AGENDA PACKET **DECEMBER 19, 2023 MEETING**		
	CAL#	**PAGE**
AGENDA		**3**
MCARTHUR AND SALAZAR RESIDENCE, 40 OLD POND ROAD, SOUTH SALEM	**Cal #91-19WP**	**Cal #10-19SW**
No new materials		**-**
RINGS END OF LEWISBORO SOLAR, 382 SMITH RIDGE ROAD, SOUTH SALEM	**Cal #07-23PB**	
Planning Board application, dated November 18, 2023		**4**
WOLF CONSERVATION CENTER, BUCK RUN, SOUTH SALEM	**Cal #06-17PB**	**Cal #43-23WP**
KSCJ comment memo, dated December 15, 2023	**Cal #18-23SW**	**20**
Applicant response letter, dated November 27, 2023		**23**
Business plan, Wolf Conservation Center, dated March 1, 2023		**29**
Revised site plan, Bibbo Associates, dated November 28, 2023		**43**
72 Hour Well Pump Test Work Plan and Well Testing Plan, Bibbo Associates, dated November 28, 2023		**62**
Revised SWPPP, Bibbo Associates, dated October 20, 2023		**67**
Revised Notice of Intent, undated		**298**
BERNABO VACANT LAND, 96 POST OFFICE ROAD, WACCABUC	**Cal #29-23WP**	**Cal #09-23SW**
Correspondence from applicant, dated November 28, 2023		**312**
Site plan and erosion control plan, P.W. Scott Engineering & Architecture, dated November 27, 2023		**313**
Building Inspector comment drawing, dated December 5, 2023		**315**
Applicant response letter, dated December 6, 2023		**316**
Correspondence from applicant, dated December 12, 2023		**317**
Revised site plan, P.W. Scott Engineering & Architecture, dated December 12, 2023		**318**
Architectural renderings, undated		**319**
Comment email with photographs, Peter Aupperle, dated November 22, 2023		**324**

<u>SUPERVISOR'S RESPONSE TO PLANNING BOARD'S INQUIRY ABOUT CAPACITY AND ADDITIONAL CONNECTIONS AT THE OAKRIDGE WATER DISTRICT AND OAKRIDGE SEWER DISTRICT FACILITIES RELATING TO THIS PROPOSAL:</u> Villas at Vista, 920 Oakridge Common, South Salem	**Cal #12-22PB**	**Cal #36-22WP**
Oakridge Water Connection Inquiry letter, Planning Board to Town Board, dated November 18, 2022		**329**
Response letter, Town Board to Planning Board, dated December 1, 2023		**331**
<u>RIDGEFIELD, CT PLANNING AND ZONING COMMISSION TO AMEND ITS TOWN CODE §2.2 and §3.3</u> - family day care and child daycare.	**-**	
Cover letter, Alice Dew, dated December 6, 2023		**332**
Proposed Amendment to The Zoning Regulations, undated		**333**

TOWN OF LEWISBORO
Westchester County, New York

Planning Board
79 Bouton Road
South Salem, New York 10590

Tel: (914) 763-5592
Fax: (914) 875-9148
Email: planning@lewisborogov.com

AGENDA

Tuesday, December 19, 2023 **The Commons / Courtroom at 79 Bouton Road**

Meeting will start at 7:30 p.m. and end at or before 11:00 p.m.

I. DECISION

Cal #91-19WP, Cal #10-19SW
McArthur and Salazar Residence, 40 Old Pond Road, South Salem, NY 10590, Sheet 33C, Block 11155, Lots 16, 17 & 44 (William McArthur, owner of record) - Amendment of the Wetland Permit Approval and Stormwater Permit Approval in connection with the reconstruction of a lakeside residence and cottage.

Cal #07-23PB
Rings End of Lewisboro solar, 382 Smith Ridge Road, South Salem, NY 10590; Sheet 49B, Block 9827, Lots 23 & 79 (Lewisboro Supply Co Inc, owner of record) - Application for roof-mounted solar panels.

II. CONTINUATION OF PUBLIC HEARING

Cal #06-17PB, Cal #43-23WP, Cal #18-23SW
Wolf Conservation Center, Buck Run, South Salem, NY 10590; Sheet 21, Block 10803, Lots 3, 65, 67, 81, 82, 83, 86 & 88 (Wolf Conservation Center, owner of record) - Application for a Site Development Plan Approval, Special Use Permit Approval, Wetland Activity Permit Approval and Stormwater Permit Approval for a private nature preserve.

III. WETLAND PERMIT REVIEW

Cal #29-23WP, Cal #09-23SW
Bernabo Residence, 96 Post Office Road, Waccabuc, NY 10597; Sheet 25, Block 10812, Lot 3 (Alex Bernabo, owner of record) – Application for a new well, septic and house.

IV. DISCUSSION

Supervisor's response to Planning Board's inquiry about capacity and additional connections at the Oakridge Water District and Oakridge Sewer District facilities relating to this proposal:

> **Cal #12-22PB, Cal #36-22WP**
> **Villas at Vista, 920 Oakridge Common, South Salem, NY 10590 Sheet 49D, Block 9829, Lot 10 (Smith Ridge Associates, owner of record) -** Application for construction of 18 additional housing units.

V. CORRESPONDENCE

Ridgefield, CT Planning and Zoning Commission to amend its Town Code §2.2 and §3.3 - family day care and child daycare.

VI. MINUTES OF November 21, 2023.

VII. NEXT MEETING DATE: January 16, 2024.

VIII. ADJOURN MEETING.

07-23PB
app fee rcd
escrow est'd

TOWN OF LEWISBORO PLANNING BOARD

79 Bouton Road, South Salem, NY 10590 Tel: (914) 763-5592 Email: planning@lewisborogov.com

Site Development Plan/Subdivision Plat Application - Check all that apply:

Waiver of Site Development Plan Procedures	☒		
Site Development Plan Approval	Step I ☐	Step II ☐	
Special Use Permit Approval	Step I ☐	Step II ☐	
Subdivision Plat Approval	Step I ☐	Step II ☐	Step III ☐

Project Information

Project Name: Rings End

Project Address: 382 Smith Ridge South Salem N.Y 10590

Lot 23 = Gross Parcel Area: 2.3 ac Zoning District: GB Sheet(s): 49B Block (s): 9827 Lot(s): 23 & 79

Lot 79 = 1.573 acs Project Description: Roof mounted Solar are merged

Is the site located within 500 feet of any Town boundary?	YES ☐	NO ☑
Is the site located within the New York City Watershed?	YES ☐	NO ☑
Is the site located on a State or County Highway?	YES ☐	NO ☑

Does the proposed action require any other permits/approvals from other agencies/departments?

Town Board ☐	ZBA ☐	Building Dept. ☑	Town Highway ☐
ACARC ☐	NYSDEC ☐	NYCDEP ☐	WCDH ☐
NYSDOT ☐	Town Wetland ☐	Town Stormwater ☐	

Other ______

Owner's Information

Name: ______ Email: ______

Address: ______ Phone: ______

Applicant's Information (if different)

Name: Helio Solar Email: Installs@helio.solar

Address: 4 Research Dr Suite 402 Shelton CT 06484 Phone: 888-868-4562

Authorized Agent's Information

Name: ______ Email: ______

Address: ______ Phone: ______

THE APPLICANT understands that any application is considered complete only when all information and documents required have been submitted and received by the Planning Board. The applicant further understands that the applicant is responsible for the payment of all application and review fees incurred by the Planning Board.

THE UNDERSIGNED WARRANTS the truth of all statements contained herein and in all supporting documents according to the best of his/her knowledge and belief, and authorizes visitation and inspection of the subject property by the Town of Lewisboro and its agents.

APPLICANT'S SIGNATURE [signature] DATE 11/15/2023

OWNER'S SIGNATURE ______ DATE ______

TOWN OF LEWISBORO PLANNING BOARD

79 Bouton Road, South Salem, NY 10590
Email: planning@lewisborogov.com
Tel: (914) 763-5592 Fax: (914) 875-9148

Tax Payment Affidavit Requirement

This form must accompany all applications to the Planning Board.

Under regulations adopted by the Town of Lewisboro, the Planning Board may not accept any application unless an affidavit from the Town of Lewisboro Receiver of Taxes is on file in the Planning Board office. The affidavit must show that all amounts due to the Town of Lewisboro as real estate taxes and special assessments on the total area encompassed by the application, together with all penalties and interest thereon, have been paid.

Under New York State law, the Westchester County Clerk may not accept any subdivision map for filing unless the same type of affidavit from the Town of Lewisboro Receiver of Taxes is submitted by the applicant at the time of filing.

This form must be completed by the applicant and must accompany all applications to the Planning Board. Upon receipt, the Planning Board Secretary will send the form to the Receiver of Taxes for signature and notarization. If preferred, the applicant may directly obtain the signature of the Receiver of Taxes and notarization prior to submission.

To Be Completed by Applicant
(Please type or print)

Ring's End Inc — *Name of Applicant*

382 ~~386~~ Smith Ridge Rd - Rings End — *Project Name*

Property Description

Tax Block(s): 9827

Tax Lot(s): 23 & 79

Tax Sheet(s): ~~488~~ 49 B

Property Assessed to:

Lewisboro Supply Co. Inc — *Name*

Fyi: Rings End Mailing Address of Lewisboro 160 Avon St Stratford, CT 066

382 ~~386~~ Smith Ridge Rd — *Address*

South Salem — *City* | New York — *State* | 10590 — *Zip*

The undersigned, being duly sworn deposes and says that a search of the tax records in the office of the Receiver of Taxes, Town of Lewisboro, reveals that all amounts due to the Town of Lewisboro as real estate taxes and special assessments, together with all penalties and interest thereon, affecting the premises described below, have been paid.

Signature - Receiver of Taxes: Deirdre M. Casper 11/28/2023
Date

Sworn to before me this

28th day of November, 2023

Janet L Donohue

JANET L. DONOHUE
NOTARY PUBLIC, STATE OF NEW YORK
No. 01DO6259627
Qualified in Westchester County
Commission Expires April 16, 2024

Signature - Notary Public (affix stamp)

TOWN OF LEWISBORO PLANNING BOARD

79 Bouton Road, South Salem, NY 10590
Email: planning@lewisborogov.com
Tel: (914) 763-5592
Fax: (914) 875-9148

Affidavit of Ownership

State of: New York

County of: Westchester

Matthew D. Dewing, being duly sworn, deposes and says that he/she resides at 386 Smith Ridge Rd in the County of Westchester, State of New York and that he/she is (check one) ☐ the owner, or ☒ the Facilities Manager
Title

of Ring End Inc.
Name of corporation, partnership, or other legal entity

which is the owner, in fee of all that certain log, piece or parcel of land situated, lying and being in the Town of Lewisboro, New York, aforesaid and know and designated on the Tax Map in the Town of Lewisboro as:

Block 9827, Lot 23 & 79, on Sheet 488.

Owner's Signature

Sworn to before me this
20th day of November, 2023

JOHN G. GIARDINO
Notary Public - Connecticut
My Commisssion Expires
March 31, 2025

Notary Public – affix stamp

Site Layout
386 Smith Ridge Rd, South Salem, NY 10590, USA
142.59 kW DC (100 kW AC) Roof Mounted Solar PV System

Satellite View
(41.212574, -73.516498)

Project Details

Site Address	386 Smith Ridge Rd, South Salem, NY 10590, USA
Codes	NY Building Code CMR 780, 2021 IRC, 2020 NEC
Electric Utility	New York State Electric & Gas
PV Modules	(291) CS3Y-490MS
PV Inverters	(2) Solar Edge SE50k-US
System Size DC	142.59 kW
System Size AC	100 kW
PV Output Voltage	208V, 3-phase
PV Output Current	279 A

386 Smith Ridge Rd,
South Salem, NY 10590,
USA

142.59 kW DC
(100 kW AC)

Client Information

MATT DEWING

(203)656-7585
matthew.dewing@ringsend.com
386 Smith Ridge Rd,
South Salem, NY 10590,
USA

Engineer's Seal

Designed by
Sync Renewables, LLC
64 Marlborough St,
Portland, CT 06480

Account:
1001-2645-494

Meter:
64-819-261

Date: 11/10/2023
Revision: 3.0

REVISION HISTORY

PARCEL AERIAL VIEW
382-386 SMITH RIDGE ROAD
RINGS END SOLAR PV SYSTEM

YELLOW BORDER
OUTLINE OF PROPERTY BOUNDARY

BLUE BORDER
OUTLINE OF PROPOSED PV SYSTEM
ON ROOFTOP

386 Smith Ridge Rd,
South Salem, NY 10590,
USA

142.59 kW DC
(100 kW AC)

Client Information

MATT DEWING

(203)656-7585
matthew.dewing@ringsend.com
386 Smith Ridge Rd,
South Salem, NY 10590,
USA

Designed by
Sync Renewables, LLC
64 Marlborough St,
Portland, CT 06480

Account:
1001-2645-494

Meter:
64-819-261

Date: 11/10/2023
Revision: 3.0

REVISION HISTORY

Module Specifications	
Canadian Solar CS3Y-490MS	
[illegible]	[illegible]
Vmp	44.6V
Imp	11A
Voc	53.3V
Isc	11.67A
Quantity	291

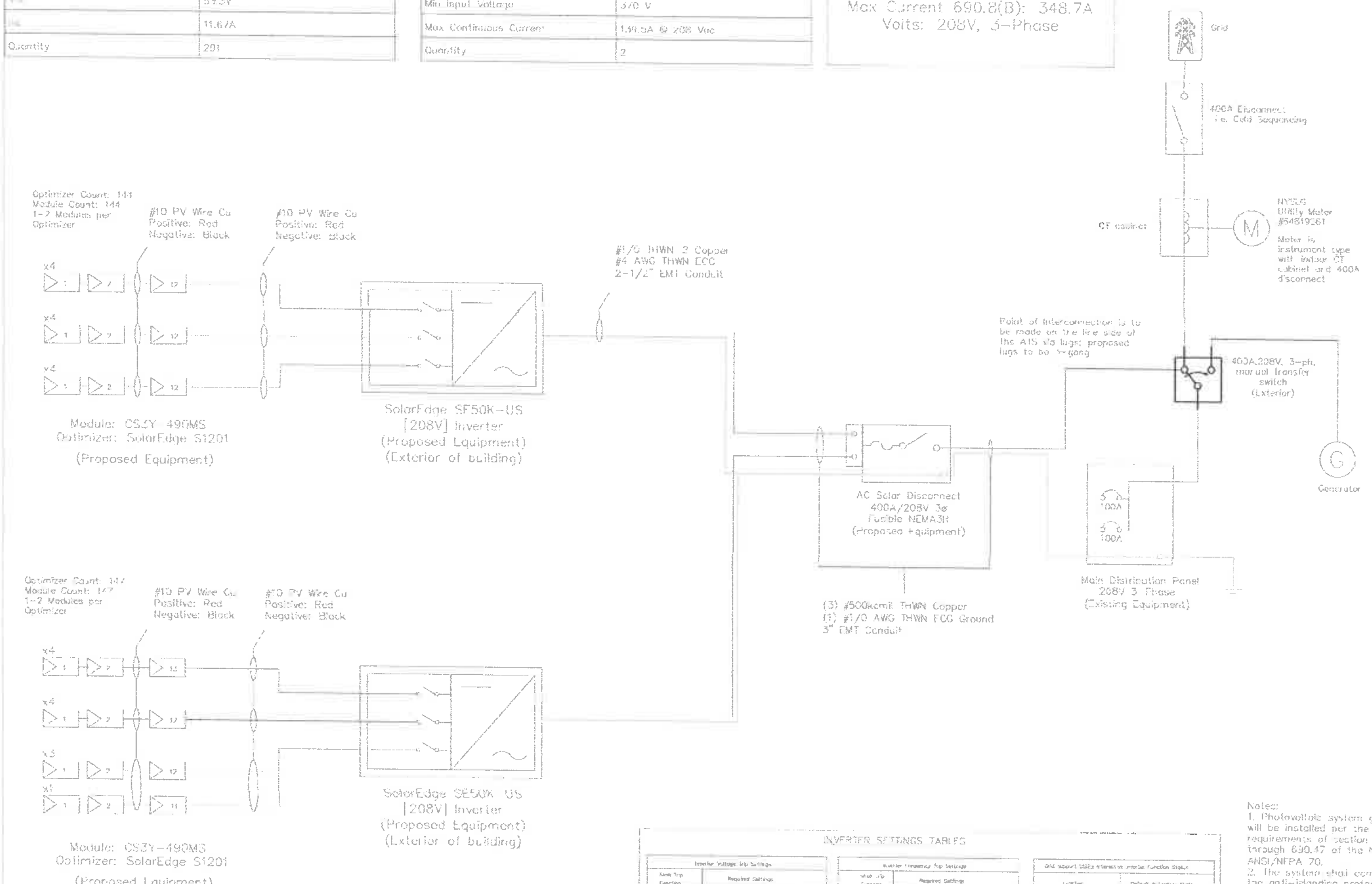
Inverter Specifications	
Solar Edge SE50K-US [208V]	
Max AC Power Rating	50000W
Max Input Voltage	600V
Min AC Power Rating	0 W
Min Input Voltage	370 V
Max Continuous Current	139.5A @ 208 Vac
Quantity	2

AC Solar Output

kW DC: 142.59kW
kW-AC: 100kW
Max Current 690.8(A): 279A
Max Current 690.8(B): 348.7A
Volts: 208V, 3-Phase

386 Smith Ridge Rd,
South Salem, NY 10590,
USA

142.59 kW DC
(100 kW AC)



Client Information

MATT DEWING

(203)656-7585
matthew.dewing@ringsend.com
386 Smith Ridge Rd,
South Salem, NY 10590,
USA

Engineer's Seal

Designed by:

Sync Renewables, LLC
64 Marlborough St,
Portland, CT 06480

Account:
1001-2645-494

Meter:
64-819-261

Date: 7/5/2023
Revision: 2.0

REVISION HISTORY

INVERTER SETTINGS TABLES

Inverter Voltage Trip Settings		
Shall Trip Function	Required Settings	
	Voltage (p.u. of nominal voltage)	Clearing Time(s)
OV2	1.20	0.16
OV1	1.10	2.0
UV1	0.88	2.0
UV2	0.50	1.1

Inverter Frequency Trip Settings		
Shall Trip Function	Required Settings	
	Frequency (Hz)	Clearing Time(s)
OF2	62.0	0.16
OF1	61.2	300.0
UF1	58.5	300.0
UF2	56.5	0.16

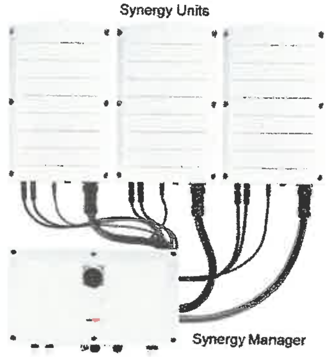
Grid Support Utility Interactive Inverter Function Status	
Function	Default Activation State
SPF, Specified Power Factor	OFF
[illegible]	[illegible]
SS, Soft Start Ramp Rate	ON
FW, Freq-Watt Function	[illegible]

Notes:
1. Photovoltaic system grounding will be installed per the requirements of section 690.41 through 690.47 of the NEC, ANSI/NFPA 70.
2. The system shall comply with the anti-islanding protective IEEE function numbers applying to the inverter system
3. The photovoltaic system shall comply with the "photovoltaic power systems and the 2011 NEC: suggested standards and practices."
4. The system shall comply with NEC 2017 690.12 Rapid Shutdown
5. The inverters shall be certified to UL 1741SA Ride Through

String Plan

386 Smith Ridge Rd, South Salem, NY 10590, USA

142.59 kW DC (100 kW AC) Roof Mounted Solar PV System



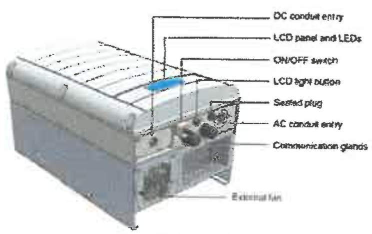
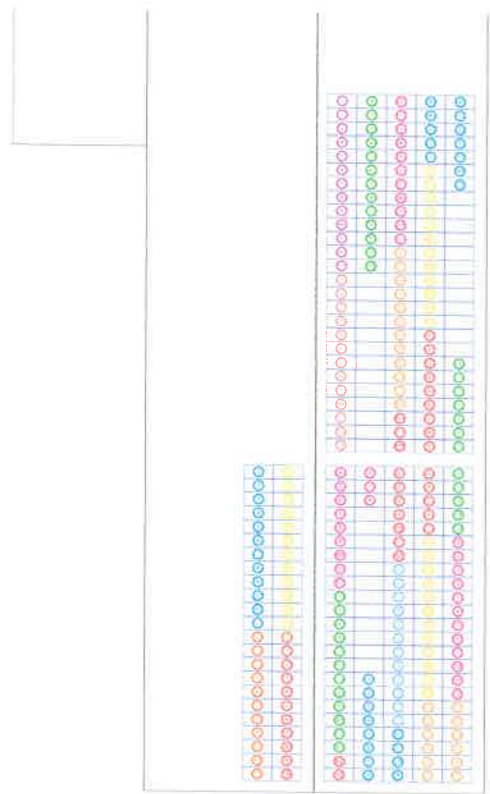
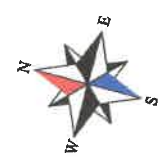


Figure 9: Inverter Interfaces



STRINGING NOTES:

1. Panels to be connected in series
2. MC4 connector heads to be used for all panel and jumper cables.
3. Wires to be managed on rail system using UV rated zip ties
4. Home run wires should be
   Red Wire: POSITIVE (+ve)
   Black Wire: NEGATIVE (-ve)



386 Smith Ridge Rd,
South Salem, NY 10590,
USA

142.59 kW DC
(100 kW AC)

Client Information
MATT DEWING

(203)656-7585
matthew.dewing@ringsend.com
386 Smith Ridge Rd,
South Salem, NY 10590,
USA

Engineer's Seal

Designed by
Sync Renewables, LLC
64 Marlborough St,
Portland, CT 06480

Account:
1001 2645 494

Meter:
64-819-261

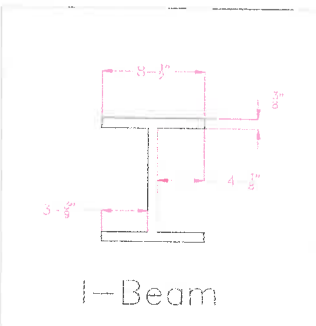
Date: 6/26/2023
Revision: 0.0

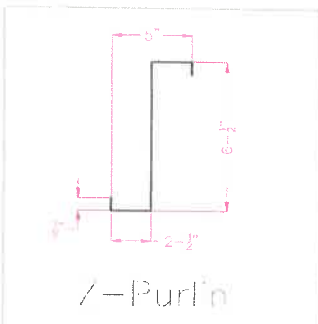
REVISION HISTORY

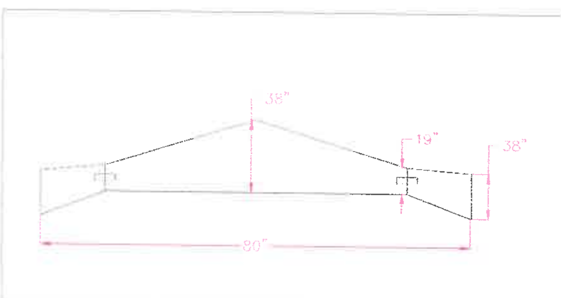
Structural Member Plan

386 Smith Ridge Rd, South Salem, NY 10590, USA

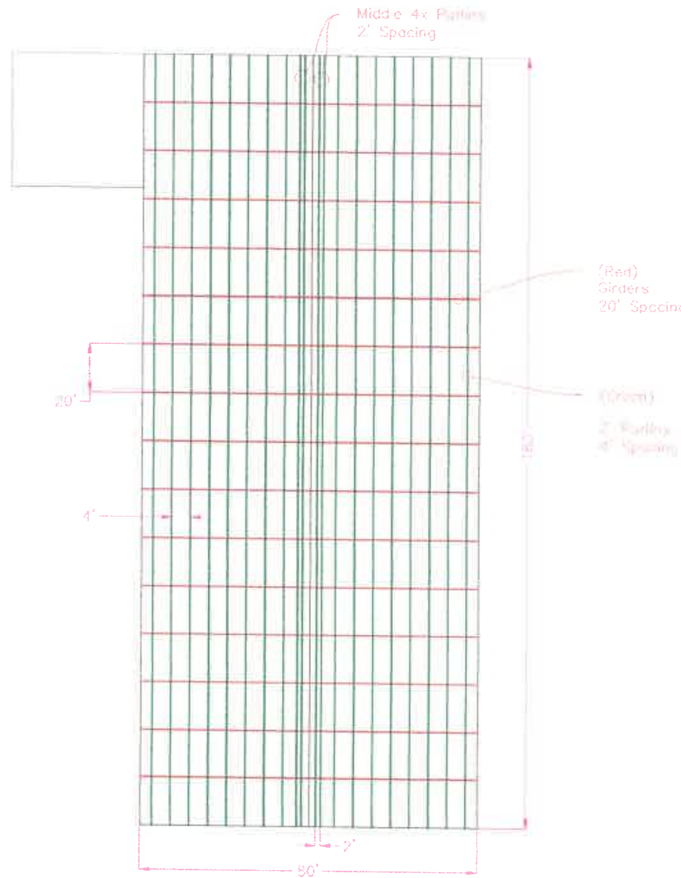
142.59 kW DC (100 kW AC) Roof Mounted Solar PV System







Smith Ridge Rd.



386 Smith Ridge Rd,
South Salem, NY 10590,
USA

142.59 kW DC
(100 kW AC)

Client Information

MATT DEWING

(203)656-7535
matthew.dewing@ringsend.com
386 Smith Ridge Rd,
South Salem, NY 10590,
USA

Engineer's Seal

Designed by
Sync Renewables, LLC
64 Marlborough St,
Portland, CT 06480

Account:
1001-2645-494

Meter:
64 619 261

Date: 6/26/2023
Revision: 0.0

REVISION HISTORY

Racking Plan
386 Smith Ridge Rd, South Salem, NY 10590, USA
142.59 kW DC (100 kW AC) Roof Mounted Solar PV System

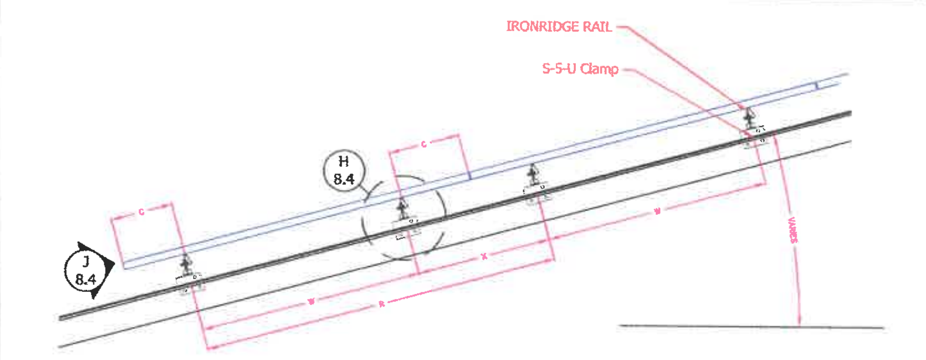


Fig.1 IronRidge XR100 Racking Sideview

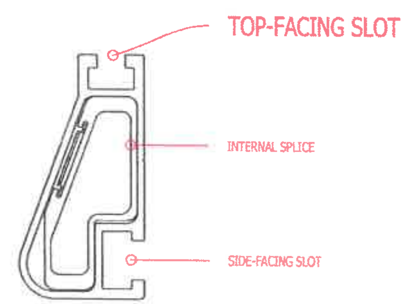


Fig.4 Detail Splice XR100

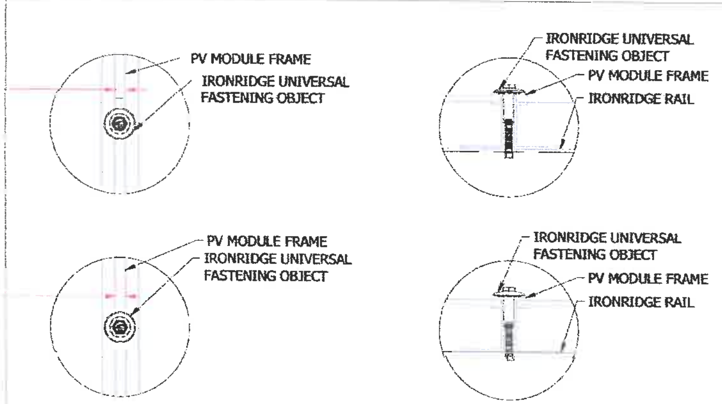


Fig.2 Mid-Clamps XR100

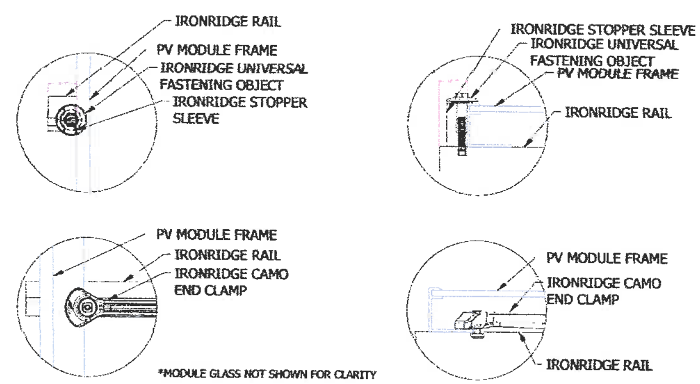


Fig.3 End-Clamps XR100

386 Smith Ridge Rd,
South Salem, NY 10590,
USA

142.59 kW DC
(100 kW AC)

Client Information

MATT DEWING

(203)656-7585
matthew.dewing@ringsend.com
386 Smith Ridge Rd,
South Salem, NY 10590,
USA

Engineer's Seal

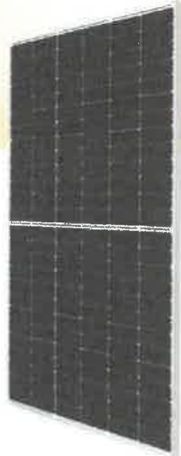
Designed by
Sync Renewables, LLC
64 Marlborough St,
Portland, CT 06480

Account:
1001-2645-494

Meter:
64-819-261

Date: 7/8/2023
Revision: 2.0

REVISION HISTORY



HiKu5 Mono PERC

475 W ~ 500 W

CS3Y-475 | 480 | 485 | 490 | 495 | 500MS

MORE POWER

Module power up to 500 W
Module efficiency up to 21.2 %

Up to 4.0 % lower LCOE
Up to 4.2 % lower system cost

Comprehensive LID / LeTID mitigation technology, up to 50% lower degradation

Compatible with mainstream trackers, cost effective product for utility power plant

Better shading tolerance

MORE RELIABLE

Minimizes micro-crack impacts

Heavy snow load up to 5400 Pa, enhanced wind load up to 2400 Pa*

* For detailed information, please refer to the Installation Manual.

12 Years Enhanced Product Warranty on Materials and Workmanship*

25 Years Linear Power Performance Warranty*

1st year power degradation no more than 2%
Subsequent annual power degradation no more than 0.55%

*According to the applicable Canadian Solar Limited Warranty Statement.

MANAGEMENT SYSTEM CERTIFICATES*

ISO 9001: 2015 / Quality management system
ISO 14001: 2015 / Standards for environmental management system
ISO 45001: 2018 / International standards for occupational health & safety

PRODUCT CERTIFICATES*

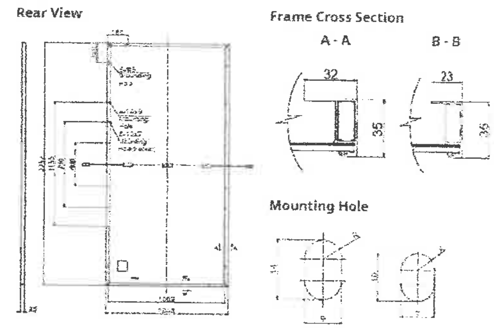
IEC 61215 / IEC 61730 / CE / MCS / INMETRO
CEC listed (US California) / FSEC (US Florida)
UL 61730 / IEC 61701 / IEC 62716 / IEC 60068-2-68
UNI 9177 Reaction to Fire: Class 1 / Take-e-way

* The specific certificates applicable to different module types and markets will vary, and therefore not all of the certifications listed herein will simultaneously apply to the products you order or use. Please contact your local Canadian Solar sales representative to confirm the specific certificates available for your Product and applicable in the regions in which the products will be used.

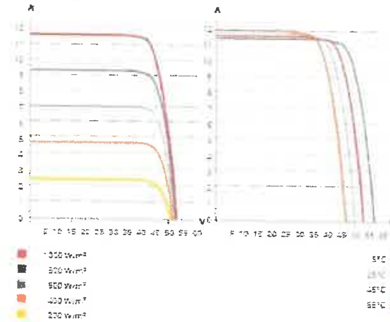
CSI Solar Co., Ltd. is committed to providing high quality solar products, solar system solutions and services to customers around the world. Canadian Solar was recognized as the No. 1 module supplier for quality and performance/price ratio in the IHS Module Customer Insight Survey, and is a leading PV project developer and manufacturer of solar modules, with over 50 GW deployed around the world since 2001.

CSI Solar Co., Ltd.
199 Lushan Road, SND, Suzhou, Jiangsu, China, 215129, www.csisolar.com, support@csisolar.com

ENGINEERING DRAWING (mm)



CS3Y-490MS / I-V CURVES



ELECTRICAL DATA | STC*

CS3Y	475MS	480MS	485MS	490MS	495MS	500MS
Nominal Max. Power (Pmax)	475 W	480 W	485 W	490 W	495 W	500 W
Opt. Operating Voltage (Vmp)	44.0 V	44.2 V	44.4 V	44.6 V	44.8 V	45.0 V
Opt. Operating Current (Imp)	10.81 A	10.87 A	10.94 A	11.00 A	11.06 A	11.12 A
Open Circuit Voltage (Voc)	52.7 V	52.9 V	53.1 V	53.3 V	53.5 V	53.7 V
Short Circuit Current (Isc)	11.52 A	11.57 A	11.62 A	11.67 A	11.72 A	11.77 A
Module Efficiency	20.1%	20.3%	20.6%	20.8%	21.0%	21.2%
Operating Temperature	-40°C ~ +85°C					
Max. System Voltage	1500V (IEC/UL) or 1000V (IEC/UL)					
Module Fire Performance	TYPE 1 (UL 61730 1500V) or TYPE 2 (UL 61730 1000V) or CLASS C (IEC 61730)					
Max. Series Fuse Rating	20 A					
Application Classification	Class A					
Power Tolerance	0 ~ + 10 W					

* Under Standard Test Conditions (STC) of irradiance of 1000 W/m², spectrum AM 1.5 and cell temperature of 25°C.

ELECTRICAL DATA | NMOT*

CS3Y	475MS	480MS	485MS	490MS	495MS	500MS
Nominal Max. Power (Pmax)	355 W	359 W	362 W	366 W	370 W	374 W
Opt. Operating Voltage (Vmp)	41.1 V	41.3 V	41.5 V	41.7 V	41.8 V	42.0 V
Opt. Operating Current (Imp)	8.64 A	8.70 A	8.74 A	8.78 A	8.86 A	8.91 A
Open Circuit Voltage (Voc)	49.7 V	49.9 V	50.1 V	50.2 V	50.4 V	50.6 V
Short Circuit Current (Isc)	9.29 A	9.33 A	9.38 A	9.42 A	9.46 A	9.50 A

* Under Nominal Module Operating Temperature (NMOT), irradiance of 800 W/m² spectrum AM 1.5, ambient temperature 20°C, wind speed 1 m/s.

MECHANICAL DATA

Specification	Data
Cell Type	Mono-crystalline
Cell Arrangement	156 [2 X (13 X 6)]
Dimensions	2252 X 1048 X 35 mm (88.7 X 41.3 X 1.38 in)
Weight	25.7 kg (56.7 lbs)
Front Cover	3.2 mm tempered glass
Frame	Anodized aluminium alloy
J-Box	IP68, 3 bypass diodes
Cable	4 mm² (IEC), 12 AWG (UL)
Cable Length (Including Connector)	410 mm (16.1 in) (+) / 290 mm (11.4 in) (-) or customized length*
Connector	T4 series or H4 UTX or MC4-EVO2
Per Pallet	30 pieces
Per Container (40' HQ)	600 pieces

* For detailed information, please contact your local Canadian Solar sales and technical representatives.

TEMPERATURE CHARACTERISTICS

Specification	Data
Temperature Coefficient (Pmax)	-0.34 % / °C
Temperature Coefficient (Voc)	-0.26 % / °C
Temperature Coefficient (Isc)	0.05 % / °C
Nominal Module Operating Temperature	42 ± 3°C

PARTNER SECTION

* The specifications and key features contained in this datasheet may deviate slightly from our actual products due to the on-going innovation and product enhancement. CSI Solar Co., Ltd. reserves the right to make necessary adjustment to the information described herein at any time without further notice.
Please be kindly advised that PV modules should be handled and installed by qualified people who have professional skills and please carefully read the safety and installation instructions before using our PV modules.

CSI Solar Co., Ltd.
199 Lushan Road, SND, Suzhou, Jiangsu, China, 215129, www.csisolar.com, support@csisolar.com

Three Phase Inverter with Synergy Technology

For the 208V Grid for North America

SE50KUS

INVERTERS

Powered by unique pre-commissioning process for rapid system installation

- Pre-commissioning feature for automated validation of system components and wiring during the site installation process and prior to grid connection
- Easy 2-person installation with lightweight, modular design (each inverter consists of 3 Synergy units and 1 Synergy Manager)
- Independent operation of each Synergy unit enables higher uptime and easy serviceability
- Built-in thermal sensors detect faulty wiring ensuring enhanced protection and safety
- Built-in arc fault protection and rapid shutdown
- Built-in PID mitigation for maximized system performance
- Monitored* and field-replaceable surge protection devices, to better withstand surges caused by lightning or other events
- Built-in module-level monitoring with Ethernet or cellular communication for full system visibility

*Applicable only for DC and AC SPDs

solaredge.com

solaredge

Three Phase Inverter with Synergy Technology

For the 208V Grid for North America

SE50KUS

MODEL NUMBER APPLICABLE TO INVERTERS WITH PART NUMBER	SExxK-USx2Ixxxx SE50KUS	UNITS
OUTPUT		
Rated AC Active Output Power	50000	W
Maximum AC Apparent Output Power	50000	VA
AC Output Line Connections	3W + PE, 4W + PE	
Supported Grids	WYE: TN-C, TN-S, TN-C-S, TT, IT, Delta: IT	
AC Output Voltage Minimum-Nominal-Maximum [1] (L-N)	105 – 120 – 132.5	Vac
AC Output Voltage Minimum-Nominal-Maximum [1] (L-L)	183 – 208 – 229	Vac
AC Frequency Min-Nom-Max [1]	59.5 – 60 – 60.5	Hz
Maximum Continuous Output Current (per Phase, PF =1)	139.5	Aac
GFDI Threshold	1	A
Utility Monitoring, Islanding Protection, Configurable Power Factor, Country Configurable Thresholds	Yes	
Total Harmonic Distortion	≤ 3	%
Power Factor Range	+/-0.2 to 1	
INPUT		
Maximum DC Power (Module STC) Inverter / Synergy Unit	87500 / 29165	W
Transformer-less, Ungrounded	Yes	
Maximum Input Voltage DC+ to DC-	600	Vdc
Operating Voltage Range	370 – 600	Vdc
Maximum Input Current	3 x 46.5	Adc
Reverse-Polarity Protection	Yes	
Ground-Fault Isolation Detection	167kΩ sensitivity per Synergy Unit [2]	
CEC Weighted Efficiency	97	%
Nighttime Power Consumption	≤ 12	W
ADDITIONAL FEATURES		
Supported Communication Interfaces [3]	2 x RS485, Ethernet, Wi-Fi (optional), Cellular (optional)	
Smart Energy Management	Export Limitation	
Inverter Commissioning	With the SetApp mobile application using built-in Wi-Fi access point for local connection	
Arc Fault Protection	Built-in, User Configurable (According to UL1699B)	
Photovoltaic Rapid Shutdown System	NEC 2014, 2017 and 2020, Built-in	
PID Rectifier	Nighttime, built-in	
RS485 Surge Protection (ports 1+2)	Type II, field replaceable, integrated	
AC, DC Surge Protection	Type II, field replaceable, integrated	
DC Fuses (Single Pole)	25A, integrated	
Pre-Commissioning	Built-in [4]	
DC SAFETY SWITCH		
DC Disconnect	Built-in	
STANDARD COMPLIANCE		
Safety	UL1699B, UL1741, UL1741 SA, UL1741 SB, UL1998, CSA C22.2#107.1, Canadian AFCI according to T.I.L. M-07	
Grid Connection Standards	IEEE 1547-2018, Rule 21, Rule 14 (HI)	
Emissions	FCC part 15 class A	

(1) For other regional settings please contact SolarEdge support.
(2) Where permitted by local regulations.
(3) For specifications of the optional communication options, visit the Communication product page or the Resource Library to download the relevant product datasheet.
(4) Not available for P/Ns SExxK-xxxxBFxx.

Power Optimizer

For North America

S1201

POWER OPTIMIZER

SolarEdge's most advanced, cost-effective Power Optimizer for commercial and large field installations

Greater Energy Yields

- High efficiency (99.5%) with module-level MPPT, for maximized system energy production and revenue, and fast project ROI
- Supports high power and bifacial PV modules, and high string current for more power per string.

Maximum Protection with Built-In Safety

- Designed to automatically reduce high DC voltage to touch-safe levels, upon grid/inverter shutdown, with SafeDC™
- Includes SolarEdge Sense Connect, allowing continuous monitoring to detect overheating due to installation issues or connector-level wear and tear

Lower BoS Costs

- Flexible system design enables maximum space utilization and up to 2x longer string lengths, 50% less cables, fuses and combiner boxes
- Supports connection of two PV modules in series with easy cable management and fast installation times

Simpler O&M

- Module-level system monitoring enabling pinpointed fault detection and remote, time-saving troubleshooting

solaredge.com

solaredge

Power Optimizer

For North America

S1201

	S1201	Units
INPUT		
Rated Input DC Power[1]	1200	W
Absolute Maximum Input Voltage (Voc)	125	Vdc
MPPT Operating Range	12.5 – 105	Vdc
Maximum Short Circuit Current (Isc) of Connected PV Module	15	Adc
Maximum Efficiency	99.5	%
Weighted Efficiency	98.8	%
Overvoltage Category	II	
OUTPUT DURING OPERATION		
Maximum Output Current	18	Adc
Maximum Output Voltage	80	Vdc
OUTPUT DURING STANDBY (POWER OPTIMIZER DISCONNECTED FROM INVERTER OR INVERTER OFF)		
Safety Output Voltage per Power Optimizer	1	Vdc
STANDARD COMPLIANCE		
Photovoltaic Rapid Shutdown System	Compliant with NEC 2014, 2017, 2020	
EMC	FCC Part15, IEC 61000-6-2, and IEC 61000-6-3	
Safety	IEC62109-1 (class II safety), UL 1741, UL 3741, CSA C22.2#107.1	
Material	UL 94 V-0, UV Resistant	
RoHS	Yes	
Fire Safety	VDE-AR-E 2100-712:2013-05	
INSTALLATION SPECIFICATIONS		
Maximum Allowed System Voltage	1000	Vdc
Dimensions (W x L x H)	129 x 155 x 59 / 5.08 x 6.10 x 2.32	mm / in
Weight	1105 / 2.4	gr / lb
Input Connector	MC4[2]	
Input Wire Length	1.6 / 5.25[3]	m / ft
Output Connector	MC4	
Output Wire Length	(+) 3.3 (-) 0.10 / (+) 17.38, (-) 0.32	m / ft
Operating Temperature Range[4]	-40 to +85 / -40 to +185	°C / °F
Protection Rating	IP68 / NEMA6P	
Relative Humidity	0 – 100	%

(1) Rated power of the module at STC will not exceed the power optimizer Rated Input DC Power. Modules with up to +5% power tolerance are allowed.
(2) For other connector types please contact SolarEdge.
(3) The Sense Connect feature is only enabled on the output cable connectors.
(4) For ambient temperatures above +85°C / +149°F power de-rating is applied.

PV System Design Using a SolarEdge Inverter[5][6][7]		208V Grid SE10K	208V Grid SE17.3K*	277/480V Grid SE20K, SE30K	277/480V Grid SE40K*	
Compatible Power Optimizers		S1201				
Minimum String Length	Power Optimizers	8	10	15	15	
	PV Modules	15	19	29	29	
Maximum String Length	Power Optimizers	30	30	30	30	
	PV Modules	60	60	60	60	
Maximum Continuous Power per String		7200	8820	15300	15300	W
Maximum Allowed Connected Power per String[7]		1 string – 8400 2 strings or more – 10600	1 string – 10020 2 strings or more – 13000	1 string – 17550 2 strings or more – 23000	2 strings or less – 17550 3 strings or more – 23000	W
Parallel Strings of Different Lengths or Orientations		Yes				
Maximum Difference in Number of Power Optimizers Allowed Between the Shortest and Longest String Connected to the Same Inverter Unit		5 Power Optimizers				

*The same rules apply for Synergy units of equivalent power ratings, that are part of the modular Synergy Technology inverter.
(5) S1201 cannot be mixed with any other Power Optimizers models in the same string.
(6) For each string, a Power Optimizer may be connected to a single PV module if 1) each Power Optimizer is connected to a single PV module or 2) it is the only Power Optimizer connected to a single PV module in the string.
(7) To connect more STC power per string, design your project using SolarEdge Designer.

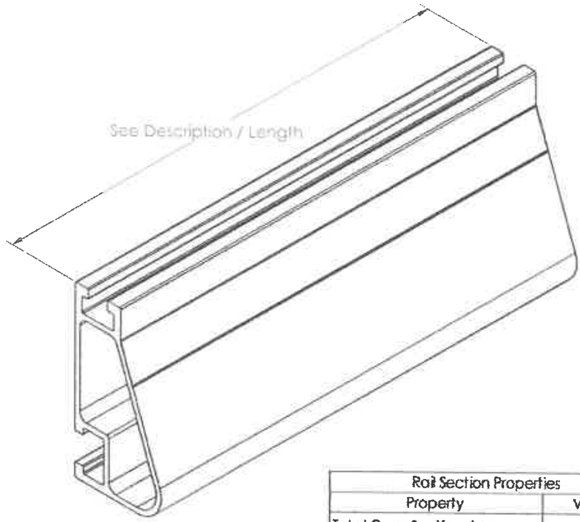
RoHS

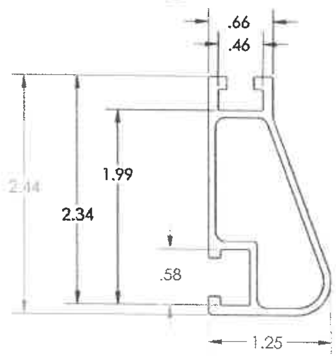
Intertek

Cut Sheet

IRONRIDGE

XR100® Rail





Rail Section Properties	
Property	Value
Total Cross-Sectional Area	0.582 in^2
Section Modulus (X-axis)	0.297 in^3
Moment of Inertia (X-axis)	0.390 in^4
Moment of Inertia (Y-axis)	0.085 in^4
Torsional Constant	0.214 in^3
Polar Moment of Inertia	0.126 in^4

APPROVED MATERIALS:
6005-T6, 6005A-T61, 6105-T5, 6N01-T6
(34,000 PSI YIELD STRENGTH MINIMUM)

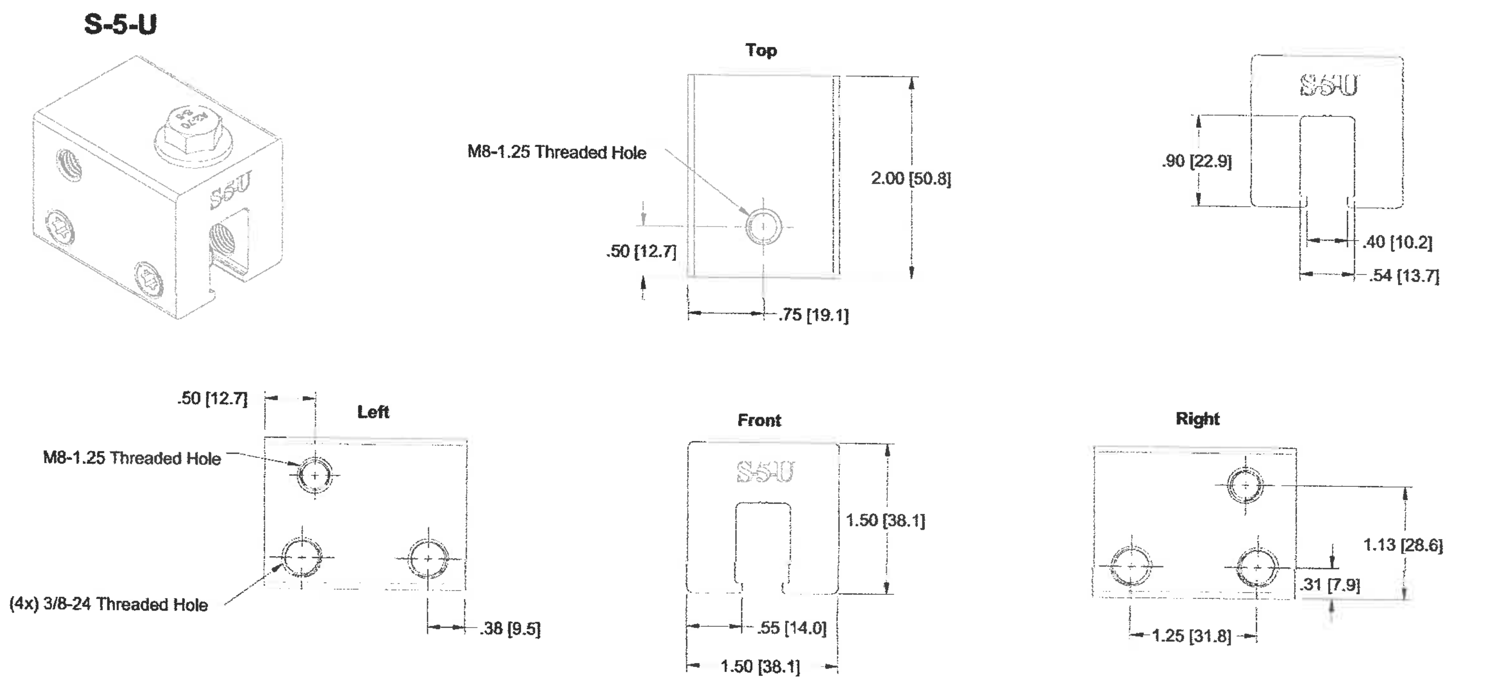
Clear Part Number	Black Part Number	Description / Length	Material	Weight
XR-100-132A	XR-100-132B	XR100, Rail 132" (11 Feet)	6000-Series Aluminum	7.50 lbs.
XR-100-168A	XR-100-168B	XR100, Rail 168" (14 Feet)		9.55 lbs.
XR-100-204A	XR-100-204B	XR100, Rail 204" (17 Feet)		11.60 lbs.

v1.11

S-5-U Clamp

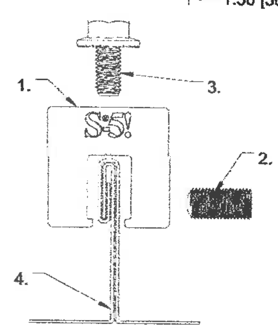
386 Smith Ridge Rd, South Salem, NY 10590, USA

142.59 kW DC (100 kW AC) Roof Mounted Solar PV System



General Notes:

1. S-5-U
2. 0.9" 3/8-24 T30 Drive SetScrew
3. M8-1.25 16 mm Bolt
4. Example roof



386 Smith Ridge Rd,
South Salem, NY 10590,
USA

142.59 kW DC
(100 kW AC)

Client Information

MATT DEWING

(203)656-7585
matthew.dewing@ringsend.com
386 Smith Ridge Rd,
South Salem, NY 10590,
USA

Engineer's Seal

Designed by

Sync Renewables, LLC
64 Marlborough St.,
Portland, CT 06480

Account:
1001-2645-494

Meter:
64-819-261

Date: 7/9/2023
Revision: 1.0

REVISION HISTORY

PV Labeling

386 Smith Ridge Rd, South Salem, NY 10590, USA

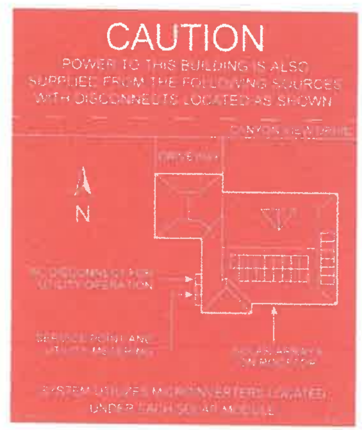
142.59 kW DC (100 kW AC) Roof Mounted Solar PV System

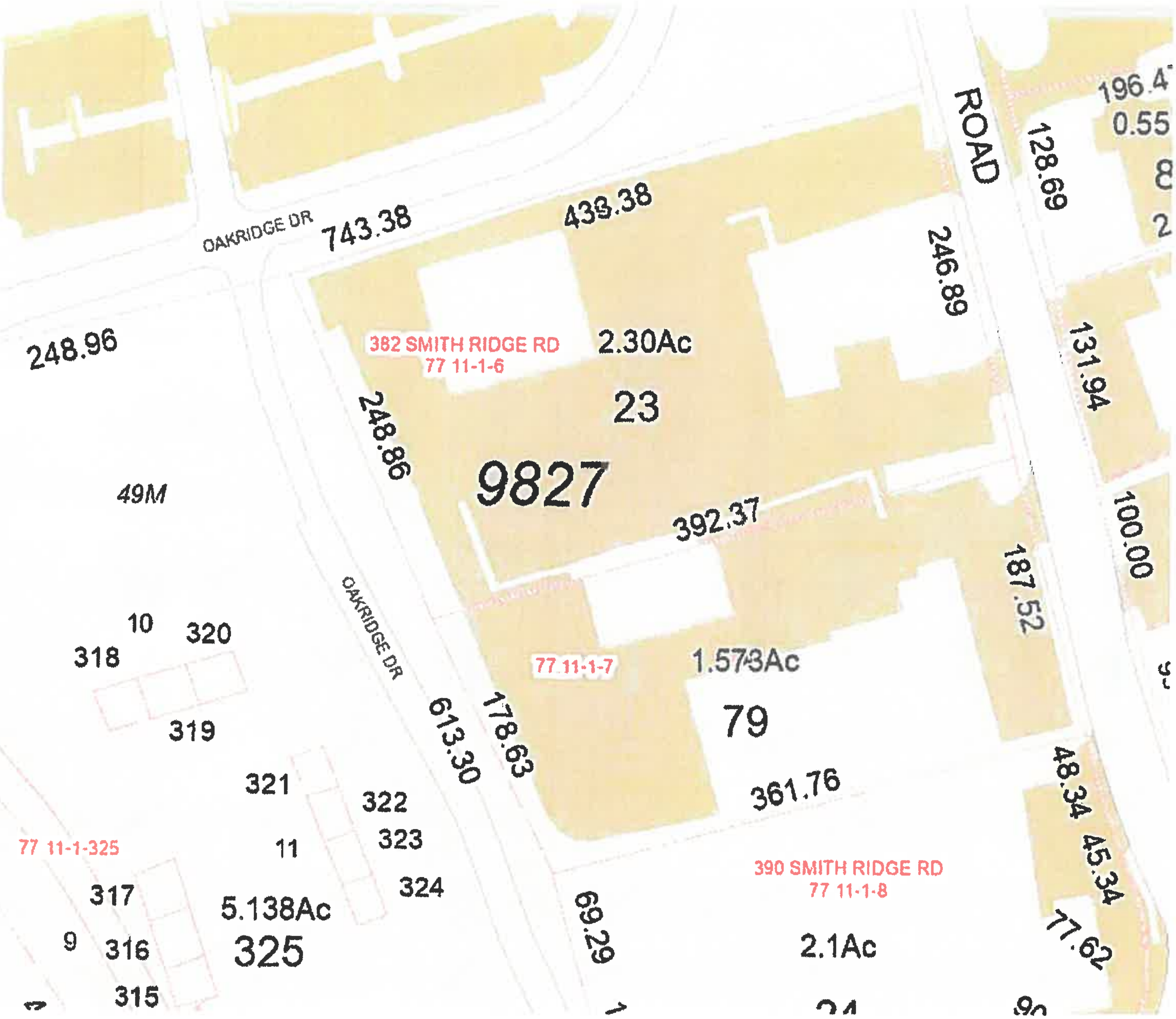
System Labeling shall comply with the 2020 NEC Labeling Requirements

2020 NEC Labeling Requirements

NEC Section	Location of Label	Label Text and Apperance
690.54	All interactive system(s) points of interconnection with other sources shall be marked at an accessible location at the disconnecting means as a power source and with the rated ac output current and the nominal operating ac voltage.	
690.13(B) 690.15 705.10	Each PV system disconnecting means shall plainly indicate whether in the open (off) or closed (on) position and be permanently marked: "PV SYSTEM DISCONNECT" Or equivalent.	MAIN PHOTOVOLTAIC SYSTEM DISCONNECT PHOTOVOLTAIC DC DISCONNECT PHOTOVOLTAIC AC DISCONNECT
690.53	A permanent readily visible label indicating the highest maximum dc voltage in a PV system, calculated in accordance with 690.7, shall be provided by the installer at one of the three locations.	
690.31 (D)(2)	Unless the purpose is evident, the following wiring methods and enclosures that contain PV system dc circuit conductors shall be marked: (1) Exposed raceways, cable trays, and other wiring methods (2) Covers or enclosures of pull boxes and junction boxes (3) Conduit bodies in which any of the available conduit openings are unused	SOLAR PV DC CIRCUIT
690.13(B) 690.15(C)	Where all terminals of the disconnecting means may be energized in the open position, a warning sign shall be mounted on or adjacent to the disconnecting means.	

NEC Section	Location of Label	Label Text and Apperance
705.12 (B)(3)(2)	A permanent warning label shall be applied to the distribution equipment adjacent to the back-fed breaker from the inverter.	WARNING
705.12 (B)(3)(3)	Permanent warning labels shall be applied to distribution equipment	
690.56 (C)	Buildings with PV systems shall have a permanent label located at each service equipment location to which the PV systems are connected or at an approved readily visible location and shall indicate the location of rapid shutdown initiation devices. The label shall include a simple diagram of a building with a roof and shall include the following words: The title "SOLAR PV SYSTEM IS EQUIPPED WITH RAPID SHUTDOWN" shall utilize capitalized characters with a minimum height of 3/8 in. in black on yellow background, and the remaining characters shall be capitalized with a minimum height of 3/16 in. in black on white background.	SOLAR PV SYSTEM EQUIPPED WITH RAPID SHUTDOWN TURN RAPID SHUTDOWN SWITCH TO THE "OFF" POSITION TO SHUTDOWN PV SYSTEM AND REDUCE SHOCK HAZARD IN ARRAY
	(2) A rapid shutdown switch shall have a label located on or no more than 3 ft from the switch that includes this wording. The label shall be reflective, with all letters capitalized and having a minimum height of 3/8 in., in white on red background.	
	1) Buildings with More Than One Rapid Shutdown Type. For buildings that have PV systems with both rapid shutdown types or a PV system with a rapid shutdown type and a PV system with no rapid shutdown, a detailed plan view diagram of the roof shall be provided showing each different PV system and a dotted line around areas that remain energized after the rapid shutdown switch is operated.	

NEC Section	Location of Label	Label Text and Apperance
690.56(B) 690.4(D) 705.10	A permanent plaque or directory shall be installed at each service equipment location, or at an approved readily visible location. The plaque or directory shall denote the location of each power source disconnecting means for the building or structure and be grouped with other plaques or directories for other on-site sources. The plaque or directory shall be marked with the wording "CAUTION: MULTIPLE SOURCES OF POWER." Any posted diagrams shall be correctly oriented with respect to the diagram's location. The marking shall comply with 110.21(B).	 5" x 6"



OAKRIDGE DR
743.38
433.38
ROAD
196.4
0.55
128.69
246.89
248.96
382 SMITH RIDGE RD
77 11-1-6
2.30Ac
23
131.94
248.86
9827
49M
392.37
100.00
187.52
OAKRIDGE DR
10
320
318
77 11-1-7
1.573Ac
79
319
613.30
178.63
48.34
321
322
361.76
323
77 11-1-325
11
45.34
317
324
390 SMITH RIDGE RD
77 11-1-8
5.138Ac
69.29
9
316
325
2.1Ac
77.62
315

KSCJ CONSULTING

John Kellard, P.E.
David Sessions, RLA, AICP
Joseph M. Cermele, P.E., CFM
Jan K. Johannessen, AICP

MEMORANDUM

TO: Chairperson Janet Andersen and
Members of Lewisboro Planning Board

CC: Ciorsdan Conran
Judson Siebert, Esq.
Kevin Kelly, Building Inspector

FROM: Jan K. Johannessen, AICP
Joseph M. Cermele, P.E., CFM
Town Consulting Professionals

DATE: December 15, 2023

RE: Wolf Conservation Center
Mead Street and Buck Run
Sheet 21, Block 10803, Lots 3, 77, 65, 81, 82, 83, 86, and 88

PROJECT DESCRIPTION

The subject property consists of ±32.3 acres of land and is located off Buck Run, a private road, within the R-2A and R-4A Zoning Districts. The applicant has submitted an application for a Special Use Permit, under Section 220-43.2, Private Nature Preserves, of the Zoning Code, and is proposing several improvements in the furtherance of its goals and objectives.

REQUIRED APPROVALS/REFERRALS

1. Subdivision, a Special Use Permit, a Wetland Activity Permit and a Town Stormwater Permit are required from the Planning Board; a public hearing is required to be held.

2. Area variance(s) may be required from the Zoning Board of Appeals (ZBA).

3. The application must be referred to the Architecture and Community Appearance Review Council (ACARC) for review and recommendations.

4. Westchester County Department of Health (WCDH) Approval is required for Realty Subdivision, reconstruction of an existing sanitary sewage disposal systems and new potable water well(s). A public water system will likely be required by the WCDH.

5. The proposed action requires Stormwater Pollution Prevention Plan (SWPPP) Approval from the New York City Department of Environmental Protection (NYCDEP).

6. Land disturbance will exceed one (1) acre located within the NYCDEP East of Hudson Watershed; coverage under the New York State Department of Environmental Conservation (NYSDEC) SPDES General Permit for Stormwater Discharge from Construction Activity (GP-0-20-001) is required.

7. An Article 24 Freshwater Wetland Permit may be required from the NYSDEC.

8. Improvements and modifications within the State right-of-way will require approval from the New York State Department of Transportation (NYSDOT).

9. The proposed action must be referred to the Westchester County Planning Board in accordance with Section 239-m of the General Municipal Law; the Planning Board administrator will coordinate this referral.

COMMENTS

1. The applicant has updated and resubmitted its previously submitted business plan and written description demonstrating compliance with the Special Use Permit provisions for Private Nature Preserves, for the Board's review.

2. As previously noted, the applicant acknowledges that the SWPPP Report will need to include pipe flow calculations; please provide with future submissions. The calculations shall demonstrate that the proposed pipe network along the Buck Run driveway will have sufficient capacity.

3. We defer further comments regarding the SWPPP until the application has received comments back from the NYCDEP.

4. The applicant has submitted the 72-Hour Well Pump Test Work Plan, which is being forwarded to our Hydrogeologist Consultant for review and comment.

In order to expedite the review of subsequent submissions, the applicant should provide annotated responses to each of the comments outlined herein.

PLANS REVIEWED, PREPARED BY BIBBO ASSOCIATES, LLP, DATED NOVEMBER 28, 2023:

- Cover (CS-1)
- Preliminary Subdivision Plan (PP-1)
- Existing Conditions Plan (EX-1)

- Existing Conditions & Removals Plan (EX-2)
- Layout Plan – South (LP-1)
- Layout Plan – North (LP-2)
- Construction Plan – South (CP-1)
- Construction Plan – North (CP-2)
- Erosion Control Plan (EC-1)
- Erosion Control Notes & Details (EC-2)
- Road Profiles (P-1)
- Drainage Profiles (P-2)
- Turning Maneuvers (T-1)
- Sight Distance & Profiles (SD-1)
- Mitigation Plan (M-1)
- Lighting Plan (LP-1)
- Details (D-1, D-2, D-3)
- Well Testing Plan (WT-1)

DOCUMENTS REVIEWED:

- Letter, prepared by Janet J. Giris, dated November 27, 2023
- Stormwater Pollution Prevention Plan Report, dated October 20, 2023
- Operational Plan and Special Use Permit Compliance, dated March 1, 2023
- Notice of Intent
- 72-Hour Well Pump Test Work Plan

JKJ/dc

DELBELLO DONNELLAN WEINGARTEN WISE & WIEDERKEHR, LLP

COUNSELLORS AT LAW

THE GATEWAY BUILDING
ONE NORTH LEXINGTON AVENUE
WHITE PLAINS, NEW YORK 10601

(914) 681-0200
FACSIMILE (914) 684-0288

Janet J. Giris
Partner
jjg@ddw-law.com

Connecticut Office
1111 SUMMER STREET
STAMFORD, CT 06905
(203) 298-0000

November 27, 2023

By Hand Delivery

Honorable Janet Anderson, Chair
and Members of the Planning Board
Town of Lewisboro
79 Bouton Road
South Salem, New York 10590

Re: Application of The Wolf Conservation Center, Inc., for Subdivision, Site Plan, Special Permit Approval, Wetland Permit and Stormwater Permit in Connection with a Private Nature Preserve on Property Located on Buck Run, South Salem.

Dear Chairwoman Anderson and Members of the Board:

As you know, this firm represents the Wolf Conservation Center, Inc. (the "Applicant"), in connection with the above-referenced applications. On behalf of the Applicant and in support of our applications, we respectfully submit the enclosed revised plans and materials for the Board's review and consideration at its meeting on December 19, 2023.

Over the course of the last several meetings with the Board, the Applicant has focused on the subdivision which was approved by the Board on November 21, 2023. In addition, the Applicant and its consultants have been working to address the outstanding comments regarding the remainder of its applications for special permit, site plan, wetland permit and stormwater permit approvals received from the Town's consulting professionals, KSCJ Consulting, in its memorandum to the Board dated May 12, 2023 (the "KSCJ Memo"). Accordingly, on behalf of the Applicant and in support of our applications, we respectfully submit the enclosed set of site plan drawings and materials which have been revised to address the comments contained in the KSCJ Memo. Each set of revised plans consists of the following sheets:

Drawing No.	Title	Prepared By	Dated or Last Revised
CS-1	Cover Sheet	Bibbo Associates, LLP ("Bibbo")	11-28-23
PP-1	Preliminary Plot Plan	Bibbo	11-28-23

EX-1	Existing Conditions Plan	Bibbo	11-28-23
EX-2	Removals Plan	Bibbo	11-28-23
LP-1	Layout Plan - South	Bibbo	11-28-23
LP-2	Layout Plan – North	Bibbo	11-28-23
CP-1	Construction Plan - South	Bibbo	11-28-23
CP-2	Construction Plan – North	Bibbo	11-28-23
EC-1	Erosion Control Plan	Bibbo	11-28-23
EC-2	Erosion Control Notes & Detail	Bibbo	11-28-23
P-1	Road Profiles	Bibbo	11-28-23
P-2	Drainage Profiles	Bibbo	11-28-23
T-1	Turning Maneuvers	Bibbo	11-28-23
SD-1	Sight Distance & Profiles	Bibbo	11-28-23
M-1	Mitigation Plan	Bibbo	11-28-23
LP-1	Lighting Plan	Bibbo	11-28-23
D-1	Details	Bibbo	11-28-23
D-2	Details	Bibbo	11-28-23
D-3	Details	Bibbo	11-28-23
D-4	Details	Bibbo	11-28-23

In addition to the revised plans referenced above, we also respectfully submit the following materials for your review and consideration:

1. A “72 Hour Well Pump Test Work Plan,” together with Drawing WT-1, entitled “Well Testing Plan” prepared by Bibbo and dated November 28, 2023;

2. A revised “Stormwater Pollution Prevention Plan”, prepared by Bibbo and last revised October 20, 2023 (NYCDEP Completeness); and

3. A revised Notice of Intent (“NOI”).

In response to the comments contained in the KSCJ Memo, we respectfully offer the following responses. As requested in the KSCJ Memo, each of the comments is repeated below with the response following:

1. **Comment: The applicant acknowledges the request to submit an updated Existing Conditions Survey (boundary and 2-foot contours), signed and sealed by a NYS Licensed Land Surveyor.**

   Response: A signed and sealed existing conditions survey entitled “Topographic Map Prepared for the Wolf Conservation Center, Inc.”, prepared by Insite Engineering, Surveying & Landscape Architecture, P.C. , dated 11/21/2018 (consisting of two (2) sheets) was included in our previous submission to the Board on June 26, 2023.

2. **Comment: The applicant has acknowledged the need to update and resubmit its previously submitted business plan and written description demonstrating**

compliance with the Special Use Permit provisions for Private Nature Preserves. The business plan shall include a title and date for reference purposes.

Response: A revised business plan, entitled "Operational Plan and Special Use Permit Compliance Created for Review by the Town of Lewisboro", dated March 1, 2023 is enclosed with this submission. As previously stated to the Board, the proposed Private Nature Preserve complies with the specific site standards contained in Section 220-43.2 (B) of the Zoning Code as follows:

a. The Property, which consists of approximately 33.1 acres, exceeds the ten (10) acre minimum required for qualification as a Private Nature Preserve;

b. The Property is located on a private road (Buck Run) which has direct access to a state highway (Route 35);

c. The accessory uses and structures existing and proposed on the Property are customarily incidental to a private nature preserve, and include animal enclosures, employee offices, a learning center; a storage and maintenance building, camping pods, a refrigeration and kitchen building for animal food preparation, composting toilets and an amphitheater.

d. The Applicant respectfully submits that the Property is appropriately fenced and screened so that impacts from any activity on the Property are properly mitigated.

e. In order to ensure that animal waste will not adversely impact the Property or any wetlands or waterbodies on the Property or adjacent properties, animal waste is handled in two ways; The two enclosures housing the WCC ambassador packs are cleaned approximately 2 to 4 times a week. All debris including scat and remnant bones from feedings is removed and disposed of in the trash that is picked up weekly. The enclosures for the federally protected endangered species are cleaned only intermittently, consistent with the "hands off" management of these critically endangered wolves. Regular human presence can adversely impact preparation for potential release into the wild. Clean ups are therefore done at opportune times such as during health checks and enclosure and fence maintenance. This protocol ensures that they are disturbed as minimally as possible. When in large quantities, collected bones and scat are double bagged and disposed of at the Town of Somers transfer station.

In addition to the specific site standards contained in Section 220-43.2(B) of the Zoning Code, the proposed Private Nature Preserve complies with the general special permit standards contained in Section 220-32(E) as follows:

a. The location and size of the use, the nature and intensity of the operations involved in the Private Nature Preserve or conducted in connection with it, the size of the site in relation to it and the location of the site with respect to streets giving access to it, are such that it will be in harmony with the appropriate and orderly development of the district in which it is located and that it complies with all special requirements for such use established in the Zoning Code. As we have discussed with the Board, site size of the site now consists of more than thirty-three (33) acres and is appropriately sized for the approximately twenty-six (26) wolves currently living at the Property[1] and related educational and conservation activities. The Applicant intends to preserve the wooded and natural environment of the Property, and its improvement plan has been thoughtfully designed to minimize disturbance to the Property. The Wolf Conservation Center has harmoniously existed in its current location since 1999; the additional land acquired by the Applicant and the proposed improvements will further enhance its harmonious existence within the community. As stated above, the Wolf Center complies with the site standards contained in Section 220-43.2 (B) of the Zoning Code.

b. The location, nature and height of buildings, walls and fences and the nature and extent of existing or proposed plantings on the site are such that the use will not hinder or discourage the appropriate development and use of adjacent land and buildings. The proposed improvements have been designed in accordance with the bulk and dimensional regulations of the Zoning Code, and as previously stated have been designed to minimize site disturbance. The Applicant is adaptively repurposing a number of existing structures on the Property. Accordingly, the Applicant respectfully submits that the proposed improvements and use of the Property as a Private Nature Preserve will not affect the development or use of adjacent land or buildings.

c. Operations in connection with the Private Nature Preserve will not be more objectionable to nearby properties by reason of noise, fumes, vibration or other characteristics than would be the operations of any permitted use not requiring a special permit. As previously stated, the Wolf Center has existed harmoniously on the Property since 1999. The Private Nature Preserve will operate in a manner which is harmonious with the surrounding land uses, and will not generate noise, fumes, vibrations or other characteristics which are more objectionable to nearby properties than other uses permitted in the R-4A and R-2A Districts which include schools and municipal uses.

d. Parking areas will be of adequate size for the particular use, properly located and suitably screened from adjoining residential uses, and the entrance and exit drives shall be laid out so as to achieve maximum and adequate safety. As part of its application, the Applicant has proposed: a) improvements to and widening of Buck Run; and b) construction of a new off-street parking area containing a total of 26 parking spaces, including two (2) handicap spaces of parking spaces. The Applicant respectfully submits that the parking areas are of adequate size for the proposed use, and access to the Property has been adequately and safely designed.

[1] This number varies depending on births, deaths and relocation of wolves.

3. **Comment: The proposed tree plantings have not been accounted for in the Area Reduction RR Techniques (Question #29 of the NOI). Please add.**

   Response: The enclosed NOI has been revised to account for the proposed Tree Planting Area Reduction Practices contained in Question #29.

4. **Comment: Please provide a detail for Proposed Outlet Structure #1.1.**

   Response: A detail for the proposed Infiltration Basin 1.1P outlet structure is included on Sheet D-2 of the enclosed drawings.

5. **Comment: The applicant acknowledges that the SWPPP Report will need to include pipe flow calculations; please provide with future submissions. The calculations shall demonstrate that the proposed pipe network along the Buck Run driveway will have sufficient capacity.**

   Response: Comment noted. Pipe sizing calculations will be included in the final SWPPP for the project.

6. **Comment: We defer further comments regarding the SWPPP until the application has received comments back from the NYCDEP.**

   Response: Comment noted. The Applicant received a notice of complete application from the NYCDEP on November 15, 2023; we anticipate receipt of NYCDEP's technical comments to the SWPPP by December 30, 2023.

7. **Comment: As previously noted, we continue to recommend the need for diversion swales and water bars to be utilized during construction. The practices as shown and described in the SWPPP will only function once the conveyances have been installed. It is recommended that temporary sediment traps be constructed during construction. A second temporary sediment trap may be required at the upper portion of the development. Provide adequate sizing calculations in accordance with the NYSDEC Stormwater Management Design Manual (SMDM). Alot of the disturbance will be located on steep slopes, which will affect the downgraded portions of the project. Furthermore, a phasing plan should be implemented which outlines the phases of construction noted in the construction sequencing notes.**

   Response: The erosion control plans have been revised to include additional erosion and sediment control measures in the form of water bars, temporary stone check dams and a double row of silt fence which has been added immediately downgradient of critical areas. As the Applicant's consultants continue to coordinate with NYCDEP on the SWPPP, they will explore the possibility of utilizing an infiltration basin as a temporary sediment basin during construction.

8. **Comment: A "No Parking Anytime" sign should be shown for the ADA loading space on the plan and detail.**

   Response: As requested, the plans have been revised to include a "No Parking Anytime" sign at the ADA loading space. Details for signage are included on Sheet D-3 of the enclosed plans.

9. **Comment: Since all curbs will be concrete, please remove the asphalt pavement label located on sheet CD-1.**

   Response: Comment noted. The plans have been revised accordingly.

10. **Comment: The applicant acknowledges that the WCDH will require that a 72-hour pump test be performed for the public water system. The applicant shall coordinate with this office regarding the pump test, including preparation and approval of a work plan.**

    Response: The proposed "72 Hour Pump Test Work Plan" is enclosed. Upon review and approval by KSCJ, the Applicant will conduct the test in accordance with the work plan.

We respectfully request that this matter be placed on the Board's December 19, 2023 agenda for continued review. Thank you for your consideration, and we look forward to meeting with the Board on December 19.

Very truly yours,

Janet J. Giris

JANET J. GIRIS

Enclosures

cc: Judson Siebert, Esq.
Jan Johannessen, AICP, KSCJ
Spencer Wilhelm, The Wolf Conservation Center
Bill Cordiano, The Wolf Conservation Center
Dean Travalino, The Wolf Conservation Center
Matthew Gironda, P.E., Bibbo Associates

.

Operational Plan and Special Use Permit Compliance
Created for Review by the Town of Lewisboro
March 1, 2023

MISSION: *Advance the survival of wolves by inspiring a global community through education, advocacy, research, and recovery.*

- WCC mailing address: Wolf Conservation Center, PO Box 421, South Salem, NY 10590
- WCC physical address: 7 Buck Run, South Salem, NY 10590
- Phone: 914-763-2373
- Email: info@nywolf.org

Founded by **Hélène Grimaud** in 1999, the Wolf Conservation Center (WCC) is a 501(c)(3) not-for-profit environmental education organization working to protect and preserve wolves in North America through science-based education, advocacy, and participation in the federal recovery and release programs for two critically endangered wolf species - the Mexican gray wolf and red wolf. The WCC's two 'ambassador wolves' reside on exhibit where they help teach the public about wolves and their vital role in the environment. Through wolves, the WCC teaches the broader message of conservation, ecological balance, and personal responsibility for improved human stewardship of our World.

The Wolf Conservation Center (WCC) participates in the federal Species Survival Plan (SSP) recovery programs for the Mexican gray wolf and the red wolf, two of the rarest mammals in North America. Both species at one time were completely extinct in the wild. Since 2003 the WCC has played a critical role in preserving and protecting these imperiled species through carefully managed breeding and reintroduction. To date, the WCC remains one of the three largest holding facilities for these rare species, and six wolves from the Center have been given the extraordinary opportunity to resume their rightful place in the wild landscape.

What is a Species Survival Plan?
A Species Survival Plan (SSP) is a breeding and management program designed to ensure the long-term sustainability of captive-based animal populations. It's a coordinated effort among zoos, organizations like the Wolf Conservation Center, U.S. Fish and Wildlife Service, Mexico's Fish & Wildlife Agencies and managed under the Association of Zoos and Aquariums (AZA).

To best prepare the critically endangered wolves who are candidates for wild-release, the center's approximately 20 Mexican gray wolves and 10 red wolves reside off exhibit within the WCC's Endangered Species Facility.

The WCC is governed by a 16-member Board of Directors, a full-time staff, an advisory board of veterinarians, educators, scientists and other naturalists. AKA - Wolf Conservation Center Team

Current Staff:
Caleb Alexander, Media & Communications Manager
Rebecca Bose, Curator
Jeff Dow, Partnership Manager
Regan Downey, Director of Education
Dana Goin, Wildlife Outreach Specialist
Jared Gorman, Education Assistant
Joseph W. Hinton, PhD, Senior Research Scientist
Alice O'Rourke, Executive Director, interim
Chris Lovell, IT Operations Specialist
Sunny Murphy, Research Associate
Deputy Director
Hannah Power, Program Educator
Sean Seary, Program Educator and Volunteer Coordinator
Alex Spitzer, Facilities Manager
Spencer Wilhelm, Director of Operations

Board of Directors
Errol Antzis
Jeffrey Blockinger
Cristina Civetta
Bill Cordiano
Susie Freund
Helene Grimaud, Founder
Martha Handler, President
Maryanne Hartley
Scott Kantro
Tracy Kraft
Tripp Killin
Claudia Neary
Shari Wolf Ruckh
Rob Shultz
Dean Travalino
Patrick Valentino

Advisory Board
Diane Bentivegna
Erica Cornwall
Nina Fascione
Cathy Kangas
Randolf Perry

Scientific Advisory Board
Charlie Duffy, VMD (Veterinary Medical Doctor)
Cristina Eisenberg, Ph.D., Earthwatch Lead Scientist, Author
Dr. Don Moore, Smithsonian Zoo/ Polar Bear international
Rolf Peterson, Wolf Biologist

*****Individuals and their titles and/or the number of WCC team members listed above are subject to change without notice.

Hours of Operation: The WCC is staffed seven days per week. General office operating hours are 9:00am-5:00pm, although staff and guests may be on-site during extended evening/overnight/early morning hours while participating in one of the WCC's scheduled public events.

GUIDELINES AND RULES

The Wolf Conservation Center (WCC) is a smoke-free facility (this includes no juuls, e-cigarettes, vaping, drugs, or tobacco products of any kind).

- Visitors aged 16 and under must be accompanied by a chaperone. Sleeping with Wolves registrants under age 18 must be accompanied by a chaperone.
- Touching or feeding the wolves is prohibited.
- Deposit trash in designated receptacles.
- Shirts and shoes are required at all times.
- We reserve the right to escort from WCC grounds any individuals or groups who are acting in ways deemed harmful to our animals, or that impinge upon the enjoyment of the facility by other guests.
- Weapons of any kind are not allowed at the WCC.
- Alcohol is not permitted, unless provided by the WCC during specified adult programming.

We don't allow visitors to have physical contact with our wolves, as they are wild animals and here to assist with education programs. A majority of our wolves are critically endangered red wolves and Mexican gray wolves, and they reside at our center as part of federal recovery programs. As such, it is critical we safeguard their wild, elusive behavior and natural wariness of humans. Visitors are able to see our ambassador wolves quite closely and clearly through a fence and photos/videos are allowed.

Weather Policy & Guests: The WCC programming usually runs rain or shine, but the WCC staff monitors weather conditions closely, and if potentially severe storms are predicted, the staff will contact registered visitors to inform of cancellations and to reschedule. If conditions become severe or if lightning occurs during a visit, then visitors will be directed to the safety of the WCC classroom. In the event of a tornado warning all visitors will be led to the lower level of the WCC administration.

Behind the Public Scene of the WCC

Current On-Site Structures & Use:

1 Buck Run – Ranch style residential building. Used by the WCC as staff/intern/special guest sleeping quarters.

3 Buck Run – Cape style residential building to be demolished. Site to become Education Pavilion.

4 Buck Run – Ranch style residential building used by the WCC as offices for operations and facilities. There is a small shed in rear that remains.

7 Buck Run – (1) Contemporary residential building that is used by the WCC as its' administrative, education, and animal care headquarters. (2) There is a shed to the south of admin which houses freezers. This building will be removed during renovations. (3) The current classroom site will have a newly constructed building that will become cold storage and animal food prep.

Enclosures – There are two enclosures for WCC's ambassador wolves and eight enclosures for wolves under the SSP program. Each enclosure ranges from 0.75-1.5 acres in size.

Medical: All WCC onsite staff members and all volunteer educators are CPR/first aid certified. The WCC has an AED and emergency first aid kits available if needed. Staff communicates on-site via handheld radios and cellphones.

Storms: When a severe storm is expected a WCC staff member(s) will stay on-site to monitor conditions. Much of the site can also be monitored 24/7 with the existing network camera system. The WCC is served by a stand-by 38KW generator which provides site power to #7 Buck Run and wolf enclosures.

Enclosure Breach: If a wolf enclosure is breached during a storm or by any other cause, then the on-site staff member will assess the situation, stay at the breached area, and contact the WCC emergency response team members. If the breach results in a wolf out of its enclosure, then the previous protocol remains, but includes participation from a wildlife management company to assist if trapping is necessary. If an animal makes a full breach of the WCC property's two fence system, then local authorities will also be contacted. If guests are on property, then they will be escorted to an area away from the breach or asked to leave the facility.

Property Walks: Every day, the areas of the property containing the wolf enclosures are walked and surveyed to look for enclosure breaches, maintenance needs to enclosures, needed tree work, or other.

Property Tree Maintenance: Each year the WCC meets with a certified arborist to conduct a property tree assessment to identify trees that are diseased, dead, have broken limbs, or pose a potential hazard to people or structures. The same tree company also gives priority to the WCC to assist with emergencies involving trees.

Fencing Maintenance: The WCC works with a local fence company for as needed repairs or improvements. The fencing company also prioritizes the WCC to aid in any fencing emergency.

Waste Management: Trash, including cardboard and other recyclables, is collected weekly by a waste management company. Large items are trucked to the Town of Somers transfer station or to a recycling facility.
Animal waste is handled in two ways: (1) The two enclosures housing the WCC ambassador packs are cleaned approximately 2 to 4 times a week. Scat and remnant bones from feedings are removed, bagged, and disposed of in the trash that is picked up weekly. (2) The enclosures for the federally protected endangered species are cleaned only intermittently, consistent with the "hands off" management of these critically endangered wolves. Regular human presence can adversely impact preparation for potential release into the wild. Clean ups are therefore done at opportune times such as during health checks, the weekly feeding, or during enclosure and fence maintenance. This protocol ensures that they are disturbed as minimally as possible. All collected bones and scat are double bagged, and depending on quantity, put into WCC refuse or dumped at the transfer station in Somers.

Buck Run Maintenance: Buck Run is a private road with six adjoining parcels, five of which are now owned by the WCC. The one remaining parcel contains a 2-acre lot of NYCDEP wetlands. Historic deeds suggested that the owner of each parcel is responsible for 1/6 of the cost of road maintenance. However, since its founding in 1999, the WCC has maintained Buck Run at its own effort and expense.

Financials: To view the yearly audited financials, 990's, or annual reports please visit and download from the WCC website @ www.nywolf.org/financials.

VOLUNTEERING AT THE WCC – 16 YEARS AND OLDER – MUST COMPLETE THE ONLINE APPLICATION

Onsite Help

There's always work to be done at the Center. The jobs aren't always glamorous, but they do all come with the benefit of getting to observe the wolves.

- **Ground Maintenance:** We could always use help cleaning, cutting grass, clearing brush, assisting with the various construction tasks and projects that arise.
- **Guides:** We are always looking for dynamic and engaging people to run visits and give educational presentations.
- **Assistant Guides:** Assist with programs, set up and clean up while participating in the educational program as a center representative.
- **Veterinary Care:** We are extremely indebted to the vets that already help us out, but we always have the need to add more to our roster.

Offsite Help

We know that many people want to help out the wolves but cannot make it to the WCC very often or at all. Here are a few examples of things people can do for us from the comfort of their own homes:

- **Grant writing**
- **Creating crafts to be sold onsite**
- **Publicity**

Fundraising

We are sustained by donations from individuals, so another huge way people of all ages can help us is by conducting their own fund-raising events for the Wolf Conservation Center. It doesn't have to be difficult or even involve too much preparation or planning – we want you to enjoy whatever you do with us or on our behalf!

INTERN AT THE WOLF CONSERVATION CENTER

The Wolf Conservation Center is pleased to offer the opportunity for high school and college interns to gain experience in wildlife conservation and education.

HIGH SCHOOL INTERNSHIP

High school interns will learn about animal husbandry and enrichment; environmental education; enclosure and grounds maintenance; and non-profit fundraising by participating in daily activities alongside WCC staff. Daily activities that interns will assist with include food preparation, helping with on-site education programs, and enclosure construction.

The high school internship runs throughout the spring season and is unpaid. **The application deadline for this internship is March 1st.**

QUALIFICATIONS:

- Must be at least 16 years of age (driver's license is encouraged).
- Must enjoy working outdoors.
- Must be in good physical condition and able to lift 50 pounds.
- Preference is given to students pursuing a career in a related field.

COLLEGE INTERNSHIP

The WCC offers year-round environmental education and conservation internship opportunities for college students, those who have recently graduated, or others looking to explore a new career path. The internships are designed to expose interns to the field of conservation education and wildlife biology. Interns conduct a variety of educational programs and assist with the daily operations of the WCC, which may vary depending on the internship season.

Throughout the course of the internship, interns will primarily deal with the general public but will also have opportunities to interact with camps, scouts, and school groups. Interns will contribute to the success of the WCC through development of special projects, support work, and general maintenance.
The WCC does not offer housing for interns. All interns are responsible for securing their own transportation to and from the WCC.

The internship seasons and descriptions are as follows:
Winter/Spring (February-May): This season at the Wolf Conservation Center is very busy with programming, winter weather preparations and spring clean-ups. As an intern during this season, you are able to observe the wolves in their full winter coats as they illustrate how animals are able to adapt to their ever-changing landscape. This internship is very flexible to accommodate school, work, and possible weather schedules.
The application deadline for this internship is December 1.

Summer (June – August): This internship will focus on environmental education, as interns will take part in our summer camp as counselors and educators. There will also be opportunities to assist with general operations such as enclosure upkeep, grounds work, overnight and weekend programming, as well as potential fundraising opportunities. This internship period is very structured and full-time availability is required. Due to the demand of this full-time internship, there is a stipend for this season. **The application deadline for this internship is March 8th.**

Fall (September– December): As the summer subsides the need for interns does not. Our fall season consists of school programming and winter preparation projects. Interns are able to have a flexible schedule to work around school, life, and other obligations. **The application deadline for this internship is July 1st.**

Planned Campus Renovation – Overview
Special Use Permit & Compliance

The following information is to provide reference on the efforts of the Wolf Conservation Center to be compliant with the Local Law, Private Nature Preserve Law, §220-43.2. Presented first are brief answers to section A: Site Standards and Section B: Traffic Controls. More descriptive explanations follow as well as summaries of the planned site improvements, trailed by copies of the required approvals and permits applicable to Part C of the local law. Next, listed are the public opportunities provided by the WCC offering passive, yet organized recreational experiences consistent with the special permit's pursuits.

Site Standards

1. Minimum lot size needed (10) acres: The WCC provides 33+ acres.
2. Access to a state highway or major street: The WCC's private entrance is located off of State Route 35 providing easy access for all vehicular traffic.
3. Permitted accessory uses: The current and planned accessory uses are supportive buildings for administration, storage, animal enclosures, freezers, public education and event space, and staff housing as needed.

4. Fencing is comprised of 11 gauge, 8' galvanized chain link for the secondary perimeter fencing. The primary enclosure fencing is composed of 9 gauge, 11' galvanized or brown vinyl coated chain link. Fencing specifications are consistent with USDA requirements.
5. Wetland delineation: Wetlands have been delineated.
   a. Animal waste is handled in one of two ways.
      i. The two enclosures housing the WCC ambassador packs are cleaned approximately 2 to 4 times a week. Scat and remnant bones from feedings are removed, bagged, and disposed of in the trash that is picked up weekly.
      ii. The enclosures for the federally protected endangered species are cleaned intermittently, consistent with the "hands off" management of these critically endangered wolves. Regular human presence can adversely impact preparation for potential release into the wild. Clean ups are therefore done at opportune times such as during health checks, the weekly feeding, or during enclosure and fence maintenance. This protocol ensures that they are disturbed as minimally as possible. When in large quantities, collected bones and scat are double bagged, disposed of at the transfer station in Somers.

   B. Wolf Menu and frequency

      i. The animals at the WCC eat better than most human carnivores. The wolf menu is made up of organic meat consisting of local wild game (deer, beaver, turkey, fish) primarily from road kill, seasonal hunts & state beaver trapping, NYS poaching confiscations. Domesticated food, typically poultry and seafood, is donated from various grocery stores such as Whole Foods and Mom's Organic Market.

      ii. Wolves are gorging creatures meaning they eat large meals when possible and are forced to fast when food is not plentiful.

         1. The majority of each wolf group, are fed typically one large meal once per week. Consuming their fill and returning over time until fully consumed. Wolves will eat a deer from the head to the hoof. Local scavengers, such as ravens and vultures, help to fully eliminate the given food source.

Traffic Controls

1. Staff Traffic Control: All guests must pre-register to visit the WCC which controls attendance and the number of vehicles. Because events are prescheduled and staggered throughout the day, guest traffic commonly all arrive/depart within a 30-minute window of the event. Staff and/or volunteers currently check in guests as they park.
2. Bus and Van Transport: The WCC intends to provide a large vehicle traffic loop to help accommodate all sized buses, vans, & delivery vehicles.
3. ON street parking: The WCC doesn't encourage on-street parking; adequate parking will be provided in the parking area to be constructed.
4. OFF street parking: Guest parking for 26- vehicles (including two (2) handicap accessible spaces) and/or two busses is to be provided. Staff parking is provided at each accessory building. From time to time, the Center may conduct planned larger events for which the WCC cannot accommodate the number of expected

vehicles. In that instance, one option will be for the WCC to rent the Lewisboro Town Park parking lot, hire a charter bus service, and shuttle guests to the WCC. Foreseeable large events requiring the town park (or other parking venue) could consist of Galas and fundraisers, Halloween or Holiday lights evenings, or larger private parties.

New Buildings and Their Planned Use

The WCC campus is comprised of approximately 33+ acres located on the north side of Route 35 with access from WCC's private drive, Buck Run (to be renamed "Atka's Way" in connection with other approvals from the Town of Lewisboro) in South Salem, New York. The site is heavily wooded with steep slopes. Visitors' opportunities and administrative activities are clustered to the southeastern portion of the site with the northern and western parts of the site used for additional wolf enclosures that are not accessible to visitors. There are several buildings on the site today including the original home that functions as an administrative building and veterinary facility, a small cabin for educational gatherings, and storage buildings.

The WCC's campus planned renovation is ambitious. The scope of work includes a variety of new elements: A 4,700 sq. ft. educational pavilion consisting of a classroom, gift shop, extended learning hall/gallery, conference room with kitchenette, full unfinished basement for mechanicals and storage, and an amphitheater. An animal care facility containing freezers, butchering area, sink space, and storage will replace the current classroom cabin. The WCC will install 12 prefabricated camping huts for the popular "Sleeping with Wolves" event. Adjacent to the huts will be a composting toilet(s) comfort station for campers and also support for day visitors. Other renovations include the widening and repaving of Buck Run, construction of a guest parking area for cars and buses, pathways, installation of site lighting, construction of infrastructure improvements including storm water management measures, and underground utilities for the entire site.

Arrival/Parking/Accessibility

The site plan which will be implemented as designed by Bibbo Engineering includes a bus turn around, drop off area and a 26-car visitor parking lot on the lowest portion of the property on the east side of Buck Run. This layout will allow multiple buses to make their way up a portion of the hill, park, and safely leave students and visitors with a paved walkway that leads up to the planned Educational Pavilion. Large delivery vehicles will also benefit from the new turn around access. Two ADA Handicapped parking spaces will be provided adjacent to the Educational Pavilion, and another ADA space closer to the wolf enclosures. The WCC will also provide guests who have limited abilities with a staff driven, ADA handicapped/wheelchair accessible golf cart for transfers around the property.

Green/Low Impact Design

Sustainability is defined as the consumption of natural resources in a manner that ensures that the resource will not be permanently depleted or damaged. The WCC is committed to building facilities that employ 'green low-impact' solutions which will lengthen the useful life of individual buildings and lessen the campus' impact on the surrounding environment for future generations to enjoy. The concept of sustainable architecture is the design, construction and maintenance of buildings and sites in a way that maintains the regional natural resources and the quality of our surrounding environment.

The WCC's "green" approach will: Feature water efficiency through both selection of landscape design/material and low flow plumbing fixtures, utilize energy efficient mechanical and electrical systems, select materials that are produced

regionally, contain high recycled material content, and no VOCs, and utilize natural light and natural ventilation to minimizing fossil fuel energy needs. Site Design is the first step to a sustainable project. The landscape design will take into consideration limiting water consumption on campus by utilizing indigenous landscape materials that will require no or minimal irrigation once established over the first year. All building products will be designed with regional building materials wherever possible, a high level of recyclable building materials and no volatile organic compounds (VOC's).
More specifically, the WCC is committed to use building techniques such as a 38kw photovoltaic (solar panel) system, ground source heat pumps (geothermal), direct on-demand hot water, touchless and low flow sinks and toilets, touchless air hand dryers, long lasting LED light fixtures, a green vegetative roof, a super insulated exterior wall envelope, and extensive use of materials with high recycled content and no VOC (volatile organic compounds). The Education Center has been positioned to face north on the southern sloped hill to limit the sun's impact on thermal gain which minimizes the demand of the mechanical cooling system. Facing north also provides for a use of soft natural daylight throughout the day.

Education Pavilion: The pavilion is the first stop for WCC Guests. The Pavilion consists of five main components:
(1) Gift Shop/Reception – Used as described.
(2) Extended Learning Hall/Gallery – This is a multifunctional space used for displaying exhibits, group gatherings, and more.
(3) Classroom – This is the main space for educational presentations. Intended occupancy is consistent with our current programming at an attendance of 40-43 for general, 1.5-hour events.
(4) Conference Hall – This building is separated from the three spaces listed above. It consists of a dedicated space for web conferencing and board/staff meetings. Other events to use the space would be birthday parties, small corporate retreats, or rented for other private parties. The building also has a small kitchenette that will provide support for events that require light snacks, pizza, ice cream, and drinks or for catering companies to use as staging and to reheat/keep warm prepared food during less frequent events such as a fundraising gala.
(5) Amphitheater – Other than simply retaining the hillside it provides an outdoor learning area, staging area for larger school groups, and large event space.

Trail System: From the education pavilion, switch backing uphill through the forest, will be a new pathway for guests to safely walk to the wolf enclosures. The path will be constructed out of crushed rock "fines" providing a permeable, yet sure footed surface. As needed, precut stone steps will also be placed along the pathway. Steps are to remain as limited as possible. Along the entire pathway, cedar bollards with LED downlights to illuminate the pathway during evening events will be placed at roughly 20' intervals.

Composting Toilet: The WCC will construct a Clivus Multrum, two stall, composting toilet comfort station. The Comfort Station, designed by Centerbrook Architects, will support guests participating in "Sleeping with Wolves" events. Regular guests will also be encouraged to use the facility if they need a restroom while they are in the vicinity of the wolf enclosures. The building consists of two levels. At ground level (approaching from the downhill side) is a walkout basement that will contain the composting equipment, electrical service, water heater, and small water holding tank. Approaching from the north (or uphill), guests will be able to directly walk into one of two identical units. Each stall will have a foam flush toilet, sink, hand dryer, and a supply cabinet with countertop which may able be used as a baby changing table. The M35 system is the largest that is made by Clivus Multrum. The manufacturer suggests that the system be pumped by a septic company every two years if the composted material is not removed to be used as compost. The WCC's intent will be to pump the system every two years and/or if we are experiencing higher guest usage than expected.

Camping Dens: The most popular event offered to guests is the nocturnal overnight adventure, "Sleeping with Wolves." For many seasons, the WCC has provided guests the opportunity to spend the night in a private party tent sleeping up to four people. As part of the proposed improvements, the WCC intends to install twelve (12) prefabricated units (10'x16') manufactured by the Glamping Pods of America in southern Missouri. The pods (DENS) will provide sleeping quarters for up to four, electricity, lights, and heat & AC. The dens are configured into a horseshoe pattern where the rear of each unit faces a wolf enclosure. Construction is simple with the dens being prefabricated off-site. The dens will sit on concrete supports elevated off the ground. An underground electric supply will connect to each unit fed from the Comfort Station's basement electrical supply.

Animal Care/Cold Storage: Constructed in the location of the WCC current 15' x 30' classroom will be a 16'x45' rectangular building which will include a large walk-in freezer, small cooler, and a heated meat thawing room. There will also be a wash station with sinks and hoses to spray down the entire building. The floor offers a number of floor drains with material strainers to filter out any solid waste from making its way to the septic system. There is also an interior parking area for the food delivery vehicle. Although rectangular in footprint, the design of the building has been artistically created by Centerbrook Architects to somewhat mimic the shape of a wolf in a "lying down with head up" position. At the rear of the building is a covered set of stairs that leads to a second floor, unfinished storage area. The stairway also provides cover for the freezer mechanical systems.

Buck Run: To Become ATKA'S WAY. As part of the approvals process with the Town of Lewisboro, the WCC intends to rename the private roadway "Atka's Way" after the fallen ambassador wolf, "Atka." The entire private drive will be repaved with new asphalt and widened to accommodate two-way traffic. Storm water drainage has been engineered to accompany installation of the new roadway.

Guest Parking: The new guest parking lot will be constructed with a gravel substrate. There will be a total of 26 passenger car parking spaces. The parking area will also have a one-way bus loop into the main lot to drop off visitors to the Center. The one-way loop is intended primarily for daytime bus activity but can be utilized for material deliveries and special events as needed, or those that expect a larger audience where guests may be shuttled to the site from an offsite location. The parking and bus loop will have a number of LED downlights on 14' wood poles to help guide guests during evening hours. The parking/road lighting will be controllable through various switches to turn on/off as needed. Evening programming (with the exception of campouts) typically concludes around 9pm during the summer months; the WCC will do its best to limit the use of these fixtures. The parking lot lights will also be fitted with light shields to keep light from extending into neighboring property.

Site Electrical: The WCC has determined that it is necessary to install the current and future electrical supply from Route 35 underground vs above using telephone poles. Today's environmental climate, damaging storms, fire safety, and public safety were all factors in this decision.

Current Structures/Features: All other existing structures will retain their use as described on page #4.

Wolf Conservation Center Public Events

Year	Number of Onsite Programs	Number of Guests
2018	542	15,749
2019	567	16,401
2020	129	2,766
2021	258	4,074
2022	515	14,192

Onsite Programs:
Visit the Wolf Conservation Center (WCC) for a unique and educational experience! All of our education programs offer guests of all ages opportunities to not only learn about wolves but to see wolves too! Program lengths vary, but most generally run approximately 1.5 hours. All public visits are guided by a staff member and/or an approved volunteer. In addition to general public visits, the WCC hosts school children, special guest lectures, overnight adventures, birthday parties, summer camps, and private group visits.

The WCC's two 'ambassador wolves' reside on exhibit where they help teach the public about the importance and plight of wolves. To best prepare the critically endangered wolves who are candidates for wild-release, the center's approximately 20 Mexican gray wolves and 10 red wolves reside off exhibit within the WCC's Endangered Species Facility.

All visitors are required to pre-register for a program via the WCC website at **www.nywolf.org** - simply click on the event of your choice on the **Program Calendar** for additional information and registration! Space is limited for all events. The WCC reserves the right to cancel and refund any program due to a lack of registrants. The WCC discourages walk in visitors.

Visit limitations: The WCC must self-regulate its visit schedule closely. Other events do need to occur on a daily to weekly schedule that do not include the public. The WCC attempts to perform any activity that can be described as "a distraction to a guest visit experience," to be completed when the facility is closed to the public. Such events could include the feeding of the wolves or performing any property maintenance task. Most importantly, wolves need time to be wolves while not in the presence of people.

Looking beyond 2023, the WCC intends to provide the public with visit opportunities in the same manner as before. All visits will continue to require preregistration to a scheduled public event or to arrange a variety of private group experiences. The new and improved campus will provide more opportunities to increase visits to the Center. It is expected that the largest likely increase will come from weekday school groups due to the improved bus access and other facilities, as well as the WCC's increased exposure within the global community. The weekdays, however, are not just for public school groups. We also welcome senior citizens and people with disabilities, universities, West Point cadets, home schooled students, corporate retreats, service groups, "Sleeping with Wolves" participants, and more.

Historically, weekend visit opportunities have been extremely well attended by families, couples & individuals. Typically, during peak spring – fall seasons, each weekend provides six to eight public or private events scheduled throughout morning into the overnight. While there is not much room for additional weekend events during this time of the year to be scheduled, we expect that events will continue to meet maximum registration capacity.

Winter season is a great time to visit too. During winter, the typical weekend will provide four to six visit opportunities due to the shortened days and colder weather. School visits are less frequent than in spring and fall, but we welcome their registration. With the addition of the camping pods, winter time "Sleeping with Wolves" events will now be offered during colder months. The frequency of winter time SWW events is yet to be determined.

WCC Sample of Events Offered: Unless otherwise noted, each event can be held any day of the week.
Wolves of North America - Learn about the mythology, biology and ecology of wolf families and discover why it's a special time for packs in North America. Whether the wolves are living on the Arctic tundra or the woodlands of the southwest, wolf families are out searching for prey as their pups grow bigger and bolder! Guests will visit Ambassador Wolves Silas & Nikai, and possibly the WCC's endangered red wolves and Mexican gray wolves as well.
1.5-hour event. Target audience size: 40 people

Pack Chat for Kids - This is the best introduction to wolves for families with young children. Kids will learn about the mythology surrounding wolves and the important role of wolves in the natural world. This is an exciting time for wolves; they are out searching for prey as their pups grow bigger and bolder! Guests will visit Ambassador Wolves Nikai, and Silas, and possibly the WCC's endangered red wolves and Mexican gray wolves as well. 1.5-hour event. Target audience size: 40 people

Sleeping with Wolves – This popular nocturnal adventure experience gives guests a chance to camp out overnight with the 40+ wolves that call the WCC home! With all the howls, circling vultures, and nature's nighttime chatter, you'll feel like you're camping under the stars with wild wolves. Fun highlights include an education program, dinner, outdoor movie, campfires, and continental breakfast in the morning. 5pm-8:30am Maximum audience size: 48 people

Summer Wolf Camp for Kids - Give the young animal lover in your family a chance to thrive among wolves all week long! The five-day program will include opportunities for your child to learn about nature and wildlife through woodland exploration, scavenger hunts, wilderness games, live animals, etc. Children will learn about various habitats, animal communication and behavior, food chains, and local wildlife.
8:30am-3pm Monday-Friday Target audience size: 36 children

Coffee with Wolves - Enjoy your morning coffee with our wolves! Visitors are encouraged to bring their newspapers and spend a relaxing morning with our Ambassador and red wolves. We'll provide the coffee… and the wolves! The wolves can be very active in the early morning, so we ask that visitors remain quiet and subdued, as this is a peaceful, private moment for all involved.
1-hour event. Target audience size: 12 people

Full Moon Wolf Walk - While enjoying nature's chatter by the WCC's outdoor fire pit, guests will enjoy seasonal treats and the symphony of howls from the wolves that call the WCC home. Guests will learn about the history of wolves in the United States, the importance of wolves in a healthy ecosystem, and the efforts to save these magnificent creatures for future generations. Guests will also take a short moonlit walk to visit Ambassador Wolves Silas and Nikai! Please bring flashlights.
1.5-hour event. Target audience size: 35.

Photo Session - Join us for this special opportunity to photograph the WCC's Ambassador Wolves: Nikai and Silas! Guests will also be given access to photograph the WCC's endangered Mexican wolves and red wolves from vantage points not generally available during regular visits.
2-hour event. Target audience size: 12 people

Evening Howl for Adults Only - Join us for a special Evening Howl and enjoy visiting the wolves during their favorite hour - dusk. Learn about the mythology, biology and ecology of wolves in North America while enjoying a lovely spread of wine and cheese. Guests will take a short sunset hike to howl with Ambassador wolves Nikai and Silas and potentially behold the WCC's critically endangered red wolves and Mexican wolves too. This program is for adults 21 years old and over.
1.5-hour event. Target audience size: 40 people

Evening Howl for Pups of All Ages - Enjoy visiting the wolves during their favorite hour - dusk. Learn about the mythology, biology and ecology of wolf families and discover why May is a magical time for packs in North America. Guests will take a short sunset hike to howl with Ambassador wolves Nikai and Silas and potentially behold the WCC's endangered red wolves and Mexican wolves. All guests will be served weather appropriate treats.
1.5-hour event. Target audience size: 40 people

Coyotes: Behavior, Ecology, and Coexistence - Join the Wolf Conservation Center (WCC) for a special program about our local cousin to the wolf – the Eastern Coyote. Learn more about their biology and behavior and ways to reduce or prevent problems from occurring between people, pets and coyotes. After the talk, guests will visit Ambassador wolves Nikai and Silas and will potentially behold the WCC's critically endangered red wolves.
1.5-hour event. Target audience size: 40 people

Wildlife Explorers: After School Program - Take a walk on the wild side and join us at the Wolf Conservation Center (WCC) as we explore the natural world and give the young animal lover in your family a chance to thrive among wolves and other woodland critters! The WCC's educational and interactive afterschool program encourages your child to embrace Nature's wild treasures and helps foster an understanding of the importance of healthy and balanced ecosystems. 1-hour event. Target audience size: 12 students

Birthday Parties - After our informative introduction to wolves, we begin a wolf-related activity. Currently we offer the group an opportunity to give gifts to the ambassador wolves! Prior to visiting the wolves, the kids will assemble "enrichment boxes." We will supply all kinds of goodies (spices, old toys, feathers, fur etc.) for the kids to choose from and they can create custom made gifts for the wolves to enjoy! Once the boxes are completed, the birthday group will help throw the gifts into the wolves' enclosures. The group then returns to the classroom area for food, etc.
2-hour event. Target audience size: 15 children

Private Group Visit - These programs are one (1) hour in length, but they provide visitors with the opportunity to see the WCC's two ambassador wolves while learning about the history, biology, and ecology of wolves in North America. An emphasis is placed on recovery efforts for endangered red wolves and Mexican gray wolves; visitors even have the chance to potentially see some of these elusive wolves that reside at the WCC.
1-hour event. Typical Target audience size: up to 15 people

School Field Trips - Learn about North America's wildest residents - wolves - during an education session with a WCC wolf expert. Students will be exposed to the history, ecology, and biology of wolves, and will learn about the current challenges

facing wolf recovery across the United States. An emphasis will be placed on endangered species recovery programs for critically endangered red wolves and Mexican gray wolves. This program is suitable for students in elementary, middle, and high school and college, and can be tailored to meet specific course requirements.
1.5 hours.   Target audience size: 45 students in one session/90 students in two sessions.

Offsite Programs
The Wolf Conservation Center's offsite education programs are intended to supplement classroom-based lesson plans or serve as a stand-alone presentation, and offer an in-depth look at wolves and their ecological importance. Each program is 45 minutes in length (but can be adjusted if needed) and includes supplemental materials for students to complete both before and after the program (if desired), as a way to further their learning.   The WCC offers four offsite education modules: Wolves of North America, Saving a Species, Animal Adaptations, Coyote Behavior, Ecology, and Coexistence.
Program length varies.   Target audience size: No limit

Virtual Webinars - Choose from a variety of program topics, ranging from animal adaptations to critically endangered wolf recovery efforts, and enjoy a 45-minute immersion into the wild world of wolves! Each program is intended to supplement classroom-based lesson plans and offer an in-depth look at wolves and their ecological importance. Programs are suitable for elementary – college aged students and align with various Next Generation Science Standards (NGSS).
Program length varies.   Target audience size: 500 people

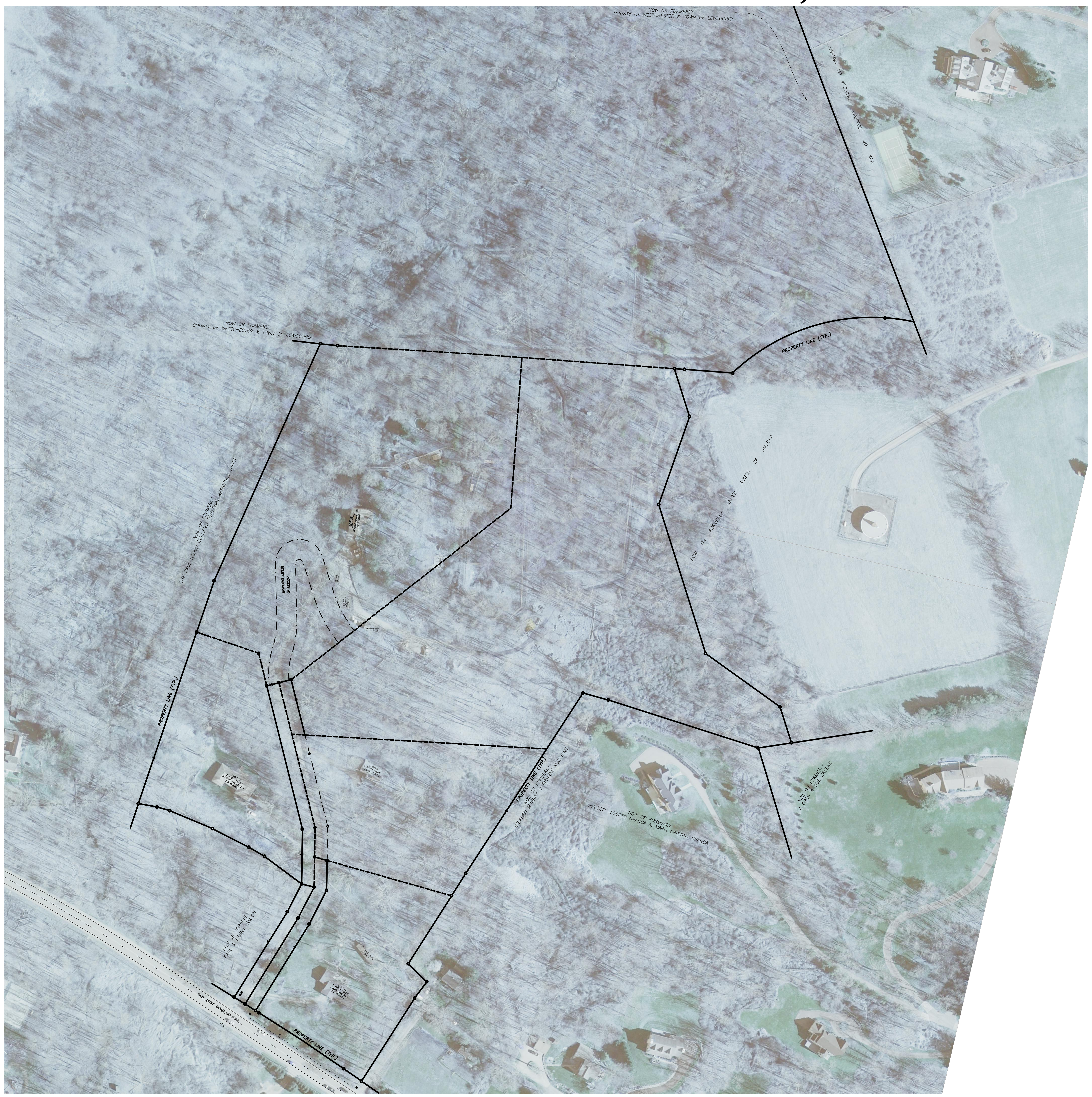
Virtual Field Trips - Our virtual field trips allow viewers to learn about the history and biology of wolves in North America and see the WCC's ambassador wolves. There's even a chance to potentially see endangered red wolves and Mexican gray wolves!
Program length varies.   Target audience size: 500 people

Virtual Birthday Parties - These parties are approximately 45 minutes in length and attendees will see the WCC's ambassador wolves in live time; there's also the possibility of seeing two red wolves and two Mexican gray wolves! A WCC educator will also be on screen teaching the attendees about the wolves, guiding the children through creating presents for the wolves, and answering any questions they ask.
Program length varies.   Target audience size: 100 people

Virtual Corporate Retreats - Learn about the importance of teamwork and adapting to constantly-changing environments using wolves as examples! Attendees will enjoy a live session featuring the WCC's ambassador wolves and a WCC educator; a potential sighting of some of the WCC's endangered red wolves and Mexican gray wolves is also possible.
Program length varies.   Target audience size: 100 people

WOLF CONSERVATION CENTER

BUCK RUN, SOUTH SALEM, NY
WESTCHESTER COUNTY, NY



PLAN

GRAPHIC SCALE

100 0 50 100 200 400

(IN FEET)
1 inch = 100 ft.

UNAUTHORIZED ALTERATIONS AND ADDITIONS TO THIS DRAWING IS A VIOLATION OF SECTION 7209 (2) OF THE NEW YORK STATE EDUCATION LAW.

PROJECT TEAM:

OWNER/APPLICANT
WOLF CONSERVATION CENTER
7 BUCK RUN
SOUTH SALEM, NY 10590
(914) 763-2373
CONTACT: SPENCER WILHELM

CIVIL ENGINEERING
BIBBO ASSOCIATES, LLP
293 ROUTE 100, SUITE 203
SOMERS, NY 10589
(914) 277-5805
CONTACT: MATTHEW J. GIRONDA, P.E.

ENVIRONMENTAL/WETLAND
EVANS ASSOCIATES ENVIRONMENTAL CONSULTING, INC.
205 AMITY ROAD
BETHANY, CT 06524
(203) 393-0690
CONTACT: BETH EVANS, PWS

SURVEYOR
INSITE ENGINEERING, SURVEYING, & LANDSCAPE ARCHITECTURE, P.C
3 GARRETT PLACE
CARMEL, NY 10512
(845) 225-9690
CONTACT: JEFFREY DEROSA, LS

ARCHITECT
(FOR EDUCATION PAVILION)
KG+D ARCHITECTS
285 MAIN STREET
MT. KISCO, NY 10549
(914) 666-5900
CONTACT: ERIK KAEYER, AIA

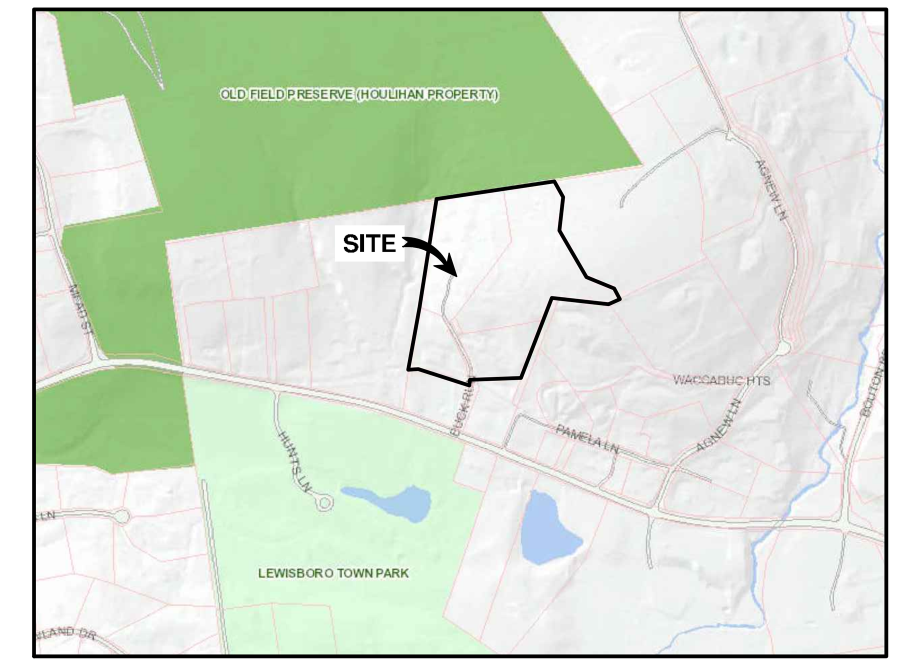
(FOR COMPOST RESTROOM & FREEZER FACILITIES)
CENTERBROOK
ARCHITECTS AND PLANNERS, LLP.
67 MAIN STREET
CENTERBROOK, CT 06409
(860) 767-0175

CALL BEFORE YOU DIG 1-800-962-7962

UNDER THE NY STATE LAW PROTECTING UNDERGROUND FACILITIES, THE FOLLOWING RULES AND REGULATIONS ARE IN EFFECT FOR ALL EXCAVATORS:

* THEY MUST CALL FOR A UTILITY STAKE-OUT (2) TWO FULL WORKING DAYS PRIOR TO AN EXCAVATION.
* THEY MUST CONFIRM PRECISE LOCATIONS OF UNDERGROUND FACILITIES.
* THEY MUST PRESERVE STAKES AND MARKINGS UNTIL NO LONGER NEEDED AT SITE.
* THEY MUST CONTACT NON-UFPO MEMBER UTILITY OWNERS FOR STAKE-OUTS.

COVER SHEET, 11/22/2023 12:05:59 PM



LOCATION MAP
1" = 2000'

PLAN SET (LIST OF DRAWINGS)
PLANS PROVIDED BY BIBBO ASSOCIATES, LLP.

DRAWING INDEX:

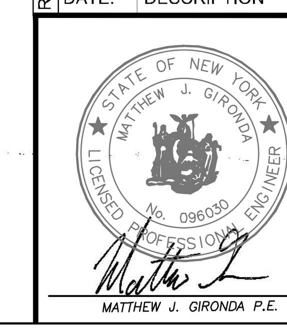
SHT #	DWG I.D.	TITLE
1	CS-1	COVER SHEET
2	PP-1	PRELIMINARY PLOT PLAN
3	EX-1	EXISTING CONDITIONS PLAN
4	EX-2	REMOVALS PLAN
5	LP-1	LAYOUT PLAN - SOUTH
6	LP-2	LAYOUT PLAN - NORTH
7	CP-1	CONSTRUCTION PLAN - SOUTH
8	CP-2	CONSTRUCTION PLAN - NORTH
9	EC-1	EROSION CONTROL PLAN
10	EC-2	EROSION CONTROL NOTES AND DETAIL
11	P-1	ROAD PROFILES
12	P-2	DRAINAGE PROFILES
13	T-1	TURNING MANEUVERS
14	SD-1	SIGHT DISTANCE & PROFILES
15	M-1	MITIGATION PLAN
16	LP-1	LIGHTING PLAN
17	D-1	DETAILS
18	D-2	DETAILS
19	D-3	DETAILS
20	D-4	DETAILS

SITE DATA

1. TOTAL AREA OF PARCELS: 118.907 AC±
2. OWNER AND APPLICANT:
   WOLF CONSERVATION CENTER
   7 BUCK RUN
   SOUTH SALEM, NY 10590
3. ZONING DISTRICT(S): R-4A and R-2A
4. SURVEY BY:
   INSITE ENGINEERING, SURVEYING
   & LANDSCAPE ARCHITECTURE, P.C.
   3 GARRETT PLACE
   CARMEL, NY 10512
5. TAX ID #: SHEET 21
   BLOCK 10803
   LOT 3, 65,67, 81, 82, 83, 84, 86 & 88

REVISIONS:

DATE:	DESCRIPTION	BY/CK	DATE:	DESCRIPTION	BY/CK
11-28-23	PLANNING BOARD SUBMISSION	RH/MG	01-16-23	BUILDING DEPARTMENT COMMENTS	RH/MG
10-20-23	NYCDEP COMPLETENESS COMMENTS	RH/MG	02-07-22	WCHD NYCDEP COMMENTS	ZF/ED
04-25-23	PLANNING BOARD SUBMISSION	RH/MG	06-04-21	NYCDEP APPLICATION	RH/MG
02-07-23	PLANNING BOARD SUBMISSION	RH/MG	04-27-21	PLANNING BOARD SUBMISSION	RH/MG



MATTHEW J. GIRONDA P.E.

COVER SHEET

WOLF CONSERVATION CENTER
7 BUCK RUN, SOUTH SALEM, NY 10590
TOWN OF LEWISBORO, WESTCHESTER COUNTY, NY

BIBBO ASSOCIATES, LLP
293 ROUTE 100 SUITE 203
SOMERS, NEW YORK 10589
TEL. 914 277 5805

DATE:	12-29-2020
SCALE:	1" = 100'
FILE:	L5
DSGN / CHK:	MG/RH
DRN. BY:	RH
SHT NO.	1 OF 20
DWG NO.	CS-1

GENERAL NOTES:

1. EXISTING PROPERTY BOUNDARIES AND SITE FEATURES SHOWN HEREON FOR ARE BASED ON THE FOLLOWING:

   "SURVEY OF PROPERTY", DATED JUNE 12, 2017, PREPARED BY INSITE ENGINEERING, SURVEYING & LANDSCAPE ARCHITECTURE, P.C.

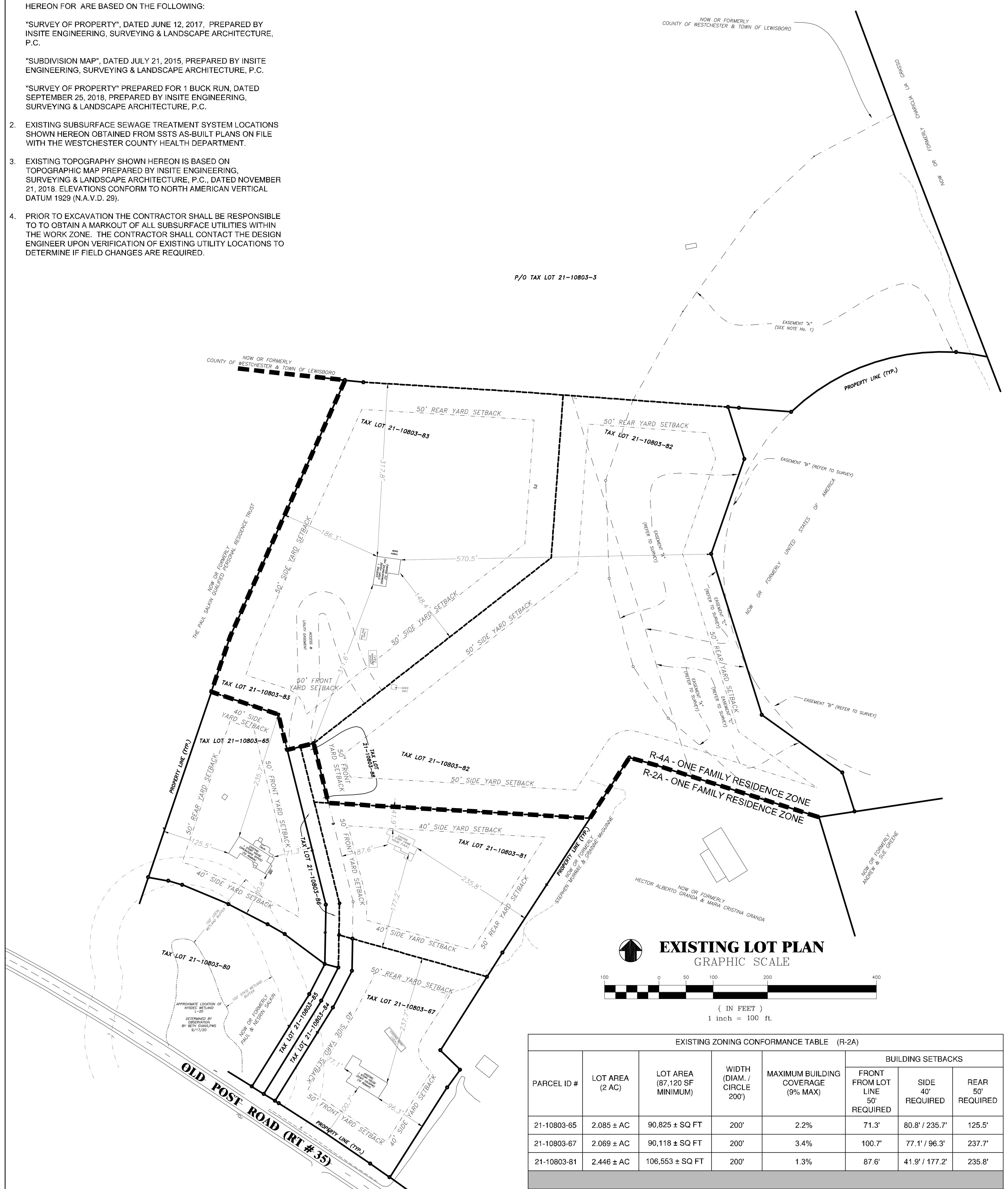
   "SUBDIVISION MAP", DATED JULY 21, 2015, PREPARED BY INSITE ENGINEERING, SURVEYING & LANDSCAPE ARCHITECTURE, P.C.

   "SURVEY OF PROPERTY" PREPARED FOR 1 BUCK RUN, DATED SEPTEMBER 25, 2018, PREPARED BY INSITE ENGINEERING, SURVEYING & LANDSCAPE ARCHITECTURE, P.C.

2. EXISTING SUBSURFACE SEWAGE TREATMENT SYSTEM LOCATIONS SHOWN HEREON OBTAINED FROM SSTS AS-BUILT PLANS ON FILE WITH THE WESTCHESTER COUNTY HEALTH DEPARTMENT.

3. EXISTING TOPOGRAPHY SHOWN HEREON IS BASED ON TOPOGRAPHIC MAP PREPARED BY INSITE ENGINEERING, SURVEYING & LANDSCAPE ARCHITECTURE, P.C., DATED NOVEMBER 21, 2018. ELEVATIONS CONFORM TO NORTH AMERICAN VERTICAL DATUM 1929 (N.A.V.D. 29).

4. PRIOR TO EXCAVATION THE CONTRACTOR SHALL BE RESPONSIBLE TO TO OBTAIN A MARKOUT OF ALL SUBSURFACE UTILITIES WITHIN THE WORK ZONE. THE CONTRACTOR SHALL CONTACT THE DESIGN ENGINEER UPON VERIFICATION OF EXISTING UTILITY LOCATIONS TO DETERMINE IF FIELD CHANGES ARE REQUIRED.



EXISTING LOT PLAN

GRAPHIC SCALE

(IN FEET)
1 inch = 100 ft.

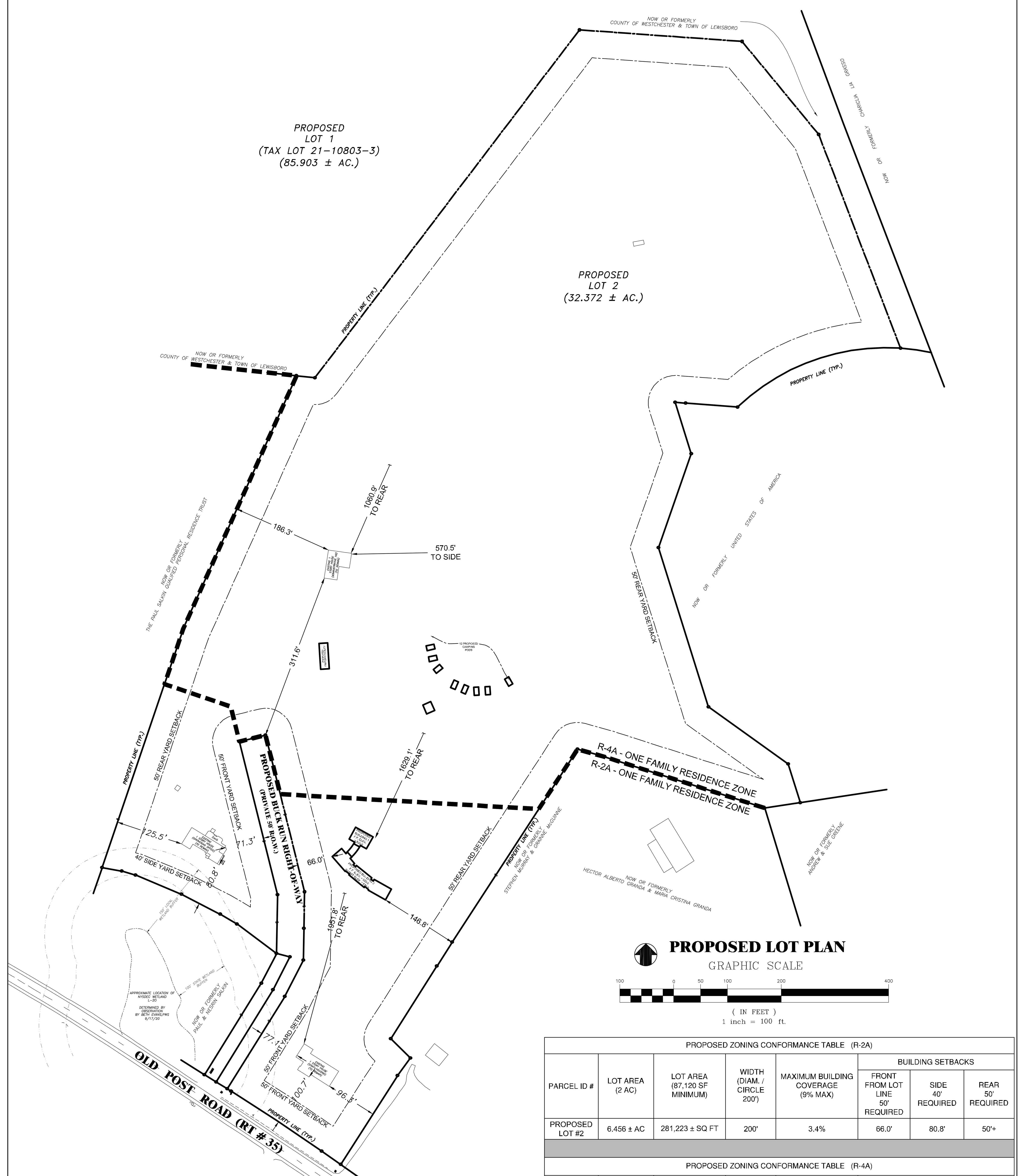
EXISTING ZONING CONFORMANCE TABLE (R-2A)							
PARCEL ID #	LOT AREA (2 AC)	LOT AREA (87,120 SF MINIMUM)	WIDTH (DIAM. / CIRCLE 200')	MAXIMUM BUILDING COVERAGE (9% MAX)	BUILDING SETBACKS: FRONT FROM LOT LINE 50' REQUIRED	SIDE 40' REQUIRED	REAR 50' REQUIRED
21-10803-65	2.085 ± AC	90,825 ± SQ FT	200'	2.2%	71.3'	80.8' / 235.7'	125.5'
21-10803-67	2.069 ± AC	90,118 ± SQ FT	200'	3.4%	100.7'	77.1' / 96.3'	237.7'
21-10803-81	2.446 ± AC	106,553 ± SQ FT	200'	1.3%	87.6'	41.9' / 177.2'	235.8'

EXISTING ZONING CONFORMANCE TABLE (R-4A)							
PARCEL ID #	LOT AREA (4 AC)	LOT AREA (174,240 SF MINIMUM)	WIDTH (DIAM. / CIRCLE 250')	MAXIMUM BUILDING COVERAGE (6% MAX)	BUILDING SETBACKS: FRONT FROM LOT LINE 50' REQUIRED	SIDE 50' REQUIRED	REAR 50' REQUIRED
21-10803-82	8.863 ± AC	386,056 ± SQ FT	250'	0.0%	-----	-----	-----
21-10803-83	6.054 ± AC	263,697 ± SQ FT	250'	1.0%	311.6'	148.4' / 186.3'	317.8'
21-10803-84	0.190 ± AC	8,228 ± SQ FT	-----	-----	-----	-----	-----
21-10803-86	0.234 ± AC	10,180 ± SQ FT	-----	-----	-----	-----	-----
21-10803-88	0.063 ± AC	2,723 ± SQ FT	-----	-----	-----	-----	-----
21-10803-3	96.903 ± AC	4,221,095 ± SQ FT	250'	0.0%	-----	-----	-----

CALL BEFORE YOU DIG 1-800-962-7962

UNDER THE NY STATE LAW PROTECTING UNDERGROUND FACILITIES, THE FOLLOWING RULES AND REGULATIONS ARE IN EFFECT FOR ALL EXCAVATORS:

* THEY MUST CALL FOR A UTILITY STAKE-OUT (2) TWO FULL WORKING DAYS PRIOR TO AN EXCAVATION.
* THEY MUST CONFIRM PRECISE LOCATIONS OF UNDERGROUND FACILITIES.
* THEY MUST PRESERVE STAKES AND MARKINGS UNTIL NO LONGER NEEDED AT SITE.
* THEY MUST CONTACT NON-UFPO MEMBER UTILITY OWNERS FOR STAKE-OUTS.



PROPOSED LOT PLAN

GRAPHIC SCALE

(IN FEET)
1 inch = 100 ft.

PROPOSED ZONING CONFORMANCE TABLE (R-2A)							
PARCEL ID #	LOT AREA (2 AC)	LOT AREA (87,120 SF MINIMUM)	WIDTH (DIAM. / CIRCLE 200')	MAXIMUM BUILDING COVERAGE (9% MAX)	BUILDING SETBACKS: FRONT FROM LOT LINE 50' REQUIRED	SIDE 40' REQUIRED	REAR 50' REQUIRED
PROPOSED LOT #2	6.456 ± AC	281,223 ± SQ FT	200'	3.4%	66.0'	80.8'	50'+

PROPOSED ZONING CONFORMANCE TABLE (R-4A)							
PARCEL ID #	LOT AREA (4 AC)	LOT AREA (174,240 SF MINIMUM)	WIDTH (DIAM. / CIRCLE 250')	MAXIMUM BUILDING COVERAGE (6% MAX)	BUILDING SETBACKS: FRONT FROM LOT LINE 50' REQUIRED	SIDE 50' REQUIRED	REAR 50' REQUIRED
PROPOSED LOT #1 (21-10803-3)	85.903 ± AC	3,741,935 ± SQ FT	250'	0.0%	-----	-----	-----
PROPOSED LOT #2	25.916 ± AC	1,128,901 ± SQ FT	250'	0.4%	311.6'	186.3'	1060.9'
PROPOSED R.O.W.	0.630 ± AC	27,446 ± SQ FT	-----	-----	-----	-----	-----

LEGEND

EXISTING PROPERTY LINE
WETLAND BUFFER LINE
WETLAND BOUNDARY LINE
EXISTING WOLF ENCLOSURE FENCE
EXISTING EASEMENT LINE
EXISTING ZONING BOUNDARY

REVISIONS: DATE:	DESCRIPTION	BY/CK	DATE:	DESCRIPTION	BY/CK
11-28-23	PLANNING BOARD SUBMISSION	RH/MG	01-16-23	BUILDING DEPARTMENT COMMENTS	RH/MG
10-20-23	NYCDEP COMPLETENESS COMMENTS	RH/MG	02-07-22	WCHD NYCDEP COMMENTS	ZF/ED
04-25-23	PLANNING BOARD SUBMISSION	RH/MG	06-04-21	NYCDEP APPLICATION	RH/MG
02-07-23	PLANNING BOARD SUBMISSION	RH/MG	04-27-21	PLANNING BOARD SUBMISSION	RH/MG

STATE OF NEW YORK · MATTHEW J. GIRONDA · No. 096030 · LICENSED PROFESSIONAL ENGINEER

MATTHEW J. GIRONDA P.E.

PRELIMINARY SUBDIVISION PLAN

WOLF CONSERVATION CENTER
7 BUCK RUN, SOUTH SALEM, NY 10590
TOWN OF LEWISBORO, WESTCHESTER COUNTY, NY

BIBBO ASSOCIATES, LLP
293 ROUTE 100 SUITE 203
SOMERS, NEW YORK 10589
TEL. 914 277 5805

DATE:	12-29-2020
SCALE:	1" = 100'
FILE:	L5
DSGN / CHK:	MG/RH
DRN. BY:	RH
SHT NO.	2 OF 20
DWG NO.	PP-1

LEGEND

EXISTING PROPERTY LINE	
WETLAND BUFFER LINE	
WETLAND BOUNDARY LINE	
EXISTING WOLF ENCLOSURE FENCE	
EXISTING EASEMENT LINE	
EXISTING 2' CONTOUR	
EXISTING 10' CONTOUR	420

PLAN

GRAPHIC SCALE

(IN FEET)
1 inch = 60 ft.

UNAUTHORIZED ALTERATIONS AND ADDITIONS TO THIS DRAWING IS A VIOLATION OF SECTION 7209 (2) OF THE NEW YORK STATE EDUCATION LAW.

TREE CHART

TREE #	DIAMETER	SPECIES	STATUS
1	10"	SPRUCE	
2	12"	PINE	
3	14" & 16"	BURCH	
4	12" & 16"	HEMLOCK	
5	8"	TULIP	
6	22"	SPRUCE	
7	12", 14" & 16"	HEMLOCK	
8	10"	ELM	
9	8"	MAPLE	
10	6"	MAPLE	
11	12" & 18"	MAPLE	
12	6"	MAPLE	
13	6"	LOCUST	
14	28"	MAPLE	TBR
15	28"	LOCUST	TBR
16	12"	MAPLE	TBR
17	14"	CHERRY	TBR
18	8"	MAPLE	TBR
19	10"	MAPLE	TBR
20	6"	MAPLE	TBR
21	6" TW, 5" & 3"	MAPLE	TBR
22	10"	MAPLE	TBR
23	36"	MAPLE	TBR
24	38"	MAPLE	TBR
25	14" & 5"	MAPLE	TBR
26	8"	MAPLE	TBR
27	14"	MAPLE	TBR
28	16"	LOCUST	TBR
29	6"	MAPLE	TBR
30	14" & 8"	MAPLE	TBR
31	12"	MAPLE	TBR
32	8"	MAPLE	TBR
33	30"	MAPLE	TBR
34	12"	CHERRY	TBR
35	6"	MAPLE	TBR
36	10"	MAPLE	TBR
37	10"	MAPLE	TBR
38	30"	MAPLE	TBR
39	38"	MAPLE	TBR
40	6"	MAPLE	TBR
41	36"	MAPLE	TBR
42	30"	MAPLE	TBR
43	28"	MAPLE	TBR
44	18"	MAPLE	TBR
45	12"	MAPLE	TBR
46	36"	MAPLE	
47	12"	MAPLE	
48	36"	MAPLE	
49	12"	LOCUST	TBR
50	6"	LOCUST	
51	12"	LOCUST	TBR
52	4"	MAPLE	
53	6"	MAPLE	TBR
54	6" & 10"	MAPLE	TBR
55	6"	MAPLE	TBR
56	16"	MAPLE	TBR
57	12"	MAPLE	TBR
58	12"	MAPLE	TBR
59	12"	MAPLE	TBR
60	24"	MAPLE	TBR
61	10"	MAPLE	TBR
62	24"	MAPLE	TBR
63	26"	MAPLE	TBR
64	16"	MAPLE	
65	12"	MAPLE	TBR
66	10"	MAPLE	TBR
67	14"	MAPLE	TBR
68	6"	MAPLE	TBR
69	18"	MAPLE	TBR
70	14"	MAPLE	TBR
71	16"	MAPLE	TBR
72	6"	MAPLE	TBR
73	16"	MAPLE	TBR
74	12"	MAPLE	TBR
75	14"	MAPLE	
76	22"	MAPLE	TBR
77	12", 24" & 28"	MAPLE	TBR
78	14"	MAPLE	TBR
79	16"	MAPLE	TBR
80	8"	MAPLE	TBR
81	16"	MAPLE	TBR
82	22"	MAPLE	TBR
83	UNIDENTIFIED	UNKNOWN	TBR
84	22"	MAPLE	TBR
85	22"	MAPLE	TBR
86	224"	ASH	TBR
87	18"	MAPLE	TBR
88	8"	ELM	TBR
89	10"	ELM	TBR
90	6"	ELM	TBR
91	18"	ASH	TBR
92	16"	ASH	TBR
93	16"	MAPLE	TBR
94	26"	ASH	TBR
95	16"	MAPLE	TBR
96	26"	ASH	TBR

TREE CHART

TREE #	DIAMETER	SPECIES	STATUS
97	10"	ELM	TBR
98	6"	LOCUST	TBR
99	6"	ELM	TBR
100	24"	MAPLE	TBR
101	26"	MAPLE	TBR
102	6"	LOCUST	TBR
103	14"	MAPLE	TBR
104	6"	ELM	TBR
105	26"	MAPLE	TBR
106	10"	MAPLE	TBR
107	6"	ELM	TBR
108	8"	ELM	TBR
109	6"	MAPLE	
110	6"	MAPLE	
111	18"	MAPLE	
112	28"	MAPLE	
113	14"	MAPLE	TBR
114	10"	ELM	TBR
115	16"	MAPLE	
116	14"	MAPLE	
117	6" & 4"	MAPLE	
118	24"	ASH	
119	22"	OAK	TBR
120	22"	MAPLE	
121	24"	LOCUST	
122	12"	MAPLE	
123	16"	MAPLE	
124	10"	MAPLE	TBR
125	6"	MAPLE	TBR
126	16"	MAPLE	TBR
127	14"	MAPLE	TBR
128	14"	MAPLE	
129	24" & 12"	MAPLE	
130	8"	HICKORY	
131	26"	MAPLE	
132	6"	MAPLE	
133	14"	HICKORY	
134	10" & 10"	HICKORY	
135	20"	OAK	
136	14"	MAPLE	
137	N/A	UNKNOWN	
138	12"	OAK	
139	12"	OAK	
140	6"	MAPLE	
141	14"	ASH	
142	14"	MAPLE	
143	6" & 4"	MAPLE	
144	6"	MAPLE	
145	6"	MAPLE	
146	12"	WALNUT	
147	28"	WALNUT	
148	8"	SPRUCE	
149	24"	MAPLE	
150	24"	HICKORY	
151	6"	MAPLE	
152	16"	ELM	
153	6"	MAPLE	
154	14" & 16"	HICKORY	
155	14" & 16"	HICKORY	
156	34"	OAK	
157	12"	MAPLE	
158	12"	MAPLE	
159	8"	MAPLE	
160	22"	MAPLE	
161	12"	MAPLE	
162	10"	MAPLE	
163	14"	OAK	
164	6"	OAK	
165	14"	OAK	
166	12"	OAK	
167	22"	MAPLE	
168	20"	MAPLE	
169	32"	HICKORY	
170	24"	OAK	
171	26'	OAK	
172	16"	MAPLE	
173	14"	LOCUST	
174	24"	MAPLE	
175	14"	MAPLE	TBR
176	20"	MAPLE	
177	12"	LOCUST	
178	14"	MAPLE	
179	16"	MAPLE	
180	26"	MAPLE	
181	24"	LOCUST	
182	6"	CHERRY	
183	12"	LOCUST	
184	14"	MAPLE	TBR
185	14"	MAPLE	
186	24"	MAPLE	
187	14"	HICKORY	TBR
188	24"	OAK	TBR
189	12"	CHERRY	
190	6"	CHERRY	
191	6"	CHERRY	
192	12"	CHERRY	TBR

TREE CHART

TREE #	DIAMETER	SPECIES	STATUS
193	10"	MAPLE	TBR
194	16"	MAPLE	
195	14"	LOCUST	TBR
196	12"	LOCUST	TBR
197	14"	LOCUST	TBR
198	22"	MAPLE	
199	18"	LOCUST	TBR
200	22"	CHERRY	TBR
201	16"	LOCUST	
202	6"	HICKORY	
203	18"	LOCUST	
204	24"	MAPLE	TBR
205	22"	OAK	
206	10"	LOCUST	
207	26"	OAK	
208	16"	OAK	
209	28"	WALNUT	
210	26"	OAK	
211	20"	CHERRY	
212	26"	OAK	
213	16"	OAK	
214	16"	MAPLE	
215	8"	MAPLE	
216	24"	MAPLE	
217	14"	MAPLE	TBR
218	12"	MAPLE	TBR
219	12"	MAPLE	TBR
220	12"	MAPLE	
221	6"	MAPLE	
222	12"	MAPLE	TBR
223	38"	OAK	TBR
224	14"	MAPLE	TBR
225	18"	MAPLE	TBR
226	14"	MAPLE	TBR
227	14"	MAPLE	TBR
228	28"	OAK	TBR
229	16"	MAPLE	TBR
230	22"	MAPLE	TBR
231	10"	MAPLE	TBR
232	18"	MAPLE	TBR
233	14"	MAPLE	
234	28"	MAPLE	TBR
235	12"	ASH	TBR
236	16"	OAK	
237	16"	OAK	TBR
238	12"	MAPLE	TBR
239	16"	MAPLE	TBR
240	14"	MAPLE	TBR
241	24"	ASH	TBR
242	14"	MAPLE	
243	20"	MAPLE	TBR
244	26"	MAPLE	TBR
245	8"	MAPLE	TBR
246	18"	ASH	TBR
247	12"	MAPLE	TBR
248	16"	MAPLE	TBR
249	28"	MAPLE	TBR
250	10"	DOGWOOD	TBR
251	14"	SPRUCE	
252	24"	MAPLE	
253	6"	MAPLE	
254	4"	SPRUCE	TBR
255	16"	SPRUCE	TBR
256	4"	SPRUCE	TBR
257	16"	MAPLE	TBR
258	12"	SPRUCE	
259	8"	SPRUCE	
260	8"	SPRUCE	
261	10"	SPRUCE	
262	16"	SPRUCE	TBR
263	24"	OAK	
264	N/A	HOLLY	
265	8"	LOCUST	TBR

REVISIONS:

DATE:	DESCRIPTION	BY/CK	DATE:	DESCRIPTION	BY/CK
11-28-23	PLANNING BOARD SUBMISSION	RH/MG	01-16-23	BUILDING DEPARTMENT COMMENTS	RH/MG
10-20-23	NYCDEP COMPLETENESS COMMENTS	RH/MG	02-07-22	WCHD NYCDEP COMMENTS	ZF/ED
04-25-23	PLANNING BOARD SUBMISSION	RH/MG	06-04-21	NYCDEP APPLICATION	RH/MG
02-07-23	PLANNING BOARD SUBMISSION	RH/MG	04-27-21	PLANNING BOARD SUBMISSION	RH/MG

CALL BEFORE YOU DIG 1-800-962-7962

UNDER THE NY STATE LAW PROTECTING UNDERGROUND FACILITIES, THE FOLLOWING RULES AND REGULATIONS ARE IN EFFECT FOR ALL EXCAVATORS:

* THEY MUST CALL FOR A UTILITY STAKE-OUT (2) TWO FULL WORKING DAYS PRIOR TO AN EXCAVATION.
* THEY MUST CONFIRM PRECISE LOCATIONS OF UNDERGROUND FACILITIES.
* THEY MUST PRESERVE STAKES AND MARKINGS UNTIL NO LONGER NEEDED AT SITE.
* THEY MUST CONTACT NON-UFPO MEMBER UTILITY OWNERS FOR STAKE-OUTS.

MATTHEW J. GIRONDA P.E.

EXISTING CONDITIONS PLAN

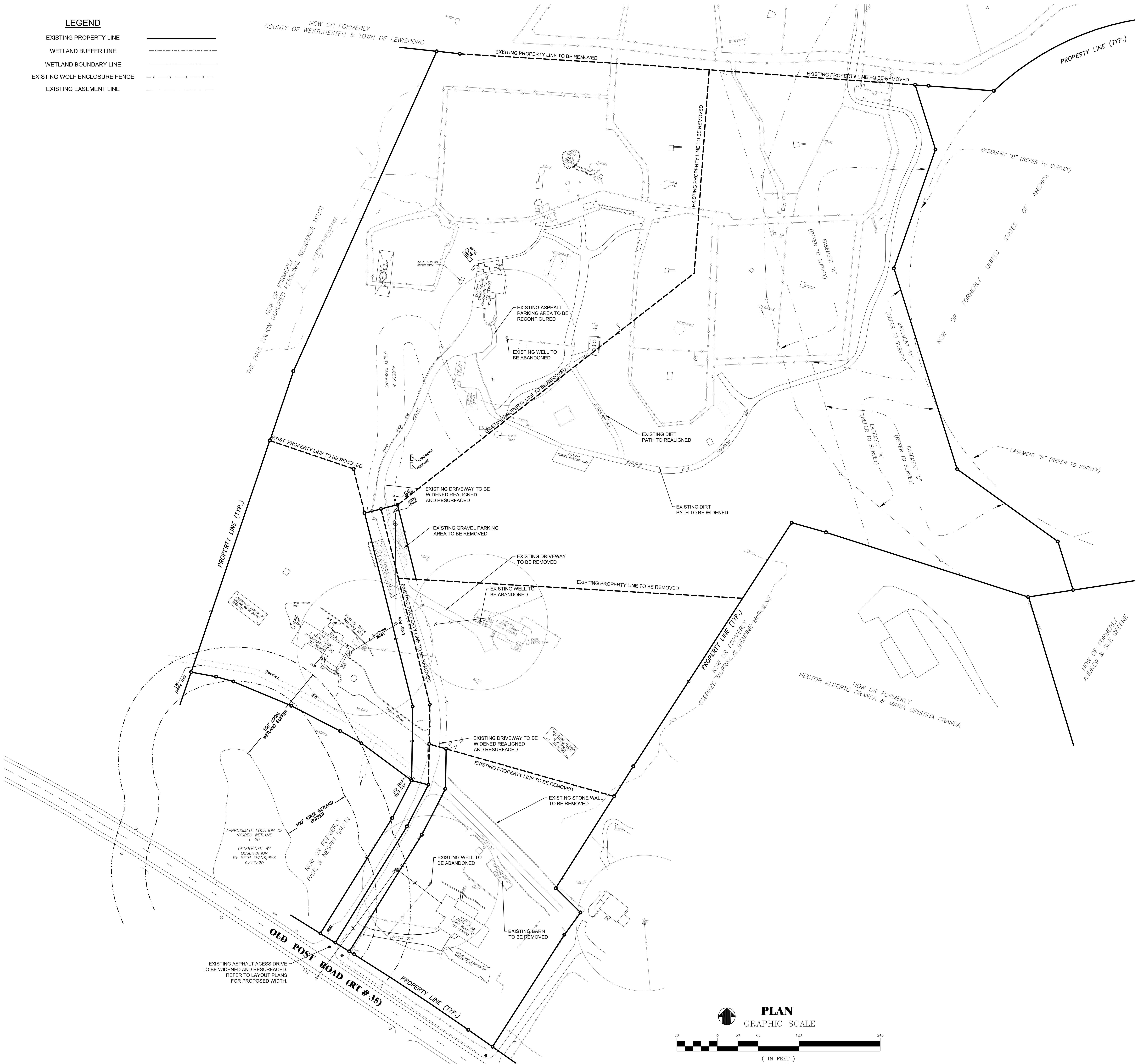
WOLF CONSERVATION CENTER
7 BUCK RUN, SOUTH SALEM, NY 10590
TOWN OF LEWISBORO, WESTCHESTER COUNTY, NY

BIBBO ASSOCIATES, LLP
293 ROUTE 100 SUITE 203
SOMERS, NEW YORK 10589
TEL. 914 277 5805

DATE:	12-29-2020
SCALE:	1" = 60'
FILE:	L5
DSGN / CHK:	MG/RH
DRN. BY:	RH
SHT NO.	3 OF 20
DWG NO.	EX-1

LEGEND

EXISTING PROPERTY LINE	
WETLAND BUFFER LINE	
WETLAND BOUNDARY LINE	
EXISTING WOLF ENCLOSURE FENCE	
EXISTING EASEMENT LINE	



PLAN

GRAPHIC SCALE

60 0 30 60 120 240

(IN FEET)
1 inch = 60 ft.

UNAUTHORIZED ALTERATIONS AND ADDITIONS TO THIS DRAWING IS A VIOLATION OF SECTION 7209 (2) OF THE NEW YORK STATE EDUCATION LAW.

CALL BEFORE YOU DIG 1-800-962-7962

UNDER THE NY STATE LAW PROTECTING UNDERGROUND FACILITIES, THE FOLLOWING RULES AND REGULATIONS ARE IN EFFECT FOR ALL EXCAVATORS:

* THEY MUST CALL FOR A UTILITY STAKE-OUT (2) TWO FULL WORKING DAYS PRIOR TO AN EXCAVATION.
* THEY MUST CONFIRM PRECISE LOCATIONS OF UNDERGROUND FACILITIES.
* THEY MUST PRESERVE STAKES AND MARKINGS UNTIL NO LONGER NEEDED AT SITE.
* THEY MUST CONTACT NON-UFPO MEMBER UTILITY OWNERS FOR STAKE-OUTS.

REMOVALS PLAN, 11/22/2023 12:06:14 PM

REVISIONS:					
11-28-23	PLANNING BOARD SUBMISSION	RH/MG	01-16-23	BUILDING DEPARTMENT COMMENTS	RH/MG
10-20-23	NYCDEP COMPLETENESS COMMENTS	RH/MG	02-07-22	WCHD NYCDEP COMMENTS	ZF/ED
04-25-23	PLANNING BOARD SUBMISSION	RH/MG	06-04-21	NYCDEP APPLICATION	RH/MG
02-07-23	PLANNING BOARD SUBMISSION	RH/MG	04-27-21	PLANNING BOARD SUBMISSION	RH/MG
DATE:	DESCRIPTION	BY/CK	DATE:	DESCRIPTION	BY/CK

STATE OF NEW YORK · MATTHEW J. GIRONDA · LICENSED PROFESSIONAL ENGINEER · No. 096030

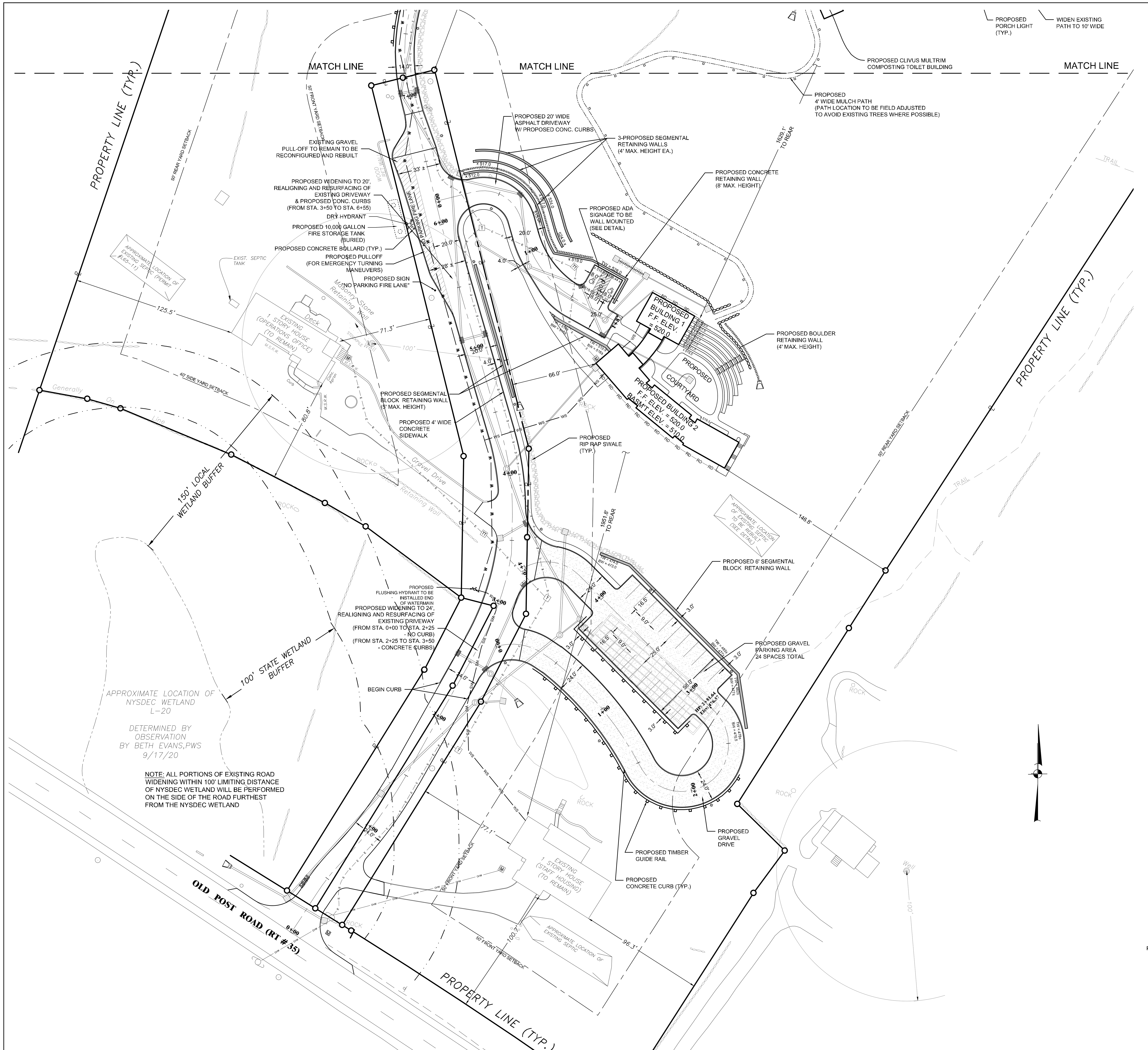
MATTHEW J. GIRONDA P.E.

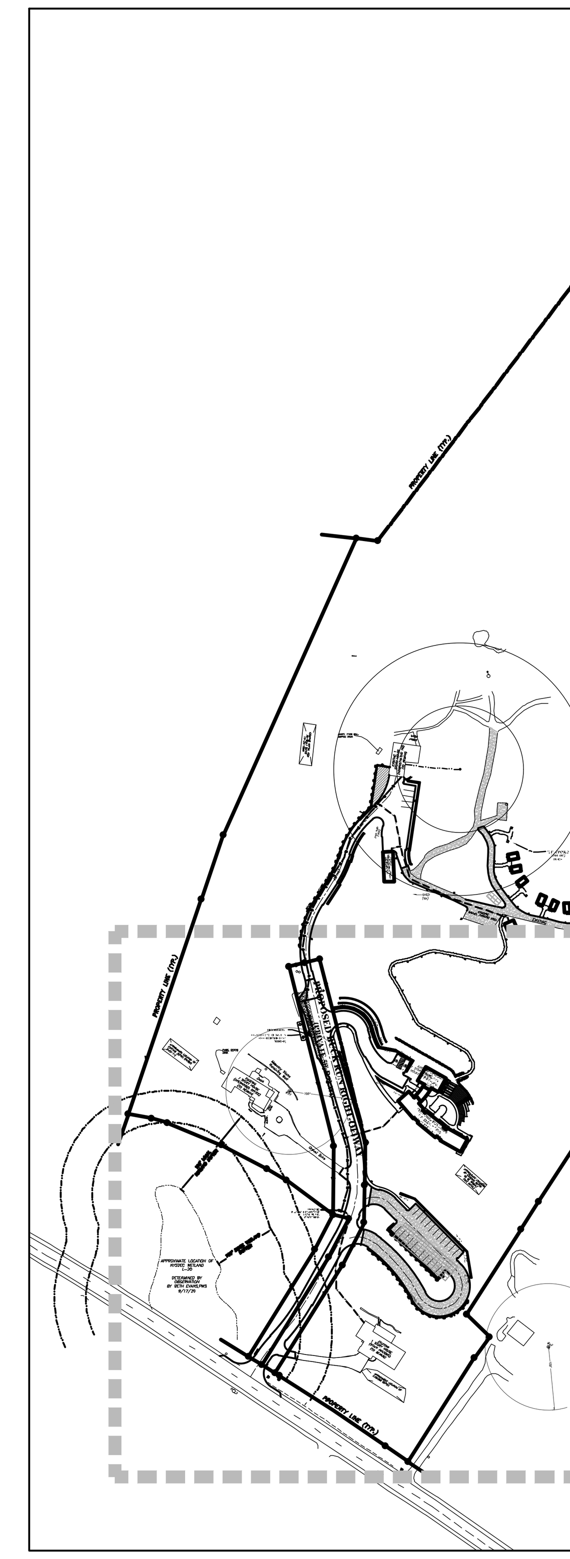
EXISTING CONDITIONS & REMOVALS PLAN

WOLF CONSERVATION CENTER
7 BUCK RUN, SOUTH SALEM, NY 10590
TOWN OF LEWISBORO, WESTCHESTER COUNTY, NY

BIBBO ASSOCIATES, LLP
293 ROUTE 100 SUITE 203
SOMERS, NEW YORK 10589
TEL. 914 277 5805

DATE:	12-29-2020
SCALE:	1" = 60'
FILE:	L5
DSGN / CHK:	MG/RH
DRN. BY:	RH
SHT NO.	4 OF 20
DWG NO.	EX-2





OVERALL PLAN

GRAPHIC SCALE

(IN FEET)
1 inch = 200 ft.

LEGEND

EXISTING PROPERTY LINE	
WETLAND BUFFER LINE	
WETLAND BOUNDARY LINE	
EXISTING WOLF ENCLOSURE FENCE	— X — X — X —
EXISTING EASEMENT LINE	
PROPOSED RETAINING WALL	
PROPOSED ELECTRIC METER	M
PROPOSED TRANSFORMER	T
PROPOSED T-TAP	TT
PROPOSED OVERHEAD ELECTRIC SERVICE	— OHE — OHE —
PROPOSED UNDERGROUND ELECTRIC SERVICE	— E — E — E — E — E —
PROPOSED ROOF LEADER CONNECTION PIPE	— RD — RD — RD — RD — RD —
PROPOSED PVC DR-18 WATERMAIN	— W — W —
PROPOSED CU WATER SERVICE	— WS — WS — WS —

PLAN

GRAPHIC SCALE

(IN FEET)
1 inch = 30 ft.

CALL BEFORE YOU DIG 1-800-962-7962

UNDER THE NY STATE LAW PROTECTING UNDERGROUND FACILITIES, THE FOLLOWING RULES AND REGULATIONS ARE IN EFFECT FOR ALL EXCAVATORS:

* THEY MUST CALL FOR A UTILITY STAKE-OUT (2) TWO FULL WORKING DAYS PRIOR TO AN EXCAVATION.
* THEY MUST CONFIRM PRECISE LOCATIONS OF UNDERGROUND FACILITIES.
* THEY MUST PRESERVE STAKES AND MARKINGS UNTIL NO LONGER NEEDED AT SITE.
* THEY MUST CONTACT NON-UFPO MEMBER UTILITY OWNERS FOR STAKE-OUTS.

REVISIONS:

DATE:	DESCRIPTION	BY/CK	DATE:	DESCRIPTION	BY/CK
11-28-23	PLANNING BOARD SUBMISSION	RH/MG	01-16-23	BUILDING DEPARTMENT COMMENTS	RH/MG
10-20-23	NYCDEP COMPLETENESS COMMENTS	RH/MG	02-07-22	WCHD NYCDEP COMMENTS	ZF/ED
04-25-23	PLANNING BOARD SUBMISSION	RH/MG	06-04-21	NYCDEP APPLICATION	RH/MG
02-07-23	PLANNING BOARD SUBMISSION	RH/MG	04-27-21	PLANNING BOARD SUBMISSION	RH/MG

STATE OF NEW YORK
MATTHEW J. GIRONDA
No. 096030
LICENSED PROFESSIONAL ENGINEER

MATTHEW J. GIRONDA P.E.

LAYOUT PLAN - SOUTH

WOLF CONSERVATION CENTER
7 BUCK RUN, SOUTH SALEM, NY 10590
TOWN OF LEWISBORO , WESTCHESTER COUNTY, NY

BIBBO ASSOCIATES, LLP
293 ROUTE 100 SUITE 203
SOMERS, NEW YORK 10589
TEL. 914 277 5805

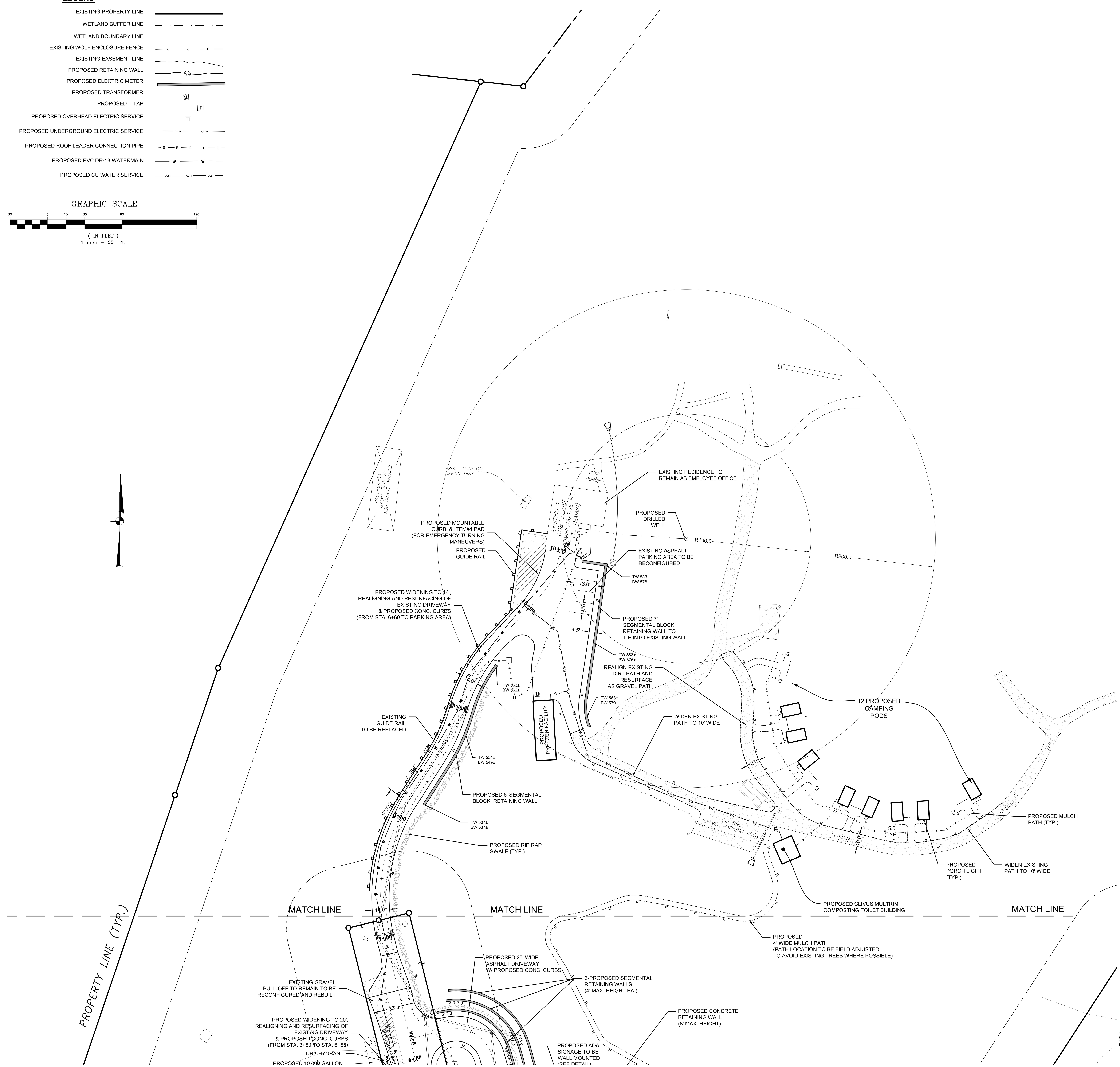
DATE:	12-29-2020
SCALE:	1" = 30'
FILE:	L5
DSGN / CHK:	MG/RH
DRN. BY:	RH
SHT NO.	5 OF 20
DWG NO.	LP-1

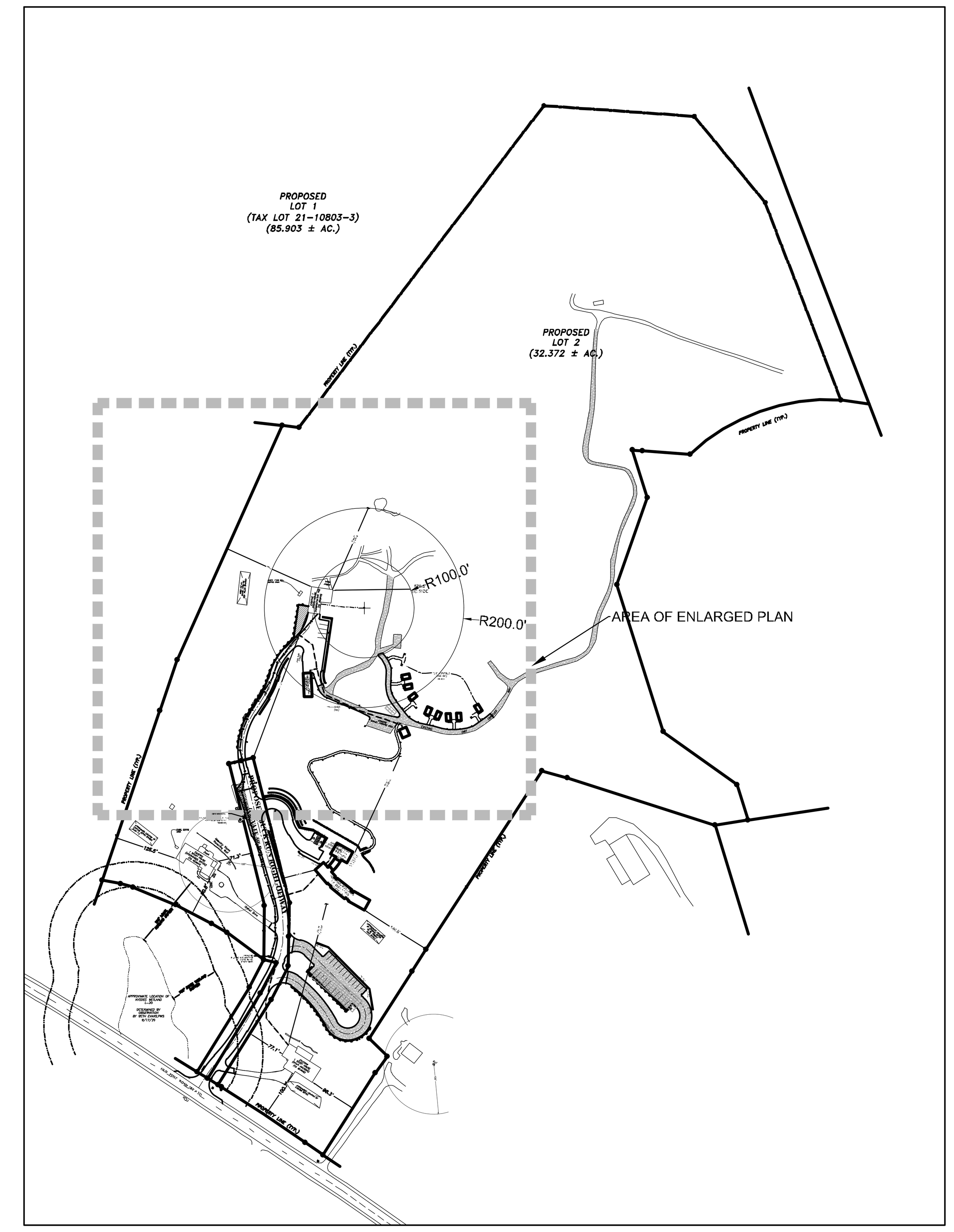
LEGEND

- EXISTING PROPERTY LINE
- WETLAND BUFFER LINE
- WETLAND BOUNDARY LINE
- EXISTING WOLF ENCLOSURE FENCE
- EXISTING EASEMENT LINE
- PROPOSED RETAINING WALL
- PROPOSED ELECTRIC METER
- PROPOSED TRANSFORMER
- PROPOSED T-TAP
- PROPOSED OVERHEAD ELECTRIC SERVICE
- PROPOSED UNDERGROUND ELECTRIC SERVICE
- PROPOSED ROOF LEADER CONNECTION PIPE
- PROPOSED PVC DR-18 WATERMAIN
- PROPOSED CU WATER SERVICE

GRAPHIC SCALE

(IN FEET)
1 inch = 30 ft.





OVERALL PLAN

GRAPHIC SCALE

(IN FEET)
1 inch = 200 ft.

CALL BEFORE YOU DIG 1-800-962-7962

UNDER THE NY STATE LAW PROTECTING UNDERGROUND FACILITIES, THE FOLLOWING RULES AND REGULATIONS ARE IN EFFECT FOR ALL EXCAVATORS:

* THEY MUST CALL FOR A UTILITY STAKE-OUT (2) TWO FULL WORKING DAYS PRIOR TO AN EXCAVATION.
* THEY MUST CONFIRM PRECISE LOCATIONS OF UNDERGROUND FACILITIES.
* THEY MUST PRESERVE STAKES AND MARKINGS UNTIL NO LONGER NEEDED AT SITE.
* THEY MUST CONTACT NON-UFPO MEMBER UTILITY OWNERS FOR STAKE-OUTS.

REVISIONS:

DATE:	DESCRIPTION	BY/CK	DATE:	DESCRIPTION	BY/CK
11-28-23	PLANNING BOARD SUBMISSION	RH/MG	01-16-23	BUILDING DEPARTMENT COMMENTS	RH/MG
10-20-23	NYCDEP COMPLETENESS COMMENTS	RH/MG	02-07-22	WCHD NYCDEP COMMENTS	ZF/ED
04-25-23	PLANNING BOARD SUBMISSION	RH/MG	06-04-21	NYCDEP APPLICATION	RH/MG
02-07-23	PLANNING BOARD SUBMISSION	RH/MG	04-27-21	PLANNING BOARD SUBMISSION	RH/MG

STATE OF NEW YORK · MATTHEW J. GIRONDA · No. 096030 · LICENSED PROFESSIONAL ENGINEER

MATTHEW J. GIRONDA P.E.

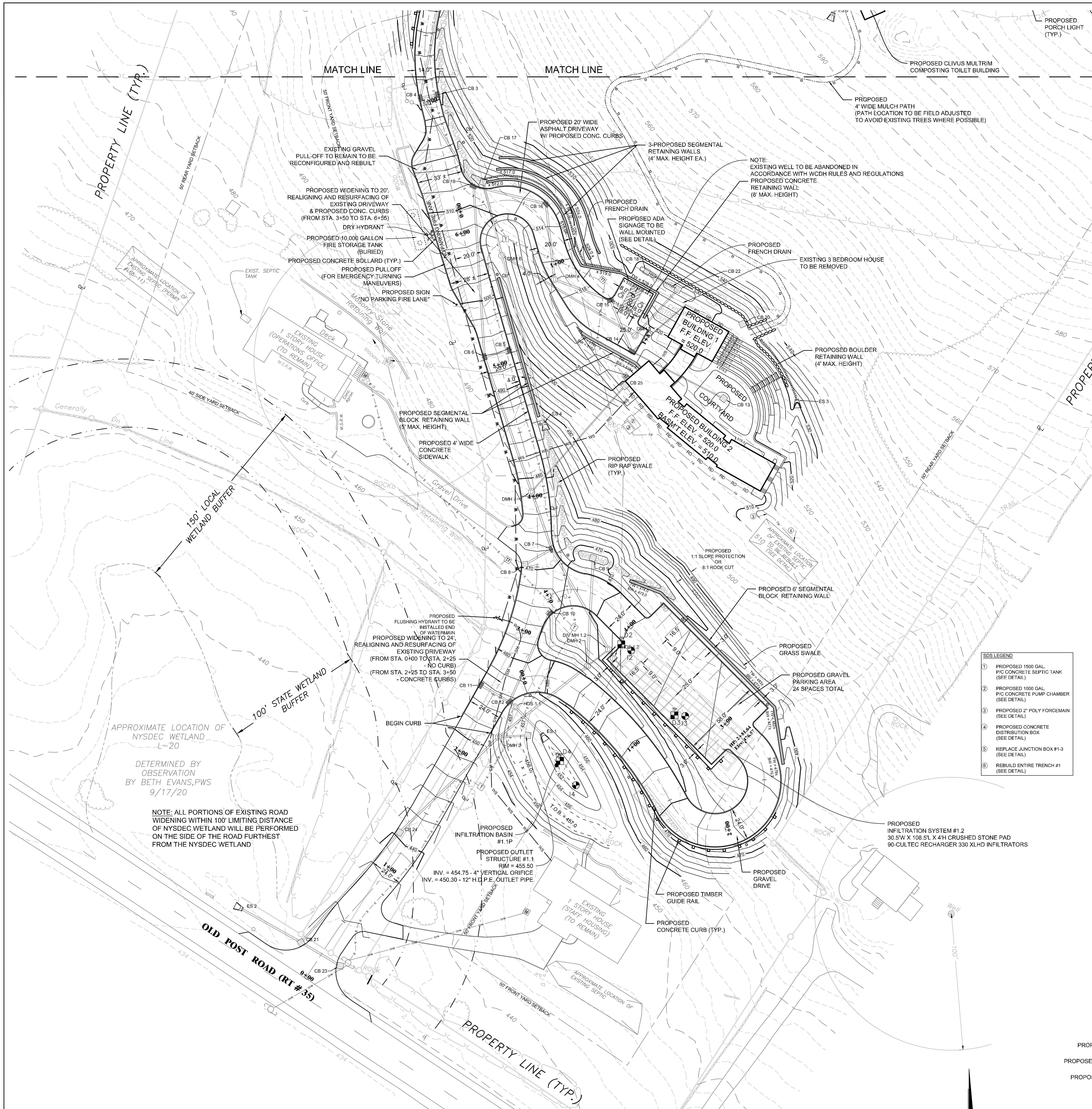
LAYOUT PLAN - NORTH

WOLF CONSERVATION CENTER

7 BUCK RUN, SOUTH SALEM, NY 10590
TOWN OF LEWISBORO , WESTCHESTER COUNTY, NY

BIBBO ASSOCIATES, LLP
293 ROUTE 100 SUITE 203
SOMERS, NEW YORK 10589
TEL. 914 277 5805

DATE:	12-31-2020
SCALE:	1" = 30'
FILE:	L5
DSGN / CHK:	MG/RH
DRN. BY:	RH
SHT NO.	6 OF 20
DWG NO.	LP-2



DRAINAGE SCHEDULE			
NAME	RIM:	PIPES IN:	PIPES OUT:
CB 1	552.37		15" HDPE INV. OUT =549.35 (TO CB 2) L = 9.9', S = 0.81%
CB 2	552.49	15" HDPE INV. IN =549.25 (FROM CB 1) L =9.9', S = 0.81%	15" HDPE INV. OUT =548.02 (TO DMH 1) L = 95.0', S = 20.00%
CB 3	521.39		15" HDPE INV. OUT =516.46 (TO CB 4) L = 9.9', S = 0.98%
CB 4	521.02	15" HDPE INV. IN =516.18 (FROM DMH 1) L =99.6', S = 10.00% 15" HDPE INV. IN =516.34 (FROM CB 3) L =9.9', S = 0.98%	15" HDPE INV. OUT =516.18 (TO CB 19) L = 73.1', S = 15.00%
CB 5	494.25		15" HDPE INV. OUT =490.50 (TO CB 6) L = 16.1', S = 7.67%
CB 6	493.96	15" HDPE INV. IN =489.05 (FROM CB 5) L =16.1', S = 7.67% 15" HDPE INV. IN =489.06 (FROM CB 19) L =123.2', S = 12.60%	15" HDPE INV. OUT =487.80 (TO DMH 7) L = 102.4', S = 14.00%
CB 7	472.11	15" HDPE INV. IN =467.00 (FROM DMH 7) L =41.5', S = 14.00% 15" HDPE INV. IN =466.93 (FROM CB 8) L =19.1', S = 1.01%	15" HDPE INV. OUT =466.94 (TO DIV MH 1.2) L = 81.1', S = 1.00%
CB 8	470.34		15" HDPE INV. OUT =467.16 (TO CB 7) L = 19.1', S = 1.01%
CB 9	467.50		15" HDPE INV. OUT =463.50 (TO DMH 2) L = 75.8', S = 9.43%
CB 10	465.99		15" HDPE INV. OUT =461.00 (TO CB 12) L = 68.9', S = 10.60%
CB 11	456.48		15" HDPE INV. OUT =453.62 (TO CB 12) L = 21.4', S = 0.90%
CB 12	456.26	15" HDPE INV. IN =453.40 (FROM CB 10) L =68.9', S = 10.60% 15" HDPE INV. IN =453.40 (FROM CB 11) L =21.4', S = 0.90%	15" HDPE INV. OUT =453.40 (TO HDS 1.1) L = 1.8', S = 1.33%
CB 13	519.99		8" HDPE INV. OUT =517.00 (TO CB 14) L = 71.9', S = 1.30%
CB 14	519.44	8" HDPE INV. IN =516.02 (FROM CB 13) L =71.9', S = 1.30% 6" HDPE INV. IN =516.00 (FROM) L =524.5', S = -994.29%	15" HDPE INV. OUT =514.27 (TO CB 15) L = 37.5', S = 1.30%
CB 15	518.63	15" HDPE INV. IN =513.74 (FROM CB 14) L =37.5', S = 1.30%	15" HDPE INV. OUT =513.74 (TO DMH 4) L = 40.0', S = 5.50%
CB 16	512.87	15" HDPE INV. IN =509.30 (FROM DMH 4) L =51.9', S = 4.00%	15" HDPE INV. OUT =509.29 (TO CB 19) L = 51.4', S = 4.00%
CB 17	511.50		15" HDPE INV. OUT =505.39 (TO DMH 6) L = 51.3', S = 8.00%
CB 18	528.00		8" HDPE INV. OUT =524.50 (TO CB 22) L = 22.2', S = 1.15%
CB 19	512.00	15" HDPE INV. IN =507.10 (FROM CB 16) L =51.4', S = 4.00% 15" HDPE INV. IN =504.86 (FROM CB 4) L =73.1', S = 15.00%	15" HDPE INV. OUT =504.86 (TO CB 6) L = 123.2', S = 12.60%
CB 20	531.52		6" HDPE INV. OUT =524.75 (TO CB 22) L = 49.3', S = 1.02%
CB 21	435.94	15" HDPE INV. IN =432.77 (FROM CB 24) L =104.1', S = 1.00% 15" HDPE INV. IN =432.77 (FROM CB 23) L =29.2', S = 0.09%	15" HDPE INV. OUT =432.77 (TO ES 2) L = 47.7', S = 1.14%
CB 22	527.50	8" HDPE INV. IN =524.20 (FROM CB 18) L =22.2', S = 1.15% 6" HDPE INV. IN =524.20 (FROM CB 20) L =49.3', S = 1.02%	12" HDPE INV. OUT =519.80 (TO DMH 5) L = 42.4', S = 9.23%
CB 23	435.82		15" HDPE INV. OUT =432.80 (TO CB 21) L = 29.2', S = 0.09%
CB 24	440.31	15" HDPE INV. IN =433.85 (FROM DMH 3) L =97.5', S = 12.30%	15" HDPE INV. OUT =433.85 (TO CB 21) L = 104.1', S = 1.00%
CB 25	509.56		8" HDPE INV. OUT =506.00 (TO DMH 7) L = 104.5', S = 31.02%
DIV MH 1.2	471.53	15" HDPE INV. IN =466.09 (FROM CB 7) L =81.1', S = 1.00%	8" HDPE INV. OUT =466.07 (TO HDS 1.2) L = 3.6', S = 1.00% 8" HDPE INV. OUT =462.28 (TO DMH 2) L = 15.9', S = 6.50%
DMH 1	533.75	15" HDPE INV. IN =526.74 (FROM CB 2) L =95.0', S = 20.00%	15" HDPE INV. OUT =526.45 (TO CB 4) L = 99.6', S = 10.00%
DMH 2	465.00	8" HDPE INV. IN =460.99 (FROM DIV MH 1.2) L =15.9', S = 6.50% 15" HDPE INV. IN =456.00 (FROM CB 9) L =75.8', S = 9.43%	15" HDPE INV. OUT =456.00 (TO DMH 3) L = 80.0', S = 11.73%
DMH 3	453.97	15" HDPE INV. IN =446.23 (FROM DMH 2) L =80.0', S = 11.73% 12" HDPE INV. IN =446.48 (FROM O.C.S. 1) L =17.9', S = 17.83%	15" HDPE INV. OUT =446.23 (TO CB 24) L = 97.5', S = 12.30%
DMH 4	517.30	15" HDPE INV. IN =511.34 (FROM CB 15) L =40.0', S = 5.50%	15" HDPE INV. OUT =511.53 (TO CB 16) L = 51.9', S = 4.00%
DMH 5	519.89	12" HDPE INV. IN =515.54 (FROM CB 22) L =42.4', S = 9.23%	12" HDPE INV. OUT =512.60 (TO DMH 6) L = 110.6', S = 10.00%
DMH 6	505.78	15" HDPE INV. IN =500.95 (FROM CB 17) L =51.3', S = 8.00% 12" HDPE INV. IN =501.20 (FROM DMH 5) L =110.6', S = 10.00%	15" HDPE INV. OUT =497.96 (TO ES 4) L = 125.6', S = 11.00%
DMH 7	478.50	15" HDPE INV. IN =473.15 (FROM CB 6) L =102.4', S = 14.00% 8" HDPE INV. IN =473.90 (FROM CB 25) L =104.5', S = 31.02%	15" HDPE INV. OUT =473.15 (TO CB 7) L = 41.5', S = 14.00%
ES 1		15" HDPE INV. IN =453.00 (FROM HDS 1.1) L =26.6', S = 1.17%	
ES 2		15" HDPE INV. IN =432.20 (FROM CB 21) L =47.7', S = 1.14%	
ES 3		8" HDPE INV. IN =530.00 (FROM UNDER DRAIN) L =51.1', S = 1.05%	
ES 4		15" HDPE INV. IN =484.06 (FROM DMH 6) L =125.6', S = 11.00%	
HDS 1.1	457.52	15" HDPE INV. IN =453.33 (FROM CB 12) L =1.8', S = 1.33%	15" HDPE INV. OUT =453.33 (TO ES 1) L = 26.6', S = 1.17%
HDS 1.2	471.96	8" HDPE INV. IN =466.60 (FROM DIV MH 1.2) L =3.6', S = 1.00%	8" HDPE INV. OUT =466.60 (TO INF 1.2) L = 7.4', S = 1.00%
INF 1.2		8" HDPE INV. IN =466.51 (FROM HDS 1.2) L =7.4', S = 1.00%	
O.C.S. 1	455.50		12" HDPE INV. OUT =450.30 (TO DMH 3) L = 17.9', S = 17.83%
UNDER DRAIN			8" HDPE INV. OUT =530.55 (TO ES 3) L = 51.1', S = 1.05%

DRAINAGE SCHEDULE			
NAME	RIM:	PIPES IN:	PIPES OUT:
CB 26	580.50		6" HDPE INV. OUT =575.00 (TO ES 5) L = 105.4', S = 1.40%
DIV MH 1.3	600.87		4" HDPE INV. OUT =593.10 (TO HDS 1.3) L = 2.9', S = 0.87% 8" HDPE INV. OUT =595.00 (TO ES 6) L = 42.0', S = 1.15%
ES 5		6" HDPE INV. IN =573.50 (FROM CB 26) L =105.4', S = 1.40%	
ES 6		8" HDPE INV. IN =594.50 (FROM DIV MH 1.3) L =42.0', S = 1.15%	
HDS 1.3	600.11	4" HDPE INV. IN =593.04 (FROM DIV MH 1.3) L =2.9', S = 0.87%	4" HDPE INV. OUT =593.04 (TO INF 1.3) L = 2.4', S = 0.88%
INF 1.3		4" HDPE INV. IN =593.00 (FROM HDS 1.3) L =2.4', S = 0.88%	

NOTES:

1. PIPE ANCHORS TO BE INSTALLED WHERE PROPOSED DRAINAGE PIPE SLOPE EXCEEDS 15%
2. ANCHORS SHALL BE PLACED EVERY JOINT.
3. PIPE TO BE INSTALLED PER MANUFACTURERS RECOMMENDATIONS.
4. CONTRACTOR SHALL CONSULT WITH ADVANCED DRAINAGE SYSTEMS, INC. (ADS) FOR SPECIFIC DESIGN AND INSTALLATION REQUIREMENTS.

SDS LEGEND

1. PROPOSED 1500 GAL. P/C CONCRETE SEPTIC TANK (SEE DETAIL)
2. PROPOSED 1000 GAL. P/C CONCRETE PUMP CHAMBER (SEE DETAIL)
3. PROPOSED 2" POLY FORCEMAIN (SEE DETAIL)
4. PROPOSED CONCRETE DISTRIBUTION BOX (SEE DETAIL)
5. REPLACE JUNCTION BOX #1-3 (SEE DETAIL)
6. REBUILD ENTIRE TRENCH #1 (SEE DETAIL)

BIBBO ASSOCIATES, LLP
Consulting Engineers

Project: Wolf Conservation Center
Feature: Deep Test Results
Sheet: 1 of 2
Recorded By: Matthew Gironda
Date: May 25, 2021

Hole ID:	TP D-1	Hole ID:	TP D-2
Depth:	Description:	Depth:	Description:
0-24"	Top Soil	0-18"	Top Soil
24"-56"	Light Brown Fine Sandy Loam	18"-30"	Red/Brown Fine Sandy Loam
56"-96"	Dark Brown Fine Sandy Loam	30"-104"	Brown Medium/Fine Sand
			w/ Silt and Cobbles
	No Rock		No Rock
	or Water at Full Depth		or Water at Full Depth
Hole ID:	TP D-3	Hole ID:	TP D-4
Depth:	Description:	Depth:	Description:
0-24"	Top Soil	0-18"	Top Soil
24"-48"	Red/Brown Fine Sandy Loam	18"-30"	Red/Brown Fine Sandy Loam
48"-120"	Brown Fine/Medium Sand	30"-104"	Brown Medium/Fine Sand w/
	w/ Silt and Cobbles		traces of Silt and some cobbles
	No Rock		No Rock
	or Water at Full Depth		or Water at Full Depth

BIBBO ASSOCIATES, LLP
Consulting Engineers

Project: Wolf Conservation Cente
Feature: Infiltration Percolation Test Results
Sheet: 2 of 2
Recorded By: Matthew Gironda
Date: May 25, 2021

Hole ID:	Run #	Time Start (Min.)	Time Stop (Min.)	Depth to Water From Ground Surface From (In.)	Depth to Water From Ground Surface To (In.)	Time (Min.)	Drop (In.)	Rate (In. / Hr)
IT I-1	1	10:30 AM	11:30 AM	48.00	62.00	60	14.00	14.00
	2	11:33 AM	12:03 PM	48.00	60.50	60	12.50	12.50
	3	12:34 PM	1:34 PM	48.00	60.50	60	12.50	12.50
	4	1:36 PM	2:36 PM	48.00	60.50	60	12.50	12.50
IT I-2	1	9:45 AM	10:45 AM	48.00	67.00	60	19.00	19.00
	2	10:47 AM	11:47 AM	48.00	68.00	60	20.00	20.00
	3	11:48 AM	12:48 PM	48.00	68.50	60	20.50	20.50
	4	12:49 PM	1:49 PM	48.00	66.00	60	18.00	18.00
IT I-3	1	9:36 AM	10:36 AM	76.00	97.50	60	21.50	21.50
	2	10:38 AM	11:38 AM	76.00	100.00	60	24.00	24.00
	3	11:40 AM	12:40 PM	76.00	97.00	60	21.00	21.00
	4	12:42 PM	1:42 PM	76.00	97.00	60	21.00	21.00
IT I-4	1	9:30 AM	10:30 AM	52.00	71.50	60	19.50	19.50
	2	10:32 AM	11:32 AM	52.00	71.00	60	19.00	19.00
	3	11:33 AM	12:33 PM	52.00	70.00	60	18.00	18.00
	4	12:34 PM	1:34 PM	52.00	70.00	60	18.00	18.00

LEGEND

- EXISTING PROPERTY LINE
- PROPOSED PROPERTY LINE
- WETLAND BUFFER LINE
- WETLAND BOUNDARY LINE
- EXISTING WOLF ENCLOSURE FENCE
- EXISTING EASEMENT LINE
- EXISTING 2' CONTOUR
- EXISTING 10' CONTOUR — 420
- PROPOSED 2' CONTOUR
- PROPOSED 10' CONTOUR
- PROPOSED RETAINING WALL
- PROPOSED ELECTRIC METER — M
- PROPOSED TRANSFORMER — T
- PROPOSED T-TAP — TT
- PROPOSED OVERHEAD ELECTRIC SERVICE — OHW
- PROPOSED UNDERGROUND ELECTRIC SERVICE — E
- PROPOSED ROOF LEADER CONNECTION PIPE — RD
- PROPOSED PVC DR-18 WATERMAIN — W
- PROPOSED CU WATER SERVICE — WS

PLAN

GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.

CALL BEFORE YOU DIG 1-800-962-7962

UNDER THE NY STATE LAW PROTECTING UNDERGROUND FACILITIES, THE FOLLOWING RULES AND REGULATIONS ARE IN EFFECT FOR ALL EXCAVATORS:

* THEY MUST CALL FOR A UTILITY STAKE-OUT (2) TWO FULL WORKING DAYS PRIOR TO AN EXCAVATION.
* THEY MUST CONFIRM PRECISE LOCATIONS OF UNDERGROUND FACILITIES.
* THEY MUST PRESERVE STAKES AND MARKINGS UNTIL NO LONGER NEEDED AT SITE.
* THEY MUST CONTACT NON-UFPO MEMBER UTILITY OWNERS FOR STAKE-OUTS.

REVISIONS:					
11-28-23	PLANNING BOARD SUBMISSION	RH/MG	01-16-23	BUILDING DEPARTMENT COMMENTS	RH/MG
10-20-23	NYCDEP COMPLETENESS COMMENTS	RH/MG	02-07-22	WCHD NYCDEP COMMENTS	ZF/ED
04-25-23	PLANNING BOARD SUBMISSION	RH/MG	06-04-21	NYCDEP APPLICATION	RH/MG
02-07-23	PLANNING BOARD SUBMISSION	RH/MG	04-27-21	PLANNING BOARD SUBMISSION	RH/MG
DATE:	DESCRIPTION	BY/CK	DATE:	DESCRIPTION	BY/CK

STATE OF NEW YORK · MATTHEW J. GIRONDA · LICENSED PROFESSIONAL ENGINEER · No. 096030

MATTHEW J. GIRONDA P.E.

CONSTRUCTION PLAN - SOUTH

WOLF CONSERVATION CENTER
7 BUCK RUN, SOUTH SALEM, NY 10590
TOWN OF LEWISBORO , WESTCHESTER COUNTY, NY

BIBBO ASSOCIATES, LLP
293 ROUTE 100 SUITE 203
SOMERS, NEW YORK 10589
TEL. 914 277 5805

DATE:	12-29-2020
SCALE:	1" = 30'
FILE:	L5
DSGN / CHK:	MG/RH
DRN. BY:	RH
SHT NO.	7 OF 20
DWG NO.	CP-1

LEGEND

EXISTING PROPERTY LINE	
PROPOSED PROPERTY LINE	
WETLAND BUFFER LINE	
WETLAND BOUNDARY LINE	
EXISTING WOLF ENCLOSURE FENCE	— x — x — x —
EXISTING EASEMENT LINE	
EXISTING 2' CONTOUR	
EXISTING 10' CONTOUR	420
PROPOSED 2' CONTOUR	
PROPOSED 10' CONTOUR	420
PROPOSED RETAINING WALL	
PROPOSED ELECTRIC METER	M
PROPOSED TRANSFORMER	T
PROPOSED T-TAP	TT
PROPOSED OVERHEAD ELECTRIC SERVICE	— OHW — OHW —
PROPOSED UNDERGROUND ELECTRIC SERVICE	— E — E — E — E — E —
PROPOSED ROOF LEADER CONNECTION PIPE	—RD—RD—RD—RD—RD—
PROPOSED PVC DR-18 WATERMAIN	— W — W —
PROPOSED CU WATER SERVICE	— WS — WS — WS —

SDS LEGEND

1. PROPOSED 1500 GAL. P/C CONCRETE SEPTIC TANK (SEE DETAIL)
2. PROPOSED 1000 GAL. P/C CONCRETE PUMP CHAMBER (SEE DETAIL)
3. PROPOSED 2" POLY FORCEMAIN (SEE DETAIL)
4. PROPOSED CONCRETE DISTRIBUTION BOX (SEE DETAIL)
5. REPLACE JUNCTION BOX #1-3 (SEE DETAIL)
6. REBUILD ENTIRE TRENCH #1 (SEE DETAIL)

GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.

CALL BEFORE YOU DIG 1-800-962-7962

UNDER THE NY STATE LAW PROTECTING UNDERGROUND FACILITIES, THE FOLLOWING RULES AND REGULATIONS ARE IN EFFECT FOR ALL EXCAVATORS:

* THEY MUST CALL FOR A UTILITY STAKE-OUT (2) TWO FULL WORKING DAYS PRIOR TO AN EXCAVATION.
* THEY MUST CONFIRM PRECISE LOCATIONS OF UNDERGROUND FACILITIES.
* THEY MUST PRESERVE STAKES AND MARKINGS UNTIL NO LONGER NEEDED AT SITE.
* THEY MUST CONTACT NON-UFPO MEMBER UTILITY OWNERS FOR STAKE-OUTS.

DRAINAGE SCHEDULE

NAME	RIM:	PIPES IN:	PIPES OUT:
CB 1	552.37		15" HDPE INV. OUT =549.35 (TO CB 2) L = 9.9', S = 0.81%
CB 2	552.49	15" HDPE INV. IN =549.25 (FROM CB 1) L =9.9', S = 0.81%	15" HDPE INV. OUT =548.02 (TO DMH 1) L = 95.0', S = 20.00%
CB 3	521.39		15" HDPE INV. OUT =516.46 (TO CB 4) L = 9.9', S = 0.98%
CB 4	521.02	15" HDPE INV. IN =516.18 (FROM DMH 1) L =99.6', S = 10.00% 15" HDPE INV. IN =516.34 (FROM CB 3) L =9.9', S = 0.98%	15" HDPE INV. OUT =516.18 (TO CB 19) L = 73.1', S = 15.00%
CB 5	494.25		15" HDPE INV. OUT =490.50 (TO CB 6) L = 16.1', S = 7.67%
CB 6	493.96	15" HDPE INV. IN =489.05 (FROM CB 5) L =16.1', S = 7.67% 15" HDPE INV. IN =489.06 (FROM CB 19) L =123.2', S = 12.60%	15" HDPE INV. OUT =487.80 (TO DMH 7) L = 102.4', S = 14.00%
CB 7	472.11	15" HDPE INV. IN =467.00 (FROM DMH 7) L =41.5', S = 14.00% 15" HDPE INV. IN =466.93 (FROM CB 8) L =19.1', S = 1.01%	15" HDPE INV. OUT =466.94 (TO DIV MH 1.2) L = 81.1', S = 1.00%
CB 8	470.34		15" HDPE INV. OUT =467.16 (TO CB 7) L = 19.1', S = 1.01%
CB 9	467.50		15" HDPE INV. OUT =463.50 (TO DMH 2) L = 75.8', S = 9.43%
CB 10	465.99		15" HDPE INV. OUT =461.00 (TO CB 12) L = 68.9', S = 10.60%
CB 11	456.48		15" HDPE INV. OUT =453.62 (TO CB 12) L = 21.4', S = 0.90%
CB 12	456.26	15" HDPE INV. IN =453.40 (FROM CB 10) L =68.9', S = 10.60% 15" HDPE INV. IN =453.40 (FROM CB 11) L =21.4', S = 0.90%	15" HDPE INV. OUT =453.40 (TO HDS 1.1) L = 1.8', S = 1.33%
CB 13	519.99		8" HDPE INV. OUT =517.00 (TO CB 14) L = 71.9', S = 1.30%
CB 14	519.44	8" HDPE INV. IN =516.02 (FROM CB 13) L =71.9', S = 1.30% 6" HDPE INV. IN =516.00 (FROM) L =524.5', S = -994.29%	15" HDPE INV. OUT =514.27 (TO CB 15) L = 37.5', S = 1.30%
CB 15	518.63	15" HDPE INV. IN =513.74 (FROM CB 14) L =37.5', S = 1.30%	15" HDPE INV. OUT =513.74 (TO DMH 4) L = 40.0', S = 5.50%
CB 16	512.87	15" HDPE INV. IN =509.30 (FROM DMH 4) L =51.9', S = 4.00%	15" HDPE INV. OUT =509.29 (TO CB 19) L = 51.4', S = 4.00%
CB 17	511.50		15" HDPE INV. OUT =505.39 (TO DMH 6) L = 51.3', S = 8.00%
CB 18	528.00		8" HDPE INV. OUT =524.50 (TO CB 22) L = 22.2', S = 1.15%
CB 19	512.00	15" HDPE INV. IN =507.10 (FROM CB 16) L =51.4', S = 4.00% 15" HDPE INV. IN =504.86 (FROM CB 4) L =73.1', S = 15.00%	15" HDPE INV. OUT =504.86 (TO CB 6) L = 123.2', S = 12.60%
CB 20	531.52		6" HDPE INV. OUT =524.75 (TO CB 22) L = 49.3', S = 1.02%
CB 21	435.94	15" HDPE INV. IN =432.77 (FROM CB 24) L =104.1', S = 1.00% 15" HDPE INV. IN =432.77 (FROM CB 23) L =29.2', S = 0.09%	15" HDPE INV. OUT =432.77 (TO ES 2) L = 47.7', S = 1.14%
CB 22	527.50	8" HDPE INV. IN =524.20 (FROM CB 18) L =22.2', S = 1.15% 6" HDPE INV. IN =524.20 (FROM CB 20) L =49.3', S = 1.02%	12" HDPE INV. OUT =519.80 (TO DMH 5) L = 42.4', S = 9.23%
CB 23	435.82		15" HDPE INV. OUT =432.80 (TO CB 21) L = 29.2', S = 0.09%
CB 24	440.31	15" HDPE INV. IN =433.85 (FROM DMH 3) L =97.5', S = 12.30%	15" HDPE INV. OUT =433.85 (TO CB 21) L = 104.1', S = 1.00%
CB 25	509.56		8" HDPE INV. OUT =506.00 (TO DMH 7) L = 104.5', S = 31.02%
DIV MH 1.2	471.53	15" HDPE INV. IN =466.09 (FROM CB 7) L =81.1', S = 1.00%	8" HDPE INV. OUT =466.67 (TO HDS 1.2) L = 3.6', S = 1.00% 8" HDPE INV. OUT =462.28 (TO DMH 2) L = 15.9', S = 6.50%
DMH 1	533.75	15" HDPE INV. IN =528.74 (FROM CB 2) L =95.0', S = 20.00%	15" HDPE INV. OUT =526.45 (TO CB 4) L = 99.6', S = 10.00%
DMH 2	465.00	8" HDPE INV. IN =460.99 (FROM DIV MH 1.2) L =15.9', S = 6.50% 15" HDPE INV. IN =456.00 (FROM CB 9) L =75.8', S = 9.43%	15" HDPE INV. OUT =456.00 (TO DMH 3) L = 80.0', S = 11.73%
DMH 3	453.97	15" HDPE INV. IN =446.23 (FROM DMH 2) L =80.0', S = 11.73% 12" HDPE INV. IN =446.48 (FROM O.C.S. 1) L =17.9', S = 17.83%	15" HDPE INV. OUT =446.23 (TO CB 24) L = 97.5', S = 12.30%
DMH 4	517.30	15" HDPE INV. IN =511.34 (FROM CB 15) L =40.0', S = 5.50%	15" HDPE INV. OUT =511.53 (TO CB 16) L = 51.9', S = 4.00%
DMH 5	519.89	12" HDPE INV. IN =515.54 (FROM CB 22) L =42.4', S = 9.23%	12" HDPE INV. OUT =512.60 (TO DMH 6) L = 110.6', S = 10.00%
DMH 6	505.78	15" HDPE INV. IN =500.95 (FROM CB 17) L =51.3', S = 8.00% 12" HDPE INV. IN =501.20 (FROM DMH 5) L =110.6', S = 10.00%	15" HDPE INV. OUT =497.96 (TO ES 4) L = 125.6', S = 11.00%
DMH 7	478.50	15" HDPE INV. IN =473.15 (FROM CB 6) L =102.4', S = 14.00% 8" HDPE INV. IN =473.90 (FROM CB 25) L =104.5', S = 31.02%	15" HDPE INV. OUT =473.15 (TO CB 7) L = 41.5', S = 14.00%
ES 1		15" HDPE INV. IN =453.00 (FROM HDS 1.1) L =26.6', S = 1.17%	
ES 2		15" HDPE INV. IN =432.20 (FROM CB 21) L =47.7', S = 1.14%	
ES 3		8" HDPE INV. IN =530.00 (FROM UNDER DRAIN) L =51.1', S = 1.05%	
ES 4		15" HDPE INV. IN =484.06 (FROM DMH 6) L =125.6', S = 11.00%	
HDS 1.1	457.52	15" HDPE INV. IN =453.33 (FROM CB 12) L =1.8', S = 1.33%	15" HDPE INV. OUT =453.33 (TO ES 1) L = 26.6', S = 1.17%
HDS 1.2	471.96	8" HDPE INV. IN =466.60 (FROM DIV MH 1.2) L =3.6', S = 1.00%	8" HDPE INV. OUT =466.60 (TO INF 1.2) L = 7.4', S = 1.00%
INF 1.2		8" HDPE INV. IN =466.51 (FROM HDS 1.2) L =7.4', S = 1.00%	
O.C.S. 1	455.50		12" HDPE INV. OUT =450.30 (TO DMH 3) L = 17.9', S = 17.83%
UNDER DRAIN			8" HDPE INV. OUT =530.55 (TO ES 3) L = 51.1', S = 1.05%

DRAINAGE SCHEDULE

NAME	RIM:	PIPES IN:	PIPES OUT:
CB 26	580.50		6" HDPE INV. OUT =575.00 (TO ES 5) L = 105.4', S = 1.40%
DIV MH 1.3	600.87		4" HDPE INV. OUT =593.10 (TO HDS 1.3) L = 2.9', S = 0.87% 8" HDPE INV. OUT =595.00 (TO ES 6) L = 42.0', S = 1.15%
ES 5		6" HDPE INV. IN =573.50 (FROM CB 26) L =105.4', S = 1.40%	
ES 6		8" HDPE INV. IN =594.50 (FROM DIV MH 1.3) L =42.0', S = 1.15%	
HDS 1.3	600.11	4" HDPE INV. IN =593.04 (FROM DIV MH 1.3) L =2.9', S = 0.87%	4" HDPE INV. OUT =593.04 (TO INF 1.3) L = 2.4', S = 0.88%
INF 1.3		4" HDPE INV. IN =593.00 (FROM HDS 1.3) L =2.4', S = 0.88%	

NOTES:

1. PIPE ANCHORS TO BE INSTALLED WHERE PROPOSED DRAINAGE PIPE SLOPE EXCEEDS 15%
2. ANCHORS SHALL BE PLACED EVERY JOINT.
3. PIPE TO BE INSTALLED PER MANUFACTURERS RECOMMENDATIONS.
4. CONTRACTOR SHALL CONSULT WITH ADVANCED DRAINAGE SYSTEMS, INC. (ADS) FOR SPECIFIC DESIGN AND INSTALLATION REQUIREMENTS.

REVISIONS:

DATE:	DESCRIPTION	BY/CK	DATE:	DESCRIPTION	BY/CK
11-28-23	PLANNING BOARD SUBMISSION	RH/MG	01-16-23	BUILDING DEPARTMENT COMMENTS	RH/MG
10-20-23	NYCDEP COMPLETENESS COMMENTS	RH/MG	02-07-22	WCHD NYCDEP COMMENTS	ZF/ED
04-25-23	PLANNING BOARD SUBMISSION	RH/MG	06-04-21	NYCDEP APPLICATION	RH/MG
02-07-23	PLANNING BOARD SUBMISSION	RH/MG	04-27-21	PLANNING BOARD SUBMISSION	RH/MG

STATE OF NEW YORK · MATTHEW J. GIRONDA · LICENSED PROFESSIONAL ENGINEER · No. 096030

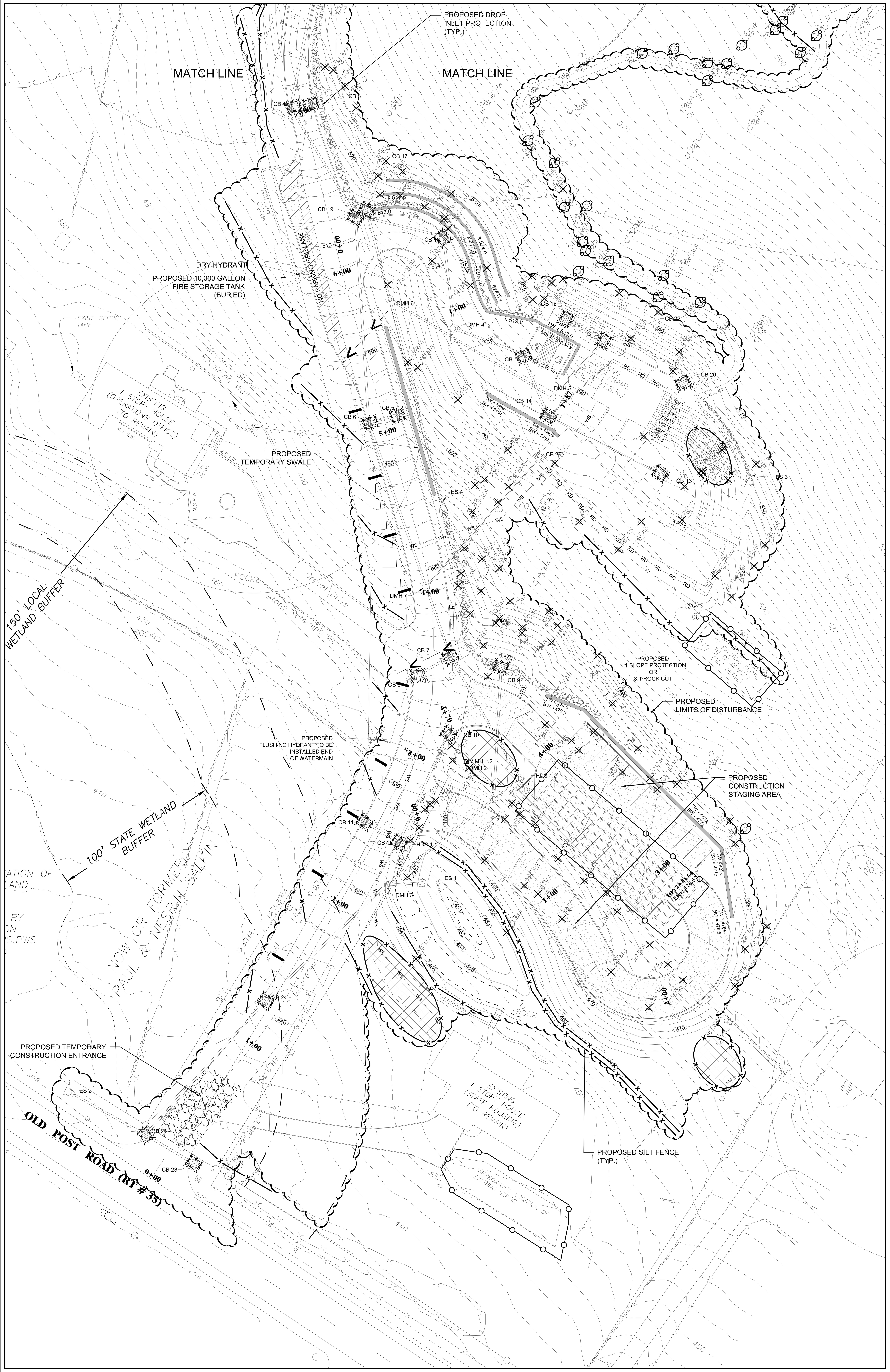
MATTHEW J. GIRONDA P.E.

CONSTRUCTION PLAN - NORTH

WOLF CONSERVATION CENTER
7 BUCK RUN, SOUTH SALEM, NY 10590
TOWN OF LEWISBORO , WESTCHESTER COUNTY, NY

BIBBO ASSOCIATES, LLP
293 ROUTE 100 SUITE 203
SOMERS, NEW YORK 10589
TEL. 914 277 5805

DATE:	12-29-2020
SCALE:	1" = 30'
FILE:	L5
DSGN / CHK:	MG/RH
DRN. BY:	RH
SHT NO.	8 OF 20
DWG NO.	CP-2



EROSION CONTROL PLAN - SOUTH

GRAPHIC SCALE

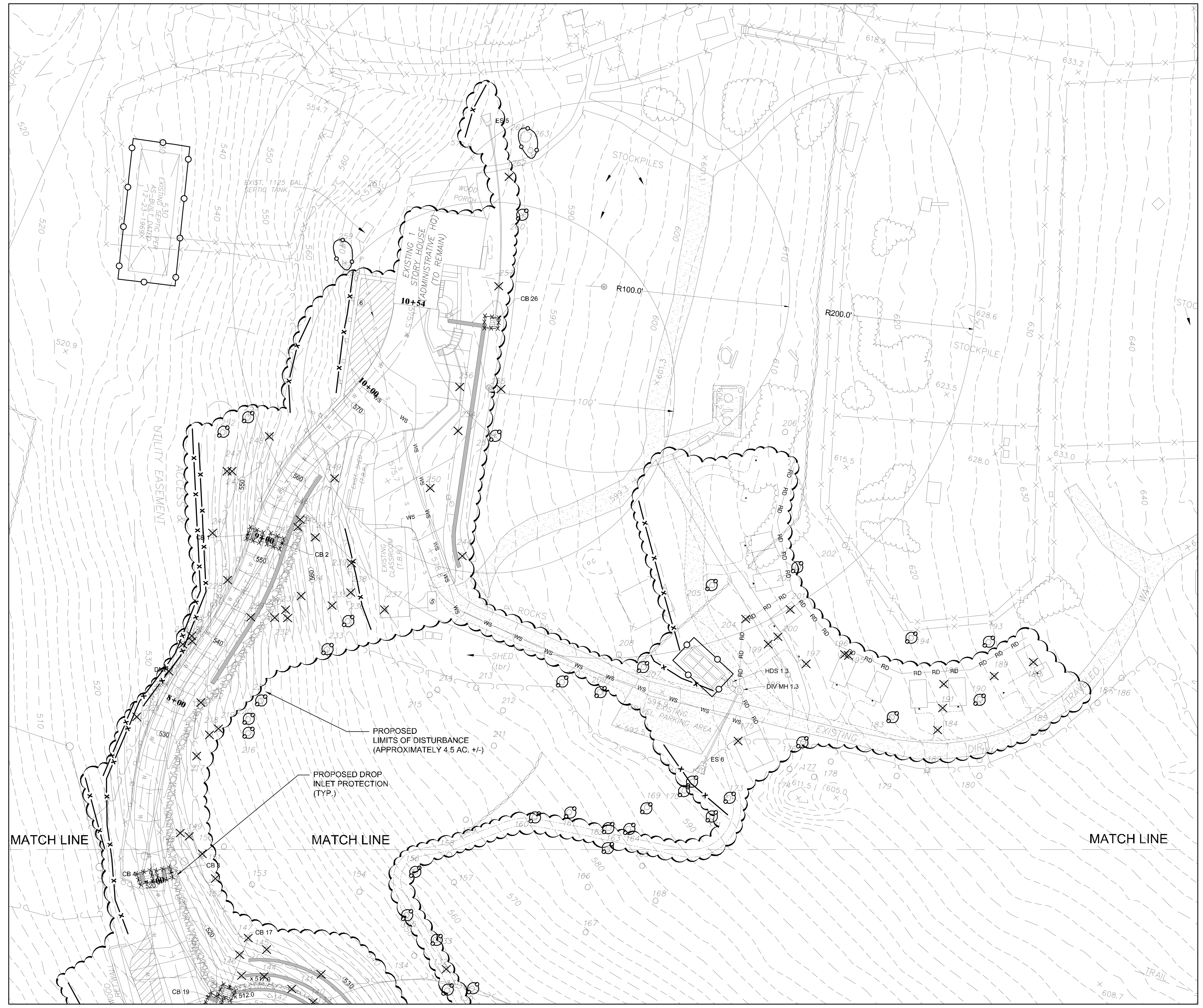
30 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.

ESTIMATED QUANTITY OF EARTHWORK		
CUT (CY)	FILL (CY)	NET (CY)
7,015*	2,940	4,075 (CUT)

* INCLUDES QUANTITY OF MATERIAL REMOVED FOR STORMWATER INFILTRATION SYSTEMS

NOTE: QUANTITIES NOT TO BE USED FOR BIDDING PURPOSES.



EROSION CONTROL PLAN - NORTH

GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.

LEGEND

- EXISTING PROPERTY LINE
- WETLAND BUFFER LINE
- WETLAND BOUNDARY LINE
- EXISTING WOLF ENCLOSURE FENCE
- EXISTING EASEMENT LINE
- EXISTING 2' CONTOUR
- EXISTING 10' CONTOUR — 420
- PROPOSED 2' CONTOUR
- PROPOSED 10' CONTOUR
- PROPOSED RETAINING WALL
- PROPOSED ELECTRIC METER — M
- PROPOSED TRANSFORMER — T
- PROPOSED T-TAP — TT
- PROPOSED OVERHEAD ELECTRIC SERVICE — OHW OHW
- PROPOSED UNDERGROUND ELECTRIC SERVICE — E E E E E

EROSION CONTROL LEGEND:

- DRAIN INLET PROTECTION (TYP.) * TO BE INSTALLED ON ALL CATCH BASINS
- CONSTRUCTION ENTRANCE
- PROPOSED SILT FENCE
- TEMPORARY STOCKPILE AREA
- PROPOSED TEMPORARY CONSTRUCTION FENCING (ORANGE FENCING)
- LIMIT OF DISTURBANCE
- WATER BAR
- PROPOSED TREE PROTECTION
- PROPOSED CHECK DAM (TYP.)

CALL BEFORE YOU DIG 1-800-962-7962

UNDER THE NY STATE LAW PROTECTING UNDERGROUND FACILITIES, THE FOLLOWING RULES AND REGULATIONS ARE IN EFFECT FOR ALL EXCAVATORS:

* THEY MUST CALL FOR A UTILITY STAKE-OUT (2) TWO FULL WORKING DAYS PRIOR TO AN EXCAVATION.
* THEY MUST CONFIRM PRECISE LOCATIONS OF UNDERGROUND FACILITIES.
* THEY MUST PRESERVE STAKES AND MARKINGS UNTIL NO LONGER NEEDED AT SITE.
* THEY MUST CONTACT NON-UFPO MEMBER UTILITY OWNERS FOR STAKE-OUTS.

REVISIONS: DATE:	DESCRIPTION	BY/CK	DATE:	DESCRIPTION	BY/CK
11-28-23	PLANNING BOARD SUBMISSION	RH/MG	01-16-23	BUILDING DEPARTMENT COMMENTS	RH/MG
10-20-23	NYCDEP COMPLETENESS COMMENTS	RH/MG	02-07-22	WCHD NYCDEP COMMENTS	ZF/ED
04-25-23	PLANNING BOARD SUBMISSION	RH/MG	06-04-21	NYCDEP APPLICATION	RH/MG
02-07-23	PLANNING BOARD SUBMISSION	RH/MG	04-27-21	PLANNING BOARD SUBMISSION	RH/MG

STATE OF NEW YORK · MATTHEW J. GIRONDA · LICENSED PROFESSIONAL ENGINEER · No. 096030

MATTHEW J. GIRONDA P.E.

EROSION CONTROL PLAN

WOLF CONSERVATION CENTER
7 BUCK RUN, SOUTH SALEM, NY 10590
TOWN OF LEWISBORO , WESTCHESTER COUNTY, NY

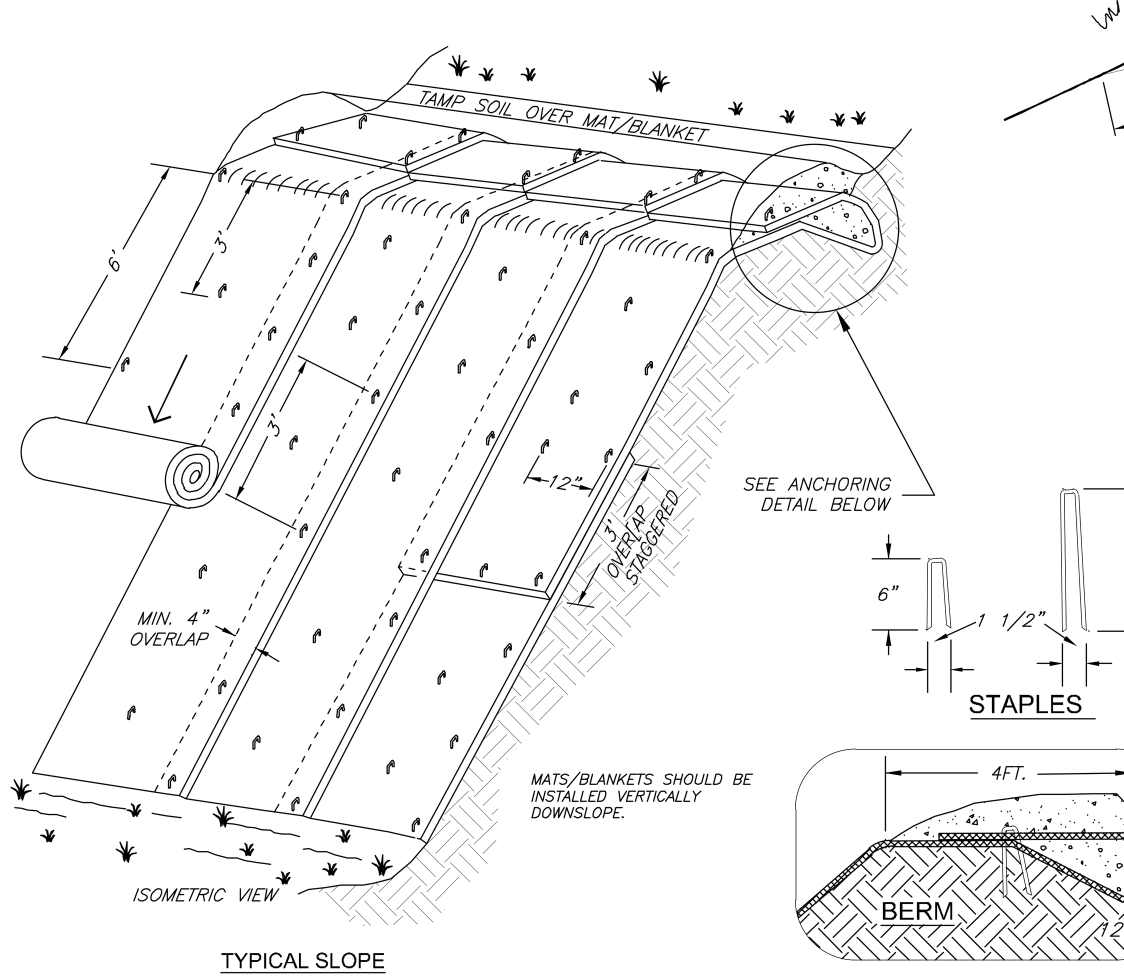
BIBBO ASSOCIATES, LLP
293 ROUTE 100 SUITE 203
SOMERS, NEW YORK 10589
TEL. 914 277 5805

DATE:	12-29-2020
SCALE:	1" = 30'
FILE:	L5
DSGN / CHK:	MG/RH
DRN. BY:	RH
SHT NO.	9 OF 20
DWG NO.	EC-1

CONSTRUCTION SEQUENCING:

1. SURVEY LOCATE THE CENTERLINE OF THE PROPOSED BUCK RUN DRIVEWAY EXTENSION, CENTERLINE OF THE PROPOSED DRIVEWAY TO PROPOSED BUILDING 1 AND 2 AND CENTERLINE OF THE PROPOSED GRAVEL PARKING AREA.
2. SURVEY LOCATE AND STAKE THE PROPOSED LIMITS OF DISTURBANCE, BERM OF THE INFILTRATION BASIN AND LOWER PROPOSED INFILTRATION SYSTEMS.
3. CORDON OFF LOWER INFILTRATION SYSTEMS AND EXISTING SSTS' ADJACENT TO PROPOSED BUILDING 1 WITH CONSTRUCTION FENCING.
4. IDENTIFY TREES TO REMAIN AND PROVIDE PROTECTIVE FENCING. CLEAR TREES WITHIN THE LIMITS OF DISTURBANCE (NOTE: MAINTAIN EXISTING VEGETATIVE GROUND COVER FOR AS LONG AS POSSIBLE ON AREAS NOT REQUIRING GRADING).
5. INSTALL STABILIZED CONSTRUCTION ENTRANCE FROM OLD POST ROAD (ROUTE 35).
6. INSTALL ALL SILT FENCE AS SHOWN.
7. DEMOLISH EXISTING STRUCTURES AS NEEDED AS CONSTRUCTION PROGRESSES FROM OLD POST ROAD NORTH INTO THE SITE.
8. STRIP TOPSOIL FROM THE DRIVEWAY SHOULDERS AND GRAVEL PARKING AREA AND STOCKPILE.
9. STRIP DRIVEWAY SURFACE OF BUCK RUN TO STA. 4+00, EXCAVATE AND FILL TO FORM EMBANKMENTS AND ROUGH GRADE GRAVEL PARKING AREA AND INFILTRATION BASIN.
10. CONSTRUCT PORTION OF DRIVEWAY TO STA. 4+00 AND GRAVEL PARKING AREA TO SUBGRADE. INSTALL CATCH BASIN(S), DRAIN MANHOLE(S), AND DRAINAGE PIPE, FROM STA. 0+00 TO 4+00. INSTALL INFILTRATION SYSTEM INCLUDING DIVERSION STRUCTURES AND HDS UNITS. PROVIDE INLET PROTECTION FOR CATCH BASINS.
11. REINSTALL CONSTRUCTION FENCING TO PROTECT INFILTRATION SYSTEM AREA.
12. ESTABLISH CONSTRUCTION STAGING AREA IN AREA OF GRAVEL PARKING AREA.
13. CONSTRUCT INFILTRATION BASIN.
14. INSTALL CURB AND BINDER COURSE OF PAVEMENT ON PORTION OF COMPLETED DRIVEWAY. BACK-UP CURBS WITH TOPSOIL AND APPLY SEED AND MULCH.
15. DEMOLISH EXISTING STRUCTURES IN AREA OF BUILDINGS 1 AND 2.
16. STRIP DRIVEWAY SURFACE OF BUCK RUN FROM STA. 4+00 TO 7+00, EXCAVATE AND FILL TO FORM EMBANKMENTS AND ROUGH GRADE AS NEEDED. CONSTRUCTION RETAINING WALL AND INSTALL SIDEWALK.
17. CONSTRUCT DRIVEWAY TO SUBGRADE AND RETAINING WALLS ASSOCIATED WITH ACCESS TO BUILDING'S 1 AND 2.
18. CONSTRUCT BUILDING 1 AND 2 AND ASSOCIATED IMPROVEMENTS AND INSTALL ELECTRICAL, TELEPHONE, AND CABLE UTILITIES.
19. INSTALL CATCH BASIN(S), DRAIN MANHOLE(S), AND DRAINAGE PIPE, FROM STA. 4+00 TO 7+00 AND PROPOSED DRIVEWAY TO NEW BUILDINGS. PROVIDE INLET PROTECTION FOR CATCH BASINS.
20. INSTALL CURB AND BINDER COURSE OF PAVEMENT ON PORTION OF COMPLETED DRIVEWAY. BACK-UP CURBS WITH TOPSOIL AND APPLY SEED AND MULCH.
21. STRIP DRIVEWAY SURFACE OF THE REMAINDER OF BUCK RUN, EXCAVATE AND FILL TO FORM EMBANKMENTS AND ROUGH GRADE AS NEEDED. CONSTRUCTION RETAINING WALLS AND PARKING AREA.
22. DEMOLISH EXISTING STRUCTURES AND CONSTRUCT PROPOSED FREEZER FACILITY.
23. INSTALL REMAINING CATCH BASIN(S), DRAIN MANHOLE(S), AND DRAINAGE PIPE ASSOCIATED WITH THE DRIVEWAY IMPROVEMENTS. PROVIDE INLET PROTECTION FOR CATCH BASINS.
24. INSTALL REMAINING ELECTRICAL, TELEPHONE, AND CABLE UTILITIES.
25. INSTALL CURB AND BINDER COURSE OF PAVEMENT ON PORTION OF COMPLETED DRIVEWAY. BACK-UP CURBS WITH TOPSOIL AND APPLY SEED AND MULCH.
26. CONSTRUCT UPPER SITE IMPROVEMENTS (CAMPING PODS AND RESTROOM FACILITIES) AND GRAVEL PATH RESURFACING AND REALIGNMENT.
27. FINE GRADE DRIVEWAY SHOULDERS, LAWN AREA, AND ALL OTHER DISTURBED AREAS TO BE RESTORED TO VEGETATIVE COVER AND COMPLETE RESTORATION OF THESE AREAS WITH SEED AND MULCH. INSTALL LANDSCAPE PLANTINGS AND MULCH BEDS. INDIVIDUAL INFILTRATION SYSTEMS SHALL BE PLACED INTO OPERATION ONLY AFTER FINAL STABILIZATION OF DISTURBED AREA FROM CONTRIBUTING AREA. REMOVE THE SEALS FROM THE PIPE OUTLETS IN DIVERSION STRUCTURES.
28. INSTALL GRAVEL COURSE OF GRAVEL PARKING AREA.
29. CLEANOUT CATCH BASINS AND REMOVE EROSION CONTROLS.
30. INSTALL TOP COURSE OF PAVEMENT.
31. INSTALL PAVEMENT MARKINGS AS NEEDED.
32. RE-VEGETATE ROAD SHOULDERS AND YARD AREAS AS NEEDED.

NOTE: SITE STABILIZATION (80% UNIFORM DENSITY OF PERMANENT VEGETATION OR PERMANENT MULCH/STONE) MUST BE ACHIEVED PRIOR TO REMOVING TEMPORARY EROSION CONTROL MEASURES.



TYPICAL SLOPE SOIL STABILIZATION

STAPLES

ANCHORING DETAIL

CURLEX 1 BLANKET OR APPROVED EQUAL TO BE UTILIZED ON ALL NEW EMBANKMENTS STEEPER THAN 2 ON 1 IN THE AREA OF DISTURBANCE

EROSION BLANKETS INSTALLATION
(N.T.S.)

CALL BEFORE YOU DIG 1-800-962-7962

UNDER THE NY STATE LAW PROTECTING UNDERGROUND FACILITIES, THE FOLLOWING RULES AND REGULATIONS ARE IN EFFECT FOR ALL EXCAVATORS:

* THEY MUST CALL FOR A UTILITY STAKE-OUT (2) TWO FULL WORKING DAYS PRIOR TO AN EXCAVATION.
* THEY MUST FURNISH PRECISE LOCATIONS OF UNDERGROUND FACILITIES.
* THEY MUST PRESERVE STAKES AND MARKINGS UNTIL NO LONGER NEEDED AT SITE.
* THEY MUST CONTACT NON-UFPO MEMBER UTILITY OWNERS FOR STAKE-OUTS.

CRITICAL AREA SEEDING SPECIFICATION

This practice applies to all disturbed areas void of vegetation except where specific seeding/planting recommendations exist in other standards and specifications for specific uses such as recreation.

SEEDING
Site preparation-scarify soil surface for: seedbed preparation if compacted.
Remove debris and obstacles such as rocks and stumps.

Soil Amendments
1. Lime to PH 6.0
2. Fertilize with 600lbs. of 5-10-10 or equivalent per acre (14lbs./ 1000 sq.ft.).

Seed Mixtures
1. Temporary Seeding's
   a. Ryegrass (annual or perennial) @ 30lbs. per acre(0.7 lbs/ 100sq.ft.).
   b. Certified "aroostook" winter rye (ceral rye) @ 100 lbs. per acre(2.5lbs./1000 sq.ft.).

   Use winter rye if seeding in October/November.

2) Permanent Seeding's
   a. Rough or occasionally mowed areas:

	lbs. / acre	lbs. / 1000sq. ft.
Empire birdsfoot trefoil(1)	8	0.20
OR		
Common white clover(1)	8	0.20
PLUS		
Tall fescue	20	0.45
PLUS		
Redtop	2	.05
OR		
Ryegrass	5	0.10 (perennial)

(1) add innoculant immediately prior to seeding.

Time of seeding

The optimum time for permanent seeding's with legumes (birdsfoot trefoil or clover) is early spring.

Permanent seeding's may be any time of the year if properly mulched and adequate moisture is provided. Mid summer is not a good time to seed, but these seeding's if construction is complete, will facilitate covering the land. Portions may fail and may need reseeding the following year.

Temporary seeding's should be made within 24 hours of construction or disturbance. If not, the soil must be scarified prior to seeding.

Method of seeding

Broadcasting. drilling with cultipack type seeder or hydroseeding are acceptable. Good soil to seed contact is the key to successful seeding's.

Mulching and Mulch Anchoring

See specifications below.

Irrigation

Watering may be essential to establish a new seeding. Weather conditions and the intended use of the area will dictate when to water. Irrigation is specialized practice and care needs to be taken not to exceed the application rate/infiltration rate of a given soil.

Each application must be uniformly applied and 1 to 2 inches of water should be applied per application set up.

Mulching

The mulching specifications provided hereon apply to any disturbed areas or exposed slopes 20' vertical or greater that are exposed outside of the spring and fall grass growing season.

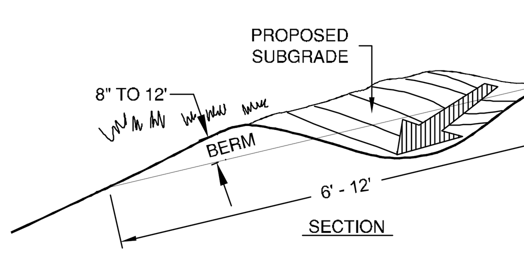
Mulch Material: Air-dried hay or straw: free of undesirable seeds and coarse materials.

Application Rate: 90-100 lbs per 1000 s.f. or 2 tons per acre.

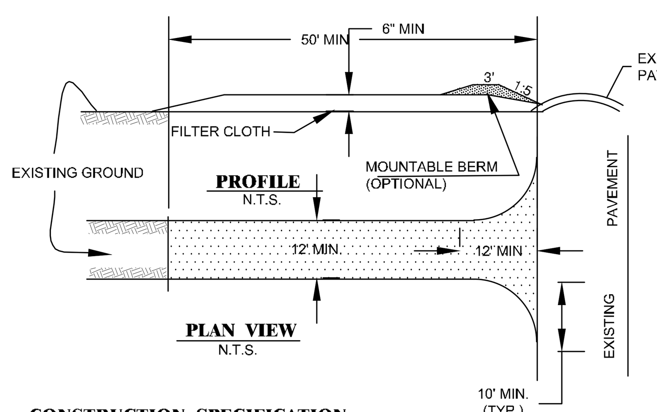
Recommended Surface Coverage: Approximately 90%

Mulch Anchoring Material: Biodegradable Mulch netting: light-weight paper, jute wood fiber, or plastic netting

Method of Anchoring Application: Staple mulch netting to soil surface in accordance with netting manufacturers recommendations.



WATER BREAKS
N.T.S.



CONSTRUCTION SPECIFICATION

1 STONE SIZE- USE 2" STONE, OR RECYCLED CONCRETE EQUIVALENT.
2 LENGTH-NOT LESS THAN 50' (EXCEPT ON A SINGLE RESIDENCE LOT WHERE A 30 FOOT MINIMUM LENGHT 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 & WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
9 PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.

STABILIZED CONSTRUCTION ENTRANCE DETAIL
N.T.S.

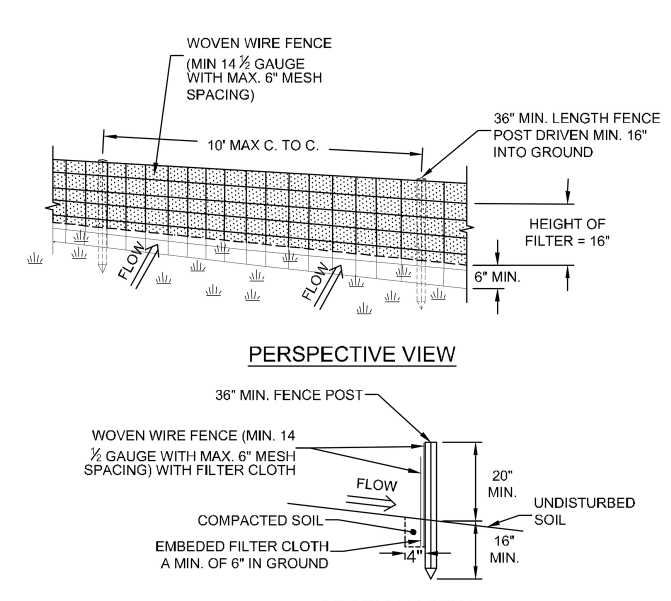
SEDIMENTATION & EROSION CONTROL NOTES

A. General Notes

1. Prior to commencement of any clearing, grading, or excavation in connection with any proposed construction activity, the Owner of Record shall file a notice of Intent (NOI) with the New York State Department of Environmental Conservation (NYSDEC) and the Town of Lewisboro. When all construction has been completed and the site has reached final stabilization, the Owner shall submit a Notice of Termination NOT) to the NYSDEC and the Town of Lewisboro.
2. A copy of all Notice of Intents and all Contractor's Certifications, required pursuant to the NYS DEC's "SPDES General Permit for Stormwater Discharges from Construction Activity" (Permit No. GP-02-01) for all land disturbances, development or redevelopment located within the Town of Lewisboro, shall also be filed with the Lewisboro Planning Department.
3. All construction activities involving the removal or deposition of soil are to be provided with appropriate protective measures to minimize erosion and contain sediment deposition within the site. Minimum soil erosion and sediment control measures shall be implemented as shown on the plans approved by the Town of Lewisboro. All erosion and sediment control measures employed during construction shall comply with the NYS DEC's "New York Standards and Specifications for Erosion and Sediment Control," latest edition.
4. The Owner's Field Representative (O.F.R.) will be responsible for the implementation and maintenance of sediment and erosion control measures on the site prior to and during construction. All erosion control measures are to be maintained in proper functioning order and are to be repaired or replaced as necessary, or as required by the Town Planner, Building Inspector, Town ECI, or Town Engineer.
5. Sedimentation and erosion control measures shall be inspected and maintained on a daily basis by the O.F.R. to ensure that channels, temporary and permanent ditches and pipes are clear of debris, that embankments and berms have not been breached and that all straw bales and silt fences are intact. Any failure of sediment and erosion control measures shall be immediately repaired by the Contractor and inspected for approval by the O.F.R. and/or Site Engineer.
6. The O.F.R. shall inspect downstream conditions for evidence of sedimentation on a weekly basis and after rainstorms of 0.5 inches or greater.
7. All erosion control measures are to be inspected and maintained on a regular basis throughout the construction period and until all disturbed land has been stabilized by vegetation or paving. Responsibility for the erosion and sediment control plan rests with the landowner of record. This responsibility includes installation and maintenance of all control measures, informing all parties involved in site construction of the plan's objectives and requirements, notifying the Town of Lewisboro of any transfer of its responsibility and transferring a copy of the certified erosion and sediment control plan should the title of all or part of the land be transferred.
8. Site inspections shall be conducted by a qualified soil erosion control professional (retained by the Owner) at least twice every seven (7) calendar days and within 24 hours of the end of a storm event of 0.5 inches or greater.
9. Wherever feasible, natural vegetation should be retained and protected. Only the smallest practical area of land should be exposed at any one time during development, and the exposure shall be kept to the shortest practical period of time. Disturbance shall be limited to the areas required to perform construction.
10 Stabilized construction entrances, silt fences and other erosion and sediment controls shall be installed as shown on plans approved by the Town of Lewisboro prior to beginning any clearing and grubbing or earthwork.
11 The exposure of an area by site preparation shall be kept to the shortest practical period of time. Erosion and sediment control requirements shall include surface stabilization measures applied as soon as practical in portions of the site where construction activities have temporarily or permanently ceased, but in no case more than seven (7) days after the construction activity in that portion of the site has temporarily or permanently ceased. From November 1 through March 31 any disturbed area must be stabilized using a heavy mulch layer, a rolled erosion control product or another method that does not require seed germination to control erosion. Any graded areas not subject to further disturbance or construction traffic shall be immediately brought to final grade and receive permanent vegetation cover in combination with a suitable mulch.
12 The permanent final vegetation and structures shall be installed as soon as practical and as may be directed by the Town Planner, Town ECI, or Town Engineer.
13. All topsoil to be stripped from the area being developed shall be stockpiled not less than two hundred (200) feet from any body of surface water and shall be immediately seeded with a rye grass mixture having a quick germination time.
14. Grass seed mix may be applied by either mechanical or hydroseeding methods. All seeding and turf establishment shall be performed in accordance with the current edition of the NYS DOT's "Standard Specifications- Construction and Materials," Section 610-3.02, Method No. 1. If seeding is performed between May 15th and August 15th irrigation may be required to ensure proper lawn establishment, and shall be performed if so directed by the project engineer or the Town's representatives.
15. All cut slopes and embankment fills are to be immediately laid back and stabilized using appropriate techniques which meet the design standards found in the "New York Standards and Specifications for Erosion and Sediment Control," latest edition. At a minimum, slopes and embankments shall be stabilized as follows:
    a. Grade to finished slopes.
    b. Scarified.
    c. Topsoiled with not less than four (4) inches of suitable topsoil material.
    d. Seeded with perennial rye grass. Seed shall be applied at the rate of not less than five (5) pounds per one thousand (1,000) square feet.
    e. Mulched with not less than one (1) inch and not more than three (3) inches of straw (two tons per acre) and anchored in a suitable manner.
    f. All graded slopes greater than a 2h:1v shall use a rolled erosion control product or other means necessary to provide permanent stabilization, and shall be approved by the Town of Lewisboro prior to installation.
16. On all embankment fill slopes, topsoil shall be stripped at least five (5) feet wider than required for the embankment toe of slope. A protective berm of topsoil shall be left in this area, running parallel to the contours for the purpose of restricting drainage runoff. The topsoil berm shall be seeded as required for stockpiles.
17. Paved roadways shall be kept clean at all times.
18. The site shall at all times be graded and maintained such that all stormwater runoff is diverted to soil erosion and sediment control facilities.
19. All storm drainage outlets shall be stabilized, as required, before the discharge points become operational.
20. Stormwater from disturbed areas must be passed through sediment control devices before discharge beyond disturbed areas or discharged into other drainage systems.
21. Dust shall be controlled by sprinkling or other approved methods as necessary, or as directed by the O.F.R.
22. Cut and fills shall not endanger adjoining property, nor divert water onto the property of others.
23. All fills shall be compacted to provide stability of material and to prevent settlement.
24. Erosion control measures shall remain in place until all soil disturbing activities have been completed and all disturbed areas are suitably stabilized. A disturbed area shall be deemed to be "suitably stabilized" upon establishment of a uniform perennial vegetative cover (having a density of at least 80%) on all unpaved areas or areas not covered by permanent structures. Areas which are paved or covered by a permanent structures shall also be considered to be "suitably stabilized."
25. Construction equipment shall not unnecessarily cross live streams except by means of bridges and culverts or other approved methods.
26. Temporary on-site sedimentation basins for the immediate control of erosion and sediment transport are to be provided when and where required or ordered. The length, width and depth of such basins are to be determined in the field in accordance with the "New York Standards and Specifications for Erosion and Sediment Control," latest edition.
27. As warranted by field conditions, special additional sedimentation and erosion control measures, as specified by the site Engineer, the Building Inspector, the Town Planner the Town ECI and/or the Town Engineer shall be installed by the Contractor at no cost to the Town.

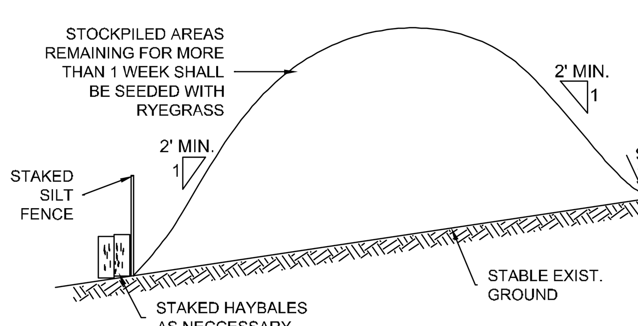
B. Streams

1. All construction activities in or around streams are to be provided with temporary erosion control structures, dewatering devices, or temporary stream diversions as approved by the Town of Lewisboro. These structures shall be in place as shown on the approved plans prior to the start of any construction activity.
2. Construction of temporary erosion control measures shall begin with the installation of devices/measures located farthest downstream, and thence proceed upstream until all required erosion control measures are in place.
3. After construction, the temporary erosion control measures are to be removed in reverse order, with the erosion control measures located farthest upstream removed first, and thence proceeding downstream.
4. Construction activities are to begin with the farthest downstream work and proceed to activities farthest upstream. Prior to commencement of upstream activities, all downstream construction must be completed and permanently stabilized.
5. All temporary erosion control measures are to be left in place, maintained and replaced as needed or as directed, until all work upstream therefrom has been completed and all related temporary erosion control measures have been removed.



CONSTRUCTION SPECIFICATIONS:
1. WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES. POSTS SHALL BE STEEL EITHER "T" OR "U" TYPE OR HARDWOOD.
2. FILTER CLOTH TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION. FENCE SHALL BE WOVEN WIRE, 6" MAXIMUM MESH OPENING.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVER-LAPPED BY SIX INCHES AND FOLDED. FILTER CLOTH SHALL BE EITHER FILTER X, MIRAFI 100X, STABILINKA T140N, OR APPROVED EQUIVALENT.
4. PREFABRICATED UNITS SHALL BE GEOFAB, ENVIROFENCE, OR APPROVED EQUIVALENT.
5. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.

SILT FENCE DETAIL
N.T.S.



TYPICAL SOIL STOCKPILE DETAIL
N.T.S.

MAINTENANCE AND INSPECTION REQUIREMENTS

A. Construction Phase

Throughout project construction, the responsibility for installation, maintenance and repair of erosion controls and SMP's will rest with the site contractor as the owner's representative. Oversight of the preparedness of erosion controls and SMP's will be conducted by the owner's qualified professional through regular inspections in accordance with NYSDEC SPDES GP-0-15-002 General Permit requirements. On a daily basis, the project superintendent shall check for damaged silt fence, the need to clean mud tracked onto Route 35. Street sweeping should be conducted as required. Monitor catch basin sumps for sediment accumulation and clean out when one half full.

Construction debris, such as sheet metal and wood scrap, paper and insulation products, styrofoam cups and paper wrappers can become windblown litter over and off the site if neglected. Such litter is easily controlled and prevented when the project superintendent sets the tone for vigilant litter control at the outset of the project. Suitable and ample refuse containers will be provided on the site and emptied when full. Any scattered debris will be picked up and placed in containers on a daily basis. Heavy equipment will be refueled by daily deliveries to the site. Gasoline and oil for small engine equipment will be stored in construction equipment storage sheds. Refueling will take place at least 100 feet from the drainage swales to preclude any possible escape of spilled fuel to stormwater. In the event of any major spill, its capture and the removal of contaminated soil will be conducted under NYSDEC regulations for spill remediation.

As work progresses, the superintendent must ensure that the new work area is first protected with perimeter erosion controls. As important as the need to identify areas requiring protection, is the need to determine disturbed areas that can be stabilized with temporary vegetation. Site management responsibilities will include identification of sections in a work phase where active site work will not occur over the next 7 days. If disturbed earth is present, the superintendent will direct the spreading of rye grass seed and mulch for a temporary protective cover.

B. Post Construction

Following completion of construction, stabilization of the site and establishment of turf material, responsibility and maintenance will remain with the Owner. These items will require the following maintenance tasks:

Inspection - Following construction, each Infiltration System, detention system,

CDS's outlet and diversion MH's will require regular inspections on at least a semi-annual basis and following major storm events to check for:

a. Evidence of clogging of detention system outlet structure.
b. Accumulation of sediment at the inlet and around detention system outlet control structure.
c. Sediment accumulation at the Infiltration Systems.
d. Accumulation of debris and sediment in the diversion manholes, detention system inlet and equalization piping and catch basins.
e. Swale erosion.

Debris and Litter Control - Removal of debris and litter should be undertaken during the mowing operation.

Erosion Control - Eroding soil on slopes, contributory areas noted during inspections and in diversion swales should be stabilized immediately with topsoil replacement, seeding and mulching. Any riprap dislodged at pipe outlets and in swales should be repositioned.

Sediment Removal - Sediment deposition in the detention and Infiltration Systems, CDS pretreatments and diversion Manholes will need to be removed in order to maintain capacity for stormwater treatment and prevent clogging of the outlet structure. The need for sediment removal should be determined during routine inspections and the appropriate equipment and manpower scheduled for the task.

Catch Basin Cleanout - Catch basins are provided with sumps 18 inches below the pipe inverts for sediment trapping purposes. Catch basin sumps should be cleaned annually using a vacuum cleaning service.

SOIL RESTORATION

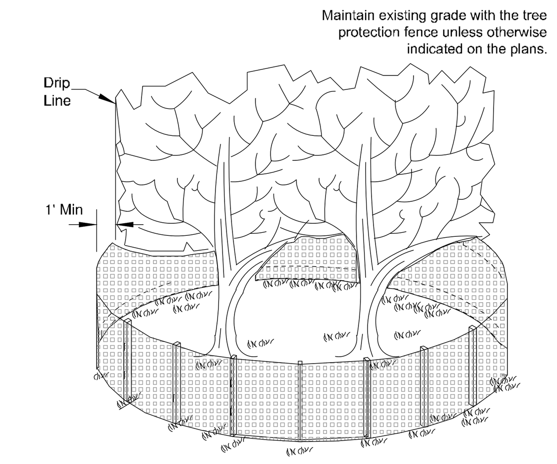
SOIL RESTORATION IS A REQUIRED PRACTICE APPLIED ACROSS AREAS OF A DEVELOPMENT SITE WHERE SOILS HAVE BEEN DISTURBED AND WILL BE VEGETATED IN ORDER TO RECOVER THE ORIGINAL PROPERTIES AND POROSITY OF THE SOIL.

SOIL RESTORATION IS APPLIED IN THE CLEANUP, RESTORATION, AND LANDSCAPING PHASE OF CONSTRUCTION FOLLOWED BY THE PERMANENT ESTABLISHMENT OF AN APPROPRIATE, DEEP-ROOTED GROUNDCOVER TO HELP MAINTAIN THE RESTORED SOIL STRUCTURE. SOIL RESTORATION INCLUDES MECHANICAL DECOMPACTION, COMPOST AMENDMENT, OR BOTH.

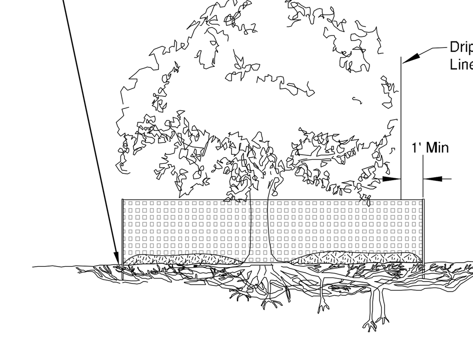
DURING PERIODS OF RELATIVELY LOW TO MODERATE SUBSOIL MOISTURE, THE DISTURBED SUBSOILS ARE RETURNED TO ROUGH GRADE AND THE FOLLOWING SOIL RESTORATION STEPS APPLIED:

1. APPLY 3 INCHES OF COMPOSTj OVER SUBSOIL
2. TILL COMPOST INTO SUBSOIL TO A DEPTH OF AT LEAST 12" (INCHES) USING A CAT-MOUNTED RIPPER, TRACTOR- MOUNTED DISC, OR TILLER, MIXING, AND CIRCULATING AIR AND COMPOST INTO SUBSOILS.
3. ROCK-PICK UNTIL UPLIFTED STONE/ROCK MATERIALS OF FOUR INCHES AND LARGER SIZE ARE CLEANED OFF THE SITE.
4. APPLY TOPSOIL TO A DEPTH OF 6" (INCHES).
5. VEGETATE AS REQUIRED BY APPROVED PLAN.

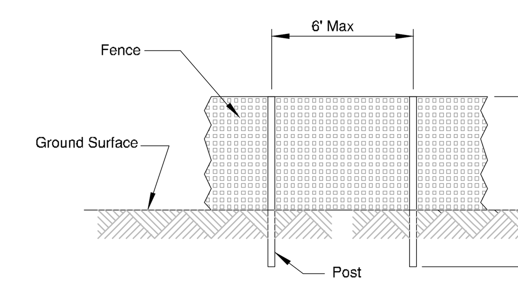
COMPOST SHALL BE AGED, FROM PLANT DERIVED MATERIALS, FREE OF VIABLE WEED SEEDS, HAVE NO VISIBLE FREE WATER OR DUST PRODUCED WHEN HANDLING, PASS THROUGH A HALF INCH SCREEN AND HAVE A PH SUITABLE TO GROW DESIRED PLANTS.



TREE GROUP



INDIVIDUAL TREE

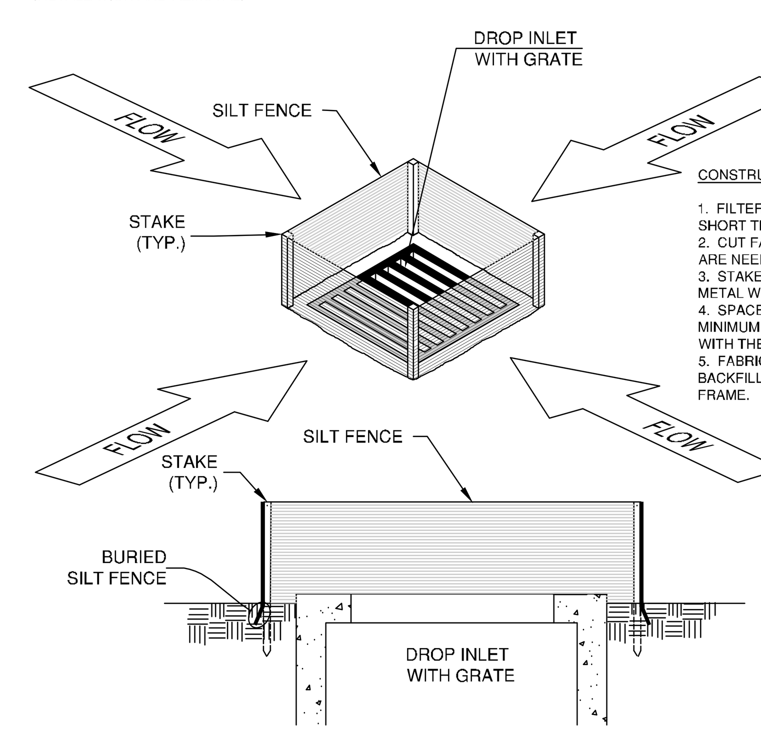


POST AND FENCE DETAIL

EXISTING TREE PROTECTION
N.T.S.

TREE PROTECTION SHALL BE INSTALLED PRIOR TO ANY CONSTRUCTION ACTIVITY.

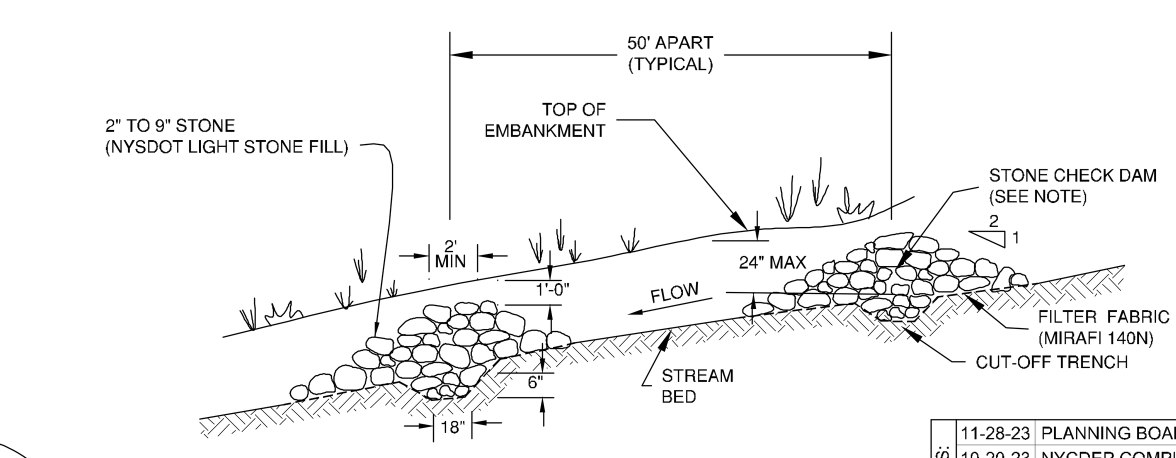
NOTES:
1. THE FENCE SHALL BE LOCATED A MINIMUM OF 1 FOOT OUTSIDE THE DRIP LINE OF THE TREE TO BE SAVED AND IN NO CASE CLOSER THAN 5 FEET TO THE TRUNK OF ANY TREE.
2. FENCE POSTS SHALL BE EITHER STANDARD STEEL OR 2" X 6' WOOD POSTS OR APPROVED EQUAL.
3. THE FENCE MAY BE EITHER 40" HIGH SNOW FENCE, 40" PLASTIC WEB FENCING OR APPROVED EQUAL.
4. NO PRUNING SHALL BE PERFORMED EXCEPT BY APPROVED ARBORIST.
5. NO EQUIPMENT SHALL OPERATE INSIDE THE PROTECTIVE FENCING INCLUDING DURING FENCE INSTALLATION AND REMOVAL.



CONSTRUCTION SPECIFICATIONS

1. FILTER FABRIC SHALL HAVE AN EOS OF 40-85. BURLAP MAY BE USED FOR SHORT TERM APPLICATIONS.
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" x 4" 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.

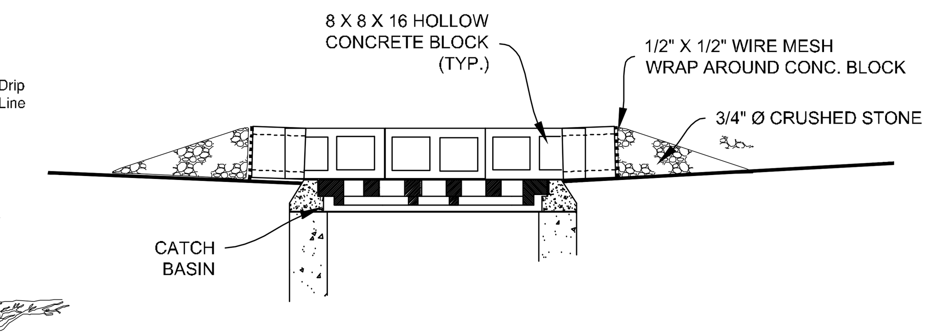
DROP INLET PROTECTION AT CATCH BASIN
N.T.S.



LONGITUDINAL SECTION ALONG STREAM AT CHECKDAM

NOTE
CHECK DAMS SHALL BE SPACED SUCH THAT THE BASE OF ONE SHALL BE ON A LEVEL WITH THE TOP OF THE NEXT ONE DOWN STREAM OF IT.

STONE CHECK DAMS
N.T.S.



STONE & CONCRETE BLOCK INLET PROTECTION AT CATCH BASIN
N.T.S.
(TO BE INSTALLED ON DRIVEWAY AFTER INSTALLATION OF ITEM #4)

PRACTICE: EROSION CONTROLS

Maintenance Item	Frequency of Inspection					
	Short Term				Long Term	
	Following Major Rainfall	Daily	Weekly	Monthly	Yearly	Following Major Rainfall
Silt Fence (not knocked down or bulging)	X	X				
Construction Entrance (silt accumulation)	X	X				
Soil Stockpile	X			X		
Seeding/Mulching	X			X		
Site Stabilization	X		X			
Catch Basin Inlet Protection	X		X			
Use of Construction Staging Areas	X	X				
General Site Appearance	X	X				
Debris/Litter Control	X	X				
Need to Clean Road Surface	X	X				
Stormwater Discharge Quality	X	X			X	X

PRACTICE: CATCH BASINS, DRAIN MANHOLES & DIVERSION STRUCTURES

Maintenance Item	Frequency of Inspection							
	Short Term				Long Term			
	Following Major Rainfall	Daily	Weekly	Monthly	Monthly	Bi-monthly*	Yearly	Following Major Rainfall
Inflow Pipes & Rims Clear	X			X		X	X	X
Sediment Accumulation in Sumps	X			X			X	X
Accumulation of larger trash	X			X	X		X	X
Outlets Unobstructed	X			X		X	X	X

* For catch basins located in grassy areas only.

PRACTICE: INFILTRATION SYSTEMS / BASIN

Maintenance Item	Frequency of Inspection						
	Short Term				Long Term		
	Following Major Rainfall	Daily	Weekly	Monthly	Monthly	Yearly	Following Major Rainfall
Inflow Pipes Clear	X					X	X
Outlet Structure	X					X	X
Diversion Manhole / Outlets	X		X	X	X	X	X
No Evidence of Downstream Erosion	X						X
Dewaters Between Storms	X						X
Upland Area Clear of Debris	X						X
Forebay Silt Accumulation > 6"	X					X	X

PRACTICE: CDS PRETREATMENT UNITS

Maintenance Item	Frequency of Inspection							
	Short Term				Long Term			
	Following Major Rainfall	Daily	Weekly	Monthly	Monthly	Quarterly*	Yearly	Following Major Rainfall
Inflow Pipes & Rims Clear	X			X		X	X	X
Sediment Accumulation in Sumps	X			X		X	X	X
Accumulation of larger trash	X			X		X	X	X
Outlets Unobstructed	X			X		X		X

*During first year only.

PRACTICE: ROCK OUTLET PROTECTION /SWALES

Maintenance Item	Frequency of Inspection						
	Short Term				Long Term		
	Following Major Rainfall	Daily	Weekly	Monthly	Monthly	Yearly	Following Major Rainfall
Debris Cleanout	X					X	X
Vegetation	X		X			X	X
Sediment Deposition	X		X			X	X
Dislodged Stone	X			X	X		X

REVISIONS:

DATE:	DESCRIPTION	BY/CK	DATE:	DESCRIPTION	BY/CK
11-28-23	PLANNING BOARD SUBMISSION	RH/MG	01-16-23	BUILDING DEPARTMENT COMMENTS	RH/MG
10-20-23	NYCDEP COMPLETENESS COMMENTS	RH/MG	02-07-22	WCHD NYCDEP COMMENTS	ZF/ED
04-25-23	PLANNING BOARD SUBMISSION	RH/MG	06-04-21	NYCDEP APPLICATION	RH/MG
02-07-23	PLANNING BOARD SUBMISSION	RH/MG	04-27-21	PLANNING BOARD SUBMISSION	RH/MG

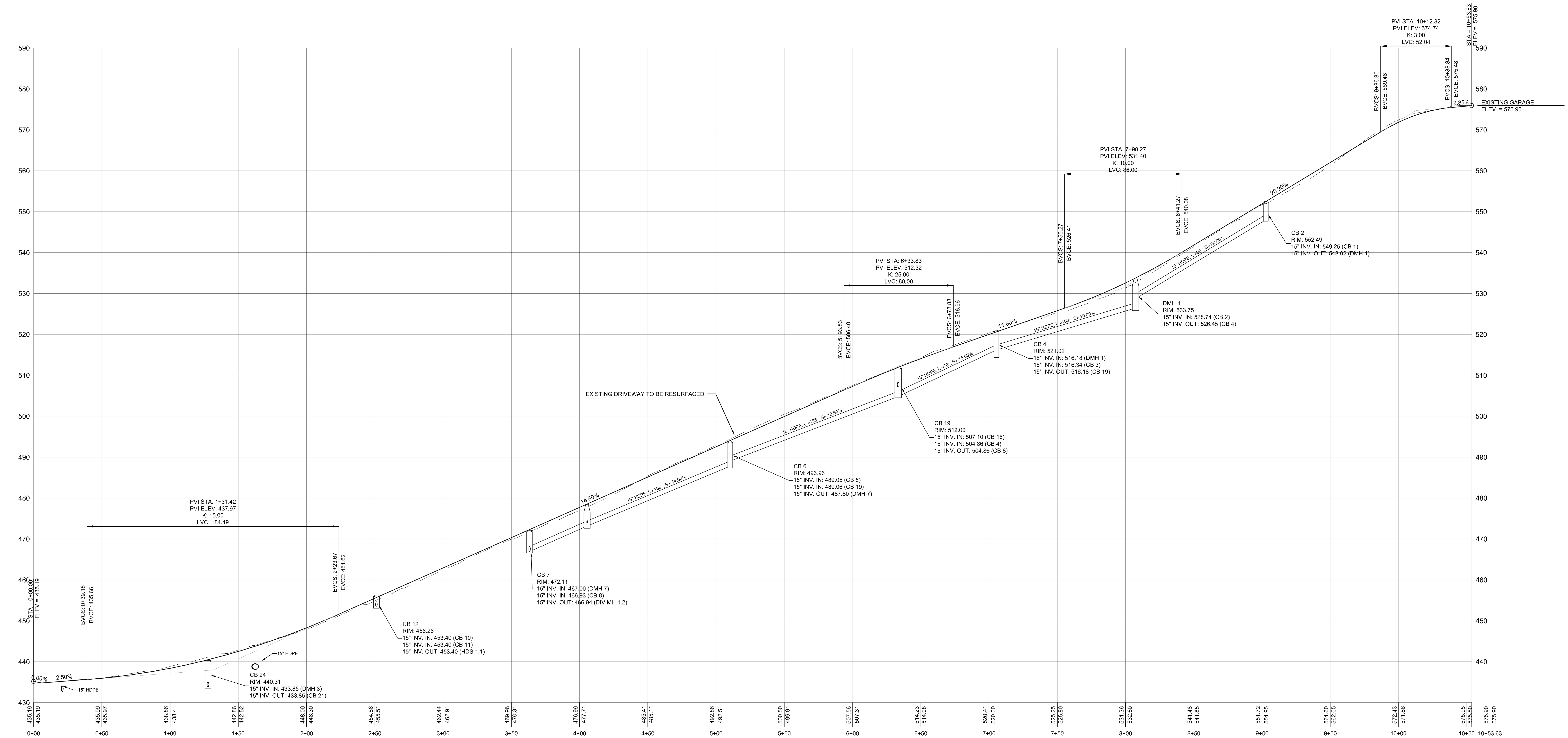
EROSION CONTROL NOTES & DETAILS

WOLF CONSERVATION CENTER
7 BUCK RUN, SOUTH SALEM, NY 10590
TOWN OF LEWISBORO , WESTCHESTER COUNTY, NY

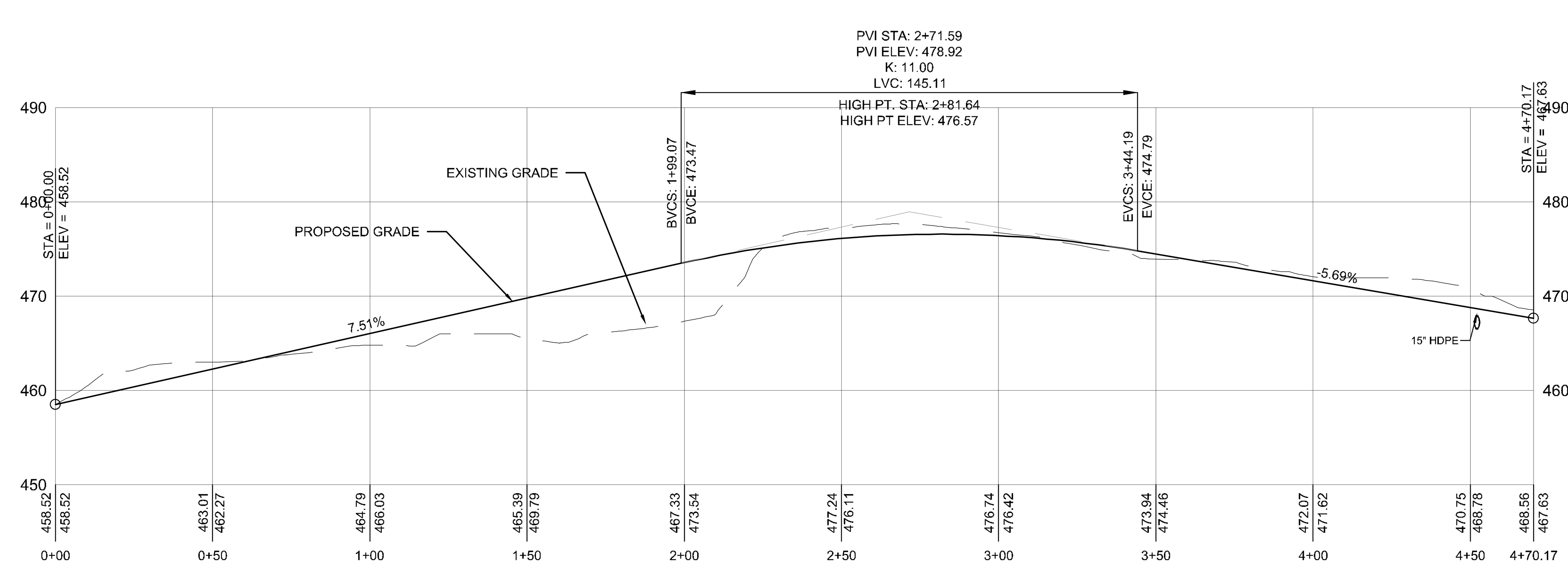
BIBBO ASSOCIATES, LLP
293 ROUTE 100 SUITE 203
SOMERS, NEW YORK 10589
TEL. 914 277 5805

MATTHEW J. GIRONDA P.E.

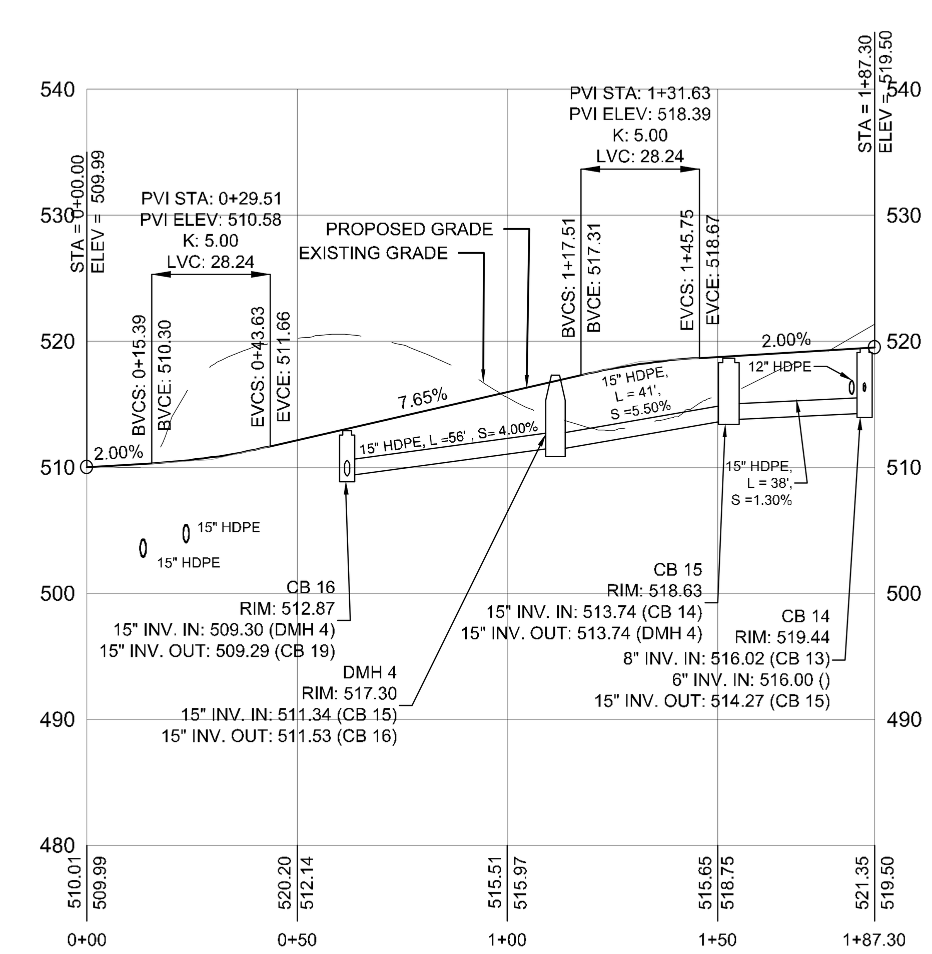
DATE:	12-29-2020
SCALE:	1" = 60'
FILE:	L5
DSGN / CHK:	MG/RH
DRN. BY:	RH
SHT NO.	10 OF 20
DWG NO.	EC-2



MAIN DRIVEWAY PROFILE
SCALE: 1" = 30' (H)
1" = 10' (V)



BUS ROUTE PROFILE
SCALE: 1" = 30' (H)
1" = 10' (V)



EDUCATION PAVILION PROFILE
SCALE: 1" = 30' (H)
1" = 10' (V)

CALL BEFORE YOU DIG 1-800-962-7962

UNDER THE NY STATE LAW PROTECTING UNDERGROUND FACILITIES, THE FOLLOWING RULES AND REGULATIONS ARE IN EFFECT FOR ALL EXCAVATORS:

* THEY MUST CALL FOR A UTILITY STAKE-OUT (2) TWO FULL WORKING DAYS PRIOR TO AN EXCAVATION.
* THEY MUST CONFIRM PRECISE LOCATIONS OF UNDERGROUND FACILITIES.
* THEY MUST PRESERVE STAKES AND MARKINGS UNTIL NO LONGER NEEDED AT SITE.
* THEY MUST CONTACT NON-UFPO MEMBER UTILITY OWNERS FOR STAKE-OUTS.

REVISIONS:					
11-28-23	PLANNING BOARD SUBMISSION	RH/MG	01-16-23	BUILDING DEPARTMENT COMMENTS	RH/MG
10-20-23	NYCDEP COMPLETENESS COMMENTS	RH/MG	02-07-22	WCHD NYCDEP COMMENTS	ZF/ED
04-25-23	PLANNING BOARD SUBMISSION	RH/MG	06-04-21	NYCDEP APPLICATION	RH/MG
02-07-23	PLANNING BOARD SUBMISSION	RH/MG	04-27-21	PLANNING BOARD SUBMISSION	RH/MG
DATE:	DESCRIPTION	BY/CK	DATE:	DESCRIPTION	BY/CK

STATE OF NEW YORK
MATTHEW J. GIRONDA
No. 096030
LICENSED PROFESSIONAL ENGINEER

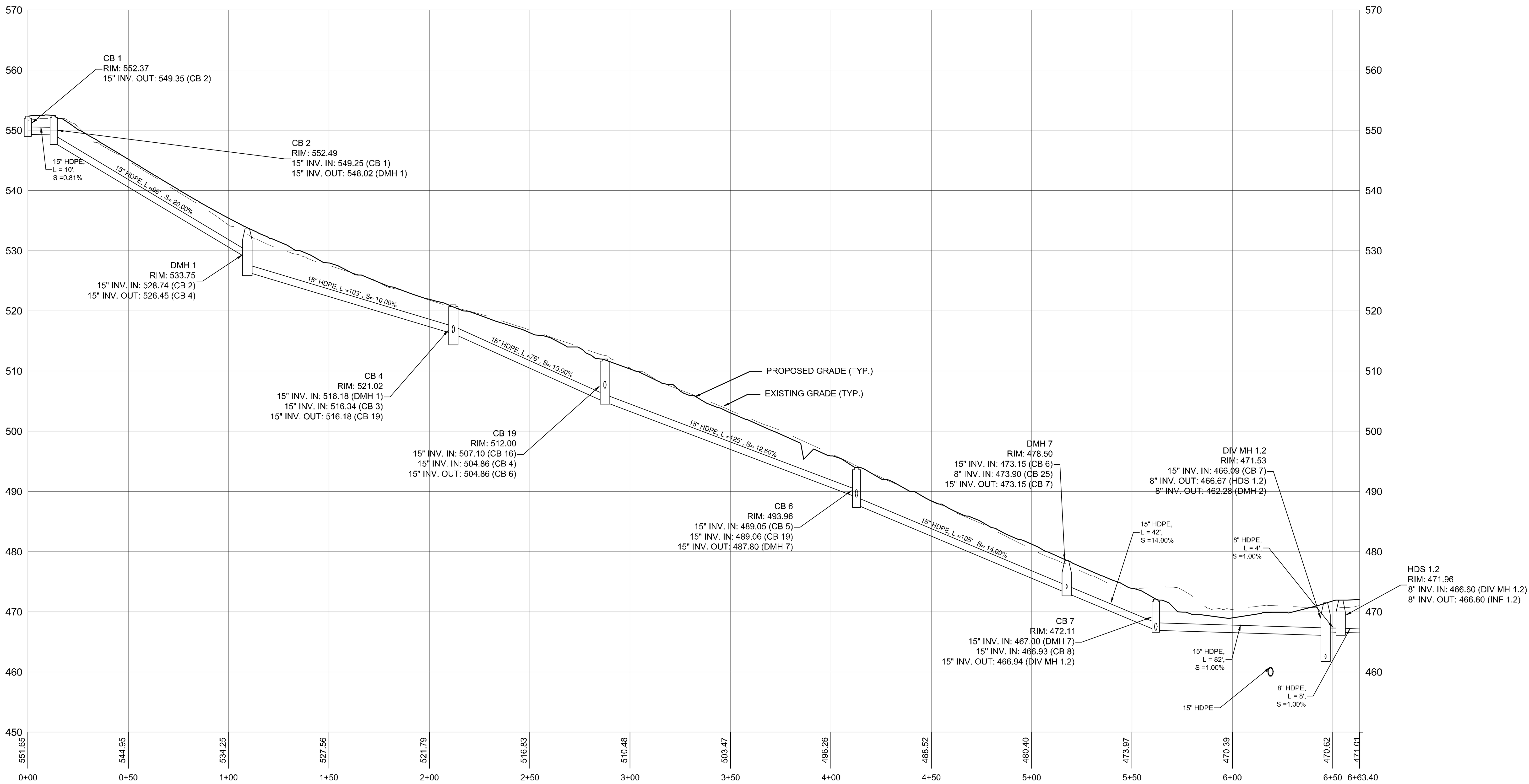
MATTHEW J. GIRONDA P.E.

ROAD PROFILES

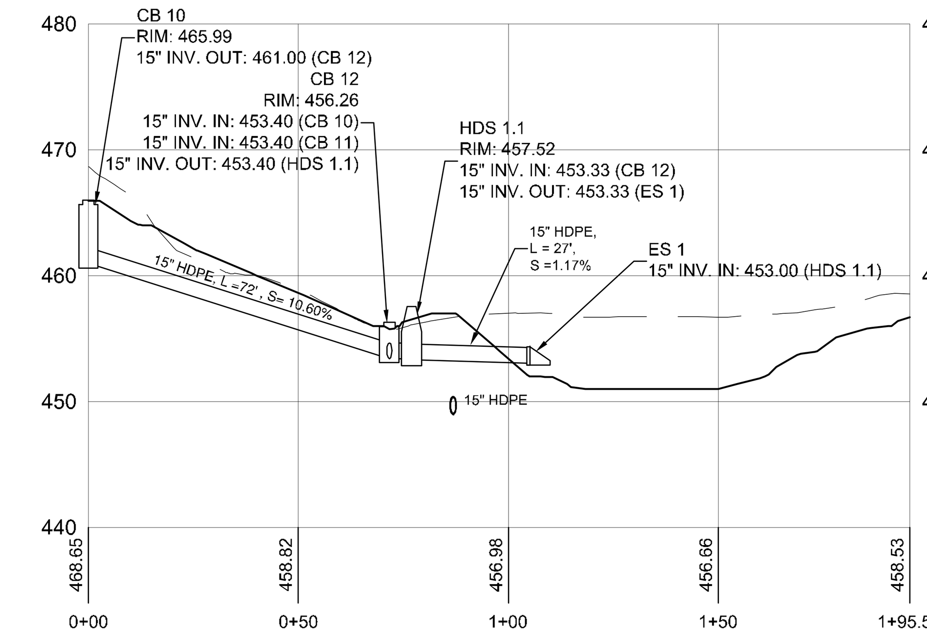
WOLF CONSERVATION CENTER
7 BUCK RUN, SOUTH SALEM, NY 10590
TOWN OF LEWISBORO , WESTCHESTER COUNTY, NY

BIBBO ASSOCIATES, LLP
293 ROUTE 100 SUITE 203
SOMERS, NEW YORK 10589
TEL. 914 277 5805

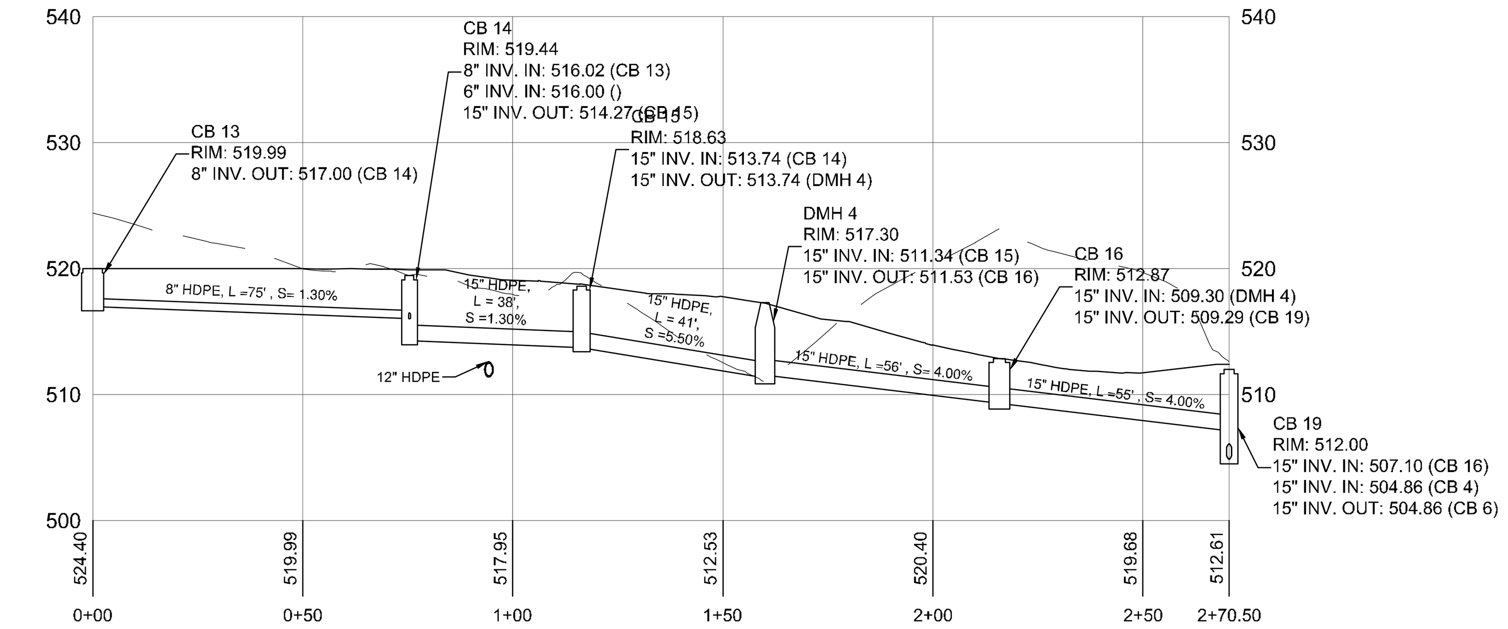
DATE:	12-29-2020
SCALE:	1" = 30'
FILE:	L5
DSGN / CHK:	MG/RH
DRN. BY:	RH
SHT NO.	11 OF 20
DWG NO.	P-1



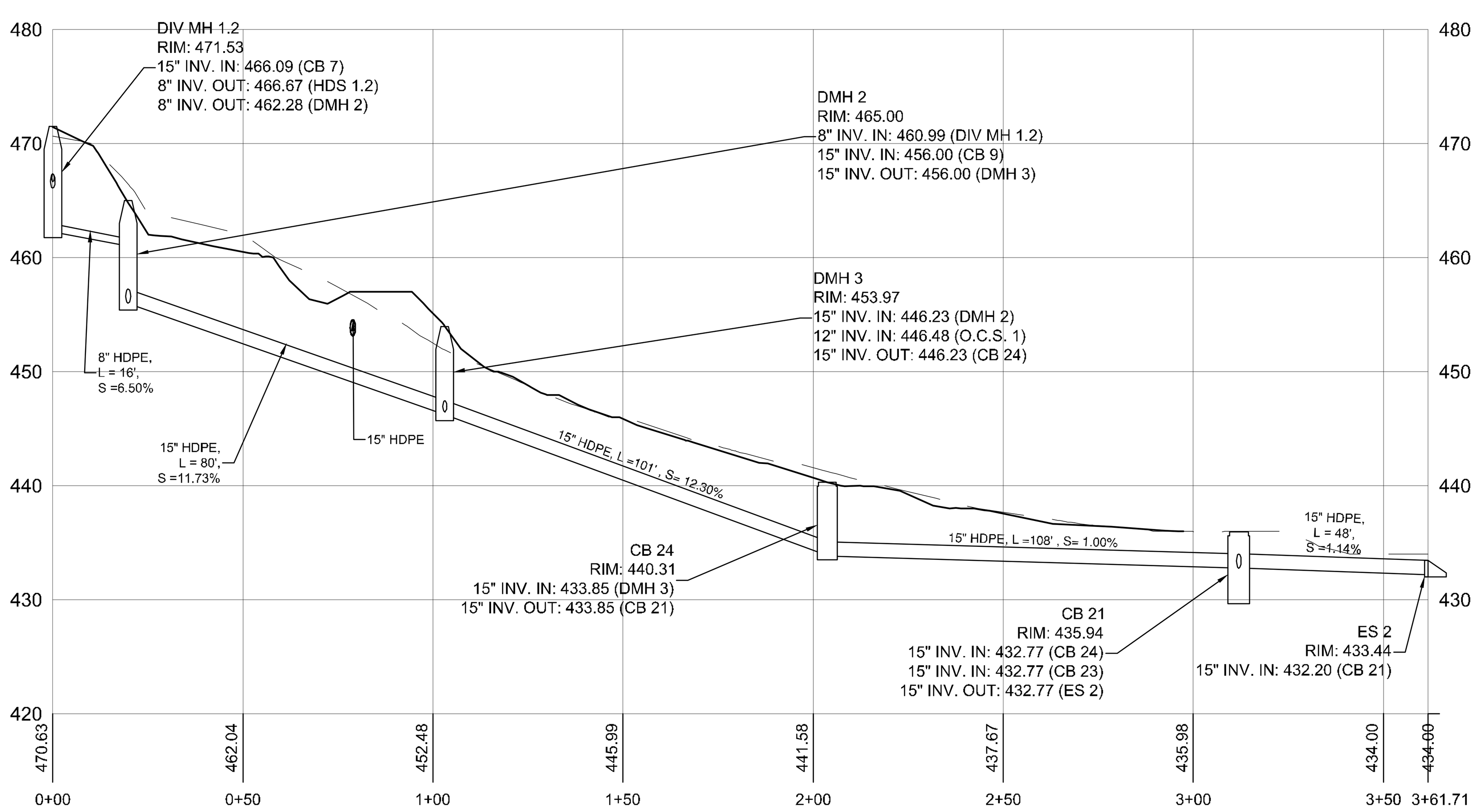
DRAINAGE PROFILE (CB 1 TO INF 1.2)
SCALE: 1" = 30' (H)
1" = 10' (V)



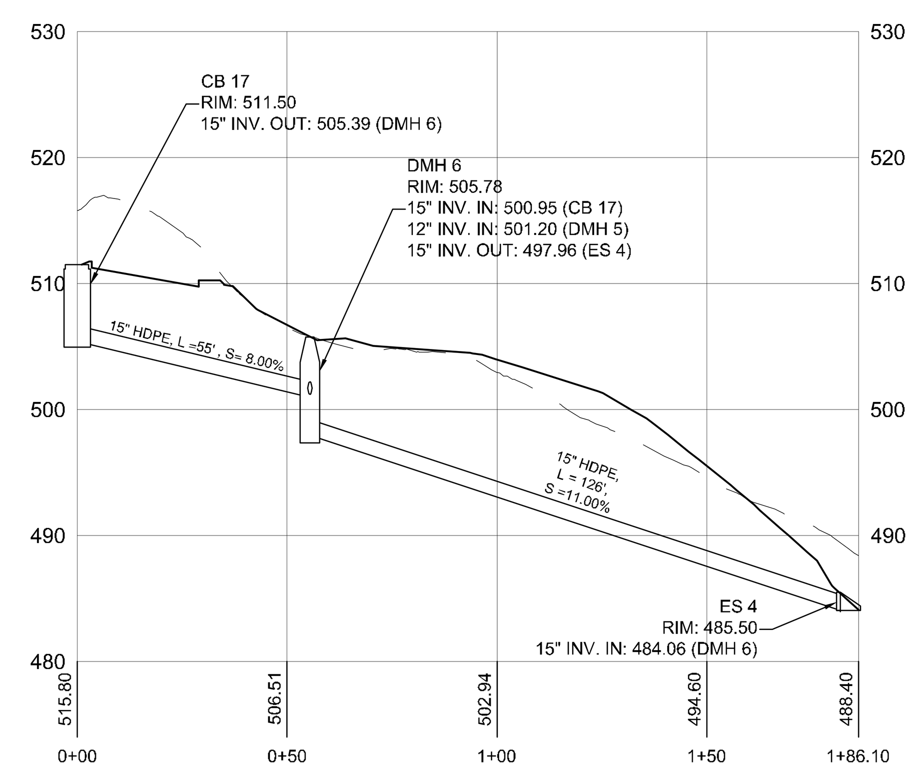
DRAINAGE PROFILE (CB 11 TO ES 1)
SCALE: 1" = 30' (H)
1" = 10' (V)



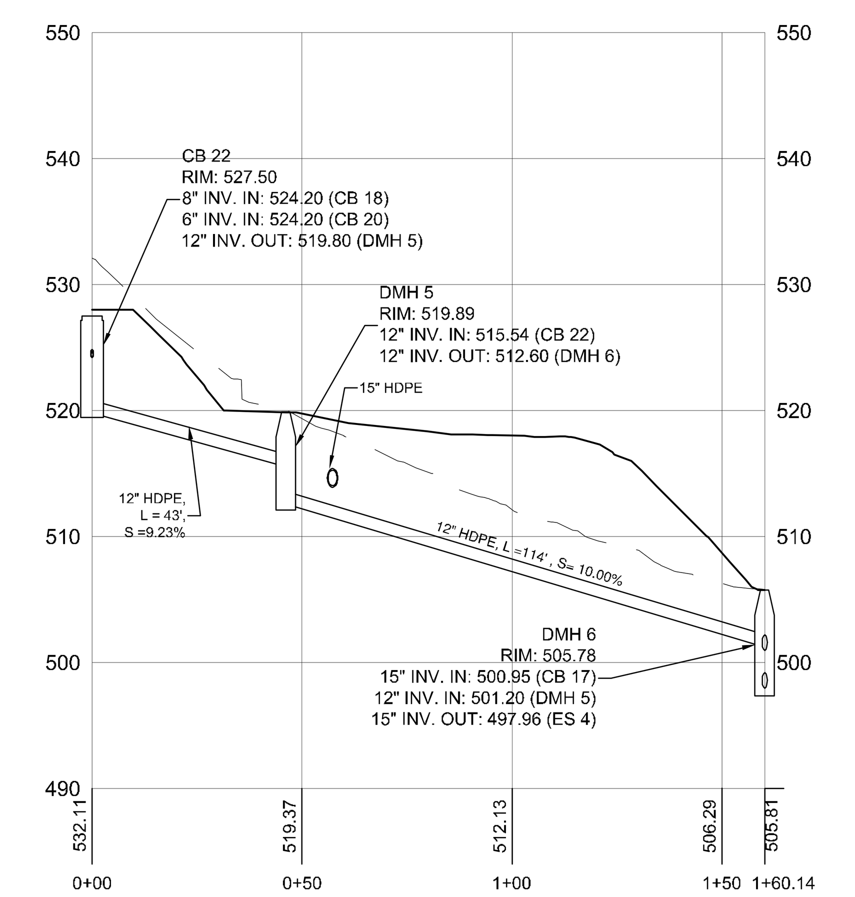
DRAINAGE PROFILE (CB 13 TO CB 19)
SCALE: 1" = 30' (H)
1" = 10' (V)



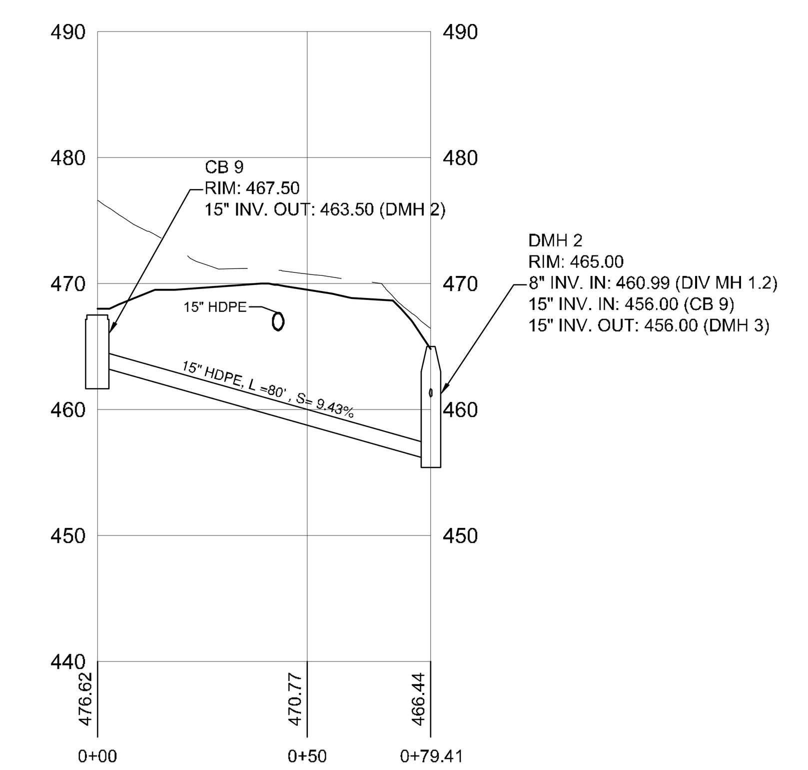
DRAINAGE PROFILE (DS 1.2 TO ES 2)
SCALE: 1" = 30' (H)
1" = 10' (V)



DRAINAGE PROFILE (CB 17 TO ES 4)
SCALE: 1" = 30' (H)
1" = 10' (V)



DRAINAGE PROFILE (CB 22 TO DMH 6)
SCALE: 1" = 30' (H)
1" = 10' (V)



DRAINAGE PROFILE (CB 9 TO DMH 2)
SCALE: 1" = 30' (H)
1" = 10' (V)

REVISIONS:

DATE:	DESCRIPTION	BY/CK	DATE:	DESCRIPTION	BY/CK
11-28-23	PLANNING BOARD SUBMISSION	RH/MG	01-16-23	BUILDING DEPARTMENT COMMENTS	RH/MG
10-20-23	NYCDEP COMPLETENESS COMMENTS	RH/MG	02-07-22	WCHD NYCDEP COMMENTS	ZF/ED
04-25-23	PLANNING BOARD SUBMISSION	RH/MG	06-04-21	NYCDEP APPLICATION	RH/MG
02-07-23	PLANNING BOARD SUBMISSION	RH/MG	04-27-21	PLANNING BOARD SUBMISSION	RH/MG

STATE OF NEW YORK · MATTHEW J. GIRONDA · LICENSED PROFESSIONAL ENGINEER · No. 096030

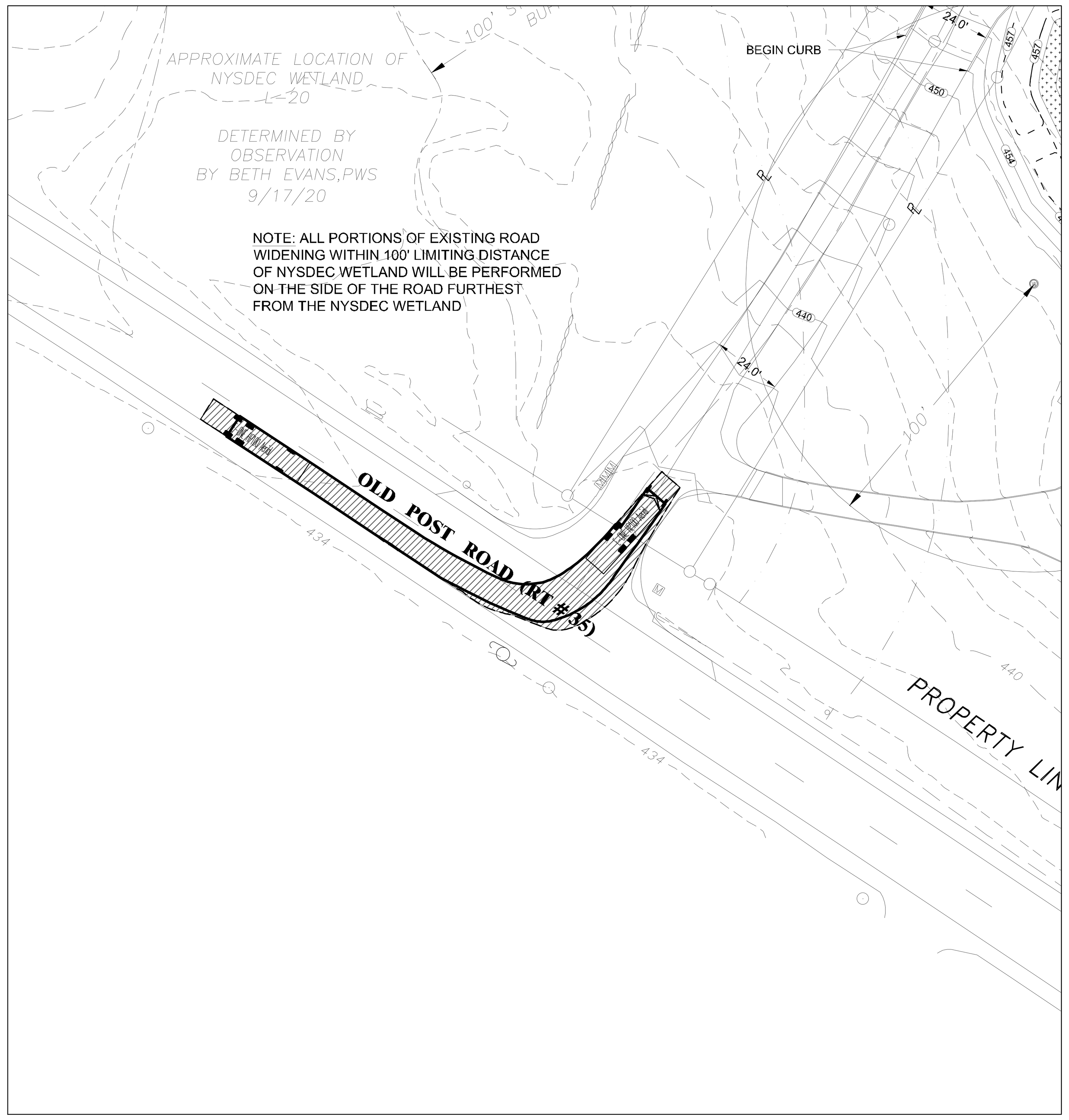
MATTHEW J. GIRONDA P.E.

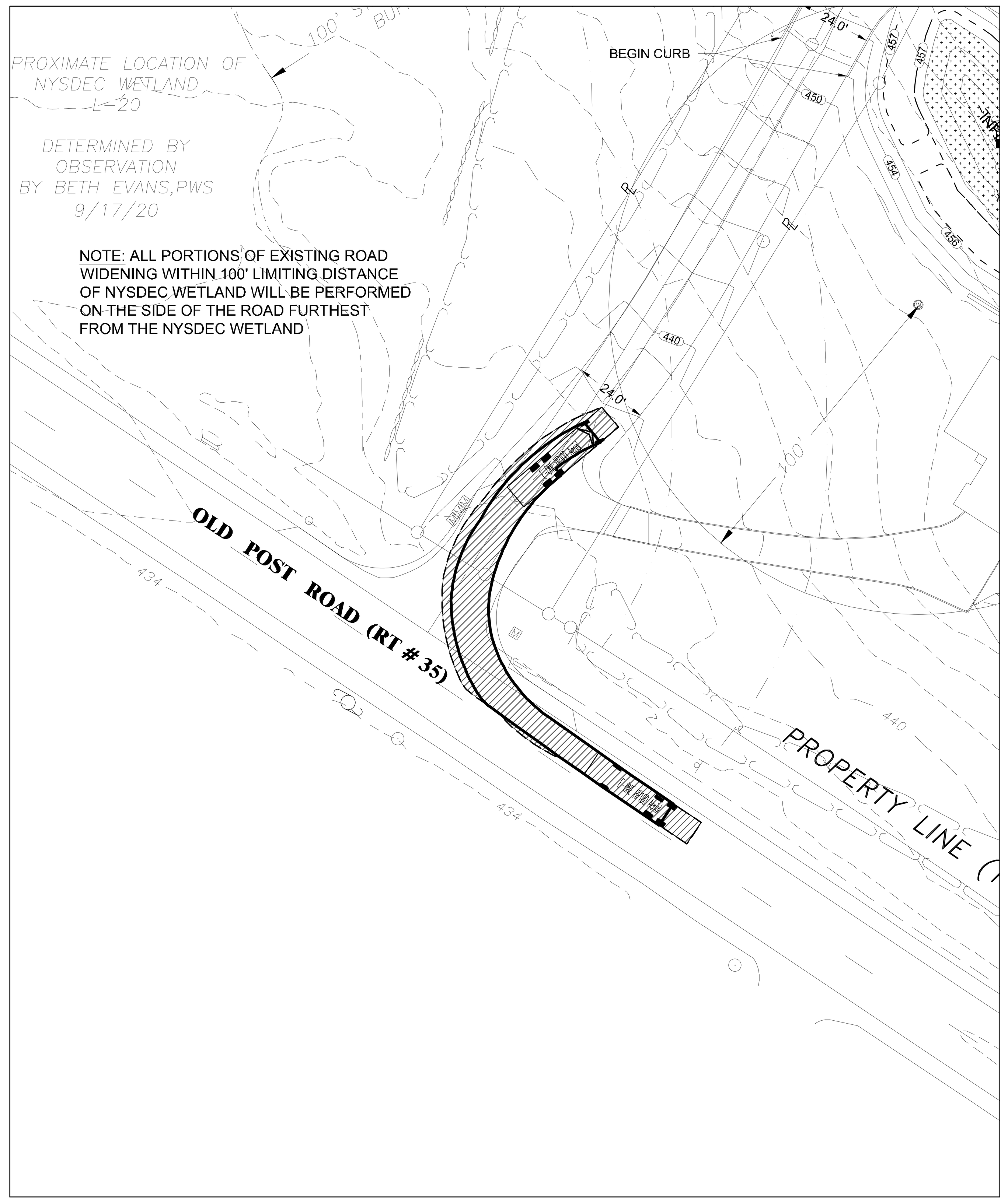
DRAINAGE PROFILES

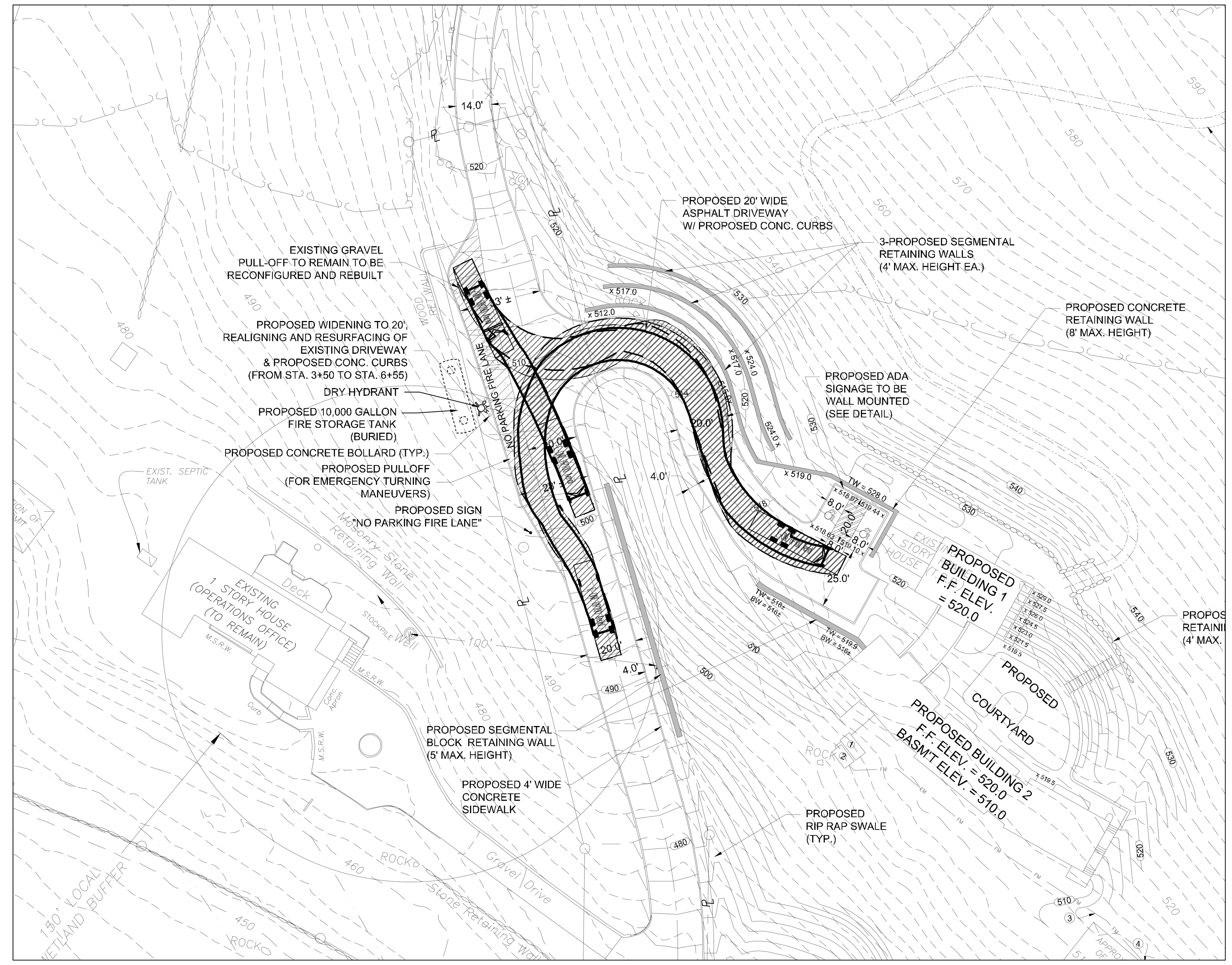
WOLF CONSERVATION CENTER
7 BUCK RUN, SOUTH SALEM, NY 10590
TOWN OF LEWISBORO , WESTCHESTER COUNTY, NY

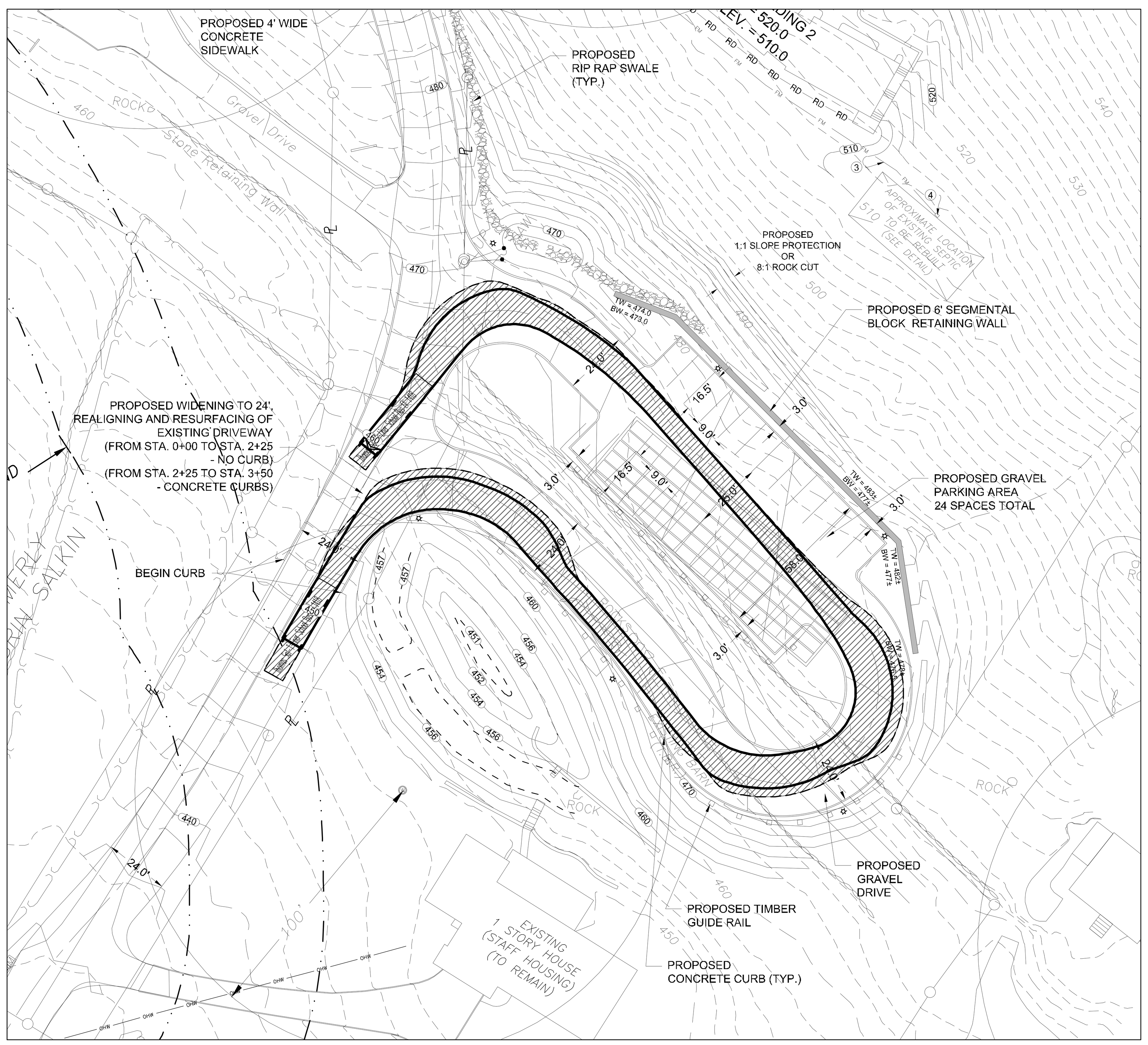
BIBBO ASSOCIATES, LLP
293 ROUTE 100 SUITE 203
SOMERS, NEW YORK 10589
TEL. 914 277 5805

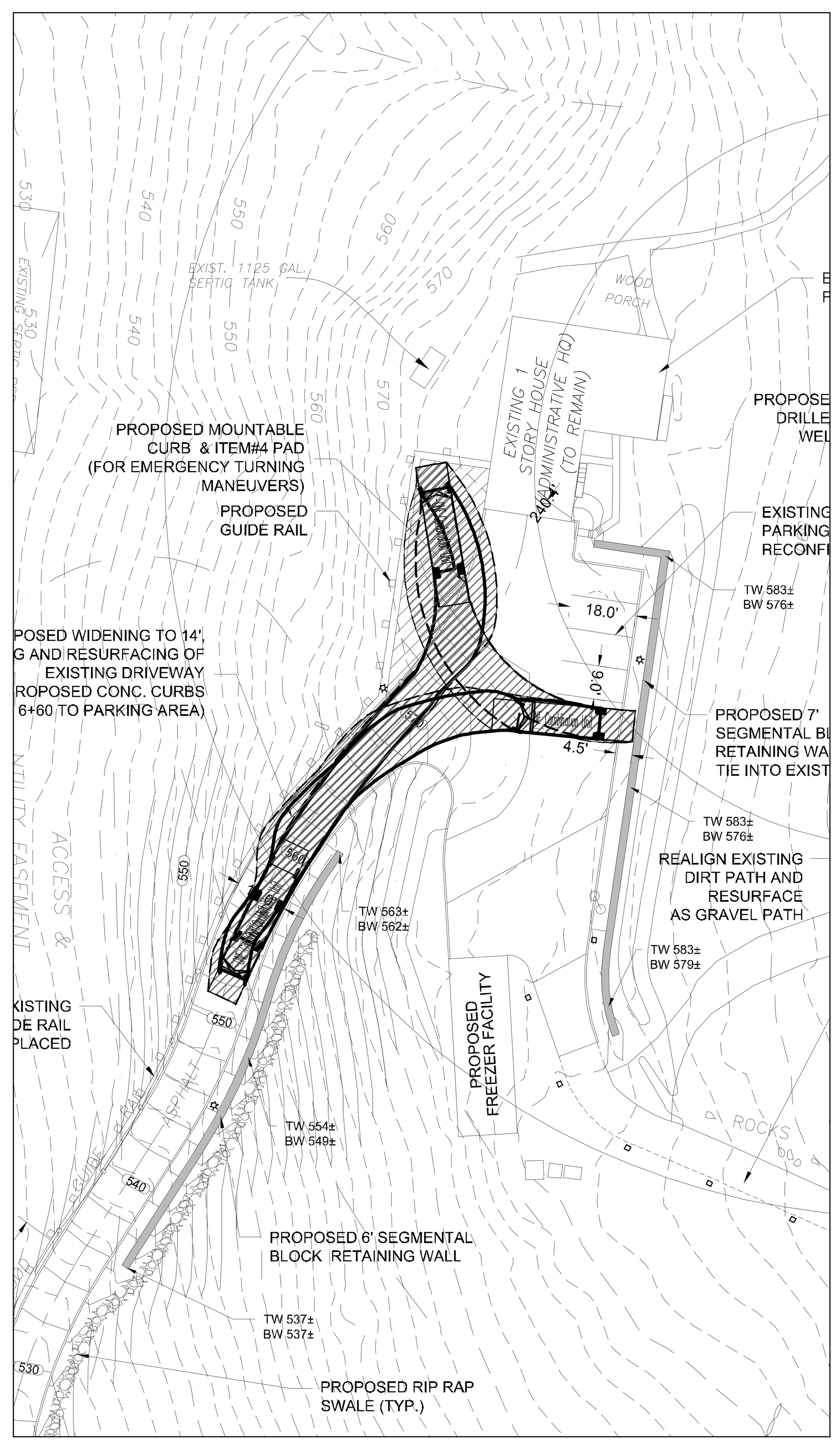
DATE:	12-29-2020
SCALE:	1" = 30'
FILE:	L5
DSGN / CHK:	MG/RH
DRN. BY:	RH
SHT NO.	12 OF 20
DWG NO.	P-2

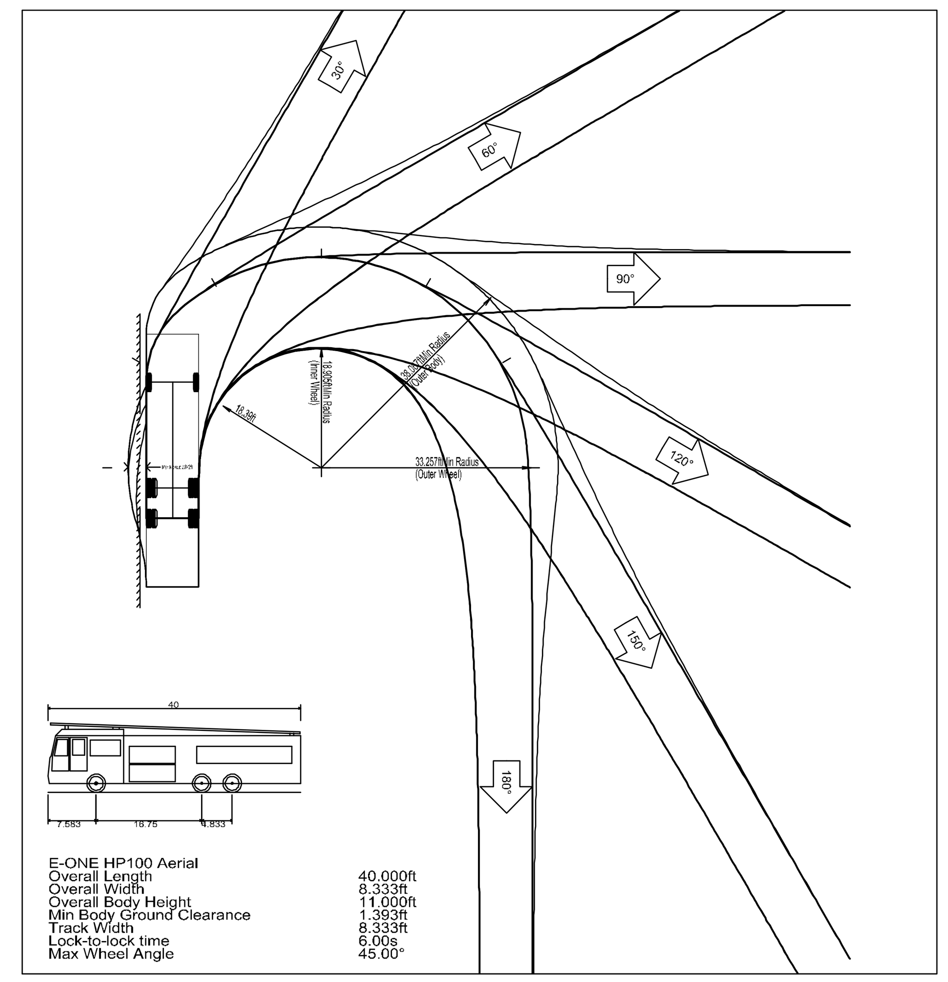


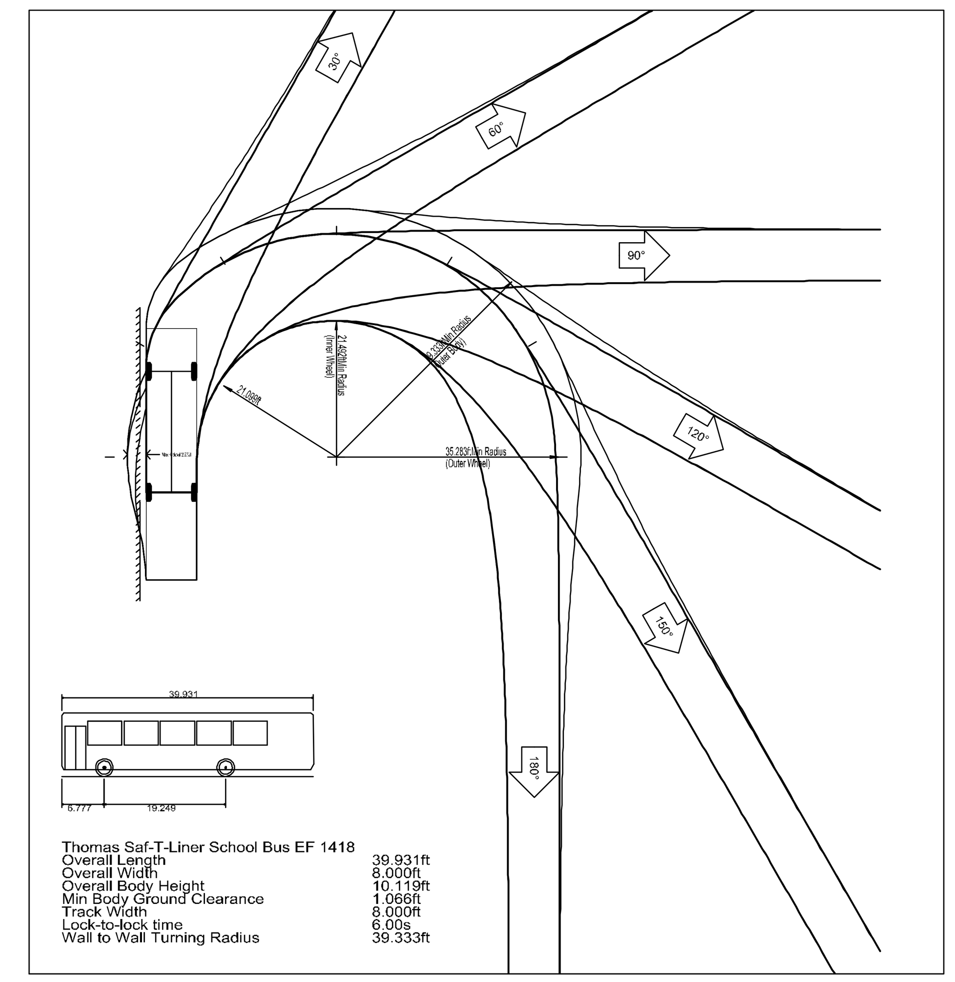


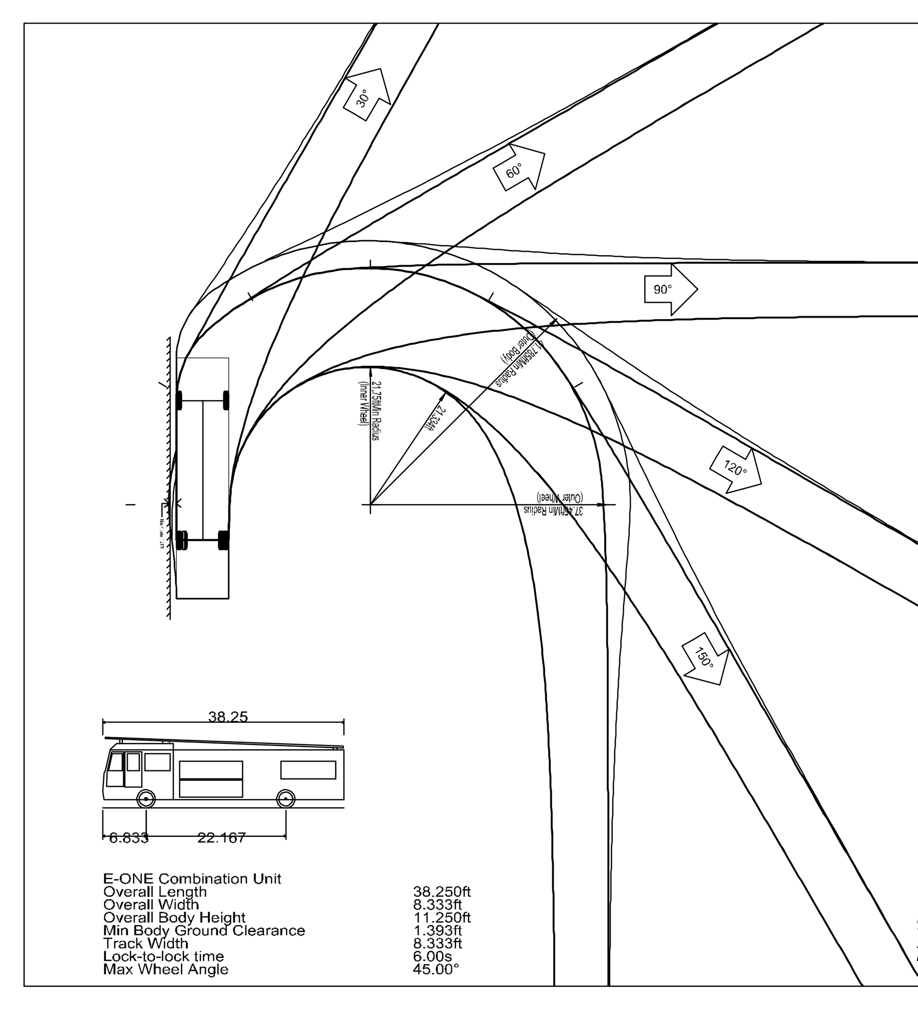












LEGEND:

- E-ONE HP100 Aerial — DESIGN VEHICLE OUTLINE & DIRECTION OF TRAVEL
- E-ONE COMBINATION UNIT — DESIGN VEHICLE OUTLINE & DIRECTION OF TRAVEL
- SCHOOL BUS — DESIGN VEHICLE OUTLINE & DIRECTION OF TRAVEL
- FORWARD MOVEMENT WHEEL PATH
- REVERSE MOVEMENT WHEEL PATH
- VEHICLE BODY ENVELOPE

REVISIONS:

DATE:	DESCRIPTION	BY/CK	DATE:	DESCRIPTION	BY/CK
11-28-23	PLANNING BOARD SUBMISSION	RH/MG	01-16-23	BUILDING DEPARTMENT COMMENTS	RH/MG
10-20-23	NYCDEP COMPLETENESS COMMENTS	RH/MG	02-07-22	WCHD NYCDEP COMMENTS	ZF/ED
04-25-23	PLANNING BOARD SUBMISSION	RH/MG	06-04-21	NYCDEP APPLICATION	RH/MG
02-07-23	PLANNING BOARD SUBMISSION	RH/MG	04-27-21	PLANNING BOARD SUBMISSION	RH/MG

MATTHEW J. GIRONDA P.E.

TURNING MANEUVERS

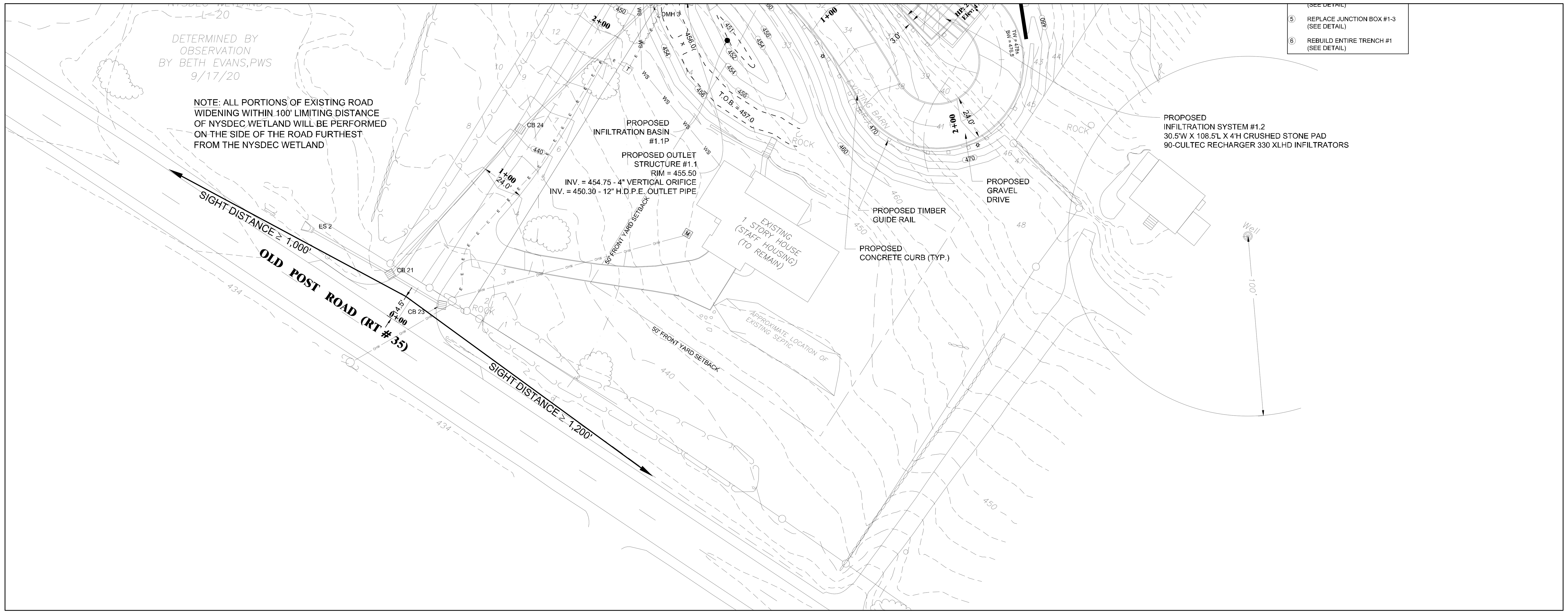
WOLF CONSERVATION CENTER
7 BUCK RUN, SOUTH SALEM, NY 10590
TOWN OF LEWISBORO , WESTCHESTER COUNTY, NY

BIBBO ASSOCIATES, LLP
293 ROUTE 100 SUITE 203
SOMERS, NEW YORK 10589
TEL. 914 277 5805

DATE:	12-29-2020
SCALE:	1" = 30'
FILE:	L5
DSGN / CHK:	MG/RH
DRN. BY:	RH
SHT NO.	13 OF 20
DWG NO.	T-1

LEGEND

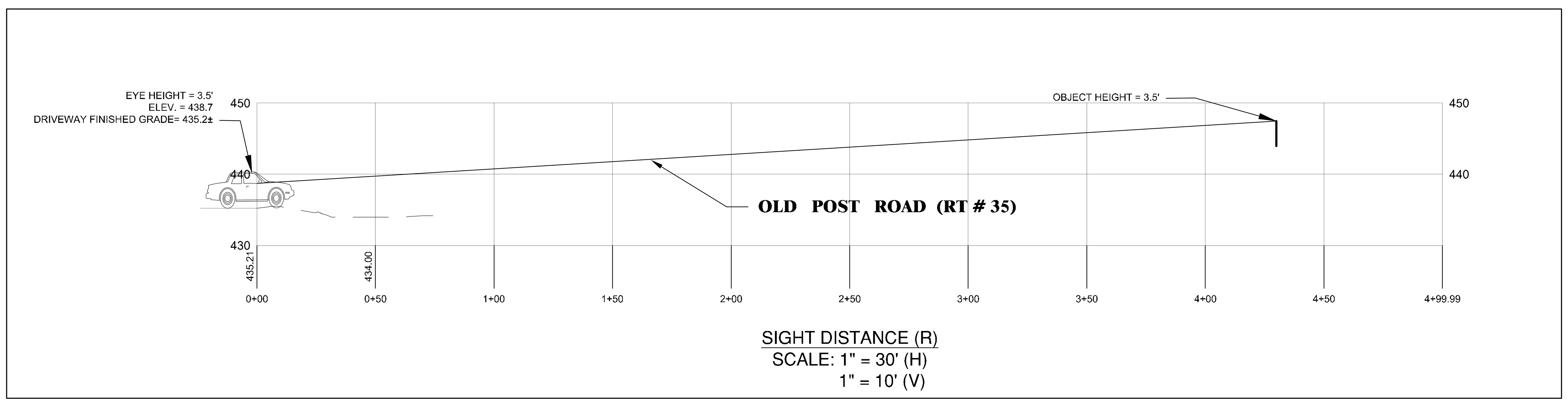
- EXISTING PROPERTY LINE
- WETLAND BUFFER LINE
- WETLAND BOUNDARY LINE
- EXISTING WOLF ENCLOSURE FENCE
- EXISTING EASEMENT LINE
- PROPOSED RETAINING WALL
- PROPOSED ELECTRIC METER
- PROPOSED TRANSFORMER
- PROPOSED T-TAP
- PROPOSED OVERHEAD ELECTRIC SERVICE
- PROPOSED UNDERGROUND ELECTRIC SERVICE
- PROPOSED ROOF LEADER CONNECTION PIPE
- PROPOSED PVC DR-18 WATERMAIN
- PROPOSED CU WATER SERVICE



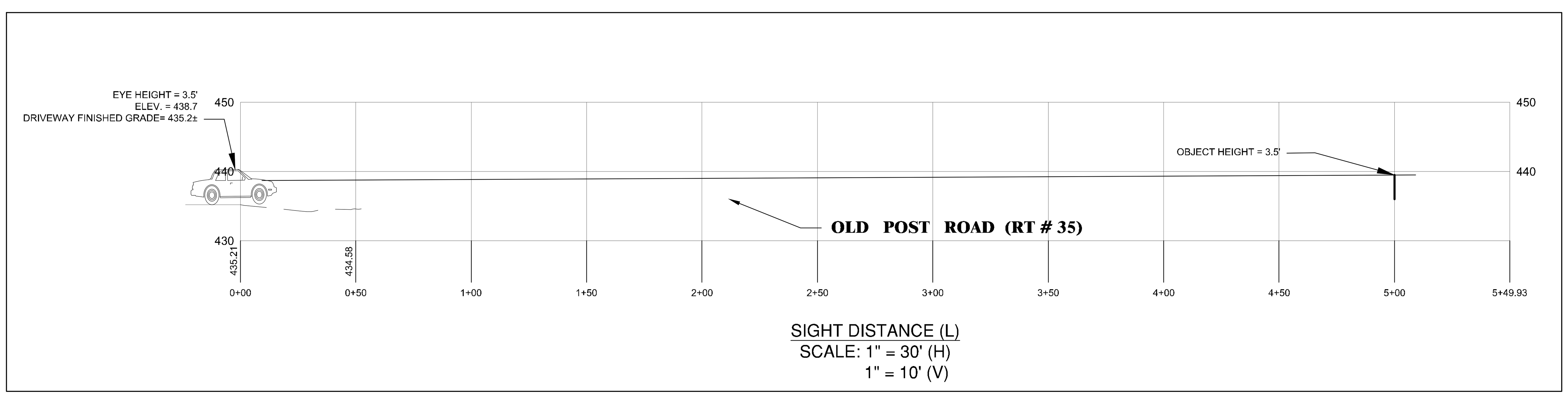
SIGHT DISTANCE

GRAPHIC SCALE

(IN FEET)
1 inch = 30 ft.



SIGHT DISTANCE (R)
SCALE: 1" = 30' (H)
1" = 10' (V)



SIGHT DISTANCE (L)
SCALE: 1" = 30' (H)
1" = 10' (V)

CALL BEFORE YOU DIG 1-800-962-7962

UNDER THE NY STATE LAW PROTECTING UNDERGROUND FACILITIES, THE FOLLOWING RULES AND REGULATIONS ARE IN EFFECT FOR ALL EXCAVATORS:

* THEY MUST CALL FOR A UTILITY STAKE-OUT (2) TWO FULL WORKING DAYS PRIOR TO AN EXCAVATION.
* THEY MUST CONFIRM PRECISE LOCATIONS OF UNDERGROUND FACILITIES.
* THEY MUST PRESERVE STAKES AND MARKINGS UNTIL NO LONGER NEEDED AT SITE.
* THEY MUST CONTACT NON-UFPO MEMBER UTILITY OWNERS FOR STAKE-OUTS.

SPEED LIMIT (mph)	REQUIRED INTERSECTION SIGHT DISTANCE *	PROVIDED SIGHT DISTANCE
45	500' (L)	> 500' (L)
	430' (R)	> 430' (R)

* Sight Distances measured in accordance with AASHTO "Policy on Geometric Design of Highways and Streets"

BUCK RUN ENTRANCE NOTES:
1. ANY TREE BRANCHES OR BRUSH WHICH MAY OBSTRUCT SIGHT DISTANCE SHALL BE REMOVED.

REVISIONS:

DATE:	DESCRIPTION	BY/CK	DATE:	DESCRIPTION	BY/CK
11-28-23	PLANNING BOARD SUBMISSION	RH/MG	01-16-23	BUILDING DEPARTMENT COMMENTS	RH/MG
10-20-23	NYCDEP COMPLETENESS COMMENTS	RH/MG	02-07-22	WCHD NYCDEP COMMENTS	ZF/ED
04-25-23	PLANNING BOARD SUBMISSION	RH/MG	06-04-21	NYCDEP APPLICATION	RH/MG
02-07-23	PLANNING BOARD SUBMISSION	RH/MG	04-27-21	PLANNING BOARD SUBMISSION	RH/MG

STATE OF NEW YORK · MATTHEW J. GIRONDA · LICENSED PROFESSIONAL ENGINEER · No. 096030

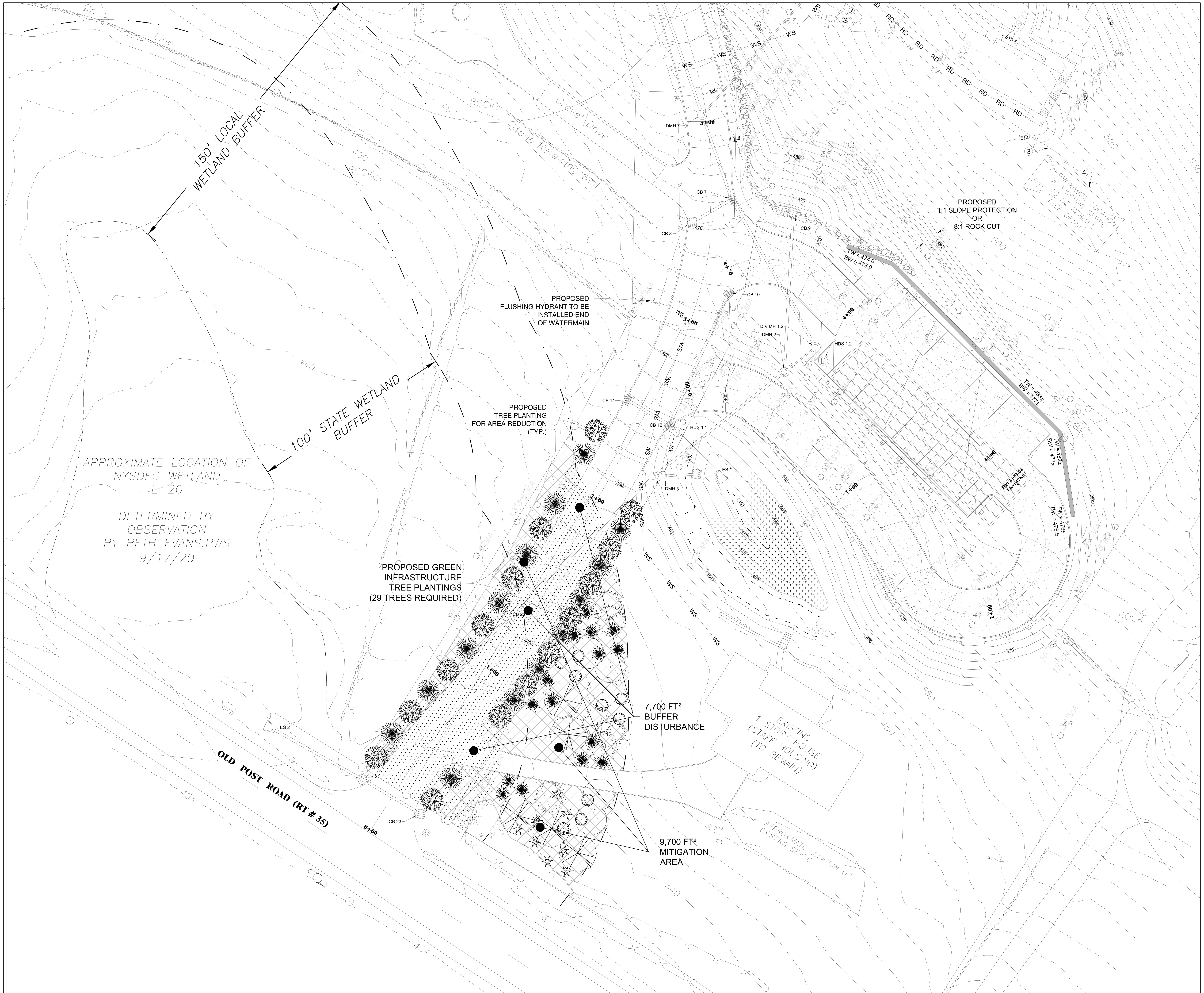
MATTHEW J. GIRONDA P.E.

SIGHT DISTANCE & PROFILES

WOLF CONSERVATION CENTER
7 BUCK RUN, SOUTH SALEM, NY 10590
TOWN OF LEWISBORO , WESTCHESTER COUNTY, NY

BIBBO ASSOCIATES, LLP
293 ROUTE 100 SUITE 203
SOMERS, NEW YORK 10589
TEL. 914 277 5805

DATE:	12-29-2020
SCALE:	1" = 30'
FILE:	L5
DSGN / CHK:	MG/RH
DRN. BY:	RH
SHT NO.	14 OF 20
DWG NO.	SD-1



STORMWATER MITIGATION PLANT SCHEDULE

TREES (OR APPROVED EQUAL)

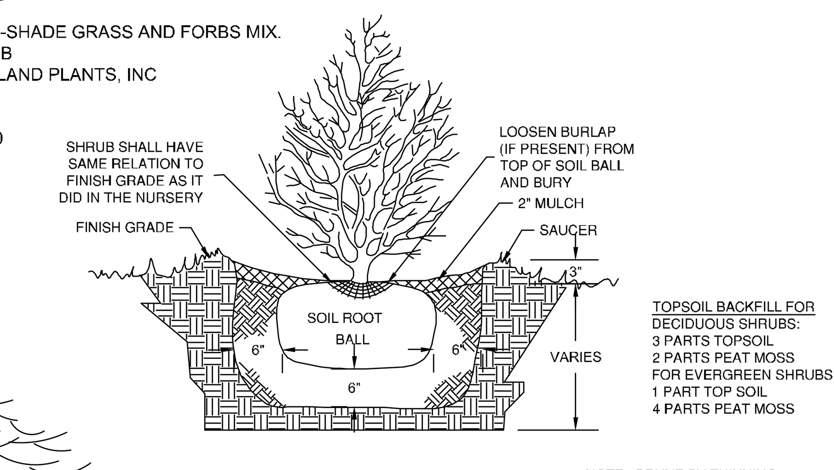
Symbol	Code	Quantity	Scientific Name	Common Name	Size at Planting	Remarks
	AS	15	ACER SACCHARUM	SUGAR MAPLE	2 1/2- 3 IN. CAL.	
	UAP	14	ULMUS AMERICANA 'PRINCETON'	PRINCETON ELM	3-3 1/2 IN. CAL.	

WETLAND MITIGATION PLANT SCHEDULE

Symbol	Code	Quantity	Scientific Name	Common Name	Size at Planting	Remarks
TREES (OR APPROVED EQUAL)						
	AAB	6	AMELANCHIER ARBOREA AUTNAM BRILLIANCE	SERVICEBERRY	7'-8' HT	12'-15' O.C.
	CCF	5	CERCIS CANADENSIS ' FOREST PANSY'	EASTERN REDBUD	6'-7' HT	20' O.C.
	CFL	5	CORNUS FLORIDA ' CHEROKEE PRINCESS'	WH. FLOWERING DOGWOOD		6'-12' O.C.
SHRUBS (OR APPROVED EQUAL)						
Symbol	Code	Quantity	Scientific Name	Common Name	Size at Planting	Remarks
	CA	8	CORNUS AMOMUM	SILKY DOGWOOD	#3 CONT.	10' O.C.
	HVI	15	HAMAMELSIS VIRGINIANA	COMMON WITCHHAZEL	#3 CONT.	6' O.C.
	IV	9	ILEX VERTICILLATA	WINTERBERRY	#3 CONT.	10' O.C.

PLANTING LEGEND

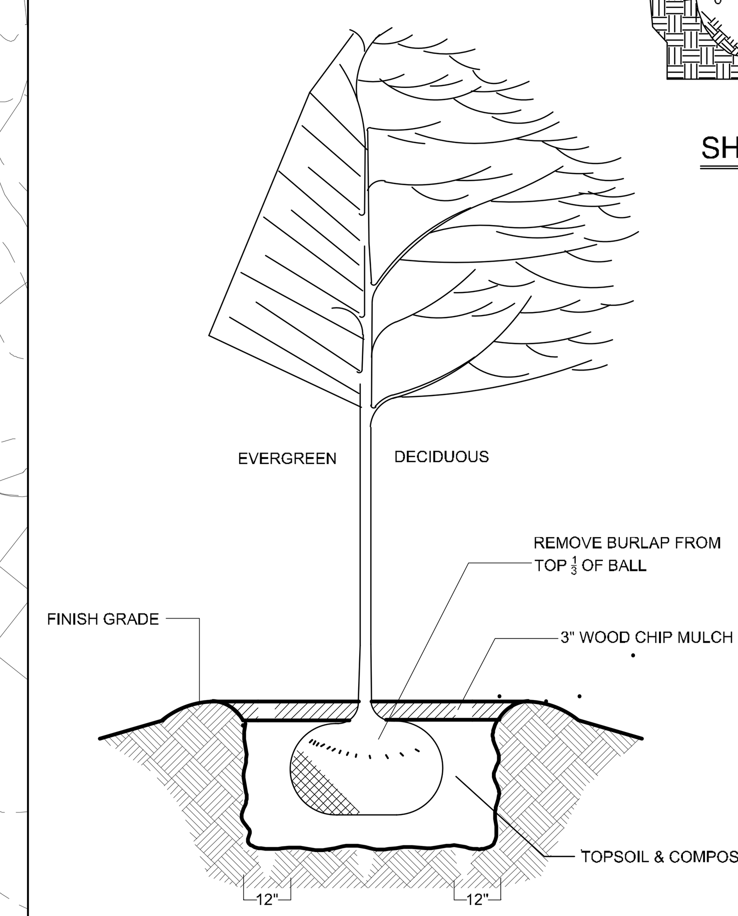
SEED MIX: NEW ENGLAND SEMI-SHADE GRASS AND FORBS MIX.
APPLICATION: 1,450 SQ FEET PER LB
SUPPLIER: NEW ENGLAND WETLAND PLANTS, INC
820 WEST STREET
AMHERST, MA 01002
PHONE: 413-548-8000



TOPSOIL BACKFILL FOR DECIDUOUS SHRUBS:
3 PARTS TOPSOIL
2 PARTS PEAT MOSS
FOR EVERGREEN SHRUBS:
1 PART TOP SOIL
4 PARTS PEAT MOSS

SHRUB PLANTING
N.T.S.

NOTE: PRUNE BY THINNING BRANCHES (NOT ALL END TIPS) RETAINING NORMAL SHAPE NEVER CUT EVERGREEN LEADER.



TREE PLANTING DETAIL
N.T.S.

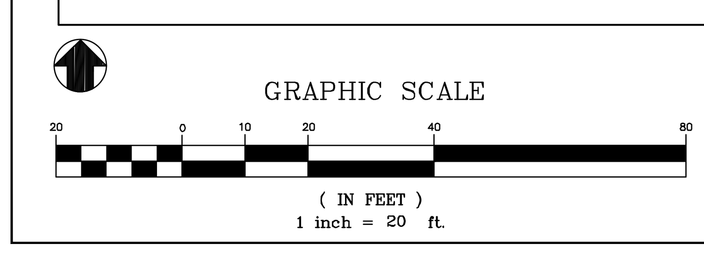
LEGEND

- EXISTING PROPERTY LINE
- WETLAND BUFFER LINE
- WETLAND BOUNDARY LINE
- EXISTING WOLF ENCLOSURE FENCE
- EXISTING EASEMENT LINE
- EXISTING 2' CONTOUR
- EXISTING 10' CONTOUR
- PROPOSED 2' CONTOUR
- PROPOSED 10' CONTOUR
- PROPOSED RETAINING WALL
- PROPOSED ELECTRIC METER
- PROPOSED TRANSFORMER
- PROPOSED T-TAP
- PROPOSED OVERHEAD ELECTRIC SERVICE
- PROPOSED UNDERGROUND ELECTRIC SERVICE

CALL BEFORE YOU DIG 1-800-962-7962

UNDER THE NY STATE LAW PROTECTING UNDERGROUND FACILITIES, THE FOLLOWING RULES AND REGULATIONS ARE IN EFFECT FOR ALL EXCAVATORS:

* THEY MUST CALL FOR A UTILITY STAKE-OUT (2) TWO FULL WORKING DAYS PRIOR TO AN EXCAVATION.
* THEY MUST CONFIRM PRECISE LOCATIONS OF UNDERGROUND FACILITIES.
* THEY MUST PRESERVE STAKES AND MARKINGS UNTIL NO LONGER NEEDED AT SITE.
* THEY MUST CONTACT NON-UFPO MEMBER UTILITY OWNERS FOR STAKE-OUTS.



UNAUTHORIZED ALTERATIONS AND ADDITIONS TO THIS DRAWING IS A VIOLATION OF SECTION 7209 (2) OF THE NEW YORK STATE EDUCATION LAW.

REVISIONS: DATE:	DESCRIPTION	BY/CK	DATE:	DESCRIPTION	BY/CK
11-28-23	PLANNING BOARD SUBMISSION	RH/MG	01-16-23	BUILDING DEPARTMENT COMMENTS	RH/MG
10-20-23	NYCDEP COMPLETENESS COMMENTS	RH/MG	02-07-22	WCHD NYCDEP COMMENTS	ZF/ED
04-25-23	PLANNING BOARD SUBMISSION	RH/MG	06-04-21	NYCDEP APPLICATION	RH/MG
02-07-23	PLANNING BOARD SUBMISSION	RH/MG	04-27-21	PLANNING BOARD SUBMISSION	RH/MG

STATE OF NEW YORK · MATTHEW J. GIRONDA · No. 096030 · LICENSED PROFESSIONAL ENGINEER

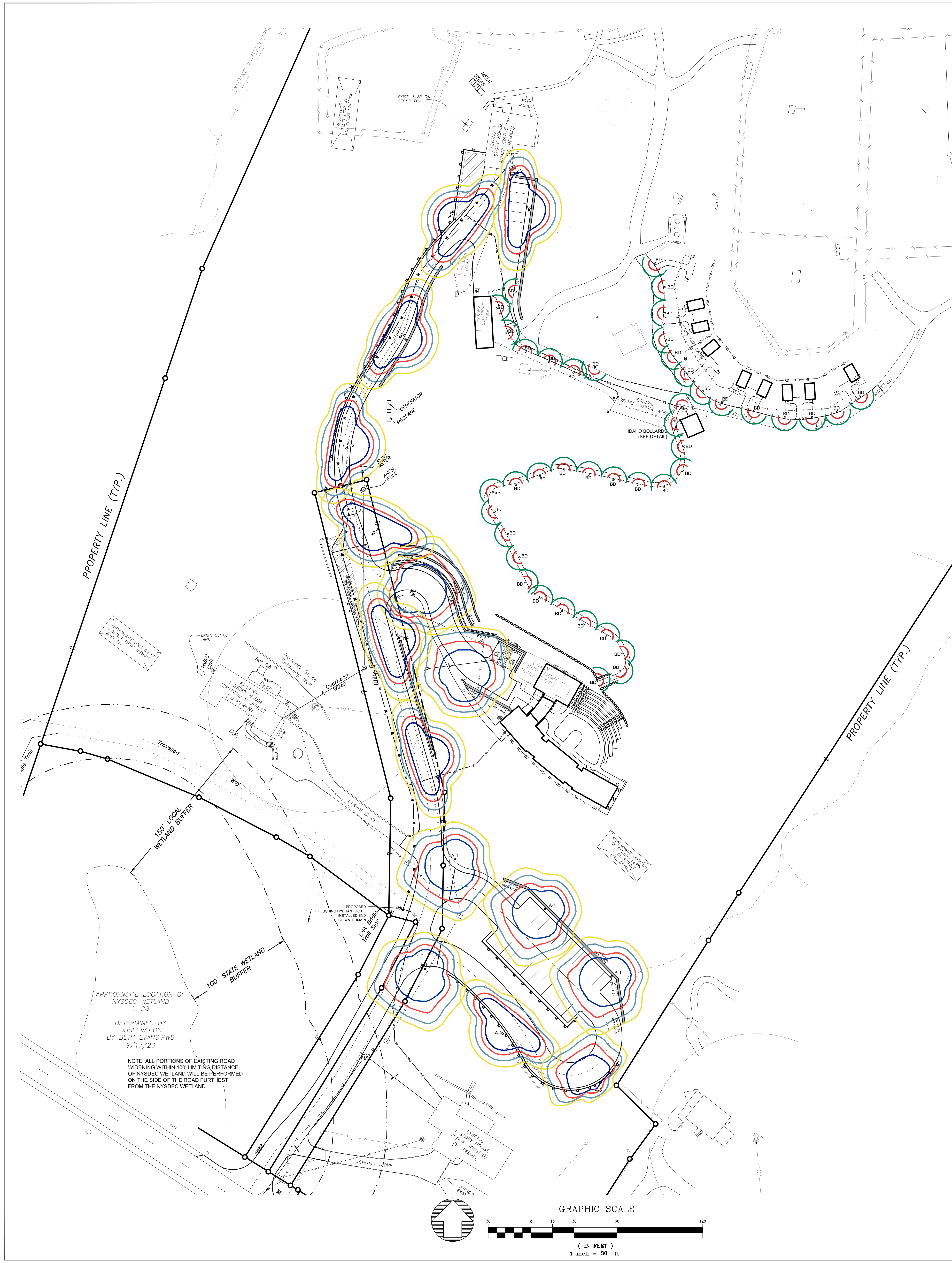
MATTHEW J. GIRONDA P.E.

MITIGATION PLAN

WOLF CONSERVATION CENTER
7 BUCK RUN, SOUTH SALEM, NY 10590
TOWN OF LEWISBORO , WESTCHESTER COUNTY, NY

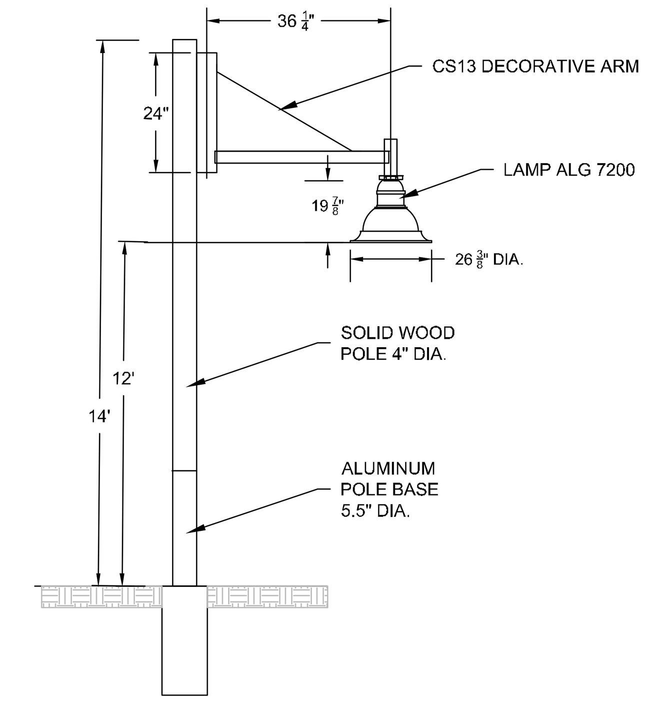
BIBBO ASSOCIATES, LLP
293 ROUTE 100 SUITE 203
SOMERS, NEW YORK 10589
TEL. 914 277 5805

DATE:	12-29-2020
SCALE:	1" = 20'
FILE:	L5
DSGN / CHK:	MG/RH
DRN. BY:	RH
SHT NO.	15 OF 20
DWG NO.	M-1

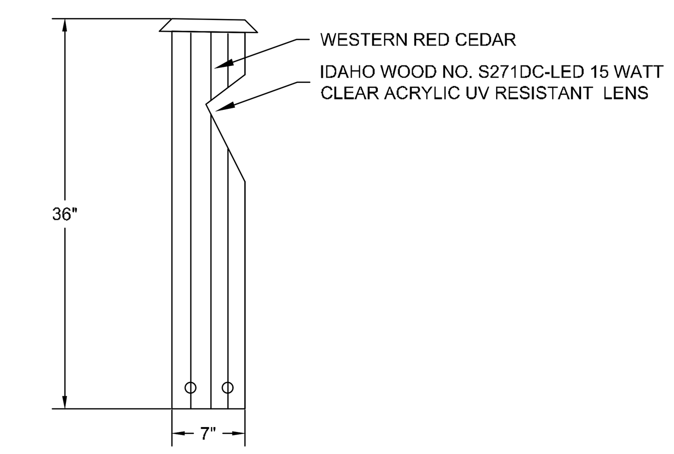


LEGEND

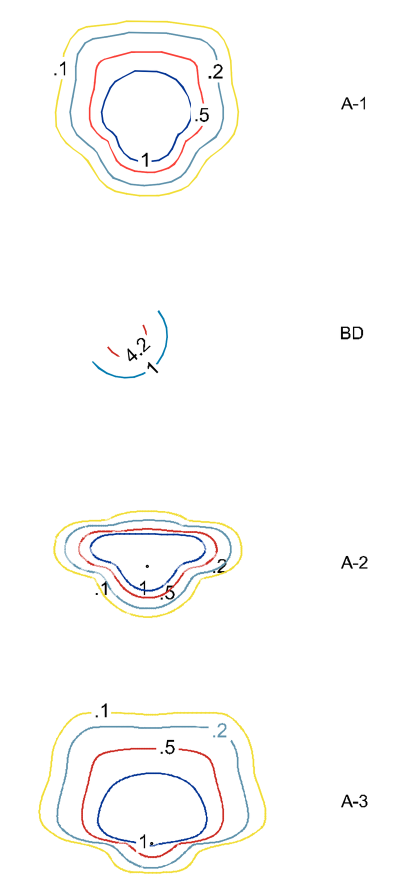
- EXISTING PROPERTY LINE
- WETLAND BUFFER LINE
- WETLAND BOUNDARY LINE
- EXISTING WOLF ENCLOSURE FENCE
- EXISTING EASEMENT LINE
- PROPOSED RETAINING WALL
- PROPOSED ELECTRIC METER
- PROPOSED TRANSFORMER
- PROPOSED T-TAP
- PROPOSED OVERHEAD ELECTRIC SERVICE
- PROPOSED UNDERGROUND ELECTRIC SERVICE
- PROPOSED ROOF LEADER CONNECTION PIPE
- PROPOSED PVC DR-18 WATERMAIN
- PROPOSED CU WATER SERVICE



LAMP POST DETAIL
NTS



BOLLARD DETAIL
NTS



PHOTOMETRIC LEGEND
Units are measured in footcandles

LUMINAIRE SCHEDULE						
SYMBOL	QTY	LABEL	ARRANGEMENT	LUMENS /LAMP	WATTS	DESCRIPTION
☼		A-1	SINGLE	6617	64	ALLEGRA MEDIUM ALG-120/277-CSL-M80-30K-CRI 70-4 14ft POLE
☼		A-2	SINGLE	6329	64	ALLEGRA MEDIUM ALG-120/277-CSL-M80-30K-CRI 70-4 BLS 14ft POLE
☼		A-3	SINGLE	3524	64	ALLEGRA MEDIUM ALG-120/277-CSL-M80-30K-CRI 70-2 14ft POLE
□		BD	SINGLE	1600	15 LED	IDAHO WOOD NO. 2271DC-LED15 WATT

CALL BEFORE YOU DIG 1-800-962-7962

UNDER THE NY STATE LAW PROTECTING UNDERGROUND FACILITIES, THE FOLLOWING RULES AND REGULATIONS ARE IN EFFECT FOR ALL EXCAVATORS:

* THEY MUST CALL FOR A UTILITY STAKE-OUT (2) TWO FULL WORKING DAYS PRIOR TO AN EXCAVATION.
* THEY MUST CONFIRM PRECISE LOCATIONS OF UNDERGROUND FACILITIES.
* THEY MUST PRESERVE STAKES AND MARKINGS UNTIL NO LONGER NEEDED AT SITE.
* THEY MUST CONTACT NON-UFPO MEMBER UTILITY OWNERS FOR STAKE-OUTS.

REVISIONS: DATE:	DESCRIPTION	BY/CK	DATE:	DESCRIPTION	BY/CK
11-28-23	PLANNING BOARD SUBMISSION	RH/MG	01-16-23	BUILDING DEPARTMENT COMMENTS	RH/MG
10-20-23	NYCDEP COMPLETENESS COMMENTS	RH/MG	02-07-22	WCHD NYCDEP COMMENTS	ZF/ED
04-25-23	PLANNING BOARD SUBMISSION	RH/MG	06-04-21	NYCDEP APPLICATION	RH/MG
02-07-23	PLANNING BOARD SUBMISSION	RH/MG	04-27-21	PLANNING BOARD SUBMISSION	RH/MG

STATE OF NEW YORK MATTHEW J. GIRONDA No. 096030 LICENSED PROFESSIONAL ENGINEER

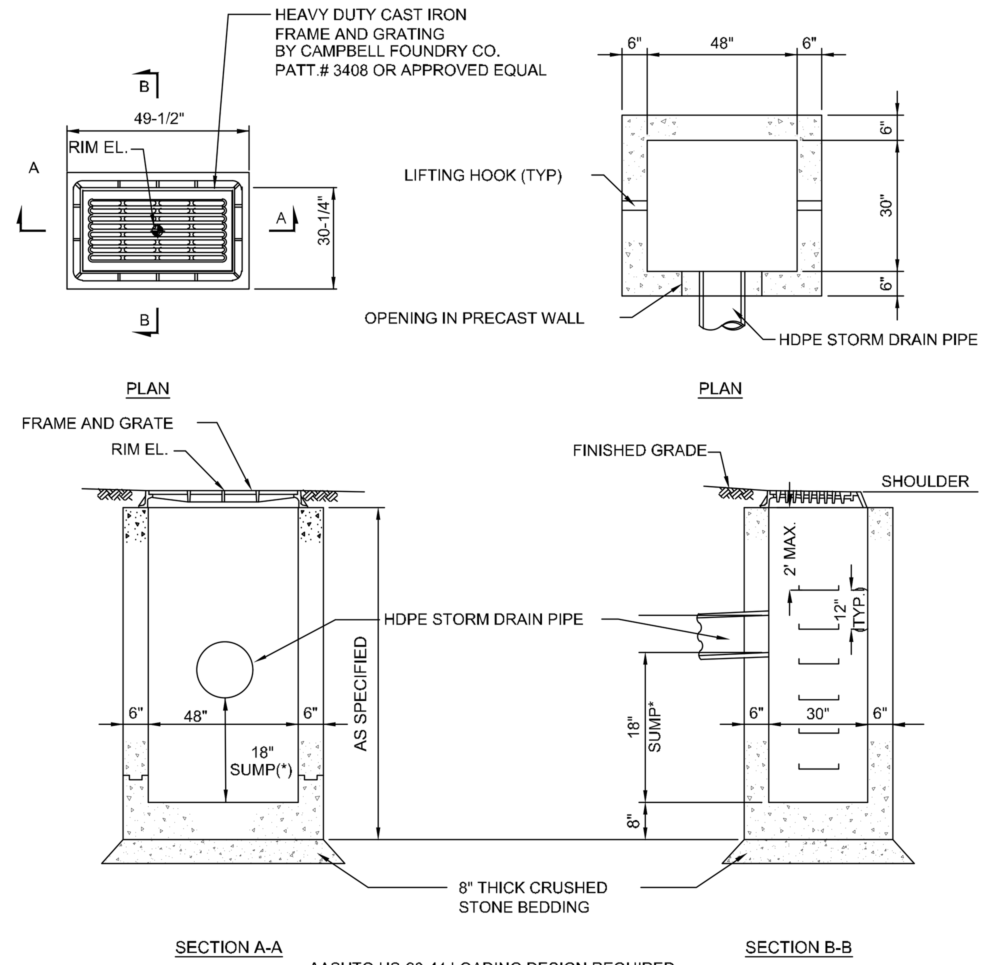
MATTHEW J. GIRONDA P.E.

LIGHTING PLAN

WOLF CONSERVATION CENTER
7 BUCK RUN, SOUTH SALEM, NY 10590
TOWN OF LEWISBORO , WESTCHESTER COUNTY, NY

BIBBO ASSOCIATES, LLP
293 ROUTE 100 SUITE 203
SOMERS, NEW YORK 10589
TEL. 914 277 5805

DATE:	12-29-2020
SCALE:	1" = 30'
FILE:	L5
DSGN / CHK:	MG/RH
DRN. BY:	RH
SHT NO.	16 OF 20
DWG NO.	LP-1



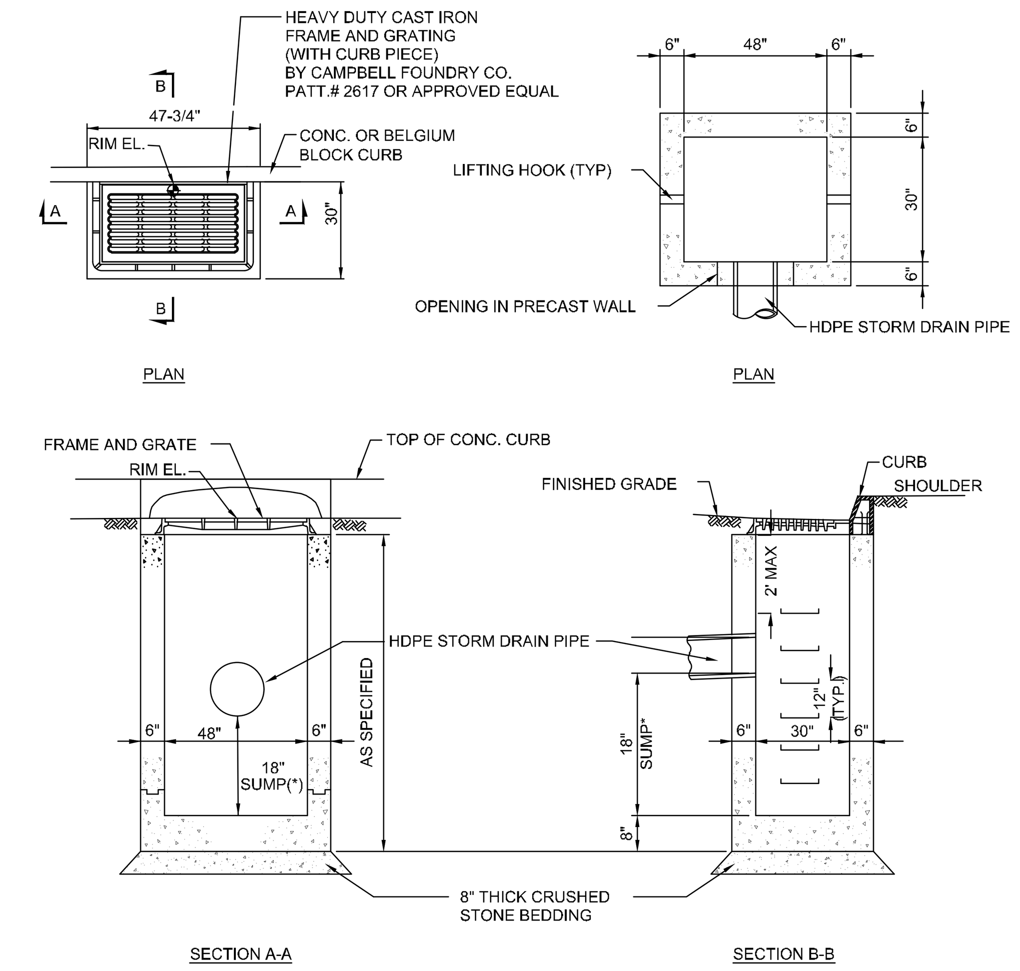
SECTION A-A SECTION B-B

AASHTO HS-20-44 LOADING DESIGN REQUIRED

1. BASE & RISE SECTIONS SHALL BE PRECAST & MONOLITHICALLY POURED.
2. CONCRETE SHALL BE 4,000 PSI AT TIME OF DELIVERY.
3. ALL BASINS SHALL HAVE 18" MINIMUM SUMPS.
4. PROVIDE PROPER LIP AND / OR ANCHORING IN CASES OF HIGH GROUND WATER TO PREVENT FLOATATION.
5. LADDER RUNGS CONFORMING TO N.Y.S.D.O.T. SPEC. NO.725-02.01
6. ALL PIPES SHALL BE LAID OR CUT FLUSH WITH THE INSIDE OF THE BASIN WALL & SHALL BE FIRMLY PARGED IN PLACE, BOTH INSIDE AND OUTSIDE.
7. BRICK FRAME & GRATE TO GRADE TO MATCH BOTH CROWN OF ROAD & SLOPE OF ROAD. A MAX. OF TWO (2) CONCRETE BRICKS OR ONE (1) 6" SOLID BLOCK WILL BE PERMITTED, PARGED INSIDE & OUTSIDE.

TYPICAL CATCH BASIN (FT TYPE)

N.T.S.

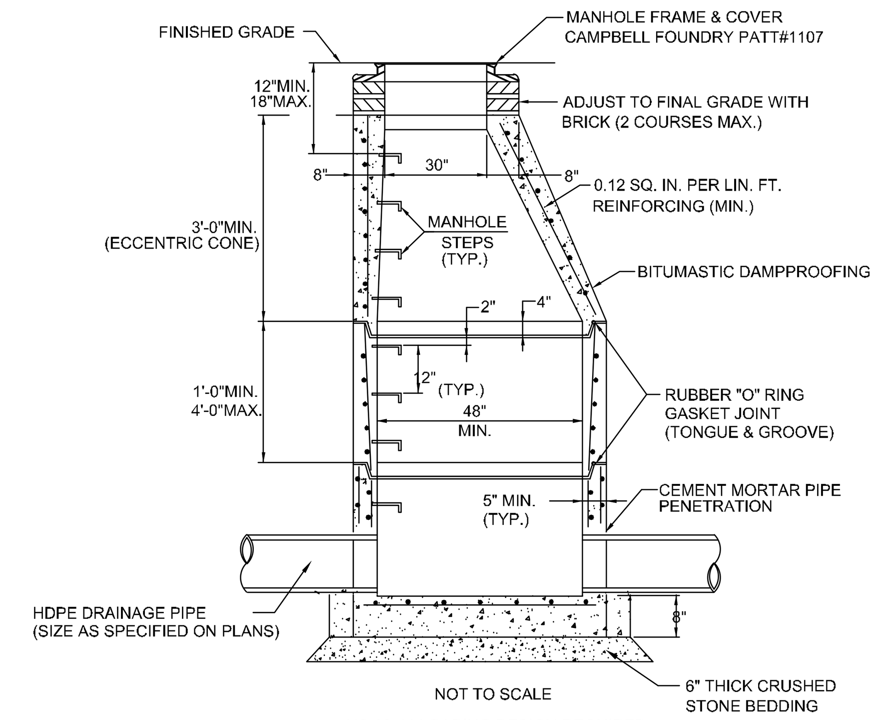


SECTION A-A SECTION B-B

AASHTO HS-20-44 LOADING DESIGN REQUIRED

TYPICAL CATCH BASIN (CI TYPE)

N.T.S.



NOT TO SCALE

GENERAL NOTES: HS-20-44 LOADING DESIGN REQUIRED

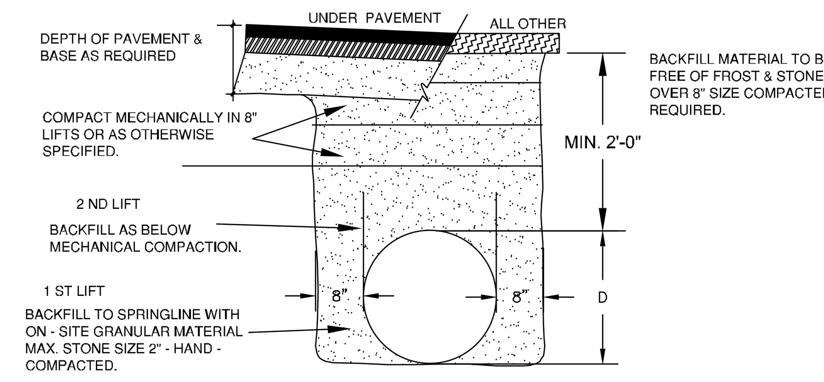
1. DRAINAGE PIPES MARKED WITH "HDPE" SHALL BE HIGH DENSITY POLYETHYLENE SMOOTH BORE AS MANUFACTURED BY ADS N-12 OR APPROVED EQUAL
2. CATCH BASINS, MANHOLES AND ALL CASTINGS SHALL BE IN ACCORDANCE WITH TOWN OF SOMERS REQUIREMENTS, STANDARDS AND SPECIFICATIONS AND AS SHOWN ON PLANS.
3. UNDERDRAINS SHALL BE 6" DIA. PERFORATED CORRUGATED STEEL PIPE OR EQUAL.
4. CATCH BASIN OR DRAIN MANHOLE WITH 3 OR MORE PIPE CONNECTIONS SHALL BE OVERSIZED DIMENSIONS.

NOTES:

1. 5' OR 6' DIA. PRECAST BASES MAY BE USED WHEN REQUIRED DUE TO SIZE OR NUMBER OF PIPES AT THE MANHOLE. ECCENTRIC PRECAST REDUCERS SHALL BE PLACED ABOVE THE 5' OR 6' BASE AND THE WALL THICKNESS INCREASED 1" FOR EACH 1' OF INSIDE DIAMETER INCREASE.
2. NON-SHRINK GROUT MAY BE UTILIZED IN LIEU OF FLEXIBLE SLEEVES FOR STORM DRAINAGE MANHOLES.
3. LIFTING HOLES IN PRECAST SECTIONS TO BE FILLED WITH MORTAR.
4. FOR SHALLOW MANHOLES, SUBSTITUTE PRECAST SLAB TOP FOR ECCENTRIC CONE. SLAB SHALL BE CAPABLE OF SUPPORTING AN HS-20-44 LOAD.

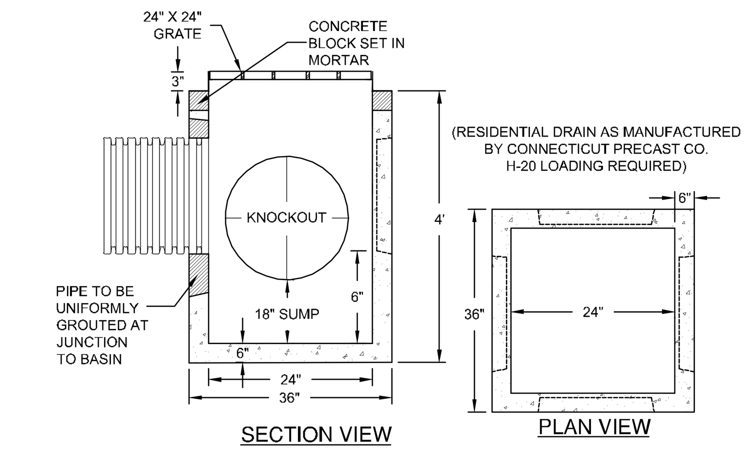
PRECAST CONCRETE DRAINAGE MANHOLE

N.T.S.



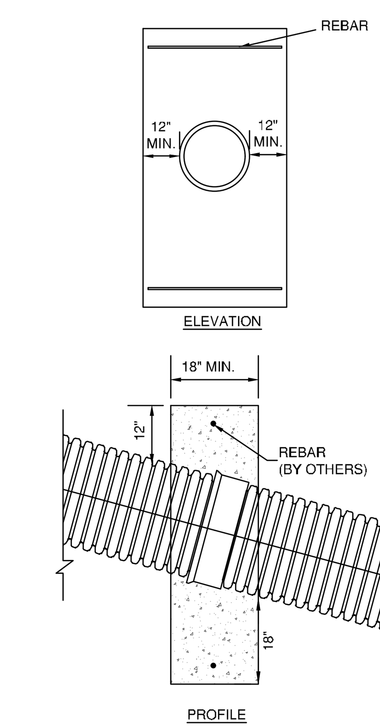
DRAINAGE PIPE INSTALLATION

N.T.S.



YARD DRAIN DETAIL

N.T.S.

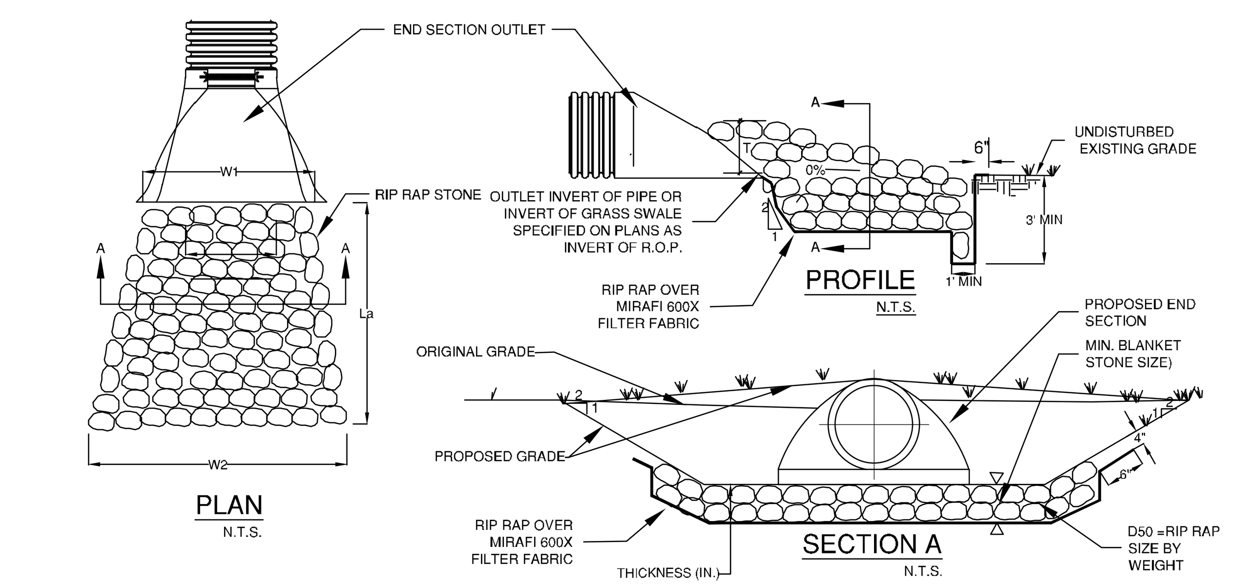


NOTES:

1. PIPE ANCHORS TO BE INSTALLED WHERE PROPOSED DRAINAGE PIPE SLOPE EXCEEDS 15%
2. ANCHORS SHALL BE PLACED EVERY JOINT.
3. PIPE TO BE INSTALLED PER MANUFACTURERS RECOMMENDATIONS.
4. CONTRACTOR SHALL CONSULT WITH ADVANCED DRAINAGE SYSTEMS, INC. (ADS) FOR SPECIFIC DESIGN AND INSTALLATION REQUIREMENTS.

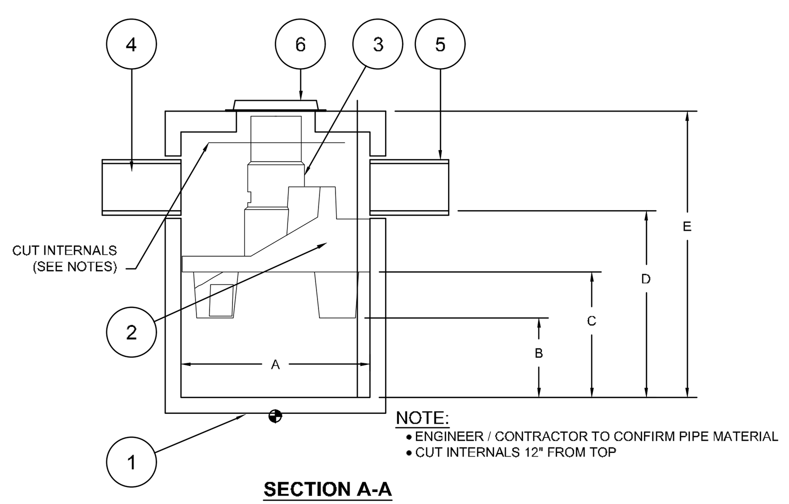
CONCRETE DRAIN PIPE ANCHOR

N.T.S



ROCK OUTLET PROTECTION (R.O.P.)

N.T.S



NOTE:
- ENGINEER / CONTRACTOR TO CONFIRM PIPE MATERIAL
- CUT INTERNALS 12" FROM TOP

SECTION A-A

NTS

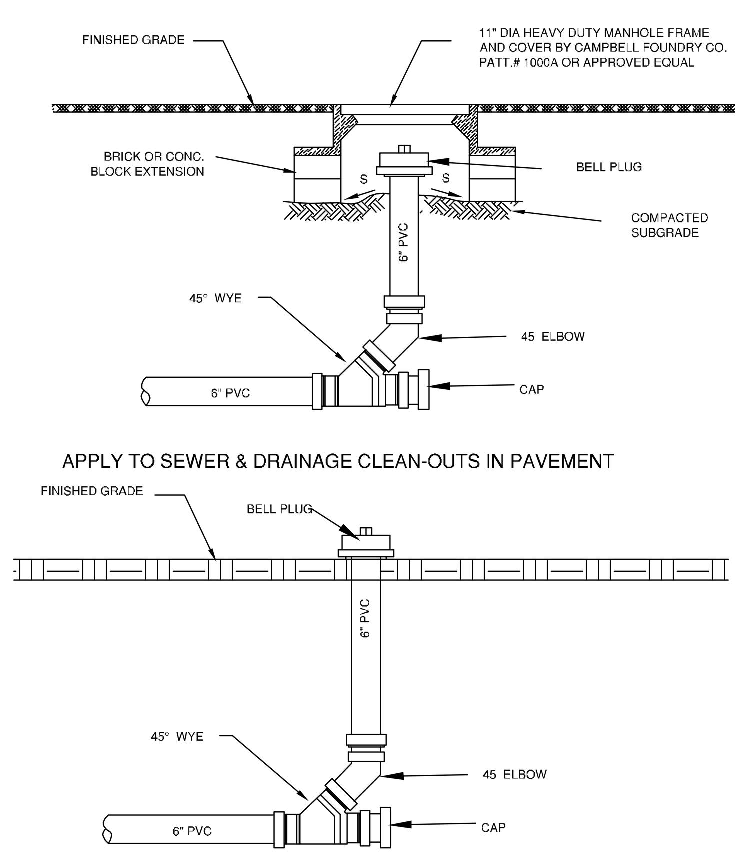
PARTS LIST : **FIRST DEFENSE HC**	
ITEM	**DESCRIPTION**
1	I.D. PRECAST MANHOLE
2	LEDGER SUPPORT
3	SEPARATION MODULE
4	INLET PIPE (BY OTHERS)
5	OUTLET PIPE (BY OTHERS)
6	FRAME & COVER

STRUCTURE NUMBER	MODEL	DIMENSIONS (FT)				
		A (MANHOLE DIAMETER (I.D.))	B	C	D	E
HDS 1.1	FD-4HC	4	2.25	3.47	4.97	8.0
HDS 1.2	FD-5HC	5	2.40	3.90	5.83	9.33
HDS 1.3	FD-3HC	3	1.83	2.67	3.71	6.46

FIRST DEFENSE DETAIL

N.T.S.

(DESIGNED, MANUFACTURED, AND SUPPLIED BY HYDRO INTERNATIONAL PLC.)

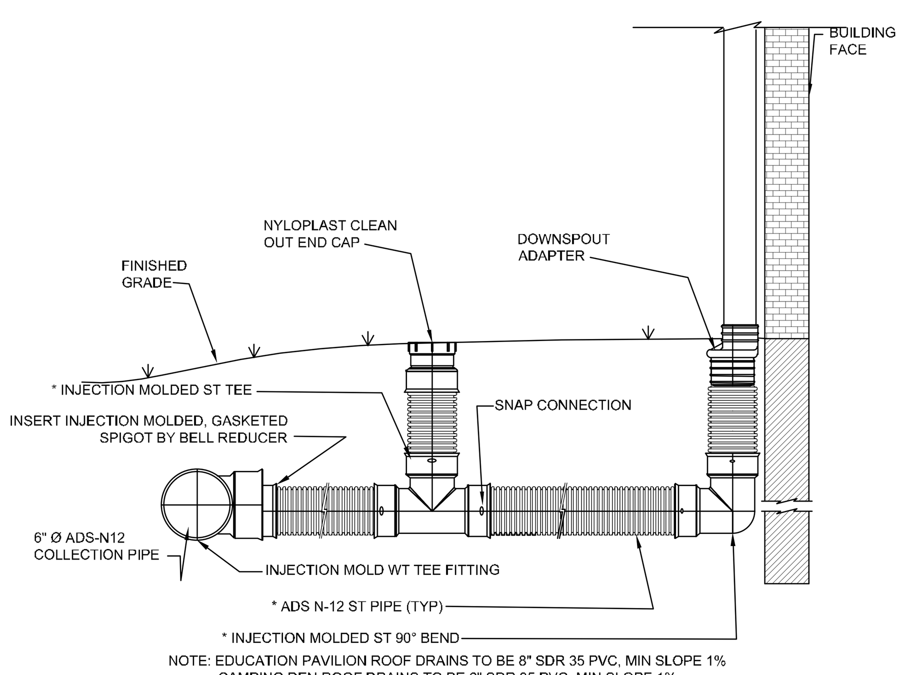


APPLY TO SEWER & DRAINAGE CLEAN-OUTS IN PAVEMENT

APPLY TO SEWER & DRAINAGE CLEAN-OUTS NOT IN PAVEMENT

TYPICAL CLEANOUT DETAIL

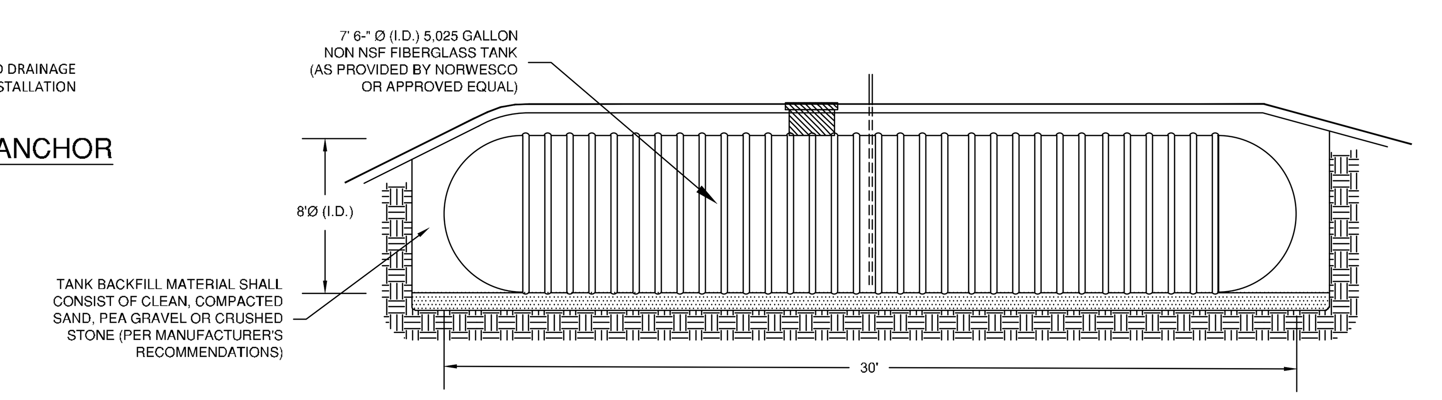
N.T.S.



NOTE: EDUCATION PAVILION ROOF DRAINS TO BE 8" SDR 35 PVC, MIN SLOPE 1% CAMPING DEN ROOF DRAINS TO BE 6" SDR 35 PVC, MIN SLOPE 1%

ROOF LEADER CONNECTION DETAIL

N.T.S.

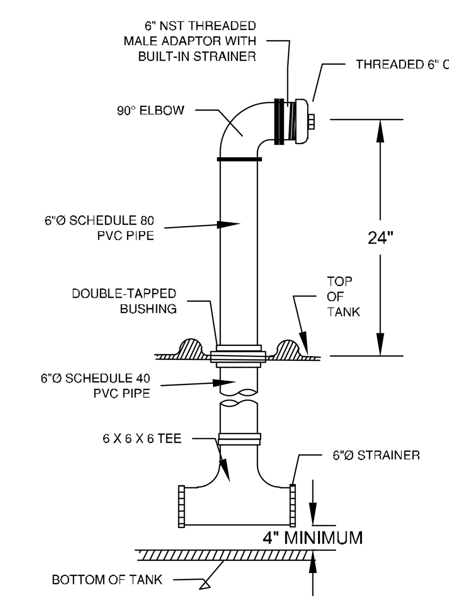


INSTALLATION NOTE:
TO INSURE TANK STABILITY, PROVIDE FOR SUBSURFACE DRAINAGE OF BEDDING AND BACKFILL AREA AS EXISTING CONDITIONS WARRANT. THE USE OF ANCHORING "DEADMEN" WITH STRAPS SHALL ALSO BE USED, IF REQUIRED BY THE PROJECT ENGINEER AFTER INSPECTION OF SITE CONDITIONS PRIOR TO TANK PLACEMENT.

NOTE:
FINAL TANK LOCATION AND CONNECTION DETAILS TO BE COORDINATED WITH THE LOCAL FIRE DEPARTMENT PRIOR TO PURCHASE AND INSTALLATION.

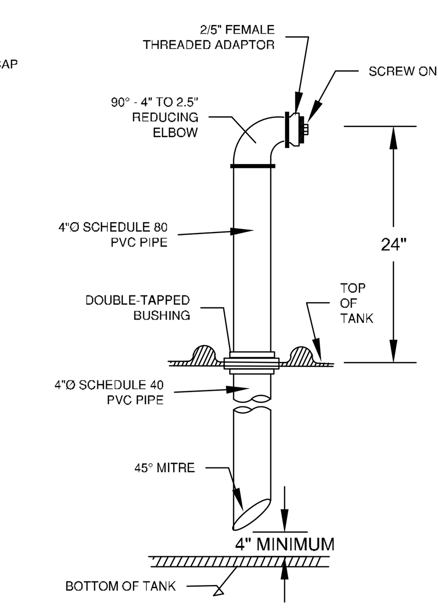
10,000 GAL. FIRE SUPPRESSION WATER STORAGE TANK

N.T.S.



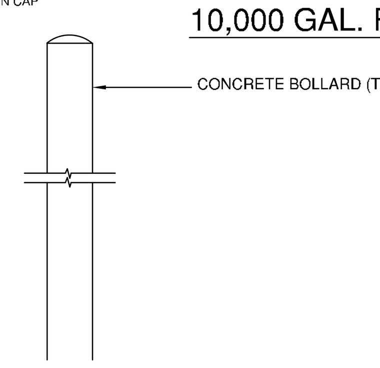
POST HYDRANT DETAIL

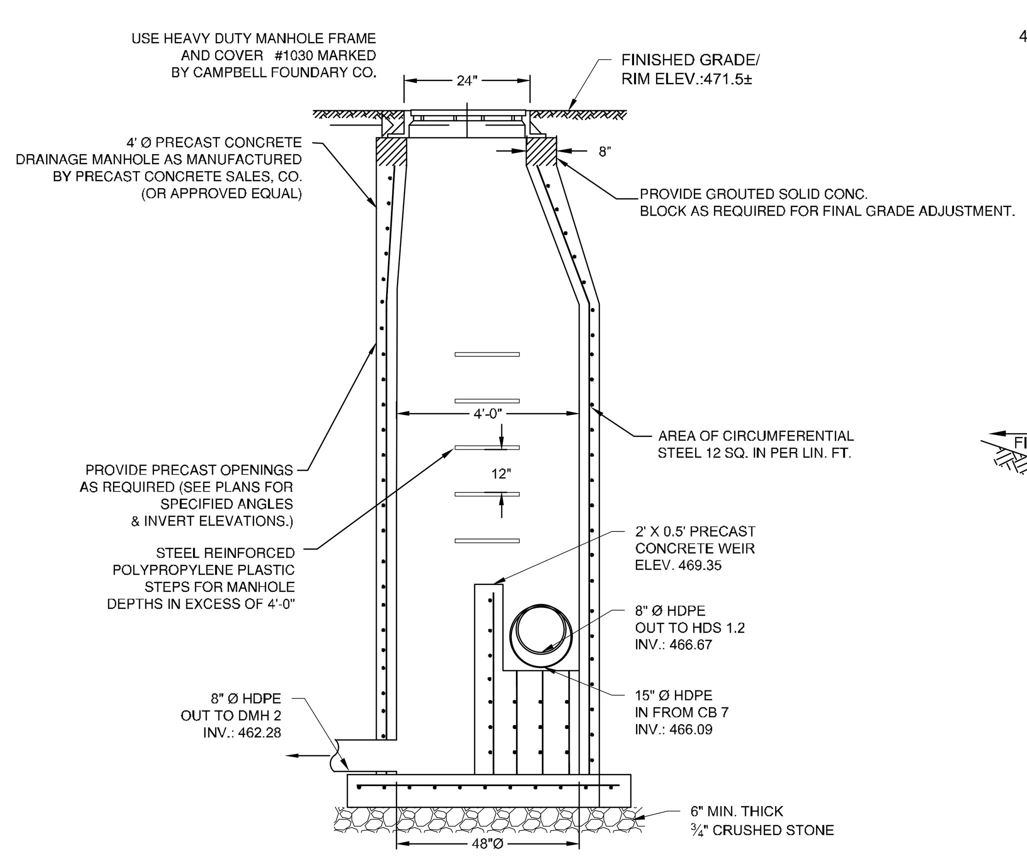
NOT TO SCALE



TANK FILL DETAIL

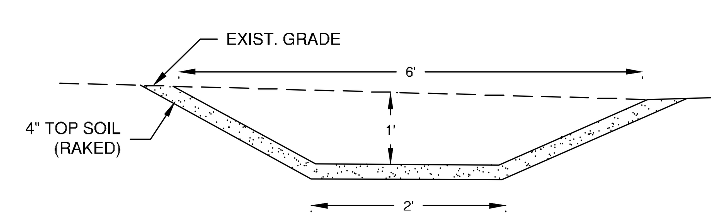
NOT TO SCALE





DIVERSION MANHOLE 1.2 DETAIL

N.T.S.



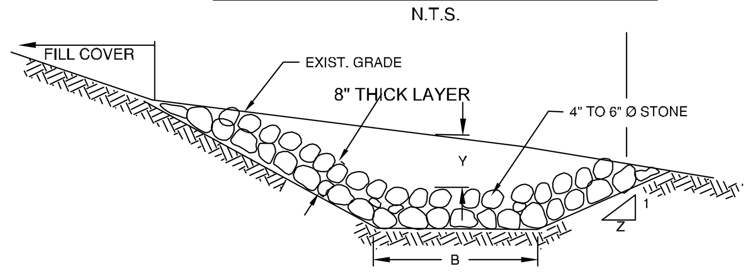
SEED MIXTURE RATE / 1000 SF

BIRDSFOOT TREFOIL .2lb
TALL FESCUE .45 lb
PERRENNIAL RYEGRASS .1 lb

MULCH: HAY OR STRAW 2 BALES

GRASS LINED SWALE DETAIL

N.T.S.

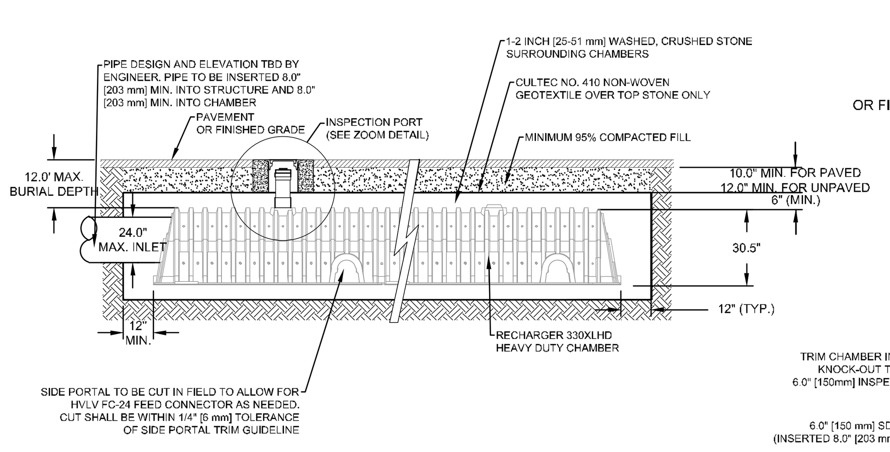


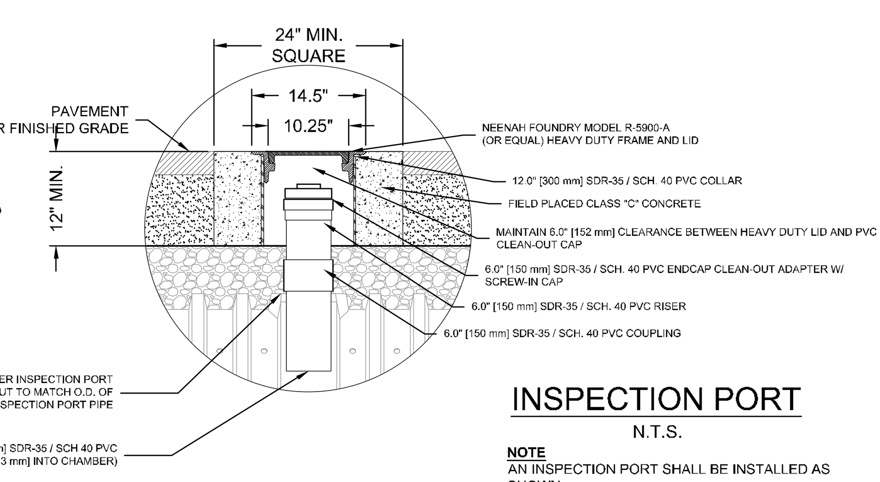
SWALE DIMENSIONS				
SWALE I.D.	Z	B	Y	SLOPE
RIP-RAP	2	2'	1'	VARIES

TO BE USED WHERE FLOWS EXCEED 2 F.P.S. OR GRADES EXCEEDING 15 %

RIP-RAP SWALE DETAIL

N.T.S.

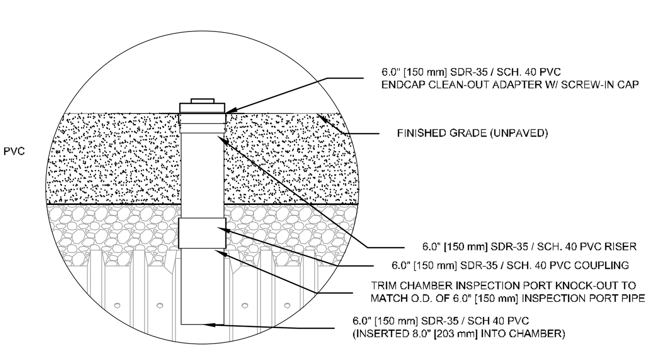


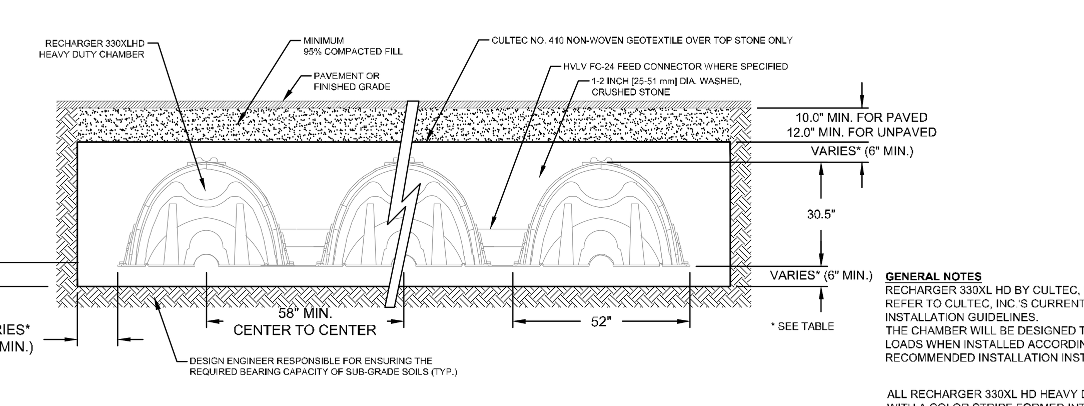


INSPECTION PORT

N.T.S.

NOTE
AN INSPECTION PORT SHALL BE INSTALLED AS SHOWN

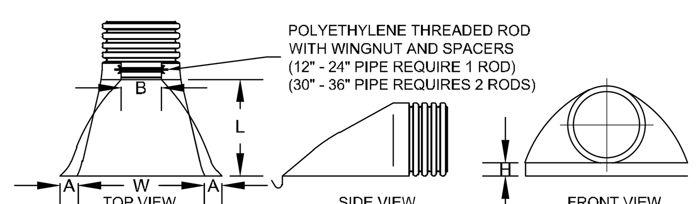




CULTEC RECHARGER 330 XLHD

N.T.S.

(OR APPROVED EQUAL)



ADS PRODUCT DIMENSIONS						
PART #	PIPE Ø	A	B (MAX)	H	L	W
1210NP	12"	6.5"	10"	6.5"	25"	29"
1510NP	15"	6.5"	10"	6.5"	25"	29"
1810NP	18"	7.5"	15"	6.5"	32"	35"
2410NP	24"	7.5"	18"	6.5"	36"	45"
3015NP	30"	7.5"	12"	8.6"	36"	63"
3615NP	36"	7.5"	25"	8.6"	58"	63"

ADS - FLARED END SECTION

N.T.S.

(OR APPROVED EQUAL)

NOTE:
SHOP DRAWINGS OF ALL CIVIL COMPONENTS SHOULD BE PROVIDED TO OUR OFFICE FOR THEIR REVIEW AND APPROVAL PRIOR TO PRODUCTION / PURCHASING

REVISIONS: DATE:	DESCRIPTION	BY/CK	DATE:	DESCRIPTION	BY/CK
11-28-23	PLANNING BOARD SUBMISSION	RH/MG	01-16-23	BUILDING DEPARTMENT COMMENTS	RH/MG
10-20-23	NYCDEP COMPLETENESS COMMENTS	RH/MG	02-07-22	WCHD NYCDEP COMMENTS	ZF/ED
04-25-23	PLANNING BOARD SUBMISSION	RH/MG	06-04-21	NYCDEP APPLICATION	RH/MG
02-07-23	PLANNING BOARD SUBMISSION	RH/MG	04-27-21	PLANNING BOARD SUBMISSION	RH/MG

STATE OF NEW YORK · MATTHEW J. GIRONDA · LICENSED PROFESSIONAL ENGINEER · No. 096030

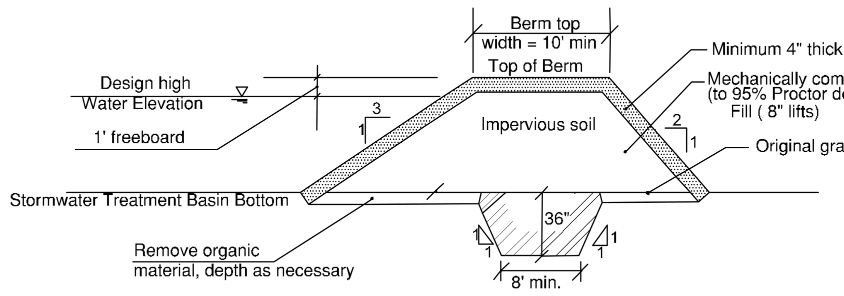
MATTHEW J. GIRONDA P.E.

DETAILS

WOLF CONSERVATION CENTER
7 BUCK RUN, SOUTH SALEM, NY 10590
TOWN OF LEWISBORO , WESTCHESTER COUNTY, NY

BIBBO ASSOCIATES, LLP
293 ROUTE 100 SUITE 203
SOMERS, NEW YORK 10589
TEL. 914 277 5805

DATE:	12-29-2020
SCALE:	1" = 30'
FILE:	L5
DSGN / CHK:	MG/RH
DRN. BY:	RH
SHT NO.	17 OF 20
DWG NO.	D-1



STORMWATER BASIN BERM DETAIL

N.T.S.

Whenever a berm is to be constructed on a slope:
The subgrade shall be benched to provide level surfaces for proper operation of compaction equipment.

CONSTRUCTION SPECIFICATIONS

1. " EMBANKMENT MATERIAL SHALL CONSIST OF SELECT GLACIAL TILL COMPRISED OF A MIX OF SILT, SAND, CLAY AND GRAVEL FROM ON-SITE EXCAVATION. THE PERCENTAGE OF FINES PASSING THE 200 SIEVE SHALL BE AT LEAST 20% BY WEIGHT BORROW MATERIAL SHALL BE TESTED FOR OPTIMUM MOISTURE CONTENT AND PROCTOR MAXIMUM DRY DENSITY. MATERIAL WITH MOISTURE CONTENT IN EXCESS OF OPTIMUM SHALL BE DRIED TO THE REQUIRED OPTIMUM CONTENT BY SPREADING, HARROWING, BLADING OR OTHER APPROVED MEANS PRIOR TO PLACEMENT IN THE BERM. NO STONES GREATER IN SIZE THAN 6 INCHES IN MAXIMUM DIMENSIONS AND NO ORGANIC MATERIAL SHALL BE ALLOWED IN THE EMBANKMENT.

2. THE GROUND SURFACE UNDER THE EMBANKMENT SHALL BE STRIPPED OF ALL VEGETATION, ROOTS, TOPSOIL AND SUBSOIL TO THE DEPTH INDICATED ON THE DETAIL. AFTER STRIPPING TO SUBGRADE THE EARTH SHALL BE MOISTENED, IF DRY, AND COMPACTED BEFORE PLACEMENT OF THE FIRST LAYER OF EMBANKMENT MATERIAL.

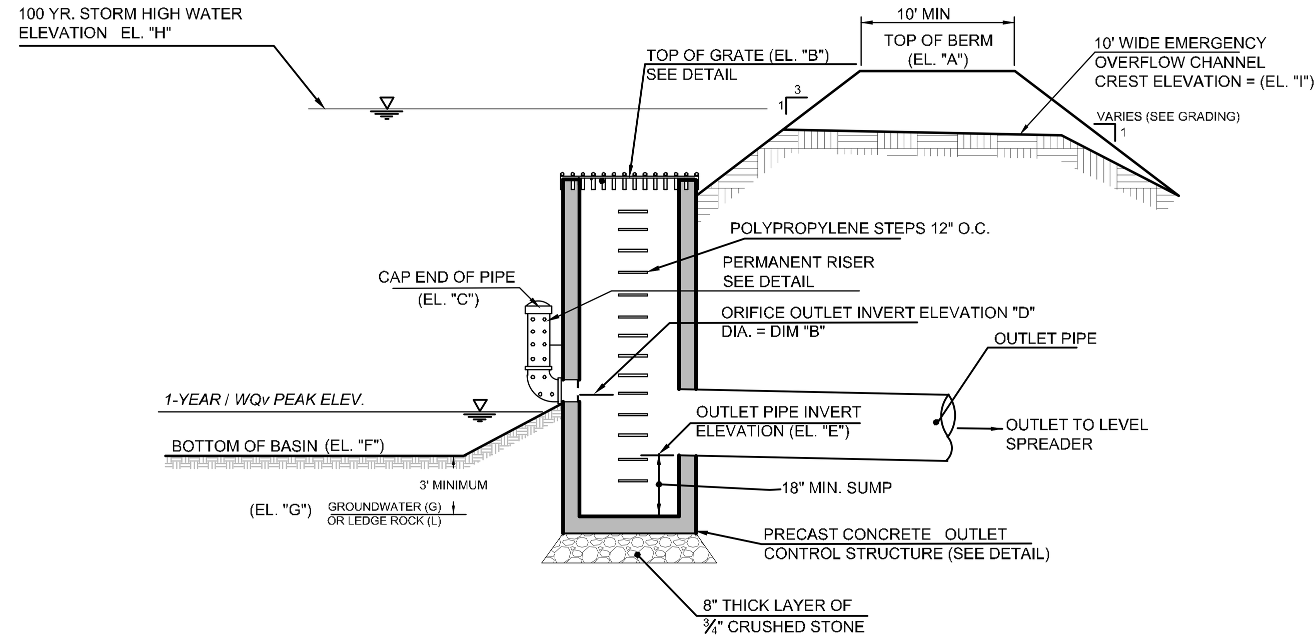
3. THE EMBANKMENT SHALL BE CONSTRUCTED IN EVEN EIGHT(8) INCH LIFTS AND MECHANICALLY COMPACTED TO A MINIMUM DRY DENSITY OF 95% OF MAXIMUM DENSITY AS DETERMINED BY THE STANDARD COMPACTION TEST.

4. COMPACTION EQUIPMENT

   A) EMBANKMENT LIFTS - LIFTS SHALL BE COMPACTED WITH A SMOOTH STEEL WHEEL VIBRATORY ROLLER HAVING A NOMINAL GROSS WEIGHT OF NOT LESS THAN 10 TONS AND EXERT A MINIMUM FORCE OF NOT LESS THAN 300 POUNDS PER INCH OF WIDTH ON THE COMPRESSION ROLL FACES.

   B) SPECIALLY COMPACTED EARTH FILL- WHERE COMPACTION BY MEANS OF THE SPECIFIED ROLLER IS IMPRACTICAL AT SUCH LOCATIONS AS STEEP AND IRREGULAR ABUTMENTS, ROUGH AND IRREGULAR FOUNDATIONS, ADJACENT TO OUTLET WORKS, COMPACTION EQUIPMENT SHALL INCLUDE IMPACT RAMMERS, SMALL DRUM VIBRATORS, OR OTHER APPROVED MECHANICAL TAMPERS. THE MATERIAL, MOISTURE AND DENSITY SHALL BE AS SPECIFIED ABOVE EXCEPT THAT ROCK SIZE SHALL BE LIMITED TO 2 INCHES. LIFT THICKNESS SHALL BE REDUCED IF NECESSARY TO ACHIEVE THE REQUIRED COMPACTION WITH THE EQUIPMENT USED.

5. ANTI-SEEP COLLARS AS SUPPLIED BY SCHEIB DRAINAGE PRODUCTS, OREGON, MO. TO BE INSTALLED ON ALL OUTLET PIPES PENETRATING THE BERM.



X- SECTIONAL VIEW

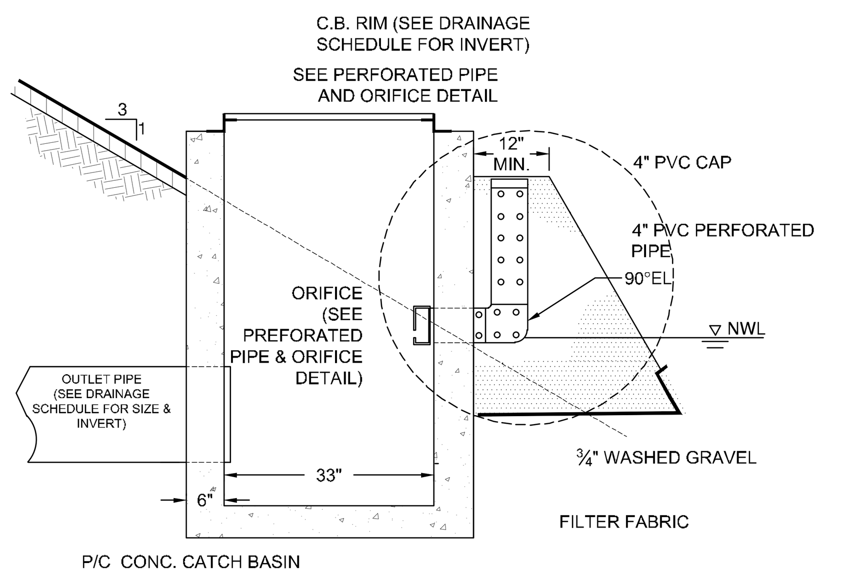
NTS

STORMWATER TREATMENT BASIN	ELEVATIONS									DIMENSIONS	OUTLET PIPE		
	EL. "A" T.O.B.	EL. "B" GRATE	EL. "C" CAP	EL. "D" ORIFICE	EL. "E" CULVERT	EL. "F" BOTTOM	EL. "G" G / L	EL. "H" 100-YR	EL. "I" EMG. SPWY.	DIM. "B" ORIFICE (Ø INCH)	DIA./MATERIAL (INCH)	SLOPE (%)	LENGTH (LF)
INFILTRATION BASIN 1.1	457.00	455.50	453.00	454.75	450.30	451.00	N/A	455.39	456.00	4	12" HDPE	1.38	58

INFILTRATION BASIN OUTLET CONTROL CONFIGURATION

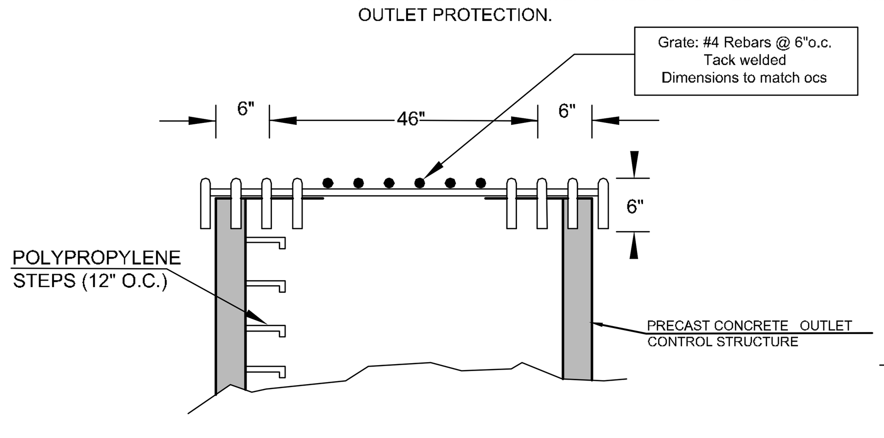
NTS

NOTE: IN CASE OF INFILTRATION BASIN CLOGGING, TO ALLOW FOR ANY NECESSARY MAINTENANCE, A SUBMERSIBLE PUMP SHALL BE UTILIZED, AND IMPOUNDED WATER SHALL BE PUMPED THROUGH THE OUTLET STRUCTURE'S PRIMARY 18" DIA. CULVERT TO THE PROPOSED ROCK OUTLET PROTECTION.



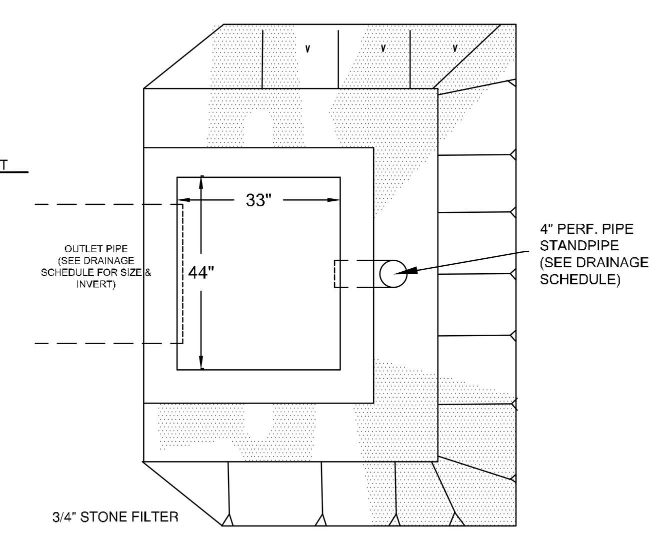
INFILTRATION BASIN OUTLET STRUCTURE DETAIL - SECTION VIEW

N.T.S



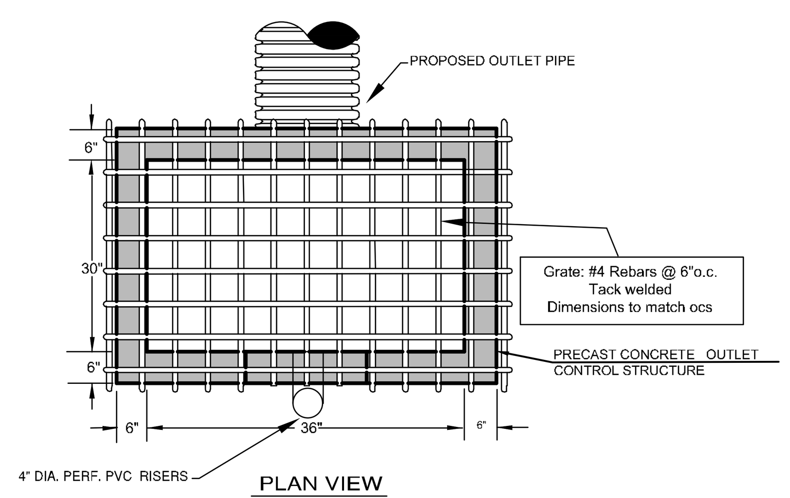
ELEVATION VIEW

N.T.S.



INFILTRATION BASIN OUTLET STRUCTURE DETAIL - PLAN VIEW

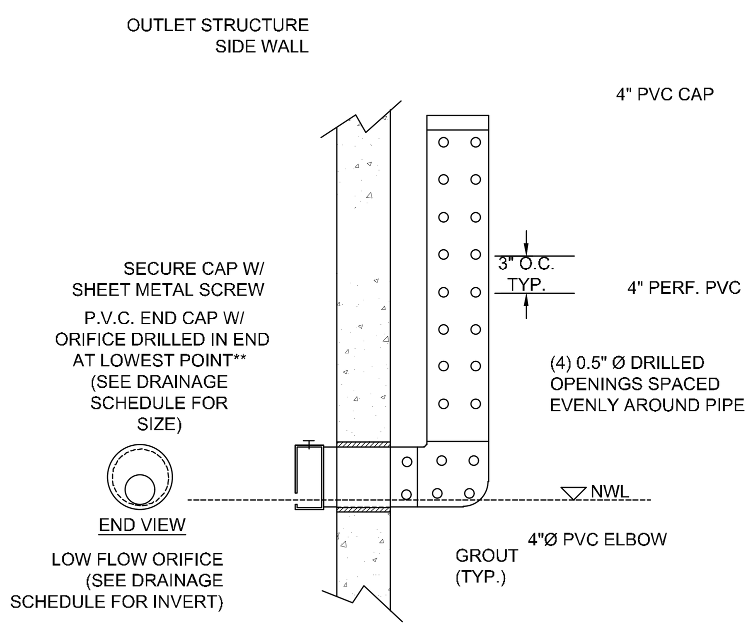
N.T.S.



PLAN VIEW

OUTLET CONTROL STRUCTURE AND GRATE DETAIL

N.T.S



PERFORATED PIPE AND ORIFICE DETAIL

N.T.S

FRAMES SHALL BE SET ONE INCH BELOW FINISHED GRADE AS MEASURED AT A DISTANCE OF 1 1/2 INCHES IN EITHER DIRECTION ALONG THE GUTTER LINE

NOTE:
SHOP DRAWINGS OF ALL CIVIL COMPONENTS SHOULD BE PROVIDED TO OUR OFFICE FOR THEIR REVIEW AND APPROVAL PRIOR TO PRODUCTION / PURCHASING

REVISIONS:

DATE:	DESCRIPTION	BY/CK	DATE:	DESCRIPTION	BY/CK
11-28-23	PLANNING BOARD SUBMISSION	RH/MG	01-16-23	BUILDING DEPARTMENT COMMENTS	RH/MG
10-20-23	NYCDEP COMPLETENESS COMMENTS	RH/MG	02-07-22	WCHD NYCDEP COMMENTS	ZF/ED
04-25-23	PLANNING BOARD SUBMISSION	RH/MG	06-04-21	NYCDEP APPLICATION	RH/MG
02-07-23	PLANNING BOARD SUBMISSION	RH/MG	04-27-21	PLANNING BOARD SUBMISSION	RH/MG

STATE OF NEW YORK · MATTHEW J. GIRONDA · No. 096030 · LICENSED PROFESSIONAL ENGINEER

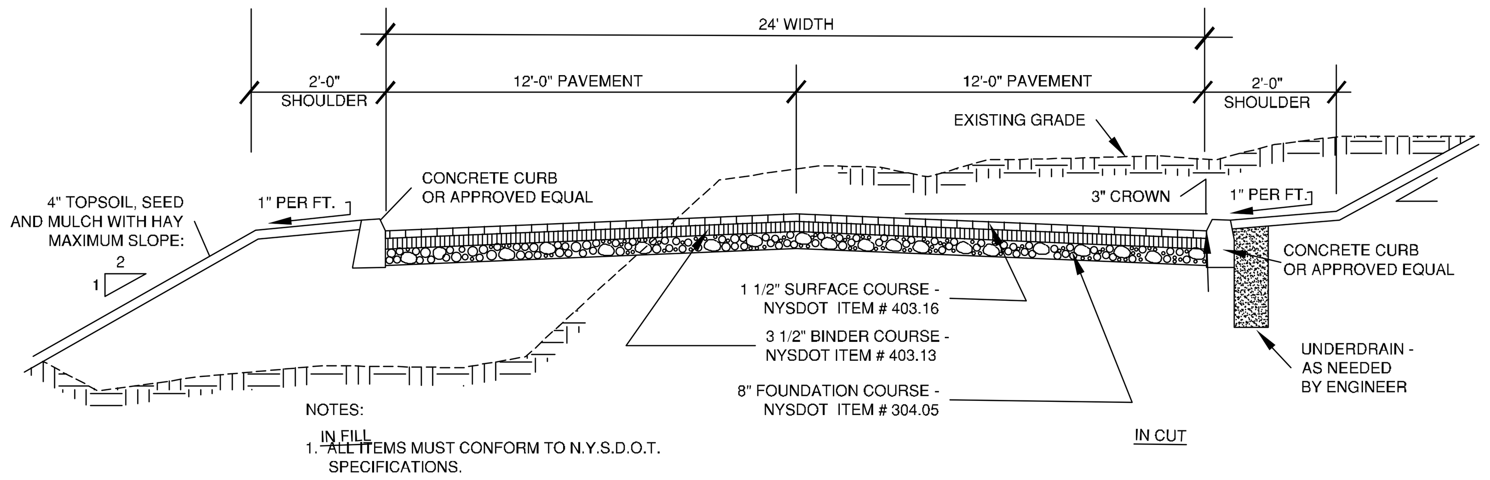
MATTHEW J. GIRONDA P.E.

DETAILS

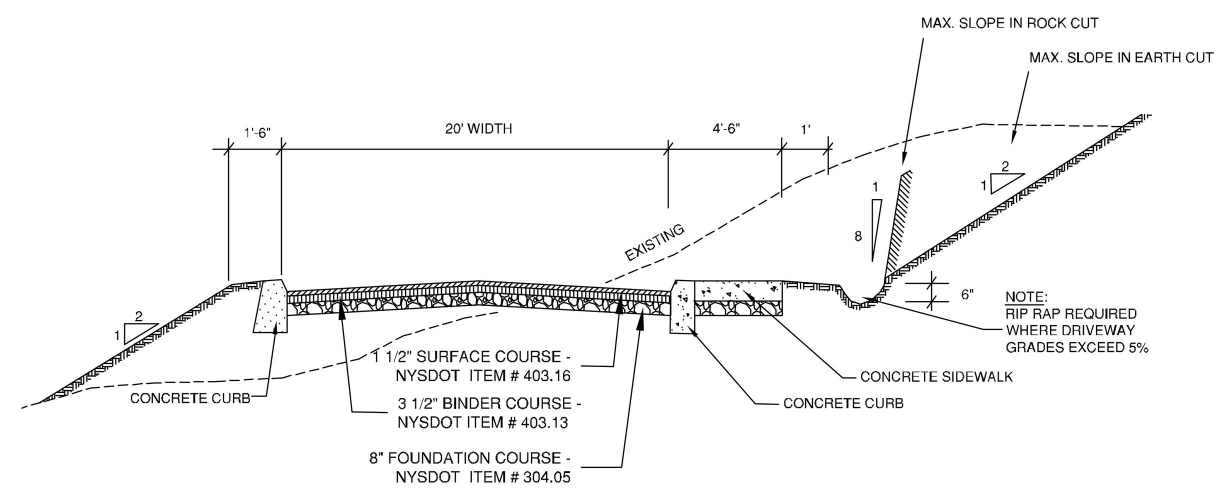
WOLF CONSERVATION CENTER
7 BUCK RUN, SOUTH SALEM, NY 10590
TOWN OF LEWISBORO , WESTCHESTER COUNTY, NY

BIBBO ASSOCIATES, LLP
293 ROUTE 100 SUITE 203
SOMERS, NEW YORK 10589
TEL. 914 277 5805

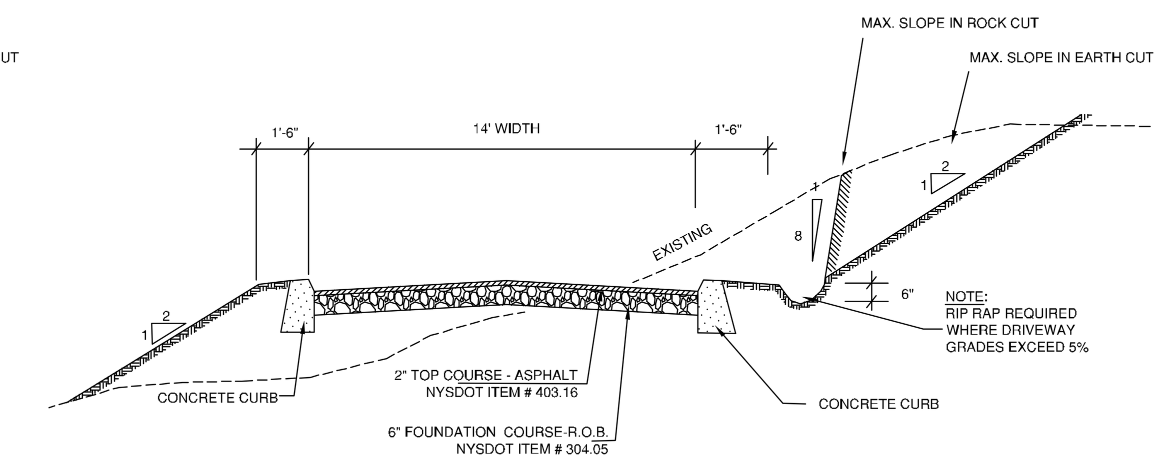
DATE:	12-29-2020
SCALE:	1" = 30'
FILE:	L5
DSGN / CHK:	MG/RH
DRN. BY:	RH
SHT NO.	18 OF 20
DWG NO.	D-2



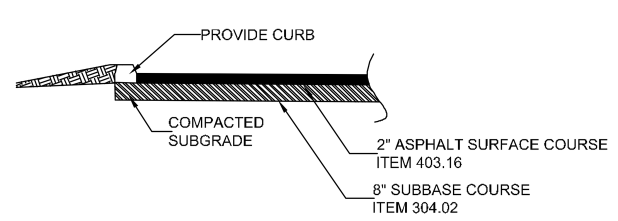
24' WIDE PRIVATE ROAD PAVEMENT SECTION
(STATION 0+00 - 3+50)
N.T.S.



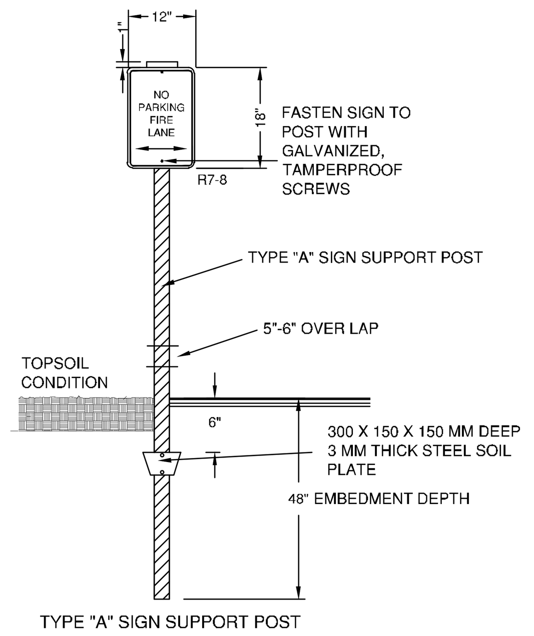
20' WIDE DRIVEWAY PAVEMENT SECTION
(STATION 3+50 - 6+60)
N.T.S.



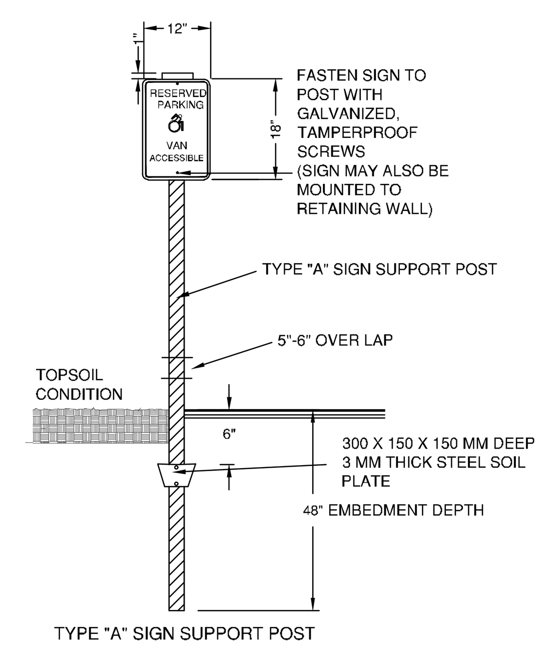
14' WIDE DRIVEWAY PAVEMENT SECTION
(STATION 6+60 - PARKING AREA)
N.T.S.



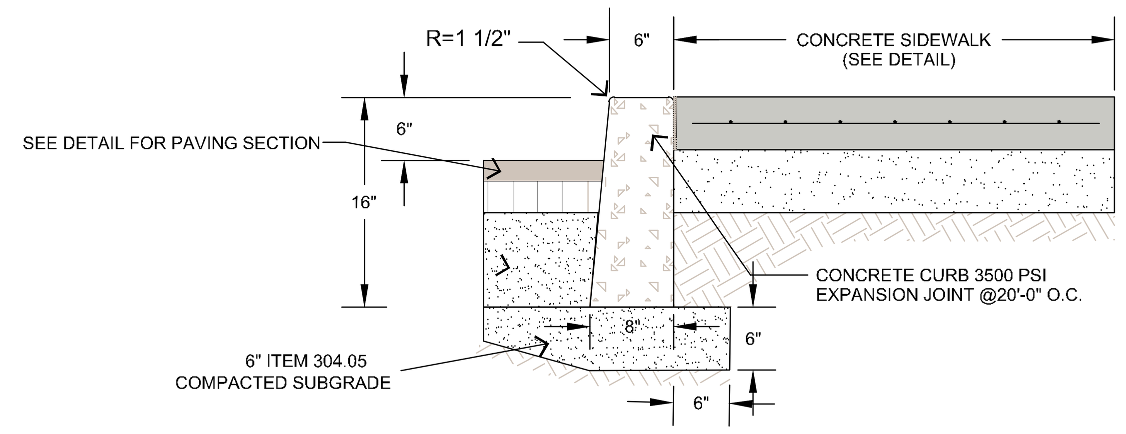
PROPOSED PARKING AREA PAVEMENT SECTION
N.T.S.



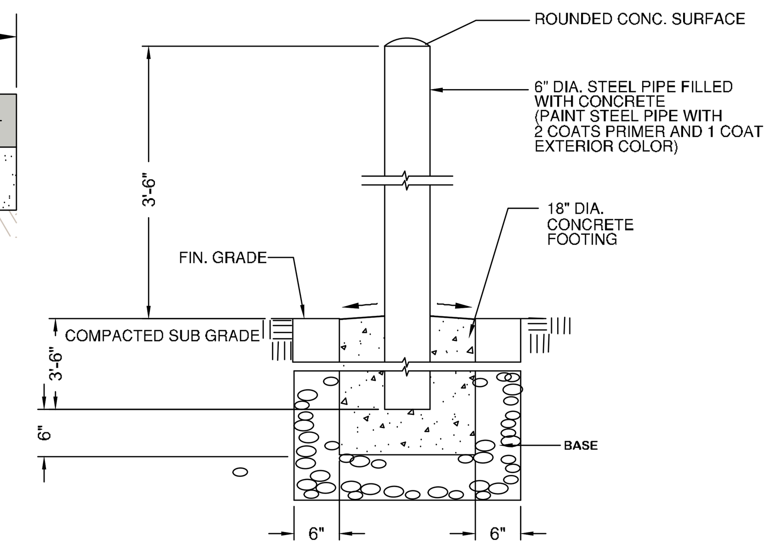
NO PARKING SIGNAGE
N.T.S.



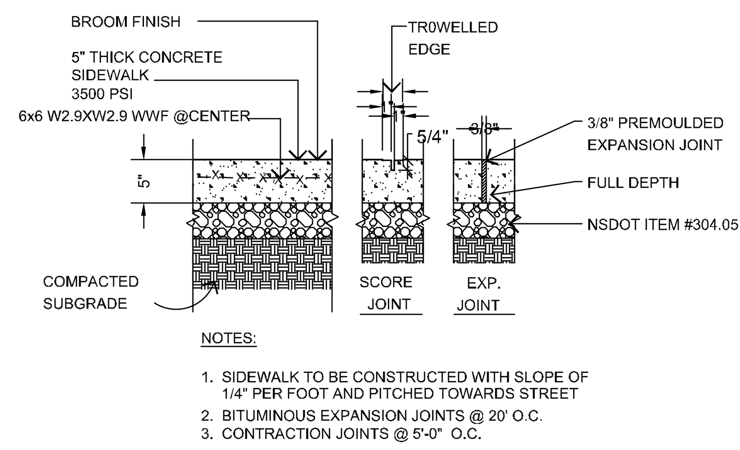
ACCESSIBLE PARKING SIGNAGE
N.T.S.



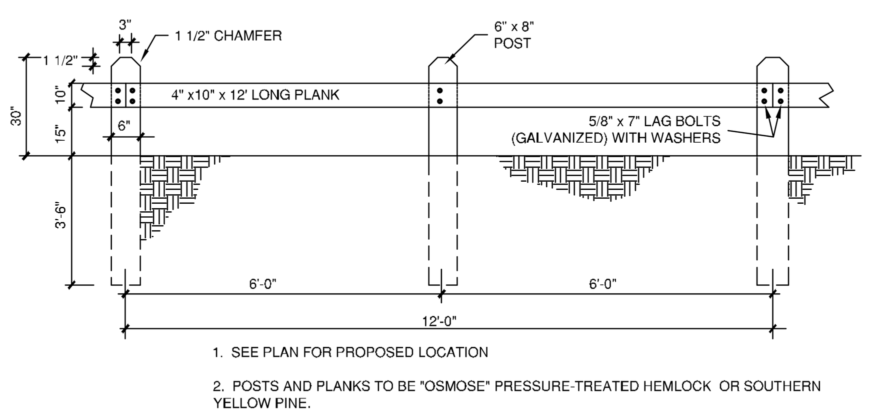
CONCRETE CURB DETAIL
N.T.S.



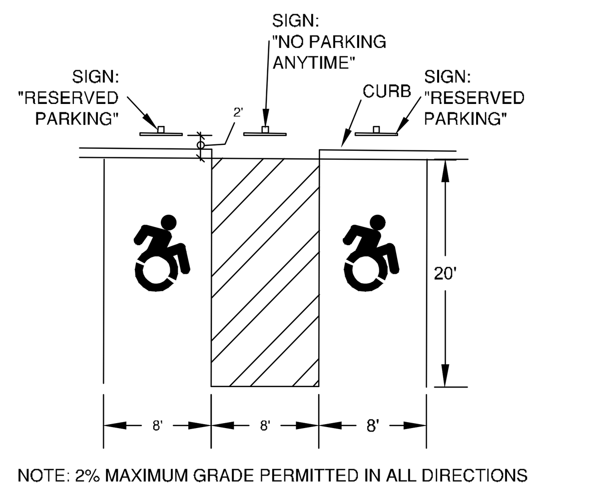
CONCRETE FILLED STEEL BOLLARD
N.T.S.



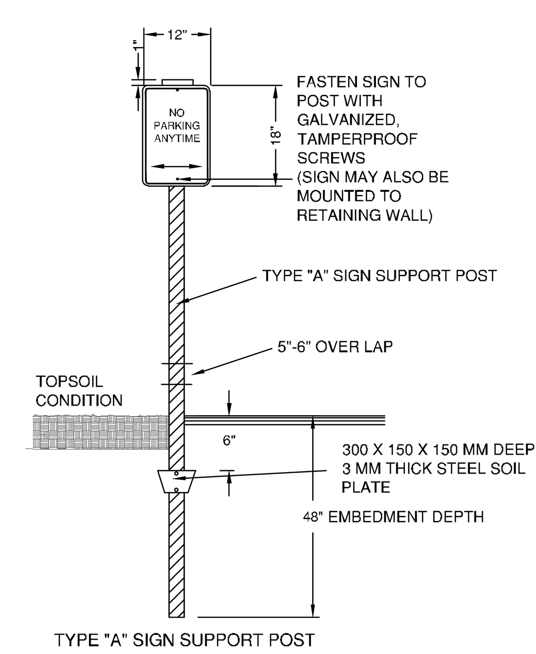
CONCRETE SIDEWALK DETAIL
N.T.S.



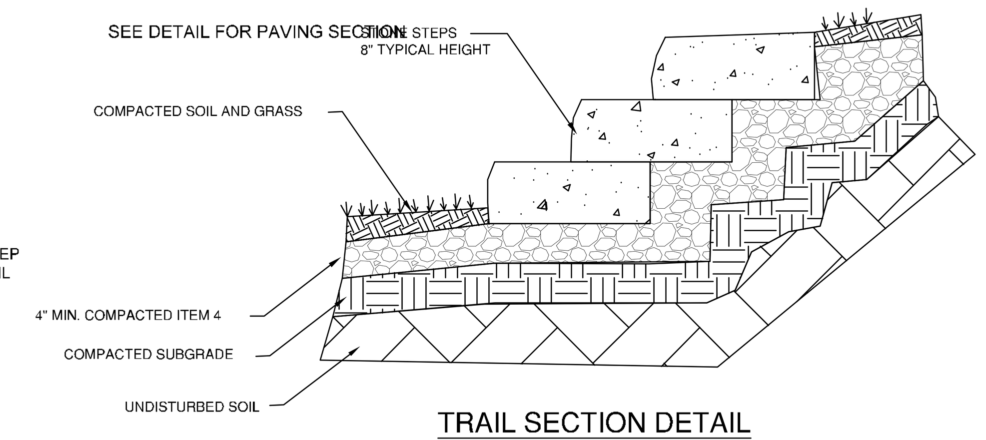
TIMBER GUIDE RAIL DETAIL
N.T.S.



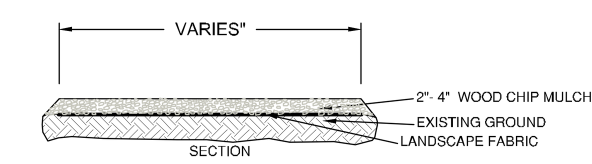
ACCESSIBLE PARKING DIMENSIONS & SIGN PLACEMENT
N.T.S.



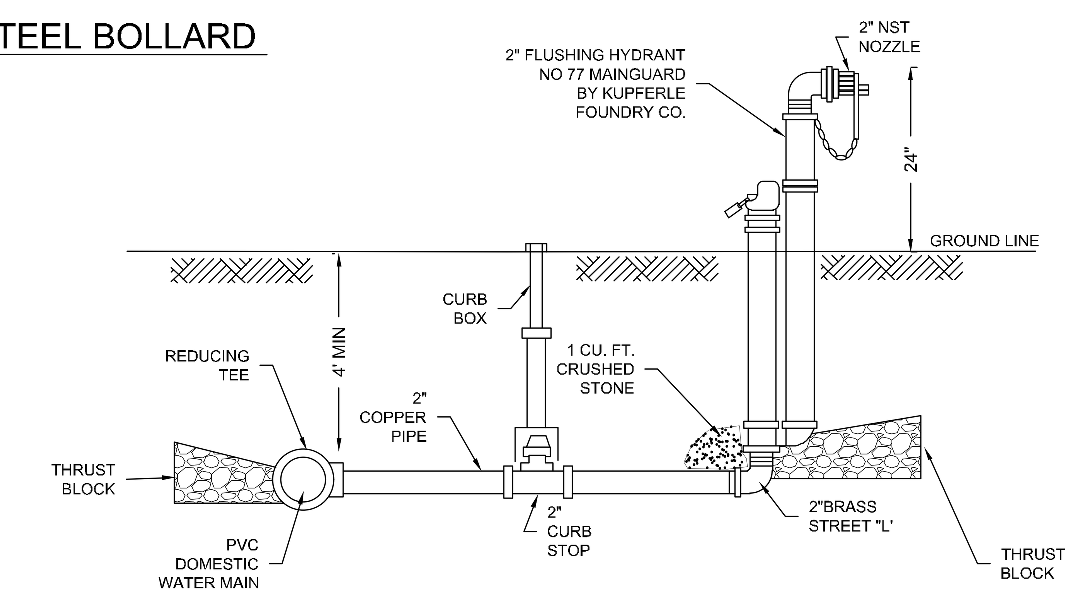
NO PARKING SIGNAGE
N.T.S.



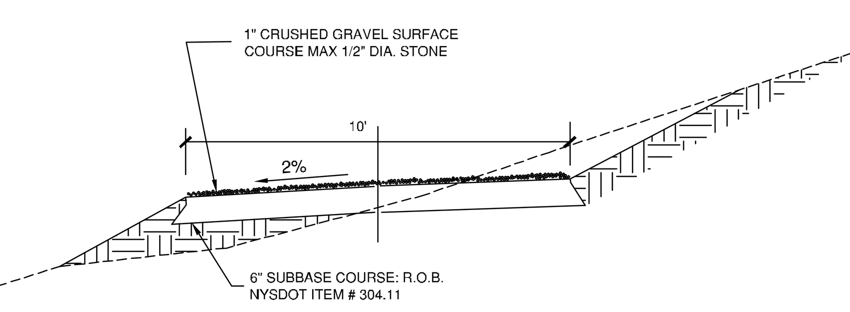
TRAIL SECTION DETAIL
N.T.S.



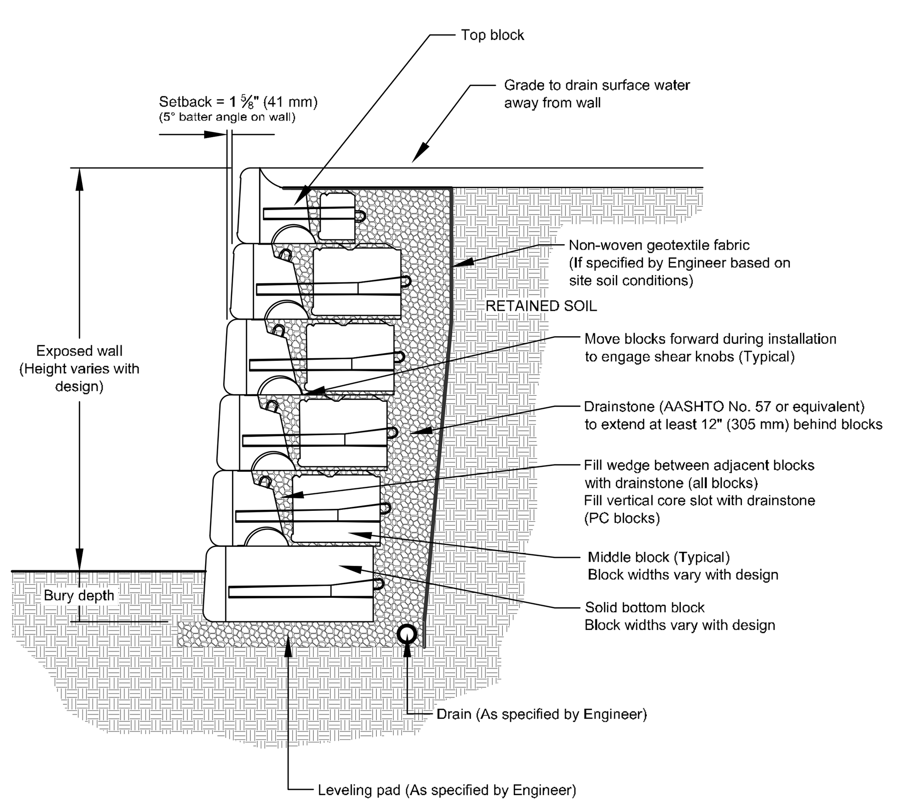
WOOD CHIP WALKING TRAIL
N.T.S.



FLUSHING HYDRANT DETAIL
N.T.S.



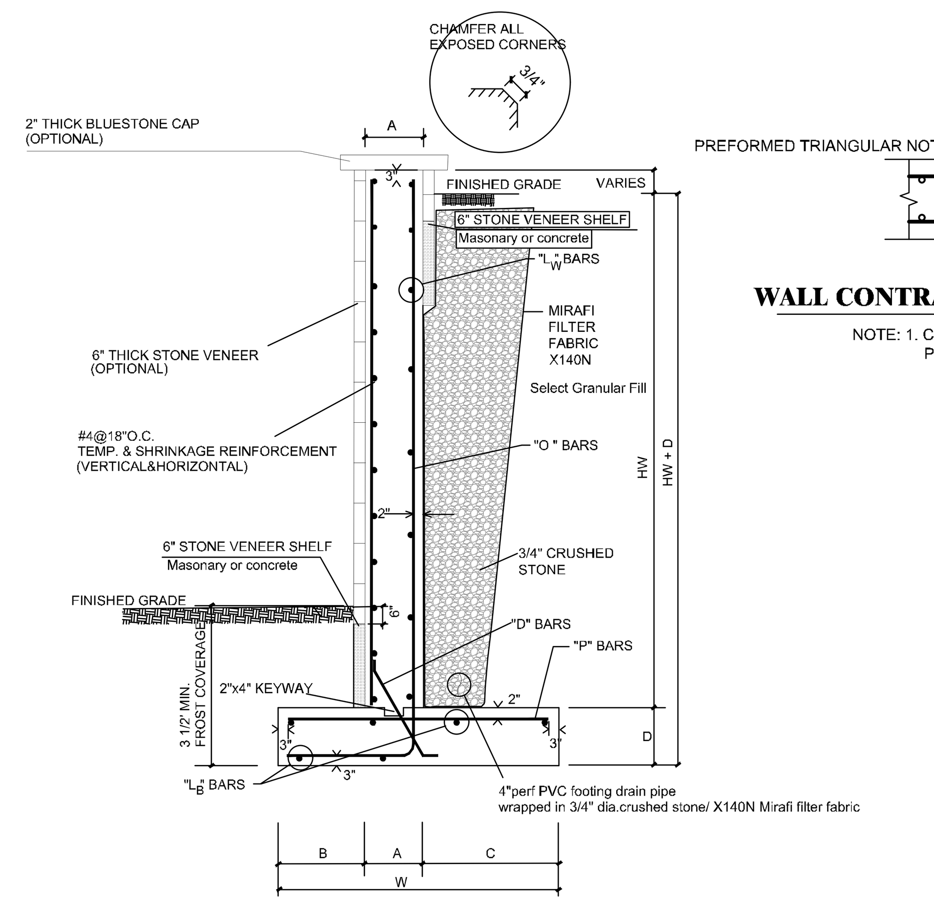
GRAVEL PATH DETAIL
N.T.S.



TYPICAL SEGMENTAL BLOCK RETAINING WALL DETAIL
N.T.S.

NOTES:

1. TYPICAL WALL DETAIL IS PROVIDED FOR REFERENCE ONLY. WALL DESIGN DRAWINGS PREPARED BY A NYS LICENSED ENGINEER SHALL BE PROVIDED TO THE PROJECT ENGINEER FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION.
2. ACTUAL WALL DESIGN DRAWINGS AND CALCULATIONS SHALL BE BASED ON SITE CONDITIONS.
3. TYPICAL WALL DETAIL PROVIDED ABOVE BASED ON "TYPICAL GRAVITY WALL SECTION" AS MANUFACTURED BY REDI ROCK.
4. THE CONSTRUCTION OF RETAINING WALLS GREATER THAN OR EQUAL TO FOUR (4') IN HEIGHT SHALL BE CERTIFIED BY THE DESIGN PROFESSIONAL PRIOR TO ISSUANCE TO A CERTIFICATE OF OCCUPANCY / COMPLETION.

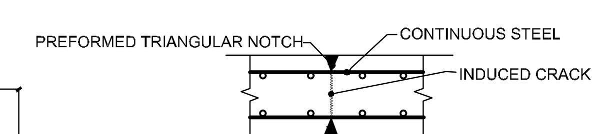


REINFORCED CONCRETE RETAINING WALL DETAIL- SECTION
NTS

RETAINING WALL SCHEDULE											
HW	A	B	C	W	"0" BARS	"D" BARS	"L_B" BARS	"L_W" BARS	"P " BARS	"D " BASE DEPTH	DESCRIPTIONS
0' to 10'	12"	15"	3'-5"	5'-8"	#5@12"o.c.	#4@12"	6-#5	#5@12"o.c.	#5@12"o.c.	12"	

NOTES:

1. THE CONSTRUCTION OF RETAINING WALLS GREATER THAN OR EQUAL TO FOUR (4') IN HEIGHT SHALL BE CERTIFIED BY THE DESIGN PROFESSIONAL PRIOR TO ISSUANCE TO A CERTIFICATE OF OCCUPANCY / COMPLETION.



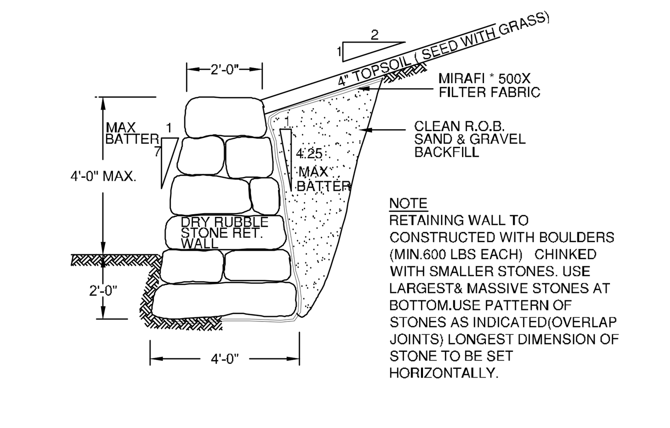
WALL CONTRACTION JOINT DETAIL
NOTE: 1. CONCRETE TO BE CONTINUOUSLY PLACED ACROSS JOINT

NOTES:

1. THE CONTRACTOR SHALL VERIFY THE EXISTING SOIL, TOPOGRAPHIC CONDITIONS, SUBSEQUENT RETAINING WALL HEIGHTS AND SOIL CONDITIONS PRIOR TO STARTING THE WORK. ANY INCONSISTENCIES SHALL BE REPORTED TO THE DESIGN ENGINEER TO DETERMINE IF FIELD CHANGES ARE REQUIRED.
2. REINFORCEMENT SHALL BE ASTM GRADE 60, DEFORMED BILLET-STEEL REBAR FOR CONCRETE REINFORCEMENT COMPLIANCE WITH ASTM A615.
3. ALL POURED IN PLACE CONCRETE SHALL HAVE A 3000 PSI COMPRESSIVE STRENGTH AT 28 DAYS.
4. WHERE THE RETAINING WALL SHALL BE CONSTRUCTED ON A SLOPE, SUFFICIENT LEVEL SHELVING SHALL BE PROVIDED FOR FOOTING CONSTRUCTION. BOTTOM OF FOOTING SHALL BE CONSTRUCTED AS SHOWN ON THE RETAINING WALL CROSS SECTION.
5. BACKFILL MATERIAL OF THE RETAINING WALL SHALL BE SELECT GRANULAR FILL CONFORMING TO THE GRADATION REQUIREMENTS SPECIFIED IN TABLE 7-7 OF THE NYSDOT STANDARD SPECIFICATIONS AND AS DESCRIBED BELOW:

SIEVE SIZE	PERCENT PASSING
4"	100%
No. 40	0-70%
No. 200	0-15%

6. SELECT GRANULAR FILL SHALL BE FREE OF LARGE STONES, ORGANIC MATTER, SOILS CONTAINING LARGE PERCENTAGES OF SILT / CLAY AND FROZEN MATERIALS. BACKFILL SHALL PROVIDE ADEQUATE DRAINAGE BEHIND THE WALL.
7. RETAINING WALL DESIGN IS BASED ON A 2.0 TON/SF SOIL BEARING CAPACITY. THE CONTRACTOR SHALL FIELD VERIFY SOIL CONDITIONS AND BEARING CAPACITIES OF IN-SITU SOIL. IF SOIL TESTING REVEALS INADEQUATE SOIL BEARING CAPACITIES, THE DESIGN ENGINEER SHALL BE NOTIFIED TO CONFIRM WALL DESIGN PARAMETERS PRIOR TO CONSTRUCTION.
8. THE RETAINING WALL DESIGN IS BASED ON A "B" CLASS "GRANULAR SOILS, MIX GRAIN SIZES" BACKFILL SOIL CONDITION. ANY ALTERATION FROM THESE SOILS, SUCH AS HIGH GROUNDWATER, HIGH PERCENTAGES OF FINES, SILTS AND CLAYS WILL CONSTITUTE DESIGN CHANGES.
9. CONTRACTOR SHALL TAKE CONCRETE CORE SAMPLES FROM FOOTING AND STEM POURS SEPARATELY AND HAVE THEM LABORATORY TESTED FOR COMPRESSIVE STRENGTH FOR 7 AND 28 DAYS.
10. ALL REBAR LAP SPLICES SHALL BE A MINIMUM OF 32" IN LENGTH.
11. WALL CONTRACTION JOINTS WILL BE PROVIDED AT EVERY 25" O.C. AS INDICATED ON THE PLANS
12. CHAMFER ALL EXPOSED CORNERS $\frac{3}{4}$"
13. NO WALL DRAINAGE SHALL DISCHARGE DIRECTLY TO ADJOINING PROPERTIES.
14. THE COMPLETED RETAINING WALL CONSTRUCTION SHALL BE CERTIFIED BY A LICENSED NEW YORK STATE PROFESSIONAL ENGINEER TO BE IN CONFORMANCE WITH THE APPROVED PLANS AND MUST INCLUDE LABORATORY TESTING RESULTS FOR SUB GRADE BEARING CAPACITY, BACKFILL GRADATION, COMPACTION, CONCRETE STRENGTH AND REBAR PLACEMENT.
14. RETAINING WALL FOOTING BOTTOM WILL BE ON THE EXISTING GRADE. ALL CONCRETE POURS SHALL BE MONOLITHIC AND NO HORIZONTAL COLD JOINTS WILL BE ALLOWED.
15. CONTRACTOR TO ENSURE PROPER SHORING AND/PR BRACING TO STABILIZE OR PREVENT CAVE-INS OF LOOSE SOIL AT THE EXCAVATION SITE.
16. WHEN BACKFILLING AGAINST THE WALLS, HEAVY COMPACTION EQUIPMENT SHALL BE KEPT AT LEAST 5 FEET AWAY FROM THE WALL. ONLY THE LIGHTWEIGHT COMPACTION EQUIPMENT SHALL BE USED NEAR THE WALL.
17. TOP OF WALL ELEVATIONS SHOWN ON THE PLANS INCLUDE 2" THICK CAP STONE, FOR NET CONCRETE ELEVATION SUBTRACT 2" FROM TOP ELEVATIONS.



BOULDER RETAINING WALL DETAIL
N.T.S.

NOTE:
SHOP DRAWINGS OF ALL CIVIL COMPONENTS SHOULD BE PROVIDED TO OUR OFFICE FOR THEIR REVIEW AND APPROVAL PRIOR TO PRODUCTION / PURCHASING

REVISIONS: DATE:	DESCRIPTION	BY/CK	DATE:	DESCRIPTION	BY/CK
11-28-23	PLANNING BOARD SUBMISSION	RH/MG	01-16-23	BUILDING DEPARTMENT COMMENTS	RH/MG
10-20-23	NYCDEP COMPLETENESS COMMENTS	RH/MG	02-07-22	WCHD NYCDEP COMMENTS	ZF/ED
04-25-23	PLANNING BOARD SUBMISSION	RH/MG	06-04-21	NYCDEP APPLICATION	RH/MG
02-07-23	PLANNING BOARD SUBMISSION	RH/MG	04-27-21	PLANNING BOARD SUBMISSION	RH/MG

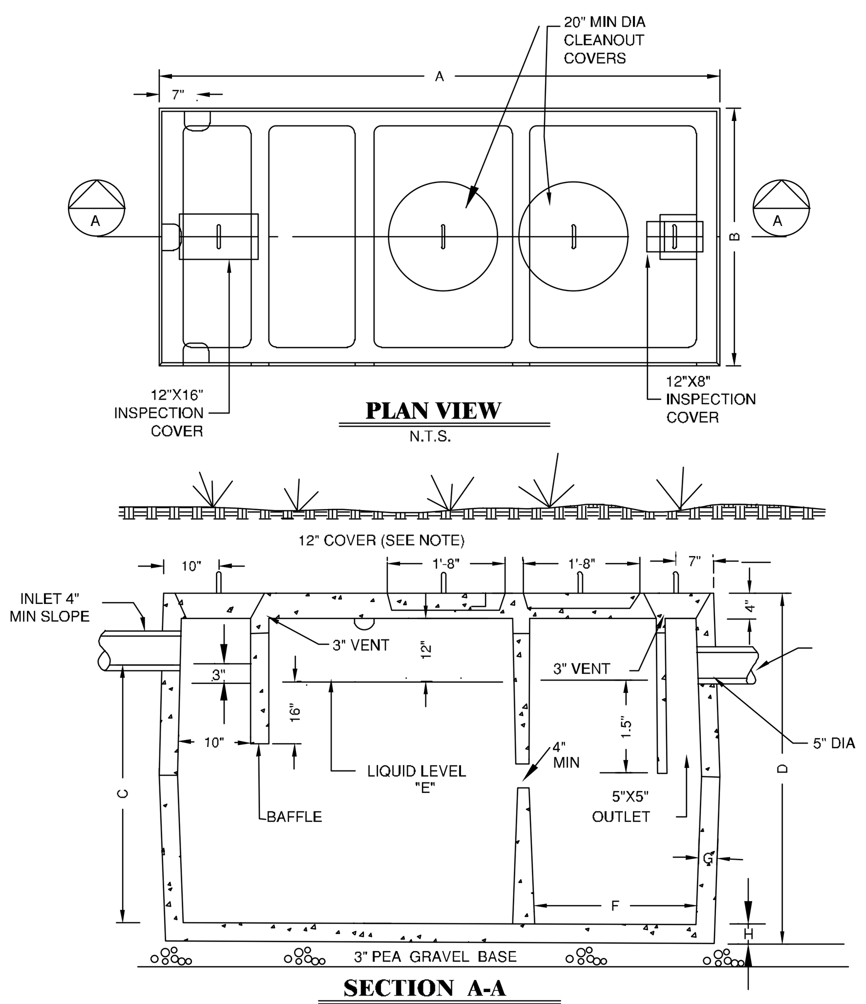
STATE OF NEW YORK · MATTHEW J. GIRONDA · No. 096030 · LICENSED PROFESSIONAL ENGINEER
MATTHEW J. GIRONDA P.E.

DETAILS

WOLF CONSERVATION CENTER
7 BUCK RUN, SOUTH SALEM, NY 10590
TOWN OF LEWISBORO , WESTCHESTER COUNTY, NY

BIBBO ASSOCIATES, LLP
293 ROUTE 100 SUITE 203
SOMERS, NEW YORK 10589
TEL. 914 277 5805

DATE:	12-29-2020
SCALE:	1" = 30'
FILE:	L5
DSGN / CHK:	SB
DRN. BY:	NH
SHT NO.	19 OF 20
DWG NO.	D-3



SECTION A-A

N.T.S.

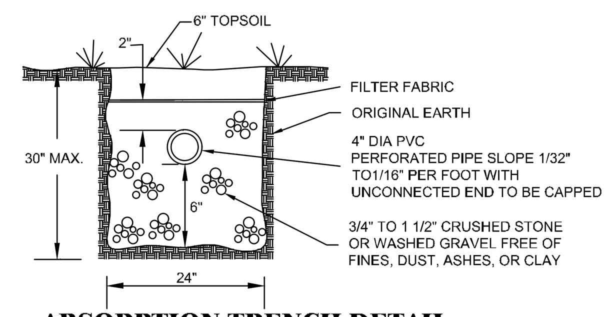
TYPICAL SEPTIC TANK DETAIL

MANUFACTURED BY M & M PRECAST OR , APPROVED EQUAL
WITH LENGTH TO WIDTH RATIO 2:1

SEPTIC TANK SPECIFICATIONS & CAPACITIES

	LIQUID CAPACITY	A LENGTH	B WIDTH	C INVERT	D HEIGHT	E LIQUID LEVEL	F COMPART LENGTH	G WALL THICKN.	H BOTTOM THICKN.
	1000 GAL.	9'-0"	4'-6"	4'-7"	5'-8"	4'-0"	N/A	3"	4"
ST*	1250 GAL.	10'-4"	4'-10"	4'-7"	5'-8"	4'-0"	3'-1"	3"	4"
	1500 GAL.	10'-4"	4'-10"	5'-5.1"	6'-6"	5'-1-5"	3'-1"	3"	4"

NOTE: IF TANK COVER EXCEEDS 24" USE BRICK OR CONCRETE RISER OVER ACCESS MANHOLE AS NECESSARY TO MAINTAIN 12 " COVER



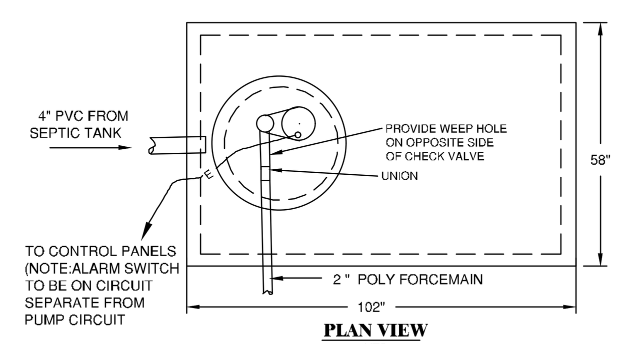
ABSORPTION TRENCH DETAIL

N.T.S.

1.) TRENCHES ARE TO BE INSTALLED PARALLEL TO FINISHED CONTOURS

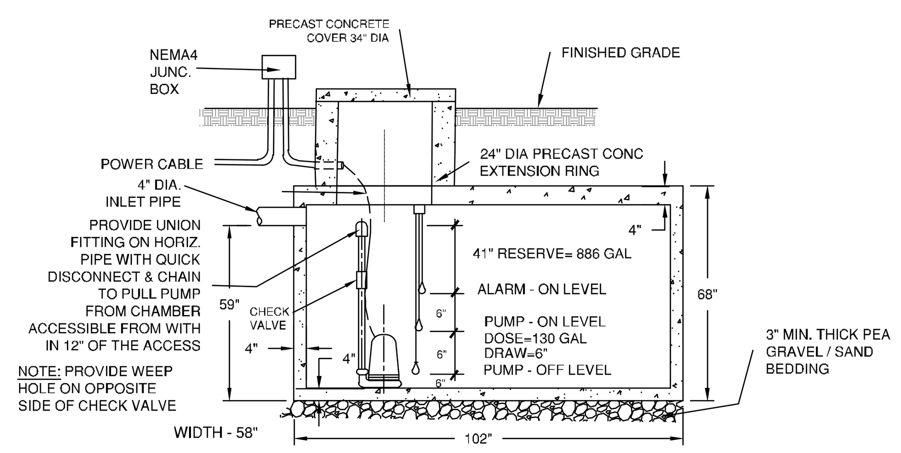
2.) A 5' MINIMUM SEPARATION DISTANCE IS REQUIRED FROM THE BOTTOM OF THE TRENCH TO THE PRESENCE OF LEDGE OR GROUNDWATER.

3.) PROVIDE END CAPS AT THE END OF ALL TRENCHES.



PLAN VIEW

NTS



1000 GAL PUMP CHAMBER DETAIL

N. T. S.

BY M & M PRECAST CONCRETE CO. O. A. E. PROVIDE ALARM AT DWELLING

PUMP STATION SPECIFICATIONS:

1) EFFLUENT PUMP - GOULDS MODEL PE51 0.5 HP 115 VOLTS

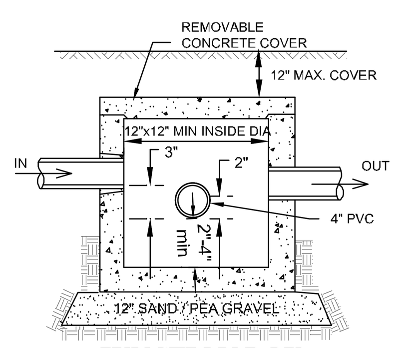
2) SIMPLEX CONTROL PANEL WITH HIGH LEVEL ALARM CIRCUIT, HORN AND FLASHING RED LIGHT. ALARM TO BE POWERED BY SEPARATE POWER SUPPLY FROM MAIN PANEL.

3) MECHANICAL FLOAT CONTROL SWITCHES (3 REQUIRED) GOULDS MODEL A2.7

4) ALL ELECTRICAL WORK AND MATERIAL FOR PUMP SYSTEM SHALL COMPLY WITH THE NATIONAL ELECTRICAL CODE.

5) THE PUMP CONTROL PANEL DISCONNECTS AND ALARM SHALL BE LOCATED INSIDE THE HOUSE.

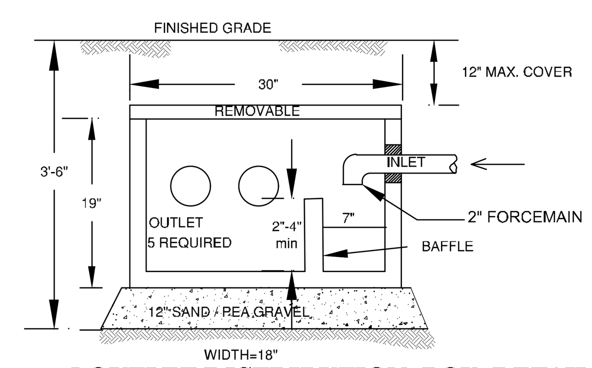
6) NEMA 4X FILBERGLASS JUNCTION BOX (TO BE POST MOUNTED AT EXTERIOR OF PUMP STATION)



JUNCTION BOX DETAIL

N.T.S.

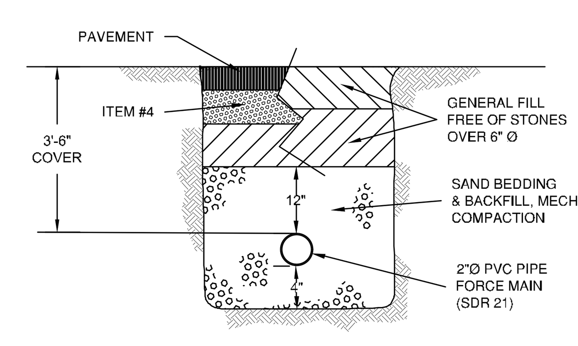
NOTE:
BOTTOM OF THE J-BOX MUST BE LEVEL AND SUPPORTED SOLIDLY TO BELOW FROST LINE AND THE FOOTING TO BE EXTENDED TO 36" BELOW GROUND LEVEL.



5 OUTLET DISTRIBUTION BOX DETAIL

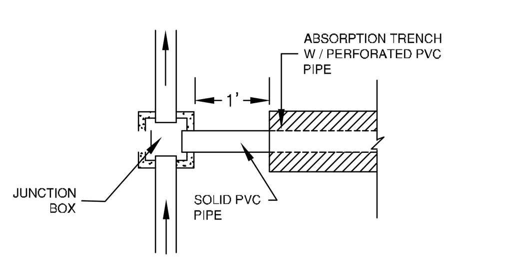
N. T. S.

NOTE:
1. BOTTOM OF THE D-BOX MUST BE LEVEL AND SUPPORTED SOLIDLY TO BELOW FROST LINE AND THE FOOTING TO BE EXTENDED TO 36" BELOW GROUND LEVEL.
2. PROVIDE SPEED LEVELERS AS NEEDED TO EVENLY DISTRIBUTE FLOW.



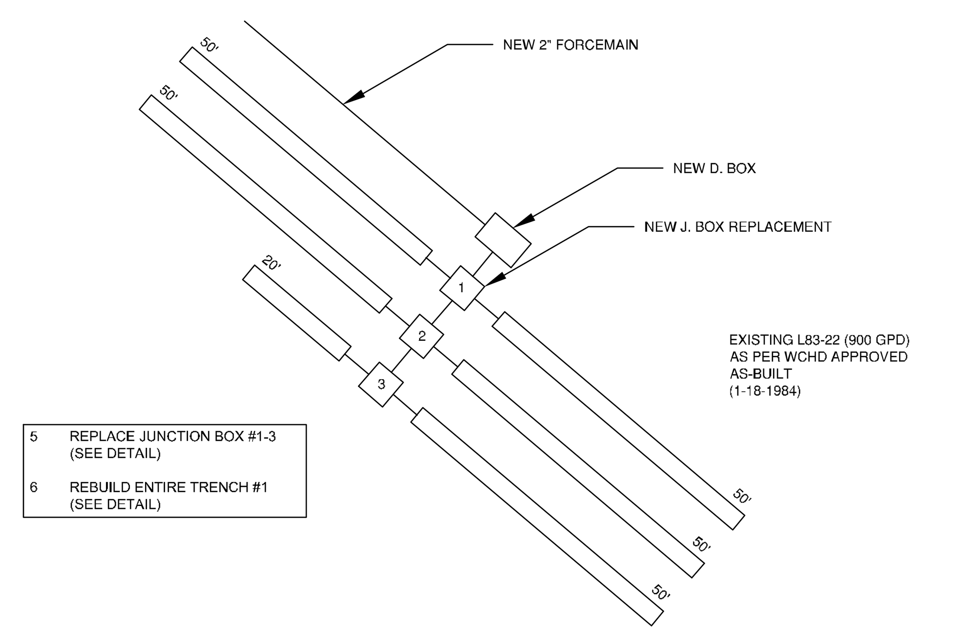
FORCE MAIN INSTALLATION DETAIL

N.T.S.



JUNCTION BOX & TRENCH CONNECTION DETAIL

N.T.S.



EXISTING SEPTIC

N. T. S.

NOTE:
SHOP DRAWINGS OF ALL CIVIL COMPONENTS SHOULD BE PROVIDED TO OUR OFFICE FOR THEIR REVIEW AND APPROVAL PRIOR TO PRODUCTION / PURCHASING

REVISIONS: DATE:	DESCRIPTION	BY/CK	DATE:	DESCRIPTION	BY/CK
11-28-23	PLANNING BOARD SUBMISSION	RH/MG	01-16-23	BUILDING DEPARTMENT COMMENTS	RH/MG
10-20-23	NYCDEP COMPLETENESS COMMENTS	RH/MG	02-07-22	WCHD NYCDEP COMMENTS	ZF/ED
04-25-23	PLANNING BOARD SUBMISSION	RH/MG	06-04-21	NYCDEP APPLICATION	RH/MG
02-07-23	PLANNING BOARD SUBMISSION	RH/MG	04-27-21	PLANNING BOARD SUBMISSION	RH/MG

STATE OF NEW YORK MATTHEW J. GIRONDA No. 096030 LICENSED PROFESSIONAL ENGINEER

MATTHEW J. GIRONDA P.E.

ON-SITE WASTEWATER TREATMENT SYSTEM

DETAILS

WOLF CONSERVATION CENTER
7 BUCK RUN, SOUTH SALEM, NY 10590
TOWN OF LEWISBORO , WESTCHESTER COUNTY, NY

BIBBO ASSOCIATES, LLP
293 ROUTE 100 SUITE 203
SOMERS, NEW YORK 10589
TEL. 914 277 5805

DATE:	12-29-2020
SCALE:	1" = 30'
FILE:	L5
DSGN / CHK:	SB
DRN. BY:	NH
SHT NO.	20 OF 20
DWG NO.	D-4

72 HOUR WELL PUMP TEST WORK PLAN

for

Wolf Conservation Center

Buck Run
Lewisboro – (T)

Supply Well

The Wolf Conservation Center is proposing to construct a new educational pavilion, 12 yurts for overnight camping, and several ancillary site improvements to support their existing operations in the Town of Lewisboro. The project site consists of several tax parcels located on Buck Run in the Town of Lewisboro which were previously developed for single family residential use. The Wolf Center currently utilizes the existing dwellings and large wooded areas for their daily operations as a Private Nature Preserve. It is planned to merge the existing parcels into one large property which will will contain the new educational pavilion as well as the existing dwellings, which will be converted to maintenance / office uses to support the preserve. All new and existing structures will be served with water from on-site drilled wells. The anticipated design flow for the campus use is approximately 850 gpd. The peak demand is estimated to be 10 to 12 gpm. The target yield from the well is therefore **12 gpm.**

1) Pump Test Duration

The pump test shall be scheduled in close coordination with the weather forecast. When excessive rainfall is forecast prior to or during the scheduled test period, the test shall be rescheduled for a period of normal weather. No pumping of the well on the site shall be allowed within 24 hours of the start of the pumping test.

The pump test shall be continuously conducted over a minimum period of 24 hours or until yield and water level stabilization is achieved. Stabilization is defined as an unchanging water level within the well for the final 6 hours of pumping accompanied by a constant pumping rate.

2) Schedule of Measurements

Time After Pumping Started	***Time Intervals***
0 to 15 minutes	1 minute
15 to 50 minutes	5 minutes
50 to 100 minutes	10 minutes

Time After Pumping Started	***Time Intervals***
100 to 500 minutes	30 minutes
500 to 1000 minutes	1 hours
1000 to 5000 minutes	4 hours

Water level measurements should be made to the nearest 0.01 foot. A log of weather conditions shall be maintained during the test.

3) Method of Measurement

Water level monitoring shall be conducted using either a pressure transducer data recorder or electric drop line. The rate of flow shall be measured from a water meter installed on the discharge pipe followed by a ball or gate valve to regulate flow.

4) Onsite / Off-Site Well Monitoring

The three (3) nearest onsite wells to the test location will be monitored during the test and are the existing wells serving the dwellings located at 3, 4 and 7 Buck Run. The wells are located approximately 85 ft, 480 ft and 570 ft. respectively from the test well.
Water level monitoring in the observation wells will begin 24 hours prior to the start of the pump test, continue through the pump test and for 12 hours after the end of the pumping test.

In addition to the observation wells identified above, the owners of the property located at 16 Waccabuc River Lane will be contacted for permission to allow monitoring of their existing well, which is the nearest offsite well location.

5) Recovery

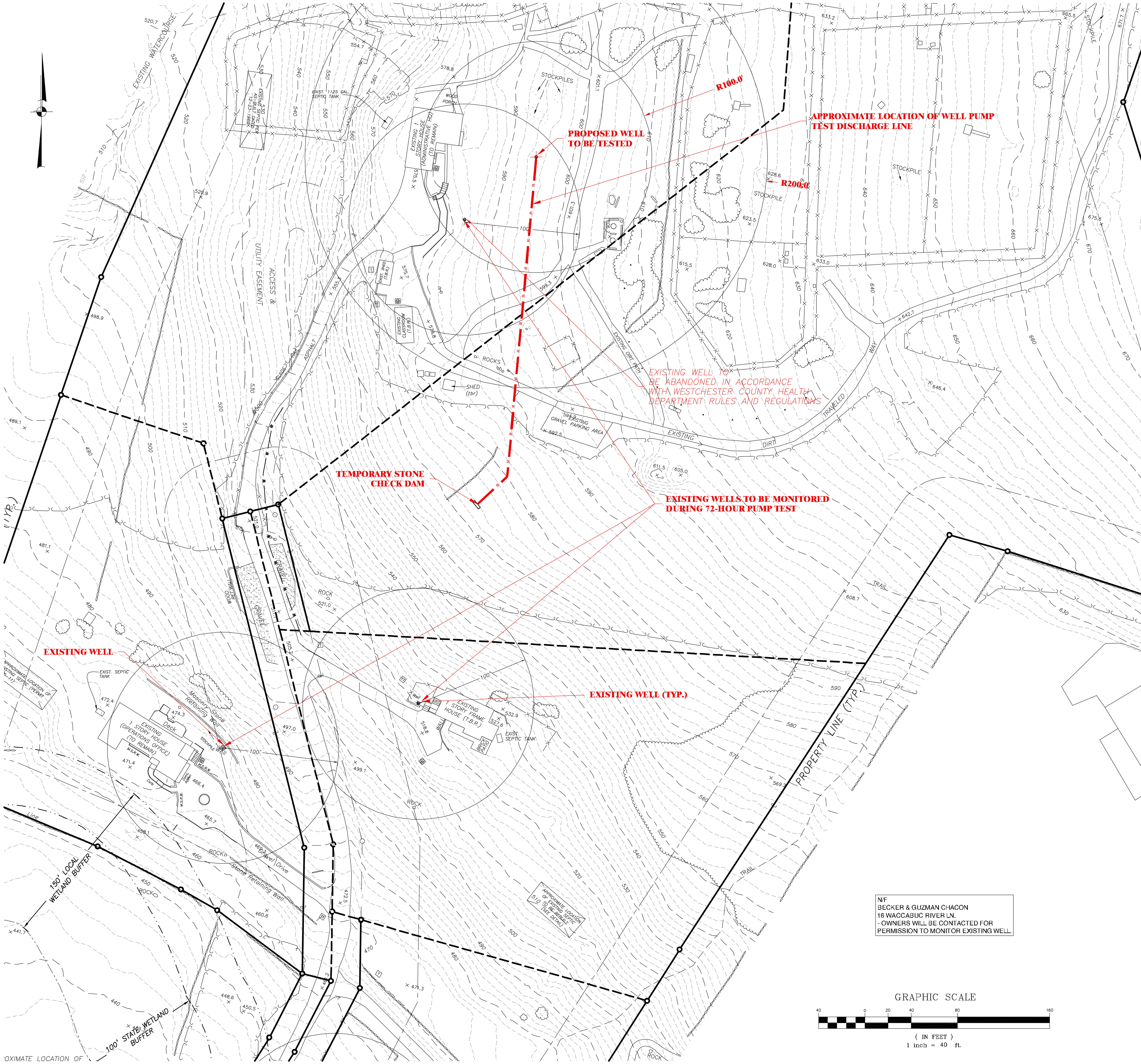
The Schedule of Measurements provided above shall be used for the recovery period and recorded in the test and observation wells. Recovery period water level measurements shall commence one minute prior to shut down of the well pump and continue for at least 12 hours. In the test well a check valve shall be installed above the pump at the base of the drop pipe to eliminate backflow of water into the well and its influence on the recovery data.

6) Erosion Control

In order to prevent erosion caused by the test pump discharge, it shall be directed into a temporary stone filled sump and velocity dissipator as shown and detailed on the attached sketch.

7) Water Quality Testing

Water samples from the Test Well will be taken near the end of the pump test and delivered to a NYS certified laboratory for analysis of water quality parameters required by Subpart 5-1 of the State Sanitary Code and the Westchester County Health Department. (See attached list of Requirements and Standards)



OVERALL PLAN

GRAPHIC SCALE

(IN FEET)
1 inch = 200 ft.

CALL BEFORE YOU DIG 1-800-962-7962

UNDER THE NY STATE LAW PROTECTING UNDERGROUND FACILITIES, THE FOLLOWING RULES AND REGULATIONS ARE IN EFFECT FOR ALL EXCAVATORS:

* THEY MUST CALL FOR A UTILITY STAKE-OUT (2) TWO FULL WORKING DAYS PRIOR TO AN EXCAVATION.
* THEY MUST CONFIRM PRECISE LOCATIONS OF UNDERGROUND FACILITIES.
* THEY MUST PRESERVE STAKES AND MARKINGS UNTIL NO LONGER NEEDED AT SITE.
* THEY MUST CONTACT NON-UFPO MEMBER UTILITY OWNERS FOR STAKE-OUTS.

REVISIONS:

DATE:	DESCRIPTION	BY/CK	DATE:	DESCRIPTION	BY/CK

STATE OF NEW YORK · MATTHEW J. GIRONDA · LICENSED PROFESSIONAL ENGINEER · No. 096030

MATTHEW J. GIRONDA P.E.

WELL TESTING PLAN

WOLF CONSERVATION CENTER

7 BUCK RUN, SOUTH SALEM, NY 10590
TOWN OF LEWISBORO , WESTCHESTER COUNTY, NY

BIBBO ASSOCIATES, LLP
293 ROUTE 100 SUITE 203
SOMERS, NEW YORK 10589
TEL. 914 277 5805

DATE:	11-28-2023
SCALE:	1" = 40'
FILE:	L5
DSGN / CHK:	MG/RH
DRN. BY:	RH
SHT NO.	1 OF 1
DWG NO.	WT-1

Stormwater Pollution Prevention Plan

for

Wolf Conservation Center

1,3,4 & 7 Buck Run
Town of Lewisboro,
New York

Revised: October 20, 2023 (NYCDEP Completeness)
Revised: April 25, 2023 (Lewisboro (T))
Revised: February 7, 2023 (Lewisboro (T))
Revised: June 4, 2021 (NYCDEP Application)
Revised: April 27, 2021
Date: December 29, 2020

Prepared by:

Bibbo Associates, LLP
Mill Pond Offices
293 Route 100- Suite 203
Somers, New York 10589
(914) 277-5805

STATE OF NEW YORK
MATTHEW J GIRONDA
096030
LICENSED PROFESSIONAL ENGINEER

Matthew J. Gironda, P.E.
NYS License No. 096030

CONTACT INFORMATION AND CERTIFICATION

Applicant:

Wolf Conservation Center
7 Buck Run
South Salem, NY 10590

Project Engineer & Qualified Inspector:

Bibbo Associates, LLP
293 Route 100, Suite 203
Somers, NY 10589
Attn: Matthew J. Gironda, P.E., NY License 096030
mgironda@bibboassociates.com
(914) 277-5805 ext. 314

Contractor's Certification:

"I hereby certify 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 New York State Pollutant Discharge Elimination System ("SPDES") General Permit 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. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings."

Name & Title: ______________________________

Signature: ______________________________

Company Name: ______________________________

Company Address ______________________________

Phone: ______________________________

Date: ______________________________

Trained Contractor: ______________________________
(On-site, Daily)

Project Information:

Project Title:	Wolf Conservation Center
Project Address:	7 Bick Run
Tax Map Number:	21-10803-3, 81, 82, 83,88
Project Area:	32.3 acres

Applicant/Owner/ Operator Information:

Wolf Conservation Center
7 Buck Run
South Salem, NY 10590
Attn: Spencer Wilhelm
(914) 763-2373
Spencer@nywolf.org

Certifying Engineer Information:

Bibbo Associates, LLP
293 Route 100, Suite 203
Somers, NY 10589
Attn: Matthew J. Gironda, P.E., NY License 096030
mgironda@bibboassociates.com
(914) 277-5805 ext. 314

Short-Term Responsible Party for SWPPP Implementation:

Short-term responsible parties for SWPPP Implementation will be site contractor as the owner's representative.

Long-Term Responsible Party for SWPPP Implementation:

Long-term responsible parties for SWPPP Implementation will be the property owner.

Potential Party Responsible for Inspections as Required Under SPDES Permit:
T.B.D

Table of Contents:

Appendices:

Figures:

1.0 Introduction

1.1 Project Description

The Wolf Conservation Center is proposing to construct a new educational pavilion and related site improvements to support their existing operations on the subject parcel. The project site is located on Buck Run in the Town of Lewisboro and consists of multiple tax parcels which were previously developed for single family residential use. The Wolf Center currently utilizes the existing dwellings and large wooded areas for their daily operations. In order to better facilitate the current use The Wolf Center is seeking to implement the following site improvements:

- Widening of the existing private road (Buck Run) which provides access to the project site from NYS Route 35.
- Demolition of the existing single-family residence located at 4 Buck Run.
- Construction of a new educational pavilion and supporting water supply and wastewater treatment components.
- Construction of new site wide Stormwater Management system.
- Construction of new and expanded parking areas as well as pedestrian access ways to support the new educational pavilion.
- Construction of new freezer building.
- Construction of 12 camping pods / Yurts.

The total land disturbance resulting from the proposed development including all individual lot construction is approximately 4.5 ac.±. As the total land disturbance exceeds 1-acre and the project is located within the NYC East of Hudson Watershed, coverage under the SPDES General Permit for Temporary Stormwater Discharges from Construction Activity (GP-0-20-001) is required and all proposed SMP's must be designed in accordance with the Enhanced Phosphorous Removal standards specified in Chapter 10 of the Design Manual. In addition, the project will also require a SWPPP approval from the NYCDEP per section 18-39 of their Rules and Regulations. For further discussion regarding NYCDEP requirements, refer to section 2.6 of this report.

Assuming a timely permitting process construction is anticipated to begin in the Spring of 2024 and take approximately 36 months to complete.

The following permits are required for the subject project:

Wolf Conservation Center – Required Approvals

Agency and Approval Required:	Status:
Town of Lewisboro Planning Board: Subdivision Approval (Preliminary & Final) Site Development Plan Approval Wetland Permit Stormwater Permit	 Pending Pending Pending Pending
Westchester County Health Department Realty Subdivision Approval Change of Use Approval Public Water Supply Approval	 Pending Pending Pending
New York City Dept. of Environmental Protection: SWPPP Approval	Pending
New York State Dept. of Environmental Conservation: Coverage under SPDES General Permit for Stormwater Discharges from Construction Activity (GP-0-20-001) Freshwater Wetland Activity Permit	 Pending Pending Pending
New York State Department of Transportation: Highway Work Permit for Commercial Entrance	Pending

1.2 Existing Conditions

The project site is located on the north side of NYS Rte. 35 at the intersection with Buck Run in the Town of Lewisboro. The site consists of six (6) separate tax parcels, four (4) of which contain existing single-family dwellings. The two (2) remaining parcels are largely undeveloped and are utilize for the wolf enclosures located in the north and northeastern portions of the property.

The majority of the site is wooded, with lawn areas in the vicinity of the existing dwellings. Existing onsite impervious surfaces consist of the private road (Buck Run), individual driveways and dwellings. Slopes onsite range from moderate to steep, and site topography generally directs runoff from north to south towards an offsite NYSDEC regulated wetland located southwest of the project site. The wetland flows from north to south under NYS Rte. 35 through a drainage culvert. The entrance of which was utilized as the design point in the enclosed peak flow analysis.

The Natural Resource Conservation Service Soil Survey identifies the onsite soils as Charlton Loam (ChC), Paxton Fine Sandy Loam (PnC & PnD), Sutton Loam (SuB), and Woodbridge Loam (WdC). The Charlton soils are specified as Hydrologic Soil Group "B", the Paxton soils are identified as Hydrologic soil group "C", and the Sutton Loam as well as Woodbridge Loam are given dual "C/D" hydrologic group classifications.

1.3 Proposed Conditions

As described above the proposed development consists of the following site improvements:

- Widening of the existing private road (Buck Run) which provides access to the project site from NYS Route 35.
- Demolition of the existing single-family residence located at 4 Buck Run.
- Construction of a new educational pavilion and supporting water supply and wastewater treatment components.
- Construction of new site wide Stormwater Management system.
- Construction of new and expanded parking areas as well as pedestrian access ways to support the new educational pavilion.
- Construction of new freezer building.
- Construction of 12 camping pods / Yurts.

Stormwater runoff generated by the proposed impervious surfaces will be captured and treated in two (2) subsurface infiltration systems and one (1) Infiltration Basin sized to provide storage volume for 100% of the contributing WQv to each practice in accordance with the NYSDEC WQV and RRv requirements. In addition to the proposed infiltration practices additional Green Infrastructure will be provided for impervious area reduction purposes in the form of tree planting along the site entrance.

Stormwater peak runoff rates following development will not exceed those in the existing condition. As proposed, stormwater runoff rates following development would have no adverse impacts on downstream properties or stormwater conveying systems. Similarly, considering the nature of the existing site conditions and the level of stormwater treatment proposed in the post-development condition, it is predicted that this development will not result in any adverse impacts to downstream reservoirs, streams, wetlands or watercourses.

2.0 Stormwater Management

2.1 Methodology

Stormwater management computations provided in this report are based upon the Soil Conservation Service (SCS) a.k.a. Natural Resource Conservation Service (NRCS), TR-20 methodologies and recommendations included in the NYSDEC Design Manual and GP-0-20-001 requirements. Pre-and post-development rates for stormwater runoff have been computed for comparison of the 1, 10, and 100-year storm events using the precip.net, Northeast Regional Climate Center (NRCC) precipitation data website for New York and New England. Extreme precipitation tables for the specific site location for various storms have been provided in appendix I of this report.

The computer software entitled "HydroCAD Version 10.00-21" by Applied Microcomputer Systems has been utilized to determine runoff volumes, peak runoff rates, and high-water elevations in the stormwater treatment facilities. The precipitation values obtained for the above-mentioned storm events are summarized in the Table provided below:

TABLE 1 Precipitation Values based on 24-hours Accumulation Period and Recurrence Interval	
Storm Frequency	**Precipitation (inches) – 24 hour**
1-year	2.83
10-year	4.03
100-year	9.04
90% Rainfall	1.50

2.2 NYSDEC Requirements

The subject project lies within The New York City East of Hudson watershed as identified in Appendix C of GP-0-20-001, and proposes to disturb in excess of 1 acre of land. Therefore, a SWPPP with post construction stormwater management practices must be provided, and all proposed stormwater management practices must conform to the Enhanced Phosphorous Removal Standards specified in Chapter 10 of the NYSDEC Design Manual.

2.3 Water Quality Volume (WQv) / Runoff Reduction Volume (RRv)

The stormwater management practices employed have been sized to satisfy the Water Quality Volume (RRv) and Runoff Reduction Volume (RRv) requirements specified in the Design Manual. In accordance with chapter 10, the minimum WQv/RRv for the subject project was determined based on the volume of runoff generated by the 1 year 24-hour storm event. For the portions of the subject project which consist of redevelopment activities, Water Quality Volume (WQv) sizing criteria was applied based on the Redevelopment rules specified in chapter 9 of the design manual. Figure 3 included at the end of this report has been prepared to illustrate the areas of new development as well as the areas where redevelopment sizing can be applied.

The WQv requirements set forth in the Design Manual specify that the goal for each site is to reduce the entire WQv through the use of green infrastructure practices (GIP's) and standard stormwater management practices (SMP's) with runoff reduction capacity. The proposed stormwater management practices (SMP's) to be utilized for WQv/RRv treatment are two (2) subsurface infiltration systems and one infiltration basin. Each infiltration practice is designated as a standard SMP with RRv capacity.

Calculations for the required WQv can be found in appendix "E" of this report and are summarized in the table provided below. It should be noted that WQv/RRv treatment is proposed for runoff generated by all proposed impervious surfaces as well as areas of existing impervious located within the project disturbance limits.

Calculations for the required water quality volume at design point 1 can be found in Appendix "A" of this report and are summarized in the table provided below. Please note the Impervious areas treated through the application of green infrastructure area reduction practices have been excluded.

TABLE 2
Water Quality Volume Summary

SMP ID #	Watershed Area (Ac.)*	WQv Required (AF)**	RRv Minimum (AF)***	RRv Provided (AF)****
1.1 P	0.722	0.075	0.022	0.075
INF 1.2	1.03	0.167	0.045	0.167
INF 1.3	0.046	0.01	0.003	0.01

(*) Watershed area identified above is based on contributing drainage area to the proposed infiltration practices. All sub catchments which do not contain proposed impervious surfaces or provide RRv treatment through the use of Green Infrastructure Area Reduction Practices have been excluded from the WQv calculations summarized above.
(**) Refer to HydroCAD output provided in Appendix C for 1-year storm runoff Volumes.
(***) Refer to Minimum RRv calculations provided in Appendix A.
(****) Refer to stage storage tables in HydroCAD routing contained in Appendix C. 100% RRv has been provided through the use of subsurface infiltration systems and infiltration basins.

As indicated in the above table, the project SWPPP provides treatment for 100% of the contributing WQv to the proposed infiltration practices which are designated as standard SMP's with runoff reduction capacity. Storage for 100% of the WQv is provided within each infiltration practice based on the volume of runoff generated by its contributing area. It should be noted that for the purposes of calculating the above summarized required WQv, the proposed gravel parking lot was considered impervious.

The HydroCAD routings contained in Appendix C account for an exfiltration rate utilized for modeling purposes to minimize oscillations within the infiltration system outflow hydrographs. The exfiltration rate utilized has been confirmed based on soil testing results. The results of which are provided in Appendix I. The test results indicate suitable soils exist for infiltration as well as adequate separation to groundwater or ledge rock. Witnessed deep test descriptions and infiltration testing results will be provided in the final project SWPPP.

The subsurface infiltration systems have been designed offline. Diversion structures have been provided to divert inflow from storms larger than the 1 year to the downstream infiltration basins. In accordance with chapter 3 of the Design Manual extended detention storage has been provided in the infiltration basin and the outlet control structures have been designed peak flow attenuation requirements.

Specifically, stormwater is directed overland or via a piping network to the stormwater treatment facilities. Pipe sizing calculations for the proposed stormwater conveyance system will be included in the final project SWPPP. The diversion structures have been designed to detain stormwater to mitigate the 1-year storm volumes within the facilities, The infiltration basin has also been designed to fully infiltrate the 1-year storm volume prior to utilizing the outlet control structure. Additionally, overflow weirs have been provided over the 1-year, 24-hour storm high water elevation for the infiltration systems to in addition to detaining the 1-year volume also prevent uncontrolled spillage in case of clogging in the outlet control system.

It was the intent of the design to maintain the existing drainage patterns at the site. All stormwater treatment practices were sited at locations that can receive and treat the maximum amount of site areas.

2.4 NYSDEC Redevelopment Requirements

As noted in previous sections of this report, the subject property contains existing impervious surfaces associated with the onsite dwellings, access road and driveways. Portions of these areas will be reconstructed as impervious and as such can be considered “Redevelopment Areas” per NYSDEC requirements.

There are several options listed on chapter 9 of the design manual which can be used to satisfy the redevelopment sizing criteria. This S.W.P.P.P. was prepared based on option II. Which specifies that a minimum of 25% of the WQv generated by the disturbed impervious area is captured and treated by the implementation of a standard SMP or reduced by application of green infrastructure techniques. As the subject project includes both areas of New Development as well as redevelopment activities, treatment is required for a minimum of 25% of the existing disturbed impervious area.

In order to demonstrate that runoff from a minimum of 25% of the existing impervious areas to be disturbed will be captured and treated, a Redevelopment Figure is included at the end of this report (Figure 3). The attached figure clearly illustrates that the project will provide WQv/RRv treatment through the use of standard SMP’s with RRv capacity as well as Green Infrastructure area reduction practices for 100% of all new impervious as well as more than 25% of existing disturbed impervious areas, thus satisfying the requirements of chapter 9.

2.5 Stream Channel Protection Volume (CPv)

Stream Channel Protection is intended to protect stream channels from erosion and the requirements are met by providing 24-hr extended detention of the 1-yr 24-hr rainfall event. However, this requirement may be waived if the entire Stream Channel Protection Volume (CP_v) is reduced through the use of green infrastructure practices and or infiltration. Or if the site discharges directly to tidal waters or fifth order or larger streams as determined by the Strahler-Horton methodology (Section 4.3 of the Design Manual).

As a result of the chapter 10 design specifications, this project satisfies the CPv requirement as infiltration has been provided for 100% of the required WQv which is equivalent to the 1-year storm runoff volume.

2.6 Overbank and Extreme Flood Control

Overbank Flood Control is intended to prevent an increase in the frequency and magnitude of out-of–bank flooding resulting from proposed development. To achieve Overbank Flood Control at a site the post-development peak rate of runoff generated by the 10-yr design storm must be attenuated to pre-development levels. The exception to this is for sites that discharge to fifth order streams or larger.

Extreme Flood Control is intended to prevent the risk of flood damage from large storms, maintain the pre-development 100-yr floodplain boundary, and protect the integrity of stormwater management practices. The requirement for Extreme Flood Control is met by attenuating the post-development peak flow rates generated by the 100-yr storm event to pre-development levels, unless the site discharges to a fifth order or larger stream.

As shown in the HydroCAD routings contained in Appendix C, peak flows from the 10- and 100-year storm events have been reduced to predevelopment levels with modification of summary of the pre development vs post development peak flows is provided below:

TABLE 3
Peak Runoff Discharges to Design Point 1

Design Storm (yr)	Pre-Development Peak Runoff (cfs)	Post-Development Peak Runoff (cfs)
1	8.0	7.5
10	26.4	24.8
100	61.0	57.7

2.7 NYCDEP Requirements

The subject project is located within the NYC East of Hudson Watershed and a NYCDEP SWPPP approval is required as it meets or exceeds the following thresholds listed in the Rules and Regulations described below:

<u>§18-39(b)(3)(iv):</u> A land clearing or land grading project, involving two (2) or more acres, located at least in part within the limiting distance of 100 feet of a watercourse or wetland, or within the limiting distance of 300 feet of a reservoir, reservoir stem or controlled lake or on a slope exceeding 15 percent;

The proposed site improvements will result in land disturbance in excess of 2 acres, a portion of which will take on slopes exceeding 15% thus exceeding the threshold specified in §18-39(b)(3)(iv) of the Rules and Regulations.

The NYCDEP Rules and Regulations generally match the requirements of the NYSDEC and Town of Lewisboro with several exceptions. There are two (2) exceptions of note discussed below.

The first exception of note being that two (2) different standard SMP's are required in series when the contributing drainage area to that SMP is greater than 20% impervious or an infiltration practice is not provided. As noted previously infiltration practices will provide treatment of stormwater runoff from all proposed impervious surfaces, therefore two (2) SMP's in series are not required.

The second exception is the NYCDEP requires that the minimum required stormwater treatment volume used shall be the greater of the 1-year 24 hour storm event or the volume generated by the 90% storm.

In accordance with chapter 4 of the Design Manual the following equation was used to determine the water quality volume generated by the 90% rainfall event:

$$WQv = \frac{(P)(Rv)(A)}{12}$$

Where,

WQv = Runoff Volume (acre-feet)
P = 90% Rainfall Value (inches) – (Use 1. 5")
Rv = 0.05 + 0.009(I), where I is percent Impervious Cover (use 0.2 min)
A = Contributing Drainage Area in acres

A comparison of the Runoff volumes for each infiltration system's respective contributing area are summarized in the table below:

Water Quality Volume Comparison Summary (90% Storm Runoff Volume vs 1-Year Storm Runoff Volume)					
Sub Area	**P (in.) Rainfall Value**	**Rv**	**Area (Ac.)**	**WQv (af) (90% Storm)**	**WQv (af) (1-Yr Storm)**
1.1S	1.5	0.43	0.722	0.039	0.075
1.2S	1.5	0.67	0.813	0.088	0.167
1.3S	1.5	0.95	0.046	0.005	0.010

As discussed in previous sections of this report all proposed SMP's have been sized based on their contributing runoff volume generated by the 1-year 24-hour storm event, which as summarized above provides the larger runoff volume.

2.8 Stormwater Impact Evaluation of the NYSDEC Wetland L-20

As shown on the drainage figures, runoff from the Wolf Center property enters into NYSDEC Wetland L-20. The stormwater impacts originated from Wolf Center development on the existing NYSDEC Wetland have been evaluated based on the total runoff volume. The total runoff volume has been increased by the proposed development and the effects of such have been evaluated using the greatest increase distributed over the surface area of the wetland assuming an instantaneous affect. NYSDEC wetland L-20 has an approximate area of 276.2 acres as shown on the NYSDEC Environmental Resource Mapper. The slight increase in runoff volume of 0.085 af associated with the proposed development would yield an instantaneous increase in the vertical water surface elevation of the wetland of approximately 0.003 inches which is insignificant.

3.0 Erosion and Sediment Control

The plans provide for specific erosion and sediment controls to be employed during construction. It is the intent to provide effective erosion control by minimizing land disturbance at one given time, containing sediment from disturbed areas, treating runoff where possible, and stabilizing disturbed soils as soon as possible. The directives specified on the plans and in this report serve as a minimum for erosion and sediment control. Further practices and measures may be required pursuant to onsite inspections in conformance with the requirements of the SPDES #GP-0-15-002 permit. As per the SPDES permit onsite, inspections are to be performed at a rate of 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. All erosion and sediment control practices specified for this site shall be in conformance with the New York Standards & Specifications for Erosion & Sediment Control.

3.1 Temporary Erosion and Sediment Control Practices

Listed below are the Temporary Erosion and Sediment Control Practices specified for the subject project. All practices shall be installed and maintained in conformance with the New York Standards & Specifications for Erosion & Sediment Control:

- Stabilized Construction Entrance
- Silt Fence
- Drop Inlet Protection
- Soil Stockpiles
- Debris Control

A stabilized construction entrance should be installed at construction vehicle access points. The construction entrance is designed to prevent outgoing trucks from tracking soil onto the public roadways. Construction details specifying installation requirements can be found on the plan.

The silt fence for the site will consist of a geotextile fabric installed at the toe of all disturbed slopes and parallel to the contours. The silt fence is intended to reduce runoff velocity and intercept sediment-laden runoff. Construction details specifying the proposed installation and type of permissible silt fence can be found on the plans.

Drop inlet protection for the site will consist of stone and concrete block wrapped with wire mesh surrounding the catch basins. The purpose of the stone and block inlet protection is to filter stormwater runoff and prevent sediment laden runoff from entering the drainage system through existing or proposed drain inlet structures.

Soil stockpiles are to be stabilized with vegetation and surrounded with silt fencing. This will ensure the topsoil that is stripped from the site during construction will be protected for use during final grading and that no sediment from the stockpiles will be deposited downstream.

Construction debris, such as sheet metal, wood scrap, paper and insulation products, Styrofoam cups and paper wrappers can become windblown litter over and off the site if neglected. Suitable and ample refuse containers shall be provided on the site and emptied when full. Any scattered debris shall be picked up and placed in containers on an as needed basis.

3.2 Permanent Erosion and Sediment Control Practices

The intent of the permanent erosion and sediment control practices is to permanently stabilize the ground surface via vegetative and structural practices, while controlling and reducing runoff velocities. The following permanent erosion & sediment control practices are proposed for the site:

- Land Grading
- Vegetation

Land grading is the reshaping of the existing land surface in accordance with the grading plan. Proper land grading is an essential component of the erosion control plan, as well as the stormwater pollution prevention plan. Proper grading will ensure the intended drainage areas are directed to the stormwater management practices.

Vegetation will be provided on all disturbed soils not covered by the proposed impervious surfaces. Permanent vegetation will reduce runoff velocities, filter stormwater runoff, and minimize soil erosion. Optimum times for planting are the early spring and fall; however, plantings can be started in the summer provided adequate mulch and moisture is supplied.

4.0 Maintenance & Inspection Requirements

4.1 Short Term Maintenance and Inspection Requirements

As per the SPDES permit onsite, inspections are to be performed at a rate of 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. All erosion and sediment control practices specified for this site shall be in conformance with the New York Standards & Specifications for Erosion & Sediment Control.

Inspections performed during construction should verify that all practices are functioning properly, correctly maintained, and that accumulated sediment is removed from all control structures. The inspector must also examine the site for any evidence of soil erosion, the potential for pollutants to enter the storm drain system, turbid discharge at all outfalls, and the potential for soil and mud to be transported on the public roadway at the site entrance. In addition to these general guidelines, the project plans will provide more specific erosion control guidelines, as well as a construction sequence to guide the contractor through the construction process. Discussed below are specific maintenance and inspection requirements for the temporary practices to be employed at the site.

During construction, the silt fence should be inspected weekly to ensure correct installation. In addition, any accumulated sediment resulting in “bulges” in the silt fence should be removed and mixed with onsite soil. Any damaged or torn silt fence should be replaced.

The construction entrance should be checked to ensure no sediment is being deposited onto the public roadway. Should sediment be observed, it should be removed from the street, and the stone in the construction entrance replaced.

The drop inlet protection shall be checked for accumulated sediment on a monthly basis and after significant rainfall. Any accumulated sediment shall be removed and the crushed stone shall be replaced as needed.

Once construction is completed and the site has been stabilized, a “Notice of Termination” shall be filed. At this point limited maintenance requirements are anticipated.

Throughout project construction, the responsibility for installation, maintenance and repair of erosion controls and stormwater management practices (SMP's) will rest with the site contractor as the owner's representative.

4.2 Long Term Maintenance and Inspection Requirements

Once final stabilization is achieved and construction complete, only limited maintenance will be required. A copy of the Maintenance and Inspection Checklists from Appendix "G" of the New York State Stormwater Management Design Manual is included in Appendix "G" of this report to serve as a guide for maintaining and inspecting the stormwater infiltration practices.

Inspections of the following items should be performed at a minimum annually and following significant rainstorms within a 24 hour period.

Infiltration Systems:
Refer to manufacturer's maintenance schedule in Appendix J for more specific maintenance requirements.

- Inspect the infiltration systems to ensure accumulated water is infiltrating into the soil, and debris has not entered the diversion manholes and pretreatment structures; any debris should be removed. Once debris is removed, if stormwater is still not infiltrating contact a professional engineer licensed in the State of New York to examine the system.
- Inspection of the outlet of the overflow pipe to ensure it is not plugged or clogged.

Infiltration Basin:

- Inspect emergency spillway and rock outlet protection for any dislodged stones or signs of erosion; additional stone / rip-rap shall be added as needed.
- Inspect outlet structure for clogging and debris/sediment accumulation. Any accumulated sediment/debris shall be removed and properly disposed of.
- Basin berm shall be inspected annually and mowed as needed to prevent woody growth.
- Vegetative establishment within the infiltration basin is critical to its function. Any dead, invasive, or diseased species shall be removed immediately and replaced. Additional seed and mulch shall be used as needed to maintain healthy vegetative cover.

Hydrodynamic Separators (CDS) - Pretreatment Units:
Refer to manufacturer's maintenance schedule in Appendix M for more specific

maintenance requirements.

- Inspect after heavy rainfall greater than ½" in 24 hours for the first year to determine an appropriate maintenance schedule. Subsequent inspections are reduced to quarterly.
- When the sediment volume reaches within 24"-30" of the water surface, the system should be maintained.
- Maintenance is to be performed using a vacuum truck and removing the accumulated sediment pile and debris.

Catch Basins and Drain Manholes:

- Inspect monthly and after heavy rain storms >½" in 24 hours for sediment accumulation in sumps. Accumulated sediment should be removed immediately.

5.0 Outstanding Violations or Enforcement Actions

There are no known outstanding violations or enforcement actions against this property, the owner or the applicant. There are no stormwater discharges associated with industrial activity from this site.

6.0 Conclusion

The Stormwater Pollution Prevention Plan prepared for the subject project has been prudently designed to manage stormwater runoff from both qualitative and quantitative standpoints. Proper implementation of this plan will ensure meeting water quality and quantity standards as required by the NYSDEC based on current New York State guidelines as well as most recent guidelines set forth by the NYCDEP.

Appendix A:

Water Quality Volume (WQv) / Runoff Reduction Volume (RRv) Calculations

BIBBO ASSOCIATES, LLP
Consulting Engineers - Planners

Project **WOLF CENTER**

Water Quality Volume (WQv) Calculation

Rev. April 25, 2023
Basin ID: **Design Point** *Rev. April 27, 2021*
February 3, 2023

The required stormwater quality volume will be determined using “New York State Stormwater Management Design Manual – GP 0-20-0001" Unified Stormwater Sizing Criteria. Since the project is located within the NYCDEP Watershed the “Chapter 10- Enhanced Phosphorus Removal Standards” will apply.

Rainfall events for this project have been obtained from "precip.net", Northeast Regional Climate Center - NRCC - Precipitation Data website for New York and New Englans. Extreme Precipitation Tables for the specific site location for various storms have been downloaded to HydroCAD Version 10.00-24 computer model.

Precipitation distribution curves are generated for each grid directly eliminating the need to use a static Type III curve.

Original WQv:	Subcatchment Area (A):	81,969	sq.ft.
	Rainfall (P):	2.83	in.
	Impervious Area	49,780	sq.ft.
	Percent Imperviousness(I):	60.73	%
	WQv from HydroCAD =	11,587	cu.ft.
		or	
		0.2660	ac.ft.
Area Reduced WQv:	Subcatchment Area (A):	79,069	sq.ft.
	Rainfall (P):	2.83	in.
	Impervious Area	46,880	sq.ft.
	Percent Imperviousness(I):	59.29	%
	WQv from HydroCAD (Required) =	10,977	cu.ft.
		or	
		0.2520	ac.ft.
Remaining WQv for Standard Treatment:			
	Subcatchment Area (A):	0	sq.ft.
	Rainfall (P):	2.83	in.
	Impervious Area	2,900	sq.ft.
	Percent Imperviousness(I):	0.00	%
	WQv from HydroCAD =	0	cu.ft.
		or	
		0.0000	ac.ft.

BIBBO ASSOCIATES, LLP
Consulting Engineers - Planners

Project **WOLF CENTER**

Specified Runoff Reduction Volume (S-RRv)

RRv (in acre-feet of storage) = [(P)(Rv)(Ai)] /12

Basin ID: **1.1S**	HSG: **B**	
P = Rainfall (inches)		2.83 in
Rv = 0.05+0.009(I) where I is 100% impervious		0.95
Aic = Total area of new impervious cover		2,856 ft²
S = Hydrologic Soil Group (HSG) Specific Reduction Factor (S)		0.40
HSG A = 0.55	HSG C = 0.30	
HSG B = 0.40	HSG D = 0.20	
Ai = (S)(Aic)		1,142 ft²

Ai = impervious cover targeted for runoff reduction

therefore:

RRv =	[(P)	(Rv)	(Ai)]	/ 12		
	2.83	0.95	1,142	/ 12	=	**256 cu.ft.**
						0.0059 ac.ft

BIBBO ASSOCIATES, LLP
Consulting Engineers - Planners

Project **WOLF CENTER**

Specified Runoff Reduction Volume (S-RRv)

RRv (in acre-feet of storage) = [(P)(Rv)(Ai)] /12

Basin ID: **1.1S** HSG: **C**		
P = Rainfall (inches)	2.83	in
Rv = 0.05+0.009(I) where I is 100% impervious	0.95	
Aic = Total area of new impervious cover	10,354	ft²
S = Hydrologic Soil Group (HSG) Specific Reduction Factor (S)	0.30	
HSG A = 0.55 HSG C = 0.30		
HSG B = 0.40 HSG D = 0.20		
Ai = (S)(Aic)	3,106	ft²
Ai = impervious cover targeted for runoff reduction		

therefore:

RRv =	[(P)	(Rv)	(Ai)]	/ 12			
	2.83	0.95	3,106	/ 12	=	**696**	**cu.ft.**
						0.0160	**ac.ft**

BIBBO ASSOCIATES, LLP
Consulting Engineers - Planners

Project **WOLF CENTER**

Specified Runoff Reduction Volume (S-RRv)

RRv (in acre-feet of storage) = [(P)(Rv)(Ai)] /12

Basin ID: **1.2S** HSG: **C**

P = Rainfall (inches)	2.83	in
Rv = 0.05+0.009(I) where I is 100% impervious	0.95	
Aic = Total area of new impervious cover	31,670	ft²
S = Hydrologic Soil Group (HSG) Specific Reduction Factor (S)	0.30	
HSG A = 0.55 HSG C = 0.30		
HSG B = 0.40 HSG D = 0.20		
Ai = (S)(Aic)	9,501	ft²

Ai = impervious cover targeted for runoff reduction

therefore:

RRv =	[(P)	(Rv)	(Ai)]	/ 12		
	2.83	0.95	9,501	/ 12	=	**2,129 cu.ft.**
						0.0489 ac.ft

BIBBO ASSOCIATES, LLP
Consulting Engineers - Planners

Project **WOLF CENTER**

Specified Runoff Reduction Volume (S-RRv)

RRv (in acre-feet of storage) = [(P)(Rv)(Ai)] /12

Basin ID: **1.3S**		HSG: **C**		
P = Rainfall (inches)			2.83	in
Rv = 0.05+0.009(I) where I is 100% impervious			0.95	
Aic = Total area of new impervious cover			2,000	ft²
S = Hydrologic Soil Group (HSG) Specific Reduction Factor (S)			0.30	
	HSG A = 0.55	HSG C = 0.30		
	HSG B = 0.40	HSG D = 0.20		
Ai = (S)(Aic)			600	ft²

Ai = impervious cover targeted for runoff reduction

therefore:

RRv =	[(P)	(Rv)	(Ai)]	/ 12		
	2.83	0.95	600	/ 12	=	**134 cu.ft.**
						0.0031 ac.ft

Project **WOLF CENTER**

Specified Runoff Reduction Volume (S-RRv)

RRv (in acre-feet of storage) = [(P)(Rv)(Ai)] /12

Basin ID: **Total- Design Point** HSG: **C**

P = Rainfall (inches)	2.83	in
Rv = 0.05+0.009(I) where I is 100% impervious	0.95	
Aic = Total area of new impervious cover	44,880	ft²
S = Hydrologic Soil Group (HSG) Specific Reduction Factor (S)	0.30	

HSG A = 0.55 HSG C = 0.30
HSG B = 0.40 HSG D = 0.20

Ai = (S)(Aic) 13,464 ft²

Ai = impervious cover targeted for runoff reduction

therefore:

		[(P)	(Rv)	(Ai)]	/ 12			
	RRv =							
1.1S	RRv =	2.83	0.95	1,142	/ 12	=	256	cu.ft.
							0.0059	ac.ft
1.1S	RRv =	2.83	0.95	3,106	/ 12	=	696	cu.ft.
							0.0160	ac.ft
1.2S	RRv =	2.83	0.95	9,501	/ 12	=	2,129	cu.ft.
							0.0489	ac.ft
1.3S	RRv =	2.83	0.95	600	/ 12	=	134	cu.ft.
							0.0031	ac.ft
Total	**RRv =**	**2.83**	**0.95**	**13,464**	**/ 12**	**=**	**3,016**	**cu.ft.**
							0.0692	**ac.ft**

BIBBO ASSOCIATES, LLP
Consulting Engineers - Planners

Project **WOLF CENTER**

Area Reduction Practices

Basin ID: **Design Point**

		Total Area		Area of Impervious (AI)
Original Drainage Area (DA):		81,969 sq.ft.		49,780 sq.ft.
Conservation of Natural Areas:	-	0 sq.ft.	-	0 sq.ft.
Riparian Buffers / Filter Strips:	-	0 sq.ft.	-	0 sq.ft.
Tree Planting / Tree Preservation:	-	2,900 sq.ft.	-	2,900 sq.ft.
Total Area Reduction:	=	2,900 sq.ft.		
Total AI Reduction:	=			2,900 sq.ft.
Remaining DA:		**79,069 sq.ft.**		-
Remaining AI:		-		**46,880 sq.ft.**
	or	**1.8152 ac.ft.**		**1.0762 ac.ft.**

Project **WOLF CENTER**

Source Control Practices

Basin ID: **1.1S** HSG: B & C

Practice Type: I = Infiltration

(I)=Infiltration, (B)=Bioretention, (D)=Dry Swale, (V)=Vegetated Swale, (G)=Green Roof, (R)=Rain Garden, (S)=Stormwater Planters, (C)=Cisterns/Rain Barrels, (P)=Porous Pavement

	Total Area:
DA Tributary to Practice(s):	31,450 sq.ft.
AI to Practice(s):	13,210 sq.ft.

Subcatchment Area (A):	31,450 sq.ft.
Rainfall (P):	2.83 in.
Impervious Area	13,210 sq.ft.
Percent Imperviousness(I):	42.00 %

WQv from HydroCAD = **3,267 cu.ft.**
or
0.0750 ac.ft.

Allowable Runoff Reduction Volume (RRv)

Practice Type: I = Infiltration **HSG:** B & C

Allowable runoff reduction volume for Infiltration is 100%

3,267 x 1.00 = **3,267 cu.ft.**
or
0.0750 ac.ft.

Project **WOLF CENTER**

Source Control Practices

Basin ID: **1.2S** HSG: C

Practice Type: I = Infiltration

(I)=Infiltration, (B)=Bioretention, (D)=Dry Swale, (V)=Vegetated Swale, (G)=Green Roof, (R)=Rain Garden, (S)=Stormwater Planters, (C)=Cisterns/Rain Barrels, (P)=Porous Pavement

	Total Area:
DA Tributary to Practice(s):	45,619 sq.ft.
AI to Practice(s):	31,670 sq.ft.

Subcatchment Area (A):	45,619 sq.ft.
Rainfall (P):	2.83 in.
Impervious Area	31,670 sq.ft.
Percent Imperviousness(I):	69.42 %

WQv from HydroCAD = **7,275 cu.ft.**
or
0.1670 ac.ft.

Allowable Runoff Reduction Volume (RRv)

Practice Type: I = Infiltration **HSG:** C

Allowable runoff reduction volume for Infiltration in C soil = 100% of WQv

7,275 x 1.00 = **7,275 cu.ft.**
or
0.1670 ac.ft.

Project **WOLF CENTER**

Source Control Practices

Basin ID: **1.3S** HSG: C

Practice Type: I = Infiltration

(I)=Infiltration, (B)=Bioretention, (D)=Dry Swale, (V)=Vegetated Swale, (G)=Green Roof, (R)=Rain Garden, (S)=Stormwater Planters, (C)=Cisterns/Rain Barrels, (P)=Porous Pavement

	Total Area:
DA Tributary to Practice(s):	2,000 sq.ft.
AI to Practice(s):	2,000 sq.ft.

Subcatchment Area (A):	2,000 sq.ft.
Rainfall (P):	2.83 in.
Impervious Area	2,000 sq.ft.
Percent Imperviousness(I):	100.00 %

WQv from HydroCAD = **436 cu.ft.**
or
0.0100 ac.ft.

Allowable Runoff Reduction Volume (RRv)

Practice Type: I = Infiltration **HSG:** C

Allowable runoff reduction volume for Infiltration in C soil = 100% of WQv

436 x 1.00 = **436 cu.ft.**
or
0.0100 ac.ft.

Project: WOLF CENTER

Total Runoff Reduction Volume

Basin ID: **Design Point**

Total RRv provided:

					RRv	
Original WQv - Area Reduced WQv:	11,587	-	10,977	=	610	cu.ft.
Source Control WQv Treatment Practices:						
Basin:						
1.1S				=	3,267	cu.ft.
1.2S				=	7,275	cu.ft.
1.3S				=	436	cu.ft.

Total RRv provided: 11,587 cu.ft.
or
0.266 ac.ft.

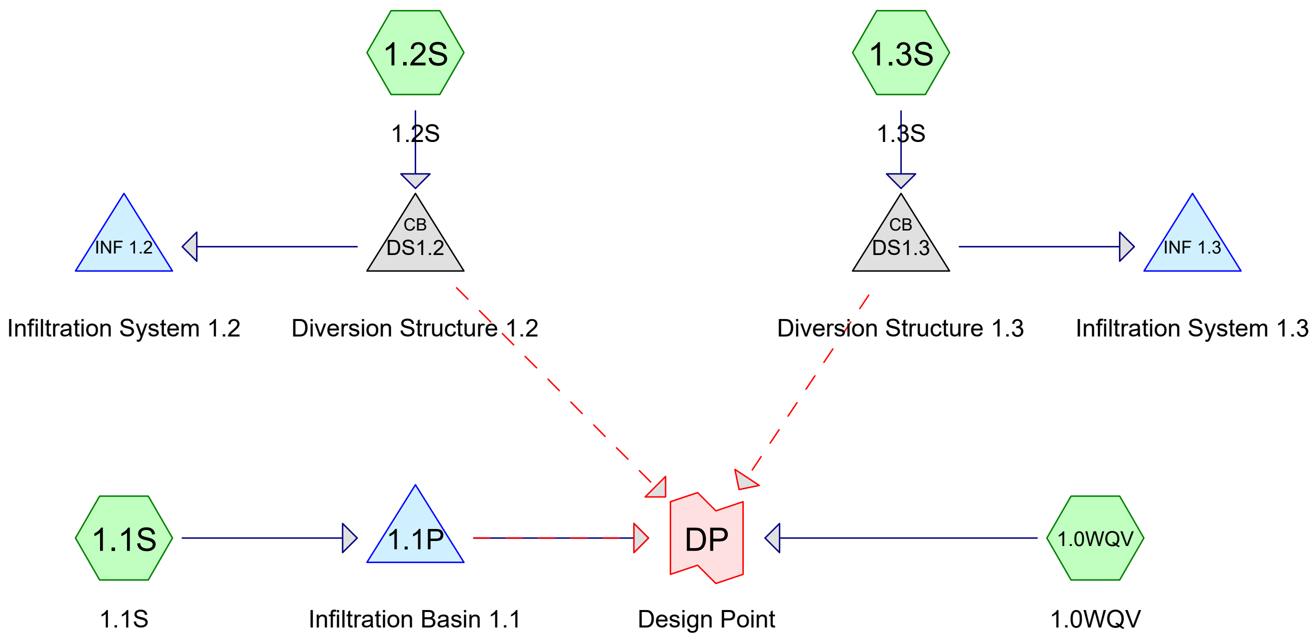
Is RRv provided	**11,587 cu.ft.**	≥ Original WQv	**11,587 cu.ft.**
	0.266 ac.ft		0.266 ac.ft
			Yes
Is RRv provided	**11,587 cu.ft.**	≥ S-RRv (min. RRv)	**3,016 cu.ft.**
	0.266 ac.ft		0.069 ac.ft
			Yes

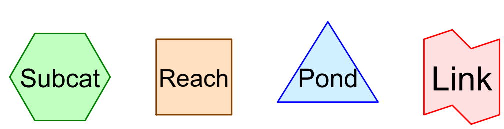
Total drainage area treated with runoff reduction / source control practices:

Area Reduction Practices:	2,900 sq.ft.	or	**0.067**	**Acres**
Source Control Practices:	79,069 sq.ft.	or	**1.815**	**Acres**
		Total:	**1.882**	**Acres**

Total impervious area treated with runoff reduction / source control practices:

Area Reduction Practices:	0 sq.ft.	or	**0.000**	**Acres**
Source Control Practices:	46,880 sq.ft.	or	**1.076**	**Acres**
		Total:	**1.076**	**Acres**





Routing Diagram for Wolf Center - WQV
Prepared by Bibbo Associates, llp., Printed 4/21/2023
HydroCAD® 10.00-24 s/n 02226 © 2018 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.067	98	(1.0WQV)
0.120	61	>75% Grass cover, Good, HSG B (1.1S)
0.619	74	>75% Grass cover, Good, HSG C (1.1S, 1.2S)
0.111	98	Proposed Building (1.2S)
0.043	98	Proposed Courtyard Imp (1.2S)
0.295	98	Proposed Pavement (1.1S)
0.574	98	Proposed Pavement & Walkway (1.2S)
0.046	98	Proposed Pods and Facilities (1.3S)
0.008	98	Proposed Sidewalk (1.1S)

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1.0WQV: 1.0WQV Runoff Area=2,900 sf 100.00% Impervious Runoff Depth=2.60"
Flow Length=1,585' Tc=23.5 min CN=98 Runoff=0.1 cfs 0.014 af

Subcatchment 1.1S: 1.1S Runoff Area=31,450 sf 42.00% Impervious Runoff Depth=1.25"
Tc=6.0 min CN=82 Runoff=1.1 cfs 0.075 af

Subcatchment 1.2S: 1.2S Runoff Area=45,619 sf 69.42% Impervious Runoff Depth=1.91"
Tc=6.0 min CN=91 Runoff=2.5 cfs 0.167 af

Subcatchment 1.3S: 1.3S Runoff Area=2,000 sf 100.00% Impervious Runoff Depth=2.60"
Tc=6.0 min CN=98 Runoff=0.1 cfs 0.010 af

Pond 1.1P: Infiltration Basin 1.1 Peak Elev=452.60' Storage=633 cf Inflow=1.1 cfs 0.075 af
Discarded=0.3 cfs 0.075 af Primary=0.0 cfs 0.000 af Secondary=0.0 cfs 0.000 af Outflow=0.3 cfs 0.075 af

Pond DS1.2: Diversion Structure 1.2 Peak Elev=469.20' Inflow=2.5 cfs 0.167 af
Primary=2.5 cfs 0.167 af Secondary=0.0 cfs 0.000 af Outflow=2.5 cfs 0.167 af

Pond DS1.3: Diversion Structure 1.3 Peak Elev=593.39' Inflow=0.1 cfs 0.010 af
Primary=0.1 cfs 0.010 af Secondary=0.0 cfs 0.000 af Outflow=0.1 cfs 0.010 af

Pond INF 1.2: Infiltration System 1.2 Peak Elev=466.22' Storage=0.006 af Inflow=2.5 cfs 0.167 af
Outflow=1.8 cfs 0.167 af

Pond INF 1.3: Infiltration System 1.3 Peak Elev=593.20' Storage=0.001 af Inflow=0.1 cfs 0.010 af
Outflow=0.1 cfs 0.010 af

Link DP: Design Point Inflow=0.1 cfs 0.014 af
Primary=0.1 cfs 0.014 af

Summary for Subcatchment 1.0WQV: 1.0WQV

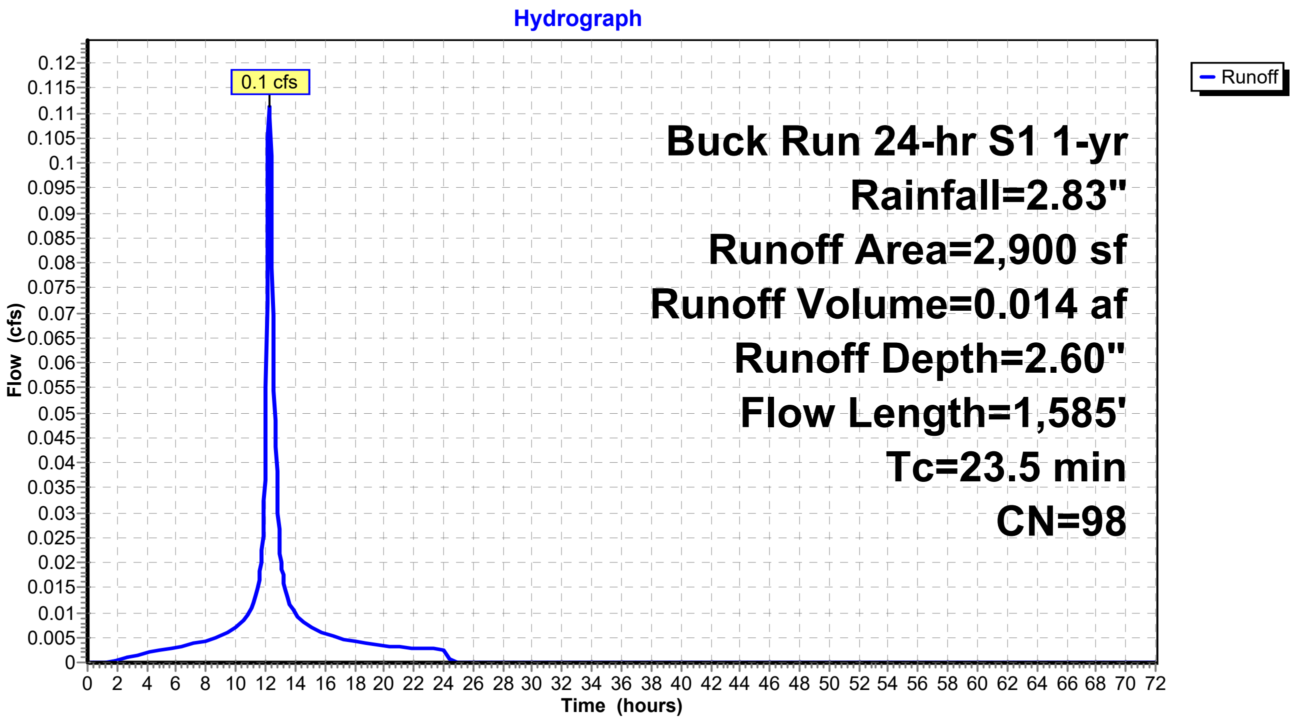
Runoff = 0.1 cfs @ 12.26 hrs, Volume= 0.014 af, Depth= 2.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Buck Run 24-hr S1 1-yr Rainfall=2.83"

	Area (sf)	CN	Description
*	2,900	98	
	2,900		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	100	0.0900	0.15		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.40"
12.1	1,485	0.1670	2.04		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
23.5	1,585	Total			

Subcatchment 1.0WQV: 1.0WQV



Summary for Subcatchment 1.1S: 1.1S

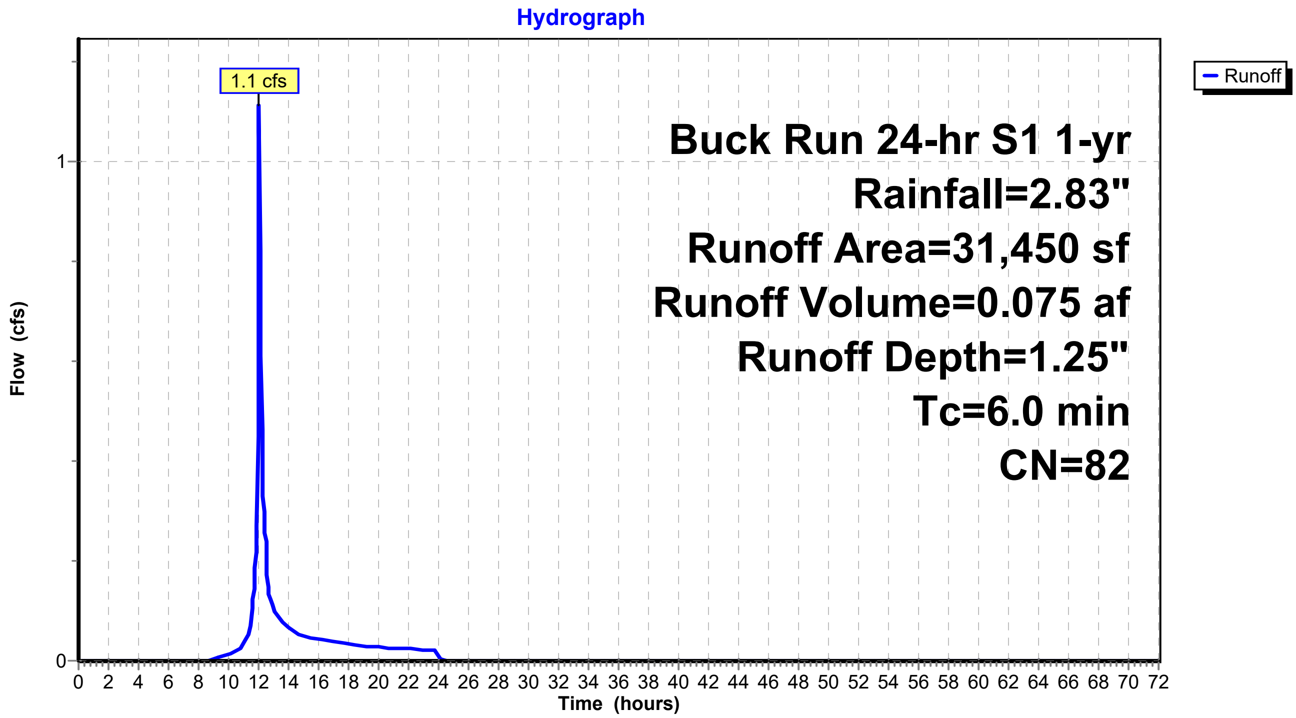
Runoff = 1.1 cfs @ 12.04 hrs, Volume= 0.075 af, Depth= 1.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Buck Run 24-hr S1 1-yr Rainfall=2.83"

	Area (sf)	CN	Description
*	12,870	98	Proposed Pavement
*	340	98	Proposed Sidewalk
	5,235	61	>75% Grass cover, Good, HSG B
	13,005	74	>75% Grass cover, Good, HSG C
	31,450	82	Weighted Average
	18,240		58.00% Pervious Area
	13,210		42.00% Impervious Area

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

Subcatchment 1.1S: 1.1S



Summary for Subcatchment 1.2S: 1.2S

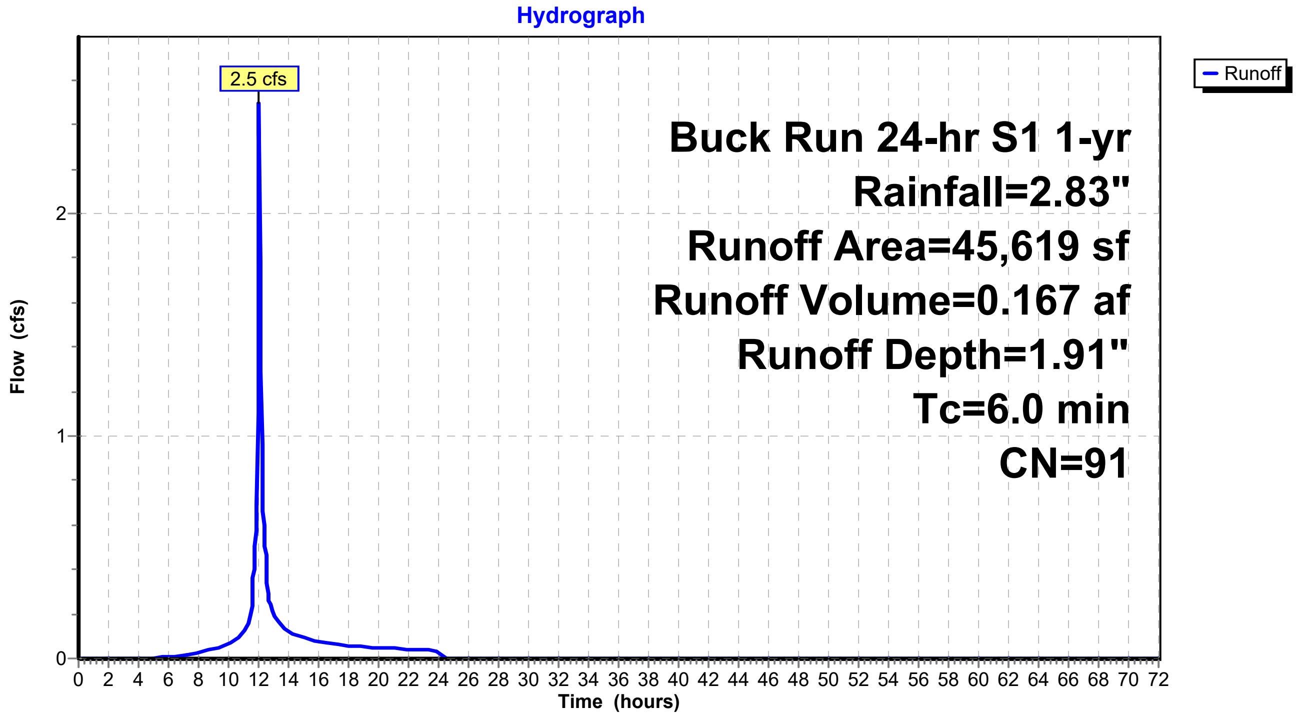
Runoff = 2.5 cfs @ 12.04 hrs, Volume= 0.167 af, Depth= 1.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Buck Run 24-hr S1 1-yr Rainfall=2.83"

	Area (sf)	CN	Description
*	24,985	98	Proposed Pavement & Walkway
*	4,815	98	Proposed Building
	10,849	74	>75% Grass cover, Good, HSG C
*	1,870	98	Proposed Courtyard Imp
	3,100	74	>75% Grass cover, Good, HSG C
	45,619	91	Weighted Average
	13,949		30.58% Pervious Area
	31,670		69.42% Impervious Area

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

Subcatchment 1.2S: 1.2S



Summary for Subcatchment 1.3S: 1.3S

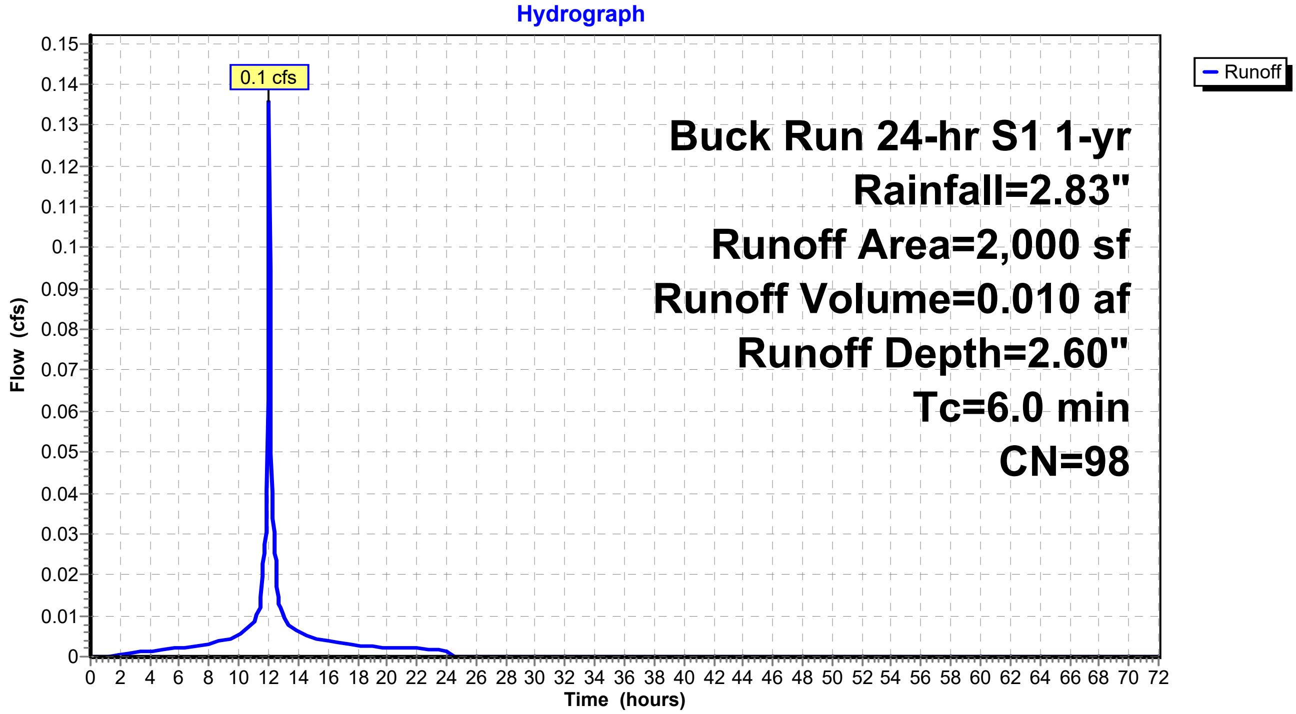
Runoff = 0.1 cfs @ 12.04 hrs, Volume= 0.010 af, Depth= 2.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Buck Run 24-hr S1 1-yr Rainfall=2.83"

	Area (sf)	CN	Description
*	2,000	98	Proposed Pods and Facilities
	2,000		100.00% Impervious Area

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

Subcatchment 1.3S: 1.3S



Summary for Pond 1.1P: Infiltration Basin 1.1

```
Inflow Area =      0.722 ac, 42.00% Impervious, Inflow Depth =  1.25"   for 1-yr event
Inflow      =        1.1 cfs @  12.04 hrs, Volume=        0.075 af
Outflow     =        0.3 cfs @  12.30 hrs, Volume=        0.075 af,  Atten= 70%,  Lag= 15.5 min
Discarded   =        0.3 cfs @  12.30 hrs, Volume=        0.075 af
Primary     =        0.0 cfs @   0.00 hrs, Volume=        0.000 af
Secondary   =        0.0 cfs @   0.00 hrs, Volume=        0.000 af
```

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 452.60' @ 12.30 hrs Surf.Area= 718 sf Storage= 633 cf

Plug-Flow detention time= 14.9 min calculated for 0.075 af (100% of inflow)
Center-of-Mass det. time= 14.9 min (879.1 - 864.2)

Volume	Invert	Avail.Storage	Storage Description
#1	451.00'	9,077 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
451.00	125	0	0
452.00	447	286	286
454.00	1,356	1,803	2,089
456.00	2,634	3,990	6,079
457.00	3,362	2,998	9,077

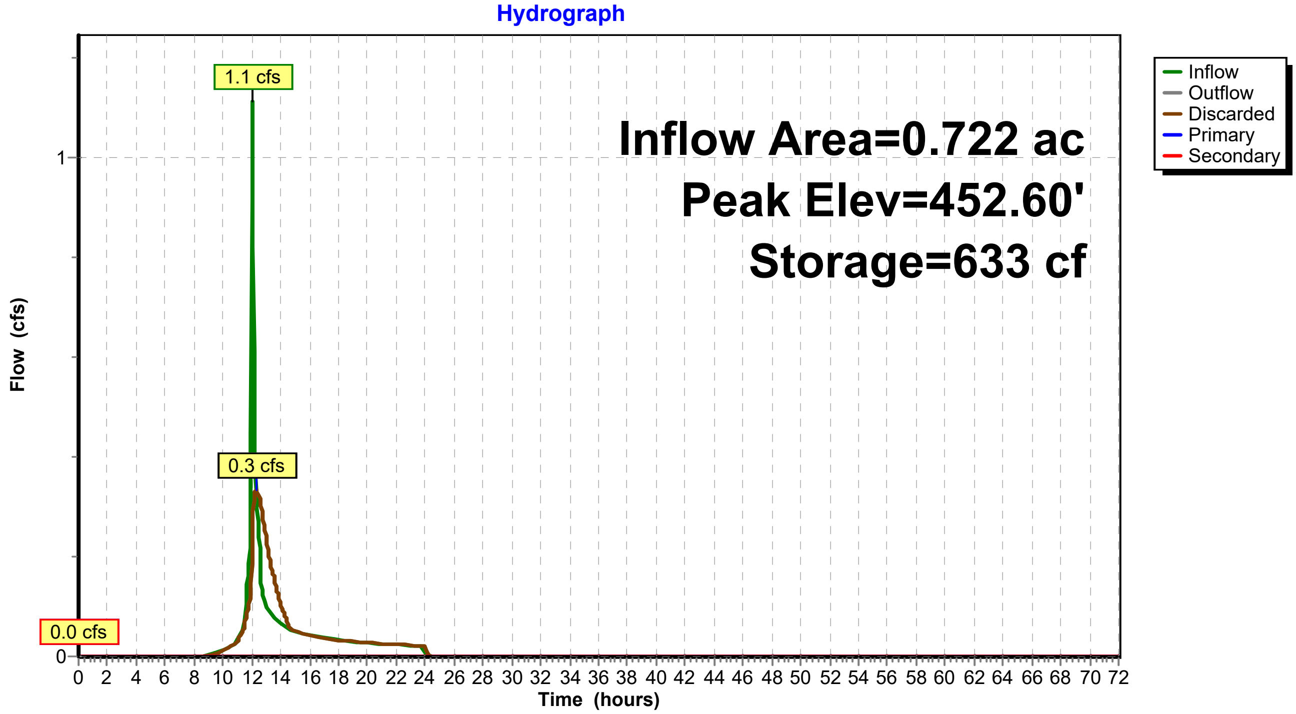
Device	Routing	Invert	Outlet Devices
#1	Primary	450.30'	**12.0" Round Culvert** L= 58.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 450.30' / 449.50' S= 0.0138 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	454.75'	**4.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	455.50'	**30.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Discarded	451.00'	**20.000 in/hr Exfiltration over Surface area** Phase-In= 0.10'
#5	Secondary	456.00'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Discarded OutFlow Max=0.3 cfs @ 12.30 hrs HW=452.59' (Free Discharge)
└─**4=Exfiltration** (Exfiltration Controls 0.3 cfs)

Primary OutFlow Max=0.0 cfs @ 0.00 hrs HW=451.00' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.0 cfs of 1.7 cfs potential flow)
  ├─**2=Orifice/Grate** (Controls 0.0 cfs)
  └─**3=Orifice/Grate** (Controls 0.0 cfs)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=451.00' TW=0.00' (Dynamic Tailwater)
└─**5=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Pond 1.1P: Infiltration Basin 1.1



Stage-Area-Storage for Pond 1.1P: Infiltration Basin 1.1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
451.00	125	0
451.10	157	14
451.20	189	31
451.30	222	52
451.40	254	76
451.50	286	103
451.60	318	133
451.70	350	166
451.80	383	203
451.90	415	243
452.00	447	286
452.10	492	333
452.20	538	384
452.30	583	441
452.40	629	501
452.50	674	566
452.60	720	636
452.70	765	710
452.80	811	789
452.90	856	872
453.00	902	960
453.10	947	1,053
453.20	992	1,150
453.30	1,038	1,251
453.40	1,083	1,357
453.50	1,129	1,468
453.60	1,174	1,583
453.70	1,220	1,703
453.80	1,265	1,827
453.90	1,311	1,956
454.00	1,356	2,089
454.10	1,420	2,228
454.20	1,484	2,373
454.30	1,548	2,525
454.40	1,612	2,683
454.50	1,676	2,847
454.60	1,739	3,018
454.70	1,803	3,195
454.80	1,867	3,378
454.90	1,931	3,568
455.00	1,995	3,765
455.10	2,059	3,967
455.20	2,123	4,176
455.30	2,187	4,392
455.40	2,251	4,614
455.50	2,315	4,842
455.60	2,378	5,077
455.70	2,442	5,318
455.80	2,506	5,565
455.90	2,570	5,819
456.00	2,634	6,079
456.10	2,707	6,346
456.20	2,780	6,620
456.30	2,852	6,902
456.40	2,925	7,191
456.50	2,998	7,487
456.60	3,071	7,790
456.70	3,144	8,101
456.80	3,216	8,419
456.90	3,289	8,744
457.00	**3,362**	**9,077**

Summary for Pond DS1.2: Diversion Structure 1.2

Inflow Area =	1.047 ac, 69.42% Impervious, Inflow Depth = 1.91" for 1-yr event			
Inflow =	2.5 cfs @	12.04 hrs, Volume=	0.167 af	
Outflow =	2.5 cfs @	12.04 hrs, Volume=	0.167 af,	Atten= 0%, Lag= 0.0 min
Primary =	2.5 cfs @	12.04 hrs, Volume=	0.167 af	
Secondary =	0.0 cfs @	0.00 hrs, Volume=	0.000 af	

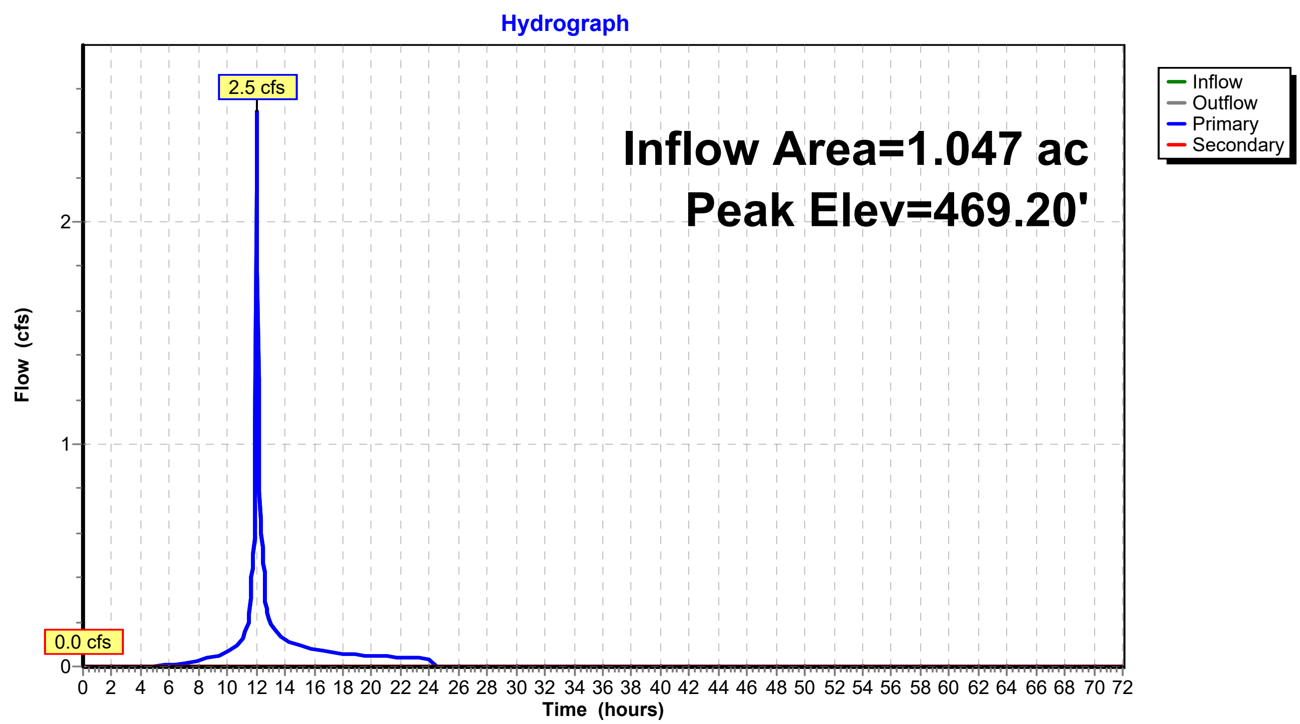
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 469.20' @ 12.04 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	466.67'	**8.0" Round Culvert** L= 6.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 466.67' / 466.60' S= 0.0117 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 3	469.35'	**2.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#3	Secondary	462.28'	**8.0" Round Culvert** L= 103.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 462.28' / 448.16' S= 0.1371 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=2.4 cfs @ 12.04 hrs HW=469.09' TW=466.16' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 2.4 cfs @ 6.95 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=462.28' TW=0.00' (Dynamic Tailwater)
└─**3=Culvert** (Controls 0.0 cfs)
  └─**2=Broad-Crested Rectangular Weir**(Controls 0.0 cfs)

Pond DS1.2: Diversion Structure 1.2



Stage-Area-Storage for Pond DS1.2: Diversion Structure 1.2

Elevation (feet)	Storage (cubic-feet)
462.28	**0**
462.32	0
462.36	0
462.40	0
462.44	0
462.48	0
462.52	0
462.56	0
462.60	0
462.64	0
462.68	0
462.72	0
462.76	0
462.80	0
462.84	0
462.88	0
462.92	0
462.96	0
463.00	0
463.04	0
463.08	0
463.12	0
463.16	0
463.20	0
463.24	0
463.28	0
463.32	0
463.36	0
463.40	0
463.44	0
463.48	0
463.52	0
463.56	0
463.60	0
463.64	0
463.68	0
463.72	0
463.76	0
463.80	0
463.84	0
463.88	0
463.92	0
463.96	0
464.00	0
464.04	0
464.08	0
464.12	0
464.16	0
464.20	0
464.24	0
464.28	0
464.32	0
464.36	0
464.40	0
464.44	0
464.48	0
464.52	0
464.56	0
464.60	0
464.64	0
464.68	0
464.72	0
464.76	0
464.80	0
464.84	0
464.88	0
464.92	0
464.96	0
465.00	0
465.04	0
465.08	0
465.12	0
465.16	0
465.20	0
465.24	0
465.28	0
465.32	0
465.36	0
465.40	0
465.44	0
465.48	0
465.52	0
465.56	0
465.60	0
465.64	0
465.68	0
465.72	0
465.76	0
465.80	0
465.84	0
465.88	0
465.92	0
465.96	0
466.00	0
466.04	0
466.08	0
466.12	0
466.16	0
466.20	0
466.24	0
466.28	0
466.32	0
466.36	0
466.40	0
466.44	0
466.48	0
466.52	0
466.56	0
466.60	0
466.64	0
466.68	0
466.72	0
466.76	0
466.80	0
466.84	0
466.88	0
466.92	0
466.96	0
467.00	0
467.04	0
467.08	0
467.12	0
467.16	0
467.20	0
467.24	0
467.28	0
467.32	0
467.36	0
467.40	0
467.44	0
467.48	0
467.52	0
467.56	0
467.60	0
467.64	0
467.68	0
467.72	0
467.76	0
467.80	0
467.84	0
467.88	0
467.92	0
467.96	0
468.00	0
468.04	0
468.08	0
468.12	0
468.16	0
468.20	0
468.24	0
468.28	0
468.32	0
468.36	0
468.40	0
468.44	0
468.48	0
468.52	0
468.56	0
468.60	0
468.64	0
468.68	0
468.72	0
468.76	0
468.80	0
468.84	0
468.88	0
468.92	0
468.96	0
469.00	0
469.04	0
469.08	0
469.12	0
469.16	0
469.20	0
469.24	0
469.28	0
469.32	0

Summary for Pond DS1.3: Diversion Structure 1.3

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 2.60" for 1-yr event
Inflow = 0.1 cfs @ 12.04 hrs, Volume= 0.010 af
Outflow = 0.1 cfs @ 12.04 hrs, Volume= 0.010 af, Atten= 0%, Lag= 0.0 min
Primary = 0.1 cfs @ 12.04 hrs, Volume= 0.010 af
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0.000 af

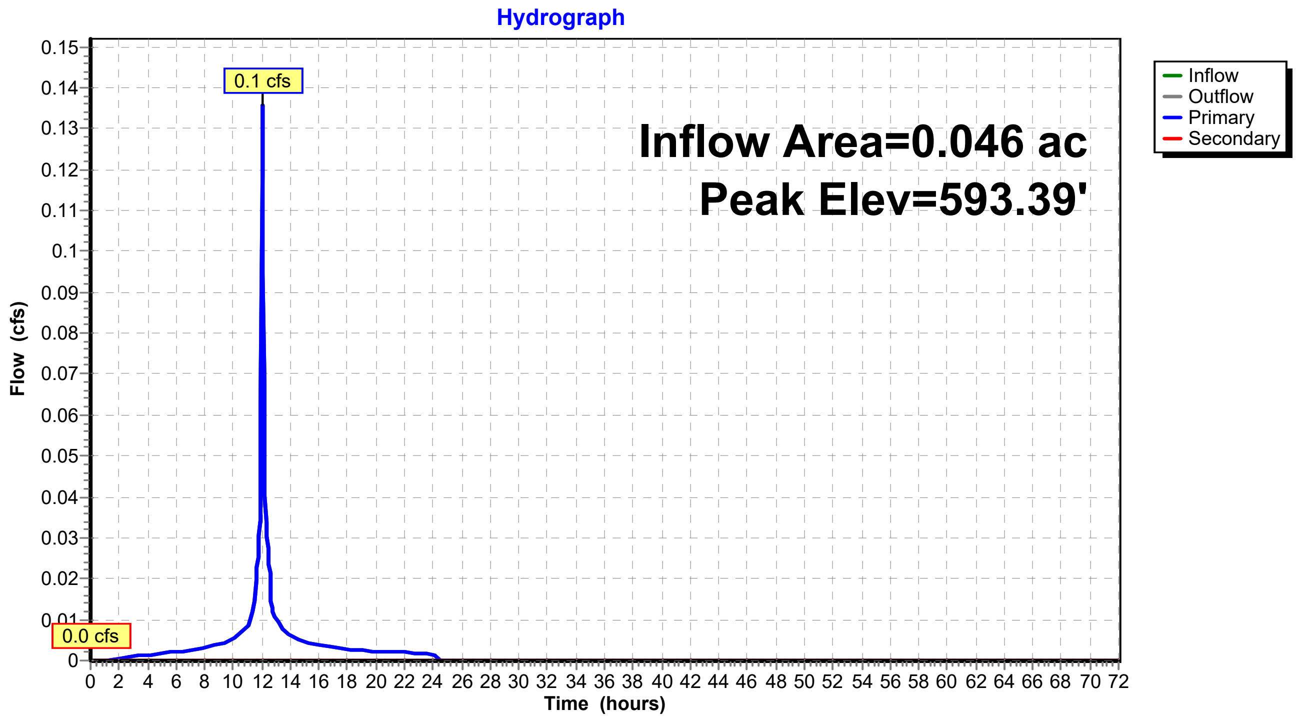
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 593.39' @ 12.04 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	593.10'	**4.0" Round Culvert** L= 6.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 593.10' / 593.00' S= 0.0167 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.09 sf
#2	Secondary	595.20'	**8.0" Round Culvert** L= 154.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 595.20' / 590.00' S= 0.0338 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=0.1 cfs @ 12.04 hrs HW=593.38' TW=593.14' (Dynamic Tailwater)
└**1=Culvert** (Barrel Controls 0.1 cfs @ 2.24 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=593.10' TW=0.00' (Dynamic Tailwater)
└**2=Culvert** (Controls 0.0 cfs)

Pond DS1.3: Diversion Structure 1.3



Stage-Area-Storage for Pond DS1.3: Diversion Structure 1.3

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
593.10	**0**	594.42	0	595.74	0
593.12	0	594.44	0	595.76	0
593.14	0	594.46	0	595.78	0
593.16	0	594.48	0	595.80	0
593.18	0	594.50	0	595.82	0
593.20	0	594.52	0	595.84	0
593.22	0	594.54	0	595.86	0
593.24	0	594.56	0		
593.26	0	594.58	0		
593.28	0	594.60	0		
593.30	0	594.62	0		
593.32	0	594.64	0		
593.34	0	594.66	0		
593.36	0	594.68	0		
593.38	0	594.70	0		
593.40	0	594.72	0		
593.42	0	594.74	0		
593.44	0	594.76	0		
593.46	0	594.78	0		
593.48	0	594.80	0		
593.50	0	594.82	0		
593.52	0	594.84	0		
593.54	0	594.86	0		
593.56	0	594.88	0		
593.58	0	594.90	0		
593.60	0	594.92	0		
593.62	0	594.94	0		
593.64	0	594.96	0		
593.66	0	594.98	0		
593.68	0	595.00	0		
593.70	0	595.02	0		
593.72	0	595.04	0		
593.74	0	595.06	0		
593.76	0	595.08	0		
593.78	0	595.10	0		
593.80	0	595.12	0		
593.82	0	595.14	0		
593.84	0	595.16	0		
593.86	0	595.18	0		
593.88	0	595.20	0		
593.90	0	595.22	0		
593.92	0	595.24	0		
593.94	0	595.26	0		
593.96	0	595.28	0		
593.98	0	595.30	0		
594.00	0	595.32	0		
594.02	0	595.34	0		
594.04	0	595.36	0		
594.06	0	595.38	0		
594.08	0	595.40	0		
594.10	0	595.42	0		
594.12	0	595.44	0		
594.14	0	595.46	0		
594.16	0	595.48	0		
594.18	0	595.50	0		
594.20	0	595.52	0		
594.22	0	595.54	0		
594.24	0	595.56	0		
594.26	0	595.58	0		
594.28	0	595.60	0		
594.30	0	595.62	0		
594.32	0	595.64	0		
594.34	0	595.66	0		
594.36	0	595.68	0		
594.38	0	595.70	0		
594.40	0	595.72	0		

Summary for Pond INF 1.2: Infiltration System 1.2

Inflow Area = 1.047 ac, 69.42% Impervious, Inflow Depth = 1.91" for 1-yr event
Inflow = 2.5 cfs @ 12.04 hrs, Volume= 0.167 af
Outflow = 1.8 cfs @ 12.05 hrs, Volume= 0.167 af, Atten= 26%, Lag= 0.5 min
Discarded = 1.8 cfs @ 12.05 hrs, Volume= 0.167 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 466.22' @ 12.10 hrs Surf.Area= 0.076 ac Storage= 0.006 af

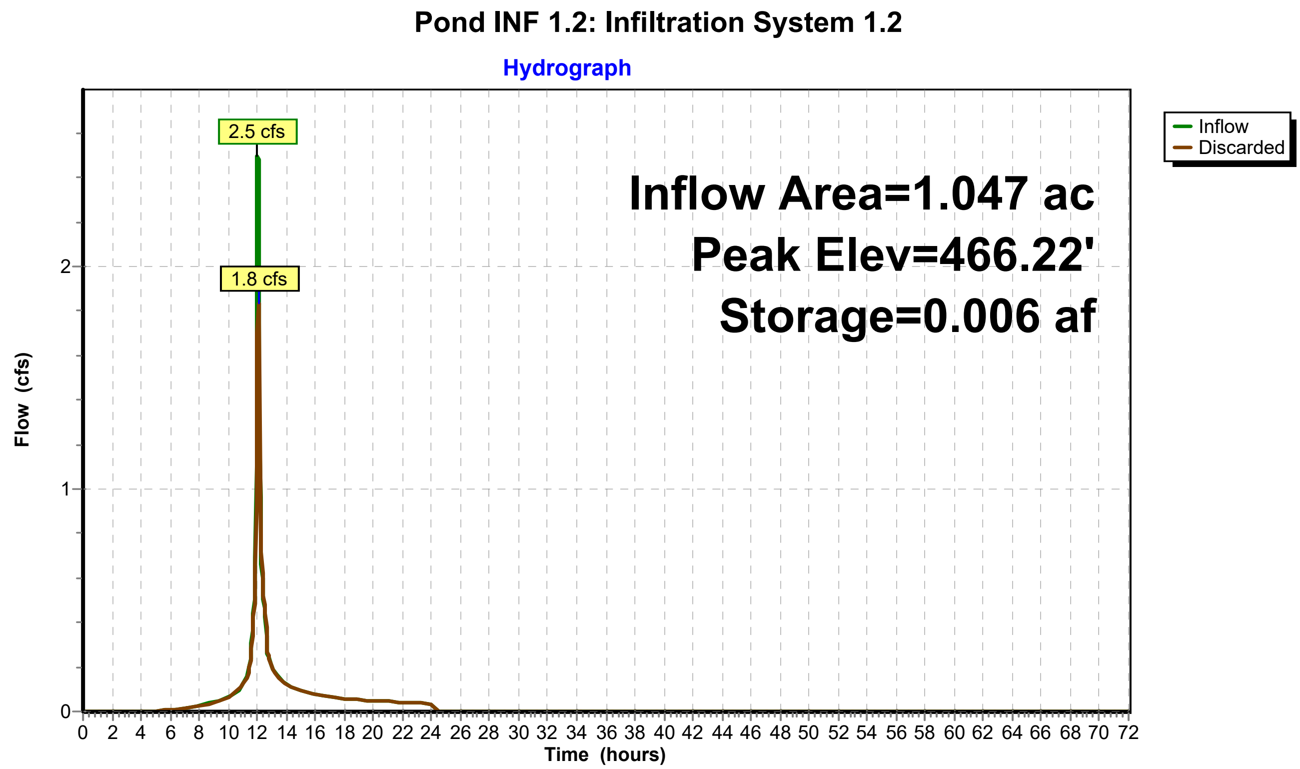
Plug-Flow detention time= 1.3 min calculated for 0.167 af (100% of inflow)
Center-of-Mass det. time= 1.3 min (821.9 - 820.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	466.01'	0.064 af	**30.50'W x 108.50'L x 3.54'H Field A** 0.269 af Overall - 0.109 af Embedded = 0.160 af x 40.0% Voids
#2A	466.51'	0.109 af	**Cultec R-330XLHD** x 90 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 6 rows
		0.173 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	466.01'	**24.000 in/hr Exfiltration over Horizontal area** Phase-In= 0.10'

Discarded OutFlow Max=1.8 cfs @ 12.05 hrs HW=466.18' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 1.8 cfs)



Stage-Area-Storage for Pond INF 1.2: Infiltration System 1.2

Elevation (feet)	Horizontal (acres)	Storage (acre-feet)
466.01	**0.076**	0.000
466.03	0.076	0.001
466.05	0.076	0.001
466.07	0.076	0.002
466.09	0.076	0.002
466.11	0.076	0.003
466.13	0.076	0.004
466.15	0.076	0.004
466.17	0.076	0.005
466.19	0.076	0.005
466.21	0.076	0.006
466.23	0.076	0.007
466.25	0.076	0.007
466.27	0.076	0.008
466.29	0.076	0.009
466.31	0.076	0.009
466.33	0.076	0.010
466.35	0.076	0.010
466.37	0.076	0.011
466.39	0.076	0.012
466.41	0.076	0.012
466.43	0.076	0.013
466.45	0.076	0.013
466.47	0.076	0.014
466.49	0.076	0.015
466.51	0.076	0.015
466.53	0.076	0.017
466.55	0.076	0.018
466.57	0.076	0.019
466.59	0.076	0.020
466.61	0.076	0.022
466.63	0.076	0.023
466.65	0.076	0.024
466.67	0.076	0.026
466.69	0.076	0.027
466.71	0.076	0.028
466.73	0.076	0.030
466.75	0.076	0.031
466.77	0.076	0.032
466.79	0.076	0.033
466.81	0.076	0.035
466.83	0.076	0.036
466.85	0.076	0.037
466.87	0.076	0.039
466.89	0.076	0.040
466.91	0.076	0.041
466.93	0.076	0.042
466.95	0.076	0.044
466.97	0.076	0.045
466.99	0.076	0.046
467.01	0.076	0.048
467.03	0.076	0.049
467.05	0.076	0.050
467.07	0.076	0.051
467.09	0.076	0.053
467.11	0.076	0.054
467.13	0.076	0.055
467.15	0.076	0.057
467.17	0.076	0.058
467.19	0.076	0.059
467.21	0.076	0.060
467.23	0.076	0.062
467.25	0.076	0.063
467.27	0.076	0.064
467.29	0.076	0.065
467.31	0.076	0.067
467.33	0.076	0.068
467.35	0.076	0.069
467.37	0.076	0.070
467.39	0.076	0.072
467.41	0.076	0.073
467.43	0.076	0.074
467.45	0.076	0.075
467.47	0.076	0.077
467.49	0.076	0.078
467.51	0.076	0.079
467.53	0.076	0.080
467.55	0.076	0.082
467.57	0.076	0.083
467.59	0.076	0.084
467.61	0.076	0.085
467.63	0.076	0.086
467.65	0.076	0.088
467.67	0.076	0.089
467.69	0.076	0.090
467.71	0.076	0.091
467.73	0.076	0.093
467.75	0.076	0.094
467.77	0.076	0.095
467.79	0.076	0.096
467.81	0.076	0.097
467.83	0.076	0.099
467.85	0.076	0.100
467.87	0.076	0.101
467.89	0.076	0.102
467.91	0.076	0.103
467.93	0.076	0.105
467.95	0.076	0.106
467.97	0.076	0.107
467.99	0.076	0.108
468.01	0.076	0.109
468.03	0.076	0.110
468.05	0.076	0.112
468.07	0.076	0.113
468.09	0.076	0.114
468.11	0.076	0.115
468.13	0.076	0.116
468.15	0.076	0.117
468.17	0.076	0.118
468.19	0.076	0.119
468.21	0.076	0.121
468.23	0.076	0.122
468.25	0.076	0.123
468.27	0.076	0.124
468.29	0.076	0.125
468.31	0.076	0.126
468.33	0.076	0.127
468.35	0.076	0.128
468.37	0.076	0.129
468.39	0.076	0.130
468.41	0.076	0.131
468.43	0.076	0.132
468.45	0.076	0.133
468.47	0.076	0.134
468.49	0.076	0.135
468.51	0.076	0.136
468.53	0.076	0.137
468.55	0.076	0.138
468.57	0.076	0.139
468.59	0.076	0.140
468.61	0.076	0.141
468.63	0.076	0.142
468.65	0.076	0.143
468.67	0.076	0.144
468.69	0.076	0.145
468.71	0.076	0.146
468.73	0.076	0.147
468.75	0.076	0.147
468.77	0.076	0.148
468.79	0.076	0.149
468.81	0.076	0.150
468.83	0.076	0.151
468.85	0.076	0.151
468.87	0.076	0.152
468.89	0.076	0.153
468.91	0.076	0.153
468.93	0.076	0.154
468.95	0.076	0.155
468.97	0.076	0.155
468.99	0.076	0.156
469.01	0.076	0.157
469.03	0.076	0.157
469.05	0.076	0.158
469.07	0.076	0.159
469.09	0.076	0.159
469.11	0.076	0.160
469.13	0.076	0.160
469.15	0.076	0.161
469.17	0.076	0.162
469.19	0.076	0.162
469.21	0.076	0.163
469.23	0.076	0.163
469.25	0.076	0.164
469.27	0.076	0.165
469.29	0.076	0.165
469.31	0.076	0.166
469.33	0.076	0.166
469.35	0.076	0.167
469.37	0.076	0.168
469.39	0.076	0.168
469.41	0.076	0.169
469.43	0.076	0.170
469.45	0.076	0.170
469.47	0.076	0.171
469.49	0.076	0.171
469.51	0.076	0.172
469.53	0.076	0.173
469.55	0.076	**0.173**

Summary for Pond INF 1.3: Infiltration System 1.3

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 2.60" for 1-yr event
Inflow = 0.1 cfs @ 12.04 hrs, Volume= 0.010 af
Outflow = 0.1 cfs @ 12.05 hrs, Volume= 0.010 af, Atten= 33%, Lag= 0.7 min
Discarded = 0.1 cfs @ 12.05 hrs, Volume= 0.010 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 593.20' @ 12.11 hrs Surf.Area= 0.006 ac Storage= 0.001 af

Plug-Flow detention time= 2.3 min calculated for 0.010 af (100% of inflow)
Center-of-Mass det. time= 2.3 min (764.0 - 761.8)

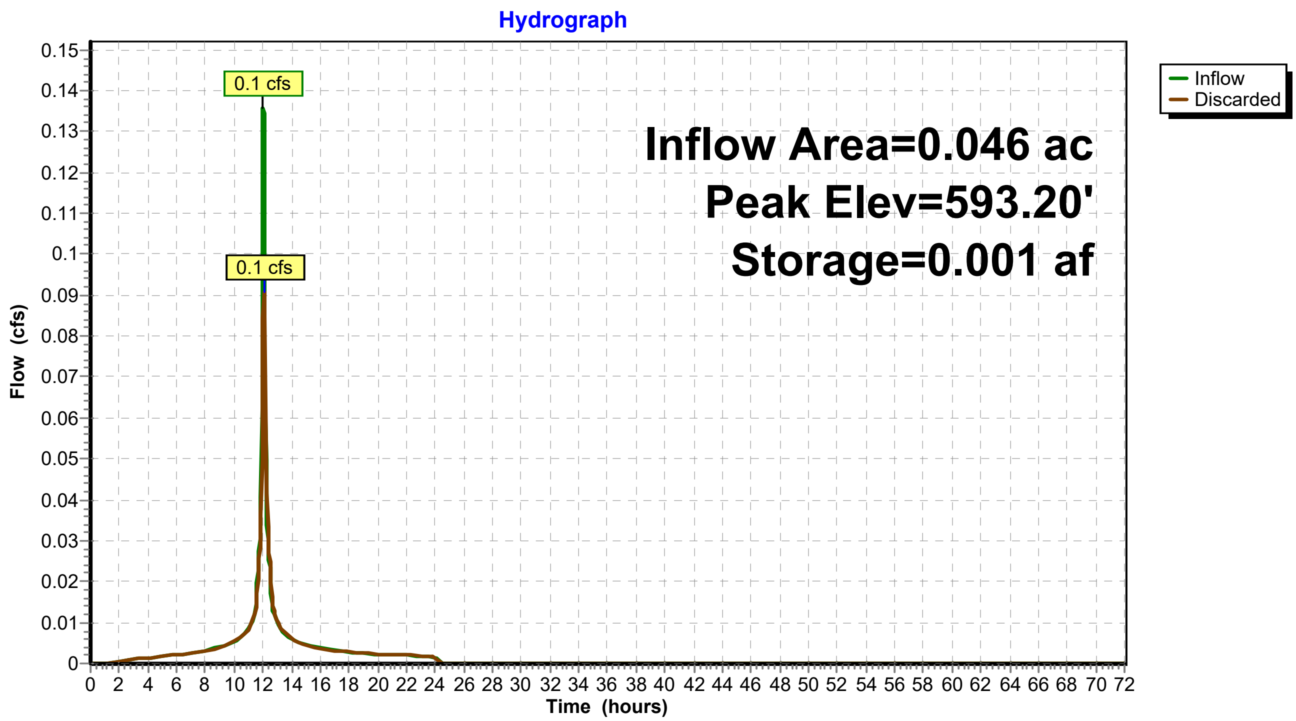
Volume	Invert	Avail.Storage	Storage Description
#1A	593.00'	0.006 af	**16.00'W x 17.50'L x 3.54'H Field A**
			0.023 af Overall - 0.008 af Embedded = 0.015 af x 40.0% Voids
#2A	593.50'	0.008 af	**Cultec R-330XLHD** x 6 Inside #1
			Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf
			Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap
			Row Length Adjustment= +1.50' x 7.45 sf x 3 rows
		0.014 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	593.00'	**14.000 in/hr Exfiltration over Horizontal area** Phase-In= 0.10'

Discarded OutFlow Max=0.1 cfs @ 12.05 hrs HW=593.16' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.1 cfs)

Pond INF 1.3: Infiltration System 1.3



Stage-Area-Storage for Pond INF 1.3: Infiltration System 1.3

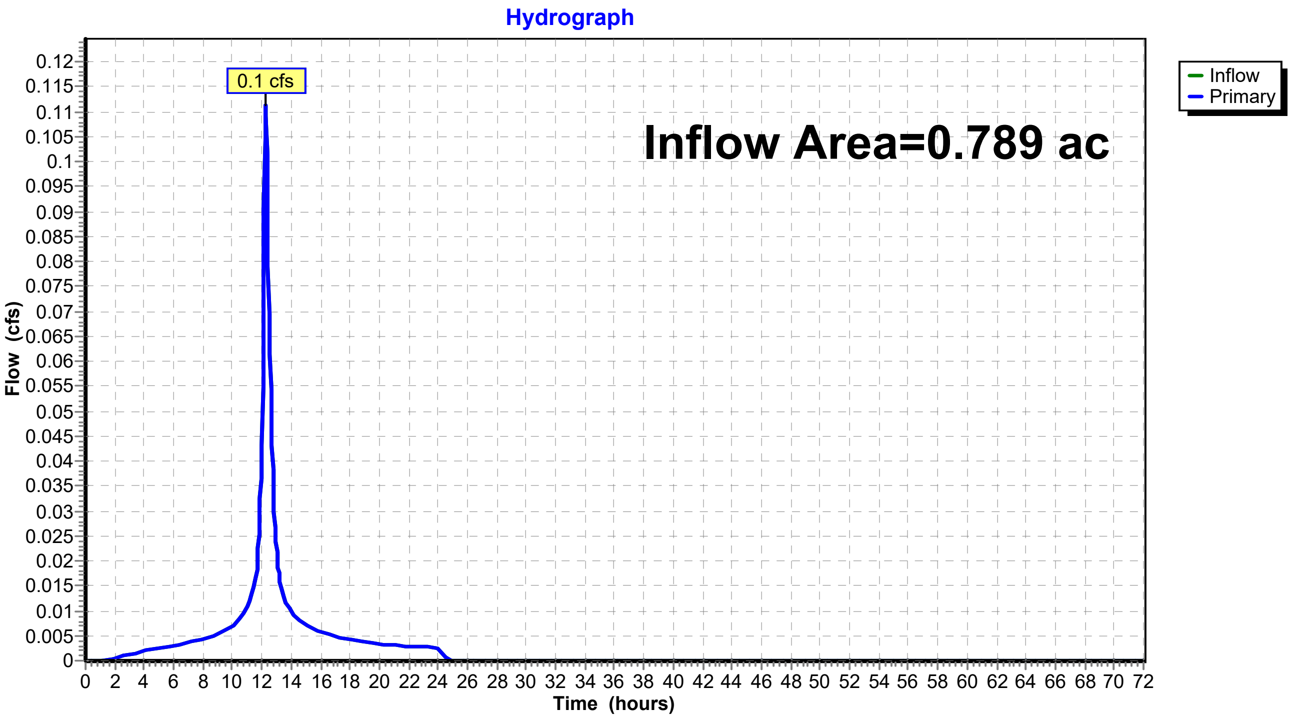
Elevation (feet)	Horizontal (acres)	Storage (acre-feet)
593.00	**0.006**	0.000
593.02	0.006	0.000
593.04	0.006	0.000
593.06	0.006	0.000
593.08	0.006	0.000
593.10	0.006	0.000
593.12	0.006	0.000
593.14	0.006	0.000
593.16	0.006	0.000
593.18	0.006	0.000
593.20	0.006	0.001
593.22	0.006	0.001
593.24	0.006	0.001
593.26	0.006	0.001
593.28	0.006	0.001
593.30	0.006	0.001
593.32	0.006	0.001
593.34	0.006	0.001
593.36	0.006	0.001
593.38	0.006	0.001
593.40	0.006	0.001
593.42	0.006	0.001
593.44	0.006	0.001
593.46	0.006	0.001
593.48	0.006	0.001
593.50	0.006	0.001
593.52	0.006	0.001
593.54	0.006	0.001
593.56	0.006	0.002
593.58	0.006	0.002
593.60	0.006	0.002
593.62	0.006	0.002
593.64	0.006	0.002
593.66	0.006	0.002
593.68	0.006	0.002
593.70	0.006	0.002
593.72	0.006	0.002
593.74	0.006	0.003
593.76	0.006	0.003
593.78	0.006	0.003
593.80	0.006	0.003
593.82	0.006	0.003
593.84	0.006	0.003
593.86	0.006	0.003
593.88	0.006	0.003
593.90	0.006	0.003
593.92	0.006	0.003
593.94	0.006	0.004
593.96	0.006	0.004
593.98	0.006	0.004
594.00	0.006	0.004
594.02	0.006	0.004
594.04	0.006	0.004
594.06	0.006	0.004
594.08	0.006	0.004
594.10	0.006	0.004
594.12	0.006	0.004
594.14	0.006	0.005
594.16	0.006	0.005
594.18	0.006	0.005
594.20	0.006	0.005
594.22	0.006	0.005
594.24	0.006	0.005
594.26	0.006	0.005
594.28	0.006	0.005
594.30	0.006	0.005
594.32	0.006	0.005
594.34	0.006	0.006
594.36	0.006	0.006
594.38	0.006	0.006
594.40	0.006	0.006
594.42	0.006	0.006
594.44	0.006	0.006
594.46	0.006	0.006
594.48	0.006	0.006
594.50	0.006	0.006
594.52	0.006	0.006
594.54	0.006	0.006
594.56	0.006	0.007
594.58	0.006	0.007
594.60	0.006	0.007
594.62	0.006	0.007
594.64	0.006	0.007
594.66	0.006	0.007
594.68	0.006	0.007
594.70	0.006	0.007
594.72	0.006	0.007
594.74	0.006	0.007
594.76	0.006	0.008
594.78	0.006	0.008
594.80	0.006	0.008
594.82	0.006	0.008
594.84	0.006	0.008
594.86	0.006	0.008
594.88	0.006	0.008
594.90	0.006	0.008
594.92	0.006	0.008
594.94	0.006	0.008
594.96	0.006	0.008
594.98	0.006	0.009
595.00	0.006	0.009
595.02	0.006	0.009
595.04	0.006	0.009
595.06	0.006	0.009
595.08	0.006	0.009
595.10	0.006	0.009
595.12	0.006	0.009
595.14	0.006	0.009
595.16	0.006	0.009
595.18	0.006	0.009
595.20	0.006	0.010
595.22	0.006	0.010
595.24	0.006	0.010
595.26	0.006	0.010
595.28	0.006	0.010
595.30	0.006	0.010
595.32	0.006	0.010
595.34	0.006	0.010
595.36	0.006	0.010
595.38	0.006	0.010
595.40	0.006	0.010
595.42	0.006	0.010
595.44	0.006	0.011
595.46	0.006	0.011
595.48	0.006	0.011
595.50	0.006	0.011
595.52	0.006	0.011
595.54	0.006	0.011
595.56	0.006	0.011
595.58	0.006	0.011
595.60	0.006	0.011
595.62	0.006	0.011
595.64	0.006	0.011
595.66	0.006	0.011
595.68	0.006	0.011
595.70	0.006	0.012
595.72	0.006	0.012
595.74	0.006	0.012
595.76	0.006	0.012
595.78	0.006	0.012
595.80	0.006	0.012
595.82	0.006	0.012
595.84	0.006	0.012
595.86	0.006	0.012
595.88	0.006	0.012
595.90	0.006	0.012
595.92	0.006	0.012
595.94	0.006	0.012
595.96	0.006	0.012
595.98	0.006	0.012
596.00	0.006	0.012
596.02	0.006	0.013
596.04	0.006	0.013
596.06	0.006	0.013
596.08	0.006	0.013
596.10	0.006	0.013
596.12	0.006	0.013
596.14	0.006	0.013
596.16	0.006	0.013
596.18	0.006	0.013
596.20	0.006	0.013
596.22	0.006	0.013
596.24	0.006	0.013
596.26	0.006	0.013
596.28	0.006	0.013
596.30	0.006	0.013
596.32	0.006	0.013
596.34	0.006	0.013
596.36	0.006	0.013
596.38	0.006	0.013
596.40	0.006	0.014
596.42	0.006	0.014
596.44	0.006	0.014
596.46	0.006	0.014
596.48	0.006	0.014
596.50	0.006	0.014
596.52	0.006	0.014
596.54	0.006	**0.014**

Summary for Link DP: Design Point

Inflow Area =	0.789 ac, 46.90% Impervious, Inflow Depth = 0.22" for 1-yr event		
Inflow =	0.1 cfs @ 12.26 hrs, Volume=	0.014 af	
Primary =	0.1 cfs @ 12.26 hrs, Volume=	0.014 af,	Atten= 0%, Lag= 0.0 min

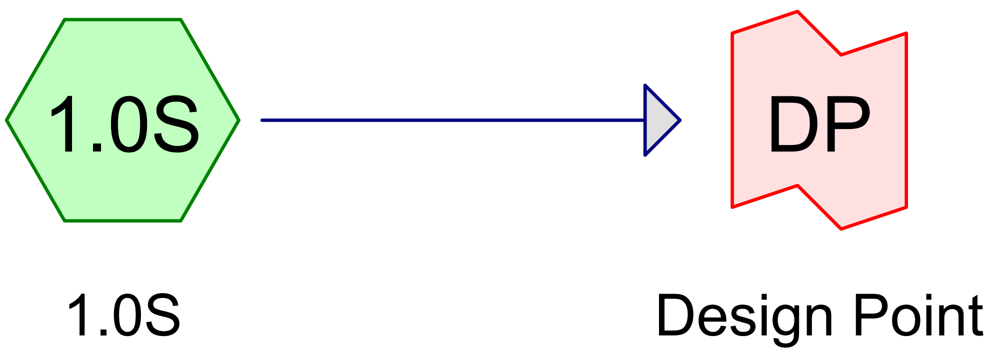
Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

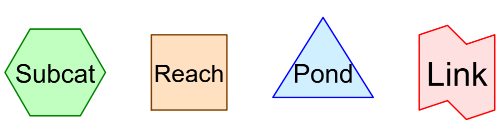
Link DP: Design Point



Appendix B:

Pre Development Peak Flow Analysis -
(HydroCAD Output for 1, 10 & 100-year Storm Events)





Routing Diagram for Wolf Center - Pre- 4-20-2023
Prepared by Bibbo Associates, llp., Printed 10/20/2023
HydroCAD® 10.00-24 s/n 02226 © 2018 HydroCAD Software Solutions LLC

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1.0S: 1.0S Runoff Area=784,606 sf 5.65% Impervious Runoff Depth=0.75"
Flow Length=1,750' Tc=25.7 min CN=73 Runoff=8.0 cfs 1.133 af

Link DP: Design Point Inflow=8.0 cfs 1.133 af
Primary=8.0 cfs 1.133 af

Summary for Subcatchment 1.0S: 1.0S

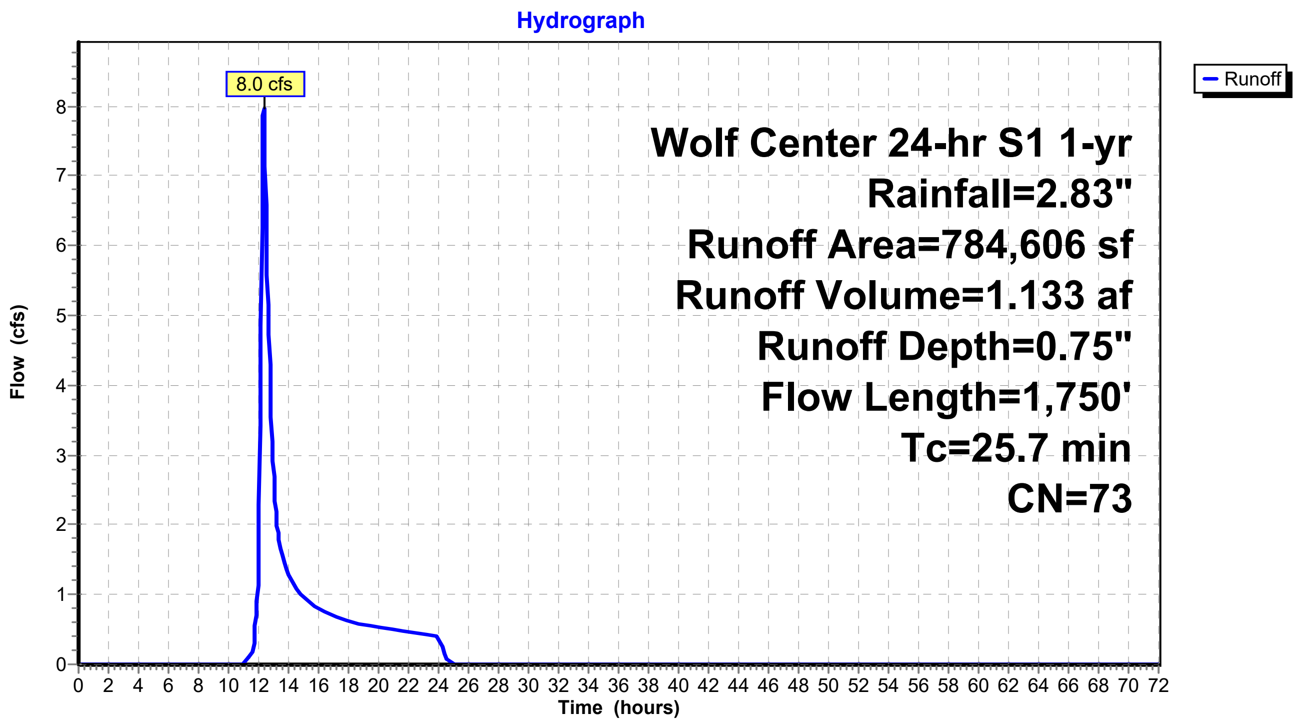
Runoff = 8.0 cfs @ 12.34 hrs, Volume= 1.133 af, Depth= 0.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Wolf Center 24-hr S1 1-yr Rainfall=2.83"

	Area (sf)	CN	Description
*	36,175	98	Existing Pavement
*	8,130	98	Existing Buildings
	10,353	61	>75% Grass cover, Good, HSG B
	13,090	74	>75% Grass cover, Good, HSG C
	8,325	80	>75% Grass cover, Good, HSG D
	1,182	89	Gravel roads, HSG C
	8,804	87	Dirt roads, HSG C
	26,408	55	Woods, Good, HSG B
	507,257	70	Woods, Good, HSG C
	164,882	77	Woods, Good, HSG D
	784,606	73	Weighted Average
	740,301		94.35% Pervious Area
	44,305		5.65% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	100	0.0900	0.15		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.40"
6.8	860	0.1800	2.12		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.1	20	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
7.4	770	0.1200	1.73		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
25.7	1,750	Total			

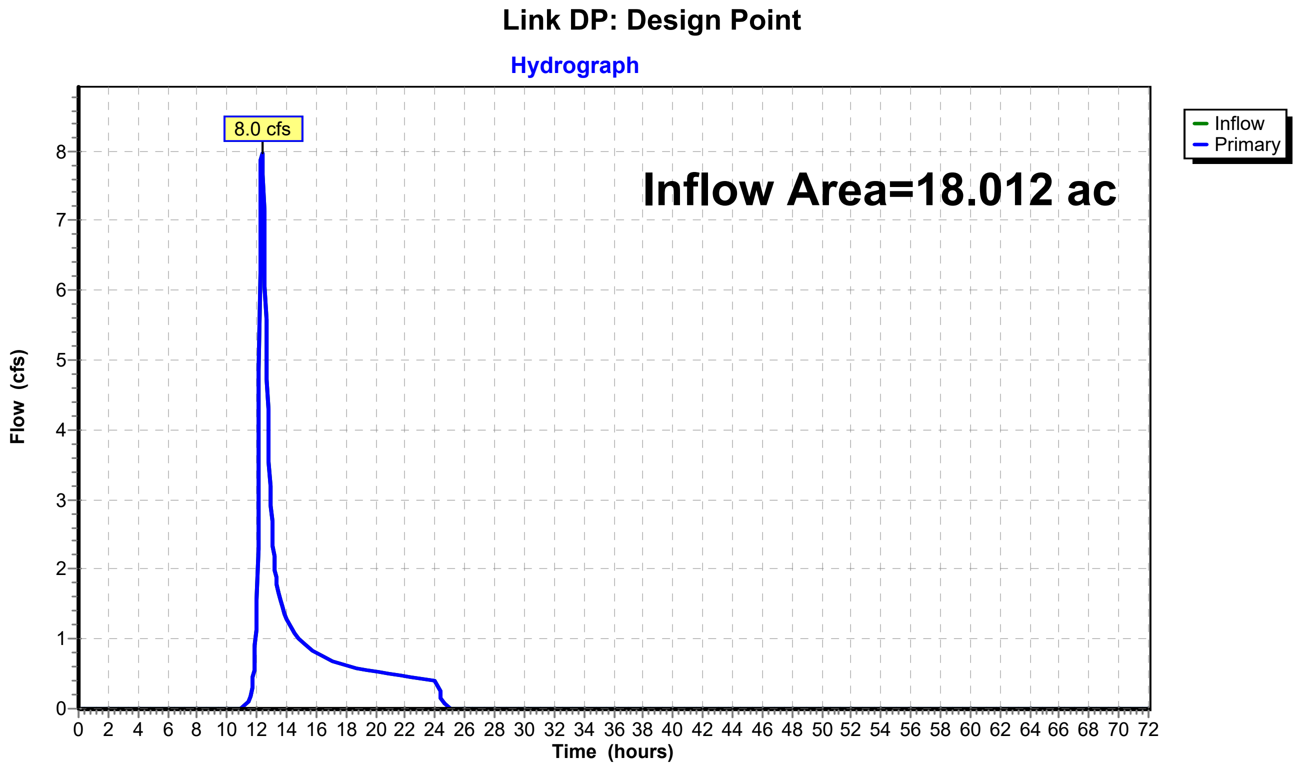
Subcatchment 1.0S: 1.0S



Summary for Link DP: Design Point

Inflow Area =	18.012 ac,	5.65% Impervious,	Inflow Depth = 0.75"	for 1-yr event	
Inflow =	8.0 cfs @	12.34 hrs,	Volume=	1.133 af	
Primary =	8.0 cfs @	12.34 hrs,	Volume=	1.133 af,	Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs



Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1.0S: 1.0S Runoff Area=784,606 sf 5.65% Impervious Runoff Depth=2.34"
Flow Length=1,750' Tc=25.7 min CN=73 Runoff=26.4 cfs 3.517 af

Link DP: Design Point Inflow=26.4 cfs 3.517 af
Primary=26.4 cfs 3.517 af

Summary for Subcatchment 1.0S: 1.0S

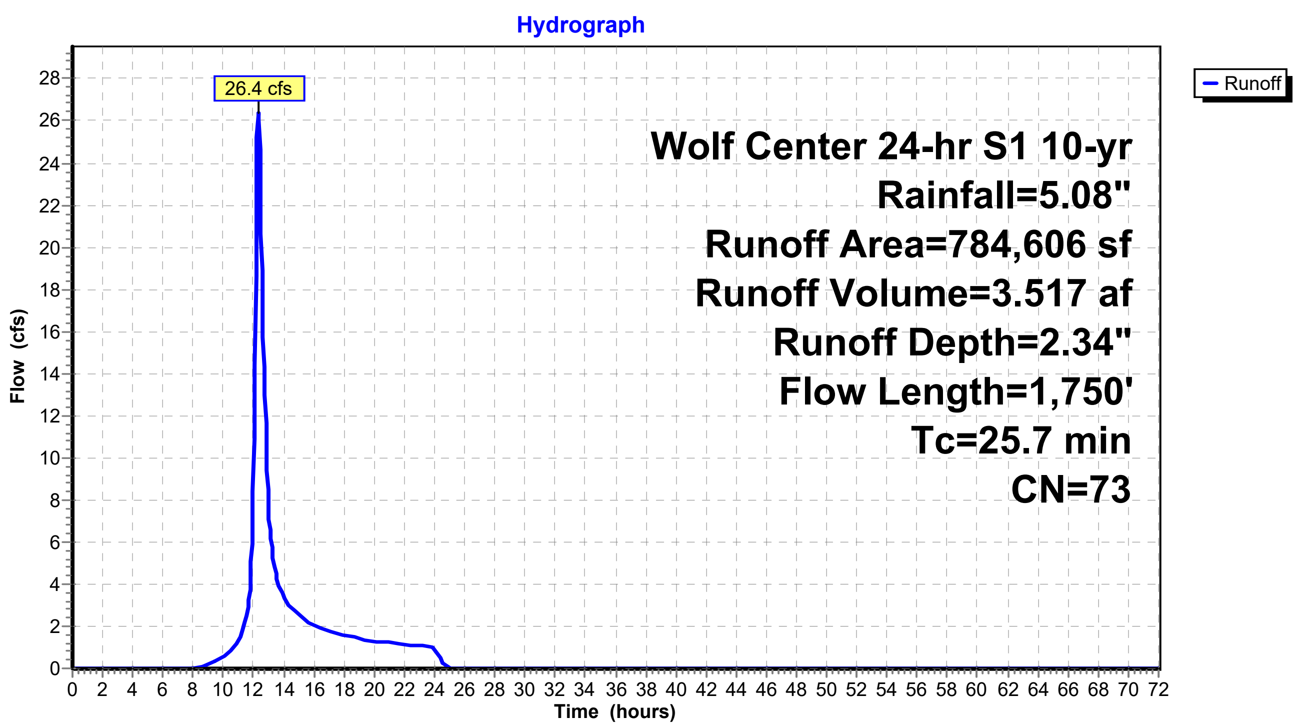
Runoff = 26.4 cfs @ 12.31 hrs, Volume= 3.517 af, Depth= 2.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Wolf Center 24-hr S1 10-yr Rainfall=5.08"

	Area (sf)	CN	Description
*	36,175	98	Existing Pavement
*	8,130	98	Existing Buildings
	10,353	61	>75% Grass cover, Good, HSG B
	13,090	74	>75% Grass cover, Good, HSG C
	8,325	80	>75% Grass cover, Good, HSG D
	1,182	89	Gravel roads, HSG C
	8,804	87	Dirt roads, HSG C
	26,408	55	Woods, Good, HSG B
	507,257	70	Woods, Good, HSG C
	164,882	77	Woods, Good, HSG D
	784,606	73	Weighted Average
	740,301		94.35% Pervious Area
	44,305		5.65% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	100	0.0900	0.15		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.40"
6.8	860	0.1800	2.12		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.1	20	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
7.4	770	0.1200	1.73		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
25.7	1,750	Total			

Subcatchment 1.0S: 1.0S

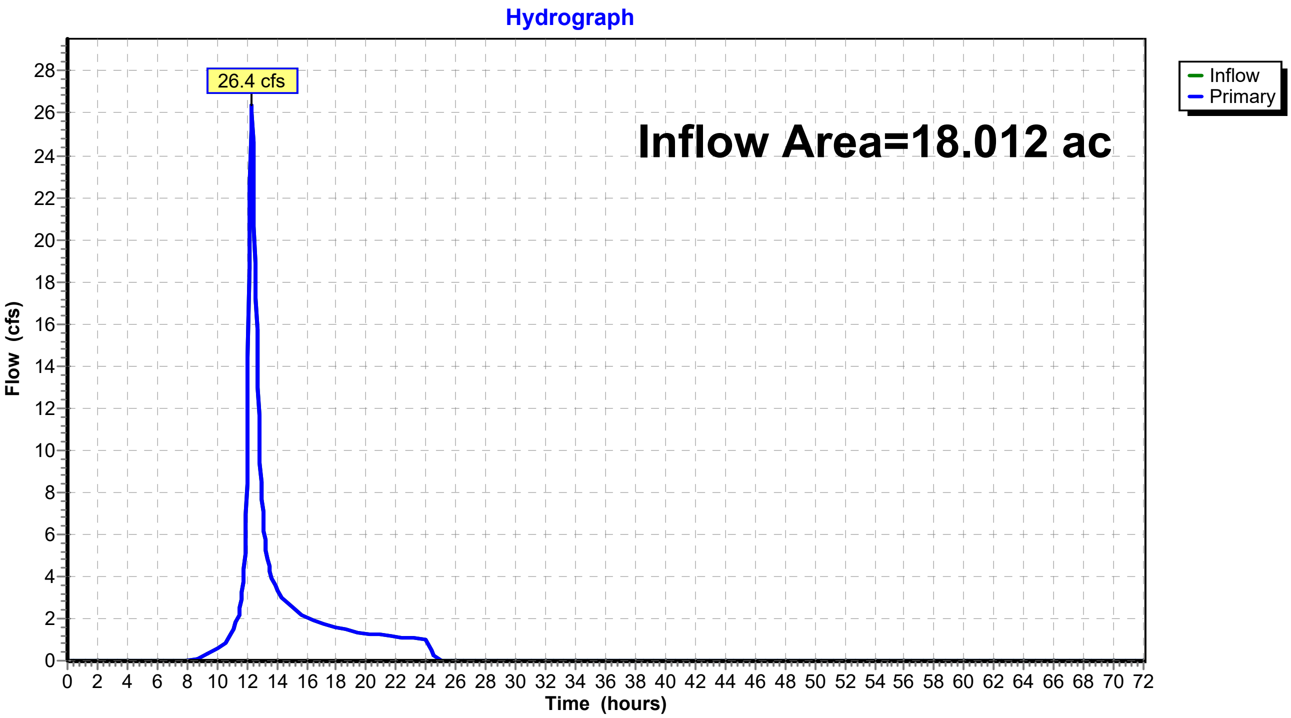


Summary for Link DP: Design Point

Inflow Area =	18.012 ac, 5.65% Impervious, Inflow Depth = 2.34"	for 10-yr event
Inflow =	26.4 cfs @ 12.31 hrs, Volume=	3.517 af
Primary =	26.4 cfs @ 12.31 hrs, Volume=	3.517 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link DP: Design Point



Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1.0S: 1.0S Runoff Area=784,606 sf 5.65% Impervious Runoff Depth=5.74"
Flow Length=1,750' Tc=25.7 min CN=73 Runoff=61.0 cfs 8.618 af

Link DP: Design Point Inflow=61.0 cfs 8.618 af
Primary=61.0 cfs 8.618 af

Summary for Subcatchment 1.0S: 1.0S

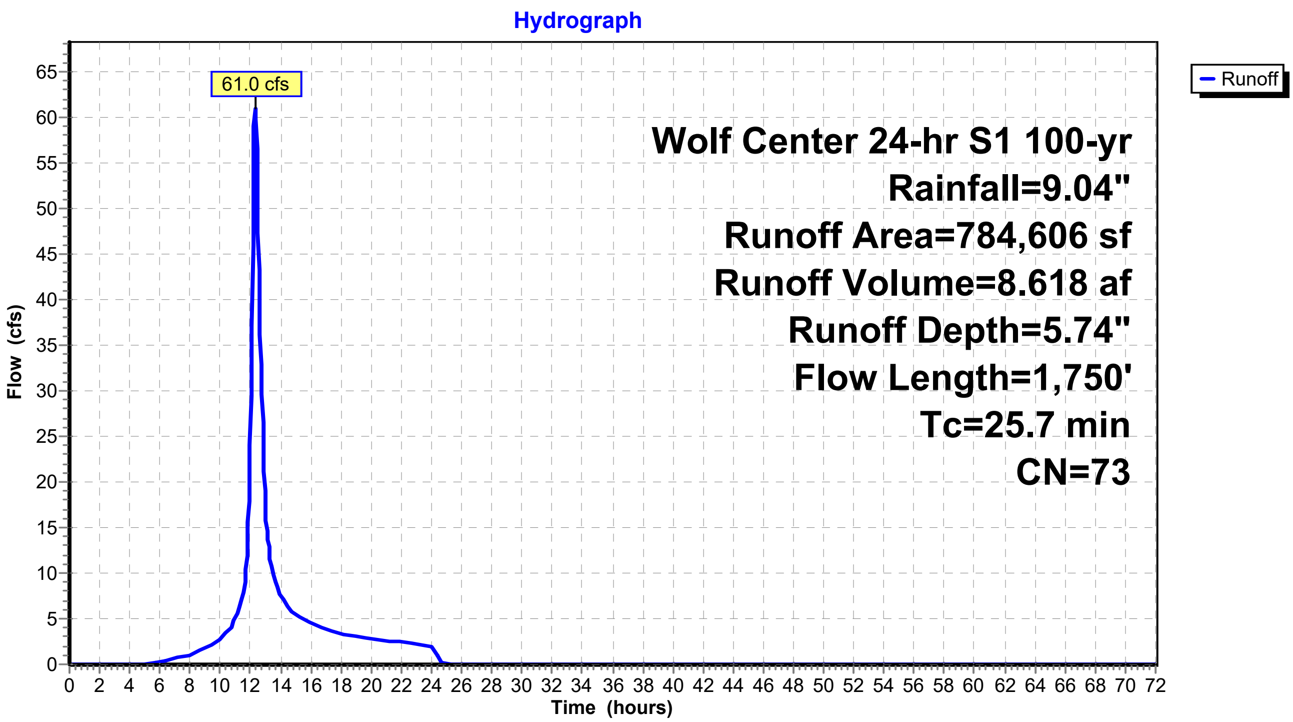
Runoff = 61.0 cfs @ 12.31 hrs, Volume= 8.618 af, Depth= 5.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Wolf Center 24-hr S1 100-yr Rainfall=9.04"

	Area (sf)	CN	Description
*	36,175	98	Existing Pavement
*	8,130	98	Existing Buildings
	10,353	61	>75% Grass cover, Good, HSG B
	13,090	74	>75% Grass cover, Good, HSG C
	8,325	80	>75% Grass cover, Good, HSG D
	1,182	89	Gravel roads, HSG C
	8,804	87	Dirt roads, HSG C
	26,408	55	Woods, Good, HSG B
	507,257	70	Woods, Good, HSG C
	164,882	77	Woods, Good, HSG D
	784,606	73	Weighted Average
	740,301		94.35% Pervious Area
	44,305		5.65% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	100	0.0900	0.15		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.40"
6.8	860	0.1800	2.12		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.1	20	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
7.4	770	0.1200	1.73		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
25.7	1,750	Total			

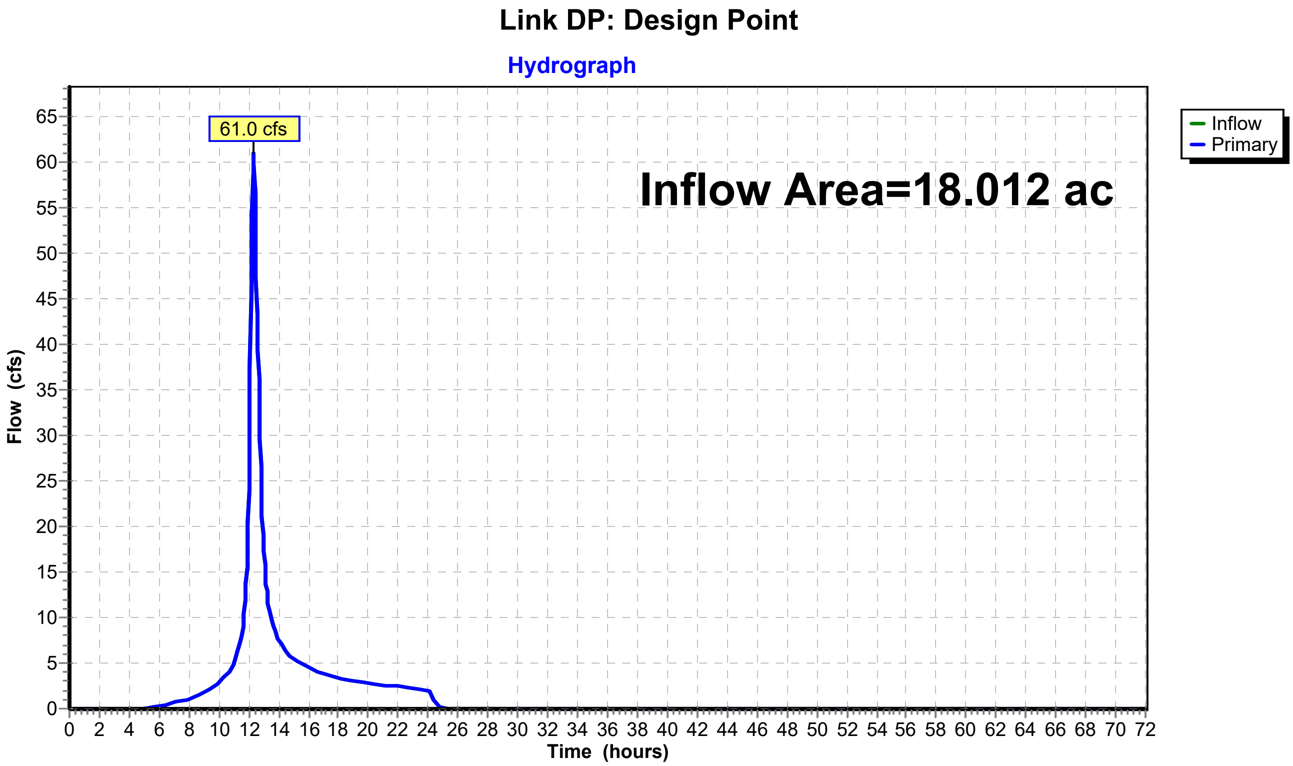
Subcatchment 1.0S: 1.0S



Summary for Link DP: Design Point

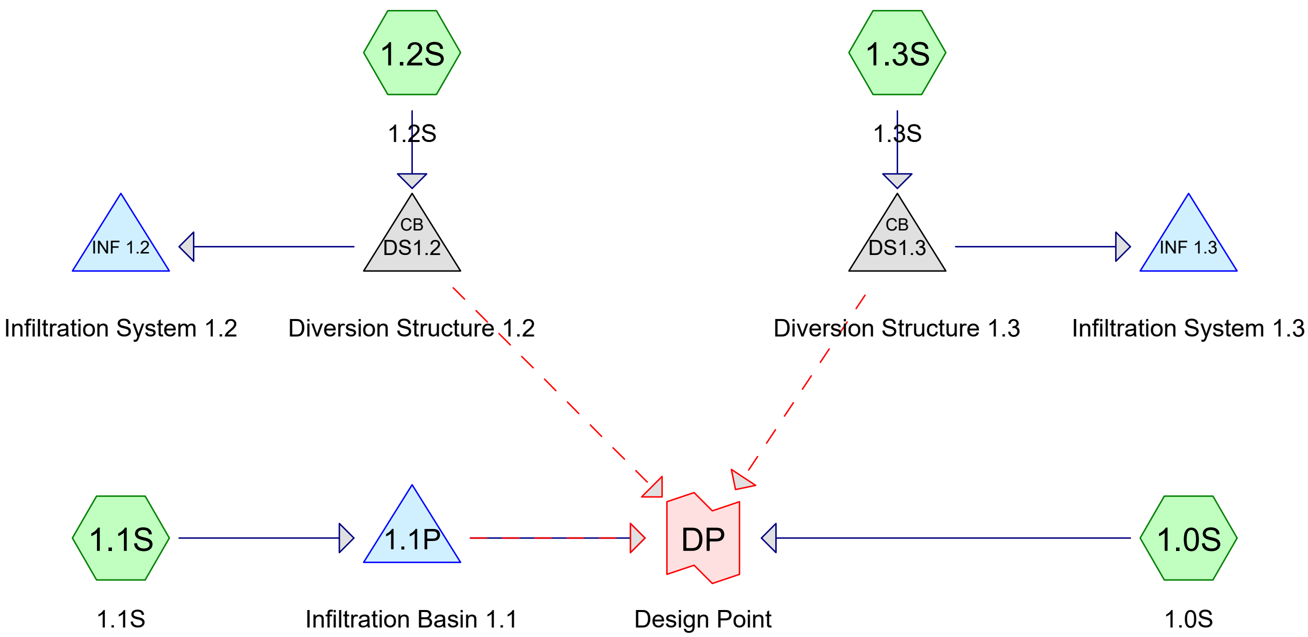
Inflow Area = 18.012 ac, 5.65% Impervious, Inflow Depth = 5.74" for 100-yr event
Inflow = 61.0 cfs @ 12.31 hrs, Volume= 8.618 af
Primary = 61.0 cfs @ 12.31 hrs, Volume= 8.618 af, Atten= 0%, Lag= 0.0 min

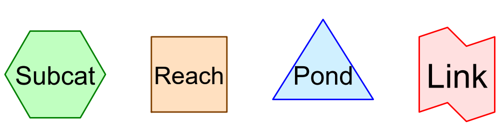
Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs



Appendix C:

Post Development Peak Flow Analysis –
(HydroCAD Output for 1, 10 & 100-year Storm Events)





Routing Diagram for Wolf Center - Post-4-20- 2023
Prepared by Bibbo Associates, llp., Printed 10/20/2023
HydroCAD® 10.00-24 s/n 02226 © 2018 HydroCAD Software Solutions LLC

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1.0S: 1.0S Runoff Area=705,538 sf 4.54% Impervious Runoff Depth=0.75"
Flow Length=1,585' Tc=23.5 min CN=73 Runoff=7.5 cfs 1.019 af

Subcatchment 1.1S: 1.1S Runoff Area=31,450 sf 42.00% Impervious Runoff Depth=1.25"
Tc=6.0 min CN=82 Runoff=1.1 cfs 0.075 af

Subcatchment 1.2S: 1.2S Runoff Area=45,619 sf 69.42% Impervious Runoff Depth=1.91"
Tc=6.0 min CN=91 Runoff=2.5 cfs 0.167 af

Subcatchment 1.3S: 1.3S Runoff Area=2,000 sf 100.00% Impervious Runoff Depth=2.60"
Tc=6.0 min CN=98 Runoff=0.1 cfs 0.010 af

Pond 1.1P: Infiltration Basin 1.1 Peak Elev=452.60' Storage=633 cf Inflow=1.1 cfs 0.075 af
Discarded=0.3 cfs 0.075 af Primary=0.0 cfs 0.000 af Secondary=0.0 cfs 0.000 af Outflow=0.3 cfs 0.075 af

Pond DS1.2: Diversion Structure 1.2 Peak Elev=469.20' Inflow=2.5 cfs 0.167 af
Primary=2.5 cfs 0.167 af Secondary=0.0 cfs 0.000 af Outflow=2.5 cfs 0.167 af

Pond DS1.3: Diversion Structure 1.3 Peak Elev=593.39' Inflow=0.1 cfs 0.010 af
Primary=0.1 cfs 0.010 af Secondary=0.0 cfs 0.000 af Outflow=0.1 cfs 0.010 af

Pond INF 1.2: Infiltration System 1.2 Peak Elev=466.22' Storage=0.006 af Inflow=2.5 cfs 0.167 af
Outflow=1.8 cfs 0.167 af

Pond INF 1.3: Infiltration System 1.3 Peak Elev=593.20' Storage=0.001 af Inflow=0.1 cfs 0.010 af
Outflow=0.1 cfs 0.010 af

Link DP: Design Point Inflow=7.5 cfs 1.019 af
Primary=7.5 cfs 1.019 af

Summary for Subcatchment 1.0S: 1.0S

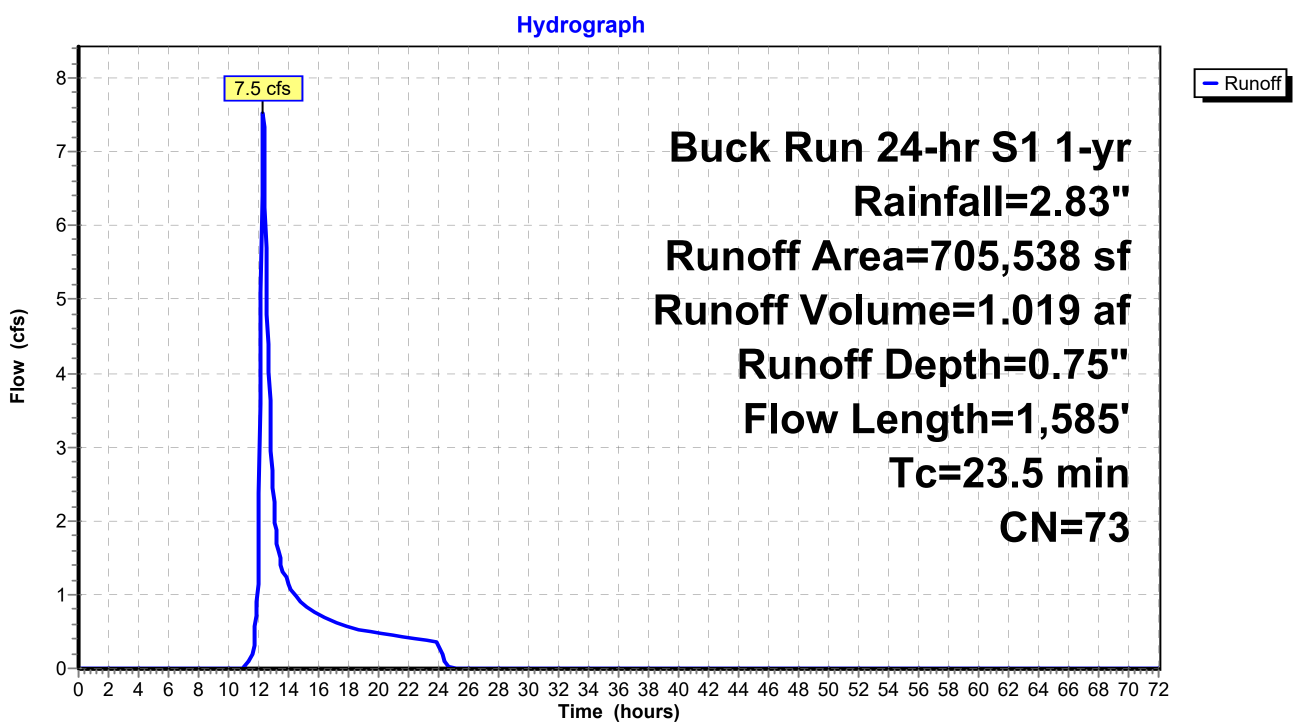
Runoff = 7.5 cfs @ 12.31 hrs, Volume= 1.019 af, Depth= 0.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Buck Run 24-hr S1 1-yr Rainfall=2.83"

	Area (sf)	CN	Description
*	18,932	98	Existing Pavement
*	6,135	98	Existing Buildings
	5,607	87	Dirt roads, HSG C
*	6,970	98	Proposed Pavement
*	1,405	61	Existing>75% Grass cover, Good, HSG B
*	3,457	80	Proposed >75% Grass cover, Good, HSG D
*	3,083	61	Proposed >75% Grass cover, Good, HSG B
*	2,900	74	Existing >75% Grass cover, Good, HSG C
*	17,714	74	Proposed >75% Grass cover, Good, HSG C
	13,520	89	Gravel roads, HSG C
	22,115	55	Woods, Good, HSG B
	417,935	70	Woods, Good, HSG C
	150,505	77	Woods, Good, HSG D
	35,260	71	Meadow, non-grazed, HSG C
	705,538	73	Weighted Average
	673,501		95.46% Pervious Area
	32,037		4.54% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	100	0.0900	0.15		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.40"
12.1	1,485	0.1670	2.04		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
23.5	1,585	Total			

Subcatchment 1.0S: 1.0S



Summary for Subcatchment 1.1S: 1.1S

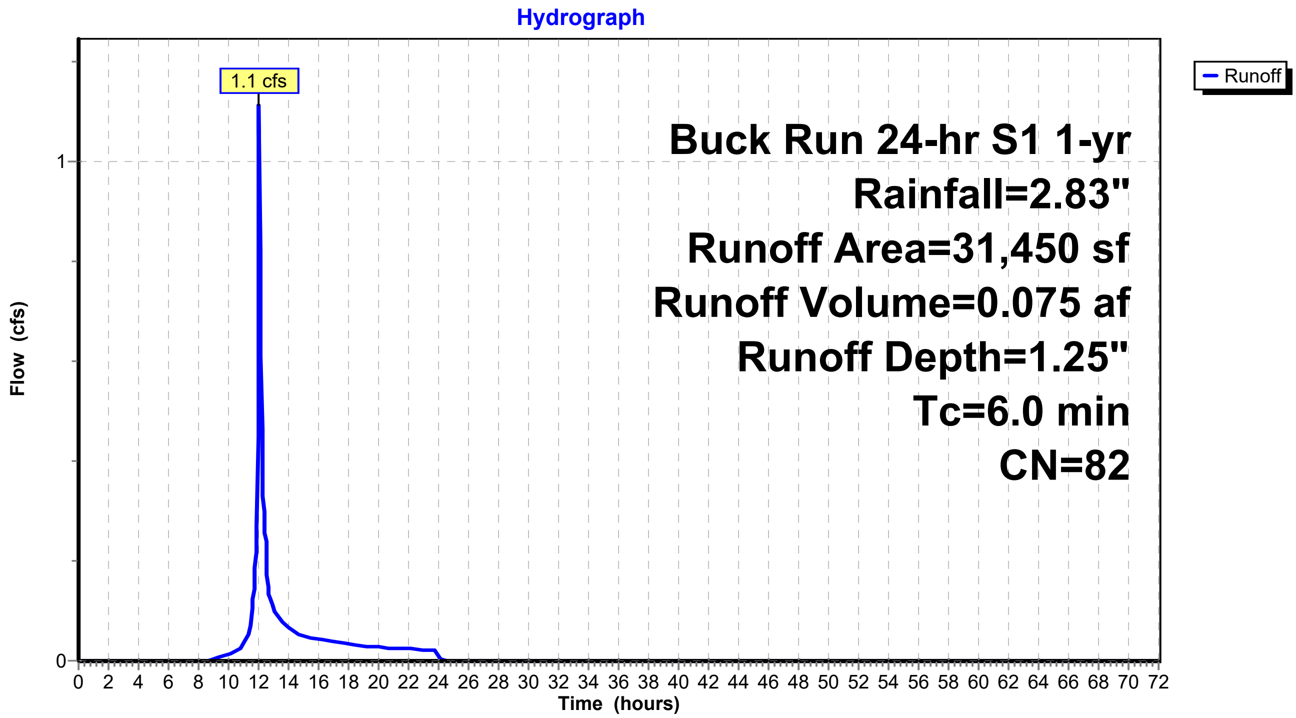
Runoff = 1.1 cfs @ 12.04 hrs, Volume= 0.075 af, Depth= 1.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Buck Run 24-hr S1 1-yr Rainfall=2.83"

	Area (sf)	CN	Description
*	12,870	98	Proposed Pavement
*	340	98	Proposed Sidewalk
	5,235	61	>75% Grass cover, Good, HSG B
	13,005	74	>75% Grass cover, Good, HSG C
	31,450	82	Weighted Average
	18,240		58.00% Pervious Area
	13,210		42.00% Impervious Area

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

Subcatchment 1.1S: 1.1S



Summary for Subcatchment 1.2S: 1.2S

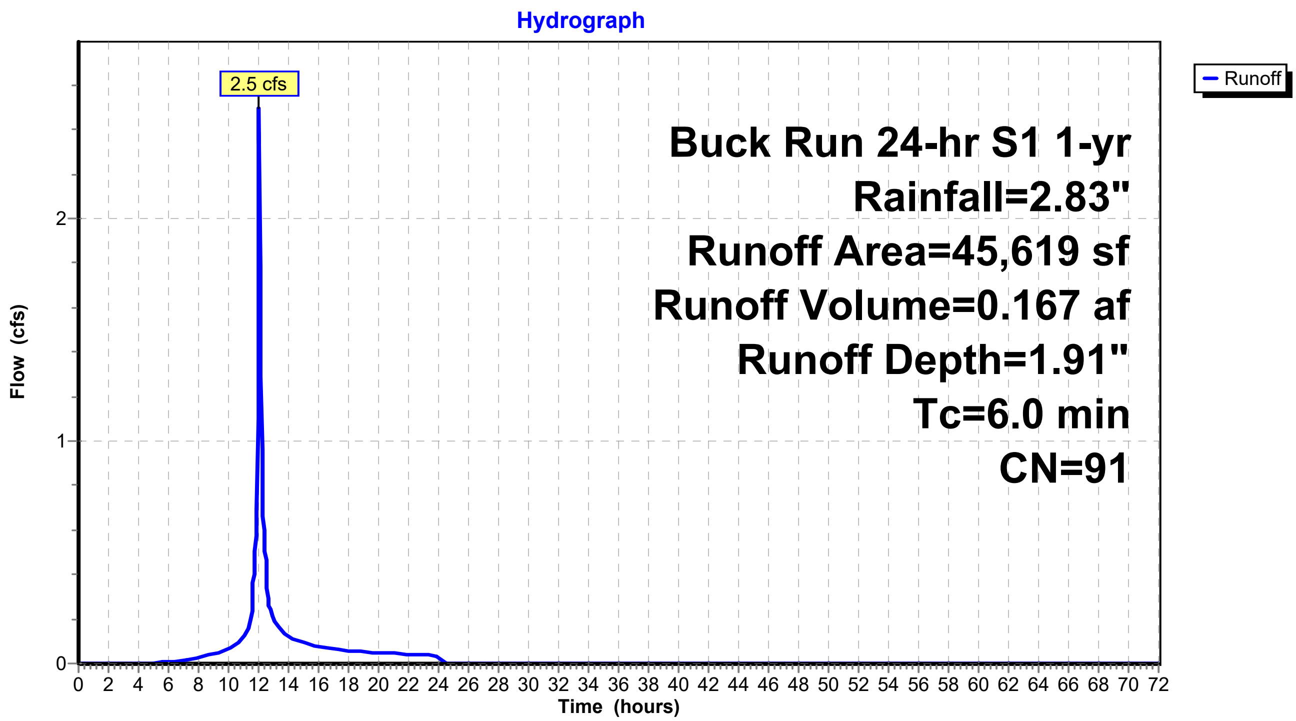
Runoff = 2.5 cfs @ 12.04 hrs, Volume= 0.167 af, Depth= 1.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Buck Run 24-hr S1 1-yr Rainfall=2.83"

	Area (sf)	CN	Description
*	24,985	98	Proposed Pavement & Walkway
*	4,815	98	Proposed Building
	10,849	74	>75% Grass cover, Good, HSG C
*	1,870	98	Proposed Courtyard Imp
	3,100	74	>75% Grass cover, Good, HSG C
	45,619	91	Weighted Average
	13,949		30.58% Pervious Area
	31,670		69.42% Impervious Area

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

Subcatchment 1.2S: 1.2S



Summary for Subcatchment 1.3S: 1.3S

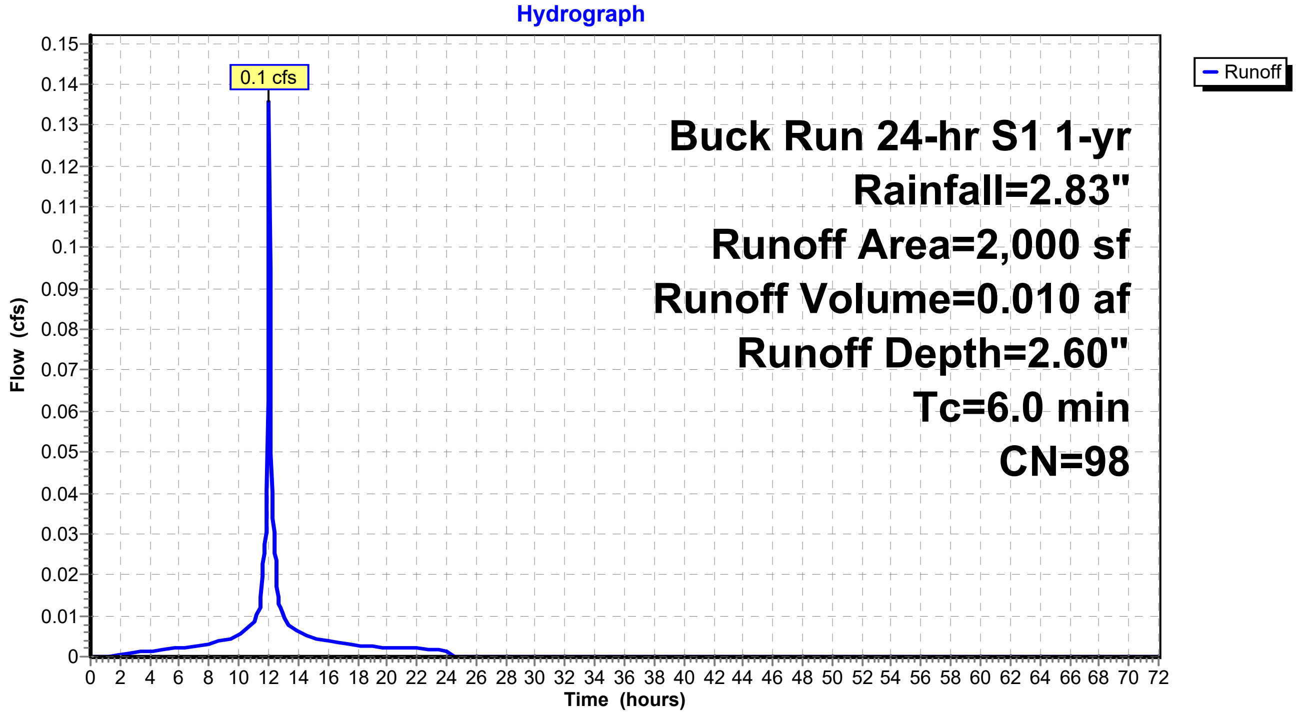
Runoff = 0.1 cfs @ 12.04 hrs, Volume= 0.010 af, Depth= 2.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Buck Run 24-hr S1 1-yr Rainfall=2.83"

	Area (sf)	CN	Description
*	2,000	98	Proposed Pods and Facilities
	2,000		100.00% Impervious Area

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

Subcatchment 1.3S: 1.3S



Summary for Pond 1.1P: Infiltration Basin 1.1

Inflow Area = 0.722 ac, 42.00% Impervious, Inflow Depth = 1.25" for 1-yr event
Inflow = 1.1 cfs @ 12.04 hrs, Volume= 0.075 af
Outflow = 0.3 cfs @ 12.30 hrs, Volume= 0.075 af, Atten= 70%, Lag= 15.5 min
Discarded = 0.3 cfs @ 12.30 hrs, Volume= 0.075 af
Primary = 0.0 cfs @ 0.00 hrs, Volume= 0.000 af
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 452.60' @ 12.30 hrs Surf.Area= 718 sf Storage= 633 cf

Plug-Flow detention time= 14.9 min calculated for 0.075 af (100% of inflow)
Center-of-Mass det. time= 14.9 min (879.1 - 864.2)

Volume	Invert	Avail.Storage	Storage Description
#1	451.00'	9,077 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
451.00	125	0	0
452.00	447	286	286
454.00	1,356	1,803	2,089
456.00	2,634	3,990	6,079
457.00	3,362	2,998	9,077

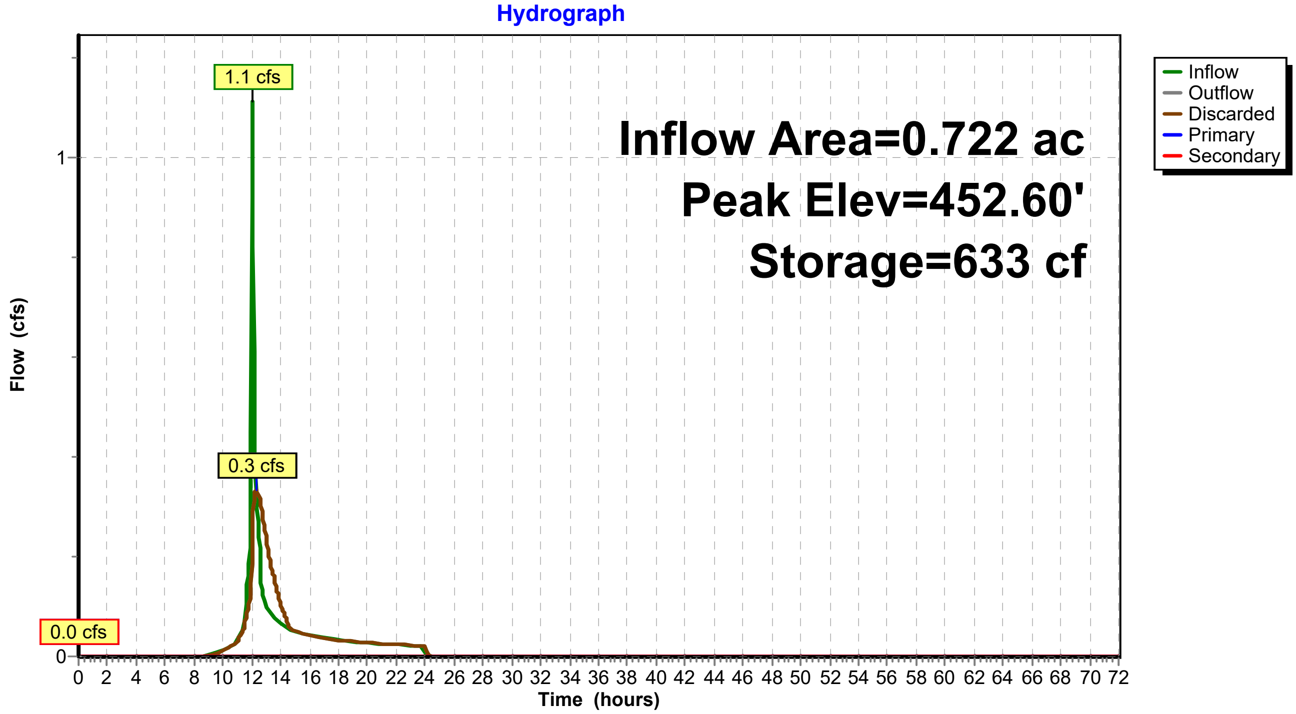
Device	Routing	Invert	Outlet Devices
#1	Primary	450.30'	**12.0" Round Culvert** L= 58.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 450.30' / 449.50' S= 0.0138 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	454.75'	**4.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	455.50'	**30.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Discarded	451.00'	**20.000 in/hr Exfiltration over Surface area** Phase-In= 0.10'
#5	Secondary	456.00'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Discarded OutFlow Max=0.3 cfs @ 12.30 hrs HW=452.59' (Free Discharge)
└─**4=Exfiltration** (Exfiltration Controls 0.3 cfs)

Primary OutFlow Max=0.0 cfs @ 0.00 hrs HW=451.00' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.0 cfs of 1.7 cfs potential flow)
  ├─**2=Orifice/Grate** (Controls 0.0 cfs)
  └─**3=Orifice/Grate** (Controls 0.0 cfs)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=451.00' TW=0.00' (Dynamic Tailwater)
└─**5=Broad-Crested Rectangular Weir**(Controls 0.0 cfs)

Pond 1.1P: Infiltration Basin 1.1



Stage-Area-Storage for Pond 1.1P: Infiltration Basin 1.1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
451.00	125	0
451.10	157	14
451.20	189	31
451.30	222	52
451.40	254	76
451.50	286	103
451.60	318	133
451.70	350	166
451.80	383	203
451.90	415	243
452.00	447	286
452.10	492	333
452.20	538	384
452.30	583	441
452.40	629	501
452.50	674	566
452.60	720	636
452.70	765	710
452.80	811	789
452.90	856	872
453.00	902	960
453.10	947	1,053
453.20	992	1,150
453.30	1,038	1,251
453.40	1,083	1,357
453.50	1,129	1,468
453.60	1,174	1,583
453.70	1,220	1,703
453.80	1,265	1,827
453.90	1,311	1,956
454.00	1,356	2,089
454.10	1,420	2,228
454.20	1,484	2,373
454.30	1,548	2,525
454.40	1,612	2,683
454.50	1,676	2,847
454.60	1,739	3,018
454.70	1,803	3,195
454.80	1,867	3,378
454.90	1,931	3,568
455.00	1,995	3,765
455.10	2,059	3,967
455.20	2,123	4,176
455.30	2,187	4,392
455.40	2,251	4,614
455.50	2,315	4,842
455.60	2,378	5,077
455.70	2,442	5,318
455.80	2,506	5,565
455.90	2,570	5,819
456.00	2,634	6,079
456.10	2,707	6,346
456.20	2,780	6,620
456.30	2,852	6,902
456.40	2,925	7,191
456.50	2,998	7,487
456.60	3,071	7,790
456.70	3,144	8,101
456.80	3,216	8,419
456.90	3,289	8,744
457.00	**3,362**	**9,077**

Summary for Pond DS1.2: Diversion Structure 1.2

Inflow Area =	1.047 ac, 69.42% Impervious, Inflow Depth = 1.91" for 1-yr event			
Inflow =	2.5 cfs @	12.04 hrs, Volume=	0.167 af	
Outflow =	2.5 cfs @	12.04 hrs, Volume=	0.167 af,	Atten= 0%, Lag= 0.0 min
Primary =	2.5 cfs @	12.04 hrs, Volume=	0.167 af	
Secondary =	0.0 cfs @	0.00 hrs, Volume=	0.000 af	

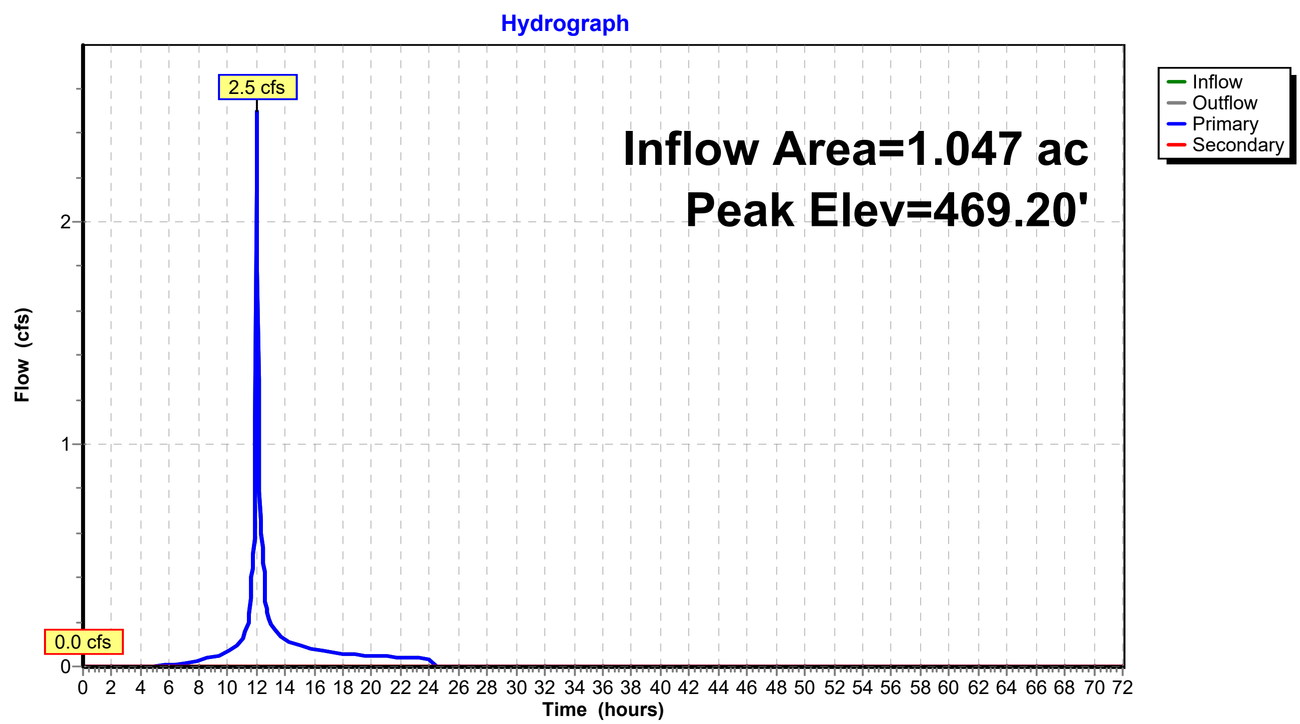
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 469.20' @ 12.04 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	466.67'	**8.0" Round Culvert** L= 6.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 466.67' / 466.60' S= 0.0117 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 3	469.35'	**2.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#3	Secondary	462.28'	**8.0" Round Culvert** L= 103.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 462.28' / 448.16' S= 0.1371 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=2.4 cfs @ 12.04 hrs HW=469.09' TW=466.16' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 2.4 cfs @ 6.95 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=462.28' TW=0.00' (Dynamic Tailwater)
└─**3=Culvert** (Controls 0.0 cfs)
  └─**2=Broad-Crested Rectangular Weir**(Controls 0.0 cfs)

Pond DS1.2: Diversion Structure 1.2



Stage-Area-Storage for Pond DS1.2: Diversion Structure 1.2

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
462.28	**0**	464.92	0	467.56	0
462.32	0	464.96	0	467.60	0
462.36	0	465.00	0	467.64	0
462.40	0	465.04	0	467.68	0
462.44	0	465.08	0	467.72	0
462.48	0	465.12	0	467.76	0
462.52	0	465.16	0	467.80	0
462.56	0	465.20	0	467.84	0
462.60	0	465.24	0	467.88	0
462.64	0	465.28	0	467.92	0
462.68	0	465.32	0	467.96	0
462.72	0	465.36	0	468.00	0
462.76	0	465.40	0	468.04	0
462.80	0	465.44	0	468.08	0
462.84	0	465.48	0	468.12	0
462.88	0	465.52	0	468.16	0
462.92	0	465.56	0	468.20	0
462.96	0	465.60	0	468.24	0
463.00	0	465.64	0	468.28	0
463.04	0	465.68	0	468.32	0
463.08	0	465.72	0	468.36	0
463.12	0	465.76	0	468.40	0
463.16	0	465.80	0	468.44	0
463.20	0	465.84	0	468.48	0
463.24	0	465.88	0	468.52	0
463.28	0	465.92	0	468.56	0
463.32	0	465.96	0	468.60	0
463.36	0	466.00	0	468.64	0
463.40	0	466.04	0	468.68	0
463.44	0	466.08	0	468.72	0
463.48	0	466.12	0	468.76	0
463.52	0	466.16	0	468.80	0
463.56	0	466.20	0	468.84	0
463.60	0	466.24	0	468.88	0
463.64	0	466.28	0	468.92	0
463.68	0	466.32	0	468.96	0
463.72	0	466.36	0	469.00	0
463.76	0	466.40	0	469.04	0
463.80	0	466.44	0	469.08	0
463.84	0	466.48	0	469.12	0
463.88	0	466.52	0	469.16	0
463.92	0	466.56	0	469.20	0
463.96	0	466.60	0	469.24	0
464.00	0	466.64	0	469.28	0
464.04	0	466.68	0	469.32	0
464.08	0	466.72	0		
464.12	0	466.76	0		
464.16	0	466.80	0		
464.20	0	466.84	0		
464.24	0	466.88	0		
464.28	0	466.92	0		
464.32	0	466.96	0		
464.36	0	467.00	0		
464.40	0	467.04	0		
464.44	0	467.08	0		
464.48	0	467.12	0		
464.52	0	467.16	0		
464.56	0	467.20	0		
464.60	0	467.24	0		
464.64	0	467.28	0		
464.68	0	467.32	0		
464.72	0	467.36	0		
464.76	0	467.40	0		
464.80	0	467.44	0		
464.84	0	467.48	0		
464.88	0	467.52	0		

Summary for Pond DS1.3: Diversion Structure 1.3

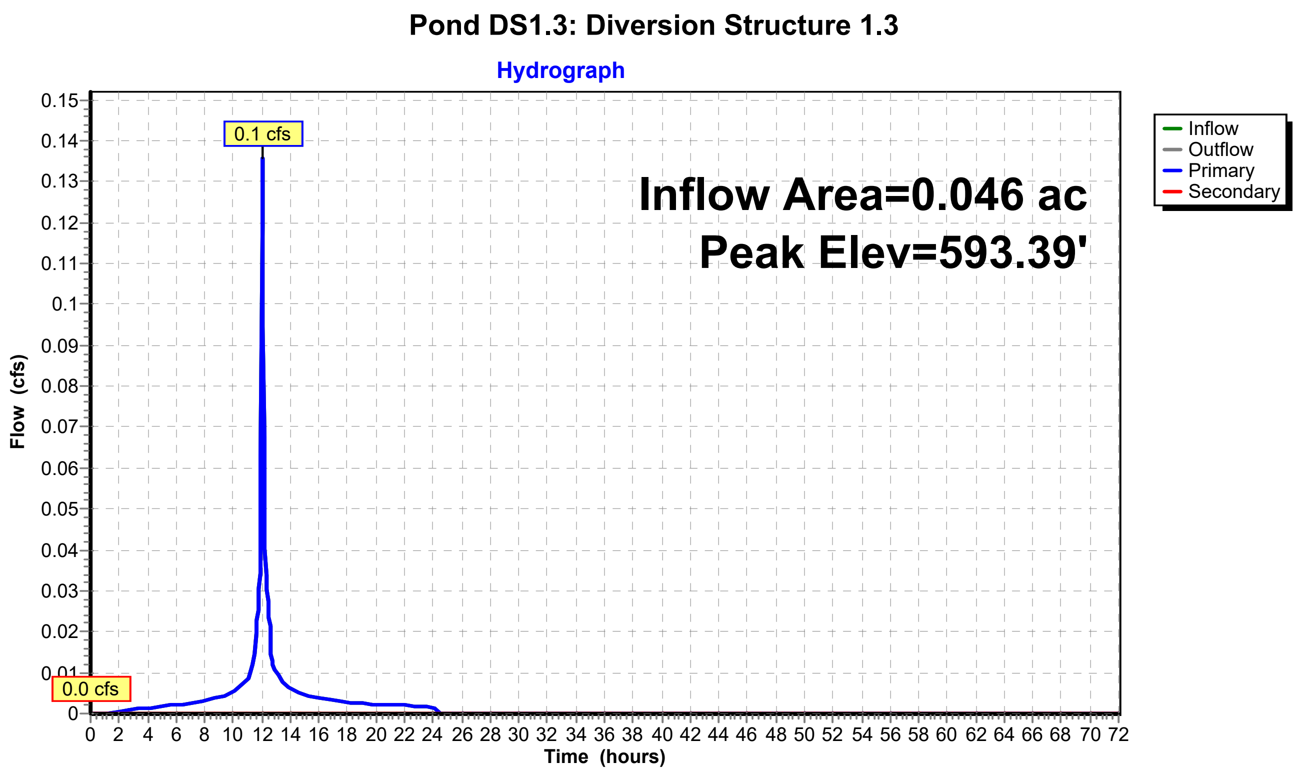
Inflow Area =	0.046 ac,100.00% Impervious, Inflow Depth = 2.60"	for 1-yr event
Inflow =	0.1 cfs @ 12.04 hrs, Volume=	0.010 af
Outflow =	0.1 cfs @ 12.04 hrs, Volume=	0.010 af, Atten= 0%, Lag= 0.0 min
Primary =	0.1 cfs @ 12.04 hrs, Volume=	0.010 af
Secondary =	0.0 cfs @ 0.00 hrs, Volume=	0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 593.39' @ 12.04 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	593.10'	**4.0" Round Culvert** L= 6.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 593.10' / 593.00' S= 0.0167 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.09 sf
#2	Secondary	595.20'	**8.0" Round Culvert** L= 154.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 595.20' / 590.00' S= 0.0338 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=0.1 cfs @ 12.04 hrs HW=593.38' TW=593.14' (Dynamic Tailwater)
└**1=Culvert** (Barrel Controls 0.1 cfs @ 2.24 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=593.10' TW=0.00' (Dynamic Tailwater)
└**2=Culvert** (Controls 0.0 cfs)



Stage-Area-Storage for Pond DS1.3: Diversion Structure 1.3

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
593.10	**0**	594.42	0	595.74	0
593.12	0	594.44	0	595.76	0
593.14	0	594.46	0	595.78	0
593.16	0	594.48	0	595.80	0
593.18	0	594.50	0	595.82	0
593.20	0	594.52	0	595.84	0
593.22	0	594.54	0	595.86	0
593.24	0	594.56	0		
593.26	0	594.58	0		
593.28	0	594.60	0		
593.30	0	594.62	0		
593.32	0	594.64	0		
593.34	0	594.66	0		
593.36	0	594.68	0		
593.38	0	594.70	0		
593.40	0	594.72	0		
593.42	0	594.74	0		
593.44	0	594.76	0		
593.46	0	594.78	0		
593.48	0	594.80	0		
593.50	0	594.82	0		
593.52	0	594.84	0		
593.54	0	594.86	0		
593.56	0	594.88	0		
593.58	0	594.90	0		
593.60	0	594.92	0		
593.62	0	594.94	0		
593.64	0	594.96	0		
593.66	0	594.98	0		
593.68	0	595.00	0		
593.70	0	595.02	0		
593.72	0	595.04	0		
593.74	0	595.06	0		
593.76	0	595.08	0		
593.78	0	595.10	0		
593.80	0	595.12	0		
593.82	0	595.14	0		
593.84	0	595.16	0		
593.86	0	595.18	0		
593.88	0	595.20	0		
593.90	0	595.22	0		
593.92	0	595.24	0		
593.94	0	595.26	0		
593.96	0	595.28	0		
593.98	0	595.30	0		
594.00	0	595.32	0		
594.02	0	595.34	0		
594.04	0	595.36	0		
594.06	0	595.38	0		
594.08	0	595.40	0		
594.10	0	595.42	0		
594.12	0	595.44	0		
594.14	0	595.46	0		
594.16	0	595.48	0		
594.18	0	595.50	0		
594.20	0	595.52	0		
594.22	0	595.54	0		
594.24	0	595.56	0		
594.26	0	595.58	0		
594.28	0	595.60	0		
594.30	0	595.62	0		
594.32	0	595.64	0		
594.34	0	595.66	0		
594.36	0	595.68	0		
594.38	0	595.70	0		
594.40	0	595.72	0		

Summary for Pond INF 1.2: Infiltration System 1.2

Inflow Area = 1.047 ac, 69.42% Impervious, Inflow Depth = 1.91" for 1-yr event
Inflow = 2.5 cfs @ 12.04 hrs, Volume= 0.167 af
Outflow = 1.8 cfs @ 12.05 hrs, Volume= 0.167 af, Atten= 26%, Lag= 0.5 min
Discarded = 1.8 cfs @ 12.05 hrs, Volume= 0.167 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 466.22' @ 12.10 hrs Surf.Area= 0.076 ac Storage= 0.006 af

Plug-Flow detention time= 1.3 min calculated for 0.167 af (100% of inflow)
Center-of-Mass det. time= 1.3 min (821.9 - 820.6)

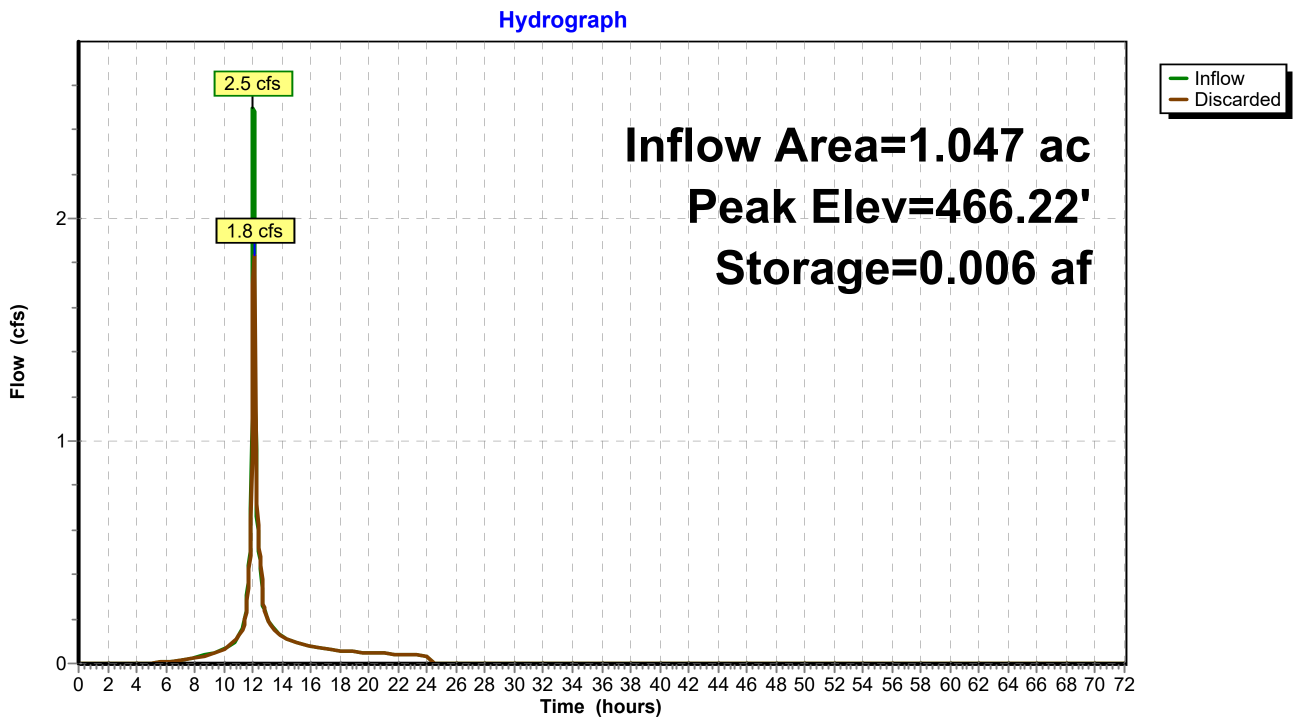
Volume	Invert	Avail.Storage	Storage Description
#1A	466.01'	0.064 af	**30.50'W x 108.50'L x 3.54'H Field A** 0.269 af Overall - 0.109 af Embedded = 0.160 af x 40.0% Voids
#2A	466.51'	0.109 af	**Cultec R-330XLHD** x 90 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 6 rows
		0.173 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	466.01'	**24.000 in/hr Exfiltration over Horizontal area** Phase-In= 0.10'

Discarded OutFlow Max=1.8 cfs @ 12.05 hrs HW=466.18' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 1.8 cfs)

Pond INF 1.2: Infiltration System 1.2



Stage-Area-Storage for Pond INF 1.2: Infiltration System 1.2

Elevation (feet)	Horizontal (acres)	Storage (acre-feet)
466.01	**0.076**	0.000
466.03	0.076	0.001
466.05	0.076	0.001
466.07	0.076	0.002
466.09	0.076	0.002
466.11	0.076	0.003
466.13	0.076	0.004
466.15	0.076	0.004
466.17	0.076	0.005
466.19	0.076	0.005
466.21	0.076	0.006
466.23	0.076	0.007
466.25	0.076	0.007
466.27	0.076	0.008
466.29	0.076	0.009
466.31	0.076	0.009
466.33	0.076	0.010
466.35	0.076	0.010
466.37	0.076	0.011
466.39	0.076	0.012
466.41	0.076	0.012
466.43	0.076	0.013
466.45	0.076	0.013
466.47	0.076	0.014
466.49	0.076	0.015
466.51	0.076	0.015
466.53	0.076	0.017
466.55	0.076	0.018
466.57	0.076	0.019
466.59	0.076	0.020
466.61	0.076	0.022
466.63	0.076	0.023
466.65	0.076	0.024
466.67	0.076	0.026
466.69	0.076	0.027
466.71	0.076	0.028
466.73	0.076	0.030
466.75	0.076	0.031
466.77	0.076	0.032
466.79	0.076	0.033
466.81	0.076	0.035
466.83	0.076	0.036
466.85	0.076	0.037
466.87	0.076	0.039
466.89	0.076	0.040
466.91	0.076	0.041
466.93	0.076	0.042
466.95	0.076	0.044
466.97	0.076	0.045
466.99	0.076	0.046
467.01	0.076	0.048
467.03	0.076	0.049
467.05	0.076	0.050
467.07	0.076	0.051
467.09	0.076	0.053
467.11	0.076	0.054
467.13	0.076	0.055
467.15	0.076	0.057
467.17	0.076	0.058
467.19	0.076	0.059
467.21	0.076	0.060
467.23	0.076	0.062
467.25	0.076	0.063
467.27	0.076	0.064
467.29	0.076	0.065
467.31	0.076	0.067
467.33	0.076	0.068
467.35	0.076	0.069
467.37	0.076	0.070
467.39	0.076	0.072
467.41	0.076	0.073
467.43	0.076	0.074
467.45	0.076	0.075
467.47	0.076	0.077
467.49	0.076	0.078
467.51	0.076	0.079
467.53	0.076	0.080
467.55	0.076	0.082
467.57	0.076	0.083
467.59	0.076	0.084
467.61	0.076	0.085
467.63	0.076	0.086
467.65	0.076	0.088
467.67	0.076	0.089
467.69	0.076	0.090
467.71	0.076	0.091
467.73	0.076	0.093
467.75	0.076	0.094
467.77	0.076	0.095
467.79	0.076	0.096
467.81	0.076	0.097
467.83	0.076	0.099
467.85	0.076	0.100
467.87	0.076	0.101
467.89	0.076	0.102
467.91	0.076	0.103
467.93	0.076	0.105
467.95	0.076	0.106
467.97	0.076	0.107
467.99	0.076	0.108
468.01	0.076	0.109
468.03	0.076	0.110
468.05	0.076	0.112
468.07	0.076	0.113
468.09	0.076	0.114
468.11	0.076	0.115
468.13	0.076	0.116
468.15	0.076	0.117
468.17	0.076	0.118
468.19	0.076	0.119
468.21	0.076	0.121
468.23	0.076	0.122
468.25	0.076	0.123
468.27	0.076	0.124
468.29	0.076	0.125
468.31	0.076	0.126
468.33	0.076	0.127
468.35	0.076	0.128
468.37	0.076	0.129
468.39	0.076	0.130
468.41	0.076	0.131
468.43	0.076	0.132
468.45	0.076	0.133
468.47	0.076	0.134
468.49	0.076	0.135
468.51	0.076	0.136
468.53	0.076	0.137
468.55	0.076	0.138
468.57	0.076	0.139
468.59	0.076	0.140
468.61	0.076	0.141
468.63	0.076	0.142
468.65	0.076	0.143
468.67	0.076	0.144
468.69	0.076	0.145
468.71	0.076	0.146
468.73	0.076	0.147
468.75	0.076	0.147
468.77	0.076	0.148
468.79	0.076	0.149
468.81	0.076	0.150
468.83	0.076	0.151
468.85	0.076	0.151
468.87	0.076	0.152
468.89	0.076	0.153
468.91	0.076	0.153
468.93	0.076	0.154
468.95	0.076	0.155
468.97	0.076	0.155
468.99	0.076	0.156
469.01	0.076	0.157
469.03	0.076	0.157
469.05	0.076	0.158
469.07	0.076	0.159
469.09	0.076	0.159
469.11	0.076	0.160
469.13	0.076	0.160
469.15	0.076	0.161
469.17	0.076	0.162
469.19	0.076	0.162
469.21	0.076	0.163
469.23	0.076	0.163
469.25	0.076	0.164
469.27	0.076	0.165
469.29	0.076	0.165
469.31	0.076	0.166
469.33	0.076	0.166
469.35	0.076	0.167
469.37	0.076	0.168
469.39	0.076	0.168
469.41	0.076	0.169
469.43	0.076	0.170
469.45	0.076	0.170
469.47	0.076	0.171
469.49	0.076	0.171
469.51	0.076	0.172
469.53	0.076	0.173
469.55	0.076	**0.173**

Summary for Pond INF 1.3: Infiltration System 1.3

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 2.60" for 1-yr event
Inflow = 0.1 cfs @ 12.04 hrs, Volume= 0.010 af
Outflow = 0.1 cfs @ 12.05 hrs, Volume= 0.010 af, Atten= 33%, Lag= 0.7 min
Discarded = 0.1 cfs @ 12.05 hrs, Volume= 0.010 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 593.20' @ 12.11 hrs Surf.Area= 0.006 ac Storage= 0.001 af

Plug-Flow detention time= 2.3 min calculated for 0.010 af (100% of inflow)
Center-of-Mass det. time= 2.3 min (764.0 - 761.8)

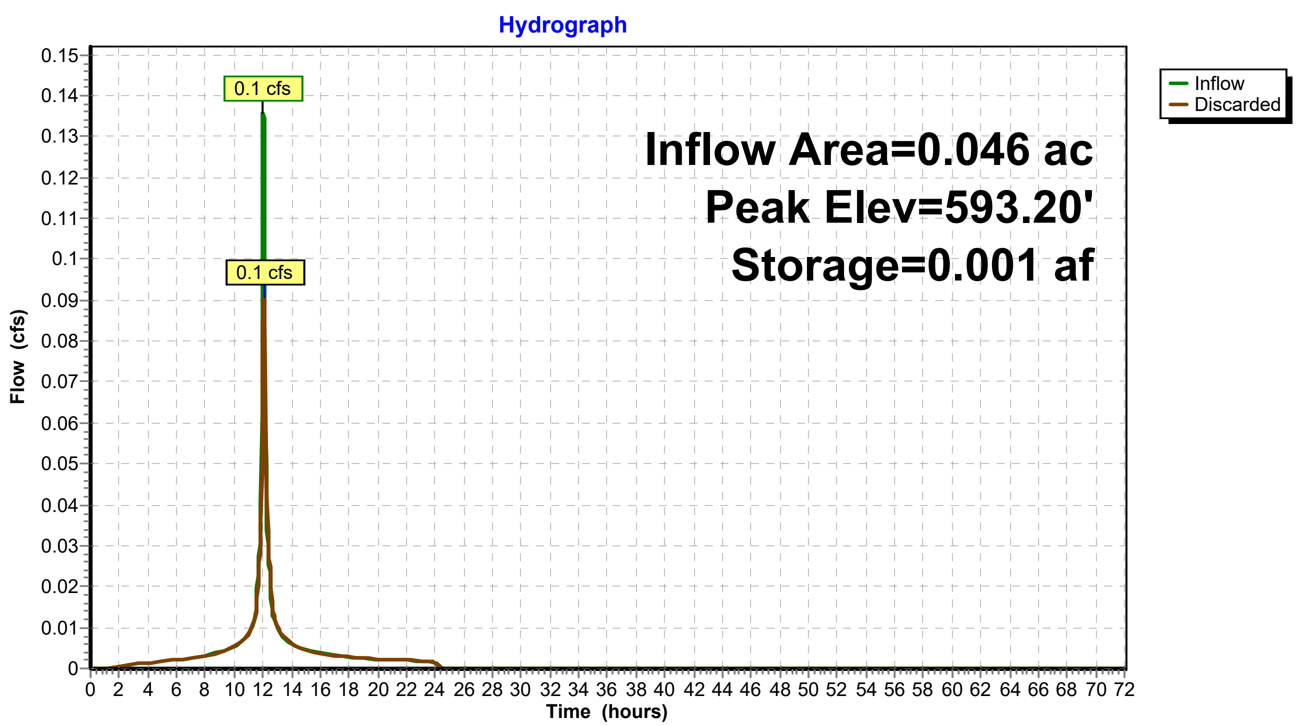
Volume	Invert	Avail.Storage	Storage Description
#1A	593.00'	0.006 af	**16.00'W x 17.50'L x 3.54'H Field A** 0.023 af Overall - 0.008 af Embedded = 0.015 af x 40.0% Voids
#2A	593.50'	0.008 af	**Cultec R-330XLHD** x 6 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 3 rows
		0.014 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	593.00'	**14.000 in/hr Exfiltration over Horizontal area** Phase-In= 0.10'

Discarded OutFlow Max=0.1 cfs @ 12.05 hrs HW=593.16' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.1 cfs)

Pond INF 1.3: Infiltration System 1.3



Stage-Area-Storage for Pond INF 1.3: Infiltration System 1.3

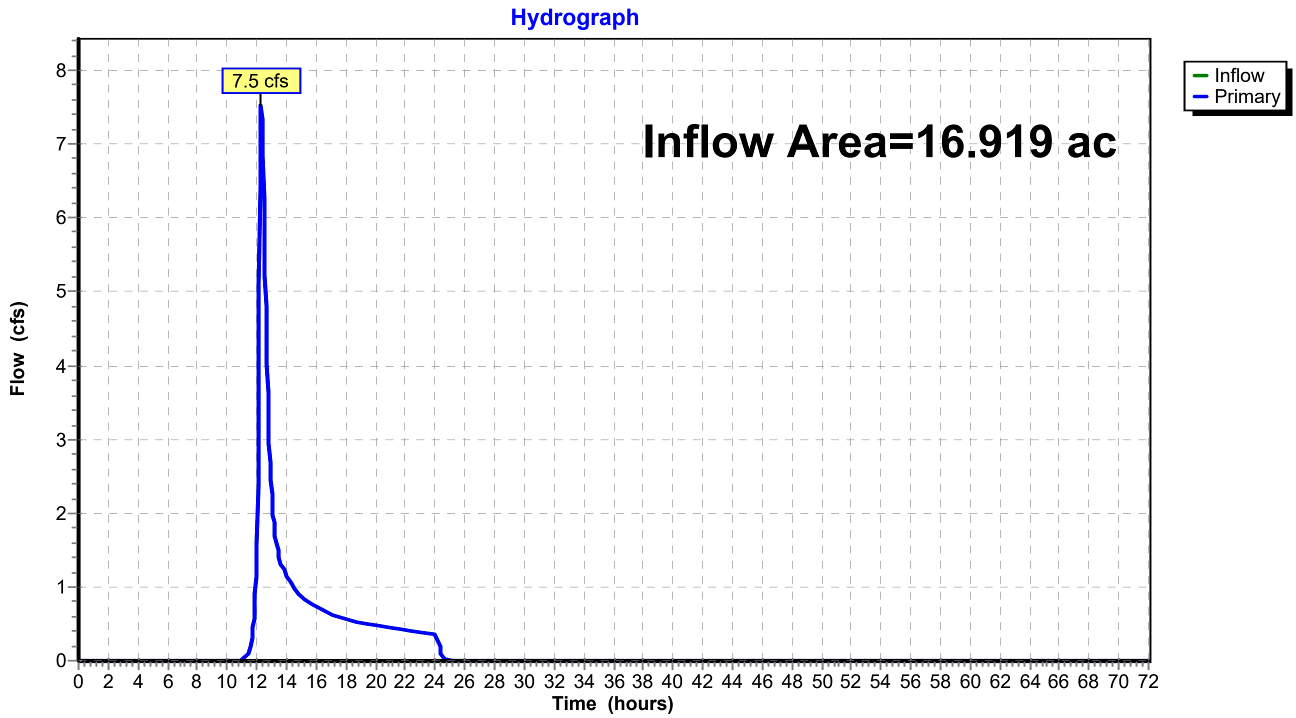
Elevation (feet)	Horizontal (acres)	Storage (acre-feet)
593.00	**0.006**	0.000
593.02	0.006	0.000
593.04	0.006	0.000
593.06	0.006	0.000
593.08	0.006	0.000
593.10	0.006	0.000
593.12	0.006	0.000
593.14	0.006	0.000
593.16	0.006	0.000
593.18	0.006	0.000
593.20	0.006	0.001
593.22	0.006	0.001
593.24	0.006	0.001
593.26	0.006	0.001
593.28	0.006	0.001
593.30	0.006	0.001
593.32	0.006	0.001
593.34	0.006	0.001
593.36	0.006	0.001
593.38	0.006	0.001
593.40	0.006	0.001
593.42	0.006	0.001
593.44	0.006	0.001
593.46	0.006	0.001
593.48	0.006	0.001
593.50	0.006	0.001
593.52	0.006	0.001
593.54	0.006	0.001
593.56	0.006	0.002
593.58	0.006	0.002
593.60	0.006	0.002
593.62	0.006	0.002
593.64	0.006	0.002
593.66	0.006	0.002
593.68	0.006	0.002
593.70	0.006	0.002
593.72	0.006	0.002
593.74	0.006	0.003
593.76	0.006	0.003
593.78	0.006	0.003
593.80	0.006	0.003
593.82	0.006	0.003
593.84	0.006	0.003
593.86	0.006	0.003
593.88	0.006	0.003
593.90	0.006	0.003
593.92	0.006	0.003
593.94	0.006	0.004
593.96	0.006	0.004
593.98	0.006	0.004
594.00	0.006	0.004
594.02	0.006	0.004
594.04	0.006	0.004
594.06	0.006	0.004
594.08	0.006	0.004
594.10	0.006	0.004
594.12	0.006	0.004
594.14	0.006	0.005
594.16	0.006	0.005
594.18	0.006	0.005
594.20	0.006	0.005
594.22	0.006	0.005
594.24	0.006	0.005
594.26	0.006	0.005
594.28	0.006	0.005
594.30	0.006	0.005
594.32	0.006	0.005
594.34	0.006	0.006
594.36	0.006	0.006
594.38	0.006	0.006
594.40	0.006	0.006
594.42	0.006	0.006
594.44	0.006	0.006
594.46	0.006	0.006
594.48	0.006	0.006
594.50	0.006	0.006
594.52	0.006	0.006
594.54	0.006	0.006
594.56	0.006	0.007
594.58	0.006	0.007
594.60	0.006	0.007
594.62	0.006	0.007
594.64	0.006	0.007
594.66	0.006	0.007
594.68	0.006	0.007
594.70	0.006	0.007
594.72	0.006	0.007
594.74	0.006	0.007
594.76	0.006	0.008
594.78	0.006	0.008
594.80	0.006	0.008
594.82	0.006	0.008
594.84	0.006	0.008
594.86	0.006	0.008
594.88	0.006	0.008
594.90	0.006	0.008
594.92	0.006	0.008
594.94	0.006	0.008
594.96	0.006	0.008
594.98	0.006	0.009
595.00	0.006	0.009
595.02	0.006	0.009
595.04	0.006	0.009
595.06	0.006	0.009
595.08	0.006	0.009
595.10	0.006	0.009
595.12	0.006	0.009
595.14	0.006	0.009
595.16	0.006	0.009
595.18	0.006	0.009
595.20	0.006	0.010
595.22	0.006	0.010
595.24	0.006	0.010
595.26	0.006	0.010
595.28	0.006	0.010
595.30	0.006	0.010
595.32	0.006	0.010
595.34	0.006	0.010
595.36	0.006	0.010
595.38	0.006	0.010
595.40	0.006	0.010
595.42	0.006	0.010
595.44	0.006	0.011
595.46	0.006	0.011
595.48	0.006	0.011
595.50	0.006	0.011
595.52	0.006	0.011
595.54	0.006	0.011
595.56	0.006	0.011
595.58	0.006	0.011
595.60	0.006	0.011
595.62	0.006	0.011
595.64	0.006	0.011
595.66	0.006	0.011
595.68	0.006	0.011
595.70	0.006	0.012
595.72	0.006	0.012
595.74	0.006	0.012
595.76	0.006	0.012
595.78	0.006	0.012
595.80	0.006	0.012
595.82	0.006	0.012
595.84	0.006	0.012
595.86	0.006	0.012
595.88	0.006	0.012
595.90	0.006	0.012
595.92	0.006	0.012
595.94	0.006	0.012
595.96	0.006	0.012
595.98	0.006	0.012
596.00	0.006	0.012
596.02	0.006	0.013
596.04	0.006	0.013
596.06	0.006	0.013
596.08	0.006	0.013
596.10	0.006	0.013
596.12	0.006	0.013
596.14	0.006	0.013
596.16	0.006	0.013
596.18	0.006	0.013
596.20	0.006	0.013
596.22	0.006	0.013
596.24	0.006	0.013
596.26	0.006	0.013
596.28	0.006	0.013
596.30	0.006	0.013
596.32	0.006	0.013
596.34	0.006	0.013
596.36	0.006	0.013
596.38	0.006	0.013
596.40	0.006	0.014
596.42	0.006	0.014
596.44	0.006	0.014
596.46	0.006	0.014
596.48	0.006	0.014
596.50	0.006	0.014
596.52	0.006	0.014
596.54	0.006	**0.014**

Summary for Link DP: Design Point

Inflow Area = 16.919 ac, 6.14% Impervious, Inflow Depth = 0.72" for 1-yr event
Inflow = 7.5 cfs @ 12.31 hrs, Volume= 1.019 af
Primary = 7.5 cfs @ 12.31 hrs, Volume= 1.019 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link DP: Design Point



Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1.0S: 1.0S Runoff Area=705,538 sf 4.54% Impervious Runoff Depth=2.34"
Flow Length=1,585' Tc=23.5 min CN=73 Runoff=24.8 cfs 3.163 af

Subcatchment 1.1S: 1.1S Runoff Area=31,450 sf 42.00% Impervious Runoff Depth=3.15"
Tc=6.0 min CN=82 Runoff=2.6 cfs 0.190 af

Subcatchment 1.2S: 1.2S Runoff Area=45,619 sf 69.42% Impervious Runoff Depth=4.06"
Tc=6.0 min CN=91 Runoff=4.7 cfs 0.354 af

Subcatchment 1.3S: 1.3S Runoff Area=2,000 sf 100.00% Impervious Runoff Depth=4.84"
Tc=6.0 min CN=98 Runoff=0.2 cfs 0.019 af

Pond 1.1P: Infiltration Basin 1.1 Peak Elev=453.96' Storage=2,030 cf Inflow=2.6 cfs 0.190 af
Discarded=0.6 cfs 0.190 af Primary=0.0 cfs 0.000 af Secondary=0.0 cfs 0.000 af Outflow=0.6 cfs 0.190 af

Pond DS1.2: Diversion Structure 1.2 Peak Elev=469.81' Inflow=4.7 cfs 0.354 af
Primary=2.8 cfs 0.338 af Secondary=1.9 cfs 0.016 af Outflow=4.7 cfs 0.354 af

Pond DS1.3: Diversion Structure 1.3 Peak Elev=593.61' Inflow=0.2 cfs 0.019 af
Primary=0.2 cfs 0.019 af Secondary=0.0 cfs 0.000 af Outflow=0.2 cfs 0.019 af

Pond INF 1.2: Infiltration System 1.2 Peak Elev=466.56' Storage=0.019 af Inflow=2.8 cfs 0.338 af
Outflow=1.8 cfs 0.338 af

Pond INF 1.3: Infiltration System 1.3 Peak Elev=593.58' Storage=0.002 af Inflow=0.2 cfs 0.019 af
Outflow=0.1 cfs 0.019 af

Link DP: Design Point Inflow=24.8 cfs 3.179 af
Primary=24.8 cfs 3.179 af

Summary for Subcatchment 1.0S: 1.0S

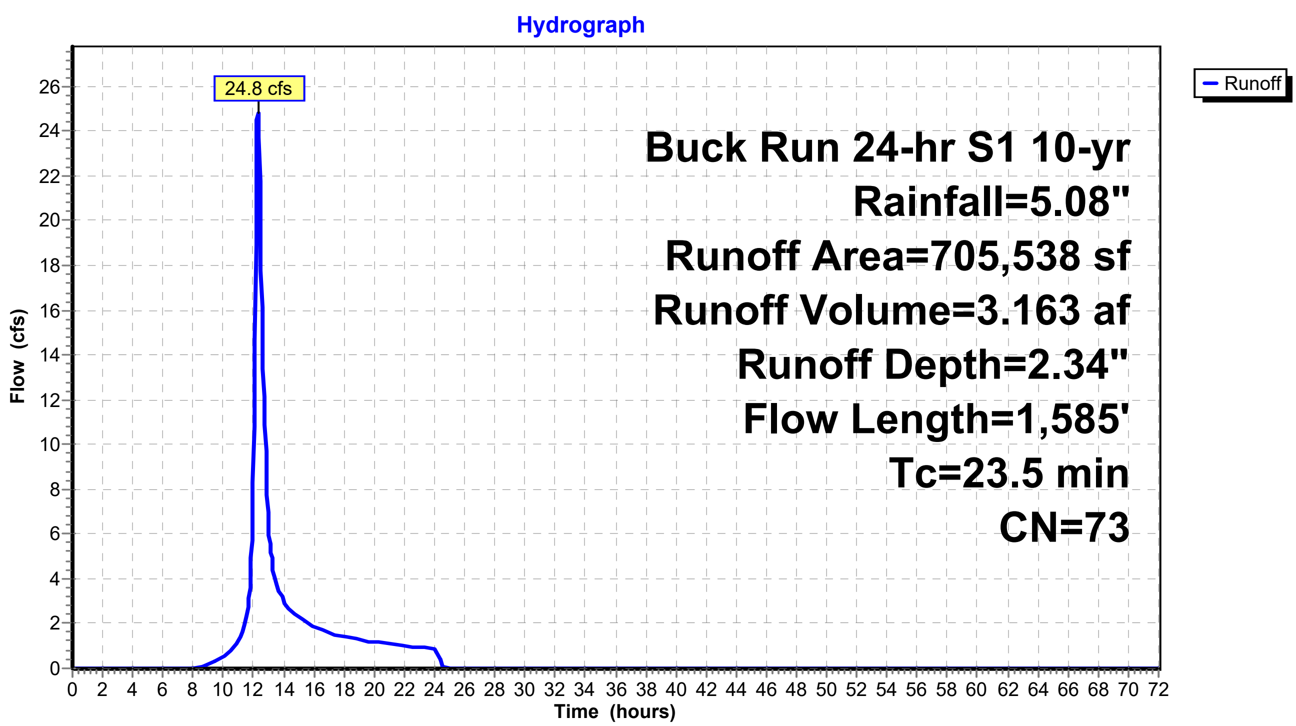
Runoff = 24.8 cfs @ 12.29 hrs, Volume= 3.163 af, Depth= 2.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Buck Run 24-hr S1 10-yr Rainfall=5.08"

	Area (sf)	CN	Description
*	18,932	98	Existing Pavement
*	6,135	98	Existing Buildings
	5,607	87	Dirt roads, HSG C
*	6,970	98	Proposed Pavement
*	1,405	61	Existing>75% Grass cover, Good, HSG B
*	3,457	80	Proposed >75% Grass cover, Good, HSG D
*	3,083	61	Proposed >75% Grass cover, Good, HSG B
*	2,900	74	Existing >75% Grass cover, Good, HSG C
*	17,714	74	Proposed >75% Grass cover, Good, HSG C
	13,520	89	Gravel roads, HSG C
	22,115	55	Woods, Good, HSG B
	417,935	70	Woods, Good, HSG C
	150,505	77	Woods, Good, HSG D
	35,260	71	Meadow, non-grazed, HSG C
	705,538	73	Weighted Average
	673,501		95.46% Pervious Area
	32,037		4.54% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	100	0.0900	0.15		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.40"
12.1	1,485	0.1670	2.04		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
23.5	1,585	Total			

Subcatchment 1.0S: 1.0S



Summary for Subcatchment 1.1S: 1.1S

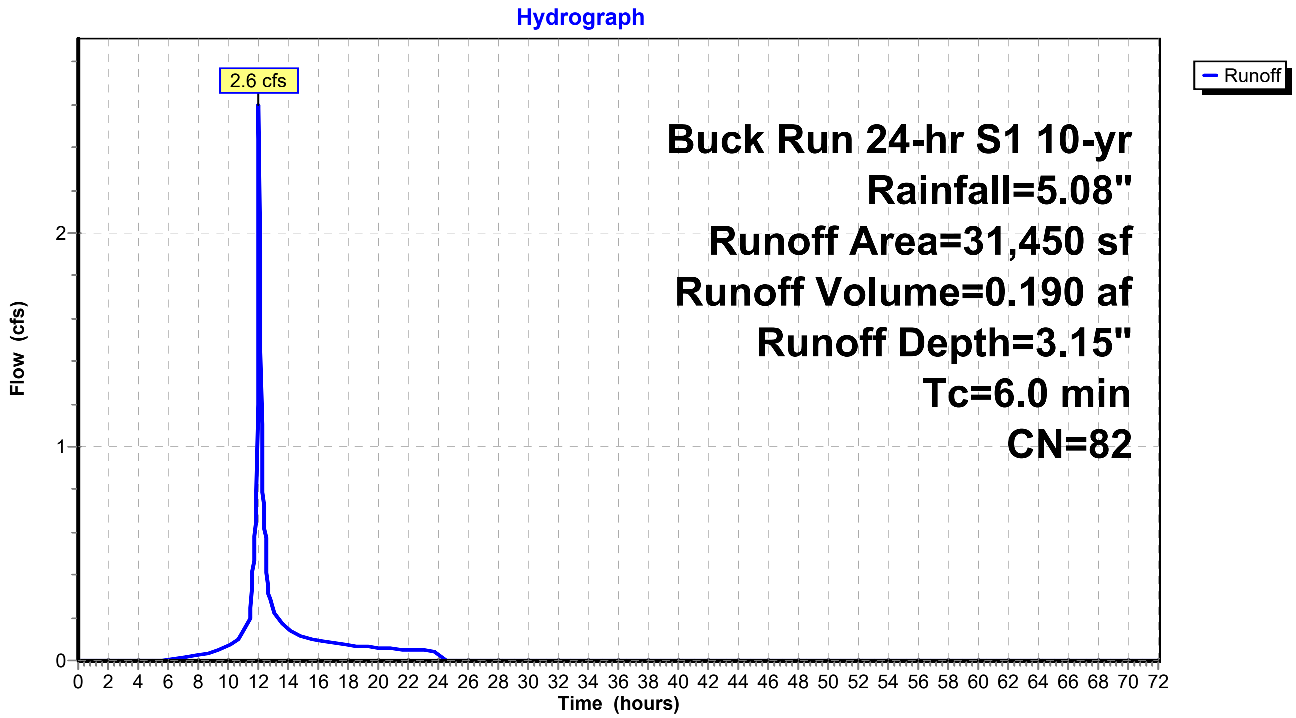
Runoff = 2.6 cfs @ 12.04 hrs, Volume= 0.190 af, Depth= 3.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Buck Run 24-hr S1 10-yr Rainfall=5.08"

	Area (sf)	CN	Description
*	12,870	98	Proposed Pavement
*	340	98	Proposed Sidewalk
	5,235	61	>75% Grass cover, Good, HSG B
	13,005	74	>75% Grass cover, Good, HSG C
	31,450	82	Weighted Average
	18,240		58.00% Pervious Area
	13,210		42.00% Impervious Area

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

Subcatchment 1.1S: 1.1S



Summary for Subcatchment 1.2S: 1.2S

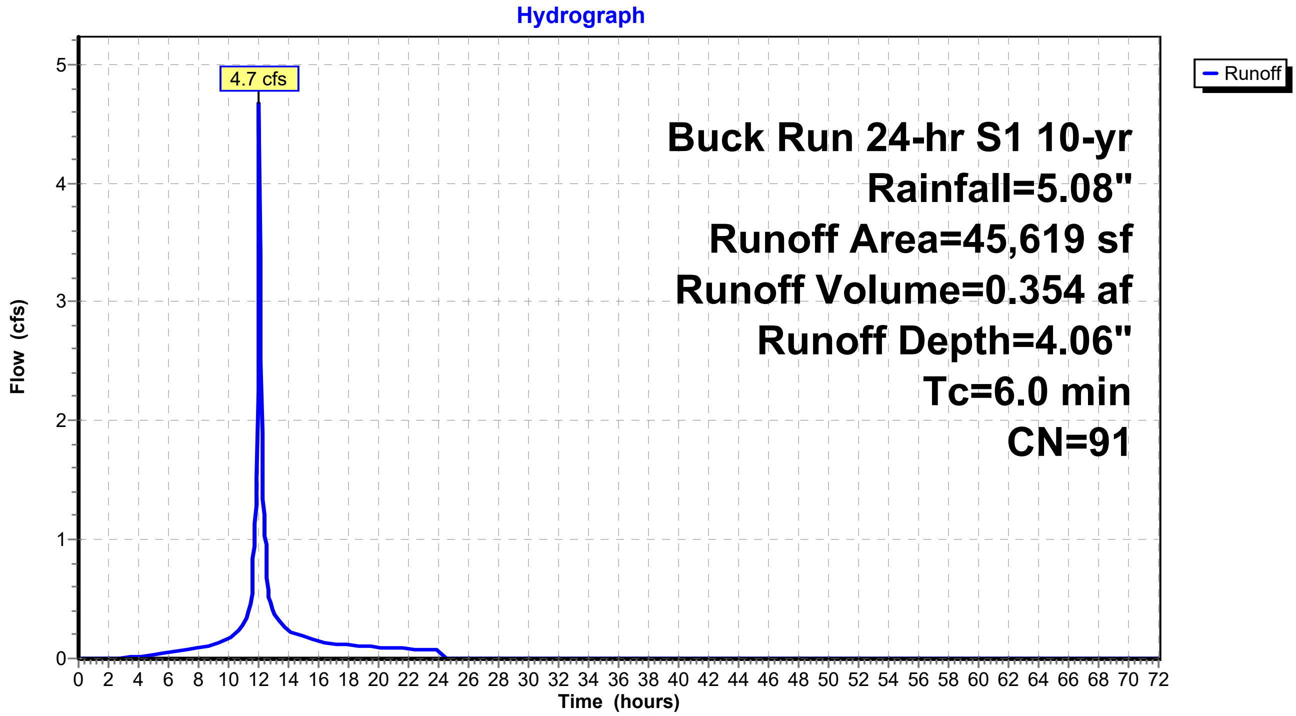
Runoff = 4.7 cfs @ 12.04 hrs, Volume= 0.354 af, Depth= 4.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Buck Run 24-hr S1 10-yr Rainfall=5.08"

	Area (sf)	CN	Description
*	24,985	98	Proposed Pavement & Walkway
*	4,815	98	Proposed Building
	10,849	74	>75% Grass cover, Good, HSG C
*	1,870	98	Proposed Courtyard Imp
	3,100	74	>75% Grass cover, Good, HSG C
	45,619	91	Weighted Average
	13,949		30.58% Pervious Area
	31,670		69.42% Impervious Area

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

Subcatchment 1.2S: 1.2S



Summary for Subcatchment 1.3S: 1.3S

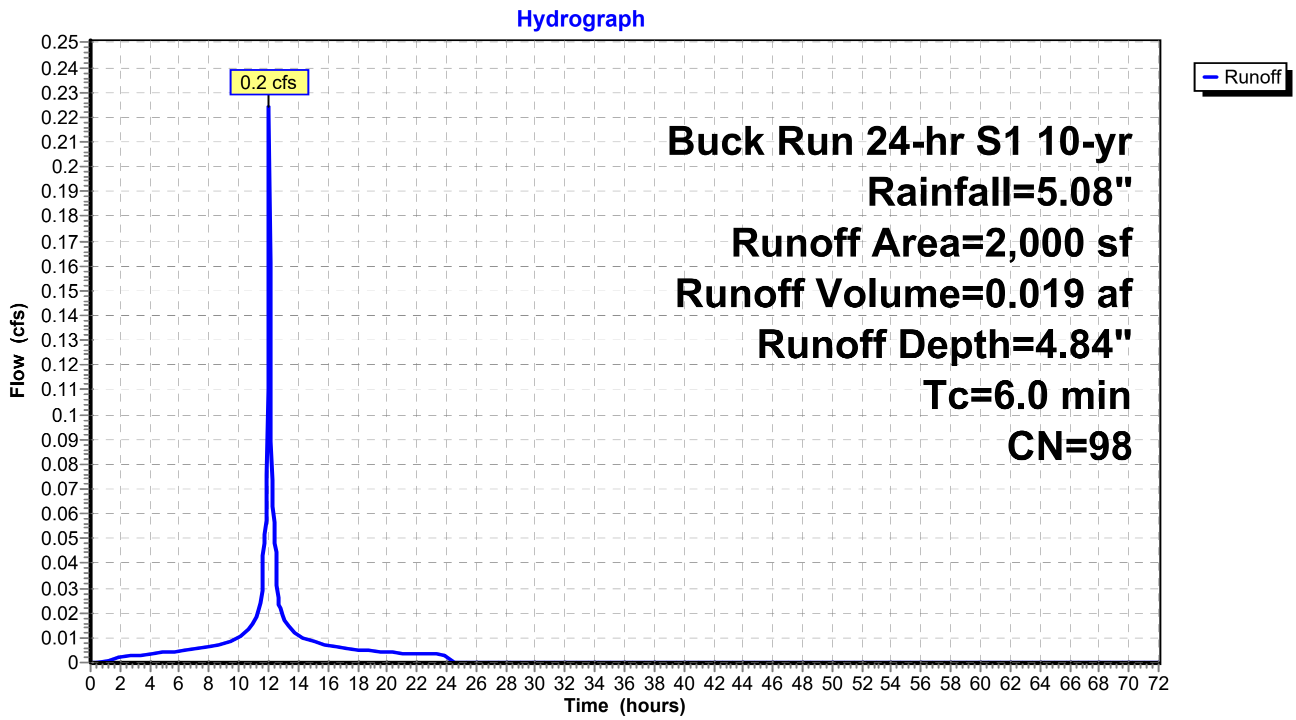
Runoff = 0.2 cfs @ 12.04 hrs, Volume= 0.019 af, Depth= 4.84"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Buck Run 24-hr S1 10-yr Rainfall=5.08"

	Area (sf)	CN	Description
*	2,000	98	Proposed Pods and Facilities
	2,000		100.00% Impervious Area

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

Subcatchment 1.3S: 1.3S



Summary for Pond 1.1P: Infiltration Basin 1.1

Inflow Area = 0.722 ac, 42.00% Impervious, Inflow Depth = 3.15" for 10-yr event
Inflow = 2.6 cfs @ 12.04 hrs, Volume= 0.190 af
Outflow = 0.6 cfs @ 12.45 hrs, Volume= 0.190 af, Atten= 76%, Lag= 24.2 min
Discarded = 0.6 cfs @ 12.45 hrs, Volume= 0.190 af
Primary = 0.0 cfs @ 0.00 hrs, Volume= 0.000 af
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 453.96' @ 12.45 hrs Surf.Area= 1,336 sf Storage= 2,030 cf

Plug-Flow detention time= 27.6 min calculated for 0.189 af (100% of inflow)
Center-of-Mass det. time= 27.6 min (860.1 - 832.5)

Volume	Invert	Avail.Storage	Storage Description
#1	451.00'	9,077 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
451.00	125	0	0
452.00	447	286	286
454.00	1,356	1,803	2,089
456.00	2,634	3,990	6,079
457.00	3,362	2,998	9,077

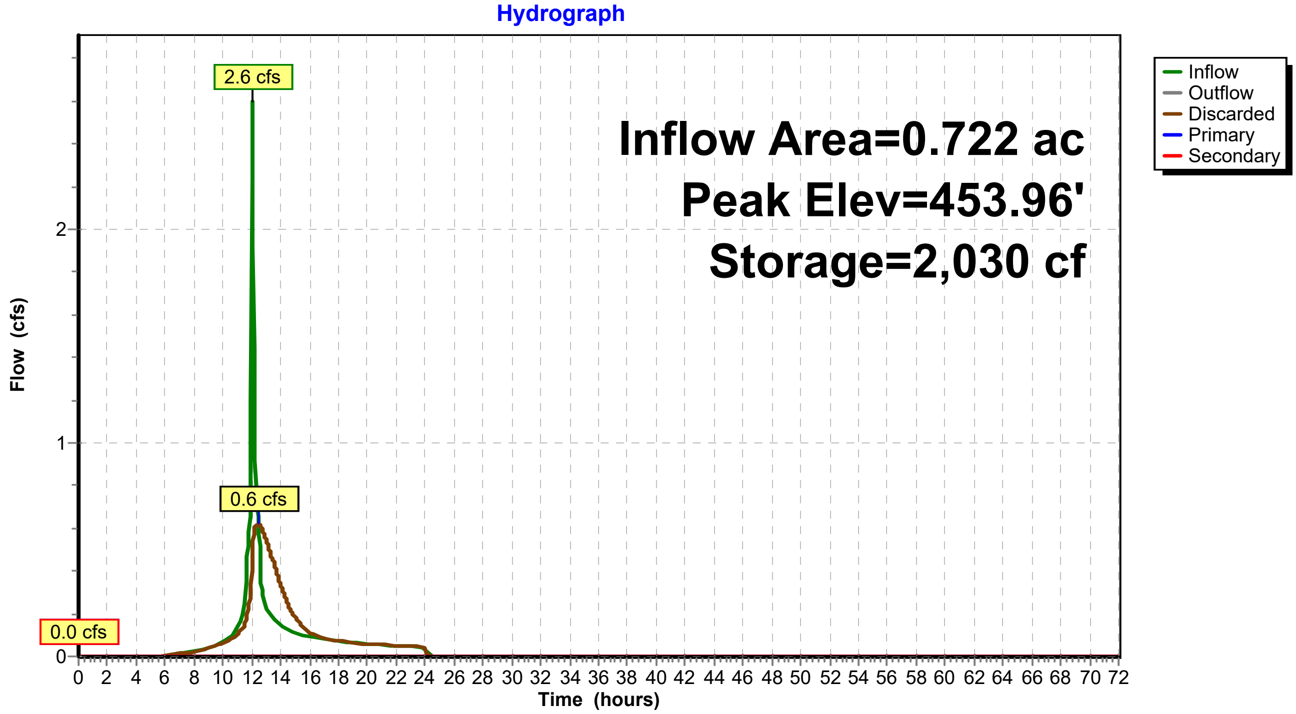
Device	Routing	Invert	Outlet Devices
#1	Primary	450.30'	**12.0" Round Culvert** L= 58.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 450.30' / 449.50' S= 0.0138 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	454.75'	**4.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	455.50'	**30.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Discarded	451.00'	**20.000 in/hr Exfiltration over Surface area** Phase-In= 0.10'
#5	Secondary	456.00'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Discarded OutFlow Max=0.6 cfs @ 12.45 hrs HW=453.96' (Free Discharge)
└─**4=Exfiltration** (Exfiltration Controls 0.6 cfs)

Primary OutFlow Max=0.0 cfs @ 0.00 hrs HW=451.00' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.0 cfs of 1.7 cfs potential flow)
  ├─**2=Orifice/Grate** (Controls 0.0 cfs)
  └─**3=Orifice/Grate** (Controls 0.0 cfs)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=451.00' TW=0.00' (Dynamic Tailwater)
└─**5=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Pond 1.1P: Infiltration Basin 1.1



Stage-Area-Storage for Pond 1.1P: Infiltration Basin 1.1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
451.00	125	0
451.10	157	14
451.20	189	31
451.30	222	52
451.40	254	76
451.50	286	103
451.60	318	133
451.70	350	166
451.80	383	203
451.90	415	243
452.00	447	286
452.10	492	333
452.20	538	384
452.30	583	441
452.40	629	501
452.50	674	566
452.60	720	636
452.70	765	710
452.80	811	789
452.90	856	872
453.00	902	960
453.10	947	1,053
453.20	992	1,150
453.30	1,038	1,251
453.40	1,083	1,357
453.50	1,129	1,468
453.60	1,174	1,583
453.70	1,220	1,703
453.80	1,265	1,827
453.90	1,311	1,956
454.00	1,356	2,089
454.10	1,420	2,228
454.20	1,484	2,373
454.30	1,548	2,525
454.40	1,612	2,683
454.50	1,676	2,847
454.60	1,739	3,018
454.70	1,803	3,195
454.80	1,867	3,378
454.90	1,931	3,568
455.00	1,995	3,765
455.10	2,059	3,967
455.20	2,123	4,176
455.30	2,187	4,392
455.40	2,251	4,614
455.50	2,315	4,842
455.60	2,378	5,077
455.70	2,442	5,318
455.80	2,506	5,565
455.90	2,570	5,819
456.00	2,634	6,079
456.10	2,707	6,346
456.20	2,780	6,620
456.30	2,852	6,902
456.40	2,925	7,191
456.50	2,998	7,487
456.60	3,071	7,790
456.70	3,144	8,101
456.80	3,216	8,419
456.90	3,289	8,744
457.00	**3,362**	**9,077**

Summary for Pond DS1.2: Diversion Structure 1.2

Inflow Area = 1.047 ac, 69.42% Impervious, Inflow Depth = 4.06" for 10-yr event
Inflow = 4.7 cfs @ 12.04 hrs, Volume= 0.354 af
Outflow = 4.7 cfs @ 12.04 hrs, Volume= 0.354 af, Atten= 0%, Lag= 0.0 min
Primary = 2.8 cfs @ 12.04 hrs, Volume= 0.338 af
Secondary = 1.9 cfs @ 12.04 hrs, Volume= 0.016 af

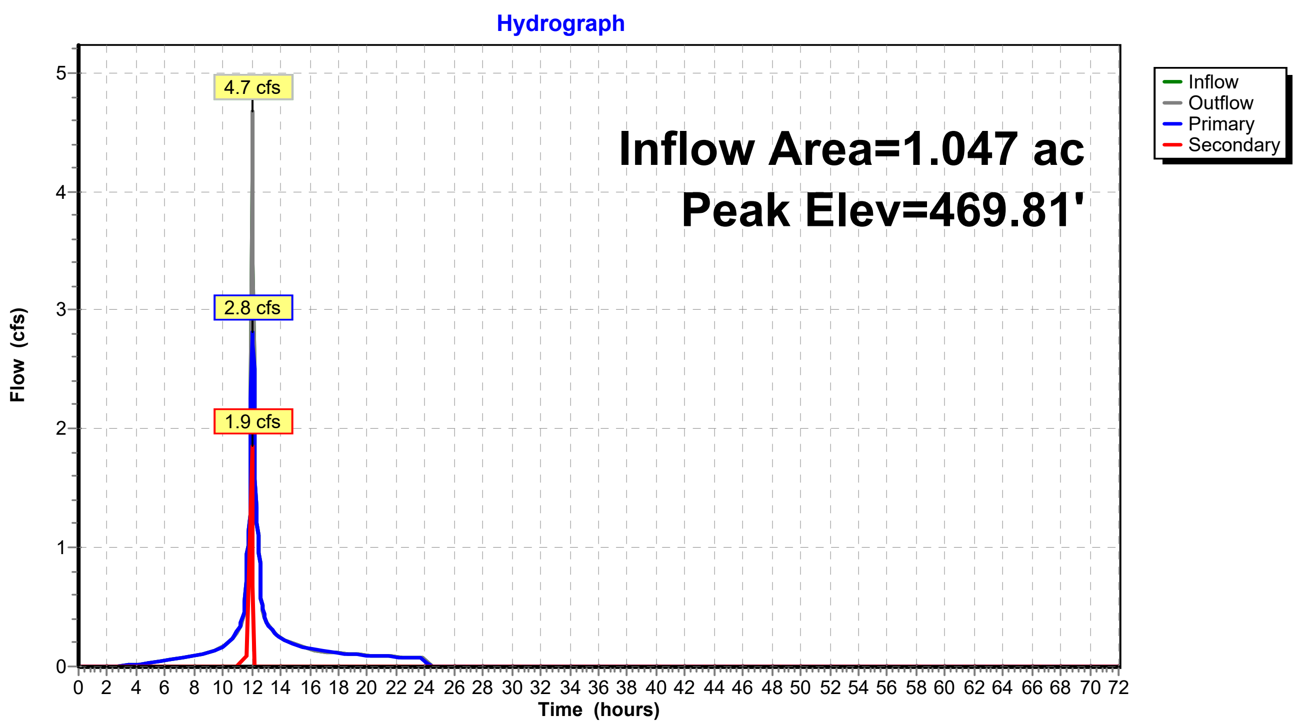
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 469.81' @ 12.04 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	466.67'	**8.0" Round Culvert** L= 6.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 466.67' / 466.60' S= 0.0117 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 3	469.35'	**2.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#3	Secondary	462.28'	**8.0" Round Culvert** L= 103.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 462.28' / 448.16' S= 0.1371 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=2.8 cfs @ 12.04 hrs HW=469.79' TW=466.31' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 2.8 cfs @ 8.03 fps)

Secondary OutFlow Max=1.7 cfs @ 12.04 hrs HW=469.79' TW=0.00' (Dynamic Tailwater)
└─**3=Culvert** (Passes 1.7 cfs of 4.5 cfs potential flow)
  └─**2=Broad-Crested Rectangular Weir** (Weir Controls 1.7 cfs @ 1.96 fps)

Pond DS1.2: Diversion Structure 1.2



Stage-Area-Storage for Pond DS1.2: Diversion Structure 1.2

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
462.28	**0**	464.92	0	467.56	0
462.32	0	464.96	0	467.60	0
462.36	0	465.00	0	467.64	0
462.40	0	465.04	0	467.68	0
462.44	0	465.08	0	467.72	0
462.48	0	465.12	0	467.76	0
462.52	0	465.16	0	467.80	0
462.56	0	465.20	0	467.84	0
462.60	0	465.24	0	467.88	0
462.64	0	465.28	0	467.92	0
462.68	0	465.32	0	467.96	0
462.72	0	465.36	0	468.00	0
462.76	0	465.40	0	468.04	0
462.80	0	465.44	0	468.08	0
462.84	0	465.48	0	468.12	0
462.88	0	465.52	0	468.16	0
462.92	0	465.56	0	468.20	0
462.96	0	465.60	0	468.24	0
463.00	0	465.64	0	468.28	0
463.04	0	465.68	0	468.32	0
463.08	0	465.72	0	468.36	0
463.12	0	465.76	0	468.40	0
463.16	0	465.80	0	468.44	0
463.20	0	465.84	0	468.48	0
463.24	0	465.88	0	468.52	0
463.28	0	465.92	0	468.56	0
463.32	0	465.96	0	468.60	0
463.36	0	466.00	0	468.64	0
463.40	0	466.04	0	468.68	0
463.44	0	466.08	0	468.72	0
463.48	0	466.12	0	468.76	0
463.52	0	466.16	0	468.80	0
463.56	0	466.20	0	468.84	0
463.60	0	466.24	0	468.88	0
463.64	0	466.28	0	468.92	0
463.68	0	466.32	0	468.96	0
463.72	0	466.36	0	469.00	0
463.76	0	466.40	0	469.04	0
463.80	0	466.44	0	469.08	0
463.84	0	466.48	0	469.12	0
463.88	0	466.52	0	469.16	0
463.92	0	466.56	0	469.20	0
463.96	0	466.60	0	469.24	0
464.00	0	466.64	0	469.28	0
464.04	0	466.68	0	469.32	0
464.08	0	466.72	0	469.36	0
464.12	0	466.76	0	469.40	0
464.16	0	466.80	0	469.44	0
464.20	0	466.84	0	469.48	0
464.24	0	466.88	0	469.52	0
464.28	0	466.92	0	469.56	0
464.32	0	466.96	0	469.60	0
464.36	0	467.00	0	469.64	0
464.40	0	467.04	0	469.68	0
464.44	0	467.08	0	469.72	0
464.48	0	467.12	0	469.76	0
464.52	0	467.16	0	469.80	0
464.56	0	467.20	0	469.84	0
464.60	0	467.24	0		
464.64	0	467.28	0		
464.68	0	467.32	0		
464.72	0	467.36	0		
464.76	0	467.40	0		
464.80	0	467.44	0		
464.84	0	467.48	0		
464.88	0	467.52	0		

Summary for Pond DS1.3: Diversion Structure 1.3

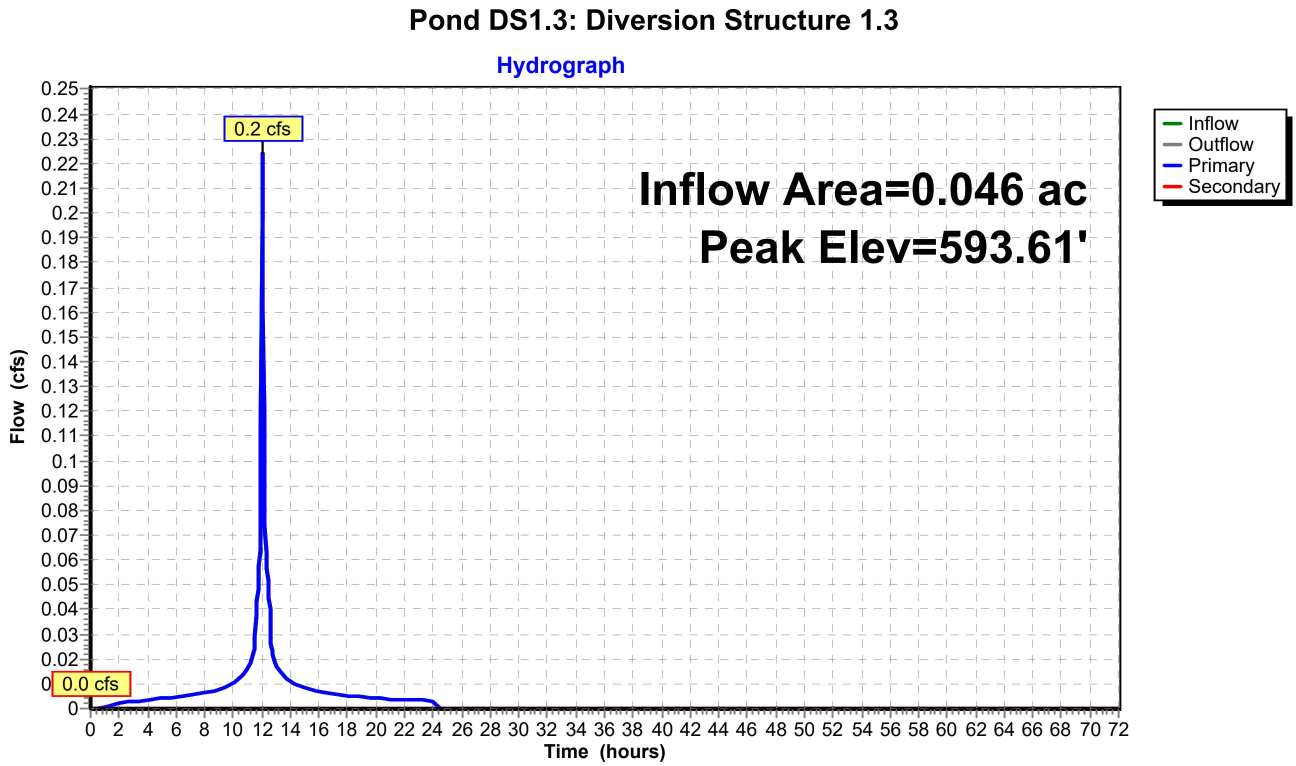
Inflow Area =	0.046 ac,100.00% Impervious,	Inflow Depth = 4.84"	for 10-yr event	
Inflow =	0.2 cfs @	12.04 hrs, Volume=	0.019 af	
Outflow =	0.2 cfs @	12.04 hrs, Volume=	0.019 af,	Atten= 0%, Lag= 0.0 min
Primary =	0.2 cfs @	12.04 hrs, Volume=	0.019 af	
Secondary =	0.0 cfs @	0.00 hrs, Volume=	0.000 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 593.61' @ 12.20 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	593.10'	**4.0" Round Culvert** L= 6.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 593.10' / 593.00' S= 0.0167 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.09 sf
#2	Secondary	595.20'	**8.0" Round Culvert** L= 154.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 595.20' / 590.00' S= 0.0338 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=0.2 cfs @ 12.04 hrs HW=593.55' TW=593.35' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 0.2 cfs @ 2.14 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=593.10' TW=0.00' (Dynamic Tailwater)
└─**2=Culvert** (Controls 0.0 cfs)



Stage-Area-Storage for Pond DS1.3: Diversion Structure 1.3

Elevation (feet)	Storage (cubic-feet)
593.10	**0**
593.12	0
593.14	0
593.16	0
593.18	0
593.20	0
593.22	0
593.24	0
593.26	0
593.28	0
593.30	0
593.32	0
593.34	0
593.36	0
593.38	0
593.40	0
593.42	0
593.44	0
593.46	0
593.48	0
593.50	0
593.52	0
593.54	0
593.56	0
593.58	0
593.60	0
593.62	0
593.64	0
593.66	0
593.68	0
593.70	0
593.72	0
593.74	0
593.76	0
593.78	0
593.80	0
593.82	0
593.84	0
593.86	0
593.88	0
593.90	0
593.92	0
593.94	0
593.96	0
593.98	0
594.00	0
594.02	0
594.04	0
594.06	0
594.08	0
594.10	0
594.12	0
594.14	0
594.16	0
594.18	0
594.20	0
594.22	0
594.24	0
594.26	0
594.28	0
594.30	0
594.32	0
594.34	0
594.36	0
594.38	0
594.40	0
594.42	0
594.44	0
594.46	0
594.48	0
594.50	0
594.52	0
594.54	0
594.56	0
594.58	0
594.60	0
594.62	0
594.64	0
594.66	0
594.68	0
594.70	0
594.72	0
594.74	0
594.76	0
594.78	0
594.80	0
594.82	0
594.84	0
594.86	0
594.88	0
594.90	0
594.92	0
594.94	0
594.96	0
594.98	0
595.00	0
595.02	0
595.04	0
595.06	0
595.08	0
595.10	0
595.12	0
595.14	0
595.16	0
595.18	0
595.20	0
595.22	0
595.24	0
595.26	0
595.28	0
595.30	0
595.32	0
595.34	0
595.36	0
595.38	0
595.40	0
595.42	0
595.44	0
595.46	0
595.48	0
595.50	0
595.52	0
595.54	0
595.56	0
595.58	0
595.60	0
595.62	0
595.64	0
595.66	0
595.68	0
595.70	0
595.72	0
595.74	0
595.76	0
595.78	0
595.80	0
595.82	0
595.84	0
595.86	0

Summary for Pond INF 1.2: Infiltration System 1.2

Inflow Area = 1.047 ac, 69.42% Impervious, Inflow Depth = 3.88" for 10-yr event
Inflow = 2.8 cfs @ 12.04 hrs, Volume= 0.338 af
Outflow = 1.8 cfs @ 11.95 hrs, Volume= 0.338 af, Atten= 35%, Lag= 0.0 min
Discarded = 1.8 cfs @ 11.95 hrs, Volume= 0.338 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 466.56' @ 12.21 hrs Surf.Area= 0.076 ac Storage= 0.019 af

Plug-Flow detention time= 2.1 min calculated for 0.338 af (100% of inflow)
Center-of-Mass det. time= 2.1 min (801.0 - 798.8)

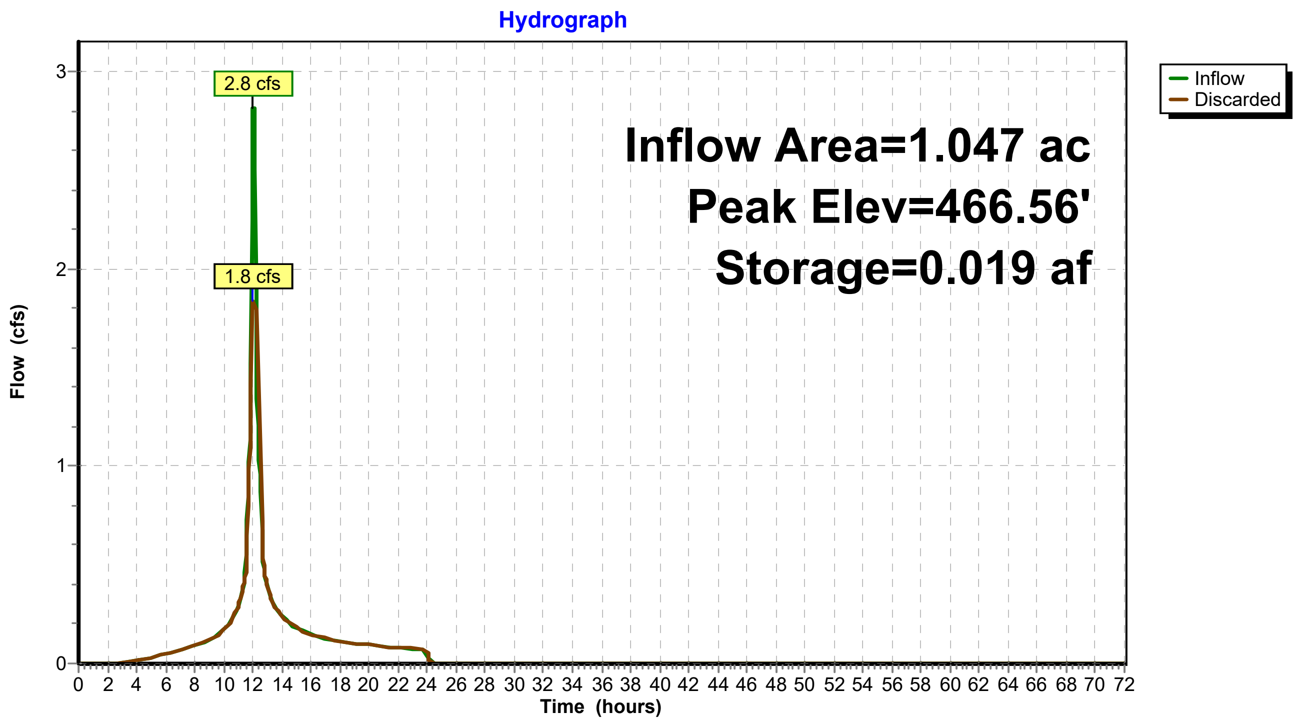
Volume	Invert	Avail.Storage	Storage Description
#1A	466.01'	0.064 af	**30.50'W x 108.50'L x 3.54'H Field A**
			0.269 af Overall - 0.109 af Embedded = 0.160 af x 40.0% Voids
#2A	466.51'	0.109 af	**Cultec R-330XLHD** x 90 Inside #1
			Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf
			Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap
			Row Length Adjustment= +1.50' x 7.45 sf x 6 rows
		0.173 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	466.01'	**24.000 in/hr Exfiltration over Horizontal area** Phase-In= 0.10'

Discarded OutFlow Max=1.8 cfs @ 11.95 hrs HW=466.12' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 1.8 cfs)

Pond INF 1.2: Infiltration System 1.2



Stage-Area-Storage for Pond INF 1.2: Infiltration System 1.2

Elevation (feet)	Horizontal (acres)	Storage (acre-feet)
466.01	**0.076**	0.000
466.03	0.076	0.001
466.05	0.076	0.001
466.07	0.076	0.002
466.09	0.076	0.002
466.11	0.076	0.003
466.13	0.076	0.004
466.15	0.076	0.004
466.17	0.076	0.005
466.19	0.076	0.005
466.21	0.076	0.006
466.23	0.076	0.007
466.25	0.076	0.007
466.27	0.076	0.008
466.29	0.076	0.009
466.31	0.076	0.009
466.33	0.076	0.010
466.35	0.076	0.010
466.37	0.076	0.011
466.39	0.076	0.012
466.41	0.076	0.012
466.43	0.076	0.013
466.45	0.076	0.013
466.47	0.076	0.014
466.49	0.076	0.015
466.51	0.076	0.015
466.53	0.076	0.017
466.55	0.076	0.018
466.57	0.076	0.019
466.59	0.076	0.020
466.61	0.076	0.022
466.63	0.076	0.023
466.65	0.076	0.024
466.67	0.076	0.026
466.69	0.076	0.027
466.71	0.076	0.028
466.73	0.076	0.030
466.75	0.076	0.031
466.77	0.076	0.032
466.79	0.076	0.033
466.81	0.076	0.035
466.83	0.076	0.036
466.85	0.076	0.037
466.87	0.076	0.039
466.89	0.076	0.040
466.91	0.076	0.041
466.93	0.076	0.042
466.95	0.076	0.044
466.97	0.076	0.045
466.99	0.076	0.046
467.01	0.076	0.048
467.03	0.076	0.049
467.05	0.076	0.050
467.07	0.076	0.051
467.09	0.076	0.053
467.11	0.076	0.054
467.13	0.076	0.055
467.15	0.076	0.057
467.17	0.076	0.058
467.19	0.076	0.059
467.21	0.076	0.060
467.23	0.076	0.062
467.25	0.076	0.063
467.27	0.076	0.064
467.29	0.076	0.065
467.31	0.076	0.067
467.33	0.076	0.068
467.35	0.076	0.069
467.37	0.076	0.070
467.39	0.076	0.072
467.41	0.076	0.073
467.43	0.076	0.074
467.45	0.076	0.075
467.47	0.076	0.077
467.49	0.076	0.078
467.51	0.076	0.079
467.53	0.076	0.080
467.55	0.076	0.082
467.57	0.076	0.083
467.59	0.076	0.084
467.61	0.076	0.085
467.63	0.076	0.086
467.65	0.076	0.088
467.67	0.076	0.089
467.69	0.076	0.090
467.71	0.076	0.091
467.73	0.076	0.093
467.75	0.076	0.094
467.77	0.076	0.095
467.79	0.076	0.096
467.81	0.076	0.097
467.83	0.076	0.099
467.85	0.076	0.100
467.87	0.076	0.101
467.89	0.076	0.102
467.91	0.076	0.103
467.93	0.076	0.105
467.95	0.076	0.106
467.97	0.076	0.107
467.99	0.076	0.108
468.01	0.076	0.109
468.03	0.076	0.110
468.05	0.076	0.112
468.07	0.076	0.113
468.09	0.076	0.114
468.11	0.076	0.115
468.13	0.076	0.116
468.15	0.076	0.117
468.17	0.076	0.118
468.19	0.076	0.119
468.21	0.076	0.121
468.23	0.076	0.122
468.25	0.076	0.123
468.27	0.076	0.124
468.29	0.076	0.125
468.31	0.076	0.126
468.33	0.076	0.127
468.35	0.076	0.128
468.37	0.076	0.129
468.39	0.076	0.130
468.41	0.076	0.131
468.43	0.076	0.132
468.45	0.076	0.133
468.47	0.076	0.134
468.49	0.076	0.135
468.51	0.076	0.136
468.53	0.076	0.137
468.55	0.076	0.138
468.57	0.076	0.139
468.59	0.076	0.140
468.61	0.076	0.141
468.63	0.076	0.142
468.65	0.076	0.143
468.67	0.076	0.144
468.69	0.076	0.145
468.71	0.076	0.146
468.73	0.076	0.147
468.75	0.076	0.147
468.77	0.076	0.148
468.79	0.076	0.149
468.81	0.076	0.150
468.83	0.076	0.151
468.85	0.076	0.151
468.87	0.076	0.152
468.89	0.076	0.153
468.91	0.076	0.153
468.93	0.076	0.154
468.95	0.076	0.155
468.97	0.076	0.155
468.99	0.076	0.156
469.01	0.076	0.157
469.03	0.076	0.157
469.05	0.076	0.158
469.07	0.076	0.159
469.09	0.076	0.159
469.11	0.076	0.160
469.13	0.076	0.160
469.15	0.076	0.161
469.17	0.076	0.162
469.19	0.076	0.162
469.21	0.076	0.163
469.23	0.076	0.163
469.25	0.076	0.164
469.27	0.076	0.165
469.29	0.076	0.165
469.31	0.076	0.166
469.33	0.076	0.166
469.35	0.076	0.167
469.37	0.076	0.168
469.39	0.076	0.168
469.41	0.076	0.169
469.43	0.076	0.170
469.45	0.076	0.170
469.47	0.076	0.171
469.49	0.076	0.171
469.51	0.076	0.172
469.53	0.076	0.173
469.55	0.076	**0.173**

Summary for Pond INF 1.3: Infiltration System 1.3

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 4.84" for 10-yr event
Inflow = 0.2 cfs @ 12.04 hrs, Volume= 0.019 af
Outflow = 0.1 cfs @ 12.00 hrs, Volume= 0.019 af, Atten= 60%, Lag= 0.0 min
Discarded = 0.1 cfs @ 12.00 hrs, Volume= 0.019 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 593.58' @ 12.20 hrs Surf.Area= 0.006 ac Storage= 0.002 af

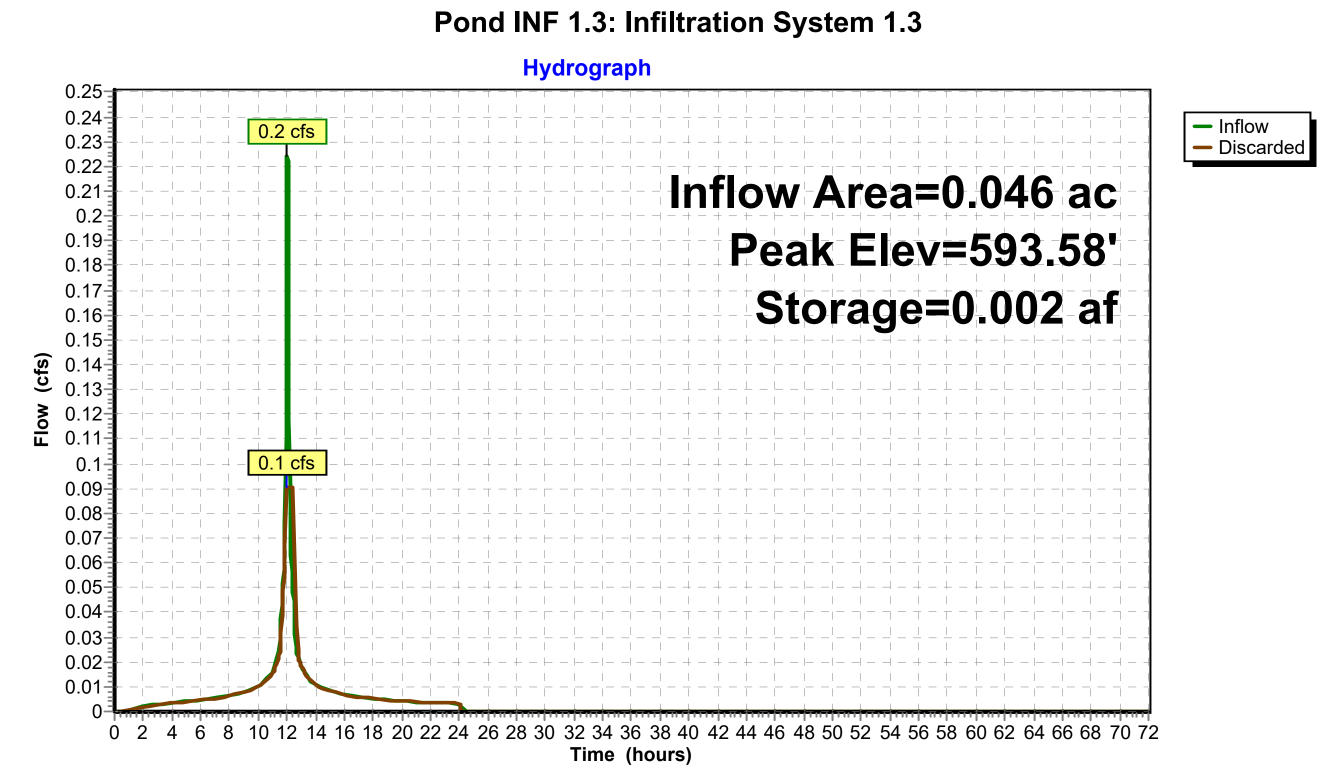
Plug-Flow detention time= 4.0 min calculated for 0.019 af (100% of inflow)
Center-of-Mass det. time= 4.0 min (752.8 - 748.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	593.00'	0.006 af	**16.00'W x 17.50'L x 3.54'H Field A** 0.023 af Overall - 0.008 af Embedded = 0.015 af x 40.0% Voids
#2A	593.50'	0.008 af	**Cultec R-330XLHD** x 6 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 3 rows
		0.014 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	593.00'	**14.000 in/hr Exfiltration over Horizontal area** Phase-In= 0.10'

Discarded OutFlow Max=0.1 cfs @ 12.00 hrs HW=593.20' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.1 cfs)



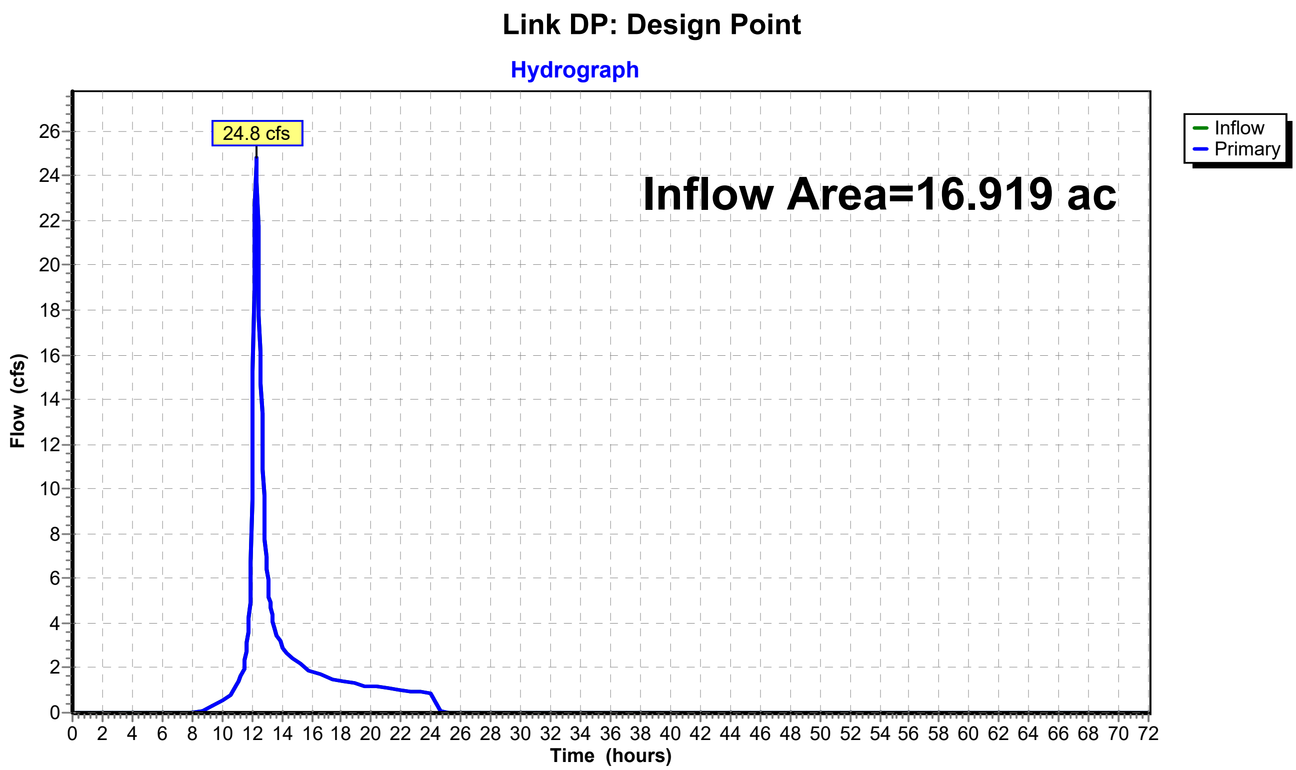
Stage-Area-Storage for Pond INF 1.3: Infiltration System 1.3

Elevation (feet)	Horizontal (acres)	Storage (acre-feet)	Elevation (feet)	Horizontal (acres)	Storage (acre-feet)	Elevation (feet)	Horizontal (acres)	Storage (acre-feet)
593.00	**0.006**	0.000	594.32	0.006	0.005	595.64	0.006	0.011
593.02	0.006	0.000	594.34	0.006	0.006	595.66	0.006	0.011
593.04	0.006	0.000	594.36	0.006	0.006	595.68	0.006	0.011
593.06	0.006	0.000	594.38	0.006	0.006	595.70	0.006	0.012
593.08	0.006	0.000	594.40	0.006	0.006	595.72	0.006	0.012
593.10	0.006	0.000	594.42	0.006	0.006	595.74	0.006	0.012
593.12	0.006	0.000	594.44	0.006	0.006	595.76	0.006	0.012
593.14	0.006	0.000	594.46	0.006	0.006	595.78	0.006	0.012
593.16	0.006	0.000	594.48	0.006	0.006	595.80	0.006	0.012
593.18	0.006	0.000	594.50	0.006	0.006	595.82	0.006	0.012
593.20	0.006	0.001	594.52	0.006	0.006	595.84	0.006	0.012
593.22	0.006	0.001	594.54	0.006	0.006	595.86	0.006	0.012
593.24	0.006	0.001	594.56	0.006	0.007	595.88	0.006	0.012
593.26	0.006	0.001	594.58	0.006	0.007	595.90	0.006	0.012
593.28	0.006	0.001	594.60	0.006	0.007	595.92	0.006	0.012
593.30	0.006	0.001	594.62	0.006	0.007	595.94	0.006	0.012
593.32	0.006	0.001	594.64	0.006	0.007	595.96	0.006	0.012
593.34	0.006	0.001	594.66	0.006	0.007	595.98	0.006	0.012
593.36	0.006	0.001	594.68	0.006	0.007	596.00	0.006	0.012
593.38	0.006	0.001	594.70	0.006	0.007	596.02	0.006	0.013
593.40	0.006	0.001	594.72	0.006	0.007	596.04	0.006	0.013
593.42	0.006	0.001	594.74	0.006	0.007	596.06	0.006	0.013
593.44	0.006	0.001	594.76	0.006	0.008	596.08	0.006	0.013
593.46	0.006	0.001	594.78	0.006	0.008	596.10	0.006	0.013
593.48	0.006	0.001	594.80	0.006	0.008	596.12	0.006	0.013
593.50	0.006	0.001	594.82	0.006	0.008	596.14	0.006	0.013
593.52	0.006	0.001	594.84	0.006	0.008	596.16	0.006	0.013
593.54	0.006	0.001	594.86	0.006	0.008	596.18	0.006	0.013
593.56	0.006	0.002	594.88	0.006	0.008	596.20	0.006	0.013
593.58	0.006	0.002	594.90	0.006	0.008	596.22	0.006	0.013
593.60	0.006	0.002	594.92	0.006	0.008	596.24	0.006	0.013
593.62	0.006	0.002	594.94	0.006	0.008	596.26	0.006	0.013
593.64	0.006	0.002	594.96	0.006	0.008	596.28	0.006	0.013
593.66	0.006	0.002	594.98	0.006	0.009	596.30	0.006	0.013
593.68	0.006	0.002	595.00	0.006	0.009	596.32	0.006	0.013
593.70	0.006	0.002	595.02	0.006	0.009	596.34	0.006	0.013
593.72	0.006	0.002	595.04	0.006	0.009	596.36	0.006	0.013
593.74	0.006	0.003	595.06	0.006	0.009	596.38	0.006	0.013
593.76	0.006	0.003	595.08	0.006	0.009	596.40	0.006	0.014
593.78	0.006	0.003	595.10	0.006	0.009	596.42	0.006	0.014
593.80	0.006	0.003	595.12	0.006	0.009	596.44	0.006	0.014
593.82	0.006	0.003	595.14	0.006	0.009	596.46	0.006	0.014
593.84	0.006	0.003	595.16	0.006	0.009	596.48	0.006	0.014
593.86	0.006	0.003	595.18	0.006	0.009	596.50	0.006	0.014
593.88	0.006	0.003	595.20	0.006	0.010	596.52	0.006	0.014
593.90	0.006	0.003	595.22	0.006	0.010	596.54	0.006	**0.014**
593.92	0.006	0.003	595.24	0.006	0.010			
593.94	0.006	0.004	595.26	0.006	0.010			
593.96	0.006	0.004	595.28	0.006	0.010			
593.98	0.006	0.004	595.30	0.006	0.010			
594.00	0.006	0.004	595.32	0.006	0.010			
594.02	0.006	0.004	595.34	0.006	0.010			
594.04	0.006	0.004	595.36	0.006	0.010			
594.06	0.006	0.004	595.38	0.006	0.010			
594.08	0.006	0.004	595.40	0.006	0.010			
594.10	0.006	0.004	595.42	0.006	0.010			
594.12	0.006	0.004	595.44	0.006	0.011			
594.14	0.006	0.005	595.46	0.006	0.011			
594.16	0.006	0.005	595.48	0.006	0.011			
594.18	0.006	0.005	595.50	0.006	0.011			
594.20	0.006	0.005	595.52	0.006	0.011			
594.22	0.006	0.005	595.54	0.006	0.011			
594.24	0.006	0.005	595.56	0.006	0.011			
594.26	0.006	0.005	595.58	0.006	0.011			
594.28	0.006	0.005	595.60	0.006	0.011			
594.30	0.006	0.005	595.62	0.006	0.011			

Summary for Link DP: Design Point

Inflow Area =	16.919 ac,	6.14% Impervious, Inflow Depth = 2.25"	for 10-yr event
Inflow =	24.8 cfs @	12.29 hrs, Volume=	3.179 af
Primary =	24.8 cfs @	12.29 hrs, Volume=	3.179 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs



Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1.0S: 1.0S Runoff Area=705,538 sf 4.54% Impervious Runoff Depth=5.74"
Flow Length=1,585' Tc=23.5 min CN=73 Runoff=57.2 cfs 7.750 af

Subcatchment 1.1S: 1.1S Runoff Area=31,450 sf 42.00% Impervious Runoff Depth=6.85"
Tc=6.0 min CN=82 Runoff=4.9 cfs 0.412 af

Subcatchment 1.2S: 1.2S Runoff Area=45,619 sf 69.42% Impervious Runoff Depth=7.95"
Tc=6.0 min CN=91 Runoff=7.9 cfs 0.694 af

Subcatchment 1.3S: 1.3S Runoff Area=2,000 sf 100.00% Impervious Runoff Depth=8.80"
Tc=6.0 min CN=98 Runoff=0.4 cfs 0.034 af

Pond 1.1P: Infiltration Basin 1.1 Peak Elev=455.39' Storage=4,587 cf Inflow=4.9 cfs 0.412 af
Discarded=1.0 cfs 0.395 af Primary=0.3 cfs 0.018 af Secondary=0.0 cfs 0.000 af Outflow=1.3 cfs 0.412 af

Pond DS1.2: Diversion Structure 1.2 Peak Elev=470.47' Inflow=7.9 cfs 0.694 af
Primary=3.1 cfs 0.628 af Secondary=4.8 cfs 0.066 af Outflow=7.9 cfs 0.694 af

Pond DS1.3: Diversion Structure 1.3 Peak Elev=594.27' Inflow=0.4 cfs 0.034 af
Primary=0.4 cfs 0.034 af Secondary=0.0 cfs 0.000 af Outflow=0.4 cfs 0.034 af

Pond INF 1.2: Infiltration System 1.2 Peak Elev=467.00' Storage=0.047 af Inflow=3.1 cfs 0.628 af
Outflow=1.8 cfs 0.628 af

Pond INF 1.3: Infiltration System 1.3 Peak Elev=594.19' Storage=0.005 af Inflow=0.4 cfs 0.034 af
Outflow=0.1 cfs 0.034 af

Link DP: Design Point Inflow=57.7 cfs 7.834 af
Primary=57.7 cfs 7.834 af

Summary for Subcatchment 1.0S: 1.0S

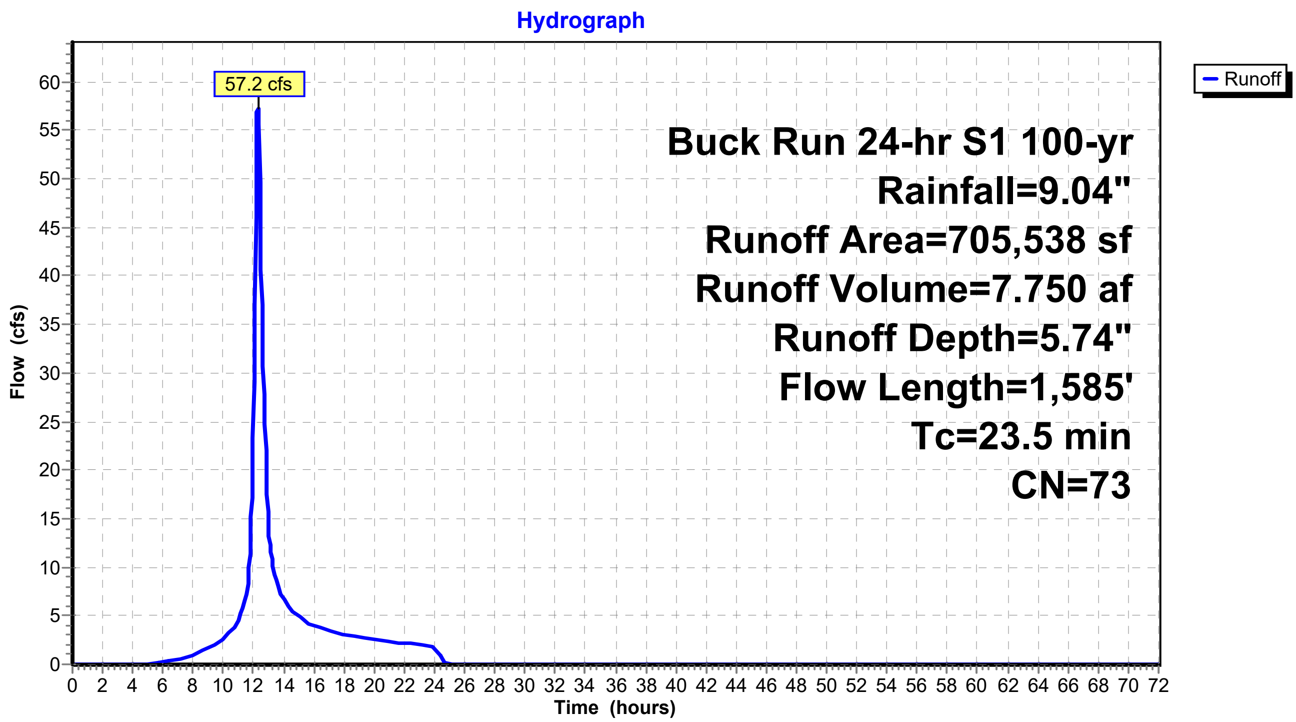
Runoff = 57.2 cfs @ 12.28 hrs, Volume= 7.750 af, Depth= 5.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Buck Run 24-hr S1 100-yr Rainfall=9.04"

	Area (sf)	CN	Description
*	18,932	98	Existing Pavement
*	6,135	98	Existing Buildings
	5,607	87	Dirt roads, HSG C
*	6,970	98	Proposed Pavement
*	1,405	61	Existing>75% Grass cover, Good, HSG B
*	3,457	80	Proposed >75% Grass cover, Good, HSG D
*	3,083	61	Proposed >75% Grass cover, Good, HSG B
*	2,900	74	Existing >75% Grass cover, Good, HSG C
*	17,714	74	Proposed >75% Grass cover, Good, HSG C
	13,520	89	Gravel roads, HSG C
	22,115	55	Woods, Good, HSG B
	417,935	70	Woods, Good, HSG C
	150,505	77	Woods, Good, HSG D
	35,260	71	Meadow, non-grazed, HSG C
	705,538	73	Weighted Average
	673,501		95.46% Pervious Area
	32,037		4.54% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	100	0.0900	0.15		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.40"
12.1	1,485	0.1670	2.04		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
23.5	1,585	Total			

Subcatchment 1.0S: 1.0S



Summary for Subcatchment 1.1S: 1.1S

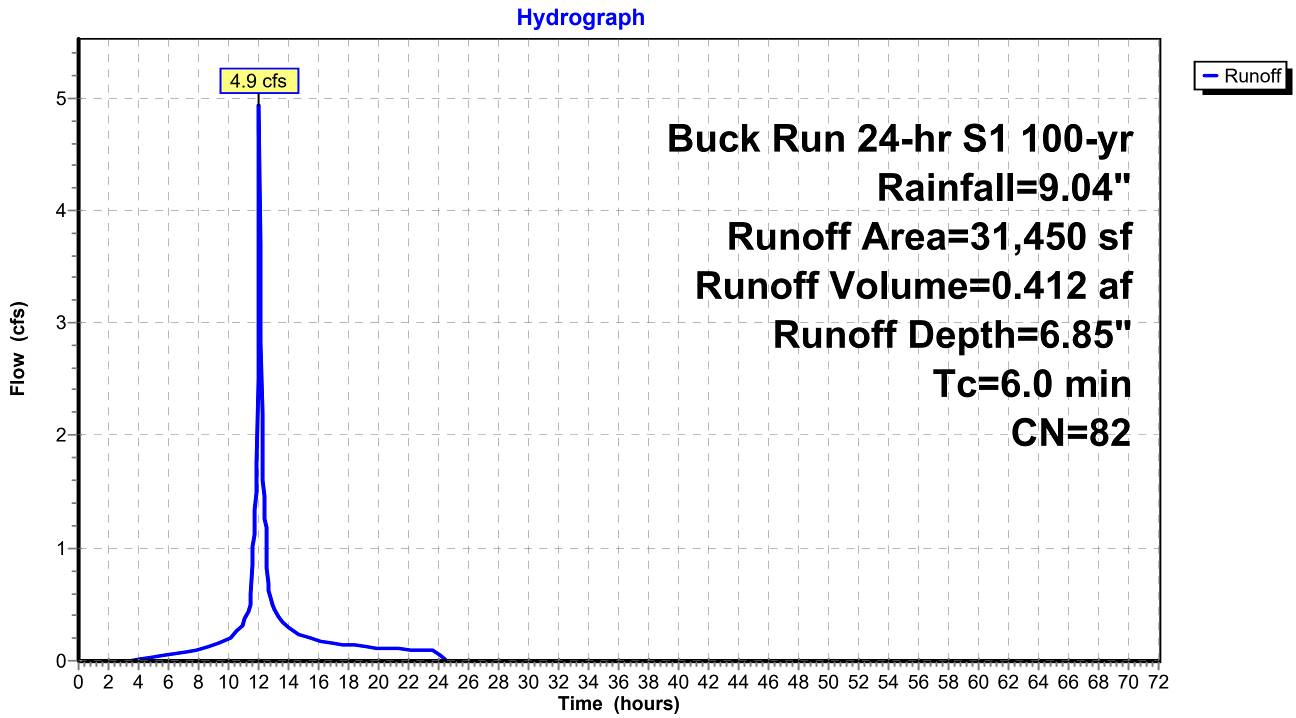
Runoff = 4.9 cfs @ 12.04 hrs, Volume= 0.412 af, Depth= 6.85"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Buck Run 24-hr S1 100-yr Rainfall=9.04"

	Area (sf)	CN	Description
*	12,870	98	Proposed Pavement
*	340	98	Proposed Sidewalk
	5,235	61	>75% Grass cover, Good, HSG B
	13,005	74	>75% Grass cover, Good, HSG C
	31,450	82	Weighted Average
	18,240		58.00% Pervious Area
	13,210		42.00% Impervious Area

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

Subcatchment 1.1S: 1.1S



Summary for Subcatchment 1.2S: 1.2S

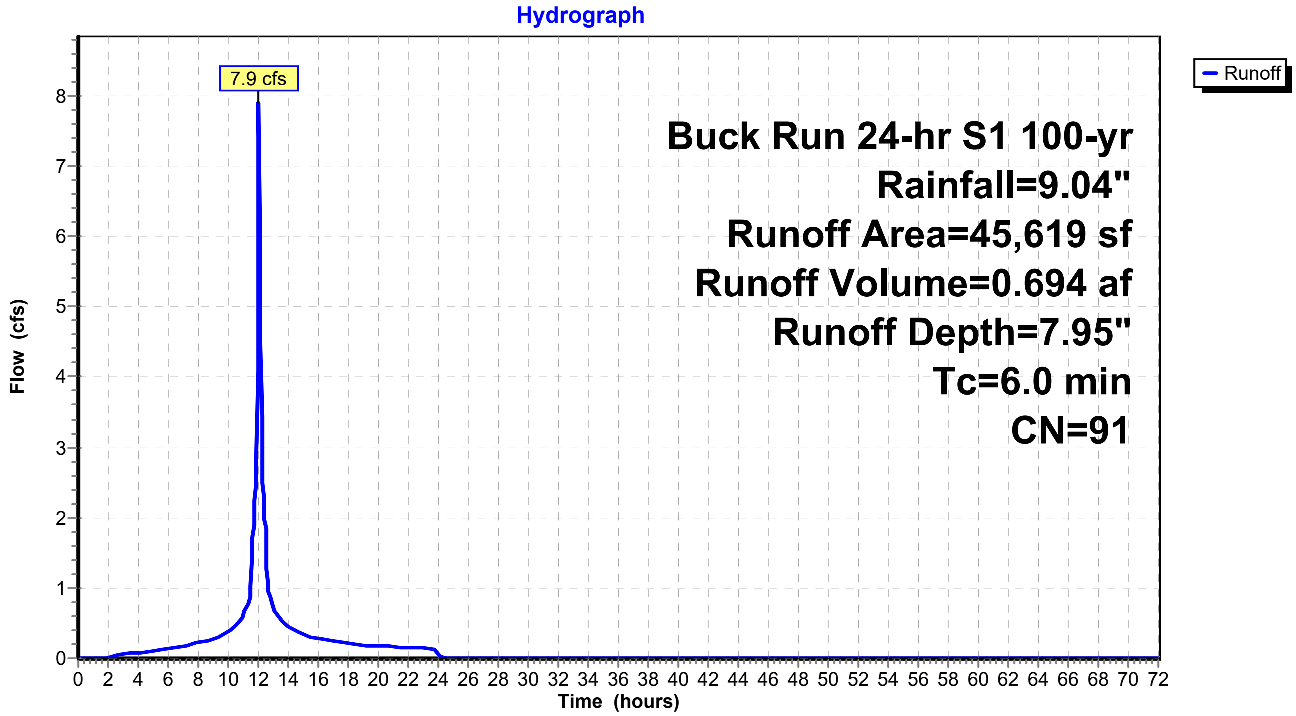
Runoff = 7.9 cfs @ 12.04 hrs, Volume= 0.694 af, Depth= 7.95"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Buck Run 24-hr S1 100-yr Rainfall=9.04"

	Area (sf)	CN	Description
*	24,985	98	Proposed Pavement & Walkway
*	4,815	98	Proposed Building
	10,849	74	>75% Grass cover, Good, HSG C
*	1,870	98	Proposed Courtyard Imp
	3,100	74	>75% Grass cover, Good, HSG C
	45,619	91	Weighted Average
	13,949		30.58% Pervious Area
	31,670		69.42% Impervious Area

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

Subcatchment 1.2S: 1.2S



Summary for Subcatchment 1.3S: 1.3S

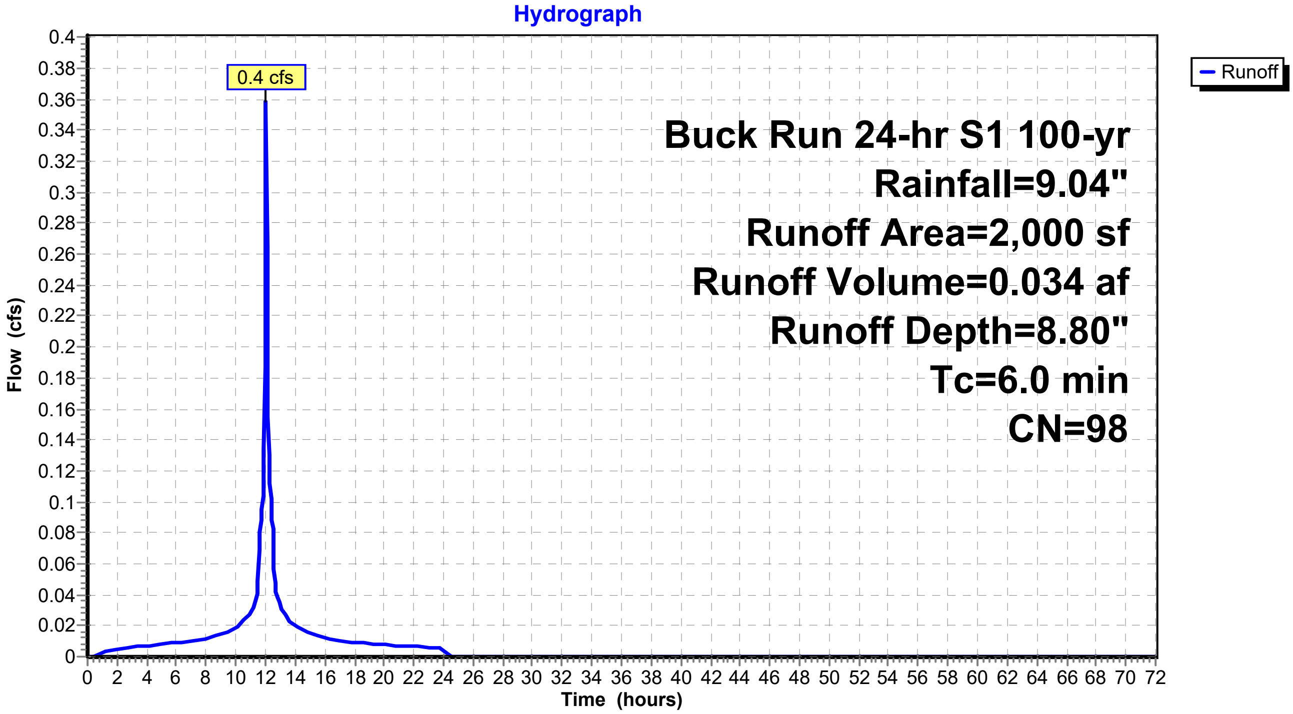
Runoff = 0.4 cfs @ 12.04 hrs, Volume= 0.034 af, Depth= 8.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Buck Run 24-hr S1 100-yr Rainfall=9.04"

	Area (sf)	CN	Description
*	2,000	98	Proposed Pods and Facilities
	2,000		100.00% Impervious Area

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

Subcatchment 1.3S: 1.3S



Summary for Pond 1.1P: Infiltration Basin 1.1

Inflow Area =	0.722 ac, 42.00% Impervious, Inflow Depth = 6.85" for 100-yr event			
Inflow =	4.9 cfs @	12.04 hrs, Volume=	0.412 af	
Outflow =	1.3 cfs @	12.41 hrs, Volume=	0.412 af,	Atten= 73%, Lag= 22.4 min
Discarded =	1.0 cfs @	12.41 hrs, Volume=	0.395 af	
Primary =	0.3 cfs @	12.41 hrs, Volume=	0.018 af	
Secondary =	0.0 cfs @	0.00 hrs, Volume=	0.000 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 455.39' @ 12.41 hrs Surf.Area= 2,243 sf Storage= 4,587 cf

Plug-Flow detention time= 38.9 min calculated for 0.412 af (100% of inflow)
Center-of-Mass det. time= 38.9 min (845.0 - 806.1)

Volume	Invert	Avail.Storage	Storage Description
#1	451.00'	9,077 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
451.00	125	0	0
452.00	447	286	286
454.00	1,356	1,803	2,089
456.00	2,634	3,990	6,079
457.00	3,362	2,998	9,077

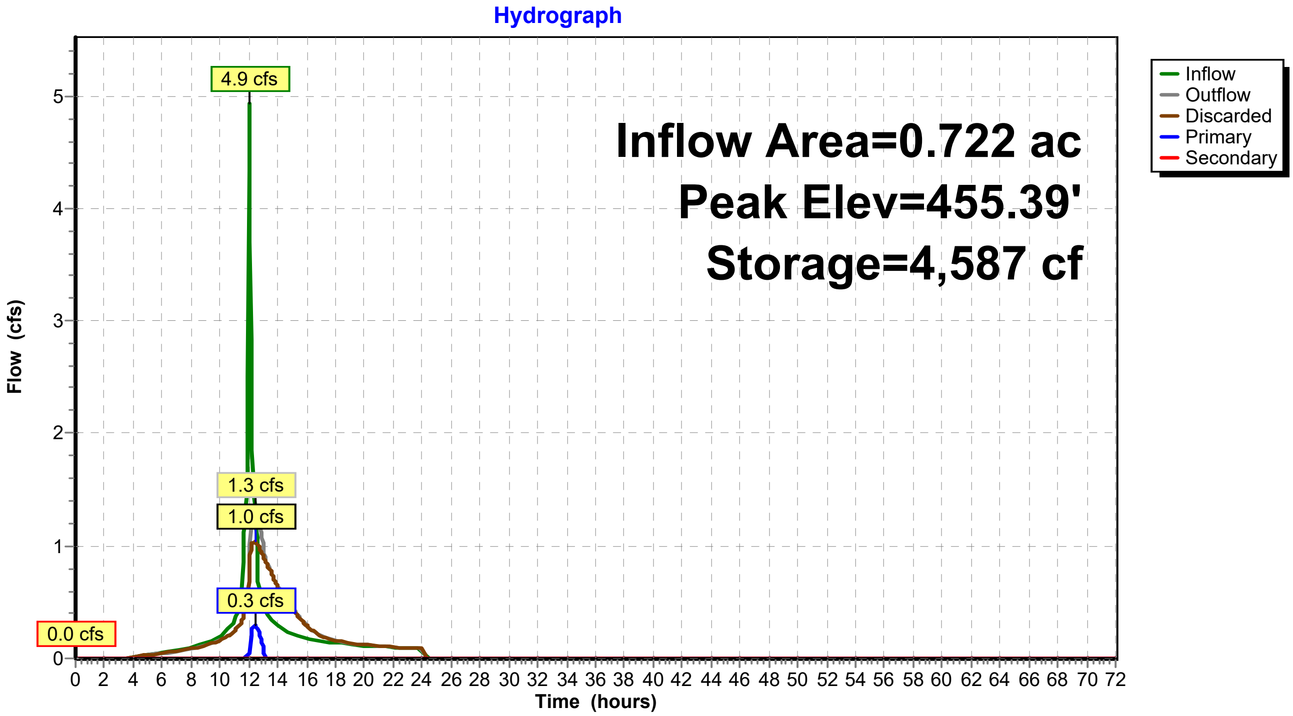
Device	Routing	Invert	Outlet Devices
#1	Primary	450.30'	**12.0" Round Culvert** L= 58.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 450.30' / 449.50' S= 0.0138 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	454.75'	**4.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	455.50'	**30.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Discarded	451.00'	**20.000 in/hr Exfiltration over Surface area** Phase-In= 0.10'
#5	Secondary	456.00'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Discarded OutFlow Max=1.0 cfs @ 12.41 hrs HW=455.39' (Free Discharge)
└─**4=Exfiltration** (Exfiltration Controls 1.0 cfs)

Primary OutFlow Max=0.3 cfs @ 12.41 hrs HW=455.39' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.3 cfs of 7.6 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 0.3 cfs @ 3.30 fps)
  └─**3=Orifice/Grate** (Controls 0.0 cfs)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=451.00' TW=0.00' (Dynamic Tailwater)
└─**5=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Pond 1.1P: Infiltration Basin 1.1



Stage-Area-Storage for Pond 1.1P: Infiltration Basin 1.1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
451.00	125	0
451.10	157	14
451.20	189	31
451.30	222	52
451.40	254	76
451.50	286	103
451.60	318	133
451.70	350	166
451.80	383	203
451.90	415	243
452.00	447	286
452.10	492	333
452.20	538	384
452.30	583	441
452.40	629	501
452.50	674	566
452.60	720	636
452.70	765	710
452.80	811	789
452.90	856	872
453.00	902	960
453.10	947	1,053
453.20	992	1,150
453.30	1,038	1,251
453.40	1,083	1,357
453.50	1,129	1,468
453.60	1,174	1,583
453.70	1,220	1,703
453.80	1,265	1,827
453.90	1,311	1,956
454.00	1,356	2,089
454.10	1,420	2,228
454.20	1,484	2,373
454.30	1,548	2,525
454.40	1,612	2,683
454.50	1,676	2,847
454.60	1,739	3,018
454.70	1,803	3,195
454.80	1,867	3,378
454.90	1,931	3,568
455.00	1,995	3,765
455.10	2,059	3,967
455.20	2,123	4,176
455.30	2,187	4,392
455.40	2,251	4,614
455.50	2,315	4,842
455.60	2,378	5,077
455.70	2,442	5,318
455.80	2,506	5,565
455.90	2,570	5,819
456.00	2,634	6,079
456.10	2,707	6,346
456.20	2,780	6,620
456.30	2,852	6,902
456.40	2,925	7,191
456.50	2,998	7,487
456.60	3,071	7,790
456.70	3,144	8,101
456.80	3,216	8,419
456.90	3,289	8,744
457.00	**3,362**	**9,077**

Summary for Pond DS1.2: Diversion Structure 1.2

Inflow Area = 1.047 ac, 69.42% Impervious, Inflow Depth = 7.95" for 100-yr event
Inflow = 7.9 cfs @ 12.04 hrs, Volume= 0.694 af
Outflow = 7.9 cfs @ 12.04 hrs, Volume= 0.694 af, Atten= 0%, Lag= 0.0 min
Primary = 3.1 cfs @ 12.05 hrs, Volume= 0.628 af
Secondary = 4.8 cfs @ 12.04 hrs, Volume= 0.066 af

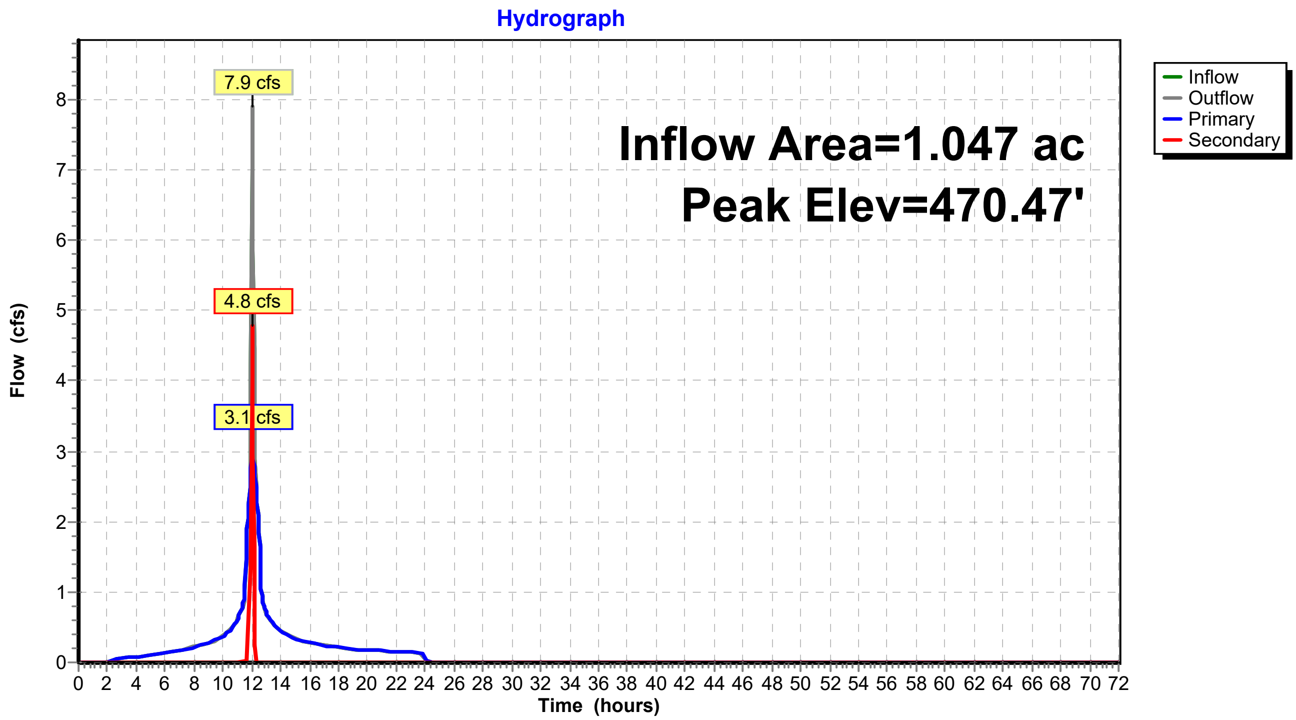
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 470.47' @ 12.05 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	466.67'	**8.0" Round Culvert** L= 6.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 466.67' / 466.60' S= 0.0117 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 3	469.35'	**2.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#3	Secondary	462.28'	**8.0" Round Culvert** L= 103.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 462.28' / 448.16' S= 0.1371 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=3.1 cfs @ 12.05 hrs HW=470.44' TW=466.62' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 3.1 cfs @ 8.92 fps)

Secondary OutFlow Max=4.7 cfs @ 12.04 hrs HW=470.38' TW=0.00' (Dynamic Tailwater)
└─**3=Culvert** (Inlet Controls 4.7 cfs @ 13.42 fps)
  └─**2=Broad-Crested Rectangular Weir** (Passes 4.7 cfs of 6.9 cfs potential flow)

Pond DS1.2: Diversion Structure 1.2



Stage-Area-Storage for Pond DS1.2: Diversion Structure 1.2

Elevation (feet)	Storage (cubic-feet)
462.28	**0**
462.32	0
462.36	0
462.40	0
462.44	0
462.48	0
462.52	0
462.56	0
462.60	0
462.64	0
462.68	0
462.72	0
462.76	0
462.80	0
462.84	0
462.88	0
462.92	0
462.96	0
463.00	0
463.04	0
463.08	0
463.12	0
463.16	0
463.20	0
463.24	0
463.28	0
463.32	0
463.36	0
463.40	0
463.44	0
463.48	0
463.52	0
463.56	0
463.60	0
463.64	0
463.68	0
463.72	0
463.76	0
463.80	0
463.84	0
463.88	0
463.92	0
463.96	0
464.00	0
464.04	0
464.08	0
464.12	0
464.16	0
464.20	0
464.24	0
464.28	0
464.32	0
464.36	0
464.40	0
464.44	0
464.48	0
464.52	0
464.56	0
464.60	0
464.64	0
464.68	0
464.72	0
464.76	0
464.80	0
464.84	0
464.88	0
464.92	0
464.96	0
465.00	0
465.04	0
465.08	0
465.12	0
465.16	0
465.20	0
465.24	0
465.28	0
465.32	0
465.36	0
465.40	0
465.44	0
465.48	0
465.52	0
465.56	0
465.60	0
465.64	0
465.68	0
465.72	0
465.76	0
465.80	0
465.84	0
465.88	0
465.92	0
465.96	0
466.00	0
466.04	0
466.08	0
466.12	0
466.16	0
466.20	0
466.24	0
466.28	0
466.32	0
466.36	0
466.40	0
466.44	0
466.48	0
466.52	0
466.56	0
466.60	0
466.64	0
466.68	0
466.72	0
466.76	0
466.80	0
466.84	0
466.88	0
466.92	0
466.96	0
467.00	0
467.04	0
467.08	0
467.12	0
467.16	0
467.20	0
467.24	0
467.28	0
467.32	0
467.36	0
467.40	0
467.44	0
467.48	0
467.52	0
467.56	0
467.60	0
467.64	0
467.68	0
467.72	0
467.76	0
467.80	0
467.84	0
467.88	0
467.92	0
467.96	0
468.00	0
468.04	0
468.08	0
468.12	0
468.16	0
468.20	0
468.24	0
468.28	0
468.32	0
468.36	0
468.40	0
468.44	0
468.48	0
468.52	0
468.56	0
468.60	0
468.64	0
468.68	0
468.72	0
468.76	0
468.80	0
468.84	0
468.88	0
468.92	0
468.96	0
469.00	0
469.04	0
469.08	0
469.12	0
469.16	0
469.20	0
469.24	0
469.28	0
469.32	0
469.36	0
469.40	0
469.44	0
469.48	0
469.52	0
469.56	0
469.60	0
469.64	0
469.68	0
469.72	0
469.76	0
469.80	0
469.84	0
469.88	0
469.92	0
469.96	0
470.00	0
470.04	0
470.08	0
470.12	0
470.16	0
470.20	0
470.24	0
470.28	0
470.32	0
470.36	0
470.40	0
470.44	0
470.48	0

Summary for Pond DS1.3: Diversion Structure 1.3

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 8.80" for 100-yr event
Inflow = 0.4 cfs @ 12.04 hrs, Volume= 0.034 af
Outflow = 0.4 cfs @ 12.04 hrs, Volume= 0.034 af, Atten= 0%, Lag= 0.0 min
Primary = 0.4 cfs @ 12.04 hrs, Volume= 0.034 af
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0.000 af

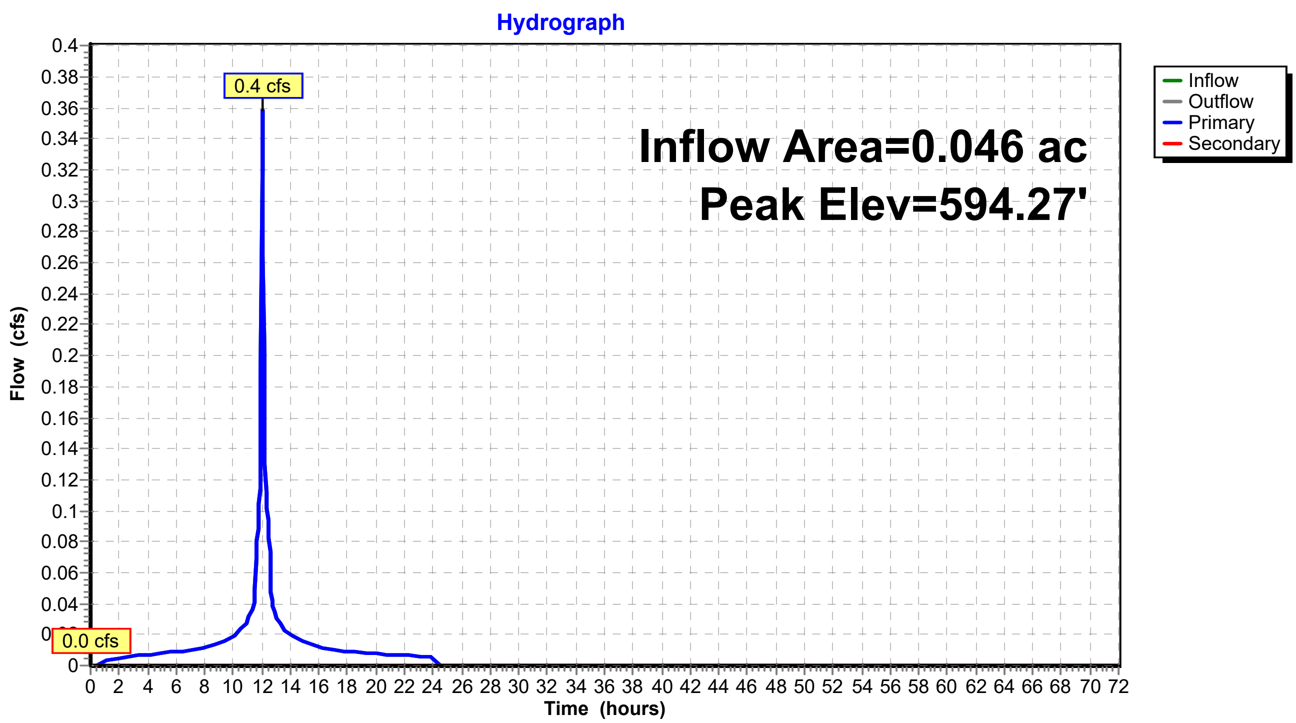
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 594.27' @ 12.06 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	593.10'	**4.0" Round Culvert** L= 6.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 593.10' / 593.00' S= 0.0167 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.09 sf
#2	Secondary	595.20'	**8.0" Round Culvert** L= 154.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 595.20' / 590.00' S= 0.0338 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=0.3 cfs @ 12.04 hrs HW=594.17' TW=593.69' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 0.3 cfs @ 3.34 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=593.10' TW=0.00' (Dynamic Tailwater)
└─**2=Culvert** (Controls 0.0 cfs)

Pond DS1.3: Diversion Structure 1.3



Stage-Area-Storage for Pond DS1.3: Diversion Structure 1.3

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
593.10	**0**	594.42	0	595.74	0
593.12	0	594.44	0	595.76	0
593.14	0	594.46	0	595.78	0
593.16	0	594.48	0	595.80	0
593.18	0	594.50	0	595.82	0
593.20	0	594.52	0	595.84	0
593.22	0	594.54	0	595.86	0
593.24	0	594.56	0		
593.26	0	594.58	0		
593.28	0	594.60	0		
593.30	0	594.62	0		
593.32	0	594.64	0		
593.34	0	594.66	0		
593.36	0	594.68	0		
593.38	0	594.70	0		
593.40	0	594.72	0		
593.42	0	594.74	0		
593.44	0	594.76	0		
593.46	0	594.78	0		
593.48	0	594.80	0		
593.50	0	594.82	0		
593.52	0	594.84	0		
593.54	0	594.86	0		
593.56	0	594.88	0		
593.58	0	594.90	0		
593.60	0	594.92	0		
593.62	0	594.94	0		
593.64	0	594.96	0		
593.66	0	594.98	0		
593.68	0	595.00	0		
593.70	0	595.02	0		
593.72	0	595.04	0		
593.74	0	595.06	0		
593.76	0	595.08	0		
593.78	0	595.10	0		
593.80	0	595.12	0		
593.82	0	595.14	0		
593.84	0	595.16	0		
593.86	0	595.18	0		
593.88	0	595.20	0		
593.90	0	595.22	0		
593.92	0	595.24	0		
593.94	0	595.26	0		
593.96	0	595.28	0		
593.98	0	595.30	0		
594.00	0	595.32	0		
594.02	0	595.34	0		
594.04	0	595.36	0		
594.06	0	595.38	0		
594.08	0	595.40	0		
594.10	0	595.42	0		
594.12	0	595.44	0		
594.14	0	595.46	0		
594.16	0	595.48	0		
594.18	0	595.50	0		
594.20	0	595.52	0		
594.22	0	595.54	0		
594.24	0	595.56	0		
594.26	0	595.58	0		
594.28	0	595.60	0		
594.30	0	595.62	0		
594.32	0	595.64	0		
594.34	0	595.66	0		
594.36	0	595.68	0		
594.38	0	595.70	0		
594.40	0	595.72	0		

Summary for Pond INF 1.2: Infiltration System 1.2

Inflow Area = 1.047 ac, 69.42% Impervious, Inflow Depth = 7.20" for 100-yr event
Inflow = 3.1 cfs @ 12.05 hrs, Volume= 0.628 af
Outflow = 1.8 cfs @ 11.75 hrs, Volume= 0.628 af, Atten= 41%, Lag= 0.0 min
Discarded = 1.8 cfs @ 11.75 hrs, Volume= 0.628 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 467.00' @ 12.49 hrs Surf.Area= 0.076 ac Storage= 0.047 af

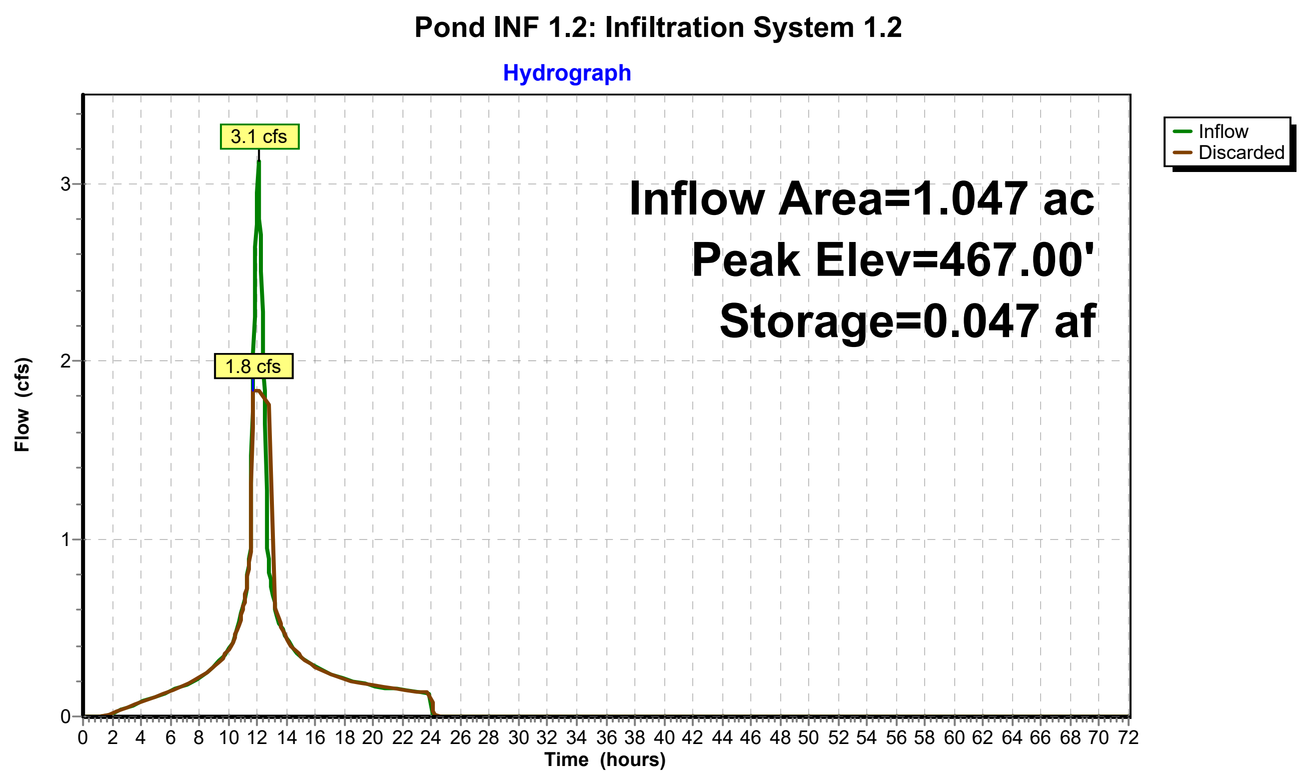
Plug-Flow detention time= 4.5 min calculated for 0.628 af (100% of inflow)
Center-of-Mass det. time= 4.5 min (784.9 - 780.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	466.01'	0.064 af	**30.50'W x 108.50'L x 3.54'H Field A** 0.269 af Overall - 0.109 af Embedded = 0.160 af x 40.0% Voids
#2A	466.51'	0.109 af	**Cultec R-330XLHD** x 90 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 6 rows
		0.173 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	466.01'	**24.000 in/hr Exfiltration over Horizontal area** Phase-In= 0.10'

Discarded OutFlow Max=1.8 cfs @ 11.75 hrs HW=466.13' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 1.8 cfs)



Stage-Area-Storage for Pond INF 1.2: Infiltration System 1.2

Elevation (feet)	Horizontal (acres)	Storage (acre-feet)	Elevation (feet)	Horizontal (acres)	Storage (acre-feet)	Elevation (feet)	Horizontal (acres)	Storage (acre-feet)
466.01	**0.076**	0.000	467.33	0.076	0.068	468.65	0.076	0.143
466.03	0.076	0.001	467.35	0.076	0.069	468.67	0.076	0.144
466.05	0.076	0.001	467.37	0.076	0.070	468.69	0.076	0.145
466.07	0.076	0.002	467.39	0.076	0.072	468.71	0.076	0.146
466.09	0.076	0.002	467.41	0.076	0.073	468.73	0.076	0.147
466.11	0.076	0.003	467.43	0.076	0.074	468.75	0.076	0.147
466.13	0.076	0.004	467.45	0.076	0.075	468.77	0.076	0.148
466.15	0.076	0.004	467.47	0.076	0.077	468.79	0.076	0.149
466.17	0.076	0.005	467.49	0.076	0.078	468.81	0.076	0.150
466.19	0.076	0.005	467.51	0.076	0.079	468.83	0.076	0.151
466.21	0.076	0.006	467.53	0.076	0.080	468.85	0.076	0.151
466.23	0.076	0.007	467.55	0.076	0.082	468.87	0.076	0.152
466.25	0.076	0.007	467.57	0.076	0.083	468.89	0.076	0.153
466.27	0.076	0.008	467.59	0.076	0.084	468.91	0.076	0.153
466.29	0.076	0.009	467.61	0.076	0.085	468.93	0.076	0.154
466.31	0.076	0.009	467.63	0.076	0.086	468.95	0.076	0.155
466.33	0.076	0.010	467.65	0.076	0.088	468.97	0.076	0.155
466.35	0.076	0.010	467.67	0.076	0.089	468.99	0.076	0.156
466.37	0.076	0.011	467.69	0.076	0.090	469.01	0.076	0.157
466.39	0.076	0.012	467.71	0.076	0.091	469.03	0.076	0.157
466.41	0.076	0.012	467.73	0.076	0.093	469.05	0.076	0.158
466.43	0.076	0.013	467.75	0.076	0.094	469.07	0.076	0.159
466.45	0.076	0.013	467.77	0.076	0.095	469.09	0.076	0.159
466.47	0.076	0.014	467.79	0.076	0.096	469.11	0.076	0.160
466.49	0.076	0.015	467.81	0.076	0.097	469.13	0.076	0.160
466.51	0.076	0.015	467.83	0.076	0.099	469.15	0.076	0.161
466.53	0.076	0.017	467.85	0.076	0.100	469.17	0.076	0.162
466.55	0.076	0.018	467.87	0.076	0.101	469.19	0.076	0.162
466.57	0.076	0.019	467.89	0.076	0.102	469.21	0.076	0.163
466.59	0.076	0.020	467.91	0.076	0.103	469.23	0.076	0.163
466.61	0.076	0.022	467.93	0.076	0.105	469.25	0.076	0.164
466.63	0.076	0.023	467.95	0.076	0.106	469.27	0.076	0.165
466.65	0.076	0.024	467.97	0.076	0.107	469.29	0.076	0.165
466.67	0.076	0.026	467.99	0.076	0.108	469.31	0.076	0.166
466.69	0.076	0.027	468.01	0.076	0.109	469.33	0.076	0.166
466.71	0.076	0.028	468.03	0.076	0.110	469.35	0.076	0.167
466.73	0.076	0.030	468.05	0.076	0.112	469.37	0.076	0.168
466.75	0.076	0.031	468.07	0.076	0.113	469.39	0.076	0.168
466.77	0.076	0.032	468.09	0.076	0.114	469.41	0.076	0.169
466.79	0.076	0.033	468.11	0.076	0.115	469.43	0.076	0.170
466.81	0.076	0.035	468.13	0.076	0.116	469.45	0.076	0.170
466.83	0.076	0.036	468.15	0.076	0.117	469.47	0.076	0.171
466.85	0.076	0.037	468.17	0.076	0.118	469.49	0.076	0.171
466.87	0.076	0.039	468.19	0.076	0.119	469.51	0.076	0.172
466.89	0.076	0.040	468.21	0.076	0.121	469.53	0.076	0.173
466.91	0.076	0.041	468.23	0.076	0.122	469.55	0.076	**0.173**
466.93	0.076	0.042	468.25	0.076	0.123			
466.95	0.076	0.044	468.27	0.076	0.124			
466.97	0.076	0.045	468.29	0.076	0.125			
466.99	0.076	0.046	468.31	0.076	0.126			
467.01	0.076	0.048	468.33	0.076	0.127			
467.03	0.076	0.049	468.35	0.076	0.128			
467.05	0.076	0.050	468.37	0.076	0.129			
467.07	0.076	0.051	468.39	0.076	0.130			
467.09	0.076	0.053	468.41	0.076	0.131			
467.11	0.076	0.054	468.43	0.076	0.132			
467.13	0.076	0.055	468.45	0.076	0.133			
467.15	0.076	0.057	468.47	0.076	0.134			
467.17	0.076	0.058	468.49	0.076	0.135			
467.19	0.076	0.059	468.51	0.076	0.136			
467.21	0.076	0.060	468.53	0.076	0.137			
467.23	0.076	0.062	468.55	0.076	0.138			
467.25	0.076	0.063	468.57	0.076	0.139			
467.27	0.076	0.064	468.59	0.076	0.140			
467.29	0.076	0.065	468.61	0.076	0.141			
467.31	0.076	0.067	468.63	0.076	0.142			

Summary for Pond INF 1.3: Infiltration System 1.3

Inflow Area =	0.046 ac,100.00% Impervious, Inflow Depth = 8.80"	for 100-yr event
Inflow =	0.4 cfs @ 12.04 hrs, Volume=	0.034 af
Outflow =	0.1 cfs @ 11.80 hrs, Volume=	0.034 af, Atten= 75%, Lag= 0.0 min
Discarded =	0.1 cfs @ 11.80 hrs, Volume=	0.034 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 594.19' @ 12.42 hrs Surf.Area= 0.006 ac Storage= 0.005 af

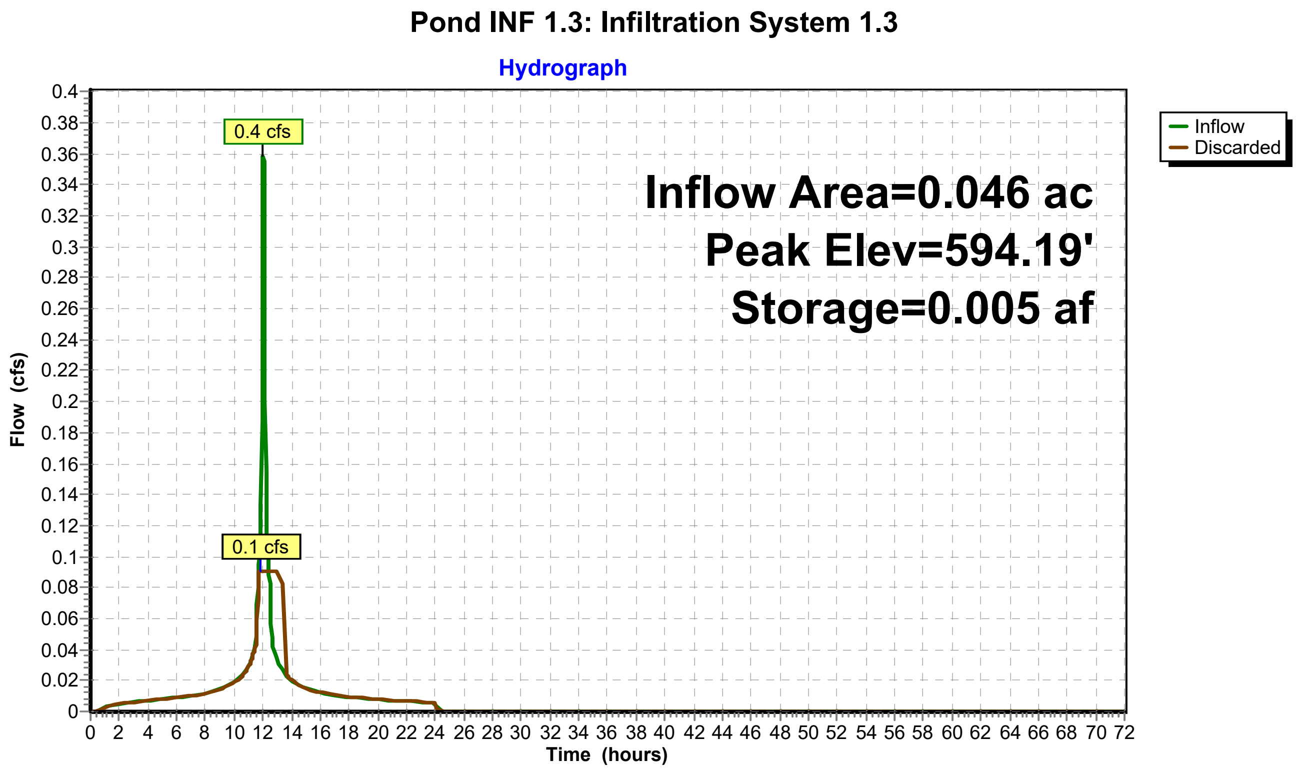
Plug-Flow detention time= 10.2 min calculated for 0.034 af (100% of inflow)
Center-of-Mass det. time= 10.1 min (750.1 - 739.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	593.00'	0.006 af	**16.00'W x 17.50'L x 3.54'H Field A** 0.023 af Overall - 0.008 af Embedded = 0.015 af x 40.0% Voids
#2A	593.50'	0.008 af	**Cultec R-330XLHD** x 6 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 3 rows
		0.014 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	593.00'	**14.000 in/hr Exfiltration over Horizontal area** Phase-In= 0.10'

Discarded OutFlow Max=0.1 cfs @ 11.80 hrs HW=593.11' (Free Discharge)
└1=**Exfiltration** (Exfiltration Controls 0.1 cfs)



Stage-Area-Storage for Pond INF 1.3: Infiltration System 1.3

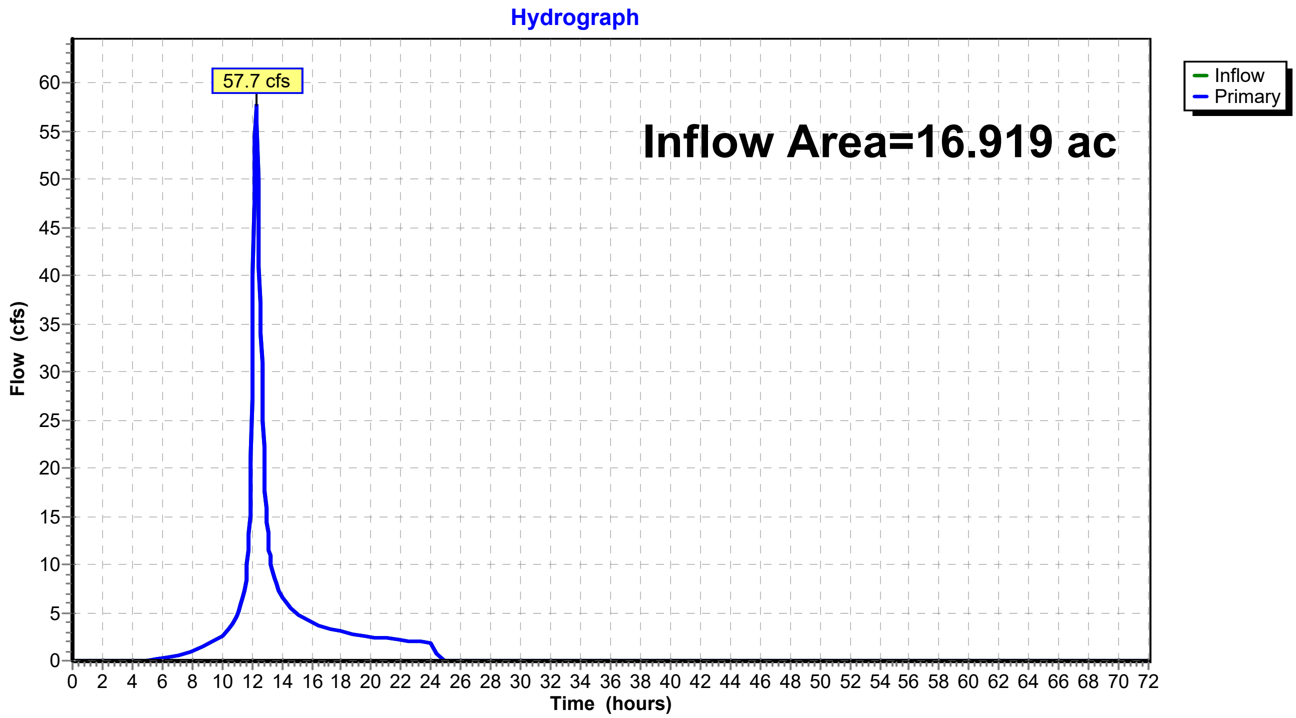
Elevation (feet)	Horizontal (acres)	Storage (acre-feet)
593.00	**0.006**	0.000
593.02	0.006	0.000
593.04	0.006	0.000
593.06	0.006	0.000
593.08	0.006	0.000
593.10	0.006	0.000
593.12	0.006	0.000
593.14	0.006	0.000
593.16	0.006	0.000
593.18	0.006	0.000
593.20	0.006	0.001
593.22	0.006	0.001
593.24	0.006	0.001
593.26	0.006	0.001
593.28	0.006	0.001
593.30	0.006	0.001
593.32	0.006	0.001
593.34	0.006	0.001
593.36	0.006	0.001
593.38	0.006	0.001
593.40	0.006	0.001
593.42	0.006	0.001
593.44	0.006	0.001
593.46	0.006	0.001
593.48	0.006	0.001
593.50	0.006	0.001
593.52	0.006	0.001
593.54	0.006	0.001
593.56	0.006	0.002
593.58	0.006	0.002
593.60	0.006	0.002
593.62	0.006	0.002
593.64	0.006	0.002
593.66	0.006	0.002
593.68	0.006	0.002
593.70	0.006	0.002
593.72	0.006	0.002
593.74	0.006	0.003
593.76	0.006	0.003
593.78	0.006	0.003
593.80	0.006	0.003
593.82	0.006	0.003
593.84	0.006	0.003
593.86	0.006	0.003
593.88	0.006	0.003
593.90	0.006	0.003
593.92	0.006	0.003
593.94	0.006	0.004
593.96	0.006	0.004
593.98	0.006	0.004
594.00	0.006	0.004
594.02	0.006	0.004
594.04	0.006	0.004
594.06	0.006	0.004
594.08	0.006	0.004
594.10	0.006	0.004
594.12	0.006	0.004
594.14	0.006	0.005
594.16	0.006	0.005
594.18	0.006	0.005
594.20	0.006	0.005
594.22	0.006	0.005
594.24	0.006	0.005
594.26	0.006	0.005
594.28	0.006	0.005
594.30	0.006	0.005
594.32	0.006	0.005
594.34	0.006	0.006
594.36	0.006	0.006
594.38	0.006	0.006
594.40	0.006	0.006
594.42	0.006	0.006
594.44	0.006	0.006
594.46	0.006	0.006
594.48	0.006	0.006
594.50	0.006	0.006
594.52	0.006	0.006
594.54	0.006	0.006
594.56	0.006	0.007
594.58	0.006	0.007
594.60	0.006	0.007
594.62	0.006	0.007
594.64	0.006	0.007
594.66	0.006	0.007
594.68	0.006	0.007
594.70	0.006	0.007
594.72	0.006	0.007
594.74	0.006	0.007
594.76	0.006	0.008
594.78	0.006	0.008
594.80	0.006	0.008
594.82	0.006	0.008
594.84	0.006	0.008
594.86	0.006	0.008
594.88	0.006	0.008
594.90	0.006	0.008
594.92	0.006	0.008
594.94	0.006	0.008
594.96	0.006	0.008
594.98	0.006	0.009
595.00	0.006	0.009
595.02	0.006	0.009
595.04	0.006	0.009
595.06	0.006	0.009
595.08	0.006	0.009
595.10	0.006	0.009
595.12	0.006	0.009
595.14	0.006	0.009
595.16	0.006	0.009
595.18	0.006	0.009
595.20	0.006	0.010
595.22	0.006	0.010
595.24	0.006	0.010
595.26	0.006	0.010
595.28	0.006	0.010
595.30	0.006	0.010
595.32	0.006	0.010
595.34	0.006	0.010
595.36	0.006	0.010
595.38	0.006	0.010
595.40	0.006	0.010
595.42	0.006	0.010
595.44	0.006	0.011
595.46	0.006	0.011
595.48	0.006	0.011
595.50	0.006	0.011
595.52	0.006	0.011
595.54	0.006	0.011
595.56	0.006	0.011
595.58	0.006	0.011
595.60	0.006	0.011
595.62	0.006	0.011
595.64	0.006	0.011
595.66	0.006	0.011
595.68	0.006	0.011
595.70	0.006	0.012
595.72	0.006	0.012
595.74	0.006	0.012
595.76	0.006	0.012
595.78	0.006	0.012
595.80	0.006	0.012
595.82	0.006	0.012
595.84	0.006	0.012
595.86	0.006	0.012
595.88	0.006	0.012
595.90	0.006	0.012
595.92	0.006	0.012
595.94	0.006	0.012
595.96	0.006	0.012
595.98	0.006	0.012
596.00	0.006	0.012
596.02	0.006	0.013
596.04	0.006	0.013
596.06	0.006	0.013
596.08	0.006	0.013
596.10	0.006	0.013
596.12	0.006	0.013
596.14	0.006	0.013
596.16	0.006	0.013
596.18	0.006	0.013
596.20	0.006	0.013
596.22	0.006	0.013
596.24	0.006	0.013
596.26	0.006	0.013
596.28	0.006	0.013
596.30	0.006	0.013
596.32	0.006	0.013
596.34	0.006	0.013
596.36	0.006	0.013
596.38	0.006	0.013
596.40	0.006	0.014
596.42	0.006	0.014
596.44	0.006	0.014
596.46	0.006	0.014
596.48	0.006	0.014
596.50	0.006	0.014
596.52	0.006	0.014
596.54	0.006	**0.014**

Summary for Link DP: Design Point

Inflow Area = 16.919 ac, 6.14% Impervious, Inflow Depth = 5.56" for 100-yr event
Inflow = 57.7 cfs @ 12.27 hrs, Volume= 7.834 af
Primary = 57.7 cfs @ 12.27 hrs, Volume= 7.834 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

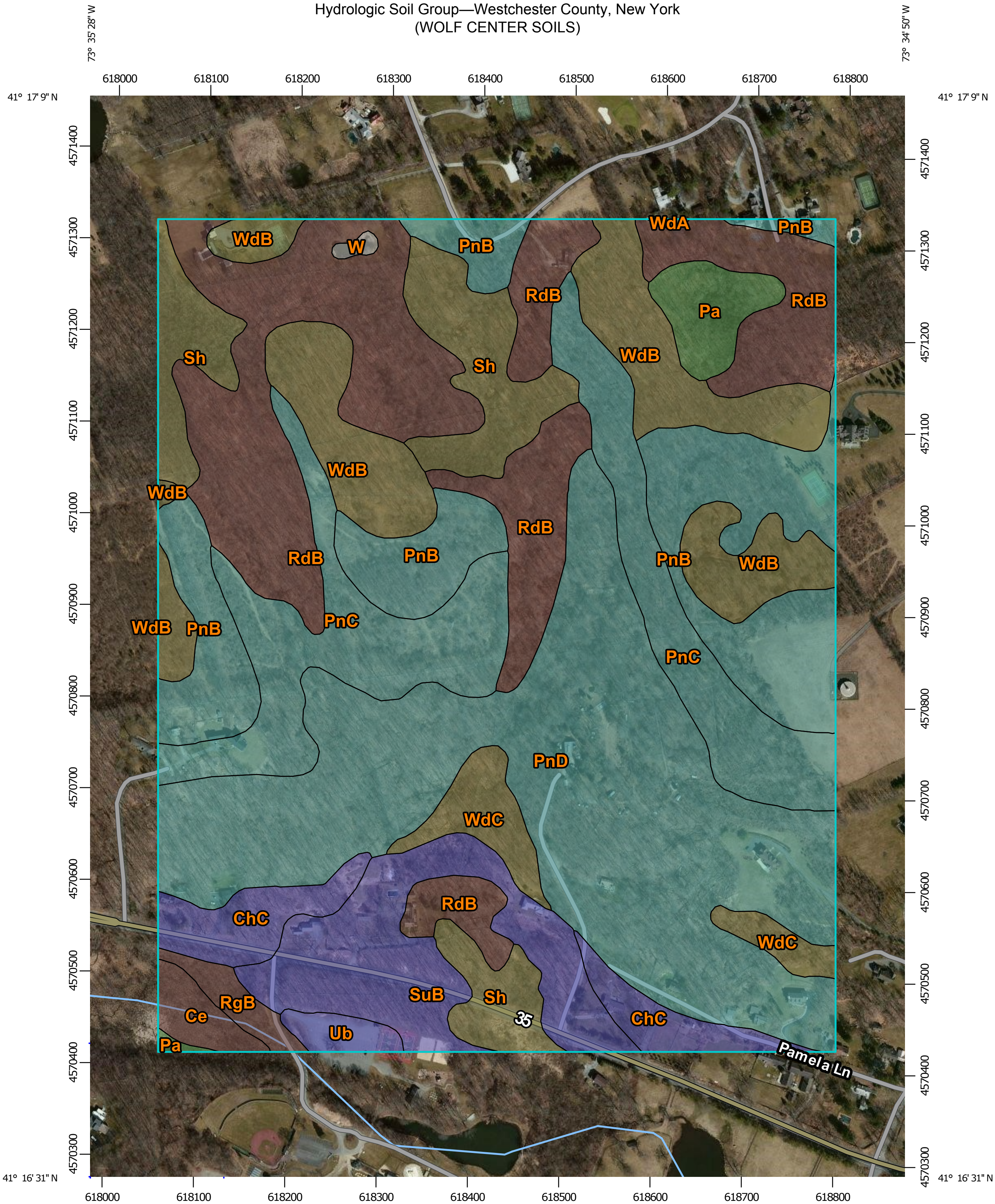
Link DP: Design Point



Appendix D:

NRCS Soil Mapping

Hydrologic Soil Group—Westchester County, New York
(WOLF CENTER SOILS)



Map Scale: 1:5,750 if printed on A portrait (8.5" x 11") sheet.

Meters: 0 50 100 200 300

Feet: 0 250 500 1000 1500

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 1:12,000.

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: http://websoilsurvey.nrcs.usda.gov
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: Westchester County, New York
Survey Area Data: Version 11, Sep 25, 2015

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

Date(s) aerial images were photographed: Mar 26, 2011—Apr 16, 2012

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

Hydrologic Soil Group— Summary by Map Unit — Westchester County, New York (NY119)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
Ce	Catden muck, 0 to 2 percent slopes	B/D	1.5	0.9%
ChC	Charlton loam, 8 to 15 percent slopes	B	5.4	3.2%
Pa	Palms muck	A/D	2.9	1.8%
PnB	Paxton fine sandy loam, 3 to 8 percent slopes	C	20.0	12.0%
PnC	Paxton fine sandy loam, 8 to 15 percent slopes	C	20.1	12.0%
PnD	Paxton fine sandy loam, 15 to 25 percent slopes	C	41.1	24.6%
RdB	Ridgebury loam, 3 to 8 percent slopes	B/D	30.7	18.3%
RgB	Ridgebury loam, 2 to 8 percent slopes, very stony	B/D	1.3	0.8%
Sh	Sun loam	C/D	11.4	6.8%
SuB	Sutton loam, 3 to 8 percent slopes	B	10.9	6.5%
Ub	Udorthents, smoothed	B	1.1	0.7%
W	Water		0.2	0.1%
WdA	Woodbridge loam, 0 to 3 percent slopes	C/D	0.1	0.0%
WdB	Woodbridge loam, 3 to 8 percent slopes	C/D	16.6	9.9%
WdC	Woodbridge loam, 8 to 15 percent slopes	C/D	3.8	2.2%
Totals for Area of Interest			**167.2**	**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 E:

New York Standards and Specifications for Erosion and Sediment Control Construction Site Log Book

APPENDIX F
CONSTRUCTION SITE INSPECTION AND MAINTENANCE LOG BOOK

STATE POLLUTANT DISCHARGE ELIMINATION SYSTEM FOR CONSTRUCTION ACTIVITIES

SAMPLE CONSTRUCTION SITE LOG BOOK

Table of Contents

I. PRE-CONSTRUCTION MEETING DOCUMENTS

Project Name ____

Permit No. ______________________ **Date of Authorization** __________

Name of Operator ____

Prime Contractor ____

a. Preamble to Site Assessment and Inspections

The Following Information To Be Read By All Person's Involved in The Construction of Stormwater Related Activities:

The Operator agrees to have a qualified inspector[1] conduct an assessment of the site prior to the commencement of construction[2] and certify in this inspection report that the appropriate erosion and sediment controls described in the SWPPP have been adequately installed or implemented to ensure overall preparedness of the site for the commencement of construction.

Prior to the commencement of construction, the Operator shall certify in this site logbook that the SWPPP has been prepared in accordance with the State's standards and meets all Federal, State and local erosion and sediment control requirements. A preconstruction meeting should be held to review all of the SWPPP requirements with construction personnel.

When construction starts, site inspections shall be conducted by the qualified inspector at least every 7 calendar days. The Operator shall maintain a record of all inspection reports in this site logbook. The site logbook shall be maintained on site and be made available to the permitting authorities upon request.

Prior to filing the Notice of Termination or the end of permit term, the Operator shall have a qualified inspector perform a final site inspection. The qualified inspector shall certify that the site has undergone final stabilization[3] using either vegetative or structural stabilization methods and that all temporary erosion and sediment controls (such as silt fencing) not needed for long-term erosion control have been removed. In addition, the Operator must identify and certify that all permanent structures described in the SWPPP have been constructed and provide the owner(s) with an operation and maintenance plan that ensures the structure(s) continuously functions as designed.

1 Refer to "Qualified Inspector" inspection requirements in the current SPDES General Permit for Stormwater Discharges from Construction Activity for complete list of inspection requirements.
2 "Commencement of construction" means the initial removal of vegetation and disturbance of soils associated with clearing, grading or excavating activities or other construction activities.
3 "Final stabilization" means that all soil-disturbing activities at the site have been completed and a uniform, perennial vegetative cover with a density of eighty (80) percent has been established or equivalent stabilization measures (such as the use of mulches or geotextiles) have been employed on all unpaved areas and areas not covered by permanent structures.

b. Pre-construction Site Assessment Checklist
(NOTE: Provide comments below as necessary)

1. Notice of Intent, SWPPP, and Contractors Certification:

Yes No NA

[ ] [ ] [ ] Has a Notice of Intent been filed with the NYS Department of Conservation?
[ ] [ ] [ ] Is the SWPPP on-site? Where?________________________________
[ ] [ ] [ ] Is the Plan current? What is the latest revision date?_______________
[ ] [ ] [ ] Is a copy of the NOI (with brief description) onsite? Where?_______________
[ ] [ ] [ ] Have all contractors involved with stormwater related activities signed a contractor's certification?

2. Resource Protection

Yes No NA

[ ] [ ] [ ] Are construction limits clearly flagged or fenced?
[ ] [ ] [ ] Important trees and associated rooting zones, on-site septic system absorption fields, existing vegetated areas suitable for filter strips, especially in perimeter areas, have been flagged for protection.
[ ] [ ] [ ] Creek crossings installed prior to land-disturbing activity, including clearing and blasting.

3. Surface Water Protection

Yes No NA

[ ] [ ] [ ] Clean stormwater runoff has been diverted from areas to be disturbed.
[ ] [ ] [ ] Bodies of water located either on site or in the vicinity of the site have been identified and protected.
[ ] [ ] [ ] Appropriate practices to protect on-site or downstream surface water are installed.
[ ] [ ] [ ] Are clearing and grading operations divided into areas <5 acres?

4. Stabilized Construction Access

Yes No NA

[ ] [ ] [ ] A temporary construction entrance to capture mud and debris from construction vehicles before they enter the public highway has been installed.
[ ] [ ] [ ] Other access areas (entrances, construction routes, equipment parking areas) are stabilized immediately as work takes place with gravel or other cover.
[ ] [ ] [ ] Sediment tracked onto public streets is removed or cleaned on a regular basis.

5. Sediment Controls

Yes No NA

[ ] [ ] [ ] Silt fence material and installation comply with the standard drawing and specifications.
[ ] [ ] [ ] Silt fences are installed at appropriate spacing intervals
[ ] [ ] [ ] Sediment/detention basin was installed as first land disturbing activity.
[ ] [ ] [ ] Sediment traps and barriers are installed.

6. Pollution Prevention for Waste and Hazardous Materials

Yes No NA

[ ] [ ] [ ] The Operator or designated representative has been assigned to implement the spill prevention avoidance and response plan.
[ ] [ ] [ ] The plan is contained in the SWPPP on page ______
[ ] [ ] [ ] Appropriate materials to control spills are onsite. Where? ___________________

II. CONSTRUCTION DURATION INSPECTIONS

a. Directions:

Inspection Forms will be filled out during the entire construction phase of the project.

Required Elements:

1) On a site map, indicate the extent of all disturbed site areas and drainage pathways. Indicate site areas that are expected to undergo initial disturbance or significant site work within the next 14-day period;

2) Indicate on a site map all areas of the site that have undergone temporary or permanent stabilization;

3) Indicate all disturbed site areas that have not undergone active site work during the previous 14-day period;

4) Inspect all sediment control practices and record the approximate degree of sediment accumulation as a percentage of sediment storage volume (for example, 10 percent, 20 percent, 50 percent);

5) Inspect all erosion and sediment control practices and record all maintenance requirements such as verifying the integrity of barrier or diversion systems (earthen berms or silt fencing) and containment systems (sediment basins and sediment traps). Identify any evidence of rill or gully erosion occurring on slopes and any loss of stabilizing vegetation or seeding/mulching. Document any excessive deposition of sediment or ponding water along barrier or diversion systems. Record the depth of sediment within containment structures, any erosion near outlet and overflow structures, and verify the ability of rock filters around perforated riser pipes to pass water; and

6) Immediately report to the Operator any deficiencies that are identified with the implementation of the SWPPP.

SITE PLAN/SKETCH

____________________________________ ________________________________

Inspector (print name) **Date of Inspection**

____________________________________ ________________________________

Qualified Inspector (print name) **Qualified Inspector Signature**

The above signed acknowledges that, to the best of his/her knowledge, all information provided on the forms is accurate and complete.

Maintaining Water Quality

Yes No NA
[ ] [ ] [ ] Is there an increase in turbidity causing a substantial visible contrast to natural conditions at the outfalls?
[ ] [ ] [ ] Is there residue from oil and floating substances, visible oil film, or globules or grease at the outfalls?
[ ] [ ] [ ] All disturbance is within the limits of the approved plans.
[ ] [ ] [ ] Have receiving lake/bay, stream, and/or wetland been impacted by silt from project?

Housekeeping

1. General Site Conditions

Yes No NA
[ ] [ ] [ ] Is construction site litter, debris and spoils appropriately managed?
[ ] [ ] [ ] Are facilities and equipment necessary for implementation of erosion and sediment control in working order and/or properly maintained?
[ ] [ ] [ ] Is construction impacting the adjacent property?
[ ] [ ] [ ] Is dust adequately controlled?

2. Temporary Stream Crossing

Yes No NA
[ ] [ ] [ ] Maximum diameter pipes necessary to span creek without dredging are installed.
[ ] [ ] [ ] Installed non-woven geotextile fabric beneath approaches.
[ ] [ ] [ ] Is fill composed of aggregate (no earth or soil)?
[ ] [ ] [ ] Rock on approaches is clean enough to remove mud from vehicles & prevent sediment from entering stream during high flow.

3. Stabilized Construction Access

Yes No NA
[ ] [ ] [ ] Stone is clean enough to effectively remove mud from vehicles.
[ ] [ ] [ ] Installed per standards and specifications?
[ ] [ ] [ ] Does all traffic use the stabilized entrance to enter and leave site?
[ ] [ ] [ ] Is adequate drainage provided to prevent ponding at entrance?

Runoff Control Practices

1. Excavation Dewatering

Yes No NA
[ ] [ ] [ ] Upstream and downstream berms (sandbags, inflatable dams, etc.) are installed per plan.
[ ] [ ] [ ] Clean water from upstream pool is being pumped to the downstream pool.
[ ] [ ] [ ] Sediment laden water from work area is being discharged to a silt-trapping device.
[ ] [ ] [ ] Constructed upstream berm with one-foot minimum freeboard.

Runoff Control Practices (continued)

2. Flow Spreader

Yes No NA

[ ] [ ] [ ] Installed per plan.
[ ] [ ] [ ] Constructed on undisturbed soil, not on fill, receiving only clear, non-sediment laden flow.
[ ] [ ] [ ] Flow sheets out of level spreader without erosion on downstream edge.

3. Interceptor Dikes and Swales

Yes No NA

[ ] [ ] [ ] Installed per plan with minimum side slopes 2H:1V or flatter.
[ ] [ ] [ ] Stabilized by geotextile fabric, seed, or mulch with no erosion occurring.
[ ] [ ] [ ] Sediment-laden runoff directed to sediment trapping structure

4. Stone Check Dam

Yes No NA

[ ] [ ] [ ] Is channel stable? (flow is not eroding soil underneath or around the structure).
[ ] [ ] [ ] Check is in good condition (rocks in place and no permanent pools behind the structure).
[ ] [ ] [ ] Has accumulated sediment been removed?.

5. Rock Outlet Protection

Yes No NA

[ ] [ ] [ ] Installed per plan.
[ ] [ ] [ ] Installed concurrently with pipe installation.

Soil Stabilization

1. Topsoil and Spoil Stockpiles

Yes No NA

[ ] [ ] [ ] Stockpiles are stabilized with vegetation and/or mulch.
[ ] [ ] [ ] Sediment control is installed at the toe of the slope.

2. Revegetation

Yes No NA

[ ] [ ] [ ] Temporary seedings and mulch have been applied to idle areas.
[ ] [ ] [ ] 4 inches minimum of topsoil has been applied under permanent seedings

Sediment Control Practices

1. Silt Fence and Linear Barriers

Yes No NA

[ ] [ ] [ ] Installed on Contour, 10 feet from toe of slope (not across conveyance channels).
[ ] [ ] [ ] Joints constructed by wrapping the two ends together for continuous support.
[ ] [ ] [ ] Fabric buried 6 inches minimum.
[ ] [ ] [ ] Posts are stable, fabric is tight and without rips or frayed areas.

Sediment accumulation is ___% of design capacity.

Sediment Control Practices (continued)

2. Storm Drain Inlet Protection (Use for Stone & Block; Filter Fabric; Curb; or, Excavated; Filter Sock or Manufactured practices)

Yes No NA
[ ] [ ] [ ] Installed concrete blocks lengthwise so open ends face outward, not upward.
[ ] [ ] [ ] Placed wire screen between No. 3 crushed stone and concrete blocks.
[ ] [ ] [ ] Drainage area is 1acre or less.
[ ] [ ] [ ] Excavated area is 900 cubic feet.
[ ] [ ] [ ] Excavated side slopes should be 2:1.
[ ] [ ] [ ] 2” x 4” frame is constructed and structurally sound.
[ ] [ ] [ ] Posts 3-foot maximum spacing between posts.
[ ] [ ] [ ] Fabric is embedded 1 to 1.5 feet below ground and secured to frame/posts with staples at max 8-inch spacing.
[ ] [ ] [ ] Posts are stable, fabric is tight and without rips or frayed areas.
[ ] [ ] [ ] Manufactured insert fabric is free of tears and punctures.
[ ] [ ] [ ] Filter Sock is not torn or flattened and fill material is contained within the mesh sock.
Sediment accumulation ___% of design capacity.

3. Temporary Sediment Trap

Yes No NA
[ ] [ ] [ ] Outlet structure is constructed per the approved plan or drawing.
[ ] [ ] [ ] Geotextile fabric has been placed beneath rock fill.
[ ] [ ] [ ] Sediment trap slopes and disturbed areas are stabilized.
Sediment accumulation is ___% of design capacity.

4. Temporary Sediment Basin

Yes No NA
[ ] [ ] [ ] Basin and outlet structure constructed per the approved plan.
[ ] [ ] [ ] Basin side slopes are stabilized with seed/mulch.
[ ] [ ] [ ] Drainage structure flushed and basin surface restored upon removal of sediment basin facility.
[ ] [ ] [ ] Sediment basin dewatering pool is dewatering at appropriate rate.
Sediment accumulation is ___% of design capacity.

<u>Note</u>: Not all erosion and sediment control practices are included in this listing. Add additional pages to this list as required by site specific design. All practices shall be maintained in accordance with their respective standards.

Construction inspection checklists for post-development stormwater management practices can be found in Appendix F of the New York Stormwater Management Design Manual.

CONSTRUCTION DURATION INSPECTIONS

b. Modifications to the SWPPP (To be completed as described below)

The Operator shall amend the SWPPP whenever:

1. There is a significant change in design, construction, operation, or maintenance which may have a significant effect on the potential for the discharge of pollutants to the waters of the United States and which has not otherwise been addressed in the SWPPP; or
2. The SWPPP proves to be ineffective in:
   a. Eliminating or significantly minimizing pollutants from sources identified in the SWPPP and as required by this permit; or
   b. Achieving the general objectives of controlling pollutants in stormwater discharges from permitted construction activity; and
3. Additionally, the SWPPP shall be amended to identify any new contractor or subcontractor that will implement any measure of the SWPPP.

Modification & Reason:

Appendix F:

Northeast Regional Climate Center Precipitation Estimates

Extreme Precipitation Tables

Northeast Regional Climate Center

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

Smoothing	No
State	New York
Location	
Longitude	73.585 degrees West
Latitude	41.279 degrees North
Elevation	0 feet
Date/Time	Mon, 28 Dec 2020 10:36:47 -0500

Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.33	0.51	0.63	0.84	1.03	1.25	**1yr**	0.89	1.22	1.43	1.82	2.28	2.83	3.18	**1yr**	2.50	3.06	3.53	4.23	4.87	**1yr**
2yr	0.39	0.61	0.75	1.02	1.25	1.50	**2yr**	1.08	1.46	1.71	2.20	2.76	3.40	3.82	**2yr**	3.01	3.67	4.21	4.98	5.63	**2yr**
5yr	0.46	0.71	0.89	1.22	1.55	1.84	**5yr**	1.33	1.80	2.11	2.72	3.42	4.27	4.82	**5yr**	3.78	4.64	5.35	6.23	7.00	**5yr**
10yr	0.53	0.81	1.00	1.40	1.81	2.16	**10yr**	1.56	2.11	2.46	3.20	4.03	5.08	5.76	**10yr**	4.49	5.54	6.41	7.38	8.25	**10yr**
25yr	0.63	0.96	1.19	1.71	2.24	2.67	**25yr**	1.94	2.61	3.03	3.97	5.00	6.38	7.29	**25yr**	5.65	7.01	8.16	9.24	10.25	**25yr**
50yr	0.72	1.10	1.37	1.96	2.64	3.13	**50yr**	2.28	3.06	3.55	4.68	5.90	7.59	8.71	**50yr**	6.72	8.37	9.80	10.96	12.09	**50yr**
100yr	0.83	1.26	1.57	2.27	3.11	3.68	**100yr**	2.69	3.60	4.16	5.52	6.96	9.04	10.41	**100yr**	8.00	10.01	11.78	13.00	14.27	**100yr**
200yr	0.96	1.44	1.82	2.63	3.67	4.33	**200yr**	3.17	4.23	4.88	6.52	8.21	10.76	12.46	**200yr**	9.52	11.98	14.15	15.43	16.84	**200yr**
500yr	1.16	1.72	2.22	3.22	4.58	5.36	**500yr**	3.96	5.24	6.03	8.13	10.23	13.56	15.80	**500yr**	12.00	15.19	18.06	19.35	20.98	**500yr**

Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.24	0.37	0.45	0.61	0.75	0.95	**1yr**	0.65	0.93	1.21	1.58	2.03	2.53	2.77	**1yr**	2.24	2.66	3.28	3.71	4.57	**1yr**
2yr	0.38	0.59	0.73	0.98	1.21	1.46	**2yr**	1.05	1.42	1.66	2.12	2.69	3.31	3.70	**2yr**	2.93	3.56	4.09	4.83	5.47	**2yr**
5yr	0.42	0.65	0.80	1.10	1.40	1.71	**5yr**	1.21	1.67	1.95	2.51	3.15	3.93	4.44	**5yr**	3.48	4.27	4.93	5.72	6.44	**5yr**
10yr	0.45	0.70	0.86	1.20	1.56	1.92	**10yr**	1.34	1.88	2.20	2.87	3.55	4.48	5.06	**10yr**	3.96	4.87	5.68	6.47	7.27	**10yr**
25yr	0.49	0.74	0.92	1.32	1.74	2.20	**25yr**	1.50	2.15	2.57	3.41	4.15	5.31	6.01	**25yr**	4.70	5.78	6.85	7.65	8.53	**25yr**
50yr	0.51	0.78	0.97	1.39	1.88	2.42	**50yr**	1.62	2.36	2.93	3.90	4.67	6.05	6.86	**50yr**	5.36	6.60	7.91	8.68	9.62	**50yr**
100yr	0.54	0.82	1.03	1.48	2.03	2.65	**100yr**	1.76	2.59	3.33	4.47	5.16	6.92	7.83	**100yr**	6.12	7.53	9.18	9.85	10.86	**100yr**
200yr	0.57	0.86	1.09	1.57	2.19	2.91	**200yr**	1.89	2.84	3.79	5.15	5.81	7.88	8.98	**200yr**	6.98	8.63	10.67	11.18	12.28	**200yr**
500yr	0.61	0.90	1.16	1.69	2.40	3.30	**500yr**	2.08	3.23	4.53	6.26	6.79	9.38	10.80	**500yr**	8.30	10.38	13.05	13.27	14.44	**500yr**

Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.37	0.57	0.70	0.94	1.15	1.38	**1yr**	0.99	1.35	1.59	2.03	2.53	3.07	3.43	**1yr**	2.72	3.30	3.80	4.51	5.19	**1yr**
2yr	0.42	0.65	0.80	1.09	1.34	1.56	**2yr**	1.16	1.52	1.78	2.27	2.85	3.52	4.01	**2yr**	3.12	3.85	4.38	5.18	5.84	**2yr**
5yr	0.50	0.77	0.96	1.32	1.68	1.98	**5yr**	1.45	1.93	2.28	2.94	3.68	4.63	5.24	**5yr**	4.10	5.04	5.78	6.75	7.54	**5yr**
10yr	0.59	0.91	1.12	1.57	2.03	2.38	**10yr**	1.75	2.33	2.77	3.57	4.50	5.71	6.47	**10yr**	5.05	6.22	7.16	8.28	9.18	**10yr**
25yr	0.74	1.13	1.40	2.01	2.64	3.08	**25yr**	2.28	3.01	3.56	4.62	5.85	7.53	8.57	**25yr**	6.66	8.24	9.49	10.83	11.91	**25yr**
50yr	0.88	1.34	1.66	2.39	3.22	3.73	**50yr**	2.78	3.65	4.32	5.59	7.16	9.29	10.58	**50yr**	8.22	10.18	11.74	13.30	14.52	**50yr**
100yr	1.05	1.59	1.99	2.88	3.95	4.53	**100yr**	3.41	4.43	5.23	6.79	9.35	11.46	13.08	**100yr**	10.14	12.58	14.47	16.33	17.71	**100yr**
200yr	1.26	1.89	2.40	3.47	4.85	5.50	**200yr**	4.18	5.38	6.32	8.22	11.55	14.14	16.18	**200yr**	12.52	15.55	17.89	20.02	21.60	**200yr**
500yr	1.62	2.41	3.10	4.50	6.40	7.10	**500yr**	5.52	6.94	8.13	10.58	15.34	18.66	21.41	**500yr**	16.51	20.59	23.57	26.16	28.04	**500yr**

Powered by ACIS
Northeast Regional Climate Center

Appendix G:

New York State Stormwater Management Design Manual Maintenance and Inspection Checklist.

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:

Infiltration Trench Operation, Maintenance, and Management Inspection Checklist

Project:
Location:
Site Status:

Date:

Time:

Inspector:

MAINTENANCE ITEM	SATISFACTORY / UNSATISFACTORY	COMMENTS
1. Debris Cleanout (Monthly)		
Trench surface clear of debris		
Inflow pipes clear of debris		
Overflow spillway clear of debris		
Inlet area clear of debris		
2. Sediment Traps or Forebays (Annual)		
Obviously trapping sediment		
Greater than 50% of storage volume remaining		
3. Dewatering (Monthly)		
Trench dewaters between storms		
4. Sediment Cleanout of Trench (Annual)		
No evidence of sedimentation in trench		
Sediment accumulation doesn’t yet require cleanout		
5. Inlets (Annual)		

MAINTENANCE ITEM	SATISFACTORY / UNSATISFACTORY	COMMENTS
Good condition		
No evidence of erosion		
6. Outlet/Overflow Spillway (Annual)		
Good condition, no need for repair		
No evidence of erosion		
7. Aggregate Repairs (Annual)		
Surface of aggregate clean		
Top layer of stone does not need replacement		
Trench does not need rehabilitation		

Comments:

Actions to be Taken:

Open Channel 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		
2. Check Dams or Energy Dissipators (Annual, After Major Storms)		
No evidence of flow going around structures		
No evidence of erosion at downstream toe		
Soil permeability		
Groundwater / bedrock		
3. Vegetation (Monthly)		
Mowing done when needed		
Minimum mowing depth not exceeded		
No evidence of erosion		
Fertilized per specification		
4. Dewatering (Monthly)		
Dewaters between storms		

MAINTENANCE ITEM	SATISFACTORY/ UNSATISFACTORY	COMMENTS
5. Sediment deposition (Annual)		
Clean of sediment		
6. Outlet/Overflow Spillway (Annual)		
Good condition, no need for repairs		
No evidence of erosion		

Comments:

Actions to be Taken:

Appendix H:

Cultec Infiltration Chamber Operation and Maintenance Requirements.

Contactor® & Recharger®
Stormwater Chambers

Operation and Maintenance Guidelines
for CULTEC Stormwater Management Systems

The Founder of Plastic Chamber Technology

www.cultec.com | 1(800) 4-CULTEC |

CULTEC

Published by
CULTEC, Inc.
P.O. Box 280
878 Federal Road
Brookfield, Connecticut 06804 USA
www.cultec.com

Disclaimers:
The drawings, photographs and illustrations shown in this document are for illustrative purposes only and are not necessarily to scale. Actual designs may vary.

CULTEC reserves the right to make design and/or specification changes at any time without notice at CULTEC's sole discretion.

CULTEC is not responsible for typographical errors.

Protected by one or more of the following patents:
Protected by one or more of the following patents:
U.S. Patents 6,129,482; 6,322,288; 6,854,925; 7,226,241; 7,806,627; 8,366,346; 8,425,148; and others; U.S. Designs D613819; D638,095; D668,318 and others; Canadian Patent 2,591,255 and others; Community Designs 1092191; 1745209; and others.

CULTEC, the CULTEC logo, RECHARGER, CONTACTOR, HVLV, PAC, STORMFILTER, STORMGENIE and The Chamber with The Stripe are registered trademarks of CULTEC, Inc.
Chamber of Choice, 902, HD, 100, 125, 150, 150XL, 180, 280, 330, 330XL, V8, 902, Field Drain Panel, C-1, C-2, C-3, C-4, EZ-24, Landscape Series are trademarks of CULTEC, Inc. All rights reserved.

Contact Information:
For general information on our other products and services, please contact our offices within the United States at (800)428-5832, (203)775-4416 ext. 202, or e-mail us at custservice@cultec.com.

For technical support, please call (203)775-4416 ext. 203 or e-mail tech@cultec.com.

Visit www.cultec.com/downloads.html for Product Downloads and CAD details.

Doc ID: CULG008 05-17
May 2017

These instructions are for single-layer traffic applications only. For multi-layer applications, contact CULTEC.
All illustrations and photos shown herein are examples of typical situations. Be sure to follow the engineer's drawings.
Actual designs may vary.

This manual contains guidelines recommended by CULTEC, Inc. and may be used in conjunction with, but not to supersede, local regulations or regulatory authorities. OSHA Guidelines must be followed when inspecting or cleaning any structure.

Introduction

The CULTEC Subsurface Stormwater Management System is a high-density polyethylene (HDPE) chamber system arranged in parallel rows surrounded by washed stone. The CULTEC chambers create arch-shaped voids within the washed stone to provide stormwater detention, retention, infiltration, and reclamation. Filter fabric is placed between the native soil and stone interface to prevent the intrusion of fines into the system. In order to minimize the amount of sediment which may enter the CULTEC system, a sediment collection device (stormwater pretreatment device) is recommended upstream from the CULTEC chamber system. Examples of pretreatment devices include, but are not limited to, an appropriately sized catch basin with sump, pretreatment catchment device, oil grit separator, or baffled distribution box. Manufactured pretreatment devices may also be used in accordance with CULTEC chambers. Installation, operation, and maintenance of these devices shall be in accordance with manufacturer's recommendations. Almost all of the sediment entering the stormwater management system will be collected within the pretreatment device.

Best Management Practices allow for the maintenance of the preliminary collection systems prior to feeding the CULTEC chambers. The pretreatment structures shall be inspected for any debris that will restrict inlet flow rates. Outfall structures, if any, such as outlet control must also be inspected for any obstructions that would restrict outlet flow rates. OSHA Guidelines must be followed when inspecting or cleaning any structure.

Operation and Maintenance Requirements

I. Operation

CULTEC stormwater management systems shall be operated to receive only stormwater run-off in accordance with applicable local regulations. CULTEC subsurface stormwater management chambers operate at peak performance when installed in series with pretreatment. Pretreatment of suspended solids is superior to treatment of solids once they have been introduced into the system. The use of pretreatment is adequate as long as the structure is maintained and the site remains stable with finished impervious surfaces such as parking lots, walkways, and pervious areas are properly maintained. If there is to be an unstable condition, such as improvements to buildings or parking areas, all proper silt control measures shall be implemented according to local regulations.

II. Inspection and Maintenance Options

A. The CULTEC system may be equipped with an inspection port located on the inlet row.
The inspection port is a circular cast box placed in a rectangular concrete collar. When the lid is removed, a 6-inch (150 mm) pipe with a screw-in plug will be exposed. Remove the plug. This will provide access to the CULTEC Chamber row below. From the surface, through this access, the sediment may be measured at this location. A stadia rod may be used to measure the depth of sediment if any in this row. If the depth of sediment is in excess of 3 inches (76 mm), then this row should be cleaned with high pressure water through a culvert cleaning nozzle. This would be carried out through an upstream manhole or through the CULTEC StormFilter Unit (or other pre-treatment device). CCTV inspection of this row can be deployed through this access port to deter mine if any sediment has accumulated in the inlet row.

B. If the CULTEC bed is not equipped with an inspection port, then access to the inlet row will be through an upstream manhole or the CULTEC StormFilter.

1. Manhole Access
This inspection should only be carried out by persons trained in confined space entry and sewer inspection services. After the manhole cover has been removed a gas detector must be lowered into the manhole to ensure that there are not high concentrations of toxic gases present. The inspector should be lowered into the manhole with the proper safety equipment as per OSHA requirements. The inspector may be able to observe sediment from this location. If this is not possible, the inspector will need to deploy a CCTV robot to permit viewing of the sediment.

2. **StormFilter Access**
Remove the manhole cover to allow access to the unit. Typically a 30-inch (750 mm) pipe is used as a riser from the StormFilter to the surface. As in the case with manhole access, this access point requires a technician trained in confined space entry with proper gas detection equipment. This individual must be equipped with the proper safety equipment for entry into the StormFilter. The technician will be lowered onto the StormFilter unit. The hatch on the unit must be removed. Inside the unit are two filters which may be removed according to StormFilter maintenance guidelines. Once these filters are removed the inspector can enter the StormFilter unit to launch the CCTV camera robot.

C. The inlet row of the CULTEC system is placed on a polyethylene liner to prevent scouring of the washed stone beneath this row. This also facilitates the flushing of this row with high pressure water through a culvert cleaning nozzle. The nozzle is deployed through a manhole or the StormFilter and extended to the end of the row. The water is turned on and the inlet row is back-flushed into the manhole or StormFilter. This water is to be removed from the manhole or StormFilter using a vacuum truck.

III. Maintenance Guidelines

The following guidelines shall be adhered to for the operation and maintenance of the CULTEC stormwater management system:

A. The owner shall keep a maintenance log which shall include details of any events which would have an effect on the system's operational capacity.

B. The operation and maintenance procedure shall be reviewed periodically and changed to meet site conditions.

C. Maintenance of the stormwater management system shall be performed by qualified workers and shall follow applicable occupational health and safety requirements.

D. Debris removed from the stormwater management system shall be disposed of in accordance with applicable laws and regulations.

IV. Suggested Maintenance Schedules

A. **Minor Maintenance**
The following suggested schedule shall be followed for routine maintenance during the regular operation of the stormwater system:

Frequency	Action
Monthly in first year	Check inlets and outlets for clogging and remove any debris, as required.
Spring and Fall	Check inlets and outlets for clogging and remove any debris, as required.
One year after commissioning and every third year following	Check inlets and outlets for clogging and remove any debris, as required.

B. **Major Maintenance**
The following suggested maintenance schedule shall be followed to maintain the performance of the CULTEC stormwater management chambers. Additional work may be necessary due to insufficient performance and other issues that might be found during the inspection of the stormwater management chambers. (See table on next page)

	Frequency	Action
Inlets and Outlets	Every 3 years	• Obtain documentation that the inlets, outlets and vents have been cleaned and will function as intended.
	Spring and Fall	• Check inlet and outlets for clogging and remove any debris as required.
CULTEC Stormwater Chambers	2 years after commissioning	• Inspect the interior of the stormwater management chambers through inspection port for deficiencies using CCTV or comparable technique. • Obtain documentation that the stormwater management chambers and feed connectors will function as anticipated.
	9 years after commissioning every 9 years following	• Clean stormwater management chambers and feed connectors of any debris. • Inspect the interior of the stormwater management structures for deficiencies using CCTV or comparable technique. • Obtain documentation that the stormwater management chambers and feed connectors have been cleaned and will function as intended.
	45 years after commissioning	• Clean stormwater management chambers and feed connectors of any debris. • Determine the remaining life expectancy of the stormwater management chambers and recommended schedule and actions to rehabilitate the stormwater management chambers as required. • Inspect the interior of the stormwater management chambers for deficiencies using CCTV or comparable technique. • Replace or restore the stormwater management chambers in accordance with the schedule determined at the 45-year inspection. • Attain the appropriate approvals as required. • Establish a new operation and maintenance schedule.
Surrounding Site	Monthly in 1st year	• Check for depressions in areas over and surrounding the stormwater management system.
	Spring and Fall	• Check for depressions in areas over and surrounding the stormwater management system.
	Yearly	• Confirm that no unauthorized modifications have been performed to the site.

For additional information concerning the maintenance of CULTEC Subsurface Stormwater Management Chambers, please contact CULTEC, Inc. at 1-800-428-5832.

WQMP
Operation & Maintenance (O&M) Plan

Project Name:____

Prepared for:

Project Name: ____

Address:____

City, State Zip:____

Prepared on:

Date:____

This O&M Plan describes the designated responsible party for implementation of this WQMP, including: operation and maintenance of all the structural BMP(s), conducting the training/educational program and duties, and any other necessary activities. The O&M Plan includes detailed inspection and maintenance requirements for all structural BMPs, including copies of any maintenance contract agreements, manufacturer's maintenance requirements, permits, etc.

8.1.1 Project Information

Project name	
Address	
City, State Zip	
Site size	
List of structural BMPs, number of each	
Other notes	

8.1.2 Responsible Party

The responsible party for implementation of this WQMP is:

Name of Person or HOA Property Manager	
Address	
City, State Zip	
Phone number	
24-Hour Emergency Contact number	
Email	

8.1.3 Record Keeping

Parties responsible for the O&M plan shall retain records for at least 5 years.

All training and educational activities and BMP operation and maintenance shall be documented to verify compliance with this O&M Plan. A sample Training Log and Inspection and Maintenance Log are included in this document.

8.1.4 Electronic Data Submittal

This document along with the Site Plan and Attachments shall be provided in PDF format. AutoCAD files and/or GIS coordinates of BMPs shall also be submitted to the City.

Appendix ___

BMP SITE PLAN

Site plan is preferred on minimum 11″ by 17″ colored sheets, as long as legible.

BMP OPERATION & MAINTENANCE LOG

Project Name: ______________________________

Today's Date: ______________________________

Name of Person Performing Activity (Printed): ______________________________

Signature: ______________________________

BMP Name (As Shown in O&M Plan)	Brief Description of Implementation, Maintenance, and Inspection Activity Performed

Minor Maintenance

Frequency		Action
Monthly in first year		Check inlets and outlets for clogging and remove any debris, as required.
		Notes
□ Month 1	Date:	
□ Month 2	Date:	
□ Month 3	Date:	
□ Month 4	Date	
□ Month 5	Date:	
□ Month 6	Date:	
□ Month 7	Date:	
□ Month 8	Date:	
□ Month 9	Date:	
□ Month 10	Date:	
□ Month 11	Date:	
□ Month 12	Date:	
Spring and Fall		Check inlets and outlets for clogging and remove any debris, as required.
		Notes
□ Spring	Date:	
□ Fall	Date:	
□ Spring	Date:	
□ Fall	Date:	
□ Spring	Date:	
□ Fall	Date:	
□ Spring	Date:	
□ Fall	Date:	
□ Spring	Date:	
□ Fall	Date:	
□ Spring	Date:	
□ Fall	Date:	
One year after commissioning and every third year following		Check inlets and outlets for clogging and remove any debris, as required.
		Notes
□ Year 1	Date:	
□ Year 4	Date:	
□ Year 7	Date:	
□ Year 10	Date:	
□ Year 13	Date:	
□ Year 16	Date:	
□ Year 19	Date:	
□ Year 22	Date:	

Major Maintenance

	Frequency		Action
Inlets and Outlets	**Every 3 years**		Obtain documentation that the inlets, outlets and vents have been cleaned and will function as intended.
			Notes
	□ Year 1	Date:	
	□ Year 4	Date:	
	□ Year 7	Date:	
	□ Year 10	Date:	
	□ Year 13	Date:	
	□ Year 16	Date:	
	□ Year 19	Date:	
	□ Year 22	Date:	
	Spring and Fall		Check inlet and outlets for clogging and remove any debris, as required.
			Notes
	□ Spring	Date:	
	□ Fall	Date:	
	□ Spring	Date:	
	□ Fall	Date:	
	□ Spring	Date:	
	□ Fall	Date:	
	□ Spring	Date:	
	□ Fall	Date:	
	□ Spring	Date:	
	□ Fall	Date:	
	□ Spring	Date:	
	□ Fall	Date:	
CULTEC Stormwater Chambers	**2 years after commissioning**		□ Inspect the interior of the stormwater management chambers through inspection port for deficiencies using CCTV or comparable technique. □ Obtain documentation that the stormwater management chambers and feed connectors will function as anticipated.
			Notes
	□ Year 2	Date:	

Major Maintenance

	Frequency		Action
CULTEC Stormwater Chambers	**9 years after commissioning every 9 years following**		□ Clean stormwater management chambers and feed connectors of any debris. □ Inspect the interior of the stormwater management structures for deficiencies using CCTV or comparable technique. □ Obtain documentation that the stormwater management chambers and feed connectors have been cleaned and will function as intended.
			Notes
	□ Year 9	Date:	
	□ Year 18	Date:	
	□ Year 27	Date:	
	□ Year 36	Date:	
	45 years after commissioning		□ Clean stormwater management chambers and feed connectors of any debris. □ Determine the remaining life expectancy of the stormwater management chambers and recommended schedule and actions to rehabilitate the stormwater management chambers as required. □ Inspect the interior of the stormwater management chambers for deficiencies using CCTV or comparable technique. □ Replace or restore the stormwater management chambers in accordance with the schedule determined at the 45-year inspection. □ Attain the appropriate approvals as required. □ Establish a new operation and maintenance schedule.
			Notes
	□ Year 45	Date:	

Major Maintenance

	Frequency		Action
Surrounding Site	**Monthly in 1st year**		☐ Check for depressions in areas over and surrounding the stormwater management system.
			Notes
	☐ Month 1	Date:	
	☐ Month 2	Date:	
	☐ Month 3	Date:	
	☐ Month 4	Date:	
	☐ Month 5	Date:	
	☐ Month 6	Date:	
	☐ Month 7	Date:	
	☐ Month 8	Date:	
	☐ Month 9	Date:	
	☐ Month 10	Date:	
	☐ Month 11	Date:	
	☐ Month 12	Date:	
	Spring and Fall		☐ Check for depressions in areas over and surrounding the stormwater management system.
			Notes
	☐ Spring	Date:	
	☐ Fall	Date:	
	☐ Spring	Date:	
	☐ Fall	Date:	
	☐ Spring	Date:	
	☐ Fall	Date:	
	☐ Spring	Date:	
	☐ Fall	Date:	
	☐ Spring	Date:	
	☐ Fall	Date:	
	☐ Spring	Date:	
	☐ Fall	Date:	
	Yearly		☐ Confirm that no unauthorized modifications have been performed to the site.
			Notes
	☐ Year 1	Date:	
	☐ Year 2	Date:	
	☐ Year 3	Date:	
	☐ Year 4	Date:	
	☐ Year 5	Date:	
	☐ Year 6	Date:	
	☐ Year 7	Date:	

CULG008 05-17

Appendix I:

Soil Testing Data

BIBBO ASSOCIATES, LLP
Consulting Engineers

Sheet: 1 of 2
Recorded By: Matthew Gironda
Date: May 25, 2021

Project: Wolf Conservation Center
Feature: Deep Test Results

Hole ID:	TP D-1	Hole ID:	TP D-2
Depth:	Description:	Depth:	Description:
0-24"	Top Soil	0-18"	Top Soil
24"-56"	Light Brown Fine Sandy Loam	18"-30"	Red/Brown Fine Sandy Loam
56"-96"	Dark Brown Fine Sandy Loam	30"-104"	Brown Medium/Fine Sand
			w/ Silt and Cobbles
	No Rock		No Rock
	or Water at Full Depth		or Water at Full Depth

Hole ID:	TP D-3	Hole ID:	TP D-4
Depth:	Description:	Depth:	Description:
0-24"	Top Soil	0-18"	Top Soil
24"-48"	Red/Brown Fine Sandy Loam	18"-30"	Red/Brown Fine Sandy Loam
48"-120"	Brown Fine/Medium Sand	30"-104"	Brown Medium/Fine Sand w/
	w/ Silt and Cobbles		traces of Silt and some cobbles
	No Rock		No Rock
	or Water at Full Depth		or Water at Full Depth

BIBBO ASSOCIATES, LLP

Consulting Engineers

Sheet: 2 of 2

Project: Wolf Conservation Cente

Feature: Infiltration Percolation Test Results

Recorded By: Matthew Gironda

Date: May 25, 2021

Hole ID:	Run #	Time Start (Min.)	Time Stop (Min.)	Depth to Water From Ground Surface From (In.)	To (In.)	Time (Min.)	Drop (In.)	Rate (In. / Hr.)
IT I-1	1	10:30 AM	11:30 AM	48.00	62.00	60	14.00	14.00
	2	11:33 AM	12:03 PM	48.00	60.50	60	12.50	12.50
	3	12:34 PM	1:34 PM	48.00	60.50	60	12.50	12.50
	4	1:36 PM	2:36 PM	48.00	60.50	60	12.50	12.50
IT I-2	1	9:45 AM	10:45 AM	48.00	67.00	60	19.00	19.00
	2	10:47 AM	11:47 AM	48.00	68.00	60	20.00	20.00
	3	11:48 AM	12:48 PM	48.00	68.50	60	20.50	20.50
	4	12:49 PM	1:49 PM	48.00	66.00	60	18.00	18.00
IT I-3	1	9:36 AM	10:36 AM	76.00	97.50	60	21.50	21.50
	2	10:38 AM	11:38 AM	76.00	100.00	60	24.00	24.00
	3	11:40 AM	12:40 PM	76.00	97.00	60	21.00	21.00
	4	12:42 PM	1:42 PM	76.00	97.00	60	21.00	21.00
IT I-4	1	9:30 AM	10:30 AM	52.00	71.50	60	19.50	19.50
	2	10:32 AM	11:32 AM	52.00	71.00	60	19.00	19.00
	3	11:33 AM	12:33 PM	52.00	70.00	60	18.00	18.00
	4	12:34 PM	1:34 PM	52.00	70.00	60	18.00	18.00

Appendix J:

First Defense Stormwater Treatment Unit Operation and Maintenance Manual

BIBBO ASSOCIATES, LLP
Consulting Engineers - Planners

Wolf Conservation Center

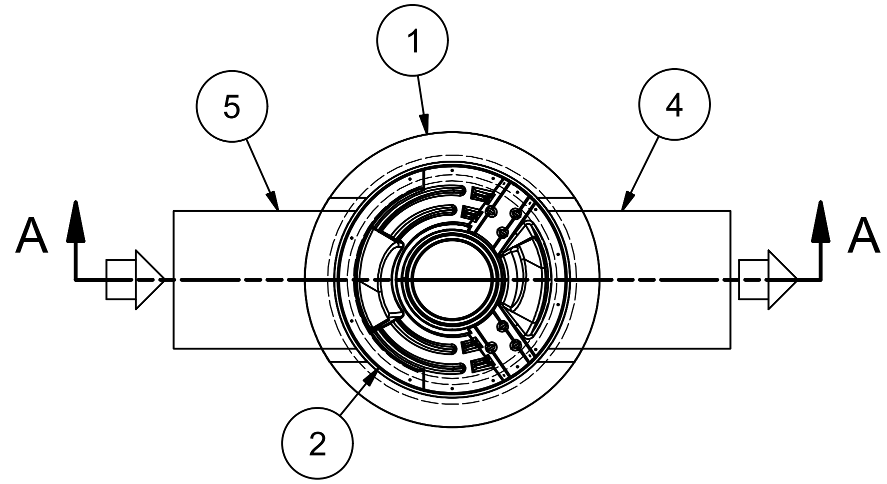
Hydrointernational First Defense Sizing Summary

Structure Number	*First Defense HDS Unit Model No.*	*NJDEP Certified Treatment Capacity * (cfs)*	*1-Year Storm Peak Flow ** (cfs)*	*100-Year Storm Peak Flow *** (cfs)*
HDS #1.1	FD-4HC	1.50	1.1	4.9
H.D.S. #1.2	FD-5HC	2.34	2.3	3.0
H.D.S. #1.3	FD-3HC	0.84	0.1	0.4

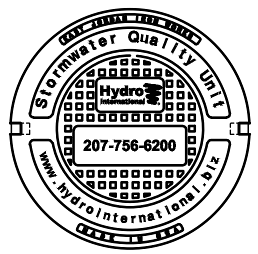
* NJDEP Certified Treatment Rates Provided by manufacturer. Refer to detail provided on project drawings

** 1-Year Storm Peak Flow rates obtained from HydroCAD model inculded in Appendix C

*** 100 Year Peak Flow obtained from HydroCAD model in Appendix C.
Manufacturer rated Peak Hydraulic Flow for Model # FD-3HC = 15.0 cfs. Manufacturer rated Peak Hydraulic Flow for Model # FD-4HC = 18.0 cfs. Manufacturer rated Peak Hydraulic Flow for Model # FD-5HC = 20.0 cfs.

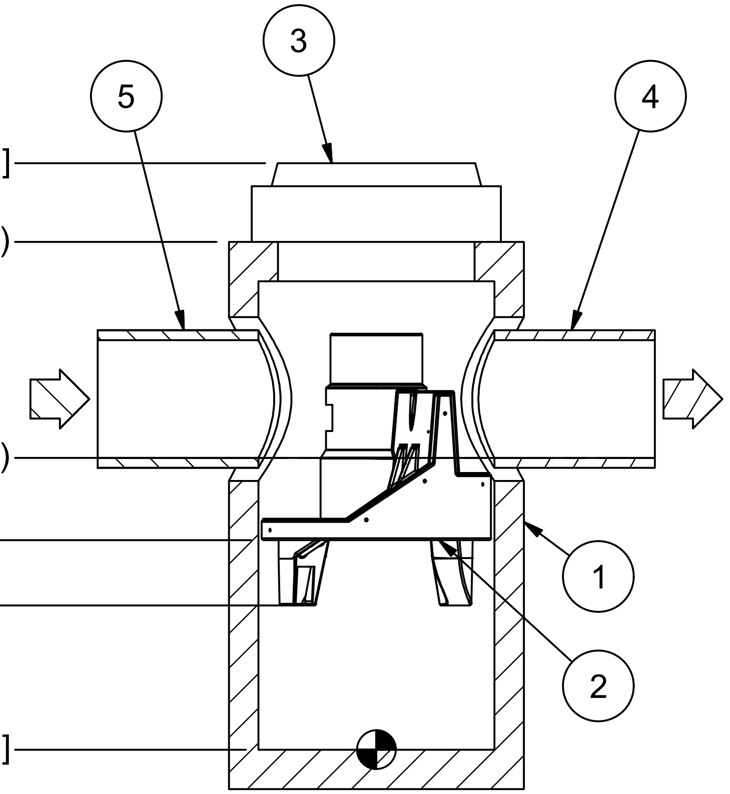


PLAN VIEW



HYDRO FRAME AND
COVER (INCLUDED)

GRADE RINGS BY OTHERS
AS REQUIRED



SECTION A-A

PRODUCT SPECIFICATION:

1. PEAK HYDRAULIC FLOW: 15.0 cfs (424 l/s)
2. MIN SEDIMENT STORAGE CAPACITY: 0.4 cu. yd. (0.3 cu. m.)
3. OIL STORAGE CAPACITY: 125 gal. (473 liters)
4. MAXIMUM INLET/OUTLET PIPE DIAMETERS: 18 in. (450 mm)
5. THE TREATMENT SYSTEM SHALL USE AN INDUCED VORTEX TO SEPARATE POLLUTANTS FROM STORMWATER RUNOFF.
6. FOR MORE PRODUCT INFORMATION INCLUDING REGULATORY ACCEPTANCES, PLEASE VISIT https://hydro-int.com/en/products/first-defense

GENERAL NOTES:
1. General Arrangement drawings only. Contact Hydro International for site specific drawings.
2. The diameter of the inlet and outlet pipes may be no more than 18".
3. Multiple inlet pipes possible (refer to project plan).
4. Inlet/outlet pipe angle can vary to align with drainage network (refer to project plan.s)
5. Peak flow rate and minimum height limited by available cover and pipe diameter.
6. Larger sediment storage capacity may be provided with a deeper sump depth.

PARTS LIST

ITEM	QTY	SIZE (in)	SIZE (mm)	DESCRIPTION
1	1	36	900	I.D. PRECAST MANHOLE
2	1			INTERNAL COMPONENTS (PRE-INSTALLED)
3	1	30	750	FRAME AND COVER (ROUND)
4	1	18 (MAX)	450 (MAX)	OUTLET PIPE (BY OTHERS)
5	1	18 (MAX)	450 (MAX)	INLET PIPE (BY OTHERS)

PROJECTION

IF IN DOUBT ASK

COMMENTS:

1. MANHOLE WALL AND SLAB THICKNESSES ARE NOT TO SCALE.

2. CONTACT HYDRO INTERNATIONAL FOR A BOTTOM OF STRUCTURE ELEVATION PRIOR TO SETTING FIRST DEFENSE MANHOLE.

3. CONTRACTOR TO CONFIRM RIM, PIPE INVERTS, PIPE DIA. AND PIPE ORIENTATION PRIOR TO RELEASE OF UNIT TO FABRICATION.

DATE: 11/8/2019
SCALE: 1:30

DRAWN BY: JLL3
CHECKED BY: -
APPROVED BY

Title
3-ft DIAMETER

FIRST DEFENSE HIGH CAPACITY

GENERAL ARRANGEMENT

Hydro International®

hydro-int.com

HYDRO INTERNATIONAL

DO NOT SCALE DRAWING
STEEL FABRICATION TOLERANCES
UNLESS OTHERWISE SPECIFIED,
DIMENSIONS ARE IN INCHES.

LINEAR
000 - 012in = ±0.04in
012 - 024in = ±0.06in
024 - 048in = ±0.08in
048 - 120in = ±0.12in
120in >>>> = ±0.20in

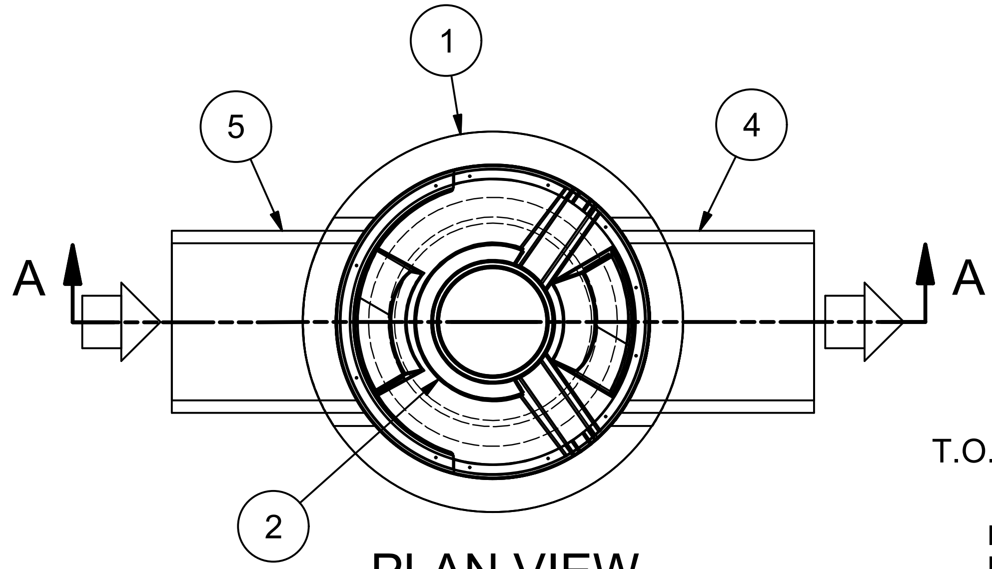
ANGULAR
000 - 120in = ±1°
120 - 240in = ±0.5°
240in >>>> = ±0.25°

WEIGHT: N/A
MATERIAL:

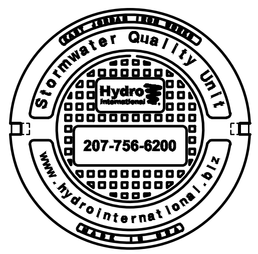
STOCK NUMBER:

DRAWING NO.: 3FDHC_FDHC GA

SHEET SIZE: B
SHEET: 1 OF 1
Rev: -

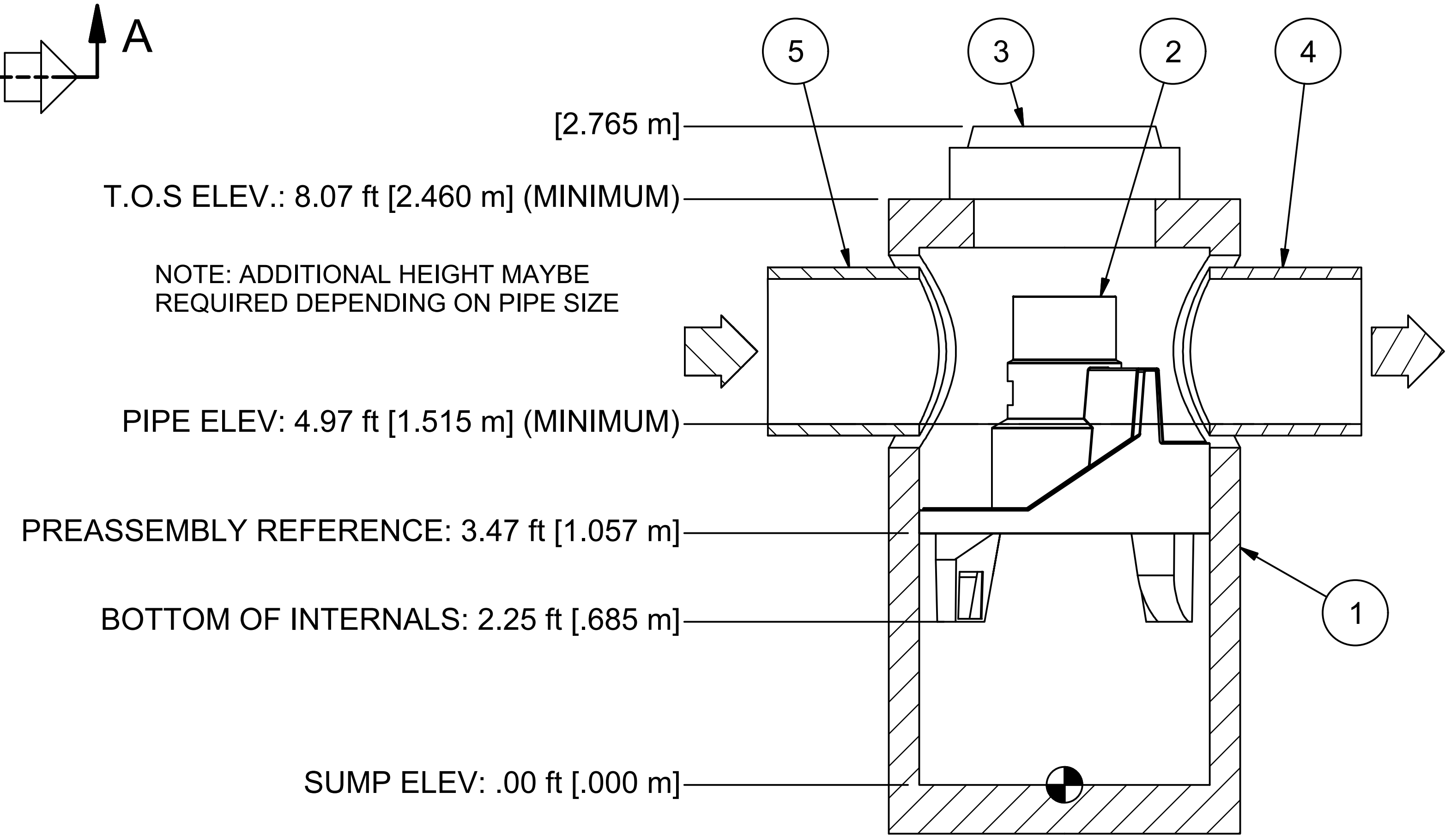


PLAN VIEW



HYDRO FRAME AND COVER (INCLUDED)

GRADE RINGS BY OTHERS
AS REQUIRED



SECTION A-A

PRODUCT SPECIFICATION:

1. PEAK HYDRAULIC FLOW: 18.0 cfs (510 l/s)
2. MIN SEDIMENT STORAGE CAPACITY: 0.7 cu. yd. (0.5 cu. m.)
3. OIL STORAGE CAPACITY: 191 gal. (723 liters)
4. MAXIMUM INLET/OUTLET PIPE DIAMETERS: 24 in. (600 mm)
5. THE TREATMENT SYSTEM SHALL USE AN INDUCED VORTEX TO SEPARATE POLLUTANTS FROM STORMWATER RUNOFF.
6. FOR MORE PRODUCT INFORMATION INCLUDING REGULATORY ACCEPTANCES, PLEASE VISIT https://hydro-int.com/en/products/first-defense

GENERAL NOTES:
1. General Arrangement drawings only. Contact Hydro International for site specific drawings.
2. The diameter of the inlet and outlet pipes may be no more than 24".
3. Multiple inlet pipes possible (refer to project plan).
4. Inlet/outlet pipe angle can vary to align with drainage network (refer to project plan.s)
5. Peak flow rate and minimum height limited by available cover and pipe diameter.
6. Larger sediment storage capacity may be provided with a deeper sump depth.

PARTS LIST

ITEM	QTY	SIZE (in)	SIZE (mm)	DESCRIPTION
1	1	48	1200	I.D. PRECAST MANHOLE
2	1			INTERNAL COMPONENTS (PRE-INSTALLED)
3	1	30	750	FRAME AND COVER (ROUND)
4	1	24 (MAX)	600 (MAX)	OUTLET PIPE (BY OTHERS)
5	1	24 (MAX)	600 (MAX)	INLET PIPE (BY OTHERS)

PROJECTION

IF IN DOUBT ASK

COMMENTS:

1. MANHOLE WALL AND SLAB THICKNESSES ARE NOT TO SCALE.

2. CONTACT HYDRO INTERNATIONAL FOR A BOTTOM OF STRUCTURE ELEVATION PRIOR TO SETTING FIRST DEFENSE MANHOLE.

3. CONTRACTOR TO CONFIRM RIM, PIPE INVERTS, PIPE DIA. AND PIPE ORIENTATION PRIOR TO RELEASE OF UNIT TO FABRICATION.

DATE: 11/8/2019	SCALE: 1:30	
DRAWN BY: JLL3	CHECKED BY: -	APPROVED BY

Title
4-ft DIAMETER

FIRST DEFENSE HIGH CAPACITY

GENERAL ARRANGEMENT

Hydro International

hydro-int.com

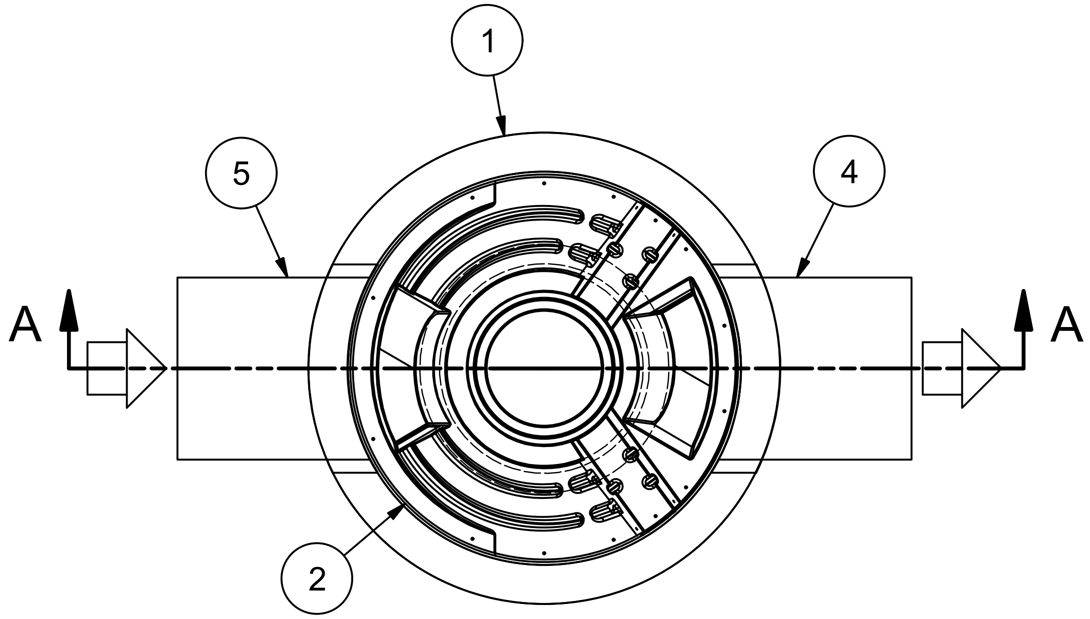
HYDRO INTERNATIONAL

DO NOT SCALE DRAWING
STEEL FABRICATION TOLERANCES
UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES.

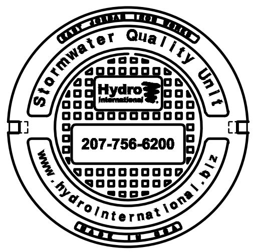
LINEAR
000 - 012in = ±0.04in
012 - 024in = ±0.06in
024 - 048in = ±0.08in
048 - 120in = ±0.12in
120in >>>> = ±0.20in

ANGULAR
000 - 120in = ±1°
120 - 240in = ±0.5°
240in >>>> = ±0.25°

WEIGHT: N/A	MATERIAL:	
STOCK NUMBER:		
DRAWING NO.: 4FDHC_FDHC GA STD		
SHEET SIZE: B	SHEET: 1 OF 1	Rev: -

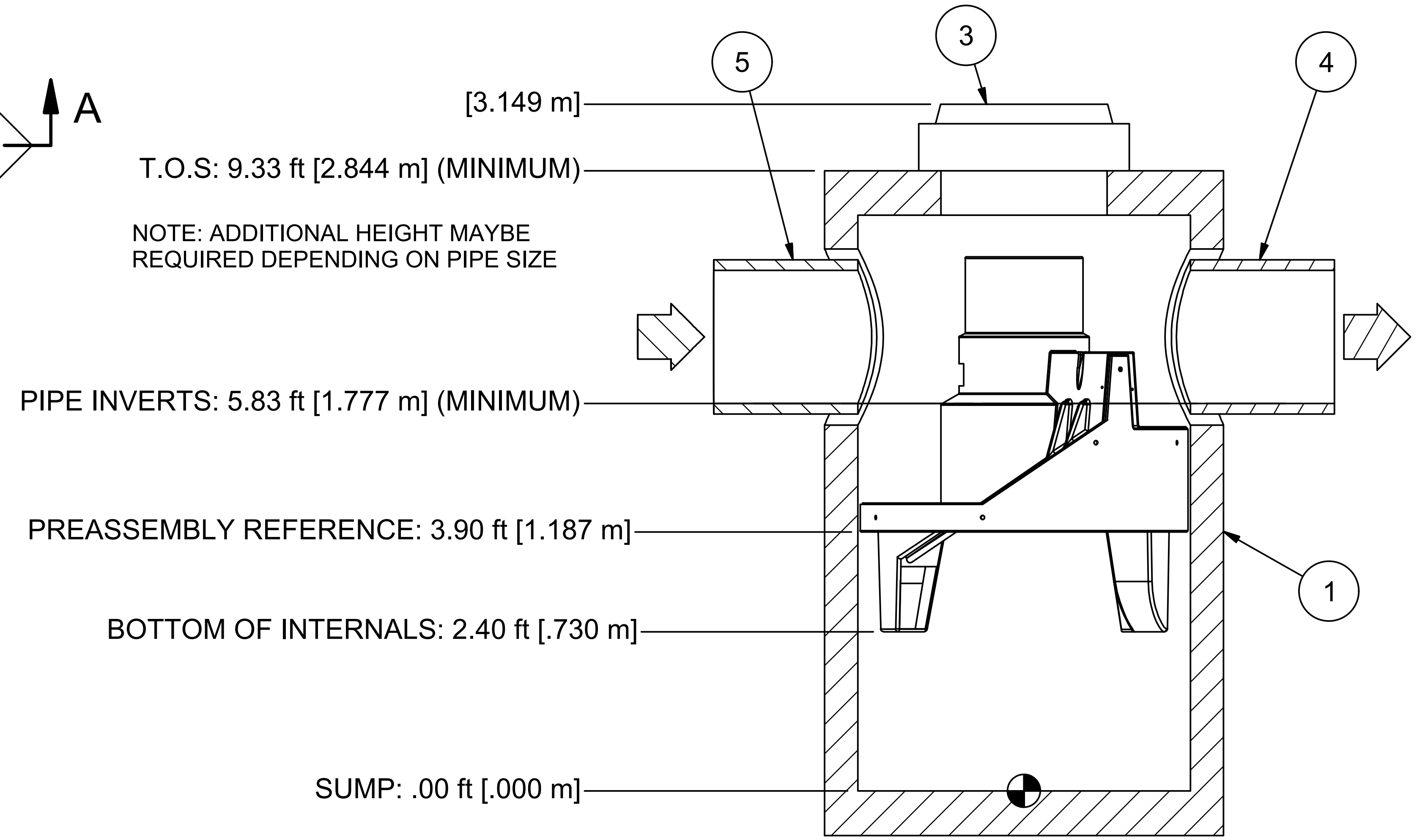


PLAN VIEW



HYDRO FRAME AND COVER (INCLUDED)

GRADE RINGS BY OTHERS
AS REQUIRED



SECTION A-A

PRODUCT SPECIFICATION:

1. PEAK HYDRAULIC FLOW: 20.0 cfs (566 l/s)
2. MIN SEDIMENT STORAGE CAPACITY: 1.1 cu. yd. (0.8 cu. m.)
3. OIL STORAGE CAPACITY: 300 gal. (1135 liters)
4. MAXIMUM INLET/OUTLET PIPE DIAMETERS: 24 in. (600 mm)
5. THE TREATMENT SYSTEM SHALL USE AN INDUCED VORTEX TO SEPARATE POLLUTANTS FROM STORMWATER RUNOFF.
6. FOR MORE PRODUCT INFORMATION INCLUDING REGULATORY ACCEPTANCES, PLEASE VISIT https://hydro-int.com/en/products/first-defense

GENERAL NOTES:
1. General Arrangement drawings only. Contact Hydro International for site specific drawings.
2. The diameter of the inlet and outlet pipes may be no more than 24".
3. Multiple inlet pipes possible (refer to project plan).
4. Inlet/outlet pipe angle can vary to align with drainage network (refer to project plan.s)
5. Peak flow rate and minimum height limited by available cover and pipe diameter.
6. Larger sediment storage capacity may be provided with a deeper sump depth.

PARTS LIST

ITEM	QTY	SIZE (in)	SIZE (mm)	DESCRIPTION
1	1	60	1500	I.D. PRECAST MANHOLE
2	1			INTERNAL COMPONENTS (PRE-INSTALLED)
3	1	30	750	FRAME AND COVER (ROUND)
4	1	24 (MAX)	600 (MAX)	OUTLET PIPE (BY OTHERS)
5	1	24 (MAX)	600 (MAX)	INLET PIPE (BY OTHERS)

PROJECTION

IF IN DOUBT ASK

COMMENTS:

1. MANHOLE WALL AND SLAB THICKNESSES ARE NOT TO SCALE.
2. CONTACT HYDRO INTERNATIONAL FOR A BOTTOM OF STRUCTURE ELEVATION PRIOR TO SETTING FIRST DEFENSE MANHOLE.
3. CONTRACTOR TO CONFIRM RIM, PIPE INVERTS, PIPE DIA. AND PIPE ORIENTATION PRIOR TO RELEASE OF UNIT TO FABRICATION.

DATE: 11/8/2019	SCALE: 1:30	
DRAWN BY: JLL3	CHECKED BY: -	APPROVED BY

Title
5-ft DIAMETER

FIRST DEFENSE HIGH CAPACITY

GENERAL ARRANGEMENT

Hydro International®
hydro-int.com
HYDRO INTERNATIONAL

DO NOT SCALE DRAWING
STEEL FABRICATION TOLERANCES
UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES.

LINEAR
000 - 012in = ±0.04in
012 - 024in = ±0.06in
024 - 048in = ±0.08in
048 - 120in = ±0.12in
120in >>>> = ±0.20in

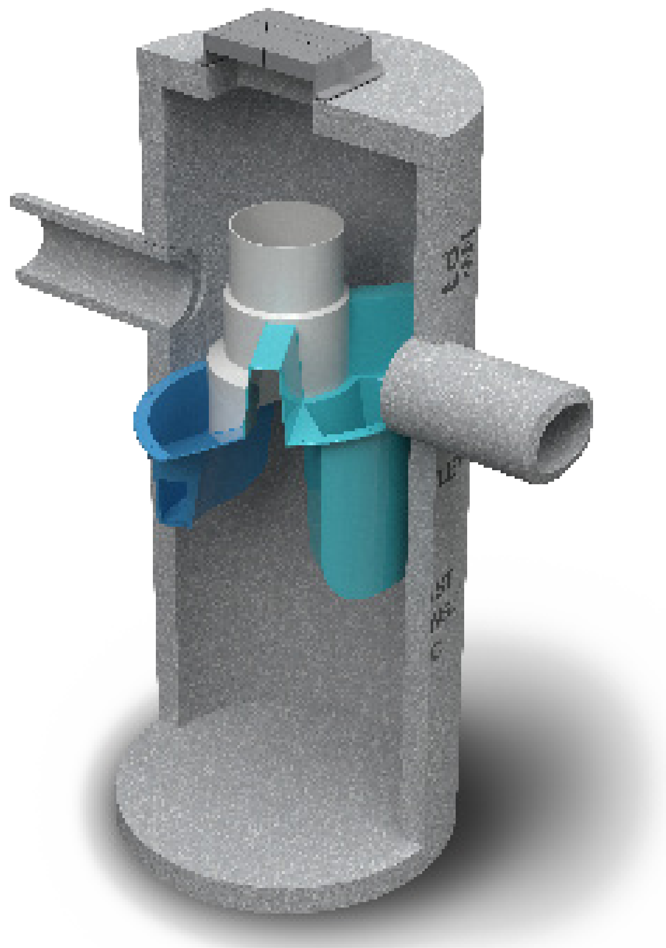
ANGULAR
000 - 120in = ±1°
120 - 240in = ±0.5°
240in >>>> = ±0.25°

WEIGHT: N/A	MATERIAL:

STOCK NUMBER:

DRAWING NO.: Eng_5FDHC_FDHC GA

SHEET SIZE: B	SHEET: 1 OF 1	Rev: -



Operation and Maintenance Manual

First Defense® High Capacity and First Defense® Optimum

Vortex Separator for Stormwater Treatment

Table of Contents

Hydro International (Stormwater), 94 Hutchins Drive, Portland ME 04102
Tel: (207) 756-6200 Fax: (207) 756-6212 Web: www.hydro-int.com

I. First Defense® by Hydro International

Introduction

The First Defense® is an enhanced vortex separator that combines an effective and economical stormwater treatment chamber with an integral peak flow bypass. It efficiently removes total suspended solids (TSS), trash and hydrocarbons from stormwater runoff without washing out previously captured pollutants. The First Defense® is available in several model configurations to accommodate a wide range of pipe sizes, peak flows and depth constraints.

The two product models described in this guide are the First Defense® High Capacity and the First Defense® Optimum; they are inspected and maintained identically.

Operation

The First Defense® operates on simple fluid hydraulics. It is self-activating, has no moving parts, no external power requirement and is fabricated with durable non-corrosive components. No manual procedures are required to operate the unit and maintenance is limited to monitoring accumulations of stored pollutants and periodic clean-outs. The First Defense® has been designed to allow for easy and safe access for inspection, monitoring and clean-out procedures. Neither entry into the unit nor removal of the internal components is necessary for maintenance, thus safety concerns related to confined-space-entry are avoided.

Pollutant Capture and Retention

The internal components of the First Defense® have been designed to optimize pollutant capture. Sediment is captured and retained in the base of the unit, while oil and floatables are stored on the water surface in the inner volume (Fig.1).

The pollutant storage volumes are isolated from the built-in bypass chamber to prevent washout during high-flow storm events. The sump of the First Defense® retains a standing water level between storm events. This ensures a quiescent flow regime at the onset of a storm, preventing resuspension and washout of pollutants captured during previous events.

Accessories such as oil absorbent pads are available for enhanced oil removal and storage. Due to the separation of the oil and floatable storage volume from the outlet, the potential for washout of stored pollutants between clean-outs is minimized.

Applications

- Stormwater treatment at the point of entry into the drainage line
- Sites constrained by space, topography or drainage profiles with limited slope and depth of cover
- Retrofit installations where stormwater treatment is placed on or tied into an existing storm drain line
- Pretreatment for filters, infiltration and storage

Advantages

- Inlet options include surface grate or multiple inlet pipes
- Integral high capacity bypass conveys large peak flows without the need for “offline” arrangements using separate junction manholes
- Long flow path through the device ensures a long residence time within the treatment chamber, enhancing pollutant settling
- Delivered to site pre-assembled and ready for installation

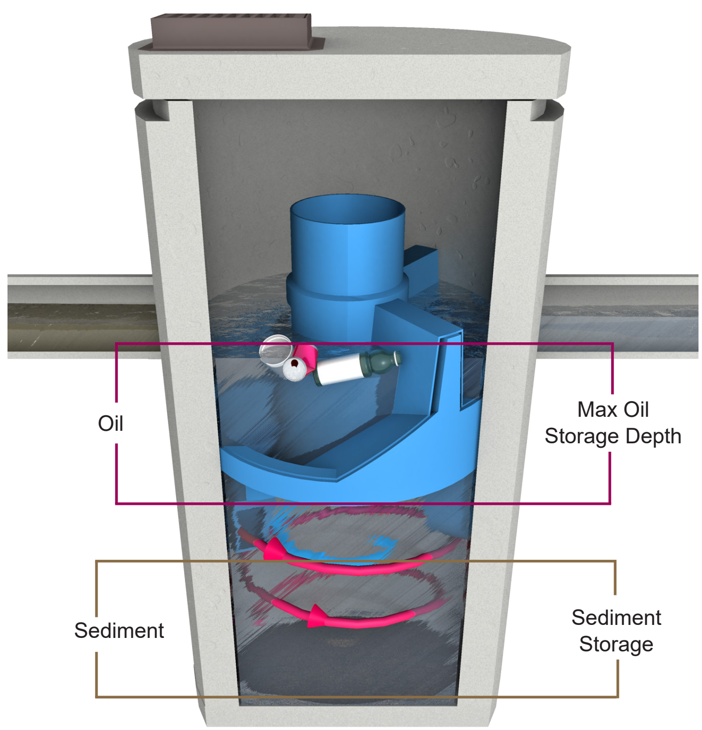


Fig.1 Pollutant storage volumes in the First Defense®.

II. Model Sizes & Configurations

The First Defense® inlet and internal bypass arrangements are available in several model sizes and configurations. The components have modified geometries allowing greater design flexibility to accommodate various site constraints.

All First Defense® models include the internal components that are designed to remove and retain total suspended solids (TSS), gross solids, floatable trash and hydrocarbons (Fig.2). First Defense® model sizes (diameter) are shown in Table 1.

III. Maintenance

First Defense® Components

1. **Built-In Bypass**
2. **Inlet Pipe**
3. **Inlet Chute**
4. **Floatables Draw-off Port**
5. **Outlet Pipe**
6. **Floatables Storage**
7. **Sediment Storage**
8. **Inlet Grate or Cover**

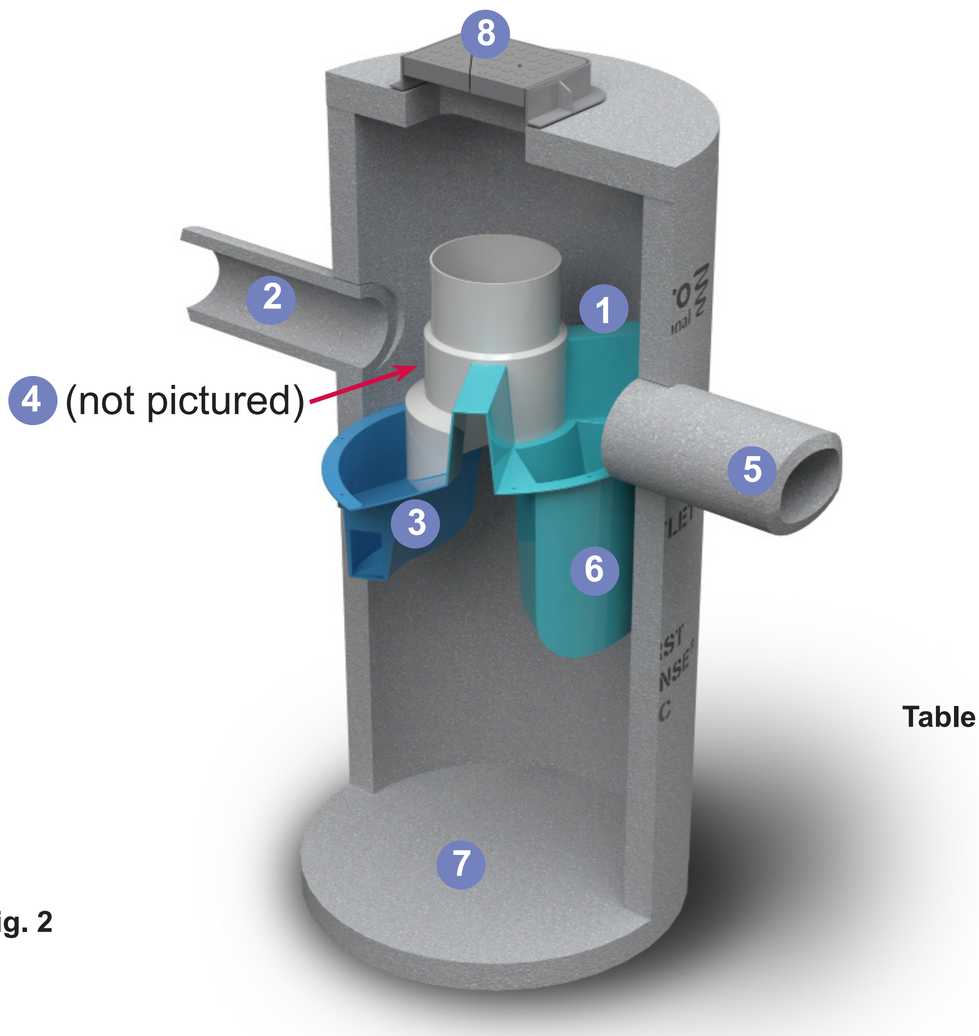


Fig. 2

Table 1

First Defense® Model Sizes
(ft / m) diameter
3 / 0.9
4 / 1.2
5 / 1.5
6 / 1.8
7 / 2.1
8 / 2.4
10 / 3.0

Overview

The First Defense® protects the environment by removing a wide range of pollutants from stormwater runoff. Periodic removal of these captured pollutants is essential to the continuous, long-term functioning of the First Defense®. The First Defense® will capture and retain sediment and oil until the sediment and oil storage volumes are full to capacity. When sediment and oil storage capacities are reached, the First Defense® will no longer be able to store removed sediment and oil.

The First Defense® allows for easy and safe inspection, monitoring and clean-out procedures. A commercially or municipally owned sump-vac is used to remove captured sediment and floatables. Access ports are located in the top of the manhole.

Maintenance events may include Inspection, Oil & Floatables Removal, and Sediment Removal. Maintenance events do not require entry into the First Defense®, nor do they require the internal components of the First Defense® to be removed. In the case of inspection and floatables removal, a vactor truck is not required. However, a vactor truck is required if the maintenance event is to include oil removal and/or sediment removal.

Maintenance Equipment Considerations

The internal components of the First Defense® have a centrally located circular shaft through which the sediment storage sump can be accessed with a sump vac hose. The open diameter of this access shaft is 15 inches in diameter (Fig.3). Therefore, the nozzle fitting of any vactor hose used for maintenance should be less than 15 inches in diameter.

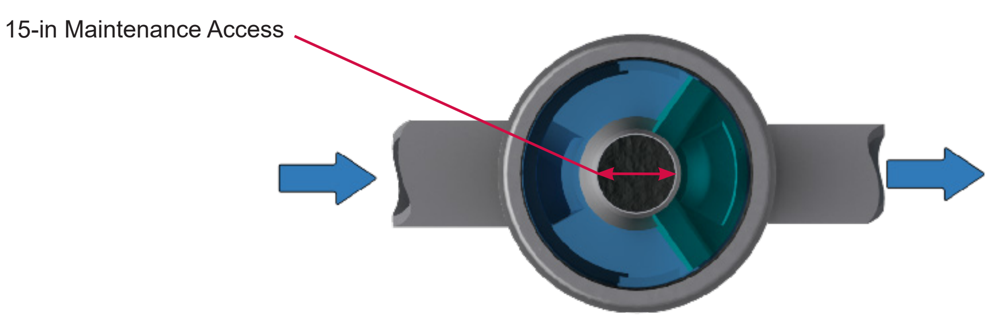


Fig.3 The central opening to the sump of the First Defense®is 15 inches in diameter.

Determining Your Maintenance Schedule

The frequency of clean out is determined in the field after installation. During the first year of operation, the unit should be inspected every six months to determine the rate of sediment and floatables accumulation. A simple probe such as a Sludge-Judge® can be used to determine the level of accumulated solids stored in the sump. This information can be recorded in the maintenance log (see page 9) to establish a routine maintenance schedule.

The vactor procedure, including both sediment and oil / flotables removal, for First Defense® typically takes less than 30 minutes and removes a combined water/oil volume of about 765 gallons.

Inspection Procedures

1. Set up any necessary safety equipment around the access port or grate of the First Defense® as stipulated by local ordinances. Safety equipment should notify passing pedestrian and road traffic that work is being done.

2. Remove the grate or lid to the manhole.

3. Without entering the vessel, look down into the chamber to inspect the inside. Make note of any irregularities. Fig.4 shows the standing water level that should be observed.

4. Without entering the vessel, use the pole with the skimmer net to remove floatables and loose debris from the components and water surface.

5. Using a sediment probe such as a Sludge Judge®, measure the depth of sediment that has collected in the sump of the vessel.

6. On the Maintenance Log (see page 9), record the date, unit location, estimated volume of floatables and gross debris removed, and the depth of sediment measured. Also note any apparent irregularities such as damaged components or blockages.

7. Securely replace the grate or lid.

8. Take down safety equipment.

9. Notify Hydro International of any irregularities noted during inspection.

Fig.4 Floatables are removed with a vactor hose

Floatables and Sediment Clean Out

Floatables clean out is typically done in conjunction with sediment removal. A commercially or municipally owned sump-vac is used to remove captured sediment and floatables (Fig.4).

Floatables and loose debris can also be netted with a skimmer and pole. The access port located at the top of the manhole provides unobstructed access for a vactor hose to be lowered to the base of the sump.

Scheduling

- Floatables and sump clean out are typically conducted once a year during any season.

- Floatables and sump clean out should occur as soon as possible following a spill in the contributing drainage area.

Recommended Equipment

- Safety Equipment (traffic cones, etc)

- Crow bar or other tool to remove grate or lid

- Pole with skimmer or net (if only floatables are being removed)

- Sediment probe (such as a Sludge Judge®)

- Vactor truck (flexible hose recommended)

- First Defense® Maintenance Log

Floatables and Sediment Clean Out Procedures

1. Set up any necessary safety equipment around the access port or grate of the First Defense® as stipulated by local ordinances. Safety equipment should notify passing pedestrian and road traffic that work is being done.

2. Remove the grate or lid to the manhole.

3. Without entering the vessel, look down into the chamber to inspect the inside. Make note of any irregularities.

4. Remove oil and floatables stored on the surface of the water with the vactor hose or with the skimmer or net

5. Using a sediment probe such as a Sludge Judge®, measure the depth of sediment that has collected in the sump of the vessel and record it in the Maintenance Log (page 9).

6. Once all floatables have been removed, drop the vactor hose to the base of the sump. Vactor out the sediment and gross debris off the sump floor

7. Retract the vactor hose from the vessel.

8. On the Maintenance Log provided by Hydro International, record the date, unit location, estimated volume of floatables and gross debris removed, and the depth of sediment measured. Also note any apparent irregularities such as damaged components, blockages, or irregularly high or low water levels.

9. Securely replace the grate or lid.

Maintenance at a Glance

Inspection	- Regularly during first year of installation - Every 6 months after the first year of installation
Oil and Floatables Removal	- Once per year, with sediment removal - Following a spill in the drainage area
Sediment Removal	- Once per year or as needed - Following a spill in the drainage area
NOTE: For most clean outs the entire volume of liquid does not need to be removed from the manhole. Only remove the first few inches of oils and floatables from the water surface to reduce the total volume of liquid removed during a clean out.	

First Defense® Installation Log

HYDRO INTERNATIONAL REFERENCE NUMBER:	
SITE NAME:	
SITE LOCATION:	
OWNER:	CONTRACTOR:
CONTACT NAME:	CONTACT NAME:
COMPANY NAME:	COMPANY NAME:
ADDRESS:	ADDRESS:
TELEPHONE:	TELEPHONE:
FAX:	FAX:

INSTALLATION DATE: / /

MODEL SIZE (CIRCLE ONE): [3-FT] [4-FT] [5-FT] [6-FT] [7-FT] [8-FT] [10-FT]

INLET (CIRCLE ALL THAT APPLY): GRATED INLET (CATCH BASIN) INLET PIPE (FLOW THROUGH)

Hydro International®

First Defense® Inspection and Maintenance Log

Date	Initials	Depth of Floatables and Oils	Sediment Depth Measured	Volume of Sediment Removed	Site Activity and Comments

Hydro International (Stormwater), 94 Hutchins Drive, Portland ME 04102
Tel: (207) 756-6200 Fax: (207) 756-6212 Web: www.hydro-int.com

Hydro International (Stormwater), 94 Hutchins Drive, Portland ME 04102
Tel: (207) 756-6200 Fax: (207) 756-6212 Web: www.hydro-int.com

Hydro International

Stormwater Solutions

94 Hutchins Drive
Portland, ME 04102

Tel: (207) 756-6200
Fax: (207) 756-6212
stormwaterinquiry@hydro-int.com

www.hydro-int.com

Turning Water Around...®

Appendix K:

Construction sequence

CONSTRUCTION SEQUENCING:

1. SURVEY LOCATE THE CENTERLINE OF THE PROPOSED BUCK RUN DRIVEWAY EXTENSION, CENTERLINE OF THE PROPOSED DRIVEWAY TO PROPOSED BUILDING 1 AND 2 AND CENTERLINE OF THE PROPOSED GRAVEL PARKING AREA.
2. SURVEY LOCATE AND STAKE THE PROPOSED LIMITS OF DISTURBANCE, BERM OF THE INFILTRATION BASIN AND LOWER PROPOSED INFILTRATION SYSTEMS.
3. CORDON OFF LOWER INFILTRATION SYSTEMS AND EXISTING SSTS' ADJACENT TO PROPOSED BUILDING 1 WITH CONSTRUCTION FENCING.
4. IDENTIFY TREES TO REMAIN AND PROVIDE PROTECTIVE FENCING. CLEAR TREES WITHIN THE LIMITS OF DISTURBANCE (NOTE: MAINTAIN EXISTING VEGETATIVE GROUND COVER FOR AS LONG AS POSSIBLE ON AREAS NOT REQUIRING GRADING).
5. INSTALL STABILIZED CONSTRUCTION ENTRANCE FROM OLD POST ROAD (ROUTE 35).
6. INSTALL ALL SILT FENCE AS SHOWN.
7. DEMOLISH EXISTING STRUCTURES AS NEEDED AS CONSTRUCTION PROGRESSES FROM OLD POST ROAD NORTH INTO THE SITE.
8. STRIP TOPSOIL FROM THE DRIVEWAY SHOULDERS AND GRAVEL PARKING AREA AND STOCKPILE.
9. STRIP DRIVEWAY SURFACE OF BUCK RUN TO STA. 4+00, EXCAVATE AND FILL TO FORM EMBANKMENTS AND ROUGH GRADE GRAVEL PARKING AREA AND INFILTRATION BASIN.
10. CONSTRUCT PORTION OF DRIVEWAY TO STA. 4+00 AND GRAVEL PARKING AREA TO SUBGRADE. INSTALL CATCH BASIN(S), DRAIN MANHOLE(S), AND DRAINAGE PIPE, FROM STA. 0+00 TO 4+00. INSTALL INFILTRATION SYSTEM INCLUDING DIVERSION STRUCTURES AND HDS UNITS. PROVIDE INLET PROTECTION FOR CATCH BASINS.
11. REINSTALL CONSTRUCTION FENCING TO PROTECT INFILTRATION SYSTEM AREA.
12. ESTABLISH CONSTRUCTION STAGING AREA IN AREA OF GRAVEL PARKING AREA.
13. CONSTRUCT INFILTRATION BASIN.
14. INSTALL CURB AND BINDER COURSE OF PAVEMENT ON PORTION OF COMPLETED DRIVEWAY. BACK-UP CURBS WITH TOPSOIL AND APPLY SEED AND MULCH.
15. DEMOLISH EXISTING STRUCTURES IN AREA OF BUILDINGS 1 AND 2.
16. STRIP DRIVEWAY SURFACE OF BUCK RUN FROM STA. 4+00 TO 7+00, EXCAVATE AND FILL TO FORM EMBANKMENTS AND ROUGH GRADE AS NEEDED. CONSTRUCTION RETAINING WALL AND INSTALL SIDEWALK.

17. CONSTRUCT DRIVEWAY TO SUBGRADE AND RETAINING WALLS ASSOCIATED WITH ACCESS TO BUILDING'S 1 AND 2.
18. CONSTRUCT BUILDING 1 AND 2 AND ASSOCIATED IMPROVEMENTS AND INSTALL ELECTRICAL, TELEPHONE, AND CABLE UTILITIES.
19. INSTALL CATCH BASIN(S), DRAIN MANHOLE(S), AND DRAINAGE PIPE, FROM STA. 4+00 TO 7+00 AND PROPOSED DRIVEWAY TO NEW BUILDINGS. PROVIDE INLET PROTECTION FOR CATCH BASINS.
20. INSTALL CURB AND BINDER COURSE OF PAVEMENT ON PORTION OF COMPLETED DRIVEWAY. BACK-UP CURBS WITH TOPSOIL AND APPLY SEED AND MULCH.
21. STRIP DRIVEWAY SURFACE OF THE REMAINDER OF BUCK RUN, EXCAVATE AND FILL TO FORM EMBANKMENTS AND ROUGH GRADE AS NEEDED. CONSTRUCTION RETAINING WALLS AND PARKING AREA.
22. DEMOLISH EXISTING STRUCTURES AND CONSTRUCT PROPOSED FREEZER FACILITY.
23. INSTALL REMAINING CATCH BASIN(S), DRAIN MANHOLE(S), AND DRAINAGE PIPE ASSOCIATED WITH THE DRIVEWAY IMPROVEMENTS. PROVIDE INLET PROTECTION FOR CATCH BASINS.
24. INSTALL REMAINING ELECTRICAL, TELEPHONE, AND CABLE UTILITIES.
25. INSTALL CURB AND BINDER COURSE OF PAVEMENT ON PORTION OF COMPLETED DRIVEWAY. BACK-UP CURBS WITH TOPSOIL AND APPLY SEED AND MULCH.
26. CONSTRUCT UPPER SITE IMPROVEMENTS (CAMPING PODS AND RESTROOM FACILITIES) AND GRAVEL PATH RESURFACING AND REALIGNMENT.
27. FINE GRADE DRIVEWAY SHOULDERS, LAWN AREA, AND ALL OTHER DISTURBED AREAS TO BE RESTORED TO VEGETATIVE COVER AND COMPLETE RESTORATION OF THESE AREAS WITH SEED AND MULCH. INSTALL LANDSCAPE PLANTINGS AND MULCH BEDS. INDIVIDUAL INFILTRATION SYSTEMS SHALL BE PLACED INTO OPERATION ONLY AFTER FINAL STABILIZATION OF DISTURBED AREA FROM CONTRIBUTING AREA. REMOVE THE SEALS FROM THE PIPE OUTLETS IN DIVERSION STRUCTURES.
28. INSTALL GRAVEL COURSE OF GRAVEL PARKING AREA.
29. CLEANOUT CATCH BASINS AND REMOVE EROSION CONTROLS.
30. INSTALL TOP COURSE OF PAVEMENT.
31. INSTALL PAVEMENT MARKINGS AS NEEDED.
32. RE-VEGETATE ROAD SHOULDERS AND YARD AREAS AS NEEDED.

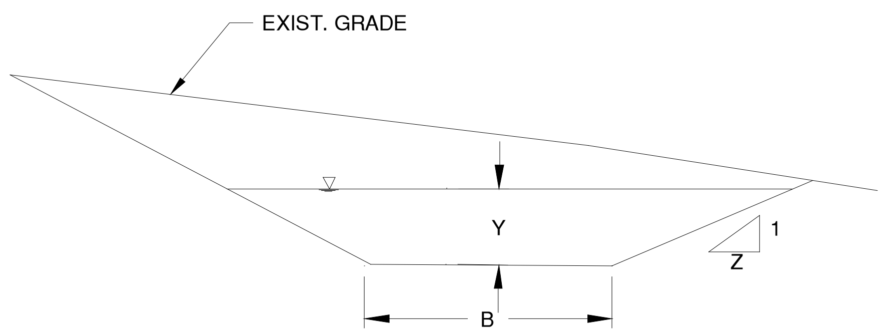
NOTE: SITE STABILIZATION (80% UNIFORM DENSITY OF PERMANENT VEGETATION OR PERMANENT MULCH/STONE) MUST BE ACHIEVED PRIOR TO REMOVING TEMPORARY EROSION CONTROL MEASURES.

Appendix L:

Swale Sizing

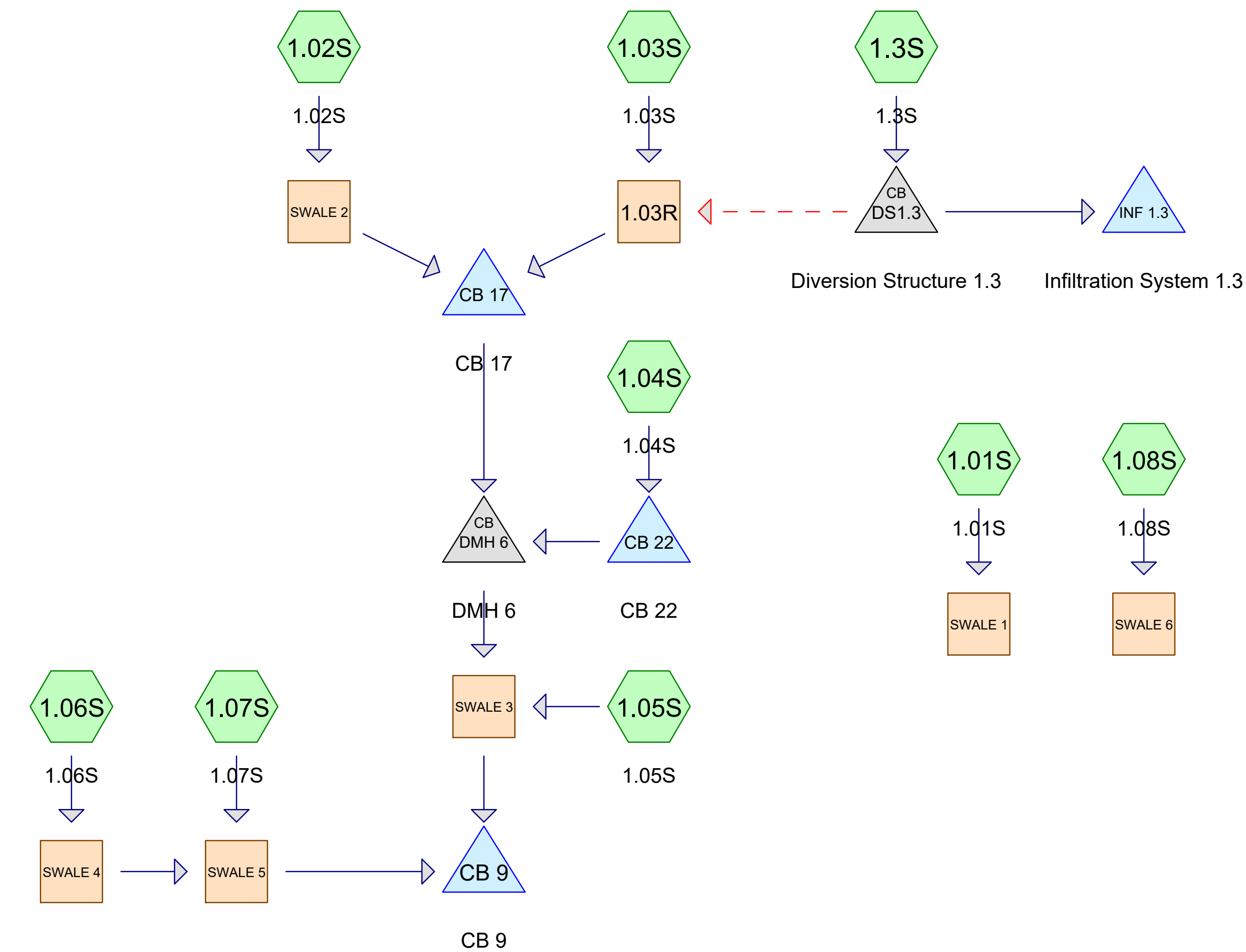
BIBBO ASSOCIATES, L.L.P.
Consulting Engineers

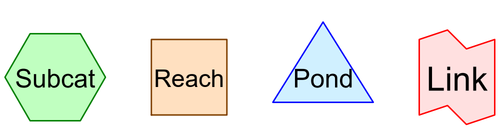
Wolf Conservation Center
Swale Sizing Summary



Swale # Number	Swale Type	Tributary Area (AF)	10-Year Storm Peak Inflow (cfs)	Average Flow Depth (ft)	Swale Parameters			Freeboard (ft.)
					Z	B (ft.)	Y (ft.)	
Swale 1	Grass	0.229	1.8	0.19	2	2	1	0.81
Swale 2	Rip-rap	0.315	2.3	0.31	2	2	1	0.69
Swale 3	Rip-rap	0.770	5.7	0.48	2	2	1	0.52
Swale 4	Rip-rap	0.164	1.6	0.20	2	2	1	0.80
Swale 5	Rip-rap	0.314	3.2	0.38	2	2	1	0.62
Swale 6	Rip-rap	0.274	2.6	0.30	2	2	1	0.70

Note: The minimum freeboard for lined waterways shall be 0.25 feet above design high water in areas where erosion resistant vegetation cannot be grown adjacent to the paved side slopes. No freeboard is required where good vegetation can be grown and is maintained





Routing Diagram for Wolf Center - SWALES 10-2023
Prepared by Bibbo Associates, llp., Printed 10/20/2023
HydroCAD® 10.00-24 s/n 02226 © 2018 HydroCAD Software Solutions LLC

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1.01S: 1.01S Runoff Area=54,906 sf 0.00% Impervious Runoff Depth=2.18"
Flow Length=762' Tc=23.5 min CN=71 Runoff=1.8 cfs 0.229 af

Subcatchment 1.02S: 1.02S Runoff Area=72,889 sf 0.00% Impervious Runoff Depth=2.26"
Flow Length=960' Tc=27.4 min CN=72 Runoff=2.3 cfs 0.315 af

Subcatchment 1.03S: 1.03S Runoff Area=30,431 sf 0.00% Impervious Runoff Depth=2.34"
Flow Length=488' Tc=8.8 min CN=73 Runoff=1.6 cfs 0.136 af

Subcatchment 1.04S: 1.04S Runoff Area=65,878 sf 0.00% Impervious Runoff Depth=2.18"
Flow Length=755' Tc=16.6 min CN=71 Runoff=2.5 cfs 0.274 af

Subcatchment 1.05S: 1.05S Runoff Area=9,104 sf 5.18% Impervious Runoff Depth=2.51"
Tc=6.0 min CN=75 Runoff=0.6 cfs 0.044 af

Subcatchment 1.06S: 1.06S Runoff Area=40,950 sf 0.00% Impervious Runoff Depth=2.10"
Flow Length=746' Tc=14.4 min CN=70 Runoff=1.6 cfs 0.164 af

Subcatchment 1.07S: 1.07S Runoff Area=35,857 sf 0.00% Impervious Runoff Depth=2.18"
Flow Length=390' Tc=9.6 min CN=71 Runoff=1.7 cfs 0.149 af

Subcatchment 1.08S: 1.08S Runoff Area=68,349 sf 0.00% Impervious Runoff Depth=2.10"
Flow Length=904' Tc=15.7 min CN=70 Runoff=2.6 cfs 0.274 af

Subcatchment 1.3S: 1.3S Runoff Area=2,000 sf 100.00% Impervious Runoff Depth=4.84"
Tc=6.0 min CN=98 Runoff=0.2 cfs 0.019 af

Reach 1.03R: Avg. Flow Depth=0.19' Max Vel=0.66 fps Inflow=1.6 cfs 0.136 af
n=0.400 L=242.0' S=0.3202 '/' Capacity=7.1 cfs Outflow=1.4 cfs 0.136 af

Reach SWALE 1: Avg. Flow Depth=0.31' Max Vel=2.20 fps Inflow=1.8 cfs 0.229 af
n=0.030 L=150.0' S=0.0133 '/' Capacity=16.6 cfs Outflow=1.8 cfs 0.229 af

Reach SWALE 2: Avg. Flow Depth=0.27' Max Vel=3.25 fps Inflow=2.3 cfs 0.315 af
n=0.069 L=285.0' S=0.1754 '/' Capacity=26.2 cfs Outflow=2.3 cfs 0.315 af

Reach SWALE 3: Avg. Flow Depth=0.48' Max Vel=4.02 fps Inflow=5.7 cfs 0.770 af
n=0.069 L=110.0' S=0.1455 '/' Capacity=23.8 cfs Outflow=5.7 cfs 0.770 af

Reach SWALE 4: Avg. Flow Depth=0.20' Max Vel=3.30 fps Inflow=1.6 cfs 0.164 af
n=0.069 L=78.0' S=0.2564 '/' Capacity=31.6 cfs Outflow=1.6 cfs 0.164 af

Reach SWALE 5: Avg. Flow Depth=0.38' Max Vel=2.94 fps Inflow=3.2 cfs 0.314 af
n=0.069 L=150.0' S=0.1000 '/' Capacity=19.8 cfs Outflow=3.1 cfs 0.314 af

Reach SWALE 6: Avg. Flow Depth=0.30' Max Vel=3.31 fps Inflow=2.6 cfs 0.274 af
n=0.069 L=90.0' S=0.1667 '/' Capacity=25.5 cfs Outflow=2.6 cfs 0.274 af

Pond CB 17: CB 17 Peak Elev=511.68' Storage=4 cf Inflow=3.1 cfs 0.452 af
Outflow=3.1 cfs 0.452 af

Pond CB 22: CB 22 Peak Elev=527.65' Storage=5 cf Inflow=2.5 cfs 0.274 af
Outflow=2.5 cfs 0.274 af

Pond CB 9: CB 9 Peak Elev=467.84' Storage=17 cf Inflow=8.6 cfs 1.083 af
Outflow=8.6 cfs 1.083 af

Pond DMH 6: DMH 6 Peak Elev=499.45' Inflow=5.5 cfs 0.726 af
15.0" Round Culvert n=0.013 L=127.0' S=0.1094 '/' Outflow=5.5 cfs 0.726 af

Pond DS1.3: Diversion Structure 1.3 Peak Elev=593.68' Inflow=0.2 cfs 0.019 af
Primary=0.2 cfs 0.019 af Secondary=0.0 cfs 0.000 af Outflow=0.2 cfs 0.019 af

Pond INF 1.3: Infiltration System 1.3 Peak Elev=593.58' Storage=0.002 af Inflow=0.2 cfs 0.019 af
Outflow=0.1 cfs 0.019 af

Summary for Subcatchment 1.01S: 1.01S

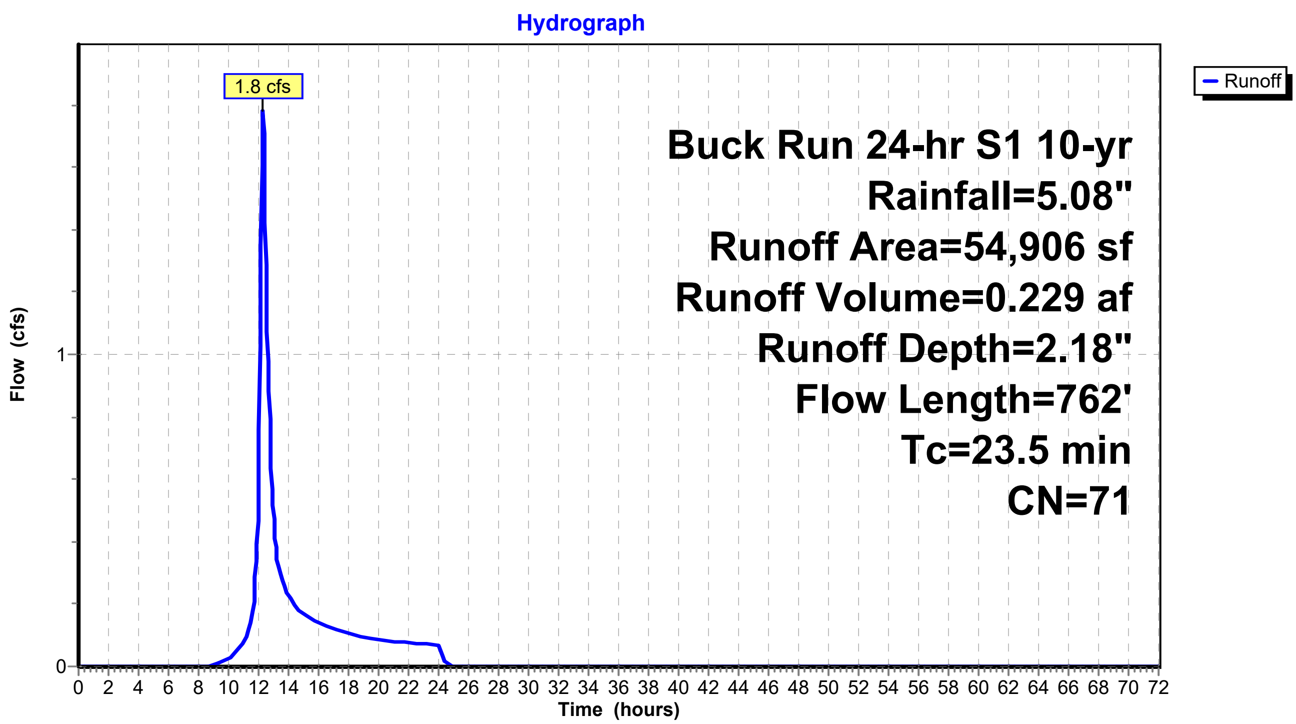
Runoff = 1.8 cfs @ 12.29 hrs, Volume= 0.229 af, Depth= 2.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Buck Run 24-hr S1 10-yr Rainfall=5.08"

Area (sf)	CN	Description
3,700	87	Dirt roads, HSG C
4,789	74	>75% Grass cover, Good, HSG C
46,417	70	Woods, Good, HSG C
54,906	71	Weighted Average
54,906		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.7	100	0.0300	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.40"
5.8	662	0.1450	1.90		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
23.5	762	Total			

Subcatchment 1.01S: 1.01S



Summary for Subcatchment 1.02S: 1.02S

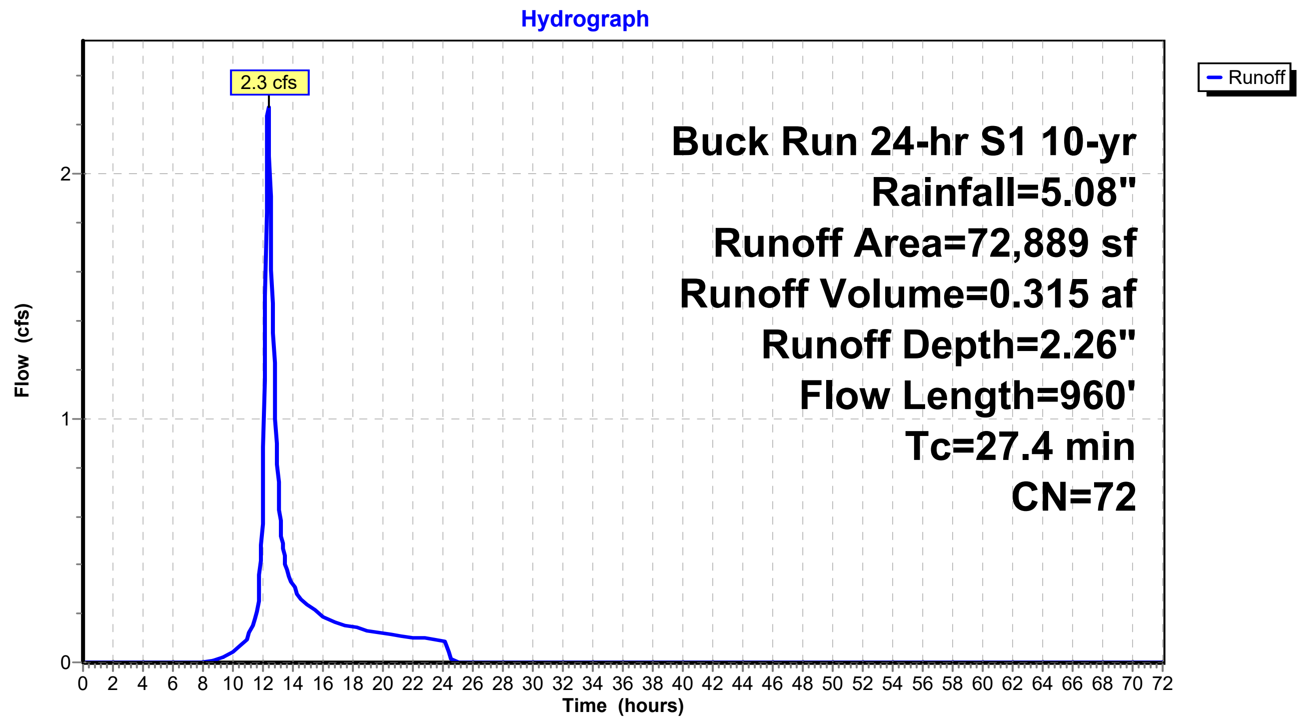
Runoff = 2.3 cfs @ 12.34 hrs, Volume= 0.315 af, Depth= 2.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Buck Run 24-hr S1 10-yr Rainfall=5.08"

Area (sf)	CN	Description
5,326	87	Dirt roads, HSG C
19,189	74	>75% Grass cover, Good, HSG C
48,374	70	Woods, Good, HSG C
72,889	72	Weighted Average
72,889		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.8	100	0.0200	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.40"
4.2	485	0.1460	1.91		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.0	157	0.1400	2.62		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.3	202	0.2870	2.68		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.1	16	0.3130	3.92		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
27.4	960	Total			

Subcatchment 1.02S: 1.02S



Summary for Subcatchment 1.03S: 1.03S

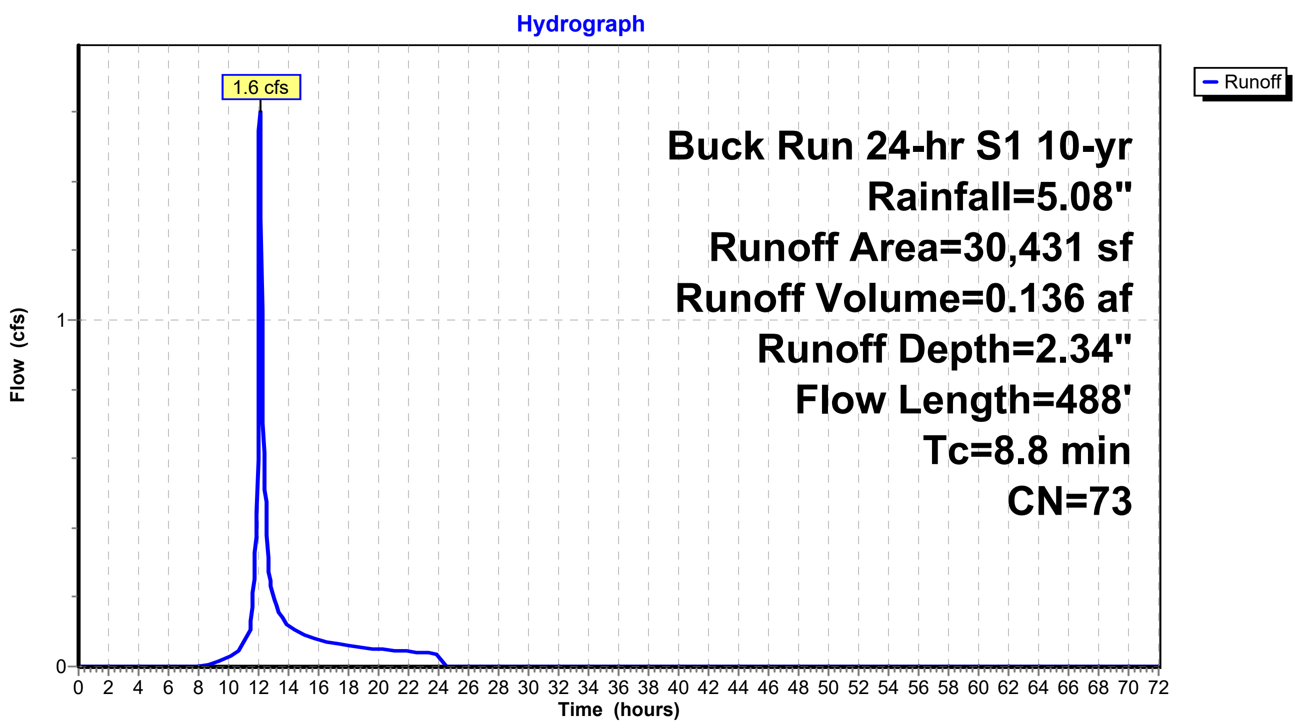
Runoff = 1.6 cfs @ 12.08 hrs, Volume= 0.136 af, Depth= 2.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Buck Run 24-hr S1 10-yr Rainfall=5.08"

Area (sf)	CN	Description
2,873	87	Dirt roads, HSG C
10,613	74	>75% Grass cover, Good, HSG C
16,945	70	Woods, Good, HSG C
30,431	73	Weighted Average
30,431		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.6	20	0.1500	0.13		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.40"
4.0	80	0.1125	0.33		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.40"
0.2	35	0.2850	3.74		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	30	0.1330	5.87		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.5	81	0.1600	2.80		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.3	214	0.2850	2.67		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.1	28	0.3570	4.18		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
8.8	488	Total			

Subcatchment 1.03S: 1.03S



Summary for Subcatchment 1.04S: 1.04S

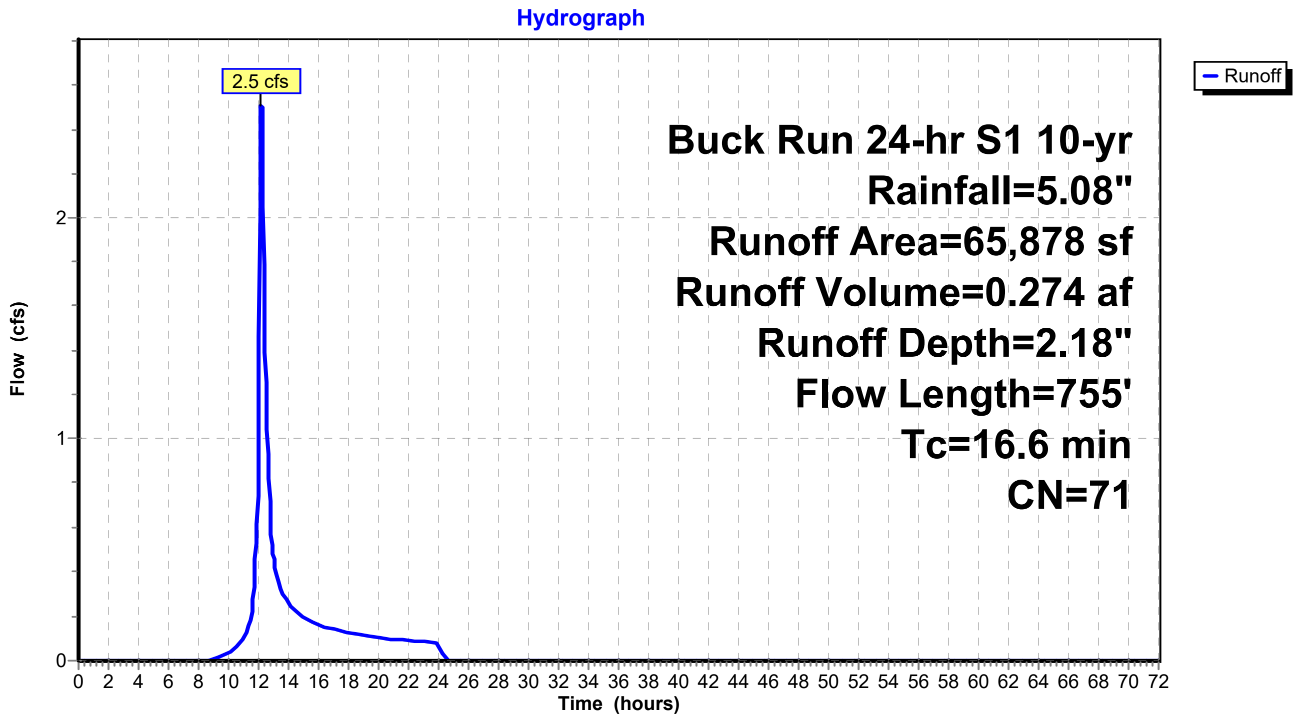
Runoff = 2.5 cfs @ 12.19 hrs, Volume= 0.274 af, Depth= 2.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Buck Run 24-hr S1 10-yr Rainfall=5.08"

Area (sf)	CN	Description
2,166	87	Dirt roads, HSG C
6,623	74	>75% Grass cover, Good, HSG C
57,089	70	Woods, Good, HSG C
65,878	71	Weighted Average
65,878		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0	100	0.0800	0.14		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.40"
4.5	620	0.2085	2.28		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.1	35	0.6850	5.79		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
16.6	755	Total			

Subcatchment 1.04S: 1.04S



Summary for Subcatchment 1.05S: 1.05S

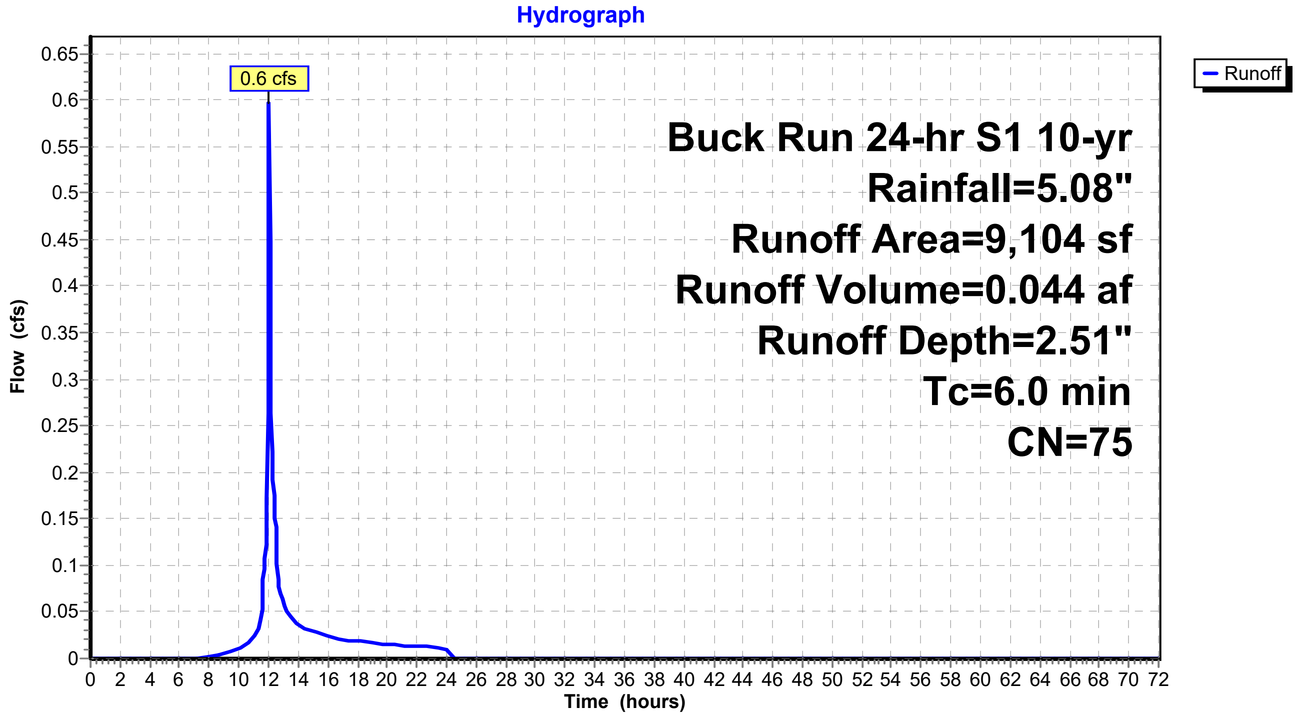
Runoff = 0.6 cfs @ 12.04 hrs, Volume= 0.044 af, Depth= 2.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Buck Run 24-hr S1 10-yr Rainfall=5.08"

Area (sf)	CN	Description
472	98	Paved parking, HSG C
1,149	70	Woods, Good, HSG C
7,483	74	>75% Grass cover, Good, HSG C
9,104	75	Weighted Average
8,632		94.82% Pervious Area
472		5.18% Impervious Area

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

Subcatchment 1.05S: 1.05S



Summary for Subcatchment 1.06S: 1.06S

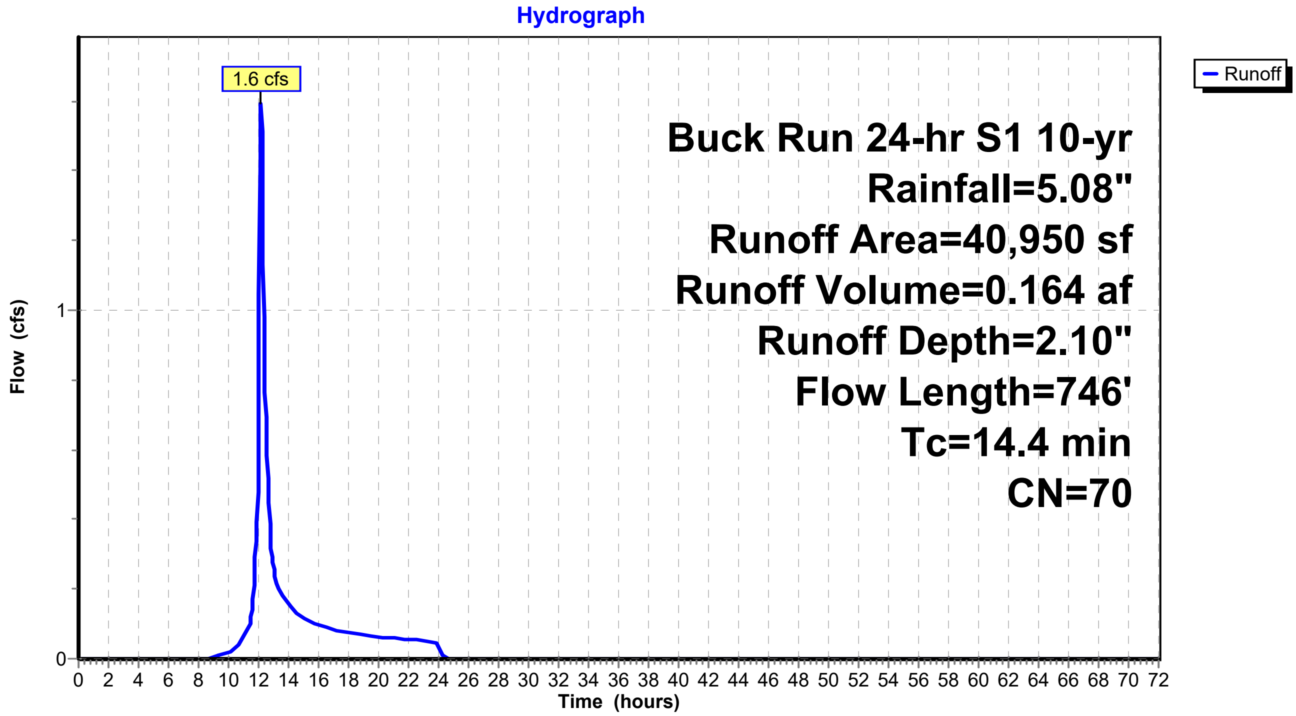
Runoff = 1.6 cfs @ 12.16 hrs, Volume= 0.164 af, Depth= 2.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Buck Run 24-hr S1 10-yr Rainfall=5.08"

Area (sf)	CN	Description
3,043	74	>75% Grass cover, Good, HSG C
37,907	70	Woods, Good, HSG C
40,950	70	Weighted Average
40,950		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.9	100	0.1300	0.17		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.40"
4.4	616	0.2190	2.34		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.1	30	0.4330	4.61		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
14.4	746	Total			

Subcatchment 1.06S: 1.06S



Summary for Subcatchment 1.07S: 1.07S

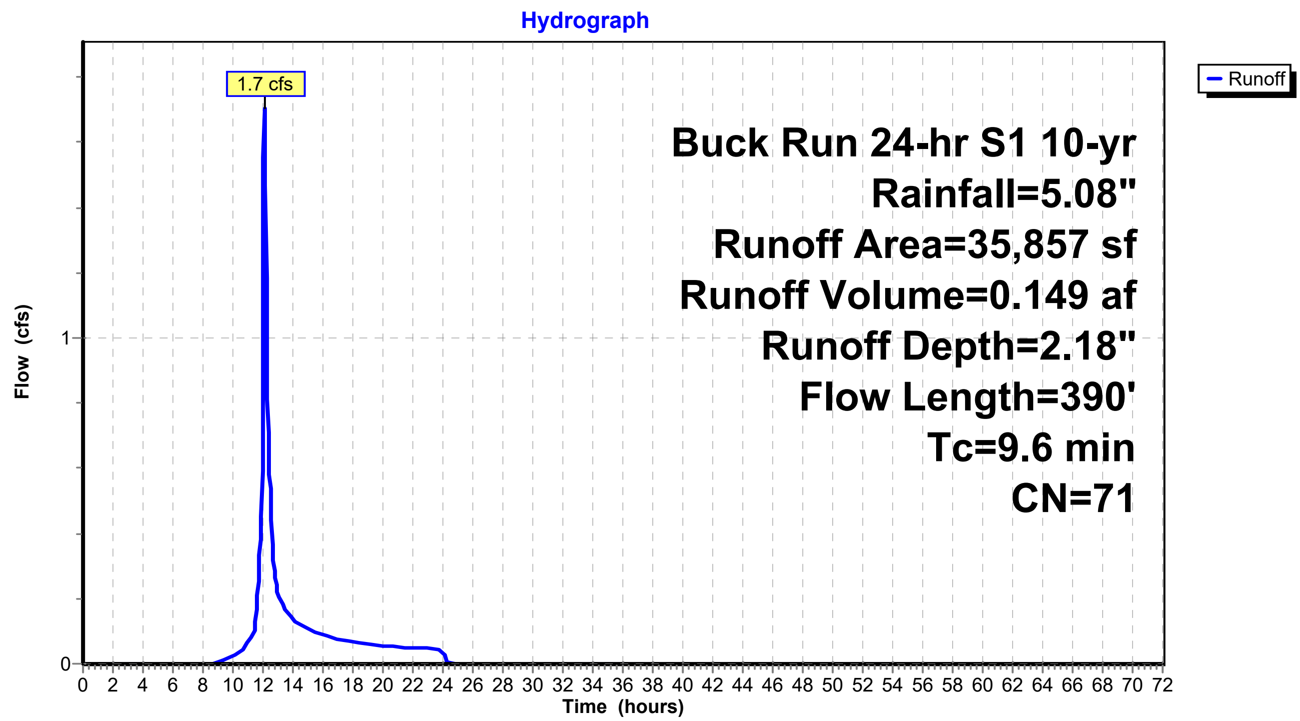
Runoff = 1.7 cfs @ 12.09 hrs, Volume= 0.149 af, Depth= 2.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Buck Run 24-hr S1 10-yr Rainfall=5.08"

Area (sf)	CN	Description
27,283	70	Woods, Good, HSG C
8,574	74	>75% Grass cover, Good, HSG C
35,857	71	Weighted Average
35,857		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	100	0.2400	0.22		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.40"
1.9	290	0.2680	2.59		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
9.6	390	Total			

Subcatchment 1.07S: 1.07S



Summary for Subcatchment 1.08S: 1.08S

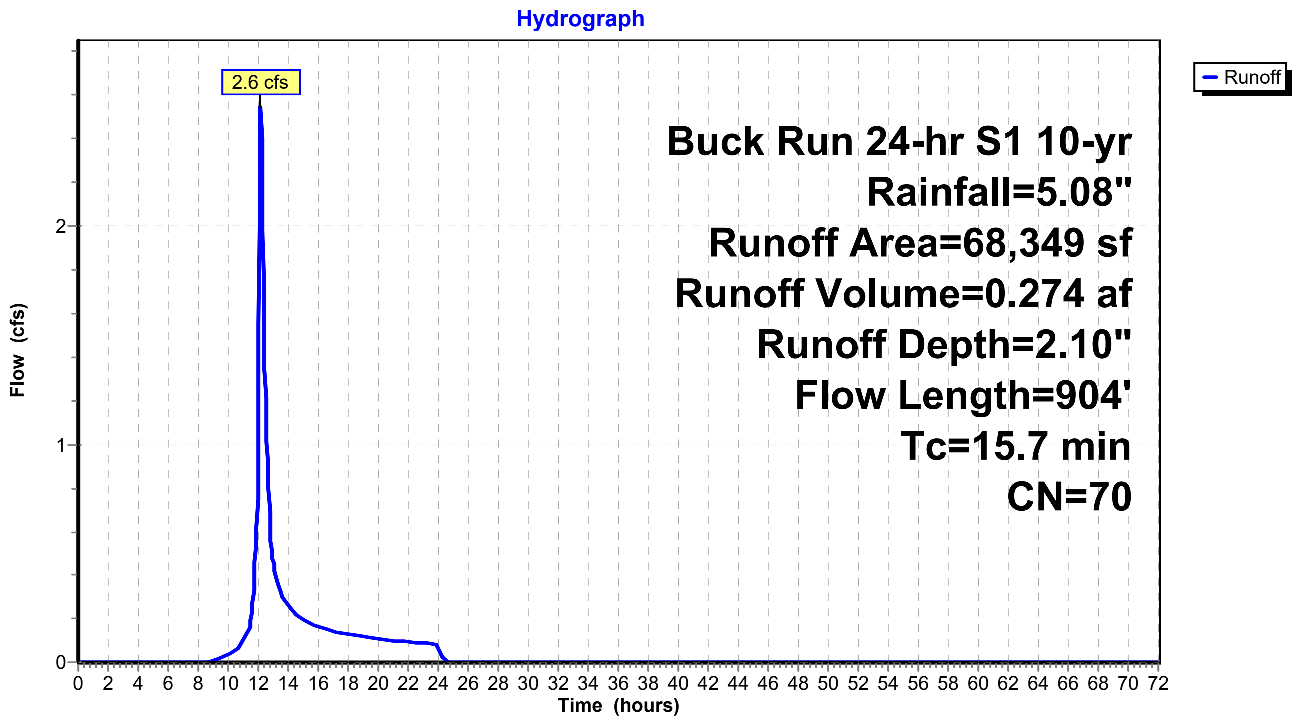
Runoff = 2.6 cfs @ 12.18 hrs, Volume= 0.274 af, Depth= 2.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Buck Run 24-hr S1 10-yr Rainfall=5.08"

Area (sf)	CN	Description
68,349	70	Woods, Good, HSG C
68,349		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	100	0.1200	0.16		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.40"
5.5	804	0.2370	2.43		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
15.7	904	Total			

Subcatchment 1.08S: 1.08S



Summary for Subcatchment 1.3S: 1.3S

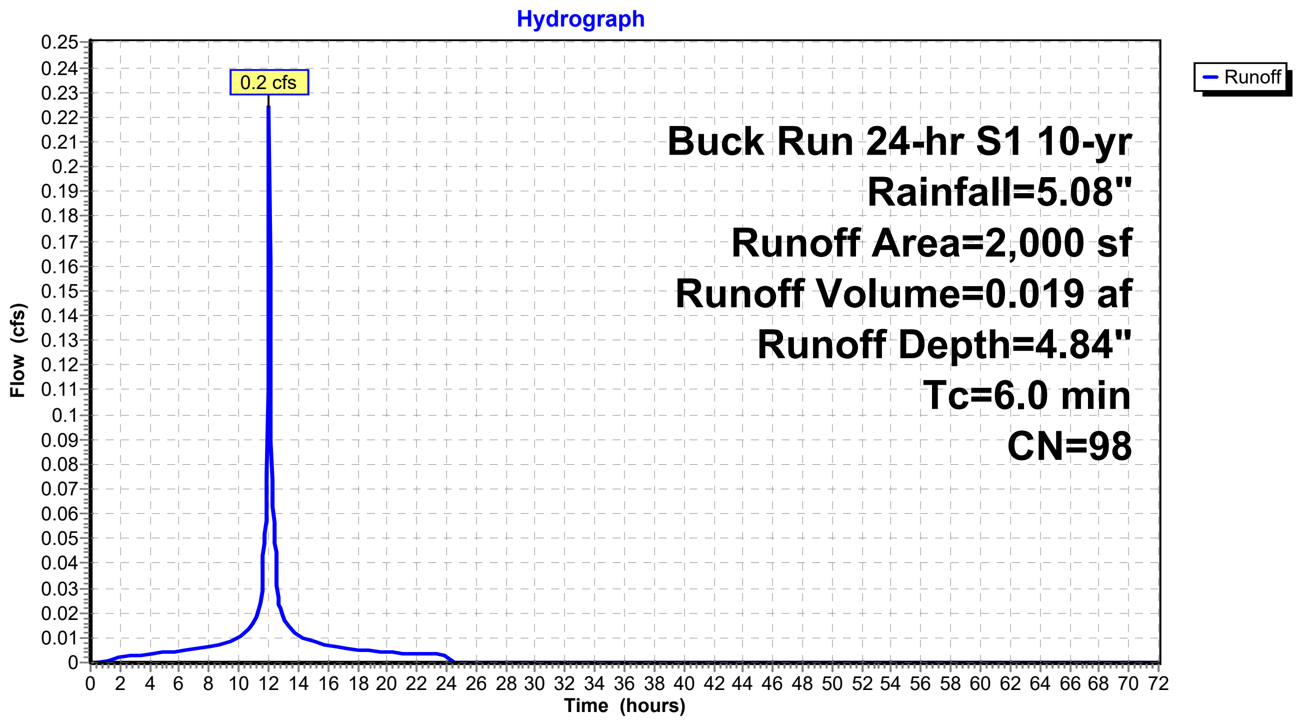
Runoff = 0.2 cfs @ 12.04 hrs, Volume= 0.019 af, Depth= 4.84"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Buck Run 24-hr S1 10-yr Rainfall=5.08"

	Area (sf)	CN	Description
*	2,000	98	Proposed Pods and Facilities
	2,000		100.00% Impervious Area

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

Subcatchment 1.3S: 1.3S



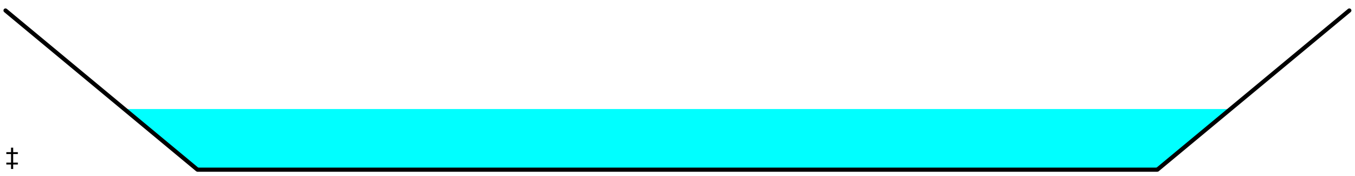
Summary for Reach 1.03R:

Inflow Area = 0.699 ac, 0.00% Impervious, Inflow Depth = 2.34" for 10-yr event
Inflow = 1.6 cfs @ 12.08 hrs, Volume= 0.136 af
Outflow = 1.4 cfs @ 12.15 hrs, Volume= 0.136 af, Atten= 15%, Lag= 4.1 min

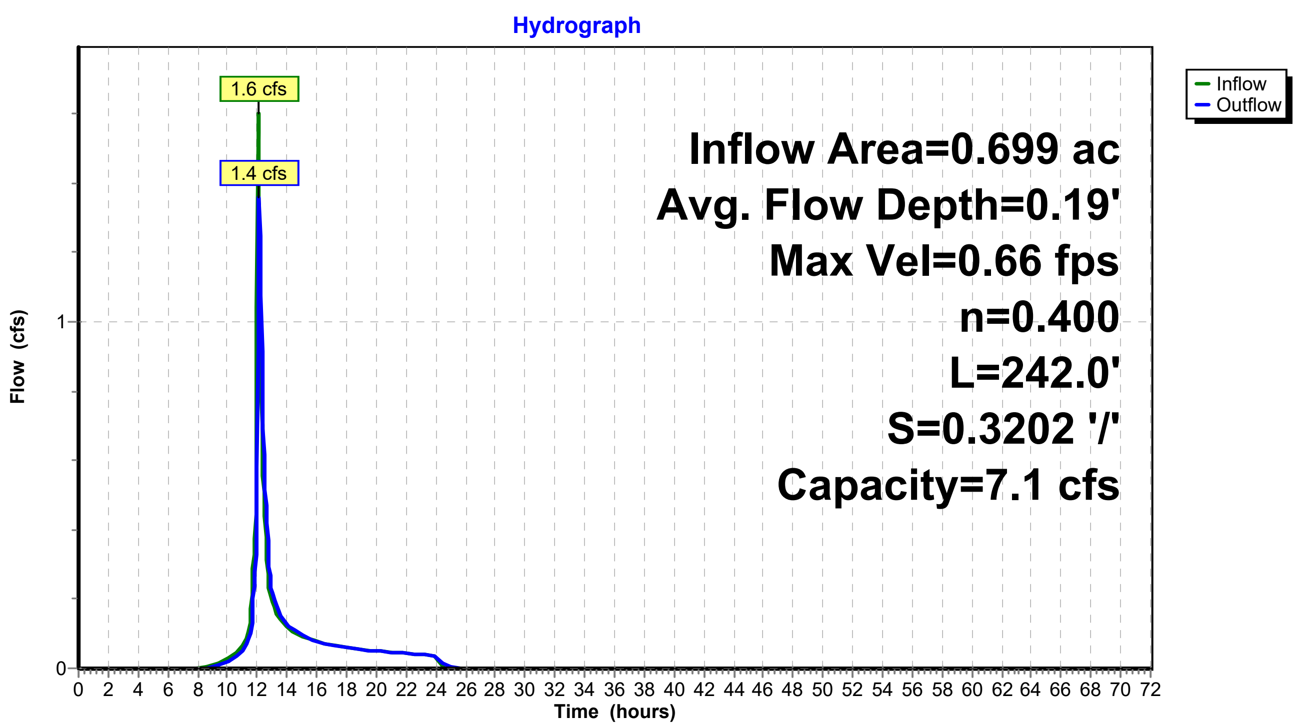
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 0.66 fps, Min. Travel Time= 6.1 min
Avg. Velocity = 0.16 fps, Avg. Travel Time= 24.7 min

Peak Storage= 496 cf @ 12.15 hrs
Average Depth at Peak Storage= 0.19'
Bank-Full Depth= 0.50' Flow Area= 6.0 sf, Capacity= 7.1 cfs

10.00' x 0.50' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 4.0 '/' Top Width= 14.00'
Length= 242.0' Slope= 0.3202 '/'
Inlet Invert= 594.50', Outlet Invert= 517.00'



Reach 1.03R:



Stage-Area-Storage for Reach 1.03R:

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
594.50	0.0	0
594.51	0.1	24
594.52	0.2	49
594.53	0.3	73
594.54	0.4	98
594.55	0.5	123
594.56	0.6	149
594.57	0.7	174
594.58	0.8	200
594.59	0.9	226
594.60	1.0	252
594.61	1.1	278
594.62	1.3	304
594.63	1.4	331
594.64	1.5	358
594.65	1.6	385
594.66	1.7	412
594.67	1.8	439
594.68	1.9	467
594.69	2.0	495
594.70	2.2	523
594.71	2.3	551
594.72	2.4	579
594.73	2.5	608
594.74	2.6	637
594.75	2.8	666
594.76	2.9	695
594.77	3.0	724
594.78	3.1	753
594.79	3.2	783
594.80	3.4	813
594.81	3.5	843
594.82	3.6	874
594.83	3.7	904
594.84	3.9	935
594.85	4.0	966
594.86	4.1	997
594.87	4.2	1,028
594.88	4.4	1,059
594.89	4.5	1,091
594.90	4.6	1,123
594.91	4.8	1,155
594.92	4.9	1,187
594.93	5.0	1,220
594.94	5.2	1,252
594.95	5.3	1,285
594.96	5.4	1,318
594.97	5.6	1,351
594.98	5.7	1,385
594.99	5.9	1,418
595.00	**6.0**	**1,452**

Summary for Reach SWALE 1:

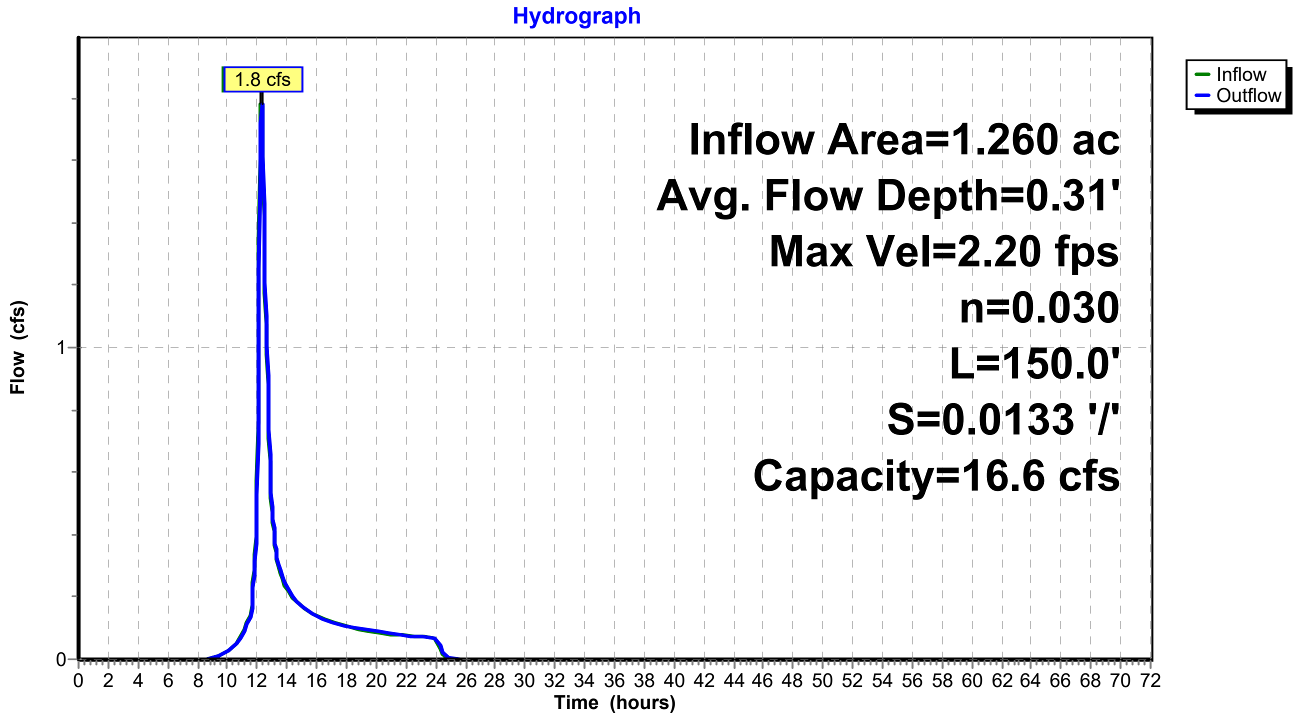
Inflow Area = 1.260 ac, 0.00% Impervious, Inflow Depth = 2.18" for 10-yr event
Inflow = 1.8 cfs @ 12.29 hrs, Volume= 0.229 af
Outflow = 1.8 cfs @ 12.30 hrs, Volume= 0.229 af, Atten= 0%, Lag= 0.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 2.20 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 0.82 fps, Avg. Travel Time= 3.0 min

Peak Storage= 121 cf @ 12.30 hrs
Average Depth at Peak Storage= 0.31'
Bank-Full Depth= 1.00' Flow Area= 4.0 sf, Capacity= 16.6 cfs

2.00' x 1.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 2.0 '/' Top Width= 6.00'
Length= 150.0' Slope= 0.0133 '/'
Inlet Invert= 584.00', Outlet Invert= 582.00'

Reach SWALE 1:



Stage-Area-Storage for Reach SWALE 1:

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
584.00	0.0	0
584.01	0.0	3
584.02	0.0	6
584.03	0.1	9
584.04	0.1	12
584.05	0.1	16
584.06	0.1	19
584.07	0.1	22
584.08	0.2	26
584.09	0.2	29
584.10	0.2	33
584.11	0.2	37
584.12	0.3	40
584.13	0.3	44
584.14	0.3	48
584.15	0.3	52
584.16	0.4	56
584.17	0.4	60
584.18	0.4	64
584.19	0.5	68
584.20	0.5	72
584.21	0.5	76
584.22	0.5	81
584.23	0.6	85
584.24	0.6	89
584.25	0.6	94
584.26	0.7	98
584.27	0.7	103
584.28	0.7	108
584.29	0.7	112
584.30	0.8	117
584.31	0.8	122
584.32	0.8	127
584.33	0.9	132
584.34	0.9	137
584.35	0.9	142
584.36	1.0	147
584.37	1.0	152
584.38	1.0	157
584.39	1.1	163
584.40	1.1	168
584.41	1.2	173
584.42	1.2	179
584.43	1.2	184
584.44	1.3	190
584.45	1.3	196
584.46	1.3	201
584.47	1.4	207
584.48	1.4	213
584.49	1.5	219
584.50	1.5	225
584.51	1.5	231
584.52	1.6	237
584.53	1.6	243
584.54	1.7	249
584.55	1.7	256
584.56	1.7	262
584.57	1.8	268
584.58	1.8	275
584.59	1.9	281
584.60	1.9	288
584.61	2.0	295
584.62	2.0	301
584.63	2.1	308
584.64	2.1	315
584.65	2.1	322
584.66	2.2	329
584.67	2.2	336
584.68	2.3	343
584.69	2.3	350
584.70	2.4	357
584.71	2.4	364
584.72	2.5	372
584.73	2.5	379
584.74	2.6	386
584.75	2.6	394
584.76	2.7	401
584.77	2.7	409
584.78	2.8	417
584.79	2.8	424
584.80	2.9	432
584.81	2.9	440
584.82	3.0	448
584.83	3.0	456
584.84	3.1	464
584.85	3.1	472
584.86	3.2	480
584.87	3.3	488
584.88	3.3	496
584.89	3.4	505
584.90	3.4	513
584.91	3.5	521
584.92	3.5	530
584.93	3.6	538
584.94	3.6	547
584.95	3.7	556
584.96	3.8	564
584.97	3.8	573
584.98	3.9	582
584.99	3.9	591
585.00	**4.0**	**600**

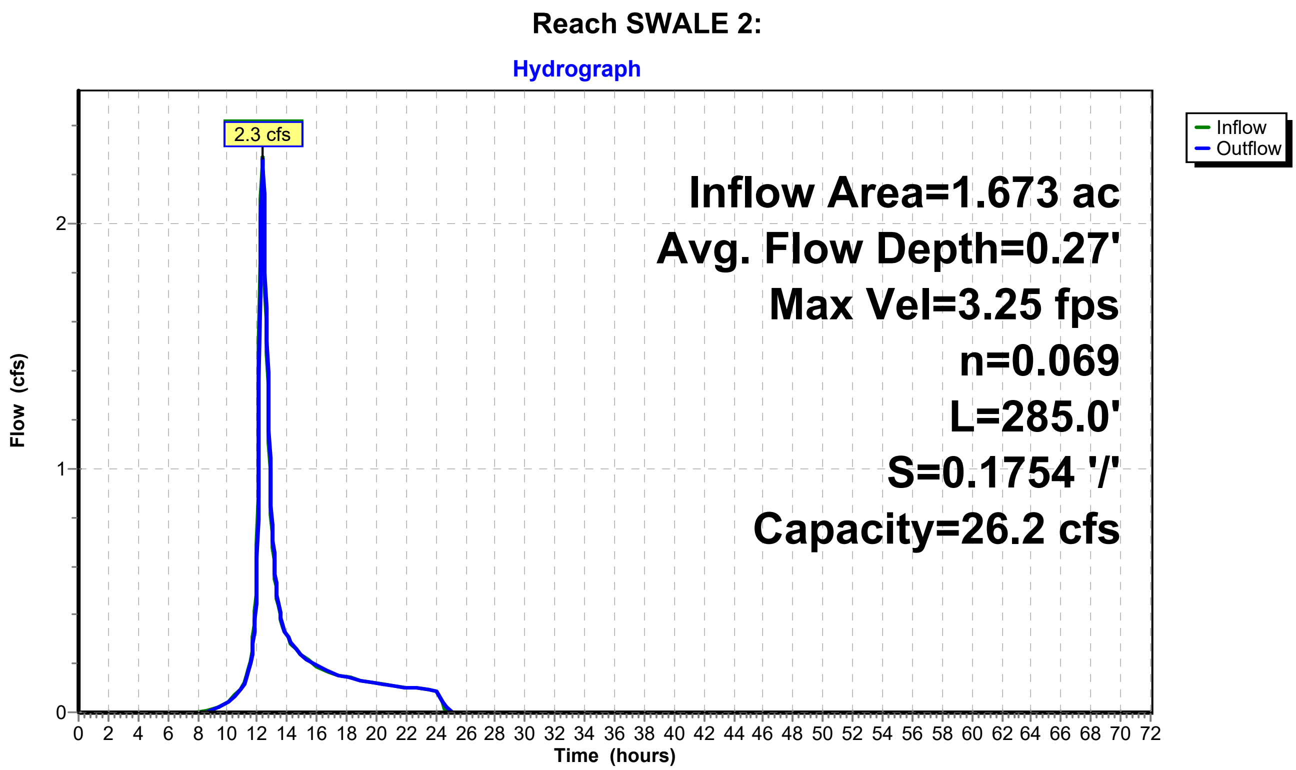
Summary for Reach SWALE 2:

Inflow Area = 1.673 ac, 0.00% Impervious, Inflow Depth = 2.26" for 10-yr event
Inflow = 2.3 cfs @ 12.34 hrs, Volume= 0.315 af
Outflow = 2.3 cfs @ 12.36 hrs, Volume= 0.315 af, Atten= 0%, Lag= 1.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 3.25 fps, Min. Travel Time= 1.5 min
Avg. Velocity = 1.22 fps, Avg. Travel Time= 3.9 min

Peak Storage= 199 cf @ 12.36 hrs
Average Depth at Peak Storage= 0.27'
Bank-Full Depth= 1.00' Flow Area= 4.0 sf, Capacity= 26.2 cfs

2.00' x 1.00' deep channel, n= 0.069 Riprap, 6-inch
Side Slope Z-value= 2.0 '/' Top Width= 6.00'
Length= 285.0' Slope= 0.1754 '/'
Inlet Invert= 562.00', Outlet Invert= 512.00'



Stage-Area-Storage for Reach SWALE 2:

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
562.00	0.0	0	562.66	2.2	624
562.01	0.0	6	562.67	2.2	638
562.02	0.0	12	562.68	2.3	651
562.03	0.1	18	562.69	2.3	665
562.04	0.1	24	562.70	2.4	678
562.05	0.1	30	562.71	2.4	692
562.06	0.1	36	562.72	2.5	706
562.07	0.1	43	562.73	2.5	720
562.08	0.2	49	562.74	2.6	734
562.09	0.2	56	562.75	2.6	748
562.10	0.2	63	562.76	2.7	762
562.11	0.2	70	562.77	2.7	777
562.12	0.3	77	562.78	2.8	791
562.13	0.3	84	562.79	2.8	806
562.14	0.3	91	562.80	2.9	821
562.15	0.3	98	562.81	2.9	836
562.16	0.4	106	562.82	3.0	851
562.17	0.4	113	562.83	3.0	866
562.18	0.4	121	562.84	3.1	881
562.19	0.5	129	562.85	3.1	896
562.20	0.5	137	562.86	3.2	912
562.21	0.5	145	562.87	3.3	927
562.22	0.5	153	562.88	3.3	943
562.23	0.6	161	562.89	3.4	959
562.24	0.6	170	562.90	3.4	975
562.25	0.6	178	562.91	3.5	991
562.26	0.7	187	562.92	3.5	1,007
562.27	0.7	195	562.93	3.6	1,023
562.28	0.7	204	562.94	3.6	1,039
562.29	0.7	213	562.95	3.7	1,056
562.30	0.8	222	562.96	3.8	1,073
562.31	0.8	231	562.97	3.8	1,089
562.32	0.8	241	562.98	3.9	1,106
562.33	0.9	250	562.99	3.9	1,123
562.34	0.9	260	563.00	**4.0**	**1,140**
562.35	0.9	269			
562.36	1.0	279			
562.37	1.0	289			
562.38	1.0	299			
562.39	1.1	309			
562.40	1.1	319			
562.41	1.2	330			
562.42	1.2	340			
562.43	1.2	350			
562.44	1.3	361			
562.45	1.3	372			
562.46	1.3	383			
562.47	1.4	394			
562.48	1.4	405			
562.49	1.5	416			
562.50	1.5	428			
562.51	1.5	439			
562.52	1.6	451			
562.53	1.6	462			
562.54	1.7	474			
562.55	1.7	486			
562.56	1.7	498			
562.57	1.8	510			
562.58	1.8	522			
562.59	1.9	535			
562.60	1.9	547			
562.61	2.0	560			
562.62	2.0	573			
562.63	2.1	585			
562.64	2.1	598			
562.65	2.1	611			

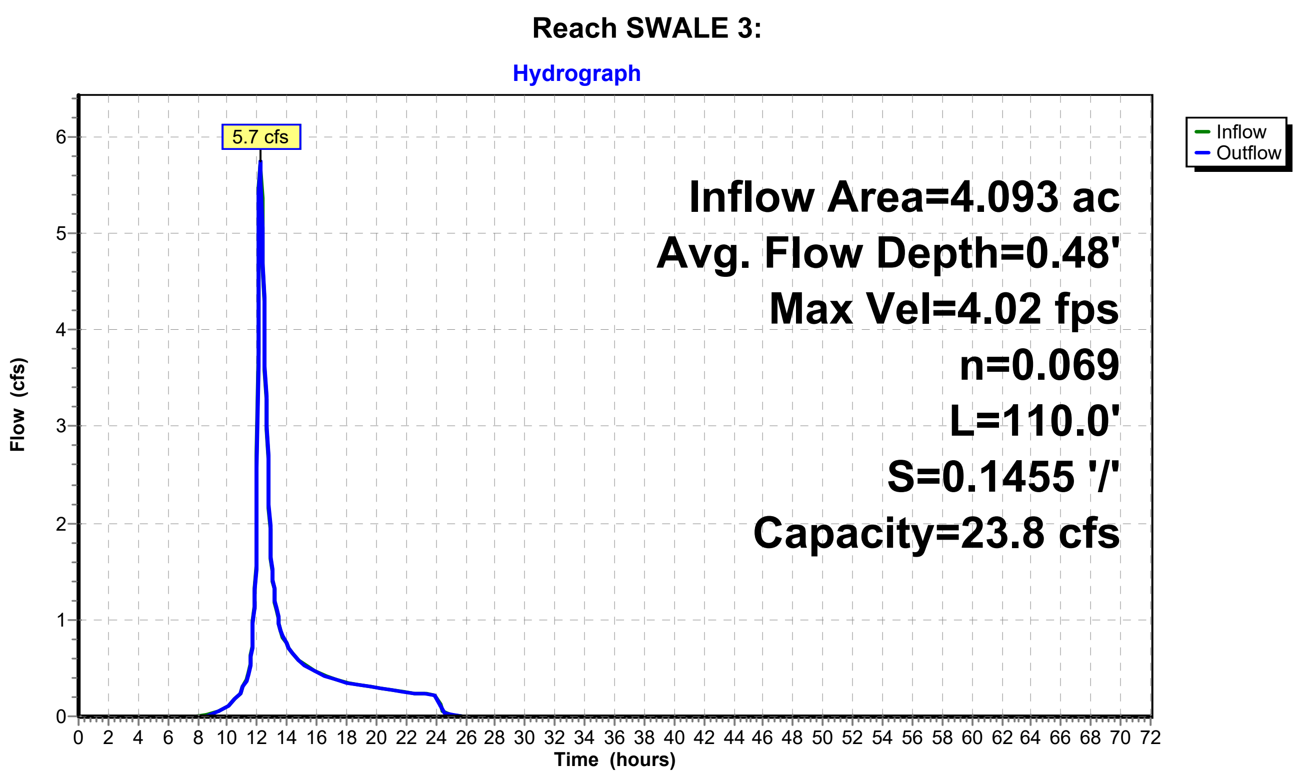
Summary for Reach SWALE 3:

Inflow Area = 4.093 ac, 0.26% Impervious, Inflow Depth = 2.26" for 10-yr event
Inflow = 5.7 cfs @ 12.21 hrs, Volume= 0.770 af
Outflow = 5.7 cfs @ 12.22 hrs, Volume= 0.770 af, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 4.02 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 1.30 fps, Avg. Travel Time= 1.4 min

Peak Storage= 157 cf @ 12.22 hrs
Average Depth at Peak Storage= 0.48'
Bank-Full Depth= 1.00' Flow Area= 4.0 sf, Capacity= 23.8 cfs

2.00' x 1.00' deep channel, n= 0.069 Riprap, 6-inch
Side Slope Z-value= 2.0 '/' Top Width= 6.00'
Length= 110.0' Slope= 0.1455 '/'
Inlet Invert= 484.00', Outlet Invert= 468.00'



Stage-Area-Storage for Reach SWALE 3:

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
484.00	0.0	0	484.66	2.2	241
484.01	0.0	2	484.67	2.2	246
484.02	0.0	4	484.68	2.3	251
484.03	0.1	7	484.69	2.3	257
484.04	0.1	9	484.70	2.4	262
484.05	0.1	12	484.71	2.4	267
484.06	0.1	14	484.72	2.5	272
484.07	0.1	16	484.73	2.5	278
484.08	0.2	19	484.74	2.6	283
484.09	0.2	22	484.75	2.6	289
484.10	0.2	24	484.76	2.7	294
484.11	0.2	27	484.77	2.7	300
484.12	0.3	30	484.78	2.8	305
484.13	0.3	32	484.79	2.8	311
484.14	0.3	35	484.80	2.9	317
484.15	0.3	38	484.81	2.9	323
484.16	0.4	41	484.82	3.0	328
484.17	0.4	44	484.83	3.0	334
484.18	0.4	47	484.84	3.1	340
484.19	0.5	50	484.85	3.1	346
484.20	0.5	53	484.86	3.2	352
484.21	0.5	56	484.87	3.3	358
484.22	0.5	59	484.88	3.3	364
484.23	0.6	62	484.89	3.4	370
484.24	0.6	65	484.90	3.4	376
484.25	0.6	69	484.91	3.5	382
484.26	0.7	72	484.92	3.5	389
484.27	0.7	75	484.93	3.6	395
484.28	0.7	79	484.94	3.6	401
484.29	0.7	82	484.95	3.7	408
484.30	0.8	86	484.96	3.8	414
484.31	0.8	89	484.97	3.8	420
484.32	0.8	93	484.98	3.9	427
484.33	0.9	97	484.99	3.9	433
484.34	0.9	100	485.00	**4.0**	**440**
484.35	0.9	104			
484.36	1.0	108			
484.37	1.0	112			
484.38	1.0	115			
484.39	1.1	119			
484.40	1.1	123			
484.41	1.2	127			
484.42	1.2	131			
484.43	1.2	135			
484.44	1.3	139			
484.45	1.3	144			
484.46	1.3	148			
484.47	1.4	152			
484.48	1.4	156			
484.49	1.5	161			
484.50	1.5	165			
484.51	1.5	169			
484.52	1.6	174			
484.53	1.6	178			
484.54	1.7	183			
484.55	1.7	188			
484.56	1.7	192			
484.57	1.8	197			
484.58	1.8	202			
484.59	1.9	206			
484.60	1.9	211			
484.61	2.0	216			
484.62	2.0	221			
484.63	2.1	226			
484.64	2.1	231			
484.65	2.1	236			

Summary for Reach SWALE 4:

Inflow Area = 0.940 ac, 0.00% Impervious, Inflow Depth = 2.10" for 10-yr event
Inflow = 1.6 cfs @ 12.16 hrs, Volume= 0.164 af
Outflow = 1.6 cfs @ 12.16 hrs, Volume= 0.164 af, Atten= 0%, Lag= 0.2 min

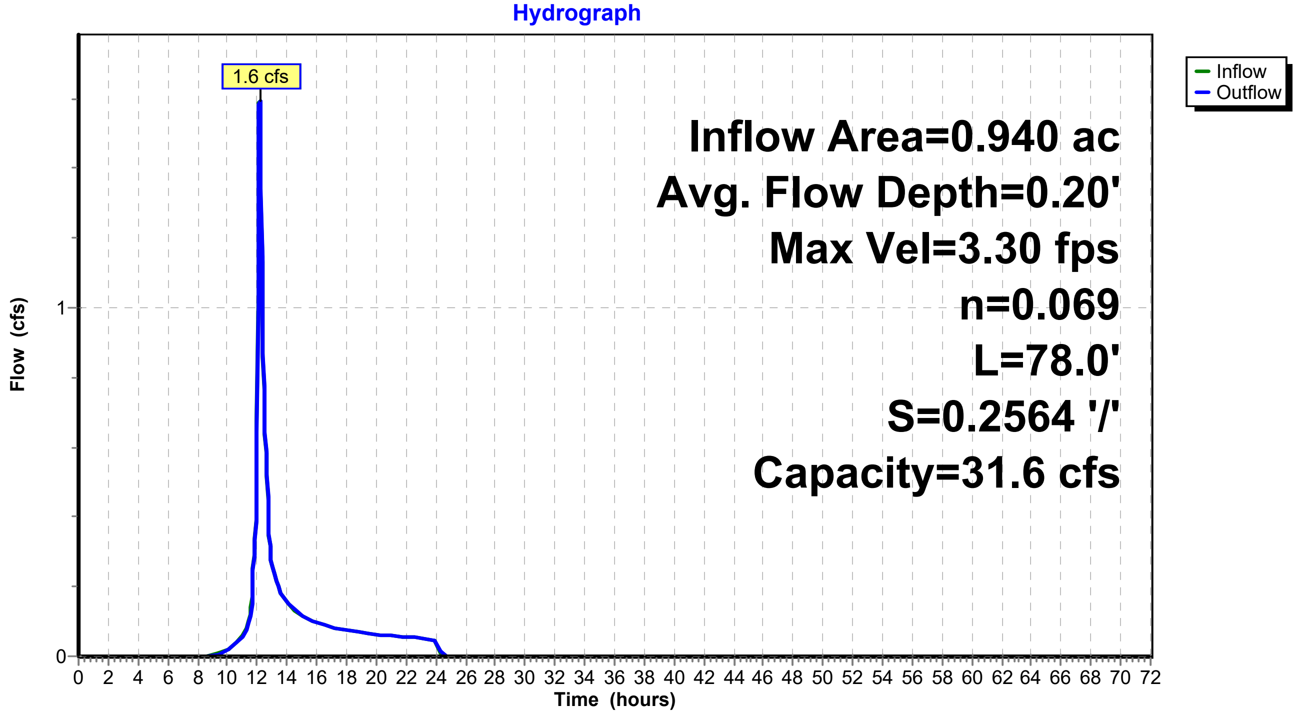
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 3.30 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 1.15 fps, Avg. Travel Time= 1.1 min

Peak Storage= 38 cf @ 12.16 hrs
Average Depth at Peak Storage= 0.20'
Bank-Full Depth= 1.00' Flow Area= 4.0 sf, Capacity= 31.6 cfs

2.00' x 1.00' deep channel, n= 0.069 Riprap, 6-inch
Side Slope Z-value= 2.0 '/' Top Width= 6.00'
Length= 78.0' Slope= 0.2564 '/'
Inlet Invert= 530.00', Outlet Invert= 510.00'

Reach SWALE 4:

Hydrograph



Stage-Area-Storage for Reach SWALE 4:

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
530.00	0.0	0
530.01	0.0	2
530.02	0.0	3
530.03	0.1	5
530.04	0.1	6
530.05	0.1	8
530.06	0.1	10
530.07	0.1	12
530.08	0.2	13
530.09	0.2	15
530.10	0.2	17
530.11	0.2	19
530.12	0.3	21
530.13	0.3	23
530.14	0.3	25
530.15	0.3	27
530.16	0.4	29
530.17	0.4	31
530.18	0.4	33
530.19	0.5	35
530.20	0.5	37
530.21	0.5	40
530.22	0.5	42
530.23	0.6	44
530.24	0.6	46
530.25	0.6	49
530.26	0.7	51
530.27	0.7	53
530.28	0.7	56
530.29	0.7	58
530.30	0.8	61
530.31	0.8	63
530.32	0.8	66
530.33	0.9	68
530.34	0.9	71
530.35	0.9	74
530.36	1.0	76
530.37	1.0	79
530.38	1.0	82
530.39	1.1	85
530.40	1.1	87
530.41	1.2	90
530.42	1.2	93
530.43	1.2	96
530.44	1.3	99
530.45	1.3	102
530.46	1.3	105
530.47	1.4	108
530.48	1.4	111
530.49	1.5	114
530.50	1.5	117
530.51	1.5	120
530.52	1.6	123
530.53	1.6	127
530.54	1.7	130
530.55	1.7	133
530.56	1.7	136
530.57	1.8	140
530.58	1.8	143
530.59	1.9	146
530.60	1.9	150
530.61	2.0	153
530.62	2.0	157
530.63	2.1	160
530.64	2.1	164
530.65	2.1	167
530.66	2.2	171
530.67	2.2	175
530.68	2.3	178
530.69	2.3	182
530.70	2.4	186
530.71	2.4	189
530.72	2.5	193
530.73	2.5	197
530.74	2.6	201
530.75	2.6	205
530.76	2.7	209
530.77	2.7	213
530.78	2.8	217
530.79	2.8	221
530.80	2.9	225
530.81	2.9	229
530.82	3.0	233
530.83	3.0	237
530.84	3.1	241
530.85	3.1	245
530.86	3.2	250
530.87	3.3	254
530.88	3.3	258
530.89	3.4	262
530.90	3.4	267
530.91	3.5	271
530.92	3.5	276
530.93	3.6	280
530.94	3.6	284
530.95	3.7	289
530.96	3.8	294
530.97	3.8	298
530.98	3.9	303
530.99	3.9	307
531.00	**4.0**	**312**

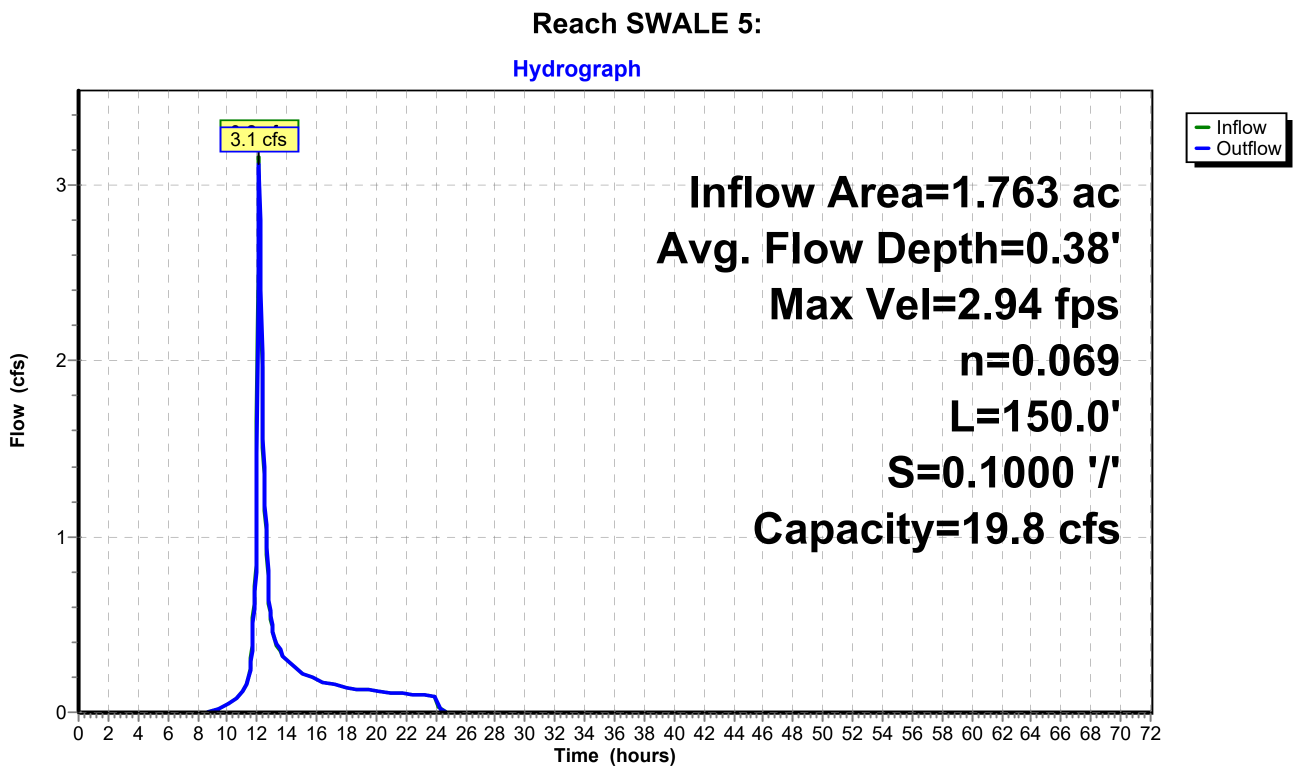
Summary for Reach SWALE 5:

Inflow Area = 1.763 ac, 0.00% Impervious, Inflow Depth = 2.13" for 10-yr event
Inflow = 3.2 cfs @ 12.12 hrs, Volume= 0.314 af
Outflow = 3.1 cfs @ 12.13 hrs, Volume= 0.314 af, Atten= 1%, Lag= 0.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 2.94 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 1.04 fps, Avg. Travel Time= 2.4 min

Peak Storage= 159 cf @ 12.13 hrs
Average Depth at Peak Storage= 0.38'
Bank-Full Depth= 1.00' Flow Area= 4.0 sf, Capacity= 19.8 cfs

2.00' x 1.00' deep channel, n= 0.069 Riprap, 6-inch
Side Slope Z-value= 2.0 '/' Top Width= 6.00'
Length= 150.0' Slope= 0.1000 '/'
Inlet Invert= 483.00', Outlet Invert= 468.00'



Stage-Area-Storage for Reach SWALE 5:

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
483.00	0.0	0
483.01	0.0	3
483.02	0.0	6
483.03	0.1	9
483.04	0.1	12
483.05	0.1	16
483.06	0.1	19
483.07	0.1	22
483.08	0.2	26
483.09	0.2	29
483.10	0.2	33
483.11	0.2	37
483.12	0.3	40
483.13	0.3	44
483.14	0.3	48
483.15	0.3	52
483.16	0.4	56
483.17	0.4	60
483.18	0.4	64
483.19	0.5	68
483.20	0.5	72
483.21	0.5	76
483.22	0.5	81
483.23	0.6	85
483.24	0.6	89
483.25	0.6	94
483.26	0.7	98
483.27	0.7	103
483.28	0.7	108
483.29	0.7	112
483.30	0.8	117
483.31	0.8	122
483.32	0.8	127
483.33	0.9	132
483.34	0.9	137
483.35	0.9	142
483.36	1.0	147
483.37	1.0	152
483.38	1.0	157
483.39	1.1	163
483.40	1.1	168
483.41	1.2	173
483.42	1.2	179
483.43	1.2	184
483.44	1.3	190
483.45	1.3	196
483.46	1.3	201
483.47	1.4	207
483.48	1.4	213
483.49	1.5	219
483.50	1.5	225
483.51	1.5	231
483.52	1.6	237
483.53	1.6	243
483.54	1.7	249
483.55	1.7	256
483.56	1.7	262
483.57	1.8	268
483.58	1.8	275
483.59	1.9	281
483.60	1.9	288
483.61	2.0	295
483.62	2.0	301
483.63	2.1	308
483.64	2.1	315
483.65	2.1	322
483.66	2.2	329
483.67	2.2	336
483.68	2.3	343
483.69	2.3	350
483.70	2.4	357
483.71	2.4	364
483.72	2.5	372
483.73	2.5	379
483.74	2.6	386
483.75	2.6	394
483.76	2.7	401
483.77	2.7	409
483.78	2.8	417
483.79	2.8	424
483.80	2.9	432
483.81	2.9	440
483.82	3.0	448
483.83	3.0	456
483.84	3.1	464
483.85	3.1	472
483.86	3.2	480
483.87	3.3	488
483.88	3.3	496
483.89	3.4	505
483.90	3.4	513
483.91	3.5	521
483.92	3.5	530
483.93	3.6	538
483.94	3.6	547
483.95	3.7	556
483.96	3.8	564
483.97	3.8	573
483.98	3.9	582
483.99	3.9	591
484.00	**4.0**	**600**

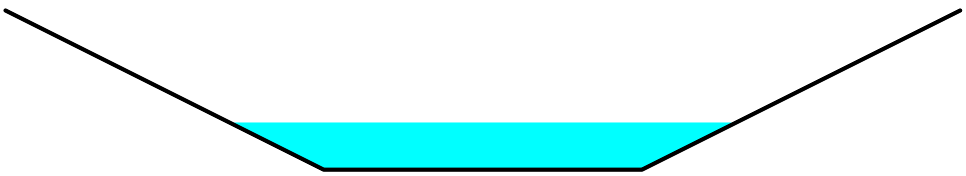
Summary for Reach SWALE 6:

Inflow Area = 1.569 ac, 0.00% Impervious, Inflow Depth = 2.10" for 10-yr event
Inflow = 2.6 cfs @ 12.18 hrs, Volume= 0.274 af
Outflow = 2.6 cfs @ 12.18 hrs, Volume= 0.274 af, Atten= 0%, Lag= 0.4 min

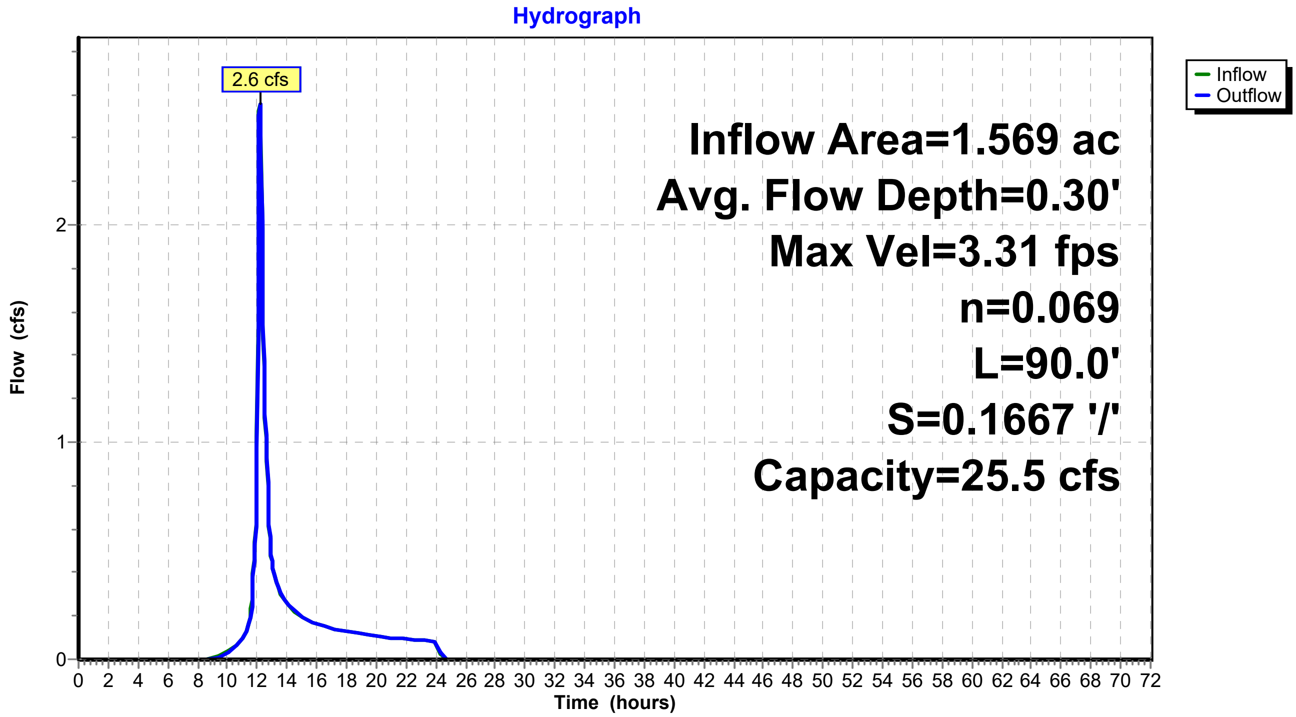
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 3.31 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 1.20 fps, Avg. Travel Time= 1.3 min

Peak Storage= 69 cf @ 12.18 hrs
Average Depth at Peak Storage= 0.30'
Bank-Full Depth= 1.00' Flow Area= 4.0 sf, Capacity= 25.5 cfs

2.00' x 1.00' deep channel, n= 0.069 Riprap, 6-inch
Side Slope Z-value= 2.0 '/' Top Width= 6.00'
Length= 90.0' Slope= 0.1667 '/'
Inlet Invert= 483.00', Outlet Invert= 468.00'



Reach SWALE 6:



Stage-Area-Storage for Reach SWALE 6:

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
483.00	0.0	0
483.01	0.0	2
483.02	0.0	4
483.03	0.1	6
483.04	0.1	7
483.05	0.1	9
483.06	0.1	11
483.07	0.1	13
483.08	0.2	16
483.09	0.2	18
483.10	0.2	20
483.11	0.2	22
483.12	0.3	24
483.13	0.3	26
483.14	0.3	29
483.15	0.3	31
483.16	0.4	33
483.17	0.4	36
483.18	0.4	38
483.19	0.5	41
483.20	0.5	43
483.21	0.5	46
483.22	0.5	48
483.23	0.6	51
483.24	0.6	54
483.25	0.6	56
483.26	0.7	59
483.27	0.7	62
483.28	0.7	65
483.29	0.7	67
483.30	0.8	70
483.31	0.8	73
483.32	0.8	76
483.33	0.9	79
483.34	0.9	82
483.35	0.9	85
483.36	1.0	88
483.37	1.0	91
483.38	1.0	94
483.39	1.1	98
483.40	1.1	101
483.41	1.2	104
483.42	1.2	107
483.43	1.2	111
483.44	1.3	114
483.45	1.3	117
483.46	1.3	121
483.47	1.4	124
483.48	1.4	128
483.49	1.5	131
483.50	1.5	135
483.51	1.5	139
483.52	1.6	142
483.53	1.6	146
483.54	1.7	150
483.55	1.7	153
483.56	1.7	157
483.57	1.8	161
483.58	1.8	165
483.59	1.9	169
483.60	1.9	173
483.61	2.0	177
483.62	2.0	181
483.63	2.1	185
483.64	2.1	189
483.65	2.1	193
483.66	2.2	197
483.67	2.2	201
483.68	2.3	206
483.69	2.3	210
483.70	2.4	214
483.71	2.4	219
483.72	2.5	223
483.73	2.5	227
483.74	2.6	232
483.75	2.6	236
483.76	2.7	241
483.77	2.7	245
483.78	2.8	250
483.79	2.8	255
483.80	2.9	259
483.81	2.9	264
483.82	3.0	269
483.83	3.0	273
483.84	3.1	278
483.85	3.1	283
483.86	3.2	288
483.87	3.3	293
483.88	3.3	298
483.89	3.4	303
483.90	3.4	308
483.91	3.5	313
483.92	3.5	318
483.93	3.6	323
483.94	3.6	328
483.95	3.7	333
483.96	3.8	339
483.97	3.8	344
483.98	3.9	349
483.99	3.9	355
484.00	**4.0**	**360**

Summary for Pond CB 17: CB 17

Inflow Area = 2.372 ac, 0.00% Impervious, Inflow Depth = 2.28" for 10-yr event
Inflow = 3.1 cfs @ 12.29 hrs, Volume= 0.452 af
Outflow = 3.1 cfs @ 12.29 hrs, Volume= 0.452 af, Atten= 0%, Lag= 0.0 min
Primary = 3.1 cfs @ 12.29 hrs, Volume= 0.452 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 511.68' @ 12.29 hrs Surf.Area= 31 sf Storage= 4 cf

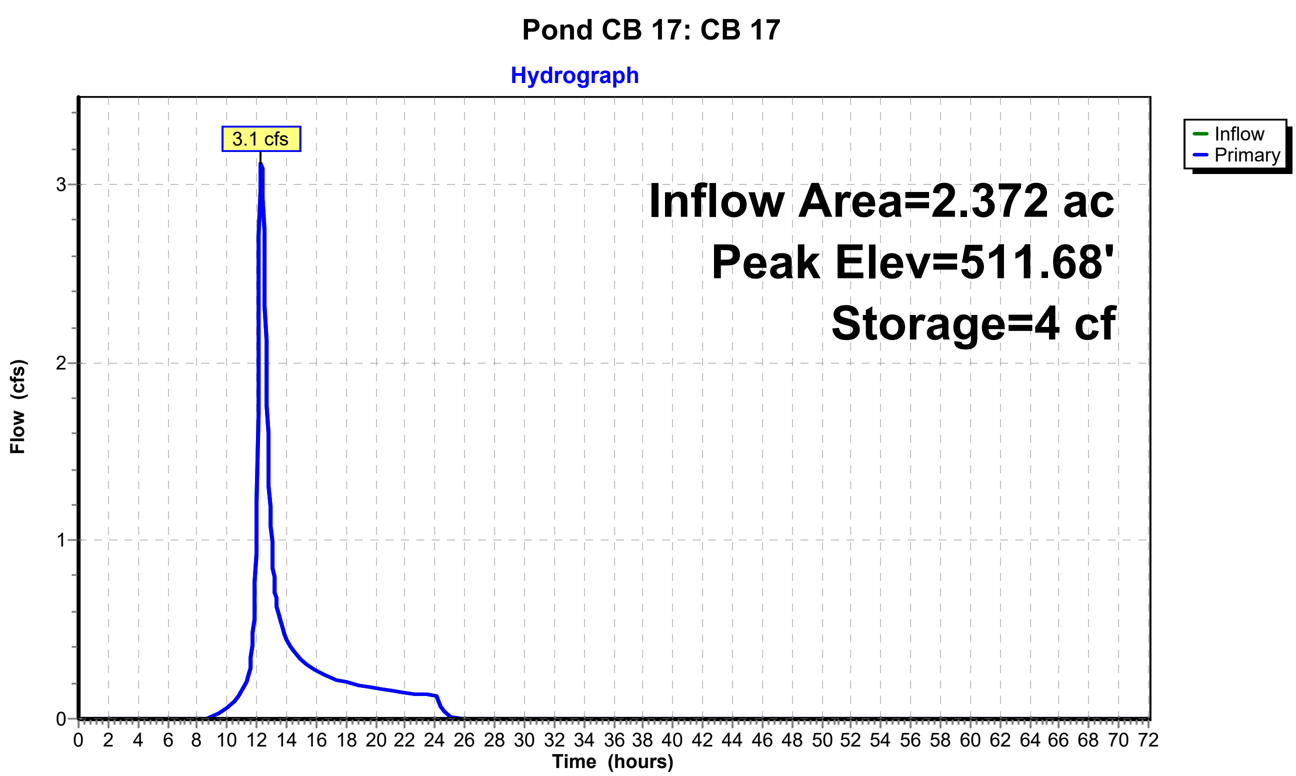
Plug-Flow detention time= 0.0 min calculated for 0.451 af (100% of inflow)
Center-of-Mass det. time= 0.0 min (885.3 - 885.3)

Volume	Invert	Avail.Storage	Storage Description
#1	511.50'	20 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
511.50	10	0	0
512.00	70	20	20

Device	Routing	Invert	Outlet Devices
#1	Primary	505.39'	**15.0" Round Culvert** L= 56.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 505.39' / 500.95' S= 0.0793 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 1	511.50'	**30.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=3.1 cfs @ 12.29 hrs HW=511.68' TW=499.37' (Dynamic Tailwater)
↑—**1=Culvert** (Passes 3.1 cfs of 14.1 cfs potential flow)
↑—**2=Orifice/Grate** (Weir Controls 3.1 cfs @ 1.37 fps)



Stage-Area-Storage for Pond CB 17: CB 17

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
511.50	10	0
511.51	11	0
511.52	12	0
511.53	14	0
511.54	15	0
511.55	16	1
511.56	17	1
511.57	18	1
511.58	20	1
511.59	21	1
511.60	22	2
511.61	23	2
511.62	24	2
511.63	26	2
511.64	27	3
511.65	28	3
511.66	29	3
511.67	30	3
511.68	32	4
511.69	33	4
511.70	34	4
511.71	35	5
511.72	36	5
511.73	38	5
511.74	39	6
511.75	40	6
511.76	41	7
511.77	42	7
511.78	44	8
511.79	45	8
511.80	46	8
511.81	47	9
511.82	48	9
511.83	50	10
511.84	51	10
511.85	52	11
511.86	53	11
511.87	54	12
511.88	56	12
511.89	57	13
511.90	58	14
511.91	59	14
511.92	60	15
511.93	62	15
511.94	63	16
511.95	64	17
511.96	65	17
511.97	66	18
511.98	68	19
511.99	69	19
512.00	**70**	**20**

Summary for Pond CB 22: CB 22

Inflow Area = 1.512 ac, 0.00% Impervious, Inflow Depth = 2.18" for 10-yr event
Inflow = 2.5 cfs @ 12.19 hrs, Volume= 0.274 af
Outflow = 2.5 cfs @ 12.19 hrs, Volume= 0.274 af, Atten= 0%, Lag= 0.0 min
Primary = 2.5 cfs @ 12.19 hrs, Volume= 0.274 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 527.65' @ 12.19 hrs Surf.Area= 59 sf Storage= 5 cf

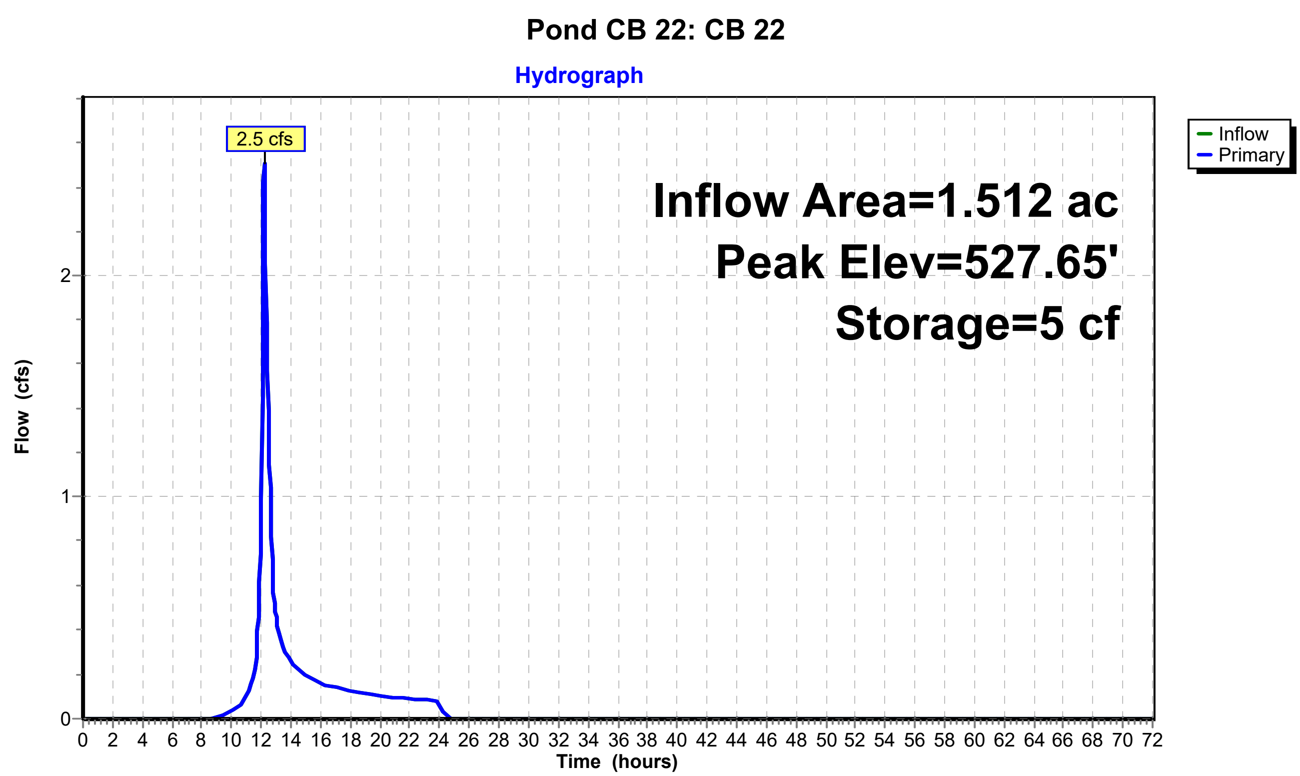
Plug-Flow detention time= 0.0 min calculated for 0.274 af (100% of inflow)
Center-of-Mass det. time= 0.0 min (878.4 - 878.3)

Volume	Invert	Avail.Storage	Storage Description
#1	527.50'	46 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
527.50	10	0	0
528.00	173	46	46

Device	Routing	Invert	Outlet Devices
#1	Primary	519.80'	**12.0" Round Culvert** L= 46.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 519.80' / 515.54' S= 0.0926 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	527.50'	**30.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.5 cfs @ 12.19 hrs HW=527.65' TW=499.42' (Dynamic Tailwater)
1=Culvert (Passes 2.5 cfs of 10.3 cfs potential flow)
2=Orifice/Grate (Weir Controls 2.5 cfs @ 1.27 fps)



Stage-Area-Storage for Pond CB 22: CB 22

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
527.50	10	0
527.51	13	0
527.52	17	0
527.53	20	0
527.54	23	1
527.55	26	1
527.56	30	1
527.57	33	1
527.58	36	2
527.59	39	2
527.60	43	3
527.61	46	3
527.62	49	4
527.63	52	4
527.64	56	5
527.65	59	5
527.66	62	6
527.67	65	6
527.68	69	7
527.69	72	8
527.70	75	9
527.71	78	9
527.72	82	10
527.73	85	11
527.74	88	12
527.75	92	13
527.76	95	14
527.77	98	15
527.78	101	16
527.79	105	17
527.80	108	18
527.81	111	19
527.82	114	20
527.83	118	21
527.84	121	22
527.85	124	23
527.86	127	25
527.87	131	26
527.88	134	27
527.89	137	29
527.90	140	30
527.91	144	32
527.92	147	33
527.93	150	34
527.94	153	36
527.95	157	38
527.96	160	39
527.97	163	41
527.98	166	42
527.99	170	44
528.00	**173**	**46**

Summary for Pond CB 9: CB 9

Inflow Area = 5.856 ac, 0.19% Impervious, Inflow Depth = 2.22" for 10-yr event
Inflow = 8.6 cfs @ 12.18 hrs, Volume= 1.083 af
Outflow = 8.6 cfs @ 12.18 hrs, Volume= 1.083 af, Atten= 0%, Lag= 0.1 min
Primary = 8.6 cfs @ 12.18 hrs, Volume= 1.083 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 467.84' @ 12.18 hrs Surf.Area= 90 sf Storage= 17 cf

Plug-Flow detention time= 0.0 min calculated for 1.082 af (100% of inflow)
Center-of-Mass det. time= 0.0 min (880.9 - 880.8)

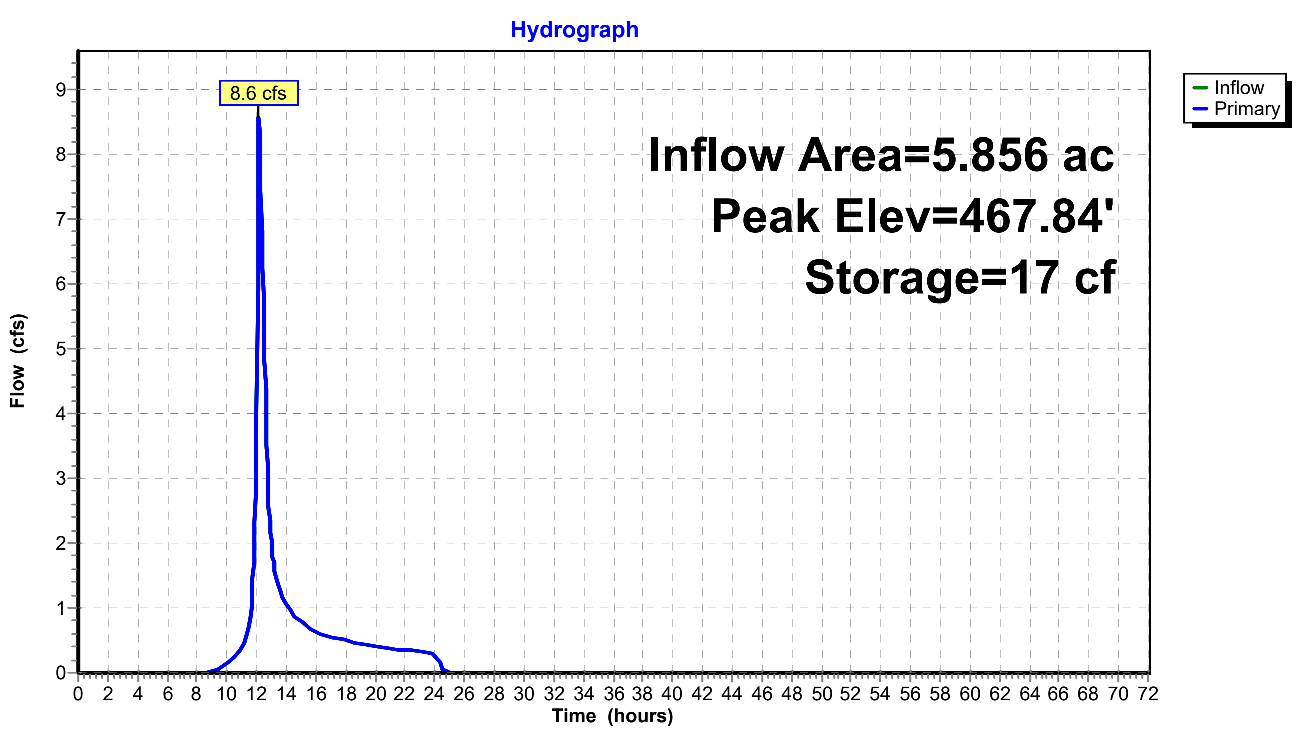
Volume	Invert	Avail.Storage	Storage Description
#1	467.50'	220 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
467.50	10	0	0
468.00	127	34	34
469.00	244	186	220

Device	Routing	Invert	Outlet Devices
#1	Primary	463.50'	**15.0" Round Culvert** L= 80.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 463.50' / 456.00' S= 0.0938 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 1	467.50'	**30.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=8.5 cfs @ 12.18 hrs HW=467.84' (Free Discharge)
└─**1=Culvert** (Passes 8.5 cfs of 11.4 cfs potential flow)
  └─**2=Orifice/Grate** (Weir Controls 8.5 cfs @ 1.91 fps)

Pond CB 9: CB 9



Stage-Area-Storage for Pond CB 9: CB 9

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
467.50	10	0
467.52	15	0
467.54	19	1
467.56	24	1
467.58	29	2
467.60	33	2
467.62	38	3
467.64	43	4
467.66	47	5
467.68	52	6
467.70	57	7
467.72	61	8
467.74	66	9
467.76	71	11
467.78	76	12
467.80	80	14
467.82	85	15
467.84	90	17
467.86	94	19
467.88	99	21
467.90	104	23
467.92	108	25
467.94	113	27
467.96	118	29
467.98	122	32
468.00	127	34
468.02	129	37
468.04	132	39
468.06	134	42
468.08	136	45
468.10	139	48
468.12	141	50
468.14	143	53
468.16	146	56
468.18	148	59
468.20	150	62
468.22	153	65
468.24	155	68
468.26	157	71
468.28	160	74
468.30	162	78
468.32	164	81
468.34	167	84
468.36	169	88
468.38	171	91
468.40	174	94
468.42	176	98
468.44	178	101
468.46	181	105
468.48	183	109
468.50	186	112
468.52	188	116
468.54	190	120
468.56	193	124
468.58	195	128
468.60	197	132
468.62	200	135
468.64	202	139
468.66	204	144
468.68	207	148
468.70	209	152
468.72	211	156
468.74	214	160
468.76	216	165
468.78	218	169
468.80	221	173
468.82	223	178
468.84	225	182
468.86	228	187
468.88	230	191
468.90	232	196
468.92	235	201
468.94	237	205
468.96	239	210
468.98	242	215
469.00	**244**	**220**

Summary for Pond DMH 6: DMH 6

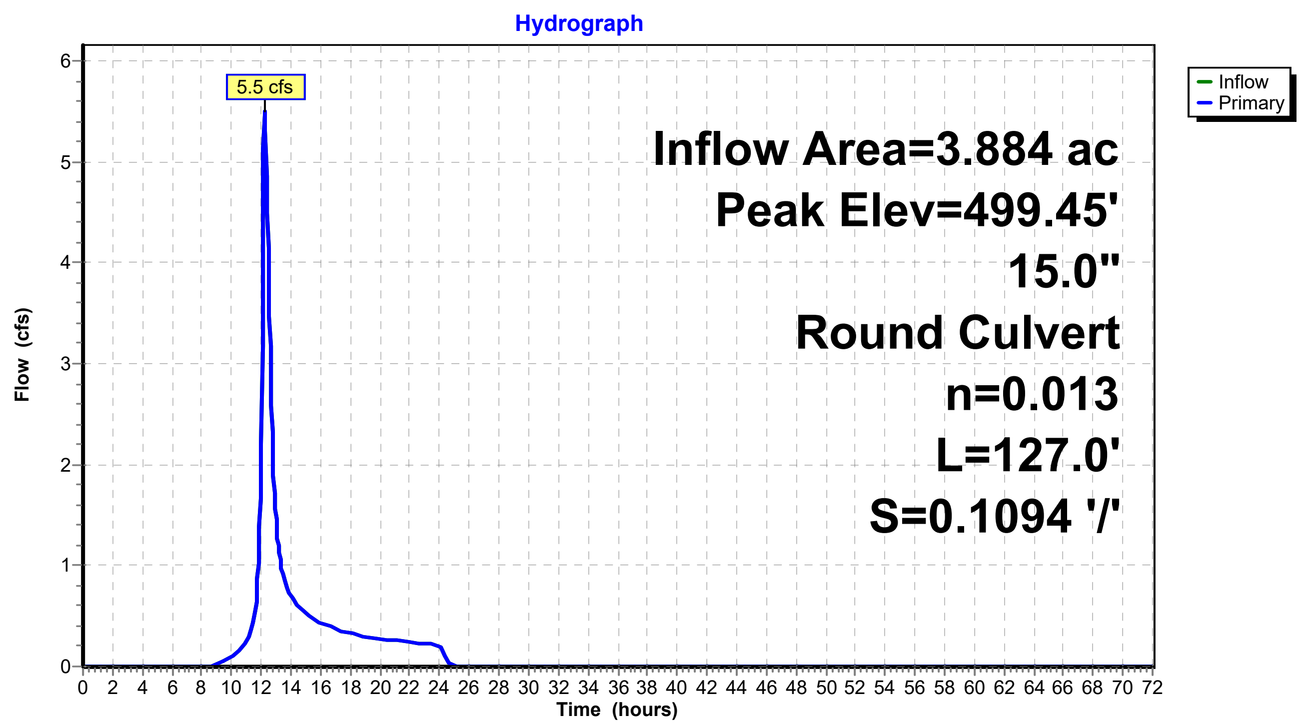
Inflow Area =	3.884 ac,	0.00% Impervious, Inflow Depth = 2.24"	for 10-yr event
Inflow =	5.5 cfs @	12.22 hrs, Volume=	0.726 af
Outflow =	5.5 cfs @	12.22 hrs, Volume=	0.726 af, Atten= 0%, Lag= 0.0 min
Primary =	5.5 cfs @	12.22 hrs, Volume=	0.726 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 499.45' @ 12.22 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	497.96'	**15.0" Round Culvert** L= 127.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 497.96' / 484.06' S= 0.1094 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=5.4 cfs @ 12.22 hrs HW=499.44' TW=484.48' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 5.4 cfs @ 4.44 fps)

Pond DMH 6: DMH 6



Stage-Area-Storage for Pond DMH 6: DMH 6

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
497.96	**0**	498.62	0	499.28	0
497.97	0	498.63	0	499.29	0
497.98	0	498.64	0	499.30	0
497.99	0	498.65	0	499.31	0
498.00	0	498.66	0	499.32	0
498.01	0	498.67	0	499.33	0
498.02	0	498.68	0	499.34	0
498.03	0	498.69	0	499.35	0
498.04	0	498.70	0	499.36	0
498.05	0	498.71	0	499.37	0
498.06	0	498.72	0	499.38	0
498.07	0	498.73	0	499.39	0
498.08	0	498.74	0	499.40	0
498.09	0	498.75	0	499.41	0
498.10	0	498.76	0	499.42	0
498.11	0	498.77	0	499.43	0
498.12	0	498.78	0	499.44	0
498.13	0	498.79	0	499.45	0
498.14	0	498.80	0		
498.15	0	498.81	0		
498.16	0	498.82	0		
498.17	0	498.83	0		
498.18	0	498.84	0		
498.19	0	498.85	0		
498.20	0	498.86	0		
498.21	0	498.87	0		
498.22	0	498.88	0		
498.23	0	498.89	0		
498.24	0	498.90	0		
498.25	0	498.91	0		
498.26	0	498.92	0		
498.27	0	498.93	0		
498.28	0	498.94	0		
498.29	0	498.95	0		
498.30	0	498.96	0		
498.31	0	498.97	0		
498.32	0	498.98	0		
498.33	0	498.99	0		
498.34	0	499.00	0		
498.35	0	499.01	0		
498.36	0	499.02	0		
498.37	0	499.03	0		
498.38	0	499.04	0		
498.39	0	499.05	0		
498.40	0	499.06	0		
498.41	0	499.07	0		
498.42	0	499.08	0		
498.43	0	499.09	0		
498.44	0	499.10	0		
498.45	0	499.11	0		
498.46	0	499.12	0		
498.47	0	499.13	0		
498.48	0	499.14	0		
498.49	0	499.15	0		
498.50	0	499.16	0		
498.51	0	499.17	0		
498.52	0	499.18	0		
498.53	0	499.19	0		
498.54	0	499.20	0		
498.55	0	499.21	0		
498.56	0	499.22	0		
498.57	0	499.23	0		
498.58	0	499.24	0		
498.59	0	499.25	0		
498.60	0	499.26	0		
498.61	0	499.27	0		

Summary for Pond DS1.3: Diversion Structure 1.3

Inflow Area =	0.046 ac,100.00% Impervious,	Inflow Depth = 4.84"	for 10-yr event
Inflow =	0.2 cfs @ 12.04 hrs,	Volume=	0.019 af
Outflow =	0.2 cfs @ 12.04 hrs,	Volume=	0.019 af, Atten= 0%, Lag= 0.0 min
Primary =	0.2 cfs @ 12.04 hrs,	Volume=	0.019 af
Secondary =	0.0 cfs @ 0.00 hrs,	Volume=	0.000 af

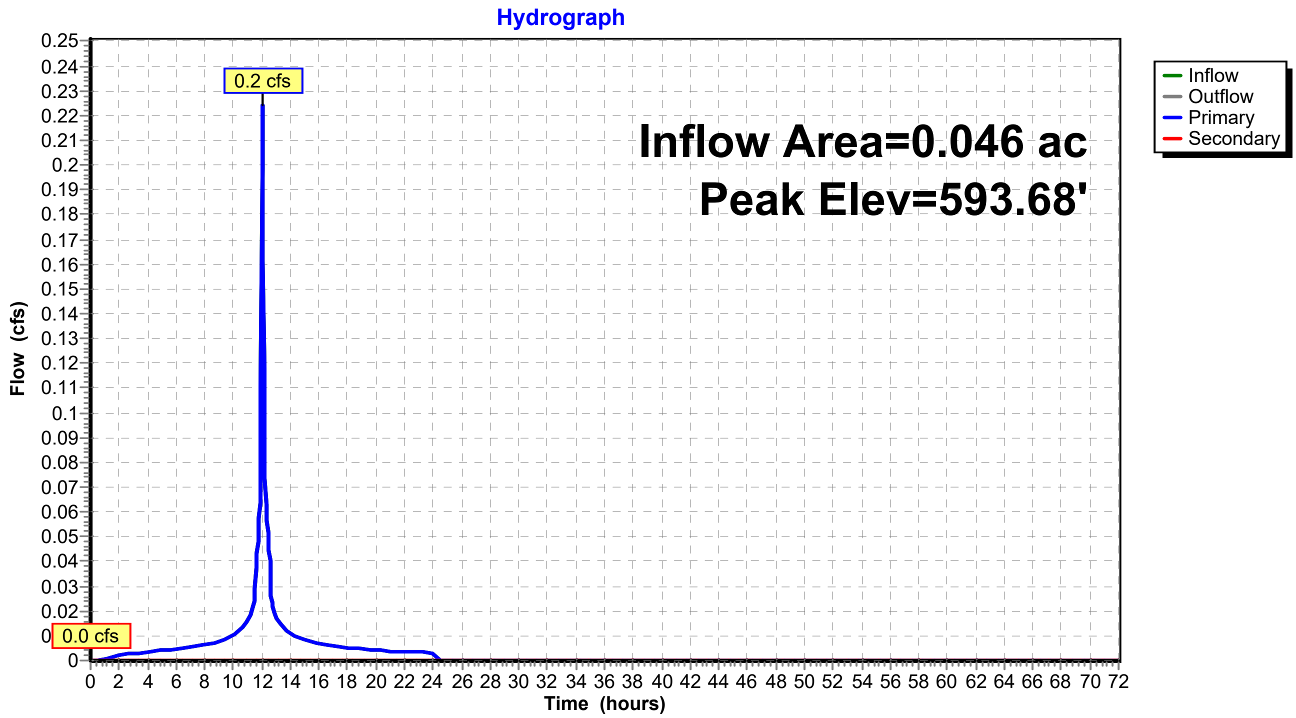
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 593.68' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	593.10'	**4.0" Round Culvert** L= 6.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 593.10' / 593.00' S= 0.0167 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.09 sf
#2	Secondary	595.20'	**8.0" Round Culvert** L= 154.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 595.20' / 590.00' S= 0.0338 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=0.2 cfs @ 12.04 hrs HW=593.63' TW=593.35' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 0.2 cfs @ 2.55 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=593.10' TW=594.50' (Dynamic Tailwater)
└─**2=Culvert** (Controls 0.0 cfs)

Pond DS1.3: Diversion Structure 1.3



Stage-Area-Storage for Pond DS1.3: Diversion Structure 1.3

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
593.10	**0**	594.42	0	595.74	0
593.12	0	594.44	0	595.76	0
593.14	0	594.46	0	595.78	0
593.16	0	594.48	0	595.80	0
593.18	0	594.50	0	595.82	0
593.20	0	594.52	0	595.84	0
593.22	0	594.54	0	595.86	0
593.24	0	594.56	0		
593.26	0	594.58	0		
593.28	0	594.60	0		
593.30	0	594.62	0		
593.32	0	594.64	0		
593.34	0	594.66	0		
593.36	0	594.68	0		
593.38	0	594.70	0		
593.40	0	594.72	0		
593.42	0	594.74	0		
593.44	0	594.76	0		
593.46	0	594.78	0		
593.48	0	594.80	0		
593.50	0	594.82	0		
593.52	0	594.84	0		
593.54	0	594.86	0		
593.56	0	594.88	0		
593.58	0	594.90	0		
593.60	0	594.92	0		
593.62	0	594.94	0		
593.64	0	594.96	0		
593.66	0	594.98	0		
593.68	0	595.00	0		
593.70	0	595.02	0		
593.72	0	595.04	0		
593.74	0	595.06	0		
593.76	0	595.08	0		
593.78	0	595.10	0		
593.80	0	595.12	0		
593.82	0	595.14	0		
593.84	0	595.16	0		
593.86	0	595.18	0		
593.88	0	595.20	0		
593.90	0	595.22	0		
593.92	0	595.24	0		
593.94	0	595.26	0		
593.96	0	595.28	0		
593.98	0	595.30	0		
594.00	0	595.32	0		
594.02	0	595.34	0		
594.04	0	595.36	0		
594.06	0	595.38	0		
594.08	0	595.40	0		
594.10	0	595.42	0		
594.12	0	595.44	0		
594.14	0	595.46	0		
594.16	0	595.48	0		
594.18	0	595.50	0		
594.20	0	595.52	0		
594.22	0	595.54	0		
594.24	0	595.56	0		
594.26	0	595.58	0		
594.28	0	595.60	0		
594.30	0	595.62	0		
594.32	0	595.64	0		
594.34	0	595.66	0		
594.36	0	595.68	0		
594.38	0	595.70	0		
594.40	0	595.72	0		

Summary for Pond INF 1.3: Infiltration System 1.3

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 4.84" for 10-yr event
Inflow = 0.2 cfs @ 12.04 hrs, Volume= 0.019 af
Outflow = 0.1 cfs @ 12.00 hrs, Volume= 0.019 af, Atten= 60%, Lag= 0.0 min
Discarded = 0.1 cfs @ 12.00 hrs, Volume= 0.019 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 593.58' @ 12.20 hrs Surf.Area= 0.006 ac Storage= 0.002 af

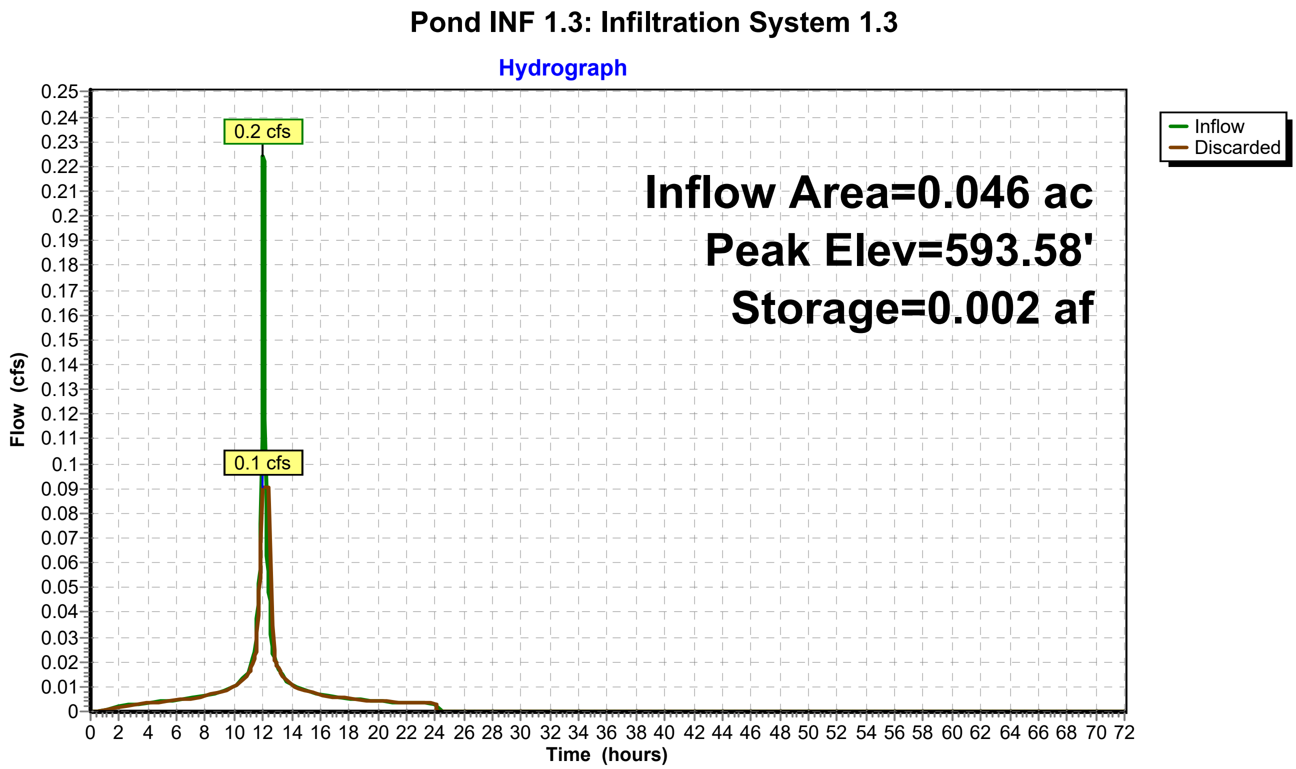
Plug-Flow detention time= 4.0 min calculated for 0.019 af (100% of inflow)
Center-of-Mass det. time= 4.0 min (752.8 - 748.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	593.00'	0.006 af	**16.00'W x 17.50'L x 3.54'H Field A** 0.023 af Overall - 0.008 af Embedded = 0.015 af x 40.0% Voids
#2A	593.50'	0.008 af	**Cultec R-330XLHD** x 6 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 3 rows
		0.014 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	593.00'	**14.000 in/hr Exfiltration over Horizontal area** Phase-In= 0.10'

Discarded OutFlow Max=0.1 cfs @ 12.00 hrs HW=593.20' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.1 cfs)



Stage-Area-Storage for Pond INF 1.3: Infiltration System 1.3

Elevation (feet)	Horizontal (acres)	Storage (acre-feet)
593.00	**0.006**	0.000
593.02	0.006	0.000
593.04	0.006	0.000
593.06	0.006	0.000
593.08	0.006	0.000
593.10	0.006	0.000
593.12	0.006	0.000
593.14	0.006	0.000
593.16	0.006	0.000
593.18	0.006	0.000
593.20	0.006	0.001
593.22	0.006	0.001
593.24	0.006	0.001
593.26	0.006	0.001
593.28	0.006	0.001
593.30	0.006	0.001
593.32	0.006	0.001
593.34	0.006	0.001
593.36	0.006	0.001
593.38	0.006	0.001
593.40	0.006	0.001
593.42	0.006	0.001
593.44	0.006	0.001
593.46	0.006	0.001
593.48	0.006	0.001
593.50	0.006	0.001
593.52	0.006	0.001
593.54	0.006	0.001
593.56	0.006	0.002
593.58	0.006	0.002
593.60	0.006	0.002
593.62	0.006	0.002
593.64	0.006	0.002
593.66	0.006	0.002
593.68	0.006	0.002
593.70	0.006	0.002
593.72	0.006	0.002
593.74	0.006	0.003
593.76	0.006	0.003
593.78	0.006	0.003
593.80	0.006	0.003
593.82	0.006	0.003
593.84	0.006	0.003
593.86	0.006	0.003
593.88	0.006	0.003
593.90	0.006	0.003
593.92	0.006	0.003
593.94	0.006	0.004
593.96	0.006	0.004
593.98	0.006	0.004
594.00	0.006	0.004
594.02	0.006	0.004
594.04	0.006	0.004
594.06	0.006	0.004
594.08	0.006	0.004
594.10	0.006	0.004
594.12	0.006	0.004
594.14	0.006	0.005
594.16	0.006	0.005
594.18	0.006	0.005
594.20	0.006	0.005
594.22	0.006	0.005
594.24	0.006	0.005
594.26	0.006	0.005
594.28	0.006	0.005
594.30	0.006	0.005
594.32	0.006	0.005
594.34	0.006	0.006
594.36	0.006	0.006
594.38	0.006	0.006
594.40	0.006	0.006
594.42	0.006	0.006
594.44	0.006	0.006
594.46	0.006	0.006
594.48	0.006	0.006
594.50	0.006	0.006
594.52	0.006	0.006
594.54	0.006	0.006
594.56	0.006	0.007
594.58	0.006	0.007
594.60	0.006	0.007
594.62	0.006	0.007
594.64	0.006	0.007
594.66	0.006	0.007
594.68	0.006	0.007
594.70	0.006	0.007
594.72	0.006	0.007
594.74	0.006	0.007
594.76	0.006	0.008
594.78	0.006	0.008
594.80	0.006	0.008
594.82	0.006	0.008
594.84	0.006	0.008
594.86	0.006	0.008
594.88	0.006	0.008
594.90	0.006	0.008
594.92	0.006	0.008
594.94	0.006	0.008
594.96	0.006	0.008
594.98	0.006	0.009
595.00	0.006	0.009
595.02	0.006	0.009
595.04	0.006	0.009
595.06	0.006	0.009
595.08	0.006	0.009
595.10	0.006	0.009
595.12	0.006	0.009
595.14	0.006	0.009
595.16	0.006	0.009
595.18	0.006	0.009
595.20	0.006	0.010
595.22	0.006	0.010
595.24	0.006	0.010
595.26	0.006	0.010
595.28	0.006	0.010
595.30	0.006	0.010
595.32	0.006	0.010
595.34	0.006	0.010
595.36	0.006	0.010
595.38	0.006	0.010
595.40	0.006	0.010
595.42	0.006	0.010
595.44	0.006	0.011
595.46	0.006	0.011
595.48	0.006	0.011
595.50	0.006	0.011
595.52	0.006	0.011
595.54	0.006	0.011
595.56	0.006	0.011
595.58	0.006	0.011
595.60	0.006	0.011
595.62	0.006	0.011
595.64	0.006	0.011
595.66	0.006	0.011
595.68	0.006	0.011
595.70	0.006	0.012
595.72	0.006	0.012
595.74	0.006	0.012
595.76	0.006	0.012
595.78	0.006	0.012
595.80	0.006	0.012
595.82	0.006	0.012
595.84	0.006	0.012
595.86	0.006	0.012
595.88	0.006	0.012
595.90	0.006	0.012
595.92	0.006	0.012
595.94	0.006	0.012
595.96	0.006	0.012
595.98	0.006	0.012
596.00	0.006	0.012
596.02	0.006	0.013
596.04	0.006	0.013
596.06	0.006	0.013
596.08	0.006	0.013
596.10	0.006	0.013
596.12	0.006	0.013
596.14	0.006	0.013
596.16	0.006	0.013
596.18	0.006	0.013
596.20	0.006	0.013
596.22	0.006	0.013
596.24	0.006	0.013
596.26	0.006	0.013
596.28	0.006	0.013
596.30	0.006	0.013
596.32	0.006	0.013
596.34	0.006	0.013
596.36	0.006	0.013
596.38	0.006	0.013
596.40	0.006	0.014
596.42	0.006	0.014
596.44	0.006	0.014
596.46	0.006	0.014
596.48	0.006	0.014
596.50	0.006	0.014
596.52	0.006	0.014
596.54	0.006	**0.014**

Appendix M:

Stormwater Maintenance and Access Agreement

**SCHEDULE "A" TO STORMWATER CONTROL FACILITY
MAINTENANCE AND ACCESS AGREEMENT
BY AND BETWEEN
THE WOLF CENTER AND THE TOWN OF LEWISBORO**

As used herein, "Short Term Maintenance Requirements" are those stormwater control measures to be undertaken during such time as the construction activities. "Long Term Maintenance Requirements" are those stormwater control measures to be undertaken following the completion of construction. Maintenance and inspections shall be performed in accordance with the SWPPP and as described herein.

Maintenance and Inspection Requirements:

Maintenance and inspections are required in order to ensure the stormwater and erosion and sediment control practices are acting as designed. Inspections will be performed twice every 7 calendar days and/or significant rainfall during construction. Upon completion of construction and the subsequent filing of the Notice of Termination, maintenance and inspections are expected to be minimal. Temporary and permanent maintenance and inspection requirements are further discussed below. Proper maintenance and inspections will ensure the longevity and effectiveness of the stormwater pollution prevention plan, and erosion and sediment control plan.

Short Term Maintenance and Inspection Requirements:

The Developer will be responsible for maintenance of all erosion controls during construction.

Inspections performed during construction should verify all practices are functioning properly, correctly maintained, and accumulated sediment is removed from all control structures. The inspector must also examine the site for any evidence of soil erosion, turbid discharge at all outfalls, and the potential for soil and mud to be transported on the public roadway at the site entrance. Discussed below are specific maintenance and inspection requirements for the temporary practices to be employed at the site.

During construction, the silt fence should be inspected to ensure correct installation. In addition, any accumulated sediment resulting in “bulges” in the silt fence should be removed. Any damaged or torn silt fence should be replaced.

The construction entrance should be checked to ensure no sediment is being deposited onto the public roadway. Should sediment be observed, it should be removed from the street, and the stone in the construction entrance replaced.

Stormwater Treatment Area monitoring and maintenance will be the responsibility of the developer throughout the proposed operations. As a minimum, Bibbo Associates, LLP recommends the following maintenance:

Inspection - Inspections are to be performed by a "Qualified Inspector" basis of twice every 7 calendar days or following a significant rainfall event, consistent with the SPDES General Permit. A copy of the "NYSDEC Construction Site Log Book" shall be used as a template for the weekly site inspection reports. Following construction inspections will be required on an annual basis as a minimum and following major storm events to check for:

a. Evidence of clogging of the outlet structure
b. Accumulation of sediment at inlets and around the outlet structure
c. Erosion of the berm, slope and other areas contributing to the basin
d. Condition of the emergency spillway

Repairs, as needed, shall be undertaken to restore facility to proper function. In the case of infiltration basin clogging, to allow for any necessary maintenance a submersible pump shall be utilized and impounded water shall be pumped through the outlet structure's primary culvert to the proposed rock outlet protection. (See also Sediment Removal below.)

Mowing – The berm crest and slopes, as well as the basin bottom should be mowed at least twice a year to discourage woody growth.

Debris and Litter Control - Removal of debris and litter should be undertaken during the mowing operation. Particular attention should be given to removal of debris and branches around the outlet structure.

Erosion Control - Eroding soil on the berm, slope, or other contributory areas noted during inspections should be stabilized immediately with topsoil replacement, seeding and mulching. Any riprap dislodged on the emergency spillway should be repositioned.

Sediment Removal - Sediment deposition in the temporary sediment trap will need to be removed in order to maintain the necessary capacity for capturing sediment. The need for sediment removal should be determined during routine inspections and the appropriate equipment and manpower scheduled for the task.

Catch Basin Clean Out - Sediment deposition in the basin can be reduced by regular clean out of catch basin sumps located in the common driveway *(accumulated sediment shall be removed from catch basin if it reaches a level of ½ the available sump).* More frequent clean out will be necessary during home construction along the common driveway. It will be the developer's responsibility to monitor the accumulation in the sumps and clean out sediment as required.

Hydrodynamic Separator – The Hydrodynamic Separator shall be inspected semiannually for accumulated sediment and to ensure all systems components are functioning properly. Inspection frequency may have to be adjusted based on winter sanding operations. Accumulated sediment shall be removed when it reaches a level of ¾ the available sump. It will be the developer's responsibility to monitor the accumulation in the sumps and clean out sediment as required during home construction.

Stormwater Infiltration Basin - Remove sediment/gross solids from the infiltration surface annually. The vegetative cover needs to be regularly maintained. Grass cover may be mowed and bare areas should be reseeded. Disc, aerate or scrape the basin bottom to restore original cross section and infiltration rate every one to five years. To avoid soil compaction concerns, infiltration areas should not be used for recreational purposes. (Refer to 10.4.3.5 Maintenance of Chapter 10 of the NYSSMDM)

All maintenance and inspection requirements of the NYSDEC Stormwater Management Design Manual "Phase II" August 2010 are adopted by reference into this report. Sample construction and maintenance checklists may be found in the Appendix.

Long Term Maintenance and Inspection Requirements:

Long Term Maintenance requirements are the same as listed above for Short Term Maintenance.

Figure 1:

Pre-development Drainage Basin Plan

CALL BEFORE YOU DIG 1-800-962-7962

UNDER THE NY STATE LAW PROTECTING UNDERGROUND FACILITIES, THE FOLLOWING RULES AND REGULATIONS ARE IN EFFECT FOR ALL EXCAVATORS:

* THEY MUST CALL FOR A UTILITY STAKE-OUT (2) TWO FULL WORKING DAYS PRIOR TO AN EXCAVATION.
* THEY MUST CONFIRM PRECISE LOCATIONS OF UNDERGROUND FACILITIES.
* THEY MUST PRESERVE STAKES AND MARKINGS UNTIL NO LONGER NEEDED AT SITE.
* THEY MUST CONTACT NON-UFPO MEMBER UTILITY OWNERS FOR STAKE-OUTS.

REVISIONS:

DATE:	DESCRIPTION	BY/CK	DATE:	DESCRIPTION	BY/CK
			01-16-23	BUILDING DEPARTMENT COMMENTS	RH/MG
10-20-23	NYCDEP COMPLETENESS COMMENTS	RH/MG	02-07-22	WCHD NYCDEP COMMENTS	ZF/ED
04-25-23	PLANNING BOARD SUBMISSION	RH/MG	06-04-21	NYCDEP APPLICATION	RH/MG
02-07-23	PLANNING BOARD SUBMISSION	RH/MG	04-27-21	PLANNING BOARD SUBMISSION	RH/MG

MATTHEW J. GIRONDA P.E.

PREDEVELOPMENT DRAINAGE BASIN MAP

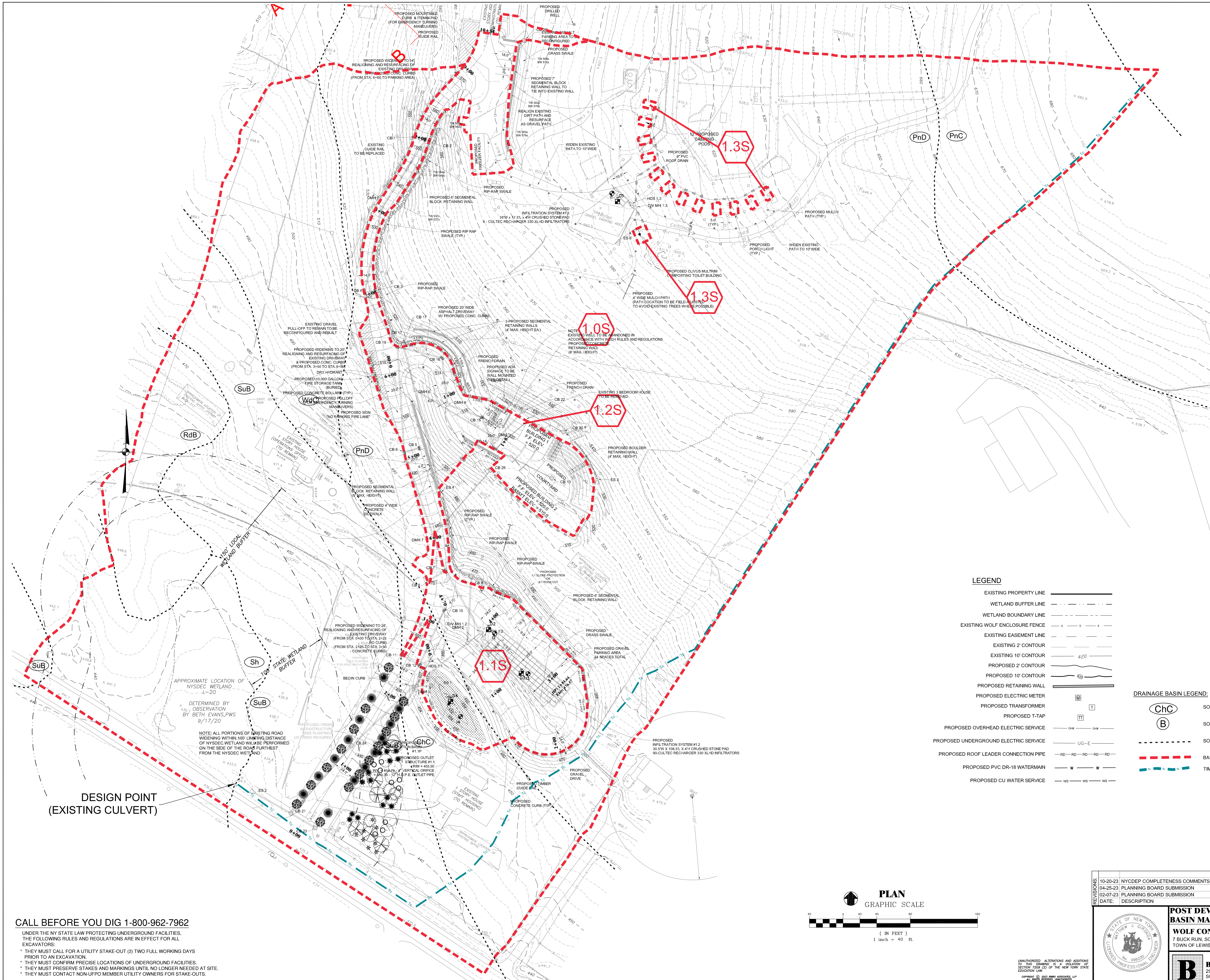
WOLF CONSERVATION CENTER
7 BUCK RUN, SOUTH SALEM, NY 10590
TOWN OF LEWISBORO, WESTCHESTER COUNTY, NY

BIBBO ASSOCIATES, LLP
293 ROUTE 100 SUITE 203
SOMERS, NEW YORK 10589
TEL. 914 277 5805

DATE:	12-29-2020
SCALE:	1" = 40'
FILE:	L5
DSGN / CHK:	MG/RH
DRN. BY:	RH
SHT NO.	FIGURE 1
DWG NO.	PRE

Figure 2:

Post-development Drainage Basin Plan



LEGEND

EXISTING PROPERTY LINE	
WETLAND BUFFER LINE	
WETLAND BOUNDARY LINE	
EXISTING WOLF ENCLOSURE FENCE	— X — X — X —
EXISTING EASEMENT LINE	
EXISTING 2' CONTOUR	
EXISTING 10' CONTOUR	420
PROPOSED 2' CONTOUR	
PROPOSED 10' CONTOUR	420
PROPOSED RETAINING WALL	
PROPOSED ELECTRIC METER	M
PROPOSED TRANSFORMER	T
PROPOSED T-TAP	TT
PROPOSED OVERHEAD ELECTRIC SERVICE	— OHW — OHW —
PROPOSED UNDERGROUND ELECTRIC SERVICE	— UG—E —
PROPOSED ROOF LEADER CONNECTION PIPE	—RD—RD—RD—RD—RD—
PROPOSED PVC DR-18 WATERMAIN	— W — W —
PROPOSED CU WATER SERVICE	— WS — WS — WS —

DRAINAGE BASIN LEGEND:

ChC	SOIL TYPE
B	SOIL CLASSIFICATION
	SOIL BOUNDARY
	BASIN BOUNDARY
Tc	TIME OF CONCENTRATION PATH (TC)

PLAN
GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

CALL BEFORE YOU DIG 1-800-962-7962

UNDER THE NY STATE LAW PROTECTING UNDERGROUND FACILITIES, THE FOLLOWING RULES AND REGULATIONS ARE IN EFFECT FOR ALL EXCAVATORS:

* THEY MUST CALL FOR A UTILITY STAKE-OUT (2) TWO FULL WORKING DAYS PRIOR TO AN EXCAVATION.
* THEY MUST CONFIRM PRECISE LOCATIONS OF UNDERGROUND FACILITIES.
* THEY MUST PRESERVE STAKES AND MARKINGS UNTIL NO LONGER NEEDED AT SITE.
* THEY MUST CONTACT NON-UFPO MEMBER UTILITY OWNERS FOR STAKE-OUTS.

REVISIONS:

DATE:	DESCRIPTION	BY/CK	DATE:	DESCRIPTION	BY/CK
			01-16-23	BUILDING DEPARTMENT COMMENTS	RH/MG
10-20-23	NYCDEP COMPLETENESS COMMENTS	RH/MG	02-07-22	WCHD NYCDEP COMMENTS	ZF/ED
04-25-23	PLANNING BOARD SUBMISSION	RH/MG	06-04-21	NYCDEP APPLICATION	RH/MG
02-07-23	PLANNING BOARD SUBMISSION	RH/MG	04-27-21	PLANNING BOARD SUBMISSION	RH/MG

STATE OF NEW YORK · MATTHEW J. GIRONDA · No. 096030 · LICENSED PROFESSIONAL ENGINEER

MATTHEW J. GIRONDA P.E.

POST DEVELOPMENT DRAINAGE BASIN MAP

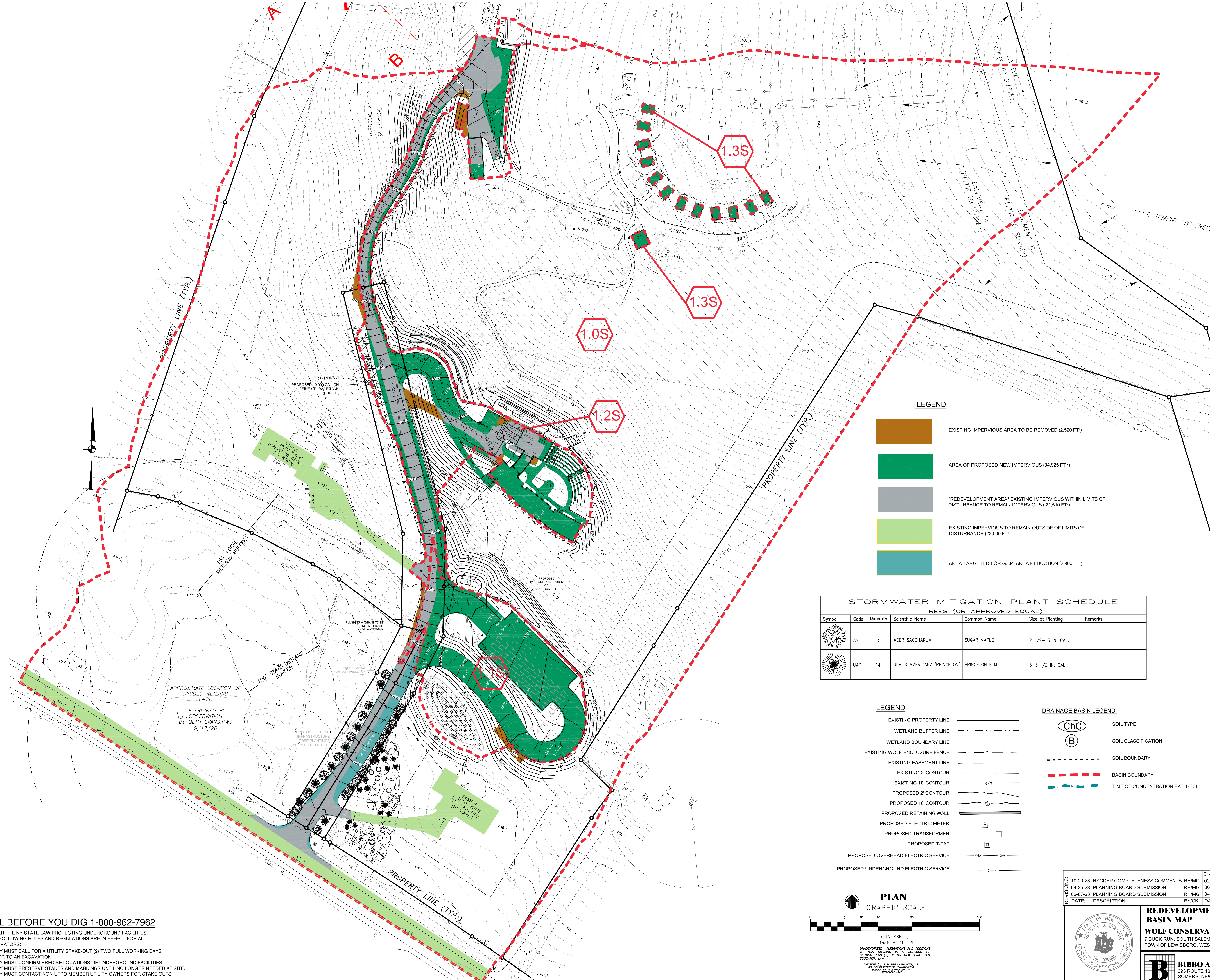
WOLF CONSERVATION CENTER
7 BUCK RUN, SOUTH SALEM, NY 10590
TOWN OF LEWISBORO, WESTCHESTER COUNTY, NY

BIBBO ASSOCIATES, LLP
293 ROUTE 100 SUITE 203
SOMERS, NEW YORK 10589
TEL. 914 277 5805

DATE:	1-31-2019
SCALE:	1" = 40'
FILE:	L5
DSGN / CHK:	MG/RH
DRN. BY:	RH
SHT NO.	FIGURE 2
DWG NO.	POST

Figure 3:

Redevelopment Map



LEGEND

	EXISTING IMPERVIOUS AREA TO BE REMOVED (2,520 FT²)
	AREA OF PROPOSED NEW IMPERVIOUS (34,925 FT²)
	"REDEVELOPMENT AREA" EXISTING IMPERVIOUS WITHIN LIMITS OF DISTURBANCE TO REMAIN IMPERVIOUS (21,510 FT²)
	EXISTING IMPERVIOUS TO REMAIN OUTSIDE OF LIMITS OF DISTURBANCE (22,000 FT²)
	AREA TARGETED FOR G.I.P. AREA REDUCTION (2,900 FT²)

STORMWATER MITIGATION PLANT SCHEDULE						
TREES (OR APPROVED EQUAL)						
Symbol	Code	Quantity	Scientific Name	Common Name	Size at Planting	Remarks
	AS	15	ACER SACCHARUM	SUGAR MAPLE	2 1/2– 3 IN. CAL.	
	UAP	14	ULMUS AMERICANA 'PRINCETON'	PRINCETON ELM	3–3 1/2 IN. CAL.	

LEGEND

EXISTING PROPERTY LINE
WETLAND BUFFER LINE
WETLAND BOUNDARY LINE
EXISTING WOLF ENCLOSURE FENCE
EXISTING EASEMENT LINE
EXISTING 2' CONTOUR
EXISTING 10' CONTOUR — 420
PROPOSED 2' CONTOUR
PROPOSED 10' CONTOUR — 420
PROPOSED RETAINING WALL
PROPOSED ELECTRIC METER — M
PROPOSED TRANSFORMER — T
PROPOSED T-TAP — TT
PROPOSED OVERHEAD ELECTRIC SERVICE — OHW — OHW
PROPOSED UNDERGROUND ELECTRIC SERVICE — UG-E

DRAINAGE BASIN LEGEND:

ChC — SOIL TYPE
B — SOIL CLASSIFICATION
SOIL BOUNDARY
BASIN BOUNDARY
TIME OF CONCENTRATION PATH (TC)

PLAN
GRAPHIC SCALE

40 0 40 40 80 160

(IN FEET)
1 inch = 40 ft.

UNAUTHORIZED ALTERATIONS AND ADDITIONS TO THIS DRAWING IS A VIOLATION OF SECTION 7209 (2) OF THE NEW YORK STATE EDUCATION LAW.

CALL BEFORE YOU DIG 1-800-962-7962

UNDER THE NY STATE LAW PROTECTING UNDERGROUND FACILITIES, THE FOLLOWING RULES AND REGULATIONS ARE IN EFFECT FOR ALL EXCAVATORS:

* THEY MUST CALL FOR A UTILITY STAKE-OUT (2) TWO FULL WORKING DAYS PRIOR TO AN EXCAVATION.
* THEY MUST CONFIRM PRECISE LOCATIONS OF UNDERGROUND FACILITIES.
* THEY MUST PRESERVE STAKES AND MARKINGS UNTIL NO LONGER NEEDED AT SITE.
* THEY MUST CONTACT NON-UFPO MEMBER UTILITY OWNERS FOR STAKE-OUTS.

REVISIONS:

DATE:	DESCRIPTION	BY/CK	DATE:	DESCRIPTION	BY/CK
			01-16-23	BUILDING DEPARTMENT COMMENTS	RH/MG
10-20-23	NYCDEP COMPLETENESS COMMENTS	RH/MG	02-07-22	WCHD NYCDEP COMMENTS	ZF/ED
04-25-23	PLANNING BOARD SUBMISSION	RH/MG	06-04-21	NYCDEP APPLICATION	RH/MG
02-07-23	PLANNING BOARD SUBMISSION	RH/MG	04-27-21	PLANNING BOARD SUBMISSION	RH/MG

STATE OF NEW YORK · MATTHEW J. GIRONDA · No. 096030 · LICENSED PROFESSIONAL ENGINEER

MATTHEW J. GIRONDA P.E.

REDEVELOPMENT DRAINAGE BASIN MAP

WOLF CONSERVATION CENTER
7 BUCK RUN, SOUTH SALEM, NY 10590
TOWN OF LEWISBORO, WESTCHESTER COUNTY, NY

BIBBO ASSOCIATES, LLP
293 ROUTE 100 SUITE 203
SOMERS, NEW YORK 10589
TEL. 914 277 5805

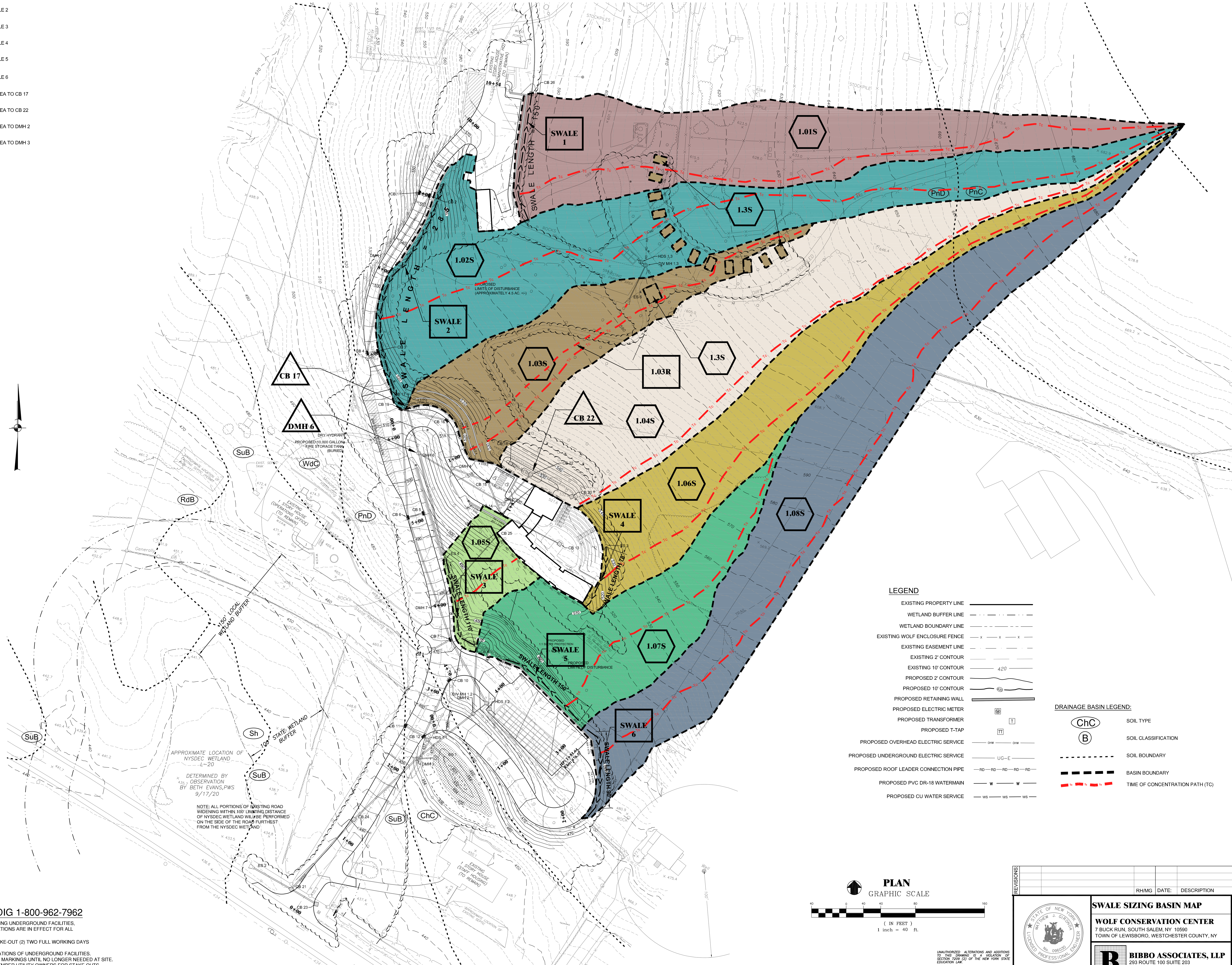
DATE:	4-24-2020
SCALE:	1" = 40'
FILE:	L5
DSGN / CHK:	MG/RH
DRN. BY:	RH
SHT NO.	1 OF 1
DWG NO.	FIGURE 3

Figure 4:

Swale and Pipe Sizing Basin Map

AREA LEGEND

- TRIBUTARY AREA TO SWALE 1
- TRIBUTARY AREA TO SWALE 2
- TRIBUTARY AREA TO SWALE 3
- TRIBUTARY AREA TO SWALE 4
- TRIBUTARY AREA TO SWALE 5
- TRIBUTARY AREA TO SWALE 6
- OVERLAND TRIBUTARY AREA TO CB 17
- OVERLAND TRIBUTARY AREA TO CB 22
- OVERLAND TRIBUTARY AREA TO DMH 2
- OVERLAND TRIBUTARY AREA TO DMH 3



LEGEND

- EXISTING PROPERTY LINE
- WETLAND BUFFER LINE
- WETLAND BOUNDARY LINE
- EXISTING WOLF ENCLOSURE FENCE
- EXISTING EASEMENT LINE
- EXISTING 2' CONTOUR
- EXISTING 10' CONTOUR — 420
- PROPOSED 2' CONTOUR
- PROPOSED 10' CONTOUR
- PROPOSED RETAINING WALL
- PROPOSED ELECTRIC METER
- PROPOSED TRANSFORMER
- PROPOSED T-TAP
- PROPOSED OVERHEAD ELECTRIC SERVICE — OHW
- PROPOSED UNDERGROUND ELECTRIC SERVICE — UG-E
- PROPOSED ROOF LEADER CONNECTION PIPE — RD
- PROPOSED PVC DR-18 WATERMAIN — W
- PROPOSED CU WATER SERVICE — WS

DRAINAGE BASIN LEGEND:

- ChC — SOIL TYPE
- B — SOIL CLASSIFICATION
- SOIL BOUNDARY
- BASIN BOUNDARY
- TIME OF CONCENTRATION PATH (TC)

PLAN

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

CALL BEFORE YOU DIG 1-800-962-7962

UNDER THE NY STATE LAW PROTECTING UNDERGROUND FACILITIES, THE FOLLOWING RULES AND REGULATIONS ARE IN EFFECT FOR ALL EXCAVATORS:

* THEY MUST CALL FOR A UTILITY STAKE-OUT (2) TWO FULL WORKING DAYS PRIOR TO AN EXCAVATION.
* THEY MUST CONFIRM PRECISE LOCATIONS OF UNDERGROUND FACILITIES.
* THEY MUST PRESERVE STAKES AND MARKINGS UNTIL NO LONGER NEEDED AT SITE.
* THEY MUST CONTACT NON-UFPO MEMBER UTILITY OWNERS FOR STAKE-OUTS.

REVISIONS:	RH/MG	DATE:	DESCRIPTION	BY/CK

STATE OF NEW YORK — MATTHEW J. GIRONDA — LICENSED PROFESSIONAL ENGINEER — No. 096030

MATTHEW J. GIRONDA P.E.

SWALE SIZING BASIN MAP

WOLF CONSERVATION CENTER
7 BUCK RUN, SOUTH SALEM, NY 10590
TOWN OF LEWISBORO, WESTCHESTER COUNTY, NY

BIBBO ASSOCIATES, LLP
293 ROUTE 100 SUITE 203
SOMERS, NEW YORK 10589
TEL. 914 277 5805

DATE:	10-18-2023
SCALE:	1" = 40'
FILE:	L5
DSGN / CHK:	MG/RH
DRN. BY:	RH
SHT NO.	FIGURE 4
DWG NO.	SW

0644089821

NOTICE OF INTENT

New York State Department of Environmental Conservation
Division of Water
625 Broadway, 4th Floor
Albany, New York 12233-3505

NYR

(for DEC use only)

Stormwater Discharges Associated with Construction Activity Under State Pollutant Discharge Elimination System (SPDES) General Permit # GP-0-20-001

All sections must be completed unless otherwise noted. Failure to complete all items may result in this form being returned to you, thereby delaying your coverage under this General Permit. Applicants must read and understand the conditions of the permit and prepare a Stormwater Pollution Prevention Plan prior to submitting this NOI. Applicants are responsible for identifying and obtaining other DEC permits that may be required.

-IMPORTANT-

RETURN THIS FORM TO THE ADDRESS ABOVE

OWNER/OPERATOR MUST SIGN FORM

Owner/Operator Information

Owner/Operator (Company Name/Private Owner Name/Municipality Name)

Wolf Conservation Center

Owner/Operator Contact Person Last Name (NOT CONSULTANT)

Wilhelm

Owner/Operator Contact Person First Name

Spencer

Owner/Operator Mailing Address

7 Buck Run

City

South Salem

State: NY

Zip: 10590 -

Phone (Owner/Operator): 914 7 63 3 2 3 7 3 3

Fax (Owner/Operator): - -

Email (Owner/Operator)

Spencer@nywolf.org

FED TAX ID

13 - 4073912 (not required for individuals)

6401089828

Project Site Information

Project/Site Name
Wolf Conservation Center

Street Address (NOT P.O. BOX)
7 Buck Run

Side of Street
● **North** ○ **South** ○ **East** ○ **West**

City/Town/Village (THAT ISSUES BUILDING PERMIT)
South Salem

State	Zip	County	DEC Region
NY	10590 -	Westchester	3

Name of Nearest Cross Street
Old Post Road (Route 35)

Distance to Nearest Cross Street (Feet)
350

Project In Relation to Cross Street
● **North** ○ **South** ○ **East** ○ **West**

Tax Map Numbers
Section-Block-Parcel
21-10803-3

Tax Map Numbers
81 82 83 88

1. Provide the Geographic Coordinates for the project site. To do this, go to the NYSDEC Stormwater Interactive Map on the DEC website at:

https://gisservices.dec.ny.gov/gis/stormwater/

Zoom into your Project Location such that you can accurately click on the centroid of your site. Once you have located the centroid of your project site, go to the bottom right hand corner of the map for the X, Y coordinates. Enter the coordinates into the boxes below. For problems with the interactive map use the help function.

X Coordinates (Easting)	**Y Coordinates (Northing)**
-7 3585	41279
Ex. -73.749	**Ex. 42.652**

2. What is the nature of this construction project?

○ **New Construction**

● **Redevelopment with increase in impervious area**

○ **Redevelopment with no increase in impervious area**

3. Select the predominant land use for both pre and post development conditions.
SELECT ONLY ONE CHOICE FOR EACH

Pre-Development Existing Land Use

- ○ FOREST
- ○ PASTURE/OPEN LAND
- ○ CULTIVATED LAND
- ○ SINGLE FAMILY HOME
- ○ SINGLE FAMILY SUBDIVISION
- ○ TOWN HOME RESIDENTIAL
- ○ MULTIFAMILY RESIDENTIAL
- ○ INSTITUTIONAL/SCHOOL
- ○ INDUSTRIAL
- ● COMMERCIAL
- ○ ROAD/HIGHWAY
- ○ RECREATIONAL/SPORTS FIELD
- ○ BIKE PATH/TRAIL
- ○ LINEAR UTILITY
- ○ PARKING LOT
- ○ OTHER

Post-Development Future Land Use

- ○ SINGLE FAMILY HOME
- ○ SINGLE FAMILY SUBDIVISION — Number of Lots
- ○ TOWN HOME RESIDENTIAL
- ○ MULTIFAMILY RESIDENTIAL
- ○ INSTITUTIONAL/SCHOOL
- ○ INDUSTRIAL
- ● COMMERCIAL
- ○ MUNICIPAL
- ○ ROAD/HIGHWAY
- ○ RECREATIONAL/SPORTS FIELD
- ○ BIKE PATH/TRAIL
- ○ LINEAR UTILITY (water, sewer, gas, etc.)
- ○ PARKING LOT
- ○ CLEARING/GRADING ONLY
- ○ DEMOLITION, NO REDEVELOPMENT
- ○ WELL DRILLING ACTIVITY *(Oil, Gas, etc.)
- ○ OTHER

***Note**: for gas well drilling, non-high volume hydraulic fractured wells only

4. In accordance with the larger common plan of development or sale, enter the total project site area; the total area to be disturbed; existing impervious area to be disturbed (for redevelopment activities); and the future impervious area constructed within the disturbed area. (Round to the nearest tenth of an acre.)

Total Site Area	Total Area To Be Disturbed	Existing Impervious Area To Be Disturbed	Future Impervious Area Within Disturbed Area
32.3	4.5	0.6	1.4

5. Do you plan to disturb more than 5 acres of soil at any one time? ○ **Yes** ● **No**

6. Indicate the percentage of each Hydrologic Soil Group(HSG) at the site.

A	B	C	D
%	4 %	74 %	22 %

7. Is this a phased project? ○ **Yes** ○ **No**

8. Enter the planned start and end dates of the disturbance activities.

Start Date 04/01/2024 - **End Date** 04/30/2026

9. Identify the nearest surface waterbody(ies) to which construction site runoff will discharge.

Name

DEC Wetland

9a. Type of waterbody identified in Question 9?

- ○ Wetland / State Jurisdiction On Site (Answer 9b)
- ● Wetland / State Jurisdiction Off Site
- ○ Wetland / Federal Jurisdiction On Site (Answer 9b)
- ○ Wetland / Federal Jurisdiction Off Site
- ○ Stream / Creek On Site
- ○ Stream / Creek Off Site
- ○ River On Site
- ○ River Off Site
- ○ Lake On Site
- ○ Lake Off Site
- ○ Other Type On Site
- ○ Other Type Off Site

9b. How was the wetland identified?

- ● Regulatory Map
- ○ Delineated by Consultant
- ○ Delineated by Army Corps of Engineers
- ○ Other (identify)

10. Has the surface waterbody(ies) in question 9 been identified as a 303(d) segment in Appendix E of GP-0-20-001? ○ **Yes** ● **No**

11. Is this project located in one of the Watersheds identified in Appendix C of GP-0-20-001? ● **Yes** ○ **No**

12. Is the project located in one of the watershed areas associated with AA and AA-S classified waters? ● **Yes** ○ **No**
If no, skip question 13.

13. Does this construction activity disturb land with no existing impervious cover and where the Soil Slope Phase is identified as an E or F on the USDA Soil Survey? ○ **Yes** ● **No**
If Yes, what is the acreage to be disturbed?

____ . _

14. Will the project disturb soils within a State regulated wetland or the protected 100 foot adjacent area? ● **Yes** ○ **No**

15. Does the site runoff enter a separate storm sewer system (including roadside drains, swales, ditches, culverts, etc)? ○ Yes ● No ○ Unknown

16. What is the name of the municipality/entity that owns the separate storm sewer system?

17. Does any runoff from the site enter a sewer classified as a Combined Sewer? ○ Yes ● No ○ Unknown

18. Will future use of this site be an agricultural property as defined by the NYS Agriculture and Markets Law? ○ Yes ● No

19. Is this property owned by a state authority, state agency, federal government or local government? ○ Yes ● No

20. Is this a remediation project being done under a Department approved work plan? (i.e. CERCLA, RCRA, Voluntary Cleanup Agreement, etc.) ○ Yes ● No

21. Has the required Erosion and Sediment Control component of the SWPPP been developed in conformance with the current NYS Standards and Specifications for Erosion and Sediment Control (aka Blue Book)? ● Yes ○ No

22. Does this construction activity require the development of a SWPPP that includes the post-construction stormwater management practice component (i.e. Runoff Reduction, Water Quality and Quantity Control practices/techniques)? ● Yes ○ No
If No, skip questions 23 and 27-39.

23. Has the post-construction stormwater management practice component of the SWPPP been developed in conformance with the current NYS Stormwater Management Design Manual? ● Yes ○ No

24. The Stormwater Pollution Prevention Plan (SWPPP) was prepared by:

- [x] **Professional Engineer (P.E.)**
- [ ] **Soil and Water Conservation District (SWCD)**
- [ ] **Registered Landscape Architect (R.L.A)**
- [ ] **Certified Professional in Erosion and Sediment Control (CPESC)**
- [ ] **Owner/Operator**
- [ ] **Other**

SWPPP Preparer: Bibbo Associates, LLP

Contact Name (Last, Space, First): Gironda, Matthew, P.E.

Mailing Address: 293 Route 100, Suite 203

City: SOmers

State: NY Zip: 10589 -

Phone: 914-277-5805 Fax: 914-277-8210

Email: mgironda@bibboassociates.com

SWPPP Preparer Certification

I hereby certify that the Stormwater Pollution Prevention Plan (SWPPP) for this project has been prepared in accordance with the terms and conditions of the GP-0-20-001. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of this permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

First Name: Matthew **MI**: J

Last Name: Gironda

Signature

Date __ / __ / ____

25. Has a construction sequence schedule for the planned management practices been prepared? ● Yes ○ No

26. Select **all** of the erosion and sediment control practices that will be employed on the project site:

Temporary Structural

- ○ Check Dams
- ● Construction Road Stabilization
- ○ Dust Control
- ○ Earth Dike
- ○ Level Spreader
- ○ Perimeter Dike/Swale
- ○ Pipe Slope Drain
- ○ Portable Sediment Tank
- ○ Rock Dam
- ○ Sediment Basin
- ○ Sediment Traps
- ● Silt Fence
- ● Stabilized Construction Entrance
- ● Storm Drain Inlet Protection
- ○ Straw/Hay Bale Dike
- ○ Temporary Access Waterway Crossing
- ○ Temporary Stormdrain Diversion
- ○ Temporary Swale
- ○ Turbidity Curtain
- ○ Water bars

Biotechnical

- ○ Brush Matting
- ○ Wattling

Vegetative Measures

- ○ Brush Matting
- ○ Dune Stabilization
- ○ Grassed Waterway
- ○ Mulching
- ○ Protecting Vegetation
- ○ Recreation Area Improvement
- ● Seeding
- ○ Sodding
- ○ Straw/Hay Bale Dike
- ○ Streambank Protection
- ○ Temporary Swale
- ● Topsoiling
- ○ Vegetating Waterways

Permanent Structural

- ○ Debris Basin
- ● Diversion
- ○ Grade Stabilization Structure
- ● Land Grading
- ○ Lined Waterway (Rock)
- ○ Paved Channel (Concrete)
- ○ Paved Flume
- ○ Retaining Wall
- ○ Riprap Slope Protection
- ● Rock Outlet Protection
- ○ Streambank Protection

Other

Post-construction Stormwater Management Practice (SMP) Requirements

Important: Completion of Questions 27-39 is not required if response to Question 22 is No.

27. Identify all site planning practices that were used to prepare the final site plan/layout for the project.

● **Preservation of Undisturbed Areas**

○ **Preservation of Buffers**

● **Reduction of Clearing and Grading**

○ **Locating Development in Less Sensitive Areas**

○ **Roadway Reduction**

○ **Sidewalk Reduction**

○ **Driveway Reduction**

○ **Cul-de-sac Reduction**

○ **Building Footprint Reduction**

○ **Parking Reduction**

27a. Indicate which of the following soil restoration criteria was used to address the requirements in Section 5.1.6("Soil Restoration") of the Design Manual (2010 version).

● All disturbed areas will be restored in accordance with the Soil Restoration requirements in Table 5.3 of the Design Manual (see page 5-22).

○ Compacted areas were considered as impervious cover when calculating the **WQv Required**, and the compacted areas were assigned a post-construction Hydrologic Soil Group (HSG) designation that is one level less permeable than existing conditions for the hydrology analysis.

28. Provide the total Water Quality Volume (WQv) required for this project (based on final site plan/layout).

Total WQv Required

0 . 20 5. 2 5 **acre-feet**

29. Identify the RR techniques (Area Reduction), RR techniques(Volume Reduction) and Standard SMPs with RRv Capacity in Table 1 (See Page 9) that were used to reduce the Total WQv Required(#28).

Also, provide in Table 1 the total impervious area that contributes runoff to each technique/practice selected. For the Area Reduction Techniques, provide the total contributing area (includes pervious area) and, if applicable, the total impervious area that contributes runoff to the technique/practice.

Note: Redevelopment projects shall use Tables 1 and 2 to identify the SMPs used to treat and/or reduce the WQv required. If runoff reduction techniques will not be used to reduce the required WQv, skip to question 33a after identifying the SMPs.

7738089822

Table 1 - Runoff Reduction (RR) Techniques and Standard Stormwater Management Practices (SMPs)

RR Techniques (Area Reduction)	Total Contributing Area (acres)		Total Contributing Impervious Area(acres)
○ Conservation of Natural Areas (RR-1)	.	and/or	.
○ Sheetflow to Riparian Buffers/Filters Strips (RR-2)	.	and/or	.
● Tree Planting/Tree Pit (RR-3)	0.0067	and/or	0.0067
○ Disconnection of Rooftop Runoff (RR-4)	.	and/or	.

RR Techniques (Volume Reduction)	Total Contributing Impervious Area(acres)
○ Vegetated Swale (RR-5)	.
○ Rain Garden (RR-6)	.
○ Stormwater Planter (RR-7)	.
○ Rain Barrel/Cistern (RR-8)	.
○ Porous Pavement (RR-9)	.
○ Green Roof (RR-10)	.

Standard SMPs with RRv Capacity	Total Contributing Impervious Area(acres)
○ Infiltration Trench (I-1)	.
● Infiltration Basin (I-2)	0.3
○ Dry Well (I-3)	.
● Underground Infiltration System (I-4)	.
○ Bioretention (F-5)	0.77
○ Dry Swale (O-1)	.

Standard SMPs	Total Contributing Impervious Area(acres)
○ Micropool Extended Detention (P-1)	.
○ Wet Pond (P-2)	.
○ Wet Extended Detention (P-3)	.
○ Multiple Pond System (P-4)	.
○ Pocket Pond (P-5)	.
○ Surface Sand Filter (F-1)	.
○ Underground Sand Filter (F-2)	.
○ Perimeter Sand Filter (F-3)	.
○ Organic Filter (F-4)	.
○ Shallow Wetland (W-1)	.
○ Extended Detention Wetland (W-2)	.
○ Pond/Wetland System (W-3)	.
○ Pocket Wetland (W-4)	.
○ Wet Swale (O-2)	.

Table 2 - Alternative SMPs
(DO NOT INCLUDE PRACTICES BEING USED FOR PRETREATMENT ONLY)

Alternative SMP	Total Contributing Impervious Area(acres)
○ Hydrodynamic	.
○ Wet Vault	.
○ Media Filter	.
○ Other	.

Provide the name and manufacturer of the Alternative SMPs (i.e. proprietary practice(s)) being used for WQv treatment.

Name

Manufacturer

Note: Redevelopment projects which do not use RR techniques, shall use questions 28, 29, 33 and 33a to provide SMPs used, total WQv required and total WQv provided for the project.

30. Indicate the Total RRv provided by the RR techniques (Area/Volume Reduction) and Standard SMPs with RRv capacity identified in question 29.

Total RRv provided

0.205.25 **acre-feet**

31. Is the Total RRv provided (#30) greater than or equal to the total WQv required (#28).

● **Yes** ○ **No**

If Yes, go to question 36.
If No, go to question 32.

32. Provide the Minimum RRv required based on HSG.
[Minimum RRv Required = (P)(0.95)(Ai)/12, Ai=(S)(Aic)]

Minimum RRv Required

. **acre-feet**

32a. Is the Total RRv provided (#30) greater than or equal to the Minimum RRv Required (#32)?

○ **Yes** ○ **No**

If Yes, go to question 33.
Note: Use the space provided in question #39 to summarize the specific site limitations and justification for not reducing 100% of WQv required (#28). A detailed evaluation of the specific site limitations and justification for not reducing 100% of the WQv required (#28) must also be included in the SWPPP.
If No, sizing criteria has not been met, so NOI can not be processed. SWPPP preparer must modify design to meet sizing criteria.

1766089827

33. Identify the Standard SMPs in Table 1 and, if applicable, the Alternative SMPs in Table 2 that were used to treat the remaining total WQv(=Total WQv Required in 28 - Total RRv Provided in 30).

Also, provide in Table 1 and 2 the total <u>impervious</u> area that contributes runoff to each practice selected.

Note: Use Tables 1 and 2 to identify the SMPs used on Redevelopment projects.

33a. Indicate the Total WQv provided (i.e. WQv treated) by the SMPs identified in question #33 and Standard SMPs with RRv Capacity identified in question 29.

WQv Provided

[ ][ ][ ].[ ][ ][ ] **acre-feet**

Note: For the standard SMPs with RRv capacity, the WQv provided by each practice = the WQv calculated using the contributing drainage area to the practice - RRv provided by the practice. (See Table 3.5 in Design Manual)

34. Provide the sum of the Total RRv provided (#30) and the WQv provided (#33a). [ ][ ][ ].[ ][ ][ ]

35. Is the sum of the RRv provided (#30) and the WQv provided (#33a) greater than or equal to the total WQv required (#28)? ○ **Yes** ○ **No**

If Yes, go to question 36.
If No, sizing criteria has not been met, so NOI can not be processed. SWPPP preparer must modify design to meet sizing criteria.

36. Provide the total Channel Protection Storage Volume (CPv) required and provided or select waiver (36a), if applicable.

CPv Required	**CPv Provided**
0 . 20 5. 2 5 **acre-feet**	0 . 20 5. 2 5 **acre-feet**

36a. The need to provide channel protection has been waived because:

○ Site discharges directly to tidal waters or a fifth order or larger stream.

○ Reduction of the total CPv is achieved on site through runoff reduction techniques or infiltration systems.

37. Provide the Overbank Flood (Qp) and Extreme Flood (Qf) control criteria or select waiver (37a), if applicable.

<u>**Total Overbank Flood Control Criteria (Qp)**</u>

Pre-Development	**Post-development**
2 62 .6 4. 4 **CFS**	2 42 .4 8. 8 **CFS**

<u>**Total Extreme Flood Control Criteria (Qf)**</u>

Pre-Development	**Post-development**
6 16 .1 0. 0 **CFS**	5 75 .7 5. 5 **CFS**

37a. The need to meet the Qp and Qf criteria has been waived because:

- ○ Site discharges directly to tidal waters or a fifth order or larger stream.
- ○ Downstream analysis reveals that the Qp and Qf controls are not required

38. Has a long term Operation and Maintenance Plan for the post-construction stormwater management practice(s) been developed?

● Yes ○ No

If Yes, Identify the entity responsible for the long term Operation and Maintenance

Property Owner

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.

4285089826

40. Identify other DEC permits, existing and new, that are required for this project/facility.

- ○ Air Pollution Control
- ○ Coastal Erosion
- ○ Hazardous Waste
- ○ Long Island Wells
- ○ Mined Land Reclamation
- ○ Solid Waste
- ○ Navigable Waters Protection / Article 15
- ○ Water Quality Certificate
- ○ Dam Safety
- ○ Water Supply
- ● Freshwater Wetlands/Article 24
- ○ Tidal Wetlands
- ○ Wild, Scenic and Recreational Rivers
- ○ Stream Bed or Bank Protection / Article 15
- ○ Endangered or Threatened Species(Incidental Take Permit)
- ○ Individual SPDES
- ○ SPDES Multi-Sector GP NYR
- ○ Other
- ○ None

41. Does this project require a US Army Corps of Engineers Wetland Permit? ○ Yes ● No
If Yes, Indicate Size of Impact. .

42. Is this project subject to the requirements of a regulated, traditional land use control MS4? ● Yes ○ No
(If No, skip question 43)

43. Has the "MS4 SWPPP Acceptance" form been signed by the principal executive officer or ranking elected official and submitted along with this NOI? ● Yes ○ No

44. If this NOI is being submitted for the purpose of continuing or transferring coverage under a general permit for stormwater runoff from construction activities, please indicate the former SPDES number assigned. NYR

Owner/Operator Certification

I have read or been advised of the permit conditions and believe that I understand them. I also understand that, under the terms of the permit, there may be reporting requirements. I hereby certify that this document and the corresponding documents were prepared under my direction or supervision. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. I further understand that coverage under the general permit will be identified in the acknowledgment that I will receive as a result of submitting this NOI and can be as long as sixty (60) business days as provided for in the general permit. I also understand that, by submitting this NOI, I am acknowledging that the SWPPP has been developed and will be implemented as the first element of construction, and agreeing to comply with all the terms and conditions of the general permit for which this NOI is being submitted.

Print First Name Spencer

MI

Print Last Name Wilhelm

Owner/Operator Signature

Date __ / __ / ____

P.W. Scott pwscott@pwscott.com
Engineering & Architecture, P.C. www.pwscott.com
3871 Danbury Rd (Route 6) (845) 278-2110
Brewster, NY 10509

November 28, 2023

Ms. Janet Anderson, Planning Board Chairperson
Planning Board Members
Town of Lewisboro
79 Bouton Road
South Salem, NY 10590
planning@lewisborogov.com

Re: 96 Post Office Rd
Amended Site Plan

Dear Ms. Anderson and Planning Board Members,

Please find attached an amended site plan with a 2-story residence as requested. The planter has been reduced in size to reflect the reduced site impervious. There are no longer any impacts in the wetlands due to the structures. There is minor wetland grading on the north side of the project for the well and sediment trap below the driveway. This area will be replanted. The deck to the west is now cantilevered, the deck to the south is on piers. There is no modification required for the septic system approved by WCDOH & NYCDEP.

We request, if at all possible, that the project be presented to the Board at the December meeting to review this alternative. If acceptable, our office will appear in January with the final SWPPP and completed documents for further review. Mr. Bernabo will be attending the meeting in December to discuss the proposed 2-story residence.

Thank you for your attention to this matter.

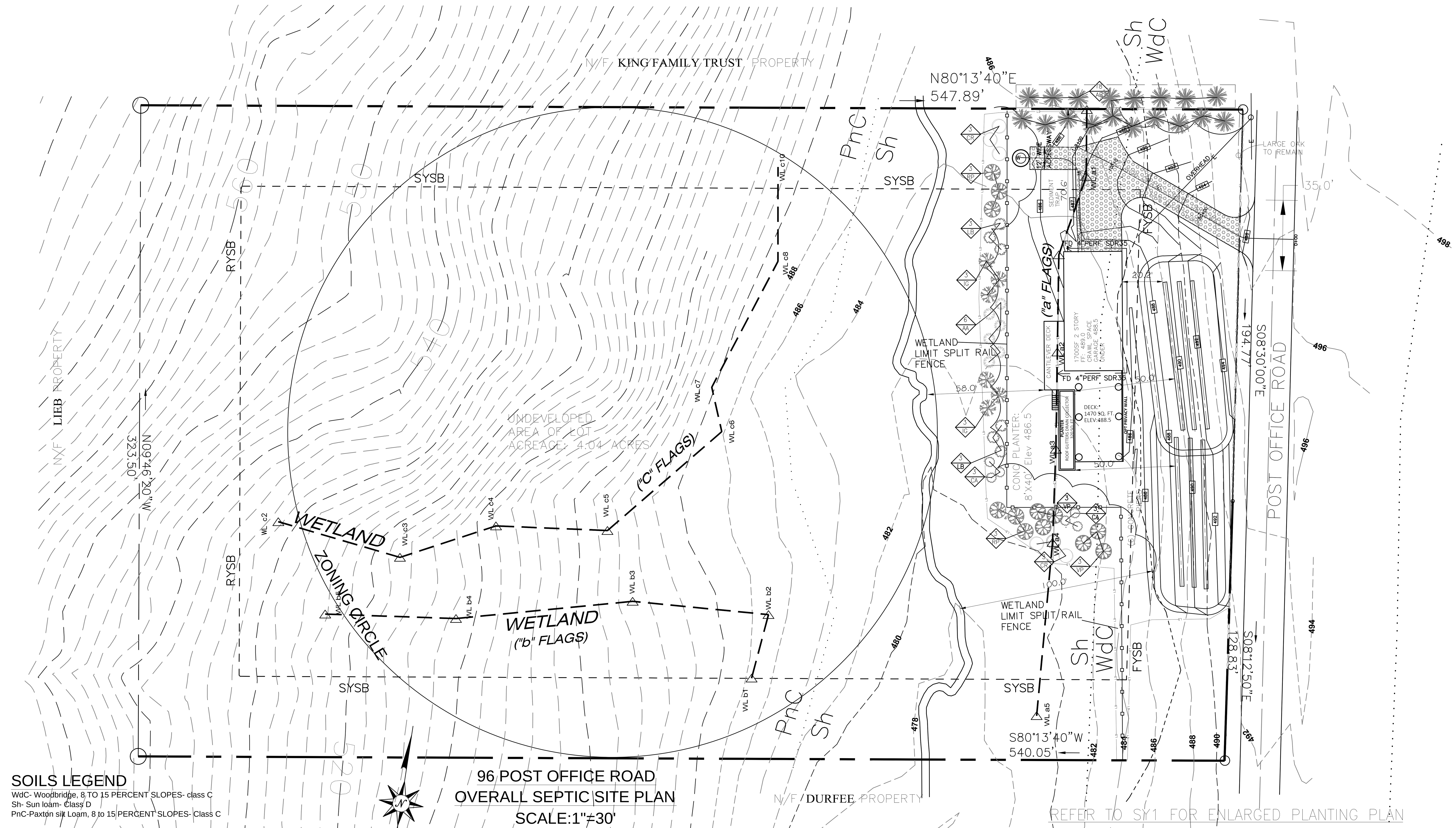
Respectfully submitted.

Peder Scott

Peder Scott, P.E., R.A.
President

Attach

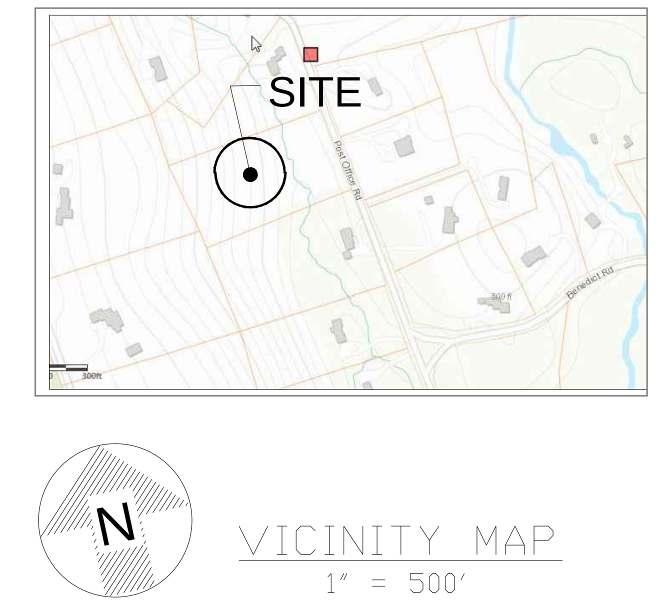
cc: Alex Bernabo, Owner, info@wdesigne.com



SOILS LEGEND

WdC- Woodbridge, 8 TO 15 PERCENT SLOPES- class C
Sh- Sun loam- Class D
PnC-Paxton silt Loam, 8 to 15 PERCENT SLOPES- Class C

96 POST OFFICE ROAD
OVERALL SEPTIC SITE PLAN
SCALE:1"=30'

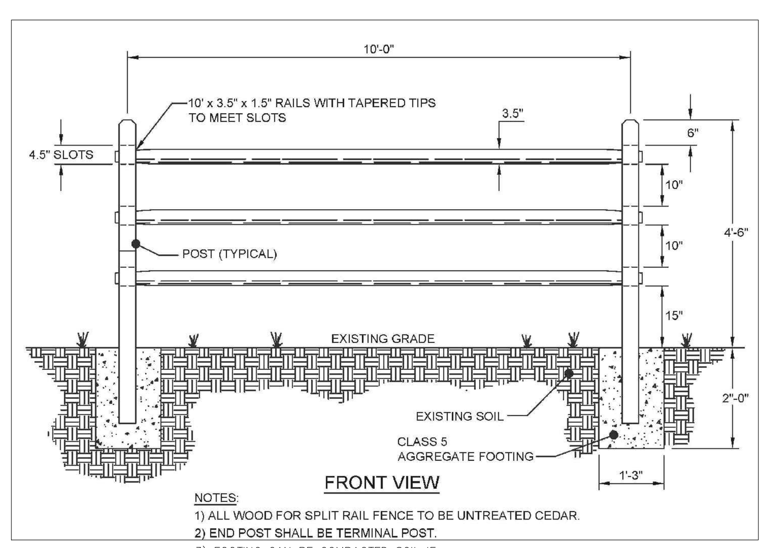


Zoning Tabluation
Zone: RA4

	Required	Proposed
Min. Lot Area:	4.0	4.04
Lot Width (circle ft):	250.0	320.0
Min. Yards		
Front - Street Center Line	75.0	71.3*
Front - Front Lot Line	50.0	54.0
Side Setback:	50.0	78.5
Rear Setback:	50.0	439.14
Max. Building Steel		
Stories	2.5 Stories	2 Story
Feet	35 Feet	28 Feet
Max. Building Coverage:		
House & Planter Footprint:2,020 sf	6.0%	1.10%
Treatment Planter: 320 sf (included in coverage)		
Including Deck: 1500 sf		2.0%

Disturbances Proposed		
Wetland:	.062 acre; 2694 sf	planter & well & grading
Wetland -incl plantings	0.162 acre; 7074 sf	planter & well & grading
Upland areas:	0.462 acre, 20,124 sf	driveway & SSDS Area
Upland areas-incl plantings	0.50 acre; 21780 sf	driveway & SSDS Area

		5/30/2023	9/20/2023	11/27/2023
CS	COVER SHEET	✓	✓	✓
SY1	IRSP EROSION CONTROL PLAN	✓	✓	
SY2	CONCRETE PLANTER DETAILS	✓	✓	
SY3	DRIVEWAY DETAILS		✓	
SY4	TREE PRESERVATION PLAN		✓	
SP1	SEPTIC PLAN - NEW CONSTRUCTION	✓	No change	No change
D1	DRAINAGE OVERLAYS		✓	



1/CS WETLAND SPLIT RAIL FENCE DETAIL
N.T.S.

NOTES: All wetland buffer planting shall be contained within Deer Fence for a duration of THREE (3) years minimum.
Provide a single 3.0 ft opening for access to property.

WETLAND IMPACT MITIGATION

THE EXISTING PROPERTY, SIMILAR TO THE ADJACENT PROPERTIES ALONG POST OFFICE RD., CONTAINS LOCAL WETLANDS ON THE REAR OF THE PROPERTY. THE SUBJECT LOT IS THE LAST VACANT LOT OF THIS SUBDIVISION APPROVED IN THE LATE 1970'S. THE WETLANDS INCLUDE A STREAM COURSE, AS NOTED ON THE SITE PLAN, WHICH IS NOT NYSDEC REGULATED. THE WETLANDS CONSIST OF A HEAVILY WOODED SITE WITH AN UNDERSTORY OF SYMPLOCARPUS FOETIDUS (SKUNK CABBAGE) AND IS IN GOOD CONDITION. ACCORDINGLY, SITE MITIGATION FOR THE DISTURBANCES IS PROPOSED AS FOLLOWS:

1. SPLIT RAIL FENCE ALONG THE EDGE OF THE LOT DISTURBANCE TO PREVENT ENTRY INTO THE WETLAND.
2. PERMANENT STONE OUTLET SEDIMENT TRAP TO TREAT ANY DRIVEWAY DRAINAGE.
3. CONCRETE PLANTER TO TREAT BUILDING ROOF RUNOFF IN COMPLIANCE WITH NYCDEP & NYSDEC IRSP.
4. BUFFER PLANTS ARE PROPOSED BEYOND THE SPLIT RAIL FENCE AS ON THE CHART PROVIDED, FOR AN AREA OF 0.13 ACRES.
5. SINCE THESE PLANTS ARE WITHIN THE WETLAND, A REPLACEMENT OF 1/1 (.20 ACRES) REPLACEMENT OF WETLAND PLANTS IS NOT FEASIBLE. UPLAND AREAS ON THE WEST SIDE OF THE LOT WILL REQUIRE DISTURBANCES FOR ACCESS, THEREFOR OFFSITE WETLAND MITIGATION IS PROPOSED OR THE REMOVAL OF INVASIVE BARBERRY PLANTS ACROSS THE SITE (2 ACRES PLUS)

WATERCOURSE BUFFER NOTES

1. REMOVE BROKEN LIMBS AND DEBRIS FROM THE WATERCOURSE.
2. CLEAN UP THE BUFFER AREA TO A WIDTH OF 15' ON EACH SIDE OF THE WATERCOURSE.
3. INSTALL FERNS AND SHRUBS AS NOTED ON THE PLAN.
4. OVER-SEED THE FILTER STRIP AREA WITH A CONSERVATION GRASS SEED MIX.
5. MULCH THE ENTIRE AREA WITH WEED FREE STRAW.
6. SURROUND NEW PLANTINGS WITH DEER FENCING FOR 3 YEARS TO ALLOW GROWTH OF PLANTS.

Stream Buffer Plants

SYM	Quant.	Botanical Name	Common Name	Caliper/Cont.	Spacing
Shrubs					
AA	6	*Amelanchier arborea*	Common serviceberry	2 gal.	5'
CA	6	*Clethra alnifolia*	Sweet pepperbush	2 gal.	5'
CR	6	*Cornus racemosa*	Gray dogwood	2 gal.	6'
IG	6	*Ilex glabra*	Inkberry	2 gal.	8'
LB	6	*Lindera benzoin*	Spicebush	2 gal.	6'
RP	6	*Rhododendron periclymenoides*	Pinkster azalea	2 gal.	8'
VP	6	*Vaccinium pallidum*	Blue Ridge blueberry	2 gal.	8'
	42				

SUPPLEMENTAL PLANTINGS

THE PLANTINGS SHALL BE INSPECTED AND SUPPLEMENTAL PLANTINGS ADDED AFTER TWO YEAR GROWING PERIOD IF 85% COVERAGE IS NOT ACHIEVED WITH THE PLANTINGS NOTED ABOVE. THE PERMITTEE SHALL TAKE ALL NECESSARY STEPS TO ENSURE A LEVEL OF SURVIVAL AND REPLANT AND REGRADE WITH TOPSOIL, IF NECESSARY.

EXACT LOCATION OF THE PROPOSED PLANTS SHALL BE COORDINATED WITH EXISTING FOLIAGE AND TREES TO ENSURE THAT MINIMAL DISTURBANCE TAKES PLACE WITH EXISTING VEGETATION

Visual Buffer Plants

SYM	Quant.	Botanical Name	Common Name	Caliper/Cont.	Spacing
Trees					
AB	10	*Arborvitae- Thuja*	Green Giant Arborvitae	2" (8 feet)	12'

L E G E N D

QUANTITY / SPECIES
PLANT SYMBOLS
DEER FENCING ADJACENT TO SPLIT RAIL FENCE

L E G E N D

PL — — PL	PROPERTY LINE
468	EXISTING CONTOUR
× 463.3	EXISTING SPOT ELEVATION
(472)	PROPOSED CONTOUR
HP	HIGH POINT IN GRADE
X (463.3)	PROPOSED SPOT ELEVATION
PT#	PERCOLATION TEST HOLE
DT#	DEEP TEST HOLE
	WETLAND SPLIT RAIL FENCE
RD/FD	ROOF AND FOOTING DRAIN
	SOIL BOUNDARY
SF	SILT FENCE
	EXISTING CATCH BASIN
	PROPOSED SWALE
W	WATER LINE
	EXISTING WELL
	STREAM 100' SETBACK LINE
WL##	WETLAND LINE

PROPERTY IDENTIFICATION

OWNER: ALEX BERNABO
wDESIGNE, INC.

ADDRESS: 3867 DANBURY ROAD
BREWSTER NY 10509

E911 # : 96 POST OFFICE ROAD, LEWISBORO

LEWISBORO T.M. SHEET 25 BLOCK 10812 LOT 3

PROPERTY ADDRESS: 96 POST OFFICE ROAD
LEWISBORO, NY 10590

NYC DEP WATERSHED: CROSS RIVER BASIN

AREA OF HOUSE
PROPOSED: 2600 SF+ 600SF GARAGE
BEDROOMS: 2 BEDROOM

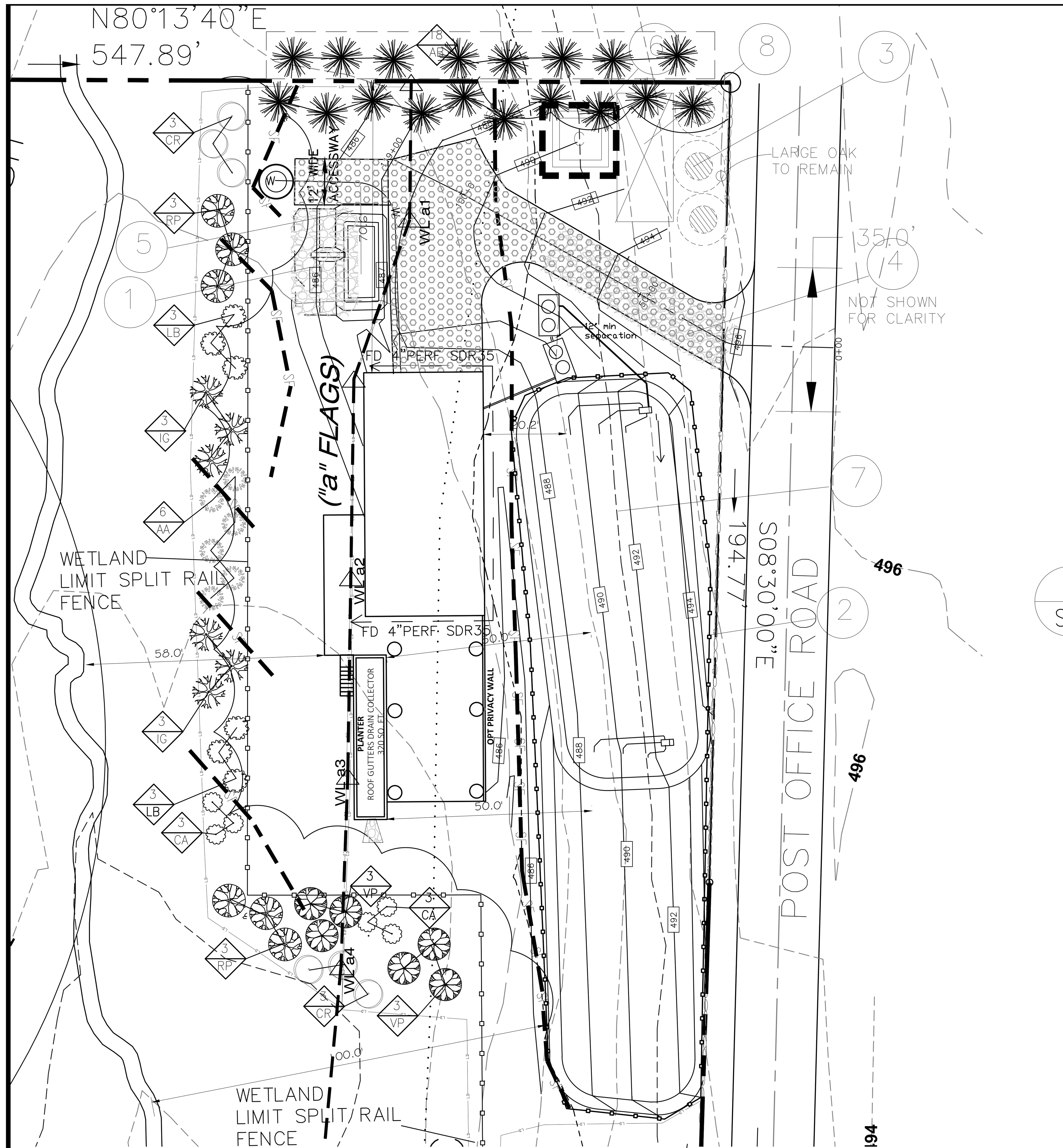
NOTE: DO NOT SCALE DRAWINGS
DIMENSIONS SUPERCEDE SCALE

P. W. SCOTT
ENGINEERING & ARCHITECTURE, P.C.
3871 ROUTE 6
BREWSTER, NY 10509 845-278-2110

Revisions

No.	Date	Description
A	8/16/23	REVISED PER TE MEMO
B	9/20/23	REVISED PER TE MEMO
C	11/27/23	2 STORY HOUSE OPTION

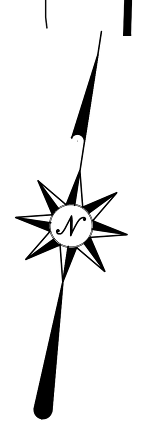
Dwg. Title: COVER SHEET
Project Title: 96 POST OFFICE ROAD LEWISBORO, NY
Proj. No. 21-110
Drawn by MA/PWS
Date 5/25/23
Scale AS NOTED
Seal
Dwg. No. CS

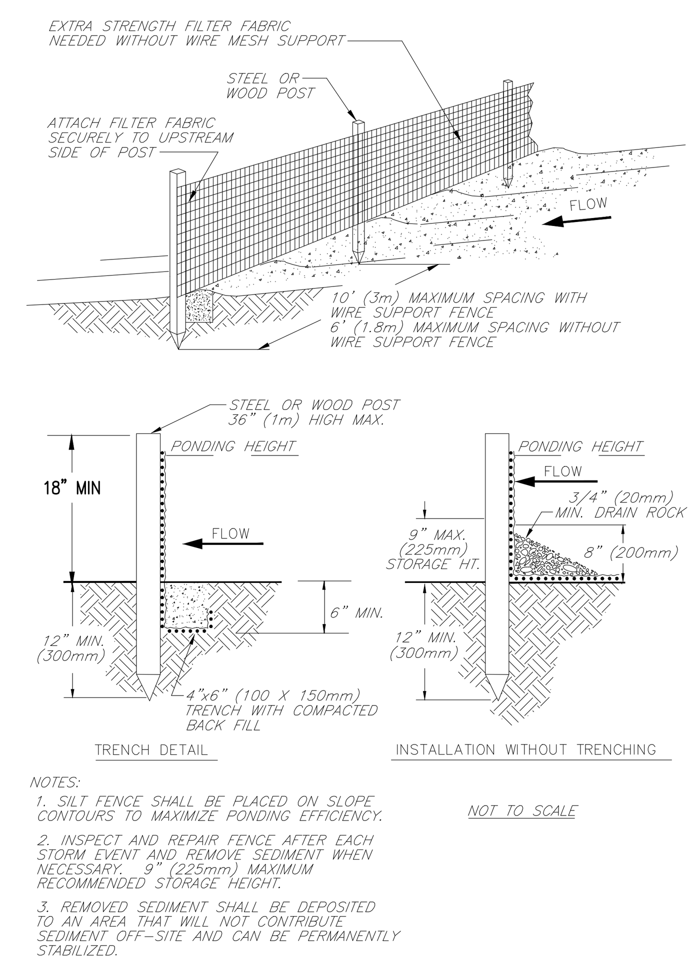


EXPANDED SITE PLAN

SCALE:1"=20'

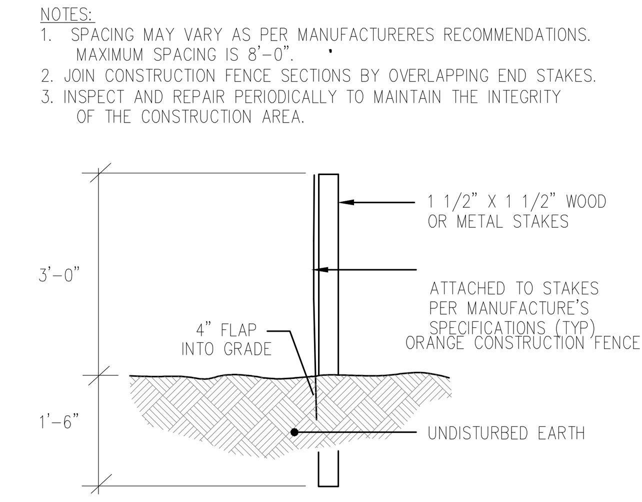
Reference the Cover Sheet CS for lot geometry and setbacks





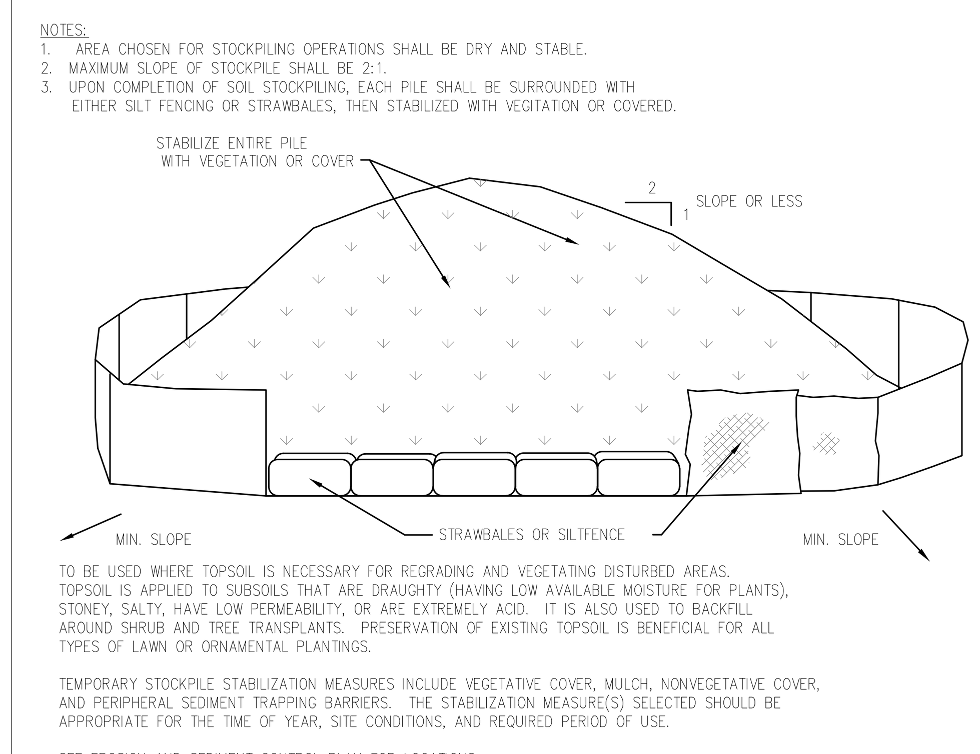
1 SY1 SILT FENCE- STANDARD ONLY

N.T.S.



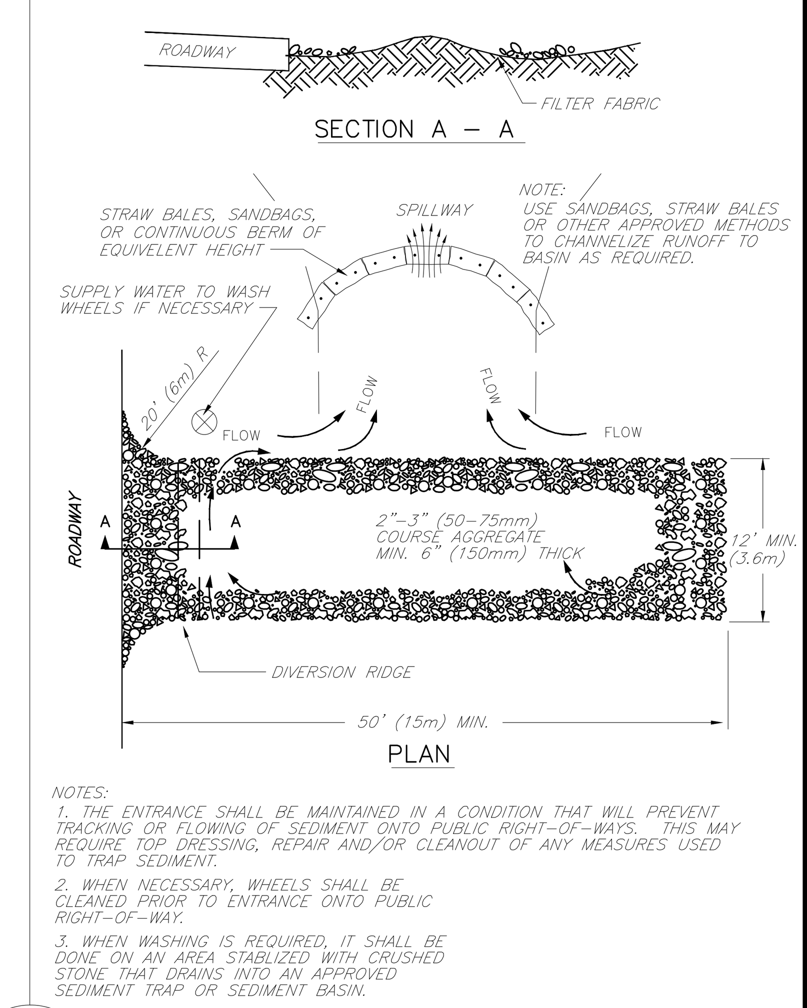
2 SY1 CONSTRUCTION FENCE

N.T.S.



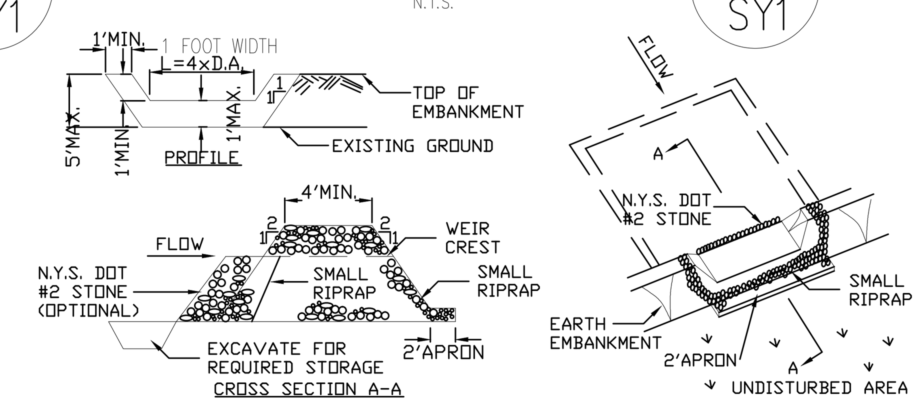
3 SY1 SOIL STOCKPILE

N.T.S.



4 SY1 CONSTRUCTION ENTRANCE

N.T.S.



OPTION: A ONE FOOT LAYER OF N.Y.S. DOT #2 STONE MAY BE PLACED ON THE UPSTREAM SIDE OF THE RIPRAP INPLACE OF THE EMBEDDED FILTER CLOTH.

CONSTRUCTION SPECIFICATIONS

1. AREA UNDER EMBANKMENT SHALL BE CLEARED, GRUBBED AND STRIPPED OF ANY VEGETATION AND ROOT MAT. THE POOL AREA SHALL BE CLEARED.
2. THE FILL MATERIAL FOR THE EMBANKMENT SHALL BE FREE OF ROOTS AND OTHER WOODY VEGETATION AS WELL AS OVER-SIZED STONES, ROCKS, ORGANIC MATERIAL OR OTHER OBJECTIONABLE MATERIAL. THE EMBANKMENT SHALL BE COMPACTED BY TRAVERSING WITH EQUIPMENT WHILE IT IS BEING CONSTRUCTED.
3. ALL CUT AND FILL SLOPES SHALL BE 2:1 OR FLATTER.
4. THE STONE USED IN THE OUTLET SHALL BE SMALL RIPRAP 4"-8" ALONG WITH A 1' THICKNESS OF 2" AGGREGATE PLACED ON THE UP-GRADE SIDE ON THE SMALL RIPRAP OR EMBEDDED FILTER CLOTH IN THE RIPRAP.
5. SEDIMENT SHALL BE REMOVED AND TRAP RESTORED TO ITS ORIGINAL DIMENSIONS WHEN THE SEDIMENT HAS ACCUMULATED TO 1/2 THE DESIGN DEPTH OF THE TRAP.
6. THE STRUCTURE SHALL BE INSPECTED AFTER EACH RAIN AND REPAIRS MADE AS NEEDED.
7. CONSTRUCTION OPERATIONS SHALL BE CARRIED OUT IN SUCH A MANNER THAT EROSION AND WATER POLLUTION IS MINIMIZED.
8. THE STRUCTURE SHALL BE REMOVED AND THE AREA STABILIZED WHEN THE DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.

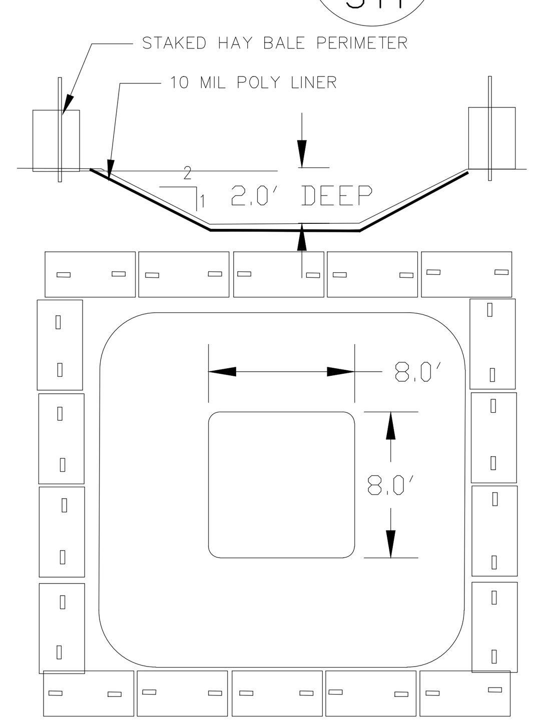
MAXIMUM DRAINAGE AREA 5 ACRES

STONE OUTLET SEDIMENT TRAP CHART

TRAP #	LOCATION	DRAINAGE AREA	REQ'D VOL (CF)	OUTLET WIDTH	DEPTH	TOP DIMENSION L WIDTH W
1	DRIVEWAY	0.10	360	1.0 FEET	3.0	12x25

VOL= .4 AREA (DEPTH)

5 SY1



Maintenance

- All concrete washout facilities shall be inspected daily. Damaged or leaking facilities shall be deactivated and repaired or replaced immediately. Excess rainwater that has accumulated over hardened concrete should be pumped to a stabilized area, such as a grass filter strip.
- Accumulated hardened material shall be removed when 75% of the storage capacity of the structure is filled. Any excess wash water shall be pumped into a containment vessel and properly disposed of off-site.
- Dispose of the hardened material off-site in a construction/demolition landfill. On-site disposal may be allowed if this has been approved and accepted as part of the projects SWPPP. In that case, the material should be recycled as specified, or buried and covered with a minimum of 2 feet of clean compacted earth fill 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.

6 SY1

SITE PREPARATIONS: LIME PH TO 6.0
FERTILIZER: WITH 800#/ACRE OF 5-10-10 PER ACRE;(20#/1000 SF)

TOP SOIL: 2% WEIGHT FINE TEXTURE ORGANICS
NOT LESS THAN #200 SIEVE, NOT MORE THAN 15% CLAY
FREE OF STONES:1&1.5", LESS THAN 10% GRAVEL
SOLUABLE SALTS LESS THAN 500 PPM.

APPLY: 5 INCHES MINIMUM
MULCH PER SPECIFICATIONS

TEMPORARY SEEDINGS:

SEEDING REQUIRMENTS: RYE GRASS @30#/ACRE(0.7#/1000 SF.)
WINTER CONDITION: CERTIFIED 'aroostook' winter rye(cereal rye) @100 #/acre; (2.5#/1000 sf)
required for november/october seeding

PERMANENT SEEDINGS:

ROUGH OR OCCASSIONALLY MOWED:

EMPIRE BIRDSFOOT @ 8#/ACRE; .20#/1000 SF.
TREFOIL OR COMMON WHITE CLOVER
TALL FESCUE @ 20#/ACRE; .45#/1000 SF.
REDTOP @ 2#/ACRE; .05#/1000 SF.

FREQUENTLY MOWED: SHADY DRY SITES

65% FINE FESCUE @ 140#/ACRE; .3.3#/1000 SF.
15% PERRENIAL RYE @ 33#/ACRE; .0.7#/1000 SF.
20% BLUE GRASS BLEND @ 44#/ACRE; .1.0#/1000 SF.

SEEDING SPECIFICATIONS

SITE PREPARATIONS:

RAKE OUT ROCKS ON THE SURFACE, REMOVE ANY WOOD STOCKPILE BEYOND AREA DISTURBANCE FOR DISPOSAL

JUTE NETTING

UNDYED, UNBLEACHED PLAINWEAVE WARP:78 END/YD.

APPLICATION RATE: 48" X 50 YDS./1000 SF.(60#ROLL/ACRE)
DEPTH APPLICATION: 60 SG. YDS.
TIE DOWN PER MANUFACTURERS SPECIFICATIONS.

BEST COMBINATION: FIBERS

STRAW(SMALL GRAINED) MULCH
APPLICATION RATE: 2 TONS (90#S/1000 SF.)
ANCHOR WITH: WOOD FIBER MULCH(HYDRO-MULCH)
APPLICATION RATE: 500-750#/ACRE(11#/1000 SF.)
THE WOOD FIBER MUST BE APPLIED THROUGH HYDRO-SEEDER IMMEDIATELY AFTER MULCHING.

ANCHORING:

MULCH NETTING: HAY OR STRAW: STAPLE:LIGHT-WEIGHT JUTE

MULCH SPECIFICATIONS

7 SY1

EROSION CONTROL LEGEND

NO.	SYMBOL	DESCRIPTION	STATUS
1	SF SF	SILT FENCE	TEMPORARY SEE DET. 1/SY1 PLACE PARALLEL TO GRADE-CONTOURS
2		CONSTRUCTION FENCE	AROUND EDGE SEPTIC FILL: SEE DET.2/SY1
3		TOPSOIL STOCKPILE AREA	TEMPORARY SEE DET. 3/SY1 RING WITH SILT FENCE
4		CONSTRUCTION ENTRANCE	TEMPORARY SEE DET. 4/SY1 PLACE @ EA. POINT OF ENTRY INTO SITE
5		STONE OUTLET SEDIMENT TRAP	PERMANENT SEE DET. 5/SY1
6	C	CONCRETE PUMP OUT TRAP	TEMPORARY SEE DET. 6/SY1
7		SEED & MULCH SPECIFICATIONS	TEMPORARY SEE DET. 7/SY1
8		STORAGE AREA	
9	LD	LIMIT OF DISTURBANCE	

Maintenance Schedule – During Construction – Temporary Structures

–	Component	MINIMUM Inspection Required	After Every Storm Event	Item to Inspect	Sediment Removal Req'd	Special Inspection Items **Inspect the following:**	Maintenance and Sediment Removal
1	Silt Fence	Bi-Weekly	X	Woven Wire Fence Alignment	Yes	Woven Wire & Fence Stability	Remove material when a "bulge" develops, ensure fence extends into soil and fence upright, staple fencing
2	Construction Fence	Bi-Weekly		Fence Woven Wire Conditions	None	Fence posts and grid	Fix fence up right and staple as required to ensure integrity.
3	Topsoil Stockpile Area	Bi-Weekly	X	Soil Pile Condition	None	Silt Fence at Base of Pile to be inspected and seeding reviewed.	Remove material when a "bulge" develops, ensure fence extends into soil and fence is upright, staple fencing
4	Construction Entrance	Weekly	X	Stone Placement	None	Stone Placement & soil deposit between stones	Repair Top Dressing with additional aggregate and correct stone placement.
5	Stone Outlet Sediment Trap	Bi-Weekly	X	Stone Placement & Location	Yes	Stone & Sediment Accumulation	Bi-weekly, remove sediment, set stones to correct profile, fix berm blow-outs
6	Concrete Pump Out	Monthly	X	Soil Stability	None	Once filled topsoil, seed & mulch	Due to the downhill proximity of the well, it is recommended to remove the concrete off-site once curred

SEQUENCE OF CONSTRUCTION

This narrative describes the erosion and sediment controls proposed for this project, discusses the construction sequence and states the requirements for inspection and maintenance of the erosion and sediment controls. The plan has been designed in accordance with the State of New York "2016 Standards and Specifications for Erosion and Sediment Control."

The sequences provided include anticipated start dates, which are predicated on municipal and state agency approvals.

INTRODUCTION

1. Pre-application meeting with Town of Lewisboro Town Engineer/MS4 Agent, Contractor & Engineer and NYCDEP for IRSP for project scheduling and final plan coordination. There are no NYSDEC wetlands, wetland approval on local basis.
2. File NYSDEC NOI Forms with start dates
3. E.O.R. to complete NYSDEC inspections twice/week per NOI permit.

GENERAL SPECIFICATIONS

4. Surveyor to locate limits of house, planter, septic & driveway and the limit of disturbance line prior to construction..
5. Cut trees and clear - leave stumps in place.
6. Install erosion control devices including erosion control fence. Refer to Sheet SY2
7. Install construction fence around septic area as noted.
8. Remove topsoil and stockpile as noted.
9. Contractor to verify elevation at planter and limits of building (cut & fill) E.O.R. to verify with site visit.
10. Install stone outlet sediment trap on hillside below driveway to collect runoff from driveway construction.
11. Excavate driveway and stabilize with Item #4 due to slope.
12. Stump the lot with access established for trucks picking up stumps.
13. Install concrete pump out pit adjacent to driveway
14. Install footings for residence & planter
15. Extend power to house site
16. Pour house walls & planter walls, allow sleeves for water, sewer out, and electrical, and propane lines.
17. Install concrete wall, waterproof and backfill
18. Install well by creating concrete gravel pad, install silt fence and install pump out pit for water test.
19. Remove concrete collected in the pump out pit and remove off site.
20. Install septic tanks and pump chamber. Install fill for septic and mechanically compact. Cut in trenches - D-Boxes for primary only. Complete as-built inspections with E.O.R.
21. Spread 6 in to 12 in topsoil, seed and mulch
22. Clean out stone outlet sediment trap
23. Leave stone ring in place as permanent sediment collection point.
24. Complete final utility connection. Electrical overhead or underground per Contractor.
25. Construct wood deck with sono tube piers as footings, poured in cardboard forms.
26. Once deck is complete, complete soil filling of concrete planter per specs. Connect roof leaders to planter (residence has flat roof pitching to rear and common leaders). Ensure overflows are functional in wall perimeter. Install plants between March 15th and June 15th; September 15th to October 15th . Water weekly as required if rainstorms not imminent within one week. Include planting of the northern buffer plants.
27. When entire site is stabilized with grass cover, remove silt fence.
28. Schedule MS4 Inspection with Town of Lewsiboro
29. File NOT with NYSDEC.

Project complete

REFER TO SHEET SY2 FOR EROSION CONTROL NOTES

TEMPORARY & PERMANENT MAINTENANCE IMPLEMENTATION

THE REQUIRED PARTIES RESPONSIBLE FOR FOR THE IMPLEMENTATION OF STORMWATER FACILITY INSPECTION AND AND MAINTENANCE PROGRAM CONSISTS OF THE LAND OWNER DURING & AFTER CONSTRUCTION:

OWNER: ALEX BERNABO
wDESIGNE, INC.

ADDRESS: 3867 DANBURY ROAD
BREWSTER NY 10509

EMAIL: info@wdesigne.com

TELE #: (914)-906-1336

ALL SITE WORK SHALL BE COMPLETED UNDER THE DIRECT SUPERVISION OF A LICENSED ENGINEER IN THE STATE OF NEW YORK.

NOTE: DO NOT SCALE DRAWINGS DIMENSIONS SUPERCEDE SCALE

P. W. SCOTT
ENGINEERING & ARCHITECTURE, P.C.
3871 ROUTE 6
BREWSTER, NY 10509 845-278-2110

Revisions

No.	Date	Description
A	5/8/23	REVISE PER WCDOH 5/8/23 MEMO
B	8/16/23	REVISED PER TE MEMO
C	9/20/23	REVISED PER TE MEMO
D	11/27/23	2 STORY HOUSE OPTION

Dwg. Title IRSP EROSION CONTROL PLAN

Project Title 96 POST OFFICE ROAD, LEWISBORO,NY

Proj. No. 21-110

Drawn by MA/PWS

Date 3/30/23

Scale AS NOTED

Seal

Dwg. No. SY1

Stream Buffer Plants

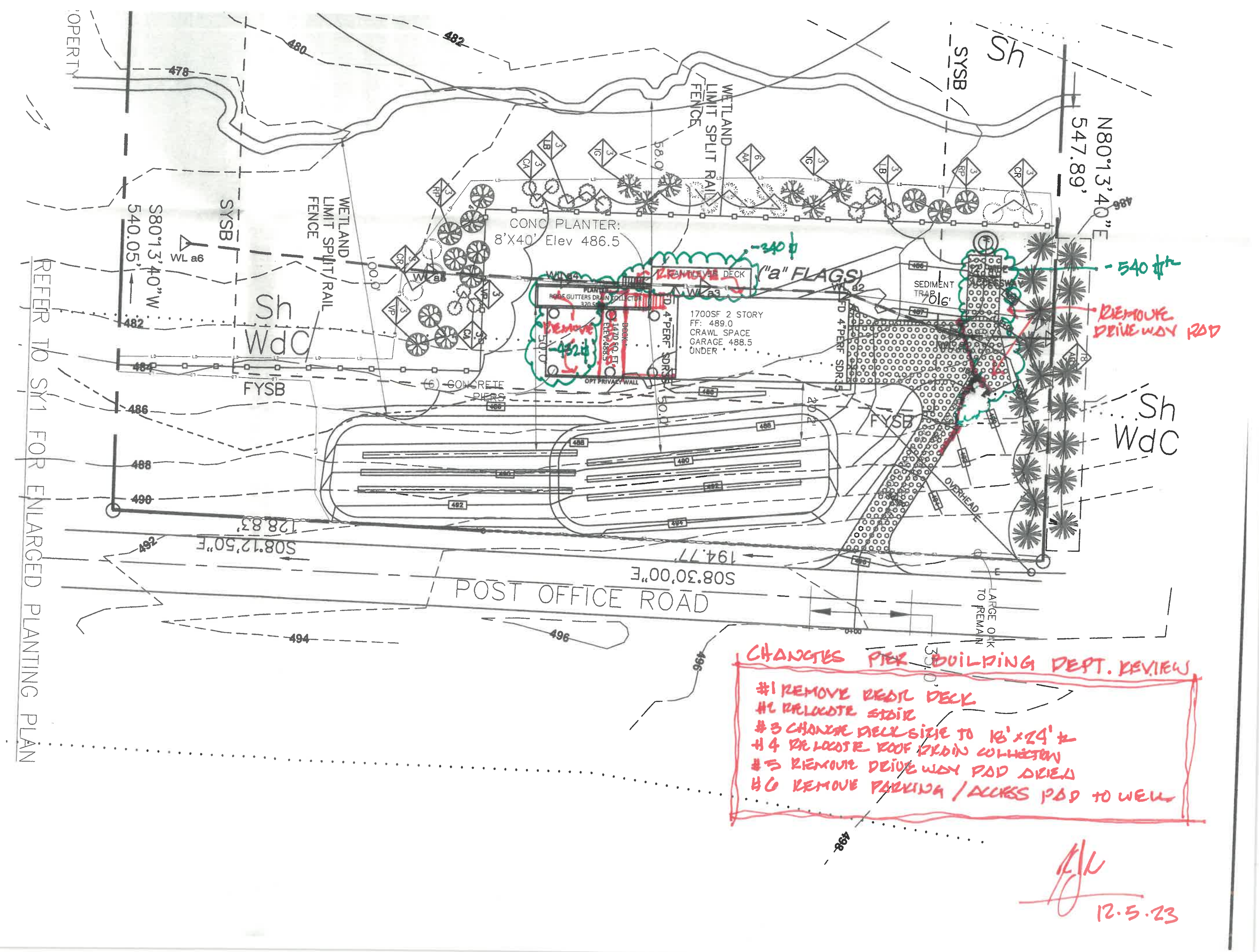
SYM	Quant.	Botanical Name	Common Name	Caliper/Cont.	Spacing
Shrubs					
AA	6	Amelanchier arborea	Common serviceberry	2 gal.	5'
CA	6	Clethra alnifolia	Sweet pepperbush	2 gal.	5'
CR	6	Cornus racemosa	Gray dogwood	2 gal.	6'
IG	6	Ilex glabra	Inkberry	2 gal.	8'
LB	6	Lindera benzoin	Spicebush	2 gal.	6'
RP	6	Rhododendron periclymenoides	[illegible]	2 gal.	6'

LEGEND

QUANTITY / SPECIES

PLANT SYMBOL

DEER FENCING



P.W. Scott | pwscott@pwscott.com
Engineering & Architecture, P.C. | www.pwscott.com
3871 Danbury Rd (Route 6) | (845) 278-2110
Brewster, NY 10509

December 6, 2023

Kevin J. Kelly, RA
Building Inspector, Code Enforcement Officer
Town of Lewisboro
79 Bouton Road
South Salem, NY 10590
kkelly@lewisborogov.com
Planning@lewisborogov.onmicrosoft.com

Re: 96 Post Office Rd
Response to BI Comments of 12/5/23 forwarded by Planning Board

Dear Kevin,

The following is in response to the your review email dated December 5, 2023 forwarded to us by the PB.

A. Well Pad Removal: In lieu of Grasscrete we need gravel to the well. We could place it on geotechnical fabric (Typar 3400) and once the well is drilled remove the gravel and fabric to original.

B. We need a backup area past the driveway in order to complete a k-turn – minimum 10 ft – could be made narrower.

C. With regards to the rear deck of 340 sf, this is cantilevered and is 9" ± in the air. Finish is 1¼ x 6 decking so water would extend to grade/wetland area.

Please accept this letter for the file.

With regards,

Peder Scott

Peder Scott, P.E., R.A.
President

cc: Alex Bernabo, Owner, info@wdesigne.com

P.W. Scott	pwscott@pwscott.com
Engineering & Architecture, P.C.	www.pwscott.com
3871 Danbury Rd (Route 6)	(845) 278-2110
Brewster, NY 10509	

December 12, 2023

Ms. Janet Anderson, Planning Board Chairperson
Planning Board Members
Town of Lewisboro
79 Bouton Road
South Salem, NY 10590
planning@lewisborogov.com

Re: 96 Post Office Rd

Dear Ms. Anderson and Planning Board Members,

Attached is a revised site plan in response to the Building Inspector for the December meeting. The plans have been revised based upon input from the Building Inspector to minimize any encroachments into the wetlands.

The following is a comparison to the 11/27/23 submission:

1. Reduced Grasscrete to 1,950 (-512 sf). None in wetland
2. Removed the Grasscrete to well, gravel shall be used only for truck entry to well site and can be removed upon well completion.
3. Reduced deck to 980 sf (-660 sf).
4. Planter remains at 320 sf - size based upon roof size - the only impervious component on site. Note: Planter must be 50.0 ft from the septic trenches as noted on the site plan.
5. House footprint remains at 1,700 sf x 2 stories including the garage.
6. SSDA – No change with this amendment.
7. There is a cantilevered deck remaining along the west side of the residence, which is 10 feet above the wetland area, with deck spacing to allow water drainage to below. This is for egress to the deck.

   Net reduction of disturbance: 1,172 sf

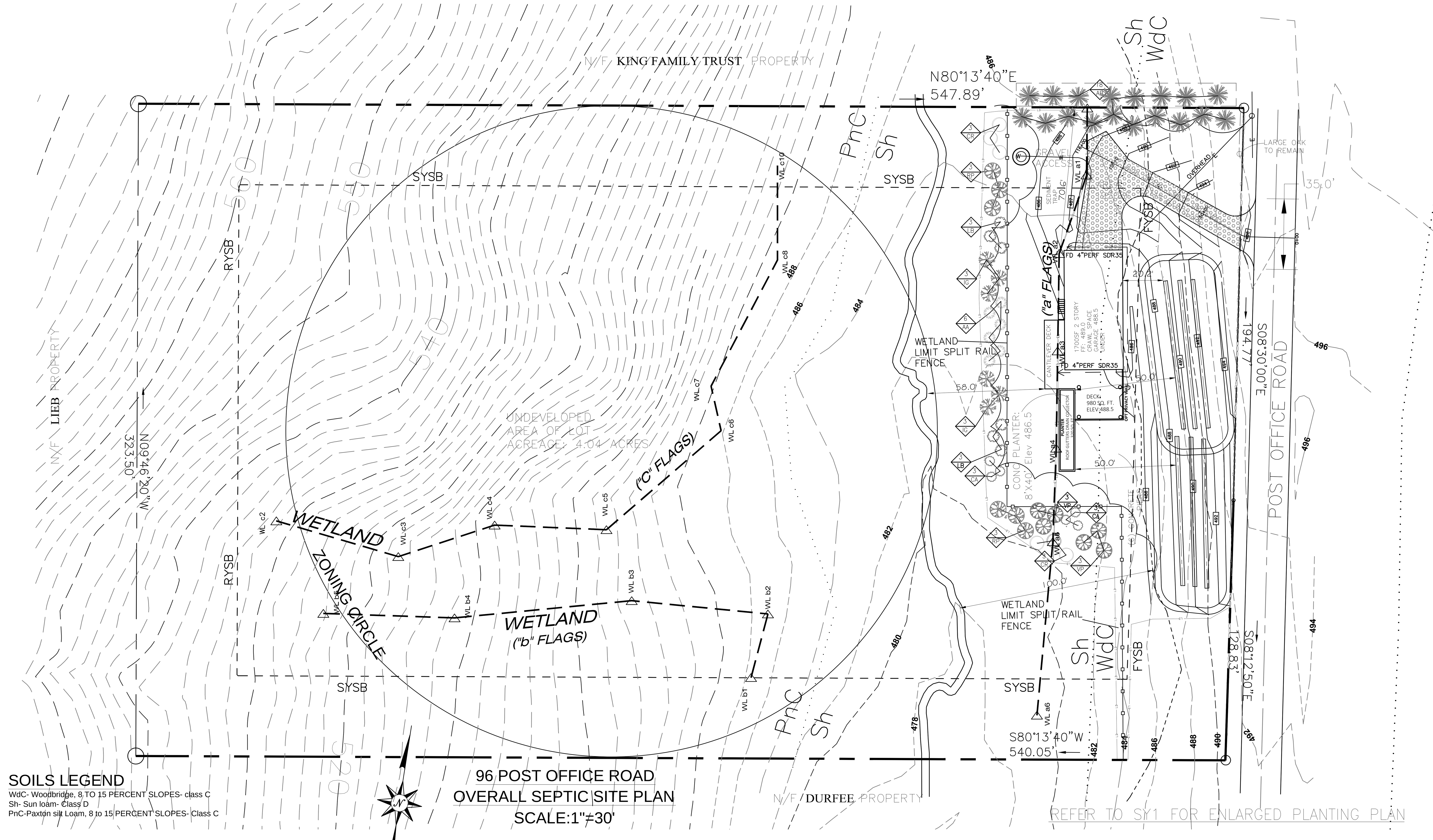
Please accept this site plan for discussion with the Owner. Three dimensional renderings of the house and architecture shall be presented for review at the meeting.

With regards,

Peder Scott

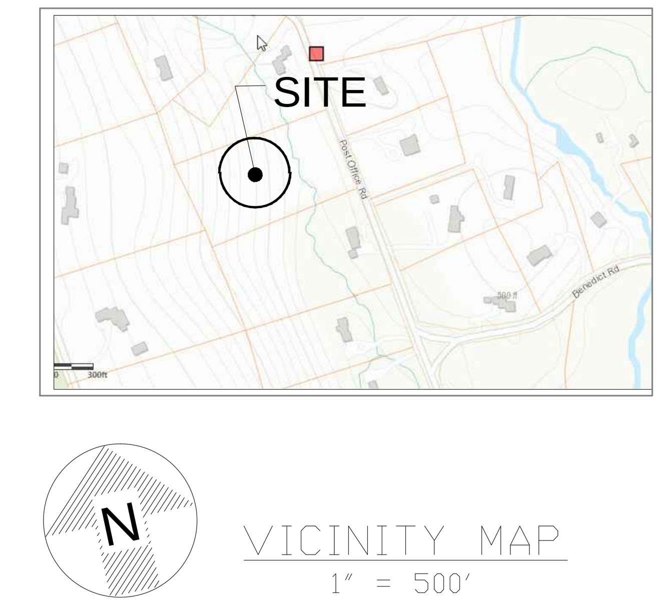
Peder Scott, P.E., R.A.
President

Attach



96 POST OFFICE ROAD
OVERALL SEPTIC SITE PLAN
SCALE:1"=30'

REFER TO SY1 FOR ENLARGED PLANTING PLAN



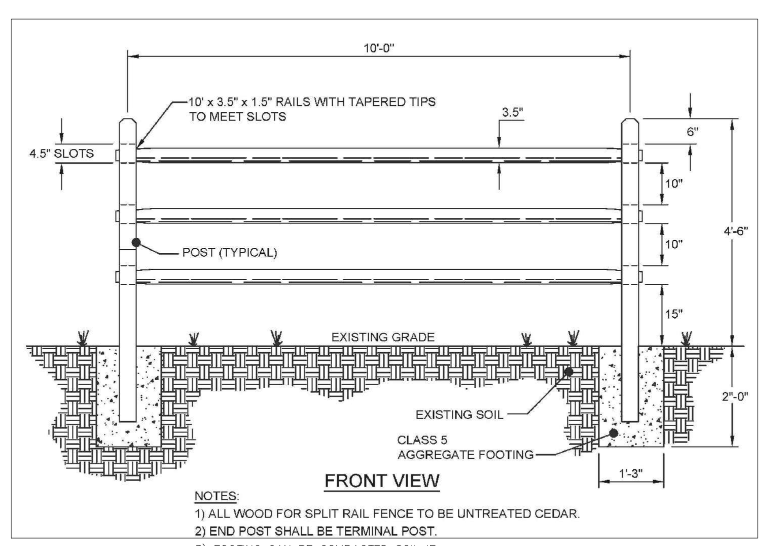
VICINITY MAP
1" = 500'

Zoning Tabluation
Zone: RA4

	Required	Proposed
Min. Lot Area:	4.0	4.04
Lot Width (circle ft):	250.0	320.0
Min. Yards		
Front - Street Center Line	75.0	71.3*
Front - Front Lot Line	50.0	54.0
Side Setback:	50.0	78.5
Rear Setback:	50.0	439.14
Max. Building Steel		
Stories	2.5 Stories	2 Story
Feet	35 Feet	28 Feet
Max. Building Coverage:		
House & Planter Footprint:2,020 sf	6.0%	1.10%
Treatment Planter: 320 sf (included in coverage)		
Including Deck: 1500 sf		2.0%

Disturbances Proposed			
Wetland:	.062 acre; 2694 sf	planter & well & grading	
Wetland -incl plantings	0.162 acre; 7074 sf	planter & well & grading	
Upland areas:	0.462 acre, 20,124 sf	driveway & SSDS Area	
Upland areas-incl plantings	0.50 acre; 21780 sf	driveway & SSDS Area	

SOILS LEGEND
WdC- Woodbridge, 8 TO 15 PERCENT SLOPES- class C
Sh- Sun loam- Class D
PnC-Paxton silt Loam, 8 to 15 PERCENT SLOPES- Class C



1 CS WETLAND SPLIT RAIL FENCE DETAIL
N.T.S.

NOTES: All wetland buffer planting shall be contained within Deer Fence for a duration of THREE (3) years minimum.
Provide a single 3.0 ft opening for access to property.

WETLAND IMPACT MITIGATION

THE EXISTING PROPERTY, SIMILAR TO THE ADJACENT PROPERTIES ALONG POST OFFICE RD., CONTAINS LOCAL WETLANDS ON THE REAR OF THE PROPERTY. THE SUBJECT LOT IS THE LAST VACANT LOT OF THIS SUBDIVISION APPROVED IN THE LATE 1970'S. THE WETLANDS INCLUDE A STREAM COURSE, AS NOTED ON THE SITE PLAN, WHICH IS NOT NYSDEC REGULATED. THE WETLANDS CONSIST OF A HEAVILY WOODED SITE WITH AN UNDERSTORY OF SYMPLOCARPUS FOETIDUS (SKUNK CABBAGE) AND IS IN GOOD CONDITION. ACCORDINGLY, SITE MITIGATION FOR THE DISTURBANCES IS PROPOSED AS FOLLOWS:

1. SPLIT RAIL FENCE ALONG THE EDGE OF THE LOT DISTURBANCE TO PREVENT ENTRY INTO THE WETLAND.
2. PERMANENT STONE OUTLET SEDIMENT TRAP TO TREAT ANY DRIVEWAY DRAINAGE.
3. CONCRETE PLANTER TO TREAT BUILDING ROOF RUNOFF IN COMPLIANCE WITH NYCDEP & NYSDEC IRSP.
4. BUFFER PLANTS ARE PROPOSED BEYOND THE SPLIT RAIL FENCE AS ON THE CHART PROVIDED, FOR AN AREA OF 0.13 ACRES.
5. SINCE THESE PLANTS ARE WITHIN THE WETLAND, A REPLACEMENT OF 1/1 (.20 ACRES) REPLACEMENT OF WETLAND PLANTS IS NOT FEASIBLE. UPLAND AREAS ON THE WEST SIDE OF THE LOT WILL REQUIRE DISTURBANCES FOR ACCESS, THEREFOR OFFSITE WETLAND MITIGATION IS PROPOSED OR THE REMOVAL OF INVASIVE BARBERRY PLANTS ACROSS THE SITE (2 ACRES PLUS)

WATERCOURSE BUFFER NOTES

1. REMOVE BROKEN LIMBS AND DEBRIS FROM THE WATERCOURSE.
2. CLEAN UP THE BUFFER AREA TO A WIDTH OF 15' ON EACH SIDE OF THE WATERCOURSE.
3. INSTALL FERNS AND SHRUBS AS NOTED ON THE PLAN.
4. OVER-SEED THE FILTER STRIP AREA WITH A CONSERVATION GRASS SEED MIX.
5. MULCH THE ENTIRE AREA WITH WEED FREE STRAW.
6. SURROUND NEW PLANTINGS WITH DEER FENCING FOR 3 YEARS TO ALLOW GROWTH OF PLANTS.

Stream Buffer Plants

SYM	Quant.	Botanical Name	Common Name	Caliper/Cont.	Spacing
Shrubs					
AA	6	*Amelanchier arborea*	Common serviceberry	2 gal.	5'
CA	6	*Clethra alnifolia*	Sweet pepperbush	2 gal.	5'
CR	6	*Cornus racemosa*	Gray dogwood	2 gal.	6'
IG	6	*Ilex glabra*	Inkberry	2 gal.	8'
LB	6	*Lindera benzoin*	Spicebush	2 gal.	6'
RP	6	*Rhododendron periclymenoides*	Pinkster azalea	2 gal.	8'
VP	6	*Vaccinium pallidum*	Blue Ridge blueberry	2 gal.	8'
	42				

SUPPLEMENTAL PLANTINGS

THE PLANTINGS SHALL BE INSPECTED AND SUPPLEMENTAL PLANTINGS ADDED AFTER TWO YEAR GROWING PERIOD IF 85% COVERAGE IS NOT ACHIEVED WITH THE PLANTINGS NOTED ABOVE. THE PERMITTEE SHALL TAKE ALL NECESSARY STEPS TO ENSURE A LEVEL OF SURVIVAL AND REPLANT AND REGRADE WITH TOPSOIL, IF NECESSARY.

EXACT LOCATION OF THE PROPOSED PLANTS SHALL BE COORDINATED WITH EXISTING FOLIAGE AND TREES TO ENSURE THAT MINIMAL DISTURBANCE TAKES PLACE WITH EXISTING VEGETATION

Visual Buffer Plants

SYM	Quant.	Botanical Name	Common Name	Caliper/Cont.	Spacing
Trees					
AB	10	*Arborvitae- Thuja*	Green Giant Arborvitae	2" (8 feet)	12'

L E G E N D

QUANTITY
SPECIES
PLANT SYMBOLS
DEER FENCING ADJACENT TO SPLIT RAIL FENCE

		5/30/2023	9/20/2023	11/27/2023
CS	COVER SHEET	✓	✓	✓
SY1	IRSP EROSION CONTROL PLAN	✓	✓	
SY2	CONCRETE PLANTER DETAILS	✓	✓	
SY3	DRIVEWAY DETAILS		✓	
SY4	TREE PRESERVATION PLAN		✓	
SP1	SEPTIC PLAN - NEW CONSTRUCTION	✓	No change	No change
D1	DRAINAGE OVERLAYS		✓	

PROPERTY IDENTIFICATION

OWNER: ALEX BERNABO
wDESIGNE, INC.

ADDRESS: 3867 DANBURY ROAD
BREWSTER NY 10509

E911 # : 96 POST OFFICE ROAD, LEWISBORO

LEWISBORO T.M. SHEET 25 BLOCK 10812 LOT 3

PROPERTY ADDRESS: 96 POST OFFICE ROAD
LEWISBORO, NY 10590

NYC DEP WATERSHED: CROSS RIVER BASIN

AREA OF HOUSE
PROPOSED: 2600 SF+ 600SF GARAGE
BEDROOMS: 2 BEDROOM

L E G E N D

PROPERTY LINE	ROOF AND FOOTING DRAIN
EXISTING CONTOUR	SOIL BOUNDARY
EXISTING SPOT ELEVATION	SILT FENCE
PROPOSED CONTOUR	EXISTING CATCH BASIN
HIGH POINT IN GRADE	PROPOSED SWALE
PROPOSED SPOT ELEVATION	WATER LINE
PERCOLATION TEST HOLE	EXISTING WELL
DEEP TEST HOLE	STREAM 100' SETBACK LINE
WETLAND SPLIT RAIL FENCE	WETLAND LINE

NOTE: DO NOT SCALE DRAWINGS DIMENSIONS SUPERCEDE SCALE

P. W. SCOTT
ENGINEERING & ARCHITECTURE, P.C.
3871 ROUTE 6
BREWSTER, NY 10509 845-278-2110

Revisions

No.	Date	Description
A	8/16/23	REVISED PER TE MEMO
B	9/20/23	REVISED PER TE MEMO
C	11/27/23	2 STORY HOUSE OPTION
D	12/11/23	RESPONCE BUILDING INSPECT

Dwg. Title: COVER SHEET
Project Title: 96 POST OFFICE ROAD LEWISBORO, NY
Proj. No. 21-110
Drawn by MA/PWS
Date 5/25/23
Scale AS NOTED
Seal
Dwg. No. CS

From: Janet Andersen
To: Ciorsdan Conran
Subject: Fwd: Fwd: 96 Post Office Road
Date: Friday, November 24, 2023 11:15:53 AM

A public comment letter.

Jan

-------- Forwarded Message --------
Subject: Fwd: 96 Post Office Road
Date: Fri, 24 Nov 2023 09:51:22 -0500
From: John Wolff <jawlbcac@gmail.com>
To: Jan Johannessen <jjohannessen@kelses.com>, Janet Andersen <ja.lewisboro@gmail.com>, kkelly@lewisborogov.com

FYI, from one of the neighbors.

---------- Forwarded message ---------
From: **Peter Aupperle** <peteraupperle@yahoo.com>
Date: Wed, Nov 22, 2023 at 1:08 PM
Subject: Re: 96 Post Office Road
To: cac1chair@lewisborogov.com <cac1chair@lewisborogov.com>

Hi Mr. Wolff - I hope that your relatives in Buffalo made it safely to your home to celebrate Thanksgiving!

It was a pleasure speaking with you after the Planning Board meeting yesterday evening, and I was hoping that I could ask you a
question about the lot next door to us.

We were told by neighbors that have lived here a very long time that the lot repeatedly failed the Perc Test, which is one reason why it was deemed Unbuildable.

The engineer that is representing the Owner has stated that he has documentation that the property recently passed the Perc test, but was that test Witnessed by the appropriate Official?

Please see the photos below taken from the second floor of our home, that show at least two large "ponding areas" on the vacant lot - the property line is right where our lawn ends. This was just from Wednesday's rain.

Also note how these ponding areas are closer to Post Office Road than the stream and wetlands, directly where the proposed new house would be built. You can see the stream and Post Office Road in the photos.

You mentioned that you have a good relationship with the new head of the Building Department. Would it be possible to ask him about the veracity/proof of the Perc test that the engineer performed for the Owner?

Thank you most sincerely in advance. Your support in this matter is greatly appreciated!

Best regards,
Peter Aupperle
92 Post Office Road
914-325-3703

--
www.lewisborotreeordinance.com

John

John Wolff

TOWN OF LEWISBORO
Westchester County, New York

Planning Board
79 Bouton Road
South Salem, New York 10590

Tel: (914) 763-5592
Fax: (914) 875-9148
Email: planning@lewisborogov.com

November 18, 2022

Honorable Tony Goncalves, Supervisor and
Members of the Town Board
Town of Lewisboro
11 Main Street
South Salem, New York 10590

Re: Application of Smith Ridge Associates
920 Oakridge Commons -
"Villas at Vista"
(P.B. Cal. #12-22 PB & #36-22 WP)

Dear Supervisor Goncalves and Members of the Town Board:

The Planning Board has received a formal application from Smith Ridge Associates, owner of Oakridge Commons, seeking site development plan approval and a wetland permit for proposed modifications to these premises. In sum, the application proposes the conversion of existing commercial space into eight (8) new dwelling units and the construction of six (6) new townhouses on the Oakridge Commons site.

A prior application, which was granted by the Planning Board, authorizes the conversion of commercial space within Oakridge Commons into four (4) new dwelling units. Consequently, the application now before the Planning Board, coupled with this prior approval, entails eighteen (18) new dwellings (comprised of two (2) two-bedroom units and sixteen (16) three-bedroom units). These residential units are located within and are proposed to be serviced by the Oakridge Water District.

The Planning Board will, as it must, evaluate this application under the Town Code and SEQRA. As it undertakes this review process, a threshold question is presented – namely, will the Oakridge Water District extend service connections to these new residential units? This question likewise applies to potential connections to Oakridge Sewer District wastewater services. If an impediment to these service connections exists, the Planning Board and the applicant may, in fact, be embarking upon an empty exercise.

Accordingly, the Planning Board has authorized me, as its Chair, to submit this letter to the Town Board, which is responsible for management, maintenance, operation and repair of Oakridge Water District and Oakridge Sewer District facilities. Specifically, I have been authorized to solicit the Town Board's position as to whether service connections for these units will be provided by the Oakridge Water and Sewer Districts.

In making this inquiry, the Planning Board is mindful of the November 10, 2022 Memorandum prepared by Joseph M. Cermele, P.E., CFM of Kellard Sessions, which addresses the capacity of the Oakridge Water District Treatment Plant. Moreover, the Planning Board has received written comments from Town residents expressing concerns as to the impact of the proposed residential units upon both water capacity and the quality of water supplied by the Oakridge Water District to its consumers.

Again, the Planning Board seeks a response from the Town Board to facilitate its review of this application and avoid a commitment of resources toward a project that, absent these service connections, will not go forward.

On behalf of the Planning Board, I thank the Town Board for its consideration of this request.

Respectfully submitted,

Janet Andersen cc

Janet Andersen, Chair

cc: Gregory Folchetti, Esq.

TOWN OF LEWISBORO
OFFICE OF THE SUPERVISOR

SUPERVISOR@LEWISBOROGOV.COM
(914) 763-3151
WWW.LEWISBOROGOV.COM

TOWN OF LEWISBORO
11 MAIN STREET
P.O. BOX 500
SOUTH SALEM, NEW YORK 10590

ANTONIO GONÇALVES, SUPERVISOR

December 1, 2023

Janet Andersen, Chair
Town of Lewisboro Planning Board
79 Bouton Road
South Salem, New York 10590

Re: Application of Smith Ridge Associates
920 Oakridge Commons – Villas at Vista
(P.B. Cal. #12-22 PB & #36-22 WP)

Dear Janet,

The Town Board is in receipt of the correspondence from the Planning Board dated 11/18/2022 with respect to the application of Smith Ridge Associates. Any issues or questions which are presented with respect to the capacity of the Oakridge Water District and Sewer District, to either provide the supply of potable water and/or for the treatment of wastewater and generated by the proposed application are strictly within the purview of the Planning Board.

As stated in the Planning Board correspondence dated 11/18/22, the Planning Board is mindful of the November 10, 2022 Memorandum prepared by Joseph M. Cermele of Kellard Sessions where it was concluded that there is adequate capacity in the water treatment facility to serve the project as proposed. Any additional professional guidance desired on these issues may be provided by a consultant engaged by the Planning Board. The Town Board will be taking no action with respect to this matter.

Sincerely,

Tony Goncalves

Tony Goncalves, Town Supervisor

Cc: Gregory Folchetti, Esq
Members of the Town Board

TOWN OF RIDGEFIELD
Planning and Zoning Commission

RECEIVED BY

DEC 1 1 2023

Town Clerk
Town of Lewisboro

December 06, 2023

Janet Donahue, Town Clerk
Town House, 11 Main Street
P.O. Box 500
South Salem, NY 10590

Re: Referral under Section 8-7d of the Connecticut General Statutes: Application for Amendment to Section 2.2; 3.3 and 3.3-Family Day care and Child Daycare Per PA 23-142

Dear Ms. Donahue:

Per Section 8-7d of the Connecticut General Statutes, "the zoning commission, planning commission, zoning and planning commission…shall notify the clerk of any adjoining municipality of the pendency of any application, petition, appeal, request or plan concerning any project on any site in which… any portion of the property affected by a decision of such commission, board or agency is within five hundred feet of the boundary of the adjoining municipality". Per Section 8-7d, "such notice shall be made by certified mail, return receipt requested, and shall be mailed *within seven days* of the date of receipt of the application, petition, request or plan."

This letter is to inform you, that on December 05, 2023, the Town of Ridgefield Planning and Zoning Commission (Commission) statutorily received the following Commission initiated amendments **A-23-6-** Section 2.2; 3.3 and 3.3-Family Day care and Child Daycare Per PA 23-142

Please reference the attached material and access to our online permitting system for Amendment Application A-23-6-Section 2.2; 3.3 and 3.3-Family Day care and Child Daycare Per PA 23-142:
https://ridgefieldct.portal.opengov.com/records/94399

Public hearings on the proposed amendment will be held on Tuesday, January 16, 2024, at 7:00 p.m. via hybrid model at the Ridgefield, Town Hall Annex, 66 Prospect St., Ridgefield CT 06877 or registering in advance for the webinar at below link:
https://us02web.zoom.us/webinar/register/WN_-Wjc5QmJQP2BDuCKxRm4lQ

If you need additional information, please contact me at 203-431-2767.

Very truly yours,

Alice Dew
Director, Planning and Zoning

CERTIFIED MAIL: 7022 1670 0002 8151 1807

cc: Janet Donahue, Town Clerk
Subject File

PROPOSED ZONING REGULATION TEXT AMENDMENT TO PERMIT FAMILY DAY CARE HOMES AND GROUP DAY CARE HOMES AS OF RIGHT IN RESIDENTIAL ZONING DISTRICTS AS REQUIRE BY PUBLIC ACT 23-142

2. DEFINITIONS

2.2. Defined Terms

"DAY CARE" RELATED TERMS

Day Care - A program of supplementary care provided to one or more persons on a regularly recurring, but part-time basis, in a place other than the recipient's own dwelling.

Day Care Center - As defined in CGS 19a-77, as may be amended:
(*A facility ... which offers or provides a program of supplementary care to more than twelve related or unrelated children outside their own homes on a regular basis.) [2006]*

Family Child ~~Day~~ Care Home - ~~As defined in CGS 19a-77, as may be amended:~~
~~(*A facility ... which consists of a private family home caring for not more than six children, including the provider's own children not in school full time ...). [2006]*~~ consists of a private family home providing care for:

A.
- (i) not more than six children, including the provider's own children not in school full time, without the presence or assistance of an assistant or substitute staff member approved by the Commissioner of Early Childhood, pursuant to section 19a-87b of the Connecticut General Statutes, present and assisting the provider; or
- (ii) not more than nine children, including the provider's own children, with the presence and assistance of such approved assistant or substitute staff member; and

B. not less than three or more than twelve hours during a twenty-four-hour period and where care is given on a regularly recurring basis, except that care may be provided in excess of twelve hours, but not more than seventy-two consecutive hours, to accommodate a need for extended care or intermittent short-term overnight care. During the regular school year, for providers described in subparagraph (A)(i) of this subdivision, a maximum of three additional children who are in school full time, including such provider's own children, shall be permitted, except that if such provider has more than three children who are such provider's own children and in school full time, all of such provider's own children shall be permitted. During the summer months when regular school is not in session, for providers described in subparagraph (A)(i) of this subdivision, a maximum of three additional children who are otherwise enrolled in school full time shall be permitted if there is such an approved assistant or substitute staff member present and assisting such provider, except that:
- (i) if such provider has more than three such additional children who are such provider's own children, all of such provider's own children shall be permitted; and
- (ii) such approved assistant or substitute staff member shall not be required if all of such additional children are such provider's own children;

c. A Family Child Care Home shall be licensed by the State and comply with sections 19a-77 to 19a-79a, or sections 19a-82 to 19a-87a, of the Connecticut General Statutes, as amended.

Group Child ~~Day~~ Care Home - ~~As defined in CGS 19a-77, as may be amended: (*A facility …which offers or provides a program of supplementary care to not less than seven nor more than twelve related or unrelated children on a regular basis.) [2006]*~~ offers or provides a program of supplementary care to:

A. Not less than seven or more than twelve related or unrelated children on a regular basis; or
B. that meets the definition of a family child care home except that it operates in a facility other than a private family home.
C. A Group Child Care Home shall be licensed by the State and comply with sections 19a-77 to 19a-79a, or sections 19a-82 to 19a-87a, of the Connecticut General Statutes, as amended.

3. RESIDENTIAL (R) ZONES

3.2. Principal Uses and Structures

B. PERMITTED WITH ZONING PERMIT (ZEO)

2. **Group Home -** A group home as defined in these Regulations.
3. Family Child Care Home or Group Child Care Home located in a residence and licensed by the State of Connecticut.

D. PERMITTED BY SPECIAL PERMIT (COMMISSION)

~~**7. Day Care (Children) -** A day care center provided that:~~

~~a. off-street parking and loading requirements shall comply with the applicable provisions of these regulations; and~~
~~b. there shall be safe and adequate provision for boarding and off boarding children from vehicles without hazard to pedestrians and traffic. Such provision shall be made on the lot where the facilities are located and without use of any part of the public street right-of-way for turning; and~~
~~c. lot size, building size, setbacks and lot coverage conform to those applicable to the zoning district; and~~
~~d. the use shall be located in a building on a lot having such size, shape, landscaping, screening, outdoor play yard space and parking so as to provide for the health and safety of the children using the facility; and~~
~~e. no area for active recreation may be located in a front yard or within ten (10) feet of a property line. A sight-obscuring and impermeable wall or fence of at least five (5) feet in height shall be installed along the entire perimeter of all recreation areas. In addition to such walls or fences, an exterior landscape buffer of at least five (5) feet in width shall be planted and maintained along the entire perimeter of any recreation areas. Buffering shall also meet the applicable requirements of these regulations; and~~
~~f. if the center is not located in a single use, freestanding building, the center must be adequately sound insulated so as to guard against noise interference with neighboring uses; and~~
~~g. the Commission shall specify the limit of the maximum number of people to be cared for and, in determining the maximum number of people permitted at the center, the Commission may consider the number of sessions per day and the impact of the overlap of two (2) or more~~

~~sessions on the neighborhood; and~~

~~h. all exterior lighting shall comply with the requirements of Section 7.8 of these Regulations.~~

~~**8. Day Care (Adult) -** A facility providing day-time care for adults provided that it shall comply with the applicable standards of Subsection 3.2.C.7of these Regulations, unless exempted under the Connecticut General Statutes~~.

3.3. Accessory Uses

A. PERMITTED WITHOUT ZONING PERMIT

4. Family Child ~~Day~~ Care ~~(Children)~~ - Family child ~~day~~ care home accessory to a single-family dwelling.

C. PERMITTED BY SPECIAL PERMIT (COMMISSION)

~~**2. Day Care (Children)** - A group day care home operated in a residential single family dwelling by the resident of the dwelling provided that:~~

~~a. lot size, building setbacks, and lot coverage conform to those applicable to the zoning district; and~~

~~b. signage, if any, will conform to the requirements of Section 7.2; and~~

~~c. there shall be safe and adequate provision for boarding and offboarding people from vehicles; and~~

~~d. a safe on-site vehicular turnaround or separate entrance and exit points must be provided; and~~

~~e. no area for active play or play structures may be located in a front yard or within ten (10) feet of a property line. A sight-obscuring and childproof wall or fence of at least five (5) feet in height shall be installed along the entire perimeter of all play areas. In addition to such walls or fences, an exterior landscape buffer of at least five (5) feet in height shall be planted and maintained along the entire perimeter of any play areas; and~~

~~f. the site must be landscaped in a manner compatible with adjacent residences. The Commission retains the right to require additional screening and landscaping; and~~

~~g. no alterations that will alter the residential character of an existing residential structure used for a group day care home is permitted. Any new or remodeled structure must be designed to be compatible with the residential character of the surrounding neighborhood; and~~

~~h. if the proposed group day care home is within one-thousand (1,000) feet of another currently operating group day care home, the Commission may approve the application only if it determined that the cumulative effects will not have an adverse impact on the neighborhood due to traffic, noise and safety; and~~

~~i. no group day care home shall be located on a shared or common driveway or accessway used by two or more residences or premises including that of the applicant; and~~

~~j. the applicant must show that the traffic congestion resulting from the operation of the group day care home will not impair the public health, safety and welfare; and~~

~~k. all exterior lighting shall comply with the requirements of Section 7.8 of these Regulations.~~

~~**3. Day Care (Children)** - A day care center accessory to a permitted use provided that it complies with the requirements of Subsection 3.2.C.7 of these Regulations.~~

4. ~~**Day Care (Adult) -** Day care for adults when accessory to a single-family dwelling.~~

~~**5. Day Care (Adult)** - A facility, accessory to a permitted use, providing day-time care for adults provided that it shall comply with the applicable standards of Subsection 3.2.C.7 of these Regulations.~~