WAY
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- PROPOSED SURFACE WATER CROSSING
- STANDARD GRAVEL ACCESS ROAD
- PERVIOUS GRAVEL ACCESS ROAD
- SILT FENCE

60 FEET 0 60 120 180

Scale: 1"=60'

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REV	DESCRIPTION	DATE	BY
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FA PROJECT NO.
220871

PROJECT MANAGER
S. MELLOTT

DRAWN BY
D. BRUE

SCALE
AS SHOWN

ISSUE DATE
12/20/2022

STATE OF NEW YORK
STEVEN C. MELLOTT
088078
LICENSED PROFESSIONAL ENGINEER

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PROJECT
PROPOSED MANLIUS SOLAR
TOWN OF MANLIUS
ONONDAGA COUNTY, NEW YORK

TITLE OF DRAWING
CIVIL GRADING PLAN - 1

DRAWING NO.
C-301

SHEET 13 OF 36

FILE NAME: H:\Projects\22\220871-00-CVE_Manlius_Sol\Eng\CAD\CUT\220871 C-300 Grading Plans.dwg
DATE/TIME: 12/20/2022 1:13:31 PM
USER: Doug Perrotto

REFER TO ELECTRICAL DRAWINGS FOR UTILITY CROSSING DETAILS

S 86°44'04" W
482.42'

33.00'

SBL: 099.-01-14.1
BOOK 5263 PAGE 729

S 86°50'44" W
585.23'

50.00'

50.00'

117.24'

822

819

5' (MIN) BETWEEN WATER LINE EASEMENT AND FENCE LIMITS

UG E

5.00'

121.46'

24.00'

20.00'

16.47'

23.78'

28' TURN RADIUS

28' TURN RADIUS

98.71'

REFER TO ELECTRICAL DRAWINGS FOR UTILITY CROSSING DETAILS

20' WIDE GRAVEL ACCESS ROAD

PROPOSED SOLAR ARRAY

SEE OCWA NOTES ON (C-700) FOR INSTALLATION REQUIREMENTS

TEMPORARY CONCRETE WASHOUT (TYP)

PRIOR TO WORK WITHIN OCWA ROW, CONTRACTOR SHALL STAKE OUT ROUTE WITHIN ROW AND NOTIFY OCWA.OCWA WILL VACUUM EXCAVATE TO CONFIRM THAT THERE IS NO JOINT OVER THE PROPOSED ENCASED DUCT AND CONFIRM THE DEPTH OF INVESTIGATION DETERMINES ANY CONFLICTS WITH PROPOSED DUCT BANK ARE PRESENT, CONTRACTOR SHALL RELOCATE PROPOSED DUCT BANK 5-8 FEET NORTH OR SOUTH OF THE PROPOSED LOCATION, AS DIRECTED BY OCWA.

PROPOSED 7' HIGH PERIMETER FENCE (TYP)

PROPOSED EQUIPMENT PAD 5

PROPOSED LOT 4

PROPOSED FILTER STRIP (TYP)

PROPOSED INVERTERS

ACCESS ROAD A

55.00'

PROPOSED UNDERGROUND ELECTRIC (TYP)

N/F NIXON PEABODY LLP
SBL: 099.-01-23.0
BOOK 3611, PAGE 322

66.00'

66' WIDE WATER LINE EASEMENT

N 20°16'26" W
799.69'

PROPERTY SETBACK LINE (TYP)

10.55'

NOTE: CONTRACTOR TO GRADE UNDER PANELS TO MEET RACKING MANUFACTURER SPECIFICATIONS AND REQUIREMENTS. ALL GRADED AREAS TO BE PERMANENTLY STABILIZED WITH SEED AND MULCH.

PROPOSED SOLAR ARRAY

PROPOSED GATE (TYP)

20.20'

16.47'

20.00'

COORDINATE FENCE POST LOCATIONS WITH OCWA PRIOR TO INSTALLATION TO ENSURE FENCE IS INSTALLED OUTSIDE OF OCWA ROW. OCWA SHALL BE NOTIFIED AT LEAST THREE (3) BUSINESS DAYS PRIOR TO FENCE INSTALLATION IN VICINITY OF OCWA ROW.

16.00'

PROPOSED SURFACE WATER CROSSING

54.00'

30' TURN RADIUS

PROPOSED SURFACE WATER CROSSING

20' WIDE GRAVEL ACCESS ROAD

20' WIDE PERVIOUS GRAVEL ACCESS ROAD

ACCESS ROAD A

112.33'

PROPOSED GATE (TYP)

28' TURN RADIUS

54.67'

11.46'

8.15'

19.00'

20.98'

24.00'

PROPOSED FILTER STRIP (TYP)

PROPOSED LOT 3

NOTE: CONTRACTOR TO GRADE UNDER PANELS TO MEET RACKING MANUFACTURER SPECIFICATIONS AND REQUIREMENTS. ALL GRADED AREAS TO BE PERMANENTLY STABILIZED WITH SEED AND MULCH.

PROPOSED SOLAR ARRAY

PROPOSED SURFACE WATER CROSSING

LEGEND

- PROJECT BOUNDARY
- PROPERTY SETBACK
- ADJACENT PROPERTY LINE
- PROPERTY LINE
- INTERIOR LOT LINE
- RIGHT-OF-WAY
- EASEMENT/RIGHT-OF-WAY
- EXISTING TREE LINE
- EXISTING FENCE
- EXISTING GRAVEL ROAD
- EXISTING OVERHEAD UTILITY LINES
- EXISTING UTILITY POLE
- TOP OF BANK
- PANEL ARRAY
- PROPOSED FENCE
- EXISTING WATER LINE
- PROPOSED TREELINE
- LIMIT OF DISTURBANCE
- DELINEATED WETLANDS
- PROPOSED FILTER STRIP OR RIPARIAN BUFFER
- PROPOSED SURFACE WATER CROSSING
- STANDARD GRAVEL ACCESS ROAD
- PERVIOUS GRAVEL ACCESS ROAD
- SILT FENCE

60 FEET 0 60 120 180
Scale: 1"=60'

NOT FOR CONSTRUCTION

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1	FEL-1 ADDRESS NOTES		

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FA PROJECT NO.
220871

PROJECT MANAGER
S. MELLOTT

DRAWN BY
D. BRUE

SCALE
AS SHOWN

ISSUE DATE
12/20/2022

STATE OF NEW YORK
STEVEN C. MELLOTT
088972
LICENSED PROFESSIONAL ENGINEER

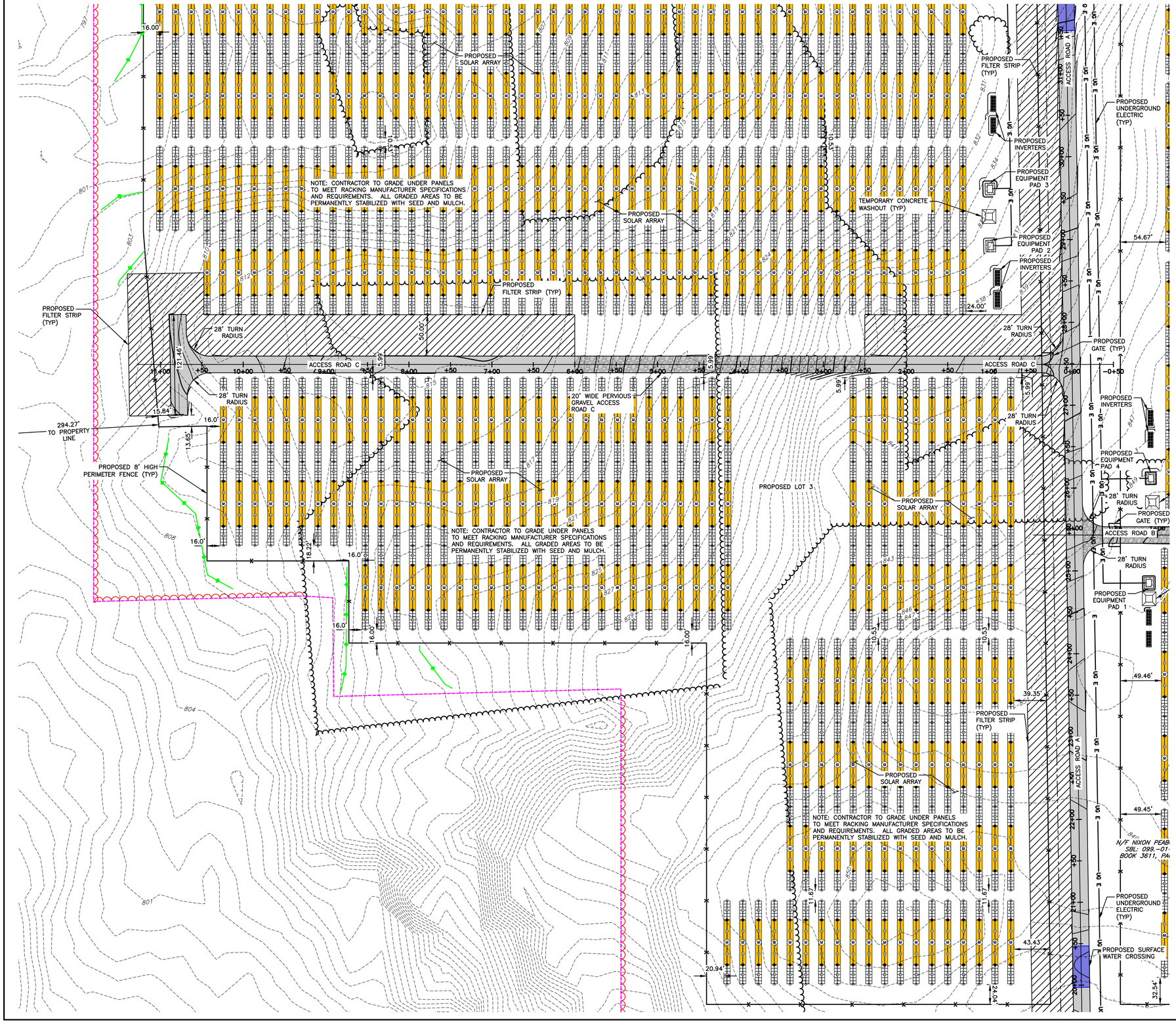
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PROJECT
PROPOSED MANLIUS SOLAR
TOWN OF MANLIUS
ONONDAGA COUNTY, NEW YORK

TITLE OF DRAWING
CIVIL GRADING PLAN - 2

DRAWING NO.
C-302

SHEET 14 OF 36



LEGEND

- PROJECT BOUNDARY
- PROPERTY SETBACK
- ADJACENT PROPERTY LINE
- PROPERTY LINE
- INTERIOR LOT LINE
- RIGHT–OF–WAY
- EASEMENT/RIGHT–OF–WAY
- EXISTING TREE LINE
- EXISTING FENCE
- EXISTING GRAVEL ROAD
- EXISTING OVERHEAD UTILITY LINES
- EXISTING UTILITY POLE
- TOP OF BANK
- PANEL ARRAY
- PROPOSED FENCE
- EXISTING WATER LINE
- PROPOSED TREELINE
- LIMIT OF DISTURBANCE
- DELINEATED WETLANDS
- PROPOSED FILTER STRIP OR RIPARIAN BUFFER
- PROPOSED SURFACE WATER CROSSING
- STANDARD GRAVEL ACCESS ROAD
- PERVIOUS GRAVEL ACCESS ROAD
- SILT FENCE

60 FEET 0 60 120 180

Scale: 1"=60'

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	BY
1	PER FULL APPLICATION		
2			
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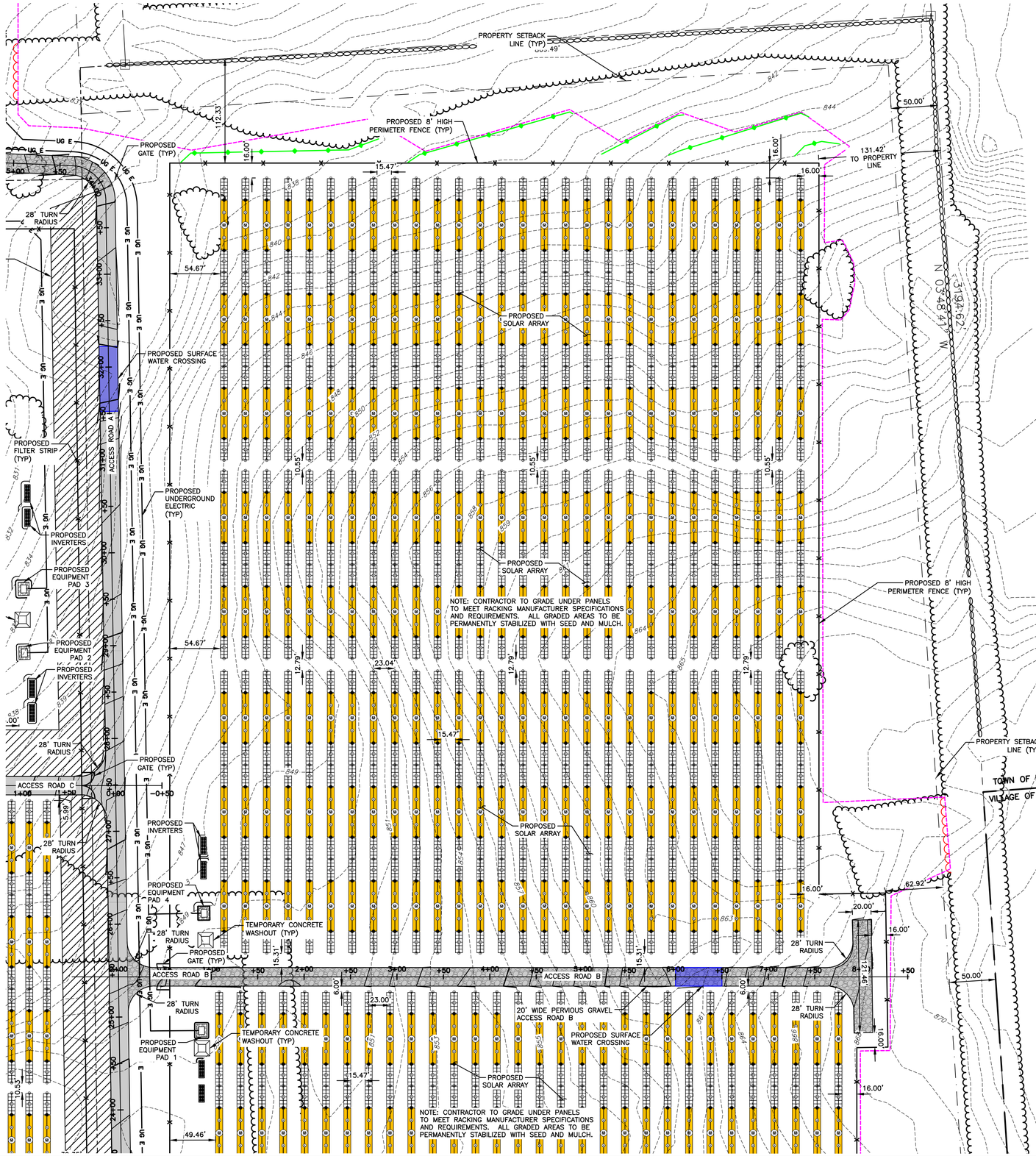
PROJECT
PROPOSED MANLIUS SOLAR
TOWN OF MANLIUS
ONONDAGA COUNTY, NEW YORK

TITLE OF DRAWING
CIVIL GRADING PLAN - 3

DRAWING NO.
C-303

SHEET 15 OF 36

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LEGEND

- PROJECT BOUNDARY
- PROPERTY SETBACK
- ADJACENT PROPERTY LINE
- PROPERTY LINE
- INTERIOR LOT LINE
- RIGHT-OF-WAY
- EASEMENT/RIGHT-OF-WAY
- EXISTING TREE LINE
- EXISTING FENCE
- EXISTING GRAVEL ROAD
- EXISTING OVERHEAD UTILITY LINES
- EXISTING UTILITY POLE
- TOP OF BANK
- PANEL ARRAY
- PROPOSED FENCE
- EXISTING WATER LINE
- PROPOSED TREELINE
- LIMIT OF DISTURBANCE
- DELINEATED WETLANDS
- PROPOSED FILTER STRIP OR RIPARIAN BUFFER
- PROPOSED SURFACE WATER CROSSING
- STANDARD GRAVEL ACCESS ROAD
- PERVIOUS GRAVEL ACCESS ROAD
- SILT FENCE

60 FEET 0 60 120 180

Scale: 1"=60'

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ISSUE DATE 12/20/2022

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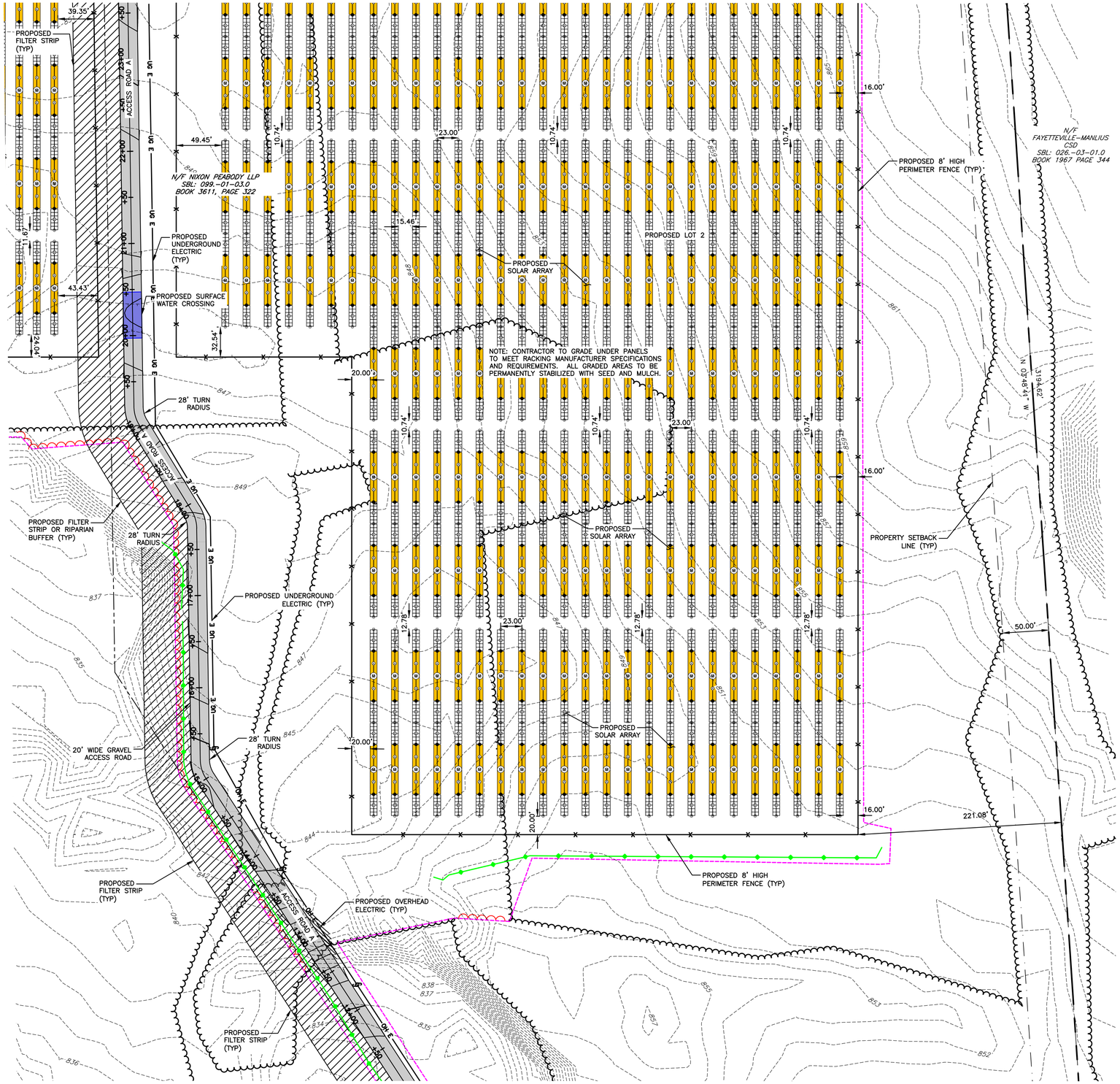
PROJECT
PROPOSED MANLIUS SOLAR
TOWN OF MANLIUS
ONONDAGA COUNTY, NEW YORK

TITLE OF DRAWING
CIVIL GRADING PLAN -4

DRAWING NO.
C-304

SHEET 16 OF 36

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LEGEND

- PROJECT BOUNDARY
- PROPERTY SETBACK
- ADJACENT PROPERTY LINE
- PROPERTY LINE
- INTERIOR LOT LINE
- RIGHT-OF-WAY
- EASEMENT/RIGHT-OF-WAY
- EXISTING TREE LINE
- EXISTING FENCE
- EXISTING GRAVEL ROAD
- EXISTING OVERHEAD UTILITY LINES
- EXISTING UTILITY POLE
- TOP OF BANK
- PANEL ARRAY
- PROPOSED FENCE
- EXISTING WATER LINE
- PROPOSED TREELINE
- LIMIT OF DISTURBANCE
- DELINEATED WETLANDS
- PROPOSED FILTER STRIP OR RIPARIAN BUFFER
- PROPOSED SURFACE WATER CROSSING
- STANDARD GRAVEL ACCESS ROAD
- PERVIOUS GRAVEL ACCESS ROAD
- SILT FENCE

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	BY
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1	FOR LEAD AGENCY REVIEW		

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FA PROJECT NO.
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TOWN OF MANLIUS
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TITLE OF DRAWING
CIVIL GRADING PLAN - 5

DRAWING NO.
C-305

SHEET 17 OF 36

FILE NAME: H:\Projects\22\220871--00--CVE_Manlius_Soil\Eng\CAD\CUT\220871 C-300 Grading Plans.dwg
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PROPOSED FILTER STRIP (TYP)

PROPOSED SURFACE WATER CROSSING

PROPOSED FILTER STRIP OR RIPARIAN BUFFER (TYP)

20' WIDE GRAVEL ACCESS ROAD

28' TURN RADIUS

ACCESS ROAD A

PROPOSED FILTER STRIP OR RIPARIAN BUFFER (TYP)

PROPOSED FILTER STRIP OR RIPARIAN BUFFER (TYP)

28' TURN RADIUS

PROPOSED OVERHEAD ELECTRIC (TYP)

28' TURN RADIUS

33' TURN RADIUS (TYP)

PROPERTY SETBACK LINE (TYP)

PROPERTY SETBACK LINE (TYP)

N/F FAYETTEVILLE-MANLIUS CSD
SBL: 026.-03-01.0
BOOK 1967 PAGE 144

N 14°48'41" W
1394.62'

50.00'

40.00'

PROPOSED LOT 1

NOTE: CONTRACTOR TO PROVIDE A SMOOTH TRANSITION FROM THE PROPOSED ACCESS ROAD TO EXISTING ACCESS ROAD

PROPOSED FILTER STRIP OR RIPARIAN BUFFER (TYP)

33' TURN RADIUS (TYP)

EDGE OF TEMPORARY TURN

STABILIZATION CONSTRUCTION ENTRANCE

PROPOSED 15" HDPE CULVERT WITH OUTLET PROTECTION

N 62°50'44" E
1136.57'
3.37'(DEED)

S 84°13'10" E
84.56'
84.18'(DEED)

S 27°09'16" E

E SENECA TURNPIKE - RTE 173
(PUBLIC RIGHT-OF-WAY)

N/F ODETTE & CARLOS PATO.
SBL: 027.-02-01.0
BOOK 5133 PAGE 109

LEGEND

- PROJECT BOUNDARY
- PROPERTY SETBACK
- ADJACENT PROPERTY LINE
- PROPERTY LINE
- INTERIOR LOT LINE
- RIGHT-OF-WAY
- EASEMENT/RIGHT-OF-WAY
- EXISTING TREE LINE
- EXISTING FENCE
- EXISTING GRAVEL ROAD
- EXISTING OVERHEAD UTILITY LINES
- EXISTING UTILITY POLE
- TOP OF BANK
- PANEL ARRAY
- PROPOSED FENCE
- EXISTING WATER LINE
- PROPOSED TREELINE
- LIMIT OF DISTURBANCE
- DELINEATED WETLANDS
- PROPOSED FILTER STRIP OR RIPARIAN BUFFER
- PROPOSED SURFACE WATER CROSSING
- STANDARD GRAVEL ACCESS ROAD
- PERVIOUS GRAVEL ACCESS ROAD
- SILT FENCE

60 FEET 0 60 120 180
Scale: 1"=60'

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	BY
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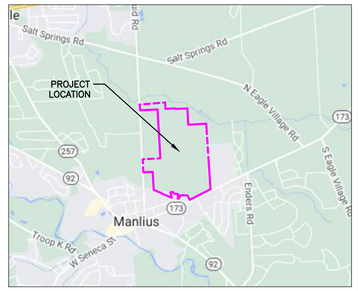
TITLE OF DRAWING
CIVIL GRADING PLAN - 6

DRAWING NO.
C-306

SHEET 18 OF 36

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SITE LOCATION
SCALE: NTS

LEGEND

- PROJECT BOUNDARY
- PROPERTY SETBACK
- ADJACENT PROPERTY LINE
- PROPERTY LINE
- INTERIOR LOT LINE
- RIGHT-OF-WAY
- EASEMENT/RIGHT-OF-WAY
- EXISTING TREE LINE
- EXISTING FENCE
- EXISTING GRAVEL ROAD
- EXISTING OVERHEAD UTILITY LINES
- EXISTING UTILITY POLE
- TOP OF BANK
- PANEL ARRAY
- PROPOSED FENCE
- EXISTING WATER LINE
- PROPOSED TREELINE
- LIMIT OF DISTURBANCE
- DELINEATED WETLANDS
- PROPOSED FILTER STRIP OR RIPARIAN BUFFER
- PROPOSED SURFACE WATER CROSSING
- STANDARD GRAVEL ACCESS ROAD
- PERVIOUS GRAVEL ACCESS ROAD
- SILT FENCE

50 FEET 0 50 100 150
Scale: 1"=50'

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REV	DESCRIPTION	DATE	BY
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FA PROJECT NO.
220871
PROJECT MANAGER
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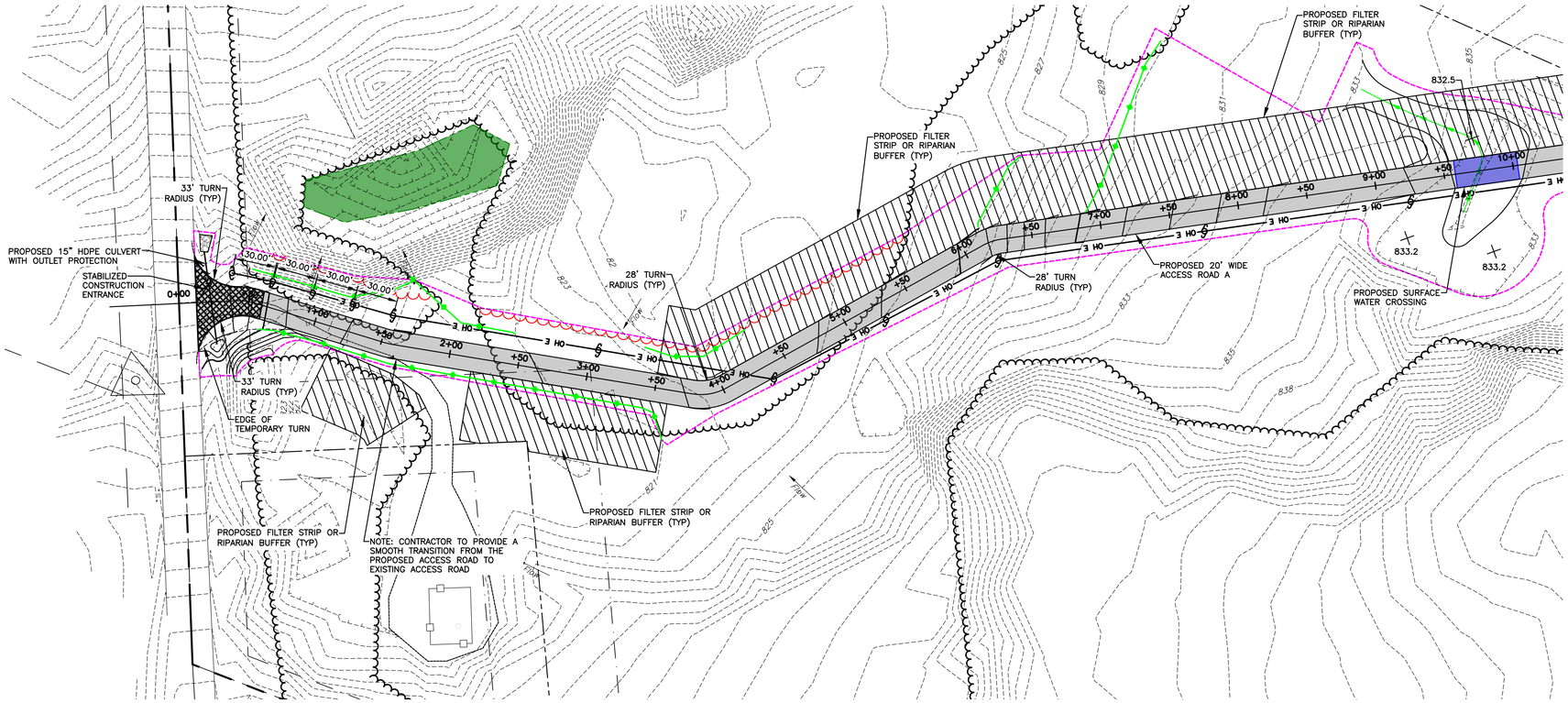
PROJECT
PROPOSED MANLIUS SOLAR
TOWN OF MANLIUS
ONONDAGA COUNTY, NEW YORK

TITLE OF DRAWING
ACCESS ROAD PLAN AND PROFILE INDEX

DRAWING NO.
C-400

SHEET 19 OF 36

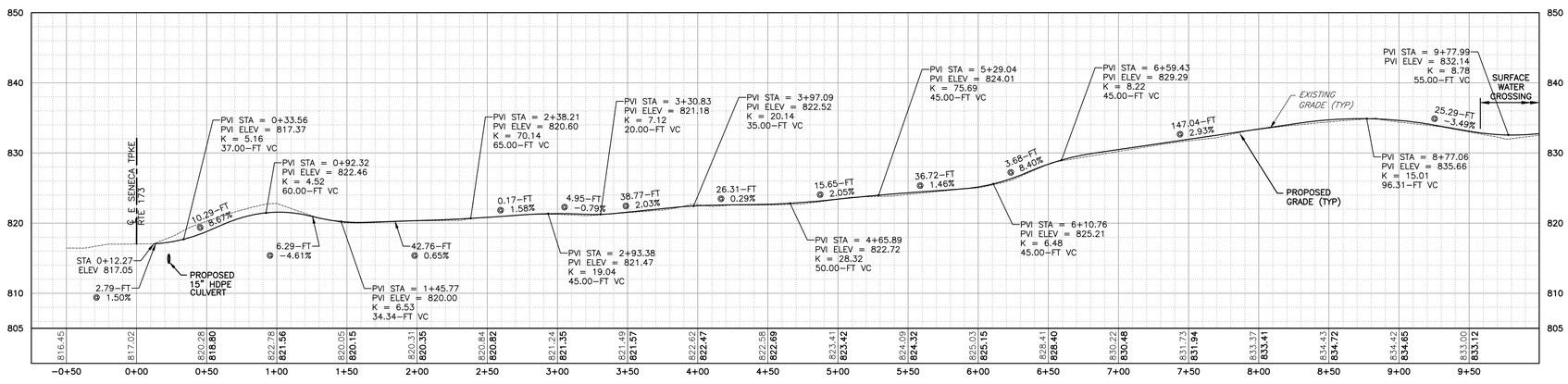
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DATE/TIME: 12/20/2022 1:19:27 PM
USER: Doug Perrotto



ACCESS ROAD A
PLAN VIEW
SCALE: 1"=50'

LEGEND

- PROJECT BOUNDARY
- PROPERTY SETBACK
- ADJACENT PROPERTY LINE
- PROPERTY LINE
- INTERIOR LOT LINE
- RIGHT–OF–WAY
- EASEMENT/RIGHT–OF–WAY
- EXISTING TREE LINE
- EXISTING FENCE
- EXISTING GRAVEL ROAD
- EXISTING OVERHEAD UTILITY LINES
- EXISTING UTILITY POLE
- TOP OF BANK
- PANEL ARRAY
- PROPOSED FENCE
- EXISTING WATER LINE
- PROPOSED TREELINE
- LIMIT OF DISTURBANCE
- DELINEATED WETLANDS
- PROPOSED FILTER STRIP OR RIPARIAN BUFFER
- PROPOSED SURFACE WATER CROSSING
- STANDARD GRAVEL ACCESS ROAD
- PERVIOUS GRAVEL ACCESS ROAD
- SILT FENCE



ACCESS ROAD A
PROFILE VIEW
SCALE: HORIZ: 1"=50'
VERT: 1"=10'

50 0 50 100 150
FEET
Scale: 1"=50'

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REV	DESCRIPTION	DATE	BY
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5			
4			
3			
2			
1	FILE LAYOUT UPDATES		

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FA PROJECT NO.
220871
PROJECT MANAGER
S. MELLOTT
DRAWN BY
D. BRUE
SCALE
AS SHOWN
ISSUE DATE
12/20/2022

STATE OF NEW YORK
STEVEN C. MELLOTT
088072
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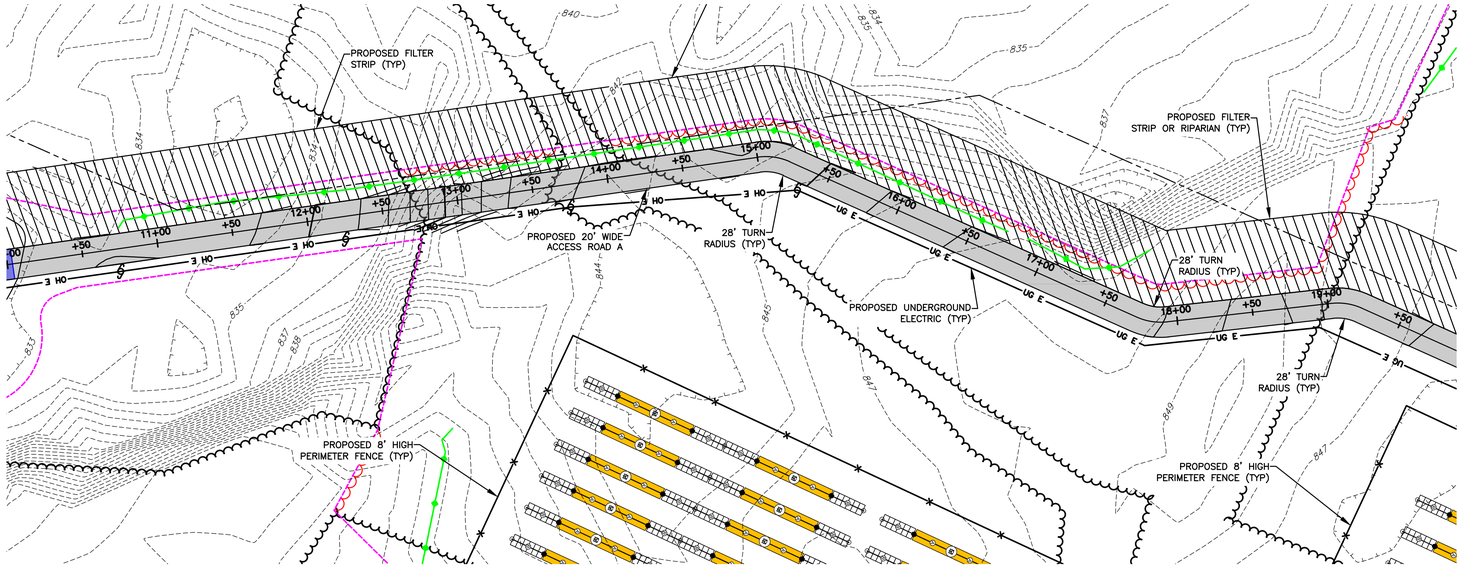
PROJECT
PROPOSED MANLIUS SOLAR
TOWN OF MANLIUS
ONONDAGA COUNTY, NEW YORK

TITLE OF DRAWING
ACCESS ROAD A PLAN PROFILE -1

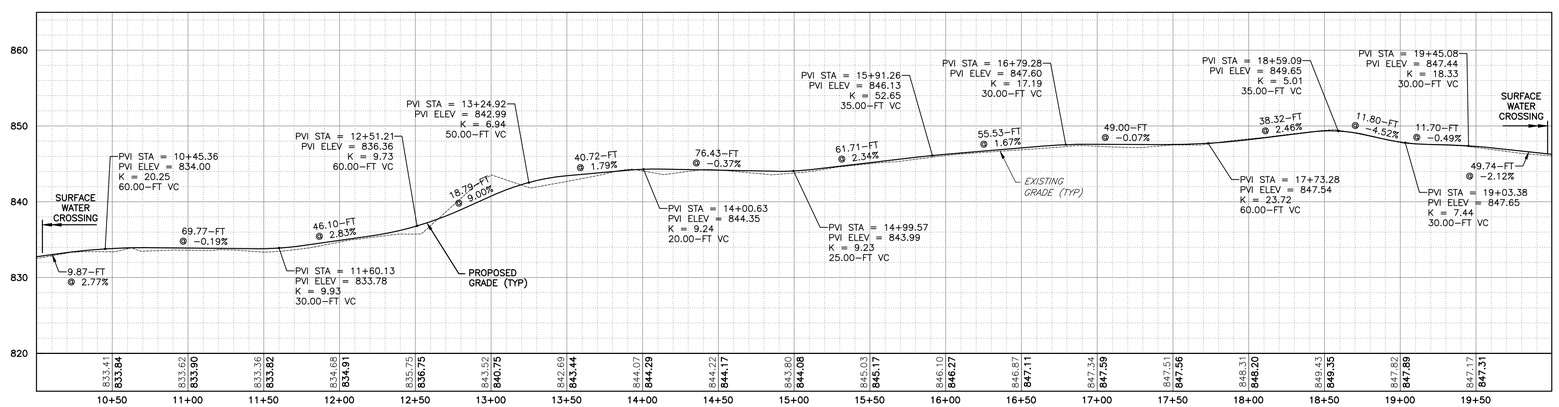
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C-401

SHEET 20 OF 36

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USER: Doug Perrotto



ACCESS ROAD A
PLAN VIEW
SCALE: 1"=50'



ACCESS ROAD A
PROFILE VIEW
SCALE: HORIZ: 1"=50'
VERT: 1"=10'

LEGEND

- PROJECT BOUNDARY
- PROPERTY SETBACK
- ADJACENT PROPERTY LINE
- PROPERTY LINE
- INTERIOR LOT LINE
- RIGHT-OF-WAY
- EASEMENT/RIGHT-OF-WAY
- EXISTING TREE LINE
- EXISTING FENCE
- EXISTING GRAVEL ROAD
- EXISTING OVERHEAD UTILITY LINES
- EXISTING UTILITY POLE
- TOP OF BANK
- PANEL ARRAY
- PROPOSED FENCE
- EXISTING WATER LINE
- PROPOSED TREELINE
- LIMIT OF DISTURBANCE
- DELINEATED WETLANDS
- PROPOSED FILTER STRIP OR RIPARIAN BUFFER
- PROPOSED SURFACE WATER CROSSING
- STANDARD GRAVEL ACCESS ROAD
- PERVIOUS GRAVEL ACCESS ROAD
- SILT FENCE

40 0 40 80 120
FEET
Scale: 1"=40'

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	BY
7			
6			
5			
4			
3			
2			
1	PER PLANNING BOARD COMMENTS		

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FA PROJECT NO.
220871
PROJECT MANAGER
S. MELLOTT
DRAWN BY
D. BRUE
SCALE
AS SHOWN
ISSUE DATE
12/20/2022

STATE OF NEW YORK
STEVEN C. MELLOTT
088078
LICENSED PROFESSIONAL ENGINEER

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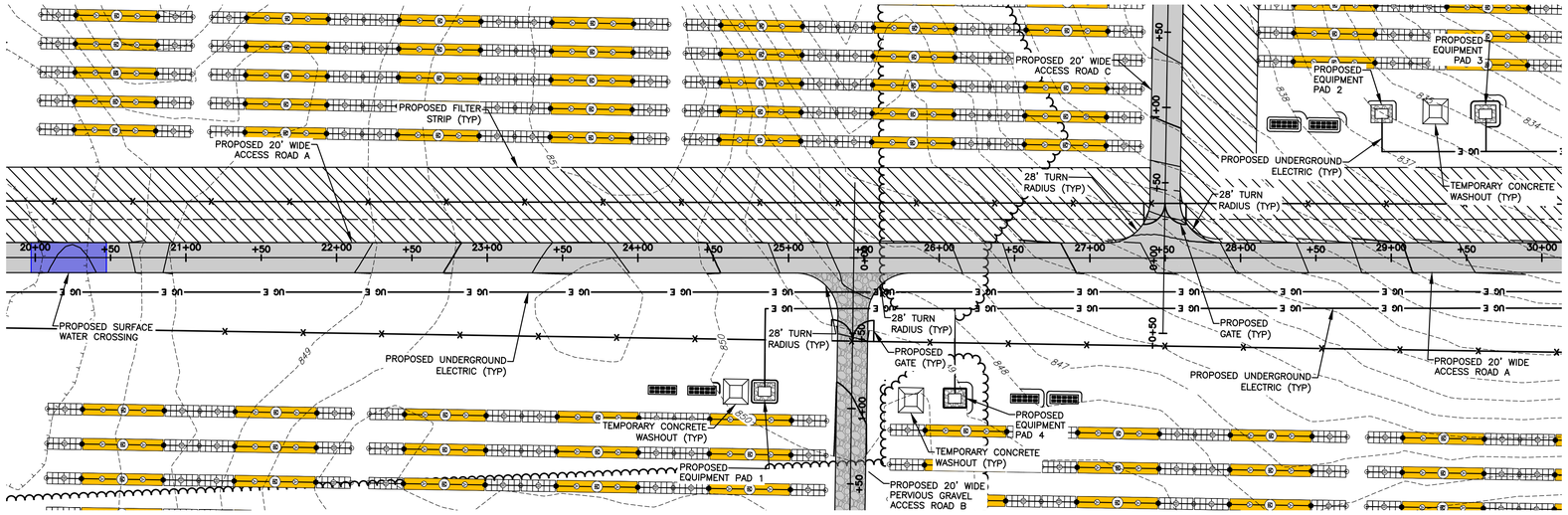
PROJECT
PROPOSED MANLIUS SOLAR
TOWN OF MANLIUS
ONONDAGA COUNTY, NEW YORK

TITLE OF DRAWING
ACCESS ROAD A PLAN PROFILE - 2

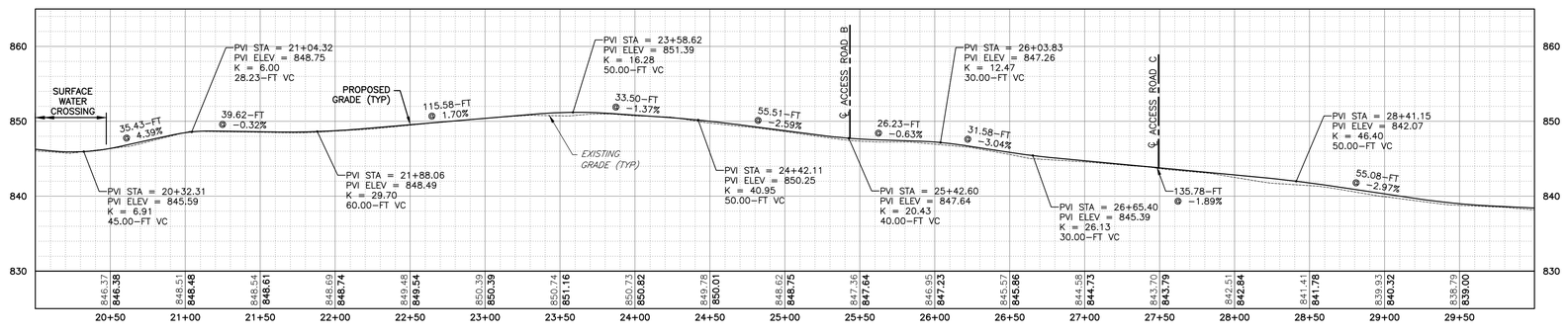
DRAWING NO.
C-402

SHEET 21 OF 36

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DATE/TIME: 12/20/2022 1:20:43 PM
USER: Doug Perrotto



ACCESS ROAD A
PLAN VIEW
SCALE: 1"=50'



ACCESS ROAD A
PROFILE VIEW
SCALE: HORIZ: 1"=50'
VERT: 1"=10'

LEGEND

- PROJECT BOUNDARY
- PROPERTY SETBACK
- ADJACENT PROPERTY LINE
- PROPERTY LINE
- INTERIOR LOT LINE
- RIGHT-OF-WAY
- EASEMENT/RIGHT-OF-WAY
- EXISTING TREE LINE
- EXISTING FENCE
- EXISTING GRAVEL ROAD
- EXISTING OVERHEAD UTILITY LINES
- EXISTING UTILITY POLE
- TOP OF BANK
- PANEL ARRAY
- PROPOSED FENCE
- EXISTING WATER LINE
- PROPOSED TREELINE
- LIMIT OF DISTURBANCE
- DELINEATED WETLANDS
- PROPOSED FILTER STRIP OR RIPARIAN BUFFER
- PROPOSED SURFACE WATER CROSSING
- STANDARD GRAVEL ACCESS ROAD
- PERVIOUS GRAVEL ACCESS ROAD
- SILT FENCE

50 FEET 0 50 100 150
Scale: 1"=50'

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	BY
7			
6			
5	FILTER LAYOUT		
4			
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2			
1			

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FA PROJECT NO.
220871
PROJECT MANAGER
S. MELLOTT
DRAWN BY
D. BRUE
SCALE
AS SHOWN
ISSUE DATE
12/20/2022

STATE OF NEW YORK
STEVEN C. MELLOTT
088972
LICENSED PROFESSIONAL ENGINEER

FISHER ASSOCIATES
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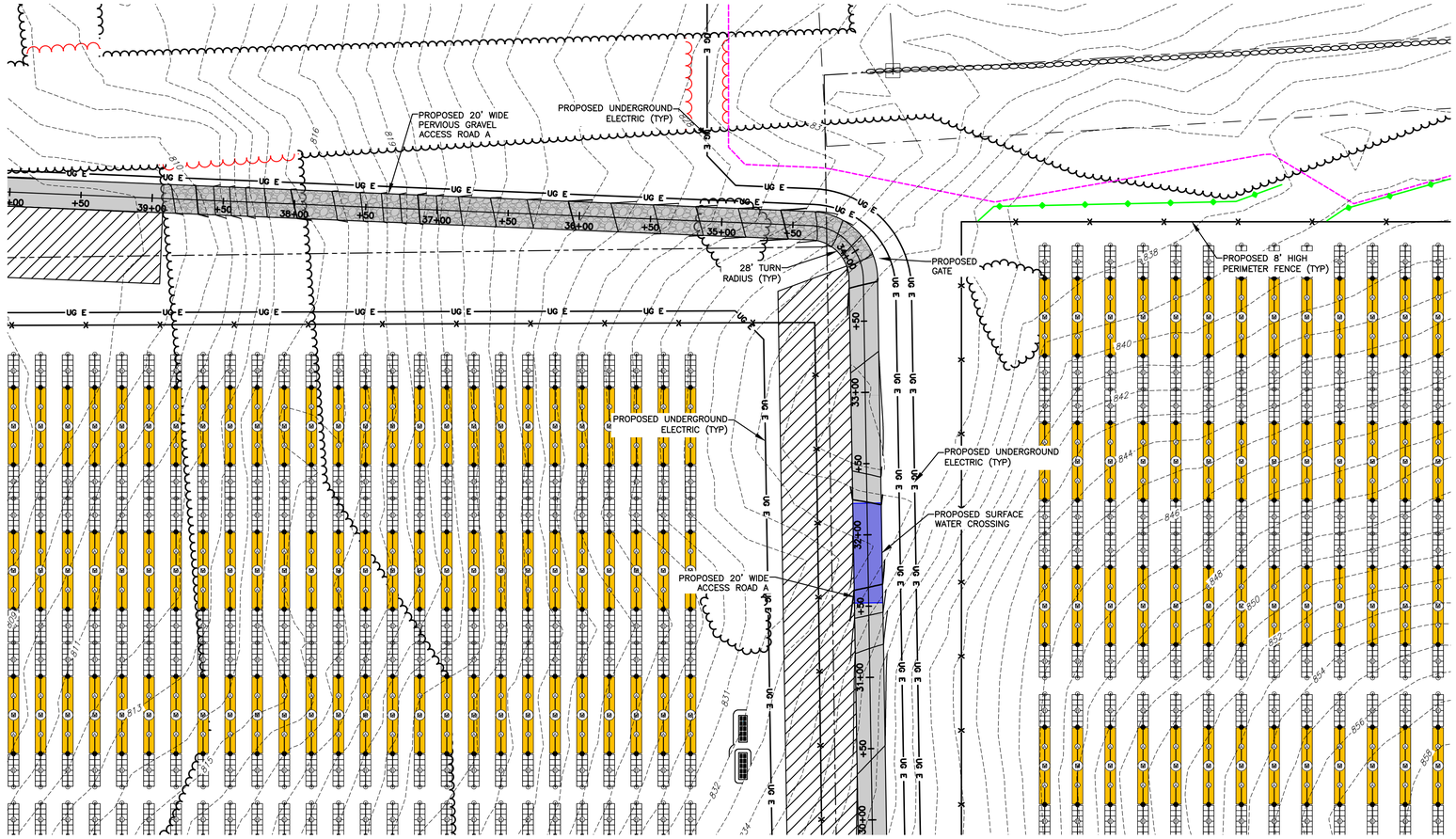
PROJECT
PROPOSED MANLIUS SOLAR
TOWN OF MANLIUS
ONONDAGA COUNTY, NEW YORK

TITLE OF DRAWING
ACCESS ROAD A PLAN PROFILE - 3

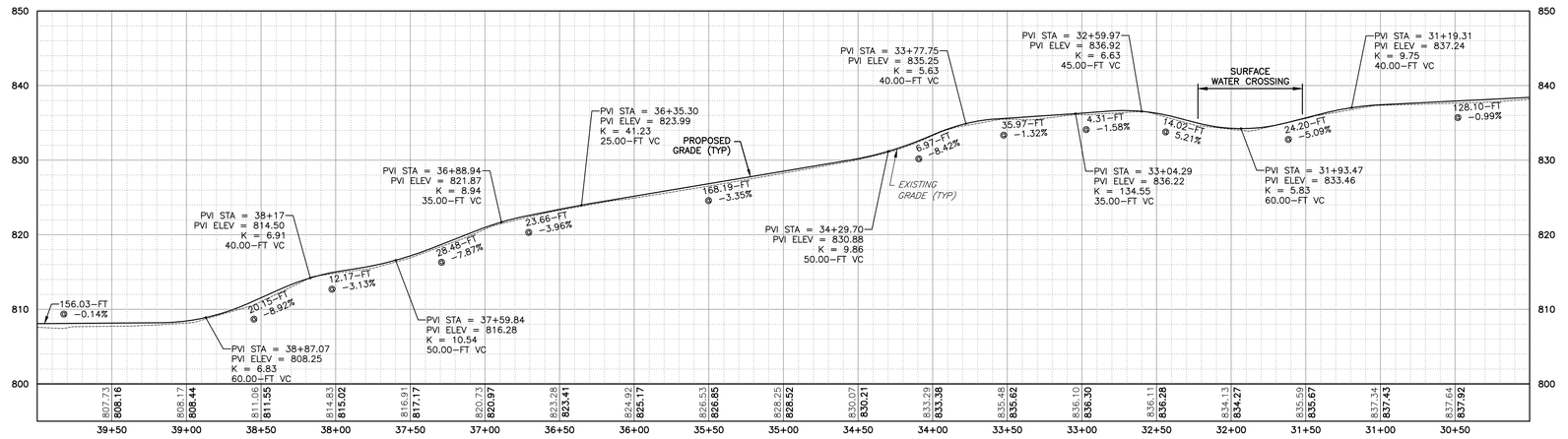
DRAWING NO.
C-403

SHEET 22 OF 36

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DATE/TIME: 12/20/2022 1:21:20 PM
USER: Doug Perrotto



ACCESS ROAD A
PLAN VIEW
SCALE: 1"=50'



ACCESS ROAD A
PROFILE VIEW
SCALE: HORIZ: 1"=50'
VERT: 1"=10'

LEGEND

- PROJECT BOUNDARY
- PROPERTY SETBACK
- ADJACENT PROPERTY LINE
- PROPERTY LINE
- INTERIOR LOT LINE
- RIGHT–OF–WAY
- EASEMENT/RIGHT–OF–WAY
- EXISTING TREE LINE
- EXISTING FENCE
- EXISTING GRAVEL ROAD
- EXISTING OVERHEAD UTILITY LINES
- EXISTING UTILITY POLE
- TOP OF BANK
- PANEL ARRAY
- PROPOSED FENCE
- EXISTING WATER LINE
- PROPOSED TREELINE
- LIMIT OF DISTURBANCE
- DELINEATED WETLANDS
- PROPOSED FILTER STRIP OR RIPARIAN BUFFER
- PROPOSED SURFACE WATER CROSSING
- STANDARD GRAVEL ACCESS ROAD
- PERVIOUS GRAVEL ACCESS ROAD
- SILT FENCE

50 0 50 100 150
FEET
Scale: 1"=50'

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	BY
1			
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FA PROJECT NO.
220871
PROJECT MANAGER
S. MELLOTT
DRAWN BY
D. BRUE
SCALE
AS SHOWN
ISSUE DATE
12/20/2022

STATE OF NEW YORK
STEVEN C. MELLOTT
088070
LICENSED PROFESSIONAL ENGINEER

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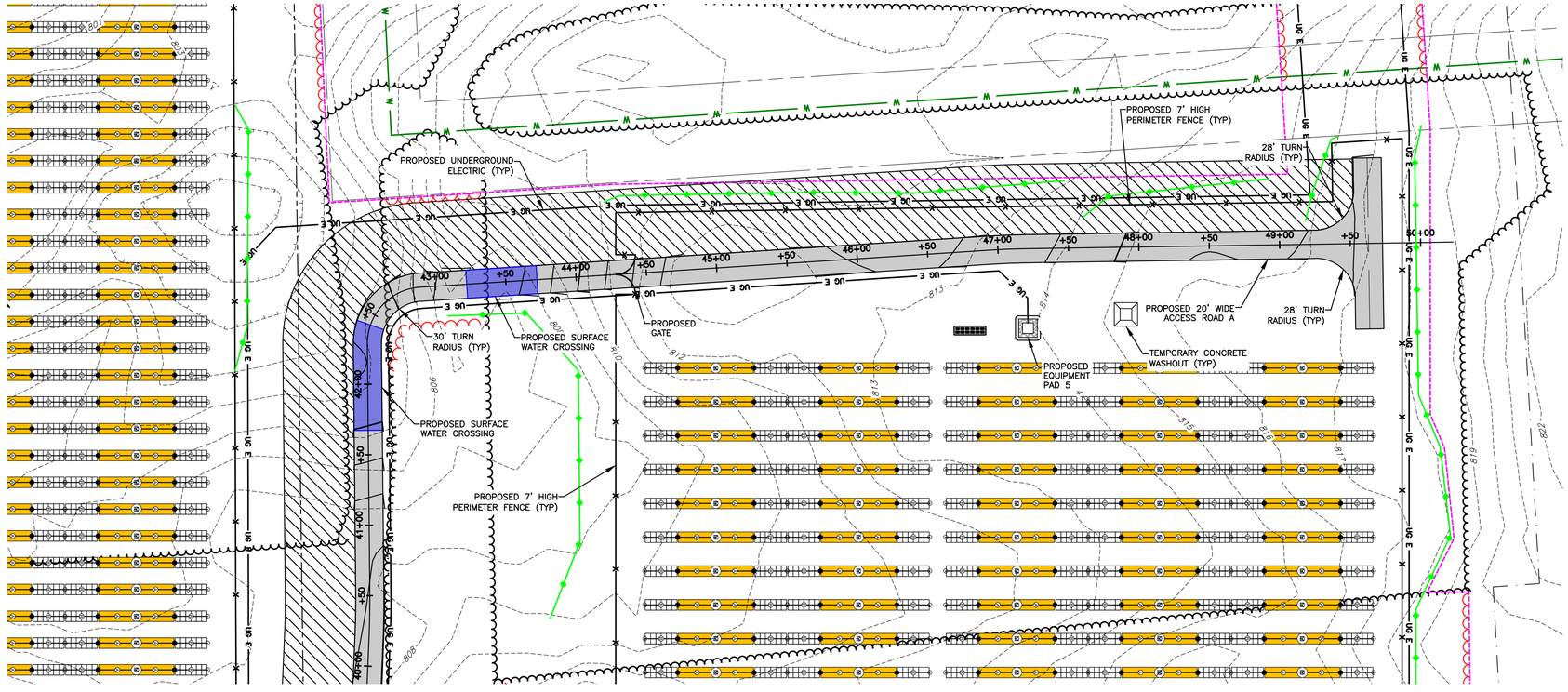
PROJECT
PROPOSED MANLIUS SOLAR
TOWN OF MANLIUS
ONONDAGA COUNTY, NEW YORK

TITLE OF DRAWING
ACCESS ROAD A PLAN PROFILE - 4

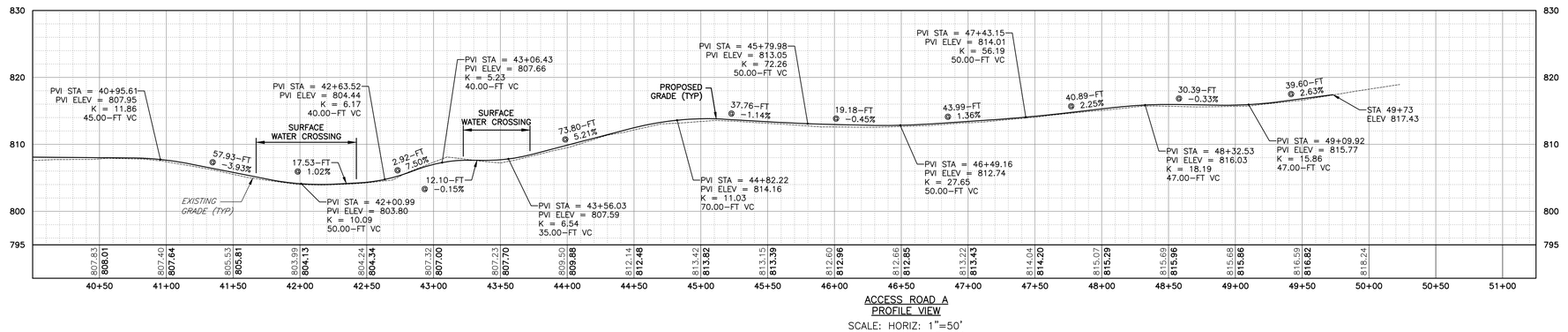
DRAWING NO.
C-404

SHEET 23 OF 36

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DATE/TIME: 12/20/2022 1:21:59 PM
USER: Doug Perrotto



ACCESS ROAD A
PLAN VIEW
SCALE: 1"=50'



ACCESS ROAD A
PROFILE VIEW
SCALE: HORIZ: 1"=50'
VERT: 1"=10'

LEGEND

- PROJECT BOUNDARY
- PROPERTY SETBACK
- ADJACENT PROPERTY LINE
- PROPERTY LINE
- INTERIOR LOT LINE
- RIGHT-OF-WAY
- EASEMENT/RIGHT-OF-WAY
- EXISTING TREE LINE
- EXISTING FENCE
- EXISTING GRAVEL ROAD
- EXISTING OVERHEAD UTILITY LINES
- EXISTING UTILITY POLE
- TOP OF BANK
- PANEL ARRAY
- PROPOSED FENCE
- EXISTING WATER LINE
- PROPOSED TREELINE
- LIMIT OF DISTURBANCE
- DELINEATED WETLANDS
- PROPOSED FILTER STRIP OR RIPARIAN BUFFER
- PROPOSED SURFACE WATER CROSSING
- STANDARD GRAVEL ACCESS ROAD
- PERVIOUS GRAVEL ACCESS ROAD
- SILT FENCE

50 FEET 0 50 100 150
Scale: 1"=50'

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	BY
7			
6			
5			
4			
3			
2			
1			

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FA PROJECT NO.
220871
PROJECT MANAGER
S. MELLOTT
DRAWN BY
D. BRUE
SCALE
AS SHOWN
ISSUE DATE
12/20/2022

STATE OF NEW YORK
STEVEN C. MELLOTT
088072
LICENSED PROFESSIONAL ENGINEER

FISHER ASSOCIATES
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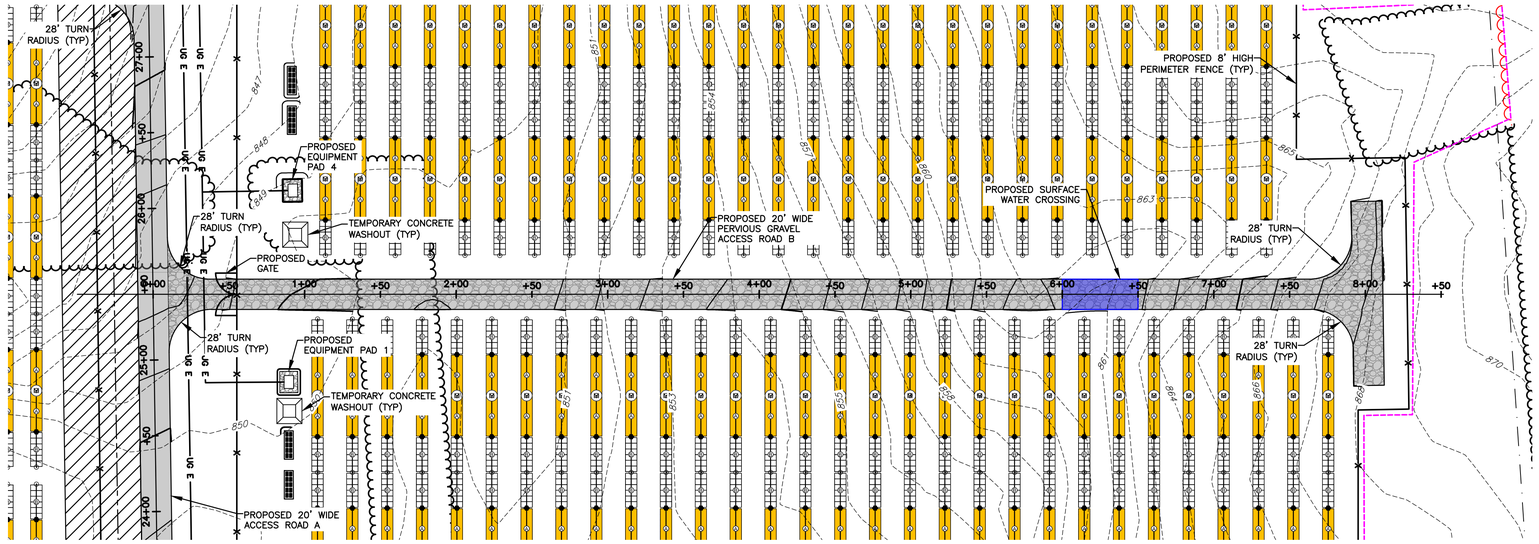
PROJECT
PROPOSED MANLIUS SOLAR
TOWN OF MANLIUS
ONONDAGA COUNTY, NEW YORK

TITLE OF DRAWING
ACCESS ROAD A PLAN PROFILE -5

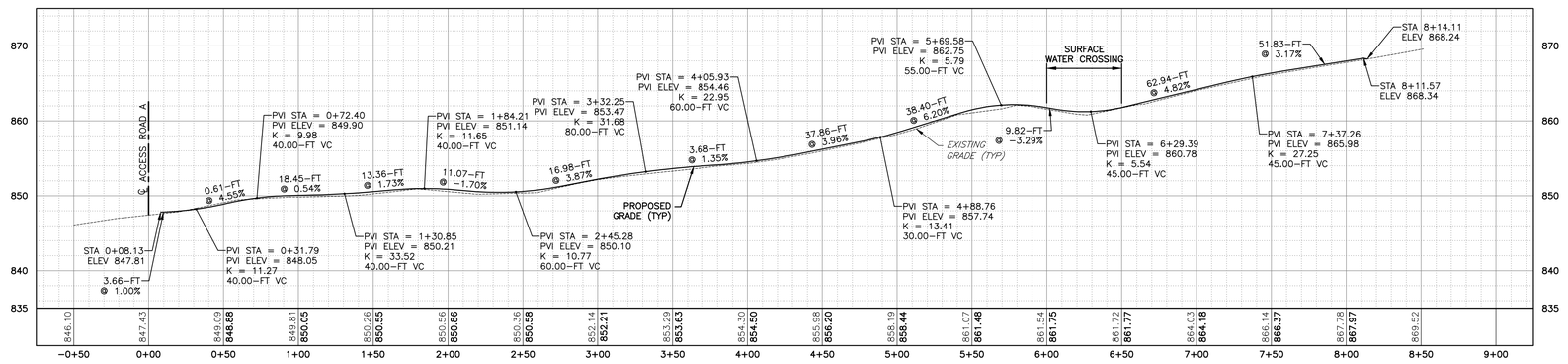
DRAWING NO.
C-405

SHEET 24 OF 36

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DATE/TIME: 12/20/2022 1:22:50 PM
USER: Doug Perrotto



ACCESS ROAD B
PLAN VIEW
SCALE: 1"=50'



ACCESS ROAD B
PROFILE VIEW
SCALE: HORIZ: 1"=50'
VERT: 1"=10'

LEGEND

- PROJECT BOUNDARY
- PROPERTY SETBACK
- ADJACENT PROPERTY LINE
- PROPERTY LINE
- INTERIOR LOT LINE
- RIGHT-OF-WAY
- EASEMENT/RIGHT-OF-WAY
- EXISTING TREE LINE
- EXISTING FENCE
- EXISTING GRAVEL ROAD
- EXISTING OVERHEAD UTILITY LINES
- EXISTING UTILITY POLE
- TOP OF BANK
- PANEL ARRAY
- PROPOSED FENCE
- EXISTING WATER LINE
- PROPOSED TREELINE
- LIMIT OF DISTURBANCE
- DELINEATED WETLANDS
- PROPOSED FILTER STRIP OR RIPARIAN BUFFER
- PROPOSED SURFACE WATER CROSSING
- STANDARD GRAVEL ACCESS ROAD
- PERVIOUS GRAVEL ACCESS ROAD
- SILT FENCE

50 0 50 100 150
FEET
Scale: 1"=50'

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	BY
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Per The New Executive Law Section 7209 states that it is a violation of engineering or land surveying law for one to alter in any way the seal of an engineer or land surveyor or to alter in any way a survey, plat, plan or report prepared by an engineer or land surveyor. If an item bearing the seal of an engineer or land surveyor is altered, said engineer or land surveyor shall affix to the item his/her seal and the notation "altered" followed by his/her signature and the date of such alteration and a specific description of the alteration.

FA PROJECT NO.
220871
PROJECT MANAGER
S. MELLOTT
DRAWN BY
D. BRUE
SCALE
AS SHOWN
ISSUE DATE
12/20/2022

STATE OF NEW YORK
STEVEN C. MELLOTT
088072
LICENSED PROFESSIONAL ENGINEER

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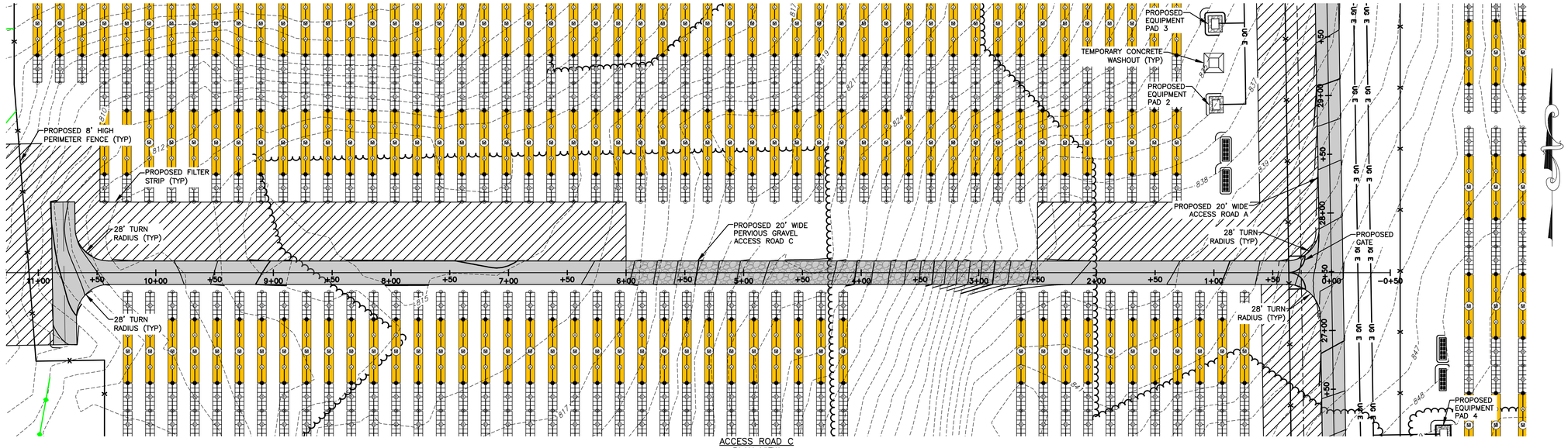
PROJECT
PROPOSED MANLIUS SOLAR
TOWN OF MANLIUS
ONONDAGA COUNTY, NEW YORK

TITLE OF DRAWING
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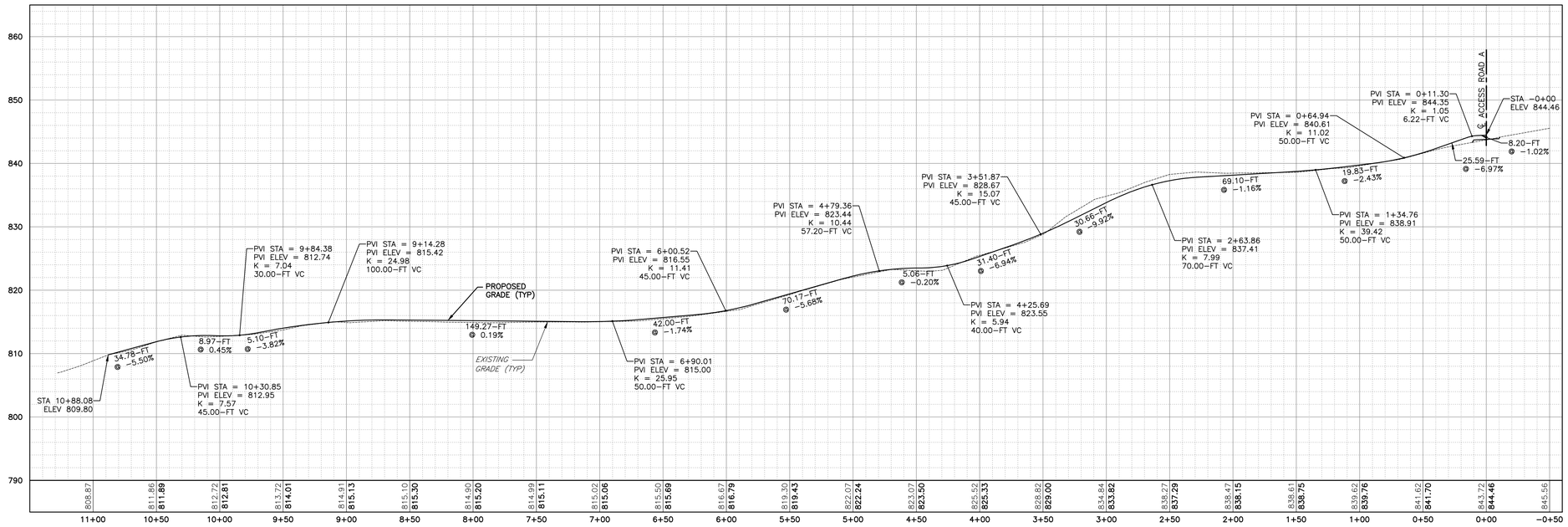
DRAWING NO.
C-406

SHEET 25 OF 36

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DATE/TIME: 12/20/2022 1:23:28 PM
USER: Doug Perrotto



ACCESS ROAD C
PLAN VIEW
SCALE: 1"=50'



ACCESS ROAD C
PROFILE VIEW
SCALE: HORIZ: 1"=50'
VERT: 1"=10'

LEGEND

- PROJECT BOUNDARY
- PROPERTY SETBACK
- ADJACENT PROPERTY LINE
- PROPERTY LINE
- INTERIOR LOT LINE
- RIGHT–OF–WAY
- EASEMENT/RIGHT–OF–WAY
- EXISTING TREE LINE
- EXISTING FENCE
- EXISTING GRAVEL ROAD
- EXISTING OVERHEAD UTILITY LINES
- EXISTING UTILITY POLE
- TOP OF BANK
- PANEL ARRAY
- PROPOSED FENCE
- EXISTING WATER LINE
- PROPOSED TREELINE
- LIMIT OF DISTURBANCE
- DELINEATED WETLANDS
- PROPOSED FILTER STRIP OR RIPARIAN BUFFER
- PROPOSED SURFACE WATER CROSSING
- STANDARD GRAVEL ACCESS ROAD
- PERVIOUS GRAVEL ACCESS ROAD
- SILT FENCE

50 FEET 0 50 100 150
Scale: 1"=50'

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	BY
7			
6			
5			
4			
3			
2			
1			

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FA PROJECT NO.
220871
PROJECT MANAGER
S. MELLOTT
DRAWN BY
D. BRUE
SCALE
AS SHOWN
ISSUE DATE
12/20/2022

STATE OF NEW YORK
STEVEN C. MELLOTT
088078
LICENSED PROFESSIONAL ENGINEER

FISHER ASSOCIATES
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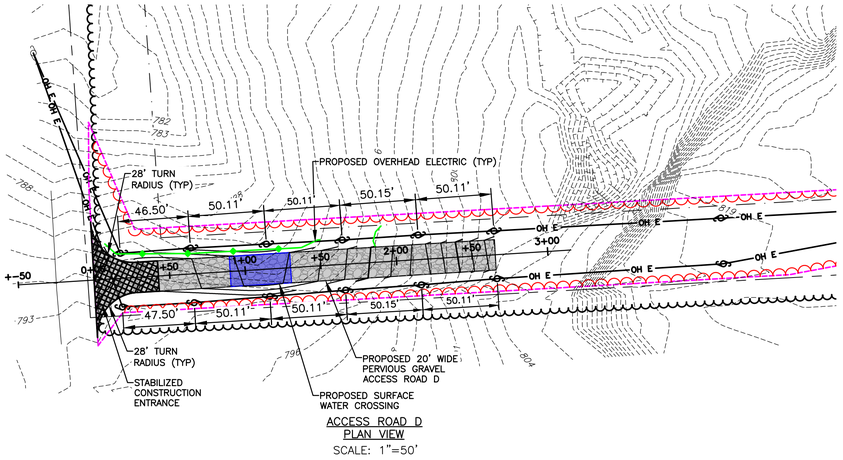
PROJECT
PROPOSED MANLIUS SOLAR
TOWN OF MANLIUS
ONONDAGA COUNTY, NEW YORK

TITLE OF DRAWING
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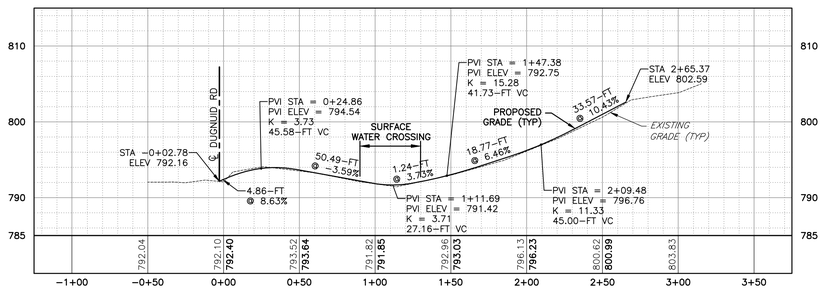
DRAWING NO.
C-407

SHEET 26 OF 36

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DATE/TIME: 12/20/2022 1:24:10 PM
USER: Doug Perrotto



ACCESS ROAD D
PLAN VIEW
SCALE: 1"=50'



ACCESS ROAD D
PROFILE VIEW
SCALE: HORIZ: 1"=50'
VERT: 1"=10'

LEGEND

- PROJECT BOUNDARY
- PROPERTY SETBACK
- ADJACENT PROPERTY LINE
- PROPERTY LINE
- INTERIOR LOT LINE
- RIGHT-OF-WAY
- EASEMENT/RIGHT-OF-WAY
- EXISTING TREE LINE
- EXISTING FENCE
- EXISTING GRAVEL ROAD
- EXISTING OVERHEAD UTILITY LINES
- EXISTING UTILITY POLE
- TOP OF BANK
- PANEL ARRAY
- PROPOSED FENCE
- EXISTING WATER LINE
- PROPOSED TREELINE
- LIMIT OF DISTURBANCE
- DELINEATED WETLANDS
- PROPOSED FILTER STRIP OR RIPARIAN BUFFER
- PROPOSED SURFACE WATER CROSSING
- STANDARD GRAVEL ACCESS ROAD
- PERVIOUS GRAVEL ACCESS ROAD
- SILT FENCE

50 0 50 100 150
FEET
Scale: 1"=50'

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	BY
7			
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5			
4			
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2			
1	FINAL SUBMITTAL		

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FA PROJECT NO.
220871

PROJECT MANAGER
S. MELLOTT

DRAWN BY
D. BRUE

SCALE
AS SHOWN

ISSUE DATE
12/20/2022

STATE OF NEW YORK
STEVEN C. MELLOTT
088072
LICENSED PROFESSIONAL ENGINEER

FISHER ASSOCIATES
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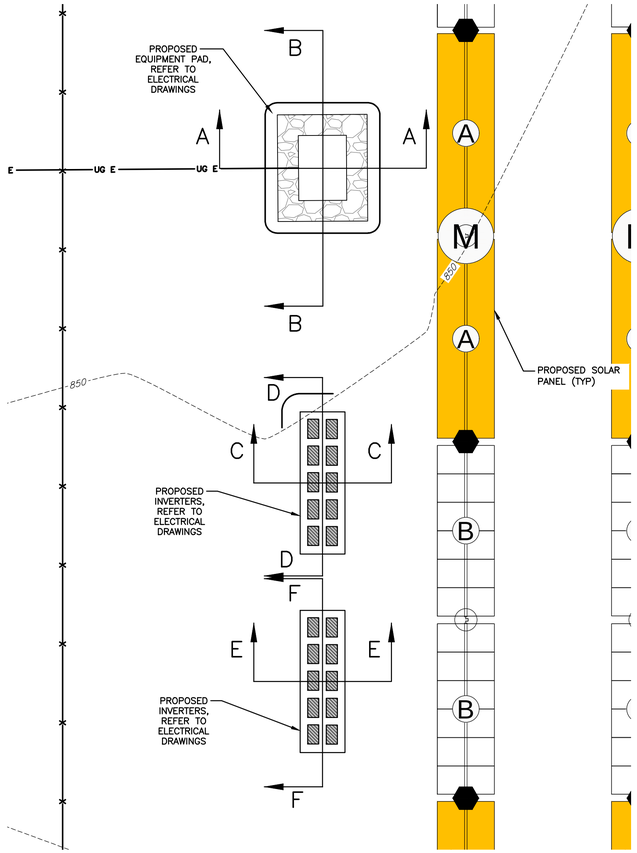
PROJECT
PROPOSED MANLIUS SOLAR
TOWN OF MANLIUS
ONONDAGA COUNTY, NEW YORK

TITLE OF DRAWING
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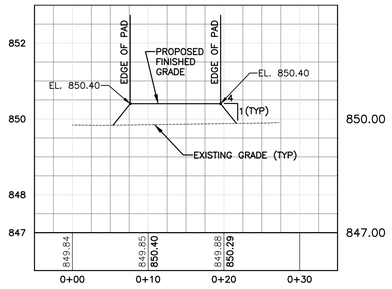
DRAWING NO.
C-408

SHEET 27 OF 36

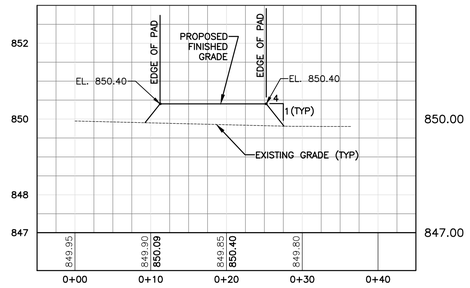
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USER: Doug Perrotto



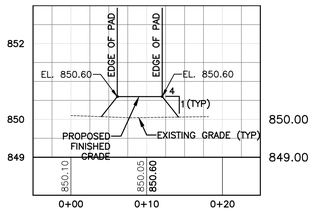
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SCALE: 1"=10'



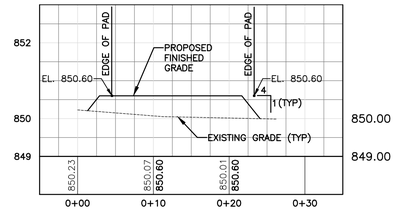
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VERT: 1"=2'



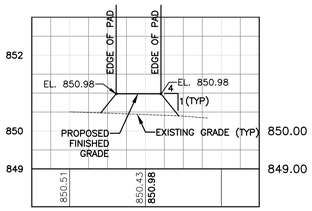
SECTION B–B
SCALE: HORIZ: 1"=10'
VERT: 1"=2'



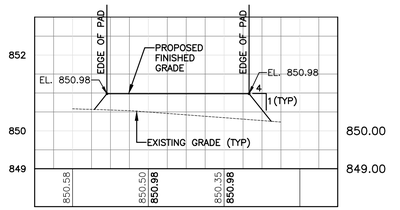
SECTION C–C
SCALE: HORIZ: 1"=10'
VERT: 1"=2'



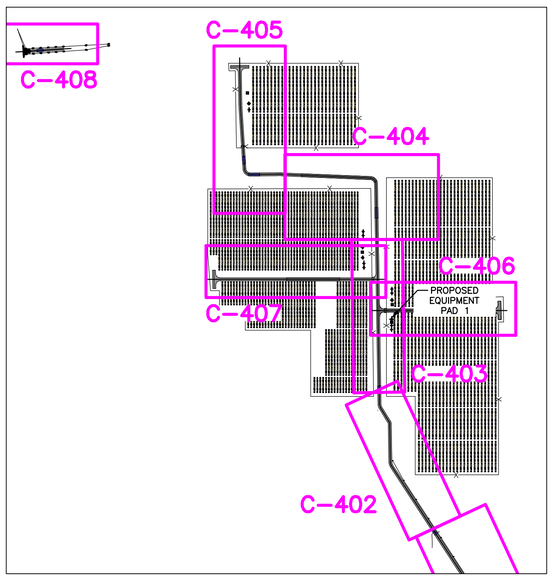
SECTION D–D
SCALE: HORIZ: 1"=10'
VERT: 1"=2'



SECTION E–E
SCALE: HORIZ: 1"=10'
VERT: 1"=2'



SECTION F–F
SCALE: HORIZ: 1"=10'
VERT: 1"=2'



LOCATION MAP
SCALE: 1"=500'

NOT FOR CONSTRUCTION

10 FEET 0 10 20 30
Scale: 1"=10'

REV	DESCRIPTION	DATE	BY
7			
6			
5			
4			
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2			
1			

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FA PROJECT NO.
220871
PROJECT MANAGER
S. MELLOTT
DRAWN BY
D. BRUE
SCALE
AS SHOWN
ISSUE DATE
12/20/2022

STATE OF NEW YORK
STEVEN C. MELLOTT
088072
LICENSED PROFESSIONAL ENGINEER

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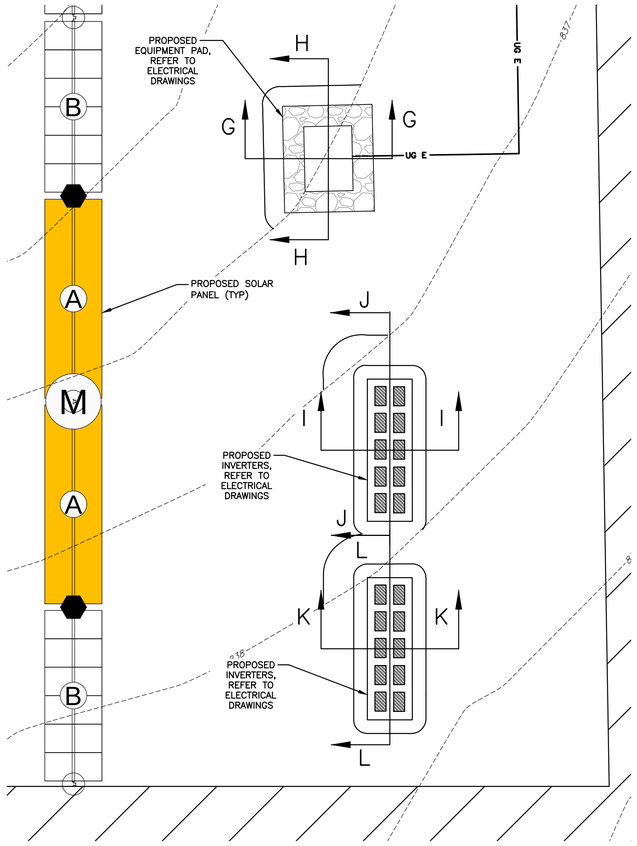
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TOWN OF MANLIUS
ONONDAGA COUNTY, NEW YORK

TITLE OF DRAWING
EQUIPMENT PAD GRADING PLAN AND SECTIONS

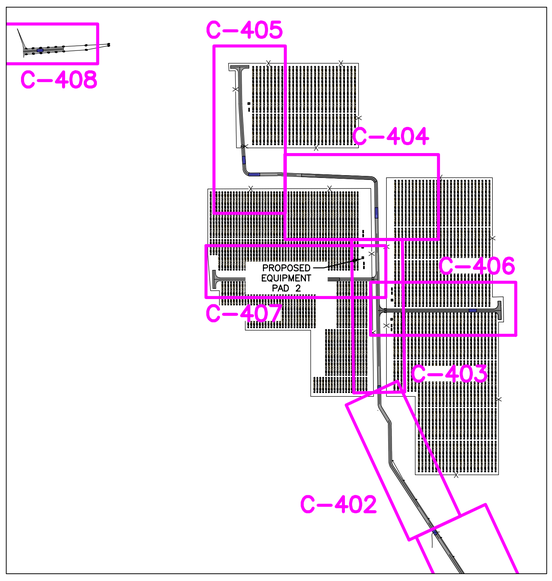
DRAWING NO.
C-409

SHEET 28 OF 36

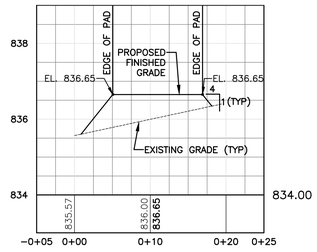
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DATE/TIME: 12/20/2022 1:26:03 PM
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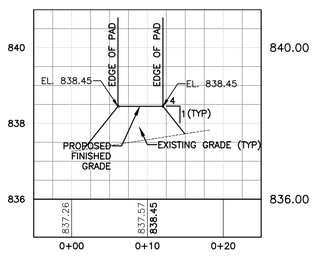
PROPOSED EQUIPMENT PAD 2 PLAN
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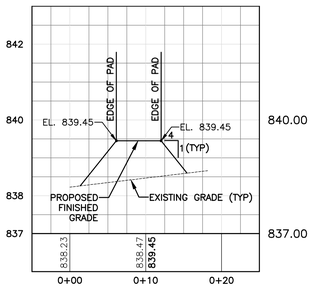
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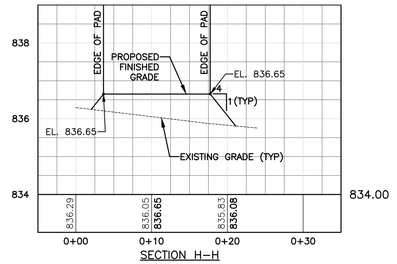
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VERT: 1"=2'



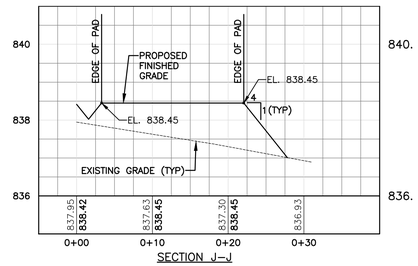
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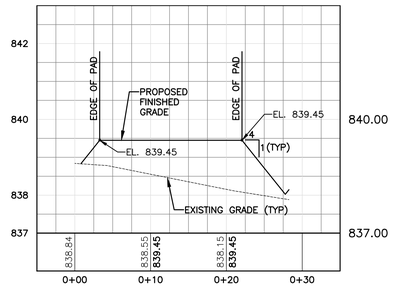
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SECTION H–H
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SECTION J–J
SCALE: HORIZ: 1"=10'
VERT: 1"=2'



SECTION L–L
SCALE: HORIZ: 1"=10'
VERT: 1"=2'

NOT FOR CONSTRUCTION

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Scale: 1"=10'

REV	DESCRIPTION	DATE	BY
7			
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4			
3			
2			
1	FOR LAND USE APPLICATIONS		

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220871
PROJECT MANAGER
S. MELLOTT
DRAWN BY
D. BRUE
SCALE
AS SHOWN
ISSUE DATE
12/20/2022

STATE OF NEW YORK
STEVEN C. MELLOTT
087073
LICENSED PROFESSIONAL ENGINEER

FISHER ASSOCIATES
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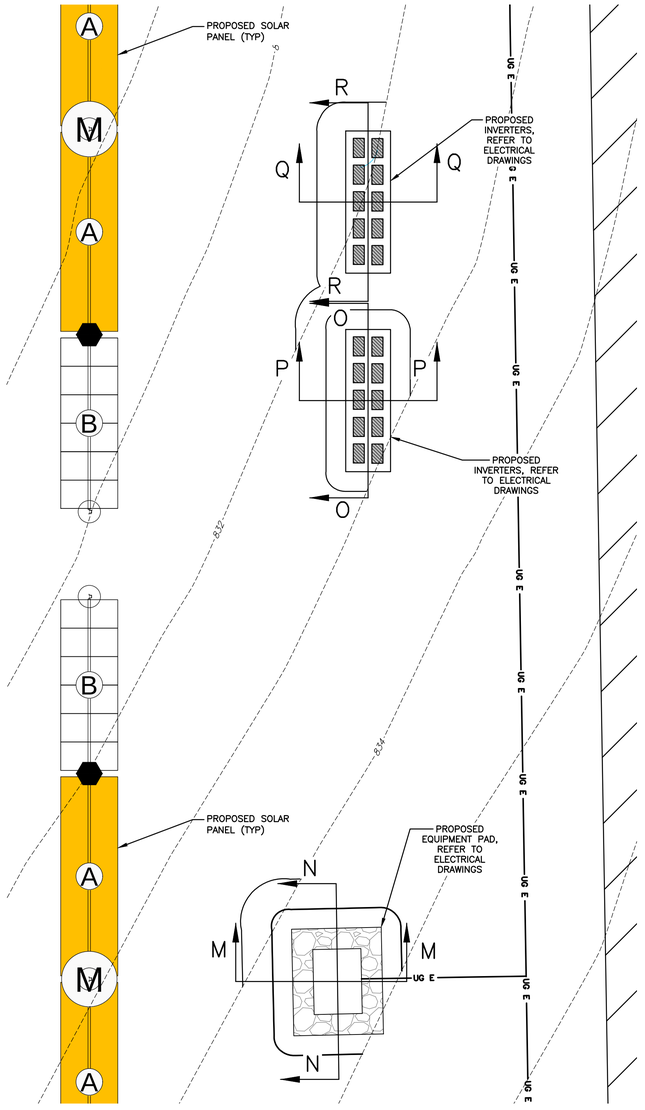
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TOWN OF MANLIUS
ONONDAGA COUNTY, NEW YORK

TITLE OF DRAWING
EQUIPMENT PAD GRADING PLAN AND SECTIONS

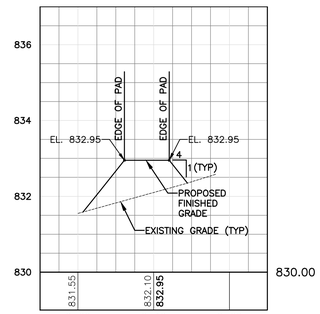
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C-410

SHEET 29 OF 36

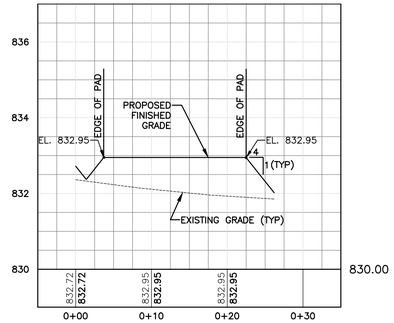
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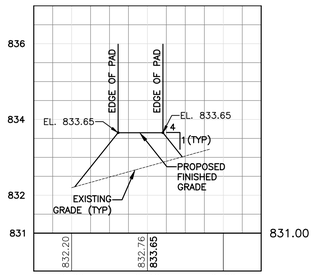
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SCALE: 1"=10'



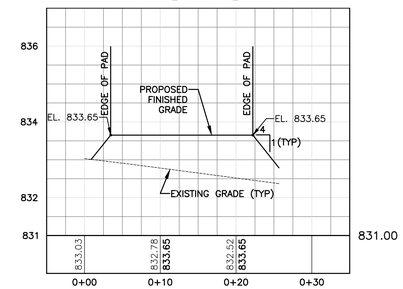
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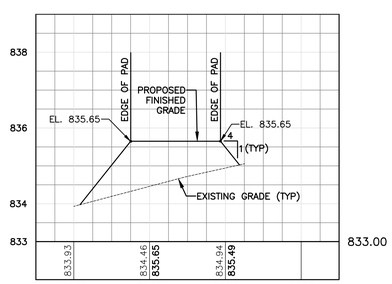
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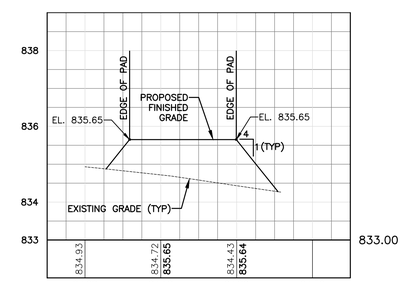
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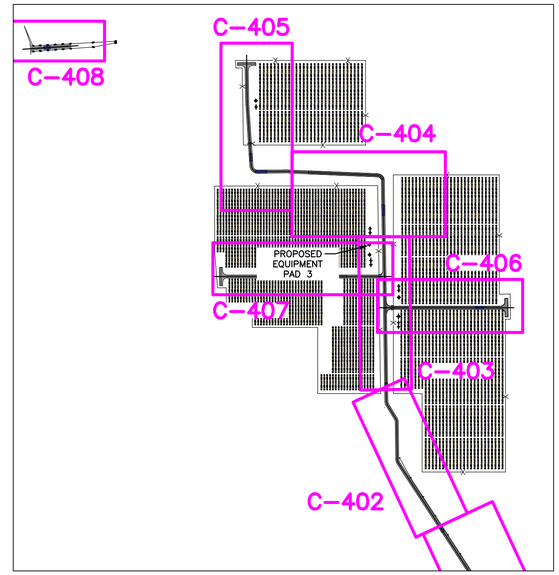
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SECTION M–M
SCALE: HORIZ: 1"=10'
VERT: 1"=2'



SECTION N–N
SCALE: HORIZ: 1"=10'
VERT: 1"=2'



LOCATION MAP
SCALE: 1"=500'

NOT FOR CONSTRUCTION

10 FEET 0 10 20 30
Scale: 1"=10'

REV	DESCRIPTION	DATE	BY
7			
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5			
4			
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2			
1	ADDENDUM #1	12/20/2022	

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220871
PROJECT MANAGER
S. MELLOTT
DRAWN BY
D. BRUE
SCALE
AS SHOWN
ISSUE DATE
12/20/2022

STATE OF NEW YORK
STEVEN C. MELLOTT
088178
LICENSED PROFESSIONAL ENGINEER

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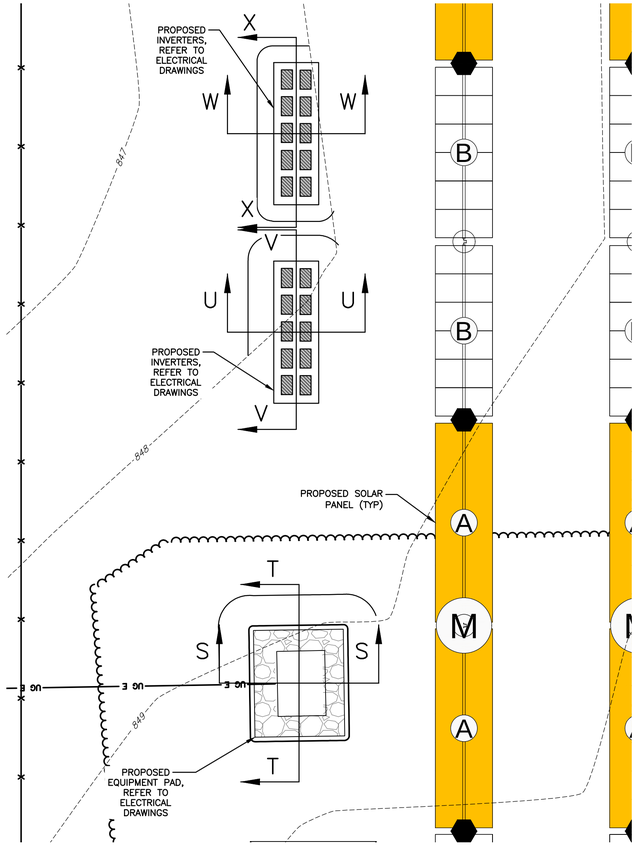
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PROPOSED MANLIUS SOLAR
TOWN OF MANLIUS
ONONDAGA COUNTY, NEW YORK

TITLE OF DRAWING
EQUIPMENT PAD GRADING PLAN AND SECTIONS

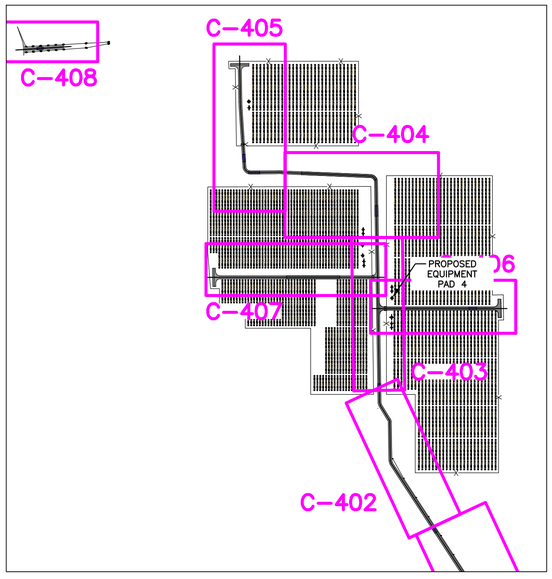
DRAWING NO.
C-411

SHEET 30 OF 36

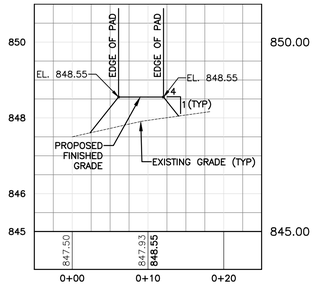
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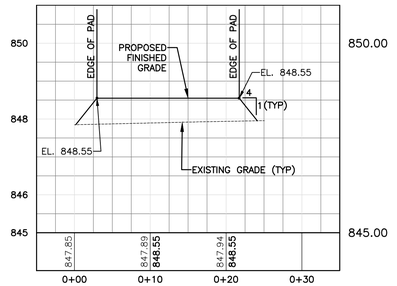
PROPOSED EQUIPMENT PAD 4 PLAN
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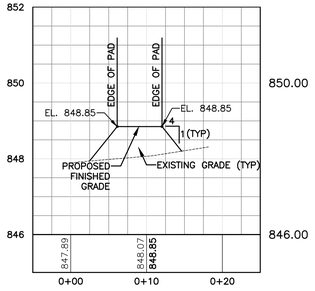
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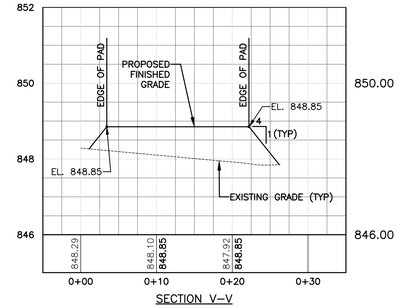
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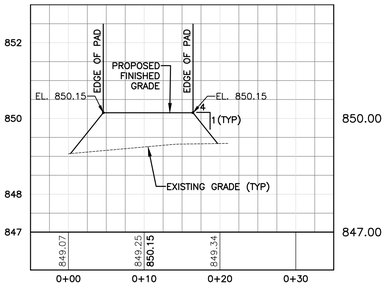
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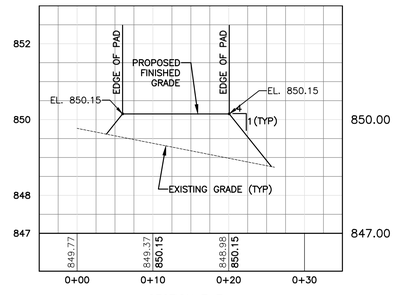
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SECTION V–V
SCALE: HORIZ: 1"=10'
VERT: 1"=2'



SECTION S–S
SCALE: HORIZ: 1"=10'
VERT: 1"=2'



SECTION T–T
SCALE: HORIZ: 1"=10'
VERT: 1"=2'

NOT FOR CONSTRUCTION

10 FEET 0 10 20 30
Scale: 1"=10'

REV	DESCRIPTION	DATE	BY
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5			
4			
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2			
1			

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220871
PROJECT MANAGER
S. MELLOTT
DRAWN BY
D. BRUE
SCALE
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ISSUE DATE
12/20/2022

STATE OF NEW YORK
STEVEN C. MELLOTT
088072
LICENSED PROFESSIONAL ENGINEER

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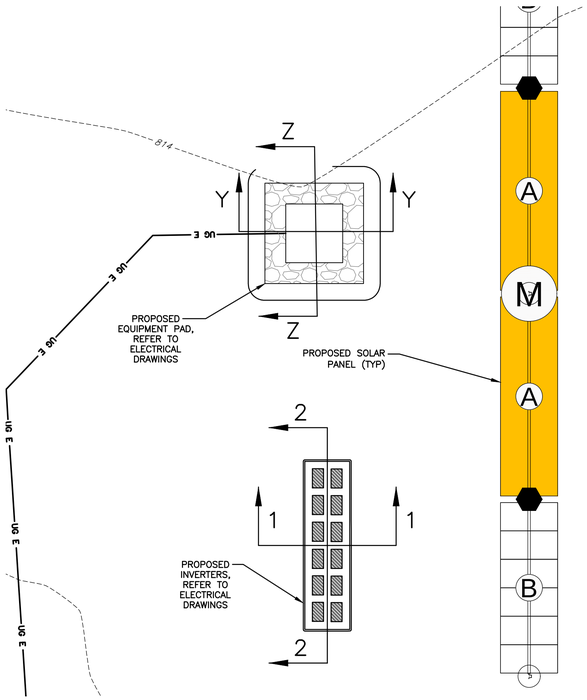
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PROPOSED MANLIUS SOLAR
TOWN OF MANLIUS
ONONDAGA COUNTY, NEW YORK

TITLE OF DRAWING
EQUIPMENT PAD GRADING PLAN AND SECTIONS

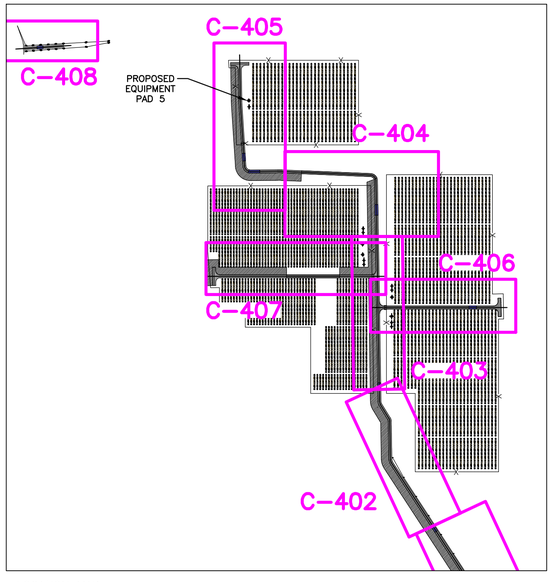
DRAWING NO.
C-412

SHEET 31 OF 36

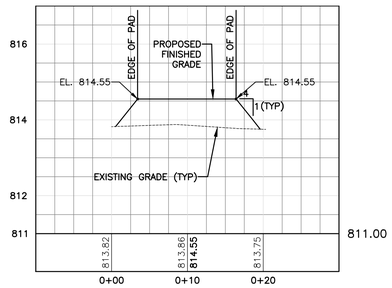
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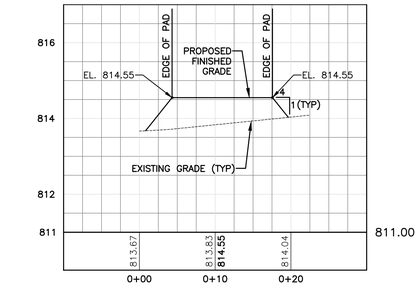
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SCALE: 1"=10'



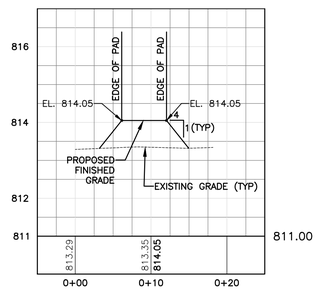
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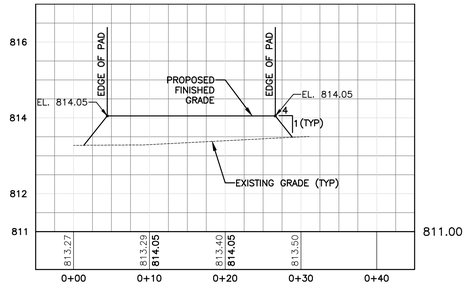
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SECTION Z–Z
SCALE: HORIZ: 1"=10'
VERT: 1"=2'



SECTION 1–1
SCALE: HORIZ: 1"=10'
VERT: 1"=2'



SECTION 2–2
SCALE: HORIZ: 1"=10'
VERT: 1"=2'

NOT FOR CONSTRUCTION

10 FEET 0 10 20 30
Scale: 1"=10'

REV	DESCRIPTION	DATE	BY
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2			
1			

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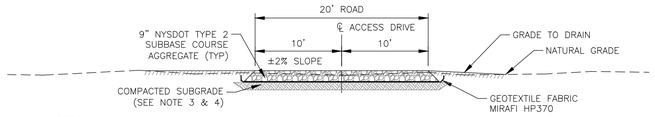
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PROPOSED MANLIUS SOLAR
TOWN OF MANLIUS
ONONDAGA COUNTY, NEW YORK

TITLE OF DRAWING
EQUIPMENT PAD GRADING PLAN AND SECTIONS

DRAWING NO.
C-413

SHEET 32 OF 36

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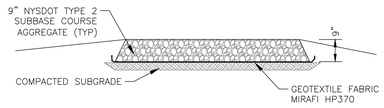


NOTES:

1. TOP OF DRIVE SHALL BE DESIGNED AND PLACED TO MATCH THE ELEVATION OF THE EXISTING GRADE AS SHOWN.
2. LIMITS OF CROSS SLOPES SHALL BE:
   0% – 2% MAX FOR ACCESS DRIVE DURING CONSTRUCTION
   2% – 4% MAX FOR ACCESS DRIVE AFTER CONSTRUCTION
3. THE PREPARED SUBGRADE SURFACE IS TO BE VISUALLY OBSERVED, AND ALL DELETERIOUS MATERIALS AND ORGANIC MATTER, ARE TO BE EXCAVATED AND REMOVED. THE EXPOSED SUBGRADE SURFACE IS TO BE COMPACTED AND BE PROOF–ROLLED UNDER THE OBSERVATION OF A QUALIFIED GEOTECHNICAL ENGINEER.
4. PER NYS AG & MARKETS GUIDELINES, EXCAVATED TOPSOIL SHALL BE DISTRIBUTED ALONG EITHER SIDE OF THE ACCESS ROAD AND VEGETATED. THE SOIL SHALL BE TAPERED TO THE EXISTING GRADE AND NOT IMPEDE NATURAL DRAINAGE PATTERNS.
5. IF THE PROOF ROLLING EVALUATION INDICATES ANY OF THE EXISTING SUBGRADES ARE FOUND TO BE IN A LOOSE/SOFT/WET, OR UNSTABLE CONDITION, BASE STABILIZATION COULD BE PROVIDED BENEATH THE ACCESS DRIVE EMBANKMENT FILL AREAS OR POOR SUBGRADE CONDITIONS TO HELP STIFFEN, STABILIZE AND IMPROVE THE SUBGRADE CONDITIONS FOR THE ACCESS DRIVE FILL PLACEMENT AND COMPACTION. THE BASE STABILIZATION SHALL INCLUDE THE PLACEMENT OF A STABILIZATION/SEPARATION GEOTEXTILE FABRIC OVER THE EXPOSED SUBGRADES, FOLLOWING SITE STRIPPING, FOLLOWED BY PLACEMENT OF APPROXIMATELY 2 FEET TO 3 FEET OF A COMPACTED OVERSIZED STRUCTURAL GRANULAR FILL MATERIAL (I.E. WELL GRADED COARSE TO FINE 'SHOT ROCK' OR COARSER CRUSHER RUN STONE, WITH A MAXIMUM PARTICLE SIZE OF ±6–INCHES) OVER THE STABILIZATION GEOTEXTILE. THE OVERSIZED STRUCTURAL GRANULAR FILL MATERIAL SHALL BE FULLY ENCAPSULATE WITH THE GEOTEXTILE FABRIC. A LAYER OF BI–AXIAL GEOGRID (I.E. TENSAR BX–1100 OR SUITABLE EQUIVALENT) MAY BE INCORPORATED OVER THE STABILIZATION GEOTEXTILE TO FURTHER REINFORCE THE BASE STABILIZATION LAYER, IF DEEMED NECESSARY BY THE GEOTECHNICAL ENGINEER.

ACCESS DRIVE CROSS SECTION DETAIL

NOT TO SCALE

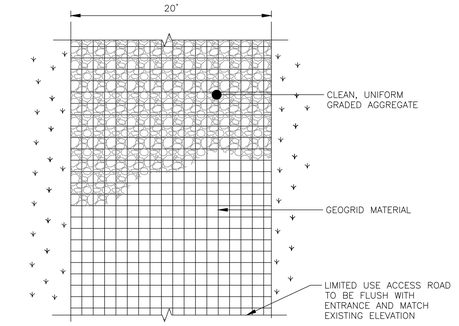


STAGING AREA NOTES:

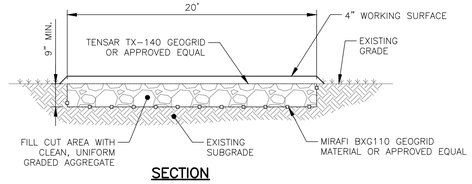
1. STRIP AND STOCKPILE TOPSOIL.
2. INSTALL STAGING AREA.
3. REMOVE STONE WHEN STAGING AREA IS NO LONGER NEEDED.
4. DECOMPACT SUBGRADE SOILS PER NYSDEC SWDM TABLE 5.3 SOIL RESTORATION REQUIREMENTS.
5. REINSTALL STOCKPILED TOPSOIL.
6. SEED AND MULCH THE DISTURBED AREA.

TEMPORARY STAGING AREA

NOT TO SCALE



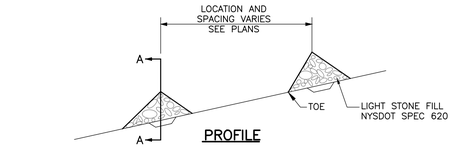
PLAN



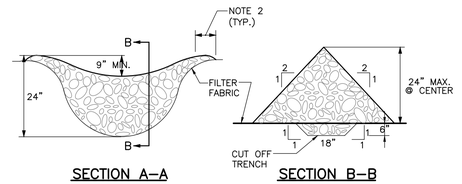
SECTION

PERVIOUS ROAD DETAIL

NOT TO SCALE



PROFILE



SECTION A–A SECTION B–B

APPLICATION NOTES:

1. CHECK DAMS SHALL BE USED TO REDUCE EROSION IN DRAINAGE CHANNEL BY RESTRICTING THE VELOCITY OF FLOW IN THE CHANNEL.
2. MAXIMUM DRAINAGE AREA ABOVE THE CHECK DAM SHALL NOT EXCEED 2–ACRES.

CONSTRUCTION SPECIFICATIONS:

1. STONE SHALL BE PLACED ON FILTER FABRIC FOUNDATION.
2. EXTEND THE STONE A MINIMUM OF 1.5–FEET BEYOND THE DITCH BANKS TO PREVENT CUTTING AROUND THE DAM.
3. PROTECT CHANNEL DOWNSTREAM OF THE LOWEST CHECK DAM FROM SCOUR AND EROSION WITH STONE OR LINER AS APPROPRIATE.
4. ENSURE THAT CHANNEL APPUTENANCES SUCH AS CULVERT ENTRANCES BELOW CHECK DAMS ARE NOT SUBJECT TO DAMAGE OR BLOCKAGE FROM DISPLACED STONE.

MAINTENANCE NOTES:

1. INSPECT CHECK DAMS ONCE A WEEK AND AFTER RAINFALLS. REMOVE SILT FROM BEHIND DAM AS NEEDED TO PERMIT FLOW THROUGH THE DAM AND PREVENT LARGE FLOWS FROM CARRYING SEDIMENT OVER THE DAM.
2. INSTALL STONE LINER IN CHANNEL UPSTREAM OF CHECK DAM IF SIGNIFICANT EROSION OCCURS.
3. REPLACE STONES AS NEEDED TO MAINTAIN THE DESIGN CROSS SECTION OF THE STRUCTURES.
4. UPON STABILIZATION OF THE SITE REMOVE CHECK DAMS SO AS NOT TO BLOCK STORM FLOW OR DRAINAGE.

CHECK DAM DETAIL

NO SCALE

NOT FOR CONSTRUCTION

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2			
1	FILE ISSUE	12/20/2022	

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220871
PROJECT MANAGER
S. MELLOTT
DRAWN BY
D. BRUE
SCALE
AS SHOWN
ISSUE DATE
12/20/2022

STATE OF NEW YORK
STEVEN C. MELLOTT
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LICENSED PROFESSIONAL ENGINEER

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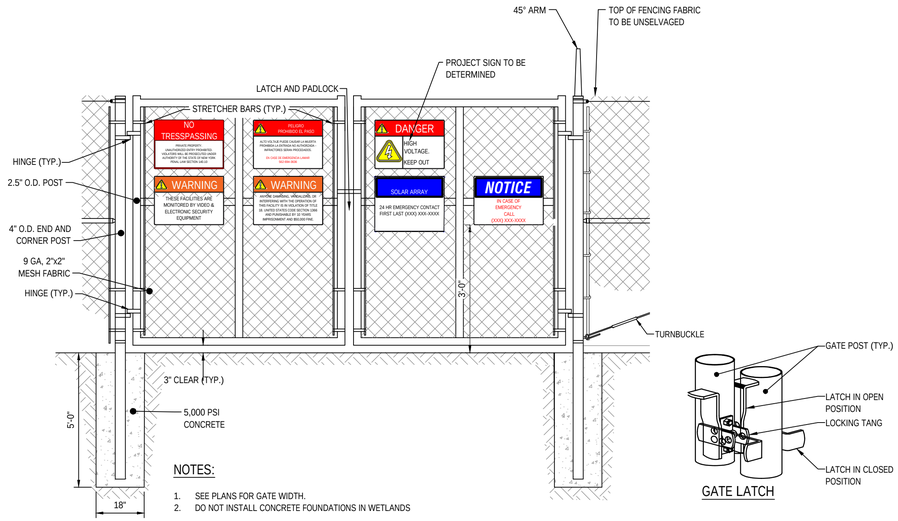
PROJECT
PROPOSED MANLIUS SOLAR
TOWN OF MANLIUS
ONONDAGA COUNTY, NEW YORK

TITLE OF DRAWING
ACCESS ROAD AND EQUIPMENT DETAILS

DRAWING NO.
C-700

SHEET 33 OF 36

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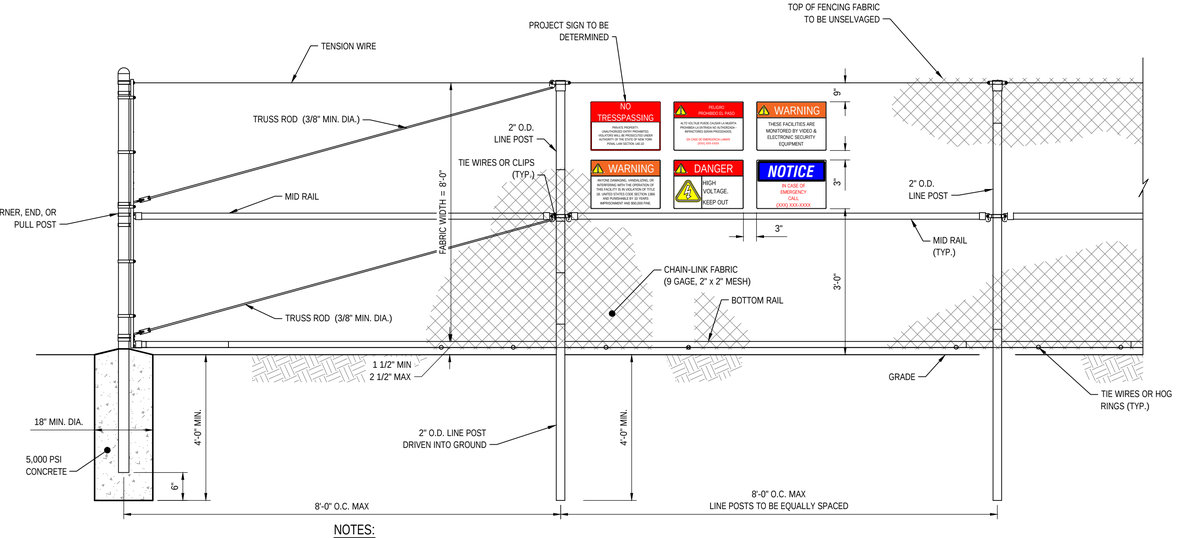


NOTES:

1. SEE PLANS FOR GATE WIDTH.
2. DO NOT INSTALL CONCRETE FOUNDATIONS IN WETLANDS

8' TALL DOUBLE SWING GATE

N.T.S.



NOTES:

1. SIGNS SHALL BE INSTALLED IN GROUPS EVERY 300',
2. DO NOT INSTALL CONCRETE FOUNDATIONS IN WETLANDS

8' HIGH SECURITY FENCE

N.T.S.

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	BY
7			
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4			
3			
2			
1	FENCE LAYOUT UPDATES		

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FA PROJECT NO.
220871

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D. BRUE

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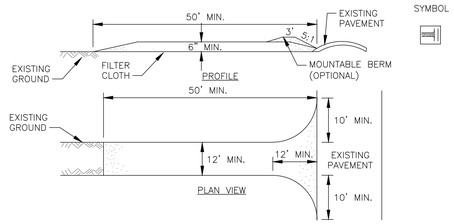
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TITLE OF DRAWING
FENCE DETAILS

DRAWING NO.
C-705

SHEET 34 OF 36

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CONSTRUCTION SPECIFICATIONS

1. STONE SIZE – USE 2" STONE, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH – NOT LESS THAN 50 FEET (EXCEPT ON A SINGLE RESIDENCE LOT WHERE A 30 FOOT MINIMUM LENGTH WOULD APPLY).
3. THICKNESS – NOT LESS THAN SIX (6) INCHES.
4. 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.
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.

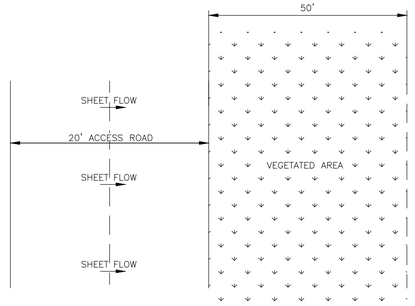
STABILIZED CONSTRUCTION ENTRANCE

NOT TO SCALE

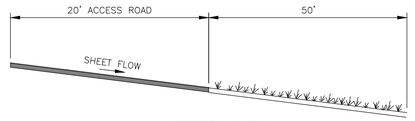
SEEDING/MULCHING

1. FERTILIZER, SUPERPHOSPHATE, AND LIME SHALL BE APPLIED AT RATES RECOMMENDED BY THE TESTING AGENCY AND APPROVED BY THE ENGINEER.
2. PERMANENT SEED SHALL BE SUPPLIED IN THE FOLLOWING PROPORTIONS AND APPLIED AT A RATE OF FIVE POUNDS PER 1,000 SF:
   SEED TYPE (% PROPORTION/% GERMINATION MIN./% PURITY MIN.
   CREEPING FESCUE (50/85/95)
   KENTUCKY BLUEGRASS (40/85/90)
   MANHATTAN PERENNIAL RYE (10/90/95)
3. TEMPORARY SEED SHALL BE SUPPLIED IN THE FOLLOWING PROPORTIONS AND APPLIED AT A RATE OF 100 POUNDS PER ACRE:
   SEED TYPE (% WEIGHT MIN./% GERMINATION MIN.
   WINTER RYE (80/85)
   RED FESCUE – CREEPING (4/80)
   PERENNIAL RYE GRASS (3/90)
   RED CLOVER (3/90)
4. MULCH SHALL BE APPLIED TO AREAS IMMEDIATELY AFTER THEY HAVE BEEN SEEDED. MULCH SHALL CONSIST OF HAY STRAW, HYDRO–MULCH, EROSION CONTROL BLANKETS, OR APPROVED EQUAL.
5. HAY OR STRAW MULCH SHALL BE AIR–FRIED; AND FREE OF UNDESIRABLE SEEDS AND COARSE MATERIALS. MULCH SHALL BE APPLIED AT A MINIMUM RATE OF 1–1/2 TONS/ACRE. MULCH SHALL BE ANCHORED WITH NETTING, PEG/TWINE, OR TRACKING. MULCH SHALL BE ANCHORED WITH NETTING WHEN APPLIED TO SLOPES GREATER THAN 15 PERCENT.

SEEDING AND MULCHING NOTES



PLAN VIEW



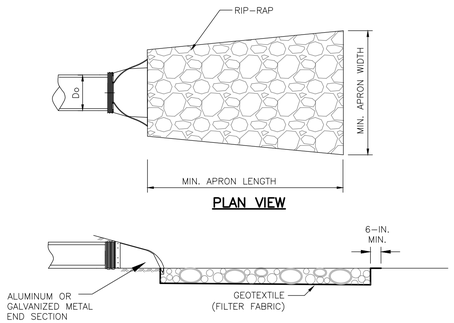
SECTION VIEW

NOTES:

1. ROAD MUST BE GENERALLY PARALLEL TO THE CONTOURS OF THE SLOPE AND GRADED TO MAINTAIN SHEET FLOW TO THE FILTER STRIP.
2. IF FILTER STRIP AREA IS DISTURBED DURING CONSTRUCTION, AREA SHALL BE DECOMPACTED, TOPSOIL SHALL BE INSTALLED AND SEEDED.
3. FILTER STRIP SHALL REMAIN VEGETATED FOR THE LIFE OF THE PROJECT.
4. FILTER STRIP SHALL HAVE A 50' WIDTH.

FILTER STRIP DETAIL

NOT TO SCALE



PLAN VIEW

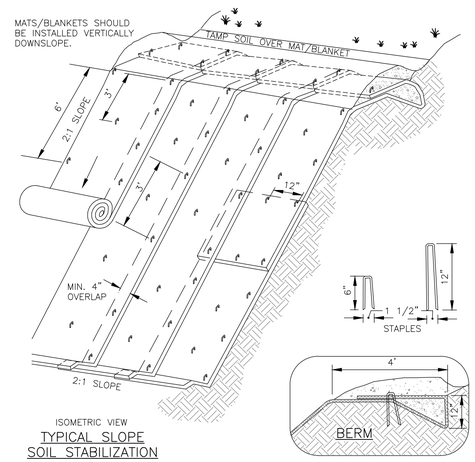
PROFILE VIEW

NOTE: REFER TO TABLE FOR LENGTH, WIDTH, AND DEPTH OF RIP–RAP

OUTLET PROTECTION SIZING			
OUTLET PIPE DIAMETER, Do (IN)	MINIMUM APRON WIDTH (FT)	MINIMUM APRON LENGTH (FT)	DEPTH OF RIP–RAP (IN)
8	8	8	8
12	3	6	12
18	4	8	18
24	6	12	18
30	8	14	24
36	10	16	24
>36	12	18	30

TYPICAL CULVERT ROCK OUTLET PROTECTION

NO SCALE



ISOMETRIC VIEW

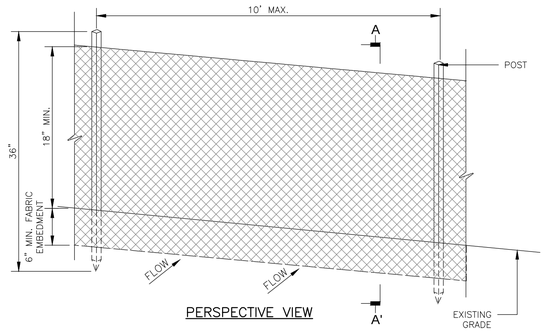
TYPICAL SLOPE SOIL STABILIZATION

NOTES:

1. SLOPE SURFACE SHALL BE FREE OF ROCKS, CLODS, STICKS AND GRASS. MATS/BLANKETS SHALL HAVE GOOD SOIL CONTACT.
2. APPLY PERMANENT SEEDING BEFORE PLACING BLANKETS.
3. LAY BLANKETS LOOSELY AND STAKE OR STAPLE TO MAINTAIN DIRECT CONTACT WITH THE SOIL. DO NOT STRETCH.

EROSION BLANKETS SLOPE INSTALLATION

NOT TO SCALE



PERSPECTIVE VIEW

SECTION A–A'

NOTES:

1. WHEN TWO SECTIONS OF SILT FENCE FABRIC ADJOIN EACH OTHER THEY SHALL BE OVERLAPPED BY 6" AND FOLDED. FILTER CLOTH SHALL BE EITHER FILTER X, MIRAFI 100X, STABLINKA T140N, OR APPROVED EQUAL.
2. PREFABRICATED UNITS SHALL MEET THE MINIMUM REQUIREMENTS SHOWN.
3. MAINTENANCE SHALL BE PERFORMED IMMEDIATELY AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.

SILT FENCE DETAIL

NO SCALE

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	BY
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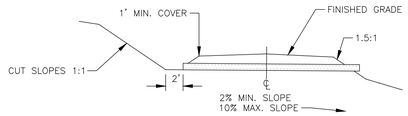
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TOWN OF MANLIUS
ONONDAGA COUNTY, NEW YORK

TITLE OF DRAWING
EROSION AND SEDIMENT CONTROL DETAILS

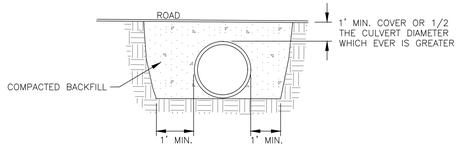
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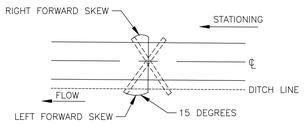


CULVERT SECTION

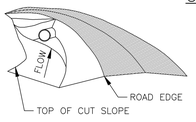


CULVERT – END VIEW

PROFILE VIEW

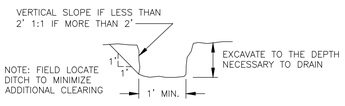


SKEW DETAIL



DITCH BLOCK

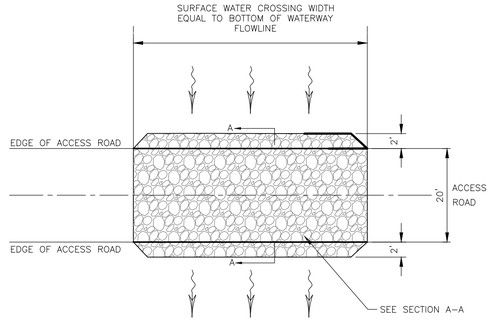
PERSPECTIVE VIEW



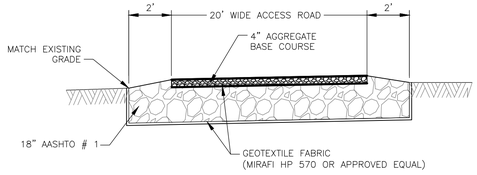
OUTLET DITCH SECTION

ROAD CULVERT

NOT TO SCALE



PLAN



SECTION A–A

NOTES:

1. DRAINAGE CROSSING SHALL BE BE FIELD VERIFIED TO DETERMINE APPROPRIATE USE OF AT GRADE CROSSING OR CULVERT INSTALLATION TO PROVIDE POSITIVE DRAINAGE.
2. CROSS SLOPE SHALL BE LESS THAN DITCH FLOWLINE SLOPE TO REDUCE WATER VELOCITY.
3. DRAINAGE CROSSINGS TO BE SET AT GRADE WITH EXISTING GROUND.

SURFACE WATER CROSSING DETAIL

NOT TO SCALE

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	BY
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5	Per Town Comments		
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DRAINAGE AND LANDSCAPE DETAILS

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C-715

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STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

FOR COMPLIANCE WITH THE SPDES GENERAL PERMIT FOR CONSTRUCTION (GP-0-20-001)

CVE Manlius
Town of Manlius, NY

Onondaga County, New York

Owner/Operator:
CVE North America, Inc.
109 W 27th St. 8th Floor
New York, NY 10001

Published: December 2022

Prepared By:

180 Charlotte Street
Rochester, NY 14607

FA No.: 220871-00

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Appendix A

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Exhibit 5: Contractor Certification(s)
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Exhibit 7: Permanent SMP Maintenance Checklists and Agreement
Exhibit 8: Stormwater Calculations
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Exhibit 10: Miscellaneous Mapping and Documentation
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Exhibit 12: Phasing Plan

References

1) "Manlius Solar" Issued For Permit Civil Plans, Prepared by Fisher Associates PE, LS, LA, DPC, dated December 2022.

I. Introduction

According to Part 1, Section A of the New York State Pollutant Discharge Elimination System (SPDES) General Permit GP-0-20-001, construction activities involving soil disturbances of one or more acres will require the drafting and implementation of a Storm Water Pollution Prevention Plan (SWPPP).

The following SWPPP addresses the proposed storm water mitigation measures and pollution prevention devices in conjunction with the proposed CVE Manlius Project located in the Town of Manlius, Onondaga County, New York. While the totality of the project has not been designed due to the timing of the various firms involved, this SWPPP will address the entirety of the project, but note the components where final design is not complete and subsequent Storm Water Management Practices are not determined.

According to New York State Department of Environmental Conservation (NYSDEC) guidance on Appendix B of the New York SPDES General Permit GP-0-20-001, permanent access roads and staging areas surfaced with impervious cover that are constructed as part of a wind project require a SWPPP that includes both Erosion and Sediment Controls and Post Construction Stormwater Management Practices in order to be in compliance for storm water discharges associated with construction activity.

The SWPPP includes the following:

a.) Stormwater Management Plans and Details
b.) Erosion and Sedimentation Control Plans and Details
c.) Notice of Intent
d.) General Permit
e.) Notice of Termination
f.) All records of inspections and activities which are created during the course of the project
g.) Other documents as may be included by reference to this SWPPP.

Changes, modifications, revisions, additions, or deletions shall become part of the SWPPP as they occur.

This SWPPP was created with the guidance of the New York State Storm Water Management Design Manual (NYS SMDM), January 2015, as well as consultation with personnel at the NYSDEC, and it documents the ability of the pollution prevention devices to comply with the SPDES requirements. The SWPPP will terminate when all disturbed areas are stabilized, permanent erosion and sedimentation controls installed, temporary erosion and sedimentation controls removed, all construction activities have ceased, and a completed Notice of Termination has been filed.

The general contractor and all sub-contractors involved in construction activities that disturb soil or implement pollution prevention controls must sign the Contractor Certification Forms. The certification forms are included in *Exhibit 5*.

II. Background Information

A. Project Contact Information

Owner/Operator: CVE North America, Inc.
109 W 27th St., 8th Floor
New York, NY 10001

B. Project Description

The project area is located in the Town of Manlius, Onondaga County, NY. A location map of the project area is included in *Exhibit 1*. The project involves the construction of a new solar array. The existing site consists of agricultural lands. Proposed improvements include the installation of the solar arrays, and associated electrical equipment, gravel access roads, and perimeter fencing.

Access roads and equipment pads will be treated by porous gravel and filter strips. These features will allow stormwater runoff to infiltrate prior to leaving the project site.

The project is located north of East Seneca Turnpike and west of the Fayetteville-Manlius Central School District in the Town of Manlius, Onondaga County, New York. The parcel's centroid Universal Transverse Mercator (UTM) easting was determined to be 421164.583 (x) and its northing to be 4762644.864 (y) from the NYS Interactive Stormwater map (*Exhibit 10*).

III. Stormwater Management Planning

As noted in Chapter 3 of the 2015 NYS SMDM, planners and designers must use the following six-step process in stormwater management planning:

1. Site planning,
2. Determine Water Quality Treatment Volume (WQv),
3. Apply Runoff Reduction Techniques and Standard Stormwater Management Practices (SMPs) with Runoff Reduction Volume (RRv) Capacity to Reduce Total WQv,
4. Determine the minimum RRv required,
5. Apply Standard SMPs to Address Remaining WQv
6. Apply Volume and Peak Rate Control Practices if Still Needed to Meet Requirements.

According to Chapter 4 of the NYS SMMDM, the SWPPP must demonstrate that all green infrastructure planning and design options are evaluated to meet the runoff reduction requirement and provide documentation if any components of the approach are not technically feasible. Thus, the following sections of this report address the above requirements with respect to site constraints and requirements for development of the project.

A. Step 1: Site Planning

In accordance with Chapter 3 of the SMDM, wetlands, waterways, buffers, floodplains, forested, critical areas, topography, soils, and bedrock or significant geology features have been mapped on the Civil Design Plans developed by Fisher Associates as referenced in this document.

1. Preservation of Natural Resources

- Preservation of Undisturbed Areas – Delineate and place into permanent conservation easement undisturbed forests, native vegetated areas, riparian corridors, wetlands, and natural terrain.
  - Access roads and solar panels have been located on land that has been previously disturbed.
- Preservation of Buffers – Define, delineate and place in permanent conservation easement naturally vegetated buffers along perennial streams, rivers, shorelines and wetlands.
  - There are no streams, rivers, etc. at the project site that can be placed in a permanent conservation easement.
- Reduction of Clearing and Grading – Limit clearing and grading to the minimum amount needed for roads, driveways, foundation, utilities and stormwater management facilities.
  - The limit of disturbance is clearly shown on the construction documents and has been limited to include the minimum area necessary for the construction of the project. No work outside of these limits shall take place.

- Locating Development in Less Sensitive Areas – Avoid sensitive resource areas such as floodplain, steep slopes, erodible soils, wetlands, mature forests and critical habitats by locating development to fit the terrain in areas that will create the least impact.

  - Slope – The project has been planned to avoid existing steep slopes as much as practicable. In areas where it is not feasible to avoid steep slopes, appropriate erosion and sediment control measures will be utilized to stabilize the disturbed areas.

  - Soil Erodibility - There are soils that are susceptible to erosion within the project limits. Appropriate erosion and sediment control measures will be used to minimalize the effects of construction.

  - Sinkholes/Karst – According to the U.S. Geological Survey Open-File Report 2004-1352, Caves and Karst in the U.S. National Park Service, AGI Karst Map of the U.S., this project is located within a Karst Area. In accordance with the NYSDEC SMDM, large infiltrations basins and deep, concentrated recharge to the ground will be avoided.

  - Depth to Bedrock – According to the Natural Resources Conservation Service (NRCS) Web Soil Survey 3.0, the depth to bedrock rates from 0" to 80" deep.

  - Water Table - According to the NRCS Web Soil Survey 3.0, the depth to the groundwater table ranges from being 19" to 80" across the site.

  - Historic and Archeological Resources – The potential historical and archaeological impacts of the proposed project will be submitted accordingly under the State Environmental Quality Review Act (SEQRA).

  - Watershed - This project is located within the Onedia Watershed (USGS Hydrologic Unit Catalog (HUC) 04140202) as shown on the watershed profile included as part of *Exhibit 10*.

  - Impaired Waters - The project does not directly discharge to a watercourse listed as a 303(d) stream according to Appendix E of the General Permit.

  - Total Maximum Daily Load Water bodies - The project does not involve a watercourse that is on the list of waterbodies in the watershed having TMDL limits (see Appendix E list of the General Permit).

  - Municipal Separate Storm Sewer System (MS4) - The project is located within the Town of Manlius, which is within a regulated MS4.

  - Aquifers – The Project is not located within a United States Environmental Protection Agency (EPA) Sole Source Aquifer. In addition, the project is not located over a Primary Aquifer according to the NYS Primary Aquifers Map.

  - Wetlands – There are freshwater emergent and freshwater forested/shrub federal wetlands within a small portion of the northern end of the site, according to the National Wetland Inventory (NWI) map included as part of *Exhibit 10.* There are not any NYSDEC jurisdictional features located within the limits of disturbance. A copy of the NYSDEC Environmental

Resource Map is also included as part of *Exhibit 10.* The wetlands have been avoided as much as practicable.

- Floodplain – The location of one of the solar array and access roads are within the mapped floodplain Zone AE according to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM). The floodplain maps are included as part of *Exhibit 10*.

- Stormwater Hotspot - This project is not classified as a Stormwater Hotspot, as it does not involve any land uses or activities listed in Table 4.3 of the SMDM.

- Open Space Design - Use clustering, conservation design or open space design to reduce impervious cover, preserve more open space and protect water resources.

  - The amount of new impervious surfaces has been kept to the minimal amount necessary to accommodate the construction and delivery traffic to and from the project.

- Soil Restoration – Restore the original properties and porosity of the soil by deep till and amendment with compost to reduce the generation of runoff and enhance the runoff reduction performance of practices such as downspout disconnection, grass channels, filter strips, and tree clusters.

  - All disturbed areas that are to be permanently vegetated shall have soil restoration applied in accordance with Table 5.3 of the NYSDEC SMDM and the NYSDEC Deep-Ripping and Decompaction Manual.

2. Reduction of Impervious Cover

- Roadway Reduction – Minimize roadway widths and lengths to reduce site impervious area.

  - All proposed gravel access roads will be 20 feet wide, which is the minimum access width for construction vehicles and fire access.

- Sidewalk Reduction – Minimize sidewalk lengths and widths to reduce site impervious area.

  - There are no sidewalks as part of this project.

- Driveway Reduction – Minimize driveway lengths and widths to reduce site impervious area.

  - Driveways for the solar arrays have been designed to minimize driveway length and width to the minimum extent practicable.

- Cul-de-sac Reduction - Minimize the number of cul-de-sacs and incorporate landscaped areas to reduce their impervious area.

  - There are no cul-de-sacs as a part of this project.

- Building Footprint Reduction – Reduce the impervious footprint of residences and commercial buildings by using alternate or taller buildings while maintaining the same floor to area ratio.

  - There are no buildings or structures as a part of this project.

- Parking Reduction – Reduce imperviousness on parking lots by eliminating unneeded spaces, providing compact car spaces and efficient parking lanes, minimizing stall dimension, using porous pavement surfaces in overflow parking areas, and using multi-storied parking decks where appropriate.

  - There are no proposed parking areas as a part of this project.

B. Step 2: Determine Water Quality Treatment Volume (WQv)

1. Soils

Based on The National Cooperative Soil Survey (NCSS) Web Soil Survey 3.1 (WSS), the site contains Hydrologic Soil Groups "HSG" B, C, and D soils. A copy of the soils map is included as part of *Exhibit 10*.

2. Proposed Surface Drainage & Covers

The project includes the construction of a new solar array located throughout the project limits. In addition to the arrays, the project will also include access roads, gravel aprons for electrical components, underground electrical systems, and overhead electric lines. The following describes the proposed project components and the stormwater management practice utilized:

- Solar Arrays – The solar panels are constructed on post systems and elevated off the ground surface. The panels are spaced apart and installed along the contour so that rainwater can flow off the down gradient side of the panel and continue as sheet flow down slope across the ground surface. The ground surface below the panels consists of a well-established vegetative cover. This eliminates the requirements to consider the solar panels as impervious, as the construction of the solar panels will not alter the hydrology from pre-to-post development conditions.

- Access Roads and Culverts - Approximately 7,480 feet of gravel access road are required for installation and maintenance of the solar arrays. The access roads consist of a permanent 20-foot wide road to accommodate construction vehicles, fire equipment, and operation and maintenance activities during the life of the project. The intent is to grade access road at existing grade level to the greatest extent practicable in order to minimize disturbances. Runoff from permanent access roads will be treated by porous pavement or filter strips.

The following table summarizes the total site area, existing impervious area, and proposed impervious area resulting from this project:

Estimated Project Areas – Table 1			
Location	**Total Site Area (ac)**		**Proposed Disturbance Area (ac)**
Overall Site	110.40 (+/-)		90.31 (+/-)
Existing Conditions			
	Impervious Area (ac)	**Pervious Area (ac)**	**Total Area (ac)**
Existing	0.00	110.40	110.40
Proposed Conditions			
	Impervious Area (ac)	**Pervious Area (ac)**	**Total Area (ac)**
Proposed	2.51	107.89	110.40
Existing Versus Proposed Comparison			
	Impervious Area (ac)		**Pervious Area (ac)**
Total Change	+2.51		-2.51

Refer to the project drawings, referenced in the Table of Contents, for further information.

1. Stormwater Quality

According to the guidance from the NYSDEC, runoff reduction and water quality volume for the linear access roads can be achieved using porous gravel and filter strips. No other runoff reduction or water quality practice is proposed for these areas. The calculations that were used to determine the required WQv are included as part of *Exhibit 8*. The following is a summary of the proposed water quality volume for the projects:

Proposed Water Quality Summary - Table 2		
Water Quality Results		
Location	**Required Water Quality Volume (cf)**	**Provided Water Quality Volume (cf)**
100% of New Impervious	11,932	-
Porous Pavement	-	See Table 3
Filter Strips	-	See Table 3
Porous Pavement	-	See Table 3
Filter Strips	-	See Table 3
Porous Pavement	-	See Table 3
Filter Strips	-	See Table 3
Porous Pavement	-	See Table 3
Filter Strips	-	See Table 3

B. Step 3: Runoff Reduction by Applying Green Infrastructure Techniques and Standard SMPs with Runoff Reduction Volume (RRv) Capacity

According to Chapter 4 of the NYS SMDM, Runoff Reduction shall be achieved by infiltration, groundwater recharge, reuse, recycle, evaporation/evapotranspiration to replicate pre-development hydrology. This requirement can be accomplished by application of on-site green infrastructure practices, standard stormwater management practices with runoff reduction capacity, and good operation and maintenance.

The table below summarizes how the WQv is reduced by Runoff Reduction. After Runoff Reduction, the projects achieve 100% of the required WQv for the site.

Proposed Runoff Reduction Summary - Table 3

Runoff Reduction Results

Location	Required Water Quality Volume (cf)	Reduced Water Quality Volume (cf)
100% of New Impervious	11,932	-
Porous Pavement	-	448
Filter Strips	-	1,897
Porous Pavement	-	793
Filter Strips	-	1,414
Porous Pavement	-	552
Filter Strips	-	966
Porous Pavement	-	1,483
Filter Strips	-	4,830

Below are the RRv practices available for consideration. Each item has been assessed for practicality and feasibility.

1. Conservation of Natural Areas

   There are no forests, native vegetated areas, riparian corridors, wetlands, or other natural terrain within the project area that can be placed within a permanent conservation easement.

2. Sheetflow to Riparian Buffers or Filter Strips

   A minimum of 50 feet of decompacted soil along a portion of the access roads will be allowed to revegetate to act as filter strips. The filter strips will not be located on steep slopes. Vegetation is to be maintained between solar array rows to act as a riparian buffer for sheetflow across the solar array.

3. Vegetated Open Swales

   Existing drainage conveyance swales will remain as much as practicable. The access roads will be placed at existing grade and no additional swales are proposed.

4. Tree Planting/Tree Box

   Tree plantings are not proposed as a part of these projects. The existing trees on the site will remain to the best extent as practicable and will be protected through construction.

5. Disconnection of Rooftop Runoff

   There are no buildings or structures proposed for these projects.

6. Disconnection of Non-Rooftop Runoff

   Disconnections can be utilized on the site where the area receiving runoff is equal to or greater than the disconnected surface. Filter socks may be utilized to filter sheet flow downslope. Construction vehicles should avoid compacting areas to be used for disconnection during installation of the panels. Groundcover vegetation is to be maintained and should be protected from future compaction by planting shrubs or trees around the perimeter.

7. Stream Daylighting

   There are no existing enclosed streams that can be daylighted within the project limits.

8. Rain Garden

   Rain gardens are not needed for these projects because the contributing drainage areas are treated by other methods.

9. Green Roof

   Green roof practices are not feasible for any building or structure in these projects.

10. Stormwater Planters

    There are no locations throughout either project where stormwater planters can be utilized.

11. Rain Tanks/Cisterns

    Because there is not a planned use for collected rainwater at this site, rain tanks/cisterns are not technically feasible.

12. Porous Pavement

    A portion of the access roads will be constructed utilizing a porous gravel section to meet the runoff reduction, water quality, and water quantity requirements of the General Permit.

13. Standard SMPs with RRv Capacity

    Additional SMP’s are not required for these projects.

C. Step 4: Apply Standard Stormwater Management Practices to Address Remaining Water Quality Volume

The intent of the projects is to only provide water quality and runoff reduction practices on the site. The access roads and equipment areas will not have permanent stormwater quantity practices installed other than porous gravel and filter strips as previously mentioned. Both of these Green Infrastructure practices are adequately capable to allow stormwater runoff to infiltrate prior to leaving the project sites.

D. Step 5: Apply Volume and Peak Rate Control Practices if Still Needed to Meet Requirements

1. Existing Runoff

HydroCAD version 10.00, which utilizes the Soil Conservation Service (SCS) method, was used to model the existing conditions for the individual sites under the National Weather Service (NWS) 24-hour 1-year, 10-year, and 100-year frequency peak flow, in accordance with the standards set forth in the NYS SMDM. The resulting flow information is included as part of *Exhibit 8*. The following is a summary of the results:

Existing Stormwater Quantity Results – Table 4

Location	1-Year Peak Flow (cfs)	10-Year Peak Flow (cfs)	100-Year Peak Flow (cfs)
Drainage Area 1	0.44	2.46	7.17
Drainage Area 2	0.39	1.30	3.17
Drainage Area 3	0.73	3.42	9.46
Drainage Area 4	1.26	5.35	14.52
Drainage Area 5	0.42	3.78	13.63
Drainage Area 6	0.54	2.16	5.65
Drainage Area 7	0.24	2.83	11.13
Drainage Area 8	0.72	2.53	6.32
Drainage Area 9	1.47	4.91	12.03
Drainage Area 10	2.58	7.88	18.42
Drainage Area 11	3.10	11.59	29.78
Drainage Area 12	0.61	2.28	5.86
Drainage Area 13	1.93	7.20	18.51
Drainage Area 14	0.87	2.91	7.05
Drainage Area 15	2.66	9.40	23.53
Drainage Area 16	1.89	6.35	15.54
Drainage Area 17	1.16	4.07	10.19
Drainage Area 18	1.48	5.53	14.19
Drainage Area 19	1.68	5.33	12.64
Drainage Area 20	1.19	3.75	8.91
Drainage Area 21	2.30	7.34	17.50
Drainage Area 22	0.86	2.57	5.94
Drainage Area 23	0.53	1.49	3.33
Drainage Area 24	1.04	2.80	6.14
Drainage Area 25	0.69	2.71	7.15
Drainage Area 26	1.03	2.61	5.54
Drainage Area 27	1.32	3.42	7.31
Drainage Area 28	0.72	2.30	5.51

2. Proposed Runoff

HydroCAD version 10.00, which utilizes the SCS method, was used to model the proposed conditions under the National Weather Service (NWS) 24-hour 1-year, 10-year, and 100-year frequency peak

flow, in accordance with the standards set forth in the NYS SMDM. The resulting flow information is included as part of *Exhibit 8*. The following is a summary of the results:

Proposed Stormwater Quantity Results – Table 5

Location	1-Year Peak Flow (cfs) Change from Existing	10-Year Peak Flow (cfs) Change From Existing	100-Year Peak Flow (cfs) Change From Existing
Drainage Area 1	0.32 -0.12	1.81 -0.65	5.32 -1.85
Drainage Area 2	0.39 0.00	1.30 0.00	3.16 -0.01
Drainage Area 3	0.73 0.00	3.41 -0.01	9.44 -0.02
Drainage Area 4	1.22 -0.04	5.19 -0.16	14.08 -0.44
Drainage Area 5	0.41 -0.01	3.71 -0.07	13.39 -0.24
Drainage Area 6	0.54 0.00	2.16 0.00	5.66 +0.01
Drainage Area 7	0.24 0.00	2.81 -0.02	11.08 -0.05
Drainage Area 8	0.72 0.00	2.53 0.00	6.32 0.00
Drainage Area 9	1.47 0.00	4.91 0.00	12.03 0.00
Drainage Area 10	0.86 -1.62	4.57 -3.31	13.57 -4.85
Drainage Area 11	3.05 -0.05	11.40 -0.19	29.30 -0.48
Drainage Area 12	0.67 +0.06	2.35 +0.07	5.88 +0.02
Drainage Area 13	1.76 -0.17	6.57 -0.63	16.90 -1.61
Drainage Area 14	0.86 -0.01	2.88 -0.03	6.98 -0.07
Drainage Area 15	2.92 +0.26	9.78 +0.38	23.91 +0.38
Drainage Area 16	1.89 0.00	6.35 0.00	15.54 0.00
Drainage Area 17	1.08 -0.08	3.80 -0.27	9.51 -0.68
Drainage Area 18	1.48 0.00	5.54 +0.01	14.21 +0.02
Drainage Area 19	1.68 0.00	5.33 0.00	12.64 0.00
Drainage Area 20	1.13 -0.06	3.56 -0.19	8.45 -0.46
Drainage Area 21	2.29 -0.01	7.29 -0.05	17.38 -0.12
Drainage Area 22	0.80 -0.06	2.50 -0.07	5.66 -0.28
Drainage Area 23	0.40 -0.13	1.29 -0.20	3.06 -0.27
Drainage Area 24	0.96 -0.08	2.69 -0.11	6.02 -0.12
Drainage Area 25	0.61 -0.08	2.55 -0.16	6.91 -0.24

Drainage Area 26	0.87 -0.16	2.29 -0.32	4.96 -0.58
Drainage Area 27	1.21 -0.11	3.14 -0.28	6.72 -0.59
Drainage Area 28	0.58 -0.14	1.95 -0.35	4.77 -0.74

Porous pavement will be used as the stormwater management practice for both water quality and water quantity. The porous gravel was modeled as a permeable surface in HydroCAD for the proposed conditions. The proposed stormwater calculations below are a representation of the contribution that the porous pavement will have on the proposed stormwater quantity results.

Proposed Porous Gravel Stormwater Quantity Results – Table 6

Location	1-Year Peak Flow (cfs)	10-Year Peak Flow (cfs)	100-Year Peak Flow (cfs)
Porous Pavement – West Road	0.30	1.19	3.09

IV. Pollution Prevention Measures

The primary goal of pollution prevention efforts during project construction is to control soil and pollutants that originate on the site and prevent them from flowing to surface waters. The purpose of this SWPPP is to provide guidelines for achieving that goal. A successful pollution prevention program also relies upon careful inspection and adjustments during the construction process in order to enhance its effectiveness. Prior to the commencement of construction of the development, a Notice of Intent (NOI) shall be filed with the NYSDEC to obtain coverage under SPDES General Permit GP-0-20-001 for storm water discharges from construction activity. The NOI shall be signed by the owner/operator and SWPPP Preparer and submitted to the NYSDEC.

Note that temporary stabilization of the project shall be employed to the fullest extent practical prior to freezing conditions. This shall include temporary seeding and establishment of vegetation wherever possible or other methods approved by the Qualified Professional, such as rolled erosion control products. If this is achieved, winter shutdown observations can be limited to one time per 30 calendar days.

A. Erosion and Sedimentation Control

The areas of disturbance are to be minimized as much as practical and limited to the areas depicted on the project drawings. Permission from the Regional NYSDEC Office is required if it is deemed necessary to disturb more than 5 acres at any one time. The project will need to disturb more than 5 acres at any one time and a draft request letter have been included in *Exhibit 12.* The erosion and sediment control plan is included within the referenced construction plans.

A summary of the construction sequencing for erosion control features is as follows:

a. Evaluate, mark and protect, with appropriate erosion control measures, important trees, associated rooting zones, and other existing site features designated to remain.

b. Construct stabilized construction entrances as depicted on the plans to capture mud and debris from construction vehicles before they enter the public highway.
- Stabilize bare areas (entrances, construction routes, equipment areas) immediately as work takes place. Top these areas with gravel or maintain vegetative cover.
- Sediment tracked onto public streets shall be removed or cleaned on a daily basis and as necessary throughout the day.

c. Construct temporary erosion and sediment control measures (silt fencing, tree protection, etc.).
- Silt fence and tree protection material and installation must comply with the standard drawing and specifications.
- Install silt fence based on appropriate spacing intervals. Decrease this interval as the slope increases. The area below the silt fence should be undisturbed ground.

d. Remove and stockpile topsoil and vegetation from areas to be impacted by the construction activities. No organic debris shall be buried on site. The topsoil stockpile should be stabilized by seed, mulch, or other appropriate measures as soon as possible.

e. Commence construction activities.

f. For portions of the site that directly discharge to the 303(d) stream and where soil disturbance activities have 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.

- For the remainder of the site, stabilization measures must be initiated by the end of the next business day and completed within fourteen (14) days from the date the most recent soil disturbance activity ceased.
- If the site is snow covered and/or frozen then stabilization measures shall be implemented as soon as practicable.
- Acknowledgement that where soil disturbance activity has been temporarily or permanently ceased, temporary and/or permanent soil stabilization measures, in conformance with the New York State Standards and Specifications for Erosion and Sediment Control, shall be installed within seven (7) days from the date the soil disturbance activity ceased.

B. Other Pollution Prevention Controls

1. Dust and Mud Control

Construction traffic must enter and exit the site at the stabilized construction entrances as depicted on the plan sheets and in accordance with the New York State Department of Environmental Conservation (NYSDEC) Standards and Specifications for Erosion and Sediment Control (SSESC). The purpose is to trap dust and mud that would otherwise be carried off-site by construction traffic. Water trucks or other dust control agents may be used as needed during construction to reduce dust generated on the site. After construction, the site will be stabilized (as described elsewhere), which will reduce the potential for dust generation.

2. Solid Waste Disposal

No solid materials, including building materials, are allowed to be discharged from the site with storm water. All solid waste, including disposable materials incidental to the major construction activities, must be collected and placed in containers. The containers will be emptied as necessary by a contract trash disposal service and hauled away from the site. Containers shall remain closed at all times. Substances that have the potential for pollution of surface and/or groundwater must be controlled by whatever means necessary in order to ensure that they do not discharge from the site.

3. Sanitary Facilities

All personnel involved with construction activities must comply with state and local sanitary or septic system regulations. Temporary sanitary facilities shall be provided at the site throughout the construction phase. They must be utilized by all construction personnel and shall be serviced by a commercial operator.

4. Water Source

   Non-storm water components of site discharge must be clean water. Water used for construction, which discharges from the site must originate from a public water supply or private well approved by the State Health Department. Water used for construction that does not originate from an approved public supply must not discharge from the site.

5. Concrete Waste from Concrete Ready-Mix Trucks

   Discharge of excess or waste concrete and/or wash water from concrete trucks will be allowed on the construction site, but only in specifically designated diked areas prepared to prevent contact between the concrete and/or wash water and storm water that will be discharged from the site. Alternatively, waste concrete can be placed into forms to make riprap or other useful concrete products. The cured residue from the concrete washout diked areas shall be disposed in accordance with applicable state and federal regulations.

6. Fuel Tanks

   Temporary on-site fuel tanks for construction vehicles shall meet all state and federal regulations. Tanks shall have approved spill containment with the capacity required by the applicable regulations. The tank shall be in sound condition free of rust or other damage, which might compromise containment. Hoses, valves, fittings, caps, filler nozzles, and associated hardware shall be maintained in proper working condition at all times. Refueling shall take place 100 foot minimum outside of natural resources areas.

7. Hazardous Waste Management and Spill Reporting

   Any hazardous or potentially hazardous waste that is brought onto the construction site will be handled properly in order to reduce the potential for storm water pollution. All materials used on this construction site will be properly stored, handled and dispensed following any applicable label directions. Material Safety Data Sheets (MSDS) information will be kept on site for any and all applicable materials.

   In the event of an accidental spill immediate action shall be taken by the General Contractor to contain and remove the spilled material. All hazardous materials shall be disposed of by the Contractor in the manner specified by local, state, and federal regulations and by the manufacturer of such products. As soon as possible, the spill shall be reported to the appropriate state and local agencies. As required under the provisions of the Clean Water Act, any spill or discharge entering the waters of the United States shall be properly reported.

   Any spills of hazardous materials in quantities in excess of Reportable Quantities as defined by EPA or the State Agency regulations, shall be immediately reported to the EPA National Response Center (1-800-424-8802) and the NYSDEC Division of Environmental Remediation (NYS Spill Hotline, 1-800-457-7362). The reportable quantity for petroleum products is 5-gal. Refer to Exhibit 1.1-1 of the NYSDEC Division of Environmental Remediation Technical Field Guidance Spill Reporting and Initial Notification Requirements for hazardous materials spill reportable quantities and procedures.

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

a. 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.) shall be stored in a secure location, under cover, when not in use.
b. The minimum practical quantity of all such materials shall be kept on the job site and scheduled for delivery as close to time of use as practical.
c. A spill control and containment kit (containing for example, absorbents, such as kitty litter or sawdust, acid neutralizing agents, brooms, dust pans, mops, rags, gloves, goggles, plastic and metal trash containers, etc.) shall be provided at the storage site.
d. All of the product in a container shall be used before the container is disposed of. All such containers shall be triple rinsed, with water prior to disposal. The rinse water used in these containers shall be disposed of in a manner in compliance with state and federal regulations and shall not be allowed to mix with storm water discharges.
e. All products shall be stored in and used from the original container with the original product label.
f. All products shall be used in strict compliance with instructions on the product label.
g. The disposal of excess or used products shall be in strict compliance with instructions on the product label.

8. Allowable Non-Stormwater Discharges

The following non-stormwater discharges are allowed as indicated in this SWPPP:

- Vehicle wash water if no detergents are used
- Firefighting activities
- Fire hydrant flushing, with chlorine residuals of 0.2-ppm or less
- Potable water sources including water line flushing, with chlorine residuals of 0.2-ppm or less
- Uncontaminated groundwater or spring water (with geotechnical evaluation only)
- Building wash water if no detergents are used
- Water used to control dust
- Uncontaminated excavation dewatering (with geotechnical evaluation only)

V. Construction Phasing and Sequence of Activities

A. Phasing

In accordance with the GP-0-20-001, the Owner/Operator shall not disturb greater than five (5) acres of soil at any one time without prior written authorization from the Department or MS4 as applicable.

It is anticipated that more than 5 acres will be disturbed at one time. The request for NYSDEC approval is included in Exhibit 2 that shall be submitted for authorization prior to work beginning. Note that the GP-0-20-001 requires construction observations to occur two times per week if the 5 acre threshold is exceeded.

B. Sequence of Construction Activities

In general, the proposed construction sequence shall consist of installation of all perimeter E&S Control and Green Practices prior to starting the tasks listed below, unless indicated otherwise on the construction documents. In addition, all disturbed areas are to be vegetated prior to commencement of subsequent tasks.

1. Box out, Compact Subgrade, and Install Access Roads;
2. Construct solar panel arrays;
3. Install Underground Electrical Collection System;
4. Remove Temporary E&S devices after final stabilization of each area is declared by the Qualified Professional;
5. Restore any disturbed area due to removal of temporary measures.

All cleared areas are to be reclaimed and allowed to revegetate. Areas adjacent to impervious areas will remain as permanent filter strips to provide runoff reduction and water quality volume. Refer to the information listed below for a detailed description of the proposed construction sequencing for each of the various project components.

1. Access Roads - The items below provide a generalized construction sequence for the control of erosion and sedimentation during the construction of the access roadways.
    - Install stabilized construction entrance at entrances from Public roads.
    - Install erosion and sediment controls at the locations shown on the construction drawings.
    - Complete clearing and grubbing.
    - In agricultural areas, remove topsoil for the width of the access roadways.
    - Place geotextile (as determined by design) and place gravel over the geotextile.
    - Use the roadways to deliver equipment and materials to the solar sites.
    - Stabilize according to temporary/permanent stabilization methods.
    - After the access roadways have been stabilized, remove all erosion and sediment control structures.

2. Underground Electric System and Overhead Electric Lines- The following provides a generalized construction sequence of the construction and implementation of the erosion and sediment controls during construction of the collection system:

- Install the erosion and sediment controls around perimeter of areas to be disturbed.
- Complete clearing along the cable route.
- Install and backfill trench in one operation.
- Replace topsoil and place seed and mulch.
- After the site is stabilized remove erosion and sediment controls.

VI. Construction Observation & Maintenance Procedures

A. Inspection Schedule

The Owner/Operator shall have a Qualified Professional conduct an assessment of the site prior to the commencement of any non-erosion and sediment control construction work and report that the appropriate erosion and sediment controls described herein have been installed adequately for construction of the project to begin.

Construction observations shall be completed upon commencement of disturbance at least one time every seven days or two times every seven days in the event that disturbances are 5 acres or more at any one time until final stabilization of the site is achieved. Construction observation reports shall be performed by the Qualified Inspector after each observation and filed with the SWPPP. A digital photograph, with date stamp, that clearly show the condition of all practices that have been identified as needing corrective actions shall be included with the inspection report. In addition, the Qualified Inspector shall take a digital photograph, with date stamp, that clearly shows the condition of the practice after the corrective action has been completed. A copy of each required report form is included as part of *Exhibit 6*.

B. Observation and Maintenance Practices

The following observation and maintenance practices shall be used to maintain the proposed erosion and sediment controls and all post construction stormwater management practices identified herein throughout construction:

1. Construction Entrances are to be inspected for evidence of off-site sediment tracking where vehicles exit the project area. Each contractor and subcontractor is responsible for maintaining the construction entrance and other controls as previously described.
2. Material storage areas that are exposed to precipitation are to be inspected. Offsite storage areas for materials used exclusively for the project are to be included in the inspections and inspections reports are to be completed.
3. Swales shall be observed for breaches and they shall be repaired when found.
4. Check Dams shall be inspected for depth of sediment and built-up sediment shall be removed prior to it exceeding a depth of one-third the height of the dam.
5. Temporary Sediment Basins/Sediment Traps, if required, shall be inspected for depth of sediment and built-up sediment shall be removed prior to it exceeding a depth greater than 50-percent of the basin, as measured at the outlet of the structure. Vegetation within the structure shall be limited to a maximum height of 18-inches. The outlet device shall be cleaned when drawdown time exceeds 36 hours and repaired as necessary. Note that these devices shall be used for snow storage, if required, during construction.
6. All sediment and debris removed from a practice shall be disposed of in accordance with all applicable waste disposal regulations.
7. Temporary and Permanent Seeding, as well as Plantings shall be inspected for washouts, bare spots, and healthy growth. Washout areas shall be stabilized by jute-mesh, sod, or other approved energy dissipation means. Bare spots and unhealthy growth areas shall be re-established, as required.

8. All measures shall be maintained in good working order and in accordance with the latest edition of the NYSSESC. If a repair is necessary, it shall be initiated within 24 hours of report and completed within 48-hours thereafter.

C. Inspection Reporting

Construction observation reports shall be performed by a Qualified Inspector and review by a Qualified Professional after each observation and filed with the SWPPP.

Additional forms, which can be found on the NYS DEC webpage, such as the "NYS DEC Inspection Checklist", should be reviewed by the Owner/Operator or a duly authorized representative, prior to allowing commencement of construction. Note that a duly authorized representative must have written authorization from the Owner/Operator to sign documents and that a copy of the authorization must be submitted to the NYS DEC. The forms shall be posted on-site in a publicly-accessible location and made available to agency staff upon request.

D. Site Stabilization Inspections

The site shall be cleaned of all construction debris prior to demobilization. Temporary erosion and sediment control practices shall be removed when soils are stabilized, as determined by the Qualified Professional. After the Qualified Professional declares final stabilization of the site and reports that all temporary controls have been removed, the NOT shall be signed by the Owner/Operator and filed with the NYS DEC. Note that all permanent stormwater management structures, including required structures due to modifications of the SWPPP, shall be listed on the NOT.

E. Modifications/Revisions

Any necessary modifications to this SWPPP shall be implemented within 7 calendar days of an inspection. Modifications are necessary if a control measure or procedure does not provide adequate pollutant control. All revisions are to be recorded in the Construction Log Book, included in *Exhibit 7* within 7 calendar days of an inspection.

VII. Post-Construction Operation & Maintenance Procedures

In accordance with the SPDES GP, the SWPPP shall include a maintenance schedule to achieve continuous and effective operation of each post-construction erosion and sediment control practice and stormwater control practice. In addition, the Owner/Operator shall at all times properly operate and maintain, which includes adequate laboratory controls and appropriate quality assurance procedures, all facilities, systems of treatment, systems of control, and related appurtenances that were installed as a requirement of the SWPPP. Thus, the following post-construction operation and maintenance plan, which also includes the maintenance requirements included in the SMDM for the proposed facilities, has been prepared to fulfill the above referenced provisions:

1. Inspect the proposed erosion and sediment control practices at the end of each spring and during dry times of the year, as summarized below:

a. Lawns - Observe areas for bare spots, washouts, and healthy growth. Apply topsoil, seed, and mulch to areas, as necessary. Water as required to reestablish lawn as quick as possible. In highly erodible areas, install sod or an approved energy dissipating device until re-establishment is achieved.
b. Plantings - Observe for weak and unhealthy species. Prune and replace as necessary.
c. Mulch - Observe areas for bare and thin spots. Re-apply mulch, as necessary, to obtain a minimum depth of 4-inches over the entire area.

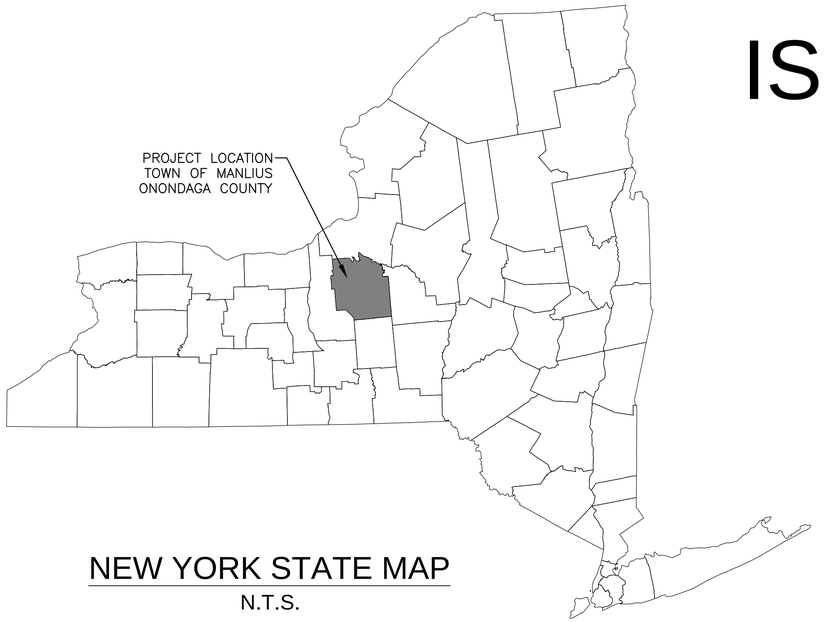
Operation, maintenance, and management reports should be made by the Owner/Operator after each inspection and filed with the SWPPP. Copies of each suggested report form to be used for the proposed practices are included in this report.

Note that this plan shall be updated, as necessary, to include all permanent stormwater management structures listed on the NOT and that the plan shall include the operation and maintenance procedures necessary for the structures to function as designed after final stabilization, as described in the SPDES GP.

APPENDIX A

Exhibit 1: Project Location Maps

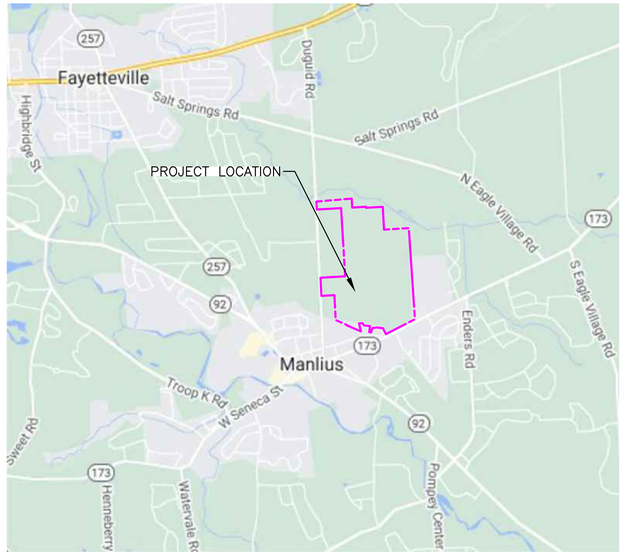
MANLIUS SOLAR
ISSUED FOR PERMIT



NEW YORK STATE MAP
N.T.S.

TOWN OF MANLIUS
ONONDAGA COUNTY, NY

PROJECT No. 220871



LOCATION MAP
N.T.S.

PREPARED BY:

FISHER ASSOCIATES
WWW.FISHERASSOC.COM

INDEX OF DRAWINGS:

DRAWING NUMBER	SHEET NUMBER	DRAWING TITLE
C-001	01	COVER SHEET
C-002	02	CONSTRUCTIONS NOTES
C-100	03	EXISTING CONDITIONS AND DEMO PLAN
C-200	04	OVERALL SITE PLAN
C-201	05	OVERALL SITE PLAN INDEX
C-202	06	CIVIL SITE PLAN – 1
C-203	07	CIVIL SITE PLAN – 2
C-204	08	CIVIL SITE PLAN – 3
C-205	09	CIVIL SITE PLAN – 4
C-206	10	CIVIL SITE PLAN – 5
C-207	11	CIVIL SITE PLAN – 6
C-300	12	OVERALL GRADING PLAN
C-301	13	CIVIL GRADING PLAN – 1
C-302	14	CIVIL GRADING PLAN – 2
C-303	15	CIVIL GRADING PLAN – 3
C-304	16	CIVIL GRADING PLAN –4
C-305	17	CIVIL GRADING PLAN – 5
C-306	18	CIVIL GRADING PLAN – 6
C-400	19	ACCESS ROAD PLAN AND PROFILE INDEX
C-401	20	ACCESS ROAD A PLAN PROFILE –1
C-402	21	ACCESS ROAD A PLAN PROFILE –2
C-403	22	ACCESS ROAD A PLAN PROFILE – 3
C-404	23	ACCESS ROAD A PLAN PROFILE – 4
C-405	24	ACCESS ROAD A PLAN PROFILE –5
C-406	25	ACCESS ROAD B PLAN PROFILE –1
C-407	26	ACCESS ROAD C PLAN PROFILE –1
C-408	27	ACCESS ROAD D PLAN PROFILE –1
C-409	28	EQUIPMENT PAD GRADING PLAN AND SECTIONS
C-410	29	EQUIPMENT PAD GRADING PLAN AND SECTIONS
C-411	30	EQUIPMENT PAD GRADING PLAN AND SECTIONS
C-412	31	EQUIPMENT PAD GRADING PLAN AND SECTIONS
C-413	32	EQUIPMENT PAD GRADING PLAN AND SECTIONS
C-700	33	ACCESS ROAD AND EQUIPMENT DETAILS
C-705	34	FENCE DETAILS
C-710	35	EROSION AND SEDIMENT CONTROL DETAILS
C-715	36	DRAINAGE AND LANDSCAPE DETAILS

PROJECT SITE INFORMATION	
SITE ADDRESS	0 DUGUID ROAD MANLIUS, NY
COUNTY PARCEL NUMBER	099.-01-03.0
GPS COORDINATES	43°0'43.20"N 75°58'1.20"W
SITE ELEVATION	880 FT
UTILITY NAME	
UTILITY ADDRESS	
UTILITY CONTACT INFORMATION	
DEVELOPER NAME	CVE NORTH AMERICA, INC.
DEVELOPER ADDRESS	109 W 37TH ST. 8TH FLOOR NY,10001
DEVELOPER CONTACT INFORMATION	519-804-9163
CIVIL ENGINEER OF RECORD (EOR) NAME	S. MELLOTT
CIVIL EOR ADDRESS	180 CHARLOTTE ST. ROCHESTER, NY
CIVIL EOR CONTACT INFORMATION	585-334-1310
APPLICABLE BUILDING PERMIT AUTHORITY	TOWN OF MANLIUS

CIVIL SITE BASIS AND QUANTITY ESTIMATES	
EXISTING LAND USE	AG (AGRICULTURAL)
SETBACK FRONT MIN. DESIGNED (FT)	50 FT
SETBACK REAR MIN. DESIGNED (FT)	112.33 FT
SETBACK SIDE MIN. DESIGNED (FT)	131.42 FT
ROAD WIDTH DESIGNED (FT)	20 FT
MAX STRUCTURE HEIGHT DESIGNED (FT)	15 FT
MAX. FENCE HEIGHT DESIGNED (FT)	8 FT
PROPERTY AREA (ACRES)	110.4 ACRES
FENCED AREA (ACRES)	67.29 ACRES
EQUIPMENT AREA (SF)	563.37 SF
ROAD AREA (SF)	7,478 SF
AGGREGATE BASE MATERIAL (CY)	4,186.75 CY
SILT FENCE (LF)	6268.04 LF
CHAIN-LINK FENCE (LF)	13,228 LF
GATE COUNT	3
LIMITS OF DISTURBANCE (ACRES)	90.31 ACRES
CUT (CY)	384.06 CY
FILL (CY)	1,114.21 CY

PROJECT SUMMARY			
	LOT 2	LOT 3	LOT 4
SYSTEM AC SIZE (MW)	5.0	5.0	5.0
SYSTEM DC SIZE (MW)	6.738	6.118	1.998
MODULE COUNT	12,714	11,544	3,770
INVERTER COUNT	40	40	12
TRANSFORMER COUNT	2	2	1
POLE COUNT			
PANEL WATTAGE	530 W	530 W	530 W

NOT FOR CONSTRUCTION

FILE NAME: H:\Projects\22\220871-00-CVE_Manlius_Sol\Eng\CAD\CUT\220871 C-001 Cover Sheet.dwg
DATE/TIME: 12/9/2022 3:58:58 PM
USER: Dorian Brue

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New York State Education Law Section 7209 states that it is a violation of law for any person, unless he is acting under the direction of a licensed professional engineer or land surveyor, to alter an item in any way. If an item bearing the seal of an engineer or land surveyor is altered, the altering engineer or land surveyor shall affix to the item his/her seal and the notation "altered by" followed by his/her signature and the date of such alteration, and a specific description of the alteration.

REV	DESCRIPTION	DATE	BY
7			
6			
5			
4			
3			
2			
1			

FA PROJECT NO.
220871
PROJECT MANAGER
S. MELLOTT
DRAWN BY
D. BRUE
SCALE
AS SHOWN
ISSUE DATE
12/09/2022

FISHER ASSOCIATES
WWW.FISHERASSOC.COM

PROJECT
PROPOSED MANLIUS SOLAR
TOWN OF MANLIUS
ONONDAGA COUNTY, NEW YORK

TITLE OF DRAWING
COVER SHEET

DRAWING NO.
C-001

SEQUENCE OF CONSTRUCTION:

1. PRE-CONSTRUCTION MEETING HELD TO INCLUDE PROJECT MANAGER, OPERATOR'S ENGINEER, CONTRACTOR, TOWN MS4 REPRESENTATIVE, AND SUB-CONTRACTORS PRIOR TO LAND DISTURBING ACTIVITIES.
2. INSTALL PERIMETER SILT FENCE.
3. BEGIN CLEARING AND GRUBBING OPERATIONS. CLEARING AND GRUBBING SHALL BE DONE ONLY IN AREAS WHERE EARTHWORK WILL BE PERFORMED AND ONLY IN AREAS WHERE CONSTRUCTION IS PLANNED TO COMMENCE WITHIN 14 DAYS AFTER CLEARING AND GRUBBING.
4. STRIP TOPSOIL AND STOCKPILE IN A LOCATION ACCEPTABLE TO CONSTRUCTION MANAGER. WHEN STOCKPILE IS COMPLETE, INSTALL PERIMETER SILT FENCE, SEED SURFACE WITH 100% PERENNIAL RYEGRASS MIXTURE AT A RATE OF 2-4 LBS. PER 1000 SF. APPLY 90-100 LBS PER 1000 SF OF MULCH.
5. COMMENCE EARTHWORK CUT AND FILLS. THE WORK SHALL BE PROGRESSED TO ALLOW A REASONABLE TRANSFER OF CUT AND FILL EARTH FOR ROUGH GRADING AND EARTH MOVING. THE CONTRACTOR WILL BE GIVEN SOME LATITUDE TO VARY FROM THE FOLLOWING SCHEDULE IN ORDER TO MEET THE FIELD CONDITIONS ENCOUNTERED. CONTRACTOR SHALL REVIEW VARIATIONS TO SWPPP WITH DESIGN ENGINEER AND QUALIFIED PROFESSIONAL PRIOR TO IMPLEMENTATION.
6. AS ROADWAY AND ACCESS DRIVES ARE BROUGHT TO GRADE, THEY WILL BE STABILIZED WITH CRUSHED STONE SUBBASE AT A DEPTH SPECIFIED ON PLANS TO PREVENT EROSION AS SOON AS PRACTICABLE.
7. STABILIZE ALL AREAS AS SOON AS PRACTICABLE, IDLE IN EXCESS OF 7 DAYS AND IN WHICH CONSTRUCTION WILL NOT COMMENCE WITHIN 14 DAYS.
8. INSTALL UTILITIES. TRENCH EXCAVATION/BACKFILL AREAS SHOULD BE STABILIZED PROGRESSIVELY AT THE END OF EACH WORKDAY WITH SEED AND STRAW MULCH AT A RATE OF 100% PERENNIAL RYE GRASS AT 2-4 LBS/1000 SF MULCHED AT 90-100 LBS/1000 SF.
9. STABILIZE ALL AREAS IDLE IN EXCESS OF 7 DAYS IN WHICH CONSTRUCTION WILL NOT COMMENCE WITHIN 14 DAYS.
10. REMOVE TEMPORARY CONSTRUCTION EXITS AND PERIMETER SILT FENCE ONCE SITE HAS ACHIEVED 80% UNIFORM STABILIZATION.
11. REMOVE SILT FENCE WITHIN WETLANDS DURING CONSTRUCTION, RETURN SILT FENCE AFTER CONSTRUCTION HAS BEEN FINALIZED.

GENERAL NOTES:

1. THE EXISTING UNDERGROUND STRUCTURES AND UTILITIES SHOWN ON THIS MAP HAVE BEEN PLOTTED FROM AVAILABLE SURVEYS AND RECORD MAPS AS PROVIDED, THEY ARE NOT CERTIFIED TO THE ACCURACY OF THEIR LOCATION AND/OR COMPLETENESS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE LOCATION AND EXTENT OF ALL UNDERGROUND STRUCTURES AND UTILITIES PRIOR TO ANY DIGGING OR CONSTRUCTION ACTIVITIES IN THEIR VICINITY. THE CONTRACTOR SHALL HAVE ALL EXISTING UTILITIES FIELD STAKED BEFORE STARTING WORK BY CALLING 1-800-962-7962.
2. HIGHWAY DRAINAGE ALONG ALL ROADS AND PRIVATE DRIVES SHALL BE KEPT CLEAN OF MUD, DEBRIS ETC. AT ALL TIMES.
3. THE CONTRACTOR SHALL CONSULT THE OWNER OR THEIR REPRESENTATIVE BEFORE DEVIATING FROM THESE PLANS.
4. IN ALL TRENCH EXCAVATIONS, CONTRACTOR MUST LAY THE TRENCH SIDE SLOPES BACK TO A SAFE SLOPE, USE A TRENCH SHIELD OR PROVIDE SHEETING AND BRACING.
5. IF SUSPICIOUS AND/OR HAZARDOUS MATERIAL IS ENCOUNTERED DURING DEMOLITION/CONSTRUCTION, ALL WORK SHALL STOP AND THE COUNTY DEPARTMENT OF HEALTH AND THE NEW YORK STATE DEPARTMENT OF CONSERVATION SHALL BE NOTIFIED IMMEDIATELY. WORK SHALL NOT RESUME UNTIL THE DEVELOPER HAS OUTLINED APPROPRIATE ACTION FOR DEALING WITH THE WASTE MATERIAL AND THE DEVELOPMENT PLANS ARE MODIFIED AS MAY BE NECESSARY.
6. EXCAVATED WASTE MATERIAL REMOVED FROM THE SITE SHALL BE PLACED AT A LOCATION ACCEPTABLE TO THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION.
7. AREAS DISTURBED OR DAMAGED AS PART OF THIS PROJECTS CONSTRUCTION THAT ARE OUTSIDE OF THE PRIMARY WORK AREA SHALL BE RESTORED, AT THE CONTRACTORS EXPENSE, TO THE SATISFACTION OF THE OWNER'S REPRESENTATIVE.
8. TREES MAY BE CLEARED WITHIN THE FLOODPLAIN OR WETLAND AREAS AS LONG AS THE STUMPS ARE NOT CLEARED OR GRUBBED. LOW GROUND PRESSURE CONSTRUCTION VEHICLES OR TIMBER MATTING MAY BE UTILIZED TO CUT TREES AND TO REMOVE DEBRIS WITHIN THE FLOODPLAIN OR WETLAND AREAS. CONSTRUCTION TRAFFIC WITHIN THE FLOODPLAIN OR WETLANDS SHALL BE MINIMIZED TO THAT WHICH IS NECESSARY FOR THE INSTALLATION OF THE PANELS, RACKING, AND OTHER PROJECT COMPONENTS. THE WETLAND AREAS SHALL BE PROTECTED AT ALL TIMES AS SHOWN ON THE PLANS WHEN INSTALLATION OF THE PROJECT COMPONENTS IS NOT ONGOING.

WASTE/HAZARDOUS MATERIAL PRACTICES:

1. WHENEVER POSSIBLE COVERED TRASH CONTAINERS SHOULD BE USED.
2. DAILY SITE CLEANUP IS REQUIRED TO REDUCE DEBRIS AND POLLUTANTS IN THE ENVIRONMENT.
3. CONTRACTOR SHALL PROVIDE A SAFE STORAGE SPACE FOR ALL PAINTS, STAINS AND SOLVENTS INSIDE A COVERED STORAGE AREA.
4. ALL FUELS, OILS AND GREASE MUST BE KEPT IN CONTAINERS AT ALL TIMES.

EROSION & SEDIMENT CONTROL NOTES:

1. INSTALL EROSION CONTROL MEASURES AS INDICATED ON THE PLAN PRIOR TO THE START OF ANY EXCAVATION WORK. EROSION CONTROL MEASURES WILL BE IMPLEMENTED IN ACCORDANCE WITH THE NEW YORK STATE STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL, DATED NOVEMBER 2016.
2. CONTRACTOR TO LIMIT CONSTRUCTION TRAFFIC THROUGH WETLANDS.
3. REFER TO STORM WATER POLLUTION PLAN NOTES FOR EROSION CONTROL MEASURE NOTES.

SITE STABILIZATION:

1. WHEN FINAL GRADE IS ACHIEVED DURING NON-GERMINATING MONTHS, THE AREA SHOULD BE MULCHED UNTIL THE BEGINNING OF THE NEXT PLANTING SEASON.
2. MULCHES SHOULD BE APPLIED AT THE RATES SHOWN IN THE MULCH APPLICATION RATES TABLE. VERY LITTLE BARE GROUND SHOULD BE VISIBLE THROUGH THE MULCH.
3. STRAW AND HAY MULCH SHOULD BE ANCHORED OR TACKIFIED IMMEDIATELY AFTER APPLICATION TO PREVENT BEING WINDBLOWN. A TRACTOR-DRAWN IMPLEMENT MAY BE USED TO "CRIMP" THE STRAW OR HAY INTO THE SOIL – ABOUT 3 INCHES. THIS METHOD SHOULD BE LIMITED TO SLOPES NO STEEPER THAN 3H:1V. THE MACHINERY SHOULD BE OPERATED ALONG THE CONTOUR. NOTE: CRIMPING OF HAY OR STRAW BY RUNNING OVER IT WITH TRACKED MACHINERY IS NOT RECOMMENDED.
4. BEFORE SEEDING IS APPLIED THE CONTRACTOR SHALL SPREAD SOIL TO PREVENT PONDING AND CONFIRM THAT SOIL WILL SUSTAIN THE SEED GERMINATION AND ESTABLISHMENT OF VEGETATION.
5. GRADED AREAS SHOULD BE SCARIFIED OR OTHERWISE LOOSENED TO A DEPTH OF 3 TO 5 INCHES TO PERMIT BONDING OF THE TOPSOIL TO THE SURFACE AREAS AND TO PROVIDE A ROUGHENED SURFACE TO PREVENT TOPSOIL FROM SLIDING DOWN SLOPE. COMPACTED SOILS SHOULD BE SCARIFIED TO A DEPTH OF 6 TO 12 INCHES, ALONG CONTOUR WHEREVER POSSIBLE, PRIOR TO SEEDING.
6. TOPSOIL OR AMENDED SOIL SHOULD BE UNIFORMLY DISTRIBUTED ACROSS THE DISTURBED AREA TO A MINIMUM DEPTH OF 6 INCHES. SPREADING SHOULD BE DONE IN SUCH A MANNER THAT SODDING OR SEEDING CAN PROCEED WITH A MINIMUM OF ADDITIONAL PREPARATION OR TILLAGE. IRREGULARITIES IN THE SURFACE RESULTING FROM TOPSOIL PLACEMENT SHOULD BE CORRECTED IN ORDER TO PREVENT FORMATION OF DEPRESSIONS.
7. TOPSOIL SHOULD NOT BE PLACED WHILE THE TOPSOIL OR SUBSOIL IS IN A FROZEN OR MUDDY CONDITION, WHEN THE SUBSOIL IS EXCESSIVELY WET, OR IN A CONDITION THAT MAY OTHERWISE BE DETRIMENTAL TO PROPER GRADING AND SEEDBED PREPARATION.
8. WHEN USED AS A MULCH REPLACEMENT, THE APPLICATION RATE (THICKNESS) OF THE COMPOST SHOULD BE ½" TO ¾". COMPOST SHOULD BE PLACED EVENLY AND SHOULD PROVIDE 100% SOIL COVERAGE. NO SOIL SHOULD BE VISIBLE.
9. POLYMERIC AND GUM TACKIFIERS MIXED AND APPLIED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS MAY BE USED TO TACK MULCH. AVOID APPLICATION DURING RAIN AND ON WINDY DAYS. A 24-HOUR CURING PERIOD AND A SOIL TEMPERATURE HIGHER THAN 45° F ARE TYPICALLY REQUIRED. APPLICATION SHOULD GENERALLY BE HEAVIEST AT EDGES OF SEEDED AREAS AND AT CRESTS OF RIDGES AND BANKS TO PREVENT LOSS BY WIND. THE REMAINDER OF THE AREA SHOULD HAVE BINDER APPLIED UNIFORMLY. BINDERS MAY BE APPLIED AFTER MULCH IS SPREAD OR SPRAYED INTO THE MULCH AS IT IS BEING BLOWN ONTO THE SOIL. APPLYING STRAW AND BINDER TOGETHER IS GENERALLY MORE EFFECTIVE.
10. SYNTHETIC BINDERS, OR CHEMICAL BINDERS, MAY BE USED AS RECOMMENDED BY THE MANUFACTURER TO ANCHOR MULCH PROVIDED SUFFICIENT DOCUMENTATION IS PROVIDED TO SHOW THEY ARE NON-TOXIC TO NATIVE PLANT AND ANIMAL SPECIES.
11. MULCH ON SLOPES OF 8% OR STEEPER SHOULD BE HELD IN PLACE WITH NETTING. LIGHTWEIGHT PLASTIC, FIBER, OR PAPER NETS MAY BE STAPLED OVER THE MULCH ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.
12. SHREDDED PAPER HYDROMULCH SHOULD NOT BE USED ON SLOPES STEEPER THAN 5%. WOOD FIBER HYDROMULCH MAY BE APPLIED ON STEEPER SLOPES PROVIDED A TACKIFIER IS USED. THE APPLICATION RATE FOR ANY HYDROMULCH SHOULD BE 2,000 LB/ACRE AT A MINIMUM.
13. LIME, FERTILIZER, SEED, AND MULCH DISTURBED AREAS PER THE EROSION AND SEDIMENT CONTROL PLANS. IN AREAS OF STEEP SLOPES OR OBVIOUS AREAS WHERE POTENTIAL EROSION MAY OCCUR, AN EROSION CONTROL MAT OR FLEXIBLE GROWTH MEDIUM (FGM) SHALL BE USED. FGM SHALL BE APPLIED PER MANUFACTURER SPECIFICATIONS.
14. NO CONSTRUCTION TRAFFIC SHALL OCCUR TO REMOVE ANY BMPS UNTIL THE SECTION HAS ACHIEVED 80% PERENNIAL VEGETATIVE COVER. AN AREA SHALL BE CONSIDERED TO HAVE ACHIEVED FINAL STABILIZATION WHEN IT HAS A MINIMUM 80% PERENNIAL VEGETATIVE COVER OR OTHER PERMANENT NONVEGETATIVE COVER WITH A DENSITY SUFFICIENT TO RESIST ACCELERATED EROSION AND SUBSURFACE CHARACTERISTICS SUFFICIENT TO RESIST SLIDING OR OTHER MOVEMENTS.

STORM WATER POLLUTION PREVENTION PLAN NOTES:

1. REFER TO THE STORMWATER POLLUTION PREVENTION PLAN PREPARED FOR THE PROJECT FOR MORE INFORMATION.
2. THE CONTRACTOR SHALL PROVIDE A QUALIFIED INSPECTOR TO INSPECT THE PROJECT AT THE END OF EACH WORK WEEK AND PROVIDE A REPORT AT LEAST ONCE PER WEEK.
3. ALL INLETS TO THE STORM SEWER SHALL HAVE INLET PROTECTION. ADD INLET PROTECTION ON INLET NEXT TO ROAD. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE BEST MANAGEMENT PRACTICES (BMP'S) UNTIL GROUND COVER IS ESTABLISHED.
4. REMOVE AND STOCKPILE TOPSOIL AS DIRECTED BY THE CONSTRUCTION MANAGER REPLACE TOPSOIL TO A MINIMUM 4" DEPTH. ALL DISTURBED AREAS TO BE HYDROSEEDED AS DIRECTED BY THE CONSTRUCTION MANAGER TO PROMOTE VEGETATION AS SOON AS PRACTICABLE.
5. IF THE SEASONS PROHIBITS TEMPORARY SEEDING, THE DISTURBED AREAS WILL BE MULCHED WITH STRAW HAY OR EQUIVALENT AND ANCHORED IN ACCORDANCE WITH THE "STANDARDS", NETTING OR LIQUID MULCH BINDER.
6. CONTRACTOR SHALL BE RESPONSIBLE FOR THE MAINTENANCE AND REMOVAL OF TEMPORARY SEDIMENTATION CONTROLS. EROSION CONTROL MEASURES SHALL NOT BE REMOVED BEFORE 80% UNIFORM VEGETATION HAS BEEN ACHIEVED.
7. ALL EROSION CONTROL MEASURES ARE TO BE REPLACED WHENEVER THEY BECOME CLOGGED OR INOPERABLE AND SHALL BE REPLACED WHEN THEY HAVE REACHED THE DESIGN LIFE INDICATED IN THE NYS GUIDELINES FOR URBAN EROSION SEDIMENT CONTROL DESIGN MANUAL OR EVERY THREE MONTHS..
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORATION OF TOPSOIL TO ALL DISTURBED AREAS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO MAINTAIN EROSION CONTROL MEASURES AT ALL TIMES.
9. THE CONTRACTOR SHALL DESIGNATE A MEMBER OF HIS/HER FIRM TO BE RESPONSIBLE TO MONITOR EROSION CONTROL, EROSION CONTROL STRUCTURES THROUGHOUT CONSTRUCTION.
10. ALL DISTURBED AREAS SHALL BE FINISH GRADED TO PROMOTE VEGETATION ON ALL EXPOSED AREAS AS SOON AS PRACTICABLE. STABILIZATION PRACTICES (TEMPORARY/PERMANENT SEEDING, MULCHING, GEOTEXTILES, ETC.)MUST BE IMPLEMENTED WITHIN SEVEN (7) DAYS WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED, AND NOT EXPECTED TO RESUME WITHIN FOURTEEN (14) DAYS.
11. PAVED ROADWAYS MUST BE KEPT CLEAN AT ALL TIMES. ALL CONSTRUCTION DEBRIS AND SEDIMENT SPOILS, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHT-OF-WAYS MUST BE REMOVED IMMEDIATELY.
12. DUST SHALL BE CONTROLLED BY WATERING.
13. ADJOINING PROPERTY SHALL BE PROTECTED FROM EXCAVATION AND FILLING OPERATIONS ON THE PROPOSED SITE.
14. EROSION CONTROL MEASURES SHOULD BE RELOCATED INWARD AS PERIMETER SLOPE CONSTRUCTION PROGRESSES AND RECONSTRUCTED TO THE NYS STANDARDS & SPECIFICATIONS AT THE END OF EACH DAY.
15. PERIMETER AREAS SHALL BE TEMPORARILY STABILIZED WITH SEED AND MULCH PROGRESSIVELY A MINIMUMAT AT THE END OF EACH WEEK WITH 100% PERENNIAL RYEGRASS MIX AT A RATE OF 2-4 LBS PER 1000 SF AND MULCH 90-100 lbs/1000 SF OF WEED FREE STRAW.
16. SLOPE TRACKING SHALL BE IMPLEMENTED ON ALL SLOPE 1 ON 3 OR GREATER AT THE END OF EACH WORK DAY AND PRIOR TO FINAL SLOPE GRADING AND STABILIZATION.

NOT FOR CONSTRUCTION

FILE NAME: H:\Projects\22\220871-00-CVE_Manlius_Sol\Eng\CAD\CUT\220871 C-002 Construction Notes.dwg
DATE/TIME: 12/9/2022 3:59:24 PM
USER: Doran Brue

REV	DESCRIPTION	DATE	BY
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1	FOR APPROVAL		

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FA PROJECT NO.
220871
PROJECT MANAGER
S. MELLOTT
DRAWN BY
D. BRUE
SCALE
AS SHOWN
ISSUE DATE
12/09/2022

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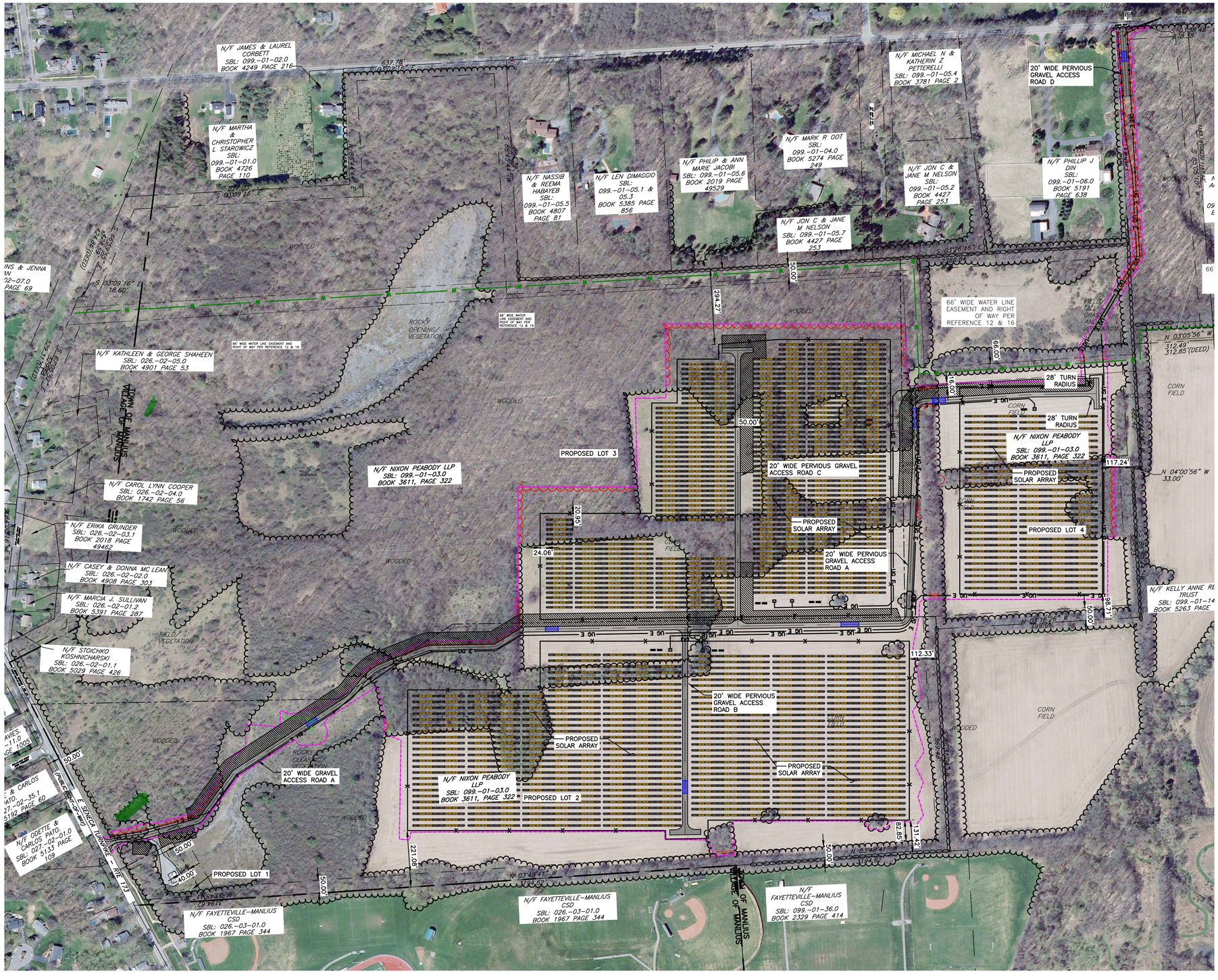
PROJECT
PROPOSED MANLIUS SOLAR
TOWN OF MANLIUS
ONONDAGA COUNTY, NEW YORK

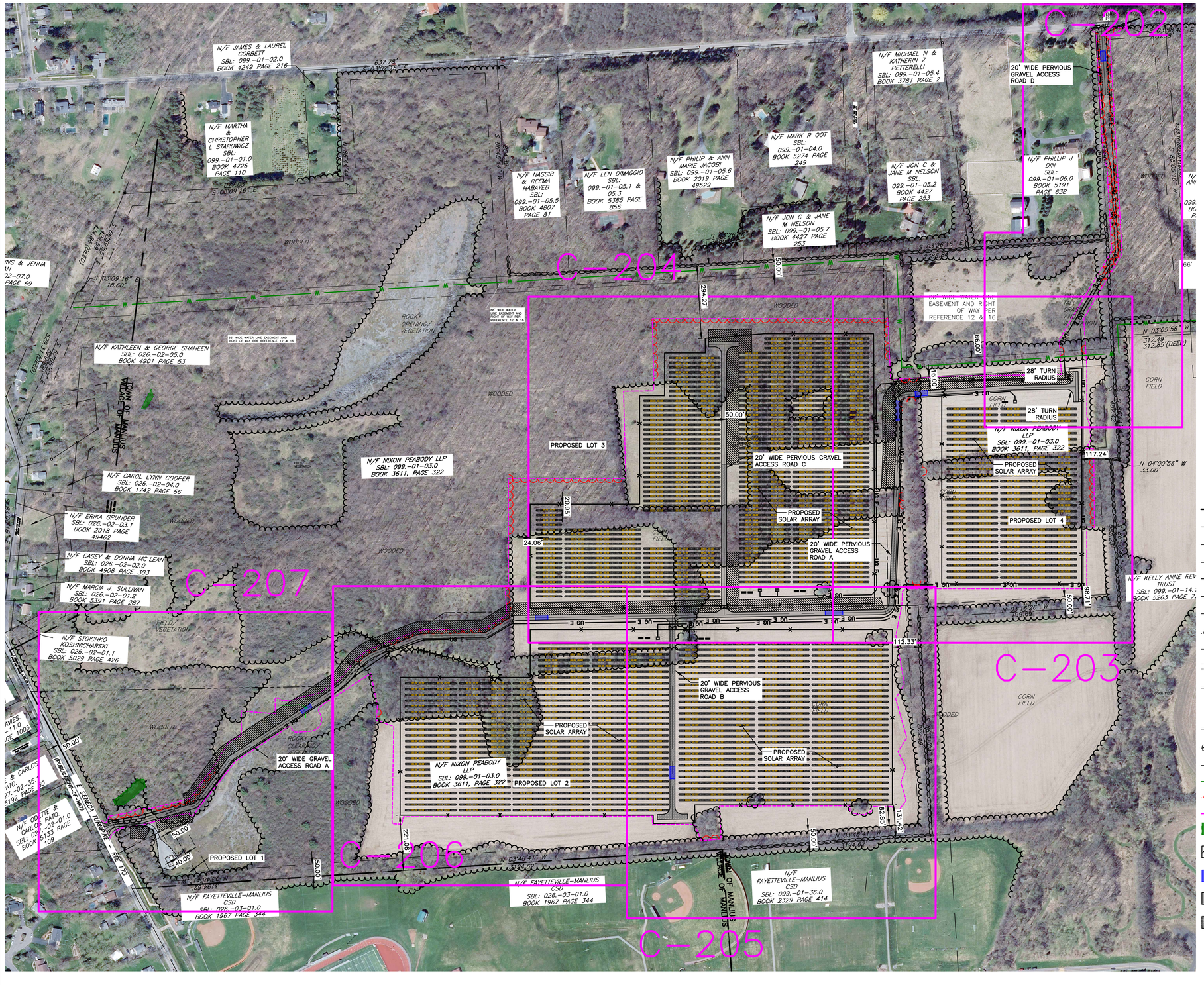
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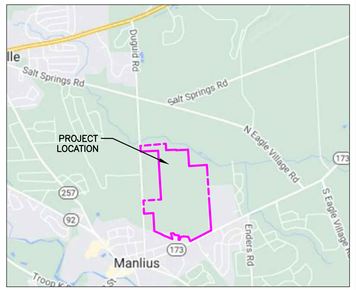
DRAWING NO.
C-002

SHEET 02 OF 36


N/F JAMES & LAUREL CORBETT SBL: 099.-01-02.0 BOOK 4249 PAGE 216
637.78' (DEED)
N/F MARTHA & CHRISTOPHER L STAROWICZ SBL: 099.-01-01.0 BOOK 4726 PAGE 110
N/F NASSIB & REEMA HABAYEB SBL: 099.-01-05.5 BOOK 4807 PAGE 81
N/F LEN DIMAGGIO SBL: 099.-01-05.1 & 05.3 BOOK 5385 PAGE 856
N/F PHILIP & ANN MARIE JACOBI SBL: 099.-01-05.6 BOOK 2019 PAGE 49529
N/F MARK R OOT SBL: 099.-01-04.0 BOOK 5274 PAGE 249
N/F MICHAEL N & KATHERIN Z PETTERELLI SBL: 099.-01-05.4 BOOK 3781 PAGE 2
N/F JON C & JANE M NELSON SBL: 099.-01-05.2 BOOK 4427 PAGE 253
N/F PHILLIP J DIN SBL: 099.-01-06.0 BOOK 5191 PAGE 638
N/F JON C & JANE M NELSON SBL: 099.-01-05.7 BOOK 4427 PAGE 253
66' WIDE WATER LINE EASEMENT AND RIGHT OF WAY PER REFERENCE 12 & 16
N/F KATHLEEN & GEORGE SHAHEEN SBL: 026.-02-05.0 BOOK 4901 PAGE 53
N/F NIXON PEABODY LLP SBL: 099.-01-03.0 BOOK 3611, PAGE 322
N/F CAROL LYNN COOPER SBL: 026.-02-04.0 BOOK 1742 PAGE 56
N/F ERIKA GRUNDER SBL: 026.-02-03.1 BOOK 2018 PAGE 49462
N/F CASEY & DONNA MC LEAN SBL: 026.-02-02.0 BOOK 4908 PAGE 303
N/F MARCIA J. SULLIVAN SBL: 026.-02-01.2 BOOK 5391 PAGE 287
N/F STOICHKO KOSHNICHARSKI SBL: 026.-02-01.1 BOOK 5029 PAGE 426
N/F ODETTE & CARLOS PATO SBL: 021.-02-01.0 BOOK 5133 PAGE 109
N/F FAYETTEVILLE-MANLIUS CSD SBL: 026.-03-01.0 BOOK 1967 PAGE 344
N/F FAYETTEVILLE-MANLIUS CSD SBL: 099.-01-36.0 BOOK 2329 PAGE 414
N/F KELLY ANNE REV TRUST SBL: 099.-01-14.1 BOOK 5263 PAGE 72
E. SENECA TURNPIKE - RTE 173
TOWN OF MANLIUS VILLAGE OF MANLIUS
CORN FIELD
WOODED
ROCKY OPENING/ VEGETATION
FIELD GRASS/ VEGETATION
N 03°05'56" W 312.49' 312.85' (DEED)
N 04°00'56" W 33.00'
S 03°05'56" E 312.49' (DEED)
S 03°05'56" E 312.49'
S 04°00'56" E 33.00'
S 86°19'16" W 1319.16'
S 86°19'16" W 1319.16'
S 86°19'16" W 1319.16


N/F JAMES & LAUREL CORBETT SBL: 099.-01-02.0 BOOK 4249 PAGE 216
637.76' (DEED)
N/F MARTHA & CHRISTOPHER L STAROWICZ SBL: 099.-01-01.0 BOOK 4726 PAGE 110
N/F NASSIB & REEMA HABAYEB SBL: 099.-01-05.5 BOOK 4807 PAGE 81
N/F LEN DIMAGGIO SBL: 099.-01-05.1 & 05.3 BOOK 5385 PAGE 856
N/F PHILIP & ANN MARIE JACOBI SBL: 099.-01-05.6 BOOK 2019 PAGE 49529
N/F MARK R OOT SBL: 099.-01-04.0 BOOK 5274 PAGE 249
N/F MICHAEL N & KATHERIN Z PETTERELLI SBL: 099.-01-05.4 BOOK 3781 PAGE 2
20' WIDE PERVIOUS GRAVEL ACCESS ROAD D
N/F JON C & JANE M NELSON SBL: 099.-01-05.2 BOOK 4427 PAGE 253
N/F PHILLIP J DIN SBL: 099.-01-06.0 BOOK 5191 PAGE 638
N/F JON C & JANE M NELSON SBL: 099.-01-05.7 BOOK 4427 PAGE 253
66' WIDE WATER LINE EASEMENT AND RIGHT OF WAY PER REFERENCE 12 & 16
N/F KATHLEEN & GEORGE SHAHEEN SBL: 026.-02-05.0 BOOK 4901 PAGE 53
TOWN OF MANLIUS VILLAGE OF MANLIUS
N/F CAROL LYNN COOPER SBL: 026.-02-04.0 BOOK 1742 PAGE 56
N/F ERIKA GRUNDER SBL: 026.-02-03.1 BOOK 2018 PAGE 49462
N/F CASEY & DONNA MC LEAN SBL: 026.-02-02.0 BOOK 4908 PAGE 303
N/F MARCIA J. SULLIVAN SBL: 026.-02-01.2 BOOK 5391 PAGE 287
N/F STOICHKO KOSHNICHARSKI SBL: 026.-02-01.1 BOOK 5029 PAGE 426
N/F ODETTE & CARLOS PATO SBL: 027.-02-01.0 BOOK 5133 PAGE 109
N/F FAYETTEVILLE-MANLIUS CSD SBL: 026.-03-01.0 BOOK 1967 PAGE 344
N/F NIXON PEABODY LLP SBL: 099.-01-03.0 BOOK 3611, PAGE 322
N/F FAYETTEVILLE-MANLIUS CSD SBL: 099.-01-36.0 BOOK 2329 PAGE 414
N/F KELLY ANNE RE TRUST SBL: 099.-01-14 BOOK 5263 PAGE
PROPOSED LOT 1
PROPOSED LOT 2
PROPOSED LOT 3
PROPOSED LOT 4
20' WIDE GRAVEL ACCESS ROAD A
20' WIDE PERVIOUS GRAVEL ACCESS ROAD B
20' WIDE PERVIOUS GRAVEL ACCESS ROAD C
20' WIDE PERVIOUS GRAVEL ACCESS ROAD A
PROPOSED SOLAR ARRAY
28' TURN RADIUS
66' WIDE WATER LINE EASEMENT AND RIGHT OF WAY PER REFERENCE 12 & 16
WOODED
ROCKY OPENING/ VEGETATION
FIELD/ VEGETATION
CORN FIELD
E. SENECA TURNPIKE (PUBLIC RTE 173)
S 03°09'16" E 18.60'
294.27'
50.00'
66.00'
117.24'
112.33'
131.42'
82.85'
221.08'
20.95'
24.06'
98.71'
N 03°05'56" W 312.49' 312.85'(DEED)
N 04°00'56" W 33.00'
N 03°48'41" W 334.62'
S 03°48'41" E 334.62'
S 03°09'16" E 228.19'
N 03°16'26" W 98.00'
S 03°09'16" E 228.19'
S 03°09'16" E 228.19'
S 88°54'41" W 1328.39'
S 88°54'41" W 1328.39'
S 88°54'41" W 1328.39





SITE LOCATION
SCALE: NTS

LEGEND

- PROJECT BOUNDARY
- PROPERTY SETBACK
- ADJACENT PROPERTY LINE
- PROPERTY LINE
- INTERIOR LOT LINE
- RIGHT-OF-WAY
- EASEMENT/RIGHT-OF-WAY
- EXISTING TREE LINE
- EXISTING FENCE
- EXISTING GRAVEL ROAD
- EXISTING OVERHEAD UTILITY LINES
- EXISTING UTILITY POLE
- TOP OF BANK
- PANEL ARRAY
- PROPOSED FENCE
- EXISTING WATER LINE
- PROPOSED TREELINE
- LIMIT OF DISTURBANCE
- DELINEATED WETLANDS
- PROPOSED FILTER STRIP OR RIPARIAN BUFFER
- PROPOSED SURFACE WATER CROSSING
- STANDARD GRAVEL ACCESS ROAD
- PERVIOUS GRAVEL ACCESS ROAD

200 FEET 0 200 400 600
Scale: 1"=200'

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	BY
1			
2			
3			
4			
5			
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7			

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FA PROJECT NO.
220871
PROJECT MANAGER
S. MELLOTT
DRAWN BY
D. BRUE
SCALE
AS SHOWN
ISSUE DATE
12/09/2022

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PROJECT
PROPOSED MANLIUS SOLAR
TOWN OF MANLIUS
ONONDAGA COUNTY, NEW YORK

TITLE OF DRAWING
OVERALL SITE PLAN INDEX

DRAWING NO.
C-201

SHEET 05 OF 36

FILE NAME: H:\Projects\22\220871-00-CVE_Manlius_Sol\Eng\CAD\CUT\220871 C-200 Site Plans.dwg
DATE/TIME: 12/9/2022 4:05:38 PM
USER: Dorian Brue



LEGEND

- PROJECT BOUNDARY
- PROPERTY SETBACK
- ADJACENT PROPERTY LINE
- PROPERTY LINE
- INTERIOR LOT LINE
- RIGHT-OF-WAY
- EASEMENT/RIGHT-OF-WAY
- EXISTING TREE LINE
- EXISTING FENCE
- EXISTING GRAVEL ROAD
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- EXISTING UTILITY POLE
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- PROPOSED FENCE
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- PROPOSED TREELINE
- LIMIT OF DISTURBANCE
- DELINEATED WETLANDS
- PROPOSED FILTER STRIP OR RIPARIAN BUFFER
- PROPOSED SURFACE WATER CROSSING
- STANDARD GRAVEL ACCESS ROAD
- PERVIOUS GRAVEL ACCESS ROAD

60 FEET 0 60 120 180

Scale: 1"=60'

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	BY
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2			
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7			

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FA PROJECT NO.
220871

PROJECT MANAGER
S. MELLOTT

DRAWN BY
D. BRUE

SCALE
AS SHOWN

ISSUE DATE
12/09/2022

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TOWN OF MANLIUS
ONONDAGA COUNTY, NEW YORK

TITLE OF DRAWING
CIVIL SITE PLAN - 1

DRAWING NO.
C-202

SHEET 06 OF 36

FILE NAME: H:\Projects\22\220871-00-CVE_Manlius_Sol\Eng\CAD\CUT\220871 C-200 Site Plans.dwg
DATE/TIME: 12/9/2022 4:06:31 PM
USER: Dorian Brue

REFER TO ELECTRICAL DRAWINGS FOR UTILITY CROSSING DETAILS

S 86°44'04" W 482.42'

N 04°00'56" W 33.00'

N/F KELLY ANNE REVOC TRUST SBL: 099.-01-14.1 BOOK 5263 PAGE 729

S 86°50'44" W 585.23'

50.00'

50.00'

117.24'

5' (MIN) BETWEEN WATER LINE EASEMENT AND FENCE LIMITS

UG E

5.00'

121.46'

24.00'

20.00'

23.78'

16.47'

28' TURN RADIUS

28' TURN RADIUS

24.00'

98.71'

REFER TO ELECTRICAL DRAWINGS FOR UTILITY CROSSING DETAILS

20' WIDE GRAVEL ACCESS ROAD

PROPOSED SOLAR ARRAY

SEE OCWA NOTES ON (C-700) FOR INSTALLATION REQUIREMENTS

PRIOR TO WORK WITHIN OCWA ROW, CONTRACTOR SHALL STAKE OUT ROUTE WITHIN ROW AND NOTIFY OCWA.OCWA WILL VACUUM EXCAVATE TO CONFIRM THAT THERE IS NO JOINT OVER THE PROPOSED ENCASED DUCT AND CONFIRM THE DEPTH OF INVESTIGATION DETERMINES ANY CONFLICTS WITH PROPOSED DUCT BANK ARE PRESENT, CONTRACTOR SHALL RELOCATE PROPOSED DUCT BANK 5-8 FEET NORTH OR SOUTH OF THE PROPOSED LOCATION, AS DIRECTED BY OCWA.

PROPOSED 7' HIGH PERIMETER FENCE (TYP)

ACCESS ROAD A

PROPOSED EQUIPMENT PAD 5

PROPOSED LOT 4

PROPOSED FILTER STRIP (TYP)

PROPOSED INVERTERS

55.00'

N/F NIXON PEABODY LLP SBL: 099.-01-23.0 BOOK 3611, PAGE 322

PROPOSED UNDERGROUND ELECTRIC (TYP)

10.55'

PROPERTY SETBACK LINE (TYP)

N 03°16'26" W 799.69'

66.00'

66' WIDE WATER LINE EASEMENT

NOTE: CONTRACTOR TO GRADE UNDER PANELS TO MEET RACKING MANUFACTURER SPECIFICATIONS AND REQUIREMENTS. ALL GRADED AREAS TO BE PERMANENTLY STABILIZED WITH SEED AND MULCH.

PROPOSED SOLAR ARRAY

PROPOSED GATE (TYP)

20.20'

16.47'

20.20'

20.00'

COORDINATE FENCE POST LOCATIONS WITH OCWA PRIOR TO INSTALLATION TO ENSURE FENCE IS INSTALLED OUTSIDE OF OCWA ROW. OCWA SHALL BE NOTIFIED AT LEAST THREE (3) BUSINESS DAYS PRIOR TO FENCE INSTALLATION IN VICINITY OF OCWA ROW.

16.00'

PROPOSED SURFACE WATER CROSSING

54.00'

30' TURN RADIUS

PROPOSED SURFACE WATER CROSSING

20' WIDE GRAVEL ACCESS ROAD

112.33'

20' WIDE PERVIOUS GRAVEL ACCESS ROAD

ACCESS ROAD A

PROPOSED GATE (TYP)

28' TURN RADIUS

18.15'

11.46'

19.00'

16.00'

PROPOSED FILTER STRIP (TYP)

20.88'

24.00'

PROPOSED FILTER STRIP (TYP)

54.67'

PROPOSED LOT 3

NOTE: CONTRACTOR TO GRADE UNDER PANELS TO MEET RACKING MANUFACTURER SPECIFICATIONS AND REQUIREMENTS. ALL GRADED AREAS TO BE PERMANENTLY STABILIZED WITH SEED AND MULCH.

PROPOSED SOLAR ARRAY

PROPOSED SURFACE WATER CROSSING

LEGEND

- PROJECT BOUNDARY
- PROPERTY SETBACK
- ADJACENT PROPERTY LINE
- PROPERTY LINE
- INTERIOR LOT LINE
- RIGHT-OF-WAY
- EASEMENT/RIGHT-OF-WAY
- EXISTING TREE LINE
- EXISTING FENCE
- EXISTING GRAVEL ROAD
- EXISTING OVERHEAD UTILITY LINES
- EXISTING UTILITY POLE
- TOP OF BANK
- PANEL ARRAY
- PROPOSED FENCE
- EXISTING WATER LINE
- PROPOSED TREELINE
- LIMIT OF DISTURBANCE
- DELINEATED WETLANDS
- PROPOSED FILTER STRIP OR RIPARIAN BUFFER
- PROPOSED SURFACE WATER CROSSING
- STANDARD GRAVEL ACCESS ROAD
- PERVIOUS GRAVEL ACCESS ROAD

60 FEET 0 60 120 180

Scale: 1"=60'

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REV	DESCRIPTION	DATE	BY
1			
2			
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FA PROJECT NO.
220871

PROJECT MANAGER
S. MELLOTT

DRAWN BY
D. BRUE

SCALE
AS SHOWN

ISSUE DATE
12/09/2022

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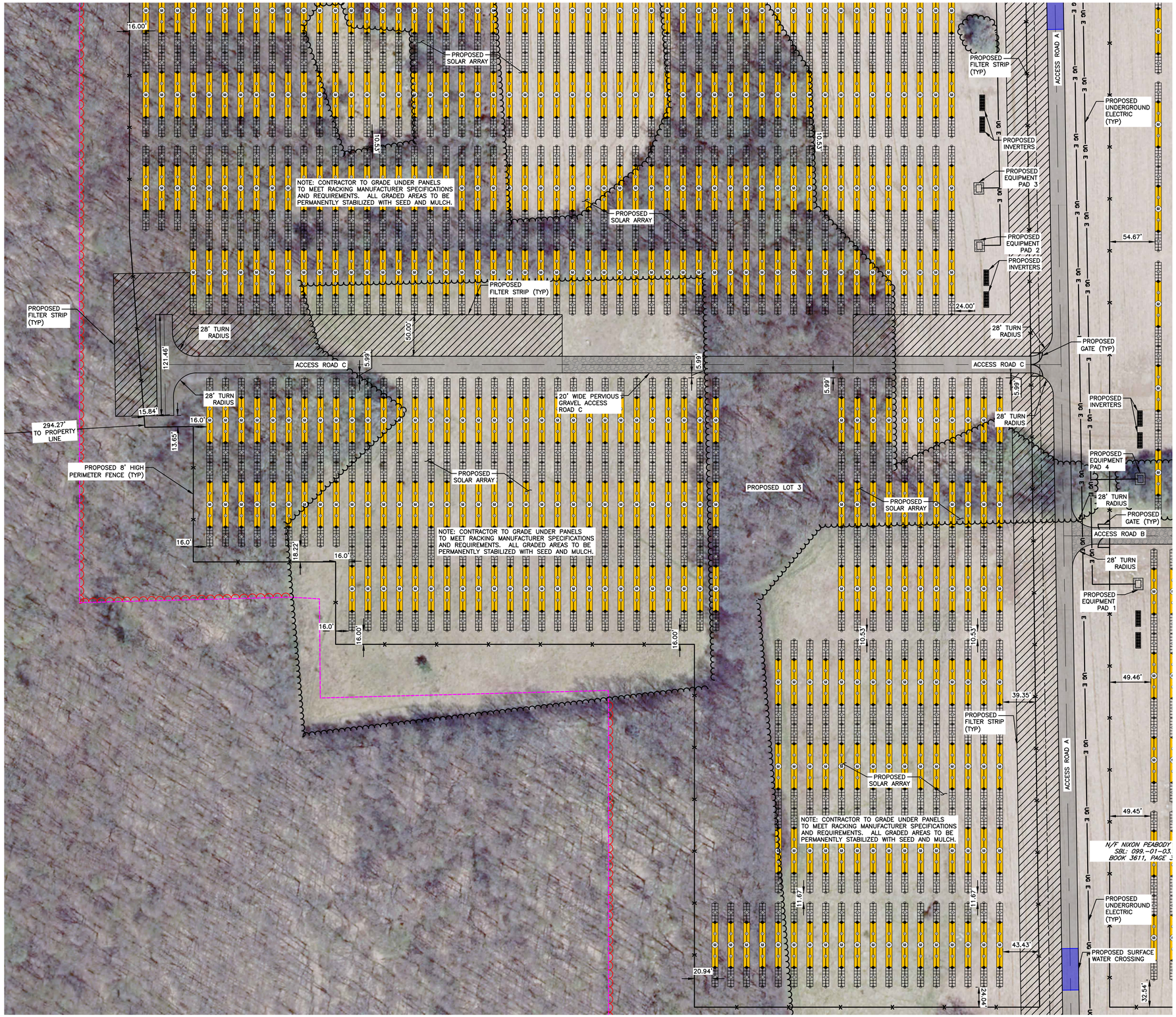
PROJECT
PROPOSED MANLIUS SOLAR
TOWN OF MANLIUS
ONONDAGA COUNTY, NEW YORK

TITLE OF DRAWING
CIVIL SITE PLAN - 2

DRAWING NO.
C-203

SHEET 07 OF 36

FILE NAME: H:\Projects\22\220871-00-CVE_Manlius_Sol\Eng\CAD\CUT\220871 C-200 Site Plans.dwg
DATE/TIME: 12/9/2022 4:07:39 PM
USER: Dorian Brue



LEGEND

- PROJECT BOUNDARY
- PROPERTY SETBACK
- ADJACENT PROPERTY LINE
- PROPERTY LINE
- INTERIOR LOT LINE
- RIGHT-OF-WAY
- EASEMENT/RIGHT-OF-WAY
- EXISTING TREE LINE
- EXISTING FENCE
- EXISTING GRAVEL ROAD
- EXISTING OVERHEAD UTILITY LINES
- EXISTING UTILITY POLE
- TOP OF BANK
- PANEL ARRAY
- PROPOSED FENCE
- EXISTING WATER LINE
- PROPOSED TREELINE
- LIMIT OF DISTURBANCE
- DELINEATED WETLANDS
- PROPOSED FILTER STRIP OR RIPARIAN BUFFER
- PROPOSED SURFACE WATER CROSSING
- STANDARD GRAVEL ACCESS ROAD
- PERVIOUS GRAVEL ACCESS ROAD

NOT FOR CONSTRUCTION

60 FEET 0 60 120 180

Scale: 1"=60'

REV	DESCRIPTION	DATE	BY
7			
6			
5			
4			
3			
2			
1			

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FA PROJECT NO. 220871
PROJECT MANAGER S. MELLOTT
DRAWN BY D. BRUE
SCALE AS SHOWN
ISSUE DATE 12/09/2022

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PROJECT
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TOWN OF MANLIUS
ONONDAGA COUNTY, NEW YORK

TITLE OF DRAWING
CIVIL SITE PLAN - 3

DRAWING NO.
C-204

SHEET 08 OF 36

FILE NAME: H:\Projects\22\220871-00-CVE_Manlius_Sol\Eng\CAD\CUT\220871 C-200 Site Plans.dwg
DATE/TIME: 12/9/2022 4:08:55 PM
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PROPERTY SETBACK LINE (TYP)

PROPOSED 8' HIGH PERIMETER FENCE (TYP)

PROPOSED GATE (TYP)

28' TURN RADIUS

PROPOSED FILTER STRIP (TYP)

ACCESS ROAD A

PROPOSED SURFACE WATER CROSSING

PROPOSED UNDERGROUND ELECTRIC (TYP)

PROPOSED INVERTERS

PROPOSED EQUIPMENT PAD 3

PROPOSED EQUIPMENT PAD 2

PROPOSED SOLAR ARRAY

CORN FIELD

NOTE: CONTRACTOR TO GRADE UNDER PANELS TO MEET RACKING MANUFACTURER SPECIFICATIONS AND REQUIREMENTS. ALL GRADED AREAS TO BE PERMANENTLY STABILIZED WITH SEED AND MULCH.

ACCESS ROAD C

PROPOSED EQUIPMENT PAD 4

ACCESS ROAD B

20' WIDE PERVIOUS GRAVEL ACCESS ROAD B

PROPOSED EQUIPMENT PAD 1

112.33'

50.00'

131.42' TO PROPERTY LINE

15.47'

16.00'

54.67'

10.55'

12.79'

23.04'

24.00'

15.09'

15.31'

6.00'

23.00'

10.53'

49.46'

39.35'

62.92'

20.00'

121.49'

16.10'

3194.92'
N 03°48'41" W

N/F FAYETTEVILLE-MANLIUS CSD
SBL: 099.-01-36.0
BOOK 2329 PAGE 414

PROPERTY SETBACK LINE (TYP)

TOWN OF MANLIUS
VILLAGE OF MANLIUS

LEGEND

- PROJECT BOUNDARY
- PROPERTY SETBACK
- ADJACENT PROPERTY LINE
- PROPERTY LINE
- INTERIOR LOT LINE
- RIGHT-OF-WAY
- EASEMENT/RIGHT-OF-WAY
- EXISTING TREE LINE
- EXISTING FENCE
- EXISTING GRAVEL ROAD
- EXISTING OVERHEAD UTILITY LINES
- EXISTING UTILITY POLE
- TOP OF BANK
- PANEL ARRAY
- PROPOSED FENCE
- EXISTING WATER LINE
- PROPOSED TREELINE
- LIMIT OF DISTURBANCE
- DELINEATED WETLANDS
- PROPOSED FILTER STRIP OR RIPARIAN BUFFER
- PROPOSED SURFACE WATER CROSSING
- STANDARD GRAVEL ACCESS ROAD
- PERVIOUS GRAVEL ACCESS ROAD

NOT FOR CONSTRUCTION

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FEET
Scale: 1"=60'

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FA PROJECT NO.
220871

PROJECT MANAGER
S. MELLOTT

DRAWN BY
D. BRUE

SCALE
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12/09/2022

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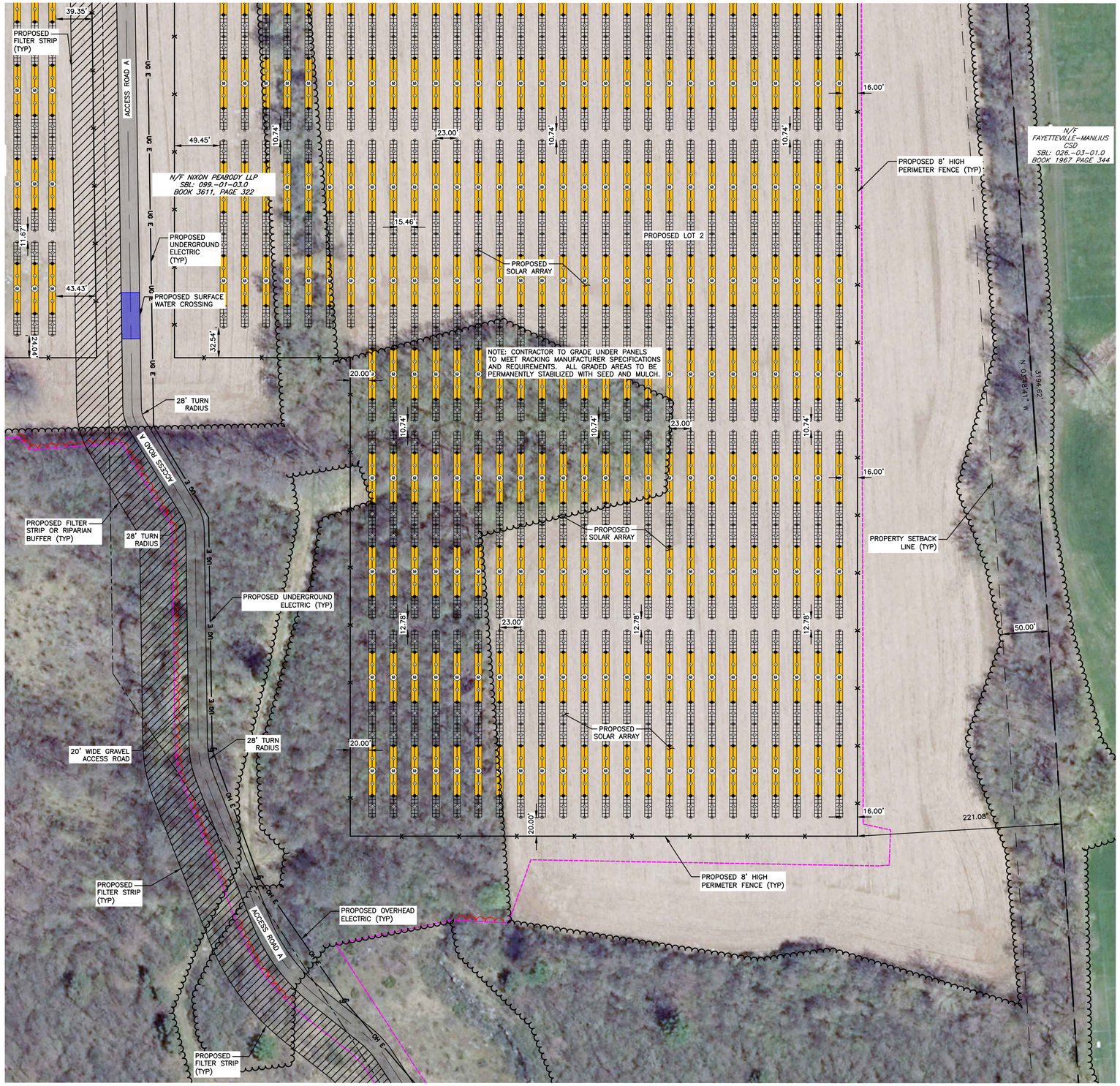
PROJECT
PROPOSED MANLIUS SOLAR
TOWN OF MANLIUS
ONONDAGA COUNTY, NEW YORK

TITLE OF DRAWING
CIVIL SITE PLAN - 4

DRAWING NO.
C-205

SHEET 09 OF 36

FILE NAME: H:\Projects\22\220871-00-CVE_Manlius_Sol\Eng\CAD\CUT\220871 C-200 Site Plans.dwg
DATE/TIME: 12/9/2022 4:10:04 PM
USER: Dorian Brue



LEGEND

- PROJECT BOUNDARY
- PROPERTY SETBACK
- ADJACENT PROPERTY LINE
- PROPERTY LINE
- INTERIOR LOT LINE
- RIGHT-OF-WAY
- EASEMENT/RIGHT-OF-WAY
- EXISTING TREE LINE
- EXISTING FENCE
- EXISTING GRAVEL ROAD
- EXISTING OVERHEAD UTILITY LINES
- EXISTING UTILITY POLE
- TOP OF BANK
- PANEL ARRAY
- PROPOSED FENCE
- EXISTING WATER LINE
- PROPOSED TREELINE
- LIMIT OF DISTURBANCE
- DELINEATED WETLANDS
- PROPOSED FILTER STRIP OR RIPARIAN BUFFER
- PROPOSED SURFACE WATER CROSSING
- STANDARD GRAVEL ACCESS ROAD
- PERVIOUS GRAVEL ACCESS ROAD

60 FEET 0 60 120 180

Scale: 1"=60'

NOT FOR CONSTRUCTION

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FA PROJECT NO.
220871

PROJECT MANAGER
S. MELLOTT

DRAWN BY
D. BRUE

SCALE
AS SHOWN

ISSUE DATE
12/09/2022

PROJECT
PROPOSED MANLIUS SOLAR
TOWN OF MANLIUS
ONONDAGA COUNTY, NEW YORK

TITLE OF DRAWING
CIVIL SITE PLAN - 5

DRAWING NO.
C-206

SHEET 10 OF 36

FILE NAME: H:\Projects\22\220871-00-CVE_Manlius_Sol\Eng\CAD\CUT\220871 C-200 Site Plans.dwg
DATE/TIME: 12/9/2022 4:11:08 PM
USER: Dorian Brue



LEGEND

- PROJECT BOUNDARY
- PROPERTY SETBACK
- ADJACENT PROPERTY LINE
- PROPERTY LINE
- INTERIOR LOT LINE
- RIGHT-OF-WAY
- EASEMENT/RIGHT-OF-WAY
- EXISTING TREE LINE
- EXISTING FENCE
- EXISTING GRAVEL ROAD
- EXISTING OVERHEAD UTILITY LINES
- EXISTING UTILITY POLE
- TOP OF BANK
- PANEL ARRAY
- PROPOSED FENCE
- EXISTING WATER LINE
- PROPOSED TREELINE
- LIMIT OF DISTURBANCE
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- PROPOSED FILTER STRIP OR RIPARIAN BUFFER
- PROPOSED SURFACE WATER CROSSING
- STANDARD GRAVEL ACCESS ROAD
- PERVIOUS GRAVEL ACCESS ROAD

60 FEET 0 60 120 180

Scale: 1"=60'

NOT FOR CONSTRUCTION

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FA PROJECT NO. 220871
PROJECT MANAGER S. MELLOTT
DRAWN BY D. BRUE
SCALE AS SHOWN
ISSUE DATE 12/09/2022

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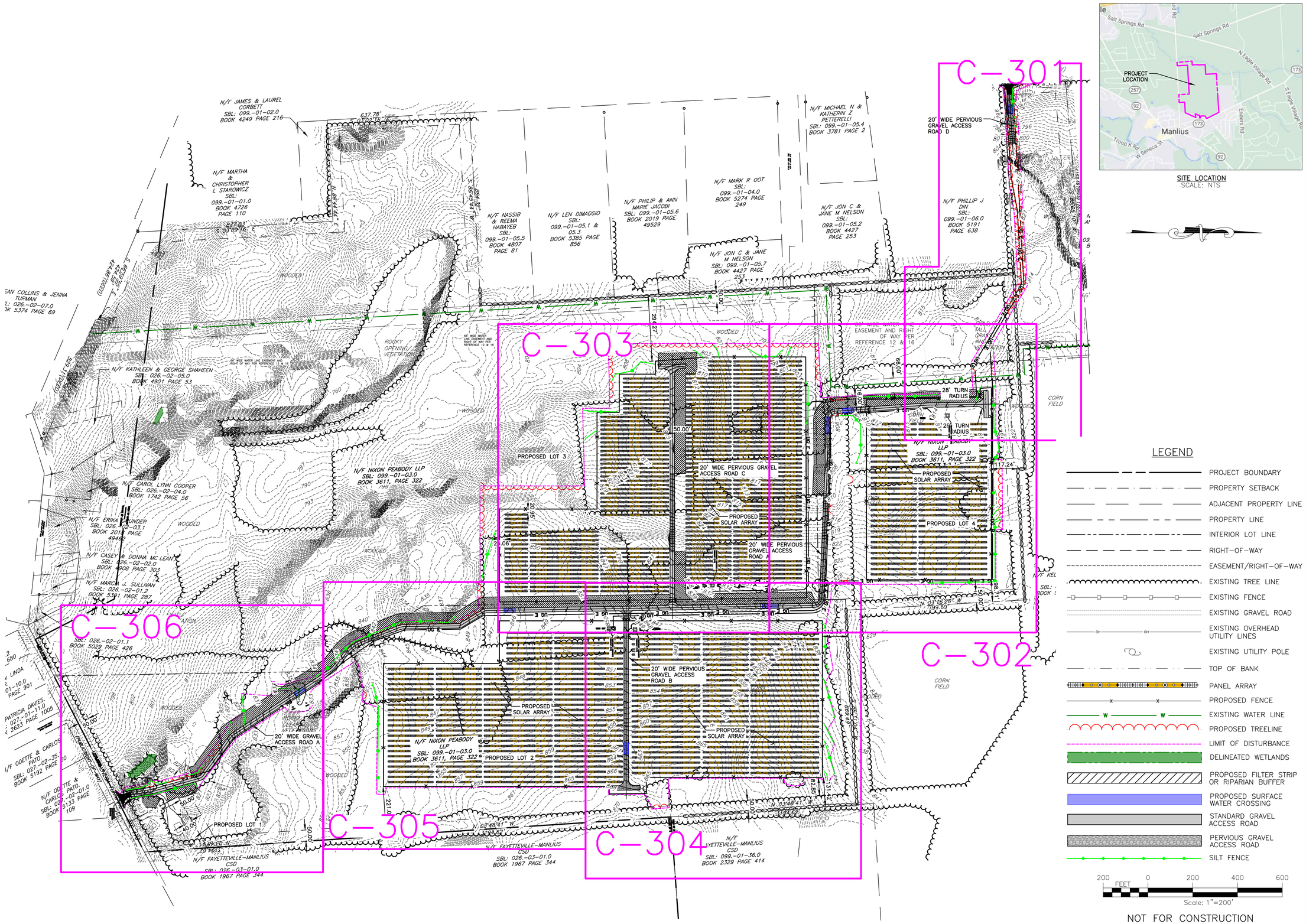
PROJECT
PROPOSED MANLIUS SOLAR
TOWN OF MANLIUS
ONONDAGA COUNTY, NEW YORK

TITLE OF DRAWING
CIVIL SITE PLAN - 6

DRAWING NO.
C-207

SHEET 11 OF 36

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SITE LOCATION
SCALE: NTS

LEGEND

- PROJECT BOUNDARY
- PROPERTY SETBACK
- ADJACENT PROPERTY LINE
- PROPERTY LINE
- INTERIOR LOT LINE
- RIGHT-OF-WAY
- EASEMENT/RIGHT-OF-WAY
- EXISTING TREE LINE
- EXISTING FENCE
- EXISTING GRAVEL ROAD
- EXISTING OVERHEAD UTILITY LINES
- EXISTING UTILITY POLE
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- PROPOSED FILTER STRIP OR RIPARIAN BUFFER
- PROPOSED SURFACE WATER CROSSING
- STANDARD GRAVEL ACCESS ROAD
- PERVIOUS GRAVEL ACCESS ROAD
- SILT FENCE

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FEET
Scale: 1"=200'

NOT FOR CONSTRUCTION

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FA PROJECT NO.
220871
PROJECT MANAGER
S. MELLOTT
DRAWN BY
D. BRUE
SCALE
AS SHOWN
ISSUE DATE
12/09/2022

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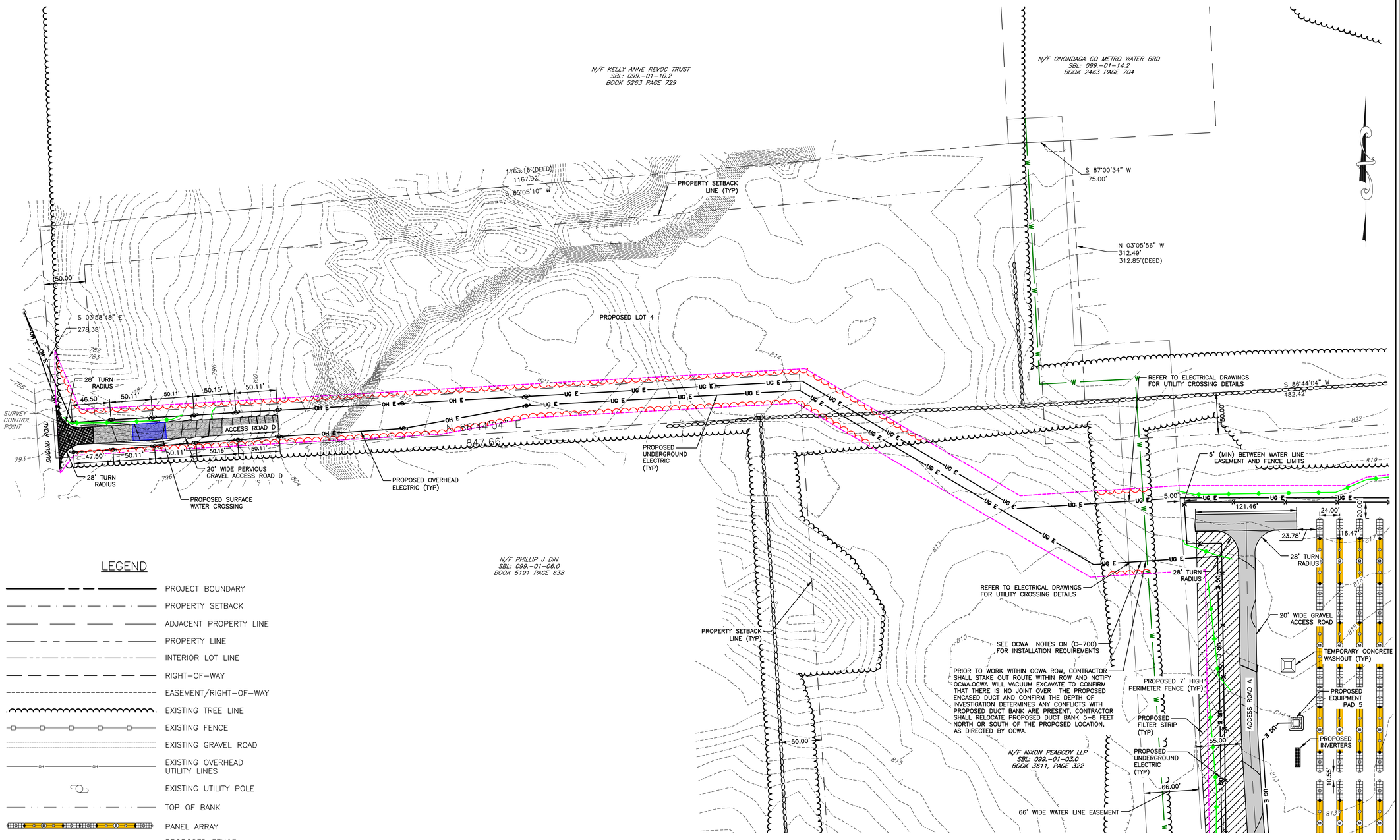
PROJECT
PROPOSED MANLIUS SOLAR
TOWN OF MANLIUS
ONONDAGA COUNTY, NEW YORK

TITLE OF DRAWING
OVERALL GRADING PLAN

DRAWING NO.
C-300

SHEET 12 OF 36

FILE NAME: H:\Projects\22\220871-00-CVE_Manlius_Sol\Eng\CAD\CUT\220871 C-300 Grading Plans.dwg
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LEGEND

- PROJECT BOUNDARY
- PROPERTY SETBACK
- ADJACENT PROPERTY LINE
- PROPERTY LINE
- INTERIOR LOT LINE
- RIGHT-OF-WAY
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- PROPOSED SURFACE WATER CROSSING
- STANDARD GRAVEL ACCESS ROAD
- PERVIOUS GRAVEL ACCESS ROAD
- SILT FENCE

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FA PROJECT NO.
220871
PROJECT MANAGER
S. MELLOTT
DRAWN BY
D. BRUE
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ISSUE DATE
12/09/2022

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PROJECT
PROPOSED MANLIUS SOLAR
TOWN OF MANLIUS
ONONDAGA COUNTY, NEW YORK

TITLE OF DRAWING
CIVIL GRADING PLAN - 1

DRAWING NO.
C-301

REFER TO ELECTRICAL DRAWINGS FOR UTILITY CROSSING DETAILS

S 86°44'04" W
482.42'

S 86°50'44" W
585.23'

SBL: 099.-01-14.1
BOOK 5263 PAGE 729

33.00'

50.00'

117.24'

5' (MIN) BETWEEN WATER LINE EASEMENT AND FENCE LIMITS

5.00'

121.46'

24.00'

20.00'

16.47'

23.78'

28' TURN RADIUS

98.71'

N 07°12'26" W
799.69'

REFER TO ELECTRICAL DRAWINGS FOR UTILITY CROSSING DETAILS

20' WIDE GRAVEL ACCESS ROAD

PROPOSED SOLAR ARRAY

SEE OCWA NOTES ON (C-700) FOR INSTALLATION REQUIREMENTS

TEMPORARY CONCRETE WASHOUT (TYP)

PRIOR TO WORK WITHIN OCWA ROW, CONTRACTOR SHALL STAKE OUT ROUTE WITHIN ROW AND NOTIFY OCWA.OCWA WILL VACUUM EXCAVATE TO CONFIRM THAT THERE IS NO JOINT OVER THE PROPOSED ENCASED DUCT AND CONFIRM THE DEPTH OF INVESTIGATION DETERMINES ANY CONFLICTS WITH PROPOSED DUCT BANK ARE PRESENT, CONTRACTOR SHALL RELOCATE PROPOSED DUCT BANK 5-8 FEET NORTH OR SOUTH OF THE PROPOSED LOCATION, AS DIRECTED BY OCWA.

PROPOSED 7' HIGH PERIMETER FENCE (TYP)

PROPOSED EQUIPMENT PAD 5

PROPOSED LOT 4

PROPOSED FILTER STRIP (TYP)

PROPOSED INVERTERS

ACCESS ROAD A

PROPOSED UNDERGROUND ELECTRIC (TYP)

55.00'

N/F NIXON PEABODY LLP
SBL: 099.-01-23.0
BOOK 3611, PAGE 322

PROPERTY SETBACK LINE (TYP)

66.00'

66' WIDE WATER LINE EASEMENT

NOTE: CONTRACTOR TO GRADE UNDER PANELS TO MEET RACKING MANUFACTURER SPECIFICATIONS AND REQUIREMENTS. ALL GRADED AREAS TO BE PERMANENTLY STABILIZED WITH SEED AND MULCH.

PROPOSED SOLAR ARRAY

PROPOSED GATE (TYP)

20.20'

16.47'

20.00'

COORDINATE FENCE POST LOCATIONS WITH OCWA PRIOR TO INSTALLATION TO ENSURE FENCE IS INSTALLED OUTSIDE OF OCWA ROW. OCWA SHALL BE NOTIFIED AT LEAST THREE (3) BUSINESS DAYS PRIOR TO FENCE INSTALLATION IN VICINITY OF OCWA ROW.

16.00'

PROPOSED SURFACE WATER CROSSING

54.00'

30' TURN RADIUS

PROPOSED SURFACE WATER CROSSING

20' WIDE GRAVEL ACCESS ROAD

20' WIDE PERVIOUS GRAVEL ACCESS ROAD

ACCESS ROAD A

PROPOSED GATE (TYP)

12.33'

28' TURN RADIUS

11.46'

19.00'

24.00'

PROPOSED FILTER STRIP (TYP)

PROPOSED LOT 3

NOTE: CONTRACTOR TO GRADE UNDER PANELS TO MEET RACKING MANUFACTURER SPECIFICATIONS AND REQUIREMENTS. ALL GRADED AREAS TO BE PERMANENTLY STABILIZED WITH SEED AND MULCH.

PROPOSED SOLAR ARRAY

PROPOSED FILTER STRIP (TYP)

54.67'

PROPOSED SURFACE WATER CROSSING

LEGEND

- PROJECT BOUNDARY
- PROPERTY SETBACK
- ADJACENT PROPERTY LINE
- PROPERTY LINE
- INTERIOR LOT LINE
- RIGHT-OF-WAY
- EASEMENT/RIGHT-OF-WAY
- EXISTING TREE LINE
- EXISTING FENCE
- EXISTING GRAVEL ROAD
- EXISTING OVERHEAD UTILITY LINES
- EXISTING UTILITY POLE
- TOP OF BANK
- PANEL ARRAY
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- PROPOSED TREELINE
- LIMIT OF DISTURBANCE
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- PROPOSED SURFACE WATER CROSSING
- STANDARD GRAVEL ACCESS ROAD
- PERVIOUS GRAVEL ACCESS ROAD
- SILT FENCE

60 FEET 0 60 120 180
Scale: 1"=60'

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FA PROJECT NO.
220871

PROJECT MANAGER
S. MELLOTT

DRAWN BY
D. BRUE

SCALE
AS SHOWN

ISSUE DATE
12/09/2022

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PROJECT
PROPOSED MANLIUS SOLAR
TOWN OF MANLIUS
ONONDAGA COUNTY, NEW YORK

TITLE OF DRAWING
CIVIL GRADING PLAN - 2

DRAWING NO.
C-302

SHEET 14 OF 36

FILE NAME: H:\Projects\22\220871-00-CVE_Manlius_Sol\Eng\CAD\CUT\220871 C-300 Grading Plans.dwg
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NOTE: CONTRACTOR TO GRADE UNDER PANELS TO MEET RACKING MANUFACTURER SPECIFICATIONS AND REQUIREMENTS. ALL GRADED AREAS TO BE PERMANENTLY STABILIZED WITH SEED AND MULCH.

PROPOSED SOLAR ARRAY

PROPOSED FILTER STRIP (TYP)

PROPOSED FILTER STRIP (TYP)

TEMPORARY CONCRETE WASHOUT (TYP)

PROPOSED EQUIPMENT PAD 3

PROPOSED INVERTERS

PROPOSED EQUIPMENT PAD 2

PROPOSED INVERTERS

PROPOSED UNDERGROUND ELECTRIC (TYP)

ACCESS ROAD A

28' TURN RADIUS

50.00'

ACCESS ROAD C

20' WIDE PERVIOUS GRAVEL ACCESS ROAD C

PROPOSED GATE (TYP)

PROPOSED INVERTERS

PROPOSED EQUIPMENT PAD 4

PROPOSED GATE (TYP)

ACCESS ROAD B

PROPOSED EQUIPMENT PAD 1

294.27' TO PROPERTY LINE

PROPOSED 8' HIGH PERIMETER FENCE (TYP)

PROPOSED LOT 3

PROPOSED FILTER STRIP (TYP)

PROPOSED UNDERGROUND ELECTRIC (TYP)

PROPOSED SURFACE WATER CROSSING

N/F NIXON PEAB SBL: 099.-01- BOOK 3611, PA

LEGEND

- PROJECT BOUNDARY
- PROPERTY SETBACK
- ADJACENT PROPERTY LINE
- PROPERTY LINE
- INTERIOR LOT LINE
- RIGHT-OF-WAY
- EASEMENT/RIGHT-OF-WAY
- EXISTING TREE LINE
- EXISTING FENCE
- EXISTING GRAVEL ROAD
- EXISTING OVERHEAD UTILITY LINES
- EXISTING UTILITY POLE
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- PROPOSED SURFACE WATER CROSSING
- STANDARD GRAVEL ACCESS ROAD
- PERVIOUS GRAVEL ACCESS ROAD
- SILT FENCE

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FEET
Scale: 1"=60'

NOT FOR CONSTRUCTION

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FA PROJECT NO.
220871

PROJECT MANAGER
S. MELLOTT

DRAWN BY
D. BRUE

SCALE
AS SHOWN

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12/09/2022

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PROJECT
PROPOSED MANLIUS SOLAR
TOWN OF MANLIUS
ONONDAGA COUNTY, NEW YORK

TITLE OF DRAWING
CIVIL GRADING PLAN - 3

DRAWING NO.
C-303

SHEET 15 OF 36

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PROPERTY SETBACK LINE (TYP)

PROPOSED 8' HIGH PERIMETER FENCE (TYP)

PROPOSED GATE (TYP)

PROPOSED SOLAR ARRAY

PROPOSED SURFACE WATER CROSSING

PROPOSED FILTER STRIP (TYP)

PROPOSED UNDERGROUND ELECTRIC (TYP)

PROPOSED INVERTERS

PROPOSED EQUIPMENT PAD 3

PROPOSED EQUIPMENT PAD 2

PROPOSED EQUIPMENT PAD 4

PROPOSED EQUIPMENT PAD 1

28' TURN RADIUS

ACCESS ROAD A

ACCESS ROAD B

ACCESS ROAD C

TEMPORARY CONCRETE WASHOUT (TYP)

20' WIDE PERVIOUS GRAVEL ACCESS ROAD B

NOTE: CONTRACTOR TO GRADE UNDER PANELS TO MEET RACKING MANUFACTURER SPECIFICATIONS AND REQUIREMENTS. ALL GRADED AREAS TO BE PERMANENTLY STABILIZED WITH SEED AND MULCH.

131.42' TO PROPERTY LINE

N 03°48'41" W 319.69'

N/F FAYETTEVILLE-MANLIUS CSD
SBL: 099-01-36.0
BOOK 2329 PAGE 414

TOWN OF MANLIUS
VILLAGE OF MANLIUS

LEGEND

- PROJECT BOUNDARY
- PROPERTY SETBACK
- ADJACENT PROPERTY LINE
- PROPERTY LINE
- INTERIOR LOT LINE
- RIGHT-OF-WAY
- EASEMENT/RIGHT-OF-WAY
- EXISTING TREE LINE
- EXISTING FENCE
- EXISTING GRAVEL ROAD
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- STANDARD GRAVEL ACCESS ROAD
- PERVIOUS GRAVEL ACCESS ROAD
- SILT FENCE

60 FEET 0 60 120 180

Scale: 1"=60'

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FA PROJECT NO.
220871

PROJECT MANAGER
S. MELLOTT

DRAWN BY
D. BRUE

SCALE
AS SHOWN

ISSUE DATE
12/09/2022

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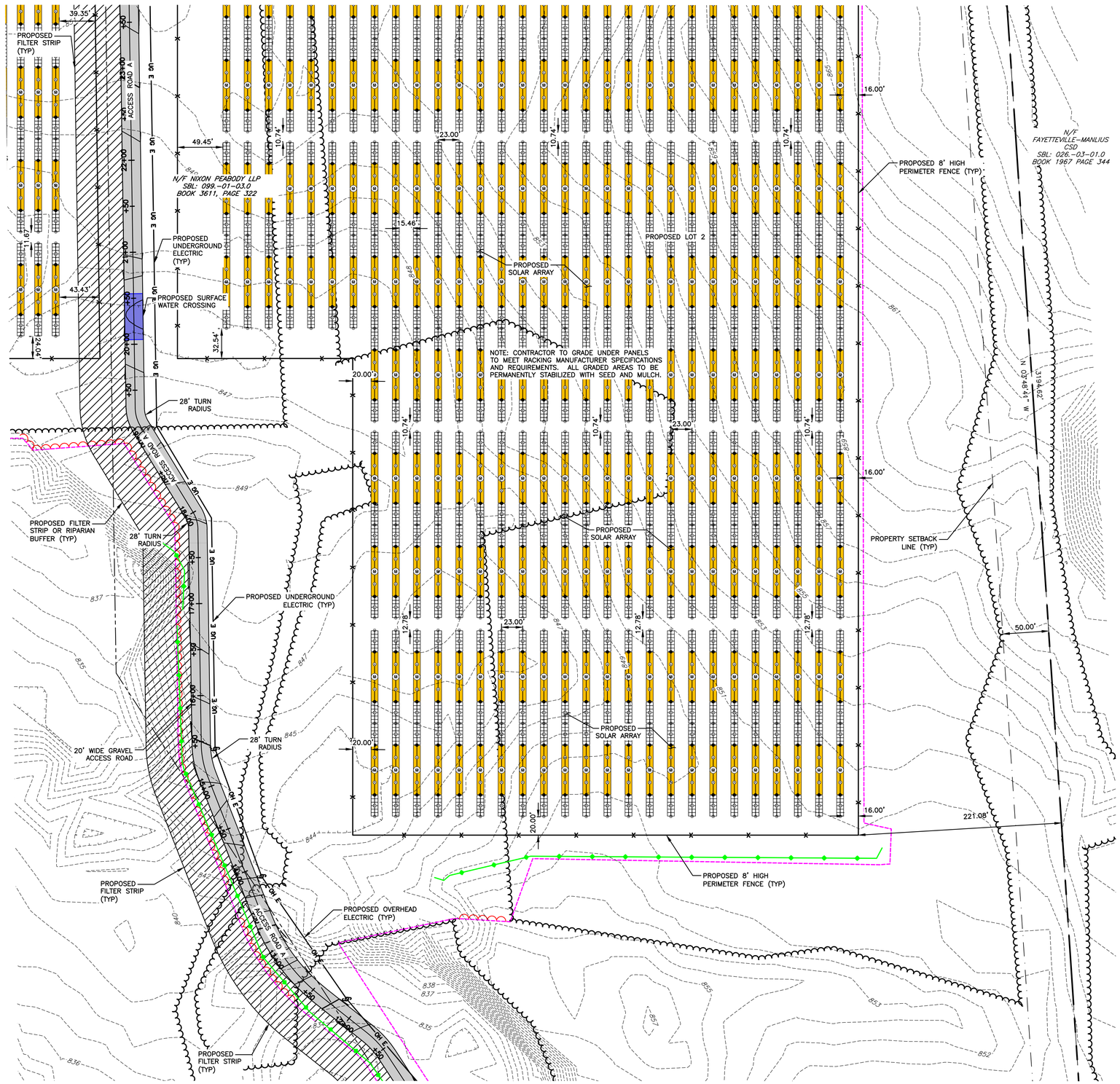
PROJECT
PROPOSED MANLIUS SOLAR
TOWN OF MANLIUS
ONONDAGA COUNTY, NEW YORK

TITLE OF DRAWING
CIVIL GRADING PLAN -4

DRAWING NO.
C-304

SHEET 16 OF 36

FILE NAME: H:\Projects\22\220871-00-CVE_Manlius_Sol\Eng\CAD\CUT\220871 C-300 Grading Plans.dwg
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LEGEND

- PROJECT BOUNDARY
- PROPERTY SETBACK
- ADJACENT PROPERTY LINE
- PROPERTY LINE
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- STANDARD GRAVEL ACCESS ROAD
- PERVIOUS GRAVEL ACCESS ROAD
- SILT FENCE

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Scale: 1"=60'

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FA PROJECT NO.
220871
PROJECT MANAGER
S. MELLOTT
DRAWN BY
D. BRUE
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AS SHOWN
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PROJECT
PROPOSED MANLIUS SOLAR
TOWN OF MANLIUS
ONONDAGA COUNTY, NEW YORK

TITLE OF DRAWING
CIVIL GRADING PLAN - 5

DRAWING NO.
C-305

SHEET 17 OF 36

FILE NAME: H:\Projects\22\220871-00-CVE_Manlius_Sol\Eng\CAD\CUT\220871 C-300 Grading Plans.dwg
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PROPOSED FILTER STRIP (TYP)

PROPOSED SURFACE WATER CROSSING

PROPOSED FILTER STRIP OR RIPARIAN BUFFER (TYP)

28' TURN RADIUS

20' WIDE GRAVEL ACCESS ROAD

ACCESS ROAD A

PROPOSED FILTER STRIP OR RIPARIAN BUFFER (TYP)

PROPERTY SETBACK LINE (TYP)

N/F FAYETTEVILLE-MANLIUS CSD
SBL: 026.-03-01.0
BOOK 1967 PAGE 344

N 48°14'41" W 1394.62'

50.00'

PROPOSED OVERHEAD ELECTRIC (TYP)

PROPOSED LOT 1

NOTE: CONTRACTOR TO PROVIDE A SMOOTH TRANSITION FROM THE PROPOSED ACCESS ROAD TO EXISTING ACCESS ROAD

PROPOSED FILTER STRIP OR RIPARIAN BUFFER (TYP)

33' TURN RADIUS (TYP)

EDGE OF TEMPORARY TURN

STABILIZATION CONSTRUCTION ENTRANCE

N 62°50'44" E
1136.57'
3.37'(DEED)

E SENECA TURNPIKE - RTE 173
(PUBLIC RIGHT-OF-WAY)

PROPERTY SETBACK LINE (TYP)

S 84°13'10" E
84.56'
84.18'(DEED)

S 27°09'16" E

N/F ODETTE & CARLOS PATO.
SBL: 027.-02-01.0
BOOK 5133 PAGE 109

LEGEND

- PROJECT BOUNDARY
- PROPERTY SETBACK
- ADJACENT PROPERTY LINE
- PROPERTY LINE
- INTERIOR LOT LINE
- RIGHT-OF-WAY
- EASEMENT/RIGHT-OF-WAY
- EXISTING TREE LINE
- EXISTING FENCE
- EXISTING GRAVEL ROAD
- EXISTING OVERHEAD UTILITY LINES
- EXISTING UTILITY POLE
- TOP OF BANK
- PANEL ARRAY
- PROPOSED FENCE
- EXISTING WATER LINE
- PROPOSED TREELINE
- LIMIT OF DISTURBANCE
- DELINEATED WETLANDS
- PROPOSED FILTER STRIP OR RIPARIAN BUFFER
- PROPOSED SURFACE WATER CROSSING
- STANDARD GRAVEL ACCESS ROAD
- PERVIOUS GRAVEL ACCESS ROAD
- SILT FENCE

60 0 60 120 180
FEET
Scale: 1"=60'

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	BY
7			
6			
5			
4			
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1			

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FA PROJECT NO.
220871
PROJECT MANAGER
S. MELLOTT
DRAWN BY
D. BRUE
SCALE
AS SHOWN
ISSUE DATE
12/09/2022

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PROJECT
PROPOSED MANLIUS SOLAR
TOWN OF MANLIUS
ONONDAGA COUNTY, NEW YORK

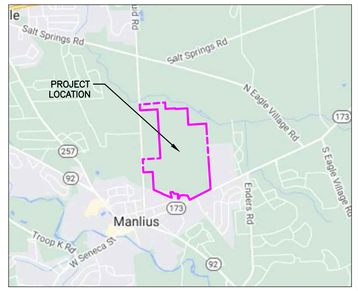
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CIVIL GRADING PLAN - 6

DRAWING NO.
C-306

SHEET 18 OF 36

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SITE LOCATION
SCALE: NTS

LEGEND

- PROJECT BOUNDARY
- PROPERTY SETBACK
- ADJACENT PROPERTY LINE
- PROPERTY LINE
- INTERIOR LOT LINE
- RIGHT-OF-WAY
- EASEMENT/RIGHT-OF-WAY
- EXISTING TREE LINE
- EXISTING FENCE
- EXISTING GRAVEL ROAD
- EXISTING OVERHEAD UTILITY LINES
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- TOP OF BANK
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- PROPOSED SURFACE WATER CROSSING
- STANDARD GRAVEL ACCESS ROAD
- PERVIOUS GRAVEL ACCESS ROAD
- SILT FENCE

50 FEET 0 50 100 150
Scale: 1"=50'

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	BY
1			
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4			
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S. MELLOTT
DRAWN BY
D. BRUE
SCALE
AS SHOWN
ISSUE DATE
12/09/2022

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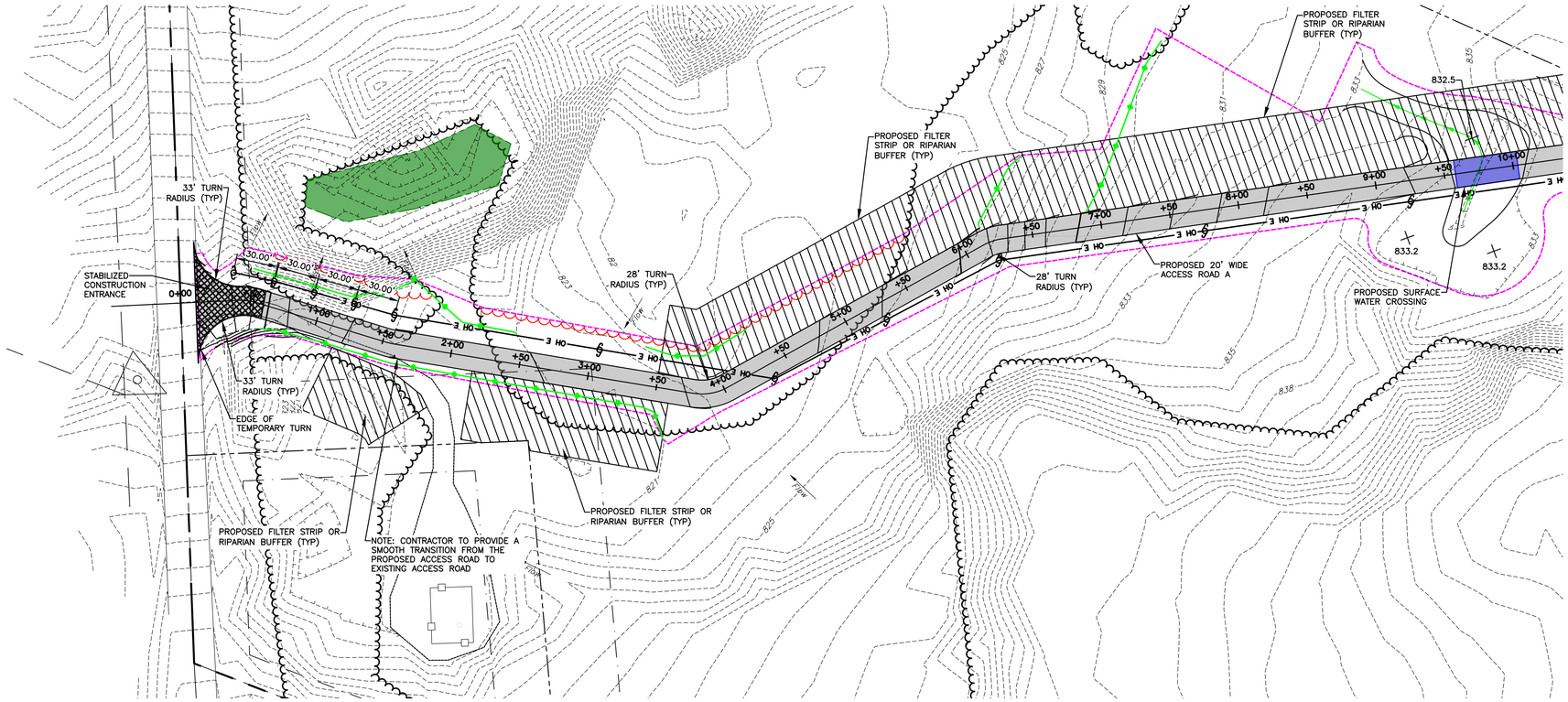
PROJECT
PROPOSED MANLIUS SOLAR
TOWN OF MANLIUS
ONONDAGA COUNTY, NEW YORK

TITLE OF DRAWING
ACCESS ROAD PLAN AND PROFILE INDEX

DRAWING NO.
C-400

SHEET 19 OF 36

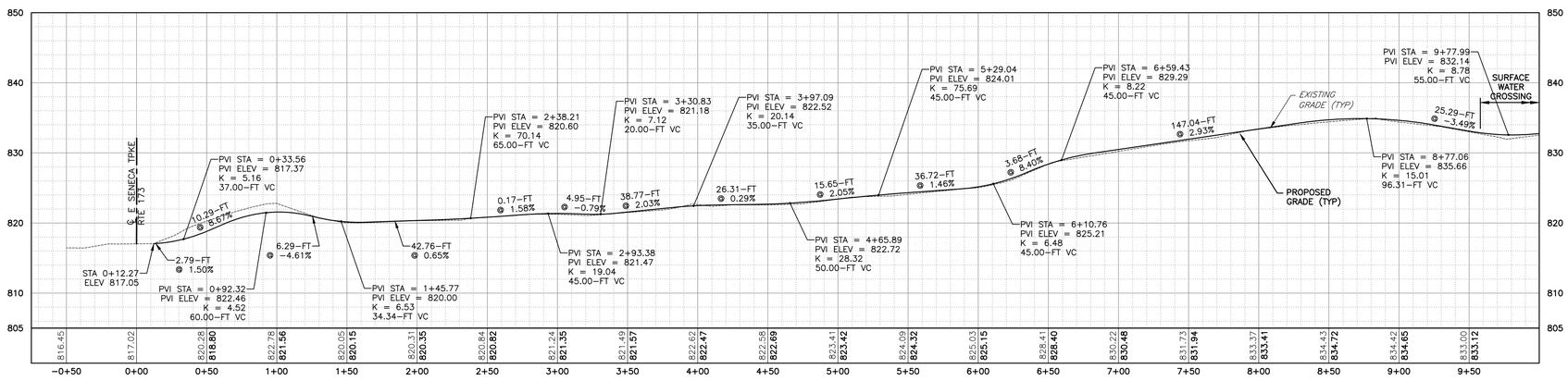
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DATE/TIME: 12/9/2022 4:05:13 PM
USER: Doug Perrotto



ACCESS ROAD A
PLAN VIEW
SCALE: 1"=50'

LEGEND

- PROJECT BOUNDARY
- PROPERTY SETBACK
- ADJACENT PROPERTY LINE
- PROPERTY LINE
- INTERIOR LOT LINE
- RIGHT–OF–WAY
- EASEMENT/RIGHT–OF–WAY
- EXISTING TREE LINE
- EXISTING FENCE
- EXISTING GRAVEL ROAD
- EXISTING OVERHEAD UTILITY LINES
- EXISTING UTILITY POLE
- TOP OF BANK
- PANEL ARRAY
- PROPOSED FENCE
- EXISTING WATER LINE
- PROPOSED TREELINE
- LIMIT OF DISTURBANCE
- DELINEATED WETLANDS
- PROPOSED FILTER STRIP OR RIPARIAN BUFFER
- PROPOSED SURFACE WATER CROSSING
- STANDARD GRAVEL ACCESS ROAD
- PERVIOUS GRAVEL ACCESS ROAD
- SILT FENCE



ACCESS ROAD A
PROFILE VIEW
SCALE: HORIZ: 1"=50'
VERT: 1"=10'

50 0 50 100 150
FEET
Scale: 1"=50'

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	BY
7			
6			
5			
4			
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2			
1	FILE LAYOUT UPDATES		

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220871
PROJECT MANAGER
S. MELLOTT
DRAWN BY
D. BRUE
SCALE
AS SHOWN
ISSUE DATE
12/09/2022

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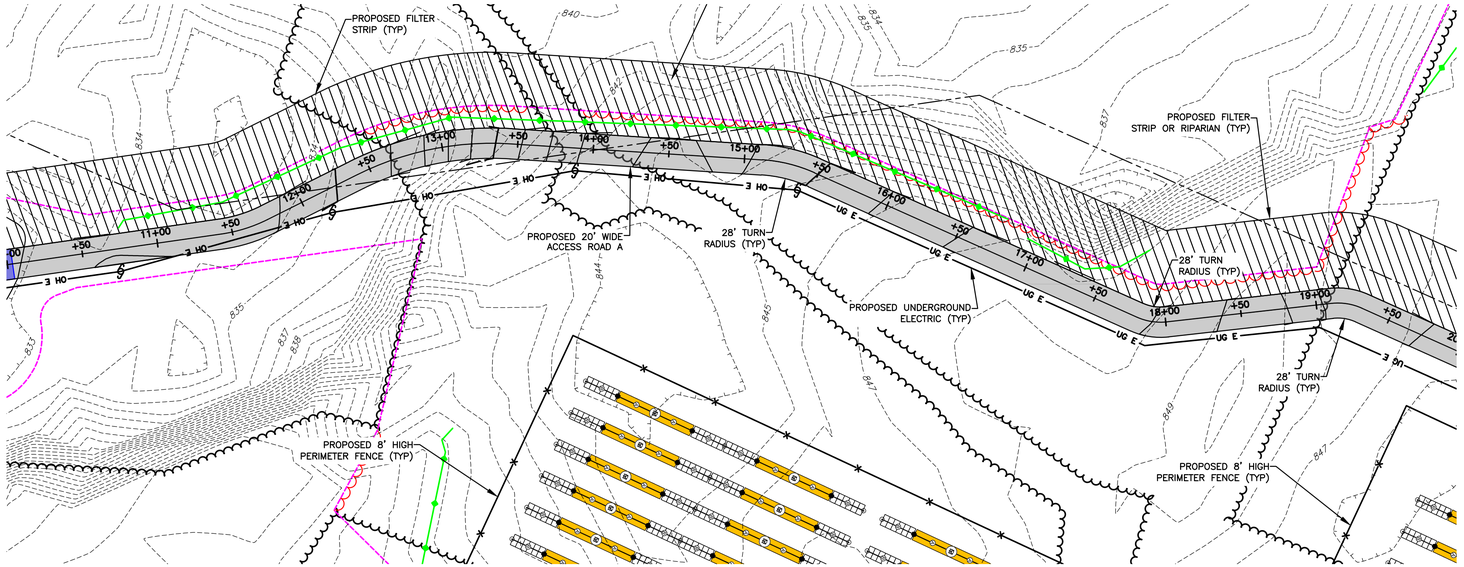
PROJECT
PROPOSED MANLIUS SOLAR
TOWN OF MANLIUS
ONONDAGA COUNTY, NEW YORK

TITLE OF DRAWING
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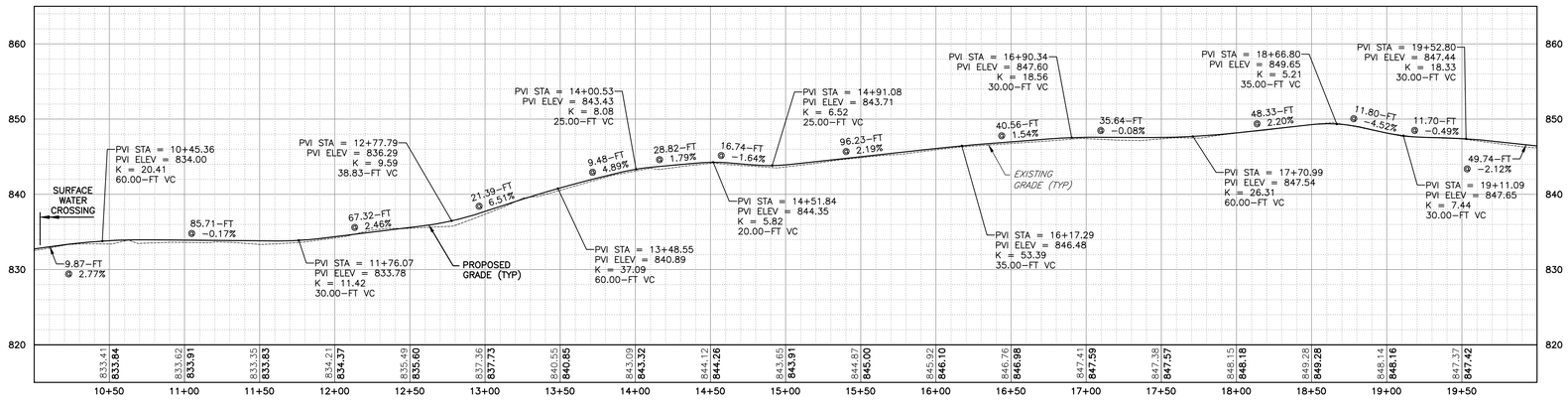
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C-401

SHEET 20 OF 36

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DATE/TIME: 12/9/2022 4:05:48 PM
USER: Doug Perrotto



ACCESS ROAD A
PLAN VIEW
SCALE: 1"=50'



ACCESS ROAD A
PROFILE VIEW
SCALE: HORIZ: 1"=50'
VERT: 1"=10'

LEGEND

- PROJECT BOUNDARY
- PROPERTY SETBACK
- ADJACENT PROPERTY LINE
- PROPERTY LINE
- INTERIOR LOT LINE
- RIGHT-OF-WAY
- EASEMENT/RIGHT-OF-WAY
- EXISTING TREE LINE
- EXISTING FENCE
- EXISTING GRAVEL ROAD
- EXISTING OVERHEAD UTILITY LINES
- EXISTING UTILITY POLE
- TOP OF BANK
- PANEL ARRAY
- PROPOSED FENCE
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- PROPOSED TREELINE
- LIMIT OF DISTURBANCE
- DELINEATED WETLANDS
- PROPOSED FILTER STRIP OR RIPARIAN BUFFER
- PROPOSED SURFACE WATER CROSSING
- STANDARD GRAVEL ACCESS ROAD
- PERVIOUS GRAVEL ACCESS ROAD
- SILT FENCE

40 FEET 0 40 80 120
Scale: 1"=40'

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REV	DESCRIPTION	DATE	BY
7			
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5			
4			
3			
2			
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FA PROJECT NO.
220871
PROJECT MANAGER
S. MELLOTT
DRAWN BY
D. BRUE
SCALE
AS SHOWN
ISSUE DATE
12/09/2022

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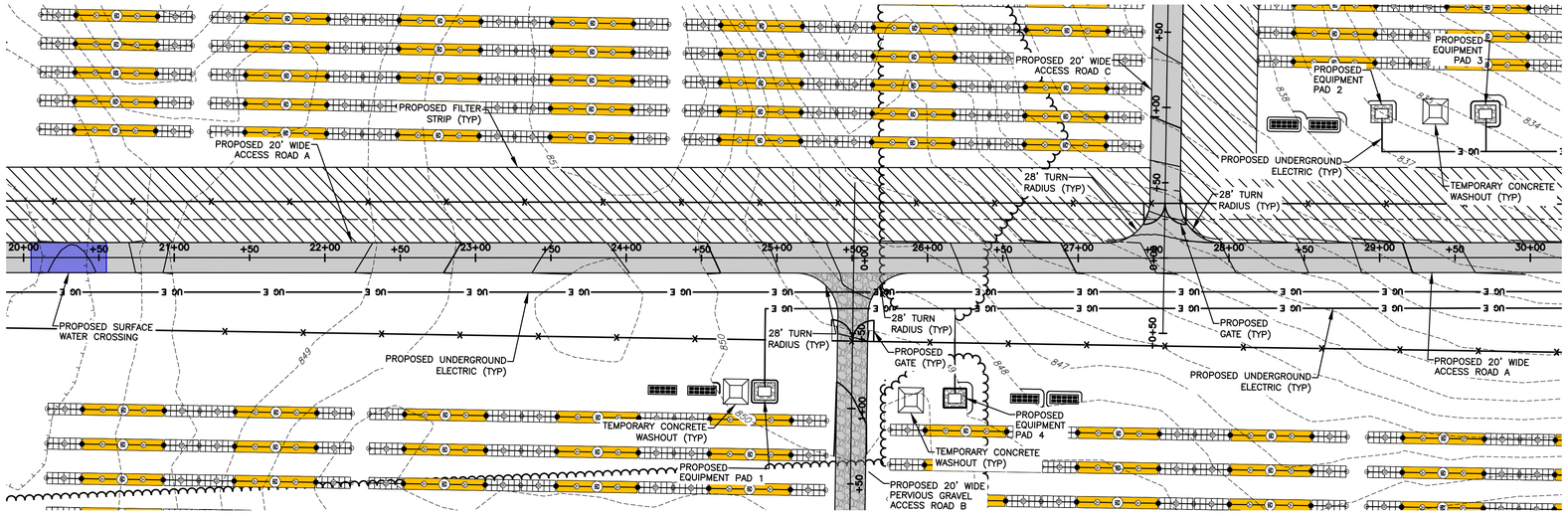
PROJECT
PROPOSED MANLIUS SOLAR
TOWN OF MANLIUS
ONONDAGA COUNTY, NEW YORK

TITLE OF DRAWING
ACCESS ROAD A PLAN PROFILE -2

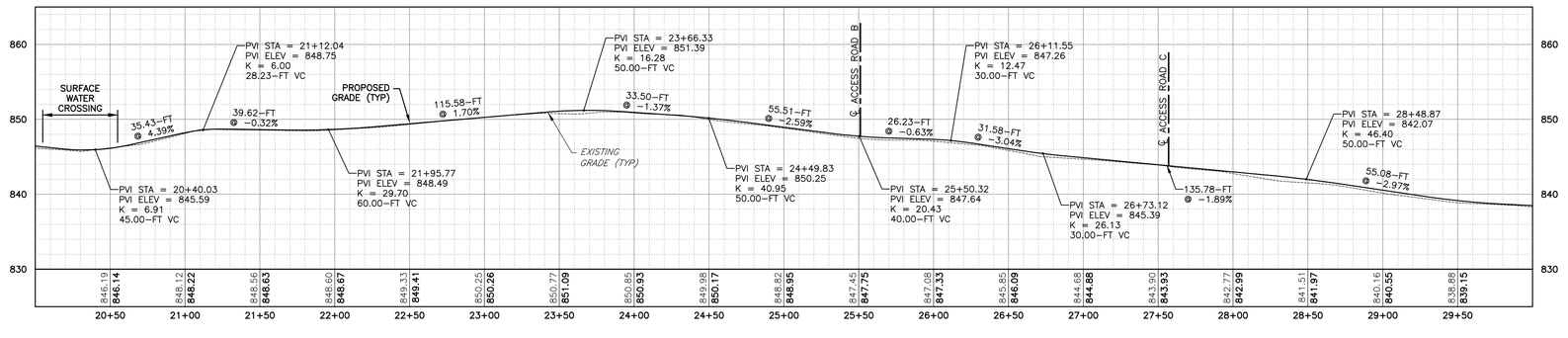
DRAWING NO.
C-402

SHEET 21 OF 36

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DATE/TIME: 12/9/2022 4:06:20 PM
USER: Doug Perrotto



ACCESS ROAD A
PLAN VIEW
SCALE: 1"=50'



ACCESS ROAD A
PROFILE VIEW
SCALE: HORIZ: 1"=50'
VERT: 1"=10'

LEGEND

- PROJECT BOUNDARY
- PROPERTY SETBACK
- ADJACENT PROPERTY LINE
- PROPERTY LINE
- INTERIOR LOT LINE
- RIGHT-OF-WAY
- EASEMENT/RIGHT-OF-WAY
- EXISTING TREE LINE
- EXISTING FENCE
- EXISTING GRAVEL ROAD
- EXISTING OVERHEAD UTILITY LINES
- EXISTING UTILITY POLE
- TOP OF BANK
- PANEL ARRAY
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- PROPOSED TREELINE
- LIMIT OF DISTURBANCE
- DELINEATED WETLANDS
- PROPOSED FILTER STRIP OR RIPARIAN BUFFER
- PROPOSED SURFACE WATER CROSSING
- STANDARD GRAVEL ACCESS ROAD
- PERVIOUS GRAVEL ACCESS ROAD
- SILT FENCE

50 0 50 100 150
FEET
Scale: 1"=50'

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	BY
1			
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PROJECT MANAGER
S. MELLOTT
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SCALE
AS SHOWN
ISSUE DATE
12/09/2022

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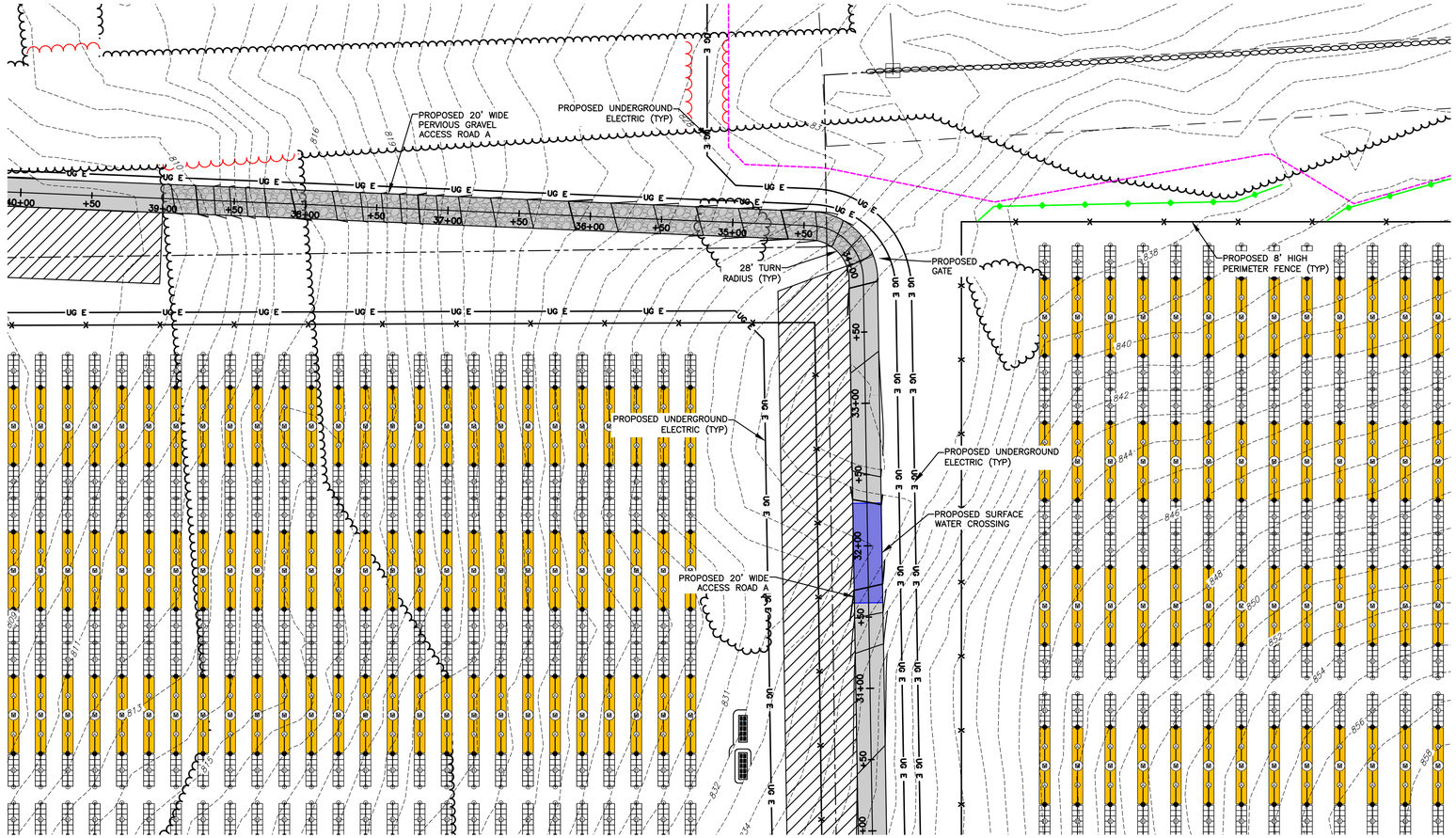
PROJECT
PROPOSED MANLIUS SOLAR
TOWN OF MANLIUS
ONONDAGA COUNTY, NEW YORK

TITLE OF DRAWING
ACCESS ROAD A PLAN PROFILE - 3

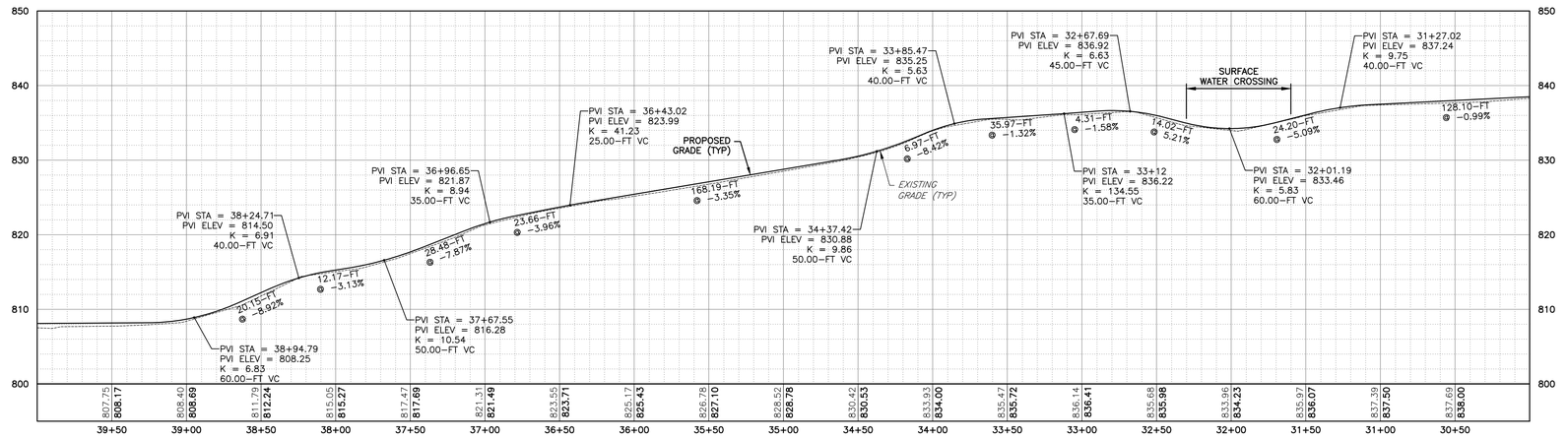
DRAWING NO.
C-403

SHEET 22 OF 36

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DATE/TIME: 12/9/2022 4:06:52 PM
USER: Doug Perrotto



ACCESS ROAD A
PLAN VIEW
SCALE: 1"=50'



ACCESS ROAD A
PROFILE VIEW
SCALE: HORIZ: 1"=50'
VERT: 1"=10'

LEGEND

- PROJECT BOUNDARY
- PROPERTY SETBACK
- ADJACENT PROPERTY LINE
- PROPERTY LINE
- INTERIOR LOT LINE
- RIGHT-OF-WAY
- EASEMENT/RIGHT-OF-WAY
- EXISTING TREE LINE
- EXISTING FENCE
- EXISTING GRAVEL ROAD
- EXISTING OVERHEAD UTILITY LINES
- EXISTING UTILITY POLE
- TOP OF BANK
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- PROPOSED FENCE
- EXISTING WATER LINE
- PROPOSED TREELINE
- LIMIT OF DISTURBANCE
- DELINEATED WETLANDS
- PROPOSED FILTER STRIP OR RIPARIAN BUFFER
- PROPOSED SURFACE WATER CROSSING
- STANDARD GRAVEL ACCESS ROAD
- PERVIOUS GRAVEL ACCESS ROAD
- SILT FENCE

50 0 50 100 150
FEET
Scale: 1"=50'

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	BY
7			
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4			
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FA PROJECT NO.
220871
PROJECT MANAGER
S. MELLOTT
DRAWN BY
D. BRUE
SCALE
AS SHOWN
ISSUE DATE
12/09/2022

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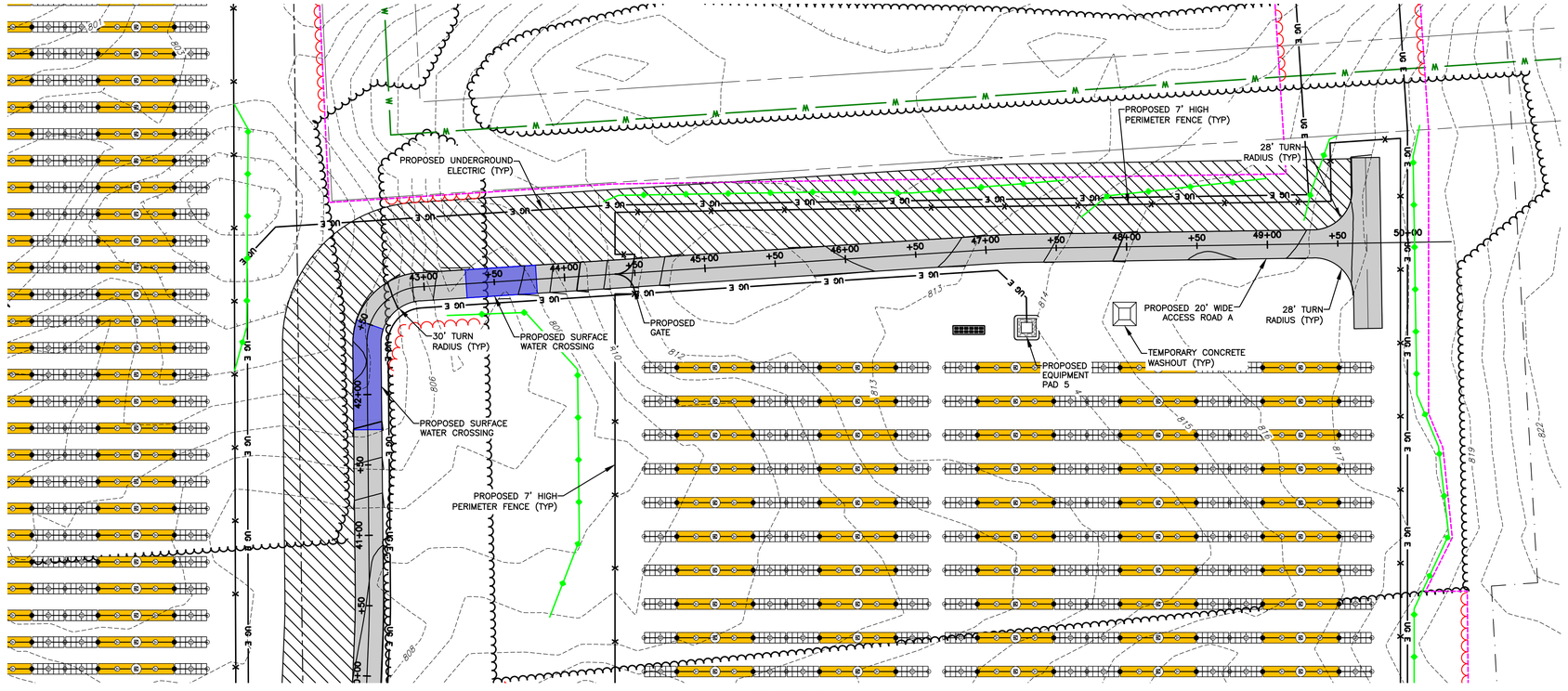
PROJECT
PROPOSED MANLIUS SOLAR
TOWN OF MANLIUS
ONONDAGA COUNTY, NEW YORK

TITLE OF DRAWING
ACCESS ROAD A PLAN PROFILE - 4

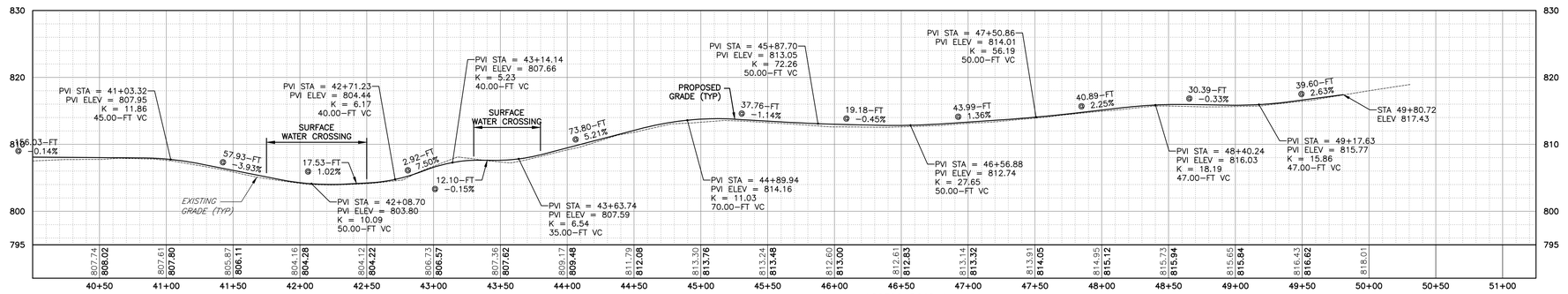
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C-404

SHEET 23 OF 36

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USER: Doug Perrotto



ACCESS ROAD A
PLAN VIEW
SCALE: 1"=50'



ACCESS ROAD A
PROFILE VIEW
SCALE: HORIZ: 1"=50'
VERT: 1"=10'

LEGEND

- PROJECT BOUNDARY
- PROPERTY SETBACK
- ADJACENT PROPERTY LINE
- PROPERTY LINE
- INTERIOR LOT LINE
- RIGHT-OF-WAY
- EASEMENT/RIGHT-OF-WAY
- EXISTING TREE LINE
- EXISTING FENCE
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- EXISTING OVERHEAD UTILITY LINES
- EXISTING UTILITY POLE
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- PROPOSED FILTER STRIP OR RIPARIAN BUFFER
- PROPOSED SURFACE WATER CROSSING
- STANDARD GRAVEL ACCESS ROAD
- PERVIOUS GRAVEL ACCESS ROAD
- SILT FENCE

50 FEET 0 50 100 150
Scale: 1"=50'

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	BY
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5			
4			
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2			
1	FILE LAYOUT UPDATES		

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FA PROJECT NO.
220871
PROJECT MANAGER
S. MELLOTT
DRAWN BY
D. BRUE
SCALE
AS SHOWN
ISSUE DATE
12/09/2022

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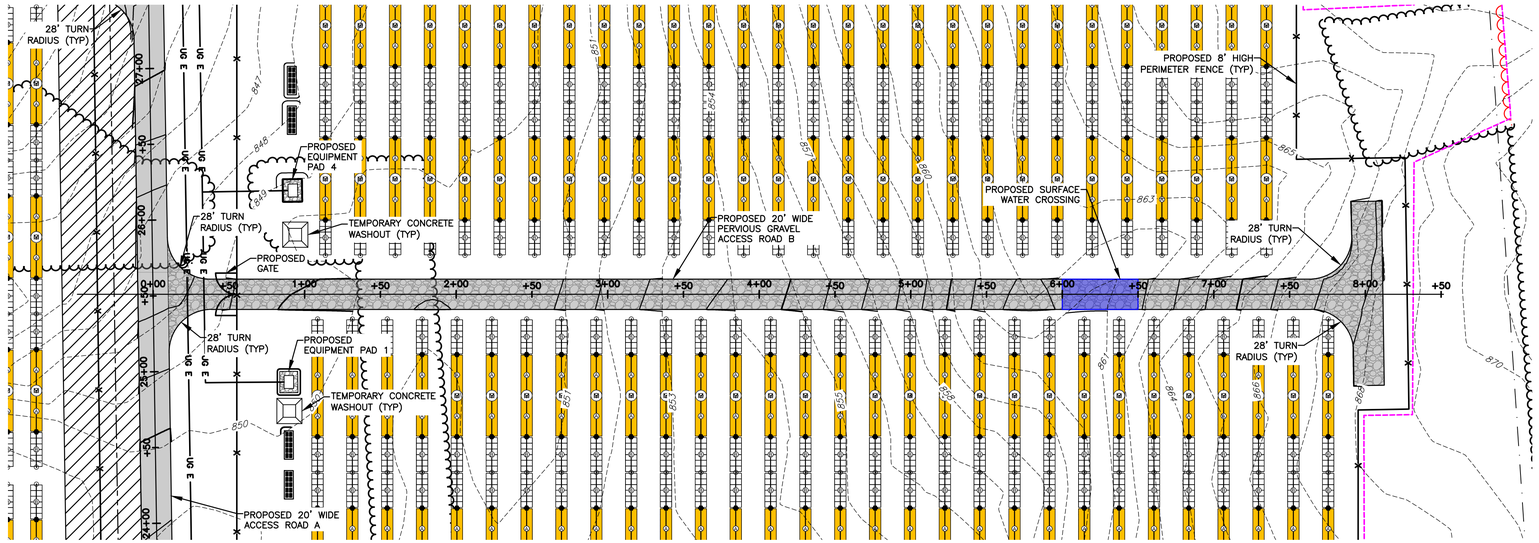
PROJECT
PROPOSED MANLIUS SOLAR
TOWN OF MANLIUS
ONONDAGA COUNTY, NEW YORK

TITLE OF DRAWING
ACCESS ROAD A PLAN PROFILE -5

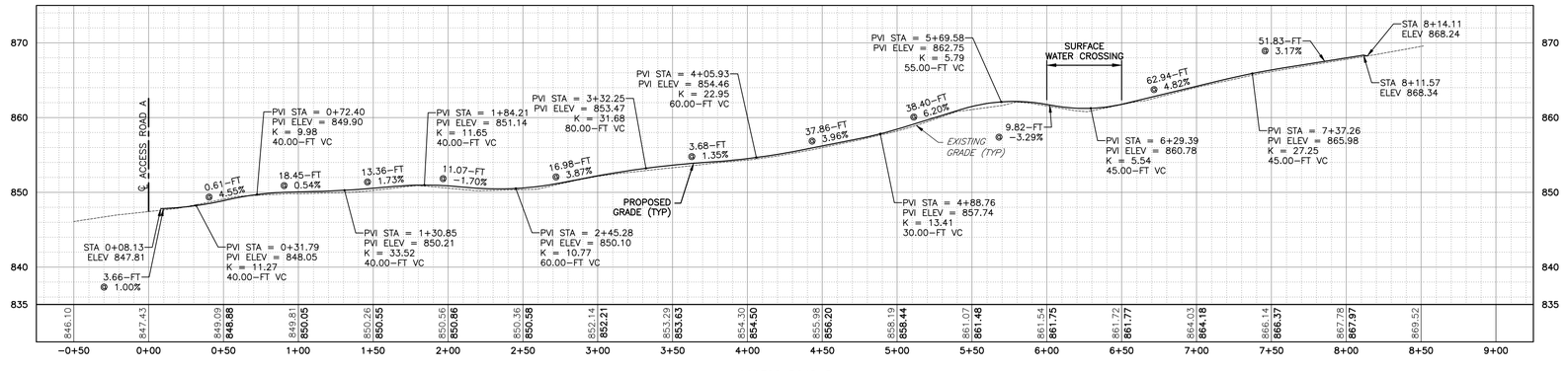
DRAWING NO.
C-405

SHEET 24 OF 36

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DATE/TIME: 12/9/2022 4:08:05 PM
USER: Doug Perrotto



ACCESS ROAD B
PLAN VIEW
SCALE: 1"=50'



ACCESS ROAD B
PROFILE VIEW
SCALE: HORIZ: 1"=50'
VERT: 1"=10'

LEGEND

- PROJECT BOUNDARY
- PROPERTY SETBACK
- ADJACENT PROPERTY LINE
- PROPERTY LINE
- INTERIOR LOT LINE
- RIGHT-OF-WAY
- EASEMENT/RIGHT-OF-WAY
- EXISTING TREE LINE
- EXISTING FENCE
- EXISTING GRAVEL ROAD
- EXISTING OVERHEAD UTILITY LINES
- EXISTING UTILITY POLE
- TOP OF BANK
- PANEL ARRAY
- PROPOSED FENCE
- EXISTING WATER LINE
- PROPOSED TREELINE
- LIMIT OF DISTURBANCE
- DELINEATED WETLANDS
- PROPOSED FILTER STRIP OR RIPARIAN BUFFER
- PROPOSED SURFACE WATER CROSSING
- STANDARD GRAVEL ACCESS ROAD
- PERVIOUS GRAVEL ACCESS ROAD
- SILT FENCE

50 0 50 100 150
FEET
Scale: 1"=50'

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	BY
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220871
PROJECT MANAGER
S. MELLOTT
DRAWN BY
D. BRUE
SCALE
AS SHOWN
ISSUE DATE
12/09/2022

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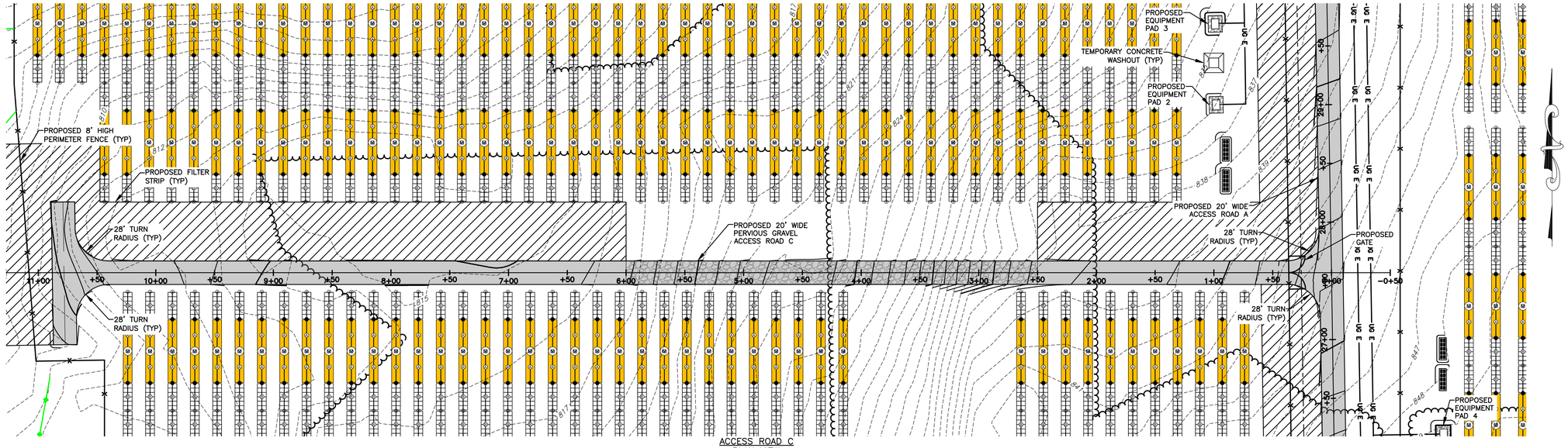
PROJECT
PROPOSED MANLIUS SOLAR
TOWN OF MANLIUS
ONONDAGA COUNTY, NEW YORK

TITLE OF DRAWING
ACCESS ROAD B PLAN PROFILE -1

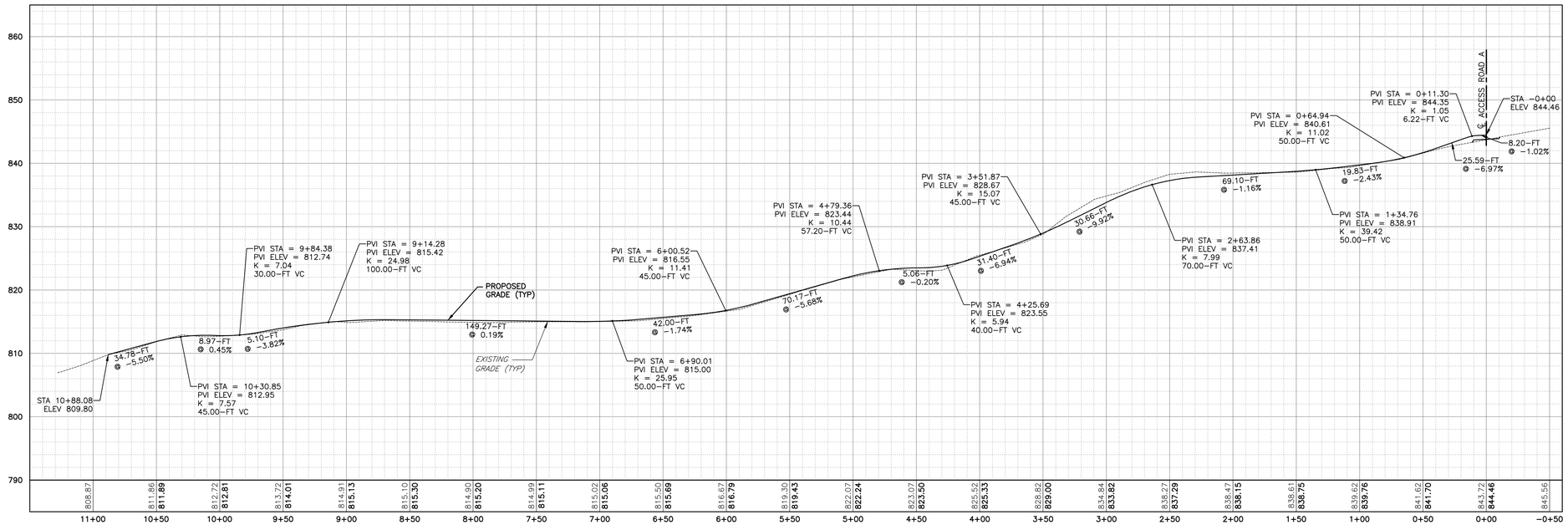
DRAWING NO.
C-406

SHEET 25 OF 36

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DATE/TIME: 12/9/2022 4:08:39 PM
USER: Doug Perrotto



ACCESS ROAD C
PLAN VIEW
SCALE: 1"=50'



ACCESS ROAD C
PROFILE VIEW
SCALE: HORIZ: 1"=50'
VERT: 1"=10'

LEGEND

- PROJECT BOUNDARY
- PROPERTY SETBACK
- ADJACENT PROPERTY LINE
- PROPERTY LINE
- INTERIOR LOT LINE
- RIGHT−OF−WAY
- EASEMENT/RIGHT−OF−WAY
- EXISTING TREE LINE
- EXISTING FENCE
- EXISTING GRAVEL ROAD
- EXISTING OVERHEAD UTILITY LINES
- EXISTING UTILITY POLE
- TOP OF BANK
- PANEL ARRAY
- PROPOSED FENCE
- EXISTING WATER LINE
- PROPOSED TREELINE
- LIMIT OF DISTURBANCE
- DELINEATED WETLANDS
- PROPOSED FILTER STRIP OR RIPARIAN BUFFER
- PROPOSED SURFACE WATER CROSSING
- STANDARD GRAVEL ACCESS ROAD
- PERVIOUS GRAVEL ACCESS ROAD
- SILT FENCE

50 FEET 0 50 100 150
Scale: 1"=50'

NOT FOR CONSTRUCTION

FILE NAME: H:\Projects\22\220871-00-CVE_Manlius_Sol\Eng\CAD\CUT\220871 C-400 Access Road Plan and Profile.dwg
DATE/TIME: 12/9/2022 4:09:16 PM
USER: Doug Perrotto

REV	DESCRIPTION	DATE	BY
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1			

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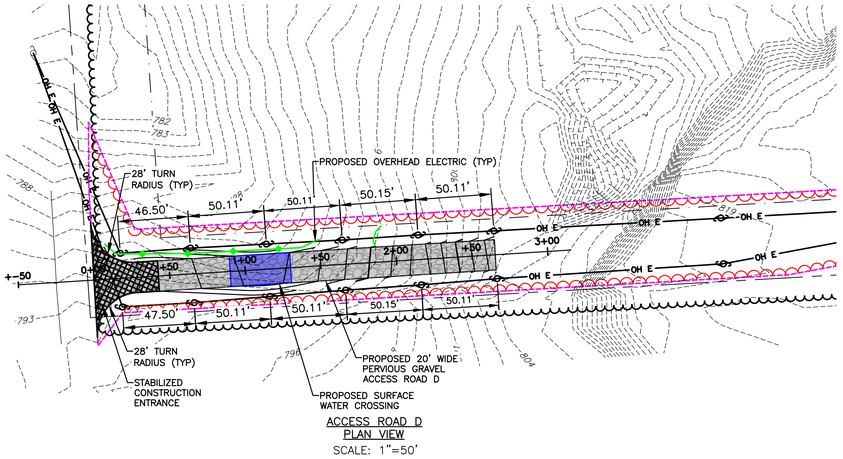
FA PROJECT NO.
220871
PROJECT MANAGER
S. MELLOTT
DRAWN BY
D. BRUE
SCALE
AS SHOWN
ISSUE DATE
12/09/2022

PROJECT
PROPOSED MANLIUS SOLAR
TOWN OF MANLIUS
ONONDAGA COUNTY, NEW YORK

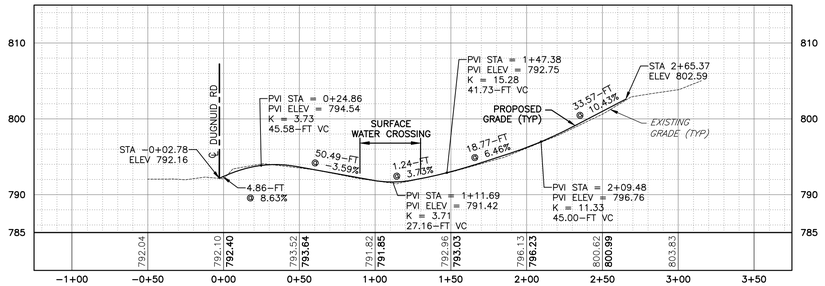
TITLE OF DRAWING
ACCESS ROAD C PLAN PROFILE -1

DRAWING NO.
C-407

SHEET 26 OF 36



ACCESS ROAD D
PLAN VIEW
SCALE: 1"=50'



ACCESS ROAD D
PROFILE VIEW
SCALE: HORIZ: 1"=50'
VERT: 1"=10'

LEGEND

- PROJECT BOUNDARY
- PROPERTY SETBACK
- ADJACENT PROPERTY LINE
- PROPERTY LINE
- INTERIOR LOT LINE
- RIGHT-OF-WAY
- EASEMENT/RIGHT-OF-WAY
- EXISTING TREE LINE
- EXISTING FENCE
- EXISTING GRAVEL ROAD
- EXISTING OVERHEAD UTILITY LINES
- EXISTING UTILITY POLE
- TOP OF BANK
- PANEL ARRAY
- PROPOSED FENCE
- EXISTING WATER LINE
- PROPOSED TREELINE
- LIMIT OF DISTURBANCE
- DELINEATED WETLANDS
- PROPOSED FILTER STRIP OR RIPARIAN BUFFER
- PROPOSED SURFACE WATER CROSSING
- STANDARD GRAVEL ACCESS ROAD
- PERVIOUS GRAVEL ACCESS ROAD
- SILT FENCE

50 0 50 100 150
FEET
Scale: 1"=50'

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	BY
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FA PROJECT NO.
220871

PROJECT MANAGER
S. MELLOTT

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D. BRUE

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ISSUE DATE
12/09/2022

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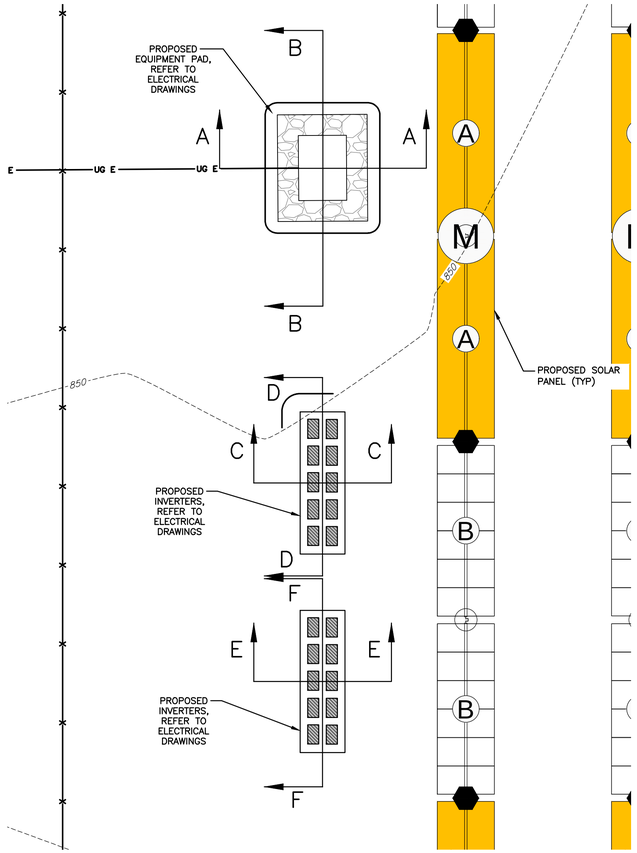
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TOWN OF MANLIUS
ONONDAGA COUNTY, NEW YORK

TITLE OF DRAWING
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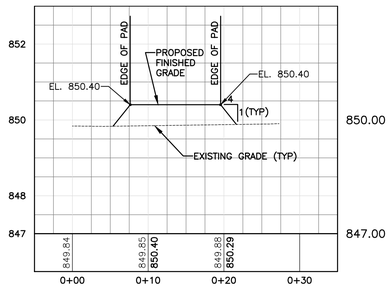
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C-408

SHEET 27 OF 36

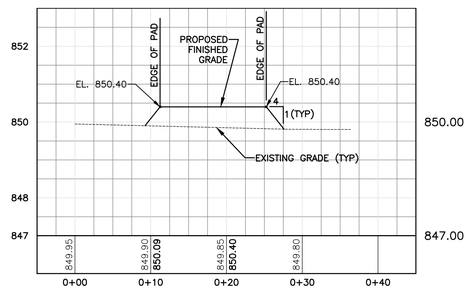
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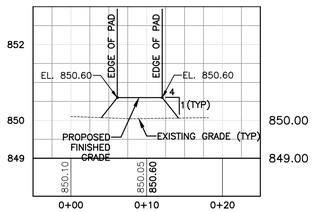
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SCALE: 1"=10'



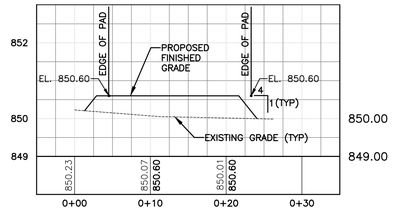
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VERT: 1"=2'



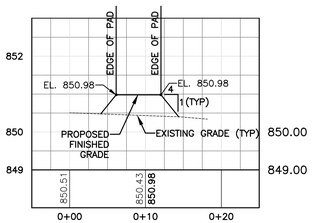
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VERT: 1"=2'



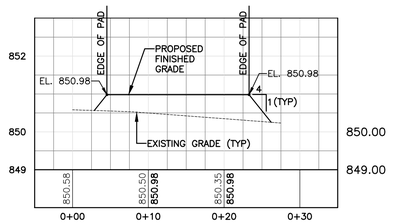
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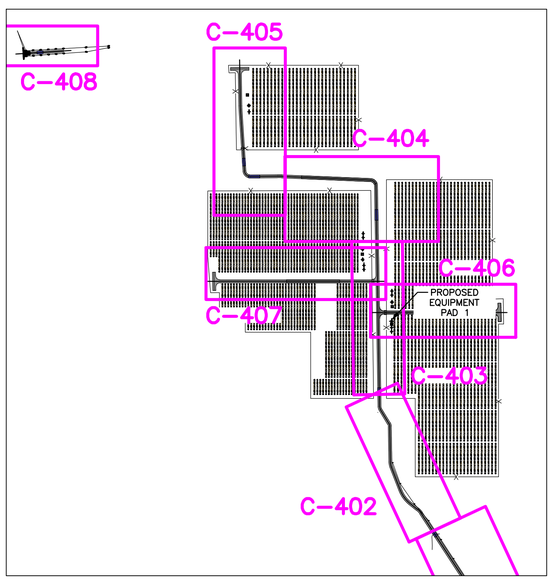
SECTION D–D
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VERT: 1"=2'



SECTION E–E
SCALE: HORIZ: 1"=10'
VERT: 1"=2'



SECTION F–F
SCALE: HORIZ: 1"=10'
VERT: 1"=2'



LOCATION MAP
SCALE: 1"=500'

NOT FOR CONSTRUCTION

10 FEET 0 10 20 30
Scale: 1"=10'

REV	DESCRIPTION	DATE	BY
7			
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FA PROJECT NO.
220871
PROJECT MANAGER
S. MELLOTT
DRAWN BY
D. BRUE
SCALE
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ISSUE DATE
12/09/2022

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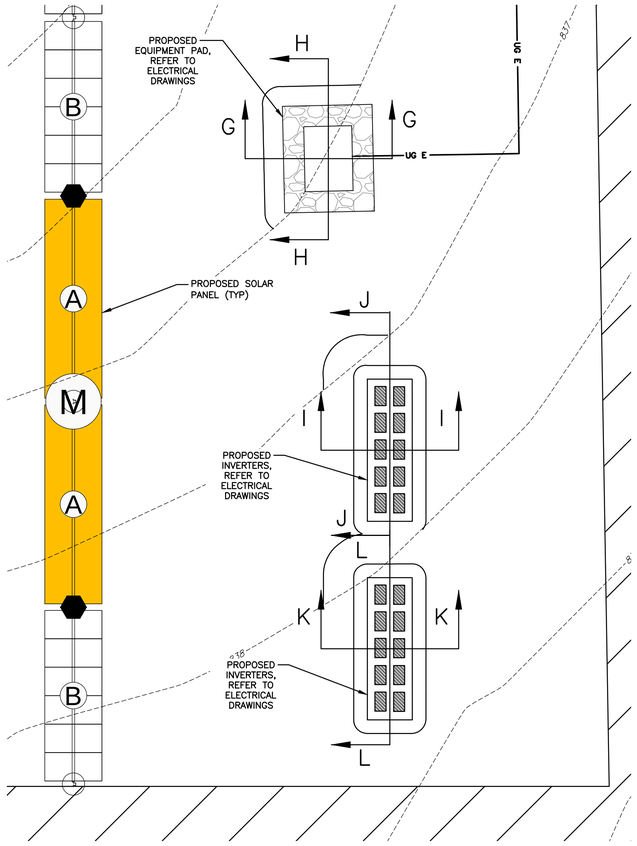
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TOWN OF MANLIUS
ONONDAGA COUNTY, NEW YORK

TITLE OF DRAWING
EQUIPMENT PAD GRADING PLAN AND SECTIONS

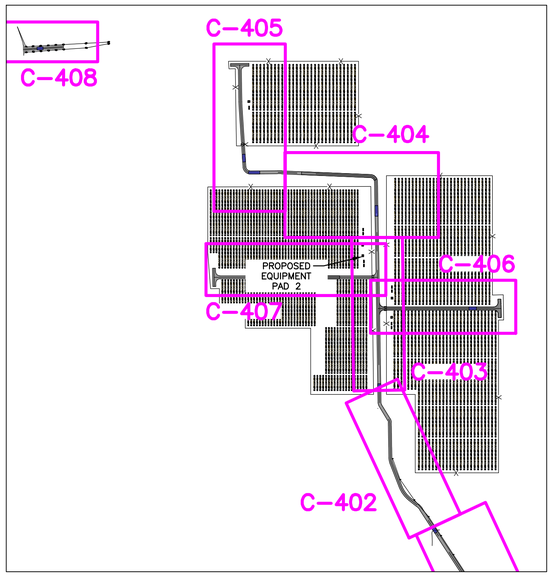
DRAWING NO.
C-409

SHEET 28 OF 36

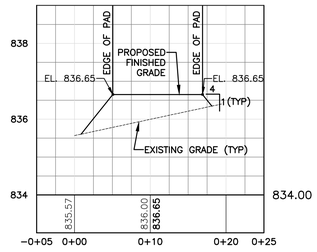
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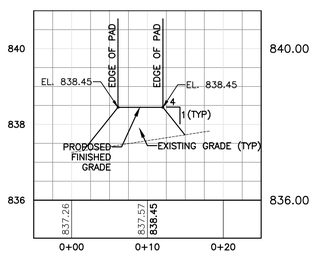
PROPOSED EQUIPMENT PAD 2 PLAN
SCALE: 1"=10'



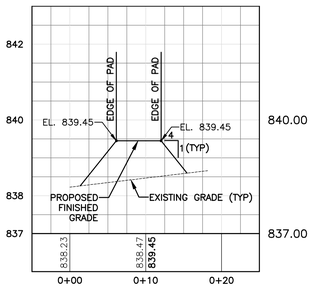
LOCATION MAP
SCALE: 1"=500'



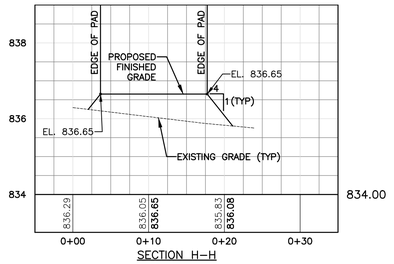
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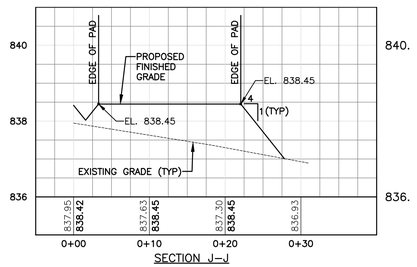
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VERT: 1"=2'



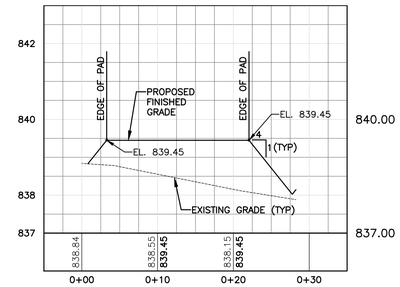
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SECTION H–H
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SECTION J–J
SCALE: HORIZ: 1"=10'
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SECTION L–L
SCALE: HORIZ: 1"=10'
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DATE/TIME: 12/9/2022 4:12:16 PM
USER: Doug Perrotto

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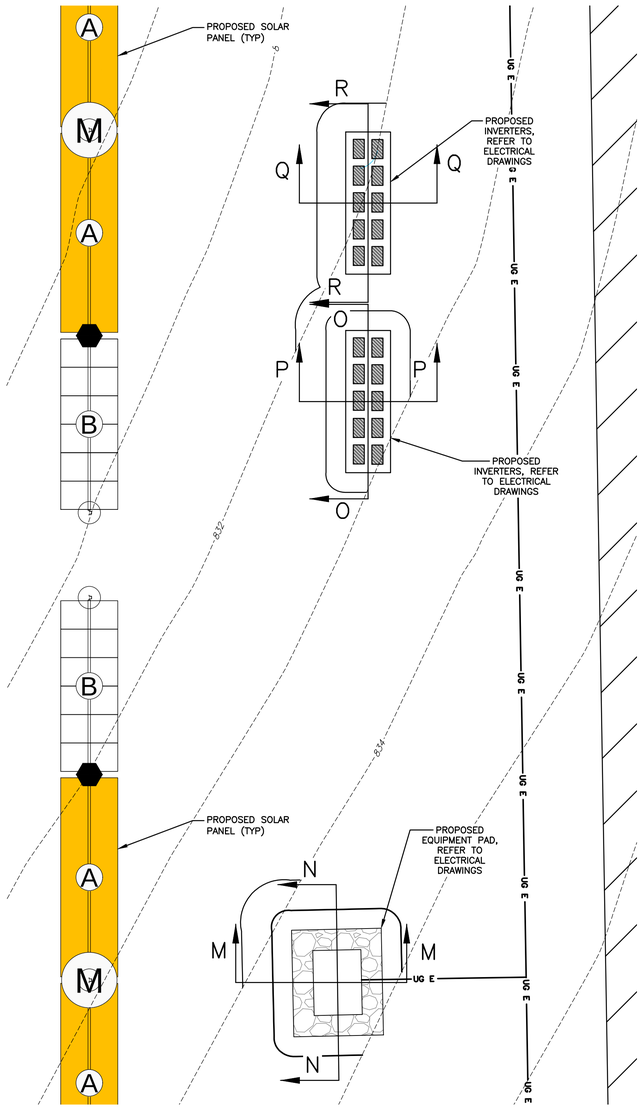
FA PROJECT NO.
220871
PROJECT MANAGER
S. MELLOTT
DRAWN BY
D. BRUE
SCALE
AS SHOWN
ISSUE DATE
12/09/2022

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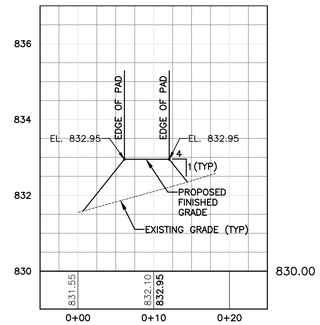
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TOWN OF MANLIUS
ONONDAGA COUNTY, NEW YORK

TITLE OF DRAWING
EQUIPMENT PAD GRADING PLAN AND SECTIONS

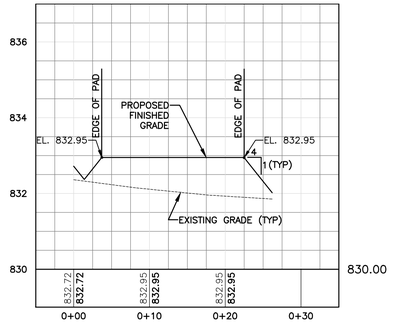
DRAWING NO.
C-410



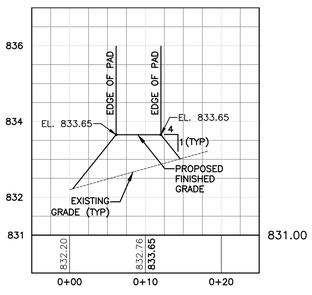
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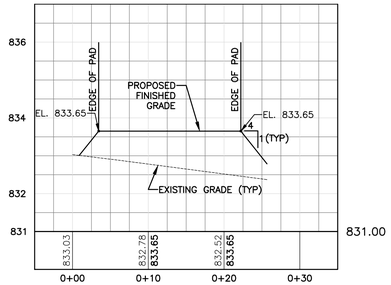
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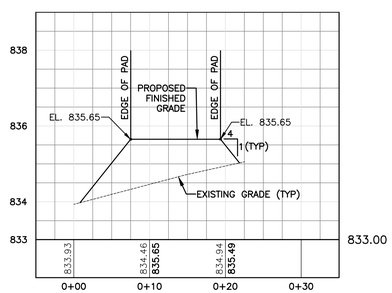
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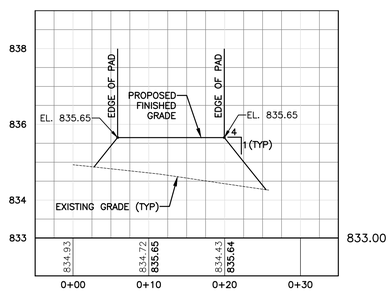
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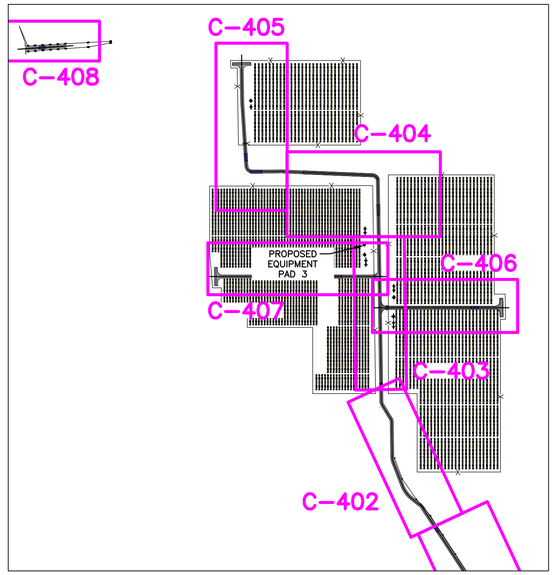
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SECTION M–M
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SECTION N–N
SCALE: HORIZ: 1"=10'
VERT: 1"=2'



LOCATION MAP
SCALE: 1"=500'

NOT FOR CONSTRUCTION

10 0 10 20 30
FEET
Scale: 1"=10'

REV	DESCRIPTION	DATE	BY
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FA PROJECT NO.
220871
PROJECT MANAGER
S. MELLOTT
DRAWN BY
D. BRUE
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ISSUE DATE
12/09/2022

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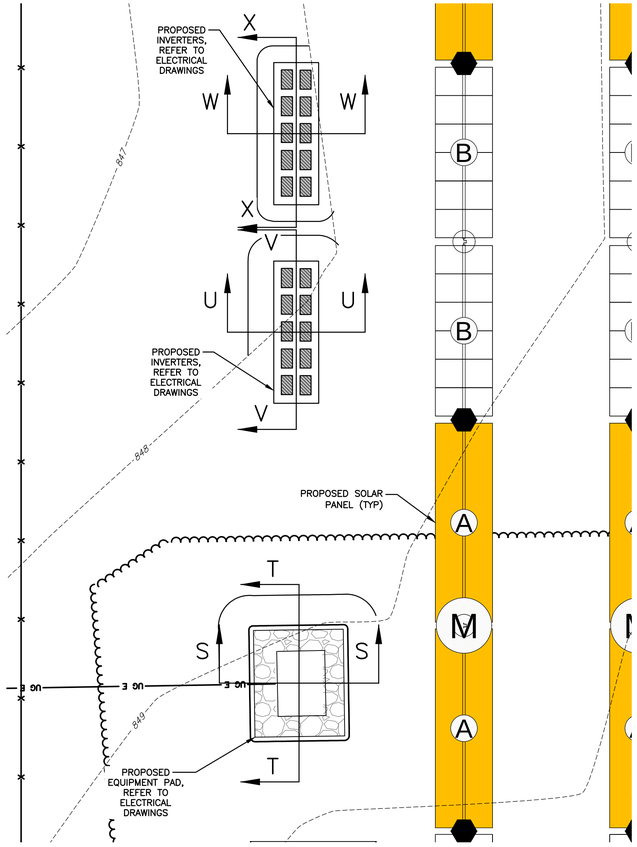
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TOWN OF MANLIUS
ONONDAGA COUNTY, NEW YORK

TITLE OF DRAWING
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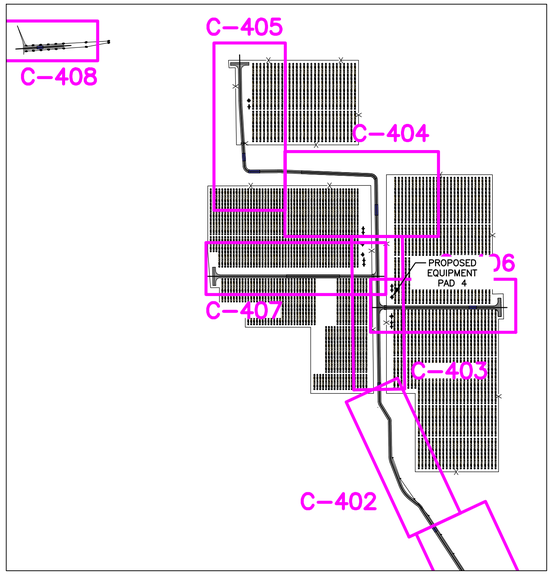
DRAWING NO.
C-411

SHEET 30 OF 36

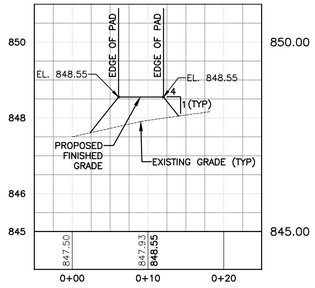
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USER: Doug Perrotto



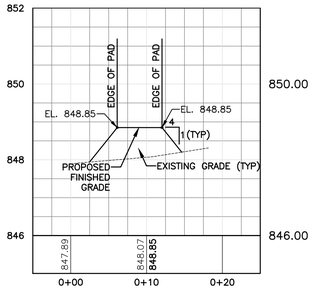
PROPOSED EQUIPMENT PAD 4 PLAN
SCALE: 1"=10'



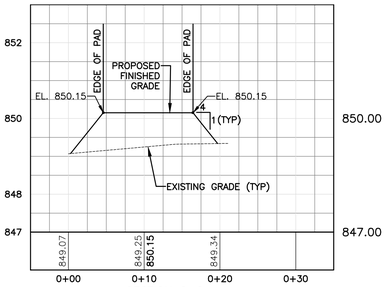
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SCALE: 1"=500'



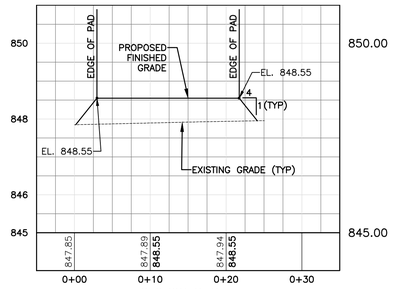
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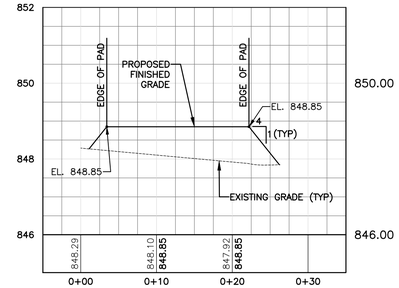
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VERT: 1"=2'



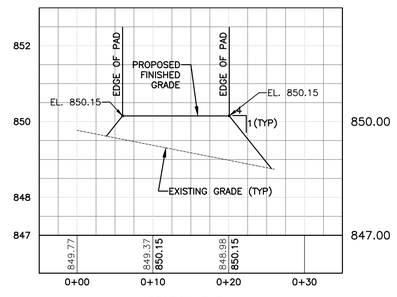
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VERT: 1"=2'



SECTION X–X
SCALE: HORIZ: 1"=10'
VERT: 1"=2'



SECTION V–V
SCALE: HORIZ: 1"=10'
VERT: 1"=2'



SECTION T–T
SCALE: HORIZ: 1"=10'
VERT: 1"=2'

NOT FOR CONSTRUCTION

10 FEET 0 10 20 30
Scale: 1"=10'

REV	DESCRIPTION	DATE	BY
7			
6			
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4			
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1	FOR CLIENT REVIEW	12/09/2022	EJL

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220871
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S. MELLOTT
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D. BRUE
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AS SHOWN
ISSUE DATE
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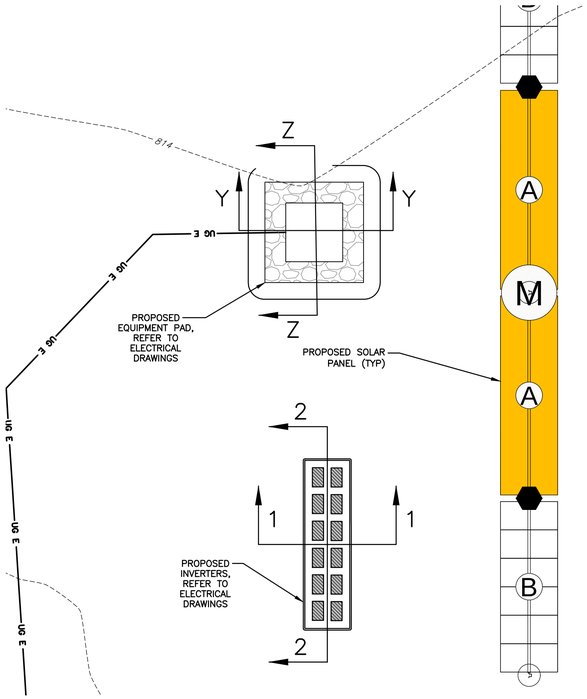
PROJECT
PROPOSED MANLIUS SOLAR
TOWN OF MANLIUS
ONONDAGA COUNTY, NEW YORK

TITLE OF DRAWING
EQUIPMENT PAD GRADING PLAN AND SECTIONS

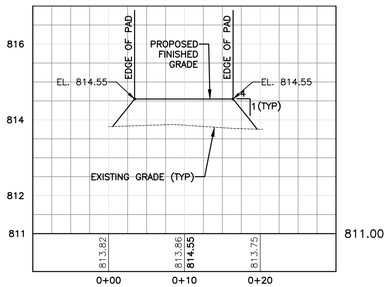
DRAWING NO.
C-412

SHEET 31 OF 36

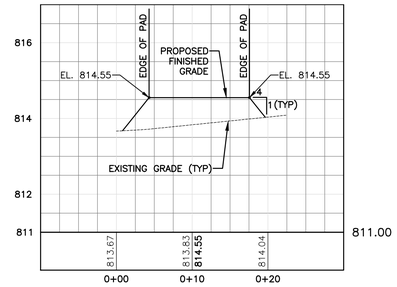
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USER: Doug Perrotto



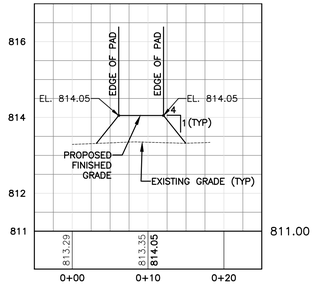
PROPOSED EQUIPMENT PAD 5 PLAN
SCALE: 1"=10'



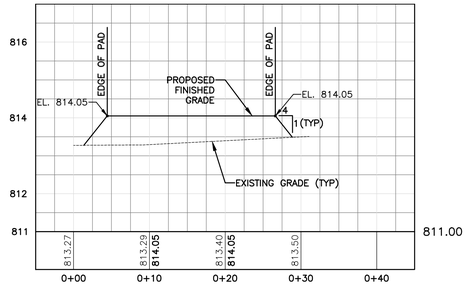
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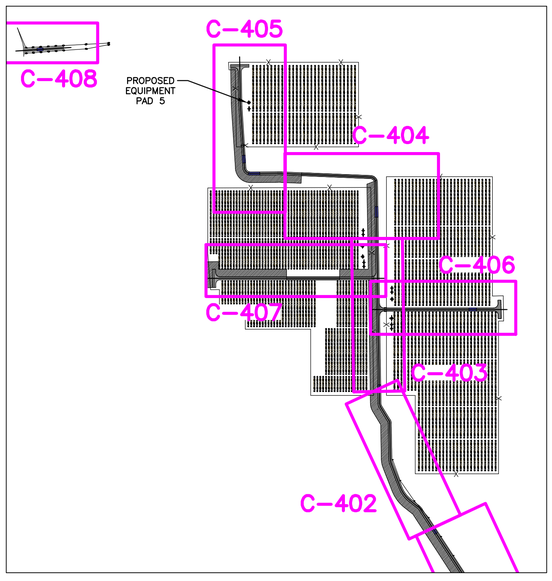
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SECTION 1–1
SCALE: HORIZ: 1"=10'
VERT: 1"=2'



SECTION 2–2
SCALE: HORIZ: 1"=10'
VERT: 1"=2'



LOCATION MAP
SCALE: 1"=500'

NOT FOR CONSTRUCTION

10 FEET 0 10 20 30
Scale: 1"=10'

REV	DESCRIPTION	DATE	BY
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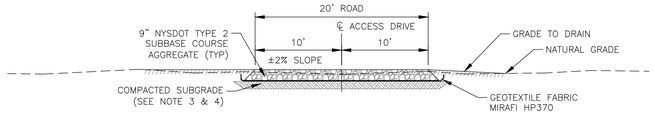
PROJECT
PROPOSED MANLIUS SOLAR
TOWN OF MANLIUS
ONONDAGA COUNTY, NEW YORK

TITLE OF DRAWING
EQUIPMENT PAD GRADING PLAN AND SECTIONS

DRAWING NO.
C-413

SHEET 32 OF 36

FILE NAME: H:\Projects\22\220871-00-CVE_Manlius_Sol\Eng\CAD\CUT\220871 C-400 Access Road Plan and Profile.dwg
DATE/TIME: 12/9/2022 4:16:10 PM
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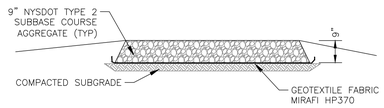


NOTES:

1. TOP OF DRIVE SHALL BE DESIGNED AND PLACED TO MATCH THE ELEVATION OF THE EXISTING GRADE AS SHOWN.
2. LIMITS OF CROSS SLOPES SHALL BE:
   0% – 2% MAX FOR ACCESS DRIVE DURING CONSTRUCTION
   2% – 4% MAX FOR ACCESS DRIVE AFTER CONSTRUCTION
3. THE PREPARED SUBGRADE SURFACE IS TO BE VISUALLY OBSERVED, AND ALL DELETERIOUS MATERIALS AND ORGANIC MATTER, ARE TO BE EXCAVATED AND REMOVED. THE EXPOSED SUBGRADE SURFACE IS TO BE COMPACTED AND BE PROOF–ROLLED UNDER THE OBSERVATION OF A QUALIFIED GEOTECHNICAL ENGINEER.
4. PER NYS AG & MARKETS GUIDELINES, EXCAVATED TOPSOIL SHALL BE DISTRIBUTED ALONG EITHER SIDE OF THE ACCESS ROAD AND VEGETATED. THE SOIL SHALL BE TAPERED TO THE EXISTING GRADE AND NOT IMPEDE NATURAL DRAINAGE PATTERNS.
5. IF THE PROOF ROLLING EVALUATION INDICATES ANY OF THE EXISTING SUBGRADES ARE FOUND TO BE IN A LOOSE/SOFT/WET, OR UNSTABLE CONDITION, BASE STABILIZATION COULD BE PROVIDED BENEATH THE ACCESS DRIVE EMBANKMENT FILL AREAS OR POOR SUBGRADE CONDITIONS TO HELP STIFFEN, STABILIZE AND IMPROVE THE SUBGRADE CONDITIONS FOR THE ACCESS DRIVE FILL PLACEMENT AND COMPACTION. THE BASE STABILIZATION SHALL INCLUDE THE PLACEMENT OF A STABILIZATION/SEPARATION GEOTEXTILE FABRIC OVER THE EXPOSED SUBGRADES, FOLLOWING SITE STRIPPING, FOLLOWED BY PLACEMENT OF APPROXIMATELY 2 FEET TO 3 FEET OF A COMPACTED OVERSIZED STRUCTURAL GRANULAR FILL MATERIAL (I.E. WELL GRADED COARSE TO FINE "SHOT ROCK" OR COARSER CRUSHER RUN STONE, WITH A MAXIMUM PARTICLE SIZE OF ±6–INCHES) OVER THE STABILIZATION GEOTEXTILE. THE OVERSIZED STRUCTURAL GRANULAR FILL MATERIAL SHALL BE FULLY ENCAPSULATE WITH THE GEOTEXTILE FABRIC. A LAYER OF BI–AXIAL GEOGRID (I.E. TENSAR BX–1100 OR SUITABLE EQUIVALENT) MAY BE INCORPORATED OVER THE STABILIZATION GEOTEXTILE TO FURTHER REINFORCE THE BASE STABILIZATION LAYER, IF DEEMED NECESSARY BY THE GEOTECHNICAL ENGINEER.

ACCESS DRIVE CROSS SECTION DETAIL

NOT TO SCALE

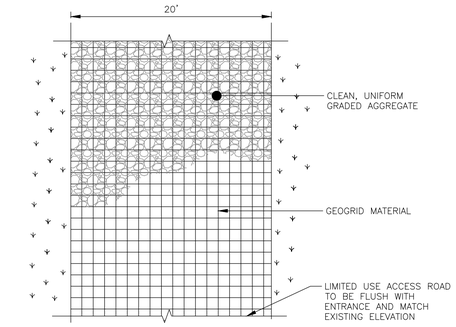


STAGING AREA NOTES:

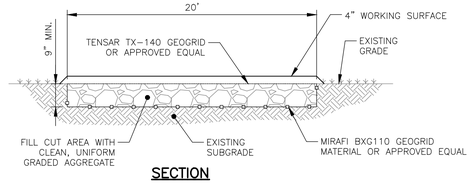
1. STRIP AND STOCKPILE TOPSOIL.
2. INSTALL STAGING AREA.
3. REMOVE STONE WHEN STAGING AREA IS NO LONGER NEEDED.
4. DECOMPACT SUBGRADE SOILS PER NYSDEC SWDM TABLE 5.3 SOIL RESTORATION REQUIREMENTS.
5. REINSTALL STOCKPILED TOPSOIL.
6. SEED AND MULCH THE DISTURBED AREA.

TEMPORARY STAGING AREA

NOT TO SCALE



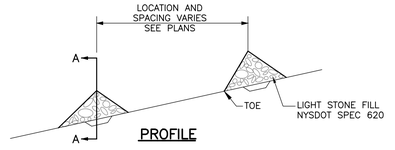
PLAN



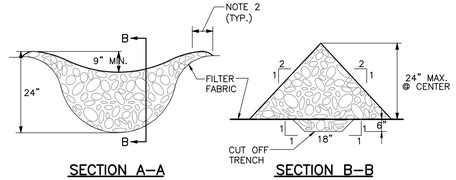
SECTION

PERVIOUS ROAD DETAIL

NOT TO SCALE



PROFILE



SECTION A–A

SECTION B–B

APPLICATION NOTES:

1. CHECK DAMS SHALL BE USED TO REDUCE EROSION IN DRAINAGE CHANNEL BY RESTRICTING THE VELOCITY OF FLOW IN THE CHANNEL.
2. MAXIMUM DRAINAGE AREA ABOVE THE CHECK DAM SHALL NOT EXCEED 2–ACRES.

CONSTRUCTION SPECIFICATIONS:

1. STONE SHALL BE PLACED ON FILTER FABRIC FOUNDATION.
2. EXTEND THE STONE A MINIMUM OF 1.5–FEET BEYOND THE DITCH BANKS TO PREVENT CUTTING AROUND THE DAM.
3. PROTECT CHANNEL DOWNSTREAM OF THE LOWEST CHECK DAM FROM SCOUR AND EROSION WITH STONE OR LINER AS APPROPRIATE.
4. ENSURE THAT CHANNEL APPUTENANCES SUCH AS CULVERT ENTRANCES BELOW CHECK DAMS ARE NOT SUBJECT TO DAMAGE OR BLOCKAGE FROM DISPLACED STONE.

MAINTENANCE NOTES:

1. INSPECT CHECK DAMS ONCE A WEEK AND AFTER RAINFALLS. REMOVE SILT FROM BEHIND DAM AS NEEDED TO PERMIT FLOW THROUGH THE DAM AND PREVENT LARGE FLOWS FROM CARRYING SEDIMENT OVER THE DAM.
2. INSTALL STONE LINER IN CHANNEL UPSTREAM OF CHECK DAM IF SIGNIFICANT EROSION OCCURS.
3. REPLACE STONES AS NEEDED TO MAINTAIN THE DESIGN CROSS SECTION OF THE STRUCTURES.
4. UPON STABILIZATION OF THE SITE REMOVE CHECK DAMS SO AS NOT TO BLOCK STORM FLOW OR DRAINAGE.

CHECK DAM DETAIL

NO SCALE

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	BY
7			
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2			
1	FINAL ISSUE	12/09/2022	DJB

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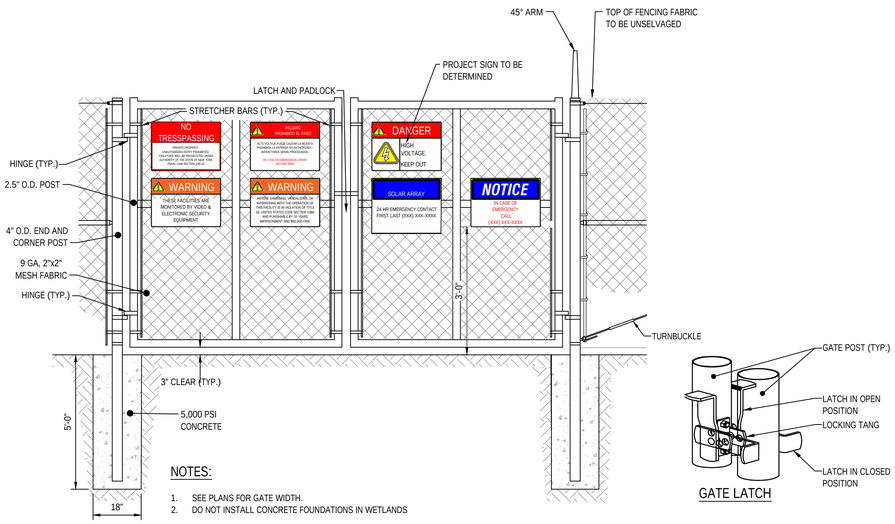
PROJECT
PROPOSED MANLIUS SOLAR
TOWN OF MANLIUS
ONONDAGA COUNTY, NEW YORK

TITLE OF DRAWING
ACCESS ROAD AND EQUIPMENT DETAILS

DRAWING NO.
C-700

SHEET 33 OF 36

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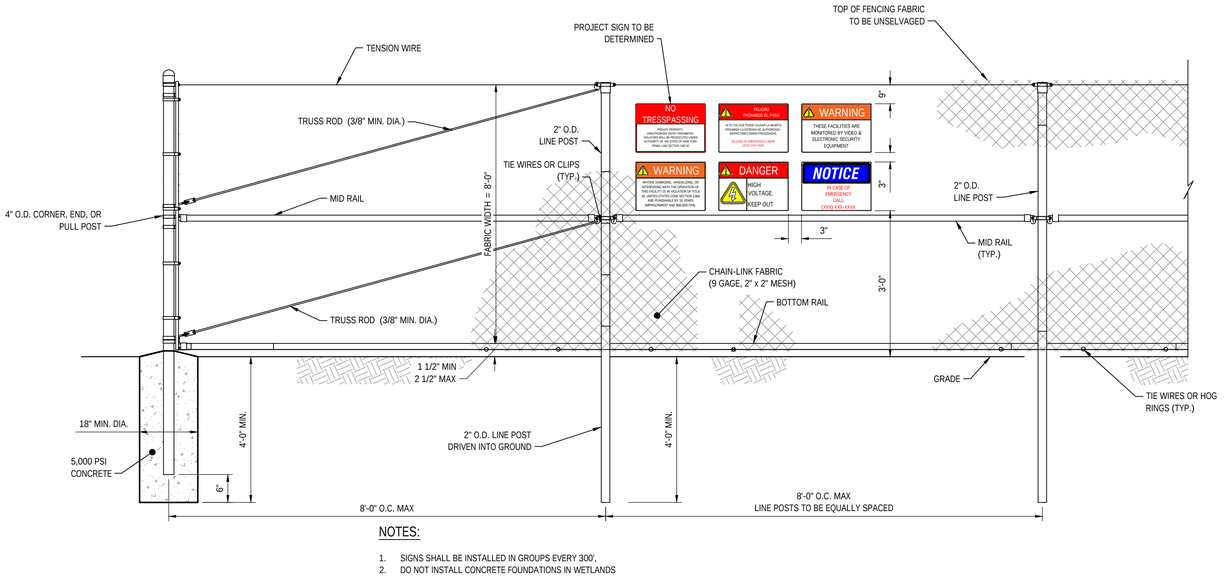


NOTES:

1. SEE PLANS FOR GATE WIDTH.
2. DO NOT INSTALL CONCRETE FOUNDATIONS IN WETLANDS

8' TALL DOUBLE SWING GATE

N.T.S.



NOTES:

1. SIGNS SHALL BE INSTALLED IN GROUPS EVERY 300',
2. DO NOT INSTALL CONCRETE FOUNDATIONS IN WETLANDS

8' HIGH SECURITY FENCE

N.T.S.

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	BY
1			
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3			
4			
5			
6			
7			

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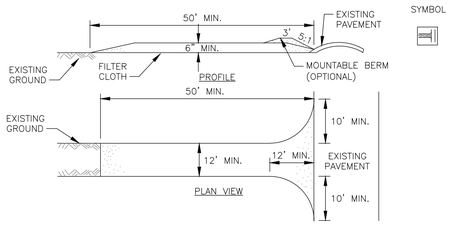
PROJECT
PROPOSED MANLIUS SOLAR
TOWN OF MANLIUS
ONONDAGA COUNTY, NEW YORK

TITLE OF DRAWING
FENCE DETAILS

DRAWING NO.
C-705

SHEET 34 OF 36

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USER: Doug Perrotto



SYMBOL

CONSTRUCTION SPECIFICATIONS

1. STONE SIZE – USE 2" STONE, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH – NOT LESS THAN 50 FEET (EXCEPT ON A SINGLE RESIDENCE LOT WHERE A 30 FOOT MINIMUM LENGTH WOULD APPLY).
3. THICKNESS – NOT LESS THAN SIX (6) INCHES.
4. 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.
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.

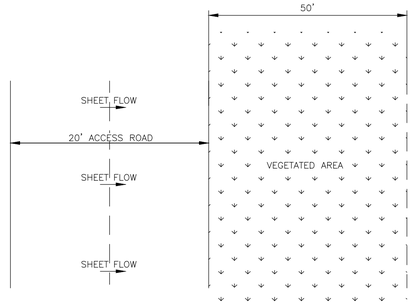
STABILIZED CONSTRUCTION ENTRANCE

NOT TO SCALE

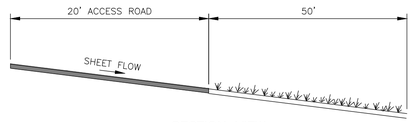
SEEDING/MULCHING

1. FERTILIZER, SUPERPHOSPHATE, AND LIME SHALL BE APPLIED AT RATES RECOMMENDED BY THE TESTING AGENCY AND APPROVED BY THE ENGINEER.
2. PERMANENT SEED SHALL BE SUPPLIED IN THE FOLLOWING PROPORTIONS AND APPLIED AT A RATE OF FIVE POUNDS PER 1,000 SF:
   SEED TYPE (% PROPORTION/% GERMINATION MIN./% PURITY MIN.
   CREEPING FESCUE (50/85/95)
   KENTUCKY BLUEGRASS (40/85/90)
   MANHATTAN PERENNIAL RYE (10/90/95)
3. TEMPORARY SEED SHALL BE SUPPLIED IN THE FOLLOWING PROPORTIONS AND APPLIED AT A RATE OF 100 POUNDS PER ACRE:
   SEED TYPE (% WEIGHT MIN./% GERMINATION MIN.
   WINTER RYE (80/85)
   RED FESCUE – CREEPING (4/80)
   PERENNIAL RYE GRASS (3/90)
   RED CLOVER (3/90)
4. MULCH SHALL BE APPLIED TO AREAS IMMEDIATELY AFTER THEY HAVE BEEN SEEDED. MULCH SHALL CONSIST OF HAY STRAW, HYDRO–MULCH, EROSION CONTROL BLANKETS, OR APPROVED EQUAL.
5. HAY OR STRAW MULCH SHALL BE AIR–FRIED; AND FREE OF UNDESIRABLE SEEDS AND COARSE MATERIALS. MULCH SHALL BE APPLIED AT A MINIMUM RATE OF 1–1/2 TONS/ACRE. MULCH SHALL BE ANCHORED WITH NETTING, PEG/TWINE, OR TRACKING. MULCH SHALL BE ANCHORED WITH NETTING WHEN APPLIED TO SLOPES GREATER THAN 15 PERCENT.

SEEDING AND MULCHING NOTES



PLAN VIEW



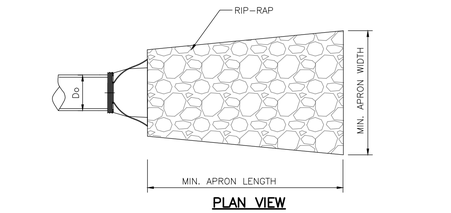
SECTION VIEW

NOTES:

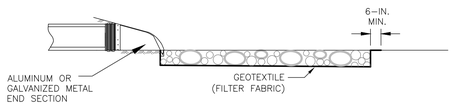
1. ROAD MUST BE GENERALLY PARALLEL TO THE CONTOURS OF THE SLOPE AND GRADED TO MAINTAIN SHEET FLOW TO THE FILTER STRIP.
2. IF FILTER STRIP AREA IS DISTURBED DURING CONSTRUCTION, AREA SHALL BE DECOMPACTED, TOPSOIL SHALL BE INSTALLED AND SEEDED.
3. FILTER STRIP SHALL REMAIN VEGETATED FOR THE LIFE OF THE PROJECT.
4. FILTER STRIP SHALL HAVE A 50' WIDTH.

FILTER STRIP DETAIL

NOT TO SCALE



PLAN VIEW



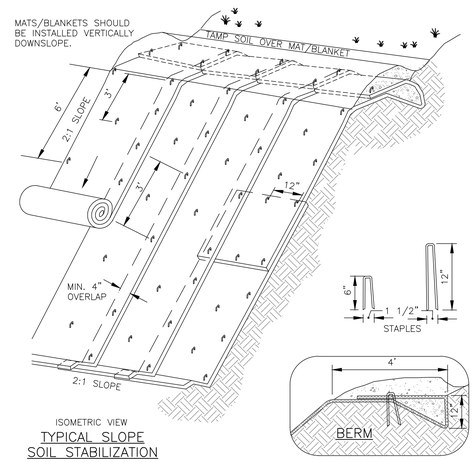
PROFILE VIEW

NOTE: REFER TO TABLE FOR LENGTH, WIDTH, AND DEPTH OF RIP–RAP

OUTLET PROTECTION SIZING			
OUTLET PIPE DIAMETER, Do (IN)	MINIMUM APRON WIDTH (FT)	MINIMUM APRON LENGTH (FT)	DEPTH OF RIP–RAP (IN)
8	8	8	8
12	3	6	12
18	4	8	18
24	6	12	18
30	8	14	24
36	10	16	24
>36	12	18	30

TYPICAL CULVERT ROCK OUTLET PROTECTION

NO SCALE



ISOMETRIC VIEW

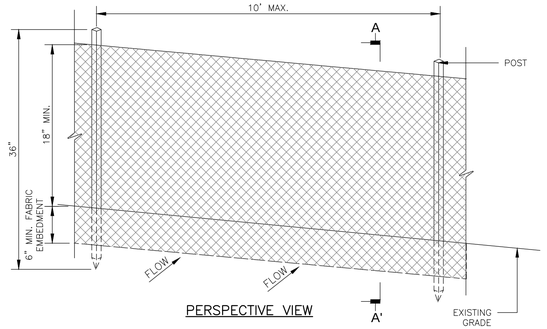
TYPICAL SLOPE SOIL STABILIZATION

NOTES:

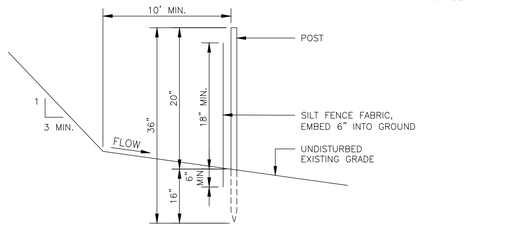
1. SLOPE SURFACE SHALL BE FREE OF ROCKS, CLODS, STICKS AND GRASS. MATS/BLANKETS SHALL HAVE GOOD SOIL CONTACT.
2. APPLY PERMANENT SEEDING BEFORE PLACING BLANKETS.
3. LAY BLANKETS LOOSELY AND STAKE OR STAPLE TO MAINTAIN DIRECT CONTACT WITH THE SOIL. DO NOT STRETCH.

EROSION BLANKETS SLOPE INSTALLATION

NOT TO SCALE



PERSPECTIVE VIEW



SECTION A–A'

NOTES:

1. WHEN TWO SECTIONS OF SILT FENCE FABRIC ADJOIN EACH OTHER THEY SHALL BE OVERLAPPED BY 6" AND FOLDED. FILTER CLOTH SHALL BE EITHER FILTER X, MIRAFI 100X, STABLINKA T140N, OR APPROVED EQUAL.
2. PREFABRICATED UNITS SHALL MEET THE MINIMUM REQUIREMENTS SHOWN.
3. MAINTENANCE SHALL BE PERFORMED IMMEDIATELY AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.

SILT FENCE DETAIL

NO SCALE

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	BY
7			
6			
5			
4			
3			
2			
1			

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New York State Education Law Section 7209 states that it is a violation of law for any person, unless he is acting under the direction of a licensed professional engineer or land surveyor, to alter an item in any way. If an item bearing the seal of an engineer or land surveyor is altered, the altering engineer or land surveyor shall affix to the item his/her seal and the notation "altered by" followed by his/her signature and the date of such alteration, and a specific description of the alteration.

FA PROJECT NO.
220871
PROJECT MANAGER
S. MELLOTT
DRAWN BY
D. BRUE
SCALE
AS SHOWN
ISSUE DATE
12/09/2022

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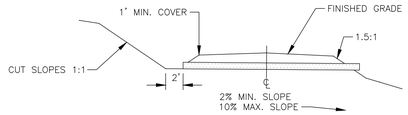
PROJECT
PROPOSED MANLIUS SOLAR
TOWN OF MANLIUS
ONONDAGA COUNTY, NEW YORK

TITLE OF DRAWING
EROSION AND SEDIMENT CONTROL DETAILS

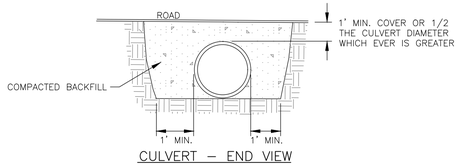
DRAWING NO.
C-710

SHEET 35 OF 36

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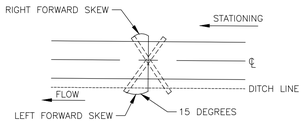


CULVERT SECTION

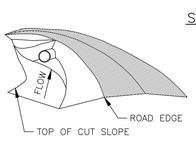


CULVERT – END VIEW

PROFILE VIEW

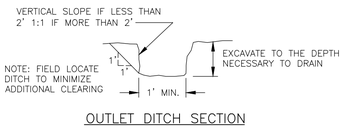


SKEW DETAIL



DITCH BLOCK

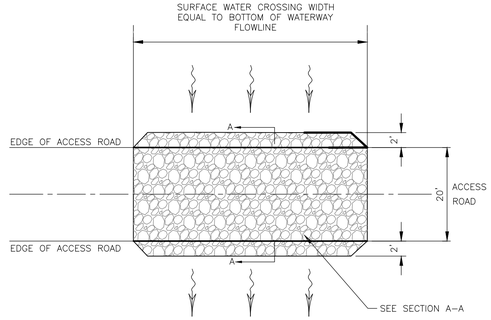
PERSPECTIVE VIEW



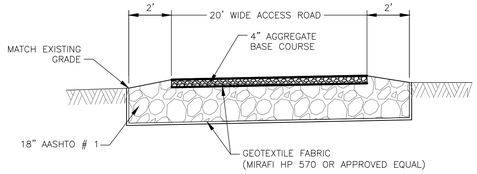
OUTLET DITCH SECTION

ROAD CULVERT

NOT TO SCALE



PLAN



SECTION A–A

NOTES:

1. DRAINAGE CROSSING SHALL BE BE FIELD VERIFIED TO DETERMINE APPROPRIATE USE OF AT GRADE CROSSING OR CULVERT INSTALLATION TO PROVIDE POSITIVE DRAINAGE.
2. CROSS SLOPE SHALL BE LESS THAN DITCH FLOWLINE SLOPE TO REDUCE WATER VELOCITY.
3. DRAINAGE CROSSINGS TO BE SET AT GRADE WITH EXISTING GROUND.

SURFACE WATER CROSSING DETAIL

NOT TO SCALE

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	BY
7			
6			
5			
4			
3			
2			
1			

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If an item bearing the seal of an engineer or land surveyor is altered, the altering engineer or land surveyor shall affix to the item his/her seal and the notation "altered by" followed by his/her signature and the date of such alteration, and a specific description of the alteration.

FA PROJECT NO.
220871

PROJECT MANAGER
S. MELLOTT

DRAWN BY
D. BRUE

SCALE
AS SHOWN

ISSUE DATE
12/09/2022

G:\Signature\SCM_NY_stamp_and_signature.tif

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PROJECT
PROPOSED MANLIUS SOLAR
TOWN OF MANLIUS
ONONDAGA COUNTY, NEW YORK

TITLE OF DRAWING
DRAINAGE AND LANDSCAPE DETAILS

DRAWING NO.
C-715

SHEET 36 OF 36

FILE NAME: H:\Projects\22\220871-00-CVE_Manlius_Sol\Eng\CAD\CUT\220871 C-700 Details.dwg
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Exhibit 2: Notice of Intent (NOI) Application

NOI for coverage under Stormwater General Permit for Construction Activity

version 1.35

(Submission #: HPP-J9FJ-FTRTX, version 1)

Details

Submission Alias	Manlius NOI for coverage under Stormwater General Permit for Construction Activity
Originally Started By	Carolina Castro
Alternate Identifier	CVE Manlius
Submission ID	HPP-J9FJ-FTRTX
Submission Reason	New
Status	Draft

Form Input

Owner/Operator Information

Owner/Operator Name (Company/Private Owner/Municipality/Agency/Institution, etc.)
CVE North America, Inc.

Owner/Operator Contact Person Last Name (NOT CONSULTANT)
NONE PROVIDED

Owner/Operator Contact Person First Name
NONE PROVIDED

Owner/Operator Mailing Address
109 W 27th St., 8th FLoor

City
New York

State
NY

Zip
10001

Phone
NONE PROVIDED

Email
NONE PROVIDED

Federal Tax ID
NONE PROVIDED

Project Location

Project/Site Name
CVE Manlius

Street Address (Not P.O. Box)
8119 E Seneca Turnpike

Side of Street
North

City/Town/Village (THAT ISSUES BUILDING PERMIT)
Manlius

State
NY

Zip
13104

DEC Region
7

County
ONONDAGA

Name of Nearest Cross Street
Westfield Dr.

Distance to Nearest Cross Street (Feet)
550

Project In Relation to Cross Street
East

Tax Map Numbers Section-Block-Parcel
NONE PROVIDED

Tax Map Numbers
NONE PROVIDED

1. Coordinates

Provide the Geographic Coordinates for the project site. The two methods are:
- Navigate to the project location on the map (below) and click to place a marker and obtain the XY coordinates.
- The "Find Me" button will provide the lat/long for the person filling out this form. Then pan the map to the correct location and click the map to place a marker and obtain the XY coordinates.

Navigate to your location and click on the map to get the X,Y coordinates
43.005549436725275,-75.96475065851108

Project Details

2. What is the nature of this project?
Redevelopment with increase in impervious area

3. Select the predominant land use for both pre and post development conditions.

Pre-Development Existing Landuse
Pasture/Open Land

Post-Development Future Land Use
Other: Solar Array

3a. If Single Family Subdivision was selected in question 3, enter the number of subdivision lots.
NONE PROVIDED

---

4. In accordance with the larger common plan of development or sale, enter the total project site acreage, the acreage to be disturbed and the future impervious area (acreage)within the disturbed area.

*** ROUND TO THE NEAREST TENTH OF AN ACRE. ***

Total Site Area (acres)
110.4

Total Area to be Disturbed (acres)
90.31

Existing Impervious Area to be Disturbed (acres)
0

Future Impervious Area Within Disturbed Area (acres)
2.51

5. Do you plan to disturb more than 5 acres of soil at any one time?
No

---

6. Indicate the percentage (%) of each Hydrologic Soil Group(HSG) at the site.

A (%)
0

B (%)
26.2

C (%)
41.9

D (%)
15.4

7. Is this a phased project?
Yes

8. Enter the planned start and end dates of the disturbance activities.

Start Date
06/01/2023

End Date
06/01/2024

9. Identify the nearest surface waterbody(ies) to which construction site runoff will discharge.
Bishop Brook

9a. Type of waterbody identified in question 9?
Stream/Creek Off Site

Other Waterbody Type Off Site Description
NONE PROVIDED

9b. If "wetland" was selected in 9A, how was the wetland identified?
NONE PROVIDED

10. Has the surface waterbody(ies in question 9 been identified as a 303(d) segment in Appendix E of GP-0-20-001?
No

11. Is this project located in one of the Watersheds identified in Appendix C of GP-0-20-001?
No

12. Is the project located in one of the watershed areas associated with AA and AA-S classified waters?
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 D (provided the map unit name is inclusive of slopes greater than 25%), E or F on the USDA Soil Survey?
No

If Yes, what is the acreage to be disturbed?
NONE PROVIDED

14. Will the project disturb soils within a State regulated wetland or the protected 100 foot adjacent area?
No

15. Does the site runoff enter a separate storm sewer system (including roadside drains, swales, ditches, culverts, etc)?
Yes

16. What is the name of the municipality/entity that owns the separate storm sewer system?
Manlius

17. Does any runoff from the site enter a sewer classified as a Combined Sewer?
Unknown

18. Will future use of this site be an agricultural property as defined by the NYS Agriculture and Markets Law?
No

19. Is this property owned by a state authority, state agency, federal government or local government?
No

20. Is this a remediation project being done under a Department approved work plan? (i.e. CERCLA, RCRA, Voluntary Cleanup Agreement, etc.)
No

Required SWPPP Components

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

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

If you answered No in question 22, skip question 23 and the Post-construction Criteria and Post-construction SMP Identification sections.

23. Has the post-construction stormwater management practice component of the SWPPP been developed in conformance with the current NYS Stormwater Management Design Manual?
NONE PROVIDED

24. The Stormwater Pollution Prevention Plan (SWPPP) was prepared by:
Professional Engineer (P.E.)

SWPPP Preparer
Fisher Associates

Contact Name (Last, Space, First)
Mellott Steven

Mailing Address
180 Charlotte St

City
Rochester

State
New York

Zip
14607

Phone
585-750-4730

Email
smellott@fisherassoc.com

Download SWPPP Preparer Certification Form
Please take the following steps to prepare and upload your preparer certification form:

1) Click on the link below to download a blank certification form
2) The certified SWPPP preparer should sign this form
3) Scan the signed form
4) Upload the scanned document
Download SWPPP Preparer Certification Form

Please upload the SWPPP Preparer Certification
SWPPP Preparer Form.pdf - 12/09/2022 09:51 PM
Comment
NONE PROVIDED

Erosion & Sediment Control Criteria

25. Has a construction sequence schedule for the planned management practices been prepared?
Yes

26. Select all of the erosion and sediment control practices that will be employed on the project site:

Temporary Structural
Construction Road Stabilization
Dust Control
Silt Fence
Stabilized Construction Entrance

Biotechnical
None

Vegetative Measures
Mulching
Protecting Vegetation
Seeding
Topsoiling

Permanent Structural
None

Other
NONE PROVIDED

Post-Construction Criteria

*** 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.
NONE PROVIDED

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).
NONE PROVIDED

28. Provide the total Water Quality Volume (WQv) required for this project (based on final site plan/layout). (Acre-feet)
0.274

29. Post-construction SMP Identification
Use the Post-construction SMP Identification section to identify the RR techniques (Area Reduction), RR techniques(Volume Reduction) and Standard SMPs with RRv Capacity that were used to reduce the Total WQv Required (#28).

Identify the SMPs to be used by providing 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 the Post-Construction SMP Identification section 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.

30. Indicate the Total RRv provided by the RR techniques (Area/Volume Reduction) and Standard SMPs with RRv capacity identified in question 29. (acre-feet)
0.293

31. Is the Total RRv provided (#30) greater than or equal to the total WQv required (#28)?
Yes

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)] (acre-feet)
NONE PROVIDED

32a. Is the Total RRv provided (#30) greater than or equal to the Minimum RRv Required (#32)?
NONE PROVIDED

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; therefore, NOI can not be processed. SWPPP preparer must modify design to meet sizing criteria.

33. SMPs
Use the Post-construction SMP Identification section to identify the Standard SMPs and, if applicable, the Alternative SMPs to be used to treat the remaining total WQv (=Total WQv Required in #28 - Total RRv Provided in #30).

Also, provide the total impervious area that contributes runoff to each practice selected.

NOTE: Use the Post-construction SMP Identification section 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. (acre-feet)
NONE PROVIDED

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 - 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).
NONE PROVIDED

35. Is the sum of the RRv provided (#30) and the WQv provided (#33a) greater than or equal to the total WQv required (#28)?
NONE PROVIDED

If Yes, go to question 36.

If No, sizing criteria has not been met; therefore, 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)
NONE PROVIDED

CPv Provided (acre-feet)
NONE PROVIDED

36a. The need to provide channel protection has been waived because:
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.

Overbank Flood Control Criteria (Qp)

Pre-Development (CFS)
120.27

Post-Development (CFS)
113.66

Total Extreme Flood Control Criteria (Qf)

Pre-Development (CFS)
306.12

Post-Development (CFS)
292.85

37a. The need to meet the Qp and Qf criteria has been waived because:
NONE PROVIDED

38. Has a long term Operation and Maintenance Plan for the post-construction stormwater management practice(s) been developed?
Yes

If Yes, Identify the entity responsible for the long term Operation and Maintenance
CVE North America Inc.

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.
This project involves a solar array installation, while maintaining the existing pervious area. However, a gravel access road will be installed for construction and maintenance, using porous pavement and filter strips for water quality. This is a scenario 2 project.

Post-Construction SMP Identification

Runoff Reduction (RR) Techniques, Standard Stormwater Management Practices (SMPs) and Alternative SMPs
Identify the Post-construction SMPs to be used by providing 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.

RR Techniques (Area Reduction)

Round to the nearest tenth

Total Contributing Acres for Conservation of Natural Area (RR-1)
NONE PROVIDED

Total Contributing Impervious Acres for Conservation of Natural Area (RR-1)
NONE PROVIDED

Total Contributing Acres for Sheetflow to Riparian Buffers/Filter Strips (RR-2)
2.51

Total Contributing Impervious Acres for Sheetflow to Riparian Buffers/Filter Strips (RR-2)
NONE PROVIDED

Total Contributing Acres for Tree Planting/Tree Pit (RR-3)
NONE PROVIDED

Total Contributing Impervious Acres for Tree Planting/Tree Pit (RR-3)
NONE PROVIDED

Total Contributing Acres for Disconnection of Rooftop Runoff (RR-4)
NONE PROVIDED

RR Techniques (Volume Reduction)

Total Contributing Impervious Acres for Disconnection of Rooftop Runoff (RR-4)
NONE PROVIDED

Total Contributing Impervious Acres for Vegetated Swale (RR-5)
NONE PROVIDED

Total Contributing Impervious Acres for Rain Garden (RR-6)
NONE PROVIDED

Total Contributing Impervious Acres for Stormwater Planter (RR-7)
NONE PROVIDED

Total Contributing Impervious Acres for Rain Barrel/Cistern (RR-8)
NONE PROVIDED

Total Contributing Impervious Acres for Porous Pavement (RR-9)
0.95

Total Contributing Impervious Acres for Green Roof (RR-10)
NONE PROVIDED

Standard SMPs with RRv Capacity

Total Contributing Impervious Acres for Infiltration Trench (I-1)
NONE PROVIDED

Total Contributing Impervious Acres for Infiltration Basin (I-2)
NONE PROVIDED

Total Contributing Impervious Acres for Dry Well (I-3)
NONE PROVIDED

Total Contributing Impervious Acres for Underground Infiltration System (I-4)
NONE PROVIDED

Total Contributing Impervious Acres for Bioretention (F-5)
NONE PROVIDED

Total Contributing Impervious Acres for Dry Swale (O-1)
NONE PROVIDED

Standard SMPs

Total Contributing Impervious Acres for Micropool Extended Detention (P-1)
NONE PROVIDED

Total Contributing Impervious Acres for Wet Pond (P-2)
NONE PROVIDED

Total Contributing Impervious Acres for Wet Extended Detention (P-3)
NONE PROVIDED

Total Contributing Impervious Acres for Multiple Pond System (P-4)
NONE PROVIDED

Total Contributing Impervious Acres for Pocket Pond (P-5)
NONE PROVIDED

Total Contributing Impervious Acres for Surface Sand Filter (F-1)
NONE PROVIDED

Total Contributing Impervious Acres for Underground Sand Filter (F-2)
NONE PROVIDED

Total Contributing Impervious Acres for Perimeter Sand Filter (F-3)
NONE PROVIDED

Total Contributing Impervious Acres for Organic Filter (F-4)
NONE PROVIDED

Total Contributing Impervious Acres for Shallow Wetland (W-1)
NONE PROVIDED

Total Contributing Impervious Acres for Extended Detention Wetland (W-2)
NONE PROVIDED

Total Contributing Impervious Acres for Pond/Wetland System (W-3)
NONE PROVIDED

Total Contributing Impervious Acres for Pocket Wetland (W-4)
NONE PROVIDED

Total Contributing Impervious Acres for Wet Swale (O-2)
NONE PROVIDED

Alternative SMPs (DO NOT INCLUDE PRACTICES BEING USED FOR PRETREATMENT ONLY)

Total Contributing Impervious Area for Hydrodynamic
NONE PROVIDED

Total Contributing Impervious Area for Wet Vault
NONE PROVIDED

Total Contributing Impervious Area for Media Filter
NONE PROVIDED

"Other" Alternative SMP?
NONE PROVIDED

Total Contributing Impervious Area for "Other"
NONE PROVIDED

Provide the name and manufaturer of the alternative SMPs (i.e. proprietary practice(s)) being used for WQv treatment.

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.

Manufacturer of Alternative SMP
NONE PROVIDED

Name of Alternative SMP
NONE PROVIDED

Other Permits

40. Identify other DEC permits, existing and new, that are required for this project/facility.
None

If SPDES Multi-Sector GP, then give permit ID
NONE PROVIDED

If Other, then identify
NONE PROVIDED

41. Does this project require a US Army Corps of Engineers Wetland Permit?
No

If "Yes," then indicate Size of Impact, in acres, to the nearest tenth
NONE PROVIDED

42. 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.
NONE PROVIDED

MS4 SWPPP Acceptance

43. Is this project subject to the requirements of a regulated, traditional land use control MS4?
Yes - Please attach the MS4 Acceptance form below

If No, skip question 44

44. Has the "MS4 SWPPP Acceptance" form been signed by the principal executive officer or ranking elected official and submitted along with this NOI?
NONE PROVIDED

MS4 SWPPP Acceptance Form Download
Download form from the link below. Complete, sign, and upload.
MS4 SWPPP Acceptance Form

MS4 Acceptance Form Upload
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Comment
NONE PROVIDED

Owner/Operator Certification

Owner/Operator Certification Form Download
Download the certification form by clicking the link below. Complete, sign, scan, and upload the form.
Owner/Operator Certification Form (PDF, 45KB)

Upload Owner/Operator Certification Form
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Comment
NONE PROVIDED

Attachments

Date	Attachment Name	Context	User
12/9/2022 9:56 PM	Owner Form.pdf	Attachment	Carolina Castro
12/9/2022 9:56 PM	MS4 Form.pdf	Attachment	Carolina Castro
12/9/2022 9:51 PM	SWPPP Preparer Form.pdf	Attachment	Carolina Castro

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

SWPPP Preparer Certification Form

SPDES General Permit for Stormwater Discharges From Construction Activity (GP-0-20-001)

Project Site Information

Project/Site Name

CVE Manlius Solar

Owner/Operator Information

Owner/Operator (Company Name/Private Owner/Municipality Name)

CVE North America Inc.

Certification Statement – SWPPP Preparer

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.

Steven		Mellott
First name	MI	Last Name

Signature

Date

Revised: January 2020

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Owner/Operator Certification Form

SPDES General Permit For Stormwater Discharges From Construction Activity (GP-0-20-001)

Project/Site Name: CVE Manlius Solar

eNOI Submission Number: HPP-J9FJ-FTRTX

eNOI Submitted by: ☐ **Owner/Operator** ☑ **SWPPP Preparer** ☐ **Other**

Certification Statement - Owner/Operator

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.

Owner/Operator First Name M.I. Last Name

_____

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:	CVE North America Inc.
2. Contact Person:	
3. Street Address:	109 W 27th St., 8th Floor
4. City/State/Zip:	New York, NY 10001
II. Project Site Information	
5. Project/Site Name:	CVE Manlius Solar
6. Street Address:	E Seneca Turnpike
7. City/State/Zip:	Manlius, Onondaga County, New York, 13104
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

(NYS DEC - MS4 SWPPP Acceptance Form - January 2015)

Exhibit 3: SPDES GP-0-20-001

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SPDES GENERAL PERMIT
FOR STORMWATER DISCHARGES

From

CONSTRUCTION ACTIVITY

Permit No. GP- 0-20-001

Issued Pursuant to Article 17, Titles 7, 8 and Article 70

of the Environmental Conservation Law

Effective Date: January 29, 2020

Expiration Date: January 28, 2025

John J. Ferguson

Chief Permit Administrator

1-23-20

Authorized Signature

Date

Address: NYS DEC
Division of Environmental Permits
625 Broadway, 4th Floor
Albany, N.Y. 12233-1750

PREFACE

Pursuant to Section 402 of the Clean Water Act ("CWA"), stormwater *discharges* from certain *construction activities* are unlawful unless they are authorized by a *National Pollutant Discharge Elimination System ("NPDES")* permit or by a state permit program. New York administers the approved State Pollutant Discharge Elimination System (SPDES) program with permits issued in accordance with the New York State Environmental Conservation Law (ECL) Article 17, Titles 7, 8 and Article 70.

An *owner or operator* of a *construction activity* that is eligible for coverage under this permit must obtain coverage prior to the *commencement of construction activity*. Activities that fit the definition of "*construction activity*", as defined under 40 CFR 122.26(b)(14)(x), (15)(i), and (15)(ii), constitute construction of a *point source* and therefore, pursuant to ECL section 17-0505 and 17-0701, the *owner or operator* must have coverage under a SPDES permit prior to *commencing construction activity*. The *owner or operator* cannot wait until there is an actual *discharge* from the *construction site* to obtain permit coverage.

***Note: The italicized words/phrases within this permit are defined in Appendix A.**

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
SPDES GENERAL PERMIT FOR STORMWATER DISCHARGES FROM CONSTRUCTION ACTIVITIES

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Part 1. PERMIT COVERAGE AND LIMITATIONS

A. Permit Application

This permit authorizes stormwater *discharges* to *surface waters of the State* from the following *construction activities* identified within 40 CFR Parts 122.26(b)(14)(x), 122.26(b)(15)(i) and 122.26(b)(15)(ii), provided all of the eligibility provisions of this permit are met:

1. *Construction activities* involving soil disturbances of one (1) or more acres; including disturbances of less than one acre that are part of a *larger common plan of development or sale* that will ultimately disturb one or more acres of land; excluding *routine maintenance activity* that is performed to maintain the original line and grade, hydraulic capacity or original purpose of a facility;

2. *Construction activities* involving soil disturbances of less than one (1) acre where the Department has determined that a *SPDES* permit is required for stormwater *discharges* based on the potential for contribution to a violation of a *water quality standard* or for significant contribution of *pollutants* to *surface waters of the State.*

3. *Construction activities* located in the watershed(s) identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.

B. Effluent Limitations Applicable to Discharges from Construction Activities

*Discharge*s authorized by this permit must achieve, at a minimum, the effluent limitations in Part I.B.1. (a) – (f) of this permit. These limitations represent the degree of effluent reduction attainable by the application of best practicable technology currently available.

1. Erosion and Sediment Control Requirements - The *owner or operator* must select, design, install, implement and maintain control measures to *minimize* the *discharge* of *pollutants* and prevent a violation of the *water quality standards*. The selection, design, installation, implementation, and maintenance of these control measures must meet the non-numeric effluent limitations in Part I.B.1.(a) – (f) of this permit and be in accordance with the New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016, using sound engineering judgment. Where control measures are not designed in conformance with the design criteria included in the technical standard, the *owner or operator* must include in the *Stormwater Pollution Prevention Plan* (“SWPPP”) the reason(s) for the

deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

a. **Erosion and Sediment Controls.** Design, install and maintain effective erosion and sediment controls to *minimize* the *discharge* of *pollutants* and prevent a violation of the *water quality standards*. At a minimum, such controls must be designed, installed and maintained to:

   (i) *Minimize* soil erosion through application of runoff control and soil stabilization control measure to *minimize pollutant discharge*s;

   (ii) Control stormwater *discharge*s, including both peak flowrates and total stormwater volume, to *minimize* channel and *streambank* erosion and scour in the immediate vicinity of the *discharge* points;

   (iii) *Minimize* the amount of soil exposed during *construction activity*;

   (iv) *Minimize* the disturbance of *steep slopes*;

   (v) *Minimize* sediment *discharge*s from the site;

   (vi) Provide and maintain *natural buffer*s around surface waters, direct stormwater to vegetated areas and maximize stormwater infiltration to reduce *pollutant discharge*s, unless *infeasible*;

   (vii) *Minimize* soil compaction. Minimizing soil compaction is not required where the intended function of a specific area of the site dictates that it be compacted;

   (viii) Unless *infeasible*, preserve a sufficient amount of topsoil to complete soil restoration and establish a uniform, dense vegetative cover; and

   (ix) *Minimize* dust. On areas of exposed soil, *minimize* dust through the appropriate application of water or other dust suppression techniques to control the generation of pollutants that could be discharged from the site.

b. **Soil Stabilization**. 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 fourteen (14) days from the date the current soil disturbance activity ceased. For construction sites that *directly discharge* to one of the 303(d) segments

listed in Appendix E or is located in one of the watersheds listed in Appendix C, 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. See Appendix A for definition of *Temporarily Ceased*.

c. **Dewatering**. *Discharge*s from *dewatering* activities, including *discharge*s from *dewatering* of trenches and excavations, must be managed by appropriate control measures.

d. **Pollution Prevention Measures**. Design, install, implement, and maintain effective pollution prevention measures to *minimize* the *discharge* of *pollutants* and prevent a violation of the *water quality standards*. At a minimum, such measures must be designed, installed, implemented and maintained to:

(i) *Minimize* the *discharge* of *pollutants* from equipment and vehicle washing, wheel wash water, and other wash waters. This applies to washing operations that use clean water only. Soaps, detergents and solvents cannot be used;

(ii) *Minimize* the exposure of building materials, building products, construction wastes, trash, landscape materials, fertilizers, pesticides, herbicides, detergents, sanitary waste, hazardous and toxic waste, and other materials present on the site to precipitation and to stormwater. Minimization of exposure is not required in cases where the exposure to precipitation and to stormwater will not result in a *discharge* of *pollutants*, or where exposure of a specific material or product poses little risk of stormwater contamination (such as final products and materials intended for outdoor use) ; and

(iii) Prevent the *discharge* of *pollutants* from spills and leaks and implement chemical spill and leak prevention and response procedures.

e. **Prohibited *Discharges*.** The following *discharge*s are prohibited:

(i) Wastewater from washout of concrete;

(ii) Wastewater from washout and cleanout of stucco, paint, form release oils, curing compounds and other construction materials;

(iii) Fuels, oils, or other *pollutants* used in vehicle and equipment operation and maintenance;

(iv) Soaps or solvents used in vehicle and equipment washing; and

(v) Toxic or hazardous substances from a spill or other release.

f. Surface Outlets. When discharging from basins and impoundments, the outlets shall be designed, constructed and maintained in such a manner that sediment does not leave the basin or impoundment and that erosion at or below the outlet does not occur.

C. Post-construction Stormwater Management Practice Requirements

1. The *owner or operator* of a *construction activity* that requires post-construction stormwater management practices pursuant to Part III.C. of this permit must select, design, install, and maintain the practices to meet the *performance criteria* in the New York State Stormwater Management Design Manual ("Design Manual"), dated January 2015, using sound engineering judgment. Where post-construction stormwater management practices ("SMPs") are not designed in conformance with the *performance criteria* in the Design Manual, the *owner or operator* must include in the SWPPP the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

2. The *owner or operator* of a *construction activity* that requires post-construction stormwater management practices pursuant to Part III.C. of this permit must design the practices to meet the applicable *sizing criteria* in Part I.C.2.a., b., c. or d. of this permit.

a. Sizing Criteria for New Development

(i) Runoff Reduction Volume ("RRv"): Reduce the total Water Quality Volume ("WQv") by application of RR techniques and standard SMPs with RRv capacity. The total WQv shall be calculated in accordance with the criteria in Section 4.2 of the Design Manual.

(ii) Minimum RRv and Treatment of Remaining Total WQv: Construction activities that cannot meet the criteria in Part I.C.2.a.(i) of this permit due to site limitations shall direct runoff from all newly constructed impervious areas to a RR technique or standard SMP with RRv capacity unless infeasible. The specific site limitations that prevent the reduction of 100% of the WQv shall be documented in the SWPPP.

For each impervious area that is not directed to a RR technique or standard SMP with RRv capacity, the SWPPP must include documentation which demonstrates that all options were considered and for each option explains why it is considered infeasible.

In no case shall the runoff reduction achieved from the newly constructed impervious areas be less than the Minimum RRv as calculated using the criteria in Section 4.3 of the Design Manual. The remaining portion of the total WQv that cannot be reduced shall be treated by application of standard SMPs.

(iii) Channel Protection Volume ("Cpv"): Provide 24 hour extended detention of the post-developed 1-year, 24-hour storm event; remaining after runoff reduction. The Cpv requirement does not apply when:
(1) Reduction of the entire Cpv is achieved by application of runoff reduction techniques or infiltration systems, or
(2) The site discharges directly to tidal waters, or fifth order or larger streams.

(iv) *Overbank* Flood Control Criteria ("Qp"): Requires storage to attenuate the post-development 10-year, 24-hour peak discharge rate (Qp) to predevelopment rates. The Qp requirement does not apply when:
(1) the site discharges directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that *overbank* control is not required.

(v) Extreme Flood Control Criteria ("Qf"): Requires storage to attenuate the post-development 100-year, 24-hour peak discharge rate (Qf) to predevelopment rates. The Qf requirement does not apply when:
(1) the site discharges directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that *overbank* control is not required.

b. *Sizing Criteria* for *New Development* in Enhanced Phosphorus Removal Watershed

(i) Runoff Reduction Volume (RRv): Reduce the total Water Quality Volume (WQv) by application of RR techniques and standard SMPs with RRv capacity. The total WQv is the runoff volume from the 1-year, 24 hour design storm over the post-developed watershed and shall be

calculated in accordance with the criteria in Section 10.3 of the Design Manual.

(ii) Minimum RRv and Treatment of Remaining Total WQv: *Construction activities* that cannot meet the criteria in Part I.C.2.b.(i) of this permit due to *site limitations* shall direct runoff from all newly constructed *impervious areas* to a RR technique or standard SMP with RRv capacity unless *infeasible*. The specific *site limitations* that prevent the reduction of 100% of the WQv shall be documented in the SWPPP. For each *impervious area* that is not directed to a RR technique or standard SMP with RRv capacity, the SWPPP must include documentation which demonstrates that all options were considered and for each option explains why it is considered *infeasible.*

In no case shall the runoff reduction achieved from the newly constructed *impervious areas* be less than the Minimum RRv as calculated using the criteria in Section 10.3 of the Design Manual. The remaining portion of the total WQv that cannot be reduced shall be treated by application of standard SMPs.

(iii) Channel Protection Volume (Cpv): Provide 24 hour extended detention of the post-developed 1-year, 24-hour storm event; remaining after runoff reduction. The Cpv requirement does not apply when:
(1) Reduction of the entire Cpv is achieved by application of runoff reduction techniques or infiltration systems, or
(2) The site *discharge*s directly to tidal waters, or fifth order or larger streams.

(iv) *Overbank* Flood Control Criteria (Qp): Requires storage to attenuate the post-development 10-year, 24-hour peak *discharge* rate (Qp) to predevelopment rates. The Qp requirement does not apply when:
(1) the site *discharge*s directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that *overbank* control is not required.

(v) Extreme Flood Control Criteria (Qf): Requires storage to attenuate the post-development 100-year, 24-hour peak *discharge* rate (Qf) to predevelopment rates. The Qf requirement does not apply when:
(1) the site *discharge*s directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that *overbank* control is not required.

c. Sizing Criteria for Redevelopment Activity

(i) Water Quality Volume (WQv): The WQv treatment objective for *redevelopment activity* shall be addressed by one of the following options. *Redevelopment activities* located in an Enhanced Phosphorus Removal Watershed (see Part III.B.3. and Appendix C of this permit) shall calculate the WQv in accordance with Section 10.3 of the Design Manual. All other *redevelopment activities* shall calculate the WQv in accordance with Section 4.2 of the Design Manual.

(1) Reduce the existing *impervious cover* by a minimum of 25% of the total disturbed, *impervious area*. The Soil Restoration criteria in Section 5.1.6 of the Design Manual must be applied to all newly created pervious areas, or

(2) Capture and treat a minimum of 25% of the WQv from the disturbed, *impervious area* by the application of standard SMPs; or reduce 25% of the WQv from the disturbed, *impervious area* by the application of RR techniques or standard SMPs with RRv capacity., or

(3) Capture and treat a minimum of 75% of the WQv from the disturbed, *impervious area* as well as any additional runoff from tributary areas by application of the alternative practices discussed in Sections 9.3 and 9.4 of the Design Manual., or

(4) Application of a combination of 1, 2 and 3 above that provide a weighted average of at least two of the above methods. Application of this method shall be in accordance with the criteria in Section 9.2.1(B) (IV) of the Design Manual.

If there is an existing post-construction stormwater management practice located on the site that captures and treats runoff from the *impervious area* that is being disturbed, the WQv treatment option selected must, at a minimum, provide treatment equal to the treatment that was being provided by the existing practice(s) if that treatment is greater than the treatment required by options 1 – 4 above.

(ii) Channel Protection Volume (Cpv): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site.

(iii) *Overbank* Flood Control Criteria (Qp): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site.

(iv) Extreme Flood Control Criteria (Qf): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site

d. Sizing Criteria for Combination of Redevelopment Activity and New Development

Construction projects that include both New Development and Redevelopment Activity shall provide post-construction stormwater management controls that meet the sizing criteria calculated as an aggregate of the Sizing Criteria in Part I.C.2.a. or b. of this permit for the New Development portion of the project and Part I.C.2.c of this permit for Redevelopment Activity portion of the project.

D. Maintaining Water Quality

The Department expects that compliance with the conditions of this permit will control *discharge*s necessary to meet applicable *water quality standards*. It shall be a violation of the *ECL* for any discharge to either cause or contribute to a violation of *water quality standards* as contained in Parts 700 through 705 of Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York, such as:

1. There shall be no increase in turbidity that will cause a substantial visible contrast to natural conditions;

2. There shall be no increase in suspended, colloidal or settleable solids that will cause deposition or impair the waters for their best usages; and

3. There shall be no residue from oil and floating substances, nor visible oil film, nor globules of grease.

If there is evidence indicating that the stormwater *discharge*s authorized by this permit are causing, have the reasonable potential to cause, or are contributing to a violation of the *water quality standards*; the *owner or operator* must take appropriate corrective action in accordance with Part IV.C.5. of this general permit and document in accordance with Part IV.C.4. of this general permit. To address the *water quality standard* violation the *owner or operator* may need to provide additional information, include and implement appropriate controls in the SWPPP to correct the problem, or obtain an individual SPDES permit.

If there is evidence indicating that despite compliance with the terms and conditions of this general permit it is demonstrated that the stormwater *discharge*s authorized by this permit are causing or contributing to a violation of *water quality standards*, or if the Department determines that a modification of the permit is necessary to prevent a violation of *water quality standards*, the authorized *discharge*s will no longer be eligible for coverage under this permit. The Department may require the *owner or operator* to obtain an individual SPDES permit to continue discharging.

E. Eligibility Under This General Permit

1. This permit may authorize all *discharges* of stormwater from *construction activity* to *surface waters of the State* and *groundwaters* except for ineligible *discharges* identified under subparagraph F. of this Part.

2. Except for non-stormwater *discharges* explicitly listed in the next paragraph, this permit only authorizes stormwater *discharge*s; including stormwater runoff, snowmelt runoff, and surface runoff and drainage, from *construction activities*.

3. Notwithstanding paragraphs E.1 and E.2 above, the following non-stormwater discharges are authorized by this permit: those listed in 6 NYCRR 750-1.2(a)(29)(vi), with the following exception: "Discharges from firefighting activities are authorized only when the firefighting activities are emergencies/unplanned"; waters to which other components have not been added that are used to control dust in accordance with the SWPPP; and uncontaminated *discharge*s from *construction site* de-watering operations. All non-stormwater discharges must be identified in the SWPPP. Under all circumstances, the *owner or operator* must still comply with *water quality standards* in Part I.D of this permit.

4. The *owner or operator* must maintain permit eligibility to *discharge* under this permit. Any *discharges* that are not compliant with the eligibility conditions of this permit are not authorized by the permit and the *owner or operator* must either apply for a separate permit to cover those ineligible *discharges* or take steps necessary to make the *discharge* eligible for coverage.

F. Activities Which Are Ineligible for Coverage Under This General Permit

All of the following are **not** authorized by this permit:

1. *Discharge*s after *construction activities* have been completed and the site has undergone *final stabilization*;

2. *Discharge*s that are mixed with sources of non-stormwater other than those expressly authorized under subsection E.3. of this Part and identified in the SWPPP required by this permit;

3. *Discharges* that are required to obtain an individual SPDES permit or another SPDES general permit pursuant to Part VII.K. of this permit;

4. *Construction activities* or *discharges* from *construction activities* that may adversely affect an *endangered or threatened species* unless the *owner or*

operator has obtained a permit issued pursuant to 6 NYCRR Part 182 for the project or the Department has issued a letter of non-jurisdiction for the project. All documentation necessary to demonstrate eligibility shall be maintained on site in accordance with Part II.D.2 of this permit;

5. *Discharges* which either cause or contribute to a violation of *water quality standards* adopted pursuant to the *ECL* and its accompanying regulations;

6. *Construction activities* for residential, commercial and institutional projects:

   a. Where the *discharge*s from the *construction activities* are tributary to waters of the state classified as AA or AA-s; and

   b. Which are undertaken on land with no existing *impervious cover*; and

   c. Which disturb one (1) or more acres of land designated on the current United States Department of Agriculture ("USDA") Soil Survey as Soil Slope Phase "D", (provided the map unit name is inclusive of slopes greater than 25%), or Soil Slope Phase "E" or "F" (regardless of the map unit name), or a combination of the three designations.

7. *Construction activities* for linear transportation projects and linear utility projects:

   a. Where the *discharge*s from the *construction activities* are tributary to waters of the state classified as AA or AA-s; and

   b. Which are undertaken on land with no existing *impervious cover*; and

   c. Which disturb two (2) or more acres of land designated on the current USDA Soil Survey as Soil Slope Phase "D" (provided the map unit name is inclusive of slopes greater than 25%), or Soil Slope Phase "E" or "F" (regardless of the map unit name), or a combination of the three designations.

8. *Construction activities* that have the potential to affect an *historic property*, unless there is documentation that such impacts have been resolved. The following documentation necessary to demonstrate eligibility with this requirement shall be maintained on site in accordance with Part II.D.2 of this permit and made available to the Department in accordance with Part VII.F of this permit:

   a. Documentation that the *construction activity* is not within an archeologically sensitive area indicated on the sensitivity map, and that the *construction activity* is not located on or immediately adjacent to a property listed or determined to be eligible for listing on the National or State Registers of Historic Places, and that there is no new permanent building on the *construction site* within the following distances from a building, structure, or object that is more than 50 years old, or if there is such a new permanent building on the *construction site* within those parameters that NYS Office of Parks, Recreation and Historic Preservation (OPRHP), a Historic Preservation Commission of a Certified Local Government, or a qualified preservation professional has determined that the building, structure, or object more than 50 years old is not historically/archeologically significant.

      - 1-5 acres of disturbance - 20 feet
      - 5-20 acres of disturbance - 50 feet
      - 20+ acres of disturbance - 100 feet, or

   b. DEC consultation form sent to OPRHP, and copied to the NYS DEC Agency Historic Preservation Officer (APO), and
      (i) the State Environmental Quality Review (SEQR) Environmental Assessment Form (EAF) with a negative declaration or the Findings Statement, with documentation of OPRHP's agreement with the resolution; or
      (ii) documentation from OPRHP that the *construction activity* will result in No Impact; or
      (iii) documentation from OPRHP providing a determination of No Adverse Impact; or
      (iv) a Letter of Resolution signed by the owner/operator, OPRHP and the DEC APO which allows for this *construction activity* to be eligible for coverage under the general permit in terms of the State Historic Preservation Act (SHPA); or

   c. Documentation of satisfactory compliance with Section 106 of the National Historic Preservation Act for a coterminous project area:

(i) No Affect
(ii) No Adverse Affect
(iii) Executed Memorandum of Agreement, or

d. Documentation that:

(i) SHPA Section 14.09 has been completed by NYS DEC or another state agency.

9. *Discharge*s from *construction activities* that are subject to an existing SPDES individual or general permit where a SPDES permit for *construction activity* has been terminated or denied; or where the *owner or operator* has failed to renew an expired individual permit.

Part II. PERMIT COVERAGE

A. How to Obtain Coverage

1. An *owner or operator* of a *construction activity* that is not subject to the requirements of a regulated, traditional land use control MS4 must first prepare a SWPPP in accordance with all applicable requirements of this permit and then submit a completed Notice of Intent (NOI) to the Department to be authorized to discharge under this permit.

2. An *owner or operator* of a *construction activity* that is subject to the requirements of a *regulated, traditional land use control MS4* must first prepare a SWPPP in accordance with all applicable requirements of this permit and then have the SWPPP reviewed and accepted by the *regulated, traditional land use control MS4* prior to submitting the NOI to the Department. The *owner or operator* shall have the “MS4 SWPPP Acceptance” form signed in accordance with Part VII.H., and then submit that form along with a completed NOI to the Department.

3. The requirement for an *owner or operator* to have its SWPPP reviewed and accepted by the *regulated, traditional land use control MS4* prior to submitting the NOI to the Department does not apply to an *owner or operator* that is obtaining permit coverage in accordance with the requirements in Part II.F. (Change of *Owner or Operator*) or where the *owner or operator* of the *construction activity* is the *regulated, traditional land use control MS4* . This exemption does not apply to *construction activities* subject to the New York City Administrative Code.

B. Notice of Intent (NOI) Submittal

1. Prior to December 21, 2020, an owner or operator shall use either the electronic (eNOI) or paper version of the NOI that the Department prepared. Both versions of the NOI are located on the Department's website (http://www.dec.ny.gov/). The paper version of the NOI shall be signed in accordance with Part VII.H. of this permit and submitted to the following address:

   NOTICE OF INTENT
   NYS DEC, Bureau of Water Permits
   625 Broadway, 4th Floor
   Albany, New York 12233-3505

2. Beginning December 21, 2020 and in accordance with EPA's 2015 NPDES Electronic Reporting Rule (40 CFR Part 127), the *owner or operator* must submit the NOI electronically using the *Department's* online NOI.

3. The *owner or operator* shall have the SWPPP preparer sign the "SWPPP Preparer Certification" statement on the NOI prior to submitting the form to the Department.

4. As of the date the NOI is submitted to the Department, the *owner or operator* shall make the NOI and SWPPP available for review and copying in accordance with the requirements in Part VII.F. of this permit.

C. Permit Authorization

1. An *owner or operator* shall not *commence construction activity* until their authorization to *discharge* under this permit goes into effect.

2. Authorization to *discharge* under this permit will be effective when the *owner or operator* has satisfied all of the following criteria:

   a. project review pursuant to the State Environmental Quality Review Act ("SEQRA") have been satisfied, when SEQRA is applicable. See the Department's website (http://www.dec.ny.gov/) for more information,

   b. where required, all necessary Department permits subject to the *Uniform Procedures Act ("UPA")* (see 6 NYCRR Part 621), or the equivalent from another New York State agency, have been obtained, unless otherwise notified by the Department pursuant to 6 NYCRR 621.3(a)(4). *Owners or operators* of *construction activities* that are required to obtain *UPA* permits

must submit a preliminary SWPPP to the appropriate DEC Permit Administrator at the Regional Office listed in Appendix F at the time all other necessary *UPA* permit applications are submitted. The preliminary SWPPP must include sufficient information to demonstrate that the *construction activity* qualifies for authorization under this permit,

c. the final SWPPP has been prepared, and

d. a complete NOI has been submitted to the Department in accordance with the requirements of this permit.

3. An *owner or operator* that has satisfied the requirements of Part II.C.2 above will be authorized to *discharge* stormwater from their *construction activity* in accordance with the following schedule:

   a. For *construction activities* that are <u>not</u> subject to the requirements of a *regulated, traditional land use control MS4*:

      (i) Five (5) business days from the date the Department receives a complete electronic version of the NOI (eNOI) for *construction activities* with a SWPPP that has been prepared in conformance with the design criteria in the technical standard referenced in Part III.B.1 and the *performance criteria* in the technical standard referenced in Parts III.B., 2 or 3, for *construction activities* that require post-construction stormwater management practices pursuant to Part III.C.; or

      (ii) Sixty (60) business days from the date the Department receives a complete NOI (electronic or paper version) for *construction activities* with a SWPPP that has <u>not</u> been prepared in conformance with the design criteria in technical standard referenced in Part III.B.1. or, for *construction activities* that require post-construction stormwater management practices pursuant to Part III.C., the *performance criteria* in the technical standard referenced in Parts III.B., 2 or 3, or;

      (iii) Ten (10) business days from the date the Department receives a complete paper version of the NOI for *construction activities* with a SWPPP that has been prepared in conformance with the design criteria in the technical standard referenced in Part III.B.1 and the *performance criteria* in the technical standard referenced in Parts III.B., 2 or 3, for *construction activities* that require post-construction stormwater management practices pursuant to Part III.C.

b. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4*:

(i) Five (5) business days from the date the Department receives both a complete electronic version of the NOI (eNOI) and signed "*MS4* SWPPP Acceptance" form, or

(ii) Ten (10) business days from the date the Department receives both a complete paper version of the NOI and signed "MS4 SWPPP Acceptance" form.

4. Coverage under this permit authorizes stormwater *discharges* from only those areas of disturbance that are identified in the NOI. If an *owner or operator* wishes to have stormwater *discharges* from future or additional areas of disturbance authorized, they must submit a new NOI that addresses that phase of the development, unless otherwise notified by the Department. The *owner or operator* shall not *commence construction activity* on the future or additional areas until their authorization to *discharge* under this permit goes into effect in accordance with Part II.C. of this permit.

D. General Requirements For Owners or Operators With Permit Coverage

1. The *owner or operator* shall ensure that the provisions of the SWPPP are implemented from the *commencement of construction activity* until all areas of disturbance have achieved *final stabilization* and the Notice of Termination ("NOT") has been submitted to the Department in accordance with Part V. of this permit. This includes any changes made to the SWPPP pursuant to Part III.A.4. of this permit.

2. The *owner or operator* shall maintain a copy of the General Permit (GP-0-20-001), NOI, *NOI Acknowledgment Letter*, SWPPP, MS4 SWPPP Acceptance form, inspection reports, responsible contractor's or subcontractor's certification statement (see Part III.A.6.), and all documentation necessary to demonstrate eligibility with this permit at the *construction site* until all disturbed areas have achieved *final stabilization* and the NOT has been submitted to the Department. The documents must be maintained in a secure location, such as a job trailer, on-site construction office, or mailbox with lock. The secure location must be accessible during normal business hours to an individual performing a compliance inspection.

3. The *owner or operator* of a *construction activity* shall not disturb greater than five (5) acres of soil at any one time without prior written authorization from the Department or, in areas under the jurisdiction of a *regulated, traditional land*

use control MS4, the *regulated, traditional land use control MS4* (provided the *regulated, traditional land use control MS4* is not the *owner or operator* of the *construction activity*). At a minimum, the *owner or operator* must comply with the following requirements in order to be authorized to disturb greater than five (5) acres of soil at any one time:

a. 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.

b. 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.

c. The *owner or operator* shall prepare a phasing plan that defines maximum disturbed area per phase and shows required cuts and fills.

d. The *owner or operator* shall install any additional site-specific practices needed to protect water quality.

e. The *owner or operator* shall include the requirements above in their SWPPP.

4. In accordance with statute, regulations, and the terms and conditions of this permit, the Department may suspend or revoke an *owner's or operator's* coverage under this permit at any time if the Department determines that the SWPPP does not meet the permit requirements or consistent with Part VII.K..

5. Upon a finding of significant non-compliance with the practices described in the SWPPP or violation of this permit, the Department may order an immediate stop to all activity at the site until the non-compliance is remedied. The stop work order shall be in writing, describe the non-compliance in detail, and be sent to the *owner or operator*.

6. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4*, the *owner or operator* shall notify the

regulated, traditional land use control MS4 in writing of any planned amendments or modifications to the post-construction stormwater management practice component of the SWPPP required by Part III.A. 4. and 5. of this permit. Unless otherwise notified by the *regulated, traditional land use control MS4*, the *owner or operator* shall have the SWPPP amendments or modifications reviewed and accepted by the *regulated, traditional land use control MS4* prior to commencing construction of the post-construction stormwater management practice.

E. Permit Coverage for Discharges Authorized Under GP-0-15-002

1. Upon renewal of SPDES General Permit for Stormwater Discharges from *Construction Activity* (Permit No. GP-0-15-002), an *owner or operator* of *a construction activity* with coverage under GP-0-15-002, as of the effective date of GP- 0-20-001, shall be authorized to *discharge* in accordance with GP- 0-20-001, unless otherwise notified by the Department.

   An *owner or operator* may continue to implement the technical/design components of the post-construction stormwater management controls provided that such design was done in conformance with the technical standards in place at the time of initial project authorization. However, they must comply with the other, non-design provisions of GP-0-20-001.

F. Change of Owner or Operator

1. When property ownership changes or when there is a change in operational control over the construction plans and specifications, the original *owner or operator* must notify the new *owner or operator*, in writing, of the requirement to obtain permit coverage by submitting a NOI with the Department. For *construction activities* subject to the requirements of a *regulated, traditional land use control MS4,* the original *owner or operator* must also notify the MS4, in writing, of the change in ownership at least 30 calendar days prior to the change in ownership.

2. Once the new *owner or operator* obtains permit coverage, the original *owner or operator* shall then submit a completed NOT with the name and permit identification number of the new *owner or operator* to the Department at the address in Part II.B.1. of this permit. If the original *owner or operator* maintains ownership of a portion of the *construction activity* and will disturb soil, they must maintain their coverage under the permit.

3. Permit coverage for the new *owner or operator* will be effective as of the date the Department receives a complete NOI, provided the original *owner or*

operator was not subject to a sixty (60) business day authorization period that has not expired as of the date the Department receives the NOI from the new *owner or operator*.

Part III. STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

A. General SWPPP Requirements

1. A SWPPP shall be prepared and implemented by the *owner or operator* of each *construction activity* covered by this permit. The SWPPP must document the selection, design, installation, implementation and maintenance of the control measures and practices that will be used to meet the effluent limitations in Part I.B. of this permit and where applicable, the post-construction stormwater management practice requirements in Part I.C. of this permit. The SWPPP shall be prepared prior to the submittal of the NOI. The NOI shall be submitted to the Department prior to the *commencement of construction activity*. A copy of the completed, final NOI shall be included in the SWPPP.

2. The SWPPP shall describe the erosion and sediment control practices and where required, post-construction stormwater management practices that will be used and/or constructed to reduce the *pollutants* in stormwater *discharges* and to assure compliance with the terms and conditions of this permit. In addition, the SWPPP shall identify potential sources of pollution which may reasonably be expected to affect the quality of stormwater *discharges*.

3. All SWPPPs that require the post-construction stormwater management practice component shall be prepared by a *qualified professional* that is knowledgeable in the principles and practices of stormwater management and treatment.

4. The *owner or operator* must keep the SWPPP current so that it at all times accurately documents the erosion and sediment controls practices that are being used or will be used during construction, and all post-construction stormwater management practices that will be constructed on the site. At a minimum, the *owner or operator* shall amend the SWPPP, including construction drawings:

    a. whenever the current provisions prove to be ineffective in minimizing *pollutants* in stormwater *discharges* from the site;

b. whenever there is a change in design, construction, or operation at the *construction site* that has or could have an effect on the *discharge* of *pollutants*;

c. to address issues or deficiencies identified during an inspection by the *qualified inspector,* the Department or other regulatory authority; and

d. to document the final construction conditions.

5. The Department may notify the *owner or operator* at any time that the SWPPP does not meet one or more of the minimum requirements of this permit. The notification shall be in writing and identify the provisions of the SWPPP that require modification. Within fourteen (14) calendar days of such notification, or as otherwise indicated by the Department, the *owner or operator* shall make the required changes to the SWPPP and submit written notification to the Department that the changes have been made. If the *owner or operator* does not respond to the Department's comments in the specified time frame, the Department may suspend the *owner's or operator's* coverage under this permit or require the *owner or operator* to obtain coverage under an individual SPDES permit in accordance with Part II.D.4. of this permit.

6. Prior to the *commencement of construction activity*, the *owner or operator* must 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; and the contractor(s) and subcontractor(s) that will be responsible for constructing the post-construction stormwater management practices included in the SWPPP. The *owner or 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. This person shall be known as the *trained contractor.* The *owner or 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 or operator* shall have each of the contractors and subcontractors identified above sign a copy of the following certification statement below before they commence any *construction activity*:

   "I hereby certify under penalty of law that I understand and agree to comply with the terms and conditions of the SWPPP and agree to implement any corrective actions identified by the *qualified inspector* during a site inspection. I also understand that the *owner or operator* must comply with

the terms and conditions of the most current version of the New York State Pollutant Discharge Elimination System ("SPDES") general permit for stormwater *discharge*s from *construction activities* and that it is unlawful for any person to cause or contribute to a violation of *water quality standards*. Furthermore, I am aware that there are significant penalties for submitting false information, that I do not believe to be true, including the possibility of fine and imprisonment for knowing violations"

In addition to providing the certification statement above, the certification page must also identify the specific elements of the SWPPP that each contractor and subcontractor will be responsible for and include the name and title of the person providing the signature; the name and title of the *trained contractor* responsible for SWPPP implementation; the name, address and telephone number of the contracting firm; the address (or other identifying description) of the site; and the date the certification statement is signed. The *owner or operator* shall attach the certification statement(s) to the copy of the SWPPP that is maintained at the *construction site*. If new or additional contractors are hired to implement measures identified in the SWPPP after construction has commenced, they must also sign the certification statement and provide the information listed above.

7. For projects where the Department requests a copy of the SWPPP or inspection reports, the *owner or operator* shall submit the documents in both electronic (PDF only) and paper format within five (5) business days, unless otherwise notified by the Department.

B. Required SWPPP Contents

1. Erosion and sediment control component - All SWPPPs prepared pursuant to this permit shall include erosion and sediment control practices designed in conformance with the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016. Where erosion and sediment control practices are not designed in conformance with the design criteria included in the technical standard, the *owner or operator* must demonstrate *equivalence* to the technical standard. At a minimum, the erosion and sediment control component of the SWPPP shall include the following:

    a. Background information about the scope of the project, including the location, type and size of project

b. A site map/construction drawing(s) for the project, including a general location map. At a minimum, the site map shall show the total site area; all improvements; areas of disturbance; areas that will not be disturbed; existing vegetation; on-site and adjacent off-site surface water(s); floodplain/floodway boundaries; wetlands and drainage patterns that could be affected by the *construction activity*; existing and final contours ; locations of different soil types with boundaries; material, waste, borrow or equipment storage areas located on adjacent properties; and location(s) of the stormwater *discharge*(s);

c. A description of the soil(s) present at the site, including an identification of the Hydrologic Soil Group (HSG);

d. A construction phasing plan and sequence of operations describing the intended order of *construction activities*, including clearing and grubbing, excavation and grading, utility and infrastructure installation and any other activity at the site that results in soil disturbance;

e. A description of the minimum erosion and sediment control practices to be installed or implemented for each *construction activity* that will result in soil disturbance. Include a schedule that identifies the timing of initial placement or implementation of each erosion and sediment control practice and the minimum time frames that each practice should remain in place or be implemented;

f. A temporary and permanent soil stabilization plan that meets the requirements of this general permit and the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016, for each stage of the project, including initial land clearing and grubbing to project completion and achievement of *final stabilization*;

g. A site map/construction drawing(s) showing the specific location(s), size(s), and length(s) of each erosion and sediment control practice;

h. The dimensions, material specifications, installation details, and operation and maintenance requirements for all erosion and sediment control practices. Include the location and sizing of any temporary sediment basins and structural practices that will be used to divert flows from exposed soils;

i. A maintenance inspection schedule for the contractor(s) identified in Part III.A.6. of this permit, to ensure continuous and effective operation of the erosion and sediment control practices. The maintenance inspection

schedule shall be in accordance with the requirements in the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016;

j. A description of the pollution prevention measures that will be used to control litter, construction chemicals and construction debris from becoming a *pollutant* source in the stormwater *discharges*;

k. A description and location of any stormwater *discharges* associated with industrial activity other than construction at the site, including, but not limited to, stormwater *discharges* from asphalt plants and concrete plants located on the *construction site*; and

l. Identification of any elements of the design that are not in conformance with the design criteria in the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016. Include the reason for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

2. Post-construction stormwater management practice component – The *owner or operator* of any construction project identified in Table 2 of Appendix B as needing post-construction stormwater management practices shall prepare a SWPPP that includes practices designed in conformance with the applicable *sizing criteria* in Part I.C.2.a., c. or d. of this permit and the *performance criteria* in the technical standard, New York State Stormwater Management Design Manual dated January 2015

   Where post-construction stormwater management practices are not designed in conformance with the *performance criteria* in the technical standard, the *owner or operator* must include in the SWPPP the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

   The post-construction stormwater management practice component of the SWPPP shall include the following:

   a. Identification of all post-construction stormwater management practices to be constructed as part of the project. Include the dimensions, material specifications and installation details for each post-construction stormwater management practice;

b. A site map/construction drawing(s) showing the specific location and size of each post-construction stormwater management practice;

c. A Stormwater Modeling and Analysis Report that includes:
   (i) Map(s) showing pre-development conditions, including watershed/subcatchments boundaries, flow paths/routing, and design points;

   (ii) Map(s) showing post-development conditions, including watershed/subcatchments boundaries, flow paths/routing, design points and post-construction stormwater management practices;

   (iii) Results of stormwater modeling (i.e. hydrology and hydraulic analysis) for the required storm events. Include supporting calculations (model runs), methodology, and a summary table that compares pre and post-development runoff rates and volumes for the different storm events;

   (iv) Summary table, with supporting calculations, which demonstrates that each post-construction stormwater management practice has been designed in conformance with the *sizing criteria* included in the Design Manual;

   (v) Identification of any *sizing criteria* that is not required based on the requirements included in Part I.C. of this permit; and

   (vi) Identification of any elements of the design that are not in conformance with the *performance criteria* in the Design Manual. Include the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the Design Manual;

d. Soil testing results and locations (test pits, borings);

e. Infiltration test results, when required; and

f. An operations and maintenance plan that includes inspection and maintenance schedules and actions to ensure continuous and effective operation of each post-construction stormwater management practice. The plan shall identify the entity that will be responsible for the long term operation and maintenance of each practice.

3. Enhanced Phosphorus Removal Standards - All construction projects identified in Table 2 of Appendix B that are located in the watersheds identified in Appendix C shall prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the applicable *sizing criteria* in Part I.C.2. b., c. or d. of this permit and the *performance criteria,* Enhanced Phosphorus Removal Standards included in the Design Manual. At a minimum, the post-construction stormwater management practice component of the SWPPP shall include items 2.a - 2.f. above.

C. Required SWPPP Components by Project Type

Unless otherwise notified by the Department, *owners or operators* of *construction activities* identified in Table 1 of Appendix B are required to prepare a SWPPP that only includes erosion and sediment control practices designed in conformance with Part III.B.1 of this permit. *Owners or operators* of the *construction activities* identified in Table 2 of Appendix B shall prepare a SWPPP that also includes post-construction stormwater management practices designed in conformance with Part III.B.2 or 3 of this permit.

Part IV. INSPECTION AND MAINTENANCE REQUIREMENTS

A. General Construction Site Inspection and Maintenance Requirements

1. The *owner or operator* must ensure that all erosion and sediment control practices (including pollution prevention measures) and all post-construction stormwater management practices identified in the SWPPP are inspected and maintained in accordance with Part IV.B. and C. of this permit.

2. The terms of this permit shall not be construed to prohibit the State of New York from exercising any authority pursuant to the ECL, common law or federal law, or prohibit New York State from taking any measures, whether civil or criminal, to prevent violations of the laws of the State of New York or protect the public health and safety and/or the environment.

B. Contractor Maintenance Inspection Requirements

1. The *owner or operator* of each *construction activity* identified in Tables 1 and 2 of Appendix B shall have a *trained contractor* inspect the erosion and sediment control practices and pollution prevention measures being implemented within the active work area daily to ensure that they are being maintained in effective operating condition at all times. If deficiencies are identified, the contractor shall

begin implementing corrective actions within one business day and shall complete the corrective actions in a reasonable time frame.

2. For construction sites where soil disturbance activities have been temporarily suspended (e.g. winter shutdown) and *temporary stabilization* measures have been applied to all disturbed areas, the *trained contractor* can stop conducting the maintenance inspections. The *trained contractor* shall begin conducting the maintenance inspections in accordance with Part IV.B.1. of this permit as soon as soil disturbance activities resume.

3. For construction sites where soil disturbance activities have been shut down with partial project completion, the *trained contractor* can stop conducting the maintenance inspections if all areas disturbed as of the project shutdown date have achieved *final stabilization* and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational.

C. Qualified Inspector Inspection Requirements

The *owner or operator* shall have a *qualified inspector* conduct site inspections in conformance with the following requirements:

[Note: The *trained contractor* identified in Part III.A.6. and IV.B. of this permit **cannot** conduct the *qualified inspector* site inspections unless they meet the *qualified inspector* qualifications included in Appendix A. In order to perform these inspections, the *trained contractor* would have to be a:

- licensed Professional Engineer,
- Certified Professional in Erosion and Sediment Control (CPESC),
- New York State Erosion and Sediment Control Certificate Program holder
- Registered Landscape Architect, or
- someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided they have received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity].

1. A *qualified inspector* shall conduct site inspections for all *construction activities* identified in Tables 1 and 2 of Appendix B, with the exception of:

   a. the construction of a single family residential subdivision with 25% or less *impervious cover* at total site build-out that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres and is not located

in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix E;

b. the construction of a single family home that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres and is not located in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix E;

c. construction on agricultural property that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres; and

d. *construction activities* located in the watersheds identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.

2. Unless otherwise notified by the Department, the *qualified inspector* shall conduct site inspections in accordance with the following timetable:

a. For construction sites where soil disturbance activities are on-going, the *qualified inspector* shall conduct a site inspection at least once every seven (7) calendar days.

b. For construction sites where soil disturbance activities are on-going and the *owner or operator* has received authorization in accordance with Part II.D.3 to disturb greater than five (5) acres of soil at any one time, the *qualified inspector* shall conduct at least two (2) site inspections every seven (7) calendar days. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.

c. For construction sites where soil disturbance activities have been temporarily suspended (e.g. winter shutdown) and *temporary stabilization* measures have been applied to all disturbed areas, the *qualified inspector* shall conduct a site inspection at least once every thirty (30) calendar days. The *owner or operator* shall notify the DOW Water (SPDES) Program contact at the Regional Office (see contact information in Appendix F) or, in areas under the jurisdiction of a *regulated, traditional land use control MS4,* the *regulated, traditional land use control MS4* (provided the *regulated, traditional land use control MS4* is not the *owner or operator* of the *construction activity*) in writing prior to reducing the frequency of inspections.

d. For construction sites where soil disturbance activities have been shut down with partial project completion, the *qualified inspector* can stop conducting inspections if all areas disturbed as of the project shutdown date have achieved *final stabilization* and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational. The *owner or operator* shall notify the DOW Water (SPDES) Program contact at the Regional Office (see contact information in Appendix F) or, in areas under the jurisdiction of a *regulated, traditional land use control MS4,* the *regulated, traditional land use control MS4* (provided the *regulated, traditional land use control MS4* is not the *owner or operator* of the *construction activity*) in writing prior to the shutdown. If soil disturbance activities are not resumed within 2 years from the date of shutdown, the *owner or operator* shall have the *qualified inspector* perform a final inspection and certify that all disturbed areas have achieved *final stabilization,* and all temporary, structural erosion and sediment control measures have been removed*;* and that all post-construction stormwater management practices have been constructed in conformance with the SWPPP by signing the "*Final Stabilization*" and "Post-Construction Stormwater Management Practice" certification statements on the NOT. The *owner or operator* shall then submit the completed NOT form to the address in Part II.B.1 of this permit.

e. For construction sites that directly *discharge* to one of the 303(d) segments listed in Appendix E or is located in one of the watersheds listed in Appendix C, the *qualified inspector* shall conduct at least two (2) site inspections every seven (7) calendar days. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.

3. At a minimum, the *qualified inspector* shall inspect all erosion and sediment control practices and pollution prevention measures 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*.

4. 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:

a. Date and time of inspection;

b. Name and title of person(s) performing inspection;

c. A description of the weather and soil conditions (e.g. dry, wet, saturated) at the time of the inspection;

d. 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;

e. A description of the condition of all natural surface waterbodies 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 waterbody;

f. Identification of all erosion and sediment control practices and pollution prevention measures that need repair or maintenance;

g. Identification of all erosion and sediment control practices and pollution prevention measures that were not installed properly or are not functioning as designed and need to be reinstalled or replaced;

h. Description and sketch of areas with active soil disturbance activity, areas that have been disturbed but are inactive at the time of the inspection, and areas that have been stabilized (temporary and/or final) since the last inspection;

i. 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;

j. Corrective action(s) that must be taken to install, repair, replace or maintain erosion and sediment control practices and pollution prevention measures; and to correct deficiencies identified with the construction of the post-construction stormwater management practice(s);

k. Identification and status of all corrective actions that were required by previous inspection; and

l. 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.

5. Within one business day of the completion of an inspection, the *qualified inspector* shall notify the *owner or operator* and appropriate contractor or subcontractor identified in Part III.A.6. of this permit 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.

6. All inspection reports shall be signed by the *qualified inspector.* Pursuant to Part II.D.2. of this permit, the inspection reports shall be maintained on site with the SWPPP.

Part V. TERMINATION OF PERMIT COVERAGE

A. Termination of Permit Coverage

1. An *owner or operator* that is eligible to terminate coverage under this permit must submit a completed NOT form to the address in Part II.B.1 of this permit. The NOT form shall be one which is associated with this permit, signed in accordance with Part VII.H of this permit.

2. An *owner or operator* may terminate coverage when one or more the following conditions have been met:

   a. Total project completion - All *construction activity* identified in the SWPPP has been completed; and all areas of disturbance have achieved *final stabilization*; and all temporary, structural erosion and sediment control measures have been removed; and all post-construction stormwater management practices have been constructed in conformance with the SWPPP and are operational;

b. Planned shutdown with partial project completion - All soil disturbance activities have ceased; and all areas disturbed as of the project shutdown date have achieved *final stabilization*; and all temporary, structural erosion and sediment control measures have been removed; and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational;

c. A new *owner or operator* has obtained coverage under this permit in accordance with Part II.F. of this permit.

d. The *owner or operator* obtains coverage under an alternative SPDES general permit or an individual SPDES permit.

3. For *construction activities* meeting subdivision 2a. or 2b. of this Part, the *owner or operator* shall have the *qualified inspector* perform a final site inspection prior to submitting the NOT. The *qualified inspector* shall, by signing the "*Final Stabilization*" and "Post-Construction Stormwater Management Practice certification statements on the NOT, certify that all the requirements in Part V.A.2.a. or b. of this permit have been achieved.

4. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4* and meet subdivision 2a. or 2b. of this Part, the *owner or operator* shall have the *regulated, traditional land use control MS4* sign the "MS4 Acceptance" statement on the NOT in accordance with the requirements in Part VII.H. of this permit. The *regulated, traditional land use control MS4* official, by signing this statement, has determined that it is acceptable for the *owner or operator* to submit the NOT in accordance with the requirements of this Part. The *regulated, traditional land use control MS4* can make this determination by performing a final site inspection themselves or by accepting the *qualified inspector*'s final site inspection certification(s) required in Part V.A.3. of this permit.

5. For *construction activities* that require post-construction stormwater management practices and meet subdivision 2a. of this Part, the *owner or operator* must, prior to submitting the NOT, ensure one of the following:

   a. the post-construction stormwater management practice(s) and any right-of-way(s) needed to maintain such practice(s) have been deeded to the municipality in which the practice(s) is located,

b. an executed maintenance agreement is in place with the municipality that will maintain the post-construction stormwater management practice(s),

c. for post-construction stormwater management practices that are privately owned, the *owner or operator* has a mechanism 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,

d. for post-construction stormwater management practices that are owned by a public or private institution (e.g. school, university, hospital), government agency or authority, or public utility; the *owner or operator* has policy and procedures in place that ensures operation and maintenance of the practices in accordance with the operation and maintenance plan.

Part VI. REPORTING AND RETENTION RECORDS

A. Record Retention

The *owner or operator* shall retain a copy of the NOI, NOI Acknowledgment Letter, SWPPP, MS4 SWPPP Acceptance form and any inspection reports that were prepared in conjunction with this permit for a period of at least five (5) years from the date that the Department receives a complete NOT submitted in accordance with Part V. of this general permit.

B. Addresses

With the exception of the NOI, NOT, and MS4 SWPPP Acceptance form (which must be submitted to the address referenced in Part II.B.1 of this permit), all written correspondence requested by the Department, including individual permit applications, shall be sent to the address of the appropriate DOW Water (SPDES) Program contact at the Regional Office listed in Appendix F.

Part VII. STANDARD PERMIT CONDITIONS

A. Duty to Comply

The *owner or operator* must comply with all conditions of this permit. All contractors and subcontractors associated with the project must comply with the terms of the SWPPP. Any non-compliance with this permit constitutes a violation of the Clean Water

Act (CWA) and the ECL and is grounds for an enforcement action against the *owner or operator* and/or the contractor/subcontractor; permit revocation, suspension or modification; or denial of a permit renewal application. Upon a finding of significant non-compliance with this permit or the applicable SWPPP, the Department may order an immediate stop to all *construction activity* at the site until the non-compliance is remedied. The stop work order shall be in writing, shall describe the non-compliance in detail, and shall be sent to the *owner or operator*.

If any human remains or archaeological remains are encountered during excavation, the *owner or operator* must immediately cease, or cause to cease, all *construction activity* in the area of the remains and notify the appropriate Regional Water Engineer (RWE). *Construction activity* shall not resume until written permission to do so has been received from the RWE.

B. Continuation of the Expired General Permit

This permit expires five (5) years from the effective date. If a new general permit is not issued prior to the expiration of this general permit, an *owner or operator* with coverage under this permit may continue to operate and *discharge* in accordance with the terms and conditions of this general permit, if it is extended pursuant to the State Administrative Procedure Act and 6 NYCRR Part 621, until a new general permit is issued.

C. Enforcement

Failure of the *owner or operator,* its contractors, subcontractors, agents and/or assigns to strictly adhere to any of the permit requirements contained herein shall constitute a violation of this permit. There are substantial criminal, civil, and administrative penalties associated with violating the provisions of this permit. Fines of up to $37,500 per day for each violation and imprisonment for up to fifteen (15) years may be assessed depending upon the nature and degree of the offense.

D. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for an *owner or operator* in an enforcement action that it would have been necessary to halt or reduce the *construction activity* in order to maintain compliance with the conditions of this permit.

E. Duty to Mitigate

The *owner or operator* and its contractors and subcontractors shall take all reasonable steps to *minimize* or prevent any *discharge* in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

F. Duty to Provide Information

The *owner or operator* shall furnish to the Department, within a reasonable specified time period of a written request, all documentation necessary to demonstrate eligibility and any information to determine compliance with this permit or to determine whether cause exists for modifying or revoking this permit, or suspending or denying coverage under this permit, in accordance with the terms and conditions of this permit. The NOI, SWPPP and inspection reports required by this permit are public documents that the *owner or operator* must make available for review and copying by any person within five (5) business days of the *owner or operator* receiving a written request by any such person to review these documents. Copying of documents will be done at the requester's expense.

G. Other Information

When the *owner or operator* becomes aware that they failed to submit any relevant facts, or submitted incorrect information in the NOI or in any of the documents required by this permit , or have made substantive revisions to the SWPPP (e.g. the scope of the project changes significantly, the type of post-construction stormwater management practice(s) changes, there is a reduction in the sizing of the post-construction stormwater management practice, or there is an increase in the disturbance area or *impervious area*), which were not reflected in the original NOI submitted to the Department, they shall promptly submit such facts or information to the Department using the contact information in Part II.A. of this permit. Failure of the *owner or operator* to correct or supplement any relevant facts within five (5) business days of becoming aware of the deficiency shall constitute a violation of this permit.

H. Signatory Requirements

1. All NOIs and NOTs shall be signed as follows:

    a. For a corporation these forms shall be signed by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means:

(i) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation; or

(ii) the manager of one or more manufacturing, production or operating facilities, provided the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;

b. For a partnership or sole proprietorship these forms shall be signed by a general partner or the proprietor, respectively; or

c. For a municipality, State, Federal, or other public agency these forms shall be signed by either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes:

(i) the chief executive officer of the agency, or

(ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of EPA).

2. The SWPPP and other information requested by the Department shall be signed by a person described in Part VII.H.1. of this permit or by a duly authorized representative of that person. A person is a duly authorized representative only if:

a. The authorization is made in writing by a person described in Part VII.H.1. of this permit;

b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field,

superintendent, position of *equivalent* responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position) and,

c. The written authorization shall include the name, title and signature of the authorized representative and be attached to the SWPPP.

3. All inspection reports shall be signed by the *qualified inspector* that performs the inspection.

4. The MS4 SWPPP Acceptance form shall be signed by the principal executive officer or ranking elected official from the *regulated, traditional land use control MS4,* or by a duly authorized representative of that person.

   It shall constitute a permit violation if an incorrect and/or improper signatory authorizes any required forms, SWPPP and/or inspection reports.

I. Property Rights

The issuance of this permit does not convey any property rights of any sort, nor any exclusive privileges, nor does it authorize any injury to private property nor any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations. *Owners or operators* must obtain any applicable conveyances, easements, licenses and/or access to real property prior to *commencing construction activity*.

J. Severability

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit shall not be affected thereby.

K. Requirement to Obtain Coverage Under an Alternative Permit

1. The Department may require any owner or operator authorized by this permit to apply for and/or obtain either an individual SPDES permit or another SPDES general permit. When the Department requires any discharger authorized by a general permit to apply for an individual SPDES permit, it shall notify the discharger in writing that a permit application is required. This notice shall

include a brief statement of the reasons for this decision, an application form, a statement setting a time frame for the owner or operator to file the application for an individual SPDES permit, and a deadline, not sooner than 180 days from owner or operator receipt of the notification letter, whereby the authorization to discharge under this general permit shall be terminated. Applications must be submitted to the appropriate Permit Administrator at the Regional Office. The Department may grant additional time upon demonstration, to the satisfaction of the Department, that additional time to apply for an alternative authorization is necessary or where the Department has not provided a permit determination in accordance with Part 621 of this Title.

2. When an individual SPDES permit is issued to a discharger authorized to *discharge* under a general SPDES permit for the same *discharge*(s), the general permit authorization for outfalls authorized under the individual SPDES permit is automatically terminated on the effective date of the individual permit unless termination is earlier in accordance with 6 NYCRR Part 750.

L. Proper Operation and Maintenance

The *owner or operator* shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the *owner or operator* to achieve compliance with the conditions of this permit and with the requirements of the SWPPP.

M. Inspection and Entry

The *owner or operator* shall allow an authorized representative of the Department, EPA, applicable county health department, or, in the case of a *construction site* which *discharges* through an *MS4*, an authorized representative of the *MS4* receiving the discharge, upon the presentation of credentials and other documents as may be required by law, to:

1. Enter upon the owner’s or operator's premises where a regulated facility or activity is located or conducted or where records must be kept under the conditions of this permit;

2. Have access to and copy at reasonable times, any records that must be kept under the conditions of this permit; and

3. Inspect at reasonable times any facilities or equipment (including monitoring and control equipment), practices or operations regulated or required by this permit.

4. Sample or monitor at reasonable times, for purposes of assuring permit compliance or as otherwise authorized by the Act or ECL, any substances or parameters at any location.

N. Permit Actions

This permit may, at any time, be modified, suspended, revoked, or renewed by the Department in accordance with 6 NYCRR Part 621. The filing of a request by the *owner or operator* for a permit modification, revocation and reissuance, termination, a notification of planned changes or anticipated noncompliance does not limit, diminish and/or stay compliance with any terms of this permit.

O. Definitions

Definitions of key terms are included in Appendix A of this permit.

P. Re-Opener Clause

1. If there is evidence indicating potential or realized impacts on water quality due to any stormwater discharge associated with construction activity covered by this permit, the owner or operator of such discharge may be required to obtain an individual permit or alternative general permit in accordance with Part VII.K. of this permit or the permit may be modified to include different limitations and/or requirements.

2. Any Department initiated permit modification, suspension or revocation will be conducted in accordance with 6 NYCRR Part 621, 6 NYCRR 750-1.18, and 6 NYCRR 750-1.20.

Q. Penalties for Falsification of Forms and Reports

In accordance with 6NYCRR Part 750-2.4 and 750-2.5, any person who knowingly makes any false material statement, representation, or certification in any application, record, report or other document filed or required to be maintained under this permit, including reports of compliance or noncompliance shall, upon conviction, be punished in accordance with ECL §71-1933 and or Articles 175 and 210 of the New York State Penal Law.

R. Other Permits

Nothing in this permit relieves the *owner or operator* from a requirement to obtain any other permits required by law.

APPENDIX A – Acronyms and Definitions

Acronyms

APO – Agency Preservation Officer
BMP – Best Management Practice
CPESC – Certified Professional in Erosion and Sediment Control
Cpv – Channel Protection Volume
CWA – Clean Water Act (or the Federal Water Pollution Control Act, 33 U.S.C. §1251 et seq)
DOW – Division of Water
EAF – Environmental Assessment Form
ECL - Environmental Conservation Law
EPA – U. S. Environmental Protection Agency
HSG – Hydrologic Soil Group
MS4 – Municipal Separate Storm Sewer System
NOI – Notice of Intent
NOT – Notice of Termination
NPDES – National Pollutant Discharge Elimination System
OPRHP – Office of Parks, Recreation and Historic Places
Qf – Extreme Flood
Qp – Overbank Flood
RRv – Runoff Reduction Volume
RWE – Regional Water Engineer
SEQR – State Environmental Quality Review
SEQRA - State Environmental Quality Review Act
SHPA – State Historic Preservation Act
SPDES – State Pollutant Discharge Elimination System
SWPPP – Stormwater Pollution Prevention Plan
TMDL – Total Maximum Daily Load
UPA – Uniform Procedures Act
USDA – United States Department of Agriculture
WQv – Water Quality Volume

Definitions

All definitions in this section are solely for the purposes of this permit.

Agricultural Building – a structure designed and constructed to house farm implements, hay, grain, poultry, livestock or other horticultural products; excluding any structure designed, constructed or used, in whole or in part, for human habitation, as a place of employment where agricultural products are processed, treated or packaged, or as a place used by the public.

Agricultural Property –means the land for construction of a barn, *agricultural building*, silo, stockyard, pen or other structural practices identified in Table II in the "Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State" prepared by the Department in cooperation with agencies of New York Nonpoint Source Coordinating Committee (dated June 2007).

Alter Hydrology from Pre to Post-Development Conditions - means the post-development peak flow rate(s) has increased by more than 5% of the pre-developed condition for the design storm of interest (e.g. 10 yr and 100 yr).

Combined Sewer - means a sewer that is designed to collect and convey both "sewage" and "stormwater".

Commence (Commencement of) Construction Activities - means the initial disturbance of soils associated with clearing, grading or excavation activities; or other construction related activities that disturb or expose soils such as demolition, stockpiling of fill material, and the initial installation of erosion and sediment control practices required in the SWPPP. See definition for "*Construction Activity(ies)*" also.

Construction Activity(ies) - means any clearing, grading, excavation, filling, demolition or stockpiling activities that result in soil disturbance. Clearing activities can include, but are not limited to, logging equipment operation, the cutting and skidding of trees, stump removal and/or brush root removal. Construction activity does not include routine maintenance that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of a facility.

Construction Site – means the land area where *construction activity(ies)* will occur. See definition for "*Commence (Commencement of) Construction Activities"* and "*Larger Common Plan of Development or Sale" also.*

Dewatering – means the act of draining rainwater and/or groundwater from building foundations, vaults or excavations/trenches.

Direct Discharge (to a specific surface waterbody) - means that runoff flows from a *construction site* by overland flow and the first point of discharge is the specific surface waterbody, or runoff flows from a *construction site* to a separate storm sewer system

and the first point of discharge from the separate storm sewer system is the specific surface waterbody.

Discharge(s) - means any addition of any pollutant to waters of the State through an outlet or *point source*.

Embankment –means an earthen or rock slope that supports a road/highway.

Endangered or Threatened Species – see 6 NYCRR Part 182 of the Department's rules and regulations for definition of terms and requirements.

Environmental Conservation Law (ECL) - means chapter 43-B of the Consolidated Laws of the State of New York, entitled the Environmental Conservation Law.

Equivalent (Equivalence) – means that the practice or measure meets all the performance, longevity, maintenance, and safety objectives of the technical standard and will provide an equal or greater degree of water quality protection.

Final Stabilization - means that all soil disturbance activities have ceased and a uniform, perennial vegetative cover with a density of eighty (80) percent over the entire pervious surface has been established; or other equivalent stabilization measures, such as permanent landscape mulches, rock rip-rap or washed/crushed stone have been applied on all disturbed areas that are not covered by permanent structures, concrete or pavement.

General SPDES permit - means a SPDES permit issued pursuant to 6 NYCRR Part 750-1.21 and Section 70-0117 of the ECL authorizing a category of discharges.

Groundwater(s) - means waters in the saturated zone. The saturated zone is a subsurface zone in which all the interstices are filled with water under pressure greater than that of the atmosphere. Although the zone may contain gas-filled interstices or interstices filled with fluids other than water, it is still considered saturated.

Historic Property – means any building, structure, site, object or district that is listed on the State or National Registers of Historic Places or is determined to be eligible for listing on the State or National Registers of Historic Places.

Impervious Area (Cover) - means all impermeable surfaces that cannot effectively infiltrate rainfall. This includes paved, concrete and gravel surfaces (i.e. parking lots, driveways, roads, runways and sidewalks); building rooftops and miscellaneous impermeable structures such as patios, pools, and sheds.

Infeasible – means not technologically possible, or not economically practicable and achievable in light of best industry practices.

Larger Common Plan of Development or Sale - means a contiguous area where multiple separate and distinct *construction activities* are occurring, or will occur, under one plan. The term “plan” in “larger common plan of development or sale” is broadly defined as any announcement or piece of documentation (including a sign, public notice or hearing, marketing plan, advertisement, drawing, permit application, State Environmental Quality Review Act (SEQRA) environmental assessment form or other documents, zoning request, computer design, etc.) or physical demarcation (including boundary signs, lot stakes, surveyor markings, etc.) indicating that *construction activities* may occur on a specific plot.

For discrete construction projects that are located within a larger common plan of development or sale that are at least 1/4 mile apart, each project can be treated as a separate plan of development or sale provided any interconnecting road, pipeline or utility project that is part of the same “common plan” is not concurrently being disturbed.

Minimize – means reduce and/or eliminate to the extent achievable using control measures (including best management practices) that are technologically available and economically practicable and achievable in light of best industry practices.

Municipal Separate Storm Sewer (MS4) - a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains):

(i) Owned or operated by a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, stormwater, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the CWA that discharges to surface waters of the State*;*
(ii) Designed or used for collecting or conveying stormwater;
(iii) Which is not a *combined sewer*; and
(iv) Which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR 122.2.

National Pollutant Discharge Elimination System (NPDES) - means the national system for the issuance of wastewater and stormwater permits under the Federal Water Pollution Control Act (Clean Water Act).

Natural Buffer –means an undisturbed area with natural cover running along a surface water (e.g. wetland, stream, river, lake, etc.).

New Development – means any land disturbance that does not meet the definition of Redevelopment Activity included in this appendix.

New York State Erosion and Sediment Control Certificate Program – a certificate program that establishes and maintains a process to identify and recognize individuals who are capable of developing, designing, inspecting and maintaining erosion and sediment control plans on projects that disturb soils in New York State. The certificate program is administered by the New York State Conservation District Employees Association.

NOI Acknowledgment Letter - means the letter that the Department sends to an owner or operator to acknowledge the Department's receipt and acceptance of a complete Notice of Intent. This letter documents the owner's or operator's authorization to discharge in accordance with the general permit for stormwater discharges from *construction activity*.

Nonpoint Source - means any source of water pollution or pollutants which is not a discrete conveyance or *point source* permitted pursuant to Title 7 or 8 of Article 17 of the Environmental Conservation Law (see ECL Section 17-1403).

Overbank –means flow events that exceed the capacity of the stream channel and spill out into the adjacent floodplain.

Owner or Operator - means the person, persons or legal entity which owns or leases the property on which the *construction activity* is occurring; an entity that has operational control over the construction plans and specifications, including the ability to make modifications to the plans and specifications; and/or an entity that has day-to-day operational control of those activities at a project that are necessary to ensure compliance with the permit conditions.

Performance Criteria – means the design criteria listed under the "Required Elements" sections in Chapters 5, 6 and 10 of the technical standard, New York State Stormwater Management Design Manual, dated January 2015. It does not include the Sizing Criteria (i.e. WQv, RRv, Cpv, Qp and Qf) in Part I.C.2. of the permit.

Point Source - means any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, vessel or other floating craft, or landfill leachate collection system from which *pollutants* are or may be discharged.

Pollutant - means dredged spoil, filter backwash, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand and industrial, municipal, agricultural waste and ballast discharged into water; which may cause or might reasonably be expected to cause pollution of the waters of the state in contravention of the standards or guidance values adopted as provided in 6 NYCRR Parts 700 et seq .

Qualified Inspector - means a person that is knowledgeable in the principles and practices of erosion and sediment control, such as a licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), Registered Landscape Architect, New York State Erosion and Sediment Control Certificate Program holder or other Department endorsed individual(s).

It can also mean someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided that person has training in the principles and practices of erosion and sediment control. Training in the principles and practices of erosion and sediment control means that the individual working under the direct supervision of the licensed Professional Engineer or Registered Landscape Architect has received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity. After receiving the initial training, the individual working under the direct supervision of the licensed Professional Engineer or Registered Landscape Architect shall receive four (4) hours of training every three (3) years.

It can also mean a person that meets the *Qualified Professional* qualifications in addition to the *Qualified Inspector* qualifications.

Note: Inspections of any post-construction stormwater management practices that include structural components, such as a dam for an impoundment, shall be performed by a licensed Professional Engineer.

Qualified Professional - means a person that is knowledgeable in the principles and practices of stormwater management and treatment, such as a licensed Professional Engineer, Registered Landscape Architect or other Department endorsed individual(s). Individuals preparing SWPPPs that require the post-construction stormwater management practice component must have an understanding of the principles of hydrology, water quality management practice design, water quantity control design, and, in many cases, the principles of hydraulics. All components of the SWPPP that involve the practice of engineering, as defined by the NYS Education Law (see Article 145), shall be prepared by, or under the direct supervision of, a professional engineer licensed to practice in the State of New York.

Redevelopment Activity(ies) – means the disturbance and reconstruction of existing impervious area, including impervious areas that were removed from a project site within five (5) years of preliminary project plan submission to the local government (i.e. site plan, subdivision, etc.).

Regulated, Traditional Land Use Control MS4 - means a city, town or village with land use control authority that is authorized to discharge under New York State DEC's

SPDES General Permit For Stormwater Discharges from Municipal Separate Stormwater Sewer Systems (MS4s) or the City of New York's Individual SPDES Permit for their Municipal Separate Storm Sewer Systems (NY-0287890).

Routine Maintenance Activity - means *construction activity* that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of a facility, including, but not limited to:

- Re-grading of gravel roads or parking lots,
- Cleaning and shaping of existing roadside ditches and culverts that maintains the approximate original line and grade, and hydraulic capacity of the ditch,
- Cleaning and shaping of existing roadside ditches that does not maintain the approximate original grade, hydraulic capacity and purpose of the ditch if the changes to the line and grade, hydraulic capacity or purpose of the ditch are installed to improve water quality and quantity controls (e.g. installing grass lined ditch),
- Placement of aggregate shoulder backing that stabilizes the transition between the road shoulder and the ditch or *embankment*,
- Full depth milling and filling of existing asphalt pavements, replacement of concrete pavement slabs, and similar work that does not expose soil or disturb the bottom six (6) inches of subbase material,
- Long-term use of equipment storage areas at or near highway maintenance facilities,
- Removal of sediment from the edge of the highway to restore a previously existing sheet-flow drainage connection from the highway surface to the highway ditch or *embankment*,
- Existing use of Canal Corp owned upland disposal sites for the canal, and
- Replacement of curbs, gutters, sidewalks and guide rail posts.

Site limitations – means site conditions that prevent the use of an infiltration technique and or infiltration of the total WQv. Typical site limitations include: seasonal high groundwater, shallow depth to bedrock, and soils with an infiltration rate less than 0.5 inches/hour. The existence of site limitations shall be confirmed and documented using actual field testing (i.e. test pits, soil borings, and infiltration test) or using information from the most current United States Department of Agriculture (USDA) Soil Survey for the County where the project is located.

Sizing Criteria – means the criteria included in Part I.C.2 of the permit that are used to size post-construction stormwater management control practices. The criteria include; Water Quality Volume (WQv), Runoff Reduction Volume (RRv), Channel Protection Volume (Cpv), *Overbank* Flood (Qp), and Extreme Flood (Qf).

State Pollutant Discharge Elimination System (SPDES) - means the system established pursuant to Article 17 of the ECL and 6 NYCRR Part 750 for issuance of permits authorizing discharges to the waters of the state.

Steep Slope – means land area designated on the current United States Department of Agriculture ("USDA") Soil Survey as Soil Slope Phase "D", (provided the map unit name is inclusive of slopes greater than 25%) , or Soil Slope Phase E or F, (regardless of the map unit name), or a combination of the three designations.

Streambank – as used in this permit, means the terrain alongside the bed of a creek or stream. The bank consists of the sides of the channel, between which the flow is confined.

Stormwater Pollution Prevention Plan (SWPPP) – means a project specific report, including construction drawings, that among other things: describes the construction activity(ies), identifies the potential sources of pollution at the *construction site*; describes and shows the stormwater controls that will be used to control the pollutants (i.e. erosion and sediment controls; for many projects, includes post-construction stormwater management controls); and identifies procedures the *owner or operator* will implement to comply with the terms and conditions of the permit. See Part III of the permit for a complete description of the information that must be included in the SWPPP.

Surface Waters of the State - shall be construed to include lakes, bays, sounds, ponds, impounding reservoirs, springs, rivers, streams, creeks, estuaries, marshes, inlets, canals, the Atlantic ocean within the territorial seas of the state of New York and all other bodies of surface water, natural or artificial, inland or coastal, fresh or salt, public or private (except those private waters that do not combine or effect a junction with natural surface waters), which are wholly or partially within or bordering the state or within its jurisdiction. Waters of the state are further defined in 6 NYCRR Parts 800 to 941.

Temporarily Ceased – means that an existing disturbed area will not be disturbed again within 14 calendar days of the previous soil disturbance.

Temporary Stabilization - means that exposed soil has been covered with material(s) as set forth in the technical standard, New York Standards and Specifications for Erosion and Sediment Control, to prevent the exposed soil from eroding. The materials can include, but are not limited to, mulch, seed and mulch, and erosion control mats (e.g. jute twisted yarn, excelsior wood fiber mats).

Total Maximum Daily Loads (TMDLs) - A TMDL is the sum of the allowable loads of a single pollutant from all contributing point and *nonpoint source*s. It is a calculation of the maximum amount of a pollutant that a waterbody can receive on a daily basis and still meet *water quality standards*, and an allocation of that amount to the pollutant's sources. A TMDL stipulates wasteload allocations (WLAs) for *point source* discharges, load allocations (LAs) for *nonpoint source*s, and a margin of safety (MOS).

Trained Contractor - means an employee from the contracting (construction) company, identified in Part III.A.6., that has received four (4) hours of Department endorsed

training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity. After receiving the initial training, the *trained contractor* shall receive four (4) hours of training every three (3) years.

It can also mean an employee from the contracting (construction) company, identified in Part III.A.6., that meets the *qualified inspector* qualifications (e.g. licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), Registered Landscape Architect, New York State Erosion and Sediment Control Certificate Program holder, or someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided they have received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity).

The *trained contractor* is responsible for the day to day implementation of the SWPPP.

Uniform Procedures Act (UPA) Permit - means a permit required under 6 NYCRR Part 621 of the Environmental Conservation Law (ECL), Article 70.

Water Quality Standard - means such measures of purity or quality for any waters in relation to their reasonable and necessary use as promulgated in 6 NYCRR Part 700 et seq.

APPENDIX B – Required SWPPP Components by Project Type

Table 1
Construction Activities that Require the Preparation of a SWPPP That Only Includes Erosion and Sediment Controls

The following construction activities that involve soil disturbances of one (1) or more acres of land, but less than five (5) acres:

- Single family home not located in one of the watersheds listed in Appendix C or not *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family residential subdivisions with 25% or less impervious cover at total site build-out and not located in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix E
- Construction of a barn or other *agricultural building*, silo, stock yard or pen.

The following construction activities that involve soil disturbances between five thousand (5000) square feet and one (1) acre of land:

All construction activities located in the watersheds identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Installation of underground, linear utilities; such as gas lines, fiber-optic cable, cable TV, electric, telephone, sewer mains, and water mains
- Environmental enhancement projects, such as wetland mitigation projects, stormwater retrofits and stream restoration projects
- Pond construction
- Linear bike paths running through areas with vegetative cover, including bike paths surfaced with an impervious cover
- Cross-country ski trails and walking/hiking trails
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are not part of residential, commercial or institutional development;
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that include incidental shoulder or curb work along an existing highway to support construction of the sidewalk, bike path or walking path.
- Slope stabilization projects
- Slope flattening that changes the grade of the site, but does not significantly change the runoff characteristics

Table 1 (Continued) CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP THAT ONLY INCLUDES EROSION AND SEDIMENT CONTROLS

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Spoil areas that will be covered with vegetation
- Vegetated open space projects (i.e. recreational parks, lawns, meadows, fields, downhill ski trails) excluding projects that *alter hydrology from pre to post development* conditions,
- Athletic fields (natural grass) that do not include the construction or reconstruction of *impervious area* and do not *alter hydrology from pre to post development* conditions
- Demolition project where vegetation will be established, and no redevelopment is planned
- Overhead electric transmission line project that does not include the construction of permanent access roads or parking areas surfaced with *impervious cover*
- Structural practices as identified in Table II in the "Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State", excluding projects that involve soil disturbances of greater than five acres and construction activities that include the construction or reconstruction of impervious area
- Temporary access roads, median crossovers, detour roads, lanes, or other temporary impervious areas that will be restored to pre-construction conditions once the construction activity is complete

Table 2

CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP THAT INCLUDES POST-CONSTRUCTION STORMWATER MANAGEMENT PRACTICES

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Single family home located in one of the watersheds listed in Appendix C or *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family home that disturbs five (5) or more acres of land
- Single family residential subdivisions located in one of the watersheds listed in Appendix C or *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family residential subdivisions that involve soil disturbances of between one (1) and five (5) acres of land with greater than 25% impervious cover at total site build-out
- Single family residential subdivisions that involve soil disturbances of five (5) or more acres of land, and single family residential subdivisions that involve soil disturbances of less than five (5) acres that are part of a larger common plan of development or sale that will ultimately disturb five or more acres of land
- Multi-family residential developments; includes duplexes, townhomes, condominiums, senior housing complexes, apartment complexes, and mobile home parks
- Airports
- Amusement parks
- Breweries, cideries, and wineries, including establishments constructed on agricultural land
- Campgrounds
- Cemeteries that include the construction or reconstruction of impervious area (>5% of disturbed area) or *alter the hydrology from pre to post development* conditions
- Commercial developments
- Churches and other places of worship
- Construction of a barn or other *agricultural building* (e.g. silo) and structural practices as identified in Table II in the "Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State" that include the construction or reconstruction of *impervious area*, excluding projects that involve soil disturbances of less than five acres.
- Golf courses
- Institutional development; includes hospitals, prisons, schools and colleges
- Industrial facilities; includes industrial parks
- Landfills
- Municipal facilities; includes highway garages, transfer stations, office buildings, POTW's, water treatment plants, and water storage tanks
- Office complexes
- Playgrounds that include the construction or reconstruction of impervious area
- Sports complexes
- Racetracks; includes racetracks with earthen (dirt) surface
- Road construction or reconstruction, including roads constructed as part of the construction activities listed in Table 1

Table 2 (Continued)

CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP THAT INCLUDES POST-CONSTRUCTION STORMWATER MANAGEMENT PRACTICES

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Parking lot construction or reconstruction, including parking lots constructed as part of the construction activities listed in Table 1
- Athletic fields (natural grass) that include the construction or reconstruction of impervious area (>5% of disturbed area) or *alter the hydrology from pre to post development* conditions
- Athletic fields with artificial turf
- Permanent access roads, parking areas, substations, compressor stations and well drilling pads, surfaced with *impervious cover,* and constructed as part of an over-head electric transmission line project, wind-power project, cell tower project, oil or gas well drilling project, sewer or water main project or other linear utility project
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are part of a residential, commercial or institutional development
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are part of a highway construction or reconstruction project
- All other construction activities that include the construction or reconstruction of *impervious area* or *alter the hydrology from pre to post development* conditions, and are not listed in Table 1

APPENDIX C – Watersheds Requiring Enhanced Phosphorus Removal

Watersheds where *owners or operators* of construction activities identified in Table 2 of Appendix B must prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the Enhanced Phosphorus Removal Standards included in the technical standard, New York State Stormwater Management Design Manual ("Design Manual").

- Entire New York City Watershed located east of the Hudson River **-** Figure 1
- Onondaga Lake Watershed **-** Figure 2
- Greenwood Lake Watershed **-**Figure 3
- Oscawana Lake Watershed – Figure 4
- Kinderhook Lake Watershed – Figure 5

Figure 1 - New York City Watershed East of the Hudson

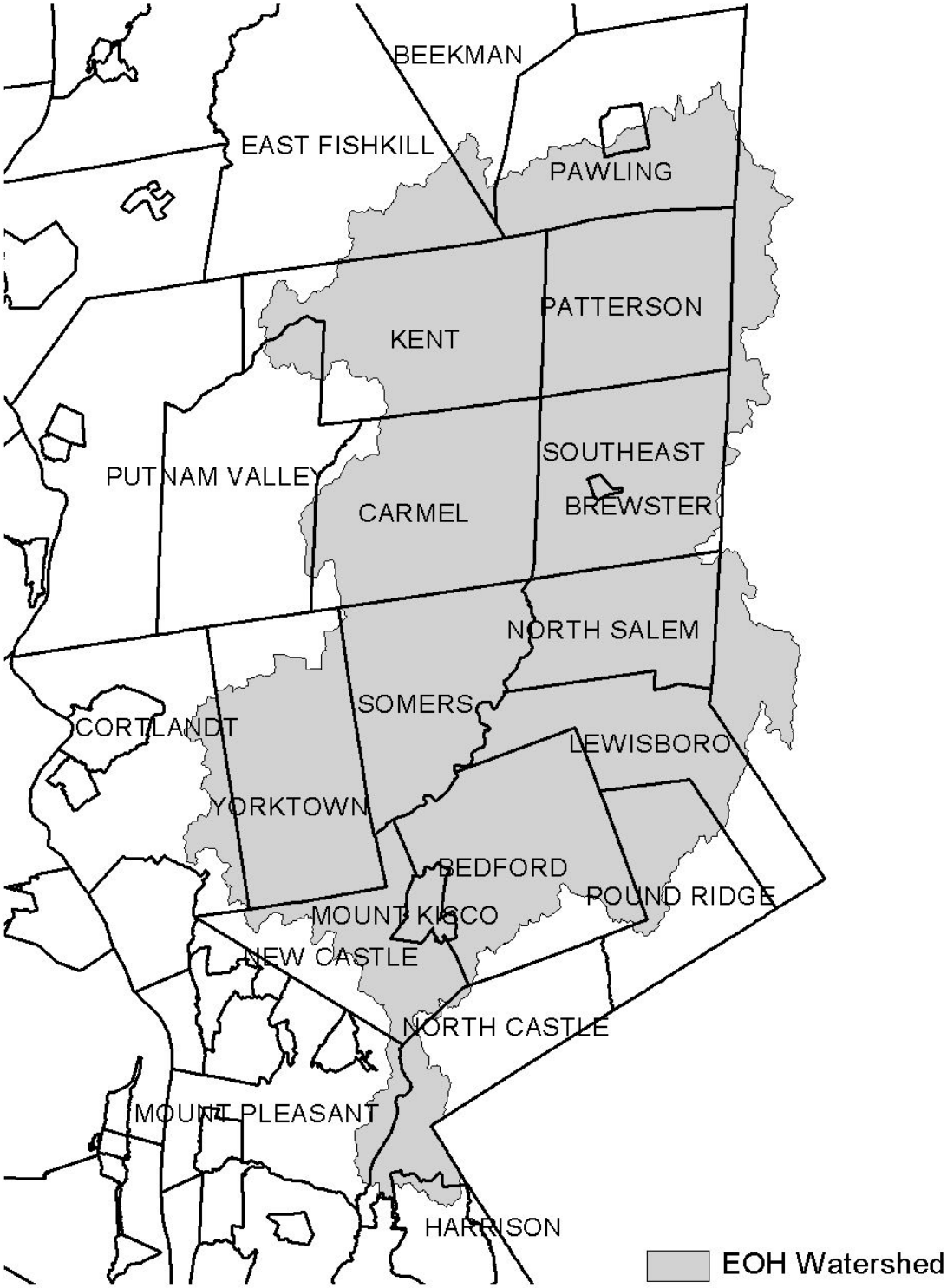


Figure 2 - Onondaga Lake Watershed



Figure 3 - Greenwood Lake Watershed

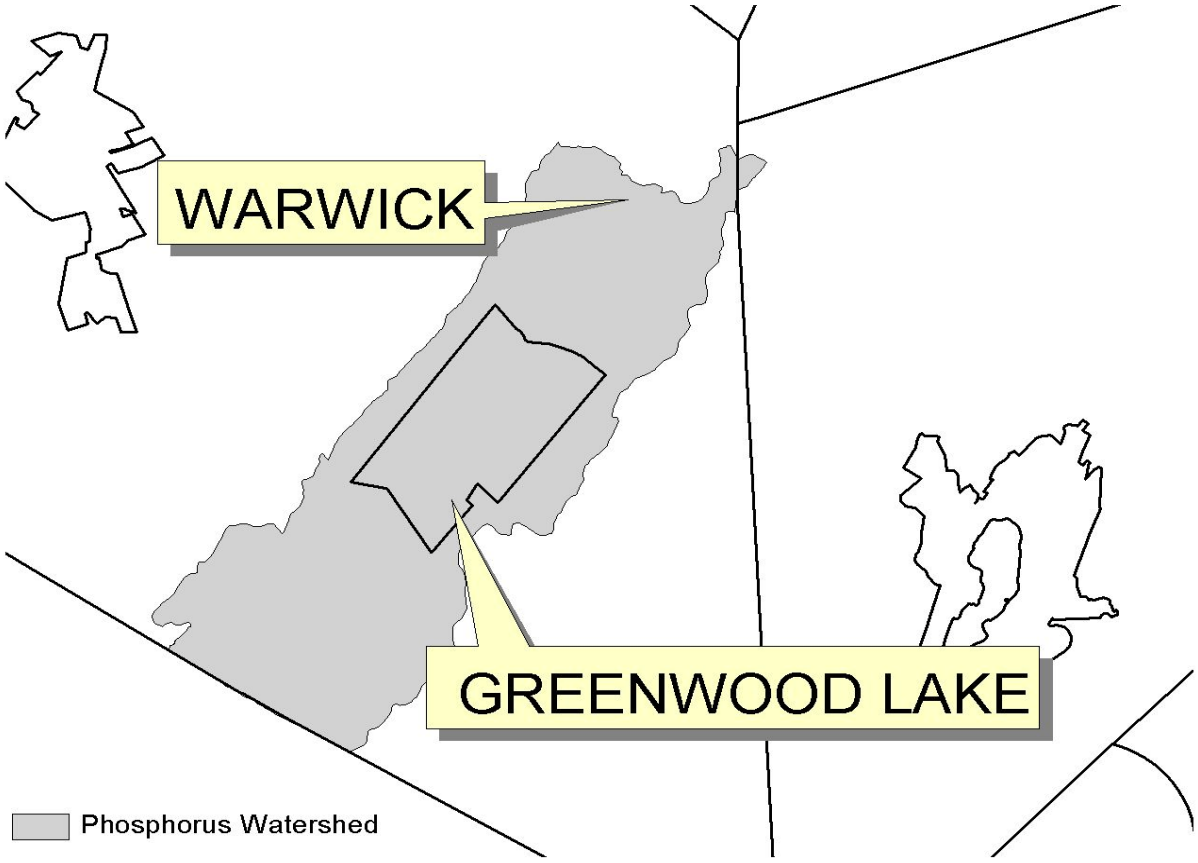


Figure 4 - Oscawana Lake Watershed

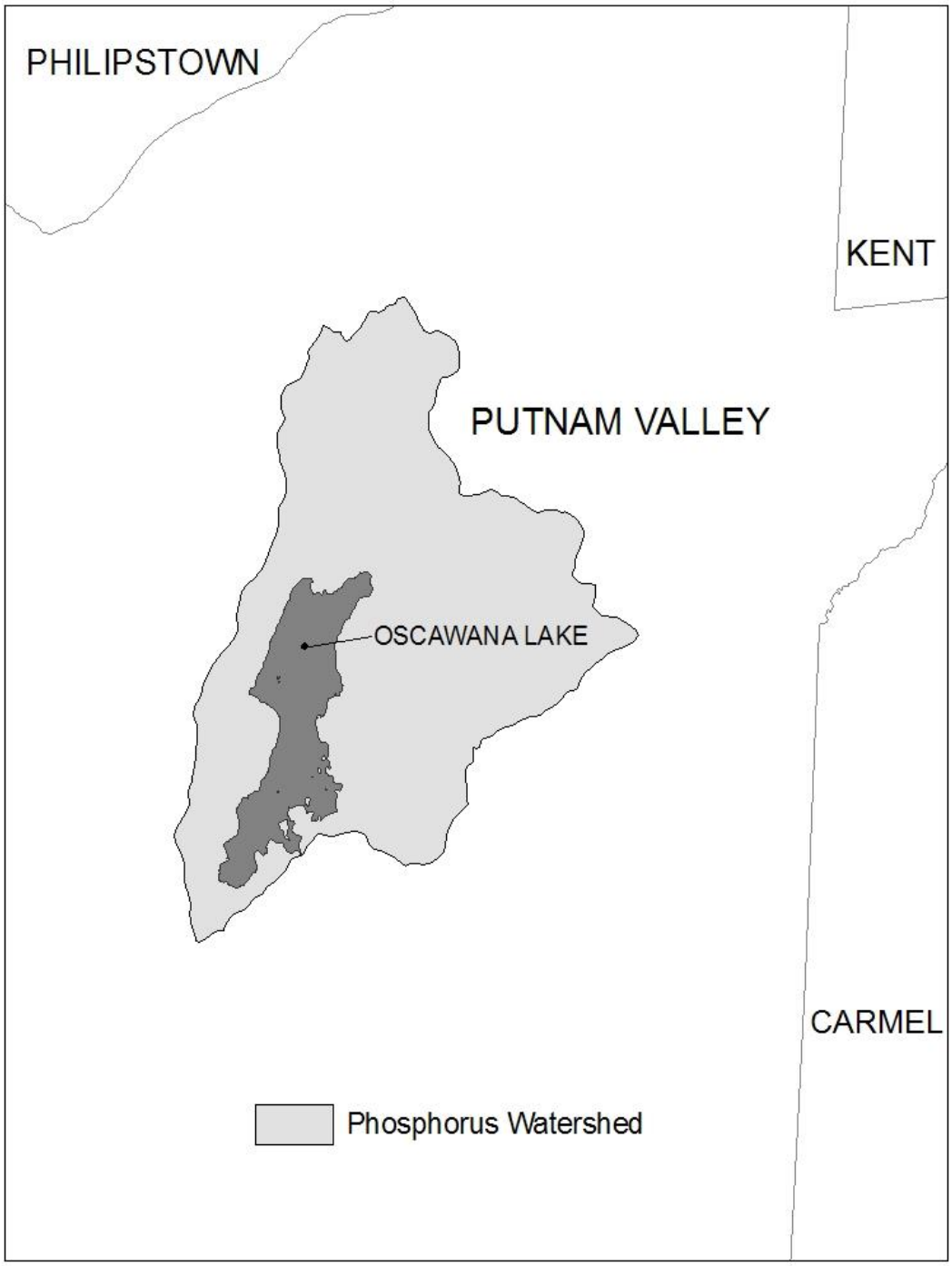
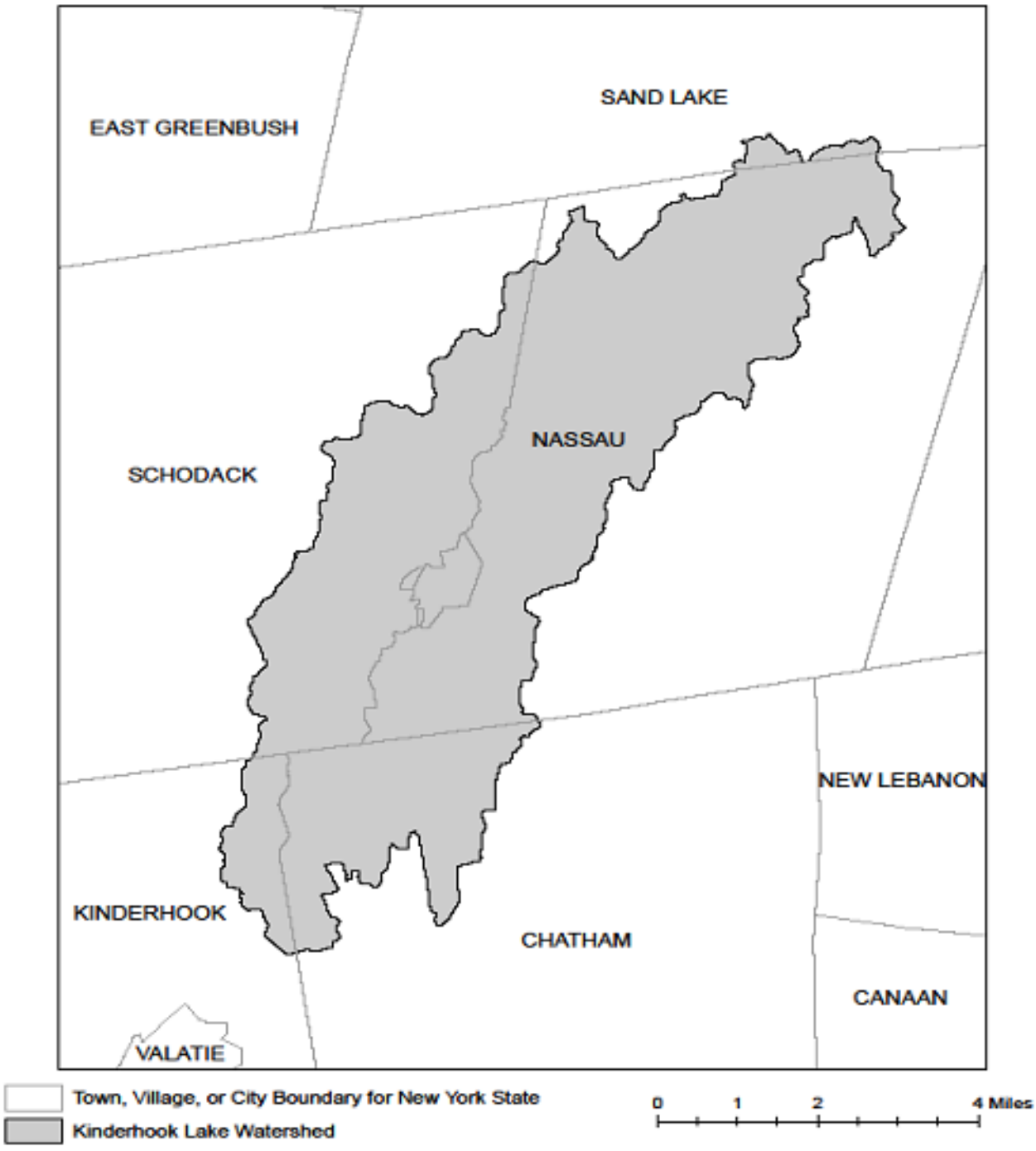


Figure 5 - Kinderhook Lake Watershed



APPENDIX D – Watersheds with Lower Disturbance Threshold

Watersheds where *owners or operators* of construction activities that involve soil disturbances between five thousand (5000) square feet and one (1) acre of land must obtain coverage under this permit.

Entire New York City Watershed that is located east of the Hudson River **-** See Figure 1 in Appendix C

APPENDIX E – 303(d) Segments Impaired by Construction Related Pollutant(s)

List of 303(d) segments impaired by pollutants related to *construction activity* (e.g. silt, sediment or nutrients). The list was developed using "The Final New York State 2016 Section 303(d) List of Impaired Waters Requiring a TMDL/Other Strategy" dated November 2016. *Owners or operators* of single family home and single family residential subdivisions with 25% or less total impervious cover at total site build-out that involve soil disturbances of one or more acres of land, but less than 5 acres, and *directly discharge* to one of the listed segments below shall prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the New York State Stormwater Management Design Manual ("Design Manual"), dated January 2015.

COUNTY	WATERBODY	POLLUTANT
Albany	Ann Lee (Shakers) Pond, Stump Pond	Nutrients
Albany	Basic Creek Reservoir	Nutrients
Allegany	Amity Lake, Saunders Pond	Nutrients
Bronx	Long Island Sound, Bronx	Nutrients
Bronx	Van Cortlandt Lake	Nutrients
Broome	Fly Pond, Deer Lake, Sky Lake	Nutrients
Broome	Minor Tribs to Lower Susquehanna (north)	Nutrients
Broome	Whitney Point Lake/Reservoir	Nutrients
Cattaraugus	Allegheny River/Reservoir	Nutrients
Cattaraugus	Beaver (Alma) Lake	Nutrients
Cattaraugus	Case Lake	Nutrients
Cattaraugus	Linlyco/Club Pond	Nutrients
Cayuga	Duck Lake	Nutrients
Cayuga	Little Sodus Bay	Nutrients
Chautauqua	Bear Lake	Nutrients
Chautauqua	Chadakoin River and tribs	Nutrients
Chautauqua	Chautauqua Lake, North	Nutrients
Chautauqua	Chautauqua Lake, South	Nutrients
Chautauqua	Findley Lake	Nutrients
Chautauqua	Hulburt/Clymer Pond	Nutrients
Clinton	Great Chazy River, Lower, Main Stem	Silt/Sediment
Clinton	Lake Champlain, Main Lake, Middle	Nutrients
Clinton	Lake Champlain, Main Lake, North	Nutrients
Columbia	Kinderhook Lake	Nutrients
Columbia	Robinson Pond	Nutrients
Cortland	Dean Pond	Nutrients

303(d) Segments Impaired by Construction Related Pollutant(s)

Dutchess	Fall Kill and tribs	Nutrients
Dutchess	Hillside Lake	Nutrients
Dutchess	Wappingers Lake	Nutrients
Dutchess	Wappingers Lake	Silt/Sediment
Erie	Beeman Creek and tribs	Nutrients
Erie	Ellicott Creek, Lower, and tribs	Silt/Sediment
Erie	Ellicott Creek, Lower, and tribs	Nutrients
Erie	Green Lake	Nutrients
Erie	Little Sister Creek, Lower, and tribs	Nutrients
Erie	Murder Creek, Lower, and tribs	Nutrients
Erie	Rush Creek and tribs	Nutrients
Erie	Scajaquada Creek, Lower, and tribs	Nutrients
Erie	Scajaquada Creek, Middle, and tribs	Nutrients
Erie	Scajaquada Creek, Upper, and tribs	Nutrients
Erie	South Branch Smoke Cr, Lower, and tribs	Silt/Sediment
Erie	South Branch Smoke Cr, Lower, and tribs	Nutrients
Essex	Lake Champlain, Main Lake, South	Nutrients
Essex	Lake Champlain, South Lake	Nutrients
Essex	Willsboro Bay	Nutrients
Genesee	Bigelow Creek and tribs	Nutrients
Genesee	Black Creek, Middle, and minor tribs	Nutrients
Genesee	Black Creek, Upper, and minor tribs	Nutrients
Genesee	Bowen Brook and tribs	Nutrients
Genesee	LeRoy Reservoir	Nutrients
Genesee	Oak Orchard Cr, Upper, and tribs	Nutrients
Genesee	Tonawanda Creek, Middle, Main Stem	Nutrients
Greene	Schoharie Reservoir	Silt/Sediment
Greene	Sleepy Hollow Lake	Silt/Sediment
Herkimer	Steele Creek tribs	Silt/Sediment
Herkimer	Steele Creek tribs	Nutrients
Jefferson	Moon Lake	Nutrients
Kings	Hendrix Creek	Nutrients
Kings	Prospect Park Lake	Nutrients
Lewis	Mill Creek/South Branch, and tribs	Nutrients
Livingston	Christie Creek and tribs	Nutrients
Livingston	Conesus Lake	Nutrients
Livingston	Mill Creek and minor tribs	Silt/Sediment
Monroe	Black Creek, Lower, and minor tribs	Nutrients
Monroe	Buck Pond	Nutrients
Monroe	Cranberry Pond	Nutrients

303(d) Segments Impaired by Construction Related Pollutant(s)

Monroe	Lake Ontario Shoreline, Western	Nutrients
Monroe	Long Pond	Nutrients
Monroe	Mill Creek and tribs	Nutrients
Monroe	Mill Creek/Blue Pond Outlet and tribs	Nutrients
Monroe	Minor Tribs to Irondequoit Bay	Nutrients
Monroe	Rochester Embayment - East	Nutrients
Monroe	Rochester Embayment - West	Nutrients
Monroe	Shipbuilders Creek and tribs	Nutrients
Monroe	Thomas Creek/White Brook and tribs	Nutrients
Nassau	Beaver Lake	Nutrients
Nassau	Camaans Pond	Nutrients
Nassau	East Meadow Brook, Upper, and tribs	Silt/Sediment
Nassau	East Rockaway Channel	Nutrients
Nassau	Grant Park Pond	Nutrients
Nassau	Hempstead Bay	Nutrients
Nassau	Hempstead Lake	Nutrients
Nassau	Hewlett Bay	Nutrients
Nassau	Hog Island Channel	Nutrients
Nassau	Long Island Sound, Nassau County Waters	Nutrients
Nassau	Massapequa Creek and tribs	Nutrients
Nassau	Milburn/Parsonage Creeks, Upp, and tribs	Nutrients
Nassau	Reynolds Channel, west	Nutrients
Nassau	Tidal Tribs to Hempstead Bay	Nutrients
Nassau	Tribs (fresh) to East Bay	Nutrients
Nassau	Tribs (fresh) to East Bay	Silt/Sediment
Nassau	Tribs to Smith/Halls Ponds	Nutrients
Nassau	Woodmere Channel	Nutrients
New York	Harlem Meer	Nutrients
New York	The Lake in Central Park	Nutrients
Niagara	Bergholtz Creek and tribs	Nutrients
Niagara	Hyde Park Lake	Nutrients
Niagara	Lake Ontario Shoreline, Western	Nutrients
Niagara	Lake Ontario Shoreline, Western	Nutrients
Oneida	Ballou, Nail Creeks and tribs	Nutrients
Onondaga	Harbor Brook, Lower, and tribs	Nutrients
Onondaga	Ley Creek and tribs	Nutrients
Onondaga	Minor Tribs to Onondaga Lake	Nutrients
Onondaga	Ninemile Creek, Lower, and tribs	Nutrients
Onondaga	Onondaga Creek, Lower, and tribs	Nutrients
Onondaga	Onondaga Creek, Middle, and tribs	Nutrients

303(d) Segments Impaired by Construction Related Pollutant(s)

Onondaga	Onondaga Lake, northern end	Nutrients
Onondaga	Onondaga Lake, southern end	Nutrients
Ontario	Great Brook and minor tribs	Silt/Sediment
Ontario	Great Brook and minor tribs	Nutrients
Ontario	Hemlock Lake Outlet and minor tribs	Nutrients
Ontario	Honeoye Lake	Nutrients
Orange	Greenwood Lake	Nutrients
Orange	Monhagen Brook and tribs	Nutrients
Orange	Orange Lake	Nutrients
Orleans	Lake Ontario Shoreline, Western	Nutrients
Orleans	Lake Ontario Shoreline, Western	Nutrients
Oswego	Lake Neatahwanta	Nutrients
Oswego	Pleasant Lake	Nutrients
Putnam	Bog Brook Reservoir	Nutrients
Putnam	Boyd Corners Reservoir	Nutrients
Putnam	Croton Falls Reservoir	Nutrients
Putnam	Diverting Reservoir	Nutrients
Putnam	East Branch Reservoir	Nutrients
Putnam	Lake Carmel	Nutrients
Putnam	Middle Branch Reservoir	Nutrients
Putnam	Oscawana Lake	Nutrients
Putnam	Palmer Lake	Nutrients
Putnam	West Branch Reservoir	Nutrients
Queens	Bergen Basin	Nutrients
Queens	Flushing Creek/Bay	Nutrients
Queens	Jamaica Bay, Eastern, and tribs (Queens)	Nutrients
Queens	Kissena Lake	Nutrients
Queens	Meadow Lake	Nutrients
Queens	Willow Lake	Nutrients
Rensselaer	Nassau Lake	Nutrients
Rensselaer	Snyders Lake	Nutrients
Richmond	Grasmere Lake/Bradys Pond	Nutrients
Rockland	Congers Lake, Swartout Lake	Nutrients
Rockland	Rockland Lake	Nutrients
Saratoga	Ballston Lake	Nutrients
Saratoga	Dwaas Kill and tribs	Silt/Sediment
Saratoga	Dwaas Kill and tribs	Nutrients
Saratoga	Lake Lonely	Nutrients
Saratoga	Round Lake	Nutrients
Saratoga	Tribs to Lake Lonely	Nutrients

303(d) Segments Impaired by Construction Related Pollutant(s)

Schenectady	Collins Lake	Nutrients
Schenectady	Duane Lake	Nutrients
Schenectady	Mariaville Lake	Nutrients
Schoharie	Engleville Pond	Nutrients
Schoharie	Summit Lake	Nutrients
Seneca	Reeder Creek and tribs	Nutrients
St.Lawrence	Black Lake Outlet/Black Lake	Nutrients
St.Lawrence	Fish Creek and minor tribs	Nutrients
Steuben	Smith Pond	Nutrients
Suffolk	Agawam Lake	Nutrients
Suffolk	Big/Little Fresh Ponds	Nutrients
Suffolk	Canaan Lake	Silt/Sediment
Suffolk	Canaan Lake	Nutrients
Suffolk	Flanders Bay, West/Lower Sawmill Creek	Nutrients
Suffolk	Fresh Pond	Nutrients
Suffolk	Great South Bay, East	Nutrients
Suffolk	Great South Bay, Middle	Nutrients
Suffolk	Great South Bay, West	Nutrients
Suffolk	Lake Ronkonkoma	Nutrients
Suffolk	Long Island Sound, Suffolk County, West	Nutrients
Suffolk	Mattituck (Marratooka) Pond	Nutrients
Suffolk	Meetinghouse/Terrys Creeks and tribs	Nutrients
Suffolk	Mill and Seven Ponds	Nutrients
Suffolk	Millers Pond	Nutrients
Suffolk	Moriches Bay, East	Nutrients
Suffolk	Moriches Bay, West	Nutrients
Suffolk	Peconic River, Lower, and tidal tribs	Nutrients
Suffolk	Quantuck Bay	Nutrients
Suffolk	Shinnecock Bay and Inlet	Nutrients
Suffolk	Tidal tribs to West Moriches Bay	Nutrients
Sullivan	Bodine, Montgomery Lakes	Nutrients
Sullivan	Davies Lake	Nutrients
Sullivan	Evens Lake	Nutrients
Sullivan	Pleasure Lake	Nutrients
Tompkins	Cayuga Lake, Southern End	Nutrients
Tompkins	Cayuga Lake, Southern End	Silt/Sediment
Tompkins	Owasco Inlet, Upper, and tribs	Nutrients
Ulster	Ashokan Reservoir	Silt/Sediment
Ulster	Esopus Creek, Upper, and minor tribs	Silt/Sediment
Warren	Hague Brook and tribs	Silt/Sediment

303(d) Segments Impaired by Construction Related Pollutant(s)

Warren	Huddle/Finkle Brooks and tribs	Silt/Sediment
Warren	Indian Brook and tribs	Silt/Sediment
Warren	Lake George	Silt/Sediment
Warren	Tribs to L.George, Village of L George	Silt/Sediment
Washington	Cossayuna Lake	Nutrients
Washington	Lake Champlain, South Bay	Nutrients
Washington	Tribs to L.George, East Shore	Silt/Sediment
Washington	Wood Cr/Champlain Canal and minor tribs	Nutrients
Wayne	Port Bay	Nutrients
Westchester	Amawalk Reservoir	Nutrients
Westchester	Blind Brook, Upper, and tribs	Silt/Sediment
Westchester	Cross River Reservoir	Nutrients
Westchester	Lake Katonah	Nutrients
Westchester	Lake Lincolndale	Nutrients
Westchester	Lake Meahagh	Nutrients
Westchester	Lake Mohegan	Nutrients
Westchester	Lake Shenorock	Nutrients
Westchester	Long Island Sound, Westchester (East)	Nutrients
Westchester	Mamaroneck River, Lower	Silt/Sediment
Westchester	Mamaroneck River, Upper, and minor tribs	Silt/Sediment
Westchester	Muscoot/Upper New Croton Reservoir	Nutrients
Westchester	New Croton Reservoir	Nutrients
Westchester	Peach Lake	Nutrients
Westchester	Reservoir No.1 (Lake Isle)	Nutrients
Westchester	Saw Mill River, Lower, and tribs	Nutrients
Westchester	Saw Mill River, Middle, and tribs	Nutrients
Westchester	Sheldrake River and tribs	Silt/Sediment
Westchester	Sheldrake River and tribs	Nutrients
Westchester	Silver Lake	Nutrients
Westchester	Teatown Lake	Nutrients
Westchester	Titicus Reservoir	Nutrients
Westchester	Truesdale Lake	Nutrients
Westchester	Wallace Pond	Nutrients
Wyoming	Java Lake	Nutrients
Wyoming	Silver Lake	Nutrients

APPENDIX F – List of NYS DEC Regional Offices

Region	Covering the following counties:	DIVISION OF ENVIRONMENTAL PERMITS (DEP) Permit Administrators	DIVISION OF WATER (DOW) Water (SPDES) Program
1	Nassau and Suffolk	50 Circle Road Stony Brook, NY 11790 Tel. (631) 444-0365	50 Circle Road Stony Brook, NY 11790-3409 Tel. (631) 444-0405
2	Bronx, Kings, New York, Queens and Richmond	1 Hunters Point Plaza, 47-40 21st St. Long Island City, NY 11101-5407 Tel. (718) 482-4997	1 Hunters Point Plaza, 47-40 21st St. Long Island City, NY 11101-5407 Tel. (718) 482-4933
3	Dutchess, Orange, Putnam, Rockland, Sullivan, Ulster and Westchester	21 South Putt Corners Road New Paltz, NY 12561-1696 Tel. (845) 256-3059	100 Hillside Avenue, Suite 1w White Plains, NY 10603 Tel. (914) 428 - 2505
4	Albany, Columbia, Delaware, Greene, Montgomery, Otsego, Rensselaer, Schenectady and Schoharie	1150 North Westcott Road Schenectady, NY 12306-2014 Tel. (518) 357-2069	1130 North Westcott Road Schenectady, NY 12306-2014 Tel. (518) 357-2045
5	Clinton, Essex, Franklin, Fulton, Hamilton, Saratoga, Warren and Washington	1115 State Route 86, Po Box 296 Ray Brook, NY 12977-0296 Tel. (518) 897-1234	232 Golf Course Road Warrensburg, NY 12885-1172 Tel. (518) 623-1200
6	HERKIMER, JEFFERSON, LEWIS, ONEIDA AND ST. LAWRENCE	STATE OFFICE BUILDING 317 WASHINGTON STREET WATERTOWN, NY 13601-3787 TEL. (315) 785-2245	STATE OFFICE BUILDING 207 GENESEE STREET UTICA, NY 13501-2885 TEL. (315) 793-2554
7	BROOME, CAYUGA, CHENANGO, CORTLAND, MADISON, ONONDAGA, OSWEGO, TIOGA AND TOMPKINS	615 ERIE BLVD. WEST SYRACUSE, NY 13204-2400 TEL. (315) 426-7438	615 ERIE BLVD. WEST SYRACUSE, NY 13204-2400 TEL. (315) 426-7500
8	CHEMUNG, GENESEE, LIVINGSTON, MONROE, ONTARIO, ORLEANS, SCHUYLER, SENECA, STEUBEN, WAYNE AND YATES	6274 EAST AVON-LIMA ROADAVON, NY 14414-9519 TEL. (585) 226-2466	6274 EAST AVON-LIMA RD. AVON, NY 14414-9519 TEL. (585) 226-2466
9	ALLEGANY, CATTARAUGUS, CHAUTAUQUA, ERIE, NIAGARA AND WYOMING	270 MICHIGAN AVENUE BUFFALO, NY 14203-2999 TEL. (716) 851-7165	270 MICHIGAN AVENUE BUFFALO, NY 14203-2999 TEL. (716) 851-7070

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Water, Bureau of Water Permits
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www.dec.ny.gov

M E M O R A N D U M

TO: Regional Water Engineers

FROM: Robert Wither, Chief, South Permit Section

SUBJECT: Solar Panel Construction Stormwater Permitting/SWPPP Guidance

DATE: April 5, 2018

Issue

The Department is seeing an increase in the number of solar panel construction projects across New York State. This has resulted in an increase in the number of questions on Construction General Permit (CGP) and Stormwater Pollution Prevention Plan (SWPPP) requirements from design professionals because the current CGP (GP-0-15-002) does not include a specific reference to the SWPPP requirements for solar panel projects in Tables 1 and 2 of Appendix B. To address this issue, the Division of Water (DOW) has developed the following guidance on CGP/SWPPP requirements for the different types of solar panel projects.

Scenario 1

The DOW considers solar panel projects designed and constructed in accordance with the following criteria to be a "*Land clearing and grading for the purposes of creating vegetated open space (i.e. recreational parks, lawns, meadows, fields)*" type project as listed in Table 1, Appendix B of the CGP. Therefore, the SWPPP for this type of project will typically just need to address erosion and sediment controls.

1. Solar panels are constructed on post or rack systems and elevated off the ground surface,
2. The panels are spaced apart so that rain water can flow off the down gradient side of the panel and continue as sheet flow across the ground surface*,
3. For solar panels constructed on slopes, the individual rows of solar panels are generally installed along the contour so rain water sheet flows down slope*,
4. The ground surface below the panels consist of a well-established vegetative cover (see "Final Stabilization" definition in Appendix A of the CGP),
5. The project does not include the construction of any traditional impervious areas (i.e. buildings, substation pads, gravel access roads or parking areas, etc.),
6. Construction of the solar panels will not alter the hydrology from pre-to post development conditions (see Appendix A of the CGP, for definition of "Alter the hydrology…"). Note: The design professional shall perform the necessary site assessment/hydrology analysis to make this determination.

*Refer to Maryland's "Stormwater Design Guidance- Solar Panel Installations" attached for guidance on panel installation.
**See notes below for additional criteria.

Scenario 2

If the design and construction of the solar panels meets all the criteria above, except for item 6, the project will fall under the "*All other construction activities that include the construction or reconstruction of impervious area or alter the hydrology from pre-to post development conditions, and are not listed in Table 1*" project type as listed in Table 2, Appendix B of the CGP. Therefore, the SWPPP for this type of project must address post-construction stormwater practices designed in accordance with the sizing criteria in Chapter 4 of the NYS Stormwater Management Design Manual, dated January 2015 (Note: Chapter 10 for projects in NYC EOH Watershed). The Water Quality Volume (WQv)/Runoff Reduction Volume (RRv) sizing criteria can be addressed by designing and constructing the solar panels in accordance with the criteria in items 1 – 4 above, however, the quantity control sizing criteria (Cpv, Qp and Qf) from Chapter 4 (or 10) of the Design Manual must still be addressed, unless one of the waiver criteria from Chapter 4 can be applied. **See notes below for additional criteria.

**** Notes**

- Item 1: For solar panel projects where the panels are mounted directly to the ground (i.e. no space below panel to allow for infiltration of runoff), the SWPPP must address post-construction stormwater management controls designed in accordance with the sizing criteria in Chapter 4 of the NYS Stormwater Management Design Manual, dated January 2015 (Note: Chapter 10 for projects in NYC EOH Watershed).

- Item 5: For solar panel projects that include the construction of traditional impervious areas (i.e. buildings, substation pads, gravel access roads or parking areas, etc.), the SWPPP must address post-construction stormwater management controls for those areas of the project. This applies to both Scenario 1 and 2 above.

cc: Carol Lamb-Lafay, BWP
Dave Gasper, BWP

Stormwater Design Guidance – Solar Panel Installations

Revisions to Maryland's stormwater management regulations in 2010 require that environmental site design (ESD) be used to the maximum extent practicable (MEP) to mimic natural hydrology, reduce runoff to reflect forested wooded conditions, and minimize the impact of land development on water resources. This applies to any residential, commercial, industrial, or institutional development where more than 5,000 square feet of land area is disturbed. Consequently, stormwater management must be addressed even when permeable features like solar panel installations exceed 5,000 square feet of land disturbance.

Depending on local soil conditions and proposed imperviousness, the amount of rainfall that stormwater requirements are based on varies from 1.0 to 2.6 inches. However, addressing stormwater management does not mean that structural or micro-scale practices must be constructed to capture and treat large volumes of runoff. Using nonstructural techniques like disconnecting impervious cover reduces runoff by promoting overland filtering and infiltration. Commonly used with smaller or narrower impervious areas like driveways or open roads, the Disconnection of Non-Rooftop Runoff technique (see pp. 5.61 to 5.65 of the **2000 Maryland Stormwater Design Manual**[1]) is a low cost alternative for treating runoff in situations like rows of solar panels.

When non-rooftop disconnection is used to treat runoff, the following factors should be considered:

- The vegetated area receiving runoff must be equal to or greater in length than the disconnected surface (e.g., width of the row of solar panels)
- Runoff must sheet flow onto and across vegetated areas to maintain the disconnection
- Disconnections should be located on gradual slopes (≤ 5%) to maintain sheetflow. Level spreaders, terraces, or berms may be used to maintain sheetflow conditions if the average slope is steeper than 5%. However, installations on slopes greater than 10% will require an engineered plan that ensures adequate treatment and the safe and non-erosive conveyance of runoff to the property line or downstream stormwater management practice.
- Disconnecting impervious surfaces works best in undisturbed soils. To minimize disturbance and compaction, construction vehicles and equipment should avoid areas used for disconnection during installation of the solar panels.
- Groundcover vegetation must be maintained in good condition in those areas receiving disconnected runoff. Typically this maintenance is no different than other lawn or landscaped areas. However, areas receiving runoff should be protected (e.g., planting shrubs or trees along the perimeter) from future compaction.

Depending on the layout and number of panels installed, the disconnection of non-rooftop runoff technique may address some or all of the stormwater management requirements for an individual project. Where the imperviousness is high or there is other infrastructure (e.g., access roads, transformers), additional runoff may need to be treated. In these situations, other ESD techniques or micro-scale practices may be needed to provide stormwater management for these features.

Example 1 – Using Non-Rooftop Disconnection Where the Average Slope ≤ 5%

Several rows of solar panels will be installed in an existing meadow. The soils within the meadow are hydrologic soil group (HSG) B and the average slope does not exceed 5%. Each row of panels is 10 feet wide and the distance between rows is 20 feet. The rows of solar panels will be installed according to Figure 1 below. In this scenario, the disconnection length is the same as the distance between rows (20 feet) and is greater than the width of each row (10 feet). Therefore, each row of panels is adequately disconnected and the runoff from 1.0 inch of rainfall is treated.

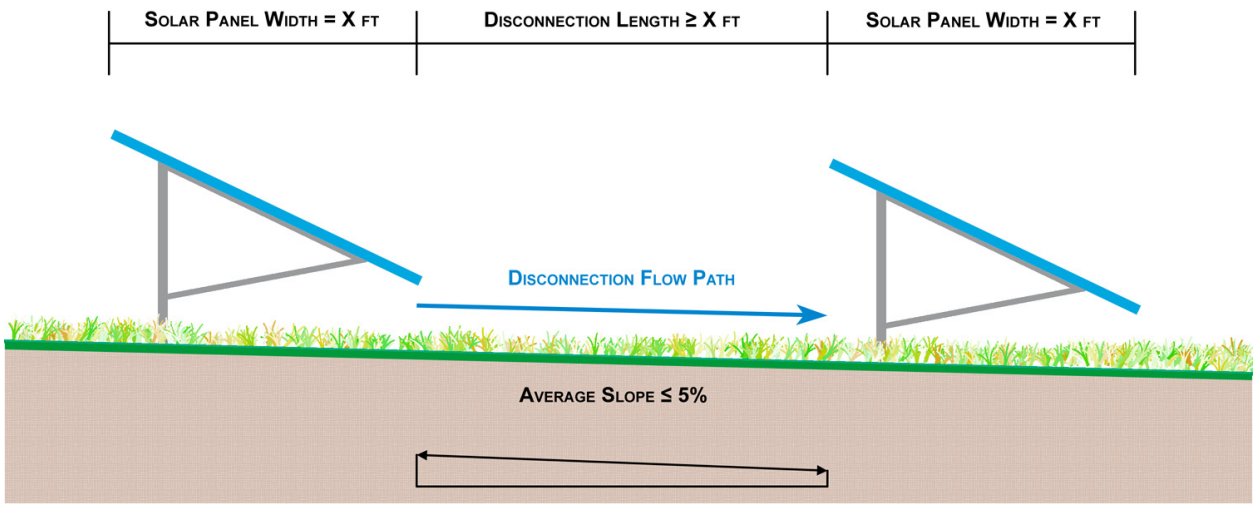


Figure 1. Typical Installation - Slope ≤ 5%

Example 2 – Using Non-Rooftop Disconnection Where the Average Slope ≥ 5% but ≤ 10%

Several rows of solar panels will be installed in an existing meadow. The soils within the meadow are hydrologic soil group (HSG) B and the average slope is greater than 5% but less than 10%. Each row of panels is 10 feet wide and the distance between rows is 20 feet. The rows of solar panels will be installed as shown in Figure 2 below. The disconnection length is the same as the distance between rows (20 feet) and is greater than the width of each row (10 feet). However, in this example, a level spreader (typically 1 to 2-foot wide and 1 foot deep) has been located at the drip edge of each row of panels to dissipate energy and maintain sheetflow.

Discussion

To meet State and local stormwater management requirements, ESD must be used to the MEP to reduce runoff to reflect forested conditions. While all reasonable options for implementing ESD must be investigated, minimally, the runoff from 1 inch of rainfall must be treated. In each of the examples above, there may be additional opportunities to implement ESD techniques or practices and reduce runoff that should be explored. However, simply disconnecting the runoff from the solar panel arrays captures and treats the runoff from 1.0 inch of rainfall. Where imperviousness is low and soil conditions less optimal (e.g., HSG C or D), this may be sufficient to completely address stormwater management requirements. In more dense applications or in sandy soils, additional stormwater management may be required.

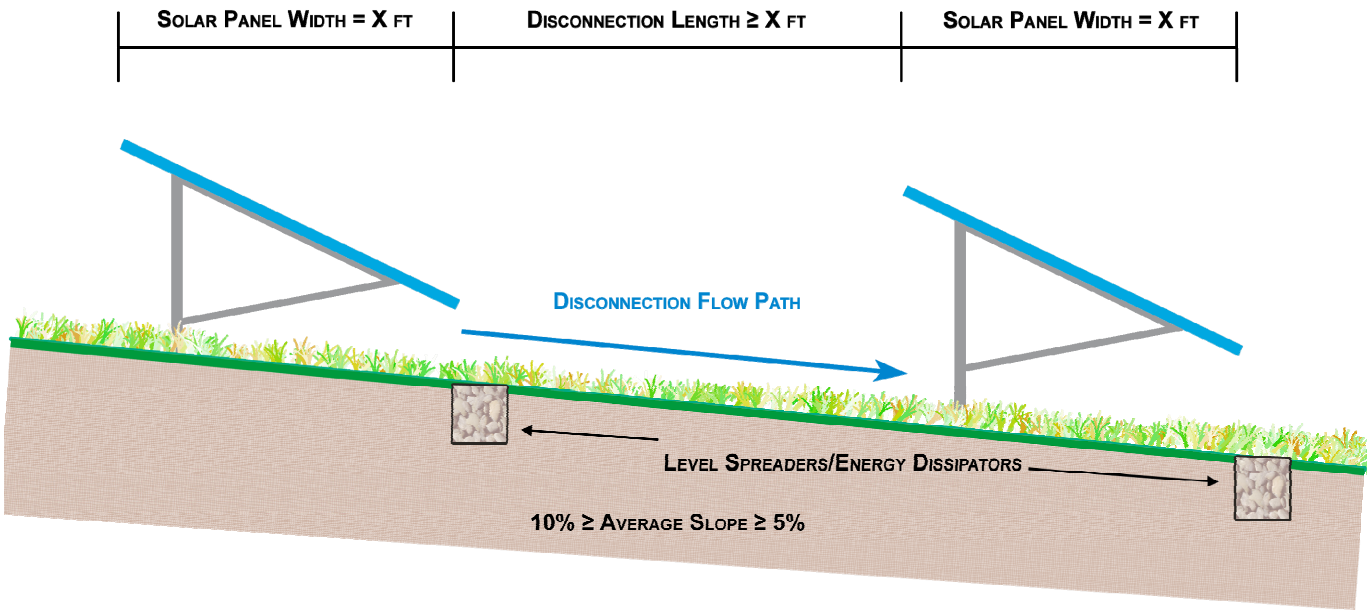


Figure 2. Typical Installation – Slope ≥ 5% but ≤ 10%

Conclusion

The primary purpose of Maryland's stormwater management program is to mimic natural hydrologic runoff characteristics and minimize the impact of land development on water resources. Any land development project that exceeds 5,000 square feet of disturbance, including solar panel projects, must address stormwater management. However, for solar panels, stormwater management may be provided in a cost-effective manner by disconnecting each row of panels and directing runoff over the vegetated areas between the individual rows.

Resources

[1] 2000 Maryland Stormwater Design Manual, Volumes I and II, MDE, October 2000 (http://www.mde.state.md.us/programs/Water/StormwaterManagementProgram/MarylandStormwaterDesignManual/Pages/Programs/WaterPrograms/SedimentandStormwater/stormwater_design/index.aspx)

Exhibit 4: Notice of Termination (NOT) Form

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)

Exhibit 5: Contractor Certification(s)

CONTRACTOR & SUBCONTRACTOR
CERTIFICATION(S)

"I certify under penalty of law that I understand and agree to comply with the terms and conditions of the SWPPP for the construction site identified in such SWPPP as a condition of authorization to discharge stormwater. I also understand that the Owner/Operator must comply with the terms and conditions of the New York State Pollution Discharge Elimination System (SPDES) General Permit # GP-0-20-001 for stormwater discharges from construction activities and that it is unlawful for any person to cause or contribute to a violation of water quality standards."

General Contractor

Company Name: _____ Phone No: _____
Company Address: _____

Signature: _____ Date: _____
Print Name & Title

Subcontractor

Company Name: _____ Phone No: _____
Company Address: _____
Company Address: _____

Signature: _____ Date: _____
Print Name & Title

Subcontractor

Company Name: _____ Phone No: _____
Company Address: _____

Signature: _____ Date: _____
Print Name & Title

Subcontractor

Company Name: _____ Phone No: _____
Company Address: _____

Signature: _____ Date: _____
Print Name & Title

Subcontractor

Company Name: _____ Phone No: _____
Company Address: _____

Signature: _____ Date: _____
Print Name & Title

Signature-
a. For a corporation: by (1) president, secretary, treasurer, or vice president of the corporation in charge of a principal business function, or any other person authorized to and who performs similar policy or decisions making functions for the corporation; or (2) the manager of one or more manufacturing, production or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding $250,000,000 (in second-quarter 1980 dollars) if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;
b. For a partnership or sole proprietorship: by a general partner or the proprietor, respectively; or
c. For a municipality, State, Federal, or other public agency: by either a principal executive office or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes (1) the chief executive office or the agency, or (2) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of EPA)

Exhibit 6: Construction Inspection Reports

MURK 6 (04/09) ○ Metric ◉ English

SPDES STORMWATER INSPECTION REPORT

Clear Form

JOB STAMP

Date: _____

Day of Week: S M T W T F S

Sheet No. ____ of ____

	AM		PM	
Weather				
Temperature		° F		° F
Soil Condition				

This inspection and maintenance form is to be used on contracts covered by SPDES General Permit for Construction Activity (GP-0-20-001) . The completed inspection form must be filed in the Engineer's Field Office.

Reason for this Inspection:

☐ Standard 7 calendar day inspection

☐ Subsequent inspection in 7 calendar day period due to soil disturbance exceeding 5 acres

☐ Received 0.5 in or more of rain in a 24 hour period

Codes for erosion and sediment control measures to be inspected: [Use the following codes in the table below] (1) mulch, (2) seed and mulch, (3) check dams, (4) strawbales, (5) silt fence, (6) sediment trap, (7) turbidity curtains, (8) pipe slope drains, (9) drainage structure inlet protection, (10) rolled erosion control products, (11) soil stabilizers, (12) construction entrances, (13) pipe inlet/outlet protection, (14) water diversion structures, (15) sedimentation basins, (16) cofferdams, (17) Other _____

List ONLY those erosion & sediment control and/or stormwater management practices that require repair, maintenance, reinstallation or replacement.

ID	Location of Practice (Use stations or descriptions)	Practice		Describe Specific Maintenance Required (Including sediment removal, replacement or installation of practice)	Remarks
		Code #	Temp or Perm? (T,P or NA)		
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

Print Form

MURK 6 REVERSE
(04/09)

Clear Form

ID	Location of Practice (Use stations or descriptions)	Practice		Describe Specific Maintenance Required (Including sediment removal, replacement or installation of practice)	Remarks
		Code #	Temp or Perm? (T,P or NA)		
11					
12					
13					
14					
15					

Have areas been disturbed or stabilized since the last inspection? ☐ Yes ☐ No
If YES, attach a location map showing all disturbed areas and areas stabilized since the last inspection.

Identify outlet points of stormwater from the project site to Waters of the US (e.g. streams, rivers, lakes, wetlands, etc.) and describe the condition of the stormwater (add additional pages as necessary to include all outlets points to Waters of the US):

	Location of Outlet (STA / OFFSET)	**Type of Outlet** (e.g. pipe, ditch, overland flow,etc.)	**Is Runoff from Site Outletting to Water of the US?**	**Describe Runoff** (if any) (e.g. clear, turbid)
1				
2				
3				

Are more than 5 acres of soil disturbed at this site at any one time? _____
If YES, was a notification form sent to NYSDEC? _____

Describe Existing Deficiencies in the SWPPP. Specify for each location using row ID number, if applicable.

_____

_____

_____

_____

_____

_____

Qualified Inspector Name/Title
(w/ Firm Name, If Consultant) _____

Qualified Inspector Signature: _____ Prepared: _____ (Date) Copy to Contractor: _____ (Date)

☐ Engineer-in-Charge
☐ Resident Engineer

Reviewed By: _____ Date Reviewed: _____ (Date)

☐ MURK 6-1 SPDES Stormwater Inspection Report - Continuation attached

Print Form

MURK 6-1
(04/09)

SPDES STORMWATER INSPECTION REPORT - CONTINUATION

Clear Form

JOB STAMP

Date: _____ Sheet No. ____ of ____

Codes for erosion and sediment control measures to be inspected: [Use the following codes in the table below] (1) mulch, (2) seed and mulch, (3) check dams, (4) strawbales, (5) silt fence, (6) sediment trap, (7) turbidity curtains, (8) pipe slope drains, (9) drainage structure inlet protection, (10) rolled erosion control products, (11) soil stabilizers, (12) construction entrances, (13) pipe inlet/outlet protection, (14) water diversion structures, (15) sedimentation basins, (16) cofferdams, (17) Other _____

List ONLY those erosion & sediment control and/or stormwater management practices that require repair, maintenance, reinstallation or replacement.

ID	Location of Practice (Use stations or descriptions)	Practice		Describe Specific Maintenance Required (Including sediment removal, replacement or installation of practice)	Remarks
		Code #	Temp or Perm? (T,P or NA)		
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					

Print Form

MURK 6-1 REVERSE
(04/09)

Clear Form

ID	Location of Practice (Use stations or descriptions)	Practice		Describe Specific Maintenance Required (Including sediment removal, replacement or installation of practice)	Remarks
		Code #	Temp or Perm? (T,P or NA)		
18					
19					
20					
21					
22					
23					
24					
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29					
30					
31					
32					
33					
34					
35					
36					
37					
38					
39					
40					
41					
42					

Qualified Inspector Initials:: _____

Print Form

Stormwater Pond/Wetland Operation, Maintenance and Management Inspection Checklist

Project _____
Location: _____
Site Status: _____

Date: _____
Time: _____

Inspector: _____

Maintenance Item	Satisfactory/ Unsatisfactory	Comments
1. Embankment and emergency spillway (Annual, After Major Storms)		
1. Vegetation and ground cover adequate		
2. Embankment erosion		
3. Animal burrows		
4. Unauthorized planting		
5. Cracking, bulging, or sliding of dam		
a. Upstream face		
b. Downstream face		
c. At or beyond toe		
downstream		
upstream		
d. Emergency spillway		
6.Pond, toe & chimney drains clear and functioning		
7.Seeps/leaks on downstream face		
8.Slope protection or riprap failure		
9. Vertical/horizontal alignment of top of dam "As-Built"		

Maintenance Item	Satisfactory/ Unsatisfactory	Comments
10. Emergency spillway clear of obstructions and debris		
11. Other (specify)		
2. Riser and principal spillway (Annual)		
Type: Reinforced concrete _____ Corrugated pipe _____ Masonry _____ 1. Low flow orifice obstructed		
2. Low flow trash rack. a. Debris removal necessary		
b. Corrosion control		
3. Weir trash rack maintenance a. Debris removal necessary		
b. corrosion control		
4. Excessive sediment accumulation insider riser		
5. Concrete/masonry condition riser and barrels a. cracks or displacement		
b. Minor spalling (<1")		
c. Major spalling (rebars exposed)		
d. Joint failures		
e. Water tightness		
6. Metal pipe condition		
7. Control valve a. Operational/exercised		
b. Chained and locked		
8. Pond drain valve a. Operational/exercised		
b. Chained and locked		
9. Outfall channels functioning		
10. Other (specify)		

Maintenance Item	Satisfactory/ Unsatisfactory	Comments
3. Permanent Pool (Wet Ponds) (monthly)		
1. Undesirable vegetative growth		
2. Floating or floatable debris removal required		
3. Visible pollution		
4. Shoreline problem		
5. Other (specify)		
4. Sediment Forebays		
1.Sedimentation noted		
2. Sediment cleanout when depth < 50% design depth		
5. Dry Pond Areas		
1. Vegetation adequate		
2. Undesirable vegetative growth		
3. Undesirable woody vegetation		
4. Low flow channels clear of obstructions		
5. Standing water or wet spots		
6. Sediment and / or trash accumulation		
7. Other (specify)		
6. Condition of Outfalls (Annual , After Major Storms)		
1. Riprap failures		
2. Slope erosion		
3. Storm drain pipes		
4.Endwalls / Headwalls		
5. Other (specify)		
7. Other (Monthly)		
1. Encroachment on pond, wetland or easement area		

Maintenance Item	Satisfactory/ Unsatisfactory	Comments
2. Complaints from residents		
3.Aesthetics a. Grass growing required		
b. Graffiti removal needed		
c. Other (specify)		
4. Conditions of maintenance access routes.		
5. Signs of hydrocarbon build-up		
6. Any public hazards (specify)		
8. Wetland Vegetation (Annual)		
1. Vegetation healthy and growing Wetland maintaining 50% surface area coverage of wetland plants after the second growing season. (If unsatisfactory, reinforcement plantings needed)		
2. Dominant wetland plants: Survival of desired wetland plant species Distribution according to landscaping plan?		
3. Evidence of invasive species		
4. Maintenance of adequate water depths for desired wetland plant species		
5. Harvesting of emergent plantings needed		
6. Have sediment accumulations reduced pool volume significantly or are plants “choked” with sediment		
7. Eutrophication level of the wetland.		
8. Other (specify)		

Comments:

Actions to be Taken:

Sand/Organic Filter Operation, Maintenance and Management Inspection Checklist

Project:
Location:
Site Status:

Date:

Time:

Inspector:

MAINTENANCE ITEM	SATISFACTORY / UNSATISFACTORY	COMMENTS
1. Debris Cleanout (Monthly)		
Contributing areas clean of debris		
Filtration facility clean of debris		
Inlet and outlets clear of debris		
2. Oil and Grease (Monthly)		
No evidence of filter surface clogging		
Activities in drainage area minimize oil and grease entry		
3. Vegetation (Monthly)		
Contributing drainage area stabilized		
No evidence of erosion		
Area mowed and clipping removed		
4. Water Retention Where Required (Monthly)		
Water holding chambers at normal pool		
No evidence of leakage		
5. Sediment Deposition (Annual)		

MAINTENANCE ITEM	SATISFACTORY / UNSATISFACTORY	COMMENTS
Filter chamber free of sediments		
Sedimentation chamber not more than half full of sediments		
6. Structural Components (Annual)		
No evidence of structural deterioration		
Any grates are in good condition		
No evidence of spalling or cracking of structural parts		
7. Outlet/Overflow Spillway (Annual)		
Good condition, no need for repairs		
No evidence of erosion (if draining into a natural channel)		
8. Overall Function of Facility (Annual)		
Evidence of flow bypassing facility		
No noticeable odors outside of facility		

Comments:

Actions to be Taken:

Bioretention Operation, Maintenance and Management Inspection Checklist

Project:
Location:
Site Status:

Date:

Time:

Inspector:

MAINTENANCE ITEM	SATISFACTORY / UNSATISFACTORY	COMMENTS
1. Debris Cleanout (Monthly)		
Bioretention and contributing areas clean of debris		
No dumping of yard wastes into practice		
Litter (branches, etc.) have been removed		
2. Vegetation (Monthly)		
Plant height not less than design water depth		
Fertilized per specifications		
Plant composition according to approved plans		
No placement of inappropriate plants		
Grass height not greater than 6 inches		
No evidence of erosion		
3. Check Dams/Energy Dissipaters/Sumps (Annual, After Major Storms)		
No evidence of sediment buildup		

MAINTENANCE ITEM	SATISFACTORY / UNSATISFACTORY	COMMENTS
Sumps should not be more than 50% full of sediment		
No evidence of erosion at downstream toe of drop structure		
4. Dewatering (Monthly)		
Dewaters between storms		
No evidence of standing water		
5. Sediment Deposition (Annual)		
Swale clean of sediments		
Sediments should not be > 20% of swale design depth		
6. Outlet/Overflow Spillway (Annual, After Major Storms)		
Good condition, no need for repair		
No evidence of erosion		
No evidence of any blockages		
7. Integrity of Filter Bed (Annual)		
Filter bed has not been blocked or filled inappropriately		

Comments:

Actions to be Taken:

Exhibit 7: Permanent SMP Maintenance Checklists and Agreement

Permanent SMP Maintenance Agreement

I accept responsibility for ownership and proper maintenance of each permanent Stormwater Management Practice (SMP) located at (Address) _____ and I will update the maintenance plan, as required by the Stormwater Pollution Prevention Plan (SWPPP) upon final stabilization of the site.

I will complete any necessary repairs and, or preventative maintenance procedures in a timely manner to achieve proper functioning of each SMP, as recommended by the SWPPP.

It is my understanding that the maintenance plan may be amended/revised at any time by the New York State Department of Environmental Conservation (DEC) and I will abide by any reasonable prescribed changes.

> I will continue to own and maintain the stormwater practice until the New York State DEC is notified in writing of a transfer in ownership and maintenance responsibility. The notification will include a date for the transfer of responsibility and a letter of acceptance from the new owner.

_____
Signature

_____
Printed Name

_____
Address

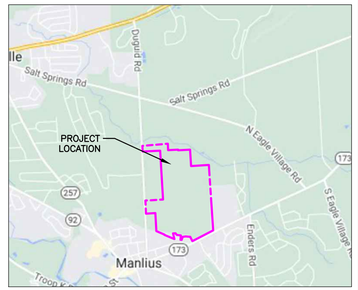
_____
Phone Number

_____
Date

Exhibit 8: Stormwater Calculations

- Water Quality Calculations
- Water Quantity HydroCAD Calculations





SITE LOCATION
SCALE: NTS

LEGEND

- PROJECT BOUNDARY
- PROPERTY SETBACK
- ADJACENT PROPERTY LINE
- PROPERTY LINE
- INTERIOR LOT LINE
- RIGHT-OF-WAY
- EASEMENT/RIGHT-OF-WAY
- EXISTING TREE LINE
- EXISTING FENCE
- EXISTING GRAVEL ROAD
- EXISTING OVERHEAD UTILITY LINES
- EXISTING UTILITY POLE
- TOP OF BANK
- PANEL ARRAY
- PROPOSED FENCE
- EXISTING WATER LINE
- PROPOSED TREELINE
- LIMIT OF DISTURBANCE
- DELINEATED WETLANDS
- PROPOSED FILTER STRIP OR RIPARIAN BUFFER
- PROPOSED SURFACE WATER CROSSING
- STANDARD GRAVEL ACCESS ROAD
- PERVIOUS GRAVEL ACCESS ROAD

200 FEET 0 200 400 600
Scale: 1"=200'

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	BY
1			
2			
3			
4			
5			
6			
7			

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FA PROJECT NO.
220871
PROJECT MANAGER
S. MELLOTT
DRAWN BY
D. BRUE
SCALE
AS SHOWN
ISSUE DATE
12/09/2022

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PROJECT
PROPOSED MANLIUS SOLAR
TOWN OF MANLIUS
ONONDAGA COUNTY, NEW YORK

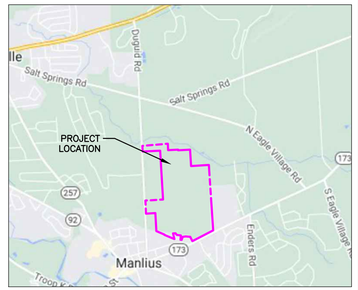
TITLE OF DRAWING
DRAINAGE AREAS - SWPPP

DRAWING NO.
EX

SHEET 01 OF 03

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DATE/TIME: 12/9/2022 6:01:13 PM
USER: Carolina Castro

PROPOSED DRAINAGE AREA 1
PROPOSED DRAINAGE AREA 2
PROPOSED DRAINAGE AREA 3
PROPOSED DRAINAGE AREA 4
PROPOSED DRAINAGE AREA 5
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PROPOSED DRAINAGE AREA 26
PROPOSED DRAINAGE AREA 27
PROPOSED DRAINAGE AREA 28



SITE LOCATION
SCALE: NTS

LEGEND

- PROJECT BOUNDARY
- PROPERTY SETBACK
- ADJACENT PROPERTY LINE
- PROPERTY LINE
- INTERIOR LOT LINE
- RIGHT-OF-WAY
- EASEMENT/RIGHT-OF-WAY
- EXISTING TREE LINE
- EXISTING FENCE
- EXISTING GRAVEL ROAD
- EXISTING OVERHEAD UTILITY LINES
- EXISTING UTILITY POLE
- TOP OF BANK
- PANEL ARRAY
- PROPOSED FENCE
- EXISTING WATER LINE
- PROPOSED TREELINE
- LIMIT OF DISTURBANCE
- DELINEATED WETLANDS
- PROPOSED FILTER STRIP OR RIPARIAN BUFFER
- PROPOSED SURFACE WATER CROSSING
- STANDARD GRAVEL ACCESS ROAD
- PERVIOUS GRAVEL ACCESS ROAD

200 FEET 0 200 400 600
Scale: 1"=200'

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	BY
7			
6			
5			
4			
3			
2			
1			

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FA PROJECT NO.
220871
PROJECT MANAGER
S. MELLOTT
DRAWN BY
D. BRUE
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12/09/2022

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PROJECT
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TOWN OF MANLIUS
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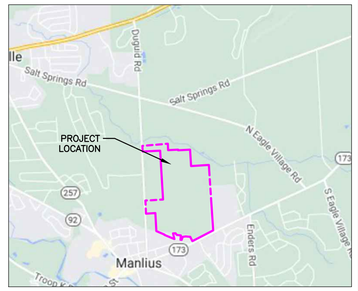
TITLE OF DRAWING
DRAINAGE AREAS - SWPPP

DRAWING NO.
PR

SHEET 02 OF 03

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DATE/TIME: 12/9/2022 6:01:40 PM
USER: Carolina Castro





SITE LOCATION
SCALE: NTS

LEGEND

- PROJECT BOUNDARY
- PROPERTY SETBACK
- ADJACENT PROPERTY LINE
- PROPERTY LINE
- INTERIOR LOT LINE
- RIGHT-OF-WAY
- EASEMENT/RIGHT-OF-WAY
- EXISTING TREE LINE
- EXISTING FENCE
- EXISTING GRAVEL ROAD
- EXISTING OVERHEAD UTILITY LINES
- EXISTING UTILITY POLE
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- PROPOSED FENCE
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- PROPOSED FILTER STRIP OR RIPARIAN BUFFER
- PROPOSED SURFACE WATER CROSSING
- STANDARD GRAVEL ACCESS ROAD
- PERVIOUS GRAVEL ACCESS ROAD

200 FEET 0 200 400 600
Scale: 1"=200'

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	BY
1			
2			
3			
4			
5			
6			
7			

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PROJECT
PROPOSED MANLIUS SOLAR
TOWN OF MANLIUS
ONONDAGA COUNTY, NEW YORK

TITLE OF DRAWING
GREEN INFRASTRUCTURE PLAN

DRAWING NO.
GI

SHEET 03 OF 03

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DATE/TIME: 12/9/2022 6:15:17 PM
USER: Carolina Castro

Version 1.6
Last Updated: 03/28/2014

Total Water Quality Volume Calculation
WQv(acre-feet) = [(P)(Rv)(A)] /12

Is this project subject to Chapter 10 of the NYS Design Manual (i.e. WQv is equal to post-development 1 year runoff volume)?	No
Design Point:	MANLIUS
P=	1.00 inch

Manually enter P, Total Area and Impervious Cover.

Breakdown of Subcatchments

Catchment Number	Total Area *(Acres)*	Impervious Area *(Acres)*	Percent Impervious *%*	Rv	WQv *(ft^3)*	Description
1	0.13	0.13	100%	0.95	448	Porous Pavement
2	0.55	0.55	100%	0.95	1,897	Filter Strips
3	0.23	0.23	100%	0.95	793	Porous Pavement
4	0.41	0.41	100%	0.95	1,414	Filter Strips
5	0.16	0.16	100%	0.95	552	Porous Pavement
6	0.28	0.28	100%	0.95	966	Filter Strips
7	0.43	0.43	100%	0.95	1,483	Porous Pavement
8	1.27	1.27	100%	0.95	4,380	Filter Strips
9						
10						
Subtotal (1-30)	3.46	3.46	100%	0.95	**11,932**	**Subtotal 1**
Total	3.46	3.46	100%	0.95	**11,932**	**Initial WQv**	**0.27**	**af**

Identify Runoff Reduction Techniques By Area

Technique	Total Contributing Area *(Acre)*	Contributing Impervious Area *(Acre)*	Notes
Conservation of Natural Areas	0.00	0.00	*minimum 10,000 sf*
Riparian Buffers	0.00	0.00	*maximum contributing length 75 feet to 150 feet*
Filter Strips	2.51	2.51	
Tree Planting	0.00	0.00	*Up to 100 sf directly connected impervious area may be subtracted per tree*
Total	**2.51**	**2.51**	

Recalculate WQv after application of Area Reduction Techniques

	Total Area *(Acres)*	Impervious Area *(Acres)*	Percent Impervious *%*	Runoff Coefficient Rv	WQv *(ft^3)*		
"<<Initial WQv"	3.46	3.46	100%	0.95	11,932		
Subtract Area	-2.51	-2.51					
WQv adjusted after Area Reductions	**0.95**	**0.95**	100%	0.95	3,276		
Disconnection of Rooftops		0.00					
Adjusted WQv after Area Reduction and Rooftop Disconnect	0.95	0.95	100%	0.95	**3,276**	**0.08**	**af**
WQv reduced by Area Reduction techniques					8,656	**0.20**	**af**

Runoff Reduction Volume and Treated volumes						
	Runoff Reduction Techiques/Standard SMPs		**Total Contributing Area**	**Total Contributing Impervious Area**	**WQv Reduced (RRv)**	**WQv Treated**
			(acres)	**(acres)**	**cf**	**cf**
Area/Volume Reduction	Conservation of Natural Areas	RR-1	0.00	0.00		
	Sheetflow to Riparian Buffers/Filter Strips	RR-2	2.51	2.51		
	Tree Planting/Tree Pit	RR-3	0.00	0.00		
	Disconnection of Rooftop Runoff	RR-4		0.00		
	Vegetated Swale	RR-5	1.71	1.71	839	
	Rain Garden	RR-6	0.00	0.00	0	
	Stormwater Planter	RR-7	0.00	0.00	0	
	Rain Barrel/Cistern	RR-8	0.00	0.00	0	
	Porous Pavement	RR-9	0.95	0.95	3276	
	Green Roof (Intensive & Extensive)	RR-10	0.00	0.00	0	
Standard SMPs w/RRv Capacity	Infiltration Trench	I-1	0.00	0.00	0	0
	Infiltration Basin	I-2	0.00	0.00	0	0
	Dry Well	I-3	0.00	0.00	0	0
	Underground Infiltration System	I-4	0.00			
	Bioretention & Infiltration Bioretention	F-5	0.00	0.00	0	0
	Dry swale	O-1	0.00	0.00	0	0
Standard SMPs	Micropool Extended Detention (P-1)	P-1				
	Wet Pond (P-2)	P-2				
	Wet Extended Detention (P-3)	P-3				
	Multiple Pond system (P-4)	P-4				
	Pocket Pond (p-5)	P-5				
	Surface Sand filter (F-1)	F-1				
	Underground Sand filter (F-2)	F-2				
	Perimeter Sand Filter (F-3)	F-3				
	Organic Filter (F-4	F-4				
	Shallow Wetland (W-1)	W-1				
	Extended Detention Wetland (W-2	W-2				
	Pond/Wetland System (W-3)	W-3				
	Pocket Wetland (W-4)	W-4				
	Wet Swale (O-2)	O-2				
Totals by Area Reduction →			2.51	2.51	8656	
Totals by Volume Reduction →			2.66	2.66	4115	
Totals by Standard SMP w/RRV →			0.00	0.00	0	0
Totals by Standard SMP →			0.00	0.00		0
Totals (Area + Volume + all SMPs) →			5.17	5.17	12,771	0
	Impervious Cover √	error				
	Total Area √	error				

Minimum RRv

Enter the Soils Data for the site		
Soil Group	Acres	S
A	0.00	55%
B	0.57	40%
C	1.69	30%
D	**1.20**	20%
Total Area	3.46	
Calculate the Minimum RRv		
S =	**0.28**	
Impervious =	3.46	*acre*
Precipitation	1	*in*
Rv	0.95	
Minimum RRv	**3,362**	***ft3***
	0.08	af

NOI QUESTIONS

#	NOI Question	Reported Value	
		cf	af
28	Total Water Quality Volume (WQv) Required	11932	*0.274*
30	Total RRV Provided	12771	*0.293*
31	Is RRv Provided ≥WQv Required?	Yes	
32	Minimum RRv	3362	*0.077*
32a	Is RRv Provided ≥ Minimum RRv Required?	Yes	
33a	Total WQv Treated	0	*0.000*
34	Sum of Volume Reduced & Treated	12771	*0.293*
34	Sum of Volume Reduced and Treated	12771	*0.293*
35	Is Sum RRv Provided and WQv Provided ≥WQv Required?	Yes	

100.00%

Apply Peak Flow Attenuation			
36	Channel Protection	*Cpv*	
37	Overbank	*Qp*	
37	Extreme Flood Control	*Qf*	
	Are Quantity Control requirements met?	*Yes*	Plan Completed

Porous Pavement Worksheet

Ap = Vw / (n x dt)

Ap	Required porous pavement surface area	*ft2*	
Vw	Design Volume	*ft3*	
n	porosity of gravel bed/resevoir		*Assume .4 for gravel*
dt	depth of gravel bed/resevoir		

Design Point:	**MANLIUS**

Enter Site Data For Drainage Area to be Treated by Practice							
Catchment Number	**Total Area** *(Acres)*	**Impervious Area** *(Acres)*	**Percent Impervious** *%*	**Rv**	**WQv** *(ft^3)*	**Precipitation** *(in)*	**Description**
1	0.13	0.13	1.00	0.95	448.31	1.00	Porous Pavement

Enter Soil Infiltration Rate			
Soil Inflitration Rate	0.50	*in/hour*	

Calculate Required Surface Area				
Design Volume	Vw	448	*ft^3*	
Are underdrains being used?		No	-	
Porosity of Gravel Bed	*n*	0.40	-	
Gravel Bed Depth	dt	1.50	*ft*	
Required Surface Area	Ap	747	*sf*	
Surface Area Provided		5,663	*sf*	*Dimensions of pavement can be provided here*
Storage Volume Provided		3,398	*ft^3*	

Determine the Runoff Reduction			
RRv	**448**	***ft^3***	

Porous Pavement Worksheet

Ap = Vw / (n x dt)

Ap	Required porous pavement surface area	*ft2*	
Vw	Design Volume	*ft3*	
n	porosity of gravel bed/resevoir		*Assume .4 for gravel*
dt	depth of gravel bed/resevoir		

Design Point:	**MANLIUS**

Enter Site Data For Drainage Area to be Treated by Practice							
Catchment Number	**Total Area** *(Acres)*	**Impervious Area** *(Acres)*	**Percent Impervious** *%*	**Rv**	**WQv** *(ft^3)*	**Precipitation** *(in)*	**Description**
3	0.23	0.23	1.00	0.95	793.16	1.00	Porous Pavement

Enter Soil Infiltration Rate			
Soil Inflitration Rate	0.50	*in/hour*	

Calculate Required Surface Area				
Design Volume	Vw	793	*ft^3*	
Are underdrains being used?		No	-	
Porosity of Gravel Bed	*n*	0.40	-	
Gravel Bed Depth	dt	1.50	*ft*	
Required Surface Area	Ap	1,322	*sf*	
Surface Area Provided		10,019	*sf*	*Dimensions of pavement can be provided here*
Storage Volume Provided		6,011	*ft^3*	

Determine the Runoff Reduction			
RRv	**793**	***ft^3***	

Porous Pavement Worksheet

Ap = Vw / (n x dt)

Ap	Required porous pavement surface area	*ft2*	
Vw	Design Volume	*ft3*	
n	porosity of gravel bed/resevoir		*Assume .4 for gravel*
dt	depth of gravel bed/resevoir		

Design Point:	**MANLIUS**

Enter Site Data For Drainage Area to be Treated by Practice							
Catchment Number	**Total Area** *(Acres)*	**Impervious Area** *(Acres)*	**Percent Impervious** *%*	**Rv**	**WQv** *(ft^3)*	**Precipitation** *(in)*	**Description**
5	0.16	0.16	1.00	0.95	551.76	1.00	Porous Pavement

Enter Soil Infiltration Rate			
Soil Inflitration Rate	0.50	*in/hour*	

Calculate Required Surface Area				
Design Volume	Vw	552	*ft^3*	
Are underdrains being used?		No	-	
Porosity of Gravel Bed	*n*	0.40	-	
Gravel Bed Depth	dt	1.50	*ft*	
Required Surface Area	Ap	920	*sf*	
Surface Area Provided		6,970	*sf*	*Dimensions of pavement can be provided here*
Storage Volume Provided		4,182	*ft^3*	

Determine the Runoff Reduction			
RRv	**552**	***ft^3***	

Porous Pavement Worksheet

Ap = Vw / (n x dt)

Ap	Required porous pavement surface area	*ft2*	
Vw	Design Volume	*ft3*	
n	porosity of gravel bed/resevoir		*Assume .4 for gravel*
dt	depth of gravel bed/resevoir		

Design Point:	**MANLIUS**

Enter Site Data For Drainage Area to be Treated by Practice							
Catchment Number	**Total Area** *(Acres)*	**Impervious Area**	**Percent Impervious**	**Rv**	**WQv** *(ft^3)*	**Precipitation** *(in)*	**Description**
7	0.43	0.43	1.00	0.95	1482.86	1.00	Porous Pavement

Enter Soil Infiltration Rate			
Soil Inflitration Rate	0.50	*in/hour*	

Calculate Required Surface Area				
Design Volume	Vw	1,483	*ft^3*	
Are underdrains being used?		No	-	
Porosity of Gravel Bed	*n*	0.40	-	
Gravel Bed Depth	dt	1.50	*ft*	
Required Surface Area	Ap	2,471	*sf*	
Surface Area Provided		18,731	*sf*	*Dimensions of pavement can be provided here*
Storage Volume Provided		11,238	*ft^3*	

Determine the Runoff Reduction			
RRv	**1,483**	***ft^3***	

Porous Pavement Worksheet

Total RRV	3,276.08
Total Area	0.95
Total Impervious Area	0.95

Filter Strip

Design Point:	MANLIUS

Enter Site Data For Drainage Area to be Treated by Practice							
Catchment Number	**Total Area** *(Acres)*	**Impervious Area** *(Acres)*	**Percent Impervious** *%*	**Rv**	**WQv** *(ft^3)*	**Precipitation** *(in)*	**Description**
2	0.55	0.55	1.00	0.95	1896.68	1.00	Filter Strips

Design Elements			
Is another area based practice applied to this area?	*No*	*Y/N*	
Amended Soils & Dense Turf Cover?	*Yes*	*Y/N*	
Is area protected from compaction from heavy equipment during construction?	*Yes*	*Y/N*	
Small Area of Impervious Area & close to source?	*Yes*	*Y/N*	
Composte Amendments?	*No*	*Y/N*	
Boundary Spreader?	*No*	*Y/N*	*Gravel Diaphram at top*
Boundary Zone?	*No*	*Y/N*	*25 feet of level grass*
Specify how sheet flow will be ensured.	N/A		*level spreader shall be used for buffer slopes ranging from 3-15%*
Average contributing slope	2	*%*	*3% maximum unless a level spreader is used.*
Slope of first 10 feet of Filter Strip	1	*%*	*2% maximum*
Overall Slope	2	*%*	*8% maximum*
Contributing Length of Pervious Areas (PC)	0	*ft*	*150 ft maximum*
Contributing Length of Impervious areas (IC)	20	*ft*	*75 ft maximum*
Maximum PC Contributing Length for combination of PC & IC	130	*ft*	
Soil Group (HSG)	D		
Filter Strip Width	50	*ft*	*50 ft minimum for slopes 0-8%* *75 ft minimum for slopes 8-12%* *100 ft minimum for slopes 12-15%* *HSG C or D increase by 15-20%*
Are All Criteria for Filter Strips in Section 5.3.2 met?	*Yes*		

Area Reduction Adjustments		
Subtract	**0.55**	***Acres from total Area***
Subtract	**0.55**	***Acres from total Impervious Area***

FALSE

Filter Strip

Design Point:	MANLIUS

Enter Site Data For Drainage Area to be Treated by Practice							
Catchment Number	**Total Area** *(Acres)*	**Impervious Area** *(Acres)*	**Percent Impervious** *%*	**Rv**	**WQv** *(ft^3)*	**Precipitation** *(in)*	**Description**
4	0.41	0.41	1.00	0.95	1413.89	1.00	Filter Strips

Design Elements			
Is another area based practice applied to this area?	*No*	*Y/N*	
Amended Soils & Dense Turf Cover?	*Yes*	*Y/N*	
Is area protected from compaction from heavy equipment during construction?	*Yes*	*Y/N*	
Small Area of Impervious Area & close to source?	*Yes*	*Y/N*	
Composte Amendments?	*No*	*Y/N*	
Boundary Spreader?	*No*	*Y/N*	*Gravel Diaphram at top*
Boundary Zone?	*No*	*Y/N*	*25 feet of level grass*
Specify how sheet flow will be ensured.	N/A		*level spreader shall be used for buffer slopes ranging from 3-15%*
Average contributing slope	2	*%*	*3% maximum unless a level spreader is used.*
Slope of first 10 feet of Filter Strip	1	*%*	*2% maximum*
Overall Slope	2	*%*	*8% maximum*
Contributing Length of Pervious Areas (PC)	0	*ft*	*150 ft maximum*
Contributing Length of Impervious areas	20	*ft*	*75 ft maximum*
Maximum PC Contributing Length for combination of PC & IC	130	*ft*	
Soil Group (HSG)	D		
Filter Strip Width	50	*ft*	*50 ft minimum for slopes 0-8%* *75 ft minimum for slopes 8-12%* *100 ft minimum for slopes 12-15%* *HSG C or D increase by 15-20%*
Are All Criteria for filter strips in Section 5.3.2 met?	*Yes*		

Area Reduction Adjustments		
Subtract	**0.41**	***Acres from total Area***
Subtract	**0.41**	***Acres from total Impervious Area***

FALSE

Filter Strip

Design Point:	MANLIUS

Enter Site Data For Drainage Area to be Treated by Practice							
Catchment Number	**Total Area** *(Acres)*	**Impervious Area** *(Acres)*	**Percent Impervious** *%*	**Rv**	**WQv** *(ft^3)*	**Precipitation** *(in)*	**Description**
6	0.28	0.28	1.00	0.95	965.58	1.00	Filter Strips

Design Elements			
Is another area based practice applied to this area?	*No*	*Y/N*	
Amended Soils & Dense Turf Cover?	*Yes*	*Y/N*	
Is area protected from compaction from heavy equipment during construction?	*Yes*	*Y/N*	
Small Area of Impervious Area & close to source?	*Yes*	*Y/N*	
Composte Amendments?	*No*	*Y/N*	
Boundary Spreader?	*No*	*Y/N*	*Gravel Diaphram at top*
Boundary Zone?	*No*	*Y/N*	*25 feet of level grass*
Specify how sheet flow will be ensured.	N/A		*level spreader shall be used for buffer slopes ranging from 3-15%*
Average contributing slope	2	*%*	*3% maximum unless a level spreader is used.*
Slope of first 10 feet of Filter Strip	1	*%*	*2% maximum*
Overall Slope	2	*%*	*8% maximum*
Contributing Length of Pervious Areas (PC)	0	*ft*	*150 ft maximum*
Contributing Length of Impervious areas	20	*ft*	*75 ft maximum*
Maximum PC Contributing Length for combination of PC & IC	130	*ft*	
Soil Group (HSG)	C		
Filter Strip Width	50	*ft*	*50 ft minimum for slopes 0-8%* *75 ft minimum for slopes 8-12%* *100 ft minimum for slopes 12-15%* *HSG C or D increase by 15-20%*
Are All Criteria in Section 5.3.2 (filter strips) met?	*Yes*		

Area Reduction Adjustments		
Subtract	**0.28**	***Acres from total Area***
Subtract	**0.28**	***Acres from total Impervious Area***

FALSE

Filter Strip

Design Point:	MANLIUS

Enter Site Data For Drainage Area to be Treated by Practice							
Catchment Number	**Total Area** *(Acres)*	**Impervious Area** *(Acres)*	**Percent Impervious** *%*	**Rv**	**WQv** *(ft^3)*	**Precipitation** *(in)*	**Description**
8	1.27	1.27	1.00	0.95	4379.60	1.00	Filter Strips

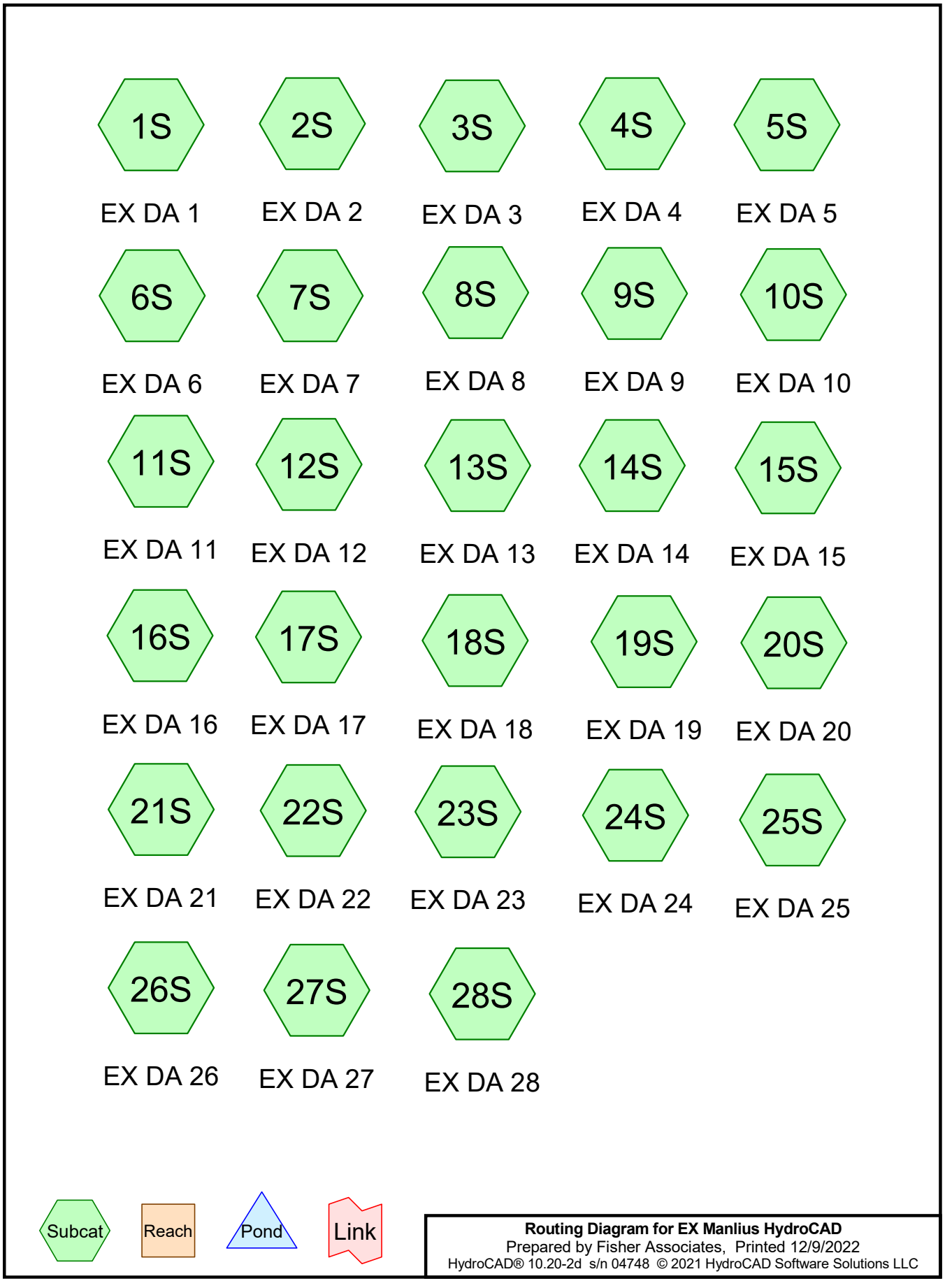
Design Elements			
Is another area based practice applied to this area?	*No*	*Y/N*	
Amended Soils & Dense Turf Cover?	*Yes*	*Y/N*	
Is area protected from compaction from heavy equipment during construction?	*Yes*	*Y/N*	
Small Area of Impervious Area & close to source?	*Yes*	*Y/N*	
Composte Amendments?	*No*	*Y/N*	
Boundary Spreader?	*No*	*Y/N*	*Gravel Diaphram at top*
Boundary Zone?	*No*	*Y/N*	*25 feet of level grass*
Specify how sheet flow will be ensured.	N/A		*level spreader shall be used for buffer slopes ranging from 3-15%*
Average contributing slope	2	*%*	*3% maximum unless a level spreader is used.*
Slope of first 10 feet of Filter Strip	1	*%*	*2% maximum*
Overall Slope	2	*%*	*8% maximum*
Contributing Length of Pervious Areas (PC)	0	*ft*	*150 ft maximum*
Contributing Length of Impervious areas	20	*ft*	*75 ft maximum*
Maximum PC Contributing Length for combination of PC & IC	130	*ft*	
Soil Group (HSG)	D		
Filter Strip Width	50	*ft*	*50 ft minimum for slopes 0-8%* *75 ft minimum for slopes 8-12%* *100 ft minimum for slopes 12-15%* *HSG C or D increase by 15-20%*
Are All Criteria in Section 5.3.2 (fitler strips) met?	*Yes*		

Area Reduction Adjustments		
Subtract	**1.27**	***Acres from total Area***
Subtract	**1.27**	***Acres from total Impervious Area***

FALSE

Filter Strip

Total Subtracted from Total Area	2.51
Total Subtracted from Total Impervious Area	2.51



Routing Diagram for EX Manlius HydroCAD
Prepared by Fisher Associates, Printed 12/9/2022
HydroCAD® 10.20-2d s/n 04748 © 2021 HydroCAD Software Solutions LLC

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-Year	NRCC 24-hr	A	Default	24.00	1	2.01	2
2	10-Year	NRCC 24-hr	A	Default	24.00	1	3.37	2
3	100-Year	NRCC 24-hr	A	Default	24.00	1	5.66	2

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.120	39	A - Developed. Open Space (28S)
0.282	55	B - Deciduous Forest (1S, 5S)
0.027	65	B - Developed, Low Intensity (1S)
0.430	61	B - Developed, Open Space (1S)
0.376	61	B - Meadowed Land (1S, 25S)
11.423	58	B - Meadowed Land (4S, 5S, 7S)
18.141	78	B - Meadowed Land (9S, 10S, 11S, 13S, 17S, 18S, 21S)
14.557	70	C - Deciduous Forest (3S, 4S, 5S, 7S, 8S, 9S, 10S, 11S, 12S, 13S, 14S, 15S, 16S, 21S, 24S)
0.272	74	C - Developed, Open Space (7S, 10S, 11S, 25S)
0.044	70	C - Evergreen Forest (14S)
36.631	74	C - Meadowed Land (3S, 4S, 5S, 6S, 7S, 9S, 11S, 12S, 13S, 15S, 16S, 17S, 18S, 25S)
7.870	82	C - Meadowed Land (10S, 21S, 24S)
29.712	77	D - Deciduous Forest (1S, 2S, 3S, 8S, 12S, 13S, 14S, 15S, 16S, 17S, 18S, 19S, 20S, 21S, 22S, 23S, 24S, 25S, 26S, 27S, 28S)
0.010	82	D - Developed, Low Intensity (28S)
0.006	85	D - Developed, Medium Intensity (3S)
0.048	80	D - Developed, Open Space (28S)
0.120	77	D - Evergreen Forest (8S, 14S, 15S)
6.980	80	D - Meadowed Land (1S, 3S, 12S, 13S, 15S, 16S, 17S, 19S, 20S)
1.003	89	D - Meadowed Land (18S, 23S, 24S, 25S)
4.018	84	D - Shrub/Scrub (22S, 26S, 27S, 28S)
132.070	**74**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
132.070	Other	1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 10S, 11S, 12S, 13S, 14S, 15S, 16S, 17S, 18S, 19S, 20S, 21S, 22S, 23S, 24S, 25S, 26S, 27S, 28S
132.070		**TOTAL AREA**

Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	0.000	0.120	0.120	A - Developed. Open Space	28S
0.000	0.000	0.000	0.000	0.282	0.282	B - Deciduous Forest	1S, 5S
0.000	0.000	0.000	0.000	0.027	0.027	B - Developed, Low Intensity	1S
0.000	0.000	0.000	0.000	0.430	0.430	B - Developed, Open Space	1S
0.000	0.000	0.000	0.000	29.940	29.940	B - Meadowed Land	1S, 4S, 5S, 7S, 9S, 10S, 11S, 13S, 17S, 18S

Ground Covers (selected nodes) (continued)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	0.000	14.557	14.557	C - Deciduous Forest	3S, 4S, 5S, 7S, 8S, 9S, 10S, 11S, 12S, 13S, 14S, 15S, 16S.

Ground Covers (selected nodes) (continued)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	0.000	0.272	0.272	C - Developed, Open Space	7S, 10S, 11S, 25S
0.000	0.000	0.000	0.000	0.044	0.044	C - Evergreen Forest	14S
0.000	0.000	0.000	0.000	44.501	44.501	C - Meadowed Land	3S, 4S, 5S, 6S, 7S, 9S, 10S, 11S, 12S

Ground Covers (selected nodes) (continued)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	0.000	29.712	29.712	D - Deciduous Forest	1S, 2S, 3S, 8S, 12S, 13S, 14S, 15S, 16S, 17S, 18S, 19S, 20

Ground Covers (selected nodes) (continued)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	0.000	0.010	0.010	D - Developed, Low Intensity	28S
0.000	0.000	0.000	0.000	0.006	0.006	D - Developed, Medium Intensity	3S
0.000	0.000	0.000	0.000	0.048	0.048	D - Developed, Open Space	28S
0.000	0.000	0.000	0.000	0.120	0.120	D - Evergreen Forest	8S, 14S, 15S
0.000	0.000	0.000	0.000	7.983	7.983	D - Meadowed Land	1S, 3S, 12S, 13S, 15S, 16S, 17S, 18

Ground Covers (selected nodes) (continued)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	0.000	4.018	4.018	D - Shrub/Scrub	22S, 26S, 27S, 28S
0.000	**0.000**	**0.000**	**0.000**	**132.070**	**132.070**	**TOTAL AREA**	

Time span=0.00-100.00 hrs, dt=0.05 hrs, 2001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: EX DA 1 Runoff Area=2.097 ac 0.00% Impervious Runoff Depth=0.24"
Flow Length=454' Tc=9.2 min CN=70 Runoff=0.44 cfs 0.043 af

Subcatchment 2S: EX DA 2 Runoff Area=0.983 ac 0.00% Impervious Runoff Depth=0.45"
Flow Length=312' Tc=18.5 min CN=77 Runoff=0.39 cfs 0.037 af

Subcatchment 3S: EX DA 3 Runoff Area=3.529 ac 0.00% Impervious Runoff Depth=0.30"
Flow Length=440' Tc=19.5 min CN=72 Runoff=0.73 cfs 0.087 af

Subcatchment 4S: EX DA 4 Runoff Area=7.320 ac 0.00% Impervious Runoff Depth=0.32"
Flow Length=1,080' Tc=36.8 min CN=73 Runoff=1.26 cfs 0.198 af

Subcatchment 5S: EX DA 5 Runoff Area=9.189 ac 0.00% Impervious Runoff Depth=0.14"
Flow Length=1,150' Tc=35.1 min CN=65 Runoff=0.42 cfs 0.106 af

Subcatchment 6S: EX DA 6 Runoff Area=1.995 ac 0.00% Impervious Runoff Depth=0.35"
Flow Length=553' Tc=20.1 min CN=74 Runoff=0.54 cfs 0.059 af

Subcatchment 7S: EX DA 7 Runoff Area=8.930 ac 0.00% Impervious Runoff Depth=0.10"
Flow Length=2,108' Tc=40.2 min CN=63 Runoff=0.24 cfs 0.077 af

Subcatchment 8S: EX DA 8 Runoff Area=2.164 ac 0.00% Impervious Runoff Depth=0.42"
Flow Length=553' Tc=21.6 min CN=76 Runoff=0.72 cfs 0.076 af

Subcatchment 9S: EX DA 9 Runoff Area=5.871 ac 0.00% Impervious Runoff Depth=0.45"
Flow Length=2,043' Tc=43.4 min CN=77 Runoff=1.47 cfs 0.222 af

Subcatchment 10S: EX DA 10 Runoff Area=8.128 ac 0.00% Impervious Runoff Depth=0.53"
Flow Length=2,106' Tc=40.6 min CN=79 Runoff=2.58 cfs 0.358 af

Subcatchment 11S: EX DA 11 Runoff Area=13.942 ac 0.00% Impervious Runoff Depth=0.39"
Flow Length=2,066' Tc=36.3 min CN=75 Runoff=3.10 cfs 0.448 af

Subcatchment 12S: EX DA 12 Runoff Area=2.590 ac 0.00% Impervious Runoff Depth=0.39"
Flow Length=762' Tc=32.9 min CN=75 Runoff=0.61 cfs 0.083 af

Subcatchment 13S: EX DA 13 Runoff Area=9.223 ac 0.00% Impervious Runoff Depth=0.39"
Flow Length=2,130' Tc=40.6 min CN=75 Runoff=1.93 cfs 0.297 af

Subcatchment 14S: EX DA 14 Runoff Area=2.056 ac 0.00% Impervious Runoff Depth=0.45"
Flow Length=510' Tc=16.4 min CN=77 Runoff=0.87 cfs 0.078 af

Subcatchment 15S: EX DA 15 Runoff Area=10.425 ac 0.00% Impervious Runoff Depth=0.42"
Flow Length=1,658' Tc=35.0 min CN=76 Runoff=2.66 cfs 0.364 af

Subcatchment 16S: EX DA 16 Runoff Area=6.509 ac 0.00% Impervious Runoff Depth=0.45"
Flow Length=1,499' Tc=33.4 min CN=77 Runoff=1.89 cfs 0.246 af

Subcatchment 17S: EX DA 17 Runoff Area=4.443 ac 0.00% Impervious Runoff Depth=0.42"
Flow Length=1,199' Tc=33.9 min CN=76 Runoff=1.16 cfs 0.155 af

Subcatchment 18S: EX DA 18 Runoff Area=5.396 ac 0.00% Impervious Runoff Depth=0.39"
Flow Length=955' Tc=24.8 min CN=75 Runoff=1.48 cfs 0.174 af

Subcatchment 19S: EX DA 19 Runoff Area=3.900 ac 0.00% Impervious Runoff Depth=0.49"
Flow Length=555' Tc=19.5 min CN=78 Runoff=1.68 cfs 0.159 af

Subcatchment 20S: EX DA 20 Runoff Area=2.720 ac 0.00% Impervious Runoff Depth=0.49"
Flow Length=606' Tc=19.1 min CN=78 Runoff=1.19 cfs 0.111 af

Subcatchment 21S: EX DA 21 Runoff Area=6.421 ac 0.00% Impervious Runoff Depth=0.49"
Flow Length=1,191' Tc=27.6 min CN=78 Runoff=2.30 cfs 0.262 af

Subcatchment 22S: EX DA 22 Runoff Area=1.562 ac 0.00% Impervious Runoff Depth=0.53"
Flow Length=538' Tc=14.6 min CN=79 Runoff=0.86 cfs 0.069 af

Subcatchment 23S: EX DA 23 Runoff Area=1.050 ac 0.00% Impervious Runoff Depth=0.61"
Flow Length=492' Tc=24.3 min CN=81 Runoff=0.53 cfs 0.053 af

Subcatchment 24S: EX DA 24 Runoff Area=2.043 ac 0.00% Impervious Runoff Depth=0.66"
Flow Length=735' Tc=28.2 min CN=82 Runoff=1.04 cfs 0.112 af

Subcatchment 25S: EX DA 25 Runoff Area=4.097 ac 0.00% Impervious Runoff Depth=0.35"
Flow Length=923' Tc=48.7 min CN=74 Runoff=0.69 cfs 0.121 af

Subcatchment 26S: EX DA 26 Runoff Area=1.178 ac 0.00% Impervious Runoff Depth=0.70"
Flow Length=353' Tc=10.9 min CN=83 Runoff=1.03 cfs 0.069 af

Subcatchment 27S: EX DA 27 Runoff Area=2.090 ac 0.00% Impervious Runoff Depth=0.70"
Flow Length=428' Tc=21.9 min CN=83 Runoff=1.32 cfs 0.122 af

Subcatchment 28S: EX DA 28 Runoff Area=2.219 ac 0.00% Impervious Runoff Depth=0.49"
Flow Length=523' Tc=32.8 min CN=78 Runoff=0.72 cfs 0.091 af

Total Runoff Area = 132.070 ac Runoff Volume = 4.276 af Average Runoff Depth = 0.39"
100.00% Pervious = 132.070 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1S: EX DA 1

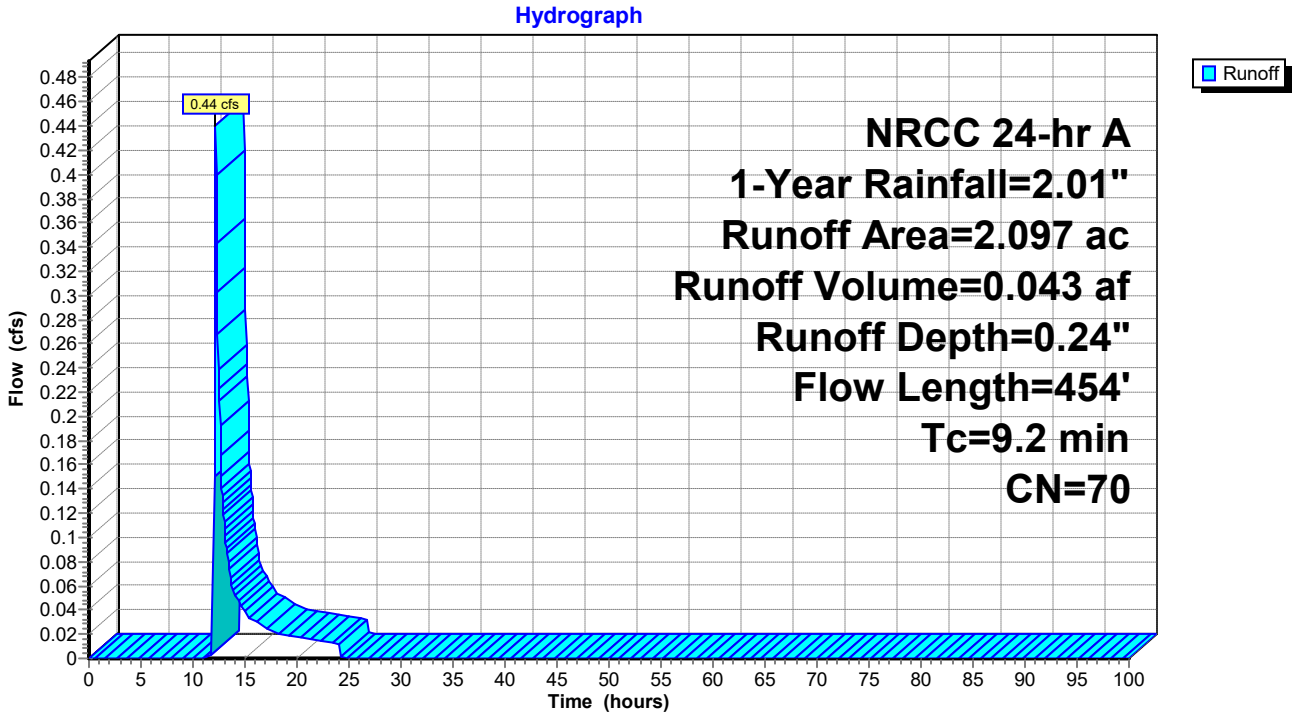
Runoff = 0.44 cfs @ 12.21 hrs, Volume= 0.043 af, Depth= 0.24"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 1-Year Rainfall=2.01"

	Area (ac)	CN	Description
*	0.279	55	B - Deciduous Forest
*	0.046	61	B - Meadowed Land
*	0.430	61	B - Developed, Open Space
*	0.027	65	B - Developed, Low Intensity
*	1.198	77	D - Deciduous Forest
*	0.117	80	D - Meadowed Land
	2.097	70	Weighted Average
	2.097		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	94	0.0851	0.26		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
0.8	106	0.0943	2.15		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.3	254	0.0709	1.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
9.2	454	Total			

Subcatchment 1S: EX DA 1



Summary for Subcatchment 2S: EX DA 2

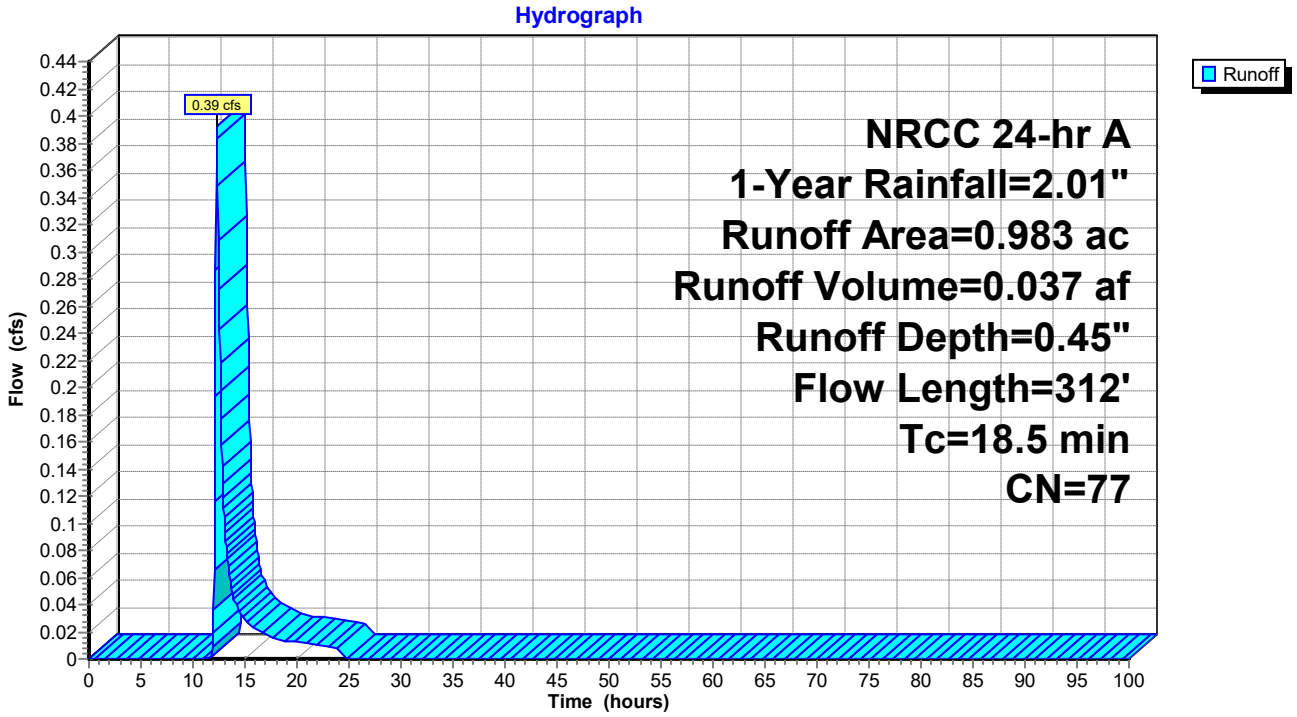
Runoff = 0.39 cfs @ 12.31 hrs, Volume= 0.037 af, Depth= 0.45"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 1-Year Rainfall=2.01"

	Area (ac)	CN	Description
*	0.983	77	D - Deciduous Forest
	0.983		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.2	127	0.0157	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
3.0	116	0.0086	0.65		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	69	0.2464	3.47		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
18.5	312	Total			

Subcatchment 2S: EX DA 2



Summary for Subcatchment 3S: EX DA 3

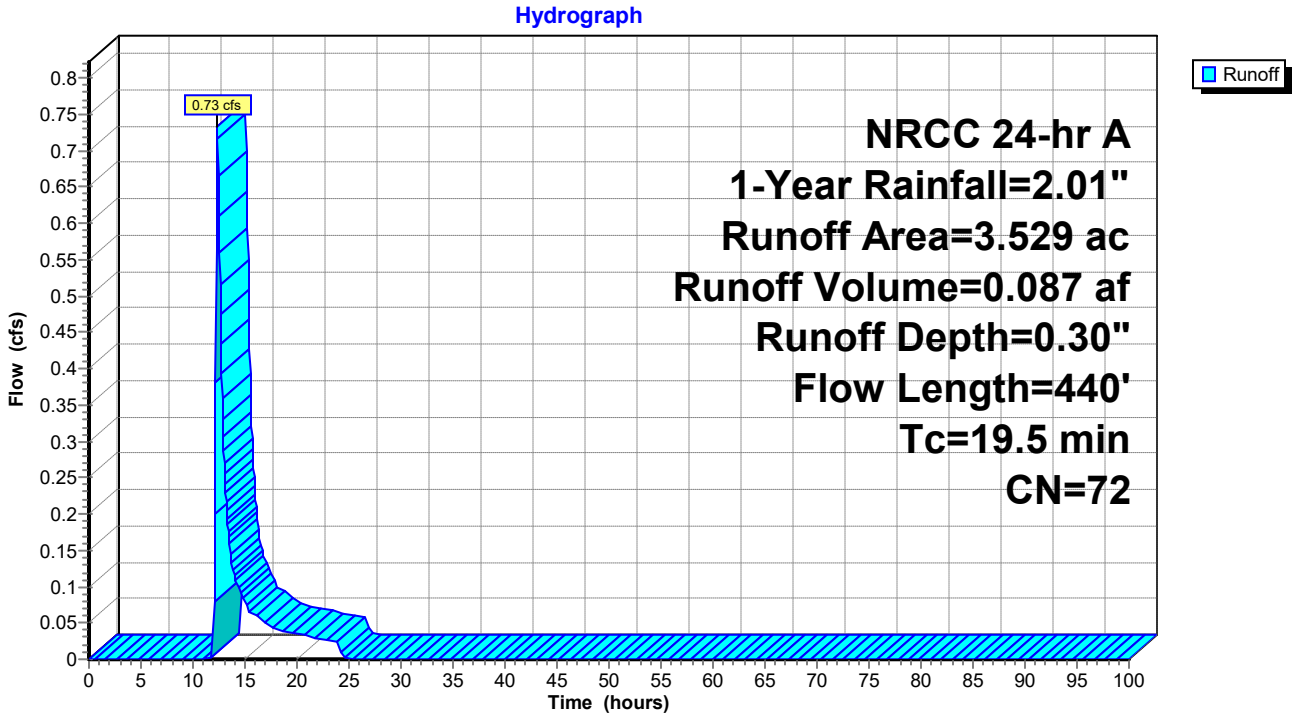
Runoff = 0.73 cfs @ 12.36 hrs, Volume= 0.087 af, Depth= 0.30"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 1-Year Rainfall=2.01"

	Area (ac)	CN	Description
*	2.115	70	C - Deciduous Forest
*	0.791	74	C - Meadowed Land
*	0.017	80	D - Meadowed Land
*	0.600	77	D - Deciduous Forest
*	0.006	85	D - Developed, Medium Intensity
	3.529	72	Weighted Average
	3.529		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.3	114	0.0175	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
1.1	116	0.0603	1.72		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.1	210	0.0095	0.68		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
19.5	440	Total			

Subcatchment 3S: EX DA 3



Summary for Subcatchment 4S: EX DA 4

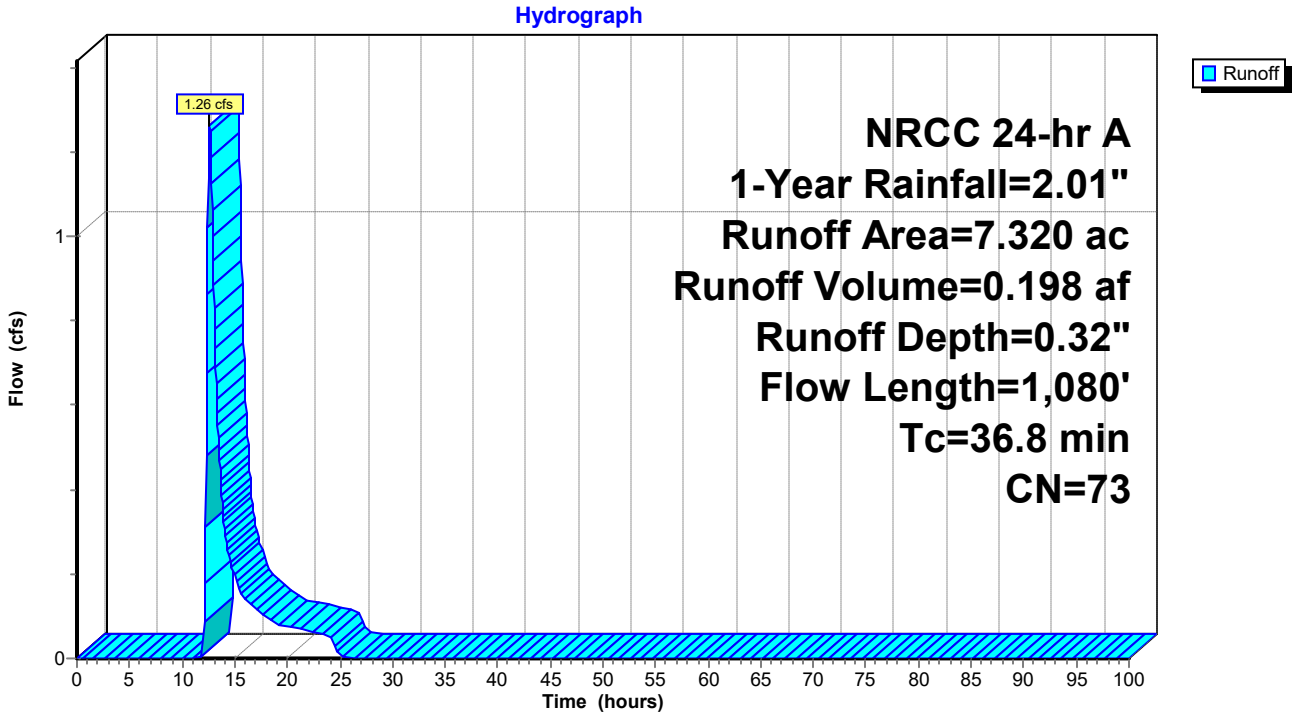
Runoff = 1.26 cfs @ 12.63 hrs, Volume= 0.198 af, Depth= 0.32"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 1-Year Rainfall=2.01"

	Area (ac)	CN	Description
*	0.200	58	B - Meadowed Land
*	5.292	74	C - Meadowed Land
*	1.828	70	C - Deciduous Forest
	7.320	73	Weighted Average
	7.320		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.6	102	0.0196	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
1.4	114	0.0351	1.31		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.5	177	0.0282	1.18		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.2	145	0.0069	0.58		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
15.3	346	0.0029	0.38		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.8	196	0.0663	1.80		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
36.8	1,080	Total			

Subcatchment 4S: EX DA 4



Summary for Subcatchment 5S: EX DA 5

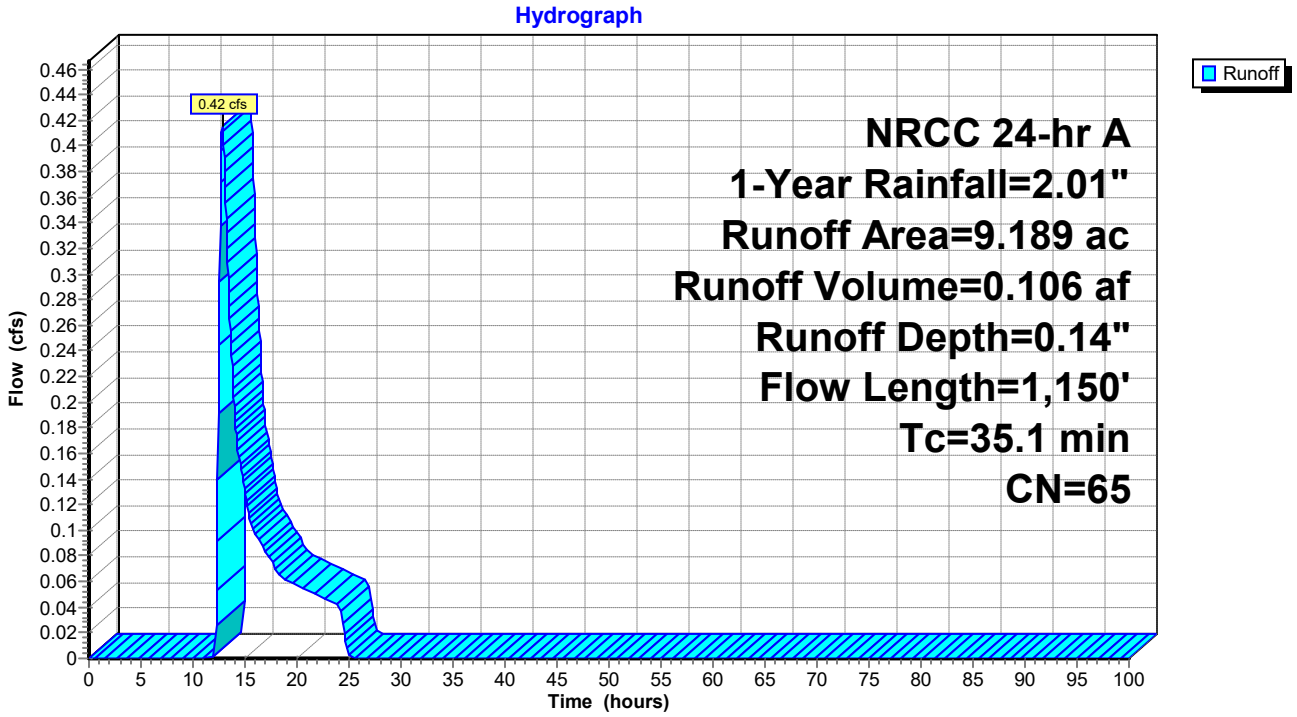
Runoff = 0.42 cfs @ 12.82 hrs, Volume= 0.106 af, Depth= 0.14"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 1-Year Rainfall=2.01"

	Area (ac)	CN	Description
*	4.897	58	B - Meadowed Land
*	0.003	55	B - Deciduous Forest
*	3.151	74	C - Meadowed Land
*	1.138	70	C - Deciduous Forest
	9.189	65	Weighted Average
	9.189		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.6	165	0.0182	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
2.2	160	0.0312	1.24		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.0	204	0.0147	0.85		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.1	182	0.0110	0.73		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.2	154	0.0130	0.80		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.0	285	0.0281	1.17		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
35.1	1,150	Total			

Subcatchment 5S: EX DA 5



Summary for Subcatchment 6S: EX DA 6

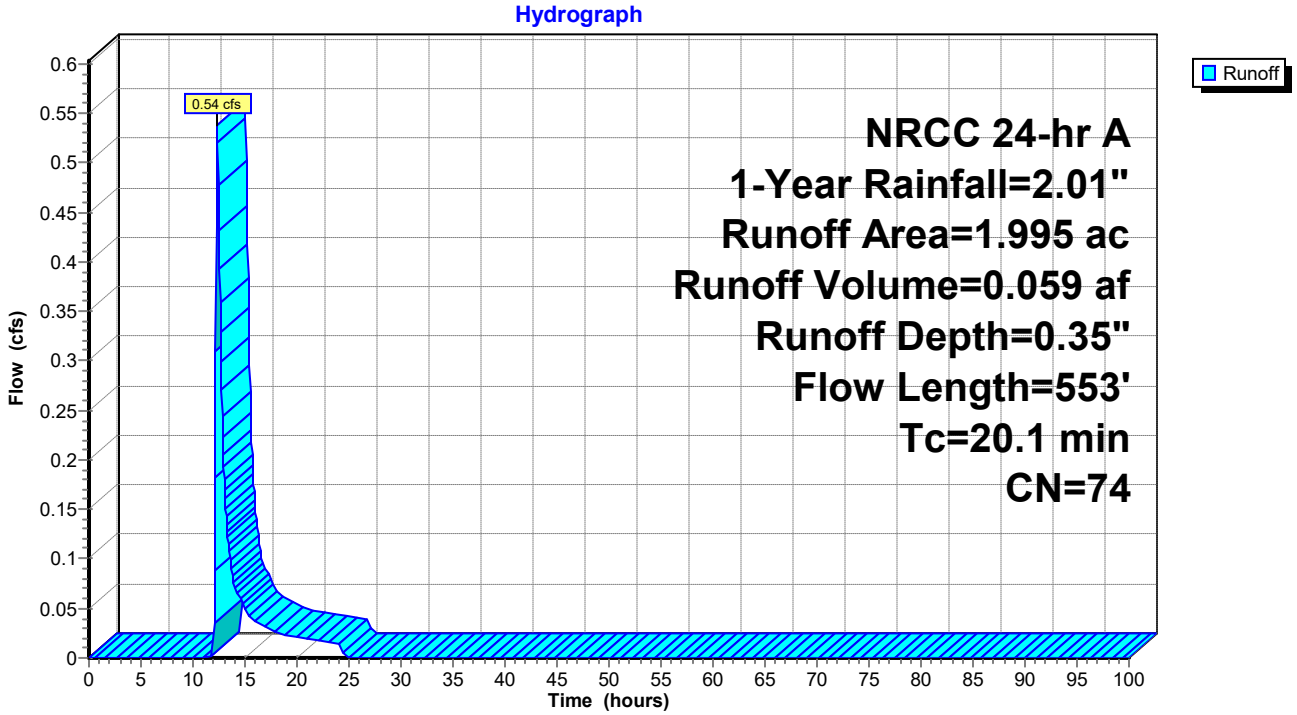
Runoff = 0.54 cfs @ 12.35 hrs, Volume= 0.059 af, Depth= 0.35"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 1-Year Rainfall=2.01"

	Area (ac)	CN	Description
*	1.995	74	C - Meadowed Land
	1.995		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.8	89	0.0562	0.22		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
3.4	159	0.0126	0.79		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.5	74	0.0135	0.81		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
8.4	231	0.0043	0.46		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
20.1	553	Total			

Subcatchment 6S: EX DA 6



Summary for Subcatchment 7S: EX DA 7

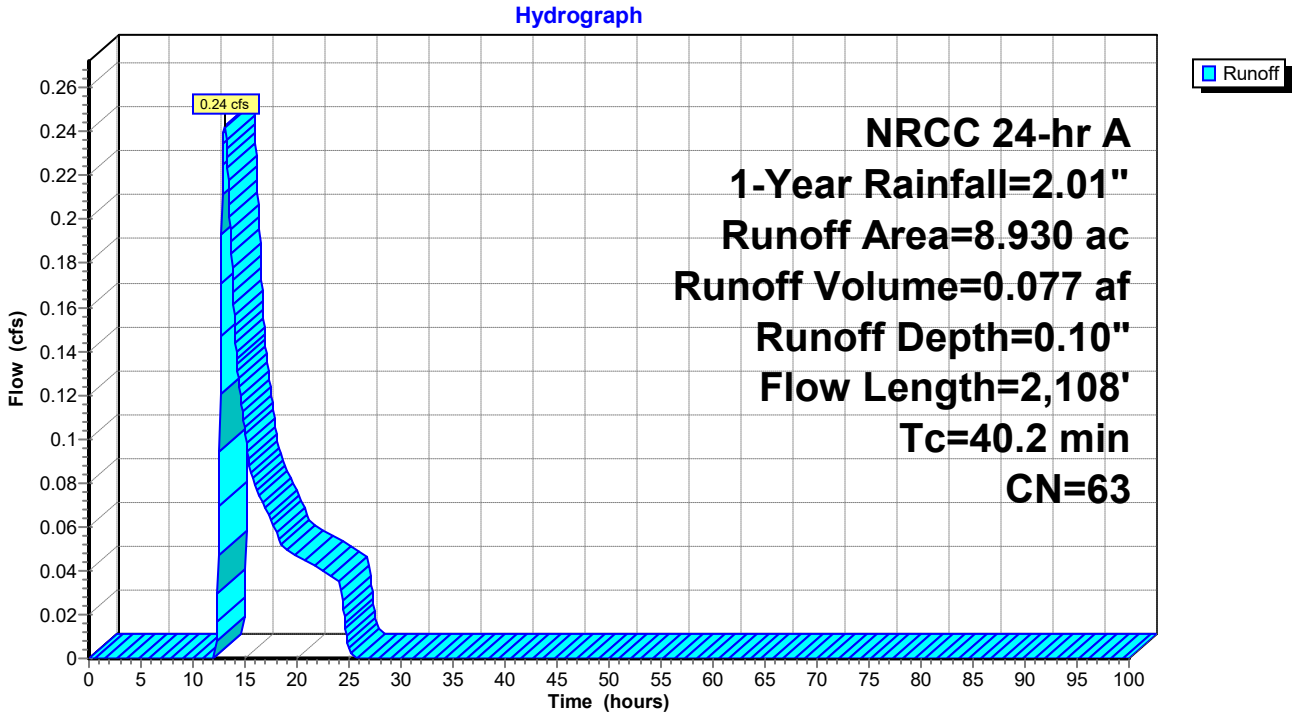
Runoff = 0.24 cfs @ 13.04 hrs, Volume= 0.077 af, Depth= 0.10"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 1-Year Rainfall=2.01"

	Area (ac)	CN	Description
*	6.326	58	B - Meadowed Land
*	0.088	70	C - Deciduous Forest
*	2.500	74	C - Meadowed Land
*	0.016	74	C - Developed, Open Space
	8.930	63	Weighted Average
	8.930		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.5	164	0.0427	0.22		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
8.4	570	0.0263	1.14		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.9	247	0.0405	1.41		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.4	126	0.0159	0.88		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.2	456	0.0307	1.23		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.8	545	0.0275	1.16		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
40.2	2,108	Total			

Subcatchment 7S: EX DA 7



Summary for Subcatchment 8S: EX DA 8

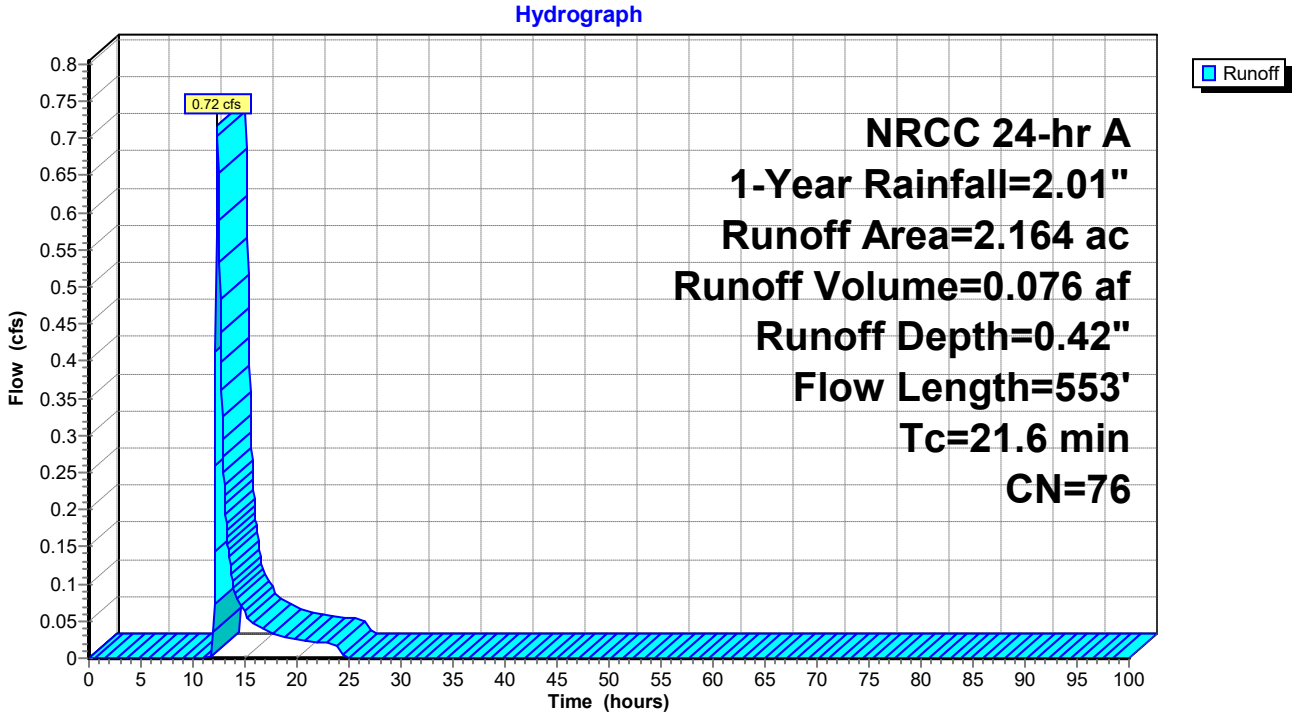
Runoff = 0.72 cfs @ 12.36 hrs, Volume= 0.076 af, Depth= 0.42"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 1-Year Rainfall=2.01"

	Area (ac)	CN	Description
*	0.308	70	C - Deciduous Forest
*	1.834	77	D - Deciduous Forest
*	0.022	77	D - Evergreen Forest
	2.164	76	Weighted Average
	2.164		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.6	178	0.0337	0.20		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
5.1	239	0.0125	0.78		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.9	136	0.0294	1.20		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
21.6	553	Total			

Subcatchment 8S: EX DA 8



Summary for Subcatchment 9S: EX DA 9

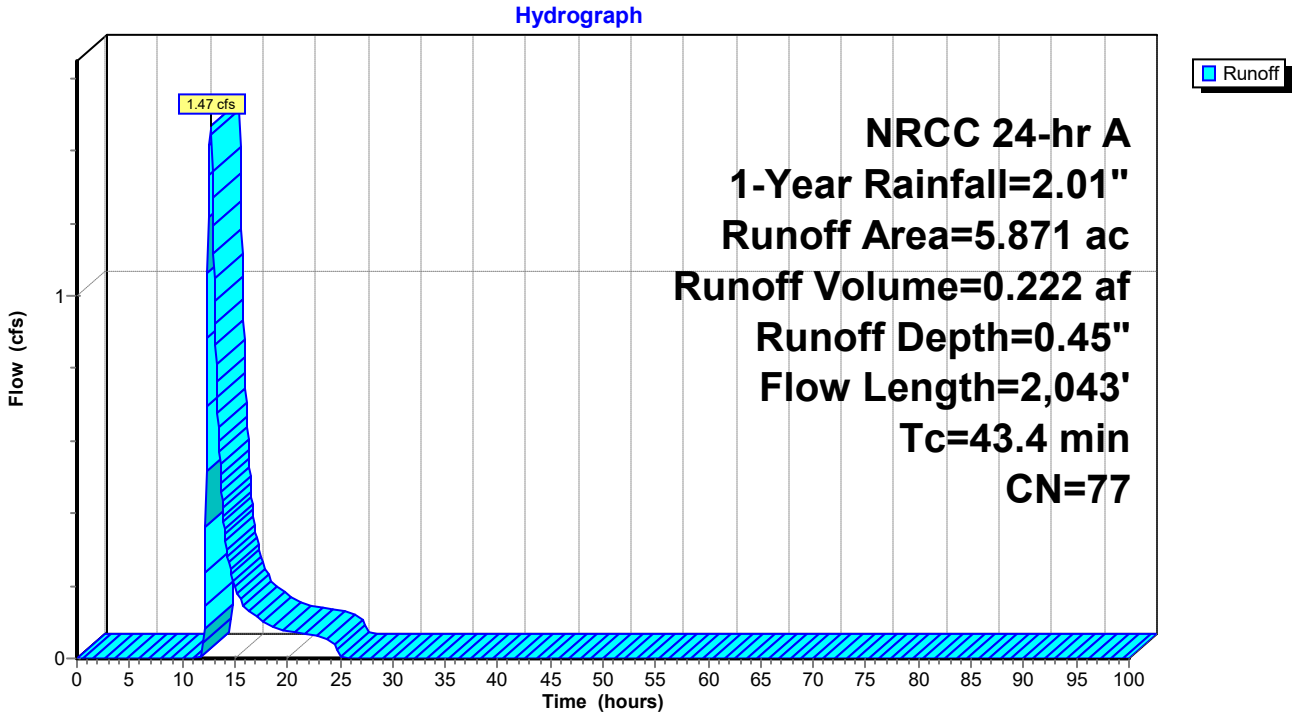
Runoff = 1.47 cfs @ 12.69 hrs, Volume= 0.222 af, Depth= 0.45"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 1-Year Rainfall=2.01"

	Area (ac)	CN	Description
*	4.539	78	B - Meadowed Land
*	1.173	74	C - Meadowed Land
*	0.159	70	C - Deciduous Forest
	5.871	77	Weighted Average
	5.871		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.8	210	0.0286	0.20		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
4.0	313	0.0351	1.31		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.0	412	0.0194	0.97		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.8	315	0.0381	1.37		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.2	366	0.0437	1.46		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.6	427	0.0234	1.07		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
43.4	2,043	Total			

Subcatchment 9S: EX DA 9



Summary for Subcatchment 10S: EX DA 10

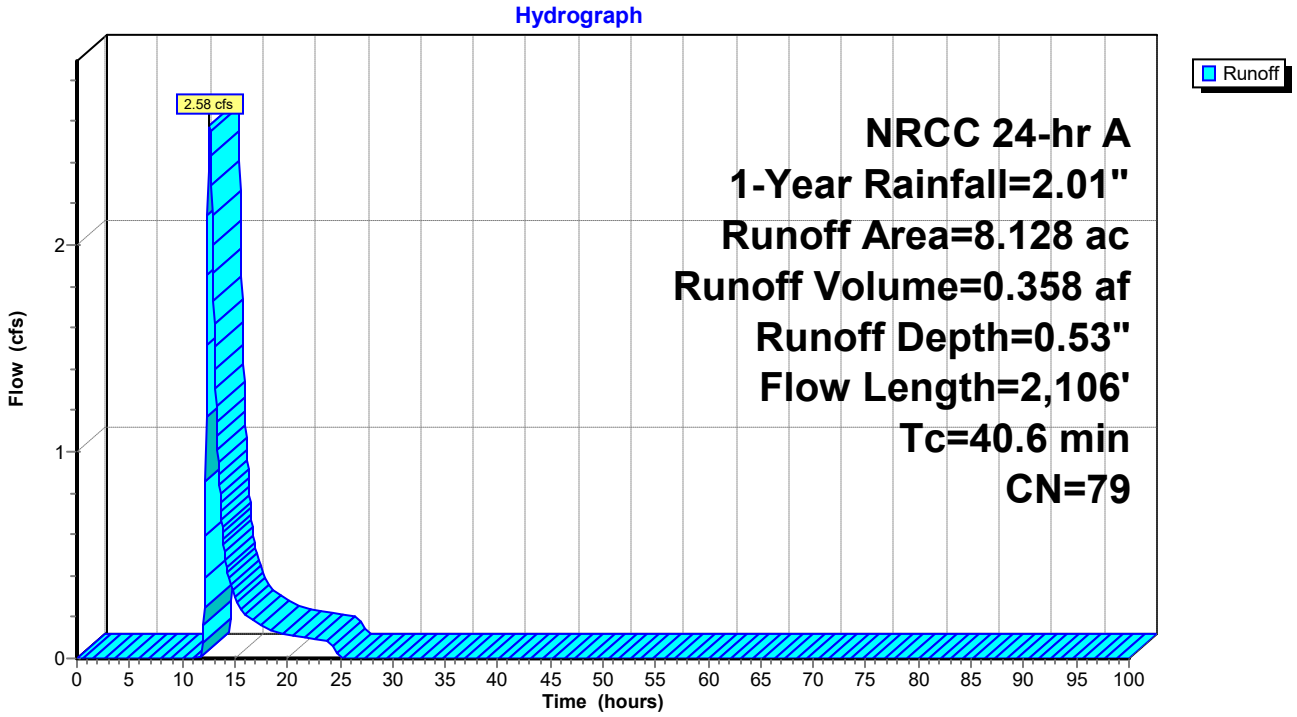
Runoff = 2.58 cfs @ 12.63 hrs, Volume= 0.358 af, Depth= 0.53"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 1-Year Rainfall=2.01"

	Area (ac)	CN	Description
*	3.901	78	B - Meadowed Land
*	0.775	70	C - Deciduous Forest
*	3.440	82	C - Meadowed Land
*	0.012	74	C - Developed, Open Space
	8.128	79	Weighted Average
	8.128		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.4	165	0.0303	0.19		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
9.5	590	0.0220	1.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.2	325	0.0585	1.69		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
8.0	692	0.0419	1.43		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.5	334	0.0210	1.01		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
40.6	2,106	Total			

Subcatchment 10S: EX DA 10



Summary for Subcatchment 11S: EX DA 11

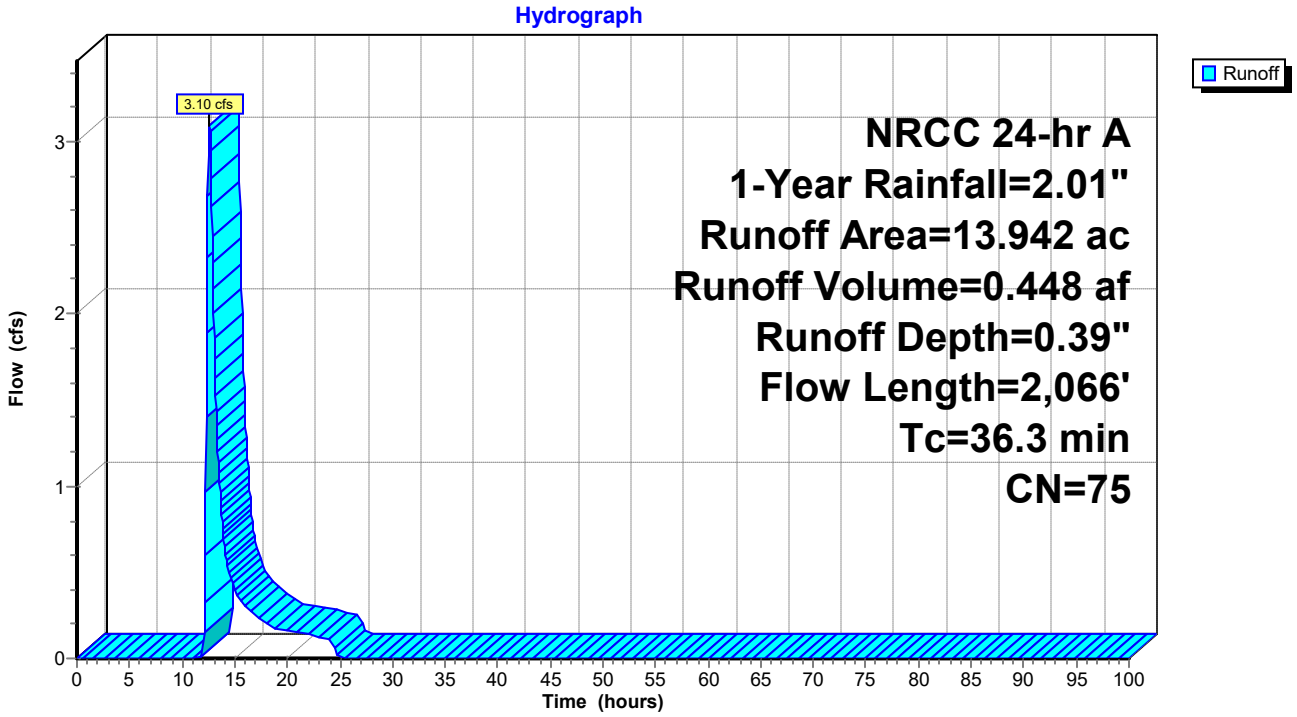
Runoff = 3.10 cfs @ 12.60 hrs, Volume= 0.448 af, Depth= 0.39"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 1-Year Rainfall=2.01"

	Area (ac)	CN	Description
*	6.619	78	B - Meadowed Land
*	4.484	74	C - Meadowed Land
*	2.822	70	C - Deciduous Forest
*	0.017	74	C - Developed, Open Space
	13.942	75	Weighted Average
	13.942		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.4	68	0.0147	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
4.4	218	0.0138	0.82		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.0	397	0.0353	1.32		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.4	191	0.0365	1.34		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.9	386	0.0544	1.63		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.0	189	0.0529	1.61		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.0	281	0.0285	1.18		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.2	336	0.0238	1.08		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
36.3	2,066	Total			

Subcatchment 11S: EX DA 11



Summary for Subcatchment 12S: EX DA 12

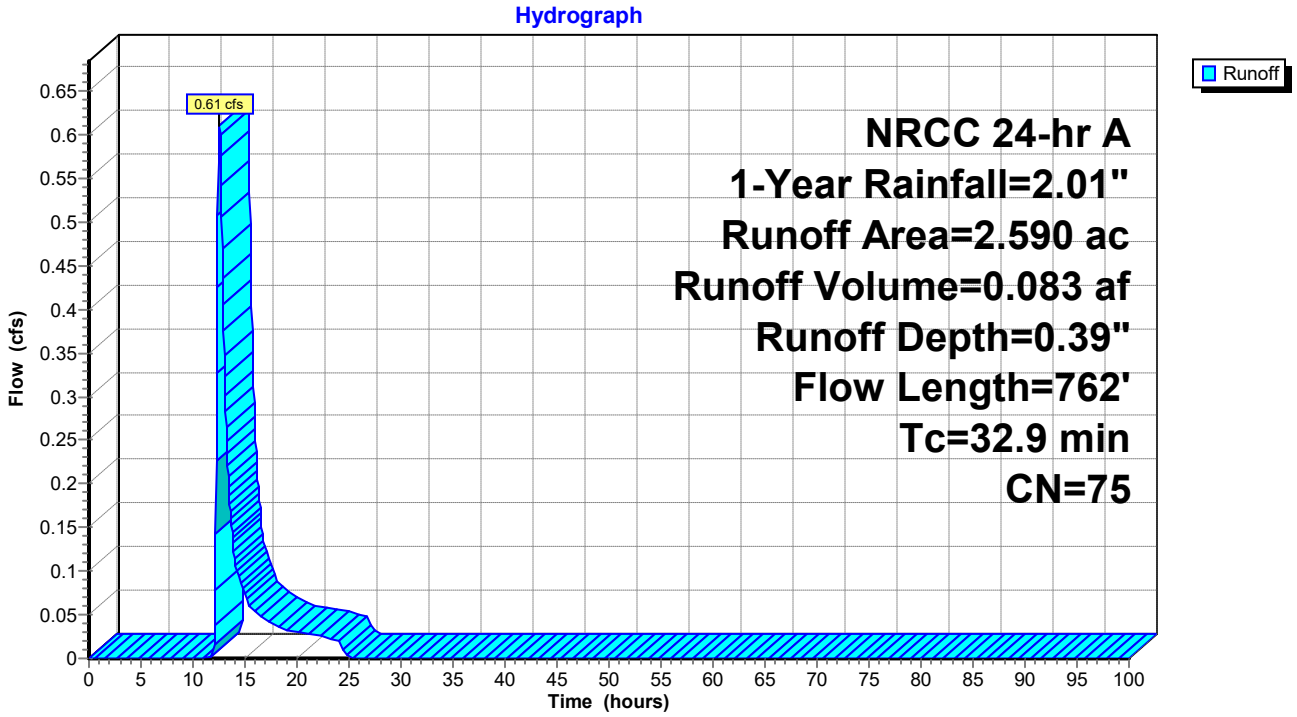
Runoff = 0.61 cfs @ 12.55 hrs, Volume= 0.083 af, Depth= 0.39"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 1-Year Rainfall=2.01"

	Area (ac)	CN	Description
*	0.518	70	C - Deciduous Forest
*	0.201	74	C - Meadowed Land
*	0.047	80	D - Meadowed Land
*	1.824	77	D - Deciduous Forest
	2.590	75	Weighted Average
	2.590		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.9	192	0.0104	0.13		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
1.1	117	0.0684	1.83		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.9	253	0.0237	1.08		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.0	200	0.0250	1.11		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
32.9	762	Total			

Subcatchment 12S: EX DA 12



Summary for Subcatchment 13S: EX DA 13

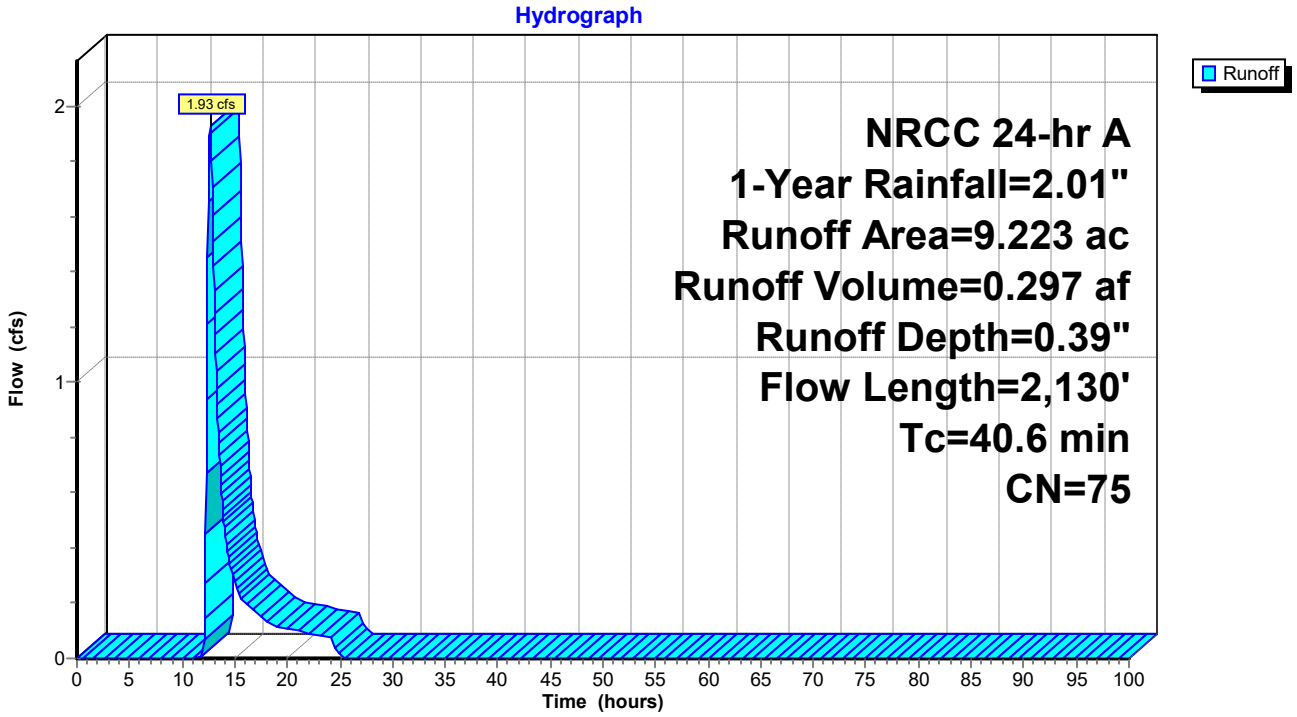
Runoff = 1.93 cfs @ 12.67 hrs, Volume= 0.297 af, Depth= 0.39"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 1-Year Rainfall=2.01"

	Area (ac)	CN	Description
*	1.802	78	B - Meadowed Land
*	4.529	74	C - Meadowed Land
*	1.207	70	C - Deciduous Forest
*	1.266	80	D - Meadowed Land
*	0.419	77	D - Deciduous Forest
	9.223	75	Weighted Average
	9.223		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.5	166	0.0361	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
4.5	276	0.0217	1.03		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.4	460	0.0217	1.03		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.2	210	0.0238	1.08		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.4	183	0.0328	1.27		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.9	370	0.0513	1.59		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.6	192	0.0312	1.24		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.1	273	0.0440	1.47		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
40.6	2,130	Total			

Subcatchment 13S: EX DA 13



Summary for Subcatchment 14S: EX DA 14

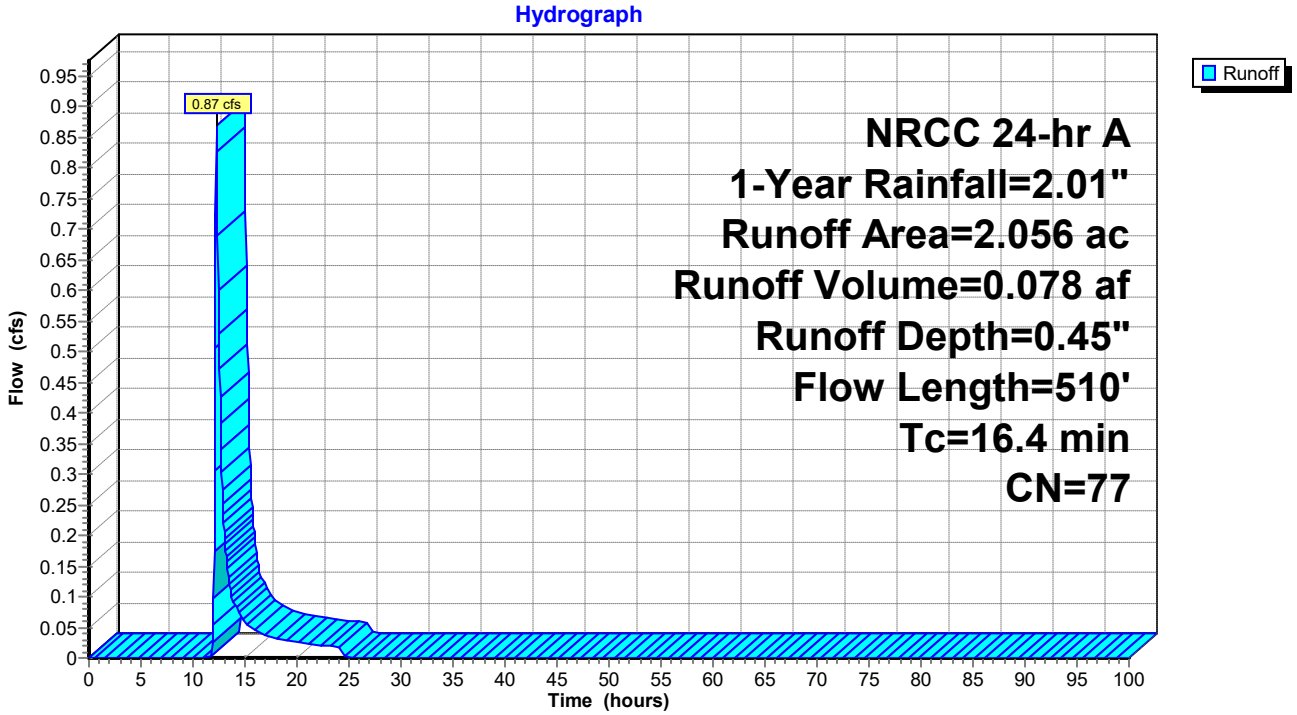
Runoff = 0.87 cfs @ 12.28 hrs, Volume= 0.078 af, Depth= 0.45"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 1-Year Rainfall=2.01"

	Area (ac)	CN	Description
*	0.091	70	C - Deciduous Forest
*	0.044	70	C - Evergreen Forest
*	0.087	77	D - Evergreen Forest
*	1.834	77	D - Deciduous Forest
	2.056	77	Weighted Average
	2.056		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2	174	0.0632	0.26		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
5.2	336	0.0238	1.08		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
16.4	510	Total			

Subcatchment 14S: EX DA 14



Summary for Subcatchment 15S: EX DA 15

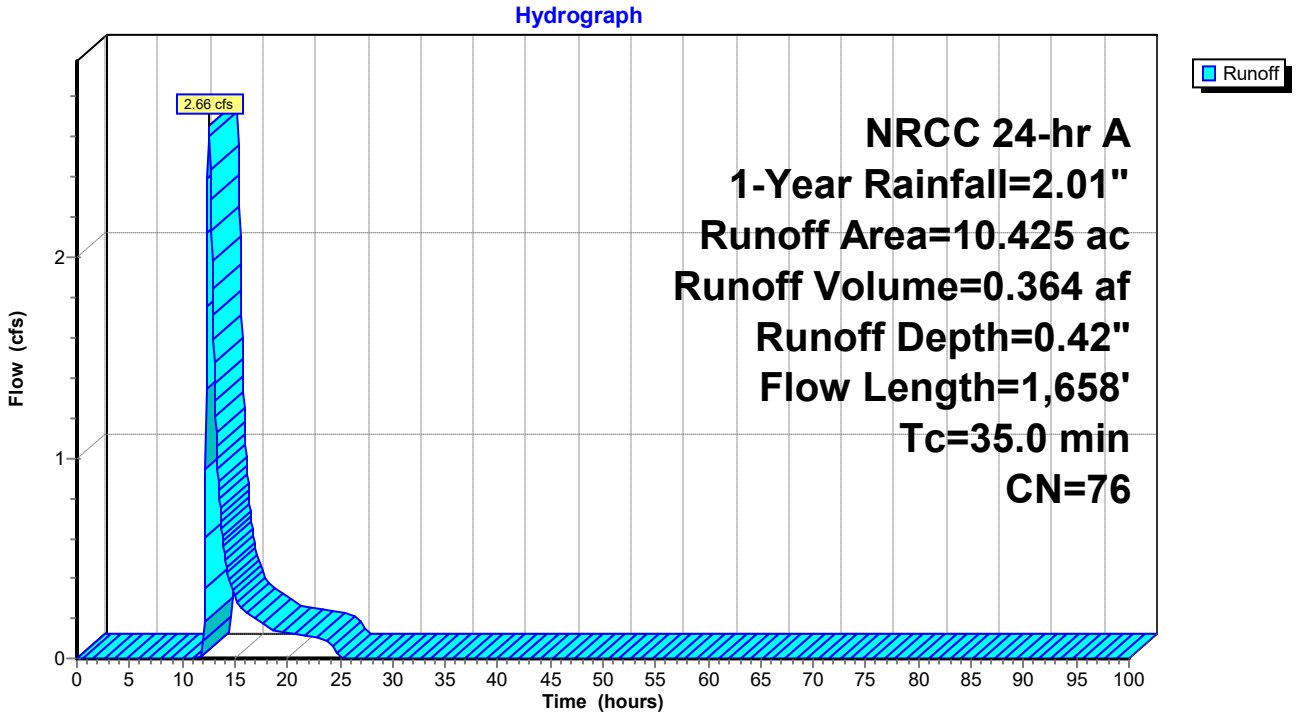
Runoff = 2.66 cfs @ 12.57 hrs, Volume= 0.364 af, Depth= 0.42"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 1-Year Rainfall=2.01"

	Area (ac)	CN	Description
*	1.586	70	C - Deciduous Forest
*	1.366	74	C - Meadowed Land
*	1.941	80	D - Meadowed Land
*	0.011	77	D - Evergreen Forest
*	5.521	77	D - Deciduous Forest
	10.425	76	Weighted Average
	10.425		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.4	186	0.0323	0.20		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
1.7	209	0.0909	2.11		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.1	441	0.0431	1.45		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.3	423	0.0189	0.96		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.5	399	0.0301	1.21		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
35.0	1,658	Total			

Subcatchment 15S: EX DA 15



Summary for Subcatchment 16S: EX DA 16

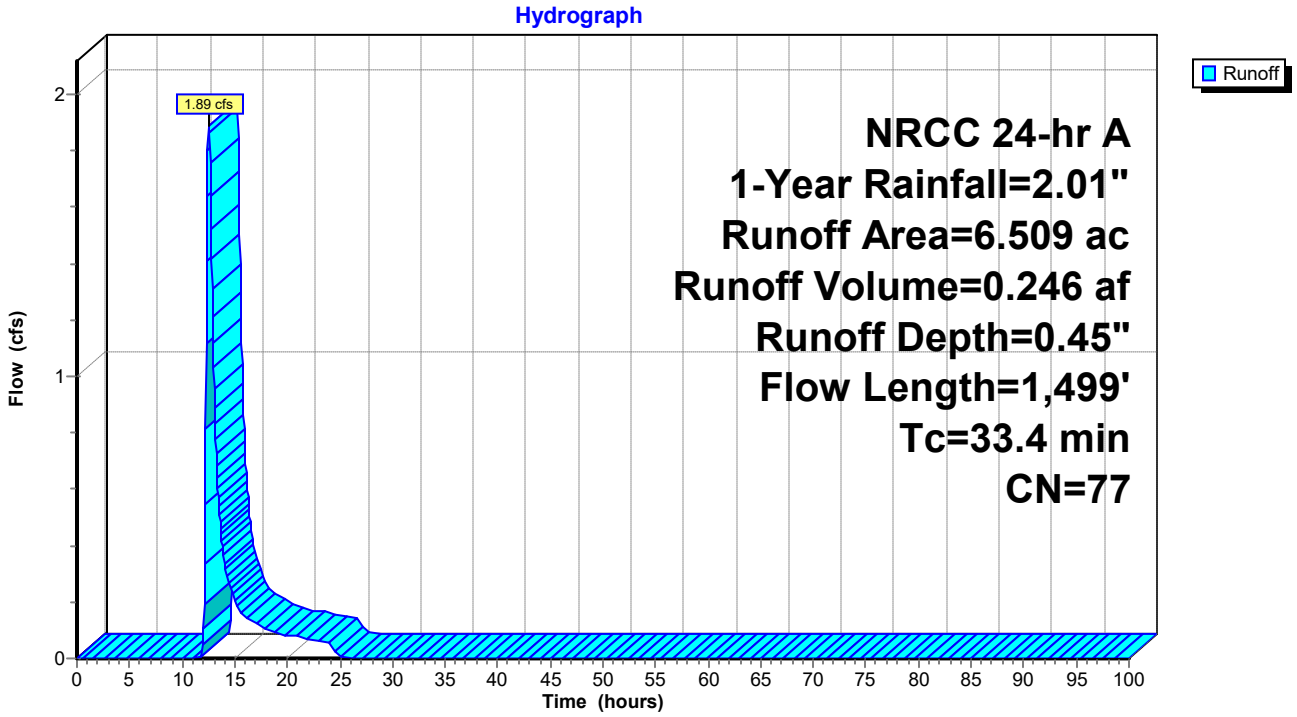
Runoff = 1.89 cfs @ 12.53 hrs, Volume= 0.246 af, Depth= 0.45"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 1-Year Rainfall=2.01"

	Area (ac)	CN	Description
*	0.552	70	C - Deciduous Forest
*	0.308	74	C - Meadowed Land
*	4.488	77	D - Deciduous Forest
*	1.161	80	D - Meadowed Land
	6.509	77	Weighted Average
	6.509		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.1	222	0.0270	0.19		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
2.9	311	0.0643	1.78		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.2	191	0.0419	1.43		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.8	331	0.0423	1.44		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.4	444	0.0383	1.37		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
33.4	1,499	Total			

Subcatchment 16S: EX DA 16



Summary for Subcatchment 17S: EX DA 17

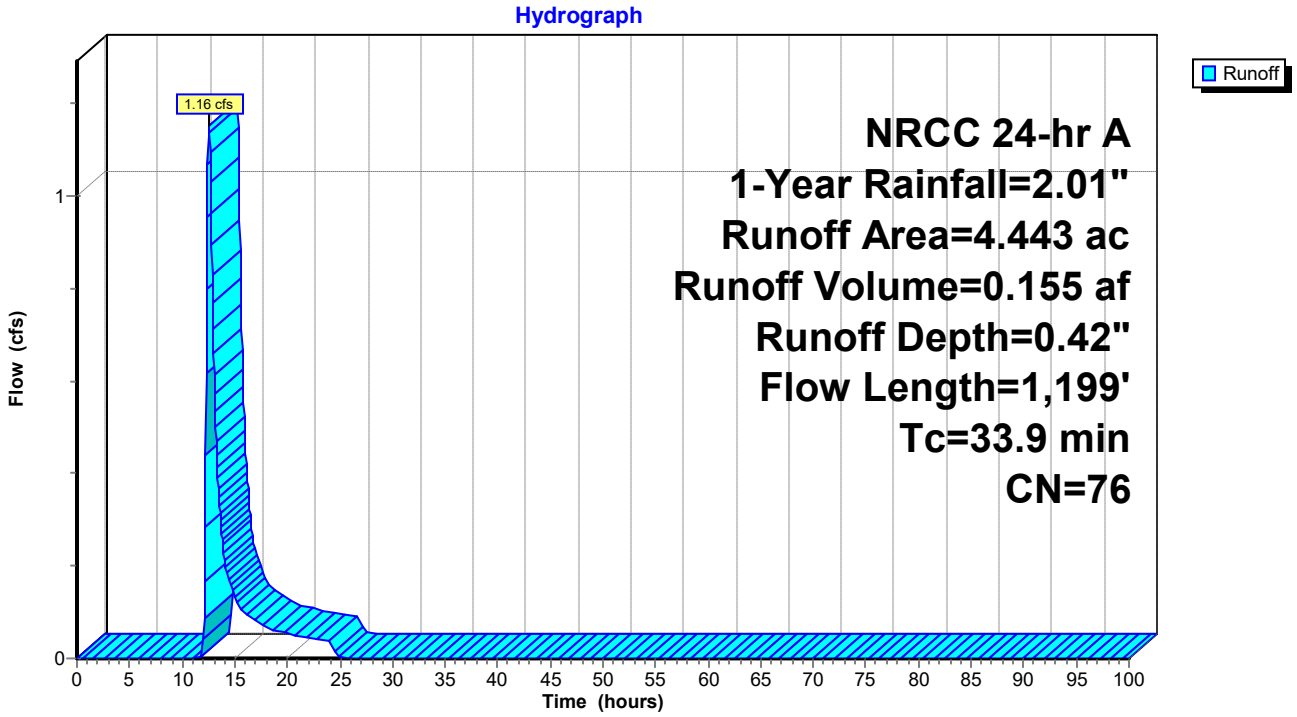
Runoff = 1.16 cfs @ 12.55 hrs, Volume= 0.155 af, Depth= 0.42"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 1-Year Rainfall=2.01"

	Area (ac)	CN	Description
*	0.198	78	B - Meadowed Land
*	3.169	74	C - Meadowed Land
*	1.001	80	D - Meadowed Land
*	0.075	77	D - Deciduous Forest
	4.443	76	Weighted Average
	4.443		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.6	137	0.0292	0.18		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
2.7	232	0.0431	1.45		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.2	266	0.0150	0.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
9.4	360	0.0083	0.64		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.0	204	0.0147	0.85		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
33.9	1,199	Total			

Subcatchment 17S: EX DA 17



Summary for Subcatchment 18S: EX DA 18

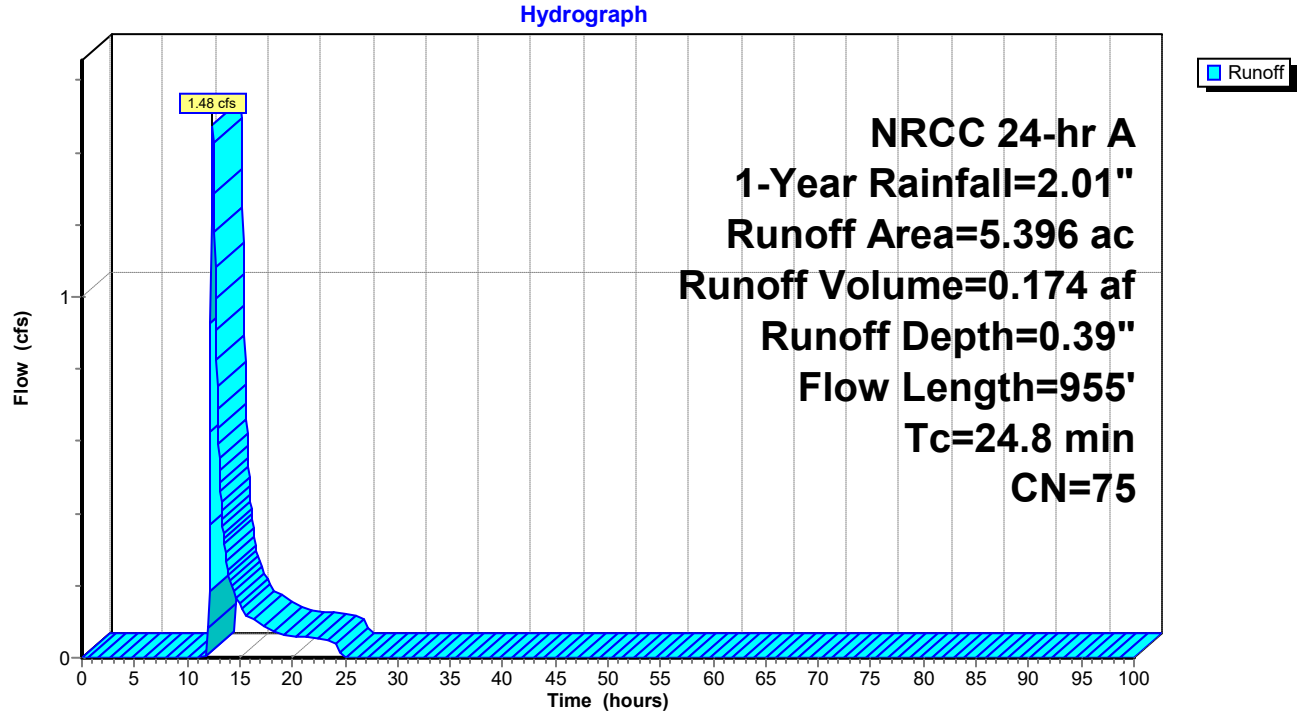
Runoff = 1.48 cfs @ 12.42 hrs, Volume= 0.174 af, Depth= 0.39"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 1-Year Rainfall=2.01"

	Area (ac)	CN	Description
*	0.672	78	B - Meadowed Land
*	4.382	74	C - Meadowed Land
*	0.137	89	D - Meadowed Land
*	0.205	77	D - Deciduous Forest
	5.396	75	Weighted Average
	5.396		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	108	0.0278	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
5.1	379	0.0317	1.25		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
9.1	468	0.0150	0.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
24.8	955	Total			

Subcatchment 18S: EX DA 18



Summary for Subcatchment 19S: EX DA 19

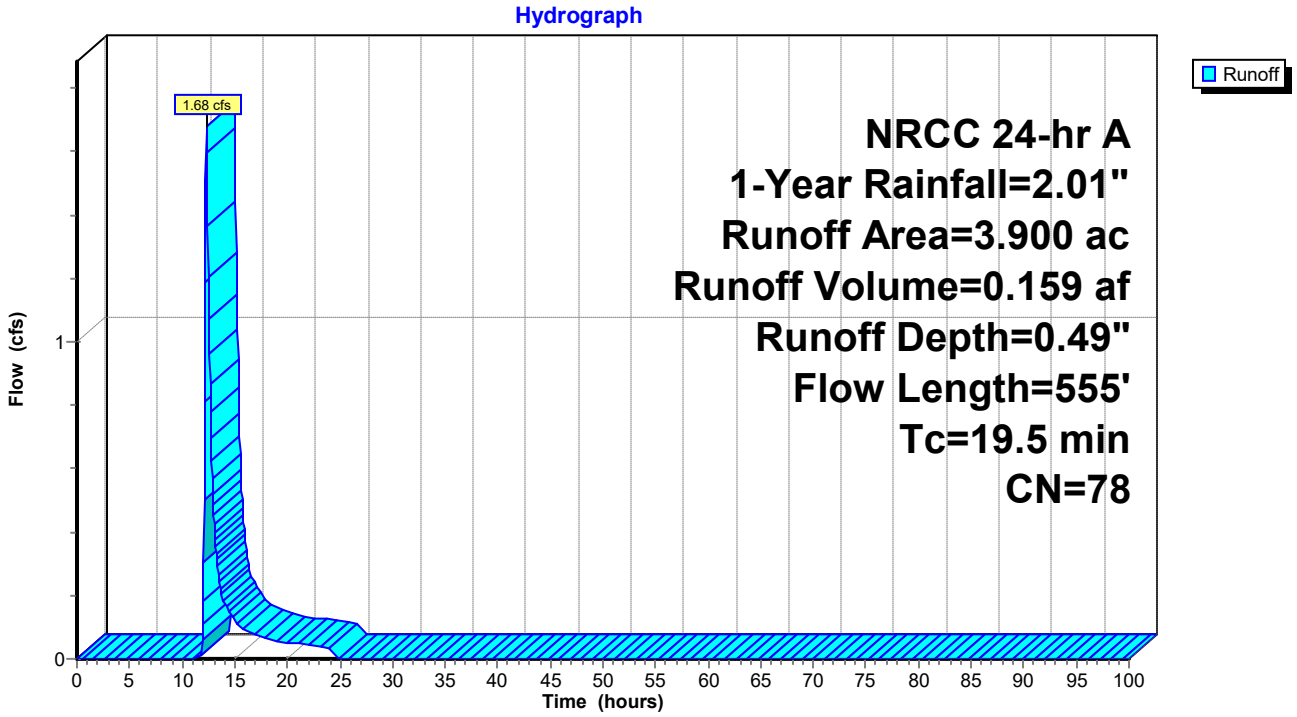
Runoff = 1.68 cfs @ 12.32 hrs, Volume= 0.159 af, Depth= 0.49"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 1-Year Rainfall=2.01"

	Area (ac)	CN	Description
*	3.180	77	D - Deciduous Forest
*	0.720	80	D - Meadowed Land
	3.900	78	Weighted Average
	3.900		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.8	200	0.0300	0.20		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
2.7	355	0.1014	2.23		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
19.5	555	Total			

Subcatchment 19S: EX DA 19



Summary for Subcatchment 20S: EX DA 20

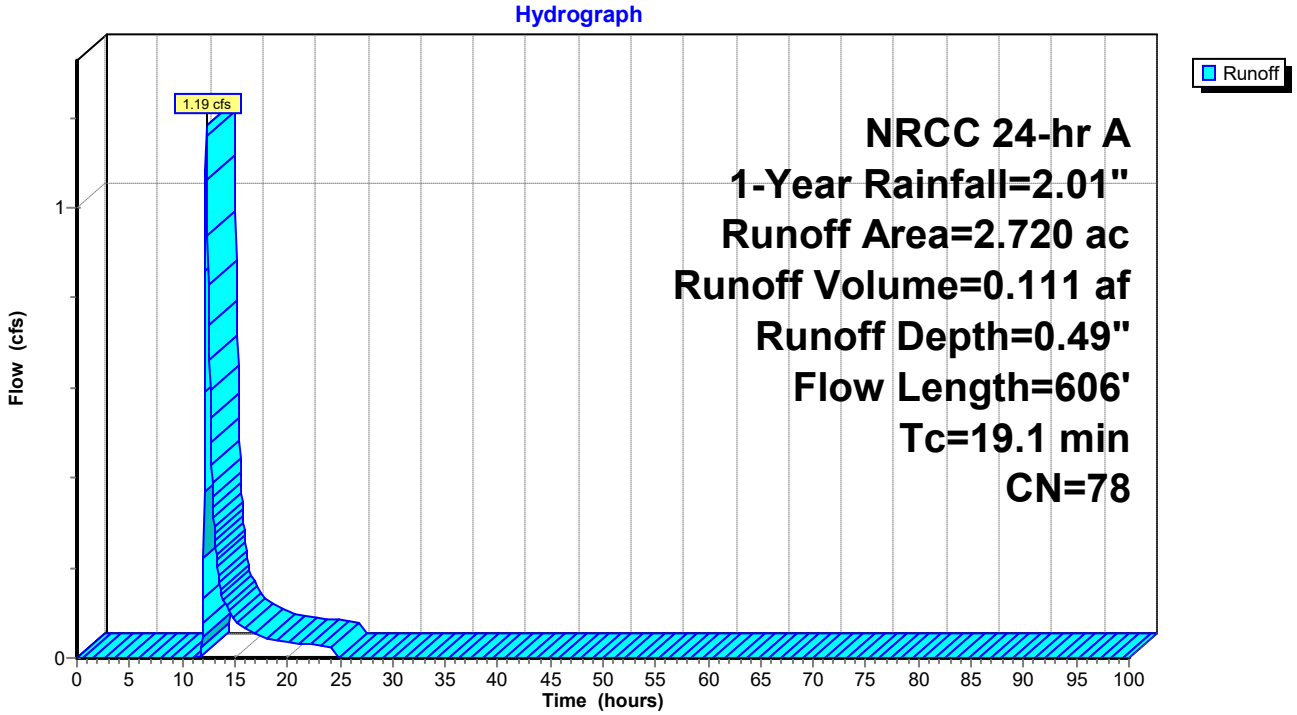
Runoff = 1.19 cfs @ 12.32 hrs, Volume= 0.111 af, Depth= 0.49"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 1-Year Rainfall=2.01"

	Area (ac)	CN	Description
*	2.010	77	D - Deciduous Forest
*	0.710	80	D - Meadowed Land
	2.720	78	Weighted Average
	2.720		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.8	150	0.0333	0.20		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
1.9	181	0.0497	1.56		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.4	275	0.0218	1.03		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
19.1	606	Total			

Subcatchment 20S: EX DA 20



Summary for Subcatchment 21S: EX DA 21

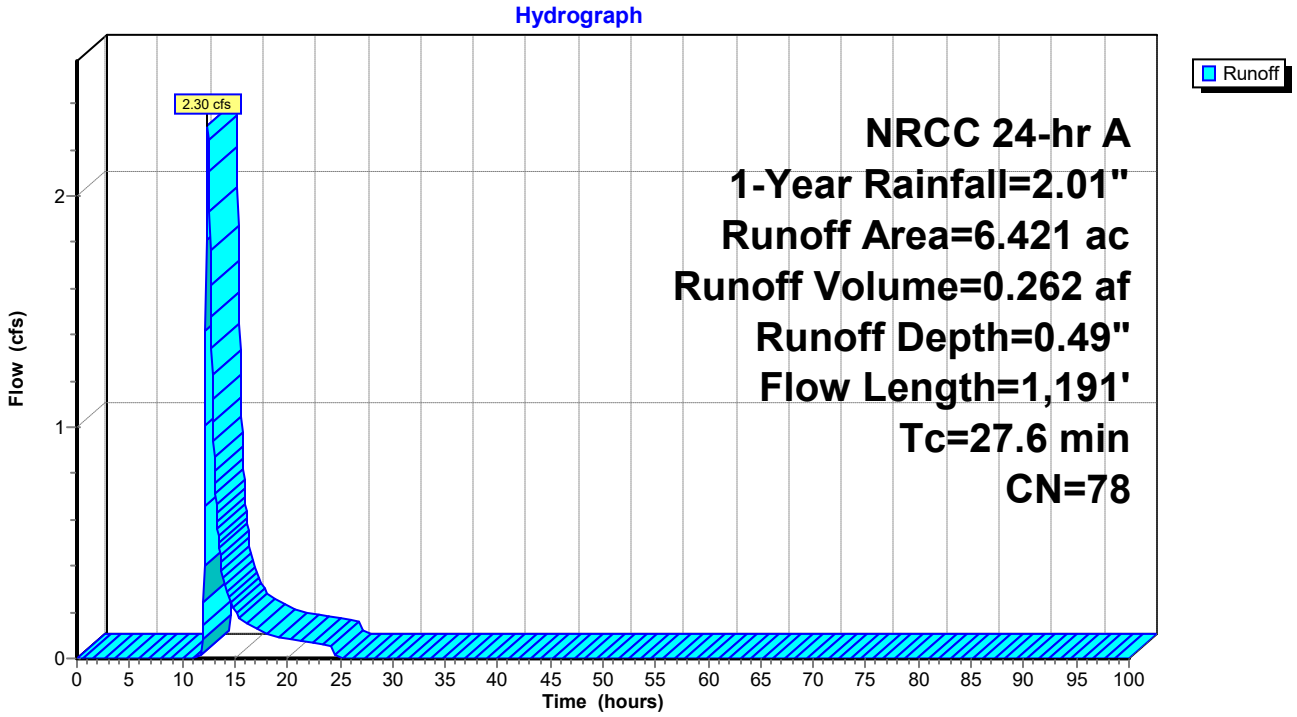
Runoff = 2.30 cfs @ 12.44 hrs, Volume= 0.262 af, Depth= 0.49"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 1-Year Rainfall=2.01"

	Area (ac)	CN	Description
*	0.410	78	B - Meadowed Land
*	1.310	70	C - Deciduous Forest
*	3.140	82	C - Meadowed Land
*	1.561	77	D - Deciduous Forest
	6.421	78	Weighted Average
	6.421		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	100	0.0300	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
5.0	354	0.0282	1.18		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
8.2	437	0.0160	0.89		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.7	300	0.0233	1.07		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
27.6	1,191	Total			

Subcatchment 21S: EX DA 21



Summary for Subcatchment 22S: EX DA 22

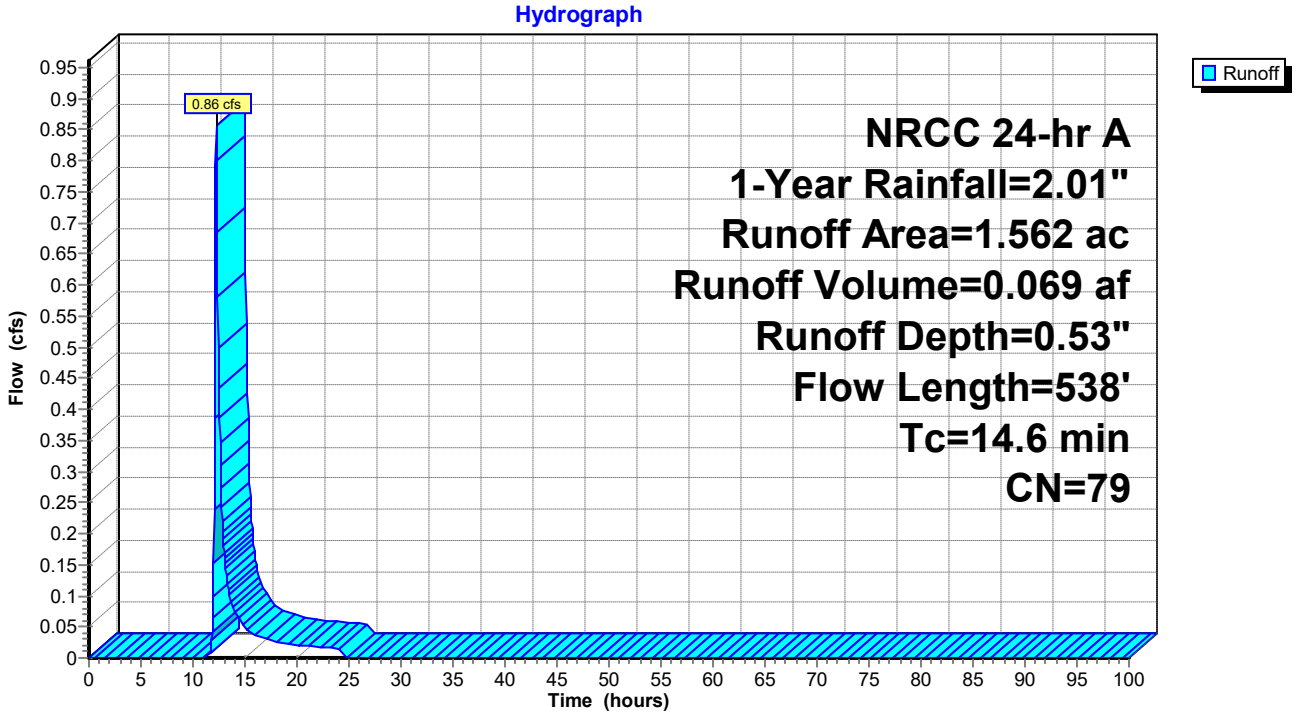
Runoff = 0.86 cfs @ 12.25 hrs, Volume= 0.069 af, Depth= 0.53"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 1-Year Rainfall=2.01"

	Area (ac)	CN	Description
*	1.136	77	D - Deciduous Forest
*	0.426	84	D - Shrub/Scrub
	1.562	79	Weighted Average
	1.562		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	125	0.0480	0.22		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
2.9	228	0.0351	1.31		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.1	185	0.0432	1.45		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
14.6	538	Total			

Subcatchment 22S: EX DA 22



Summary for Subcatchment 23S: EX DA 23

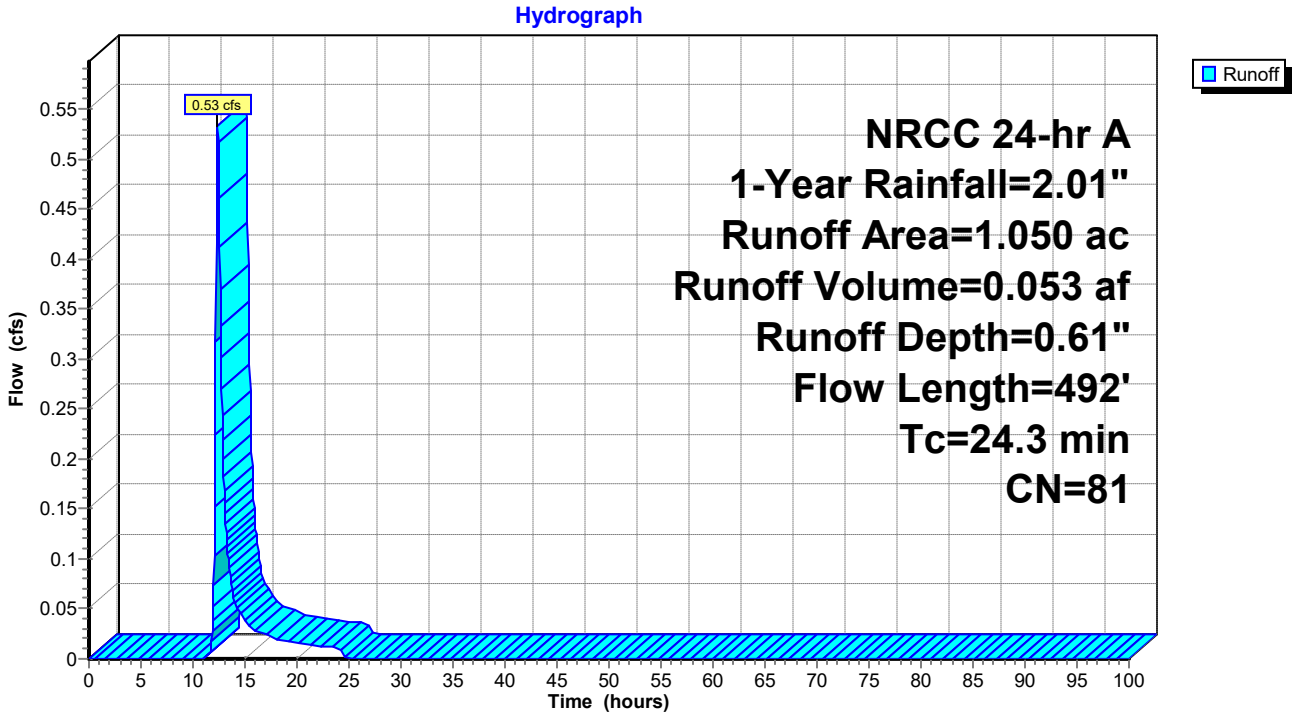
Runoff = 0.53 cfs @ 12.38 hrs, Volume= 0.053 af, Depth= 0.61"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 1-Year Rainfall=2.01"

	Area (ac)	CN	Description
*	0.730	77	D - Deciduous Forest
*	0.320	89	D - Meadowed Land
	1.050	81	Weighted Average
	1.050		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.4	205	0.0195	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
3.9	287	0.0314	1.24		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
24.3	492	Total			

Subcatchment 23S: EX DA 23



Summary for Subcatchment 24S: EX DA 24

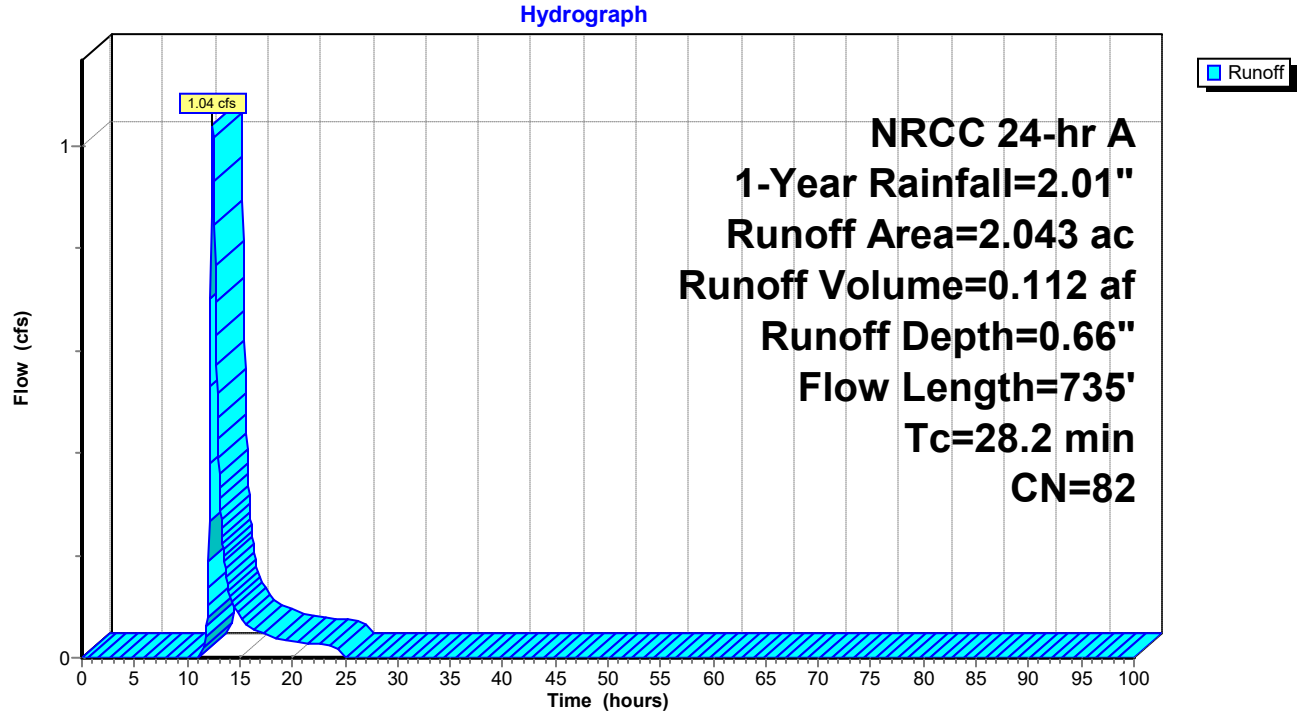
Runoff = 1.04 cfs @ 12.43 hrs, Volume= 0.112 af, Depth= 0.66"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 1-Year Rainfall=2.01"

	Area (ac)	CN	Description
*	1.290	82	C - Meadowed Land
*	0.060	70	C - Deciduous Forest
*	0.342	89	D - Meadowed Land
*	0.351	77	D - Deciduous Forest
	2.043	82	Weighted Average
	2.043		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.1	183	0.0328	0.20		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
6.6	197	0.0051	0.50		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.5	355	0.0169	0.91		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
28.2	735	Total			

Subcatchment 24S: EX DA 24



Summary for Subcatchment 25S: EX DA 25

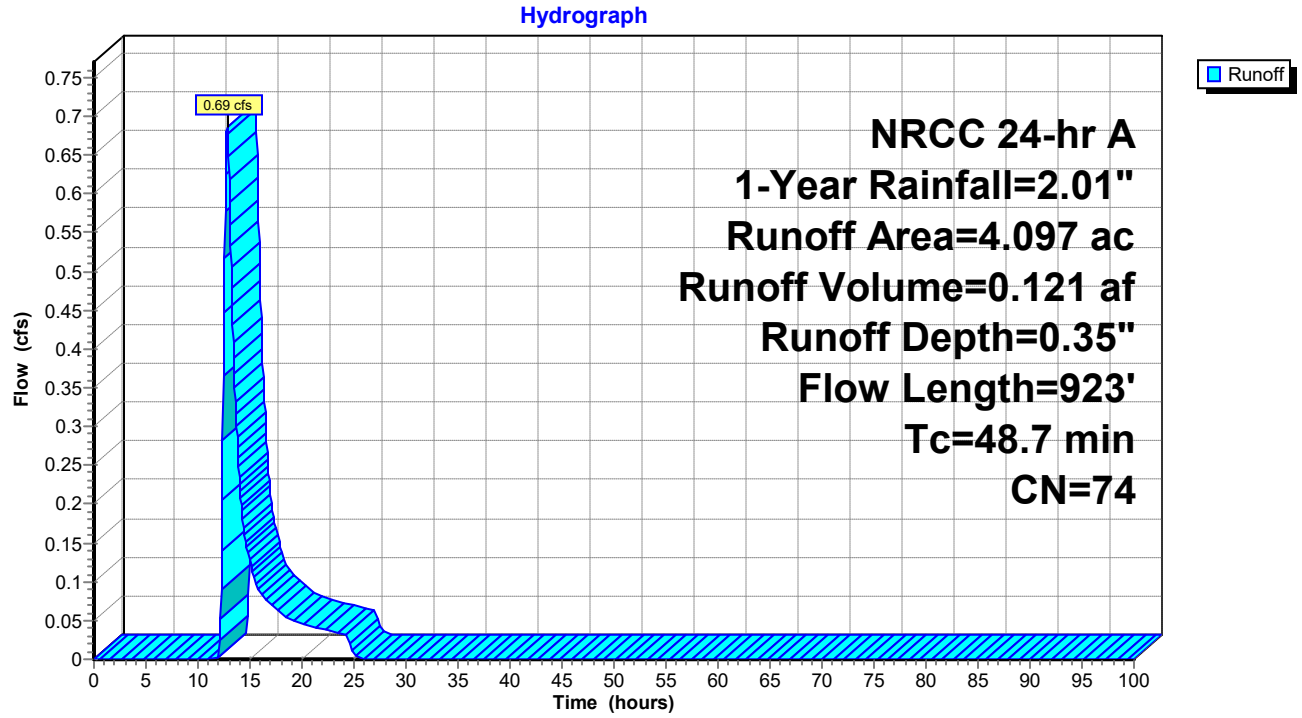
Runoff = 0.69 cfs @ 12.81 hrs, Volume= 0.121 af, Depth= 0.35"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 1-Year Rainfall=2.01"

	Area (ac)	CN	Description
*	0.330	61	B - Meadowed Land
*	3.290	74	C - Meadowed Land
*	0.227	74	C - Developed, Open Space
*	0.204	89	D - Meadowed Land
*	0.046	77	D - Deciduous Forest
	4.097	74	Weighted Average
	4.097		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.7	167	0.0419	0.22		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
2.2	170	0.0353	1.32		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
33.8	586	0.0017	0.29		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
48.7	923	Total			

Subcatchment 25S: EX DA 25



Summary for Subcatchment 26S: EX DA 26

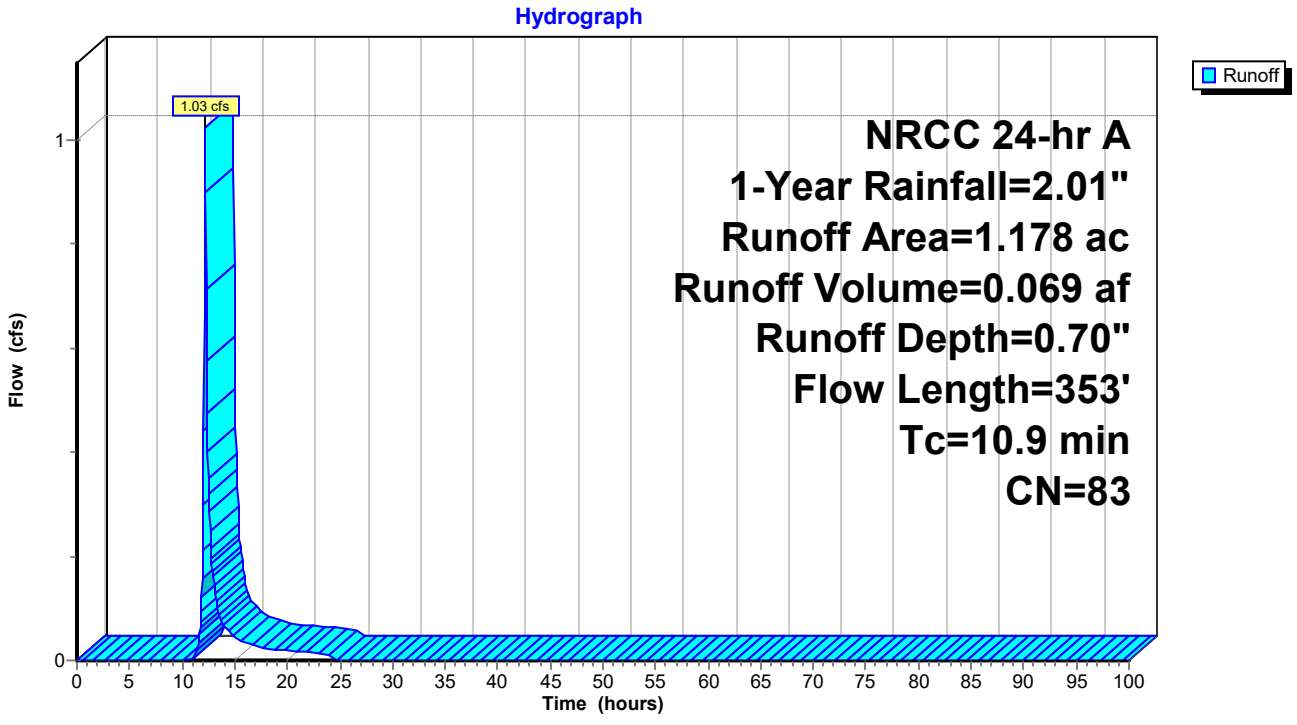
Runoff = 1.03 cfs @ 12.20 hrs, Volume= 0.069 af, Depth= 0.70"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 1-Year Rainfall=2.01"

	Area (ac)	CN	Description
*	0.200	77	D - Deciduous Forest
*	0.050	77	D - Deciduous Forest
*	0.928	84	D - Shrub/Scrub
	1.178	83	Weighted Average
	1.178		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	93	0.0323	0.18		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
2.1	260	0.0846	2.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
10.9	353	Total			

Subcatchment 26S: EX DA 26



Summary for Subcatchment 27S: EX DA 27

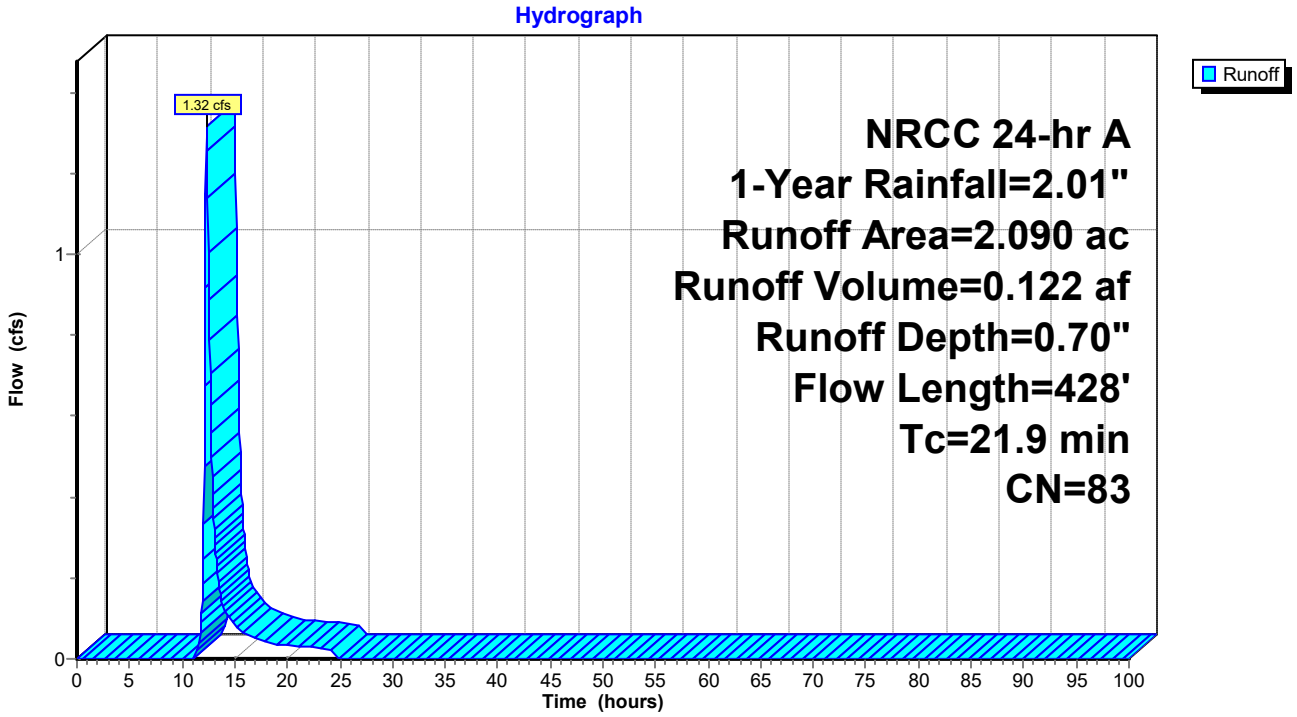
Runoff = 1.32 cfs @ 12.34 hrs, Volume= 0.122 af, Depth= 0.70"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 1-Year Rainfall=2.01"

	Area (ac)	CN	Description
*	0.260	77	D - Deciduous Forest
*	1.830	84	D - Shrub/Scrub
	2.090	83	Weighted Average
	2.090		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.0	208	0.0240	0.18		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
2.9	220	0.0318	1.25		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
21.9	428	Total			

Subcatchment 27S: EX DA 27



Summary for Subcatchment 28S: EX DA 28

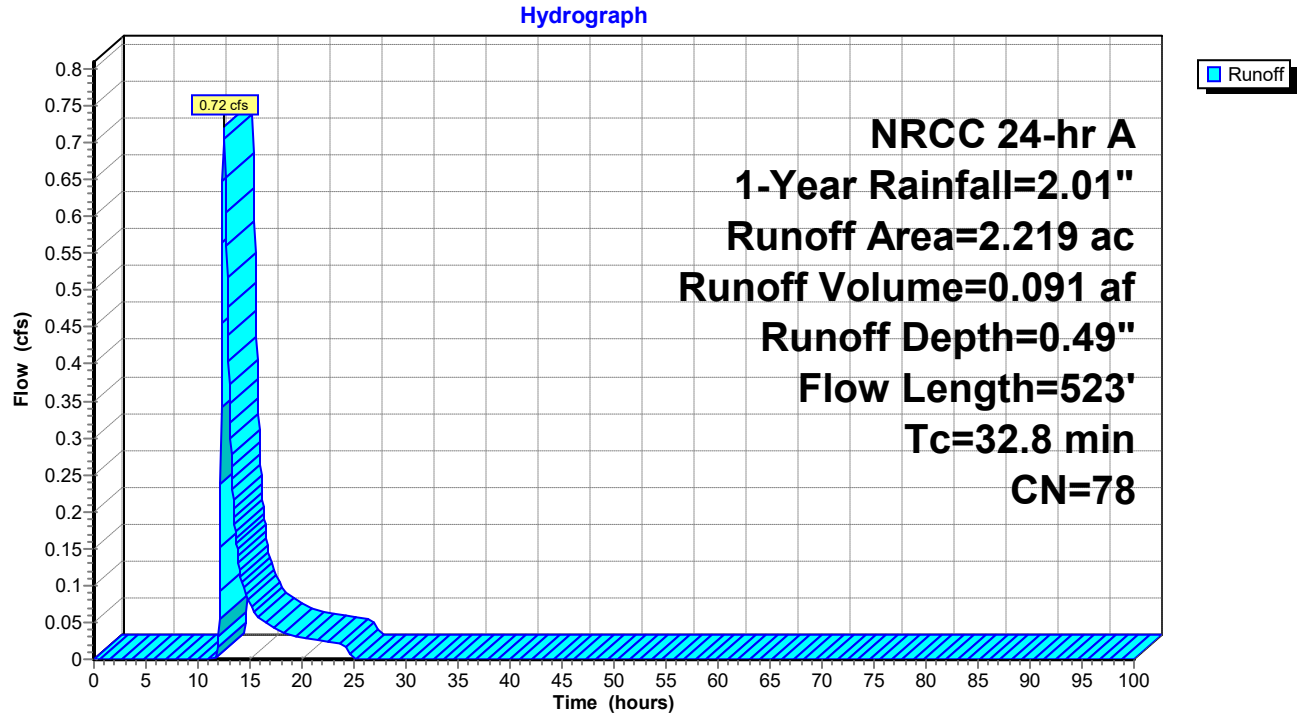
Runoff = 0.72 cfs @ 12.52 hrs, Volume= 0.091 af, Depth= 0.49"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 1-Year Rainfall=2.01"

	Area (ac)	CN	Description
*	0.120	39	A - Developed. Open Space
*	0.010	82	D - Developed, Low Intensity
*	1.207	77	D - Deciduous Forest
*	0.834	84	D - Shrub/Scrub
*	0.048	80	D - Developed, Open Space
	2.219	78	Weighted Average
	2.219		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.1	206	0.0097	0.13		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
5.2	213	0.0094	0.68		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	104	0.2115	3.22		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
32.8	523	Total			

Subcatchment 28S: EX DA 28



Time span=0.00-100.00 hrs, dt=0.05 hrs, 2001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: EX DA 1 Runoff Area=2.097 ac 0.00% Impervious Runoff Depth=0.93"
Flow Length=454' Tc=9.2 min CN=70 Runoff=2.46 cfs 0.162 af

Subcatchment 2S: EX DA 2 Runoff Area=0.983 ac 0.00% Impervious Runoff Depth=1.33"
Flow Length=312' Tc=18.5 min CN=77 Runoff=1.30 cfs 0.109 af

Subcatchment 3S: EX DA 3 Runoff Area=3.529 ac 0.00% Impervious Runoff Depth=1.04"
Flow Length=440' Tc=19.5 min CN=72 Runoff=3.42 cfs 0.305 af

Subcatchment 4S: EX DA 4 Runoff Area=7.320 ac 0.00% Impervious Runoff Depth=1.09"
Flow Length=1,080' Tc=36.8 min CN=73 Runoff=5.35 cfs 0.667 af

Subcatchment 5S: EX DA 5 Runoff Area=9.189 ac 0.00% Impervious Runoff Depth=0.68"
Flow Length=1,150' Tc=35.1 min CN=65 Runoff=3.78 cfs 0.524 af

Subcatchment 6S: EX DA 6 Runoff Area=1.995 ac 0.00% Impervious Runoff Depth=1.15"
Flow Length=553' Tc=20.1 min CN=74 Runoff=2.16 cfs 0.191 af

Subcatchment 7S: EX DA 7 Runoff Area=8.930 ac 0.00% Impervious Runoff Depth=0.60"
Flow Length=2,108' Tc=40.2 min CN=63 Runoff=2.83 cfs 0.445 af

Subcatchment 8S: EX DA 8 Runoff Area=2.164 ac 0.00% Impervious Runoff Depth=1.27"
Flow Length=553' Tc=21.6 min CN=76 Runoff=2.53 cfs 0.229 af

Subcatchment 9S: EX DA 9 Runoff Area=5.871 ac 0.00% Impervious Runoff Depth=1.33"
Flow Length=2,043' Tc=43.4 min CN=77 Runoff=4.91 cfs 0.653 af

Subcatchment 10S: EX DA 10 Runoff Area=8.128 ac 0.00% Impervious Runoff Depth=1.47"
Flow Length=2,106' Tc=40.6 min CN=79 Runoff=7.88 cfs 0.993 af

Subcatchment 11S: EX DA 11 Runoff Area=13.942 ac 0.00% Impervious Runoff Depth=1.21"
Flow Length=2,066' Tc=36.3 min CN=75 Runoff=11.59 cfs 1.407 af

Subcatchment 12S: EX DA 12 Runoff Area=2.590 ac 0.00% Impervious Runoff Depth=1.21"
Flow Length=762' Tc=32.9 min CN=75 Runoff=2.28 cfs 0.261 af

Subcatchment 13S: EX DA 13 Runoff Area=9.223 ac 0.00% Impervious Runoff Depth=1.21"
Flow Length=2,130' Tc=40.6 min CN=75 Runoff=7.20 cfs 0.930 af

Subcatchment 14S: EX DA 14 Runoff Area=2.056 ac 0.00% Impervious Runoff Depth=1.33"
Flow Length=510' Tc=16.4 min CN=77 Runoff=2.91 cfs 0.229 af

Subcatchment 15S: EX DA 15 Runoff Area=10.425 ac 0.00% Impervious Runoff Depth=1.27"
Flow Length=1,658' Tc=35.0 min CN=76 Runoff=9.40 cfs 1.105 af

Subcatchment 16S: EX DA 16 Runoff Area=6.509 ac 0.00% Impervious Runoff Depth=1.33"
Flow Length=1,499' Tc=33.4 min CN=77 Runoff=6.35 cfs 0.724 af

Subcatchment 17S: EX DA 17 Runoff Area=4.443 ac 0.00% Impervious Runoff Depth=1.27"
Flow Length=1,199' Tc=33.9 min CN=76 Runoff=4.07 cfs 0.471 af

Subcatchment 18S: EX DA 18 Runoff Area=5.396 ac 0.00% Impervious Runoff Depth=1.21"
Flow Length=955' Tc=24.8 min CN=75 Runoff=5.53 cfs 0.544 af

Subcatchment 19S: EX DA 19 Runoff Area=3.900 ac 0.00% Impervious Runoff Depth=1.40"
Flow Length=555' Tc=19.5 min CN=78 Runoff=5.33 cfs 0.455 af

Subcatchment 20S: EX DA 20 Runoff Area=2.720 ac 0.00% Impervious Runoff Depth=1.40"
Flow Length=606' Tc=19.1 min CN=78 Runoff=3.75 cfs 0.317 af

Subcatchment 21S: EX DA 21 Runoff Area=6.421 ac 0.00% Impervious Runoff Depth=1.40"
Flow Length=1,191' Tc=27.6 min CN=78 Runoff=7.34 cfs 0.749 af

Subcatchment 22S: EX DA 22 Runoff Area=1.562 ac 0.00% Impervious Runoff Depth=1.47"
Flow Length=538' Tc=14.6 min CN=79 Runoff=2.57 cfs 0.191 af

Subcatchment 23S: EX DA 23 Runoff Area=1.050 ac 0.00% Impervious Runoff Depth=1.60"
Flow Length=492' Tc=24.3 min CN=81 Runoff=1.49 cfs 0.140 af

Subcatchment 24S: EX DA 24 Runoff Area=2.043 ac 0.00% Impervious Runoff Depth=1.68"
Flow Length=735' Tc=28.2 min CN=82 Runoff=2.80 cfs 0.285 af

Subcatchment 25S: EX DA 25 Runoff Area=4.097 ac 0.00% Impervious Runoff Depth=1.15"
Flow Length=923' Tc=48.7 min CN=74 Runoff=2.71 cfs 0.393 af

Subcatchment 26S: EX DA 26 Runoff Area=1.178 ac 0.00% Impervious Runoff Depth=1.75"
Flow Length=353' Tc=10.9 min CN=83 Runoff=2.61 cfs 0.172 af

Subcatchment 27S: EX DA 27 Runoff Area=2.090 ac 0.00% Impervious Runoff Depth=1.75"
Flow Length=428' Tc=21.9 min CN=83 Runoff=3.42 cfs 0.305 af

Subcatchment 28S: EX DA 28 Runoff Area=2.219 ac 0.00% Impervious Runoff Depth=1.40"
Flow Length=523' Tc=32.8 min CN=78 Runoff=2.30 cfs 0.259 af

Total Runoff Area = 132.070 ac Runoff Volume = 13.215 af Average Runoff Depth = 1.20"
100.00% Pervious = 132.070 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1S: EX DA 1

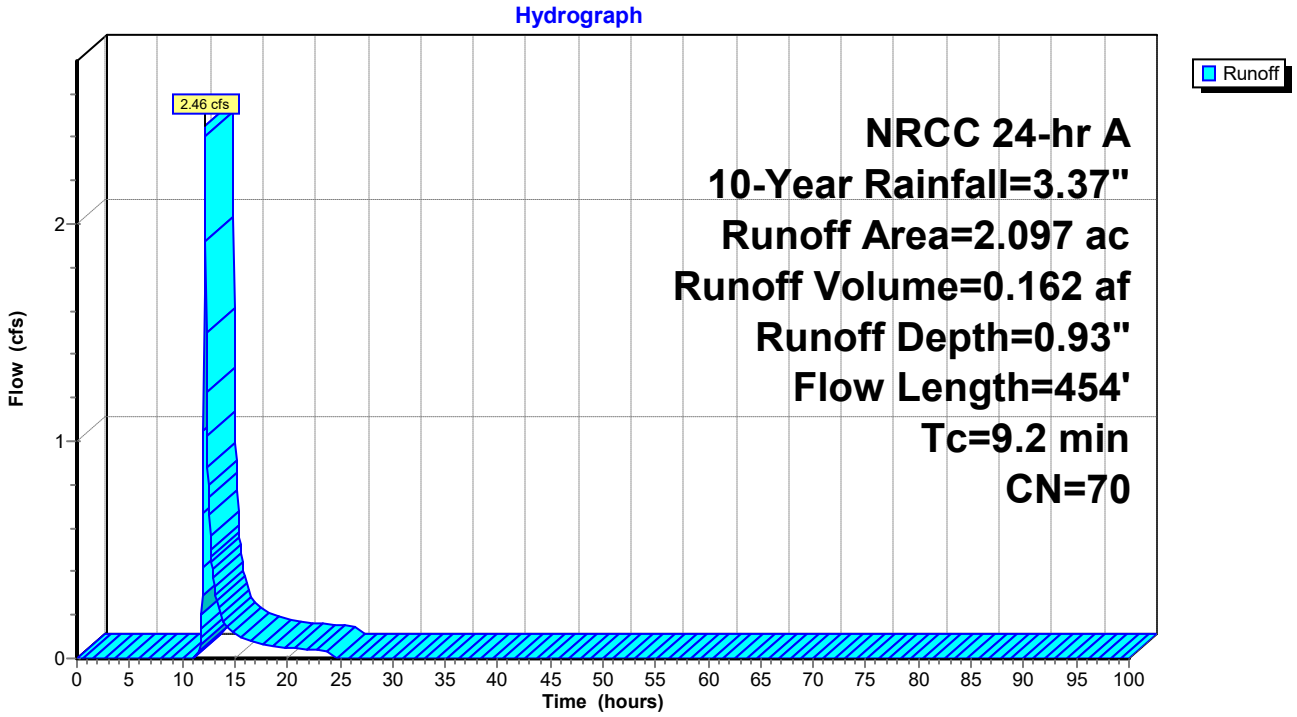
Runoff = 2.46 cfs @ 12.18 hrs, Volume= 0.162 af, Depth= 0.93"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 10-Year Rainfall=3.37"

	Area (ac)	CN	Description
*	0.279	55	B - Deciduous Forest
*	0.046	61	B - Meadowed Land
*	0.430	61	B - Developed, Open Space
*	0.027	65	B - Developed, Low Intensity
*	1.198	77	D - Deciduous Forest
*	0.117	80	D - Meadowed Land
	2.097	70	Weighted Average
	2.097		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	94	0.0851	0.26		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
0.8	106	0.0943	2.15		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.3	254	0.0709	1.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
9.2	454	Total			

Subcatchment 1S: EX DA 1



Summary for Subcatchment 2S: EX DA 2

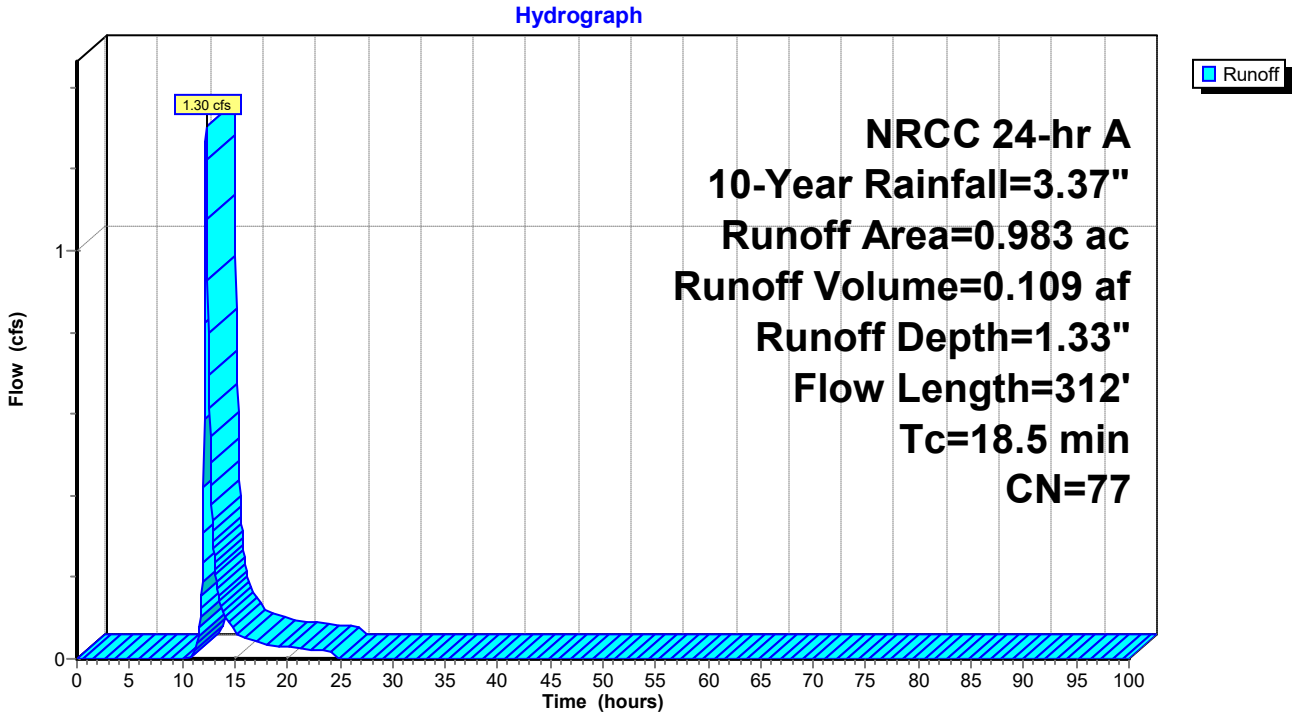
Runoff = 1.30 cfs @ 12.29 hrs, Volume= 0.109 af, Depth= 1.33"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 10-Year Rainfall=3.37"

	Area (ac)	CN	Description
*	0.983	77	D - Deciduous Forest
	0.983		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.2	127	0.0157	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
3.0	116	0.0086	0.65		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	69	0.2464	3.47		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
18.5	312	Total			

Subcatchment 2S: EX DA 2



Summary for Subcatchment 3S: EX DA 3

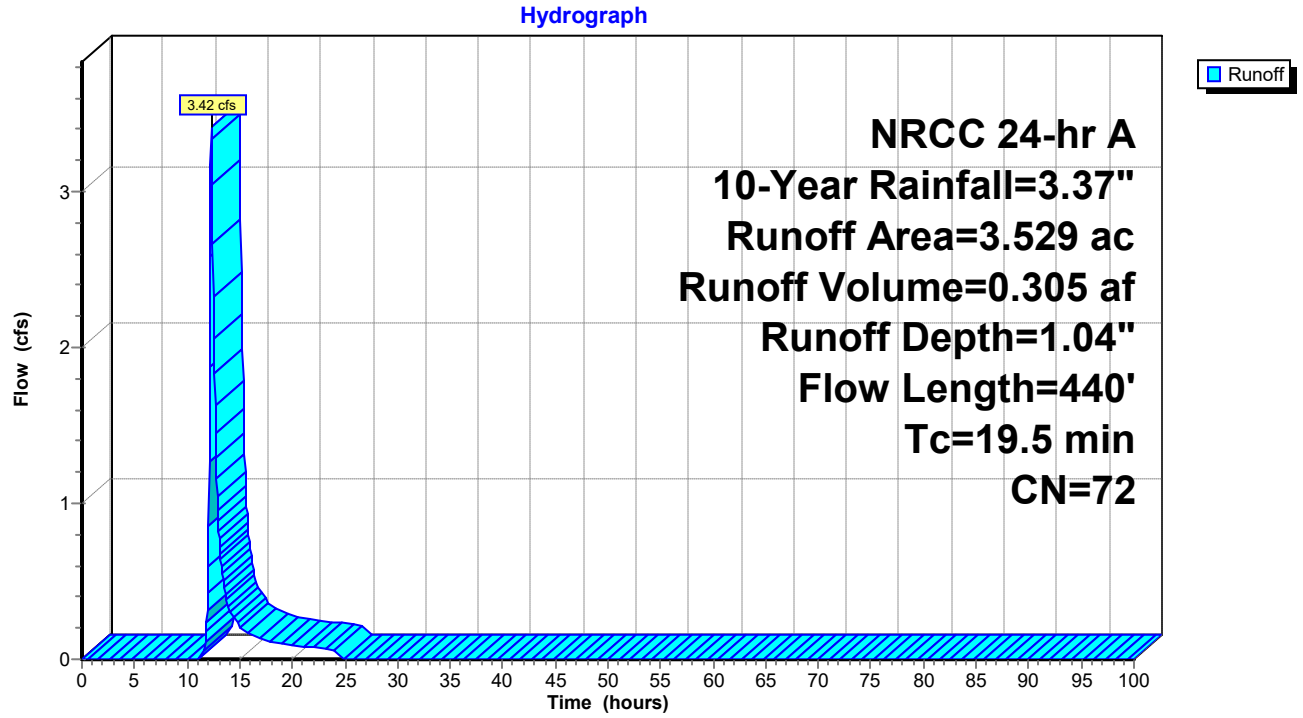
Runoff = 3.42 cfs @ 12.31 hrs, Volume= 0.305 af, Depth= 1.04"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 10-Year Rainfall=3.37"

	Area (ac)	CN	Description
*	2.115	70	C - Deciduous Forest
*	0.791	74	C - Meadowed Land
*	0.017	80	D - Meadowed Land
*	0.600	77	D - Deciduous Forest
*	0.006	85	D - Developed, Medium Intensity
	3.529	72	Weighted Average
	3.529		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.3	114	0.0175	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
1.1	116	0.0603	1.72		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.1	210	0.0095	0.68		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
19.5	440	Total			

Subcatchment 3S: EX DA 3



Summary for Subcatchment 4S: EX DA 4

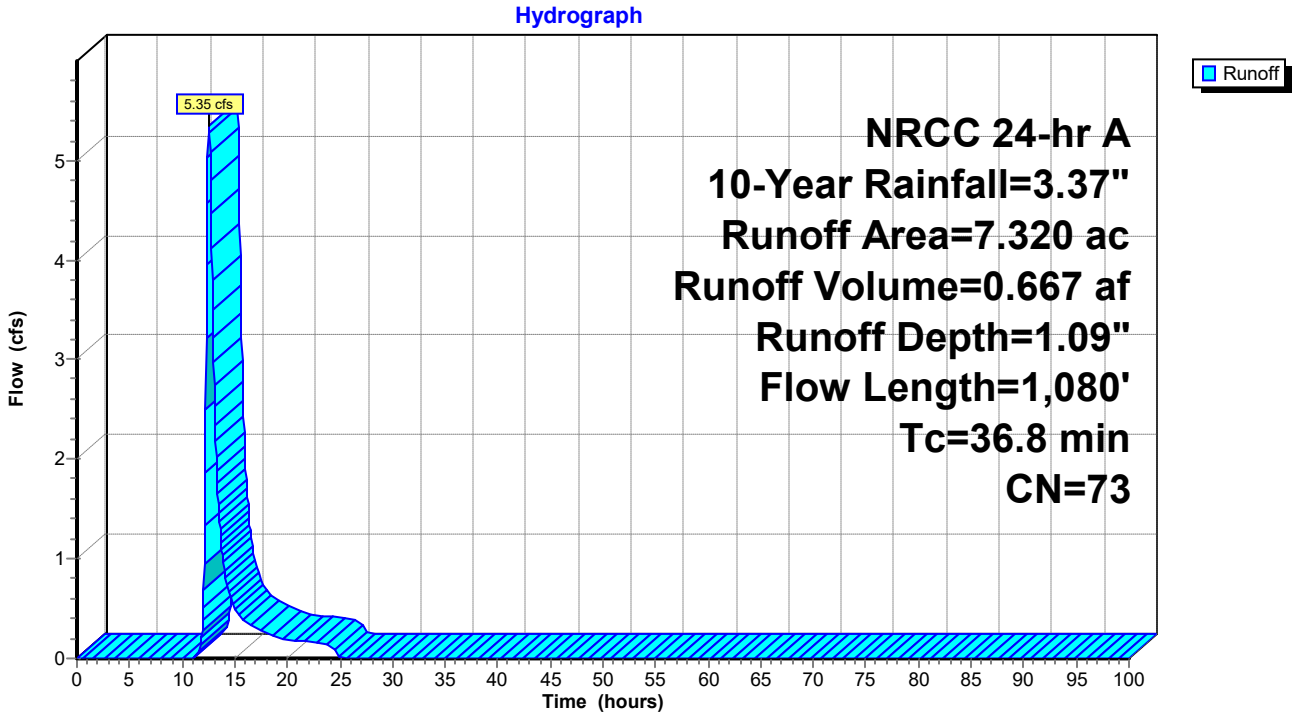
Runoff = 5.35 cfs @ 12.55 hrs, Volume= 0.667 af, Depth= 1.09"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 10-Year Rainfall=3.37"

	Area (ac)	CN	Description
*	0.200	58	B - Meadowed Land
*	5.292	74	C - Meadowed Land
*	1.828	70	C - Deciduous Forest
	7.320	73	Weighted Average
	7.320		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.6	102	0.0196	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
1.4	114	0.0351	1.31		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.5	177	0.0282	1.18		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.2	145	0.0069	0.58		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
15.3	346	0.0029	0.38		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.8	196	0.0663	1.80		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
36.8	1,080	Total			

Subcatchment 4S: EX DA 4



Summary for Subcatchment 5S: EX DA 5

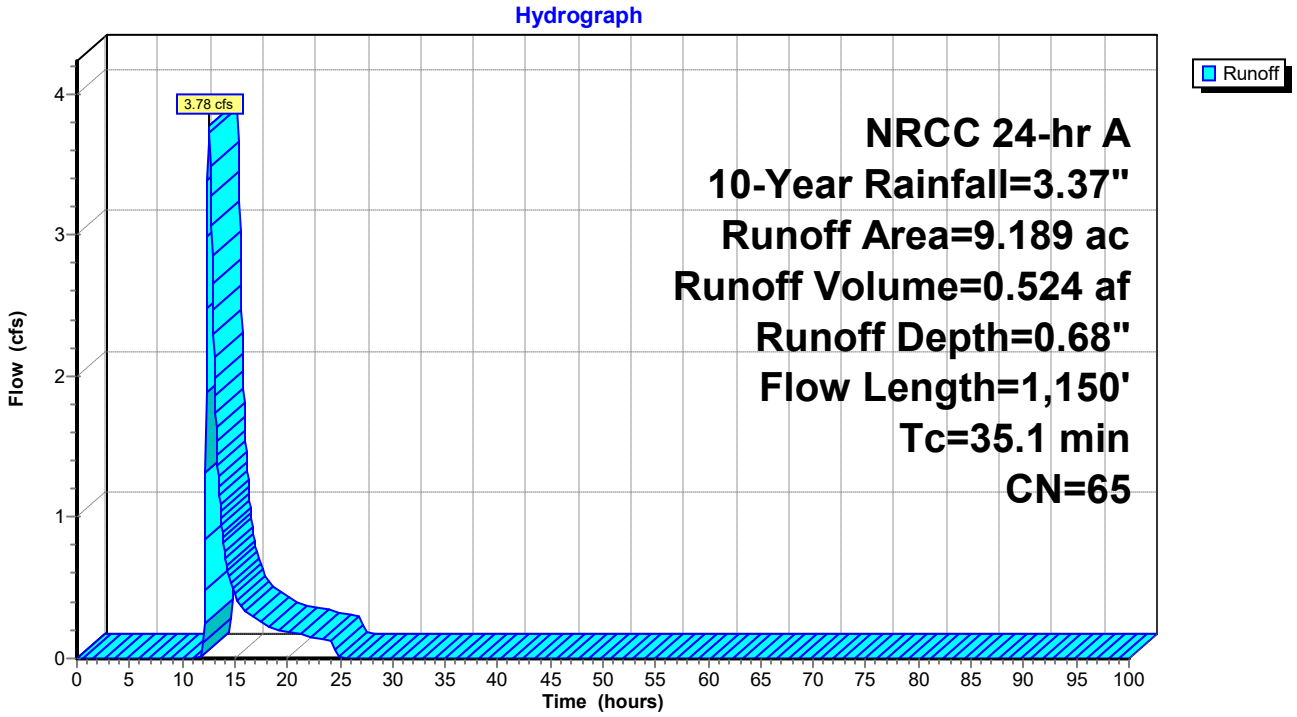
Runoff = 3.78 cfs @ 12.58 hrs, Volume= 0.524 af, Depth= 0.68"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 10-Year Rainfall=3.37"

	Area (ac)	CN	Description
*	4.897	58	B - Meadowed Land
*	0.003	55	B - Deciduous Forest
*	3.151	74	C - Meadowed Land
*	1.138	70	C - Deciduous Forest
	9.189	65	Weighted Average
	9.189		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.6	165	0.0182	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
2.2	160	0.0312	1.24		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.0	204	0.0147	0.85		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.1	182	0.0110	0.73		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.2	154	0.0130	0.80		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.0	285	0.0281	1.17		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
35.1	1,150	Total			

Subcatchment 5S: EX DA 5



Summary for Subcatchment 6S: EX DA 6

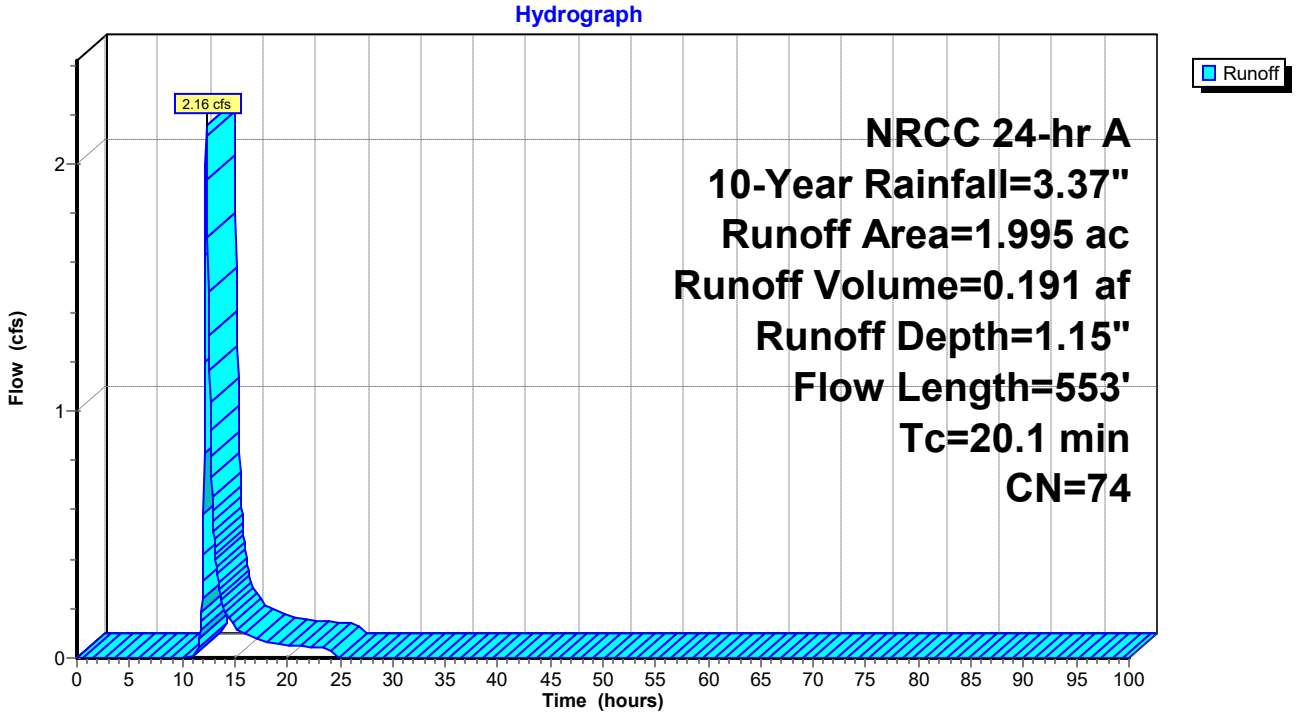
Runoff = 2.16 cfs @ 12.31 hrs, Volume= 0.191 af, Depth= 1.15"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 10-Year Rainfall=3.37"

	Area (ac)	CN	Description
*	1.995	74	C - Meadowed Land
	1.995		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.8	89	0.0562	0.22		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
3.4	159	0.0126	0.79		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.5	74	0.0135	0.81		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
8.4	231	0.0043	0.46		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
20.1	553	Total			

Subcatchment 6S: EX DA 6



Summary for Subcatchment 7S: EX DA 7

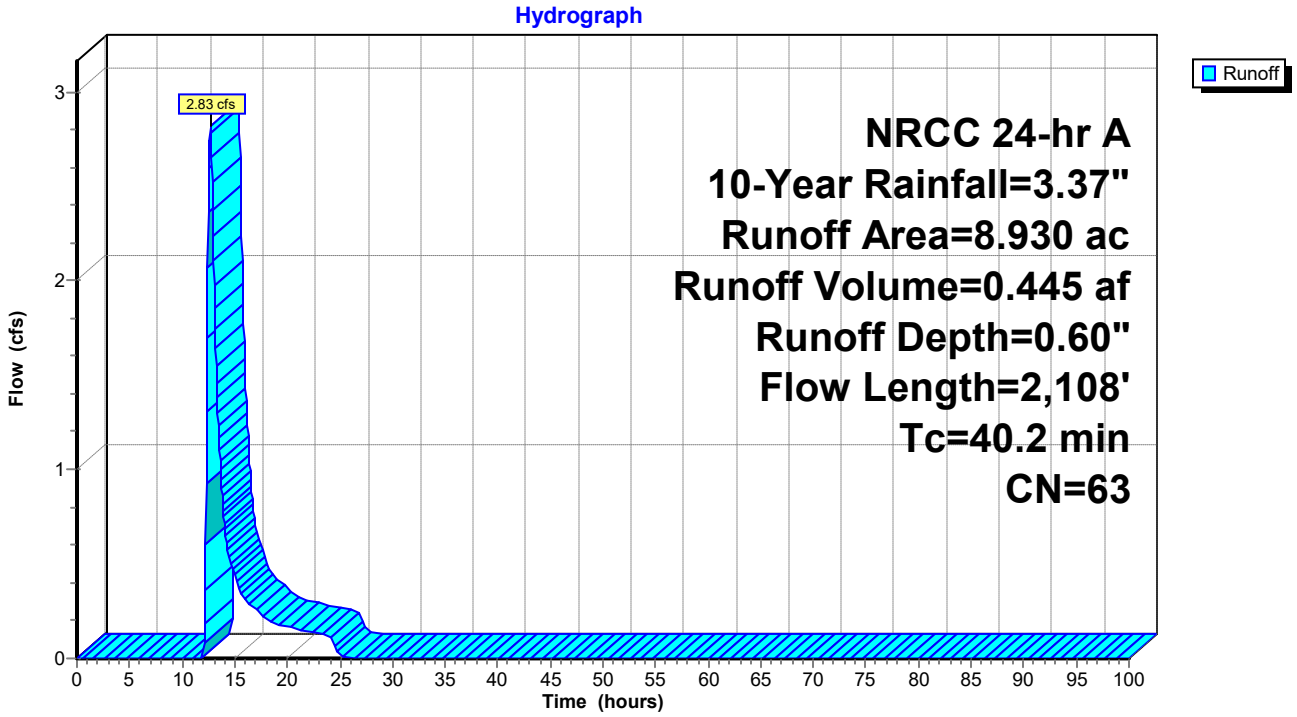
Runoff = 2.83 cfs @ 12.67 hrs, Volume= 0.445 af, Depth= 0.60"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 10-Year Rainfall=3.37"

	Area (ac)	CN	Description
*	6.326	58	B - Meadowed Land
*	0.088	70	C - Deciduous Forest
*	2.500	74	C - Meadowed Land
*	0.016	74	C - Developed, Open Space
	8.930	63	Weighted Average
	8.930		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.5	164	0.0427	0.22		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
8.4	570	0.0263	1.14		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.9	247	0.0405	1.41		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.4	126	0.0159	0.88		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.2	456	0.0307	1.23		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.8	545	0.0275	1.16		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
40.2	2,108	Total			

Subcatchment 7S: EX DA 7



Summary for Subcatchment 8S: EX DA 8

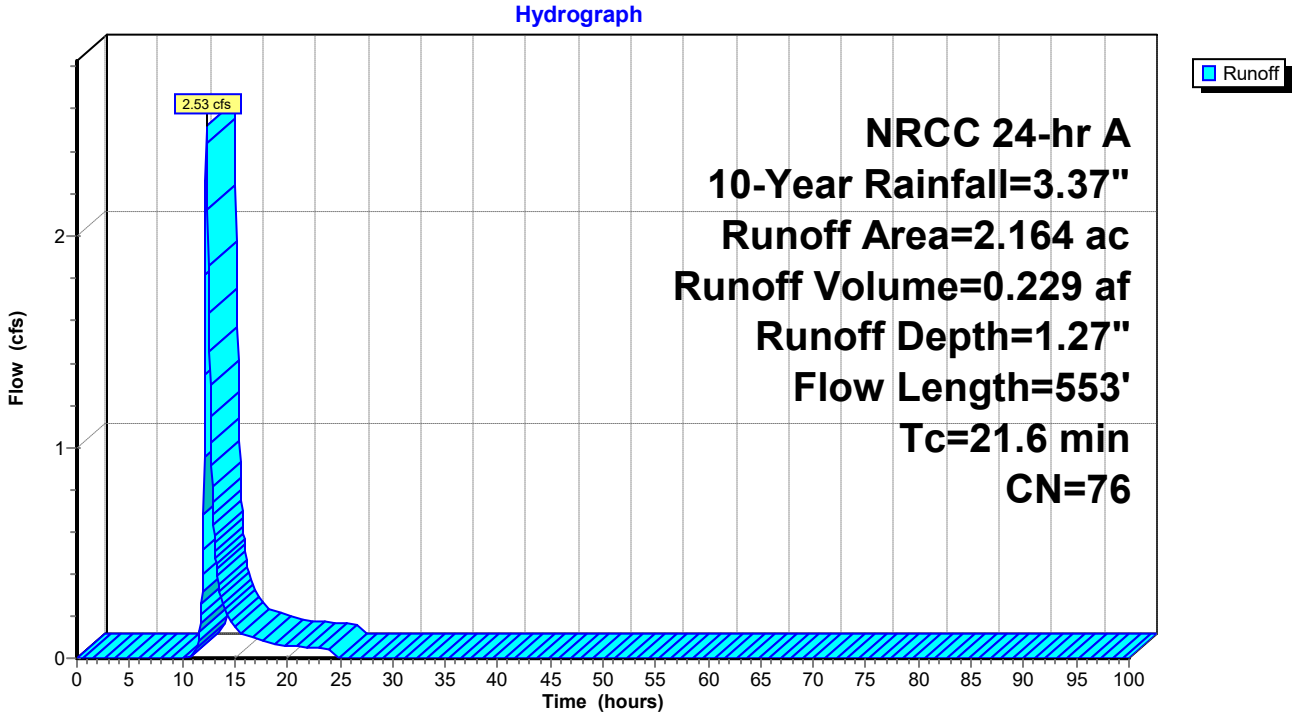
Runoff = 2.53 cfs @ 12.33 hrs, Volume= 0.229 af, Depth= 1.27"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 10-Year Rainfall=3.37"

	Area (ac)	CN	Description
*	0.308	70	C - Deciduous Forest
*	1.834	77	D - Deciduous Forest
*	0.022	77	D - Evergreen Forest
	2.164	76	Weighted Average
	2.164		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.6	178	0.0337	0.20		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
5.1	239	0.0125	0.78		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.9	136	0.0294	1.20		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
21.6	553	Total			

Subcatchment 8S: EX DA 8



Summary for Subcatchment 9S: EX DA 9

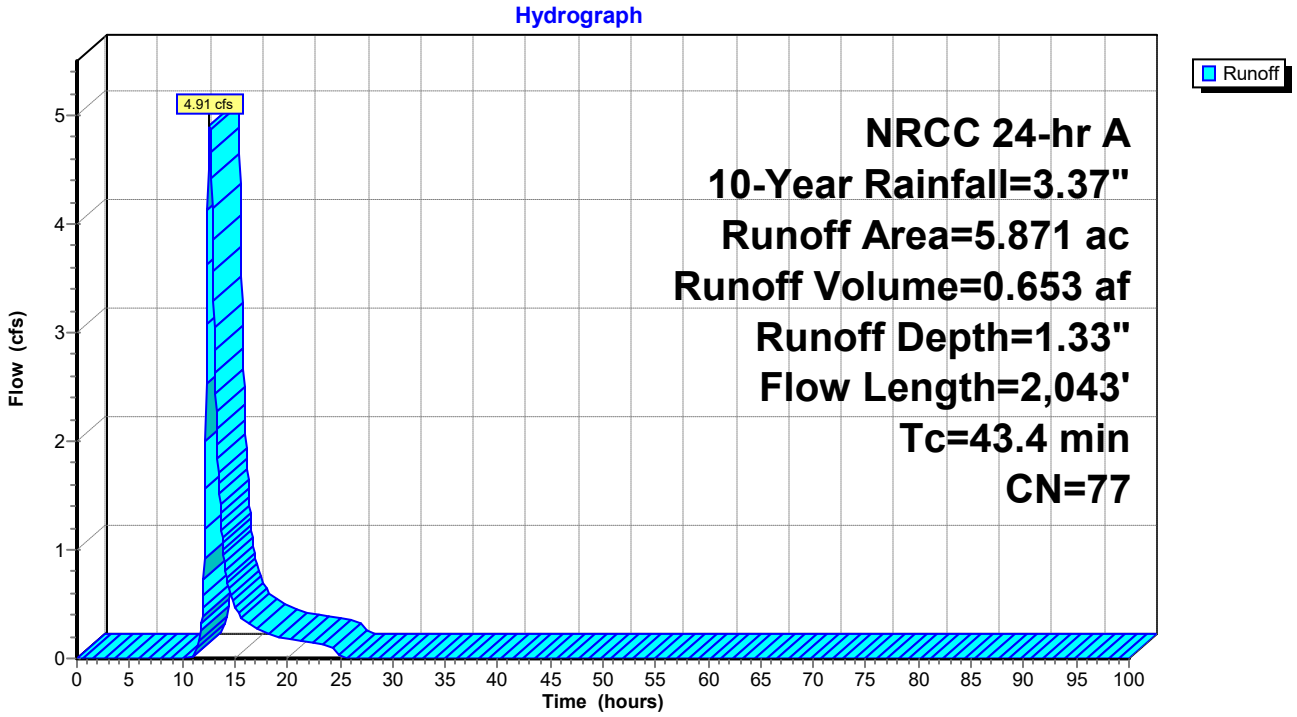
Runoff = 4.91 cfs @ 12.63 hrs, Volume= 0.653 af, Depth= 1.33"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 10-Year Rainfall=3.37"

	Area (ac)	CN	Description
*	4.539	78	B - Meadowed Land
*	1.173	74	C - Meadowed Land
*	0.159	70	C - Deciduous Forest
	5.871	77	Weighted Average
	5.871		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.8	210	0.0286	0.20		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
4.0	313	0.0351	1.31		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.0	412	0.0194	0.97		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.8	315	0.0381	1.37		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.2	366	0.0437	1.46		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.6	427	0.0234	1.07		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
43.4	2,043	Total			

Subcatchment 9S: EX DA 9



Summary for Subcatchment 10S: EX DA 10

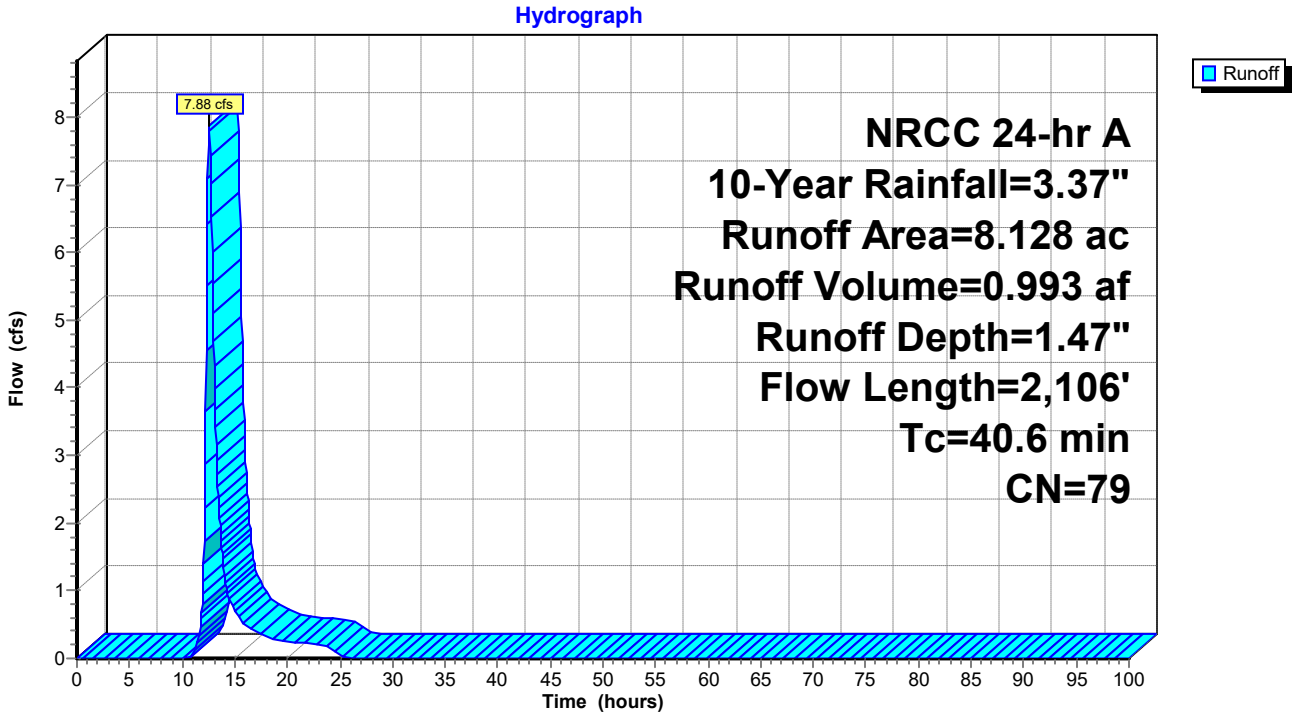
Runoff = 7.88 cfs @ 12.59 hrs, Volume= 0.993 af, Depth= 1.47"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 10-Year Rainfall=3.37"

	Area (ac)	CN	Description
*	3.901	78	B - Meadowed Land
*	0.775	70	C - Deciduous Forest
*	3.440	82	C - Meadowed Land
*	0.012	74	C - Developed, Open Space
	8.128	79	Weighted Average
	8.128		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.4	165	0.0303	0.19		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
9.5	590	0.0220	1.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.2	325	0.0585	1.69		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
8.0	692	0.0419	1.43		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.5	334	0.0210	1.01		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
40.6	2,106	Total			

Subcatchment 10S: EX DA 10



Summary for Subcatchment 11S: EX DA 11

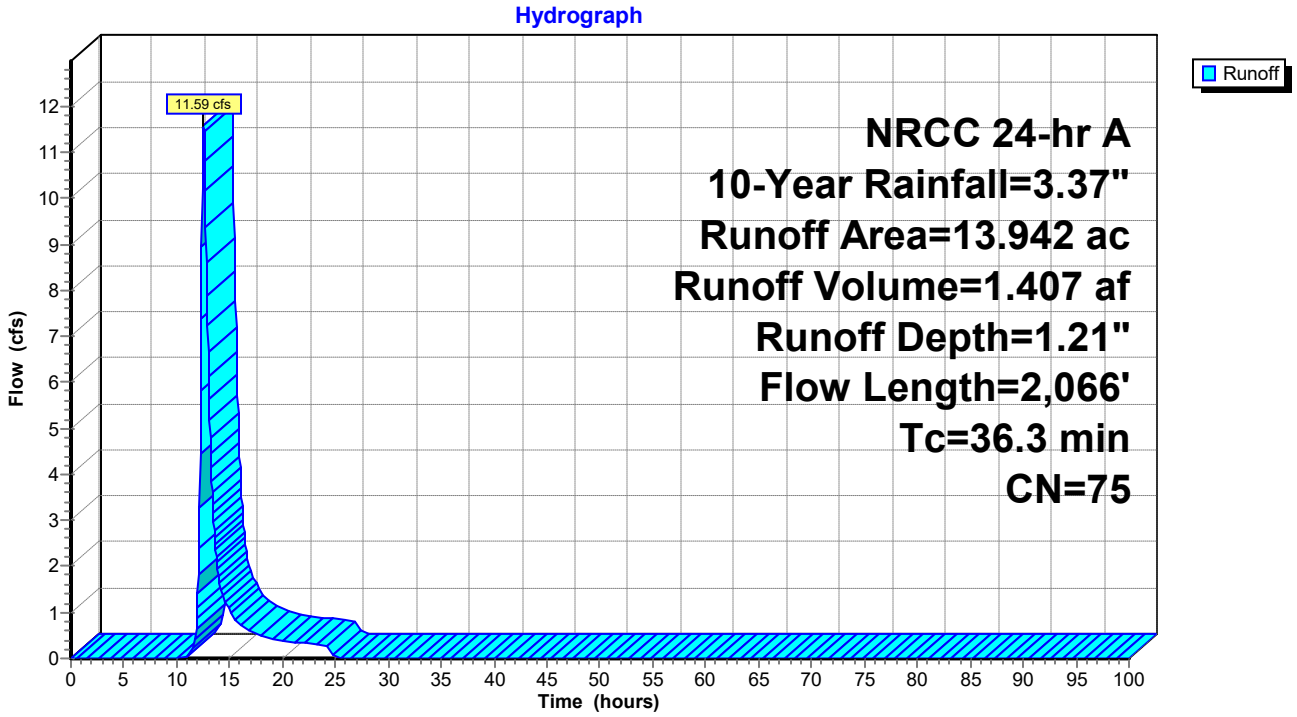
Runoff = 11.59 cfs @ 12.54 hrs, Volume= 1.407 af, Depth= 1.21"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 10-Year Rainfall=3.37"

	Area (ac)	CN	Description
*	6.619	78	B - Meadowed Land
*	4.484	74	C - Meadowed Land
*	2.822	70	C - Deciduous Forest
*	0.017	74	C - Developed, Open Space
	13.942	75	Weighted Average
	13.942		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.4	68	0.0147	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
4.4	218	0.0138	0.82		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.0	397	0.0353	1.32		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.4	191	0.0365	1.34		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.9	386	0.0544	1.63		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.0	189	0.0529	1.61		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.0	281	0.0285	1.18		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.2	336	0.0238	1.08		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
36.3	2,066	Total			

Subcatchment 11S: EX DA 11



Summary for Subcatchment 12S: EX DA 12

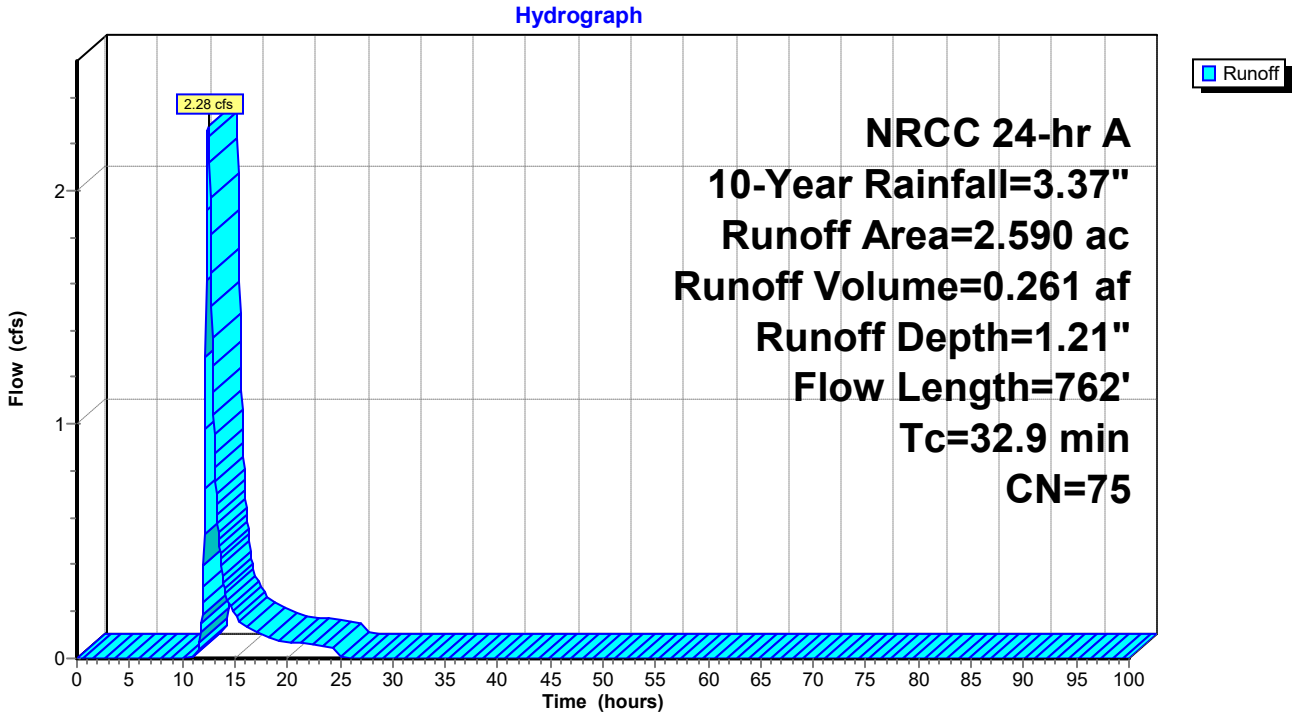
Runoff = 2.28 cfs @ 12.49 hrs, Volume= 0.261 af, Depth= 1.21"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 10-Year Rainfall=3.37"

	Area (ac)	CN	Description
*	0.518	70	C - Deciduous Forest
*	0.201	74	C - Meadowed Land
*	0.047	80	D - Meadowed Land
*	1.824	77	D - Deciduous Forest
	2.590	75	Weighted Average
	2.590		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.9	192	0.0104	0.13		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
1.1	117	0.0684	1.83		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.9	253	0.0237	1.08		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.0	200	0.0250	1.11		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
32.9	762	Total			

Subcatchment 12S: EX DA 12



Summary for Subcatchment 13S: EX DA 13

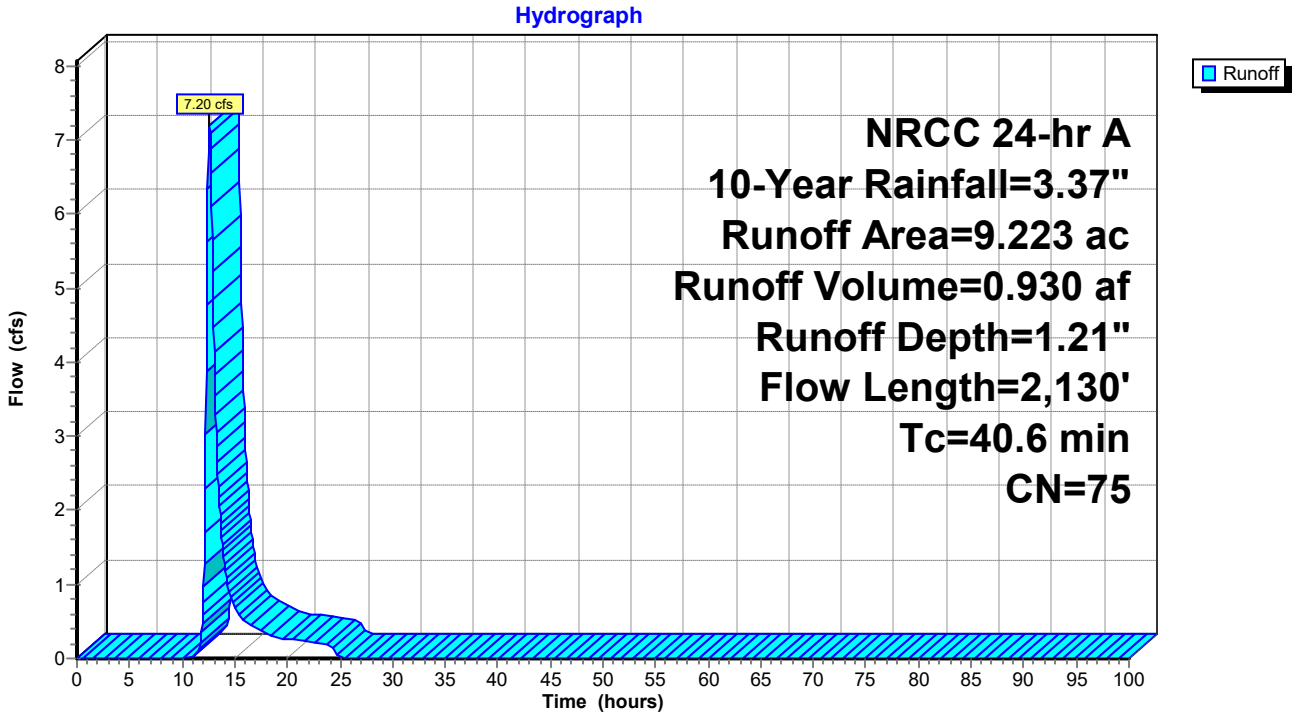
Runoff = 7.20 cfs @ 12.60 hrs, Volume= 0.930 af, Depth= 1.21"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 10-Year Rainfall=3.37"

	Area (ac)	CN	Description
*	1.802	78	B - Meadowed Land
*	4.529	74	C - Meadowed Land
*	1.207	70	C - Deciduous Forest
*	1.266	80	D - Meadowed Land
*	0.419	77	D - Deciduous Forest
	9.223	75	Weighted Average
	9.223		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.5	166	0.0361	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
4.5	276	0.0217	1.03		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.4	460	0.0217	1.03		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.2	210	0.0238	1.08		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.4	183	0.0328	1.27		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.9	370	0.0513	1.59		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.6	192	0.0312	1.24		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.1	273	0.0440	1.47		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
40.6	2,130	Total			

Subcatchment 13S: EX DA 13



Summary for Subcatchment 14S: EX DA 14

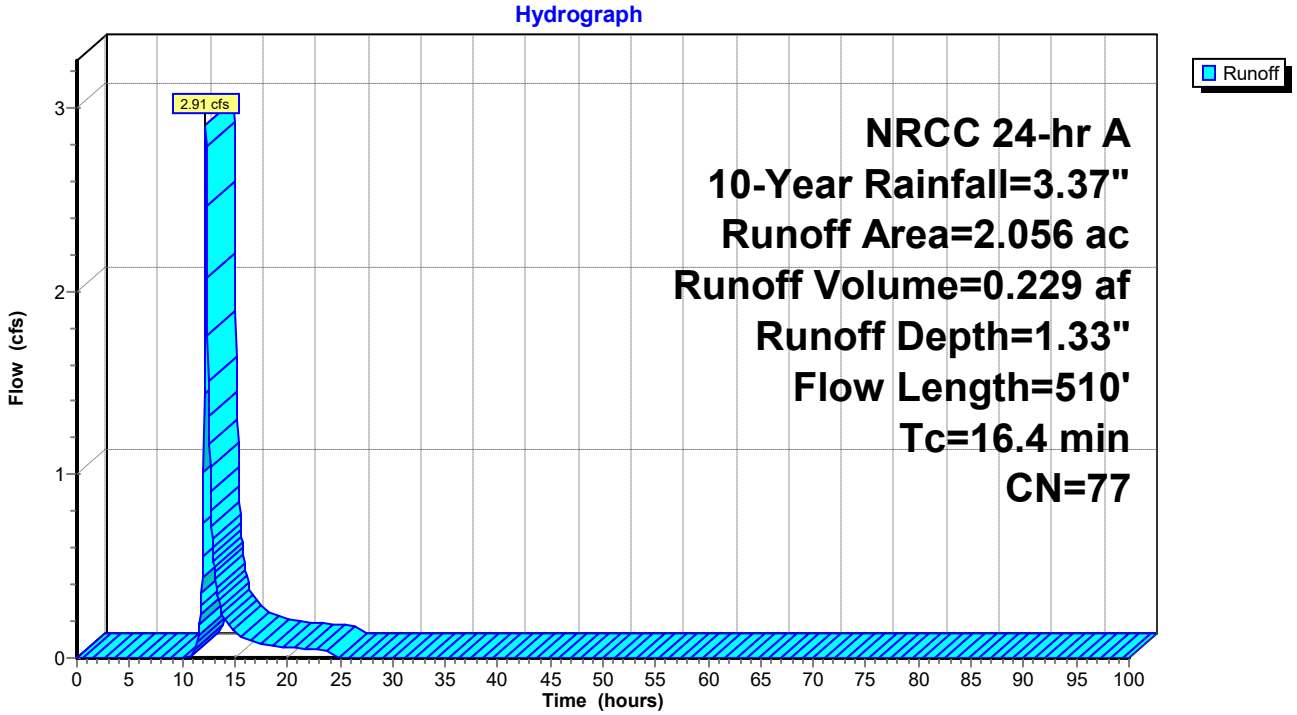
Runoff = 2.91 cfs @ 12.26 hrs, Volume= 0.229 af, Depth= 1.33"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 10-Year Rainfall=3.37"

	Area (ac)	CN	Description
*	0.091	70	C - Deciduous Forest
*	0.044	70	C - Evergreen Forest
*	0.087	77	D - Evergreen Forest
*	1.834	77	D - Deciduous Forest
	2.056	77	Weighted Average
	2.056		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2	174	0.0632	0.26		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
5.2	336	0.0238	1.08		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
16.4	510	Total			

Subcatchment 14S: EX DA 14



Summary for Subcatchment 15S: EX DA 15

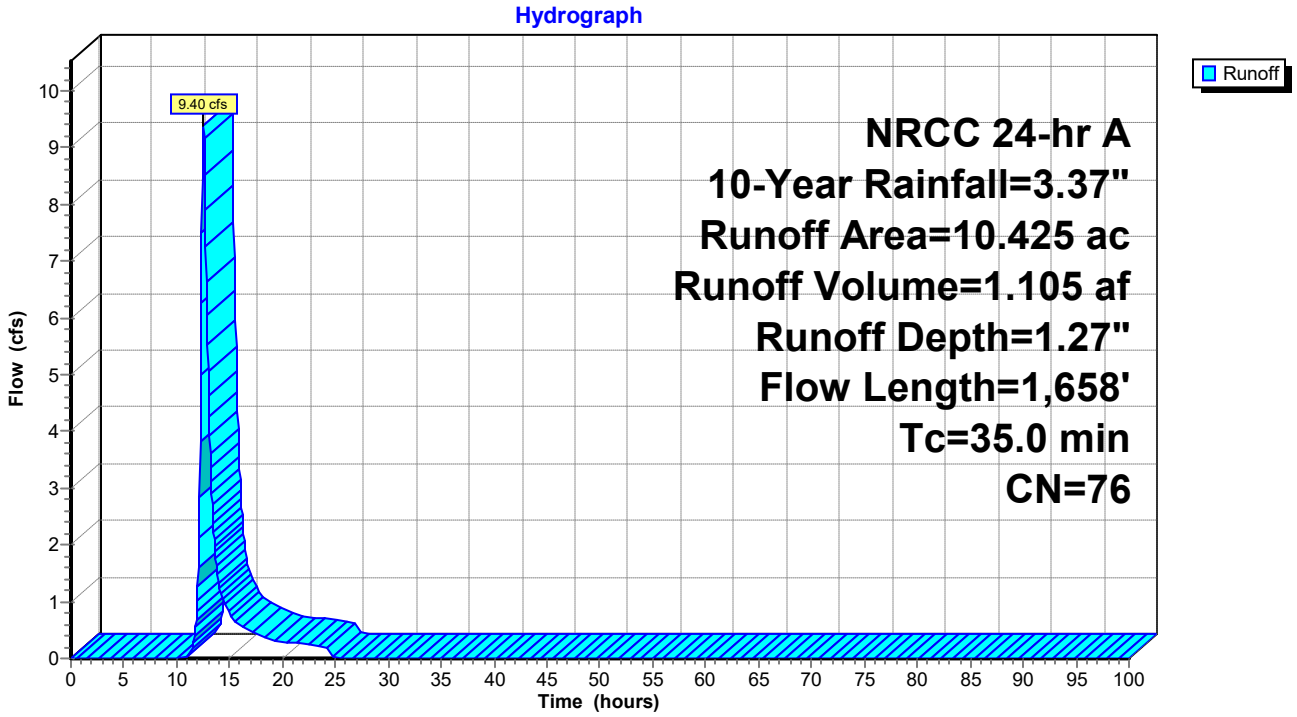
Runoff = 9.40 cfs @ 12.52 hrs, Volume= 1.105 af, Depth= 1.27"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 10-Year Rainfall=3.37"

	Area (ac)	CN	Description
*	1.586	70	C - Deciduous Forest
*	1.366	74	C - Meadowed Land
*	1.941	80	D - Meadowed Land
*	0.011	77	D - Evergreen Forest
*	5.521	77	D - Deciduous Forest
	10.425	76	Weighted Average
	10.425		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.4	186	0.0323	0.20		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
1.7	209	0.0909	2.11		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.1	441	0.0431	1.45		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.3	423	0.0189	0.96		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.5	399	0.0301	1.21		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
35.0	1,658	Total			

Subcatchment 15S: EX DA 15



Summary for Subcatchment 16S: EX DA 16

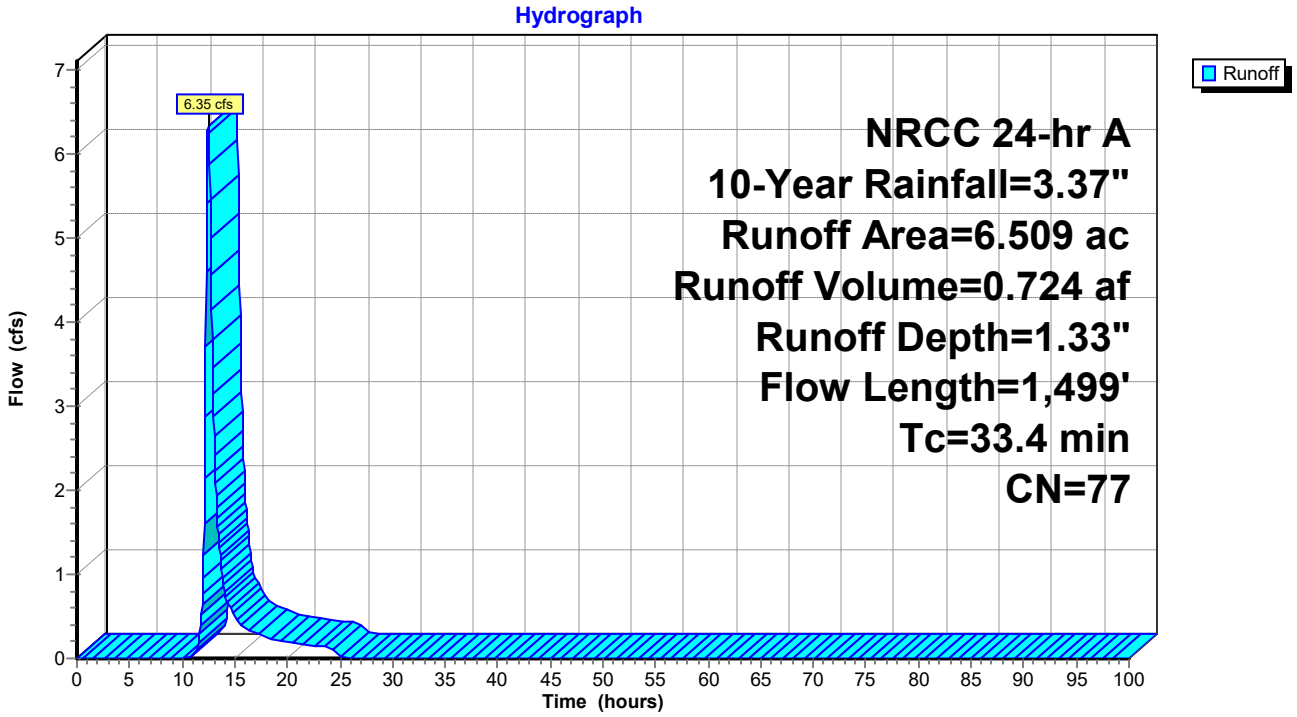
Runoff = 6.35 cfs @ 12.49 hrs, Volume= 0.724 af, Depth= 1.33"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 10-Year Rainfall=3.37"

	Area (ac)	CN	Description
*	0.552	70	C - Deciduous Forest
*	0.308	74	C - Meadowed Land
*	4.488	77	D - Deciduous Forest
*	1.161	80	D - Meadowed Land
	6.509	77	Weighted Average
	6.509		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.1	222	0.0270	0.19		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
2.9	311	0.0643	1.78		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.2	191	0.0419	1.43		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.8	331	0.0423	1.44		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.4	444	0.0383	1.37		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
33.4	1,499	Total			

Subcatchment 16S: EX DA 16



Summary for Subcatchment 17S: EX DA 17

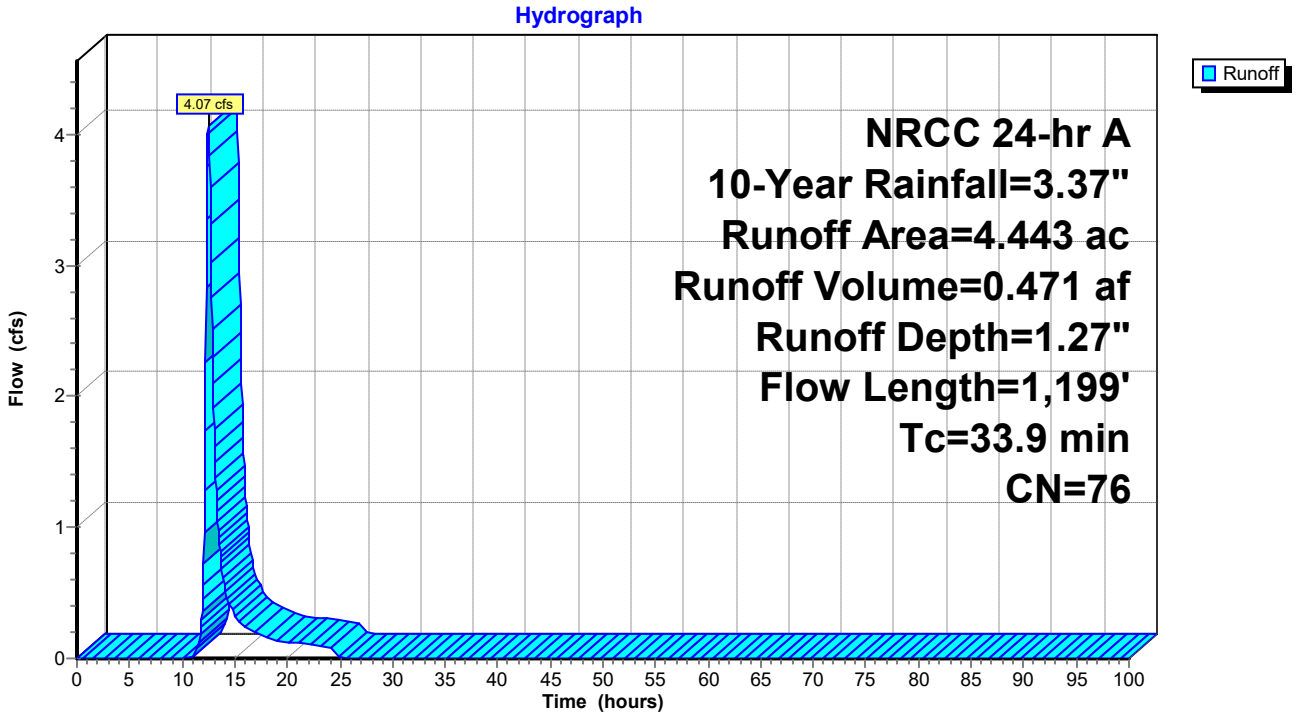
Runoff = 4.07 cfs @ 12.50 hrs, Volume= 0.471 af, Depth= 1.27"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 10-Year Rainfall=3.37"

	Area (ac)	CN	Description
*	0.198	78	B - Meadowed Land
*	3.169	74	C - Meadowed Land
*	1.001	80	D - Meadowed Land
*	0.075	77	D - Deciduous Forest
	4.443	76	Weighted Average
	4.443		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.6	137	0.0292	0.18		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
2.7	232	0.0431	1.45		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.2	266	0.0150	0.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
9.4	360	0.0083	0.64		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.0	204	0.0147	0.85		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
33.9	1,199	Total			

Subcatchment 17S: EX DA 17



Summary for Subcatchment 18S: EX DA 18

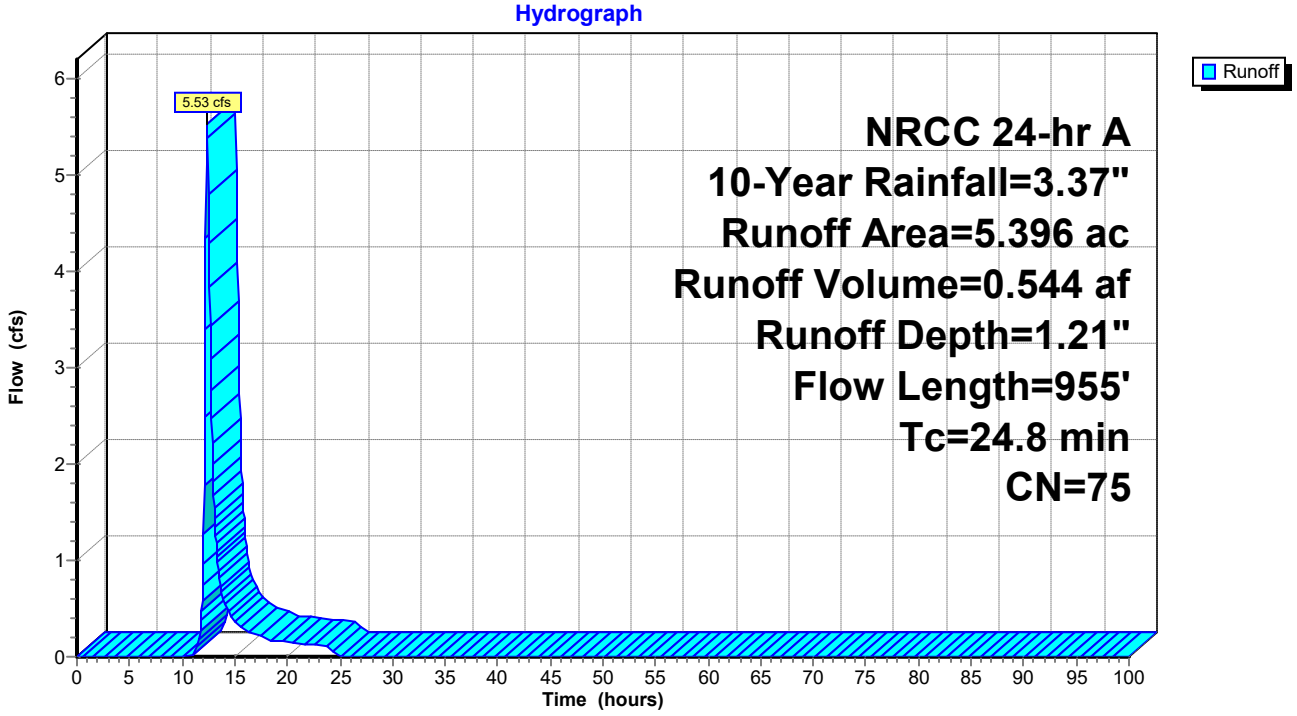
Runoff = 5.53 cfs @ 12.38 hrs, Volume= 0.544 af, Depth= 1.21"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 10-Year Rainfall=3.37"

	Area (ac)	CN	Description
*	0.672	78	B - Meadowed Land
*	4.382	74	C - Meadowed Land
*	0.137	89	D - Meadowed Land
*	0.205	77	D - Deciduous Forest
	5.396	75	Weighted Average
	5.396		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	108	0.0278	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
5.1	379	0.0317	1.25		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
9.1	468	0.0150	0.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
24.8	955	Total			

Subcatchment 18S: EX DA 18



Summary for Subcatchment 19S: EX DA 19

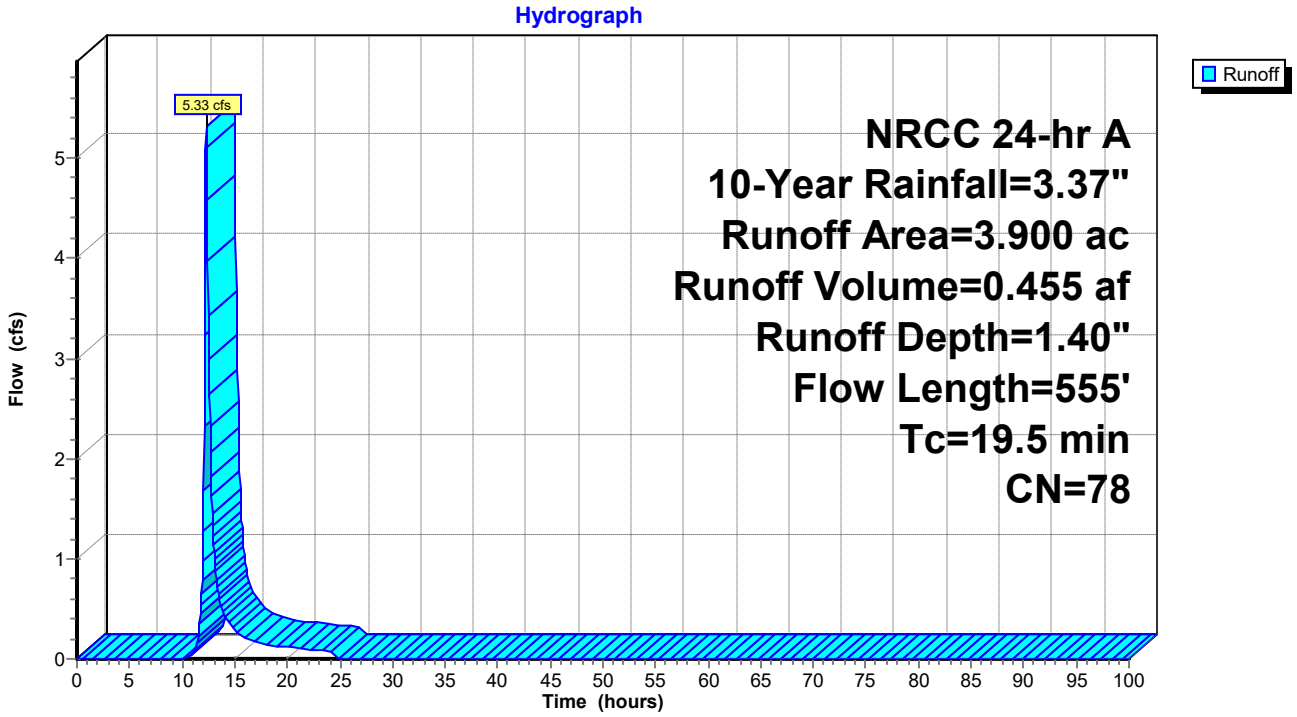
Runoff = 5.33 cfs @ 12.30 hrs, Volume= 0.455 af, Depth= 1.40"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 10-Year Rainfall=3.37"

	Area (ac)	CN	Description
*	3.180	77	D - Deciduous Forest
*	0.720	80	D - Meadowed Land
	3.900	78	Weighted Average
	3.900		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.8	200	0.0300	0.20		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
2.7	355	0.1014	2.23		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
19.5	555	Total			

Subcatchment 19S: EX DA 19



Summary for Subcatchment 20S: EX DA 20

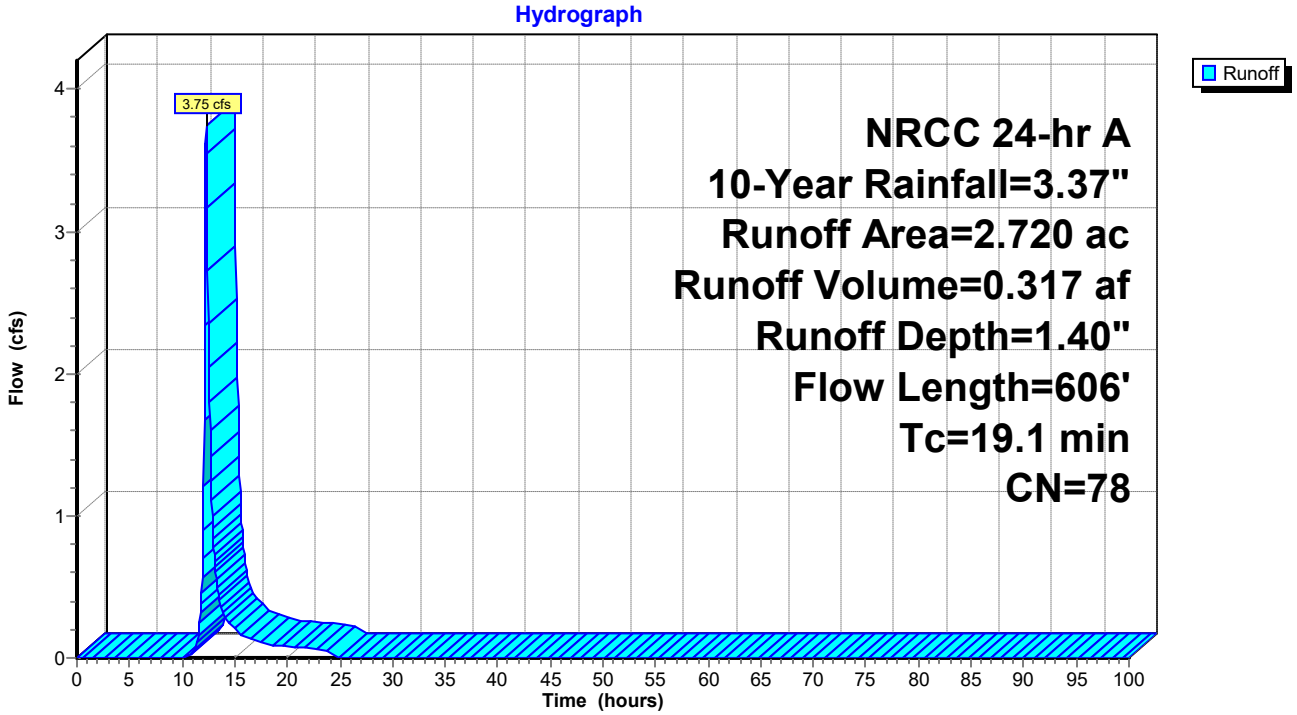
Runoff = 3.75 cfs @ 12.30 hrs, Volume= 0.317 af, Depth= 1.40"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 10-Year Rainfall=3.37"

	Area (ac)	CN	Description
*	2.010	77	D - Deciduous Forest
*	0.710	80	D - Meadowed Land
	2.720	78	Weighted Average
	2.720		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.8	150	0.0333	0.20		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
1.9	181	0.0497	1.56		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.4	275	0.0218	1.03		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
19.1	606	Total			

Subcatchment 20S: EX DA 20



Summary for Subcatchment 21S: EX DA 21

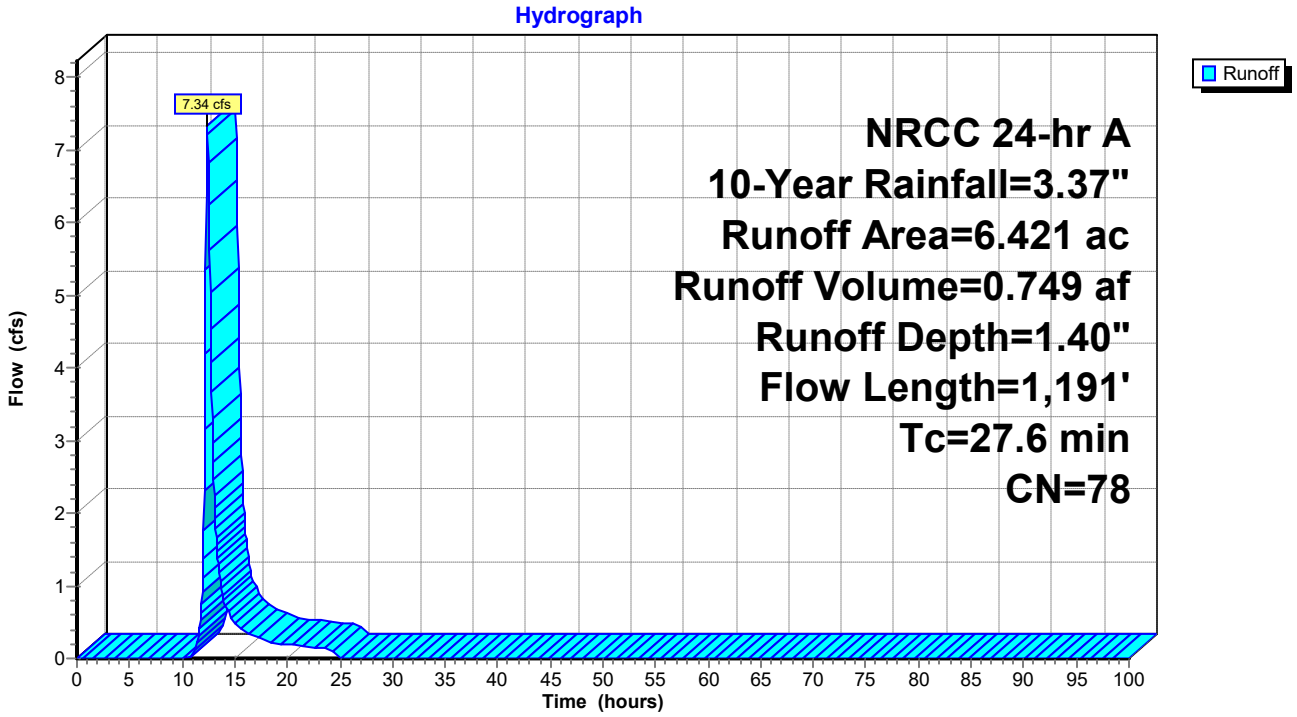
Runoff = 7.34 cfs @ 12.41 hrs, Volume= 0.749 af, Depth= 1.40"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 10-Year Rainfall=3.37"

	Area (ac)	CN	Description
*	0.410	78	B - Meadowed Land
*	1.310	70	C - Deciduous Forest
*	3.140	82	C - Meadowed Land
*	1.561	77	D - Deciduous Forest
	6.421	78	Weighted Average
	6.421		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	100	0.0300	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
5.0	354	0.0282	1.18		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
8.2	437	0.0160	0.89		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.7	300	0.0233	1.07		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
27.6	1,191	Total			

Subcatchment 21S: EX DA 21



Summary for Subcatchment 22S: EX DA 22

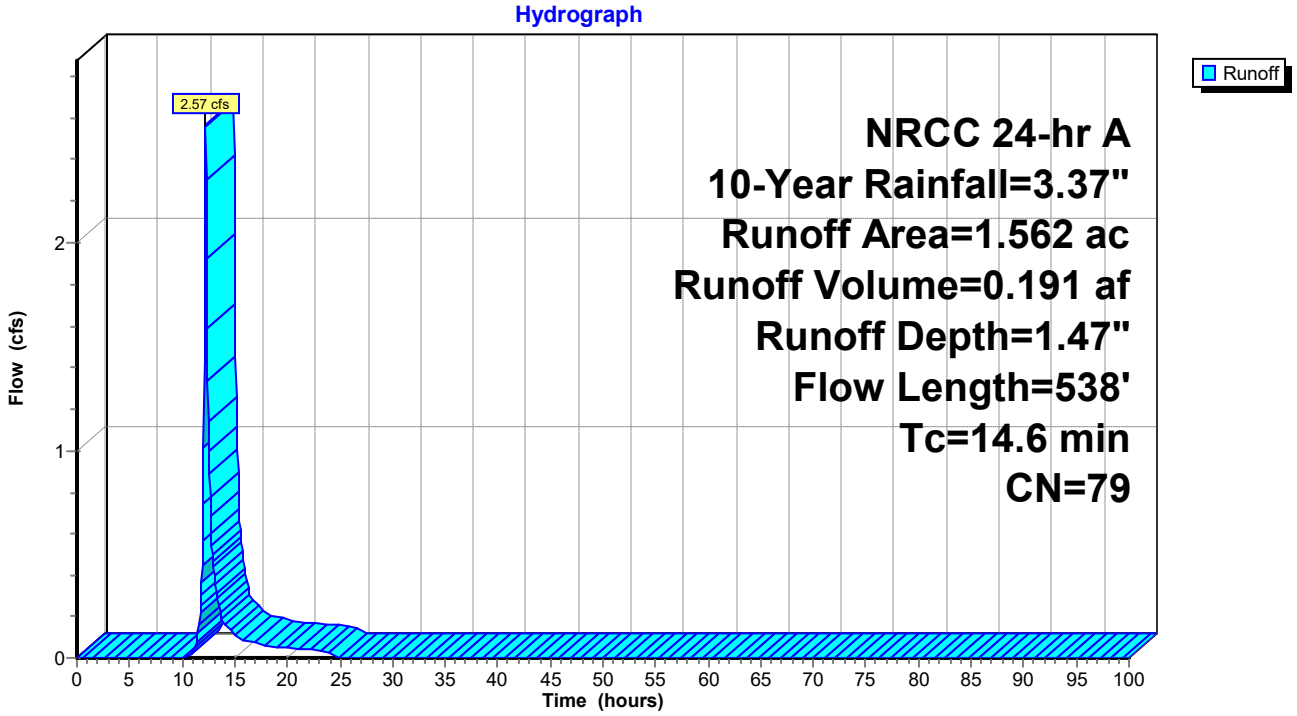
Runoff = 2.57 cfs @ 12.24 hrs, Volume= 0.191 af, Depth= 1.47"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 10-Year Rainfall=3.37"

	Area (ac)	CN	Description
*	1.136	77	D - Deciduous Forest
*	0.426	84	D - Shrub/Scrub
	1.562	79	Weighted Average
	1.562		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	125	0.0480	0.22		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
2.9	228	0.0351	1.31		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.1	185	0.0432	1.45		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
14.6	538	Total			

Subcatchment 22S: EX DA 22



Summary for Subcatchment 23S: EX DA 23

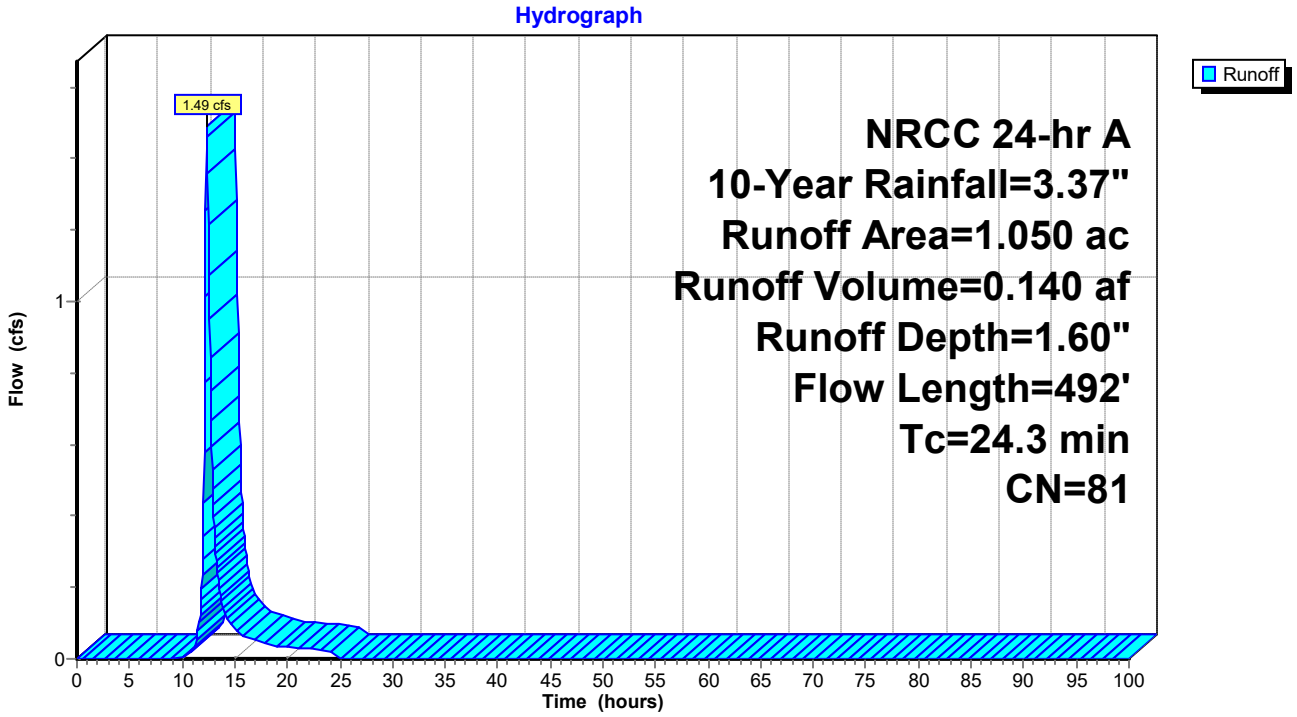
Runoff = 1.49 cfs @ 12.36 hrs, Volume= 0.140 af, Depth= 1.60"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 10-Year Rainfall=3.37"

	Area (ac)	CN	Description
*	0.730	77	D - Deciduous Forest
*	0.320	89	D - Meadowed Land
	1.050	81	Weighted Average
	1.050		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.4	205	0.0195	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
3.9	287	0.0314	1.24		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
24.3	492	Total			

Subcatchment 23S: EX DA 23



Summary for Subcatchment 24S: EX DA 24

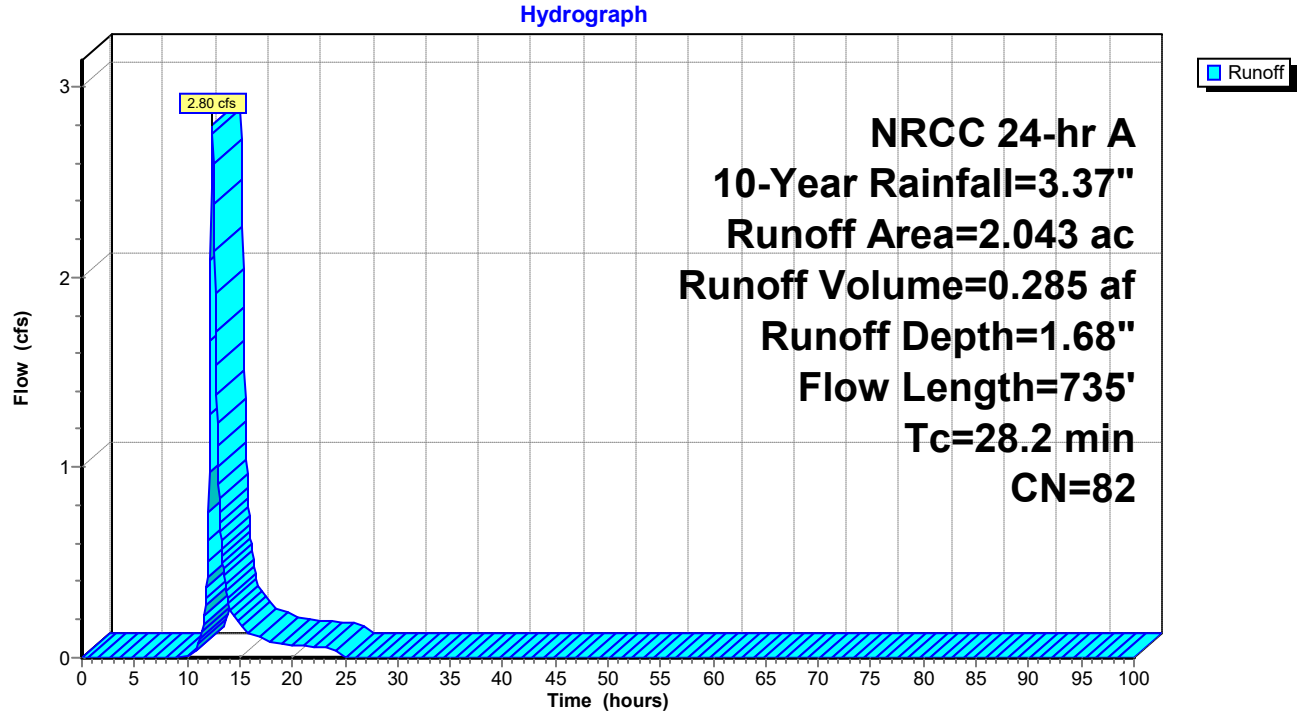
Runoff = 2.80 cfs @ 12.41 hrs, Volume= 0.285 af, Depth= 1.68"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 10-Year Rainfall=3.37"

	Area (ac)	CN	Description
*	1.290	82	C - Meadowed Land
*	0.060	70	C - Deciduous Forest
*	0.342	89	D - Meadowed Land
*	0.351	77	D - Deciduous Forest
	2.043	82	Weighted Average
	2.043		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.1	183	0.0328	0.20		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
6.6	197	0.0051	0.50		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.5	355	0.0169	0.91		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
28.2	735	Total			

Subcatchment 24S: EX DA 24



Summary for Subcatchment 25S: EX DA 25

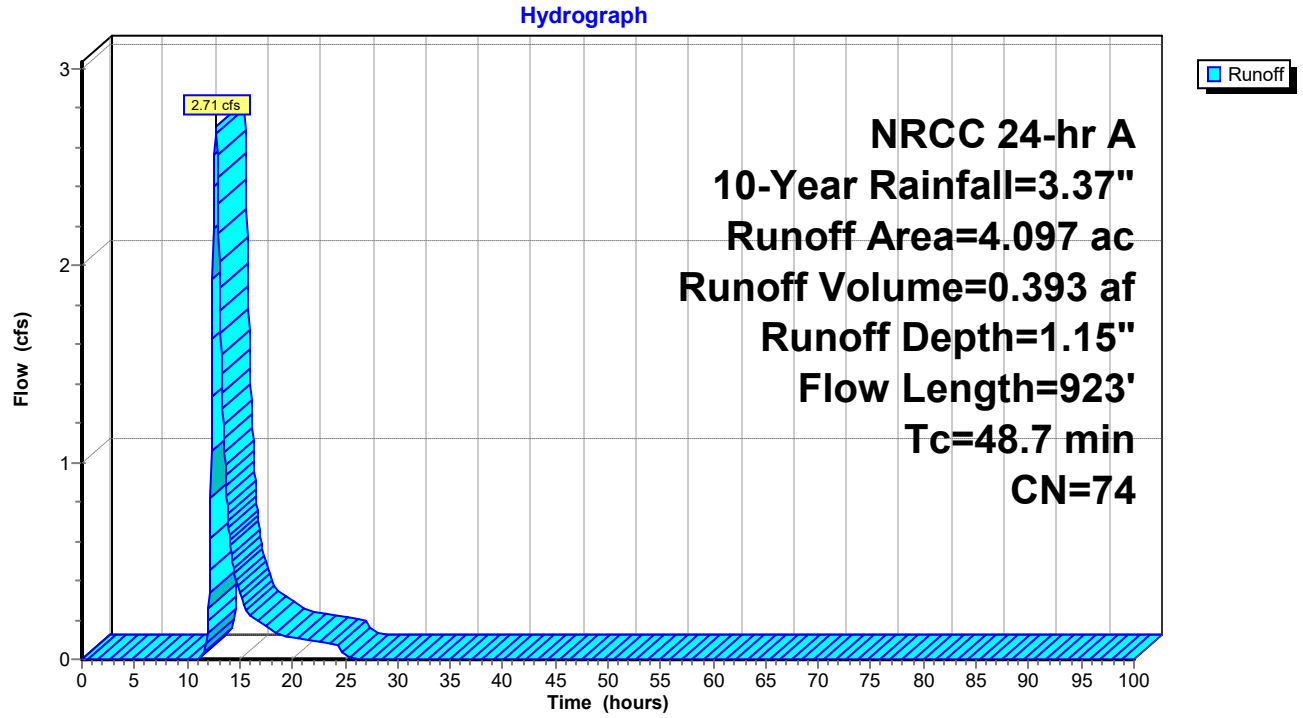
Runoff = 2.71 cfs @ 12.72 hrs, Volume= 0.393 af, Depth= 1.15"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 10-Year Rainfall=3.37"

	Area (ac)	CN	Description
*	0.330	61	B - Meadowed Land
*	3.290	74	C - Meadowed Land
*	0.227	74	C - Developed, Open Space
*	0.204	89	D - Meadowed Land
*	0.046	77	D - Deciduous Forest
	4.097	74	Weighted Average
	4.097		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.7	167	0.0419	0.22		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
2.2	170	0.0353	1.32		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
33.8	586	0.0017	0.29		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
48.7	923	Total			

Subcatchment 25S: EX DA 25



Summary for Subcatchment 26S: EX DA 26

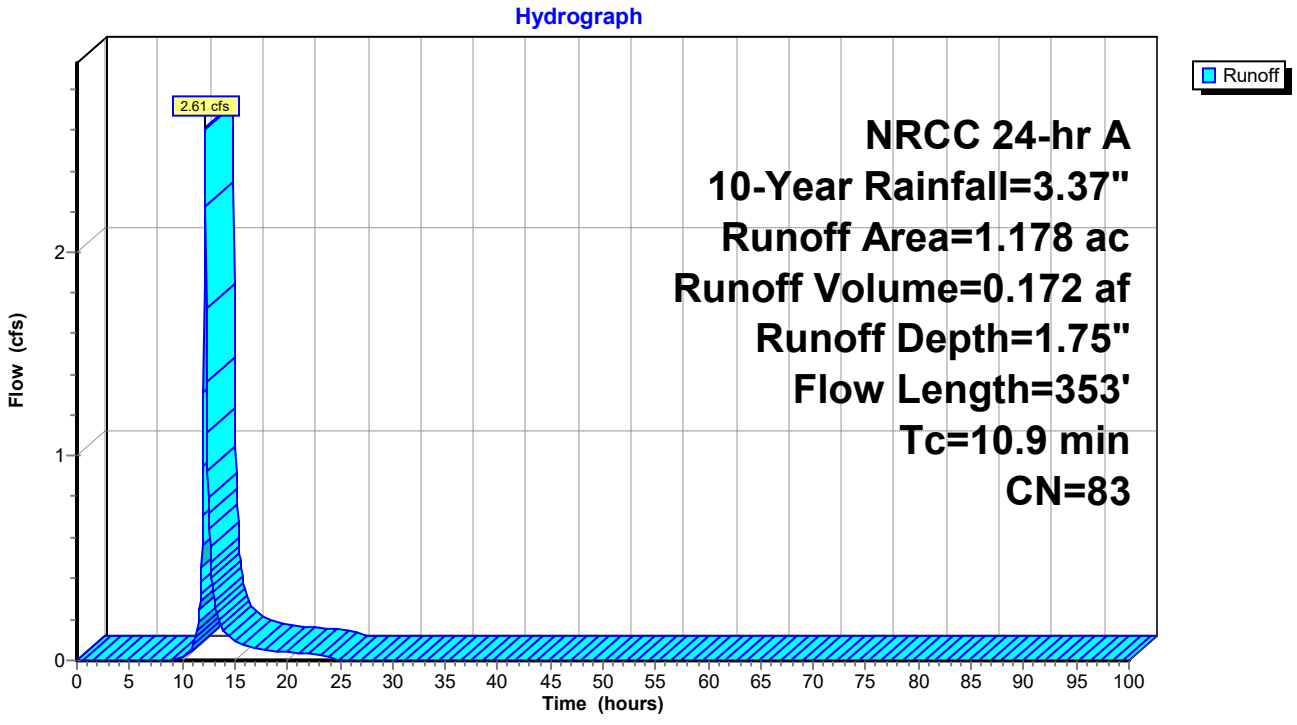
Runoff = 2.61 cfs @ 12.19 hrs, Volume= 0.172 af, Depth= 1.75"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 10-Year Rainfall=3.37"

	Area (ac)	CN	Description
*	0.200	77	D - Deciduous Forest
*	0.050	77	D - Deciduous Forest
*	0.928	84	D - Shrub/Scrub
	1.178	83	Weighted Average
	1.178		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	93	0.0323	0.18		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
2.1	260	0.0846	2.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
10.9	353	Total			

Subcatchment 26S: EX DA 26



Summary for Subcatchment 27S: EX DA 27

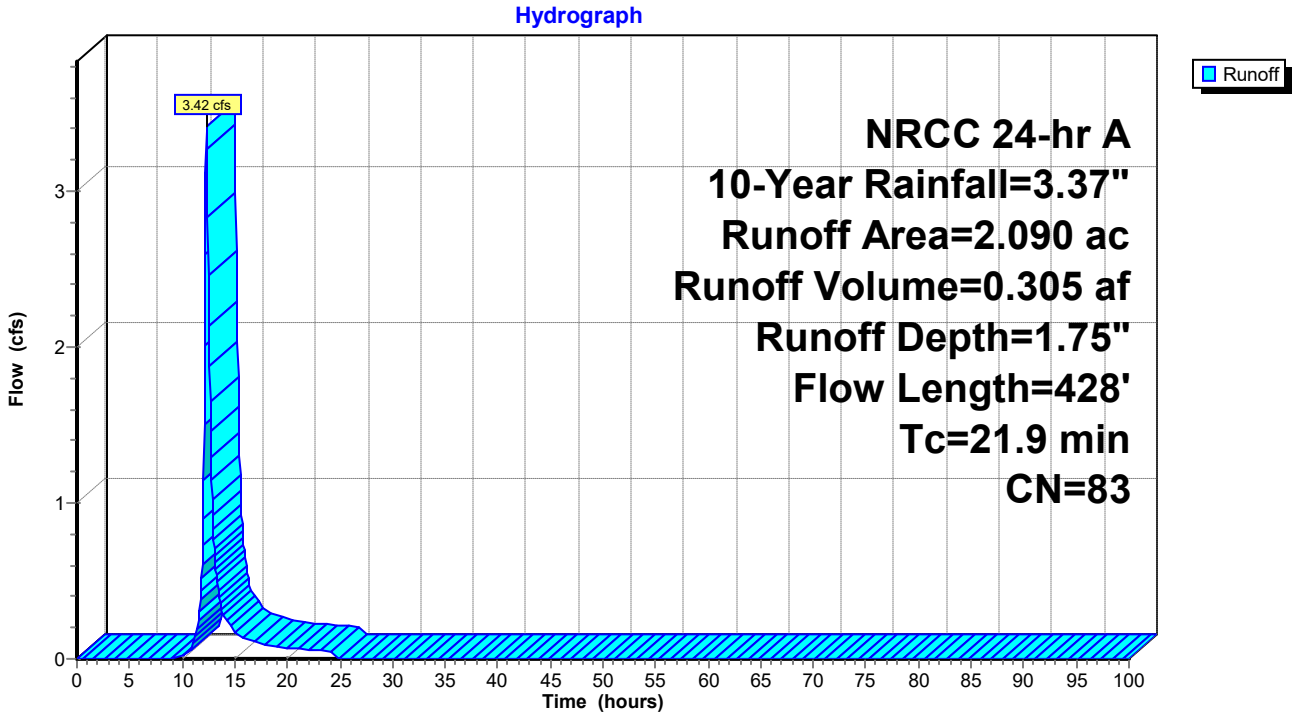
Runoff = 3.42 cfs @ 12.32 hrs, Volume= 0.305 af, Depth= 1.75"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 10-Year Rainfall=3.37"

	Area (ac)	CN	Description
*	0.260	77	D - Deciduous Forest
*	1.830	84	D - Shrub/Scrub
	2.090	83	Weighted Average
	2.090		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.0	208	0.0240	0.18		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
2.9	220	0.0318	1.25		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
21.9	428	Total			

Subcatchment 27S: EX DA 27



Summary for Subcatchment 28S: EX DA 28

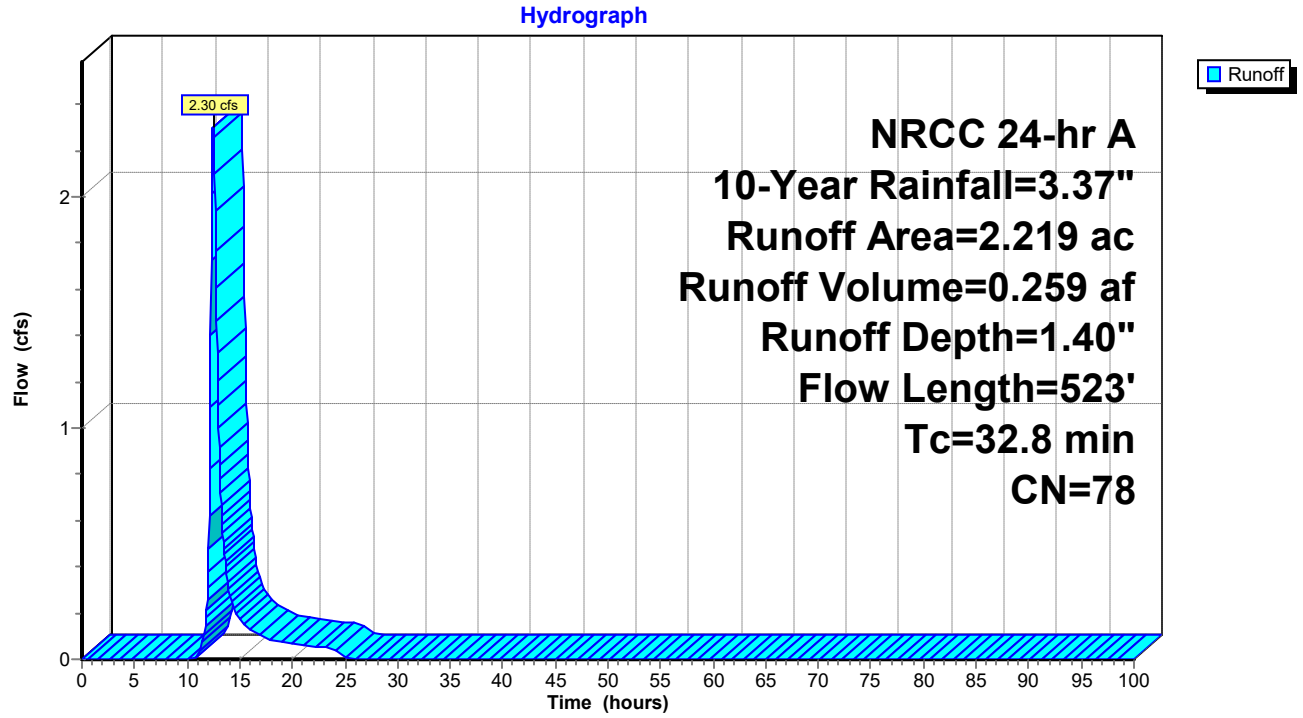
Runoff = 2.30 cfs @ 12.48 hrs, Volume= 0.259 af, Depth= 1.40"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 10-Year Rainfall=3.37"

	Area (ac)	CN	Description
*	0.120	39	A - Developed. Open Space
*	0.010	82	D - Developed, Low Intensity
*	1.207	77	D - Deciduous Forest
*	0.834	84	D - Shrub/Scrub
*	0.048	80	D - Developed, Open Space
	2.219	78	Weighted Average
	2.219		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.1	206	0.0097	0.13		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
5.2	213	0.0094	0.68		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	104	0.2115	3.22		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
32.8	523	Total			

Subcatchment 28S: EX DA 28



Time span=0.00-100.00 hrs, dt=0.05 hrs, 2001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: EX DA 1 Runoff Area=2.097 ac 0.00% Impervious Runoff Depth=2.54"
Flow Length=454' Tc=9.2 min CN=70 Runoff=7.17 cfs 0.444 af

Subcatchment 2S: EX DA 2 Runoff Area=0.983 ac 0.00% Impervious Runoff Depth=3.18"
Flow Length=312' Tc=18.5 min CN=77 Runoff=3.17 cfs 0.261 af

Subcatchment 3S: EX DA 3 Runoff Area=3.529 ac 0.00% Impervious Runoff Depth=2.72"
Flow Length=440' Tc=19.5 min CN=72 Runoff=9.46 cfs 0.799 af

Subcatchment 4S: EX DA 4 Runoff Area=7.320 ac 0.00% Impervious Runoff Depth=2.81"
Flow Length=1,080' Tc=36.8 min CN=73 Runoff=14.52 cfs 1.713 af

Subcatchment 5S: EX DA 5 Runoff Area=9.189 ac 0.00% Impervious Runoff Depth=2.11"
Flow Length=1,150' Tc=35.1 min CN=65 Runoff=13.63 cfs 1.614 af

Subcatchment 6S: EX DA 6 Runoff Area=1.995 ac 0.00% Impervious Runoff Depth=2.90"
Flow Length=553' Tc=20.1 min CN=74 Runoff=5.65 cfs 0.482 af

Subcatchment 7S: EX DA 7 Runoff Area=8.930 ac 0.00% Impervious Runoff Depth=1.94"
Flow Length=2,108' Tc=40.2 min CN=63 Runoff=11.13 cfs 1.445 af

Subcatchment 8S: EX DA 8 Runoff Area=2.164 ac 0.00% Impervious Runoff Depth=3.09"
Flow Length=553' Tc=21.6 min CN=76 Runoff=6.32 cfs 0.557 af

Subcatchment 9S: EX DA 9 Runoff Area=5.871 ac 0.00% Impervious Runoff Depth=3.18"
Flow Length=2,043' Tc=43.4 min CN=77 Runoff=12.03 cfs 1.558 af

Subcatchment 10S: EX DA 10 Runoff Area=8.128 ac 0.00% Impervious Runoff Depth=3.38"
Flow Length=2,106' Tc=40.6 min CN=79 Runoff=18.42 cfs 2.288 af

Subcatchment 11S: EX DA 11 Runoff Area=13.942 ac 0.00% Impervious Runoff Depth=2.99"
Flow Length=2,066' Tc=36.3 min CN=75 Runoff=29.78 cfs 3.479 af

Subcatchment 12S: EX DA 12 Runoff Area=2.590 ac 0.00% Impervious Runoff Depth=2.99"
Flow Length=762' Tc=32.9 min CN=75 Runoff=5.86 cfs 0.646 af

Subcatchment 13S: EX DA 13 Runoff Area=9.223 ac 0.00% Impervious Runoff Depth=2.99"
Flow Length=2,130' Tc=40.6 min CN=75 Runoff=18.51 cfs 2.301 af

Subcatchment 14S: EX DA 14 Runoff Area=2.056 ac 0.00% Impervious Runoff Depth=3.18"
Flow Length=510' Tc=16.4 min CN=77 Runoff=7.05 cfs 0.546 af

Subcatchment 15S: EX DA 15 Runoff Area=10.425 ac 0.00% Impervious Runoff Depth=3.09"
Flow Length=1,658' Tc=35.0 min CN=76 Runoff=23.53 cfs 2.683 af

Subcatchment 16S: EX DA 16 Runoff Area=6.509 ac 0.00% Impervious Runoff Depth=3.18"
Flow Length=1,499' Tc=33.4 min CN=77 Runoff=15.54 cfs 1.727 af

Subcatchment 17S: EX DA 17 Runoff Area=4.443 ac 0.00% Impervious Runoff Depth=3.09"
Flow Length=1,199' Tc=33.9 min CN=76 Runoff=10.19 cfs 1.144 af

Subcatchment 18S: EX DA 18 Runoff Area=5.396 ac 0.00% Impervious Runoff Depth=2.99"
Flow Length=955' Tc=24.8 min CN=75 Runoff=14.19 cfs 1.346 af

Subcatchment 19S: EX DA 19 Runoff Area=3.900 ac 0.00% Impervious Runoff Depth=3.28"
Flow Length=555' Tc=19.5 min CN=78 Runoff=12.64 cfs 1.066 af

Subcatchment 20S: EX DA 20 Runoff Area=2.720 ac 0.00% Impervious Runoff Depth=3.28"
Flow Length=606' Tc=19.1 min CN=78 Runoff=8.91 cfs 0.744 af

Subcatchment 21S: EX DA 21 Runoff Area=6.421 ac 0.00% Impervious Runoff Depth=3.28"
Flow Length=1,191' Tc=27.6 min CN=78 Runoff=17.50 cfs 1.755 af

Subcatchment 22S: EX DA 22 Runoff Area=1.562 ac 0.00% Impervious Runoff Depth=3.38"
Flow Length=538' Tc=14.6 min CN=79 Runoff=5.94 cfs 0.440 af

Subcatchment 23S: EX DA 23 Runoff Area=1.050 ac 0.00% Impervious Runoff Depth=3.58"
Flow Length=492' Tc=24.3 min CN=81 Runoff=3.33 cfs 0.313 af

Subcatchment 24S: EX DA 24 Runoff Area=2.043 ac 0.00% Impervious Runoff Depth=3.68"
Flow Length=735' Tc=28.2 min CN=82 Runoff=6.14 cfs 0.626 af

Subcatchment 25S: EX DA 25 Runoff Area=4.097 ac 0.00% Impervious Runoff Depth=2.90"
Flow Length=923' Tc=48.7 min CN=74 Runoff=7.15 cfs 0.990 af

Subcatchment 26S: EX DA 26 Runoff Area=1.178 ac 0.00% Impervious Runoff Depth=3.78"
Flow Length=353' Tc=10.9 min CN=83 Runoff=5.54 cfs 0.371 af

Subcatchment 27S: EX DA 27 Runoff Area=2.090 ac 0.00% Impervious Runoff Depth=3.78"
Flow Length=428' Tc=21.9 min CN=83 Runoff=7.31 cfs 0.658 af

Subcatchment 28S: EX DA 28 Runoff Area=2.219 ac 0.00% Impervious Runoff Depth=3.28"
Flow Length=523' Tc=32.8 min CN=78 Runoff=5.51 cfs 0.607 af

Total Runoff Area = 132.070 ac Runoff Volume = 32.602 af Average Runoff Depth = 2.96"
100.00% Pervious = 132.070 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1S: EX DA 1

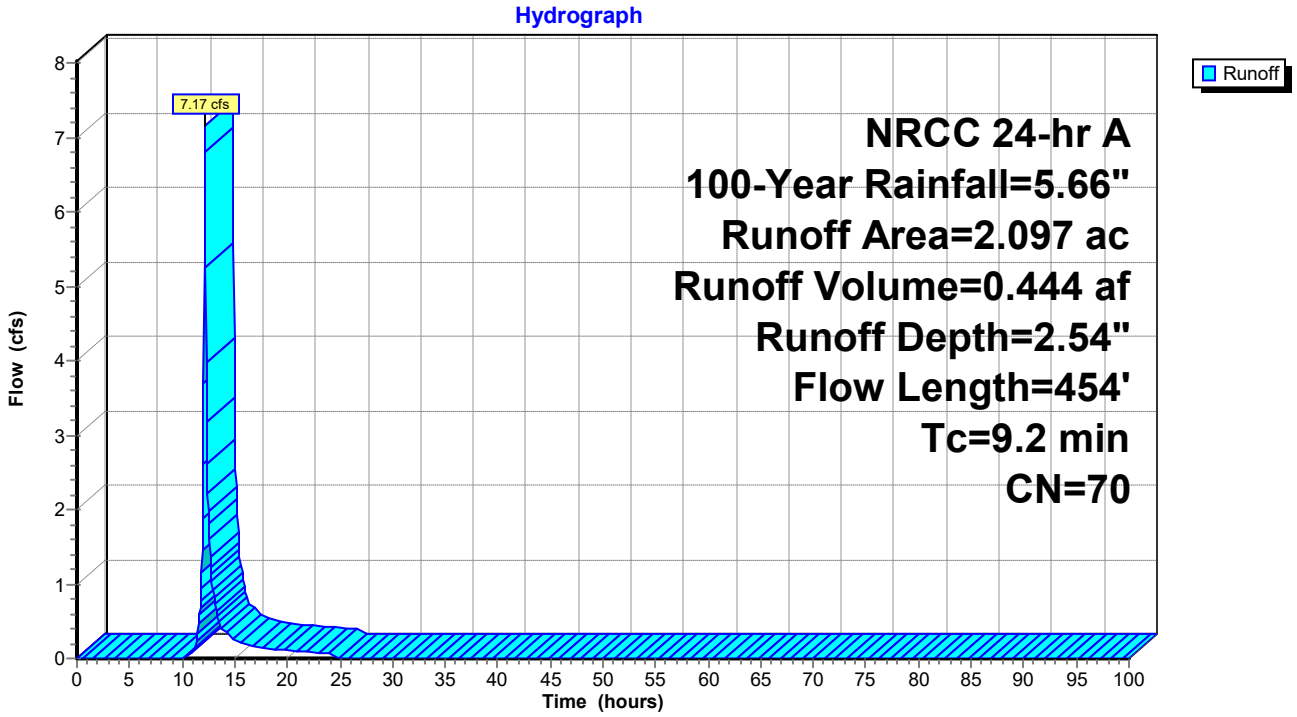
Runoff = 7.17 cfs @ 12.17 hrs, Volume= 0.444 af, Depth= 2.54"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 100-Year Rainfall=5.66"

	Area (ac)	CN	Description
*	0.279	55	B - Deciduous Forest
*	0.046	61	B - Meadowed Land
*	0.430	61	B - Developed, Open Space
*	0.027	65	B - Developed, Low Intensity
*	1.198	77	D - Deciduous Forest
*	0.117	80	D - Meadowed Land
	2.097	70	Weighted Average
	2.097		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	94	0.0851	0.26		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
0.8	106	0.0943	2.15		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.3	254	0.0709	1.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
9.2	454	Total			

Subcatchment 1S: EX DA 1



Summary for Subcatchment 2S: EX DA 2

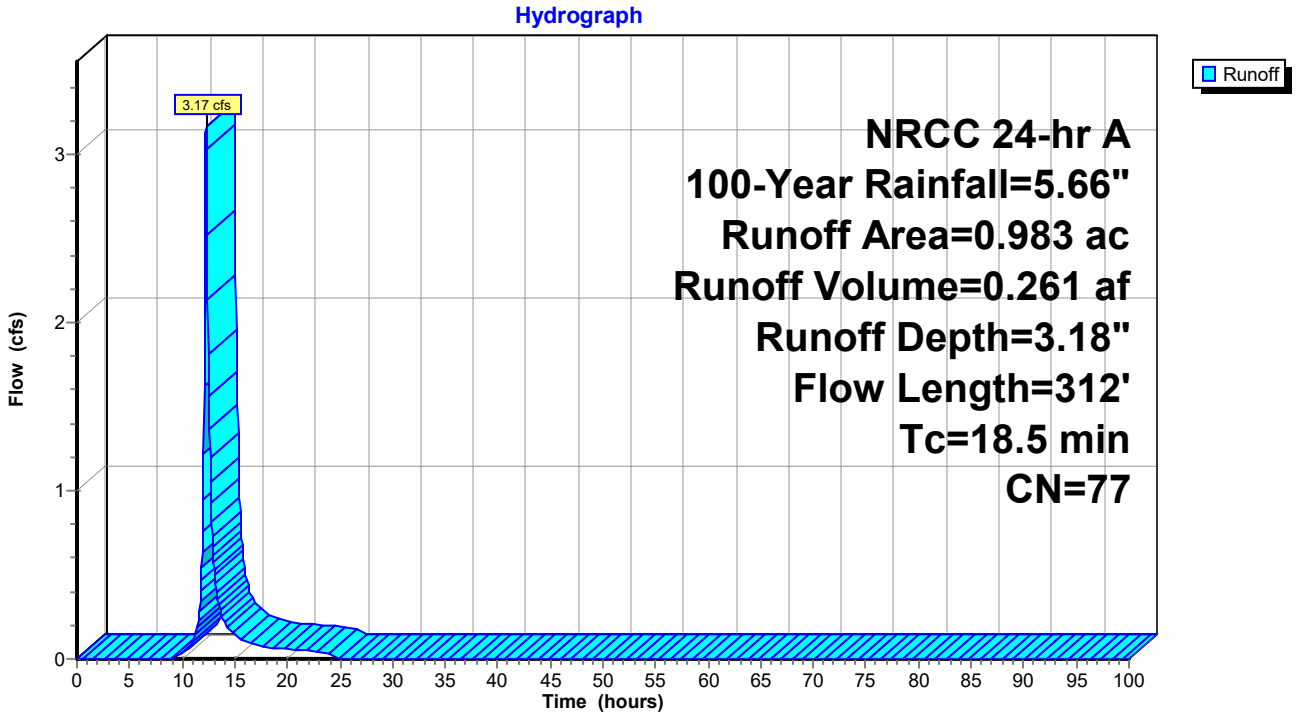
Runoff = 3.17 cfs @ 12.28 hrs, Volume= 0.261 af, Depth= 3.18"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 100-Year Rainfall=5.66"

	Area (ac)	CN	Description
*	0.983	77	D - Deciduous Forest
	0.983		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.2	127	0.0157	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
3.0	116	0.0086	0.65		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	69	0.2464	3.47		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
18.5	312	Total			

Subcatchment 2S: EX DA 2



Summary for Subcatchment 3S: EX DA 3

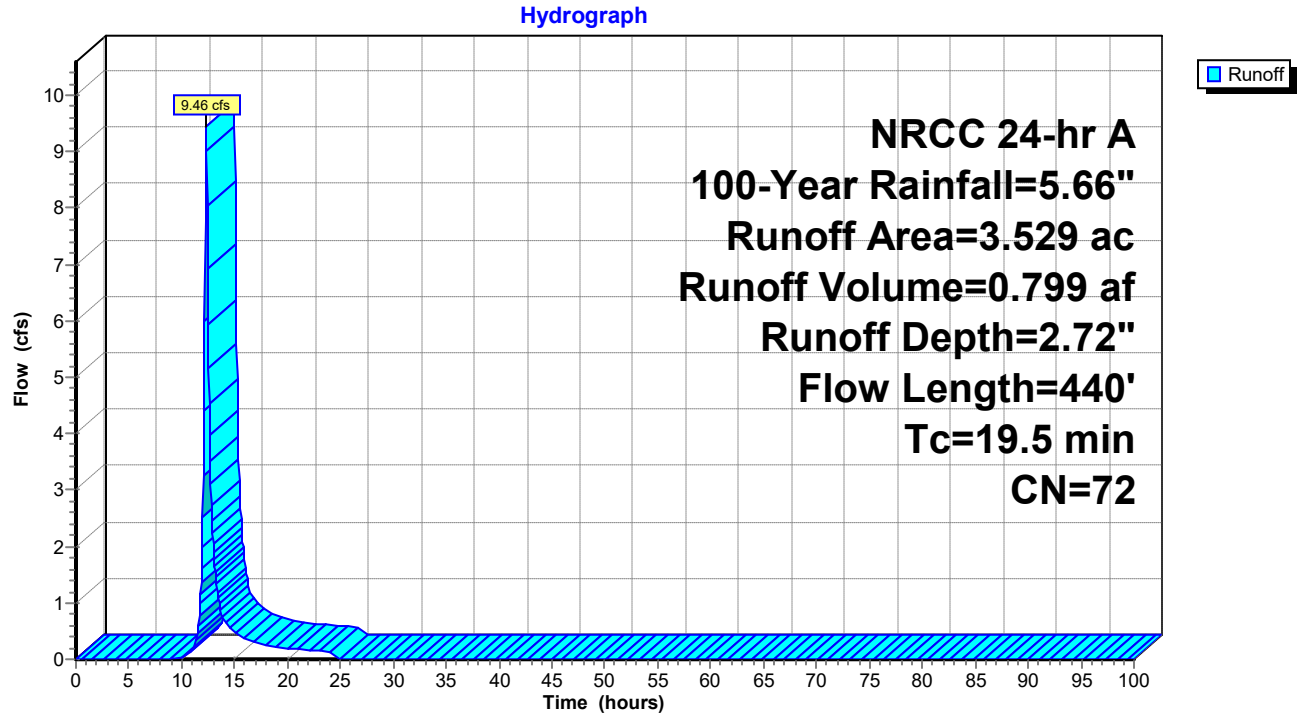
Runoff = 9.46 cfs @ 12.30 hrs, Volume= 0.799 af, Depth= 2.72"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 100-Year Rainfall=5.66"

	Area (ac)	CN	Description
*	2.115	70	C - Deciduous Forest
*	0.791	74	C - Meadowed Land
*	0.017	80	D - Meadowed Land
*	0.600	77	D - Deciduous Forest
*	0.006	85	D - Developed, Medium Intensity
	3.529	72	Weighted Average
	3.529		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.3	114	0.0175	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
1.1	116	0.0603	1.72		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.1	210	0.0095	0.68		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
19.5	440	Total			

Subcatchment 3S: EX DA 3



Summary for Subcatchment 4S: EX DA 4

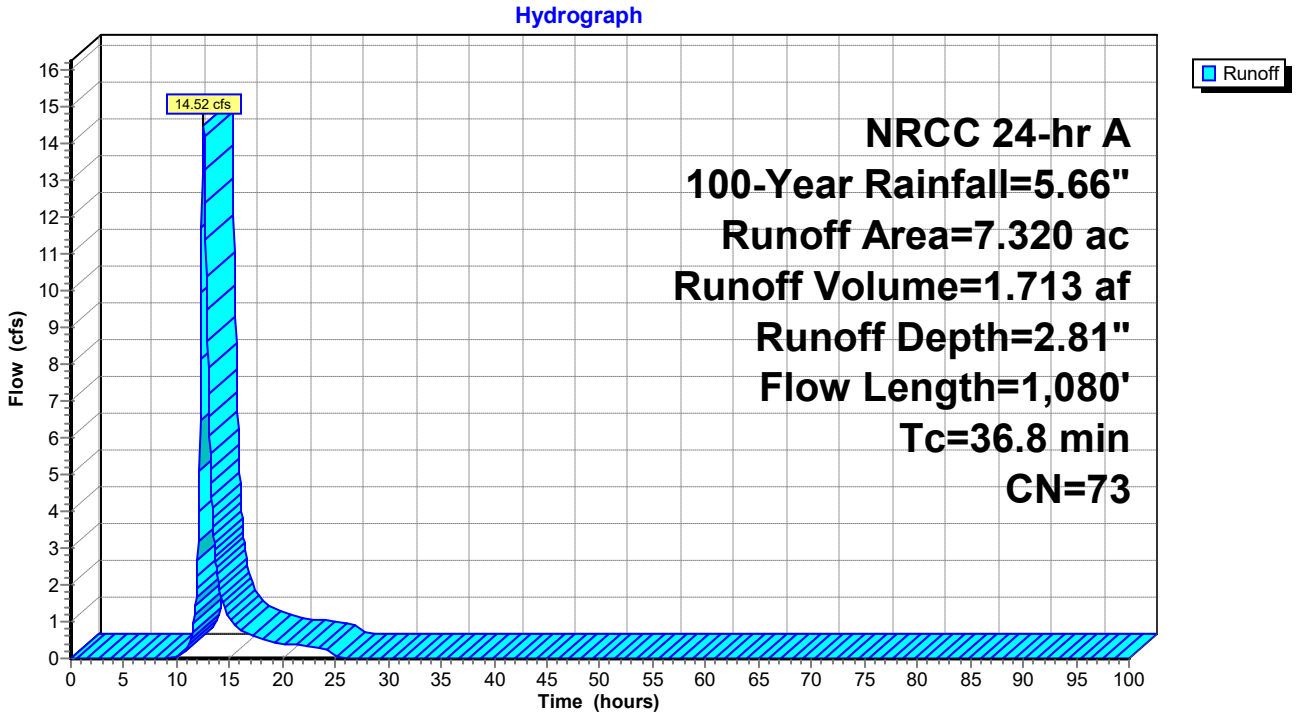
Runoff = 14.52 cfs @ 12.52 hrs, Volume= 1.713 af, Depth= 2.81"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 100-Year Rainfall=5.66"

	Area (ac)	CN	Description
*	0.200	58	B - Meadowed Land
*	5.292	74	C - Meadowed Land
*	1.828	70	C - Deciduous Forest
	7.320	73	Weighted Average
	7.320		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.6	102	0.0196	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
1.4	114	0.0351	1.31		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.5	177	0.0282	1.18		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.2	145	0.0069	0.58		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
15.3	346	0.0029	0.38		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.8	196	0.0663	1.80		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
36.8	1,080	Total			

Subcatchment 4S: EX DA 4



Summary for Subcatchment 5S: EX DA 5

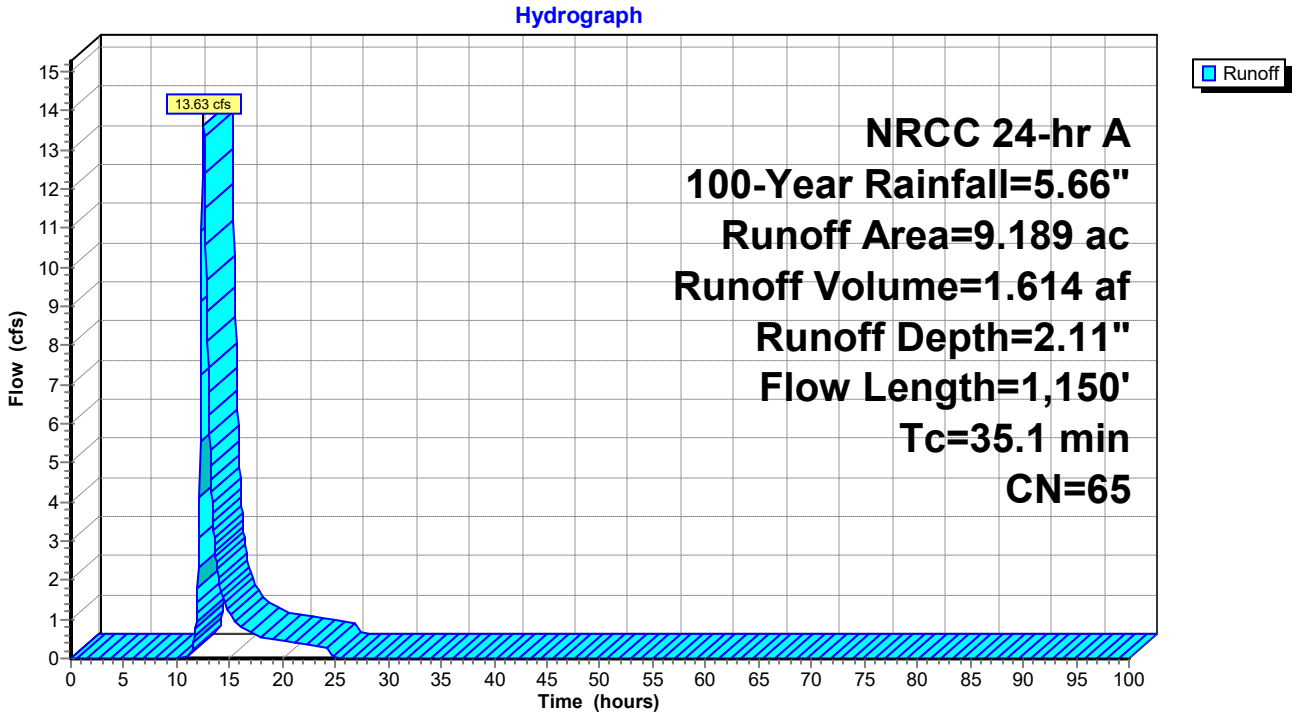
Runoff = 13.63 cfs @ 12.52 hrs, Volume= 1.614 af, Depth= 2.11"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 100-Year Rainfall=5.66"

	Area (ac)	CN	Description
*	4.897	58	B - Meadowed Land
*	0.003	55	B - Deciduous Forest
*	3.151	74	C - Meadowed Land
*	1.138	70	C - Deciduous Forest
	9.189	65	Weighted Average
	9.189		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.6	165	0.0182	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
2.2	160	0.0312	1.24		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.0	204	0.0147	0.85		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.1	182	0.0110	0.73		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.2	154	0.0130	0.80		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.0	285	0.0281	1.17		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
35.1	1,150	Total			

Subcatchment 5S: EX DA 5



Summary for Subcatchment 6S: EX DA 6

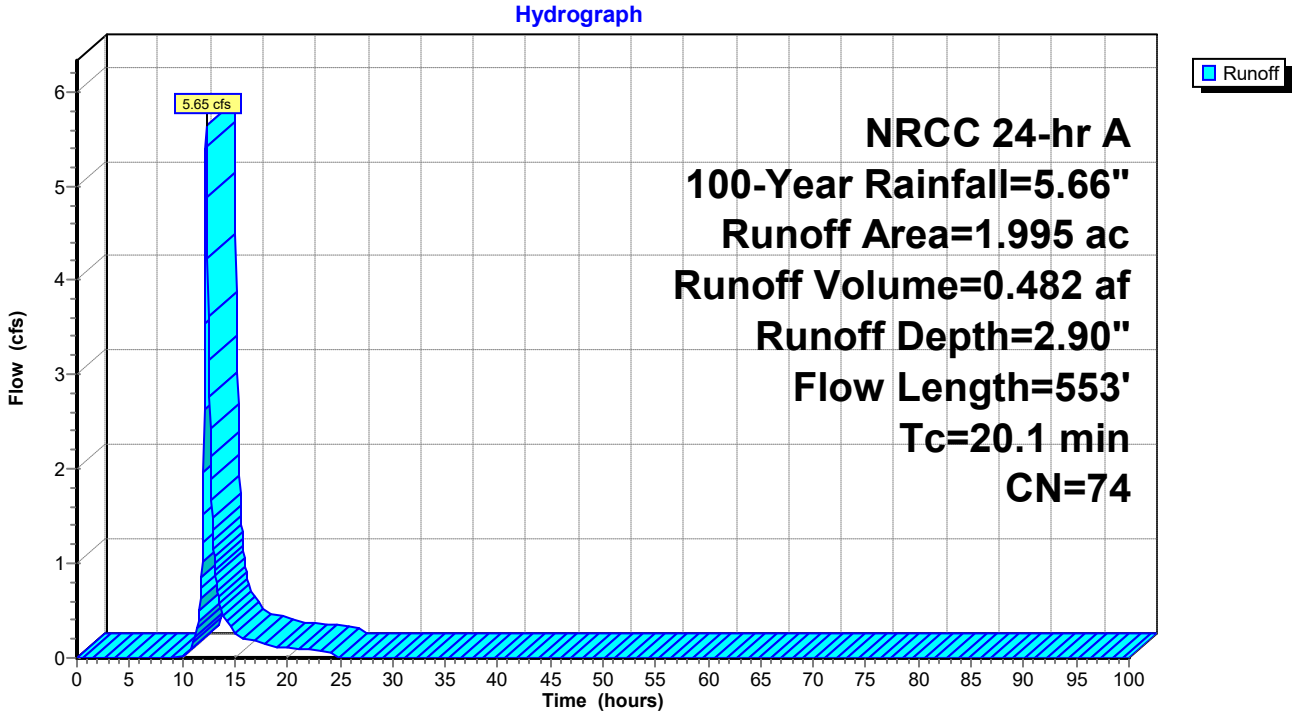
Runoff = 5.65 cfs @ 12.30 hrs, Volume= 0.482 af, Depth= 2.90"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 100-Year Rainfall=5.66"

	Area (ac)	CN	Description
*	1.995	74	C - Meadowed Land
	1.995		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.8	89	0.0562	0.22		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
3.4	159	0.0126	0.79		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.5	74	0.0135	0.81		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
8.4	231	0.0043	0.46		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
20.1	553	Total			

Subcatchment 6S: EX DA 6



Summary for Subcatchment 7S: EX DA 7

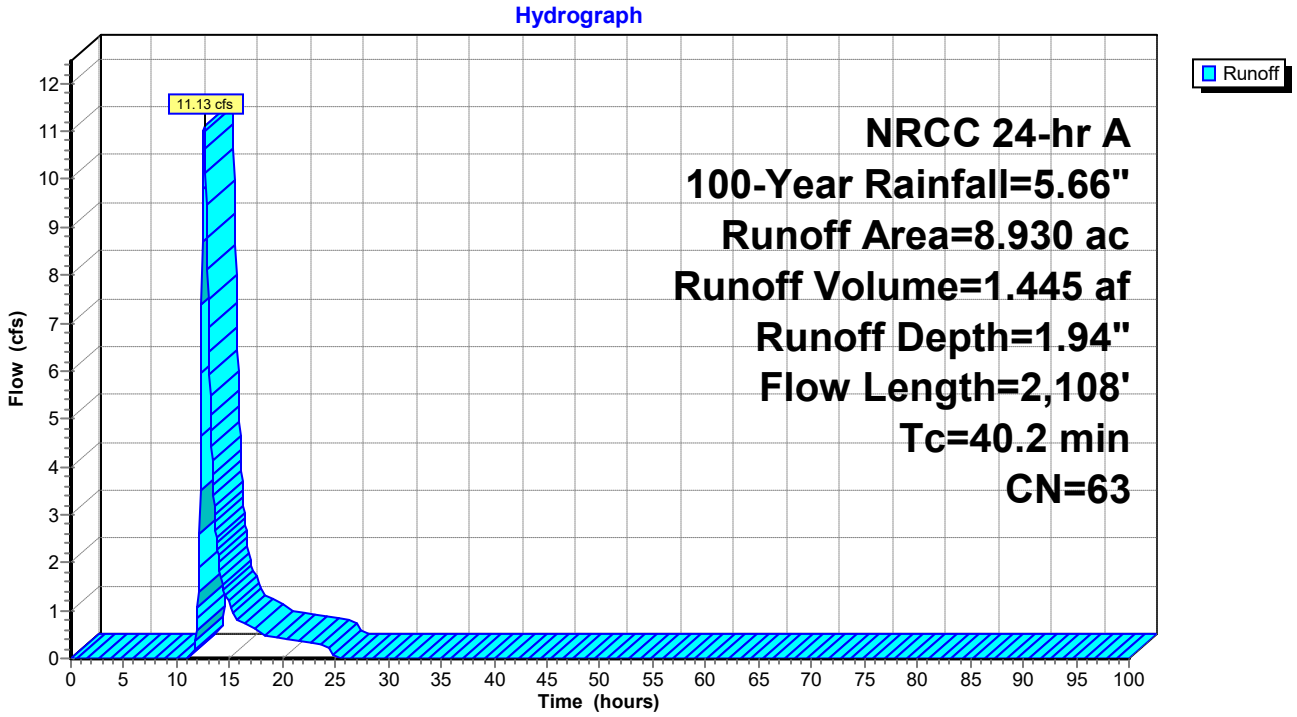
Runoff = 11.13 cfs @ 12.60 hrs, Volume= 1.445 af, Depth= 1.94"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 100-Year Rainfall=5.66"

	Area (ac)	CN	Description
*	6.326	58	B - Meadowed Land
*	0.088	70	C - Deciduous Forest
*	2.500	74	C - Meadowed Land
*	0.016	74	C - Developed, Open Space
	8.930	63	Weighted Average
	8.930		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.5	164	0.0427	0.22		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
8.4	570	0.0263	1.14		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.9	247	0.0405	1.41		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.4	126	0.0159	0.88		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.2	456	0.0307	1.23		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.8	545	0.0275	1.16		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
40.2	2,108	Total			

Subcatchment 7S: EX DA 7



Summary for Subcatchment 8S: EX DA 8

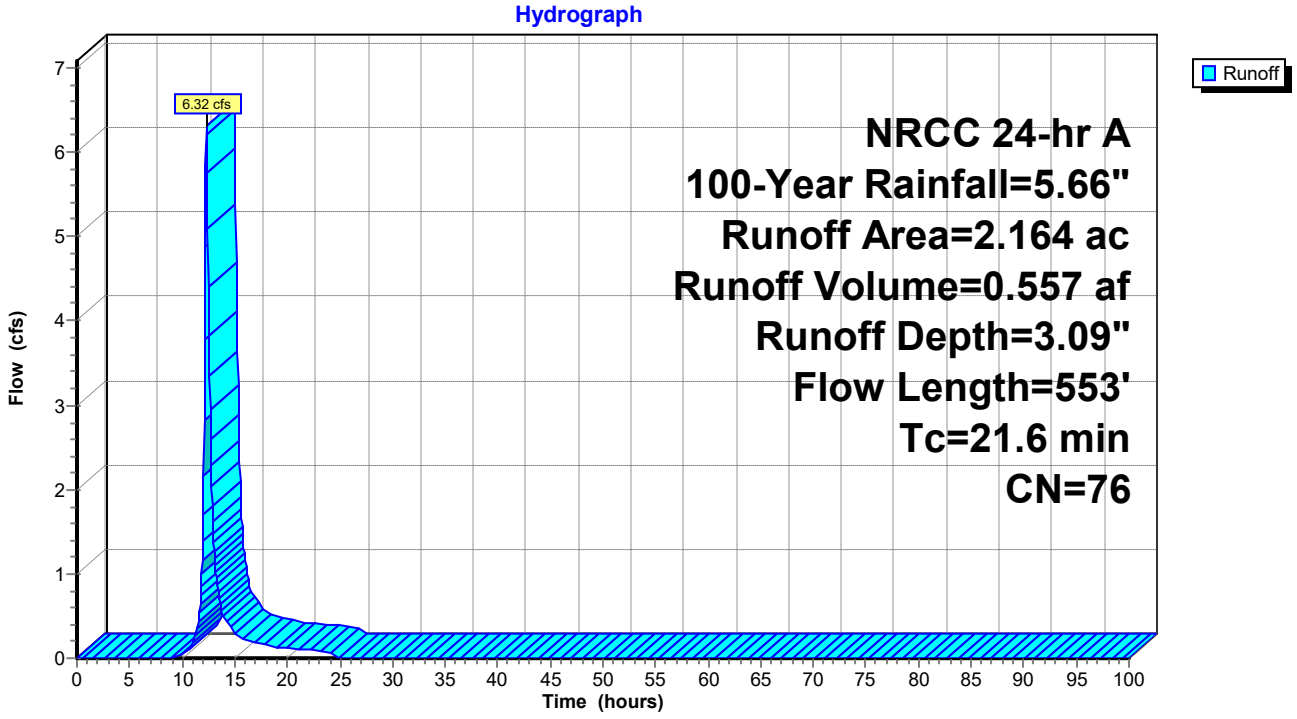
Runoff = 6.32 cfs @ 12.32 hrs, Volume= 0.557 af, Depth= 3.09"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 100-Year Rainfall=5.66"

	Area (ac)	CN	Description
*	0.308	70	C - Deciduous Forest
*	1.834	77	D - Deciduous Forest
*	0.022	77	D - Evergreen Forest
	2.164	76	Weighted Average
	2.164		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.6	178	0.0337	0.20		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
5.1	239	0.0125	0.78		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.9	136	0.0294	1.20		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
21.6	553	Total			

Subcatchment 8S: EX DA 8



Summary for Subcatchment 9S: EX DA 9

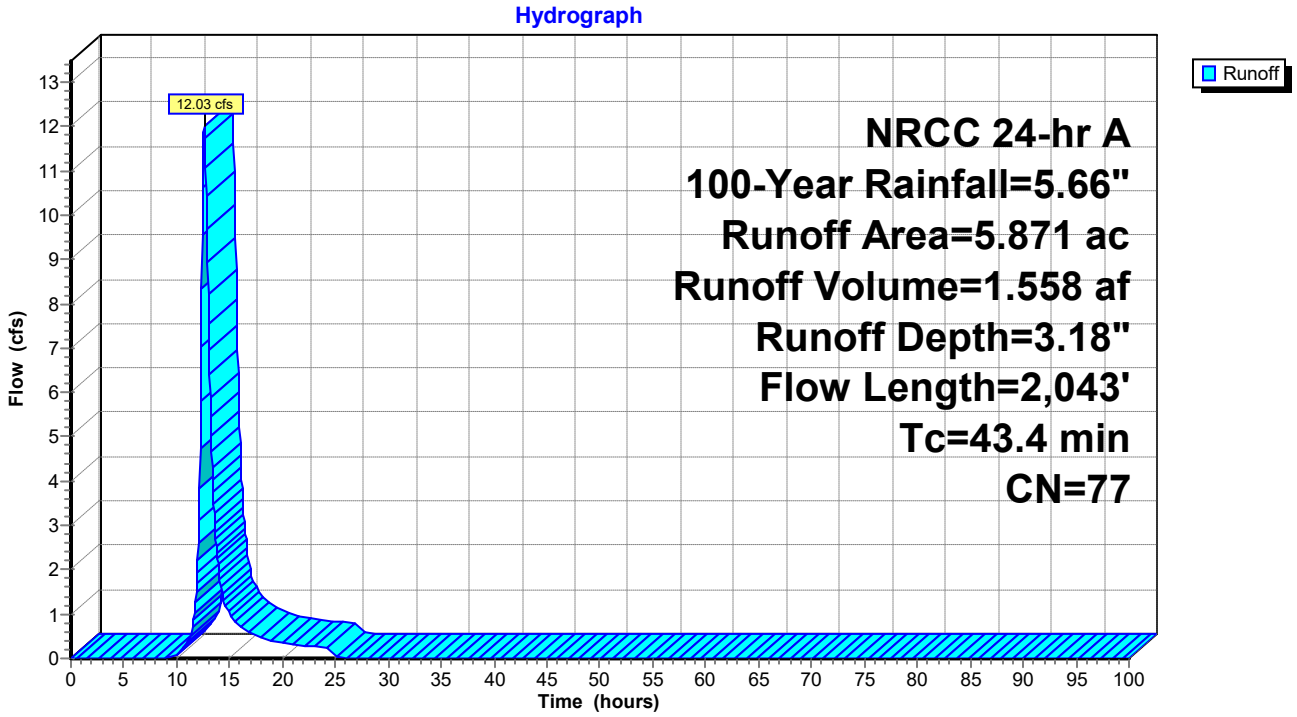
Runoff = 12.03 cfs @ 12.61 hrs, Volume= 1.558 af, Depth= 3.18"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 100-Year Rainfall=5.66"

	Area (ac)	CN	Description
*	4.539	78	B - Meadowed Land
*	1.173	74	C - Meadowed Land
*	0.159	70	C - Deciduous Forest
	5.871	77	Weighted Average
	5.871		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.8	210	0.0286	0.20		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
4.0	313	0.0351	1.31		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.0	412	0.0194	0.97		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.8	315	0.0381	1.37		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.2	366	0.0437	1.46		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.6	427	0.0234	1.07		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
43.4	2,043	Total			

Subcatchment 9S: EX DA 9



Summary for Subcatchment 10S: EX DA 10

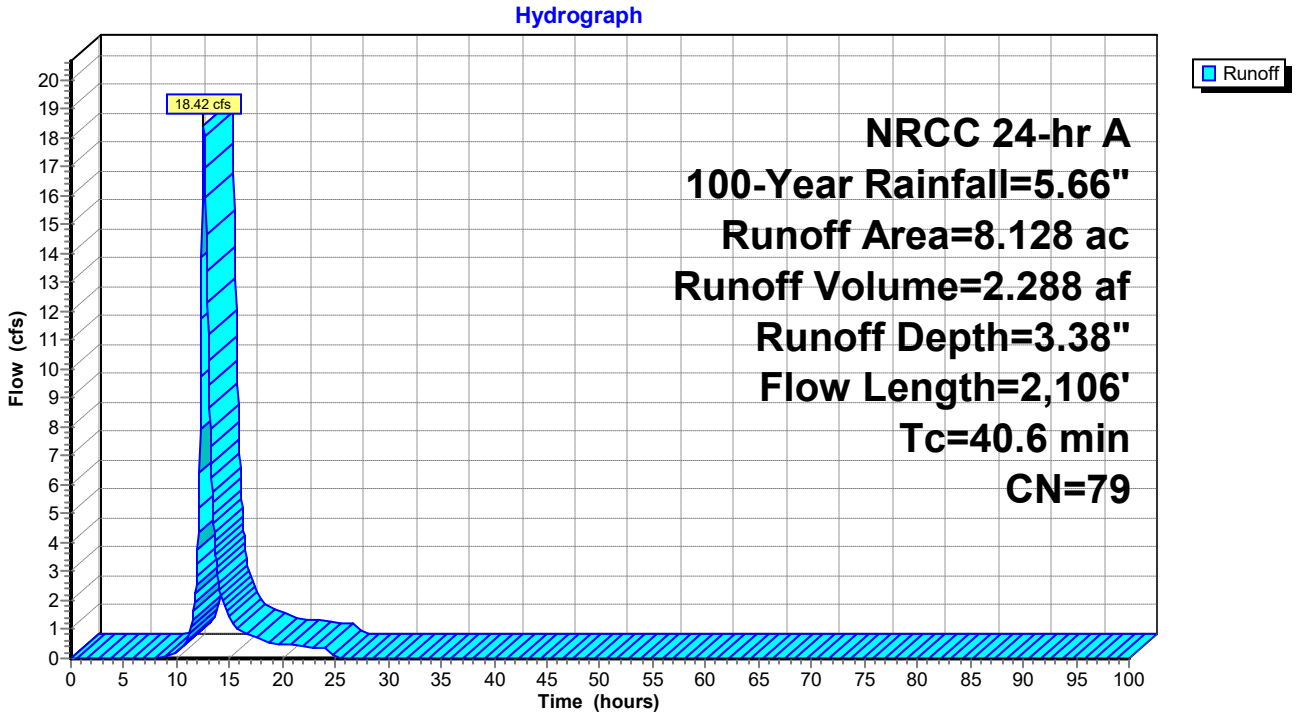
Runoff = 18.42 cfs @ 12.56 hrs, Volume= 2.288 af, Depth= 3.38"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 100-Year Rainfall=5.66"

	Area (ac)	CN	Description
*	3.901	78	B - Meadowed Land
*	0.775	70	C - Deciduous Forest
*	3.440	82	C - Meadowed Land
*	0.012	74	C - Developed, Open Space
	8.128	79	Weighted Average
	8.128		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.4	165	0.0303	0.19		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
9.5	590	0.0220	1.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.2	325	0.0585	1.69		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
8.0	692	0.0419	1.43		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.5	334	0.0210	1.01		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
40.6	2,106	Total			

Subcatchment 10S: EX DA 10



Summary for Subcatchment 11S: EX DA 11

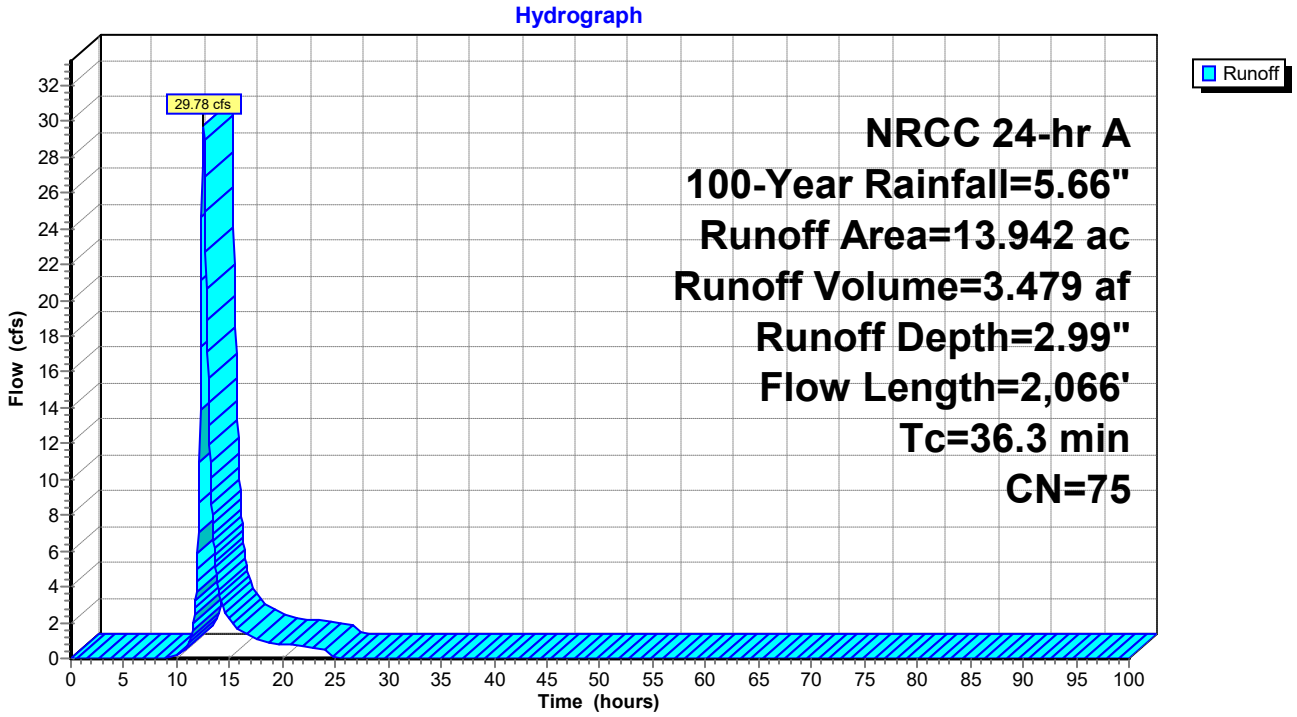
Runoff = 29.78 cfs @ 12.51 hrs, Volume= 3.479 af, Depth= 2.99"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 100-Year Rainfall=5.66"

	Area (ac)	CN	Description
*	6.619	78	B - Meadowed Land
*	4.484	74	C - Meadowed Land
*	2.822	70	C - Deciduous Forest
*	0.017	74	C - Developed, Open Space
	13.942	75	Weighted Average
	13.942		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.4	68	0.0147	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
4.4	218	0.0138	0.82		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.0	397	0.0353	1.32		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.4	191	0.0365	1.34		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.9	386	0.0544	1.63		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.0	189	0.0529	1.61		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.0	281	0.0285	1.18		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.2	336	0.0238	1.08		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
36.3	2,066	Total			

Subcatchment 11S: EX DA 11



Summary for Subcatchment 12S: EX DA 12

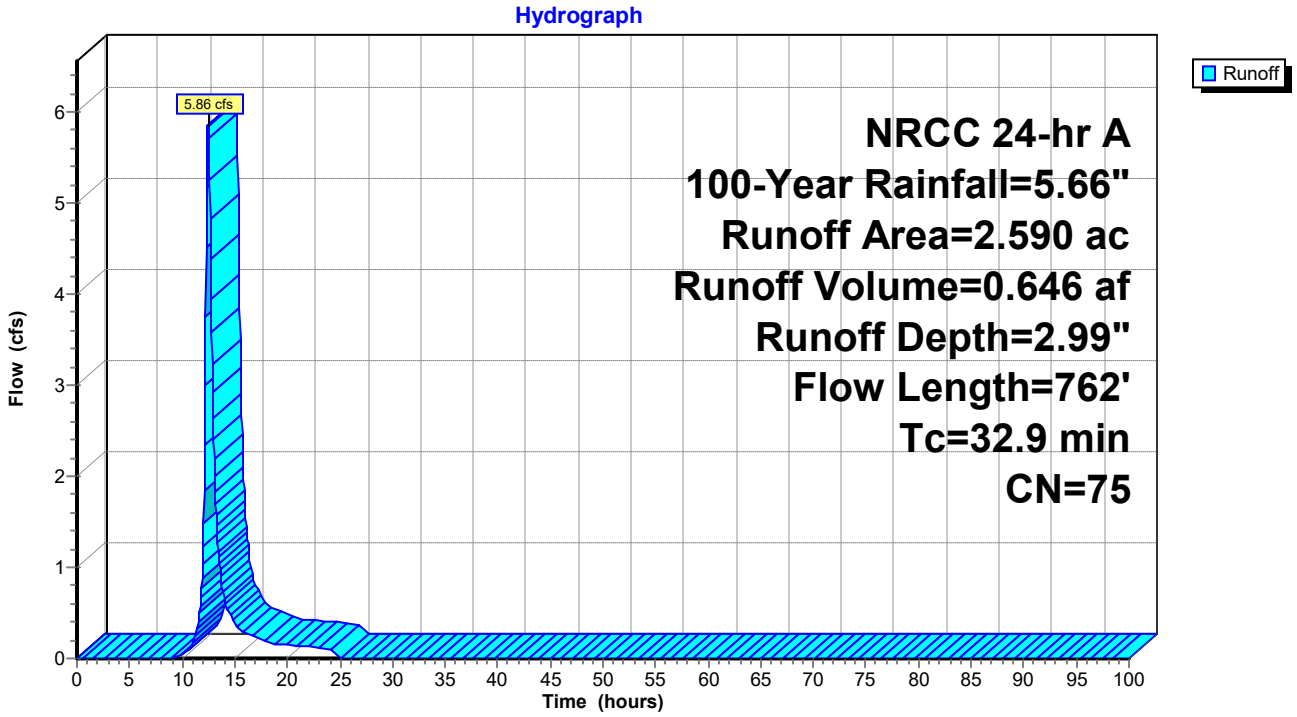
Runoff = 5.86 cfs @ 12.47 hrs, Volume= 0.646 af, Depth= 2.99"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 100-Year Rainfall=5.66"

	Area (ac)	CN	Description
*	0.518	70	C - Deciduous Forest
*	0.201	74	C - Meadowed Land
*	0.047	80	D - Meadowed Land
*	1.824	77	D - Deciduous Forest
	2.590	75	Weighted Average
	2.590		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.9	192	0.0104	0.13		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
1.1	117	0.0684	1.83		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.9	253	0.0237	1.08		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.0	200	0.0250	1.11		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
32.9	762	Total			

Subcatchment 12S: EX DA 12



Summary for Subcatchment 13S: EX DA 13

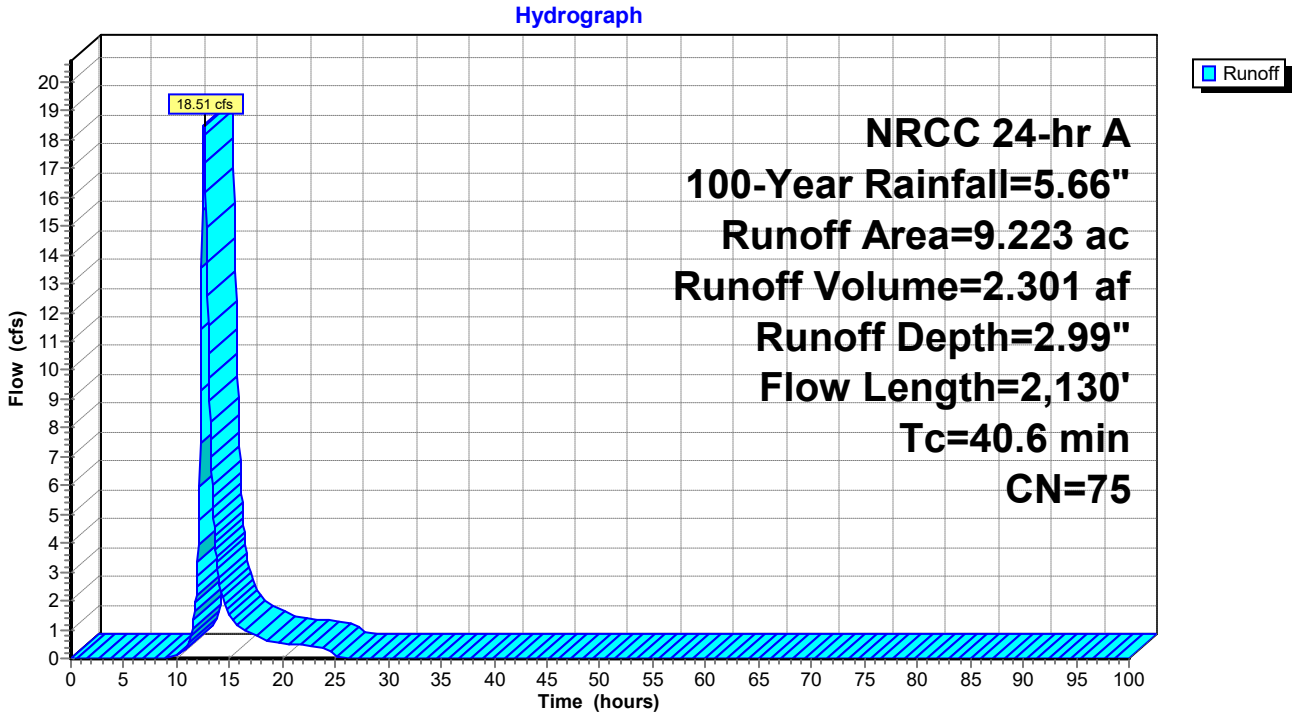
Runoff = 18.51 cfs @ 12.57 hrs, Volume= 2.301 af, Depth= 2.99"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 100-Year Rainfall=5.66"

	Area (ac)	CN	Description
*	1.802	78	B - Meadowed Land
*	4.529	74	C - Meadowed Land
*	1.207	70	C - Deciduous Forest
*	1.266	80	D - Meadowed Land
*	0.419	77	D - Deciduous Forest
	9.223	75	Weighted Average
	9.223		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.5	166	0.0361	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
4.5	276	0.0217	1.03		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.4	460	0.0217	1.03		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.2	210	0.0238	1.08		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.4	183	0.0328	1.27		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.9	370	0.0513	1.59		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.6	192	0.0312	1.24		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.1	273	0.0440	1.47		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
40.6	2,130	Total			

Subcatchment 13S: EX DA 13



Summary for Subcatchment 14S: EX DA 14

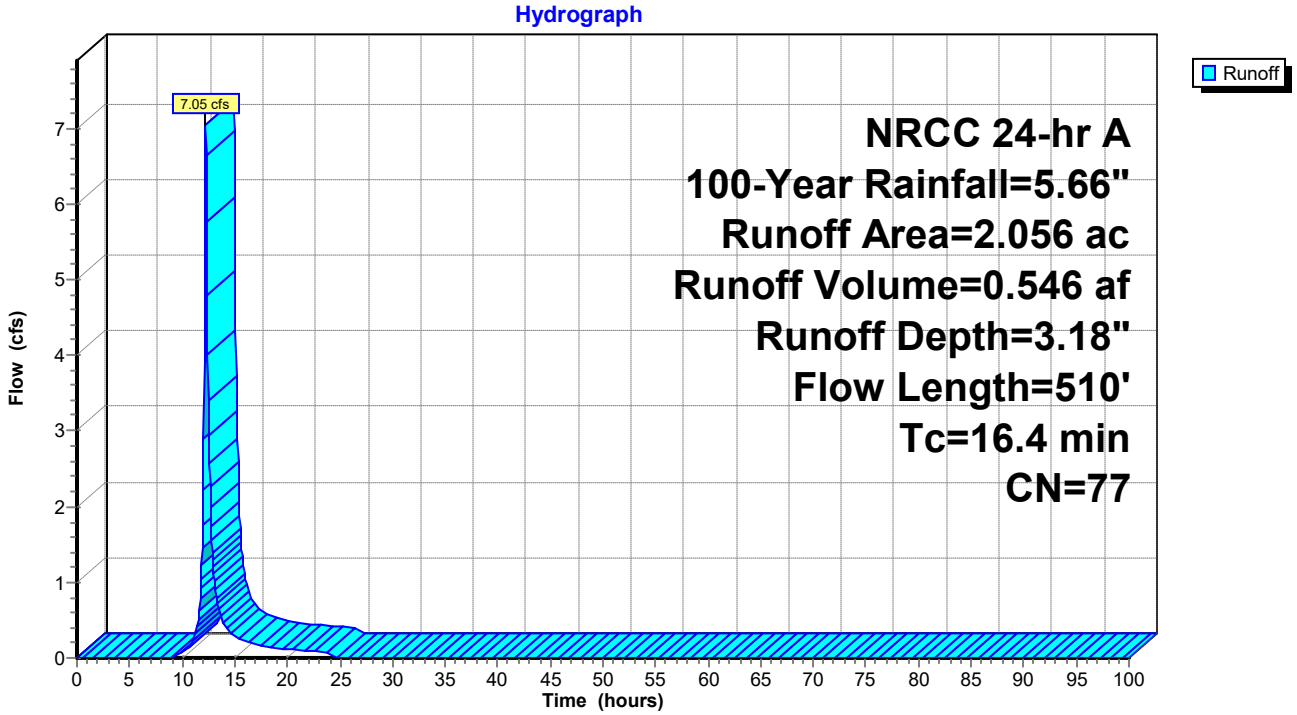
Runoff = 7.05 cfs @ 12.25 hrs, Volume= 0.546 af, Depth= 3.18"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 100-Year Rainfall=5.66"

	Area (ac)	CN	Description
*	0.091	70	C - Deciduous Forest
*	0.044	70	C - Evergreen Forest
*	0.087	77	D - Evergreen Forest
*	1.834	77	D - Deciduous Forest
	2.056	77	Weighted Average
	2.056		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2	174	0.0632	0.26		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
5.2	336	0.0238	1.08		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
16.4	510	Total			

Subcatchment 14S: EX DA 14



Summary for Subcatchment 15S: EX DA 15

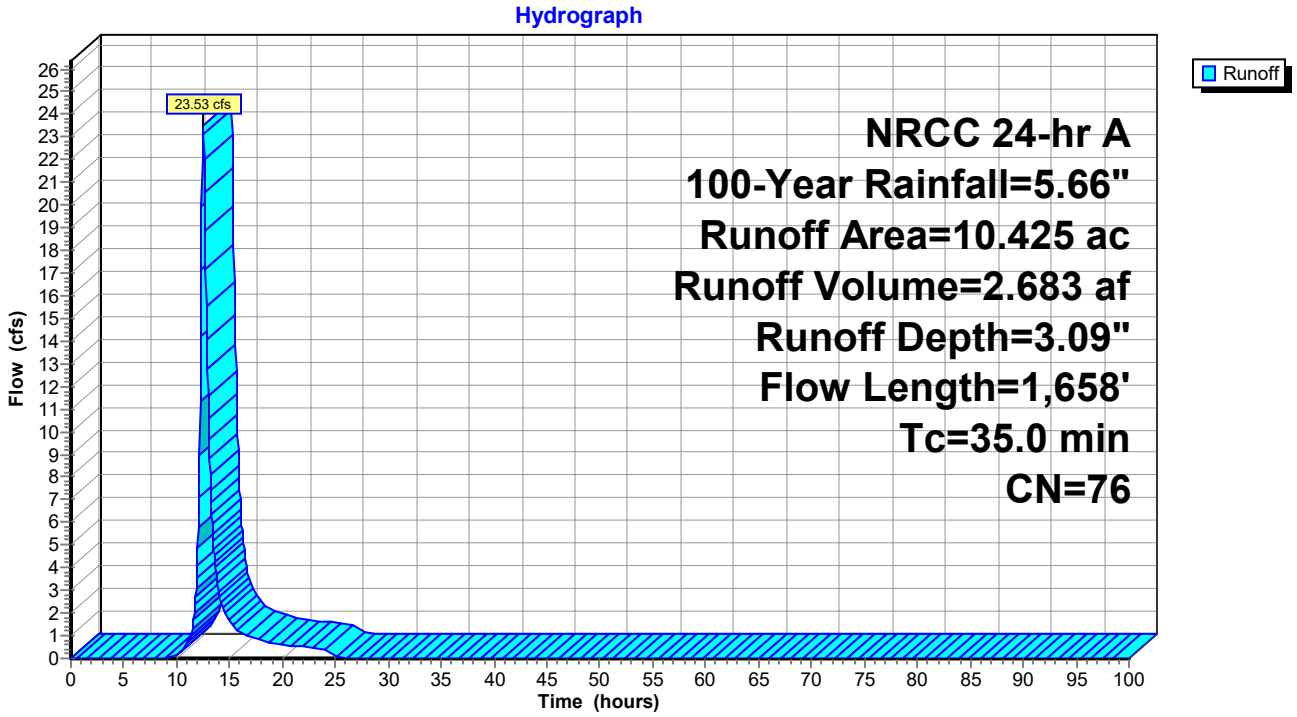
Runoff = 23.53 cfs @ 12.50 hrs, Volume= 2.683 af, Depth= 3.09"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 100-Year Rainfall=5.66"

	Area (ac)	CN	Description
*	1.586	70	C - Deciduous Forest
*	1.366	74	C - Meadowed Land
*	1.941	80	D - Meadowed Land
*	0.011	77	D - Evergreen Forest
*	5.521	77	D - Deciduous Forest
	10.425	76	Weighted Average
	10.425		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.4	186	0.0323	0.20		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
1.7	209	0.0909	2.11		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.1	441	0.0431	1.45		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.3	423	0.0189	0.96		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.5	399	0.0301	1.21		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
35.0	1,658	Total			

Subcatchment 15S: EX DA 15



Summary for Subcatchment 16S: EX DA 16

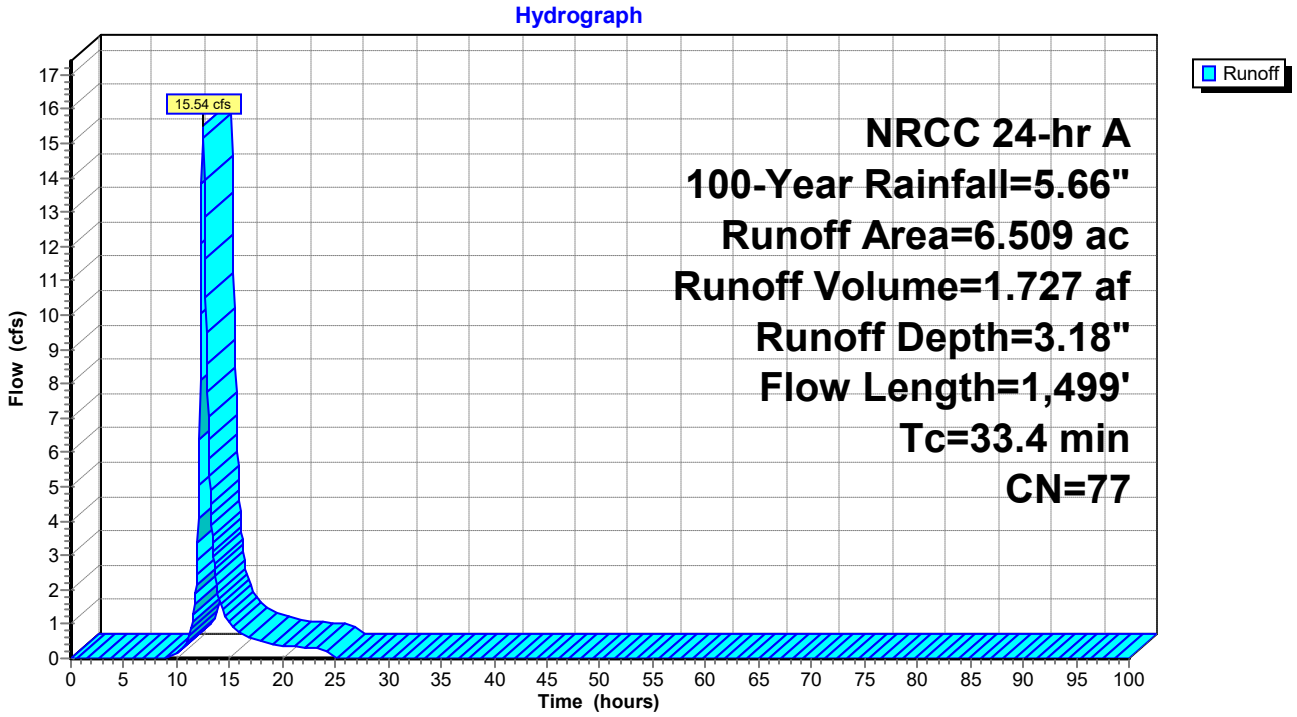
Runoff = 15.54 cfs @ 12.47 hrs, Volume= 1.727 af, Depth= 3.18"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 100-Year Rainfall=5.66"

	Area (ac)	CN	Description
*	0.552	70	C - Deciduous Forest
*	0.308	74	C - Meadowed Land
*	4.488	77	D - Deciduous Forest
*	1.161	80	D - Meadowed Land
	6.509	77	Weighted Average
	6.509		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.1	222	0.0270	0.19		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
2.9	311	0.0643	1.78		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.2	191	0.0419	1.43		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.8	331	0.0423	1.44		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.4	444	0.0383	1.37		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
33.4	1,499	Total			

Subcatchment 16S: EX DA 16



Summary for Subcatchment 17S: EX DA 17

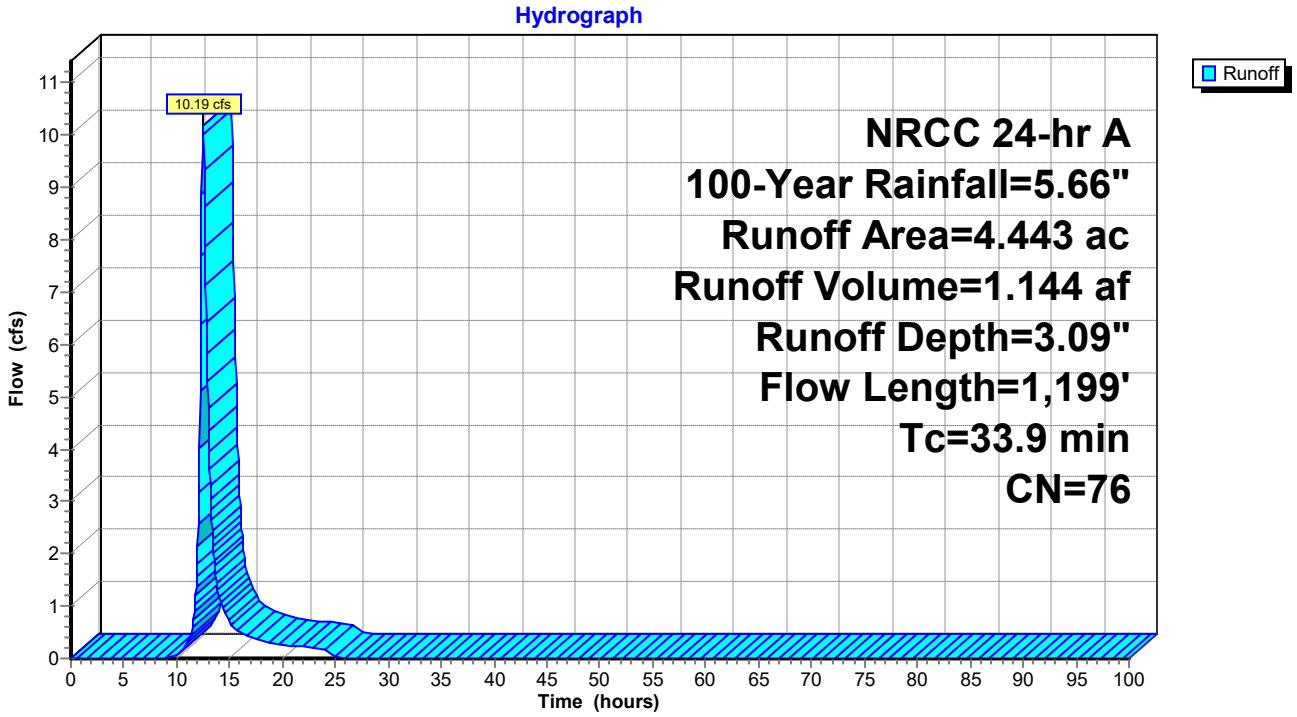
Runoff = 10.19 cfs @ 12.48 hrs, Volume= 1.144 af, Depth= 3.09"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 100-Year Rainfall=5.66"

	Area (ac)	CN	Description
*	0.198	78	B - Meadowed Land
*	3.169	74	C - Meadowed Land
*	1.001	80	D - Meadowed Land
*	0.075	77	D - Deciduous Forest
	4.443	76	Weighted Average
	4.443		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.6	137	0.0292	0.18		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
2.7	232	0.0431	1.45		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.2	266	0.0150	0.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
9.4	360	0.0083	0.64		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.0	204	0.0147	0.85		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
33.9	1,199	Total			

Subcatchment 17S: EX DA 17



Summary for Subcatchment 18S: EX DA 18

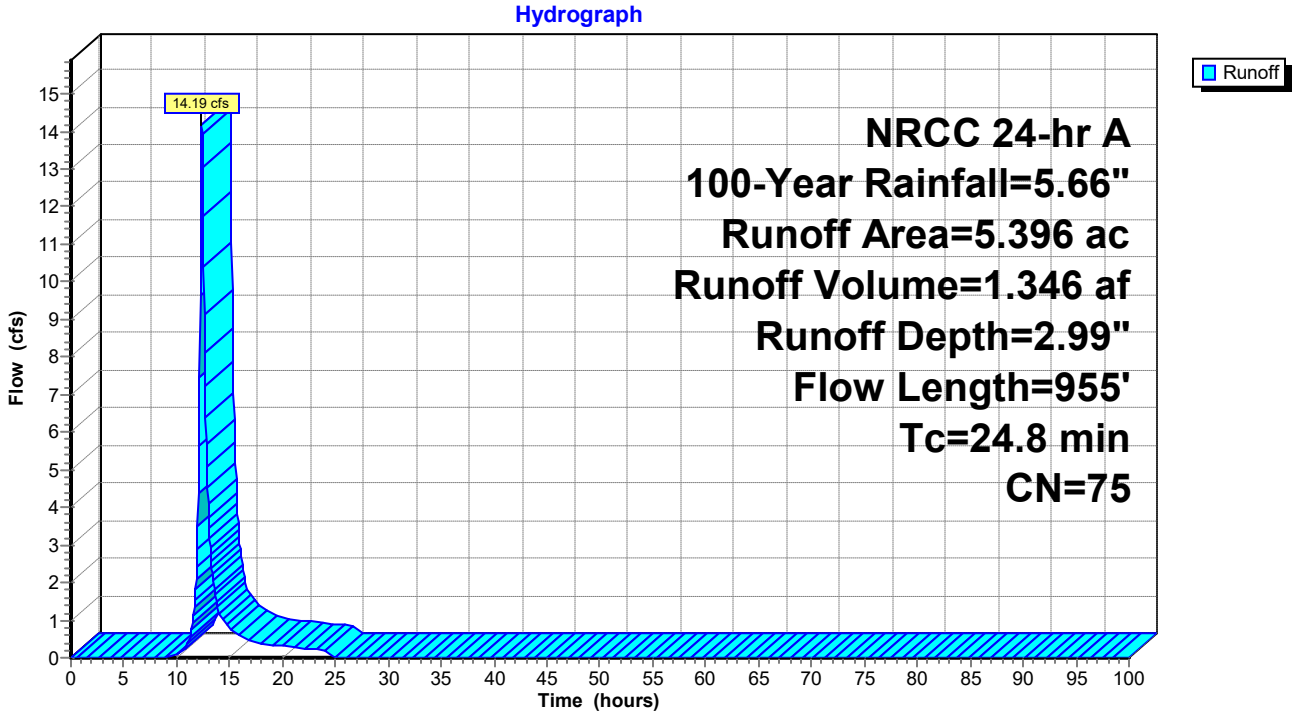
Runoff = 14.19 cfs @ 12.36 hrs, Volume= 1.346 af, Depth= 2.99"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 100-Year Rainfall=5.66"

	Area (ac)	CN	Description
*	0.672	78	B - Meadowed Land
*	4.382	74	C - Meadowed Land
*	0.137	89	D - Meadowed Land
*	0.205	77	D - Deciduous Forest
	5.396	75	Weighted Average
	5.396		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	108	0.0278	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
5.1	379	0.0317	1.25		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
9.1	468	0.0150	0.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
24.8	955	Total			

Subcatchment 18S: EX DA 18



Summary for Subcatchment 19S: EX DA 19

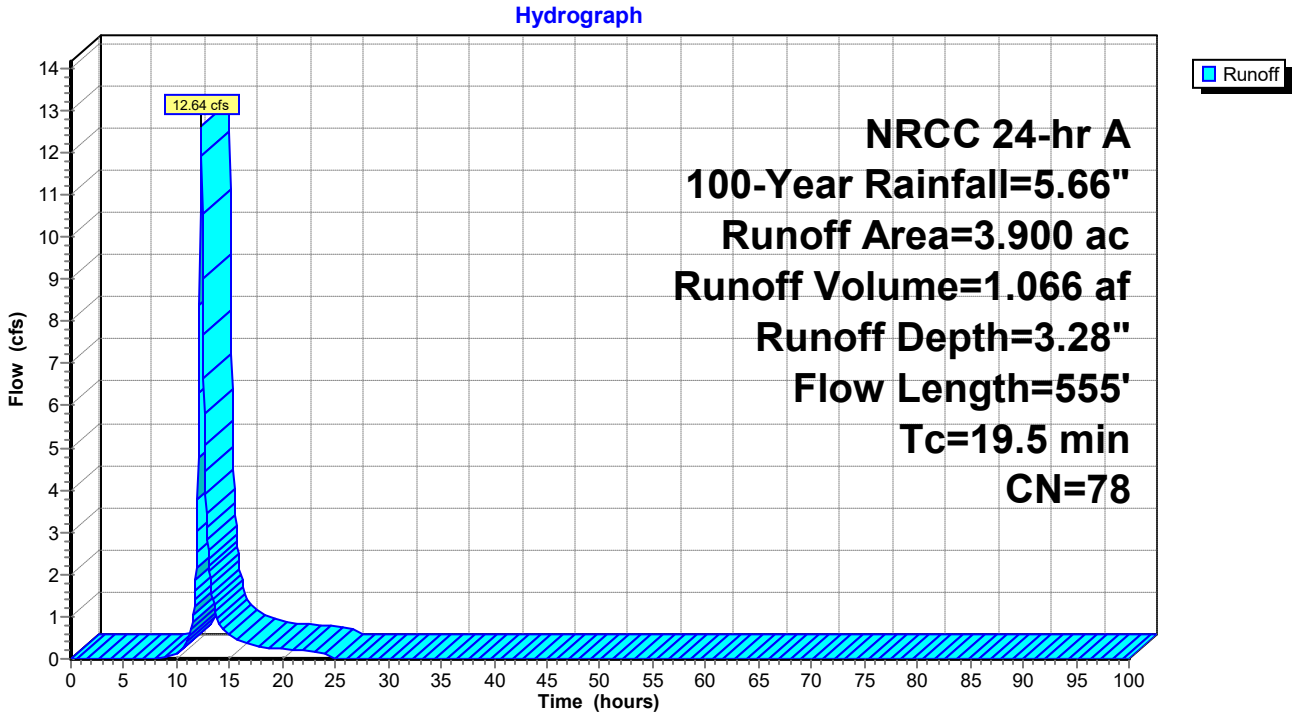
Runoff = 12.64 cfs @ 12.29 hrs, Volume= 1.066 af, Depth= 3.28"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 100-Year Rainfall=5.66"

	Area (ac)	CN	Description
*	3.180	77	D - Deciduous Forest
*	0.720	80	D - Meadowed Land
	3.900	78	Weighted Average
	3.900		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.8	200	0.0300	0.20		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
2.7	355	0.1014	2.23		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
19.5	555	Total			

Subcatchment 19S: EX DA 19



Summary for Subcatchment 20S: EX DA 20

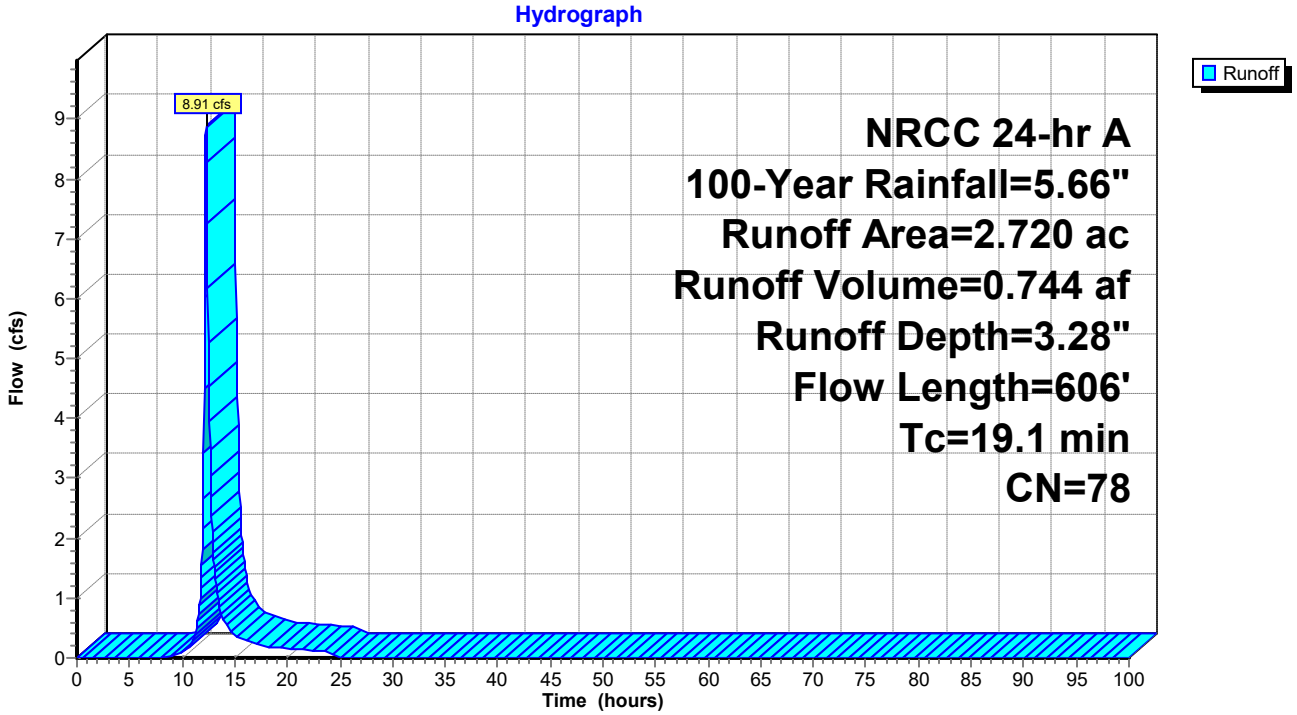
Runoff = 8.91 cfs @ 12.28 hrs, Volume= 0.744 af, Depth= 3.28"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 100-Year Rainfall=5.66"

	Area (ac)	CN	Description
*	2.010	77	D - Deciduous Forest
*	0.710	80	D - Meadowed Land
	2.720	78	Weighted Average
	2.720		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.8	150	0.0333	0.20		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
1.9	181	0.0497	1.56		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.4	275	0.0218	1.03		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
19.1	606	Total			

Subcatchment 20S: EX DA 20



Summary for Subcatchment 21S: EX DA 21

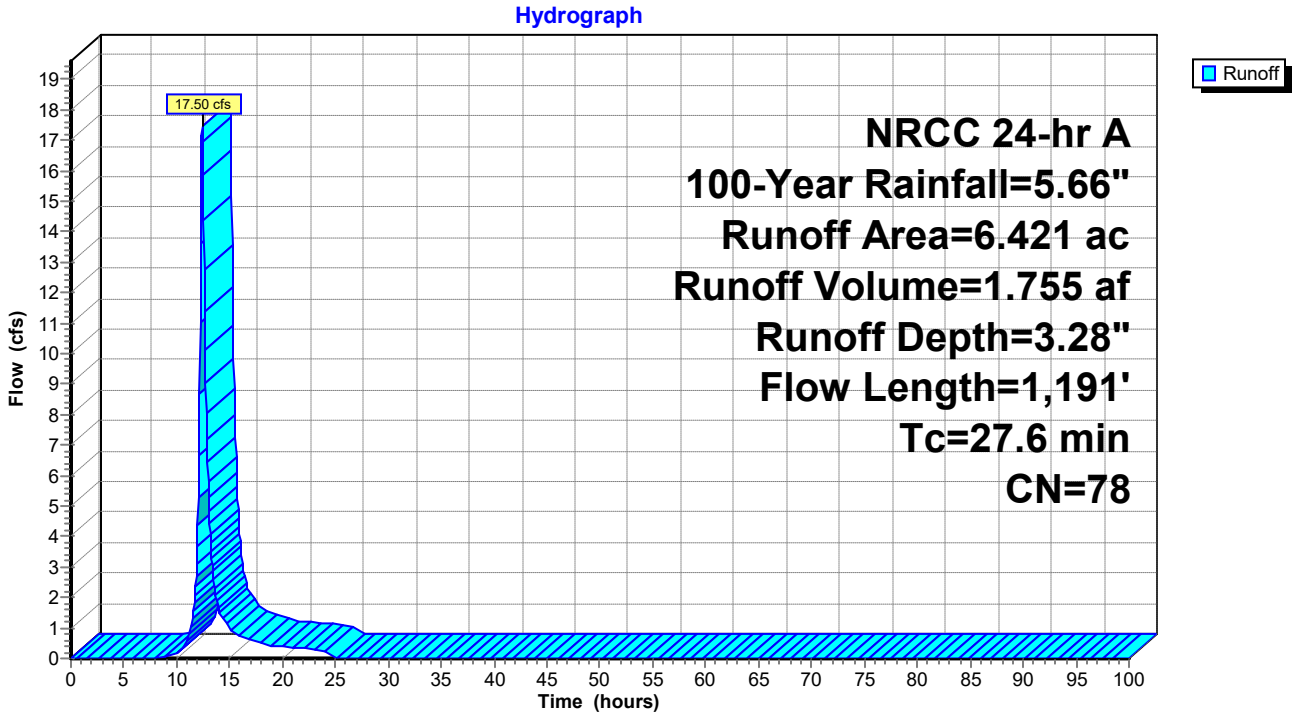
Runoff = 17.50 cfs @ 12.39 hrs, Volume= 1.755 af, Depth= 3.28"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 100-Year Rainfall=5.66"

	Area (ac)	CN	Description
*	0.410	78	B - Meadowed Land
*	1.310	70	C - Deciduous Forest
*	3.140	82	C - Meadowed Land
*	1.561	77	D - Deciduous Forest
	6.421	78	Weighted Average
	6.421		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	100	0.0300	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
5.0	354	0.0282	1.18		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
8.2	437	0.0160	0.89		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.7	300	0.0233	1.07		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
27.6	1,191	Total			

Subcatchment 21S: EX DA 21



Summary for Subcatchment 22S: EX DA 22

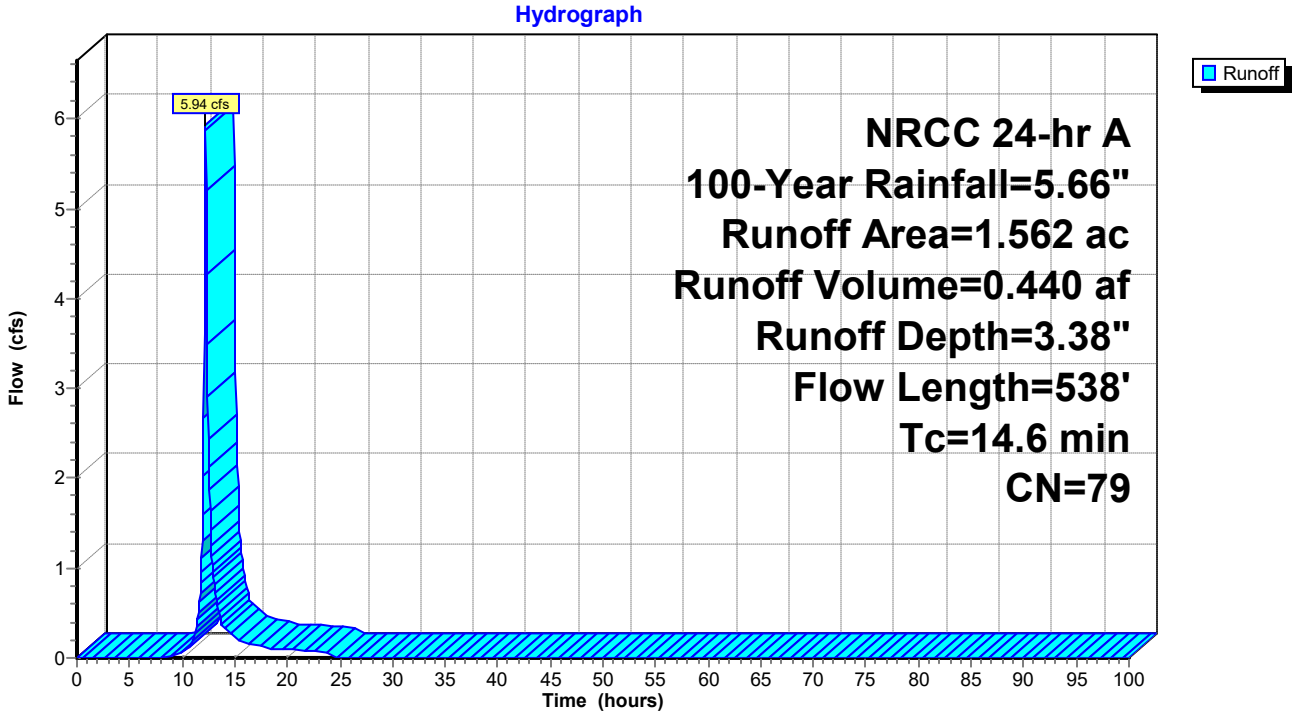
Runoff = 5.94 cfs @ 12.23 hrs, Volume= 0.440 af, Depth= 3.38"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 100-Year Rainfall=5.66"

	Area (ac)	CN	Description
*	1.136	77	D - Deciduous Forest
*	0.426	84	D - Shrub/Scrub
	1.562	79	Weighted Average
	1.562		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	125	0.0480	0.22		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
2.9	228	0.0351	1.31		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.1	185	0.0432	1.45		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
14.6	538	Total			

Subcatchment 22S: EX DA 22



Summary for Subcatchment 23S: EX DA 23

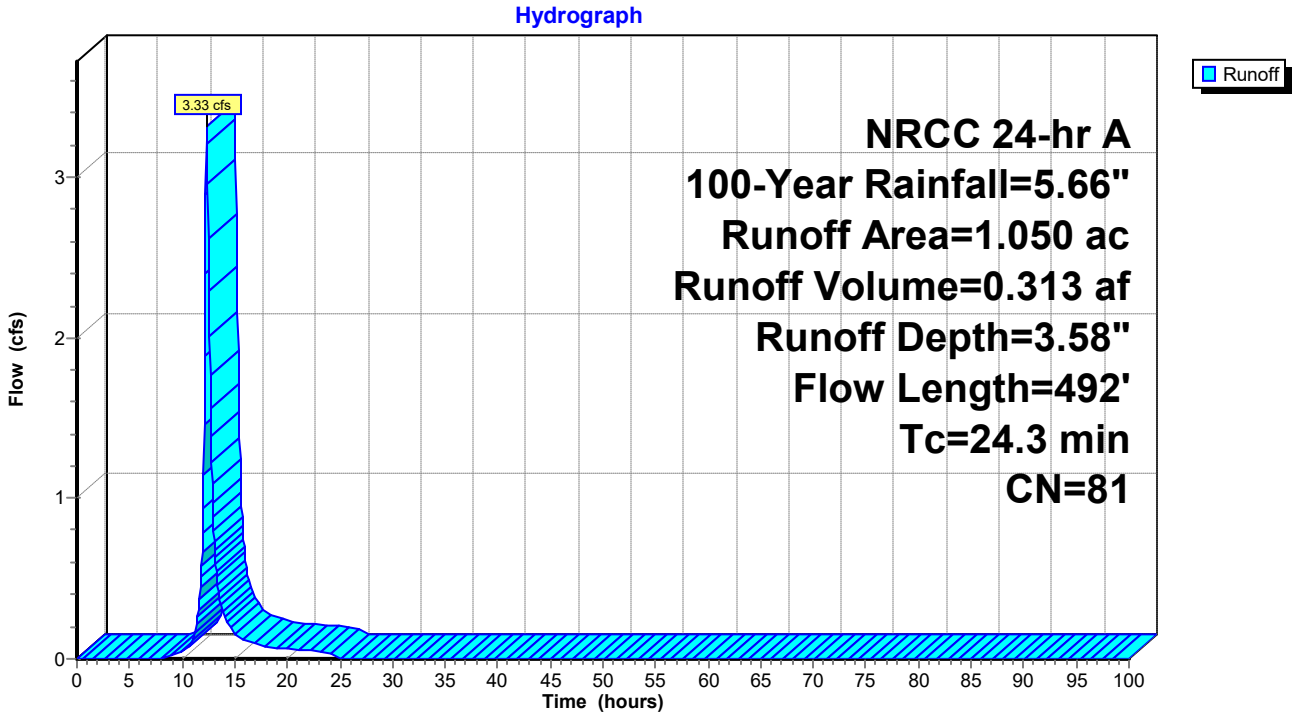
Runoff = 3.33 cfs @ 12.35 hrs, Volume= 0.313 af, Depth= 3.58"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 100-Year Rainfall=5.66"

	Area (ac)	CN	Description
*	0.730	77	D - Deciduous Forest
*	0.320	89	D - Meadowed Land
	1.050	81	Weighted Average
	1.050		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.4	205	0.0195	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
3.9	287	0.0314	1.24		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
24.3	492	Total			

Subcatchment 23S: EX DA 23



Summary for Subcatchment 24S: EX DA 24

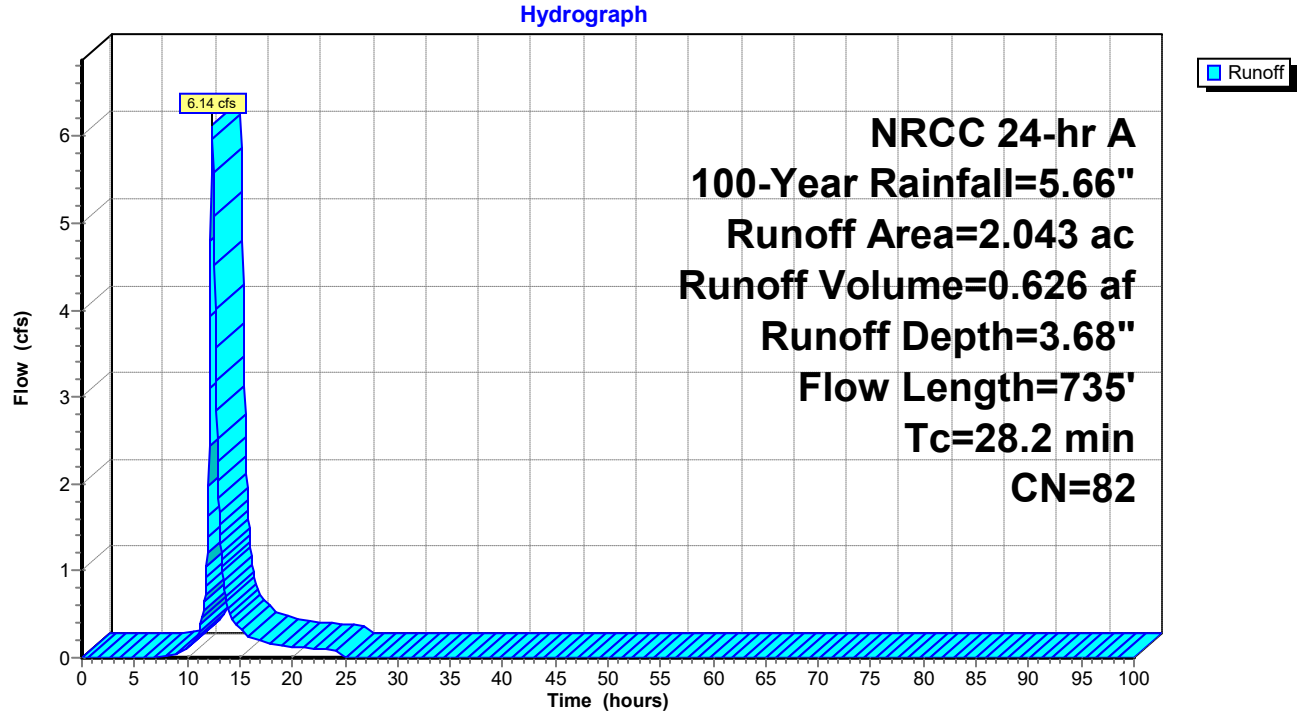
Runoff = 6.14 cfs @ 12.40 hrs, Volume= 0.626 af, Depth= 3.68"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 100-Year Rainfall=5.66"

	Area (ac)	CN	Description
*	1.290	82	C - Meadowed Land
*	0.060	70	C - Deciduous Forest
*	0.342	89	D - Meadowed Land
*	0.351	77	D - Deciduous Forest
	2.043	82	Weighted Average
	2.043		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.1	183	0.0328	0.20		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
6.6	197	0.0051	0.50		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.5	355	0.0169	0.91		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
28.2	735	Total			

Subcatchment 24S: EX DA 24



Summary for Subcatchment 25S: EX DA 25

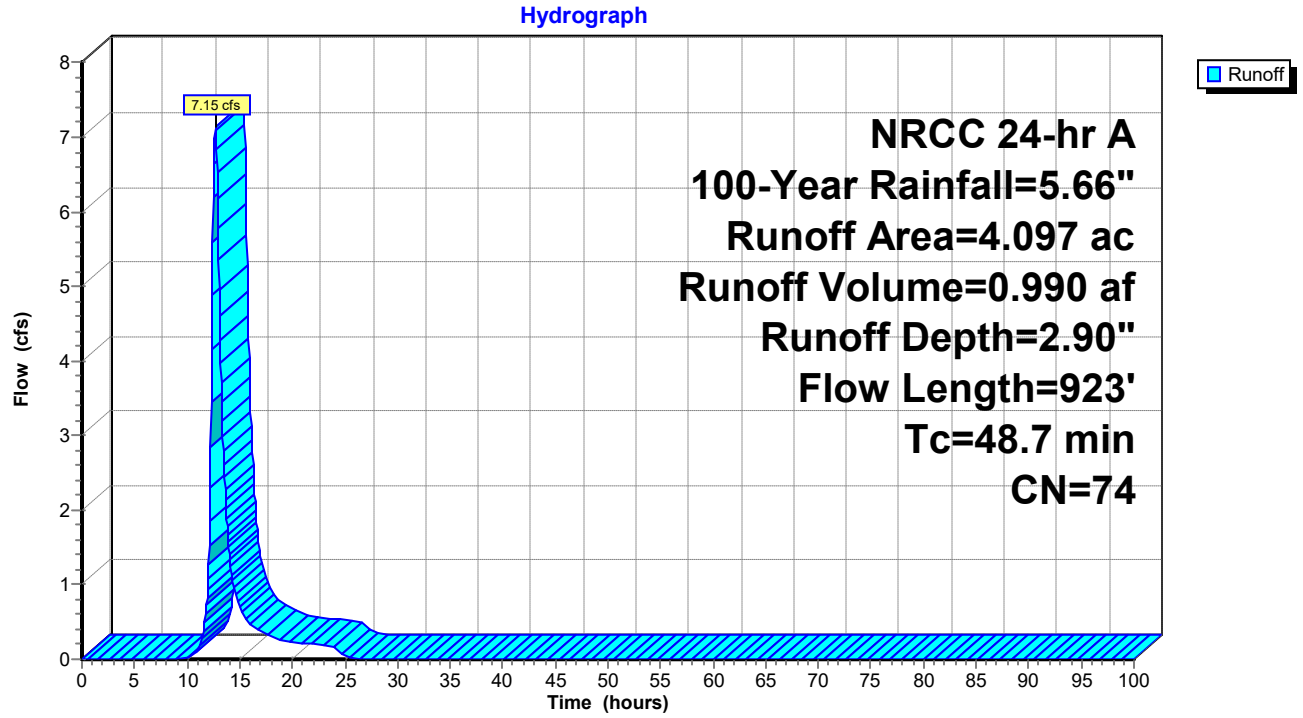
Runoff = 7.15 cfs @ 12.69 hrs, Volume= 0.990 af, Depth= 2.90"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 100-Year Rainfall=5.66"

	Area (ac)	CN	Description
*	0.330	61	B - Meadowed Land
*	3.290	74	C - Meadowed Land
*	0.227	74	C - Developed, Open Space
*	0.204	89	D - Meadowed Land
*	0.046	77	D - Deciduous Forest
	4.097	74	Weighted Average
	4.097		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.7	167	0.0419	0.22		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
2.2	170	0.0353	1.32		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
33.8	586	0.0017	0.29		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
48.7	923	Total			

Subcatchment 25S: EX DA 25



Summary for Subcatchment 26S: EX DA 26

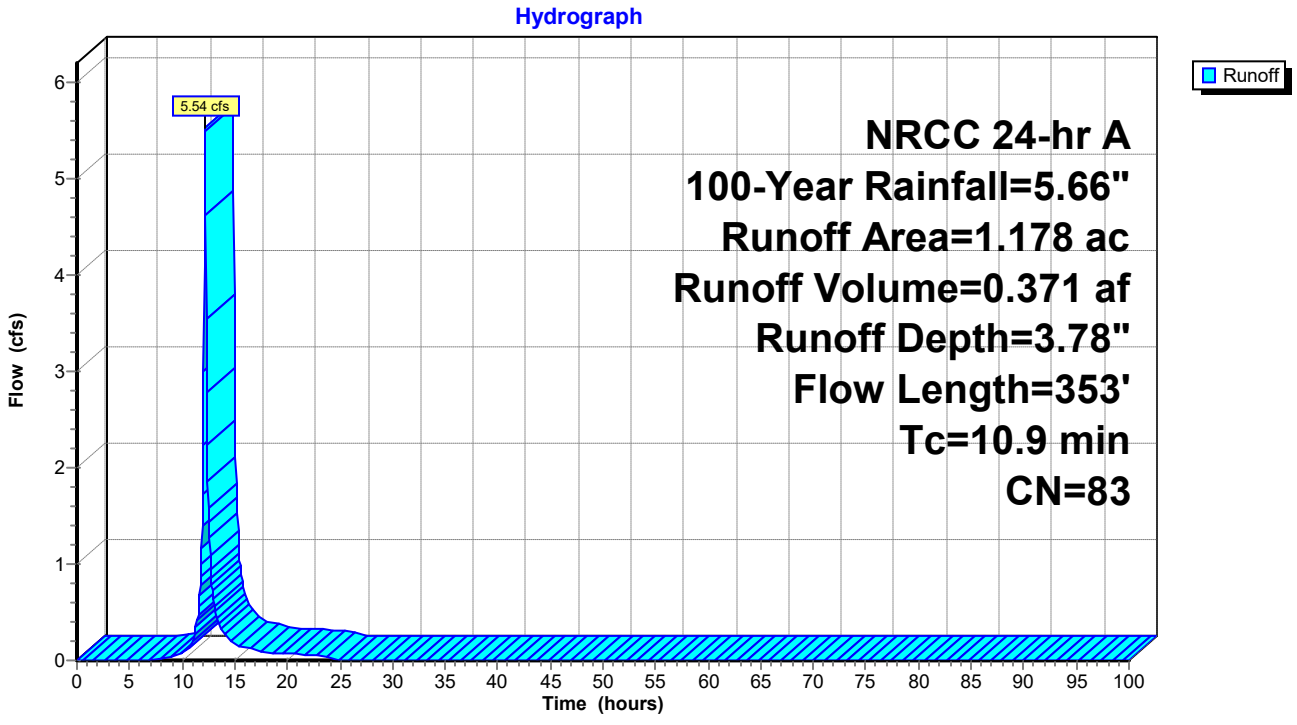
Runoff = 5.54 cfs @ 12.19 hrs, Volume= 0.371 af, Depth= 3.78"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 100-Year Rainfall=5.66"

	Area (ac)	CN	Description
*	0.200	77	D - Deciduous Forest
*	0.050	77	D - Deciduous Forest
*	0.928	84	D - Shrub/Scrub
	1.178	83	Weighted Average
	1.178		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	93	0.0323	0.18		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
2.1	260	0.0846	2.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
10.9	353	Total			

Subcatchment 26S: EX DA 26



Summary for Subcatchment 27S: EX DA 27

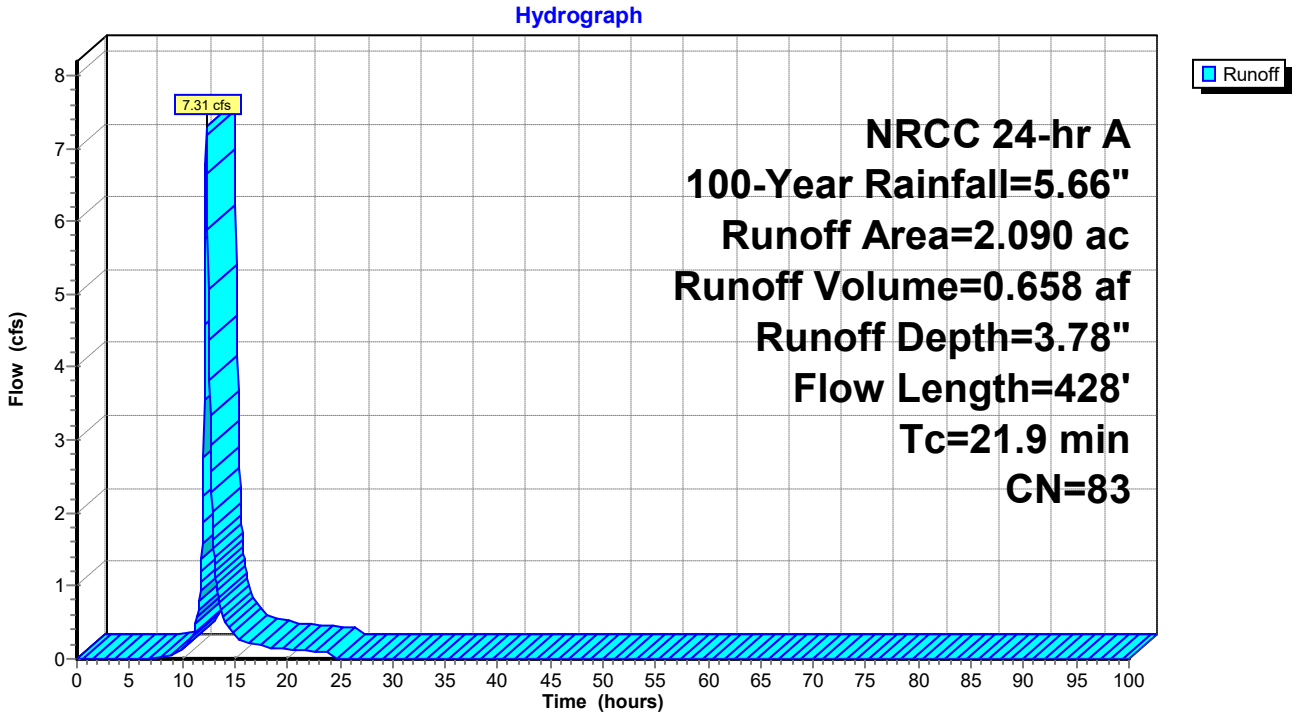
Runoff = 7.31 cfs @ 12.32 hrs, Volume= 0.658 af, Depth= 3.78"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 100-Year Rainfall=5.66"

	Area (ac)	CN	Description
*	0.260	77	D - Deciduous Forest
*	1.830	84	D - Shrub/Scrub
	2.090	83	Weighted Average
	2.090		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.0	208	0.0240	0.18		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
2.9	220	0.0318	1.25		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
21.9	428	Total			

Subcatchment 27S: EX DA 27



Summary for Subcatchment 28S: EX DA 28

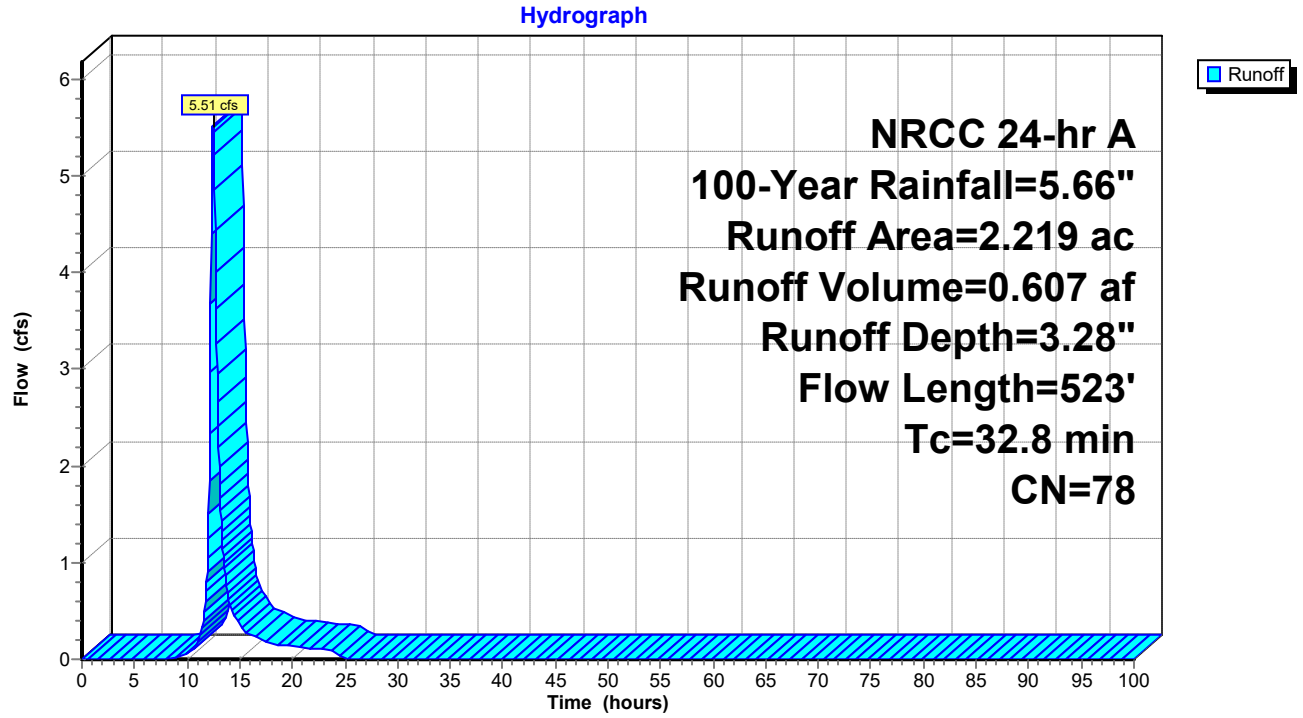
Runoff = 5.51 cfs @ 12.46 hrs, Volume= 0.607 af, Depth= 3.28"
Routed to nonexistent node 12L

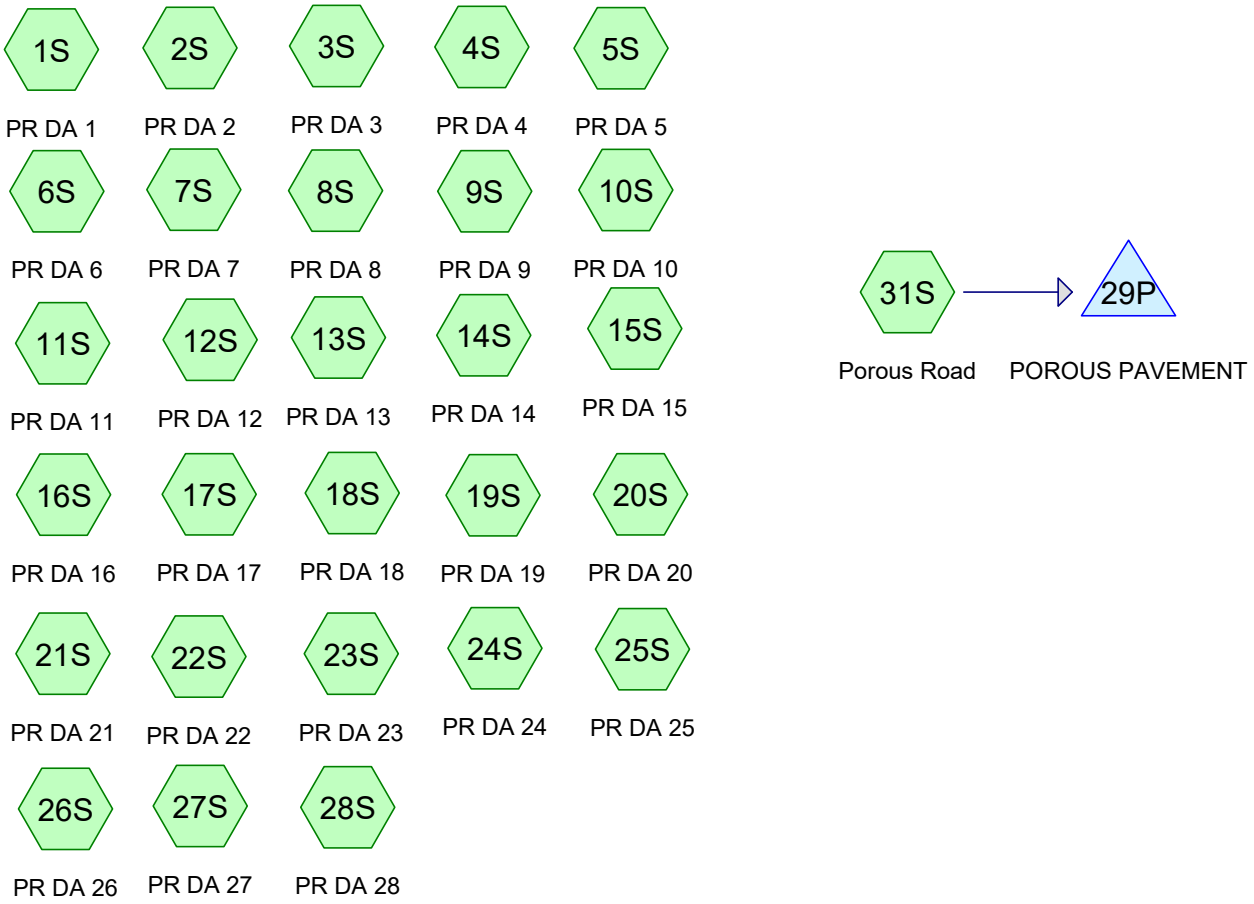
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 100-Year Rainfall=5.66"

	Area (ac)	CN	Description
*	0.120	39	A - Developed. Open Space
*	0.010	82	D - Developed, Low Intensity
*	1.207	77	D - Deciduous Forest
*	0.834	84	D - Shrub/Scrub
*	0.048	80	D - Developed, Open Space
	2.219	78	Weighted Average
	2.219		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.1	206	0.0097	0.13		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
5.2	213	0.0094	0.68		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	104	0.2115	3.22		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
32.8	523	Total			

Subcatchment 28S: EX DA 28





Subcat Reach Pond Link

Routing Diagram for PR Manlius HydroCAD
Prepared by Fisher Associates, Printed 12/9/2022
HydroCAD® 10.20-2d s/n 04748 © 2021 HydroCAD Software Solutions LLC

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-Year	NRCC 24-hr	A	Default	24.00	1	2.01	2
2	10-Year	NRCC 24-hr	A	Default	24.00	1	3.37	2
3	100-Year	NRCC 24-hr	A	Default	24.00	1	5.66	2

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.120	39	A - Developed. Open Space (28S)
0.027	65	B - Developed, Low Intensity (1S)
0.430	61	B - Developed, Open Space (1S)
15.654	58	B - Meadowed Land (1S, 4S, 5S, 7S, 10S)
13.991	78	B - Meadowed Land (9S, 11S, 13S, 17S, 18S, 21S)
0.330	61	B - Meadowed Land (25S)
10.187	70	C - Deciduous Forest (3S, 4S, 5S, 7S, 8S, 9S, 11S, 12S, 13S, 14S, 15S, 16S, 21S)
0.243	74	C - Developed, Open Space (7S, 25S)
0.044	70	C - Evergreen Forest (14S)
31.461	74	C - Meadowed Land (3S, 4S, 5S, 6S, 7S, 9S, 13S, 15S, 16S, 17S, 18S, 25S)
8.700	82	C - Meadowed Land (10S, 21S, 24S)
7.346	73	C - Meadowed Land (11S, 12S)
0.950	74	C - Pervious Road (31S)
20.928	77	D - Deciduous Forest (1S, 2S, 3S, 8S, 12S, 13S, 14S, 15S, 16S, 17S, 18S, 19S, 20S, 21S, 22S, 23S, 24S, 25S, 26S, 27S, 28S)
0.010	82	D - Developed, Low Intensity (28S)
0.006	85	D - Developed, Medium Intensity (3S)
0.048	80	D - Developed, Open Space (28S)
0.087	77	D - Evergreen Forest (14S)
11.194	80	D - Meadowed Land (1S, 14S, 15S, 16S, 17S, 18S, 19S, 20S, 21S, 23S, 24S, 25S, 27S, 28S)
4.866	78	D - Meadowed Land (2S, 3S, 8S, 12S, 13S, 22S)
3.419	84	D - Shrub/Scrub (22S, 26S, 27S, 28S)
130.041	**74**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
130.041	Other	1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 10S, 11S, 12S, 13S, 14S, 15S, 16S, 17S, 18S, 19S, 20S, 21S, 22S, 23S, 24S, 25S, 26S, 27S, 28S, 31S
130.041		**TOTAL AREA**

Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	0.000	0.120	0.120	A - Developed. Open Space	2 8 S
0.000	0.000	0.000	0.000	0.027	0.027	B - Developed, Low Intensity	1 S
0.000	0.000	0.000	0.000	0.430	0.430	B - Developed, Open Space	1 S
0.000	0.000	0.000	0.000	29.975	29.975	B - Meadowed Land	1 S , 4 S , 5 S , 7 S , 9 S , 1 0 S , 1 1 S , 1 3 S , 1 7 S , 1 8 S , 2 1 S ,

Ground Covers (selected nodes) (continued)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	0.000	10.187	10.187	C - Deciduous Forest	3S, 4S, 5S, 7S, 8S, 9S, 11S, 12S, 13S, 14S, 15S, 16S, 21S

Ground Covers (selected nodes) (continued)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	0.000	0.243	0.243	C - Developed, Open Space	7S, 25S
0.000	0.000	0.000	0.000	0.044	0.044	C - Evergreen Forest	14S
0.000	0.000	0.000	0.000	47.507	47.507	C - Meadowed Land	3S, 4S, 5S, 6S, 7S, 9S, 10S, 11S, 12S, 13S, 15S

Ground Covers (selected nodes) (continued)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	0.000	0.950	0.950	C - Pervious Road	3 1 S
0.000	0.000	0.000	0.000	20.928	20.928	D - Deciduous Forest	1 S , 2 S , 3 S , 8 S , 1 2 S , 1 3 S , 1 4 S , 1 5 S , 1 6 S , 1 7 S , 1 8 S , 1 9 S

Ground Covers (selected nodes) (continued)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	0.000	0.010	0.010	D - Developed, Low Intensity	28S
0.000	0.000	0.000	0.000	0.006	0.006	D - Developed, Medium Intensity	3S
0.000	0.000	0.000	0.000	0.048	0.048	D - Developed, Open Space	28S
0.000	0.000	0.000	0.000	0.087	0.087	D - Evergreen Forest	14S
0.000	0.000	0.000	0.000	16.060	16.060	D - Meadowed Land	1S, 2S, 3S, 8S, 12S, 13S, 14S, 15S, 16S, 17S

Ground Covers (selected nodes) (continued)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	0.000	3.419	3.419	D - Shrub/Scrub	22S, 26S, 27S, 28S
0.000	**0.000**	**0.000**	**0.000**	**130.041**	**130.041**	**TOTAL AREA**	

Time span=0.00-100.00 hrs, dt=0.05 hrs, 2001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: PR DA 1 Runoff Area=1.968 ac 0.00% Impervious Runoff Depth=0.24"
Flow Length=604' Tc=16.6 min CN=70 Runoff=0.32 cfs 0.040 af

Subcatchment 2S: PR DA 2 Runoff Area=0.980 ac 0.00% Impervious Runoff Depth=0.45"
Flow Length=312' Tc=18.5 min CN=77 Runoff=0.39 cfs 0.037 af

Subcatchment 3S: PR DA 3 Runoff Area=3.523 ac 0.00% Impervious Runoff Depth=0.30"
Flow Length=440' Tc=19.5 min CN=72 Runoff=0.73 cfs 0.087 af

Subcatchment 4S: PR DA 4 Runoff Area=7.098 ac 0.00% Impervious Runoff Depth=0.32"
Flow Length=1,080' Tc=36.8 min CN=73 Runoff=1.22 cfs 0.192 af

Subcatchment 5S: PR DA 5 Runoff Area=9.028 ac 0.00% Impervious Runoff Depth=0.14"
Flow Length=1,150' Tc=35.1 min CN=65 Runoff=0.41 cfs 0.104 af

Subcatchment 6S: PR DA 6 Runoff Area=2.000 ac 0.00% Impervious Runoff Depth=0.35"
Flow Length=553' Tc=20.1 min CN=74 Runoff=0.54 cfs 0.059 af

Subcatchment 7S: PR DA 7 Runoff Area=8.889 ac 0.00% Impervious Runoff Depth=0.10"
Flow Length=2,108' Tc=40.2 min CN=63 Runoff=0.24 cfs 0.077 af

Subcatchment 8S: PR DA 8 Runoff Area=2.164 ac 0.00% Impervious Runoff Depth=0.42"
Flow Length=553' Tc=21.6 min CN=76 Runoff=0.72 cfs 0.076 af

Subcatchment 9S: PR DA 9 Runoff Area=5.871 ac 0.00% Impervious Runoff Depth=0.45"
Flow Length=2,043' Tc=43.4 min CN=77 Runoff=1.47 cfs 0.222 af

Subcatchment 10S: PR DA 10 Runoff Area=8.060 ac 0.00% Impervious Runoff Depth=0.24"
Flow Length=2,106' Tc=40.6 min CN=70 Runoff=0.86 cfs 0.164 af

Subcatchment 11S: PR DA 11 Runoff Area=13.716 ac 0.00% Impervious Runoff Depth=0.39"
Flow Length=2,066' Tc=36.3 min CN=75 Runoff=3.05 cfs 0.441 af

Subcatchment 12S: PR DA 12 Runoff Area=2.520 ac 0.00% Impervious Runoff Depth=0.42"
Flow Length=762' Tc=32.9 min CN=76 Runoff=0.67 cfs 0.088 af

Subcatchment 13S: PR DA 13 Runoff Area=8.420 ac 0.00% Impervious Runoff Depth=0.39"
Flow Length=2,130' Tc=40.6 min CN=75 Runoff=1.76 cfs 0.271 af

Subcatchment 14S: PR DA 14 Runoff Area=2.035 ac 0.00% Impervious Runoff Depth=0.45"
Flow Length=510' Tc=16.4 min CN=77 Runoff=0.86 cfs 0.077 af

Subcatchment 15S: PR DA 15 Runoff Area=10.274 ac 0.00% Impervious Runoff Depth=0.45"
Flow Length=1,658' Tc=35.0 min CN=77 Runoff=2.92 cfs 0.388 af

Subcatchment 16S: PR DA 16 Runoff Area=6.509 ac 0.00% Impervious Runoff Depth=0.45"
Flow Length=1,499' Tc=33.4 min CN=77 Runoff=1.89 cfs 0.246 af

Subcatchment 17S: PR DA 17 Runoff Area=4.145 ac 0.00% Impervious Runoff Depth=0.42"
Flow Length=1,199' Tc=33.9 min CN=76 Runoff=1.08 cfs 0.145 af

Subcatchment 18S: PR DA 18 Runoff Area=5.404 ac 0.00% Impervious Runoff Depth=0.39"
Flow Length=955' Tc=24.8 min CN=75 Runoff=1.48 cfs 0.174 af

Subcatchment 19S: PR DA 19 Runoff Area=3.900 ac 0.00% Impervious Runoff Depth=0.49"
Flow Length=555' Tc=19.5 min CN=78 Runoff=1.68 cfs 0.159 af

Subcatchment 20S: PR DA 20 Runoff Area=2.580 ac 0.00% Impervious Runoff Depth=0.49"
Flow Length=606' Tc=19.1 min CN=78 Runoff=1.13 cfs 0.105 af

Subcatchment 21S: PR DA 21 Runoff Area=6.379 ac 0.00% Impervious Runoff Depth=0.49"
Flow Length=1,191' Tc=27.6 min CN=78 Runoff=2.29 cfs 0.260 af

Subcatchment 22S: PR DA 22 Runoff Area=1.449 ac 0.00% Impervious Runoff Depth=0.53"
Flow Length=538' Tc=14.6 min CN=79 Runoff=0.80 cfs 0.064 af

Subcatchment 23S: PR DA 23 Runoff Area=1.050 ac 0.00% Impervious Runoff Depth=0.49"
Flow Length=492' Tc=24.3 min CN=78 Runoff=0.40 cfs 0.043 af

Subcatchment 24S: PR DA 24 Runoff Area=2.054 ac 0.00% Impervious Runoff Depth=0.61"
Flow Length=735' Tc=28.2 min CN=81 Runoff=0.96 cfs 0.105 af

Subcatchment 25S: PR DA 25 Runoff Area=4.097 ac 0.00% Impervious Runoff Depth=0.32"
Flow Length=923' Tc=48.7 min CN=73 Runoff=0.61 cfs 0.111 af

Subcatchment 26S: PR DA 26 Runoff Area=1.079 ac 0.00% Impervious Runoff Depth=0.66"
Flow Length=353' Tc=10.9 min CN=82 Runoff=0.87 cfs 0.059 af

Subcatchment 27S: PR DA 27 Runoff Area=1.920 ac 0.00% Impervious Runoff Depth=0.70"
Flow Length=428' Tc=21.9 min CN=83 Runoff=1.21 cfs 0.112 af

Subcatchment 28S: PR DA 28 Runoff Area=1.979 ac 0.00% Impervious Runoff Depth=0.45"
Flow Length=523' Tc=32.8 min CN=77 Runoff=0.58 cfs 0.075 af

Subcatchment 31S: Porous Road Runoff Area=0.950 ac 0.00% Impervious Runoff Depth=0.35"
Flow Length=2,000' Tc=14.7 min CN=74 Runoff=0.30 cfs 0.028 af

Pond 29P: POROUS PAVEMENT Peak Elev=840.01' Storage=0.003 af Inflow=0.30 cfs 0.028 af
Outflow=0.23 cfs 0.028 af

Total Runoff Area = 130.041 ac Runoff Volume = 4.008 af Average Runoff Depth = 0.37"
100.00% Pervious = 130.041 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1S: PR DA 1

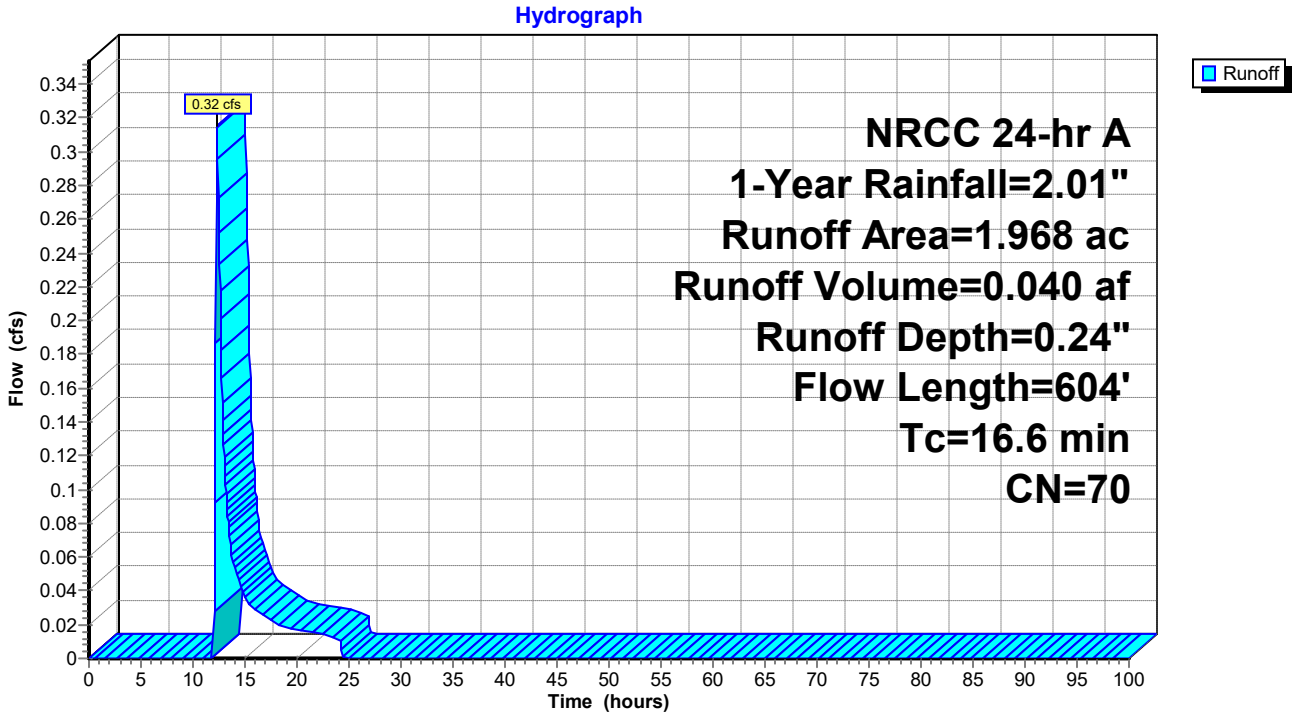
Runoff = 0.32 cfs @ 12.33 hrs, Volume= 0.040 af, Depth= 0.24"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 1-Year Rainfall=2.01"

	Area (ac)	CN	Description
*	0.324	58	B - Meadowed Land
*	0.430	61	B - Developed, Open Space
*	0.027	65	B - Developed, Low Intensity
*	1.070	77	D - Deciduous Forest
*	0.117	80	D - Meadowed Land
	1.968	70	Weighted Average
	1.968		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0	83	0.0120	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
2.4	307	0.0912	2.11		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	51	0.0588	1.70		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.7	163	0.0552	1.64		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
16.6	604	Total			

Subcatchment 1S: PR DA 1



Summary for Subcatchment 2S: PR DA 2

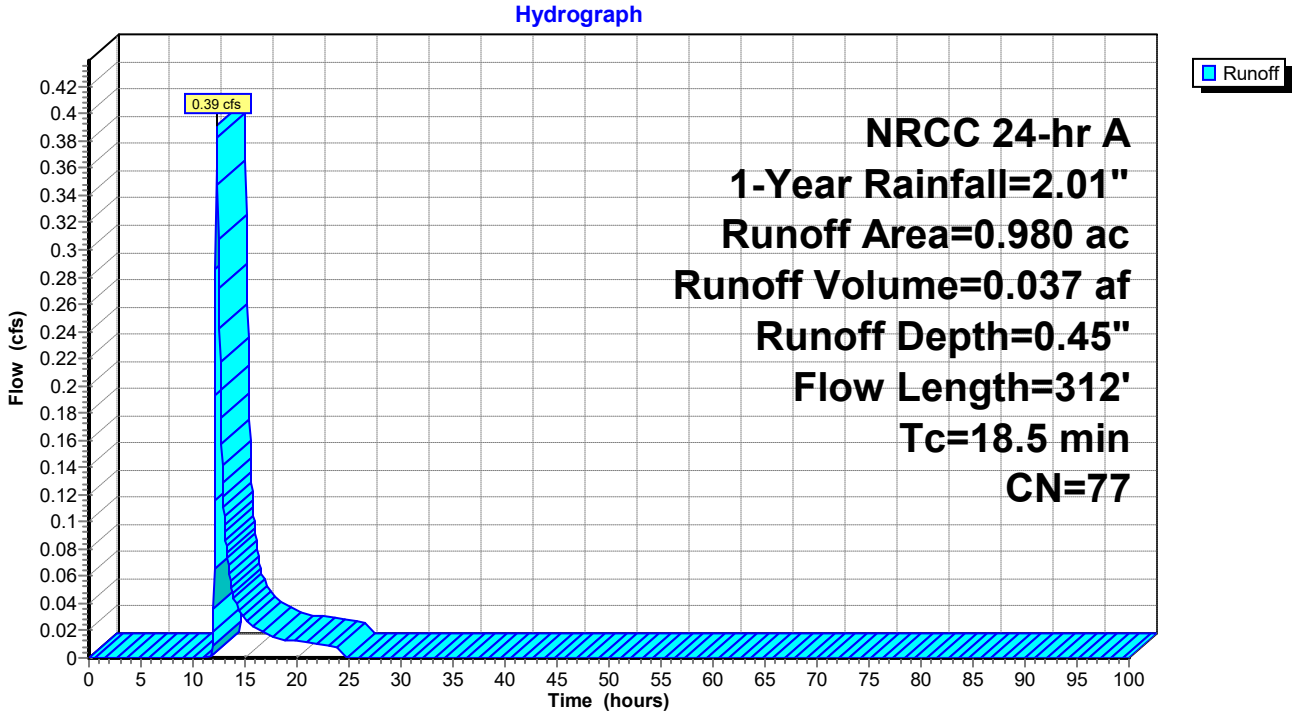
Runoff = 0.39 cfs @ 12.31 hrs, Volume= 0.037 af, Depth= 0.45"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 1-Year Rainfall=2.01"

	Area (ac)	CN	Description
*	0.700	77	D - Deciduous Forest
*	0.280	78	D - Meadowed Land
	0.980	77	Weighted Average
	0.980		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.2	127	0.0157	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
3.0	116	0.0086	0.65		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	69	0.2464	3.47		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
18.5	312	Total			

Subcatchment 2S: PR DA 2



Summary for Subcatchment 3S: PR DA 3

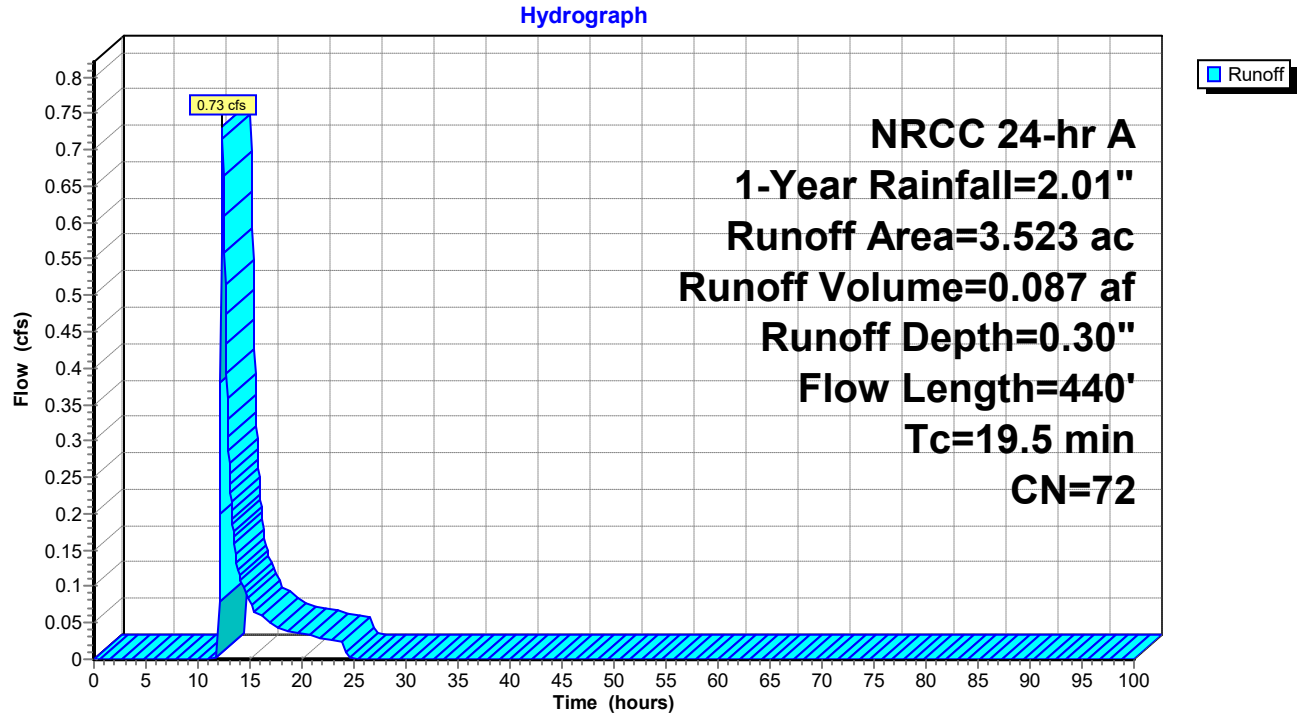
Runoff = 0.73 cfs @ 12.36 hrs, Volume= 0.087 af, Depth= 0.30"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 1-Year Rainfall=2.01"

	Area (ac)	CN	Description
*	1.900	70	C - Deciduous Forest
*	1.000	74	C - Meadowed Land
*	0.213	78	D - Meadowed Land
*	0.404	77	D - Deciduous Forest
*	0.006	85	D - Developed, Medium Intensity
	3.523	72	Weighted Average
	3.523		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.3	114	0.0175	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
1.1	116	0.0603	1.72		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.1	210	0.0095	0.68		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
19.5	440	Total			

Subcatchment 3S: PR DA 3



Summary for Subcatchment 4S: PR DA 4

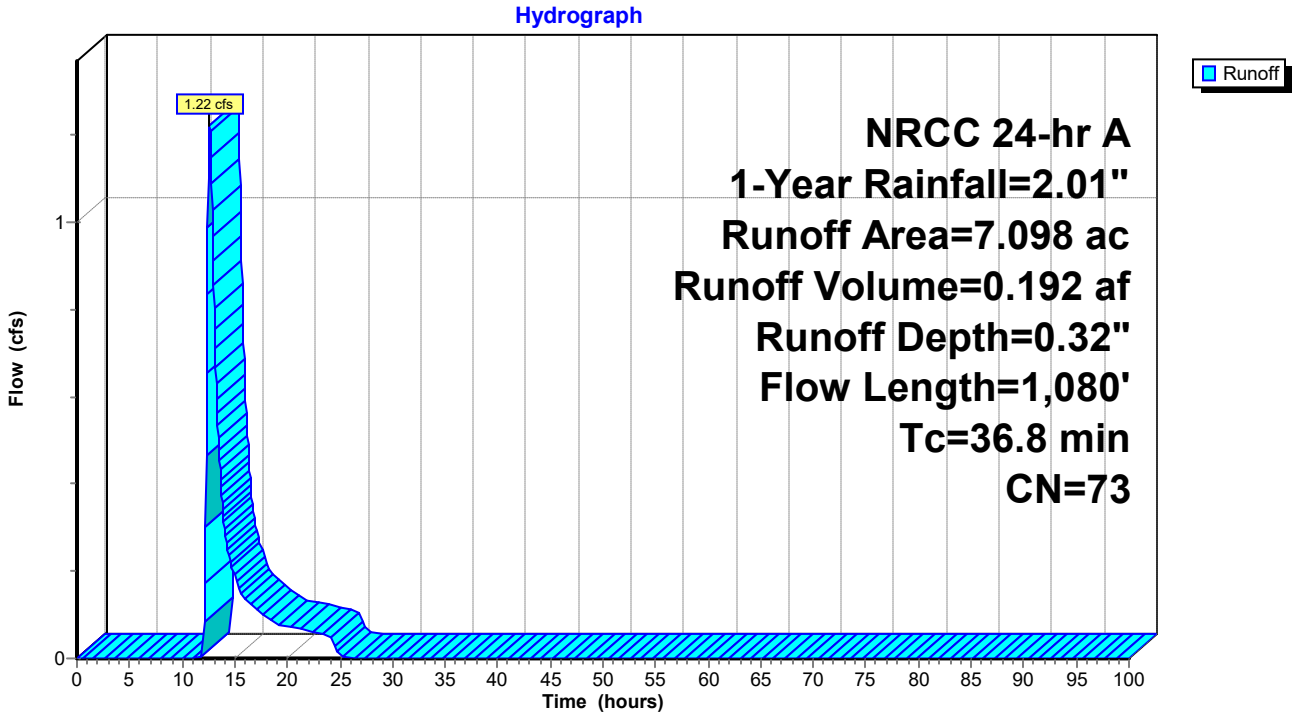
Runoff = 1.22 cfs @ 12.63 hrs, Volume= 0.192 af, Depth= 0.32"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 1-Year Rainfall=2.01"

	Area (ac)	CN	Description
*	0.200	58	B - Meadowed Land
*	5.070	74	C - Meadowed Land
*	1.828	70	C - Deciduous Forest
	7.098	73	Weighted Average
	7.098		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.6	102	0.0196	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
1.4	114	0.0351	1.31		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.5	177	0.0282	1.18		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.2	145	0.0069	0.58		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
15.3	346	0.0029	0.38		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.8	196	0.0663	1.80		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
36.8	1,080	Total			

Subcatchment 4S: PR DA 4



Summary for Subcatchment 5S: PR DA 5

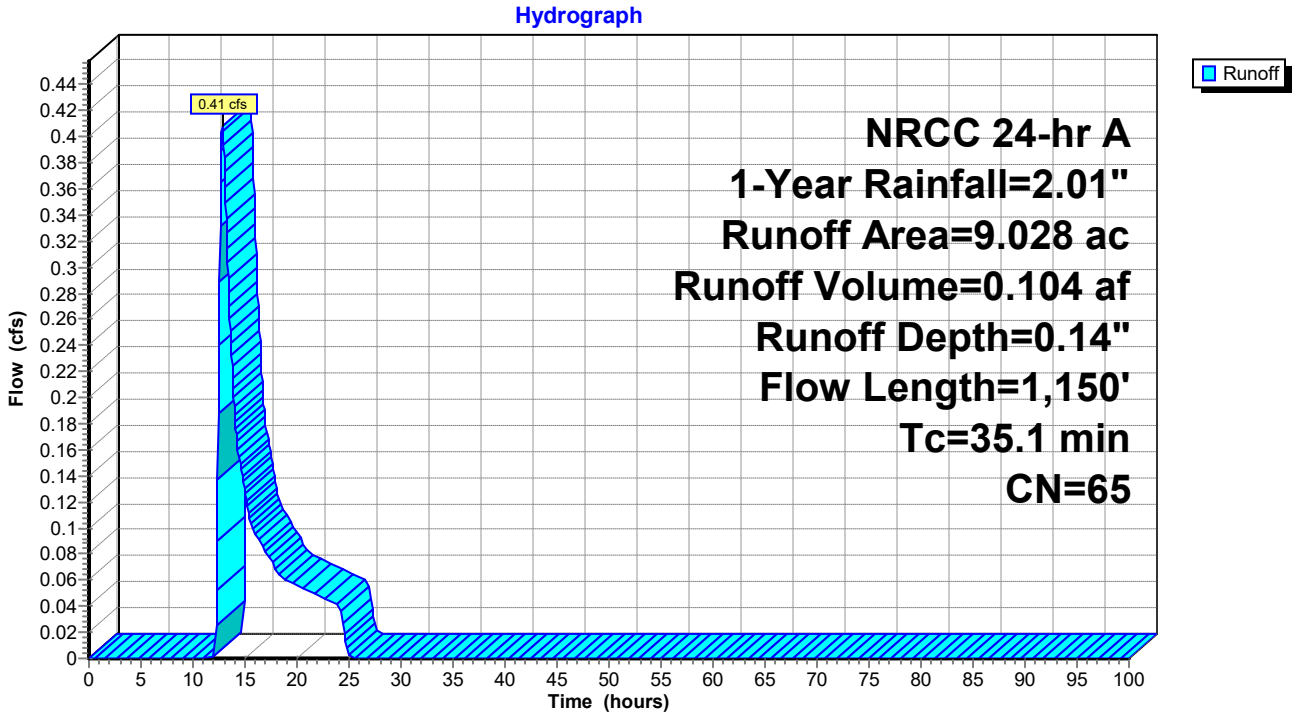
Runoff = 0.41 cfs @ 12.82 hrs, Volume= 0.104 af, Depth= 0.14"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 1-Year Rainfall=2.01"

	Area (ac)	CN	Description
*	4.900	58	B - Meadowed Land
*	2.990	74	C - Meadowed Land
*	1.138	70	C - Deciduous Forest
	9.028	65	Weighted Average
	9.028		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.6	165	0.0182	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
2.2	160	0.0312	1.24		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.0	204	0.0147	0.85		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.1	182	0.0110	0.73		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.2	154	0.0130	0.80		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.0	285	0.0281	1.17		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
35.1	1,150	Total			

Subcatchment 5S: PR DA 5



Summary for Subcatchment 6S: PR DA 6

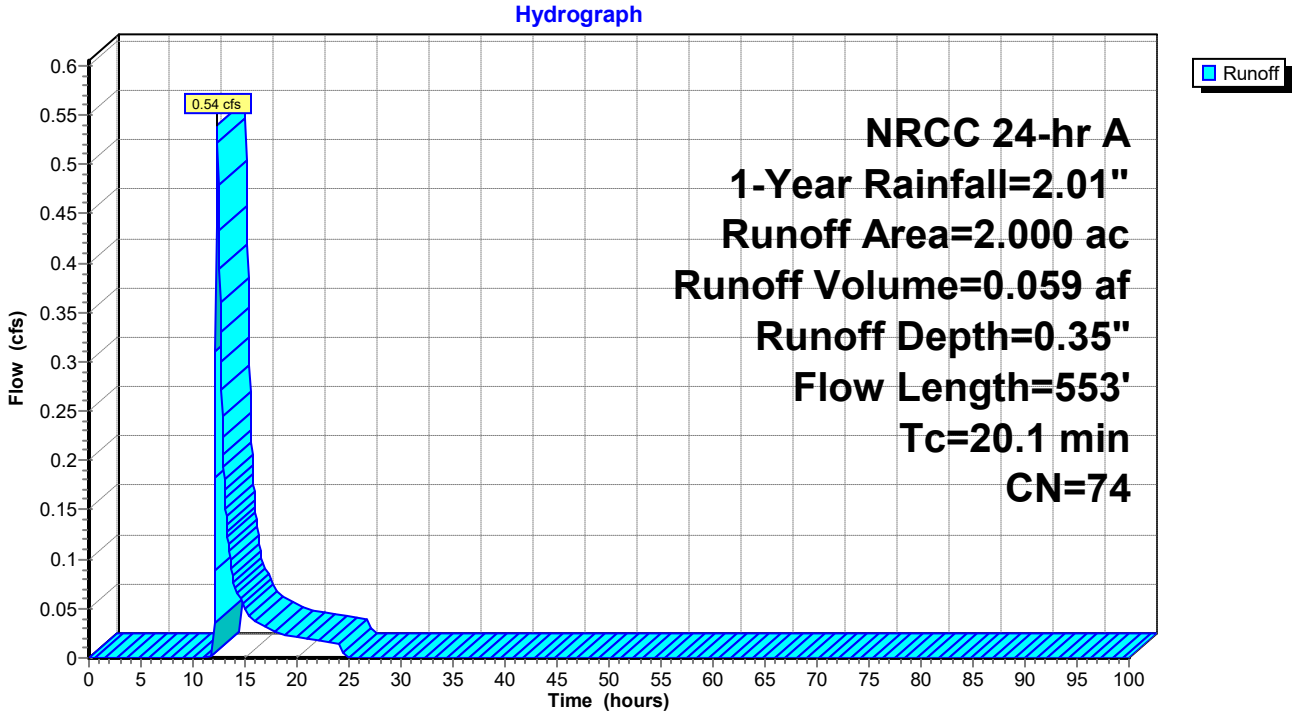
Runoff = 0.54 cfs @ 12.35 hrs, Volume= 0.059 af, Depth= 0.35"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 1-Year Rainfall=2.01"

	Area (ac)	CN	Description
*	2.000	74	C - Meadowed Land
	2.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.8	89	0.0562	0.22		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
3.4	159	0.0126	0.79		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.5	74	0.0135	0.81		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
8.4	231	0.0043	0.46		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
20.1	553	Total			

Subcatchment 6S: PR DA 6



Summary for Subcatchment 7S: PR DA 7

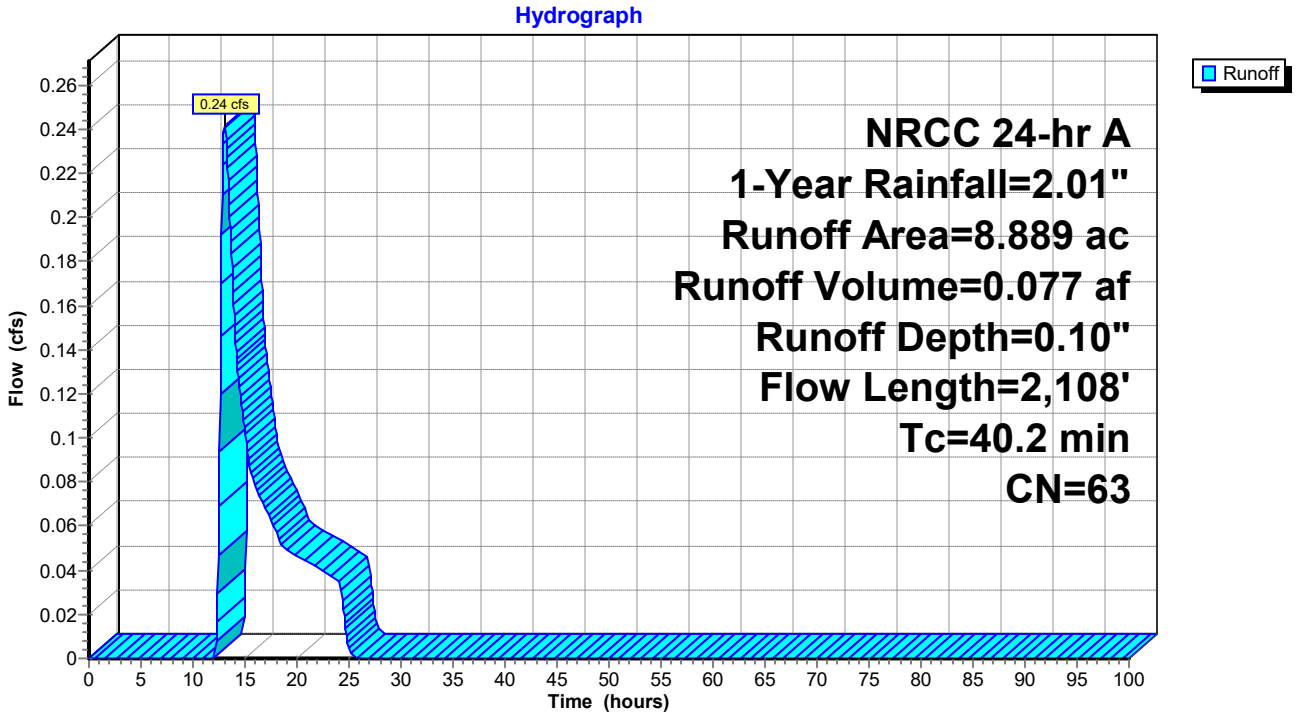
Runoff = 0.24 cfs @ 13.04 hrs, Volume= 0.077 af, Depth= 0.10"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 1-Year Rainfall=2.01"

	Area (ac)	CN	Description
*	6.330	58	B - Meadowed Land
*	0.090	70	C - Deciduous Forest
*	2.453	74	C - Meadowed Land
*	0.016	74	C - Developed, Open Space
	8.889	63	Weighted Average
	8.889		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.5	164	0.0427	0.22		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
8.4	570	0.0263	1.14		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.9	247	0.0405	1.41		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.4	126	0.0159	0.88		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.2	456	0.0307	1.23		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.8	545	0.0275	1.16		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
40.2	2,108	Total			

Subcatchment 7S: PR DA 7



Summary for Subcatchment 8S: PR DA 8

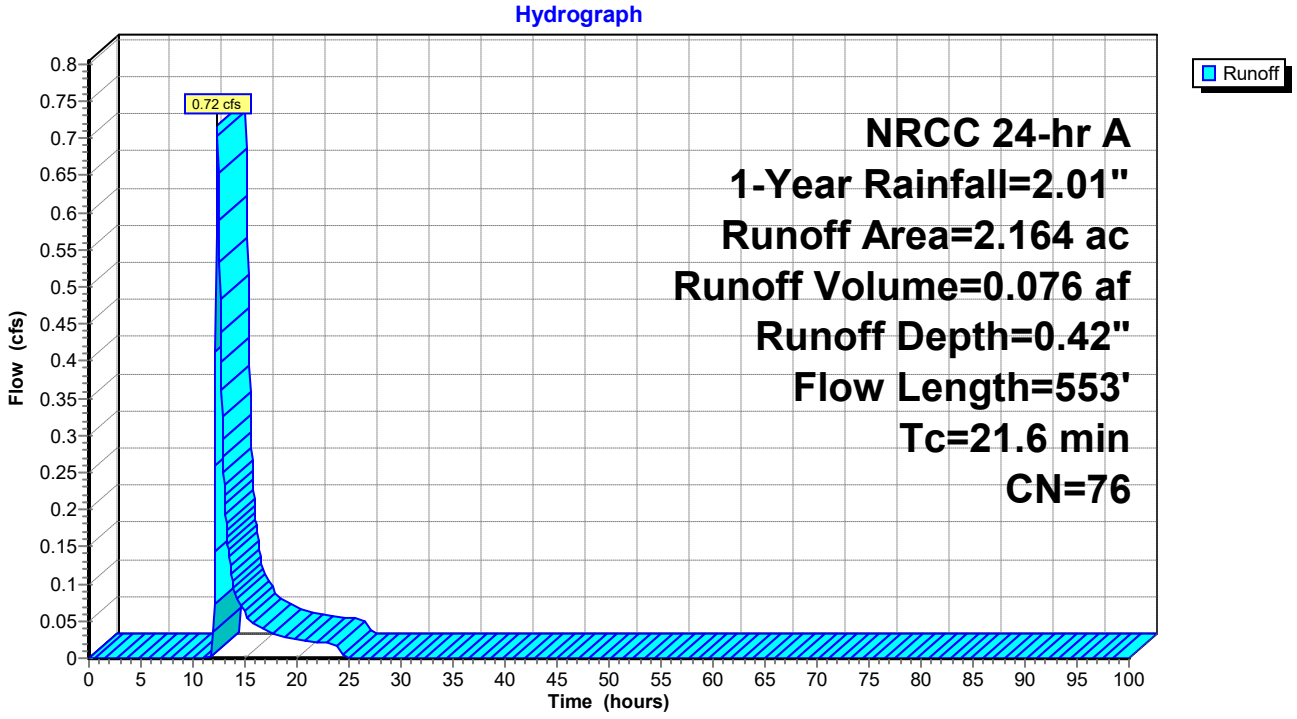
Runoff = 0.72 cfs @ 12.36 hrs, Volume= 0.076 af, Depth= 0.42"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 1-Year Rainfall=2.01"

	Area (ac)	CN	Description
*	0.310	70	C - Deciduous Forest
*	0.830	77	D - Deciduous Forest
*	1.024	78	D - Meadowed Land
	2.164	76	Weighted Average
	2.164		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.6	178	0.0337	0.20		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
5.1	239	0.0125	0.78		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.9	136	0.0294	1.20		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
21.6	553	Total			

Subcatchment 8S: PR DA 8



Summary for Subcatchment 9S: PR DA 9

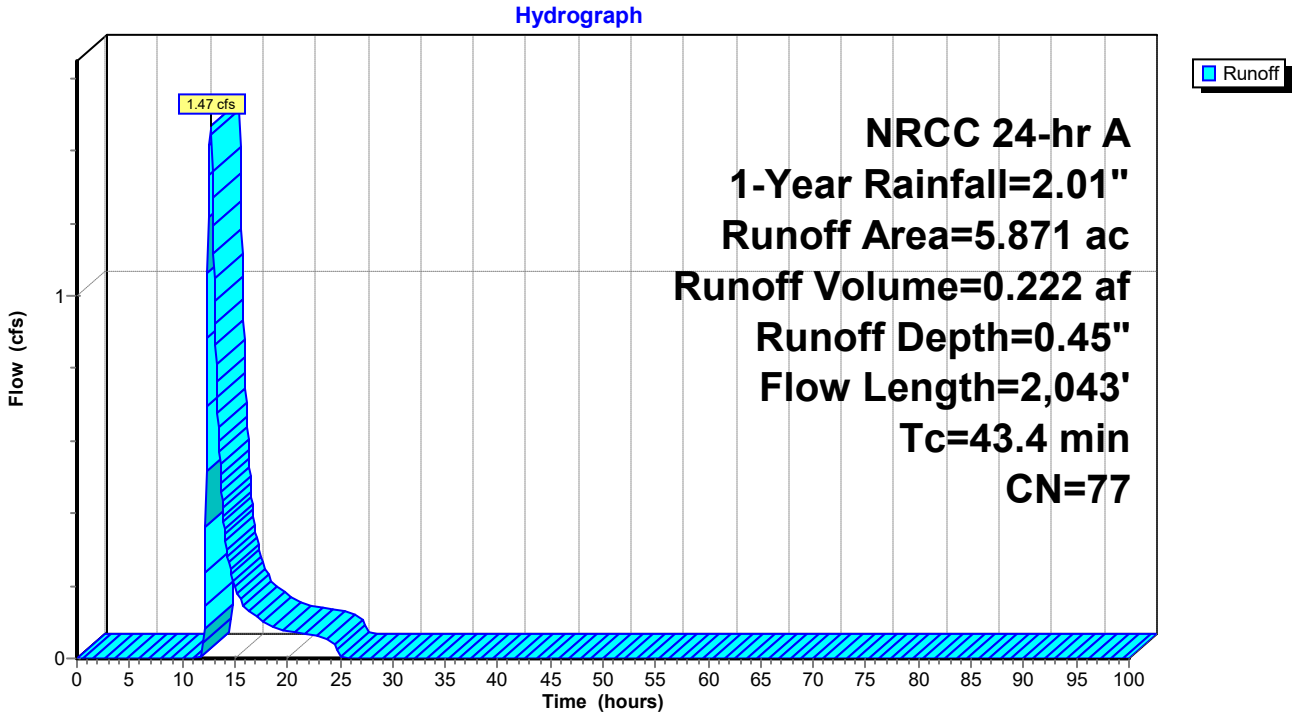
Runoff = 1.47 cfs @ 12.69 hrs, Volume= 0.222 af, Depth= 0.45"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 1-Year Rainfall=2.01"

	Area (ac)	CN	Description
*	4.539	78	B - Meadowed Land
*	1.173	74	C - Meadowed Land
*	0.159	70	C - Deciduous Forest
	5.871	77	Weighted Average
	5.871		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.8	210	0.0286	0.20		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
4.0	313	0.0351	1.31		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.0	412	0.0194	0.97		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.8	315	0.0381	1.37		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.2	366	0.0437	1.46		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.6	427	0.0234	1.07		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
43.4	2,043	Total			

Subcatchment 9S: PR DA 9



Summary for Subcatchment 10S: PR DA 10

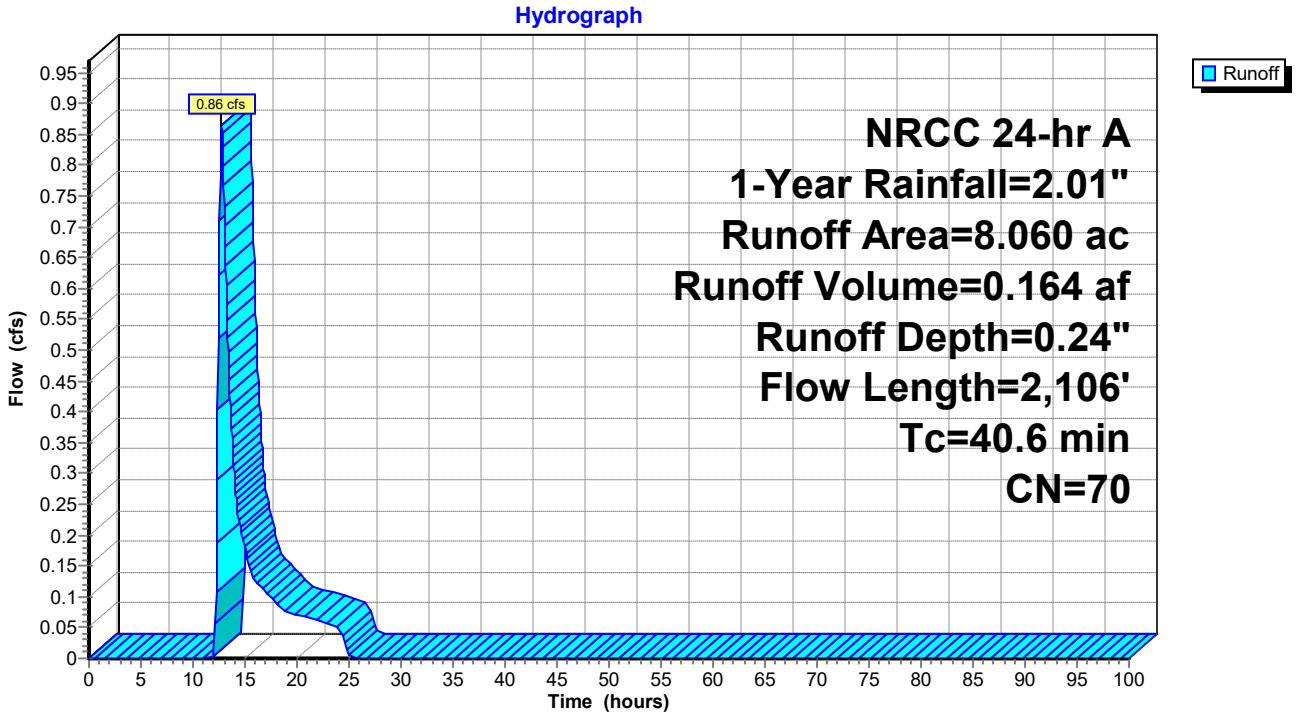
Runoff = 0.86 cfs @ 12.75 hrs, Volume= 0.164 af, Depth= 0.24"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 1-Year Rainfall=2.01"

	Area (ac)	CN	Description
*	3.900	58	B - Meadowed Land
*	4.160	82	C - Meadowed Land
	8.060	70	Weighted Average
	8.060		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.4	165	0.0303	0.19		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
9.5	590	0.0220	1.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.2	325	0.0585	1.69		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
8.0	692	0.0419	1.43		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.5	334	0.0210	1.01		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
40.6	2,106	Total			

Subcatchment 10S: PR DA 10



Summary for Subcatchment 11S: PR DA 11

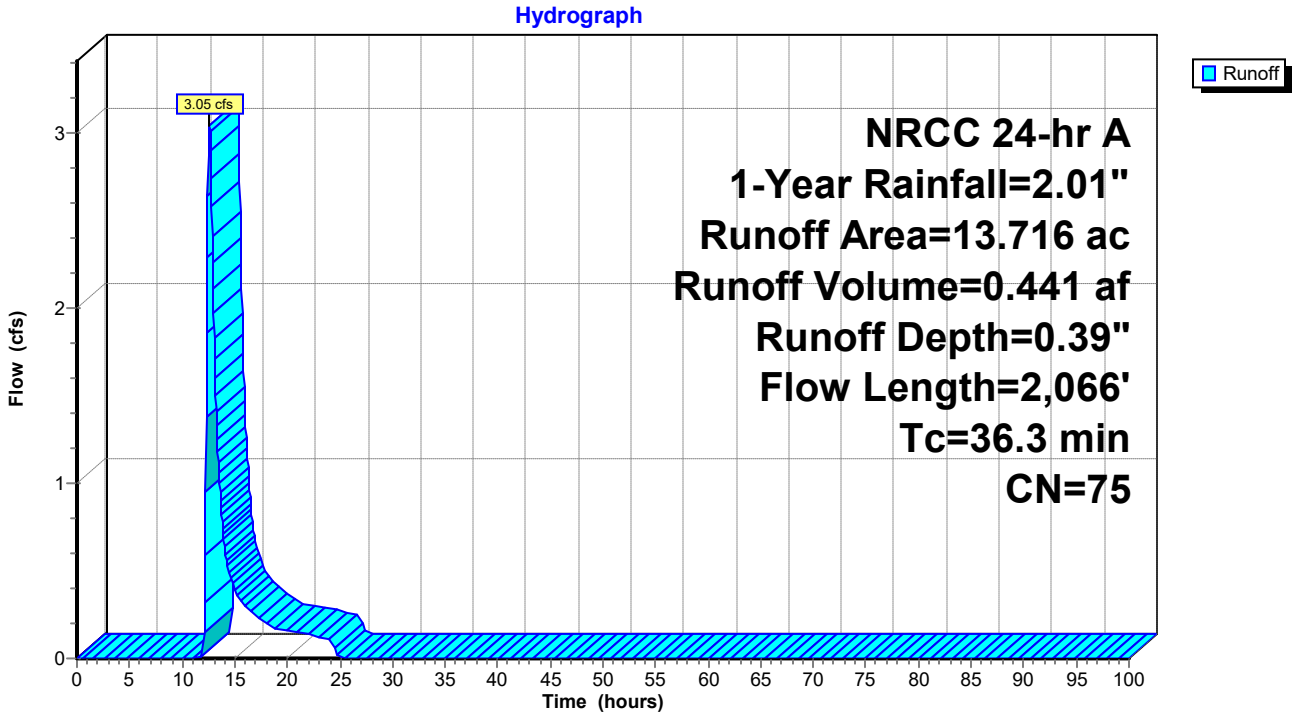
Runoff = 3.05 cfs @ 12.60 hrs, Volume= 0.441 af, Depth= 0.39"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 1-Year Rainfall=2.01"

	Area (ac)	CN	Description
*	6.370	78	B - Meadowed Land
*	7.146	73	C - Meadowed Land
*	0.200	70	C - Deciduous Forest
	13.716	75	Weighted Average
	13.716		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.4	68	0.0147	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
4.4	218	0.0138	0.82		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.0	397	0.0353	1.32		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.4	191	0.0365	1.34		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.9	386	0.0544	1.63		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.0	189	0.0529	1.61		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.0	281	0.0285	1.18		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.2	336	0.0238	1.08		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
36.3	2,066	Total			

Subcatchment 11S: PR DA 11



Summary for Subcatchment 12S: PR DA 12

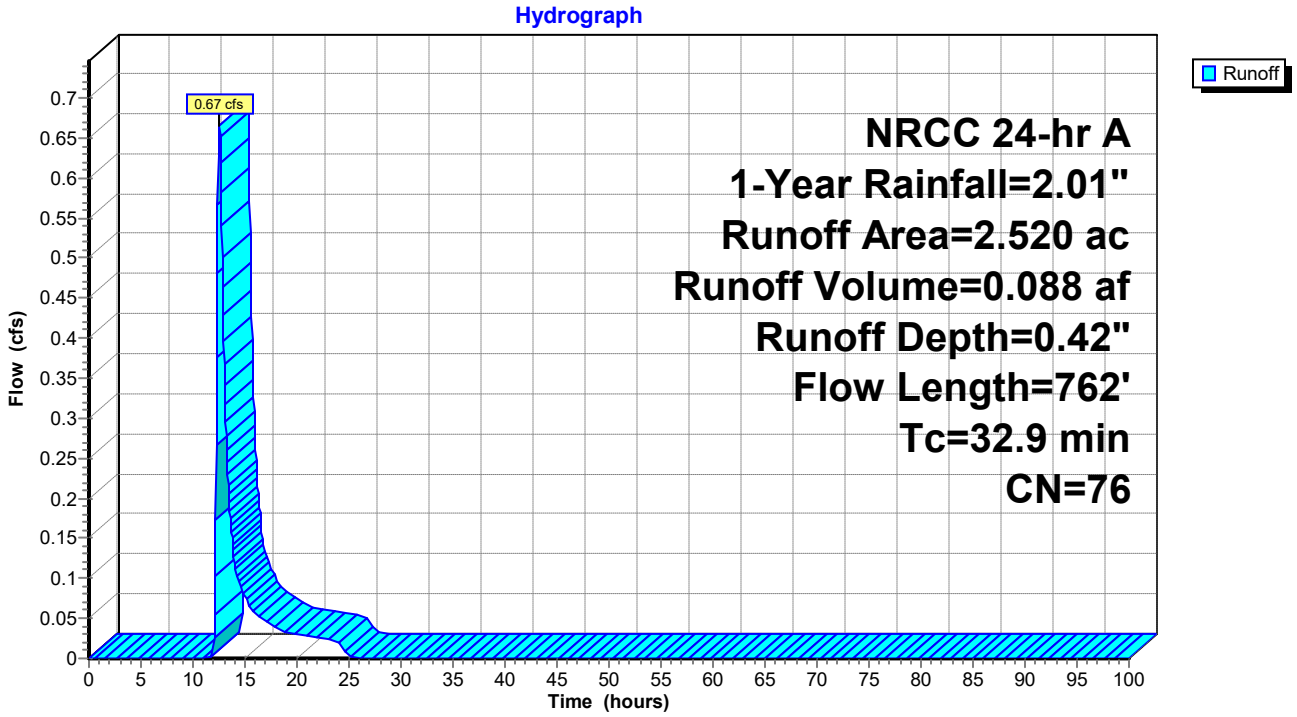
Runoff = 0.67 cfs @ 12.54 hrs, Volume= 0.088 af, Depth= 0.42"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 1-Year Rainfall=2.01"

	Area (ac)	CN	Description
*	0.520	70	C - Deciduous Forest
*	0.200	73	C - Meadowed Land
*	1.710	78	D - Meadowed Land
*	0.090	77	D - Deciduous Forest
	2.520	76	Weighted Average
	2.520		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.9	192	0.0104	0.13		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
1.1	117	0.0684	1.83		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.9	253	0.0237	1.08		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.0	200	0.0250	1.11		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
32.9	762	Total			

Subcatchment 12S: PR DA 12



Summary for Subcatchment 13S: PR DA 13

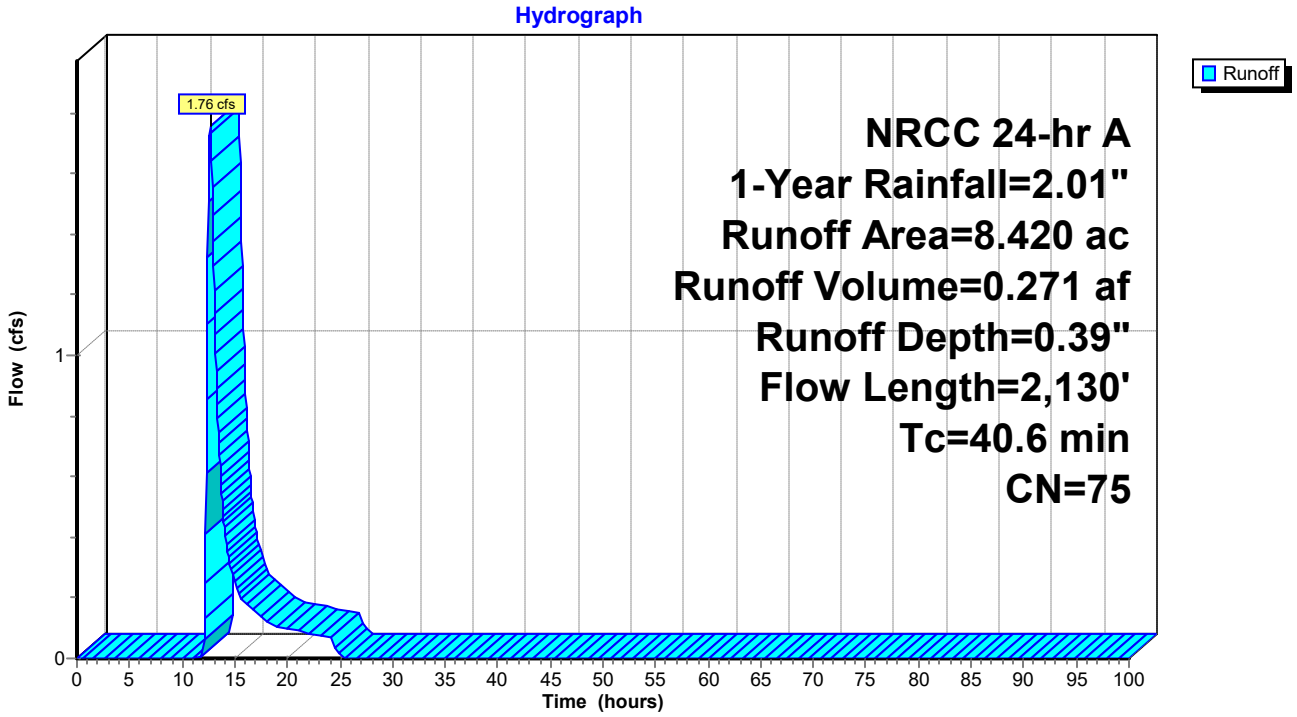
Runoff = 1.76 cfs @ 12.67 hrs, Volume= 0.271 af, Depth= 0.39"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 1-Year Rainfall=2.01"

	Area (ac)	CN	Description
*	1.802	78	B - Meadowed Land
*	4.558	74	C - Meadowed Land
*	0.561	70	C - Deciduous Forest
*	1.230	78	D - Meadowed Land
*	0.269	77	D - Deciduous Forest
	8.420	75	Weighted Average
	8.420		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.5	166	0.0361	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
4.5	276	0.0217	1.03		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.4	460	0.0217	1.03		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.2	210	0.0238	1.08		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.4	183	0.0328	1.27		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.9	370	0.0513	1.59		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.6	192	0.0312	1.24		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.1	273	0.0440	1.47		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
40.6	2,130	Total			

Subcatchment 13S: PR DA 13



Summary for Subcatchment 14S: PR DA 14

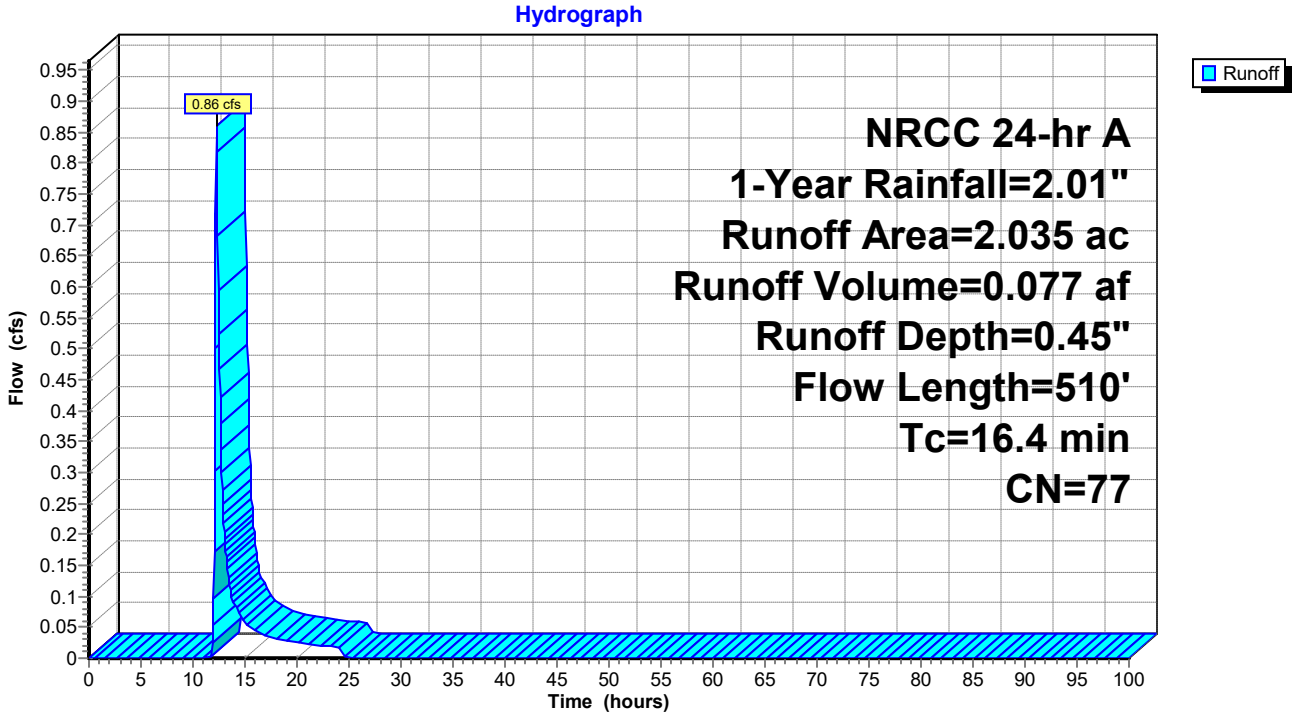
Runoff = 0.86 cfs @ 12.28 hrs, Volume= 0.077 af, Depth= 0.45"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 1-Year Rainfall=2.01"

	Area (ac)	CN	Description
*	0.091	70	C - Deciduous Forest
*	0.044	70	C - Evergreen Forest
*	0.087	77	D - Evergreen Forest
*	1.247	77	D - Deciduous Forest
*	0.566	80	D - Meadowed Land
	2.035	77	Weighted Average
	2.035		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2	174	0.0632	0.26		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
5.2	336	0.0238	1.08		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
16.4	510	Total			

Subcatchment 14S: PR DA 14



Summary for Subcatchment 15S: PR DA 15

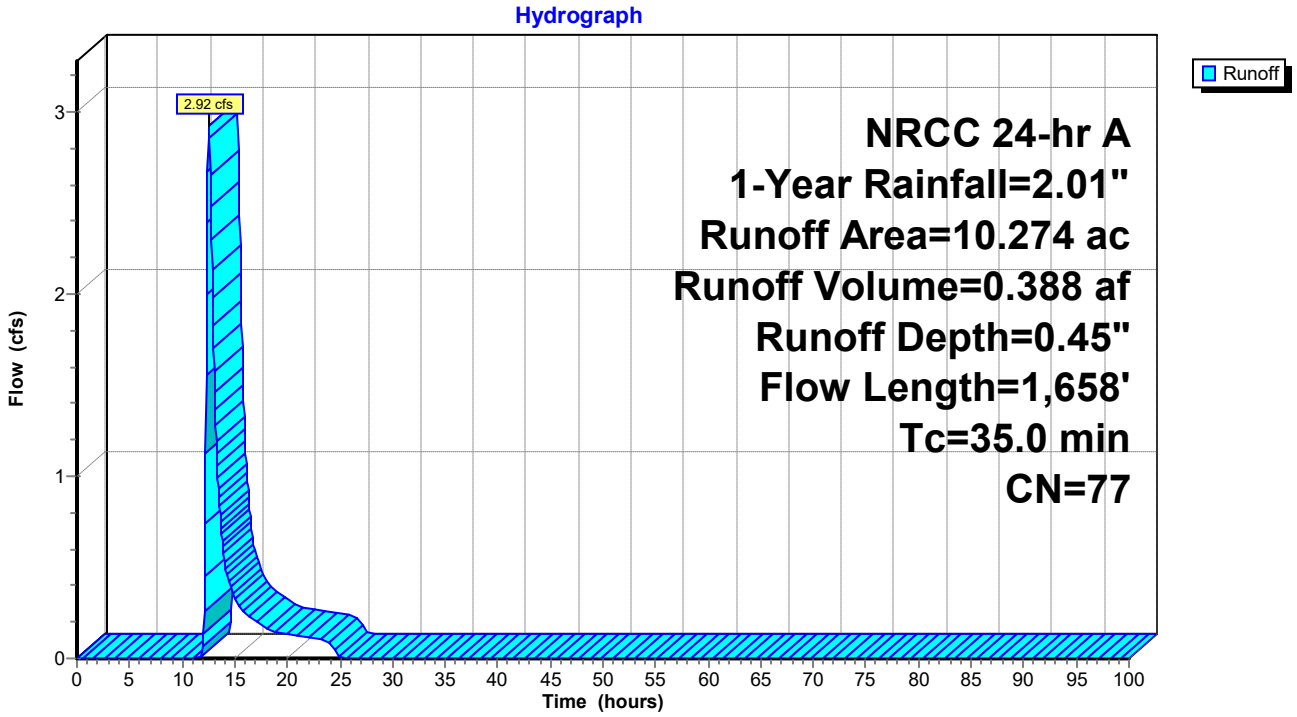
Runoff = 2.92 cfs @ 12.56 hrs, Volume= 0.388 af, Depth= 0.45"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 1-Year Rainfall=2.01"

	Area (ac)	CN	Description
*	1.568	70	C - Deciduous Forest
*	1.366	74	C - Meadowed Land
*	3.940	80	D - Meadowed Land
*	3.400	77	D - Deciduous Forest
	10.274	77	Weighted Average
	10.274		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.4	186	0.0323	0.20		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
1.7	209	0.0909	2.11		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.1	441	0.0431	1.45		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.3	423	0.0189	0.96		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.5	399	0.0301	1.21		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
35.0	1,658	Total			

Subcatchment 15S: PR DA 15



Summary for Subcatchment 16S: PR DA 16

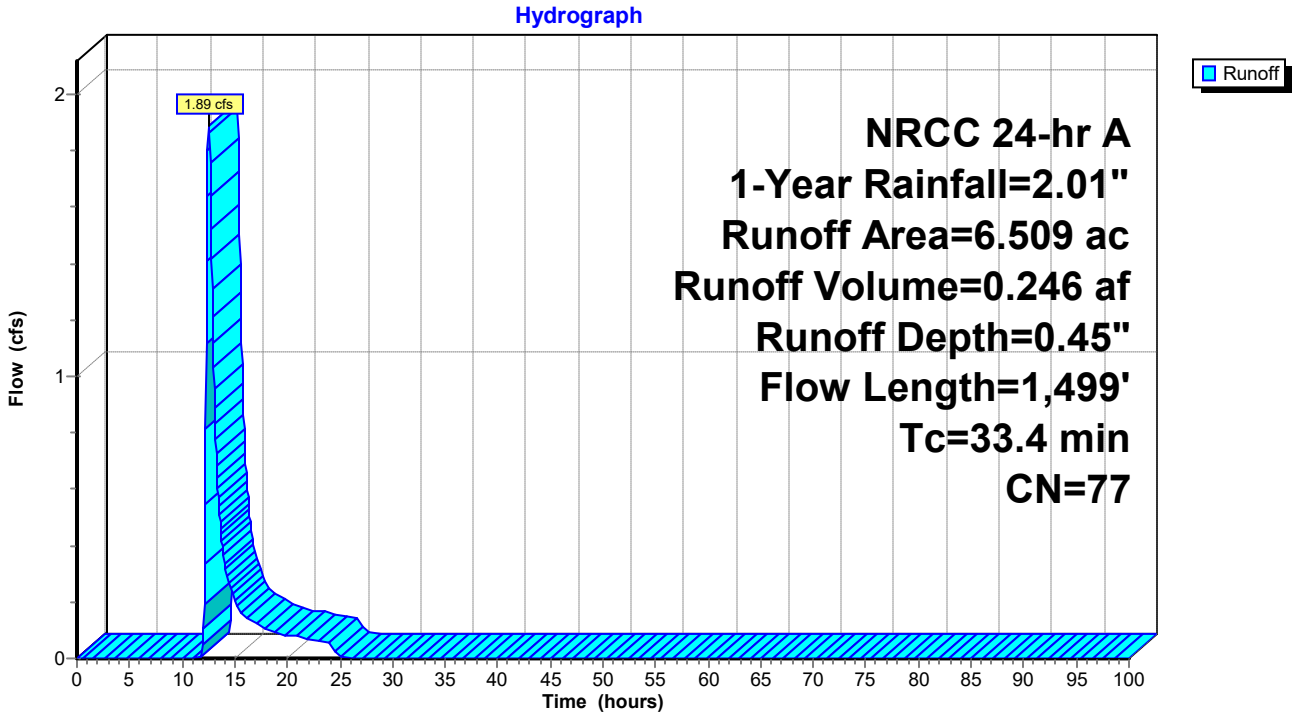
Runoff = 1.89 cfs @ 12.53 hrs, Volume= 0.246 af, Depth= 0.45"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 1-Year Rainfall=2.01"

	Area (ac)	CN	Description
*	0.552	70	C - Deciduous Forest
*	0.308	74	C - Meadowed Land
*	3.833	77	D - Deciduous Forest
*	1.816	80	D - Meadowed Land
	6.509	77	Weighted Average
	6.509		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.1	222	0.0270	0.19		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
2.9	311	0.0643	1.78		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.2	191	0.0419	1.43		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.8	331	0.0423	1.44		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.4	444	0.0383	1.37		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
33.4	1,499	Total			

Subcatchment 16S: PR DA 16



Summary for Subcatchment 17S: PR DA 17

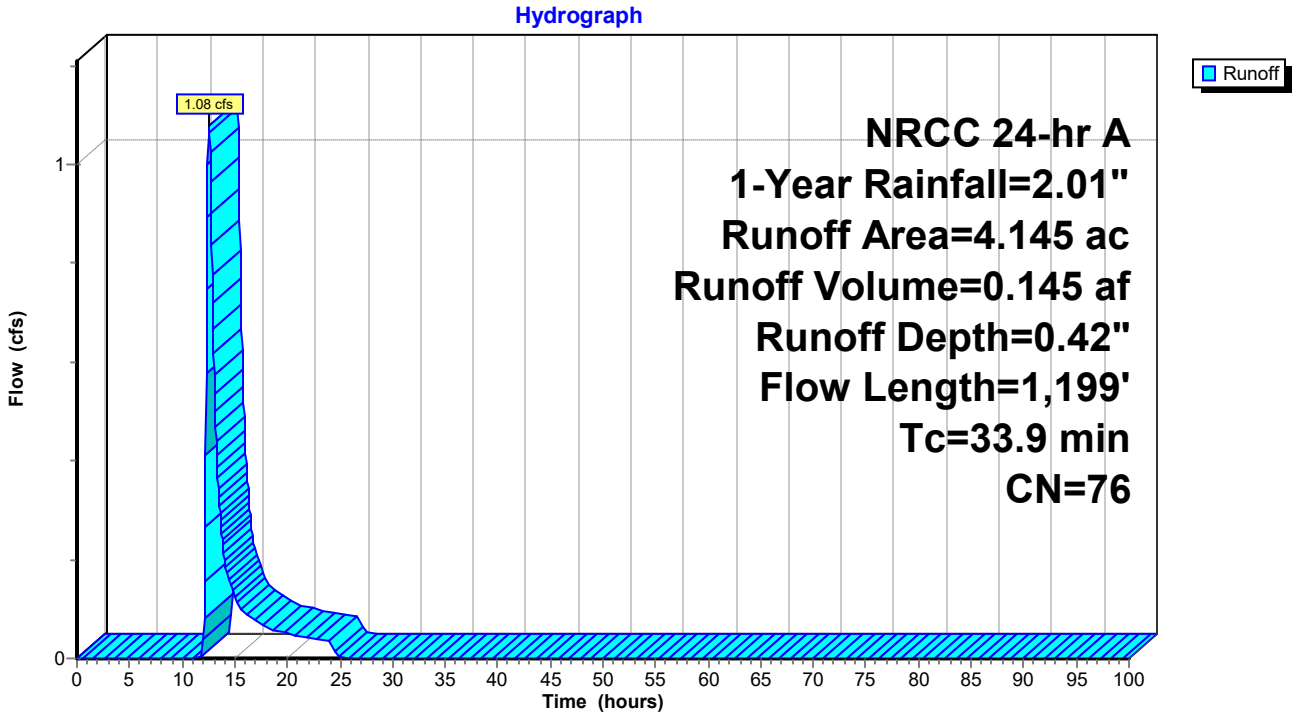
Runoff = 1.08 cfs @ 12.55 hrs, Volume= 0.145 af, Depth= 0.42"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 1-Year Rainfall=2.01"

	Area (ac)	CN	Description
*	0.198	78	B - Meadowed Land
*	2.871	74	C - Meadowed Land
*	1.001	80	D - Meadowed Land
*	0.075	77	D - Deciduous Forest
	4.145	76	Weighted Average
	4.145		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.6	137	0.0292	0.18		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
2.7	232	0.0431	1.45		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.2	266	0.0150	0.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
9.4	360	0.0083	0.64		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.0	204	0.0147	0.85		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
33.9	1,199	Total			

Subcatchment 17S: PR DA 17



Summary for Subcatchment 18S: PR DA 18

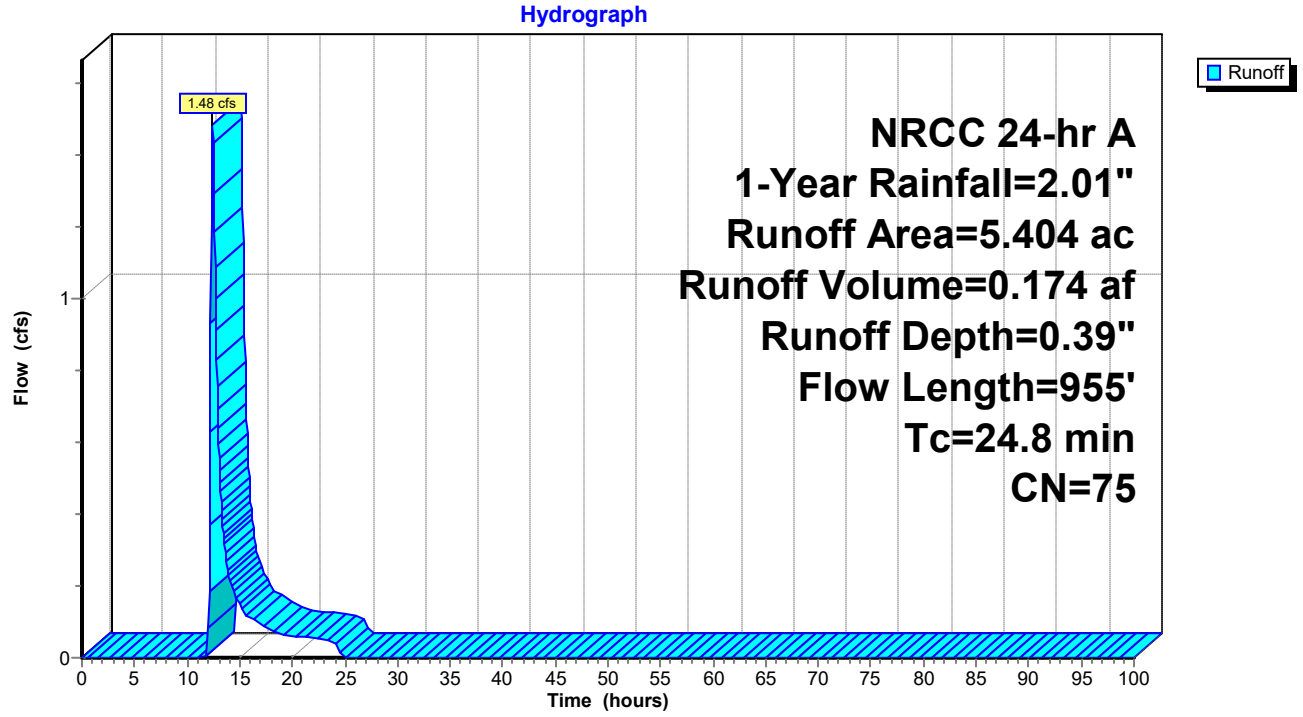
Runoff = 1.48 cfs @ 12.42 hrs, Volume= 0.174 af, Depth= 0.39"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 1-Year Rainfall=2.01"

	Area (ac)	CN	Description
*	0.672	78	B - Meadowed Land
*	4.382	74	C - Meadowed Land
*	0.260	80	D - Meadowed Land
*	0.090	77	D - Deciduous Forest
	5.404	75	Weighted Average
	5.404		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	108	0.0278	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
5.1	379	0.0317	1.25		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
9.1	468	0.0150	0.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
24.8	955	Total			

Subcatchment 18S: PR DA 18



Summary for Subcatchment 19S: PR DA 19

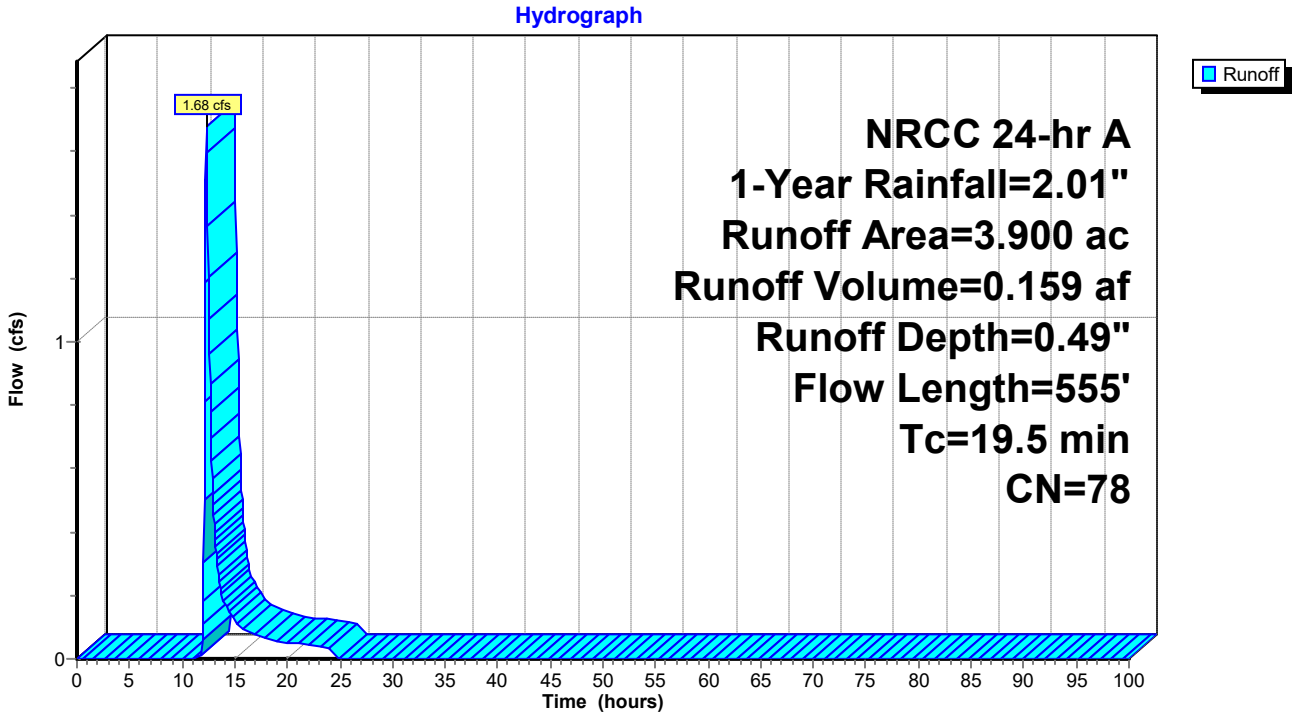
Runoff = 1.68 cfs @ 12.32 hrs, Volume= 0.159 af, Depth= 0.49"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 1-Year Rainfall=2.01"

	Area (ac)	CN	Description
*	3.180	77	D - Deciduous Forest
*	0.720	80	D - Meadowed Land
	3.900	78	Weighted Average
	3.900		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.8	200	0.0300	0.20		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
2.7	355	0.1014	2.23		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
19.5	555	Total			

Subcatchment 19S: PR DA 19



Summary for Subcatchment 20S: PR DA 20

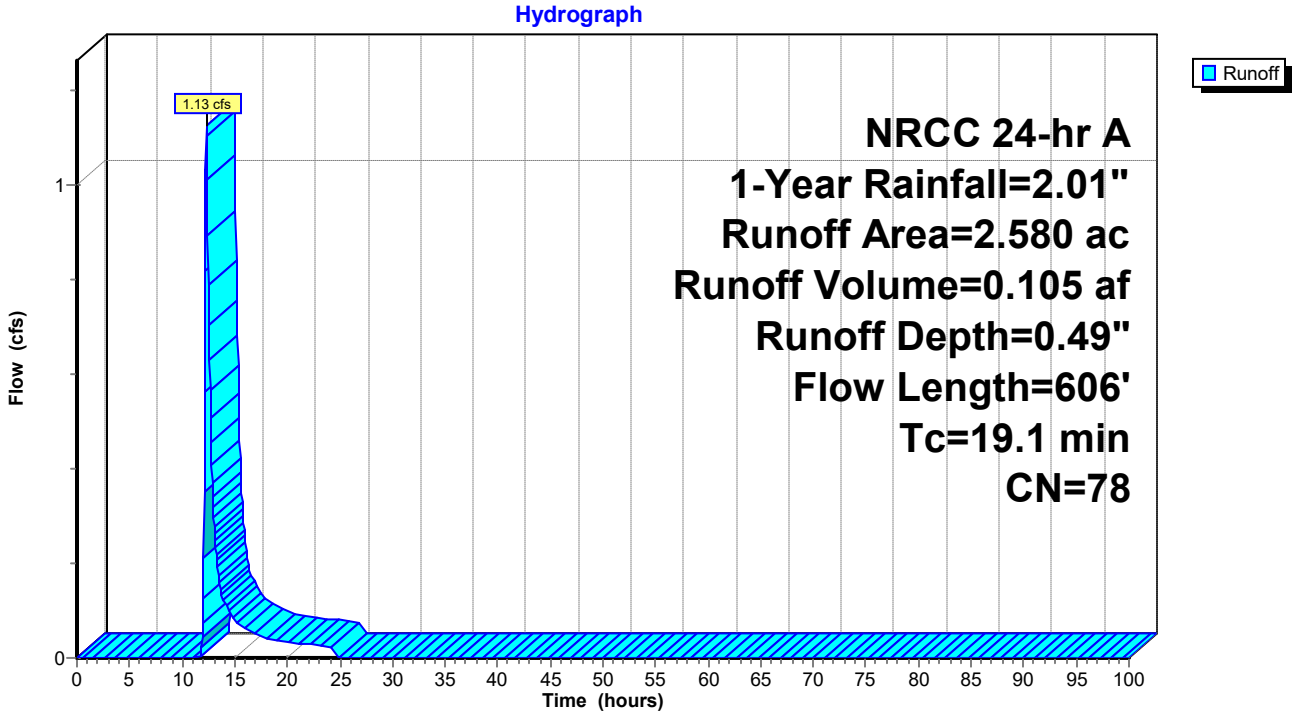
Runoff = 1.13 cfs @ 12.32 hrs, Volume= 0.105 af, Depth= 0.49"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 1-Year Rainfall=2.01"

	Area (ac)	CN	Description
*	1.690	77	D - Deciduous Forest
*	0.890	80	D - Meadowed Land
	2.580	78	Weighted Average
	2.580		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.8	150	0.0333	0.20		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
1.9	181	0.0497	1.56		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.4	275	0.0218	1.03		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
19.1	606	Total			

Subcatchment 20S: PR DA 20



Summary for Subcatchment 21S: PR DA 21

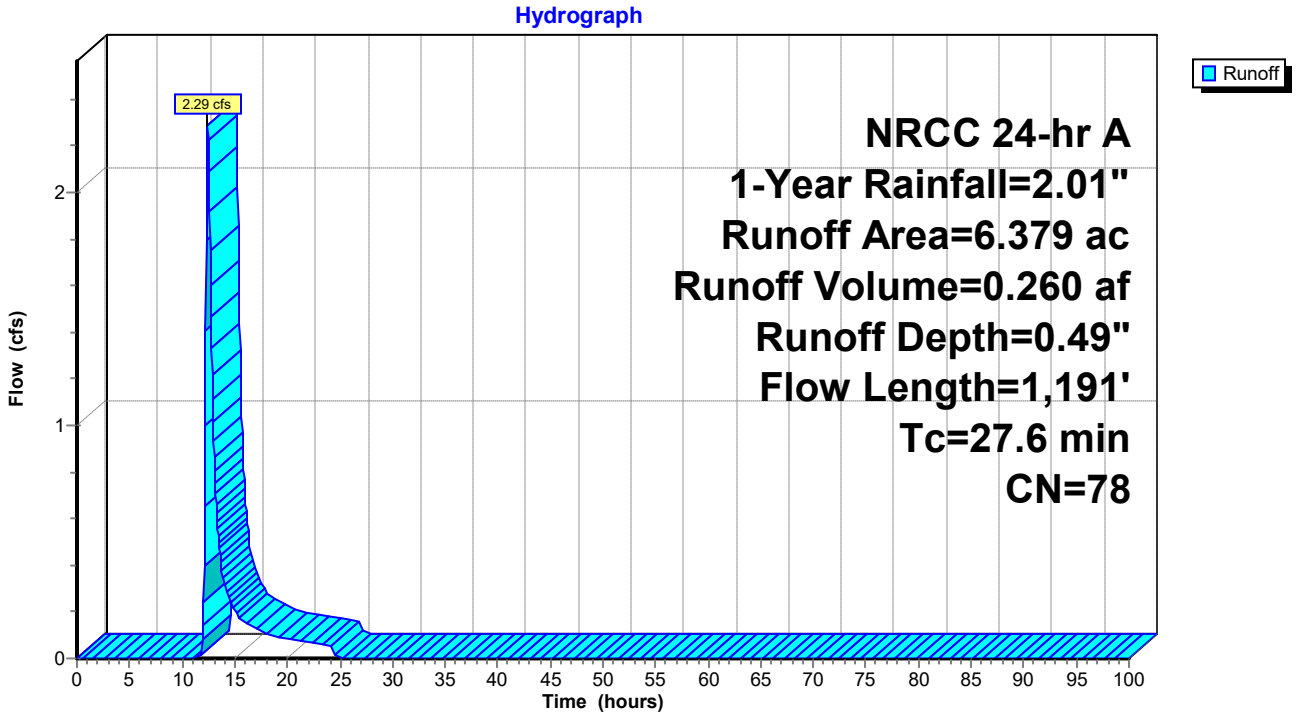
Runoff = 2.29 cfs @ 12.44 hrs, Volume= 0.260 af, Depth= 0.49"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 1-Year Rainfall=2.01"

	Area (ac)	CN	Description
*	0.410	78	B - Meadowed Land
*	1.270	70	C - Deciduous Forest
*	3.180	82	C - Meadowed Land
*	1.250	77	D - Deciduous Forest
*	0.269	80	D - Meadowed Land
	6.379	78	Weighted Average
	6.379		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	100	0.0300	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
5.0	354	0.0282	1.18		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
8.2	437	0.0160	0.89		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.7	300	0.0233	1.07		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
27.6	1,191	Total			

Subcatchment 21S: PR DA 21



Summary for Subcatchment 22S: PR DA 22

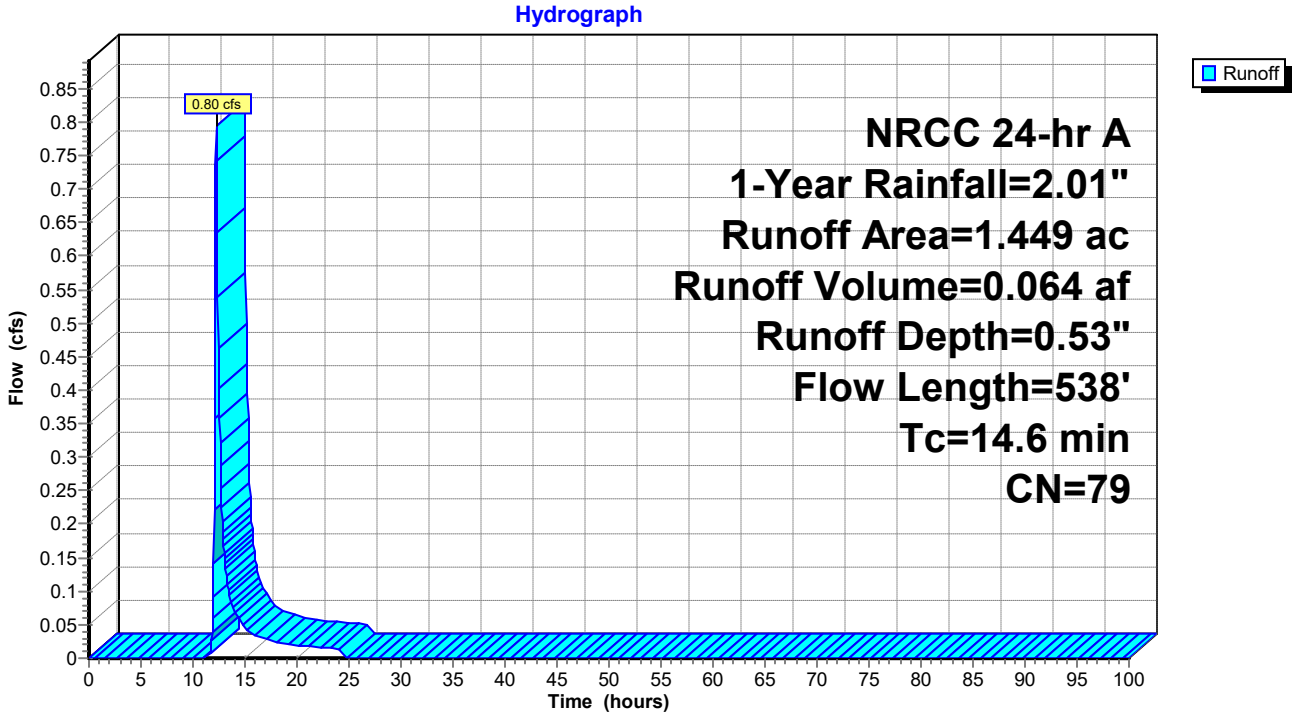
Runoff = 0.80 cfs @ 12.25 hrs, Volume= 0.064 af, Depth= 0.53"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 1-Year Rainfall=2.01"

	Area (ac)	CN	Description
*	0.660	77	D - Deciduous Forest
*	0.380	84	D - Shrub/Scrub
*	0.409	78	D - Meadowed Land
	1.449	79	Weighted Average
	1.449		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	125	0.0480	0.22		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
2.9	228	0.0351	1.31		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.1	185	0.0432	1.45		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
14.6	538	Total			

Subcatchment 22S: PR DA 22



Summary for Subcatchment 23S: PR DA 23

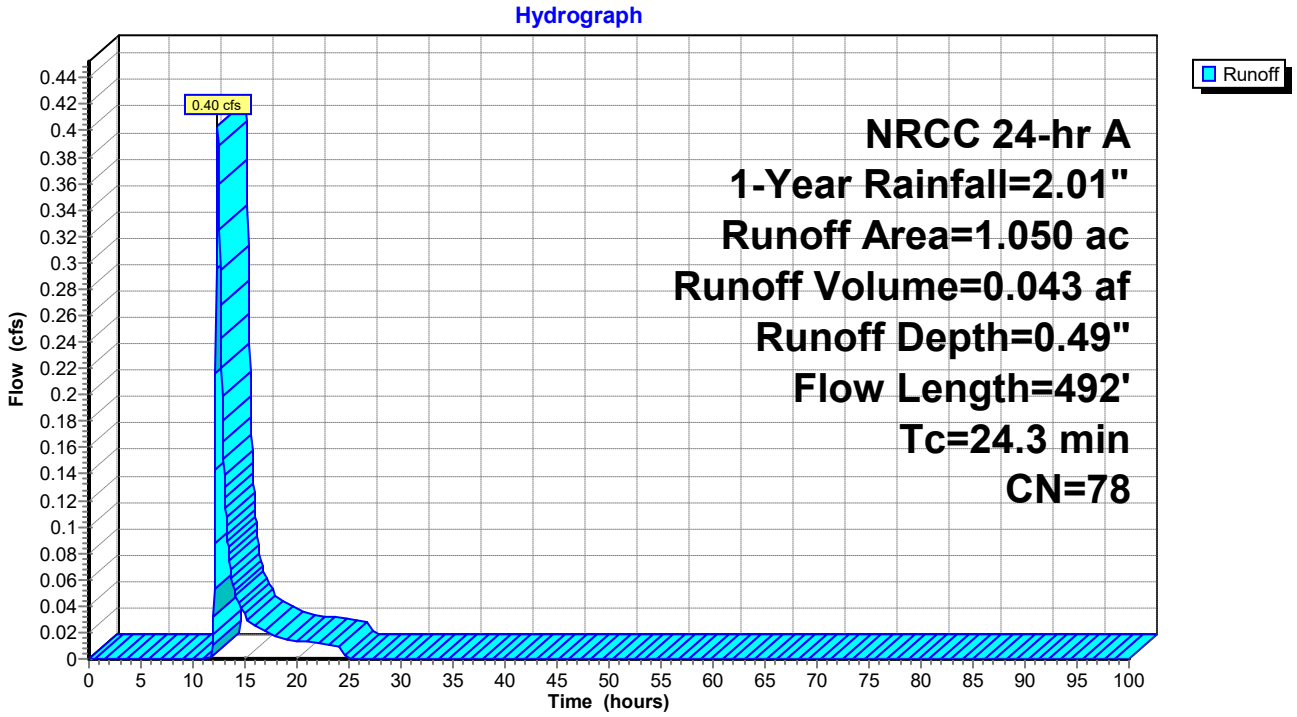
Runoff = 0.40 cfs @ 12.39 hrs, Volume= 0.043 af, Depth= 0.49"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 1-Year Rainfall=2.01"

	Area (ac)	CN	Description
*	0.630	77	D - Deciduous Forest
*	0.420	80	D - Meadowed Land
	1.050	78	Weighted Average
	1.050		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.4	205	0.0195	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
3.9	287	0.0314	1.24		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
24.3	492	Total			

Subcatchment 23S: PR DA 23



Summary for Subcatchment 24S: PR DA 24

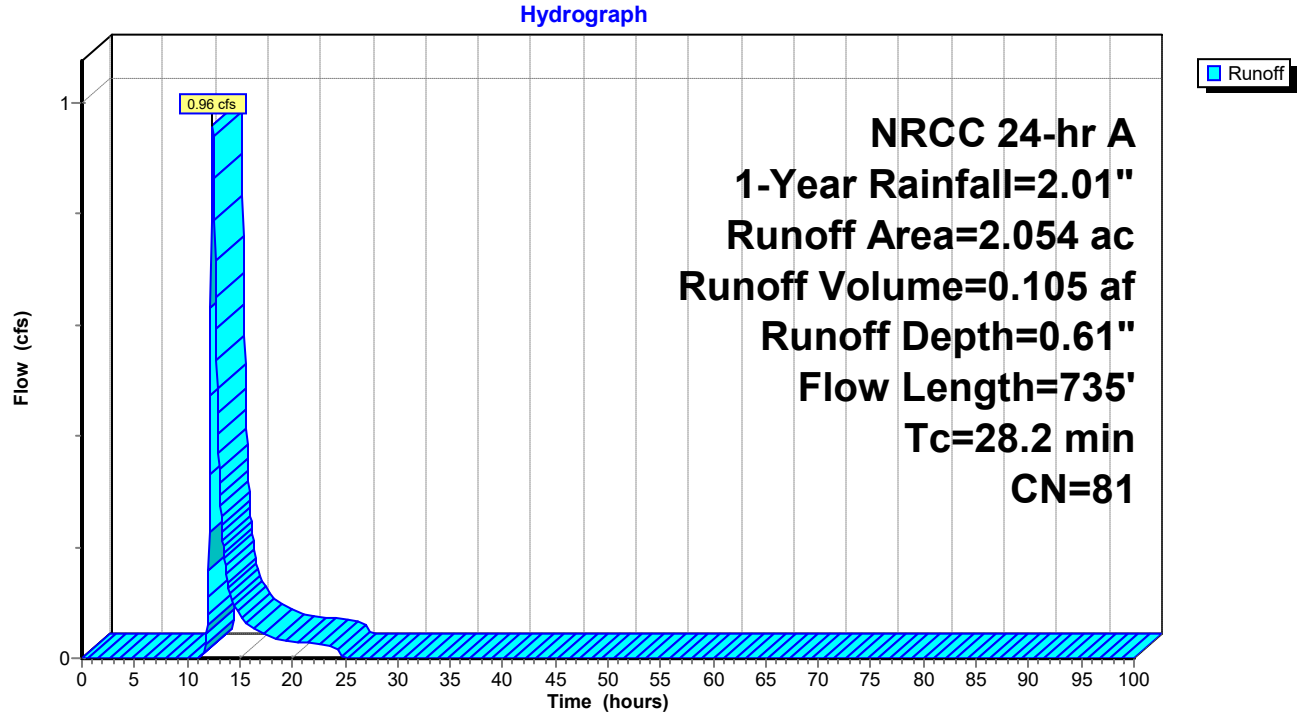
Runoff = 0.96 cfs @ 12.43 hrs, Volume= 0.105 af, Depth= 0.61"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 1-Year Rainfall=2.01"

	Area (ac)	CN	Description
*	1.360	82	C - Meadowed Land
*	0.630	80	D - Meadowed Land
*	0.064	77	D - Deciduous Forest
	2.054	81	Weighted Average
	2.054		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.1	183	0.0328	0.20		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
6.6	197	0.0051	0.50		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.5	355	0.0169	0.91		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
28.2	735	Total			

Subcatchment 24S: PR DA 24



Summary for Subcatchment 25S: PR DA 25

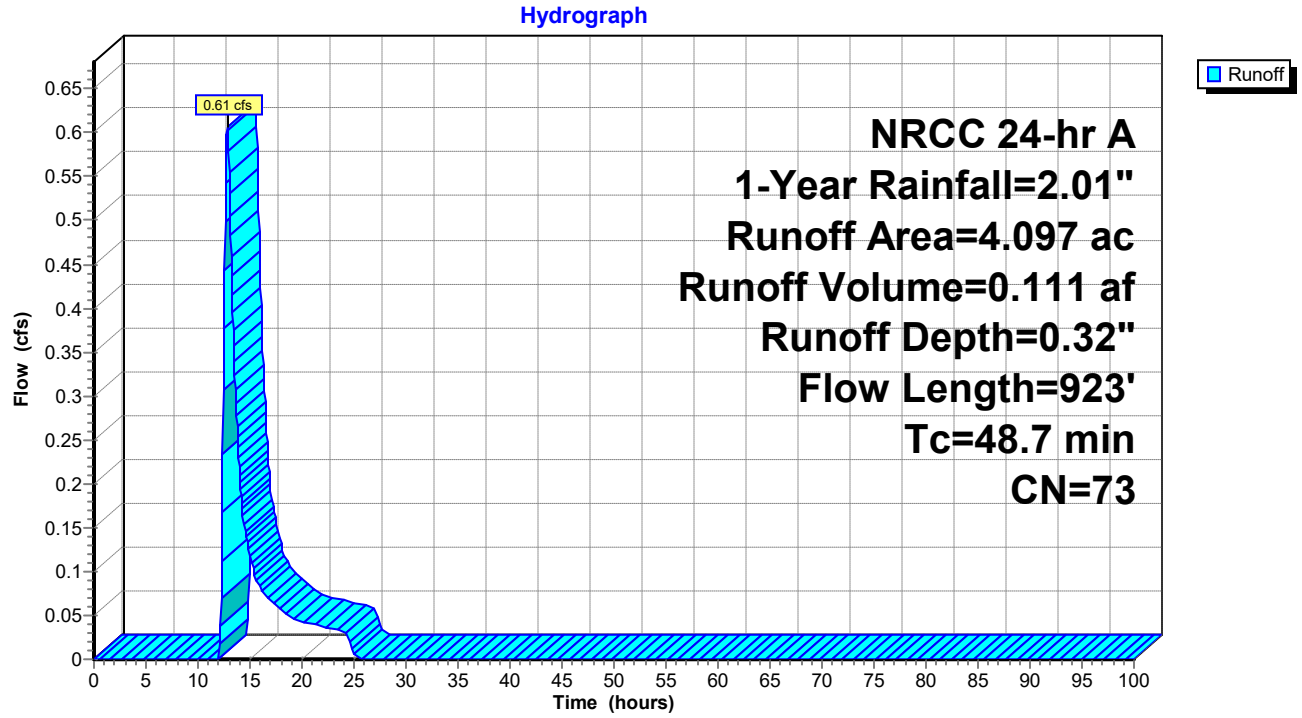
Runoff = 0.61 cfs @ 12.83 hrs, Volume= 0.111 af, Depth= 0.32"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 1-Year Rainfall=2.01"

	Area (ac)	CN	Description
*	0.330	61	B - Meadowed Land
*	3.290	74	C - Meadowed Land
*	0.227	74	C - Developed, Open Space
*	0.204	80	D - Meadowed Land
*	0.046	77	D - Deciduous Forest
	4.097	73	Weighted Average
	4.097		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.7	167	0.0419	0.22		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
2.2	170	0.0353	1.32		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
33.8	586	0.0017	0.29		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
48.7	923	Total			

Subcatchment 25S: PR DA 25



Summary for Subcatchment 26S: PR DA 26

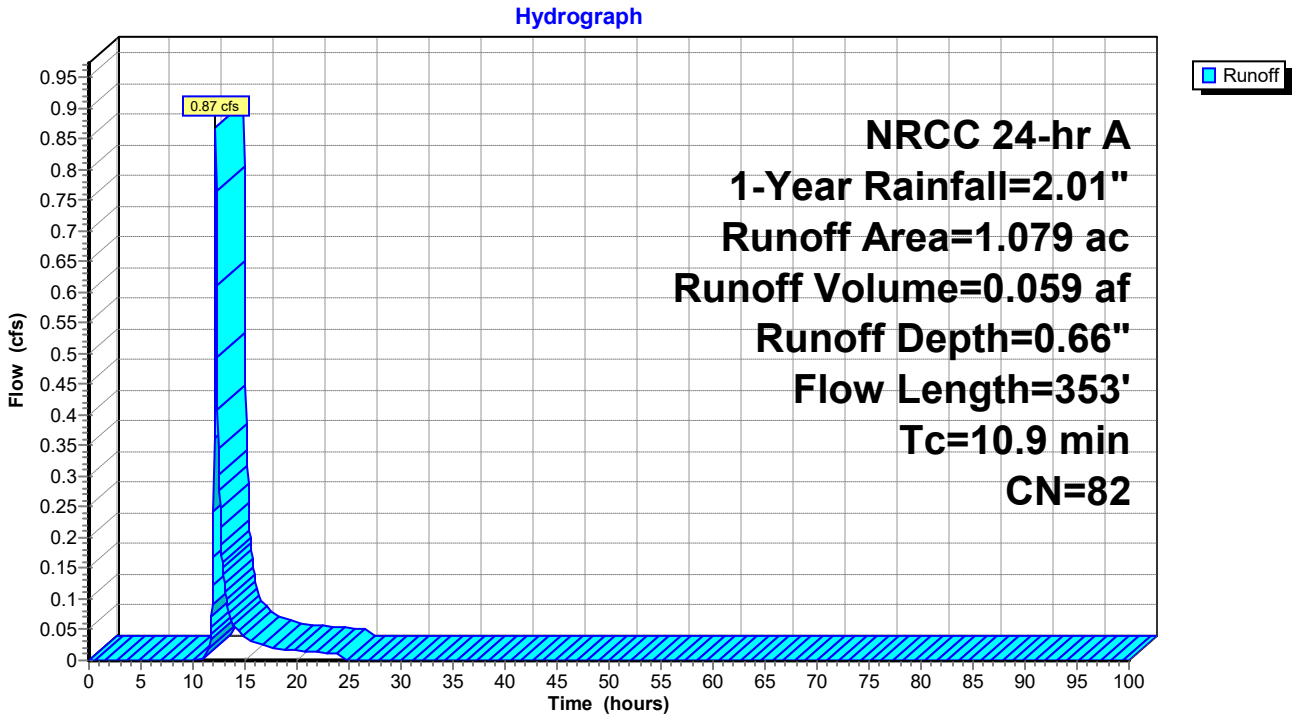
Runoff = 0.87 cfs @ 12.20 hrs, Volume= 0.059 af, Depth= 0.66"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 1-Year Rainfall=2.01"

	Area (ac)	CN	Description
*	0.200	77	D - Deciduous Forest
*	0.050	77	D - Deciduous Forest
*	0.829	84	D - Shrub/Scrub
	1.079	82	Weighted Average
	1.079		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	93	0.0323	0.18		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
2.1	260	0.0846	2.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
10.9	353	Total			

Subcatchment 26S: PR DA 26



Summary for Subcatchment 27S: PR DA 27

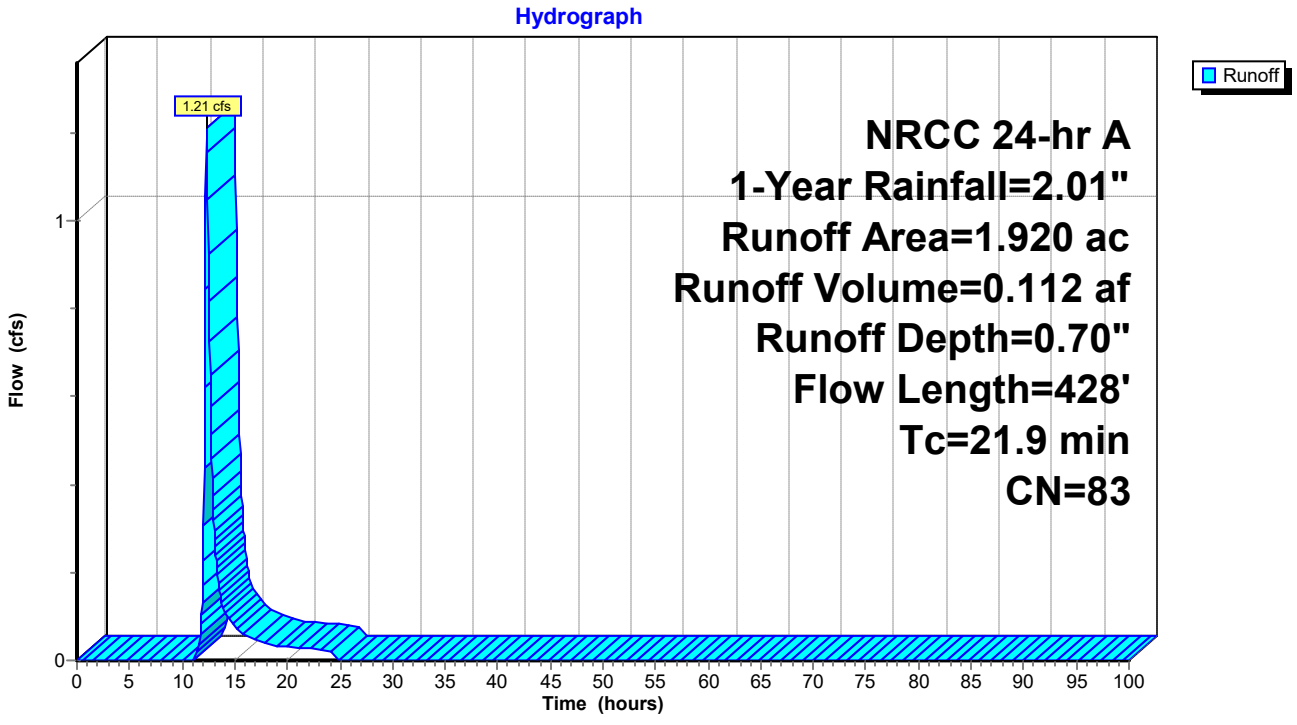
Runoff = 1.21 cfs @ 12.34 hrs, Volume= 0.112 af, Depth= 0.70"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 1-Year Rainfall=2.01"

	Area (ac)	CN	Description
*	0.260	77	D - Deciduous Forest
*	1.650	84	D - Shrub/Scrub
*	0.010	80	D - Meadowed Land
	1.920	83	Weighted Average
	1.920		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.0	208	0.0240	0.18		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
2.9	220	0.0318	1.25		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
21.9	428	Total			

Subcatchment 27S: PR DA 27



Summary for Subcatchment 28S: PR DA 28

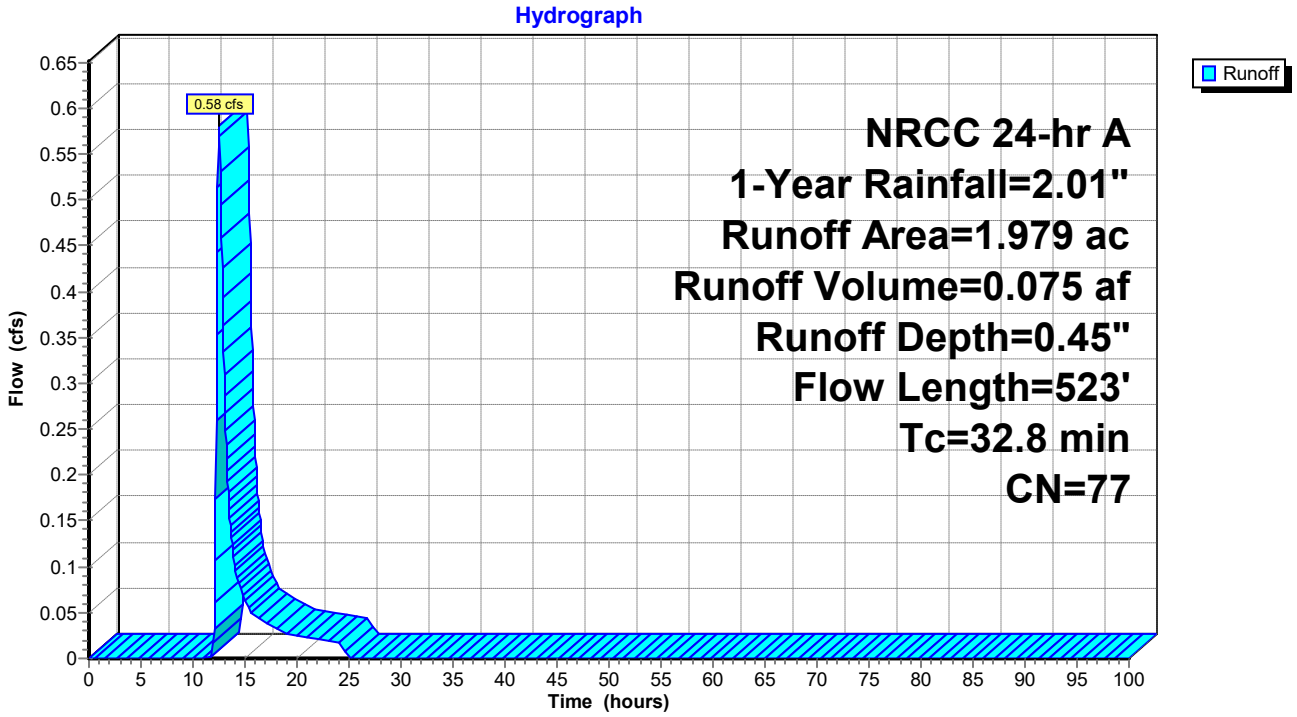
Runoff = 0.58 cfs @ 12.52 hrs, Volume= 0.075 af, Depth= 0.45"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 1-Year Rainfall=2.01"

	Area (ac)	CN	Description
*	0.120	39	A - Developed. Open Space
*	0.010	82	D - Developed, Low Intensity
*	0.890	77	D - Deciduous Forest
*	0.560	84	D - Shrub/Scrub
*	0.048	80	D - Developed, Open Space
*	0.351	80	D - Meadowed Land
	1.979	77	Weighted Average
	1.979		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.1	206	0.0097	0.13		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
5.2	213	0.0094	0.68		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	104	0.2115	3.22		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
32.8	523	Total			

Subcatchment 28S: PR DA 28



Summary for Subcatchment 31S: Porous Road

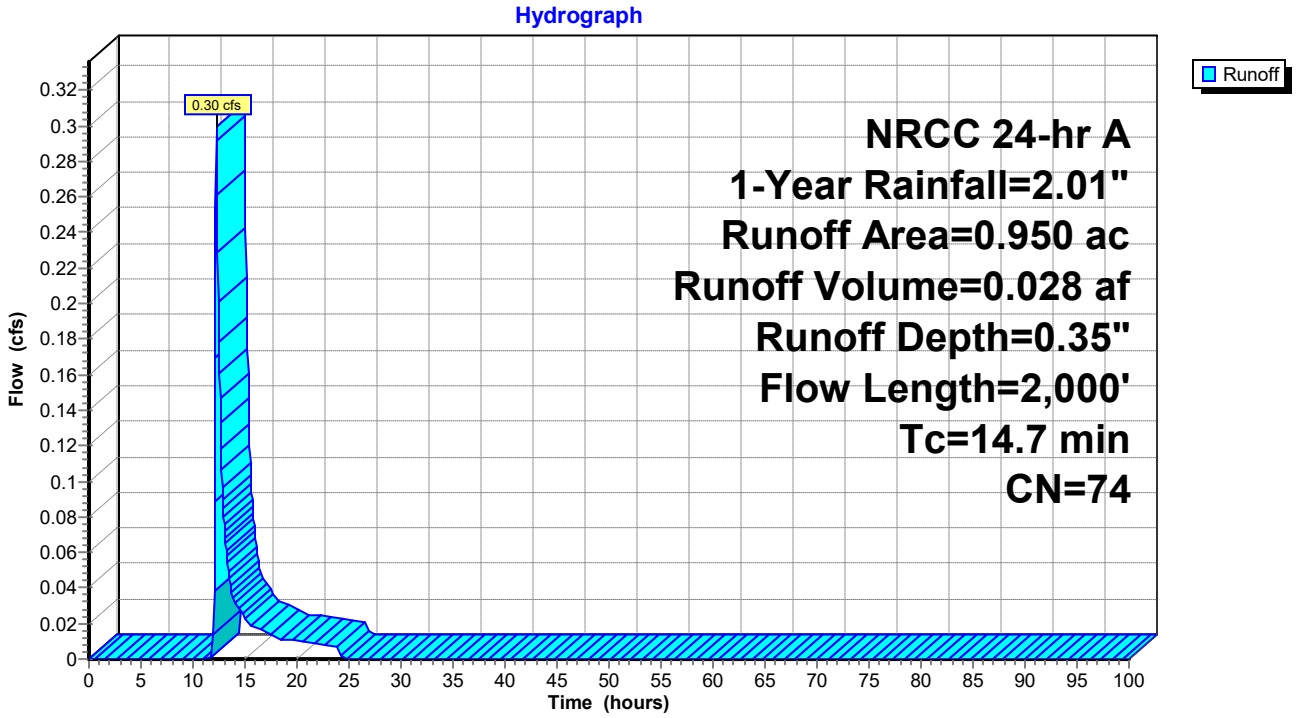
Runoff = 0.30 cfs @ 12.27 hrs, Volume= 0.028 af, Depth= 0.35"
Routed to Pond 29P : POROUS PAVEMENT

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 1-Year Rainfall=2.01"

	Area (ac)	CN	Description
*	0.950	74	C - Pervious Road
	0.950		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.3	300	0.0500	2.13		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.38"
12.4	1,700	0.0200	2.28		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
14.7	2,000	Total			

Subcatchment 31S: Porous Road



Summary for Pond 29P: POROUS PAVEMENT

Inflow Area = 0.950 ac, 0.00% Impervious, Inflow Depth = 0.35" for 1-Year event
Inflow = 0.30 cfs @ 12.27 hrs, Volume= 0.028 af
Outflow = 0.23 cfs @ 12.41 hrs, Volume= 0.028 af, Atten= 24%, Lag= 8.3 min
Discarded = 0.23 cfs @ 12.41 hrs, Volume= 0.028 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
Peak Elev= 840.01' @ 12.41 hrs Surf.Area= 0.950 ac Storage= 0.003 af

Plug-Flow detention time= 8.7 min calculated for 0.028 af (100% of inflow)
Center-of-Mass det. time= 8.6 min (895.9 - 887.3)

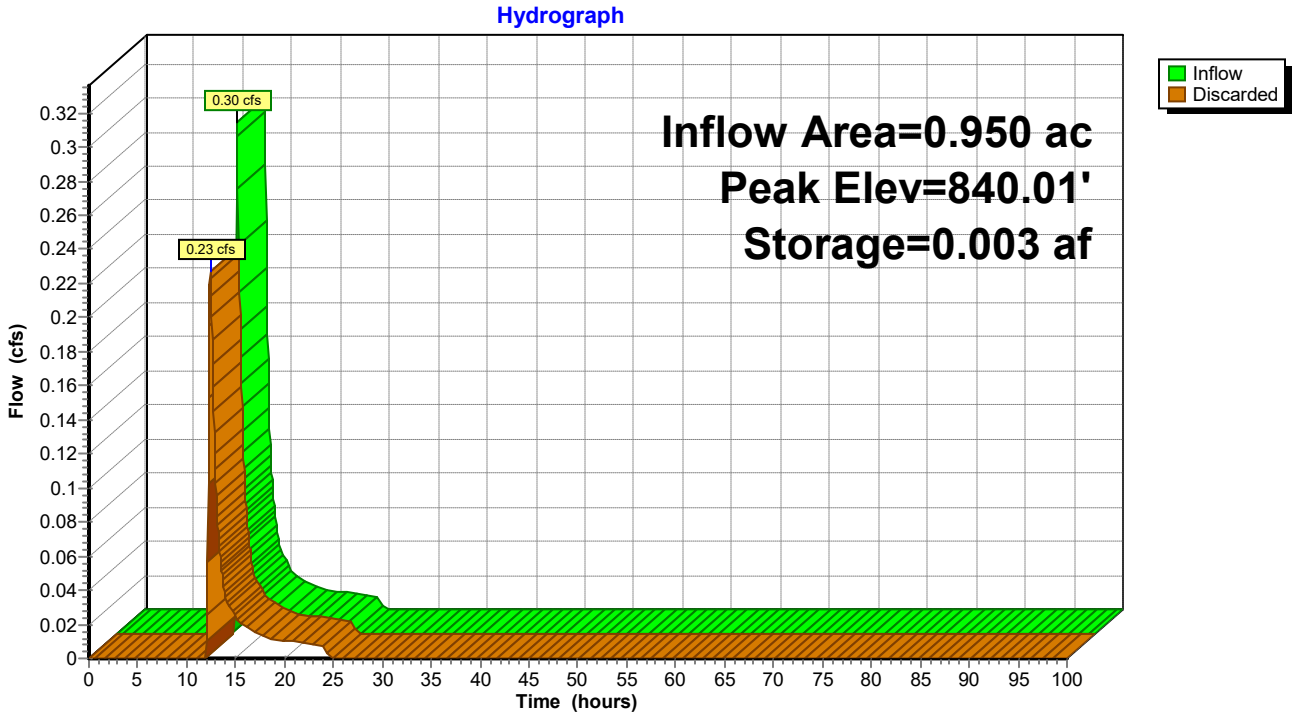
Volume	Invert	Avail.Storage	Storage Description
#1	840.00'	0.570 af	**Porous Pavement (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Voids (%)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
840.00	0.950	0.0	0.000	0.000
840.75	0.950	40.0	0.285	0.285
841.50	0.950	40.0	0.285	0.570

Device	Routing	Invert	Outlet Devices
#1	Discarded	840.00'	**0.500 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.48 cfs @ 12.41 hrs HW=840.01' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.48 cfs)

Pond 29P: POROUS PAVEMENT



Time span=0.00-100.00 hrs, dt=0.05 hrs, 2001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: PR DA 1 Runoff Area=1.968 ac 0.00% Impervious Runoff Depth=0.93"
Flow Length=604' Tc=16.6 min CN=70 Runoff=1.81 cfs 0.152 af

Subcatchment 2S: PR DA 2 Runoff Area=0.980 ac 0.00% Impervious Runoff Depth=1.33"
Flow Length=312' Tc=18.5 min CN=77 Runoff=1.30 cfs 0.109 af

Subcatchment 3S: PR DA 3 Runoff Area=3.523 ac 0.00% Impervious Runoff Depth=1.04"
Flow Length=440' Tc=19.5 min CN=72 Runoff=3.41 cfs 0.304 af

Subcatchment 4S: PR DA 4 Runoff Area=7.098 ac 0.00% Impervious Runoff Depth=1.09"
Flow Length=1,080' Tc=36.8 min CN=73 Runoff=5.19 cfs 0.647 af

Subcatchment 5S: PR DA 5 Runoff Area=9.028 ac 0.00% Impervious Runoff Depth=0.68"
Flow Length=1,150' Tc=35.1 min CN=65 Runoff=3.71 cfs 0.515 af

Subcatchment 6S: PR DA 6 Runoff Area=2.000 ac 0.00% Impervious Runoff Depth=1.15"
Flow Length=553' Tc=20.1 min CN=74 Runoff=2.16 cfs 0.192 af

Subcatchment 7S: PR DA 7 Runoff Area=8.889 ac 0.00% Impervious Runoff Depth=0.60"
Flow Length=2,108' Tc=40.2 min CN=63 Runoff=2.81 cfs 0.442 af

Subcatchment 8S: PR DA 8 Runoff Area=2.164 ac 0.00% Impervious Runoff Depth=1.27"
Flow Length=553' Tc=21.6 min CN=76 Runoff=2.53 cfs 0.229 af

Subcatchment 9S: PR DA 9 Runoff Area=5.871 ac 0.00% Impervious Runoff Depth=1.33"
Flow Length=2,043' Tc=43.4 min CN=77 Runoff=4.91 cfs 0.653 af

Subcatchment 10S: PR DA 10 Runoff Area=8.060 ac 0.00% Impervious Runoff Depth=0.93"
Flow Length=2,106' Tc=40.6 min CN=70 Runoff=4.57 cfs 0.624 af

Subcatchment 11S: PR DA 11 Runoff Area=13.716 ac 0.00% Impervious Runoff Depth=1.21"
Flow Length=2,066' Tc=36.3 min CN=75 Runoff=11.40 cfs 1.384 af

Subcatchment 12S: PR DA 12 Runoff Area=2.520 ac 0.00% Impervious Runoff Depth=1.27"
Flow Length=762' Tc=32.9 min CN=76 Runoff=2.35 cfs 0.267 af

Subcatchment 13S: PR DA 13 Runoff Area=8.420 ac 0.00% Impervious Runoff Depth=1.21"
Flow Length=2,130' Tc=40.6 min CN=75 Runoff=6.57 cfs 0.849 af

Subcatchment 14S: PR DA 14 Runoff Area=2.035 ac 0.00% Impervious Runoff Depth=1.33"
Flow Length=510' Tc=16.4 min CN=77 Runoff=2.88 cfs 0.226 af

Subcatchment 15S: PR DA 15 Runoff Area=10.274 ac 0.00% Impervious Runoff Depth=1.33"
Flow Length=1,658' Tc=35.0 min CN=77 Runoff=9.78 cfs 1.143 af

Subcatchment 16S: PR DA 16 Runoff Area=6.509 ac 0.00% Impervious Runoff Depth=1.33"
Flow Length=1,499' Tc=33.4 min CN=77 Runoff=6.35 cfs 0.724 af

Subcatchment 17S: PR DA 17 Runoff Area=4.145 ac 0.00% Impervious Runoff Depth=1.27"
Flow Length=1,199' Tc=33.9 min CN=76 Runoff=3.80 cfs 0.439 af

Subcatchment 18S: PR DA 18 Runoff Area=5.404 ac 0.00% Impervious Runoff Depth=1.21"
Flow Length=955' Tc=24.8 min CN=75 Runoff=5.54 cfs 0.545 af

Subcatchment 19S: PR DA 19 Runoff Area=3.900 ac 0.00% Impervious Runoff Depth=1.40"
Flow Length=555' Tc=19.5 min CN=78 Runoff=5.33 cfs 0.455 af

Subcatchment 20S: PR DA 20 Runoff Area=2.580 ac 0.00% Impervious Runoff Depth=1.40"
Flow Length=606' Tc=19.1 min CN=78 Runoff=3.56 cfs 0.301 af

Subcatchment 21S: PR DA 21 Runoff Area=6.379 ac 0.00% Impervious Runoff Depth=1.40"
Flow Length=1,191' Tc=27.6 min CN=78 Runoff=7.29 cfs 0.744 af

Subcatchment 22S: PR DA 22 Runoff Area=1.449 ac 0.00% Impervious Runoff Depth=1.47"
Flow Length=538' Tc=14.6 min CN=79 Runoff=2.38 cfs 0.177 af

Subcatchment 23S: PR DA 23 Runoff Area=1.050 ac 0.00% Impervious Runoff Depth=1.40"
Flow Length=492' Tc=24.3 min CN=78 Runoff=1.29 cfs 0.122 af

Subcatchment 24S: PR DA 24 Runoff Area=2.054 ac 0.00% Impervious Runoff Depth=1.60"
Flow Length=735' Tc=28.2 min CN=81 Runoff=2.69 cfs 0.275 af

Subcatchment 25S: PR DA 25 Runoff Area=4.097 ac 0.00% Impervious Runoff Depth=1.09"
Flow Length=923' Tc=48.7 min CN=73 Runoff=2.55 cfs 0.373 af

Subcatchment 26S: PR DA 26 Runoff Area=1.079 ac 0.00% Impervious Runoff Depth=1.68"
Flow Length=353' Tc=10.9 min CN=82 Runoff=2.29 cfs 0.151 af

Subcatchment 27S: PR DA 27 Runoff Area=1.920 ac 0.00% Impervious Runoff Depth=1.75"
Flow Length=428' Tc=21.9 min CN=83 Runoff=3.14 cfs 0.280 af

Subcatchment 28S: PR DA 28 Runoff Area=1.979 ac 0.00% Impervious Runoff Depth=1.33"
Flow Length=523' Tc=32.8 min CN=77 Runoff=1.95 cfs 0.220 af

Subcatchment 31S: Porous Road Runoff Area=0.950 ac 0.00% Impervious Runoff Depth=1.15"
Flow Length=2,000' Tc=14.7 min CN=74 Runoff=1.19 cfs 0.091 af

Pond 29P: POROUS PAVEMENT Peak Elev=840.05' Storage=0.018 af Inflow=1.19 cfs 0.091 af
Outflow=0.48 cfs 0.091 af

Total Runoff Area = 130.041 ac Runoff Volume = 12.634 af Average Runoff Depth = 1.17"
100.00% Pervious = 130.041 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1S: PR DA 1

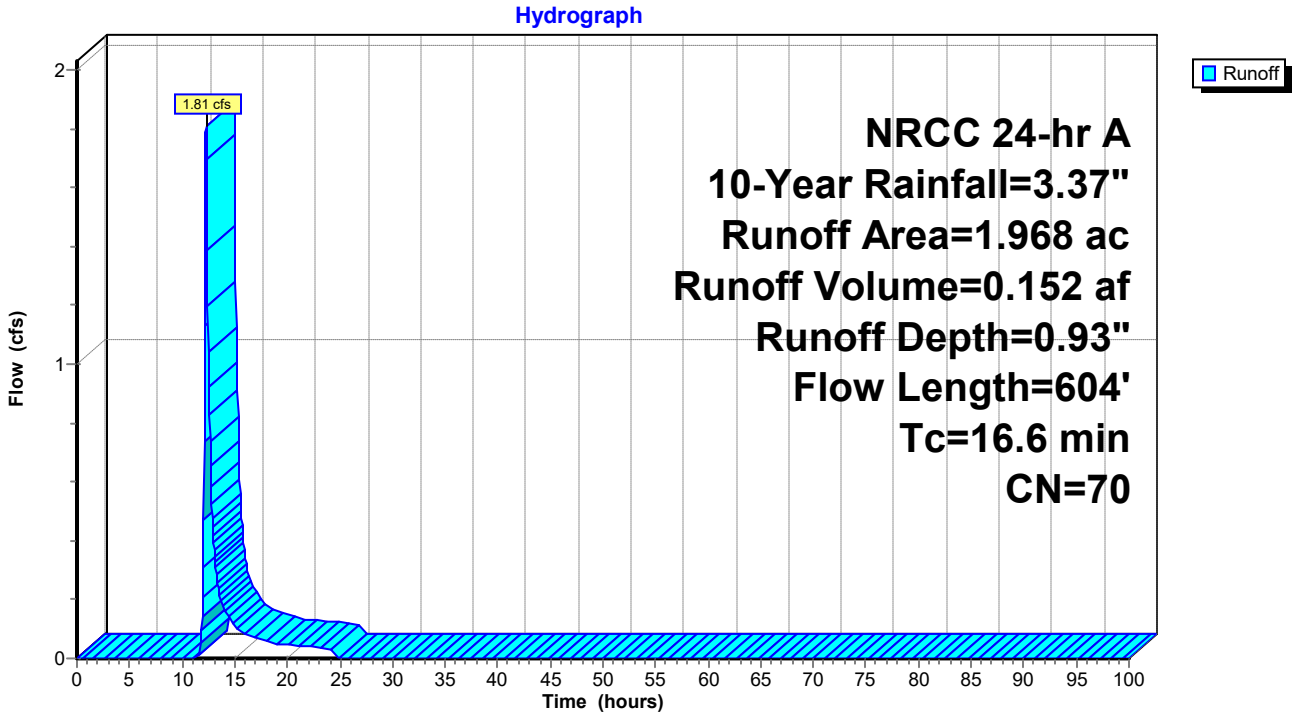
Runoff = 1.81 cfs @ 12.27 hrs, Volume= 0.152 af, Depth= 0.93"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 10-Year Rainfall=3.37"

	Area (ac)	CN	Description
*	0.324	58	B - Meadowed Land
*	0.430	61	B - Developed, Open Space
*	0.027	65	B - Developed, Low Intensity
*	1.070	77	D - Deciduous Forest
*	0.117	80	D - Meadowed Land
	1.968	70	Weighted Average
	1.968		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0	83	0.0120	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
2.4	307	0.0912	2.11		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	51	0.0588	1.70		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.7	163	0.0552	1.64		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
16.6	604	Total			

Subcatchment 1S: PR DA 1



Summary for Subcatchment 2S: PR DA 2

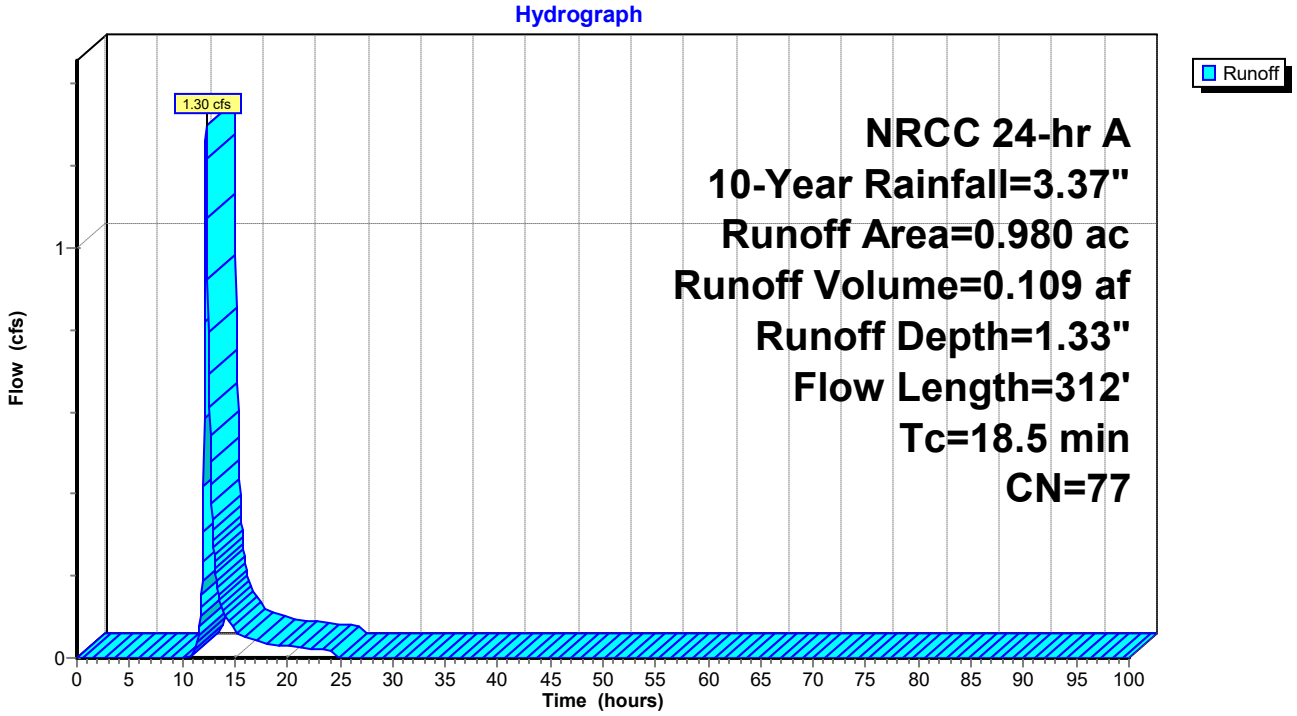
Runoff = 1.30 cfs @ 12.29 hrs, Volume= 0.109 af, Depth= 1.33"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 10-Year Rainfall=3.37"

	Area (ac)	CN	Description
*	0.700	77	D - Deciduous Forest
*	0.280	78	D - Meadowed Land
	0.980	77	Weighted Average
	0.980		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.2	127	0.0157	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
3.0	116	0.0086	0.65		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	69	0.2464	3.47		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
18.5	312	Total			

Subcatchment 2S: PR DA 2



Summary for Subcatchment 3S: PR DA 3

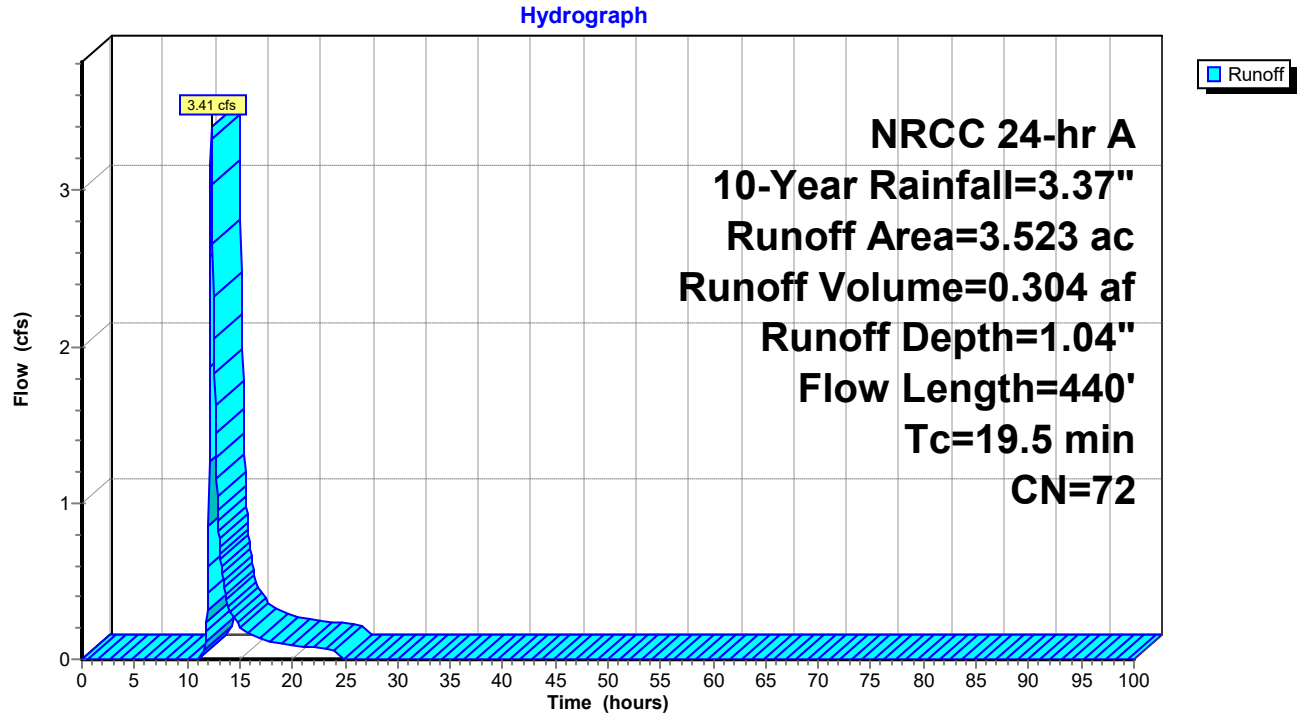
Runoff = 3.41 cfs @ 12.31 hrs, Volume= 0.304 af, Depth= 1.04"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 10-Year Rainfall=3.37"

	Area (ac)	CN	Description
*	1.900	70	C - Deciduous Forest
*	1.000	74	C - Meadowed Land
*	0.213	78	D - Meadowed Land
*	0.404	77	D - Deciduous Forest
*	0.006	85	D - Developed, Medium Intensity
	3.523	72	Weighted Average
	3.523		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.3	114	0.0175	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
1.1	116	0.0603	1.72		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.1	210	0.0095	0.68		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
19.5	440	Total			

Subcatchment 3S: PR DA 3



Summary for Subcatchment 4S: PR DA 4

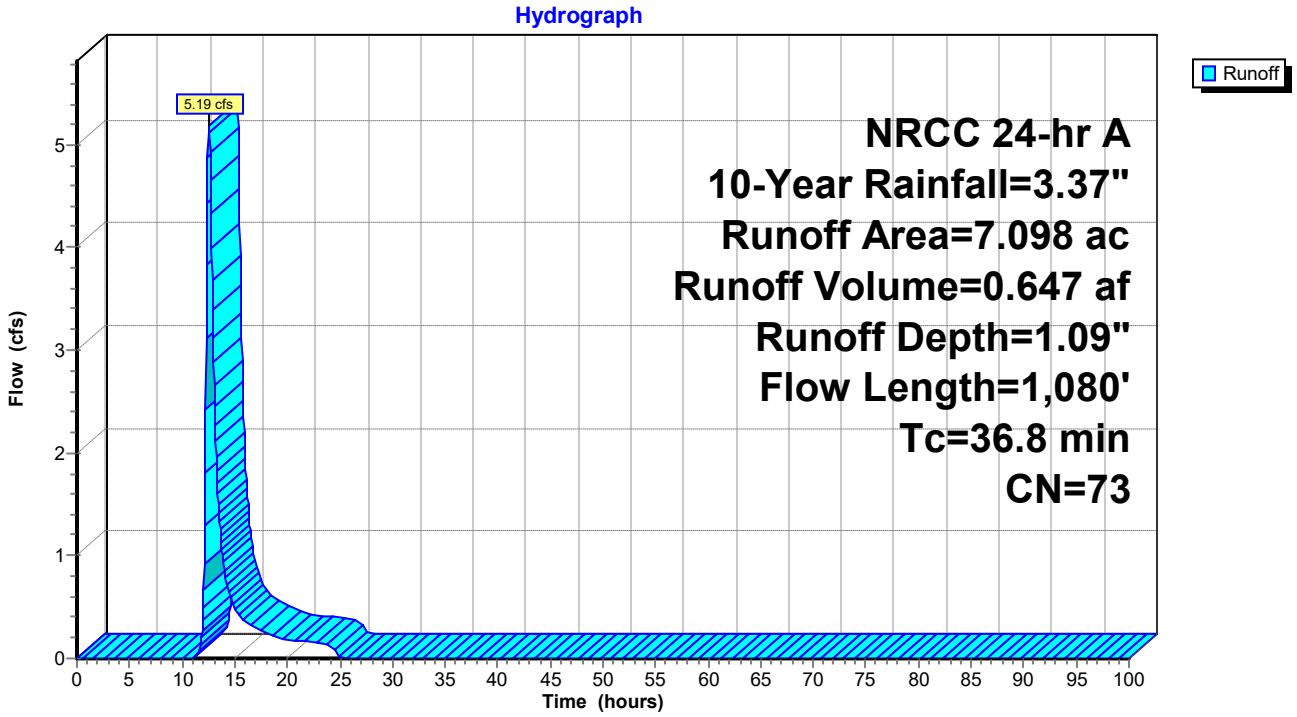
Runoff = 5.19 cfs @ 12.55 hrs, Volume= 0.647 af, Depth= 1.09"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 10-Year Rainfall=3.37"

	Area (ac)	CN	Description
*	0.200	58	B - Meadowed Land
*	5.070	74	C - Meadowed Land
*	1.828	70	C - Deciduous Forest
	7.098	73	Weighted Average
	7.098		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.6	102	0.0196	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
1.4	114	0.0351	1.31		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.5	177	0.0282	1.18		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.2	145	0.0069	0.58		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
15.3	346	0.0029	0.38		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.8	196	0.0663	1.80		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
36.8	1,080	Total			

Subcatchment 4S: PR DA 4



Summary for Subcatchment 5S: PR DA 5

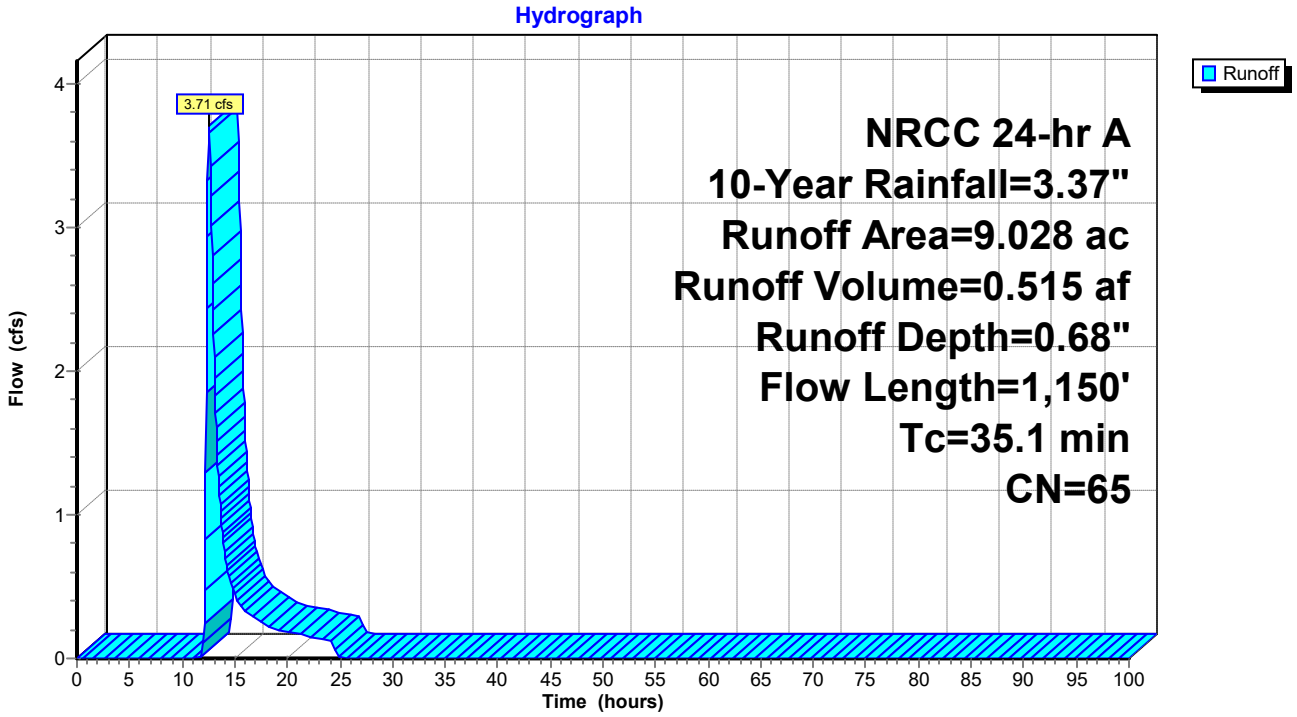
Runoff = 3.71 cfs @ 12.58 hrs, Volume= 0.515 af, Depth= 0.68"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 10-Year Rainfall=3.37"

	Area (ac)	CN	Description
*	4.900	58	B - Meadowed Land
*	2.990	74	C - Meadowed Land
*	1.138	70	C - Deciduous Forest
	9.028	65	Weighted Average
	9.028		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.6	165	0.0182	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
2.2	160	0.0312	1.24		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.0	204	0.0147	0.85		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.1	182	0.0110	0.73		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.2	154	0.0130	0.80		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.0	285	0.0281	1.17		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
35.1	1,150	Total			

Subcatchment 5S: PR DA 5



Summary for Subcatchment 6S: PR DA 6

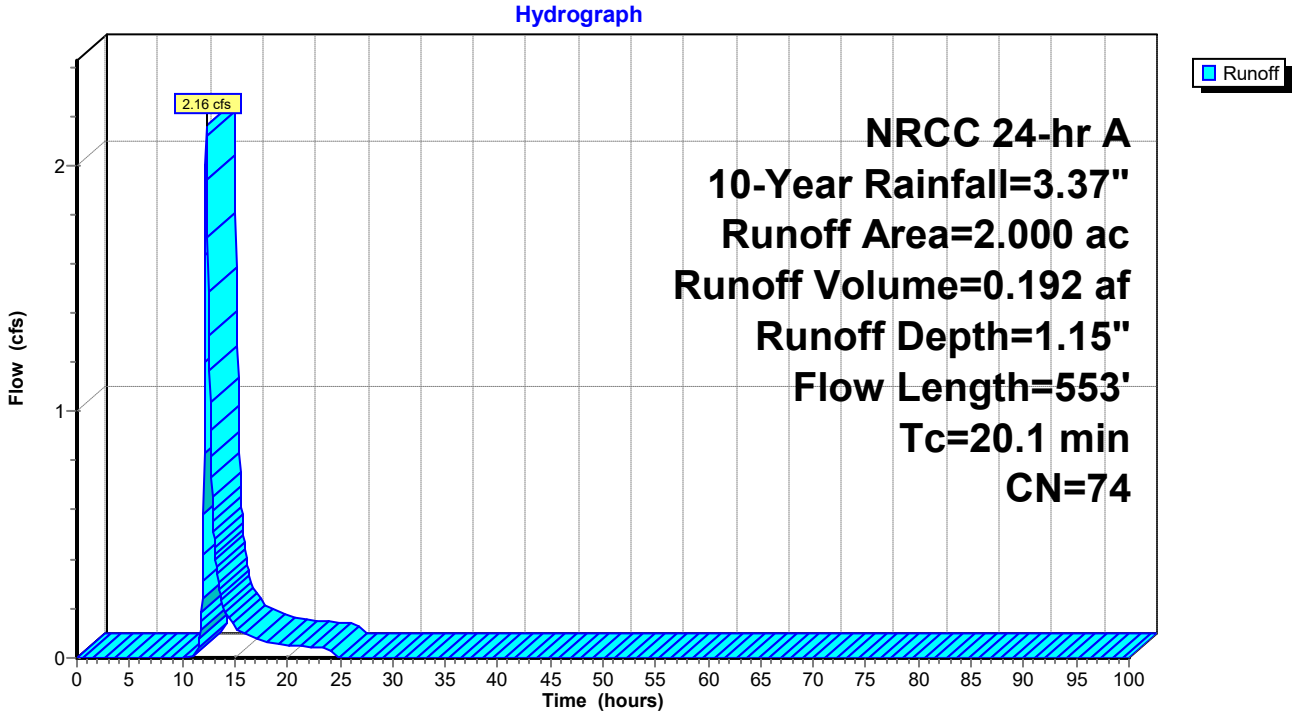
Runoff = 2.16 cfs @ 12.31 hrs, Volume= 0.192 af, Depth= 1.15"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 10-Year Rainfall=3.37"

	Area (ac)	CN	Description
*	2.000	74	C - Meadowed Land
	2.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.8	89	0.0562	0.22		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
3.4	159	0.0126	0.79		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.5	74	0.0135	0.81		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
8.4	231	0.0043	0.46		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
20.1	553	Total			

Subcatchment 6S: PR DA 6



Summary for Subcatchment 7S: PR DA 7

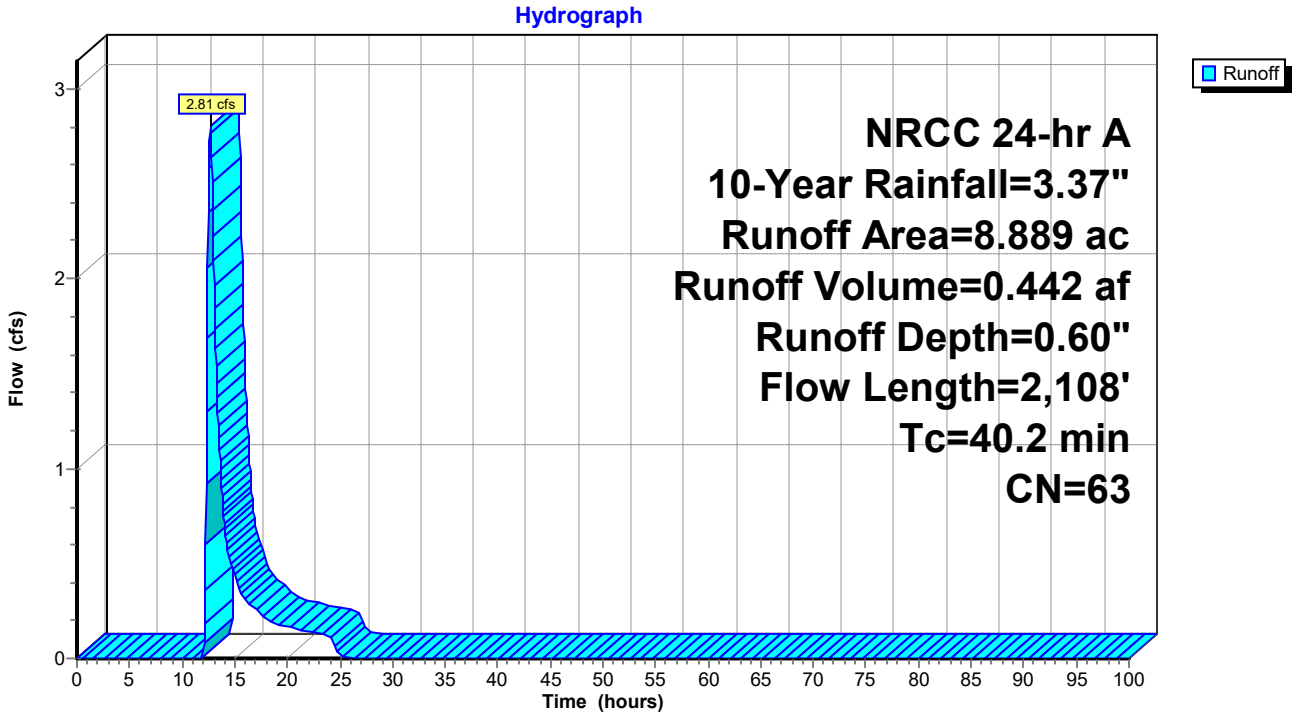
Runoff = 2.81 cfs @ 12.67 hrs, Volume= 0.442 af, Depth= 0.60"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 10-Year Rainfall=3.37"

	Area (ac)	CN	Description
*	6.330	58	B - Meadowed Land
*	0.090	70	C - Deciduous Forest
*	2.453	74	C - Meadowed Land
*	0.016	74	C - Developed, Open Space
	8.889	63	Weighted Average
	8.889		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.5	164	0.0427	0.22		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
8.4	570	0.0263	1.14		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.9	247	0.0405	1.41		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.4	126	0.0159	0.88		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.2	456	0.0307	1.23		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.8	545	0.0275	1.16		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
40.2	2,108	Total			

Subcatchment 7S: PR DA 7



Summary for Subcatchment 8S: PR DA 8

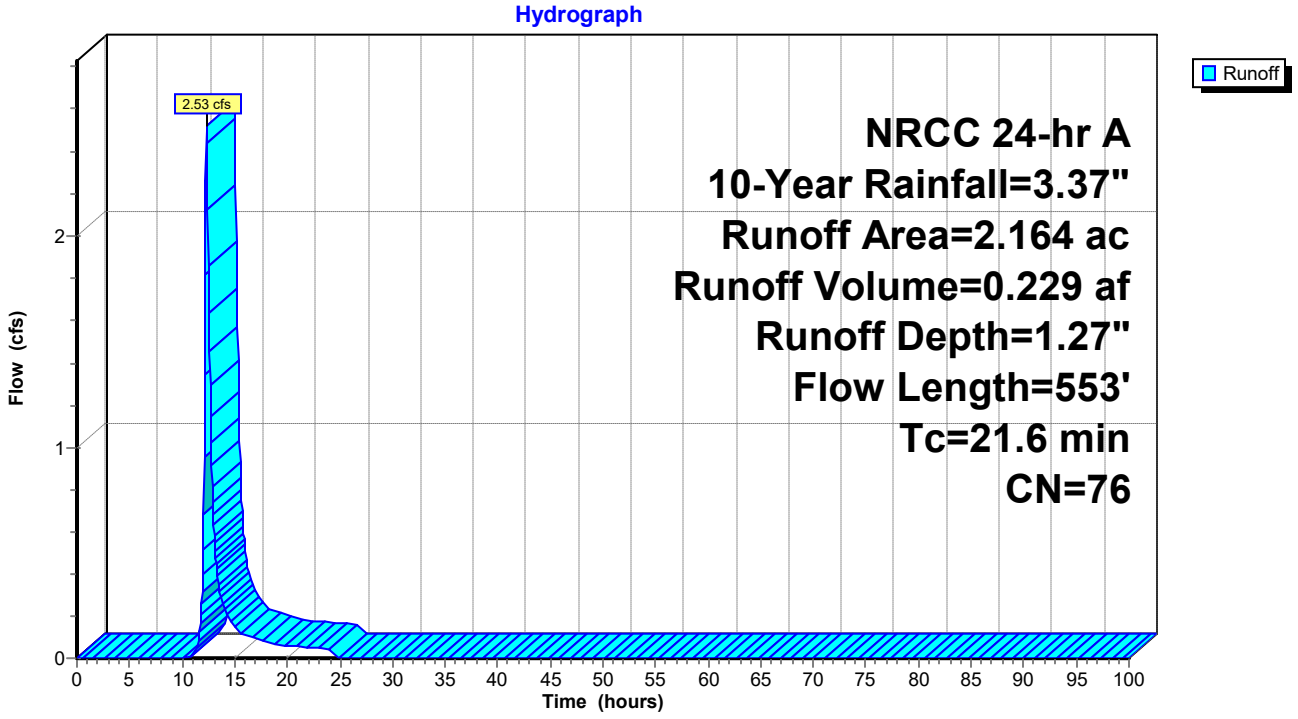
Runoff = 2.53 cfs @ 12.33 hrs, Volume= 0.229 af, Depth= 1.27"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 10-Year Rainfall=3.37"

	Area (ac)	CN	Description
*	0.310	70	C - Deciduous Forest
*	0.830	77	D - Deciduous Forest
*	1.024	78	D - Meadowed Land
	2.164	76	Weighted Average
	2.164		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.6	178	0.0337	0.20		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
5.1	239	0.0125	0.78		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.9	136	0.0294	1.20		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
21.6	553	Total			

Subcatchment 8S: PR DA 8



Summary for Subcatchment 9S: PR DA 9

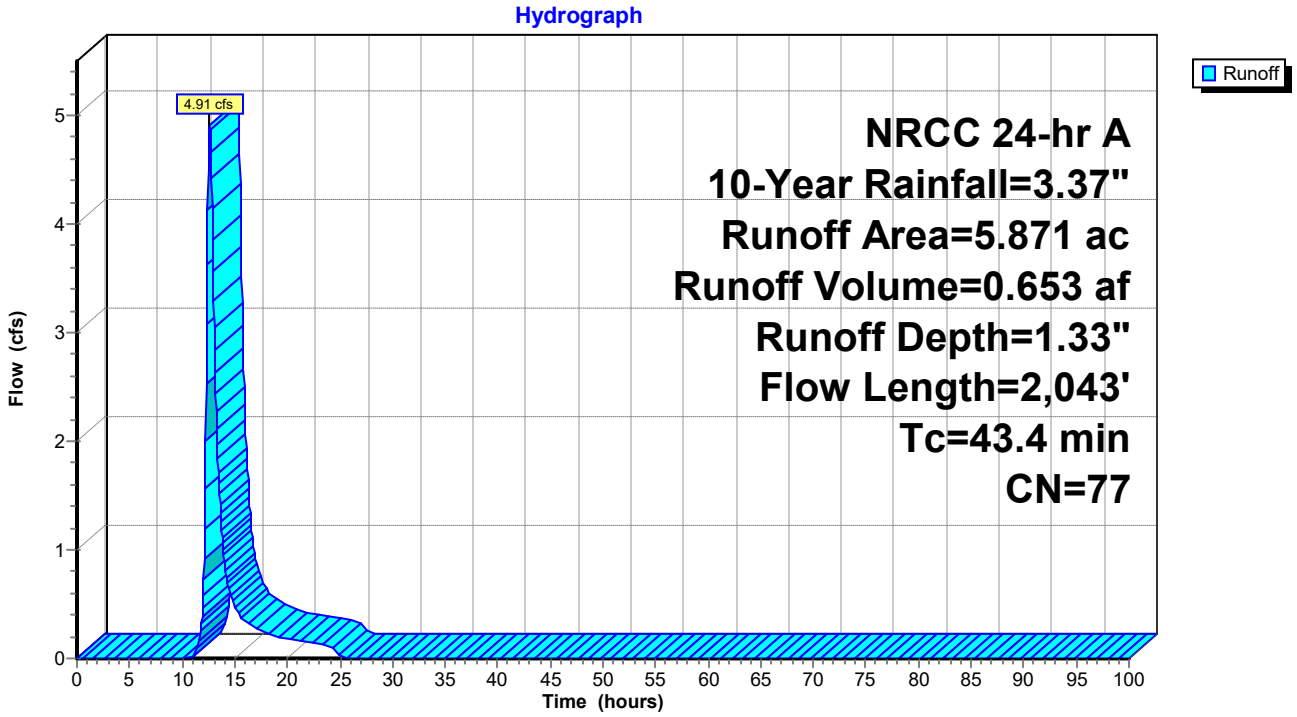
Runoff = 4.91 cfs @ 12.63 hrs, Volume= 0.653 af, Depth= 1.33"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 10-Year Rainfall=3.37"

	Area (ac)	CN	Description
*	4.539	78	B - Meadowed Land
*	1.173	74	C - Meadowed Land
*	0.159	70	C - Deciduous Forest
	5.871	77	Weighted Average
	5.871		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.8	210	0.0286	0.20		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
4.0	313	0.0351	1.31		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.0	412	0.0194	0.97		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.8	315	0.0381	1.37		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.2	366	0.0437	1.46		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.6	427	0.0234	1.07		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
43.4	2,043	Total			

Subcatchment 9S: PR DA 9



Summary for Subcatchment 10S: PR DA 10

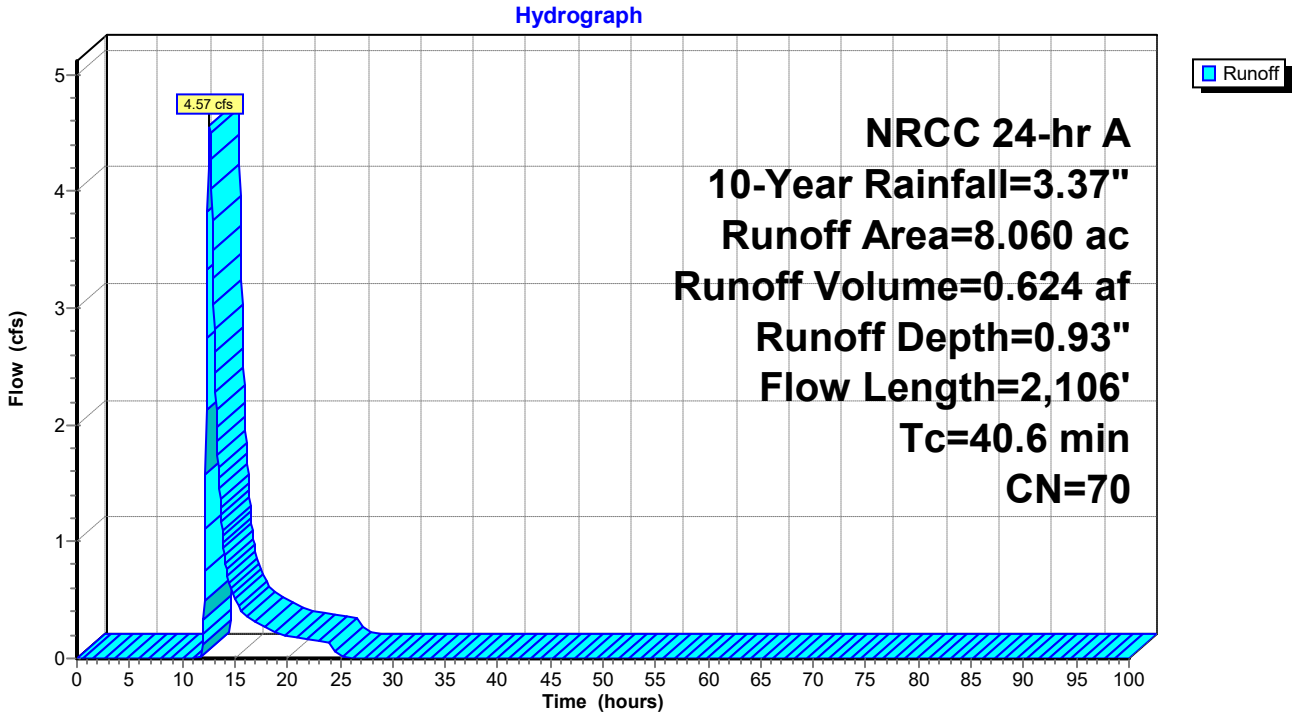
Runoff = 4.57 cfs @ 12.62 hrs, Volume= 0.624 af, Depth= 0.93"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 10-Year Rainfall=3.37"

	Area (ac)	CN	Description
*	3.900	58	B - Meadowed Land
*	4.160	82	C - Meadowed Land
	8.060	70	Weighted Average
	8.060		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.4	165	0.0303	0.19		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
9.5	590	0.0220	1.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.2	325	0.0585	1.69		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
8.0	692	0.0419	1.43		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.5	334	0.0210	1.01		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
40.6	2,106	Total			

Subcatchment 10S: PR DA 10



Summary for Subcatchment 11S: PR DA 11

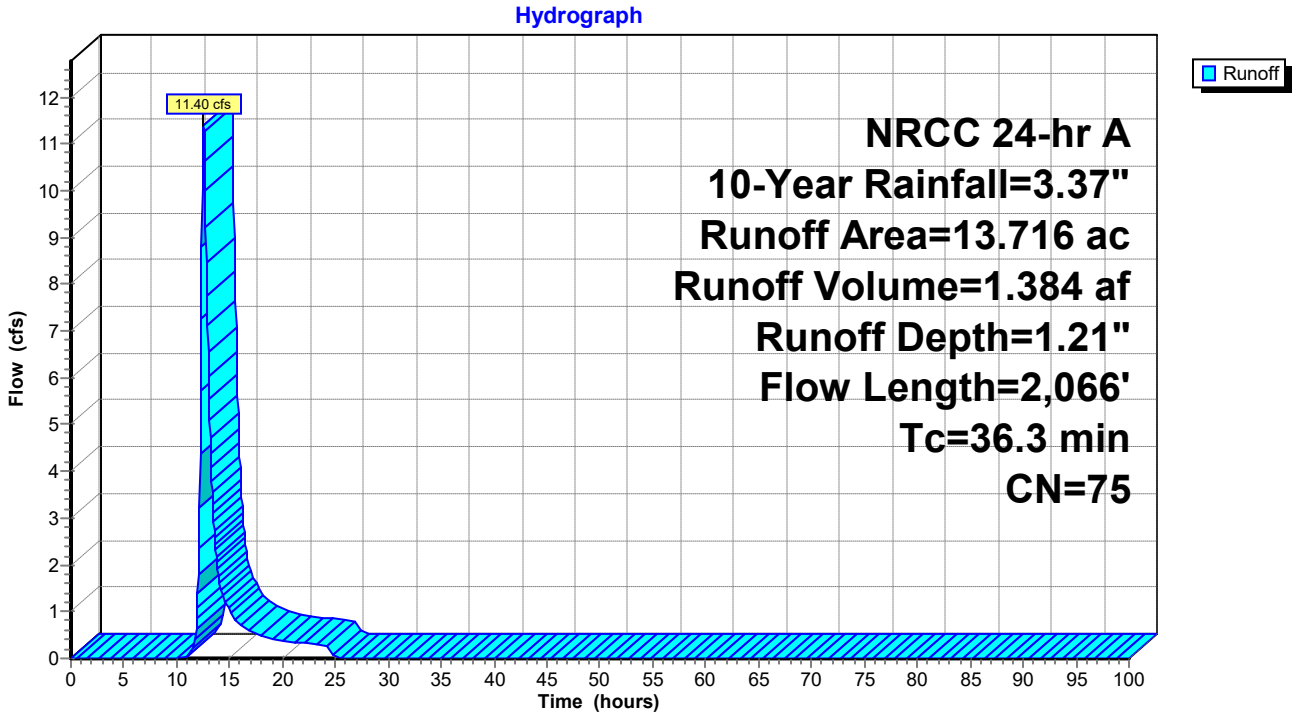
Runoff = 11.40 cfs @ 12.54 hrs, Volume= 1.384 af, Depth= 1.21"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 10-Year Rainfall=3.37"

	Area (ac)	CN	Description
*	6.370	78	B - Meadowed Land
*	7.146	73	C - Meadowed Land
*	0.200	70	C - Deciduous Forest
	13.716	75	Weighted Average
	13.716		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.4	68	0.0147	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
4.4	218	0.0138	0.82		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.0	397	0.0353	1.32		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.4	191	0.0365	1.34		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.9	386	0.0544	1.63		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.0	189	0.0529	1.61		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.0	281	0.0285	1.18		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.2	336	0.0238	1.08		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
36.3	2,066	Total			

Subcatchment 11S: PR DA 11



Summary for Subcatchment 12S: PR DA 12

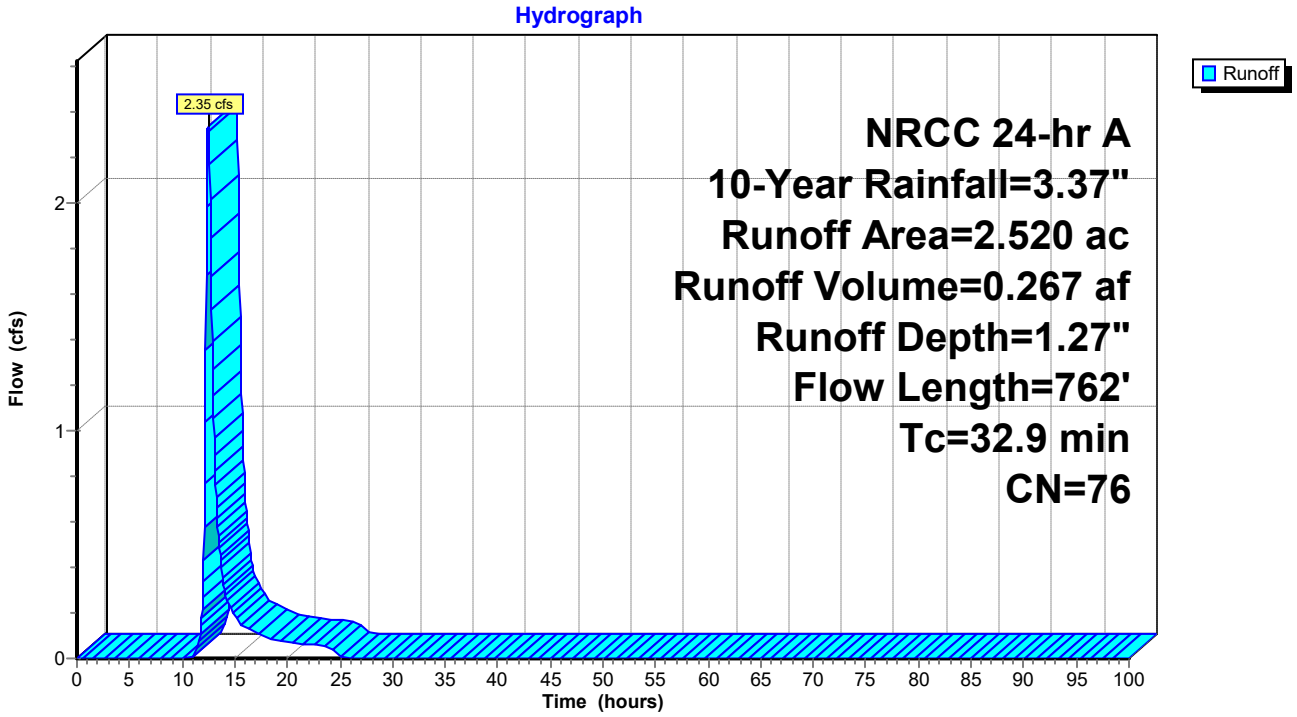
Runoff = 2.35 cfs @ 12.49 hrs, Volume= 0.267 af, Depth= 1.27"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 10-Year Rainfall=3.37"

	Area (ac)	CN	Description
*	0.520	70	C - Deciduous Forest
*	0.200	73	C - Meadowed Land
*	1.710	78	D - Meadowed Land
*	0.090	77	D - Deciduous Forest
	2.520	76	Weighted Average
	2.520		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.9	192	0.0104	0.13		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
1.1	117	0.0684	1.83		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.9	253	0.0237	1.08		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.0	200	0.0250	1.11		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
32.9	762	Total			

Subcatchment 12S: PR DA 12



Summary for Subcatchment 13S: PR DA 13

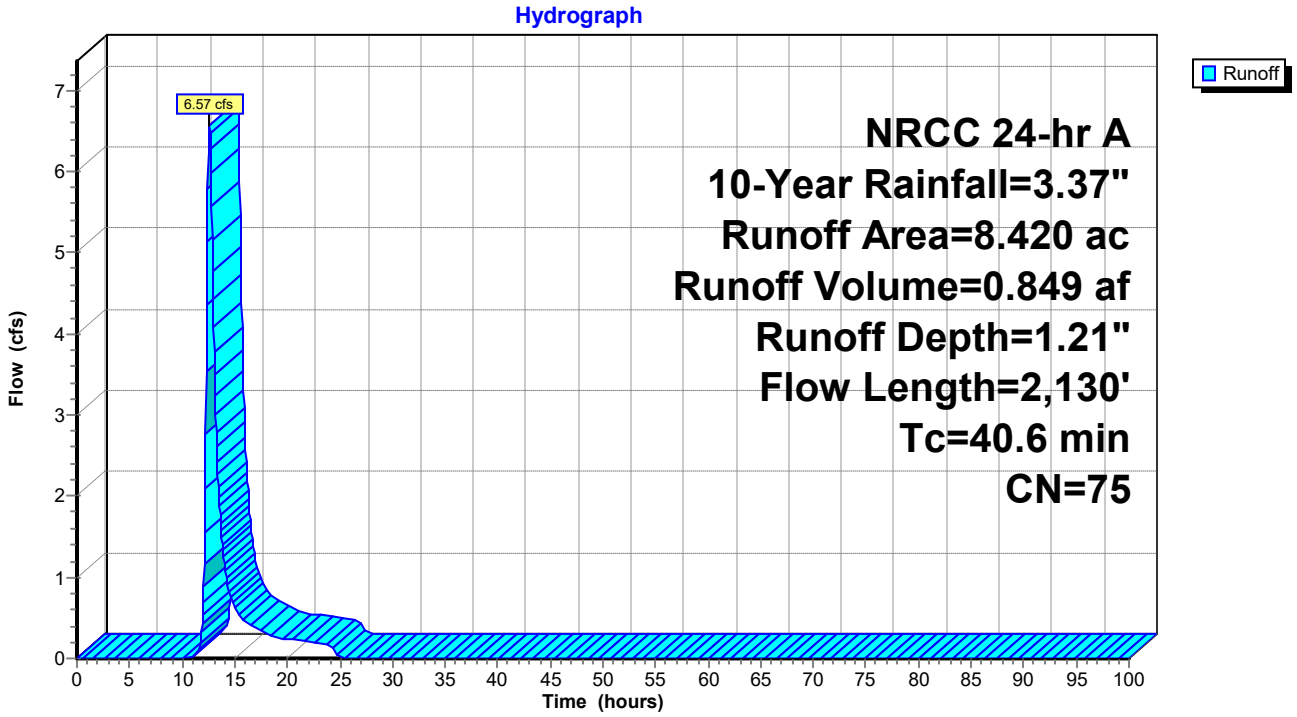
Runoff = 6.57 cfs @ 12.60 hrs, Volume= 0.849 af, Depth= 1.21"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 10-Year Rainfall=3.37"

	Area (ac)	CN	Description
*	1.802	78	B - Meadowed Land
*	4.558	74	C - Meadowed Land
*	0.561	70	C - Deciduous Forest
*	1.230	78	D - Meadowed Land
*	0.269	77	D - Deciduous Forest
	8.420	75	Weighted Average
	8.420		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.5	166	0.0361	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
4.5	276	0.0217	1.03		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.4	460	0.0217	1.03		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.2	210	0.0238	1.08		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.4	183	0.0328	1.27		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.9	370	0.0513	1.59		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.6	192	0.0312	1.24		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.1	273	0.0440	1.47		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
40.6	2,130	Total			

Subcatchment 13S: PR DA 13



Summary for Subcatchment 14S: PR DA 14

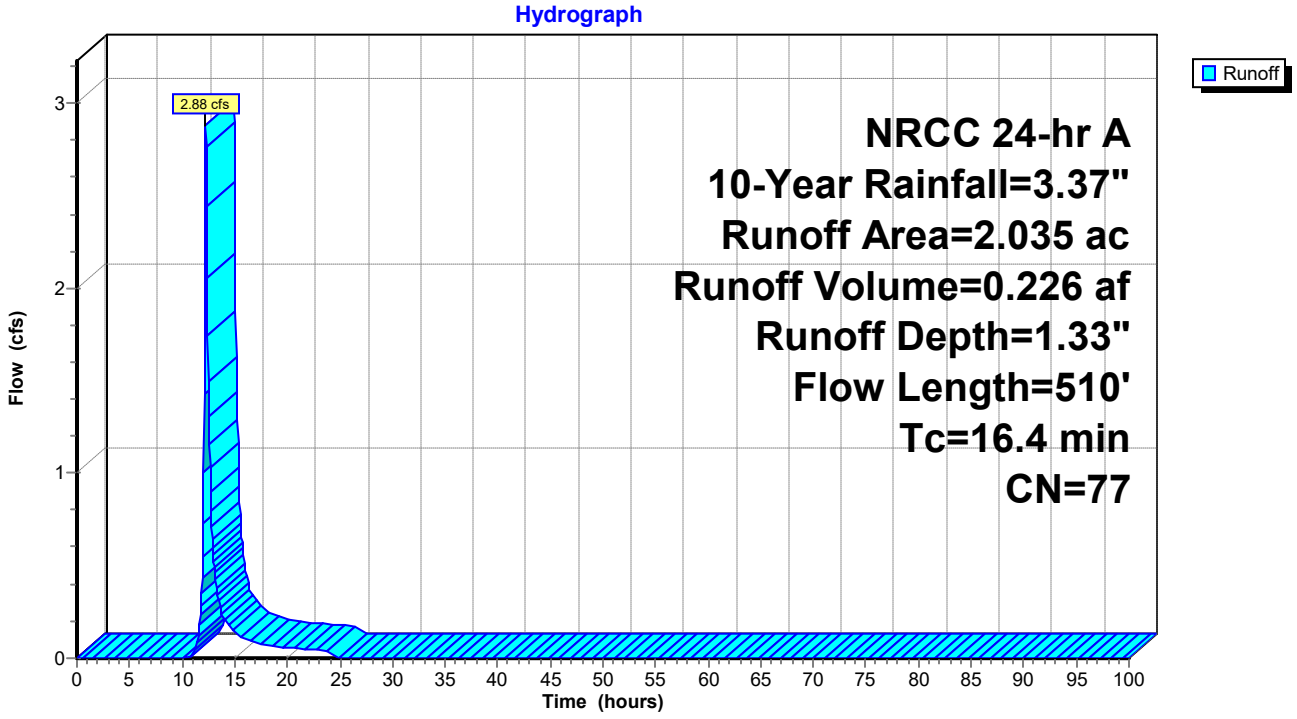
Runoff = 2.88 cfs @ 12.26 hrs, Volume= 0.226 af, Depth= 1.33"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 10-Year Rainfall=3.37"

	Area (ac)	CN	Description
*	0.091	70	C - Deciduous Forest
*	0.044	70	C - Evergreen Forest
*	0.087	77	D - Evergreen Forest
*	1.247	77	D - Deciduous Forest
*	0.566	80	D - Meadowed Land
	2.035	77	Weighted Average
	2.035		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2	174	0.0632	0.26		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
5.2	336	0.0238	1.08		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
16.4	510	Total			

Subcatchment 14S: PR DA 14



Summary for Subcatchment 15S: PR DA 15

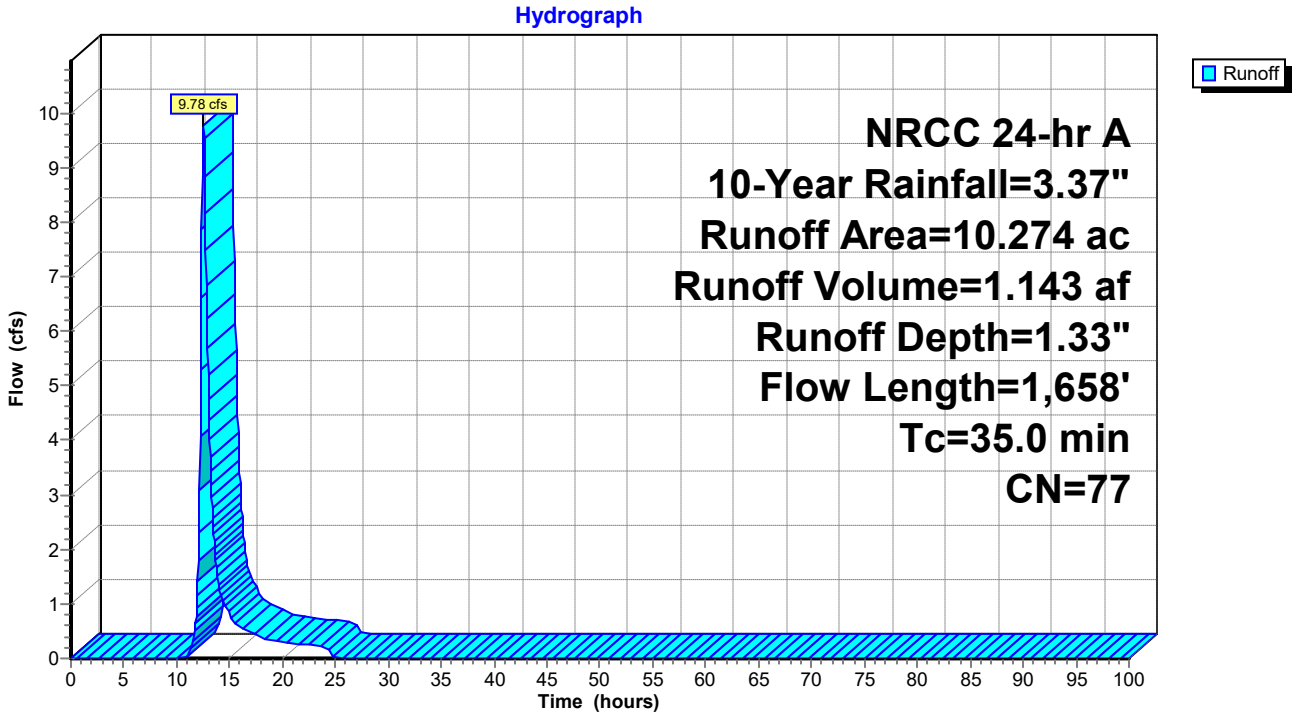
Runoff = 9.78 cfs @ 12.52 hrs, Volume= 1.143 af, Depth= 1.33"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 10-Year Rainfall=3.37"

	Area (ac)	CN	Description
*	1.568	70	C - Deciduous Forest
*	1.366	74	C - Meadowed Land
*	3.940	80	D - Meadowed Land
*	3.400	77	D - Deciduous Forest
	10.274	77	Weighted Average
	10.274		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.4	186	0.0323	0.20		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
1.7	209	0.0909	2.11		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.1	441	0.0431	1.45		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.3	423	0.0189	0.96		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.5	399	0.0301	1.21		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
35.0	1,658	Total			

Subcatchment 15S: PR DA 15



Summary for Subcatchment 16S: PR DA 16

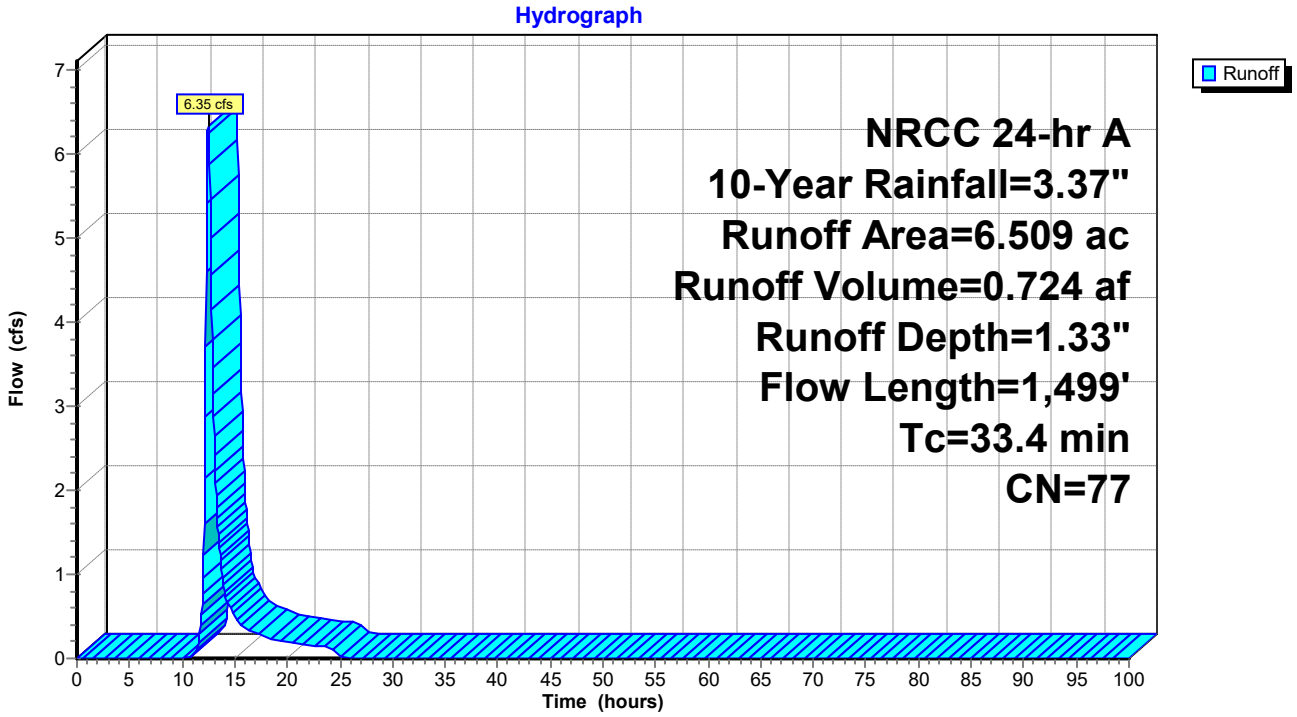
Runoff = 6.35 cfs @ 12.49 hrs, Volume= 0.724 af, Depth= 1.33"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 10-Year Rainfall=3.37"

	Area (ac)	CN	Description
*	0.552	70	C - Deciduous Forest
*	0.308	74	C - Meadowed Land
*	3.833	77	D - Deciduous Forest
*	1.816	80	D - Meadowed Land
	6.509	77	Weighted Average
	6.509		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.1	222	0.0270	0.19		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
2.9	311	0.0643	1.78		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.2	191	0.0419	1.43		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.8	331	0.0423	1.44		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.4	444	0.0383	1.37		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
33.4	1,499	Total			

Subcatchment 16S: PR DA 16



Summary for Subcatchment 17S: PR DA 17

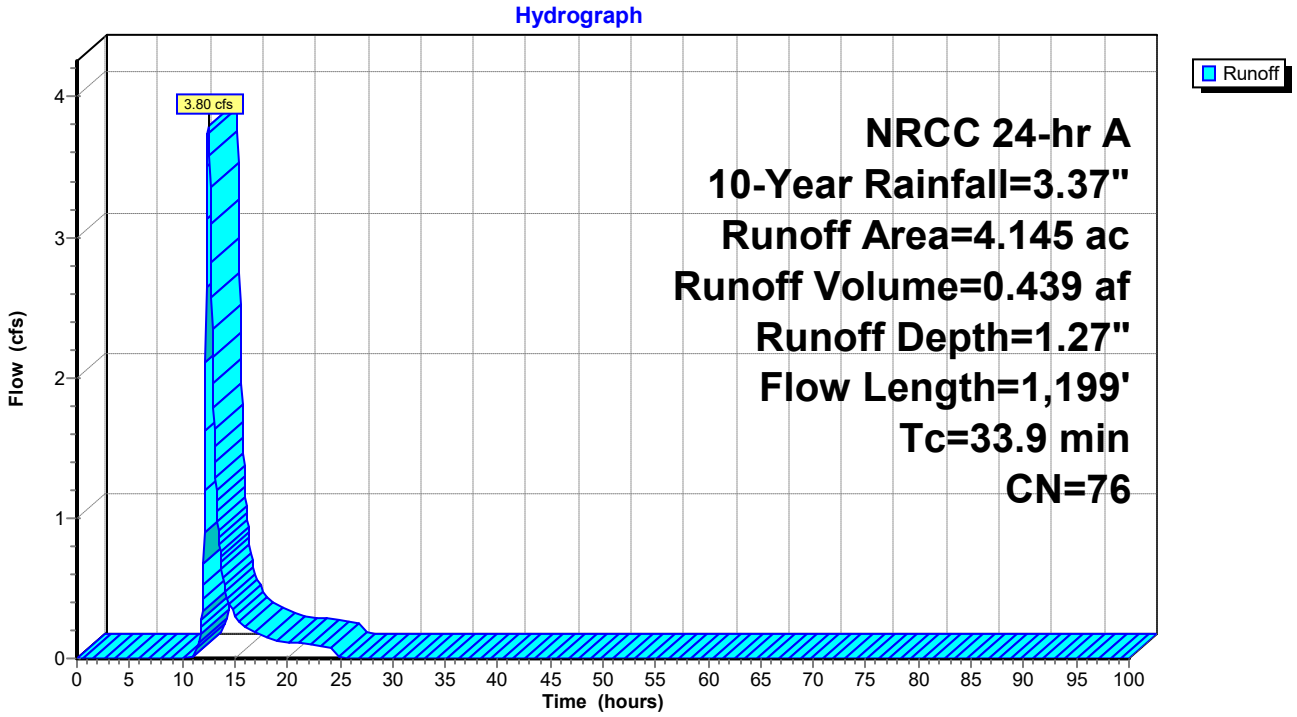
Runoff = 3.80 cfs @ 12.50 hrs, Volume= 0.439 af, Depth= 1.27"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 10-Year Rainfall=3.37"

	Area (ac)	CN	Description
*	0.198	78	B - Meadowed Land
*	2.871	74	C - Meadowed Land
*	1.001	80	D - Meadowed Land
*	0.075	77	D - Deciduous Forest
	4.145	76	Weighted Average
	4.145		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.6	137	0.0292	0.18		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
2.7	232	0.0431	1.45		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.2	266	0.0150	0.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
9.4	360	0.0083	0.64		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.0	204	0.0147	0.85		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
33.9	1,199	Total			

Subcatchment 17S: PR DA 17



Summary for Subcatchment 18S: PR DA 18

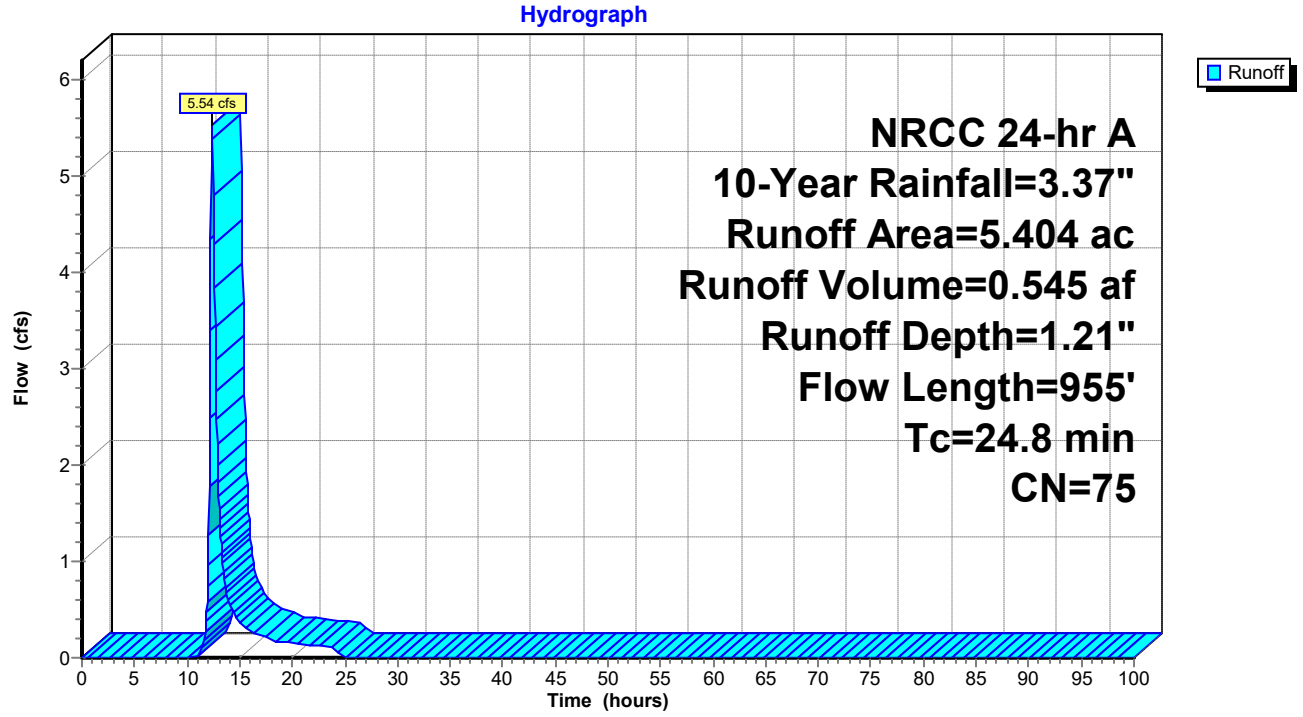
Runoff = 5.54 cfs @ 12.38 hrs, Volume= 0.545 af, Depth= 1.21"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 10-Year Rainfall=3.37"

	Area (ac)	CN	Description
*	0.672	78	B - Meadowed Land
*	4.382	74	C - Meadowed Land
*	0.260	80	D - Meadowed Land
*	0.090	77	D - Deciduous Forest
	5.404	75	Weighted Average
	5.404		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	108	0.0278	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
5.1	379	0.0317	1.25		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
9.1	468	0.0150	0.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
24.8	955	Total			

Subcatchment 18S: PR DA 18



Summary for Subcatchment 19S: PR DA 19

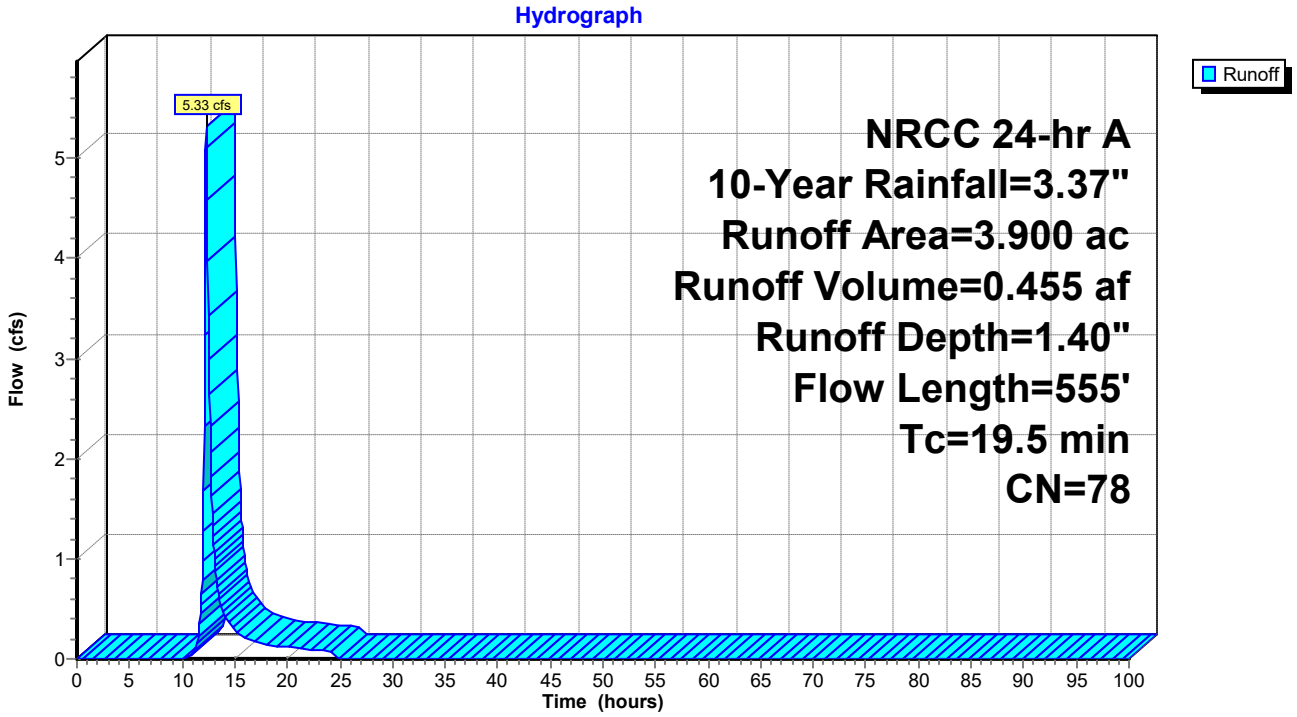
Runoff = 5.33 cfs @ 12.30 hrs, Volume= 0.455 af, Depth= 1.40"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 10-Year Rainfall=3.37"

	Area (ac)	CN	Description
*	3.180	77	D - Deciduous Forest
*	0.720	80	D - Meadowed Land
	3.900	78	Weighted Average
	3.900		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.8	200	0.0300	0.20		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
2.7	355	0.1014	2.23		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
19.5	555	Total			

Subcatchment 19S: PR DA 19



Summary for Subcatchment 20S: PR DA 20

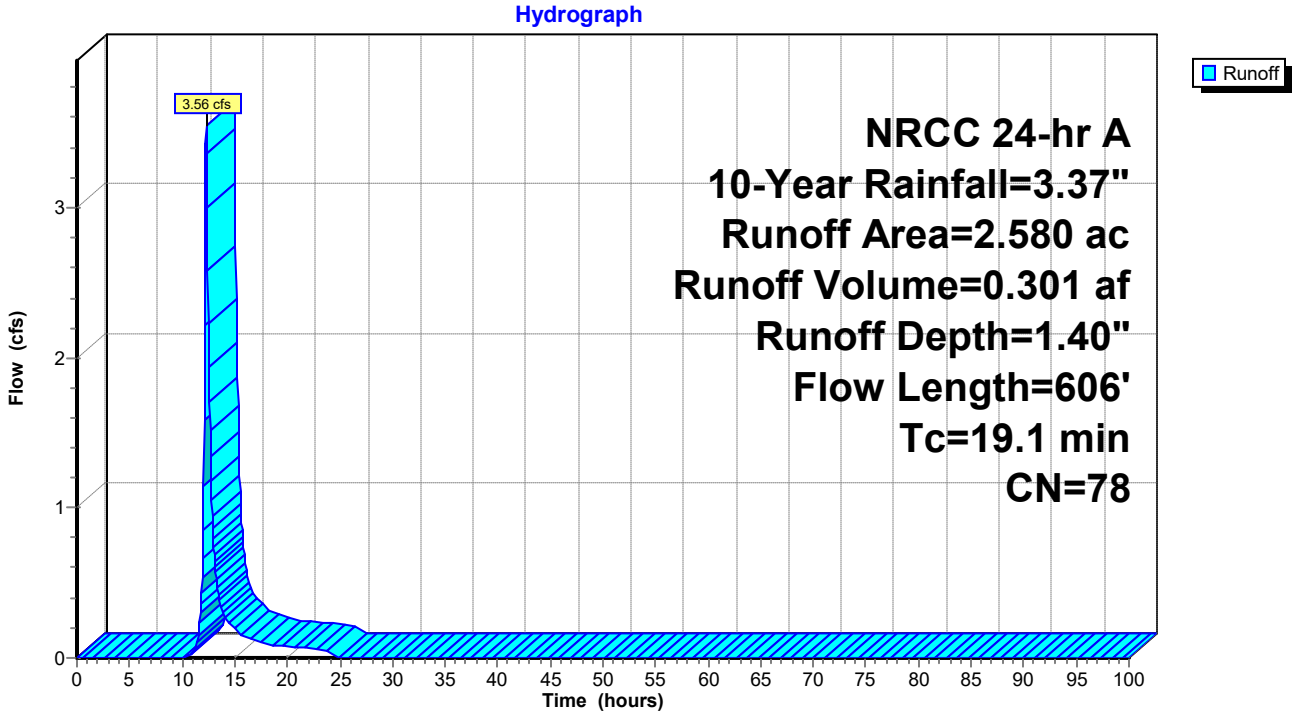
Runoff = 3.56 cfs @ 12.30 hrs, Volume= 0.301 af, Depth= 1.40"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 10-Year Rainfall=3.37"

	Area (ac)	CN	Description
*	1.690	77	D - Deciduous Forest
*	0.890	80	D - Meadowed Land
	2.580	78	Weighted Average
	2.580		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.8	150	0.0333	0.20		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
1.9	181	0.0497	1.56		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.4	275	0.0218	1.03		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
19.1	606	Total			

Subcatchment 20S: PR DA 20



Summary for Subcatchment 21S: PR DA 21

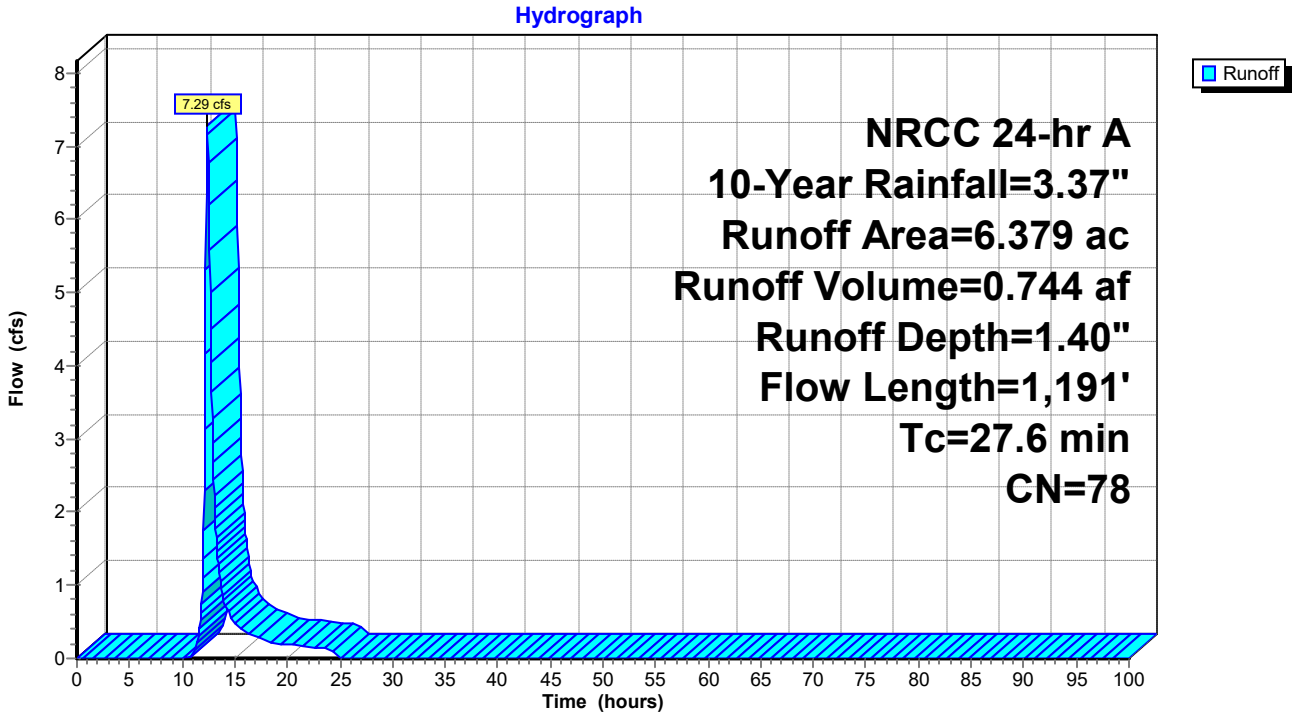
Runoff = 7.29 cfs @ 12.41 hrs, Volume= 0.744 af, Depth= 1.40"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 10-Year Rainfall=3.37"

	Area (ac)	CN	Description
*	0.410	78	B - Meadowed Land
*	1.270	70	C - Deciduous Forest
*	3.180	82	C - Meadowed Land
*	1.250	77	D - Deciduous Forest
*	0.269	80	D - Meadowed Land
	6.379	78	Weighted Average
	6.379		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	100	0.0300	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
5.0	354	0.0282	1.18		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
8.2	437	0.0160	0.89		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.7	300	0.0233	1.07		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
27.6	1,191	Total			

Subcatchment 21S: PR DA 21



Summary for Subcatchment 22S: PR DA 22

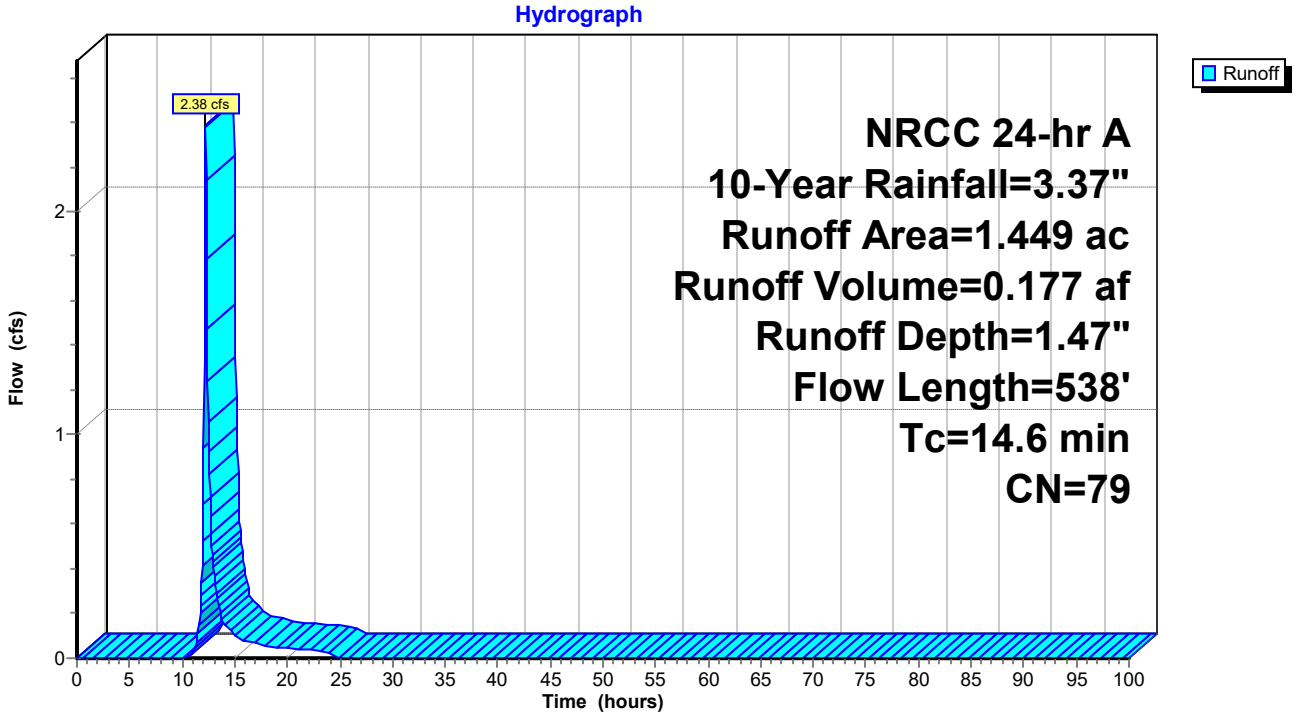
Runoff = 2.38 cfs @ 12.24 hrs, Volume= 0.177 af, Depth= 1.47"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 10-Year Rainfall=3.37"

	Area (ac)	CN	Description
*	0.660	77	D - Deciduous Forest
*	0.380	84	D - Shrub/Scrub
*	0.409	78	D - Meadowed Land
	1.449	79	Weighted Average
	1.449		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	125	0.0480	0.22		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
2.9	228	0.0351	1.31		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.1	185	0.0432	1.45		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
14.6	538	Total			

Subcatchment 22S: PR DA 22



Summary for Subcatchment 23S: PR DA 23

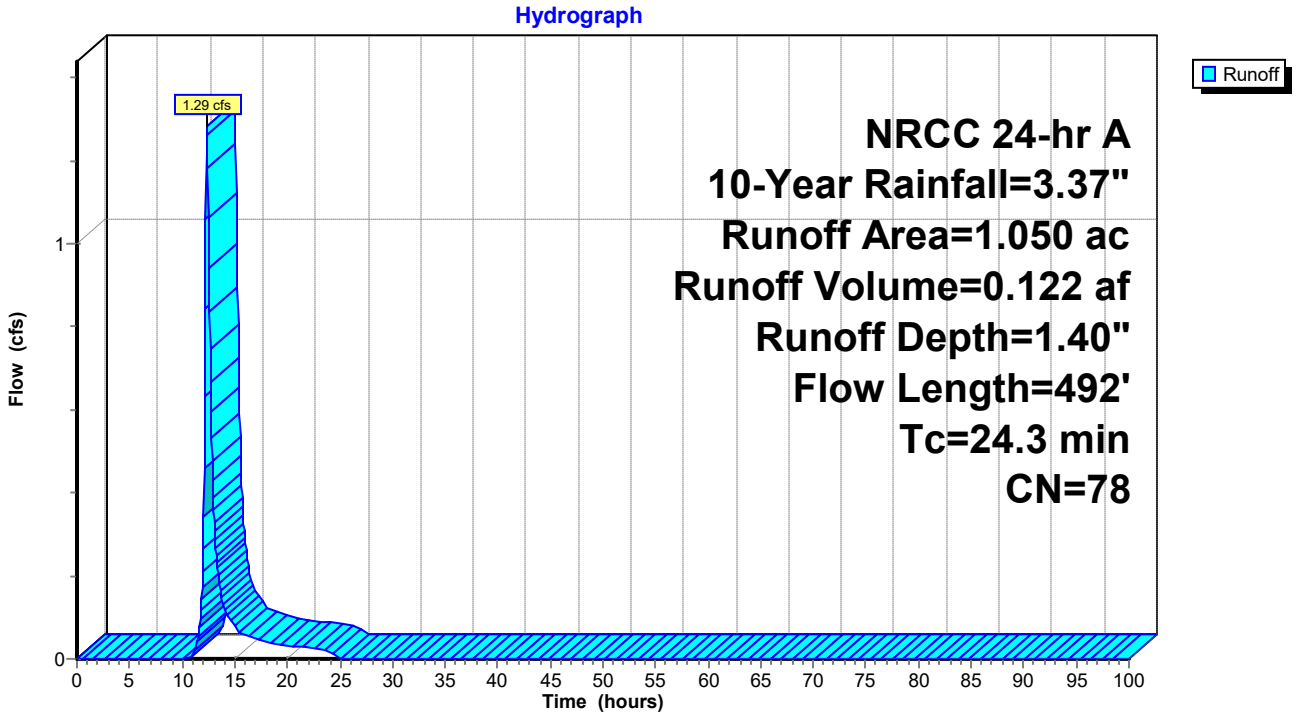
Runoff = 1.29 cfs @ 12.36 hrs, Volume= 0.122 af, Depth= 1.40"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 10-Year Rainfall=3.37"

	Area (ac)	CN	Description
*	0.630	77	D - Deciduous Forest
*	0.420	80	D - Meadowed Land
	1.050	78	Weighted Average
	1.050		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.4	205	0.0195	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
3.9	287	0.0314	1.24		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
24.3	492	Total			

Subcatchment 23S: PR DA 23



Summary for Subcatchment 24S: PR DA 24

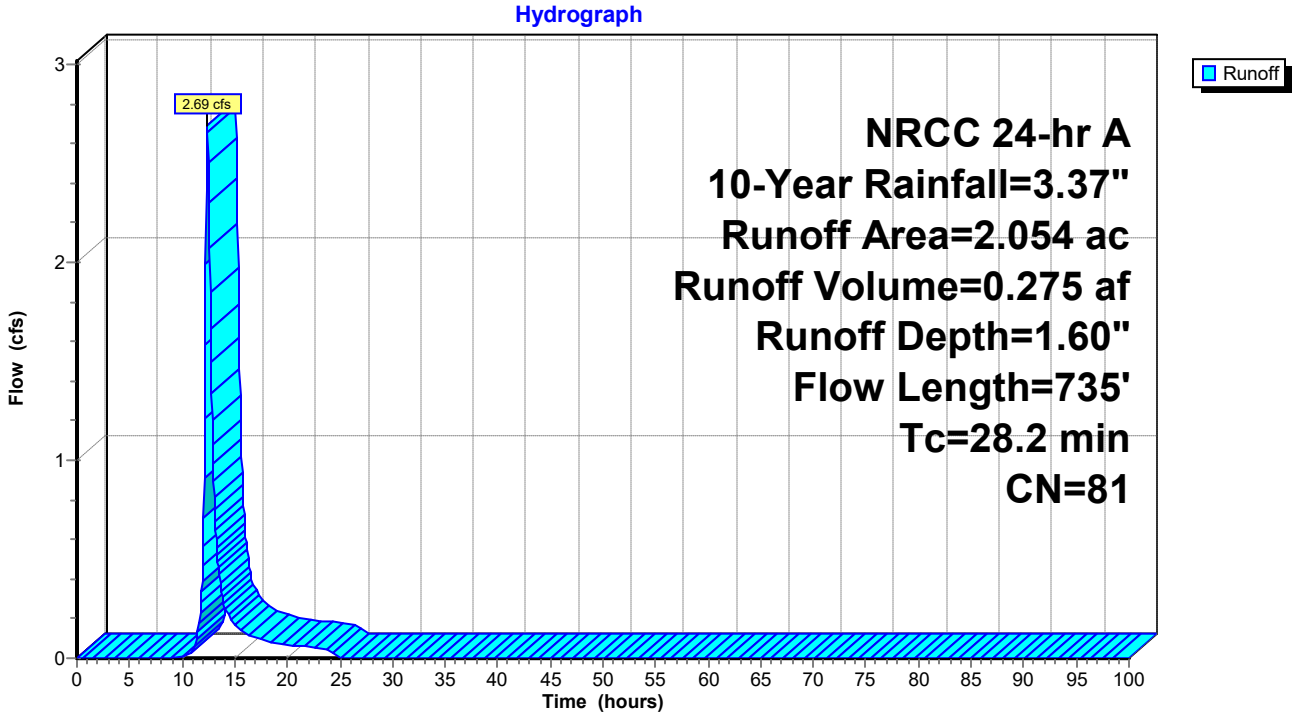
Runoff = 2.69 cfs @ 12.41 hrs, Volume= 0.275 af, Depth= 1.60"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 10-Year Rainfall=3.37"

	Area (ac)	CN	Description
*	1.360	82	C - Meadowed Land
*	0.630	80	D - Meadowed Land
*	0.064	77	D - Deciduous Forest
	2.054	81	Weighted Average
	2.054		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.1	183	0.0328	0.20		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
6.6	197	0.0051	0.50		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.5	355	0.0169	0.91		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
28.2	735	Total			

Subcatchment 24S: PR DA 24



Summary for Subcatchment 25S: PR DA 25

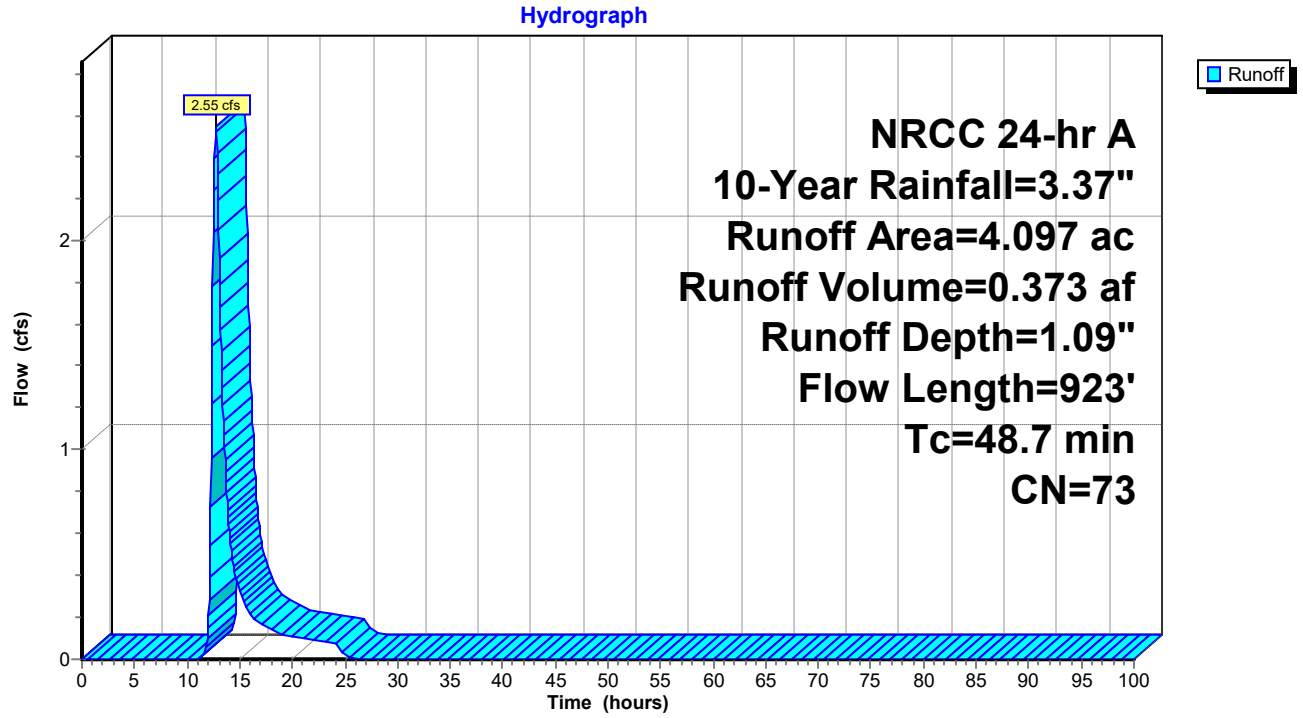
Runoff = 2.55 cfs @ 12.72 hrs, Volume= 0.373 af, Depth= 1.09"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 10-Year Rainfall=3.37"

	Area (ac)	CN	Description
*	0.330	61	B - Meadowed Land
*	3.290	74	C - Meadowed Land
*	0.227	74	C - Developed, Open Space
*	0.204	80	D - Meadowed Land
*	0.046	77	D - Deciduous Forest
	4.097	73	Weighted Average
	4.097		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.7	167	0.0419	0.22		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
2.2	170	0.0353	1.32		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
33.8	586	0.0017	0.29		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
48.7	923	Total			

Subcatchment 25S: PR DA 25



Summary for Subcatchment 26S: PR DA 26

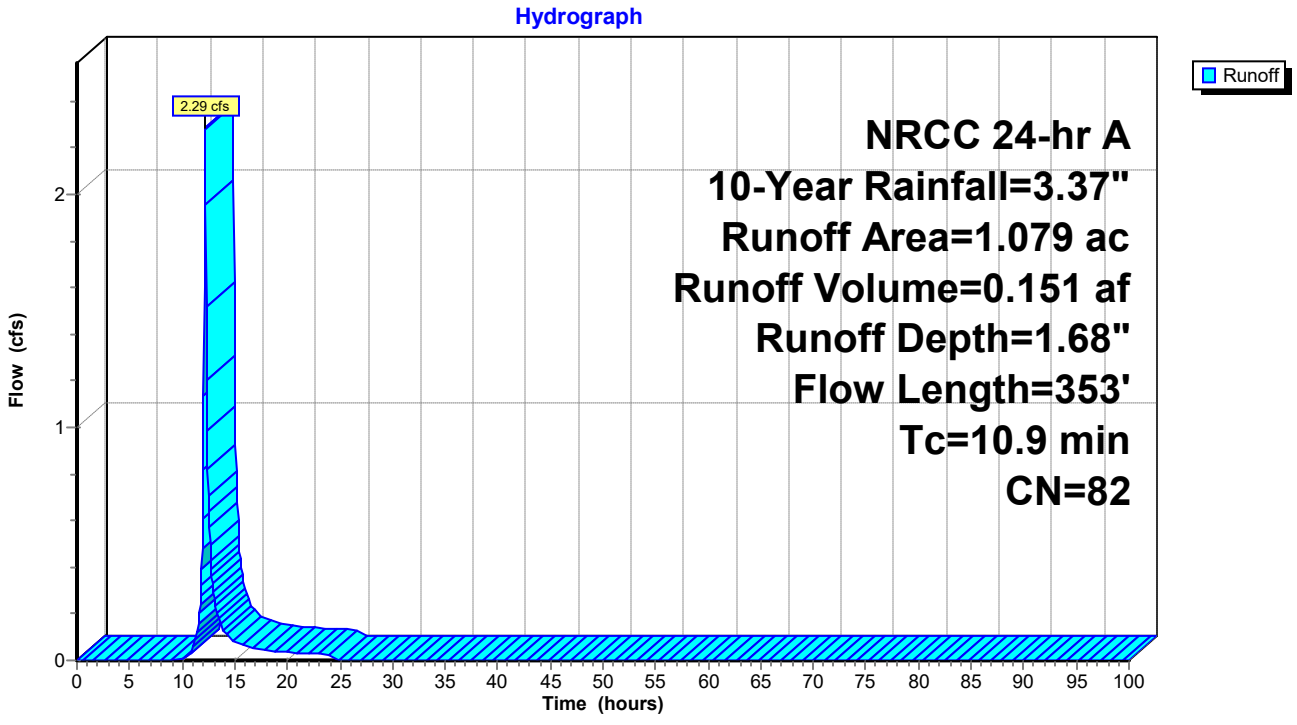
Runoff = 2.29 cfs @ 12.19 hrs, Volume= 0.151 af, Depth= 1.68"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 10-Year Rainfall=3.37"

	Area (ac)	CN	Description
*	0.200	77	D - Deciduous Forest
*	0.050	77	D - Deciduous Forest
*	0.829	84	D - Shrub/Scrub
	1.079	82	Weighted Average
	1.079		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	93	0.0323	0.18		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
2.1	260	0.0846	2.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
10.9	353	Total			

Subcatchment 26S: PR DA 26



Summary for Subcatchment 27S: PR DA 27

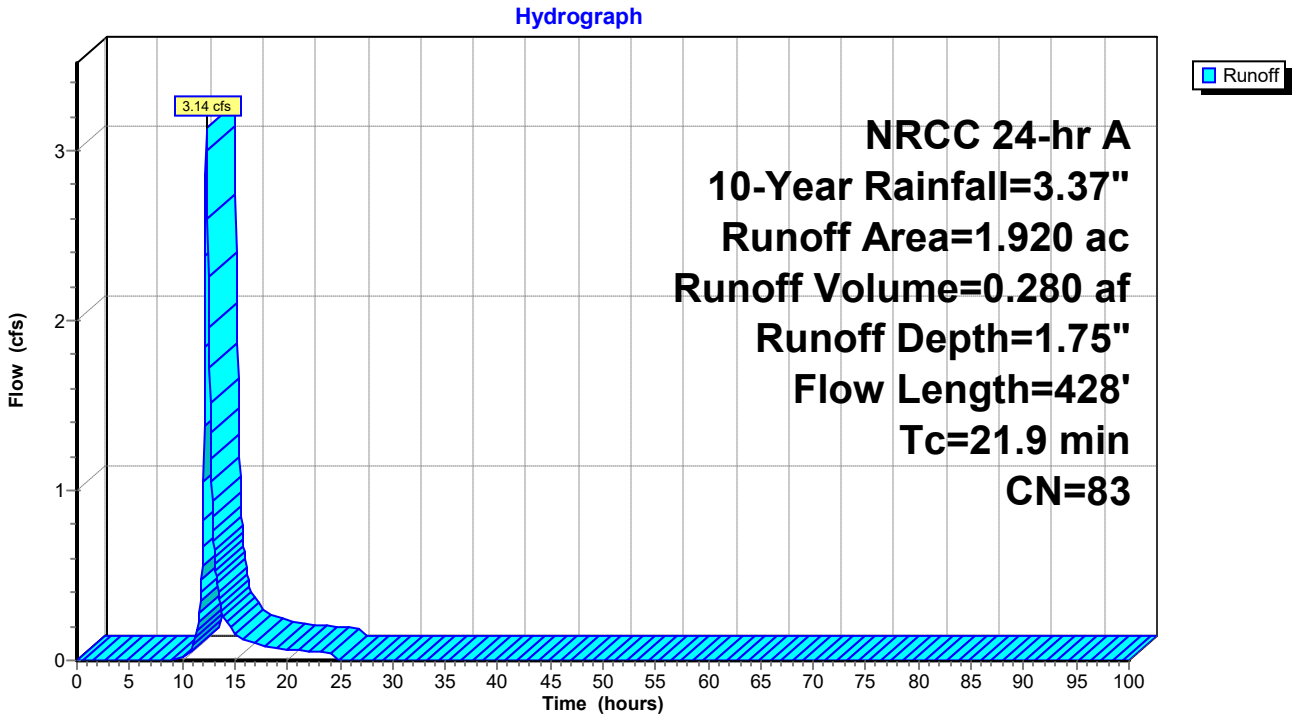
Runoff = 3.14 cfs @ 12.32 hrs, Volume= 0.280 af, Depth= 1.75"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 10-Year Rainfall=3.37"

	Area (ac)	CN	Description
*	0.260	77	D - Deciduous Forest
*	1.650	84	D - Shrub/Scrub
*	0.010	80	D - Meadowed Land
	1.920	83	Weighted Average
	1.920		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.0	208	0.0240	0.18		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
2.9	220	0.0318	1.25		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
21.9	428	Total			

Subcatchment 27S: PR DA 27



Summary for Subcatchment 28S: PR DA 28

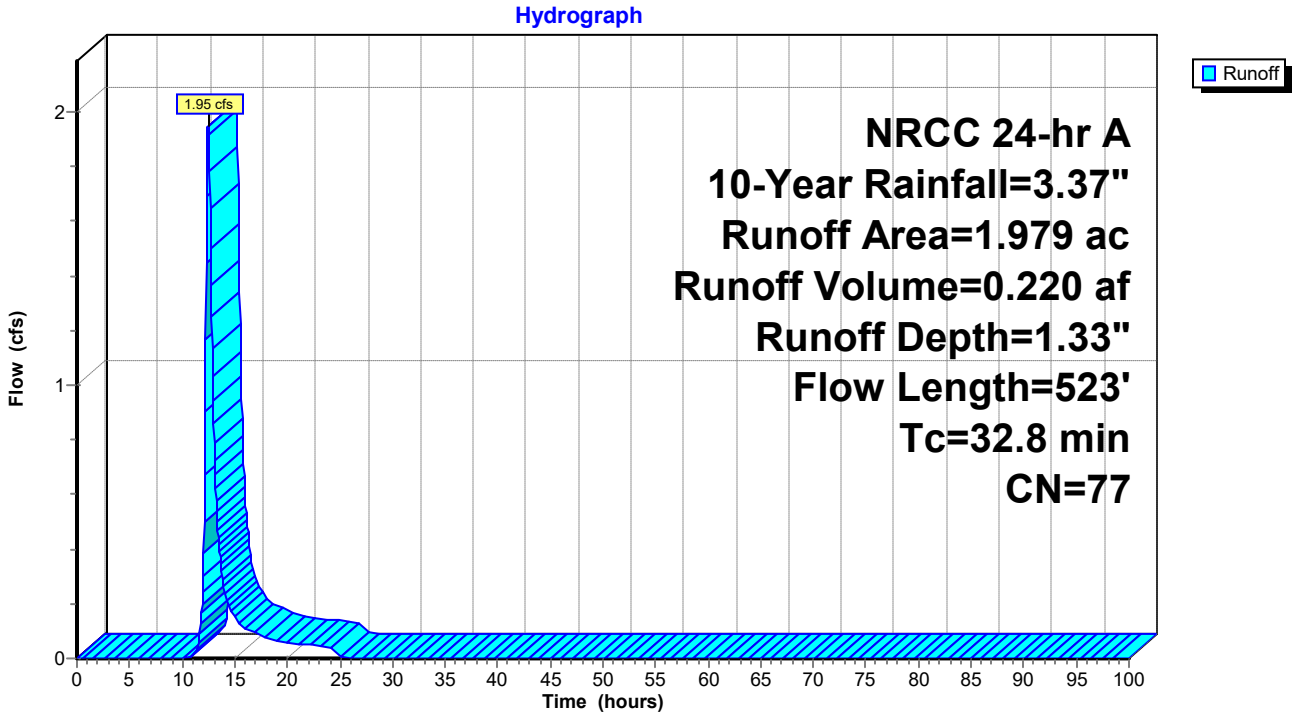
Runoff = 1.95 cfs @ 12.48 hrs, Volume= 0.220 af, Depth= 1.33"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 10-Year Rainfall=3.37"

	Area (ac)	CN	Description
*	0.120	39	A - Developed. Open Space
*	0.010	82	D - Developed, Low Intensity
*	0.890	77	D - Deciduous Forest
*	0.560	84	D - Shrub/Scrub
*	0.048	80	D - Developed, Open Space
*	0.351	80	D - Meadowed Land
	1.979	77	Weighted Average
	1.979		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.1	206	0.0097	0.13		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
5.2	213	0.0094	0.68		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	104	0.2115	3.22		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
32.8	523	Total			

Subcatchment 28S: PR DA 28



Summary for Subcatchment 31S: Porous Road

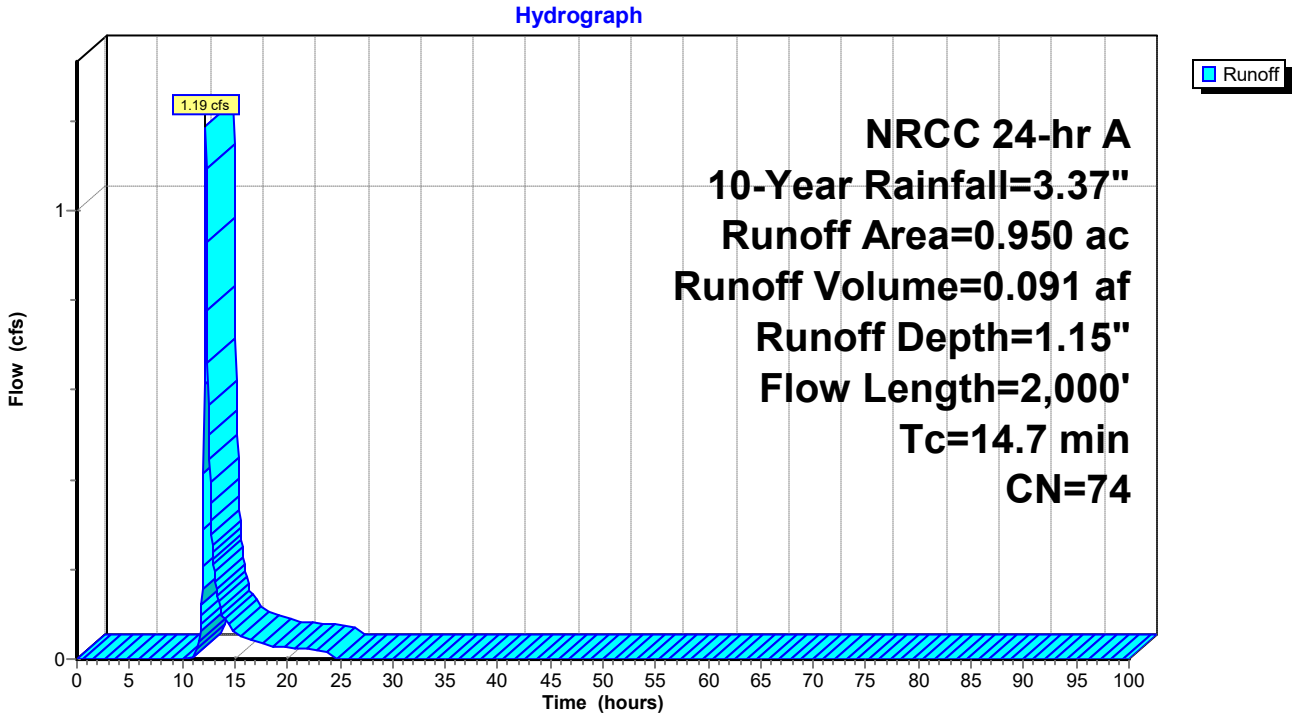
Runoff = 1.19 cfs @ 12.25 hrs, Volume= 0.091 af, Depth= 1.15"
Routed to Pond 29P : POROUS PAVEMENT

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 10-Year Rainfall=3.37"

	Area (ac)	CN	Description
*	0.950	74	C - Pervious Road
	0.950		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.3	300	0.0500	2.13		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.38"
12.4	1,700	0.0200	2.28		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
14.7	2,000	Total			

Subcatchment 31S: Porous Road



Summary for Pond 29P: POROUS PAVEMENT

Inflow Area = 0.950 ac, 0.00% Impervious, Inflow Depth = 1.15" for 10-Year event
Inflow = 1.19 cfs @ 12.25 hrs, Volume= 0.091 af
Outflow = 0.48 cfs @ 12.20 hrs, Volume= 0.091 af, Atten= 60%, Lag= 0.0 min
Discarded = 0.48 cfs @ 12.20 hrs, Volume= 0.091 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
Peak Elev= 840.05' @ 12.57 hrs Surf.Area= 0.950 ac Storage= 0.018 af

Plug-Flow detention time= 14.6 min calculated for 0.091 af (100% of inflow)
Center-of-Mass det. time= 14.5 min (865.9 - 851.4)

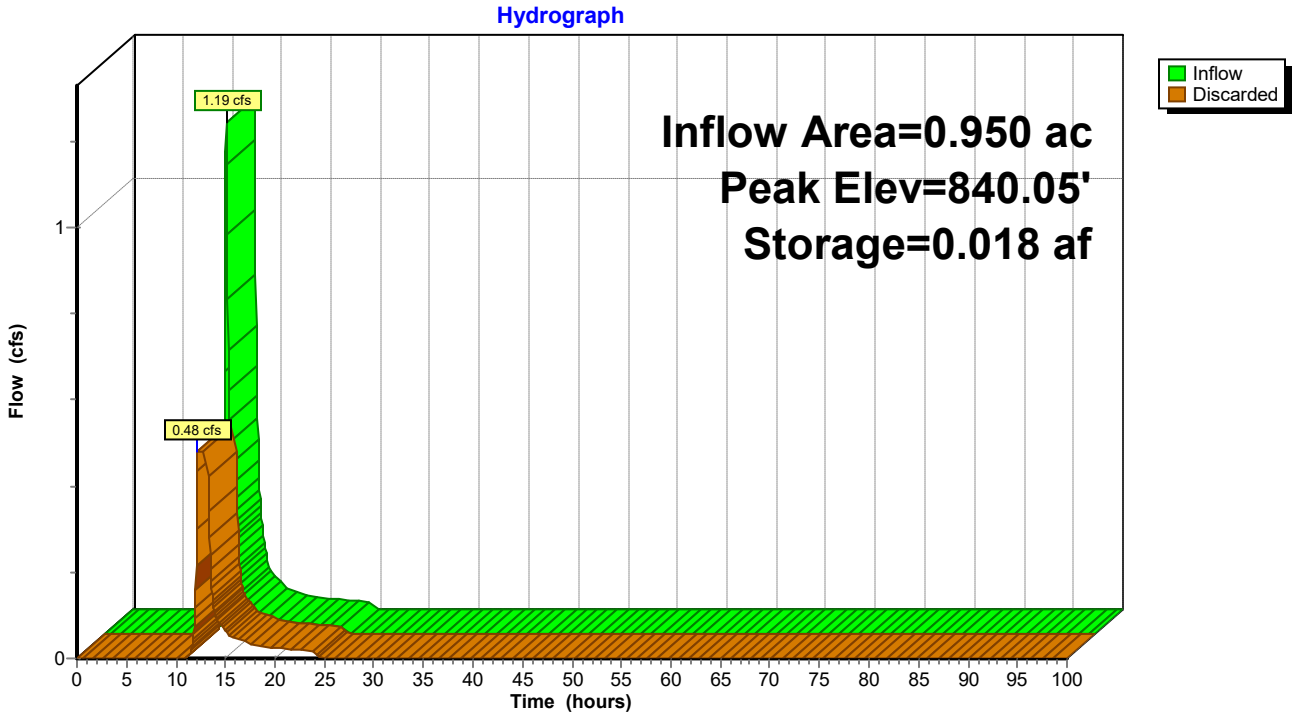
Volume	Invert	Avail.Storage	Storage Description
#1	840.00'	0.570 af	**Porous Pavement (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Voids (%)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
840.00	0.950	0.0	0.000	0.000
840.75	0.950	40.0	0.285	0.285
841.50	0.950	40.0	0.285	0.570

Device	Routing	Invert	Outlet Devices
#1	Discarded	840.00'	**0.500 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.48 cfs @ 12.20 hrs HW=840.02' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.48 cfs)

Pond 29P: POROUS PAVEMENT



Time span=0.00-100.00 hrs, dt=0.05 hrs, 2001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: PR DA 1 Runoff Area=1.968 ac 0.00% Impervious Runoff Depth=2.54"
Flow Length=604' Tc=16.6 min CN=70 Runoff=5.32 cfs 0.416 af

Subcatchment 2S: PR DA 2 Runoff Area=0.980 ac 0.00% Impervious Runoff Depth=3.18"
Flow Length=312' Tc=18.5 min CN=77 Runoff=3.16 cfs 0.260 af

Subcatchment 3S: PR DA 3 Runoff Area=3.523 ac 0.00% Impervious Runoff Depth=2.72"
Flow Length=440' Tc=19.5 min CN=72 Runoff=9.44 cfs 0.798 af

Subcatchment 4S: PR DA 4 Runoff Area=7.098 ac 0.00% Impervious Runoff Depth=2.81"
Flow Length=1,080' Tc=36.8 min CN=73 Runoff=14.08 cfs 1.661 af

Subcatchment 5S: PR DA 5 Runoff Area=9.028 ac 0.00% Impervious Runoff Depth=2.11"
Flow Length=1,150' Tc=35.1 min CN=65 Runoff=13.39 cfs 1.585 af

Subcatchment 6S: PR DA 6 Runoff Area=2.000 ac 0.00% Impervious Runoff Depth=2.90"
Flow Length=553' Tc=20.1 min CN=74 Runoff=5.66 cfs 0.484 af

Subcatchment 7S: PR DA 7 Runoff Area=8.889 ac 0.00% Impervious Runoff Depth=1.94"
Flow Length=2,108' Tc=40.2 min CN=63 Runoff=11.08 cfs 1.439 af

Subcatchment 8S: PR DA 8 Runoff Area=2.164 ac 0.00% Impervious Runoff Depth=3.09"
Flow Length=553' Tc=21.6 min CN=76 Runoff=6.32 cfs 0.557 af

Subcatchment 9S: PR DA 9 Runoff Area=5.871 ac 0.00% Impervious Runoff Depth=3.18"
Flow Length=2,043' Tc=43.4 min CN=77 Runoff=12.03 cfs 1.558 af

Subcatchment 10S: PR DA 10 Runoff Area=8.060 ac 0.00% Impervious Runoff Depth=2.54"
Flow Length=2,106' Tc=40.6 min CN=70 Runoff=13.57 cfs 1.705 af

Subcatchment 11S: PR DA 11 Runoff Area=13.716 ac 0.00% Impervious Runoff Depth=2.99"
Flow Length=2,066' Tc=36.3 min CN=75 Runoff=29.30 cfs 3.423 af

Subcatchment 12S: PR DA 12 Runoff Area=2.520 ac 0.00% Impervious Runoff Depth=3.09"
Flow Length=762' Tc=32.9 min CN=76 Runoff=5.88 cfs 0.649 af

Subcatchment 13S: PR DA 13 Runoff Area=8.420 ac 0.00% Impervious Runoff Depth=2.99"
Flow Length=2,130' Tc=40.6 min CN=75 Runoff=16.90 cfs 2.101 af

Subcatchment 14S: PR DA 14 Runoff Area=2.035 ac 0.00% Impervious Runoff Depth=3.18"
Flow Length=510' Tc=16.4 min CN=77 Runoff=6.98 cfs 0.540 af

Subcatchment 15S: PR DA 15 Runoff Area=10.274 ac 0.00% Impervious Runoff Depth=3.18"
Flow Length=1,658' Tc=35.0 min CN=77 Runoff=23.91 cfs 2.726 af

Subcatchment 16S: PR DA 16 Runoff Area=6.509 ac 0.00% Impervious Runoff Depth=3.18"
Flow Length=1,499' Tc=33.4 min CN=77 Runoff=15.54 cfs 1.727 af

Subcatchment 17S: PR DA 17 Runoff Area=4.145 ac 0.00% Impervious Runoff Depth=3.09"
Flow Length=1,199' Tc=33.9 min CN=76 Runoff=9.51 cfs 1.067 af

Subcatchment 18S: PR DA 18 Runoff Area=5.404 ac 0.00% Impervious Runoff Depth=2.99"
Flow Length=955' Tc=24.8 min CN=75 Runoff=14.21 cfs 1.348 af

Subcatchment 19S: PR DA 19 Runoff Area=3.900 ac 0.00% Impervious Runoff Depth=3.28"
Flow Length=555' Tc=19.5 min CN=78 Runoff=12.64 cfs 1.066 af

Subcatchment 20S: PR DA 20 Runoff Area=2.580 ac 0.00% Impervious Runoff Depth=3.28"
Flow Length=606' Tc=19.1 min CN=78 Runoff=8.45 cfs 0.705 af

Subcatchment 21S: PR DA 21 Runoff Area=6.379 ac 0.00% Impervious Runoff Depth=3.28"
Flow Length=1,191' Tc=27.6 min CN=78 Runoff=17.38 cfs 1.744 af

Subcatchment 22S: PR DA 22 Runoff Area=1.449 ac 0.00% Impervious Runoff Depth=3.38"
Flow Length=538' Tc=14.6 min CN=79 Runoff=5.51 cfs 0.408 af

Subcatchment 23S: PR DA 23 Runoff Area=1.050 ac 0.00% Impervious Runoff Depth=3.28"
Flow Length=492' Tc=24.3 min CN=78 Runoff=3.06 cfs 0.287 af

Subcatchment 24S: PR DA 24 Runoff Area=2.054 ac 0.00% Impervious Runoff Depth=3.58"
Flow Length=735' Tc=28.2 min CN=81 Runoff=6.02 cfs 0.612 af

Subcatchment 25S: PR DA 25 Runoff Area=4.097 ac 0.00% Impervious Runoff Depth=2.81"
Flow Length=923' Tc=48.7 min CN=73 Runoff=6.91 cfs 0.959 af

Subcatchment 26S: PR DA 26 Runoff Area=1.079 ac 0.00% Impervious Runoff Depth=3.68"
Flow Length=353' Tc=10.9 min CN=82 Runoff=4.96 cfs 0.330 af

Subcatchment 27S: PR DA 27 Runoff Area=1.920 ac 0.00% Impervious Runoff Depth=3.78"
Flow Length=428' Tc=21.9 min CN=83 Runoff=6.72 cfs 0.604 af

Subcatchment 28S: PR DA 28 Runoff Area=1.979 ac 0.00% Impervious Runoff Depth=3.18"
Flow Length=523' Tc=32.8 min CN=77 Runoff=4.77 cfs 0.525 af

Subcatchment 31S: Porous Road Runoff Area=0.950 ac 0.00% Impervious Runoff Depth=2.90"
Flow Length=2,000' Tc=14.7 min CN=74 Runoff=3.09 cfs 0.230 af

Pond 29P: POROUS PAVEMENT Peak Elev=840.23' Storage=0.088 af Inflow=3.09 cfs 0.230 af
Outflow=0.48 cfs 0.230 af

Total Runoff Area = 130.041 ac Runoff Volume = 31.514 af Average Runoff Depth = 2.91"
100.00% Pervious = 130.041 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1S: PR DA 1

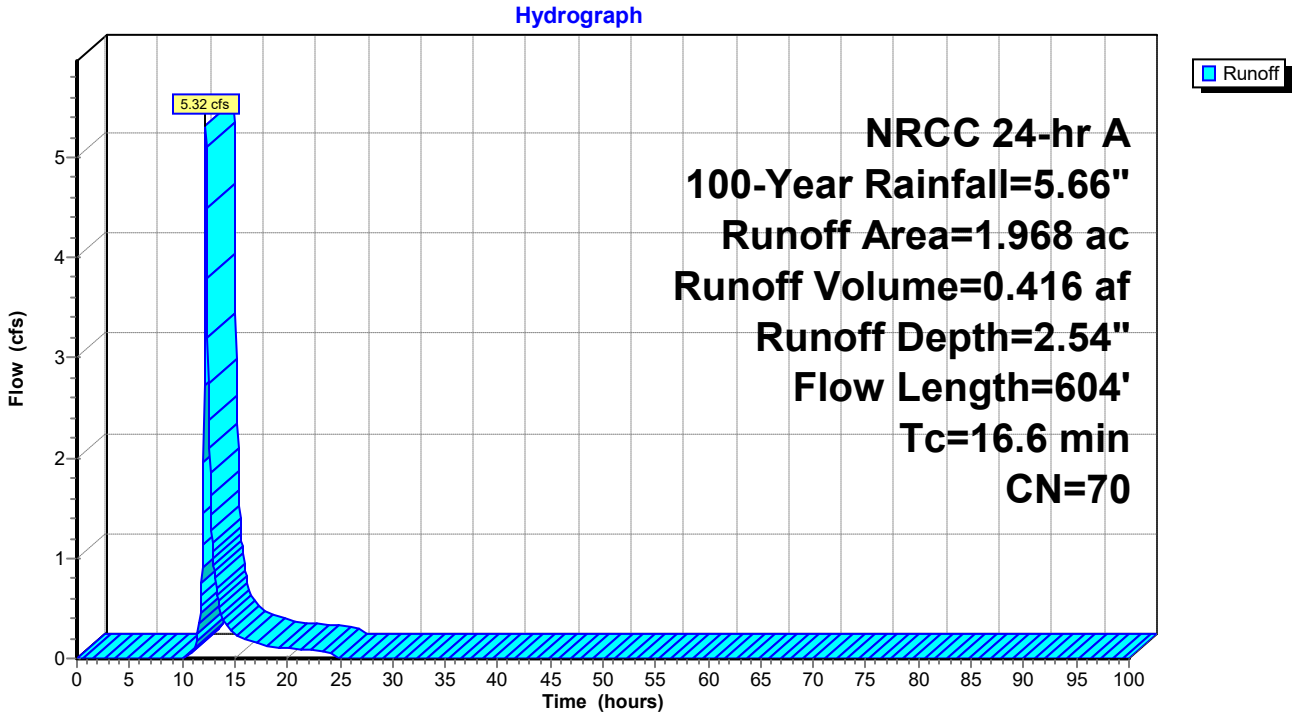
Runoff = 5.32 cfs @ 12.26 hrs, Volume= 0.416 af, Depth= 2.54"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 100-Year Rainfall=5.66"

	Area (ac)	CN	Description
*	0.324	58	B - Meadowed Land
*	0.430	61	B - Developed, Open Space
*	0.027	65	B - Developed, Low Intensity
*	1.070	77	D - Deciduous Forest
*	0.117	80	D - Meadowed Land
	1.968	70	Weighted Average
	1.968		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0	83	0.0120	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
2.4	307	0.0912	2.11		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	51	0.0588	1.70		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.7	163	0.0552	1.64		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
16.6	604	Total			

Subcatchment 1S: PR DA 1



Summary for Subcatchment 2S: PR DA 2

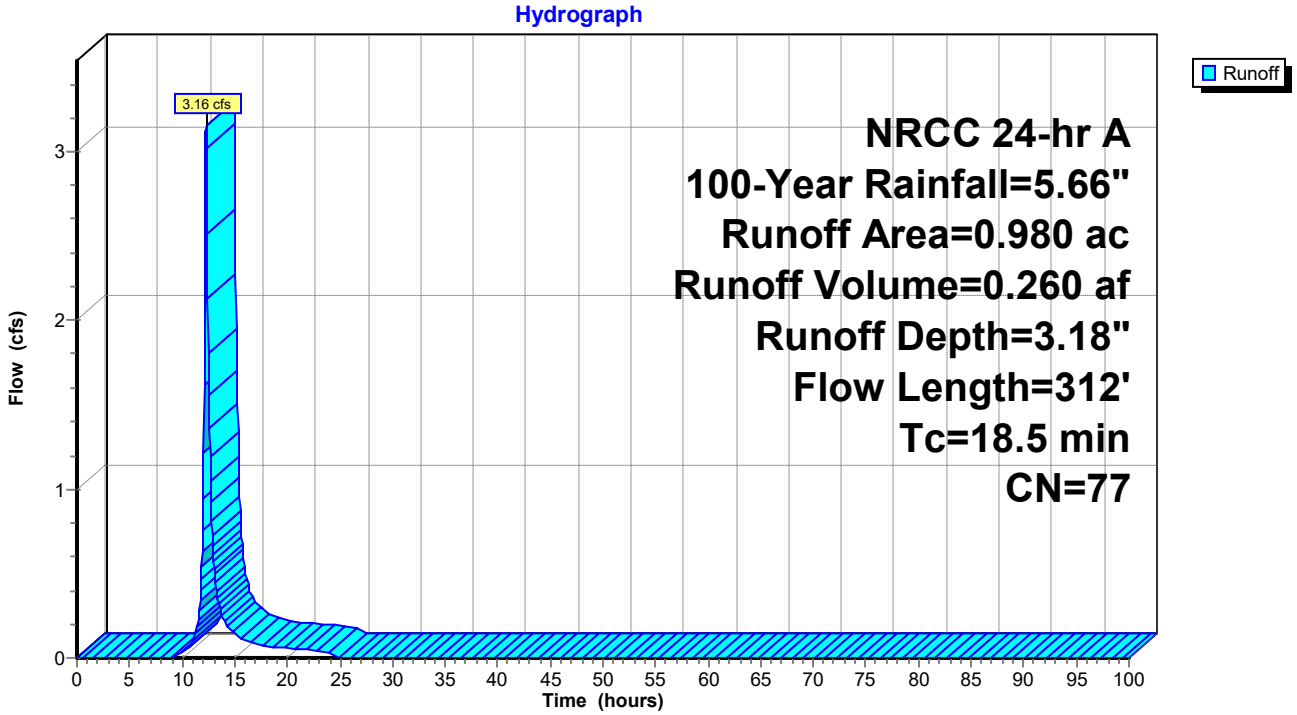
Runoff = 3.16 cfs @ 12.28 hrs, Volume= 0.260 af, Depth= 3.18"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 100-Year Rainfall=5.66"

	Area (ac)	CN	Description
*	0.700	77	D - Deciduous Forest
*	0.280	78	D - Meadowed Land
	0.980	77	Weighted Average
	0.980		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.2	127	0.0157	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
3.0	116	0.0086	0.65		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	69	0.2464	3.47		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
18.5	312	Total			

Subcatchment 2S: PR DA 2



Summary for Subcatchment 3S: PR DA 3

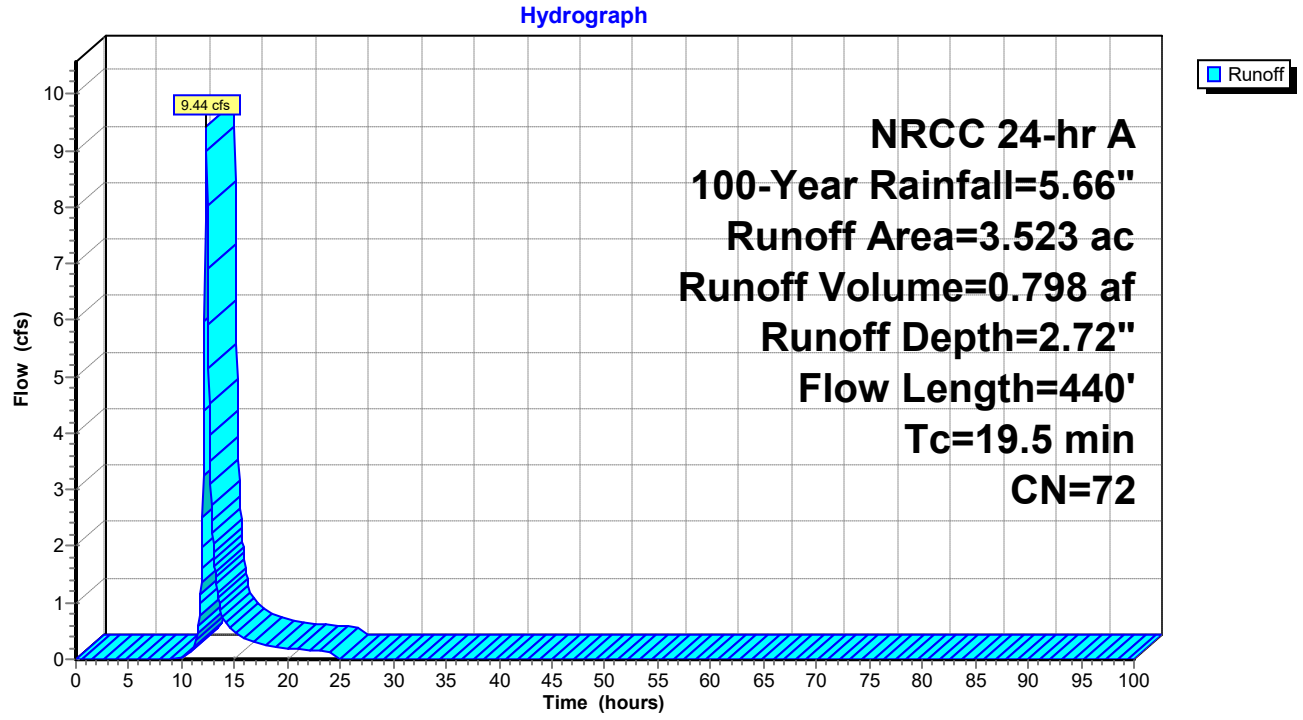
Runoff = 9.44 cfs @ 12.30 hrs, Volume= 0.798 af, Depth= 2.72"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 100-Year Rainfall=5.66"

	Area (ac)	CN	Description
*	1.900	70	C - Deciduous Forest
*	1.000	74	C - Meadowed Land
*	0.213	78	D - Meadowed Land
*	0.404	77	D - Deciduous Forest
*	0.006	85	D - Developed, Medium Intensity
	3.523	72	Weighted Average
	3.523		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.3	114	0.0175	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
1.1	116	0.0603	1.72		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.1	210	0.0095	0.68		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
19.5	440	Total			

Subcatchment 3S: PR DA 3



Summary for Subcatchment 4S: PR DA 4

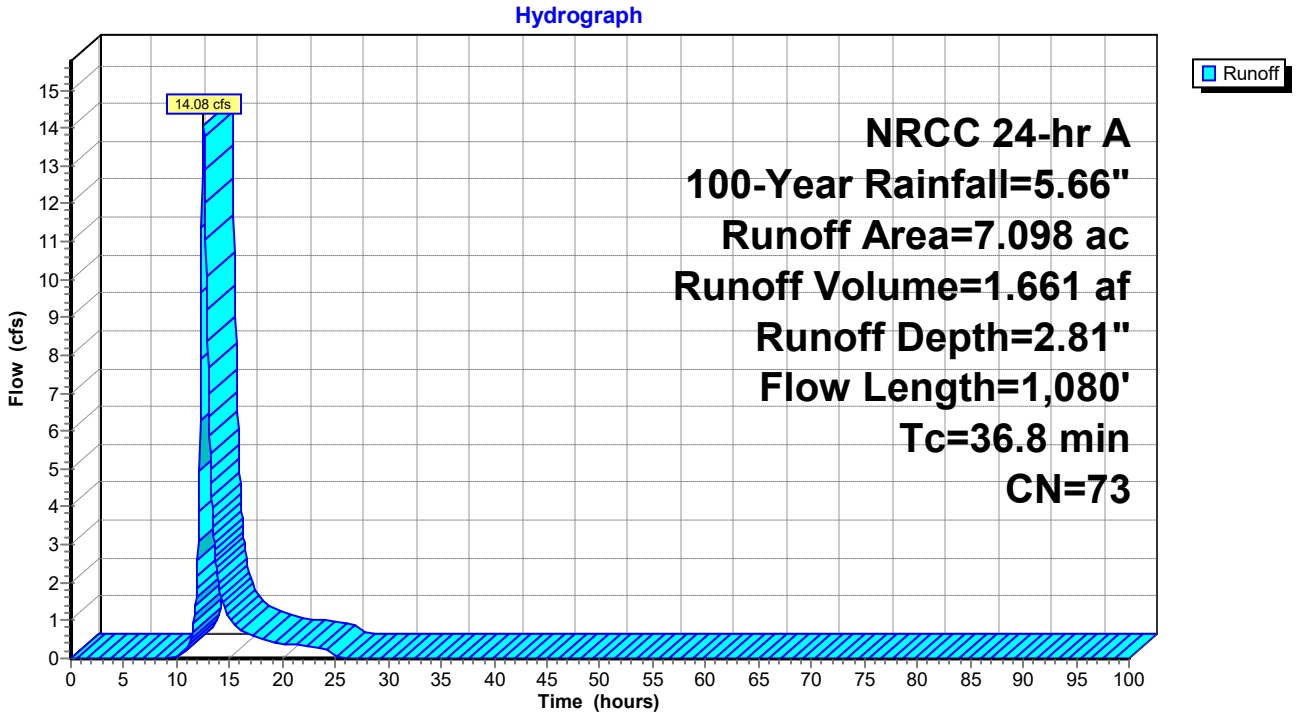
Runoff = 14.08 cfs @ 12.52 hrs, Volume= 1.661 af, Depth= 2.81"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 100-Year Rainfall=5.66"

	Area (ac)	CN	Description
*	0.200	58	B - Meadowed Land
*	5.070	74	C - Meadowed Land
*	1.828	70	C - Deciduous Forest
	7.098	73	Weighted Average
	7.098		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.6	102	0.0196	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
1.4	114	0.0351	1.31		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.5	177	0.0282	1.18		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.2	145	0.0069	0.58		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
15.3	346	0.0029	0.38		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.8	196	0.0663	1.80		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
36.8	1,080	Total			

Subcatchment 4S: PR DA 4



Summary for Subcatchment 5S: PR DA 5

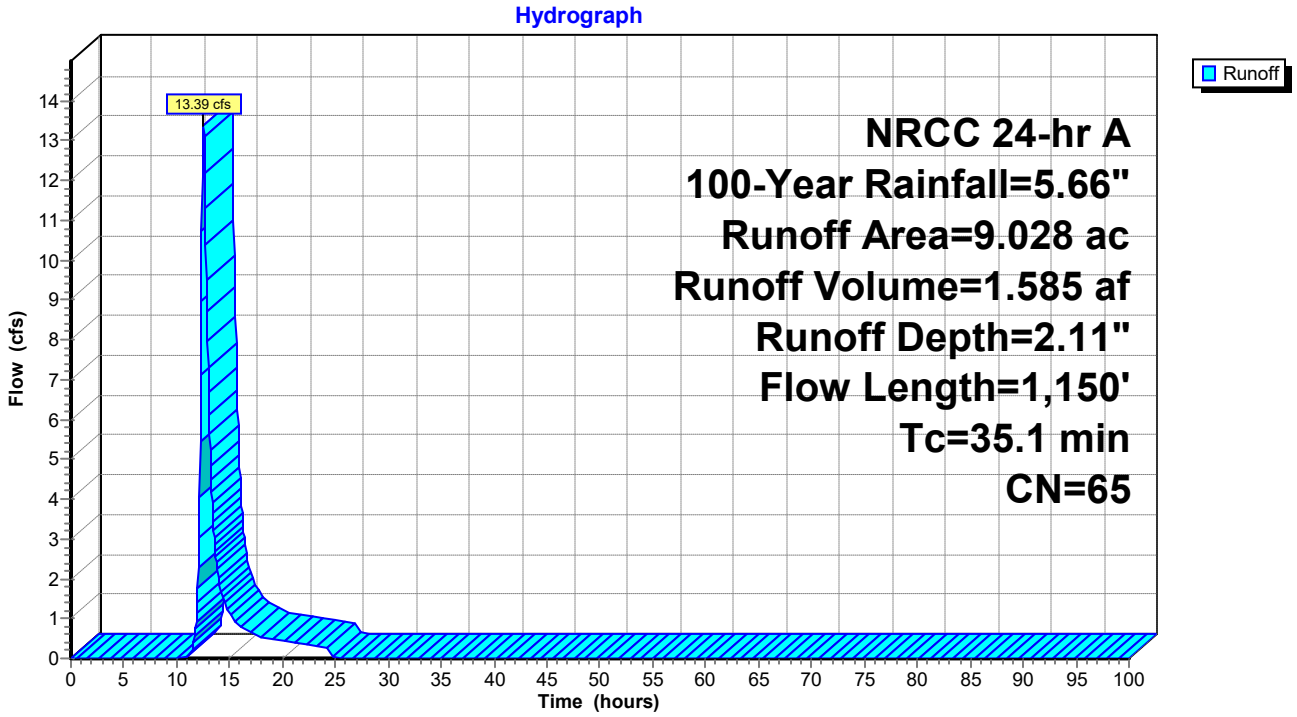
Runoff = 13.39 cfs @ 12.52 hrs, Volume= 1.585 af, Depth= 2.11"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 100-Year Rainfall=5.66"

	Area (ac)	CN	Description
*	4.900	58	B - Meadowed Land
*	2.990	74	C - Meadowed Land
*	1.138	70	C - Deciduous Forest
	9.028	65	Weighted Average
	9.028		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.6	165	0.0182	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
2.2	160	0.0312	1.24		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.0	204	0.0147	0.85		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.1	182	0.0110	0.73		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.2	154	0.0130	0.80		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.0	285	0.0281	1.17		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
35.1	1,150	Total			

Subcatchment 5S: PR DA 5



Summary for Subcatchment 6S: PR DA 6

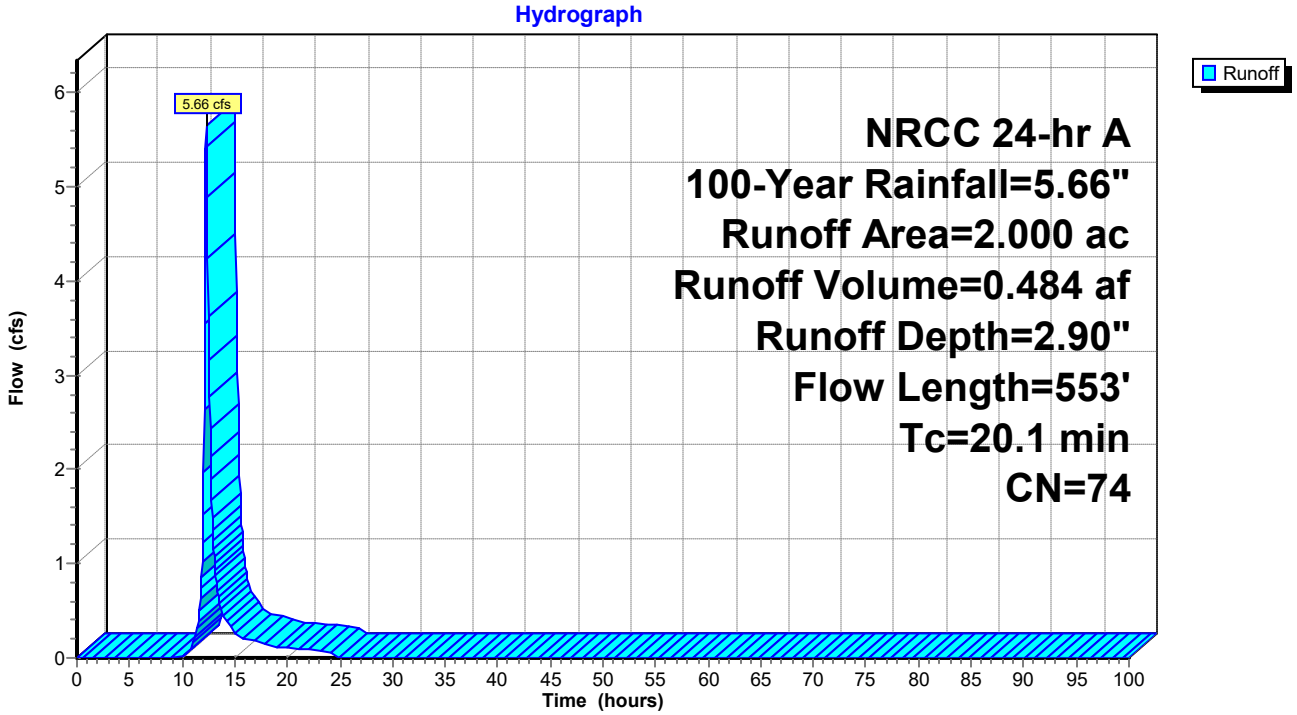
Runoff = 5.66 cfs @ 12.30 hrs, Volume= 0.484 af, Depth= 2.90"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 100-Year Rainfall=5.66"

	Area (ac)	CN	Description
*	2.000	74	C - Meadowed Land
	2.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.8	89	0.0562	0.22		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
3.4	159	0.0126	0.79		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.5	74	0.0135	0.81		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
8.4	231	0.0043	0.46		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
20.1	553	Total			

Subcatchment 6S: PR DA 6



Summary for Subcatchment 7S: PR DA 7

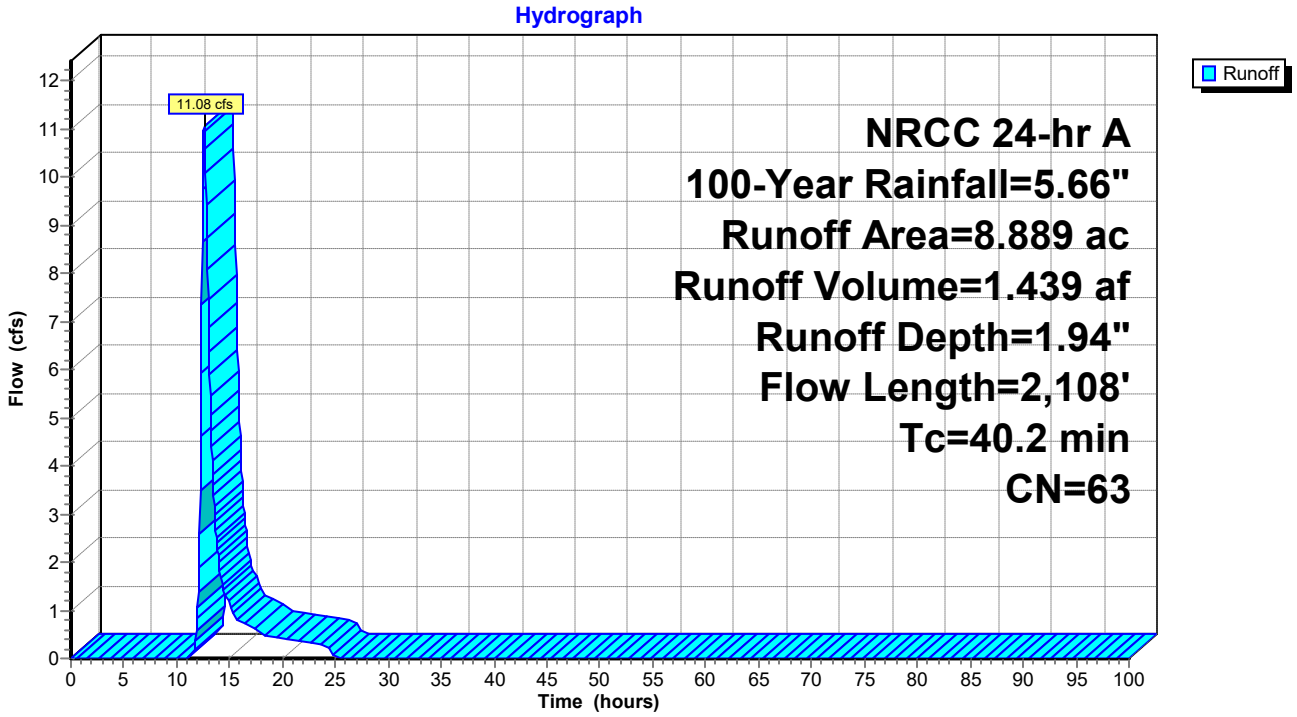
Runoff = 11.08 cfs @ 12.60 hrs, Volume= 1.439 af, Depth= 1.94"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 100-Year Rainfall=5.66"

	Area (ac)	CN	Description
*	6.330	58	B - Meadowed Land
*	0.090	70	C - Deciduous Forest
*	2.453	74	C - Meadowed Land
*	0.016	74	C - Developed, Open Space
	8.889	63	Weighted Average
	8.889		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.5	164	0.0427	0.22		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
8.4	570	0.0263	1.14		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.9	247	0.0405	1.41		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.4	126	0.0159	0.88		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.2	456	0.0307	1.23		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.8	545	0.0275	1.16		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
40.2	2,108	Total			

Subcatchment 7S: PR DA 7



Summary for Subcatchment 8S: PR DA 8

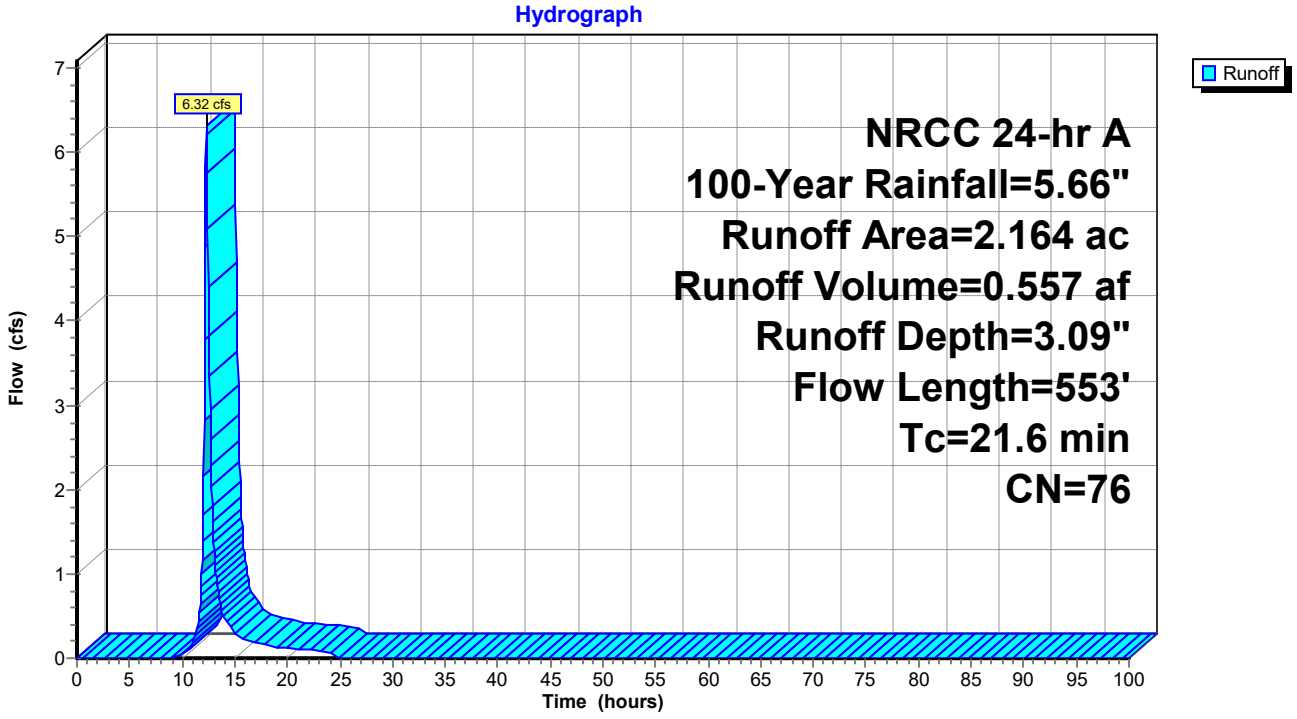
Runoff = 6.32 cfs @ 12.32 hrs, Volume= 0.557 af, Depth= 3.09"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 100-Year Rainfall=5.66"

	Area (ac)	CN	Description
*	0.310	70	C - Deciduous Forest
*	0.830	77	D - Deciduous Forest
*	1.024	78	D - Meadowed Land
	2.164	76	Weighted Average
	2.164		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.6	178	0.0337	0.20		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
5.1	239	0.0125	0.78		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.9	136	0.0294	1.20		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
21.6	553	Total			

Subcatchment 8S: PR DA 8



Summary for Subcatchment 9S: PR DA 9

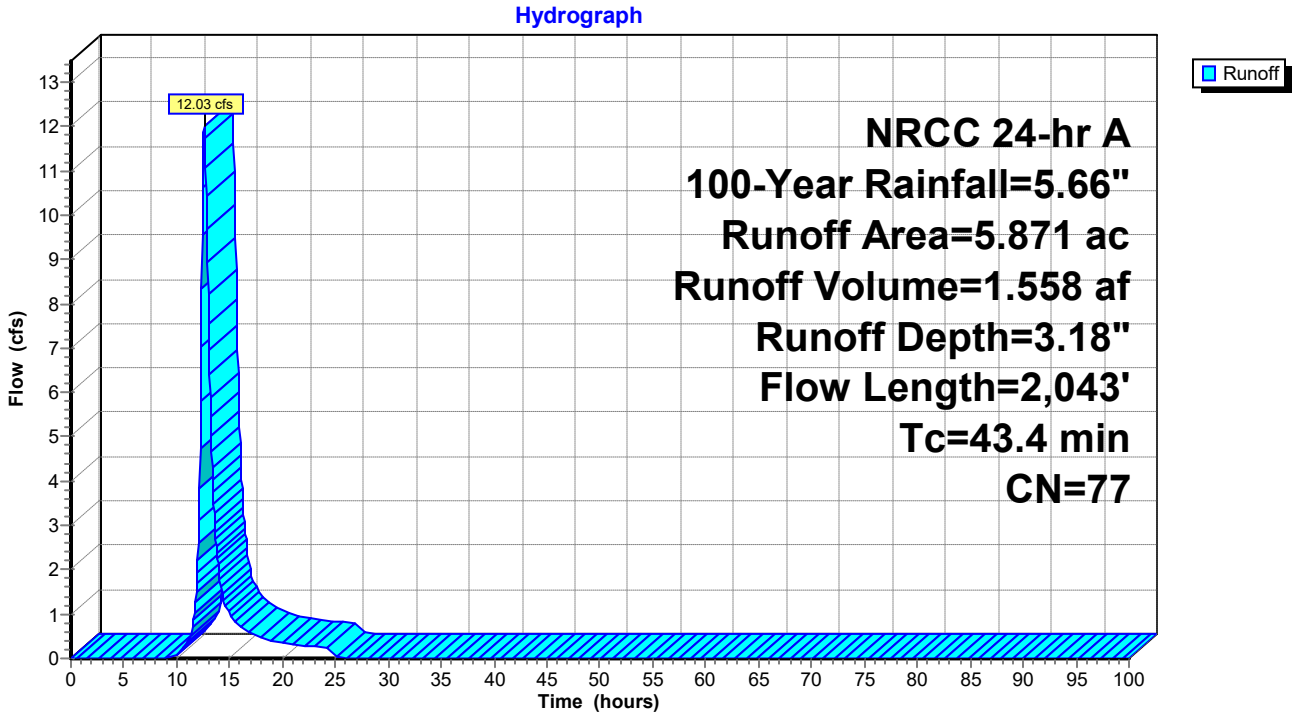
Runoff = 12.03 cfs @ 12.61 hrs, Volume= 1.558 af, Depth= 3.18"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 100-Year Rainfall=5.66"

	Area (ac)	CN	Description
*	4.539	78	B - Meadowed Land
*	1.173	74	C - Meadowed Land
*	0.159	70	C - Deciduous Forest
	5.871	77	Weighted Average
	5.871		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.8	210	0.0286	0.20		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
4.0	313	0.0351	1.31		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.0	412	0.0194	0.97		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.8	315	0.0381	1.37		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.2	366	0.0437	1.46		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.6	427	0.0234	1.07		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
43.4	2,043	Total			

Subcatchment 9S: PR DA 9



Summary for Subcatchment 10S: PR DA 10

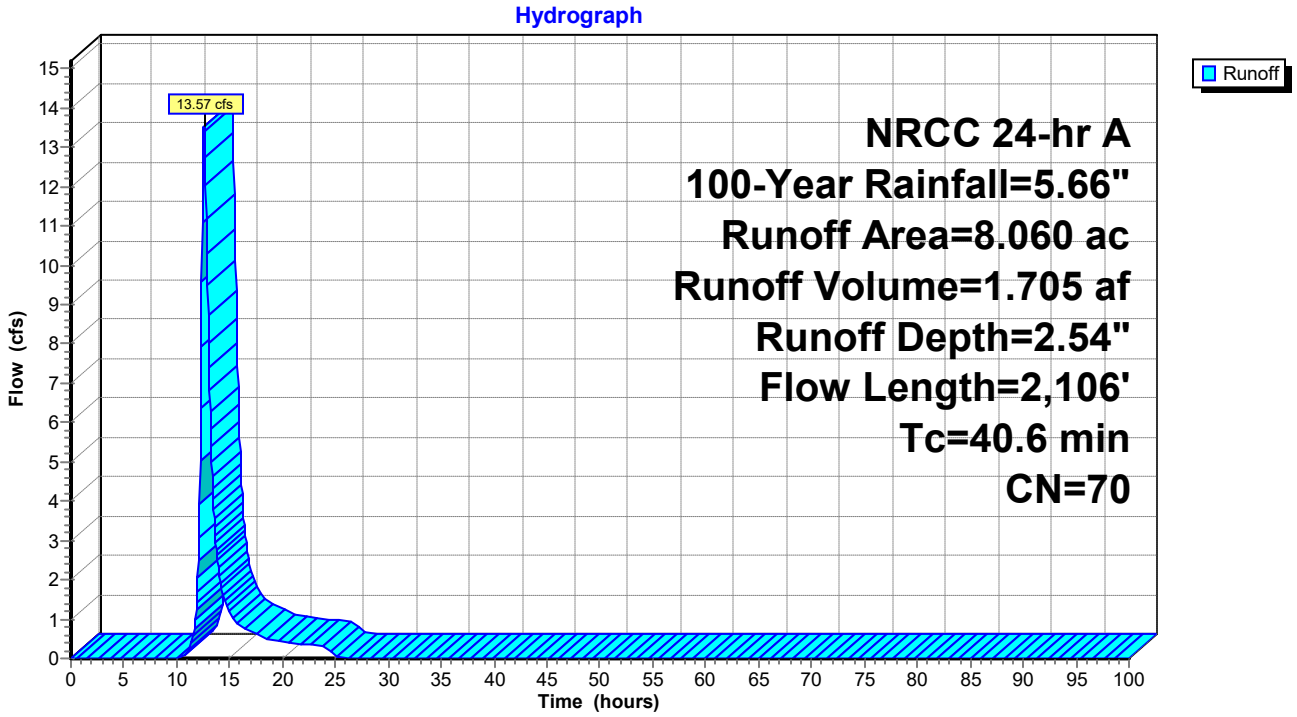
Runoff = 13.57 cfs @ 12.58 hrs, Volume= 1.705 af, Depth= 2.54"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 100-Year Rainfall=5.66"

	Area (ac)	CN	Description
*	3.900	58	B - Meadowed Land
*	4.160	82	C - Meadowed Land
	8.060	70	Weighted Average
	8.060		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.4	165	0.0303	0.19		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
9.5	590	0.0220	1.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.2	325	0.0585	1.69		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
8.0	692	0.0419	1.43		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.5	334	0.0210	1.01		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
40.6	2,106	Total			

Subcatchment 10S: PR DA 10



Summary for Subcatchment 11S: PR DA 11

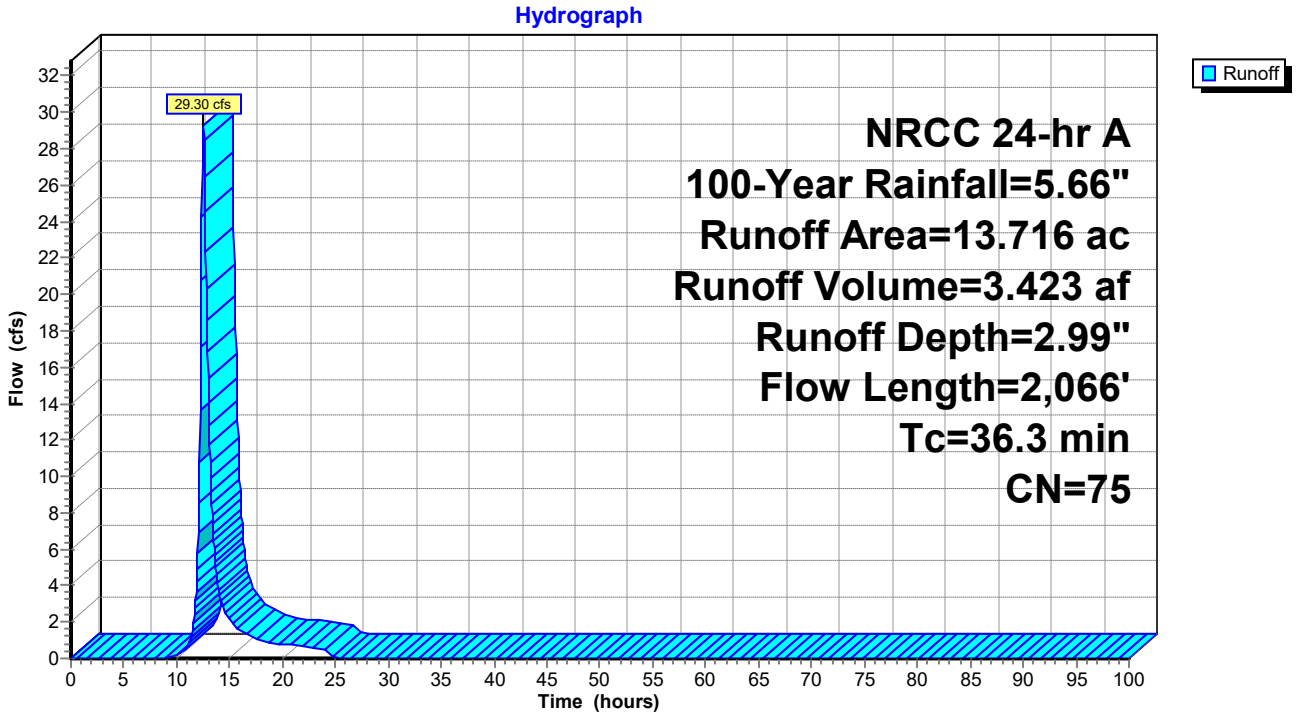
Runoff = 29.30 cfs @ 12.51 hrs, Volume= 3.423 af, Depth= 2.99"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 100-Year Rainfall=5.66"

	Area (ac)	CN	Description
*	6.370	78	B - Meadowed Land
*	7.146	73	C - Meadowed Land
*	0.200	70	C - Deciduous Forest
	13.716	75	Weighted Average
	13.716		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.4	68	0.0147	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
4.4	218	0.0138	0.82		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.0	397	0.0353	1.32		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.4	191	0.0365	1.34		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.9	386	0.0544	1.63		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.0	189	0.0529	1.61		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.0	281	0.0285	1.18		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.2	336	0.0238	1.08		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
36.3	2,066	Total			

Subcatchment 11S: PR DA 11



Summary for Subcatchment 12S: PR DA 12

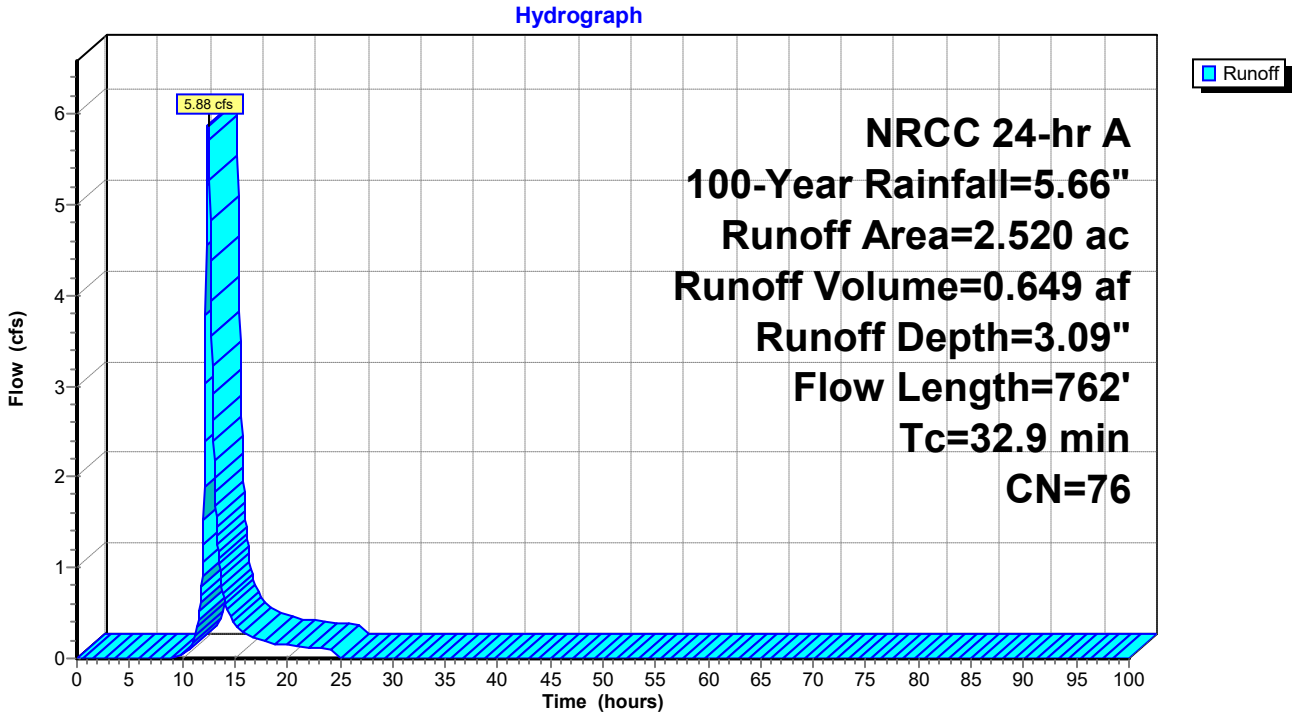
Runoff = 5.88 cfs @ 12.47 hrs, Volume= 0.649 af, Depth= 3.09"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 100-Year Rainfall=5.66"

	Area (ac)	CN	Description
*	0.520	70	C - Deciduous Forest
*	0.200	73	C - Meadowed Land
*	1.710	78	D - Meadowed Land
*	0.090	77	D - Deciduous Forest
	2.520	76	Weighted Average
	2.520		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.9	192	0.0104	0.13		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
1.1	117	0.0684	1.83		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.9	253	0.0237	1.08		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.0	200	0.0250	1.11		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
32.9	762	Total			

Subcatchment 12S: PR DA 12



Summary for Subcatchment 13S: PR DA 13

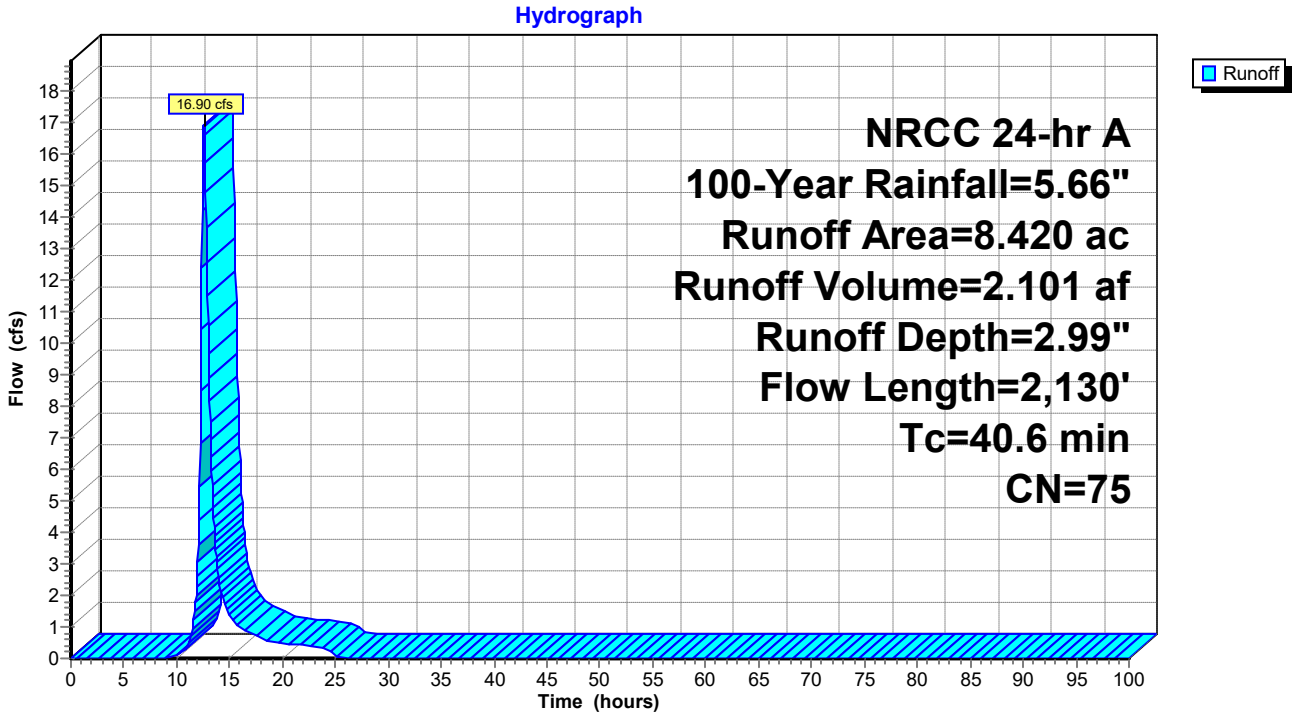
Runoff = 16.90 cfs @ 12.57 hrs, Volume= 2.101 af, Depth= 2.99"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 100-Year Rainfall=5.66"

	Area (ac)	CN	Description
*	1.802	78	B - Meadowed Land
*	4.558	74	C - Meadowed Land
*	0.561	70	C - Deciduous Forest
*	1.230	78	D - Meadowed Land
*	0.269	77	D - Deciduous Forest
	8.420	75	Weighted Average
	8.420		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.5	166	0.0361	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
4.5	276	0.0217	1.03		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.4	460	0.0217	1.03		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.2	210	0.0238	1.08		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.4	183	0.0328	1.27		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.9	370	0.0513	1.59		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.6	192	0.0312	1.24		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.1	273	0.0440	1.47		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
40.6	2,130	Total			

Subcatchment 13S: PR DA 13



Summary for Subcatchment 14S: PR DA 14

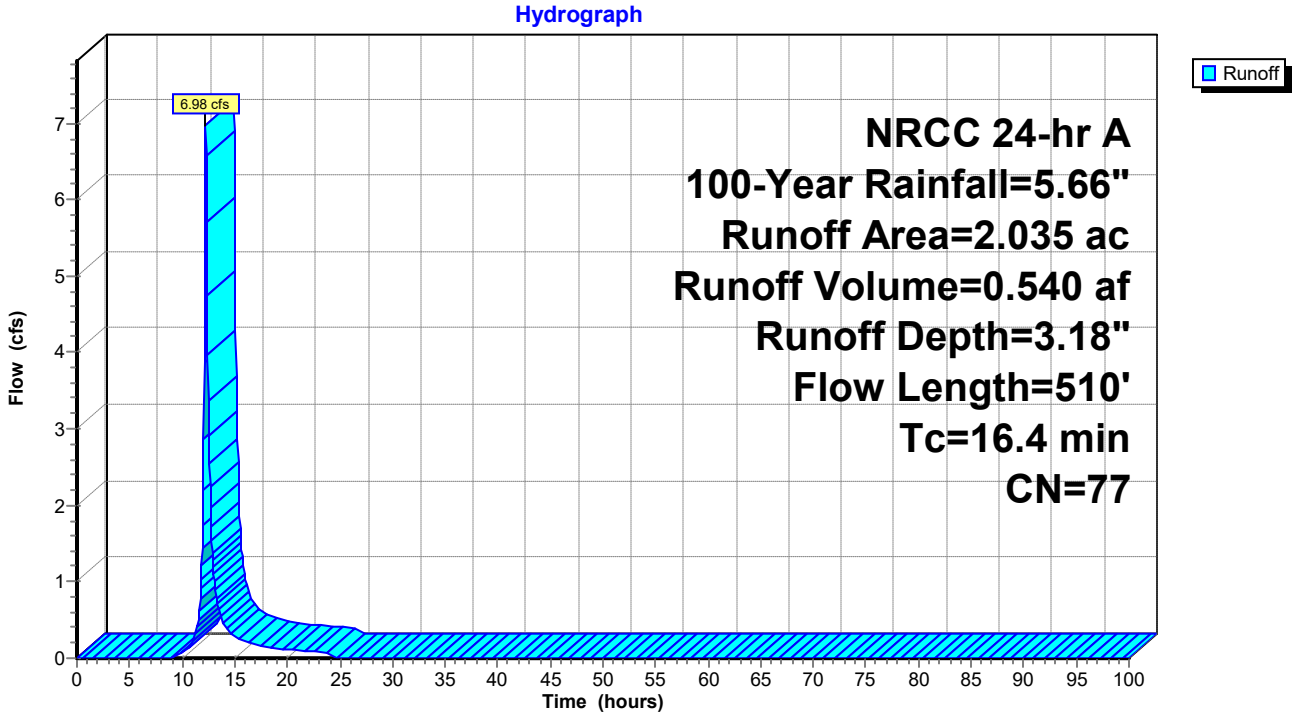
Runoff = 6.98 cfs @ 12.25 hrs, Volume= 0.540 af, Depth= 3.18"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 100-Year Rainfall=5.66"

	Area (ac)	CN	Description
*	0.091	70	C - Deciduous Forest
*	0.044	70	C - Evergreen Forest
*	0.087	77	D - Evergreen Forest
*	1.247	77	D - Deciduous Forest
*	0.566	80	D - Meadowed Land
	2.035	77	Weighted Average
	2.035		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2	174	0.0632	0.26		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
5.2	336	0.0238	1.08		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
16.4	510	Total			

Subcatchment 14S: PR DA 14



Summary for Subcatchment 15S: PR DA 15

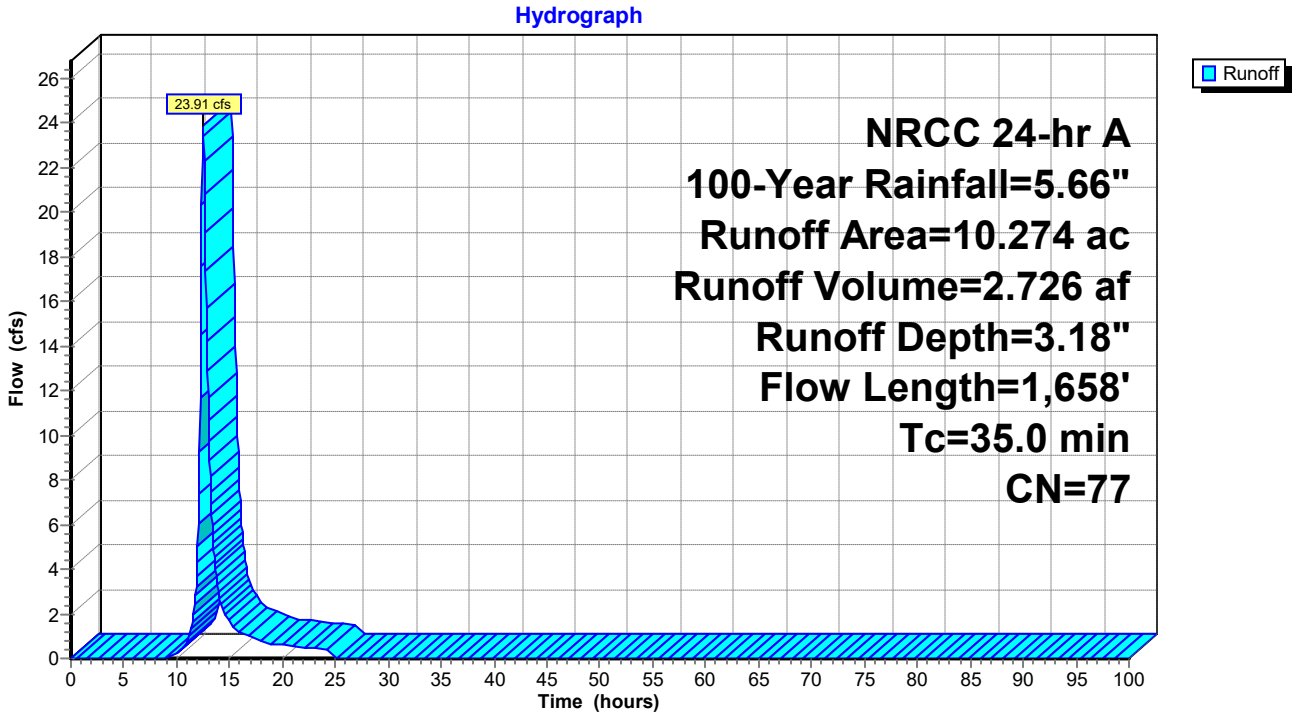
Runoff = 23.91 cfs @ 12.50 hrs, Volume= 2.726 af, Depth= 3.18"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 100-Year Rainfall=5.66"

	Area (ac)	CN	Description
*	1.568	70	C - Deciduous Forest
*	1.366	74	C - Meadowed Land
*	3.940	80	D - Meadowed Land
*	3.400	77	D - Deciduous Forest
	10.274	77	Weighted Average
	10.274		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.4	186	0.0323	0.20		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
1.7	209	0.0909	2.11		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.1	441	0.0431	1.45		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.3	423	0.0189	0.96		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.5	399	0.0301	1.21		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
35.0	1,658	Total			

Subcatchment 15S: PR DA 15



Summary for Subcatchment 16S: PR DA 16

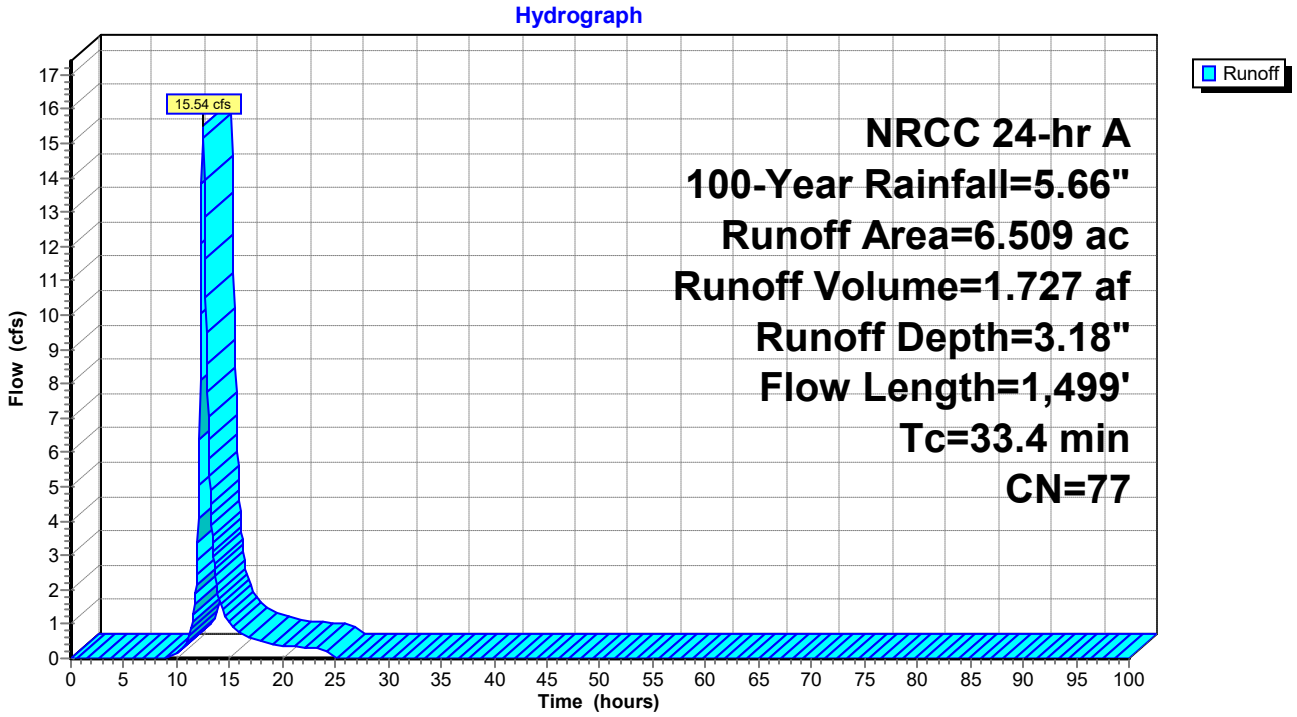
Runoff = 15.54 cfs @ 12.47 hrs, Volume= 1.727 af, Depth= 3.18"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 100-Year Rainfall=5.66"

	Area (ac)	CN	Description
*	0.552	70	C - Deciduous Forest
*	0.308	74	C - Meadowed Land
*	3.833	77	D - Deciduous Forest
*	1.816	80	D - Meadowed Land
	6.509	77	Weighted Average
	6.509		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.1	222	0.0270	0.19		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
2.9	311	0.0643	1.78		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.2	191	0.0419	1.43		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.8	331	0.0423	1.44		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.4	444	0.0383	1.37		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
33.4	1,499	Total			

Subcatchment 16S: PR DA 16



Summary for Subcatchment 17S: PR DA 17

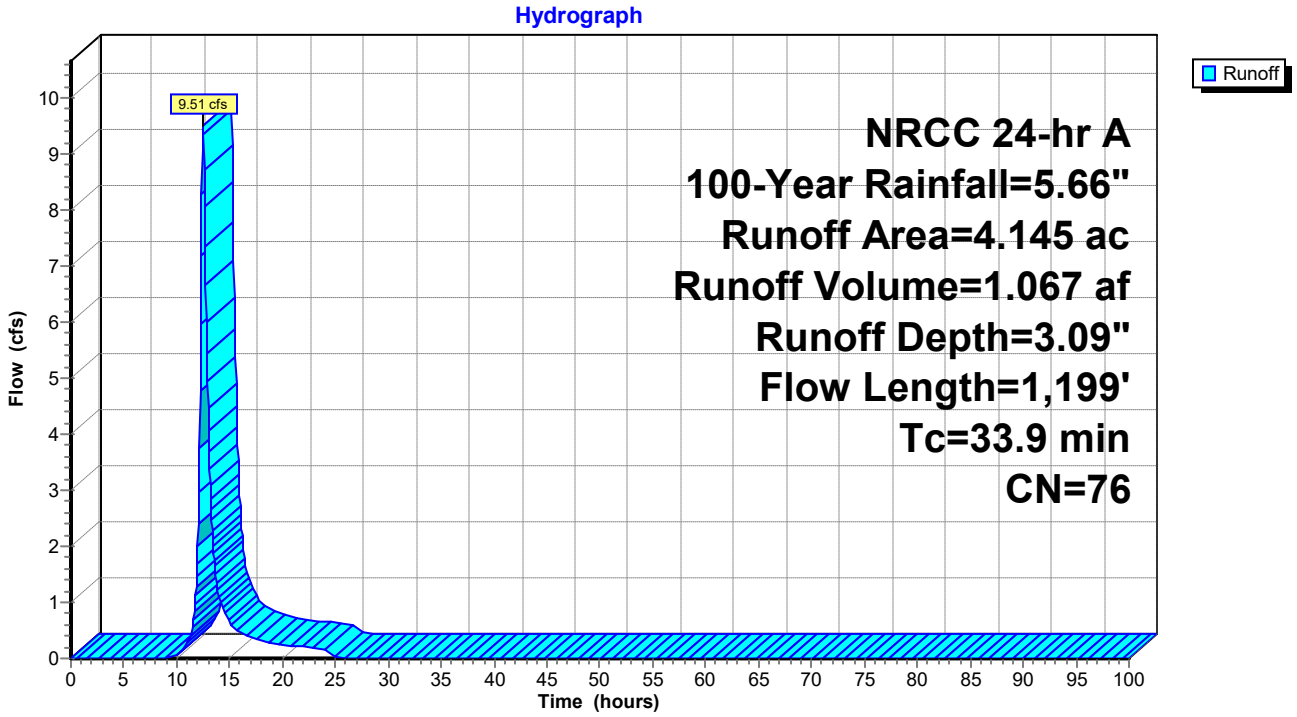
Runoff = 9.51 cfs @ 12.48 hrs, Volume= 1.067 af, Depth= 3.09"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 100-Year Rainfall=5.66"

	Area (ac)	CN	Description
*	0.198	78	B - Meadowed Land
*	2.871	74	C - Meadowed Land
*	1.001	80	D - Meadowed Land
*	0.075	77	D - Deciduous Forest
	4.145	76	Weighted Average
	4.145		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.6	137	0.0292	0.18		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
2.7	232	0.0431	1.45		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.2	266	0.0150	0.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
9.4	360	0.0083	0.64		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.0	204	0.0147	0.85		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
33.9	1,199	Total			

Subcatchment 17S: PR DA 17



Summary for Subcatchment 18S: PR DA 18

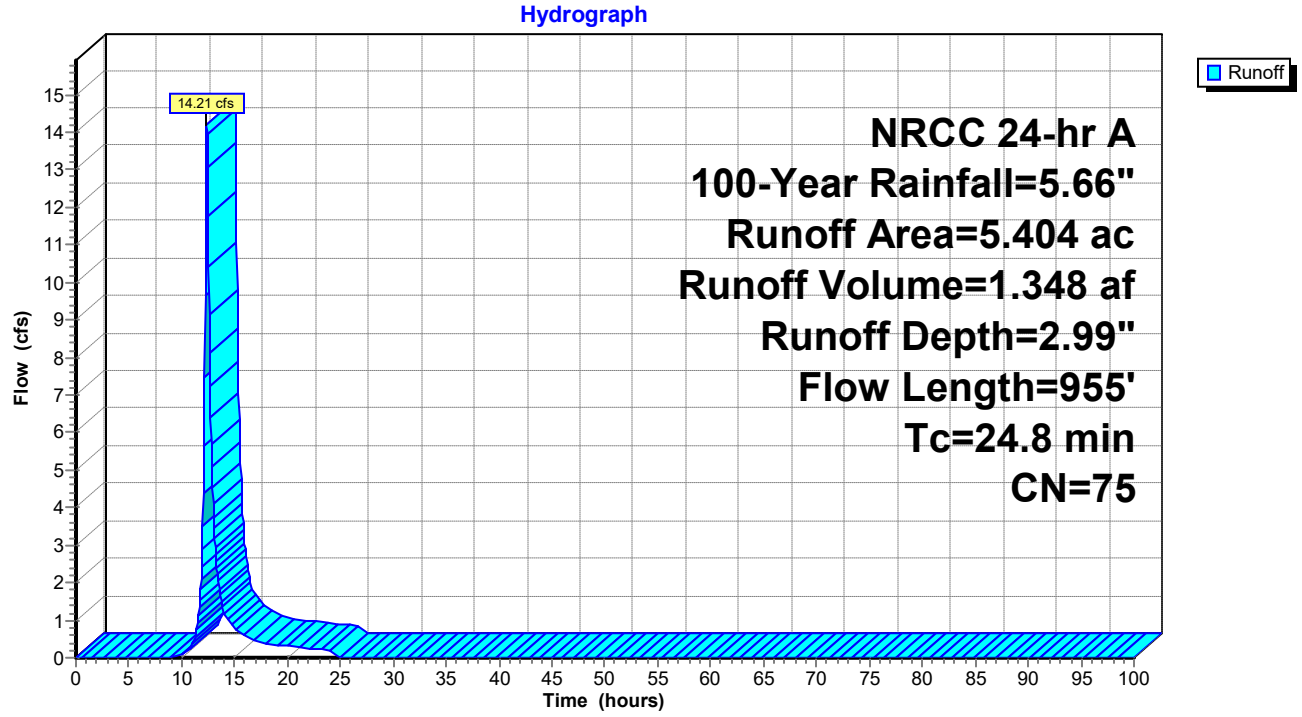
Runoff = 14.21 cfs @ 12.36 hrs, Volume= 1.348 af, Depth= 2.99"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 100-Year Rainfall=5.66"

	Area (ac)	CN	Description
*	0.672	78	B - Meadowed Land
*	4.382	74	C - Meadowed Land
*	0.260	80	D - Meadowed Land
*	0.090	77	D - Deciduous Forest
	5.404	75	Weighted Average
	5.404		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	108	0.0278	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
5.1	379	0.0317	1.25		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
9.1	468	0.0150	0.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
24.8	955	Total			

Subcatchment 18S: PR DA 18



Summary for Subcatchment 19S: PR DA 19

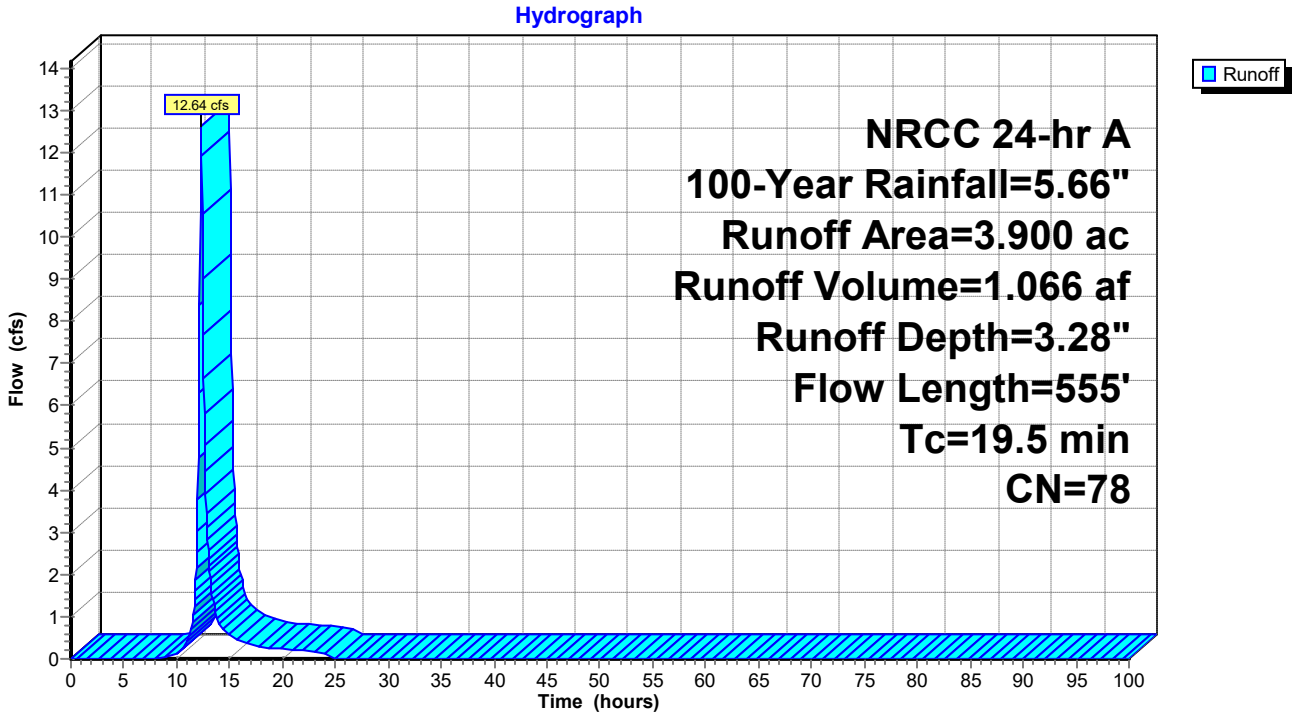
Runoff = 12.64 cfs @ 12.29 hrs, Volume= 1.066 af, Depth= 3.28"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 100-Year Rainfall=5.66"

	Area (ac)	CN	Description
*	3.180	77	D - Deciduous Forest
*	0.720	80	D - Meadowed Land
	3.900	78	Weighted Average
	3.900		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.8	200	0.0300	0.20		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
2.7	355	0.1014	2.23		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
19.5	555	Total			

Subcatchment 19S: PR DA 19



Summary for Subcatchment 20S: PR DA 20

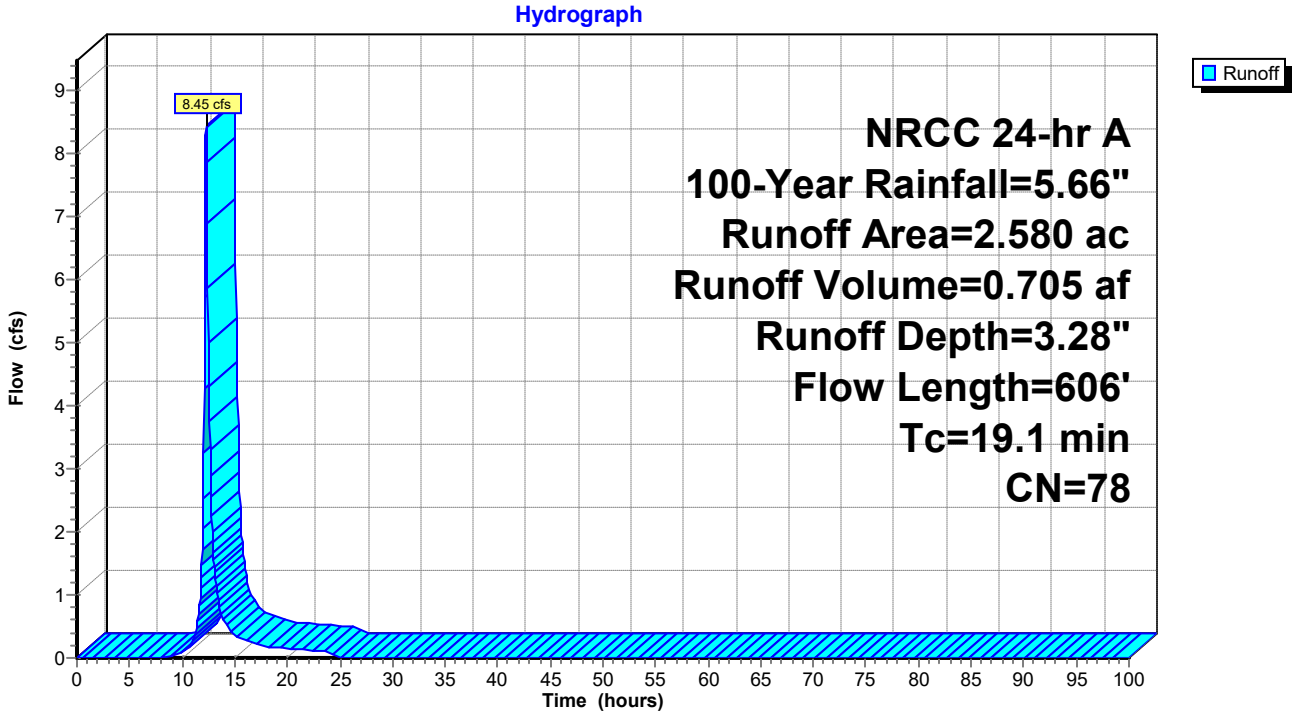
Runoff = 8.45 cfs @ 12.28 hrs, Volume= 0.705 af, Depth= 3.28"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 100-Year Rainfall=5.66"

	Area (ac)	CN	Description
*	1.690	77	D - Deciduous Forest
*	0.890	80	D - Meadowed Land
	2.580	78	Weighted Average
	2.580		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.8	150	0.0333	0.20		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
1.9	181	0.0497	1.56		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.4	275	0.0218	1.03		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
19.1	606	Total			

Subcatchment 20S: PR DA 20



Summary for Subcatchment 21S: PR DA 21

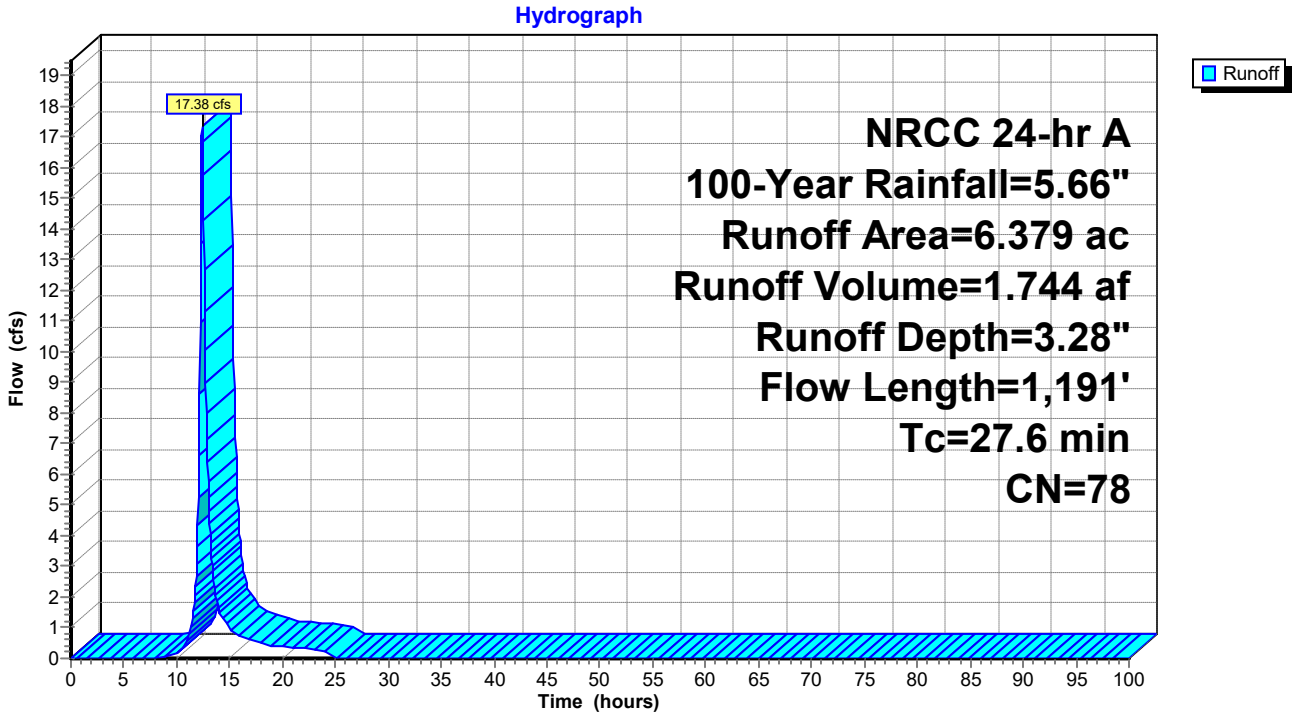
Runoff = 17.38 cfs @ 12.39 hrs, Volume= 1.744 af, Depth= 3.28"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 100-Year Rainfall=5.66"

	Area (ac)	CN	Description
*	0.410	78	B - Meadowed Land
*	1.270	70	C - Deciduous Forest
*	3.180	82	C - Meadowed Land
*	1.250	77	D - Deciduous Forest
*	0.269	80	D - Meadowed Land
	6.379	78	Weighted Average
	6.379		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	100	0.0300	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
5.0	354	0.0282	1.18		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
8.2	437	0.0160	0.89		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.7	300	0.0233	1.07		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
27.6	1,191	Total			

Subcatchment 21S: PR DA 21



Summary for Subcatchment 22S: PR DA 22

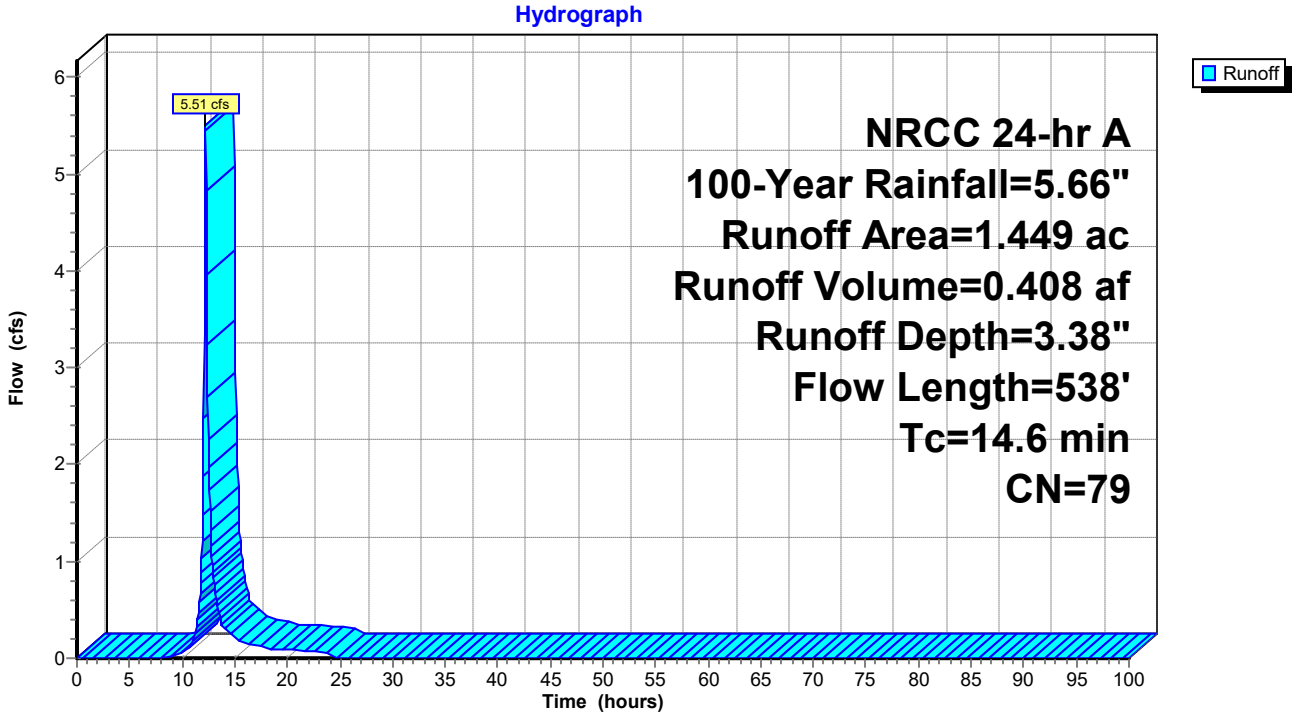
Runoff = 5.51 cfs @ 12.23 hrs, Volume= 0.408 af, Depth= 3.38"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 100-Year Rainfall=5.66"

	Area (ac)	CN	Description
*	0.660	77	D - Deciduous Forest
*	0.380	84	D - Shrub/Scrub
*	0.409	78	D - Meadowed Land
	1.449	79	Weighted Average
	1.449		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	125	0.0480	0.22		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
2.9	228	0.0351	1.31		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.1	185	0.0432	1.45		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
14.6	538	Total			

Subcatchment 22S: PR DA 22



Summary for Subcatchment 23S: PR DA 23

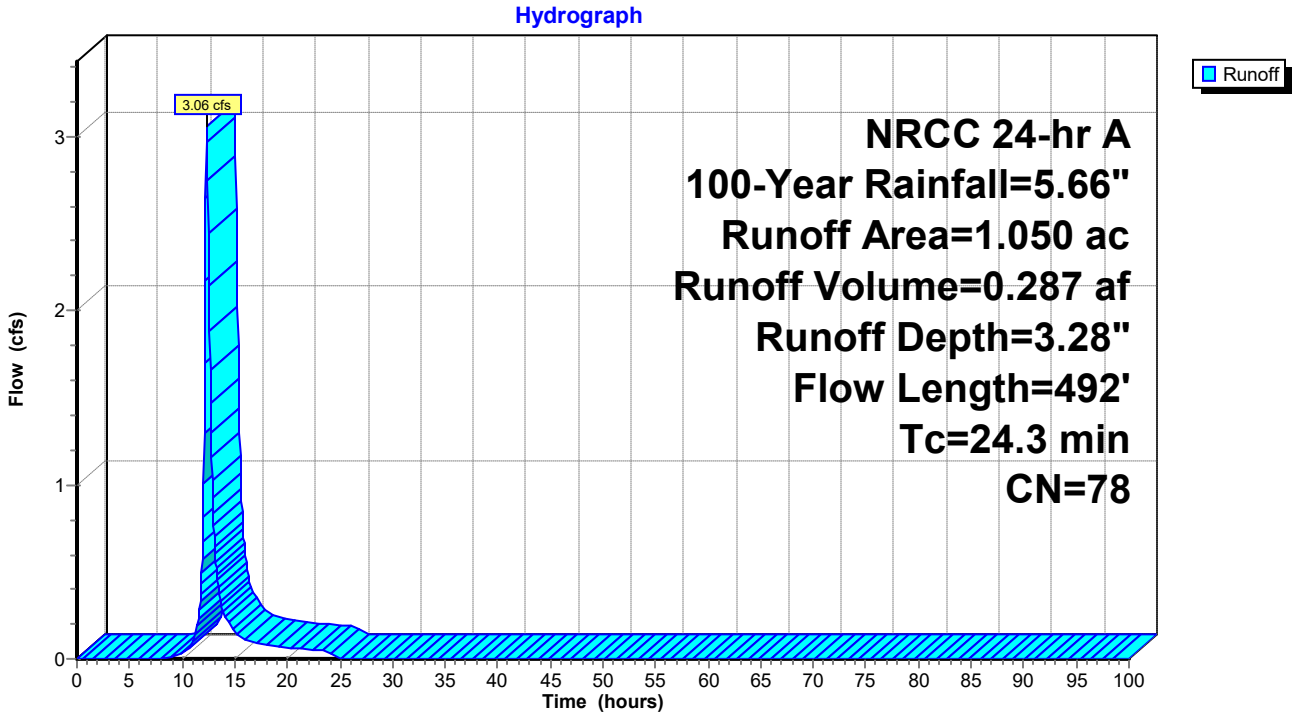
Runoff = 3.06 cfs @ 12.35 hrs, Volume= 0.287 af, Depth= 3.28"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 100-Year Rainfall=5.66"

	Area (ac)	CN	Description
*	0.630	77	D - Deciduous Forest
*	0.420	80	D - Meadowed Land
	1.050	78	Weighted Average
	1.050		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.4	205	0.0195	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
3.9	287	0.0314	1.24		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
24.3	492	Total			

Subcatchment 23S: PR DA 23



Summary for Subcatchment 24S: PR DA 24

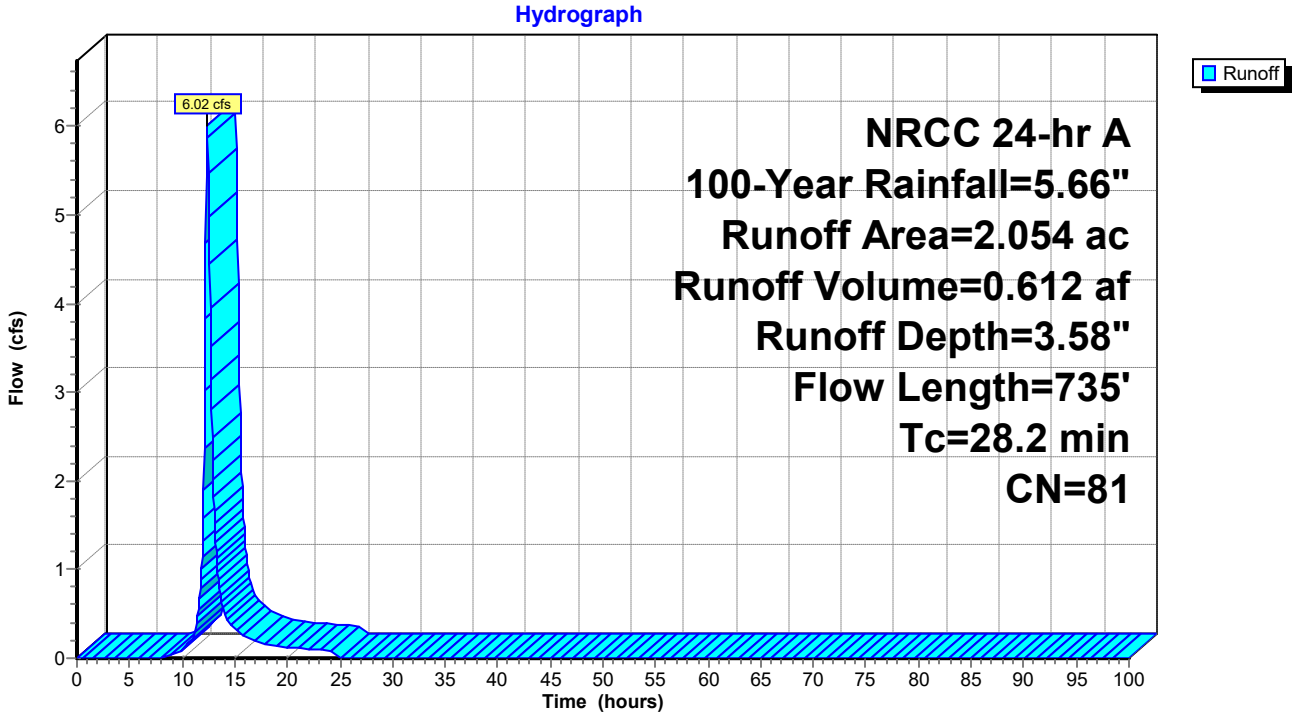
Runoff = 6.02 cfs @ 12.40 hrs, Volume= 0.612 af, Depth= 3.58"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 100-Year Rainfall=5.66"

	Area (ac)	CN	Description
*	1.360	82	C - Meadowed Land
*	0.630	80	D - Meadowed Land
*	0.064	77	D - Deciduous Forest
	2.054	81	Weighted Average
	2.054		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.1	183	0.0328	0.20		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
6.6	197	0.0051	0.50		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.5	355	0.0169	0.91		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
28.2	735	Total			

Subcatchment 24S: PR DA 24



Summary for Subcatchment 25S: PR DA 25

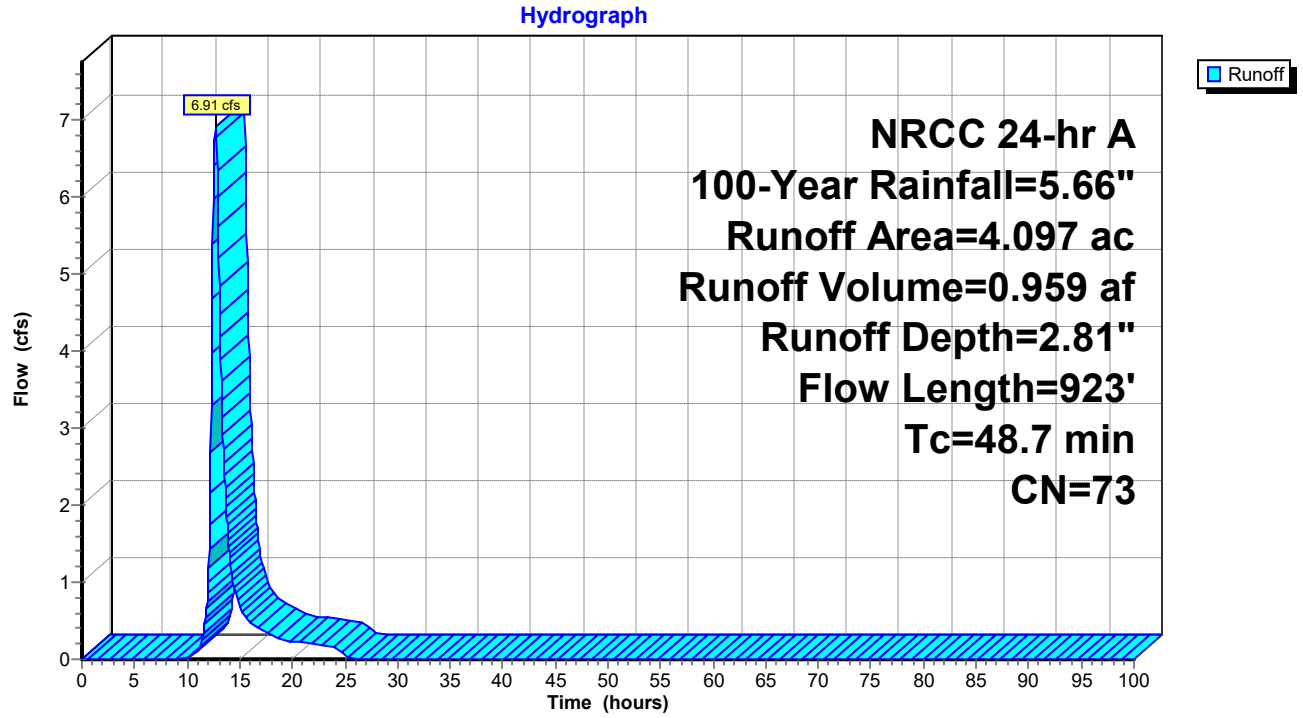
Runoff = 6.91 cfs @ 12.69 hrs, Volume= 0.959 af, Depth= 2.81"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 100-Year Rainfall=5.66"

	Area (ac)	CN	Description
*	0.330	61	B - Meadowed Land
*	3.290	74	C - Meadowed Land
*	0.227	74	C - Developed, Open Space
*	0.204	80	D - Meadowed Land
*	0.046	77	D - Deciduous Forest
	4.097	73	Weighted Average
	4.097		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.7	167	0.0419	0.22		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
2.2	170	0.0353	1.32		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
33.8	586	0.0017	0.29		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
48.7	923	Total			

Subcatchment 25S: PR DA 25



Summary for Subcatchment 26S: PR DA 26

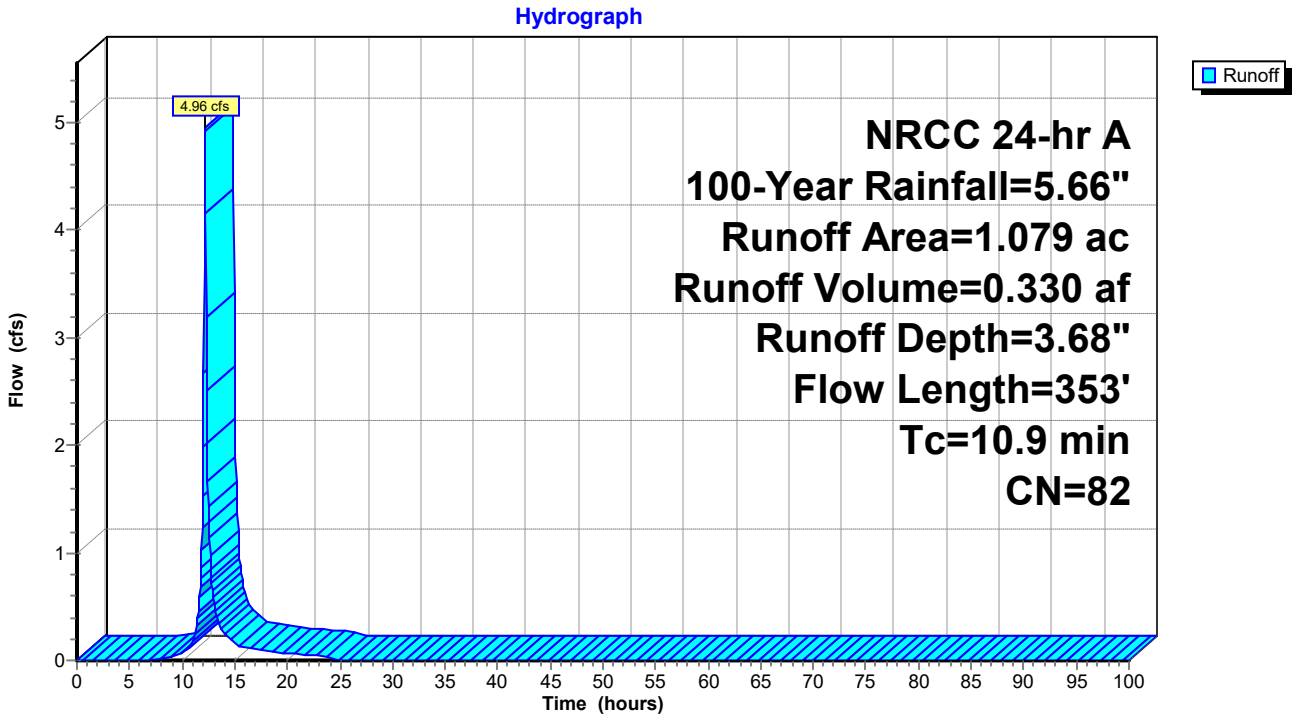
Runoff = 4.96 cfs @ 12.19 hrs, Volume= 0.330 af, Depth= 3.68"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 100-Year Rainfall=5.66"

	Area (ac)	CN	Description
*	0.200	77	D - Deciduous Forest
*	0.050	77	D - Deciduous Forest
*	0.829	84	D - Shrub/Scrub
	1.079	82	Weighted Average
	1.079		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	93	0.0323	0.18		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
2.1	260	0.0846	2.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
10.9	353	Total			

Subcatchment 26S: PR DA 26



Summary for Subcatchment 27S: PR DA 27

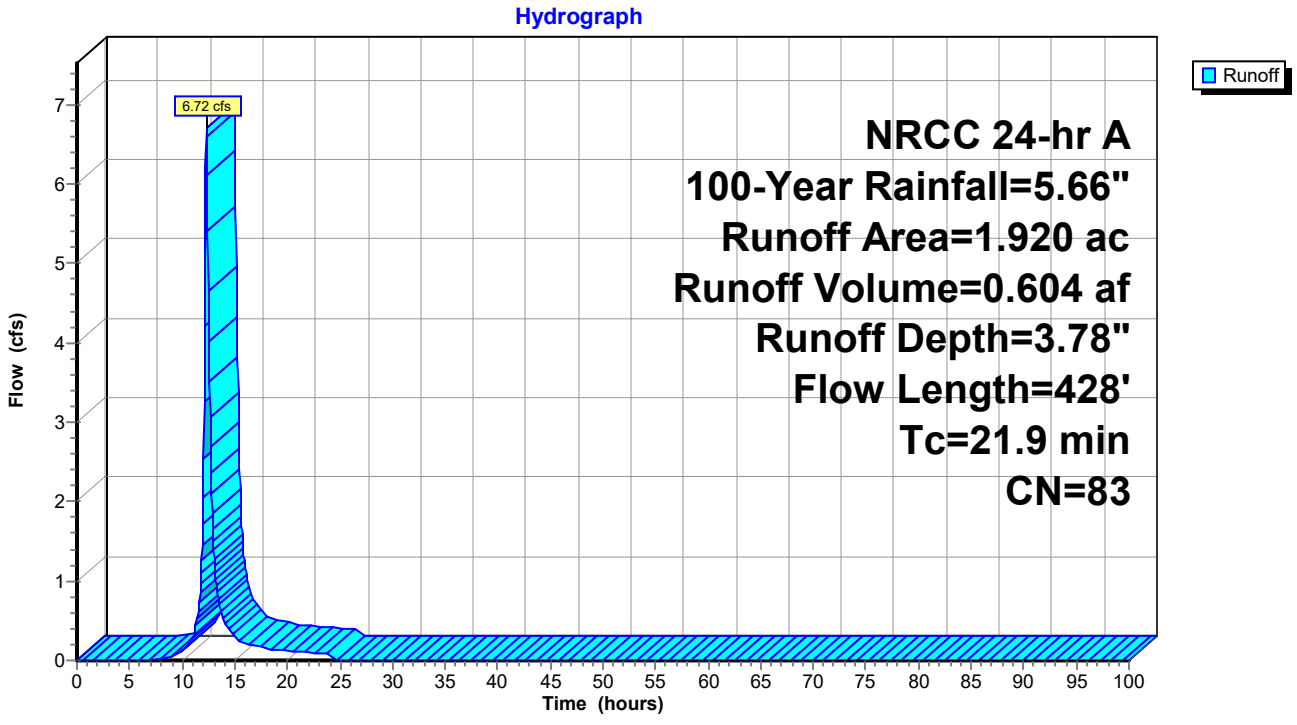
Runoff = 6.72 cfs @ 12.32 hrs, Volume= 0.604 af, Depth= 3.78"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 100-Year Rainfall=5.66"

	Area (ac)	CN	Description
*	0.260	77	D - Deciduous Forest
*	1.650	84	D - Shrub/Scrub
*	0.010	80	D - Meadowed Land
	1.920	83	Weighted Average
	1.920		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.0	208	0.0240	0.18		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
2.9	220	0.0318	1.25		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
21.9	428	Total			

Subcatchment 27S: PR DA 27



Summary for Subcatchment 28S: PR DA 28

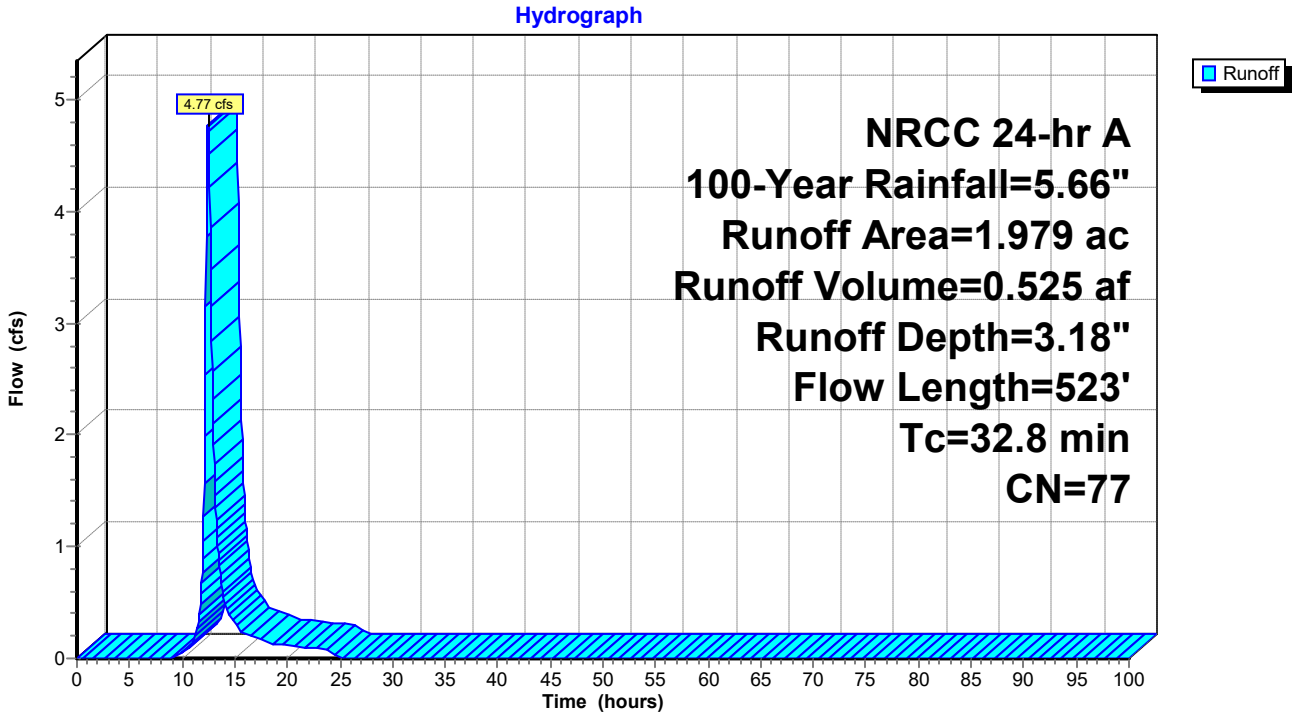
Runoff = 4.77 cfs @ 12.46 hrs, Volume= 0.525 af, Depth= 3.18"
Routed to nonexistent node 12L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 100-Year Rainfall=5.66"

	Area (ac)	CN	Description
*	0.120	39	A - Developed. Open Space
*	0.010	82	D - Developed, Low Intensity
*	0.890	77	D - Deciduous Forest
*	0.560	84	D - Shrub/Scrub
*	0.048	80	D - Developed, Open Space
*	0.351	80	D - Meadowed Land
	1.979	77	Weighted Average
	1.979		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.1	206	0.0097	0.13		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
5.2	213	0.0094	0.68		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	104	0.2115	3.22		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
32.8	523	Total			

Subcatchment 28S: PR DA 28



Summary for Subcatchment 31S: Porous Road

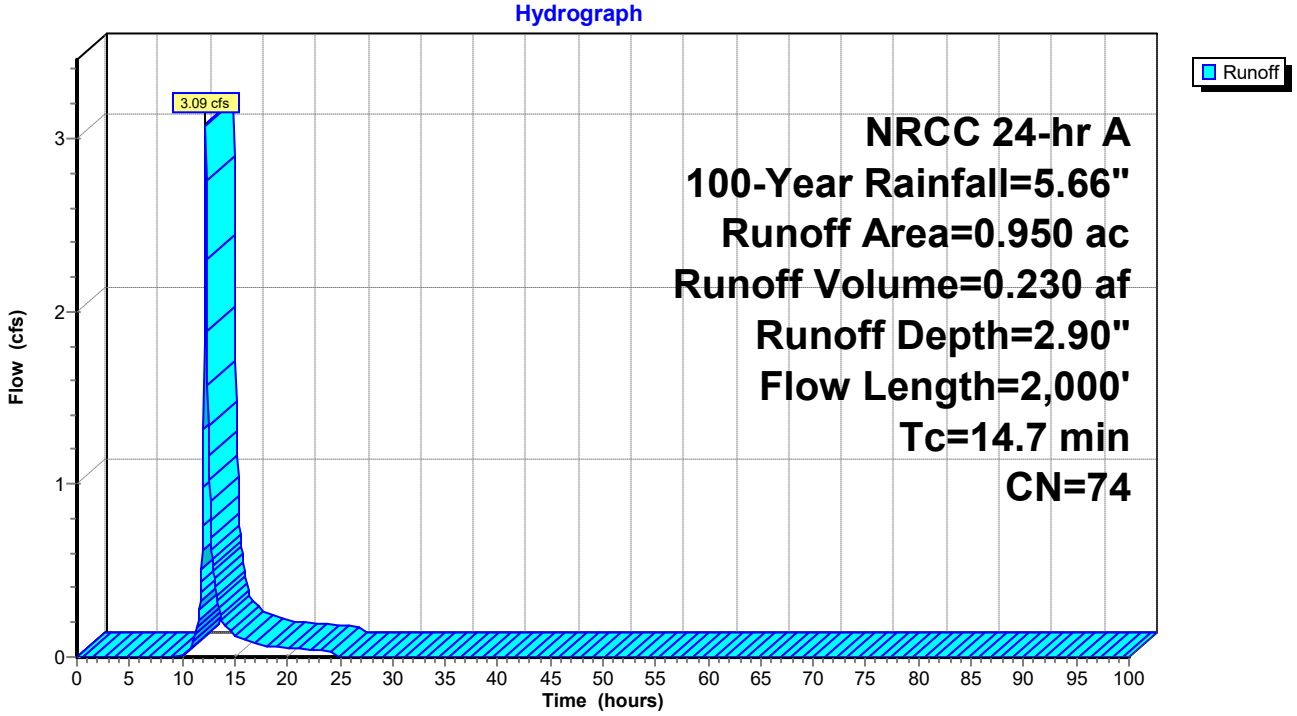
Runoff = 3.09 cfs @ 12.24 hrs, Volume= 0.230 af, Depth= 2.90"
Routed to Pond 29P : POROUS PAVEMENT

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 100-Year Rainfall=5.66"

	Area (ac)	CN	Description
*	0.950	74	C - Pervious Road
	0.950		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.3	300	0.0500	2.13		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.38"
12.4	1,700	0.0200	2.28		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
14.7	2,000	Total			

Subcatchment 31S: Porous Road



Summary for Pond 29P: POROUS PAVEMENT

Inflow Area = 0.950 ac, 0.00% Impervious, Inflow Depth = 2.90" for 100-Year event
Inflow = 3.09 cfs @ 12.24 hrs, Volume= 0.230 af
Outflow = 0.48 cfs @ 11.95 hrs, Volume= 0.230 af, Atten= 85%, Lag= 0.0 min
Discarded = 0.48 cfs @ 11.95 hrs, Volume= 0.230 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
Peak Elev= 840.23' @ 12.98 hrs Surf.Area= 0.950 ac Storage= 0.088 af

Plug-Flow detention time= 64.5 min calculated for 0.230 af (100% of inflow)
Center-of-Mass det. time= 64.5 min (892.6 - 828.1)

Volume	Invert	Avail.Storage	Storage Description
#1	840.00'	0.570 af	**Porous Pavement (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Voids (%)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
840.00	0.950	0.0	0.000	0.000
840.75	0.950	40.0	0.285	0.285
841.50	0.950	40.0	0.285	0.570

Device	Routing	Invert	Outlet Devices
#1	Discarded	840.00'	**0.500 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.48 cfs @ 11.95 hrs HW=840.02' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.48 cfs)

Pond 29P: POROUS PAVEMENT

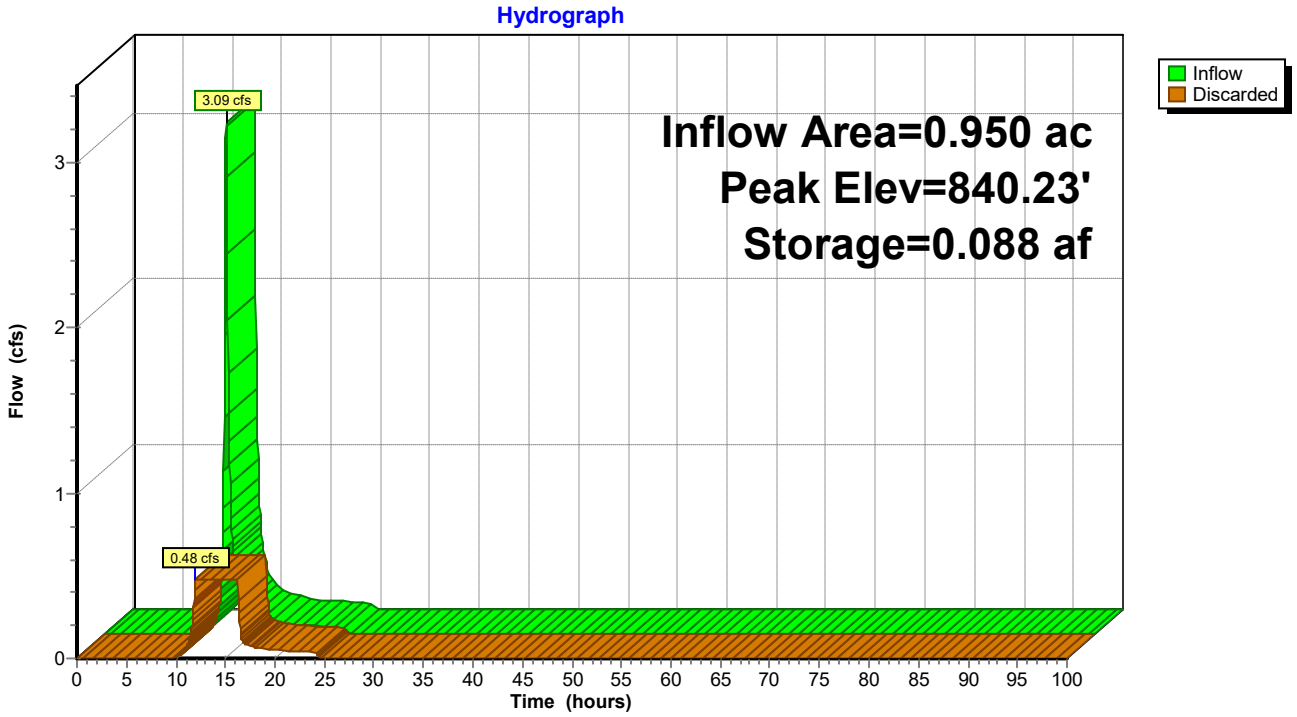


Exhibit 9: Erosion and Sediment Control Details

STANDARD AND SPECIFICATIONS FOR STABILIZED CONSTRUCTION ACCESS



Definition & Scope

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 stabilized construction access is to reduce or eliminate the tracking of sediment onto public rights-of-way or streets.

Conditions Where Practice Applies

A stabilized construction access shall be used at all points of construction ingress and egress.

Design Criteria

See Figure 2.1 on page 2.31 for details.

Aggregate Size: Use a matrix of 1-4 inch stone, or reclaimed or recycled concrete equivalent.

Thickness: Not less than six (6) inches.

Width: 12-foot minimum but not less than the full width of points where ingress or egress occurs. 24-foot minimum if there is only one access to the site.

Length: As required, but not less than 50 feet (except on a single residence lot where a 30 foot minimum would apply).

Geotextile: To be placed over the entire area to be covered with aggregate. Filter cloth will not be required on a single-family residence lot. Piping of surface water under entrance shall be provided as required. If piping is impossible, a mountable berm with 5:1 slopes will be permitted.

Criteria for Geotextile: The geotextile shall be woven or nonwoven fabric consisting only of continuous chain polymeric filaments or yarns of polyester. The fabric shall be inert to commonly encountered chemicals, hydro-carbons, mildew, rot resistant, and conform to the fabric properties as shown:

Fabric Properties[3]	Light Duty[1] Roads Grade Subgrade	Heavy Duty[2] Haul Roads Rough Graded	Test Method
Grab Tensile Strength (lbs)	200	220	ASTM D1682
Elongation at Failure (%)	50	60	ASTM D1682
Mullen Burst Strength (lbs)	190	430	ASTM D3786
Puncture Strength (lbs)	40	125	ASTM D751 Modified
Equivalent	40-80	40-80	US Std Sieve
Opening Size			CW-02215
Aggregate Depth	6	10	-

[1]Light Duty Road: Area sites that have been graded to subgrade and where most travel would be single axle vehicles and an occasional multi-axle truck. Acceptable materials are Trevira Spunbond 1115, Mirafi 100X, Typar 3401, or equivalent.

[2]Heavy Duty Road: Area sites with only rough grading, and where most travel would be multi-axle vehicles. Acceptable materials are Trevira Spunbond 1135, Mirafi 600X, or equivalent.

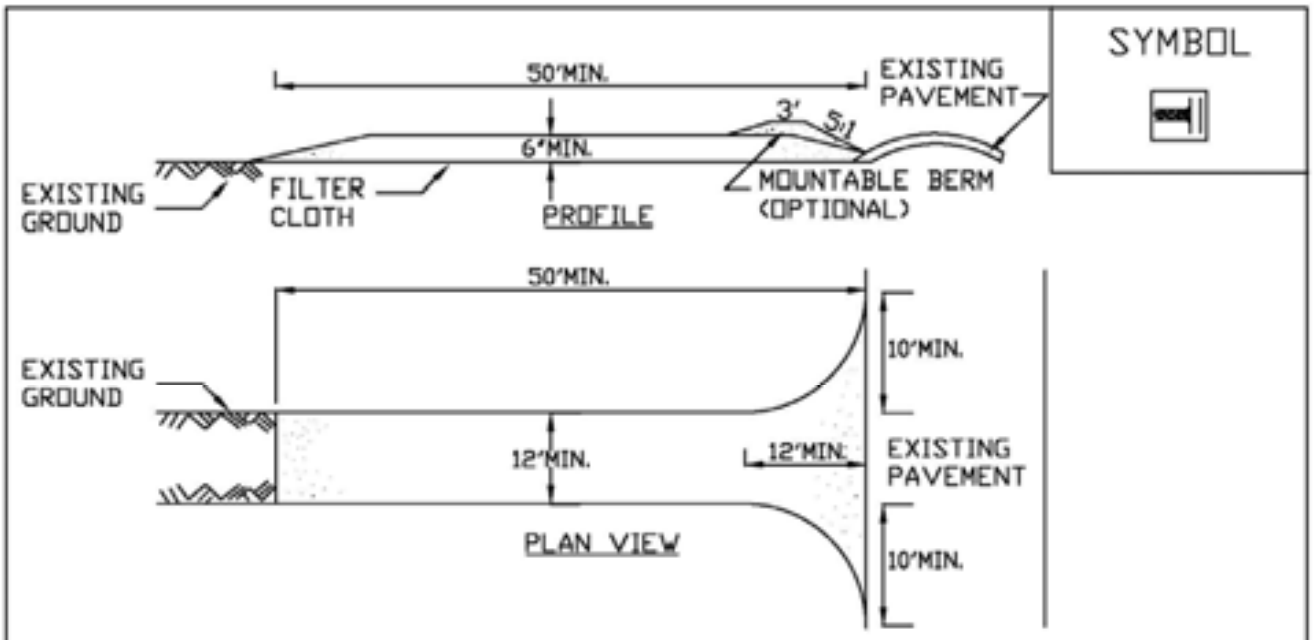
[3]Fabrics not meeting these specifications may be used only when design procedure and supporting documentation are supplied to determine aggregate depth and fabric strength.

Maintenance

The access shall be maintained in a condition which will prevent tracking of sediment onto public rights-of-way or streets. 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 watercourses.

Figure 2.1
Stabilized Construction Access

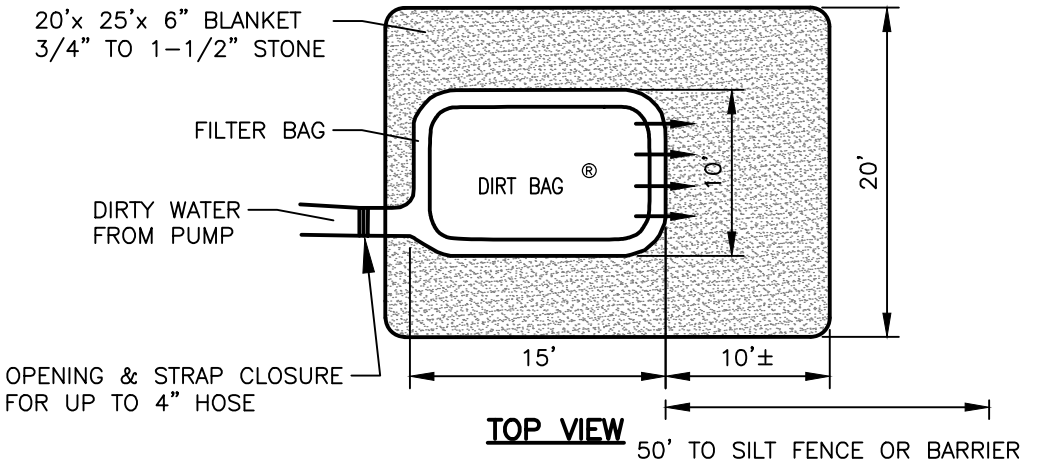


CONSTRUCTION SPECIFICATIONS

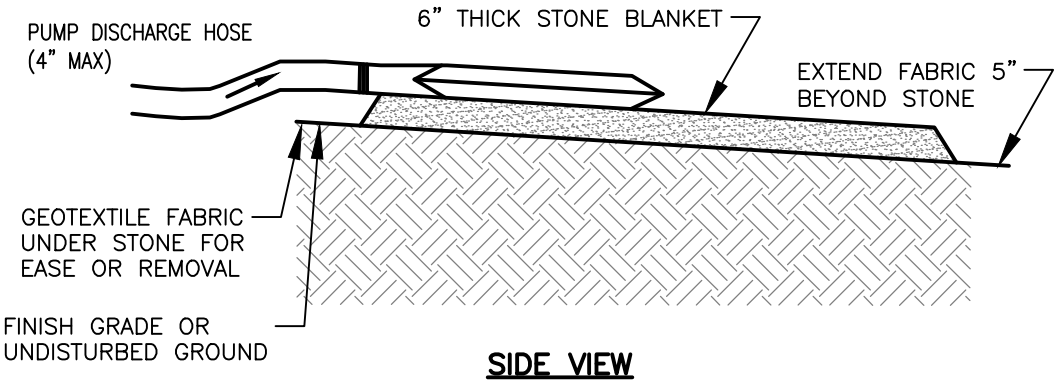
1. STONE SIZE - USE 1-4 INCH STONE, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH - NOT LESS THAN 50 FEET (EXCEPT ON A SINGLE RESIDENCE LOT WHERE A 30 FOOT MINIMUM LENGTH WOULD APPLY).
3. THICKNESS - NOT LESS THAN SIX (6) INCHES.
4. WIDTH - TWELVE (12) FOOT MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS. TWENTY-FOUR (24) FOOT IF SINGLE ENTRANCE TO SITE.
5. GEOTEXTILE - WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
6. SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ACCESS SHALL BE PIPED BENEATH 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 A 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.

ADAPTED FROM DETAILS PROVIDED BY: USDA - NRCS, NEW YORK STATE DEPARTMENT OF TRANSPORTATION, NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION, NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE

STABILIZED CONSTRUCTION ACCESS



TOP VIEW



SIDE VIEW

NOTES:

1. DIRT BAG MATERIAL BASED ON PARTICLE SIZE IN DIRTY WATER, I.E. FOR COARSE PARTICLES A WOVEN MATERIAL; FOR SILTS/CLAYS A NON-WOVEN MATERIAL.
2. DO NOT OVER PRESSURIZE DIRT BAG OR USE BEYOND CAPACITY.
3. LOCATE DISCHARGE SITE ON FLAT UPLAND AREAS AS FAR AWAY AS POSSIBLE FROM STREAMS, WETLANDS, OTHER RESOURCES AND POINTS OF CONCENTRATED FLOW.
4. DOWN GRADIENT RECEIVING AREA MUST BE WELL VEGETATED OR OTHERWISE STABLE FROM EROSION. E.G. FOREST FLOOR OR COARSE GRAVEL/STONE.
5. DISCHARGE NOT PERMITTED WITHIN 25' OF A STREAM OR WETLAND. CONSULT DEP IF STRUCTURE MUST BE WITHIN 75' OF STREAM OR WATER BODY. SECONDARY CONTAINMENT MAY BE NECESSARY.

PUMPED DISCHARGE SEDIMENT CONTROL DEVICE ("DIRT BAG")

N.T.S.

STANDARD AND SPECIFICATIONS FOR DIVERSION



Definition & Scope

A drainage way of parabolic or trapezoidal cross-section with a supporting ridge on the lower side that is constructed across the slope to intercept and convey runoff to stable outlets at non-erosive velocities.

Conditions Where Practice Applies

Diversions are used where:

1. Runoff from higher areas has potential for damaging properties, causing erosion, or interfering with, or preventing the establishment of, vegetation on lower areas.
2. Surface and/or shallow subsurface flow is damaging sloping upland.
3. The length of slopes needs to be reduced so that soil loss will be kept to a minimum.

Diversions are only applicable below stabilized or protected areas. Avoid establishment on slopes greater than fifteen percent. Diversions should be used with caution on soils subject to slippage. Construction of diversions shall be in compliance with state and local drainage and water laws.

Design Criteria

Location

Diversion location shall be determined by considering outlet conditions, topography, land use, soil type, length of slope, seep planes (when seepage is a problem), and the development layout.

Capacity

Peak rates of runoff values used in determining the capacity requirements shall be calculated using the most current hydrologic data from the Northeast Regional Climate Center in an appropriate model.

The constructed diversion shall have capacity to carry, as a minimum, the peak discharge from a 10 year frequency rainfall event with freeboard of not less than 0.3 feet.

Diversions designed to protect homes, schools, industrial buildings, roads, parking lots, and comparable high-risk areas, and those designed to function in connection with other structures, shall have sufficient capacity to carry peak runoff expected from a storm frequency consistent with the hazard involved.

Cross Section

The diversion channel shall be parabolic or trapezoidal in shape. Parabolic Diversion design charts are provided in Tables 3.2, 3.3 and 3.4 on pages 3.10, 3.12 and 3.13**.** The diversion shall be designed to have stable side slopes. The side slopes shall not be steeper than 2:1 and shall be flat enough to ensure ease of maintenance of the diversion and its protective vegetative cover.

The ridge shall have a minimum width of four feet at the design water elevation; a minimum of 0.3 feet freeboard and a reasonable settlement factor shall be provided.

Velocity and Grade

The permissible velocity for the specified method of stabilization will determine the maximum grade. Maximum permissible velocities of flow for the stated conditions of stabilization shall be as shown in Table 3.1 on page 3.10 of this standard.

Diversions are not usually applicable below high sediment producing areas unless land treatment practices or structural measures, designed to prevent damaging accumulations of sediment in the channels, are installed with, or before, the diversions.

Outlets

Each diversion must have an adequate outlet. The outlet may be a grassed waterway, vegetated or paved area, grade stabilization structure, flow spreader, flow diffuser, stable watercourse, or subsurface drain outlet. In all cases, the outlet must convey runoff to a point where outflow will not cause damage. Vegetated outlets shall be installed before diversion construction, if needed, to ensure establishment of

vegetative cover in the outlet channel.

The design elevation of the water surface in the diversion shall not be lower than the design elevation of the water surface in the outlet at their junction when both are operating at design flow.

Stabilization

Vegetated diversions shall be stabilized in accordance with the following tables.

Table 3.1
Diversion Maximum Permissible Design Velocities Table

Soil Texture	Retardance and Cover	Permissible Velocity (ft / second) for Selected Channel Vegetation
Sand, Silt, Sandy loam, silty loam, loamy sand (ML, SM, SP, SW)	C-Kentucky 31 tall fescue and Kentucky bluegrass	3.0
	D-Annuals[1] Small grain (rye, oats, barley, millet) Ryegrass	2.5
Silty clay loam, Sandy clay loam (ML-CL, SC)	C-Kentucky 31 tall fescue and Kentucky bluegrass	4.0
	D-Annuals[1] Small grain (rye, oats, barley, millet) Ryegrass	3.5
Clay (CL)	C-Kentucky 31 tall fescue and Kentucky bluegrass	5.0
	D-Annuals[1] Small grain (rye, oats, barley, millet) Ryegrass	4.0
[1] Annuals—Use only as temporary protection until permanent vegetation is established.		

Table 3.2 - Retardance Factors for Various Grasses and Legumes Table

Retardance	Cover	Condition
A	Reed canarygrass	Excellent stand, tall (average 36 inches)
B	Smooth bromegrass	Good stand, mowed (average 12 to 15 inches)
	Tall fescue	Good stand, unmowed (average 18 inches)
	Grass-legume mixture—Timothy, smooth bromegrass, or Orchard grass with birdsfoot trefoil	Good stand, uncut (average 20 inches)
	Reed canarygrass	Good stand, mowed (average 12 to 15 inches)
	Tall fescue, with birdsfoot trefoil or ladino clover	Good stand, uncut (average 18 inches)
C	Redtop	Good stand, headed (15 to 20 inches)
	Grass-legume mixture—summer (Orchard grass, redtop, Annual ryegrass, and ladino or white clover)	Good stand, uncut (6 to 8 inches)
	Kentucky bluegrass	Good stand, headed (6 to 12 inches)
D	Red fescue	Good stand, headed (12 to 18 inches)
	Grass-legume mixture—fall, spring (Orchard grass, redtop, Annual ryegrass, and white or ladino clover)	Good stand, uncut (4 to 5 inches)

Figure 3.4
Diversion Detail

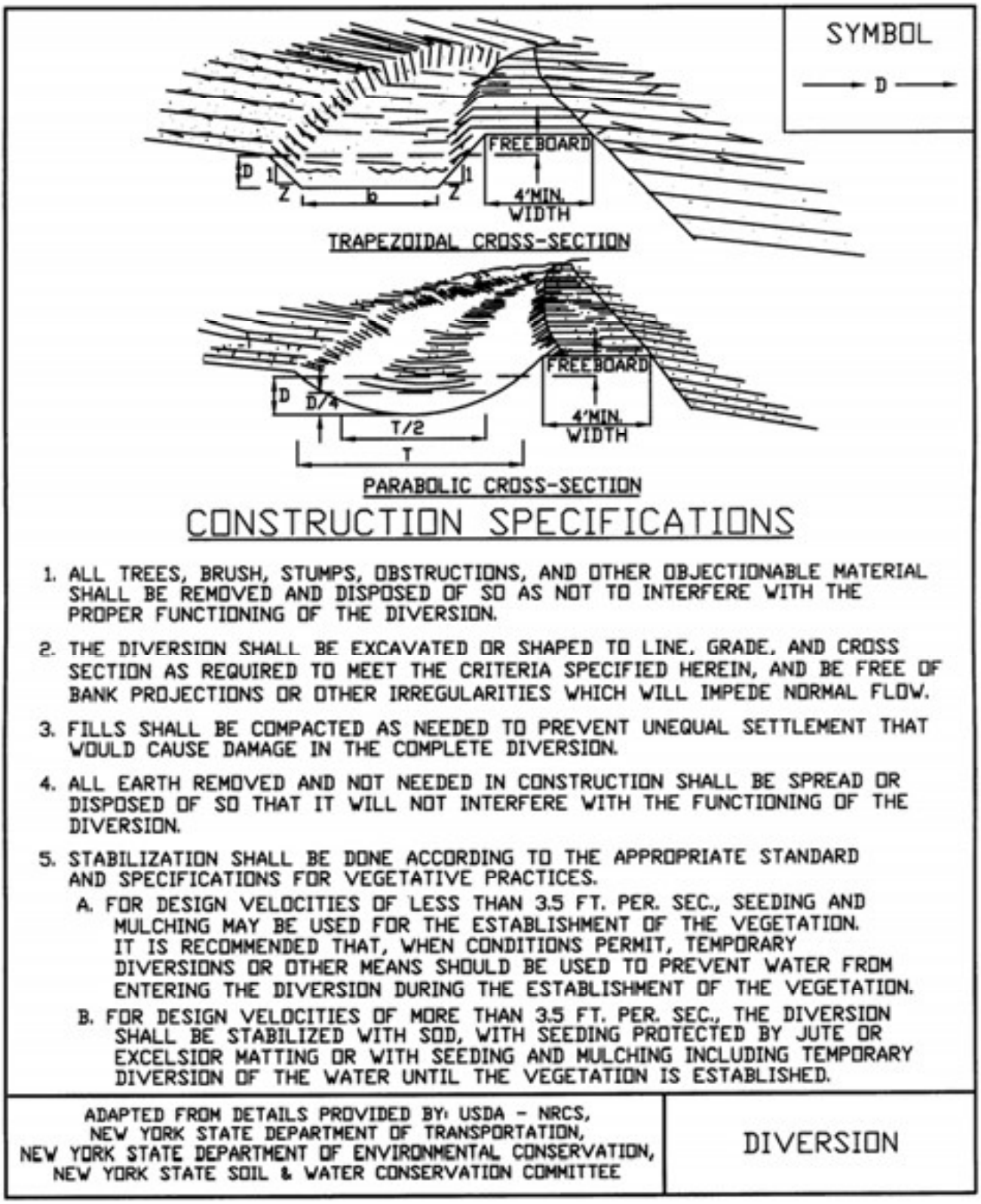


Table 3.3
Parabolic Diversion Design, Without Freeboard Tables - 1 (USDA– NRCS)

PARABOLIC DIVERSION DESIGN, WITHOUT FREEBOARD

RETARDANCE - D & C
GRADE, % - 0.50

V_1 Based on Permissible Velocity of the Soil With Retardance "D"
Top Width, Depth & V_2 Based on Retardance "C"

Q	V_1 = 2.0			V_1 = 2.5			V_1 = 3.0			V_1 = 3.5			V_1 = 4.0			V_1 = 4.5			V_1 = 5.0			V_1 = 5.5			V_1 = 6.0		
cfs	T	D	V_2	T	D	V_2	T	D	V_2	T	D	V_2	T	D	V_2	T	D	V_2	T	D	V_2	T	D	V_2	T	D	V_2
15	9	1.6	1.6																								
20	11	1.6	1.7																								
25	14	1.6	1.7	9	1.9	2.1																					
30	17	1.6	1.7	11	1.9	2.2	8	2.2	2.5																		
35	20	1.6	1.7	12	1.9	2.3	9	2.1	2.6																		
40	22	1.6	1.7	14	1.8	2.3	11	2.1	2.7																		
45	25	1.5	1.7	16	1.8	2.3	12	2.0	2.8																		
50	28	1.5	1.7	18	1.8	2.4	13	2.0	2.8	10	2.4	3.2															
55	31	1.5	1.7	19	1.9	2.4	15	2.0	2.8	11	2.4	3.3															
60	33	1.5	1.7	21	1.8	2.4	16	2.0	2.8	11	2.4	3.3															
65	36	1.5	1.8	23	1.8	2.4	17	2.0	2.9	12	2.4	3.3															
70	39	1.5	1.7	24	1.8	2.4	18	2.0	2.9	13	2.3	3.4															
75	42	1.5	1.8	26	1.8	2.4	19	2.0	2.9	14	2.3	3.4	11	2.7	3.7												
80	44	1.5	1.8	28	1.8	2.4	21	2.0	2.9	15	2.3	3.4	12	2.7	3.8												
90	50	1.5	1.8	31	1.8	2.4	24	2.0	2.9	17	2.3	3.4	13	2.7	3.8												
100	55	1.5	1.8	35	1.8	2.4	26	2.0	2.9	19	2.3	3.5	15	2.6	3.9	12	3.0	4.1									

PARABOLIC DIVERSION DESIGN, WITHOUT FREEBOARD

RETARDANCE - D & C
GRADE, % - 1.0

V_1 based on Permissible Velocity of the Soil With Retardance "D"
Top Width, Depth & V_2 Based on Retardance "C"

Q	V_1 = 2.0			V_1 = 2.5			V_1 = 3.0			V_1 = 3.5			V_1 = 4.0			V_1 = 4.5			V_1 = 5.0			V_1 = 5.5			V_1 = 6.0		
cfs	T	D	V_2	T	D	V_2	T	D	V_2	T	D	V_2	T	D	V_2	T	D	V_2	T	D	V_2	T	D	V_2	T	D	V_2
15	13	1.1	1.5	8	1.3	2.0																					
20	18	1.1	1.5	11	1.3	2.1	8	1.5	2.6																		
25	22	1.1	1.5	14	1.3	2.1	9	1.5	2.6	8	1.6	3.0															
30	27	1.1	1.5	17	1.3	2.1	11	1.5	2.7	9	1.6	3.0															
35	31	1.1	1.5	19	1.3	2.2	13	1.5	2.8	11	1.6	3.1	8	1.8	3.6												
40	35	1.1	1.5	22	1.3	2.1	15	1.4	2.8	12	1.5	3.1	9	1.8	3.7												
45	40	1.1	1.5	25	1.3	2.2	17	1.5	2.8	13	1.6	3.2	10	1.8	3.7												
50	44	1.1	1.5	28	1.3	2.2	19	1.4	2.8	15	1.6	3.2	11	1.8	3.8	9	2.0	4.2									
55	48	1.1	1.5	30	1.3	2.2	20	1.4	2.8	16	1.5	3.3	12	1.8	3.8	10	2.0	4.3									
60	53	1.1	1.5	33	1.3	2.2	22	1.4	2.8	18	1.5	3.3	14	1.7	3.8	10	2.0	4.3									
65	57	1.1	1.5	36	1.3	2.2	24	1.4	2.8	19	1.5	3.3	15	1.7	3.8	11	2.0	4.3	9	2.2	4.7						
70	61	1.1	1.5	38	1.3	2.2	26	1.4	2.8	21	1.5	3.3	16	1.7	3.9	12	2.0	4.4	10	2.2	4.7						
75	66	1.1	1.5	41	1.3	2.2	28	1.4	2.9	22	1.5	3.3	17	1.7	3.9	13	2.0	4.5	11	2.2	4.7						
80	70	1.1	1.5	44	1.3	2.2	29	1.4	2.9	24	1.5	3.3	18	1.7	3.9	14	2.0	4.6	11	2.2	4.9						
90	79	1.1	1.5	49	1.3	2.2	33	1.4	2.9	27	1.5	3.3	20	1.7	3.9	15	1.9	4.5	13	2.2	4.9	11	2.4	5.2			
100	87	1.1	1.5	55	1.3	2.2	37	1.4	2.9	29	1.5	3.3	22	1.7	3.9	17	1.9	4.5	14	2.2	4.9	12	2.4	5.3			

Table 3.4
Parabolic Diversion Design, Without Freeboard Tables - 2 (USDA– NRCS)

PARABOLIC DIVERSION DESIGN, WITHOUT FREEBOARD

RETARDANCE - D & C
GRADE, % - 1.5

V_1 Based on Permissible Velocity of the Soil With Retardance "D"
Top Width, Depth & V_2 Based on Retardance "C"

Q	V_1 - 2.0			V_1 - 2.5			V_1 - 3.0			V_1 - 3.5			V_1 - 4.0			V_1 - 4.5			V_1 - 5.0			V_1 - 5.5			V_1 - 6.0		
cfs	T	D	V_2	T	D	V_2	T	D	V_2	T	D	V_2	T	D	V_2	T	D	V_2	T	D	V_2	T	D	V_2	T	D	V_2
15	17	0.9	1.4	11	1.1	1.9	8	1.2	2.4																		
20	23	0.9	1.4	15	1.0	1.9	10	1.2	2.5	7	1.4	3.0	5	1.5	3.4												
25	28	0.9	1.4	19	1.0	1.9	12	1.2	2.6	8	1.4	3.2	7	1.5	3.6												
30	34	0.9	1.4	22	1.0	1.9	15	1.2	2.6	10	1.3	3.2	8	1.5	3.6	7	1.6	4.0									
35	40	0.9	1.4	26	1.0	2.0	17	1.1	2.6	12	1.3	3.3	10	1.4	3.7	8	1.6	4.1									
40	45	0.9	1.4	30	1.0	1.9	20	1.2	2.6	14	1.3	3.3	11	1.4	3.7	9	1.6	4.2	7	1.8	4.6						
45	51	0.9	1.4	33	1.0	2.0	22	1.1	2.6	15	1.3	3.4	12	1.4	3.8	10	1.5	4.3	8	1.8	4.6						
50	56	0.9	1.4	37	1.0	2.0	25	1.1	2.7	17	1.3	3.4	14	1.4	3.9	11	1.5	4.3	9	1.8	4.8						
55	62	0.9	1.5	41	1.0	2.0	27	1.1	2.6	19	1.3	3.4	15	1.4	3.9	12	1.5	4.3	10	1.7	4.9	8	1.9	5.1			
60	67	0.9	1.5	44	1.0	2.0	30	1.1	2.7	20	1.3	3.4	16	1.4	3.9	14	1.5	4.4	11	1.7	4.9	9	1.9	5.2			
65	73	0.9	1.5	48	1.0	2.0	32	1.1	2.7	22	1.3	3.4	18	1.4	3.9	15	1.5	4.4	11	1.7	5.0	10	1.9	5.3			
70	78	0.9	1.5	51	1.0	2.0	34	1.1	2.7	24	1.3	3.4	19	1.4	3.9	16	1.5	4.4	12	1.7	4.9	10	1.9	5.4	9	2.1	5.6
75	83	0.9	1.5	55	1.0	2.0	37	1.1	2.7	25	1.3	3.4	21	1.4	3.9	17	1.5	4.4	13	1.7	5.0	11	1.9	5.4	9	2.1	5.6
80	89	0.9	1.5	59	1.0	2.0	39	1.1	2.7	27	1.3	3.4	22	1.4	3.9	18	1.5	4.4	14	1.7	5.0	12	1.9	5.5	10	2.1	5.8
90	100	0.9	1.5	66	1.0	2.0	44	1.1	2.7	30	1.3	3.5	25	1.4	3.9	20	1.5	4.4	15	1.7	5.0	13	1.9	5.4	11	2.0	5.9
100				73	1.0	2.0	49	1.1	2.7	33	1.3	3.5	27	1.4	3.9	22	1.5	4.5	17	1.7	5.1	15	1.9	5.5	12	2.0	6.0

PARABOLIC DIVERSION DESIGN, WITHOUT FREEBOARD

RETARDANCE - D & C
GRADE, % - 2.0

V_1 Based on Permissible Velocity of the Soil With Retardance "D"
Top Width, Depth & V_2 Based on Retardance "C"

Q	V_1 - 2.0			V_1 - 2.5			V_1 - 3.0			V_1 - 3.5			V_1 - 4.0			V_1 - 4.5			V_1 - 5.0			V_1 - 5.5			V_1 - 6.0		
cfs	T	D	V_2	T	D	V_2	T	D	V_2	T	D	V_2	T	D	V_2	T	D	V_2	T	D	V_2	T	D	V_2	T	D	V_2
15	21	0.8	1.3	13	0.9	1.9	9	1.0	2.4	7	1.2	2.9															
20	28	0.8	1.3	17	0.9	1.9	12	1.0	2.4	9	1.1	3.0	7	1.3	3.5	5	1.4	3.8									
25	35	0.8	1.3	21	0.9	1.9	15	1.0	2.4	11	1.1	3.0	8	1.3	3.7	7	1.4	4.0									
30	41	0.8	1.3	26	0.9	1.9	18	1.0	2.5	13	1.1	3.0	10	1.2	3.7	8	1.3	4.2	7	1.5	4.5						
35	48	0.8	1.4	30	0.9	1.9	22	1.0	2.4	15	1.1	3.1	11	1.2	3.8	9	1.3	4.2	8	1.5	4.7						
40	55	0.8	1.3	34	0.9	1.9	25	1.0	2.5	18	1.1	3.1	13	1.2	3.8	11	1.3	4.3	9	1.5	4.7	7	1.7	5.0			
45	62	0.8	1.4	38	0.9	1.9	28	1.0	2.5	20	1.1	3.1	14	1.2	3.8	12	1.3	4.3	10	1.4	4.8	8	1.6	5.2			
50	68	0.8	1.4	42	0.9	1.9	31	1.0	2.5	22	1.1	3.1	16	1.2	3.9	13	1.3	4.3	11	1.4	4.8	9	1.6	5.3	8	1.7	5.6
55	75	0.8	1.4	46	0.9	1.9	34	1.0	2.5	24	1.1	3.1	17	1.2	3.8	14	1.3	4.3	12	1.4	4.9	10	1.6	5.3	8	1.7	5.8
60	82	0.8	1.4	51	0.9	1.9	37	1.0	2.5	26	1.1	3.1	19	1.2	3.9	16	1.3	4.4	13	1.4	4.8	11	1.6	5.3	9	1.7	5.7
65	88	0.8	1.4	55	0.9	1.9	40	1.0	2.5	28	1.1	3.1	21	1.2	3.9	17	1.3	4.4	14	1.4	4.9	11	1.6	5.4	10	1.7	5.7
70	95	0.8	1.4	59	0.9	1.9	43	1.0	2.5	30	1.1	3.1	22	1.2	3.9	18	1.3	4.4	15	1.4	4.9	12	1.6	5.4	10	1.7	5.8
75				63	0.9	1.9	46	1.0	2.5	32	1.1	3.2	24	1.2	3.9	20	1.3	4.4	16	1.4	5.0	13	1.6	5.5	11	1.7	5.9
80				67	0.9	2.0	48	1.0	2.5	35	1.1	3.1	25	1.2	3.9	21	1.3	4.4	17	1.4	4.9	14	1.6	5.4	12	1.7	6.0
90				75	0.9	2.0	54	1.0	2.5	39	1.1	3.2	28	1.2	3.9	23	1.3	4.4	19	1.4	4.9	16	1.6	5.5	13	1.7	5.9
100				83	0.9	2.0	60	1.0	2.5	43	1.1	3.2	31	1.2	3.9	26	1.3	4.4	21	1.4	5.0	17	1.6	5.5	15	1.7	6.0

STANDARD AND SPECIFICATIONS FOR DUST CONTROL



Definition & Scope

The control of dust resulting from land-disturbing activities, to prevent surface and air movement of dust from disturbed soil surfaces that may cause off-site damage, health hazards, and traffic safety problems.

Conditions Where Practice Applies

On construction roads, access points, and other disturbed areas subject to surface dust movement and dust blowing where off-site damage may occur if dust is not controlled.

Design Criteria

Construction operations should be scheduled to minimize the amount of area disturbed at one time. Buffer areas of vegetation should be left where practical. Temporary or permanent stabilization measures shall be installed. No specific design criteria is given; see construction specifications below for common methods of dust control.

Water quality must be considered when materials are selected for dust control. Where there is a potential for the material to wash off to a stream, ingredient information must be provided to the NYSDEC.

No polymer application shall take place without written approval from the NYSDEC.

Construction Specifications

A. **Non-driving Areas** – These areas use products and materials applied or placed on soil surfaces to prevent airborne migration of soil particles.

Vegetative Cover – For disturbed areas not subject to traffic, vegetation provides the most practical method of dust control (see Section 3).

Mulch (including gravel mulch) – Mulch offers a fast effective means of controlling dust. This can also include rolled erosion control blankets.

Spray adhesives – These are products generally composed of polymers in a liquid or solid form that are mixed with water to form an emulsion that is sprayed on the soil surface with typical hydroseeding equipment. The mixing ratios and application rates will be in accordance with the manufacturer's recommendations for the specific soils on the site. In no case should the application of these adhesives be made on wet soils or if there is a probability of precipitation within 48 hours of its proposed use. Material Safety Data Sheets will be provided to all applicators and others working with the material.

B. **Driving Areas** – These areas utilize water, polymer emulsions, and barriers to prevent dust movement from the traffic surface into the air.

Sprinkling – The site may be sprayed with water until the surface is wet. This is especially effective on haul roads and access route to provide short term limited dust control.

Polymer Additives – These polymers are mixed with water and applied to the driving surface by a water truck with a gravity feed drip bar, spray bar or automated distributor truck. The mixing ratios and application rates will be in accordance with the manufacturer's recommendations. Incorporation of the emulsion into the soil will be done to the appropriate depth based on expected traffic. Compaction after incorporation will be by vibratory roller to a minimum of 95%. The prepared surface shall be moist and no application of the polymer will be made if there is a probability of precipitation within 48 hours of its proposed use. Material Safety Data Sheets will be provided to all applicators working with the material.

Barriers – Woven geo-textiles can be placed on the driving surface to effectively reduce dust throw and particle migration on haul roads. Stone can also be used for construction roads for effective dust control.

Windbreak – A silt fence or similar barrier can control air currents at intervals equal to ten times the barrier height. Preserve existing wind barrier vegetation as much as practical.

Maintenance

Maintain dust control measures through dry weather periods until all disturbed areas are stabilized.

STANDARD AND SPECIFICATIONS FOR BUFFER FILTER STRIP



Land Slope (%)	Minimum Filter Strip Width (ft.)
≤10	50
20	60
30	85
40	105
50	125
60	145
70	165

Definition & Scope

A **temporary/permanent** well vegetated grassed area below a disturbed area that can be used to remove sediment from runoff prior to it reaching surface waters or other designated areas of concern, such as parking lots and road pavement.

Condition Where Practice Applies

This practice is effective when the flow is in the form of sheet flow and the vegetative cover is established prior to disturbance. Surface water must be protected from sediment-laden runoff until buffer filter strip vegetation is established, and then the proposed disturbance can be undertaken. This practice is effective when the flow is in the form of sheet flow (maximum of 150 feet).

Design Criteria

1. The vegetation should be a well established perennial grass. Wooded and brushy areas are not acceptable for purposes of sediment removal.

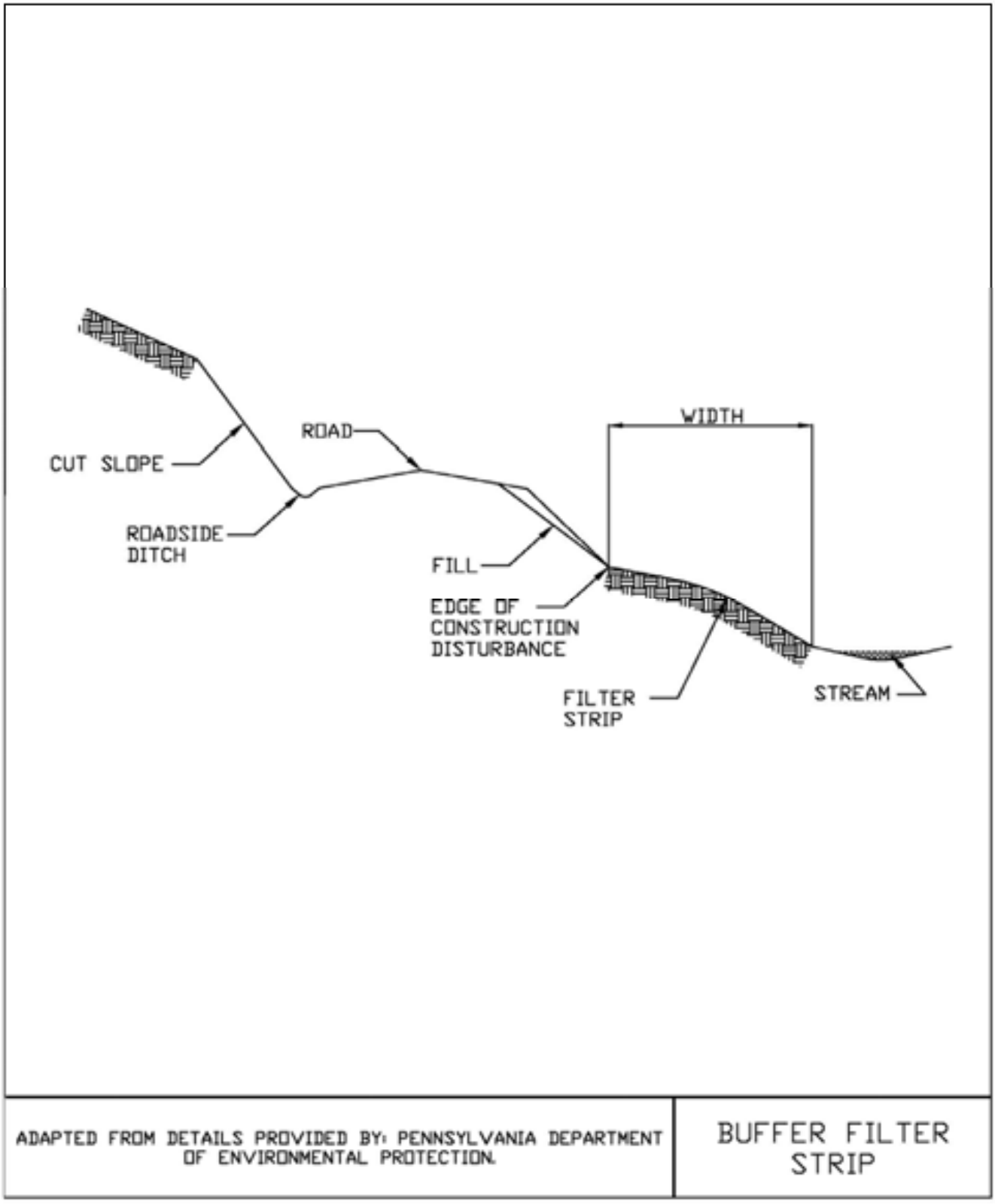
2. The minimum buffer filter strip width for stream protection shall be in accordance with the following table:

3. The minimum buffer filter strip width to protect paved areas during construction is 20 feet.

Maintenance

If at any time the width of the buffer filter strip has been reduced by sediment deposition to half its original width or concentrated flow has developed, suitable additional practices should be installed. The erosion and sediment control plan shall include these details.

Figure 5.1
Buffer Filter Strip



STANDARD AND SPECIFICATIONS FOR STORM DRAIN INLET PROTECTION



Definition & Scope

A **temporary** barrier with low permeability, installed around inlets in the form of a fence, berm or excavation around an opening, detaining water and thereby reducing the sediment content of sediment laden water by settling thus preventing heavily sediment laden water from entering a storm drain system.

Conditions Where Practice Applies

This practice shall be used where the drainage area to an inlet is disturbed, it is not possible to temporarily divert the storm drain outfall into a trapping device, and watertight blocking of inlets is not advisable. **It is not to be used in place of sediment trapping devices.** This practice shall be used with an upstream buffer strip if placed at a storm drain inlet on a paved surface. It may be used in conjunction with storm drain diversion to help prevent siltation of pipes installed with low slope angle.

Types of Storm Drain Inlet Practices

There are five (5) specific types of storm drain inlet protection practices that vary according to their function, location, drainage area, and availability of materials:

I. Excavated Drop Inlet Protection
II. Fabric Drop Inlet Protection
III. Stone & Block Drop Inlet Protection
IV. Paved Surface Inlet Protection
V. Manufactured Insert Inlet Protection

Design Criteria

Drainage Area – The drainage area for storm drain inlets shall not exceed one acre. Erosion control/temporary stabilization measures must be implemented on the disturbed drainage area tributary to the inlet. The crest elevations of these practices shall provide storage and minimize bypass flow.

Type I – Excavated Drop Inlet Protection

This practice is generally used during initial overlot grading after the storm drain trunk line is installed.

Limit the drainage area to the inlet device to 1 acre. Excavated side slopes shall be no steeper than 2:1. The minimum depth shall be 1 foot and the maximum depth 2 feet as measured from the crest of the inlet structure. Shape the excavated basin to fit conditions with the longest dimension oriented toward the longest inflow area to provide maximum trap efficiency. The capacity of the excavated basin should be established to contain 900 cubic feet per acre of disturbed area. Weep holes, protected by fabric and stone, should be provided for draining the temporary pool.

Inspect and clean the excavated basin after every storm. Sediment should be removed when 50 percent of the storage volume is achieved This material should be incorporated into the site in a stabilized manner.

Type II – Fabric Drop Inlet Protection



This practice is generally used during final elevation grading phases after the storm drain system is completed.

Limit the drainage area to 1 acre per inlet device. Land area slope immediately surrounding this device should not exceed 1 percent. The maximum height of the fabric above the inlet crest shall not exceed 1.5 feet unless reinforced.

The top of the barrier should be maintained to allow overflow to drop into the drop inlet and not bypass the inlet to

unprotected lower areas. Support stakes for fabric shall be a minimum of 3 feet long, spaced a maximum 3 feet apart. They should be driven close to the inlet so any overflow drops into the inlet and not on the unprotected soil. Improved performance and sediment storage volume can be obtained by excavating the area.

Inspect the fabric barrier after each rain event and make repairs as needed. Remove sediment from the pool area as necessary with care not to undercut or damage the filter fabric. Upon stabilization of the drainage area, remove all materials and unstable sediment and dispose of properly. Bring the adjacent area of the drop inlet to grade, smooth and compact and stabilize in the appropriate manner to the site.

Type III – Stone and Block Drop Inlet Protection

This practice is generally used during the initial and intermediate overlot grading of a construction site.

Limit the drainage area to 1 acre at the drop inlet. The stone barrier should have a minimum height of 1 foot and a maximum height of 2 feet. Do not use mortar. The height should be limited to prevent excess ponding and bypass flow.

Recess the first course of blocks at least 2 inches below the crest opening of the storm drain for lateral support. Subsequent courses can be supported laterally if needed by placing a 2x4 inch wood stud through the block openings perpendicular to the course. The bottom row should have a few blocks oriented so flow can drain through the block to dewater the basin area.

The stone should be placed just below the top of the blocks on slopes of 2:1 or flatter. Place hardware cloth of wire mesh with ½ inch openings over all block openings to hold stone in place.

As an optional design, the concrete blocks may be omitted and the entire structure constructed of stone, ringing the outlet (“doughnut”). The stone should be kept at a 3:1 slope toward the inlet to keep it from being washed into the inlet. A level area 1 foot wide and four inches below the crest will further prevent wash. Stone on the slope toward the inlet should be at least 3 inches in size for stability and 1 inch or smaller away from the inlet to control flow rate. The elevation of the top of the stone crest must be maintained 6 inches lower than the ground elevation down slope from the inlet to ensure that all storm flows pass over the stone into the storm drain and not past the structure. Temporary diking should be used as necessary to prevent bypass flow.

The barrier should be inspected after each rain event and repairs made where needed. Remove sediment as necessary to provide for accurate storage volume for subsequent rains. Upon stabilization of contributing drainage area, remove all materials and any unstable soil and dispose of properly.

Bring the disturbed area to proper grade, smooth, compact and stabilize in a manner appropriate to the site.

Type IV – Paved Surface Inlet Protection



This practice is generally used after pavement construction has been done while final grading and soil stabilization is occurring. These practices should be used with upstream buffer strips in linear construction applications, and with temporary surface stabilization for overlot areas, to reduce the sediment load at the practice. This practice includes sand bags, compost filter socks, geo-tubes filled with ballast, and manufactured surface barriers. Pea gravel can also be used in conjunction with these practices to improve performance. When the inlet is not at a low point, and is offset from the pavement or gutter line, protection should be selected and installed so that flows are not diverted around the inlet.



The drainage area should be limited to 1 acre at the drain inlet. All practices will be placed at the inlet perimeter or beyond to maximize the flow capacity of the inlet. Practices shall be weighted, braced, tied, or otherwise anchored to prevent movement or shifting of location on paved surfaces. Traffic safety shall be integrated with the use of this practice. All practices should be marked with traffic safety cones as appropriate. Structure height shall not cause flooding or by-pass flow that would cause additional erosion.

The structure should be inspected after every storm event. Any sediment should be removed and disposed of on the site. Any broken or damaged components should be replaced. Check all materials for proper anchorage and secure as necessary.

Type V - Manufactured Insert Inlet Protection



The drainage area shall be limited to 1 acre at the drain inlet. All inserts will be installed and anchored in accordance with the manufacturers recommendations and design details. The fabric portion of the structure will equal or exceed the performance standard for the silt fence fabric. The inserts will be installed to preserve a minimum of 50 percent of the open, unobstructed design flow area of the storm drain inlet opening to maintain capacity for storm events.

Figure 5.31
Excavated Drop Inlet Protection

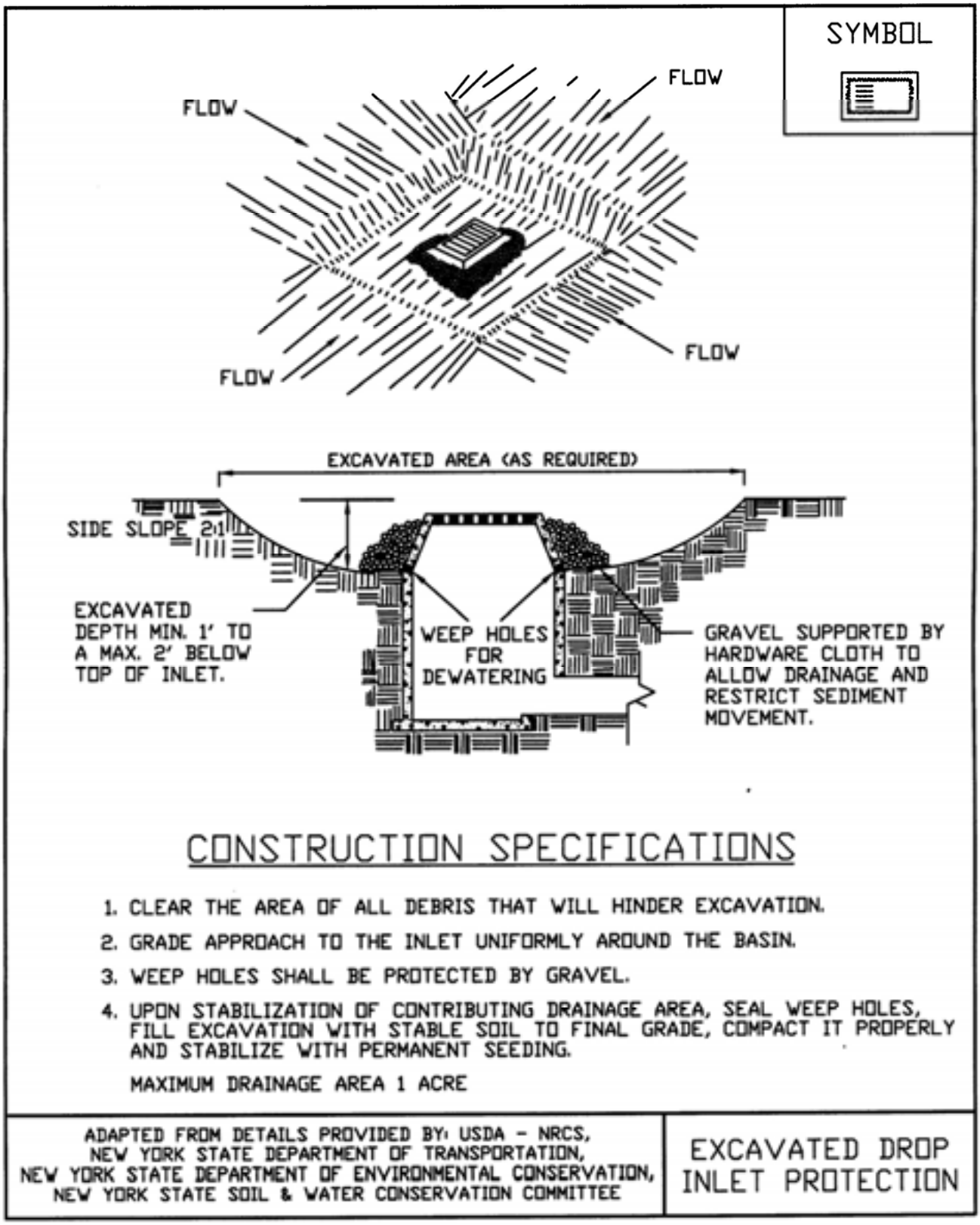


Figure 5.32
Fabric Drop Inlet Protection

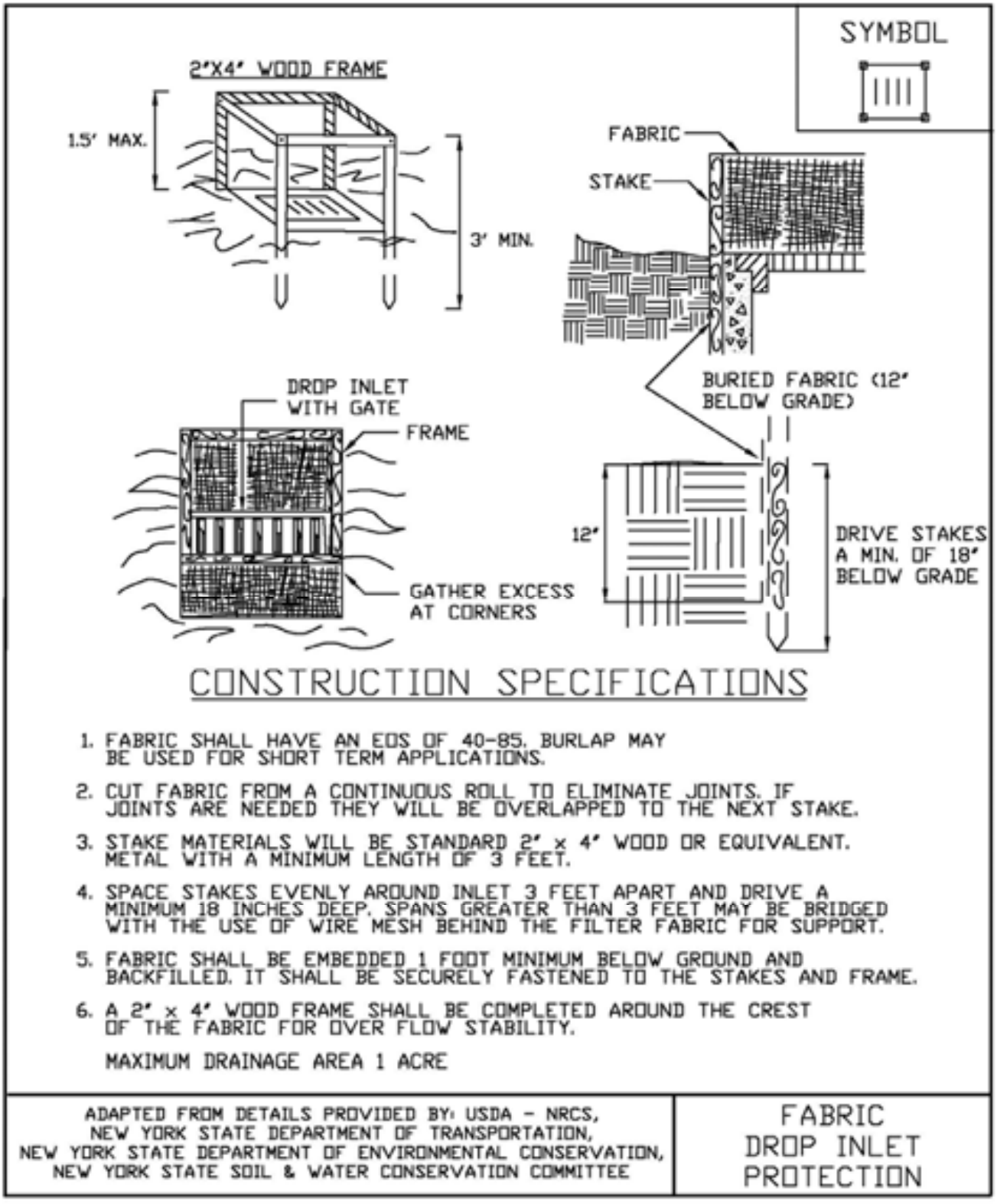
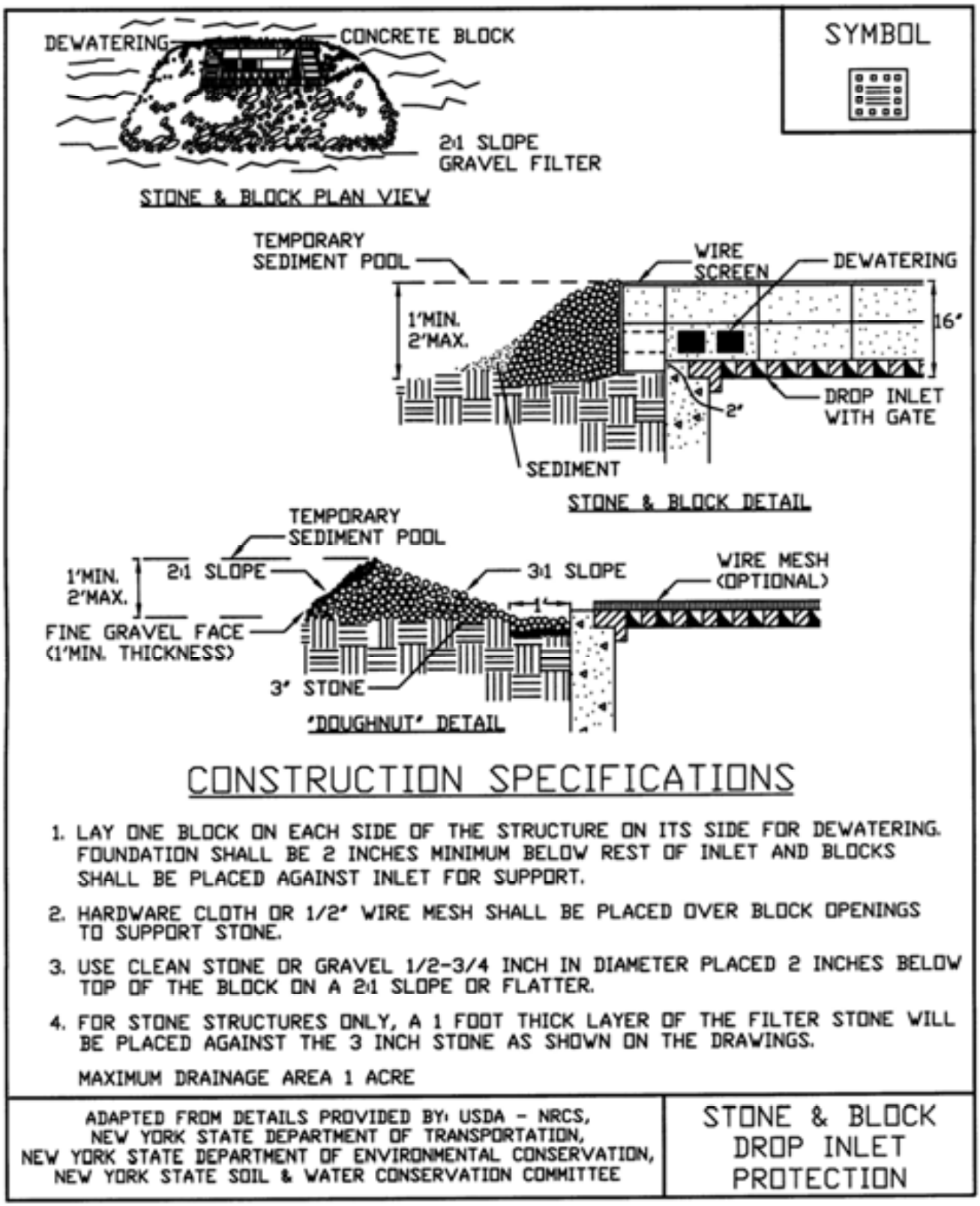


Figure 5.33
Stone & Block Drop Inlet Protection



CONSTRUCTION SPECIFICATIONS

1. LAY ONE BLOCK ON EACH SIDE OF THE STRUCTURE ON ITS SIDE FOR DEWATERING. FOUNDATION SHALL BE 2 INCHES MINIMUM BELOW REST OF INLET AND BLOCKS SHALL BE PLACED AGAINST INLET FOR SUPPORT.
2. HARDWARE CLOTH OR 1/2" WIRE MESH SHALL BE PLACED OVER BLOCK OPENINGS TO SUPPORT STONE.
3. USE CLEAN STONE OR GRAVEL 1/2-3/4 INCH IN DIAMETER PLACED 2 INCHES BELOW TOP OF THE BLOCK ON A 2:1 SLOPE OR FLATTER.
4. FOR STONE STRUCTURES ONLY, A 1 FOOT THICK LAYER OF THE FILTER STONE WILL BE PLACED AGAINST THE 3 INCH STONE AS SHOWN ON THE DRAWINGS.

MAXIMUM DRAINAGE AREA 1 ACRE

ADAPTED FROM DETAILS PROVIDED BY: USDA - NRCS,
NEW YORK STATE DEPARTMENT OF TRANSPORTATION,
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION,
NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE

STONE & BLOCK DROP INLET PROTECTION

STANDARD AND SPECIFICATIONS FOR MULCHING



Definition and Scope

Applying coarse plant residue or chips, or other suitable materials, to cover the soil surface to provide initial erosion control while a seeding or shrub planting is establishing. Mulch will conserve moisture and modify the surface soil temperature and reduce fluctuation of both. Mulch will prevent soil surface crusting and aid in weed control. Mulch can also be used alone for temporary stabilization in non-growing months. Use of stone as a mulch could be more permanent and should not be limited to non-growing months.

Conditions Where Practice Applies

On soils subject to erosion and on new seedings and shrub plantings. Mulch is useful on soils with low infiltration rates by retarding runoff.

Criteria

Site preparation prior to mulching requires the installation of necessary erosion control or water management practices and drainage systems.

Slope, grade and smooth the site to fit needs of selected mulch products.

Remove all undesirable stones and other debris to meet the needs of the anticipated land use and maintenance required.

Apply mulch after soil amendments and planting is accomplished or simultaneously if hydroseeding is used.

Select appropriate mulch material and application rate or material needs. Hay mulch shall not be used in wetlands or in areas of permanent seeding. Clean straw mulch is preferred alternative in wetland application. Determine local availability.

Select appropriate mulch anchoring material.

NOTE: The best combination for grass/legume establishment is straw (cereal grain) mulch applied at 2 ton/ acre (90 lbs./1000sq.ft.) and anchored with wood fiber mulch (hydromulch) at 500 – 750 lbs./acre (11 – 17 lbs./1000 sq. ft.). The wood fiber mulch must be applied through a hydroseeder immediately after mulching.



Table 4.2
Guide to Mulch Materials, Rates, and Uses

Mulch Material	Quality Standards	per 1000 Sq. Ft.	per Acre	Depth of Application	Remarks
Wood chips or shavings	Air-dried. Free of objectionable coarse material	500-900 lbs.	10-20 tons	2-7”	Used primarily around shrub and tree plantings and recreation trails to inhibit weed competition. Resistant to wind blowing. Decomposes slowly.
Wood fiber cellulose (partly digested wood fibers)	Made from natural wood usually with green dye and dispersing agent	50 lbs.	2,000 lbs.	—	Apply with hydromulcher. No tie down required. Less erosion control provided than 2 tons of hay or straw.
Gravel, Crushed Stone or Slag	Washed; Size 2B or 3A—1 1/2”	9 cu. yds.	405 cu. yds.	3”	Excellent mulch for short slopes and around plants and ornamentals. Use 2B where subject to traffic. (Approximately 2,000 lbs./cu. yd.). Frequently used over filter fabric for better weed control.
Hay or Straw	Air-dried; free of undesirable seeds & coarse materials	90-100 lbs. 2-3 bales	2 tons (100-120 bales)	cover about 90% surface	Use small grain straw where mulch is maintained for more than three months. Subject to wind blowing unless anchored. Most commonly used mulching material. Provides the best micro-environment for germinating seeds.
Jute twisted yarn	Undyed, unbleached plain weave. Warp 78 ends/yd., Weft 41 ends/ yd. 60-90 lbs./roll	48” x 50 yds. or 48” x 75 yds.	—	—	Use without additional mulch. Tie down as per manufacturers specifications. Good for center line of concentrated water flow.
Excelsior wood fiber mats	Interlocking web of excelsior fibers with photodegradable plastic netting	4’ x 112.5’ or 8’ x 112.5’.	—	—	Use without additional mulch. Excellent for seeding establishment. Anchor as per manufacturers specifications. Approximately 72 lbs./roll for excelsior with plastic on both sides. Use two sided plastic for centerline of waterways.
Straw or coconut fiber, or combination	Photodegradable plastic net on one or two sides	Most are 6.5 ft. x 3.5 ft.	81 rolls	—	Designed to tolerate higher velocity water flow, centerlines of waterways, 60 sq. yds. per roll.

Table 4.3
Mulch Anchoring Guide

Anchoring Method or Material	Kind of Mulch to be Anchored	How to Apply
1. Peg and Twine	Hay or straw	After mulching, divide areas into blocks approximately 1 sq. yd. in size. Drive 4-6 pegs per block to within 2" to 3" of soil surface. Secure mulch to surface by stretching twine between pegs in criss-cross pattern on each block. Secure twine around each peg with 2 or more tight turns. Drive pegs flush with soil. Driving stakes into ground tightens the twine.
2. Mulch netting	Hay or straw	Staple the light-weight paper, jute, wood fiber, or plastic nettings to soil surface according to manufacturer's recommendations. Should be biodegradable. Most products are not suitable for foot traffic.
3. Wood cellulose fiber	Hay or straw	Apply with hydroseeder immediately after mulching. Use 500 lbs. wood fiber per acre. Some products contain an adhesive material ("tackifier"), possibly advantageous.
4. Mulch anchoring tool	Hay or straw	Apply mulch and pull a mulch anchoring tool (blunt, straight discs) over mulch as near to the contour as possible. Mulch material should be "tucked" into soil surface about 3".
5. Tackifier	Hay or straw	Mix and apply polymeric and gum tackifiers according to manufacturer's instructions. Avoid application during rain. A 24-hour curing period and a soil temperature higher than 45^0 Fahrenheit are required.

STANDARD AND SPECIFICATIONS FOR SILT FENCE



Definition & Scope

A **temporary** barrier of geotextile fabric installed on the contours across a slope used to intercept sediment laden runoff from small drainage areas of disturbed soil by temporarily ponding the sediment laden runoff allowing settling to occur. The maximum period of use is limited by the ultraviolet stability of the fabric (approximately one year).

Conditions Where Practice Applies

A silt fence may be used subject to the following conditions:

1. Maximum allowable slope length and fence length will not exceed the limits shown in the Design Criteria for the specific type of silt fence used ; and
2. Maximum ponding depth of 1.5 feet behind the fence; and
3. Erosion would occur in the form of sheet erosion; and
4. There is no concentration of water flowing to the barrier; and
5. Soil conditions allow for proper keying of fabric, or other anchorage, to prevent blowouts.

Design Criteria

1. Design computations are not required for installations of 1 month or less. Longer installation periods should be designed for expected runoff.
2. All silt fences shall be placed as close to the disturbed area as possible, but at least 10 feet from the toe of a slope steeper than 3H:1V, to allow for maintenance and roll down. The area beyond the fence must be undisturbed or stabilized.
3. The type of silt fence specified for each location on the plan shall not exceed the maximum slope length and maximum fence length requirements shown in the following table:

		Slope Length/Fence Length (ft.)		
Slope	Steepness	Standard	Reinforced	Super
<2%	< 50:1	300/1500	N/A	N/A
2-10%	50:1 to 10:1	125/1000	250/2000	300/2500
10-20%	10:1 to 5:1	100/750	150/1000	200/1000
20-33%	5:1 to 3:1	60/500	80/750	100/1000
33-50%	3:1 to 2:1	40/250	70/350	100/500
>50%	> 2:1	20/125	30/175	50/250

Standard Silt Fence (SF) is fabric rolls stapled to wooden stakes driven 16 inches in the ground.
Reinforced Silt Fence (RSF) is fabric placed against welded wire fabric with anchored steel posts driven 16 inches in the ground.
Super Silt Fence (SSF) is fabric placed against chain link fence as support backing with posts driven 3 feet in the ground.

4. Silt fence shall be removed as soon as the disturbed area has achieved final stabilization.

The silt fence shall be installed in accordance with the appropriate details. Where ends of filter cloth come together, they shall be overlapped, folded and stapled to prevent sediment bypass. Butt joints are not acceptable. A detail of the silt fence shall be shown on the plan. See Figure 5.30 on page 5.56 for Reinforced Silt Fence as an example of details to be provided.

Criteria for Silt Fence Materials

1. Silt Fence Fabric: The fabric shall meet the following specifications unless otherwise approved by the appropriate erosion and sediment control plan approval authority. Such approval shall not constitute statewide acceptance.

Fabric Properties	Minimum Acceptable Value	Test Method
Grab Tensile Strength (lbs)	110	ASTM D 4632
Elongation at Failure (%)	20	ASTM D 4632
Mullen Burst Strength (PSI)	300	ASTM D 3786
Puncture Strength (lbs)	60	ASTM D 4833
Minimum Trapezoidal Tear Strength (lbs)	50	ASTM D 4533
Flow Through Rate (gal/ min/sf)	25	ASTM D 4491
Equivalent Opening Size	40-80	US Std Sieve ASTM D 4751
Minimum UV Residual (%)	70	ASTM D 4355

2. Fence Posts (for fabricated units): The length shall be a minimum of 36 inches long. Wood posts will be of sound quality hardwood with a minimum cross sectional area of 3.5 square inches. Steel posts will be standard T and U section weighing not less than 1.00 pound per linear foot. Posts for super silt fence shall be standard chain link fence posts.

3. Wire Fence for reinforced silt fence: Wire fencing shall be a minimum 14 gage with a maximum 6 in. mesh opening, or as approved.

4. Prefabricated silt fence is acceptable as long as all material specifications are met.

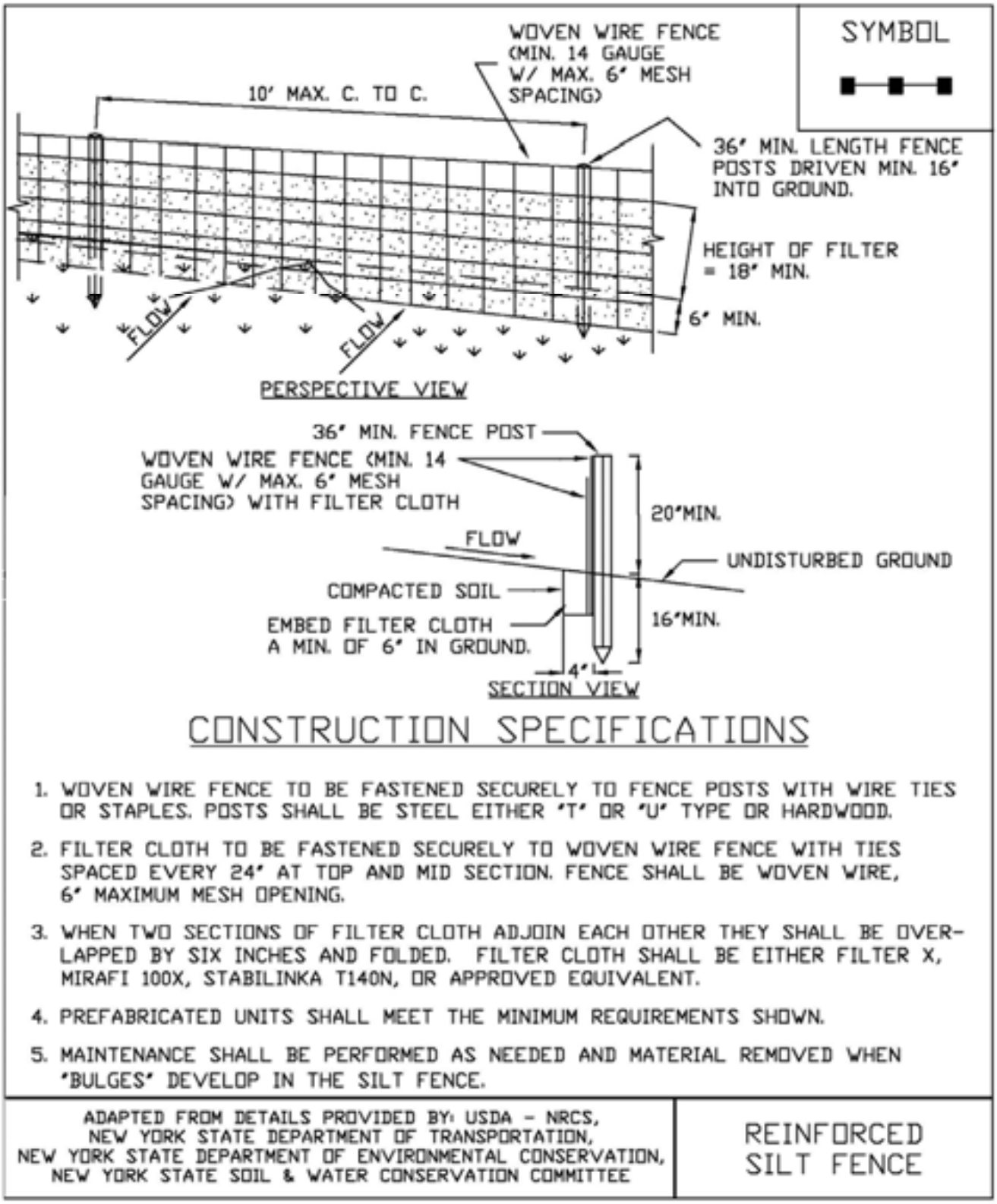
Super Silt Fence

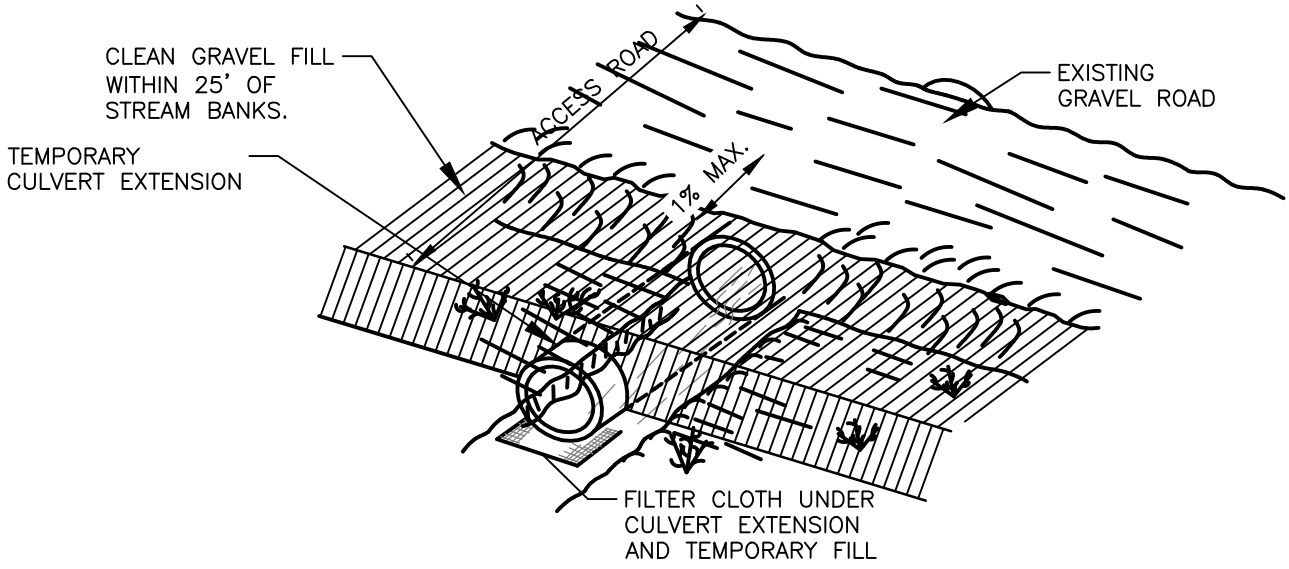


Reinforced Silt Fence



Figure 5.30
Reinforced Silt Fence





NOTES:

1. EXISTING CULVERT SHALL BE EXTENDED ON THE SIDE OF ROAD RESULTING IN THE LEAST AMOUNT OF WETLAND AND/OR STREAM IMPACTS.

2. TEMPORARY CULVERT SHALL BE INSTALLED NO SOONER THAN 4 WEEKS PRIOR TO THE CRANE CROSSING AND SHALL BE REMOVED WITHIN 5 MONTHS AFTER THE CROSSING.

3. THE CULVERT SHALL EXTEND A MINIMUM OF 1' BEYOND THE TOE OF SLOPE.

4. IN AREAS THAT HAVE LESS THAN 1' OF COVER OVER THE EXISTING CULVERT, A STEEL PLATE MAY BE UTILIZED IN CONJUNCTION WITH THE TEMPORARY CULVERT EXTENSIONS TO SPAN THE CULVERT AND PROVIDE FOR CONSTRUCTION LOADING.

5. THE MINIMUM DIAMETER OF THE TEMPORARY CULVERT SHALL EQUAL THE SIZE OF THE EXISTING CULVERT.

TEMPORARY CULVERT EXTENSION

N.T.S.

STANDARD AND SPECIFICATIONS FOR TOPSOILING



Definition & Scope

Spreading a specified quality and quantity of topsoil materials on graded or constructed subsoil areas to provide acceptable plant cover growing conditions, thereby reducing erosion; to reduce irrigation water needs; and to reduce the need for nitrogen fertilizer application.

Conditions Where Practice Applies

Topsoil is applied to subsoils that are droughty (low available moisture for plants), stony, slowly permeable, salty or extremely acid. It is also used to backfill around shrub and tree transplants. This standard does not apply to wetland soils.

Design Criteria

1. Preserve existing topsoil in place where possible, thereby reducing the need for added topsoil.

2. Conserve by stockpiling topsoil and friable fine textured subsoils that must be stripped from the excavated site and applied after final grading where vegetation will be established. Topsoil stockpiles must be stabilized. Stockpile surfaces can be stabilized by vegetation, geotextile or plastic covers. This can be aided by orientating the stockpile lengthwise into prevailing winds.

3. Refer to USDA Natural Resource Conservation Service soil surveys or soil interpretation record sheets for further soil texture information for selecting appropriate design topsoil depths.

Site Preparation

1. As needed, install erosion and sediment control practices such as diversions, channels, sediment traps, and stabilizing measures, or maintain if already installed.

2. Complete rough grading and final grade, allowing for depth of topsoil to be added.

3. Scarify all compact, slowly permeable, medium and fine textured subsoil areas. Scarify at approximately right angles to the slope direction in soil areas that are steeper than 5 percent. Areas that have been overly compacted shall be decompacted in accordance with the Soil Restoration Standard.

4. Remove refuse, woody plant parts, stones over 3 inches in diameter, and other litter.

Topsoil Materials

1. Topsoil shall have at least 6 percent by weight of fine textured stable organic material, and no greater than 20 percent. Muck soil shall not be considered topsoil.

2. Topsoil shall have not less than 20 percent fine textured material (passing the NO. 200 sieve) and not more than 15 percent clay.

3. Topsoil treated with soil sterilants or herbicides shall be so identified to the purchaser.

4. Topsoil shall be relatively free of stones over 1 1/2 inches in diameter, trash, noxious weeds such as nut sedge and quackgrass, and will have less than 10 percent gravel.

5. Topsoil containing soluble salts greater than 500 parts per million shall not be used.

6. Topsoil may be manufactured as a mixture of a mineral component and organic material such as compost.

Application and Grading

1. Topsoil shall be distributed to a uniform depth over the area. It shall not be placed when it is partly frozen, muddy, or on frozen slopes or over ice, snow, or standing water puddles.

2. Topsoil placed and graded on slopes steeper than 5 percent shall be promptly fertilized, seeded, mulched, and stabilized by “tracking” with suitable equipment.

3. Apply topsoil in the amounts shown in Table 4.7 below:

Table 4.7 - Topsoil Application Depth		
Site Conditions	**Intended Use**	**Minimum Topsoil Depth**
1. Deep sand or loamy sand	Mowed lawn	6 in.
	Tall legumes, unmowed	2 in.
	Tall grass, unmowed	1 in.
2. Deep sandy loam	Mowed lawn	5 in.
	Tall legumes, unmowed	2 in.
	Tall grass, unmowed	none
3. Six inches or more: silt loam, clay loam, loam, or silt	Mowed lawn	4 in.
	Tall legumes, unmowed	1 in.
	Tall grass, unmowed	1 in.

STANDARD AND SPECIFICATIONS FOR PROTECTING VEGETATION DURING CONSTRUCTION



Definition & Scope

The protection of trees, shrubs, ground cover and other vegetation from damage by construction equipment. In order to preserve existing vegetation determined to be important for soil erosion control, water quality protection, shade, screening, buffers, wildlife habitat, wetland protection, and other values.

Conditions Where Practices Applies

On planned construction sites where valued vegetation exists and needs to be preserved.

Design Criteria

1. Planning Considerations

   A. Inventory:

      1) Property boundaries, topography, vegetation and soils information should be gathered. Identify potentially high erosion areas, areas with tree windthrow potential, etc. A vegetative cover type map should be made on a copy of a topographic map which shows other natural and manmade features. Vegetation that is desirable to preserve because of its value for screening, shade, critical erosion control, endangered species, aesthetics, etc., should be identified and marked on the map.

      2) Based upon this data, general statements should be prepared about the present condition, potential problem areas, and unique features of the property.

   B. Planning:

      1) After engineering plans (plot maps) are prepared, another field review should take place and recommendations made for the vegetation to be saved. Minor adjustments in location of roads, dwellings, and utilities may be needed. Construction on steep slopes, erodible soils, wetlands, and streams should be avoided. Clearing limits should be delineated (See "Determine Limits of Clearing and Grading" on page 2.2).

      2) Areas to be seeded and planted should be identified. Remaining vegetation should blend with their surroundings and/or provide special function such as a filter strip, buffer zone, or screen.

      3) Trees and shrubs of special seasonal interest, such as flowering dogwood, red maple, striped maple, serviceberry, or shadbush, and valuable potential shade trees should be identified and marked for special protective treatment as appropriate.

      4) Trees to be cut should be marked on the plans. If timber can be removed for salable products, a forester should be consulted for marketing advice.

      5) Trees that may become a hazard to people, personal property, or utilities should be removed. These include trees that are weak-wooded, disease-prone, subject to windthrow, or those that have severely damaged root systems.

      6) The vigor of remaining trees may be improved by a selective thinning. A forester should be consulted for implementing this practice.

2. Measures to Protect Vegetation

   A. Limit soil placement over existing tree and shrub roots to a maximum of 3 inches. Soils with loamy texture and good structure should be used.

   B. Use retaining walls and terraces to protect roots of trees and shrubs when grades are lowered. Lowered grades should start no closer than the dripline of the tree. For narrow-canopied trees and shrubs, the stem diameter in inches is converted to feet and doubled, such that a 10 inch tree should be protected to 20 feet.

   C. Trenching across tree root systems should be the same minimum distance from the trunk, as in "B". Tunnels under root systems for underground utilities should start 18 inches or deeper below the normal ground surface. Tree roots which must be severed should be cut clean. Backfill material that will be in contact with the roots should be topsoil or a prepared planting soil mixture.

   D. Construct sturdy fences, or barriers, of wood, steel, or other protective material around valuable

vegetation for protection from construction equipment. Place barriers far enough away from trees, but not less than the specifications in "B", so that tall equipment such as backhoes and dump trucks do not contact tree branches.

E. Construction limits should be identified and clearly marked to exclude equipment.

F. Avoid spills of oil/gas and other contaminants.

G. Obstructive and broken branches should be pruned properly. The branch collar on all branches whether living or dead should not be damaged. The 3 or 4 cut method should be used on all branches larger than two inches at the cut. First cut about one-third the way through the underside of the limb (about 6-12 inches from the tree trunk). Then (approximately an inch further out) make a second cut through the limb from the upper side. When the branch is removed, there is no splintering of the main tree trunk. Remove the stub. If the branch is larger than 5-6 inches in diameter, use the four cut system. Cuts 1 and 2 remain the same and cut 3 should be from the underside of the limb, on the outside of the branch collar. Cut 4 should be from the top and in alignment with the 3rd cut. Cut 3 should be 1/4 to 1/3 the way through the limb. This will prevent the bark from peeling down the trunk. Do not paint the cut surface.

H. Penalties for damage to valuable trees, shrubs, and herbaceous plants should be clearly spelled out in the contract.

PROTECTING TREES IN HEAVY USE AREAS

The compaction of soil over the roots of trees and shrubs by the trampling of recreationists, vehicular traffic, etc., reduces oxygen, water, and nutrient uptake by feeder roots. This weakens and may eventually kill the plants. Table 2.6 rates the “Susceptibility of Tree Species to Compaction.”

Where heavy compaction is anticipated, apply and maintain a 3 to 4 inch layer of undecayed wood chips or 2 inches of No. 2 washed, crushed gravel. In addition, use of a wooden or plastic mat may be used to lessen compaction, if applicable.

Table 2.6
Susceptibility of Tree Species to Compaction[1]

Resistant:

Box elder……	*Acer negundo*	Willows……	*Salix spp.*
Green ash……..	*Fraxinus pennsylvanica*	Honey locust……	*Gleditsia triacanthos*
Red elm……..	*Ulmus rubra*	Eastern cottonwood…….	*Populus deltoides*
Hawthornes……	*Crataegus spp.*	Swamp white oak…….	*Quercus bicolor*
Bur oak……..	*Quercus macrocarpa*	Hophornbeam……	*Ostrya virginiana*
Northern white cedar….	*Thuja occidentalis*		

Intermediate:

Red maple…….	*Acer rubrum*	Sweetgum…….	*Liquidambar styraciflua*
Silver maple……..	*Acer saccharinum*	Norway maple…….	*Acer platanoides*
Hackberry…….	*Celtis occidentalis*	Shagbark hickory…….	*Carya ovata*
Black gum……	*Nyssa sylvatica*	London plane……..	*Platanus x hybrida*
Red oak……	*Quercus rubra*	Pin oak…….	*Quercus palustris*
Basswood…….	*Tilia americana*		

Susceptible:

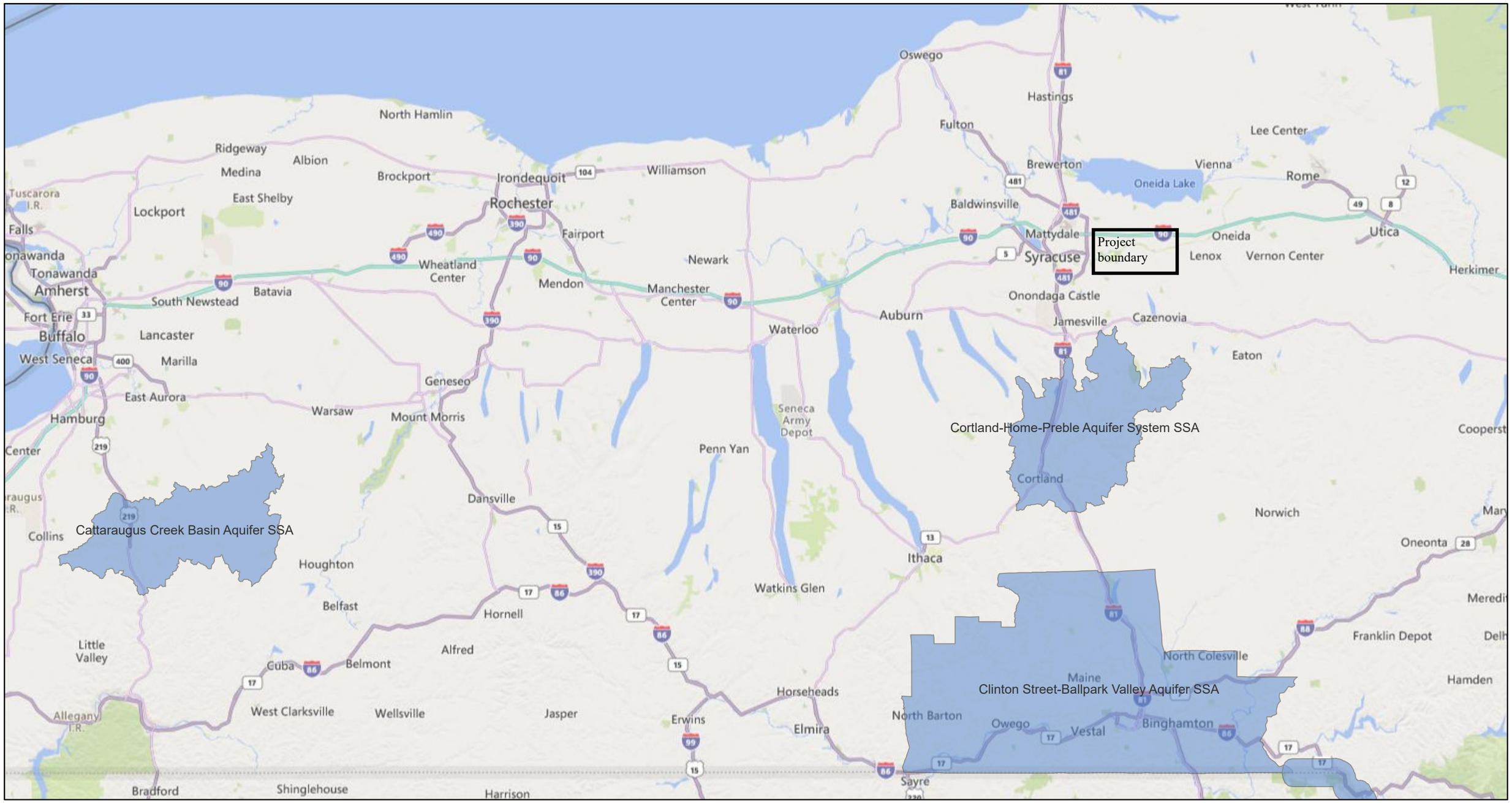
Sugar maple…….	*Acer saccharum*	Austrian Pine……	*Pinus nigra*
White pine……	*Pinus strobus*	White ash…….	*Fraxinus americana*
Blue spruce……..	*Picea pungens*	Paper birch……..	*Betula papyrifera*
White oak……	*Quercus alba*	Moutain ash…….	*Sorbus aucuparia*
Red pine……..	*Pinus resinosa*	Japanese maple……	*Acer palmatum*

[1] If a tree species does not appear on the list, insufficient information is available to rate it for this purpose.

Exhibit 10: Miscellaneous Mapping and Documentation

- EPA Designated Sole Source Aquifer Map and Information
- New York State Primary Aquifer Map
- National Wetland Inventory Maps
- NYSDEC Environmental Resource Map
- SHPO CRIS Map
- NYSDEC Stormwater Resource Map
- NRCS Web Soil Survey Soil Maps
- Watershed Maps and Information
- FEMA Flood Maps

ArcGIS Web AppBuilder



9/24/2021, 9:03:07 AM

Sole_Source_Aquifers

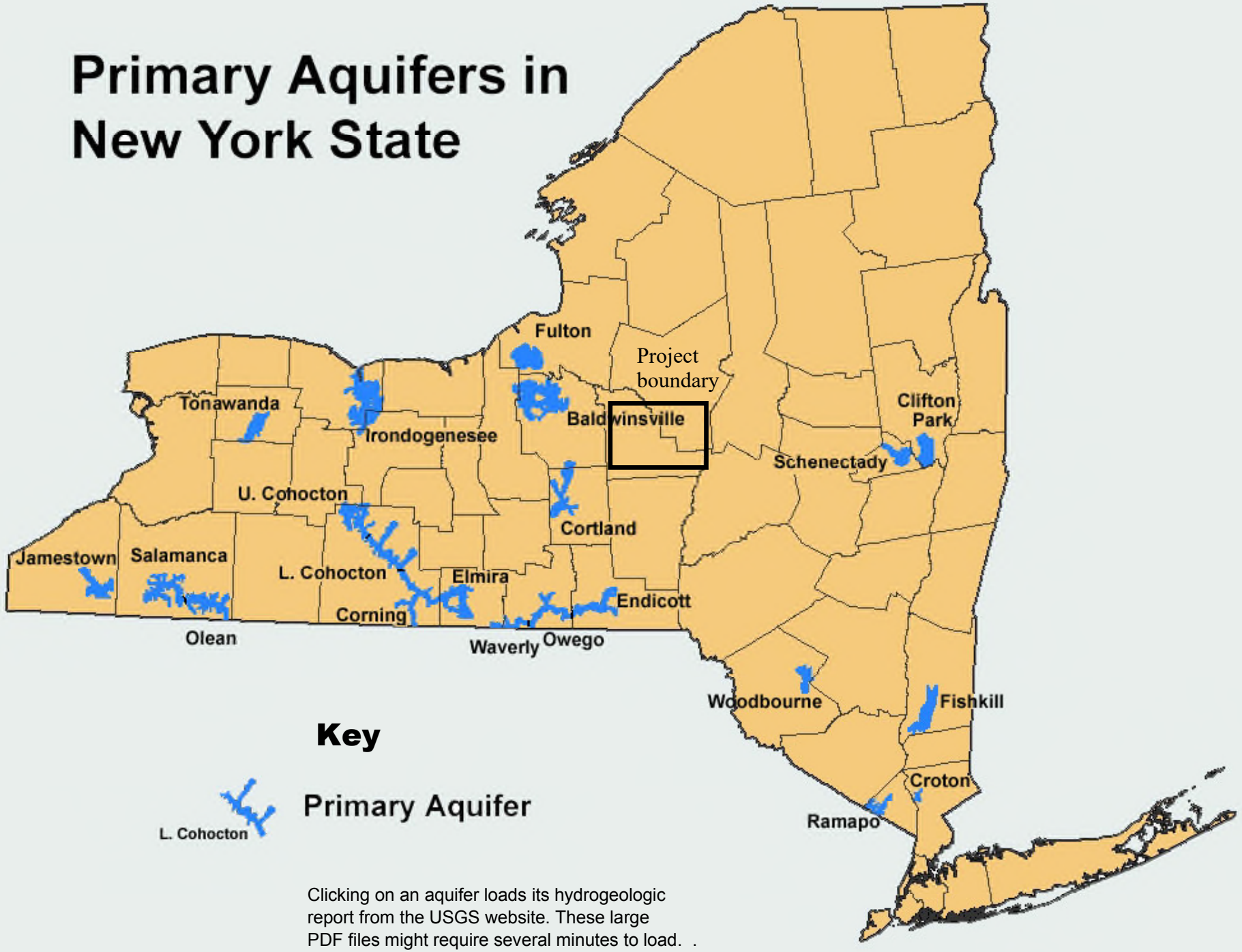
1:1,155,581

0 10 20 40 mi

0 15 30 60 km

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Primary Aquifers in New York State



Key

Primary Aquifer

Clicking on an aquifer loads its hydrogeologic report from the USGS website. These large PDF files might require several minutes to load. .

U.S. Fish and Wildlife Service
National Wetlands Inventory

Wetlands



November 4, 2022

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Environmental Resource Mapper

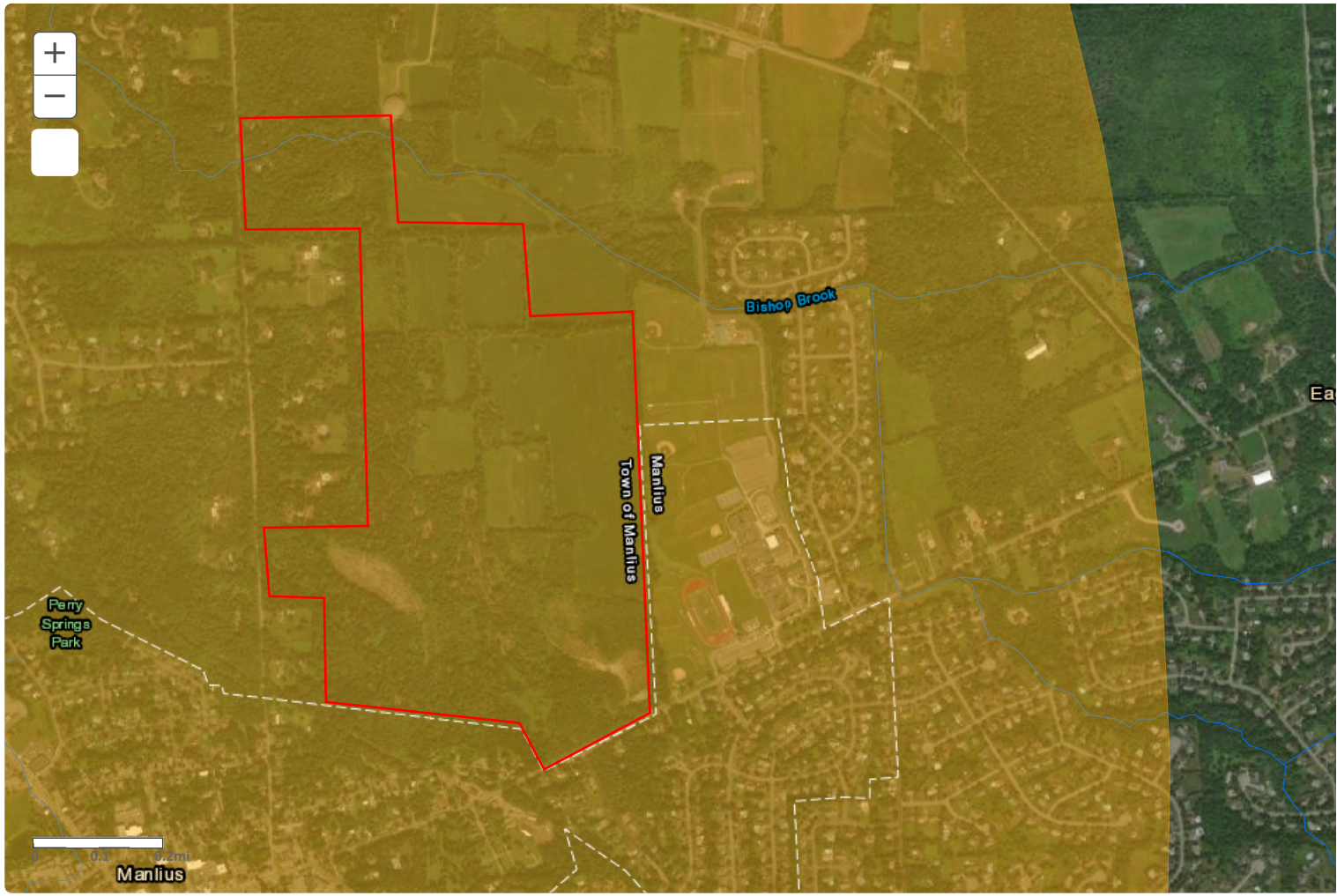
Base Map: Satellite with Labels | Using this map

- Search
- Tools
- **Layers and Legend**

All Layers

- Unique Geological Features
- Waterbody Classifications for Rivers/Streams
- Waterbody Classifications for Lakes
- State Regulated Freshwater Wetlands (Outside of the Adirondack Park)
- State Regulated Wetland Checkzone
- Imperiled Mussels
- Mussel Screening Ponded Waters
- Mussel Screening Streams

- Other Wetland Layers
- Reference Layers
- Tell Me More...
- Need A Permit?
- Contacts



Criteria | Spatial | Results

1. Navigate to your area of interest

Option A: Zoom to a County or Municipality

Select County... | Select Municipality... | Zoom

Option B: Find an Address Location

type address here | Find Address

2. Define or refine the location/area for your search

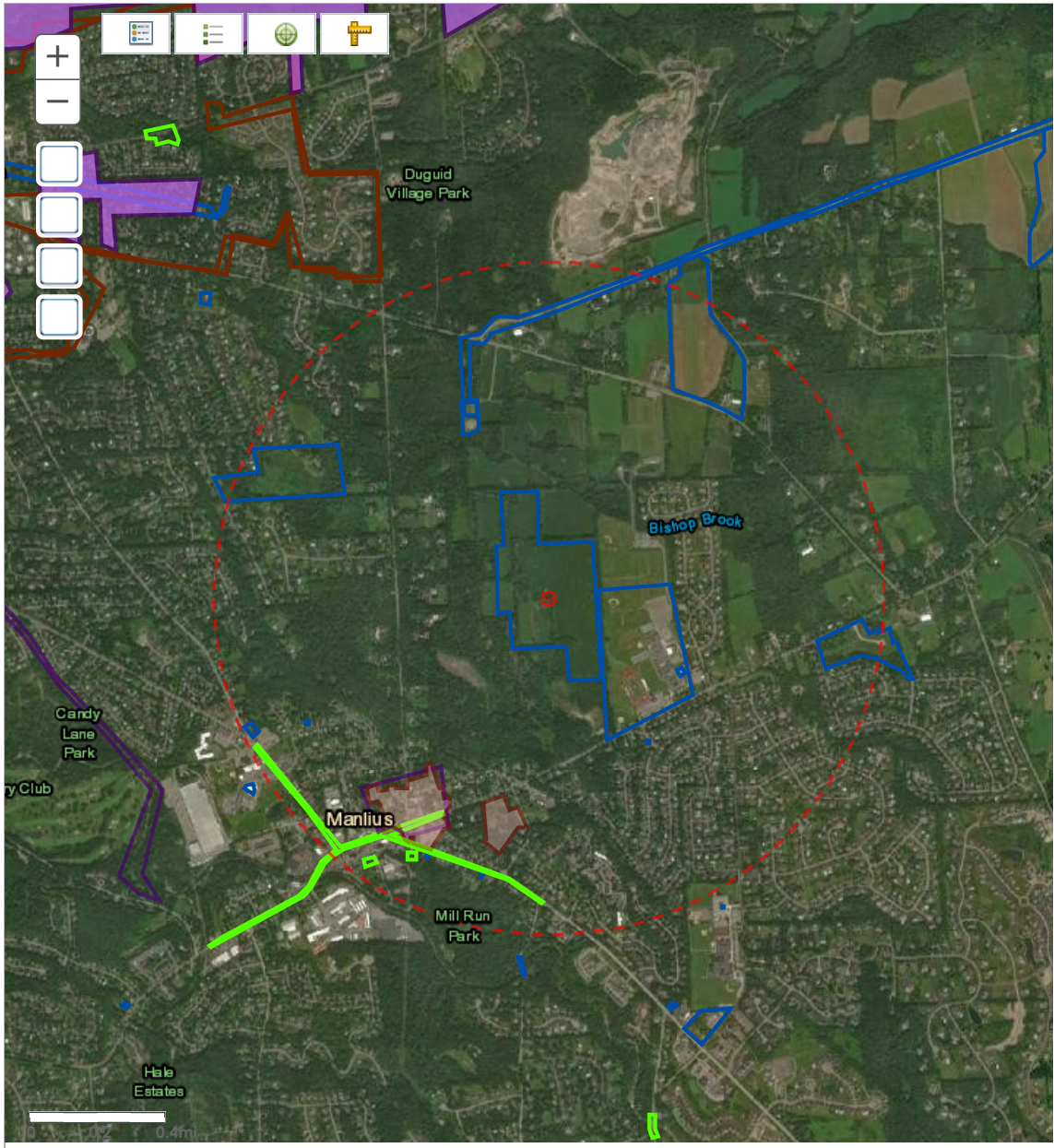
Click a button below to activate the draw tool and draw the shape on the map

Point | Line | Rectangle | Circle | Polygon

3. Generate a search radius around your graphic (Optional)

Generate a 1 Mile buffer | Generate Buffer

Search | Reset



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Stormwater Interactive Map

Base Map: Satellite with Labels | Using this map

- Search
- Tools
- **Permit Related Layers**

All Layers

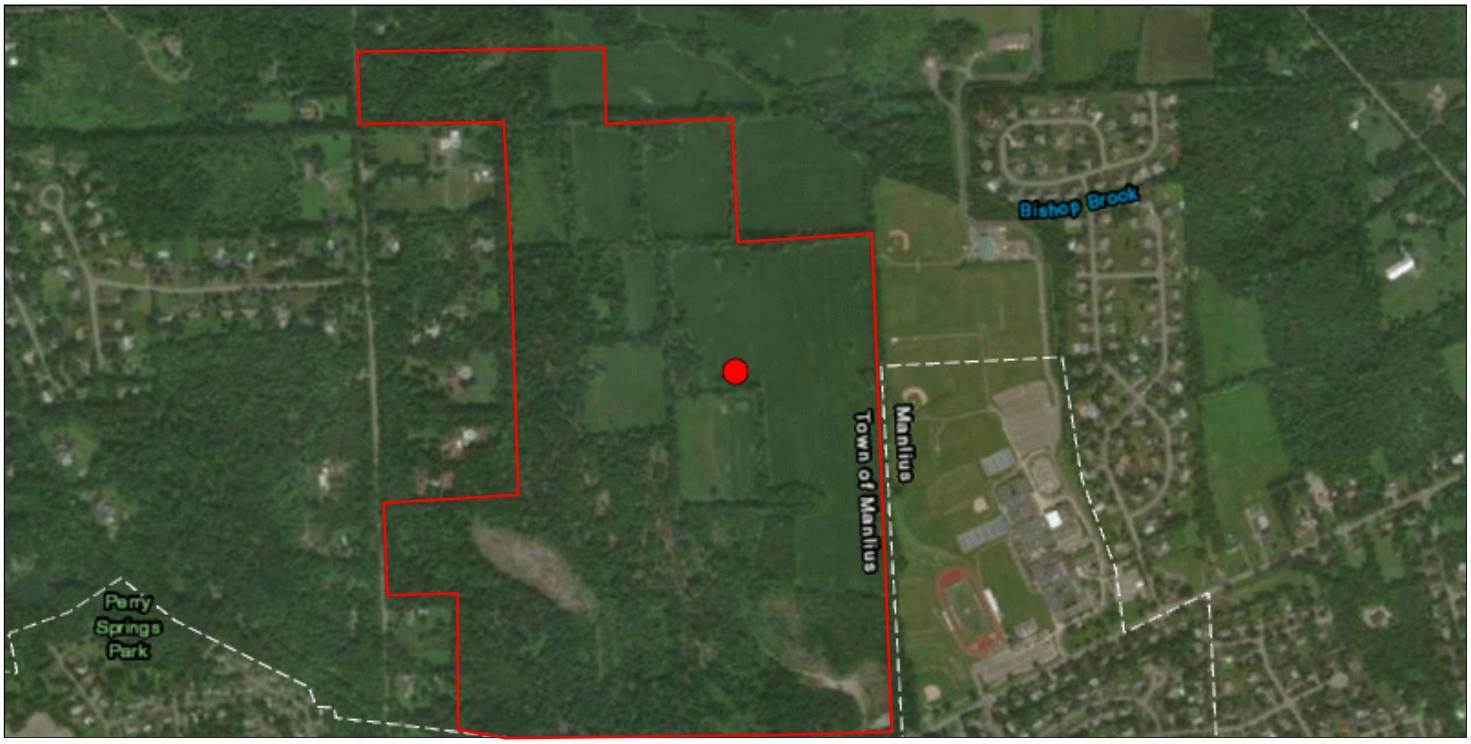
Layers become visible at different scales

- Watershed Improvement Strategy
- Regulated MS4s
  - Automatic
  - Designation 2003
  - Designation 2008
  - Designation 2010
- 303D Stream Construction
- 303D Estuary Construction
- 303D Lake Construction
- 1-Year 24-Hour Rainfall
- 90 Percentile Rainfall
- Class AA AAS Watersheds

- Other Useful Reference Layers
- General Permit Information
- Contacts



Stormwater Interactive Map



The coordinates of the point you clicked on are:

UTM 18	**Easting:**	421164.583	**Northing:**	4762644.864
Longitude/Latitude	**Longitude:**	-75.967	**Latitude:**	43.012

The approximate address of the point you clicked on is:
Town of Manlius, New York

County: Onondaga
Town: Manlius
USGS Quad: MANLIUS

DEC Administrative Boundaries

Region 7:
(Central New York) Broome, Cayuga, Chenango, Cortland, Madison, Onondaga, Oswego, Tioga and Tompkins counties. For more information visit **http://www.dec.ny.gov/about/615.html**.

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Onondaga County, New York



November 4, 2022

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

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 17, Sep 10, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 21, 2020—Nov 7, 2021

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.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BeB	Benson silt loam, undulating	15.4	15.4%
BNC	Benson-Wassaic-Rock outcrop association, sloping	2.2	2.2%
CfB	Cazenovia silt loam, 2 to 8 percent slopes	14.1	14.1%
HnB	Honeoye silt loam, 3 to 8 percent slopes	26.2	26.2%
Pt	Quarries	14.4	14.4%
WcB	Wassaic silt loam, 0 to 8 percent slopes	27.8	27.8%
Totals for Area of Interest		**100.0**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it

was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Onondaga County, New York

BeB—Benson silt loam, undulating

Map Unit Setting

National map unit symbol: 9vft
Elevation: 90 to 1,000 feet
Mean annual precipitation: 38 to 42 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 110 to 190 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Benson and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Benson

Setting

Landform: Till plains, ridges, benches
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Channery loamy till underlain by limestone or calcareous shale

Typical profile

H1 - 0 to 8 inches: silt loam
H2 - 8 to 18 inches: very channery loam
H3 - 18 to 22 inches: unweathered bedrock

Properties and qualities

Slope: 0 to 8 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 1 percent
Available water supply, 0 to 60 inches: Very low (about 2.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: D
Ecological site: F101XY011NY - Shallow Till Upland
Hydric soil rating: No

Minor Components

Wassaic

Percent of map unit: 5 percent
Hydric soil rating: No

Honeoye
Percent of map unit: 5 percent
Hydric soil rating: No

Ontario
Percent of map unit: 5 percent
Hydric soil rating: No

Cazenovia
Percent of map unit: 5 percent
Hydric soil rating: No

BNC—Benson-Wassaic-Rock outcrop association, sloping

Map Unit Setting
National map unit symbol: 9vfq
Elevation: 90 to 1,750 feet
Mean annual precipitation: 38 to 42 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 110 to 190 days
Farmland classification: Not prime farmland

Map Unit Composition
Benson and similar soils: 31 percent
Wassaic and similar soils: 29 percent
Rock outcrop: 20 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Benson

Setting
Landform: Till plains, ridges, benches
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Channery loamy till underlain by limestone or calcareous shale

Typical profile
H1 - 0 to 8 inches: silt loam
H2 - 8 to 18 inches: very channery loam
H3 - 18 to 22 inches: unweathered bedrock

Properties and qualities
Slope: 0 to 25 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.60 in/hr)
Depth to water table: More than 80 inches

Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 1 percent
Available water supply, 0 to 60 inches: Very low (about 2.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: D
Ecological site: F101XY011NY - Shallow Till Upland
Hydric soil rating: No

Description of Wassaic

Setting

Landform: Till plains, ridges, benches
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Loamy till derived mainly from limestone, with varying amounts of sandstone, shale, and crystalline rock

Typical profile

H1 - 0 to 11 inches: silt loam
H2 - 11 to 23 inches: channery silt loam
C - 23 to 35 inches: channery loam
R - 35 to 39 inches: unweathered bedrock

Properties and qualities

Slope: 0 to 25 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: About 19 to 39 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 1 percent
Available water supply, 0 to 60 inches: Low (about 5.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: C
Ecological site: F101XY012NY - Till Upland
Hydric soil rating: No

Minor Components

Ontario

Percent of map unit: 5 percent
Hydric soil rating: No

Unnamed soils

Percent of map unit: 5 percent
Hydric soil rating: No

Honeoye

Percent of map unit: 5 percent
Hydric soil rating: No

Cazenovia

Percent of map unit: 5 percent
Hydric soil rating: No

CfB—Cazenovia silt loam, 2 to 8 percent slopes

Map Unit Setting

National map unit symbol: 9vg5
Elevation: 380 to 1,690 feet
Mean annual precipitation: 38 to 42 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 110 to 190 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Cazenovia and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cazenovia

Setting

Landform: Till plains, reworked lake plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Loamy till that contains limestone with an admixture of reddish lake-laid clays or reddish clay shale

Typical profile

H1 - 0 to 12 inches: silt loam
H2 - 12 to 36 inches: silty clay loam
H3 - 36 to 60 inches: gravelly silty clay loam

Properties and qualities

Slope: 2 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 24 to 48 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent

Available water supply, 0 to 60 inches: Moderate (about 8.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C
Ecological site: F101XY013NY - Moist Till
Hydric soil rating: No

Minor Components

Ovid

Percent of map unit: 10 percent
Hydric soil rating: No

Unnamed soils

Percent of map unit: 5 percent
Hydric soil rating: No

HnB—Honeoye silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2w3p2
Elevation: 260 to 1,780 feet
Mean annual precipitation: 31 to 57 inches
Mean annual air temperature: 41 to 50 degrees F
Frost-free period: 100 to 190 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Honeoye and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Honeoye

Setting

Landform: Ridges, till plains, drumlins
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Crest, side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Calcareous loamy lodgment till derived from limestone, sandstone, and shale

Typical profile

Ap - 0 to 8 inches: silt loam
E - 8 to 10 inches: silt loam
Bt/E - 10 to 14 inches: loam
Bt1 - 14 to 23 inches: loam
Bt2 - 23 to 29 inches: gravelly loam

C - 29 to 79 inches: gravelly loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 1.42 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 40 percent
Available water supply, 0 to 60 inches: Moderate (about 7.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B
Ecological site: F101XY012NY - Till Upland
Hydric soil rating: No

Minor Components

Lima

Percent of map unit: 5 percent
Landform: Till plains, ridges, drumlins
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Lansing

Percent of map unit: 4 percent
Landform: Till plains, hills, drumlins
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Appleton

Percent of map unit: 4 percent
Landform: Till plains, ridges, drumlins
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Wassaic

Percent of map unit: 2 percent
Landform: Till plains, ridges, benches
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Convex

Across-slope shape: Convex
Hydric soil rating: No

Pt—Quarries

Map Unit Setting

National map unit symbol: 9vkm
Mean annual precipitation: 38 to 42 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 110 to 190 days
Farmland classification: Not prime farmland

Map Unit Composition

Quarries: 70 percent
Minor components: 30 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Quarries

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8s
Hydric soil rating: Unranked

Minor Components

Halsey

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Galen

Percent of map unit: 5 percent
Hydric soil rating: No

Minoa

Percent of map unit: 5 percent
Hydric soil rating: No

Howard

Percent of map unit: 5 percent
Hydric soil rating: No

Arkport

Percent of map unit: 5 percent
Hydric soil rating: No

Lamson

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

WcB—Wassaic silt loam, 0 to 8 percent slopes

Map Unit Setting

National map unit symbol: 9vl8
Elevation: 800 to 1,750 feet
Mean annual precipitation: 38 to 42 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 110 to 190 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Wassaic and similar soils: 75 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wassaic

Setting

Landform: Till plains, ridges, benches
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Loamy till derived mainly from limestone, with varying amounts of sandstone, shale, and crystalline rock

Typical profile

H1 - 0 to 11 inches: silt loam
H2 - 11 to 23 inches: channery silt loam
C - 23 to 35 inches: channery loam
R - 35 to 39 inches: unweathered bedrock

Properties and qualities

Slope: 0 to 8 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: About 19 to 39 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 1 percent
Available water supply, 0 to 60 inches: Low (about 5.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C
Ecological site: F101XY012NY - Till Upland
Hydric soil rating: No

Minor Components

Benson
Percent of map unit: 5 percent
Hydric soil rating: No

Honeoye
Percent of map unit: 4 percent
Hydric soil rating: No

Mohawk
Percent of map unit: 4 percent
Hydric soil rating: No

Ontario
Percent of map unit: 4 percent
Hydric soil rating: No

Palatine
Percent of map unit: 4 percent
Hydric soil rating: No

Cazenovia
Percent of map unit: 4 percent
Hydric soil rating: No

Soil Information for All Uses

Soil Properties and Qualities

The Soil Properties and Qualities section includes various soil properties and qualities displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each property or quality.

Soil Qualities and Features

Soil qualities are behavior and performance attributes that are not directly measured, but are inferred from observations of dynamic conditions and from soil properties. Example soil qualities include natural drainage, and frost action. Soil features are attributes that are not directly part of the soil. Example soil features include slope and depth to restrictive layer. These features can greatly impact the use and management of the soil.

Hydrologic Soil Group

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.

Custom Soil Resource Report
Map—Hydrologic Soil Group



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)

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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 17, Sep 10, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 21, 2020—Nov 7, 2021

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.

Table—Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
BeB	Benson silt loam, undulating	D	15.4	15.4%
BNC	Benson-Wassaic-Rock outcrop association, sloping		2.2	2.2%
CfB	Cazenovia silt loam, 2 to 8 percent slopes	C	14.1	14.1%
HnB	Honeoye silt loam, 3 to 8 percent slopes	B	26.2	26.2%
Pt	Quarries		14.4	14.4%
WcB	Wassaic silt loam, 0 to 8 percent slopes	C	27.8	27.8%
Totals for Area of Interest			**100.0**	**100.0%**

Rating Options—Hydrologic Soil Group

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Hydrologic Soil Group

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.

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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.


75° 58' 25" W
75° 57' 33" W
43° 1' 4" N
43° 0' 13" N
420700
420800
420900
421000
421100
421200
421300
421400
421500
421600
421700
421800
4763200
4763100
4763000
4762900
4762800
4762700
4762600
4762500
4762400
4762300
4762200
4762100
4762000
4761900
4761800
4761700
WcB
CfB
HnB
BeB
Pt
BNC
Bishop Brook
Soil Map may not be valid at this scale.
Map Scale: 1:7,640 if printed on A portrait (8.5" x 11") sheet.
N
Meters
0
100
200
400
600
Feet
0
350
700
1400
2100
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

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

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CfB	Cazenovia silt loam, 2 to 8 percent slopes	C	14.1	14.1%
HnB	Honeoye silt loam, 3 to 8 percent slopes	B	26.2	26.2%
Pt	Quarries		14.4	14.4%
WcB	Wassaic silt loam, 0 to 8 percent slopes	C	27.8	27.8%
Totals for Area of Interest			**100.0**	**100.0%**

Rating Options—Hydrologic Soil Group

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

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Custom Soil Resource Report
Soil Map



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

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Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 21, 2020—Nov 7, 2021

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.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BeB	Benson silt loam, undulating	15.4	15.4%
BNC	Benson-Wassaic-Rock outcrop association, sloping	2.2	2.2%
CfB	Cazenovia silt loam, 2 to 8 percent slopes	14.1	14.1%
HnB	Honeoye silt loam, 3 to 8 percent slopes	26.2	26.2%
Pt	Quarries	14.4	14.4%
WcB	Wassaic silt loam, 0 to 8 percent slopes	27.8	27.8%
Totals for Area of Interest		**100.0**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it

was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Onondaga County, New York

BeB—Benson silt loam, undulating

Map Unit Setting

National map unit symbol: 9vft
Elevation: 90 to 1,000 feet
Mean annual precipitation: 38 to 42 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 110 to 190 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Benson and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Benson

Setting

Landform: Till plains, ridges, benches
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Channery loamy till underlain by limestone or calcareous shale

Typical profile

H1 - 0 to 8 inches: silt loam
H2 - 8 to 18 inches: very channery loam
H3 - 18 to 22 inches: unweathered bedrock

Properties and qualities

Slope: 0 to 8 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 1 percent
Available water supply, 0 to 60 inches: Very low (about 2.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: D
Ecological site: F101XY011NY - Shallow Till Upland
Hydric soil rating: No

Minor Components

Wassaic

Percent of map unit: 5 percent
Hydric soil rating: No

Honeoye
Percent of map unit: 5 percent
Hydric soil rating: No

Ontario
Percent of map unit: 5 percent
Hydric soil rating: No

Cazenovia
Percent of map unit: 5 percent
Hydric soil rating: No

BNC—Benson-Wassaic-Rock outcrop association, sloping

Map Unit Setting
National map unit symbol: 9vfq
Elevation: 90 to 1,750 feet
Mean annual precipitation: 38 to 42 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 110 to 190 days
Farmland classification: Not prime farmland

Map Unit Composition
Benson and similar soils: 31 percent
Wassaic and similar soils: 29 percent
Rock outcrop: 20 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Benson

Setting
Landform: Till plains, ridges, benches
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Channery loamy till underlain by limestone or calcareous shale

Typical profile
H1 - 0 to 8 inches: silt loam
H2 - 8 to 18 inches: very channery loam
H3 - 18 to 22 inches: unweathered bedrock

Properties and qualities
Slope: 0 to 25 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.60 in/hr)
Depth to water table: More than 80 inches

Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 1 percent
Available water supply, 0 to 60 inches: Very low (about 2.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: D
Ecological site: F101XY011NY - Shallow Till Upland
Hydric soil rating: No

Description of Wassaic

Setting

Landform: Till plains, ridges, benches
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Loamy till derived mainly from limestone, with varying amounts of sandstone, shale, and crystalline rock

Typical profile

H1 - 0 to 11 inches: silt loam
H2 - 11 to 23 inches: channery silt loam
C - 23 to 35 inches: channery loam
R - 35 to 39 inches: unweathered bedrock

Properties and qualities

Slope: 0 to 25 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: About 19 to 39 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 1 percent
Available water supply, 0 to 60 inches: Low (about 5.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: C
Ecological site: F101XY012NY - Till Upland
Hydric soil rating: No

Minor Components

Ontario

Percent of map unit: 5 percent
Hydric soil rating: No

Unnamed soils

Percent of map unit: 5 percent
Hydric soil rating: No

Honeoye

Percent of map unit: 5 percent
Hydric soil rating: No

Cazenovia

Percent of map unit: 5 percent
Hydric soil rating: No

CfB—Cazenovia silt loam, 2 to 8 percent slopes

Map Unit Setting

National map unit symbol: 9vg5
Elevation: 380 to 1,690 feet
Mean annual precipitation: 38 to 42 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 110 to 190 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Cazenovia and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cazenovia

Setting

Landform: Till plains, reworked lake plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Loamy till that contains limestone with an admixture of reddish lake-laid clays or reddish clay shale

Typical profile

H1 - 0 to 12 inches: silt loam
H2 - 12 to 36 inches: silty clay loam
H3 - 36 to 60 inches: gravelly silty clay loam

Properties and qualities

Slope: 2 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 24 to 48 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent

Available water supply, 0 to 60 inches: Moderate (about 8.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C
Ecological site: F101XY013NY - Moist Till
Hydric soil rating: No

Minor Components

Ovid

Percent of map unit: 10 percent
Hydric soil rating: No

Unnamed soils

Percent of map unit: 5 percent
Hydric soil rating: No

HnB—Honeoye silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2w3p2
Elevation: 260 to 1,780 feet
Mean annual precipitation: 31 to 57 inches
Mean annual air temperature: 41 to 50 degrees F
Frost-free period: 100 to 190 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Honeoye and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Honeoye

Setting

Landform: Ridges, till plains, drumlins
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Crest, side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Calcareous loamy lodgment till derived from limestone, sandstone, and shale

Typical profile

Ap - 0 to 8 inches: silt loam
E - 8 to 10 inches: silt loam
Bt/E - 10 to 14 inches: loam
Bt1 - 14 to 23 inches: loam
Bt2 - 23 to 29 inches: gravelly loam

C - 29 to 79 inches: gravelly loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 1.42 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 40 percent
Available water supply, 0 to 60 inches: Moderate (about 7.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B
Ecological site: F101XY012NY - Till Upland
Hydric soil rating: No

Minor Components

Lima

Percent of map unit: 5 percent
Landform: Till plains, ridges, drumlins
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Lansing

Percent of map unit: 4 percent
Landform: Till plains, hills, drumlins
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Appleton

Percent of map unit: 4 percent
Landform: Till plains, ridges, drumlins
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Wassaic

Percent of map unit: 2 percent
Landform: Till plains, ridges, benches
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Convex

Across-slope shape: Convex
Hydric soil rating: No

Pt—Quarries

Map Unit Setting

National map unit symbol: 9vkm
Mean annual precipitation: 38 to 42 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 110 to 190 days
Farmland classification: Not prime farmland

Map Unit Composition

Quarries: 70 percent
Minor components: 30 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Quarries

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8s
Hydric soil rating: Unranked

Minor Components

Halsey

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Galen

Percent of map unit: 5 percent
Hydric soil rating: No

Minoa

Percent of map unit: 5 percent
Hydric soil rating: No

Howard

Percent of map unit: 5 percent
Hydric soil rating: No

Arkport

Percent of map unit: 5 percent
Hydric soil rating: No

Lamson

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

WcB—Wassaic silt loam, 0 to 8 percent slopes

Map Unit Setting

National map unit symbol: 9vl8
Elevation: 800 to 1,750 feet
Mean annual precipitation: 38 to 42 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 110 to 190 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Wassaic and similar soils: 75 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wassaic

Setting

Landform: Till plains, ridges, benches
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Loamy till derived mainly from limestone, with varying amounts of sandstone, shale, and crystalline rock

Typical profile

H1 - 0 to 11 inches: silt loam
H2 - 11 to 23 inches: channery silt loam
C - 23 to 35 inches: channery loam
R - 35 to 39 inches: unweathered bedrock

Properties and qualities

Slope: 0 to 8 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: About 19 to 39 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 1 percent
Available water supply, 0 to 60 inches: Low (about 5.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C
Ecological site: F101XY012NY - Till Upland
Hydric soil rating: No

Minor Components

Benson
Percent of map unit: 5 percent
Hydric soil rating: No

Honeoye
Percent of map unit: 4 percent
Hydric soil rating: No

Mohawk
Percent of map unit: 4 percent
Hydric soil rating: No

Ontario
Percent of map unit: 4 percent
Hydric soil rating: No

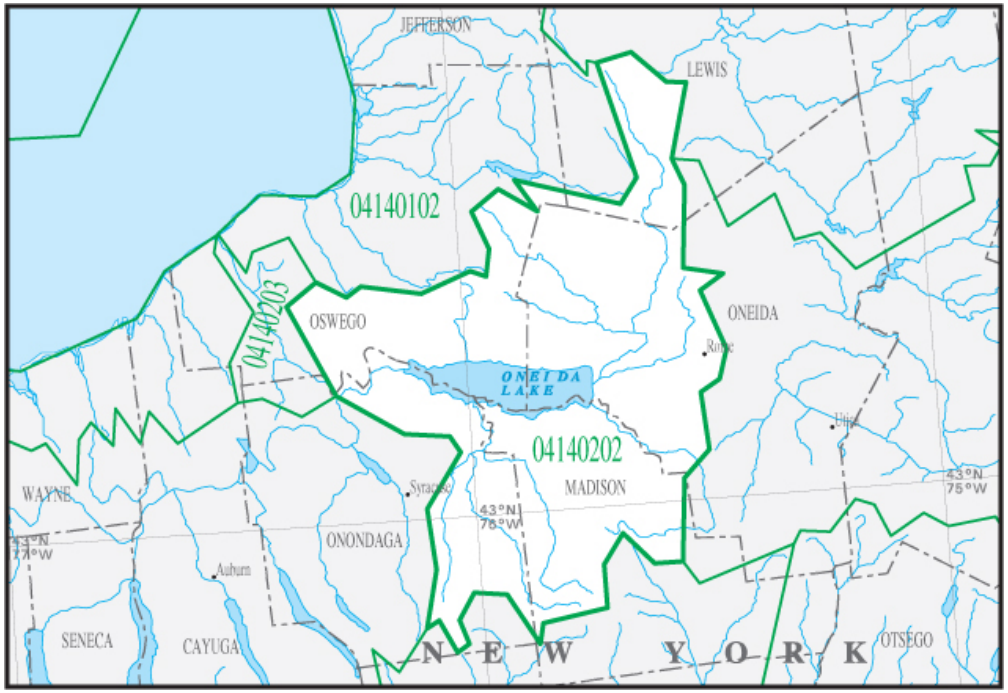
Palatine
Percent of map unit: 4 percent
Hydric soil rating: No

Cazenovia
Percent of map unit: 4 percent
Hydric soil rating: No

Science in Your Watershed

Locate Your Watershed

Watersheds in: 04 Great Lakes Region



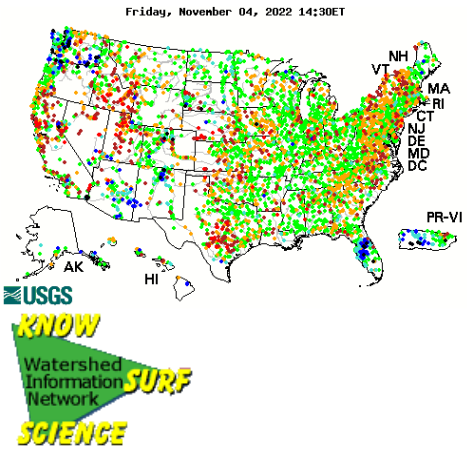
Additional Information for this Watershed

USGS Water	Surf Your Watershed	Know Your Watershed	*HELP!*

Science in Your Watershed

- Home
- Locate Your Watershed (Legacy 8-digit HUC)
- Locate Your Watershed by 12-digit HUC
- Links By Watershed

- Information Discovery
  - Active Projects
  - Databases
  - Publications
  - Reports
- Data Integration:
  - Watersheds
  - Education
- Case Studies:
  - Analysis
  - Assessment
  - Characterization
  - Management
  - Stream Restoration
- Customer Service
- Glossaries
- Conferences/Events



Subregion 0414 -- Southeastern Lake Ontario: The drainage into Lake Ontario from the Genesee River Basin boundary to and including the Stony Creek Basin. New York.
Area = 6710 sq.mi.

Accounting Unit 041401 -- Southeastern Lake Ontario: The drainage into Lake Ontario from the Genesee River Basin boundary to and including the Stony Creek Basin, excluding the Oswego River Basin. New York.
Area = 1680 sq.mi.

Cataloging Units 04140101 -- Irondequoit-Ninemile. New York.
Area = 708 sq.mi.
04140102 -- Salmon-Sandy. New York.
Area = 969 sq.mi.

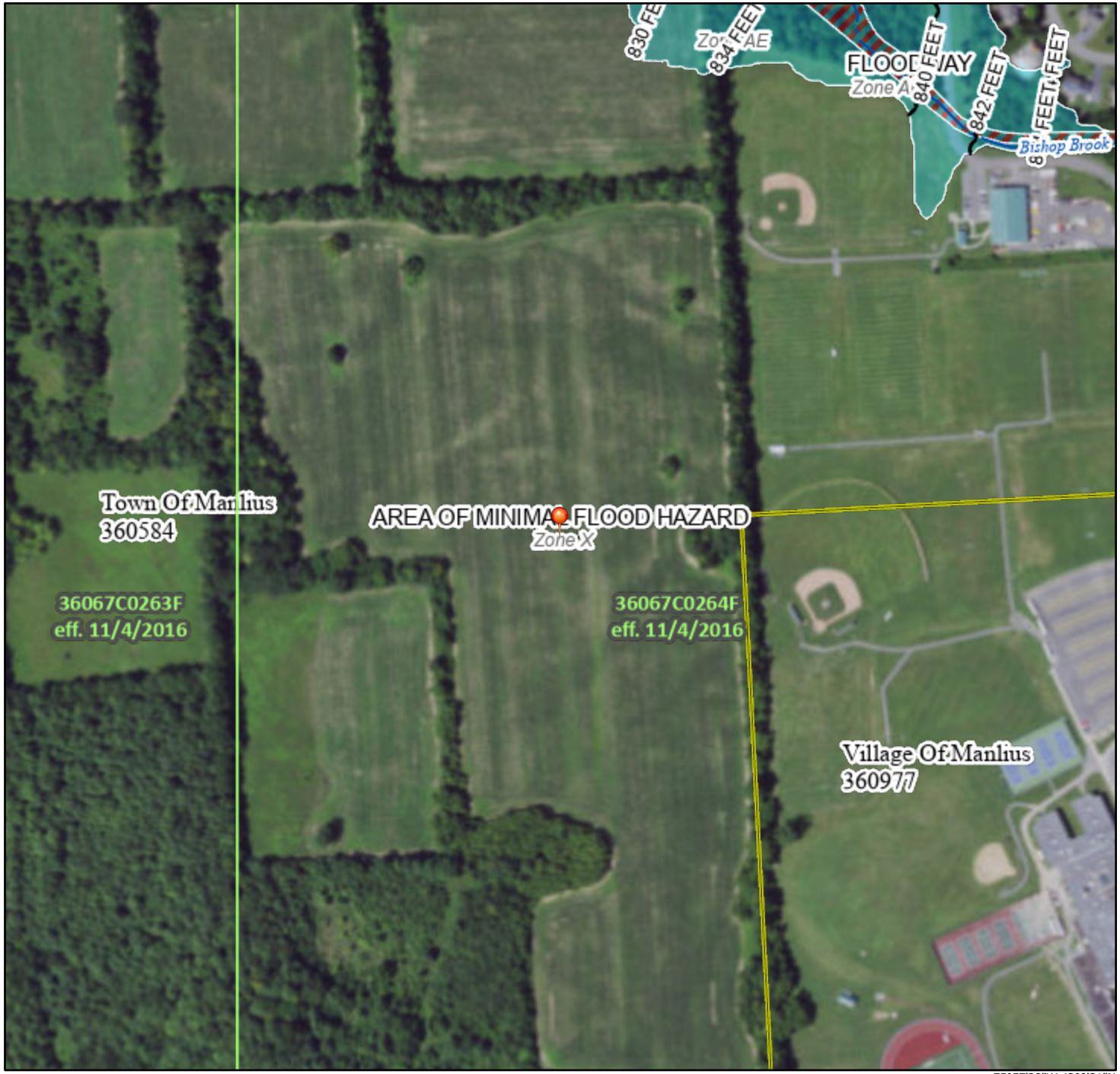
Accounting Unit 041402 -- Oswego: The Oswego River Basin. New York.
Area = 5030 sq.mi.

Cataloging Units 04140201 -- Seneca. New York.
Area = 3430 sq.mi.
04140202 -- Oneida. New York.
Area = 1470 sq.mi.
04140203 -- Oswego. New York.
Area = 131 sq.mi.

National Flood Hazard Layer FIRMette

FEMA

75°58'15"W 43°0'57"N



75°57'38"W 43°0'31"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 11/4/2022 at 3:11 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

National Flood Hazard Layer FIRMette

FEMA

75°58'41"W 43°1'10"N



75°58'4"W 43°0'44"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance / Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 11/9/2022 at 10:49 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

Exhibit 11: SWPPP Amendments

CONR 8
(06/08)

SPEDES STORMWATER POLLUTION PREVENTION PLAN (SWPPP) REVISION

Clear Form

JOB STAMP

Date of Revision: _____

Sheet No. _____ of _____ Sheets

This form is to be used when revisions to the current Stormwater Pollution Prevention Plan (SWPPP) are required by SPDES General Permit for Construction Activity [GP-0-20-001]. The completed form must be filed in the Engineer's Field Office

Reason for the Revision(s): Revision(s) were requested by NYSDEC: ☐ Yes ☐ No

Describe the Revision(s) to the SWPPP:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that false statements made herein are punishable as a class A misdemeanor pursuant to Section 210.45 of the Penal Law."

Signature: _____

Date Prepared: _____ Date Submitted: _____ Date Copy Sent to Contractor: _____

Engineer-in-Charge Name/Title
(w/Firm Name, If Consultant): _____

Print Form


FISHER
ASSOCIATES

MANLIUS EAST
6,865.56 kW-DC, 5,000.0 kW-AC
8109 E SENECA TURNPIKE
MANLIUS, NY 13104

(43.01303, -75.96589)

CODES AND STANDARDS

NEC 2017
NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)
NATIONAL FIRE PROTECTION ASSOCIATION (NFPA 70E)
AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)
AMERICAN SOCIETY OF TESTING MATERIALS (ASTM)

PROJECT INFORMATION

Owner:
CVE US EI5 Manlius East, LLC

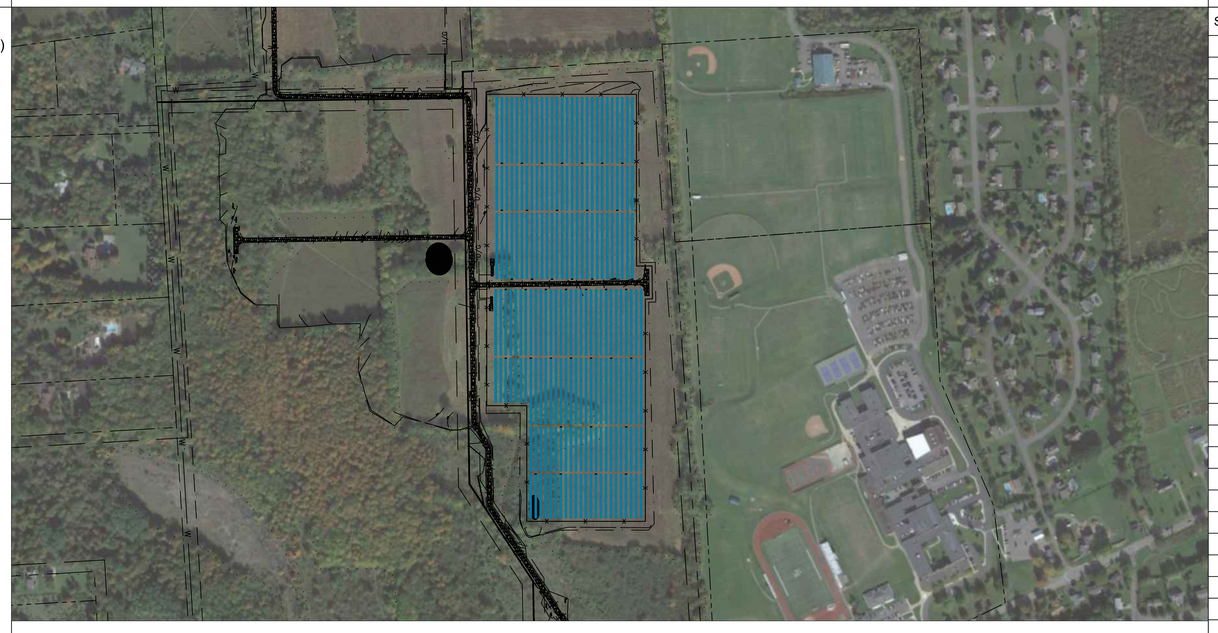
General Contractor:

Installer:

Engineer:
Castillo Engineering Services LLC
620 N. Wymore Road, Suite 250,
Maitland, FL 32751
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Castillo Engineering
DESIGNING TOMORROW'S POWER®

ARRAY VIEW



COUNTY MAP



AERIAL VIEW



DRAWING INDEX

SHEET#	SHEET DESCRIPTION	REV / ISSUE	DATE
G-001	TITLE SHEET	0 / IFP	12/09/2022
G-100	GENERAL NOTES - SHEET 1	0 / IFP	12/09/2022
G-101	GENERAL NOTES - SHEET 2	0 / IFP	12/09/2022
C-001	OVERALL SITE PLAN	0 / IFP	12/09/2022
E-001	POLE LAYOUT SITE PLAN	0 / IFP	12/09/2022
E-100	SINGLE LINE DIAGRAM - SHEET 1	0 / IFP	12/09/2022
E-101	SINGLE LINE DIAGRAM - SHEET 2	0 / IFP	12/09/2022
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E-103	THREE LINE DIAGRAM - SHEET 1	0 / IFP	12/09/2022
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E-111	AC & DC SYSTEM VALUE	0 / IFP	12/09/2022
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E-201	DC FEEDER PLAN - AREA 1	0 / IFP	12/09/2022
E-202	DC FEEDER PLAN - AREA 2	0 / IFP	12/09/2022
E-203	DC FEEDER PLAN - AREA 3	0 / IFP	12/09/2022
E-204	DC FEEDER PLAN - AREA 4	0 / IFP	12/09/2022
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E-403	MOUNTING DETAILS	0 / IFP	12/09/2022
E-404	CONDUIT TRENCHING DETAILS - SHEET 1	0 / IFP	12/09/2022
E-405	CONDUIT TRENCHING DETAILS - SHEET 2	0 / IFP	12/09/2022
E-406	EQUIPMENT PAD DETAIL	0 / IFP	12/09/2022
E-407	EQUIPMENT RACK DETAILS	0 / IFP	12/09/2022
E-500	WARNING LABELS - SHEET 1	0 / IFP	12/09/2022
E-501	WARNING LABELS - SHEET 2	0 / IFP	12/09/2022
E-502	WIRE LABELING	0 / IFP	12/09/2022
E-600	POLE DETAILS - SHEET 1	0 / IFP	12/09/2022
E-601	POLE DETAILS - SHEET 2	0 / IFP	12/09/2022
E-602	POLE DETAILS - SHEET 3	0 / IFP	12/09/2022
E-603	POLE LAYOUT	0 / IFP	12/09/2022
D-100	DATASHEETS	0 / IFP	12/09/2022

SYSTEM INFORMATION

MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	489
MODULE QUANTITY	12,714
TOTAL DC SIZE	6,865,560 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	40
TOTAL AC SIZE	5,000,000 W
TILT	±55°
AZIMUTH	180°

Castillo Engineering
DESIGNING TOMORROW'S POWER®

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REVISIONS

DESCRIPTION	DATE	REV
IFP	12/09/2022	0
30% REVIEW	11/11/2022	A

PROJECT INSTALLER

STATE OF NEW YORK · E. E. CASTILLO · 095344 · LICENSED PROFESSIONAL ENGINEER

Digitally signed by: Ermocrates E Castillo
Date: 2022.12.12 09:46:42

PROJECT NAME

MANLIUS EAST
8109 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

TITLE SHEET

SHEET SIZE

ARCH D
24" X 36"

SHEET NUMBER

G-001

1. GENERAL NOTES AND SPECIFICATIONS

A. PROVIDE ALL MATERIALS, LABOR, EQUIPMENT AND SERVICES AND PERFORM ALL OPERATION IN CONNECTION WITH THE ELECTRICAL WORK. IT IS THE INTENT THAT THESE DRAWINGS PROVIDE THE WORK REQUIRED FOR AN ELECTRICAL INSTALLATION THAT IS COMPLETE IN EVERY RESPECT, READY FOR OPERATION.

B. ALL WORK SHALL COMPLY WITH ALL LOCAL, STATE AND FEDERAL CODES AND THE REQUIREMENTS OF ANY OF THE AUTHORITIES HAVING JURISDICTION. ALL MATERIAL AND EQUIPMENT SHALL BE UL LISTED AND SHALL BEAR THE UL INSPECTION LABEL WHEREVER STANDARDS HAVE BEEN ESTABLISHED AT THE COMPLETION OF THE WORK, SECURE CERTIFICATES OF APPROVAL FROM THE VARIOUS AUTHORITIES HAVING JURISDICTION AND DELIVER SAME TO THE DESIGN PROFESSIONAL.

C. ALL WORK SHALL COMPLY WITH NECA STANDARD OF INSTALLATION (PUBLISHED BY THE NATIONAL ELECTRICAL CONTRACTORS ASSOCIATION) AND NFPA 70 - NATIONAL ELECTRICAL CODE NEC-2017, AND ALL APPLICABLE SAFETY STANDARDS. COMPLY WITH APPLICABLE STANDARDS THE OWNER HAS DEVELOPED AS THEY PERTAIN TO THIS WORK.

D. "PROVIDE" MEANS TO SUPPLY, ERECT, INSTALL, TEST, AND CONNECT UP IN COMPLETE READINESS FOR REGULAR OPERATION. THE PARTICULAR WORK REFERRED TO "FURNISH" MEANS TO SUPPLY AND DELIVER TO THE JOB. "INSTALL" MEANS TO RECEIVE, INSTALL AND CONNECT UP IN COMPLETE READINESS FOR REGULAR OPERATION, THE PARTICULAR WORK REFERRED TO. "APPROVED EQUAL" MEANS AN EQUIPMENT OR MATERIAL WHICH, IN THE OPINION OF THE DESIGN PROFESSIONAL, IS EQUAL IN QUALITY, DURABILITY, APPEARANCE, STRENGTH, DESIGN, PERFORMANCE, PHYSICAL DIMENSIONS AND ARRANGEMENT TO THE EQUIPMENT OR MATERIAL SPECIFIED AND WILL FUNCTION ADEQUATELY IN ACCORDANCE WITH THE GENERAL DESIGN.

E. BEFORE SUBMITTING THE BID, VISIT EACH SITE WHERE WORK IS REQUIRED. SURVEY THE EXISTING CONDITIONS AND BECOME FAMILIAR WITH THE DIFFICULTIES WHICH WILL AFFECT THE EXECUTION AND COMPLETION OF THE WORK. INVESTIGATE THE NATURE AND LOCATION OF THE WORK, THE GENERAL AND LOCAL CONDITIONS, PARTICULARLY THOSE BEARING UPON THE WORK REQUIRED, TRANSPORTATION, DISPOSAL, HANDLING AND STORAGE OF MATERIALS, AVAILABILITY OF LABOR, WATER, ELECTRICAL POWER, ROADS AND PHYSICAL CONDITIONS AT THE SITE NEEDED FOR THE PROSECUTION OF THE WORK AND ALL OTHER MATTERS UPON WHICH INFORMATION IS REASONABLY OBTAINABLE AND WHICH CAN IN ANY WAY AFFECT THE WORK OR THE COST THEREOF UNDER THE CONTRACT.

F. PROCURE AND PAY FOR ALL CERTIFICATES, FEES, TESTS, INSPECTIONS, BONDS, DEPOSITS AND ESCROW ACCOUNTS REQUIRED FOR COMPLETE INSTALLATION OF THE WORK. GIVE ALL NOTICES REQUIRED BY LAW, ORDINANCES OR THE RULES AND REGULATIONS OF THE VARIOUS AUTHORITIES. COMPLY WITH ALL ORDERS OF THE, LOCAL DEPARTMENT OF BUILDINGS, COUNTY DEPARTMENTS OF HEALTH, FIRE MARSHAL, ETC. DELIVER TO THE OWNER'S REPRESENTATIVE ALL PERMITS AND CERTIFICATES OF APPROVAL ISSUED BY ALL TOWN, COUNTY AND STATE AGENCIES HAVING JURISDICTION IN CONNECTION WITH THIS WORK BEFORE THE CERTIFICATE FOR THE FINAL PAYMENT IS ISSUED.

G. NO WORK SHALL BE COVERED OVER UNTIL TEST HAVE BEEN PERFORMED AND THE AUTHORITIES HAVING JURISDICTION HAVE EXAMINED, INSPECTED AND APPROVED THE TESTS AND THE WORK. PROVIDE ALL CONTROLLED INSPECTIONS CONTROLLED REQUIRED BY THE REGULATIONS OF TOWN, COUNTY AND STATE. THE CONTROLLED INSPECTIONS SHALL BE MADE BY AN INSPECTOR MEETING THE PROFESSIONAL REQUIREMENTS SET FORTH BY STATE AND LOCAL LAWS AND SHALL BE CARRIED OUT IN ACCORDANCE WITH APPLICABLE TOWN, COUNTY AND STATE BUILDING CODES.

H. PROVIDE ALL NECESSARY INSURANCE, FREE OF EXTRA CHARGE AND AGREE TO INDEMNIFY AND SAVE HARMLESS THE PARTY CONTRACTING FOR SERVICES AGAINST LOSS OR EXPENSE.

I. THE DRAWINGS DO NOT UNDERTAKE TO ILLUSTRATE OR SET FORTH EVERY ITEM NECESSARY FOR THE WORK, AS IT IS ASSUMED THAT WITH THIS BID SUBMISSION, THE CONTRACTOR ACKNOWLEDGES THAT HE/SHE IS EXPERT IN THE SEVERAL LINES OF THE WORK AND IS CAPABLE OF INTERPRETING THEM. WHERE NO SPECIFIED MANUFACTURER OR QUALITY OF MATERIAL IS GIVEN, A FIRST-CLASS STANDARD ARTICLE AS APPROVED BY THE DESIGN PROFESSIONAL SHALL BE FURNISHED.

J. THE DRAWINGS ARE GENERALLY DIAGRAMMATIC AND ARE INTENDED TO CONVEY THE SCOPE OF WORK AND INDICATE GENERAL ARRANGEMENT OF EQUIPMENT, CONDUITS, PANELS, FIXTURES, ETC. THE LOCATION OF ALL ITEMS SHOWN THAT ARE NOT DEFINITELY FIXED BY DIMENSIONS ARE APPROXIMATE. THE EXACT LOCATIONS NECESSARY TO SECURE THE BEST CONDITIONS AND RESULTS MUST BE DETERMINED AT THE PROJECT AND SHALL HAVE THE APPROVAL OF THE DESIGN PROFESSIONAL BEFORE BEING INSTALLED . DO NOT SCALE DRAWINGS.

K. MAINTAIN AND PROTECT ALL EQUIPMENT, MATERIALS AND TOOLS FROM LOSS OR DAMAGE FROM ALL CAUSES UNTIL FINAL ACCEPTANCE BY THE OWNER.

L. IT IS REQUIRED THAT THE WORK INDICATED BE CARRIED OUT WITH A MINIMUM OF INTERFERENCE TO THE ESTABLISHED ROUTINE OF THE EXISTING BUILDINGS AND THAT ALL WORK BE PERFORMED WITHIN THE REQUIRED CONTRACT TIME.

M. THE OWNER'S REPRESENTATIVE SHALL BE NOTIFIED IN WRITING WHEN INTERRUPTION OF THE PRESENTLY MAINTAINED SERVICES, MECHANICAL, ELECTRICAL OR OTHERWISE IS REQUIRED. WRITTEN PERMISSION SHALL BE OBTAINED FROM THE OWNER'S REPRESENTATIVE PRIOR TO COMMENCING WITH THE SHUT-DOWN.

N. PROVIDE ALL NECESSARY TRAILERS, EXTENSION CORDS AND LAMPS TO PROVIDE TEMPORARY LIGHT AND POWER FOR THE PROPER EXECUTION OF ALL WORK.

O. PROVIDE ALL SCAFFOLDING, RIGGING, HOISTING AND SERVICES NECESSARY FOR ERECTION AND DELIVERY INTO THE PREMISES OF ANY EQUIPMENT AND APPARATUS FURNISHED. REMOVE SAME FROM PREMISES WHEN NO LONGER REQUIRED.

P. ALL WORK SHOWN ON THE DRAWINGS THAT IS NOT SPECIFICALLY INDICATED AS BEING EXISTING SHALL BE ASSUMED TO BE NEW.

Q. THE INSTALLATION OF ALL ELECTRICAL EQUIPMENT, LIGHTING, CONDUIT AND WIRING SHALL CONFORM TO THE LATEST EDITION IBC CODE EARTHQUAKE CONTROL SECTION 1622.

R. NO PART OF THESE DRAWINGS OR SPECIFICATIONS IS INTENDED TO ALLOW A VIOLATION OF PHYSICAL WORKING SPACE REQUIREMENTS AROUND ELECTRICAL EQUIPMENT.

S. VERIFY ALL UNDERGROUND UTILITIES WITH GROUND PENETRATING RADAR PRIOR TO ANY EXCAVATION.

T. USE "CALL BEFORE YOU DIG" SERVICE PRIOR TO ANY EXCAVATION.

U. CONTRACTOR TO PROVIDE TOILET FACILITIES DURING CONSTRUCTION.

V. THE PV ARRAY RACKING IS A PENETRATING GROUND MOUNT.

2. TESTS

A. WIRE AND CABLE: PERFORM INSULATION RESISTANCE AND CONTINUITY TESTS FOR ALL CONDUCTORS . THESE SHALL BE COMPLETED PRIOR TO ENERGIZING. INVESTIGATE AND TAKE REMEDIAL ACTION WHEN CONTINUITY VALUES EXCEED 1.0 OHM AND/OR INSULATION RESISTANCE TESTS LESS THAN 500 MEGAOHMS.

B. GROUND RESISTANCE TESTS: RESISTANCE OF THE ELECTRICAL SYSTEM GROUNDING SHALL BE TESTED TO GROUND AT THE MAIN GROUND ELECTRODE CONNECTION TO ENSURE THAT GROUND RESISTIVITY VALUES DO NOT EXCEED 25 OHMS. SUPPLEMENTAL GROUNDING ELECTRODES MAY NOT EXCEED 25 OHMS.

3. GROUNDING

A. COMPLY WITH REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION, NEC, UL AND IEEE STANDARDS. SIZE GROUND CONDUCTORS IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE EXCEPT WHERE LARGER SIZES ARE INDICATED. ALL GROUND CONDUCTORS SHALL BE NOT SMALLER THAN NO.12 AWG. PROVIDE A COMPLETE ASSEMBLY OF MATERIALS REQUIRED FOR GROUNDING AND BONDING.

B. GROUNDING BUSHINGS SHALL BE HOT-DIPPED GALVANIZED BODY, MOLDED PHENOLIC INSULATION, RATED AT150 DEG C. WITH COPPER-TINNED LAY-IN LUG. PROVIDE FOR ALL INCOMING AND OUTGOING CONDUITS TO THE DISTRIBUTION EQUIPMENT. USE STAINLESS STEEL SCREWS.

C. GROUND RODS SHALL BE STEEL CORE, COPPER JACKETED TYPE, HIGH STRENGTH STEEL ALLOY CORE WITH A MOLTEN-WELDED COVERING AND CONICAL POINT WITH CHAMFER EDGE AT TOP. DRIVING HEADS SHALL BE USED TO PROTECT TOPS OF RODS DURING DRIVING. MINIMUM SIZE ROD SHALL BE 3/4 INCH DIAMETER AND 8 FOOT LONG.

D. GROUND CONNECTORS FOR CONNECTING CABLE TO PIPE SHALL BE HIGH COPPER ALLOY OR BRONZE FITTINGS. PROVIDE AN OFFSET STEEL TONGUE FOR CONNECTIONS TO STEEL AND A DRILLED TONGUE FOR CONNECTION TO COPPER BUS BAR.

E. EXPOSED NON-CURRENT CARRYING METAL PARTS OF MODULE FRAMES, EQUIPMENT AND ENCLOSURES SHALL BE GROUNDED IN ACCORDANCE WITH NEC 250.134 AND 250.136(A). PHOTOVOLTAIC MODULES TO BE GROUNDED USING FACTORY GROUND POINT ONLY OR ANY METHOD APPROVED BY THE DESIGN PROFESSIONAL.

F. GROUND CONTINUITY SHALL BE MAINTAINED ACROSS CONDUIT/ENCLOSURE INTERFACE USING APPROVED JUMPER METHOD.

G. PARTS OF THE ELECTRICAL INSTALLATION TO BE GROUNDED AND BONDED SHALL INCLUDE BUT NOT BE LIMITED TO ELECTRICAL EQUIPMENT, RACEWAYS, CABLE TRAYS, BOXES, CABINETS AND OTHER NON-CURRENT CARRYING METAL PARTS OF THE WIRING SYSTEM, METAL CONDUIT, SWITCHGEAR, HOUSING AND NEUTRALS OF TRANSFORMERS, LIGHTING FIXTURES, PANEL DEVICES, FENCES AROUND ELECTRICAL EQUIPMENT AS APPLICABLE TO EQUIPMENT INSTALLED ON THIS PROJECT.

H. USE EXOTHERMIC WELDING FOR PERMANENTLY CONCEALED AND INACCESSIBLE CONNECTIONS TO FORM SOLID METAL JOINTS. MAKE ACCESSIBLE GROUND CONNECTIONS WITH MECHANICAL PRESSURE TYPE GROUND CONNECTIONS UNLESS OTHERWISE NOTED.

I. APPLY CORROSION-RESISTANT FINISH TO FILED-CONNECTIONS, BURIED METALLIC GROUNDING AND BONDING PRODUCTS, AND PLACES WHERE FACTORY APPLIED PROTECTIVE COATINGS HAVE BEEN DESTROYED, WHICH ARE SUBJECTED TO CORROSIVE ACTION.

4. CONDUITS AND FITTINGS

A. ABOVE GROUND: PVC SCH 80: ANSI-C80.3, THREADLESS, THIN WALL CONDUIT, MINIMUM 3/4 INCH. STEEL COMPRESSION CONNECTORS AND COUPLINGS. MECHANICAL SET SCREWS AND DIE-CAST TYPE COUPLINGS AND CONNECTORS SHALL NOT BE USED. USE METAL CONDUIT BODIES TO MATCH CONDUIT WITH COMPRESSION FITTINGS.

B. RACEWAYS IN CLOSE PROXIMITY OF OTHER TRADES, SHALL BE ARRANGED TO ALLOW FOR PROPER CLEARANCE FOR SERVICING, MAXIMUM HEADROOM, ETC. AND TO PRESENT A NEAT APPEARANCE. MAINTAIN ADEQUATE CLEARANCE BETWEEN CONDUIT AND PIPING WITH A MINIMUM OF 12 INCHES CLEARANCE BETWEEN CONDUIT AND SURFACES WITH TEMPERATURES EXCEEDING 104 DEGREES F.

C. JOIN RACEWAYS WITH FITTINGS DESIGNED AND APPROVED FOR THE PURPOSE AND MAKE JOINTS TIGHT. WHERE JOINTS CANNOT BE MADE TIGHT, USE BONDING JUMPERS TO PROVIDE ELECTRICAL CONTINUITY OF THE RACEWAY SYSTEM. MAKE RACEWAY TERMINATIONS TIGHT. WHERE SUBJECT TO VIBRATION OR DAMPNESS, USE INSULATION BUSHINGS TO PROTECT CONDUCTORS. CUT CONDUIT SQUARE USING SAW OR PIPE CUTTER AND DE-BURR CUT ENDS.

D. USE CONDUIT HUBS OR SEALING LOCKNUTS TO FASTEN CONDUIT TO BOXES IN DAMP AND WET LOCATIONS.

E. SUPPORT CONDUIT USING STEEL OR MALLEABLE IRON SINGLE OR DOUBLE HOLE CONDUIT STRAPS, LAY-IN ADJUSTABLE HANGERS, CLEVIS HANGERS AND SPLIT HANGERS AS REQUIRED. FASTEN CONDUIT SUPPORTS TO STRUCTURE AND SURFACES. DO NOT ATTACH CONDUIT SUPPORTS TO CEILING SUPPORT WIRES, OR ANY OTHER CONDUIT, PIPE, DUCT, ETC. DO NOT SUPPORT CONDUIT WITH WIRE OR PIPE HANGER STRAPS. ALL SUPPORTS SHALL CONFORM TO NEC 344.30.

F. BELOW GRADE: PVC SCHEDULE 80 OR PVC SCHEDULE 40. VERIFY WITH DESIGN ENGINEER PRIOR TO INSTALLATION. CONDUIT NEMA TC2 UL 651, WITH MATCHING FITTINGS BY SAME MANUFACTURER AS THE CONDUIT. COMPLYING WITH NEMA TC 3 AND UL 51413.

G. CONDUIT EXPANSION FITTINGS SHALL BE PROVIDED AS REQUIRED PER NEC 300.7 & 352.44.

H. ALL CONDUITS SHALL BE SEALED AT ALL ENDS.

I. EXPANSION FITTINGS SHALL BE UTILIZED ON MEDIUM VOLTAGE RUNS. MATERIAL TO BE CROUSE-HINDS SERIES XJGD COMBINATION EXPANSION/DEFLECTION COUPLINGS OR EQUAL.

5. WIRE AND CABLE

A. WIRE AND CABLE TYPES TO BE PER THE SCHEDULE.

B. PULL CONDUCTORS SIMULTANEOUSLY WITH UL LISTED PULLING COMPOUND OR LUBRICANT FOR BUILDING WIRE #4 AWG AND LARGER. USE PULLING MEANS INCLUDING, FISH TAPE, CABLE, ROPE, AND BASKET WEAVE WIRE/CABLE GRIPS WHICH WILL NOT DAMAGE CABLES OR RACEWAYS.

C. ALL WIRING SHALL BE FACTORY COLOR CODED. FOR MODIFICATIONS TO EXISTING SYSTEMS, MATCH COLOR CODING SCHEME ALREADY IN PLACE. OTHERWISE FEEDER AND BRANCH CIRCUIT CONDUCTORS SHALL BE COLOR CODED AS FOLLOWS:

240/120 VOLTS	PHASE	600/346 VOLTS
BLACK	A	BROWN
RED	B	ORANGE
BLUE	C	YELLOW
WHITE/GREY	NEUTRAL	WHITE
GREEN	GROUND	GREEN

D. ALL WIRING IN PANELS SHALL BE NEATLY TIE-WRAPPED AND TRAINED WITHIN GUTTER SPACES.

E. ALL HOME RUN WIRING ON DC SIDE TO BE BLACK AND GREEN/BARE FOR GROUND WIRES. DC WIRES SHALL BE TYPE PV WIRE MARKED SUNLIGHT RESISTANT AND 2000V POSITIVE CONDUCTORS TO BE BLACK WITH RED TAPE AT TERMINATION POINTS, OR BE BLACK WITH A RED STRIPE. TIE WRAPS SHALL BE WEATHER AND OIL/GAS RESISTANT. TIE WRAPS MUST BE NYLON COATED STEEL OR BE UV RESISTANT GUARANTEED FOR 25 YEARS. CB OUTPUTS MAY BE RED FOR POSITIVE.

F. COMPRESSION TYPE CONNECTIONS ARE TO BE USED AT ALL TIMES.

G. ALL ALUMINUM TERMINATIONS NEED ANTI-OXIDATION COMPOUND.

6. BOXES

A. GALVANIZED STEEL PULL BOXES: NEMA OS 1 WITH WELDED SEAMS. WHERE NECESSARY TO PROVIDE A RIGID ASSEMBLY, CONSTRUCT WITH INTERNAL STRUCTURAL STEEL BRACING, HOT-DIP GALVANIZED AFTER FABRICATION. COVER SHALL BE GASKETED, SCREWED OR BOLTED ON OF MATERIAL SAME AS BOX AND SHALL BE OF SIZE AND SHAPE TO SUIT APPLICATION. SIZES SHALL BE ADEQUATE TO MEET NEC VOLUME REQUIREMENTS, BUT IN NO CASE SMALLER THAN SIZES INDICATED. REMOVE SHARP EDGES WHERE THEY MAY COME IN CONTACT WITH WIRING OR PERSONNEL.

B. FOR INTERIOR DRY LOCATIONS USE GALVANIZED SHEET STEEL, NEMA TYPE 1. FOR LOCATIONS EXPOSED TO WEATHER OR DAMPNESS USE NEMA TYPE 3R BOXES, FULLY GASKETED. FOR WET LOCATIONS USE NEMA TYPE 4 BOXES WITH FULLY GASKETED WEATHERPROOF COVERS.

C. ELECTRICALLY GROUND ALL METAL BOXES TO CONDUIT SYSTEM. WHERE WIRING TO ITEMS INCLUDES A GROUNDING CONDUCTOR, ALSO PROVIDE A GROUNDING TERMINAL IN THE INTERIOR OF THE CABINET, BOX OR ENCLOSURE.

7. SUPPORTING DEVICES

A. PROVIDE MATERIALS, SIZES AND TYPES OF ANCHORS, FASTENERS AND SUPPORTS TO CARRY THE LOADS OF EQUIPMENT AND CONDUIT. CONSIDER THE WEIGHT OF WIRE IN CONDUIT WHEN SELECTING PRODUCTS. ATTACHMENTS SHALL BE RATED BY AN INDEPENDENT TESTING LABORATORY FOR THE RATED LOADING WITH A SAFETY FACTOR OF FIVE. USE VIBRATION AND SHOCK-RESISTANT FASTENERS FOR ATTACHMENTS TO CONCRETE SLABS. DO NOT USE SPRING STEEL CLIPS AND CLAMPS, POWDER-ACTUATED ANCHORS, TESTING FOR CONCRETE AND STEEL ATTACHMENTS SHALL BE IN ACCORDANCE WITH TEST CRITERIA ESTABLISHED BY UL SUPPORTS, SUPPORT HARDWARE, AND FASTENERS SHALL BE PROTECTED WITH ZINC COATING OR WITH TREATMENT OF EQUIVALENT CORROSION RESISTANCE. PRODUCTS FOR USE OUTDOORS SHALL BE HOT-DIP GALVANIZED. IN CORROSIVE AREAS, PRODUCTS SHALL BE TREATED WITH 15 MIL PVC COATING. ALL PRODUCTS SHALL BE TREATED AFTER CUTTING AND THREADING.

B. PROVIDE ANY SPECIAL WORK, INCLUDING BUT NOT LIMITED TO INTERMEDIATE STEEL CHANNELS, THAT MAY BE REQUIRED TO OVERCOME UNUSUAL CONDITIONS. DO NOT FASTEN TO ANY TRADES OTHER THAN THE STRUCTURAL SYSTEM WHERE SPECIFICALLY NOTED BELOW.

C. PROVIDE SUPPORTS FOR ALL RACEWAYS INCLUDING U-CHANNEL SYSTEMS, RISER CLAMPS, CONDUIT STRAPS, THREADED C-CLAMPS WITH RETAINERS AND WALL BRACKETS.

D. CONCRETE STRUCTURAL ELEMENTS AND MASONRY WALLS: USE CARBON STEEL WEDGE OR SLEEVE TYPE EXPANSION ANCHORS. COORDINATE ALL ANCHOR LOCATIONS IN POST-TENSIONED SLABS. HOLES CUT DEPTH OF MORE THAN 1-1/2 INCHES IN REINFORCED CONCRETE BEAMS OR MORE THAN 3/4 INCH IN REINFORCED CONCRETE SHALL NOT CUT THE MAIN REINFORCING BARS. FILL HOLES THAT ARE NOT USED.

E. HOLLOW MASONRY: USE STEEL SPRINGHEAD TYPE TOGGLE BOLTS AND HOLLOW WALL FASTENERS.

F. STEEL STRUCTURAL ELEMENTS: USE BEAM CLAMPS, STEEL FASTENERS AND CLEVIS HANGERS.

G. STEEL SURFACES: MACHINE SCREWS, WELDED THREADED STUDS, OR SPRING-TENSION CLAMPS.

H. PARTITIONS OF LIGHT STEEL CONSTRUCTION: SHEET METAL SCREWS.

I. WOOD ELEMENTS: USE WOOD SCREWS.

J. U-CHANNEL SYSTEMS: 12 GAUGE CARBON STEEL CHANNELS, WITH 9/16 X 7/8 INCH HOLES IN TOP SURFACE, 2 INCHES ON CENTER. PROVIDE FITTINGS AND ACCESSORIES THAT MATE AND MATCH WITH U-CHANNEL AND ARE OF THE SAME MANUFACTURER. PROVIDE ANGLES AND OTHER STANDARD STRUCTURAL SHAPES. CONNECT WITH WELDS OR MACHINE BOLTS TO FORM RIGID SUPPORTS.

K. A HANGER OR SUPPORT SHALL BE INSTALLED CLOSE TO THE POINT OF A CHANGE IN DIRECTION OF ALL CONDUIT RUNS, IN EITHER A HORIZONTAL OR VERTICAL PLANE.

L. UNDER NO CONDITIONS SHALL ANY HANGERS, SUPPORTS, BOLTS, OR RIVETS PIERCE DUCTS. THE PUNCHING OF HOLES IN STRUCTURAL SHAPES WILL NOT BE ALLOWED. "C" CLAMPS WILL NOT BE ACCEPTED AS A MEANS OF FASTENING EQUIPMENT OR CONDUITS TO THE BUILDING STRUCTURE, UNLESS THE HANGER SPACING IS REDUCED BY 33-1/3%

M. SPACING OF CONDUIT SUPPORTS AS PER NEC REQUIREMENTS.

N. CABLE TIES FOR WIRE AND CABLE: PROVIDE CLIPS FROM WILEY ELECTRONICS OR APPROVED EQUAL

O. TORQUE MARKS SHALL BE APPLIED TO ALL FASTENERS, SCREWS, ETC THAT REQUIRE AND HAVE BEEN PROPERLY TORQUED

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	489
MODULE QUANTITY	12,714
TOTAL DC SIZE	6,865,560 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	40
TOTAL AC SIZE	5,000,000 W
TILT	±55°
AZIMUTH	180°

Castillo Engineering
DESIGNING TOMORROW'S POWER®
CASTILLO ENGINEERING SERVICES, LLC
COA # 28345
620 N. WYMORE ROAD,
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REVISIONS

DESCRIPTION	DATE	REV
IFP	12/09/2022	0
30% REVIEW	11/11/2022	A

PROJECT INSTALLER

STATE OF NEW YORK · E. E. CASTILLO · 095344 · LICENSED PROFESSIONAL ENGINEER

Digitally signed by: Emmocrates E Castillo
Date: 2022.12.12 09:46:42

PROJECT NAME

MANLIUS EAST
8109 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

GENERAL NOTES - SHEET 1

SHEET SIZE

ARCH D
24" X 36"

SHEET NUMBER

G-100

8. IDENTIFICATION

A. WIRE DESIGNATION MARKERS: PROVIDE FUNGUS RESISTANT, VINYL OR VINYL-CLOTH CONDUCTOR MARKERS IN OUTLET, JUNCTION AND PULL BOXES INDICATING WIRE USAGE (I.E SWITCH LEG, POWER FEED, TRAVELERS, ETC). THIS IS IN ADDITION TO WIRE CIRCUIT IDENTIFICATION REQUIREMENTS AND IS INTENDED TO CLARIFY WIRING WITHIN BOXES.

B. CIRCUIT IDENTIFICATION: PROVIDE WIRE MARKERS ON EACH CONDUCTOR IN PANELBOARD GUTTERS, PULL BOXES, OUTLET AND JUNCTION BOXES, AND AT LOAD CONNECTION. IDENTIFY BRANCH CIRCUIT OR FEEDER NUMBER FOR POWER AND LIGHTING CIRCUITS, AND WIRE DESIGNATION INDICATED ON EQUIPMENT MANUFACTURER'S SHOP DRAWING FOR CONTROL WIRING. MAINTAIN CONSISTENCY WITH SIMILAR PREVIOUSLY ESTABLISHED IDENTIFICATION SCHEMES FOR THE FACILITY'S ELECTRICAL INSTALLATIONS.

10. PHOTOVOLTAIC CIRCUIT DESIGN:

A. ALL THE DC CIRCUIT HAVE BEEN DESIGNED TO HAVE AN AVERAGE VOLTAGE DROP OF LESS THAN 1.5% AT STANDARD CONDITIONS.

B. PHOTOVOLTAIC ARRAY DC WIRE SIZING IS BASED ON REQUIREMENTS OF THE NEC SEC. 690.8. UNDERGROUND CONDUITS WILL BE POSITIONED IN ACCORDANCE TO NEC TABLE 300.50. THE AMPACITIES OF THE CONDUCTORS HAVE BEEN CALCULATED USING APPROPRIATE CORRECTION FACTORS FROM NEC TABLES 310.15(B)(16) AND 310.15(B)(2)(A).

C. ALL MATING STRING WIRING CONNECTORS SHALL BE OF THE SAME BRAND NAME. MC4 COMPATIBLE CONNECTORS SHALL NOT MATE WITH MC4 OR OTHER BRAND NAME MC4 COMPATIBLE CONNECTORS.

D. PHOTOVOLTAIC SOURCE CIRCUITS ARE PROTECTED BY OVER CURRENT PROTECTION IN ACCORDANCE WITH NEC SEC 690.9.

E. PHOTOVOLTAIC INVERTERS ARE PROVIDED WITH GROUND FAULT PROTECTION AND INTERRUPTION ABILITIES IN ACCORDANCE WITH NEC SEC. 690.5. 690.11 DOES NOT APPLY.

F. PHOTOVOLTAIC ARRAYS HAVE BEEN PROVIDED WITH DISCONNECTING MEANS IN ACCORDANCE WITH NEC SEC 690.13.

G. PHOTOVOLTAIC ARRAYS HAVE A COMMON DC AND AC GROUNDING ELECTRODE SYSTEM COMPLYING WITH THE REQUIREMENTS OF NEC SEC 690.47.

H. ALL PHOTOVOLTAIC EQUIPMENT INCLUDING PV MODULES, COMBINER BOXES, DISCONNECTS, INVERTERS, AC CIRCUIT BREAKERS WILL BE IDENTIFIED AND INFORMATION ON MAXIMUM SYSTEM VOLTAGE, CURRENT, OPERATING VOLTAGE AND CURRENT WILL BE NOTED WITH A WARNING LABEL ON A CLEARLY VISIBLE LOCATION.

I. ALL PHOTOVOLTAIC DC CONDUCTORS SHALL BE 2000V PV WIRE "SUNLIGHT RESISTANT" MARKED FOR EXPOSED WIRING. 2000V PV WIRE, DIRECT BURIAL FOR DIRECT BURIED WIRED, 2000V XLPE INSULATION /RHW-2 FOR ALL WIRING IN CONDUIT. A/C RATING OF AC EQUIPMENTS SHALL MATCH EXISTING EQUIPMENTS.

J. ALL DC EQUIPMENT SHALL BE RATED FOR A MAXIMUM SYSTEM VOLTAGE OF 2000V AND ALL TERMINALS WILL BE RATED FOR STRANDED WIRES AND HAVE A 90°C TEMPERATURE RATING.

K. CONDUITS HAVE BEEN SIZED TO MEET THE CONDUIT FILL REQUIREMENTS OF NEC. CHAPTER 9 TABLE 1.

11. CB LABELS, DC DISC LABELS, INV LABELS, WARNING LABELS:

A. ALL LABELS SHALL BE OF WEATHERPROOF AND DURABLE MATERIAL.

B. TEXT ON LABELS SHALL BE OF ARIAL FONT - IT SHALL BE LEGIBLE AND CLEAR.

C. THE TONE OF THE BACKGROUND COLOR SHALL BE BRIGHT TO ATTRACT ATTENTION. YELLOW (106) FOR CAUTION LABELS AND ORANGE (152) FOR WARNING LABELS.

D. LABELS SHALL BE SECURELY FASTENED TO SPECIFIED LOCATIONS BY USING A WEATHER PROOF AND DURABLE ADHESIVE SUITABLE FOR THE MATERIAL OF THE LABEL AND THE LOCATION.

E. THE LABELS SHALL BE POSTED AT THE LOCATIONS SPECIFIED. IF FOR REASONS OF REDUCED ACCESS OR SPACE, THE LABELS SHALL BE POSTED AT THE CLOSEST LOCATION THAT BEST SERVES THE INTENT OF THE LABEL. NOTIFY THE ENGINEER/SUPERVISOR IN SUCH A CASE BEFORE ATTACHING.

13. ABBREVIATIONS

A	AMPERES (AMP)
AC	ALTERNATING CURRENT
AF	AMP FRAME
AT	AMP TRIP
BIL	BASIC IMPULSE LEVEL
CB	COMBINER BOX
COM	COMMUNICATIONS
CT	CURRENT TRANSFORMER
CPT	CONTROL POWER TRANSFORMER
CU	COPPER
DC	DIRECT CURRENT
EMT	ELECTRICAL METALLIC TUBING
EPR	ETHYLENE PROPYLENE RUBBER
G/GND	GROUND
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GFD	GROUND FAULT PROTECTION
Inom	NOMINAL CURRENT (AMPS)
KCMIL	THOUSAND CIRCULAR MILS
KV	THOUSAND VOLT
KVA	THOUSAND VOLT-AMPS
KW	THOUSAND WATT
LFMC	LIQUID TIGHT FLEXIBLE METALLIC CONDUIT
MPPT	MAXIMUM POWER POINT
MV	MEDIUM VOLTAGE
NEC	NATIONAL ELECTRIC CODE
NESC	NATIONAL ELECTRIC SAFETY CODE
PCC	POINT OF COMMON COUPLING
PT	POTENTIAL (VOLTAGE) TRANSFORMER
PV	PHOTOVOLTAIC
PVC	POLYVINYL CHLORIDE
RMC	RIGID METAL CONDUIT
SA	SURGE ARRESTER
SCH	SCHEDULE
SPD	SURGE PROTECTION DEVICE
UL	UNDERWRITER'S LAB
V	VOLTAGE (VOLT)
Z	IMPEDANCE

SYMBOLS

	EXISTING GAS HEADER
	PAVED ROAD (NEW)
	GRAVEL ACCESS ROAD
	PV MODULE
AC	AC LINE (15kV) ABOVE GRADE CONDUIT ROUTE
DC	DC LINE (1000V)
GND	GROUND
OHW	OVERHEAD LINE
	UNDERGROUND CABLE ROUTE
	GROUND ROD/PLATE
CB# String Count	CB COMBINER BOX
	LOAD BREAK DISCONNECT SWITCH
OR	FUSED DISCONNECT SWITCH
AT AF	POWER CIRCUIT BREAKER (15kV)
	CIRCUIT BREAKER (≤ 1000V)
	VOLTAGE TRANSFORMER
	CURRENT TRANSFORMER
	GROUND
M	UTILITY METER
	MV LOAD BREAK ELBOW
	CABLE "LUG" TERMINATION
	TRANSFORMER
OR	FUSE
GFD	GROUND FAULT DEVICE
SPD	SURGE PROTECTION DEVICE
	OH CABLE TERMINATION "POT HEAD"
	SURGE ARRESTER "SA"

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	489
MODULE QUANTITY	12,714
TOTAL DC SIZE	6,865,560 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	40
TOTAL AC SIZE	5,000.000 W
TILT	±55°
AZIMUTH	180°

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PROJECT NAME

MANLIUS EAST
8109 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

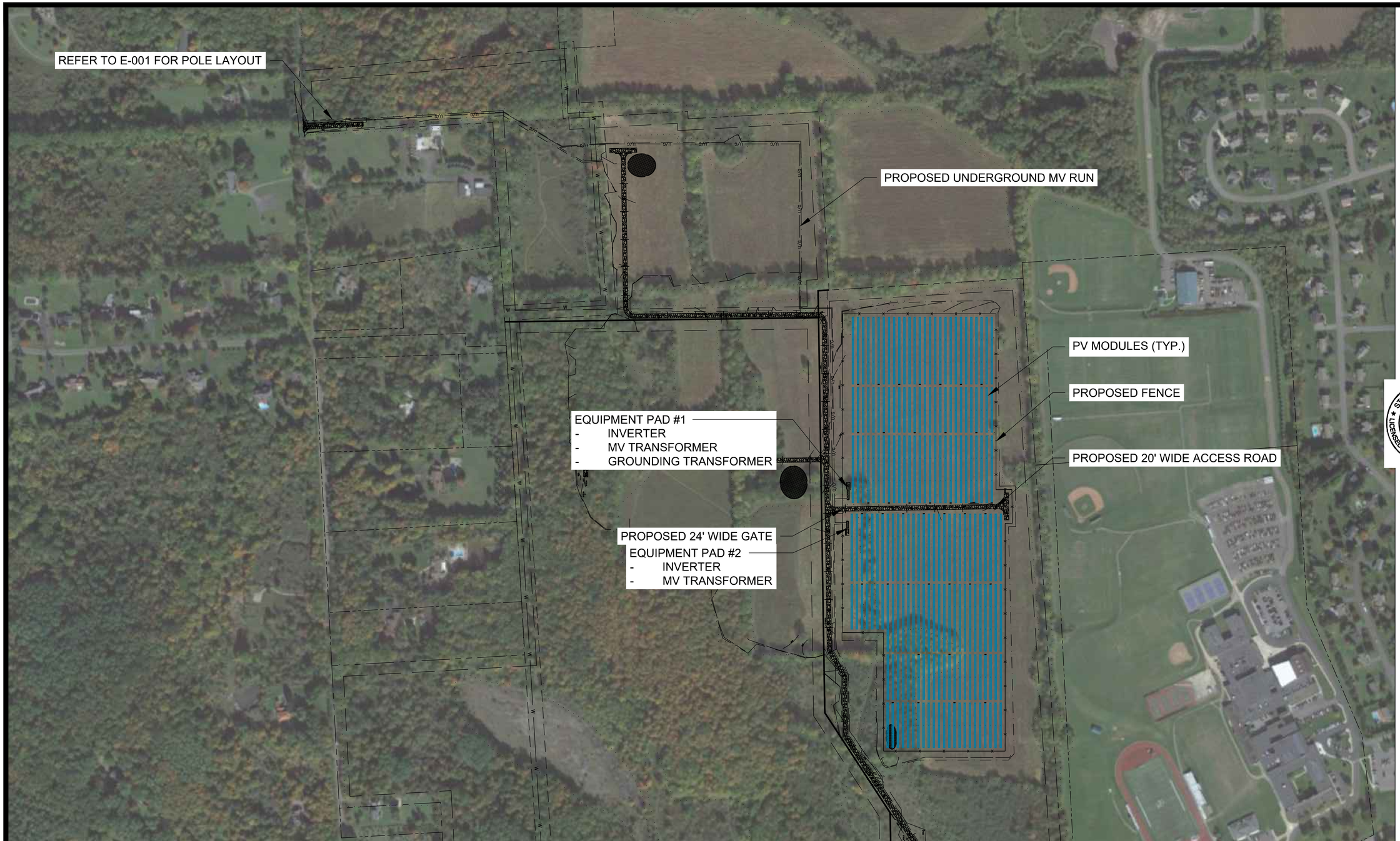
GENERAL NOTES
- SHEET 2

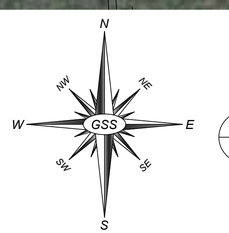
SHEET SIZE

ARCH D
24" X 36"

SHEET NUMBER

G-101





1 C-001 OVERALL SITE PLAN

200' 100' 0' 200' 600'

SCALE: 1" = 200'

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	489
MODULE QUANTITY	12,714
TOTAL DC SIZE	6,865,560 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	40
TOTAL AC SIZE	5,000,000 W
TILT	±55°
AZIMUTH	180°

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PROJECT NAME

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8109 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

OVERALL SITE PLAN

SHEET SIZE

ARCH D
24" X 36"

SHEET NUMBER

C-001

EXISTING NATIONAL GRID UTILITY POLE
FEEDER 36_11_26553

NEW UTILITY POLE #1 - UTILITY RECLOSER

NEW CUSTOMER POLE C1 - C511 - GANG OPERATED AIR-BREAK (GOAB)

NEW CUSTOMER POLE C2 - R516 - SERVICE ENTRANCE RATED, VACUUM RECLOSER

NEW CUSTOMER POLE C3 - UTILITY PRIMARY METERING CLUSTER

NEW CUSTOMER POLE C4 - CUSTOMER PRIMARY METERING CLUSTER

PROPOSED UNDERGROUND MV RUN

NEW UTILITY TURNING POLE

PROPOSED OVERHEAD MV LINE

30'-0" 30'-0" 30'-0" 30'-0" 30'-0"

5'-0" MIN. 5'-0" MIN. 5'-0" MIN. 5'-0" MIN. 5'-0" MIN. 5'-0" MIN.

150'-0" 150'-0"

OHW

793.0

794

NEW CUSTOMER POLE C5 - C513 - LOADBREAK DISCONNECT

N NW NE W GSS E SW SE S

1 / E-001 POLE LAYOUT SITE PLAN

25' 12.5' 0' 25' 75'

SCALE: 1" = 25'

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	489
MODULE QUANTITY	12,714
TOTAL DC SIZE	6,865,560 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	40
TOTAL AC SIZE	5,000,000 W
TILT	±55°
AZIMUTH	180°

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PROJECT NAME

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MANLIUS, NY 13104

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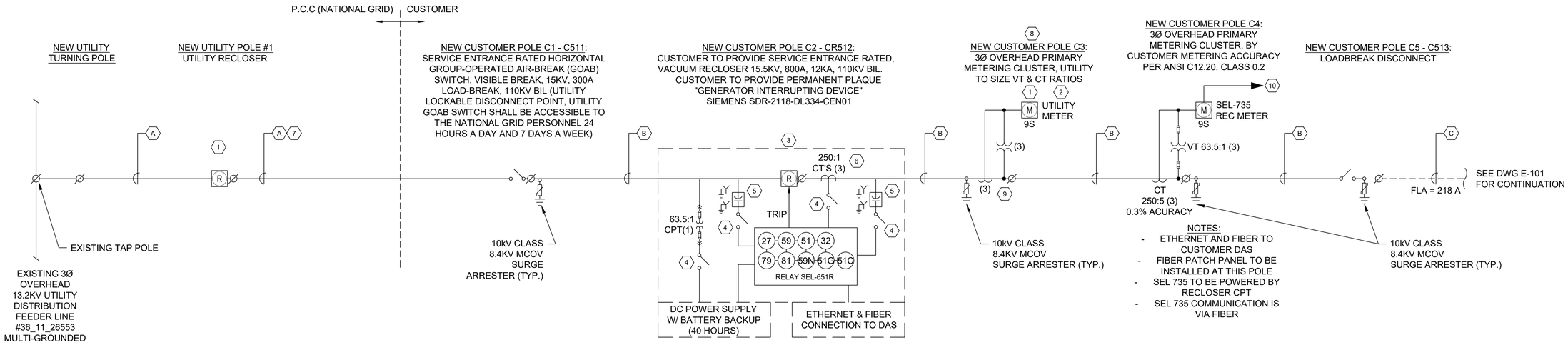
POLE LAYOUT SITE PLAN

SHEET SIZE

ARCH D
24" X 36"

SHEET NUMBER

E-001



PV SYSTEM SUMMARY	
MODULE MODEL	BOVIET BVM7612M-540-H-HC-BG-DG
MODULE STC DC RATING	540 W
MODULES PER STRING	26
STRINGS COUNT	489
MODULES COUNT	12,714
TOTAL STC DC SIZE	6,865,560 W
TOTAL STC AC SIZE	5,000,000 W
INVERTER MODEL	(QTY 40) SUNGROW SG125HV
TRANSFORMER	(QTY 2) 2500KVA PAD MOUNTED

NOTES

#	DESCRIPTION
1	EQUIPMENT IS PROVIDED AND INSTALLED BY NATIONAL GRID.
2	CUSTOMER TO PROVIDE PHONE LINE TO UTILITY METER POLE FOR UTILITY ACCESS
3	RECLOSER TO BE PROVIDED WITH SEL 651R RELAY OR EQUAL. RELAY TO HAVE DC BATTERY OR UPS BACK-UP WITH A MINIMUM OF 40 HOURS OF BATTERY BACKUP. RELAY EQUIPPED WITH FAIL-SAFE PROTECTION AND TO BE TRIPPED WITHIN 2.0 SECONDS OF DC FAILURE. AC POWER TO DC SUPPLY LOCATED ON THE UTILITY SIDE OF THE RECLOSER
4	TEST SWITCHES SHALL BE INCLUDED AS SHOWN FOR O&M PURPOSES.
5	8793.75:1 CAPACITIVE (LEA) VOLTAGE SENSORS +/-2% ACCURACY. EFFECTIVE PTR 234.5:1
6	300:1 CT(3) C10 AT -/+1% ACCURACY AND 0.13VA BURDEN AT 1A
7	NEW 15 kV CLASS OVERHEAD 3Ø WIRE SUPPLIED AND INSTALLED BY CS ENERGY AT COMMON COUPLING.
8	THE ACCURACY OF THESE CURRENT TRANSFORMERS SHALL BE SUITABLE FOR THE METERS AND RELAYS SPECIFIED WITH THE NORMAL BURDENS OF THE VARIOUS DEVICES, AND NOT LESS THAN ANSI STANDARD ACCURACY CLASSIFICATION OF 0.3 WITH BURDENS B-0.1 AND B-0.5, AND 1.2 WITH BURDEN B-2.0. UTILITY TO PROCURE VTs/CTs FOR CUSTOMER TO INSTALL.
9	CS ENERGY TO PROVIDE AND INSTALL POLE ALONG WITH GROUNDING AND MISCELLANEOUS SUPPORT.
10	120 V AC CONDUCTOR FROM RECLOSER CPT TO CUSTOMER METER

WIRE TABLE

WIRE	DESCRIPTION
A	NEW 15KV CLASS OVERHEAD 3Ø WIRE BY NATIONAL GRID
B	3#1/0 AWG 6/1 ACSR (RAVEN), 3Ø, 3W CONDUCTORS WITH (1) #2 AWG AL, 600V NEUTRAL CONDUCTOR
C	3#250KCMIL AWG AL (MV-105), 15KV CLASS, EPR 100% INSULATED 3Ø CONDUCTORS WITH 1/3 CONCENTRIC NEUTRAL AND 1#1/0 AWG AL SUPPLY-SIDE BONDING JUMPER, EQUIPMENT GROUNDING CONDUCTOR, DIRECT BURIED

SEL-651R RELAY SETTINGS

ANSI #	PICKUP					DEFAULT TIME DELAY (SEC)	DEFAULT TIME DELAY (CYCLES)	DELAY PER TCC / TIME DELAY AND TCC
	VPHASE, A, HZ							
	PERCENTAGE	ACTUAL						
59-1	110% ≤ V	8383	V L-N (PRI)	0.95	V (SEC)	1.95	117.00	-
59-2	V ≥ 120%	9145	V L-N (PRI)	1.04	V (SEC)	0.10	6.50	-
27-1	V ≤ 50%	3811	V L-N (PRI)	0.43	V (SEC)	1.05	63.00	-
27-2	V ≤ 88%	6707	V L-N (PRI)	0.76	V (SEC)	1.95	117.00	-
81U-1	56.5HZ					0.10	6.50	-
81U-2	58.5HZ					299.95	17997.00	-
81O-1	61.2HZ					299.95	17997.00	-
81O-2	62 HZ					0.10	6.50	-
51	109A PRIMARY (0.36A SECONDARY)					-	-	3.0 TD U1 CURVE
51P	273A PRIMARY (0.91A SECONDARY)					-	-	3.0 TD U1 CURVE
51G	68A PRIMARY (0.23A SECONDARY)					-	-	2.0 TD U4 CURVE
59N-1	86.52% OF VNOM	6593.71	V (PRI)	0.75	V (SEC)	0.05	3.00	-
59N-2	27.01% OF VNOM	2058.44	V (PRI)	0.23	V (SEC)	0.95	57.00	-
79	95% ≤VNOM≤105.8%	7239	≤VNOM(PRIMARY)≤	8063.04	V (PRI)	299.95	17997.00	-
		0.82	≤VNOM (SEC)≤	0.92	V (SEC)			
	59.3HZ<FREQUENCY<60.5							

a. SETTINGS TAKE INTO ACCOUNT AN ESTIMATED 3 CYCLE OPENING TIME ON THE RECLOSER.
b. FAIL-SAFE RELAY TO TRIP AT A MAXIMUM OF 2 SECONDS FOLLOWING LOSS OF DC POWER AND OR HARDWARE FAILURE.
c. AUTO-RESTORATION (79) FUNCTION WILL NOT CLOSE-IN UNTIL HEALTH VOLTAGE AND FREQUENCY HAVE BEEN MAINTAINED FOR A MINIMUM OF 5 MINUTES.

- (#) REFER TO NOTES
- (X) REFER TO WIRE TABLE

SYMBOL LEGEND

- LOAD-BREAK DISCONNECT
- TRANSFORMER, GWYE PRI: WYE SEC (TYPICAL)
- FUSE
- CIRCUIT BREAKER
- CURRENT TRANSFORMER
- VOLTAGE TRANSFORMER
- GROUND
- SURGE ARRESTER
- GROUP AIR (GOAB) SWITCH
- (M) METER UNIT
- (R) RECLOSER UNIT
- 600A 600A DEAD BREAK ELBOWS
- POLE
- OVERHEAD / PRIMARY
- UNDERGROUND / PRIMARY
- ON GRADE / PRIMARY
- EQUIPMENT BORDER

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	489
MODULE QUANTITY	12,714
TOTAL DC SIZE	6,865,560 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	40
TOTAL AC SIZE	5,000,000 W
TILT	±55°
AZIMUTH	180°

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PROJECT NAME

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8109 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

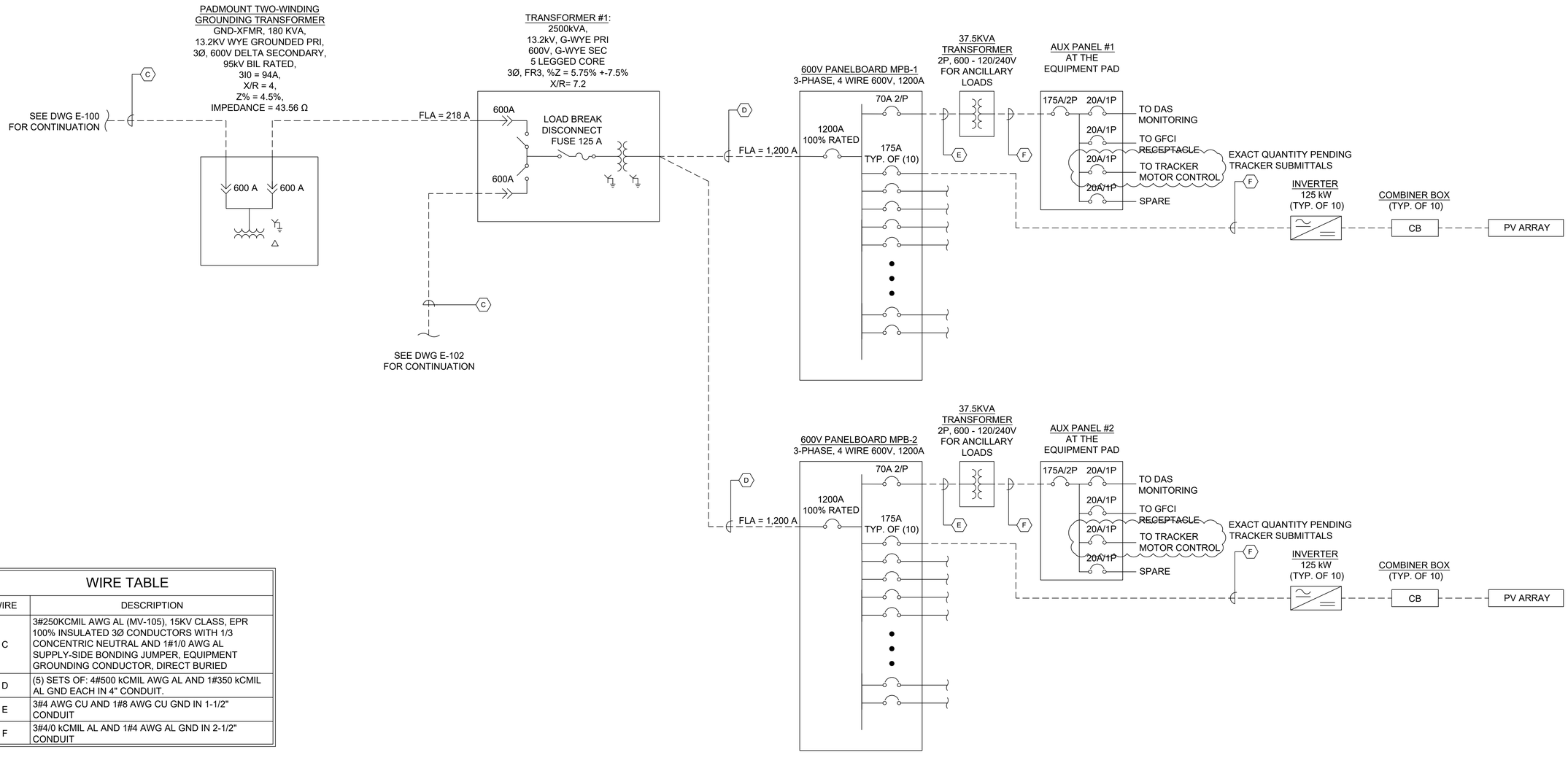
SINGLE LINE DIAGRAM - SHEET 1

SHEET SIZE

ARCH D
24" X 36"

SHEET NUMBER

E-100



WIRE TABLE	
WIRE	DESCRIPTION
C	3#250KCMIL AWG AL (MV-105), 15KV CLASS, EPR 100% INSULATED 3Ø CONDUCTORS WITH 1/3 CONCENTRIC NEUTRAL AND 1#1/0 AWG AL SUPPLY-SIDE BONDING JUMPER, EQUIPMENT GROUNDING CONDUCTOR, DIRECT BURIED
D	(5) SETS OF: 4#500 KCMIL AWG AL AND 1#350 KCMIL AL GND EACH IN 4" CONDUIT.
E	3#4 AWG CU AND 1#8 AWG CU GND IN 1-1/2" CONDUIT
F	3#4/0 kCMIL AL AND 1#4 AWG AL GND IN 2-1/2" CONDUIT

INVERTER SETTINGS			
DEVICE	PICKUP	V (L - N)	TIME DELAY
27-1	88%	304	2.00
27-2	50%	173	1.10
59-1	110%	381	2.00
59-2	120%	415	0.16
81U-1	58.5 HZ		300.00
81U-2	56.5 Hz		0.16
81O-1	61.2 Hz		300.00
81O-2	62.0 Hz		0.16
INVERTER SHALL RESUME OPERATING UPON 5 MINUTES OF STABLE GRID. 5 MINUTE PERIOD SHALL RESET FOR ANY ELEMENT TRIP			

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	489
MODULE QUANTITY	12,714
TOTAL DC SIZE	6,865,560 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	40
TOTAL AC SIZE	5,000,000 W
TILT	±55°
AZIMUTH	180°

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PROJECT NAME

MANLIUS EAST
8109 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

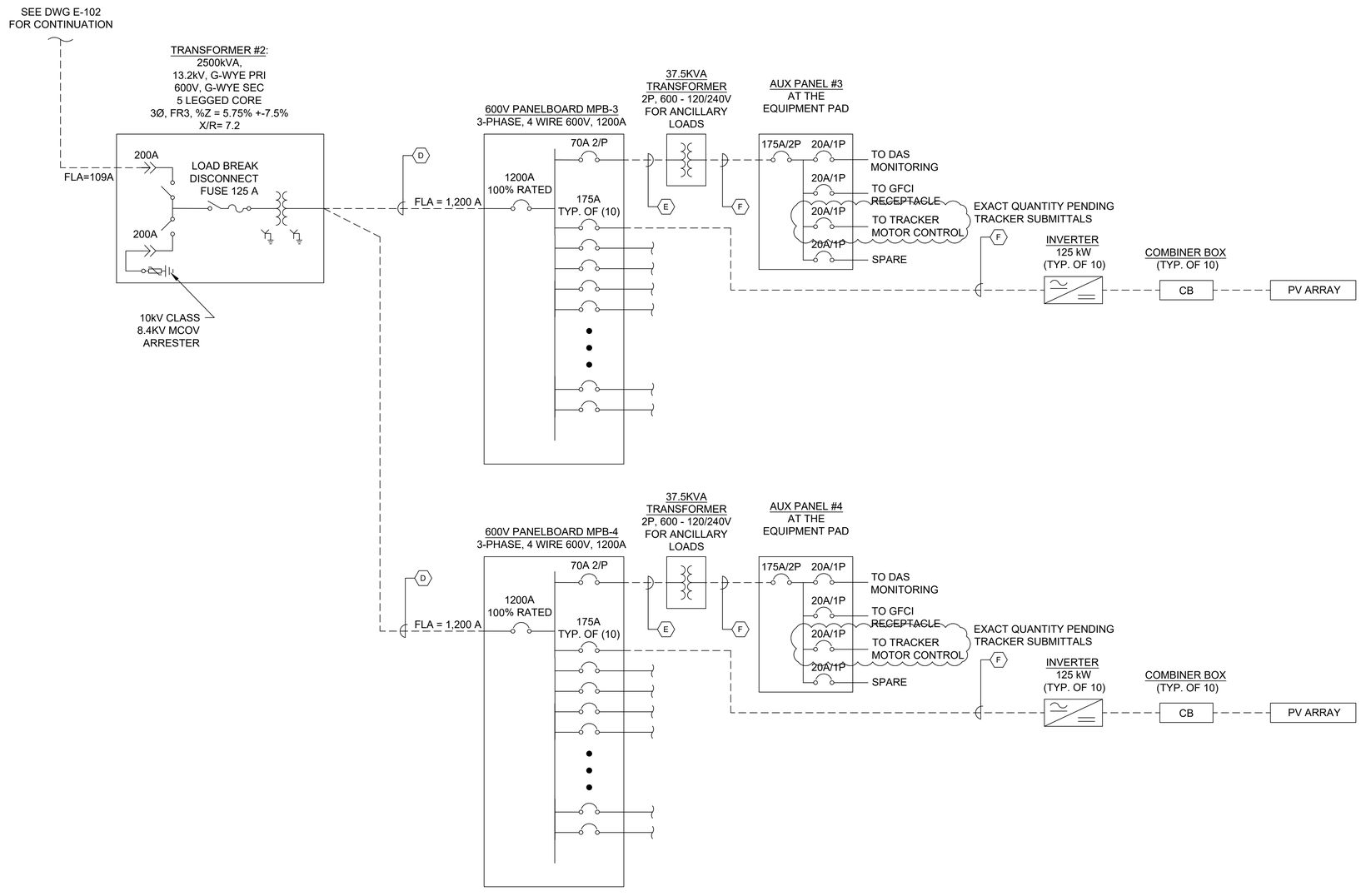
SINGLE LINE DIAGRAM - SHEET 2

SHEET SIZE

ARCH D
24" X 36"

SHEET NUMBER

E-101



WIRE TABLE	
WIRE	DESCRIPTION
C	3#250KCMIL AWG AL (MV-105), 15KV CLASS, EPR 100% INSULATED 3Ø CONDUCTORS WITH 1/3 CONCENTRIC NEUTRAL AND 1#1/0 AWG AL SUPPLY-SIDE BONDING JUMPER, EQUIPMENT GROUNDING CONDUCTOR, DIRECT BURIED
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SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
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PROJECT NAME

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MANLIUS, NY 13104

SHEET NAME

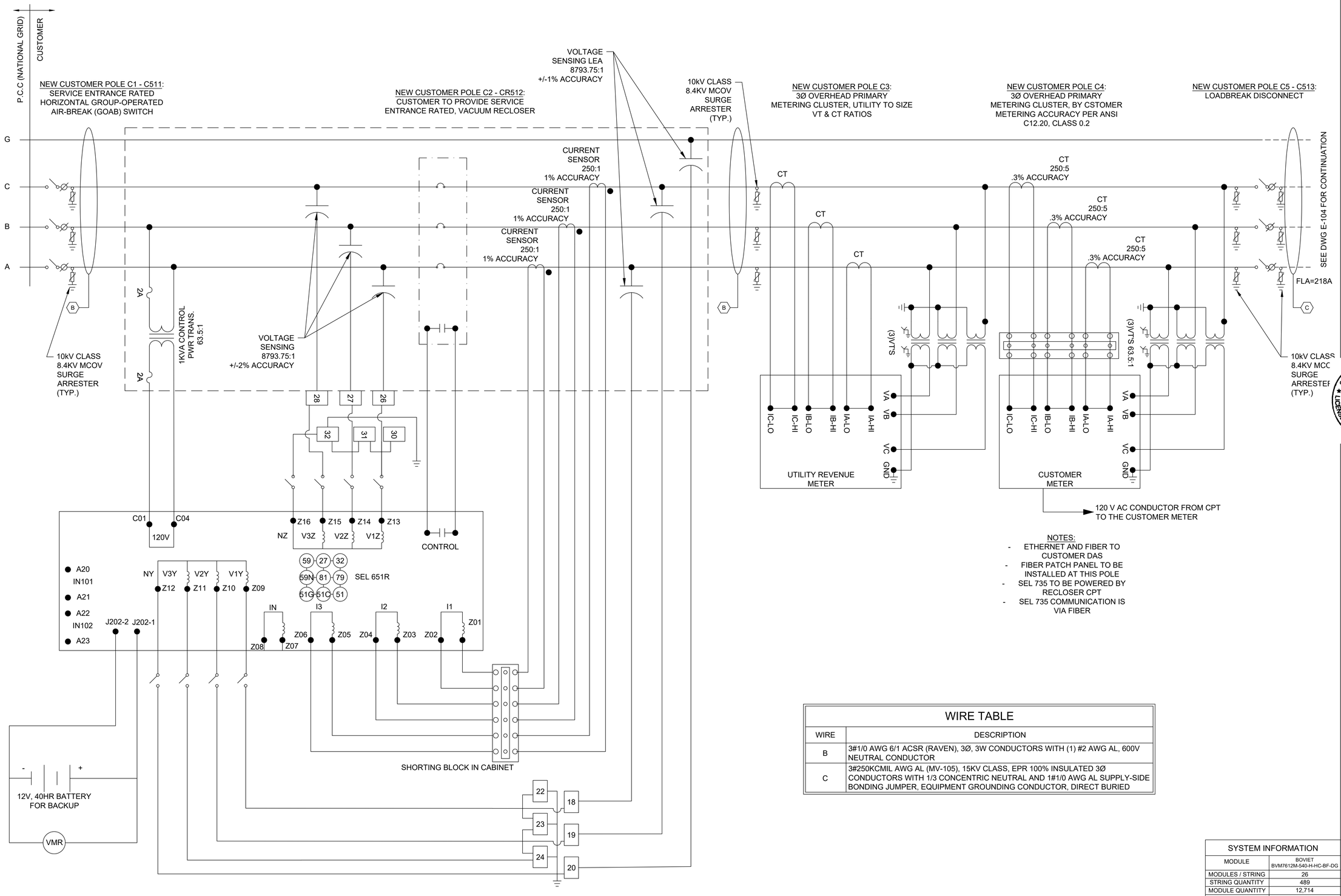
SINGLE LINE DIAGRAM - SHEET 3

SHEET SIZE

ARCH D
24" X 36"

SHEET NUMBER

E-102



NOTES:
- ETHERNET AND FIBER TO CUSTOMER DAS
- FIBER PATCH PANEL TO BE INSTALLED AT THIS POLE
- SEL 735 TO BE POWERED BY RECLOSER CPT
- SEL 735 COMMUNICATION IS VIA FIBER

WIRE TABLE

WIRE	DESCRIPTION
B	3#1/0 AWG 6/1 ACSR (RAVEN), 3Ø, 3W CONDUCTORS WITH (1) #2 AWG AL, 600V NEUTRAL CONDUCTOR
C	3#250KCMIL AWG AL (MV-105), 15KV CLASS, EPR 100% INSULATED 3Ø CONDUCTORS WITH 1/3 CONCENTRIC NEUTRAL AND 1#1/0 AWG AL SUPPLY-SIDE BONDING JUMPER, EQUIPMENT GROUNDING CONDUCTOR, DIRECT BURIED

SYSTEM INFORMATION

MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
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8109 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

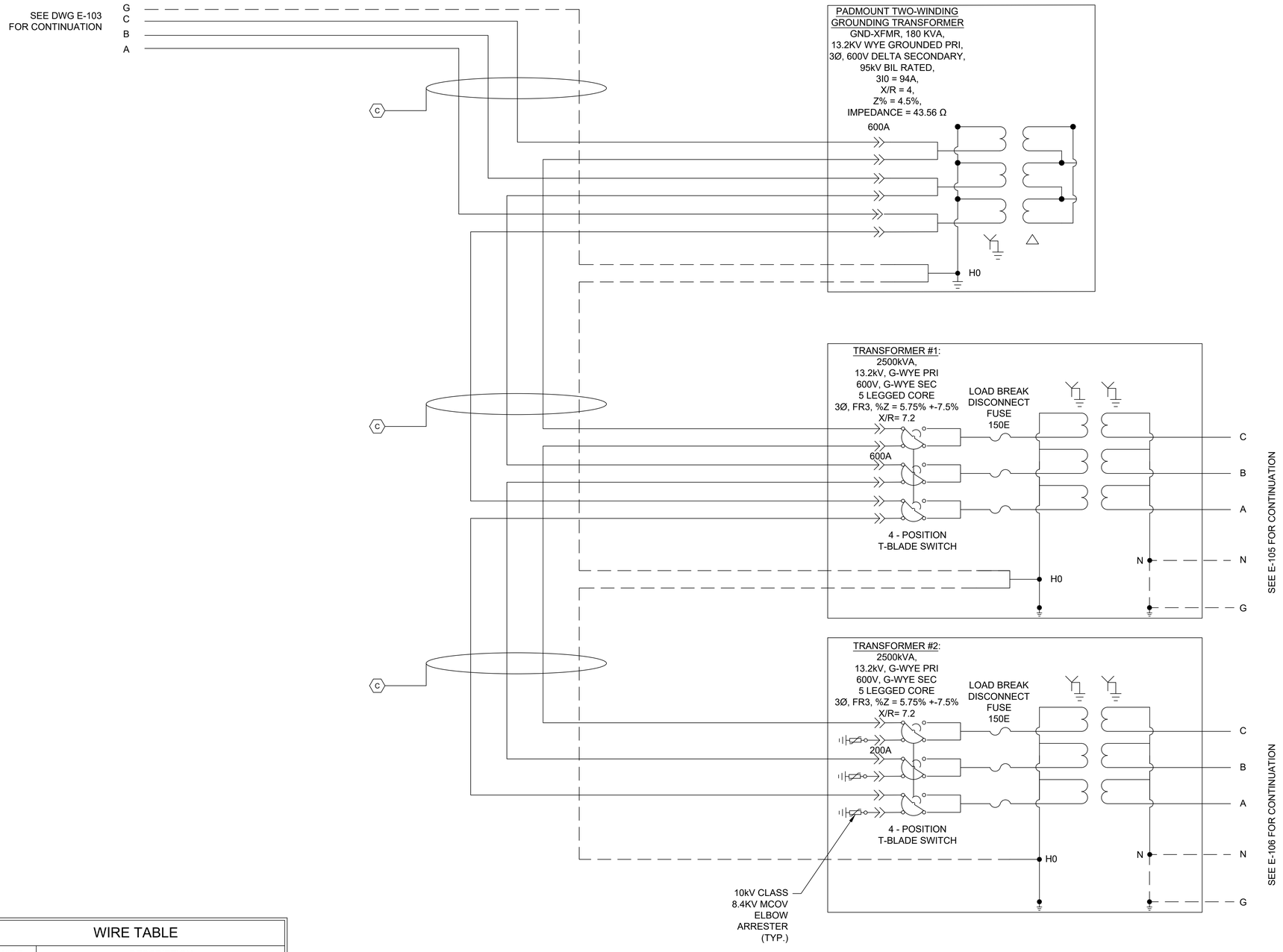
THREE LINE DIAGRAM - SHEET 1

SHEET SIZE

ARCH D
24" X 36"

SHEET NUMBER

E-103



WIRE TABLE	
WIRE	DESCRIPTION
C	3#250KCMIL AWG AL (MV-105), 15KV CLASS, EPR 100% INSULATED 3Ø CONDUCTORS WITH 1/3 CONCENTRIC NEUTRAL AND 1#1/0 AWG AL SUPPLY-SIDE BONDING JUMPER, EQUIPMENT GROUNDING CONDUCTOR, DIRECT BURIED

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	489
MODULE QUANTITY	12,714
TOTAL DC SIZE	6,865,560 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	40
TOTAL AC SIZE	5,000,000 W
TILT	±55°
AZIMUTH	180°

Castillo Engineering
DESIGNING TOMORROW'S POWER®

CASTILLO ENGINEERING SERVICES, LLC
COA # 28345
620 N. WYMORE ROAD,
SUITE 250,
MAITLAND, FL 32751
TEL: (407) 289-2575

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REVISIONS

DESCRIPTION	DATE	REV
IFP	12/09/2022	0
30% REVIEW	11/11/2022	A

PROJECT INSTALLER

STATE OF NEW YORK · E. E. CASTILLO · 095344 · LICENSED PROFESSIONAL ENGINEER

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E Castillo
Date: 2022.12.12 09:46:51

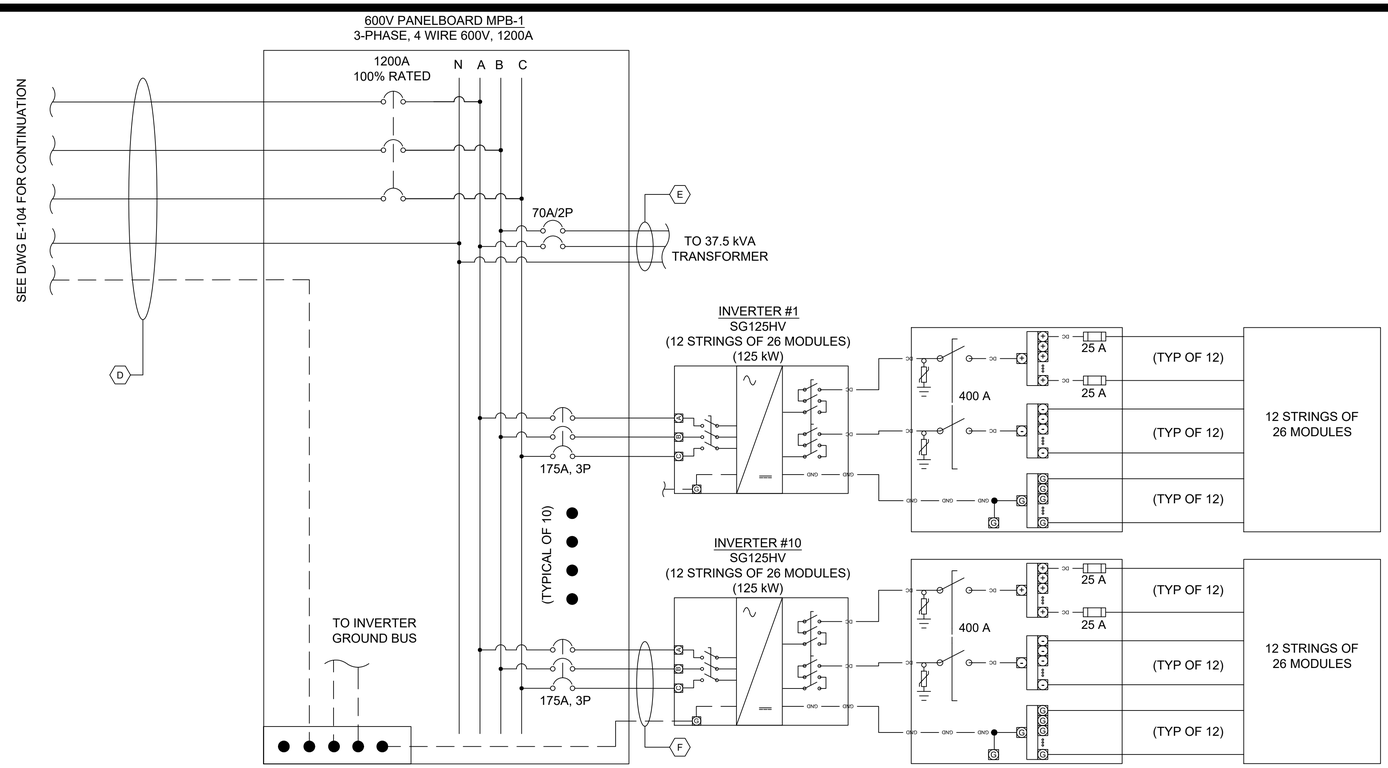
PROJECT NAME

MANLIUS EAST
8109 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME
THREE LINE DIAGRAM - SHEET 2

SHEET SIZE
ARCH D
24" X 36"

SHEET NUMBER
E-104



WIRE TABLE	
WIRE	DESCRIPTION
D	(5) SETS OF: 4#500 kCMIL AWG AL AND 1#350 kCMIL AL GND EACH IN 4" CONDUIT.
E	3#4 AWG CU AND 1#8 AWG CU GND IN 1-1/2" CONDUIT
F	3#4/0 kCMIL AL AND 1#4 AWG AL GND IN 2-1/2" CONDUIT

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	489
MODULE QUANTITY	12,714
TOTAL DC SIZE	6,865,560 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	40
TOTAL AC SIZE	5,000,000 W
TILT	±55°
AZIMUTH	180°

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PROJECT NAME

MANLIUS EAST
8109 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

THREE LINE DIAGRAM - SHEET 3

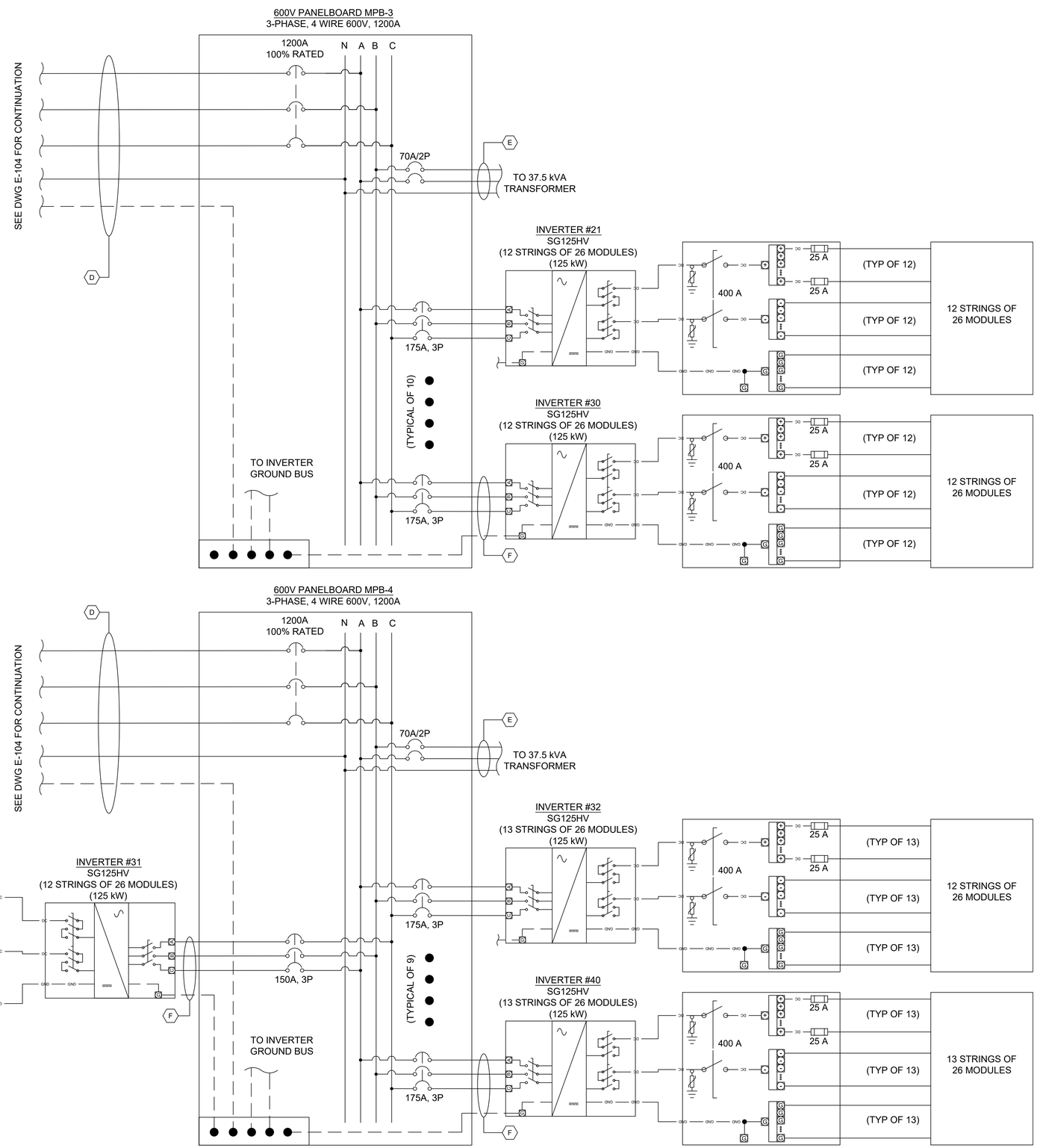
SHEET SIZE

ARCH D
24" X 36"

SHEET NUMBER

E-105

WIRE TABLE	
WIRE	DESCRIPTION
D	(5) SETS OF: 4#500 kCMIL AWG AL AND 1#350 kCMIL AL GND EACH IN 4" CONDUIT.
E	3#4 AWG CU AND 1#8 AWG CU GND IN 1-1/2" CONDUIT
F	3#4/0 kCMIL AL AND 1#4 AWG AL GND IN 2-1/2" CONDUIT



SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	489
MODULE QUANTITY	12,714
TOTAL DC SIZE	6,865,560 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	40
TOTAL AC SIZE	5,000,000 W
TILT	±55°
AZIMUTH	180°

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PROJECT NAME

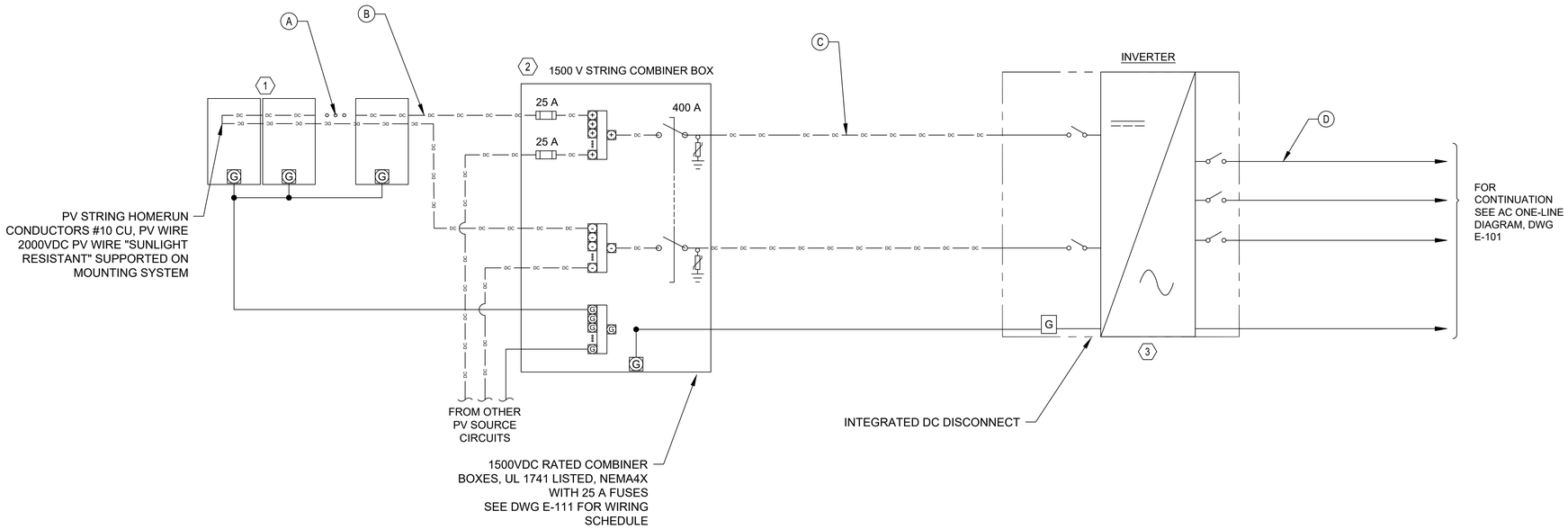
MANLIUS EAST
8109 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME
THREE LINE DIAGRAM - SHEET 4

SHEET SIZE
ARCH D
24" X 36"

SHEET NUMBER
E-106

ELECTRICAL DC ONE-LINE DIAGRAM TYPICAL



EQUIPMENT SCHEDULE

ITEM	DESCRIPTION	QUANTITY	DETAIL	REMARKS
1	PV MODULES	12,714	26 x BOVIET BVM7612M-540-H-HC-BF-DG, 540W IN EACH STRING	
2	PV COMBINER BOX	40	1500 V, UL LISTED, 90°C, NEMA 4X, 400A FUSES, 13 INPUTS	
3	INVERTER	40	SUNGROW SG125HV	INTEGRATED AC AND DC DISCONNECT

CONDUCTOR AND CONDUIT SCHEDULE

ITEM	DESCRIPTION	CONDUCTOR	CONDUIT	PATH
A	PV MODULE CONDUCTORS	2 X #4mm, CU, 2KV PV WIRE	N/A - INTEGRATED BACK OF MODULE WIRING	N/A
B	PV STRING HOMERUN CONDUCTORS	2 X #10, CU, 2KV PV WIRE	N/A - HOME RUN WIRING	BACK OF RACKING
C	DC COMBINER BOX OUTPUT CONDUCTORS	REFER TO WIRING SCHEDULE, E-111		CONDUIT IN TRENCH
D	INVERTER OUTPUT CONDUCTORS	REFER TO AC SYSTEM VALUES, E-111		CONDUIT IN TRENCH

PV ARRAY SCHEDULE PER INVERTER

INVERTER REF	MODULE			NUM STRINGS	MODS / STRING	# OF MODULES	POWER (KW)	INVERTER TYPE
	MFG	MODEL	POWER (W)					
INVERTER 1-31	BOVIET	BVM7612M-540-H-HC-BF-DG	540	12	26	312	168.480	SUNGROW SG125HV
INVERTER 32-40	BOVIET	BVM7612M-540-H-HC-BF-DG	540	13	26	338	182.520	SUNGROW SG125HV

NOTE:

1. REFER TO E-111 FOR WIRING SCHEDULE OF DC COMBINER BOXES.

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	489
MODULE QUANTITY	12,714
TOTAL DC SIZE	6,865,560 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	40
TOTAL AC SIZE	5,000,000 W
TILT	±55°
AZIMUTH	180°

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DESCRIPTION	DATE	REV
IFP	12/09/2022	0
30% REVIEW	11/11/2022	A

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PROJECT NAME

MANLIUS EAST
8109 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

DC ONE LINE DIAGRAM

SHEET SIZE

ARCH D
24" X 36"

SHEET NUMBER

E-110

DC SYSTEM VALUES

CB#	# OF STRINGS	# OF MODULES	KW @ BF-GAIN	CURRENT RATINGS				VOLTAGE RATING	COMBINER OUTPUT CONDUCTORS (CU)							STRING CONDUCTORS (CU)				TOTAL VOLTAGE DROP		OUTPUT RACEWAY CONDUIT (EMT)	EQUIP GND SIZE AWG (CU)
				Imp	Isc	NEC SIZING AMPS	OUTPUT / RECOMB. OCPD A	NOMINAL STRING (Vmp)	COND. C RATED AMPS (>NEC ADJ. AMPS)	SIZE AWG	NEC SIZING WITH TEMP AND FILL DERATE	# PER POLE	# PER CIRCUIT	OHMS/KFT	COMBINER OUTPUT CIRCUIT CIRCUIT LENGTH ONE WAY (FT)	COMBINER CIRCUIT VOLTAGE DROP (V)	FARTHEST STRING TO COMBINER (FT)	STRING COND SIZE AWG CU	MIN STRING FUSE A PER NEC	FARTHEST STRING CIRCUIT VOLTAGE DROP	TOTAL V DROP FROM FARTHEST STRING TO INVERTER (V)	% V DROP FROM FARTHEST STRING TO INVERTER		
CB-1	12	312	185.328	168.432	178.9	279.5	400	1102	350	350	336.0	1	2	0.0367	502	6.21	344	#10	25	11.7	17.9	1.63%	3" C	#3
CB-2	12	312	185.328	168.432	178.9	279.5	400	1102	350	350	336.0	1	2	0.0367	593	7.33	344	#10	25	11.7	19.1	1.73%	3" C	#3
CB-3	12	312	185.328	168.432	178.9	279.5	400	1102	350	350	336.0	1	2	0.0367	685	8.47	345	#10	25	11.8	20.2	1.83%	3" C	#3
CB-4	12	312	185.328	168.432	178.9	279.5	400	1102	350	350	336.0	1	2	0.0367	777	9.61	344	#10	25	11.7	21.3	1.93%	3" C	#3
CB-5	12	312	185.328	168.432	178.9	279.5	400	1102	350	350	336.0	1	2	0.0367	869	10.74	345	#10	25	11.8	22.5	2.04%	3" C	#3
CB-6	12	312	185.328	168.432	178.9	279.5	400	1102	350	350	336.0	1	2	0.0367	961	11.88	344	#10	25	11.7	23.6	2.14%	3" C	#3
CB-7	12	312	185.328	168.432	178.9	279.5	400	1102	350	350	336.0	1	2	0.0367	1053	13.02	345	#10	25	11.8	24.8	2.25%	3" C	#3
CB-8	12	312	185.328	168.432	178.9	279.5	400	1102	350	350	336.0	1	2	0.0367	813	10.05	269	#10	25	9.2	19.2	1.74%	3" C	#3
CB-9	12	312	185.328	168.432	178.9	279.5	400	1102	350	350	336.0	1	2	0.0367	676	8.36	269	#10	25	9.2	17.5	1.59%	3" C	#3
CB-10	12	312	185.328	168.432	178.9	279.5	400	1102	350	350	336.0	1	2	0.0367	538	6.65	269	#10	25	9.2	15.8	1.43%	3" C	#3
CB-11	12	312	185.328	168.432	178.9	279.5	400	1102	350	350	336.0	1	2	0.0367	400	4.95	269	#10	25	9.2	14.1	1.28%	3" C	#3
CB-12	12	312	185.328	168.432	178.9	279.5	400	1102	350	350	336.0	1	2	0.0367	284	3.51	247	#10	25	8.4	11.9	1.08%	3" C	#3
CB-13	12	312	185.328	168.432	178.9	279.5	400	1102	350	350	336.0	1	2	0.0367	212	2.62	344	#10	25	11.7	14.3	1.30%	3" C	#3
CB-14	12	312	185.328	168.432	178.9	279.5	400	1102	350	350	336.0	1	2	0.0367	304	3.76	345	#10	25	11.8	15.5	1.41%	3" C	#3
CB-15	12	312	185.328	168.432	178.9	279.5	400	1102	350	350	336.0	1	2	0.0367	396	4.90	345	#10	25	11.8	16.6	1.51%	3" C	#3
CB-16	12	312	185.328	168.432	178.9	279.5	400	1102	350	350	336.0	1	2	0.0367	488	6.03	345	#10	25	11.8	17.8	1.61%	3" C	#3
CB-17	12	312	185.328	168.432	178.9	279.5	400	1102	350	350	336.0	1	2	0.0367	580	7.17	345	#10	25	11.8	18.9	1.72%	3" C	#3
CB-18	12	312	185.328	168.432	178.9	279.5	400	1102	350	350	336.0	1	2	0.0367	671	8.30	345	#10	25	11.8	20.0	1.82%	3" C	#3
CB-19	12	312	185.328	168.432	178.9	279.5	400	1102	350	350	336.0	1	2	0.0367	764	9.45	388	#10	25	13.2	22.7	2.06%	3" C	#3
CB-20	12	312	185.328	168.432	178.9	279.5	400	1102	350	350	336.0	1	2	0.0367	78	0.96	343	#10	25	11.7	12.6	1.15%	3" C	#3
CB-21	12	312	185.328	168.432	178.9	279.5	400	1102	350	350	336.0	1	2	0.0367	643	7.95	343	#10	25	11.7	19.6	1.78%	3" C	#3
CB-22	12	312	185.328	168.432	178.9	279.5	400	1102	350	350	336.0	1	2	0.0367	551	6.81	343	#10	25	11.7	18.5	1.68%	3" C	#3
CB-23	12	312	185.328	168.432	178.9	279.5	400	1102	350	350	336.0	1	2	0.0367	459	5.67	343	#10	25	11.7	17.4	1.57%	3" C	#3
CB-24	12	312	185.328	168.432	178.9	279.5	400	1102	350	350	336.0	1	2	0.0367	368	4.55	343	#10	25	11.7	16.2	1.47%	3" C	#3
CB-25	12	312	185.328	168.432	178.9	279.5	400	1102	350	350	336.0	1	2	0.0367	275	3.40	343	#10	25	11.7	15.1	1.37%	3" C	#3
CB-26	12	312	185.328	168.432	178.9	279.5	400	1102	350	350	336.0	1	2	0.0367	183	2.26	343	#10	25	11.7	13.9	1.27%	3" C	#3
CB-27	12	312	185.328	168.432	178.9	279.5	400	1102	350	350	336.0	1	2	0.0367	307	3.80	256	#10	25	8.7	12.5	1.14%	3" C	#3
CB-28	12	312	185.328	168.432	178.9	279.5	400	1102	350	350	336.0	1	2	0.0367	422	5.22	324	#10	25	11.0	16.3	1.47%	3" C	#3
CB-29	12	312	185.328	168.432	178.9	279.5	400	1102	350	350	336.0	1	2	0.0367	514	6.35	347	#10	25	11.8	18.2	1.65%	3" C	#3
CB-30	12	312	185.328	168.432	178.9	279.5	400	1102	350	350	336.0	1	2	0.0367	607	7.50	345	#10	25	11.8	19.3	1.75%	3" C	#3
CB-31	12	312	185.328	168.432	178.9	279.5	400	1102	350	350	336.0	1	2	0.0367	698	8.63	345	#10	25	11.8	20.4	1.85%	3" C	#3
CB-32	13	338	200.772	182.468	193.8	302.8	400	1102	350	350	336.0	1	2	0.0367	790	10.58	345	#10	25	11.8	22.3	2.03%	3" C	#3
CB-33	13	338	200.772	182.468	193.8	302.8	400	1102	350	350	336.0	1	2	0.0367	882	11.81	462	#10	25	15.7	27.6	2.50%	3" C	#3
CB-34	13	338	200.772	182.468	193.8	302.8	400	1102	350	350	336.0	1	2	0.0367	1177	15.76	268	#10	25	9.1	24.9	2.26%	3" C	#3
CB-35	13	338	200.772	182.468	193.8	302.8	400	1102	350	350	336.0	1	2	0.0367	1017	13.62	269	#10	25	9.2	22.8	2.07%	3" C	#3
CB-36	13	338	200.772	182.468	193.8	302.8	400	1102	350	350	336.0	1	2	0.0367	878	11.76	271	#10	25	9.2	21.0	1.90%	3" C	#3
CB-37	13	338	200.772	182.468	193.8	302.8	400	1102	350	350	336.0	1	2	0.0367	977	13.09	238	#10	25	8.1	21.2	1.92%	3" C	#3
CB-38	13	338	200.772	182.468	193.8	302.8	400	1102	350	350	336.0	1	2	0.0367	1092	14.63	267	#10	25	9.1	23.7	2.15%	3" C	#3
CB-39	13	338	200.772	182.468	193.8	302.8	400	1102	350	350	336.0	1	2	0.0367	1253	16.78	271	#10	25	9.2	26.0	2.36%	3" C	#3
CB-40	13	338	200.772	182.468	193.8	302.8	400	1102	350	350	336.0	1	2	0.0367	1392	18.64	270	#10	25	9.2	27.8	2.53%	3" C	#3
TOTAL	489	12714	7552.116	6863.604	7288.5	11388.4																		

WORST CASE DC VOLTAGE DROP:	2.53%
AVERGE WORST CASE DC VOLTAGE DROP:	1.75%

AC SYSTEM VALUES

EQUIPMENT (FROM)	EQUIPMENT (TO)	AC VOLTAGE (V)	MAX OUTPUT CURRENT (A)	DISTANCE TO CORRESPONDING EQUIPMENT (FT)	OCPD (A)	CONDUCTOR SIZE	WIRE TYPE	TERMINATION RATINGS	# PER POLE	# OF WIRES PER SET	TEMPERATURE DERATE	BUNDLING DERATE	CUM. RATED AMPS (NEC ADJ AMPS)	CUM. RATED AMPS (NEC SIZING WITH TEMP AND FILL ADJUST)	CUM. RATED AMPS (OCPD RATING)	EGC	RESISTIVITY (OHMS/1000 FT)	AC VOLTAGE DROP (V)	% VOLTAGE DROP	CONDUIT TYPE	CONDUIT SIZE
INVERTERS TO 600 V PANELBOARD																				
INV #1-10	PANEL MPB-1	600	120	80	150	4/0	AL	THWN-2	75	1	3	0.96	1	180	172.8	200	#4	0.1	1.92	0.32%	PVC SCH 80	3
INV #11-20	PANEL MPB-2	600	120	80	150	4/0	AL	THWN-2	75	1	3	0.96	1	180	172.8	200	#4	0.1	1.92	0.32%	PVC SCH 80	3
INV #21-30	PANEL MPB-3	600	120	80	150	4/0	AL	THWN-2	75	1	3	0.96	1	180	172.8	200	#4	0.1	1.92	0.32%	PVC SCH 80	3
INV #31-40	PANEL MPB-4	600	120	80	150	4/0	AL	THWN-2	75	1	3	0.96	1	180	172.8	200	#4	0.1	1.92	0.32%	PVC SCH 80	3
PANELBOARD TO TRANSFORMER																				
PANEL MPB-1	TRANSFORMER #1	600	1200	80	1200	500	AL	THWN-2	75	5	4	0.96	1	1550	1488	1200	250	0.0424	1.62816	0.27%	PVC SCH 80	4
PANEL MPB-2	TRANSFORMER #1	600	1200	80	1200	500	AL	THWN-2	75	5	4	0.96	1	1550	1488	1200	250	0.0424	1.62816	0.27%	PVC SCH 80	4
PANEL MPB-3	TRANSFORMER #2	600	1200	80	1200	500	AL	THWN-2	75	5	4	0.96	1	1550	1488	1200	250	0.0424	1.62816	0.27%	PVC SCH 80	4
PANEL MPB-4	TRANSFORMER #2	600	1200	80	1200	500	AL	THWN-2	75	5	4	0.96	1	1550	1488	1200	250	0.0424	1.62816	0.27%	PVC SCH 80	4
TRANSFORMER #2 TO TRANSFORMER #1																				
TRANSFORMER #2	TRANSFORMER #1	13200	109	237	150	250	AL	MV-105	105	1	3	0.96	1	270	259.2	300	#2	0.0847	4.3761102	0.03%	PVC SCH 80	6
TRANSFORMER #1 TO GROUNDING TRANSFORMER																				
TRANSFORMER #1	GND TRANSFORMER	13200	218	20	300	250	AL	MV-105	105	1	3	0.96	1	270	259.2	300	#2	0.0847	0.738584	0.01%	PVC SCH 80	6
GROUNDING TRANSFORMER TO RISER POLE																				
GND TRANSFORMER	RISER POLE	13200	218	3600	300	250	AL	MV-105	105	1	3	0.96	1	270	259.2	300	#2	0.0847	132.94512	1.01%	DIRECT BURIED	-
																		VOLTAGE DROP		1.64%		

NOTES:

1. UP TO 10 SETS OF STRING HOMERUN CONDUCTORS MAY BE ALLOCATED TO A SINGLE 2" CONDUIT USING #10 CU PV WIRE.
   (CONDUCTOR AMPS @ 90°C)*((DERATE PER TABLE 310.15(B)(2)(a))*((DERATE PER TABLE 310.15(B)(3)(a))
   40 A * 0.96 * .7 = 26.32 A = I_{NOM}
2. COMBINER BOX TERMINATIONS AND INVERTER RECOMBINER BOX TERMINATIONS ARE RATED FOR 90°C.
3. CONDUCTORS TO BE EQUIPPED WITH THERMOSET INSULATION AND SUNLIGHT RESISTANT. BLACK WITH RED STRIPES FOR +, BLACK FOR -.
4. WIRE SIZES ARE THE MINIMUM REQUIRED FOR VOLTAGE DROP PER NEC AND CONTRACT REQUIREMENTS.
5. ALL DC WIRES MUST BE RATED FOR 2000V.
6. CONTRACTOR RESPONSIBLE FOR TOTAL WIRE LENGTHS. THE WIRE LENGTHS ON THIS SHEET ARE FOR GUIDANCE ONLY.

DESIGN TEMPERATURE COEFFICIENTS	
ASHRAE HIGH TEMP	31 °C
ASHRAE LOW TEMP	-24 °C

Boviet 594 W COEFFICIENT	
PMAX	-0.35% / °C
VOC	-0.285% / °C
ISC	0.05% / °C

Boviet 540 W MODULE PARAMETERS	
VOC	49.89 VDC
VMP	42.4 VDC
ISC	14.905 ADC
IMPP	12.76 ADC
TOLERANCE	0/+3%

Boviet 594 W MODULE PARAMETERS (BIFACIAL)	
VOC	49.89 VDC
VMP	42.4 VDC
ISC	14.905 ADC
IMPP	14.036 ADC
TOLERANCE	0/+3%

STRING OF 26X594W	
WITH NEC 690.7 & 690.8	
VMAX	1478 VDC
VNOM	1178 VDC
ISC	17.55 ADC
IMPP	17.55 ADC
WITH NEC 690.9	
STRING FUSE	21.93 ADC -> 25.00 ADC
WIRE	#10 PV WIRE

COMBINER WITH 26X25A FUSES USING 594W	
WITH NEC 690.7 & 690.8	
VMAX	1478 VDC
VNOM	1178 VDC
ISC	223.575 ADC
IMPP	210.54 ADC
WITH NEC 690.9	
DC DISCO RATING	400 ADC

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	489
MODULE QUANTITY	12,714
TOTAL DC SIZE	6,865,560 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	40
TOTAL AC SIZE	5,000,000 W
TILT	±55°
AZIMUTH	180°

Castillo Engineering
DESIGNING TOMORROW'S POWER®
CASTILLO ENGINEERING SERVICES, LLC
COA # 28345
620 N. WYMORE ROAD,
SUITE 250,
MAITLAND, FL 32751
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REVISIONS

DESCRIPTION	DATE	REV
IFP	12/09/2022	0
30% REVIEW	11/11/2022	A

PROJECT INSTALLER

STATE OF NEW YORK · E. CASTILLO · 095344 · LICENSED PROFESSIONAL ENGINEER

Digitally signed by: Democrates E Castillo
Date: 2022.12.12 09:46:57

PROJECT NAME

MANLIUS EAST
8109 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

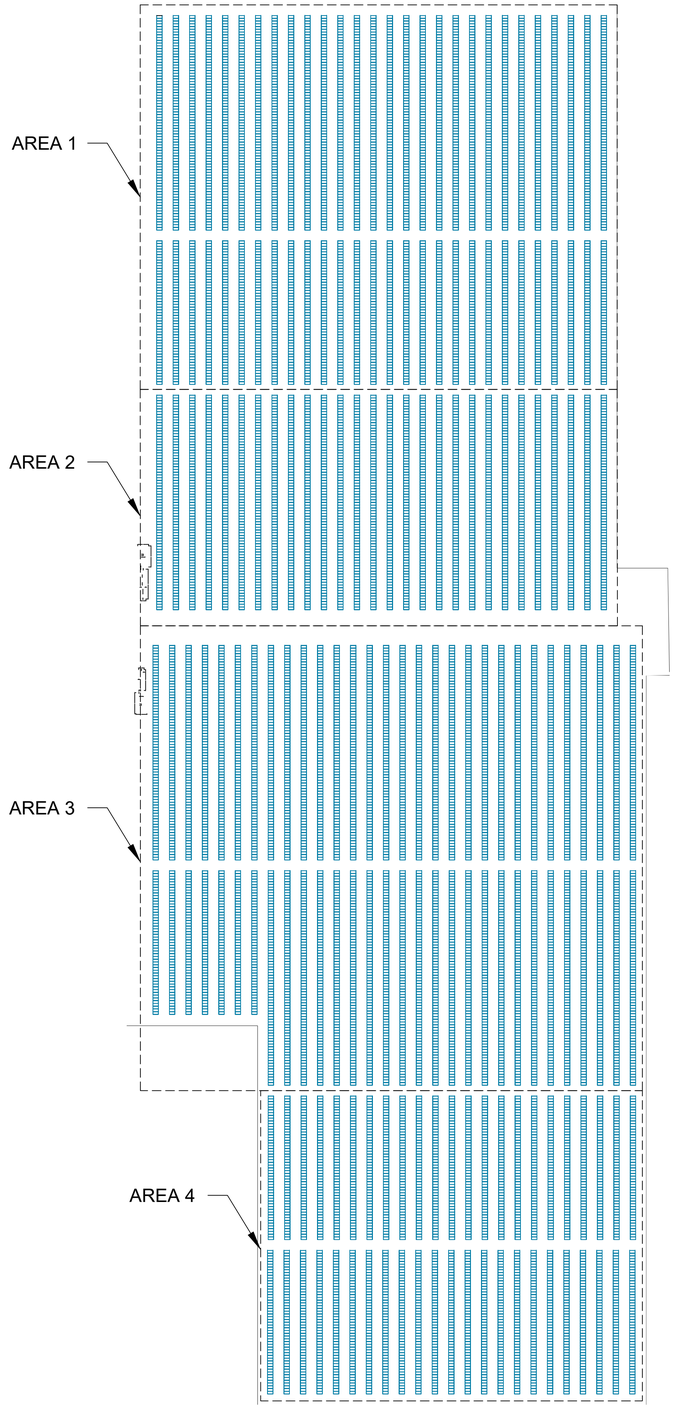
AC & DC SYSTEM VALUES

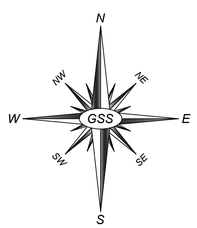
SHEET SIZE

ARCH D
24" X 36"

SHEET NUMBER

E-111





1
E-200

OVERALL DC FEEDER PLAN

100' 50' 0' 100' 300'

SCALE: 1" = 100'

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	489
MODULE QUANTITY	12,714
TOTAL DC SIZE	6,865,560 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	40
TOTAL AC SIZE	5,000,000 W
TILT	±55°
AZIMUTH	180°

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30% REVIEW	11/11/2022	A

PROJECT INSTALLER

STATE OF NEW YORK · E. E. CASTILLO · 095344 · LICENSED PROFESSIONAL ENGINEER

Digitally signed by: Emmocrates E Castillo
Date: 2022.12.12 09:46:58

PROJECT NAME

MANLIUS EAST
8109 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

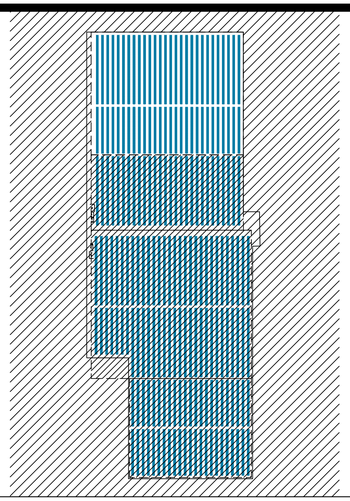
OVERALL DC FEEDER PLAN

SHEET SIZE

ARCH D
24" X 36"

SHEET NUMBER

E-200



KEY PLAN

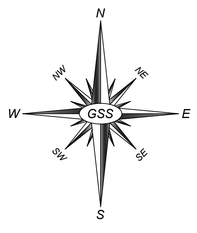
LEGEND

X1
X2

X1
X2

1. THE NUMBER (X1) REPRESENTS "DC COMBINER"
2. THE NUMBER (X2) REPRESENTS THE TOTAL RUNNING STRING COUNT FOR THEIR RESPECTIVE DC COMBINER (X1)
3. THE ORIENTATION OF THE ARROW SHOWS THE ORIENTATION OF STRING ON THE CAB SYSTEM TOWARDS THE DC COMBINER.
4. DC RUN TO TRANSITION TO AND FROM CAB SYSTEM WHEN CROSSING ROADWAYS.

DC COMBINER 7
DC COMBINER 6
DC COMBINER 5
DC COMBINER 1
DC COMBINER 2
DC COMBINER 3
DC COMBINER 4
DC COMBINER 12
DC COMBINER 11
DC COMBINER 10
DC COMBINER 9
DC COMBINER 8



1
E-201

DC FEEDER PLAN - AREA 1

30' 15' 0' 30' 90'

SCALE: 1" = 30'

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	489
MODULE QUANTITY	12,714
TOTAL DC SIZE	6,865,560 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	40
TOTAL AC SIZE	5,000,000 W
TILT	±55°
AZIMUTH	180°

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REVISIONS

DESCRIPTION	DATE	REV
IFP	12/09/2022	0
30% REVIEW	11/11/2022	A

PROJECT INSTALLER

STATE OF NEW YORK
E. E. CASTILLO
095344
LICENSED PROFESSIONAL ENGINEER

Digitally signed by: Democrates E Castillo
Date: 2022.12.12 09:47:00

PROJECT NAME

MANLIUS EAST

8109 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

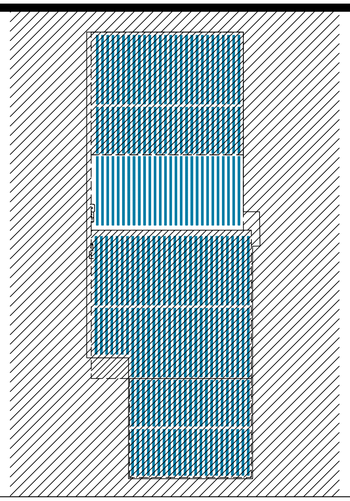
DC FEEDER PLAN - AREA 1

SHEET SIZE

ARCH D
24" X 36"

SHEET NUMBER

E-201



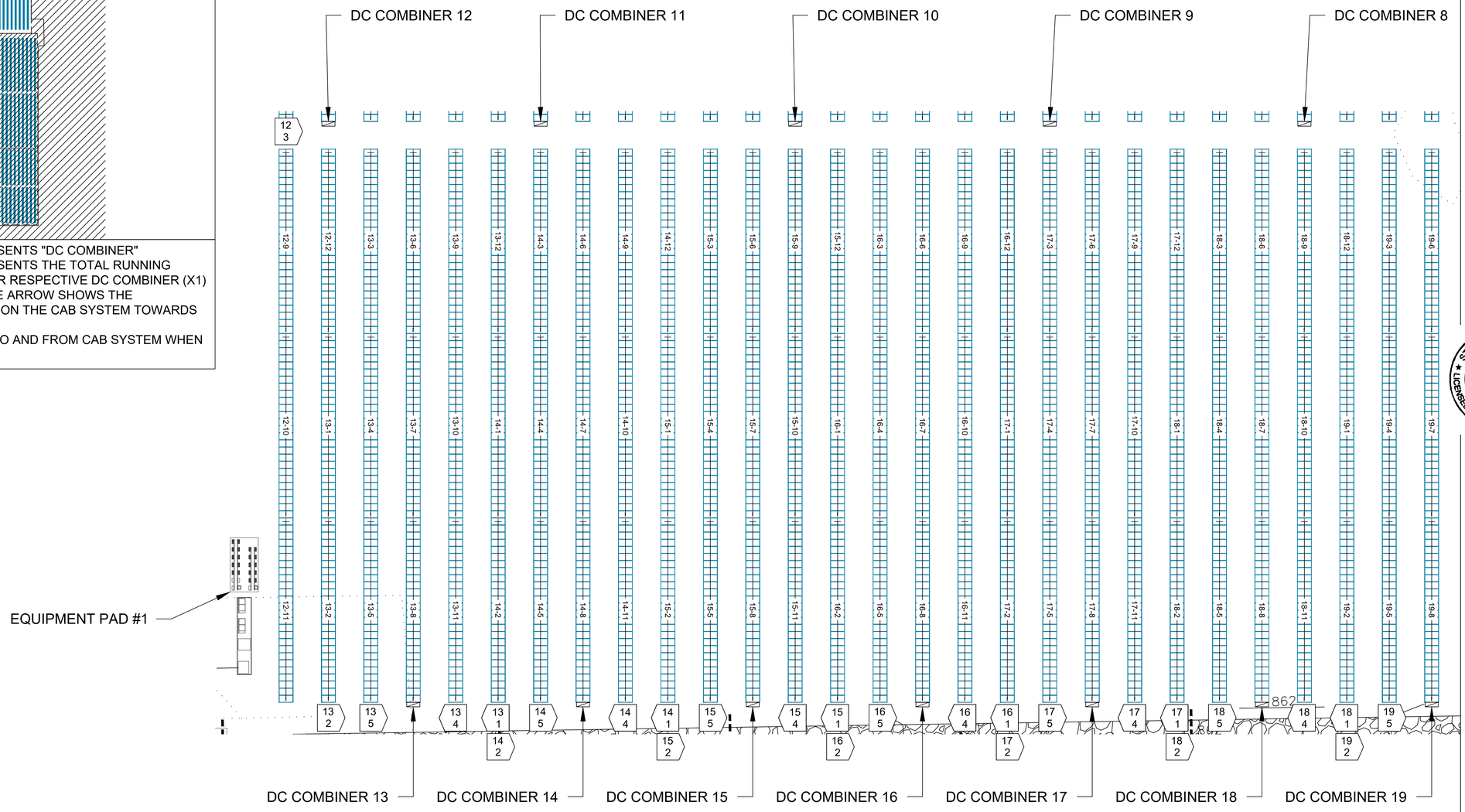
KEY PLAN

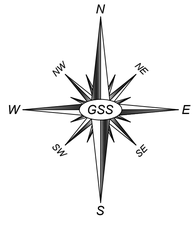
LEGEND

X1
X2

X1
X2

1. THE NUMBER (X1) REPRESENTS "DC COMBINER"
2. THE NUMBER (X2) REPRESENTS THE TOTAL RUNNING STRING COUNT FOR THEIR RESPECTIVE DC COMBINER (X1)
3. THE ORIENTATION OF THE ARROW SHOWS THE ORIENTATION OF STRING ON THE CAB SYSTEM TOWARDS THE DC COMBINER.
4. DC RUN TO TRANSITION TO AND FROM CAB SYSTEM WHEN CROSSING ROADWAYS.





1
E-202

DC FEEDER PLAN - AREA 2

30' 15' 0' 30' 90'

SCALE: 1" = 30'

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	489
MODULE QUANTITY	12,714
TOTAL DC SIZE	6,865,560 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	40
TOTAL AC SIZE	5,000,000 W
TILT	±55°
AZIMUTH	180°

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REVISIONS

DESCRIPTION	DATE	REV
IFP	12/09/2022	0
30% REVIEW	11/11/2022	A

PROJECT INSTALLER

STATE OF NEW YORK · E. E. CASTILLO · 095344 · LICENSED PROFESSIONAL ENGINEER

Digitally signed by: Democrates with Emocrates E Castillo
Date: 2022.12.12 09:47:01

PROJECT NAME

MANLIUS EAST

8109 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

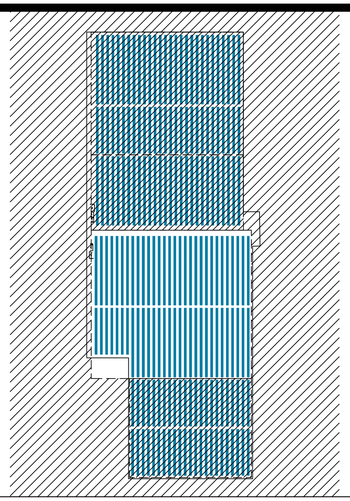
DC FEEDER PLAN - AREA 2

SHEET SIZE

ARCH D
24" X 36"

SHEET NUMBER

E-202



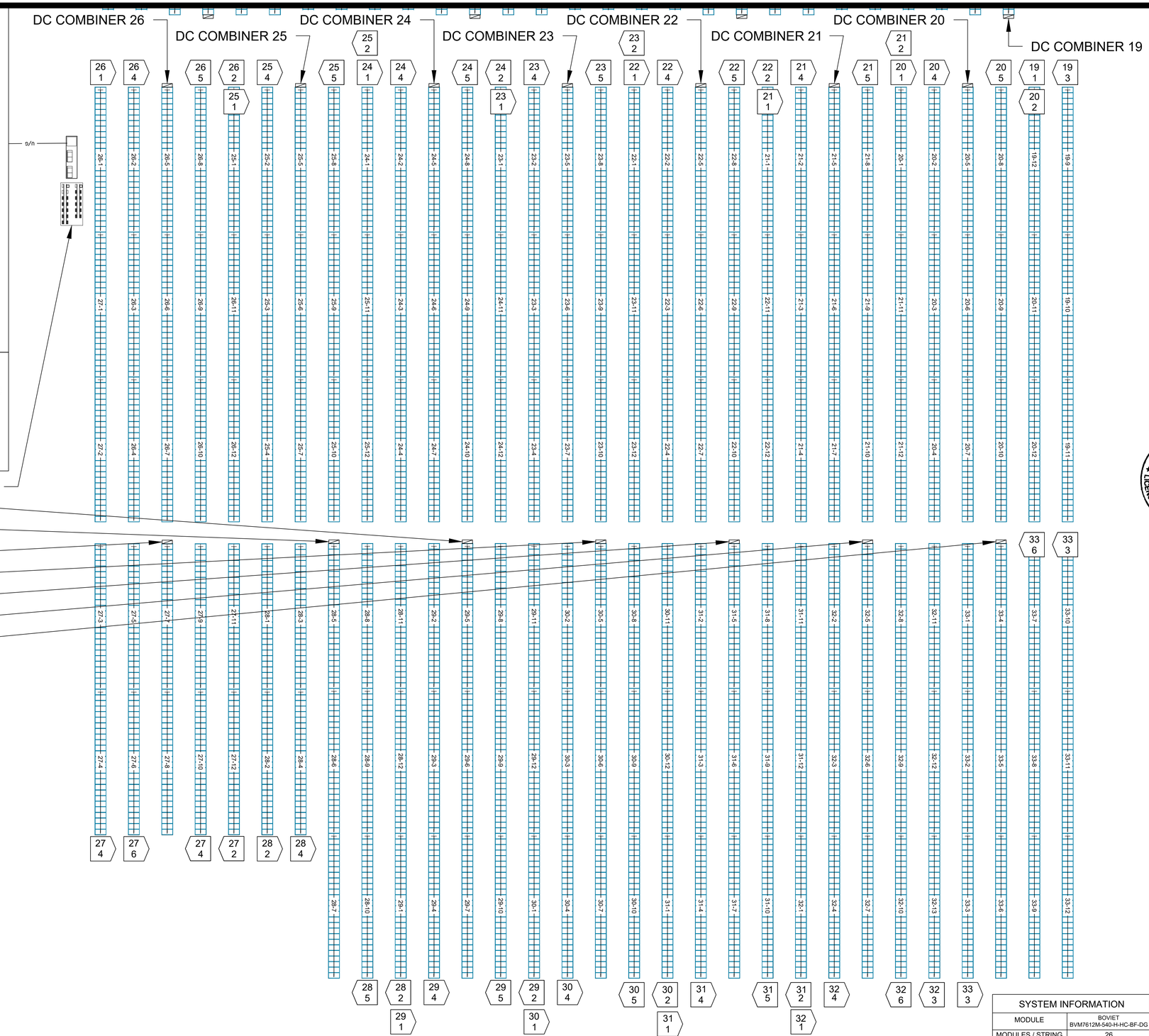
KEY PLAN

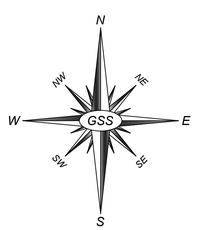
LEGEND

X1
X2

X1
X2

1. THE NUMBER (X1) REPRESENTS "DC COMBINER"
2. THE NUMBER (X2) REPRESENTS THE TOTAL RUNNING STRING COUNT FOR THEIR RESPECTIVE DC COMBINER (X1)
3. THE ORIENTATION OF THE ARROW SHOWS THE ORIENTATION OF STRING ON THE CAB SYSTEM TOWARDS THE DC COMBINER.
4. DC RUN TO TRANSITION TO AND FROM CAB SYSTEM WHEN CROSSING ROADWAYS.





1 / E-203 DC FEEDER PLAN - AREA 3

35' 17.5' 0' 35' 105'

SCALE: 1" = 35'

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	489
MODULE QUANTITY	12,714
TOTAL DC SIZE	6,865,560 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	40
TOTAL AC SIZE	5,000,000 W
TILT	±55°
AZIMUTH	180°

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SUITE 250,
MAITLAND, FL 32751
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IFP	12/09/2022	0
30% REVIEW	11/11/2022	A

PROJECT INSTALLER



Digitally signed by: Democrates E Castillo
Date: 2022.12.12 09:47:02

PROJECT NAME

MANLIUS EAST

8109 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

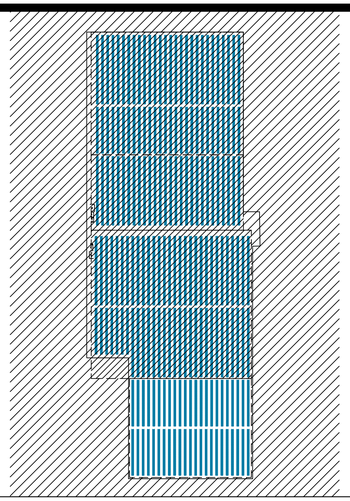
DC FEEDER PLAN - AREA 3

SHEET SIZE

ARCH D
24" X 36"

SHEET NUMBER

E-203



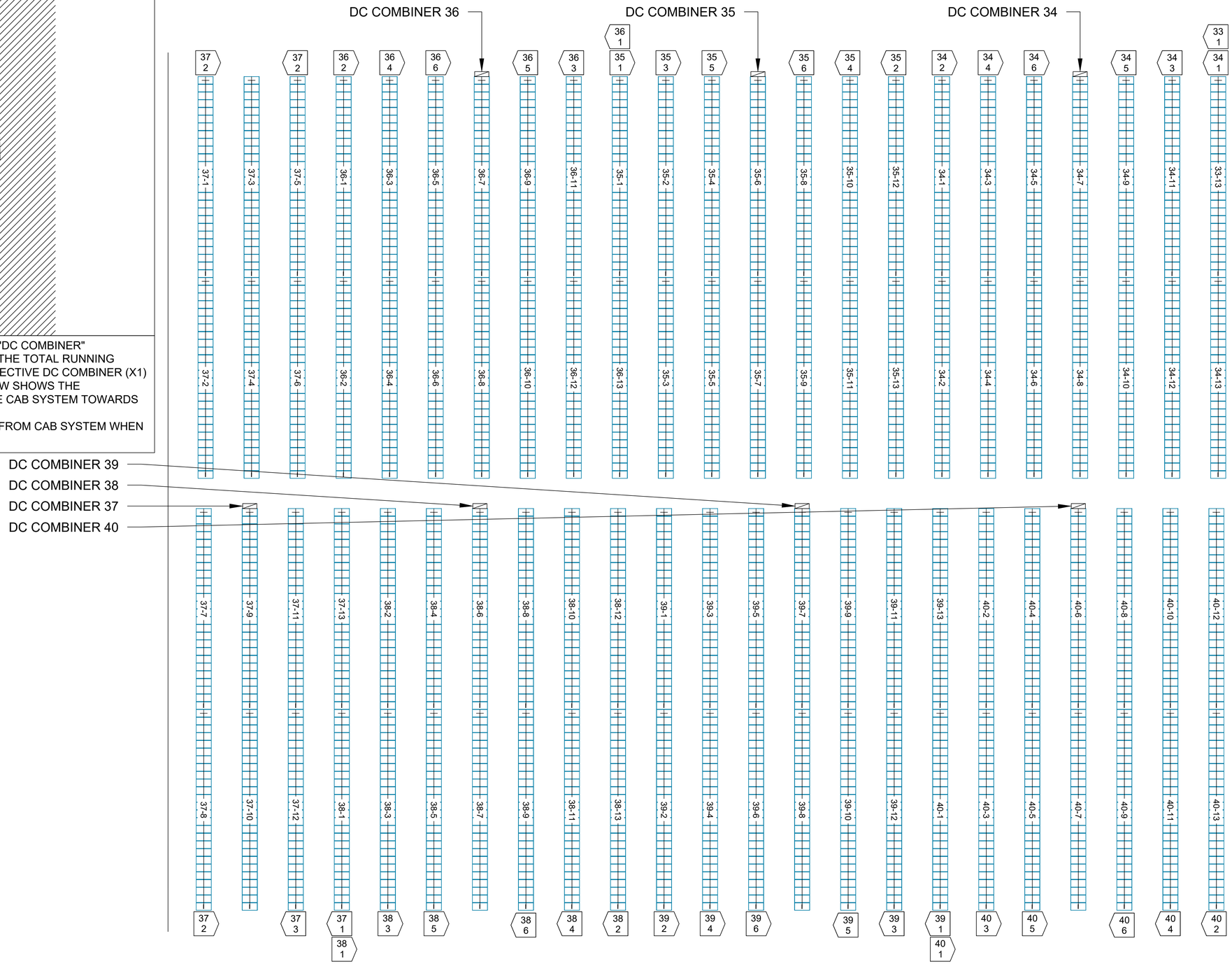
KEY PLAN

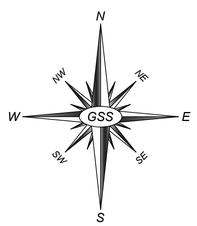
LEGEND

X1
X2

X1
X2

1. THE NUMBER (X1) REPRESENTS "DC COMBINER"
2. THE NUMBER (X2) REPRESENTS THE TOTAL RUNNING STRING COUNT FOR THEIR RESPECTIVE DC COMBINER (X1)
3. THE ORIENTATION OF THE ARROW SHOWS THE ORIENTATION OF STRING ON THE CAB SYSTEM TOWARDS THE DC COMBINER.
4. DC RUN TO TRANSITION TO AND FROM CAB SYSTEM WHEN CROSSING ROADWAYS.





1 / E-204 DC FEEDER PLAN - AREA 4

25' 12.5' 0' 25' 75'

SCALE: 1" = 25'

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	489
MODULE QUANTITY	12,714
TOTAL DC SIZE	6,865,560 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	40
TOTAL AC SIZE	5,000,000 W
TILT	±55°
AZIMUTH	180°

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REVISIONS

DESCRIPTION	DATE	REV
IFP	12/09/2022	0
30% REVIEW	11/11/2022	A

PROJECT INSTALLER

STATE OF NEW YORK · E. E. CASTILLO · 095344 · LICENSED PROFESSIONAL ENGINEER

Digitally signed by: Emmocrates E Castillo
Date: 2022.12.12 09:47:03

PROJECT NAME

MANLIUS EAST

8109 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

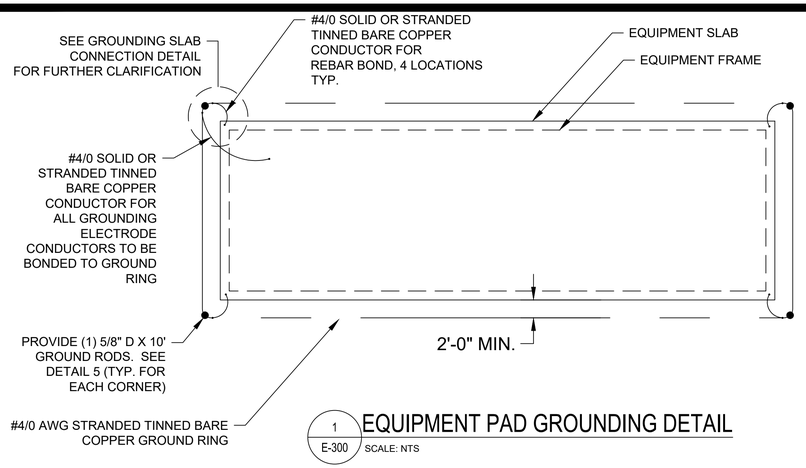
DC FEEDER PLAN - AREA 4

SHEET SIZE

ARCH D
24" X 36"

SHEET NUMBER

E-204

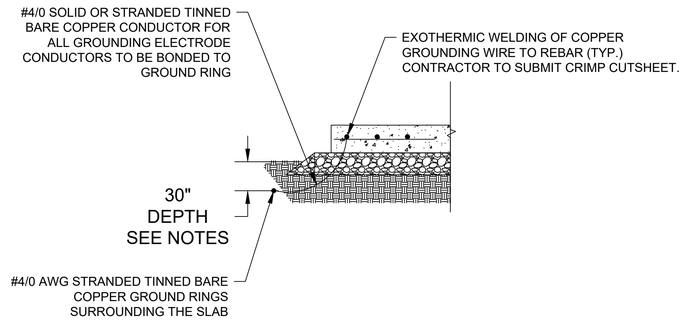


1 E-300 EQUIPMENT PAD GROUNDING DETAIL

SCALE: NTS

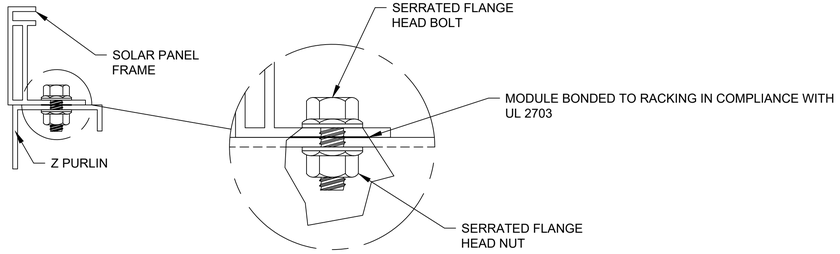
NOTES:

1. GROUNDING RESISTANCE IS TO BE 25 OHMS OR LESS.
2. IF GROUNDING RESISTANCE VALUES CANNOT BE OBTAINED, INSTALL ADDITIONAL GROUNDING ELECTRODES AND RE-TEST.
3. ONE TESTING WELL TO BE INSTALLED.



2 E-300 EQUIPMENT PAD GROUNDING SLAB CONNECTION DETAIL

SCALE: NTS

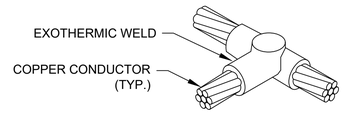


NOTES:

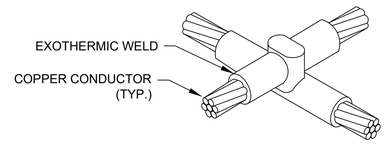
1. BE SURE TO FOLLOW THE MODULE AND RACKING MANUFACTURER'S INSTALLATION MANUAL.
2. MODULES ARE BONDED TO THE PURLIN ON RACKING SYSTEM BY UL 2703. BONDING PATH CONTINUES FROM PURLIN TO COMBINER BOX.

3 E-300 MODULE BONDING/GROUNDING

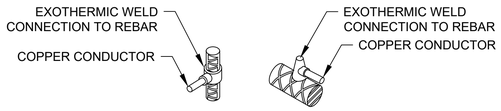
SCALE: NTS



3-WAY EXOTHERMIC WELD CONNECTION DETAIL



4-WAY EXOTHERMIC WELD CONNECTION DETAIL



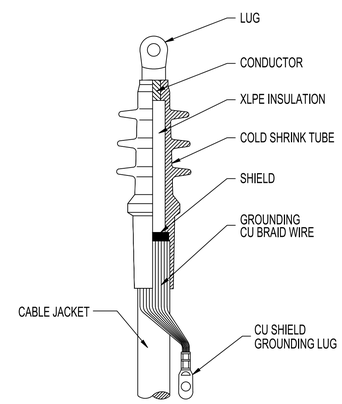
NOTE:

1. REBAR SHALL BE INSTALLED IN A MINIMUM OF ONE CONTINUOUS 20FT LENGTH PER NEC 250.52(A)(3).

GROUND WIRE TO REBAR EXOTHERMIC WELD CONNECTION DETAIL

4 E-300 EXOTHERMIC WELD CONNECTIONS

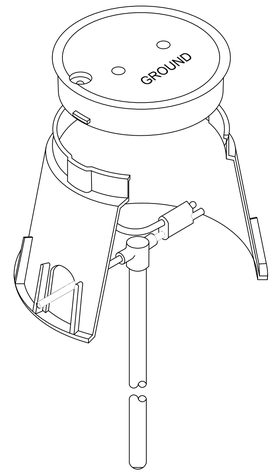
SCALE: NTS



NOTE: SHIELD SHALL BE GROUNDED IN BOTH ENDS OF MV CABLE

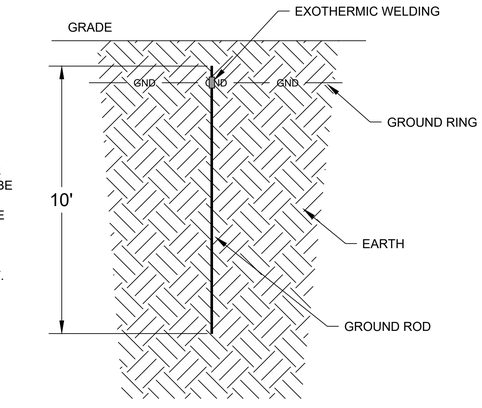
5 E-300 MV CABLE TERMINAL DETAIL

SCALE: NTS



6 E-300 GROUND TEST WELL

SCALE: NTS

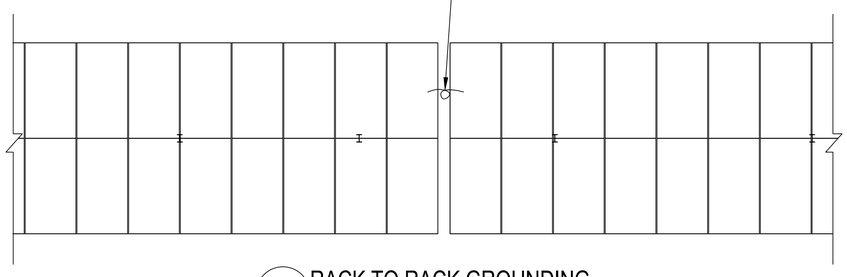


NOTES:

1. GROUNDING RESISTANCE AROUND THE SWITCHGEAR AND EQUIPMENT PADS TO BE LESS THAN 25 OHMS.
2. IF GROUNDING RESISTANCE VALUES CANNOT BE OBTAINED, INSTALL ADDITIONAL GROUNDING ELECTRODES AND RE-TEST.

7 E-300 GROUND ROD INSTALLATION

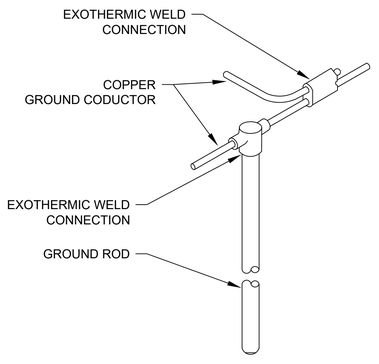
SCALE: NTS



- BONDING JUMPERS TO BE USED TO CONNECT RACKS TOGETHER IN THE E-W DIRECTION.
- USE WEEB-BNDJMP OR EQUIVALENT APPROVED BY THE ENGINEER FOR AREAS WHERE THERE IS SPACE BETWEEN ADJACENT RACKS.
- BE SURE TO FOLLOW THE MODULE AND RACKING MANUFACTURER'S INSTALLATION MANUAL.
- SLACK TO BE INSTALLED ON JUMPERS.
- GROUND LUGS WITH #6 CU WIRE IS ALSO ACCEPTABLE

8 E-300 RACK TO RACK GROUNDING

SCALE: NTS



9 E-300 GROUND ROD DETAIL

SCALE: NTS

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	489
MODULE QUANTITY	12,714
TOTAL DC SIZE	6,865,560 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	40
TOTAL AC SIZE	5,000,000 W
TILT	±55°
AZIMUTH	180°

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COA # 28345
620 N. WYMORE ROAD,
SUITE 250,
MAITLAND, FL 32751
TEL: (407) 289-2575

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REVISIONS

DESCRIPTION	DATE	REV
IFP	12/09/2022	0
30% REVIEW	11/11/2022	A

PROJECT INSTALLER

STATE OF NEW YORK E. E. CASTILLO 095344 LICENSED PROFESSIONAL ENGINEER

Digitally signed by: Democrates E Castillo Date: 2022.12.12 09:47:04

PROJECT NAME

MANLIUS EAST

8109 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

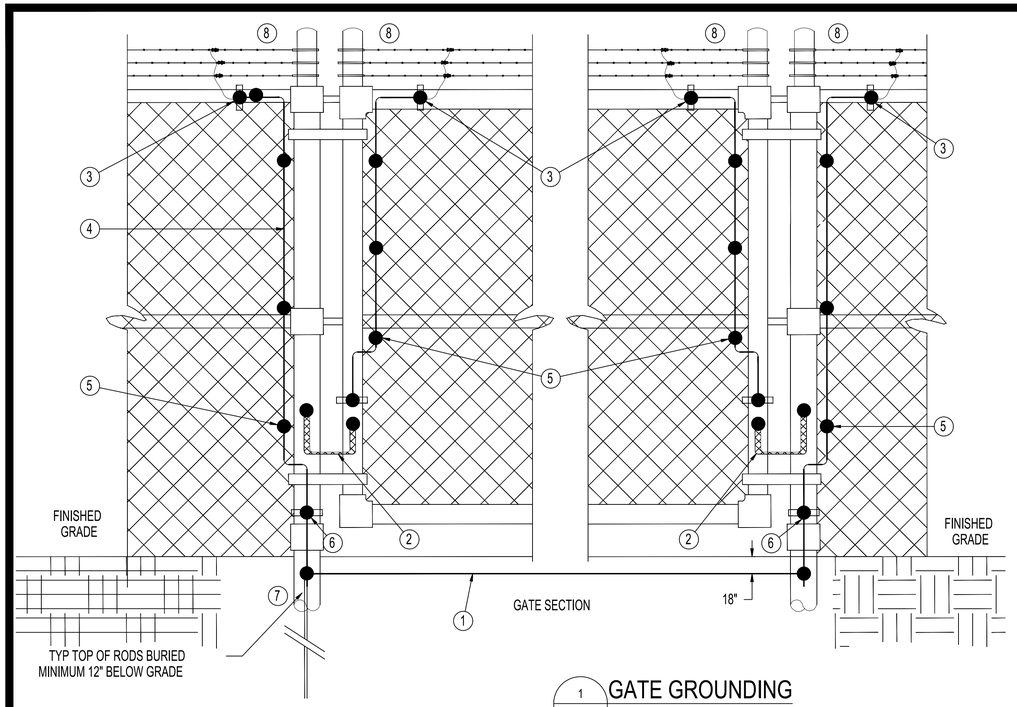
GROUNDING DETAILS - SHEET 1

SHEET SIZE

ARCH D
24" X 36"

SHEET NUMBER

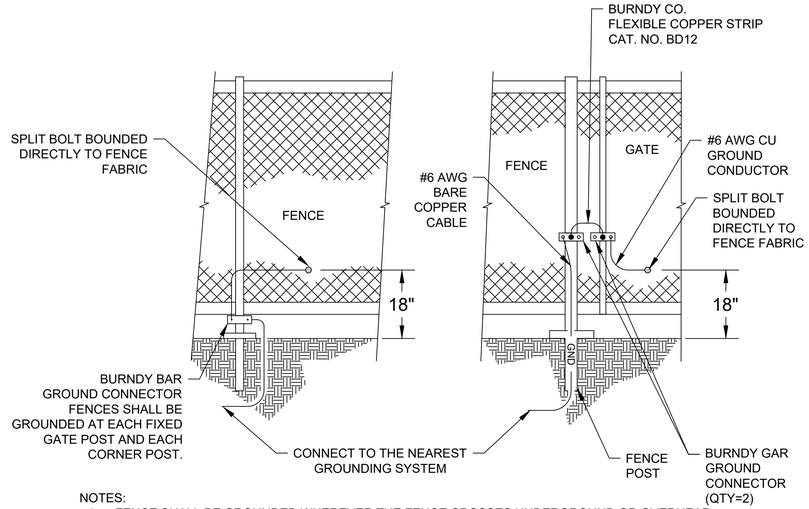
E-300



1 E-301 GATE GROUNDING
SCALE: NTS

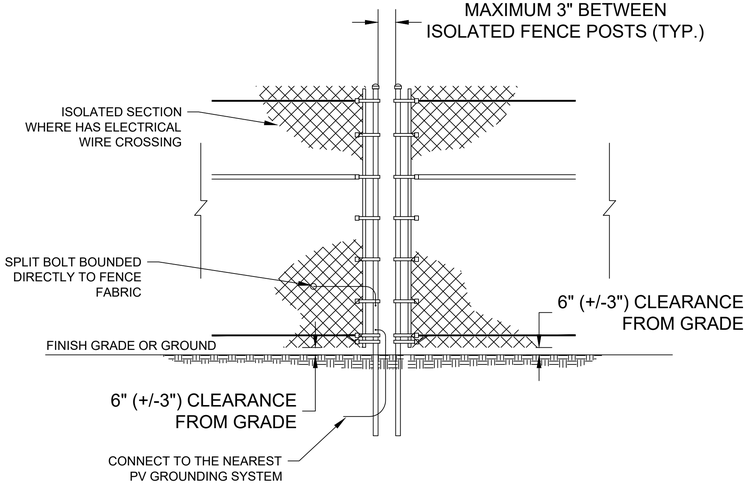
GENERAL NOTES
1. IF BARBED WIRE STRANDS ARE USED ABOVE THE FENCE FABRIC, THE BARBED WIRE STRANDS SHALL BE BONDED TO THE GROUNDING CONDUCTOR, JUMPER OR FENCE.
2. EXPOSED FENCE GEC'S AND CLAMPS SHALL BE INSTALLED WITHIN FENCE PERIMETER.
3. FENCES SHALL BE GROUNDED AT EACH SIDE OF A GATE OR OPENING. GROUND ALL GATE POSTS.
4. RODS AND GEC SHALL BE BURIED 24" OUTSIDE FENCE PERIMETER.
5. WHERE MEDIUM VOLTAGE AND ABOVE OVERHEAD CROSSES THE FENCES, THE FENCE SHALL BE GROUNDED WITHIN 50' OF THE EASEMENT CROSSING ON EITHER SIDE. IF THERE IS NO EASEMENT, THE FENCE SHALL BE GROUNDED WITHIN 50' OF THE CROSSING ON EITHER SIDE. GROUND RODS SHALL BE PLACED EVERY 50' INSIDE THE GROUNDED SECTION. FENCES SHALL CONTAIN AN ISOLATION JOINT AT THE END OF THE GROUNDED SECTION.
6. GROUND GRID EXTENDS BEYOND GATE SWING.

KEYED NOTES
1. GATES AND GROUND RODS SHALL BE BONDED TOGETHER WITH #2 BARE COPPER.
2. FLEXIBLE GROUND WITH COMPRESSION LUGS TO PIPE CLAMPS, FENCE GATE ASSEMBLY AS MANUFACTURED BY HARGER, OR EQUAL. BRAID WITH COMPATIBLE PIPE CLAMPS BY BURNDY ALSO ACCEPTABLE.
3. PROVIDE POST CLAMP TO TOP RAIL.
4. #6 BARE COPPER WIRE, TYPICAL UNLESS NOTED OTHERWISE.
5. PROVIDE FENCE FABRIC GROUNDING CLAMPS SUCH AS MODEL "FGC" AS MANUFACTURED BY HARGER, OR EQUAL.
6. PROVIDE FENCE POST CLAMP BY ERICO, HARGER, OR EQUAL.
7. GROUND ROD BONDED TO BARE COPPER WITH EXOTHERMIC WELD OR IRREVERSIBLE CRIMP STYLE.
8. PROVIDE BRONZE SPLIT BOLT CONNECTIONS TO BARBED WIRE.

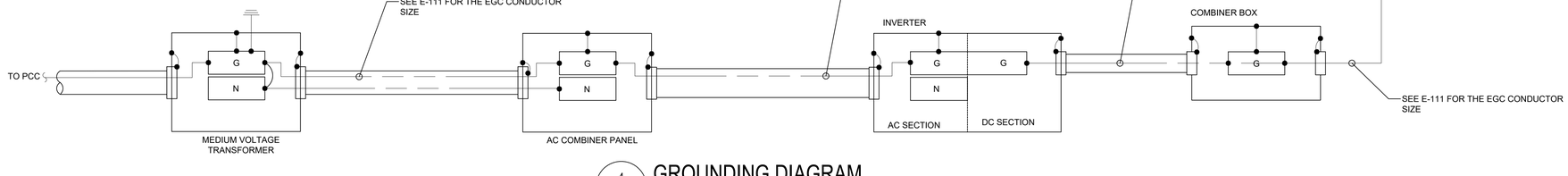


NOTES:
1. FENCE SHALL BE GROUNDED WHEREVER THE FENCE CROSSES UNDERGROUND OR OVERHEAD POWER LINES. FENCE SHALL BE GROUNDED AT A MIN. 20' ON EITHER SIDE OF THE POWER LINE.
2. TO PREVENT GROUNDING OF THE FENCE BEYOND THE 20' FIBER GLASS MESH OR ISOLATION GAPS CAN BE INSTALLED.

2 E-301 FENCE GROUNDING DETAIL
SCALE: NTS



3 E-301 ISOLATED FENCE GROUNDING DETAIL
SCALE: NTS



4 E-301 GROUNDING DIAGRAM
NOT TO SCALE

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	489
MODULE QUANTITY	12,714
TOTAL DC SIZE	6,865,560 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	40
TOTAL AC SIZE	5,000.000 W
TILT	±55°
AZIMUTH	180°

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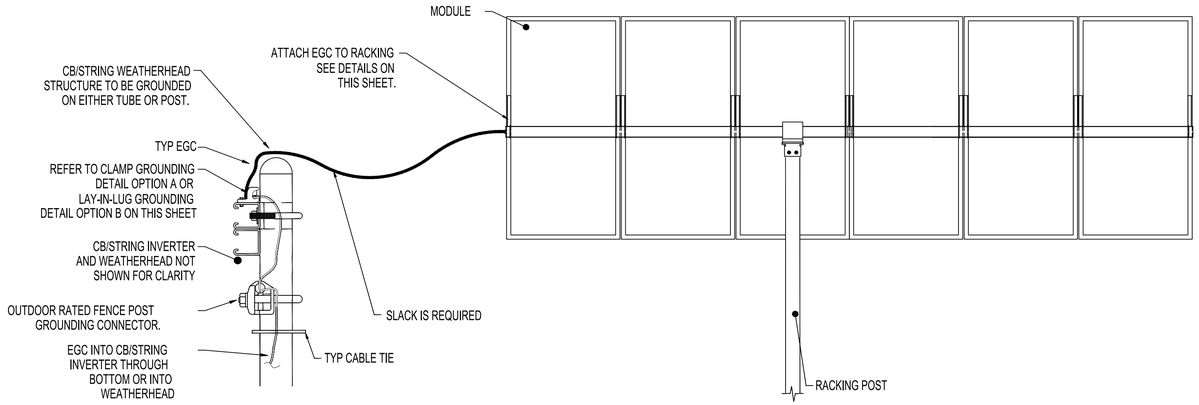
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Date: 2022.12.12 09:47:05

PROJECT NAME
MANLIUS EAST
8109 E SENECA TURNPIKE
MANLIUS, NY 13104

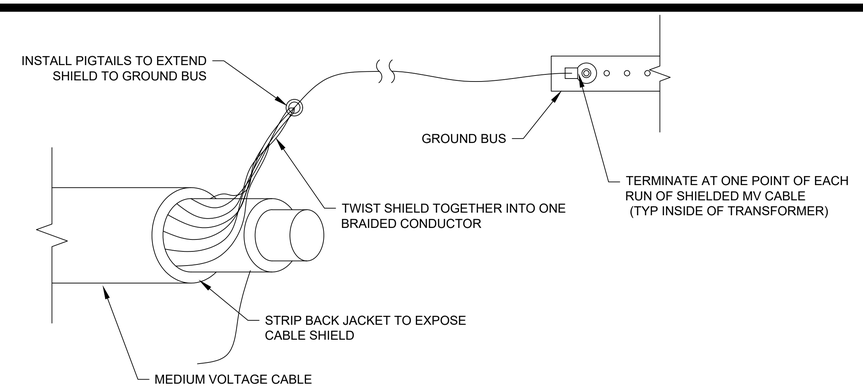
SHEET NAME
GROUNDING DETAILS - SHEET 2

SHEET SIZE
ARCH D
24" X 36"

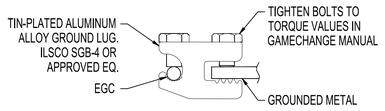
SHEET NUMBER
E-301

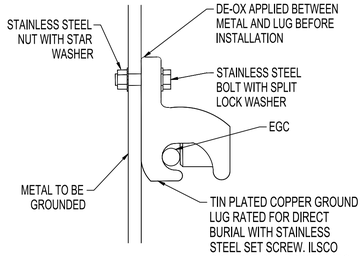


1 E-302 **RACK BONDING**
SCALE: NTS



2 E-302 **MEDIUM VOLTAGE CABLE SHIELD GROUNDING**
SCALE: NTS





3A E-302 **CLAMP GROUNDING DETAIL OPTION A**
SCALE: NTS

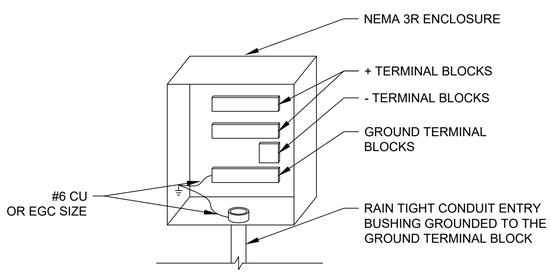
3B E-302 **LAY-IN-LUG GROUNDING DETAIL OPTION B**
SCALE: NTS

NOTES
1. ALL HARDWARE SHALL BE STAINLESS STEEL.
2. EGC SHALL BE #6 BARE SOLID CU.
3. SHALL BE USED FOR EXTERIOR BONDING TO RACKING.
4. ILSCO DE-OX (OR APPROVED EQ) APPLIED TO BOTH SIDES PRIOR TO LUG AND HARDWARE INSTALLATION.

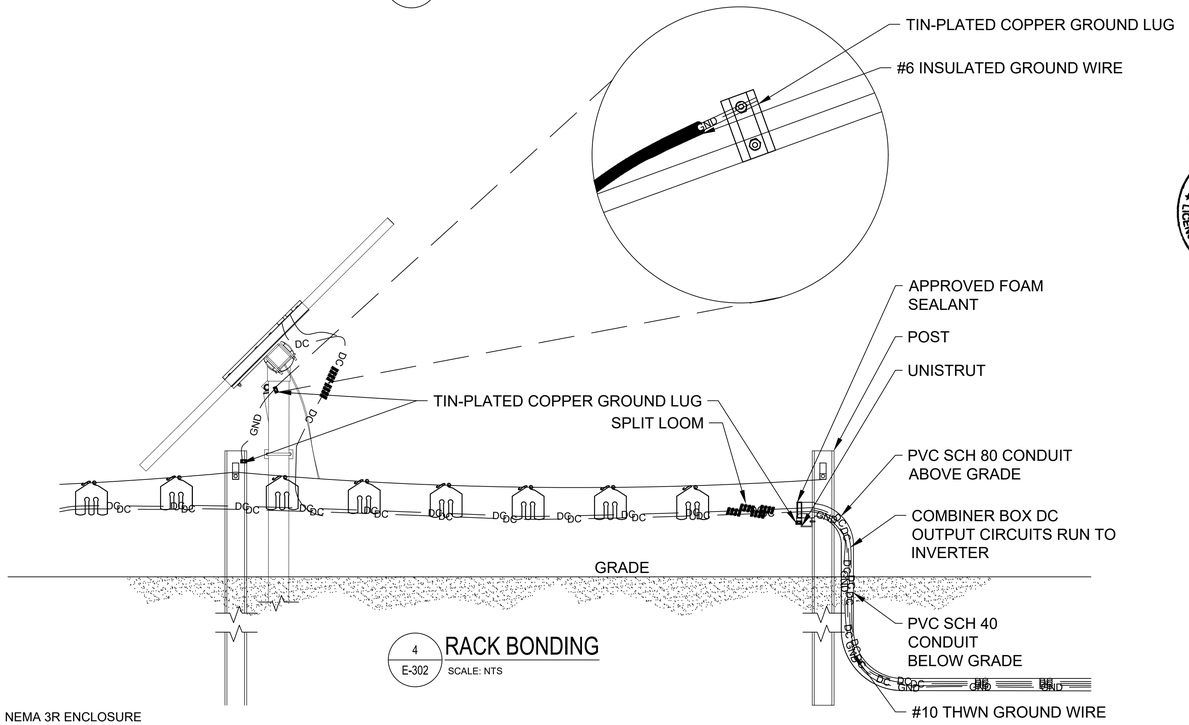
GENERAL GROUNDING NOTES
1. GROUNDING BUSHINGS SHALL BE USED USED ON CONDUIT TERMINATIONS IN CABINET, BOX, OR AUXILIARY GUTTER AND SHALL BE SUITABLE FOR BONDING TO GROUND IN ACCORDANCE WITH NEC 250.92.
2. METALLIC CONDUITS, ENCLOSURES, AND CONNECTORS SHALL BE INSTALLED SO THAT THE CONDUIT BONDING PATH INTEGRITY IS MAINTAINED.
3. RACKING GROUNDING AND BONDING SHALL BE INSTALLED BY E.C. RACKING GROUNDING TO FOLLOW MANUFACTURER INSTALLATION MANUAL

5 E-302 **RACK BONDING JUMPER DETAIL**
SCALE: NTS

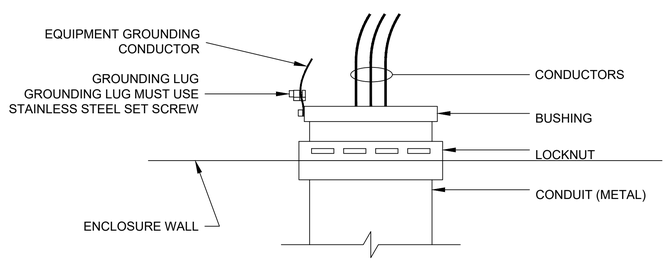
NOTES
1. ALL HARDWARE SHALL BE STAINLESS STEEL.
2. EGC SHALL BE #6 BARE SOLID CU.
3. SHALL BE USED FOR EXTERIOR BONDING TO RACKING.
4. ILSCO DE-OX (OR APPROVED EQ) APPLIED TO BOTH SIDES PRIOR TO LUG AND HARDWARE INSTALLATION.



6 E-302 **TYPICAL EQUIPMENT GROUNDING DETAIL**
SCALE: NTS



4 E-302 **RACK BONDING**
SCALE: NTS



7 E-302 **TYPICAL CONDUIT GROUNDING DETAIL**
SCALE: NTS

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	489
MODULE QUANTITY	12,714
TOTAL DC SIZE	6,865,560 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	40
TOTAL AC SIZE	5,000,000 W
TILT	±55°
AZIMUTH	180°

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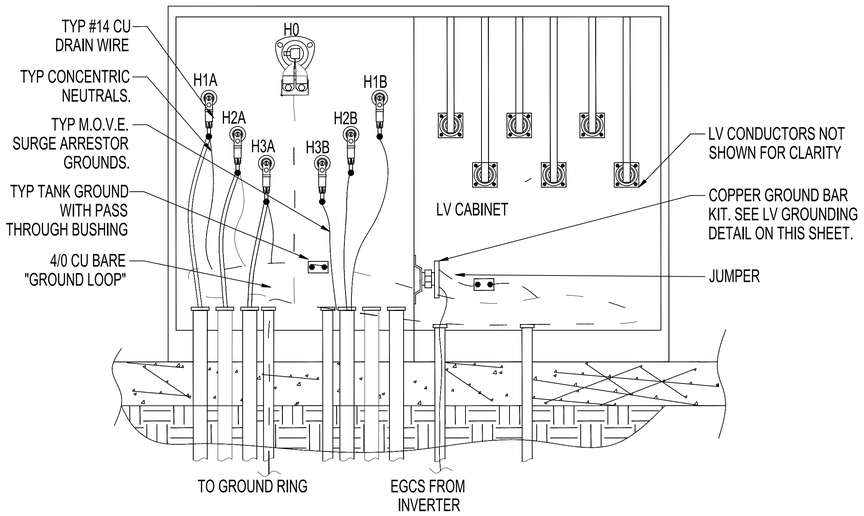
PROJECT NAME

MANLIUS EAST
8109 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME
GROUNDING DETAILS - SHEET 3

SHEET SIZE
ARCH D
24" X 36"

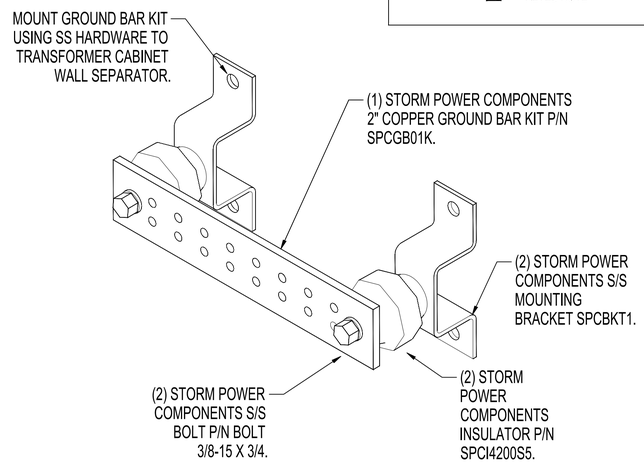
SHEET NUMBER
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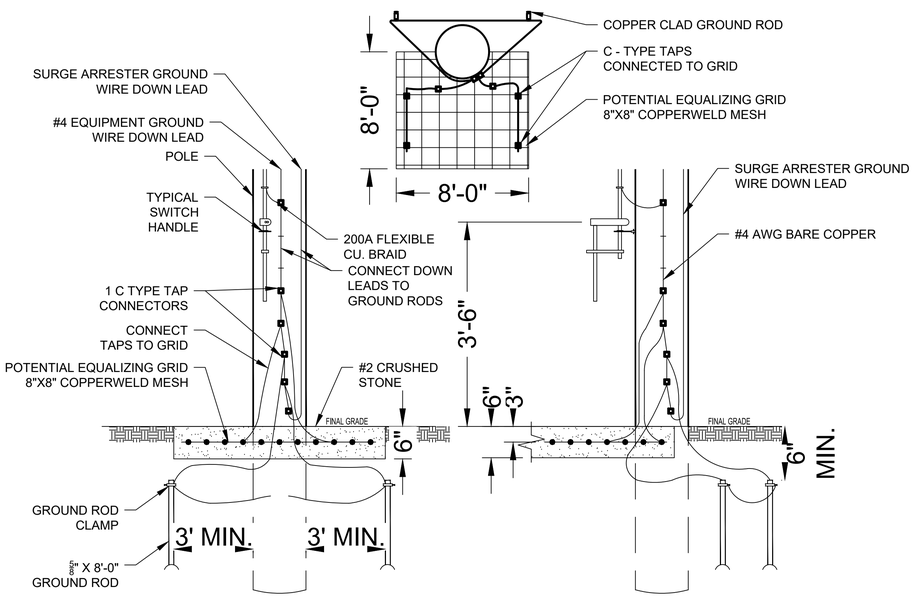
1 E-303 **MV TRANSFORMER GROUNDING**
SCALE: NTS

LEGEND

- #4/0 AWG CU BARE
- COMPRESSION LUG
- SPLIT BOLT
- GROUND ROD
- ERICO 150 WELDING MATERIAL, P/N TAC2Q2Q
- CAD WELD TO REBAR
- [X] KEYED NOTE



2 E-303 **LV GROUNDING DETAIL**
SCALE: NTS



5 E-303 **SWITCH HANDLE GROUNDING**
SCALE: NTS

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	489
MODULE QUANTITY	12,714
TOTAL DC SIZE	6,865,560 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	40
TOTAL AC SIZE	5,000,000 W
TILT	±55°
AZIMUTH	180°

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PROJECT NAME

MANLIUS EAST
8109 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

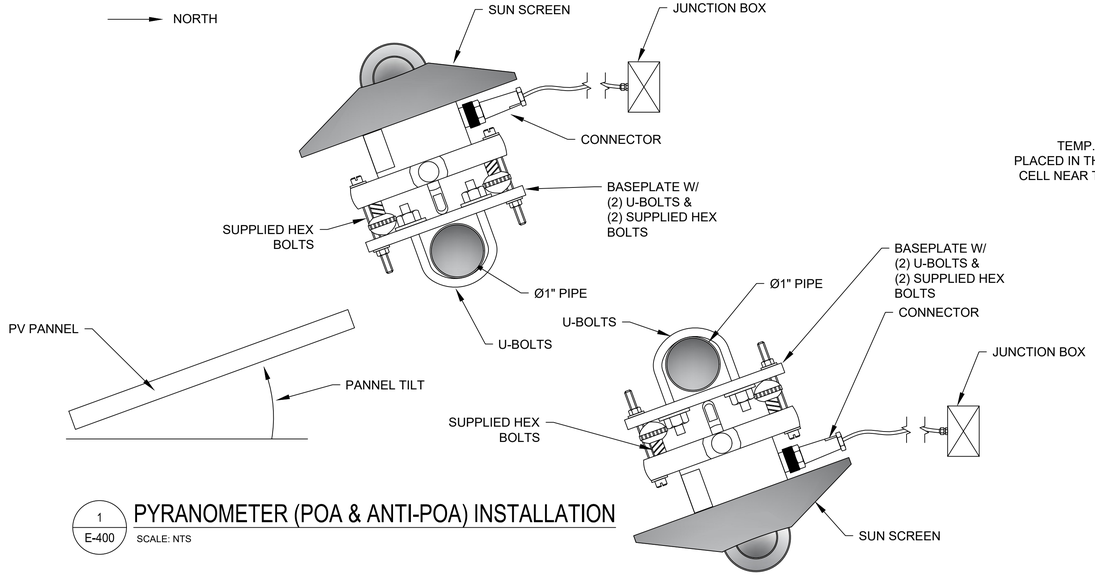
GROUNDING DETAILS - SHEET 4

SHEET SIZE

ARCH D
24" X 36"

SHEET NUMBER

E-303



1 E-400 PYRANOMETER (POA & ANTI-POA) INSTALLATION

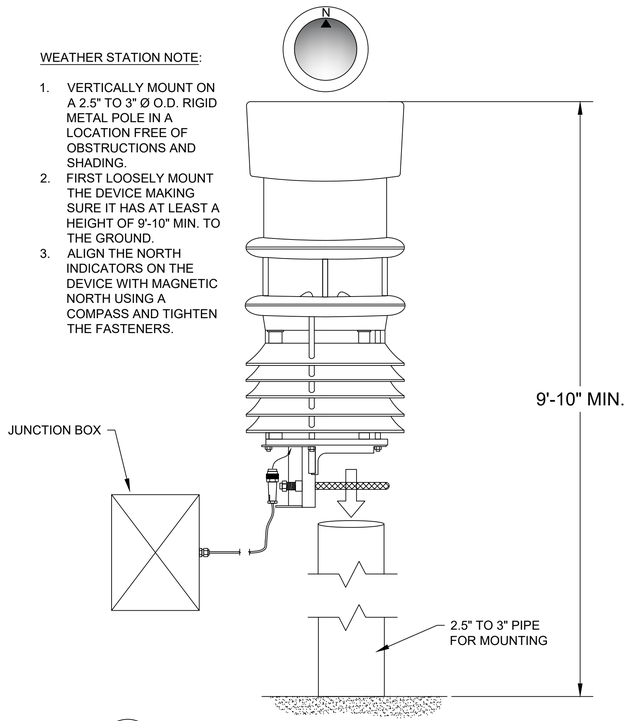
SCALE: NTS

PYRANOMETER NOTE:

1. FOR POA PYRANOMETERS, ROTATE ASSEMBLY SO THAT THE BASEPLATE IS PARALLEL TO THE PV ARRAY AND FASTEN SNUGLY. FOR GHI PYRANOMETER, ROTATE ASSEMBLY SO THAT THE BASEPLATE IS PARALLEL TO THE GROUND.
2. PLACE PYRANOMETER ONTO THE MOUNTING BRACKET BASEPLATE AND ENSURE THEY ARE PARALLEL TO EACH OTHER USING THE LEVELING METER.
3. ELECTRICAL DETAILS REFERS TO DAS INFORMATION. IF THE SENSOR IS THE LAST DEVICE IN A MODBUS CHAIN WHICH CONSISTS OF 3 OR MORE DEVICES, THEN ADD A 120Ω RESISTOR BETWEEN THE DATA+ AND DATA- WIRES

WEATHER STATION NOTE:

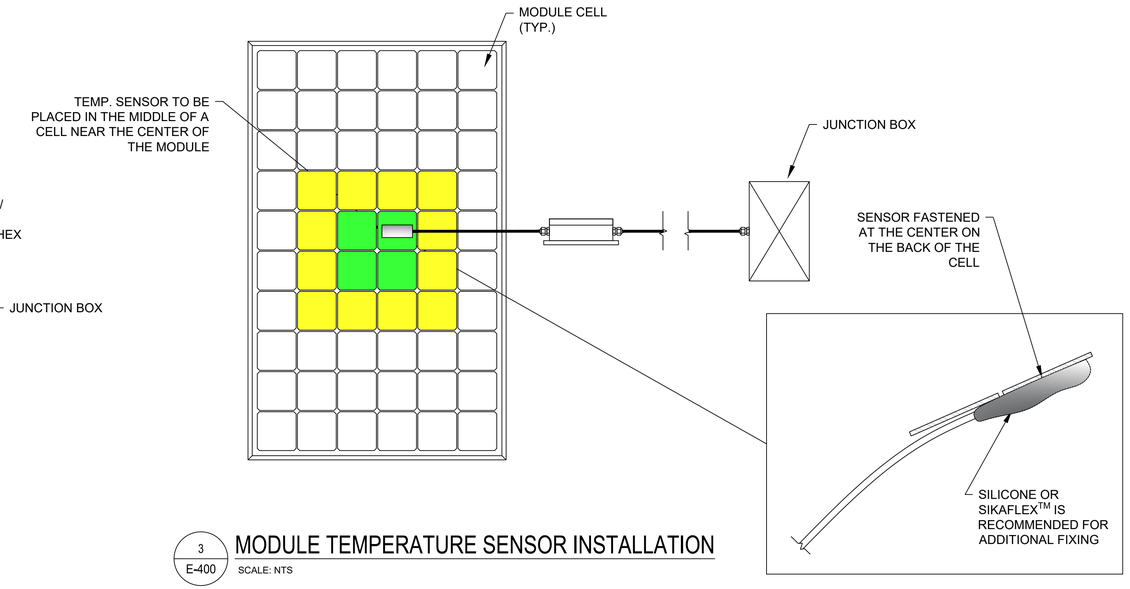
1. VERTICALLY MOUNT ON A 2.5" TO 3" Ø O.D. RIGID METAL POLE IN A LOCATION FREE OF OBSTRUCTIONS AND SHADING.
2. FIRST LOOSELY MOUNT THE DEVICE MAKING SURE IT HAS AT LEAST A HEIGHT OF 9'-10" MIN. TO THE GROUND.
3. ALIGN THE NORTH INDICATORS ON THE DEVICE WITH MAGNETIC NORTH USING A COMPASS AND TIGHTEN THE FASTENERS.



4 E-400 TYPICAL WEATHER STATION INSTALLATION

SCALE: NTS

NOTE:
ON HOLD PENDING VENDOR EQUIPMENT SUMBITTAL.

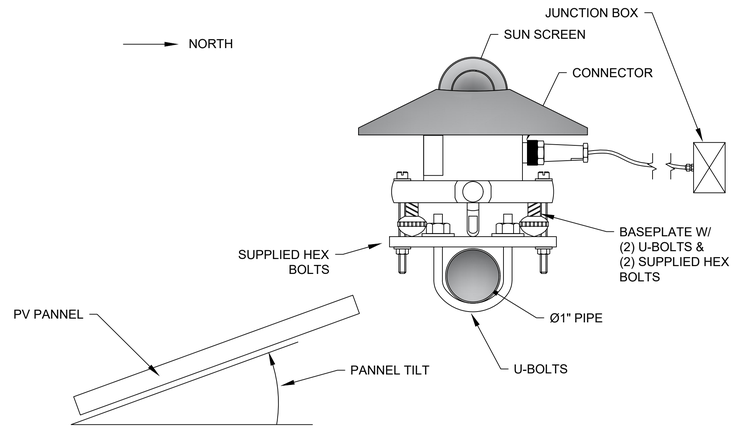


3 E-400 MODULE TEMPERATURE SENSOR INSTALLATION

SCALE: NTS

TEMPERATURE SENSOR NOTE:

1. THE SENSOR SHALL BE PLACED ON A MODULE THAT IS AT LEAST 1 MODULE FROM THE EDGE OF THE ARRAY ON ALL SIDES WHEN POSSIBLE.
2. CLEAN THE CELL BEFORE ATTACHING A SENSOR ONTO IT.



2 E-400 PYRANOMETER (GHI) INSTALLATION

SCALE: NTS

NOTE:

1. ALL DAS EQUIPMENT TO BE INSTALLED AT THE EQUIPMENT PAD WITH THE EXCEPTION OF THE POA AND BOM TEMPERATURE SENSOR, WHICH SHALL BE INSTALLED IN THE ARRAY.
2. CAMERA LOCATION SHALL BE IN ACCORDANCE WITH OWNER REQUEST, IF APPLICABLE.
3. WEATHER STATIONS. CONTRACTOR SHALL DESIGN AND INSTALL A WEATHER STATION AT THE PROJECT. THE WEATHER STATION SHALL INCLUDE (1) HORIZONTAL AND ON (1) IN-PLANE PRYANOMETER, KIPP & ZONNEN CMP 11 (OR EQUIVAILENT), TWO (2) CALIBRATED CELLS (EQUAL OF CELL SELECTIONS FROM MODULES) IN-PLANE, A BACK OF PANEL TEMPERATURE SENSOR, AMBIENT AIR TEMPERATURE SENSOR, AND A WIND SPEED AND DIRECTION SENSOR AT A HEIGHT OF 3 METERS ABOVE GRADE. WEATHER STATION MUST BE INSTALLED AT A LOCATION WITHIN THE PROJECT WHERE IT HAS UNOBSTRUCTED ACCESS TO SUNLIGHT AND OTHER WEATHER.

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	489
MODULE QUANTITY	12,714
TOTAL DC SIZE	6,865,560 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	40
TOTAL AC SIZE	5,000,000 W
TILT	±55°
AZIMUTH	180°

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PROJECT NAME

MANLIUS EAST

8109 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

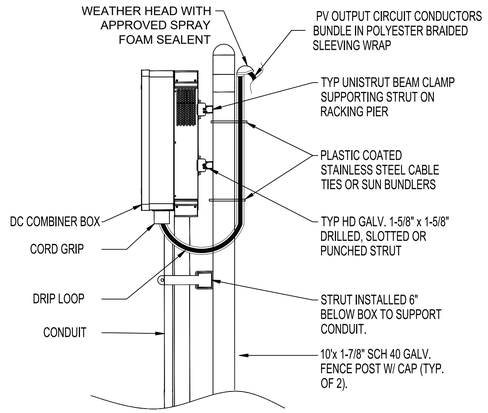
MISCELLANEOUS DETAILS - SHEET 1

SHEET SIZE

ARCH D
24" X 36"

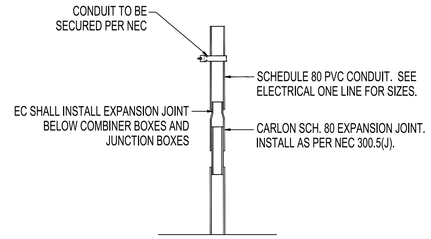
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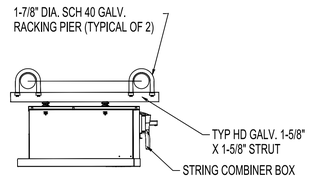


NOTE:
REFER TO DETAIL #3 FOR EXPANSION JOINT.

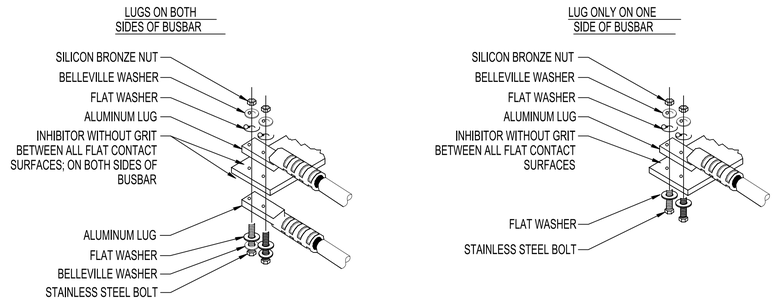
1 / E-401 DC COMBINER ATTACHEMENT DETAIL - ELEVATION
SCALE: NTS



2 / E-401 CONDUIT EXPANSION
SCALE: NTS



3 / E-401 DC COMBINER TOP VIEW
SCALE: NTS



NOTES:
1. FLAT WASHER SHALL HAVE LARGER DIAMETER THAN BELLEVILLE WASHER.
2. BOLT SHALL BE LONG ENOUGH TO ACHIEVE FULL THREAD ENGAGEMENT OF NUT WITH ENTIRE STACK SHOWN.
3. BOLT DIAMETER SHALL MATCH LUG AND BUSBAR HOLE DIAMETER.
4. IF EQUIPMENT MANUFACTURER INSTALLATION INSTRUCTIONS CONFLICT WITH THIS DETAIL, MANUFACTURER INSTRUCTIONS SHALL BE FOLLOWED.
5. NUMBER OF CRIMPS SHOWN IS DIAGRAMMATIC AND MAY VARY DEPENDING ON LUG AND CONDUCTOR SIZE.
6. INHIBITOR USED MUST BE RATED FOR THE EQUIPMENT VOLTAGE, LUG MATERIAL, AND BUSBAR MATERIAL. SUBMIT PROPOSED MATERIAL FOR APPROVAL TO ENGINEERING.

4 / E-401 LUG ATTACHMENT DETAIL
SCALE: NTS

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	489
MODULE QUANTITY	12,714
TOTAL DC SIZE	6,865,560 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	40
TOTAL AC SIZE	5,000,000 W
TILT	±55°
AZIMUTH	180°

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Date: 2022.12.12 09:47:10

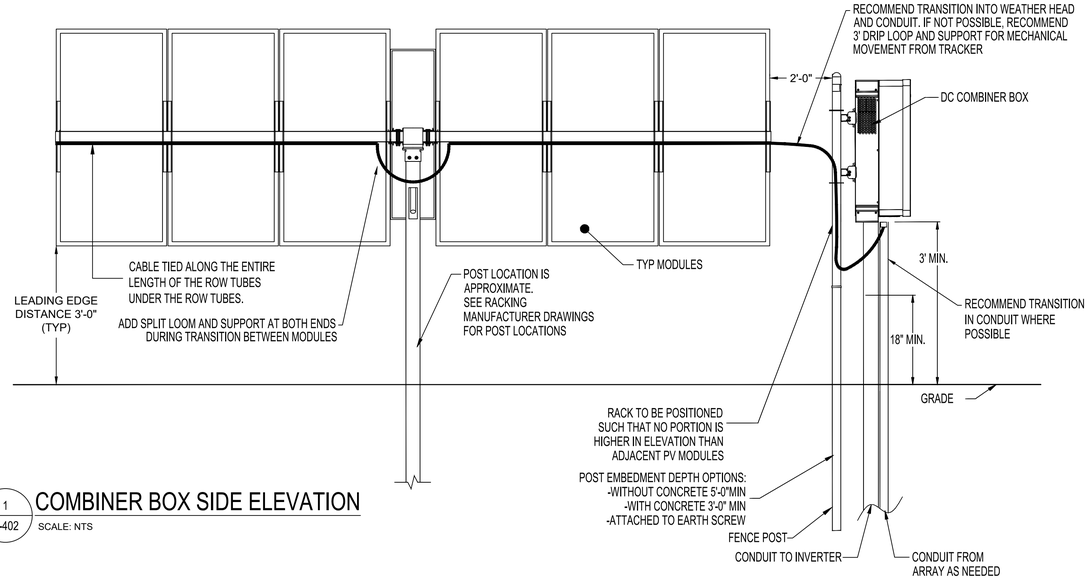
PROJECT NAME

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8109 E SENECA TURNPIKE
MANLIUS, NY 13104

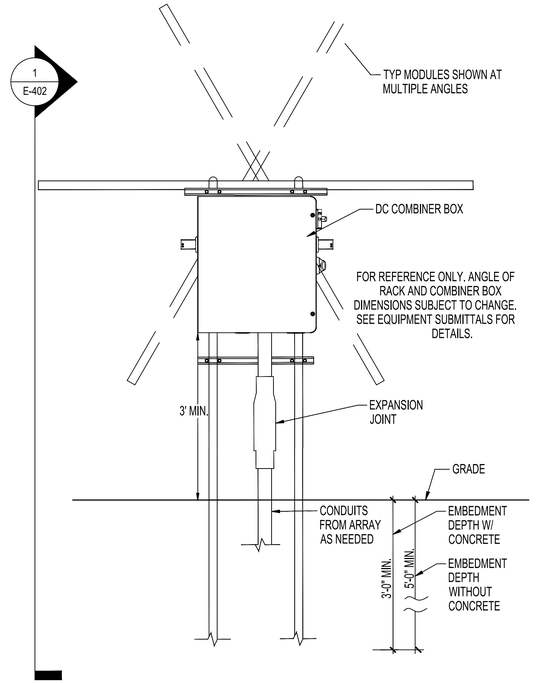
SHEET NAME
MISCELLANEOUS DETAILS - SHEET 2

SHEET SIZE
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24" X 36"

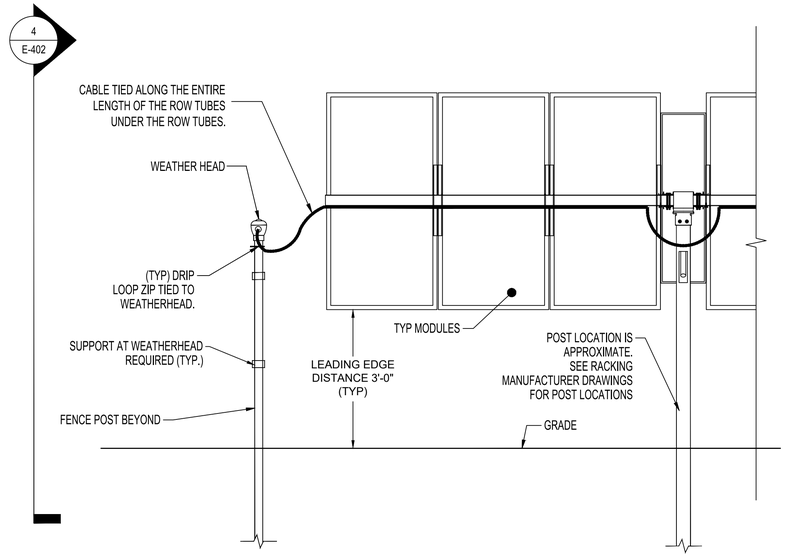
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E-401



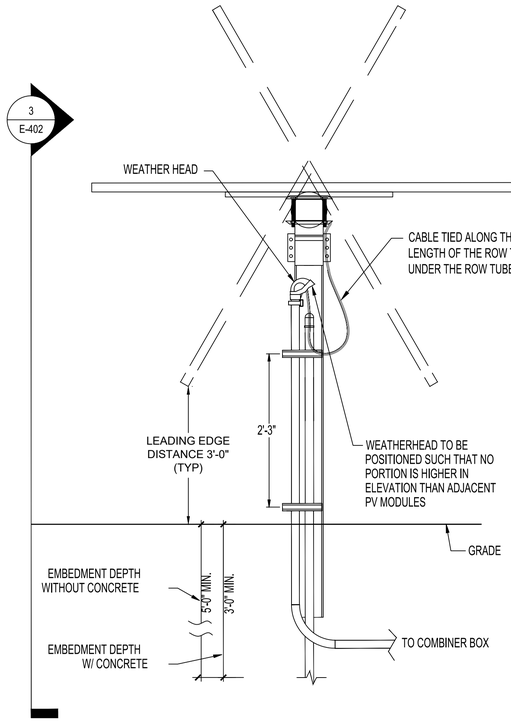
1 E-402 **COMBINER BOX SIDE ELEVATION**
SCALE: NTS



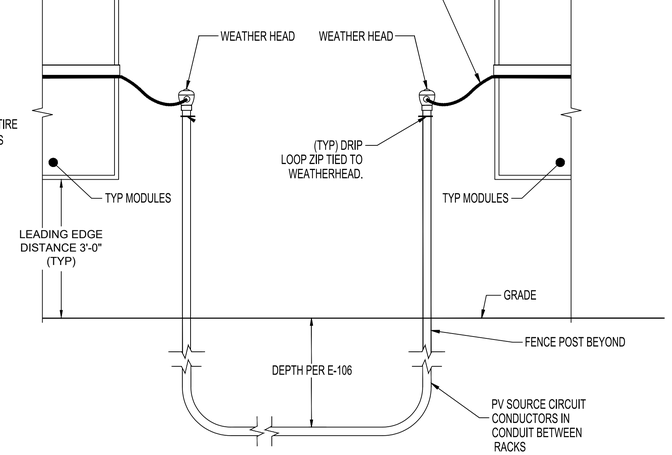
2 E-402 **COMBINER BOX FRONT ELEVATION**
SCALE: NTS



3 E-402 **WEATHERHEAD SIDE ELEVATION**
SCALE: NTS



4 E-402 **WEATHER HEAD - FRONT ELEVATION**
SCALE: NTS



5 E-402 **RACKING BREAK**
SCALE: NTS

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	489
MODULE QUANTITY	12,714
TOTAL DC SIZE	6,865,560 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	40
TOTAL AC SIZE	5,000,000 W
TILT	±55°
AZIMUTH	180°

Castillo Engineering
DESIGNING TOMORROW'S POWER®
CASTILLO ENGINEERING SERVICES, LLC
COA # 28345
620 N. WYMORE ROAD,
SUITE 250,
MAITLAND, FL 32751
TEL: (407) 289-2575

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REVISIONS

DESCRIPTION	DATE	REV
IFP	12/09/2022	0
30% REVIEW	11/11/2022	A

PROJECT INSTALLER

STATE OF NEW YORK · E. E. CASTILLO · 095344 · LICENSED PROFESSIONAL ENGINEER

Digitally signed by: Emmocrates E Castillo
Date: 2022.12.12 09:47:11

PROJECT NAME

MANLIUS EAST
8109 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

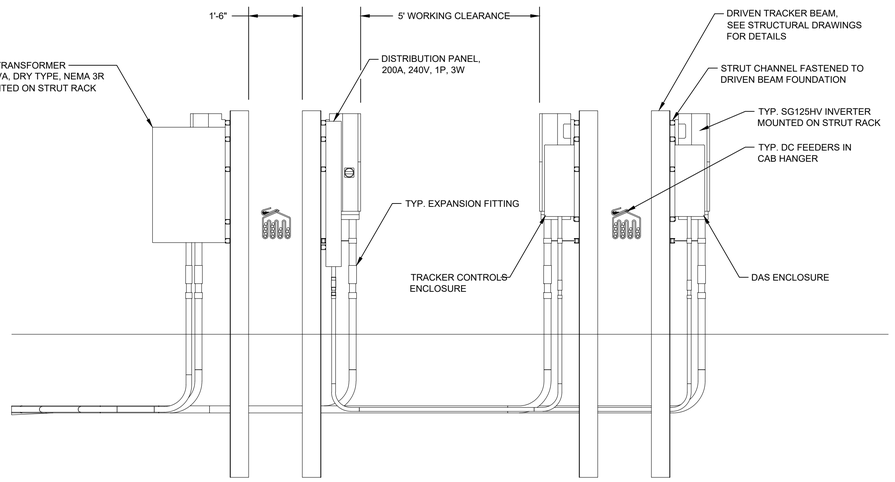
CONDUIT AND WIRE MANAGEMENT

SHEET SIZE

ARCH D
24" X 36"

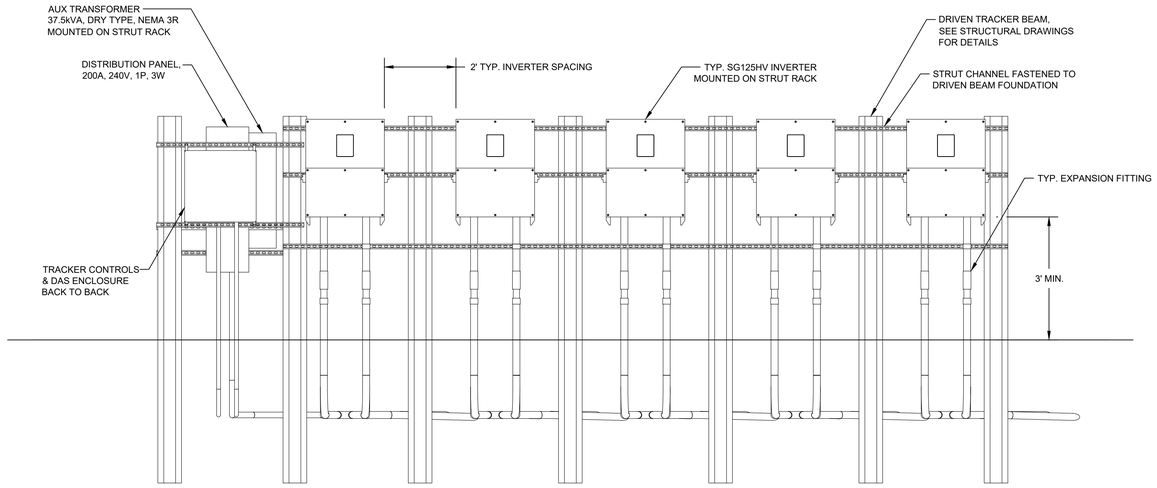
SHEET NUMBER

E-402



1 E-403 EQUIPMENT RACK ELEVATION - SIDE

SCALE: NTS



2 E-403 EQUIPMENT RACK ELEVATION - FRONT

SCALE: NTS

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	489
MODULE QUANTITY	12,714
TOTAL DC SIZE	6,865,560 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	40
TOTAL AC SIZE	5,000,000 W
TILT	±55°
AZIMUTH	180°

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REVISIONS

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PROJECT INSTALLER

STATE OF NEW YORK
E. E. CASTILLO
095344
LICENSED PROFESSIONAL ENGINEER

Digitally signed by: Emmocrates E Castillo
Date: 2022.12.12 09:47:13

PROJECT NAME

MANLIUS EAST

8109 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

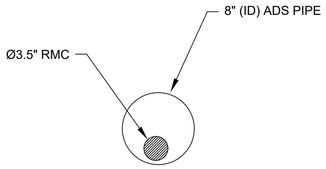
MOUNTING DETAILS

SHEET SIZE

ARCH D
24" X 36"

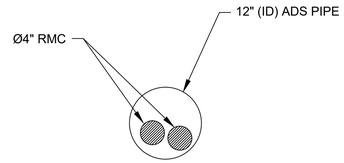
SHEET NUMBER

E-403



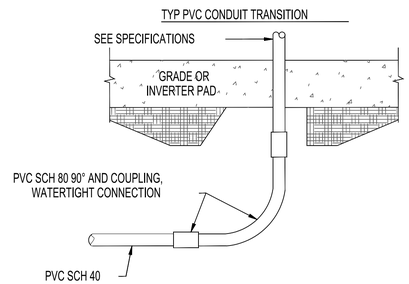
1 E-404 ELECTRICAL CONDUIT DETAIL CONFIG. A

SCALE: NTS



2 E-404 ELECTRICAL CONDUIT DETAIL CONFIG. B

SCALE: NTS



3 E-404 UNDERGROUND CONDUIT TRANSITION DETAIL

SCALE: NTS

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	489
MODULE QUANTITY	12,714
TOTAL DC SIZE	6,865,560 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	40
TOTAL AC SIZE	5,000,000 W
TILT	±55°
AZIMUTH	180°

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PROJECT INSTALLER

STATE OF NEW YORK · E. E. CASTILLO · 095344 · LICENSED PROFESSIONAL ENGINEER

Digitally signed by: Emmocrates Wilson
E Castillo
Date: 2022.12.12 09:47:14

PROJECT NAME

MANLIUS EAST

8109 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

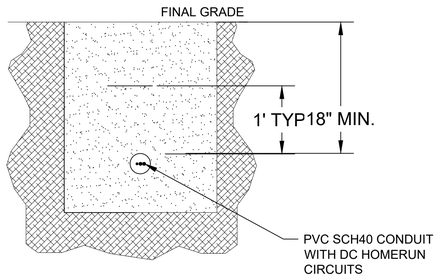
CONDUIT TRENCHING DETAILS - SHEET 1

SHEET SIZE

ARCH D
24" X 36"

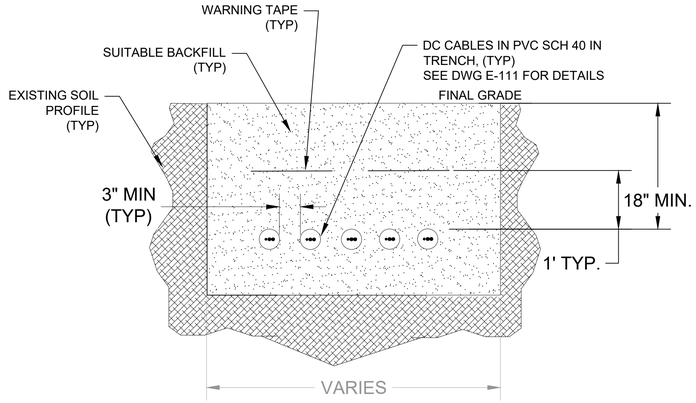
SHEET NUMBER

E-404



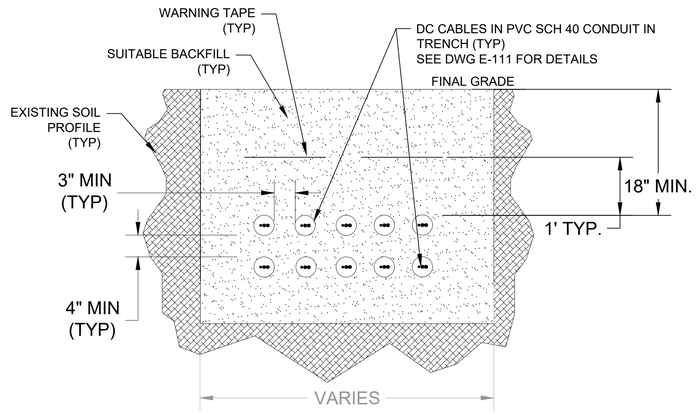
1 E-405 DC HOMERUNS ROW TO ROW JUMPER TRENCH DETAILS

SCALE: NTS



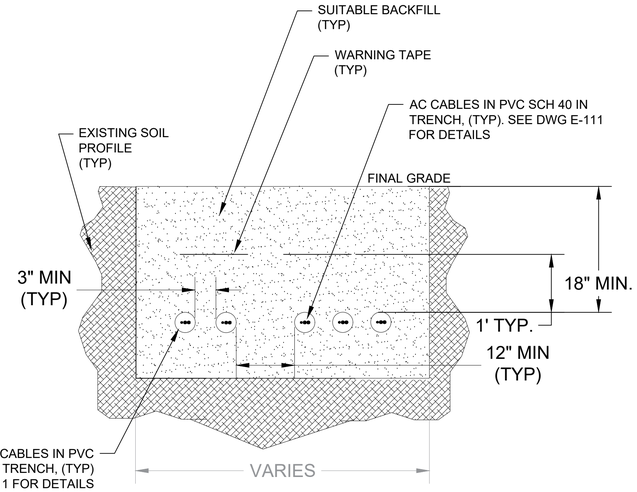
2 E-405 FEEDER CIRCUITS TRENCH DETAILS(SINGLE LAYER)

SCALE: NTS



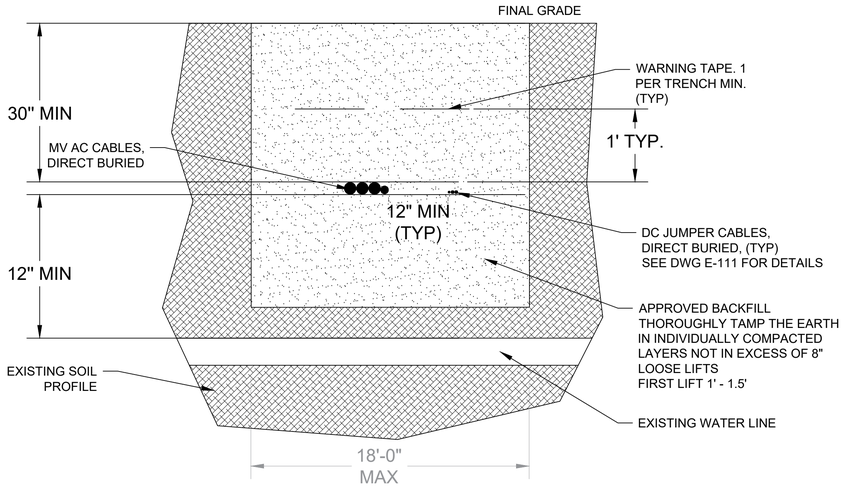
3 E-405 FEEDER CIRCUITS TRENCH DETAILS (TWO LAYERS)

SCALE: NTS



4 E-405 DC & AC CIRCUIT TRENCH DETAILS

SCALE: NTS



4 E-405 MEDIUM VOLTAGE CONDUCTORS WITH DC FEEDER CIRCUITS CROSSING UTILITY TRENCH DETAILS

SCALE: NTS

NOTES:

1. ALL LV CONDUITS TO BE BURIED AT A MINIMUM OF 18".

2. COMMUNICATION CABLES TO BE A MINIMUM OF 12" AWAY FROM DC AND AC CABLES.

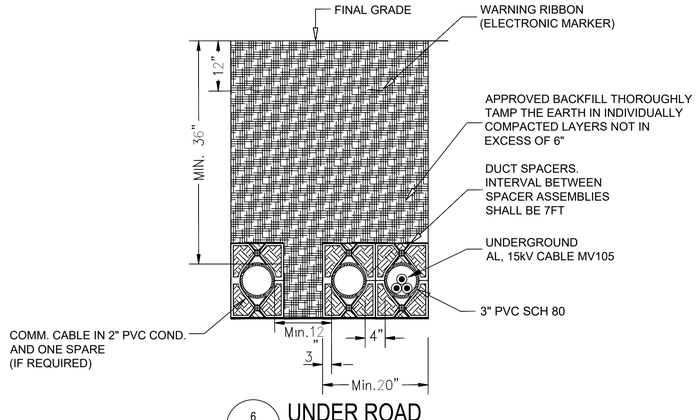
3. WARNING TAPE TO BE METALLIC WITH THE PHRASE "CAUTION: BURIED ELECTRICAL LINES"

4. BACKFILL TO BE FREE FROM ANY ROCKS OR OTHER DELETERIOUS OBJECTS THAT ARE 3/4" IN DIAMETER OR GREATER.

5. ELECTRICIANS TO PROVIDE MATCHING FITTINGS AND EXPANSION COUPLINGS BY THE SAME MANUFACTURER AS THE CONDUIT

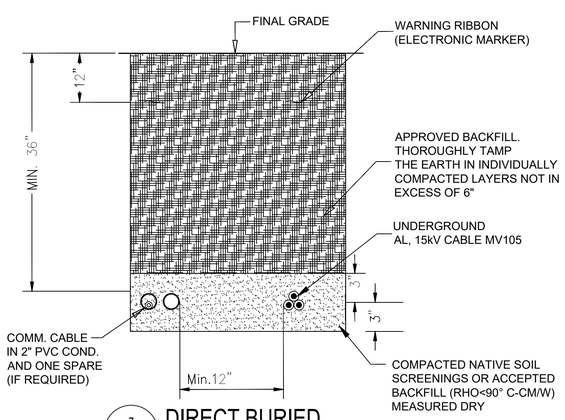
6. ALL DC CABLING TO THE COMBINER BOX SHALL BE A MINIMUM OF 18" BELOW GRADE IN CLEAN FILL. IF THERE IS MORE THAN ONE LATER OF CABLE WITHIN A TRENCH, A MINIMUM OF 4 INCHES OF SOIL SHALL SEPARATE THE LAYERS.

7. DC WIRING FROM THE COMBINER BOX TO THE INVERTERS SHALL BE A MINIMUM OF 18" BELOW GRADE IN CLEAN FILL. TRENCH BEDDING SHALL BE ADEQUATE TO PREVENT DAMAGE TO THE CABLE FROM ANY OVERSIZED MATERIAL.



6 E-405 UNDER ROAD

SCALE: NTS



7 E-405 DIRECT BURIED

SCALE: NTS

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	489
MODULE QUANTITY	12,714
TOTAL DC SIZE	6,865,560 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	40
TOTAL AC SIZE	5,000,000 W
TILT	±55°
AZIMUTH	180°

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PROJECT INSTALLER



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Date: 2022.12.12 09:47:15

PROJECT NAME

MANLIUS EAST
8109 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

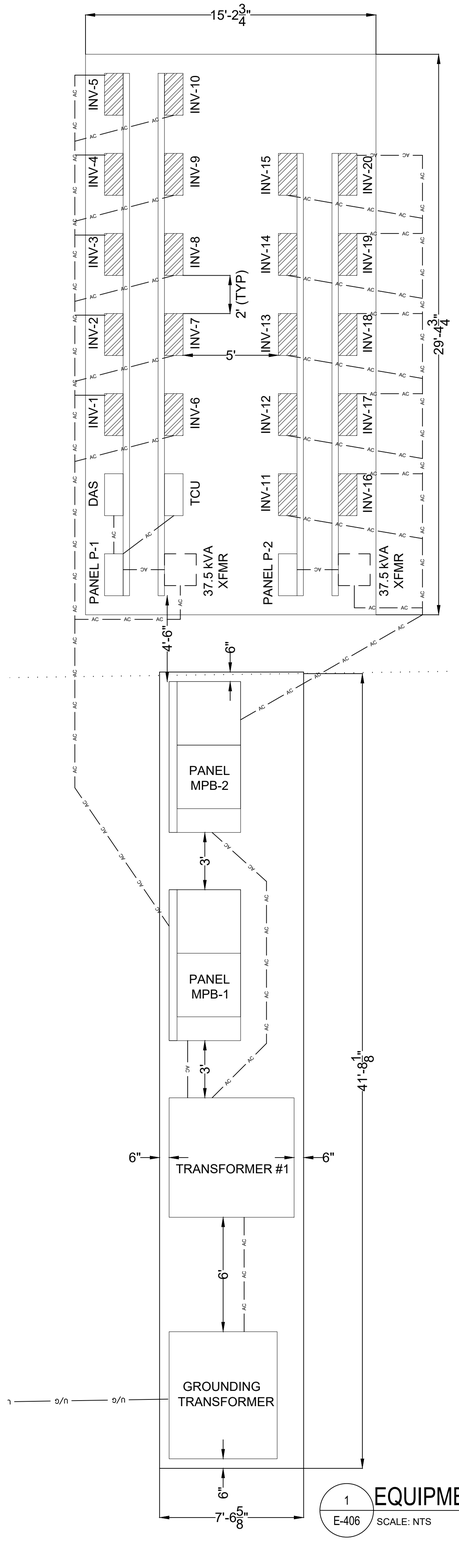
CONDUIT TRENCHING DETAILS - SHEET 2

SHEET SIZE

ARCH D
24" X 36"

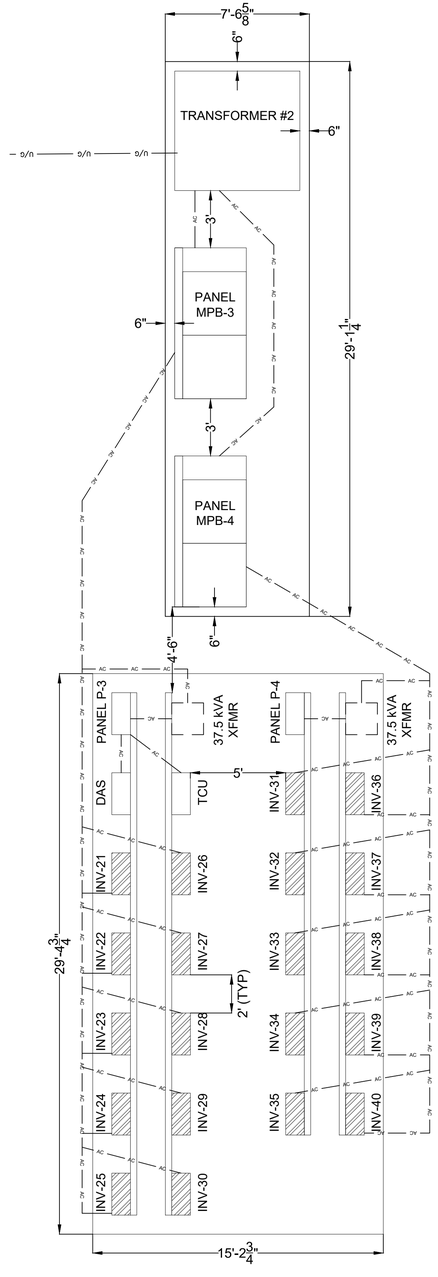
SHEET NUMBER

E-405



1 E-406 EQUIPMENT PAD DETAIL #1

SCALE: NTS



1 E-406 EQUIPMENT PAD DETAIL #2

SCALE: NTS

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	489
MODULE QUANTITY	12,714
TOTAL DC SIZE	6,865,560 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	40
TOTAL AC SIZE	5,000,000 W
TILT	±55°
AZIMUTH	180°

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PROJECT INSTALLER

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PROJECT NAME

MANLIUS EAST
8109 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

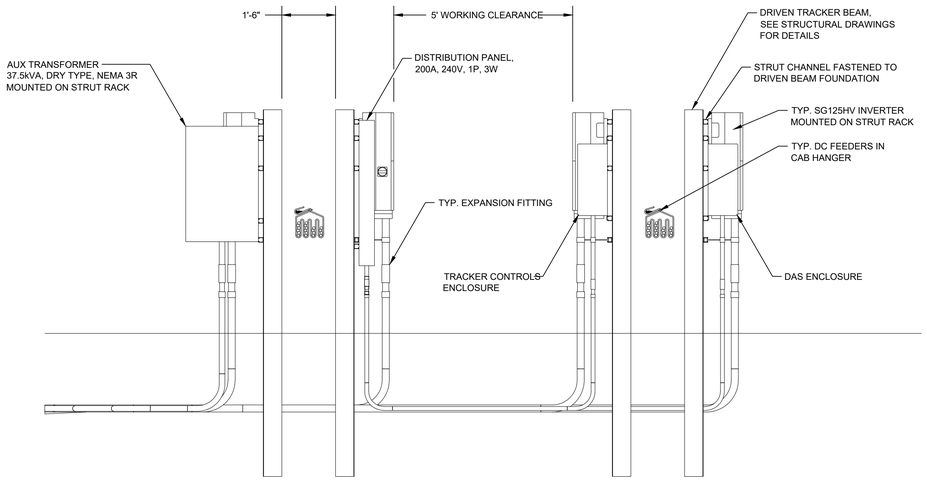
EQUIPMENT PAD DETAIL

SHEET SIZE

ARCH D
24" X 36"

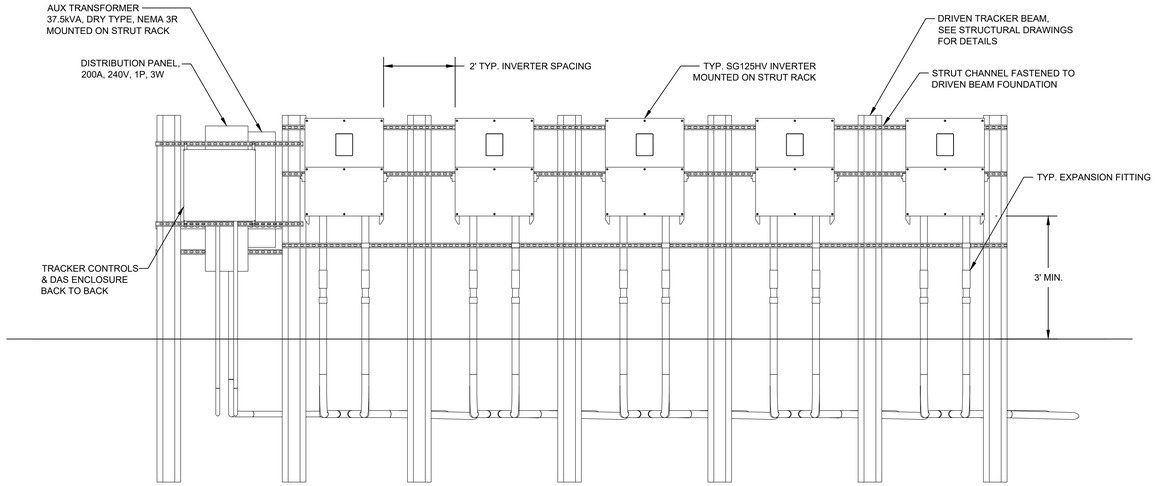
SHEET NUMBER

E-406



1 E-407 EQUIPMENT RACK ELEVATION - SIDE

SCALE: NTS



2 E-407 EQUIPMENT RACK ELEVATION - FRONT

SCALE: NTS

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	489
MODULE QUANTITY	12,714
TOTAL DC SIZE	6,865,560 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	40
TOTAL AC SIZE	5,000,000 W
TILT	±55°
AZIMUTH	180°

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PROJECT INSTALLER

STATE OF NEW YORK
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095344
LICENSED PROFESSIONAL ENGINEER

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Date: 2022.12.12 09:47:18

PROJECT NAME

MANLIUS EAST

8109 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

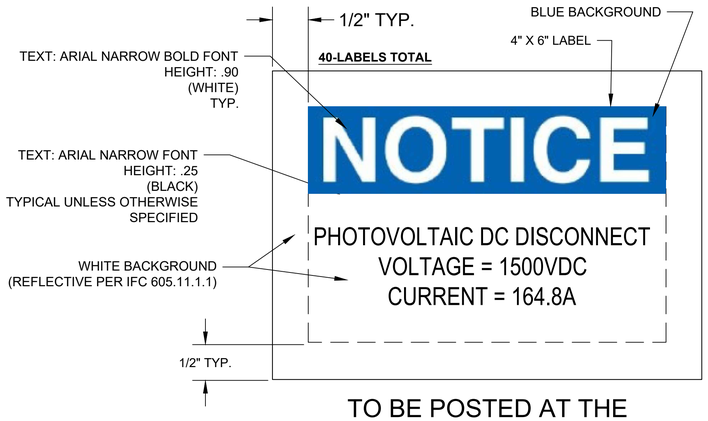
EQUIPMENT RACK DETAILS

SHEET SIZE

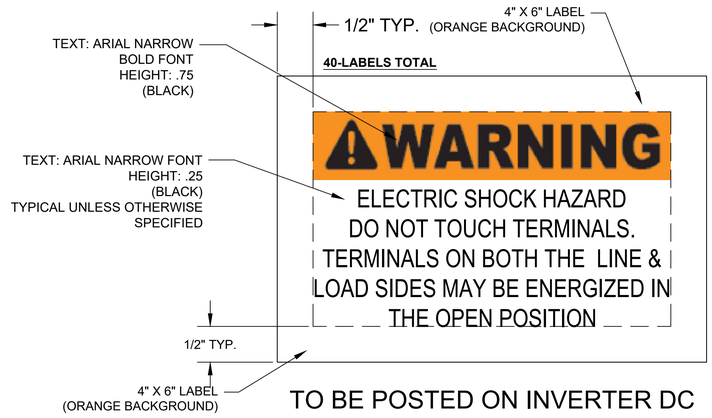
ARCH D
24" X 36"

SHEET NUMBER

E-407

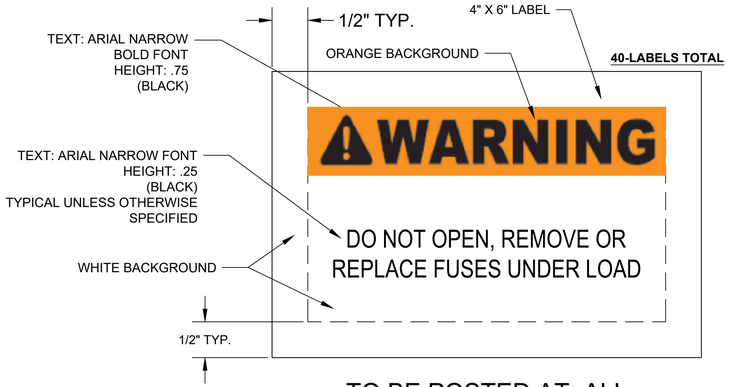


TO BE POSTED AT THE INVERTER DC DISCONNECT

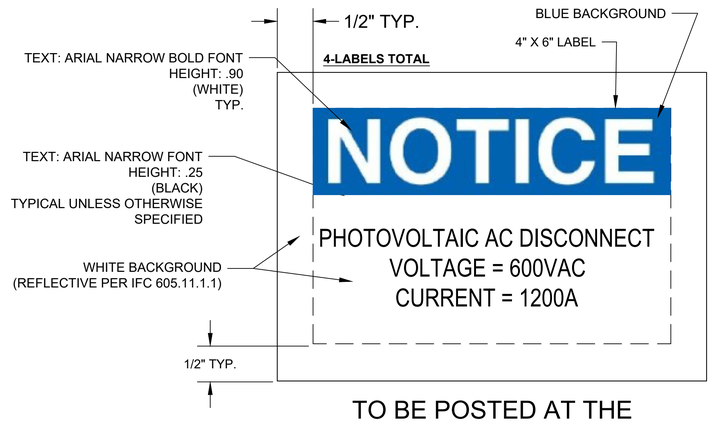


TO BE POSTED ON INVERTER DC INPUTS AND COMBINERS

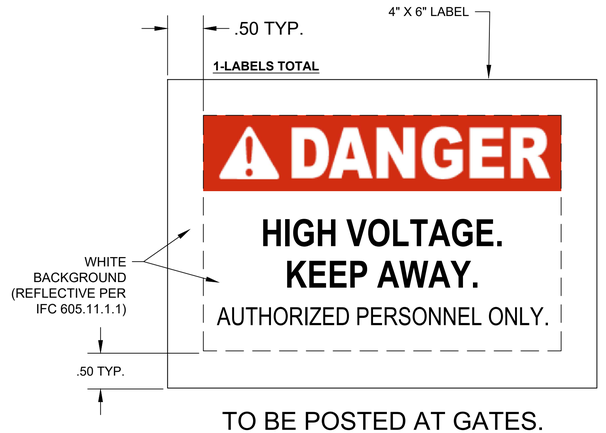




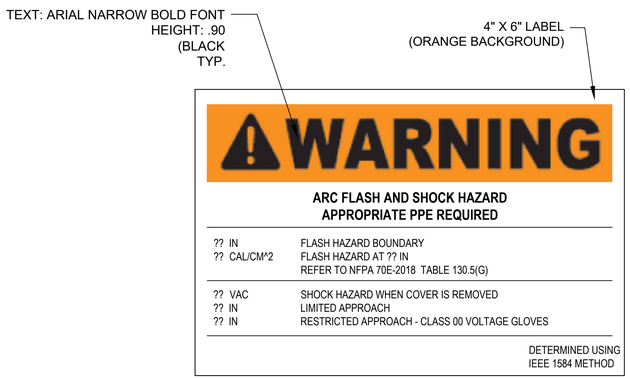
TO BE POSTED AT ALL COMBINER BOXES AND ALL OTHER FUSED LOCATIONS



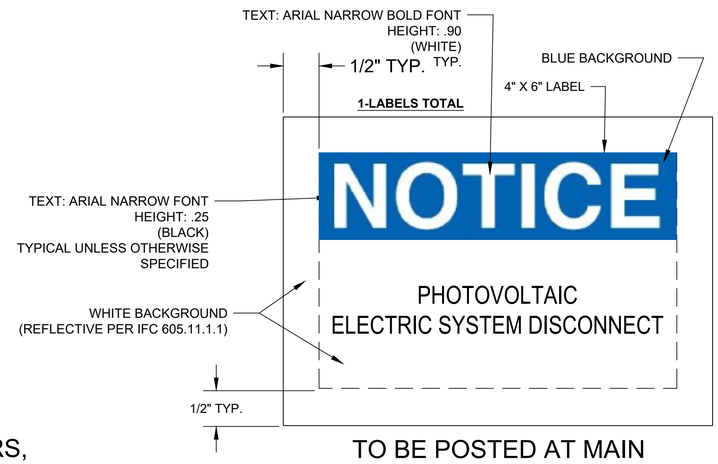
TO BE POSTED AT THE INVERTERS AC COMBINER PANEL



TO BE POSTED AT GATES.



TO BE POSTED AT AC & DC SIDES OF INVERTERS, TRANSFORMERS, PANELS, & DISCONNECTS.
WAITING FOR ARC FLASH & SHOCK HAZARD ANALYSIS



TO BE POSTED AT MAIN SERVICE DISCONNECT PER NEC 690.13(B)

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	489
MODULE QUANTITY	12,714
TOTAL DC SIZE	6,865,560 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	40
TOTAL AC SIZE	5,000,000 W
TILT	±55°
AZIMUTH	180°

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PROJECT INSTALLER

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Digitally signed by: Emmocrates with Stamps E Castillo Date: 2022.12.12 09:47:19

PROJECT NAME

MANLIUS EAST

8109 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

WARNING LABELS - SHEET 1

SHEET SIZE

ARCH D
24" X 36"

SHEET NUMBER

E-500

(WHITE BACKGROUND)

6" X 6" LABEL

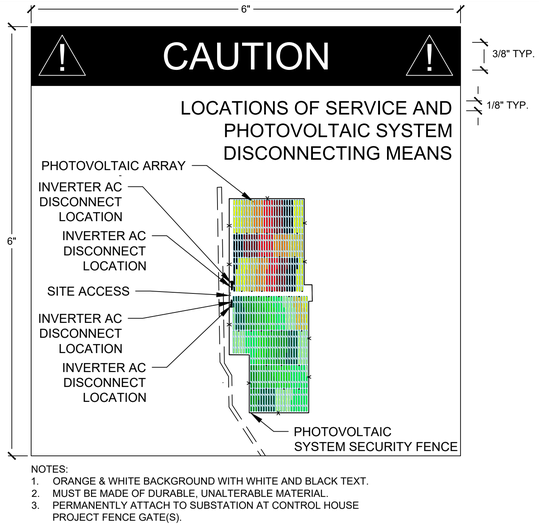
2-LABELS TOTAL

MEDIUM VOLTAGE TRANSFORMER X

2,500KVA
PRIMARY VOLTAGE = 13.2KV
SECONDARY VOLTAGE = 600V

TEXT: ARIAL NARROW FONT
HEIGHT: .25
(BLACK)
TYPICAL UNLESS OTHERWISE SPECIFIED

TO BE POSTED AT THE TRANSFORMERS. X TO BE REPLACED WITH TRANSFORMER NUMBER.



NOTES:
1. ORANGE & WHITE BACKGROUND WITH WHITE AND BLACK TEXT.
2. MUST BE MADE OF DURABLE, UNALTERABLE MATERIAL.
3. PERMANENTLY ATTACH TO SUBSTATION AT CONTROL HOUSE PROJECT FENCE GATE(S).

(WHITE BACKGROUND)

6" X 6" LABEL

40-LABELS TOTAL

PV INVERTER INV YY

AS PER SHEET E-111

FEEDS FROM CB XX

125kW
OPERATING VOLTAGE = 600Vac
OPERATING CURRENT = 120Aac

TO BE POSTED AT INVERTERS
XX TO BE REPLACED WITH NUMBER
YY TO BE REPLACED WITH INVERTER NUMBER

4" X 6" LABEL (ORANGE BACKGROUND) TYPICAL UNLESS OTHERWISE SPECIFIED

1/2" TYP.

40-LABELS TOTAL

TEXT: ARIAL NARROW BOLD FONT HEIGHT: .38 (BLACK) TYPICAL UNLESS OTHERWISE SPECIFIED

TEXT: ARIAL NARROW FONT
HEIGHT: .20
(BLACK)
TYPICAL UNLESS OTHERWISE SPECIFIED

COMBINER BOX CB YY

AS PER SHEET E-111

FEEDS TO INVERTER XX

MAX SYSTEM VOLTAGE = 1,478VDC
MAX SHORT CIRCUIT CURRENT = 210.54ADC

1/2" TYP.

TO BE POSTED AT THE COMBINER BOXES PER NEC 690.53
XX TO BE REPLACED BY CENTRAL INVERTER NUMBER
YY TO BE REPLACED BY COMBINER BOX NUMBER

4" X 6" LABEL

(WHITE BACKGROUND)

METEOROLOGICAL STATION

TEXT: ARIAL NARROW FONT
(BLACK)
TYPICAL UNLESS OTHERWISE SPECIFIED

TO BE POSTED AT THE WEATHER STATION CABINETS

(WHITE BACKGROUND)

4" X 6" LABEL

TEXT: ARIAL NARROW FONT
(BLACK)
TYPICAL UNLESS OTHERWISE SPECIFIED

DATA ACQUISITION CABINET

TO BE POSTED AT THE DAS CABINETS

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	489
MODULE QUANTITY	12,714
TOTAL DC SIZE	6,865,560 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	40
TOTAL AC SIZE	5,000,000 W
TILT	±55°
AZIMUTH	180°

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TEL: (407) 289-2575

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REVISIONS

DESCRIPTION	DATE	REV
IFP	12/09/2022	0
30% REVIEW	11/11/2022	A

PROJECT INSTALLER

STATE OF NEW YORK · E. E. CASTILLO · 095344 · LICENSED PROFESSIONAL ENGINEER

Digitally signed by: Emmocrates E Castillo
Date: 2022.12.12 09:47:20

PROJECT NAME

MANLIUS EAST
8109 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

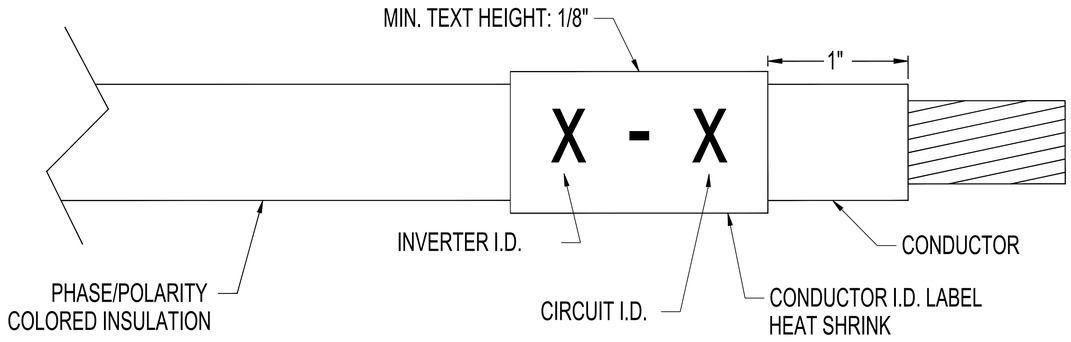
WARNING LABELS - SHEET 2

SHEET SIZE

ARCH D
24" X 36"

SHEET NUMBER

E-501



TO BE PROVIDED BY E.C.

DC INPUT CIRCUITS FROM ARRAY TO INVERTER
RANGE: 1-3.1-9.1-12 (INV.CB.CIRC)
EXAMPLE: 2.4.10

AC FEEDERS BETWEEN INVERTER AND TRANSFORMER
RANGE: 1-20 (INV)
EXAMPLE: 2

1 / E-502 WIRE LABELING
SCALE: NTS

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	489
MODULE QUANTITY	12,714
TOTAL DC SIZE	6,865,560 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	40
TOTAL AC SIZE	5,000,000 W
TILT	±55°
AZIMUTH	180°

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PROJECT NAME
MANLIUS EAST
8109 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME
WIRE LABELING

SHEET SIZE
ARCH D
24" X 36"

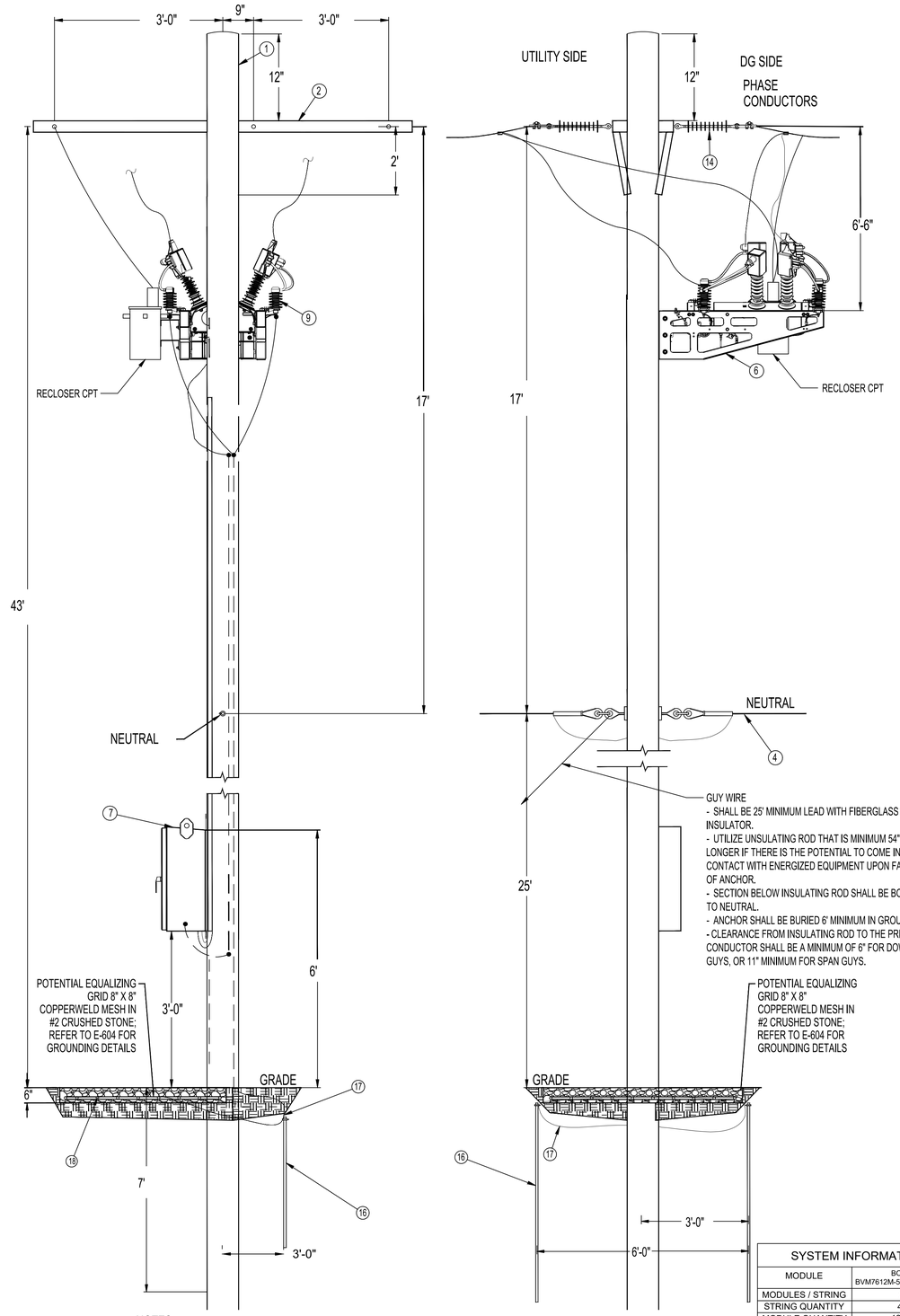
SHEET NUMBER
E-502

ITEM	QTY	DESCRIPTION	SUPPLIED BY
1		WOODEN POLE, 40' HIGH, CLASS 3	CONTRACTOR
2		$3\frac{1}{2}$" X $4\frac{1}{2}$" X 10' FIBERGLASS DEADEND ARMS	CONTRACTOR
3		PRIMARY ACSR CONDUCTOR, 4/0 AWG	CONTRACTOR
4		NEUTRAL #1 AWG CU CONDUCTOR	CONTRACTOR
5		GANG OPERATED AIR BREAK SWITCH, 15 KV, 600 A	CONTRACTOR
6		"CR512" RECLOSER, 15.5 KV, 800 A	CONTRACTOR
7		RECLOSER CONTROL PANEL	CONTRACTOR
8		FUSED CUTOUT, 15 KV, 300 A	CONTRACTOR
9		SURGE ARRESTER, 10 KV, 8.4 KV MCOV, HD RISER POLE CLASS	CONTRACTOR
10		METER CLUSTER ASSEMBLY, 15 KV	CONTRACTOR
11		METERING CABINET	CONTRACTOR
12		MC CABLE, 15 KV 4/0 AWG	CONTRACTOR
13		CABLE TERMINATION, 15 KV CLASS XX KCMIL	CONTRACTOR
14		DEADEND INSULATOR, 15 KV CLASS	CONTRACTOR
15		POST INSULATOR, 15 KV CLASS	CONTRACTOR
16		5/8" X 8' COPPER CLAD GROUND ROD	CONTRACTOR
17		CONDUCTOR BARE COPPERCLAD #4	CONTRACTOR
18		COPPERWELD GROUND MAT - 8' X 8;	CONTRACTOR

POLE LAYOUT GENERAL NOTES:

1. ALL POLES ARE SHOWN AS CONCEPTUAL AND ARE FOR DIAGRAMMATIC PURPOSES ONLY. ALL UTILITY POLES SHALL CONFORM TO ANSI 05.1, AWPA C4, ANSI C2, NESC, LOCAL UTILITY REQUIREMENTS, AND ANY OTHER APPLICABLE CODES AND STANDARDS.
2. ALL OTHER MATERIAL NEEDED FOR A COMPLETE AND OPERABLE INSTALLATION, THOUGH NOT SPECIFICALLY CALLED OUT, SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR.
3. ALL POLE LINE HARDWARE SHALL BE RATED FOR 10,000 LBS MINIMUM.
4. COMMUNICATION SPACER CABLE SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS.
5. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL HELICAL ANCHORS AND DOWN GUY WIRES. ALL DOWN GUYS SHALL BE 7#10 ALUMINUM CLAD STEEL MINIMUM. ANCHORS SHALL BE $\frac{3}{8}$ GALVANIZED SQUARE SHAFT HELICAL WITH A MINIMUM DIAMETER OF 8 INCHES. INSTALLATION OF HELICAL ANCHORS SHALL BE BY EITHER ELECTRICAL OR HYDRAULIC ROTARY TYPE TORQUE MOTOR. SIZE TO BE CONFIRMED BY CALCULATION.
6. MAINTAIN NO LESS THAN 21'10" FEED GROUND CLEARANCE THROUGHOUT EACH NEUTRAL SPAN UNDER ALL LOADING CONDITIONS FOR SPANS LESS THAN 45 FEET. FOR LONGER SPANS, CONTACT CCR ENGINEERING FOR DIRECTION.
7. MAXIMUM OPERATION TEMPERATURE OF OVERHEAD CONDUCTOR 120°F.
8. FULL-PHASE TENSION TO STOP AT UTILITY POLE WITH GUYING; SLACK SPAN BETWEEN LAST UTILITY POLE AND FIRST CCR POLE.
9. IN ADDITION TO NUTS AND WASHERS, LOCKNUTS SHALL BE INSTALLED ON ALL THREADED MATERIAL AND HARDWARE. THE THREADS ON INSTALLED BOLTS SHALL PROTRUDE PAST THE LOCK WASHERS A MINIMUM OF ONE INCH BUT NOT MORE THAN TWO INCHES.
10. A 3 INCH BY 3 INCH (MINIMUM)SQUARE, CURVED WASHER SHALL BE USED ABUTTING THE POLE WHEN INSTALLED ON PRIMARY DEADEND, NEUTRAL DEADEND, AND GUY ASSEMBLIES DIRECTLY TO POLE.
11. CONDUCTORS SHALL BE SAGGED EVENLY AND IN ACCORDANCE WITH THE CONDUCTOR MANUFACTURER'S RECOMMENDATIONS. SEE TABLE BELOW FOR INITIAL SAG BASED ON SPAN LENGTH AND TEMPERATURE.
12. EACH SURGE ARRESTER TO BE BONDED SEPARATELY TO POLE GROUND.
13. BOND ALL NON-CURRENT CARRYING METALLIC PARTS ON THE RECEIVING STRUCTURE OF THE EQUIPMENT GROUND WITH A STRANDED #4 AWG BARE COPPER CONDUCTOR.
14. ALL ARRESTORS SHALL HAVE A DEDICATED #4 AWG BARE COPPER CONDUCTOR TRAILED DOWN TO GROUNDING RODS/GRID SEPARATE FROM EQUIPMENT GROUND.
15. ALL DISCONNECTING MEANS SHALL BE UNIFORMLY PLACARDED WITH PERMANENTLY AFFIXED METAL OR PLASTIC LABELS AS REQUIRED BY THE NEC. NY SIR, AND ESB 750.

1 E-600 POINT OF INTERCONNECTION POLE BOM
SCALE: NTS



NOTES:
- CUSTOMER RECLOSER POLE SHALL INCLUDE DESIGNATION "C-2". RECLOSER IDENTIFICATION "R516".

2 E-600 RECLOSER POLE FRONT AND SIDE VIEW
SCALE: NTS

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	489
MODULE QUANTITY	12,714
TOTAL DC SIZE	6,865,560 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	40
TOTAL AC SIZE	5,000,000 W
TILT	±55°
AZIMUTH	180°

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PROJECT NAME

MANLIUS EAST
8109 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

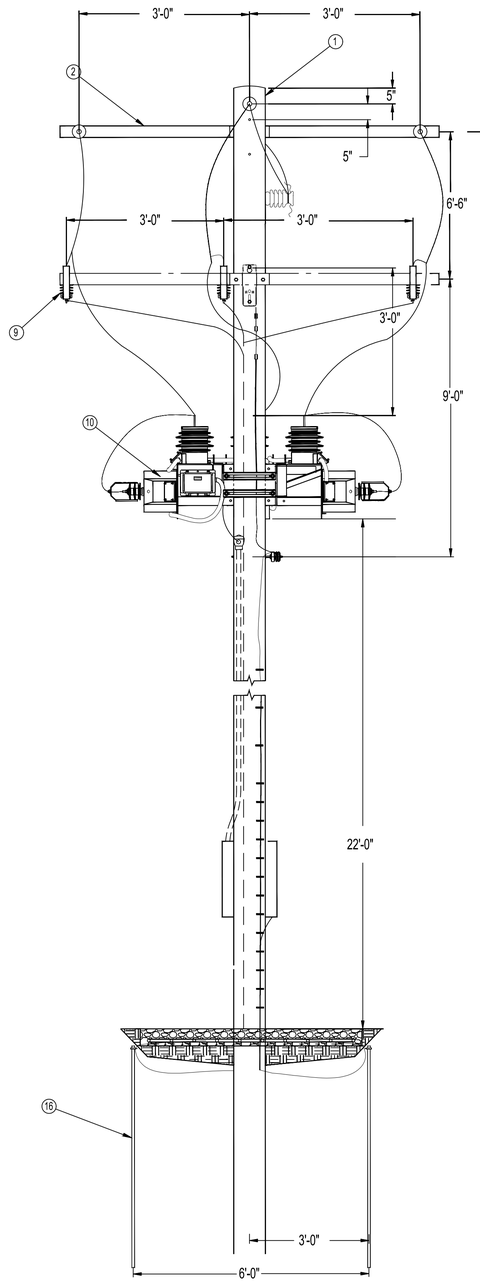
POLE DETAILS - SHEET 1

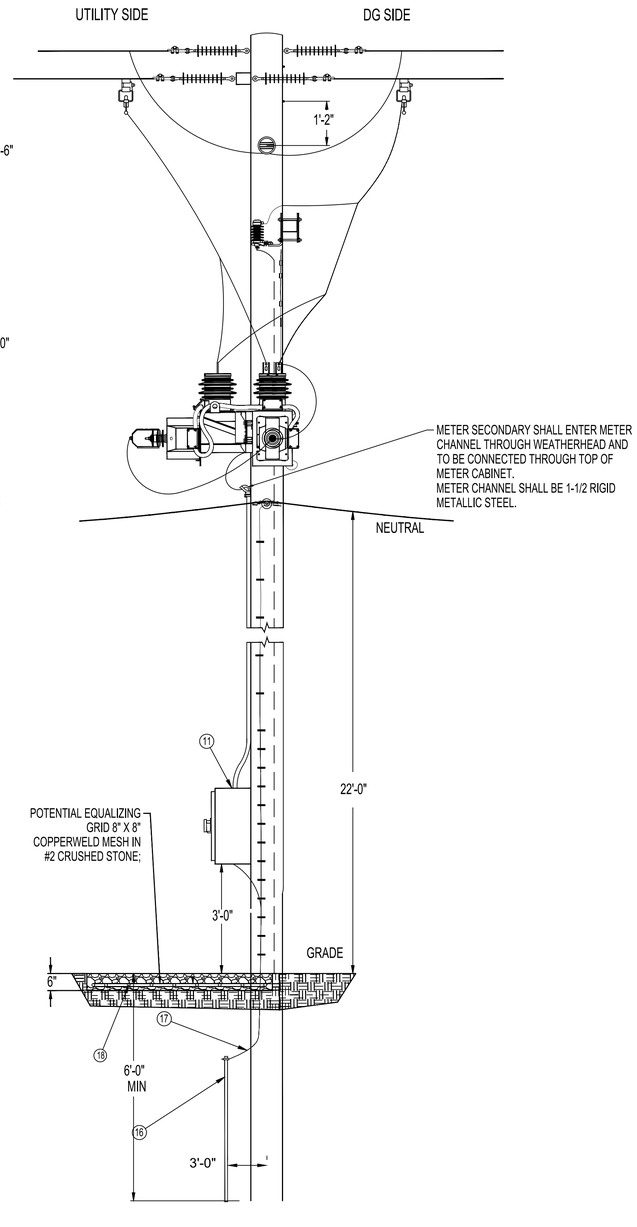
SHEET SIZE

ARCH D
24" X 36"

SHEET NUMBER

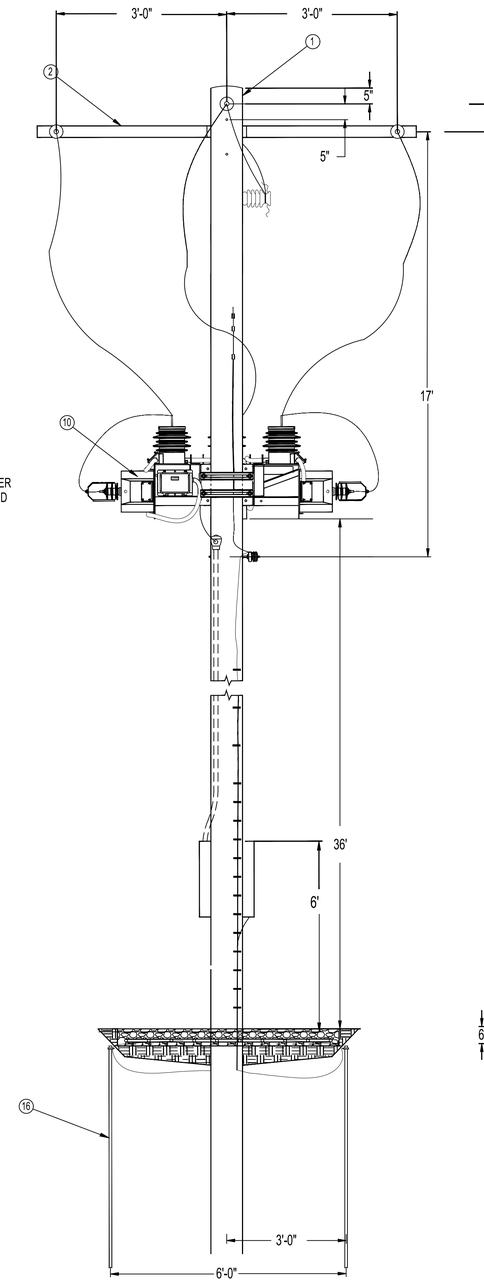
E-600

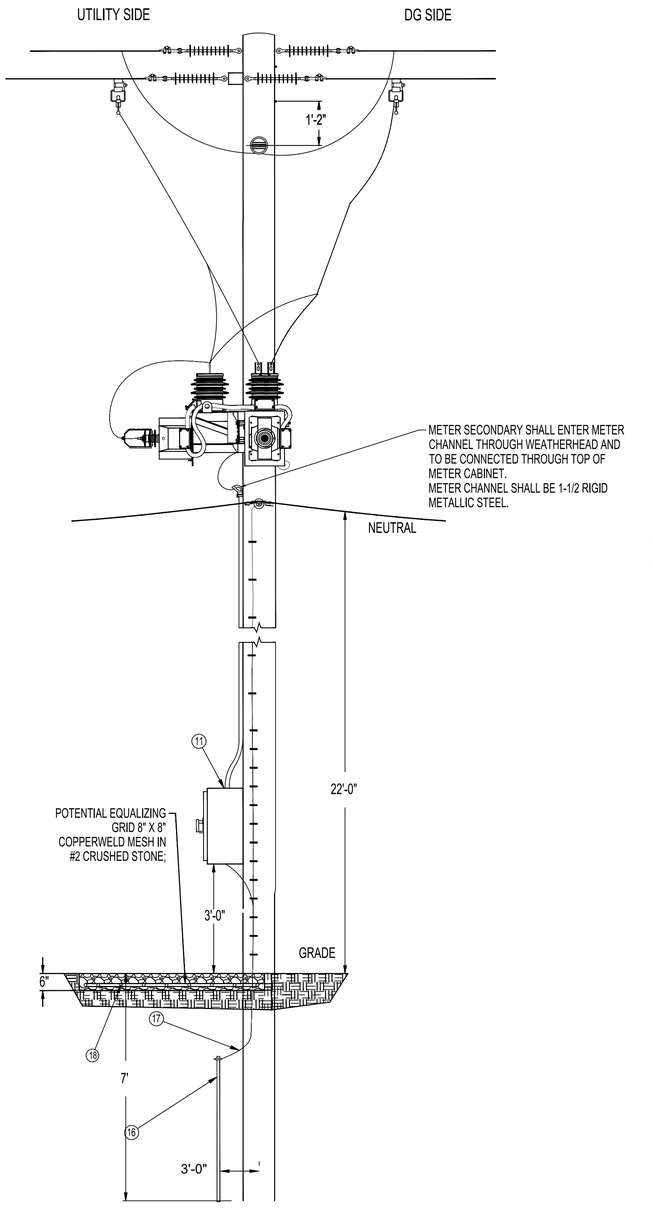




NOTES:
- UTILITY METER POLE SHALL INCLUDE DESIGNATION "C-3".
- METER SHALL HAVE 1-1/2" RMC OR PVC SCH 80 CONDUIT.

1 E-601 METER POLE FRONT AND SIDE VIEW
SCALE: NTS





NOTES:
- CUSTOMER METER POLE SHALL INCLUDE DESIGNATION "C-4".
- METER SHALL HAVE 1-1/2" RMC OR PVC SCH 80 CONDUIT.

2 E-601 METER POLE FRONT AND SIDE VIEW
SCALE: NTS

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	489
MODULE QUANTITY	12,714
TOTAL DC SIZE	6,865,560 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	40
TOTAL AC SIZE	5,000,000 W
TILT	±55°
AZIMUTH	180°

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PROJECT NAME

MANLIUS EAST
8109 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

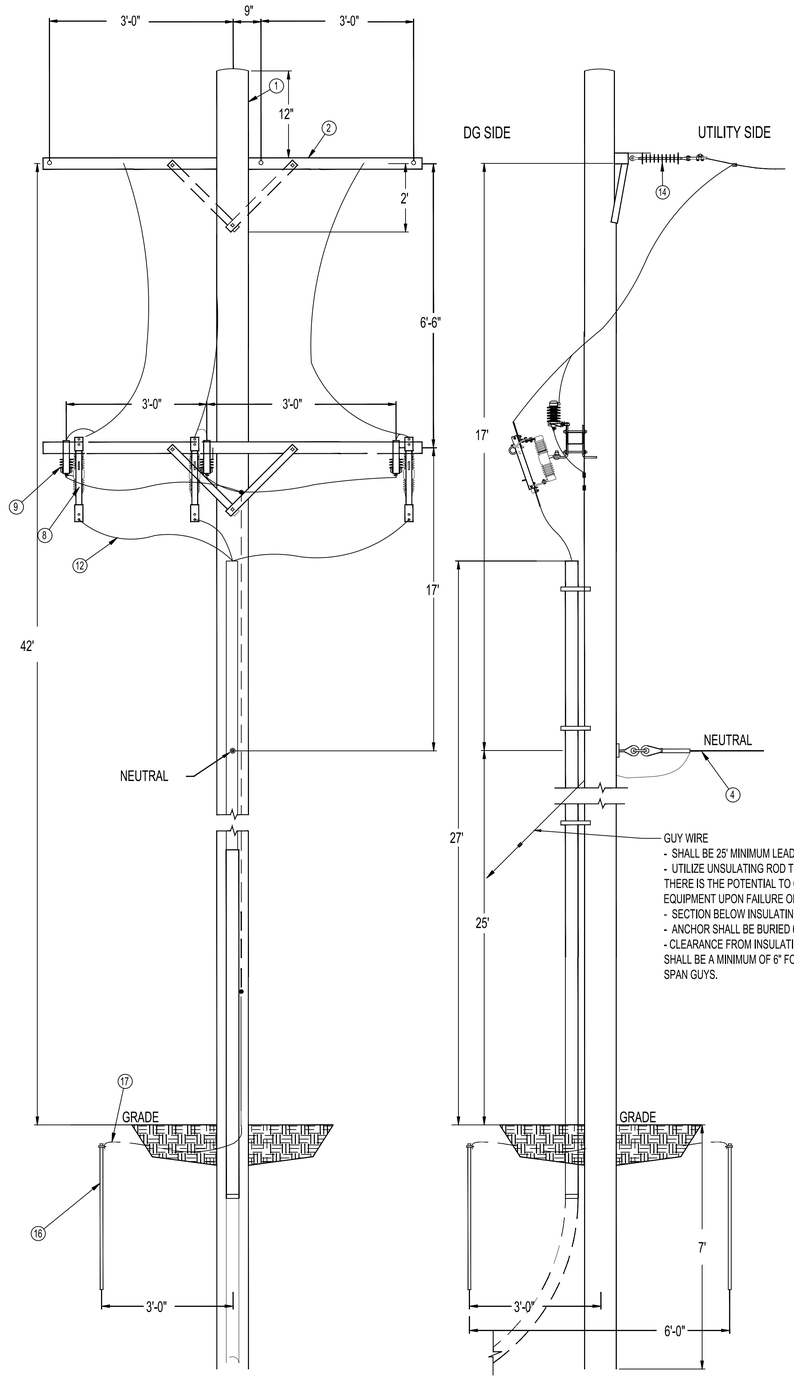
POLE DETAILS - SHEET 2

SHEET SIZE

ARCH D
24" X 36"

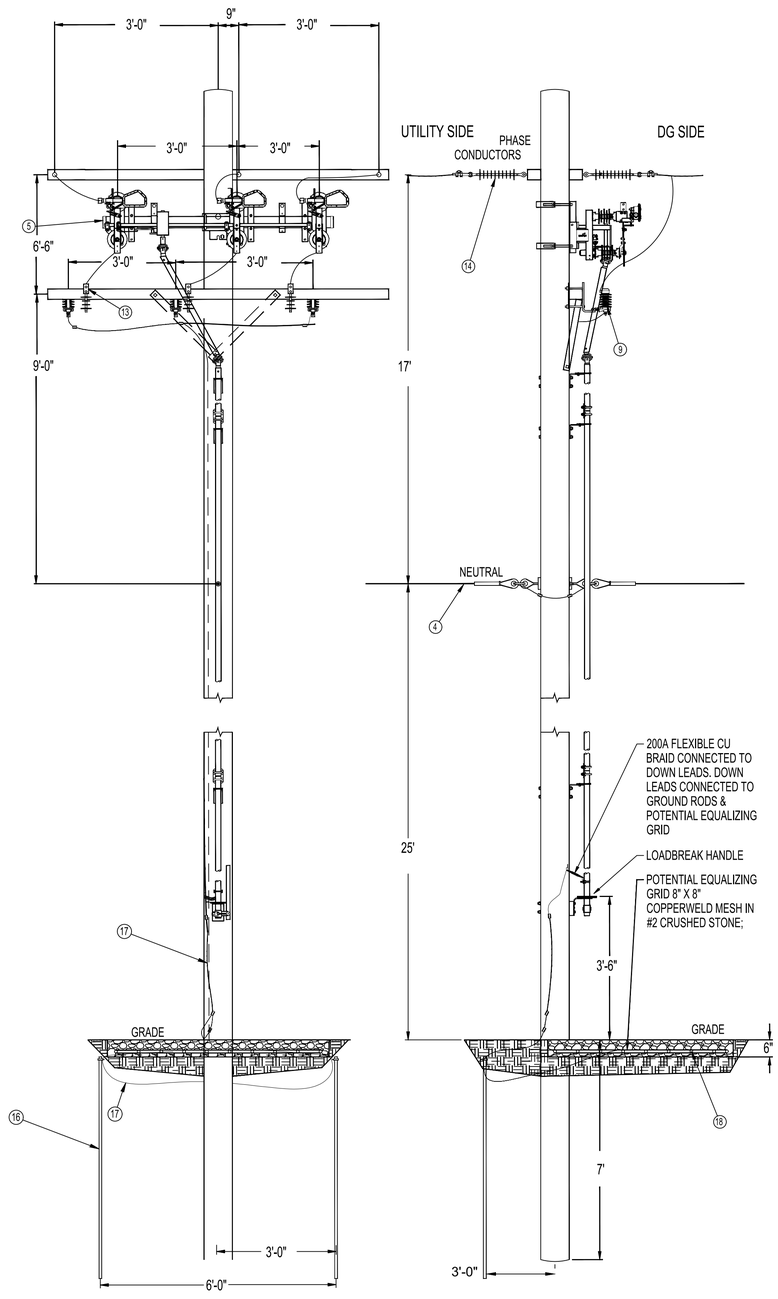
SHEET NUMBER

E-601



NOTES:
- RISER POLE DISCONNECT LABEL SHALL INCLUDE DESIGNATION "C513".
- RISER POLE SHALL INCLUDE DESIGNATION "C-5".

1 E-602 RISER POLE FRONT AND SIDE VIEW
SCALE: NTS



NOTES:
- GOAB ORIENTATION "JAWS" TO BE ON UTILITY SIDE OF DISCONNECT WHILE "BLADES" TO BE ON GENERATOR SIDE.
- UTILITY SOURCE SHALL BE CONNECTED TO JAW SIDE OF SWITCH. HINGE SIDE OF SWITCH SHALL BE CONNECTED TOWARDS CUSTOMER DER.
- THE SWITCH SHALL BE CAPABLE OF OPENING UNDER 1/2" ICE LOADING CONDITIONS NESC "HEAVY".
- MAIN GENERATOR DISCONNECT POLE LABEL SHALL INCLUDE DESIGNATION "C511".
- CUSTOMER GOAB POLE LABEL SHALL INCLUDE DESIGNATION "C-1".
- SWITCH BLADE SHALL BE ON DE-ENERGIZED SIDE OF SWITCH WHEN OPEN.

2 E-602 GOAB POLE FRONT AND SIDE VIEW
SCALE: NTS

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	489
MODULE QUANTITY	12,714
TOTAL DC SIZE	6,865,560 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	40
TOTAL AC SIZE	5,000,000 W
TILT	±55°
AZIMUTH	180°

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30% REVIEW	11/11/2022	A

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PROJECT NAME

MANLIUS EAST
8109 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

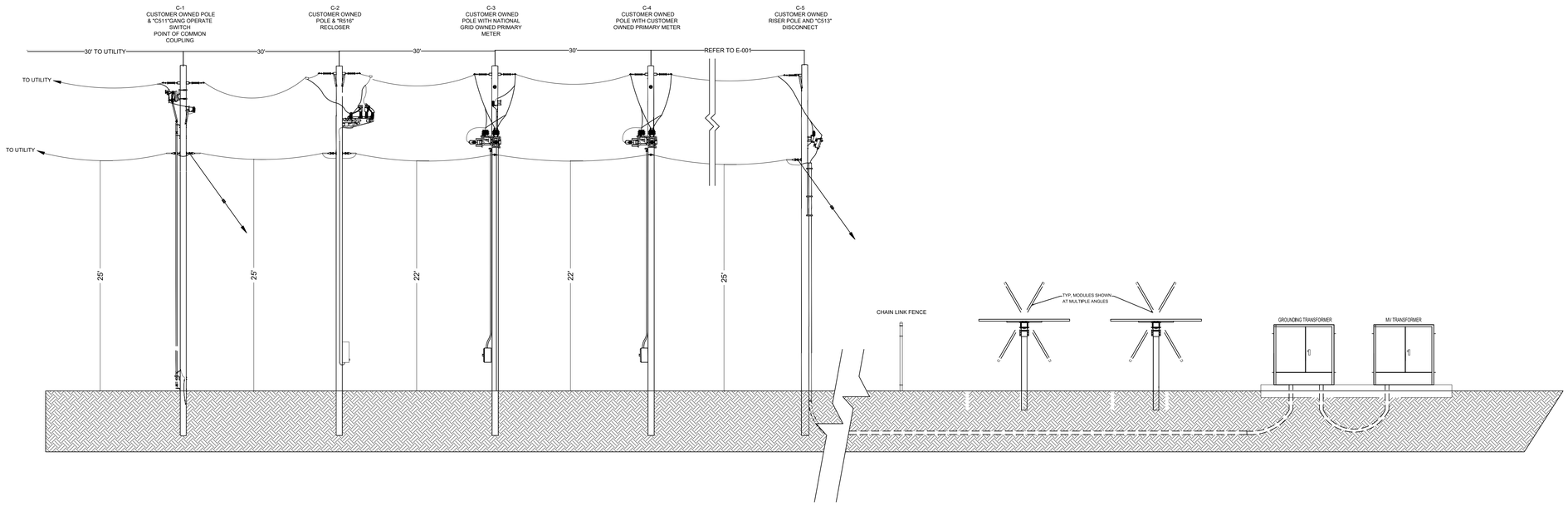
POLE DETAILS - SHEET 3

SHEET SIZE

ARCH D
24" X 36"

SHEET NUMBER

E-602



1 E-603 POLE LAYOUT
SCALE: NTS

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	489
MODULE QUANTITY	12,714
TOTAL DC SIZE	6,865,560 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	40
TOTAL AC SIZE	5,000,000 W
TILT	±55°
AZIMUTH	180°

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Date: 2022.12.12 09:47:26

PROJECT NAME

MANLIUS EAST
8109 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

POLE LAYOUT

SHEET SIZE

ARCH D
24" X 36"

SHEET NUMBER

E-603

SG125HV

String Inverter for 1500 Vdc System

SUNGROW
Clean power for all



HIGH YIELD

- Patented five-level topology, max. efficiency 98.9 %, European efficiency 98.7 %, CEC efficiency 98.5 %
- Full power operation without derating at 50 ℃
- Patented anti-PID function

EASY O&M

- Virtual central solution, easy for O&M
- Compact design and light weight for easy installation

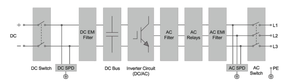
SAVED INVESTMENT

- DC 1500V,AC 600V, low system initial investment
- 1 to 5MW power block design for lower AC transformer and labor cost
- Max.DC/AC ratio up to 1.5

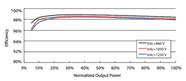
GRID SUPPORT

- Compliance with both IEC and UL safety,EMC and grid support regulations
- Low/High voltage ride through(L/HVRT)
- Active & reactive power control and power ramp rate control

CIRCUIT DIAGRAM



EFFICIENCY CURVE



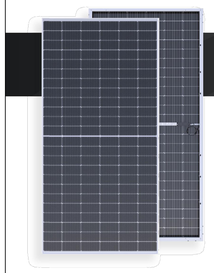
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SG125HV

Type designation	SG125HV
Input (DC)	
Max. PV input voltage	1500 V
Min. PV input voltage / Start-up input voltage	860 V / 920 V
Nominal PV input voltage	1050 V
MPP voltage range	860 – 1450 V
MPP voltage range for nominal power	860 – 1250 V
No. of independent MPP inputs	1
No. of DC inputs	1
Max. PV input current	148 A
Max. DC short-circuit current	250 A
Output (AC)	
AC output power	125 kVA @ 50 ℃
Max. AC output current	120 A
Nominal AC voltage	3 / PE, 600 V
AC voltage range	480 – 690 V
Nominal grid frequency / Grid frequency range	50 Hz / 45 – 55 Hz, 60 Hz / 55 – 65 Hz
THD	< 3 % (at nominal power)
DC current injection	< 0.5 % In
Power factor at nominal power / Adjustable power factor	> 0.99 / 0.8 leading - 0.8 lagging
Feed-in phases / connection phases	3 / 3
Efficiency	
Max. efficiency / European efficiency	98.9% / 98.7%
CEC efficiency	98.5%
Protection	
DC reverse connection protection	Yes
AC short-circuit protection	Yes
Leakage current protection	Yes
Grid monitoring	Yes
DC switch	Yes
AC switch	Yes
Q at night function	No
Anti-PID function	Yes
Overvoltage protection	DC Type II / AC Type II
General Data	
Dimensions (W*H*D)	670*902*296 mm 26.4"*35.5"*11.7"
Weight	76 kg/ 167.5 lb
Isolation method	Transformerless
Degree of protection	IP 65 NEMA 4X
Night power consumption	< 4 W
Operating ambient temperature range	-30 to 60 ℃ (> 50 ℃ derating) -22 to 140 ℉ (> 122 ℉ derating)
Allowable relative humidity range (non-condensing)	0 – 100 %
Cooling method	Smart forced air cooling
Max. operating altitude	4000 m (> 3000 m derating) 13123 ft (> 9843 ft derating)
Display / Communication	LED, Bluetooth+APP / RS485
DC connection type	OT or DT terminal (Max. 185 mm² 350 Kcmil)
AC connection type	OT or DT terminal (Max. 185 mm² 350 Kcmil)
Compliance	UL1741, UL1741SA, IEEE1547, IEEE1547.1, CSA C22.2 107.1-01-2001, FCC Part15 Sub-part B Class A Limits, California Rule 21, IEC 62109-1/-2, IEC 61000-6-2/-4, IEC 61727, IEC62116, BDEW, EN50549,VDE-AR-N 4110:2018, VDE-AR-N 4120:2018, UNE 206007-1:2013, P.O.12.3, UTE C15-712-1:2013, CEI 0-16:2017, IEC 61683, PEA, NTCO
Grid Support	LVRT, HVRT, ZVRT, active & reactive power regulation, PF control, soft start/stop

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BOVIET SOLAR



VEGA SERIES™

UTILITY SCALE SOLAR
MONO | BIFACIAL | PERC | PV MODULE

Power Range:	525W	530W	535W	540W	545W	550W
Technology:	PERC	Half cut cell	10 Busbar	144 cells
Design:	Double Glass	Silver Frame	Glass Back
Module Efficiency:	21.1%
Cell Efficiency:	22.5%~23.3%
Power Tolerance:	0~+5W
System Voltage:	1000/1500 V DC
Module Size:	90.40 x 44.65 x 1.38 inch
Module Weight:	73.86 lb.
Module Code:	BVM7612M-XXX-H-HC-BF-DG

DESIGNED TO PERFORM AND BUILT TO LAST

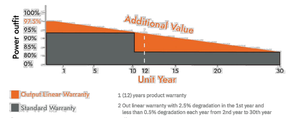
Our PV modules are designed with better technology in mind, made from robust product components, under stringent quality control steps and high-tech manufacturing processes.

PERC, half-cut, multi-busbar, and large cell designs enables our PV modules to pack more power per module, capture more photons, produce more energy, and provide reliable, dependable system performance under different installations requirements, difficult weather, or environmental conditions. Whether you are EPC, installer, contractor, or project developer, we have the right and better PV module for your residential, commercial, industrial, and utility scale solar projects.

- Monocrystalline technology
- P-Type semiconductor
- PERC Passivated emitter and rear cell technology
- Half cut cell
- Multi-Busbar cell
- Large wafer design
- Beautiful aesthetic
- Robust product component

WARRANTY

30 Years - Linear power performance warranty
12 Years - Enhanced product warranty



1. (12 years product warranty
2 Out linear warranty with 2.5% degradation in the 1st year and less than 0.5% degradation each year: from 2nd year to 30th year

CERTIFICATES

UL 61730 I IEC 61215 I IEC 61730 I CEC Listed I CE
ISO 9001 Quality Management System
ISO 14001 Environmental Management System
ISO 45001 Occupational Health and Safety Management System

*Please contact with Boviet Solar representatives for full list of certificates according to local requirements and product type

ELECTRICAL CHARACTERISTICS I STC

Maximum Power (Pmax)	525W	530W	535W	540W	545W	550W
Maximum Power Current (Imp)	12.60A	12.66A	12.71A	12.76A	12.82A	12.88A
Maximum Power Voltage (Vmp)	41.47V	41.94V	42.17V	42.40V	42.58V	42.76V
Short Circuit Current (Isc)	13.37A	13.43A	13.48A	13.55A	13.72A	13.84A
Open Circuit Voltage (Voc)	49.52V	49.71V	49.80V	49.89V	49.98V	50.13V
Module Efficiency	20.2%	20.4%	20.5%	20.7%	20.9%	21.1%
Power Tolerance	0~+5W	0~+5W	0~+5W	0~+5W	0~+5W	0~+5W

STC: AM1.5 Irradiance 1000W/m, 25° C

ELECTRICAL CHARACTERISTICS I NOCT

Maximum Power (Pmax)	525W	530W	535W	540W	545W	550W
Maximum Power (Pmax)	413W	417W	421W	425W	429W	433W
Maximum Power Current (Imp)	10.08A	10.16A	10.24A	10.32A	10.40A	10.48A
Maximum Power Voltage (Vmp)	41.02V	41.1V	41.15V	41.20V	41.25V	41.32V
Short Circuit Current (Isc)	10.67A	10.71A	10.74A	10.81A	10.86A	10.92A
Open Circuit Voltage (Voc)	48.92V	49.0V	49.23V	49.45V	48.87V	50.68V

NOCT: AM 1.5 Irradiance 800/m², 20° C, Wind speed 1m/s

MECHANICAL CHARACTERISTICS

Solar Cell	Monocrystalline I PERC PV Cells 182mm Cell I Halfcut I 10 Busbar I 144 (6x24) pcs in series
Solar Modules	Bifacial I 90.40 x 44.65 x 1.38 inch. I Weight: 73.86 lb.
Module Glass	2.0 mm (0.079 inch) High transparency, low iron, AR Coated tempered Glass
Module Frame	Frame 35 mm Ultra-strong anodized aluminum alloy frame
Module Junction Box	IP68 rated I 3 bypass diodes
Module Output Cable	4mm² (EU) I 12 AWG (US) 39.38 inch
Module Connector	Multi contact (MC4) compatible connectors
Module Encapsulant	POE
Module Backsheet	2.0mm thickness, transparent with a grid. High transmitted, low iron, and strength tempered glass
Module Fire Type	Type 29 Fire rated

PACKING INFORMATION

Pieces per pallet:	31
Pallets per container (40HQ):	20
Pieces per container (40HQ):	620
Pallet Weight:	2399.73 lb
Pallet Dimension:	91.37 x 44.69 x 49.49 inch

MAXIMUM RATING

Operating Temperature	-40°F~185°F
Maximum Series Fuse Rating	30A
Isc Temperature Coefficient	1000/1500V DC

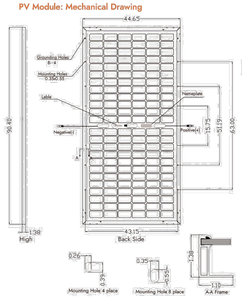
THERMAL CHARACTERISTICS

Pmax Temperature Coefficient	-0.35%/K
Voc Temperature Coefficient	-0.285%/K
Isc Temperature Coefficient	+0.05%/K
NOCT	113±35.6°F

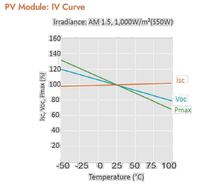
BIFACIAL OUTPUT-BACKSIDE POWER GAIN

10%	Pmax(W)	578	583	589	594	600	605
	Module efficiency (%)	22.18	22.39	22.60	22.81	23.03	23.24
20%	Pmax(W)	630	636	642	648	654	660
	Module efficiency (%)	24.20	24.43	24.66	24.89	25.12	25.35

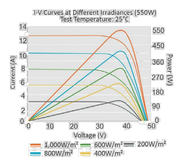
PV Module: Mechanical Drawing



PV Module: IV Curve



PV Module: IV Curve



BOVIET SOLAR | www.bovietsolar.com | V3 | August 10, 2022

Disclaimer: The information included in this PV module datasheet is subject to change without any notice and is provided for informational purposes only. No contractual rights are established or should be inferred because of the user's reliance on the information contained in this PV module datasheet. Please contact Boviet Solar's local offices for updated product information. Thank you.

Castillo Engineering
DESIGNING TOMORROW'S POWER®

CASTILLO ENGINEERING SERVICES, LLC
COA # 28345
620 N. WYMORE ROAD,
SUITE 250,
MAITLAND, FL 32751
TEL: (407) 289-2575

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REVISIONS

DESCRIPTION	DATE	REV
IFP	12/09/2022	0
30% REVIEW	11/11/2022	A

PROJECT INSTALLER

STATE OF NEW YORK
E. E. CASTILLO
LICENSED PROFESSIONAL ENGINEER
095344

Digitally signed by: [illegible]
with Democrates
E Castillo
Date: 2022.12.12 09:47:28

PROJECT NAME

MANLIUS EAST
8109 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

DATASHEETS

SHEET SIZE

ARCH D
24" X 36"

SHEET NUMBER

D-100

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	489
MODULE QUANTITY	12,714
TOTAL DC SIZE	6,865,560 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	40
TOTAL AC SIZE	5,000,000 W
TILT	±55°
AZIMUTH	180°

MANLIUS NORTH
2,035.8 kW-DC, 1,500.0 kW-AC
8107 E SENECA TURNPIKE
MANLIUS, NY 13104

(43.01628, -75.96999)

CODES AND STANDARDS

NEC 2017
NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)
NATIONAL FIRE PROTECTION ASSOCIATION (NFPA 70E)
AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)
AMERICAN SOCIETY OF TESTING MATERIALS (ASTM)

PROJECT INFORMATION

Owner:
CVE US EI4 Manlius North, LLC

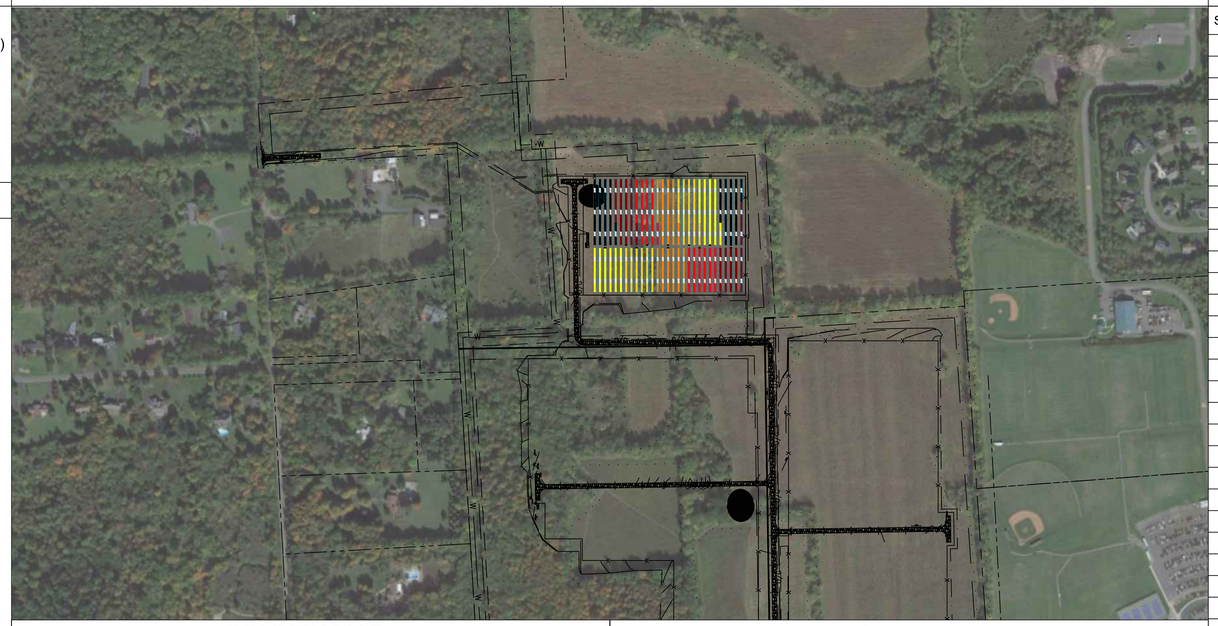
General Contractor:

Installer:

Engineer:
Castillo Engineering Services LLC
620 N. Wymore Road, Suite 250,
Maitland, FL 32751
TEL: (407) 289-2575
Ermocrates E. Castillo
License#: NY PE 095344

Castillo Engineering
DESIGNING TOMORROW'S POWER®

ARRAY VIEW



COUNTY MAP



AERIAL VIEW



DRAWING INDEX

SHEET#	SHEET DESCRIPTION	REV / ISSUE	DATE
G-001	TITLE SHEET	0 / IFP	12/09/2022
G-100	GENERAL NOTES - SHEET 1	0 / IFP	12/09/2022
G-101	GENERAL NOTES - SHEET 2	0 / IFP	12/09/2022
C-001	OVERALL SITE PLAN	0 / IFP	12/09/2022
E-001	POLE LAYOUT SITE PLAN	0 / IFP	12/09/2022
E-100	SINGLE LINE DIAGRAM - SHEET 1	0 / IFP	12/09/2022
E-101	SINGLE LINE DIAGRAM - SHEET 2	0 / IFP	12/09/2022
E-102	THREE LINE DIAGRAM - SHEET 1	0 / IFP	12/09/2022
E-103	THREE LINE DIAGRAM - SHEET 2	0 / IFP	12/09/2022
E-104	THREE LINE DIAGRAM - SHEET 3	0 / IFP	12/09/2022
E-110	DC LINE DIAGRAM	0 / IFP	12/09/2022
E-111	AC & DC SYSTEM VALUE	0 / IFP	12/09/2022
E-200	OVERALL DC FEEDER PLAN	0 / IFP	12/09/2022
E-300	GROUNDING DETAILS - SHEET 1	0 / IFP	12/09/2022
E-301	GROUNDING DETAILS - SHEET 2	0 / IFP	12/09/2022
E-302	GROUNDING DETAILS - SHEET 3	0 / IFP	12/09/2022
E-303	GROUNDING DETAILS - SHEET 4	0 / IFP	12/09/2022
E-400	MISCELLANEOUS DETAILS - SHEET 1	0 / IFP	12/09/2022
E-401	MISCELLANEOUS DETAILS - SHEET 2	0 / IFP	12/09/2022
E-402	CONDUIT AND WIRE MANAGEMENT	0 / IFP	12/09/2022
E-403	MOUNTING DETAILS	0 / IFP	12/09/2022
E-404	CONDUIT TRENCHING DETAILS - SHEET 1	0 / IFP	12/09/2022
E-405	CONDUIT TRENCHING DETAILS - SHEET 2	0 / IFP	12/09/2022
E-406	EQUIPMENT PAD DETAIL	0 / IFP	12/09/2022
E-407	EQUIPMENT RACK DETAILS	0 / IFP	12/09/2022
E-500	WARNING LABELS - SHEET 1	0 / IFP	12/09/2022
E-501	WARNING LABELS - SHEET 2	0 / IFP	12/09/2022
E-502	WIRE LABELING	0 / IFP	12/09/2022
E-600	POLE DETAILS - SHEET 1	0 / IFP	12/09/2022
E-601	POLE DETAILS - SHEET 2	0 / IFP	12/09/2022
E-602	POLE DETAILS - SHEET 3	0 / IFP	12/09/2022
E-603	POLE LAYOUT	0 / IFP	12/09/2022
D-100	DATASHEETS	0 / IFP	12/09/2022

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	145
MODULE QUANTITY	3,770
TOTAL DC SIZE	2,035,800 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	12
TOTAL AC SIZE	1,500,000 W
TILT	±55°
AZIMUTH	180°

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PROJECT NAME

MANLIUS NORTH
8107 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

TITLE SHEET

SHEET SIZE

ARCH D
24" X 36"

SHEET NUMBER

G-001

1. GENERAL NOTES AND SPECIFICATIONS

A. PROVIDE ALL MATERIALS, LABOR, EQUIPMENT AND SERVICES AND PERFORM ALL OPERATION IN CONNECTION WITH THE ELECTRICAL WORK. IT IS THE INTENT THAT THESE DRAWINGS PROVIDE THE WORK REQUIRED FOR AN ELECTRICAL INSTALLATION THAT IS COMPLETE IN EVERY RESPECT, READY FOR OPERATION.

B. ALL WORK SHALL COMPLY WITH ALL LOCAL, STATE AND FEDERAL CODES AND THE REQUIREMENTS OF ANY OF THE AUTHORITIES HAVING JURISDICTION. ALL MATERIAL AND EQUIPMENT SHALL BE UL LISTED AND SHALL BEAR THE UL INSPECTION LABEL WHEREVER STANDARDS HAVE BEEN ESTABLISHED AT THE COMPLETION OF THE WORK, SECURE CERTIFICATES OF APPROVAL FROM THE VARIOUS AUTHORITIES HAVING JURISDICTION AND DELIVER SAME TO THE DESIGN PROFESSIONAL.

C. ALL WORK SHALL COMPLY WITH NECA STANDARD OF INSTALLATION (PUBLISHED BY THE NATIONAL ELECTRICAL CONTRACTORS ASSOCIATION) AND NFPA 70 - NATIONAL ELECTRICAL CODE NEC-2017, AND ALL APPLICABLE SAFETY STANDARDS. COMPLY WITH APPLICABLE STANDARDS THE OWNER HAS DEVELOPED AS THEY PERTAIN TO THIS WORK.

D. "PROVIDE" MEANS TO SUPPLY, ERECT, INSTALL, TEST, AND CONNECT UP IN COMPLETE READINESS FOR REGULAR OPERATION. THE PARTICULAR WORK REFERRED TO "FURNISH" MEANS TO SUPPLY AND DELIVER TO THE JOB. "INSTALL" MEANS TO RECEIVE, INSTALL AND CONNECT UP IN COMPLETE READINESS FOR REGULAR OPERATION, THE PARTICULAR WORK REFERRED TO. "APPROVED EQUAL" MEANS AN EQUIPMENT OR MATERIAL WHICH, IN THE OPINION OF THE DESIGN PROFESSIONAL, IS EQUAL IN QUALITY, DURABILITY, APPEARANCE, STRENGTH, DESIGN, PERFORMANCE, PHYSICAL DIMENSIONS AND ARRANGEMENT TO THE EQUIPMENT OR MATERIAL SPECIFIED AND WILL FUNCTION ADEQUATELY IN ACCORDANCE WITH THE GENERAL DESIGN.

E. BEFORE SUBMITTING THE BID, VISIT EACH SITE WHERE WORK IS REQUIRED. SURVEY THE EXISTING CONDITIONS AND BECOME FAMILIAR WITH THE DIFFICULTIES WHICH WILL AFFECT THE EXECUTION AND COMPLETION OF THE WORK. INVESTIGATE THE NATURE AND LOCATION OF THE WORK, THE GENERAL AND LOCAL CONDITIONS, PARTICULARLY THOSE BEARING UPON THE WORK REQUIRED, TRANSPORTATION, DISPOSAL, HANDLING AND STORAGE OF MATERIALS, AVAILABILITY OF LABOR, WATER, ELECTRICAL POWER, ROADS AND PHYSICAL CONDITIONS AT THE SITE NEEDED FOR THE PROSECUTION OF THE WORK AND ALL OTHER MATTERS UPON WHICH INFORMATION IS REASONABLY OBTAINABLE AND WHICH CAN IN ANY WAY AFFECT THE WORK OR THE COST THEREOF UNDER THE CONTRACT.

F. PROCURE AND PAY FOR ALL CERTIFICATES, FEES, TESTS, INSPECTIONS, BONDS, DEPOSITS AND ESCROW ACCOUNTS REQUIRED FOR COMPLETE INSTALLATION OF THE WORK. GIVE ALL NOTICES REQUIRED BY LAW, ORDINANCES OR THE RULES AND REGULATIONS OF THE VARIOUS AUTHORITIES. COMPLY WITH ALL ORDERS OF THE, LOCAL DEPARTMENT OF BUILDINGS, COUNTY DEPARTMENTS OF HEALTH, FIRE MARSHAL, ETC. DELIVER TO THE OWNER'S REPRESENTATIVE ALL PERMITS AND CERTIFICATES OF APPROVAL ISSUED BY ALL TOWN, COUNTY AND STATE AGENCIES HAVING JURISDICTION IN CONNECTION WITH THIS WORK BEFORE THE CERTIFICATE FOR THE FINAL PAYMENT IS ISSUED.

G. NO WORK SHALL BE COVERED OVER UNTIL TEST HAVE BEEN PERFORMED AND THE AUTHORITIES HAVING JURISDICTION HAVE EXAMINED, INSPECTED AND APPROVED THE TESTS AND THE WORK. PROVIDE ALL CONTROLLED INSPECTIONS CONTROLLED REQUIRED BY THE REGULATIONS OF TOWN, COUNTY AND STATE. THE CONTROLLED INSPECTIONS SHALL BE MADE BY AN INSPECTOR MEETING THE PROFESSIONAL REQUIREMENTS SET FORTH BY STATE AND LOCAL LAWS AND SHALL BE CARRIED OUT IN ACCORDANCE WITH APPLICABLE TOWN, COUNTY AND STATE BUILDING CODES.

H. PROVIDE ALL NECESSARY INSURANCE, FREE OF EXTRA CHARGE AND AGREE TO INDEMNIFY AND SAVE HARMLESS THE PARTY CONTRACTING FOR SERVICES AGAINST LOSS OR EXPENSE.

I. THE DRAWINGS DO NOT UNDERTAKE TO ILLUSTRATE OR SET FORTH EVERY ITEM NECESSARY FOR THE WORK, AS IT IS ASSUMED THAT WITH THIS BID SUBMISSION, THE CONTRACTOR ACKNOWLEDGES THAT HE/SHE IS EXPERT IN THE SEVERAL LINES OF THE WORK AND IS CAPABLE OF INTERPRETING THEM. WHERE NO SPECIFIED MANUFACTURER OR QUALITY OF MATERIAL IS GIVEN, A FIRST-CLASS STANDARD ARTICLE AS APPROVED BY THE DESIGN PROFESSIONAL SHALL BE FURNISHED.

J. THE DRAWINGS ARE GENERALLY DIAGRAMMATIC AND ARE INTENDED TO CONVEY THE SCOPE OF WORK AND INDICATE GENERAL ARRANGEMENT OF EQUIPMENT, CONDUITS, PANELS, FIXTURES, ETC. THE LOCATION OF ALL ITEMS SHOWN THAT ARE NOT DEFINITELY FIXED BY DIMENSIONS ARE APPROXIMATE. THE EXACT LOCATIONS NECESSARY TO SECURE THE BEST CONDITIONS AND RESULTS MUST BE DETERMINED AT THE PROJECT AND SHALL HAVE THE APPROVAL OF THE DESIGN PROFESSIONAL BEFORE BEING INSTALLED . DO NOT SCALE DRAWINGS.

K. MAINTAIN AND PROTECT ALL EQUIPMENT, MATERIALS AND TOOLS FROM LOSS OR DAMAGE FROM ALL CAUSES UNTIL FINAL ACCEPTANCE BY THE OWNER.

L. IT IS REQUIRED THAT THE WORK INDICATED BE CARRIED OUT WITH A MINIMUM OF INTERFERENCE TO THE ESTABLISHED ROUTINE OF THE EXISTING BUILDINGS AND THAT ALL WORK BE PERFORMED WITHIN THE REQUIRED CONTRACT TIME.

M. THE OWNER'S REPRESENTATIVE SHALL BE NOTIFIED IN WRITING WHEN INTERRUPTION OF THE PRESENTLY MAINTAINED SERVICES, MECHANICAL, ELECTRICAL OR OTHERWISE IS REQUIRED. WRITTEN PERMISSION SHALL BE OBTAINED FROM THE OWNER'S REPRESENTATIVE PRIOR TO COMMENCING WITH THE SHUT-DOWN.

N. PROVIDE ALL NECESSARY TRAILERS, EXTENSION CORDS AND LAMPS TO PROVIDE TEMPORARY LIGHT AND POWER FOR THE PROPER EXECUTION OF ALL WORK.

O. PROVIDE ALL SCAFFOLDING, RIGGING, HOISTING AND SERVICES NECESSARY FOR ERECTION AND DELIVERY INTO THE PREMISES OF ANY EQUIPMENT AND APPARATUS FURNISHED. REMOVE SAME FROM PREMISES WHEN NO LONGER REQUIRED.

P. ALL WORK SHOWN ON THE DRAWINGS THAT IS NOT SPECIFICALLY INDICATED AS BEING EXISTING SHALL BE ASSUMED TO BE NEW.

Q. THE INSTALLATION OF ALL ELECTRICAL EQUIPMENT, LIGHTING, CONDUIT AND WIRING SHALL CONFORM TO THE LATEST EDITION IBC CODE EARTHQUAKE CONTROL SECTION 1622.

R. NO PART OF THESE DRAWINGS OR SPECIFICATIONS IS INTENDED TO ALLOW A VIOLATION OF PHYSICAL WORKING SPACE REQUIREMENTS AROUND ELECTRICAL EQUIPMENT.

S. VERIFY ALL UNDERGROUND UTILITIES WITH GROUND PENETRATING RADAR PRIOR TO ANY EXCAVATION.

T. USE "CALL BEFORE YOU DIG" SERVICE PRIOR TO ANY EXCAVATION.

U. CONTRACTOR TO PROVIDE TOILET FACILITIES DURING CONSTRUCTION.

V. THE PV ARRAY RACKING IS A PENETRATING GROUND MOUNT.

2. TESTS

A. WIRE AND CABLE: PERFORM INSULATION RESISTANCE AND CONTINUITY TESTS FOR ALL CONDUCTORS . THESE SHALL BE COMPLETED PRIOR TO ENERGIZING. INVESTIGATE AND TAKE REMEDIAL ACTION WHEN CONTINUITY VALUES EXCEED 1.0 OHM AND/OR INSULATION RESISTANCE TESTS LESS THAN 500 MEGAOHMS.

B. GROUND RESISTANCE TESTS: RESISTANCE OF THE ELECTRICAL SYSTEM GROUNDING SHALL BE TESTED TO GROUND AT THE MAIN GROUND ELECTRODE CONNECTION TO ENSURE THAT GROUND RESISTIVITY VALUES DO NOT EXCEED 25 OHMS. SUPPLEMENTAL GROUNDING ELECTRODES MAY NOT EXCEED 25 OHMS.

3. GROUNDING

A. COMPLY WITH REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION, NEC, UL AND IEEE STANDARDS. SIZE GROUND CONDUCTORS IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE EXCEPT WHERE LARGER SIZES ARE INDICATED. ALL GROUND CONDUCTORS SHALL BE NOT SMALLER THAN NO.12 AWG. PROVIDE A COMPLETE ASSEMBLY OF MATERIALS REQUIRED FOR GROUNDING AND BONDING.

B. GROUNDING BUSHINGS SHALL BE HOT-DIPPED GALVANIZED BODY, MOLDED PHENOLIC INSULATION, RATED AT150 DEG C. WITH COPPER-TINNED LAY-IN LUG. PROVIDE FOR ALL INCOMING AND OUTGOING CONDUITS TO THE DISTRIBUTION EQUIPMENT. USE STAINLESS STEEL SCREWS.

C. GROUND RODS SHALL BE STEEL CORE, COPPER JACKETED TYPE, HIGH STRENGTH STEEL ALLOY CORE WITH A MOLTEN-WELDED COVERING AND CONICAL POINT WITH CHAMFER EDGE AT TOP. DRIVING HEADS SHALL BE USED TO PROTECT TOPS OF RODS DURING DRIVING. MINIMUM SIZE ROD SHALL BE 3/4 INCH DIAMETER AND 8 FOOT LONG.

D. GROUND CONNECTORS FOR CONNECTING CABLE TO PIPE SHALL BE HIGH COPPER ALLOY OR BRONZE FITTINGS. PROVIDE AN OFFSET STEEL TONGUE FOR CONNECTIONS TO STEEL AND A DRILLED TONGUE FOR CONNECTION TO COPPER BUS BAR.

E. EXPOSED NON-CURRENT CARRYING METAL PARTS OF MODULE FRAMES, EQUIPMENT AND ENCLOSURES SHALL BE GROUNDED IN ACCORDANCE WITH NEC 250.134 AND 250.136(A). PHOTOVOLTAIC MODULES TO BE GROUNDED USING FACTORY GROUND POINT ONLY OR ANY METHOD APPROVED BY THE DESIGN PROFESSIONAL.

F. GROUND CONTINUITY SHALL BE MAINTAINED ACROSS CONDUIT/ENCLOSURE INTERFACE USING APPROVED JUMPER METHOD.

G. PARTS OF THE ELECTRICAL INSTALLATION TO BE GROUNDED AND BONDED SHALL INCLUDE BUT NOT BE LIMITED TO ELECTRICAL EQUIPMENT, RACEWAYS, CABLE TRAYS, BOXES, CABINETS AND OTHER NON-CURRENT CARRYING METAL PARTS OF THE WIRING SYSTEM, METAL CONDUIT, SWITCHGEAR, HOUSING AND NEUTRALS OF TRANSFORMERS, LIGHTING FIXTURES, PANEL DEVICES, FENCES AROUND ELECTRICAL EQUIPMENT AS APPLICABLE TO EQUIPMENT INSTALLED ON THIS PROJECT.

H. USE EXOTHERMIC WELDING FOR PERMANENTLY CONCEALED AND INACCESSIBLE CONNECTIONS TO FORM SOLID METAL JOINTS. MAKE ACCESSIBLE GROUND CONNECTIONS WITH MECHANICAL PRESSURE TYPE GROUND CONNECTIONS UNLESS OTHERWISE NOTED.

I. APPLY CORROSION-RESISTANT FINISH TO FILED-CONNECTIONS, BURIED METALLIC GROUNDING AND BONDING PRODUCTS, AND PLACES WHERE FACTORY APPLIED PROTECTIVE COATINGS HAVE BEEN DESTROYED, WHICH ARE SUBJECTED TO CORROSIVE ACTION.

4. CONDUITS AND FITTINGS

A. ABOVE GROUND: PVC SCH 80: ANSI-C80.3, THREADLESS, THIN WALL CONDUIT, MINIMUM 3/4 INCH. STEEL COMPRESSION CONNECTORS AND COUPLINGS. MECHANICAL SET SCREWS AND DIE-CAST TYPE COUPLINGS AND CONNECTORS SHALL NOT BE USED. USE METAL CONDUIT BODIES TO MATCH CONDUIT WITH COMPRESSION FITTINGS.

B. RACEWAYS IN CLOSE PROXIMITY OF OTHER TRADES, SHALL BE ARRANGED TO ALLOW FOR PROPER CLEARANCE FOR SERVICING, MAXIMUM HEADROOM, ETC. AND TO PRESENT A NEAT APPEARANCE. MAINTAIN ADEQUATE CLEARANCE BETWEEN CONDUIT AND PIPING WITH A MINIMUM OF 12 INCHES CLEARANCE BETWEEN CONDUIT AND SURFACES WITH TEMPERATURES EXCEEDING 104 DEGREES F.

C. JOIN RACEWAYS WITH FITTINGS DESIGNED AND APPROVED FOR THE PURPOSE AND MAKE JOINTS TIGHT. WHERE JOINTS CANNOT BE MADE TIGHT, USE BONDING JUMPERS TO PROVIDE ELECTRICAL CONTINUITY OF THE RACEWAY SYSTEM. MAKE RACEWAY TERMINATIONS TIGHT. WHERE SUBJECT TO VIBRATION OR DAMPNESS, USE INSULATION BUSHINGS TO PROTECT CONDUCTORS. CUT CONDUIT SQUARE USING SAW OR PIPE CUTTER AND DE-BURR CUT ENDS.

D. USE CONDUIT HUBS OR SEALING LOCKNUTS TO FASTEN CONDUIT TO BOXES IN DAMP AND WET LOCATIONS.

E. SUPPORT CONDUIT USING STEEL OR MALLEABLE IRON SINGLE OR DOUBLE HOLE CONDUIT STRAPS, LAY-IN ADJUSTABLE HANGERS, CLEVIS HANGERS AND SPLIT HANGERS AS REQUIRED. FASTEN CONDUIT SUPPORTS TO STRUCTURE AND SURFACES. DO NOT ATTACH CONDUIT SUPPORTS TO CEILING SUPPORT WIRES, OR ANY OTHER CONDUIT, PIPE, DUCT, ETC. DO NOT SUPPORT CONDUIT WITH WIRE OR PIPE HANGER STRAPS. ALL SUPPORTS SHALL CONFORM TO NEC 344.30.

F. BELOW GRADE: PVC SCHEDULE 80 OR PVC SCHEDULE 40. VERIFY WITH DESIGN ENGINEER PRIOR TO INSTALLATION. CONDUIT NEMA TC2 UL 651, WITH MATCHING FITTINGS BY SAME MANUFACTURER AS THE CONDUIT. COMPLYING WITH NEMA TC 3 AND UL 51413.

G. CONDUIT EXPANSION FITTINGS SHALL BE PROVIDED AS REQUIRED PER NEC 300.7 & 352.44.

H. ALL CONDUITS SHALL BE SEALED AT ALL ENDS.

I. EXPANSION FITTINGS SHALL BE UTILIZED ON MEDIUM VOLTAGE RUNS. MATERIAL TO BE CROUSE-HINDS SERIES XJGD COMBINATION EXPANSION/DEFLECTION COUPLINGS OR EQUAL.

5. WIRE AND CABLE

A. WIRE AND CABLE TYPES TO BE PER THE SCHEDULE.

B. PULL CONDUCTORS SIMULTANEOUSLY WITH UL LISTED PULLING COMPOUND OR LUBRICANT FOR BUILDING WIRE #4 AWG AND LARGER. USE PULLING MEANS INCLUDING, FISH TAPE, CABLE, ROPE, AND BASKET WEAVE WIRE/CABLE GRIPS WHICH WILL NOT DAMAGE CABLES OR RACEWAYS.

C. ALL WIRING SHALL BE FACTORY COLOR CODED. FOR MODIFICATIONS TO EXISTING SYSTEMS, MATCH COLOR CODING SCHEME ALREADY IN PLACE. OTHERWISE FEEDER AND BRANCH CIRCUIT CONDUCTORS SHALL BE COLOR CODED AS FOLLOWS:

240/120 VOLTS	PHASE	600/346 VOLTS
BLACK	A	BROWN
RED	B	ORANGE
BLUE	C	YELLOW
WHITE/GREY	NEUTRAL	WHITE
GREEN	GROUND	GREEN

D. ALL WIRING IN PANELS SHALL BE NEATLY TIE-WRAPPED AND TRAINED WITHIN GUTTER SPACES.

E. ALL HOME RUN WIRING ON DC SIDE TO BE BLACK AND GREEN/BARE FOR GROUND WIRES. DC WIRES SHALL BE TYPE PV WIRE MARKED SUNLIGHT RESISTANT AND 2000V POSITIVE CONDUCTORS TO BE BLACK WITH RED TAPE AT TERMINATION POINTS, OR BE BLACK WITH A RED STRIPE. TIE WRAPS SHALL BE WEATHER AND OIL/GAS RESISTANT. TIE WRAPS MUST BE NYLON COATED STEEL OR BE UV RESISTANT GUARANTEED FOR 25 YEARS. CB OUTPUTS MAY BE RED FOR POSITIVE.

F. COMPRESSION TYPE CONNECTIONS ARE TO BE USED AT ALL TIMES.

G. ALL ALUMINUM TERMINATIONS NEED ANTI-OXIDATION COMPOUND.

6. BOXES

A. GALVANIZED STEEL PULL BOXES: NEMA OS 1 WITH WELDED SEAMS. WHERE NECESSARY TO PROVIDE A RIGID ASSEMBLY, CONSTRUCT WITH INTERNAL STRUCTURAL STEEL BRACING, HOT-DIP GALVANIZED AFTER FABRICATION. COVER SHALL BE GASKETED, SCREWED OR BOLTED ON OF MATERIAL SAME AS BOX AND SHALL BE OF SIZE AND SHAPE TO SUIT APPLICATION. SIZES SHALL BE ADEQUATE TO MEET NEC VOLUME REQUIREMENTS, BUT IN NO CASE SMALLER THAN SIZES INDICATED. REMOVE SHARP EDGES WHERE THEY MAY COME IN CONTACT WITH WIRING OR PERSONNEL.

B. FOR INTERIOR DRY LOCATIONS USE GALVANIZED SHEET STEEL, NEMA TYPE 1. FOR LOCATIONS EXPOSED TO WEATHER OR DAMPNESS USE NEMA TYPE 3R BOXES, FULLY GASKETED. FOR WET LOCATIONS USE NEMA TYPE 4 BOXES WITH FULLY GASKETED WEATHERPROOF COVERS.

C. ELECTRICALLY GROUND ALL METAL BOXES TO CONDUIT SYSTEM. WHERE WIRING TO ITEMS INCLUDES A GROUNDING CONDUCTOR, ALSO PROVIDE A GROUNDING TERMINAL IN THE INTERIOR OF THE CABINET, BOX OR ENCLOSURE.

7. SUPPORTING DEVICES

A. PROVIDE MATERIALS, SIZES AND TYPES OF ANCHORS, FASTENERS AND SUPPORTS TO CARRY THE LOADS OF EQUIPMENT AND CONDUIT. CONSIDER THE WEIGHT OF WIRE IN CONDUIT WHEN SELECTING PRODUCTS. ATTACHMENTS SHALL BE RATED BY AN INDEPENDENT TESTING LABORATORY FOR THE RATED LOADING WITH A SAFETY FACTOR OF FIVE. USE VIBRATION AND SHOCK-RESISTANT FASTENERS FOR ATTACHMENTS TO CONCRETE SLABS. DO NOT USE SPRING STEEL CLIPS AND CLAMPS, POWDER-ACTUATED ANCHORS, TESTING FOR CONCRETE AND STEEL ATTACHMENTS SHALL BE IN ACCORDANCE WITH TEST CRITERIA ESTABLISHED BY UL SUPPORTS, SUPPORT HARDWARE, AND FASTENERS SHALL BE PROTECTED WITH ZINC COATING OR WITH TREATMENT OF EQUIVALENT CORROSION RESISTANCE. PRODUCTS FOR USE OUTDOORS SHALL BE HOT-DIP GALVANIZED. IN CORROSIVE AREAS, PRODUCTS SHALL BE TREATED WITH 15 MIL PVC COATING. ALL PRODUCTS SHALL BE TREATED AFTER CUTTING AND THREADING.

B. PROVIDE ANY SPECIAL WORK, INCLUDING BUT NOT LIMITED TO INTERMEDIATE STEEL CHANNELS, THAT MAY BE REQUIRED TO OVERCOME UNUSUAL CONDITIONS. DO NOT FASTEN TO ANY TRADES OTHER THAN THE STRUCTURAL SYSTEM WHERE SPECIFICALLY NOTED BELOW.

C. PROVIDE SUPPORTS FOR ALL RACEWAYS INCLUDING U-CHANNEL SYSTEMS, RISER CLAMPS, CONDUIT STRAPS, THREADED C-CLAMPS WITH RETAINERS AND WALL BRACKETS.

D. CONCRETE STRUCTURAL ELEMENTS AND MASONRY WALLS: USE CARBON STEEL WEDGE OR SLEEVE TYPE EXPANSION ANCHORS. COORDINATE ALL ANCHOR LOCATIONS IN POST-TENSIONED SLABS. HOLES CUT DEPTH OF MORE THAN 1-1/2 INCHES IN REINFORCED CONCRETE BEAMS OR MORE THAN 3/4 INCH IN REINFORCED CONCRETE SHALL NOT CUT THE MAIN REINFORCING BARS. FILL HOLES THAT ARE NOT USED.

E. HOLLOW MASONRY: USE STEEL SPRINGHEAD TYPE TOGGLE BOLTS AND HOLLOW WALL FASTENERS.

F. STEEL STRUCTURAL ELEMENTS: USE BEAM CLAMPS, STEEL FASTENERS AND CLEVIS HANGERS.

G. STEEL SURFACES: MACHINE SCREWS, WELDED THREADED STUDS, OR SPRING-TENSION CLAMPS.

H. PARTITIONS OF LIGHT STEEL CONSTRUCTION: SHEET METAL SCREWS.

I. WOOD ELEMENTS: USE WOOD SCREWS.

J. U-CHANNEL SYSTEMS: 12 GAUGE CARBON STEEL CHANNELS, WITH 9/16 X 7/8 INCH HOLES IN TOP SURFACE, 2 INCHES ON CENTER. PROVIDE FITTINGS AND ACCESSORIES THAT MATE AND MATCH WITH U-CHANNEL AND ARE OF THE SAME MANUFACTURER. PROVIDE ANGLES AND OTHER STANDARD STRUCTURAL SHAPES. CONNECT WITH WELDS OR MACHINE BOLTS TO FORM RIGID SUPPORTS.

K. A HANGER OR SUPPORT SHALL BE INSTALLED CLOSE TO THE POINT OF A CHANGE IN DIRECTION OF ALL CONDUIT RUNS, IN EITHER A HORIZONTAL OR VERTICAL PLANE.

L. UNDER NO CONDITIONS SHALL ANY HANGERS, SUPPORTS, BOLTS, OR RIVETS PIERCE DUCTS. THE PUNCHING OF HOLES IN STRUCTURAL SHAPES WILL NOT BE ALLOWED. "C" CLAMPS WILL NOT BE ACCEPTED AS A MEANS OF FASTENING EQUIPMENT OR CONDUITS TO THE BUILDING STRUCTURE, UNLESS THE HANGER SPACING IS REDUCED BY 33-1/3%

M. SPACING OF CONDUIT SUPPORTS AS PER NEC REQUIREMENTS.

N. CABLE TIES FOR WIRE AND CABLE: PROVIDE CLIPS FROM WILEY ELECTRONICS OR APPROVED EQUAL

O. TORQUE MARKS SHALL BE APPLIED TO ALL FASTENERS, SCREWS, ETC THAT REQUIRE AND HAVE BEEN PROPERLY TORQUED

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	145
MODULE QUANTITY	3,770
TOTAL DC SIZE	2,035,800 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	12
TOTAL AC SIZE	1,500,000 W
TILT	±55°
AZIMUTH	180°

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PROJECT INSTALLER

STATE OF NEW YORK · E. CASTILLO · 095344 · LICENSED PROFESSIONAL ENGINEER

Digitally signed by: Democrates E Castillo
Date: 2022.12.12 09:46:01

PROJECT NAME

MANLIUS NORTH
8107 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

GENERAL NOTES - SHEET 1

SHEET SIZE

ARCH D
24" X 36"

SHEET NUMBER

G-100

8. IDENTIFICATION

A. WIRE DESIGNATION MARKERS: PROVIDE FUNGUS RESISTANT, VINYL OR VINYL-CLOTH CONDUCTOR MARKERS IN OUTLET, JUNCTION AND PULL BOXES INDICATING WIRE USAGE (I.E SWITCH LEG, POWER FEED, TRAVELERS, ETC). THIS IS IN ADDITION TO WIRE CIRCUIT IDENTIFICATION REQUIREMENTS AND IS INTENDED TO CLARIFY WIRING WITHIN BOXES.

B. CIRCUIT IDENTIFICATION: PROVIDE WIRE MARKERS ON EACH CONDUCTOR IN PANELBOARD GUTTERS, PULL BOXES, OUTLET AND JUNCTION BOXES, AND AT LOAD CONNECTION. IDENTIFY BRANCH CIRCUIT OR FEEDER NUMBER FOR POWER AND LIGHTING CIRCUITS, AND WIRE DESIGNATION INDICATED ON EQUIPMENT MANUFACTURER'S SHOP DRAWING FOR CONTROL WIRING. MAINTAIN CONSISTENCY WITH SIMILAR PREVIOUSLY ESTABLISHED IDENTIFICATION SCHEMES FOR THE FACILITY'S ELECTRICAL INSTALLATIONS.

10. PHOTOVOLTAIC CIRCUIT DESIGN:

A. ALL THE DC CIRCUIT HAVE BEEN DESIGNED TO HAVE AN AVERAGE VOLTAGE DROP OF LESS THAN 1.5% AT STANDARD CONDITIONS.

B. PHOTOVOLTAIC ARRAY DC WIRE SIZING IS BASED ON REQUIREMENTS OF THE NEC SEC. 690.8. UNDERGROUND CONDUITS WILL BE POSITIONED IN ACCORDANCE TO NEC TABLE 300.50. THE AMPACITIES OF THE CONDUCTORS HAVE BEEN CALCULATED USING APPROPRIATE CORRECTION FACTORS FROM NEC TABLES 310.15(B)(16) AND 310.15(B)(2)(A).

C. ALL MATING STRING WIRING CONNECTORS SHALL BE OF THE SAME BRAND NAME. MC4 COMPATIBLE CONNECTORS SHALL NOT MATE WITH MC4 OR OTHER BRAND NAME MC4 COMPATIBLE CONNECTORS.

D. PHOTOVOLTAIC SOURCE CIRCUITS ARE PROTECTED BY OVER CURRENT PROTECTION IN ACCORDANCE WITH NEC SEC 690.9.

E. PHOTOVOLTAIC INVERTERS ARE PROVIDED WITH GROUND FAULT PROTECTION AND INTERRUPTION ABILITIES IN ACCORDANCE WITH NEC SEC. 690.5. 690.11 DOES NOT APPLY.

F. PHOTOVOLTAIC ARRAYS HAVE BEEN PROVIDED WITH DISCONNECTING MEANS IN ACCORDANCE WITH NEC SEC 690.13.

G. PHOTOVOLTAIC ARRAYS HAVE A COMMON DC AND AC GROUNDING ELECTRODE SYSTEM COMPLYING WITH THE REQUIREMENTS OF NEC SEC 690.47.

H. ALL PHOTOVOLTAIC EQUIPMENT INCLUDING PV MODULES, COMBINER BOXES, DISCONNECTS, INVERTERS, AC CIRCUIT BREAKERS WILL BE IDENTIFIED AND INFORMATION ON MAXIMUM SYSTEM VOLTAGE, CURRENT, OPERATING VOLTAGE AND CURRENT WILL BE NOTED WITH A WARNING LABEL ON A CLEARLY VISIBLE LOCATION.

I. ALL PHOTOVOLTAIC DC CONDUCTORS SHALL BE 2000V PV WIRE "SUNLIGHT RESISTANT" MARKED FOR EXPOSED WIRING. 2000V PV WIRE, DIRECT BURIAL FOR DIRECT BURIED WIRED, 2000V XLPE INSULATION /RHW-2 FOR ALL WIRING IN CONDUIT. A/C RATING OF AC EQUIPMENTS SHALL MATCH EXISTING EQUIPMENTS.

J. ALL DC EQUIPMENT SHALL BE RATED FOR A MAXIMUM SYSTEM VOLTAGE OF 2000V AND ALL TERMINALS WILL BE RATED FOR STRANDED WIRES AND HAVE A 90°C TEMPERATURE RATING.

K. CONDUITS HAVE BEEN SIZED TO MEET THE CONDUIT FILL REQUIREMENTS OF NEC. CHAPTER 9 TABLE 1.

11. CB LABELS, DC DISC LABELS, INV LABELS, WARNING LABELS:

A. ALL LABELS SHALL BE OF WEATHERPROOF AND DURABLE MATERIAL.

B. TEXT ON LABELS SHALL BE OF ARIAL FONT - IT SHALL BE LEGIBLE AND CLEAR.

C. THE TONE OF THE BACKGROUND COLOR SHALL BE BRIGHT TO ATTRACT ATTENTION. YELLOW (106) FOR CAUTION LABELS AND ORANGE (152) FOR WARNING LABELS.

D. LABELS SHALL BE SECURELY FASTENED TO SPECIFIED LOCATIONS BY USING A WEATHER PROOF AND DURABLE ADHESIVE SUITABLE FOR THE MATERIAL OF THE LABEL AND THE LOCATION.

E. THE LABELS SHALL BE POSTED AT THE LOCATIONS SPECIFIED. IF FOR REASONS OF REDUCED ACCESS OR SPACE, THE LABELS SHALL BE POSTED AT THE CLOSEST LOCATION THAT BEST SERVES THE INTENT OF THE LABEL. NOTIFY THE ENGINEER/SUPERVISOR IN SUCH A CASE BEFORE ATTACHING.

13. ABBREVIATIONS

A	AMPERES (AMP)
AC	ALTERNATING CURRENT
AF	AMP FRAME
AT	AMP TRIP
BIL	BASIC IMPULSE LEVEL
CB	COMBINER BOX
COM	COMMUNICATIONS
CT	CURRENT TRANSFORMER
CPT	CONTROL POWER TRANSFORMER
CU	COPPER
DC	DIRECT CURRENT
EMT	ELECTRICAL METALLIC TUBING
EPR	ETHYLENE PROPYLENE RUBBER
G/GND	GROUND
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GFD	GROUND FAULT PROTECTION
Inom	NOMINAL CURRENT (AMPS)
KCMIL	THOUSAND CIRCULAR MILS
KV	THOUSAND VOLT
KVA	THOUSAND VOLT-AMPS
KW	THOUSAND WATT
LFMC	LIQUID TIGHT FLEXIBLE METALLIC CONDUIT
MPPT	MAXIMUM POWER POINT
MV	MEDIUM VOLTAGE
NEC	NATIONAL ELECTRIC CODE
NESC	NATIONAL ELECTRIC SAFETY CODE
PCC	POINT OF COMMON COUPLING
PT	POTENTIAL (VOLTAGE) TRANSFORMER
PV	PHOTOVOLTAIC
PVC	POLYVINYL CHLORIDE
RMC	RIGID METAL CONDUIT
SA	SURGE ARRESTER
SCH	SCHEDULE
SPD	SURGE PROTECTION DEVICE
UL	UNDERWRITER'S LAB
V	VOLTAGE (VOLT)
Z	IMPEDANCE

SYMBOLS

	EXISTING GAS HEADER
	PAVED ROAD (NEW)
	GRAVEL ACCESS ROAD
	PV MODULE
AC	AC LINE (15kV) ABOVE GRADE CONDUIT ROUTE
DC	DC LINE (1000V)
GND	GROUND
OHW	OVERHEAD LINE
	UNDERGROUND CABLE ROUTE
	GROUND ROD/PLATE
CB# String Count	CB COMBINER BOX
	LOAD BREAK DISCONNECT SWITCH
OR	FUSED DISCONNECT SWITCH
AT AF	POWER CIRCUIT BREAKER (15kV)
	CIRCUIT BREAKER (≤ 1000V)
	VOLTAGE TRANSFORMER
	CURRENT TRANSFORMER
	GROUND
M	UTILITY METER
	MV LOAD BREAK ELBOW
	CABLE "LUG" TERMINATION
	TRANSFORMER
OR	FUSE
GFD	GROUND FAULT DEVICE
SPD	SURGE PROTECTION DEVICE
	OH CABLE TERMINATION "POT HEAD"
	SURGE ARRESTER "SA"

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	145
MODULE QUANTITY	3,770
TOTAL DC SIZE	2,035,800 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	12
TOTAL AC SIZE	1,500,000 W
TILT	±55°
AZIMUTH	180°

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PROJECT INSTALLER

STATE OF NEW YORK · E. CASTILLO · 095344 · LICENSED PROFESSIONAL ENGINEER

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Date: 2022.12.12 09:46:02

PROJECT NAME

MANLIUS NORTH
8107 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

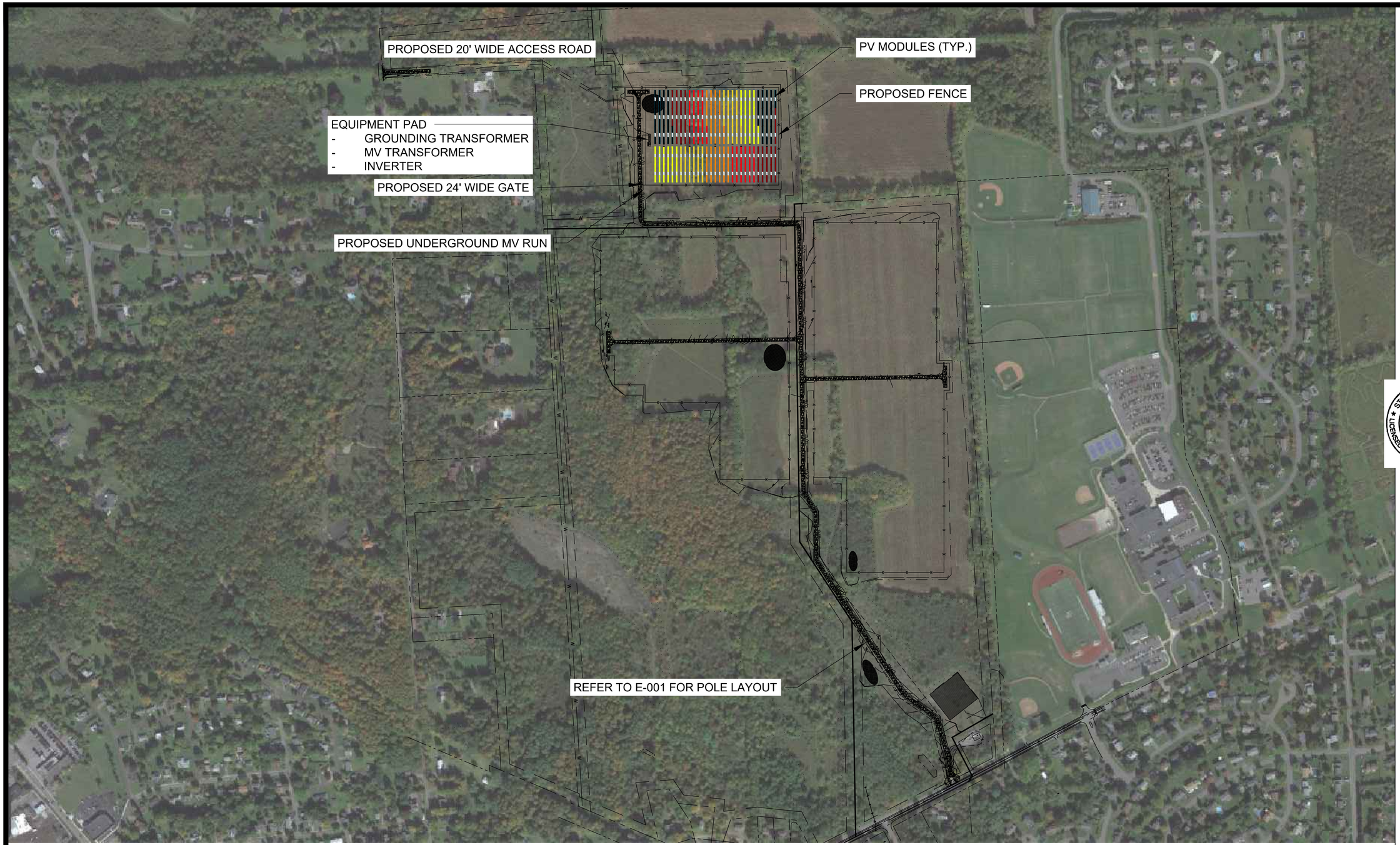
GENERAL NOTES
- SHEET 2

SHEET SIZE

ARCH D
24" X 36"

SHEET NUMBER

G-101





1 / C-001 OVERALL SITE PLAN

250' 125' 0' 250' 750'

SCALE: 1" = 250'

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
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PROJECT NAME

MANLIUS NORTH

8107 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

OVERALL SITE PLAN

SHEET SIZE

ARCH D
24" X 36"

SHEET NUMBER

C-001



N
NW
NE
W
GSS
E
SW
SE
S

1
E-001
POLE LAYOUT SITE PLAN

75' 37.5' 0' 75' 225'

SCALE: 1" = 75'

NOTES:
1. ALL POLES TO BE BETWEEN 5'-10' FROM ACCESS ROAD.

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	145
MODULE QUANTITY	3,770
TOTAL DC SIZE	2,035,800 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	12
TOTAL AC SIZE	1,500,000 W
TILT	±55°
AZIMUTH	180°

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PROJECT NAME

MANLIUS NORTH
8107 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

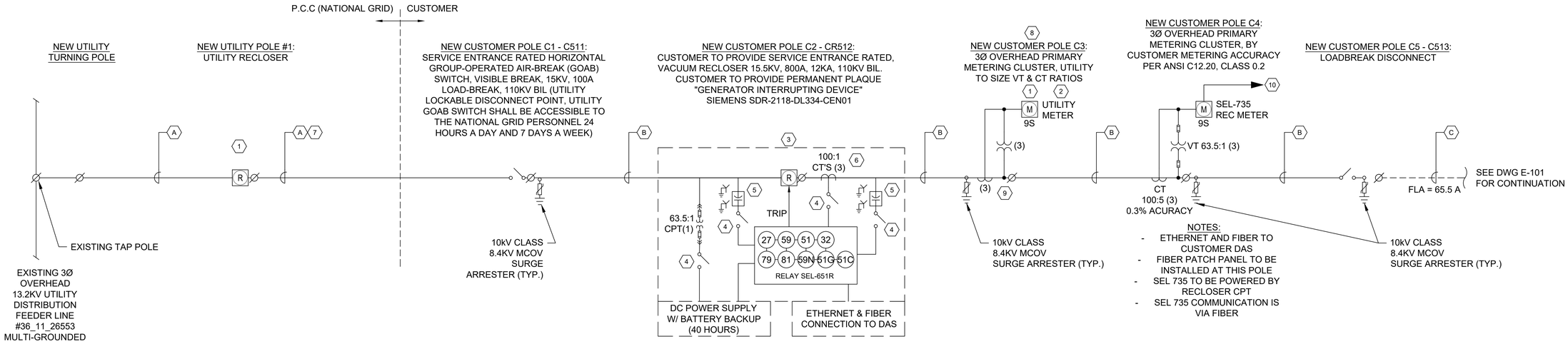
POLE LAYOUT SITE PLAN

SHEET SIZE

ARCH D
24" X 36"

SHEET NUMBER

E-001



PV SYSTEM SUMMARY

MODULE MODEL	BOVIET BVM7612M-540-H-HC-BG-DG
MODULE STC DC RATING	540 W
MODULES PER STRING	26
STRINGS COUNT	145
MODULES COUNT	3,770
TOTAL STC DC SIZE	2,035,800 W
TOTAL STC AC SIZE	1,500,000 W
INVERTER MODEL	(QTY 12) SUNGROW SG125HV
TRANSFORMER	(QTY 1) 1500KVA PAD MOUNTED

NOTES

#	DESCRIPTION
1	EQUIPMENT IS PROVIDED AND INSTALLED BY NATIONAL GRID.
2	CUSTOMER TO PROVIDE PHONE LINE TO UTILITY METER POLE FOR UTILITY ACCESS
3	RECLOSER TO BE PROVIDED WITH SEL 651R RELAY OR EQUAL. RELAY TO HAVE DC BATTERY OR UPS BACK-UP WITH A MINIMUM OF 40 HOURS OF BATTERY BACKUP. RELAY EQUIPPED WITH FAIL-SAFE PROTECTION AND TO BE TRIPPED WITHIN 2.0 SECONDS OF DC FAILURE. AC POWER TO DC SUPPLY LOCATED ON THE UTILITY SIDE OF THE RECLOSER
4	TEST SWITCHES SHALL BE INCLUDED AS SHOWN FOR O&M PURPOSES.
5	8793.75:1 CAPACITIVE (LEA) VOLTAGE SENSORS +/-2% ACCURACY. EFFECTIVE PTR 234.5:1
6	300:1 CT(3) C10 AT -/+1% ACCURACY AND 0.13VA BURDEN AT 1A
7	NEW 15 kV CLASS OVERHEAD 3Ø WIRE SUPPLIED AND INSTALLED BY CS ENERGY AT COMMON COUPLING.
8	THE ACCURACY OF THESE CURRENT TRANSFORMERS SHALL BE SUITABLE FOR THE METERS AND RELAYS SPECIFIED WITH THE NORMAL BURDENS OF THE VARIOUS DEVICES, AND NOT LESS THAN ANSI STANDARD ACCURACY CLASSIFICATION OF 0.3 WITH BURDENS B-0.1 AND B-0.5, AND 1.2 WITH BURDEN B-2.0. UTILITY TO PROCURE VTs/CTs FOR CUSTOMER TO INSTALL.
9	CS ENERGY TO PROVIDE AND INSTALL POLE ALONG WITH GROUNDING AND MISCELLANEOUS SUPPORT.
10	120 V AC CONDUCTOR FROM RECLOSER CPT TO CUSTOMER METER

WIRE TABLE

WIRE	DESCRIPTION
A	NEW 15KV CLASS OVERHEAD 3Ø WIRE BY NATIONAL GRID
B	3#1/0 AWG 6/1 ACSR (RAVEN), 3Ø, 3W CONDUCTORS WITH (1) #2 AWG AL, 600V NEUTRAL CONDUCTOR
C	3#2 AWG AL (MV-105), 15KV CLASS, EPR 100% INSULATED 3Ø CONDUCTORS WITH 1/3 CONCENTRIC NEUTRAL AND 1#6 AWG AL SUPPLY-SIDE BONDING JUMPER, EQUIPMENT GROUNDING CONDUCTOR, DIRECT BURIED

SEL-651R RELAY SETTINGS

ANSI #	PICKUP						DEFAULT TIME DELAY (SEC)	DEFAULT TIME DELAY (CYCLES)	DELAY PER TCC TIME DELAY AND TCC
	VPHASE, A, HZ								
	PERCENTAGE	ACTUAL							
59-1	110% ≤ V	8383	V L-N (PRI)		0.95	V (SEC)	1.95	117.00	-
59-2	V ≥ 120%	9145	V L-N (PRI)		1.04	V (SEC)	0.10	6.50	-
27-1	V ≤ 50%	3811	V L-N (PRI)		0.43	V (SEC)	1.05	63.00	-
27-2	V ≤ 88%	6707	V L-N (PRI)		0.76	V (SEC)	1.95	117.00	-
81U-1	56.5HZ						0.10	6.50	-
81U-2	58.5HZ						299.95	17997.00	-
81O-1	61.2HZ						299.95	17997.00	-
81O-2	62 HZ						0.10	6.50	-
51	109A PRIMARY (0.36A SECONDARY)						-	-	3.0 TD U1 CURVE
51P	273A PRIMARY (0.91A SECONDARY)						-	-	3.0 TD U1 CURVE
51G	68A PRIMARY (0.23A SECONDARY)						-	-	2.0 TD U4 CURVE
59N-1	86.52% OF VNOM	6593.71	V (PRI)		0.75	V (SEC)	0.05	3.00	-
59N-2	27.01% OF VNOM	2058.44	V (PRI)		0.23	V (SEC)	0.95	57.00	-
79	95% ≤VNOM≤105.8%	7239	≤VNOM(PRIMARY)≤		8063.04	V (PRI)	299.95	17997.00	-
		0.82	≤VNOM (SEC)≤		0.92	V (SEC)			
	59.3HZ<FREQUENCY<60.5								

a. SETTINGS TAKE INTO ACCOUNT AN ESTIMATED 3 CYCLE OPENING TIME ON THE RECLOSER.
b. FAIL-SAFE RELAY TO TRIP AT A MAXIMUM OF 2 SECONDS FOLLOWING LOSS OF DC POWER AND OR HARDWARE FAILURE.
c. AUTO-RESTORATION (79) FUNCTION WILL NOT CLOSE-IN UNTIL HEALTH VOLTAGE AND FREQUENCY HAVE BEEN MAINTAINED FOR A MINIMUM OF 5 MINUTES.

REFER TO NOTES
REFER TO WIRE TABLE

SYMBOL LEGEND

- LOAD-BREAK DISCONNECT
- TRANSFORMER, GWYE PRI: WYE SEC (TYPICAL)
- FUSE
- CIRCUIT BREAKER
- CURRENT TRANSFORMER
- VOLTAGE TRANSFORMER
- GROUND
- SURGE ARRESTER
- GROUP AIR (GOAB) SWITCH
- METER UNIT
- RECLOSER UNIT
- 600A DEAD BREAK ELBOWS
- POLE
- OVERHEAD / PRIMARY
- UNDERGROUND / PRIMARY
- ON GRADE / PRIMARY
- EQUIPMENT BORDER

SYSTEM INFORMATION

MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
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PROJECT NAME

MANLIUS NORTH
8107 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

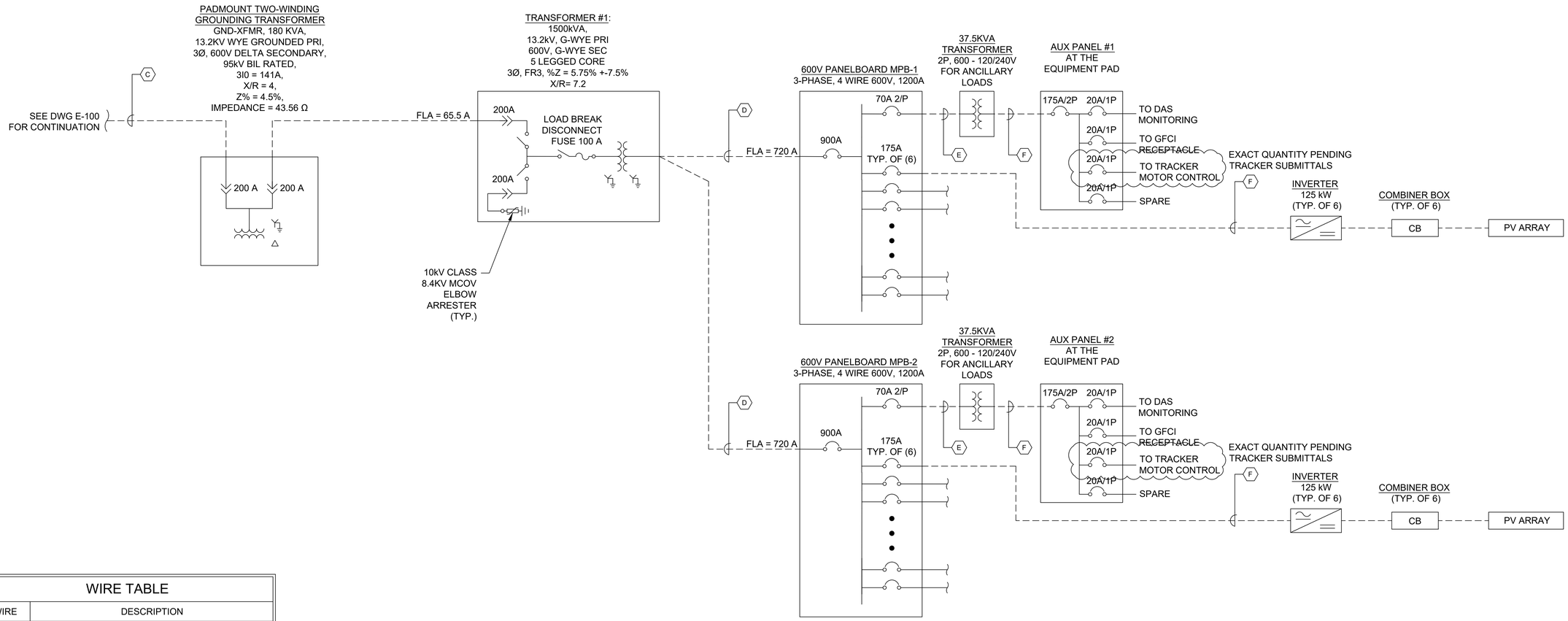
SINGLE LINE DIAGRAM - SHEET 1

SHEET SIZE

ARCH D
24" X 36"

SHEET NUMBER

E-100



WIRE TABLE	
WIRE	DESCRIPTION
C	3#2 AWG AL (MV-105), 15KV CLASS, EPR 100% INSULATED 3Ø CONDUCTORS WITH 1/3 CONCENTRIC NEUTRAL AND 1#6 AWG AL SUPPLY-SIDE BONDING JUMPER, EQUIPMENT GROUNDING CONDUCTOR, DIRECT BURIED
D	(3) SETS OF: 4#500 kCMIL AWG AL AND 1#4/0 kCMIL AL GND EACH IN 4" CONDUIT.
E	3#4 AWG CU AND 1#8 AWG CU GND IN 1-1/2" CONDUIT
F	3#4/0 kCMIL AL AND 1#4 AWG AL GND IN 2-1/2" CONDUIT

INVERTER SETTINGS			
DEVICE	PICKUP	V (L - N)	TIME DELAY
27-1	88%	304	2.00
27-2	50%	173	1.10
59-1	110%	381	2.00
59-2	120%	415	0.16
81U-1	58.5 HZ		300.00
81U-2	56.5 Hz		0.16
81O-1	61.2 Hz		300.00
81O-2	62.0 Hz		0.16
INVERTER SHALL RESUME OPERATING UPON 5 MINUTES OF STABLE GRID. 5 MINUTE PERIOD SHALL RESET FOR ANY ELEMENT TRIP			

SYSTEM INFORMATION	
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8107 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

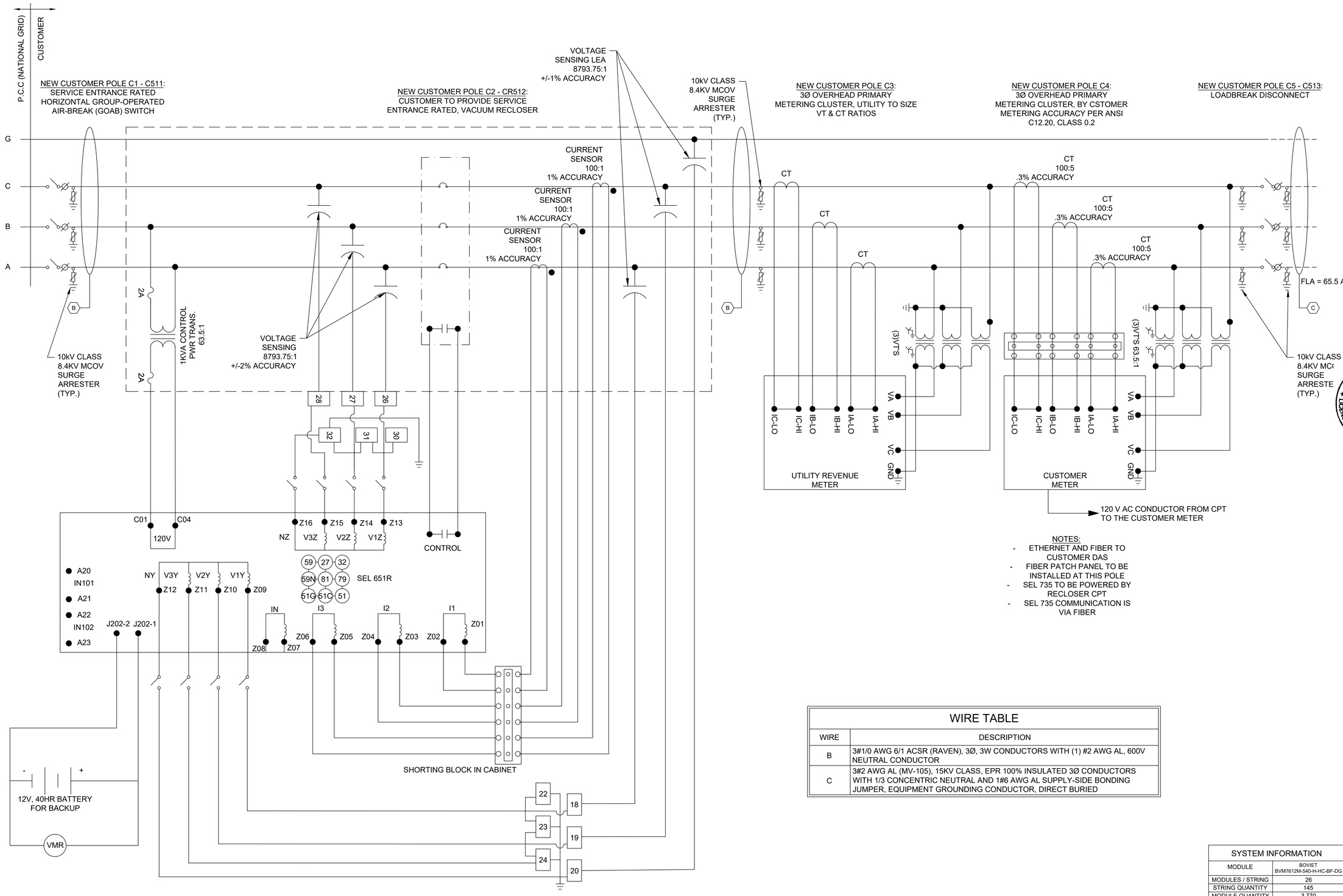
SINGLE LINE DIAGRAM - SHEET 2

SHEET SIZE

ARCH D
24" X 36"

SHEET NUMBER

E-101



NOTES:
- ETHERNET AND FIBER TO CUSTOMER DAS
- FIBER PATCH PANEL TO BE INSTALLED AT THIS POLE
- SEL 735 TO BE POWERED BY RECLOSER CPT
- SEL 735 COMMUNICATION IS VIA FIBER

WIRE TABLE

WIRE	DESCRIPTION
B	3#1/0 AWG 6/1 ACSR (RAVEN), 3Ø, 3W CONDUCTORS WITH (1) #2 AWG AL, 600V NEUTRAL CONDUCTOR
C	3#2 AWG AL (MV-105), 15KV CLASS, EPR 100% INSULATED 3Ø CONDUCTORS WITH 1/3 CONCENTRIC NEUTRAL AND 1#6 AWG AL SUPPLY-SIDE BONDING JUMPER, EQUIPMENT GROUNDING CONDUCTOR, DIRECT BURIED

SYSTEM INFORMATION

MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	145
MODULE QUANTITY	3,770
TOTAL DC SIZE	2,035,800 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	12
TOTAL AC SIZE	1,500,000 W
TILT	±55°
AZIMUTH	180°

Castillo Engineering
DESIGNING TOMORROW'S POWER®

CASTILLO ENGINEERING SERVICES, LLC
COA # 28345
620 N. WYMORE ROAD,
SUITE 250,
MAITLAND, FL 32751
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REVISIONS

DESCRIPTION	DATE	REV
IFP	12/09/2022	0
30% REVIEW	11/11/2022	A

PROJECT INSTALLER

STATE OF NEW YORK
E. E. CASTILLO
LICENSED PROFESSIONAL ENGINEER
095344

Digitally signed by: Democrates E Castillo
Date: 2022.12.12 09:46:05

PROJECT NAME

MANLIUS NORTH
8107 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

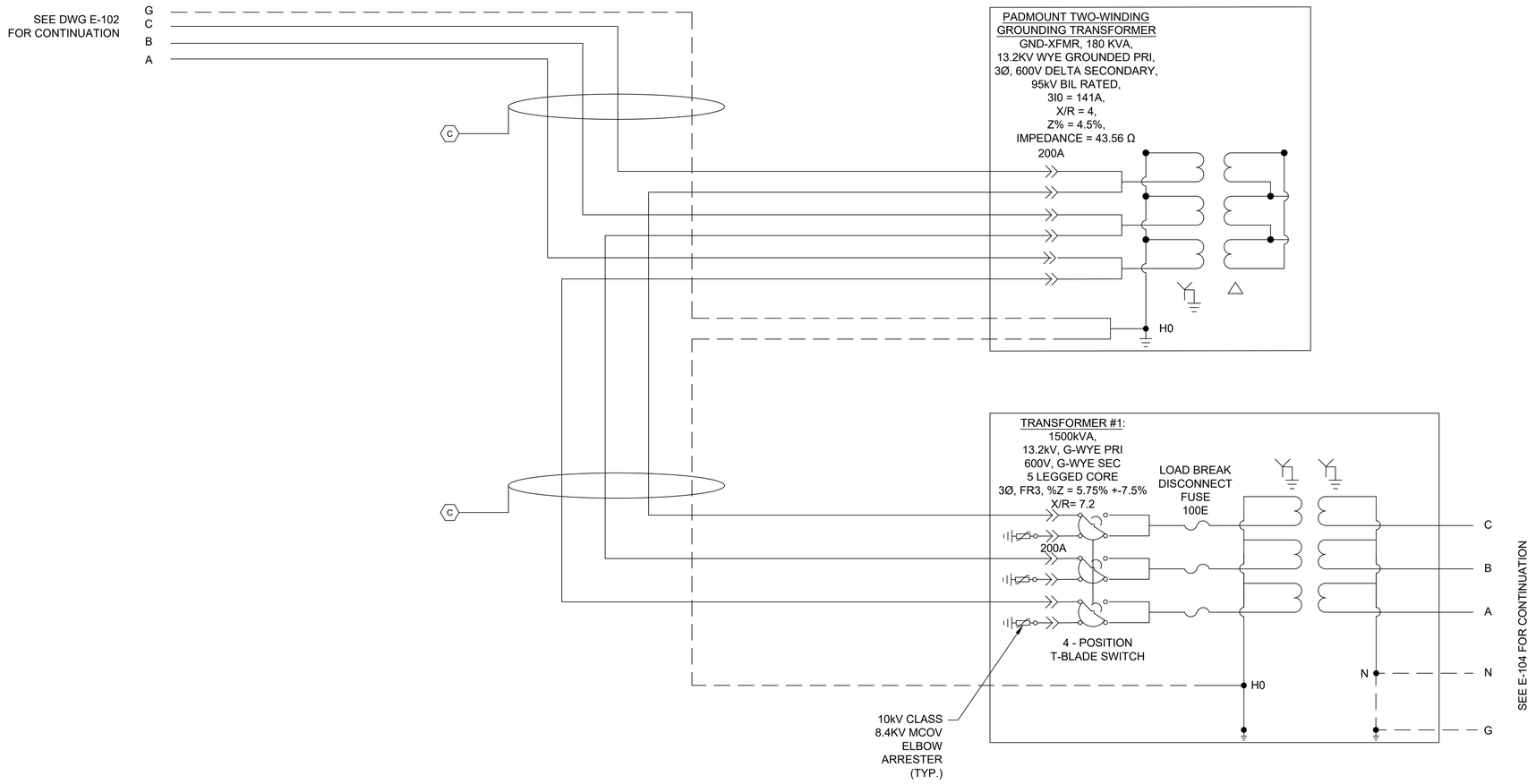
THREE LINE DIAGRAM - SHEET 1

SHEET SIZE

ARCH D
24" X 36"

SHEET NUMBER

E-102



WIRE TABLE	
WIRE	DESCRIPTION
C	3#2 AWG AL (MV-105), 15KV CLASS, EPR 100% INSULATED 3Ø CONDUCTORS WITH 1/3 CONCENTRIC NEUTRAL AND 1#6 AWG AL SUPPLY-SIDE BONDING JUMPER, EQUIPMENT GROUNDING CONDUCTOR, DIRECT BURIED

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	145
MODULE QUANTITY	3,770
TOTAL DC SIZE	2,035,800 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	12
TOTAL AC SIZE	1,500,000 W
TILT	±55°
AZIMUTH	180°

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Date: 2022.12.12 09:46:05

PROJECT NAME

MANLIUS NORTH

8107 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

THREE LINE DIAGRAM - SHEET 2

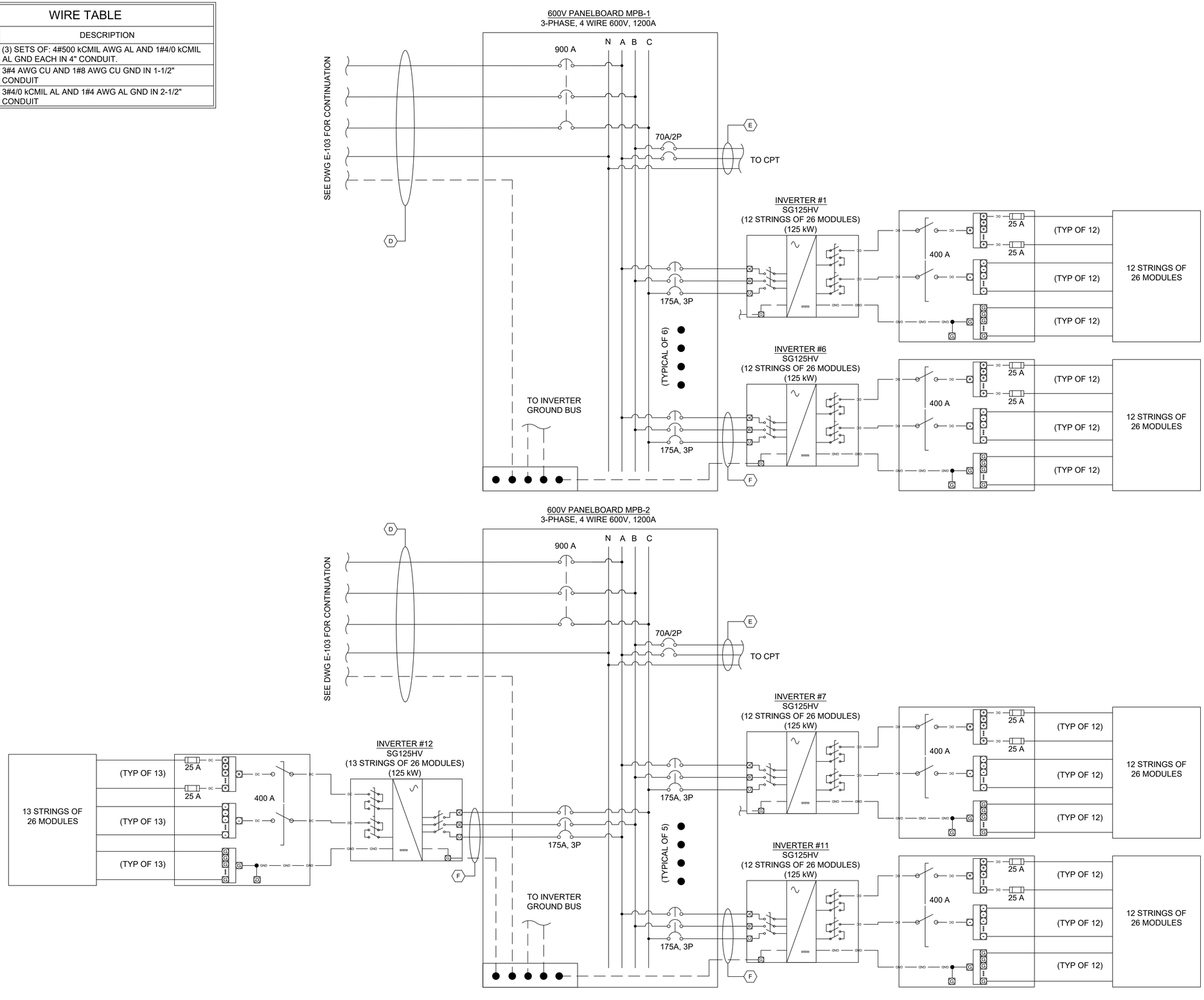
SHEET SIZE

ARCH D
24" X 36"

SHEET NUMBER

E-103

WIRE TABLE	
WIRE	DESCRIPTION
D	(3) SETS OF: 4#500 kCMIL AWG AL AND 1#4/0 kCMIL AL GND EACH IN 4" CONDUIT.
E	3#4 AWG CU AND 1#8 AWG CU GND IN 1-1/2" CONDUIT
F	3#4/0 kCMIL AL AND 1#4 AWG AL GND IN 2-1/2" CONDUIT



SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	145
MODULE QUANTITY	3,770
TOTAL DC SIZE	2,035,800 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	12
TOTAL AC SIZE	1,500,000 W
TILT	±55°
AZIMUTH	180°

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DESCRIPTION	DATE	REV
IFP	12/09/2022	0
30% REVIEW	11/11/2022	A

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PROJECT NAME

MANLIUS NORTH

8107 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

THREE LINE DIAGRAM - SHEET 3

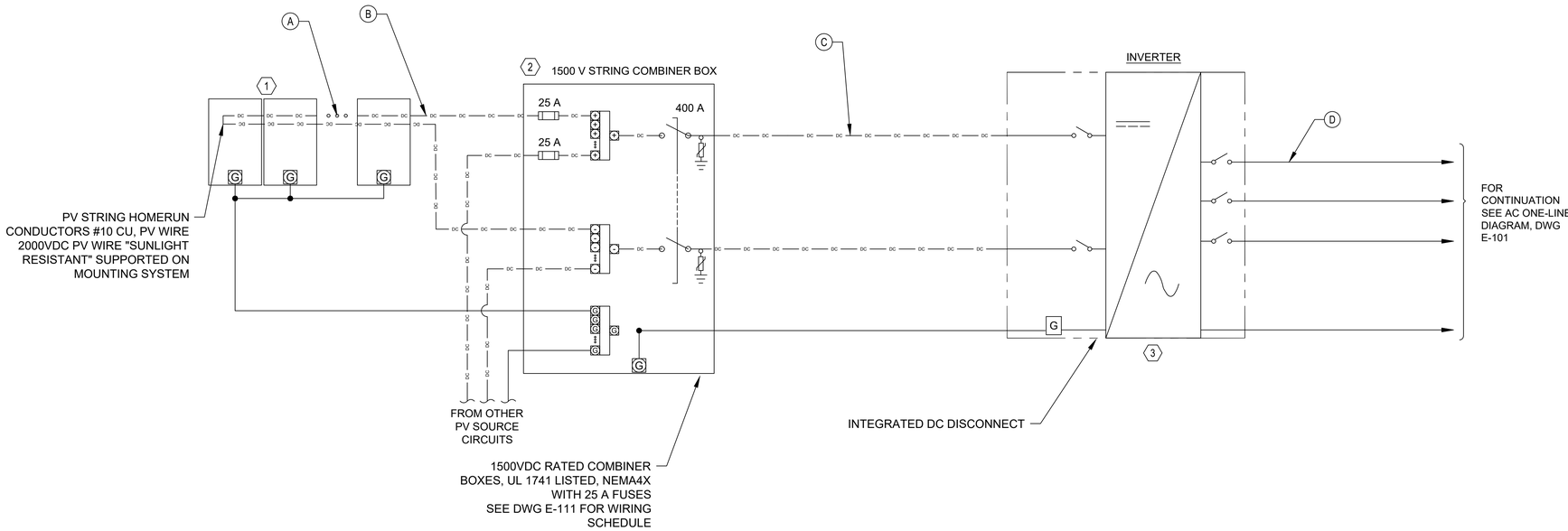
SHEET SIZE

ARCH D
24" X 36"

SHEET NUMBER

E-104

ELECTRICAL DC ONE-LINE DIAGRAM TYPICAL



EQUIPMENT SCHEDULE

ITEM	DESCRIPTION	QUANTITY	DETAIL	REMARKS
1	PV MODULES	3,770	26 x BOVIET BVM7612M-540-H-HC-BF-DG, 540W IN EACH STRING	
2	PV COMBINER BOX	12	1500 V, UL LISTED, 90°C, NEMA 4X, 400A FUSES, 13 INPUTS	
3	INVERTER	12	SUNGROW SG125HV	INTEGRATED AC AND DC DISCONNECT

CONDUCTOR AND CONDUIT SCHEDULE

ITEM	DESCRIPTION	CONDUCTOR	CONDUIT	PATH
A	PV MODULE CONDUCTORS	2 X #4mm, CU, 2KV PV WIRE	N/A - INTEGRATED BACK OF MODULE WIRING	N/A
B	PV STRING HOMERUN CONDUCTORS	2 X #10, CU, 2KV PV WIRE	N/A - HOME RUN WIRING	BACK OF RACKING
C	DC COMBINER BOX OUTPUT CONDUCTORS	REFER TO WIRING SCHEDULE, E-111		CONDUIT IN TRENCH
D	INVERTER OUTPUT CONDUCTORS	REFER TO AC SYSTEM VALUES, E-111		CONDUIT IN TRENCH

PV ARRAY SCHEDULE PER INVERTER

INVERTER REF	MODULE			NUM STRINGS	MODS / STRING	# OF MODULES	POWER (KW)	INVERTER TYPE
	MFG	MODEL	POWER (W)					
INVERTER 1-11	BOVIET	BVM7612M-540-H-HC-BF-DG	540	12	26	312	168.480	SUNGROW SG125HV
INVERTER 12	BOVIET	BVM7612M-540-H-HC-BF-DG	540	13	26	338	182.520	SUNGROW SG125HV

NOTE:

1. REFER TO E-111 FOR WIRING SCHEDULE OF DC COMBINER BOXES.

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	145
MODULE QUANTITY	3,770
TOTAL DC SIZE	2,035,800 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	12
TOTAL AC SIZE	1,500,000 W
TILT	±55°
AZIMUTH	180°

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IFP	12/09/2022	0
30% REVIEW	11/11/2022	A

PROJECT INSTALLER

STATE OF NEW YORK · E. CASTILLO · 095344 · LICENSED PROFESSIONAL ENGINEER

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E Castillo
Date: 2022.12.12 09:46:07

PROJECT NAME

MANLIUS NORTH
8107 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

DC ONE LINE DIAGRAM

SHEET SIZE

ARCH D
24" X 36"

SHEET NUMBER

E-110

DC SYSTEM VALUES

CB#	# OF STRINGS	# OF MODULES	KW @ BF-GAIN	CURRENT RATINGS				VOLTAGE RATING	COMBINER OUTPUT CONDUCTORS (CU)								STRING CONDUCTORS (CU)				TOTAL VOLTAGE DROP		OUTPUT RACEWAY CONDUIT (EMT)	EQUIP GND SIZE AWG (CU)
				Imp	Isc	NEC SIZING AMPS	OUTPUT / RECOMB. OCPD A	NOMINAL STRING (Vmp)	COND. C RATED AMPS (>NEC ADJ. AMPS)	SIZE AWG	NEC SIZING WITH TEMP AND FILL DERATE	# PER POLE	# PER CIRCUIT	OHMS/KFT	COMBINER OUTPUT CIRCUIT CIRCUIT LENGTH ONE WAY (FT)	COMBINER CIRCUIT VOLTAGE DROP (V)	FARTHEST STRING TO COMBINER (FT)	STRING COND SIZE AWG CU	MIN STRING FUSE A PER NEC	FARTHEST STRING CIRCUIT VOLTAGE DROP	TOTAL V DROP FROM FARTHEST STRING TO INVERTER (V)	% V DROP FROM FARTHEST STRING TO INVERTER		
CB-1	12	312	185.328	168.432	178.9	279.5	400	1102	350	350	336.0	1	2	0.0367	92	1.14	272	#10	25	9.3	10.4	0.94%	3" C	#3
CB-2	12	312	185.328	168.432	178.9	279.5	400	1102	350	350	336.0	1	2	0.0367	236	2.92	272	#10	25	9.3	12.2	1.11%	3" C	#3
CB-3	12	312	185.328	168.432	178.9	279.5	400	1102	350	350	336.0	1	2	0.0367	380	4.70	272	#10	25	9.3	14.0	1.27%	3" C	#3
CB-4	12	312	185.328	168.432	178.9	279.5	400	1102	350	350	336.0	1	2	0.0367	524	6.48	272	#10	25	9.3	15.7	1.43%	3" C	#3
CB-5	12	312	185.328	168.432	178.9	279.5	400	1102	350	350	336.0	1	2	0.0367	667	8.25	260	#10	25	8.9	17.1	1.55%	3" C	#3
CB-6	12	312	185.328	168.432	178.9	279.5	400	1102	350	350	336.0	1	2	0.0367	664	8.21	345	#10	25	11.8	20.0	1.81%	3" C	#3
CB-7	12	312	185.328	168.432	178.9	279.5	400	1102	350	350	336.0	1	2	0.0367	567	7.01	345	#10	25	11.8	18.8	1.70%	3" C	#3
CB-8	12	312	185.328	168.432	178.9	279.5	400	1102	350	350	336.0	1	2	0.0367	472	5.84	345	#10	25	11.8	17.6	1.60%	3" C	#3
CB-9	12	312	185.328	168.432	178.9	279.5	400	1102	350	350	336.0	1	2	0.0367	376	4.65	345	#10	25	11.8	16.4	1.49%	3" C	#3
CB-10	12	312	185.328	168.432	178.9	279.5	400	1102	350	350	336.0	1	2	0.0367	279	3.45	345	#10	25	11.8	15.2	1.38%	3" C	#3
CB-11	12	312	185.328	168.432	178.9	279.5	400	1102	350	350	336.0	1	2	0.0367	184	2.27	345	#10	25	11.8	14.0	1.27%	3" C	#3
CB-12	13	338	200.772	182.468	193.8	302.8	400	1102	350	350	336.0	1	2	0.0367	88	1.18	345	#10	25	11.8	12.9	1.17%	3" C	#3
TOTAL	145	3770	2239.38	2035.22	2161.2	3376.9																		

WORST CASE DC VOLTAGE DROP:	1.81%
AVERGE WORST CASE DC VOLTAGE DROP:	1.39%

DESIGN TEMPERATURE COEFFICIENTS	
ASHRAE HIGH TEMP	31 °C
ASHRAE LOW TEMP	-24 °C

Boviet 594 W COEFFICIENT	
PMAX	-0.35% / °C
VOC	-0.285% / °C
ISC	0.05% / °C

Boviet 540 W MODULE PARAMETERS	
VOC	49.89 VDC
VMP	42.4 VDC
ISC	14.905 ADC
IMPP	12.76 ADC
TOLERANCE	0/+3%

Boviet 594 W MODULE PARAMETERS (BIFACIAL)	
VOC	49.89 VDC
VMP	42.4 VDC
ISC	14.905 ADC
IMPP	14.036 ADC
TOLERANCE	0/+3%

STRING OF 26X594W	
WITH NEC 690.7 & 690.8	
VMAX	1478 VDC
VNOM	1178 VDC
ISC	17.55 ADC
IMPP	17.55 ADC
WITH NEC 690.9	
STRING FUSE	21.93 ADC -> 25.00 ADC
WIRE	#10 PV WIRE

COMBINER WITH 26X25A FUSES USING 594W	
WITH NEC 690.7 & 690.8	
VMAX	1478 VDC
VNOM	1178 VDC
ISC	223.575 ADC
IMPP	210.54 ADC
WITH NEC 690.9	
DC DISCO RATING	400 ADC

AC SYSTEM VALUES

EQUIPMENT (FROM)	EQUIPMENT (TO)	AC VOLTAGE (V)	MAX OUTPUT CURRENT (A)	DISTANCE TO CORRESPONDING EQUIPMENT (FT)	OCPD (A)	CONDUCTOR SIZE	WIRE TYPE	TERMINATION RATINGS	# PER POLE	# OF WIRES PER SET	TEMPERATURE DERATE	BUNDLING DERATE	CUM. RATED AMPS (NEC ADJ AMPS)	CUM. RATED AMPS (NEC SIZING WITH TEMP AND FILL ADJUST)	CUM. RATED AMPS (OCPD RATING)	EGC	RESISTIVITY (OHMS/1000 FT)	AC VOLTAGE DROP (V)	% VOLTAGE DROP	CONDUIT TYPE	CONDUIT SIZE
INVERTERS TO 600 V PANELBOARD																					
INV #1-6	PANEL MPB-1	600	120	80	150	4/0	AL THWN-2	75	1	3	0.96	1	180	172.8	200	#4	0.1	1.92	0.32%	PVC SCH 80	3
INV #7-12	PANEL MPB-2	600	120	80	150	4/0	AL THWN-2	75	1	3	0.96	1	180	172.8	200	#4	0.1	1.92	0.32%	PVC SCH 80	3
PANELBOARD TO TRANSFORMER																					
PANEL MPB-1	TRANSFORMER #1	600	720	80	900	500	AL THWN-2	75	3	4	0.96	1	930	892.8	900	4/0	0.0424	1.62816	0.27%	PVC SCH 80	4
PANEL MPB-2	TRANSFORMER #1	600	720	80	900	500	AL THWN-2	75	3	4	0.96	1	930	892.8	900	4/0	0.0424	1.62816	0.27%	PVC SCH 80	4
TRANSFORMER #1 TO GROUNDING TRANSFORMER																					
TRANSFORMER #1	GND TRANSFORMER	13200	65.5	20	90	#2	AL MV-105	105	1	3	0.96	1	130	124.8	150	#4	0.319	0.83578	0.01%	PVC SCH 80	6
GROUNDING TRANSFORMER TO RISER POLE																					
GND TRANSFORMER	RISER POLE	13200	65.5	3600	90	#2	AL MV-105	105	1	3	0.96	1	130	124.8	150	#4	0.319	150.4404	1.14%	DIRECT BURIED	-
																	VOLTAGE DROP		1.74%		

NOTES:

1. UP TO 10 SETS OF STRING HOMERUN CONDUCTORS MAY BE ALLOCATED TO A SINGLE 2" CONDUIT USING #10 CU PV WIRE.
   (CONDUCTOR AMPS @ 90°C)*((DERATE PER TABLE 310.15(B)(2)(a))*((DERATE PER TABLE 310.15(B)(3)(a))
   40 A * 0.96 * .7 = 26.32 A = I_{NOM}
2. COMBINER BOX TERMINATIONS AND INVERTER RECOMBINER BOX TERMINATIONS ARE RATED FOR 90°C.
3. CONDUCTORS TO BE EQUIPPED WITH THERMOSET INSULATION AND SUNLIGHT RESISTANT. BLACK WITH RED STRIPES FOR +, BLACK FOR -.
4. WIRE SIZES ARE THE MINIMUM REQUIRED FOR VOLTAGE DROP PER NEC AND CONTRACT REQUIREMENTS.
5. ALL DC WIRES MUST BE RATED FOR 2000V.
6. CONTRACTOR RESPONSIBLE FOR TOTAL WIRE LENGTHS. THE WIRE LENGTHS ON THIS SHEET ARE FOR GUIDANCE ONLY.

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	145
MODULE QUANTITY	3,770
TOTAL DC SIZE	2,035,800 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	12
TOTAL AC SIZE	1,500,000 W
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AZIMUTH	180°

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30% REVIEW	11/11/2022	A

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STATE OF NEW YORK · E. E. CASTILLO · 095344 · LICENSED PROFESSIONAL ENGINEER

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Date: 2022.12.12 09:46:07

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MANLIUS NORTH
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MANLIUS, NY 13104

SHEET NAME

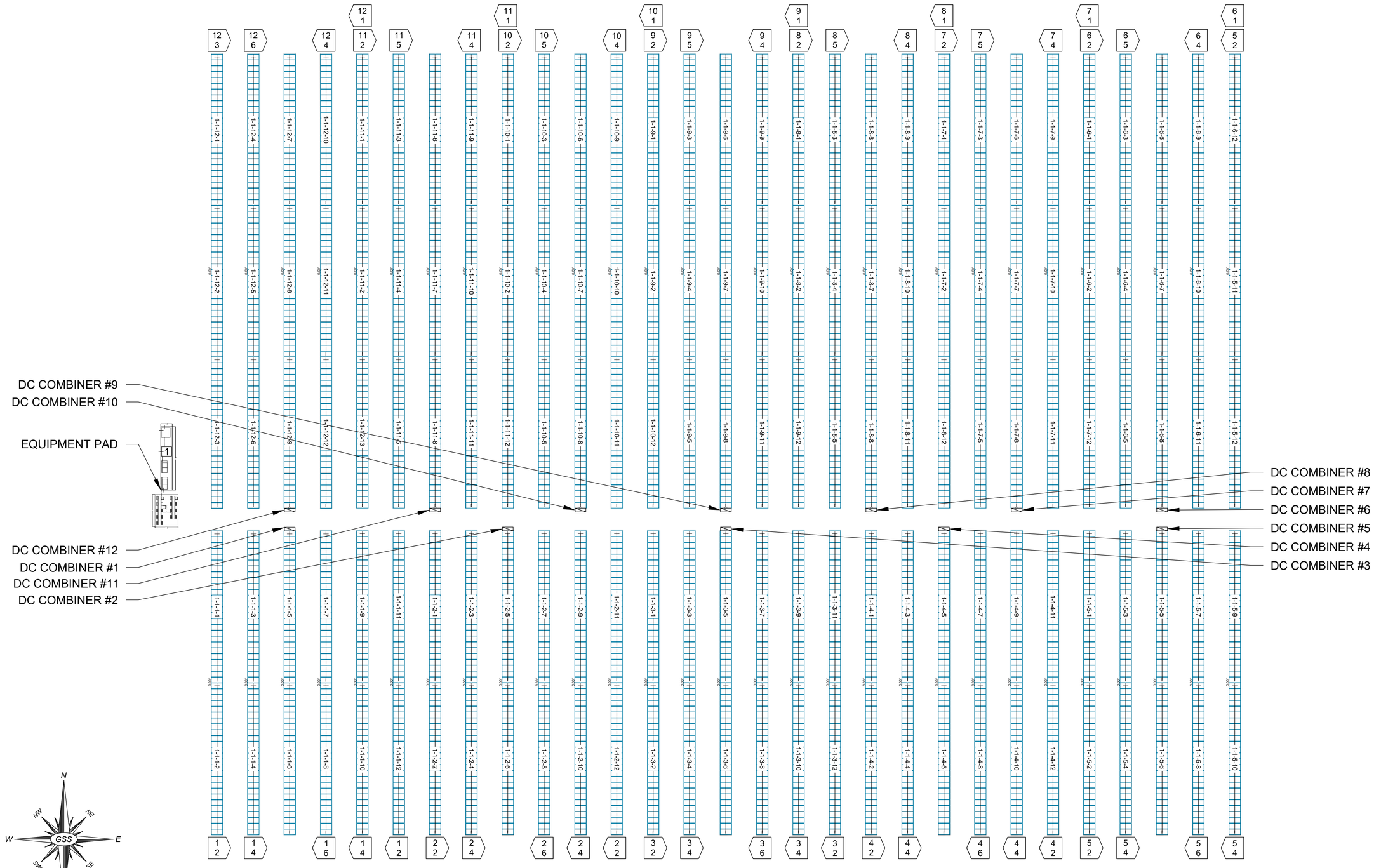
AC & DC SYSTEM VALUES

SHEET SIZE

ARCH D
24" X 36"

SHEET NUMBER

E-111



1 / E-200 OVERALL DC FEEDER PLAN

30' 15' 0' 30' 90'

SCALE: 1" = 30'

LEGEND

X1 / X2

X1 / X2

1. THE NUMBER (X1) REPRESENTS "DC COMBINER"
2. THE NUMBER (X2) REPRESENTS THE TOTAL RUNNING STRING COUNT FOR THEIR RESPECTIVE DC COMBINER (X1)
3. THE ORIENTATION OF THE ARROW SHOWS THE ORIENTATION OF STRING ON THE CAB SYSTEM TOWARDS THE DC COMBINER.
4. DC RUN TO TRANSITION TO AND FROM CAB SYSTEM WHEN CROSSING ROADWAYS.

SYSTEM INFORMATION	
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STRING QUANTITY	145
MODULE QUANTITY	3,770
TOTAL DC SIZE	2,035,800 W
INVERTER	SUNGROW SG125HV
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Date: 2022.12.12 09:46:08

PROJECT NAME

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8107 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

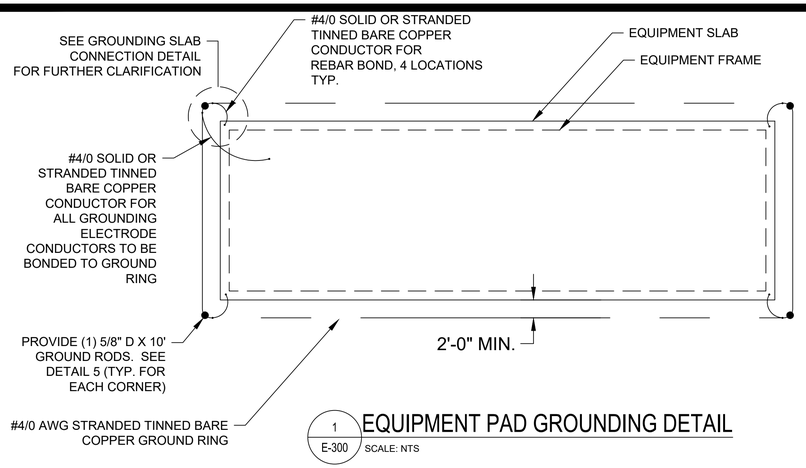
OVERALL DC FEEDER PLAN

SHEET SIZE

ARCH D
24" X 36"

SHEET NUMBER

E-200

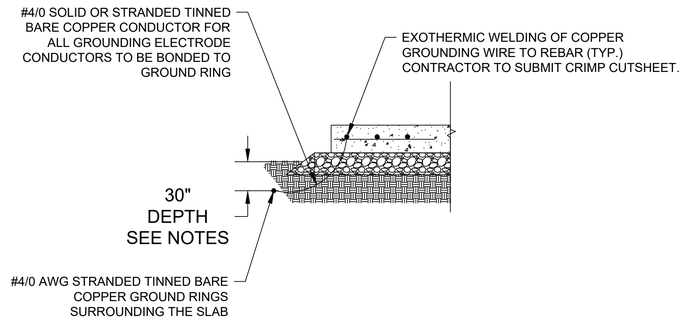


1 E-300 EQUIPMENT PAD GROUNDING DETAIL

SCALE: NTS

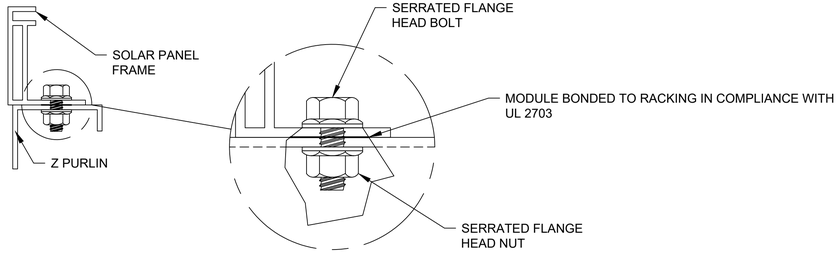
NOTES:

1. GROUNDING RESISTANCE IS TO BE 25 OHMS OR LESS.
2. IF GROUNDING RESISTANCE VALUES CANNOT BE OBTAINED, INSTALL ADDITIONAL GROUNDING ELECTRODES AND RE-TEST.
3. ONE TESTING WELL TO BE INSTALLED.



2 E-300 EQUIPMENT PAD GROUNDING SLAB CONNECTION DETAIL

SCALE: NTS

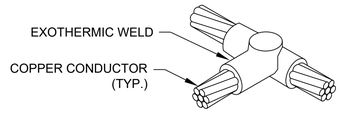


NOTES:

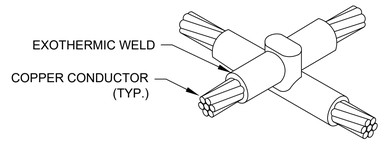
1. BE SURE TO FOLLOW THE MODULE AND RACKING MANUFACTURER'S INSTALLATION MANUAL.
2. MODULES ARE BONDED TO THE PURLIN ON RACKING SYSTEM BY UL 2703. BONDING PATH CONTINUES FROM PURLIN TO COMBINER BOX.

3 E-300 MODULE BONDING/GROUNDING

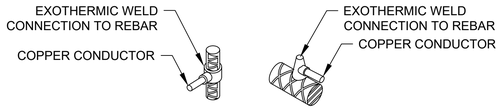
SCALE: NTS



3-WAY EXOTHERMIC WELD CONNECTION DETAIL



4-WAY EXOTHERMIC WELD CONNECTION DETAIL



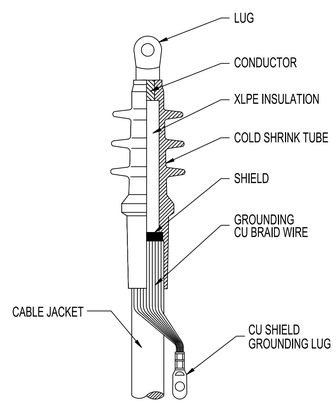
NOTE:

1. REBAR SHALL BE INSTALLED IN A MINIMUM OF ONE CONTINUOUS 20FT LENGTH PER NEC 250.52(A)(3).

GROUND WIRE TO REBAR EXOTHERMIC WELD CONNECTION DETAIL

4 E-300 EXOTHERMIC WELD CONNECTIONS

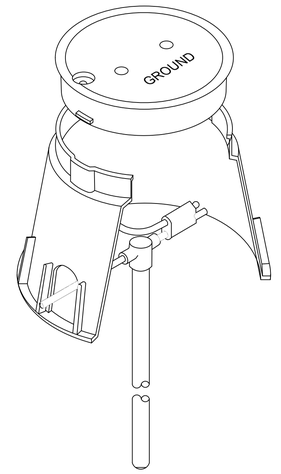
SCALE: NTS



NOTE: SHIELD SHALL BE GROUNDED IN BOTH ENDS OF MV CABLE

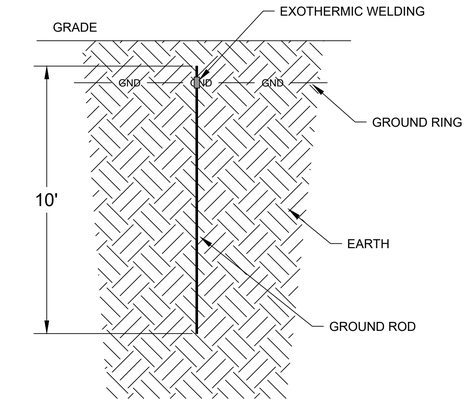
5 E-300 MV CABLE TERMINAL DETAIL

SCALE: NTS



6 E-300 GROUND TEST WELL

SCALE: NTS

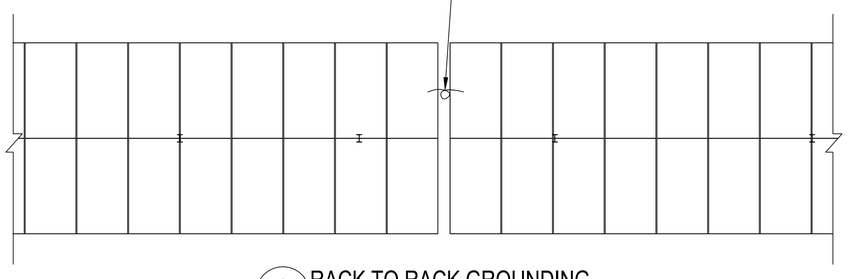


NOTES:

1. GROUNDING RESISTANCE AROUND THE SWITCHGEAR AND EQUIPMENT PADS TO BE LESS THAN 25 OHMS.
2. IF GROUNDING RESISTANCE VALUES CANNOT BE OBTAINED, INSTALL ADDITIONAL GROUNDING ELECTRODES AND RE-TEST.

7 E-300 GROUND ROD INSTALLATION

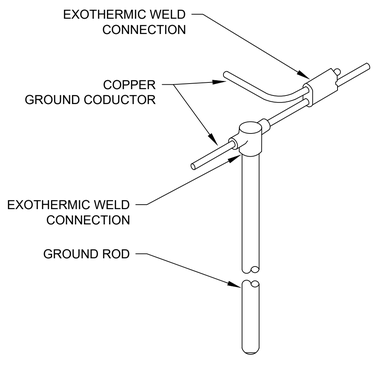
SCALE: NTS



- BONDING JUMPERS TO BE USED TO CONNECT RACKS TOGETHER IN THE E-W DIRECTION.
- USE WEEB-BNDJMP OR EQUIVALENT APPROVED BY THE ENGINEER FOR AREAS WHERE THERE IS SPACE BETWEEN ADJACENT RACKS.
- BE SURE TO FOLLOW THE MODULE AND RACKING MANUFACTURER'S INSTALLATION MANUAL.
- SLACK TO BE INSTALLED ON JUMPERS.
- GROUND LUGS WITH #6 CU WIRE IS ALSO ACCEPTABLE

8 E-300 RACK TO RACK GROUNDING

SCALE: NTS



9 E-300 GROUND ROD DETAIL

SCALE: NTS

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	145
MODULE QUANTITY	3,770
TOTAL DC SIZE	2,035,800 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	12
TOTAL AC SIZE	1,500,000 W
TILT	±55°
AZIMUTH	180°

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PROJECT INSTALLER

STATE OF NEW YORK · E. E. CASTILLO · 095344 · LICENSED PROFESSIONAL ENGINEER

Digitally signed by: with Democrates E Castillo Date: 2022.12.12 09:46:09

PROJECT NAME

MANLIUS NORTH

8107 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

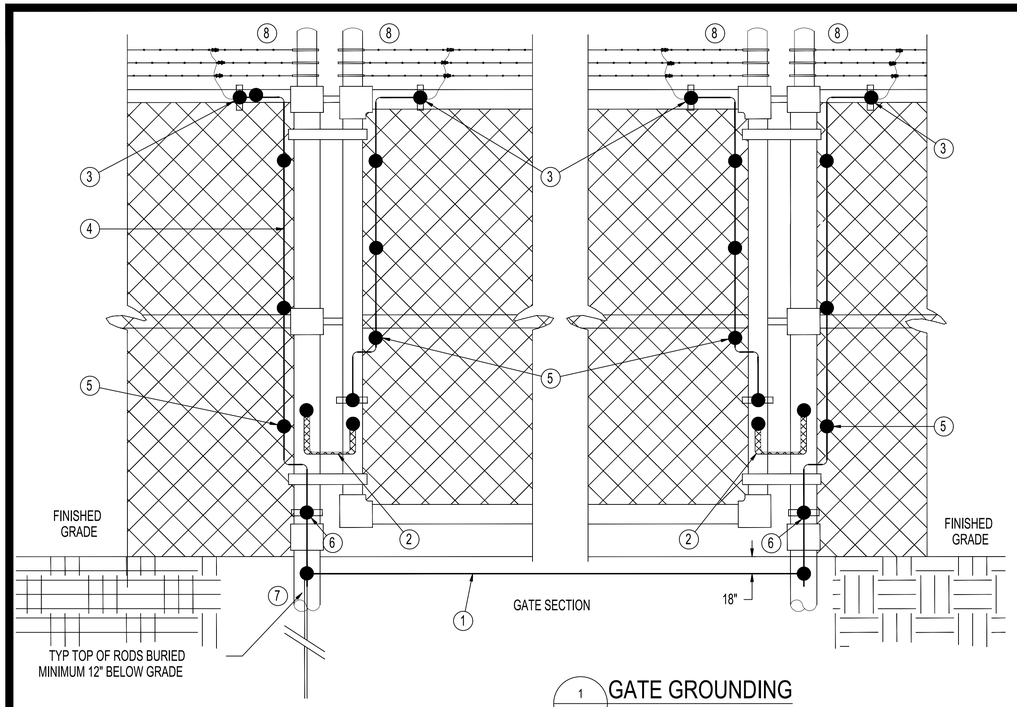
GROUNDING DETAILS - SHEET 1

SHEET SIZE

ARCH D
24" X 36"

SHEET NUMBER

E-300



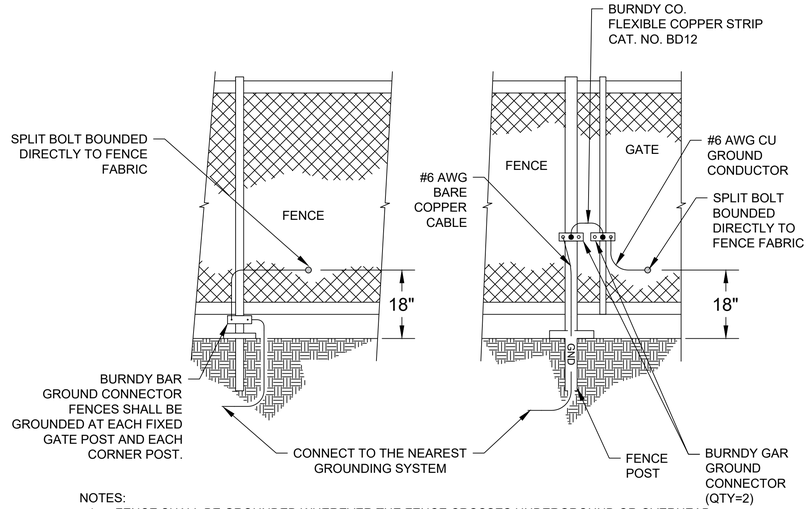
1 E-301 GATE GROUNDING
SCALE: NTS

GENERAL NOTES

1. IF BARBED WIRE STRANDS ARE USED ABOVE THE FENCE FABRIC, THE BARBED WIRE STRANDS SHALL BE BONDED TO THE GROUNDING CONDUCTOR, JUMPER OR FENCE.
2. EXPOSED FENCE GEC'S AND CLAMPS SHALL BE INSTALLED WITHIN FENCE PERIMETER.
3. FENCES SHALL BE GROUNDED AT EACH SIDE OF A GATE OR OPENING. GROUND ALL GATE POSTS.
4. RODS AND GEC SHALL BE BURIED 24" OUTSIDE FENCE PERIMETER.
5. WHERE MEDIUM VOLTAGE AND ABOVE OVERHEAD CROSSES THE FENCES, THE FENCE SHALL BE GROUNDED WITHIN 50' OF THE EASEMENT CROSSING ON EITHER SIDE. IF THERE IS NO EASEMENT, THE FENCE SHALL BE GROUNDED WITHIN 50' OF THE CROSSING ON EITHER SIDE. GROUND RODS SHALL BE PLACED EVERY 50' INSIDE THE GROUNDED SECTION. FENCES SHALL CONTAIN AN ISOLATION JOINT AT THE END OF THE GROUNDED SECTION.
6. GROUND GRID EXTENDS BEYOND GATE SWING.

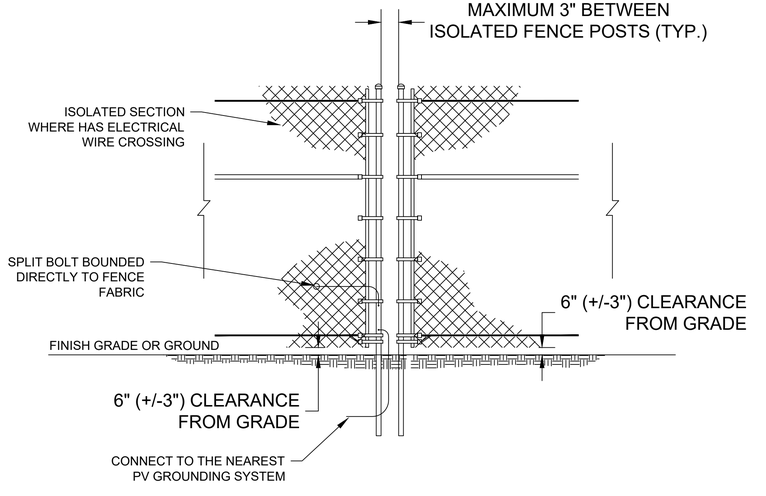
KEYED NOTES

1. GATES AND GROUND RODS SHALL BE BONDED TOGETHER WITH #2 BARE COPPER.
2. FLEXIBLE GROUND WITH COMPRESSION LUGS TO PIPE CLAMPS, FENCE GATE ASSEMBLY AS MANUFACTURED BY HARGER, OR EQUAL. BRAID WITH COMPATIBLE PIPE CLAMPS BY BURNDY ALSO ACCEPTABLE.
3. PROVIDE POST CLAMP TO TOP RAIL.
4. #6 BARE COPPER WIRE, TYPICAL UNLESS NOTED OTHERWISE.
5. PROVIDE FENCE FABRIC GROUNDING CLAMPS SUCH AS MODEL "FGC" AS MANUFACTURED BY HARGER, OR EQUAL.
6. PROVIDE FENCE POST CLAMP BY ERICO, HARGER, OR EQUAL.
7. GROUND ROD BONDED TO BARE COPPER WITH EXOTHERMIC WELD OR IRREVERSIBLE CRIMP STYLE.
8. PROVIDE BRONZE SPLIT BOLT CONNECTIONS TO BARBED WIRE.

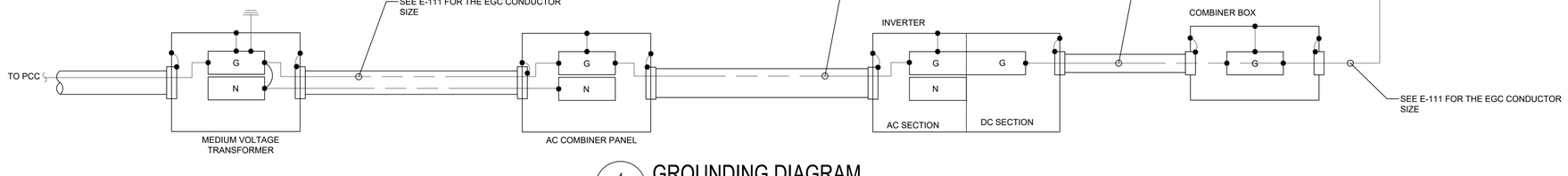


NOTES:
1. FENCE SHALL BE GROUNDED WHEREVER THE FENCE CROSSES UNDERGROUND OR OVERHEAD POWER LINES. FENCE SHALL BE GROUNDED AT A MIN. 20' ON EITHER SIDE OF THE POWER LINE.
2. TO PREVENT GROUNDING OF THE FENCE BEYOND THE 20' FIBER GLASS MESH OR ISOLATION GAPS CAN BE INSTALLED.

2 E-301 FENCE GROUNDING DETAIL
SCALE: NTS



3 E-301 ISOLATED FENCE GROUNDING DETAIL
SCALE: NTS



4 E-301 GROUNDING DIAGRAM
NOT TO SCALE

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	145
MODULE QUANTITY	3,770
TOTAL DC SIZE	2,035,800 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	12
TOTAL AC SIZE	1,500,000 W
TILT	±55°
AZIMUTH	180°

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Date: 2022.12.12 09:46:09

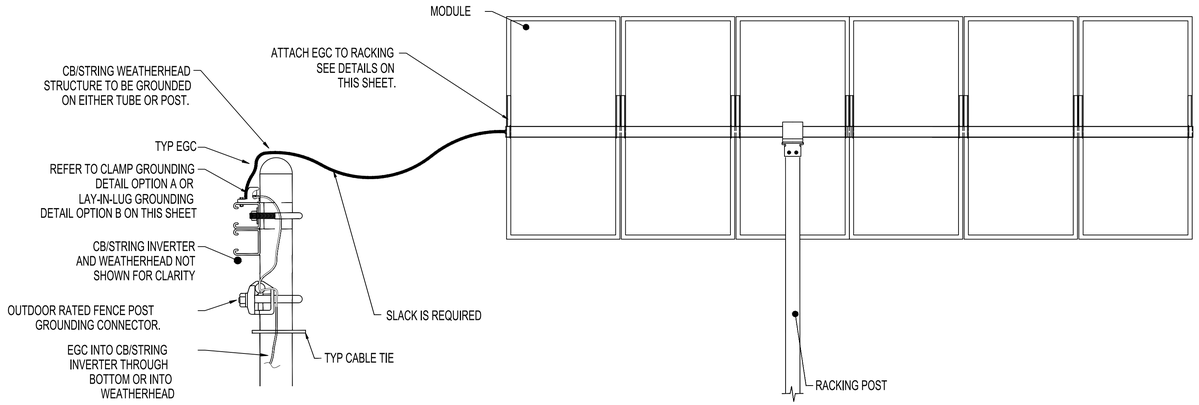
PROJECT NAME

MANLIUS NORTH
8107 E SENECA TURNPIKE
MANLIUS, NY 13104

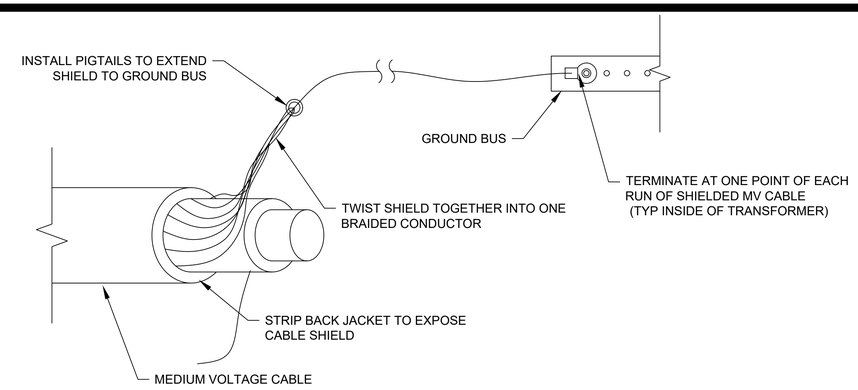
SHEET NAME
GROUNDING DETAILS - SHEET 2

SHEET SIZE
ARCH D
24" X 36"

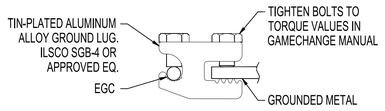
SHEET NUMBER
E-301

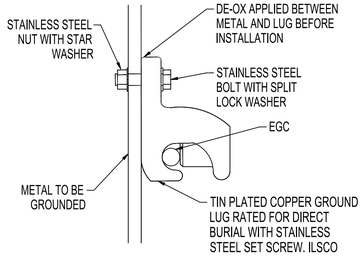


1 E-302 **RACK BONDING**
SCALE: NTS



2 E-302 **MEDIUM VOLTAGE CABLE SHIELD GROUNDING**
SCALE: NTS





3A E-302 **CLAMP GROUNDING DETAIL OPTION A**
SCALE: NTS

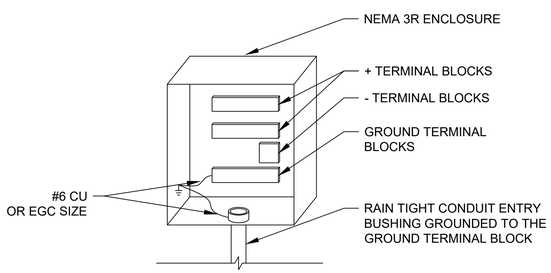
3B E-302 **LAY-IN-LUG GROUNDING DETAIL OPTION B**
SCALE: NTS

NOTES
1. ALL HARDWARE SHALL BE STAINLESS STEEL.
2. EGC SHALL BE #6 BARE SOLID CU.
3. SHALL BE USED FOR EXTERIOR BONDING TO RACKING.
4. ILSCO DE-OX (OR APPROVED EQ) APPLIED TO BOTH SIDES PRIOR TO LUG AND HARDWARE INSTALLATION.

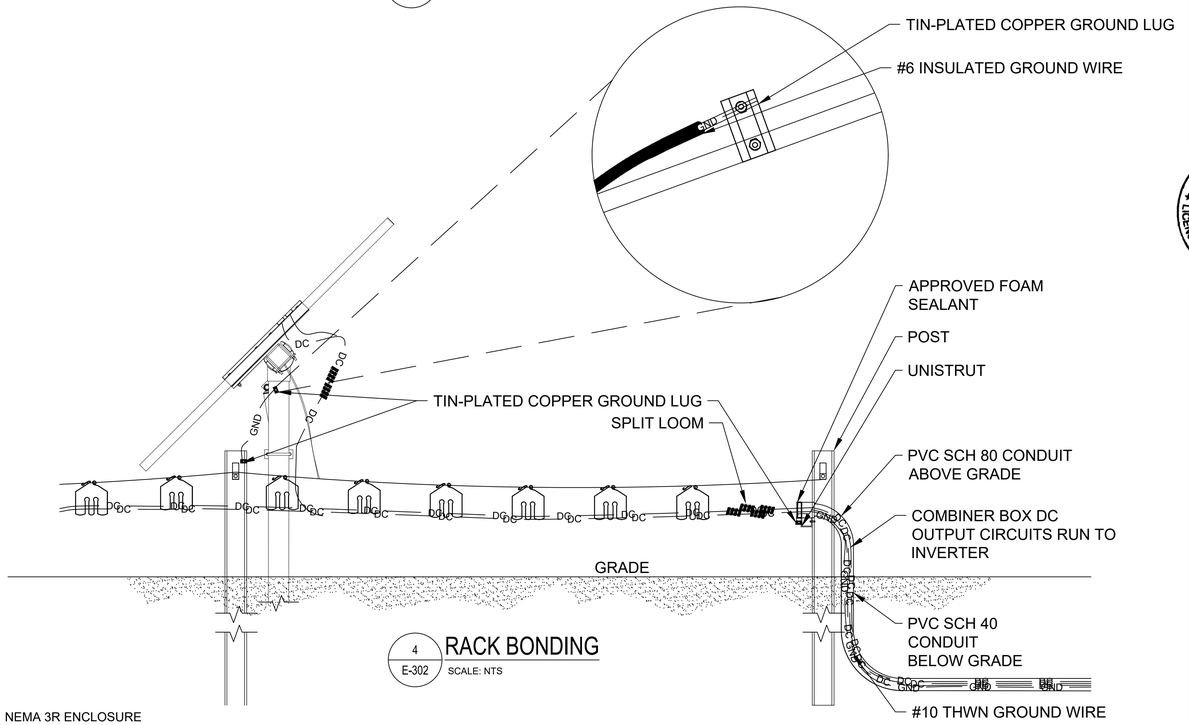
GENERAL GROUNDING NOTES
1. GROUNDING BUSHINGS SHALL BE USED USED ON CONDUIT TERMINATIONS IN CABINET, BOX, OR AUXILIARY GUTTER AND SHALL BE SUITABLE FOR BONDING TO GROUND IN ACCORDANCE WITH NEC 250.92.
2. METALLIC CONDUITS, ENCLOSURES, AND CONNECTORS SHALL BE INSTALLED SO THAT THE CONDUIT BONDING PATH INTEGRITY IS MAINTAINED.
3. RACKING GROUNDING AND BONDING SHALL BE INSTALLED BY E.C. RACKING GROUNDING TO FOLLOW MANUFACTURER INSTALLATION MANUAL

5 E-302 **RACK BONDING JUMPER DETAIL**
SCALE: NTS

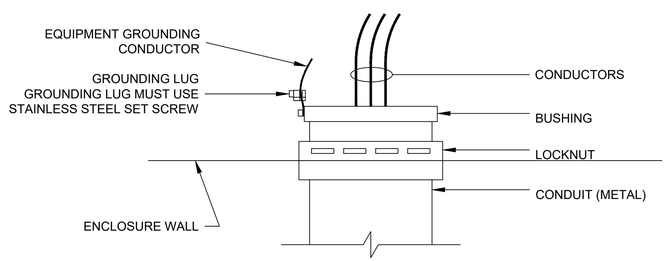
NOTES
1. ALL HARDWARE SHALL BE STAINLESS STEEL.
2. EGC SHALL BE #6 BARE SOLID CU.
3. SHALL BE USED FOR EXTERIOR BONDING TO RACKING.
4. ILSCO DE-OX (OR APPROVED EQ) APPLIED TO BOTH SIDES PRIOR TO LUG AND HARDWARE INSTALLATION.



6 E-302 **TYPICAL EQUIPMENT GROUNDING DETAIL**
SCALE: NTS



4 E-302 **RACK BONDING**
SCALE: NTS



7 E-302 **TYPICAL CONDUIT GROUNDING DETAIL**
SCALE: NTS

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	145
MODULE QUANTITY	3,770
TOTAL DC SIZE	2,035,800 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	12
TOTAL AC SIZE	1,500,000 W
TILT	±55°
AZIMUTH	180°

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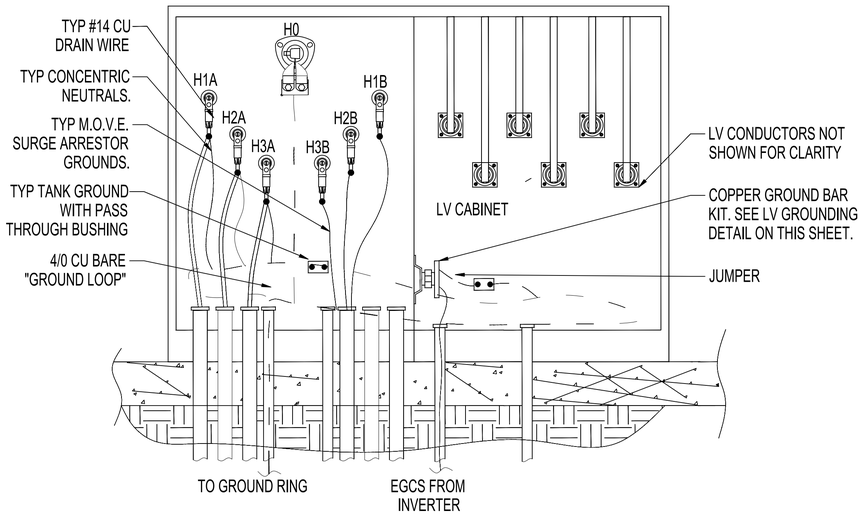
PROJECT NAME

MANLIUS NORTH
8107 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME
GROUNDING DETAILS - SHEET 3

SHEET SIZE
ARCH D
24" X 36"

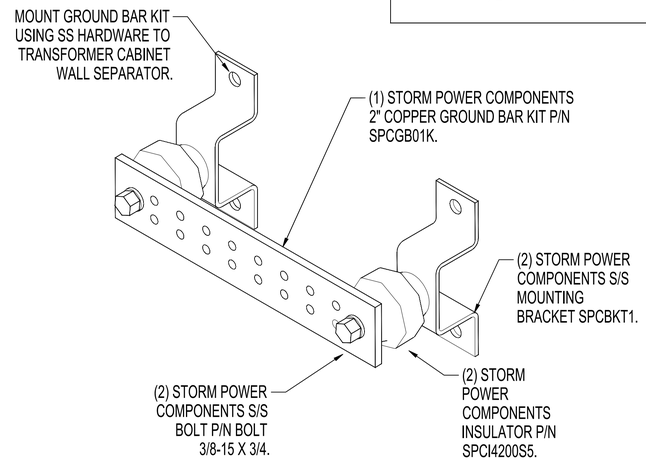
SHEET NUMBER
E-302



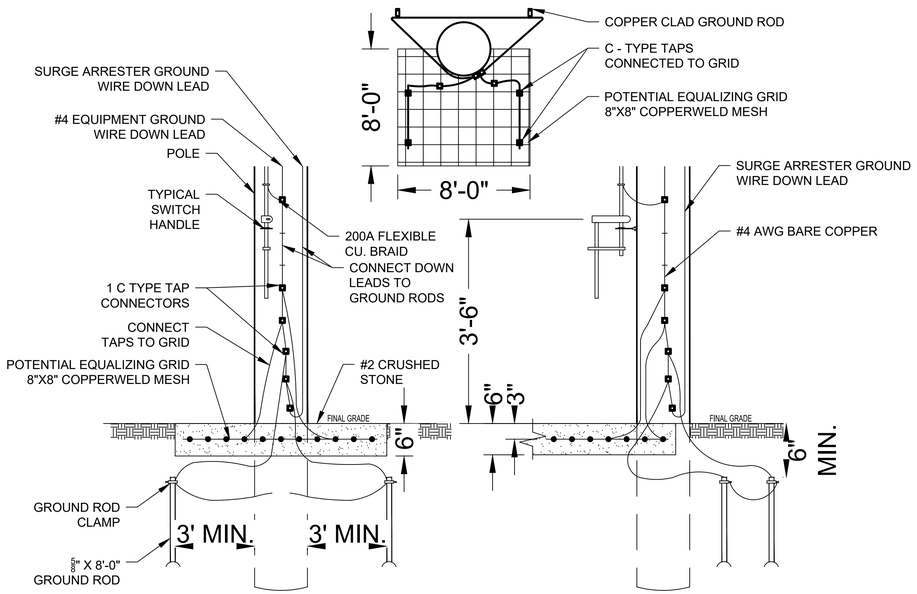
1 E-303 **MV TRANSFORMER GROUNDING**
SCALE: NTS

LEGEND

- #4/0 AWG CU BARE
- COMPRESSION LUG
- SPLIT BOLT
- GROUND ROD
- ERICO 150 WELDING MATERIAL, P/N TAC2Q2Q
- CAD WELD TO REBAR
- X KEYED NOTE



2 E-303 **LV GROUNDING DETAIL**
SCALE: NTS



3 E-303 **SWITCH HANDLE GROUNDING**
SCALE: NTS

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	145
MODULE QUANTITY	3,770
TOTAL DC SIZE	2,035,800 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	12
TOTAL AC SIZE	1,500,000 W
TILT	±55°
AZIMUTH	180°

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PROJECT NAME

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8107 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

GROUNDING DETAILS - SHEET 4

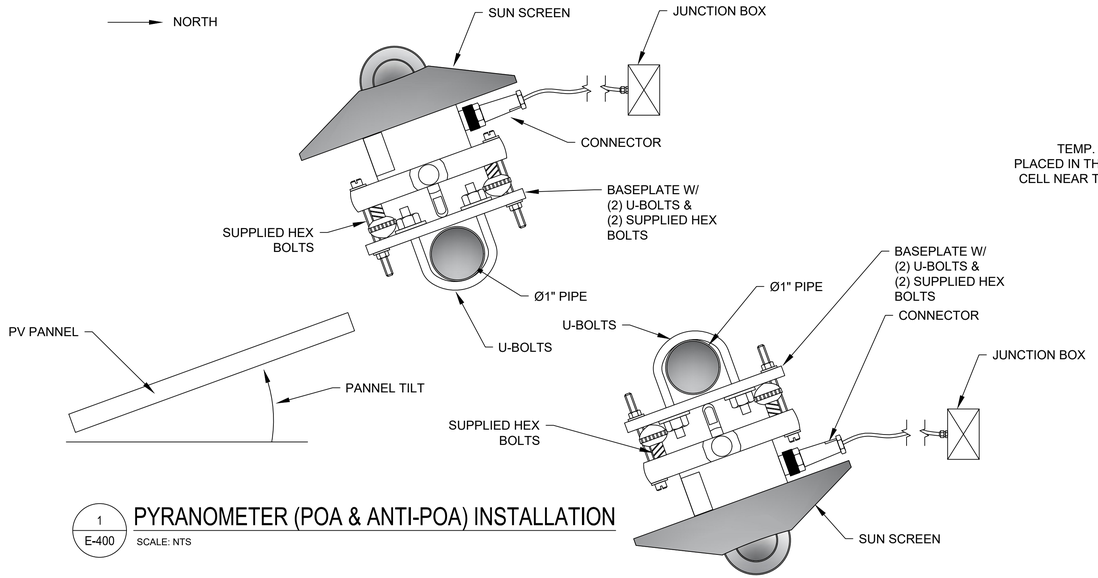
SHEET SIZE

ARCH D
24" X 36"

SHEET NUMBER

E-303

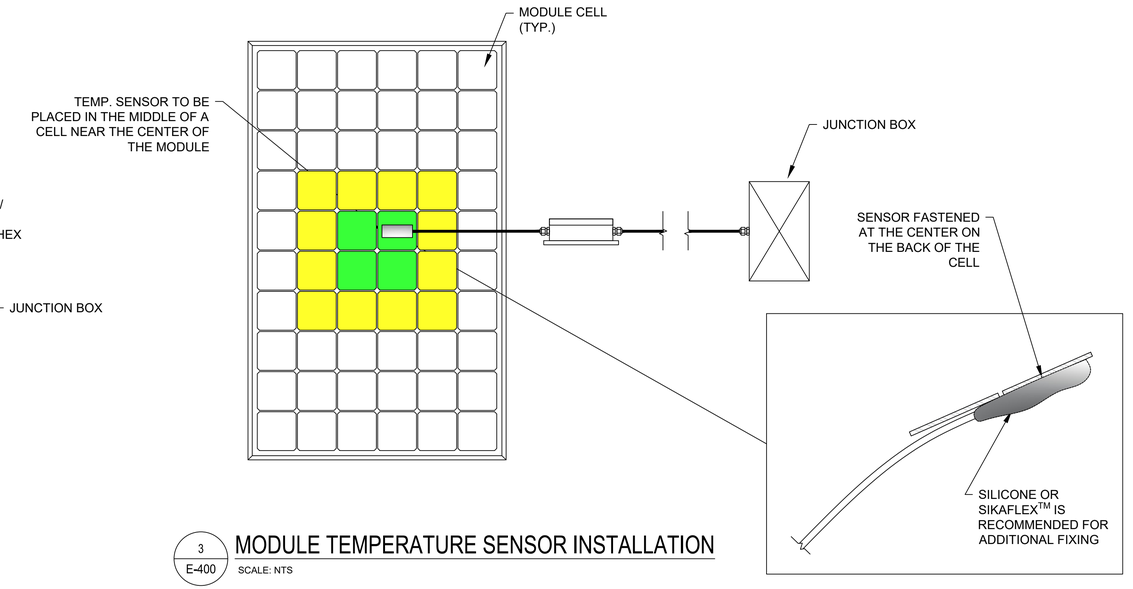
NOTE:
ON HOLD PENDING VENDOR EQUIPMENT SUMBITTAL.



1 E-400 PYRANOMETER (POA & ANTI-POA) INSTALLATION
SCALE: NTS

PYRANOMETER NOTE:

1. FOR POA PYRANOMETERS, ROTATE ASSEMBLY SO THAT THE BASEPLATE IS PARALLEL TO THE PV ARRAY AND FASTEN SNUGLY. FOR GHI PYRANOMETER, ROTATE ASSEMBLY SO THAT THE BASEPLATE IS PARALLEL TO THE GROUND.
2. PLACE PYRANOMETER ONTO THE MOUNTING BRACKET BASEPLATE AND ENSURE THEY ARE PARALLEL TO EACH OTHER USING THE LEVELING METER.
3. ELECTRICAL DETAILS REFERS TO DAS INFORMATION. IF THE SENSOR IS THE LAST DEVICE IN A MODBUS CHAIN WHICH CONSISTS OF 3 OR MORE DEVICES, THEN ADD A 120Ω RESISTOR BETWEEN THE DATA+ AND DATA- WIRES



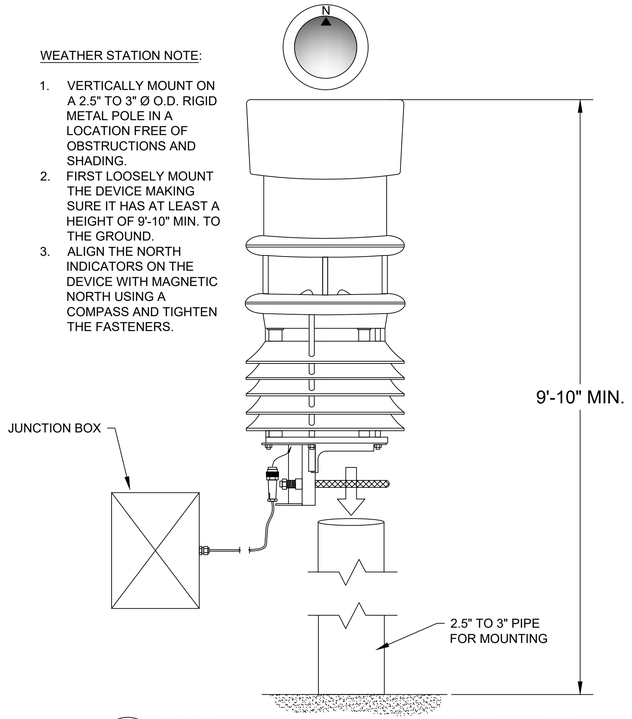
3 E-400 MODULE TEMPERATURE SENSOR INSTALLATION
SCALE: NTS

TEMPERATURE SENSOR NOTE:

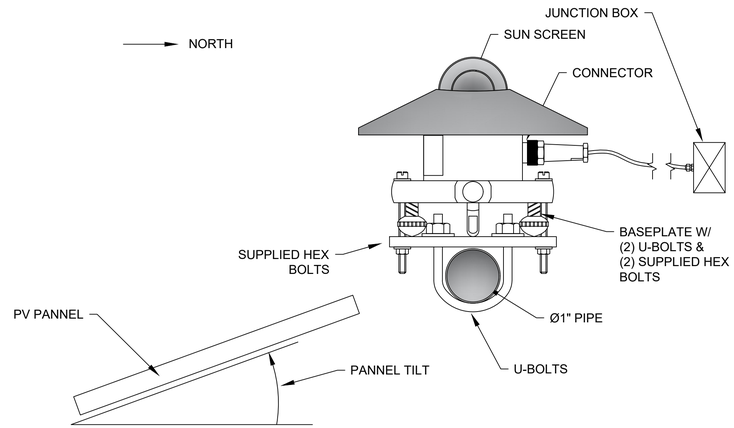
1. THE SENSOR SHALL BE PLACED ON A MODULE THAT IS AT LEAST 1 MODULE FROM THE EDGE OF THE ARRAY ON ALL SIDES WHEN POSSIBLE.
2. CLEAN THE CELL BEFORE ATTACHING A SENSOR ONTO IT.

WEATHER STATION NOTE:

1. VERTICALLY MOUNT ON A 2.5" TO 3" Ø O.D. RIGID METAL POLE IN A LOCATION FREE OF OBSTRUCTIONS AND SHADING.
2. FIRST LOOSELY MOUNT THE DEVICE MAKING SURE IT HAS AT LEAST A HEIGHT OF 9'-10" MIN. TO THE GROUND.
3. ALIGN THE NORTH INDICATORS ON THE DEVICE WITH MAGNETIC NORTH USING A COMPASS AND TIGHTEN THE FASTENERS.



4 E-400 TYPICAL WEATHER STATION INSTALLATION
SCALE: NTS



2 E-400 PYRANOMETER (GHI) INSTALLATION
SCALE: NTS

NOTE:

1. ALL DAS EQUIPMENT TO BE INSTALLED AT THE EQUIPMENT PAD WITH THE EXCEPTION OF THE POA AND BOM TEMPERATURE SENSOR, WHICH SHALL BE INSTALLED IN THE ARRAY.
2. CAMERA LOCATION SHALL BE IN ACCORDANCE WITH OWNER REQUEST, IF APPLICABLE.
3. WEATHER STATIONS. CONTRACTOR SHALL DESIGN AND INSTALL A WEATHER STATION AT THE PROJECT. THE WEATHER STATION SHALL INCLUDE (1) HORIZONTAL AND ON (1) IN-PLANE PRYANOMETER, KIPP & ZONNEN CMP 11 (OR EQUIVAILENT), TWO (2) CALIBRATED CELLS (EQUAL OF CELL SELECTIONS FROM MODULES) IN-PLANE, A BACK OF PANEL TEMPERATURE SENSOR, AMBIENT AIR TEMPERATURE SENSOR, AND A WIND SPEED AND DIRECTION SENSOR AT A HEIGHT OF 3 METERS ABOVE GRADE. WEATHER STATION MUST BE INSTALLED AT A LOCATION WITHIN THE PROJECT WHERE IT HAS UNOBSTRUCTED ACCESS TO SUNLIGHT AND OTHER WEATHER.

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	145
MODULE QUANTITY	3,770
TOTAL DC SIZE	2,035,800 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	12
TOTAL AC SIZE	1,500,000 W
TILT	±55°
AZIMUTH	180°

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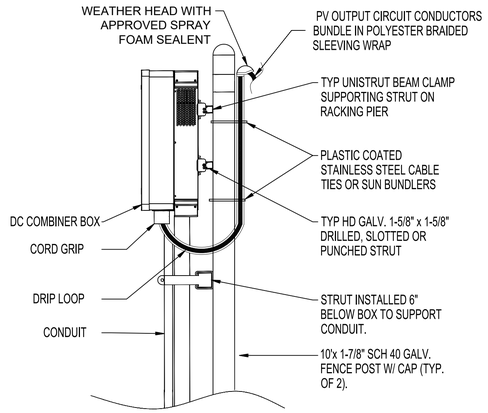
PROJECT NAME

MANLIUS NORTH
8107 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME
MISCELLANEOUS DETAILS - SHEET 1

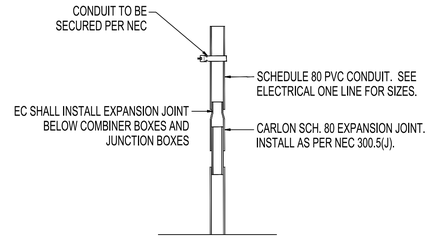
SHEET SIZE
ARCH D
24" X 36"

SHEET NUMBER
E-400

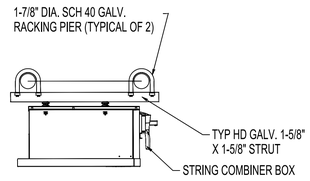


NOTE:
REFER TO DETAIL #3 FOR EXPANSION JOINT.

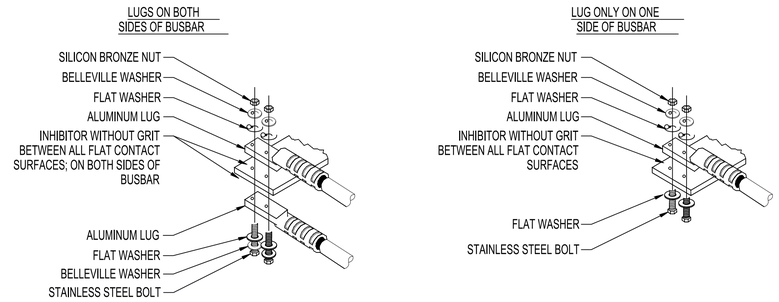
1 / E-401 DC COMBINER ATTACHEMENT DETAIL - ELEVATION
SCALE: NTS



2 / E-401 CONDUIT EXPANSION
SCALE: NTS



3 / E-401 DC COMBINER TOP VIEW
SCALE: NTS



NOTES:
1. FLAT WASHER SHALL HAVE LARGER DIAMETER THAN BELLEVILLE WASHER.
2. BOLT SHALL BE LONG ENOUGH TO ACHIEVE FULL THREAD ENGAGEMENT OF NUT WITH ENTIRE STACK SHOWN.
3. BOLT DIAMETER SHALL MATCH LUG AND BUSBAR HOLE DIAMETER.
4. IF EQUIPMENT MANUFACTURER INSTALLATION INSTRUCTIONS CONFLICT WITH THIS DETAIL, MANUFACTURER INSTRUCTIONS SHALL BE FOLLOWED.
5. NUMBER OF CRIMPS SHOWN IS DIAGRAMMATIC AND MAY VARY DEPENDING ON LUG AND CONDUCTOR SIZE.
6. INHIBITOR USED MUST BE RATED FOR THE EQUIPMENT VOLTAGE, LUG MATERIAL, AND BUSBAR MATERIAL. SUBMIT PROPOSED MATERIAL FOR APPROVAL TO ENGINEERING.

4 / E-401 LUG ATTACHMENT DETAIL
SCALE: NTS

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	145
MODULE QUANTITY	3,770
TOTAL DC SIZE	2,035,800 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	12
TOTAL AC SIZE	1,500,000 W
TILT	±55°
AZIMUTH	180°

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Digitally signed by: Emmocrates E Castillo
Date: 2022.12.12 09:46:12

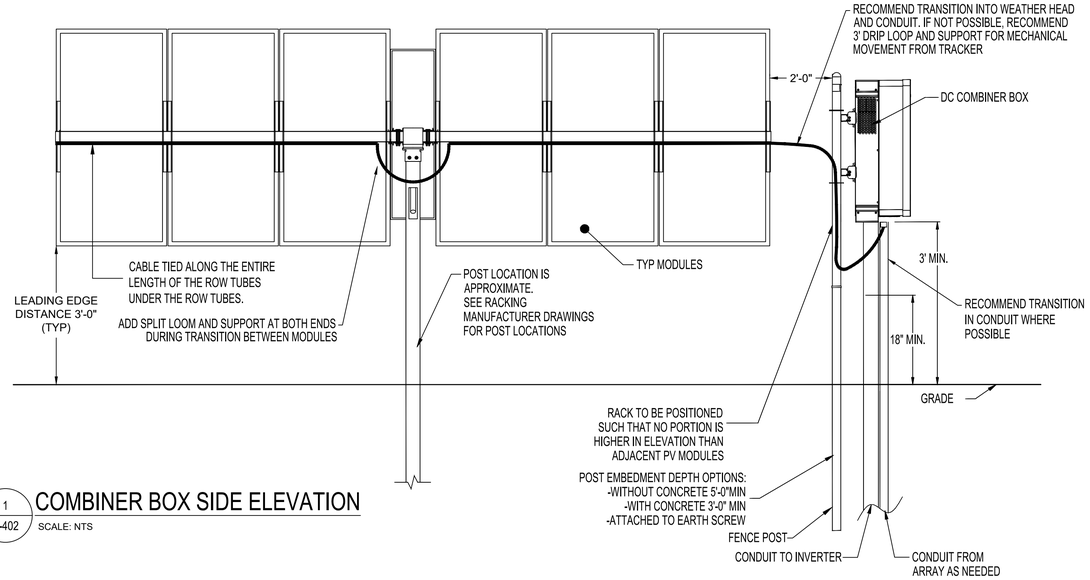
PROJECT NAME

MANLIUS NORTH
8107 E SENECA TURNPIKE
MANLIUS, NY 13104

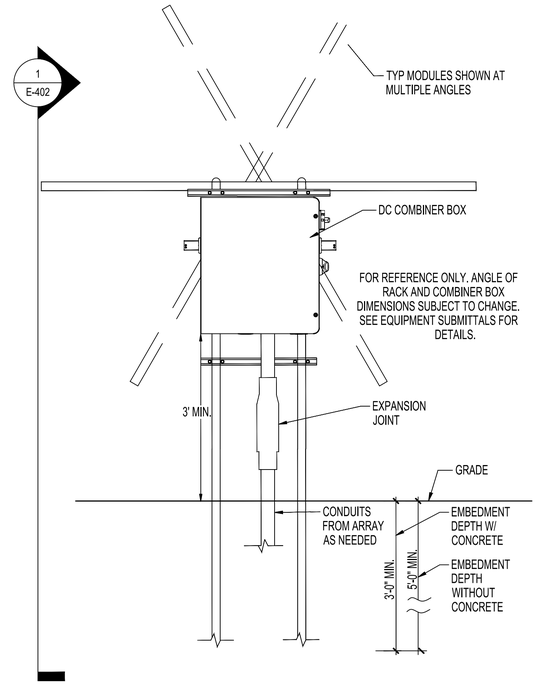
SHEET NAME
MISCELLANEOUS DETAILS - SHEET 2

SHEET SIZE
ARCH D
24" X 36"

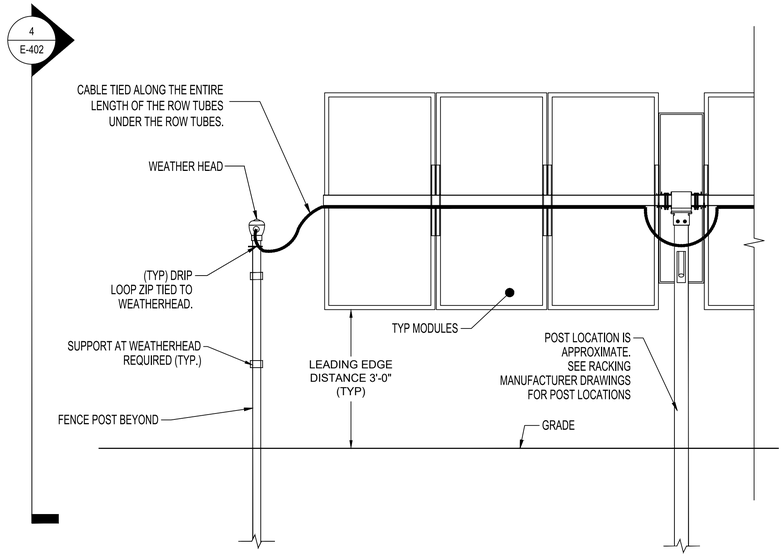
SHEET NUMBER
E-401



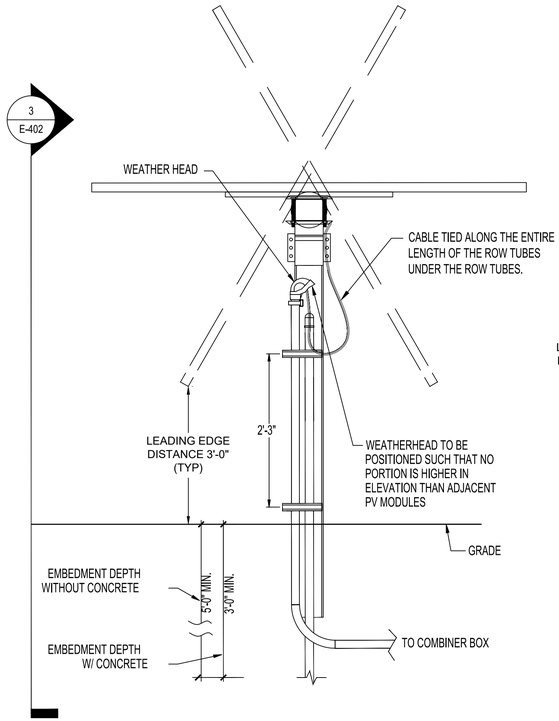
1 E-402 **COMBINER BOX SIDE ELEVATION**
SCALE: NTS



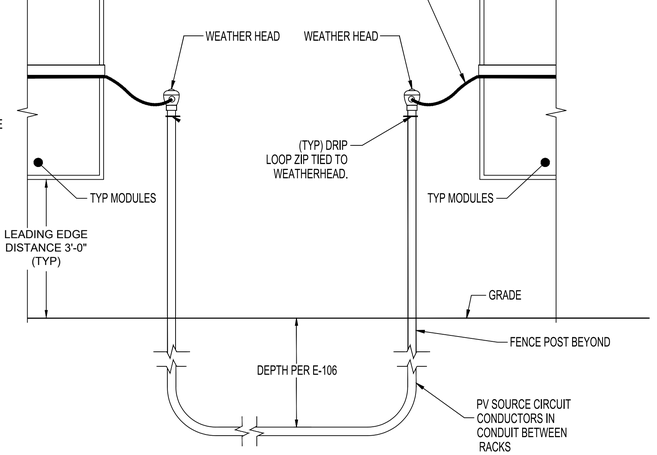
2 E-402 **COMBINER BOX FRONT ELEVATION**
SCALE: NTS



3 E-402 **WEATHERHEAD SIDE ELEVATION**
SCALE: NTS



4 E-402 **WEATHER HEAD - FRONT ELEVATION**
SCALE: NTS



5 E-402 **RACKING BREAK**
SCALE: NTS

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	145
MODULE QUANTITY	3,770
TOTAL DC SIZE	2,035,800 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	12
TOTAL AC SIZE	1,500,000 W
TILT	±55°
AZIMUTH	180°

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Date: 2022.12.12 09:46:13

PROJECT NAME

MANLIUS NORTH
8107 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

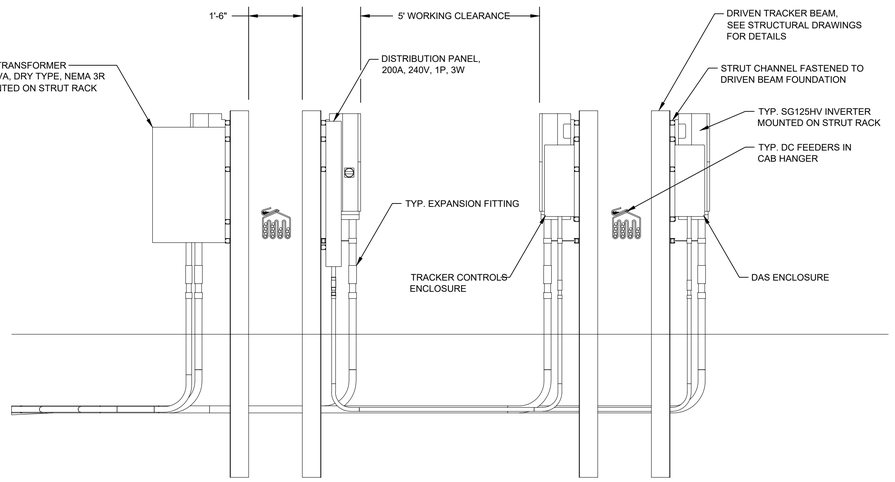
CONDUIT AND WIRE MANAGEMENT

SHEET SIZE

ARCH D
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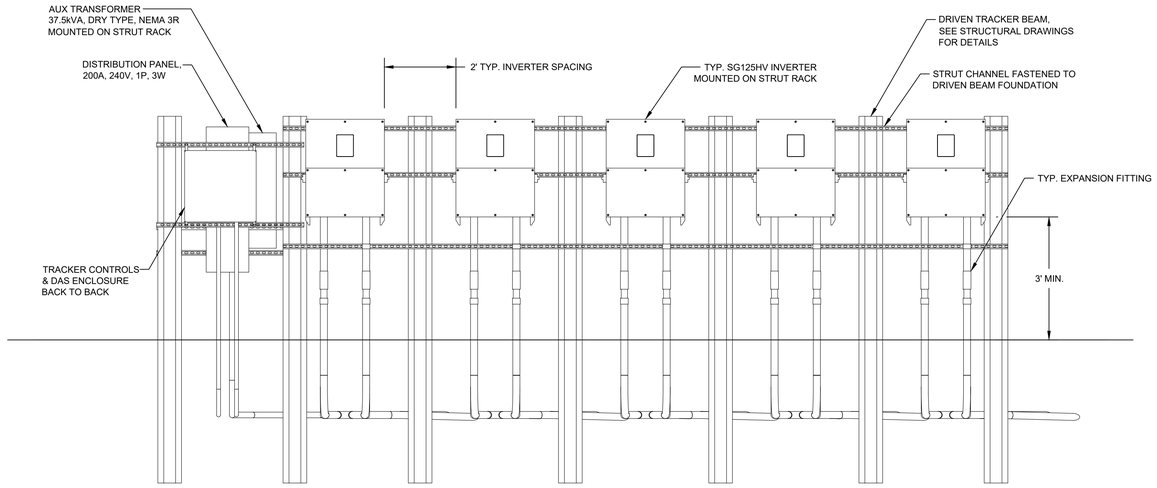
SHEET NUMBER

E-402



1 E-403 EQUIPMENT RACK ELEVATION - SIDE

SCALE: NTS



2 E-403 EQUIPMENT RACK ELEVATION - FRONT

SCALE: NTS

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	145
MODULE QUANTITY	3,770
TOTAL DC SIZE	2,035,800 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	12
TOTAL AC SIZE	1,500,000 W
TILT	±55°
AZIMUTH	180°

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PROJECT NAME

MANLIUS NORTH

8107 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

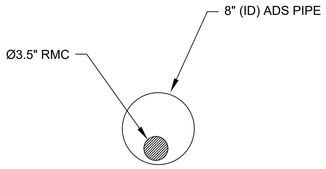
MOUNTING DETAILS

SHEET SIZE

ARCH D
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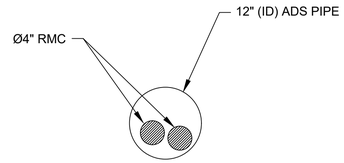
SHEET NUMBER

E-403



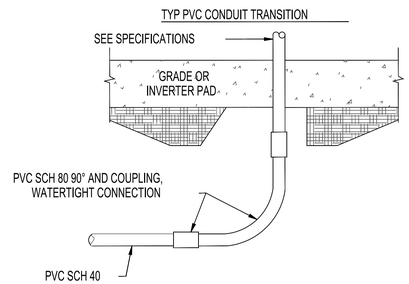
1 E-404 ELECTRICAL CONDUIT DETAIL CONFIG. A

SCALE: NTS



2 E-404 ELECTRICAL CONDUIT DETAIL CONFIG. B

SCALE: NTS



3 E-404 UNDERGROUND CONDUIT TRANSITION DETAIL

SCALE: NTS

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	145
MODULE QUANTITY	3,770
TOTAL DC SIZE	2,035,800 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	12
TOTAL AC SIZE	1,500,000 W
TILT	±55°
AZIMUTH	180°

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PROJECT NAME

MANLIUS NORTH

8107 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

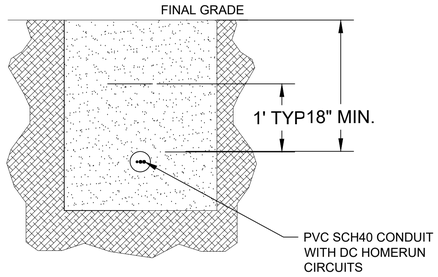
CONDUIT TRENCHING DETAILS - SHEET 1

SHEET SIZE

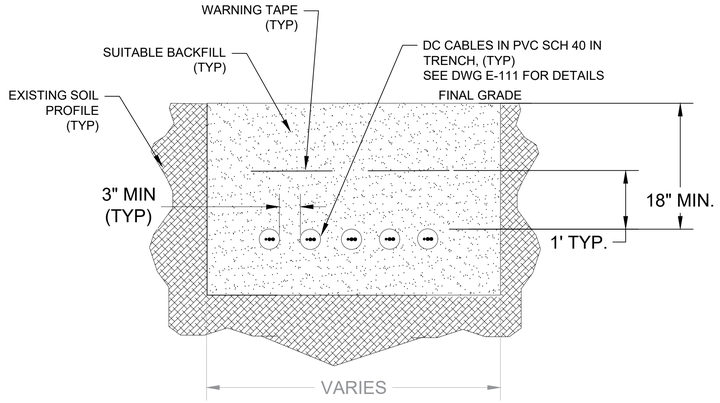
ARCH D
24" X 36"

SHEET NUMBER

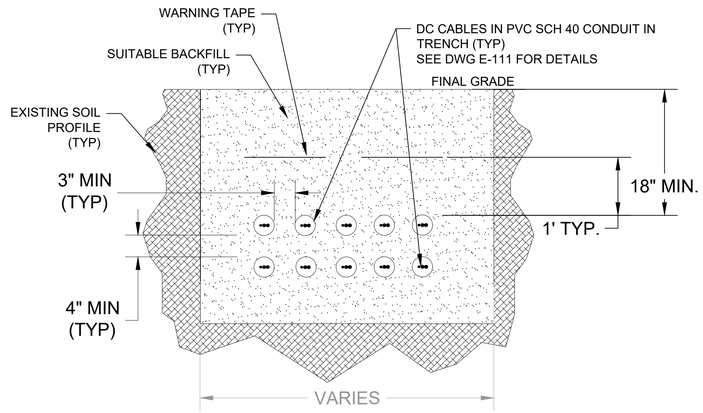
E-404



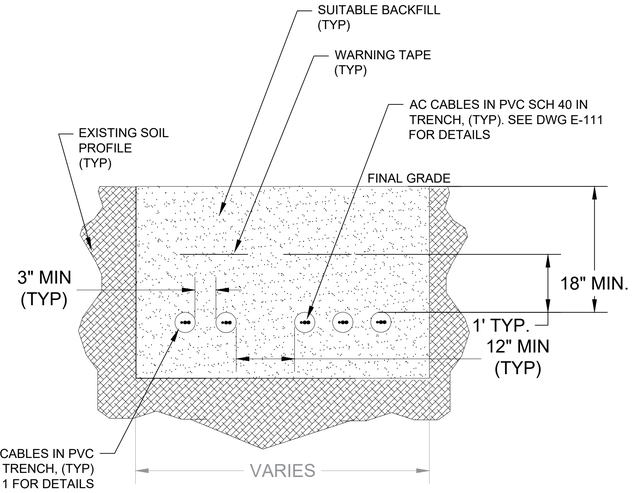
1 E-405 **DC HOMERUNS ROW TO ROW JUMPER TRENCH DETAILS**
SCALE: NTS



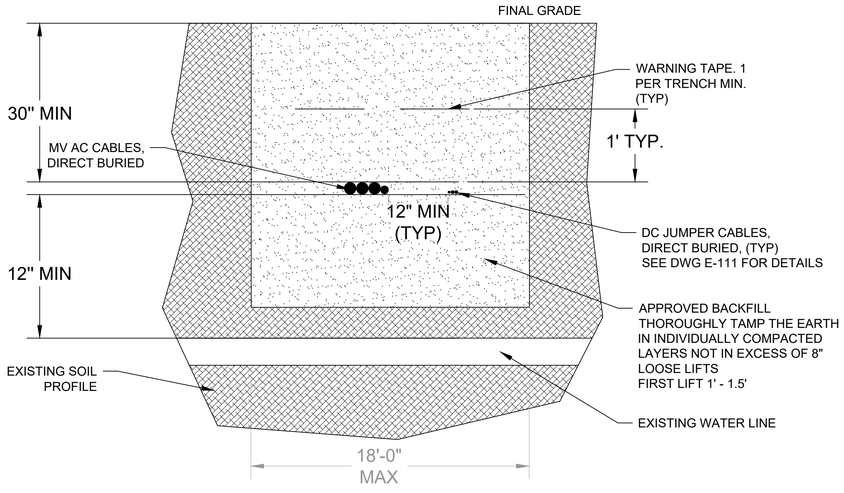
2 E-405 **FEEDER CIRCUITS TRENCH DETAILS(SINGLE LAYER)**
SCALE: NTS



3 E-405 **FEEDER CIRCUITS TRENCH DETAILS (TWO LAYERS)**
SCALE: NTS



4 E-405 **DC & AC CIRCUIT TRENCH DETAILS**
SCALE: NTS



4 E-405 **MEDIUM VOLTAGE CONDUCTORS WITH DC FEEDER CIRCUITS CROSSING UTILITY TRENCH DETAILS**
SCALE: NTS

NOTES:

1. ALL LV CONDUITS TO BE BURIED AT A MINIMUM OF 18".

2. COMMUNICATION CABLES TO BE A MINIMUM OF 12" AWAY FROM DC AND AC CABLES.

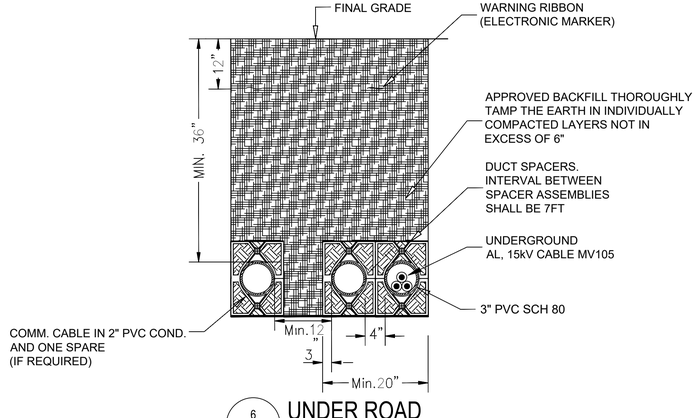
3. WARNING TAPE TO BE METALLIC WITH THE PHRASE "CAUTION: BURIED ELECTRICAL LINES"

4. BACKFILL TO BE FREE FROM ANY ROCKS OR OTHER DELETERIOUS OBJECTS THAT ARE 3/4" IN DIAMETER OR GREATER.

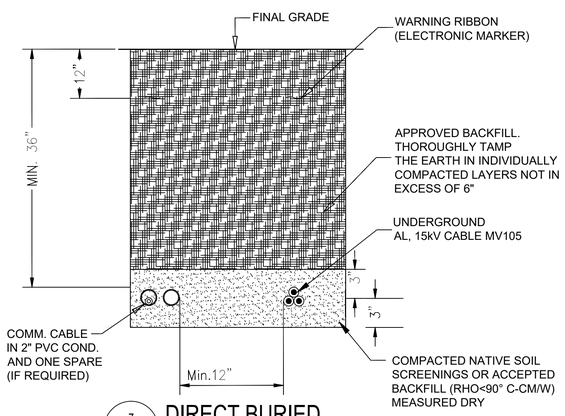
5. ELECTRICIANS TO PROVIDE MATCHING FITTINGS AND EXPANSION COUPLINGS BY THE SAME MANUFACTURER AS THE CONDUIT

6. ALL DC CABLING TO THE COMBINER BOX SHALL BE A MINIMUM OF 18" BELOW GRADE IN CLEAN FILL. IF THERE IS MORE THAN ONE LATER OF CABLE WITHIN A TRENCH, A MINIMUM OF 4 INCHES OF SOIL SHALL SEPARATE THE LAYERS.

7. DC WIRING FROM THE COMBINER BOX TO THE INVERTERS SHALL BE A MINIMUM OF 18" BELOW GRADE IN CLEAN FILL. TRENCH BEDDING SHALL BE ADEQUATE TO PREVENT DAMAGE TO THE CABLE FROM ANY OVERSIZED MATERIAL.



6 E-405 **UNDER ROAD**
SCALE: NTS



7 E-405 **DIRECT BURIED**
SCALE: NTS

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	145
MODULE QUANTITY	3,770
TOTAL DC SIZE	2,035,800 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	12
TOTAL AC SIZE	1,500,000 W
TILT	±55°
AZIMUTH	180°

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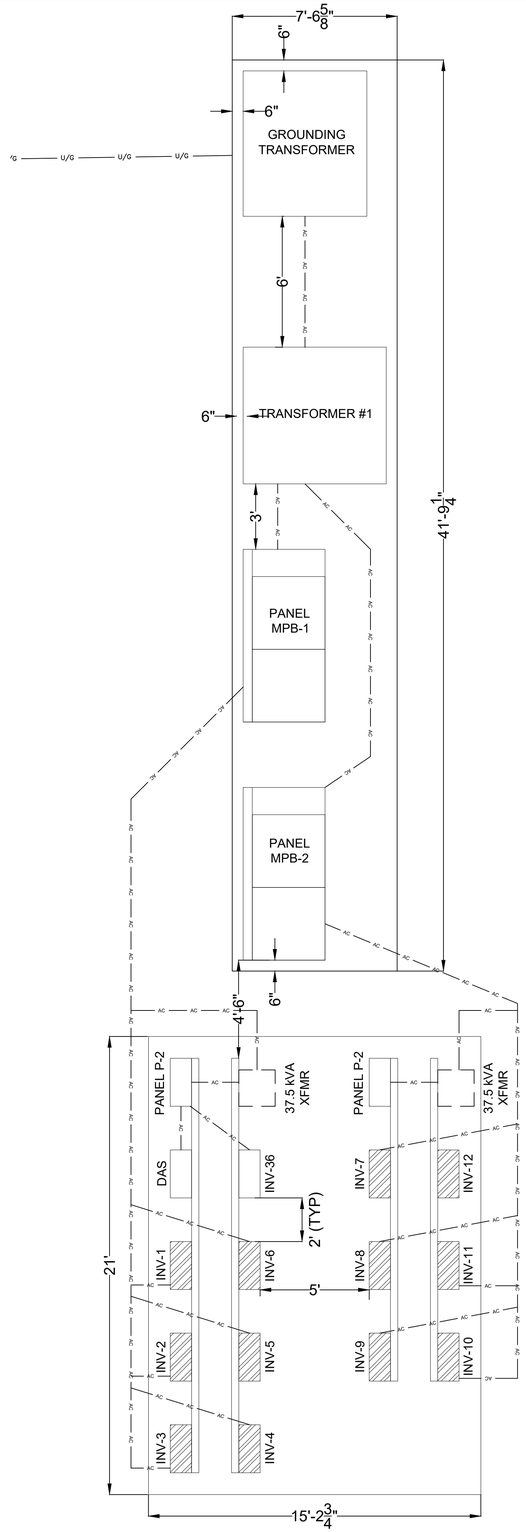
PROJECT NAME

MANLIUS NORTH
8107 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME
CONDUIT TRENCHING DETAILS - SHEET 2

SHEET SIZE
ARCH D
24" X 36"

SHEET NUMBER
E-405



1 E-406 EQUIPMENT PAD DETAIL

SCALE: NTS

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	145
MODULE QUANTITY	3,770
TOTAL DC SIZE	2,035,800 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	12
TOTAL AC SIZE	1,500,000 W
TILT	±55°
AZIMUTH	180°

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PROJECT NAME

MANLIUS NORTH
8107 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

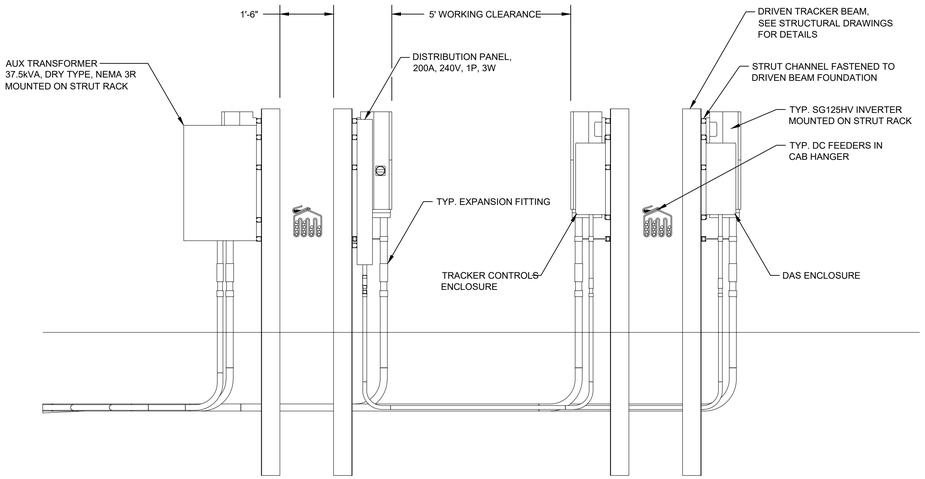
EQUIPMENT PAD DETAIL

SHEET SIZE

ARCH D
24" X 36"

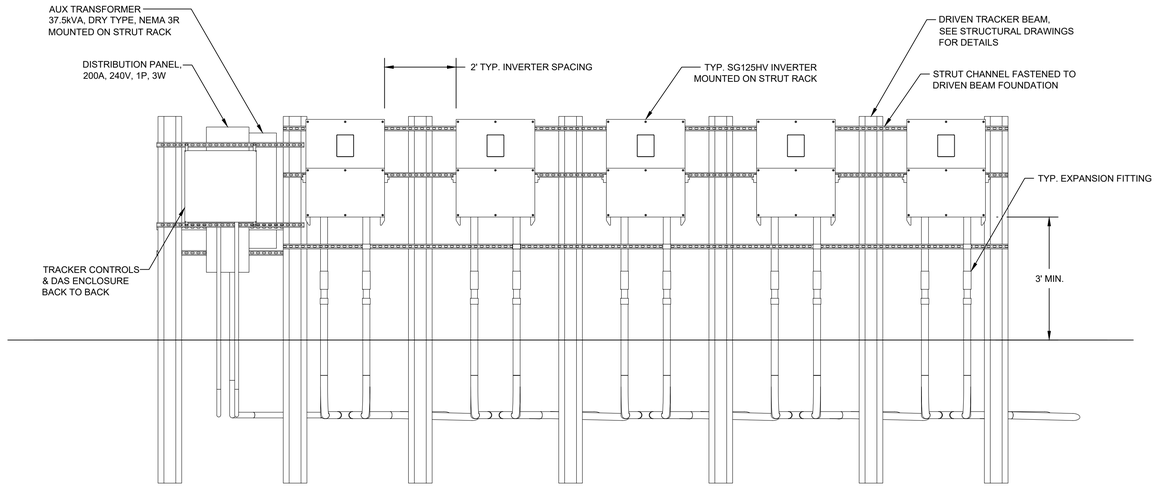
SHEET NUMBER

E-406



1 E-407 EQUIPMENT RACK ELEVATION - SIDE

SCALE: NTS



2 E-407 EQUIPMENT RACK ELEVATION - FRONT

SCALE: NTS

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	145
MODULE QUANTITY	3,770
TOTAL DC SIZE	2,035,800 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	12
TOTAL AC SIZE	1,500,000 W
TILT	±55°
AZIMUTH	180°

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PROJECT NAME

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8107 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

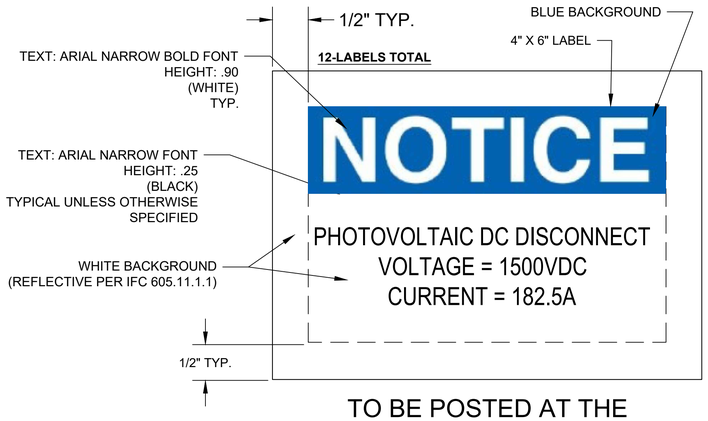
EQUIPMENT RACK DETAILS

SHEET SIZE

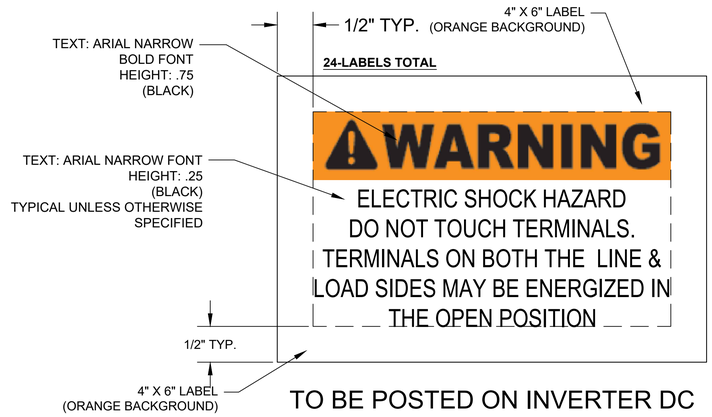
ARCH D
24" X 36"

SHEET NUMBER

E-407

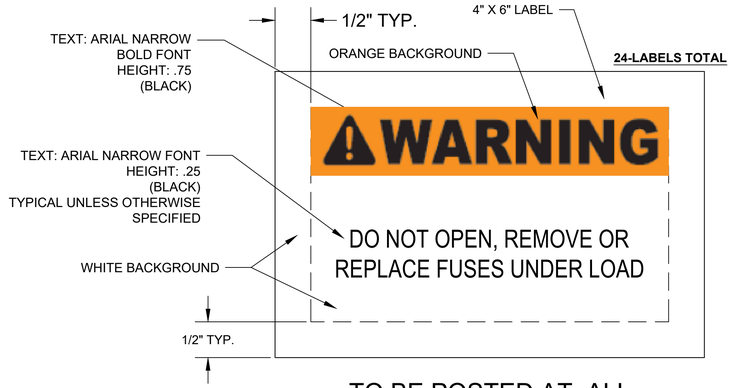


TO BE POSTED AT THE INVERTER DC DISCONNECT

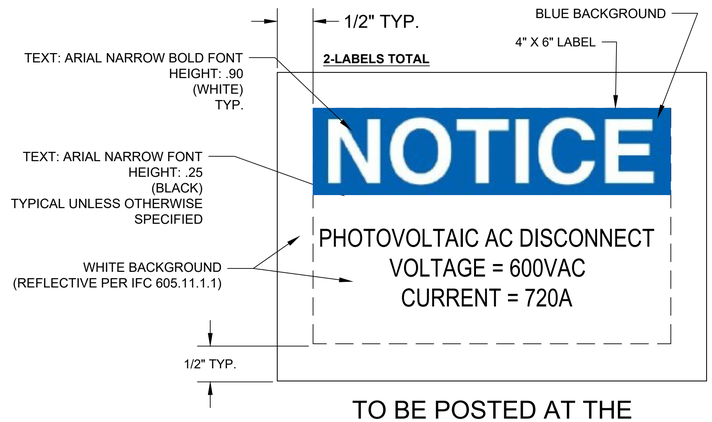


TO BE POSTED ON INVERTER DC INPUTS AND COMBINERS

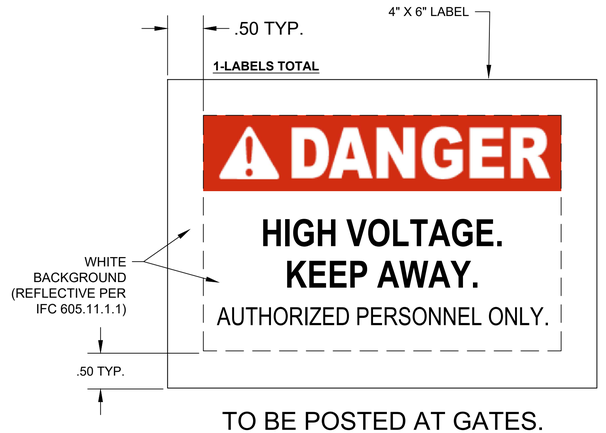




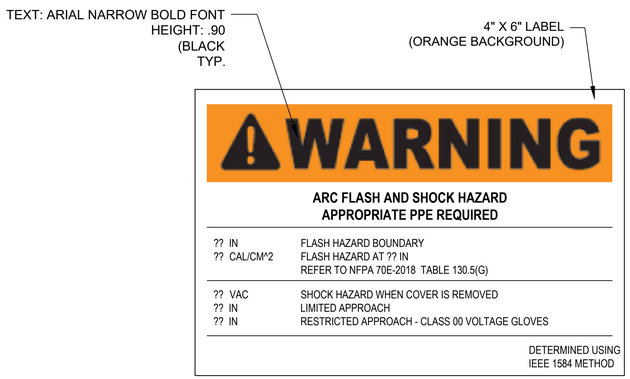
TO BE POSTED AT ALL COMBINER BOXES AND ALL OTHER FUSED LOCATIONS



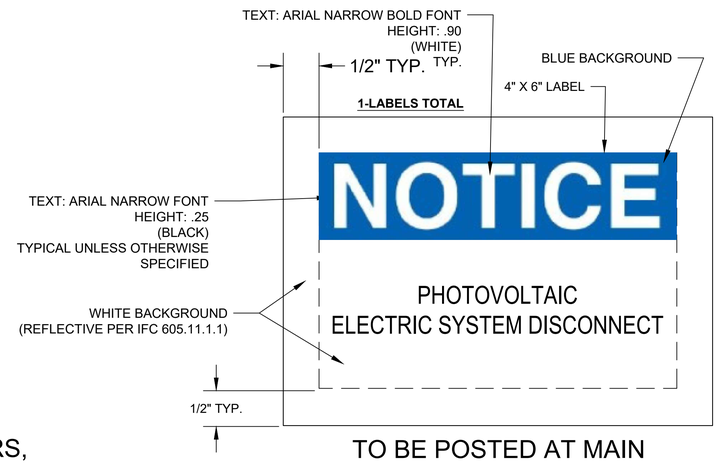
TO BE POSTED AT THE INVERTERS AC COMBINER PANEL



TO BE POSTED AT GATES.



TO BE POSTED AT AC & DC SIDES OF INVERTERS, TRANSFORMERS, PANELS, & DISCONNECTS.
WAITING FOR ARC FLASH & SHOCK HAZARD ANALYSIS



TO BE POSTED AT MAIN SERVICE DISCONNECT PER NEC 690.13(B)

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	145
MODULE QUANTITY	3,770
TOTAL DC SIZE	2,035,800 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	12
TOTAL AC SIZE	1,500,000 W
TILT	±55°
AZIMUTH	180°

Castillo Engineering
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CASTILLO ENGINEERING SERVICES, LLC
COA # 28345
620 N. WYMORE ROAD,
SUITE 250,
MAITLAND, FL 32751
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REVISIONS

DESCRIPTION	DATE	REV
IFP	12/09/2022	0
30% REVIEW	11/11/2022	A

PROJECT INSTALLER

STATE OF NEW YORK · E. CASTILLO · 095344 · LICENSED PROFESSIONAL ENGINEER

Digitally signed by: Emmocrates with Stamp
E Castillo
Date: 2022.12.12 09:46:17

PROJECT NAME

MANLIUS NORTH
8107 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

WARNING LABELS - SHEET 2

SHEET SIZE

ARCH D
24" X 36"

SHEET NUMBER

E-500

(WHITE BACKGROUND)

6" X 6" LABEL

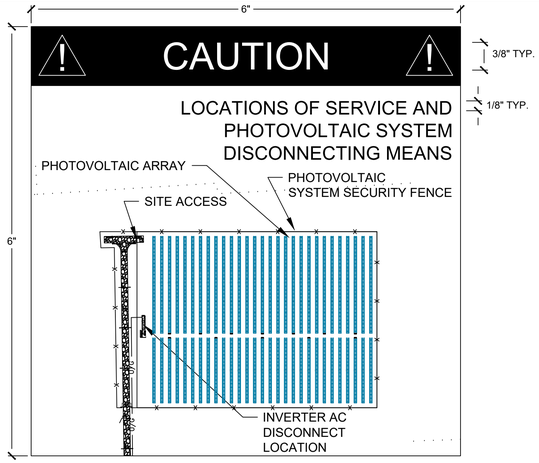
1-LABELS TOTAL

MEDIUM VOLTAGE TRANSFORMER X

1,500KVA
PRIMARY VOLTAGE = 13.2KV
SECONDARY VOLTAGE = 600V

TEXT: ARIAL NARROW FONT
HEIGHT: .25
(BLACK)
TYPICAL UNLESS OTHERWISE SPECIFIED

TO BE POSTED AT THE TRANSFORMERS. X TO BE REPLACED WITH TRANSFORMER NUMBER.



NOTES:
1. ORANGE & WHITE BACKGROUND WITH WHITE AND BLACK TEXT.
2. MUST BE MADE OF DURABLE, UNALTERABLE MATERIAL.
3. PERMANENTLY ATTACH TO SUBSTATION AT CONTROL HOUSE PROJECT FENCE GATE(S).

(WHITE BACKGROUND)

6" X 6" LABEL

40-LABELS TOTAL

PV INVERTER INV YY

FEEDS FROM CB XX

125kW
OPERATING VOLTAGE = 600Vac
OPERATING CURRENT = 120Aac

AS PER SHEET E-111

TO BE POSTED AT INVERTERS
XX TO BE REPLACED WITH NUMBER
YY TO BE REPLACED WITH INVERTER NUMBER

4" X 6" LABEL (ORANGE BACKGROUND) TYPICAL UNLESS OTHERWISE SPECIFIED

1/2" TYP.

40-LABELS TOTAL

TEXT: ARIAL NARROW BOLD FONT HEIGHT: .38 (BLACK) TYPICAL UNLESS OTHERWISE SPECIFIED

TEXT: ARIAL NARROW FONT
HEIGHT: .20
(BLACK)
TYPICAL UNLESS OTHERWISE SPECIFIED

COMBINER BOX CB YY

FEEDS TO INVERTER XX

AS PER SHEET E-111

MAX SYSTEM VOLTAGE = 1,478VDC
MAX SHORT CIRCUIT CURRENT = 223.57ADC

1/2" TYP.

TO BE POSTED AT THE COMBINER BOXES PER NEC 690.53
XX TO BE REPLACED BY CENTRAL INVERTER NUMBER
YY TO BE REPLACED BY COMBINER BOX NUMBER

4" X 6" LABEL

(WHITE BACKGROUND)

METEOROLOGICAL STATION

TEXT: ARIAL NARROW FONT
(BLACK)
TYPICAL UNLESS OTHERWISE SPECIFIED

TO BE POSTED AT THE WEATHER STATION CABINETS

(WHITE BACKGROUND)

4" X 6" LABEL

TEXT: ARIAL NARROW FONT
(BLACK)
TYPICAL UNLESS OTHERWISE SPECIFIED

DATA ACQUISITION CABINET

TO BE POSTED AT THE DAS CABINETS

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	145
MODULE QUANTITY	3,770
TOTAL DC SIZE	2,035,800 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	12
TOTAL AC SIZE	1,500,000 W
TILT	±55°
AZIMUTH	180°

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Date: 2022.12.12 09:46:18

PROJECT NAME

MANLIUS NORTH
8107 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

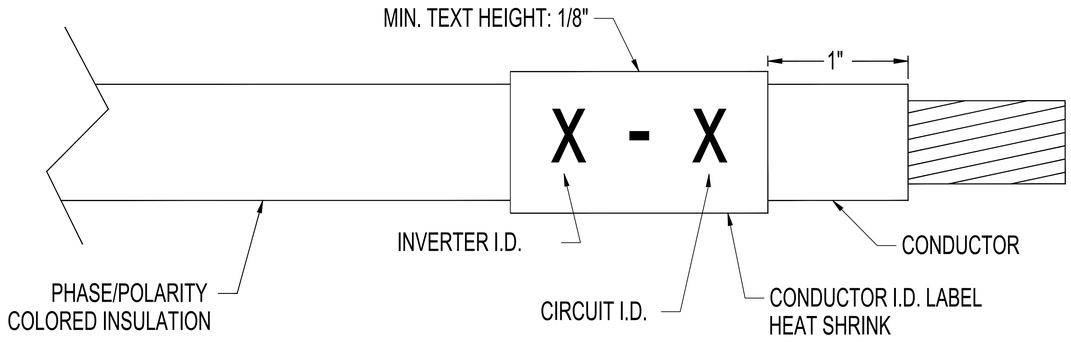
WARNING LABELS - SHEET 2

SHEET SIZE

ARCH D
24" X 36"

SHEET NUMBER

E-501



TO BE PROVIDED BY E.C.

DC INPUT CIRCUITS FROM ARRAY TO INVERTER
RANGE: 1-3.1-9.1-12 (INV.CB.CIRC)
EXAMPLE: 2.4.10

AC FEEDERS BETWEEN INVERTER AND TRANSFORMER
RANGE: 1-20 (INV)
EXAMPLE: 2

1 / E-502 WIRE LABELING
SCALE: NTS

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	145
MODULE QUANTITY	3,770
TOTAL DC SIZE	2,035,800 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	12
TOTAL AC SIZE	1,500,000 W
TILT	±55°
AZIMUTH	180°

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PROJECT NAME
MANLIUS NORTH
8107 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME
WARNING LABELS - SHEET 2

SHEET SIZE
ARCH D
24" X 36"

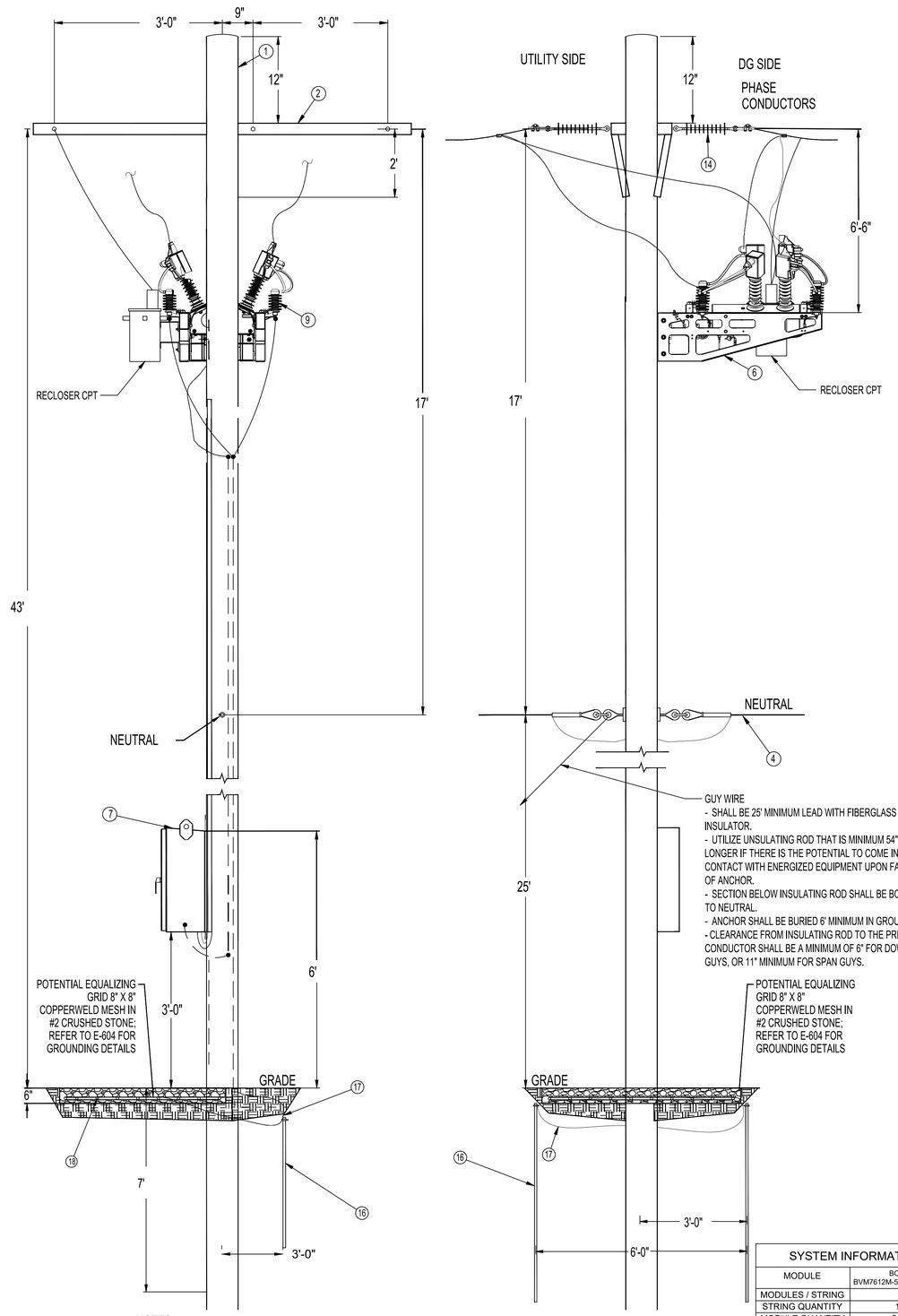
SHEET NUMBER
E-502

ITEM	QTY	DESCRIPTION	SUPPLIED BY
1		WOODEN POLE, 40' HIGH, CLASS 3	CONTRACTOR
2		$3\frac{1}{2}$" X $4\frac{1}{2}$" X 10' FIBERGLASS DEADEND ARMS	CONTRACTOR
3		PRIMARY ACSR CONDUCTOR, 4/0 AWG	CONTRACTOR
4		NEUTRAL #1 AWG CU CONDUCTOR	CONTRACTOR
5		GANG OPERATED AIR BREAK SWITCH, 15 KV, 600 A	CONTRACTOR
6		"CR512" RECLOSER, 15.5 KV, 800 A	CONTRACTOR
7		RECLOSER CONTROL PANEL	CONTRACTOR
8		FUSED CUTOUT, 15 KV, 300 A	CONTRACTOR
9		SURGE ARRESTER, 10 KV, 8.4 KV MCOV, HD RISER POLE CLASS	CONTRACTOR
10		METER CLUSTER ASSEMBLY, 15 KV	CONTRACTOR
11		METERING CABINET	CONTRACTOR
12		MC CABLE, 15 KV 4/0 AWG	CONTRACTOR
13		CABLE TERMINATION, 15 KV CLASS XX KCMIL	CONTRACTOR
14		DEADEND INSULATOR, 15 KV CLASS	CONTRACTOR
15		POST INSULATOR, 15 KV CLASS	CONTRACTOR
16		5/8" X 8' COPPER CLAD GROUND ROD	CONTRACTOR
17		CONDUCTOR BARE COPPERCLAD #4	CONTRACTOR
18		COPPERWELD GROUND MAT - 8' X 8;	CONTRACTOR

POLE LAYOUT GENERAL NOTES:

1. ALL POLES ARE SHOWN AS CONCEPTUAL AND ARE FOR DIAGRAMMATIC PURPOSES ONLY. ALL UTILITY POLES SHALL CONFORM TO ANSI 05.1, AWPA C4, ANSI C2, NESC, LOCAL UTILITY REQUIREMENTS, AND ANY OTHER APPLICABLE CODES AND STANDARDS.
2. ALL OTHER MATERIAL NEEDED FOR A COMPLETE AND OPERABLE INSTALLATION, THOUGH NOT SPECIFICALLY CALLED OUT, SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR.
3. ALL POLE LINE HARDWARE SHALL BE RATED FOR 10,000 LBS MINIMUM.
4. COMMUNICATION SPACER CABLE SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS.
5. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL HELICAL ANCHORS AND DOWN GUY WIRES. ALL DOWN GUYS SHALL BE 7#10 ALUMINUM CLAD STEEL MINIMUM. ANCHORS SHALL BE $\frac{3}{8}$ GALVANIZED SQUARE SHAFT HELICAL WITH A MINIMUM DIAMETER OF 8 INCHES. INSTALLATION OF HELICAL ANCHORS SHALL BE BY EITHER ELECTRICAL OR HYDRAULIC ROTARY TYPE TORQUE MOTOR. SIZE TO BE CONFIRMED BY CALCULATION.
6. MAINTAIN NO LESS THAN 21'10" FEED GROUND CLEARANCE THROUGHOUT EACH NEUTRAL SPAN UNDER ALL LOADING CONDITIONS FOR SPANS LESS THAN 45 FEET. FOR LONGER SPANS, CONTACT CCR ENGINEERING FOR DIRECTION.
7. MAXIMUM OPERATION TEMPERATURE OF OVERHEAD CONDUCTOR 120°F.
8. FULL-PHASE TENSION TO STOP AT UTILITY POLE WITH GUYING; SLACK SPAN BETWEEN LAST UTILITY POLE AND FIRST CCR POLE.
9. IN ADDITION TO NUTS AND WASHERS, LOCKNUTS SHALL BE INSTALLED ON ALL THREADED MATERIAL AND HARDWARE. THE THREADS ON INSTALLED BOLTS SHALL PROTRUDE PAST THE LOCK WASHERS A MINIMUM OF ONE INCH BUT NOT MORE THAN TWO INCHES.
10. A 3 INCH BY 3 INCH (MINIMUM)SQUARE, CURVED WASHER SHALL BE USED ABUTTING THE POLE WHEN INSTALLED ON PRIMARY DEADEND, NEUTRAL DEADEND, AND GUY ASSEMBLIES DIRECTLY TO POLE.
11. CONDUCTORS SHALL BE SAGGED EVENLY AND IN ACCORDANCE WITH THE CONDUCTOR MANUFACTURER'S RECOMMENDATIONS. SEE TABLE BELOW FOR INITIAL SAG BASED ON SPAN LENGTH AND TEMPERATURE.
12. EACH SURGE ARRESTER TO BE BONDED SEPARATELY TO POLE GROUND.
13. BOND ALL NON-CURRENT CARRYING METALLIC PARTS ON THE RECEIVING STRUCTURE OF THE EQUIPMENT GROUND WITH A STRANDED #4 AWG BARE COPPER CONDUCTOR.
14. ALL ARRESTORS SHALL HAVE A DEDICATED #4 AWG BARE COPPER CONDUCTOR TRAILED DOWN TO GROUNDING RODS/GRID SEPARATE FROM EQUIPMENT GROUND.
15. ALL DISCONNECTING MEANS SHALL BE UNIFORMLY PLACARDED WITH PERMANENTLY AFFIXED METAL OR PLASTIC LABELS AS REQUIRED BY THE NEC. NY SIR, AND ESB 750.

1 E-600 POINT OF INTERCONNECTION POLE BOM
SCALE: NTS



NOTES:
- CUSTOMER RECLOSER POLE SHALL INCLUDE DESIGNATION "C-2". RECLOSER IDENTIFICATION "R516".

2 E-600 RECLOSER POLE FRONT AND SIDE VIEW
SCALE: NTS

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	145
MODULE QUANTITY	3,770
TOTAL DC SIZE	2,035,800 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	12
TOTAL AC SIZE	1,500,000 W
TILT	±55°
AZIMUTH	180°

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PROJECT NAME

MANLIUS NORTH
8107 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

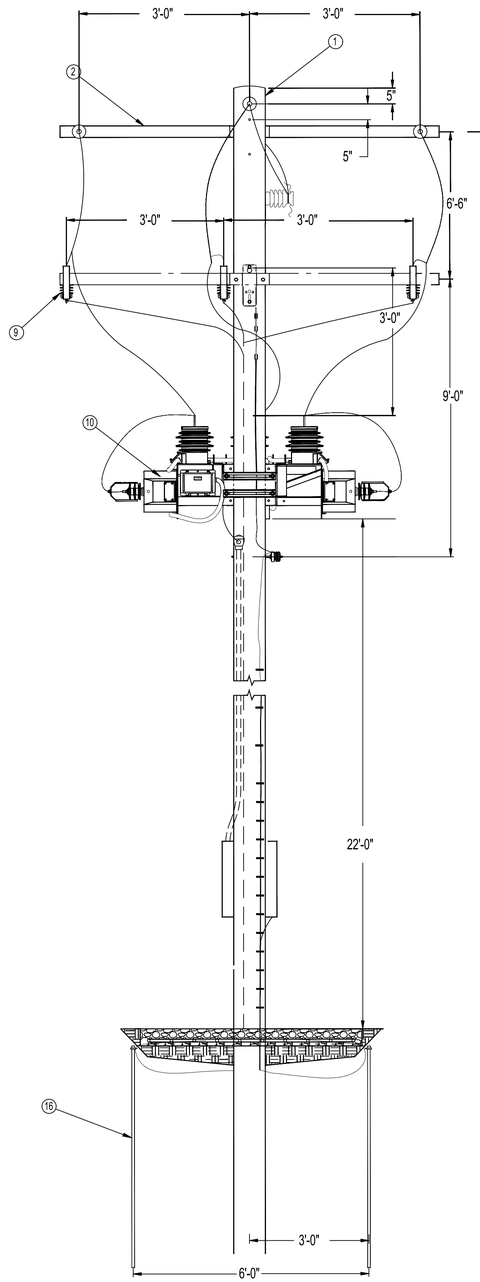
POLE DETAILS - SHEET 1

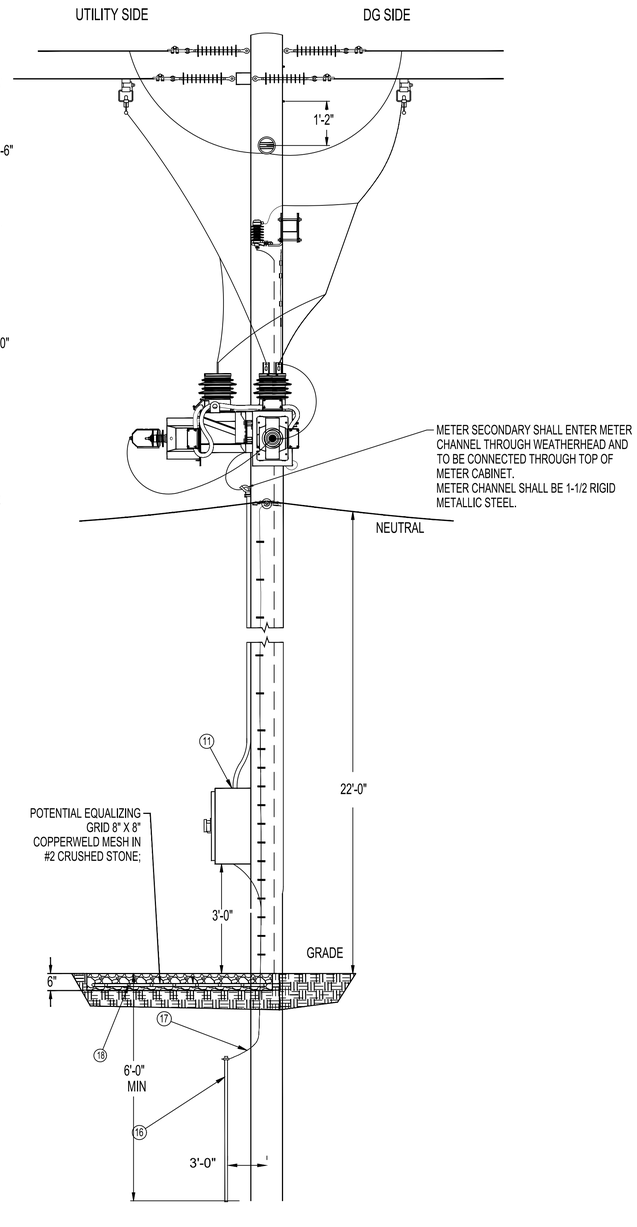
SHEET SIZE

ARCH D
24" X 36"

SHEET NUMBER

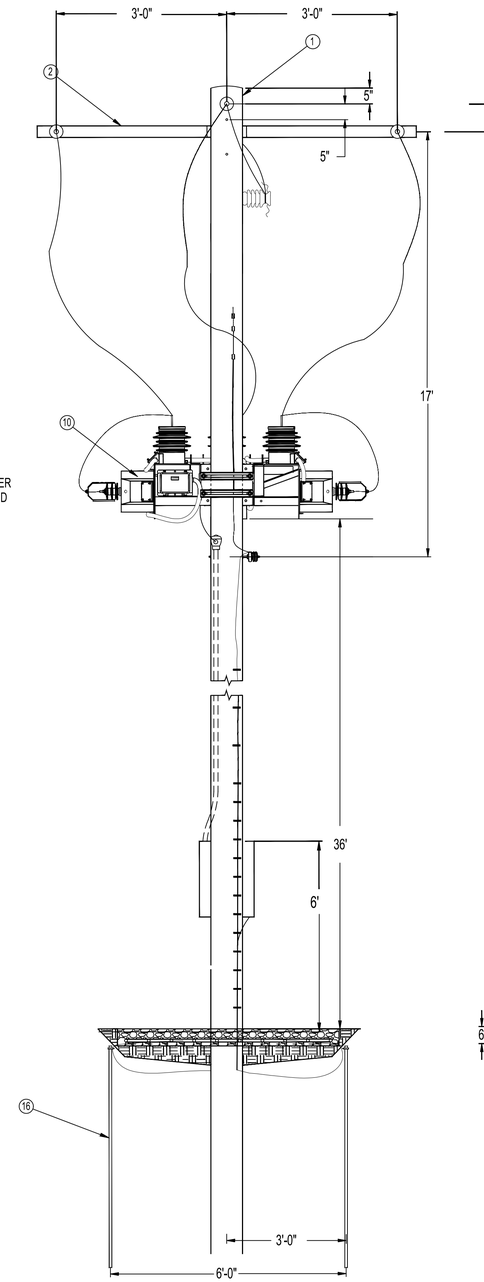
E-600

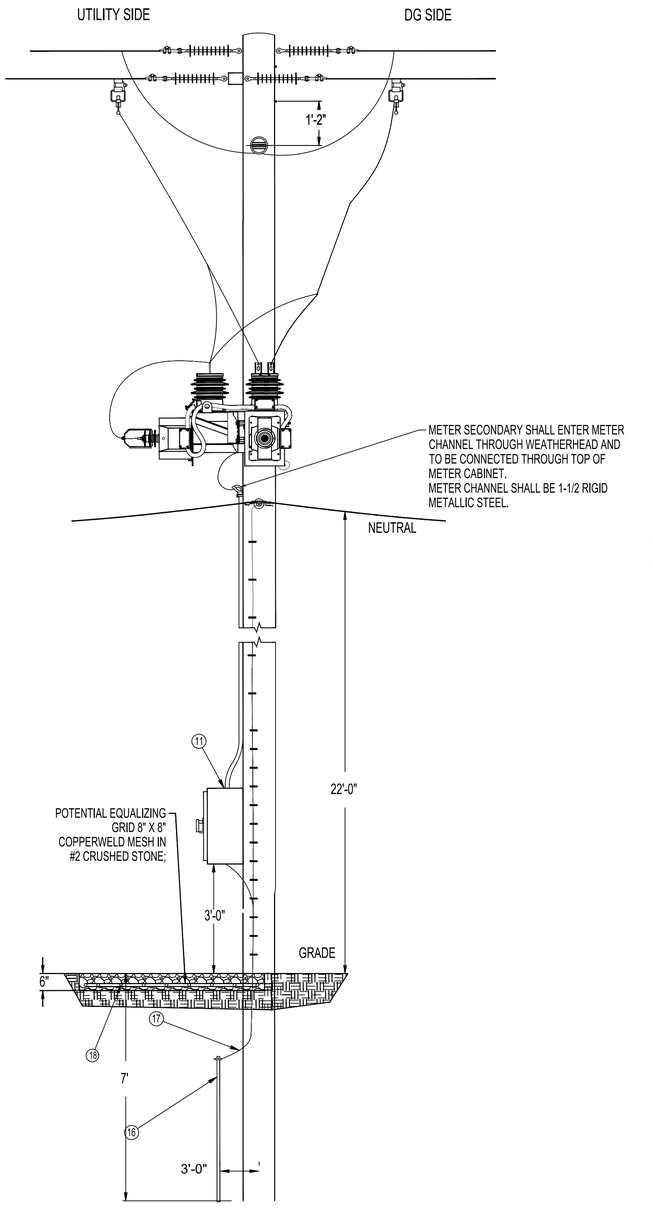




NOTES:
- UTILITY METER POLE SHALL INCLUDE DESIGNATION "C-3".
- METER SHALL HAVE 1-1/2" RMC OR PVC SCH 80 CONDUIT.

1 E-601 METER POLE FRONT AND SIDE VIEW
SCALE: NTS





NOTES:
- CUSTOMER METER POLE SHALL INCLUDE DESIGNATION "C-4".
- METER SHALL HAVE 1-1/2" RMC OR PVC SCH 80 CONDUIT.

2 E-601 METER POLE FRONT AND SIDE VIEW
SCALE: NTS

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	145
MODULE QUANTITY	3,770
TOTAL DC SIZE	2,035,800 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	12
TOTAL AC SIZE	1,500,000 W
TILT	±55°
AZIMUTH	180°

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PROJECT NAME

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8107 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

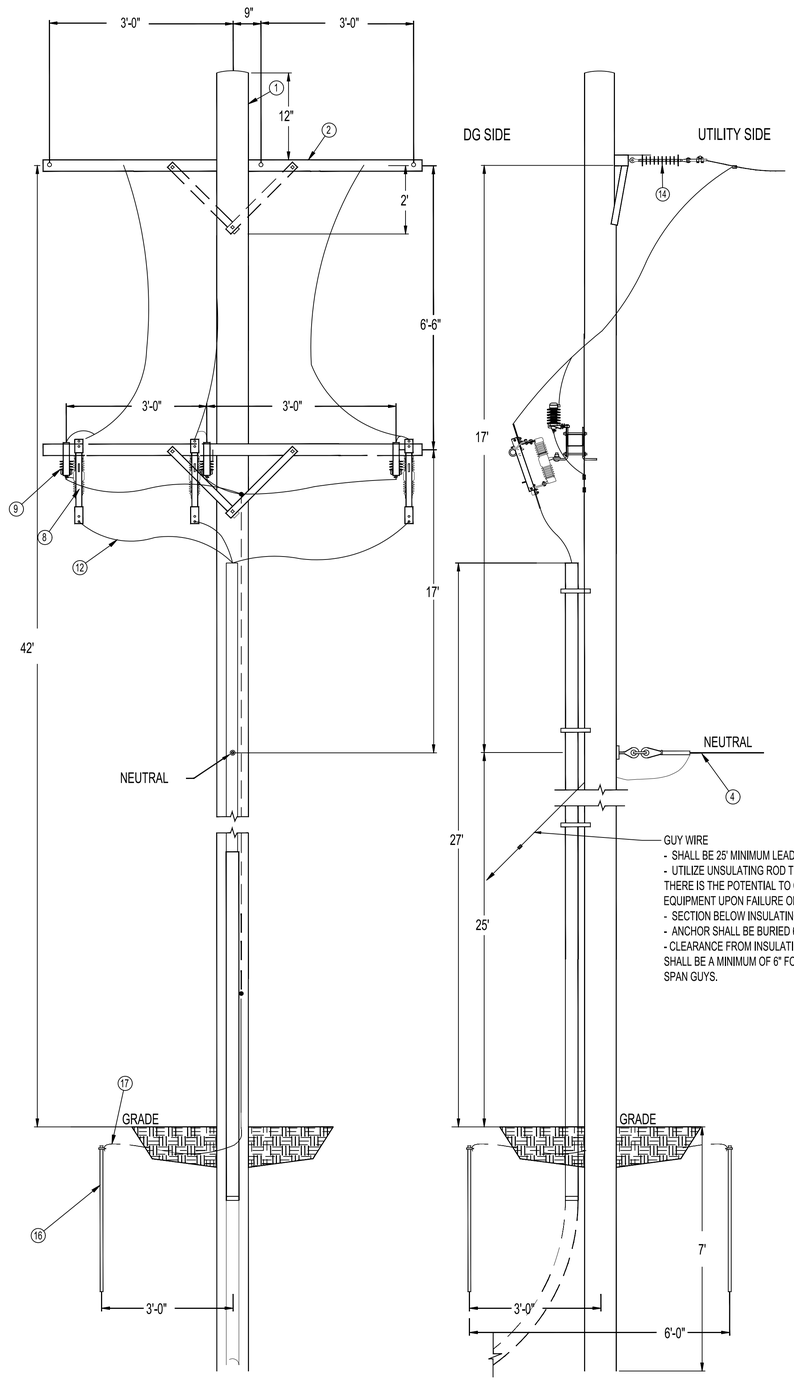
POLE DETAILS - SHEET 2

SHEET SIZE

ARCH D
24" X 36"

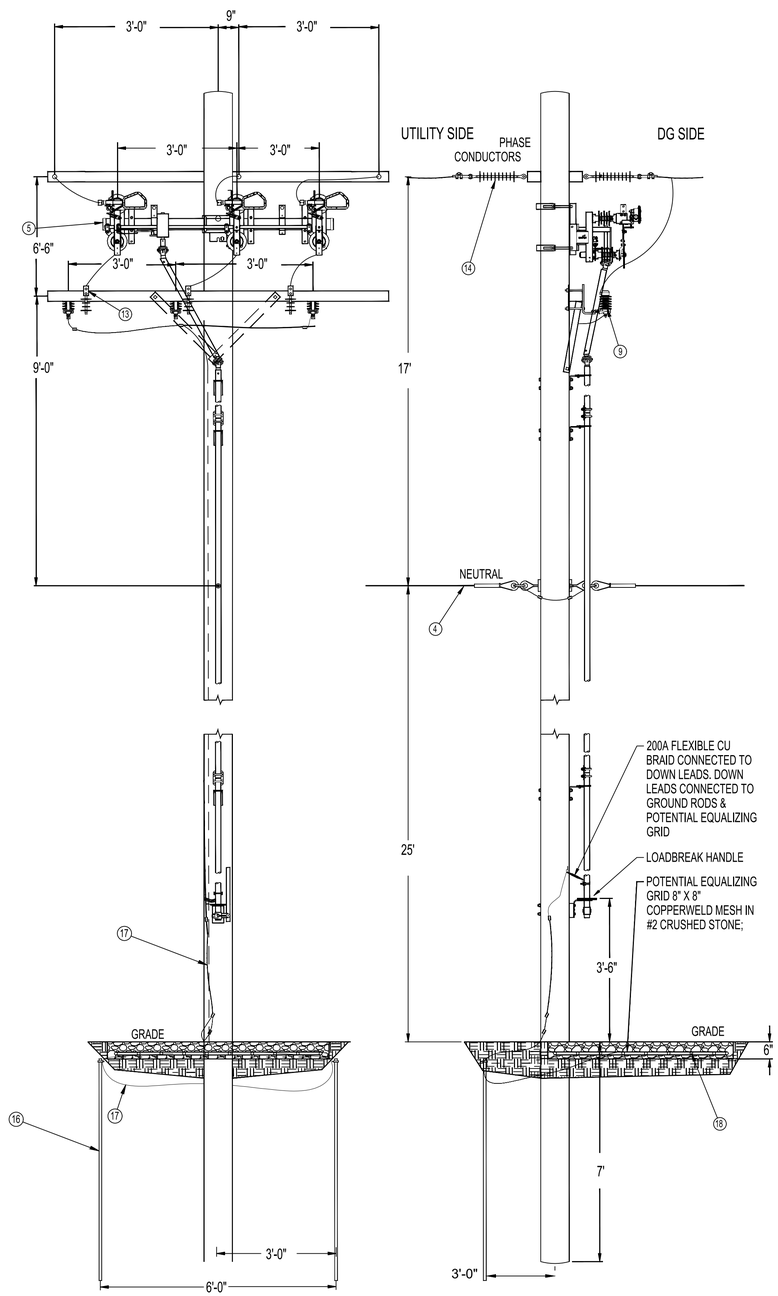
SHEET NUMBER

E-601



NOTES:
- RISER POLE DISCONNECT LABEL SHALL INCLUDE DESIGNATION "C513".
- RISER POLE SHALL INCLUDE DESIGNATION "C-5".

1 E-602 RISER POLE FRONT AND SIDE VIEW
SCALE: NTS



NOTES:
- GOAB ORIENTATION "JAWS" TO BE ON UTILITY SIDE OF DISCONNECT WHILE "BLADES" TO BE ON GENERATOR SIDE.
- UTILITY SOURCE SHALL BE CONNECTED TO JAW SIDE OF SWITCH. HINGE SIDE OF SWITCH SHALL BE CONNECTED TOWARDS CUSTOMER DER.
- THE SWITCH SHALL BE CAPABLE OF OPENING UNDER 1/2" ICE LOADING CONDITIONS NESC "HEAVY".
- MAIN GENERATOR DISCONNECT POLE LABEL SHALL INCLUDE DESIGNATION "C511".
- CUSTOMER GOAB POLE LABEL SHALL INCLUDE DESIGNATION "C-1".
- SWITCH BLADE SHALL BE ON DE-ENERGIZED SIDE OF SWITCH WHEN OPEN.

2 E-602 GOAB POLE FRONT AND SIDE VIEW
SCALE: NTS

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	145
MODULE QUANTITY	3,770
TOTAL DC SIZE	2,035,800 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	12
TOTAL AC SIZE	1,500,000 W
TILT	±55°
AZIMUTH	180°

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PROJECT INSTALLER

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Date: 2022.12.12 09:46:21

PROJECT NAME

MANLIUS NORTH
8107 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

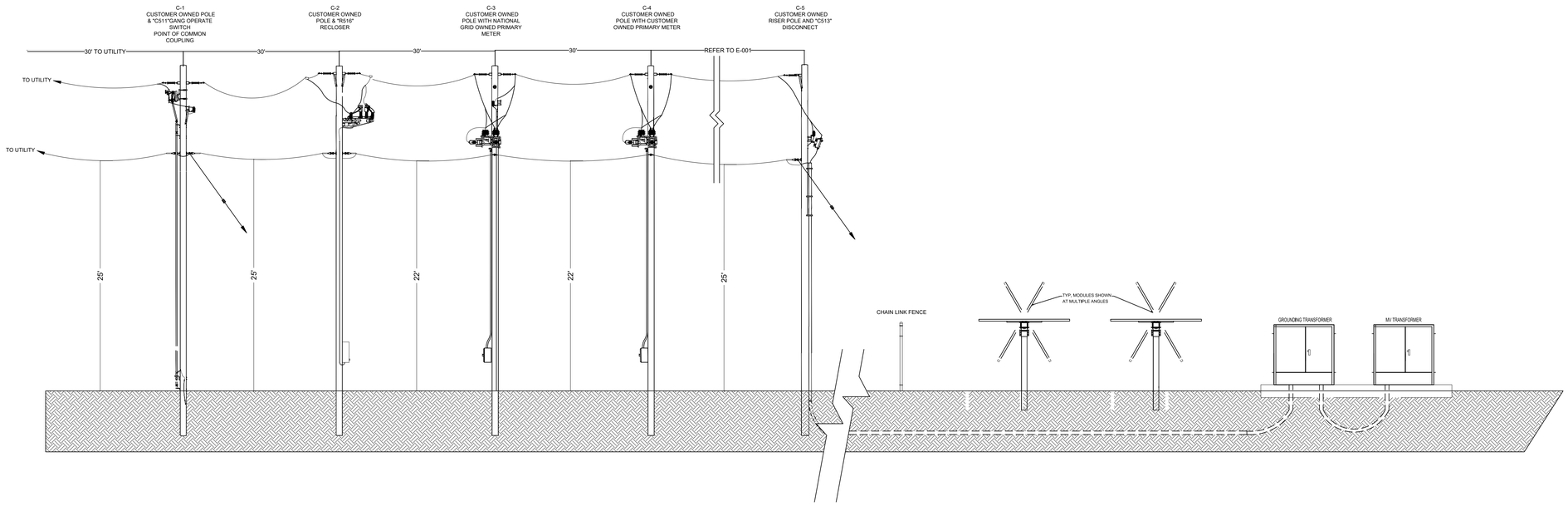
POLE DETAILS - SHEET 3

SHEET SIZE

ARCH D
24" X 36"

SHEET NUMBER

E-602



1 E-603 POLE LAYOUT
SCALE: NTS

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	145
MODULE QUANTITY	3,770
TOTAL DC SIZE	2,035,800 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	12
TOTAL AC SIZE	1,500,000 W
TILT	±55°
AZIMUTH	180°

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PROJECT NAME

MANLIUS NORTH
8107 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

POLE LAYOUT

SHEET SIZE

ARCH D
24" X 36"

SHEET NUMBER

E-603

SG125HV

String Inverter for 1500 Vdc System

SUNGROW
Clean power for all



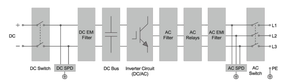
HIGH YIELD
- Patented five-level topology, max. efficiency 98.9 %, European efficiency 98.7 %, CEC efficiency 98.5 %
- Full power operation without derating at 50 ℃
- Patented anti-PID function

EASY O&M
- Virtual central solution, easy for O&M
- Compact design and light weight for easy installation

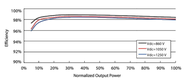
SAVED INVESTMENT
- DC 1500V,AC 600V, low system initial investment
- 1 to 5MW power block design for lower AC transformer and labor cost
- Max.DC/AC ratio up to 1.5

GRID SUPPORT
- Compliance with both IEC and UL safety,EMC and grid support regulations
- Low/High voltage ride through(L/HVRT)
- Active & reactive power control and power ramp rate control

CIRCUIT DIAGRAM



EFFICIENCY CURVE



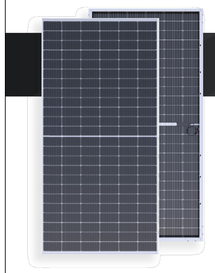
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SG125HV

Type designation	SG125HV
Input (DC)	
Max. PV input voltage	1500 V
Min. PV input voltage / Start-up input voltage	860 V / 920 V
Nominal PV input voltage	1050 V
MPP voltage range	860 – 1450 V
MPP voltage range for nominal power	860 – 1250 V
No. of independent MPP inputs	1
No. of DC inputs	1
Max. PV input current	148 A
Max. DC short-circuit current	250 A
Output (AC)	
AC output power	125 kVA @ 50 ℃
Max. AC output current	120 A
Nominal AC voltage	3 / PE, 600 V
AC voltage range	480 – 690 V
Nominal grid frequency / Grid frequency range	50 Hz / 45 – 55 Hz, 60 Hz / 55 – 65 Hz
THD	< 3 % (at nominal power)
DC current injection	< 0.5 % In
Power factor at nominal power / Adjustable power factor	> 0.99 / 0.8 leading - 0.8 lagging
Feed-in phases / connection phases	3 / 3
Efficiency	
Max. efficiency / European efficiency	98.9% / 98.7%
CEC efficiency	98.5%
Protection	
DC reverse connection protection	Yes
AC short-circuit protection	Yes
Leakage current protection	Yes
Grid monitoring	Yes
DC switch	Yes
AC switch	Yes
Q at night function	No
Anti-PID function	Yes
Overvoltage protection	DC Type II / AC Type II
General Data	
Dimensions (W*H*D)	670*902*296 mm 26.4"*35.5"*11.7"
Weight	76 kg 167.5 lb
Isolation method	Transformerless
Degree of protection	IP 65 NEMA 4X
Night power consumption	< 4 W
Operating ambient temperature range	-30 to 60 ℃ (> 50 ℃ derating) -22 to 140 ℉ (> 122 ℉ derating)
Allowable relative humidity range (non-condensing)	0 – 100 %
Cooling method	Smart forced air cooling
Max. operating altitude	4000 m (> 3000 m derating) 13123 ft (> 9843 ft derating)
Display / Communication	LED, Bluetooth+APP / RS485
DC connection type	OT or DT terminal (Max. 185 mm² 350 Kcmil)
AC connection type	OT or DT terminal (Max. 185 mm² 350 Kcmil)
Compliance	UL1741, UL1741SA, IEEE1547, IEEE15471, CSA C22.2 107.1-01-2001, FCC Part15 Sub-part B Class A Limits, California Rule 21, IEC 62109-1/-2, IEC 61000-6-2/-4, IEC 61727, IEC62116, BDEW, EN50549,VDE-AR-N 4110:2018, VDE-AR-N 4120:2018, UNE 206007-1:2013, P.O.12.3, UTE C15-712-1:2013, CEI 0-16:2017, IEC 61683, PEA, NTCO
Grid Support	LVRT, HVRT, ZVRT, active & reactive power regulation, PF control, soft start/stop

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BOVIET SOLAR



VEGA SERIES™

UTILITY SCALE SOLAR
MONO | BIFACIAL | PERC | PV MODULE

Power Range:	525W	530W I 535W I 540W I 545W I 550W
Technology:	PERC I Half cut cell I 10 Busbar I 144 cells
Design:	Double Glass I Silver Frame I Glass Back
Module Efficiency:	21.1%
Cell Efficiency:	22.5%~23.3%
Power Tolerance:	0~+5W
System Voltage:	1000/1500 V DC
Module Size:	90.40 x 44.65 x 1.38 inch
Module Weight:	73.86 lb.
Module Code:	BVM7612M-XXX-H-HC-BF-DG

DESIGNED TO PERFORM AND BUILT TO LAST

Our PV modules are designed with better technology in mind, made from robust product components, under stringent quality control steps and high-tech manufacturing processes.

PERC, half-cut, multi-busbar, and large cell designs enables our PV modules to pack more power per module, capture more photons, produce more energy, and provide reliable, dependable system performance under different installations requirements, difficult weather, or environmental conditions. Whether you are EPC, installer, contractor, or project developer, we have the right and better PV module for your residential, commercial, industrial, and utility scale solar projects.

- Monocrystalline technology
- P-Type semiconductor
- PERC Passivated emitter and rear cell technology
- Half cut cell
- Multi-Busbar cell
- Large wafer design
- Beautiful aesthetic
- Robust product component

WARRANTY

30 Years - Linear power performance warranty
12 Years - Enhanced product warranty



1. (12) years product warranty
2. Out linear warranty with 2.5% degradation in the 1st year and less than 0.5% degradation each year from 2nd year to 30th year

CERTIFICATES

UL 61730 I IEC 61215 I IEC 61730 I CEC Listed I CE
ISO 9001 Quality Management System
ISO 14001 Environmental Management System
ISO 45001 Occupational Health and Safety Management System

*Please contact with Boviet Solar representatives for full list of certificates according to local requirements and product type

ELECTRICAL CHARACTERISTICS I STC

Maximum Power (Pmax)	525W	530W	535W	540W	545W	550W
Maximum Power Current (Imp)	12.60A	12.66A	12.71A	12.76A	12.82A	12.88A
Maximum Power Voltage (Vmp)	41.47V	41.94V	42.17V	42.40V	42.58V	42.76V
Short Circuit Current (Isc)	13.37A	13.43A	13.48A	13.55A	13.72A	13.84A
Open Circuit Voltage (Voc)	49.52V	49.71V	49.80V	49.89V	49.98V	50.13V
Module Efficiency	20.2%	20.4%	20.5%	20.7%	20.9%	21.1%
Power Tolerance	0~+5W	0~+5W	0~+5W	0~+5W	0~+5W	0~+5W

STC: AM1.5 Irradiance 1000W/m, 25° C

ELECTRICAL CHARACTERISTICS I NOCT

Maximum Power (Pmax)	525W	530W	535W	540W	545W	550W
Maximum Power (Pmax)	413W	417W	421W	425W	429W	433W
Maximum Power Current (Imp)	10.08A	10.16A	10.24A	10.32A	10.40A	10.48A
Maximum Power Voltage (Vmp)	41.03V	41.1V	41.15V	41.20V	41.25V	41.32V
Short Circuit Current (Isc)	10.67A	10.71A	10.74A	10.81A	10.86A	10.92A
Open Circuit Voltage (Voc)	48.92V	49.0V	49.23V	49.45V	48.87V	50.68V

NOCT: AM 1.5 Irradiance 800/m², 20° C, Wind speed 1m/s

MECHANICAL CHARACTERISTICS

Solar Cell	Monocrystalline I PERC PV Cells 182mm Cell I Halfcut I 10 Busbar I 144 (6x24) pcs in series
Solar Modules	Bifacial I 90.40 x 44.65 x 1.38 inch. I Weight: 73.86 lb.
Module Glass	2.0 mm (0.079 inch) High transparency, low iron, AR Coated tempered Glass
Module Frame	Frame 35 mm Ultra-strong anodized aluminum alloy frame
Module Junction Box	IP68 rated I 3 bypass diodes
Module Output Cable	4mm² (EU) I 12 AWG (US) 39.38 inch
Module Connector	Multi contact (MC4) compatible connectors
Module Encapsulant	POE
Module Backsheet	2.0mm thickness, transparent with a grid. High transmitted, low iron, and strength tempered glass
Module Fire Type	Type 29 Fire rated

PACKING INFORMATION

Pieces per pallet:	31
Pallets per container (40HQ):	20
Pieces per container (40HQ):	620
Pallet Weight:	2399.73 lb
Pallet Dimension:	91.37 x 44.69 x 49.49 inch

MAXIMUM RATING

Operating Temperature	-40°F~185°F
Maximum Series Fuse Rating	30A
Isc Temperature Coefficient	1000/1500V DC

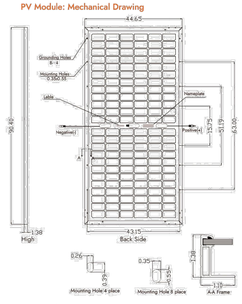
THERMAL CHARACTERISTICS

Pmax Temperature Coefficient	-0.35%/K
Voc Temperature Coefficient	-0.285%/K
Isc Temperature Coefficient	+0.05%/K
NOCT	113±35.6°F

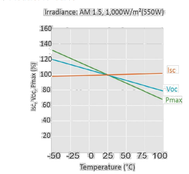
BIFACIAL OUTPUT-BACKSIDE POWER GAIN

10%	Pmax(W)	578	583	589	594	600	605
	Module efficiency (%)	22.18	22.39	22.60	22.81	23.03	23.24
20%	Pmax(W)	630	636	642	648	654	660
	Module efficiency (%)	24.20	24.43	24.66	24.89	25.12	25.35

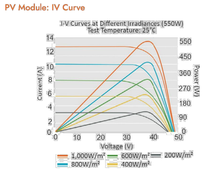
PV Module: Mechanical Drawing



PV Module: IV Curve



PV Module: IV Curve



BOVIET SOLAR | www.bovietsolar.com | V3 | August 10, 2022

Disclaimer: The information included in this PV module datasheet is subject to change without any notice and is provided for informational purposes only. No contractual rights are established or should be inferred because of the user's reliance on the information contained in this PV module datasheet. Please contact Boviet Solar's local offices for updated product information. Thank you.

Castillo Engineering
DESIGNING TOMORROW'S POWER®

CASTILLO ENGINEERING SERVICES, LLC
COA # 28345
620 N. WYMORE ROAD,
SUITE 250,
MAITLAND, FL 32751
TEL: (407) 289-2575

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REVISIONS

DESCRIPTION	DATE	REV
IFP	12/09/2022	0
30% REVIEW	11/11/2022	A

PROJECT INSTALLER

STATE OF NEW YORK
E. E. CASTILLO
LICENSED PROFESSIONAL ENGINEER
095344

Digitally signed by: E Castillo
Date: 2022.12.12 09:46:22

PROJECT NAME

MANLIUS NORTH
8107 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

DATASHEETS

SHEET SIZE

ARCH D
24" X 36"

SHEET NUMBER

D-100

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	145
MODULE QUANTITY	3,770
TOTAL DC SIZE	2,035,800 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	12
TOTAL AC SIZE	1,500,000 W
TILT	±55°
AZIMUTH	180°

MANLIUS WEST
6,233.76 kW-DC, 4,900.0 kW-AC
8105 E SENECA TURNPIKE
MANLIUS, NY 13104

(43.01162, -75.96980)

CODES AND STANDARDS

NEC 2017
NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)
NATIONAL FIRE PROTECTION ASSOCIATION (NFPA 70E)
AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)
AMERICAN SOCIETY OF TESTING MATERIALS (ASTM)

PROJECT INFORMATION

Owner:
CVE US EI6 Manlius West, LLC

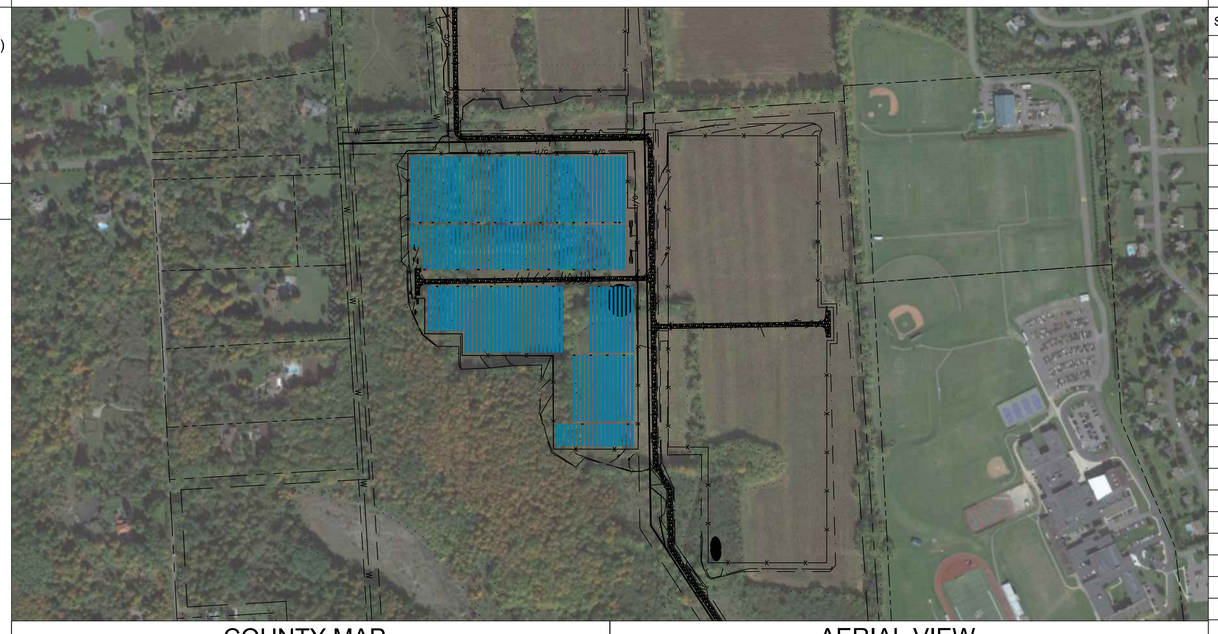
General Contractor:

Installer:

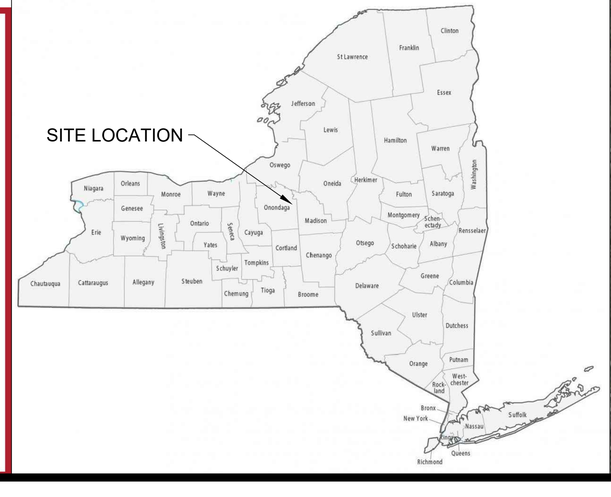
Engineer:
Castillo Engineering Services LLC
620 N. Wymore Road, Suite 250,
Maitland, FL 32751
TEL: (407) 289-2575
Ermocrates E. Castillo
License#: NY PE 095344

Castillo Engineering
DESIGNING TOMORROW'S POWER®

ARRAY VIEW



COUNTY MAP



AERIAL VIEW



DRAWING INDEX

SHEET#	SHEET DESCRIPTION	REV / ISSUE	DATE
G-001	TITLE SHEET	0 / IFP	12/09/2022
G-100	GENERAL NOTES - SHEET 1	0 / IFP	12/09/2022
G-101	GENERAL NOTES - SHEET 2	0 / IFP	12/09/2022
C-001	OVERALL SITE PLAN	0 / IFP	12/09/2022
E-001	POLE LAYOUT SITE PLAN	0 / IFP	12/09/2022
E-100	SINGLE LINE DIAGRAM - SHEET 1	0 / IFP	12/09/2022
E-101	SINGLE LINE DIAGRAM - SHEET 2	0 / IFP	12/09/2022
E-102	SINGLE LINE DIAGRAM - SHEET 3	0 / IFP	12/09/2022
E-103	THREE LINE DIAGRAM - SHEET 1	0 / IFP	12/09/2022
E-104	THREE LINE DIAGRAM - SHEET 2	0 / IFP	12/09/2022
E-105	THREE LINE DIAGRAM - SHEET 3	0 / IFP	12/09/2022
E-106	THREE LINE DIAGRAM - SHEET 4	0 / IFP	12/09/2022
E-110	DC LINE DIAGRAM	0 / IFP	12/09/2022
E-111	AC & DC SYSTEM VALUE	0 / IFP	12/09/2022
E-200	OVERALL DC FEEDER PLAN	0 / IFP	12/09/2022
E-201	DC FEEDER PLAN - AREA 1	0 / IFP	12/09/2022
E-202	DC FEEDER PLAN - AREA 2	0 / IFP	12/09/2022
E-203	DC FEEDER PLAN - AREA 3	0 / IFP	12/09/2022
E-300	GROUNDING DETAILS - SHEET 1	0 / IFP	12/09/2022
E-301	GROUNDING DETAILS - SHEET 2	0 / IFP	12/09/2022
E-302	GROUNDING DETAILS - SHEET 3	0 / IFP	12/09/2022
E-303	GROUNDING DETAILS - SHEET 4	0 / IFP	12/09/2022
E-400	MISCELLANEOUS DETAILS - SHEET 1	0 / IFP	12/09/2022
E-401	MISCELLANEOUS DETAILS - SHEET 2	0 / IFP	12/09/2022
E-402	CONDUIT AND WIRE MANAGEMENT	0 / IFP	12/09/2022
E-403	MOUNTING DETAILS	0 / IFP	12/09/2022
E-404	CONDUIT TRENCHING DETAILS - SHEET 1	0 / IFP	12/09/2022
E-405	CONDUIT TRENCHING DETAILS - SHEET 2	0 / IFP	12/09/2022
E-406	EQUIPMENT PAD DETAIL	0 / IFP	12/09/2022
E-407	EQUIPMENT RACK DETAILS	0 / IFP	12/09/2022
E-500	WARNING LABELS - SHEET 1	0 / IFP	12/09/2022
E-501	WARNING LABELS - SHEET 2	0 / IFP	12/09/2022
E-502	WIRE LABELING	0 / IFP	12/09/2022
E-600	POLE DETAILS - SHEET 1	0 / IFP	12/09/2022
E-601	POLE DETAILS - SHEET 2	0 / IFP	12/09/2022
E-602	POLE DETAILS - SHEET 3	0 / IFP	12/09/2022
E-603	POLE LAYOUT	0 / IFP	12/09/2022
D-100	DATASHEETS	0 / IFP	12/09/2022

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	444
MODULE QUANTITY	11,544
TOTAL DC SIZE	6,233,760 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	40
TOTAL AC SIZE	4,900,000 W
TILT	±55°
AZIMUTH	180°

Castillo Engineering
DESIGNING TOMORROW'S POWER®

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REVISIONS

DESCRIPTION	DATE	REV
IFP	12/09/2022	0
30% REVIEW	11/11/2022	A

PROJECT INSTALLER

STATE OF NEW YORK · E. E. CASTILLO · 095344 · LICENSED PROFESSIONAL ENGINEER

Digitally signed by: Ermocrates E Castillo
Date: 2022.12.12 09:47:49

PROJECT NAME

MANLIUS WEST
8105 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

TITLE SHEET

SHEET SIZE

ARCH D
24" X 36"

SHEET NUMBER

G-001

1. GENERAL NOTES AND SPECIFICATIONS

A. PROVIDE ALL MATERIALS, LABOR, EQUIPMENT AND SERVICES AND PERFORM ALL OPERATION IN CONNECTION WITH THE ELECTRICAL WORK. IT IS THE INTENT THAT THESE DRAWINGS PROVIDE THE WORK REQUIRED FOR AN ELECTRICAL INSTALLATION THAT IS COMPLETE IN EVERY RESPECT, READY FOR OPERATION.

B. ALL WORK SHALL COMPLY WITH ALL LOCAL, STATE AND FEDERAL CODES AND THE REQUIREMENTS OF ANY OF THE AUTHORITIES HAVING JURISDICTION. ALL MATERIAL AND EQUIPMENT SHALL BE UL LISTED AND SHALL BEAR THE UL INSPECTION LABEL WHEREVER STANDARDS HAVE BEEN ESTABLISHED AT THE COMPLETION OF THE WORK, SECURE CERTIFICATES OF APPROVAL FROM THE VARIOUS AUTHORITIES HAVING JURISDICTION AND DELIVER SAME TO THE DESIGN PROFESSIONAL.

C. ALL WORK SHALL COMPLY WITH NECA STANDARD OF INSTALLATION (PUBLISHED BY THE NATIONAL ELECTRICAL CONTRACTORS ASSOCIATION) AND NFPA 70 - NATIONAL ELECTRICAL CODE NEC-2017, AND ALL APPLICABLE SAFETY STANDARDS. COMPLY WITH APPLICABLE STANDARDS THE OWNER HAS DEVELOPED AS THEY PERTAIN TO THIS WORK.

D. "PROVIDE" MEANS TO SUPPLY, ERECT, INSTALL, TEST, AND CONNECT UP IN COMPLETE READINESS FOR REGULAR OPERATION. THE PARTICULAR WORK REFERRED TO "FURNISH" MEANS TO SUPPLY AND DELIVER TO THE JOB. "INSTALL" MEANS TO RECEIVE, INSTALL AND CONNECT UP IN COMPLETE READINESS FOR REGULAR OPERATION, THE PARTICULAR WORK REFERRED TO. "APPROVED EQUAL" MEANS AN EQUIPMENT OR MATERIAL WHICH, IN THE OPINION OF THE DESIGN PROFESSIONAL, IS EQUAL IN QUALITY, DURABILITY, APPEARANCE, STRENGTH, DESIGN, PERFORMANCE, PHYSICAL DIMENSIONS AND ARRANGEMENT TO THE EQUIPMENT OR MATERIAL SPECIFIED AND WILL FUNCTION ADEQUATELY IN ACCORDANCE WITH THE GENERAL DESIGN.

E. BEFORE SUBMITTING THE BID, VISIT EACH SITE WHERE WORK IS REQUIRED. SURVEY THE EXISTING CONDITIONS AND BECOME FAMILIAR WITH THE DIFFICULTIES WHICH WILL AFFECT THE EXECUTION AND COMPLETION OF THE WORK. INVESTIGATE THE NATURE AND LOCATION OF THE WORK, THE GENERAL AND LOCAL CONDITIONS, PARTICULARLY THOSE BEARING UPON THE WORK REQUIRED, TRANSPORTATION, DISPOSAL, HANDLING AND STORAGE OF MATERIALS, AVAILABILITY OF LABOR, WATER, ELECTRICAL POWER, ROADS AND PHYSICAL CONDITIONS AT THE SITE NEEDED FOR THE PROSECUTION OF THE WORK AND ALL OTHER MATTERS UPON WHICH INFORMATION IS REASONABLY OBTAINABLE AND WHICH CAN IN ANY WAY AFFECT THE WORK OR THE COST THEREOF UNDER THE CONTRACT.

F. PROCURE AND PAY FOR ALL CERTIFICATES, FEES, TESTS, INSPECTIONS, BONDS, DEPOSITS AND ESCROW ACCOUNTS REQUIRED FOR COMPLETE INSTALLATION OF THE WORK. GIVE ALL NOTICES REQUIRED BY LAW, ORDINANCES OR THE RULES AND REGULATIONS OF THE VARIOUS AUTHORITIES. COMPLY WITH ALL ORDERS OF THE, LOCAL DEPARTMENT OF BUILDINGS, COUNTY DEPARTMENTS OF HEALTH, FIRE MARSHAL, ETC. DELIVER TO THE OWNER'S REPRESENTATIVE ALL PERMITS AND CERTIFICATES OF APPROVAL ISSUED BY ALL TOWN, COUNTY AND STATE AGENCIES HAVING JURISDICTION IN CONNECTION WITH THIS WORK BEFORE THE CERTIFICATE FOR THE FINAL PAYMENT IS ISSUED.

G. NO WORK SHALL BE COVERED OVER UNTIL TEST HAVE BEEN PERFORMED AND THE AUTHORITIES HAVING JURISDICTION HAVE EXAMINED, INSPECTED AND APPROVED THE TESTS AND THE WORK. PROVIDE ALL CONTROLLED INSPECTIONS CONTROLLED REQUIRED BY THE REGULATIONS OF TOWN, COUNTY AND STATE. THE CONTROLLED INSPECTIONS SHALL BE MADE BY AN INSPECTOR MEETING THE PROFESSIONAL REQUIREMENTS SET FORTH BY STATE AND LOCAL LAWS AND SHALL BE CARRIED OUT IN ACCORDANCE WITH APPLICABLE TOWN, COUNTY AND STATE BUILDING CODES.

H. PROVIDE ALL NECESSARY INSURANCE, FREE OF EXTRA CHARGE AND AGREE TO INDEMNIFY AND SAVE HARMLESS THE PARTY CONTRACTING FOR SERVICES AGAINST LOSS OR EXPENSE.

I. THE DRAWINGS DO NOT UNDERTAKE TO ILLUSTRATE OR SET FORTH EVERY ITEM NECESSARY FOR THE WORK, AS IT IS ASSUMED THAT WITH THIS BID SUBMISSION, THE CONTRACTOR ACKNOWLEDGES THAT HE/SHE IS EXPERT IN THE SEVERAL LINES OF THE WORK AND IS CAPABLE OF INTERPRETING THEM. WHERE NO SPECIFIED MANUFACTURER OR QUALITY OF MATERIAL IS GIVEN, A FIRST-CLASS STANDARD ARTICLE AS APPROVED BY THE DESIGN PROFESSIONAL SHALL BE FURNISHED.

J. THE DRAWINGS ARE GENERALLY DIAGRAMMATIC AND ARE INTENDED TO CONVEY THE SCOPE OF WORK AND INDICATE GENERAL ARRANGEMENT OF EQUIPMENT, CONDUITS, PANELS, FIXTURES, ETC. THE LOCATION OF ALL ITEMS SHOWN THAT ARE NOT DEFINITELY FIXED BY DIMENSIONS ARE APPROXIMATE. THE EXACT LOCATIONS NECESSARY TO SECURE THE BEST CONDITIONS AND RESULTS MUST BE DETERMINED AT THE PROJECT AND SHALL HAVE THE APPROVAL OF THE DESIGN PROFESSIONAL BEFORE BEING INSTALLED . DO NOT SCALE DRAWINGS.

K. MAINTAIN AND PROTECT ALL EQUIPMENT, MATERIALS AND TOOLS FROM LOSS OR DAMAGE FROM ALL CAUSES UNTIL FINAL ACCEPTANCE BY THE OWNER.

L. IT IS REQUIRED THAT THE WORK INDICATED BE CARRIED OUT WITH A MINIMUM OF INTERFERENCE TO THE ESTABLISHED ROUTINE OF THE EXISTING BUILDINGS AND THAT ALL WORK BE PERFORMED WITHIN THE REQUIRED CONTRACT TIME.

M. THE OWNER'S REPRESENTATIVE SHALL BE NOTIFIED IN WRITING WHEN INTERRUPTION OF THE PRESENTLY MAINTAINED SERVICES, MECHANICAL, ELECTRICAL OR OTHERWISE IS REQUIRED. WRITTEN PERMISSION SHALL BE OBTAINED FROM THE OWNER'S REPRESENTATIVE PRIOR TO COMMENCING WITH THE SHUT-DOWN.

N. PROVIDE ALL NECESSARY TRAILERS, EXTENSION CORDS AND LAMPS TO PROVIDE TEMPORARY LIGHT AND POWER FOR THE PROPER EXECUTION OF ALL WORK.

O. PROVIDE ALL SCAFFOLDING, RIGGING, HOISTING AND SERVICES NECESSARY FOR ERECTION AND DELIVERY INTO THE PREMISES OF ANY EQUIPMENT AND APPARATUS FURNISHED. REMOVE SAME FROM PREMISES WHEN NO LONGER REQUIRED.

P. ALL WORK SHOWN ON THE DRAWINGS THAT IS NOT SPECIFICALLY INDICATED AS BEING EXISTING SHALL BE ASSUMED TO BE NEW.

Q. THE INSTALLATION OF ALL ELECTRICAL EQUIPMENT, LIGHTING, CONDUIT AND WIRING SHALL CONFORM TO THE LATEST EDITION IBC CODE EARTHQUAKE CONTROL SECTION 1622.

R. NO PART OF THESE DRAWINGS OR SPECIFICATIONS IS INTENDED TO ALLOW A VIOLATION OF PHYSICAL WORKING SPACE REQUIREMENTS AROUND ELECTRICAL EQUIPMENT.

S. VERIFY ALL UNDERGROUND UTILITIES WITH GROUND PENETRATING RADAR PRIOR TO ANY EXCAVATION.

T. USE "CALL BEFORE YOU DIG" SERVICE PRIOR TO ANY EXCAVATION.

U. CONTRACTOR TO PROVIDE TOILET FACILITIES DURING CONSTRUCTION.

V. THE PV ARRAY RACKING IS A PENETRATING GROUND MOUNT.

2. TESTS

A. WIRE AND CABLE: PERFORM INSULATION RESISTANCE AND CONTINUITY TESTS FOR ALL CONDUCTORS . THESE SHALL BE COMPLETED PRIOR TO ENERGIZING. INVESTIGATE AND TAKE REMEDIAL ACTION WHEN CONTINUITY VALUES EXCEED 1.0 OHM AND/OR INSULATION RESISTANCE TESTS LESS THAN 500 MEGAOHMS.

B. GROUND RESISTANCE TESTS: RESISTANCE OF THE ELECTRICAL SYSTEM GROUNDING SHALL BE TESTED TO GROUND AT THE MAIN GROUND ELECTRODE CONNECTION TO ENSURE THAT GROUND RESISTIVITY VALUES DO NOT EXCEED 25 OHMS. SUPPLEMENTAL GROUNDING ELECTRODES MAY NOT EXCEED 25 OHMS.

3. GROUNDING

A. COMPLY WITH REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION, NEC, UL AND IEEE STANDARDS. SIZE GROUND CONDUCTORS IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE EXCEPT WHERE LARGER SIZES ARE INDICATED. ALL GROUND CONDUCTORS SHALL BE NOT SMALLER THAN NO.12 AWG. PROVIDE A COMPLETE ASSEMBLY OF MATERIALS REQUIRED FOR GROUNDING AND BONDING.

B. GROUNDING BUSHINGS SHALL BE HOT-DIPPED GALVANIZED BODY, MOLDED PHENOLIC INSULATION, RATED AT150 DEG C. WITH COPPER-TINNED LAY-IN LUG. PROVIDE FOR ALL INCOMING AND OUTGOING CONDUITS TO THE DISTRIBUTION EQUIPMENT. USE STAINLESS STEEL SCREWS.

C. GROUND RODS SHALL BE STEEL CORE, COPPER JACKETED TYPE, HIGH STRENGTH STEEL ALLOY CORE WITH A MOLTEN-WELDED COVERING AND CONICAL POINT WITH CHAMFER EDGE AT TOP. DRIVING HEADS SHALL BE USED TO PROTECT TOPS OF RODS DURING DRIVING. MINIMUM SIZE ROD SHALL BE 3/4 INCH DIAMETER AND 8 FOOT LONG.

D. GROUND CONNECTORS FOR CONNECTING CABLE TO PIPE SHALL BE HIGH COPPER ALLOY OR BRONZE FITTINGS. PROVIDE AN OFFSET STEEL TONGUE FOR CONNECTIONS TO STEEL AND A DRILLED TONGUE FOR CONNECTION TO COPPER BUS BAR.

E. EXPOSED NON-CURRENT CARRYING METAL PARTS OF MODULE FRAMES, EQUIPMENT AND ENCLOSURES SHALL BE GROUNDED IN ACCORDANCE WITH NEC 250.134 AND 250.136(A). PHOTOVOLTAIC MODULES TO BE GROUNDED USING FACTORY GROUND POINT ONLY OR ANY METHOD APPROVED BY THE DESIGN PROFESSIONAL.

F. GROUND CONTINUITY SHALL BE MAINTAINED ACROSS CONDUIT/ENCLOSURE INTERFACE USING APPROVED JUMPER METHOD.

G. PARTS OF THE ELECTRICAL INSTALLATION TO BE GROUNDED AND BONDED SHALL INCLUDE BUT NOT BE LIMITED TO ELECTRICAL EQUIPMENT, RACEWAYS, CABLE TRAYS, BOXES, CABINETS AND OTHER NON-CURRENT CARRYING METAL PARTS OF THE WIRING SYSTEM, METAL CONDUIT, SWITCHGEAR, HOUSING AND NEUTRALS OF TRANSFORMERS, LIGHTING FIXTURES, PANEL DEVICES, FENCES AROUND ELECTRICAL EQUIPMENT AS APPLICABLE TO EQUIPMENT INSTALLED ON THIS PROJECT.

H. USE EXOTHERMIC WELDING FOR PERMANENTLY CONCEALED AND INACCESSIBLE CONNECTIONS TO FORM SOLID METAL JOINTS. MAKE ACCESSIBLE GROUND CONNECTIONS WITH MECHANICAL PRESSURE TYPE GROUND CONNECTIONS UNLESS OTHERWISE NOTED.

I. APPLY CORROSION-RESISTANT FINISH TO FILED-CONNECTIONS, BURIED METALLIC GROUNDING AND BONDING PRODUCTS, AND PLACES WHERE FACTORY APPLIED PROTECTIVE COATINGS HAVE BEEN DESTROYED, WHICH ARE SUBJECTED TO CORROSIVE ACTION.

4. CONDUITS AND FITTINGS

A. ABOVE GROUND: PVC SCH 80: ANSI-C80.3, THREADLESS, THIN WALL CONDUIT, MINIMUM 3/4 INCH. STEEL COMPRESSION CONNECTORS AND COUPLINGS. MECHANICAL SET SCREWS AND DIE-CAST TYPE COUPLINGS AND CONNECTORS SHALL NOT BE USED. USE METAL CONDUIT BODIES TO MATCH CONDUIT WITH COMPRESSION FITTINGS.

B. RACEWAYS IN CLOSE PROXIMITY OF OTHER TRADES, SHALL BE ARRANGED TO ALLOW FOR PROPER CLEARANCE FOR SERVICING, MAXIMUM HEADROOM, ETC. AND TO PRESENT A NEAT APPEARANCE. MAINTAIN ADEQUATE CLEARANCE BETWEEN CONDUIT AND PIPING WITH A MINIMUM OF 12 INCHES CLEARANCE BETWEEN CONDUIT AND SURFACES WITH TEMPERATURES EXCEEDING 104 DEGREES F.

C. JOIN RACEWAYS WITH FITTINGS DESIGNED AND APPROVED FOR THE PURPOSE AND MAKE JOINTS TIGHT. WHERE JOINTS CANNOT BE MADE TIGHT, USE BONDING JUMPERS TO PROVIDE ELECTRICAL CONTINUITY OF THE RACEWAY SYSTEM. MAKE RACEWAY TERMINATIONS TIGHT. WHERE SUBJECT TO VIBRATION OR DAMPNESS, USE INSULATION BUSHINGS TO PROTECT CONDUCTORS. CUT CONDUIT SQUARE USING SAW OR PIPE CUTTER AND DE-BURR CUT ENDS.

D. USE CONDUIT HUBS OR SEALING LOCKNUTS TO FASTEN CONDUIT TO BOXES IN DAMP AND WET LOCATIONS.

E. SUPPORT CONDUIT USING STEEL OR MALLEABLE IRON SINGLE OR DOUBLE HOLE CONDUIT STRAPS, LAY-IN ADJUSTABLE HANGERS, CLEVIS HANGERS AND SPLIT HANGERS AS REQUIRED. FASTEN CONDUIT SUPPORTS TO STRUCTURE AND SURFACES. DO NOT ATTACH CONDUIT SUPPORTS TO CEILING SUPPORT WIRES, OR ANY OTHER CONDUIT, PIPE, DUCT, ETC. DO NOT SUPPORT CONDUIT WITH WIRE OR PIPE HANGER STRAPS. ALL SUPPORTS SHALL CONFORM TO NEC 344.30.

F. BELOW GRADE: PVC SCHEDULE 80 OR PVC SCHEDULE 40. VERIFY WITH DESIGN ENGINEER PRIOR TO INSTALLATION. CONDUIT NEMA TC2 UL 651, WITH MATCHING FITTINGS BY SAME MANUFACTURER AS THE CONDUIT. COMPLYING WITH NEMA TC 3 AND UL 51413.

G. CONDUIT EXPANSION FITTINGS SHALL BE PROVIDED AS REQUIRED PER NEC 300.7 & 352.44.

H. ALL CONDUITS SHALL BE SEALED AT ALL ENDS.

I. EXPANSION FITTINGS SHALL BE UTILIZED ON MEDIUM VOLTAGE RUNS. MATERIAL TO BE CROUSE-HINDS SERIES XJGD COMBINATION EXPANSION/DEFLECTION COUPLINGS OR EQUAL.

5. WIRE AND CABLE

A. WIRE AND CABLE TYPES TO BE PER THE SCHEDULE.

B. PULL CONDUCTORS SIMULTANEOUSLY WITH UL LISTED PULLING COMPOUND OR LUBRICANT FOR BUILDING WIRE #4 AWG AND LARGER. USE PULLING MEANS INCLUDING, FISH TAPE, CABLE, ROPE, AND BASKET WEAVE WIRE/CABLE GRIPS WHICH WILL NOT DAMAGE CABLES OR RACEWAYS.

C. ALL WIRING SHALL BE FACTORY COLOR CODED. FOR MODIFICATIONS TO EXISTING SYSTEMS, MATCH COLOR CODING SCHEME ALREADY IN PLACE. OTHERWISE FEEDER AND BRANCH CIRCUIT CONDUCTORS SHALL BE COLOR CODED AS FOLLOWS:

240/120 VOLTS	PHASE	600/346 VOLTS
BLACK	A	BROWN
RED	B	ORANGE
BLUE	C	YELLOW
WHITE/GREY	NEUTRAL	WHITE
GREEN	GROUND	GREEN

D. ALL WIRING IN PANELS SHALL BE NEATLY TIE-WRAPPED AND TRAINED WITHIN GUTTER SPACES.

E. ALL HOME RUN WIRING ON DC SIDE TO BE BLACK AND GREEN/BARE FOR GROUND WIRES. DC WIRES SHALL BE TYPE PV WIRE MARKED SUNLIGHT RESISTANT AND 2000V POSITIVE CONDUCTORS TO BE BLACK WITH RED TAPE AT TERMINATION POINTS, OR BE BLACK WITH A RED STRIPE. TIE WRAPS SHALL BE WEATHER AND OIL/GAS RESISTANT. TIE WRAPS MUST BE NYLON COATED STEEL OR BE UV RESISTANT GUARANTEED FOR 25 YEARS. CB OUTPUTS MAY BE RED FOR POSITIVE.

F. COMPRESSION TYPE CONNECTIONS ARE TO BE USED AT ALL TIMES.

G. ALL ALUMINUM TERMINATIONS NEED ANTI-OXIDATION COMPOUND.

6. BOXES

A. GALVANIZED STEEL PULL BOXES: NEMA OS 1 WITH WELDED SEAMS. WHERE NECESSARY TO PROVIDE A RIGID ASSEMBLY, CONSTRUCT WITH INTERNAL STRUCTURAL STEEL BRACING, HOT-DIP GALVANIZED AFTER FABRICATION. COVER SHALL BE GASKETED, SCREWED OR BOLTED ON OF MATERIAL SAME AS BOX AND SHALL BE OF SIZE AND SHAPE TO SUIT APPLICATION. SIZES SHALL BE ADEQUATE TO MEET NEC VOLUME REQUIREMENTS, BUT IN NO CASE SMALLER THAN SIZES INDICATED. REMOVE SHARP EDGES WHERE THEY MAY COME IN CONTACT WITH WIRING OR PERSONNEL.

B. FOR INTERIOR DRY LOCATIONS USE GALVANIZED SHEET STEEL, NEMA TYPE 1. FOR LOCATIONS EXPOSED TO WEATHER OR DAMPNESS USE NEMA TYPE 3R BOXES, FULLY GASKETED. FOR WET LOCATIONS USE NEMA TYPE 4 BOXES WITH FULLY GASKETED WEATHERPROOF COVERS.

C. ELECTRICALLY GROUND ALL METAL BOXES TO CONDUIT SYSTEM. WHERE WIRING TO ITEMS INCLUDES A GROUNDING CONDUCTOR, ALSO PROVIDE A GROUNDING TERMINAL IN THE INTERIOR OF THE CABINET, BOX OR ENCLOSURE.

7. SUPPORTING DEVICES

A. PROVIDE MATERIALS, SIZES AND TYPES OF ANCHORS, FASTENERS AND SUPPORTS TO CARRY THE LOADS OF EQUIPMENT AND CONDUIT. CONSIDER THE WEIGHT OF WIRE IN CONDUIT WHEN SELECTING PRODUCTS. ATTACHMENTS SHALL BE RATED BY AN INDEPENDENT TESTING LABORATORY FOR THE RATED LOADING WITH A SAFETY FACTOR OF FIVE. USE VIBRATION AND SHOCK-RESISTANT FASTENERS FOR ATTACHMENTS TO CONCRETE SLABS. DO NOT USE SPRING STEEL CLIPS AND CLAMPS, POWDER-ACTUATED ANCHORS, TESTING FOR CONCRETE AND STEEL ATTACHMENTS SHALL BE IN ACCORDANCE WITH TEST CRITERIA ESTABLISHED BY UL SUPPORTS, SUPPORT HARDWARE, AND FASTENERS SHALL BE PROTECTED WITH ZINC COATING OR WITH TREATMENT OF EQUIVALENT CORROSION RESISTANCE. PRODUCTS FOR USE OUTDOORS SHALL BE HOT-DIP GALVANIZED. IN CORROSIVE AREAS, PRODUCTS SHALL BE TREATED WITH 15 MIL PVC COATING. ALL PRODUCTS SHALL BE TREATED AFTER CUTTING AND THREADING.

B. PROVIDE ANY SPECIAL WORK, INCLUDING BUT NOT LIMITED TO INTERMEDIATE STEEL CHANNELS, THAT MAY BE REQUIRED TO OVERCOME UNUSUAL CONDITIONS. DO NOT FASTEN TO ANY TRADES OTHER THAN THE STRUCTURAL SYSTEM WHERE SPECIFICALLY NOTED BELOW.

C. PROVIDE SUPPORTS FOR ALL RACEWAYS INCLUDING U-CHANNEL SYSTEMS, RISER CLAMPS, CONDUIT STRAPS, THREADED C-CLAMPS WITH RETAINERS AND WALL BRACKETS.

D. CONCRETE STRUCTURAL ELEMENTS AND MASONRY WALLS: USE CARBON STEEL WEDGE OR SLEEVE TYPE EXPANSION ANCHORS. COORDINATE ALL ANCHOR LOCATIONS IN POST-TENSIONED SLABS. HOLES CUT DEPTH OF MORE THAN 1-1/2 INCHES IN REINFORCED CONCRETE BEAMS OR MORE THAN 3/4 INCH IN REINFORCED CONCRETE SHALL NOT CUT THE MAIN REINFORCING BARS. FILL HOLES THAT ARE NOT USED.

E. HOLLOW MASONRY: USE STEEL SPRINGHEAD TYPE TOGGLE BOLTS AND HOLLOW WALL FASTENERS.

F. STEEL STRUCTURAL ELEMENTS: USE BEAM CLAMPS, STEEL FASTENERS AND CLEVIS HANGERS.

G. STEEL SURFACES: MACHINE SCREWS, WELDED THREADED STUDS, OR SPRING-TENSION CLAMPS.

H. PARTITIONS OF LIGHT STEEL CONSTRUCTION: SHEET METAL SCREWS.

I. WOOD ELEMENTS: USE WOOD SCREWS.

J. U-CHANNEL SYSTEMS: 12 GAUGE CARBON STEEL CHANNELS, WITH 9/16 X 7/8 INCH HOLES IN TOP SURFACE, 2 INCHES ON CENTER. PROVIDE FITTINGS AND ACCESSORIES THAT MATE AND MATCH WITH U-CHANNEL AND ARE OF THE SAME MANUFACTURER. PROVIDE ANGLES AND OTHER STANDARD STRUCTURAL SHAPES. CONNECT WITH WELDS OR MACHINE BOLTS TO FORM RIGID SUPPORTS.

K. A HANGER OR SUPPORT SHALL BE INSTALLED CLOSE TO THE POINT OF A CHANGE IN DIRECTION OF ALL CONDUIT RUNS, IN EITHER A HORIZONTAL OR VERTICAL PLANE.

L. UNDER NO CONDITIONS SHALL ANY HANGERS, SUPPORTS, BOLTS, OR RIVETS PIERCE DUCTS. THE PUNCHING OF HOLES IN STRUCTURAL SHAPES WILL NOT BE ALLOWED. "C" CLAMPS WILL NOT BE ACCEPTED AS A MEANS OF FASTENING EQUIPMENT OR CONDUITS TO THE BUILDING STRUCTURE, UNLESS THE HANGER SPACING IS REDUCED BY 33-1/3%

M. SPACING OF CONDUIT SUPPORTS AS PER NEC REQUIREMENTS.

N. CABLE TIES FOR WIRE AND CABLE: PROVIDE CLIPS FROM WILEY ELECTRONICS OR APPROVED EQUAL

O. TORQUE MARKS SHALL BE APPLIED TO ALL FASTENERS, SCREWS, ETC THAT REQUIRE AND HAVE BEEN PROPERLY TORQUED

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	444
MODULE QUANTITY	11,544
TOTAL DC SIZE	6,233,760 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	40
TOTAL AC SIZE	4,900,000 W
TILT	±55°
AZIMUTH	180°

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REVISIONS

DESCRIPTION	DATE	REV
IFP	12/09/2022	0
30% REVIEW	11/11/2022	A

PROJECT INSTALLER

STATE OF NEW YORK · E. E. CASTILLO · 095344 · LICENSED PROFESSIONAL ENGINEER

Digitally signed by: Emmocrates E Castillo
Date: 2022.12.12 09:47:50

PROJECT NAME

MANLIUS WEST
8105 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

GENERAL NOTES - SHEET 1

SHEET SIZE

ARCH D
24" X 36"

SHEET NUMBER

G-100

8. IDENTIFICATION

A. WIRE DESIGNATION MARKERS: PROVIDE FUNGUS RESISTANT, VINYL OR VINYL-CLOTH CONDUCTOR MARKERS IN OUTLET, JUNCTION AND PULL BOXES INDICATING WIRE USAGE (I.E SWITCH LEG, POWER FEED, TRAVELERS, ETC). THIS IS IN ADDITION TO WIRE CIRCUIT IDENTIFICATION REQUIREMENTS AND IS INTENDED TO CLARIFY WIRING WITHIN BOXES.

B. CIRCUIT IDENTIFICATION: PROVIDE WIRE MARKERS ON EACH CONDUCTOR IN PANELBOARD GUTTERS, PULL BOXES, OUTLET AND JUNCTION BOXES, AND AT LOAD CONNECTION. IDENTIFY BRANCH CIRCUIT OR FEEDER NUMBER FOR POWER AND LIGHTING CIRCUITS, AND WIRE DESIGNATION INDICATED ON EQUIPMENT MANUFACTURER'S SHOP DRAWING FOR CONTROL WIRING. MAINTAIN CONSISTENCY WITH SIMILAR PREVIOUSLY ESTABLISHED IDENTIFICATION SCHEMES FOR THE FACILITY'S ELECTRICAL INSTALLATIONS.

10. PHOTOVOLTAIC CIRCUIT DESIGN:

A. ALL THE DC CIRCUIT HAVE BEEN DESIGNED TO HAVE AN AVERAGE VOLTAGE DROP OF LESS THAN 1.5% AT STANDARD CONDITIONS.

B. PHOTOVOLTAIC ARRAY DC WIRE SIZING IS BASED ON REQUIREMENTS OF THE NEC SEC. 690.8. UNDERGROUND CONDUITS WILL BE POSITIONED IN ACCORDANCE TO NEC TABLE 300.50. THE AMPACITIES OF THE CONDUCTORS HAVE BEEN CALCULATED USING APPROPRIATE CORRECTION FACTORS FROM NEC TABLES 310.15(B)(16) AND 310.15(B)(2)(A).

C. ALL MATING STRING WIRING CONNECTORS SHALL BE OF THE SAME BRAND NAME. MC4 COMPATIBLE CONNECTORS SHALL NOT MATE WITH MC4 OR OTHER BRAND NAME MC4 COMPATIBLE CONNECTORS.

D. PHOTOVOLTAIC SOURCE CIRCUITS ARE PROTECTED BY OVER CURRENT PROTECTION IN ACCORDANCE WITH NEC SEC 690.9.

E. PHOTOVOLTAIC INVERTERS ARE PROVIDED WITH GROUND FAULT PROTECTION AND INTERRUPTION ABILITIES IN ACCORDANCE WITH NEC SEC. 690.5. 690.11 DOES NOT APPLY.

F. PHOTOVOLTAIC ARRAYS HAVE BEEN PROVIDED WITH DISCONNECTING MEANS IN ACCORDANCE WITH NEC SEC 690.13.

G. PHOTOVOLTAIC ARRAYS HAVE A COMMON DC AND AC GROUNDING ELECTRODE SYSTEM COMPLYING WITH THE REQUIREMENTS OF NEC SEC 690.47.

H. ALL PHOTOVOLTAIC EQUIPMENT INCLUDING PV MODULES, COMBINER BOXES, DISCONNECTS, INVERTERS, AC CIRCUIT BREAKERS WILL BE IDENTIFIED AND INFORMATION ON MAXIMUM SYSTEM VOLTAGE, CURRENT, OPERATING VOLTAGE AND CURRENT WILL BE NOTED WITH A WARNING LABEL ON A CLEARLY VISIBLE LOCATION.

I. ALL PHOTOVOLTAIC DC CONDUCTORS SHALL BE 2000V PV WIRE "SUNLIGHT RESISTANT" MARKED FOR EXPOSED WIRING. 2000V PV WIRE, DIRECT BURIAL FOR DIRECT BURIED WIRED, 2000V XLPE INSULATION /RHW-2 FOR ALL WIRING IN CONDUIT. A/C RATING OF AC EQUIPMENTS SHALL MATCH EXISTING EQUIPMENTS.

J. ALL DC EQUIPMENT SHALL BE RATED FOR A MAXIMUM SYSTEM VOLTAGE OF 2000V AND ALL TERMINALS WILL BE RATED FOR STRANDED WIRES AND HAVE A 90°C TEMPERATURE RATING.

K. CONDUITS HAVE BEEN SIZED TO MEET THE CONDUIT FILL REQUIREMENTS OF NEC. CHAPTER 9 TABLE 1.

11. CB LABELS, DC DISC LABELS, INV LABELS, WARNING LABELS:

A. ALL LABELS SHALL BE OF WEATHERPROOF AND DURABLE MATERIAL.

B. TEXT ON LABELS SHALL BE OF ARIAL FONT - IT SHALL BE LEGIBLE AND CLEAR.

C. THE TONE OF THE BACKGROUND COLOR SHALL BE BRIGHT TO ATTRACT ATTENTION. YELLOW (106) FOR CAUTION LABELS AND ORANGE (152) FOR WARNING LABELS.

D. LABELS SHALL BE SECURELY FASTENED TO SPECIFIED LOCATIONS BY USING A WEATHER PROOF AND DURABLE ADHESIVE SUITABLE FOR THE MATERIAL OF THE LABEL AND THE LOCATION.

E. THE LABELS SHALL BE POSTED AT THE LOCATIONS SPECIFIED. IF FOR REASONS OF REDUCED ACCESS OR SPACE, THE LABELS SHALL BE POSTED AT THE CLOSEST LOCATION THAT BEST SERVES THE INTENT OF THE LABEL. NOTIFY THE ENGINEER/SUPERVISOR IN SUCH A CASE BEFORE ATTACHING.

13. ABBREVIATIONS

A	AMPERES (AMP)
AC	ALTERNATING CURRENT
AF	AMP FRAME
AT	AMP TRIP
BIL	BASIC IMPULSE LEVEL
CB	COMBINER BOX
COM	COMMUNICATIONS
CT	CURRENT TRANSFORMER
CPT	CONTROL POWER TRANSFORMER
CU	COPPER
DC	DIRECT CURRENT
EMT	ELECTRICAL METALLIC TUBING
EPR	ETHYLENE PROPYLENE RUBBER
G/GND	GROUND
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GFD	GROUND FAULT PROTECTION
Inom	NOMINAL CURRENT (AMPS)
KCMIL	THOUSAND CIRCULAR MILS
KV	THOUSAND VOLT
KVA	THOUSAND VOLT-AMPS
KW	THOUSAND WATT
LFMC	LIQUID TIGHT FLEXIBLE METALLIC CONDUIT
MPPT	MAXIMUM POWER POINT
MV	MEDIUM VOLTAGE
NEC	NATIONAL ELECTRIC CODE
NESC	NATIONAL ELECTRIC SAFETY CODE
PCC	POINT OF COMMON COUPLING
PT	POTENTIAL (VOLTAGE) TRANSFORMER
PV	PHOTOVOLTAIC
PVC	POLYVINYL CHLORIDE
RMC	RIGID METAL CONDUIT
SA	SURGE ARRESTER
SCH	SCHEDULE
SPD	SURGE PROTECTION DEVICE
UL	UNDERWRITER'S LAB
V	VOLTAGE (VOLT)
Z	IMPEDANCE

SYMBOLS

	EXISTING GAS HEADER
	PAVED ROAD (NEW)
	GRAVEL ACCESS ROAD
	PV MODULE
AC	AC LINE (15kV) ABOVE GRADE CONDUIT ROUTE
DC	DC LINE (1000V)
GND	GROUND
OHW	OVERHEAD LINE
	UNDERGROUND CABLE ROUTE
	GROUND ROD/PLATE
CB# String Count	CB COMBINER BOX
	LOAD BREAK DISCONNECT SWITCH
OR	FUSED DISCONNECT SWITCH
AT AF	POWER CIRCUIT BREAKER (15kV)
	CIRCUIT BREAKER (≤ 1000V)
	VOLTAGE TRANSFORMER
	CURRENT TRANSFORMER
	GROUND
M	UTILITY METER
	MV LOAD BREAK ELBOW
	CABLE "LUG" TERMINATION
	TRANSFORMER
OR	FUSE
GFD	GROUND FAULT DEVICE
SPD	SURGE PROTECTION DEVICE
	OH CABLE TERMINATION "POT HEAD"
	SURGE ARRESTER "SA"

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	444
MODULE QUANTITY	11,544
TOTAL DC SIZE	6,233,760 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	40
TOTAL AC SIZE	4,900.000 W
TILT	±55°
AZIMUTH	180°

Castillo Engineering
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30% REVIEW	11/11/2022	A

PROJECT INSTALLER

STATE OF NEW YORK · E. CASTILLO · 095344 · LICENSED PROFESSIONAL ENGINEER

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Date: 2022.12.12 09:47:50

PROJECT NAME

MANLIUS WEST
8105 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

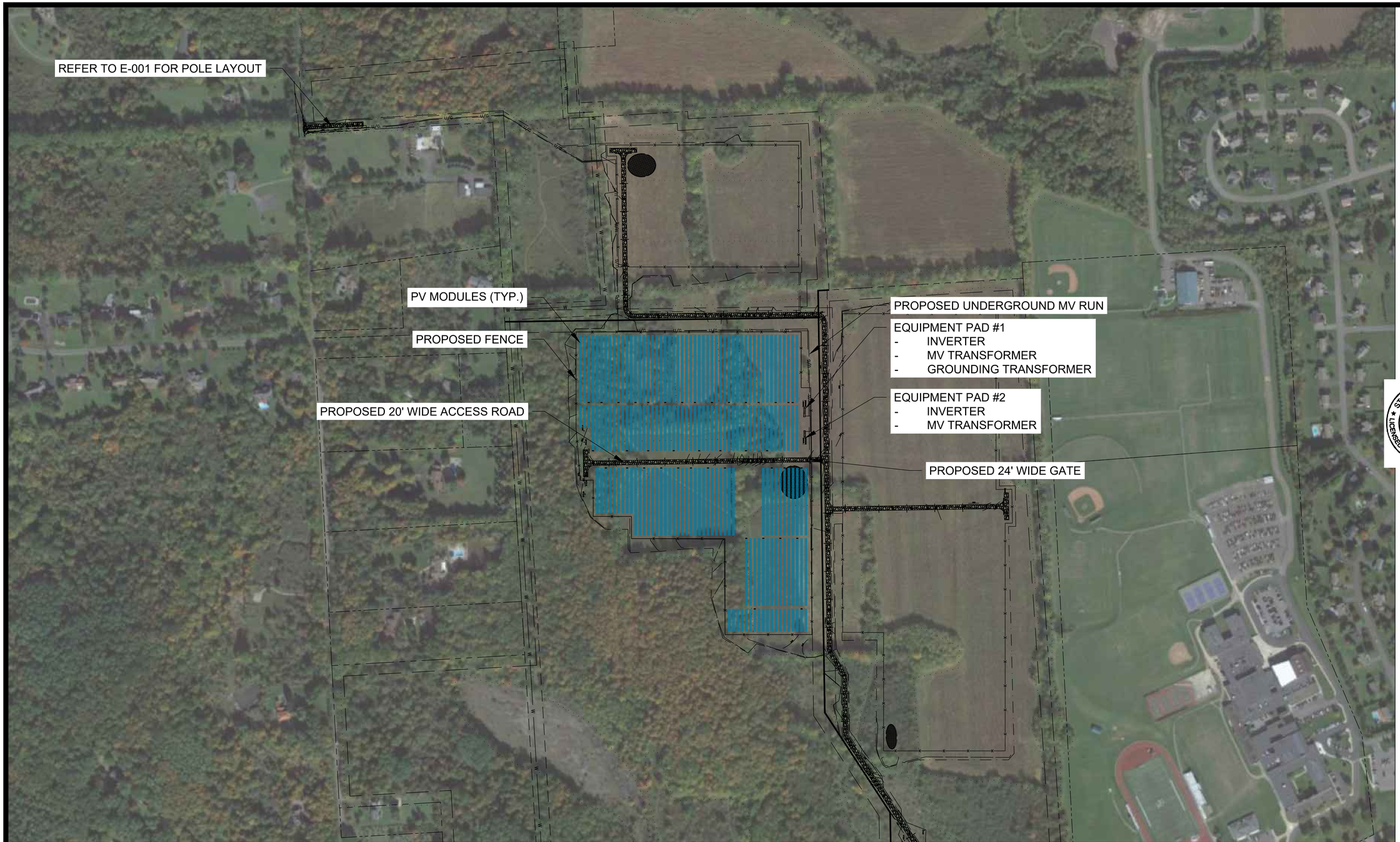
GENERAL NOTES - SHEET 2

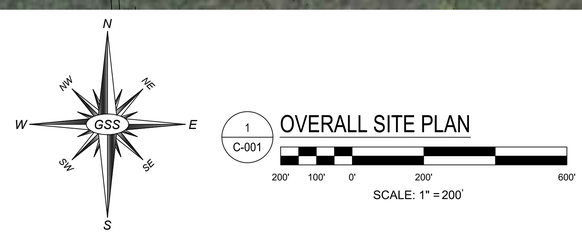
SHEET SIZE

ARCH D
24" X 36"

SHEET NUMBER

G-101





1 C-001 OVERALL SITE PLAN

200' 100' 0' 200' 600'

SCALE: 1" = 200'

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	444
MODULE QUANTITY	11,544
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STATE OF NEW YORK · E. E. CASTILLO · 095344 · LICENSED PROFESSIONAL ENGINEER

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Date: 2022.12.12 09:47:52

PROJECT NAME

MANLIUS WEST
8105 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

OVERALL SITE PLAN

SHEET SIZE

ARCH D
24" X 36"

SHEET NUMBER

C-001

EXISTING NATIONAL GRID UTILITY POLE
FEEDER 36_11_26553

PROPOSED OVERHEAD MV LINE

PROPOSED UNDERGROUND MV RUN

NEW CUSTOMER POLE C5 - C513 - LOADBREAK DISCONNECT

NEW CUSTOMER POLE C4 - CUSTOMER PRIMARY METERING CLUSTER

NEW CUSTOMER POLE C3 - UTILITY PRIMARY METERING CLUSTER

NEW CUSTOMER POLE C2 - R516 - SERVICE ENTRANCE RATED, VACUUM RECLOSER

NEW CUSTOMER POLE C1 - C511 - GANG OPERATED AIR-BREAK (GOAB)

NEW UTILITY POLE #1 - UTILITY RECLOSER

NEW UTILITY TURNING POLE

30'-0" 30'-0" 30'-0" 30'-0" 30'-0" 30'-0" 30'-0"

N NW NE W E SW SE S GSS

1 E-001 POLE LAYOUT SITE PLAN

25' 12.5' 0' 25' 75'

SCALE: 1" = 25'

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	444
MODULE QUANTITY	11,544
TOTAL DC SIZE	6,233,760 W
INVERTER	SUNGROW SG125HV
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PROJECT NAME

MANLIUS WEST
8105 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

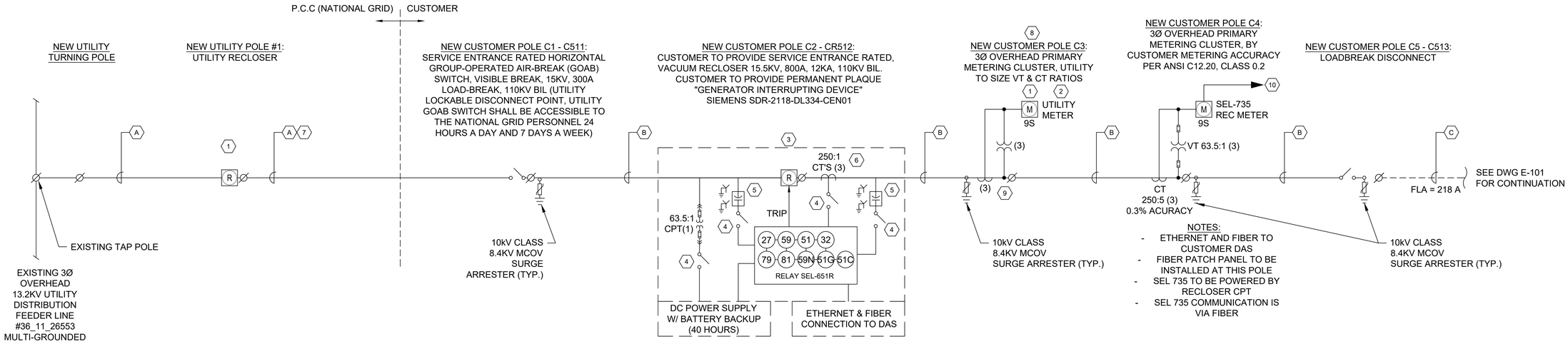
POLE LAYOUT SITE PLAN

SHEET SIZE

ARCH D
24" X 36"

SHEET NUMBER

E-001



PV SYSTEM SUMMARY	
MODULE MODEL	BOVIET BVM7612M-540-H-HC-BG-DG
MODULE STC DC RATING	540 W
MODULES PER STRING	26
STRINGS COUNT	444
MODULES COUNT	11,544
TOTAL STC DC SIZE	6,233,760 W
TOTAL STC AC SIZE	4,900,000 W
INVERTER MODEL	(QTY 40) SUNGROW SG125HV
POWER FACTOR	0.98
TRANSFORMER	(QTY 2) 2500KVA PAD MOUNTED

NOTES

#	DESCRIPTION
1	EQUIPMENT IS PROVIDED AND INSTALLED BY NATIONAL GRID.
2	CUSTOMER TO PROVIDE PHONE LINE TO UTILITY METER POLE FOR UTILITY ACCESS
3	RECLOSER TO BE PROVIDED WITH SEL 651R RELAY OR EQUAL. RELAY TO HAVE DC BATTERY OR UPS BACK-UP WITH A MINIMUM OF 40 HOURS OF BATTERY BACKUP. RELAY EQUIPPED WITH FAIL-SAFE PROTECTION AND TO BE TRIPPED WITHIN 2.0 SECONDS OF DC FAILURE. AC POWER TO DC SUPPLY LOCATED ON THE UTILITY SIDE OF THE RECLOSER
4	TEST SWITCHES SHALL BE INCLUDED AS SHOWN FOR O&M PURPOSES.
5	8793.75:1 CAPACITIVE (LEA) VOLTAGE SENSORS +/-2% ACCURACY. EFFECTIVE PTR 234.5:1
6	300:1 CT(3) C10 AT -/+1% ACCURACY AND 0.13VA BURDEN AT 1A
7	NEW 15 kV CLASS OVERHEAD 3Ø WIRE SUPPLIED AND INSTALLED BY CS ENERGY AT COMMON COUPLING.
8	THE ACCURACY OF THESE CURRENT TRANSFORMERS SHALL BE SUITABLE FOR THE METERS AND RELAYS SPECIFIED WITH THE NORMAL BURDENS OF THE VARIOUS DEVICES, AND NOT LESS THAN ANSI STANDARD ACCURACY CLASSIFICATION OF 0.3 WITH BURDENS B-0.1 AND B-0.5, AND 1.2 WITH BURDEN B-2.0. UTILITY TO PROCURE VTs/CTs FOR CUSTOMER TO INSTALL.
9	CS ENERGY TO PROVIDE AND INSTALL POLE ALONG WITH GROUNDING AND MISCELLANEOUS SUPPORT.
10	120 V AC CONDUCTOR FROM RECLOSER CPT TO CUSTOMER METER
11	PER UTILITY CESIR STUDY SITE SHOULD OPERATE AT 98% LAGGING POWER FACTOR.

WIRE TABLE

WIRE	DESCRIPTION
A	NEW 15KV CLASS OVERHEAD 3Ø WIRE BY NATIONAL GRID
B	3#1/0 AWG 6/1 ACSR (RAVEN), 3Ø, 3W CONDUCTORS WITH (1) #2 AWG AL, 600V NEUTRAL CONDUCTOR
C	3#250KCMIL AWG AL (MV-105), 15KV CLASS, EPR 100% INSULATED 3Ø CONDUCTORS WITH 1/3 CONCENTRIC NEUTRAL AND 1#1/0 AWG AL SUPPLY-SIDE BONDING JUMPER, EQUIPMENT GROUNDING CONDUCTOR, DIRECT BURIED

SEL-651R RELAY SETTINGS

ANSI	PICKUP						DEFAULT TIME DELAY (SEC)	DEFAULT TIME DELAY (CYCLES)	DELAY PER TCC
#	VPHASE, A, HZ								TIME DELAY AND TCC
	PERCENTAGE	ACTUAL							
59-1	110% ≤ V	8383	V L-N (PRI)		0.95	V (SEC)	1.95	117.00	-
59-2	V ≥ 120%	9145	V L-N (PRI)		1.04	V (SEC)	0.10	6.50	-
27-1	V ≤ 50%	3811	V L-N (PRI)		0.43	V (SEC)	1.05	63.00	-
27-2	V ≤ 88%	6707	V L-N (PRI)		0.76	V (SEC)	1.95	117.00	-
81U-1	56.5HZ						0.10	6.50	-
81U-2	58.5HZ						299.95	17997.00	-
81O-1	61.2HZ						299.95	17997.00	-
81O-2	62 HZ						0.10	6.50	-
51	109A PRIMARY (0.36A SECONDARY)						-	-	3.0 TD U1 CURVE
51P	273A PRIMARY (0.91A SECONDARY)						-	-	3.0 TD U1 CURVE
51G	68A PRIMARY (0.23A SECONDARY)						-	-	2.0 TD U4 CURVE
59N-1	86.52% OF VNOM	6593.71	V (PRI)		0.75	V (SEC)	0.05	3.00	-
59N-2	27.01% OF VNOM	2058.44	V (PRI)		0.23	V (SEC)	0.95	57.00	-
79	95% ≤VNOM≤105.8%	7239	≤VNOM(PRIMARY)≤		8063.04	V (PRI)	299.95	17997.00	-
		0.82	≤VNOM (SEC)≤		0.92	V (SEC)			
	59.3HZ<FREQUENCY<60.5								

a. SETTINGS TAKE INTO ACCOUNT AN ESTIMATED 3 CYCLE OPENING TIME ON THE RECLOSER.
b. FAIL-SAFE RELAY TO TRIP AT A MAXIMUM OF 2 SECONDS FOLLOWING LOSS OF DC POWER AND OR HARDWARE FAILURE.
c. AUTO-RESTORATION (79) FUNCTION WILL NOT CLOSE-IN UNTIL HEALTH VOLTAGE AND FREQUENCY HAVE BEEN MAINTAINED FOR A MINIMUM OF 5 MINUTES.

- (#) REFER TO NOTES
- (X) REFER TO WIRE TABLE

SYMBOL LEGEND

- LOAD-BREAK DISCONNECT
- TRANSFORMER, GWYE PRI: WYE SEC (TYPICAL)
- FUSE
- CIRCUIT BREAKER
- CURRENT TRANSFORMER
- VOLTAGE TRANSFORMER
- GROUND
- SURGE ARRESTER
- GROUP AIR (GOAB) SWITCH
- (M) METER UNIT
- (R) RECLOSER UNIT
- 600A 600A DEAD BREAK ELBOWS
- POLE
- OVERHEAD / PRIMARY
- UNDERGROUND / PRIMARY
- ON GRADE / PRIMARY
- EQUIPMENT BORDER

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	444
MODULE QUANTITY	11,544
TOTAL DC SIZE	6,233,760 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	40
TOTAL AC SIZE	4,900,000 W
TILT	±55°
AZIMUTH	180°

Castillo Engineering
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PROJECT INSTALLER



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E Castillo
Date: 2022.12.12 09:47:54

PROJECT NAME

MANLIUS WEST
8105 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

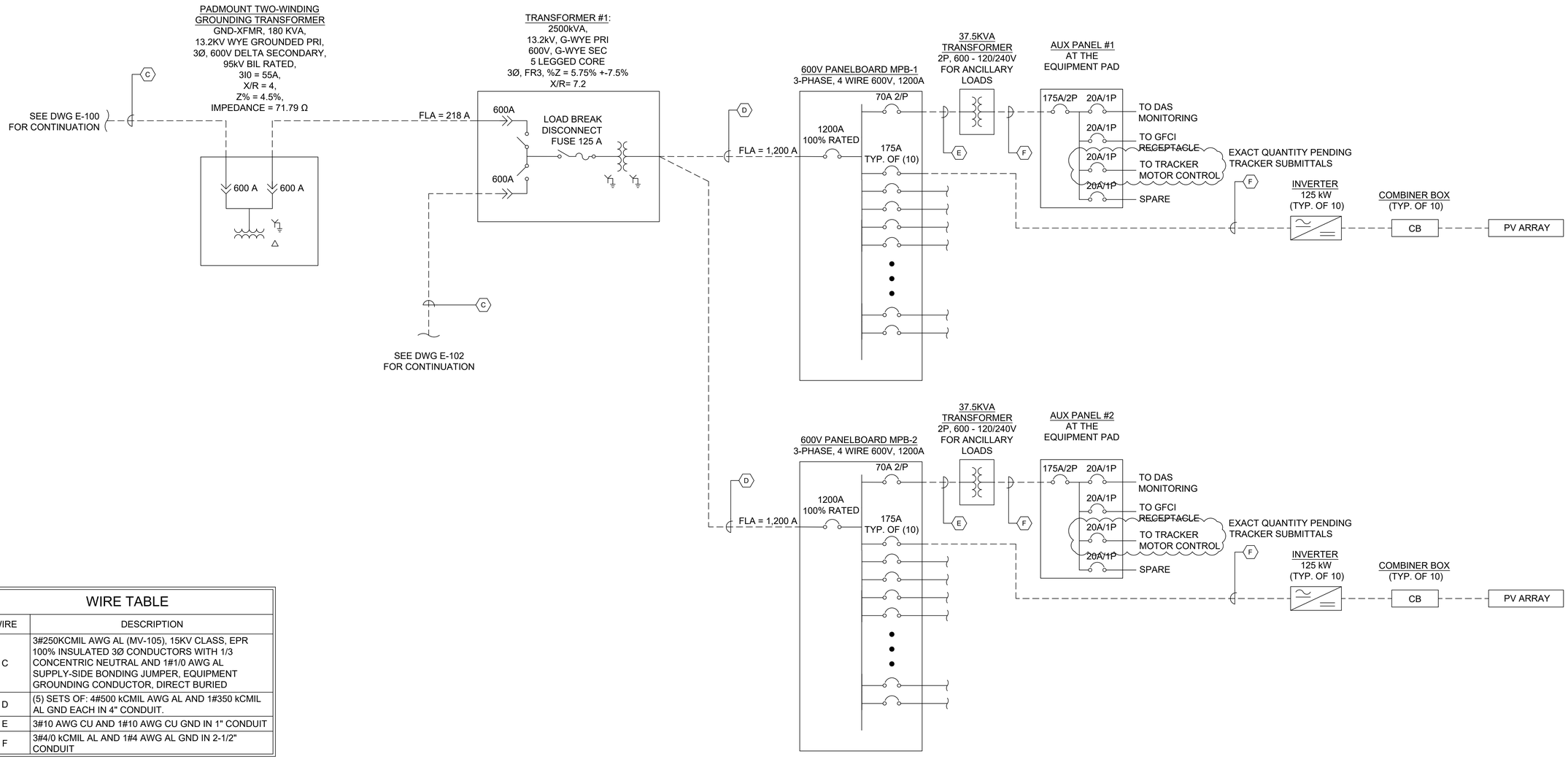
SINGLE LINE DIAGRAM - SHEET 1

SHEET SIZE

ARCH D
24" X 36"

SHEET NUMBER

E-100



WIRE TABLE	
WIRE	DESCRIPTION
C	3#250KCMIL AWG AL (MV-105), 15KV CLASS, EPR 100% INSULATED 3Ø CONDUCTORS WITH 1/3 CONCENTRIC NEUTRAL AND 1#1/0 AWG AL SUPPLY-SIDE BONDING JUMPER, EQUIPMENT GROUNDING CONDUCTOR, DIRECT BURIED
D	(5) SETS OF: 4#500 kCMIL AWG AL AND 1#350 kCMIL AL GND EACH IN 4" CONDUIT.
E	3#10 AWG CU AND 1#10 AWG CU GND IN 1" CONDUIT
F	3#4/0 kCMIL AL AND 1#4 AWG AL GND IN 2-1/2" CONDUIT

INVERTER SETTINGS			
DEVICE	PICKUP	V (L - N)	TIME DELAY
27-1	88%	304	2.00
27-2	50%	173	1.10
59-1	110%	381	2.00
59-2	120%	415	0.16
81U-1	58.5 HZ		300.00
81U-2	56.5 Hz		0.16
81O-1	61.2 Hz		300.00
81O-2	62.0 Hz		0.16
INVERTER SHALL RESUME OPERATING UPON 5 MINUTES OF STABLE GRID. 5 MINUTE PERIOD SHALL RESET FOR ANY ELEMENT TRIP			

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	444
MODULE QUANTITY	11,544
TOTAL DC SIZE	6,233,760 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	40
TOTAL AC SIZE	4,900.000 W
TILT	±55°
AZIMUTH	180°

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PROJECT NAME

MANLIUS WEST

8105 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

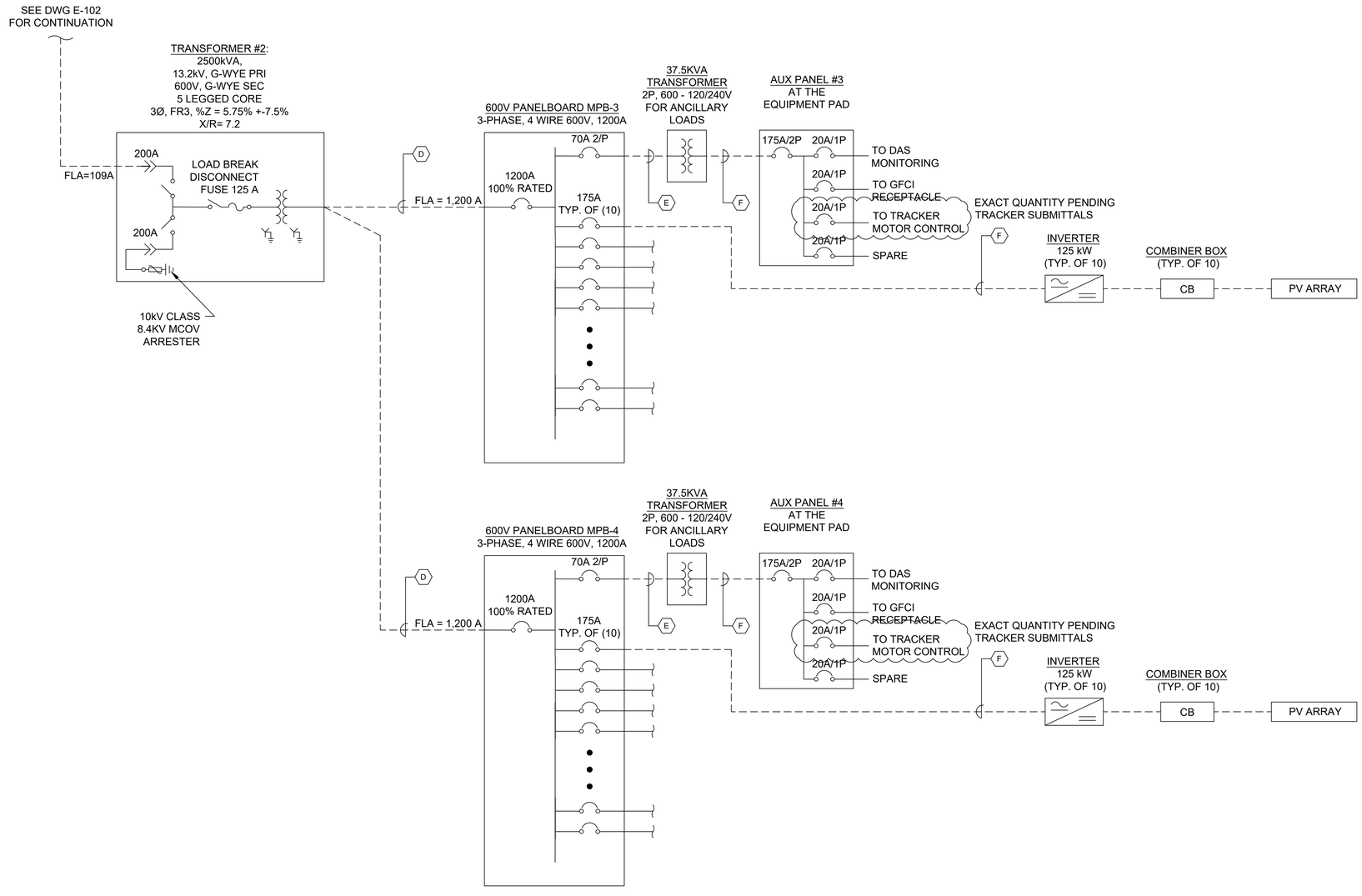
SINGLE LINE DIAGRAM - SHEET 2

SHEET SIZE

ARCH D
24" X 36"

SHEET NUMBER

E-101



WIRE TABLE	
WIRE	DESCRIPTION
C	3#250KCMIL AWG AL (MV-105), 15KV CLASS, EPR 100% INSULATED 3Ø CONDUCTORS WITH 1/3 CONCENTRIC NEUTRAL AND 1#1/0 AWG AL SUPPLY-SIDE BONDING JUMPER, EQUIPMENT GROUNDING CONDUCTOR, DIRECT BURIED
D	(5) SETS OF: 4#500 kCMIL AWG AL AND 1#350 kCMIL AL GND EACH IN 4" CONDUIT.
E	3#10 AWG CU AND 1#10 AWG CU GND IN 1" CONDUIT
F	3#4/0 kCMIL AL AND 1#4 AWG AL GND IN 2-1/2" CONDUIT

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	444
MODULE QUANTITY	11,544
TOTAL DC SIZE	6,233,760 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	40
TOTAL AC SIZE	4,900,000 W
TILT	±55°
AZIMUTH	180°

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PROJECT NAME

MANLIUS WEST
8105 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

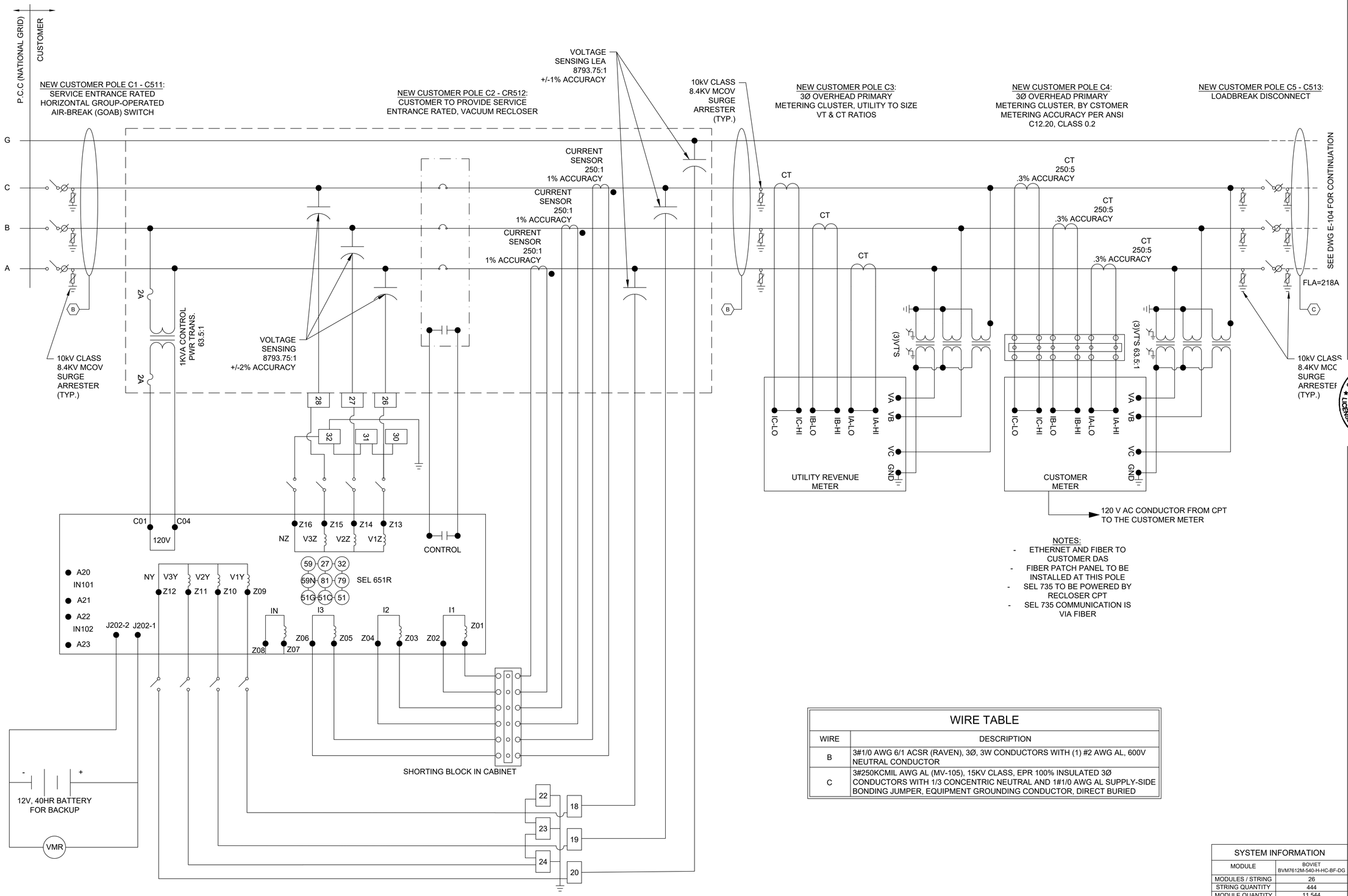
SINGLE LINE DIAGRAM - SHEET 3

SHEET SIZE

ARCH D
24" X 36"

SHEET NUMBER

E-102



NOTES:
- ETHERNET AND FIBER TO CUSTOMER DAS
- FIBER PATCH PANEL TO BE INSTALLED AT THIS POLE
- SEL 735 TO BE POWERED BY RECLOSER CPT
- SEL 735 COMMUNICATION IS VIA FIBER

WIRE TABLE

WIRE	DESCRIPTION
B	3#1/0 AWG 6/1 ACSR (RAVEN), 3Ø, 3W CONDUCTORS WITH (1) #2 AWG AL, 600V NEUTRAL CONDUCTOR
C	3#250KCMIL AWG AL (MV-105), 15KV CLASS, EPR 100% INSULATED 3Ø CONDUCTORS WITH 1/3 CONCENTRIC NEUTRAL AND 1#1/0 AWG AL SUPPLY-SIDE BONDING JUMPER, EQUIPMENT GROUNDING CONDUCTOR, DIRECT BURIED

SYSTEM INFORMATION

MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	444
MODULE QUANTITY	11,544
TOTAL DC SIZE	6,233,760 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	40
TOTAL AC SIZE	4,900,000 W
TILT	±55°
AZIMUTH	180°

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PROJECT NAME

MANLIUS WEST

8105 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

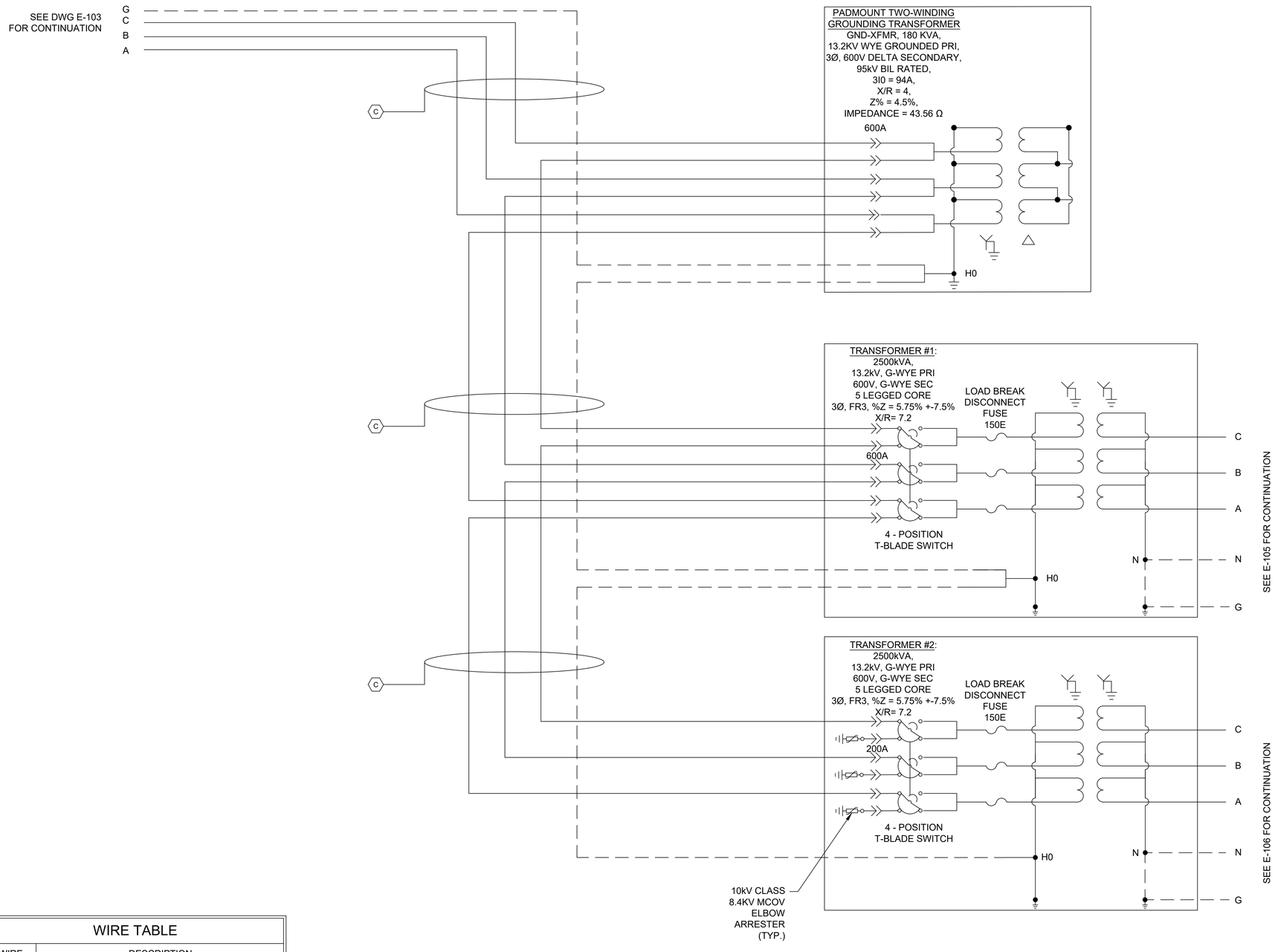
THREE LINE DIAGRAM - SHEET 1

SHEET SIZE

ARCH D
24" X 36"

SHEET NUMBER

E-103



WIRE TABLE	
WIRE	DESCRIPTION
C	3#250KCMIL AWG AL (MV-105), 15KV CLASS, EPR 100% INSULATED 3Ø CONDUCTORS WITH 1/3 CONCENTRIC NEUTRAL AND 1#1/0 AWG AL SUPPLY-SIDE BONDING JUMPER, EQUIPMENT GROUNDING CONDUCTOR, DIRECT BURIED

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	444
MODULE QUANTITY	11,544
TOTAL DC SIZE	6,233,760 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	40
TOTAL AC SIZE	4,900,000 W
TILT	±55°
AZIMUTH	180°

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PROJECT NAME

MANLIUS WEST

8105 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

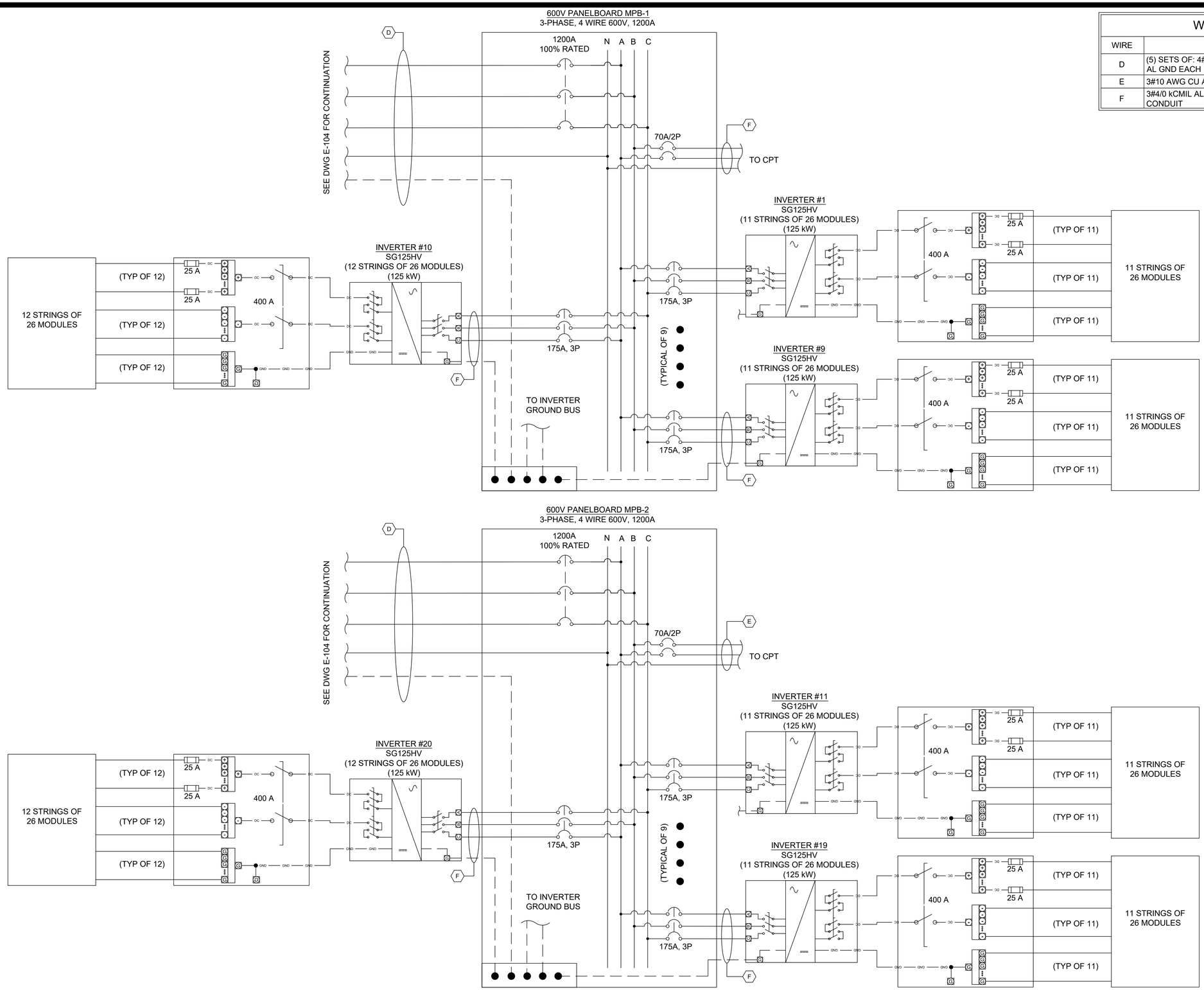
THREE LINE DIAGRAM - SHEET 2

SHEET SIZE

ARCH D
24" X 36"

SHEET NUMBER

E-104



WIRE TABLE

WIRE	DESCRIPTION
D	(5) SETS OF: 4#500 kCMIL AWG AL AND 1#350 kCMIL AL GND EACH IN 4" CONDUIT.
E	3#10 AWG CU AND 1#10 AWG CU GND IN 1" CONDUIT
F	3#4/0 kCMIL AL AND 1#4 AWG AL GND IN 2-1/2" CONDUIT

SYSTEM INFORMATION

MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	444
MODULE QUANTITY	11,544
TOTAL DC SIZE	6,233,760 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	40
TOTAL AC SIZE	4,900,000 W
TILT	±55°
AZIMUTH	180°

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PROJECT NAME

MANLIUS WEST
8105 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

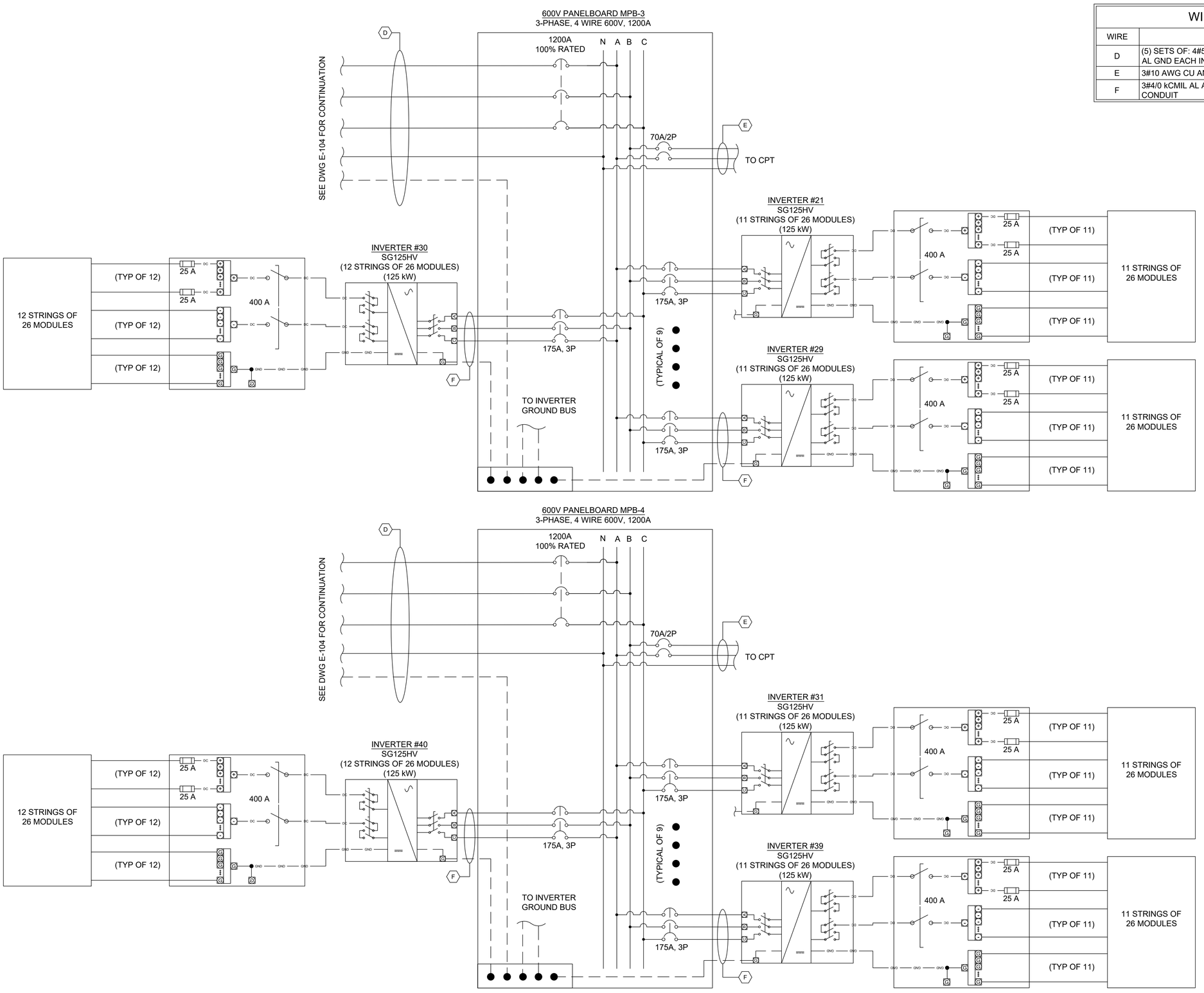
THREE LINE DIAGRAM - SHEET 3

SHEET SIZE

ARCH D
24" X 36"

SHEET NUMBER

E-106



WIRE TABLE	
WIRE	DESCRIPTION
D	(5) SETS OF: 4#500 kCMIL AWG AL AND 1#350 kCMIL AL GND EACH IN 4" CONDUIT.
E	3#10 AWG CU AND 1#10 AWG CU GND IN 1" CONDUIT
F	3#4/0 kCMIL AL AND 1#4 AWG AL GND IN 2-1/2" CONDUIT

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	444
MODULE QUANTITY	11,544
TOTAL DC SIZE	6,233.760 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	40
TOTAL AC SIZE	4,900,000 W
TILT	±55°
AZIMUTH	180°

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PROJECT NAME

MANLIUS WEST
8105 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

THREE LINE DIAGRAM - SHEET 4

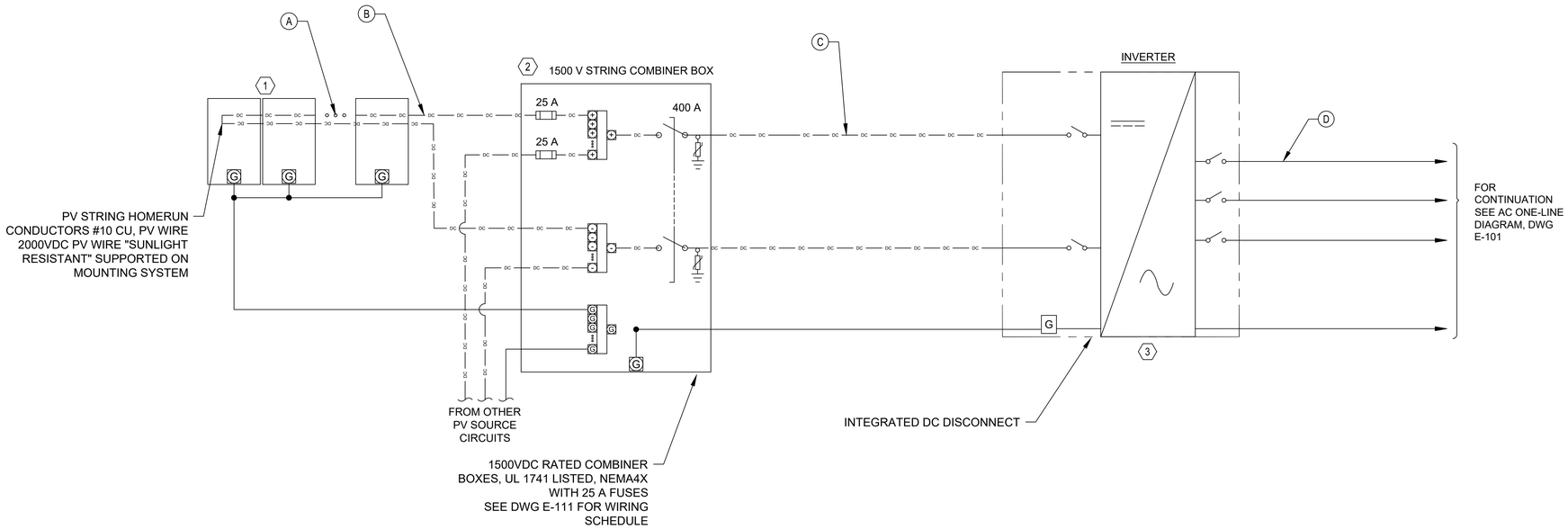
SHEET SIZE

ARCH D
24" X 36"

SHEET NUMBER

E-107

ELECTRICAL DC ONE-LINE DIAGRAM TYPICAL



EQUIPMENT SCHEDULE

ITEM	DESCRIPTION	QUANTITY	DETAIL	REMARKS
1	PV MODULES	11,544	26 x BOVIET BVM7612M-540-H-HC-BF-DG, 540W IN EACH STRING	
2	PV COMBINER BOX	40	1500 V, UL LISTED, 90°C, NEMA 4X, 400A FUSES, 13 INPUTS	
3	INVERTER	40	SUNGROW SG125HV	INTEGRATED AC AND DC DISCONNECT

CONDUCTOR AND CONDUIT SCHEDULE

ITEM	DESCRIPTION	CONDUCTOR	CONDUIT	PATH
A	PV MODULE CONDUCTORS	2 X #4mm, CU, 2KV PV WIRE	N/A - INTEGRATED BACK OF MODULE WIRING	N/A
B	PV STRING HOMERUN CONDUCTORS	2 X #10, CU, 2KV PV WIRE	N/A - HOME RUN WIRING	BACK OF RACKING
C	DC COMBINER BOX OUTPUT CONDUCTORS	REFER TO WIRING SCHEDULE, E-111		CONDUIT IN TRENCH
D	INVERTER OUTPUT CONDUCTORS	REFER TO AC SYSTEM VALUES, E-111		CONDUIT IN TRENCH

PV ARRAY SCHEDULE PER INVERTER

INVERTER REF	MODULE			NUM STRINGS	MODS / STRING	# OF MODULES	POWER (KW)	INVERTER TYPE
	MFG	MODEL	POWER (W)					
INVERTER 1-9, 11-19, 21-29, 31-39	BOVIET	BVM7612M-540-H-HC-BF-DG	540	11	26	286	154.440	SUNGROW SG125HV
INVERTER 10, 20, 30, 40	BOVIET	BVM7612M-540-H-HC-BF-DG	540	12	26	312	168.480	SUNGROW SG125HV

NOTE:

1. REFER TO E-111 FOR WIRING SCHEDULE OF DC COMBINER BOXES.

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	444
MODULE QUANTITY	11,544
TOTAL DC SIZE	6,233,760 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	40
TOTAL AC SIZE	4,900,000 W
TILT	±55°
AZIMUTH	180°

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PROJECT NAME

MANLIUS WEST
8105 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

DC ONE LINE DIAGRAM

SHEET SIZE

ARCH D
24" X 36"

SHEET NUMBER

E-110

DC SYSTEM VALUES

CB#	# OF STRINGS	# OF MODULES	KW @ BF-GAIN	CURRENT RATINGS				VOLTAGE RATING	COMBINER OUTPUT CONDUCTORS (CU)								STRING CONDUCTORS (CU)				TOTAL VOLTAGE DROP		OUTPUT RACEWAY CONDUIT (EMT)	EQUIP GND SIZE AWG (CU)
				Imp	Isc	NEC SIZING AMPS	OUTPUT / RECOMB. OCPD A	NOMINAL STRING (Vmp)	COND. C RATED AMPS (>NEC ADJ. AMPS)	SIZE AWG	NEC SIZING WITH TEMP AND FILL DERATE	# PER POLE	# PER CIRCUIT	OHMS/KFT	COMBINER OUTPUT CIRCUIT LENGTH ONE WAY (FT)	COMBINER CIRCUIT VOLTAGE DROP (V)	FARTHEST STRING TO COMBINER (FT)	STRING COND SIZE AWG CU	MIN STRING FUSE A PER NEC	FARTHEST STRING CIRCUIT VOLTAGE DROP	TOTAL V DROP FROM FARTHEST STRING TO INVERTER (V)	% V DROP FROM FARTHEST STRING TO INVERTER		
CB-1	11	286	169.884	154.396	164.0	256.2	400	1102	350	350	336.0	1	2	0.0367	986	11.17	336	#10	25	11.4	22.6	2.05%	3" C	#3
CB-2	11	286	169.884	154.396	164.0	256.2	400	1102	350	350	336.0	1	2	0.0367	930	10.54	319	#10	25	10.9	21.4	1.94%	3" C	#3
CB-3	11	286	169.884	154.396	164.0	256.2	400	1102	350	350	336.0	1	2	0.0367	854	9.68	336	#10	25	11.4	21.1	1.92%	3" C	#3
CB-4	11	286	169.884	154.396	164.0	256.2	400	1102	350	350	336.0	1	2	0.0367	778	8.82	336	#10	25	11.4	20.3	1.84%	3" C	#3
CB-5	11	286	169.884	154.396	164.0	256.2	400	1102	350	350	336.0	1	2	0.0367	721	8.17	319	#10	25	10.9	19.0	1.73%	3" C	#3
CB-6	11	286	169.884	154.396	164.0	256.2	400	1102	350	350	336.0	1	2	0.0367	645	7.31	336	#10	25	11.4	18.8	1.70%	3" C	#3
CB-7	11	286	169.884	154.396	164.0	256.2	400	1102	350	350	336.0	1	2	0.0367	570	6.46	336	#10	25	11.4	17.9	1.62%	3" C	#3
CB-8	11	286	169.884	154.396	164.0	256.2	400	1102	350	350	336.0	1	2	0.0367	512	5.80	319	#10	25	10.9	16.7	1.51%	3" C	#3
CB-9	11	286	169.884	154.396	164.0	256.2	400	1102	350	350	336.0	1	2	0.0367	435	4.93	336	#10	25	11.4	16.4	1.49%	3" C	#3
CB-10	12	312	185.328	168.432	178.9	279.5	400	1102	350	350	336.0	1	2	0.0367	360	4.45	336	#10	25	11.4	15.9	1.44%	3" C	#3
CB-11	11	286	169.884	154.396	164.0	256.2	400	1102	350	350	336.0	1	2	0.0367	284	3.22	336	#10	25	11.4	14.7	1.33%	3" C	#3
CB-12	11	286	169.884	154.396	164.0	256.2	400	1102	350	350	336.0	1	2	0.0367	227	2.57	319	#10	25	10.9	13.4	1.22%	3" C	#3
CB-13	11	286	169.884	154.396	164.0	256.2	400	1102	350	350	336.0	1	2	0.0367	151	1.71	336	#10	25	11.4	13.2	1.19%	3" C	#3
CB-14	11	286	169.884	154.396	164.0	256.2	400	1102	350	350	336.0	1	2	0.0367	94	1.07	336	#10	25	11.4	12.5	1.14%	3" C	#3
CB-15	11	286	169.884	154.396	164.0	256.2	400	1102	350	350	336.0	1	2	0.0367	75	0.85	267	#10	25	9.1	9.9	0.90%	3" C	#3
CB-16	11	286	169.884	154.396	164.0	256.2	400	1102	350	350	336.0	1	2	0.0367	372	4.22	237	#10	25	8.1	12.3	1.11%	3" C	#3
CB-17	11	286	169.884	154.396	164.0	256.2	400	1102	350	350	336.0	1	2	0.0367	468	5.30	255	#10	25	8.7	14.0	1.27%	3" C	#3
CB-18	11	286	169.884	154.396	164.0	256.2	400	1102	350	350	336.0	1	2	0.0367	582	6.60	237	#10	25	8.1	14.7	1.33%	3" C	#3
CB-19	11	286	169.884	154.396	164.0	256.2	400	1102	350	350	336.0	1	2	0.0367	677	7.67	255	#10	25	8.7	16.4	1.48%	3" C	#3
CB-20	12	312	185.328	168.432	178.9	279.5	400	1102	350	350	336.0	1	2	0.0367	790	9.77	255	#10	25	8.7	18.5	1.67%	3" C	#3
CB-21	11	286	169.884	154.396	164.0	256.2	400	1102	350	350	336.0	1	2	0.0367	763	8.65	237	#10	25	8.1	16.7	1.52%	3" C	#3
CB-22	11	286	169.884	154.396	164.0	256.2	400	1102	350	350	336.0	1	2	0.0367	857	9.71	255	#10	25	8.7	18.4	1.67%	3" C	#3
CB-23	11	286	169.884	154.396	164.0	256.2	400	1102	350	350	336.0	1	2	0.0367	1010	11.45	255	#10	25	8.7	20.1	1.83%	3" C	#3
CB-24	11	286	169.884	154.396	164.0	256.2	400	1102	350	350	336.0	1	2	0.0367	1027	11.64	294	#10	25	10.0	21.7	1.96%	3" C	#3
CB-25	11	286	169.884	154.396	164.0	256.2	400	1102	350	350	336.0	1	2	0.0367	932	10.56	341	#10	25	11.6	22.2	2.01%	3" C	#3
CB-26	11	286	169.884	154.396	164.0	256.2	400	1102	350	350	336.0	1	2	0.0367	856	9.70	319	#10	25	10.9	20.6	1.87%	3" C	#3
CB-27	11	286	169.884	154.396	164.0	256.2	400	1102	350	350	336.0	1	2	0.0367	778	8.82	336	#10	25	11.4	20.3	1.84%	3" C	#3
CB-28	11	286	169.884	154.396	164.0	256.2	400	1102	350	350	336.0	1	2	0.0367	702	7.96	336	#10	25	11.4	19.4	1.76%	3" C	#3
CB-29	11	286	169.884	154.396	164.0	256.2	400	1102	350	350	336.0	1	2	0.0367	647	7.33	319	#10	25	10.9	18.2	1.65%	3" C	#3
CB-30	12	312	185.328	168.432	178.9	279.5	400	1102	350	350	336.0	1	2	0.0367	571	7.06	336	#10	25	11.4	18.5	1.68%	3" C	#3
CB-31	11	286	169.884	154.396	164.0	256.2	400	1102	350	350	336.0	1	2	0.0367	493	5.59	336	#10	25	11.4	17.0	1.55%	3" C	#3
CB-32	11	286	169.884	154.396	164.0	256.2	400	1102	350	350	336.0	1	2	0.0367	712	8.07	368	#10	25	12.5	20.6	1.87%	3" C	#3
CB-33	11	286	169.884	154.396	164.0	256.2	400	1102	350	350	336.0	1	2	0.0367	285	3.23	339	#10	25	11.5	14.8	1.34%	3" C	#3
CB-34	11	286	169.884	154.396	164.0	256.2	400	1102	350	350	336.0	1	2	0.0367	277	3.14	319	#10	25	10.9	14.0	1.27%	3" C	#3
CB-35	11	286	169.884	154.396	164.0	256.2	400	1102	350	350	336.0	1	2	0.0367	153	1.73	336	#10	25	11.4	13.2	1.20%	3" C	#3
CB-36	11	286	169.884	154.396	164.0	256.2	400	1102	350	350	336.0	1	2	0.0367	636	7.21	319	#10	25	10.9	18.1	1.64%	3" C	#3
CB-37	11	286	169.884	154.396	164.0	256.2	400	1102	350	350	336.0	1	2	0.0367	561	6.36	336	#10	25	11.4	17.8	1.62%	3" C	#3
CB-38	11	286	169.884	154.396	164.0	256.2	400	1102	350	350	336.0	1	2	0.0367	484	5.49	336	#10	25	11.4	16.9	1.54%	3" C	#3
CB-39	11	286	169.884	154.396	164.0	256.2	400	1102	350	350	336.0	1	2	0.0367	783	8.87	329	#10	25	11.2	20.1	1.82%	3" C	#3
CB-40	12	312	185.328	168.432	178.9	279.5	400	1102	350	350	336.0	1	2	0.0367	992	12.26	219	#10	25	7.5	19.7	1.79%	3" C	#3
TOTAL	664	11544	6857.136	9319.904	9896.9	15463.9																		

WORST CASE DC VOLTAGE DROP:	2.05%
AVERGE WORST CASE DC VOLTAGE DROP:	1.58%

AC SYSTEM VALUES

EQUIPMENT (FROM)	EQUIPMENT (TO)	AC VOLTAGE (V)	MAX OUTPUT CURRENT (A)	DISTANCE TO CORRESPONDING EQUIPMENT (FT)	OCPD (A)	CONDUCTOR SIZE		WIRE TYPE	TERMINATION RATINGS	# PER POLE	# OF WIRES PER SET	TEMPERATURE DERATE	BUNDLING DERATE	CUM. RATED AMPS (NEC ADJ AMPS)	CUM. RATED AMPS (NEC SIZING WITH TEMP AND FILL ADJUST)	CUM. RATED AMPS (OCPD RATING)	EGC	RESISTIVITY (OHMS/1000 FT)	AC VOLTAGE DROP (V)	% VOLTAGE DROP	CONDUIT TYPE	CONDUIT SIZE
INVERTERS TO 600 V PANELBOARD																						
INV #1-10	PANEL MPB-1	600	120	80	150	4/0	AL	THWN-2	75	1	3	0.96	1	180	172.8	200	#4	0.1	1.92	0.32%	PVC SCH 80	3
INV #11-20	PANEL MPB-2	600	120	80	150	4/0	AL	THWN-2	75	1	3	0.96	1	180	172.8	200	#4	0.1	1.92	0.32%	PVC SCH 80	3
INV #21-30	PANEL MPB-3	600	120	80	150	4/0	AL	THWN-2	75	1	3	0.96	1	180	172.8	200	#4	0.1	1.92	0.32%	PVC SCH 80	3
INV #31-40	PANEL MPB-4	600	120	80	150	4/0	AL	THWN-2	75	1	3	0.96	1	180	172.8	200	#4	0.1	1.92	0.32%	PVC SCH 80	3
PANELBOARD TO TRANSFORMER																						
PANEL MPB-1	TRANSFORMER #1	600	1200	80	1200	500	AL	THWN-2	75	5	4	0.96	1	1550	1488	1200	250	0.0424	1.62816	0.27%	PVC SCH 80	4
PANEL MPB-2	TRANSFORMER #1	600	1200	80	1200	500	AL	THWN-2	75	5	4	0.96	1	1550	1488	1200	250	0.0424	1.62816	0.27%	PVC SCH 80	4
PANEL MPB-3	TRANSFORMER #2	600	1200	80	1200	500	AL	THWN-2	75	5	4	0.96	1	1550	1488	1200	250	0.0424	1.62816	0.27%	PVC SCH 80	4
PANEL MPB-4	TRANSFORMER #2	600	1200	80	1200	500	AL	THWN-2	75	5	4	0.96	1	1550	1488	1200	250	0.0424	1.62816	0.27%	PVC SCH 80	4
TRANSFORMER #2 TO TRANSFORMER #1																						
TRANSFORMER #2	TRANSFORMER #1	13200	109	120	150	250	AL	MV-105	105	1	3	0.96	1	270	259.2	300	#2	0.0847	2.215752	0.02%	PVC SCH 80	6
TRANSFORMER #1 TO GROUNDING TRANSFORMER																						
TRANSFORMER #1	GND TRANSFORMER	13200	218	20	300	250	AL	MV-105	105	1	3	0.96	1	270	259.2	300	#2	0.0847	0.738584	0.01%	PVC SCH 80	6
GROUNDING TRANSFORMER TO RISER POLE																						
GND TRANSFORMER	RISER POLE	13200	218	3300	300	250	AL	MV-105	105	1	3	0.96	1	270	259.2	300	#2	0.0847	121.86636	0.92%	DIRECT BURIED	-
																		VOLTAGE DROP		1.54%		

NOTES:

1. UP TO 10 SETS OF STRING HOMERUN CONDUCTORS MAY BE ALLOCATED TO A SINGLE 2" CONDUIT USING #10 CU PV WIRE.
   (CONDUCTOR AMPS @ 90°C)*((DERATE PER TABLE 310.15(B)(2)(a))*((DERATE PER TABLE 310.15(B)(3)(a))
   40 A * 0.96 * .7 = 26.32 A = I_{NOM}
2. COMBINER BOX TERMINATIONS AND INVERTER RECOMBINER BOX TERMINATIONS ARE RATED FOR 90°C.
3. CONDUCTORS TO BE EQUIPPED WITH THERMOSET INSULATION AND SUNLIGHT RESISTANT. BLACK WITH RED STRIPES FOR +, BLACK FOR -.
4. WIRE SIZES ARE THE MINIMUM REQUIRED FOR VOLTAGE DROP PER NEC AND CONTRACT REQUIREMENTS.
5. ALL DC WIRES MUST BE RATED FOR 2000V.
6. CONTRACTOR RESPONSIBLE FOR TOTAL WIRE LENGTHS. THE WIRE LENGTHS ON THIS SHEET ARE FOR GUIDANCE ONLY.

DESIGN TEMPERATURE COEFFICIENTS	
ASHRAE HIGH TEMP	31 °C
ASHRAE LOW TEMP	-24 °C

Boviet 594 W COEFFICIENT	
PMAX	-0.35% / °C
VOC	-0.285% / °C
ISC	0.05% / °C

Boviet 540 W MODULE PARAMETERS	
VOC	49.89 VDC
VMP	42.4 VDC
ISC	14.905 ADC
IMPP	12.76 ADC
TOLERANCE	0/+3%

Boviet 594 W MODULE PARAMETERS (BIFACIAL)	
VOC	49.89 VDC
VMP	42.4 VDC
ISC	14.905 ADC
IMPP	14.036 ADC
TOLERANCE	0/+3%

STRING OF 26X594W	
WITH NEC 690.7 & 690.8	
VMAX	1478 VDC
VNOM	1178 VDC
ISC	17.55 ADC
IMPP	17.55 ADC
WITH NEC 690.9	
STRING FUSE	21.93 ADC -> 25.00 ADC
WIRE	#10 PV WIRE

COMBINER WITH 26X25A FUSES USING 594W	
WITH NEC 690.7 & 690.8	
VMAX	1478 VDC
VNOM	1178 VDC
ISC	223.575 ADC
IMPP	210.54 ADC
WITH NEC 690.9	
DC DISCO RATING	400 ADC

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	444
MODULE QUANTITY	11,544
TOTAL DC SIZE	6,233,760 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	40
TOTAL AC SIZE	4,900,000 W
TILT	±55°
AZIMUTH	180°

Castillo Engineering
DESIGNING TOMORROW'S POWER®
CASTILLO ENGINEERING SERVICES, LLC
COA # 28345
620 N. WYMORE ROAD,
SUITE 250,
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REVISIONS

DESCRIPTION	DATE	REV
IFP	12/09/2022	0
30% REVIEW	11/11/2022	A

PROJECT INSTALLER

STATE OF NEW YORK · E. CASTILLO · 095344 · LICENSED PROFESSIONAL ENGINEER

Digitally signed by: Democrates E Castillo
Date: 2022.12.12 09:48:02

PROJECT NAME

MANLIUS WEST
8105 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

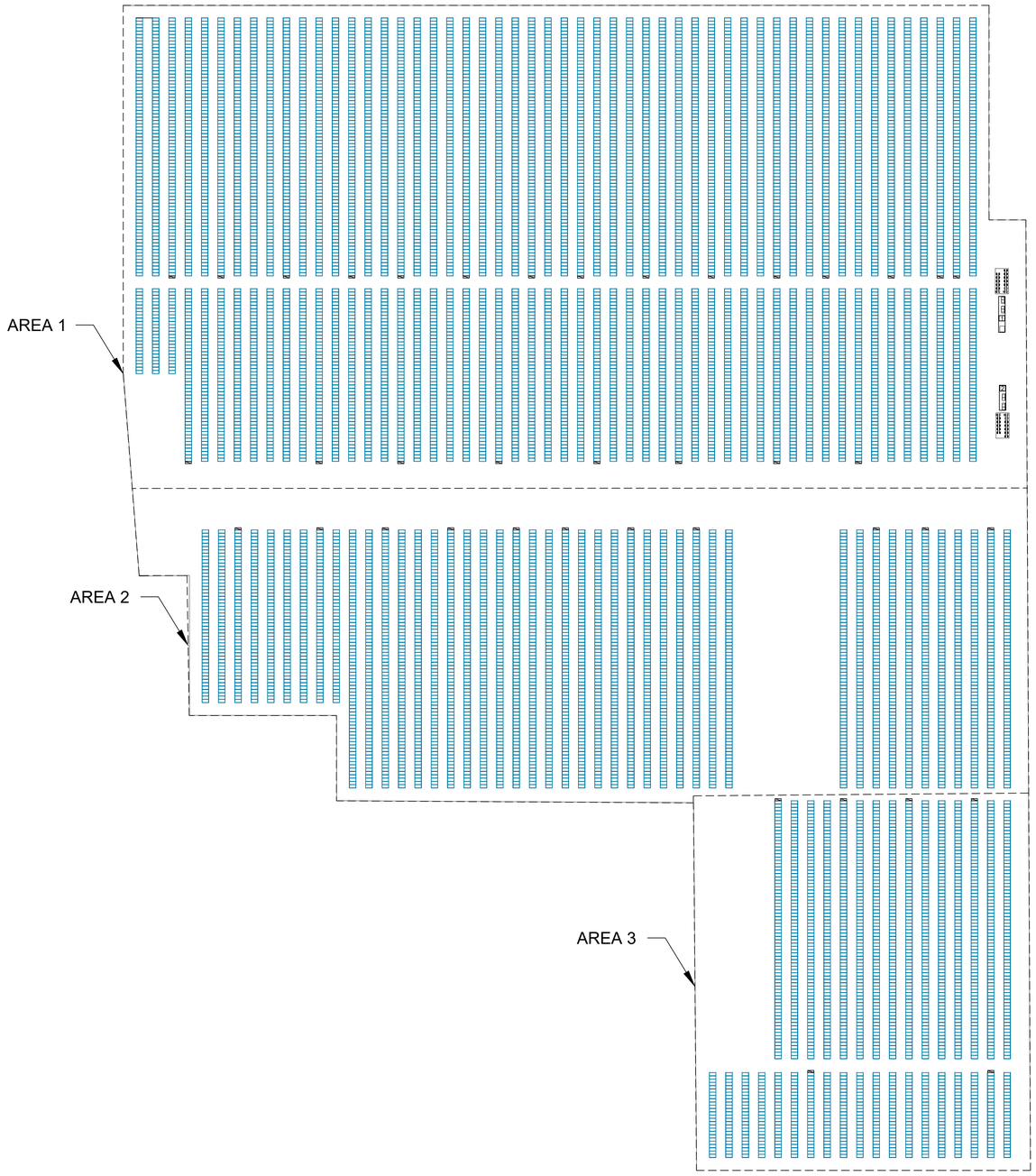
AC & DC SYSTEM VALUES

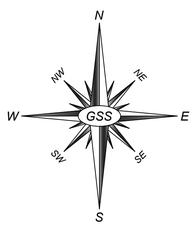
SHEET SIZE

ARCH D
24" X 36"

SHEET NUMBER

E-111





1
E-200
OVERALL DC FEEDER PLAN

75' 37.5' 0' 75' 225'

SCALE: 1" = 75'

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	444
MODULE QUANTITY	11,544
TOTAL DC SIZE	6,233,760 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	40
TOTAL AC SIZE	4,900,000 W
TILT	±55°
AZIMUTH	180°

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PROJECT INSTALLER

STATE OF NEW YORK · E. E. CASTILLO · 095344 · LICENSED PROFESSIONAL ENGINEER

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Date: 2022.12.12 09:48:03

PROJECT NAME

MANLIUS WEST
8105 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME
OVERALL DC FEEDER PLAN

SHEET SIZE
ARCH D
24" X 36"

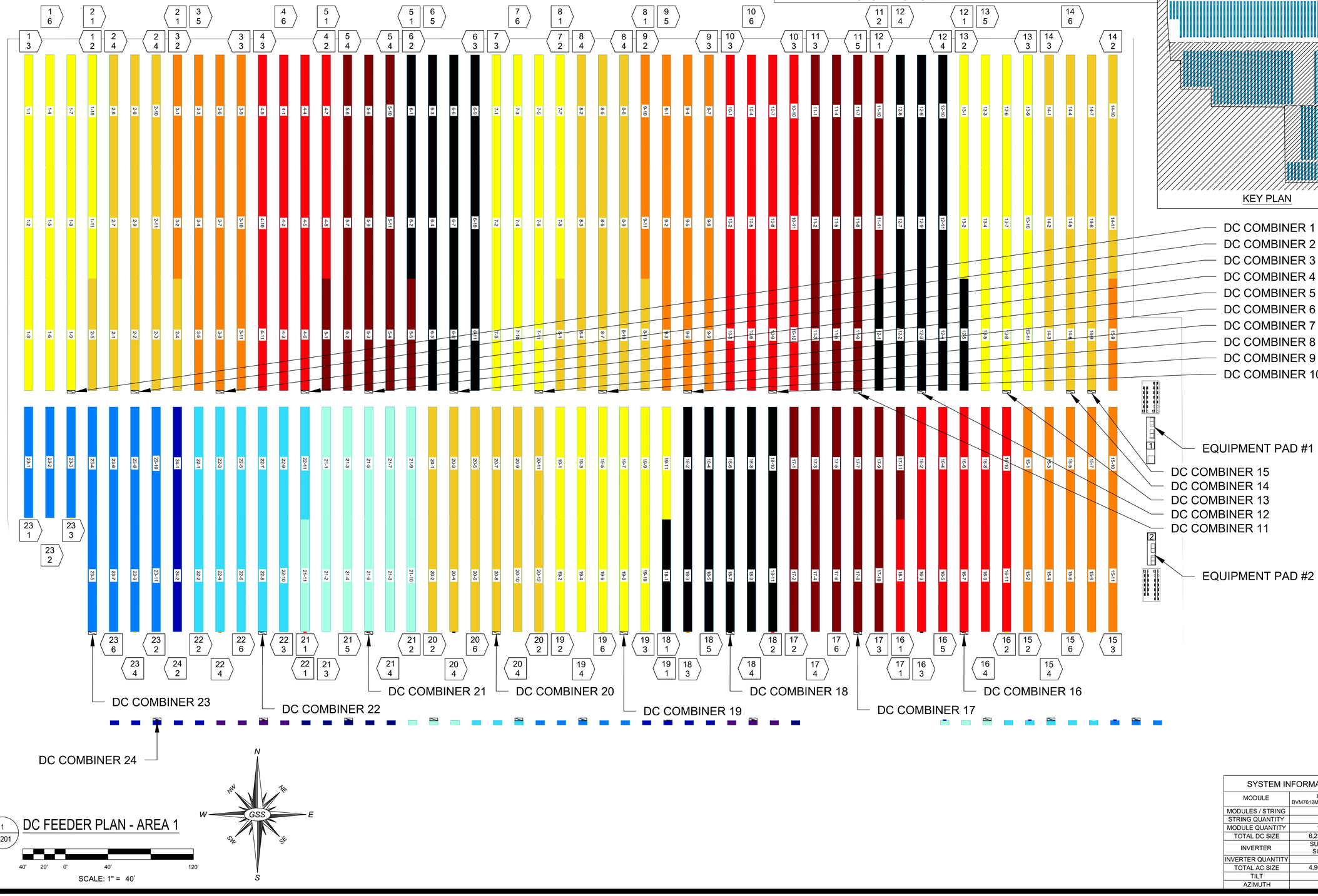
SHEET NUMBER
E-200

LEGEND

X1
X2

X1
X2

1. THE NUMBER (X1) REPRESENTS "DC COMBINER"
2. THE NUMBER (X2) REPRESENTS THE TOTAL RUNNING STRING COUNT FOR THEIR RESPECTIVE DC COMBINER (X1)
3. THE ORIENTATION OF THE ARROW SHOWS THE ORIENTATION OF STRING ON THE CAB SYSTEM TOWARDS THE DC COMBINER.
4. DC RUN TO TRANSITION TO AND FROM CAB SYSTEM WHEN CROSSING ROADWAYS.



1 E-201 DC FEEDER PLAN - AREA 1

40' 20' 0' 40' 120'

SCALE: 1" = 40'

KEY PLAN

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	444
MODULE QUANTITY	11,544
TOTAL DC SIZE	6,233,760 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	40
TOTAL AC SIZE	4,900,000 W
TILT	±55°
AZIMUTH	180°

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E. CASTILLO
095344
LICENSED PROFESSIONAL ENGINEER

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PROJECT NAME

MANLIUS WEST
8105 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

DC FEEDER PLAN - AREA 1

SHEET SIZE

ARCH D
24" X 36"

SHEET NUMBER

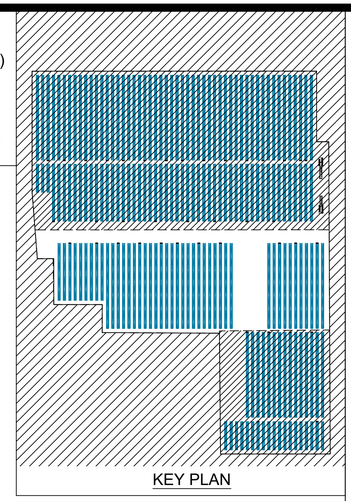
E-201

LEGEND

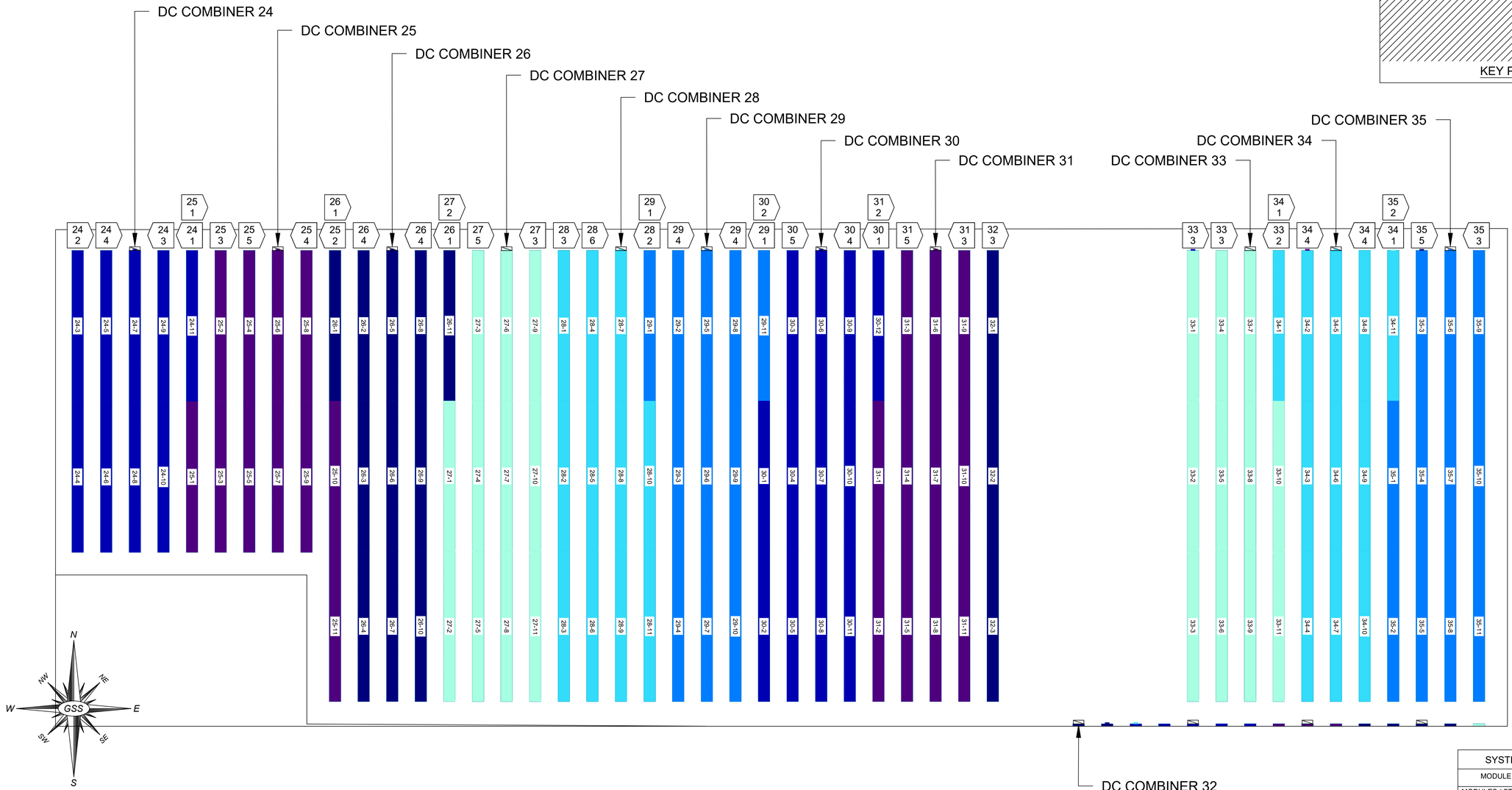
X1
X2

X1
X2

1. THE NUMBER (X1) REPRESENTS "DC COMBINER"
2. THE NUMBER (X2) REPRESENTS THE TOTAL RUNNING STRING COUNT FOR THEIR RESPECTIVE DC COMBINER (X1)
3. THE ORIENTATION OF THE ARROW SHOWS THE ORIENTATION OF STRING ON THE CAB SYSTEM TOWARDS THE DC COMBINER.
4. DC RUN TO TRANSITION TO AND FROM CAB SYSTEM WHEN CROSSING ROADWAYS.



KEY PLAN



1 / E-202 DC FEEDER PLAN - AREA 2

35' 17.5' 0' 35' 105'

SCALE: 1" = 35'

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	444
MODULE QUANTITY	11,544
TOTAL DC SIZE	6,233,760 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	40
TOTAL AC SIZE	4,900,000 W
TILT	±55°
AZIMUTH	180°

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Date: 2022.12.12 09:48:05

PROJECT NAME

MANLIUS WEST

8105 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

DC FEEDER PLAN - AREA 2

SHEET SIZE

ARCH D
24" X 36"

SHEET NUMBER

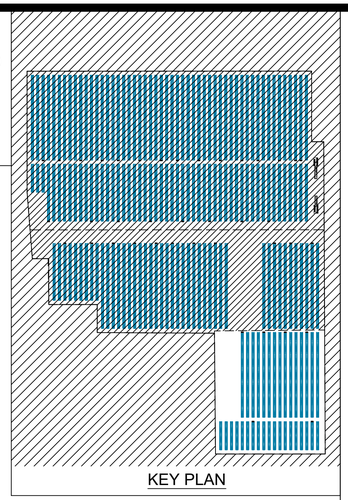
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LEGEND

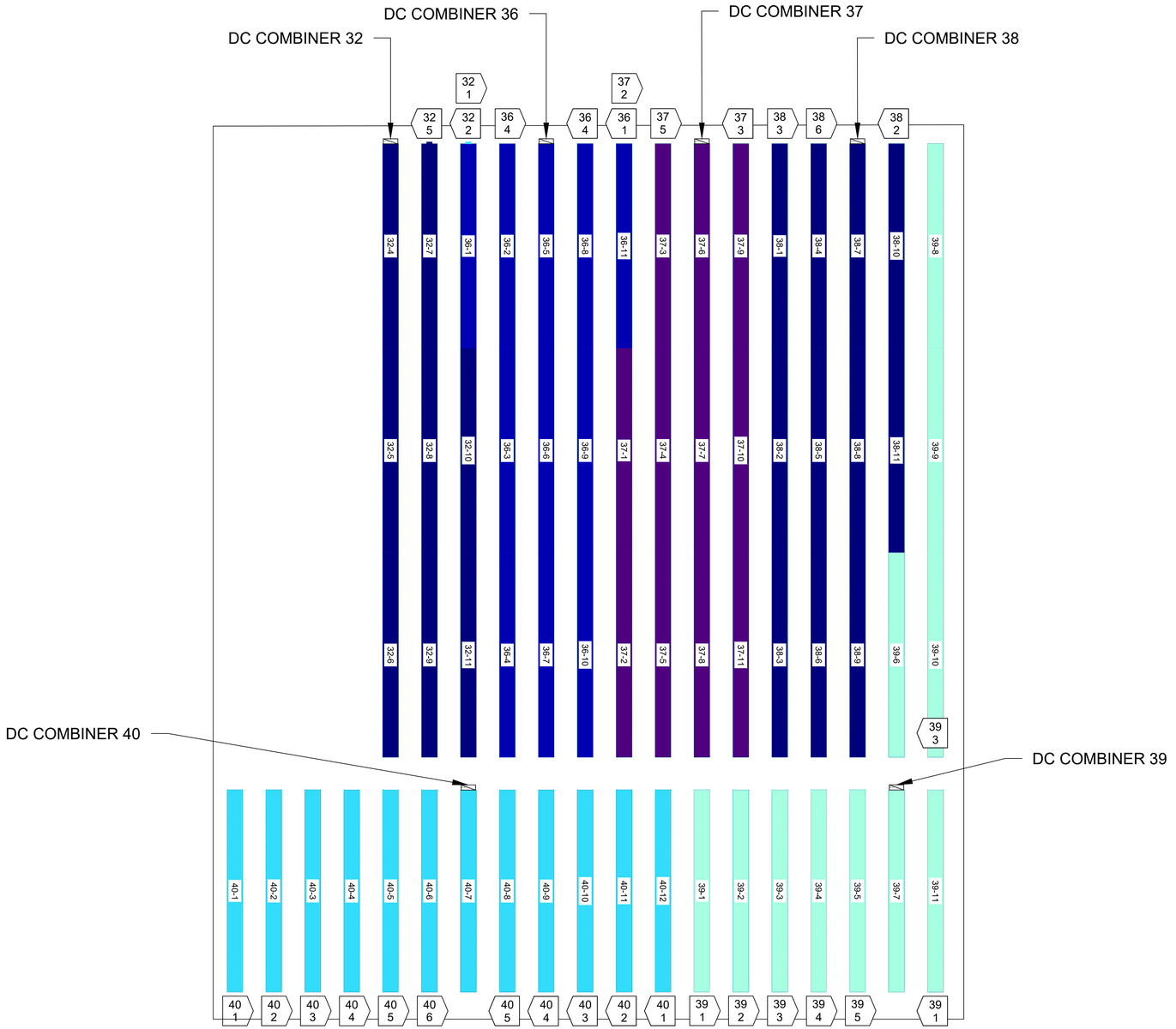
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X2

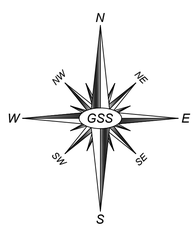
X1
X2

1. THE NUMBER (X1) REPRESENTS "DC COMBINER"
2. THE NUMBER (X2) REPRESENTS THE TOTAL RUNNING STRING COUNT FOR THEIR RESPECTIVE DC COMBINER (X1)
3. THE ORIENTATION OF THE ARROW SHOWS THE ORIENTATION OF STRING ON THE CAB SYSTEM TOWARDS THE DC COMBINER.
4. DC RUN TO TRANSITION TO AND FROM CAB SYSTEM WHEN CROSSING ROADWAYS.



KEY PLAN





1
E-203

DC FEEDER PLAN - AREA 3

30' 15' 0' 30' 90'

SCALE: 1" = 30'

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	444
MODULE QUANTITY	11,544
TOTAL DC SIZE	6,233,760 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	40
TOTAL AC SIZE	4,900,000 W
TILT	±55°
AZIMUTH	180°

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DESCRIPTION	DATE	REV
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E. E. CASTILLO
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PROJECT NAME

MANLIUS WEST

8105 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

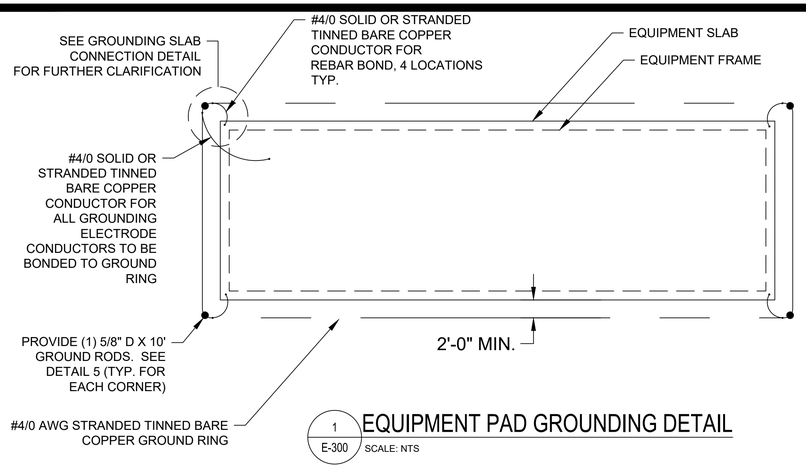
DC FEEDER PLAN - AREA 3

SHEET SIZE

ARCH D
24" X 36"

SHEET NUMBER

E-203

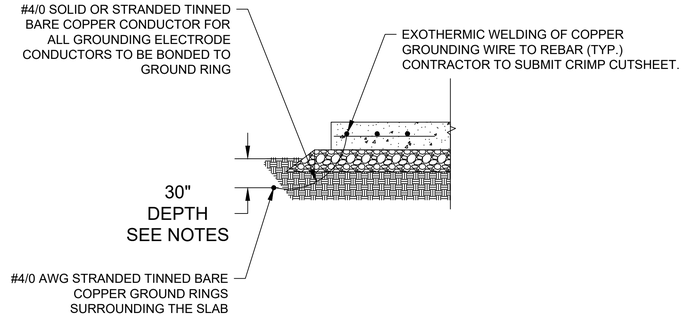


1 E-300 EQUIPMENT PAD GROUNDING DETAIL

SCALE: NTS

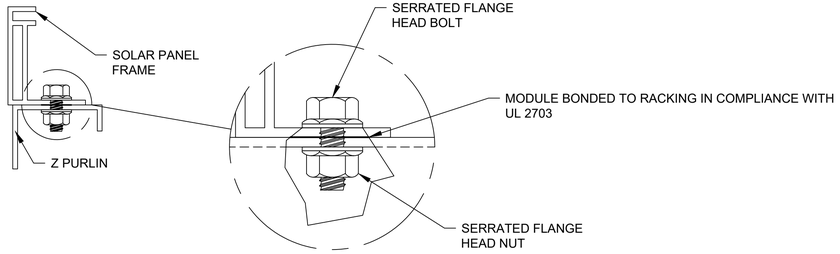
NOTES:

1. GROUNDING RESISTANCE IS TO BE 25 OHMS OR LESS.
2. IF GROUNDING RESISTANCE VALUES CANNOT BE OBTAINED, INSTALL ADDITIONAL GROUNDING ELECTRODES AND RE-TEST.
3. ONE TESTING WELL TO BE INSTALLED.



2 E-300 EQUIPMENT PAD GROUNDING SLAB CONNECTION DETAIL

SCALE: NTS

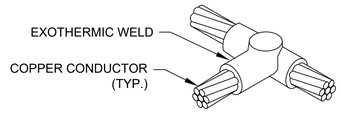


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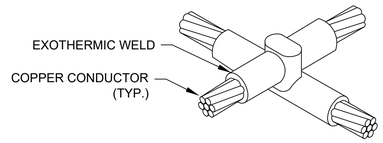
1. BE SURE TO FOLLOW THE MODULE AND RACKING MANUFACTURER'S INSTALLATION MANUAL.
2. MODULES ARE BONDED TO THE PURLIN ON RACKING SYSTEM BY UL 2703. BONDING PATH CONTINUES FROM PURLIN TO COMBINER BOX.

3 E-300 MODULE BONDING/GROUNDING

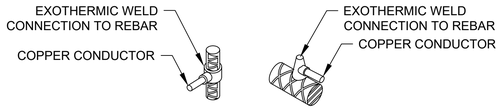
SCALE: NTS



3-WAY EXOTHERMIC WELD CONNECTION DETAIL



4-WAY EXOTHERMIC WELD CONNECTION DETAIL



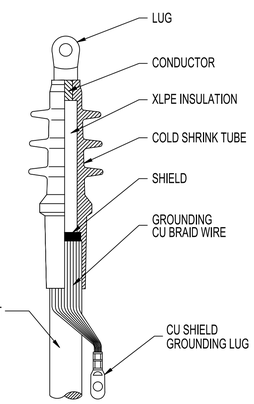
NOTE:

1. REBAR SHALL BE INSTALLED IN A MINIMUM OF ONE CONTINUOUS 20FT LENGTH PER NEC 250.52(A)(3).

GROUND WIRE TO REBAR EXOTHERMIC WELD CONNECTION DETAIL

4 E-300 EXOTHERMIC WELD CONNECTIONS

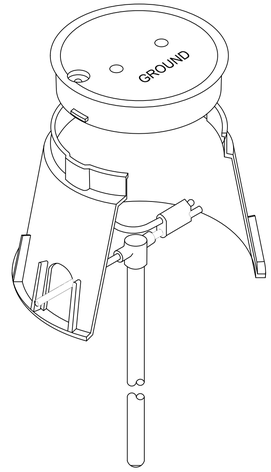
SCALE: NTS



NOTE: SHIELD SHALL BE GROUNDED IN BOTH ENDS OF MV CABLE

5 E-300 MV CABLE TERMINAL DETAIL

SCALE: NTS

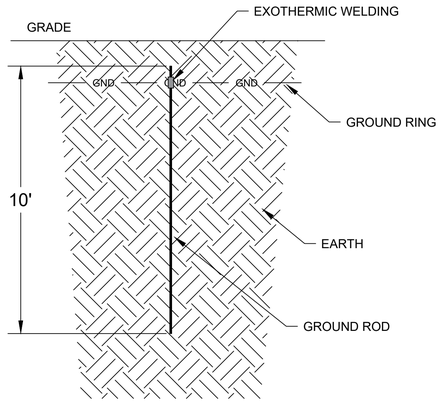


6 E-300 GROUND TEST WELL

SCALE: NTS

NOTES:

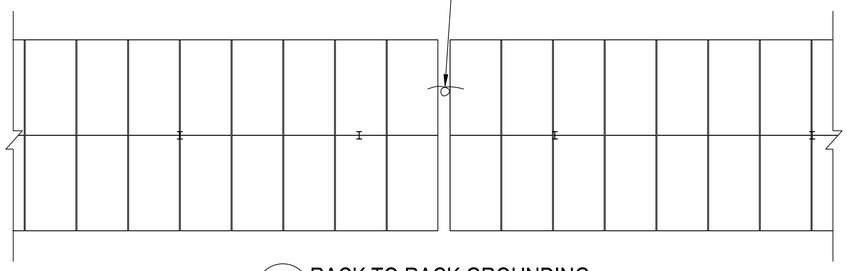
1. GROUNDING RESISTANCE AROUND THE SWITCHGEAR AND EQUIPMENT PADS TO BE LESS THAN 25 OHMS.
2. IF GROUNDING RESISTANCE VALUES CANNOT BE OBTAINED, INSTALL ADDITIONAL GROUNDING ELECTRODES AND RE-TEST.



7 E-300 GROUND ROD INSTALLATION

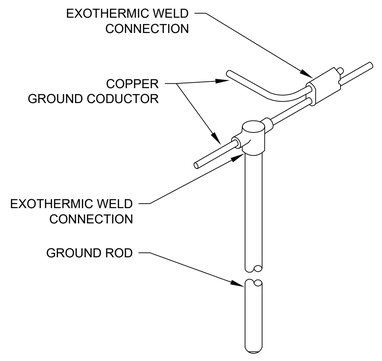
SCALE: NTS

- BONDING JUMPERS TO BE USED TO CONNECT RACKS TOGETHER IN THE E-W DIRECTION.
- USE WEEB-BNDJMP OR EQUIVALENT APPROVED BY THE ENGINEER FOR AREAS WHERE THERE IS SPACE BETWEEN ADJACENT RACKS.
- BE SURE TO FOLLOW THE MODULE AND RACKING MANUFACTURER'S INSTALLATION MANUAL.
- SLACK TO BE INSTALLED ON JUMPERS.
- GROUND LUGS WITH #6 CU WIRE IS ALSO ACCEPTABLE



8 E-300 RACK TO RACK GROUNDING

SCALE: NTS



9 E-300 GROUND ROD DETAIL

SCALE: NTS

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	444
MODULE QUANTITY	11,544
TOTAL DC SIZE	6,233,760 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	40
TOTAL AC SIZE	4,900,000 W
TILT	±55°
AZIMUTH	180°

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PROJECT INSTALLER

STATE OF NEW YORK · E. E. CASTILLO · 095344 · LICENSED PROFESSIONAL ENGINEER

Digitally signed by: Democrates E Castillo Date: 2022.12.12 09:48:07

PROJECT NAME

MANLIUS WEST

8105 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

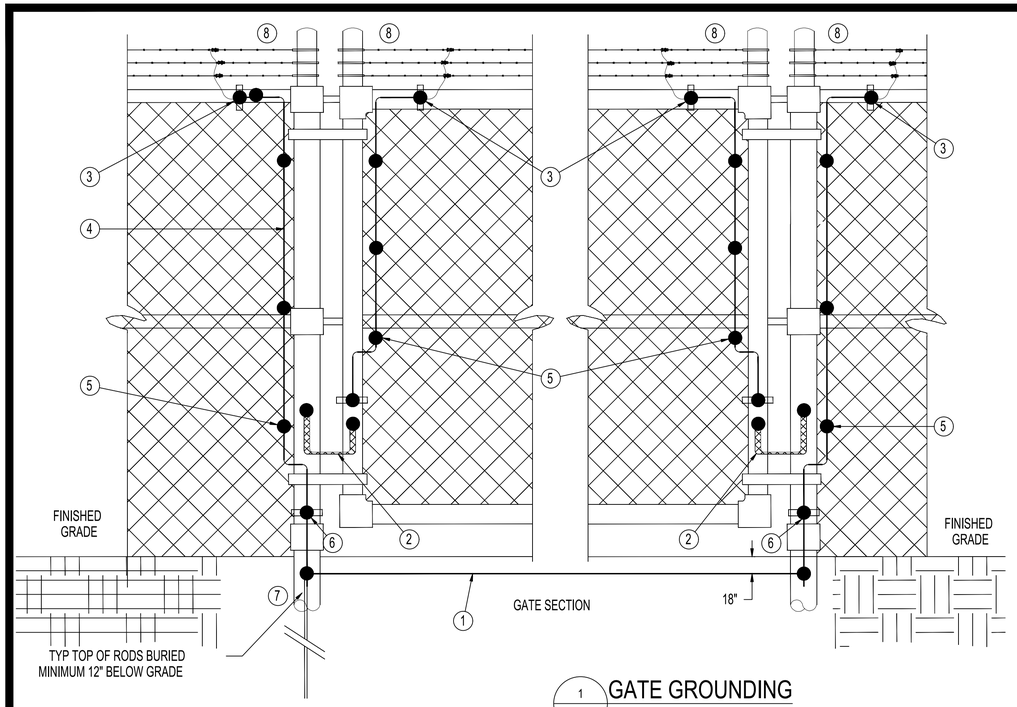
GROUNDING DETAILS - SHEET 1

SHEET SIZE

ARCH D
24" X 36"

SHEET NUMBER

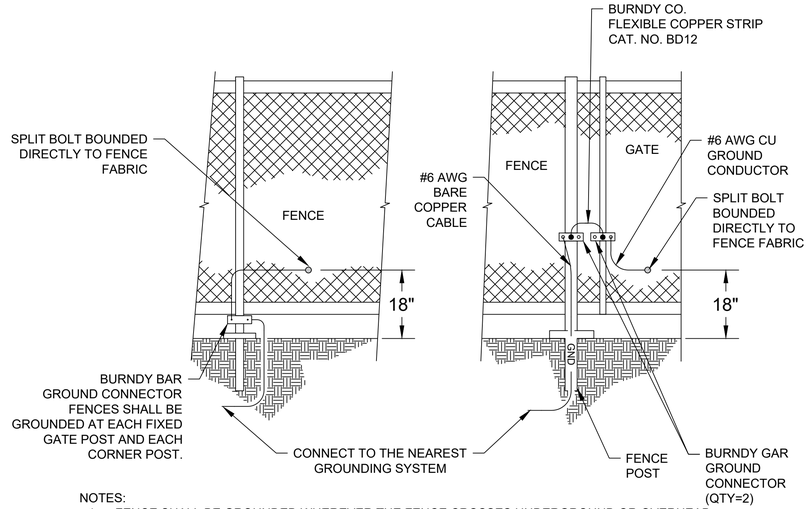
E-300



1 E-301 GATE GROUNDING
SCALE: NTS

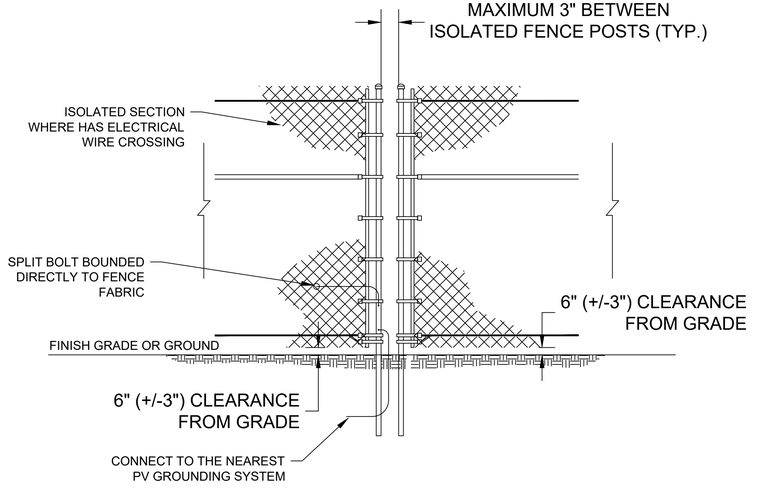
GENERAL NOTES
1. IF BARBED WIRE STRANDS ARE USED ABOVE THE FENCE FABRIC, THE BARBED WIRE STRANDS SHALL BE BONDED TO THE GROUNDING CONDUCTOR, JUMPER OR FENCE.
2. EXPOSED FENCE GEC'S AND CLAMPS SHALL BE INSTALLED WITHIN FENCE PERIMETER.
3. FENCES SHALL BE GROUNDED AT EACH SIDE OF A GATE OR OPENING. GROUND ALL GATE POSTS.
4. RODS AND GEC SHALL BE BURIED 24" OUTSIDE FENCE PERIMETER.
5. WHERE MEDIUM VOLTAGE AND ABOVE OVERHEAD CROSSES THE FENCES, THE FENCE SHALL BE GROUNDED WITHIN 50' OF THE EASEMENT CROSSING ON EITHER SIDE. IF THERE IS NO EASEMENT, THE FENCE SHALL BE GROUNDED WITHIN 50' OF THE CROSSING ON EITHER SIDE. GROUND RODS SHALL BE PLACED EVERY 50' INSIDE THE GROUNDED SECTION. FENCES SHALL CONTAIN AN ISOLATION JOINT AT THE END OF THE GROUNDED SECTION.
6. GROUND GRID EXTENDS BEYOND GATE SWING.

KEYED NOTES
1. GATES AND GROUND RODS SHALL BE BONDED TOGETHER WITH #2 BARE COPPER.
2. FLEXIBLE GROUND WITH COMPRESSION LUGS TO PIPE CLAMPS, FENCE GATE ASSEMBLY AS MANUFACTURED BY HARGER, OR EQUAL. BRAID WITH COMPATIBLE PIPE CLAMPS BY BURNDY ALSO ACCEPTABLE.
3. PROVIDE POST CLAMP TO TOP RAIL.
4. #6 BARE COPPER WIRE, TYPICAL UNLESS NOTED OTHERWISE.
5. PROVIDE FENCE FABRIC GROUNDING CLAMPS SUCH AS MODEL "FGC" AS MANUFACTURED BY HARGER, OR EQUAL.
6. PROVIDE FENCE POST CLAMP BY ERICO, HARGER, OR EQUAL.
7. GROUND ROD BONDED TO BARE COPPER WITH EXOTHERMIC WELD OR IRREVERSIBLE CRIMP STYLE.
8. PROVIDE BRONZE SPLIT BOLT CONNECTIONS TO BARBED WIRE.

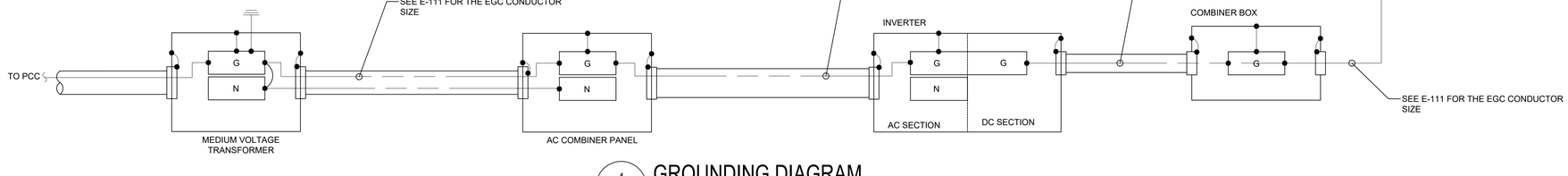


NOTES:
1. FENCE SHALL BE GROUNDED WHEREVER THE FENCE CROSSES UNDERGROUND OR OVERHEAD POWER LINES. FENCE SHALL BE GROUNDED AT A MIN. 20' ON EITHER SIDE OF THE POWER LINE.
2. TO PREVENT GROUNDING OF THE FENCE BEYOND THE 20' FIBER GLASS MESH OR ISOLATION GAPS CAN BE INSTALLED.

2 E-301 FENCE GROUNDING DETAIL
SCALE: NTS



3 E-301 ISOLATED FENCE GROUNDING DETAIL
SCALE: NTS



4 E-301 GROUNDING DIAGRAM
NOT TO SCALE

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	444
MODULE QUANTITY	11,544
TOTAL DC SIZE	6,233,760 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	40
TOTAL AC SIZE	4,900.000 W
TILT	±55°
AZIMUTH	180°

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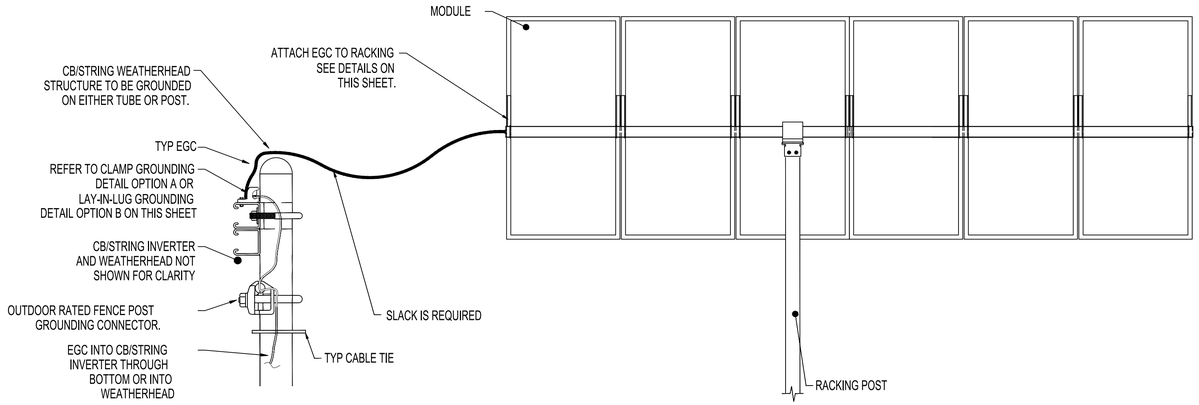
Digitally signed by: Democrates E Castillo
Date: 2022.12.12 09:48:08

PROJECT NAME
MANLIUS WEST
8105 E SENECA TURNPIKE
MANLIUS, NY 13104

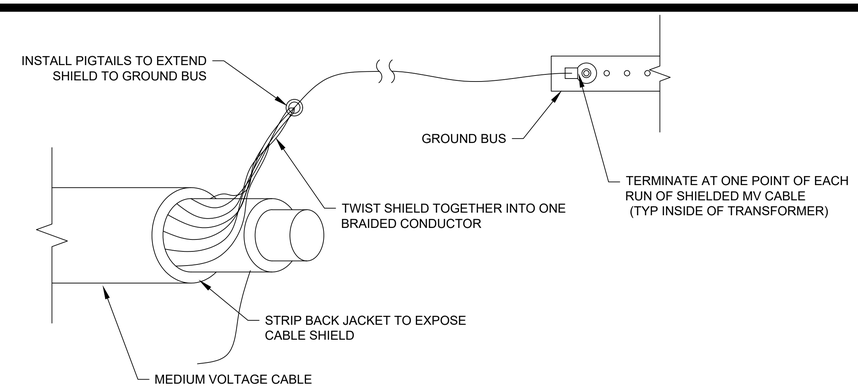
SHEET NAME
GROUNDING DETAILS - SHEET 2

SHEET SIZE
ARCH D
24" X 36"

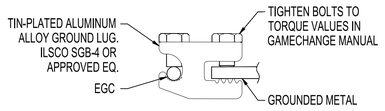
SHEET NUMBER
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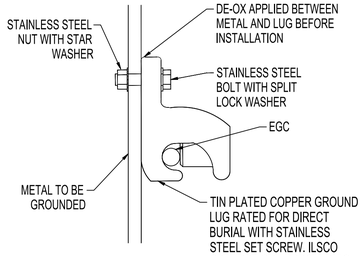


1 E-302 **RACK BONDING**
SCALE: NTS



2 E-302 **MEDIUM VOLTAGE CABLE SHIELD GROUNDING**
SCALE: NTS





3A E-302 **CLAMP GROUNDING DETAIL OPTION A**
SCALE: NTS

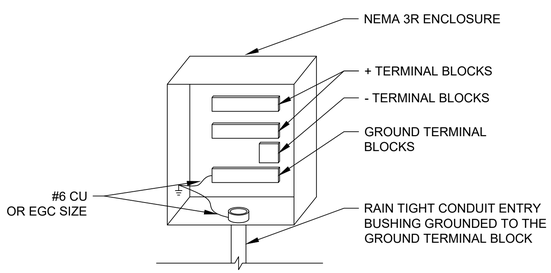
3B E-302 **LAY-IN-LUG GROUNDING DETAIL OPTION B**
SCALE: NTS

NOTES
1. ALL HARDWARE SHALL BE STAINLESS STEEL.
2. EGC SHALL BE #6 BARE SOLID CU.
3. SHALL BE USED FOR EXTERIOR BONDING TO RACKING.
4. ILSCO DE-OX (OR APPROVED EQ) APPLIED TO BOTH SIDES PRIOR TO LUG AND HARDWARE INSTALLATION.

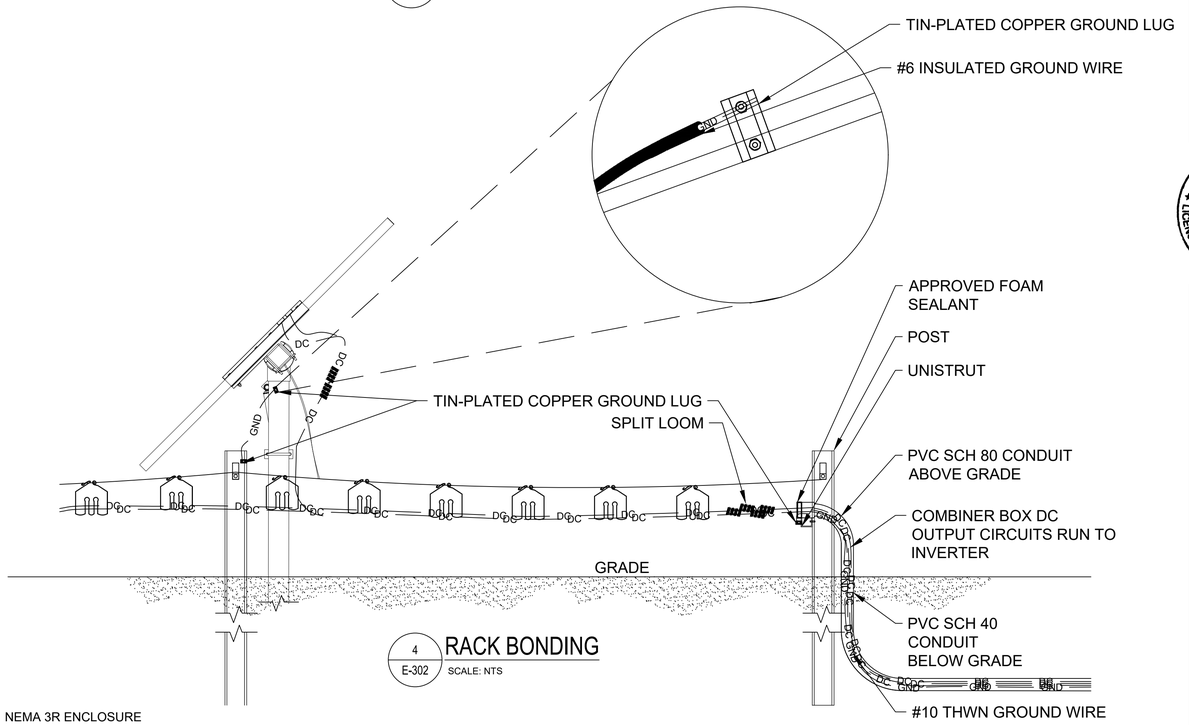
GENERAL GROUNDING NOTES
1. GROUNDING BUSHINGS SHALL BE USED USED ON CONDUIT TERMINATIONS IN CABINET, BOX, OR AUXILIARY GUTTER AND SHALL BE SUITABLE FOR BONDING TO GROUND IN ACCORDANCE WITH NEC 250.92.
2. METALLIC CONDUITS, ENCLOSURES, AND CONNECTORS SHALL BE INSTALLED SO THAT THE CONDUIT BONDING PATH INTEGRITY IS MAINTAINED.
3. RACKING GROUNDING AND BONDING SHALL BE INSTALLED BY E.C. RACKING GROUNDING TO FOLLOW MANUFACTURER INSTALLATION MANUAL

5 E-302 **RACK BONDING JUMPER DETAIL**
SCALE: NTS

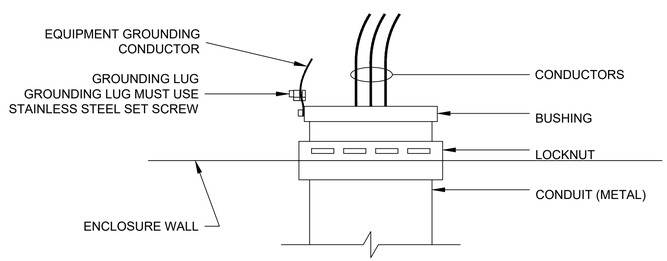
NOTES
1. ALL HARDWARE SHALL BE STAINLESS STEEL.
2. EGC SHALL BE #6 BARE SOLID CU.
3. SHALL BE USED FOR EXTERIOR BONDING TO RACKING.
4. ILSCO DE-OX (OR APPROVED EQ) APPLIED TO BOTH SIDES PRIOR TO LUG AND HARDWARE INSTALLATION.



6 E-302 **TYPICAL EQUIPMENT GROUNDING DETAIL**
SCALE: NTS



4 E-302 **RACK BONDING**
SCALE: NTS



7 E-302 **TYPICAL CONDUIT GROUNDING DETAIL**
SCALE: NTS

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	444
MODULE QUANTITY	11,544
TOTAL DC SIZE	6,233,760 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	40
TOTAL AC SIZE	4,900,000 W
TILT	±55°
AZIMUTH	180°

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Date: 2022.12.12 09:48:09

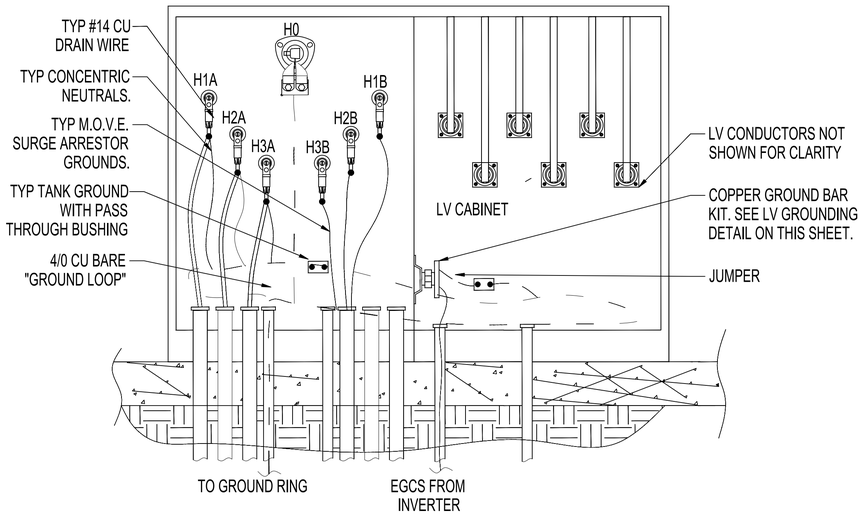
PROJECT NAME

MANLIUS WEST
8105 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME
GROUNDING DETAILS - SHEET 3

SHEET SIZE
ARCH D
24" X 36"

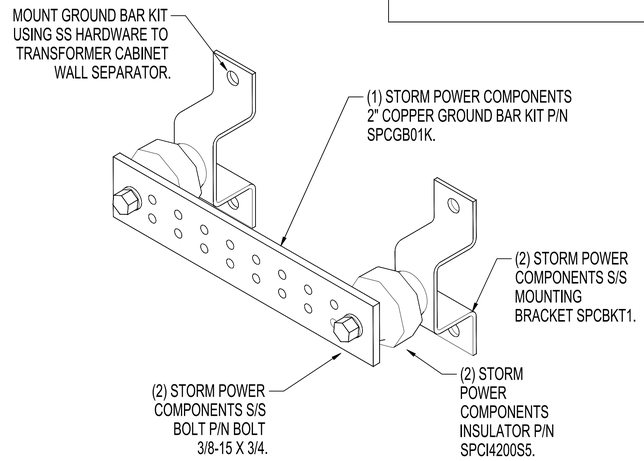
SHEET NUMBER
E-302



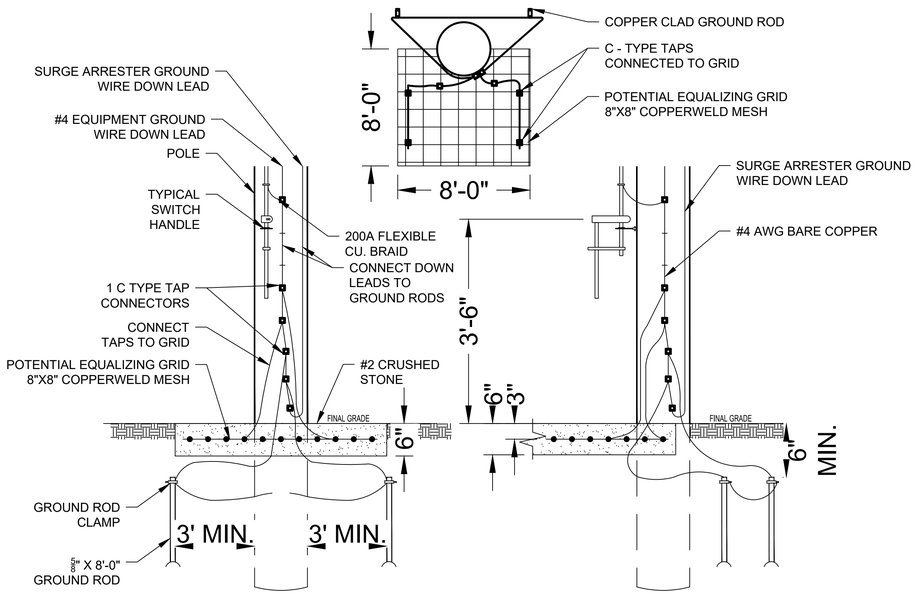
1 E-303 **MV TRANSFORMER GROUNDING**
SCALE: NTS

LEGEND

- #4/0 AWG CU BARE
- COMPRESSION LUG
- SPLIT BOLT
- GROUND ROD
- ERICO 150 WELDING MATERIAL, P/N TAC2Q2Q
- CAD WELD TO REBAR
- X KEYED NOTE



2 E-303 **LV GROUNDING DETAIL**
SCALE: NTS



3 E-303 **SWITCH HANDLE GROUNDING**
SCALE: NTS

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	444
MODULE QUANTITY	11,544
TOTAL DC SIZE	6,233,760 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	40
TOTAL AC SIZE	4,900,000 W
TILT	±55°
AZIMUTH	180°

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Date: 2022.12.12 09:48:10

PROJECT NAME

MANLIUS WEST
8105 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

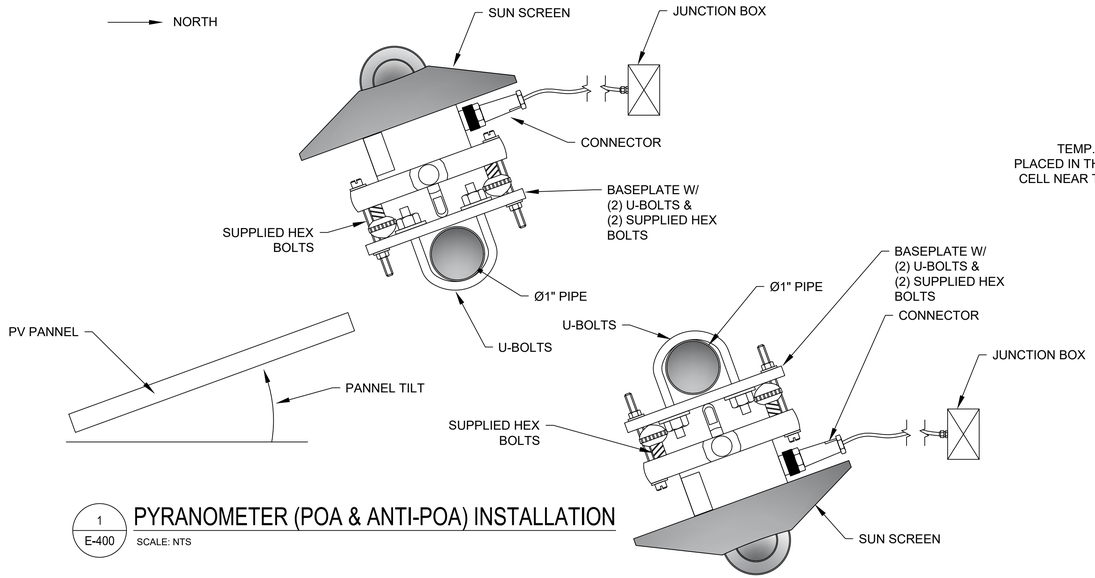
GROUNDING DETAILS - SHEET 4

SHEET SIZE

ARCH D
24" X 36"

SHEET NUMBER

E-303

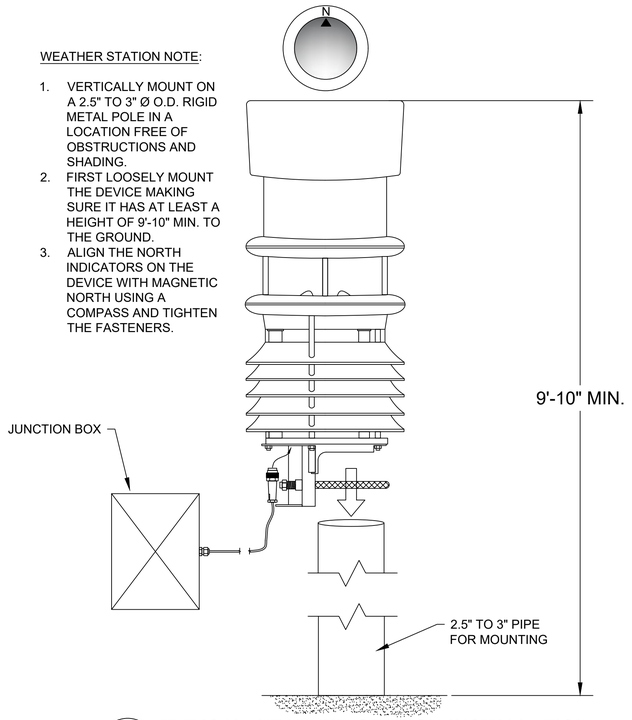


1 E-400 PYRANOMETER (POA & ANTI-POA) INSTALLATION

SCALE: NTS

PYRANOMETER NOTE:

1. FOR POA PYRANOMETERS, ROTATE ASSEMBLY SO THAT THE BASEPLATE IS PARALLEL TO THE PV ARRAY AND FASTEN SNUGLY. FOR GHI PYRANOMETER, ROTATE ASSEMBLY SO THAT THE BASEPLATE IS PARALLEL TO THE GROUND.
2. PLACE PYRANOMETER ONTO THE MOUNTING BRACKET BASEPLATE AND ENSURE THEY ARE PARALLEL TO EACH OTHER USING THE LEVELING METER.
3. ELECTRICAL DETAILS REFERS TO DAS INFORMATION. IF THE SENSOR IS THE LAST DEVICE IN A MODBUS CHAIN WHICH CONSISTS OF 3 OR MORE DEVICES, THEN ADD A 120Ω RESISTOR BETWEEN THE DATA+ AND DATA- WIRES



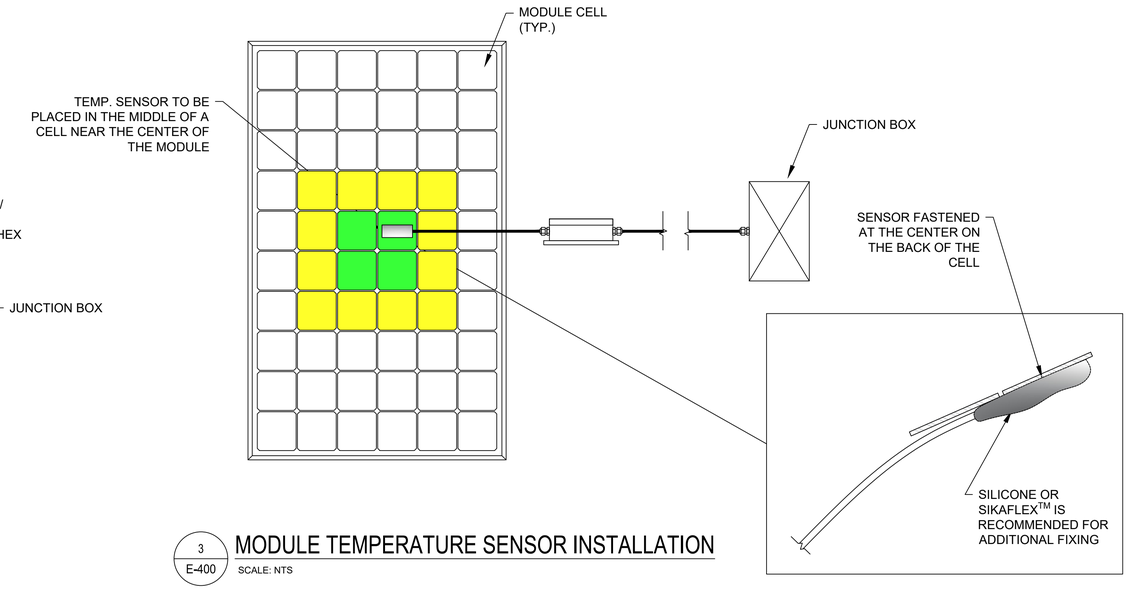
4 E-400 TYPICAL WEATHER STATION INSTALLATION

SCALE: NTS

WEATHER STATION NOTE:

1. VERTICALLY MOUNT ON A 2.5" TO 3" Ø O.D. RIGID METAL POLE IN A LOCATION FREE OF OBSTRUCTIONS AND SHADING.
2. FIRST LOOSELY MOUNT THE DEVICE MAKING SURE IT HAS AT LEAST A HEIGHT OF 9'-10" MIN. TO THE GROUND.
3. ALIGN THE NORTH INDICATORS ON THE DEVICE WITH MAGNETIC NORTH USING A COMPASS AND TIGHTEN THE FASTENERS.

NOTE:
ON HOLD PENDING VENDOR EQUIPMENT SUMBITTAL.

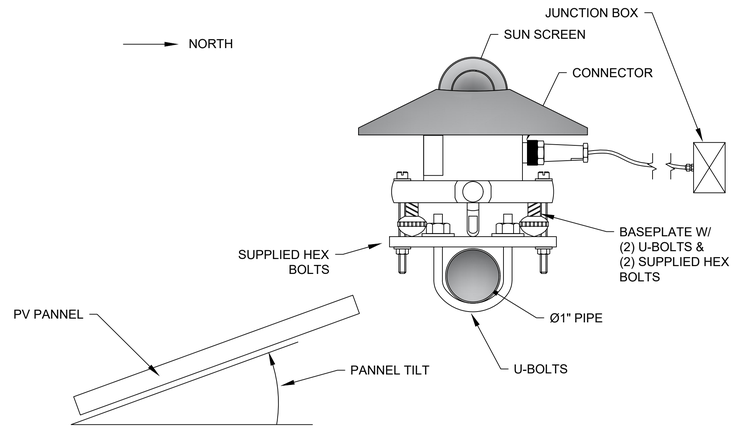


3 E-400 MODULE TEMPERATURE SENSOR INSTALLATION

SCALE: NTS

TEMPERATURE SENSOR NOTE:

1. THE SENSOR SHALL BE PLACED ON A MODULE THAT IS AT LEAST 1 MODULE FROM THE EDGE OF THE ARRAY ON ALL SIDES WHEN POSSIBLE.
2. CLEAN THE CELL BEFORE ATTACHING A SENSOR ONTO IT.



2 E-400 PYRANOMETER (GHI) INSTALLATION

SCALE: NTS

NOTE:

1. ALL DAS EQUIPMENT TO BE INSTALLED AT THE EQUIPMENT PAD WITH THE EXCEPTION OF THE POA AND BOM TEMPERATURE SENSOR, WHICH SHALL BE INSTALLED IN THE ARRAY.
2. CAMERA LOCATION SHALL BE IN ACCORDANCE WITH OWNER REQUEST, IF APPLICABLE.
3. WEATHER STATIONS. CONTRACTOR SHALL DESIGN AND INSTALL A WEATHER STATION AT THE PROJECT. THE WEATHER STATION SHALL INCLUDE (1) HORIZONTAL AND ON (1) IN-PLANE PRYANOMETER, KIPP & ZONNEN CMP 11 (OR EQUIVAILENT), TWO (2) CALIBRATED CELLS (EQUAL OF CELL SELECTIONS FROM MODULES) IN-PLANE, A BACK OF PANEL TEMPERATURE SENSOR, AMBIENT AIR TEMPERATURE SENSOR, AND A WIND SPEED AND DIRECTION SENSOR AT A HEIGHT OF 3 METERS ABOVE GRADE. WEATHER STATION MUST BE INSTALLED AT A LOCATION WITHIN THE PROJECT WHERE IT HAS UNOBSTRUCTED ACCESS TO SUNLIGHT AND OTHER WEATHER.

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	444
MODULE QUANTITY	11,544
TOTAL DC SIZE	6,233,760 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	40
TOTAL AC SIZE	4,900,000 W
TILT	±55°
AZIMUTH	180°

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DESIGNING TOMORROW'S POWER®
CASTILLO ENGINEERING SERVICES, LLC
COA # 28345
620 N. WYMORE ROAD,
SUITE 250,
MAITLAND, FL 32751
TEL: (407) 289-2575

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DESCRIPTION	DATE	REV
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PROJECT INSTALLER



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E Castillo
Date: 2022.12.12 09:48:12

PROJECT NAME

MANLIUS WEST

8105 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

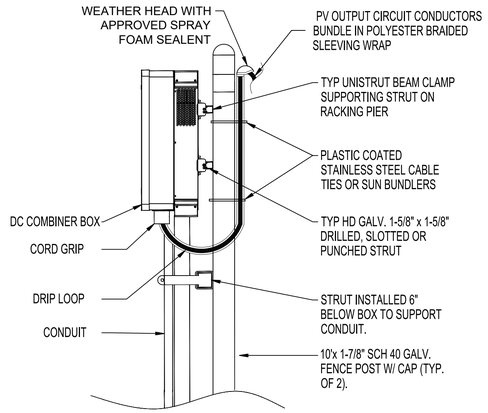
MISCELLANEOUS DETAILS - SHEET 1

SHEET SIZE

ARCH D
24" X 36"

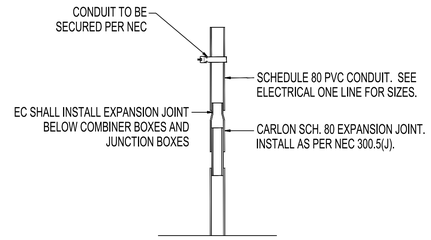
SHEET NUMBER

E-400

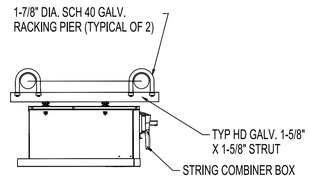


NOTE:
REFER TO DETAIL #3 FOR EXPANSION JOINT.

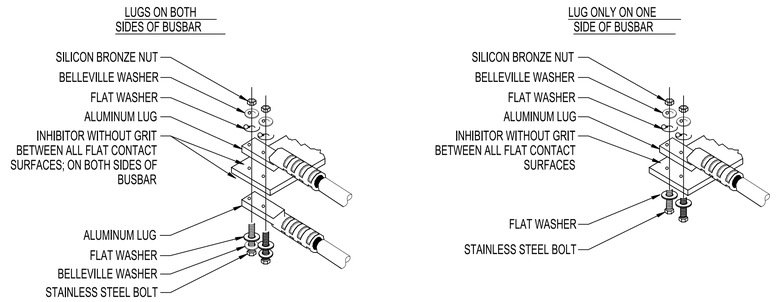
1 / E-401 DC COMBINER ATTACHEMENT DETAIL - ELEVATION
SCALE: NTS



2 / E-401 CONDUIT EXPANSION
SCALE: NTS



3 / E-401 DC COMBINER TOP VIEW
SCALE: NTS



NOTES:
1. FLAT WASHER SHALL HAVE LARGER DIAMETER THAN BELLEVILLE WASHER.
2. BOLT SHALL BE LONG ENOUGH TO ACHIEVE FULL THREAD ENGAGEMENT OF NUT WITH ENTIRE STACK SHOWN.
3. BOLT DIAMETER SHALL MATCH LUG AND BUSBAR HOLE DIAMETER.
4. IF EQUIPMENT MANUFACTURER INSTALLATION INSTRUCTIONS CONFLICT WITH THIS DETAIL, MANUFACTURER INSTRUCTIONS SHALL BE FOLLOWED.
5. NUMBER OF CRIMPS SHOWN IS DIAGRAMMATIC AND MAY VARY DEPENDING ON LUG AND CONDUCTOR SIZE.
6. INHIBITOR USED MUST BE RATED FOR THE EQUIPMENT VOLTAGE, LUG MATERIAL, AND BUSBAR MATERIAL. SUBMIT PROPOSED MATERIAL FOR APPROVAL TO ENGINEERING.

4 / E-401 LUG ATTACHMENT DETAIL
SCALE: NTS

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	444
MODULE QUANTITY	11,544
TOTAL DC SIZE	6,233,760 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	40
TOTAL AC SIZE	4,900,000 W
TILT	±55°
AZIMUTH	180°

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Digitally signed by: Emmocrates with Stamps
E Castillo
Date: 2022.12.12 09:48:13

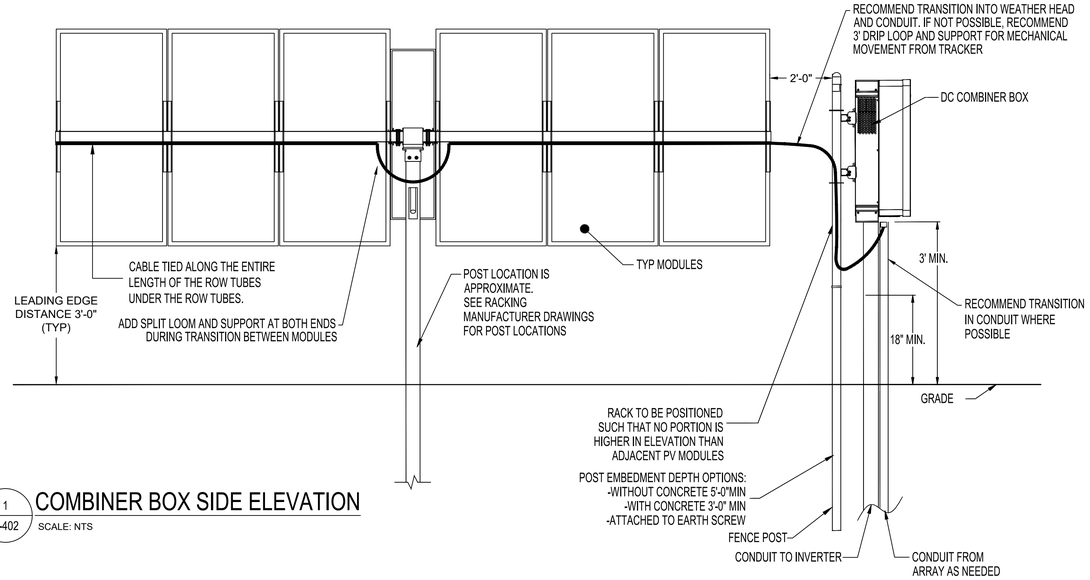
PROJECT NAME

MANLIUS WEST
8105 E SENECA TURNPIKE
MANLIUS, NY 13104

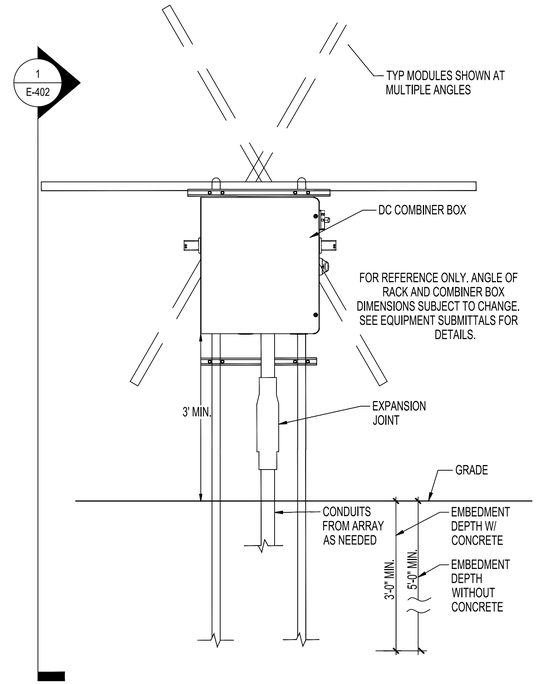
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MISCELLANEOUS DETAILS - SHEET 2

SHEET SIZE
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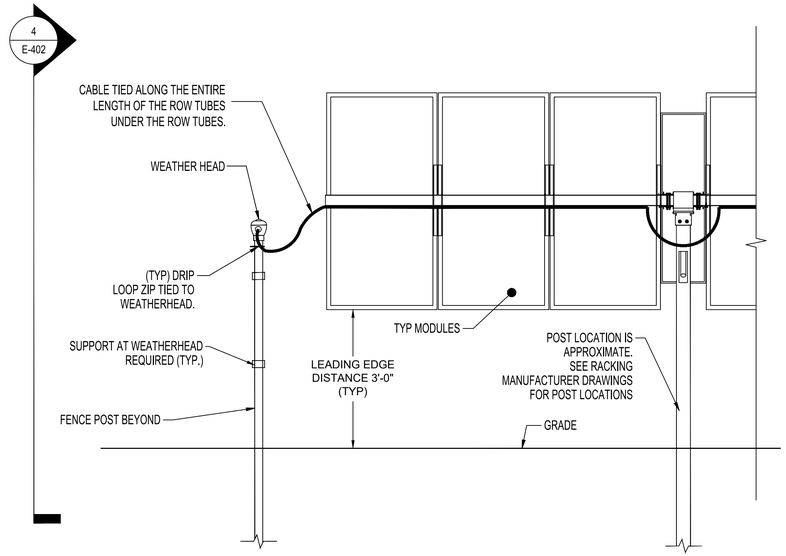
SHEET NUMBER
E-401



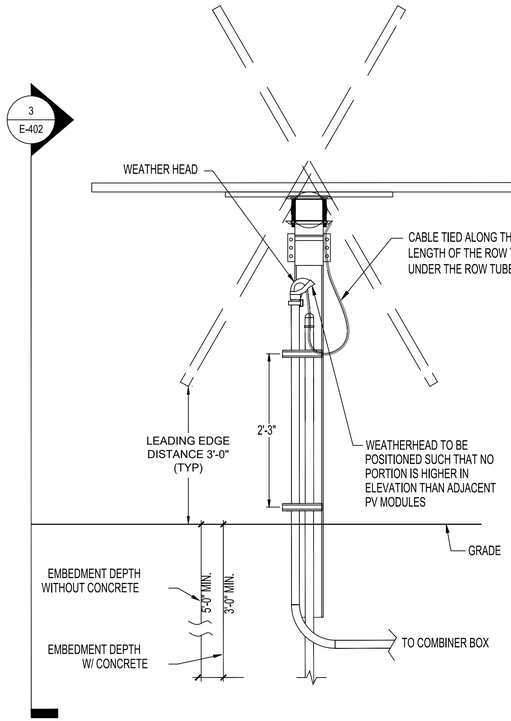
1 E-402 **COMBINER BOX SIDE ELEVATION**
SCALE: NTS



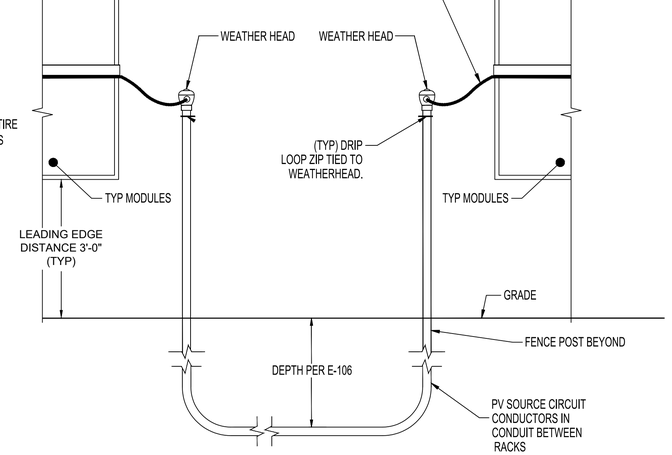
2 E-402 **COMBINER BOX FRONT ELEVATION**
SCALE: NTS



3 E-402 **WEATHERHEAD SIDE ELEVATION**
SCALE: NTS



4 E-402 **WEATHER HEAD - FRONT ELEVATION**
SCALE: NTS



5 E-402 **RACKING BREAK**
SCALE: NTS

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	444
MODULE QUANTITY	11,544
TOTAL DC SIZE	6,233,760 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	40
TOTAL AC SIZE	4,900,000 W
TILT	±55°
AZIMUTH	180°

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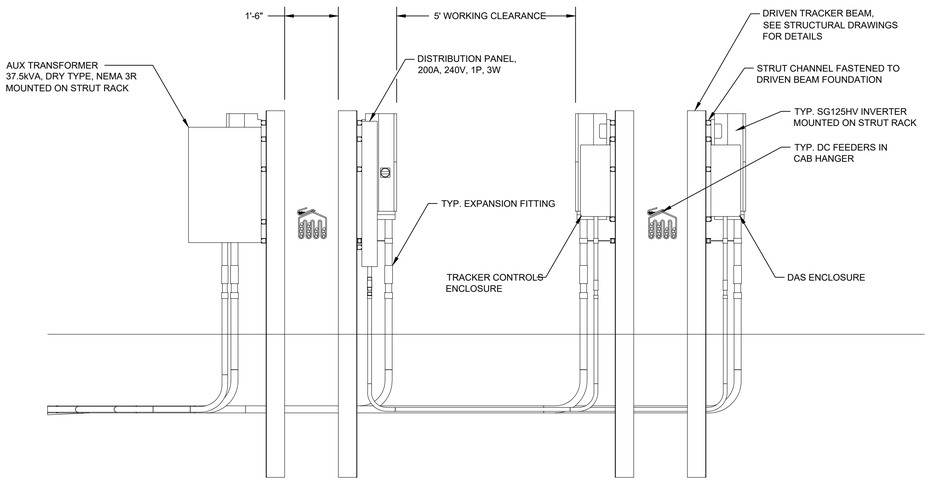
PROJECT NAME

MANLIUS WEST
8105 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME
CONDUIT AND WIRE MANAGEMENT

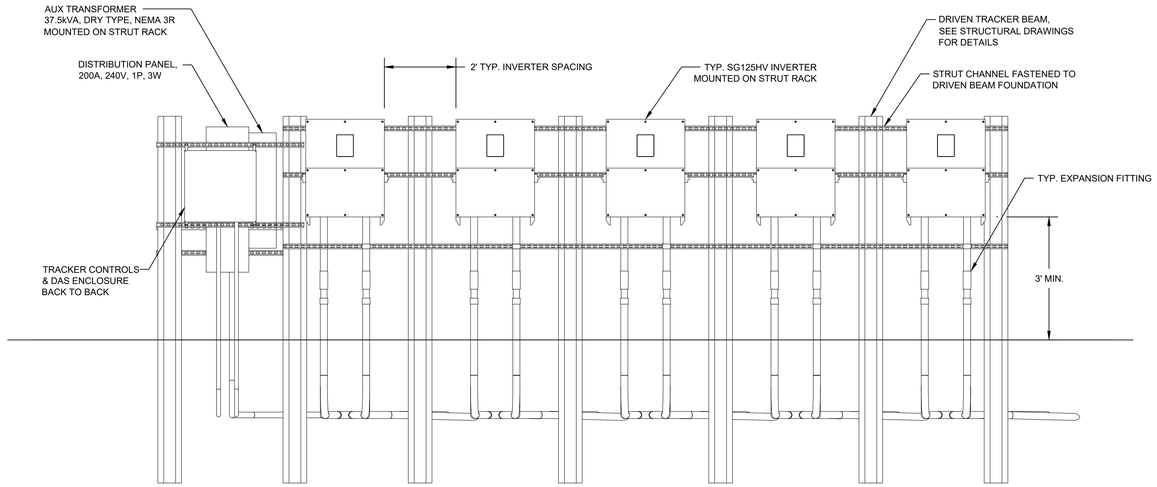
SHEET SIZE
ARCH D
24" X 36"

SHEET NUMBER
E-402



1 E-403 EQUIPMENT RACK ELEVATION - SIDE

SCALE: NTS



2 E-403 EQUIPMENT RACK ELEVATION - FRONT

SCALE: NTS

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	444
MODULE QUANTITY	11,544
TOTAL DC SIZE	6,233,760 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	40
TOTAL AC SIZE	4,900,000 W
TILT	±55°
AZIMUTH	180°

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STATE OF NEW YORK
E. E. CASTILLO
095344
LICENSED PROFESSIONAL ENGINEER

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Date: 2022.12.12 09:48:16

PROJECT NAME

MANLIUS WEST

8105 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

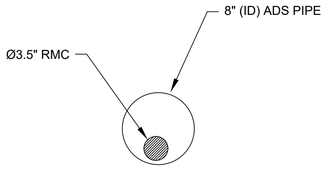
MOUNTING DETAILS

SHEET SIZE

ARCH D
24" X 36"

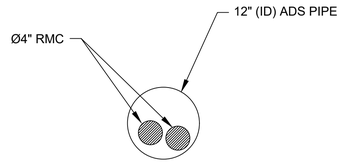
SHEET NUMBER

E-403



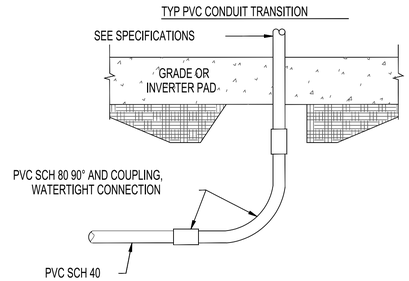
1 E-404 ELECTRICAL CONDUIT DETAIL CONFIG. A

SCALE: NTS



2 E-404 ELECTRICAL CONDUIT DETAIL CONFIG. B

SCALE: NTS



3 E-404 UNDERGROUND CONDUIT TRANSITION DETAIL

SCALE: NTS

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	444
MODULE QUANTITY	11,544
TOTAL DC SIZE	6,233,760 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	40
TOTAL AC SIZE	4,900,000 W
TILT	±55°
AZIMUTH	180°

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E Castillo
Date: 2022.12.12 09:48:17

PROJECT NAME

MANLIUS WEST

8105 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

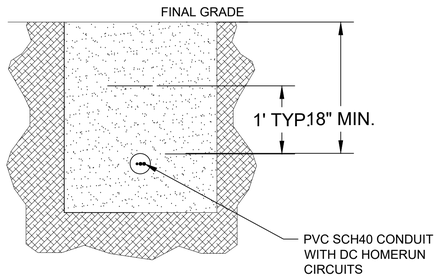
CONDUIT TRENCHING DETAILS - SHEET 1

SHEET SIZE

ARCH D
24" X 36"

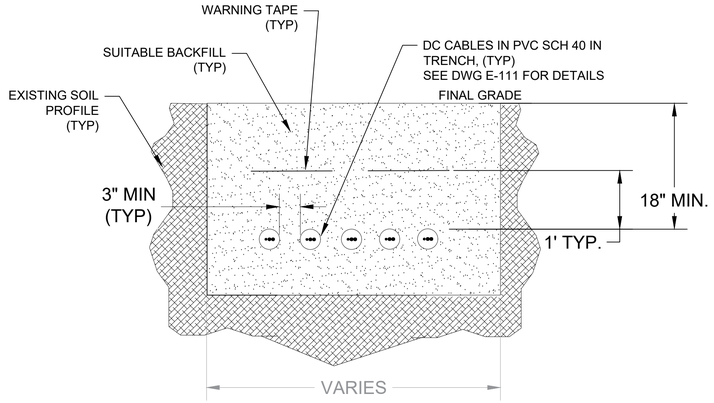
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E-404



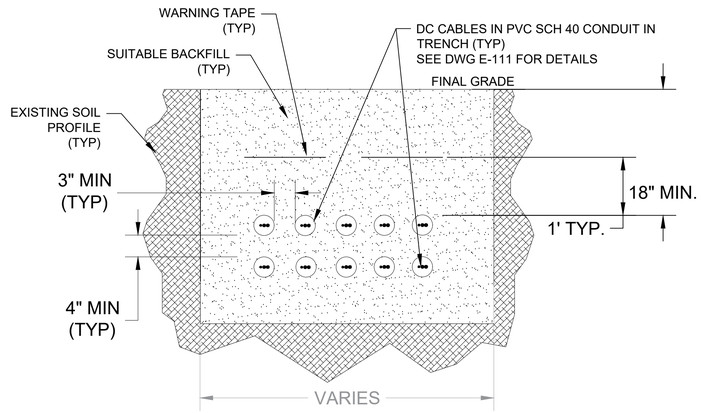
1 E-405 DC HOMERUNS ROW TO ROW JUMPER TRENCH DETAILS

SCALE: NTS



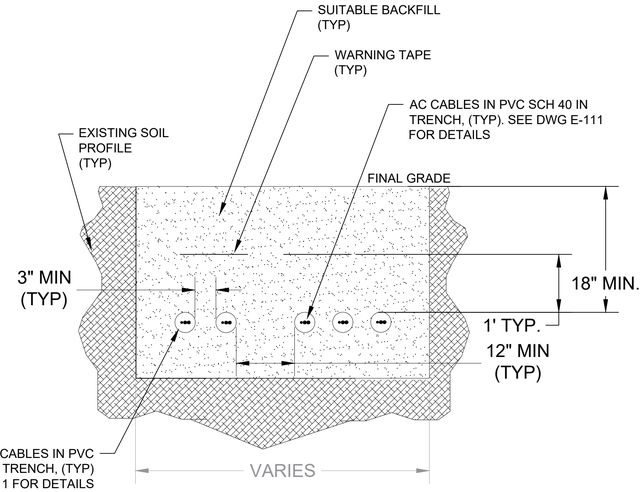
2 E-405 FEEDER CIRCUITS TRENCH DETAILS(SINGLE LAYER)

SCALE: NTS



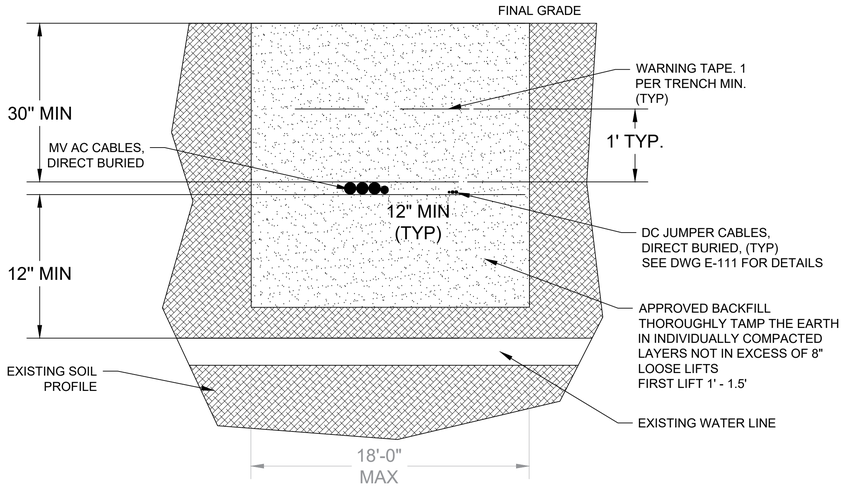
3 E-405 FEEDER CIRCUITS TRENCH DETAILS (TWO LAYERS)

SCALE: NTS



4 E-405 DC & AC CIRCUIT TRENCH DETAILS

SCALE: NTS



4 E-405 MEDIUM VOLTAGE CONDUCTORS WITH DC FEEDER CIRCUITS CROSSING UTILITY TRENCH DETAILS

SCALE: NTS

NOTES:

1. ALL LV CONDUITS TO BE BURIED AT A MINIMUM OF 18".

2. COMMUNICATION CABLES TO BE A MINIMUM OF 12" AWAY FROM DC AND AC CABLES.

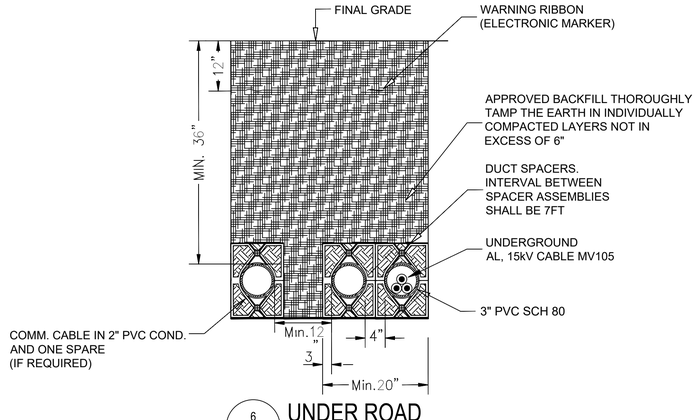
3. WARNING TAPE TO BE METALLIC WITH THE PHRASE "CAUTION: BURIED ELECTRICAL LINES"

4. BACKFILL TO BE FREE FROM ANY ROCKS OR OTHER DELETERIOUS OBJECTS THAT ARE 3/4" IN DIAMETER OR GREATER.

5. ELECTRICIANS TO PROVIDE MATCHING FITTINGS AND EXPANSION COUPLINGS BY THE SAME MANUFACTURER AS THE CONDUIT

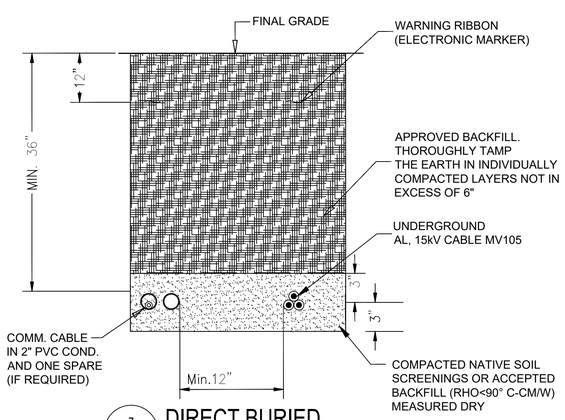
6. ALL DC CABLING TO THE COMBINER BOX SHALL BE A MINIMUM OF 18" BELOW GRADE IN CLEAN FILL. IF THERE IS MORE THAN ONE LATER OF CABLE WITHIN A TRENCH, A MINIMUM OF 4 INCHES OF SOIL SHALL SEPARATE THE LAYERS.

7. DC WIRING FROM THE COMBINER BOX TO THE INVERTERS SHALL BE A MINIMUM OF 18" BELOW GRADE IN CLEAN FILL. TRENCH BEDDING SHALL BE ADEQUATE TO PREVENT DAMAGE TO THE CABLE FROM ANY OVERSIZED MATERIAL.



6 E-405 UNDER ROAD

SCALE: NTS



7 E-405 DIRECT BURIED

SCALE: NTS

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	444
MODULE QUANTITY	11,544
TOTAL DC SIZE	6,233,760 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	40
TOTAL AC SIZE	4,900,000 W
TILT	±55°
AZIMUTH	180°

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PROJECT INSTALLER



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Date: 2022.12.12 09:48:18

PROJECT NAME

MANLIUS WEST
8105 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

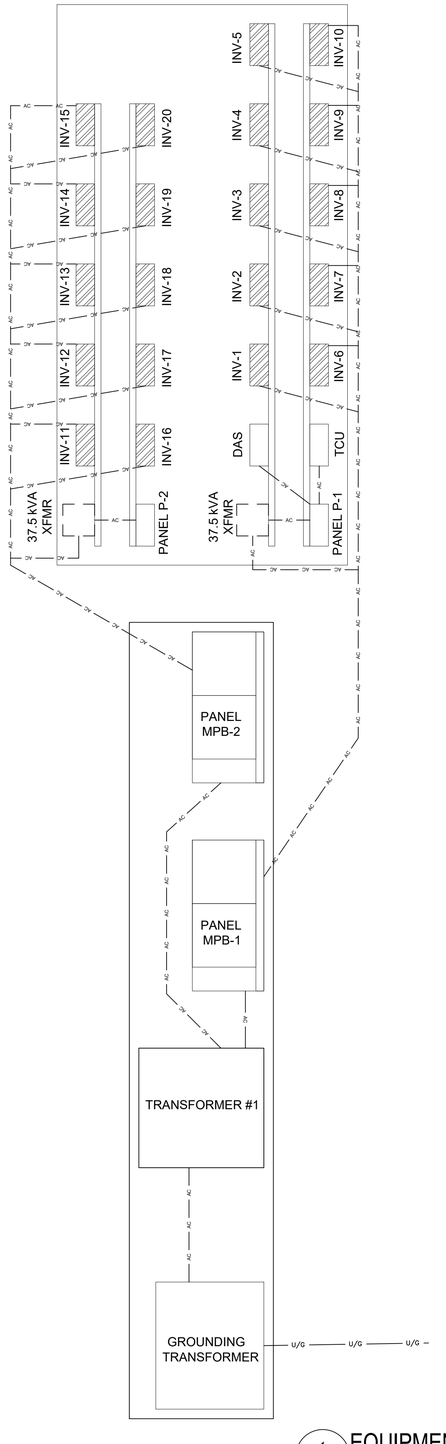
CONDUIT TRENCHING DETAILS - SHEET 2

SHEET SIZE

ARCH D
24" X 36"

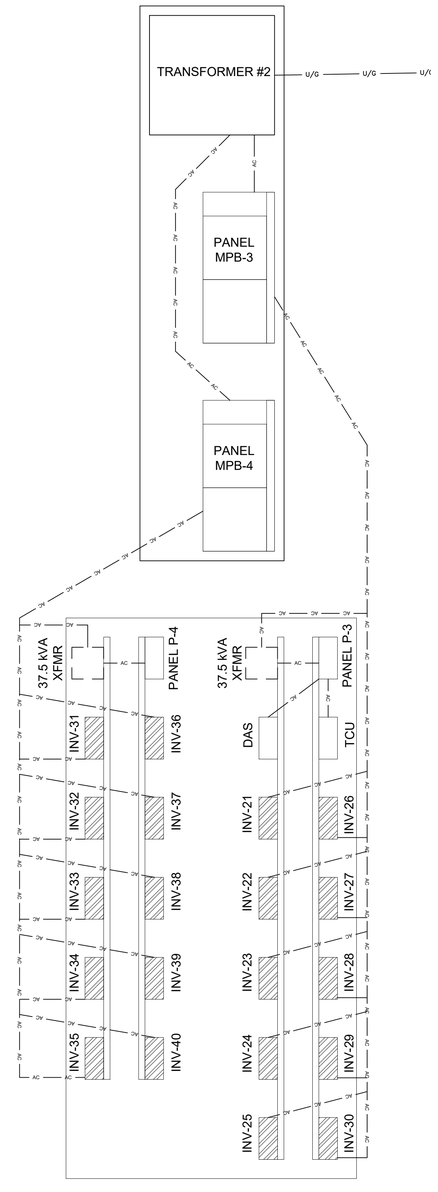
SHEET NUMBER

E-405



1 E-406 EQUIPMENT PAD DETAIL #1

SCALE: NTS



1 E-406 EQUIPMENT PAD DETAIL #2

SCALE: NTS

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	444
MODULE QUANTITY	11,544
TOTAL DC SIZE	6,233,760 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	40
TOTAL AC SIZE	4,900.000 W
TILT	±55°
AZIMUTH	180°

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PROJECT INSTALLER

STATE OF NEW YORK
E. E. CASTILLO
095344
LICENSED PROFESSIONAL ENGINEER

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with Esignature
E Castillo
Date: 2022.12.12 09:48:19

PROJECT NAME

MANLIUS WEST

8105 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

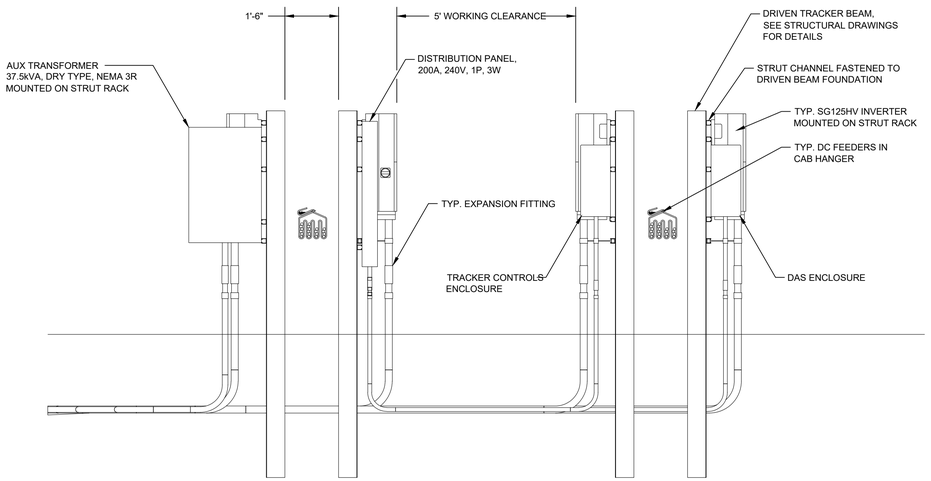
EQUIPMENT PAD DETAIL

SHEET SIZE

ARCH D
24" X 36"

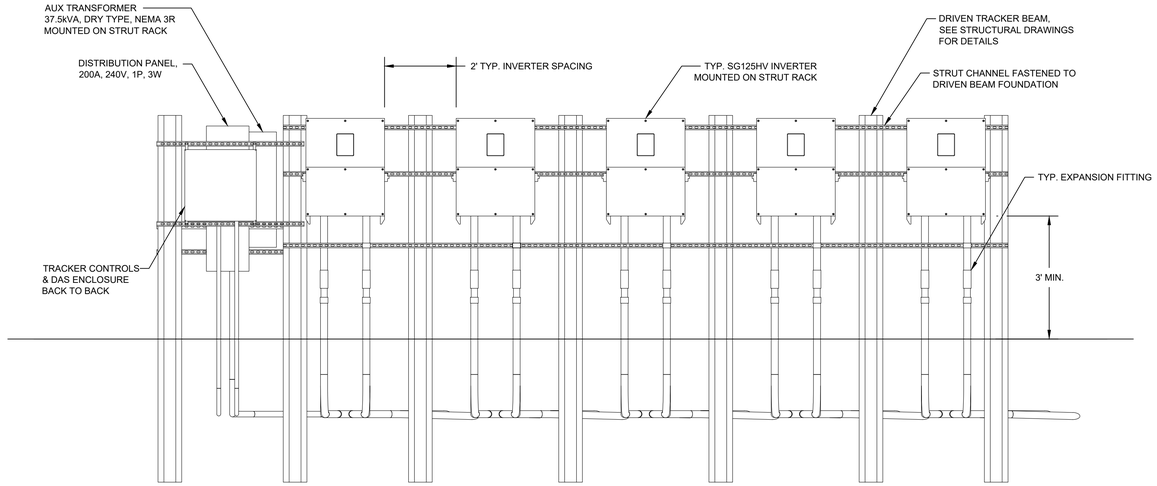
SHEET NUMBER

E-406



1 E-407 EQUIPMENT RACK ELEVATION - SIDE

SCALE: NTS



2 E-407 EQUIPMENT RACK ELEVATION - FRONT

SCALE: NTS

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	444
MODULE QUANTITY	11,544
TOTAL DC SIZE	6,233,760 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	40
TOTAL AC SIZE	4,900,000 W
TILT	±55°
AZIMUTH	180°

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PROJECT NAME

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8105 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

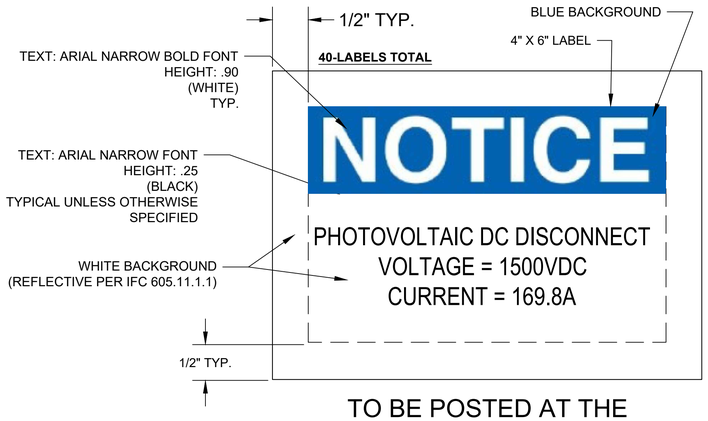
EQUIPMENT RACK DETAIL

SHEET SIZE

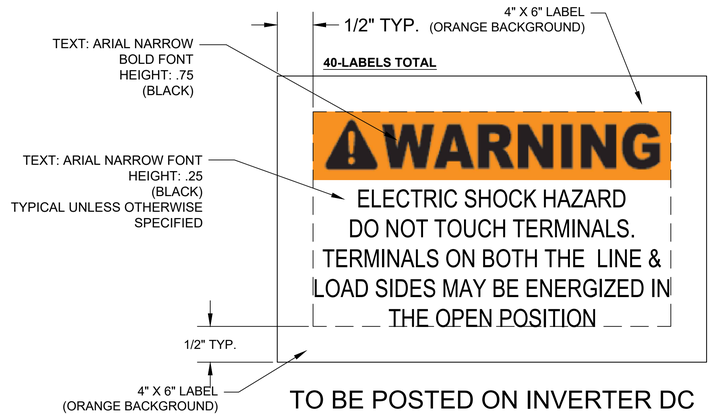
ARCH D
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SHEET NUMBER

E-407

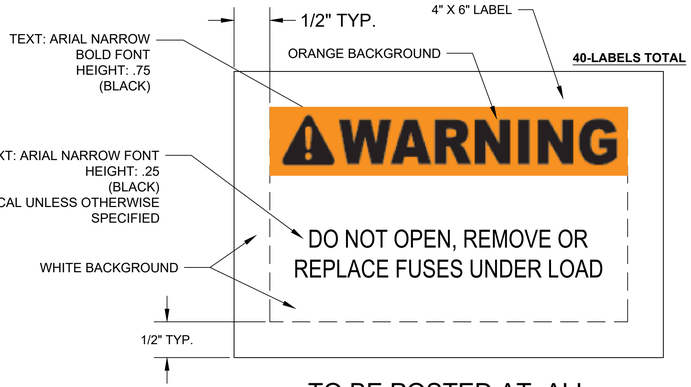


TO BE POSTED AT THE INVERTER DC DISCONNECT

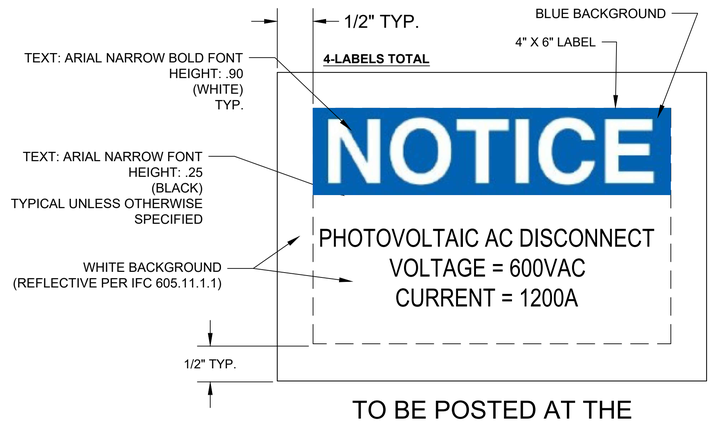


TO BE POSTED ON INVERTER DC INPUTS AND COMBINERS

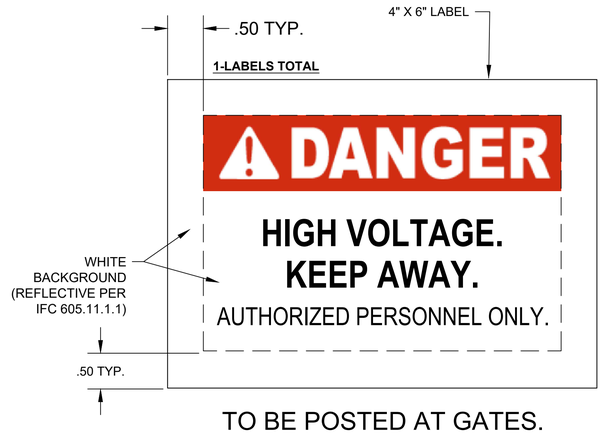




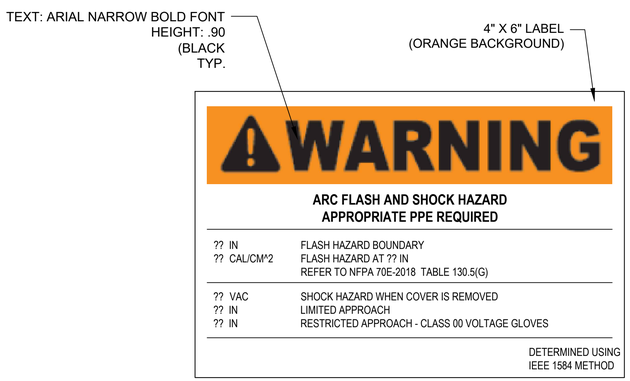
TO BE POSTED AT ALL COMBINER BOXES AND ALL OTHER FUSED LOCATIONS



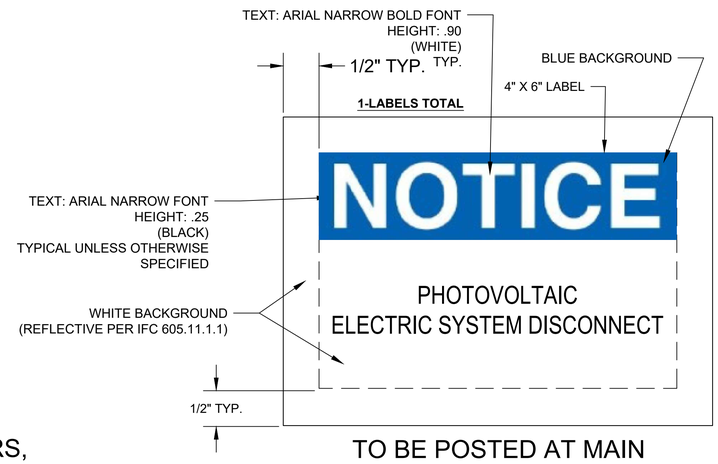
TO BE POSTED AT THE INVERTERS AC COMBINER PANEL



TO BE POSTED AT GATES.



TO BE POSTED AT AC & DC SIDES OF INVERTERS, TRANSFORMERS, PANELS, & DISCONNECTS.
WAITING FOR ARC FLASH & SHOCK HAZARD ANALYSIS



TO BE POSTED AT MAIN SERVICE DISCONNECT PER NEC 690.13(B)

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	444
MODULE QUANTITY	11,544
TOTAL DC SIZE	6,233,760 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	40
TOTAL AC SIZE	4,900,000 W
TILT	±55°
AZIMUTH	180°

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620 N. WYMORE ROAD,
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REVISIONS

DESCRIPTION	DATE	REV
IFP	12/09/2022	0
30% REVIEW	11/11/2022	A

PROJECT INSTALLER

STATE OF NEW YORK · E. CASTILLO · 095344 · LICENSED PROFESSIONAL ENGINEER

Digitally signed by: Emmocrates with Stamp
E Castillo
Date: 2022.12.12 09:48:22

PROJECT NAME

MANLIUS WEST
8105 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

WARNING LABELS - SHEET 2

SHEET SIZE

ARCH D
24" X 36"

SHEET NUMBER

E-500

(WHITE BACKGROUND)

6" X 6" LABEL

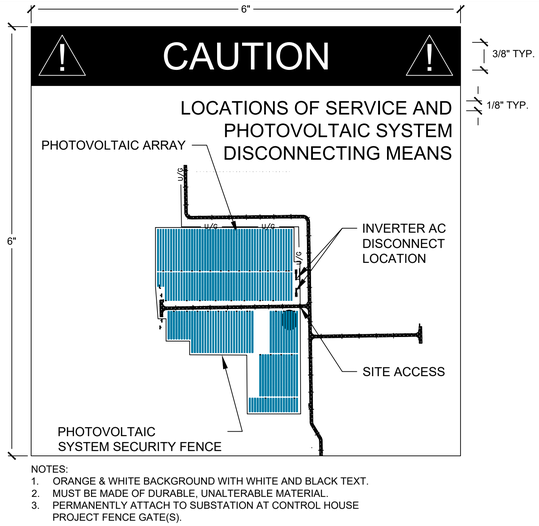
2-LABELS TOTAL

MEDIUM VOLTAGE TRANSFORMER X

2,500KVA
PRIMARY VOLTAGE = 13.2KV
SECONDARY VOLTAGE = 600V

TEXT: ARIAL NARROW FONT
HEIGHT: .25
(BLACK)
TYPICAL UNLESS OTHERWISE SPECIFIED

TO BE POSTED AT THE TRANSFORMERS. X TO BE REPLACED WITH TRANSFORMER NUMBER.



NOTES:
1. ORANGE & WHITE BACKGROUND WITH WHITE AND BLACK TEXT.
2. MUST BE MADE OF DURABLE, UNALTERABLE MATERIAL.
3. PERMANENTLY ATTACH TO SUBSTATION AT CONTROL HOUSE PROJECT FENCE GATE(S).

(WHITE BACKGROUND)

6" X 6" LABEL

40-LABELS TOTAL

PV INVERTER INV YY

FEEDS FROM CB XX

125kW
OPERATING VOLTAGE = 600Vac
OPERATING CURRENT = 120Aac

AS PER SHEET E-111

TO BE POSTED AT INVERTERS
XX TO BE REPLACED WITH NUMBER
YY TO BE REPLACED WITH INVERTER NUMBER

4" X 6" LABEL (ORANGE BACKGROUND) TYPICAL UNLESS OTHERWISE SPECIFIED

1/2" TYP.

40-LABELS TOTAL

TEXT: ARIAL NARROW BOLD FONT HEIGHT: .38 (BLACK) TYPICAL UNLESS OTHERWISE SPECIFIED

TEXT: ARIAL NARROW FONT
HEIGHT: .20
(BLACK)
TYPICAL UNLESS OTHERWISE SPECIFIED

COMBINER BOX CB YY

FEEDS TO INVERTER XX

AS PER SHEET E-111

MAX SYSTEM VOLTAGE = 1,478VDC
MAX SHORT CIRCUIT CURRENT = 223.57ADC

1/2" TYP.

TO BE POSTED AT THE COMBINER BOXES PER NEC 690.53
XX TO BE REPLACED BY CENTRAL INVERTER NUMBER
YY TO BE REPLACED BY COMBINER BOX NUMBER

4" X 6" LABEL

(WHITE BACKGROUND)

METEOROLOGICAL STATION

TEXT: ARIAL NARROW FONT
(BLACK)
TYPICAL UNLESS OTHERWISE SPECIFIED

TO BE POSTED AT THE WEATHER STATION CABINETS

(WHITE BACKGROUND)

4" X 6" LABEL

TEXT: ARIAL NARROW FONT
(BLACK)
TYPICAL UNLESS OTHERWISE SPECIFIED

DATA ACQUISITION CABINET

TO BE POSTED AT THE DAS CABINETS

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	444
MODULE QUANTITY	11,544
TOTAL DC SIZE	6,233,760 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	40
TOTAL AC SIZE	4,900,000 W
TILT	±55°
AZIMUTH	180°

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IFP	12/09/2022	0
30% REVIEW	11/11/2022	A

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Date: 2022.12.12 09:48:23

PROJECT NAME

MANLIUS WEST
8105 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

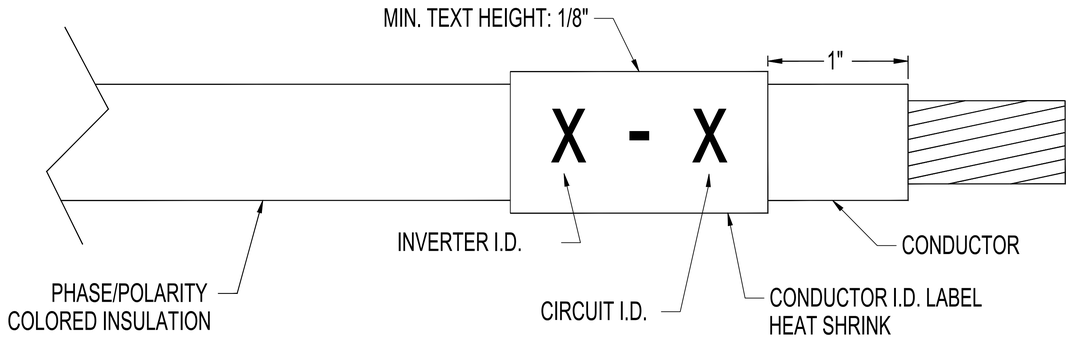
WARNING LABELS - SHEET 2

SHEET SIZE

ARCH D
24" X 36"

SHEET NUMBER

E-501



DC INPUT CIRCUITS FROM ARRAY TO INVERTER
RANGE: 1-3.1-9.1-12 (INV.CB.CIRC)
EXAMPLE: 2.4.10

TO BE PROVIDED BY E.C.

AC FEEDERS BETWEEN INVERTER AND TRANSFORMER
RANGE: 1-20 (INV)
EXAMPLE: 2

1 / E-502 WIRE LABELING
SCALE: NTS

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	444
MODULE QUANTITY	11,544
TOTAL DC SIZE	6,233,760 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	40
TOTAL AC SIZE	4,900,000 W
TILT	±55°
AZIMUTH	180°

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IFP	12/09/2022	0
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PROJECT INSTALLER

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Date: 2022.12.12 09:48:24

PROJECT NAME
MANLIUS WEST
8105 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME
WARNING LABELS - SHEET 2

SHEET SIZE
ARCH D
24" X 36"

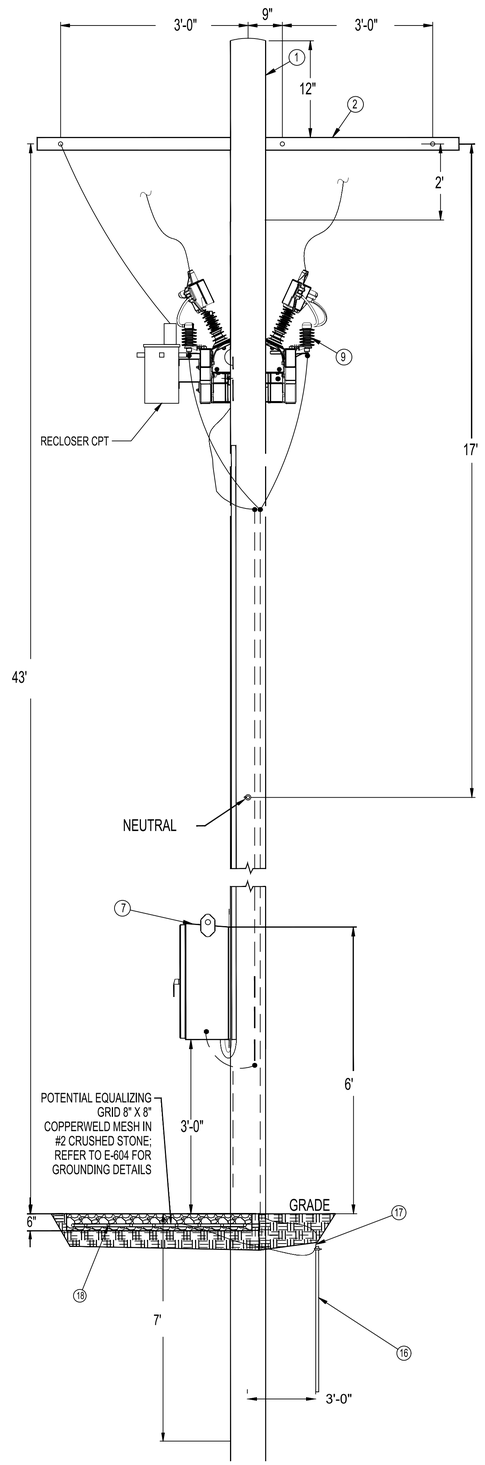
SHEET NUMBER
E-502

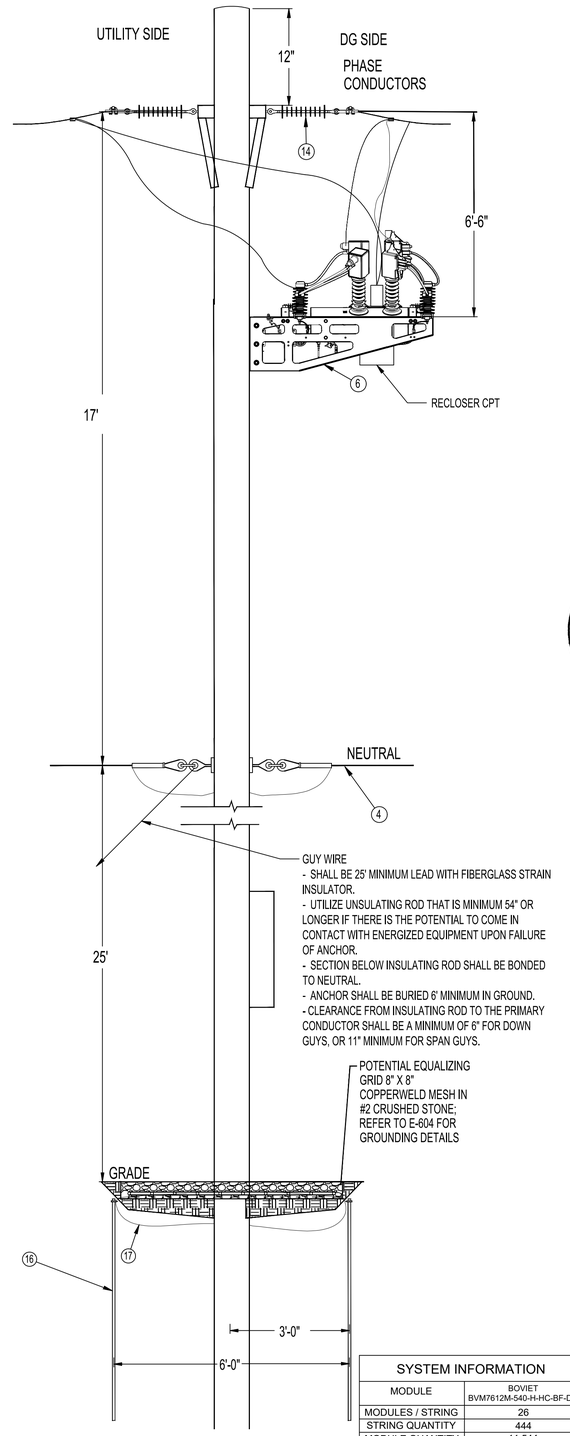
ITEM	QTY	DESCRIPTION	SUPPLIED BY
1		WOODEN POLE, 40' HIGH, CLASS 3	CONTRACTOR
2		$3\frac{1}{2}$" X $4\frac{1}{2}$" X 10' FIBERGLASS DEADEND ARMS	CONTRACTOR
3		PRIMARY ACSR CONDUCTOR, 4/0 AWG	CONTRACTOR
4		NEUTRAL #1 AWG CU CONDUCTOR	CONTRACTOR
5		GANG OPERATED AIR BREAK SWITCH, 15 KV, 600 A	CONTRACTOR
6		"CR512" RECLOSER, 15.5 KV, 800 A	CONTRACTOR
7		RECLOSER CONTROL PANEL	CONTRACTOR
8		FUSED CUTOUT, 15 KV, 300 A	CONTRACTOR
9		SURGE ARRESTER, 10 KV, 8.4 KV MCOV, HD RISER POLE CLASS	CONTRACTOR
10		METER CLUSTER ASSEMBLY, 15 KV	CONTRACTOR
11		METERING CABINET	CONTRACTOR
12		MC CABLE, 15 KV 4/0 AWG	CONTRACTOR
13		CABLE TERMINATION, 15 KV CLASS XX KCMIL	CONTRACTOR
14		DEADEND INSULATOR, 15 KV CLASS	CONTRACTOR
15		POST INSULATOR, 15 KV CLASS	CONTRACTOR
16		5/8" X 8' COPPER CLAD GROUND ROD	CONTRACTOR
17		CONDUCTOR BARE COPPERCLAD #4	CONTRACTOR
18		COPPERWELD GROUND MAT - 8' X 8;	CONTRACTOR

POLE LAYOUT GENERAL NOTES:

1. ALL POLES ARE SHOWN AS CONCEPTUAL AND ARE FOR DIAGRAMMATIC PURPOSES ONLY. ALL UTILITY POLES SHALL CONFORM TO ANSI 05.1, AWPA C4, ANSI C2, NESC, LOCAL UTILITY REQUIREMENTS, AND ANY OTHER APPLICABLE CODES AND STANDARDS.
2. ALL OTHER MATERIAL NEEDED FOR A COMPLETE AND OPERABLE INSTALLATION, THOUGH NOT SPECIFICALLY CALLED OUT, SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR.
3. ALL POLE LINE HARDWARE SHALL BE RATED FOR 10,000 LBS MINIMUM.
4. COMMUNICATION SPACER CABLE SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS.
5. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL HELICAL ANCHORS AND DOWN GUY WIRES. ALL DOWN GUYS SHALL BE 7#10 ALUMINUM CLAD STEEL MINIMUM. ANCHORS SHALL BE $\frac{3}{8}$ GALVANIZED SQUARE SHAFT HELICAL WITH A MINIMUM DIAMETER OF 8 INCHES. INSTALLATION OF HELICAL ANCHORS SHALL BE BY EITHER ELECTRICAL OR HYDRAULIC ROTARY TYPE TORQUE MOTOR. SIZE TO BE CONFIRMED BY CALCULATION.
6. MAINTAIN NO LESS THAN 21'10" FEED GROUND CLEARANCE THROUGHOUT EACH NEUTRAL SPAN UNDER ALL LOADING CONDITIONS FOR SPANS LESS THAN 45 FEET. FOR LONGER SPANS, CONTACT CCR ENGINEERING FOR DIRECTION.
7. MAXIMUM OPERATION TEMPERATURE OF OVERHEAD CONDUCTOR 120°F.
8. FULL-PHASE TENSION TO STOP AT UTILITY POLE WITH GUYING; SLACK SPAN BETWEEN LAST UTILITY POLE AND FIRST CCR POLE.
9. IN ADDITION TO NUTS AND WASHERS, LOCKNUTS SHALL BE INSTALLED ON ALL THREADED MATERIAL AND HARDWARE. THE THREADS ON INSTALLED BOLTS SHALL PROTRUDE PAST THE LOCK WASHERS A MINIMUM OF ONE INCH BUT NOT MORE THAN TWO INCHES.
10. A 3 INCH BY 3 INCH (MINIMUM)SQUARE, CURVED WASHER SHALL BE USED ABUTTING THE POLE WHEN INSTALLED ON PRIMARY DEADEND, NEUTRAL DEADEND, AND GUY ASSEMBLIES DIRECTLY TO POLE.
11. CONDUCTORS SHALL BE SAGGED EVENLY AND IN ACCORDANCE WITH THE CONDUCTOR MANUFACTURER'S RECOMMENDATIONS. SEE TABLE BELOW FOR INITIAL SAG BASED ON SPAN LENGTH AND TEMPERATURE.
12. EACH SURGE ARRESTER TO BE BONDED SEPARATELY TO POLE GROUND.
13. BOND ALL NON-CURRENT CARRYING METALLIC PARTS ON THE RECEIVING STRUCTURE OF THE EQUIPMENT GROUND WITH A STRANDED #4 AWG BARE COPPER CONDUCTOR.
14. ALL ARRESTORS SHALL HAVE A DEDICATED #4 AWG BARE COPPER CONDUCTOR TRAILED DOWN TO GROUNDING RODS/GRID SEPARATE FROM EQUIPMENT GROUND.
15. ALL DISCONNECTING MEANS SHALL BE UNIFORMLY PLACARDED WITH PERMANENTLY AFFIXED METAL OR PLASTIC LABELS AS REQUIRED BY THE NEC. NY SIR, AND ESB 750.

1 E-600 POINT OF INTERCONNECTION POLE BOM
SCALE: NTS





NOTES:
- CUSTOMER RECLOSER POLE SHALL INCLUDE DESIGNATION "C-2". RECLOSER IDENTIFICATION "R516".

2 E-600 RECLOSER POLE FRONT AND SIDE VIEW
SCALE: NTS

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	444
MODULE QUANTITY	11,544
TOTAL DC SIZE	6,233,760 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	40
TOTAL AC SIZE	4,900,000 W
TILT	±55°
AZIMUTH	180°

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PROJECT INSTALLER

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Date: 2022.12.12 09:48:25

PROJECT NAME

MANLIUS WEST
8105 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

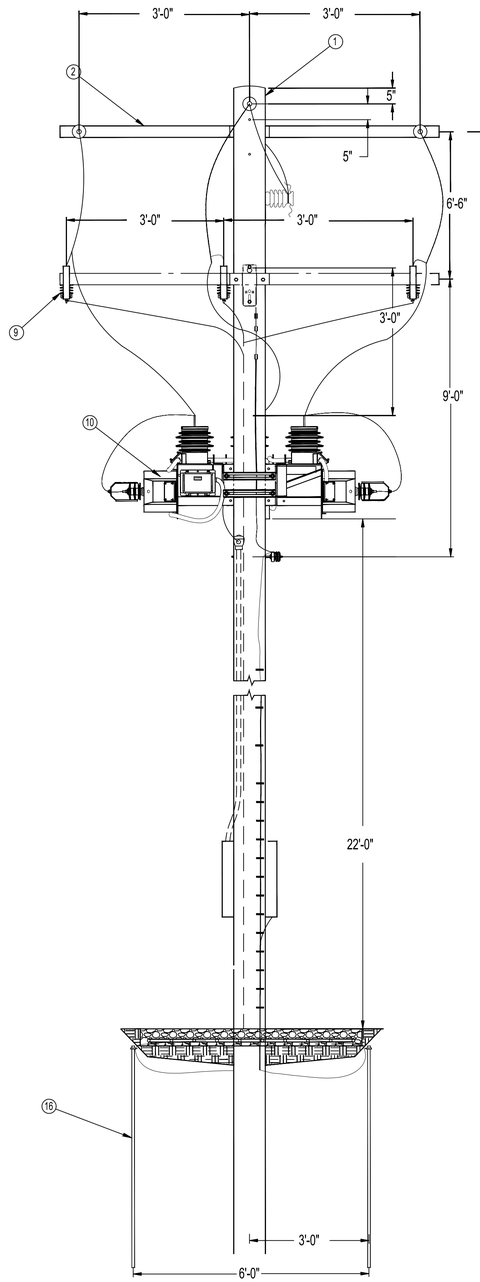
POLE DETAILS - SHEET 1

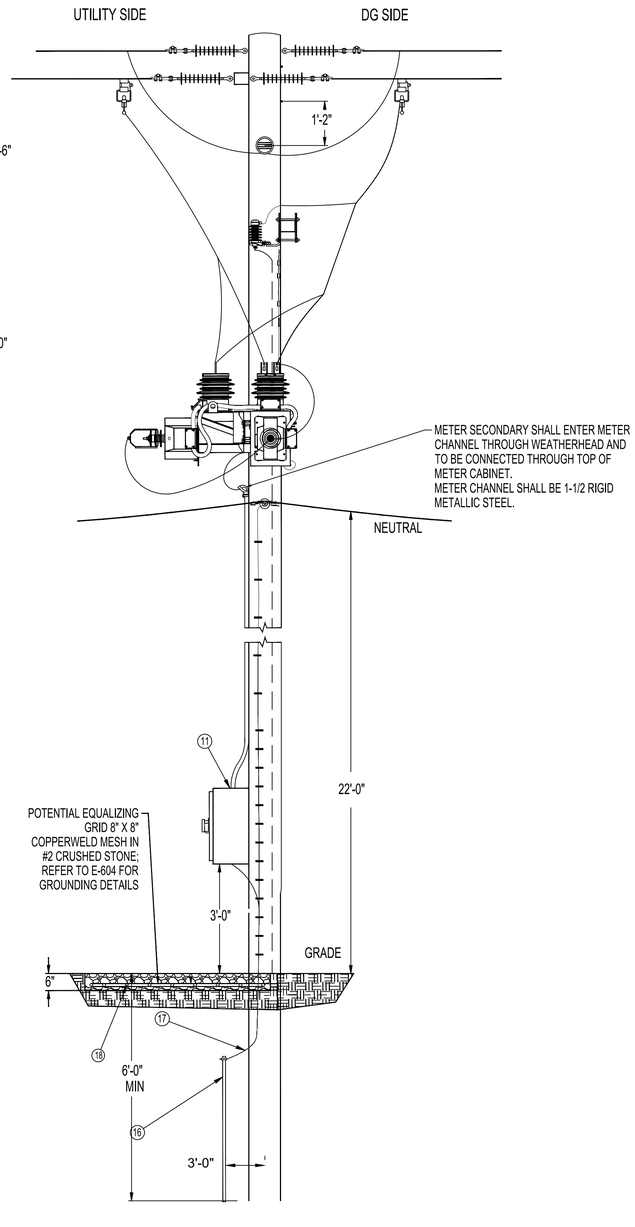
SHEET SIZE

ARCH D
24" X 36"

SHEET NUMBER

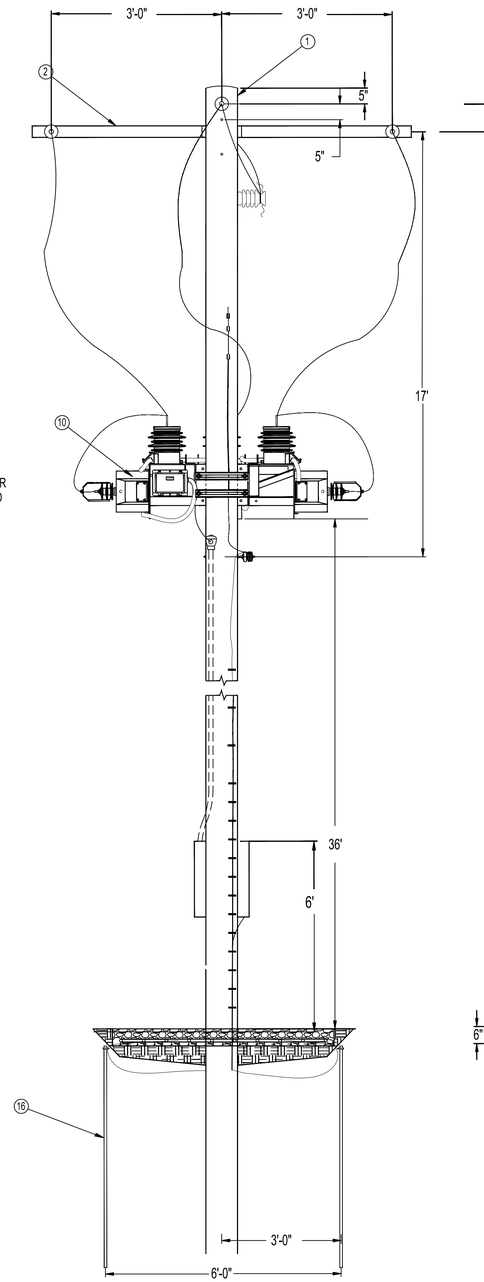
E-600

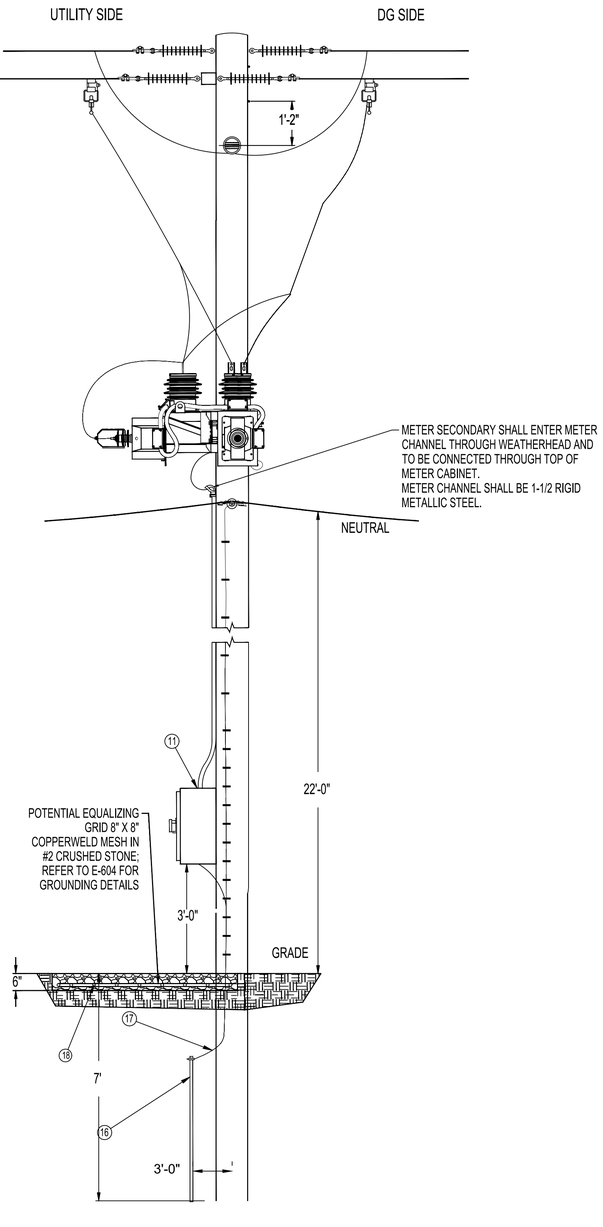




NOTES:
- UTILITY METER POLE SHALL INCLUDE DESIGNATION "C-3".
- METER SHALL HAVE 1-1/2" RMC OR PVC SCH 80 CONDUIT.

1 E-601 METER POLE FRONT AND SIDE VIEW
SCALE: NTS





NOTES:
- CUSTOMER METER POLE SHALL INCLUDE DESIGNATION "C-4".
- METER SHALL HAVE 1-1/2" RMC OR PVC SCH 80 CONDUIT.

2 E-601 METER POLE FRONT AND SIDE VIEW
SCALE: NTS

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	444
MODULE QUANTITY	11,544
TOTAL DC SIZE	6,233,760 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	40
TOTAL AC SIZE	4,900,000 W
TILT	±55°
AZIMUTH	180°

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Date: 2022.12.12 09:48:26

PROJECT NAME

MANLIUS WEST
8105 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

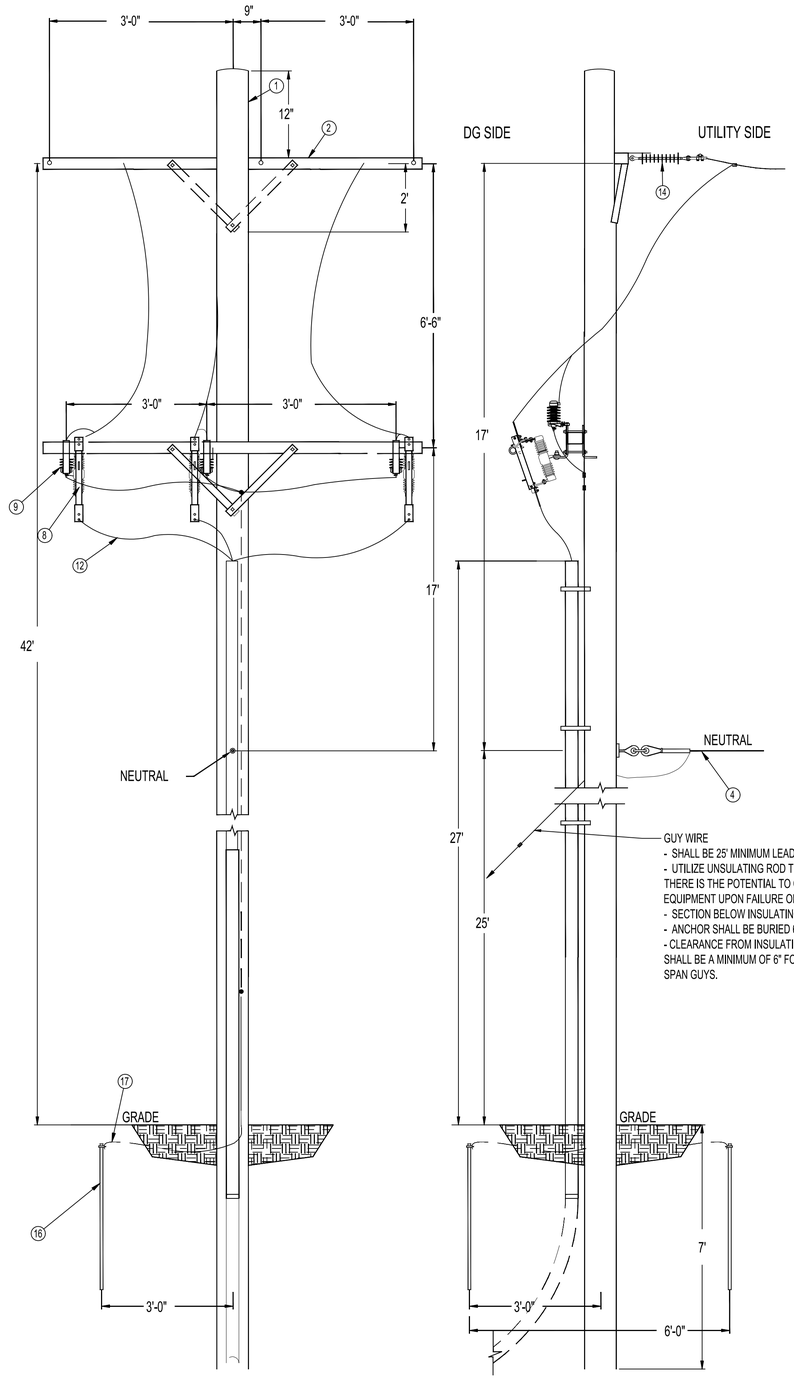
POLE DETAILS - SHEET 2

SHEET SIZE

ARCH D
24" X 36"

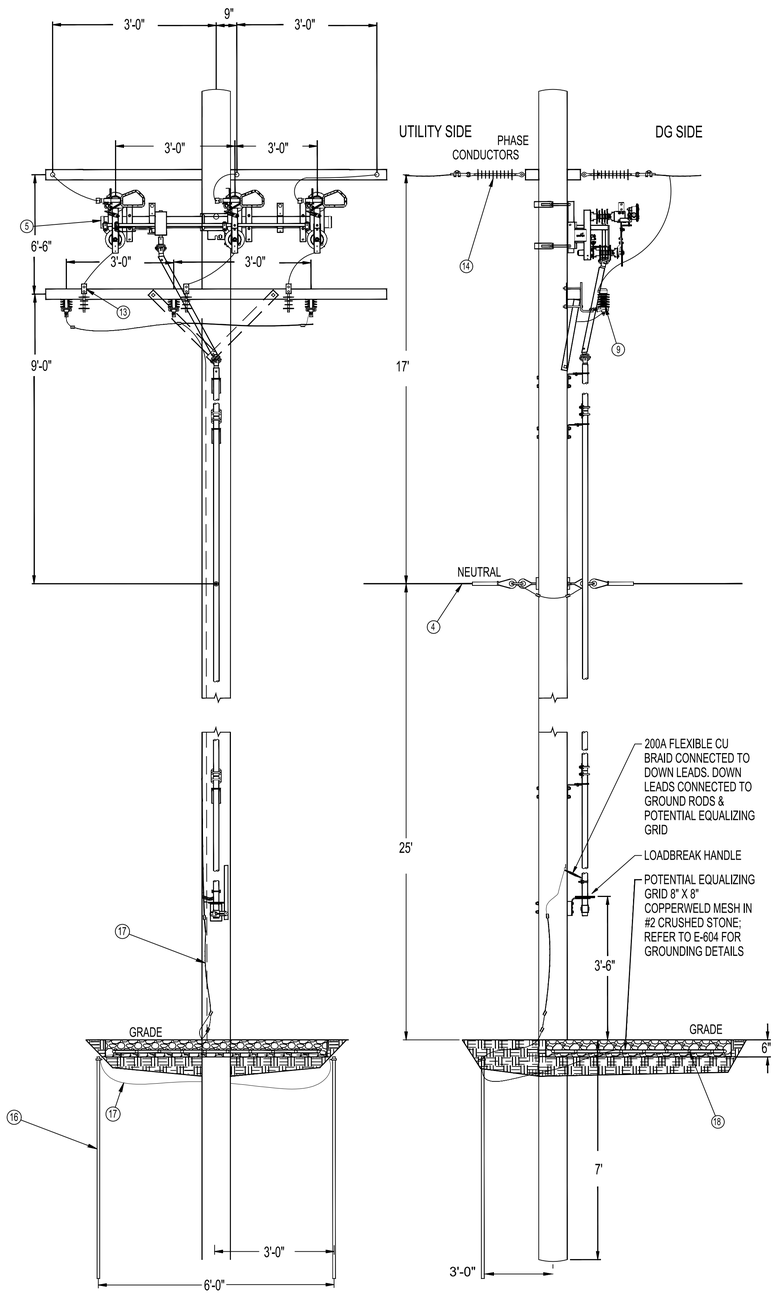
SHEET NUMBER

E-601



NOTES:
- RISER POLE DISCONNECT LABEL SHALL INCLUDE DESIGNATION "C513".
- RISER POLE SHALL INCLUDE DESIGNATION "C-5".

1 E-602 RISER POLE FRONT AND SIDE VIEW
SCALE: NTS



NOTES:
- GOAB ORIENTATION "JAWS" TO BE ON UTILITY SIDE OF DISCONNECT WHILE "BLADES" TO BE ON GENERATOR SIDE.
- UTILITY SOURCE SHALL BE CONNECTED TO JAW SIDE OF SWITCH. HINGE SIDE OF SWITCH SHALL BE CONNECTED TOWARDS CUSTOMER DER.
- THE SWITCH SHALL BE CAPABLE OF OPENING UNDER 1/2" ICE LOADING CONDITIONS NESC "HEAVY".
- MAIN GENERATOR DISCONNECT POLE LABEL SHALL INCLUDE DESIGNATION "C511".
- CUSTOMER GOAB POLE LABEL SHALL INCLUDE DESIGNATION "C-1".
- SWITCH BLADE SHALL BE ON DE-ENERGIZED SIDE OF SWITCH WHEN OPEN.

2 E-602 GOAB POLE FRONT AND SIDE VIEW
SCALE: NTS

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	444
MODULE QUANTITY	11,544
TOTAL DC SIZE	6,233,760 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	40
TOTAL AC SIZE	4,900,000 W
TILT	±55°
AZIMUTH	180°

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REVISIONS

DESCRIPTION	DATE	REV
IFP	12/09/2022	0
30% REVIEW	11/11/2022	A

PROJECT INSTALLER

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Date: 2022.12.12 09:48:27

PROJECT NAME

MANLIUS WEST
8105 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

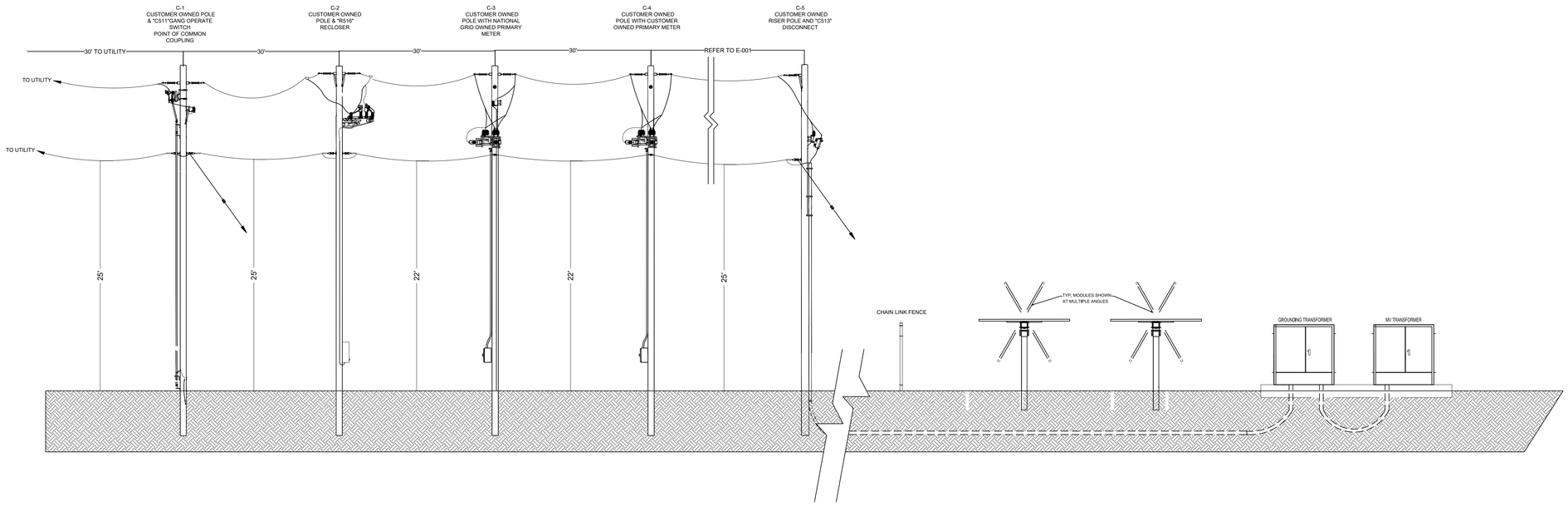
POLE DETAILS - SHEET 3

SHEET SIZE

ARCH D
24" X 36"

SHEET NUMBER

E-602



1 E-603 POLE LAYOUT
SCALE: NTS

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	444
MODULE QUANTITY	11,544
TOTAL DC SIZE	6,233,760 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	40
TOTAL AC SIZE	4,900,000 W
TILT	±55°
AZIMUTH	180°

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PROJECT INSTALLER

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Date: 2022.12.12 09:48:28

PROJECT NAME

MANLIUS WEST
8105 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

POLE LAYOUT

SHEET SIZE

ARCH D
24" X 36"

SHEET NUMBER

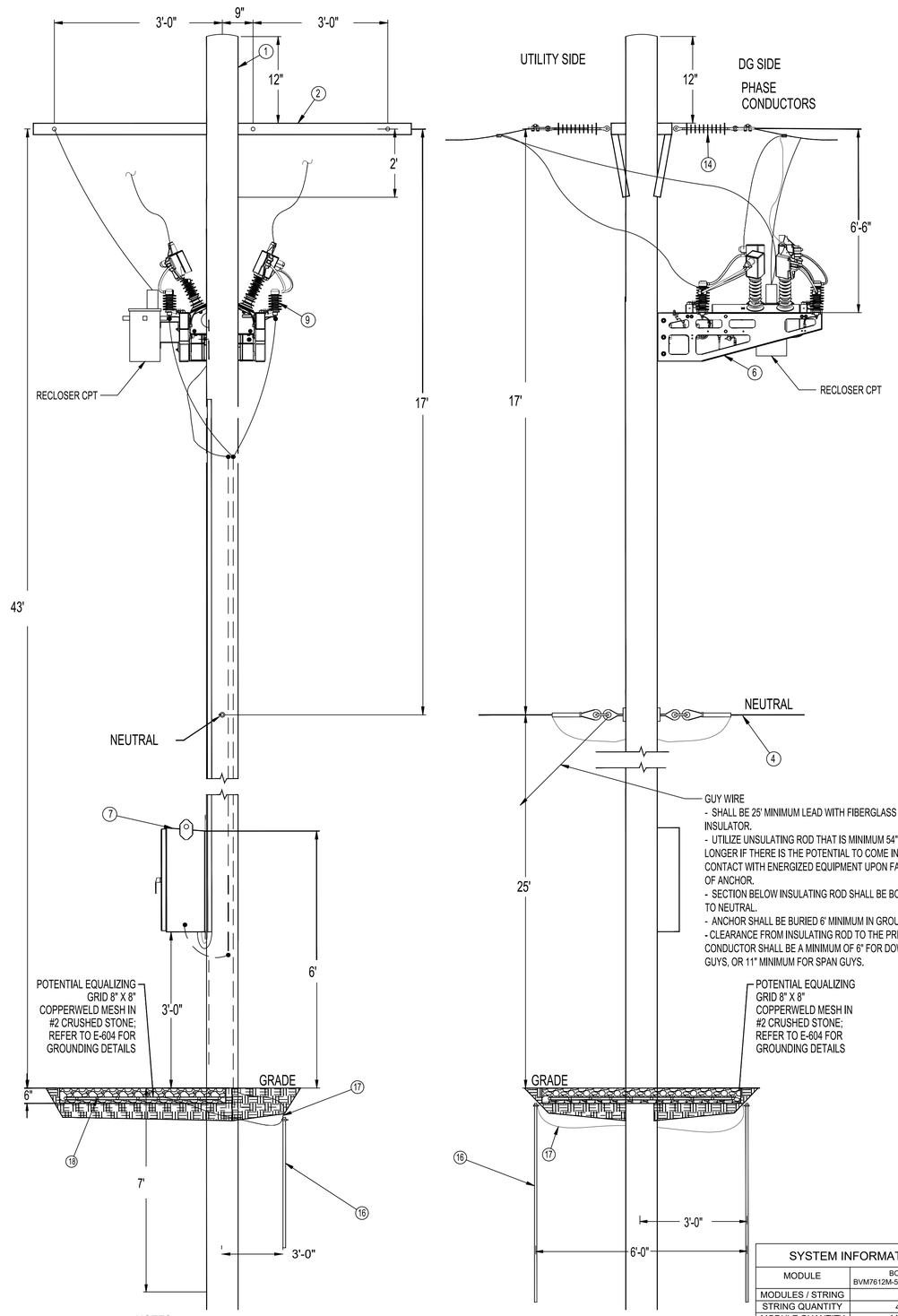
E-603

ITEM	QTY	DESCRIPTION	SUPPLIED BY
1		WOODEN POLE, 40' HIGH, CLASS 3	CONTRACTOR
2		$3\frac{1}{2}$" X $4\frac{1}{2}$" X 10' FIBERGLASS DEADEND ARMS	CONTRACTOR
3		PRIMARY ACSR CONDUCTOR, 4/0 AWG	CONTRACTOR
4		NEUTRAL #1 AWG CU CONDUCTOR	CONTRACTOR
5		GANG OPERATED AIR BREAK SWITCH, 15 KV, 600 A	CONTRACTOR
6		"CR512" RECLOSER, 15.5 KV, 800 A	CONTRACTOR
7		RECLOSER CONTROL PANEL	CONTRACTOR
8		FUSED CUTOUT, 15 KV, 300 A	CONTRACTOR
9		SURGE ARRESTER, 10 KV, 8.4 KV MCOV, HD RISER POLE CLASS	CONTRACTOR
10		METER CLUSTER ASSEMBLY, 15 KV	CONTRACTOR
11		METERING CABINET	CONTRACTOR
12		MC CABLE, 15 KV 4/0 AWG	CONTRACTOR
13		CABLE TERMINATION, 15 KV CLASS XX KCMIL	CONTRACTOR
14		DEADEND INSULATOR, 15 KV CLASS	CONTRACTOR
15		POST INSULATOR, 15 KV CLASS	CONTRACTOR
16		5/8" X 8' COPPER CLAD GROUND ROD	CONTRACTOR
17		CONDUCTOR BARE COPPERCLAD #4	CONTRACTOR
18		COPPERWELD GROUND MAT - 8' X 8;	CONTRACTOR

POLE LAYOUT GENERAL NOTES:

1. ALL POLES ARE SHOWN AS CONCEPTUAL AND ARE FOR DIAGRAMMATIC PURPOSES ONLY. ALL UTILITY POLES SHALL CONFORM TO ANSI 05.1, AWPA C4, ANSI C2, NESC, LOCAL UTILITY REQUIREMENTS, AND ANY OTHER APPLICABLE CODES AND STANDARDS.
2. ALL OTHER MATERIAL NEEDED FOR A COMPLETE AND OPERABLE INSTALLATION, THOUGH NOT SPECIFICALLY CALLED OUT, SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR.
3. ALL POLE LINE HARDWARE SHALL BE RATED FOR 10,000 LBS MINIMUM.
4. COMMUNICATION SPACER CABLE SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS.
5. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL HELICAL ANCHORS AND DOWN GUY WIRES. ALL DOWN GUYS SHALL BE 7#10 ALUMINUM CLAD STEEL MINIMUM. ANCHORS SHALL BE $\frac{3}{8}$ GALVANIZED SQUARE SHAFT HELICAL WITH A MINIMUM DIAMETER OF 8 INCHES. INSTALLATION OF HELICAL ANCHORS SHALL BE BY EITHER ELECTRICAL OR HYDRAULIC ROTARY TYPE TORQUE MOTOR. SIZE TO BE CONFIRMED BY CALCULATION.
6. MAINTAIN NO LESS THAN 21'10" FEED GROUND CLEARANCE THROUGHOUT EACH NEUTRAL SPAN UNDER ALL LOADING CONDITIONS FOR SPANS LESS THAN 45 FEET. FOR LONGER SPANS, CONTACT CCR ENGINEERING FOR DIRECTION.
7. MAXIMUM OPERATION TEMPERATURE OF OVERHEAD CONDUCTOR 120°F.
8. FULL-PHASE TENSION TO STOP AT UTILITY POLE WITH GUYING; SLACK SPAN BETWEEN LAST UTILITY POLE AND FIRST CCR POLE.
9. IN ADDITION TO NUTS AND WASHERS, LOCKNUTS SHALL BE INSTALLED ON ALL THREADED MATERIAL AND HARDWARE. THE THREADS ON INSTALLED BOLTS SHALL PROTRUDE PAST THE LOCK WASHERS A MINIMUM OF ONE INCH BUT NOT MORE THAN TWO INCHES.
10. A 3 INCH BY 3 INCH (MINIMUM)SQUARE, CURVED WASHER SHALL BE USED ABUTTING THE POLE WHEN INSTALLED ON PRIMARY DEADEND, NEUTRAL DEADEND, AND GUY ASSEMBLIES DIRECTLY TO POLE.
11. CONDUCTORS SHALL BE SAGGED EVENLY AND IN ACCORDANCE WITH THE CONDUCTOR MANUFACTURER'S RECOMMENDATIONS. SEE TABLE BELOW FOR INITIAL SAG BASED ON SPAN LENGTH AND TEMPERATURE.
12. EACH SURGE ARRESTER TO BE BONDED SEPARATELY TO POLE GROUND.
13. BOND ALL NON-CURRENT CARRYING METALLIC PARTS ON THE RECEIVING STRUCTURE OF THE EQUIPMENT GROUND WITH A STRANDED #4 AWG BARE COPPER CONDUCTOR.
14. ALL ARRESTORS SHALL HAVE A DEDICATED #4 AWG BARE COPPER CONDUCTOR TRAILED DOWN TO GROUNDING RODS/GRID SEPARATE FROM EQUIPMENT GROUND.
15. ALL DISCONNECTING MEANS SHALL BE UNIFORMLY PLACARDED WITH PERMANENTLY AFFIXED METAL OR PLASTIC LABELS AS REQUIRED BY THE NEC. NY SIR, AND ESB 750.

1 D-100 POINT OF INTERCONNECTION POLE BOM
SCALE: NTS



NOTES:
- CUSTOMER RECLOSER POLE SHALL INCLUDE DESIGNATION "C-2". RECLOSER IDENTIFICATION "R516".

2 D-100 RECLOSER POLE FRONT AND SIDE VIEW
SCALE: NTS

SYSTEM INFORMATION	
MODULE	BOVIET BVM7612M-540-H-HC-BF-DG
MODULES / STRING	26
STRING QUANTITY	444
MODULE QUANTITY	11,544
TOTAL DC SIZE	6,233,760 W
INVERTER	SUNGROW SG125HV
INVERTER QUANTITY	40
TOTAL AC SIZE	4,900,000 W
TILT	±55°
AZIMUTH	180°

Castillo Engineering
DESIGNING TOMORROW'S POWER®
CASTILLO ENGINEERING SERVICES, LLC
COA # 28345
620 N. WYMORE ROAD,
SUITE 250,
MAITLAND, FL 32751
TEL: (407) 289-2575

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REVISIONS

DESCRIPTION	DATE	REV
IFP	12/09/2022	0
30% REVIEW	11/11/2022	A

PROJECT INSTALLER

STATE OF NEW YORK · E. E. CASTILLO · 095344 · LICENSED PROFESSIONAL ENGINEER

Digitally signed by: Emmocrates E Castillo
Date: 2022.12.12 09:48:30

PROJECT NAME

MANLIUS WEST
8105 E SENECA TURNPIKE
MANLIUS, NY 13104

SHEET NAME

DATASHEETS

SHEET SIZE

ARCH D
24" X 36"

SHEET NUMBER

D-100

December 21, 2022

Planning Board
Town of Manlius
301 Brooklea Drive
Fayetteville, NY 13066

RE: Twin Ponds Housing Development
5440 Burdick Street
CHA Project No. 080118

Dear Planning Board Members:

CHA, on behalf of the applicant, is pleased to submit the enclosed Site Plan Application for the above referenced project.

The proposed project includes the construction of residential apartments and supporting infrastructure within the existing parcel. Based on the new zoning district (R-5), a variety of building types, architecture, and unit mix will be provided to create a new residential housing community.

The following items have been included for Conceptual Site Plan review to be discussed with Board:

- Site Plan Application
- Site Survey
- Concept Site Plan
- "Usable Space" Plan (calculations)
- Site Elevation Cross Section Plan
- Concept Building Elevation

Should you require any additional copies of these items, or have any questions related to the submission, please do not hesitate to contact me at 315-228-0036 or bbouchard@chacompanies.com

Very truly yours,

Brian F. Bouchard, PE.
Senior Engineer V

Enclosures
Cc:
V:\OH_Data\Offices\SNY\GovCommInfr\Civil-Site\Bouchard\HB - Twin Shores Fayetteville\2022 12-19 Planning Board Submittal\0 - Cover Letter-Twin Ponds-12-21-22.doc

One Park Place, 300 South State Street, Suite 600, Syracuse, NY 13202-2024
T 315.471.3920 • F 315.471.3569 • www.chacompanies.com

Expected Fee: _____

TOWN OF MANLIUS

PLANNING DEPARTMENT

INITIAL APPEARANCE APPLICATION

DATE: 12/21/22

Name of Project: Twin Ponds Housing

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: 5440 Burdick Street

Type of Project:

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

Developer: Twin Ponds Housing LLC Phone: 315-476-7917

Address: PO Box 515, Syracuse NY Zip: 13205

Tax Map Number(#)/s: 086.-02-06.1

Present Zoning: R-5 Desired Zoning: same

Total Acreage: 55 ac +/- Total Number of Lots: TBD

Property Owner/s: Twin Shore Properties, LLC Phone: _____

Address: 1333 13th Street, East Moline IL Zip: 61244

Tax Map#(s): _____ Owner's Signature: [signature]

Printed Name: David Neuman

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

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. Charles F. Brewer, being duly sworn, deposes and says that (s) he is:

Applicant
(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: December 22, 2022.

Charles F. Brewer
(Print Name)

(Signature)

Twin Ponds Hosting, LLC
(Entity Name)

Manager
By (Officer) (Title)

P.O. Box 515 Syracuse, NY 13205
(Mailing Address of Applicant)

315-476-7917
(Telephone Number)

Date: _____, 20____.

(Print Name)

(Signature)

(Entity Name)

By (Officer) (Title)

(Mailing Address of Applicant)

(Telephone Number)

ACKNOWLEDGEMENTS

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

On this 22nd day of December in the year 2022, before me, the undersigned, a notary public in and for said state, personally appeared Charles F. Brewer, _____, 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.

J C Cotter
Notary Public

JOSEPH C. COTTER
Notary Public, State of New York
No. 4807413
Qualified in Onondaga County
My Commission Expires Oct. 31, 2026

CORPORATE ACKNOWLEDGEMENT

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

Charles F. Brewer, being duly sworn, deposes and says the s(he) is the Manager of Twin Ponds Housing LLC 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
Of December 22, 2022

Joel C. Cotter
Notary Public

JOSEPH C. COTTER
Notary Public, State of New York
No. 4807413
Qualified in Onondaga County
My Commission Expires Oct. 31, 2026

06/29/16 LB

NORTH AT 76°35' MERIDIAN OF WEST LONGITUDE

LEGEND

IRF ⊙	IRON PIPE FOUND
IRF ○	IRON ROD FOUND
IRS ●	IRON ROD SET W/ CNY CAP
INV.	INVERT ELEVATION
UP	UTILITY POLE
WV	WATER VALVE
SWV	SERVICE WATER VALVE
YL	YARD LIGHT
LP	LIGHT POLE
	FLAG POLE
GUY	POLE GUY
SCO	SANITARY CLEAN OUT
	BOLLARD
FIRE	FIRE HYDRANT
	TELEPHONE PEDESTAL
	TRAFFIC SIGN
	2 POLE TRAFFIC SIGN
	DECIDUOUS TREE, DIAMETER AT BREST HEIGHT
	HANDICAP PARKING
	CONIFEROUS TREE, DIAMETER AT BREST HEIGHT
	SANITARY MANHOLE
	WATER MANHOLE
	ELECTRIC MANHOLE
	TELEPHONE MANHOLE
	UNKNOWN TYPE MANHOLE
	GAS VALVE
CB	STORM CATCH BASIN
	STUMP AND DIAMETER
CP	SURVEY CONTROL POINT
	CENTERLINE
	ROADWAY BOUNDARY
OHW	OVERHEAD WIRES
WTR	WATER LINE
SAN	SANITARY LINE
STM	STORM LINE
GAS	GAS LINE
	BURIED TELEPHONE LINE
	BURIED ELECTRIC LINE
	WIRE FENCE
	CHAIN LINK FENCE
	STOCKADE FENCE
	MONITORING WELL
	CATCH BASIN
TR	GASOLINE FUEL PORT / TRAFFIC CONTROL BOX

ABBREVIATIONS

CC	CURB CUT
Conc.	CONCRETE
FF/F	FIRST FLOOR ELEVATION
M/F	MEASURED/FINISHED
ELEV.	ELEVATION
ASPH.	ASPHALT
STR.	STORM
W/F	WOOD FRAME
I.D.	CAST IRON
CMP	CORRUGATED METAL PIPE
PL	PLASTIC
CPL	CORRUGATED PLASTIC PIPE

LINE	BEARING	DISTANCE
L1	S62°04'52"W	87.00'
L2	S27°55'08"E	65.00'
L3	N62°45'42"E	153.16'
L4	S76°45'12"E	89.35'

NOTES

SURVEY WAS DONE WITH THE BENEFIT OF AN ABSTRACT OF TITLE PREPARED BY ALLIED AMERICAN ABSTRACT CORP FOR TAX PARCEL 86-02-02.1, ABSTACT FILE NO. 170267, DATED FEBRUARY 20, 2017.

SURVEY WAS DONE WITH THE BENEFIT OF AN ABSTRACT OF TITLE PREPARED BY ALLIED AMERICAN ABSTRACT CORP FOR TAX PARCEL 86-02-04.1, ABSTACT FILE NO. 170270, DATED FEBRUARY 20, 2017.

SURVEY WAS DONE WITH THE BENEFIT OF AN ABSTRACT OF TITLE PREPARED BY ALLIED AMERICAN ABSTRACT CORP FOR TAX PARCEL 86-02-05.1, ABSTACT FILE NO. 170268, DATED FEBRUARY 20, 2017.

SURVEY WAS DONE WITH THE BENEFIT OF AN ABSTRACT OF TITLE PREPARED BY ALLIED AMERICAN ABSTRACT CORP FOR TAX PARCEL 86-02-06.1, ABSTACT FILE NO. 170271, DATED FEBRUARY 20, 2017.

0 100 200 300

Drawn by D.J. REITH

Checked by D.J. REITH

NO ALTERATION PERMITTED HEREON EXCEPT AS PROVIDED UNDER SECTION 7209, SUBDIVISION 2 OF THE NEW YORK STATE EDUCATION LAW.

ONLY COPIES OF THE ORIGINAL OF THIS SURVEY, MARKED WITH THE EMBOSSED LAND SURVEYOR'S SEAL, SHALL BE CONSIDERED TO BE TRUE AND VALID COPIES.

STATE OF NEW YORK · DOUGLAS JAY REITH · 049901 · LICENSED LAND SURVEYOR

THE UNDERSIGNED HEREBY CERTIFIES THAT MAP IS MADE FROM AN ACTUAL SURVEY OF THE PROPERTY SHOWN HEREON.

DOUGLAS JAY REITH
LICENSED LAND SURVEYOR

CNY LAND SURVEYING
2075 CHURCH ROAD
BALDWINSVILLE, NEW YORK 13027
(315) 635-4614

PART OF LOT 65
TOWN OF MANLIUS
COUNTY OF ONONDAGA
STATE OF NEW YORK

DRAWING TITLE

BOUNDARY SURVEY

Date Issued 12/28/21

Revisions

FILE NO. 21.213

Scale 1" = 100'

Drawing No. 1 OF 1


NORTH POND
WE
417.7
AREA = 15.07 ACRES
SOUTH POND
WE
418.8
AREA = 23.47 ACRES
FIETTA REALTY CORPORATION
N/F
2535/1031
TAX ID #86-02-06.1
COUNTY OF ONONDAGA
C.R. 94, MAP 7
2546/1086
BURDICK STREET
1 1/2 STORY
WOOD FRAME
HOUSE
#5535
WOOD FRAME
BLDG.
(DISREPAIR)
150'
36-UNIT APT
4 STORY
BUILDING
.05±
43' 15±
12-UNIT TOWNHOUSE
3 STORY
49'
12-UNIT TOWNHOUSE
3 STORY
77'
12-UNIT TOWNHOUSE
3 STORY
109'
12-UNIT TOWNHOUSE
3 STORY
200'
60-UNIT APT
4 STORY
BUILDING
.05±
24'
26'
12'
6'
HUBBELL
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USABLE DISTRICT SPACE INFORMATION

EXISTING LOT INFORMATION:

ADDRESS: 5440 Burdick St, Manlius, NY
TAX MAP No.: 086.-02-06.1
PARCEL SIZE: 52.20± ACRES
ZONING DISTRICT: Residential (R-5)

CALCULATED USABLE DISTRICT SPACE

AREA (A)	621,160 SF (14.26 Acres)
AREA (B)	963,070 SF (22.11 Acres)
TOTALS:	1,584,230 SF (36.37 Acres)

USABLE DISTRICT SPACE PER DWELLING UNIT		REQUIRED	PROVIDED
1 BEDROOM UNITS (50 ea)	3,500 SF/Unit	175,000 SF	
2 BEDROOM UNITS (216 ea)	5,000 SF/Unit	1,080,000 SF	
3 BEDROOM UNITS (10 ea)	7,000 SF/Unit	70,000 SF	
	TOTALS:	1,325,000 SF (30.42 Acres)	1,584,230 SF (36.37 Acres)

0 100 200
Scale in feet

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CHA
One Park Place, 300 South State Street, Suite 600
Syracuse, NY 13202
315.471.3920 . www.chacompanies.com

Applicant/Owner:

Twin Ponds Housing, LLC,
PO Box 515
Syracuse, NY 13210

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, ARCHITECT, LANDSCAPE ARCHITECT OR LAND SURVEYOR TO ALTER AN ITEM IN ANY WAY. IF AN ITEM BEARING THE STAMP OF A LICENSED PROFESSIONAL IS ALTERED, THE ALTERING ENGINEER, ARCHITECT, LANDSCAPE ARCHITECT OR LAND SURVEYOR SHALL AFFIX TO THE ITEM HIS OR HER SEAL AND THE NOTATION "ALTERED BY" FOLLOWED BY THEIR SIGNATURE, THE DATE OF SUCH ALTERATION, AND A SPECIFIC DESCRIPTION OF THE ALTERATION.

Project Title:

TWIN PONDS HOUSING

5440 Burdick St,
Fayetteville, NY

No.	Submittal / Revision	App'd	By	Date
1	CONCEPT REVIEW PLANNING BOARD	---	AMV	12/19/22

USABLE SPACE PLAN

Designed By:	Drawn By:	Checked By:
AMV	AMV	BFB
Issue Date:	Project No:	Scale:
12/19/22	080118	AS SHOWN

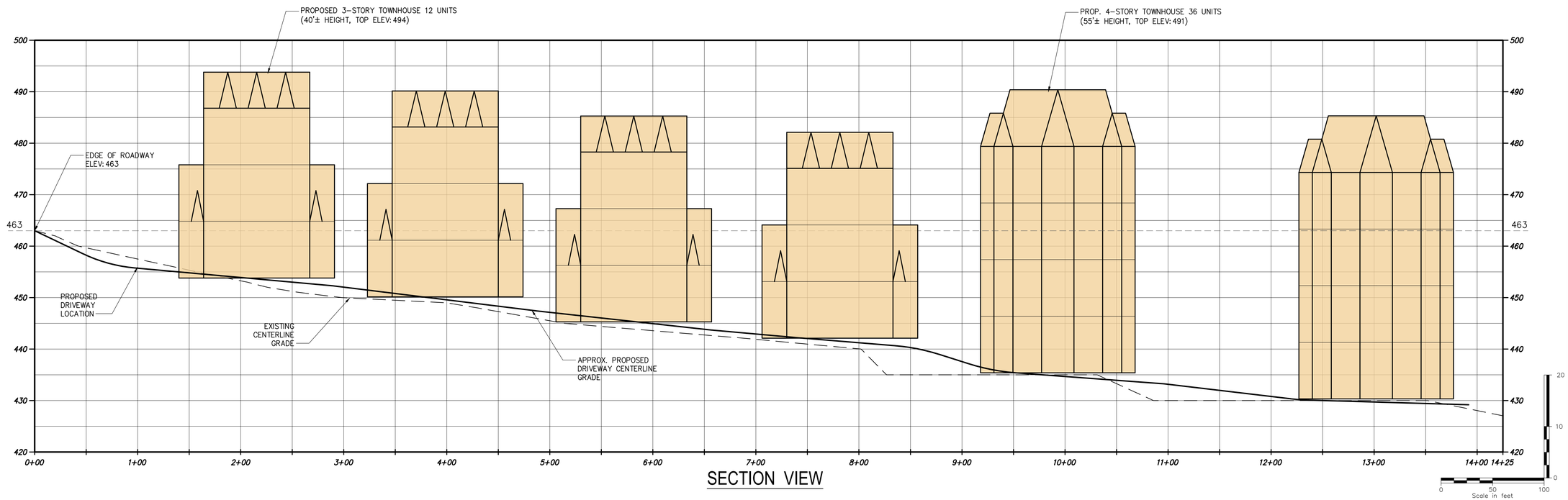
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PLAN VIEW



SECTION VIEW

Drawing Copyright © 2022

CHA
One Park Place, 300 South State Street, Suite 600
Syracuse, NY 13202
315.471.3920 . www.chacompanies.com

Applicant/Owner:

Twin Ponds Housing, LLC,
PO Box 515
Syracuse, NY 13210

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Project Title:

TWIN PONDS HOUSING

5440 Burdick St,
Fayetteville, NY

No.	Submittal / Revision	App'd. By	Date
1	CONCEPT REVIEW PLANNING BOARD	AMV	12/19/22

SECTION PLAN

Designed By:	Drawn By:	Checked By:
AMV	AMV	BFB
Issue Date:	Project No:	Scale:
12/19/22	080118	AS SHOWN

Drawing No.:

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Twin Ponds Housing

5440 Burdick Street
Fayetteville, NY

Front Elevation

36-Unit Apartments

James Fahy Design Associates
Architecture & Engineering P.C.
Rochester, NY