New York State
Parks, Recreation and
Historic Preservation

Agency 1290000

PROJECT MANUAL

TA-JJ-2023-001
JOHN JAY HOMESTEAD: SITE AND BUILDING ENHANCEMENTS
JOHN JAY HOMESTEAD STATE HISTORIC SITE

BID PROPOSALS FOR THE FOLLOWING CONTRACT(S):
D006292 GENERAL CONTRACT
VOLUME 5 of 6

Are Due via email at:
12:30 PM
on
October 8, 2024

Bid proposals will be opened exclusively via Webex at:
1:00 PM
on
October 8, 2024

Webex Link at attend:

https://meetny.webex.com/meetny/j.php?MTID=m40b9689c6ed92a60ec352816a046e233

Contact Persons:	Senior Architect	Amanda Tucker / 518.807.1884
	Architectural Conservator	Erin Maroney / 518.268.2173
	Capital Facility Manager	Garrett Jobson / 845.889.3840
	Contract Administrator	Tammy Murray / 518.474.3831
	Contract Administrator	Magen Bauer / 518.474.3258

Technical Specifications Volume 3 of 3

for

JOHN JAY HOMESTEAD SITE AND BUILDING ENHANCEMENTS

John Jay Homestead
400 Jay Street
Katonah, New York

Prepared for:

New York State Office of Parks, Recreation and Historic Preservation
Taconic Region

by:

Beyer Blinder Belle Architects & Planners LLP
New York, NY

100% CD SUBMISSION

5 June 2024

CLIENT

New York State Parks, Office of Parks
Recreation & Historic Preservation (NYSOPRHP)
625 Broadway
Albany NY 12207

NYSOPRHP Taconic Region
PO Box 308- 9 Old Post Road
Staatsburg, NY 12580

CONSULTANTS

ARCHITECT, PRIME

Beyer Blinder Belle, Architects and Planners, LLP
120 Broadway, 20th Floor
New York, NY 10271

STRUCTURE ENGINEERING

Thornton Tomasetti
120 Broadway, 15th Floor,
New York, NY 10271

MEP / FP / IT Engineering

Landmark Facilities Group
252 East Avenue
Norwalk, Ct 06855

CIVIL ENGINEERING

CHA Consulting, Inc.
575 Broadway, Suite 301,
Albany, NY 12207

LANDSCAPE ARCHITECT

Rhodeside Harwell Landscape Architecture
347 West 36th Street, Suite 1201
New York, NY 10018

LIGHTING ENGINEERING

HLB Lighting
38 East 32nd Street, 11th Floor
New York, NY 10016

SIGNAGE

LVCK - A Beyer Blinder Belle Studio
120 Broadway, 20th Floor,
New York, NY 10271

HAZARDOUS MATERIALS

Matrix New World Engineering
20 West 37th Street, 12th Fl
New York, NY 10018

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ABBREVIATIONS

Parks	New York State Office of Parks, Recreation and Historic Preservation	Division 1
BBB	Beyer Blinder Belle, Architects & Planners, LLP	Architect
TT	Thornton Tomasetti	Structure Engineering
LFG	Landmark Facilities Group	MEP / IT / FP Engineering
CHA	CHA Consulting, Inc.	Civil Engineering
RHI	Rhodeside Harwell Landscape Architecture	Landscape Architect
HLB	HLB Lighting	Lighting Engineering
LVCK	LVCK – A Beyer Blinder Belle Studio	Signage
Matrix	Matrix New World Engineering	Hazardous Materials

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APPENDIX 7

Stormwater Pollution Prevention Plan – May 2024

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STORMWATER POLLUTION PREVENTION PLAN

John Jay Homestead
Site and Building Enhancements
400 Jay Street
Katonah, New York

CHA Project Number: 080675.000

May 2024

Prepared for:
New York State Parks, Recreation and Historic Preservation Taconic Region
9 Old Post Road, PO Box 308
Staatsburg, NY 12580

Prepared by:
CHA Consulting, Inc.
III Winners Circle
Albany, New York 12205
Phone: (518) 453-4500

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1.0 PROJECT INFORMATION

Project Name and Location	Owner Name and Address
John Jay Homestead Site and Building Enhancements 400 Jay Street Katonah, New York	NYS OPRHP Taconic Region 9 Old Post Road, PO Box 308 Staatsburg, NY 12580

2.0 PROJECT DESCRIPTION

2.1 Purpose and Extent of Proposed Development

This Stormwater Pollutions Prevention Plan (SWPPP) has been prepared in accordance with the design guidelines and criteria presented in the State Pollutant Discharge Elimination System (SPDES) General Permit for Construction Activities (GP-0-20-001), Chapter 9: Redevelopment Activity and Chapter 10: Enhanced Phosphorus Removal Supplement of the New York State Stormwater Management Design Manual (January 2015), the New York State Standards and Specifications for Erosion and Sediment Control (July 2016), and Rules and Regulations for the Protection from Contamination, Degradation and Pollution of the New York City Water Supply and Its Sources (November 29, 2019) Section 18-39(b)(4).

The proposed project site is located at 400 Jay Street (John Jay Homestead State Historic Site) in Katonah, Westchester County, New York (see Figure 1 – Site Location Map). The John Jay Homestead State Historic Site is an approximately 62-acre site comprised of 10 buildings, including the original 1787 John Jay House, barns, visitor center, access roads, stone walls, and wooded areas throughout the site. Existing wetland areas and a small pond are located to the south and east of the project site. NYS Route 22 is located to the south, and the Cross River Reservoir is located approximately 3,000 feet northeast of the project site.

The project involves the design of repairs to existing pathways, interior and exterior renovation of John Jay house, construction of a new entry access road, a new parking area, and stormwater management practices. The existing main access road, proposed access road and parking lot will be paved with chip seal pavement. The existing access road will not include cuts and will be constructed at grades similar to the existing grade. The new access road and parking area will require changes to the existing topography and new stormwater management practices.

In order to evaluate the potential impacts associated with the development of the site, existing and proposed condition hydrographs were generated using standard NRCS TR-55 methodology. Peak flows were computed using the Bentley Pondpack Hydrology Program (Version V8i) and the required Water Quality Volume (WQv) and Runoff Reduction Volume (RRv) were computed using the Runoff Frequency Spectrum (RFS) Method, discussed in the New York State Stormwater Management Design Manual.

For the purposes of the hydrologic analysis, 2 design points and 5 contributing sub-areas were defined to characterize the drainage patterns of the existing conditions watershed. The proposed improvements will increase impervious area and alter the permeability of the project site. This increase in impervious area will create the potential for an increase in the amount of stormwater runoff and a need for stormwater treatment. To meet the full stormwater quality (WQv) and minimum runoff reduction volume (RRv) criteria, the project proposes to install three (3) bioretention areas and two (2) dry ponds, and new tree planting to provide WQv and RRv treatment and meet the required 1-, 10-, and 100-year peak flows mitigation criteria.

This SWPPP covers the entire project construction site, scheduled to proceed from June 2024 until March 2026. The project is intended to be constructed in phases and not to disturb greater than 5 acres of soil at any one time. Therefore, the 5 Acre Waiver is not anticipated for this project at this time.

Table 1 – Nature of Construction Project

The nature of this construction project is checked below:	
	New construction with proposed standard SMPs, Green Infrastructures, and ESC measures.
X	Redevelopment with increase in impervious areas with proposed standard SMPs and ESC measures. Green Infrastructures are required for the new impervious areas onsite.
	Redevelopment with no increase in impervious areas with proposed ESC measures only and no SMPs.

2.2 Project Disturbance Area

Overall Site Area:	62.0± acres
Total Disturbed Area:	8.30± acres
Existing Total Impervious Area:	2.25± acres
Proposed Total Impervious Area:	2.71± acres

2.3 Description and Limitations of On-Site Soils

A subsurface investigation was conducted on the project site in January 2024 by CHA which included eleven (11) test borings and two (2) infiltration tests. The Geotechnical Report is included in Appendix C of this SWPPP. Based on the boring logs, the seasonal ground water table was estimated at depths ranging from 3.1 feet to 13.2 feet on site. The two infiltration tests located on the proposed parking lot found an infiltration rate of 0.0 inches per hour.

The soil disturbance for the proposed work is limited to the 8.3 acres and consists of mostly loamy fine sand. Based on a review of the USDA Soil Surveys of Westchester County, New York, soils on the project site are described in the following list (see Figure 2 – USDA Soils Classification Map). A summary of the soil composition is shown in Table 1.

Table 2 - Soil Analysis Summary

Soil Name	Hydrologic Soil Group
PnB - Paxton fine sandy loam, 3 to 8 percent slopes	C
PnC - Paxton fine sandy loam, 8 to 15 percent slopes	C
WdA - Woodbridge loam, 0 to 3 percent slopes	C/D

The Natural Resource Conservation Service (NRCS, formerly known as the SCS), as part of their soil classification system, assigns each soil series to a Hydrologic Soil Group (HSG). The HSG is a four-letter index intended to indicate the minimum rate of infiltration obtained after prolonged wetting, and to indicate the relative potential for a soil type to generate runoff. The infiltration rate is the rate at which water enters the soil at the soil surface. The HSG also indicates the transmission rate – the rate at which water moves within the soil. Soil scientists define the four groups as follows:

- HSG ‘A’ (sand, loamy sand, or sandy loam): Soils have low runoff potential and high infiltration rates even when thoroughly wetted. They consist chiefly of deep, well to excessively drained sands or gravels and have a high rate of water transmission (> than 0.30 inches/hour).

- HSG ‘B’ (silt loam or loam): Soils have moderate infiltration rates when thoroughly wetted, and consist chiefly of moderately deep to deep, moderately well to well drained soils with moderately fine to fine texture. These soils have a moderate rate of water transmission (0.15 to 0.30 inches/hour).

- HSG ‘C’ (sandy clay loam): Soils have low infiltration rates when thoroughly wetted and consist chiefly of soils with a layer that impedes downward movement of water, and soils with moderately fine to fine texture. These soils have a low rate of water transmission (0.05 to 0.15 inches/hour).

- HSG ‘D’ (clay loam, silty clay loam, sandy clay, silty clay, or clay): Soils have high runoff potential. They have very low infiltration rates when thoroughly wetted, and consist chiefly of clay soils with a high swelling potential, soils with a permanent high water table, soils with a clay pan or clay layer at or near the surface, and shallow soils over nearly impervious material. These soils have a very low rate of water transmission (< 0.05 inches/hour).

If a soil is classified to a dual hydrologic group (A/D, B/D, or C/D), the first letter represents drained conditions and the second letter represents undrained conditions.

2.4 Historic Places

The New York State Office of Parks, Recreation and Historic Preservation (OPRHP) SHPO has reviewed the recent submission for the John Jay Homestead Historic Site Project and SHPO has indicated that the proposed project will have NO Adverse Effect to historic and cultural resources. A copy of the letter from SHPO dated 04/29/2024 will be included in Appendix B.

3.0 SEQUENCE OF MAJOR ACTIVITIES

3.1 Construction Sequence

This SWPPP presents erosion and sediment controls, both temporary and permanent, to assist the operator in compliance with the project's SPDES General Permit for construction activity. To the degree practicable, all temporary erosion and sediment control mitigation measures shall be installed immediately before associated project areas are disturbed in anticipation of all soil disturbing activities to follow.

It is the responsibility of the Contractor to ensure that all soils removed from the project site are spoiled in a manner consistent with all local, state, and federal regulations. Appropriate erosion and sediment controls shall be installed at all spoil sites. Additionally, the Contractor is responsible for coordinating the application for a GP-0-20-001 permit (and development of an associated SWPPP) if disturbance associated with any soil spoils area is greater than 0.4 hectares (1 acre). GP-0-20-001 applications must be signed by the owner of the lands on which soils are spoiled. Disturbances associated with offsite spoil areas do not contribute to the total disturbances associated with onsite activities.

This project will be carried out in 3 phases as outlined below, while maintaining the amount of concurrently disturbed soil in compliance with the NYS DEC limit (see appendix H).

Phase 1 (±2.34acres)

- Establish work area, contractor staging area, and install stabilized temporary construction entrance.
- Install temporary erosion and sediment control measures as shown on plans.
- Remove asphalt entrance drive and subbase as shown on demolition plans.
- Remove entrance gate and other amenities as shown on demolition plans.
- Install topsoil, seed, and mulch for final stabilization.

Phase 2A (±4.96 acres)

- Establish work area, contractor staging area, and install stabilized temporary construction entrance.
- Install temporary erosion and sediment control measures as shown on plans.
- Rough grade site for proposed access road and parking lot area.
- Grade and construct the proposed stormwater bioretention and dry ponds.
- Fine grade site and install subbase to stabilize disturbed areas.
- Construct the proposed parking lot, gravel road, walkway and ramps as shown on layout plans.
- Install proposed landscaping, topsoil, and seed for final stabilization of all disturbed areas.

Phase 2B (±3.68 acres)

- Establish work area, contractor staging area, and install stabilized temporary construction entrance.
- Install temporary erosion and sediment control measures as shown on plans.
- Remove existing gravel loop drive and other amenities as shown on demolition plans.
- Grade and install proposed chip seal road as shown on plans.

- Grade and install proposed chip seal walkways as shown on plans.
- Repair and renovate the existing John Jay House.
- Install proposed trees and landscaping, topsoil, and seed for final stabilization of all disturbed areas.

3.2 Name of Receiving Waters

Stormwater runoff from the John Jay Homestead campus site will either drain eastwards and discharge into the existing wetlands and unnamed tributary to Cross River Reservoir (Class B, Standards B), or drain westwards into the existing wetlands and unnamed tributary to Stone Hill River (Class C, Standards C(TS)). The Cross River Reservoir (Class AA(T), Standards AA) is located approximately 3,000 feet northeast of the project site and it is identified as an enhanced phosphorus watershed (Appendix C of the GP-0-20-001 permit). However, it is <u>not</u> listed as 303(d) segments impaired by construction related pollutants (Appendix E of the GP-0-20-001 permit).

The water quality of surface waters in New York State is classified by the New York State Department of Environmental Conservation as A, B, C, or D, with special classifications for water supply sources (AA). A "T" used with the classification indicates the stream supports, or may support, a trout population. Water quality standards are also provided. The standards apply the same classification system but, in some cases, are more stringent in an effort to eventually improve the water quality. The higher standard is most often used to reflect the existence or the potential for breeding trout (designation of (T) as discussed above). All surface waters with a Classification and/or a Standard of C (T), or better, are regulated by the State.

4.0 EROSION AND SEDIMENT CONTROLS

4.1 Pre-Construction

Prior to construction, the Owner shall have the Contractors and subcontractors identify at least one (1) person from their company who meets the requirements of a Trained Contractor. A Trained Contractor will be responsible for installing, constructing, repairing, and replacing the erosion and sediment control (ESC) practices.

In addition, the Trained Contractor will be responsible for the implementation of the Stormwater Pollution Prevention Plan (SWPPP) and the inspection and maintenance in accordance with New York Standards and Specifications for Erosion & Sediment Control (Blue Book). The Owner's Representative shall ensure that at least one (1) Trained Contractor is on-site daily when soil disturbance activities are being performed. The Trained Contractor shall inspect the site's ESC practices daily to ensure these facilities are operational. Pre-construction requirements to be followed by the Owner and Contractors prior to the commencement of any construction activities are described in Appendix E.

4.2 Timing of Controls/Measures

The erosion and sediment control measures shall be constructed prior to clearing or grading of any portion of the project. Where land disturbance is necessary, temporary seeding or mulching must be used on areas which will be exposed for more than 14 days. Permanent stabilization should be performed as soon as possible after completion of grading. After the entire project area is stabilized, the accumulated sediment shall be removed from the project area. Erosion control devices shall remain in place until disturbed areas are permanently stabilized. For projects where soil disturbance is greater than five (5) acres, and construction activity has temporarily or permanently ceased, temporary and/or permanent soil stabilization measures shall be installed and/or implemented within seven (7) days from the date the soil disturbance activity ceased. The soil stabilization measures selected shall be in conformance with the most current version of the technical standard, New York Standards and Specifications for Erosion and Sediment Control.

4.3 Erosion and Sediment Controls / Stabilization Practice

Applicable erosion and sediment control measures and details are included in Appendix H.

4.3.1 Temporary Stabilization

Topsoil stockpiles, staging areas and disturbed pervious portions of the project area where construction activity temporarily ceases for at least 14 days shall be stabilized with temporary seed and mulch no later than 14 days from the last construction activity in that area.

Temporary seed shall be ryegrass applied at the rates specified below:

- If seeding in spring, summer or early fall then seed with annual or perennial rye at a rate of 30 lbs per acre. If area is to remain stabilized over the winter into the following spring use perennial rye only.

- If seeding in late fall or early winter, use certified Aroostook winter rye (cereal rye) at a rate of 90 lbs per acre.

Any seeding method may be used that will provide uniform application of seed to the area and result in relatively good soil to seed contact. Area must be free of large rocks and debris and seeded within 24 hours of disturbance or scarification of the soil surface will be necessary prior to seeding. Fertilizer or lime is not typically used for temporary plantings.

Mulch shall be applied in conjunction with seeding and applied at the rate of 90 lbs per 1000 square feet. Mulch shall be reapplied as necessary. Areas of the project area, which are to be paved, shall be temporarily stabilized by applying temporary gravel subbase until pavement can be applied.

Bioretention basins shall be built according to the plans provided. Begin by clearing the designated area of any large rocks and debris. Ensure that the seeding method chosen guarantees uniform distribution across the site, enhancing soil-to-seed contact as per the provided plans. Address any soil surface disturbances within 24 hours, utilizing scarification if necessary to facilitate successful seeding.

Tree planting, adhere closely to the provided plans. Follow the recommended seeding or planting method to ensure even distribution and proper soil-to-seed contact as per the provided guidelines. Avoid the use of unnecessary fertilizers or lime, prioritizing natural growth processes as directed.

Sediment control fencing shall be installed around the site where depicted on the attached plan sheets. Prior to commencing any earthwork, a stabilized construction entrance shall be installed as indicated on the attached plans. This entrance shall be utilized as the exclusive construction entrance and exit to the construction areas. Construction traffic shall be limited to the construction entrance.

4.3.2 Permanent Stabilization

Disturbed portions of the project area where construction activities permanently cease shall be stabilized with permanent seed no later than 14 days after the last construction activity. The permanent seed mix shall be in accordance with the project specifications and plans. Construction and maintenance of erosion and siltation control measures are in accordance with the New York Standards and Specifications for Erosion and Sediment Control.

Where construction activity is complete over areas to be permanently vegetated, stabilize with permanent seeding. Verify seeding dates with engineer. If engineer determines that seed cannot be applied due to climate, topsoil shall not be spread and mulching shall be applied to the exposed surface to stabilize soils until the next recommended seeding period. Other project areas shall be permanently stabilized with pavement, concrete, gravel or building structures.

4.4 Winter Operations

If construction activities proceed through the winter season, access points should be enlarged and stabilized to provide for snow stockpiling. Drainage structures should be kept open and free of potential snow and ice dams. Inspection and maintenance are necessary to ensure the function of these practices during runoff events. For sites where construction activities temporarily cease, temporary and/or permanent soil stabilization measures shall be installed within seven (7) days from the date the soil disturbing activity ceased. Disturbed areas should be stabilized with seed and mulch, or other approved methods, even if the ground is covered by significant amounts of snow.

4.4.1 Winter Shutdown

Site inspections (by the qualified inspector) may be decreased to a minimum of one (1) time every thirty (30) days for sites where soil disturbing activities have ceased and at least 100% of the site has been stabilized by an approved method. Inlet protection should be installed and/or repaired before shutdown of the site. The owner or operator shall provide written notification to the respective DEC regional office prior to reducing the frequency of any site inspections.

4.5 Final Site Inspection

The qualified inspector shall perform a final inspection of the site to certify that:

- All disturbed areas have achieved final stabilization;
- Temporary erosion and sediment control practices have been removed; and
- Post-construction stormwater management practices (if required) have been constructed in conformance with the SWPPP.

Upon satisfactory completion of the final site inspection, the qualified inspector shall sign the appropriate sections of the Notice of Termination (NOT) form included in Appendix E.

4.6 Other Controls

4.6.1 Waste Disposal

Waste materials – Foreign waste materials shall be collected and stored in a secured area until removal and disposal by a licensed solid waste management company. All trash and construction debris from the project area shall be disposed of in a portable container unit. No foreign waste materials shall be buried within the project area. All personnel shall be instructed regarding the correct procedure for waste disposal. Notices stating these practices shall be posted in the project trailer and the individual who manages day-to-day project operations will be responsible for seeing that these procedures are followed.

Petroleum Impacted Waste – During the excavation activities, there is the potential that petroleum impacted soils may be encountered. In the event that field evidence of contamination is identified during the project, potentially contaminated soils will be segregated and stockpiled on polyethylene sheeting and covered in a predetermined staging area. The potentially impacted, stockpiled soils will then be sampled to determine if the soils are suitable for use as clean backfill. In the event that the soils are not suitable for re-use, the contaminated soil will be properly characterized and disposed of at an off-site NYSDEC permitted facility. The excavation will then be backfilled with clean, imported fill.

Hazardous Waste - All hazardous waste materials shall be disposed of in a manner specified by local or state regulations or by the manufacturer. Project personnel shall be instructed in these practices and the individual who manages day-to-day project operations shall be responsible for seeing that these practices are followed.

Sanitary Waste - Any sanitary waste from portable units shall be collected from the portable units by a licensed sanitary waste management contractor, as required by NYS DEC regulations.

4.6.2 Sediment Tracking by Vehicles

A stabilized construction entrance shall be installed (where depicted on attached plan) and maintained as necessary to help reduce vehicular tracking of sediment. The entrance shall be cleaned of sediment and redressed when voids in the crushed stone become filled and vehicular tracking of sediment is occurring. Dump trucks hauling materials to and from the construction project area shall be covered with a tarpaulin to reduce dust. Any sediment and debris tracked from work area along project adjacent roadways shall be immediately removed with a street sweeper or equivalent sweeping method.

4.6.3 Non-Stormwater Discharges

Non-stormwater discharges are not expected to exit the project area during construction.

4.7 Certification of Compliance with Federal, State, and Local Regulations

The stormwater pollution prevention plan reflects the New York State requirements for stormwater management and erosion and sediment control. To ensure compliance, this plan was prepared in accordance with New York State Standards. There are no other applicable State or Federal requirements for sediment and erosion plans (or permits), or stormwater management plans (or permits).

5.0 POST CONSTRUCTION STORMWATER MANAGEMENT

5.1 Hydrologic Evaluation

5.1.1 Methodology

The proposed project has been designed in accordance with the design guidelines and criteria presented in the State Pollutant Discharge Elimination System (SPDES) General Permit for Construction Activities (GP-0-20-001), Chapter 9: Redevelopment Activity and Chapter 10: Enhanced Phosphorus Removal Supplement of the New York State Stormwater Management Design Manual (January 2015), the New York State Standards and Specifications for Erosion and Sediment Control (July 2016), and Rules and Regulations for the Protection from Contamination, Degradation and Pollution of the New York City Water Supply and Its Sources (November 29, 2019) Section 18-39(b)(4).

In order to evaluate the potential impacts associated with the development of the site, existing and proposed condition hydrographs were generated. The conditions were modeled using the SCS unit hydrograph method using a type II rainfall distribution. Rainfall amounts were referenced from the New York State Stormwater Management Design Manual, January 2015. The 24-hour rainfall amounts for the 1-, 10-, and 100-year design storms in Katonah, Westchester County are 2.80-, 5.09- and 9.11-inches respectively.

Runoff curve numbers and times of concentration were computed using standard NRCS TR-55 methodology. Additionally, peak stormwater flows and hydrographs for the existing and post-development conditions were computed using the Bentley Pondpack Hydrology Program (Version V8i).

Since the proposed redevelopment project is located within the New York City Watershed East of the Hudson River as shown in Appendix C of the SPDES General Permit (GP-0-20-001) where enhanced phosphorus removal standards are required, the total Water Quality Volume (WQv) shall be calculated in accordance with Chapter 10 of the New York State Stormwater Management Design Manual (January 2015). The total estimated WQv required is calculated based on the 1-year, 24-hour design storm over the post development disturbed drainage areas using standard NRCS TR-55 methodology to account for runoff volume from the drainage areas.

Moreover, the minimum Runoff Reduction Volume (RRv) is calculated using the 1-year storm event and the amount of new impervious area within the drainage area. The required RRv criteria is applied to the new developed impervious area only.

5.1.2 Redevelopment Criteria

Redevelopment of previously developed sites is encouraged from a watershed protection standpoint because it often provides an opportunity to conserve natural resources in less impacted areas by targeting development to areas with existing services and infrastructure. Redevelopment provides an opportunity to correct existing problems and reduce pollutant discharges from previously developed areas that were constructed without effective stormwater pollution controls.

Because the technical standards contained in the New York State Stormwater Management Design Manual were primarily intended for new development projects, compliance with the standards may present a challenge on some redevelopment projects. Therefore, Chapter 9 of the New York State Stormwater Management Design Manual give the following definition for redevelopment activity on page 9-2.

Redevelopment Activity / Activities – Disturbance and reconstruction of existing impervious surfaces. This includes impervious surfaces that were removed within the last five (5) years.

If the construction project includes both new development and redevelopment activities, treatment would be required for 25% of the existing, disturbed impervious area, however, the stormwater management practices for the new development portion of the project must be designed in accordance with the sizing criteria in Chapter 4.

5.2 Existing Condition Hydrology

For the purpose of this analysis, the extent of the hydrologic model was limited to the areas affected by the proposed improvements. For the existing condition analysis, two design points and five contributing sub-areas were defined to characterize the natural drainage patterns of the watershed (See Figure 3 – Existing Conditions Watershed Map).

Design Point 1 (DP-1) is located along the southern and eastern boundary of the project site discharging into the existing wetlands and unnamed tributary to Cross River Reservoir. Stormwater runoff from DA-1, DA-2, DA-3, and DA-5 will sheet flow and drain towards DP-1, and eventually outfall into the Cross River Reservoir located approximately 3,000 feet northeast of the project site.

Design Point 2 (DP-2) is located southwestern boundary of the project site and collects stormwater runoff from Drainage Area 4 (DA-4), which ultimately drains into the existing wetlands and unnamed tributary to Stone Hill River.

Drainage Area 1 (DA-1) comprises of 3 existing buildings and a large, vegetated area located on the northeastern portion of the project site. Runoff in this sub-area sheet flows overland directed towards the existing wetlands and unnamed tributary to Cross River Reservoir at DP-1.

Drainage Area 2 (DA-2) encompasses of a large, vegetated area, an existing gravel road, and a brick cottage building. Runoff in this drainage area sheet flows overland directed eastwards and southwards into the existing wetlands and unnamed tributary to Cross River Reservoir at DP-1.

Drainage Area 3 (DA-3) contains an existing gravel entrance and access road and some vegetated areas along both sides of the road. Runoff in this sub-area sheet flows overland directed towards the existing wetlands and unnamed tributary to Cross River Reservoir at DP-1.

Drainage Area 4 (DA-4) consists of most of the project site west of the existing gravel entrance road including the original 1787John Jay House, existing loop gravel drive, sundial garden, herb garden, existing pathways, parking areas, and associated site amenities. Runoff in this drainage area will sheet flow overland directed towards DP-2, which ultimately drains into the existing wetlands and unnamed tributary to Stone Hill River.

Drainage Area 5 (DA-5) comprises of five existing buildings including the Main Barn, an existing gravel road, and some vegetated areas located northeast of the John Jay House. Runoff in this sub-area sheet flows overland directed towards DA-1 and discharge into the existing wetlands and unnamed tributary to Cross River Reservoir at DP-1.

The results of the existing condition analyses are presented in Table 3, with detailed computations provided in Appendix D.

Table 3 - Existing Condition Analysis Summary

Design Point	Watershed	Area (acres)	Tc (hrs)	Curve Number	Peak Flow Rate (cfs)		
					1-yr	10-yr	100-yr
DP-1	DA-1	4.75	0.135	75	3.71	11.8	27.88
	DA-2	3.65	0.105	75	2.99	9.40	22.10
	DA-3	1.36	0.083	82	1.74	4.42	9.29
	DA-5	1.33	0.103	82	1.66	4.25	8.95
	Total	11.09	--	--	10.00	29.72	67.98
DP-2	DA-4	7.63	0.102	79	8.08	22.39	49.29
	Total	7.63	--	--	8.08	22.39	49.29

5.3 Proposed Condition Hydrology

The proposed improvements will increase the impervious area and alter the permeability of the project site. This increase in impervious area will potentially lead to an increase in stormwater runoff and necessitate stormwater treatment. The existing condition drainage areas have been revised to reflect the new drainage patterns of the proposed watershed with two design points and ten contributing sub-areas (See Figure 4 – Proposed Conditions Watershed Map).

Design Point 1 (DP-1) continues to be located along the southern and eastern boundary of the project site discharging into the existing wetlands and unnamed tributary to Cross River Reservoir. Stormwater runoff DA 1A, DA-1B, DA-1C, DA-1D, DA-2A, DA-2B, DA-3, DA-5A, and DA-5B will sheet flow and drain towards DP-1, and eventually outfall into the Cross River Reservoir located approximately 3,000 feet northeast of the project site.

Design Point 2 (DP-2) continues to be located at the southwestern boundary of the project site and collects stormwater runoff from Drainage Area 4 (DA-4), which ultimately drains into the existing wetlands and unnamed tributary to Stone Hill River.

Drainage Area 1A (DA-1A) encompasses the proposed parking lot area, where runoff will be directed to drain towards the proposed bioretention area 1 and dry pond 1 and will outlet directly towards DP-1, and eventually discharges into the Cross River Reservoir located approximately 3,000 feet northeast of the project site.

Drainage Area 1B (DA-1B) consists of the northern portion of the proposed access road leading to the new parking lot area, where runoff will be directed to drain towards the proposed bioretention area 2 and dry pond 2 and will outlet directly towards DP-1, and eventually discharges into the Cross River Reservoir located approximately 3,000 feet northeast of the project site.

Drainage Area 1C (DA-1C) receives runoff from DA-5B and contains the cottage fabric building and an old concrete foundation, both surrounded by grassed areas. Stormwater flowing through DA-1C will be conveyed to DA-1B.

Drainage Area 1D (DA-1D) is mainly composed of grassed areas with an old concrete foundation slab and some woods on its northwest portion. Stormwater flowing through DA-1D will be conveyed to DA-1A.

Drainage Area 2A (DA-2A) contains the proposed access drive, the existing brick cottage building surrounded by woods, and a grass field. Runoff will be sheet flow and directed towards the proposed bioretention area 3 located within DA-2B.

Drainage Area 2B (DA-2B) collects water from part of DA-2A, containing the southern portion of the proposed access road and the proposed bioretention basin 3, which will outlet directly towards DP-1, and eventually discharges into the Cross River Reservoir located approximately 3,000 feet northeast of the project site.

Drainage Area 3 (DA-3) contains an existing gravel entrance and access road, which will be widened and reconstructed with chip seal pavement. The project will propose new trees to be planted along the existing trees and vegetated areas along both sides of the road. Runoff in this sub-area sheet flows overland directed towards the existing wetlands and unnamed tributary to Cross River Reservoir at DP-1.

Drainage Area 4 (DA-4) consists of most of the project site west of the existing gravel entrance road including the original 1787John Jay House, existing loop gravel drive, sundial garden, herb garden, existing pathways, parking areas, and associated site amenities. Runoff in this drainage area will sheet flow overland directed towards DP-2, which ultimately drains into the existing wetlands and unnamed tributary to Stone Hill River.

Drainage Area 5A (DA-5A) consist of the proposed chip seal road, some grassed areas, and four existing buildings. The stormwater runoff will flow into DA-1D, and eventually into DA-1A, where runoff will be directed to drain towards the proposed bioretention area 1 and dry pond 1 and will outlet directly towards DP-1, and eventually discharges into the Cross River Reservoir located approximately 3,000 feet northeast of the project site.

Drainage Area 5B (DA-5B) contains chip seal road, some grass areas, and three existing buildings. The stormwater runoff will flow into DA-1C, and eventually into DA-1B, where runoff will be directed to drain towards the proposed bioretention area 2 and dry pond 2 and will outlet directly towards DP-1, and eventually discharges into the Cross River Reservoir located approximately 3,000 feet northeast of the project site.

Table 4 – Proposed Condition Analysis Summary

Design Point	Watershed	Area (acres)	Tc (hrs)	Curve Number	Peak Flow Rate (cfs)		
					1-yr	10-yr	100-yr
DP-1	DA-1A	1.91	0.083	82	2.45	6.20	13.04
	DA-1B	0.60	0.083	81	0.73	1.90	4.04
	DA-1C	1.37	0.134	76	1.15	3.52	8.19
	DA-1D	1.51	0.088	74	1.18	3.83	9.09
	DA-2A	2.53	0.098	76	2.24	6.78	15.64
	DA-2B	0.53	0.083	82	0.68	1.72	3.62
	DA-3	1.41	0.083	84	2.00	4.82	9.86
	DA-5A	0.77	0.104	82	0.96	2.46	5.18
	DA-5B	0.57	0.083	80	0.66	1.75	3.79
	Outfall	11.20	--	--	11.93	32.81	72.17
DP-2	DA-4	7.60	0.104	77	7.11	20.93	47.58
	Outfall	7.60	--	--	7.11	20.93	47.58

5.4 Post-Development Stormwater Management Practices

5.4.1 Runoff Reduction Volume

In accordance with the New York State Stormwater Management Design Manual (January 2015), further reduction in the water quality volume (WQv) shall be designed to reduce the total amount of runoff leaving the project site and to replicate pre-development hydrology. This volumetric reduction is defined as the Runoff Reduction Volume (RRv). Runoff reduction shall be achieved by infiltration, groundwater recharge, reuse, recycle evaporation or evapotranspiration of 100% of the post-development water quality volumes to replicate pre-development hydrology by maintaining pre-construction infiltration, peak runoff flow, discharge volume, as well as minimizing concentrated flow by using runoff control techniques to provide treatment in a distributed manner before runoff reaches the collection system. This requirement can be accomplished by application of on-site green infrastructure techniques, standard stormwater management practices with runoff reduction capacity, and good operation and maintenance. Runoff reduction can be achieved by three methods: reduction of contributing drainage area, reduction of runoff volume through practice storage, and using standard stormwater practices with runoff reduction capacity.

Projects that cannot meet 100% of runoff reduction requirement must provide a justification that evaluates each of the green infrastructure planning and reduction techniques and identifies the specific limitations of the site according to which application of this criterion is technically infeasible. Implementation of green infrastructure cannot be considered infeasible unless physical constraints, hydraulic conditions, soil testing, existing and proposed slopes, or other existing technical limitations are objectively documented. And determination of application of none of the runoff reduction options is feasible may not be based on the cost of implementation measures or lack of space for required footprint of the practice.

Project that do not achieve runoff reduction to pre-construction condition must, at a minimum reduce a percentage of the runoff from impervious areas to be constructed on the site. The percent reduction is based on the Hydrologic Soil Group(s) (HSG) of the site and is defined as Specific Reduction Factor (S) and is defined as the following list.

HSG A = 0.55 (55%)
HSG B = 0.40 (40%)
HSG C = 0.30 (30%)
HSG D = 0.20 (20%)

Based on Chapter 10 of the New York State Stormwater Management Design Manual, the required minimum RRv for redevelopment projects within enhanced phosphorous removal watershed areas is computed using the equation presented below.

$$RRv_{min} = \{(P_{1\text{-}yr})\ (Rv)\ (Aic)(S)\}\ /\ 12$$

Where:

RRv_{min} = Minimum runoff reduction volume required from impervious area (acre-feet)
P1-yr = 1-year storm event rainfall (inches)
Rv = 0.05 + 0.009 (I), where I is 100% impervious cover
Aic = total area of new impervious cover
S = Hydrologic Soil Group (HSG) Specific Reduction Factor

For Katonah, Westchester County, the 1-year storm event is 2.80 inches of rainfall.

Green Infrastructure Techniques

Runoff reduction was achieved for the proposed project with the application of the green infrastructure techniques including three (3) new bioretention areas and planting new trees for drainage areas (DA-1A,1B,1C,1D,2A,2B,3, 5A, and 5B) contributing runoff to DP-1 of the project site. Since this project proposes a total of 1.10 acres of new impervious area to be constructed within these drainage areas to DP-1, the remaining impervious areas to be replaced within these areas are considered as redevelopment work. Subsequently, the minimum RRv criteria is applied to the new developed impervious area only. Therefore, the three (3) proposed bioretention areas and new trees to be planted are designed to treat the minimum RRv required for 1.10 acre of new developed impervious area.

A summary of the practice used in the project for runoff reduction is provided in Table 5 and detailed worksheets are included in Appendix G. Runoff reduction practices not applicable for the proposed project and justification for each practice is summarized in Table 6.

Table 5 - Summary of Required Runoff Reduction Volumes

Design Point	Drainage Areas	Min. RRv Required (ac-ft)	RRv Provided (ac-ft)	Runoff Reduction Techniques
DP-1	DA-1A,1B,1C, 1D,2A,2B,3,5A, and 5B	0.073	0.233	3 Bioretention areas and tree planting
DP-2	DA-4	0.000	0.000	N/A

Since drainage area DA-4 included an existing entrance access road that will be removed and turned into grassed area in post development conditions, resulting in a 37.5% reduction of imperviousness within the disturbed drainage area. Based on the regulations listed in Chapter 9 Redevelopment criteria of the New York State Stormwater Management Design Manual, this over 25 percent of reduction in imperviousness will reduce the volume of stormwater runoff, essentially, providing both water quality and water quantity. Therefore, post-construction stormwater management measures for water quality and runoff reduction treatment are not required for the redevelopment work withing drainage area DA-4, which drains into DP-2.

Table 6 – Stormwater Management Practices for Runoff Reduction Not Used in Project

Practice / Technique	Reason for Not Applying the Practice / Technique to Project
Conservation of Natural Areas	Runoff already treated with bioretention and tree planting.
Riparian Buffers / Filter Strips	Runoff already treated with bioretention and tree planting.
Rooftop Disconnection	Not applicable to proposed parking lot and access roads.
Infiltration Trench	Runoff already treated with bioretention and tree planting.
Drywell	Runoff already treated with bioretention and tree planting.
Infiltration Basin	Existing soils onsite does not infiltrate.
Dry Swale	Runoff already treated with bioretention and tree planting.
Vegetated Swale	Runoff already treated with bioretention and tree planting.
Green Roof	Not applicable to proposed parking lot and access roads.
Rain Garden	Runoff already treated with bioretention and tree planting.
Planters	Runoff already treated with bioretention and tree planting.
Cisterns / Rain Barrels	No regular use for the collected water on site.
Porous Pavement	Runoff already treated with bioretention and tree planting.

5.4.2 Water Quality Volume

Since the proposed redevelopment project is located within the New York City Watershed East of the Hudson River as shown in Appendix D of the SPDES General Permit (GP-0-20-001) where enhanced phosphorus removal standards are required, the total Water Quality Volume (WQv) shall be calculated in accordance with Chapter 10 of the New York State Stormwater Management Design Manual (January 2015). The total estimated WQv required is calculated based on the 1-year, 24-hour design storm over the post development disturbed drainage areas using standard NYSDEC Green Infrastructure worksheets.

To meet the water quality criteria listed above, three (3) new bioretention areas and new tree planting will be employed for drainage areas (DA-1A,1B,1C,1D,2A,2B,3, 5A, and 5B) contributing runoff to DP-1 of the project site. A summary of the required and provided water quality volumes (WQv) are shown in Table 7 and detailed computations are included in Appendix G.

Table 7 - Summary of Water Quality Volumes

Drainage Areas	Total Area (ac)	New Impervious Area (ac)	Required WQv (ac-ft)	Provided RRv (ac-ft)	Remaining WQv Provided (ac-ft)	Treatment Practice
DA-1A	1.91	0.60	0.148	0.069	0.079	Bioretention Area 1
DA-1B	0.60	0.18	0.045	0.019	0.026	Bioretention Area 2
DA-2B	0.53	0.18	0.044	0.020	0.024	Bioretention Area 3
DA1C,1D,2A,3, 5A, AND 5B	8.16	0.14	0.125	0.125	0.000	Tree Planting
Total to DP-1	11.20	1.10	0.362	0.233	0.129	Total Provided = 0.362 ac-ft
DA-4 (DP-2)	7.60	-0.66	0.000	0.000	0.000	Over 25% Impervious Area Reduction

Drainage Area DA-4 included an existing entrance access road that will be removed and turned into grassed area in post development conditions. Thus, the existing impervious area of 1.76 acres will be reduced to 1.10 acres, resulting in a 37% reduction of imperviousness within the disturbed drainage area. Based on the regulations listed in Chapter 9 Redevelopment criteria of the New York State Stormwater Management Design Manual, this over 25 percent of reduction in imperviousness will reduce the volume of stormwater runoff, essentially, providing both water quality and water quantity. Therefore, post-construction stormwater management measures for water quality and runoff reduction treatment are not required and not included as for this portion of the project.

5.4.3 Channel Protection Volume

Based on the sizing criteria listed in Chapter 9 of the New York State Stormwater Management Design Manual, channel protection for redevelopment activities is not required if there are no changes to the hydrology that increase the discharge rate from the project site. Since, the hydrology analysis results showed the 1-year 24-hour storm peak flow rate from the project site for post-construction condition is equal to the peak flow rate of existing condition, providing the channel protection volume (Cpv, 1-year storm) criteria is not required for the proposed redevelopment project.

5.4.4 Peak Flow Attenuation

Based on a comparison between the existing conditions and the unmitigated proposed peak flow rates, the proposed development will increase peak rates of runoff at DP-1. In accordance with the governing regulations, this increase in peak flows must be mitigated such that the post-development peak runoff rates will be no greater than the existing condition rates for the 10-year and 100-year 24-hour storm events. A summary of the existing conditions and mitigated post-development peak flow comparison is shown in Table 8, and detailed computations are included in Appendix F.

Table 8 – Existing Condition & Mitigated Post-Development Peak Flow Comparison

Design Point	Peak Flow Rate (cfs)								
	1-Year Storm			10-Year Storm			100-Year Storm		
	Exist (cfs)	Mitigated (cfs)	Δ (cfs)	Exist (cfs)	Mitigated (cfs)	Δ (cfs)	Exist (cfs)	Mitigated (cfs)	Δ (cfs)
DP-1	10.00	6.15	-3.85	29.72	23.30	-6.42	67.98	48.05	-19.93
DP-2	8.08	7.11	-0.97	22.39	20.93	-1.46	49.29	47.58	-1.71

5.4.5 Stormwater Conveyance Systems

The proposed drainage system located in the proposed parking lot and access road have been designed for the 10-year, 24-hour event, while also providing safe conveyance of the 100-year, 24-hour event.

5.5 Floodplains

Based on a review of the FEMA Flood Insurance Rate Map for the City of Katonah, Westchester County, NY (dated September 28, 2007); the entire project site is not located in the 100-year floodplain (see Figure 5 – FEMA FIRM).

6.0 MAINTENANCE/INSPECTION PROCEDURES

6.1 Erosion and Sediment Control Inspection and Maintenance Practices

These are the minimum required inspection and maintenance practices that shall be used to maintain erosion and sediment controls:

6.1.1 Owner/Operator Inspection Requirements

- Prior to construction activity the owner/operator shall have contractors and sub-contractors identify a trained individual responsible for the implementation of the SWPPP. The trained individual must be on-site on a daily basis when soil disturbing activities are occurring.

- The owner/operator shall inspect the erosion and sediment control measures as identified in the SWPPP to ensure that they are being maintained in effective operating conditions at all times. Where soil disturbing activities temporarily cease (e.g. winter shutdown) and temporary stabilization measures have been applied to all disturbed areas, the owner/operator can reduce frequency of inspections, but shall maintain a minimum of monthly inspections, and after significant rain storms and snow thaws. The owner/operator shall resume inspections when soil disturbing activities begin again.

- Where soil disturbing activities have ceased with partial project completion, the owner/operator can stop conducting inspections when disturbed areas have reached final stabilization. The qualified inspector shall coordinate and obtain approval from the Owner and Engineer that final stabilization has been achieved. All post construction stormwater management practices required for the completed areas shall have been constructed in conformance with the SWPPP and be fully operational. Final stabilization means that all soil disturbance activities have ceased and a uniform, perennial vegetative cover with a density of eighty (80) percent over the entire pervious surface has been established; or other equivalent stabilization measures, such as permanent landscape mulches, rock rip-rap or washed/crushed stone have been applied on all disturbed areas that are not covered by permanent structures, concrete or pavement.

- The owner/operator shall notify the DEC Regional Office's stormwater contact person prior to any reduction in the frequency of site inspections.

- The owner/operator shall retain copies of the NOI, NOI acknowledgment letter, SWPPP, MS4 SWPPP acceptance form and any inspection reports submitted in conjunction with this permit and records, or all data used to complete the NOI to be covered by this permit for a period of at least five (5) years from the date that the site is finally stabilized.

6.1.2 Qualified Inspector Inspection Requirements

- The qualified inspector is defined as a person that is knowledgeable in the principles and practices of erosion and sediment control, such as a licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), licensed Landscape Architect, or other Department endorsed individual(s). It may also mean someone working under the direct supervision of the licensed Professional Engineer or licensed Landscape Architect, provided that person has training in the principles and practices of erosion and sediment control. Training in the principles and practices of erosion and sediment control means the person has received four (4) hours of training endorsed by the Department and shall receive four (4) hours of training every three (3) years after the initial training.

- A site inspection shall be conducted at least twice every seven (7) days by the qualified inspector when soil disturbing activities are occurring. The two inspections shall be separated by a minimum of two full calendar days. A copy of the “Construction Duration Inspection Form” is included in the Appendix E section of this plan.

- All measures shall be maintained in good working order; if any repairs or corrective actions are necessary, it is the responsibility of the qualified inspector to notify the owner/operator and appropriate contractor within one business day. The contactor shall begin implementing the corrective action within one business day of being notified.

- All inspection forms must be signed by a qualified inspector.

- For construction sites where soil disturbing activities are temporarily suspended, temporary stabilization measures shall be applied, and the qualified inspector shall conduct a site inspection at least once every thirty (30) calendar days.

- Where soil disturbing activities have ceased with partial project completion the qualified inspector can stop conducting inspections when disturbed areas have reached final stabilization and all post construction stormwater management practices required for the completed areas have been constructed in conformance with the SWPPP and are fully operational.

- Where soil disturbing activities are not resumed within two (2) years, from the date of shut down of partial project completion, the qualified inspector shall perform a final inspection and certify that all disturbed areas have achieved final stabilization, all temporary and permanent erosion control measures have been removed, and post-construction stormwater management practices have been constructed in conformance with the SWPPP. Qualified inspector shall sign the “Final Stabilization” and “Post-Construction Stormwater Management Practice” certification statements on the Notice of Termination (NOT).

6.1.3 General Requirements

- A copy of the SPDES General Permit (GP-0-20-001), the signed Notice of Intent (NOI), NOI acknowledgement letter, SWPPP, and inspection reports shall be maintained onsite until the site has achieved final stabilization.

- Built up sediment shall be removed from any silt fence when it has reached one-third the height of the fence / dike.

- Sediment fencing and wetland protection barrier shall be inspected for depth of sediment, and tears, to see if fabric is securely attached to the fence posts, and to see that the fence posts are firmly in the ground.

- The construction entrance shall be cleaned of sediment and redressed when voids in the crushed stone become filled and vehicular tracking of sediment is occurring.

- Dust shall be controlled on access points and other disturbed areas subject to surface dust movement and blowing.

- Inspection must verify that all practices are adequately operational, maintained properly and that sediment is removed from all control structures.

- Inspection must look for evidence of soil erosion on the site, potential of pollutants entering drainage systems, problems at the discharge points, and signs of soil and mud transport from the site to the public road.

6.1.4 Dewatering Methods

During the recent geotechnical investigation activities conducted at the Site, the seasonal ground water table was estimated at depths ranging from 3.1 feet to 13.2 feet on site. Dewatering is anticipated for construction of the meadow road. If localized dewatering becomes necessary to conduct the planned construction activities, the water will be evaluated for evidence of potential contamination.

Water that exhibits no visual (e.g. free product/sheens) or olfactory evidence of contamination will be directed to a discharge area established within a vegetated portion of the Site, and will be pumped through filter bags or socks for removal of sediment prior to discharge. The water will be discharged to the ground at a controlled rate in a manner that will prevent significant runoff. Discharge of dewatering effluent into the storm sewer system is not permitted under any circumstance.

6.1.5 Dust Control

Dust control shall be used through dry weather periods until all disturbed areas are stabilized and will be controlled as needed based on site conditions. Only plain water will be used for dust suppression. Stabilized construction entrances for dust control will be consistent with NYSDEC stabilized construction entrance requirements. All applicable regulations and standards related to dust control will be followed including the New York State Standards and Specifications for Erosion and Sediment Control (“Blue Book”) for dust control.

6.2 Post-Construction Stormwater Inspection and Maintenance Practices

Long-term inspection forms for the stormwater management practices are included in Appendix E are referenced from Appendix G of the New York State Stormwater Management Design Manual.

7.0 INVENTORY FOR POLLUTION PREVENTION PLAN

The materials or substances listed below are expected to be within the project area during construction:

- Portland cement concrete.
- Fertilizers / seeding materials.
- Stone.
- Chip seal asphalt.
- Petroleum based products.
- Silt fence fabric.
- Lumber.
- Pavement marking paint.
- PVC and HDPE.

8.0 SPILL PREVENTION

The following are the material management practices that shall be used to reduce the risk of spills or other accidental exposure of materials and substances to stormwater runoff.

8.1 Good Housekeeping

The following good housekeeping practices shall be followed within project areas during construction:

- An effort shall be made to store only enough products required to do the job.
- All materials stored within project areas shall be stored in a neat, orderly manner in their appropriate containers and, if possible, under a roof or other enclosure.
- Products shall be kept in their original containers with the original manufacturer's label.
- Substances shall not be mixed with one another unless recommended by the manufacturer.
- Whenever possible, all of a product shall be used up before disposing of the container.
- Manufacturers' recommendations for proper use and disposal shall be followed.
- The project superintendent shall inspect daily to ensure proper use and disposal of materials.

8.2 Hazardous Products

These practices are used to reduce the risks associated with hazardous materials:

- Products shall be kept in original containers unless they are not resealable.
- Original labels and material safety data shall be retained.

- If surplus product must be disposed of, manufacturers' or local and state recommended methods of proper disposal shall be followed.
- Material Safety Data Sheets for all hazardous products shall be within the project area for the duration of construction.

8.3 Product Specific Practices

The following product-specific practices shall be followed within the project areas:

Petroleum Products

All project related vehicles shall be monitored for leaks and receive regular preventive maintenance to reduce the chance of leakage. Petroleum products shall be stored in tightly sealed containers which are clearly labeled. Any asphalt substances used during construction shall be applied according to the manufacturer's recommendations.

Fertilizers

Fertilizers used shall be applied only in the minimum amounts recommended by the manufacturer. Once applied, fertilizer shall be worked into the soil to limit exposure to stormwater. Fertilizers shall be stored in a covered or other contained area.

Paints

All containers shall be tightly sealed and stored when not required for use. Excess paint shall not be discharged to the storm sewer system but shall be properly disposed of according to manufacturer’s instructions or State regulations.

Concrete Trucks

Concrete trucks shall be allowed to wash out within project areas provided that the contractor provides an area which collects and contains any concrete / slurry material washed from trucks for recovery and disposal at a later time. No concrete / slurry shall be discharged from the property at any time of construction. If such washing is anticipated, the contractor shall submit a plan detailing the control of concrete / slurry to the engineer for approval.

Watercourse Protection

Construction operations shall be conducted in such a manner as to prevent damage to watercourses from pollution of debris, sediment, or other foreign material, or from manipulation, from equipment and/or materials in or near the watercourse. The contractor shall not return directly to the watercourse any water used for wash purposes or other similar operations which may cause the water to become polluted with sand, silt, cement, oil or other impurities. If the contractor uses water from the water course, the contractor shall construct an intake or temporary dam to protect and maintain watercourse water quality.

8.4 Spill Control Practices

The contractor will be responsible for preparing a project area specific spill control plan in accordance with local and NYS DEC regulations. At a minimum this plan should:

- Reduce stormwater contact if there is a spill.

- Contain the spill.
- Stop the source of the spill.
- Dispose of contaminated material in accordance with manufactures procedures, and NYS DEC regulations.
- Identify responsible and trained personnel.
- Ensure spill area is well ventilated.

9.0 UPDATING THE SWPPP

The SWPPP shall be updated/revised as conditions merit or as directed by the regulating authority. The attached inspection forms included with this document allows for the certification of any updates/revisions.

10.0 SWPPP CERTIFICATION

Contracting Firm Information:

Contracting Firm

Address

City/Town ***State*** ***Zip***

Site Location:

John Jay Homestead Historic Site
400 Jay St, Katonah
Westchester, New York

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 the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

Signature (Contractor/Subcontractor) ***Date***

For

Responsible For

Signature (Trained Individual) ***Date***

For

Responsible For

Signature (Contractor/Subcontractor) ***Date***

For

Responsible For

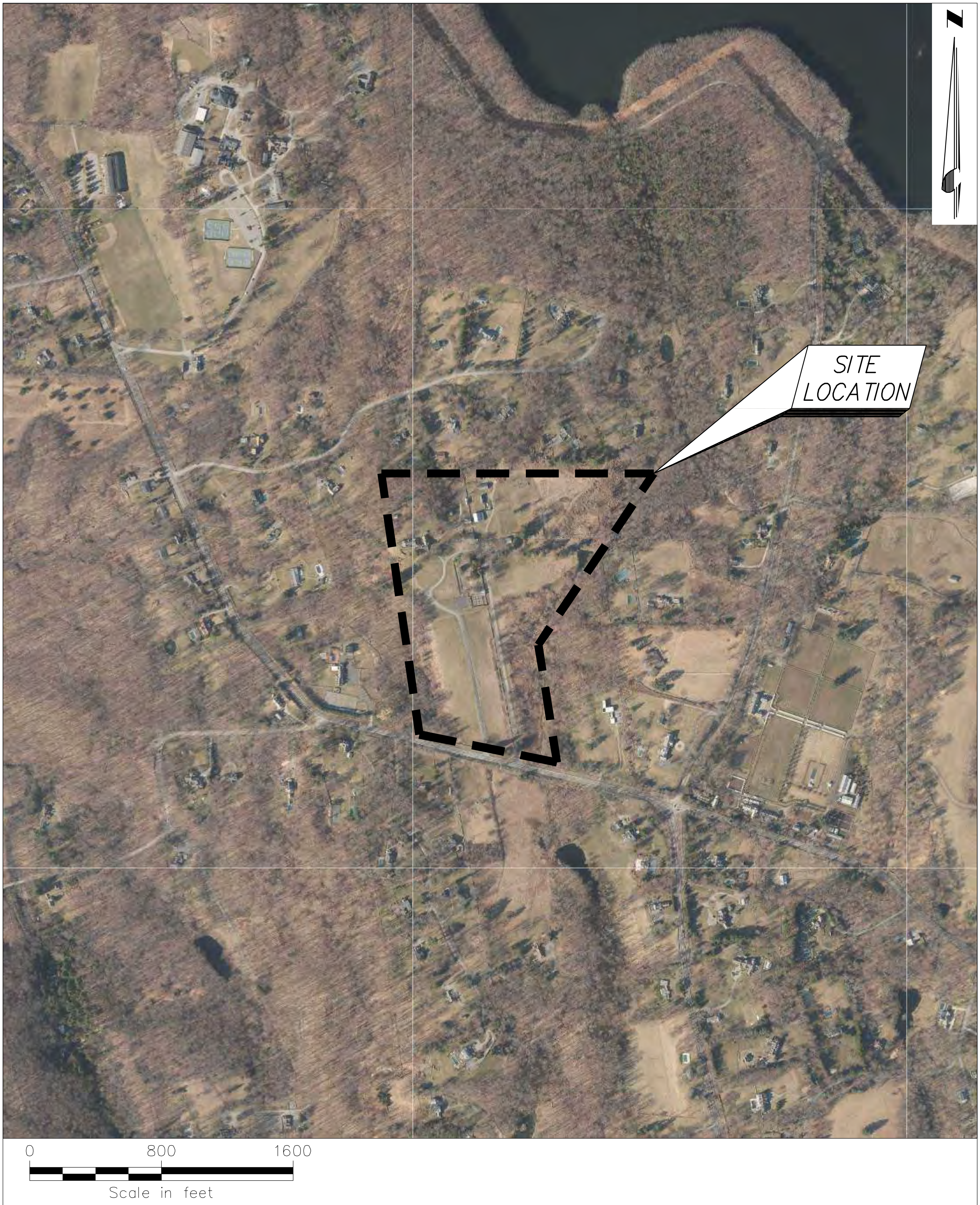
Signature (Trained Individual) ***Date***

For

Responsible For

APPENDIX A

Figures



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III Winners Circle, PO Box 5269
Albany, NY 12205-0269
518.453.4500 . www.chasolutions.com

SITE LOCATION MAP

JOHN JAY HOMESTEAD STATE HISTORIC SITE
400 JAY ST, KATONAH, 10536
WESTCHESTER COUNTY, NEW YORK

PROJECT NO.
080675

DATE: 05/06/24

FIGURE 1

File: V:\PROJECTS\ANY\K6\080675.000\09_DESIGN\EXHIBITS\STORMWATER\ARCHIEVED\066076_FIG1-SITE LOC MAP_ JOHN JAY.DWG Saved: 5/6/2024 11:34:27 AM Plotted: 5/6/2024 11:35:58 AM Current User: Bouillon, Hugo LastSavedBy: 7895

Hydrologic Soil Group—Westchester County, New York

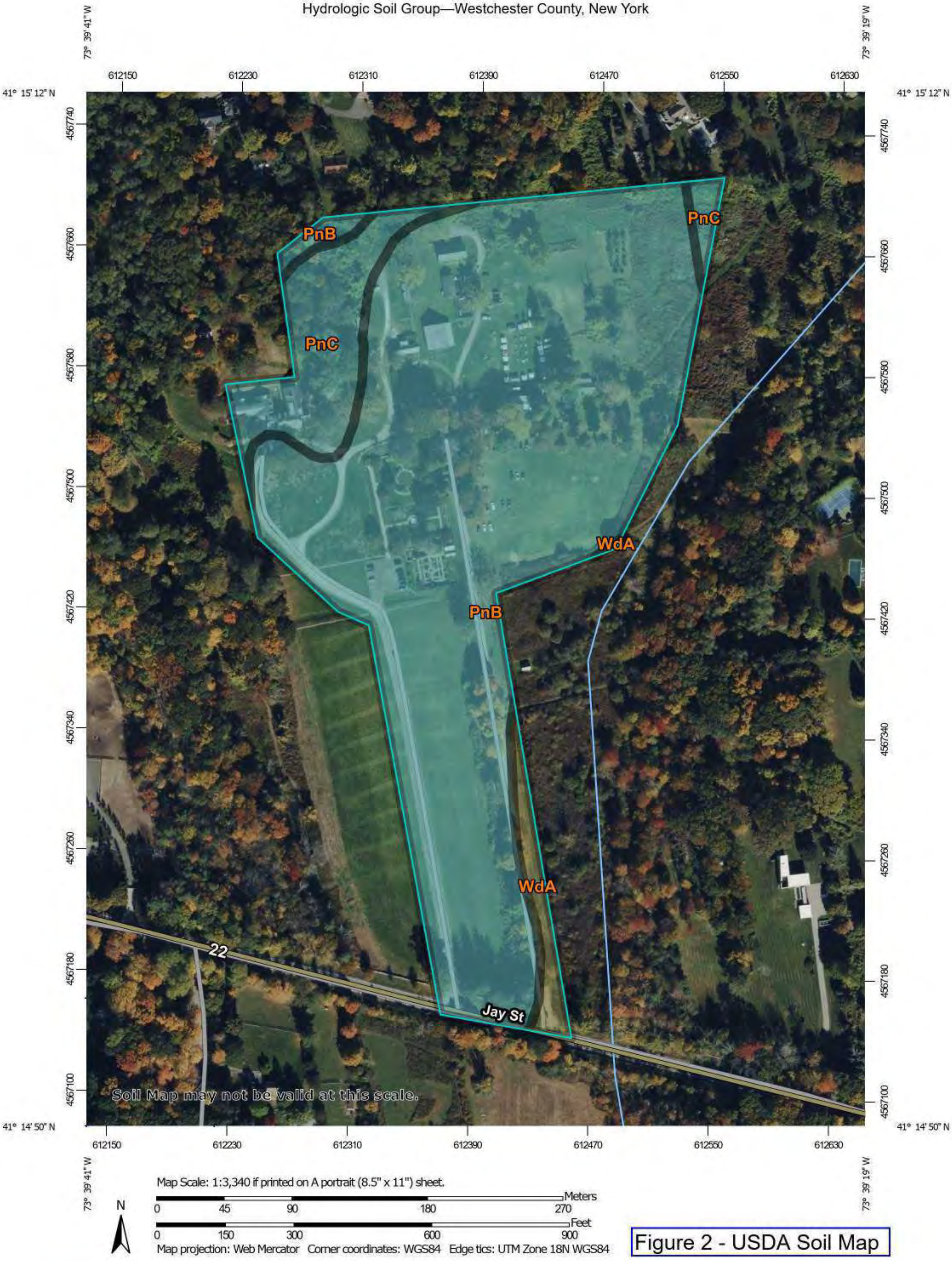

Figure 2 - USDA Soil Map

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:
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 19, Sep 6, 2023

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

Date(s) aerial images were photographed: Oct 21, 2022—Oct 27, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
PnB	Paxton fine sandy loam, 3 to 8 percent slopes	C	20.1	86.1%
PnC	Paxton fine sandy loam, 8 to 15 percent slopes	C	2.6	11.0%
WdA	Woodbridge loam, 0 to 3 percent slopes	C/D	0.7	2.9%
Totals for Area of Interest			**23.3**	**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

New York State
Parks, Recreation and
Historic Preservation

Gouvernor Kathy Hochul | Commissioner Pro Tempore Randy Simons

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Architectural Consultant
BEYER BLINDER BELLE ARCHITECTS & PLANNERS
120 BROADWAY, 20TH FLOOR, NEW YORK, NY 10271

Structural Consultant
THORNTON TOMASETTI
120 BROADWAY, 15TH FLOOR, NEW YORK, NY 10271

MEP / FP / IT Consultant
LANDMARKS FACILITIES GROUP
252 EAST AVENUE, NORWALK, CT 06855

Civil Consultant
CHA CONSULTING, INC.
575 BROADWAY, SUITE 301, ALBANY, NY 12207

Landscape Consultant
RHODESIDE HARWELL LANDSCAPE ARCHITECTURE
347 WEST 36TH STREET, SUITE 1201, NEW YORK, NY 10018

Lighting Consultant
HLB LIGHTING
38 EAST 32ND STREET, 11TH FLOOR, NEW YORK, NY 10016

Signage Consultant
LVCK - A BEYER BLINDER BELLE STUDIO
120 BROADWAY, 20TH FLOOR, NEW YORK, NY 10271

NYS OPRHP Taconic Region
9 Old Post Rd, PO Box 308
Staatsburg, NY 12580
(845) 889 - 4100

Regional Director: Linda Cooper
Capital District Manager: Garrett Jobson

Project Title:
John Jay Homestead Site And Building Enhancements

Project Location:
Katonah
NY 10536

Key Plan

REVISIONS

Rev No	Description	Date:
1	SCHEMATIC DESIGN SUBMISSION	10/2/2023
2	DESIGN DEVELOPMENT SUBMISSION	1/31/2024
3	PROGRESS CD SUBMISSION	4/10/2024

Drawn By: HB
Design By JJE
Checked By: JJE
Approved By: SKB
DATE 04/10/24

Seal and Signature

Sheet Title
EXISTING CONDITIONS WATERSHED MAP

Drawing Number
FIG-3

Project Number: D006292
Sheet: XXX of 367

New York State Parks, Recreation and Historic Preservation

Gouvernor Kathy Hochul

Commissioner Pro Tempore Randy Simons

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Architectural Consultant
BEYER BLINDER BELLE ARCHITECTS & PLANNERS
120 BROADWAY, 20TH FLOOR, NEW YORK, NY 10271

Structural Consultant
THORNTON TOMASETTI
120 BROADWAY, 15TH FLOOR, NEW YORK, NY 10271

MEP / FP / IT Consultant
LANDMARKS FACILITIES GROUP
252 EAST AVENUE, NORWALK, CT 06855

Civil Consultant
CHA CONSULTING, INC.
3 WINNERS CIRCLE, COLONIE, NY 12205

Landscape Consultant
RHODESIDE HARWELL LANDSCAPE ARCHITECTURE
347 WEST 36TH STREET, SUITE 1201, NEW YORK, NY 10018

Lighting Consultant
HLB LIGHTING
38 EAST 32ND STREET, 11TH FLOOR, NEW YORK, NY 10016

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120 BROADWAY, 20TH FLOOR, NEW YORK, NY 10271

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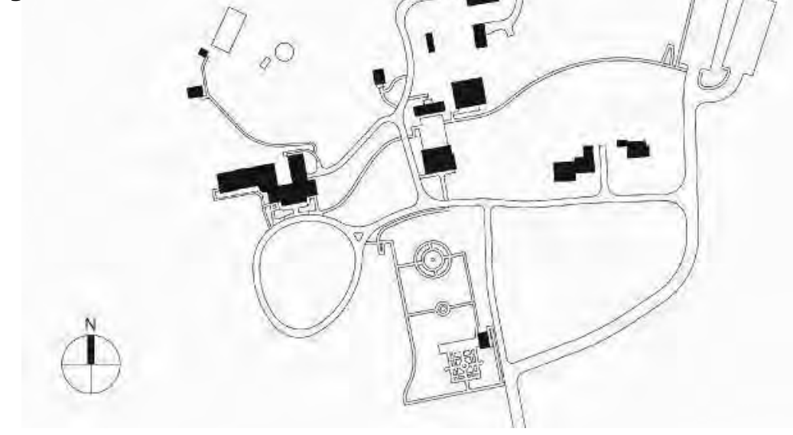

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Drawn By: HB
Design By: JJE
Checked By: JJE
Approved By: SKB
DATE: 04/10/24

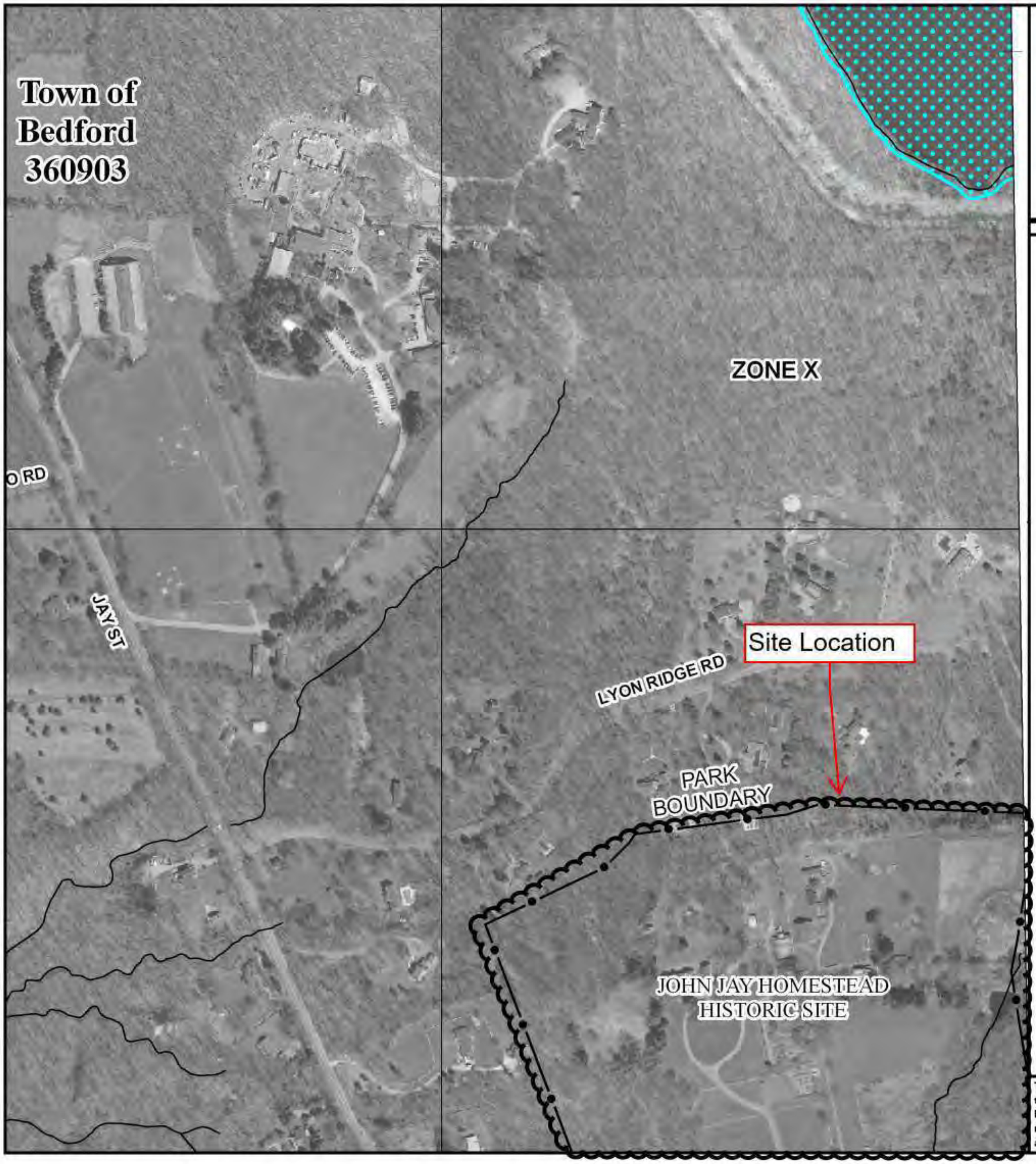
Seal and Signature

Sheet Title
PROPOSED
CONDITIONS
WATERSHED MAP

Drawing Number
FIG-4

Project Number: D006292

Sheet: XXX of 367



MAP SCALE 1" = 500'

NATIONAL FLOOD INSURANCE PROGRAM

NFIP

PANEL 0068F

FIRM

FLOOD INSURANCE RATE MAP

for WESTCHESTER COUNTY, NEW YORK
(ALL JURISDICTIONS)

CONTAINS:

COMMUNITY	NUMBER
BEDFORD, TOWN OF	360903
LEWISBORO, TOWN OF	361227

Figure 5A - FEMA MAP

PANEL 68 OF 426
MAP SUFFIX: F
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

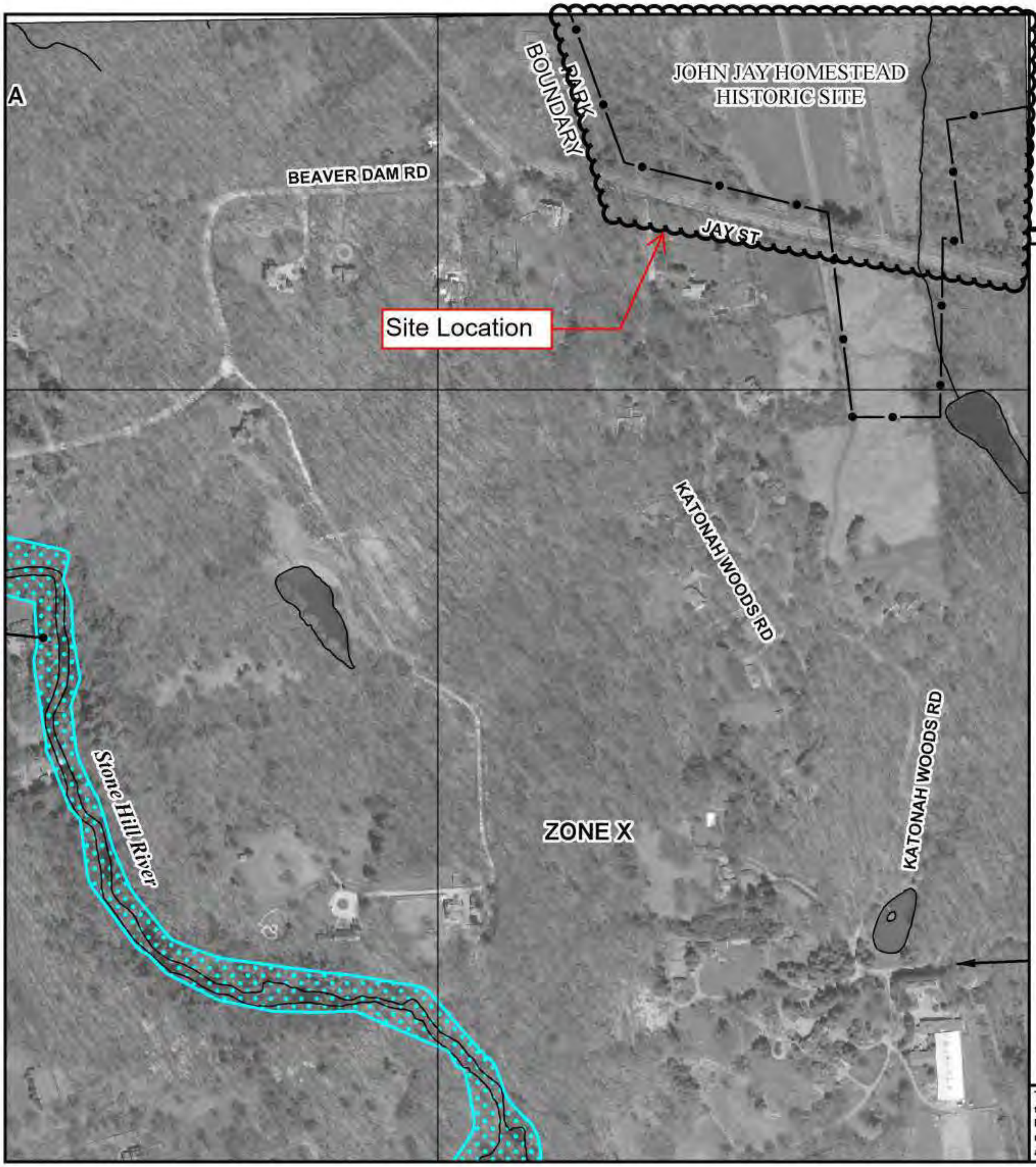
Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

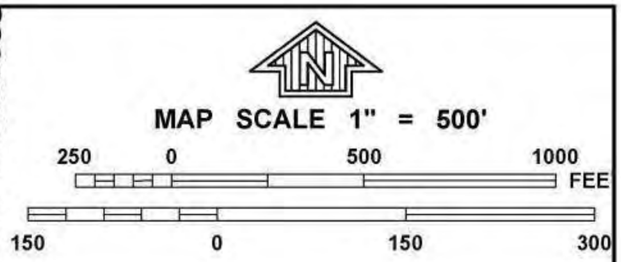
MAP NUMBER
36119C0068F

EFFECTIVE DATE
SEPTEMBER 28, 2007

Federal Emergency Management Agency

This is an official FIRMette showing a portion of the above-referenced flood map created from the MSC FIRMette Web tool. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For additional information about how to make sure the map is current, please see the Flood Hazard Mapping Updates Overview Fact Sheet available on the FEMA Flood Map Service Center home page at https://msc.fema.gov.





NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0156F

FIRM

FLOOD INSURANCE RATE MAP

for WESTCHESTER COUNTY, NEW YORK
(ALL JURISDICTIONS)

CONTAINS:

COMMUNITY	NUMBER
BEDFORD, TOWN OF	360903

Figure 5B - FEMA MAP

PANEL 156 OF 426
MAP SUFFIX: F
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

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36119C0156F

EFFECTIVE DATE
SEPTEMBER 28, 2007

Federal Emergency Management Agency

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APPENDIX B

Historic Cultural Resource

New York State
Parks, Recreation and
Historic Preservation

KATHY HOCHUL
Governor

RANDY SIMONS
Commissioner *Pro Tempore*

April 29, 2024

Erin Moroney
NYS OPRHP
1 Delaware Ave
Cohoes, NY 12047

Re: OPRHP/14.09
John Jay Homestead SHS/Building & Site Enhancements
400 Jay St, Katonah, NY 10536
23PR07343

Dear Erin Moroney:

Thank you for requesting the comments of the Division for Historic Preservation (DHP). We have reviewed the project in accordance with the New York State Historic Preservation Act of 1980 (Section 14.09 NYSPRHPL) and OPRHP Agency Protocol HP-PCD-002. These comments are those of the DHP and relate only to Historic/ Cultural resources.

We note that John Jay Homestead is a State Historic Site, a National Historic Landmark and listed in the State and National Registers of Historic Places. National Historic Landmarks (NHLs) are nationally significant places designated by the Secretary of the Interior because they possess exceptional value or quality in illustrating or interpreting the heritage of the United States.

We have reviewed the drawings dated 1/31/2024, the e-mails from Erin Moroney dated 3/18, 3/21, 4/24 and meeting notes from the 4/11/2024. For clarity, we understand the project to include:

1) Bedford House
    a. Interior restoration: including period appropriate interior finishes such as flooring and wallpaper as approved by the Bureau of Historic Sites and structural repairs (sistering with steel)
    b. Exterior restoration: including window restoration and replacement and exterior masonry work, roof replacement, porch repair.
    c. ADA compliance: Including stair/elevator improvements for access to the second floor, access to the front door via a porch lift.
    d. Electrical – including museum and exit lighting.
    e. HVAC – including geothermal.
2) Site
    a. Parking and circulation – new road to parking lot
    b. Wayfinding and exterior lighting
    c. Landscape restoration of Haha's and stone walls

3) Potting Shed
4) Carriage Barn/Visitor Center
    a. HVAC including Geothermal.
    b. ADA upgrades including raising of floors to remove interior ramps and leveling of courtyard between Carriage Barn and Coachman's House
5) Brick Cottage - Stabilization

Only the work noted above has been reviewed. Any additional work will need to be submitted as a new project for review. We note our Archeology Unit has no archeological concerns with the work as proposed. Based upon our review, it is DHP's opinion that the proposed work will have No Adverse Impact upon historic resources provided the following conditions are met:

1. The potting shed shall be treated as described in the e-mail dated 4/24/2024.
2. The Brick Cottage stabilization plans shall be submitted for review and comment when they are available.
3. Any substantive changes proposed to the project shall be submitted for our review and comment.

If you have any questions, you can call or e-mail me at the contact information below.

Sincerely,

Daniel McEneny
Division Director

APPENDIX C

Geotechnical Report

Geotechnical Engineering Report

John Jay Homestead Site and Building Enhancements

Katonah, NY

Prepared for:

Beyer Blinder Belle Architects & Planners LLP

120 Broadway, 20th Floor
New York, NY 10271

March 2024, Revised May 2024

CHA Project No.:
80675

III Winners Circle,
Albany, NY 12205

This report has been prepared and reviewed by the following qualified engineers employed by CHA.

Report Prepared By:

Adam J Bryant

Adam J. Bryant, P.E.
Geotechnical Engineer

Report Reviewed By:

Scott M. Doehla

Scott M. Doehla, P.E.
Senior Geotechnical Engineer

STATE OF NEW YORK
SCOTT MICHAEL DOEHLA
083448
LICENSED PROFESSIONAL ENGINEER

TABLE OF CONTENTS

TABLES

APPENDICES

1.0 INTRODUCTION

CHA was retained by Beyer, Blinder, Belle Architects & Planners, LLP to complete a geotechnical exploration and evaluation for the design of the brick cottage reconstruction at John Jay Homestead State Historic Site located at 400 Jay Street in Katonah, New York. The project site is shown on *Figure 1 - Site Location Map*, included in Appendix A.

The primary objectives of the exploration were to evaluate the subsurface conditions at the site and to provide geotechnical recommendations for the design of the proposed brick cottage reconstruction and paving of the existing access road.

2.0 SITE AND PROJECT DESCRIPTION

The project site is located in the John Jay Homestead State Historic Site in Katonah, New York. The John Jay Homestead State Historic Site is an approximately 62-acre site comprised of 10 buildings, including the original 1787 John Jay House, with access roads, stone walls, and wooded areas throughout the site. The project site consists of the brick cottage located east of the John Jay House, and an access road and open fields located to the north, east and south of the John Jay House. Wetland areas and a small pond are located to the south and east of the project site. Standing water was observed in the wetland area approximately 100 feet east of the existing access road in April 2024. NYS Route 22 is located to the south, and the Cross River Reservoir is located approximately 3,000 feet northeast of the project site. The ground surface at the project site slopes down from northwest to the southeast from about El. 470 feet to El. 440 feet based on a site survey. The ground surface at the brick cottage slopes down from the northwest to southeast between El. 470 feet to El. 467 feet. The brick cottage has a two-story section with a partially below grade basement of unknown height and a one-story area without a basement. The total approximate footprint of the brick cottage is 3,000 square feet. The brick cottage has a finished floor elevation (FFE) of El. 471.8 feet. An approximately 3-foot-tall stone wall is located to the north of the building. Photographs of the site are included in Appendix B.

The project involves the design of repairs to the existing brick cottage and an existing access road, a new access road, a parking area and stormwater improvements. The repairs to the brick cottage will include partial or full reconstruction of the foundations and basement walls. The existing main access road, proposed access road and parking lot will be paved with asphalt. The existing access road will not include cuts and will be constructed at grades similar to the existing grade. The new access road requires cuts of up to 2 feet and fills of up to 2 feet. The new parking area requires cuts of up to 3 feet and fills of up to 4 feet. The new parking area will have a retaining wall with a north to south orientation, dividing the parking lot in half. The retaining wall will have exposed heights ranging from 2 to 8 feet and a total length of approximately 200 feet. The parking lot area to the east of the retaining wall will have a ground surface elevation of approximately 449 feet and the area to the west will have a ground surface elevation of approximately 459 feet. Stormwater areas will consist of three bioretention ponds located to the east of the proposed new access road and parking area. The bioretention ponds will have footprints of approximately 2,500 to 5,500 square feet. Foundation work was originally being considered at the maintenance garage but was removed from the project scope by the client. Additional park access roads will be paved, the design of which is outside the scope of this report. The existing and proposed site features are shown on *Figure 2 – Subsurface Exploration Plan*, included in Appendix A.

3.0 SUBSURFACE EXPLORATION

The subsurface explorations and laboratory testing performed for this project are described in the following sections.

3.1 Boring Program

CHA conducted a subsurface exploration program consisting of fourteen total borings designated as B-1 through B-6, B-6A, B-7 through B-10, and B-101 through B-103. Borings B-1 through B-6, B-6A and B-7 through B-10 were completed between January 16 and 19, 2024. Borings B-101 through B-103 were completed on April 15, 2024. CHA retained Underground Surveying, LLC to perform a non-destructive, non-intrusive subsurface utility survey prior to drilling. Borings B-1 and B-2 were performed adjacent to the brick cottage and extended to depths of 20.9 to 22 feet. Boring B-3 was performed adjacent to the maintenance garage and extended to a depth of 22 feet. Borings B-4 and B-5 were performed along the existing access road to depths of 10 feet. Borings B-6, B-6A and B-7 through B-10 were performed for roadway and preliminary stormwater design purposes in the eastern portion of the site to depths of 12 feet. Boring B-7 is located in the vicinity of the parking area site retaining wall, which was added after the completion of the subsurface exploration. Borings B-101 through B-103 were performed for final stormwater design purposes in the eastern portion of the site to depths of 10.5 to 12 feet.

Borings B-1 through B-3 were located onsite by measuring from existing site features. Borings B-4 through B-6, B-6A, B-7 through B-10 and B-101 through B-103 were located onsite using a backpack GPS unit accurate to 1 meter. Ground surface elevations at boring locations were estimated based on interpolation between contours on the site survey and are based on NAVD88. The locations and elevations should be considered accurate only to the degree implied by the method used to determine them. The approximate boring locations are shown on *Figure 2 – Subsurface Exploration Plan*, included in Appendix A.

New England Boring Contractors of Glastonbury, Connecticut was retained by CHA to advance the borings. The field exploration was performed under the observation of a CHA geotechnical engineer who confirmed proper drilling and sampling methods were utilized for the exploration, observed and described soil samples, prepared field logs documenting the subsurface conditions, and conducted infiltration testing.

The borings were advanced with a Mobile Drill B53 truck mounted drill rig and Mobile Drill B53 rubber track mounted drill rig using hollow stem augers (HSA) with an inside diameter of 4.25 inches or solid stem augers (SSA) with an inside diameter of 2.25 inches. Continuous split spoon sampling was generally performed to a depth of up to 12 feet below ground surface, and then at standard 5-foot intervals thereafter to the boring termination depths. Standard Penetration Testing (SPT) was utilized during split-spoon sampling in general accordance with ASTM International (ASTM) Standard D-1586 "Standard Test Method for Standard Penetration Test (SPT) and Split-Barrel Sampling of Soils." The split spoon samples were advanced using an automatic 140 (±) pound hammer falling 30 (±) inches. "Blow counts" recorded on the boring logs indicate the penetration resistance for a 6-inch advancement of the split soon. Initially, the spoon is driven 6 inches to seat the sampler in undisturbed material. The number of blows required to drive the sampler the next 12 inches is taken as the SPT resistance or N-value. This value is indicative of the soil's in-place density or consistency. The final 6-inch increment that the spoon is driven is not included in the determination of the N-value. Boreholes B-1 through B-6 were backfilled with soil cuttings upon completion.

Infiltration tests were planned adjacent to borings B-6A, B-7 through B-10 and B-101 through B-103. Infiltration tests were not performed adjacent to B-8 through B-10 and B-101 through B-103 due to shallow groundwater. The infiltration tests conducted adjacent to B-6A and B-7 were designated as IT-6 and IT-7, respectively. Infiltration testing was conducted according to Appendix D of the 2022 New York State Stormwater Management Design Manual. After a presoak was conducted, water was added to the infiltration casing to set it to 24 inches above the bottom of the casing. The distance that the water within the casing dropped in an hour was measured and recorded. Water was added to bring the level back to 24 inches above the bottom of casing for the next testing interval. The test was terminated after five test intervals. Infiltration test holes were backfilled with soil cuttings upon completion. A New York City Department of Environmental Conservation (NYCDEP) representative was onsite to oversee the infiltration testing.

Water level observations were made during and upon completion of drilling. Observation wells were installed in borings B-6A and B-7 through B-10 to depths of 12 feet. Details of the observation well construction are shown on the boring logs included in Appendix C. The water levels within the wells were recorded during the subsurface exploration, and are included in *Section 4.3 – Groundwater* Conditions and on the boring logs in Appendix C.

3.2 Laboratory Analysis

Select soil samples were submitted for laboratory analysis to confirm visual descriptions. Testing included five tests for particle-size analysis (ASTM D422), one test for Atterberg Limits analysis (ASTM D4318) and one test for water content of soil (ASTM D2216). The results of the laboratory testing are included in Appendix D.

4.0 SUBSURFACE CONDITIONS

Subsurface conditions at the site were assessed based on a review of published geologic maps and the results of the subsurface exploration performed on-site and are summarized below.

4.1 Regional Geology

According to the Surficial *Geologic Map of New York – Lower Hudson Sheet*, (Cadwell, D.H. 1991), the surficial soil at the site consists of glacial till.

According to the *Geologic Map of New York – Lower Hudson Sheet*, (Fisher, D.W., Isachsen, Y.W., and Rickard, L.V., 1970), the bedrock underlying the site consists of Fordham Gneiss.

4.2 Subsurface Stratigraphy

Subsurface conditions encountered in individual borings are detailed and described on the boring logs included in Appendix C. Subsurface conditions can generally be described as follows, in order of increasing depth:

Topsoil – Topsoil was encountered at the ground surface in borings B-1 through B-3, B-6 through B-10 and B-101 through B-103 and extended to depths ranging from 0.1 to 0.2 feet.

Fill – A layer of existing fill was encountered below the topsoil in borings B-1 and B-2 and at the ground surface in borings B-4 and B-5 and extended to depths ranging from 2 to 4 feet. The layer consisted of varying amounts of fine to coarse sand, silt, fine to coarse gravel, wood and organics. The fill was brown or gray and visually classified as moist, and some near-surface samples appeared frozen. The SPT N-values ranged from 4 to 74, indicating a very loose to very compact density, however, the presence of frost likely affected N-values within the samples taken at shallow depths.

Silt/Clayey Silt/Silty Clay – A layer of silt, clayey silt or silty clay was encountered below the topsoil layer in boring B-3, B-6, B-7, and B-101 through B-103, and below the fill in borings B-1 and B-5 and extended to depths ranging from 2 to 6 feet. The layer consisted of silt, clayey silt, or silty clay with varying amounts of fine to coarse sand, fine gravel and organics. The soil was brown and visually classified as moist. The SPT N-values ranged from 2 to 8, indicating a medium stiff consistency for cohesive samples and a very loose to loose density for cohesionless samples.

Glacial Till – Glacial till was encountered below the topsoil layer in borings B-8 through B-10, below the fill in borings B-2 and B-4, below the silt, clayey silt and silty clay layer in borings B-1, B-3, B-5 through B-7 and B-101 through B-103. The glacial till layer extended to depths ranging from 10 to 22 feet. Borings B-2, B-4 through B-10 and B-101 through B-103 terminated within the glacial till layer. The layer generally consisted of various proportions of fine to coarse sand, fine to coarse gravel, silt, clay and organics. The soil was brown and visually classified as moist to wet. The SPT N-values ranged from 5 to split spoon refusal, indicating a very stiff to hard consistency for cohesive samples and a loose to very compact density for cohesionless samples.

Completely Weathered Rock – Completely weathered rock was encountered below the glacial till layer in borings B-1 and B-3 and extended to depths of 20.9 to 22 feet. Borings B-1 and B-3 terminated within the completely weathered rock. The layer consisted of fine to coarse sand with little silt and trace fine gravel. The soil was brown and visually classified as wet. The SPT N-values ranged from 85 to split spoon refusal, indicating a very compact density.

4.3 Groundwater Observations

Table 1 summarizes the observation well measurements.

Table 1: Groundwater Observation Well Measurements

Boring ID	Surface Elevation (Feet)	Screen Interval Elevation (Feet)	Date	Water Depth (Feet)	Water Elevation (Feet)
B-6A	459.5	447.5 to 452.5	1/17/2024	11.7	447.8
			1/18/2024	11.7	447.8
			1/19/2024	11.7	447.8
			4/15/2024	12.4	447.1
			4/16/2024	12.4	447.1
B-7	451.0	439.0 to 444.0	1/18/2024	7.0	444.0
			1/19/2024	7.3	443.7
			4/15/2024	8.2	442.8
			4/16/2024	7.9	443.1
B-8	451.0	439.0 to 444.0	1/18/2024	9.1	441.9
			1/19/2024	3.5	447.5
			4/15/2024	0.1	450.9
			4/16/2024	0.1	450.9
B-9	449.5	437.5 to 442.5	1/18/2024	1.1	448.4
			1/19/2024	0.8	448.7
			4/15/2024	0.7	448.8
			4/16/2024	0.7	448.8
B-10	448.5	436.5 to 441.5	1/18/2024	4.2	444.3
			1/19/2024	3.0	445.5
			4/15/2024	2.5	446
			4/16/2024	2.8	445.7

Groundwater levels were estimated based upon measurements or observed soil sample moisture content in the remaining boreholes during drilling operations and at the completion of drilling. These estimates are indicated on the boring logs included in Appendix C. Groundwater was estimated at depths ranging from 0.4 to 13.2 feet during drilling. Standing water was observed at the ground surface at boring B-101. The boreholes were only open for a short duration and seasonal factors such as temperature and precipitation affect groundwater levels. For these reasons, long-term groundwater levels may differ from those described in this report.

4.4 Infiltration Test Results

NYCDEP requires two phases of subsurface exploration and testing for stormwater management design. Borings for preliminary design consisted of B-6, B-6A and B-7 through B-10 and borings for final design consisted of B-101 through B-103. Infiltration testing was not performed at the B-8, B-9, B-10, B-101, B-102 and B-103 locations due to shallow groundwater. The results of the testing adjacent to borings B-6A and B-7 are outlined in Table 2.

Table 2: Infiltration Test Results

Boring Location	Depth Performed (ft)	Approx. Elevation Performed (ft)	Observed Infiltration Rate (in/hour)				
			Infiltration Test Run No.				
			1	2	3	4	5
IT-6A	2.0	457.5	0.0	0.0	0.0	0.0	0.0
IT-7	2.0	449.0	0.0	0.0	0.0	0.0	0.0

5.0 GEOTECHNICAL RECOMMENDATIONS

The following sections provide geotechnical recommendations for design of the project. These recommendations are based on our review of the results of the subsurface exploration.

5.1 Shallow Foundations

Shallow foundations are recommended for support of the reconstruction of the existing brick cottage and the parking area site retaining wall. The foundations should bear on the natural clayey silt or glacial till soil. Spread footings should be designed based on a maximum net allowable bearing capacity of 3 kips per square foot (ksf). Foundations should be founded at a minimum depth of 4.0 feet below finished grade to provide frost protection. We recommend that isolated footings be a minimum of 3.0 feet wide and continuous strip footings be a minimum of 18 inches wide.

Foundations should be constructed as soon as possible after excavation to minimize the risk of disturbance to the bearing surface by exposure to precipitation or other adverse conditions. Foundation excavations should be backfilled with structural fill in accordance with the placement and compaction procedures included in *Section 5.6 - Structural Fill*.

Footing subgrade shall be protected from freezing during construction. Any disturbed, frozen or softened subgrade should be removed and replaced with structural fill as required to minimize detrimental impacts to foundation performance.

The natural soil is moisture sensitive and prone to disturbance when wet or when exposed to excessive foot traffic. Foundations should be constructed as soon as possible after excavation to minimize the risk of disturbance to the bearing surface by exposure to precipitation or other adverse conditions. To protect the footing subgrade and to provide a stable working surface a minimum of 6-inches of crushed stone over separation geotextile fabric or a 2-inch to 3-inch concrete mud mat should be placed below the footing subgrade. The separation geotextile shall be a non-woven geotextile with an apparent opening size (AOS) equal to or smaller than the U.S. Standard sieve size of 70, such as Mirafi 160N. Crushed stone should consist of a 50:50 mix of NYSDOT size designation No. 1 and No. 2 crushed stone.

A detailed settlement analysis was beyond the scope of this report. However, based on the information obtained during the subsurface exploration and the recommendations outlined in this report, we anticipate that total foundation settlement will be less than 1 inch, with differential settlement of about 1/2 inch across a distance of 20 feet. These estimates are based on the assumption that foundations are constructed as recommended herein and that proper site preparation and construction monitoring is performed.

5.2 Lateral Earth Pressures

The new basement walls and the parking area site retaining wall should be designed to resist lateral soil pressure as well as surcharges from adjacent loads. Basement walls restrained against lateral movement should be designed to resist at-rest earth pressures.

New basement walls and the parking area site retaining wall should be backfilled with structural fill meeting the requirements of *Section 5.6 – Structural Fill* for a lateral distance equal to at least one-half of the wall height. Walls backfilled with structural fill should be designed to resist lateral earth pressures based on the following soil properties:

• Total Unit Weight	125 pcf
• Angle of Internal Friction	32 Degrees
• Coefficient of At-Rest Earth Pressure[1]	0.47
• Coefficient of Active Earth Pressure[1]	0.31
• Coefficient of Sliding (Mass concrete on Natural Soil)	0.3

Notes:

1. Earth pressure coefficients assume level backfill behind walls and should be adjusted if non-level backfill is proposed.

Design for new basement walls should incorporate drainage measures to prevent hydrostatic build-up and to provide positive drainage. Drainage measures should include a minimum 1-foot-thick horizontal layer of drainage stone from the surrounding soil by a separation geotextile having an AOS equal to or smaller than the U.S. Standard sieve size of 70, such as Mirafi 160N. A prefabricated drainage board may be utilized in lieu of the crushed stone layer. New basement walls that do not include drainage features should be designed for full hydrostatic pressure.

5.3 Pavement

The existing fill, natural clayey silt and silt and glacial till soils anticipated at pavement subgrade elevation are suitable for support of the proposed paved main access road, additional new access road and proposed parking area. The flexible pavement section should be designed using a California Bearing Ratio (CBR) of 5. The anticipated subgrade soils contain a significant amount of fine-grained soil and are poor draining. This soil is considered susceptible to frost heave, particularly if water is available for formation of ice lenses. Subbase course drainage is essential for successful pavement performance and longevity. The subbase course should be maintained in a drained condition at all times. Underdrains should be constructed along portions of the proposed new access road and consist of 4-inch diameter drain, spaced at 15 feet and drained to positive outlet. The underdrains should be a minimum of two feet below the proposed final grade and should be located in the access road areas that have a finished grade of less than or equal to El. 250 feet. Along the existing main access road, drainage may consist of either installing underdrains or sloping the subgrades to planned draining systems or otherwise.

The subgrade should be prepared in accordance with *Section 5.5 – Site and Subgrade Preparation*. The pavement section should include an aggregate subbase course such as NYSDOT Type 2 Subbase. The subbase along the existing access road should be underlain by a woven separation and stabilization geotextile. The geotextile should have an AOS equal to or smaller than the U.S. Standard sieve size of 40, such as Mirafi 600X.

5.4 Seismic Site Classification and Design Parameters

Based on the site location, and in accordance with the 2020 Building Code of New York State (NYSBC) Section 1613, the following spectral response accelerations should be used for seismic design:

- Mapped Spectral Response Acceleration at Short Periods (S_s)..................0.27g
- Mapped Spectral Response Acceleration at 1 Second Period (S_1).............0.06g

The location based spectral response accelerations are based on seismic Site Class B and must be adjusted for the project site class based on subsurface conditions. Site class D is recommended based on the subsurface conditions. In accordance with section 1613 of the NYSBC the following seismic design coefficients shall be used:

- Site Coefficient F_a...1.6
- Site Coefficient F_v...2.4

The potential for earthquake induced soil liquefaction was not required based on the subsurface conditions encountered and seismic design category of B for the project site.

5.5 Site and Subgrade Preparation

The areas within the improvements shall be stripped of any vegetation, topsoil and other deleterious materials. Subsequent to excavating to proposed grades, the exposed subgrade should be proofrolled with a smooth drum roller with a minimum static weight of 10 tons. The roller should operate in its vibratory mode, and complete at least six passes over the subgrade at a speed not exceeding 3 feet per second (fps). Areas which pump or weave during proof rolling shall be undercut by a minimum of 12 inches and stabilized with structural fill meeting the requirements of *Section 5.6 - Structural Fill*. If the vibration roller tends to "bring up" moisture, the subgrade should be proof rolled with the roller operating in the static mode.

5.6 Structural Fill

Structural fill should be used for backfilling foundation excavations, for raising grade behind he site retaining wall, and overexcavations. Structural fill shall consist of sound, durable, non-plastic sand and gravel, free of stumps, roots, organics, and any frozen or deleterious materials.

Structural fill shall be placed in loose lifts not exceeding 8 inches in thickness and should be compacted to at least 95 percent of the maximum laboratory dry density as determined by the modified Proctor test (ASTM D-1557). Structural fill shall conform to the gradation requirements in Table 3.

Table 3: Gradation Requirements for Structural Fill

Sieve Size	Percent Passing by Weight
4 inch	100
No. 40	0 to 70
No. 200	0 to 10

The on-site soil generally does not meet the requirements for Structural Fill.

5.7 Groundwater and Control of Water

Groundwater may be encountered when excavating during foundation construction and when excavating to establish roadway subgrades. At the brick cottage, a design groundwater elevation of 465 feet is recommended. At the existing access road, a design groundwater elevation of 448 feet is recommended. At proposed parking area, design groundwater elevations of 448 feet for the western side and 444 feet for the eastern side and site retaining wall are recommended. At the new access road, a design groundwater elevation of 449 feet is recommended. Project specifications should require that groundwater be maintained at a minimum depth of 2.0 feet below the excavation bottom at all times. It is the responsibility of the contractor to determine the most appropriate dewatering methods and to maintain dry conditions so that foundation construction may be completed in the dry.

6.0 EXCAVATIONS

All excavations should be performed in accordance with the Occupational Safety and Health Administration (OSHA) standards, and applicable state and local codes. Where adequate sloping or benching is not possible, excavation support should be provided. The design of a temporary excavation system shall be performed by a registered Professional Engineer licensed in the State of New York.

7.0 OBSERVATION DURING CONSTRUCTION

A qualified geotechnical engineer should carefully inspect all excavations, backfilling, and final bearing surfaces for foundations to ascertain that subgrades have been properly prepared. The inspection of soil subgrades should include probing of select areas to confirm density. The materials used as fill should be tested by a qualified soils laboratory to verify they meet the specified gradations and to determine their optimum moisture content and maximum dry density for compaction. In-place density tests should be performed to verify that compaction methods and equipment achieve the required densities.

8.0 CLOSURE

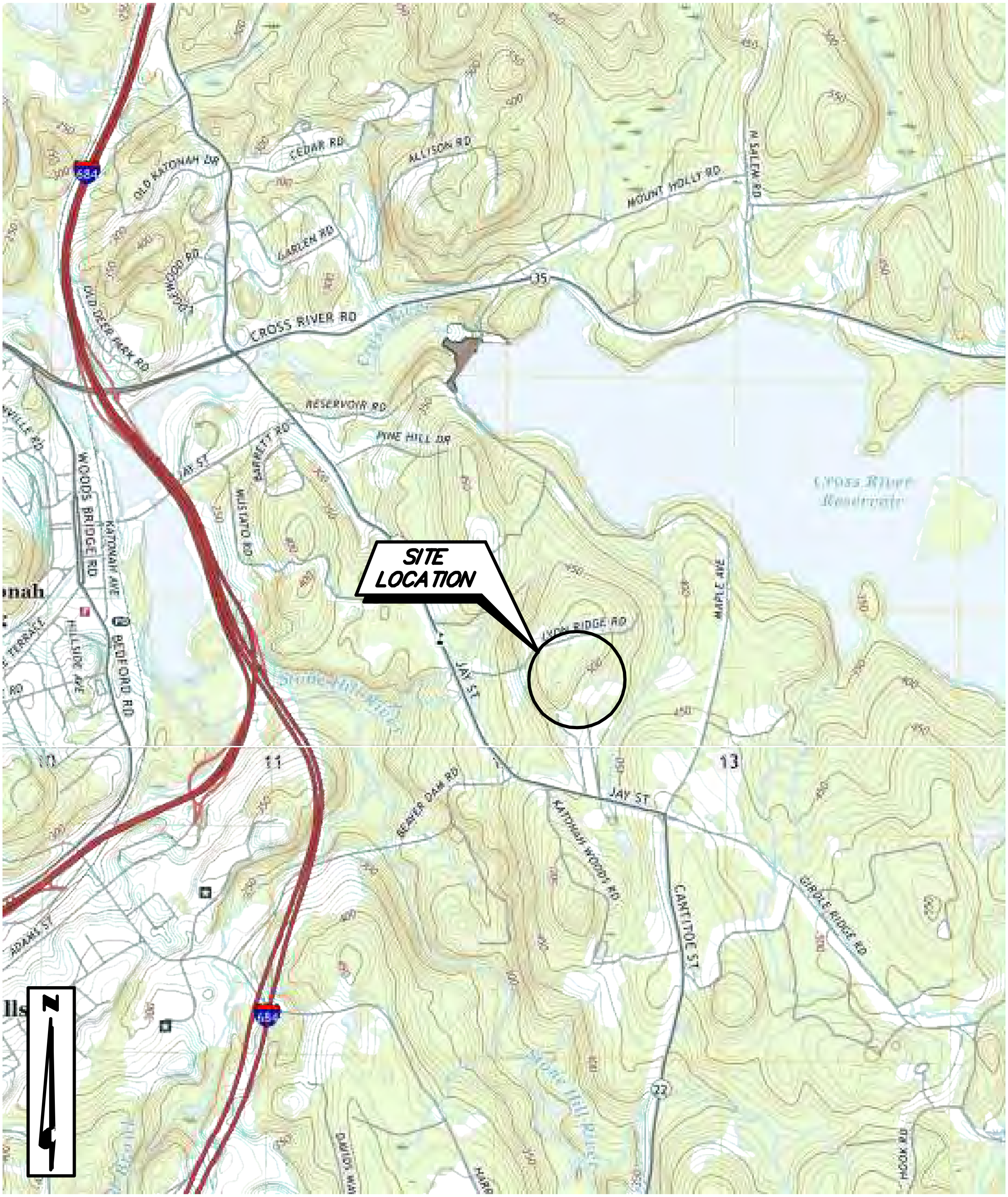
The geotechnical recommendations presented in this report are based, in part, on project and subsurface information available at the time this report was prepared and in accordance with generally accepted soil and foundation engineering practices. No other warranty, expressed or implied, is made. Some variation of subsurface conditions may occur between locations explored that may not become evident until construction. Depending on the nature and extent of the variations, it may be necessary to re-evaluate the data presented in this report.

This report has been prepared solely for design purposes and shall not be incorporated by reference of other means in the Contract Documents. If this report is included in the Contract Documents, it shall be for information only. Specifications shall take precedence.

CHA does not accept responsibility for designs based upon our recommendations unless we are engaged to review the final plans and specifications to determine whether any changes in the project affect the validity of our recommendations and whether our recommendations have been properly implemented in the design.

APPENDIX A

FIGURES



SOURCE: U.S.G.S. 7.5' Topographic
QUADRANGLES: CROTON FALLS AND MOUNT KISCO, NY

SCALE: 1"=2000'

CHA
III Winners Circle, PO Box 5269
Albany, NY 12205-0269
518.453.4500 · www.chacompanies.com

SITE LOCATION MAP

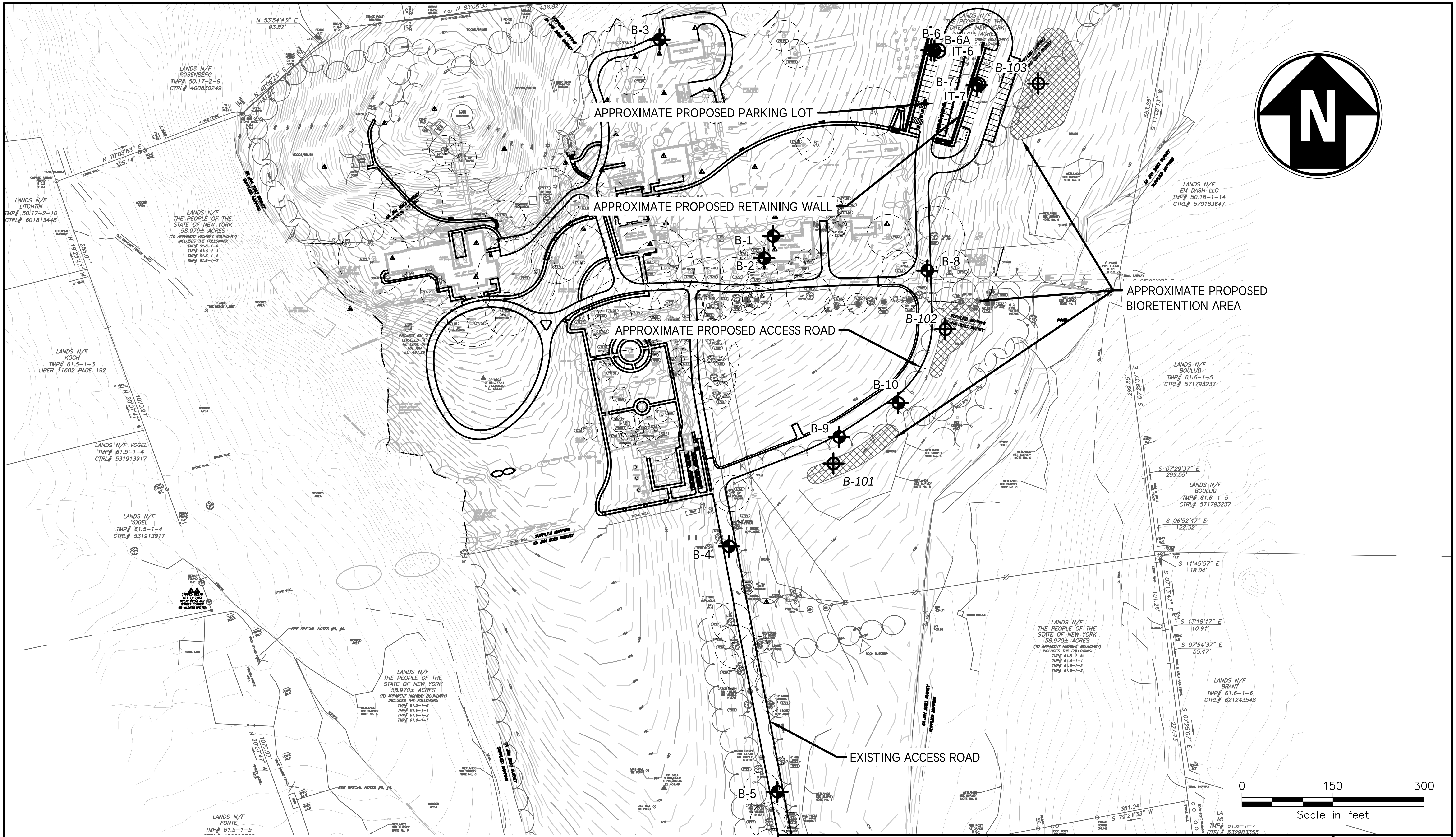
JOHN JAY HOMESTEAD STATE HISTORIC SITE
KATONAH, NEW YORK

PROJECT NO.
080675

DATE: 05/2024

FIGURE 1

File: V:\PROJECTS\ANY\K6\080675.000\09_DESIGN\DRAWINGS\GEO\080675_SITELOC.DWG Saved: 3/4/2024 12:09:41 PM Plotted: 5/8/2024 5:48:48 PM User: Bryant, Adam



LEGEND

B-1 ⊕ *APPROXIMATE JANUARY 2024 BORING LOCATION*

IT-6 ⊙ *APPROXIMATE JANUARY 2024 INFILTRATION TEST LOCATION*

B-101 ⊕ *APPROXIMATE APRIL 2024 BORING LOCATION*

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SUBSURFACE EXPLORATION PLAN

JOHN JAY HOMESTEAD STATE HISTORIC SITE
KATONAH, NEW YORK

PROJECT NO.
080675

DATE: 05/2024

FIGURE 2

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APPENDIX B

PHOTOGRAPHS

1

Drilling operations at boring B-1, looking south

2

Drilling operations at boring B-2, looking south

3

Drilling operations at boring B-5, looking northwest

4

Groundwater observation well and infiltration casing installed at boring B-6A, looking west

5

Drilling operations at boring B-8, looking southeast

6

Groundwater observation well installed at boring B-10, looking southeast

CHA	**John Jay Homestead Site and Building Enhancements** **Katonah, NY**
CHA # 80675	January 2024 – April 2024

7

Drilling operations at boring B-101, looking east

8

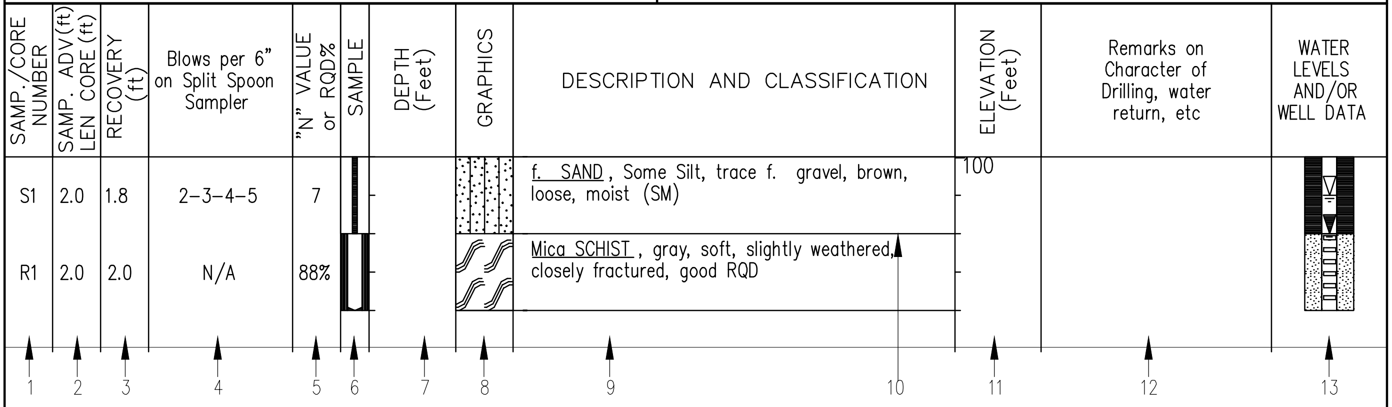
Drilling operations at boring B-103, looking east

APPENDIX C

BORING LOGS

CHA

LEGEND TO SUBSURFACE LOGS



SAMP./CORE NUMBER	SAMP. ADV(ft) LEN CORE(ft)	RECOVERY (ft)	Blows per 6" on Split Spoon Sampler	"N" VALUE or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, water return, etc	WATER LEVELS AND/OR WELL DATA
S1	2.0	1.8	2-3-4-5	7				f. SAND, Some Silt, trace f. gravel, brown, loose, moist (SM)	100		
R1	2.0	2.0	N/A	88%				Mica SCHIST, gray, soft, slightly weathered, closely fractured, good RQD			
1	2	3	4	5	6	7	8	9	10 / 11	12	13

Subsurface Logs present material classifications, test data, and observations from subsurface investigations at the subject site as reported by the inspecting geologist or engineer. In some cases, the classifications may be made based on laboratory test data when available. It should be noted that the investigation procedures only recover a small portion of the subsurface materials at the site. Therefore, actual conditions between borings and sampled intervals may differ from those presented on the Subsurface Logs. The information presented on the logs provide a basis for an evaluation of the subsurface conditions and may indicate the need for additional exploration. Any evaluation of the conditions reported on the logs must be performed by Professional Engineers or Geologists.

1. SAMP./CORE NUMBER – Samples are numbered for identification on containers, laboratory reports or in text reports.

2. SAMP.ADV/LEN.CORE – Length of sampler advance or length of coring run measured in feet.

3. RECOVERY – Amount of sample actually recovered after withdrawing sampler or core barrel from bore hole measured in feet.

4. SAMPLE BLOWS/6" – Unless otherwise noted, blow counts represent values obtained by driving a 2.0" (O.D.), 1-3/8" (I.D.) split spoon sampler into the subsurface strata with a 140 pound weight falling 30" as per ASTM International D1586. After an initial penetration of 6" to seat the sampler into undisturbed material, the sampler is then driven an additional 2 or 3 six inch increments. Refusal is defined as a resistance greater than 50 blows per 6" of penetration.

5. "N" Value or RQD % – "N" VALUE – The sum of the second and third sample blow increments is generally termed the Standard Penetration Test (SPT) "N" value. Refusal (R) is defined as a resistance greater than 50 blows for 6 inches of penetration. CORE RQD – Core Rock Quality Designation, RQD, is defined as the summed length of all pieces of core equal to or longer than 4 inches divided by the total length of the coring run. Fresh, irregular breaks distinguishable as being caused by drilling or recovery operations are ignored and the pieces are counted as intact lengths. RQD values are valid only for cores obtained with NX size core barrels.

6. SAMPLE – Graphical presentation of sample type and advance or core run length. See Table 1.

7. DEPTH – Depth as measured from the ground surface in feet.

8. GRAPHICS – Graphical presentation of subsurface materials. See Table 4. Dual soil classification and rock graphics may vary and are not shown on Table 4.

9. DESCRIPTION AND CLASSIFICATION – SOIL – Recovered samples are visually classified in the field by the supervising geologist or engineer unless otherwise noted. Particle size and plasticity classification is based on field observations, and using the Unified Soil Classification System (USCS). See Table 4. USCS symbols are presented in parentheses following the soil description. Where necessary, dual symbols may be used for combinations of soil types. Relative proportions, by weight and/or plasticity, are described in general accordance with "Suggested Methods of Test for Identification of Soils" by D.M. Burmister, ASTM Special Publication 479, 6-1970. See Table 2. Soil density or consistency description is based on the penetration resistance. See Table 3. Soil moisture description is based on the observed wetness of the soil recovered being moist or wet. Water introduced into the boring during drilling may affect the moisture content of the materials. Other geologic terms may also be used to further describe the subsurface materials. ROCK – Rock core descriptions are based on the inspector's observations and may be examined and described in greater detail by the project engineer or geologist. Terms used in the description of rock core are presented in Table 5.

10. DIVISION LINES – Division lines between deposits are based on field observations and changes in recovered material. Solid lines depict contacts between two deposits of different geologic depositional environment of known elevation. Dashed lines represent estimated elevation of contacts between two deposits of different geologic depositional environment. Dotted lines depict transitions of deposits within the same depositional environment, such as grain size or density.

11. ELEVATION – Elevation of strata changes in feet.

12. REMARKS – Miscellaneous observations.

13. WATER LEVELS & WELL DATA – Hollow water level symbol, if present, represents level at which first saturated sample or water level was encountered. Solid water level symbol, if present, depicts the most probable static water elevation at the time of drilling or as measured in an installed observation well at a later date. Subsurface water conditions are influenced by factors such as precipitation, stratigraphic composition, and drilling/coring methods. Conditions at other times may differ from those described on the logs. For graphical presentation of observation/monitoring well construction, see Table 6. Elevations of changes in construction are noted at the bottom of each section.

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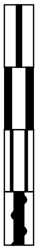
LEGEND TO SUBSURFACE LOGS

TABLE 1
TYPICAL SAMPLE TYPES



SPLIT SPOON
(1 3/8" I.D.)

NX SIZE
ROCK CORE

SHELBY TUBE
"UNDISTURBED"

AUGER SAMPLE

TABLE 2
SAMPLE MATERIAL PROPORTIONS

ADJECTIVE	PERCENTAGE OF SAMPLE
"and"	35% – 50%
"some"	20% – 35%
"little"	10% – 20%
"trace"	< 10%

Standard split spoon samples may not recover particles with any dimension larger than 1 3/8". Therefore, reported gravel percentages may not reflect actual conditions.

TABLE 3
DENSITY/CONSISTENCY

GRANULAR SOILS		COHESIVE SOILS	
Blows/ft.	Density	Blows/ft.	Consistency
< 5	Very Loose	< 2	Very Soft
5–10	Loose	2–4	Soft
11–30	Med. Compact	5–8	Med. Stiff
31–50	Compact	9–15	Stiff
> 50	Very Compact	16–30	Very Stiff
		> 30	Hard

TABLE 4
USCS CLASSIFICATION, PARTICLE SIZE, & GRAPHICS

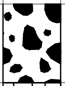
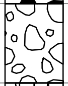
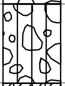
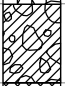
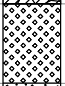
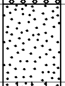
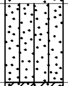
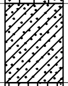
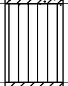
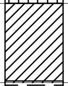
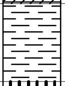
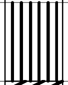
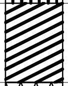
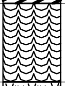
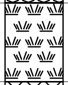
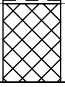
MAJOR PARTICLE SIZE DIVISION		USCS SYMBOL	GRAPHIC SYMBOL	GENERAL DESCRIPTION
COARSE GRAINED SOILS	GRAVEL Coarse: 3"–3/4" Fine: 3/4"–#4 Classification based on > 50% being gravel	GW		Well graded gravels, gravel & sand mix.
		GP		Poorly graded gravels, gravel & sand mix.
		GM		Gravel, sand and silt mix.
		GC		Gravel, sand and clay mix.
	SAND Coarse: #4–#10 Med.: #10–#40 Fine: #40–#200 Classification based on > 50% being sand	SW		Well graded sand, sand & gravel mix.
		SP		Poorly graded sand, sand & gravel mix.
		SM		Sand and silt mix.
		SC		Sand and clay mix.
FINE GRAINED SOILS	SILT & CLAY Classification based on > 50% passing #200 sieve.	ML		Inorganic silt, low plasticity.
		CL		Inorganic clay, low plasticity.
		OL		Organic silt/clay, low plasticity.
		MH		Inorganic silt, high plasticity.
		CH		Inorganic clay, high plasticity.
		OH		Organic silt/clay, high plasticity.
ORGANIC SOILS		Pt		Peat and other highly organic soils.
FILL		Fill		Miscellaneous fill materials.

TABLE 5
ROCK CLASSIFICATION TERMS

HARDNESS:

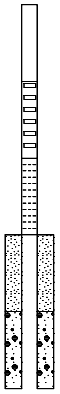
Very Soft	Carves
Soft	Grooves with knife
Med. Hard	Scratched easily with knife
Hard	Scatched with difficulty
Very Hard	Cannot be scratched with knife

WEATHERING:

Fresh	Slight or no staining of fractures, little or no discoloration, few fractures.
Slightly	Fractures stained, discoloration may extend into rock 1", some soil in fractures.
Moderately	Significant portions of rock stained and discolored, soil in fractures, loss of strength.
Highly	Entire rock discolored and dull except quartz grains, severe loss of strength.
Complete	Weathered to a residual soil.

BEDDING:		FRACTURE SPACING:		RQD:	
Massive	> 40"	Massive/V. Wide	> 6'	Excellent	> 90%
Thick	12' – 40"	Thick/Wide	2' – 6'	Good	76% – 90%
Medium	4" – 12"	Med./Med.	8" – 24"	Fair	51% – 75%
Thin	< 4"	Thin/Close	2 1/2" – 8"	Poor	25% – 50%
		V. Thin/V. Close	< 2 1/2"	V. Poor	< 25%

TABLE 6
WELL CONSTRUCTION



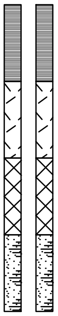
SOLID PVC PIPE

SCREENED PVC PIPE

STAINLESS STEEL SCREENED PIPE

FINE GRAINED WASHED SAND

WASHED SAND



BENTONITE PLUG

AIR ENTRAINED CEMENT

NATURAL SOIL/ ROCK FILL

BENTONITE/ CEMENT GROUT

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PROJECT NUMBER: 080675 4/26/2024

John Jay Homestead
SUBSURFACE LOG
HOLE NUMBER B-1

LOCATION: Katonah, New York

CLIENT: Beyer, Blinder, Belle Architects & Planners LLP

CONTRACTOR: New England Boring Contractors

DRILLER: D. DeAngelis INSPECTOR: C. Hourigan

CHECKED BY: CWS

COORDS. NORTHING: 882013.49 EASTING: 723564.52

SURFACE ELEV: 470.0 (ft; Estimated) DATUM: NAD83 / NAVD88

DRILL FLUID: None DRILLING METHOD: 4.25" HSA ROD SIZE: NW

HAMMER TYPE: Automatic DRILL RIG: Rubber Track ATV

START: 1/18/2024 11:05:00 AM FINISH: 1/18/2024 12:10:00 PM

WATER LEVEL OBSERVATIONS	DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
	1-18-24	12:10 PM	Completion	10.7	20	20.9
	1-18-24	1:15 PM	Completion	7.9	20	20.9

SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	BLOWS PER 6" ON SPLIT SPOON SAMPLER	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	REMARKS ON CHARACTER OF DRILLING, WATER RETURN, ETC.	WATER LEVELS AND/OR WELL DATA
S-1	2	0.8	10-5-3-2	8				**TOPSOIL** **SILT**, Some f.m.c. Sand, trace organics, brown, loose, moist **(FILL)**			
S-2	2	1.2	2-2-3-3	5				**f.m.c. SAND**, Some Silt, brown, loose, moist **(FILL)**			
S-3	2	1.4	5-5-3-3	8		5		**Clayey SILT**, Some f.m.c. Sand, brown, medium stiff, moist **(ML)**	465		
S-4	2	1.5	8-16-13-9	29				**f.m.c. SAND**, Some Silt, brown, medium compact, moist **(SM-TILL)**			▽
S-5	2	1.3	15-34-25-19	59				**f.m.c. SAND**, Some Silt, trace f.c. gravel, brown, very compact, moist **(SM-TILL)**		Water level observations made during drilling may not represent static groundwater conditions.	
S-6	2	0.7	14-20-18-16	38		10		**f.m.c. SAND**, little silt, brown, compact, brown, moist **(SM-TILL)**	460		
S-7	2	1	6-9-10-14	19		15		**f.c. GRAVEL**, Some Silt, Some f.m.c. Sand, brown, medium compact, wet **(GM-TILL)**	455		
S-8	0.9	0.9	51-100/0.4'	R		20		**f.m.c. SAND**, little silt, brown, very compact, wet **(COMPLETELY WEATHERED ROCK)**	450		
								End of Boring at 20.9 ft			

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PROJECT NUMBER: 080675 4/26/2024

John Jay Homestead
SUBSURFACE LOG
HOLE NUMBER B-2

Page 1 of 1

LOCATION: Katonah, New York	DRILL FLUID: None
CLIENT: Beyer, Blinder, Belle Architects & Planners LLP	DRILLING METHOD: 4.25" HSA
CONTRACTOR: New England Boring Contractors	ROD SIZE: NW
DRILLER: D. DeAngelis	INSPECTOR: C. Hourigan
CHECKED BY: CWS	HAMMER TYPE: Automatic
COORDS. NORTHING: 881975.48	EASTING: 723552.39
SURFACE ELEV: 469.5 (ft; Estimated)	DATUM: NAD83 / NAVD88
DRILL RIG: Rubber Track ATV	
START: 1/18/2024 1:45:00 PM	FINISH: 1/18/2024 2:40:00 PM

WATER LEVEL OBSERVATIONS	DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
	1-18-24	2:15 PM	Estimated	10	8	12
	1-18-24	2:40 PM	Completion	12.3	20	22

SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	BLOWS PER 6" ON SPLIT SPOON SAMPLER	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	REMARKS ON CHARACTER OF DRILLING, WATER RETURN, ETC.	WATER LEVELS AND/OR WELL DATA
S-1	2	1	2-2-2-3	4				**TOPSOIL** **SILT**, Some f.m.c. Sand, trace f. gravel, trace organics, trace wood, brown, very loose, moist **(FILL)**			
S-2	2	1.2	2-2-3-7	5				**SILT**, little f.m.c. sand, trace organics, brown, loose, moist **(FILL)**			
S-3	2	1.2	10-10-15-13	25		5		**f.m.c. SAND**, Some Silt, little f.c. gravel, brown, medium compact, moist **(SM-TILL)**	465		
S-4	2	1.4	13-13-14-18	27				**Similar Soil (SM-TILL)**			
S-5	2	0.4	19-16-9-8	25				Grades to little silt **(SM-TILL)**			
S-6	2	1.7	5-11-12-12	23		10		**f.m.c. SAND**, And Silt, little f. gravel, brown, medium compact, wet **(SM-TILL)**	460	Water level estimated based on visual soil sample moisture content. Water level observations made during drilling may not represent static groundwater conditions.	▽
S-7	2	1.4	11-17-10-8	27		15		Grades to little silt, trace f. gravel **(SM-TILL)**	455		
S-8	2	0.4	18-17-68-47	85		20		**f.m.c. SAND**, Some Silt, trace f.c. gravel, brown, very compact, wet **(SM-TILL)**	450		
								End of Boring at 22 ft	445		

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PROJECT NUMBER: 080675 4/26/2024

John Jay Homestead
SUBSURFACE LOG
HOLE NUMBER B-3

Page 1 of 1

LOCATION: Katonah, New York

CLIENT: Beyer, Blinder, Belle Architects & Planners LLP

CONTRACTOR: New England Boring Contractors

DRILLER: D. DeAngelis INSPECTOR: C. Hourigan

CHECKED BY: CWS

COORDS. NORTHING: 882335.02 EASTING: 723379.97

SURFACE ELEV: 487.0 (ft; Estimated) DATUM: NAD83 / NAVD88

DRILL FLUID: None DRILLING METHOD: 4.25" HSA ROD SIZE: NW

HAMMER TYPE: Automatic DRILL RIG: Rubber Track ATV

START: 1/19/2024 9:25:00 AM FINISH: 1/19/2024 11:15:00 AM

	DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
WATER LEVEL OBSERVATIONS	1-19-24	10:30 AM	Estimated	10	8	12
	1-19-24	11:15 AM	Completion	13.2	20	22
	1-19-24	12:30 PM	Completion	11.8	20	22

SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	BLOWS PER 6" ON SPLIT SPOON SAMPLER	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	REMARKS ON CHARACTER OF DRILLING, WATER RETURN, ETC.	WATER LEVELS AND/OR WELL DATA
S-1	2	0.3	1-2-3-2	5				**TOPSOIL** **SILT**, little f.m. sand, trace organics, brown, loose, moist **(ML)**			
S-2	2	0.8	6-5-4-8	9				**SILT**, Some f. Sand, trace f. gravel, brown, loose, moist **(ML-TILL)**	485		
S-3	2	1	12-19-24-24	43		5		**f.m.c. SAND**, Some Silt, Some f.c. gravel, brown, compact, moist **(SM-TILL)**			
S-4	2	1.5	34-31-26-57	57				Becomes very compact **(SM-TILL)**	480		
S-5	2	0.5	23-35-36-82	71				Grades to Some f.c. Gravel **(SM-TILL)**			
S-6	2	1	27-70-56-78	R		10		**f.m.c. SAND**, little silt, trace f. gravel, brown, very compact, wet **(COMPLETELY WEATHERED ROCK)**	475	Water level estimated based on visual soil sample moisture content. Water level observations made during drilling may not represent static groundwater conditions.	▽
S-7	2	1.5	76-45-40-37	85		15		**Similar Soil (COMPLETELY WEATHERED ROCK)**	470		
S-8	2	0.6	30-28-78-84	R		20		Grades to no f. gravel **(COMPLETELY WEATHERED ROCK)**			
								End of Boring at 22 ft	465		

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PROJECT NUMBER: 080675 4/26/2024

John Jay Homestead
SUBSURFACE LOG
HOLE NUMBER B-4

Page 1 of 1

LOCATION: Katonah, New York	DRILL FLUID: None
CLIENT: Beyer, Blinder, Belle Architects & Planners LLP	DRILLING METHOD: 2.25" SSA
CONTRACTOR: New England Boring Contractors	ROD SIZE: NW
DRILLER: D. DeAngelis	INSPECTOR: C. Hourigan
CHECKED BY: CWS	HAMMER TYPE: Automatic
COORDS. NORTHING: 881500.69	EASTING: 723494.50
SURFACE ELEV: 450.0 (ft; Estimated)	DATUM: NAD83 / NAVD88
DRILL RIG: Rubber Track ATV	
START: 1/18/2024 10:00:00 AM	FINISH: 1/18/2024 10:35:00 AM

WATER LEVEL OBSERVATIONS	DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
	1-18-24	10:35 AM	Completion	4	N/A	10

SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	BLOWS PER 6" ON SPLIT SPOON SAMPLER	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	REMARKS ON CHARACTER OF DRILLING, WATER RETURN, ETC.	WATER LEVELS AND/OR WELL DATA
S-1	2	1	159-53-21-15	74	▮		▩	**f.m.c. SAND**, Some Silt, little f.c. gravel, gray, very compact, moist **(FILL)**			
S-2	2	0.6	12-9-9-7	18	▮		▨	**f.m.c. SAND**, Some Silt, brown, medium compact, moist **(SM-TILL)**			▽
S-3	2	2	2-6-10-16	16	▮	5	▨	**f.m.c. SAND**, Some Silt, brown, medium compact, wet **(SM-TILL)**	445	Water level observations made during drilling may not represent static groundwater conditions.	
S-4	2	1.5	14-16-16-16	32	▮		▨	Becomes compact **(SM-TILL)**			
S-5	2	2	20-14-15-11	29	▮		▨	Grades to trace f.c. gravel, becomes medium compact **(SM-TILL)**			
						10		End of Boring at 10 ft	440		
						15			435		
						20			430		

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John Jay Homestead
SUBSURFACE LOG
HOLE NUMBER B-5

PROJECT NUMBER: 080675 4/26/2024

Page 1 of 1

LOCATION: Katonah, New York

CLIENT: Beyer, Blinder, Belle Architects & Planners LLP

CONTRACTOR: New England Boring Contractors

DRILLER: D. DeAngelis INSPECTOR: C. Hourigan

CHECKED BY: CWS

COORDS. NORTHING: 881096.64 EASTING: 723574.13

SURFACE ELEV: 450.0 (ft; Estimated) DATUM: NAD83 / NAVD88

DRILL FLUID: None DRILLING METHOD: 2.25" SSA ROD SIZE: NW

HAMMER TYPE: Automatic DRILL RIG: Rubber Track ATV

START: 1/17/2024 3:00:00 PM FINISH: 1/17/2024 3:25:00 PM

WATER LEVEL OBSERVATIONS	DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
	1-17-24	3:25 PM	Completion	3.1	N/A	10

SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	BLOWS PER 6" ON SPLIT SPOON SAMPLER	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	REMARKS ON CHARACTER OF DRILLING, WATER RETURN, ETC.	WATER LEVELS AND/OR WELL DATA
S-1	2	1	82-51-23-17	74				**f.m.c. SAND**, And f.c. Gravel, Some Silt, gray, very compact, moist **(FILL)**			
S-2	2	1.5	3-4-3-6	7				**Clayey SILT**, little f.m.c. sand, brown, medium stiff, moist **(ML)**		Water level observations made during drilling may not represent static groundwater conditions.	∇
S-3	2	1.1	17-22-20-20	42		5		**f.m.c. SAND**, little silt, brown, compact, wet **(SM-TILL)**	445		
								Grades to trace f. gravel **(SM-TILL)**			
S-4	2	1	18-24-23-24	47							
								Similar Soil (SM-TILL)			
S-5	2	2	25-23-23-51	46							
						10		End of Boring at 10 ft	440		
						15			435		
						20			430		

PROJECT NUMBER: 080675 4/26/2024

John Jay Homestead
SUBSURFACE LOG
HOLE NUMBER B-6

LOCATION: Katonah, New York	DRILL FLUID: None
CLIENT: Beyer, Blinder, Belle Architects & Planners LLP	DRILLING METHOD: 2.25" SSA
CONTRACTOR: New England Boring Contractors	ROD SIZE: NW
DRILLER: D. DeAngelis	HAMMER TYPE: Automatic
INSPECTOR: C. Hourigan	DRILL RIG: Rubber Track ATV
CHECKED BY: CWS	START: 1/16/2024 10:45:00 AM
COORDS. NORTHING: 882317.48	FINISH: 1/16/2024 11:15:00 AM
EASTING: 723827.65	
SURFACE ELEV: 459.5 (ft; Estimated)	
DATUM: NAD83 / NAVD88	

WATER LEVEL OBSERVATIONS	DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)

SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	BLOWS PER 6" ON SPLIT SPOON SAMPLER	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	REMARKS ON CHARACTER OF DRILLING, WATER RETURN, ETC.	WATER LEVELS AND/OR WELL DATA
								TOPSOIL			
S-1	2	0.3	1-2-1-2	3				**SILT**, little f.m.c. sand, trace organics, brown, very loose, moist **(ML)**			
S-2	2	1.4	5-8-9-8	17				**Clayey SILT**, little f.m.c. sand, trace organics, brown, medium compact, moist **(ML-TILL)**			
S-3	1	0.5	17-50/0.5'	R		5		**f.m.c. SAND**, Some Silt, trace f. gravel, brown, very compact, moist **(SM-TILL)**	455		
								End of Boring at 5.5 ft		SSA refusal at 5.5' due to possible boulder. Offset 4 feet east to B-6A.	
						10			450		
						15			445		
						20			440		
									435		

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PROJECT NUMBER: 080675 4/26/2024

John Jay Homestead
SUBSURFACE LOG
HOLE NUMBER B-6A

Page 1 of 1

LOCATION: Katonah, New York

CLIENT: Beyer, Blinder, Belle Architects & Planners LLP

CONTRACTOR: New England Boring Contractors

DRILLER: D. DeAngelis

INSPECTOR: C. Hourigan

CHECKED BY: CWS

COORDS. NORTHING: 882316.50 EASTING: 723832.82

SURFACE ELEV: 459.5 (ft; Estimated) DATUM: NAD83 / NAVD88

DRILL FLUID: None

DRILLING METHOD: 2.25" SSA

ROD SIZE: NW

HAMMER TYPE: Automatic

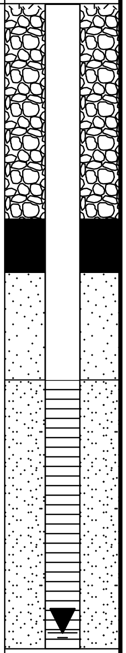
DRILL RIG: Rubber Track ATV

START: 1/16/2024 11:15:00 AM

FINISH: 1/16/2024 11:45:00 AM

	DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
WATER LEVEL OBSERVATIONS	1-19-24	1:40 PM	Static	11.7	12	12
	4-15-24	8:45 AM	Static	12	12	12
	4-16-24	9:15 AM	Static	12	12	12

SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	BLOWS PER 6" ON SPLIT SPOON SAMPLER	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	REMARKS ON CHARACTER OF DRILLING, WATER RETURN, ETC.	WATER LEVELS AND/OR WELL DATA
						5			455		
										Refer to B-6 for subsurface data to a depth of 5.5 feet.	
								SILT, And f.m.c. Sand, brown, medium compact, moist **(ML-TILL)**			
S-1	2	1	10-10-13-15	23							
								Becomes compact **(ML-TILL)**			
S-2	2	2	14-16-15-16	31							
						10			450		
								Becomes medium compact **(ML-TILL)**		Installed observation well to a depth of 12 feet upon completion. Infiltration test set adjacent to the borehole at a depth of 2 feet. Water level observations made during drilling may not represent static groundwater conditions.	
S-3	2	2	10-12-13-16	25							
								End of Boring at 12 ft			
						15			445		
						20			440		
									435		



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PROJECT NUMBER: 080675 4/26/2024

John Jay Homestead
SUBSURFACE LOG
HOLE NUMBER B-7

Page 1 of 1

LOCATION: Katonah, New York	DRILL FLUID: None
CLIENT: Beyer, Blinder, Belle Architects & Planners LLP	DRILLING METHOD: 2.25" SSA
CONTRACTOR: New England Boring Contractors	ROD SIZE: NW
DRILLER: D. DeAngelis	INSPECTOR: C. Hourigan
CHECKED BY: CWS	HAMMER TYPE: Automatic
COORDS. NORTHING: 882259.83	EASTING: 723902.72
SURFACE ELEV: 451.0 (ft; Estimated)	DATUM: NAD83 / NAVD88
DRILL RIG: Rubber Track ATV	
START: 1/16/2024 1:35:00 PM	FINISH: 1/16/2024 2:10:00 PM

WATER LEVEL OBSERVATIONS

DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
1-19-24	1:45 PM	Static	7.3	12	12
4-15-24	8:40 AM	Static	8.2	12	12
4-16-24	9:10 AM	Static	7.9	12	12

SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	BLOWS PER 6" ON SPLIT SPOON SAMPLER	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	REMARKS ON CHARACTER OF DRILLING, WATER RETURN, ETC.	WATER LEVELS AND/OR WELL DATA
								TOPSOIL			
S-1	2	1	2-1-1-1	2				**SILT**, little f.m.c. sand, trace organics, brown, very loose, moist **(ML)**	450		
S-2	2	1.5	8-12-12-16	24				**f.m.c. SAND**, Some Silt, trace organics, brown, medium compact, moist **(SM-TILL)**			
S-3	2	0.8	8-10-16-16	26		5		**f.m.c. SAND**, Some Silt, brown, medium compact, moist **(SM-TILL)**			
S-4	2	1	10-16-14-16	30				**Similar Soil** **(SM-TILL)**	445		
S-5	2	0.4	10-14-16-13	30				Grades to And Silt, becomes wet **(SM-TILL)**		Water level observations made during drilling may not represent static groundwater conditions.	
S-6	2	1	16-16-12-11	28		10		**Similar Soil** **(SM-TILL)**	440	Installed observation well to a depth of 12 feet upon completion. Infiltration test set adjacent to the borehole at a depth of 2 feet.	
								End of Boring at 12 ft			
						15			435		
						20			430		

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PROJECT NUMBER: 080675 4/26/2024

John Jay Homestead
SUBSURFACE LOG
HOLE NUMBER B-8

Page 1 of 1

LOCATION: Katonah, New York

CLIENT: Beyer, Blinder, Belle Architects & Planners LLP

CONTRACTOR: New England Boring Contractors

DRILLER: D. DeAngelis INSPECTOR: C. Hourigan

CHECKED BY: CWS

COORDS. NORTHING: 881955.04 EASTING: 723820.85

SURFACE ELEV: 451.0 (ft; Estimated) DATUM: NAD83 / NAVD88

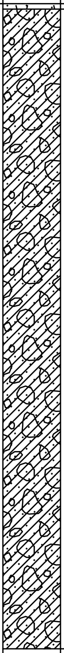
DRILL FLUID: None DRILLING METHOD: 2.25" SSA ROD SIZE: NW

HAMMER TYPE: Automatic DRILL RIG: Rubber Track ATV

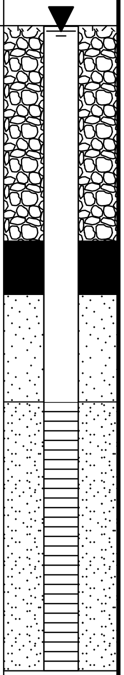
START: 1/17/2024 9:30:00 AM FINISH: 1/17/2024 10:20:00 AM

	DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
WATER LEVEL OBSERVATIONS	1-19-24	1:45 PM	Static	3.5	12	12
	4-15-24	8:50 AM	Static	0.1	12	12
	4-16-24	9:20 AM	Static	0.1	12	12

SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	BLOWS PER 6" ON SPLIT SPOON SAMPLER	"N" Value or RQD%	DEPTH (Feet)	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	REMARKS ON CHARACTER OF DRILLING, WATER RETURN, ETC.
S-1	2	1.1	2-2-3-8	5		**TOPSOIL** **SILT**, Some f.m.c. Sand, trace organics, brown, loose, moist **(ML-TILL)**	450	Water level observations made during drilling may not represent static groundwater conditions.
S-2	2	1	8-10-10-13	20		Grades to no organics, becomes medium compact **(ML-TILL)**		
S-3	2	1.2	22-14-22-16	36	5	**f.m.c. SAND**, Some Silt, brown, compact, moist **(SM-TILL)**		
S-4	2	1.1	26-22-30-29	52		**SILT**, And f.m.c. Sand, brown, very compact, moist **(ML-TILL)**	445	
S-5	2	0.7	25-41-31-29	72		Grades to Some f.m.c. Sand **(ML-TILL)**		
S-6	2	2	28-32-40-44	72	10	Becomes wet **(ML-TILL)**	440	Installed observation well to a depth of 12 feet upon completion. Infiltration test set adjacent to the borehole at a depth of 3 feet. Test was not completed due to groundwater level observations after installation.
						End of Boring at 12 ft		
					15		435	
					20		430	



WATER LEVELS AND/OR WELL DATA



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PROJECT NUMBER: 080675 4/26/2024

John Jay Homestead
SUBSURFACE LOG
HOLE NUMBER B-9

Page 1 of 1

LOCATION: Katonah, New York	DRILL FLUID: None
CLIENT: Beyer, Blinder, Belle Architects & Planners LLP	DRILLING METHOD: 2.25" SSA
CONTRACTOR: New England Boring Contractors	ROD SIZE: NW
DRILLER: D. DeAngelis	HAMMER TYPE: Automatic
INSPECTOR: C. Hourigan	DRILL RIG: Rubber Track ATV
CHECKED BY: CWS	START: 1/17/2024 1:30:00 PM
COORDS. NORTHING: 881680.96	FINISH: 1/17/2024 2:10:00 PM
EASTING: 723675.63	
SURFACE ELEV: 449.5 (ft; Estimated)	
DATUM: NAD83 / NAVD88	

WATER LEVEL OBSERVATIONS

DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
1-17-24	2:10 PM	Completion	2.7	N/A	12
1-18-24	9:20 AM	24 Hours	1.1	12	12
1-19-24	1:50 PM	Static	0.8	12	12
4-15-24	8:40 AM	Static	0.7	12	12
4-16-24	9:10 AM	Static	0.7	12	12

SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	BLOWS PER 6" ON SPLIT SPOON SAMPLER	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	REMARKS ON CHARACTER OF DRILLING, WATER RETURN, ETC.	WATER LEVELS AND/OR WELL DATA
								TOPSOIL			▼
S-1	2	0.1	2-1-2-3	3	■					Water level observations made during drilling may not represent static groundwater conditions.	
								f.m.c. SAND, Some Silt, brown, medium compact, moist **(SM-TILL)**			
S-2	2	1.5	3-7-18-26	25	■						
								f.m.c. SAND, Some Silt, trace f. gravel, brown, medium compact, wet **(SM-TILL)**	445		
S-3	2	0.7	20-15-10-9	25	■	5					
								Becomes compact **(SM-TILL)**			
S-4	2	0.7	12-14-17-16	31	■						
								Becomes very compact **(SM-TILL)**			
S-5	1	0.4	8-50/0.5'	R	■						
						10			440		
								Grades to little silt, becomes compact **(SM-TILL)**		Installed observation well to a depth of 12 feet upon completion.	
S-6	2	0.8	16-19-19-40	38	■						
								End of Boring at 12 ft			
									435		
						15					
									430		
						20					
									425		

PROJECT NUMBER: 080675 4/26/2024

John Jay Homestead
SUBSURFACE LOG
HOLE NUMBER B-10

LOCATION: Katonah, New York

CLIENT: Beyer, Blinder, Belle Architects & Planners LLP

CONTRACTOR: New England Boring Contractors

DRILLER: D. DeAngelis

INSPECTOR: C. Hourigan

CHECKED BY: CWS

COORDS. NORTHING: 881736.79 EASTING: 723773.25

SURFACE ELEV: 448.5 (ft; Estimated) DATUM: NAD83 / NAVD88

DRILL FLUID: None

DRILLING METHOD: 2.25" SSA

ROD SIZE: NW

HAMMER TYPE: Automatic

DRILL RIG: Rubber Track ATV

START: 1/17/2024 1:30:00 PM

FINISH: 1/17/2024 2:10:00 PM

WATER LEVEL OBSERVATIONS

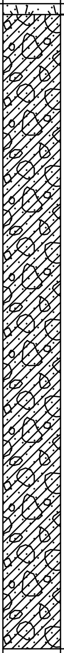
DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
1-17-24	12:50 PM	Completion	2	N/A	12
1-18-24	9:15 AM	24 Hours	4.2	12	12
1-19-24	1:50 PM	Static	3	12	12
4-15-24	8:40 AM	Static	2.5	12	12
4-16-24	9:10 AM	Static	2.8	12	12

SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	BLOWS PER 6" ON SPLIT SPOON SAMPLER	"N" Value or RQD%	DESCRIPTION AND CLASSIFICATION	REMARKS ON CHARACTER OF DRILLING, WATER RETURN, ETC.
S-1	2	0.2	1-2-2-2	4	**TOPSOIL**	
S-2	2	0.9	2-19-10-8	29	**f.m.c. SAND**, little silt, brown, medium compact, moist **(SM-TILL)**	Water level observations made during drilling may not represent static groundwater conditions.
S-3	2	1.4	8-10-11-14	21	**f.m.c. SAND**, Some Silt, trace f. gravel, brown, medium compact, wet **(SM-TILL)**	
S-4	2	0	23-15-19-16	34	No Recovery	
S-5	1	0.8	13-19-21-18	40	**SILT**, And f.m.c. Sand, brown, compact, wet **(ML-TILL)**	
S-6	2	2	17-20-22-17	42	Grades to Some f.m.c. Sand **(ML-TILL)**	Installed observation well to a depth of 12 feet upon completion.
					End of Boring at 12 ft	

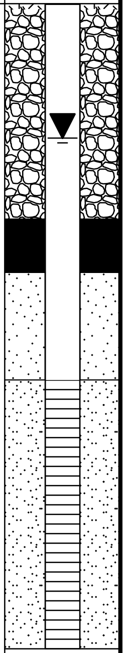
DEPTH (Feet): 5, 10, 15, 20

ELEVATION (Feet): 445, 440, 435, 430, 425

GRAPHICS



WATER LEVELS AND/OR WELL DATA



PROJECT NUMBER: 080675 4/26/2024

John Jay Homestead
SUBSURFACE LOG
HOLE NUMBER B-101

Page 1 of 1

LOCATION: Katonah, New York
CLIENT: Beyer, Blinder, Belle Architects & Planners LLP
CONTRACTOR: New England Boring Contractors
DRILLER: D. DeAngelis
INSPECTOR: C. Hourigan
CHECKED BY: SMD
COORDS. NORTHING: 881637.41
EASTING: 723666.60
SURFACE ELEV: 445.5 (ft; Estimated)
DATUM: NAD83 / NAVD88

DRILL FLUID: None
DRILLING METHOD: 2.25" SSA
ROD SIZE: NW
HAMMER TYPE: Automatic
DRILL RIG: Rubber Track ATV
START: 4/15/2024 1:30:00 PM
FINISH: 4/15/2024 2:20:00 PM

	DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
WATER LEVEL OBSERVATIONS	4-15-24	2:20 PM	Completion	5.8	None	12
	4-15-24	2:55 PM	End of Day	1	None	12
	4-16-24	9:30 AM	Start of Day	0.4	None	5

SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	BLOWS PER 6" ON SPLIT SPOON SAMPLER	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	REMARKS ON CHARACTER OF DRILLING, WATER RETURN, ETC.	WATER LEVELS AND/OR WELL DATA
								TOPSOIL	445	Standing water observed surrounding borehole. Water level observations made during drilling may not represent static groundwater conditions.	▽
S-1	2	1.7	WH-1-4-11	5				**Silty CLAY**, little f.m.c. sand, trace organics, brown, medium stiff, moist **(CL)**			
S-2	2	1.5	6-16-17-14	33				**f.m.c. SAND**, Some Silt, trace f. gravel, trace organics, brown, compact, wet **(SM-TILL)**			
S-3	2	1.3	15-18-18-14	36		5		grades to little f.c. gravel, no organics **(SM-TILL)**			
									440		
S-4	2	1	6-8-10-8	18				**Clayey SILT**, Some f.m.c. Sand, trace f. gravel, brown, very stiff, wet **(ML-TILL)**			
S-5	2	0.7	4-10-13-10	23				**f.m.c. SAND**, Some clayey Silt, trace f. gravel, brown, medium compact, wet **(SM-TILL)**			
S-6	0.1	0.1	100/0.1'	R		10		Insufficient recovery			
								End of Boring at 10.5 ft	435	Solid Stem Auger refusal at 10.5 feet. The borehole was backfilled with soil cuttings upon completion.	
						15			430		
						20			425		

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PROJECT NUMBER: 080675 4/26/2024

John Jay Homestead
SUBSURFACE LOG
HOLE NUMBER B-102

Page 1 of 1

LOCATION: Katonah, New York	DRILL FLUID: None
	DRILLING METHOD: 2.25" SSA
	ROD SIZE: NW
CLIENT: Beyer, Blinder, Belle Architects & Planners LLP	HAMMER TYPE: Automatic
	DRILL RIG: Rubber Track ATV
CONTRACTOR: New England Boring Contractors	START: 4/15/2024 11:10:00 AM
	FINISH: 4/15/2024 11:40:00 AM
DRILLER: D. DeAngelis	INSPECTOR: C. Hourigan
CHECKED BY: SMD	
COORDS. NORTHING: 881858.22	EASTING: 723850.49
SURFACE ELEV: 445.2 (ft; Estimated)	DATUM: NAD83 / NAVD88

WATER LEVEL OBSERVATIONS	DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
	4-15-24	11:40 AM	Completion	2.1	None	12
	4-15-24	2:50 PM	End of Day	1.8	None	12
	4-16-24	9:25 AM	Start of Day	2.2	None	3.8

SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	BLOWS PER 6" ON SPLIT SPOON SAMPLER	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	REMARKS ON CHARACTER OF DRILLING, WATER RETURN, ETC.	WATER LEVELS AND/OR WELL DATA
S-1	2	0.6	WH-WH-4-11	4				**TOPSOIL** **Silty CLAY**, little f.m.c. sand, trace organics, brown, soft, moist **(CL)**	445		
S-2	2	0.6	9-8-12-14	20				**f.m.c. SAND**, Some Silt, Some f.c. Gravel, brown, medium compact, wet **(SM-TILL)**		Water level observations made during drilling may not represent static groundwater conditions.	∇
S-3	2	1.4	20-24-25-15	49		5		grades to little f.c. gravel, becomes compact **(SM-TILL)**	440		
S-4	2	1.8	11-10-9-11	19				**f.m.c. SAND**, Some Silt, trace f. gravel, trace organics, brown, medium compact, wet **(SM-TILL)**			
S-5	2	1.1	18-18-13-14	31				**f.m.c. SAND**, little silt, trace f.c. gravel, brown, compact, wet **(SM-TILL)**			
S-6	2	1.4	14-9-23-22	32		10		grades to little f.c. gravel **(SM-TILL)**	435		
								End of Boring at 12 ft		The borehole was backfilled with soil cuttings upon completion.	
						15			430		
						20			425		

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PROJECT NUMBER: 080675 4/26/2024

John Jay Homestead
SUBSURFACE LOG
HOLE NUMBER B-103

Page 1 of 1

LOCATION: Katonah, New York

CLIENT: Beyer, Blinder, Belle Architects & Planners LLP

CONTRACTOR: New England Boring Contractors

DRILLER: D. DeAngelis INSPECTOR: C. Hourigan

CHECKED BY: SMD

COORDS. NORTHING: 882262.66 EASTING: 724003.70

SURFACE ELEV: 439.8 (ft; Estimated) DATUM: NAD83 / NAVD88

DRILL FLUID: None DRILLING METHOD: 2.25" SSA ROD SIZE: NW

HAMMER TYPE: Automatic DRILL RIG: Rubber Track ATV

START: 4/15/2024 9:25:00 AM FINISH: 4/15/2024 10:05:00 AM

WATER LEVEL OBSERVATIONS	DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
	4-15-24	10:05 AM	Completion	8.1	None	12
	4-15-24	2:40 PM	End of Day	3.8	None	12
	4-16-24	9:10 AM	Start of Day	3.6	None	7.8

SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	BLOWS PER 6" ON SPLIT SPOON SAMPLER	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	REMARKS ON CHARACTER OF DRILLING, WATER RETURN, ETC.	WATER LEVELS AND/OR WELL DATA
								TOPSOIL			
S-1	2	1.5	1-3-2-2	5				**Clayey SILT**, little f.m.c. sand, trace f.c. gravel, trace organics, brown, loose, moist **(ML)**			
S-2	2	1.4	4-7-9-8	16				**f.m.c. SAND**, Some Silt, trace f. gravel, brown, compact, moist **(SM-TILL)**			▽
S-3	2	2	8-9-7-4	16		5		**f.m.c. SAND**, And clayey Silt, trace f. gravel, trace organics, brown, medium compact, moist **(SM-TILL)**	435	Water level observations made during drilling may not represent static groundwater conditions.	
S-4	2	2	8-11-13-20	24				**f.m.c. SAND**, Some clayey Silt, trace f. gravel, trace organics, brown, medium compact, wet **(SM-TILL)**			
S-5	2	0.9	26-16-16-14	32				**f.m.c. SAND**, little silt, little f.c. gravel, brown, compact, wet **(SM-TILL)**			
S-6	2	1.4	13-15-17-14	32		10		**Clayey SILT**, Some f.m.c. Sand, trace f.c. gravel, brown, hard, wet **(ML-TILL)**	430		
								End of Boring at 12 ft		The borehole was backfilled with soil cuttings upon completion.	
						15			425		
						20			420		
									415		

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APPENDIX D

LABORATORY TEST RESULTS

Advance Testing

3348 Route 208, Campbell Hall, NY 10916
Phone: 845-496-1600 Fax: 845-496-1398
12960 Commerce Lake Drive, A14, Fort Myers, FL 33913
42 Day Farm Road, West Stockbridge, MA 01266
1813 State Route 7, Harpursville, NY 13787
877 US-4, Schuylerville, NY 12871

Client:	**CHA, Inc.**	**Project:**	John Jay Homestead Historic Site
Item:	B-4 S-1	**Project Number:**	240100
Source:	0-2'	**Lab Number:**	Q24-004E
Date Sampled:	1/29/2024	**Sampled By:**	Client
Date Tested:	1/30/2024	**Tested By:**	Michael Thomas

GRADATION (SIEVE ANALYSIS) OF SOIL OR AGGREGATE

Test Method(s): ASTM D422, C136, C117; AASHTO T88, T27, T11

Lab Number	Sample Type	Sampling Location	Specification
Q24-004E	B-4 S-1	In-Place	No Specification

Sieve Size		% Retained	% Passing	Spec. % Pass
mm	Inches			
100.0 mm	4"	0.0	100	
75.0 mm	3"	0.0	100	
63.0 mm	2 1/2"	0.0	100	
50.0 mm	2"	0.0	100	
37.5 mm	1 1/2"	0.0	100	
25.0 mm	1"	0.0	100	
19.0 mm	3/4"	0.0	100	
12.5 mm	1/2"	10.6	89	
6.3 mm	1/4"	15.1	74	
4.75 mm	#4	3.3	71	
2.00 mm	#10	10.7	60	
0.850 mm	#20	8.1	52	
0.600 mm	#30	2.1	50	
0.425 mm	#40	4.5	46	
0.150 mm	#100	13.4	32	
0.075 mm	#200	8.7	24	
Pan		23.5		

Comments:

Minus #200 by wash-sieve method.

Report Reviewed By: Emily J. Rodriguez

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Client:	**CHA, Inc.**	**Project:**	John Jay Homestead Historic Site
Item:	B-5 S-1	**Project Number:**	240100
Source:	0-2'	**Lab Number:**	Q24-004F
Date Sampled:	1/29/2024	**Sampled By:**	Client
Date Tested:	1/30/2024	**Tested By:**	Michael Thomas

GRADATION (SIEVE ANALYSIS) OF SOIL OR AGGREGATE

Test Method(s): ASTM D422, C136, C117; AASHTO T88, T27, T11

Lab Number	Sample Type	Sampling Location	Specification
Q24-004F	B-5 S-1	In-Place	No Specification

Sieve Size		% Retained	% Passing	Spec. % Pass
mm	Inches			
100.0 mm	4"	0.0	100	
75.0 mm	3"	0.0	100	
63.0 mm	2 1/2"	0.0	100	
50.0 mm	2"	0.0	100	
37.5 mm	1 1/2"	0.0	100	
25.0 mm	1"	0.0	100	
19.0 mm	3/4"	0.0	100	
12.5 mm	1/2"	8.5	92	
6.3 mm	1/4"	20.4	71	
4.75 mm	#4	7.4	64	
2.00 mm	#10	13.0	51	
0.850 mm	#20	10.9	40	
0.600 mm	#30	2.2	38	
0.425 mm	#40	3.7	34	
0.150 mm	#100	6.6	27	
0.075 mm	#200	4.4	23	
Pan		22.9		

Comments:

Minus #200 by wash-sieve method.

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Client:	CHA, Inc.	**Project:**	John Jay Homestead Historic Site
Material:	B-1 S-3	**Project #:**	240100
Source:	4-6'	**Lab No.:**	Q24-004A
Location:	In-Place	**Item Number:**	No Specifications
Date Sampled:	1/29/2024	**Sampled By:**	Client
Date Tested:	1/30/24	**Tested By:**	Michael Thomas

REPORT OF ATTERBERG LIMITS TEST RESULTS

TEST METHOD: ASTM D4318; LL Method B

Lab Number:	Q24-004A	**Specification**
Liquid Limit:	21	
Plastic Limit:	17	
Plasticity Index:	4	

Notes: Values shown are percent moisture.
Customary procedure is to round results to the nearest whole number.

Comments:

Emily J. Rodriguez

Report Reviewed By:

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Advance Testing

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Client:	CHA, Inc.	**Project:**	John Jay Homestead Historic Site
Material:	B-1 S-3	**Project Number:**	240100
Source:	4-6'	**Lab Number:**	Q24-004A
Location:	In-Place	**Item Number:**	No Specifications
Date Sampled:	1/29/2024	**Sampled By:**	Client
Date Tested:	1/29/2024	**Tested By:**	Michael Thomas

Report of Natural Moisture Content of Soil and Rock

Test Method: ASTM D2216

Wet Weight (g):	299.7
Dry Weight (g):	250.5
% Nat. Moisture:	**19.6**

Specification:

Comments:

No specifications available at time of testing.

Report Reviewed By: Emily J. Rodriguez

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Client:	**CHA, Inc.**	**Project:**	John Jay Homestead Historic Site
Item:	B-1 S-7	**Project Number:**	240100
Source:	15-17'	**Lab Number:**	Q24-004B
Date Sampled:	1/29/2024	**Sampled By:**	Client
Date Tested:	1/30/2024	**Tested By:**	Michael Thomas

GRADATION (SIEVE ANALYSIS) OF SOIL OR AGGREGATE

Test Method(s): ASTM D422, C136, C117; AASHTO T88, T27, T11

Lab Number	Sample Type	Sampling Location	Specification
Q24-004B	B-1 S-7	In-Place	No Specification

Sieve Size		% Retained	% Passing	Spec. % Pass
mm	Inches			
100.0 mm	4"	0.0	100	
75.0 mm	3"	0.0	100	
63.0 mm	2 1/2"	0.0	100	
50.0 mm	2"	0.0	100	
37.5 mm	1 1/2"	0.0	100	
25.0 mm	1"	0.0	100	
19.0 mm	3/4"	13.6	86	
12.5 mm	1/2"	11.1	75	
6.3 mm	1/4"	12.4	63	
4.75 mm	#4	1.0	62	
2.00 mm	#10	2.9	59	
0.850 mm	#20	3.5	56	
0.600 mm	#30	1.0	55	
0.425 mm	#40	3.4	51	
0.150 mm	#100	12.2	39	
0.075 mm	#200	9.7	29	
Pan		29.2		

Comments:

Minus #200 by wash-sieve method.

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Client:	**CHA, Inc.**	**Project:**	John Jay Homestead Historic Site
Item:	B-2 S-6	**Project Number:**	240100
Source:	10-12'	**Lab Number:**	Q24-004C
Date Sampled:	1/29/2024	**Sampled By:**	Client
Date Tested:	1/30/2024	**Tested By:**	Michael Thomas

GRADATION (SIEVE ANALYSIS) OF SOIL OR AGGREGATE

Test Method(s): ASTM D422, C136, C117; AASHTO T88, T27, T11

Lab Number	Sample Type	Sampling Location	Specification
Q24-004C	B-2 S-6	In-Place	No Specification

Sieve Size		%	%	Spec. %
mm	Inches	Retained	Passing	Pass
100.0 mm	4"	0.0	100	
75.0 mm	3"	0.0	100	
63.0 mm	2 1/2"	0.0	100	
50.0 mm	2"	0.0	100	
37.5 mm	1 1/2"	0.0	100	
25.0 mm	1"	0.0	100	
19.0 mm	3/4"	0.0	100	
12.5 mm	1/2"	4.5	96	
6.3 mm	1/4"	5.4	90	
4.75 mm	#4	0.1	90	
2.00 mm	#10	3.3	87	
0.850 mm	#20	5.9	81	
0.600 mm	#30	2.3	79	
0.425 mm	#40	6.2	72	
0.150 mm	#100	19.9	52	
0.075 mm	#200	12.4	40	
Pan		40.0		

Comments:

Minus #200 by wash-sieve method.

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Advance Testing

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Client:	**CHA, Inc.**	**Project:**	John Jay Homestead Historic Site
Item:	B-3 S-4	**Project Number:**	240100
Source:	6-8'	**Lab Number:**	Q24-004D
Date Sampled:	1/29/2024	**Sampled By:**	Client
Date Tested:	1/30/2024	**Tested By:**	Michael Thomas

GRADATION (SIEVE ANALYSIS) OF SOIL OR AGGREGATE

Test Method(s): ASTM D422, C136, C117; AASHTO T88, T27, T11

Lab Number	Sample Type	Sampling Location	Specification
Q24-004D	B-3 S-4	In-Place	No Specification

Sieve Size		%	%	Spec. %
mm	Inches	Retained	Passing	Pass
100.0 mm	4"	0.0	100	
75.0 mm	3"	0.0	100	
63.0 mm	2 1/2"	0.0	100	
50.0 mm	2"	0.0	100	
37.5 mm	1 1/2"	0.0	100	
25.0 mm	1"	0.0	100	
19.0 mm	3/4"	9.4	91	
12.5 mm	1/2"	4.5	86	
6.3 mm	1/4"	4.2	82	
4.75 mm	#4	1.6	80	
2.00 mm	#10	3.2	77	
0.850 mm	#20	5.1	72	
0.600 mm	#30	1.5	71	
0.425 mm	#40	5.3	65	
0.150 mm	#100	17.6	48	
0.075 mm	#200	14.0	34	
Pan		33.6		

Comments:

Minus #200 by wash-sieve method.

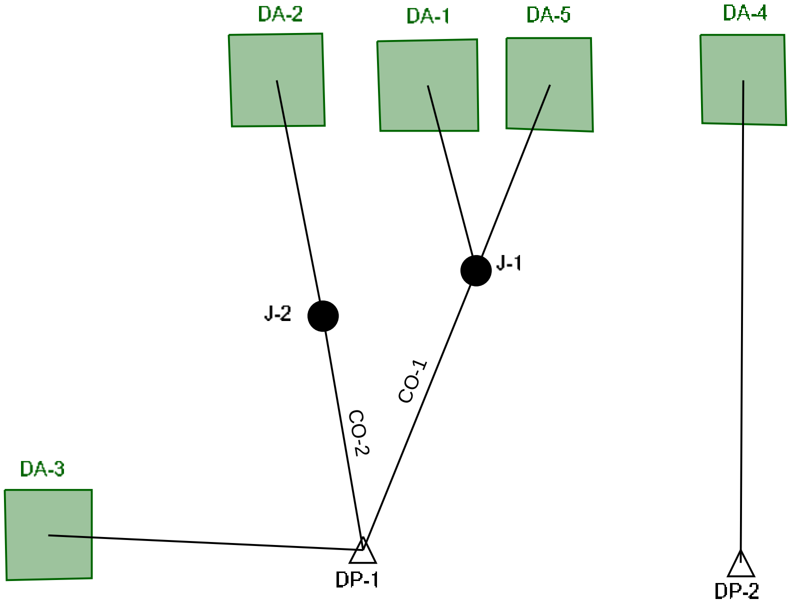
Report Reviewed By: Emily J. Rodriguez

PDF

APPENDIX D

Existing Condition PondPack Outputs

Scenario: 1 year



Project Summary

Title	John Jay Homestead Site and Building Enhancements
Engineer	HB / JMC
Company	CHA
Date	3/20/2024

Notes	400 Jay Street Katonah, Westchester County New York

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Subsection: Master Network Summary

Catchments Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft³/s)
DA-1	1 year	1	0.329	12.140	3.71
DA-1	10 years	10	0.997	12.130	11.80
DA-1	100 years	100	2.393	12.120	27.88
DA-2	1 year	1	0.253	12.120	2.99
DA-2	10 years	10	0.766	12.110	9.40
DA-2	100 years	100	1.839	12.110	22.10
DA-3	1 year	1	0.139	12.110	1.74
DA-3	10 years	10	0.358	12.110	4.42
DA-3	100 years	100	0.784	12.100	9.29
DA-4	1 year	1	0.662	12.120	8.08
DA-4	10 years	10	1.826	12.110	22.39
DA-4	100 years	100	4.155	12.110	49.29
DA-5	1 year	1	0.135	12.120	1.66
DA-5	10 years	10	0.350	12.110	4.25
DA-5	100 years	100	0.766	12.100	8.95

Node Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft³/s)
DP-1	1 year	1	0.856	12.130	10.00
DP-1	10 years	10	2.471	12.120	29.72
DP-1	100 years	100	5.782	12.120	67.98
DP-2	1 year	1	0.662	12.120	8.08
DP-2	10 years	10	1.826	12.110	22.39
DP-2	100 years	100	4.155	12.110	49.29
J-1	1 year	1	0.464	12.130	5.35
J-1	10 years	10	1.347	12.120	16.02
J-1	100 years	100	3.159	12.110	36.77
J-2	1 year	1	0.253	12.120	2.99
J-2	10 years	10	0.766	12.110	9.40
J-2	100 years	100	1.839	12.110	22.10

Subsection: Time-Depth Curve — Return Event: 1 years
Label: Time-Depth - 1 — Storm Event: 1 year
Scenario: 1 year

Time-Depth Curve: 1 year

Label	1 year
Start Time	0.000 hours
Increment	0.100 hours
End Time	24.000 hours
Return Event	1 years

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
0.000	0.0	0.0	0.0	0.0	0.0
0.500	0.0	0.0	0.0	0.0	0.0
1.000	0.0	0.0	0.0	0.0	0.0
1.500	0.0	0.0	0.0	0.1	0.1
2.000	0.1	0.1	0.1	0.1	0.1
2.500	0.1	0.1	0.1	0.1	0.1
3.000	0.1	0.1	0.1	0.1	0.1
3.500	0.1	0.1	0.1	0.1	0.1
4.000	0.1	0.1	0.1	0.1	0.1
4.500	0.1	0.1	0.1	0.2	0.2
5.000	0.2	0.2	0.2	0.2	0.2
5.500	0.2	0.2	0.2	0.2	0.2
6.000	0.2	0.2	0.2	0.2	0.2
6.500	0.2	0.2	0.2	0.2	0.2
7.000	0.3	0.3	0.3	0.3	0.3
7.500	0.3	0.3	0.3	0.3	0.3
8.000	0.3	0.3	0.3	0.3	0.4
8.500	0.4	0.4	0.4	0.4	0.4
9.000	0.4	0.4	0.4	0.4	0.5
9.500	0.5	0.5	0.5	0.5	0.5
10.000	0.5	0.5	0.6	0.6	0.6
10.500	0.6	0.6	0.6	0.7	0.7
11.000	0.7	0.7	0.7	0.8	0.8
11.500	0.8	0.9	1.0	1.0	1.2
12.000	1.4	1.6	1.8	1.8	1.9
12.500	2.0	2.0	2.0	2.1	2.1
13.000	2.1	2.1	2.1	2.2	2.2
13.500	2.2	2.2	2.2	2.2	2.3
14.000	2.3	2.3	2.3	2.3	2.3
14.500	2.3	2.3	2.4	2.4	2.4
15.000	2.4	2.4	2.4	2.4	2.4
15.500	2.4	2.4	2.5	2.5	2.5
16.000	2.5	2.5	2.5	2.5	2.5
16.500	2.5	2.5	2.5	2.5	2.5
17.000	2.5	2.6	2.6	2.6	2.6

Subsection: Time-Depth Curve
Label: Time-Depth - 1
Scenario: 1 year

Return Event: 1 years
Storm Event: 1 year

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
17.500	2.6	2.6	2.6	2.6	2.6
18.000	2.6	2.6	2.6	2.6	2.6
18.500	2.6	2.6	2.6	2.6	2.6
19.000	2.6	2.6	2.6	2.7	2.7
19.500	2.7	2.7	2.7	2.7	2.7
20.000	2.7	2.7	2.7	2.7	2.7
20.500	2.7	2.7	2.7	2.7	2.7
21.000	2.7	2.7	2.7	2.7	2.7
21.500	2.7	2.7	2.7	2.7	2.7
22.000	2.7	2.7	2.8	2.8	2.8
22.500	2.8	2.8	2.8	2.8	2.8
23.000	2.8	2.8	2.8	2.8	2.8
23.500	2.8	2.8	2.8	2.8	2.8
24.000	2.8	(N/A)	(N/A)	(N/A)	(N/A)

Subsection: Time-Depth Curve
Label: Time-Depth - 1
Scenario: 10 years

Return Event: 10 years
Storm Event: 10 years - type 3

Time-Depth Curve: 10 years - type 3	
Label	10 years - type 3
Start Time	0.000 hours
Increment	0.100 hours
End Time	24.000 hours
Return Event	10 years

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
0.000	0.0	0.0	0.0	0.0	0.0
0.500	0.0	0.0	0.0	0.0	0.0
1.000	0.1	0.1	0.1	0.1	0.1
1.500	0.1	0.1	0.1	0.1	0.1
2.000	0.1	0.1	0.1	0.1	0.1
2.500	0.1	0.1	0.1	0.1	0.2
3.000	0.2	0.2	0.2	0.2	0.2
3.500	0.2	0.2	0.2	0.2	0.2
4.000	0.2	0.2	0.2	0.2	0.2
4.500	0.3	0.3	0.3	0.3	0.3
5.000	0.3	0.3	0.3	0.3	0.3
5.500	0.3	0.3	0.3	0.4	0.4
6.000	0.4	0.4	0.4	0.4	0.4
6.500	0.4	0.4	0.4	0.4	0.5
7.000	0.5	0.5	0.5	0.5	0.5
7.500	0.5	0.5	0.5	0.6	0.6
8.000	0.6	0.6	0.6	0.6	0.6
8.500	0.7	0.7	0.7	0.7	0.7
9.000	0.7	0.8	0.8	0.8	0.8
9.500	0.8	0.9	0.9	0.9	0.9
10.000	1.0	1.0	1.0	1.0	1.1
10.500	1.1	1.1	1.2	1.2	1.2
11.000	1.3	1.3	1.4	1.4	1.5
11.500	1.5	1.6	1.7	1.9	2.1
12.000	2.5	3.0	3.2	3.4	3.5
12.500	3.6	3.6	3.7	3.7	3.8
13.000	3.8	3.9	3.9	3.9	4.0
13.500	4.0	4.0	4.0	4.1	4.1
14.000	4.1	4.2	4.2	4.2	4.2
14.500	4.2	4.3	4.3	4.3	4.3
15.000	4.3	4.4	4.4	4.4	4.4
15.500	4.4	4.5	4.5	4.5	4.5
16.000	4.5	4.5	4.5	4.5	4.6
16.500	4.6	4.6	4.6	4.6	4.6
17.000	4.6	4.6	4.7	4.7	4.7

Subsection: Time-Depth Curve
Label: Time-Depth - 1
Scenario: 10 years

Return Event: 10 years
Storm Event: 10 years - type 3

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
17.500	4.7	4.7	4.7	4.7	4.7
18.000	4.7	4.7	4.7	4.7	4.8
18.500	4.8	4.8	4.8	4.8	4.8
19.000	4.8	4.8	4.8	4.8	4.8
19.500	4.8	4.8	4.9	4.9	4.9
20.000	4.9	4.9	4.9	4.9	4.9
20.500	4.9	4.9	4.9	4.9	4.9
21.000	4.9	4.9	4.9	5.0	5.0
21.500	5.0	5.0	5.0	5.0	5.0
22.000	5.0	5.0	5.0	5.0	5.0
22.500	5.0	5.0	5.0	5.0	5.0
23.000	5.0	5.0	5.1	5.1	5.1
23.500	5.1	5.1	5.1	5.1	5.1
24.000	5.1	(N/A)	(N/A)	(N/A)	(N/A)

Subsection: Time-Depth Curve
Label: Time-Depth - 1
Scenario: 100 years

Return Event: 100 years
Storm Event: 100 years - type 3

Time-Depth Curve: 100 years - type 3	
Label	100 years - type 3
Start Time	0.000 hours
Increment	0.100 hours
End Time	24.000 hours
Return Event	100 years

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
0.000	0.0	0.0	0.0	0.0	0.0
0.500	0.0	0.1	0.1	0.1	0.1
1.000	0.1	0.1	0.1	0.1	0.1
1.500	0.1	0.1	0.2	0.2	0.2
2.000	0.2	0.2	0.2	0.2	0.2
2.500	0.2	0.2	0.2	0.3	0.3
3.000	0.3	0.3	0.3	0.3	0.3
3.500	0.3	0.3	0.4	0.4	0.4
4.000	0.4	0.4	0.4	0.4	0.4
4.500	0.5	0.5	0.5	0.5	0.5
5.000	0.5	0.5	0.5	0.6	0.6
5.500	0.6	0.6	0.6	0.6	0.6
6.000	0.7	0.7	0.7	0.7	0.7
6.500	0.7	0.8	0.8	0.8	0.8
7.000	0.8	0.8	0.9	0.9	0.9
7.500	0.9	0.9	1.0	1.0	1.0
8.000	1.0	1.1	1.1	1.1	1.1
8.500	1.2	1.2	1.2	1.3	1.3
9.000	1.3	1.4	1.4	1.4	1.5
9.500	1.5	1.6	1.6	1.6	1.7
10.000	1.7	1.8	1.8	1.9	1.9
10.500	2.0	2.0	2.1	2.1	2.2
11.000	2.3	2.3	2.4	2.5	2.6
11.500	2.7	2.9	3.1	3.4	3.8
12.000	4.6	5.3	5.7	6.0	6.2
12.500	6.4	6.5	6.6	6.7	6.8
13.000	6.8	6.9	7.0	7.0	7.1
13.500	7.1	7.2	7.2	7.3	7.3
14.000	7.4	7.4	7.5	7.5	7.6
14.500	7.6	7.6	7.7	7.7	7.7
15.000	7.8	7.8	7.8	7.9	7.9
15.500	7.9	8.0	8.0	8.0	8.0
16.000	8.1	8.1	8.1	8.1	8.2
16.500	8.2	8.2	8.2	8.2	8.3
17.000	8.3	8.3	8.3	8.3	8.4

Subsection: Time-Depth Curve
Label: Time-Depth - 1
Scenario: 100 years

Return Event: 100 years
Storm Event: 100 years - type 3

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
17.500	8.4	8.4	8.4	8.4	8.4
18.000	8.5	8.5	8.5	8.5	8.5
18.500	8.5	8.5	8.6	8.6	8.6
19.000	8.6	8.6	8.6	8.6	8.6
19.500	8.7	8.7	8.7	8.7	8.7
20.000	8.7	8.7	8.7	8.8	8.8
20.500	8.8	8.8	8.8	8.8	8.8
21.000	8.8	8.8	8.9	8.9	8.9
21.500	8.9	8.9	8.9	8.9	8.9
22.000	8.9	8.9	9.0	9.0	9.0
22.500	9.0	9.0	9.0	9.0	9.0
23.000	9.0	9.0	9.0	9.1	9.1
23.500	9.1	9.1	9.1	9.1	9.1
24.000	9.1	(N/A)	(N/A)	(N/A)	(N/A)

Subsection: Time of Concentration Calculations
Label: DA-1
Scenario: 1 year

Return Event: 1 years
Storm Event: 1 year

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	100.00 ft
Manning's n	0.240
Slope	0.120 ft/ft
2 Year 24 Hour Depth	3.4 in
Average Velocity	0.25 ft/s
Segment Time of Concentration	0.113 hours

Segment #2: TR-55 Shallow Concentrated Flow	
Hydraulic Length	120.00 ft
Is Paved?	False
Slope	0.058 ft/ft
Average Velocity	3.89 ft/s
Segment Time of Concentration	0.009 hours

Segment #3: TR-55 Shallow Concentrated Flow	
Hydraulic Length	266.00 ft
Is Paved?	False
Slope	0.109 ft/ft
Average Velocity	5.33 ft/s
Segment Time of Concentration	0.014 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.135 hours

==== SCS Channel Flow

Tc =	R = Qa / Wp V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n (Lf / V) / 3600
Where:	R= Hydraulic radius Aq= Flow area, square feet Wp= Wetted perimeter, feet V= Velocity, ft/sec Sf= Slope, ft/ft n= Manning's n Tc= Time of concentration, hours Lf= Flow length, feet

==== SCS TR-55 Shallow Concentration Flow

Tc =	Unpaved surface: V = 16.1345 * (Sf**0.5) Paved Surface: V = 20.3282 * (Sf**0.5) (Lf / V) / 3600
Where:	V= Velocity, ft/sec Sf= Slope, ft/ft Tc= Time of concentration, hours Lf= Flow length, feet

Subsection: Time of Concentration Calculations Return Event: 1 years
Label: DA-2 Storm Event: 1 year
Scenario: 1 year

Time of Concentration Results

Segment #1: TR-55 Sheet Flow

Hydraulic Length	47.00 ft
Manning's n	0.240
Slope	0.085 ft/ft
2 Year 24 Hour Depth	3.4 in
Average Velocity	0.18 ft/s
Segment Time of Concentration	0.071 hours

Segment #2: TR-55 Sheet Flow

Hydraulic Length	53.00 ft
Manning's n	0.011
Slope	0.038 ft/ft
2 Year 24 Hour Depth	3.4 in
Average Velocity	1.61 ft/s
Segment Time of Concentration	0.009 hours

Segment #3: TR-55 Shallow Concentrated Flow

Hydraulic Length	361.00 ft
Is Paved?	False
Slope	0.061 ft/ft
Average Velocity	3.98 ft/s
Segment Time of Concentration	0.025 hours

Time of Concentration (Composite)

Time of Concentration (Composite)	0.105 hours

==== SCS Channel Flow

Tc = R = Qa / Wp
V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n

(Lf / V) / 3600

Where:
R= Hydraulic radius
Aq= Flow area, square feet
Wp= Wetted perimeter, feet
V= Velocity, ft/sec
Sf= Slope, ft/ft
n= Manning's n
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Shallow Concentration Flow

Tc = Unpaved surface:
V = 16.1345 * (Sf**0.5)

Paved Surface:
V = 20.3282 * (Sf**0.5)

(Lf / V) / 3600

Where:
V= Velocity, ft/sec
Sf= Slope, ft/ft
Tc= Time of concentration, hours
Lf= Flow length, feet

Subsection: Time of Concentration Calculations
Label: DA-3
Scenario: 1 year

Return Event: 1 years
Storm Event: 1 year

Time of Concentration Results

Segment #1: User Defined Tc	
Time of Concentration	0.083 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.083 hours

Subsection: Time of Concentration Calculations
Label: DA-3
Scenario: 1 year

Return Event: 1 years
Storm Event: 1 year

==== User Defined

Tc =	Value entered by user
Where:	Tc= Time of concentration, hours

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	15.00 ft
Manning's n	0.011
Slope	0.067 ft/ft
2 Year 24 Hour Depth	3.4 in
Average Velocity	1.57 ft/s
Segment Time of Concentration	0.003 hours

Segment #2: TR-55 Sheet Flow	
Hydraulic Length	85.00 ft
Manning's n	0.150
Slope	0.106 ft/ft
2 Year 24 Hour Depth	3.4 in
Average Velocity	0.33 ft/s
Segment Time of Concentration	0.071 hours

Segment #3: TR-55 Shallow Concentrated Flow	
Hydraulic Length	108.00 ft
Is Paved?	False
Slope	0.056 ft/ft
Average Velocity	3.82 ft/s
Segment Time of Concentration	0.008 hours

Segment #4: TR-55 Shallow Concentrated Flow	
Hydraulic Length	229.00 ft
Is Paved?	False
Slope	0.039 ft/ft
Average Velocity	3.19 ft/s
Segment Time of Concentration	0.020 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.102 hours

==== SCS Channel Flow

Tc = R = Qa / Wp
V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n

(Lf / V) / 3600

Where:
R= Hydraulic radius
Aq= Flow area, square feet
Wp= Wetted perimeter, feet
V= Velocity, ft/sec
Sf= Slope, ft/ft
n= Manning's n
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Shallow Concentration Flow

Tc = Unpaved surface:
V = 16.1345 * (Sf**0.5)

Paved Surface:
V = 20.3282 * (Sf**0.5)

(Lf / V) / 3600

Where:
V= Velocity, ft/sec
Sf= Slope, ft/ft
Tc= Time of concentration, hours
Lf= Flow length, feet

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	100.00 ft
Manning's n	0.150
Slope	0.070 ft/ft
2 Year 24 Hour Depth	3.4 in
Average Velocity	0.29 ft/s
Segment Time of Concentration	0.096 hours

Segment #2: TR-55 Shallow Concentrated Flow	
Hydraulic Length	112.00 ft
Is Paved?	True
Slope	0.054 ft/ft
Average Velocity	4.72 ft/s
Segment Time of Concentration	0.007 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.103 hours

==== SCS Channel Flow

Tc =
R = Qa / Wp
V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n

(Lf / V) / 3600

Where:
R= Hydraulic radius
Aq= Flow area, square feet
Wp= Wetted perimeter, feet
V= Velocity, ft/sec
Sf= Slope, ft/ft
n= Manning's n
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Shallow Concentration Flow

Tc =
Unpaved surface:
V = 16.1345 * (Sf**0.5)

Paved Surface:
V = 20.3282 * (Sf**0.5)

(Lf / V) / 3600

Where:
V= Velocity, ft/sec
Sf= Slope, ft/ft
Tc= Time of concentration, hours
Lf= Flow length, feet

Subsection: Runoff CN-Area
Label: DA-1
Scenario: 1 year

Return Event: 1 years
Storm Event: 1 year

Runoff Curve Number Data

Soil/Surface Description	CN	Area (acres)	C (%)	UC (%)	Adjusted CN
Open space - Good Cond, HSG C	74.000	4.540	0.0	0.0	74.000
Woods - Good Cond, HSG C	70.000	0.090	0.0	0.0	70.000
Impervious	98.000	0.120	0.0	0.0	98.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	4.750	(N/A)	(N/A)	74.531

Subsection: Runoff CN-Area
Label: DA-2
Scenario: 1 year

Return Event: 1 years
Storm Event: 1 year

Runoff Curve Number Data

Soil/Surface Description	CN	Area (acres)	C (%)	UC (%)	Adjusted CN
Open space - Good Cond, HSG C	74.000	3.470	0.0	0.0	74.000
Impervious	98.000	0.180	0.0	0.0	98.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	3.650	(N/A)	(N/A)	75.184

Subsection: Runoff CN-Area
Label: DA-3
Scenario: 1 year

Return Event: 1 years
Storm Event: 1 year

Runoff Curve Number Data

Soil/Surface Description	CN	Area (acres)	C (%)	UC (%)	Adjusted CN
Open space - Good Cond, HSG C	74.000	0.890	0.0	0.0	74.000
Impervious	98.000	0.470	0.0	0.0	98.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	1.360	(N/A)	(N/A)	82.294

Subsection: Runoff CN-Area
Label: DA-4
Scenario: 1 year

Return Event: 1 years
Storm Event: 1 year

Runoff Curve Number Data

Soil/Surface Description	CN	Area (acres)	C (%)	UC (%)	Adjusted CN
Open space - Good Cond, HSG C	74.000	4.240	0.0	0.0	74.000
Woods - Good Cond, HSG C	70.000	1.620	0.0	0.0	70.000
Impervious	98.000	1.760	0.0	0.0	98.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	7.620	(N/A)	(N/A)	78.693

Subsection: Runoff CN-Area
Label: DA-5
Scenario: 1 year

Return Event: 1 years
Storm Event: 1 year

Runoff Curve Number Data

Soil/Surface Description	CN	Area (acres)	C (%)	UC (%)	Adjusted CN
Open space - Good Cond, HSG C	74.000	0.860	0.0	0.0	74.000
Impervious	98.000	0.470	0.0	0.0	98.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	1.330	(N/A)	(N/A)	82.481

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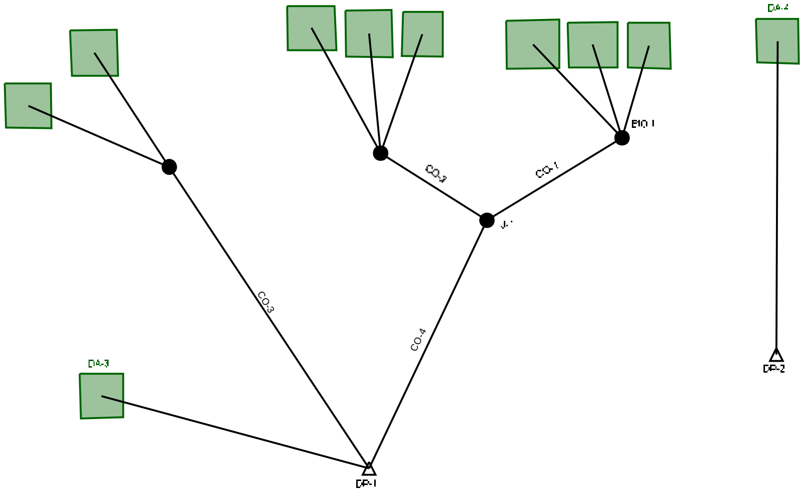
APPENDIX E

Proposed Condition PondPack Outputs

Scenario: 1 year



Project Summary

Title	John Jay Homestead Site and Building Enhancements
Engineer	HB / JMC
Company	CHA
Date	3/20/2024

Notes	400 Jay Street Katonah, Westchester County New York

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Subsection: Master Network Summary

Catchments Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft³/s)
DA-1A	1 year	1	0.195	12.110	2.45
DA-1A	10 years	10	0.503	12.110	6.20
DA-1A	100 years	100	1.101	12.100	13.04
DA-1C	1 year	1	0.101	12.130	1.15
DA-1C	10 years	10	0.298	12.130	3.52
DA-1C	100 years	100	0.704	12.120	8.19
DA-1D	1 year	1	0.099	12.120	1.18
DA-1D	10 years	10	0.306	12.110	3.83
DA-1D	100 years	100	0.745	12.100	9.09
DA-2A	1 year	1	0.186	12.120	2.24
DA-2A	10 years	10	0.550	12.110	6.78
DA-2A	100 years	100	1.301	12.110	15.64
DA-2B	1 year	1	0.054	12.110	0.68
DA-2B	10 years	10	0.139	12.110	1.72
DA-2B	100 years	100	0.305	12.100	3.62
DA-3	1 year	1	0.159	12.110	2.00
DA-3	10 years	10	0.394	12.100	4.82
DA-3	100 years	100	0.841	12.100	9.86
DA-4	1 year	1	0.591	12.120	7.11
DA-4	10 years	10	1.707	12.110	20.93
DA-4	100 years	100	3.987	12.110	47.58
DA-5A	1 year	1	0.078	12.110	0.96
DA-5A	10 years	10	0.203	12.110	2.46
DA-5A	100 years	100	0.444	12.110	5.18
DA-5B	1 year	1	0.052	12.110	0.66
DA-5B	10 years	10	0.141	12.110	1.75
DA-5B	100 years	100	0.317	12.100	3.79
DA-1B	1 year	1	0.058	12.110	0.73
DA-1B	10 years	10	0.153	12.110	1.90
DA-1B	100 years	100	0.340	12.100	4.04

Node Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft³/s)
BIO 1	1 year	1	0.371	12.110	4.59
BIO 1	10 years	10	1.011	12.110	12.49
BIO 1	100 years	100	2.290	12.100	27.31
BIO 3	1 year	1	0.240	12.120	2.91
BIO 3	10 years	10	0.689	12.110	8.50
BIO 3	100 years	100	1.607	12.110	19.25
DP-1	1 year	1	0.981	12.130	11.93
DP-1	10 years	10	2.685	12.120	32.81
DP-1	100 years	100	6.097	12.120	72.17

Subsection: Master Network Summary

Node Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft³/s)
DP-2	1 year	1	0.591	12.120	7.11
DP-2	10 years	10	1.707	12.110	20.93
DP-2	100 years	100	3.987	12.110	47.58
BIO 2	1 year	1	0.211	12.120	2.51
BIO 2	10 years	10	0.592	12.110	7.15
BIO 2	100 years	100	1.361	12.110	15.99
J-1	1 year	1	0.582	12.120	7.10
J-1	10 years	10	1.603	12.120	19.64
J-1	100 years	100	3.650	12.120	43.27

Subsection: Time-Depth Curve
Label: Time-Depth - 1
Scenario: 1 year

Return Event: 1 years
Storm Event: 1 year

Time-Depth Curve: 1 year	
Label	1 year
Start Time	0.000 hours
Increment	0.100 hours
End Time	24.000 hours
Return Event	1 years

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
0.000	0.0	0.0	0.0	0.0	0.0
0.500	0.0	0.0	0.0	0.0	0.0
1.000	0.0	0.0	0.0	0.0	0.0
1.500	0.0	0.0	0.0	0.1	0.1
2.000	0.1	0.1	0.1	0.1	0.1
2.500	0.1	0.1	0.1	0.1	0.1
3.000	0.1	0.1	0.1	0.1	0.1
3.500	0.1	0.1	0.1	0.1	0.1
4.000	0.1	0.1	0.1	0.1	0.1
4.500	0.1	0.1	0.1	0.2	0.2
5.000	0.2	0.2	0.2	0.2	0.2
5.500	0.2	0.2	0.2	0.2	0.2
6.000	0.2	0.2	0.2	0.2	0.2
6.500	0.2	0.2	0.2	0.2	0.2
7.000	0.3	0.3	0.3	0.3	0.3
7.500	0.3	0.3	0.3	0.3	0.3
8.000	0.3	0.3	0.3	0.3	0.4
8.500	0.4	0.4	0.4	0.4	0.4
9.000	0.4	0.4	0.4	0.4	0.5
9.500	0.5	0.5	0.5	0.5	0.5
10.000	0.5	0.5	0.6	0.6	0.6
10.500	0.6	0.6	0.6	0.7	0.7
11.000	0.7	0.7	0.7	0.8	0.8
11.500	0.8	0.9	1.0	1.0	1.2
12.000	1.4	1.6	1.8	1.8	1.9
12.500	2.0	2.0	2.0	2.1	2.1
13.000	2.1	2.1	2.1	2.2	2.2
13.500	2.2	2.2	2.2	2.2	2.3
14.000	2.3	2.3	2.3	2.3	2.3
14.500	2.3	2.3	2.4	2.4	2.4
15.000	2.4	2.4	2.4	2.4	2.4
15.500	2.4	2.4	2.5	2.5	2.5
16.000	2.5	2.5	2.5	2.5	2.5
16.500	2.5	2.5	2.5	2.5	2.5
17.000	2.5	2.6	2.6	2.6	2.6

Subsection: Time-Depth Curve
Label: Time-Depth - 1
Scenario: 1 year

Return Event: 1 years
Storm Event: 1 year

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
17.500	2.6	2.6	2.6	2.6	2.6
18.000	2.6	2.6	2.6	2.6	2.6
18.500	2.6	2.6	2.6	2.6	2.6
19.000	2.6	2.6	2.6	2.7	2.7
19.500	2.7	2.7	2.7	2.7	2.7
20.000	2.7	2.7	2.7	2.7	2.7
20.500	2.7	2.7	2.7	2.7	2.7
21.000	2.7	2.7	2.7	2.7	2.7
21.500	2.7	2.7	2.7	2.7	2.7
22.000	2.7	2.7	2.8	2.8	2.8
22.500	2.8	2.8	2.8	2.8	2.8
23.000	2.8	2.8	2.8	2.8	2.8
23.500	2.8	2.8	2.8	2.8	2.8
24.000	2.8	(N/A)	(N/A)	(N/A)	(N/A)

Subsection: Time-Depth Curve
Label: Time-Depth - 1
Scenario: 10 years

Return Event: 10 years
Storm Event: 10 years - type 3

Time-Depth Curve: 10 years - type 3	
Label	10 years - type 3
Start Time	0.000 hours
Increment	0.100 hours
End Time	24.000 hours
Return Event	10 years

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
0.000	0.0	0.0	0.0	0.0	0.0
0.500	0.0	0.0	0.0	0.0	0.0
1.000	0.1	0.1	0.1	0.1	0.1
1.500	0.1	0.1	0.1	0.1	0.1
2.000	0.1	0.1	0.1	0.1	0.1
2.500	0.1	0.1	0.1	0.1	0.2
3.000	0.2	0.2	0.2	0.2	0.2
3.500	0.2	0.2	0.2	0.2	0.2
4.000	0.2	0.2	0.2	0.2	0.2
4.500	0.3	0.3	0.3	0.3	0.3
5.000	0.3	0.3	0.3	0.3	0.3
5.500	0.3	0.3	0.3	0.4	0.4
6.000	0.4	0.4	0.4	0.4	0.4
6.500	0.4	0.4	0.4	0.4	0.5
7.000	0.5	0.5	0.5	0.5	0.5
7.500	0.5	0.5	0.5	0.6	0.6
8.000	0.6	0.6	0.6	0.6	0.6
8.500	0.7	0.7	0.7	0.7	0.7
9.000	0.7	0.8	0.8	0.8	0.8
9.500	0.8	0.9	0.9	0.9	0.9
10.000	1.0	1.0	1.0	1.0	1.1
10.500	1.1	1.1	1.2	1.2	1.2
11.000	1.3	1.3	1.4	1.4	1.5
11.500	1.5	1.6	1.7	1.9	2.1
12.000	2.5	3.0	3.2	3.4	3.5
12.500	3.6	3.6	3.7	3.7	3.8
13.000	3.8	3.9	3.9	3.9	4.0
13.500	4.0	4.0	4.0	4.1	4.1
14.000	4.1	4.2	4.2	4.2	4.2
14.500	4.2	4.3	4.3	4.3	4.3
15.000	4.3	4.4	4.4	4.4	4.4
15.500	4.4	4.5	4.5	4.5	4.5
16.000	4.5	4.5	4.5	4.5	4.6
16.500	4.6	4.6	4.6	4.6	4.6
17.000	4.6	4.6	4.7	4.7	4.7

Subsection: Time-Depth Curve
Label: Time-Depth - 1
Scenario: 10 years

Return Event: 10 years
Storm Event: 10 years - type 3

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
17.500	4.7	4.7	4.7	4.7	4.7
18.000	4.7	4.7	4.7	4.7	4.8
18.500	4.8	4.8	4.8	4.8	4.8
19.000	4.8	4.8	4.8	4.8	4.8
19.500	4.8	4.8	4.9	4.9	4.9
20.000	4.9	4.9	4.9	4.9	4.9
20.500	4.9	4.9	4.9	4.9	4.9
21.000	4.9	4.9	4.9	5.0	5.0
21.500	5.0	5.0	5.0	5.0	5.0
22.000	5.0	5.0	5.0	5.0	5.0
22.500	5.0	5.0	5.0	5.0	5.0
23.000	5.0	5.0	5.1	5.1	5.1
23.500	5.1	5.1	5.1	5.1	5.1
24.000	5.1	(N/A)	(N/A)	(N/A)	(N/A)

Subsection: Time-Depth Curve
Label: Time-Depth - 1
Scenario: 100 years

Return Event: 100 years
Storm Event: 100 years - type 3

Time-Depth Curve: 100 years - type 3	
Label	100 years - type 3
Start Time	0.000 hours
Increment	0.100 hours
End Time	24.000 hours
Return Event	100 years

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
0.000	0.0	0.0	0.0	0.0	0.0
0.500	0.0	0.1	0.1	0.1	0.1
1.000	0.1	0.1	0.1	0.1	0.1
1.500	0.1	0.1	0.2	0.2	0.2
2.000	0.2	0.2	0.2	0.2	0.2
2.500	0.2	0.2	0.2	0.3	0.3
3.000	0.3	0.3	0.3	0.3	0.3
3.500	0.3	0.3	0.4	0.4	0.4
4.000	0.4	0.4	0.4	0.4	0.4
4.500	0.5	0.5	0.5	0.5	0.5
5.000	0.5	0.5	0.5	0.6	0.6
5.500	0.6	0.6	0.6	0.6	0.6
6.000	0.7	0.7	0.7	0.7	0.7
6.500	0.7	0.8	0.8	0.8	0.8
7.000	0.8	0.8	0.9	0.9	0.9
7.500	0.9	0.9	1.0	1.0	1.0
8.000	1.0	1.1	1.1	1.1	1.1
8.500	1.2	1.2	1.2	1.3	1.3
9.000	1.3	1.4	1.4	1.4	1.5
9.500	1.5	1.6	1.6	1.6	1.7
10.000	1.7	1.8	1.8	1.9	1.9
10.500	2.0	2.0	2.1	2.1	2.2
11.000	2.3	2.3	2.4	2.5	2.6
11.500	2.7	2.9	3.1	3.4	3.8
12.000	4.6	5.3	5.7	6.0	6.2
12.500	6.4	6.5	6.6	6.7	6.8
13.000	6.8	6.9	7.0	7.0	7.1
13.500	7.1	7.2	7.2	7.3	7.3
14.000	7.4	7.4	7.5	7.5	7.6
14.500	7.6	7.6	7.7	7.7	7.7
15.000	7.8	7.8	7.8	7.9	7.9
15.500	7.9	8.0	8.0	8.0	8.0
16.000	8.1	8.1	8.1	8.1	8.2
16.500	8.2	8.2	8.2	8.2	8.3
17.000	8.3	8.3	8.3	8.3	8.4

Subsection: Time-Depth Curve
Label: Time-Depth - 1
Scenario: 100 years

Return Event: 100 years
Storm Event: 100 years - type 3

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
17.500	8.4	8.4	8.4	8.4	8.4
18.000	8.5	8.5	8.5	8.5	8.5
18.500	8.5	8.5	8.6	8.6	8.6
19.000	8.6	8.6	8.6	8.6	8.6
19.500	8.7	8.7	8.7	8.7	8.7
20.000	8.7	8.7	8.7	8.8	8.8
20.500	8.8	8.8	8.8	8.8	8.8
21.000	8.8	8.8	8.9	8.9	8.9
21.500	8.9	8.9	8.9	8.9	8.9
22.000	8.9	8.9	9.0	9.0	9.0
22.500	9.0	9.0	9.0	9.0	9.0
23.000	9.0	9.0	9.0	9.1	9.1
23.500	9.1	9.1	9.1	9.1	9.1
24.000	9.1	(N/A)	(N/A)	(N/A)	(N/A)

Subsection: Time of Concentration Calculations
Label: DA-1A
Scenario: 1 year

Return Event: 1 years
Storm Event: 1 year

Time of Concentration Results

Segment #1: User Defined Tc	
Time of Concentration	0.083 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.083 hours

Subsection: Time of Concentration Calculations
Label: DA-1A
Scenario: 1 year

Return Event: 1 years
Storm Event: 1 year

==== User Defined

Tc = Value entered by user
Where: Tc= Time of concentration, hours

Time of Concentration Results

Segment #1: User Defined Tc	
Time of Concentration	0.083 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.083 hours

Subsection: Time of Concentration Calculations
Label: DA-1B
Scenario: 1 year

Return Event: 1 years
Storm Event: 1 year

==== User Defined

Tc = Value entered by user
Where: Tc= Time of concentration, hours

Subsection: Time of Concentration Calculations
Label: DA-1C
Scenario: 1 year

Return Event: 1 years
Storm Event: 1 year

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	100.00 ft
Manning's n	0.150
Slope	0.040 ft/ft
2 Year 24 Hour Depth	3.4 in
Average Velocity	0.23 ft/s
Segment Time of Concentration	0.120 hours

Segment #2: TR-55 Shallow Concentrated Flow	
Hydraulic Length	213.00 ft
Is Paved?	False
Slope	0.066 ft/ft
Average Velocity	4.15 ft/s
Segment Time of Concentration	0.014 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.134 hours

==== SCS Channel Flow

Tc =

R = Qa / Wp
V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n

(Lf / V) / 3600

Where:

R= Hydraulic radius
Aq= Flow area, square feet
Wp= Wetted perimeter, feet
V= Velocity, ft/sec
Sf= Slope, ft/ft
n= Manning's n
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Shallow Concentration Flow

Tc =

Unpaved surface:
V = 16.1345 * (Sf**0.5)

Paved Surface:
V = 20.3282 * (Sf**0.5)

(Lf / V) / 3600

Where:

V= Velocity, ft/sec
Sf= Slope, ft/ft
Tc= Time of concentration, hours
Lf= Flow length, feet

Subsection: Time of Concentration Calculations
Label: DA-1D
Scenario: 1 year

Return Event: 1 years
Storm Event: 1 year

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	100.00 ft
Manning's n	0.150
Slope	0.120 ft/ft
2 Year 24 Hour Depth	3.4 in
Average Velocity	0.36 ft/s
Segment Time of Concentration	0.077 hours

Segment #2: TR-55 Shallow Concentrated Flow	
Hydraulic Length	120.00 ft
Is Paved?	False
Slope	0.058 ft/ft
Average Velocity	3.89 ft/s
Segment Time of Concentration	0.009 hours

Segment #3: TR-55 Shallow Concentrated Flow	
Hydraulic Length	40.00 ft
Is Paved?	False
Slope	0.100 ft/ft
Average Velocity	5.10 ft/s
Segment Time of Concentration	0.002 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.088 hours

==== SCS Channel Flow

Tc =
R = Qa / Wp
V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n

(Lf / V) / 3600

Where:
R= Hydraulic radius
Aq= Flow area, square feet
Wp= Wetted perimeter, feet
V= Velocity, ft/sec
Sf= Slope, ft/ft
n= Manning's n
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Shallow Concentration Flow

Tc =
Unpaved surface:
V = 16.1345 * (Sf**0.5)

Paved Surface:
V = 20.3282 * (Sf**0.5)

(Lf / V) / 3600

Where:
V= Velocity, ft/sec
Sf= Slope, ft/ft
Tc= Time of concentration, hours
Lf= Flow length, feet

Subsection: Time of Concentration Calculations
Label: DA-2A
Scenario: 1 year

Return Event: 1 years
Storm Event: 1 year

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	45.00 ft
Manning's n	0.240
Slope	0.089 ft/ft
2 Year 24 Hour Depth	3.4 in
Average Velocity	0.19 ft/s
Segment Time of Concentration	0.067 hours

Segment #2: TR-55 Sheet Flow	
Hydraulic Length	55.00 ft
Manning's n	0.011
Slope	0.018 ft/ft
2 Year 24 Hour Depth	3.4 in
Average Velocity	1.21 ft/s
Segment Time of Concentration	0.013 hours

Segment #3: TR-55 Shallow Concentrated Flow	
Hydraulic Length	278.00 ft
Is Paved?	False
Slope	0.065 ft/ft
Average Velocity	4.11 ft/s
Segment Time of Concentration	0.019 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.098 hours

==== SCS Channel Flow

Tc = R = Qa / Wp
V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n

(Lf / V) / 3600

Where:
R= Hydraulic radius
Aq= Flow area, square feet
Wp= Wetted perimeter, feet
V= Velocity, ft/sec
Sf= Slope, ft/ft
n= Manning's n
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Shallow Concentration Flow

Tc = Unpaved surface:
V = 16.1345 * (Sf**0.5)

Paved Surface:
V = 20.3282 * (Sf**0.5)

(Lf / V) / 3600

Where:
V= Velocity, ft/sec
Sf= Slope, ft/ft
Tc= Time of concentration, hours
Lf= Flow length, feet

Time of Concentration Results

Segment #1: User Defined Tc	
Time of Concentration	0.083 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.083 hours

Subsection: Time of Concentration Calculations
Label: DA-2B
Scenario: 1 year

Return Event: 1 years
Storm Event: 1 year

==== User Defined

Tc =	Value entered by user
Where:	Tc= Time of concentration, hours

Time of Concentration Results

Segment #1: User Defined Tc	
Time of Concentration	0.083 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.083 hours

==== User Defined

Tc =	Value entered by user
Where:	Tc= Time of concentration, hours

Subsection: Time of Concentration Calculations
Label: DA-4
Scenario: 1 year

Return Event: 1 years
Storm Event: 1 year

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	15.00 ft
Manning's n	0.011
Slope	0.067 ft/ft
2 Year 24 Hour Depth	3.4 in
Average Velocity	1.57 ft/s
Segment Time of Concentration	0.003 hours

Segment #2: TR-55 Sheet Flow	
Hydraulic Length	85.00 ft
Manning's n	0.150
Slope	0.106 ft/ft
2 Year 24 Hour Depth	3.4 in
Average Velocity	0.33 ft/s
Segment Time of Concentration	0.071 hours

Segment #3: TR-55 Shallow Concentrated Flow	
Hydraulic Length	125.00 ft
Is Paved?	False
Slope	0.056 ft/ft
Average Velocity	3.82 ft/s
Segment Time of Concentration	0.009 hours

Segment #4: TR-55 Shallow Concentrated Flow	
Hydraulic Length	229.00 ft
Is Paved?	False
Slope	0.035 ft/ft
Average Velocity	3.02 ft/s
Segment Time of Concentration	0.021 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.104 hours

==== SCS Channel Flow

Tc =

R = Qa / Wp
V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n

(Lf / V) / 3600

Where:

R= Hydraulic radius
Aq= Flow area, square feet
Wp= Wetted perimeter, feet
V= Velocity, ft/sec
Sf= Slope, ft/ft
n= Manning's n
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Shallow Concentration Flow

Tc =

Unpaved surface:
V = 16.1345 * (Sf**0.5)

Paved Surface:
V = 20.3282 * (Sf**0.5)

(Lf / V) / 3600

Where:

V= Velocity, ft/sec
Sf= Slope, ft/ft
Tc= Time of concentration, hours
Lf= Flow length, feet

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	100.00 ft
Manning's n	0.150
Slope	0.070 ft/ft
2 Year 24 Hour Depth	3.4 in
Average Velocity	0.29 ft/s
Segment Time of Concentration	0.096 hours

Segment #2: TR-55 Shallow Concentrated Flow	
Hydraulic Length	112.00 ft
Is Paved?	False
Slope	0.054 ft/ft
Average Velocity	3.75 ft/s
Segment Time of Concentration	0.008 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.104 hours

==== SCS Channel Flow

Tc =
R = Qa / Wp
V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n

(Lf / V) / 3600

Where:
R= Hydraulic radius
Aq= Flow area, square feet
Wp= Wetted perimeter, feet
V= Velocity, ft/sec
Sf= Slope, ft/ft
n= Manning's n
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Shallow Concentration Flow

Tc =
Unpaved surface:
V = 16.1345 * (Sf**0.5)

Paved Surface:
V = 20.3282 * (Sf**0.5)

(Lf / V) / 3600

Where:
V= Velocity, ft/sec
Sf= Slope, ft/ft
Tc= Time of concentration, hours
Lf= Flow length, feet

Subsection: Time of Concentration Calculations
Label: DA-5B
Scenario: 1 year

Return Event: 1 years
Storm Event: 1 year

Time of Concentration Results

Segment #1: User Defined Tc	
Time of Concentration	0.083 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.083 hours

Subsection: Time of Concentration Calculations
Label: DA-5B
Scenario: 1 year

Return Event: 1 years
Storm Event: 1 year

==== User Defined

Tc = Value entered by user
Where: Tc= Time of concentration, hours

Subsection: Runoff CN-Area
Label: DA-1A
Scenario: 1 year

Return Event: 1 years
Storm Event: 1 year

Runoff Curve Number Data

Soil/Surface Description	CN	Area (acres)	C (%)	UC (%)	Adjusted CN
Open space - Good Cond, HSG C	74.000	1.310	0.0	0.0	74.000
Asphalt	98.000	0.600	0.0	0.0	98.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	1.910	(N/A)	(N/A)	81.539

Subsection: Runoff CN-Area
Label: DA-1B
Scenario: 1 year

Return Event: 1 years
Storm Event: 1 year

Runoff Curve Number Data

Soil/Surface Description	CN	Area (acres)	C (%)	UC (%)	Adjusted CN
Open Space - Good Cond - HSG C	74.000	0.420	0.0	0.0	74.000
Asphalt	98.000	0.180	0.0	0.0	98.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	0.600	(N/A)	(N/A)	81.200

Subsection: Runoff CN-Area
Label: DA-1C
Scenario: 1 year

Return Event: 1 years
Storm Event: 1 year

Runoff Curve Number Data

Soil/Surface Description	CN	Area (acres)	C (%)	UC (%)	Adjusted CN
Impervious	98.000	0.110	0.0	0.0	98.000
Grass - Good Cond, HSG C	74.000	1.260	0.0	0.0	74.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	1.370	(N/A)	(N/A)	75.927

Subsection: Runoff CN-Area
Label: DA-1D
Scenario: 1 year

Return Event: 1 years
Storm Event: 1 year

Runoff Curve Number Data

Soil/Surface Description	CN	Area (acres)	C (%)	UC (%)	Adjusted CN
Open space - Good Cond, HSG C	74.000	1.380	0.0	0.0	74.000
Woods - Good Cond, HSG C	70.000	0.090	0.0	0.0	70.000
Impervious	98.000	0.040	0.0	0.0	98.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	1.510	(N/A)	(N/A)	74.397

Subsection: Runoff CN-Area
Label: DA-2A
Scenario: 1 year

Return Event: 1 years
Storm Event: 1 year

Runoff Curve Number Data

Soil/Surface Description	CN	Area (acres)	C (%)	UC (%)	Adjusted CN
Open space - Good Cond, HSG C	74.000	2.300	0.0	0.0	74.000
Impervious	98.000	0.230	0.0	0.0	98.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	2.530	(N/A)	(N/A)	76.182

Subsection: Runoff CN-Area
Label: DA-2B
Scenario: 1 year

Return Event: 1 years
Storm Event: 1 year

Runoff Curve Number Data

Soil/Surface Description	CN	Area (acres)	C (%)	UC (%)	Adjusted CN
Impervious	98.000	0.180	0.0	0.0	98.000
Open Space - Good Cond - HSG C	74.000	0.350	0.0	0.0	74.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	0.530	(N/A)	(N/A)	82.151

Subsection: Runoff CN-Area
Label: DA-3
Scenario: 1 year

Return Event: 1 years
Storm Event: 1 year

Runoff Curve Number Data

Soil/Surface Description	CN	Area (acres)	C (%)	UC (%)	Adjusted CN
Open space - Good Cond, HSG C	74.000	0.820	0.0	0.0	74.000
Impervious	98.000	0.590	0.0	0.0	98.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	1.410	(N/A)	(N/A)	84.043

Subsection: Runoff CN-Area
Label: DA-4
Scenario: 1 year

Return Event: 1 years
Storm Event: 1 year

Runoff Curve Number Data

Soil/Surface Description	CN	Area (acres)	C (%)	UC (%)	Adjusted CN
Open space - Good Cond, HSG C	74.000	4.890	0.0	0.0	74.000
Woods - Good Cond, HSG C	70.000	1.610	0.0	0.0	70.000
Impervious	98.000	1.100	0.0	0.0	98.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	7.600	(N/A)	(N/A)	76.626

Subsection: Runoff CN-Area
Label: DA-5A
Scenario: 1 year

Return Event: 1 years
Storm Event: 1 year

Runoff Curve Number Data

Soil/Surface Description	CN	Area (acres)	C (%)	UC (%)	Adjusted CN
Open space - Good Cond, HSG C	74.000	0.500	0.0	0.0	74.000
Impervious	98.000	0.270	0.0	0.0	98.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	0.770	(N/A)	(N/A)	82.416

Subsection: Runoff CN-Area
Label: DA-5B
Scenario: 1 year

Return Event: 1 years
Storm Event: 1 year

Runoff Curve Number Data

Soil/Surface Description	CN	Area (acres)	C (%)	UC (%)	Adjusted CN
Open space - Good Cond, HSG C	74.000	0.430	0.0	0.0	74.000
Impervious	98.000	0.140	0.0	0.0	98.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	0.570	(N/A)	(N/A)	79.895

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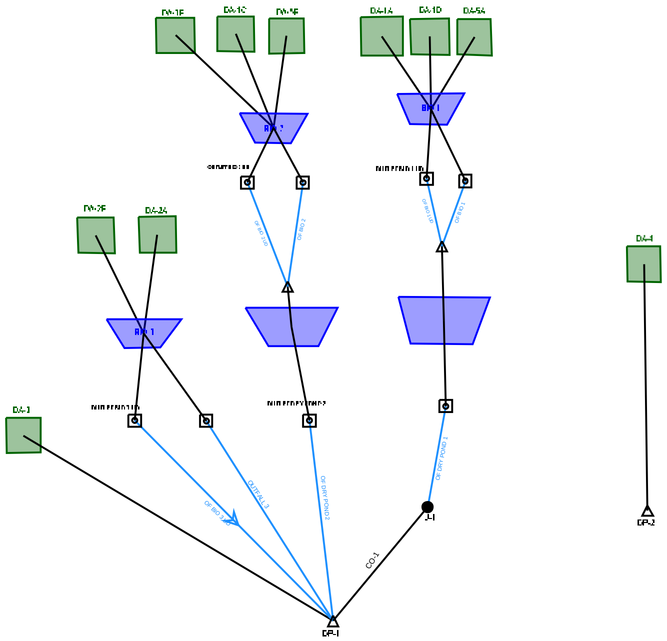
APPENDIX F

Proposed Mitigated Condition PondPack Outputs

Scenario: 1 year



Project Summary	
Title	John Jay Homestead Site and Building Enhancements
Engineer	HB / JMC
Company	CHA
Date	5/9/2024

Notes	400 Jay Street Katonah, Westchester County New York

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Subsection: Master Network Summary

Catchments Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft³/s)
DA-1A	1 year	1	0.1945	12.110	2.448
DA-1A	10 years	10	0.5025	12.110	6.201
DA-1A	100 years	100	1.1005	12.100	13.041
DA-1C	1 year	1	0.1005	12.160	1.058
DA-1C	10 years	10	0.2973	12.150	3.290
DA-1C	100 years	100	0.7040	12.150	7.684
DA-1D	1 year	1	0.0985	12.120	1.181
DA-1D	10 years	10	0.3062	12.110	3.826
DA-1D	100 years	100	0.7455	12.100	9.094
DA-2A	1 year	1	0.1859	12.120	2.240
DA-2A	10 years	10	0.5497	12.110	6.784
DA-2A	100 years	100	1.3012	12.110	15.641
DA-2B	1 year	1	0.0540	12.110	0.679
DA-2B	10 years	10	0.1394	12.110	1.721
DA-2B	100 years	100	0.3054	12.100	3.619
DA-3	1 year	1	0.1589	12.110	1.998
DA-3	10 years	10	0.3936	12.100	4.816
DA-3	100 years	100	0.8413	12.100	9.859
DA-4	1 year	1	0.5912	12.120	7.113
DA-4	10 years	10	1.7071	12.110	20.933
DA-4	100 years	100	3.9871	12.110	47.577
DA-5A	1 year	1	0.0784	12.110	0.962
DA-5A	10 years	10	0.2025	12.110	2.460
DA-5A	100 years	100	0.4436	12.110	5.185
DA-5B	1 year	1	0.0522	12.140	0.583
DA-5B	10 years	10	0.1409	12.140	1.598
DA-5B	100 years	100	0.3165	12.140	3.491
DA-1B	1 year	1	0.0580	12.110	0.730
DA-1B	10 years	10	0.1531	12.110	1.897
DA-1B	100 years	100	0.3396	12.100	4.045

Node Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft³/s)
DP-1	1 year	1	0.8514	12.130	6.148
DP-1	10 years	10	2.5477	12.150	23.300
DP-1	100 years	100	5.5384	12.120	48.050
DP-2	1 year	1	0.5912	12.120	7.113
DP-2	10 years	10	1.7071	12.110	20.933
DP-2	100 years	100	3.9871	12.110	47.577
J-1	1 year	1	0.2826	12.680	0.966
J-1	10 years	10	0.9172	12.210	7.641
J-1	100 years	100	1.8471	11.960	9.868

Subsection: Master Network Summary

Pond Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft³/s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ac-ft)
BIO 3 (IN)	1 year	1	0.2399	12.120	2.914	(N/A)	(N/A)
BIO 3 (OUT)	1 year	1	0.2162	12.130	2.879	445.60	0.0292
BIO 3 (IN)	10 years	10	0.6891	12.110	8.505	(N/A)	(N/A)
BIO 3 (OUT)	10 years	10	0.6653	12.120	8.466	445.72	0.0354
BIO 3 (IN)	100 years	100	1.6066	12.110	19.249	(N/A)	(N/A)
BIO 3 (OUT)	100 years	100	1.5825	12.110	19.211	445.87	0.0447
BIO 2 (IN)	1 year	1	0.2108	12.130	2.304	(N/A)	(N/A)
BIO 2 (OUT)	1 year	1	0.1861	12.160	2.232	447.61	0.0306
BIO 2 (IN)	10 years	10	0.5914	12.120	6.656	(N/A)	(N/A)
BIO 2 (OUT)	10 years	10	0.5666	12.140	6.572	447.74	0.0366
BIO 2 (IN)	100 years	100	1.3601	12.120	15.016	(N/A)	(N/A)
BIO 2 (OUT)	100 years	100	1.2654	12.040	11.938	448.00	0.0498
BIO 1 (IN)	1 year	1	0.3715	12.110	4.589	(N/A)	(N/A)
BIO 1 (OUT)	1 year	1	0.2913	12.230	2.794	443.63	0.1019
BIO 1 (IN)	10 years	10	1.0113	12.110	12.487	(N/A)	(N/A)
BIO 1 (OUT)	10 years	10	0.9302	12.100	11.423	443.93	0.1493
BIO 1 (IN)	100 years	100	2.2896	12.100	27.312	(N/A)	(N/A)
BIO 1 (OUT)	100 years	100	1.8659	11.940	11.433	444.00	0.1612
DRY POND 2 (IN)	1 year	1	0.1861	12.160	2.232	(N/A)	(N/A)
DRY POND 2 (OUT)	1 year	1	0.1852	12.290	1.698	445.36	0.0130
DRY POND 2 (IN)	10 years	10	0.5666	12.140	6.572	(N/A)	(N/A)
DRY POND 2 (OUT)	10 years	10	0.5651	12.240	5.290	446.97	0.0469
DRY POND 2 (IN)	100 years	100	1.2654	12.040	11.938	(N/A)	(N/A)
DRY POND 2 (OUT)	100 years	100	1.2633	12.120	9.455	447.98	0.0830
DRY POND 1 (IN)	1 year	1	0.2913	12.230	2.794	(N/A)	(N/A)
DRY POND 1 (OUT)	1 year	1	0.2826	12.680	0.966	442.25	0.0622
DRY POND 1 (IN)	10 years	10	0.9302	12.100	11.423	(N/A)	(N/A)
DRY POND 1 (OUT)	10 years	10	0.9172	12.210	7.641	443.87	0.1842
DRY POND 1 (IN)	100 years	100	1.8659	11.940	11.433	(N/A)	(N/A)
DRY POND 1 (OUT)	100 years	100	1.8471	11.960	9.868	443.96	0.1914

Time-Depth Curve: 1 year	
Label	1 year
Start Time	0.000 hours
Increment	0.100 hours
End Time	24.000 hours
Return Event	1 years

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
0.000	0.0	0.0	0.0	0.0	0.0
0.500	0.0	0.0	0.0	0.0	0.0
1.000	0.0	0.0	0.0	0.0	0.0
1.500	0.0	0.0	0.0	0.1	0.1
2.000	0.1	0.1	0.1	0.1	0.1
2.500	0.1	0.1	0.1	0.1	0.1
3.000	0.1	0.1	0.1	0.1	0.1
3.500	0.1	0.1	0.1	0.1	0.1
4.000	0.1	0.1	0.1	0.1	0.1
4.500	0.1	0.1	0.1	0.2	0.2
5.000	0.2	0.2	0.2	0.2	0.2
5.500	0.2	0.2	0.2	0.2	0.2
6.000	0.2	0.2	0.2	0.2	0.2
6.500	0.2	0.2	0.2	0.2	0.2
7.000	0.3	0.3	0.3	0.3	0.3
7.500	0.3	0.3	0.3	0.3	0.3
8.000	0.3	0.3	0.3	0.3	0.4
8.500	0.4	0.4	0.4	0.4	0.4
9.000	0.4	0.4	0.4	0.4	0.5
9.500	0.5	0.5	0.5	0.5	0.5
10.000	0.5	0.5	0.6	0.6	0.6
10.500	0.6	0.6	0.6	0.7	0.7
11.000	0.7	0.7	0.7	0.8	0.8
11.500	0.8	0.9	1.0	1.0	1.2
12.000	1.4	1.6	1.8	1.8	1.9
12.500	2.0	2.0	2.0	2.1	2.1
13.000	2.1	2.1	2.1	2.2	2.2
13.500	2.2	2.2	2.2	2.2	2.3
14.000	2.3	2.3	2.3	2.3	2.3
14.500	2.3	2.3	2.4	2.4	2.4
15.000	2.4	2.4	2.4	2.4	2.4
15.500	2.4	2.4	2.5	2.5	2.5
16.000	2.5	2.5	2.5	2.5	2.5
16.500	2.5	2.5	2.5	2.5	2.5
17.000	2.5	2.6	2.6	2.6	2.6

Subsection: Time-Depth Curve
Label: Time-Depth - 1
Scenario: 1 year

Return Event: 1 years
Storm Event: 1 year

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
17.500	2.6	2.6	2.6	2.6	2.6
18.000	2.6	2.6	2.6	2.6	2.6
18.500	2.6	2.6	2.6	2.6	2.6
19.000	2.6	2.6	2.6	2.7	2.7
19.500	2.7	2.7	2.7	2.7	2.7
20.000	2.7	2.7	2.7	2.7	2.7
20.500	2.7	2.7	2.7	2.7	2.7
21.000	2.7	2.7	2.7	2.7	2.7
21.500	2.7	2.7	2.7	2.7	2.7
22.000	2.7	2.7	2.8	2.8	2.8
22.500	2.8	2.8	2.8	2.8	2.8
23.000	2.8	2.8	2.8	2.8	2.8
23.500	2.8	2.8	2.8	2.8	2.8
24.000	2.8	(N/A)	(N/A)	(N/A)	(N/A)

Time-Depth Curve: 10 years - type 3	
Label	10 years - type 3
Start Time	0.000 hours
Increment	0.100 hours
End Time	24.000 hours
Return Event	10 years

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
0.000	0.0	0.0	0.0	0.0	0.0
0.500	0.0	0.0	0.0	0.0	0.0
1.000	0.1	0.1	0.1	0.1	0.1
1.500	0.1	0.1	0.1	0.1	0.1
2.000	0.1	0.1	0.1	0.1	0.1
2.500	0.1	0.1	0.1	0.1	0.2
3.000	0.2	0.2	0.2	0.2	0.2
3.500	0.2	0.2	0.2	0.2	0.2
4.000	0.2	0.2	0.2	0.2	0.2
4.500	0.3	0.3	0.3	0.3	0.3
5.000	0.3	0.3	0.3	0.3	0.3
5.500	0.3	0.3	0.3	0.4	0.4
6.000	0.4	0.4	0.4	0.4	0.4
6.500	0.4	0.4	0.4	0.4	0.5
7.000	0.5	0.5	0.5	0.5	0.5
7.500	0.5	0.5	0.5	0.6	0.6
8.000	0.6	0.6	0.6	0.6	0.6
8.500	0.7	0.7	0.7	0.7	0.7
9.000	0.7	0.8	0.8	0.8	0.8
9.500	0.8	0.9	0.9	0.9	0.9
10.000	1.0	1.0	1.0	1.0	1.1
10.500	1.1	1.1	1.2	1.2	1.2
11.000	1.3	1.3	1.4	1.4	1.5
11.500	1.5	1.6	1.7	1.9	2.1
12.000	2.5	3.0	3.2	3.4	3.5
12.500	3.6	3.6	3.7	3.7	3.8
13.000	3.8	3.9	3.9	3.9	4.0
13.500	4.0	4.0	4.0	4.1	4.1
14.000	4.1	4.2	4.2	4.2	4.2
14.500	4.2	4.3	4.3	4.3	4.3
15.000	4.3	4.4	4.4	4.4	4.4
15.500	4.4	4.5	4.5	4.5	4.5
16.000	4.5	4.5	4.5	4.5	4.6
16.500	4.6	4.6	4.6	4.6	4.6
17.000	4.6	4.6	4.7	4.7	4.7

Subsection: Time-Depth Curve
Label: Time-Depth - 1
Scenario: 10 years

Return Event: 10 years
Storm Event: 10 years - type 3

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
17.500	4.7	4.7	4.7	4.7	4.7
18.000	4.7	4.7	4.7	4.7	4.8
18.500	4.8	4.8	4.8	4.8	4.8
19.000	4.8	4.8	4.8	4.8	4.8
19.500	4.8	4.8	4.9	4.9	4.9
20.000	4.9	4.9	4.9	4.9	4.9
20.500	4.9	4.9	4.9	4.9	4.9
21.000	4.9	4.9	4.9	5.0	5.0
21.500	5.0	5.0	5.0	5.0	5.0
22.000	5.0	5.0	5.0	5.0	5.0
22.500	5.0	5.0	5.0	5.0	5.0
23.000	5.0	5.0	5.1	5.1	5.1
23.500	5.1	5.1	5.1	5.1	5.1
24.000	5.1	(N/A)	(N/A)	(N/A)	(N/A)

Subsection: Time-Depth Curve
Label: Time-Depth - 1
Scenario: 100 years

Return Event: 100 years
Storm Event: 100 years - type 3

Time-Depth Curve: 100 years - type 3	
Label	100 years - type 3
Start Time	0.000 hours
Increment	0.100 hours
End Time	24.000 hours
Return Event	100 years

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
0.000	0.0	0.0	0.0	0.0	0.0
0.500	0.0	0.1	0.1	0.1	0.1
1.000	0.1	0.1	0.1	0.1	0.1
1.500	0.1	0.1	0.2	0.2	0.2
2.000	0.2	0.2	0.2	0.2	0.2
2.500	0.2	0.2	0.2	0.3	0.3
3.000	0.3	0.3	0.3	0.3	0.3
3.500	0.3	0.3	0.4	0.4	0.4
4.000	0.4	0.4	0.4	0.4	0.4
4.500	0.5	0.5	0.5	0.5	0.5
5.000	0.5	0.5	0.5	0.6	0.6
5.500	0.6	0.6	0.6	0.6	0.6
6.000	0.7	0.7	0.7	0.7	0.7
6.500	0.7	0.8	0.8	0.8	0.8
7.000	0.8	0.8	0.9	0.9	0.9
7.500	0.9	0.9	1.0	1.0	1.0
8.000	1.0	1.1	1.1	1.1	1.1
8.500	1.2	1.2	1.2	1.3	1.3
9.000	1.3	1.4	1.4	1.4	1.5
9.500	1.5	1.6	1.6	1.6	1.7
10.000	1.7	1.8	1.8	1.9	1.9
10.500	2.0	2.0	2.1	2.1	2.2
11.000	2.3	2.3	2.4	2.5	2.6
11.500	2.7	2.9	3.1	3.4	3.8
12.000	4.6	5.3	5.7	6.0	6.2
12.500	6.4	6.5	6.6	6.7	6.8
13.000	6.8	6.9	7.0	7.0	7.1
13.500	7.1	7.2	7.2	7.3	7.3
14.000	7.4	7.4	7.5	7.5	7.6
14.500	7.6	7.6	7.7	7.7	7.7
15.000	7.8	7.8	7.8	7.9	7.9
15.500	7.9	8.0	8.0	8.0	8.0
16.000	8.1	8.1	8.1	8.1	8.2
16.500	8.2	8.2	8.2	8.2	8.3
17.000	8.3	8.3	8.3	8.3	8.4

Subsection: Time-Depth Curve
Label: Time-Depth - 1
Scenario: 100 years

Return Event: 100 years
Storm Event: 100 years - type 3

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
17.500	8.4	8.4	8.4	8.4	8.4
18.000	8.5	8.5	8.5	8.5	8.5
18.500	8.5	8.5	8.6	8.6	8.6
19.000	8.6	8.6	8.6	8.6	8.6
19.500	8.7	8.7	8.7	8.7	8.7
20.000	8.7	8.7	8.7	8.8	8.8
20.500	8.8	8.8	8.8	8.8	8.8
21.000	8.8	8.8	8.9	8.9	8.9
21.500	8.9	8.9	8.9	8.9	8.9
22.000	8.9	8.9	9.0	9.0	9.0
22.500	9.0	9.0	9.0	9.0	9.0
23.000	9.0	9.0	9.0	9.1	9.1
23.500	9.1	9.1	9.1	9.1	9.1
24.000	9.1	(N/A)	(N/A)	(N/A)	(N/A)

Subsection: Time of Concentration Calculations
Label: DA-1A
Scenario: 1 year

Return Event: 1 years
Storm Event: 1 year

Time of Concentration Results

Segment #1: User Defined Tc	
Time of Concentration	0.083 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.083 hours

Subsection: Time of Concentration Calculations
Label: DA-1A
Scenario: 1 year

Return Event: 1 years
Storm Event: 1 year

==== User Defined

Tc =	Value entered by user
Where:	Tc= Time of concentration, hours

Subsection: Time of Concentration Calculations
Label: DA-1B
Scenario: 1 year

Return Event: 1 years
Storm Event: 1 year

Time of Concentration Results

Segment #1: User Defined Tc	
Time of Concentration	0.083 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.083 hours

Subsection: Time of Concentration Calculations
Label: DA-1B
Scenario: 1 year

Return Event: 1 years
Storm Event: 1 year

==== User Defined

Tc = Value entered by user
Where: Tc= Time of concentration, hours

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	100.00 ft
Manning's n	0.240
Slope	0.040 ft/ft
2 Year 24 Hour Depth	3.4 in
Average Velocity	0.16 ft/s
Segment Time of Concentration	0.175 hours

Segment #2: TR-55 Shallow Concentrated Flow	
Hydraulic Length	213.00 ft
Is Paved?	False
Slope	0.066 ft/ft
Average Velocity	4.15 ft/s
Segment Time of Concentration	0.014 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.189 hours

==== SCS Channel Flow

Tc =

R = Qa / Wp
V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n

(Lf / V) / 3600

Where:

R= Hydraulic radius
Aq= Flow area, square feet
Wp= Wetted perimeter, feet
V= Velocity, ft/sec
Sf= Slope, ft/ft
n= Manning's n
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Shallow Concentration Flow

Tc =

Unpaved surface:
V = 16.1345 * (Sf**0.5)

Paved Surface:
V = 20.3282 * (Sf**0.5)

(Lf / V) / 3600

Where:

V= Velocity, ft/sec
Sf= Slope, ft/ft
Tc= Time of concentration, hours
Lf= Flow length, feet

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	100.00 ft
Manning's n	0.150
Slope	0.120 ft/ft
2 Year 24 Hour Depth	3.4 in
Average Velocity	0.36 ft/s
Segment Time of Concentration	0.077 hours

Segment #2: TR-55 Shallow Concentrated Flow	
Hydraulic Length	120.00 ft
Is Paved?	False
Slope	0.058 ft/ft
Average Velocity	3.89 ft/s
Segment Time of Concentration	0.009 hours

Segment #3: TR-55 Shallow Concentrated Flow	
Hydraulic Length	40.00 ft
Is Paved?	False
Slope	0.100 ft/ft
Average Velocity	5.10 ft/s
Segment Time of Concentration	0.002 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.088 hours

==== SCS Channel Flow

Tc =

R = Qa / Wp
V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n

(Lf / V) / 3600

Where:

R= Hydraulic radius
Aq= Flow area, square feet
Wp= Wetted perimeter, feet
V= Velocity, ft/sec
Sf= Slope, ft/ft
n= Manning's n
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Shallow Concentration Flow

Tc =

Unpaved surface:
V = 16.1345 * (Sf**0.5)

Paved Surface:
V = 20.3282 * (Sf**0.5)

(Lf / V) / 3600

Where:

V= Velocity, ft/sec
Sf= Slope, ft/ft
Tc= Time of concentration, hours
Lf= Flow length, feet

Subsection: Time of Concentration Calculations
Label: DA-2A
Scenario: 1 year

Return Event: 1 years
Storm Event: 1 year

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	45.00 ft
Manning's n	0.240
Slope	0.089 ft/ft
2 Year 24 Hour Depth	3.4 in
Average Velocity	0.19 ft/s
Segment Time of Concentration	0.067 hours

Segment #2: TR-55 Sheet Flow	
Hydraulic Length	55.00 ft
Manning's n	0.011
Slope	0.018 ft/ft
2 Year 24 Hour Depth	3.4 in
Average Velocity	1.21 ft/s
Segment Time of Concentration	0.013 hours

Segment #3: TR-55 Shallow Concentrated Flow	
Hydraulic Length	278.00 ft
Is Paved?	False
Slope	0.065 ft/ft
Average Velocity	4.11 ft/s
Segment Time of Concentration	0.019 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.098 hours

==== SCS Channel Flow

Tc =	R = Qa / Wp V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n (Lf / V) / 3600
Where:	R= Hydraulic radius Aq= Flow area, square feet Wp= Wetted perimeter, feet V= Velocity, ft/sec Sf= Slope, ft/ft n= Manning's n Tc= Time of concentration, hours Lf= Flow length, feet

==== SCS TR-55 Shallow Concentration Flow

Tc =	Unpaved surface: V = 16.1345 * (Sf**0.5) Paved Surface: V = 20.3282 * (Sf**0.5) (Lf / V) / 3600
Where:	V= Velocity, ft/sec Sf= Slope, ft/ft Tc= Time of concentration, hours Lf= Flow length, feet

Time of Concentration Results

Segment #1: User Defined Tc	
Time of Concentration	0.083 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.083 hours

Subsection: Time of Concentration Calculations	Return Event: 1 years
Label: DA-2B	Storm Event: 1 year
Scenario: 1 year	

==== User Defined

Tc =	Value entered by user
Where:	Tc= Time of concentration, hours

Subsection: Time of Concentration Calculations
Label: DA-3
Scenario: 1 year

Return Event: 1 years
Storm Event: 1 year

Time of Concentration Results

Segment #1: User Defined Tc	
Time of Concentration	0.083 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.083 hours

==== User Defined

Tc = Value entered by user
Where: Tc= Time of concentration, hours

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	15.00 ft
Manning's n	0.011
Slope	0.067 ft/ft
2 Year 24 Hour Depth	3.4 in
Average Velocity	1.57 ft/s
Segment Time of Concentration	0.003 hours

Segment #2: TR-55 Sheet Flow	
Hydraulic Length	85.00 ft
Manning's n	0.150
Slope	0.106 ft/ft
2 Year 24 Hour Depth	3.4 in
Average Velocity	0.33 ft/s
Segment Time of Concentration	0.071 hours

Segment #3: TR-55 Shallow Concentrated Flow	
Hydraulic Length	125.00 ft
Is Paved?	False
Slope	0.056 ft/ft
Average Velocity	3.82 ft/s
Segment Time of Concentration	0.009 hours

Segment #4: TR-55 Shallow Concentrated Flow	
Hydraulic Length	229.00 ft
Is Paved?	False
Slope	0.035 ft/ft
Average Velocity	3.02 ft/s
Segment Time of Concentration	0.021 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.104 hours

= = = = SCS Channel Flow

Tc =

R = Qa / Wp
V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n

(Lf / V) / 3600

Where:

R= Hydraulic radius
Aq= Flow area, square feet
Wp= Wetted perimeter, feet
V= Velocity, ft/sec
Sf= Slope, ft/ft
n= Manning's n
Tc= Time of concentration, hours
Lf= Flow length, feet

= = = = SCS TR-55 Shallow Concentration Flow

Tc =

Unpaved surface:
V = 16.1345 * (Sf**0.5)

Paved Surface:
V = 20.3282 * (Sf**0.5)

(Lf / V) / 3600

Where:

V= Velocity, ft/sec
Sf= Slope, ft/ft
Tc= Time of concentration, hours
Lf= Flow length, feet

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	100.00 ft
Manning's n	0.150
Slope	0.070 ft/ft
2 Year 24 Hour Depth	3.4 in
Average Velocity	0.29 ft/s
Segment Time of Concentration	0.096 hours

Segment #2: TR-55 Shallow Concentrated Flow	
Hydraulic Length	112.00 ft
Is Paved?	False
Slope	0.054 ft/ft
Average Velocity	3.75 ft/s
Segment Time of Concentration	0.008 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.104 hours

==== SCS Channel Flow

Tc =

R = Qa / Wp
V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n

(Lf / V) / 3600

Where:

R= Hydraulic radius
Aq= Flow area, square feet
Wp= Wetted perimeter, feet
V= Velocity, ft/sec
Sf= Slope, ft/ft
n= Manning's n
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Shallow Concentration Flow

Tc =

Unpaved surface:
V = 16.1345 * (Sf**0.5)

Paved Surface:
V = 20.3282 * (Sf**0.5)

(Lf / V) / 3600

Where:

V= Velocity, ft/sec
Sf= Slope, ft/ft
Tc= Time of concentration, hours
Lf= Flow length, feet

Subsection: Time of Concentration Calculations
Label: DA-5B
Scenario: 1 year

Return Event: 1 years
Storm Event: 1 year

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	72.00 ft
Manning's n	0.240
Slope	0.083 ft/ft
2 Year 24 Hour Depth	3.4 in
Average Velocity	0.20 ft/s
Segment Time of Concentration	0.100 hours

Segment #2: TR-55 Sheet Flow	
Hydraulic Length	28.00 ft
Manning's n	0.240
Slope	0.036 ft/ft
2 Year 24 Hour Depth	3.4 in
Average Velocity	0.12 ft/s
Segment Time of Concentration	0.066 hours

Segment #3: TR-55 Shallow Concentrated Flow	
Hydraulic Length	57.00 ft
Is Paved?	False
Slope	0.053 ft/ft
Average Velocity	3.71 ft/s
Segment Time of Concentration	0.004 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.171 hours

==== SCS Channel Flow

Tc = R = Qa / Wp
V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n

(Lf / V) / 3600

Where: R= Hydraulic radius
Aq= Flow area, square feet
Wp= Wetted perimeter, feet
V= Velocity, ft/sec
Sf= Slope, ft/ft
n= Manning's n
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Shallow Concentration Flow

Tc = Unpaved surface:
V = 16.1345 * (Sf**0.5)

Paved Surface:
V = 20.3282 * (Sf**0.5)

(Lf / V) / 3600

Where: V= Velocity, ft/sec
Sf= Slope, ft/ft
Tc= Time of concentration, hours
Lf= Flow length, feet

Subsection: Runoff CN-Area
Label: DA-1A
Scenario: 1 year

Return Event: 1 years
Storm Event: 1 year

Runoff Curve Number Data

Soil/Surface Description	CN	Area (acres)	C (%)	UC (%)	Adjusted CN
Open space - Good Cond, HSG C	74.000	1.310	0.0	0.0	74.000
Asphalt	98.000	0.600	0.0	0.0	98.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	1.910	(N/A)	(N/A)	81.539

Subsection: Runoff CN-Area
Label: DA-1B
Scenario: 1 year

Return Event: 1 years
Storm Event: 1 year

Runoff Curve Number Data

Soil/Surface Description	CN	Area (acres)	C (%)	UC (%)	Adjusted CN
Open Space - Good Cond - HSG C	74.000	0.420	0.0	0.0	74.000
Asphalt	98.000	0.180	0.0	0.0	98.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	0.600	(N/A)	(N/A)	81.200

Subsection: Runoff CN-Area
Label: DA-1C
Scenario: 1 year

Return Event: 1 years
Storm Event: 1 year

Runoff Curve Number Data

Soil/Surface Description	CN	Area (acres)	C (%)	UC (%)	Adjusted CN
Impervious	98.000	0.110	0.0	0.0	98.000
Grass - Good Cond, HSG C	74.000	1.260	0.0	0.0	74.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	1.370	(N/A)	(N/A)	75.927

Subsection: Runoff CN-Area
Label: DA-1D
Scenario: 1 year

Return Event: 1 years
Storm Event: 1 year

Runoff Curve Number Data

Soil/Surface Description	CN	Area (acres)	C (%)	UC (%)	Adjusted CN
Open space - Good Cond, HSG C	74.000	1.380	0.0	0.0	74.000
Woods - Good Cond, HSG C	70.000	0.090	0.0	0.0	70.000
Impervious	98.000	0.040	0.0	0.0	98.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	1.510	(N/A)	(N/A)	74.397

Subsection: Runoff CN-Area
Label: DA-2A
Scenario: 1 year

Return Event: 1 years
Storm Event: 1 year

Runoff Curve Number Data

Soil/Surface Description	CN	Area (acres)	C (%)	UC (%)	Adjusted CN
Open space - Good Cond, HSG C	74.000	2.300	0.0	0.0	74.000
Impervious	98.000	0.230	0.0	0.0	98.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	2.530	(N/A)	(N/A)	76.182

Subsection: Runoff CN-Area
Label: DA-2B
Scenario: 1 year

Return Event: 1 years
Storm Event: 1 year

Runoff Curve Number Data

Soil/Surface Description	CN	Area (acres)	C (%)	UC (%)	Adjusted CN
Impervious	98.000	0.180	0.0	0.0	98.000
Open Space - Good Cond - HSG C	74.000	0.350	0.0	0.0	74.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	0.530	(N/A)	(N/A)	82.151

Subsection: Runoff CN-Area
Label: DA-3
Scenario: 1 year

Return Event: 1 years
Storm Event: 1 year

Runoff Curve Number Data

Soil/Surface Description	CN	Area (acres)	C (%)	UC (%)	Adjusted CN
Open space - Good Cond, HSG C	74.000	0.820	0.0	0.0	74.000
Impervious	98.000	0.590	0.0	0.0	98.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	1.410	(N/A)	(N/A)	84.043

Subsection: Runoff CN-Area
Label: DA-4
Scenario: 1 year

Return Event: 1 years
Storm Event: 1 year

Runoff Curve Number Data

Soil/Surface Description	CN	Area (acres)	C (%)	UC (%)	Adjusted CN
Open space - Good Cond, HSG C	74.000	4.890	0.0	0.0	74.000
Woods - Good Cond, HSG C	70.000	1.610	0.0	0.0	70.000
Impervious	98.000	1.100	0.0	0.0	98.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	7.600	(N/A)	(N/A)	76.626

Subsection: Runoff CN-Area
Label: DA-5A
Scenario: 1 year

Return Event: 1 years
Storm Event: 1 year

Runoff Curve Number Data

Soil/Surface Description	CN	Area (acres)	C (%)	UC (%)	Adjusted CN
Open space - Good Cond, HSG C	74.000	0.500	0.0	0.0	74.000
Impervious	98.000	0.270	0.0	0.0	98.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	0.770	(N/A)	(N/A)	82.416

Runoff Curve Number Data

Soil/Surface Description	CN	Area (acres)	C (%)	UC (%)	Adjusted CN
Open space - Good Cond, HSG C	74.000	0.430	0.0	0.0	74.000
Impervious	98.000	0.140	0.0	0.0	98.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	0.570	(N/A)	(N/A)	79.895

Subsection: Elevation-Area Volume Curve
Label: BIO 1
Scenario: 1 year

Return Event: 1 years
Storm Event: 1 year

Elevation (ft)	Planimeter (ft²)	Area (acres)	A1+A2+sqr (A1*A2) (acres)	Volume (ac-ft)	Volume (Total) (ac-ft)
443.00	0.0	0.145	0.000	0.0000	0.0000
444.00	0.0	0.178	0.484	0.1612	0.1612

Subsection: Elevation-Area Volume Curve	Return Event: 1 years

Label: BIO 2	Storm Event: 1 year

Scenario: 1 year

Elevation (ft)	Planimeter (ft²)	Area (acres)	A1+A2+sqr (A1*A2) (acres)	Volume (ac-ft)	Volume (Total) (ac-ft)
447.00	0.0	0.040	0.000	0.0000	0.0000
448.00	0.0	0.060	0.149	0.0498	0.0498

Subsection: Elevation-Area Volume Curve
Label: BIO 3
Scenario: 1 year

Return Event: 1 years
Storm Event: 1 year

Elevation (ft)	Planimeter (ft²)	Area (acres)	A1+A2+sqr (A1*A2) (acres)	Volume (ac-ft)	Volume (Total) (ac-ft)
445.00	0.0	0.041	0.000	0.0000	0.0000
446.00	0.0	0.065	0.159	0.0530	0.0530

Subsection: Elevation-Area Volume Curve
Return Event: 1 years
Label: DRY POND 1
Storm Event: 1 year
Scenario: 1 year

Elevation (ft)	Planimeter (ft²)	Area (acres)	A1+A2+sqr (A1*A2) (acres)	Volume (ac-ft)	Volume (Total) (ac-ft)
441.00	0.0	0.037	0.000	0.0000	0.0000
442.00	0.0	0.055	0.138	0.0460	0.0460
443.00	0.0	0.075	0.194	0.0646	0.1106
444.00	0.0	0.095	0.254	0.0846	0.1951
444.50	0.0	0.113	0.312	0.0519	0.2471

Subsection: Elevation-Area Volume Curve
Return Event: 1 years

Label: DRY POND 2
Storm Event: 1 year

Scenario: 1 year

Elevation (ft)	Planimeter (ft²)	Area (acres)	A1+A2+sqr (A1*A2) (acres)	Volume (ac-ft)	Volume (Total) (ac-ft)
444.00	0.0	0.005	0.000	0.0000	0.0000
445.00	0.0	0.011	0.023	0.0076	0.0076
446.00	0.0	0.020	0.045	0.0151	0.0226
447.00	0.0	0.031	0.075	0.0249	0.0475
448.00	0.0	0.043	0.109	0.0364	0.0839
448.50	0.0	0.049	0.137	0.0229	0.1067

Requested Pond Water Surface Elevations	
Minimum (Headwater)	443.00 ft
Increment (Headwater)	0.05 ft
Maximum (Headwater)	444.00 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
User Defined Table	User Defined Rating Table - 1	Forward	TW	0.00	444.00
Tailwater Settings	Tailwater			(N/A)	(N/A)

Subsection: Outlet Input Data
Label: BIO 1 UD OUTLET
Scenario: 1 year

Return Event: 1 years
Storm Event: 1 year

Structure ID: User Defined Rating Table - 1
Structure Type: User Defined Table

Elevation (ft)	Flow (ft³/s)
443.00	0.029
443.50	0.029
444.00	0.029

Requested Pond Water Surface Elevations	
Minimum (Headwater)	446.00 ft
Increment (Headwater)	0.05 ft
Maximum (Headwater)	447.00 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
User Defined Table	User Defined Rating Table - 1	Forward	TW	0.00	448.00
Tailwater Settings	Tailwater			(N/A)	(N/A)

Subsection: Outlet Input Data
Label: BIO 2 UD OUTLET
Scenario: 1 year

Return Event: 1 years
Storm Event: 1 year

Structure ID: User Defined Rating Table - 1
Structure Type: User Defined Table

Elevation (ft)	Flow (ft³/s)
446.00	0.010
446.50	0.010
447.00	0.010

Total Pond Outflow Curve for Multiple Outfalls

Headwater Elevation (ft)	Outfall: OUTFALL 3 (ft³/s)	Outfall: OF BIO 3 UD (ft³/s)	Total Flow (ft³/s)
445.00	0.000	0.010	0.010
445.05	0.000	0.010	0.010
445.10	0.000	0.010	0.010
445.15	0.000	0.010	0.010
445.20	0.000	0.010	0.010
445.25	0.000	0.010	0.010
445.30	0.000	0.010	0.010
445.35	0.000	0.010	0.010
445.40	0.000	0.010	0.010
445.45	0.000	0.010	0.010
445.50	0.000	0.010	0.010
445.55	0.937	0.010	0.948
445.60	2.652	0.010	2.663
445.65	4.877	0.010	4.887
445.70	7.530	0.010	7.540
445.75	10.561	0.010	10.571
445.80	13.932	0.010	13.942
445.85	17.616	0.010	17.626
445.90	21.589	0.010	21.600
445.95	24.587	0.010	24.598
446.00	27.779	0.010	27.789

Requested Pond Water Surface Elevations	
Minimum (Headwater)	445.00 ft
Increment (Headwater)	0.05 ft
Maximum (Headwater)	446.00 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
User Defined Table	User Defined Rating Table - 1	Forward	TW	0.00	446.00
Tailwater Settings	Tailwater			(N/A)	(N/A)

Structure ID: User Defined Rating Table - 1
Structure Type: User Defined Table

Elevation (ft)	Flow (ft³/s)
445.00	0.010
445.50	0.010
446.00	0.010

Structure ID: TW
Structure Type: TW Setup, DS Channel

Tailwater Type	Free Outfall

Convergence Tolerances

Maximum Iterations	30
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.50 ft
Headwater Tolerance (Minimum)	0.01 ft
Headwater Tolerance (Maximum)	0.50 ft
Flow Tolerance (Minimum)	0.001 ft³/s
Flow Tolerance (Maximum)	10.000 ft³/s

Subsection: Composite Rating Curve
Label: BIO 3 UD OUTLET
Scenario: 1 year

Return Event: 1 years
Storm Event: 1 year

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)
445.00	0.010	(N/A)	0.00
445.05	0.010	(N/A)	0.00
445.10	0.010	(N/A)	0.00
445.15	0.010	(N/A)	0.00
445.20	0.010	(N/A)	0.00
445.25	0.010	(N/A)	0.00
445.30	0.010	(N/A)	0.00
445.35	0.010	(N/A)	0.00
445.40	0.010	(N/A)	0.00
445.45	0.010	(N/A)	0.00
445.50	0.010	(N/A)	0.00
445.55	0.010	(N/A)	0.00
445.60	0.010	(N/A)	0.00
445.65	0.010	(N/A)	0.00
445.70	0.010	(N/A)	0.00
445.75	0.010	(N/A)	0.00
445.80	0.010	(N/A)	0.00
445.85	0.010	(N/A)	0.00
445.90	0.010	(N/A)	0.00
445.95	0.010	(N/A)	0.00
446.00	0.010	(N/A)	0.00

Contributing Structures
User Defined Rating Table - 1
User Defined Rating Table - 1
User Defined Rating Table - 1
User Defined Rating Table - 1
User Defined Rating Table - 1
User Defined Rating Table - 1
User Defined Rating Table - 1
User Defined Rating Table - 1
User Defined Rating Table - 1
User Defined Rating Table - 1
User Defined Rating Table - 1

Subsection: Composite Rating Curve
Label: BIO 3 UD OUTLET
Scenario: 1 year

Return Event: 1 years
Storm Event: 1 year

Composite Outflow Summary

Contributing Structures
User Defined Rating Table - 1
User Defined Rating Table - 1
User Defined Rating Table - 1
User Defined Rating Table - 1
User Defined Rating Table - 1
User Defined Rating Table - 1
User Defined Rating Table - 1
User Defined Rating Table - 1
User Defined Rating Table - 1
User Defined Rating Table - 1

Requested Pond Water Surface Elevations	
Minimum (Headwater)	443.00 ft
Increment (Headwater)	0.05 ft
Maximum (Headwater)	444.00 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Irregular Weir	Weir bio 1	Forward	TW	443.50	444.00
Tailwater Settings	Tailwater			(N/A)	(N/A)

Structure ID: Weir bio 1
Structure Type: Irregular Weir

Station (ft)	Elevation (ft)
0.00	444.00
1.50	443.50
21.50	443.50
23.00	444.00

Lowest Elevation	443.50 ft
Weir Coefficient	2.80 (ft^0.5)/s

Requested Pond Water Surface Elevations	
Minimum (Headwater)	447.00 ft
Increment (Headwater)	0.05 ft
Maximum (Headwater)	448.00 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Irregular Weir	Weir bio 2	Forward	TW	447.50	448.00
Tailwater Settings	Tailwater			(N/A)	(N/A)

Structure ID: Weir bio 2
Structure Type: Irregular Weir

Station (ft)	Elevation (ft)
0.00	448.00
1.50	447.50
21.50	447.50
23.00	448.00

Lowest Elevation	447.50 ft
Weir Coefficient	2.80 (ft^0.5)/s

Requested Pond Water Surface Elevations	
Minimum (Headwater)	445.00 ft
Increment (Headwater)	0.05 ft
Maximum (Headwater)	446.00 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Inlet Box	Riser bio 3	Forward	Culvert bio 3	445.50	446.00
Culvert-Circular	Culvert bio 3	Forward	TW	442.00	446.00
Irregular Weir	Weir bio 3	Forward	TW	445.50	446.00
Tailwater Settings	Tailwater			(N/A)	(N/A)

Structure ID: Weir bio 3
Structure Type: Irregular Weir

Station (ft)	Elevation (ft)
0.00	446.00
1.50	445.50
21.50	445.50
23.00	446.00

Lowest Elevation	445.50 ft
Weir Coefficient	2.80 (ft^0.5)/s

Structure ID: Riser bio 3
Structure Type: Inlet Box

Number of Openings	1
Elevation	445.50 ft
Orifice Area	5.0 ft²
Orifice Coefficient	0.600
Weir Length	10.00 ft
Weir Coefficient	2.70 (ft^0.5)/s
K Reverse	1.000
Manning's n	0.000
Kev, Charged Riser	0.000
Weir Submergence	False
Orifice H to crest	False

Structure ID: Culvert bio 3
Structure Type: Culvert-Circular

Number of Barrels	1
Diameter	12.0 in
Length	40.00 ft
Length (Computed Barrel)	40.00 ft
Slope (Computed)	0.005 ft/ft

Outlet Control Data

Manning's n	0.013
Ke	0.400
Kb	0.031
Kr	0.400
Convergence Tolerance	0.00 ft

Inlet Control Data

Equation Form	Form 2
K	0.5340

Inlet Control Data	
M	0.5550
C	0.0196
Y	0.9000
T1 ratio (HW/D)	1.070
T2 ratio (HW/D)	1.211
Slope Correction Factor	-0.500

Use unsubmerged inlet control 1 equation below T1 elevation.
Use submerged inlet control 1 equation above T2 elevation

In transition zone between unsubmerged and submerged inlet control,
interpolate between flows at T1 & T2...

T1 Elevation	443.07 ft	T1 Flow	2.749 ft³/s
T2 Elevation	443.21 ft	T2 Flow	3.142 ft³/s

Structure ID: TW
Structure Type: TW Setup, DS Channel

Tailwater Type	Free Outfall

Convergence Tolerances

Maximum Iterations	30
Tailwater Tolerance (Minimum)	0.05 ft
Tailwater Tolerance (Maximum)	0.50 ft
Headwater Tolerance (Minimum)	0.05 ft
Headwater Tolerance (Maximum)	0.50 ft
Flow Tolerance (Minimum)	0.001 ft³/s
Flow Tolerance (Maximum)	10.000 ft³/s

Subsection: Composite Rating Curve
Label: Composite Outlet Structure - 3
Scenario: 1 year

Return Event: 1 years
Storm Event: 1 year

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)
445.00	0.000	(N/A)	0.00
445.05	0.000	(N/A)	0.00
445.10	0.000	(N/A)	0.00
445.15	0.000	(N/A)	0.00
445.20	0.000	(N/A)	0.00
445.25	0.000	(N/A)	0.00
445.30	0.000	(N/A)	0.00
445.35	0.000	(N/A)	0.00
445.40	0.000	(N/A)	0.00
445.45	0.000	(N/A)	0.00
445.50	0.000	(N/A)	0.00
445.55	0.937	(N/A)	0.00
445.60	2.652	(N/A)	0.00
445.65	4.877	(N/A)	0.00
445.70	7.530	(N/A)	0.00
445.75	10.561	(N/A)	0.00
445.80	13.932	(N/A)	0.00
445.85	17.616	(N/A)	0.00
445.90	21.589	(N/A)	0.00
445.95	24.587	(N/A)	0.00
446.00	27.779	(N/A)	0.00

Contributing Structures
(no Q: Riser bio 3,Culvert bio 3,Weir bio 3)
(no Q: Riser bio 3,Culvert bio 3,Weir bio 3)
(no Q: Riser bio 3,Culvert bio 3,Weir bio 3)
(no Q: Riser bio 3,Culvert bio 3,Weir bio 3)
(no Q: Riser bio 3,Culvert bio 3,Weir bio 3)
(no Q: Riser bio 3,Culvert bio 3,Weir bio 3)
(no Q: Riser bio 3,Culvert bio 3,Weir bio 3)
(no Q: Riser bio 3,Culvert bio 3,Weir bio 3)
(no Q: Riser bio 3,Culvert bio 3,Weir bio 3)
(no Q: Riser bio 3,Culvert bio 3,Weir bio 3)
(no Q: Riser bio 3,Culvert bio 3,Weir bio 3)

Subsection: Composite Rating Curve
Label: Composite Outlet Structure - 3
Scenario: 1 year

Return Event: 1 years
Storm Event: 1 year

Composite Outflow Summary

Contributing Structures
Riser bio 3,Culvert bio 3,Weir bio 3
Riser bio 3,Culvert bio 3,Weir bio 3
Riser bio 3,Culvert bio 3,Weir bio 3
Riser bio 3,Culvert bio 3,Weir bio 3
Riser bio 3,Culvert bio 3,Weir bio 3
Riser bio 3,Culvert bio 3,Weir bio 3
Riser bio 3,Culvert bio 3,Weir bio 3
Riser bio 3,Culvert bio 3,Weir bio 3
Riser bio 3,Culvert bio 3,Weir bio 3
Riser bio 3,Culvert bio 3,Weir bio 3

Requested Pond Water Surface Elevations	
Minimum (Headwater)	441.00 ft
Increment (Headwater)	0.05 ft
Maximum (Headwater)	444.50 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Inlet Box	Riser DRY POND 1	Forward	Culvert DRY POND 1	443.50	444.50
Orifice-Circular	Orifice DRY POND 1	Forward	Culvert DRY POND 1	441.00	444.50
Culvert-Circular	Culvert DRY POND 1	Forward	TW	436.00	444.50
Irregular Weir	Weir DRY POND 1	Forward	TW	444.00	444.50
Tailwater Settings	Tailwater			(N/A)	(N/A)

Structure ID: Riser DRY POND 1
Structure Type: Inlet Box

Number of Openings	1
Elevation	443.50 ft
Orifice Area	5.0 ft²
Orifice Coefficient	0.600
Weir Length	10.00 ft
Weir Coefficient	2.70 (ft^0.5)/s
K Reverse	1.000
Manning's n	0.000
Kev, Charged Riser	0.000
Weir Submergence	False
Orifice H to crest	False

Structure ID: Weir DRY POND 1
Structure Type: Irregular Weir

Station (ft)	Elevation (ft)
0.00	444.50
1.50	444.00
21.50	444.00
23.00	444.50

Lowest Elevation	444.00 ft
Weir Coefficient	2.80 (ft^0.5)/s

Structure ID: Culvert DRY POND 1
Structure Type: Culvert-Circular

Number of Barrels	1
Diameter	18.0 in
Length	35.00 ft
Length (Computed Barrel)	35.01 ft
Slope (Computed)	0.023 ft/ft

Outlet Control Data

Manning's n	0.013
Ke	0.000
Kb	0.018
Kr	0.400
Convergence Tolerance	0.00 ft

Inlet Control Data

Equation Form	Form 2
K	0.5340
M	0.5550
C	0.0196
Y	0.9000
T1 ratio (HW/D)	1.070
T2 ratio (HW/D)	1.202
Slope Correction Factor	-0.500

Use unsubmerged inlet control 1 equation below T1 elevation.
Use submerged inlet control 1 equation above T2 elevation

In transition zone between unsubmerged and submerged inlet control,
interpolate between flows at T1 & T2...

T1 Elevation	437.61 ft	T1 Flow	7.575 ft³/s
T2 Elevation	437.80 ft	T2 Flow	8.657 ft³/s

Structure ID: Orifice DRY POND 1
Structure Type: Orifice-Circular

Number of Openings	1
Elevation	441.00 ft
Orifice Diameter	6.0 in
Orifice Coefficient	0.600

Structure ID: TW
Structure Type: TW Setup, DS Channel

Tailwater Type	Free Outfall

Convergence Tolerances

Maximum Iterations	30
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.50 ft
Headwater Tolerance (Minimum)	0.01 ft
Headwater Tolerance (Maximum)	0.50 ft
Flow Tolerance (Minimum)	0.001 ft³/s
Flow Tolerance (Maximum)	10.000 ft³/s

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)
441.00	0.000	(N/A)	0.00
441.05	0.007	(N/A)	0.00
441.10	0.022	(N/A)	0.00
441.15	0.053	(N/A)	0.00
441.20	0.089	(N/A)	0.00
441.25	0.135	(N/A)	0.00
441.30	0.196	(N/A)	0.00
441.35	0.251	(N/A)	0.00
441.40	0.326	(N/A)	0.00
441.45	0.393	(N/A)	0.00
441.50	0.495	(N/A)	0.00
441.55	0.519	(N/A)	0.00
441.60	0.560	(N/A)	0.00
441.65	0.626	(N/A)	0.00
441.70	0.662	(N/A)	0.00
441.75	0.668	(N/A)	0.00
441.80	0.703	(N/A)	0.00
441.85	0.733	(N/A)	0.00
441.90	0.763	(N/A)	0.00
441.95	0.793	(N/A)	0.00
442.00	0.852	(N/A)	0.00
442.05	0.846	(N/A)	0.00
442.10	0.888	(N/A)	0.00
442.15	0.912	(N/A)	0.00
442.20	0.936	(N/A)	0.00
442.25	0.966	(N/A)	0.00
442.30	0.983	(N/A)	0.00
442.35	1.007	(N/A)	0.00
442.40	1.013	(N/A)	0.00
442.45	1.037	(N/A)	0.00
442.50	1.073	(N/A)	0.00
442.55	1.079	(N/A)	0.00
442.60	1.121	(N/A)	0.00
442.65	1.121	(N/A)	0.00
442.70	1.138	(N/A)	0.00
442.75	1.156	(N/A)	0.00
442.80	1.180	(N/A)	0.00
442.85	1.216	(N/A)	0.00
442.90	1.216	(N/A)	0.00
442.95	1.234	(N/A)	0.00
443.00	1.252	(N/A)	0.00
443.05	1.270	(N/A)	0.00
443.10	1.287	(N/A)	0.00
443.15	1.323	(N/A)	0.00

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)
443.20	1.323	(N/A)	0.00
443.25	1.359	(N/A)	0.00
443.30	1.353	(N/A)	0.00
443.35	1.371	(N/A)	0.00
443.40	1.407	(N/A)	0.00
443.45	1.401	(N/A)	0.00
443.50	1.419	(N/A)	0.00
443.55	1.734	(N/A)	0.00
443.60	2.301	(N/A)	0.00
443.65	3.064	(N/A)	0.00
443.70	3.898	(N/A)	0.00
443.75	4.911	(N/A)	0.00
443.80	5.949	(N/A)	0.00
443.85	7.117	(N/A)	0.00
443.90	8.369	(N/A)	0.00
443.95	9.704	(N/A)	0.00
444.00	11.110	(N/A)	0.00
444.05	13.218	(N/A)	0.00
444.10	15.934	(N/A)	0.00
444.15	19.065	(N/A)	0.00
444.20	22.555	(N/A)	0.00
444.25	26.359	(N/A)	0.00
444.30	30.466	(N/A)	0.00
444.35	34.846	(N/A)	0.00
444.40	39.180	(N/A)	0.00
444.45	42.696	(N/A)	0.00
444.50	46.391	(N/A)	0.00

Contributing Structures
(no Q: Riser DRY POND 1,Orifice DRY POND 1,Culvert DRY POND 1,Weir DRY POND 1)
Orifice DRY POND 1,Culvert DRY POND 1 (no Q: Riser DRY POND 1,Weir DRY POND 1)
Orifice DRY POND 1,Culvert DRY POND 1 (no Q: Riser DRY POND 1,Weir DRY POND 1)
Orifice DRY POND 1,Culvert DRY POND 1 (no Q: Riser DRY POND 1,Weir DRY POND 1)

Composite Outflow Summary

Contributing Structures
Orifice DRY POND 1,Culvert DRY POND 1 (no Q: Riser DRY POND 1,Weir DRY POND 1)
Orifice DRY POND 1,Culvert DRY POND 1 (no Q: Riser DRY POND 1,Weir DRY POND 1)
Orifice DRY POND 1,Culvert DRY POND 1 (no Q: Riser DRY POND 1,Weir DRY POND 1)
Orifice DRY POND 1,Culvert DRY POND 1 (no Q: Riser DRY POND 1,Weir DRY POND 1)
Orifice DRY POND 1,Culvert DRY POND 1 (no Q: Riser DRY POND 1,Weir DRY POND 1)
Orifice DRY POND 1,Culvert DRY POND 1 (no Q: Riser DRY POND 1,Weir DRY POND 1)
Orifice DRY POND 1,Culvert DRY POND 1 (no Q: Riser DRY POND 1,Weir DRY POND 1)
Orifice DRY POND 1,Culvert DRY POND 1 (no Q: Riser DRY POND 1,Weir DRY POND 1)
Orifice DRY POND 1,Culvert DRY POND 1 (no Q: Riser DRY POND 1,Weir DRY POND 1)
Orifice DRY POND 1,Culvert DRY POND 1 (no Q: Riser DRY POND 1,Weir DRY POND 1)
Orifice DRY POND 1,Culvert DRY POND 1 (no Q: Riser DRY POND 1,Weir DRY POND 1)
Orifice DRY POND 1,Culvert DRY POND 1 (no Q: Riser DRY POND 1,Weir DRY POND 1)

Subsection: Composite Rating Curve
Label: DRY POND 1 OUTLET STRUCTURE
Scenario: 1 year

Return Event: 1 years
Storm Event: 1 year

Composite Outflow Summary

Contributing Structures
Orifice DRY POND 1,Culvert DRY POND 1 (no Q: Riser DRY POND 1,Weir DRY POND 1)
Orifice DRY POND 1,Culvert DRY POND 1 (no Q: Riser DRY POND 1,Weir DRY POND 1)
Orifice DRY POND 1,Culvert DRY POND 1 (no Q: Riser DRY POND 1,Weir DRY POND 1)
Orifice DRY POND 1,Culvert DRY POND 1 (no Q: Riser DRY POND 1,Weir DRY POND 1)
Orifice DRY POND 1,Culvert DRY POND 1 (no Q: Riser DRY POND 1,Weir DRY POND 1)
Orifice DRY POND 1,Culvert DRY POND 1 (no Q: Riser DRY POND 1,Weir DRY POND 1)
Orifice DRY POND 1,Culvert DRY POND 1 (no Q: Riser DRY POND 1,Weir DRY POND 1)
Orifice DRY POND 1,Culvert DRY POND 1 (no Q: Riser DRY POND 1,Weir DRY POND 1)
Orifice DRY POND 1,Culvert DRY POND 1 (no Q: Riser DRY POND 1,Weir DRY POND 1)
Orifice DRY POND 1,Culvert DRY POND 1 (no Q: Riser DRY POND 1,Weir DRY POND 1)
Orifice DRY POND 1,Culvert DRY POND 1 (no Q: Riser DRY POND 1,Weir DRY POND 1)
Orifice DRY POND 1,Culvert DRY POND 1 (no Q: Riser DRY POND 1,Weir DRY POND 1)

Subsection: Composite Rating Curve
Label: DRY POND 1 OUTLET STRUCTURE
Scenario: 1 year

Return Event: 1 years
Storm Event: 1 year

Composite Outflow Summary

Contributing Structures
Orifice DRY POND 1,Culvert DRY POND 1 (no Q: Riser DRY POND 1,Weir DRY POND 1)
Orifice DRY POND 1,Culvert DRY POND 1 (no Q: Riser DRY POND 1,Weir DRY POND 1)
Orifice DRY POND 1,Culvert DRY POND 1 (no Q: Riser DRY POND 1,Weir DRY POND 1)
Orifice DRY POND 1,Culvert DRY POND 1 (no Q: Riser DRY POND 1,Weir DRY POND 1)
Orifice DRY POND 1,Culvert DRY POND 1 (no Q: Riser DRY POND 1,Weir DRY POND 1)
Orifice DRY POND 1,Culvert DRY POND 1 (no Q: Riser DRY POND 1,Weir DRY POND 1)
Orifice DRY POND 1,Culvert DRY POND 1 (no Q: Riser DRY POND 1,Weir DRY POND 1)
Orifice DRY POND 1,Culvert DRY POND 1 (no Q: Riser DRY POND 1,Weir DRY POND 1)
Orifice DRY POND 1,Culvert DRY POND 1 (no Q: Riser DRY POND 1,Weir DRY POND 1)
Orifice DRY POND 1,Culvert DRY POND 1 (no Q: Riser DRY POND 1,Weir DRY POND 1)
Orifice DRY POND 1,Culvert DRY POND 1 (no Q: Riser DRY POND 1,Weir DRY POND 1)
Orifice DRY POND 1,Culvert DRY POND 1 (no Q: Riser DRY POND 1,Weir DRY POND 1)

Subsection: Composite Rating Curve
Label: DRY POND 1 OUTLET STRUCTURE
Scenario: 1 year

Return Event: 1 years
Storm Event: 1 year

Composite Outflow Summary

Contributing Structures
Orifice DRY POND 1,Culvert DRY POND 1 (no Q: Riser DRY POND 1,Weir DRY POND 1)
Orifice DRY POND 1,Culvert DRY POND 1 (no Q: Riser DRY POND 1,Weir DRY POND 1)
Orifice DRY POND 1,Culvert DRY POND 1 (no Q: Riser DRY POND 1,Weir DRY POND 1)
Orifice DRY POND 1,Culvert DRY POND 1 (no Q: Riser DRY POND 1,Weir DRY POND 1)
Orifice DRY POND 1,Culvert DRY POND 1 (no Q: Riser DRY POND 1,Weir DRY POND 1)
Orifice DRY POND 1,Culvert DRY POND 1 (no Q: Riser DRY POND 1,Weir DRY POND 1)
Orifice DRY POND 1,Culvert DRY POND 1 (no Q: Riser DRY POND 1,Weir DRY POND 1)
Orifice DRY POND 1,Culvert DRY POND 1 (no Q: Riser DRY POND 1,Weir DRY POND 1)
Orifice DRY POND 1,Culvert DRY POND 1 (no Q: Riser DRY POND 1,Weir DRY POND 1)
Orifice DRY POND 1,Culvert DRY POND 1 (no Q: Riser DRY POND 1,Weir DRY POND 1)
Orifice DRY POND 1,Culvert DRY POND 1 (no Q: Riser DRY POND 1,Weir DRY POND 1)
Riser DRY POND 1,Orifice DRY POND 1,Culvert DRY POND 1 (no Q: Weir DRY POND 1)

Composite Outflow Summary

Contributing Structures
Riser DRY POND 1,Orifice DRY POND 1,Culvert DRY POND 1 (no Q: Weir DRY POND 1)
Riser DRY POND 1,Orifice DRY POND 1,Culvert DRY POND 1 (no Q: Weir DRY POND 1)
Riser DRY POND 1,Orifice DRY POND 1,Culvert DRY POND 1 (no Q: Weir DRY POND 1)
Riser DRY POND 1,Orifice DRY POND 1,Culvert DRY POND 1 (no Q: Weir DRY POND 1)
Riser DRY POND 1,Orifice DRY POND 1,Culvert DRY POND 1 (no Q: Weir DRY POND 1)
Riser DRY POND 1,Orifice DRY POND 1,Culvert DRY POND 1 (no Q: Weir DRY POND 1)
Riser DRY POND 1,Orifice DRY POND 1,Culvert DRY POND 1 (no Q: Weir DRY POND 1)
Riser DRY POND 1,Orifice DRY POND 1,Culvert DRY POND 1 (no Q: Weir DRY POND 1)
Riser DRY POND 1,Orifice DRY POND 1,Culvert DRY POND 1 (no Q: Weir DRY POND 1)
Riser DRY POND 1,Orifice DRY POND 1,Culvert DRY POND 1,Weir DRY POND 1
Riser DRY POND 1,Orifice DRY POND 1,Culvert DRY POND 1,Weir DRY POND 1
Riser DRY POND 1,Orifice DRY POND 1,Culvert DRY POND 1,Weir DRY POND 1

Composite Outflow Summary

Contributing Structures
Riser DRY POND 1,Orifice DRY POND 1,Culvert DRY POND 1,Weir DRY POND 1
Riser DRY POND 1,Orifice DRY POND 1,Culvert DRY POND 1,Weir DRY POND 1
Riser DRY POND 1,Orifice DRY POND 1,Culvert DRY POND 1,Weir DRY POND 1
Riser DRY POND 1,Orifice DRY POND 1,Culvert DRY POND 1,Weir DRY POND 1
Riser DRY POND 1,Orifice DRY POND 1,Culvert DRY POND 1,Weir DRY POND 1
Riser DRY POND 1,Orifice DRY POND 1,Culvert DRY POND 1,Weir DRY POND 1
Riser DRY POND 1,Orifice DRY POND 1,Culvert DRY POND 1,Weir DRY POND 1

Subsection: Outlet Input Data Return Event: 1 years
Label: DRY POND 2 OUTLET STRUCTURE Storm Event: 1 year
Scenario: 1 year

Requested Pond Water Surface Elevations	
Minimum (Headwater)	444.00 ft
Increment (Headwater)	0.10 ft
Maximum (Headwater)	448.50 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Orifice-Area	Orifice DRY POND 2B	Forward	Culvert DRY POND 2	445.75	448.50
Inlet Box	Riser DRY POND 2	Forward	Culvert DRY POND 2	447.75	448.50
Orifice-Circular	Orifice DRY POND 2A	Forward	Culvert DRY POND 2	444.00	448.50
Culvert-Circular	Culvert DRY POND 2	Forward	TW	443.30	448.50
Irregular Weir	Weir DRY POND 2 ES	Forward	TW	448.00	448.50
Tailwater Settings	Tailwater			(N/A)	(N/A)

Structure ID: Culvert DRY POND 2
Structure Type: Culvert-Circular

Number of Barrels	1
Diameter	24.0 in
Length	22.00 ft
Length (Computed Barrel)	22.00 ft
Slope (Computed)	0.014 ft/ft

Outlet Control Data

Manning's n	0.013
Ke	0.400
Kb	0.012
Kr	0.400
Convergence Tolerance	0.00 ft

Inlet Control Data

Equation Form	Form 2
K	0.5340
M	0.5550
C	0.0196
Y	0.9000
T1 ratio (HW/D)	1.070
T2 ratio (HW/D)	1.207
Slope Correction Factor	-0.500

Use unsubmerged inlet control 1 equation below T1 elevation.
Use submerged inlet control 1 equation above T2 elevation

In transition zone between unsubmerged and submerged inlet control,
interpolate between flows at T1 & T2...

T1 Elevation	445.44 ft	T1 Flow	15.550 ft³/s
T2 Elevation	445.71 ft	T2 Flow	17.772 ft³/s

Structure ID: Riser DRY POND 2
Structure Type: Inlet Box

Number of Openings	1
Elevation	447.75 ft
Orifice Area	5.0 ft²
Orifice Coefficient	0.600
Weir Length	10.00 ft
Weir Coefficient	2.70 (ft^0.5)/s
K Reverse	1.000
Manning's n	0.000
Kev, Charged Riser	0.000
Weir Submergence	False
Orifice H to crest	False

Structure ID: Weir DRY POND 2 ES
Structure Type: Irregular Weir

Station (ft)	Elevation (ft)
0.00	448.50
1.50	448.00
21.50	448.00
23.00	448.50

Lowest Elevation	448.00 ft
Weir Coefficient	2.80 (ft^0.5)/s

Structure ID: Orifice DRY POND 2A
Structure Type: Orifice-Circular

Number of Openings	1
Elevation	444.00 ft
Orifice Diameter	8.0 in
Orifice Coefficient	0.600

Structure ID: Orifice DRY POND 2B
Structure Type: Orifice-Area

Number of Openings	1
Elevation	445.75 ft
Orifice Area	0.5 ft²
Top Elevation	446.25 ft
Datum Elevation	445.75 ft
Orifice Coefficient	0.600

Structure ID: TW
Structure Type: TW Setup, DS Channel

Structure ID: TW
Structure Type: TW Setup, DS Channel

Tailwater Type	Free Outfall

Convergence Tolerances

Maximum Iterations	30
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.50 ft
Headwater Tolerance (Minimum)	0.01 ft
Headwater Tolerance (Maximum)	0.50 ft
Flow Tolerance (Minimum)	0.001 ft³/s
Flow Tolerance (Maximum)	10.000 ft³/s

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)
444.00	0.000	(N/A)	0.00
444.10	0.028	(N/A)	0.00
444.20	0.107	(N/A)	0.00
444.30	0.228	(N/A)	0.00
444.40	0.386	(N/A)	0.00
444.50	0.576	(N/A)	0.00
444.60	0.787	(N/A)	0.00
444.70	1.017	(N/A)	0.00
444.80	1.147	(N/A)	0.00
444.90	1.266	(N/A)	0.00
445.00	1.372	(N/A)	0.00
445.10	1.468	(N/A)	0.00
445.20	1.565	(N/A)	0.00
445.30	1.648	(N/A)	0.00
445.40	1.732	(N/A)	0.00
445.50	1.813	(N/A)	0.00
445.60	1.891	(N/A)	0.00
445.70	1.964	(N/A)	0.00
445.75	2.000	(N/A)	0.00
445.80	2.205	(N/A)	0.00
445.90	2.613	(N/A)	0.00
446.00	3.023	(N/A)	0.00
446.10	3.425	(N/A)	0.00
446.20	3.822	(N/A)	0.00
446.30	4.112	(N/A)	0.00
446.40	4.311	(N/A)	0.00
446.50	4.499	(N/A)	0.00
446.60	4.675	(N/A)	0.00
446.70	4.849	(N/A)	0.00
446.80	5.012	(N/A)	0.00
446.90	5.176	(N/A)	0.00
447.00	5.328	(N/A)	0.00
447.10	5.470	(N/A)	0.00
447.20	5.623	(N/A)	0.00
447.30	5.753	(N/A)	0.00
447.40	5.895	(N/A)	0.00
447.50	6.026	(N/A)	0.00
447.60	6.157	(N/A)	0.00
447.70	6.287	(N/A)	0.00
447.75	6.353	(N/A)	0.00
447.80	6.698	(N/A)	0.00
447.90	8.023	(N/A)	0.00
448.00	9.875	(N/A)	0.00
448.10	13.879	(N/A)	0.00

Subsection: Composite Rating Curve
Label: DRY POND 2 OUTLET STRUCTURE
Scenario: 1 year

Return Event: 1 years
Storm Event: 1 year

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)
448.20	19.761	(N/A)	0.00
448.30	26.928	(N/A)	0.00
448.40	35.063	(N/A)	0.00
448.50	44.211	(N/A)	0.00

Contributing Structures
(no Q: Orifice DRY POND 2B,Riser DRY POND 2,Orifice DRY POND 2A,Culvert DRY POND 2,Weir DRY POND 2 ES)
Orifice DRY POND 2A,Culvert DRY POND 2 (no Q: Orifice DRY POND 2B,Riser DRY POND 2,Weir DRY POND 2 ES)
Orifice DRY POND 2A,Culvert DRY POND 2 (no Q: Orifice DRY POND 2B,Riser DRY POND 2,Weir DRY POND 2 ES)
Orifice DRY POND 2A,Culvert DRY POND 2 (no Q: Orifice DRY POND 2B,Riser DRY POND 2,Weir DRY POND 2 ES)
Orifice DRY POND 2A,Culvert DRY POND 2 (no Q: Orifice DRY POND 2B,Riser DRY POND 2,Weir DRY POND 2 ES)
Orifice DRY POND 2A,Culvert DRY POND 2 (no Q: Orifice DRY POND 2B,Riser DRY POND 2,Weir DRY POND 2 ES)
Orifice DRY POND 2A,Culvert DRY POND 2 (no Q: Orifice DRY POND 2B,Riser DRY POND 2,Weir DRY POND 2 ES)
Orifice DRY POND 2A,Culvert DRY POND 2 (no Q: Orifice DRY POND 2B,Riser DRY POND 2,Weir DRY POND 2 ES)

Composite Outflow Summary

Contributing Structures
Orifice DRY POND 2A,Culvert DRY POND 2 (no Q: Orifice DRY POND 2B,Riser DRY POND 2,Weir DRY POND 2 ES)
Orifice DRY POND 2A,Culvert DRY POND 2 (no Q: Orifice DRY POND 2B,Riser DRY POND 2,Weir DRY POND 2 ES)
Orifice DRY POND 2A,Culvert DRY POND 2 (no Q: Orifice DRY POND 2B,Riser DRY POND 2,Weir DRY POND 2 ES)
Orifice DRY POND 2A,Culvert DRY POND 2 (no Q: Orifice DRY POND 2B,Riser DRY POND 2,Weir DRY POND 2 ES)
Orifice DRY POND 2A,Culvert DRY POND 2 (no Q: Orifice DRY POND 2B,Riser DRY POND 2,Weir DRY POND 2 ES)
Orifice DRY POND 2A,Culvert DRY POND 2 (no Q: Orifice DRY POND 2B,Riser DRY POND 2,Weir DRY POND 2 ES)
Orifice DRY POND 2A,Culvert DRY POND 2 (no Q: Orifice DRY POND 2B,Riser DRY POND 2,Weir DRY POND 2 ES)
Orifice DRY POND 2A,Culvert DRY POND 2 (no Q: Orifice DRY POND 2B,Riser DRY POND 2,Weir DRY POND 2 ES)
Orifice DRY POND 2A,Culvert DRY POND 2 (no Q: Orifice DRY POND 2B,Riser DRY POND 2,Weir DRY POND 2 ES)
Orifice DRY POND 2A,Culvert DRY POND 2 (no Q: Orifice DRY POND 2B,Riser DRY POND 2,Weir DRY POND 2 ES)

Composite Outflow Summary

Contributing Structures
Orifice DRY POND 2A,Culvert DRY POND 2 (no Q: Orifice DRY POND 2B,Riser DRY POND 2,Weir DRY POND 2 ES)
Orifice DRY POND 2B,Orifice DRY POND 2A,Culvert DRY POND 2 (no Q: Riser DRY POND 2,Weir DRY POND 2 ES)
Orifice DRY POND 2B,Orifice DRY POND 2A,Culvert DRY POND 2 (no Q: Riser DRY POND 2,Weir DRY POND 2 ES)
Orifice DRY POND 2B,Orifice DRY POND 2A,Culvert DRY POND 2 (no Q: Riser DRY POND 2,Weir DRY POND 2 ES)
Orifice DRY POND 2B,Orifice DRY POND 2A,Culvert DRY POND 2 (no Q: Riser DRY POND 2,Weir DRY POND 2 ES)
Orifice DRY POND 2B,Orifice DRY POND 2A,Culvert DRY POND 2 (no Q: Riser DRY POND 2,Weir DRY POND 2 ES)
Orifice DRY POND 2B,Orifice DRY POND 2A,Culvert DRY POND 2 (no Q: Riser DRY POND 2,Weir DRY POND 2 ES)
Orifice DRY POND 2B,Orifice DRY POND 2A,Culvert DRY POND 2 (no Q: Riser DRY POND 2,Weir DRY POND 2 ES)
Orifice DRY POND 2B,Orifice DRY POND 2A,Culvert DRY POND 2 (no Q: Riser DRY POND 2,Weir DRY POND 2 ES)
Orifice DRY POND 2B,Orifice DRY POND 2A,Culvert DRY POND 2 (no Q: Riser DRY POND 2,Weir DRY POND 2 ES)

Subsection: Composite Rating Curve
Label: DRY POND 2 OUTLET STRUCTURE
Scenario: 1 year

Return Event: 1 years
Storm Event: 1 year

Composite Outflow Summary

Contributing Structures
Orifice DRY POND 2B,Orifice DRY POND 2A,Culvert DRY POND 2 (no Q: Riser DRY POND 2,Weir DRY POND 2 ES)
Orifice DRY POND 2B,Orifice DRY POND 2A,Culvert DRY POND 2 (no Q: Riser DRY POND 2,Weir DRY POND 2 ES)
Orifice DRY POND 2B,Orifice DRY POND 2A,Culvert DRY POND 2 (no Q: Riser DRY POND 2,Weir DRY POND 2 ES)
Orifice DRY POND 2B,Orifice DRY POND 2A,Culvert DRY POND 2 (no Q: Riser DRY POND 2,Weir DRY POND 2 ES)
Orifice DRY POND 2B,Orifice DRY POND 2A,Culvert DRY POND 2 (no Q: Riser DRY POND 2,Weir DRY POND 2 ES)
Orifice DRY POND 2B,Orifice DRY POND 2A,Culvert DRY POND 2 (no Q: Riser DRY POND 2,Weir DRY POND 2 ES)
Orifice DRY POND 2B,Orifice DRY POND 2A,Culvert DRY POND 2 (no Q: Riser DRY POND 2,Weir DRY POND 2 ES)
Orifice DRY POND 2B,Orifice DRY POND 2A,Culvert DRY POND 2 (no Q: Riser DRY POND 2,Weir DRY POND 2 ES)
Orifice DRY POND 2B,Orifice DRY POND 2A,Culvert DRY POND 2 (no Q: Riser DRY POND 2,Weir DRY POND 2 ES)
Orifice DRY POND 2B,Orifice DRY POND 2A,Culvert DRY POND 2 (no Q: Riser DRY POND 2,Weir DRY POND 2 ES)

Composite Outflow Summary

Contributing Structures
Orifice DRY POND 2B,Orifice DRY POND 2A,Culvert DRY POND 2 (no Q: Riser DRY POND 2,Weir DRY POND 2 ES)
Orifice DRY POND 2B,Orifice DRY POND 2A,Culvert DRY POND 2 (no Q: Riser DRY POND 2,Weir DRY POND 2 ES)
Orifice DRY POND 2B,Riser DRY POND 2,Orifice DRY POND 2A,Culvert DRY POND 2 (no Q: Weir DRY POND 2 ES)
Orifice DRY POND 2B,Riser DRY POND 2,Orifice DRY POND 2A,Culvert DRY POND 2 (no Q: Weir DRY POND 2 ES)
Orifice DRY POND 2B,Riser DRY POND 2,Orifice DRY POND 2A,Culvert DRY POND 2 (no Q: Weir DRY POND 2 ES)
Orifice DRY POND 2B,Riser DRY POND 2,Orifice DRY POND 2A,Culvert DRY POND 2,Weir DRY POND 2 ES
Orifice DRY POND 2B,Riser DRY POND 2,Orifice DRY POND 2A,Culvert DRY POND 2,Weir DRY POND 2 ES
Orifice DRY POND 2B,Riser DRY POND 2,Orifice DRY POND 2A,Culvert DRY POND 2,Weir DRY POND 2 ES
Orifice DRY POND 2B,Riser DRY POND 2,Orifice DRY POND 2A,Culvert DRY POND 2,Weir DRY POND 2 ES

Subsection: Composite Rating Curve
Label: DRY POND 2 OUTLET STRUCTURE
Scenario: 1 year

Return Event: 1 years
Storm Event: 1 year

Composite Outflow Summary

Contributing Structures
Orifice DRY POND 2B,Riser DRY POND 2,Orifice DRY POND 2A,Culvert DRY POND 2,Weir DRY POND 2 ES

Subsection: Interconnected Pond Routing Summary
Label: BIO 1
Scenario: 1 year

Return Event: 1 years
Storm Event: 1 year

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions			Calculation Tolerances		
Elevation (Starting Water Surface Computed)	443.00	ft	Flow Tolerance (Minimum)	0.000	ft³/s
Volume (Starting)	0.0000	ac-ft	Maximum Iterations	35	
Outflow (Starting)	0.029	ft³/s	ICPM Time Step	0.010	hours

	Maximum Storage	
Time to Peak (hours)	Elevation (ft)	Volume (ac-ft)
12.230	443.63	0.1019

	Forward Flow Peaks		Reverse Flow Peaks	
	Time to Peak (hours)	Flow (Peak) (ft³/s)	Time to Peak (hours)	Flow (Peak) (ft³/s)
Pond Inflow....	12.110	4.589	0.000	0.000
Pond Outflow...	12.230	2.794	0.000	0.000

	Total Volume In		Total Volume Out	
	Volume (ac-ft)	Direction	Volume (ac-ft)	Direction
Pond Inflow....	0.3715	Forward	0.0000	Reverse
Pond Outflow...	0.0000	Reverse	0.2913	Forward

Mass Balance (ac-ft)	
Volume (Initial ICPM)	0.0000 ac-ft
Volume (Total In ICPM)	0.3715 ac-ft
Volume (Total Out ICPM)	0.2913 ac-ft
Volume (Ending)	0.0812 ac-ft
Elevation (Ending)	443.50 ft
Difference	-0.0011 ac-ft
Percent of Inflow Volume (Interconnected Pond Mass Balance)	0.3 %

Subsection: Interconnected Pond Routing Summary
Label: BIO 1
Scenario: 10 years

Return Event: 10 years
Storm Event: 10 years - type 3

Infiltration

Infiltration Method (Computed)	No Infiltration

Initial Conditions			Calculation Tolerances		
Elevation (Starting Water Surface Computed)	443.00	ft	Flow Tolerance (Minimum)	0.000	ft³/s
Volume (Starting)	0.0000	ac-ft	Maximum Iterations	35	
Outflow (Starting)	0.029	ft³/s	ICPM Time Step	0.010	hours

	Maximum Storage	
Time to Peak (hours)	Elevation (ft)	Volume (ac-ft)
12.210	443.93	0.1493

	Forward Flow Peaks		Reverse Flow Peaks	
	Time to Peak (hours)	Flow (Peak) (ft³/s)	Time to Peak (hours)	Flow (Peak) (ft³/s)
Pond Inflow....	12.110	12.487	0.000	0.000
Pond Outflow...	12.100	11.423	0.000	0.000

	Total Volume In		Total Volume Out	
	Volume (ac-ft)	Direction	Volume (ac-ft)	Direction
Pond Inflow....	1.0113	Forward	0.0000	Reverse
Pond Outflow...	0.0000	Reverse	0.9302	Forward

Mass Balance (ac-ft)

Volume (Initial ICPM)	0.0000 ac-ft
Volume (Total In ICPM)	1.0113 ac-ft
Volume (Total Out ICPM)	0.9302 ac-ft
Volume (Ending)	0.0823 ac-ft
Elevation (Ending)	443.51 ft
Difference	-0.0013 ac-ft
Percent of Inflow Volume (Interconnected Pond Mass Balance)	0.1 %

Subsection: Interconnected Pond Routing Summary
Label: BIO 1
Scenario: 100 years

Return Event: 100 years
Storm Event: 100 years - type 3

Infiltration

Infiltration Method (Computed)	No Infiltration

Initial Conditions / Calculation Tolerances

Initial Conditions			Calculation Tolerances		
Elevation (Starting Water Surface Computed)	443.00	ft	Flow Tolerance (Minimum)	0.000	ft³/s
Volume (Starting)	0.0000	ac-ft	Maximum Iterations	35	
Outflow (Starting)	0.029	ft³/s	ICPM Time Step	0.010	hours

	Maximum Storage	
Time to Peak (hours)	Elevation (ft)	Volume (ac-ft)
11.950	444.00	0.1612

	Forward Flow Peaks		Reverse Flow Peaks	
	Time to Peak (hours)	Flow (Peak) (ft³/s)	Time to Peak (hours)	Flow (Peak) (ft³/s)
Pond Inflow....	12.100	27.312	0.000	0.000
Pond Outflow...	11.940	11.433	0.000	0.000

	Total Volume In		Total Volume Out	
	Volume (ac-ft)	Direction	Volume (ac-ft)	Direction
Pond Inflow....	2.2896	Forward	0.0000	Reverse
Pond Outflow...	0.0000	Reverse	1.8659	Forward

Mass Balance (ac-ft)

Volume (Initial ICPM)	0.0000 ac-ft
Volume (Total In ICPM)	2.2896 ac-ft
Volume (Total Out ICPM)	1.8659 ac-ft
Volume (Ending)	0.0843 ac-ft
Elevation (Ending)	443.52 ft
Difference	0.3393 ac-ft
Percent of Inflow Volume (Interconnected Pond Mass Balance)	14.8 %

Infiltration

Infiltration Method (Computed)	No Infiltration

Initial Conditions

Elevation (Starting Water Surface Computed)	447.00	ft
Volume (Starting)	0.0000	ac-ft
Outflow (Starting)	0.010	ft³/s

Calculation Tolerances

Flow Tolerance (Minimum)	0.000	ft³/s
Maximum Iterations	35	
ICPM Time Step	0.010	hours

	Maximum Storage	
Time to Peak (hours)	Elevation (ft)	Volume (ac-ft)
12.160	447.61	0.0306

	Forward Flow Peaks		Reverse Flow Peaks	
	Time to Peak (hours)	Flow (Peak) (ft³/s)	Time to Peak (hours)	Flow (Peak) (ft³/s)
Pond Inflow....	12.130	2.304	0.000	0.000
Pond Outflow...	12.160	2.232	0.000	0.000

	Total Volume In		Total Volume Out	
	Volume (ac-ft)	Direction	Volume (ac-ft)	Direction
Pond Inflow....	0.2108	Forward	0.0000	Reverse
Pond Outflow...	0.0000	Reverse	0.1861	Forward

Mass Balance (ac-ft)

Volume (Initial ICPM)	0.0000 ac-ft
Volume (Total In ICPM)	0.2108 ac-ft
Volume (Total Out ICPM)	0.1861 ac-ft
Volume (Ending)	0.0250 ac-ft
Elevation (Ending)	447.50 ft
Difference	-0.0004 ac-ft
Percent of Inflow Volume (Interconnected Pond Mass Balance)	0.2 %

Infiltration

Infiltration Method (Computed)	No Infiltration

Initial Conditions

Elevation (Starting Water Surface Computed)	447.00	ft
Volume (Starting)	0.0000	ac-ft
Outflow (Starting)	0.010	ft³/s

Calculation Tolerances

Flow Tolerance (Minimum)	0.000	ft³/s
Maximum Iterations	35	
ICPM Time Step	0.010	hours

Time to Peak (hours)	Maximum Storage Elevation (ft)	Volume (ac-ft)
12.140	447.74	0.0366

	Forward Flow Peaks Time to Peak (hours)	Flow (Peak) (ft³/s)	Reverse Flow Peaks Time to Peak (hours)	Flow (Peak) (ft³/s)
Pond Inflow....	12.120	6.656	0.000	0.000
Pond Outflow...	12.140	6.572	0.000	0.000

	Total Volume In Volume (ac-ft)	Direction	Total Volume Out Volume (ac-ft)	Direction
Pond Inflow....	0.5914	Forward	0.0000	Reverse
Pond Outflow...	0.0000	Reverse	0.5666	Forward

Mass Balance (ac-ft)

Volume (Initial ICPM)	0.0000 ac-ft
Volume (Total In ICPM)	0.5914 ac-ft
Volume (Total Out ICPM)	0.5666 ac-ft
Volume (Ending)	0.0253 ac-ft
Elevation (Ending)	447.51 ft
Difference	-0.0005 ac-ft
Percent of Inflow Volume (Interconnected Pond Mass Balance)	0.1 %

Subsection: Interconnected Pond Routing Summary

Return Event: 100 years

Label: BIO 2

Storm Event: 100 years - type 3

Scenario: 100 years

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions			Calculation Tolerances		
Elevation (Starting Water Surface Computed)	447.00	ft	Flow Tolerance (Minimum)	0.000	ft³/s
Volume (Starting)	0.0000	ac-ft	Maximum Iterations	35	
Outflow (Starting)	0.010	ft³/s	ICPM Time Step	0.010	hours

	Maximum Storage	
Time to Peak (hours)	Elevation (ft)	Volume (ac-ft)
12.090	448.00	0.0498

	Forward Flow Peaks		Reverse Flow Peaks	
	Time to Peak (hours)	Flow (Peak) (ft³/s)	Time to Peak (hours)	Flow (Peak) (ft³/s)
Pond Inflow....	12.120	15.016	0.000	0.000
Pond Outflow...	12.040	11.938	0.000	0.000

	Total Volume In		Total Volume Out	
	Volume (ac-ft)	Direction	Volume (ac-ft)	Direction
Pond Inflow....	1.3601	Forward	0.0000	Reverse
Pond Outflow...	0.0000	Reverse	1.2654	Forward

Mass Balance (ac-ft)	
Volume (Initial ICPM)	0.0000 ac-ft
Volume (Total In ICPM)	1.3601 ac-ft
Volume (Total Out ICPM)	1.2654 ac-ft
Volume (Ending)	0.0256 ac-ft
Elevation (Ending)	447.52 ft
Difference	0.0690 ac-ft
Percent of Inflow Volume (Interconnected Pond Mass Balance)	5.1 %

Subsection: Interconnected Pond Routing Summary
Label: DRY POND 1
Scenario: 1 year

Return Event: 1 years
Storm Event: 1 year

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions			Calculation Tolerances		
Elevation (Starting Water Surface Computed)	441.00	ft	Flow Tolerance (Minimum)	0.000	ft³/s
Volume (Starting)	0.0000	ac-ft	Maximum Iterations	35	
Outflow (Starting)	0.000	ft³/s	ICPM Time Step	0.010	hours

	Maximum Storage	
Time to Peak (hours)	Elevation (ft)	Volume (ac-ft)
12.680	442.25	0.0622

	Forward Flow Peaks		Reverse Flow Peaks	
	Time to Peak (hours)	Flow (Peak) (ft³/s)	Time to Peak (hours)	Flow (Peak) (ft³/s)
Pond Inflow....	12.230	2.794	0.000	0.000
Pond Outflow...	12.680	0.966	0.000	0.000

	Total Volume In		Total Volume Out	
	Volume (ac-ft)	Direction	Volume (ac-ft)	Direction
Pond Inflow....	0.2913	Forward	0.0000	Reverse
Pond Outflow...	0.0000	Reverse	0.2826	Forward

Mass Balance (ac-ft)	
Volume (Initial ICPM)	0.0000 ac-ft
Volume (Total In ICPM)	0.2913 ac-ft
Volume (Total Out ICPM)	0.2826 ac-ft
Volume (Ending)	0.0087 ac-ft
Elevation (Ending)	441.19 ft
Difference	0.0000 ac-ft
Percent of Inflow Volume (Interconnected Pond Mass Balance)	0.0 %

Subsection: Interconnected Pond Routing Summary
Label: DRY POND 1
Scenario: 10 years

Return Event: 10 years
Storm Event: 10 years - type 3

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions			Calculation Tolerances		
Elevation (Starting Water Surface Computed)	441.00	ft	Flow Tolerance (Minimum)	0.000	ft³/s
Volume (Starting)	0.0000	ac-ft	Maximum Iterations	35	
Outflow (Starting)	0.000	ft³/s	ICPM Time Step	0.010	hours

	Maximum Storage	
Time to Peak (hours)	Elevation (ft)	Volume (ac-ft)
12.210	443.87	0.1842

	Forward Flow Peaks		Reverse Flow Peaks	
	Time to Peak (hours)	Flow (Peak) (ft³/s)	Time to Peak (hours)	Flow (Peak) (ft³/s)
Pond Inflow....	12.100	11.423	0.000	0.000
Pond Outflow...	12.210	7.641	0.000	0.000

	Total Volume In		Total Volume Out	
	Volume (ac-ft)	Direction	Volume (ac-ft)	Direction
Pond Inflow....	0.9302	Forward	0.0000	Reverse
Pond Outflow...	0.0000	Reverse	0.9172	Forward

Mass Balance (ac-ft)	
Volume (Initial ICPM)	0.0000 ac-ft
Volume (Total In ICPM)	0.9302 ac-ft
Volume (Total Out ICPM)	0.9172 ac-ft
Volume (Ending)	0.0129 ac-ft
Elevation (Ending)	441.28 ft
Difference	0.0001 ac-ft
Percent of Inflow Volume (Interconnected Pond Mass Balance)	0.0 %

Subsection: Interconnected Pond Routing Summary
Label: DRY POND 1
Scenario: 100 years

Return Event: 100 years
Storm Event: 100 years - type 3

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions			Calculation Tolerances		
Elevation (Starting Water Surface Computed)	441.00	ft	Flow Tolerance (Minimum)	0.000	ft³/s
Volume (Starting)	0.0000	ac-ft	Maximum Iterations	35	
Outflow (Starting)	0.000	ft³/s	ICPM Time Step	0.010	hours

	Maximum Storage	
Time to Peak (hours)	Elevation (ft)	Volume (ac-ft)
11.960	443.96	0.1914

	Forward Flow Peaks		Reverse Flow Peaks	
	Time to Peak (hours)	Flow (Peak) (ft³/s)	Time to Peak (hours)	Flow (Peak) (ft³/s)
Pond Inflow....	11.940	11.433	0.000	0.000
Pond Outflow...	11.960	9.868	0.000	0.000

	Total Volume In		Total Volume Out	
	Volume (ac-ft)	Direction	Volume (ac-ft)	Direction
Pond Inflow....	1.8659	Forward	0.0000	Reverse
Pond Outflow...	0.0000	Reverse	1.8471	Forward

Mass Balance (ac-ft)	
Volume (Initial ICPM)	0.0000 ac-ft
Volume (Total In ICPM)	1.8659 ac-ft
Volume (Total Out ICPM)	1.8471 ac-ft
Volume (Ending)	0.0187 ac-ft
Elevation (Ending)	441.41 ft
Difference	0.0001 ac-ft
Percent of Inflow Volume (Interconnected Pond Mass Balance)	0.0 %

Subsection: Interconnected Pond Routing Summary Return Event: 1 years
Label: DRY POND 2 Storm Event: 1 year
Scenario: 1 year

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions			Calculation Tolerances		
Elevation (Starting Water Surface Computed)	444.00	ft	Flow Tolerance (Minimum)	0.000	ft³/s
Volume (Starting)	0.0000	ac-ft	Maximum Iterations	35	
Outflow (Starting)	0.000	ft³/s	ICPM Time Step	0.010	hours

	Maximum Storage	
Time to Peak (hours)	Elevation (ft)	Volume (ac-ft)
12.290	445.36	0.0130

	Forward Flow Peaks		Reverse Flow Peaks	
	Time to Peak (hours)	Flow (Peak) (ft³/s)	Time to Peak (hours)	Flow (Peak) (ft³/s)
Pond Inflow....	12.160	2.232	0.000	0.000
Pond Outflow...	12.290	1.698	0.000	0.000

	Total Volume In		Total Volume Out	
	Volume (ac-ft)	Direction	Volume (ac-ft)	Direction
Pond Inflow....	0.1861	Forward	0.0000	Reverse
Pond Outflow...	0.0000	Reverse	0.1852	Forward

Mass Balance (ac-ft)	
Volume (Initial ICPM)	0.0000 ac-ft
Volume (Total In ICPM)	0.1861 ac-ft
Volume (Total Out ICPM)	0.1852 ac-ft
Volume (Ending)	0.0009 ac-ft
Elevation (Ending)	444.12 ft
Difference	0.0000 ac-ft
Percent of Inflow Volume (Interconnected Pond Mass Balance)	0.0 %

Infiltration

Infiltration Method (Computed)	No Infiltration

Initial Conditions			Calculation Tolerances		
Elevation (Starting Water Surface Computed)	444.00	ft	Flow Tolerance (Minimum)	0.000	ft³/s
Volume (Starting)	0.0000	ac-ft	Maximum Iterations	35	
Outflow (Starting)	0.000	ft³/s	ICPM Time Step	0.010	hours

	Maximum Storage	
Time to Peak (hours)	Elevation (ft)	Volume (ac-ft)
12.240	446.97	0.0469

	Forward Flow Peaks		Reverse Flow Peaks	
	Time to Peak (hours)	Flow (Peak) (ft³/s)	Time to Peak (hours)	Flow (Peak) (ft³/s)
Pond Inflow....	12.140	6.572	0.000	0.000
Pond Outflow...	12.240	5.290	0.000	0.000

	Total Volume In		Total Volume Out	
	Volume (ac-ft)	Direction	Volume (ac-ft)	Direction
Pond Inflow....	0.5666	Forward	0.0000	Reverse
Pond Outflow...	0.0000	Reverse	0.5651	Forward

Mass Balance (ac-ft)

Volume (Initial ICPM)	0.0000 ac-ft
Volume (Total In ICPM)	0.5666 ac-ft
Volume (Total Out ICPM)	0.5651 ac-ft
Volume (Ending)	0.0014 ac-ft
Elevation (Ending)	444.19 ft
Difference	0.0000 ac-ft
Percent of Inflow Volume (Interconnected Pond Mass Balance)	0.0 %

Subsection: Interconnected Pond Routing Summary
Label: DRY POND 2
Scenario: 100 years

Return Event: 100 years
Storm Event: 100 years - type 3

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions			Calculation Tolerances		
Elevation (Starting Water Surface Computed)	444.00	ft	Flow Tolerance (Minimum)	0.000	ft³/s
Volume (Starting)	0.0000	ac-ft	Maximum Iterations	35	
Outflow (Starting)	0.000	ft³/s	ICPM Time Step	0.010	hours

	Maximum Storage	
Time to Peak (hours)	Elevation (ft)	Volume (ac-ft)
12.120	447.98	0.0830

	Forward Flow Peaks		Reverse Flow Peaks	
	Time to Peak (hours)	Flow (Peak) (ft³/s)	Time to Peak (hours)	Flow (Peak) (ft³/s)
Pond Inflow....	12.040	11.938	0.000	0.000
Pond Outflow...	12.120	9.455	0.000	0.000

	Total Volume In		Total Volume Out	
	Volume (ac-ft)	Direction	Volume (ac-ft)	Direction
Pond Inflow....	1.2654	Forward	0.0000	Reverse
Pond Outflow...	0.0000	Reverse	1.2633	Forward

Mass Balance (ac-ft)	
Volume (Initial ICPM)	0.0000 ac-ft
Volume (Total In ICPM)	1.2654 ac-ft
Volume (Total Out ICPM)	1.2633 ac-ft
Volume (Ending)	0.0020 ac-ft
Elevation (Ending)	444.27 ft
Difference	0.0001 ac-ft
Percent of Inflow Volume (Interconnected Pond Mass Balance)	0.0 %

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APPENDIX G

Water Quality Volume and Runoff Reduction Volume Computations

Version 1.8
Last Updated: 11/09/2015

Total Water Quality Volume Calculation

WQv(acre-feet) = [(P)(Rv)(A)] /12

Is this project subject to Chapter 10 of the NYS Design Manual (i.e. WQv is equal to post-development 1 year runoff volume)?...	

Design Point:	1	
P=	2.80	*inch*

Breakdown of Subcatchments

Catchment Number	Total Area *(Acres)*	Impervious Area *(Acres)*	Percent Impervious *%*	Rv	WQv *(ft^3)*	Description
1	1.91	0.60	31%	0.33	6,459	Bioretention 1A
2	0.60	0.18	30%	0.32	1,951	Bioretention 1B
3	0.53	0.18	34%	0.36	1,916	Bioretention2B
4	8.16	0.14	2%	0.07	5,428	Tree Planting/Tree Pit DA 1C+1D+2A+3+5A+5B
5						
6						
7						
8						
9						
10						
Subtotal (1-30)	11.20	1.10	10%	0.14	15,754	Subtotal 1
Total	11.20	1.10	10%	0.14	15,754	Initial WQv

Identify Runoff Reduction Techniques By Area

Technique	Total Contributing Area *(Acre)*	Contributing Impervious Area *(Acre)*	Notes
Conservation of Natural Areas	0.00	0.00	*minimum 10,000 sf*
Riparian Buffers	0.00	0.00	*maximum contributing length 75 feet to 150 feet*
Filter Strips	0.00	0.00	
Tree Planting	8.16	0.14	*Up to 100 sf directly connected impervious area may be subtracted per tree*
Total	8.16	0.14	

Recalculate WQv after application of Area Reduction Techniques

	Total Area *(Acres)*	Impervious Area *(Acres)*	Percent Impervious *%*	Runoff Coefficient Rv	WQv *(ft^3)*
"<<Initial WQv"	11.20	1.10	10%	0.14	15,754
Subtract Area	-8.16	-0.14			
WQv adjusted after Area Reductions	3.04	0.96	32%	0.33	10,327
Disconnection of Rooftops		0.00			

Runoff Reduction Volume and Treated volumes

	Runoff Reduction Techiques/Standard SMPs		Total Contributing Area	Total Contributing Impervious Area	WQv Reduced (RRv)	WQv Treated
			(acres)	(acres)	cf	cf
Area/Volume Reduction	Conservation of Natural Areas	RR-1	0.00	0.00		
	Sheetflow to Riparian Buffers/Filter Strips	RR-2	0.00	0.00		
	Tree Planting/Tree Pit	RR-3	8.16	0.14		
	Disconnection of Rooftop Runoff	RR-4		0.00		
	Vegetated Swale	RR-5	0.00	0.00	0	
	Rain Garden	RR-6	0.00	0.00	0	
	Stormwater Planter	RR-7	0.00	0.00	0	
	Rain Barrel/Cistern	RR-8	0.00	0.00	0	
	Porous Pavement	RR-9	0.00	0.00	0	
	Green Roof (Intensive & Extensive)	RR-10	0.00	0.00	0	
Standard SMPs w/RRv Capacity	Infiltration Trench	I-1	0.00	0.00	0	0
	Infiltration Basin	I-2	0.00	0.00	0	0
	Dry Well	I-3	0.00	0.00	0	0
	Underground Infiltration System	I-4				
	Bioretention & Infiltration Bioretention	F-5	3.04	0.96	4723	5603
	Dry swale	O-1	0.00	0.00	0	0
Standard SMPs	Micropool Extended Detention (P-1)	P-1				
	Wet Pond (P-2)	P-2				
	Wet Extended Detention (P-3)	P-3				
	Multiple Pond system (P-4)	P-4				
	Pocket Pond (p-5)	P-5				
	Surface Sand filter (F-1)	F-1				
	Underground Sand filter (F-2)	F-2				
	Perimeter Sand Filter (F-3)	F-3				
	Organic Filter (F-4	F-4				
	Shallow Wetland (W-1)	W-1				
	Extended Detention Wetland (W-2	W-2				
	Pond/Wetland System (W-3)	W-3				
	Pocket Wetland (W-4)	W-4				
	Wet Swale (O-2)	O-2				
	Totals by Area Reduction	→	8.16	0.14	5428	
	Totals by Volume Reduction	→	0.00	0.00	0	
	Totals by Standard SMP w/RRV	→	3.04	0.96	4723	5603
	Totals by Standard SMP	→	0.00	0.00		0
	Totals (Area + Volume + all SMPs)	→	11.20	1.10	10,151	5,603
	Impervious Cover √	okay				

Minimum RRv

Enter the Soils Data for the site		
Soil Group	Acres	S
A		55%
B		40%
C	100.00	30%
D		20%
Total Area	100	
Calculate the Minimum RRv		
S =	0.30	
Impervious =	1.10	*acre*
Precipitation	2.8	*in*
Rv	0.95	
Minimum RRv	3,186	*ft3*
	0.07	af

NOI QUESTIONS

#	NOI Question	Reported Value	
		cf	af
28	Total Water Quality Volume (WQv) Required	15754	*0.362*
30	Total RRV Provided	10151	*0.233*
31	Is RRv Provided ≥WQv Required?	No	
32	Minimum RRv	3186	*0.073*
32a	Is RRv Provided ≥ Minimum RRv Required?	Yes	
33a	Total WQv Treated	5603	*0.129*
34	Sum of Volume Reduced & Treated	15754	*0.362*
34	Sum of Volume Reduced and Treated	15754	*0.362*
35	Is Sum RRv Provided and WQv Provided ≥WQv Required?	Yes	

Apply Peak Flow Attenuation			
36	Channel Protection	*Cpv*	
37	Overbank	*Qp*	
37	Extreme Flood Control	*Qf*	
	Are Quantity Control requirements met?		

Bioretention Worksheet

(For use on HSG C or D Soils with underdrains)

$$Af=WQv*(df)/[k*(hf+df)(tf)]$$

Af	Required Surface Area (ft2)
WQv	Water Quality Volume (ft3)
df	Depth of the Soil Medium (feet)
hf	Average height of water above the planter bed
tf	Volume Through the Filter Media (days)
k	The hydraulic conductivity [ft/day], can be varied depending on the properties of the soil media. Some reported conductivity values are: *Sand* - 3.5 ft/day (City of Austin 1988); *Peat* - 2.0 ft/day (Galli 1990); *Leaf Compost* - 8.7 ft/day (Claytor and Schueler, 1996); *Bioretention Soil* (0.5 ft/day (Claytor &

Design Point:	1

Enter Site Data For Drainage Area to be Treated by Practice							
Catchment Number	Total Area *(Acres)*	Impervious Area *(Acres)*	Percent Impervious %	Rv	WQv *(ft ^{3})*	Precipitation *(in)*	Description
1	1.91	0.60	0.31	0.33	6459.22	2.80	Bioretention 1A
Enter Impervious Area Reduced by Disconnection of Rooftops			31%	0.33	6,459	<<WQv after adjusting for Disconnected Rooftops	
Enter the portion of the WQv that is not reduced for all practices routed to this practice.						*ft ^{3}*	

Soil Information			
Soil Group	C		
Soil Infiltration Rate	0.00	*in/hour*	*Okay*
Using Underdrains?	Yes	*Okay*	

Calculate the Minimum Filter Area				
		Value	Units	Notes
WQv		6,459	*ft ^{3}*	
Enter Depth of Soil Media	*df*	2.5	*ft*	*2.5-4 ft*
Enter Hydraulic Conductivity	*k*	0.5	*ft/day*	
Enter Average Height of Ponding	*hf*	0.5	*ft*	*6 inches max.*
Enter Filter Time	*tf*	2	*days*	
Required Filter Area	*Af*	5383	*ft ^{2}*	

Determine Actual Bio-Retention Area		
Filter Width	30	*ft*
Filter Length	210	*ft*
Filter Area	6300	*ft ^{2}*
Actual Volume Provided	7560	*ft ^{3}*

Determine Runoff Reduction			
Is the Bioretention contributing flow to another practice?		Select Practice	
RRv	3,024		
RRv applied	3,024	*ft ^{3}*	*This is 40% of the storage provided or WQv whichever is less.*
Volume Treated	3,435	*ft ^{3}*	*This is the portion of the WQv that is not reduced in the practice.*
Volume Directed	0	*ft ^{3}*	This volume is directed another practice
Sizing √	OK		*Check to be sure Area provided ≥ Af*

Bioretention Worksheet

(For use on HSG C or D Soils with underdrains)

Af=WQv*(df)/[k*(hf+df)(tf)]

Af	Required Surface Area (ft2)
WQv	Water Quality Volume (ft3)
df	Depth of the Soil Medium (feet)
hf	Average height of water above the planter bed
tf	Volume Through the Filter Media (days)
k	The hydraulic conductivity [ft/day], can be varied depending on the properties of the soil media. Some reported conductivity values are: *Sand* - 3.5 ft/day (City of Austin 1988); *Peat* - 2.0 ft/day (Galli 1990); *Leaf Compost* - 8.7 ft/day (Claytor and Schueler, 1996); *Bioretention Soil* (0.5 ft/day (Claytor & Schueler, 1996)

Design Point:	1

Enter Site Data For Drainage Area to be Treated by Practice

Catchment Number	Total Area *(Acres)*	Impervious Area *(Acres)*	Percent Impervious %	Rv	WQv *(ft^3)*	Precipitation *(in)*	Description
2	0.60	0.18	0.30	0.32	1951.49	2.80	Bioretention 1B
Enter Impervious Area Reduced by Disconnection of Rooftops			30%	0.32	1,951	<<WQv after adjusting for Disconnected Rooftops	
Enter the portion of the WQv that is not reduced for all practices routed to this practice.						*ft^3*	

Soil Information

Soil Group	C		
Soil Infiltration Rate	0.00	*in/hour*	*Okay*
Using Underdrains?	Yes	*Okay*	

Calculate the Minimum Filter Area

		Value	Units	Notes
WQv		1,951	*ft^3*	
Enter Depth of Soil Media	*df*	2.5	*ft*	*2.5-4 ft*
Enter Hydraulic Conductivity	*k*	0.5	*ft/day*	
Enter Average Height of Ponding	*hf*	0.5	*ft*	*6 inches max.*
Enter Filter Time	*tf*	2	*days*	
Required Filter Area	*Af*	1626	*ft^2*	

Determine Actual Bio-Retention Area

Filter Width	15	*ft*
Filter Length	116	*ft*
Filter Area	1740	*ft^2*
Actual Volume Provided	2088	*ft^3*

Determine Runoff Reduction

Is the Bioretention contributing flow to another practice?		Select Practice	
RRv	835		
RRv applied	835	*ft^3*	*This is 40% of the storage provided or WQv whichever is less.*
Volume Treated	1,116	*ft^3*	*This is the portion of the WQv that is not reduced in the practice.*
Volume Directed	0	*ft^3*	This volume is directed another practice
Sizing √	OK		*Check to be sure Area provided ≥ Af*

Bioretention Worksheet

(For use on HSG C or D Soils with underdrains)

Af=WQv*(df)/[k*(hf+df)(tf)]

Af	Required Surface Area (ft2)
WQv	Water Quality Volume (ft3)
df	Depth of the Soil Medium (feet)
hf	Average height of water above the planter bed
tf	Volume Through the Filter Media (days)
k	The hydraulic conductivity [ft/day], can be varied depending on the properties of the soil media. Some reported conductivity values are: *Sand* - 3.5 ft/day (City of Austin 1988); *Peat* - 2.0 ft/day (Galli 1990); *Leaf Compost* - 8.7 ft/day (Claytor and Schueler, 1996); *Bioretention Soil* (0.5 ft/day (Claytor &

Design Point:	1						
Enter Site Data For Drainage Area to be Treated by Practice							
Catchment Number	Total Area *(Acres)*	Impervious Area *(Acres)*	Percent Impervious %	Rv	WQv *(ft^3)*	Precipitation *(in)*	Description
3	0.53	0.18	0.34	0.36	1915.91	2.80	Bioretention2B
Enter Impervious Area Reduced by Disconnection of Rooftops			34%	0.36	1,916	<<WQv after adjusting for Disconnected Rooftops	
Enter the portion of the WQv that is not reduced for all practices routed to this practice.						*ft^3*	
Soil Information							
Soil Group		C					
Soil Infiltration Rate		0.00	*in/hour*	*Okay*			
Using Underdrains?		Yes	*Okay*				
Calculate the Minimum Filter Area							
				Value		Units	Notes
WQv				1,916		*ft^3*	
Enter Depth of Soil Media			*df*	2.5		*ft*	*2.5-4 ft*
Enter Hydraulic Conductivity			*k*	0.5		*ft/day*	
Enter Average Height of Ponding			*hf*	0.5		*ft*	*6 inches max.*
Enter Filter Time			*tf*	2		*days*	
Required Filter Area			*Af*	1597		*ft^2*	
Determine Actual Bio-Retention Area							
Filter Width		15	*ft*				
Filter Length		120	*ft*				
Filter Area		1800	*ft^2*				
Actual Volume Provided		2160	*ft^3*				
Determine Runoff Reduction							
Is the Bioretention contributing flow to another practice?				Select Practice			
RRv		864					
RRv applied		864	*ft^3*	*This is 40% of the storage provided or WQv whichever is less.*			
Volume Treated		1,052	*ft^3*	*This is the portion of the WQv that is not reduced in the practice.*			
Volume Directed		0	*ft^3*	This volume is directed another practice			
Sizing √		OK		*Check to be sure Area provided ≥ Af*			

Tree Planting/Tree Pits

Design Point:	1

Enter Site Data For Drainage Area to be Treated by Practice							
Catchment Number	Total Area *(Acres)*	Impervious Area *(Acres)*	Percent Impervious %	Rv	WQv *(ft^3)*	Precipitation *(in)*	Description
4	8.16	0.14	0.02	0.07	5427.58	2.80	Tree Planting/Tree Pit DA 1C+1D+2A+3+5A+5B

Do you intend to use this practice for area reduction or volume reduction?	Area	Design practice using criteria below	
Design Elements			
Is another area based practice applied to this area?	*No*		
Diameter of Mature Canopy	16	*ft*	
Area Reduced per Tree	100	*sf*	*For up to a 16-foot diameter canopy of a mature tree, the area considered for reduction shall be ½ the area of the tree*
Number of Trees	61		
Total Area Reduced	6129.28	*sf*	
	0.14	*af*	*Okay*
Area Ratio: Total to Impervious area	58.3		*Okay*
Are All Criteria in Section 5.3.4 met?	*Yes*		
Area Reduction Adjustments			
Subtract	8.16	*Acres from total Area*	
Subtract	0.14	*Acres from total Impervious Area*	

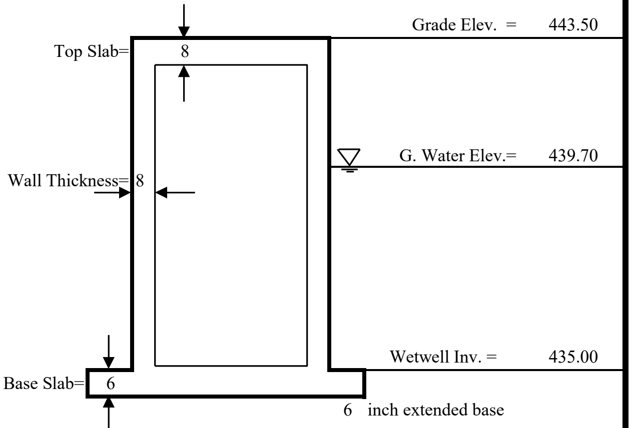
Completed By:	JMC	**Job No**	80675
Checked By:		**Page**	1 **of**
Project Name:	John Jay	**Date:**	May-24

Subject: Precast Concrete Structures - Buoyancy Calculations

Outlet Control Structure Dry Pond #1

Structure Characteristics

Diameter =	5.0	feet
Height =	8.5	feet
Wall Thickness =	0.67	feet
Extended Base =	0.5	feet
Top Slab Thickness =	0.67	feet
Base Thickness =	0.5	feet
Access Opening Dia. =	4	feet
Hatch Opening Length =	0	feet
Ground Water Depth =	**3.8**	**feet**
Unit Weight of Concrete =	150.0	lbs/cf
Unit Weight of Soil =	120.0	lbs/cf
Unit Weight of Water =	62.4	lbs/cf



Structure Top Slab Weight Calculation

Area =	32	sf
Area of Hatch Opening =	13	sf
Net Area =	19	sf
Volume =	13	cf
Weight =	1,904	lbs

Structure Body Weight Calculation

Area =	12	sf
Volume =	93	cf
Weight =	13,947	lbs

Manhole Base Weight Calculation

Area =	42	sf
Volume =	21	cf
Weight =	3,168	lbs

Total Weight of Wetwell = 19019 lbs

Soil Weight Calculation (buoyancy on soil is subtracted)

Area =	11	sf
Volume =	91	cf
Weight =	5,256	lbs

Total Resistant Force = 24,275 lbs

Buoyancy Force Calculation

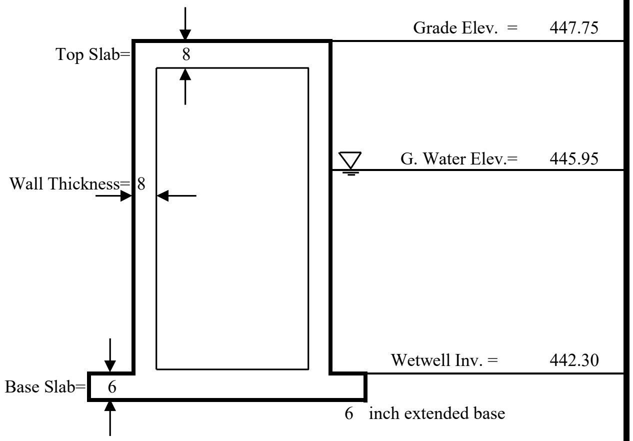
Volume Displaced By Structure =	206	cf
Weight =	12,879	lbs

Factor of Safety = 1.88 O.K.

Completed By:	JMC	**Job No**	80675
Checked By:		**Page**	2 **of**
Project Name:	John Jay	**Date:**	May-24

Subject: Precast Concrete Structures - Buoyancy Calculations

Outlet Control Structure Dry Pond #2



Structure Characteristics

Diameter =	5.0	feet
Height =	5.5	feet
Wall Thickness =	0.67	feet
Extended Base =	0.5	feet
Top Slab Thickness =	0.67	feet
Base Thickness =	0.5	feet
Access Opening Dia. =	4	feet
Hatch Opening Length =	0	feet
Ground Water Depth =	**1.8**	**feet**
Unit Weight of Concrete =	150.0	lbs/cf
Unit Weight of Soil =	120.0	lbs/cf
Unit Weight of Water =	62.4	lbs/cf

Structure Top Slab Weight Calculation

Area =	32	sf
Area of Hatch Opening =	13	sf
Net Area =	19	sf
Volume =	13	cf
Weight =	1,904	lbs

Structure Body Weight Calculation

Area =	12	sf
Volume =	57	cf
Weight =	8,514	lbs

Manhole Base Weight Calculation

Area =	42	sf
Volume =	21	cf
Weight =	3,168	lbs

Total Weight of Wetwell = 13586 lbs

Soil Weight Calculation (buoyancy on soil is subtracted)

Area =	11	sf
Volume =	59	cf
Weight =	3,370	lbs

Total Resistant Force = 16,956 lbs

Buoyancy Force Calculation

Volume Displaced By Structure =	150	cf
Weight =	9,332	lbs

Factor of Safety = 1.82 O.K.

Completed By: JMC
Checked By:
Project Name: John Jay

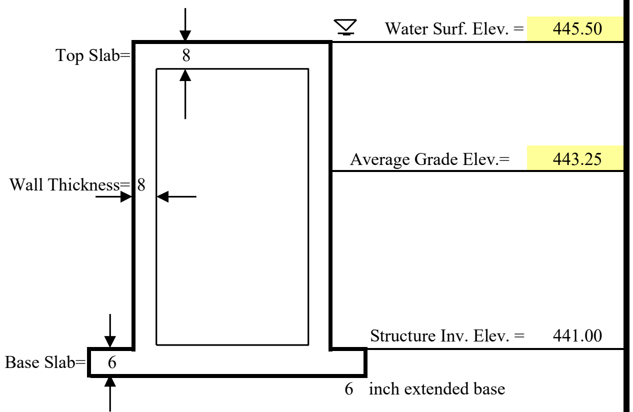
Job No 80675
Page 3 **of**
Date: May-24

Subject:

Outlet Control Structure Bioretention #3

Worst case scenario for the purposes of this design is a water surface elevation equal to the top of structure.

Outfall Structure Characterisics		
Width (ID) =	4	feet
Length (ID) =	4	feet
Height =	4.50	feet
Wall Thickness =	0.67	feet
Extended Base =	0.5	feet
Top Slab Thickness =	0.667	feet
Base Thickness =	0.5	feet
Hatch Opening Width =	3.5	feet
Hatch Opening Length =	3.5	feet
Unit Weight of Concrete =	150.0	lbs/cf
Unit Weight of Soil =	120.0	lbs/cf
Unit Weight of Water =	62.4	lbs/cf



Top Slab Weight Calculation		
Area =	28.5	sf
Area of Hatch Opening =	12	sf
Net Area =	16	sf
Volume =	11	cf
Weight =	1,621	lbs

Outfall Structure Body Weight Calculation		
Area =	12.5	
Volume =	56	cf
Weight =	8,405	lbs

Base Weight Calculation		
Area =	40.1	sf
Volume =	20	cf
Weight =	3,009	lbs

Total Weight of Structure = 13035 lbs

[1]Soil Weight Calculation (buoyancy on soil is subtracted)		
Area =	11.7	sf
Volume =	26	cf
Weight =	1,512	lbs

Total Resistant Force = 14,547 lbs

Buoyancy Force Calculation		
Volume Displaced By Wetwell =	148	cf
Weight =	9,241	lbs

Factor of Safety = 1.57 O.K.

[1] Weight of soil is conservatively estimated as a rectangular column over the footprint of the extended base.

APPENDIX H

Phasing Plan, Grading and Drainage Plan and ESC Plan and Details

Phase 1 (±2.34acres)

- Establish work area, contractor staging area, and install stabilized temporary construction entrance.
- Install temporary erosion and sediment control measures as shown on plans.
- Remove asphalt entrance drive and subbase as shown on demolition plans.
- Remove entrance gate and other amenities as shown on demolition plans.
- Install topsoil, seed, and mulch for final stabilization.

Phase 2A (±4.96 acres)

- Establish work area, contractor staging area, and install stabilized temporary construction entrance.
- Install temporary erosion and sediment control measures as shown on plans.
- Rough grade site for proposed access road and parking lot area.
- Grade and construct the proposed stormwater bioretention and dry ponds.
- Fine grade site and install subbase to stabilize disturbed areas.
- Construct the proposed parking lot, gravel road, walkway and ramps as shown on layout plans.
- Install proposed landscaping, topsoil, and seed for final stabilization of all disturbed areas.

Phase 2B (±3.68 acres)

- Establish work area, contractor staging area, and install stabilized temporary construction entrance.
- Install temporary erosion and sediment control measures as shown on plans.
- Remove existing gravel loop drive and other amenities as shown on demolition plans.
- Grade and install proposed chip seal road as shown on plans.
- Grade and install proposed chip seal walkways as shown on plans.
- Repair and renovate the existing John Jay House.
- Install proposed trees and landscaping, topsoil, and seed for final stabilization of all disturbed areas.

Note: Contractor shall not disturb more than 5 acres at one time.

New York State Parks, Recreation and Historic Preservation

Gouvernor Kathy Hochul
Commissioner Pro Tempore Randy Simons

Architectural Consultant
BEYER BLINDER BELLE ARCHITECTS & PLANNERS
120 BROADWAY, 20TH FLOOR, NEW YORK, NY 10271

Structural Consultant
THORNTON TOMASETTI
120 BROADWAY, 15TH FLOOR, NEW YORK, NY 10271

MEP / FP / IT Consultant
LANDMARKS FACILITIES GROUP
252 EAST AVENUE, NORWALK, CT 06855

Civil Consultant
CHA CONSULTING, INC.
3 WINNERS CIRCLE, COLONIE, NY 12205

Landscape Consultant
RHODESIDE HARWELL LANDSCAPE ARCHITECTURE
347 WEST 36TH STREET, SUITE 1201, NEW YORK, NY 10018

Lighting Consultant
HLB LIGHTING
38 EAST 32ND STREET, 11TH FLOOR, NEW YORK, NY 10016

Signage Consultant
LVCK - A BEYER BLINDER BELLE STUDIO
120 BROADWAY, 20TH FLOOR, NEW YORK, NY 10271

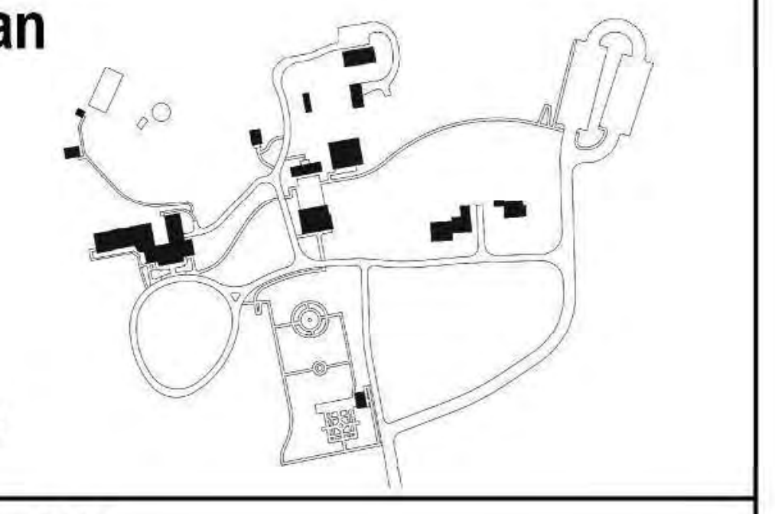
NYS OPRHP Taconic Region
9 Old Post Rd, PO Box 308
Staatsburg, NY 12580
(845) 889 - 4100

Regional Director: Linda Cooper
Capital District Manager: Garrett Jobson

Project Title:
John Jay Homestead Site And Building Enhancements

Project Location:
Katonah
NY 10536

Key Plan



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1	SCHEMATIC DESIGN SUBMISSION	10/2/2023
2	DESIGN DEVELOPMENT SUBMISSION	1/31/2024
3	PROGRESS CD SUBMISSION	4/10/2024

Drawn By:
HB

Design By
JJE

Checked By:
JJE

Approved By:
SKB

DATE
04/10/24

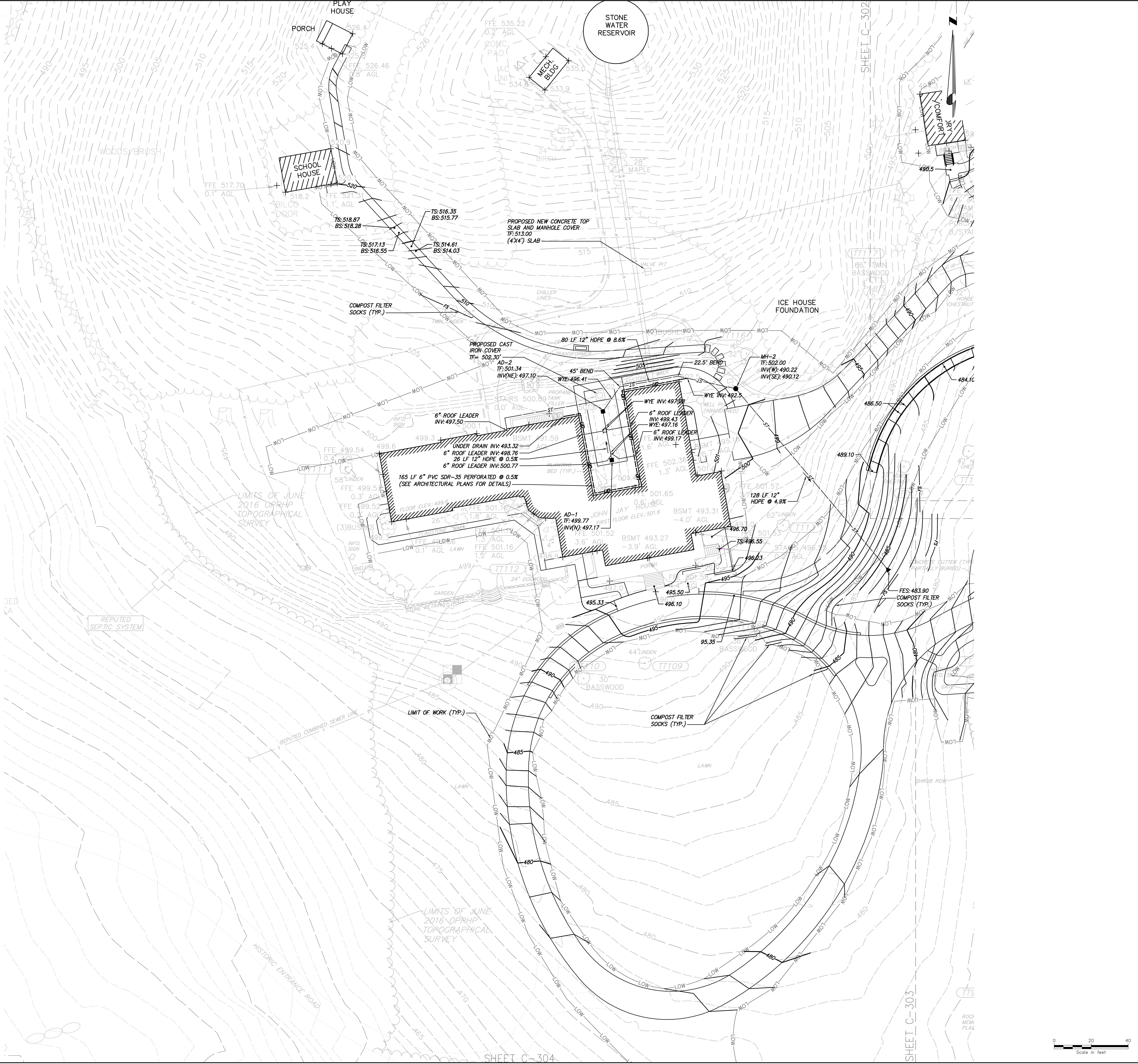
Seal and Signature

Sheet Title
Phasing plan

Drawing Number
C-002

Project Number:
D006292

Sheet:
XXX of 367



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Gouvernor Kathy Hochul   Commissioner Pro Tempore Randy Simons

Architectural Consultant
BEYER BLINDER BELLE ARCHITECTS & PLANNERS
120 BROADWAY, 20TH FLOOR, NEW YORK, NY 10271

Structural Consultant
THORNTON TOMASETTI
120 BROADWAY, 15TH FLOOR, NEW YORK, NY 10271

MEP / FP / IT Consultant
LANDMARKS FACILITIES GROUP
252 EAST AVENUE, NORWALK, CT 06855

Civil Consultant
CHA CONSULTING, INC.
3 WINNERS CIRCLE, COLONIE, NY 12205

Landscape Consultant
RHODESIDE HARWELL LANDSCAPE ARCHITECTURE
347 WEST 36TH STREET, SUITE 1201, NEW YORK, NY 10018

Lighting Consultant
HLB LIGHTING
38 EAST 32ND STREET, 11TH FLOOR, NEW YORK, NY 10016

Signage Consultant
LVCK - A BEYER BLINDER BELLE STUDIO
120 BROADWAY, 20TH FLOOR, NEW YORK, NY 10271

NYS OPRHP Taconic Region
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Staatsburg, NY 12580
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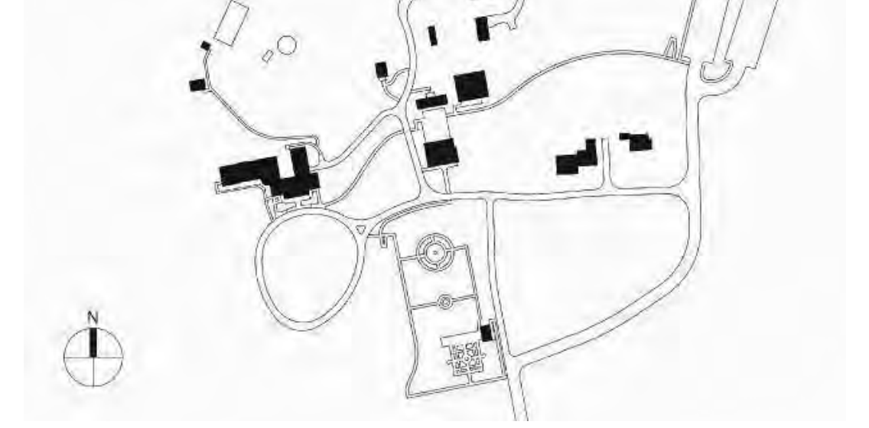
Key Plan



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2	DESIGN DEVELOPMENT SUBMISSION	1/31/2024
3	PROGRESS CD SUBMISSION	4/10/2024

Drawn By: HB
Design By JJE
Checked By: JJE
Approved By: SKB
DATE 04/10/24

Seal and Signature

Sheet Title
SITE GRADING, DRAINAGE AND EROSION CONTROL PLAN (1 OF 6)

Drawing Number
C-301

Project Number: D006292
Sheet: XXX of 367

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Architectural Consultant
BEYER BLINDER BELLE ARCHITECTS & PLANNERS
120 BROADWAY, 20TH FLOOR, NEW YORK, NY 10271

Structural Consultant
THORNTON TOMASETTI
120 BROADWAY, 15TH FLOOR, NEW YORK, NY 10271

MEP / FP / IT Consultant
LANDMARKS FACILITIES GROUP
252 EAST AVENUE, NORWALK, CT 06855

Civil Consultant
CHA CONSULTING, INC.
3 WINNERS CIRCLE, COLONIE, NY 12205

Landscape Consultant
RHODESIDE HARWELL LANDSCAPE ARCHITECTURE
347 WEST 36TH STREET, SUITE 1201, NEW YORK, NY 10018

Lighting Consultant
HLB LIGHTING
38 EAST 32ND STREET, 11TH FLOOR, NEW YORK, NY 10016

Signage Consultant
LVCK - A BEYER BLINDER BELLE STUDIO
120 BROADWAY, 20TH FLOOR, NEW YORK, NY 10271

NYS OPRHP Taconic Region
9 Old Post Rd, PO Box 308
Staatsburg, NY 12580
(845) 889 - 4100

Regional Director: Linda Cooper
Capital District Manager: Garrett Jobson

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Project Location:
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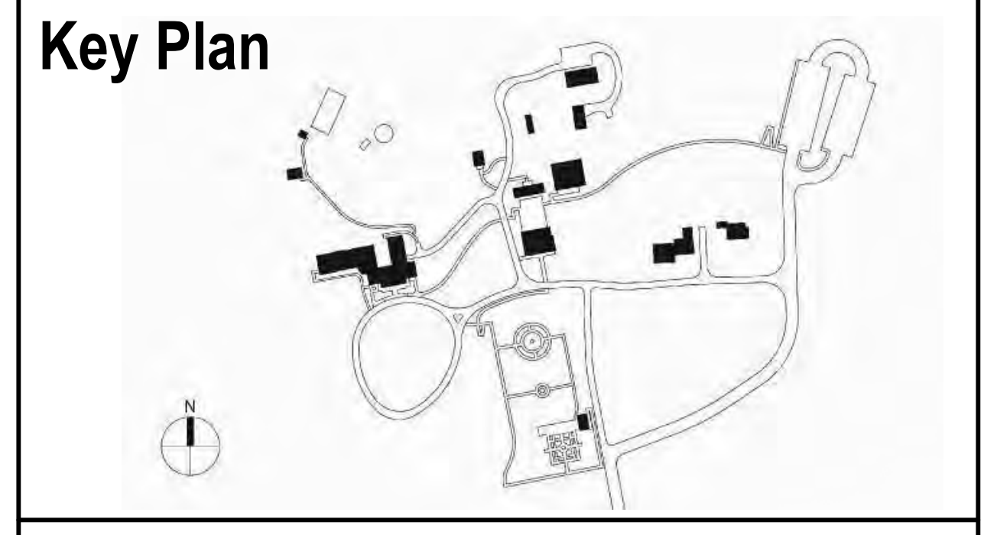
NY 10536

Key Plan



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1	SCHEMATIC DESIGN SUBMISSION	10/2/2023
2	DESIGN DEVELOPMENT SUBMISSION	1/31/2024
3	PROGRESS CD SUBMISSION	4/10/2024

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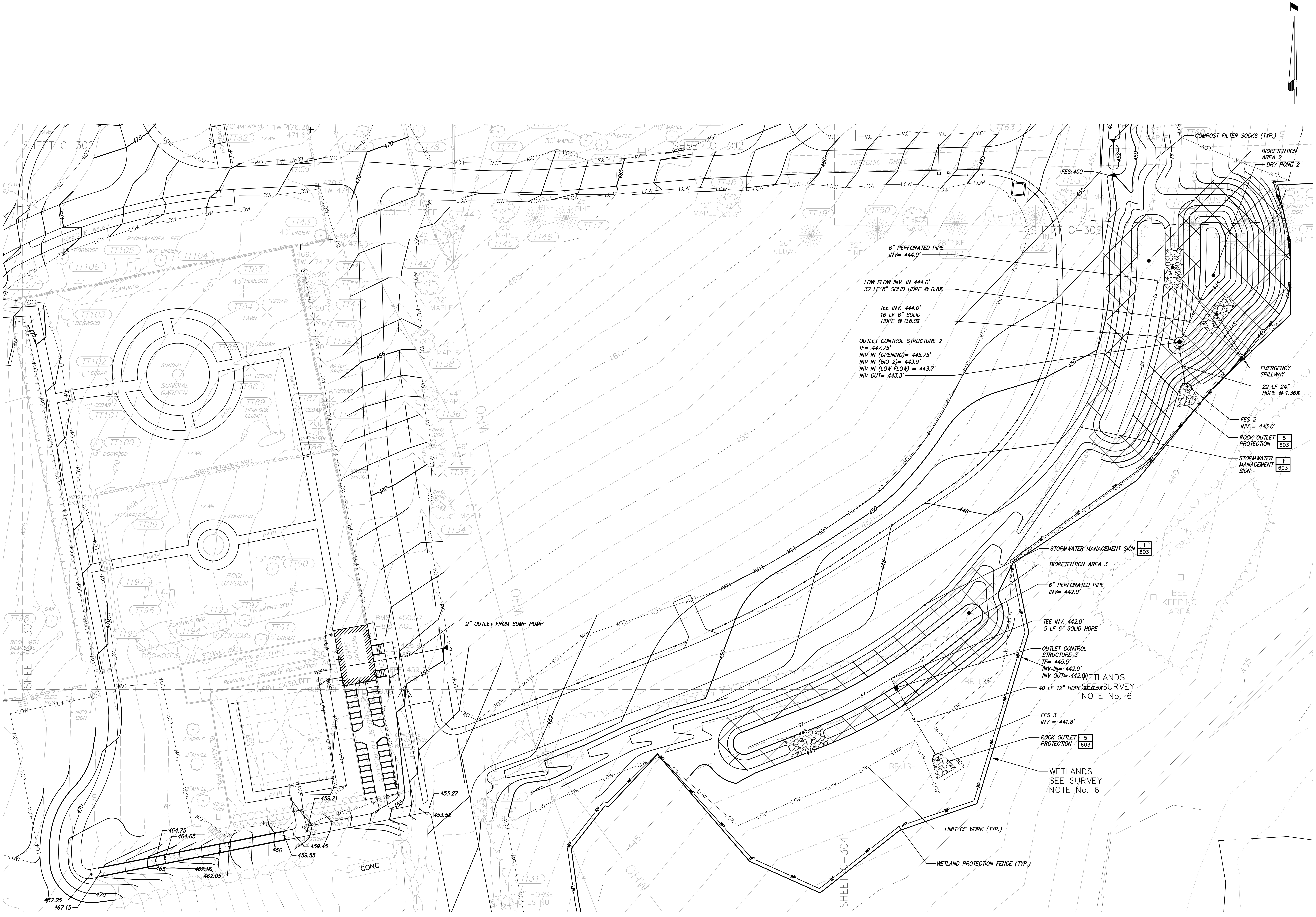
Checked By: JJE
Approved By: SKB
DATE: 04/10/24

Seal and Signature

Sheet Title
SITE GRADING, DRAINAGE AND EROSION CONTROL PLAN (2 OF 6)

Drawing Number
C-302

Project Number: D006292
Sheet: XXX of 367



LEGEND:

▨	EROSION CONTROL BANK STABILIZATION

0 20 40
Scale in feet

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Architectural Consultant
BEYER BLINDER BELLE ARCHITECTS & PLANNERS
120 BROADWAY, 20TH FLOOR, NEW YORK, NY 10271

Structural Consultant
THORNTON TOMASETTI
120 BROADWAY, 15TH FLOOR, NEW YORK, NY 10271

MEP / FP / IT Consultant
LANDMARKS FACILITIES GROUP
252 EAST AVENUE, NORWALK, CT 06855

Civil Consultant
CHA CONSULTING, INC.
3 WINNERS CIRCLE, COLONIE, NY 12205

Landscape Consultant
RHODESIDE HARWELL LANDSCAPE ARCHITECTURE
347 WEST 36TH STREET, SUITE 1201, NEW YORK, NY 10018

Lighting Consultant
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120 BROADWAY, 20TH FLOOR, NEW YORK, NY 10271

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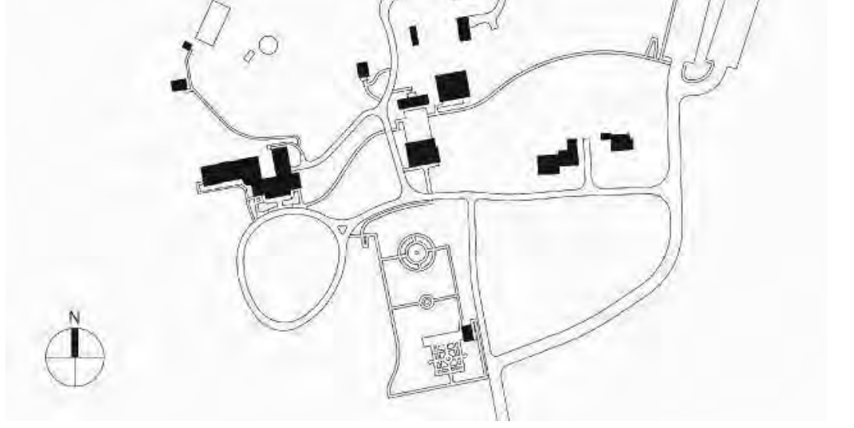
9 Old Post Rd, PO Box 308
Staatsburg, NY 12580
(845) 889 - 4100

Regional Director: Linda Cooper
Capital District Manager: Garrett Jobson

Project Title:
John Jay Homestead Site And Building Enhancements

Project Location:
Katonah
NY 10536

Key Plan



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1	SCHEMATIC DESIGN SUBMISSION	10/2/2023
2	DESIGN DEVELOPMENT SUBMISSION	1/31/2024
3	PROGRESS CD SUBMISSION	4/10/2024

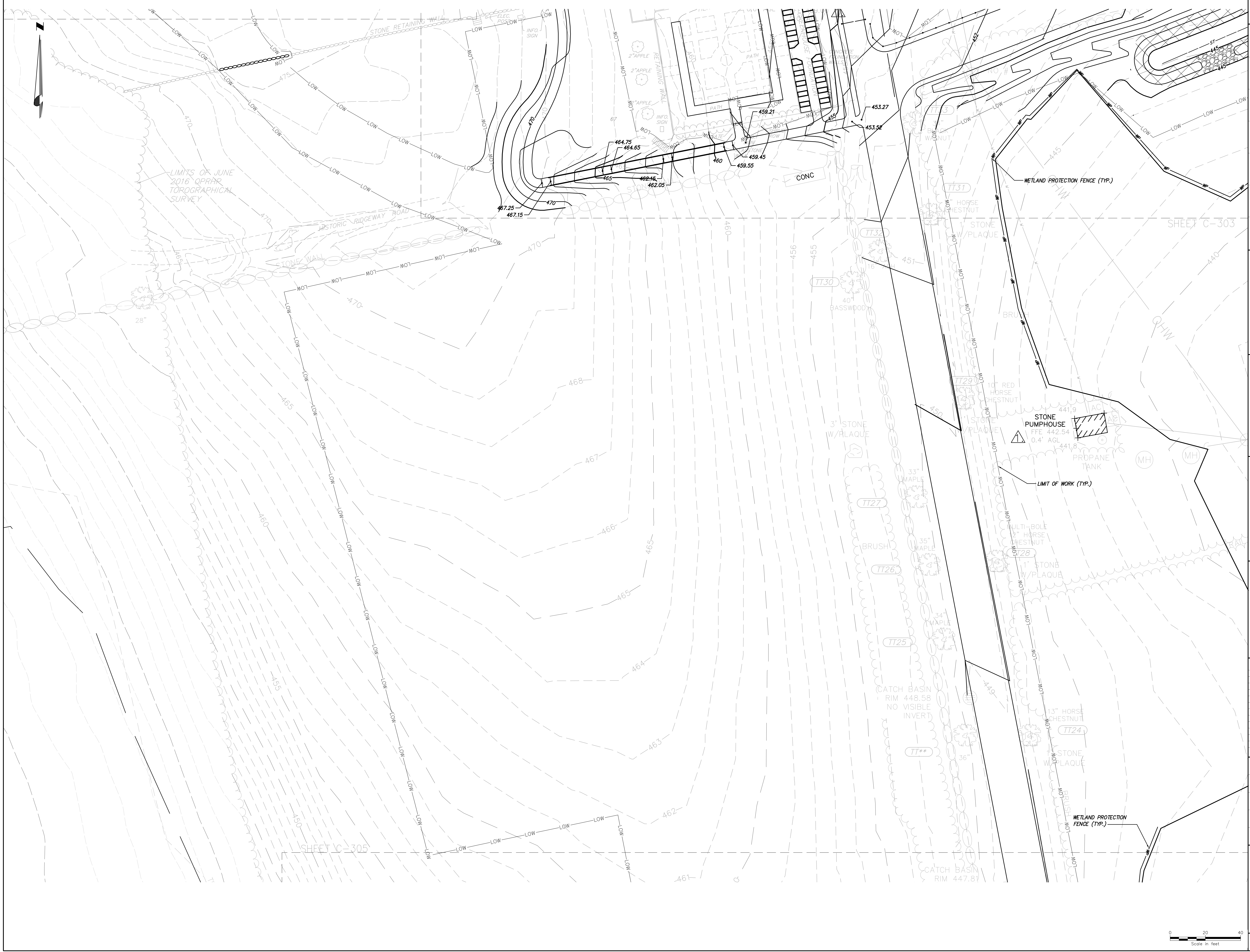
Drawn By: HB
Design By JJE
Checked By: JJE
Approved By: SKB
DATE 04/10/24

Seal and Signature

Sheet Title
SITE GRADING, DRAINAGE AND EROSION CONTROL PLAN (3 OF 6)

Drawing Number
C-303

Project Number: D006292
Sheet: XXX of 367



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THORNTON TOMASETTI
120 BROADWAY, 15TH FLOOR, NEW YORK, NY 10271

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252 EAST AVENUE, NORWALK, CT 06855

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3 WINNERS CIRCLE, COLONIE, NY 12205

Landscape Consultant
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347 WEST 36TH STREET, SUITE 1201, NEW YORK, NY 10018

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Signage Consultant
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120 BROADWAY, 20TH FLOOR, NEW YORK, NY 10271

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9 Old Post Rd, PO Box 308
Staatsburg, NY 12580
(845) 889 - 4100

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Capital District Manager: Garrett Jobson

Project Title:
John Jay Homestead Site And Building Enhancements

Project Location:
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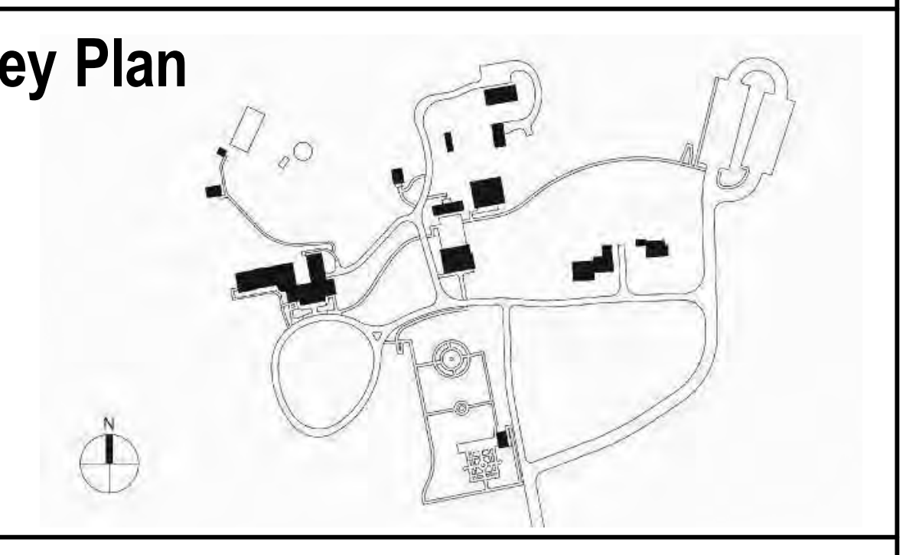
Key Plan



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Design By: JJE
Checked By: JJE
Approved By: SKB
DATE: 04/10/24

Seal and Signature

Sheet Title
SITE GRADING,
DRAINAGE AND
EROSION CONTROL
PLAN (4 OF 6)

Drawing Number
C-304

Project Number: D006292
Sheet: XXX of 367

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Structural Consultant
THORNTON TOMASETTI
120 BROADWAY, 15TH FLOOR, NEW YORK, NY 10271

MEP / FP / IT Consultant
LANDMARKS FACILITIES GROUP
252 EAST AVENUE, NORWALK, CT 06855

Civil Consultant
CHA CONSULTING, INC.
3 WINNERS CIRCLE, COLONIE, NY 12205

Landscape Consultant
RHODESIDE HARWELL LANDSCAPE ARCHITECTURE
347 WEST 36TH STREET, SUITE 1201, NEW YORK, NY 10018

Lighting Consultant
HLB LIGHTING
38 EAST 32ND STREET, 11TH FLOOR, NEW YORK, NY 10016

Signage Consultant
LVCK - A BEYER BLINDER BELLE STUDIO
120 BROADWAY, 20TH FLOOR, NEW YORK, NY 10271

NYS OPRHP Taconic Region
9 Old Post Rd, PO Box 308
Staatsburg, NY 12580
(845) 889 - 4100

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Capital District Manager: Garrett Jobson

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John Jay Homestead Site And Building Enhancements

Project Location:
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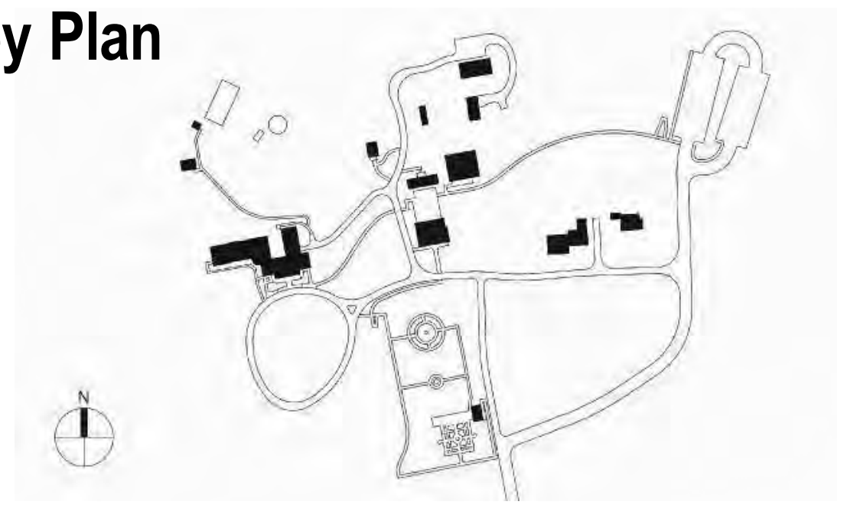
Key Plan



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3	PROGRESS CD SUBMISSION	4/10/2024

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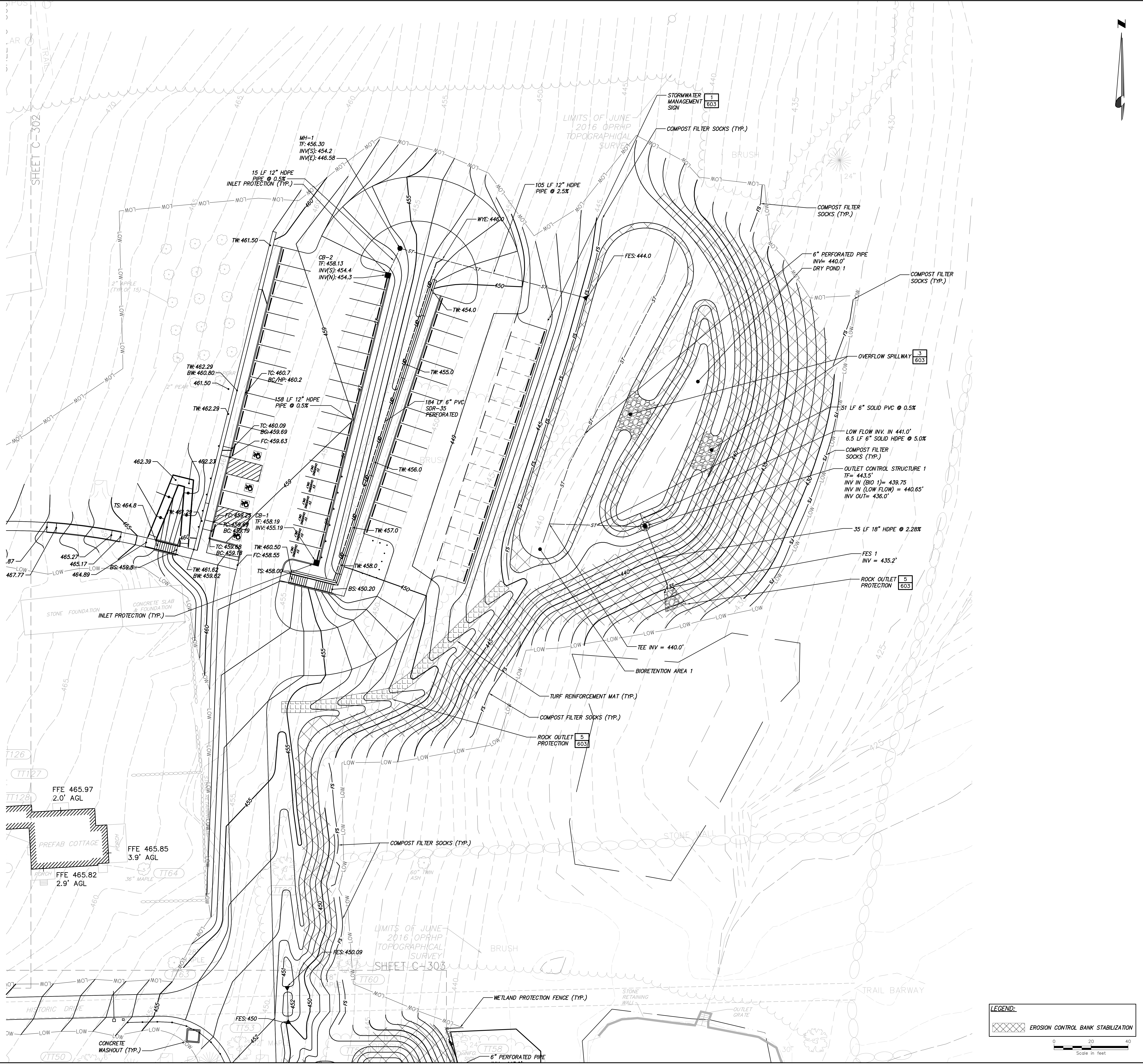
Seal and Signature

Sheet Title
SITE GRADING, DRAINAGE AND EROSION CONTROL PLAN (5 OF 6)

Drawing Number
C-305

Project Number: D006292
Sheet: XXX of 367



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Architectural Consultant
BEYER BLINDER BELLE ARCHITECTS & PLANNERS
120 BROADWAY, 20TH FLOOR, NEW YORK, NY 10271

Structural Consultant
THORNTON TOMASETTI
120 BROADWAY, 15TH FLOOR, NEW YORK, NY 10271

MEP / FP / IT Consultant
LANDMARKS FACILITIES GROUP
252 EAST AVENUE, NORWALK, CT 06855

Civil Consultant
CHA CONSULTING, INC.
3 WINNERS CIRCLE, COLONIE, NY 12205

Landscape Consultant
RHODESIDE HARWELL LANDSCAPE ARCHITECTURE
347 WEST 36TH STREET, SUITE 1201, NEW YORK, NY 10018

Lighting Consultant
HLB LIGHTING
38 EAST 32ND STREET, 11TH FLOOR, NEW YORK, NY 10016

Signage Consultant
LVCK - A BEYER BLINDER BELLE STUDIO
120 BROADWAY, 20TH FLOOR, NEW YORK, NY 10271

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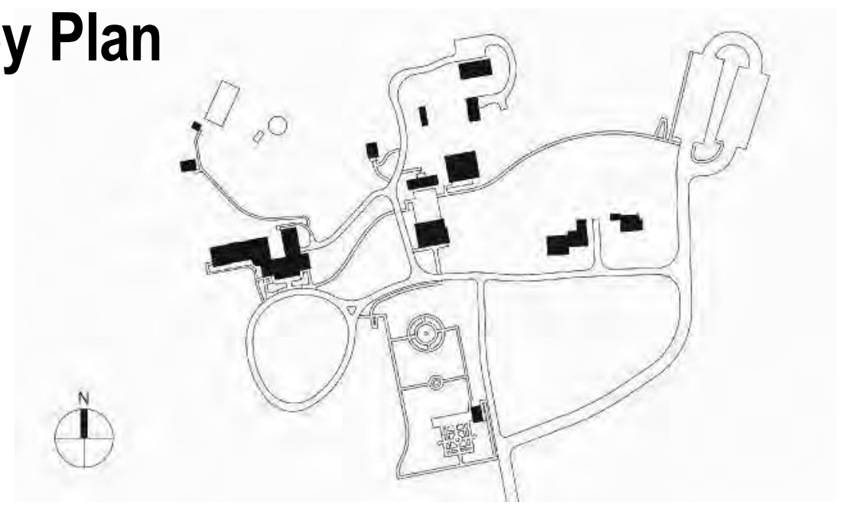
9 Old Post Rd, PO Box 308
Staatsburg, NY 12580
(845) 889 - 4100

Regional Director: Linda Cooper
Capital District Manager: Garrett Jobson

Project Title:
John Jay Homestead Site And Building Enhancements

Project Location:
Katonah
NY 10536

Key Plan



REVISIONS

Rev No	Description	Date:
1	SCHEMATIC DESIGN SUBMISSION	10/2/2023
2	DESIGN DEVELOPMENT SUBMISSION	1/31/2024
3	PROGRESS CD SUBMISSION	4/10/2024

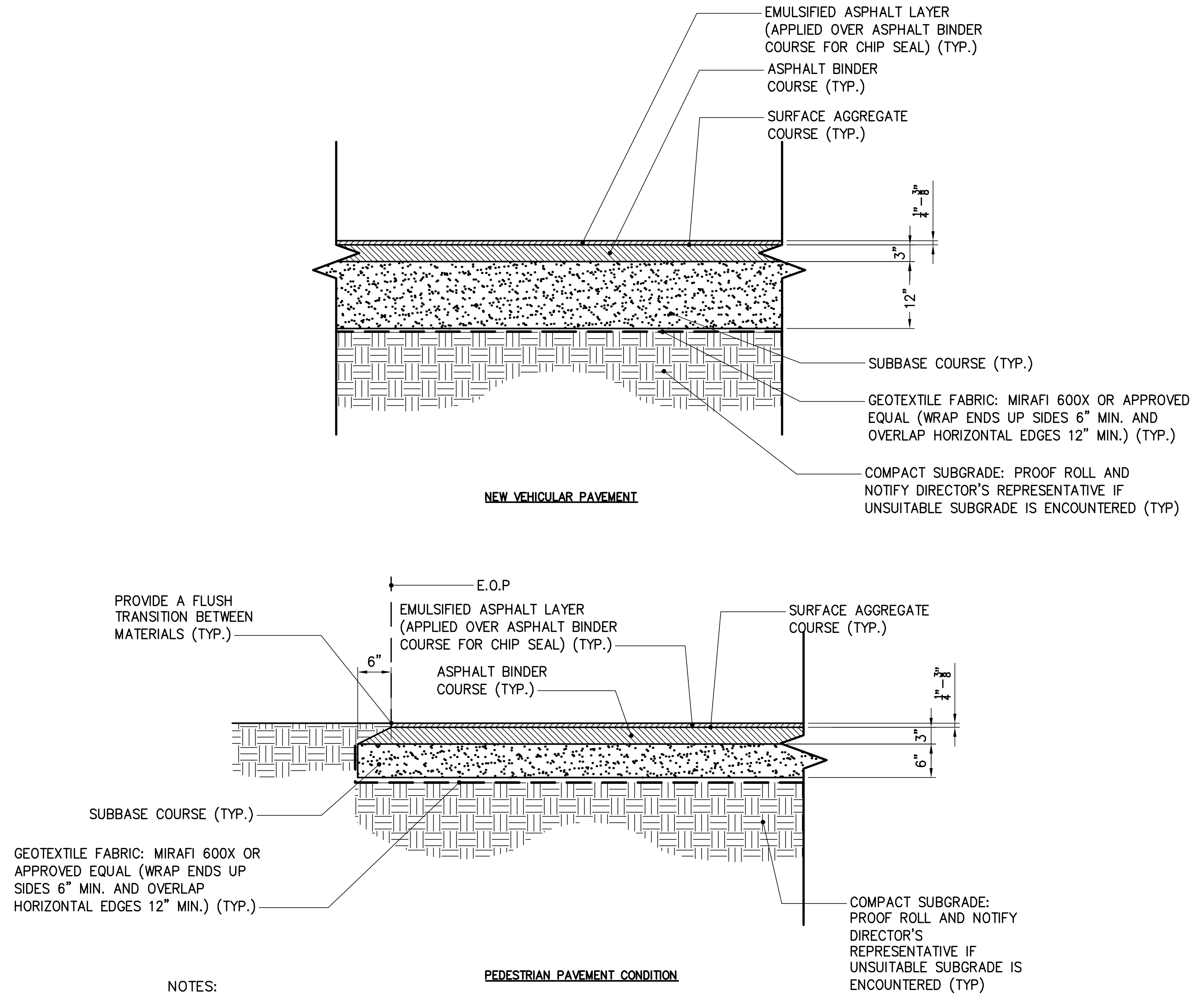
Drawn By: HB
Design By: JJE
Checked By: JJE
Approved By: SKB
DATE: 04/10/24

Seal and Signature

Sheet Title
SITE GRADING, DRAINAGE AND EROSION CONTROL PLAN (6 OF 6)

Drawing Number
C-306

Project Number: D006292
Sheet: XXX of 367

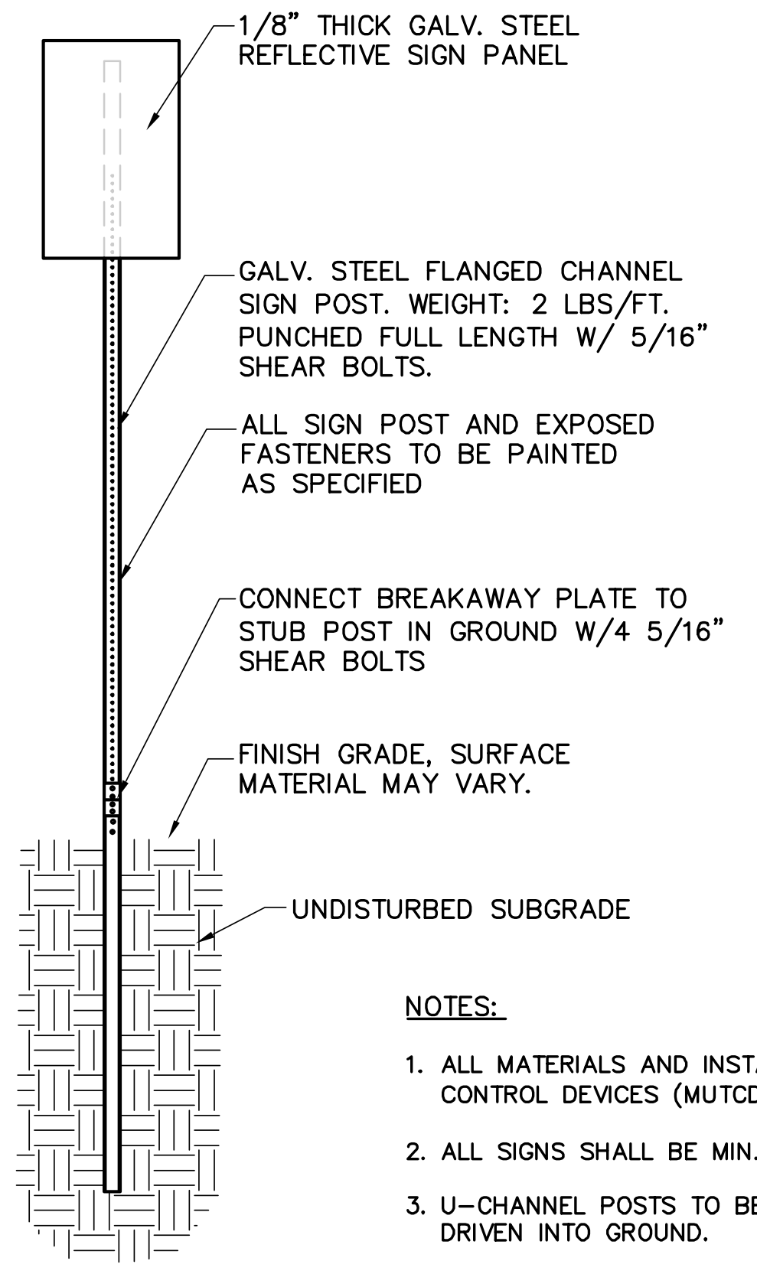


NOTES:

1. CONTRACTOR SHALL INSTALL SURFACE AGGREGATE IN SINGLE COURSE AS SHOWN, WITH FINAL IN–PLACE COMPACTED DEPTH ¼"–⅜".
2. PROVIDE FLUSH AND SMOOTH TRANSITION WHERE CHIP SEAL MEETS ADJACENT SURFACES.
3. PROVIDE MOCK UP FOR DIRECTOR'S REPRESENTATIVE APPROVAL

1 TAR AND CHIP ASPHALT PAVEMENT

SCALE: N.T.S.



SITE SIGN TABLE

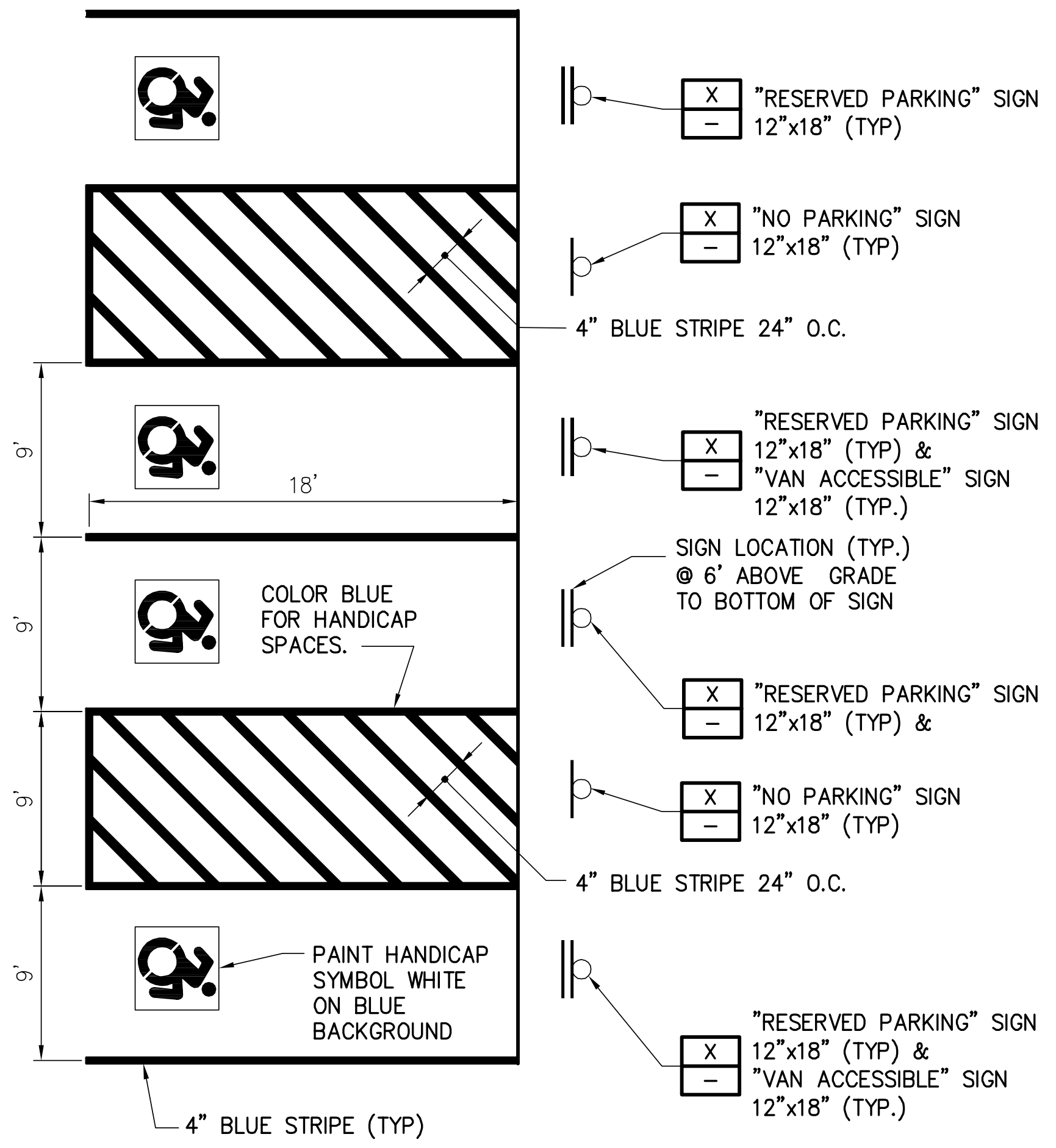
SIGN NO.	DESCRIPTION	M.U.T.C.D. NO./SIZE	QUANTITY
1	STOP	R1–1 30"x30"	X
2	RESERVED PARKING	R7–1 12"x18"	4
3	VAN ACCESSIBLE	R7–8 (12"x18")	2
4	NO PARKING	R7–1 12"x18"	2
5	ELECTRIC VEHICLE CHARGING STATION	R7–1 12"x18"	8

NOTES:

1. ALL MATERIALS AND INSTALLATION SHALL CONFORM TO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), LATEST EDITION.
2. ALL SIGNS SHALL BE MIN. 3'–0 OFF EDGE OF GRAVEL OR PAVEMENT AOBE.
3. U–CHANNEL POSTS TO BE USED FOR ALL SIGNS WITHIN RIGHT–OF–WAY AND SHALL BE DRIVEN INTO GROUND.
4. REFER TO WAYFINDING DRAWINGS FOR SIGNAGE ARTWORK AND PAINT COLOR

2 SIGN POST INSTALLATION DETAIL

SCALE: N.T.S.

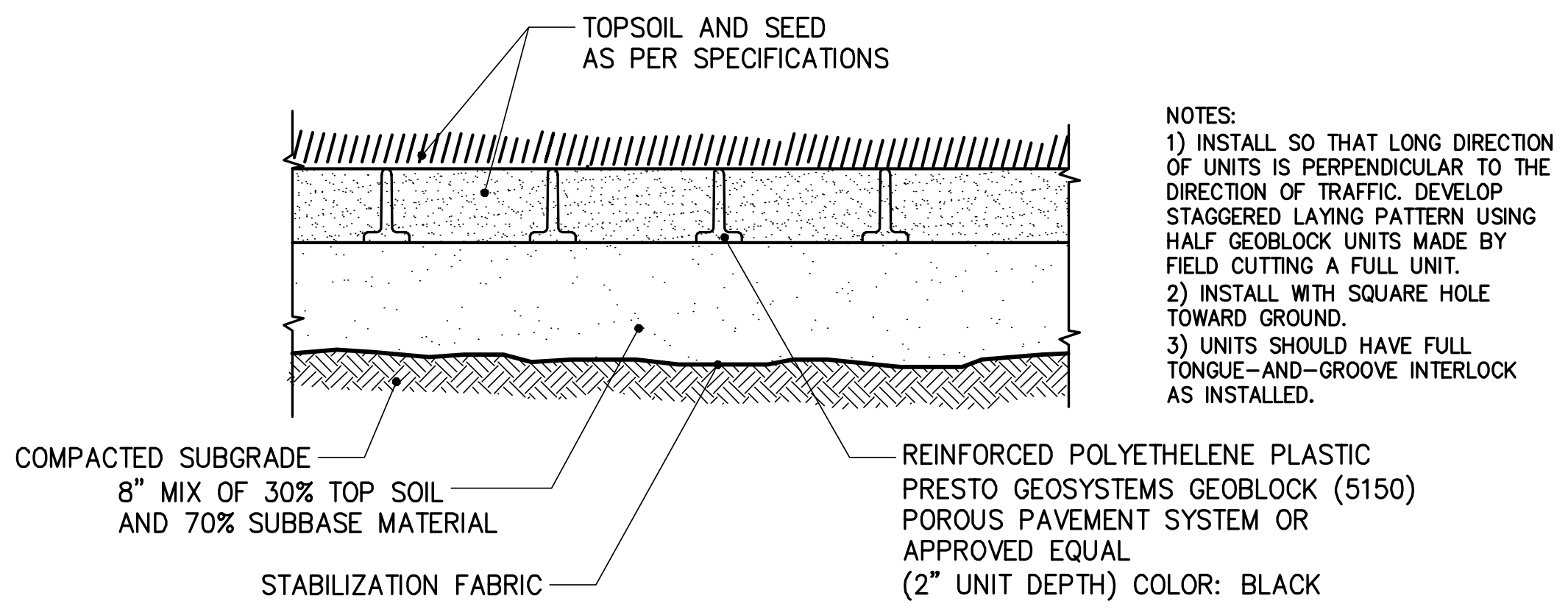


NOTE:
ALL DIMENSIONS TO CENTER OF 4" PAVEMENT STRIPING.

NOTE:
SITE PLAN SHOWS 4 PROPOSED "RESERVED PARKING" SIGNS, TWO OF WHICH WILL ALSO INCLUDE A "VAN ACCESSIBLE" SIGN ON THE SAME POST.

3 ACCESSIBLE PARKING SPACE & TYPICAL STRIPING DETAIL

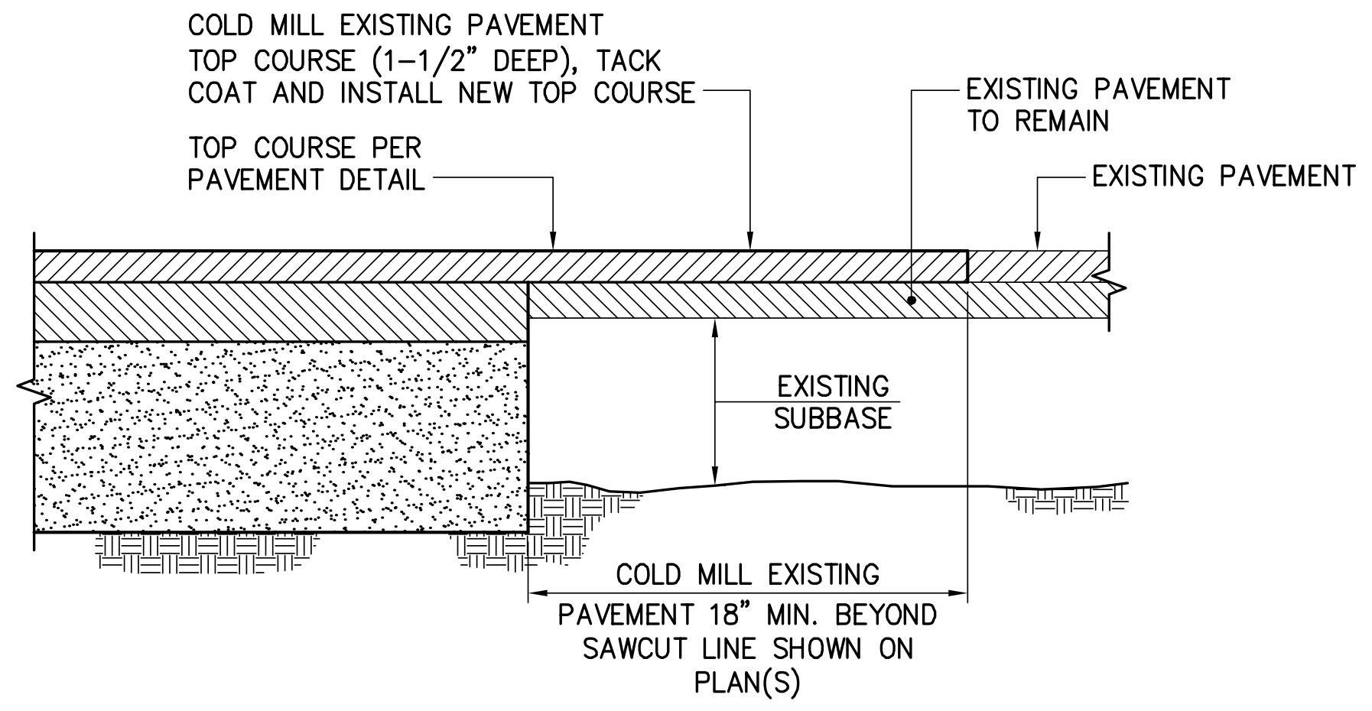
SCALE: NO SCALE



NOTES:
1) INSTALL SO THAT LONG DIRECTION OF UNITS IS PERPENDICULAR TO THE DIRECTION OF TRAFFIC. DEVELOP STAGGERED LAYING PATTERN USING HALF GEOBLOCK UNITS MADE BY FIELD CUTTING A FULL UNIT.
2) INSTALL WITH SQUARE HOLE TOWARD GROUND.
3) UNITS SHOULD HAVE FULL TONGUE–AND–GROOVE INTERLOCK AS INSTALLED.

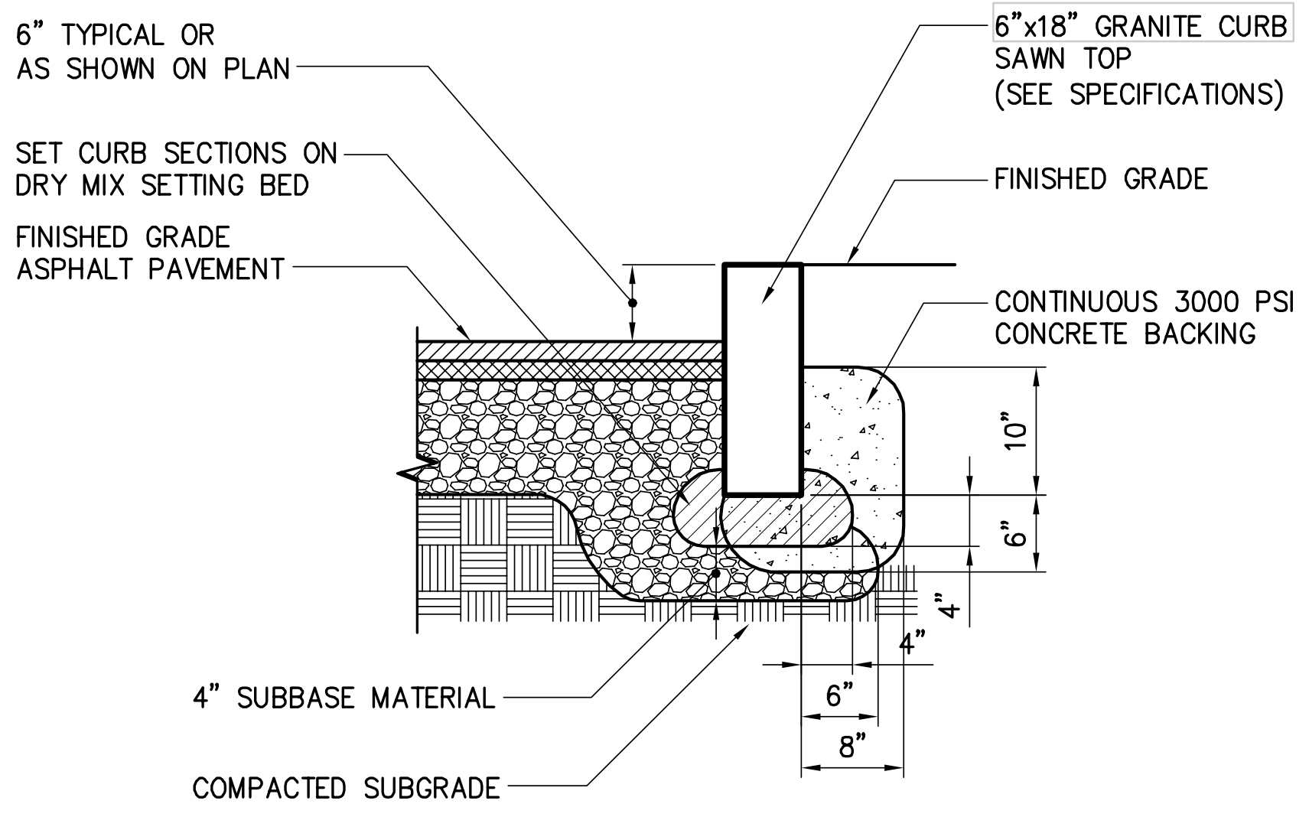
4 REINFORCED TURF DETAIL

SCALE: N.T.S.



5 PAVEMENT TRANSITION DETAIL

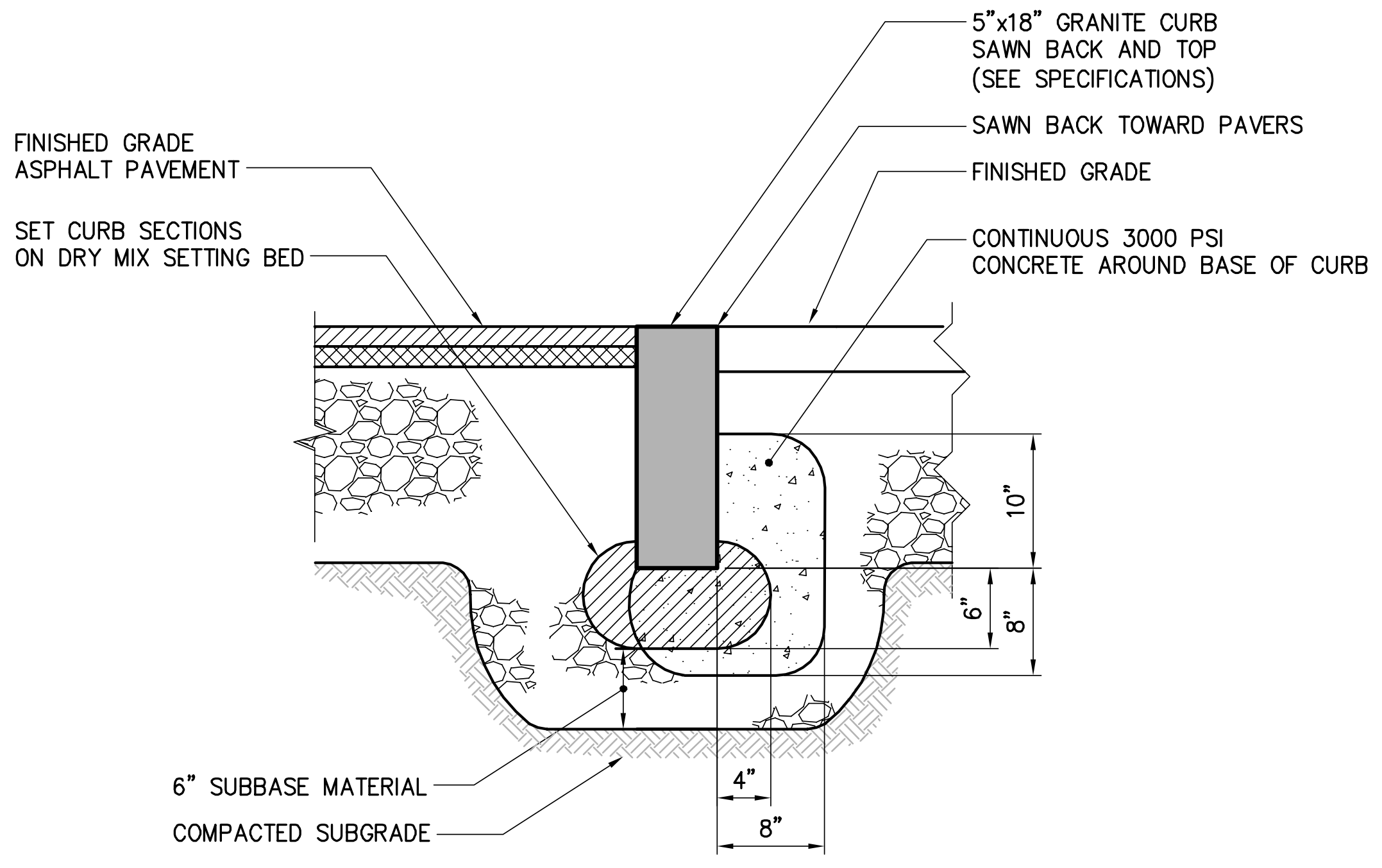
SCALE: N.T.S.



NOTE: CURB JOINTS TO BE POINTED WITH MORTAR (SEE SPECIFICATIONS).

6 GRANITE CURB DETAIL

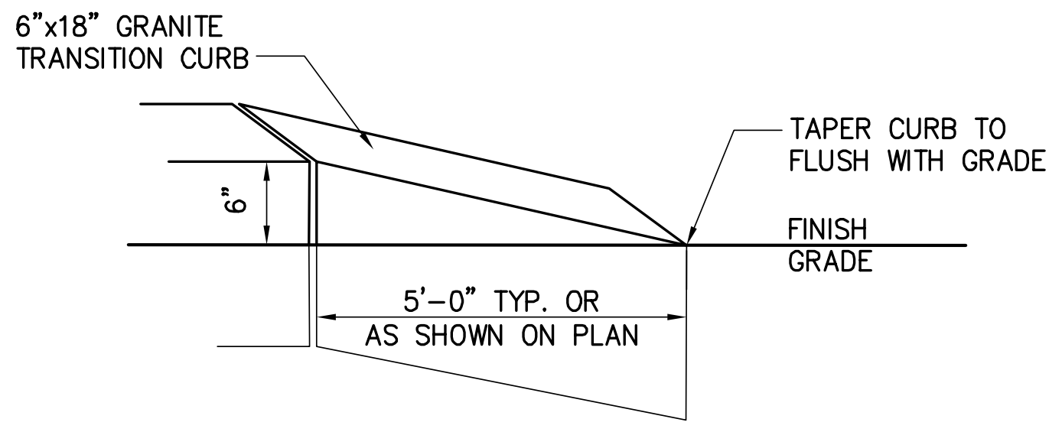
SCALE: N.T.S.



NOTE: CURB JOINTS TO BE POINTED WITH MORTAR (SEE SPECIFICATIONS).

7 FLUSH GRANITE CURB

SCALE: N.T.S.



NOTE: SEE ADJACENT GRANITE CURB DETAIL

8 GRANITE CURB TERMINATION DETAIL

SCALE: N.T.S.

New York State Parks, Recreation and Historic Preservation

Gouvernor Kathy Hochul
Commissioner Pro Tempore Randy Simons

Architectural Consultant
BEYER BLINDER BELLE ARCHITECTS & PLANNERS
120 BROADWAY, 20TH FLOOR, NEW YORK, NY 10271

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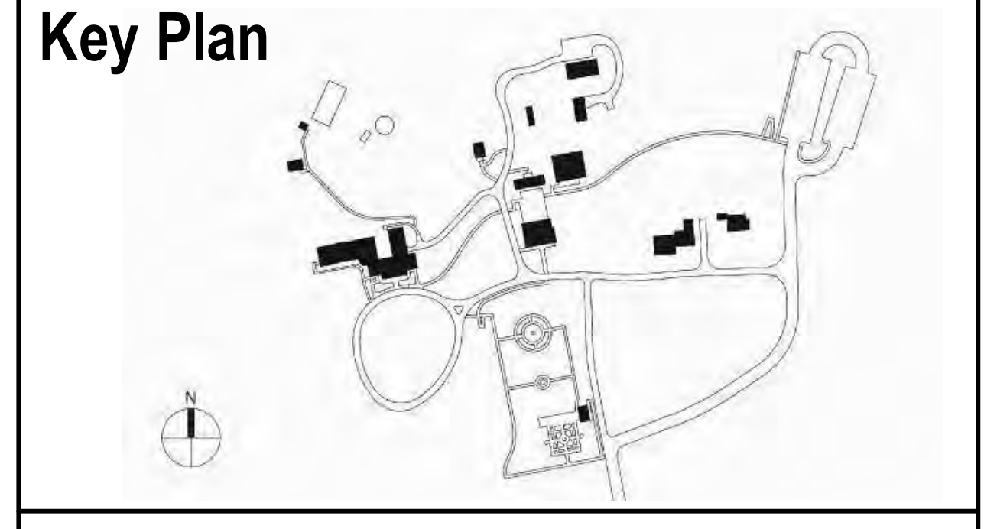
Key Plan



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1	SCHEMATIC DESIGN SUBMISSION	10/2/2023
2	DESIGN DEVELOPMENT SUBMISSION	1/31/2024
3	PROGRESS CD SUBMISSION	4/10/2024

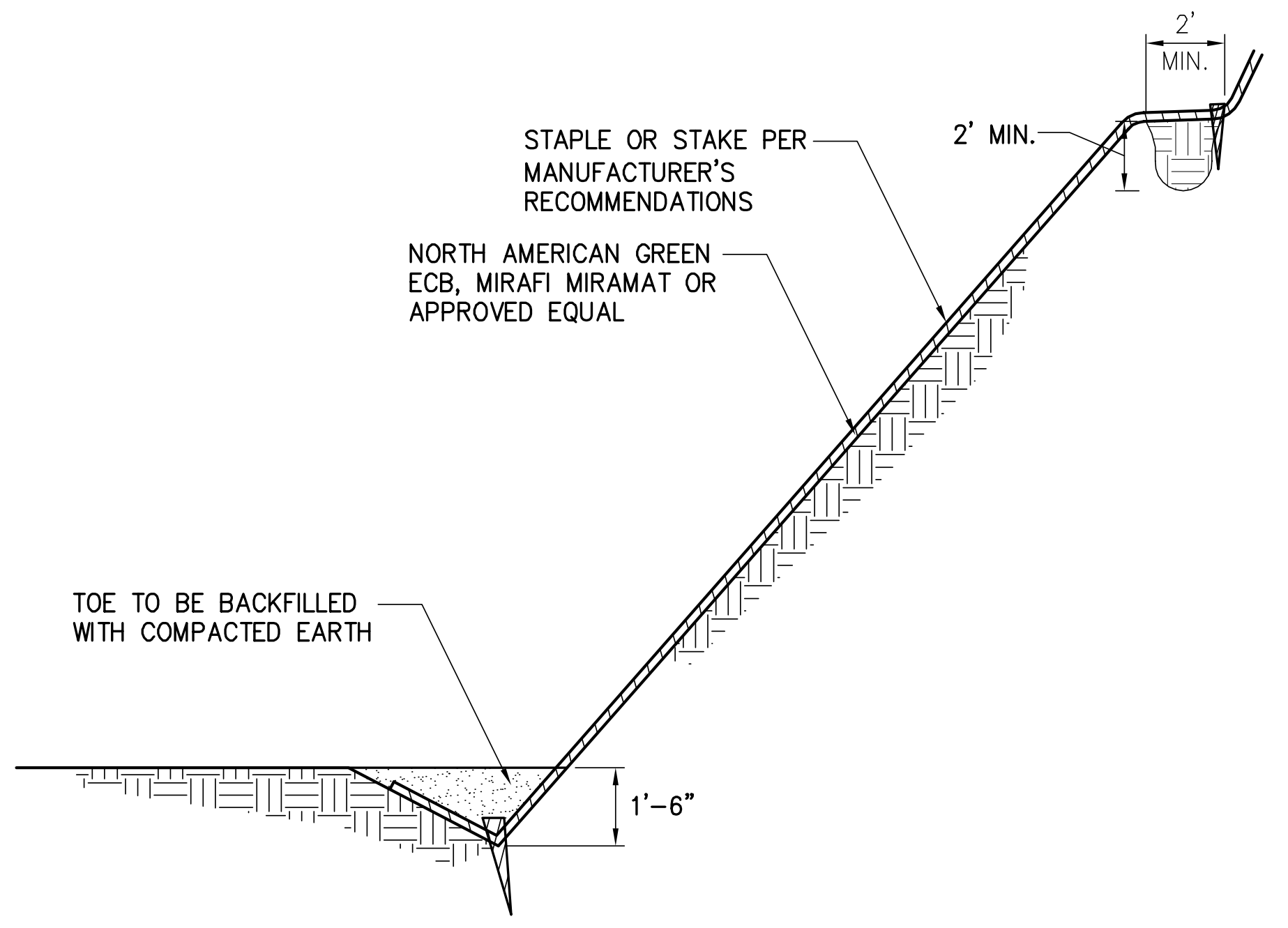
Drawn By: HB
Design By JJE
Checked By: JJE
Approved By: SKB
DATE 04/10/24

Seal and Signature

Sheet Title
DETAILS (1 OF 5)

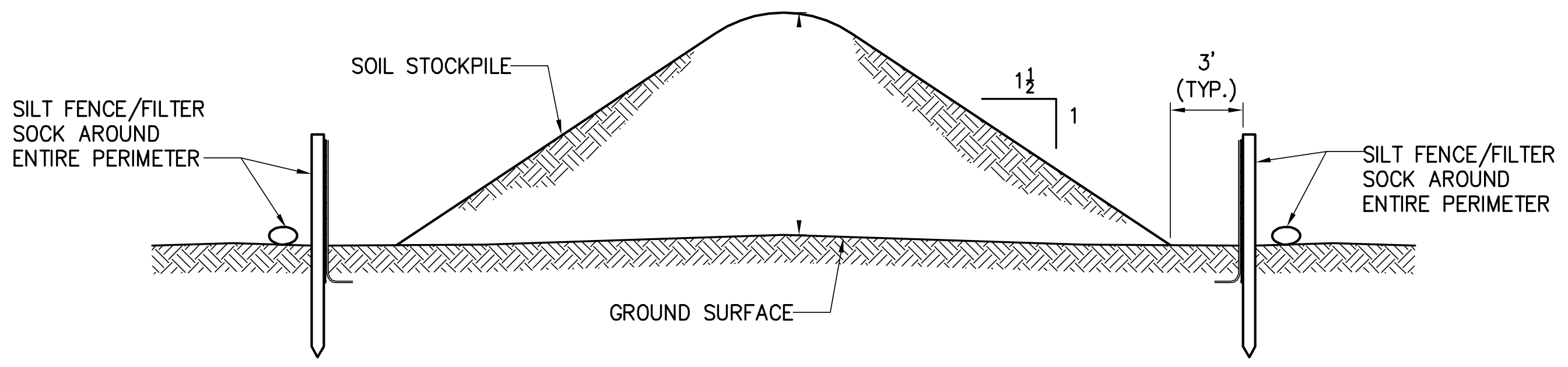
Drawing Number
C-600

Project Number: D006292
Sheet: XXX of 367



NOTE:
EROSION CONTROL BLANKETS TO BE INSTALLED ON SLOPES 3:1 OR GREATER (TYP.)

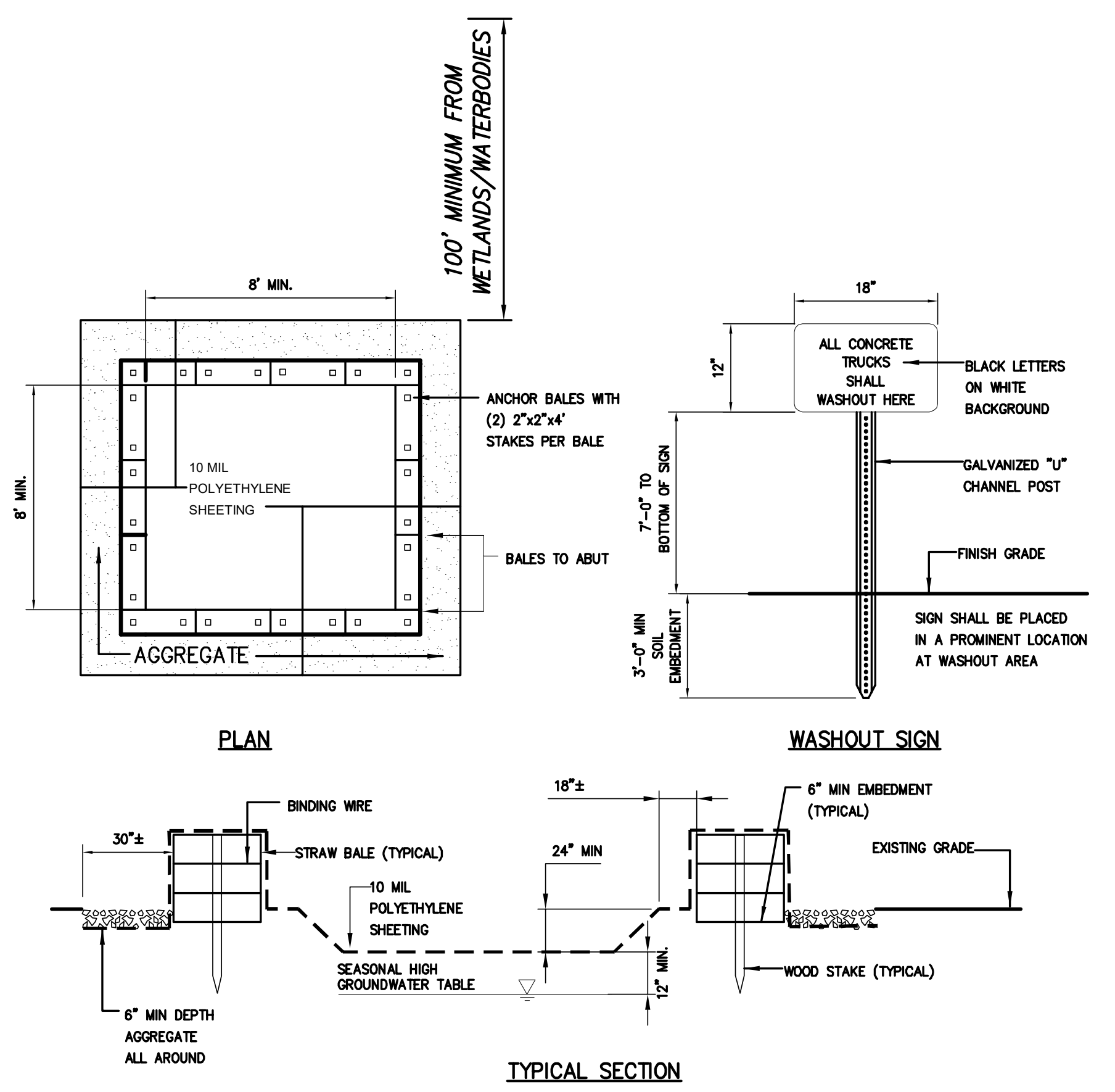
1 EROSION CONTROL BANK STABILIZATION DETAIL
SCALE: N.T.S.



NOTES:

1. INSPECT SILT FENCE EVERY 7 DAYS AND AFTER ANY RAINFALL EVENT OF 1/2" OR GREATER AND MAKE NECESSARY REPAIRS AS NEEDED.
2. IF STOCKPILE IS TO REMAIN FOR MORE THAN 14 DAYS, IT SHALL BE STABILIZED BY TEMPORARY VEGETATIVE MEASURE, OR MULCH.

2 TEMPORARY STOCK PILE
NOT TO SCALE

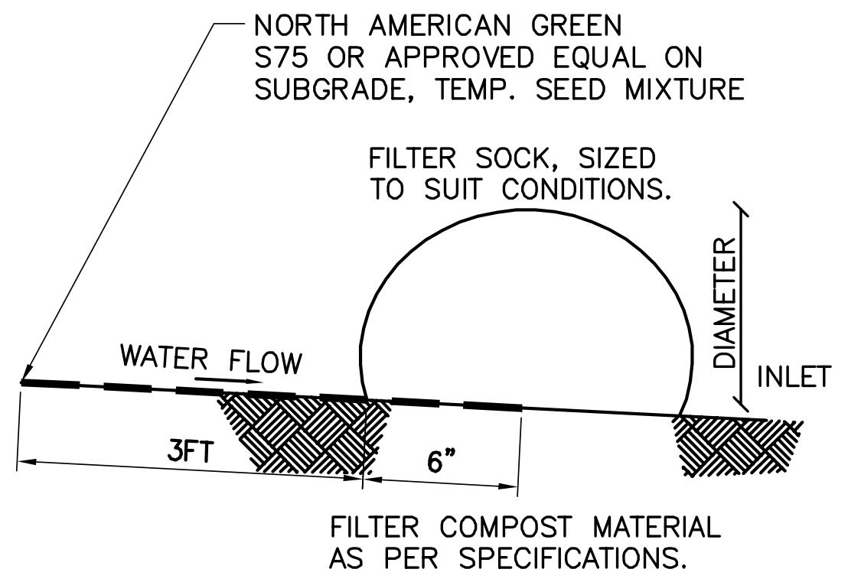


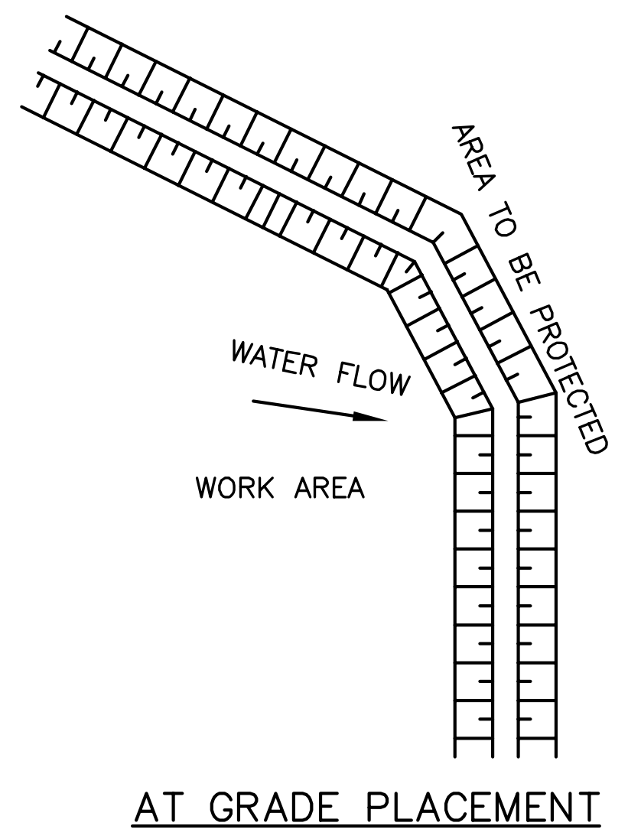
MAINTENANCE NOTES:

1. ALL CONCRETE WASHOUT FACILITIES SHALL BE INSPECTED DAILY. DAMAGED OR LEAKING FACILITATES SHALL BE DEACTIVATED AND REPAIRED OR REPLACED IMMEDIATELY. EXCESS RAINWATER THAT HAS ACCUMULATED OVER HARDENED CONCRETE SHALL BE PUMPED TO A STABILIZED AREA SUCH AS A GRASS FILTER STRIP.
2. 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.
3. DISPOSAL OF THE HARDENED MATERIAL SHALL BE OFF–SITE IN A CONSTRUCTION/DEMOLITION LANDFILL.
4. THE PLASTIC LINER SHALL BE REPLACED WITH EACH CLEANING OF THE WASHOUT FACILITY.
5. INSPECT THE PROJECT SITE FREQUENTLY TO ENSURE THAT NO CONCRETE DISCHARGES ARE TAKING PLACE IN NON–DESIGNATED AREAS.
6. LOCATION(S) TO BE DETERMINED IN THE FIELD BY THE OWNER'S REPRESENTATIVE
7. CONCRETE WASHOUTS SHALL NOT BE LOCATED WITHIN 200' OF ANY KNOWN WELL.

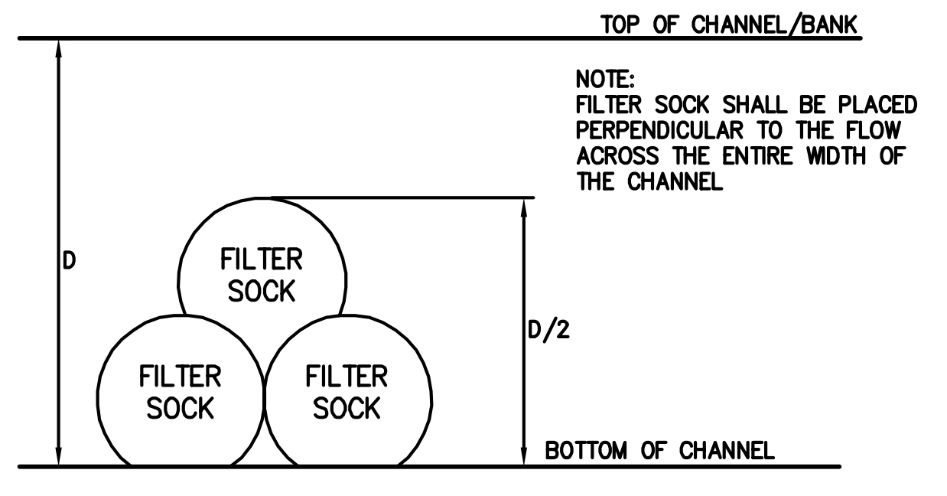
3 CONCRETE WASHOUT AREA
SCALE: N.T.S.

TYPICAL BERM FOR MINIMAL GRADES SHOWN. FOR STEEPER GRADES, I.E. 2:1 SLOPES INCREASE BERM SIZE AS DETERMINED ON SITE BY REPRESENTATIVE.

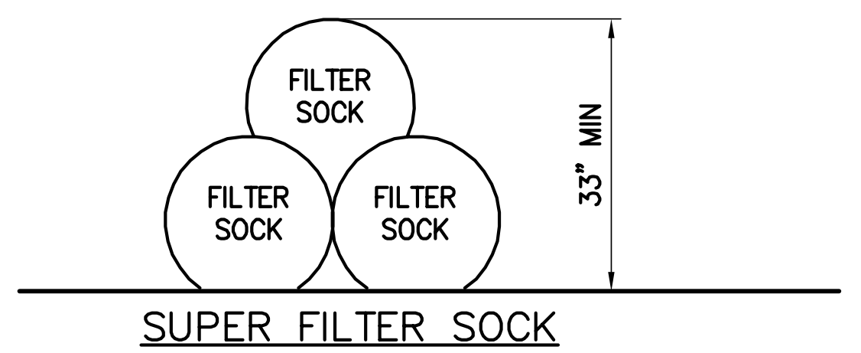




AT GRADE PLACEMENT



CHANNEL PLACEMENT

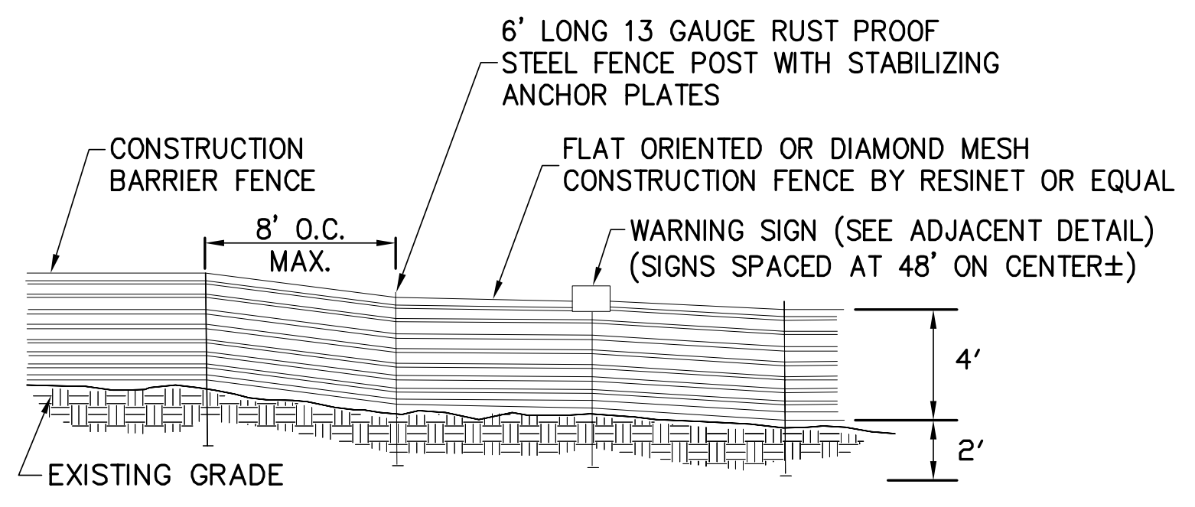


SUPER FILTER SOCK

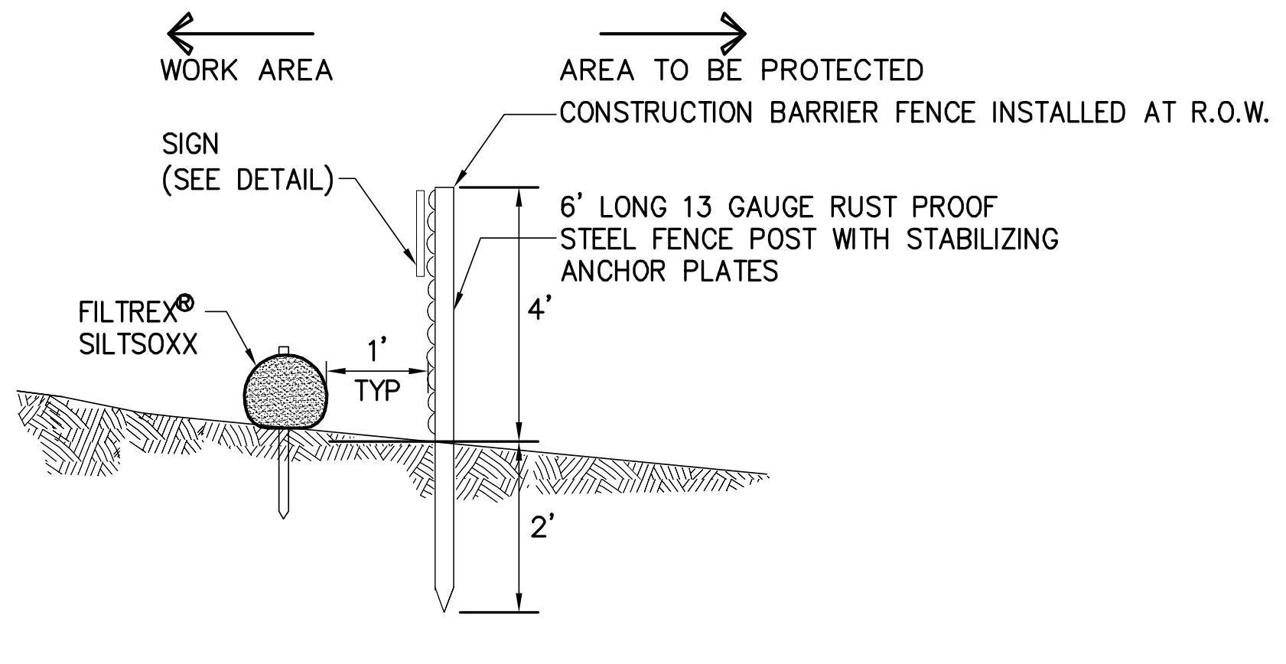
NOTES:

1. ALL MATERIAL TO MEET MANUFACTURER SPECIFICATIONS.
2. ALL FILTER SOCKS SHALL BE 12" DIAMETER UNLESS INDICATED OTHERWISE.
3. THE CONTRACTOR SHALL MAINTAIN THE COMPOST FILTER BERM IN A FUNCTIONAL CONDITION AT ALL TIMES AND IT SHALL BE ROUTINELY INSPECTED.
4. WHERE THE BERM REQUIRES REPAIR, IT WILL BE ROUTINELY REPAIRED.
5. THE CONTRACTOR SHALL REMOVE SEDIMENTS COLLECTED AT THE BASE OF THE BERM WHEN THEY REACH 1/3 OF THE EXPOSED HEIGHT OF THE BERM, OR AS DIRECTED BY THE REPRESENTATIVE.
6. THE COMPOST FILTER BERM WILL BE DISPERSED ON SITE WHEN NO LONGER REQUIRED, AS DETERMINED BY THE REPRESENTATIVE.
7. INSTALL PERPENDICULAR TO FLOW.

4 COMPOST FILTER SOCK DETAIL
NOT TO SCALE

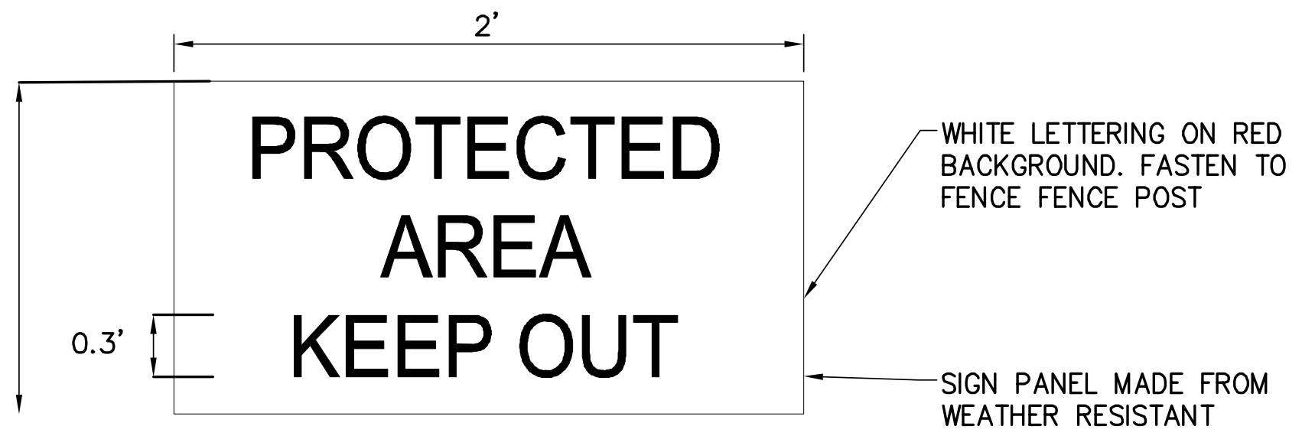


ELEVATION



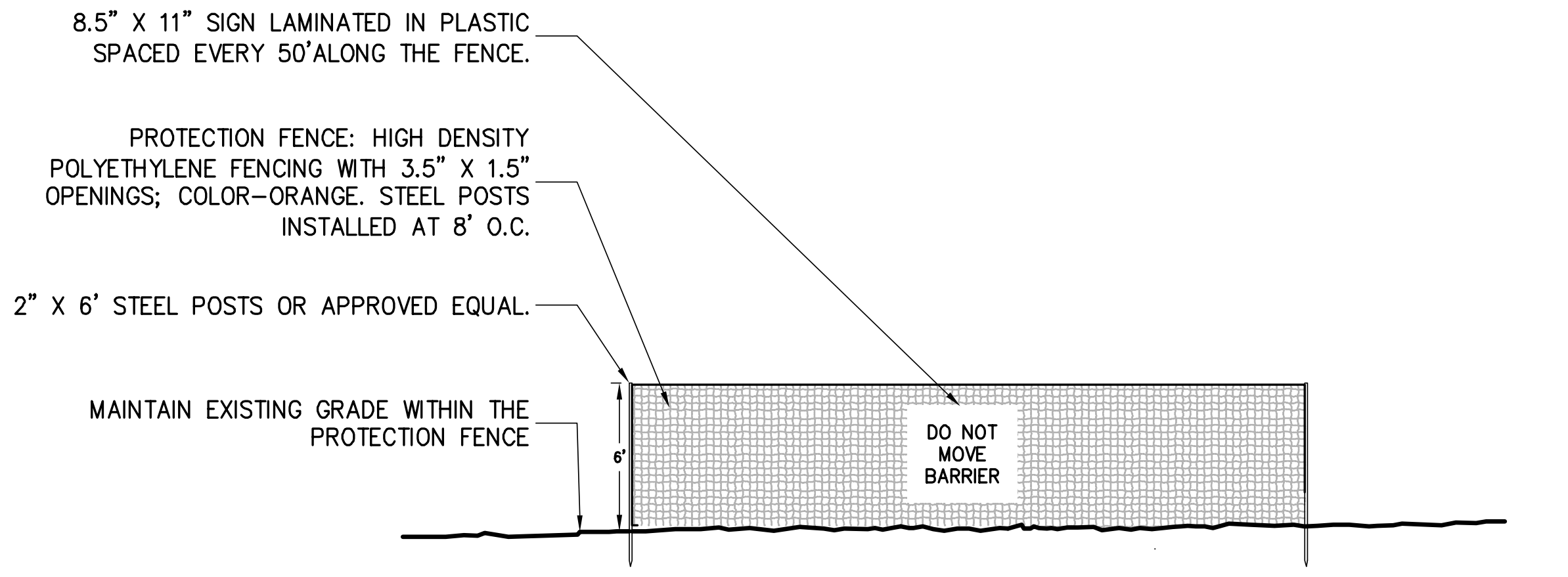
SECTION

1. CONSTRUCTION BARRIER FENCE SHALL BE INSTALLED IN THE LOCATIONS SHOWN ON THE PLANS PRIOR TO BEGINNING ANY WORK ADJACENT TO THESE AREAS.
2. THE CONTRACTOR SHALL INSTALL AT THE BEGINNING OF THE CONTRACT, AND MAINTAIN THROUGHOUT ITS DURATION.
3. SET BOTTOM OF CONSTRUCTION BARRIER FENCE FLUSH WITH EXISTING GRADE.
4. CONSTRUCTION BARRIER FENCE SHALL HAVE A MINIMUM TENSILE STRENGTH OF 2000 PSI.



WARNING SIGN DETAIL

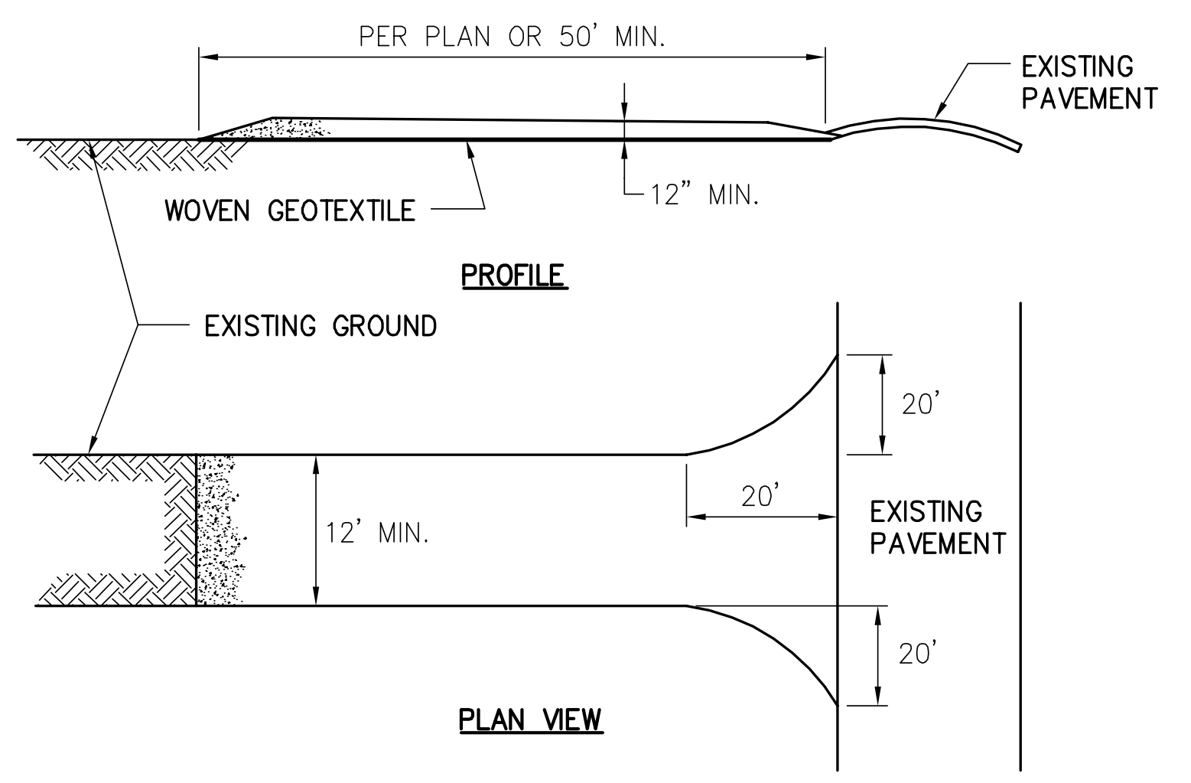
5 WETLAND PROTECTION FENCE
SCALE: N.T.S.



NOTES:

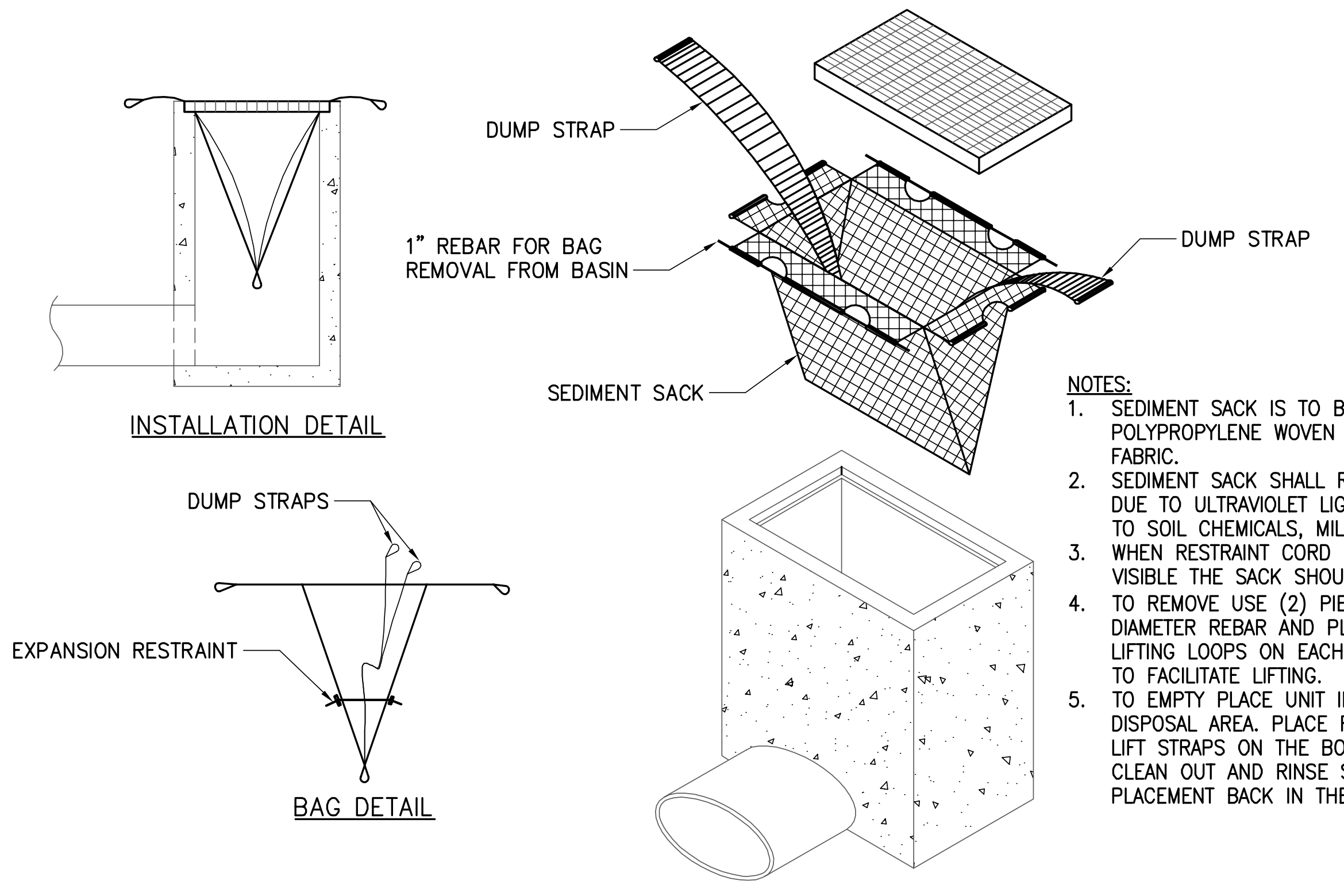
1. CONTRACTOR TO MAINTAIN INTEGRITY OF CONSTRUCTION FENCE FOR DURATION OF PROJECT.
2. NO EQUIPMENT SHALL OPERATE INSIDE THE PROTECTIVE FENCING INCLUDING DURING FENCE INSTALLATION AND REMOVAL.

6 PROTECTED AREA FENCE
NOT TO SCALE



1. STONE SIZE–USE AASHTO M43 SIZE 3 COARSE AGGREGATE, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH – NOT LESS THAN 50 FEET (EXCEPT ON A SINGLE RESIDENCE LOT WHERE A 30 FOOT MINIMUM LENGTH WOULD APPLY).
3. THICKNESS – NOT LESS THAN 12".
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 ACCESS TO SITE.
5. WOVEN GEOTEXTILE FABRIC WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
6. EXISTING ROAD SIDE DRAINAGE SHALL BE MAINTAINED.
7. SURFACE WATER – ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED BENEATH THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
8. MAINTENANCE–THE ACCESS SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS–OF–WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT OR STONE SPILLED, DROPPED, WASHED, OR TRACKED ONTO PUBLIC RIGHTS–OF–WAY MUST BE REMOVED IMMEDIATELY.
9. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON A AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
10. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.

7 STABILIZED CONSTRUCTION ACCESS
SCALE: N.T.S.



NOTES:

1. SEDIMENT SACK IS TO BE MADE WITH A POLYPROPYLENE WOVEN MONOFILAMENT FABRIC.
2. SEDIMENT SACK SHALL RESIST DEGRADATION DUE TO ULTRAVIOLET LIGHT, BE RESISTANT TO SOIL CHEMICALS, MILDEW AND INSECTS.
3. WHEN RESTRAINT CORD IS NO LONGER VISIBLE THE SACK SHOULD BE EMPTIED.
4. TO REMOVE USE (2) PIECES OF 1" DIAMETER REBAR AND PLACE THROUGH THE LIFTING LOOPS ON EACH SIDE OF THE SACK TO FACILITATE LIFTING.
5. TO EMPTY PLACE UNIT IN APPROVED DISPOSAL AREA. PLACE REBAR THROUGH THE LIFT STRAPS ON THE BOTTOM AND LIFT. CLEAN OUT AND RINSE SACK PRIOR TO PLACEMENT BACK IN THE BASIN.

8 INLET PROTECTION DETAIL
SCALE: N.T.S.

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Gouvernor Kathy Hochul
Commissioner Pro Tempore Randy Simons

Architectural Consultant
BEYER BLINDER BELLE ARCHITECTS & PLANNERS
120 BROADWAY, 20TH FLOOR, NEW YORK, NY 10271

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THORNTON TOMASETTI
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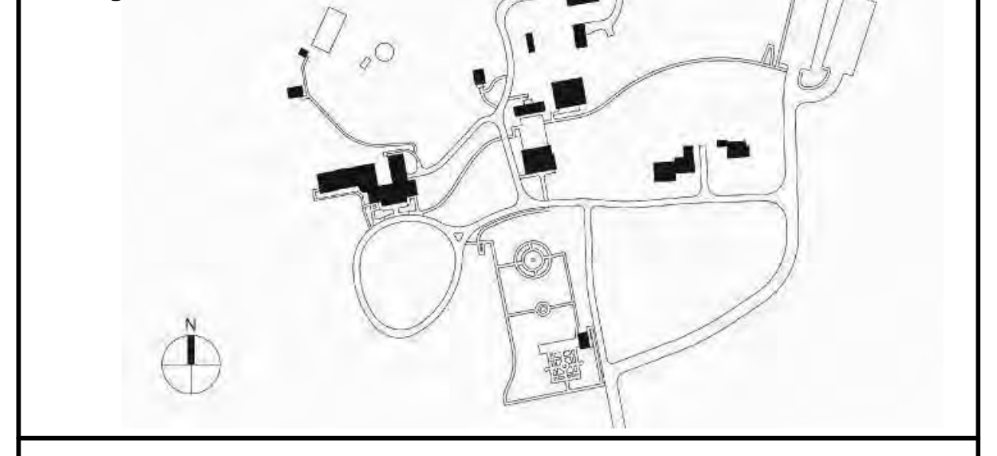

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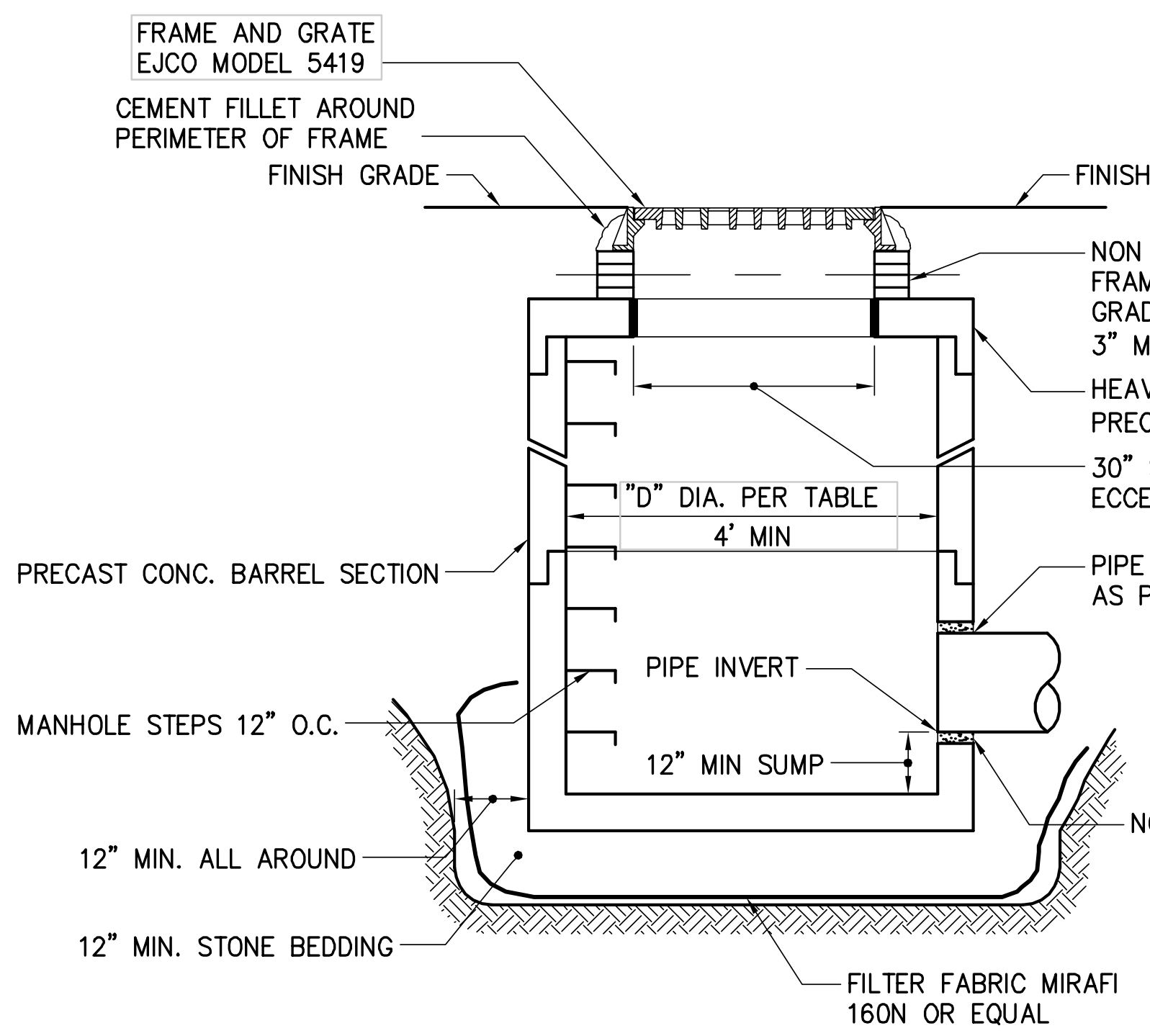
Drawn By: HB
Design By: JJE
Checked By: JJE
Approved By: SKB
DATE: 04/10/24

Seal and Signature

Sheet Title
DETAILS (2 OF 5)

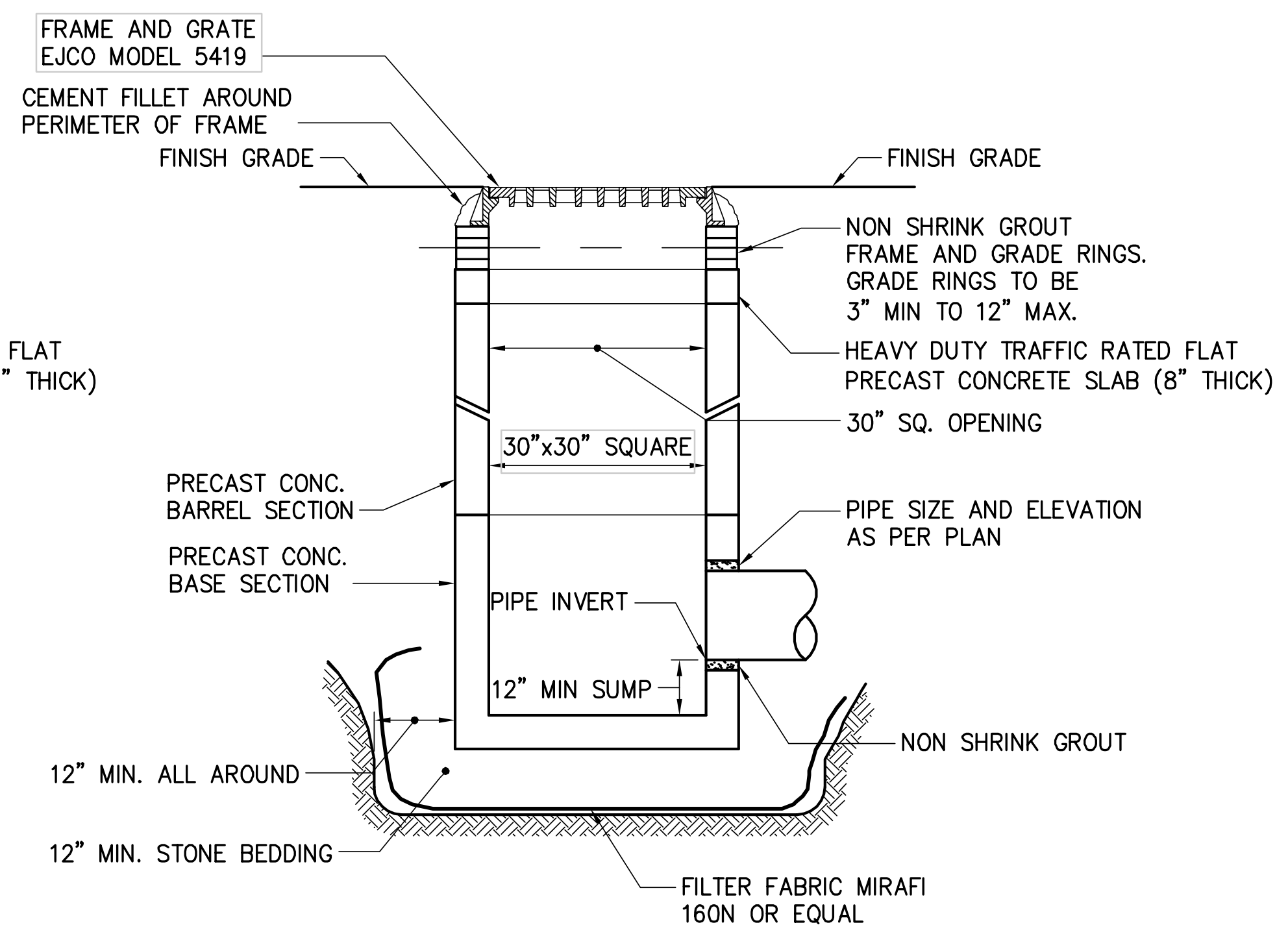
Drawing Number
C-601

Project Number: D006292
Sheet: XXX of 367



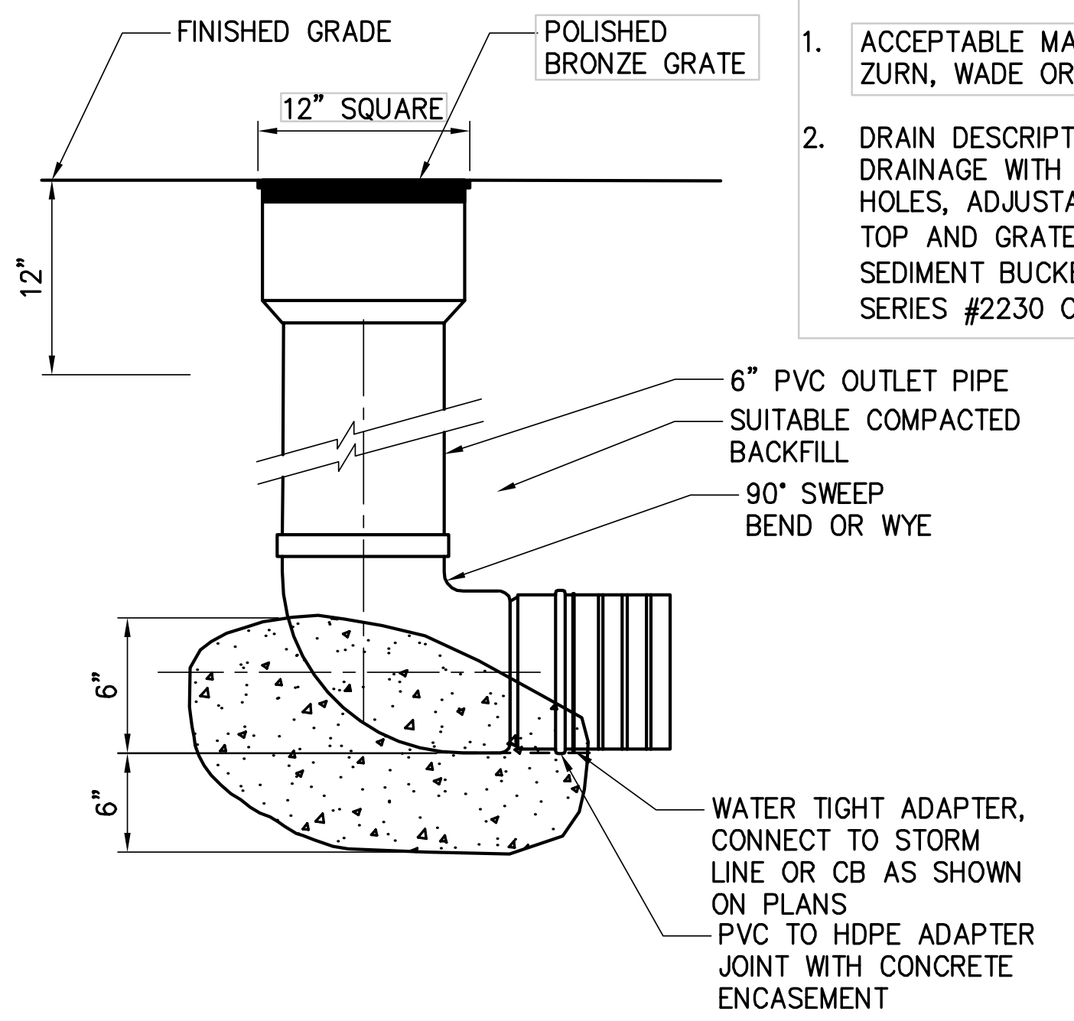
1 ROUND PRECAST CONCRETE STORM MANHOLE DETAIL

SCALE: N.T.S.



2 30"x30" CATCH BASIN DETAIL

SCALE: N.T.S.

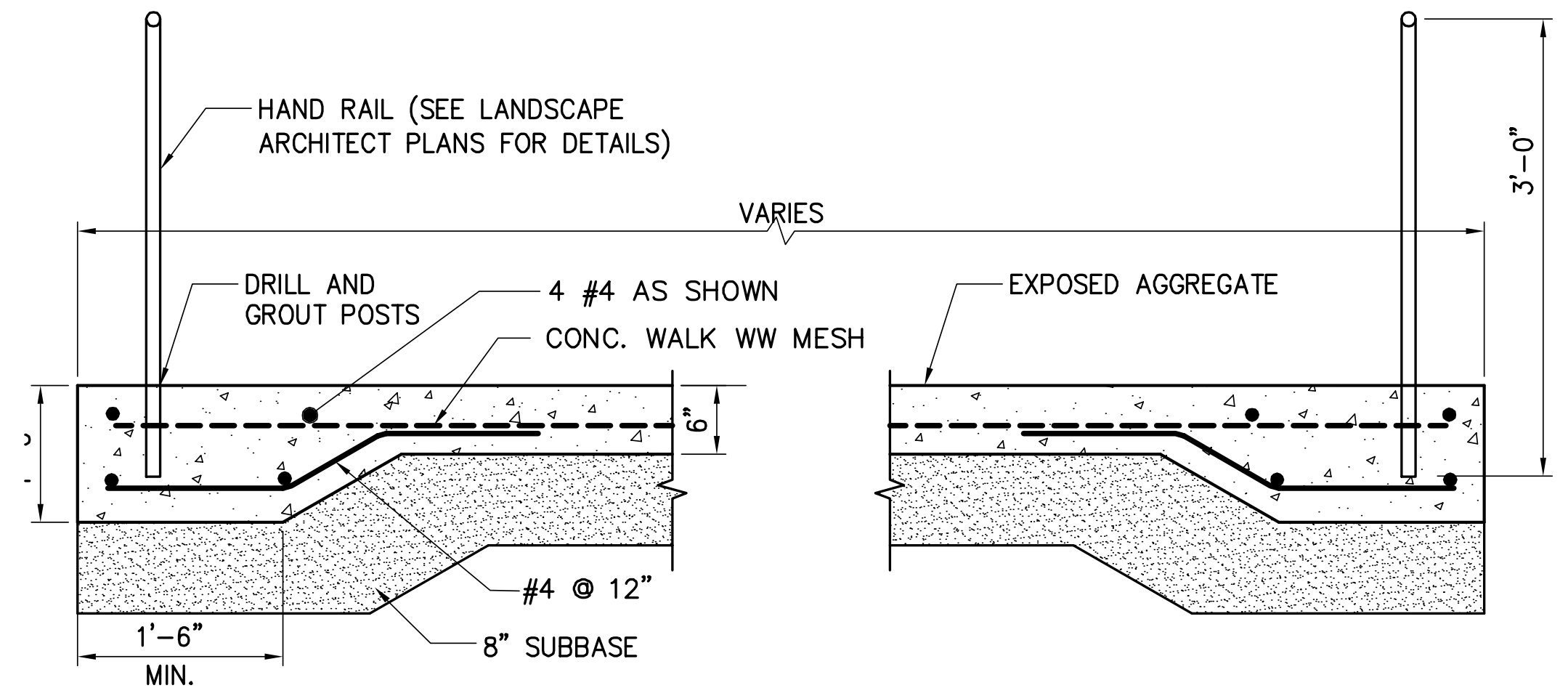


NOTES:

1. ACCEPTABLE MANUFACTURERS: JAY R. SMITH, JOSAM, ZURN, WADE OR APPROVED EQUAL.
2. DRAIN DESCRIPTION: TYPE C: CAST IRON NON-CLOG DRAINAGE WITH DOUBLE DRAINAGE FLANGE AND WEEP HOLES, ADJUSTABLE COLLAR BOTTOM OUTLET, SQUARE TOP AND GRATE, (POLISH BRONZE TOP) REMOVABLE SEDIMENT BUCKET WITH STRAINER RIM. (JAY R. SMITH SERIES #2230 OR APPROVED EQUIVALENT)

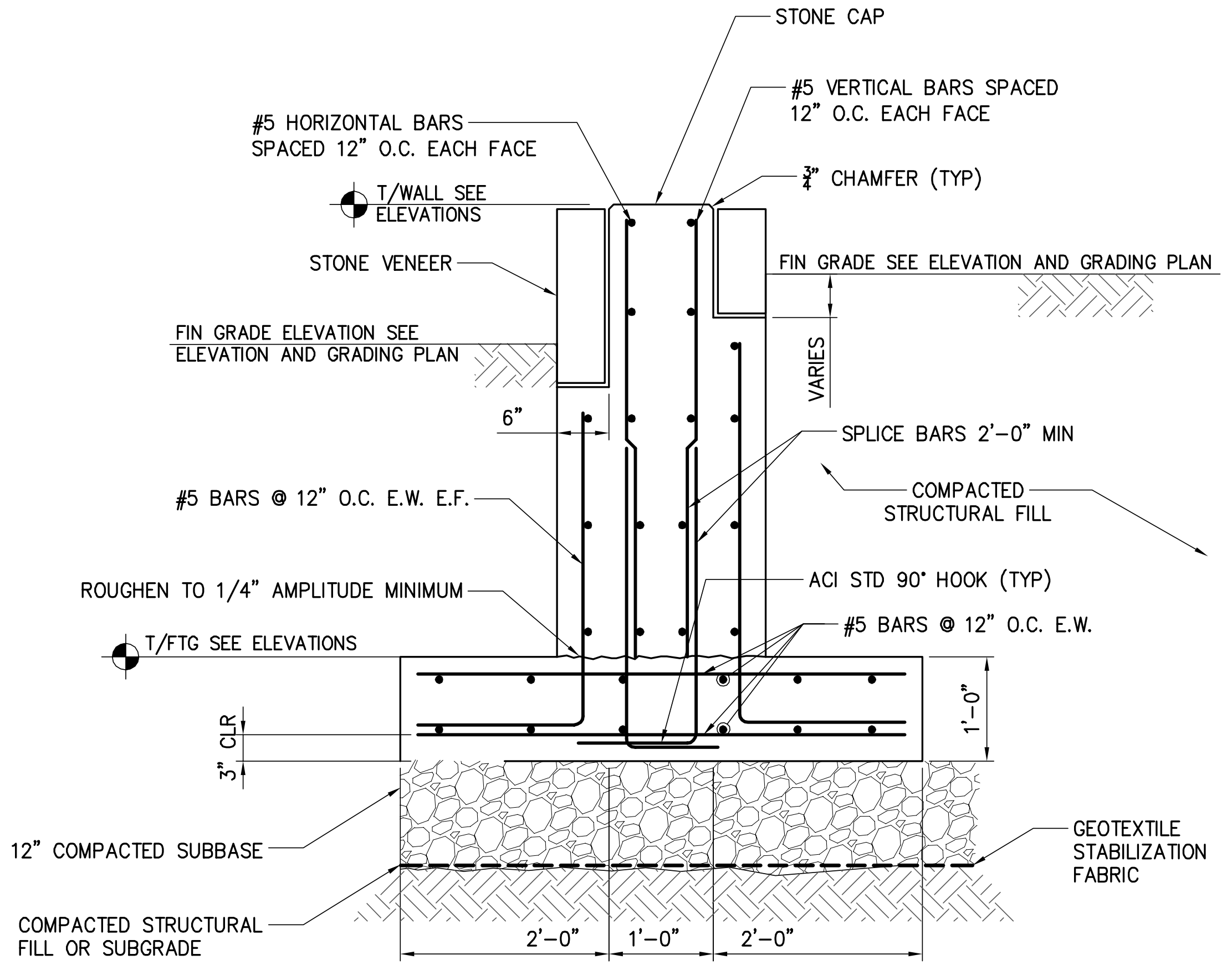
3 AREA DRAIN

NOT TO SCALE



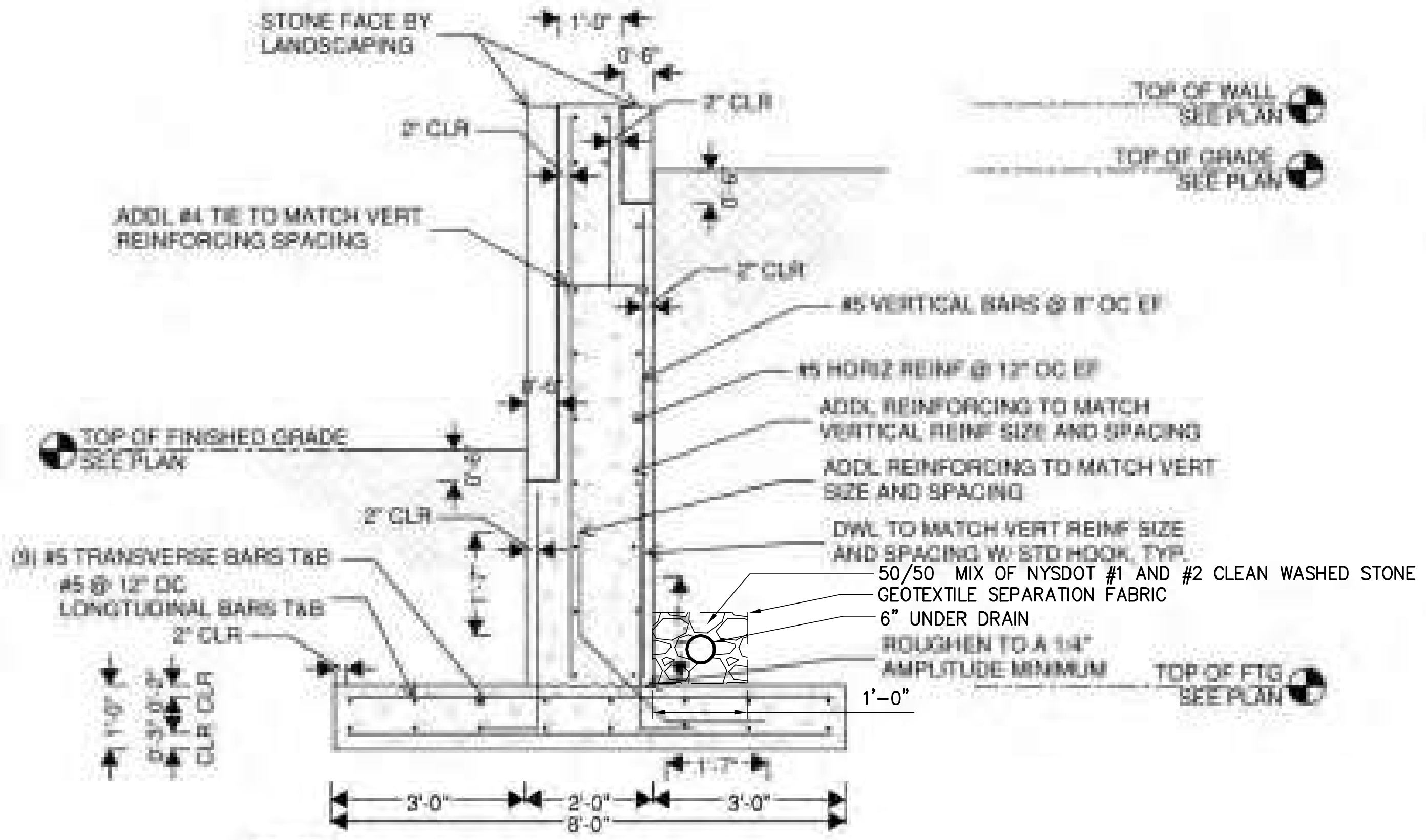
4 CONCRETE RAMP SECTION

NOT TO SCALE



5 RETAINING WALL – 1 SECTION

NOT TO SCALE

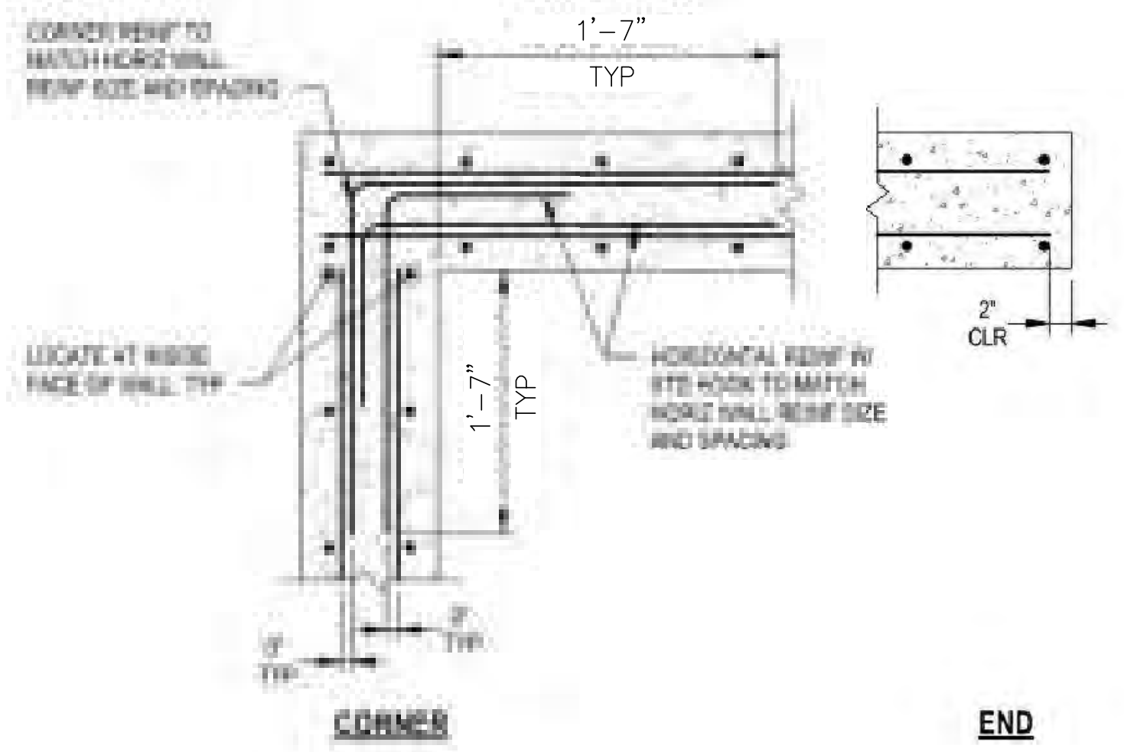


NOTES:

1. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 5,000 PSI @ 28 DAYS, MAX AGGREGATE 3/4".
2. ALL CONCRETE SHALL HAVE A SLUMP OF NO GREATER THAN 4" (WITH A TOLERANCE OF 1").
3. ALL CONCRETE SHALL HAVE A 6% ENTRAINED AIR (WITH A TOLERANCE OF 1%) CONFORMING WITH ASTM C260.
4. ALL CONCRETE SHALL HAVE A MAXIMUM WATER TO CEMENT RATIO OF 0.45.

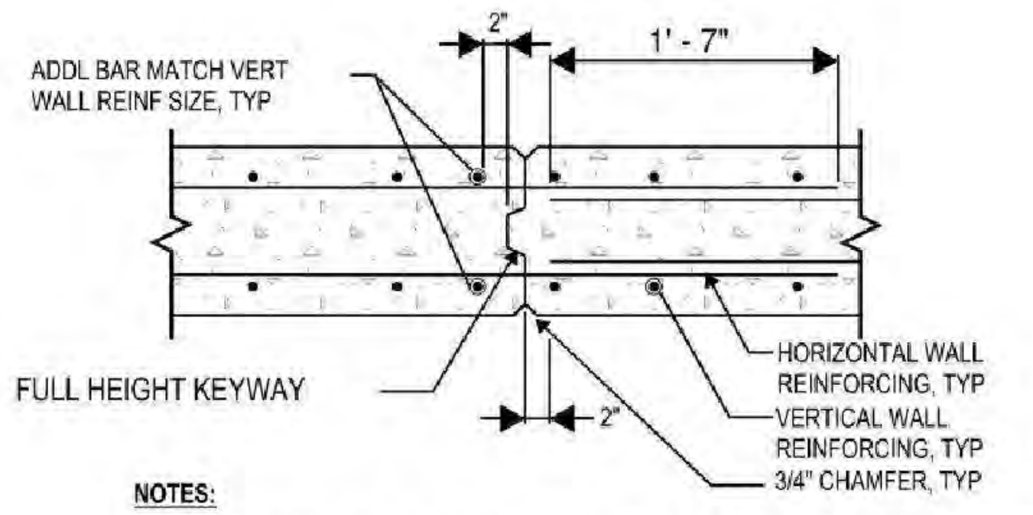
6 RETAINING WALL – 2 SECTION

NOT TO SCALE



7 TYPICAL HORIZONTAL WALL REINFORCEMENT DETAIL (PLAN)

SCALE: 3/4"=1'-0"

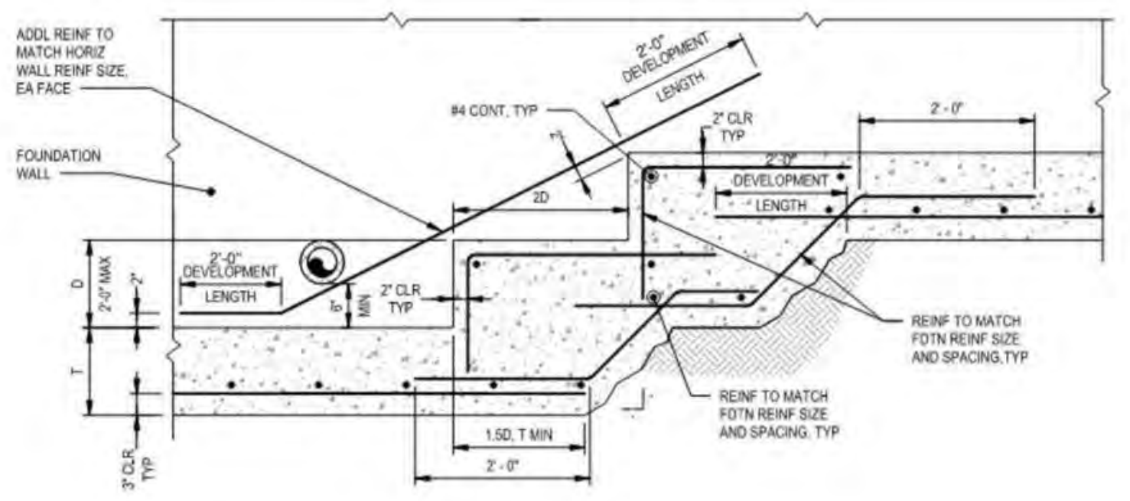


NOTES:

1. LOCATE WALL CONSTRCUTION JOINTS AT 60'-0" OC MAXIMUM, UNLESS NOTED OTHERWISE ON PLANS.
2. LOCATE JOINTS FURTHER THAN 5'-0" FROM ENDS.
3. COORDINATE JOINT LOCATION WITH VENEER CONTROL/EXPANSION JOINTS.

8 TYPICAL WALL CONSTRUCTION JOINT DETAIL

SCALE: N.T.S.

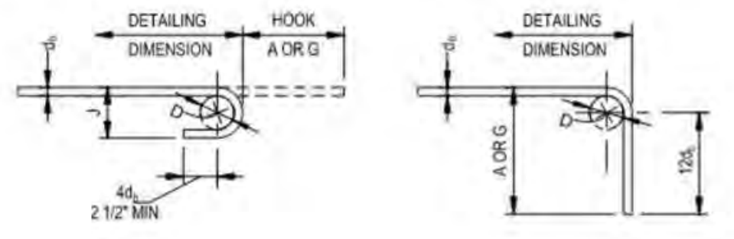


9 TYPICAL STEP FOOTING DETAIL

SCALE: N.T.S.

STANDARD HOOK FOR PRIMARY REINFORCEMENT

BAR SIZE, d_b	INSIDE BEND DIAMETER, D	180° HOOKS		90° HOOKS
		A OR G	J	A OR G
#3	2 1/4"	5"	3"	6"
#4	3"	6"	4"	8"
#5	3 3/4"	7"	5"	10"
#6	4 1/2"	8"	6"	12"
#7	5 1/4"	10"	7"	14"
#8	6"	11"	8"	16"
#9	9 1/2"	15"	11 3/4"	19"
#10	10 3/4"	17"	13 1/4"	22"
#11	12"	19"	14 3/4"	24"
#14	18 1/4"	27"	21 3/4"	31"
#18	24"	36"	28 1/2"	41"



10 TYPICAL STANDARD END HOOK FOR PRIMARY REINFORCEMENT

SCALE: N.T.S.

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BEYER BLINDER BELLE ARCHITECTS & PLANNERS
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38 EAST 32ND STREET, 11TH FLOOR, NEW YORK, NY 10016

Signage Consultant
LVCK - A BEYER BLINDER BELLE STUDIO
120 BROADWAY, 20TH FLOOR, NEW YORK, NY 10271

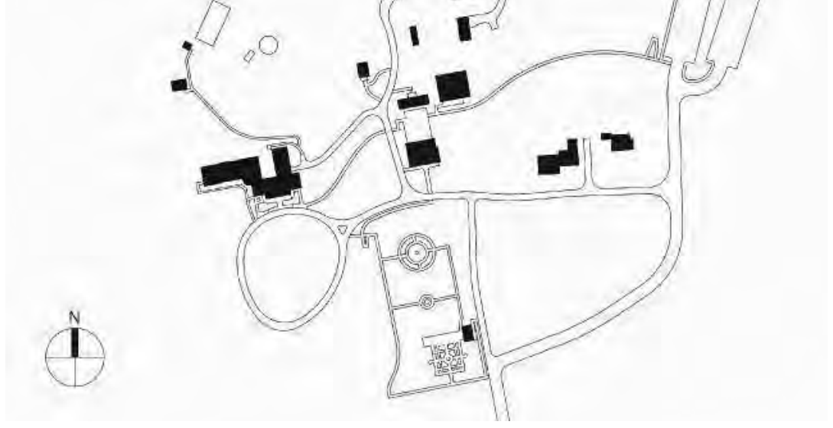
NYS OPRHP Taconic Region
9 Old Post Rd, PO Box 308
Staatsburg, NY 12580
(845) 889 - 4100

Regional Director: Linda Cooper
Capital District Manager: Garrett Jobson

Project Title:
John Jay Homestead Site And Building Enhancements

Project Location:
Katonah
NY 10536

Key Plan



REVISIONS

Rev No	Description	Date:
1	SCHEMATIC DESIGN SUBMISSION	10/2/2023
2	DESIGN DEVELOPMENT SUBMISSION	1/31/2024
3	PROGRESS CD SUBMISSION	4/10/2024

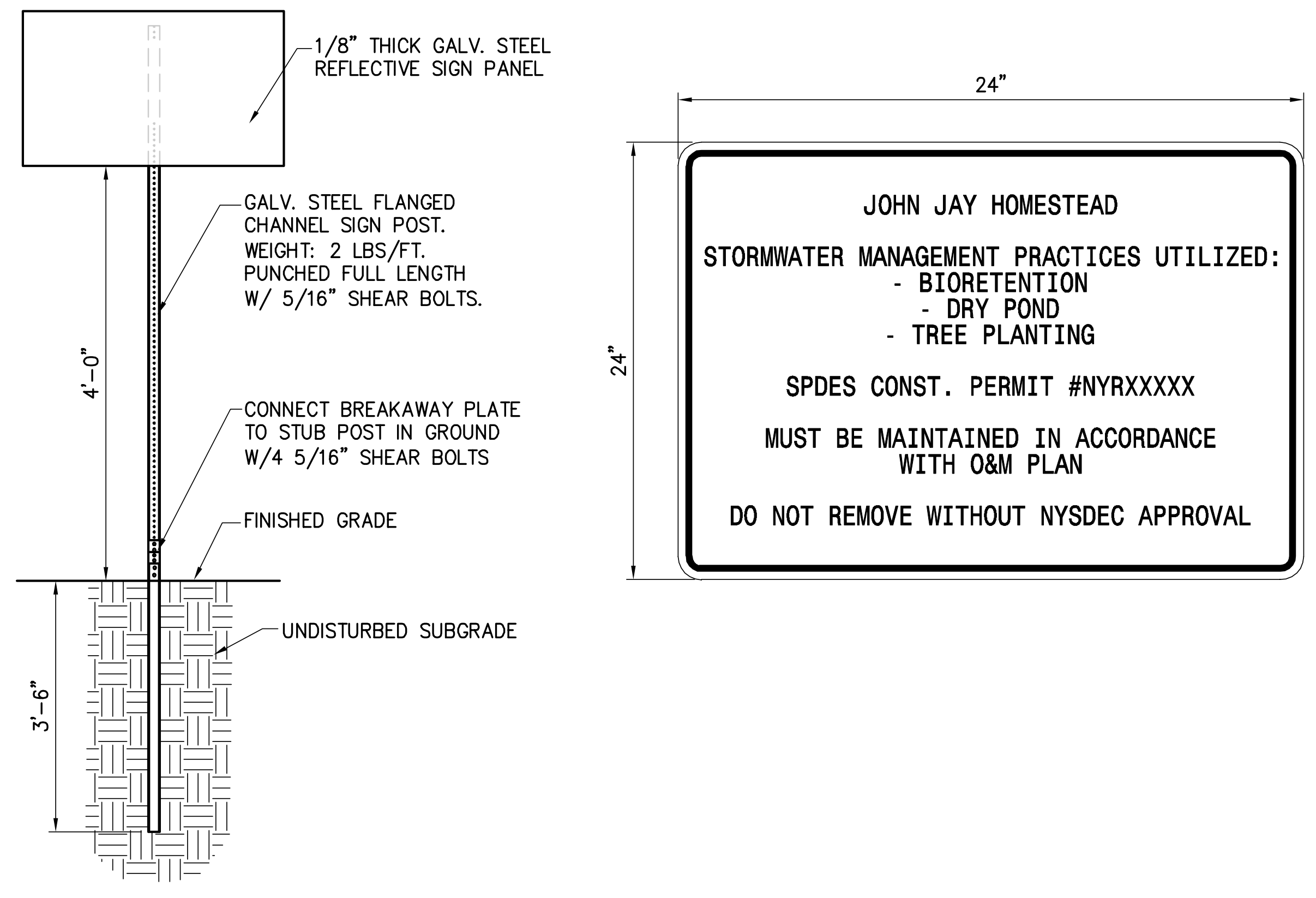
Drawn By: HB
Design By: JJE
Checked By: JJE
Approved By: SKB
DATE: 04/10/24

Seal and Signature

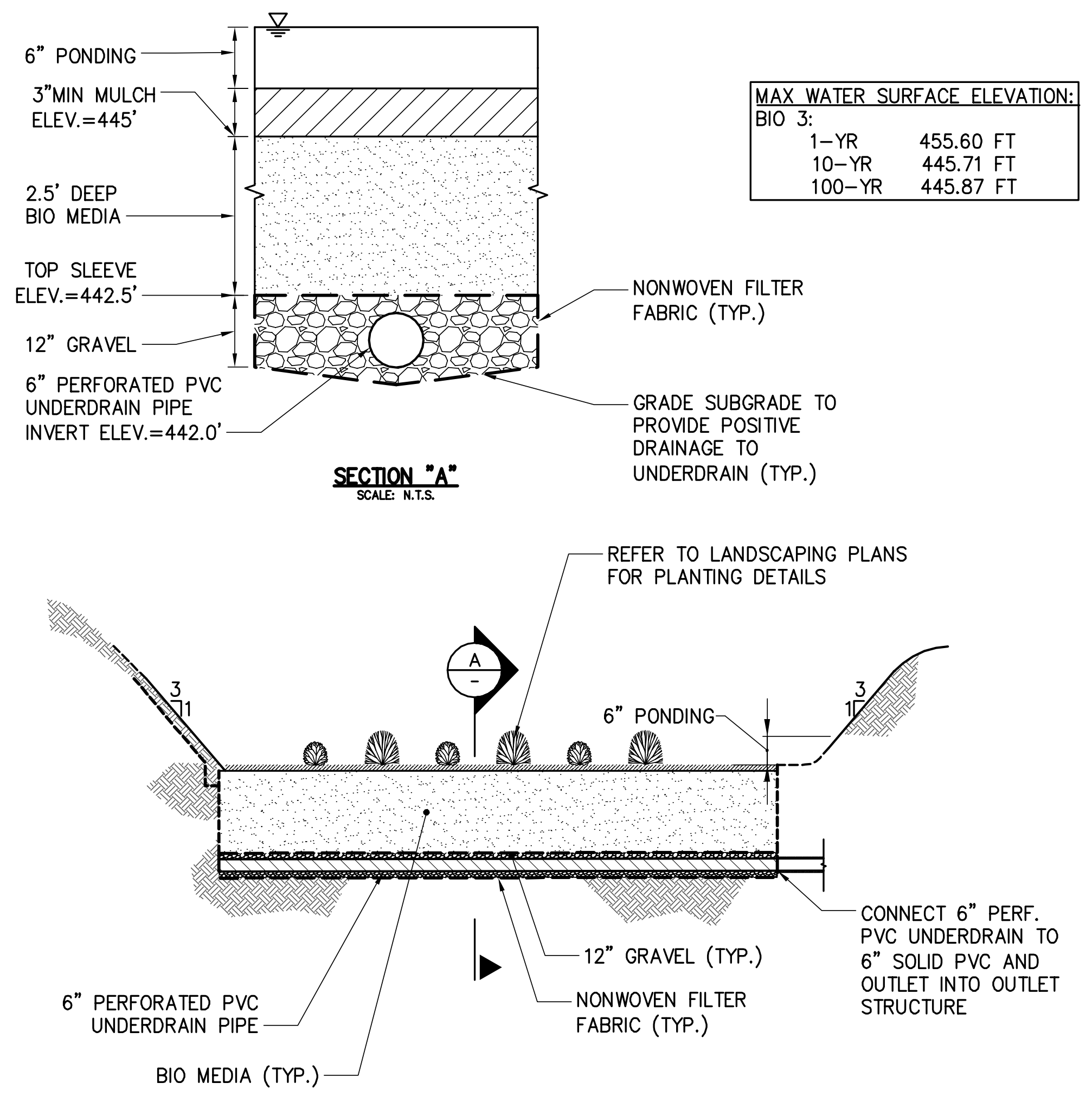
Sheet Title
DETAILS (3 OF 5)

Drawing Number
C-602

Project Number: D006292
Sheet: XXX of 367



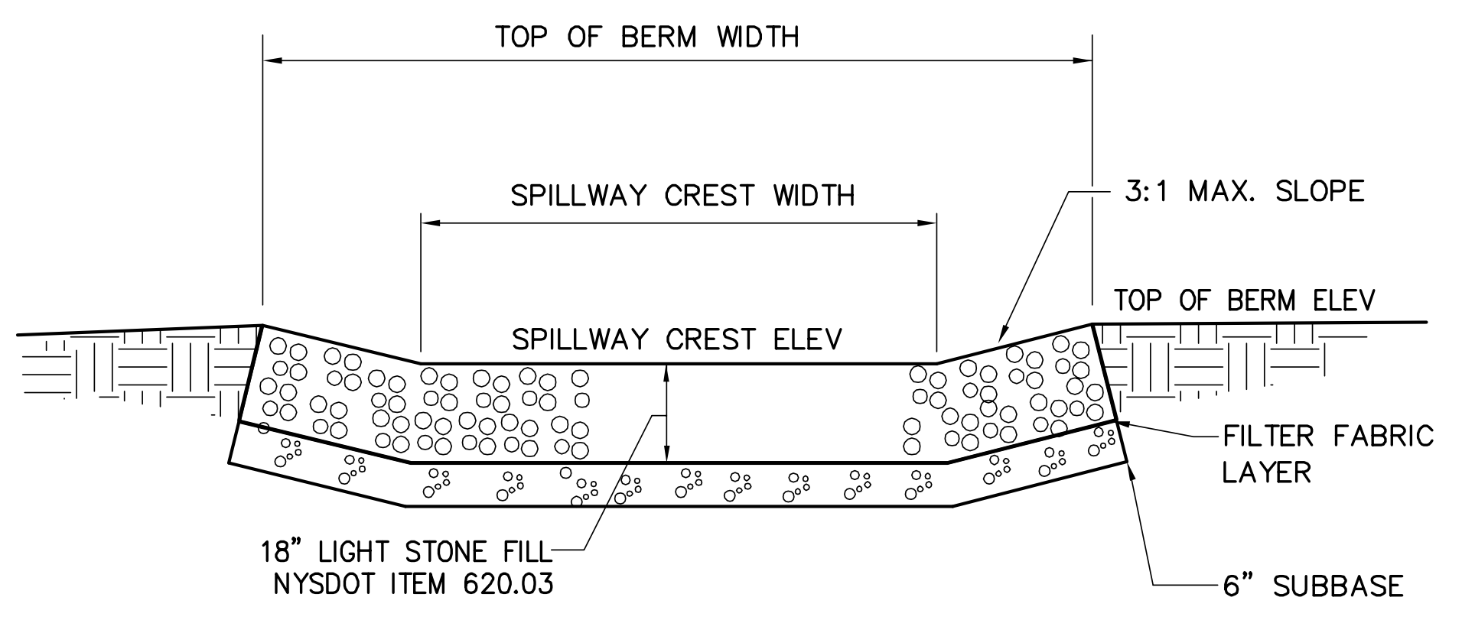
1 STORMWATER MANAGEMENT SIGN DETAIL
SCALE: N.T.S.



MAX WATER SURFACE ELEVATION:
BIO 3:

1–YR	455.60 FT
10–YR	445.71 FT
100–YR	445.87 FT

2 BIORETENTION AREA 3
SCALE: NO SCALE

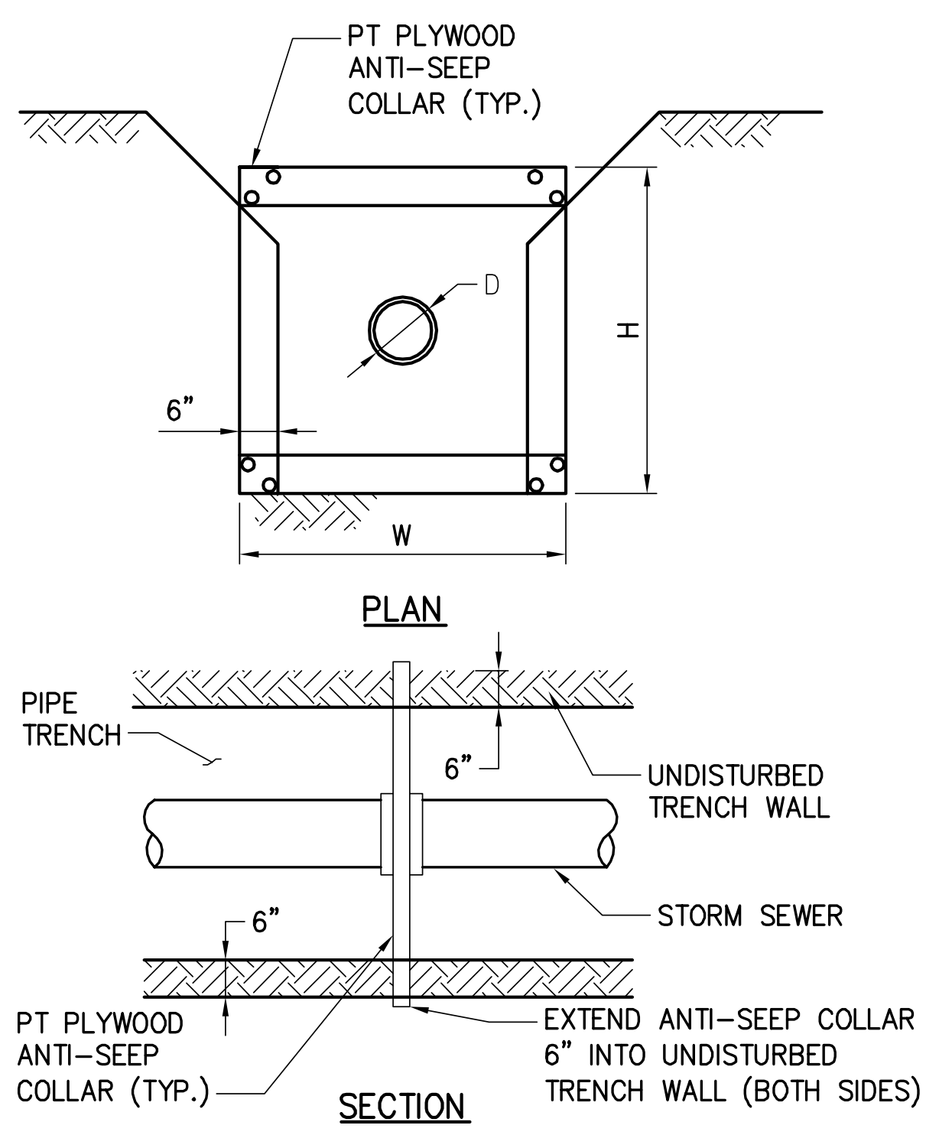


NOTE: EMERGENCY SPILLWAY SHALL BR GROUTED IN PLACE.

SPILLWAY DESIGN DATA

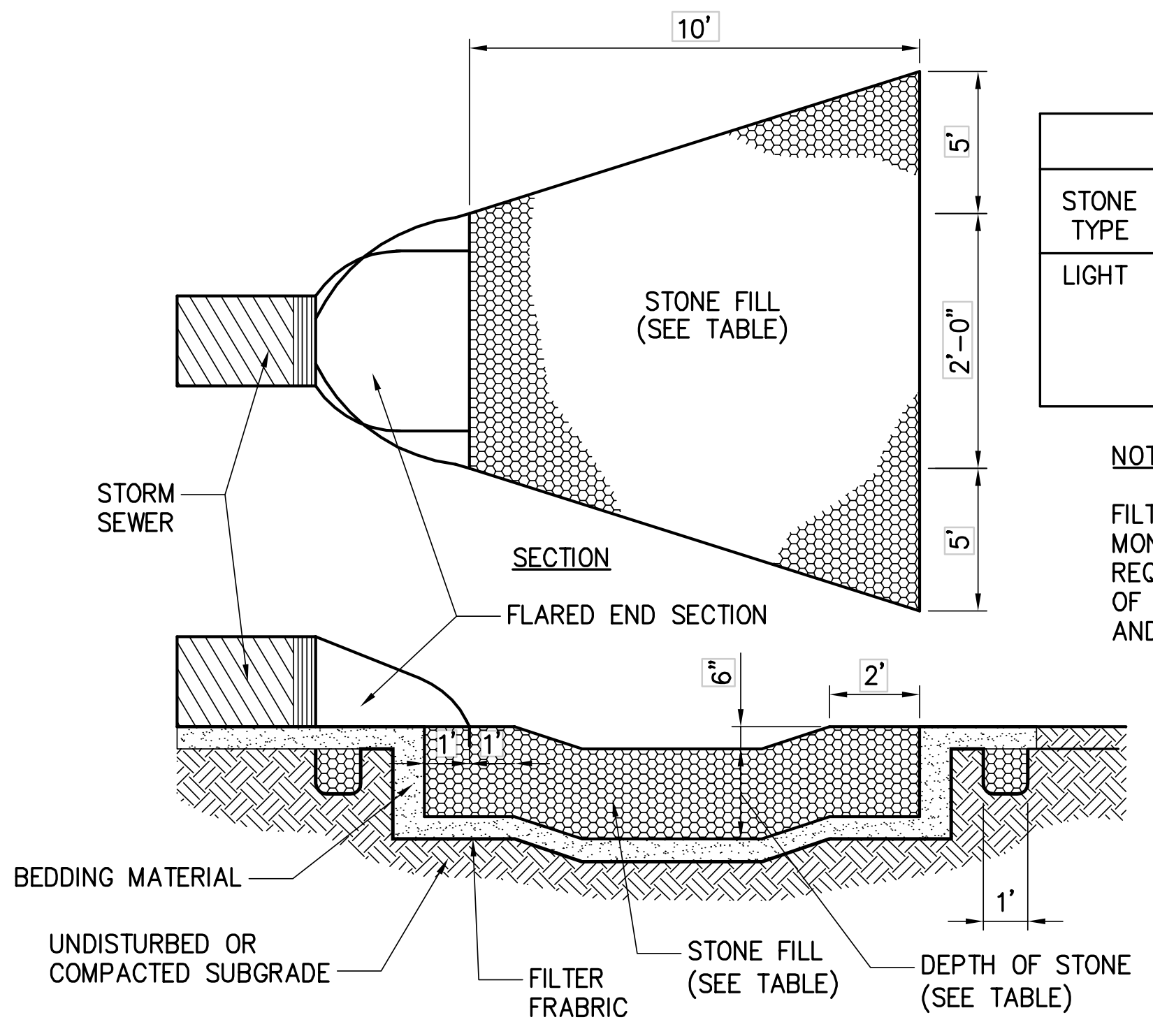
	CREST ELEV (FT)	CREST WIDTH (FT)	TOP ELEV (FT)	TOP WIDTH (FT)
BIORETENTION AREA	443.5'	20.0	444.0'	23.0
DRY POND 1	444.0'	20.0	444.5'	23.0

3 BIORETENTION AND DRY POND 1 OVERFLOW SPILLWAYS
SCALE: N.T.S.



BIORET #	HEIGHT "H"	WIDTH "W"	PIPE DIAM. "D"	QUANTITY	SPACING
1	60"	60"	18"	1	22'
2	36"	36"	18"	1	12'

4 ANTI-SEEP COLLAR INSTALLATION
SCALE: N.T.S.



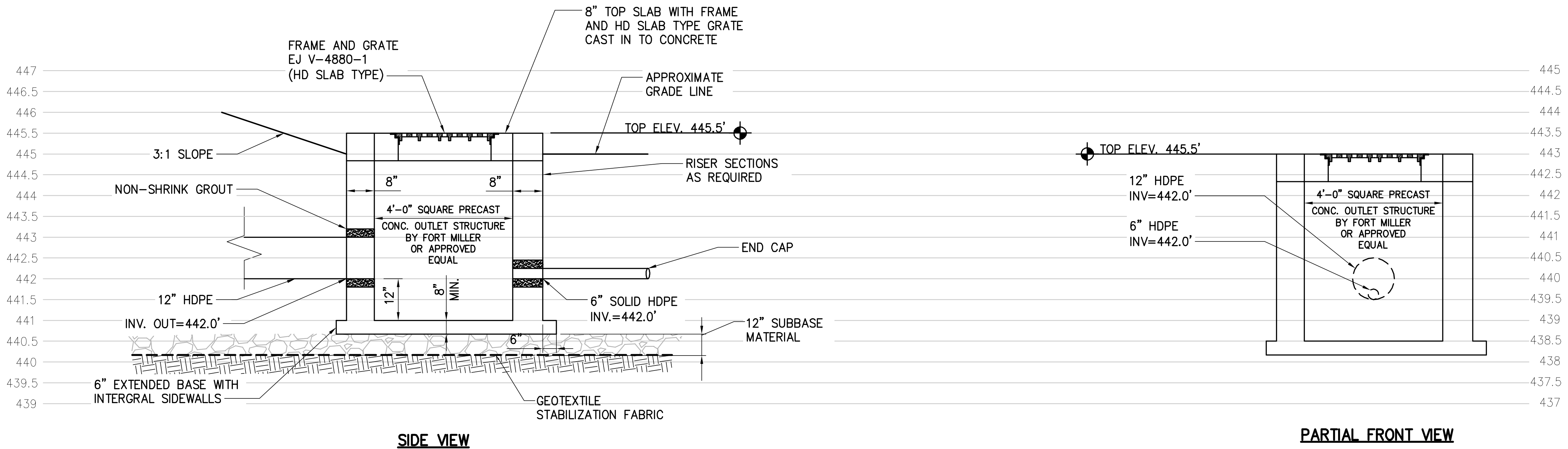
STONE SPECIFICATIONS

STONE TYPE	NYSDOT ITEM NO.	GRADATION DATA		DEPTH
LIGHT	620.03	LIGHTER THAN 110 LBS.	90–100%	1.5 FT
		LARGER THAN 6"	50–100%	
		SMALLER THAN 1/2"	0–10%	

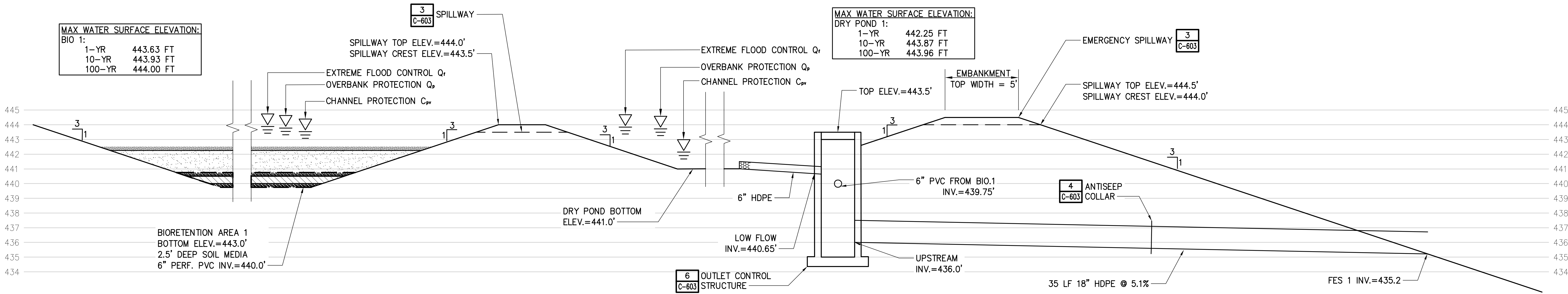
NOTES:

FILTER FABRIC CAN BE WOVEN OR NON-WOVEN MONOFILAMENT YARNS, AND SHALL MEET THESE BASE REQUIREMENTS: THICKNESS 20-60 MILS, GRAB STRENGTH OF 90-120 LBS; AND SHALL CONFORM TO ASTM D-1777 AND ASTM D-1682.

4 ROCK OUTLET PROTECTION
SCALE: N.T.S.



5 OUTLET CONTROL STRUCTURE 3
SCALE: N.T.S.



MAX WATER SURFACE ELEVATION:
BIO 1:

1–YR	443.63 FT
10–YR	443.93 FT
100–YR	444.00 FT

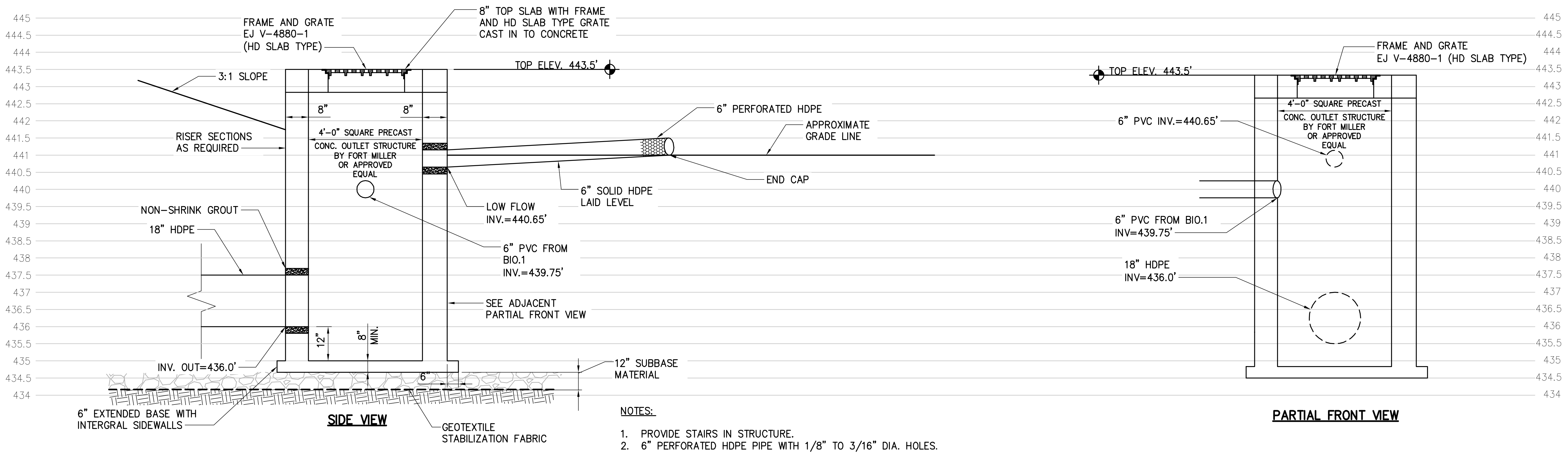
MAX WATER SURFACE ELEVATION:
DRY POND 1:

1–YR	442.25 FT
10–YR	443.87 FT
100–YR	443.96 FT

POND EMBANKMENT NOTES:

1. THE GROUND SURFACE LOCATED BELOW THE EMBANKMENT SHALL BE STRIPPED OF ALL VEGETATION, ORGANIC OR OTHERWISE OBJECTIONABLE MATERIAL.
2. AFTER STRIPPING, THE IN-PLACE MATERIAL SHOULD BE MOISTENED, IF DRY, AND COMPACTED BEFORE PLACEMENT OF THE FIRST LAYER OF EMBANKMENT MATERIAL.
3. INCLUSION OF VEGETATION, ORGANIC MATERIALS OR FROZEN SOIL IN THE EMBANKMENT IS PROHIBITED.
4. THE EMBANKMENT MATERIAL SHALL BE PLACED IN 1' MAXIMUM LIFTS.
5. EACH LIFT WILL BE COMPACTED TO 90% OF THE MAXIMUM DRY DENSITY AS ESTABLISHED BY A MODIFIED PROCTOR COMPACTION TEST.
6. THE MATERIAL BEING USED FOR THE EMBANKMENT SHALL BE FREE OF ROOTS, WOODY VEGETATION, OVERSIZED STONES, ROCKS OR OTHER OBJECTIONABLE MATERIALS.
7. EMBANKMENT SHALL BE CONSTRUCTED WITH RELATIVELY IMPERVIOUS SOILS, SUCH AS CLAYS.
8. BACKFILL AROUND CONDUITS WITHIN THE EMBANKMENT SHALL BE PLACED IN 4" LIFTS AND SHALL HAVE A MAXIMUM PARTICLE SIZE OF 3". IT SHALL ALSO MEET 90% COMPACTION.
9. THE SLOPES OF THE EMBANKMENT SHALL NEVER EXCEED 1(V) : 3(H).
10. AN ANTISEEP COLLAR IS TO BE INSTALLED AROUND THE CONDUITS PASSING THROUGH THE EMBANKMENT.

5 BIORETENTION AND DETENTION POND 1
NOT TO SCALE



NOTES:

1. PROVIDE STAIRS IN STRUCTURE.
2. 6" PERFORATED HDPE PIPE WITH 1/8" TO 3/16" DIA. HOLES.

6 OUTLET CONTROL STRUCTURE 1
SCALE: N.T.S.

New York State Parks, Recreation and Historic Preservation

Gouvernor Kathy Hochul
Commissioner Pro Tempore Randy Simons

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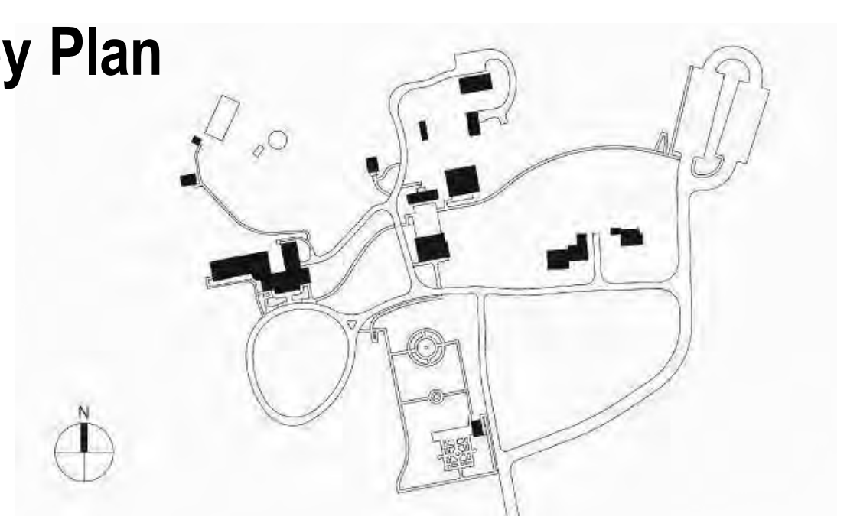

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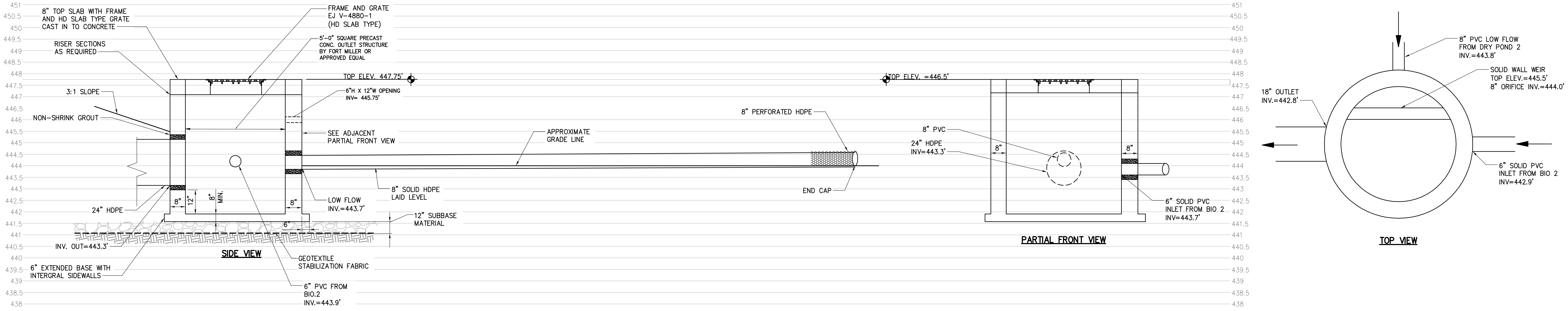
Drawn By: HB
Design By JJE
Checked By: JJE
Approved By: SKB
DATE 04/10/24
Seal and Signature

Sheet Title
DETAILS (4 OF 5)

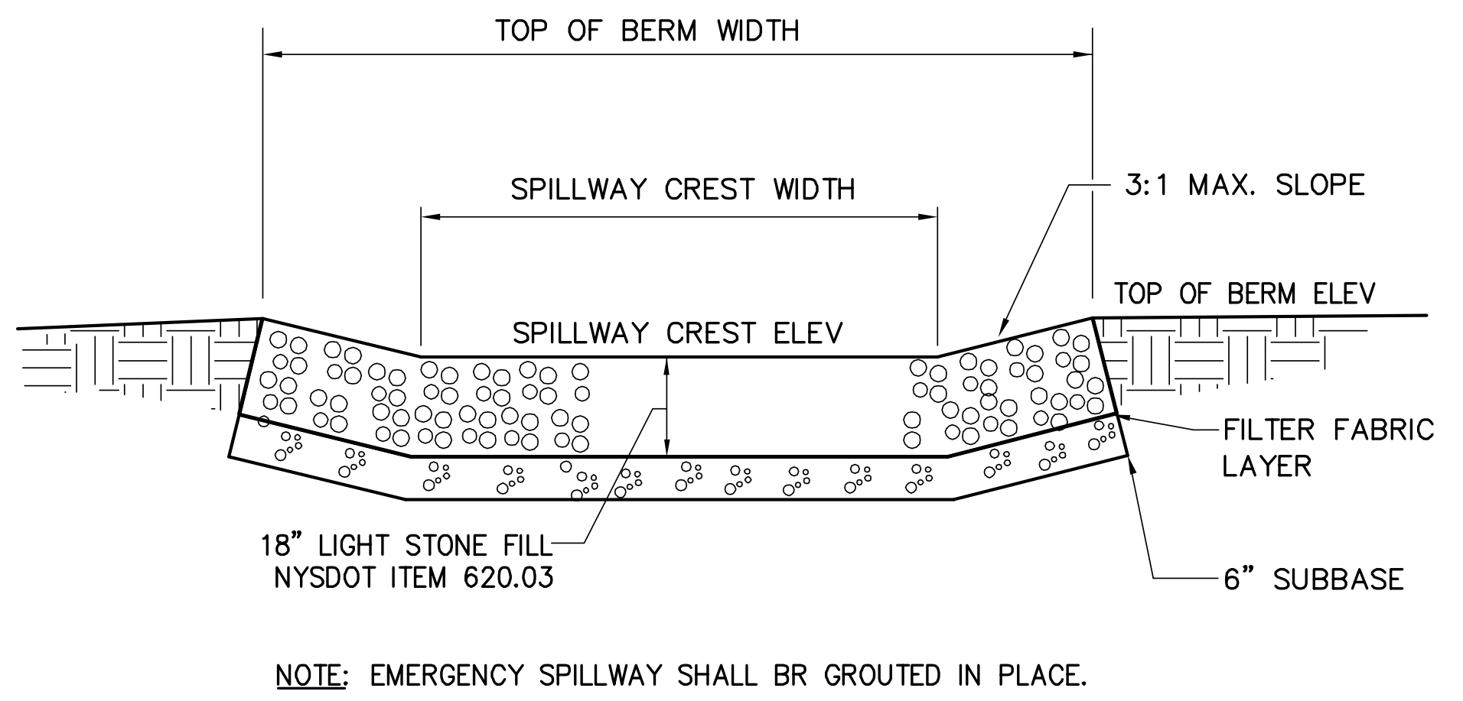
Drawing Number
C-603

Project Number: D006292
Sheet: XXX of 367



1 OUTLET CONTROL STRUCTURE 2

SCALE: N.T.S.

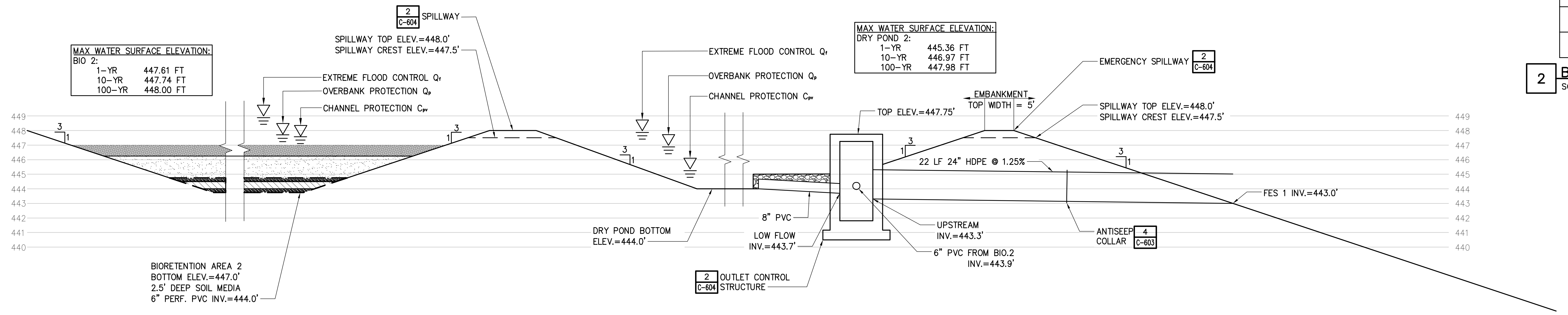


NOTE: EMERGENCY SPILLWAY SHALL BR GROUTED IN PLACE.

SPILLWAY DESIGN DATA				
	CREST ELEV (FT)	CREST WIDTH (FT)	TOP ELEV (FT)	TOP WIDTH (FT)
BIORETENTION 2	446.5'	20.0	447.0'	23.0
DRY POND 2	447.0'	23.0	447.5'	23.0

2 BIORETENTION AND DRY POND 2 OVERFLOW SPILLWAYS

SCALE: N.T.S.



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3 BIORETENTION AND DETENTION POND 2

NOT TO SCALE

New York State
Parks, Recreation and
Historic Preservation

Gouvernor Kathy Hochul
Commissioner Pro Tempore Randy Simons

Architectural Consultant
BEYER BLINDER BELLE ARCHITECTS & PLANNERS
120 BROADWAY, 20TH FLOOR, NEW YORK, NY 10271

Structural Consultant
THORNTON TOMASETTI
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NYS OPRHP Taconic Region
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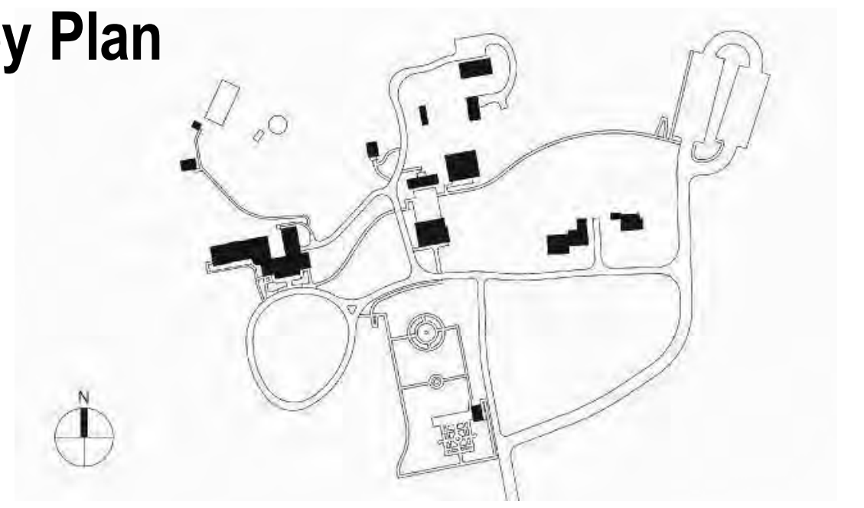
Regional Director: Linda Cooper
Capital District Manager: Garrett Jobson

Project Title:
John Jay Homestead Site And Building Enhancements

Project Location:
Katonah
NY 10536

Key Plan



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2	DESIGN DEVELOPMENT SUBMISSION	1/31/2024
3	PROGRESS CD SUBMISSION	4/10/2024

Drawn By: HB
Design By: JJE
Checked By: JJE
Approved By: SKB
DATE: 04/10/24

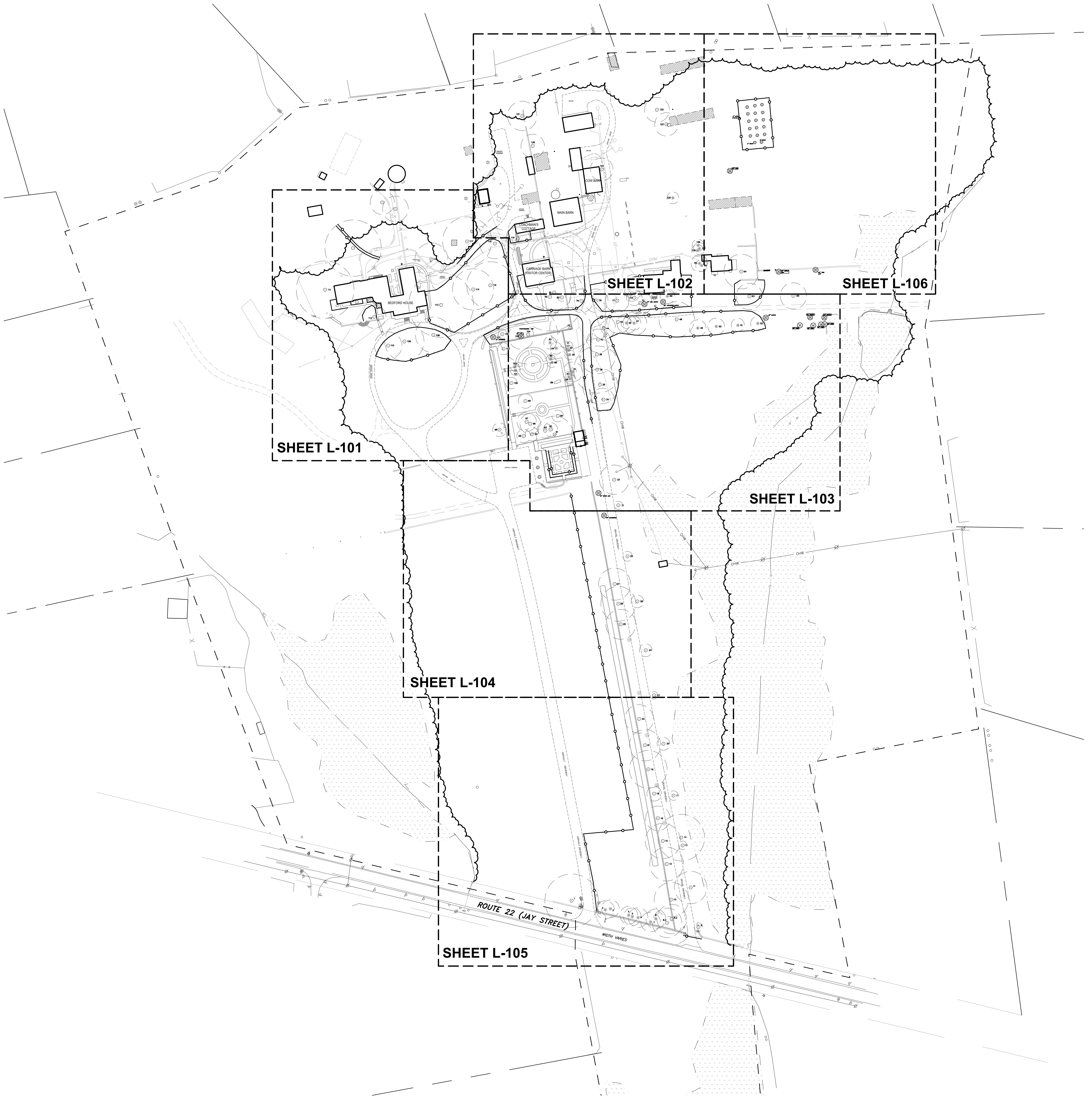
Seal and Signature

Sheet Title: DETAILS (5 OF 5)

Drawing Number: **C-604**

Project Number: D006292

Sheet: XXX of 367



LINETYPES AND EXISTING SITE FEATURES

- LIMIT OF WORK
- GRAVEL ROAD / PATH
- APPROX. PARK BOUNDARY
- FENCELINE
- STONE WALL
- TREE PROTECTION FENCE
- LIMIT OF WOODLAND
- WETLAND
- STRUCTURAL FOUNDATION / REMAINS
- EXISTING DECIDUOUS TREE SYMBOL CRITICAL ROOT ZONE (CRZ)
- EXISTING EVERGREEN TREE SYMBOL CRITICAL ROOT ZONE (CRZ)

PLANT REMOVAL LEGEND

- ⊗ TREE REMOVAL BY NYS PARKS PRIOR TO CONSTRUCTION. CONTRACTOR TO REMOVE STUMPS
- ▨ UNDERSTORY AND GROUNDCOVER PLANT REMOVAL SYMBOL

NORTH

0' 80' 160'
Scale: 1"=80'

New York State Parks, Recreation and Historic Preservation

Gouvernor Kathy Hochul
Commissioner Pro Tempore Randy Simons

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BEYER BLINDER BELLE ARCHITECTS & PLANNERS
120 BROADWAY, 20TH FLOOR, NEW YORK, NY 10271

Structural Consultant
THORNTON TOMASETTI
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LANDMARKS FACILITIES GROUP
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NYS OPRHP Taconic Region
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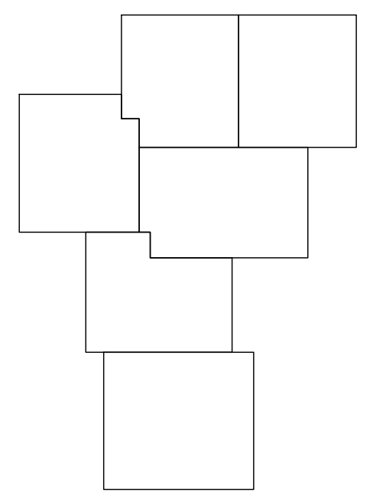
Project Location:
Katonah
NY 10536

Key Plan



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3	PROGRESS CD SUBMISSION	4/10/2024
4	PROGRESS CD SUBMISSION	5/22/2024

Drawn By:
Design By
Checked By:
Approved By:
DATE
04/10/24

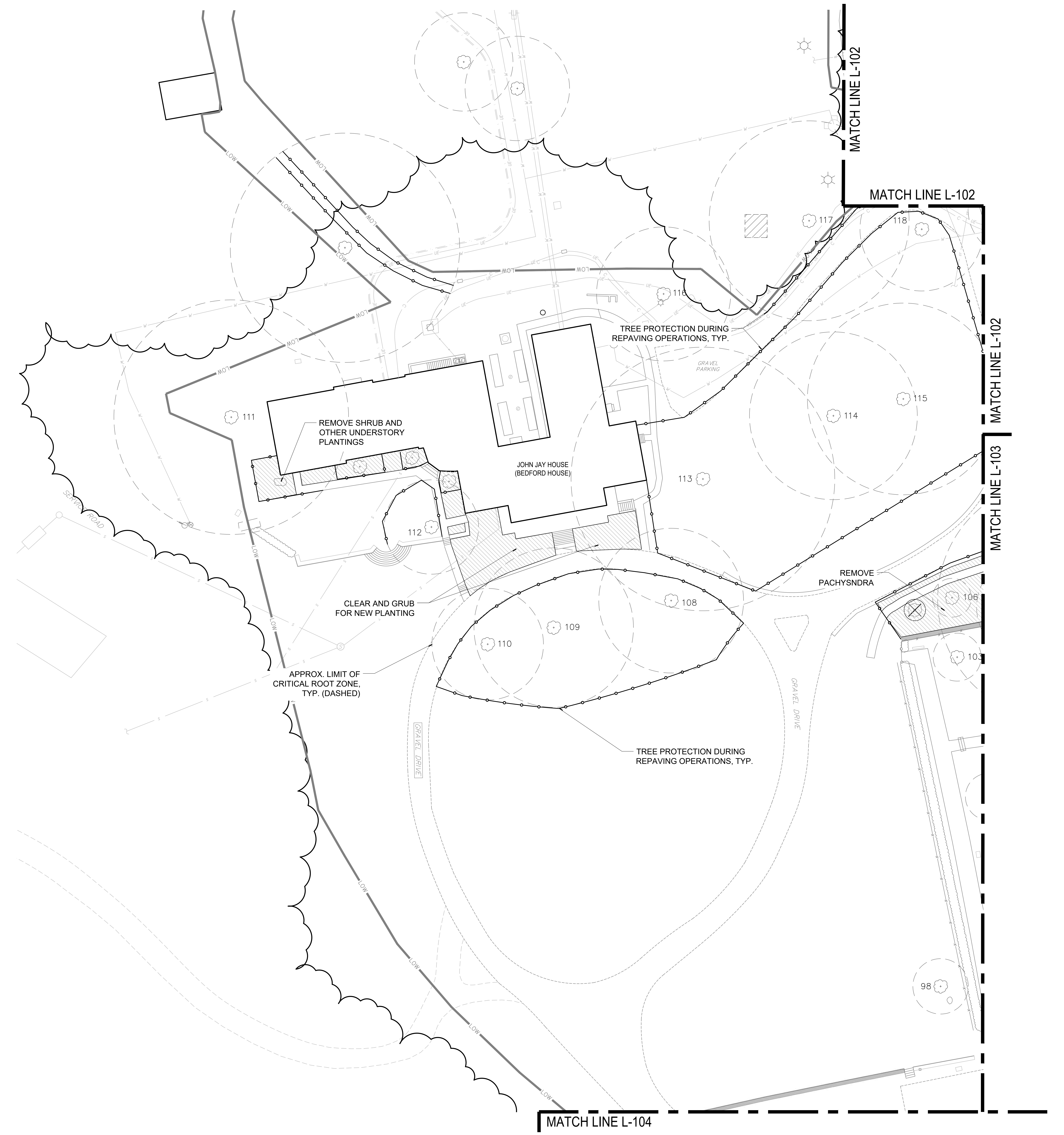
Seal and Signature

Sheet Title
SITE TREE PROTECTION AND PLANT REMOVAL PLAN

Drawing Number
L-100

Project Number:
D006292

Sheet:
of 367



LINETYPES AND EXISTING SITE FEATURES

- LIMIT OF WORK
- GRAVEL ROAD / PATH
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- TREE PROTECTION FENCE
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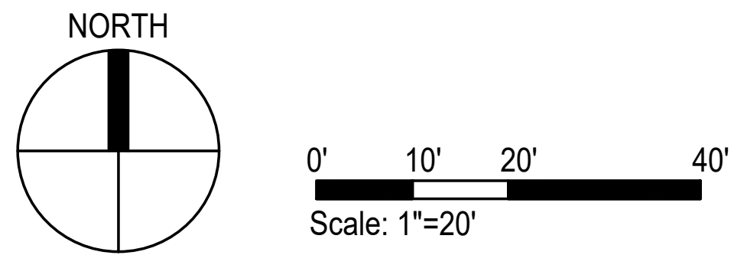
- WETLAND
- STRUCTURAL FOUNDATION / REMAINS
- EXISTING DECIDUOUS TREE SYMBOL
  CRITICAL ROOT ZONE (CRZ)
- EXISTING EVERGREEN TREE SYMBOL
  CRITICAL ROOT ZONE (CRZ)

PLANT REMOVAL LEGEND

- ⊗ TREE REMOVAL BY NYS PARKS PRIOR TO CONSTRUCTION. CONTRACTOR TO REMOVE STUMPS
- ▨ UNDERSTORY AND GROUNDCOVER PLANT REMOVAL SYMBOL



Scale: 1"=20'

New York State Parks, Recreation and Historic Preservation

Gouvernor Kathy Hochul | Commissioner Pro Tempore Randy Simons

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120 BROADWAY, 20TH FLOOR, NEW YORK, NY 10271

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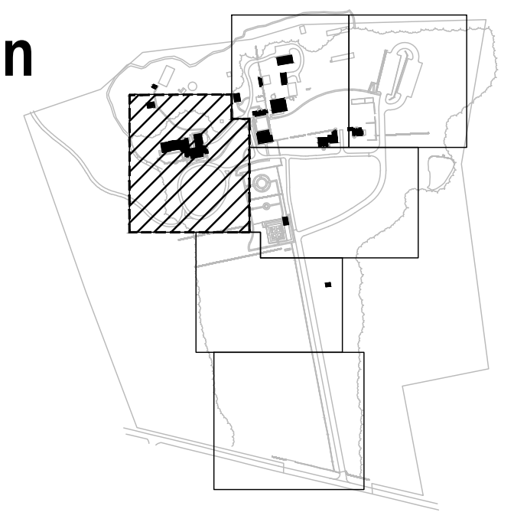

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Drawn By:

Design By

Checked By:

Approved By:

DATE
04/10/24

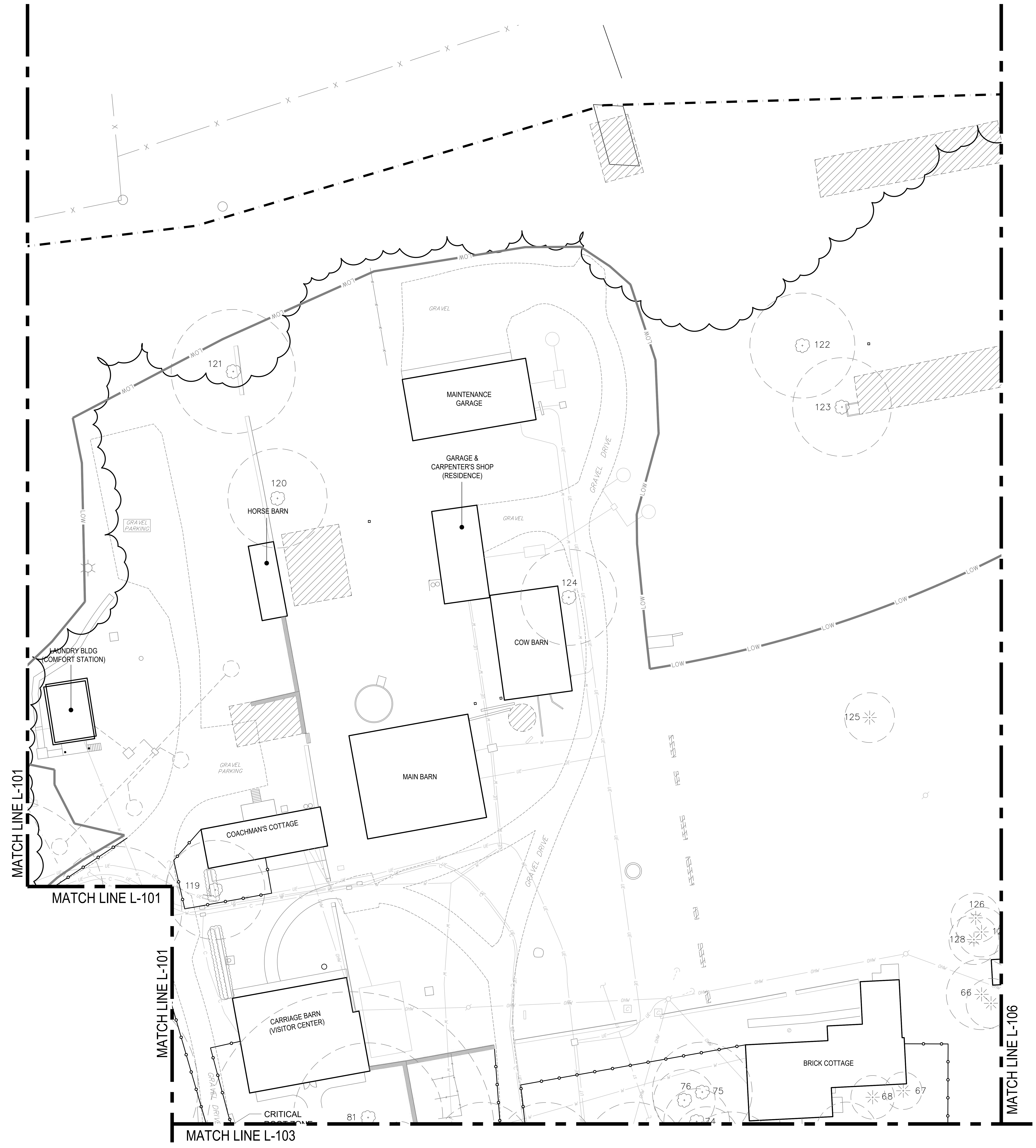
Seal and Signature

Sheet Title
TREE PROTECTION AND PLANT REMOVAL PLAN

Drawing Number
L-101

Project Number:
D006292

Sheet:
of 367



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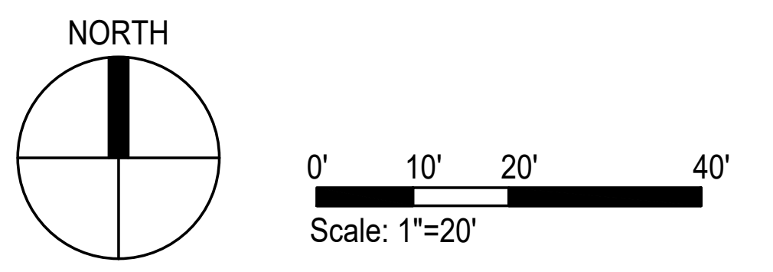

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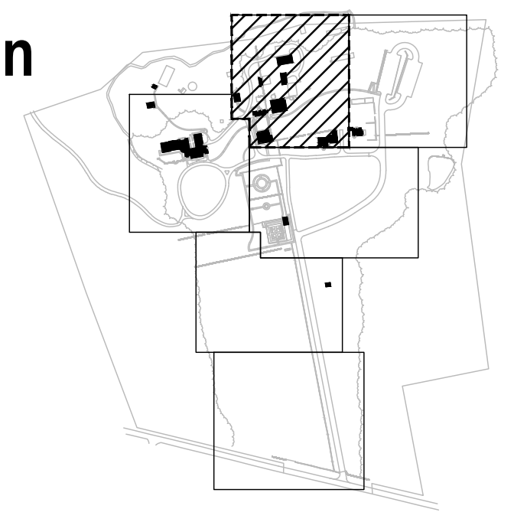

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Drawn By:
Design By
Checked By:
Approved By:
DATE
04/10/24

Seal and Signature

Sheet Title
TREE PROTECTION AND PLANT REMOVAL PLAN

Drawing Number
L-102

Project Number:
D006292

Sheet:
of 367

LINETYPES AND EXISTING SITE FEATURES

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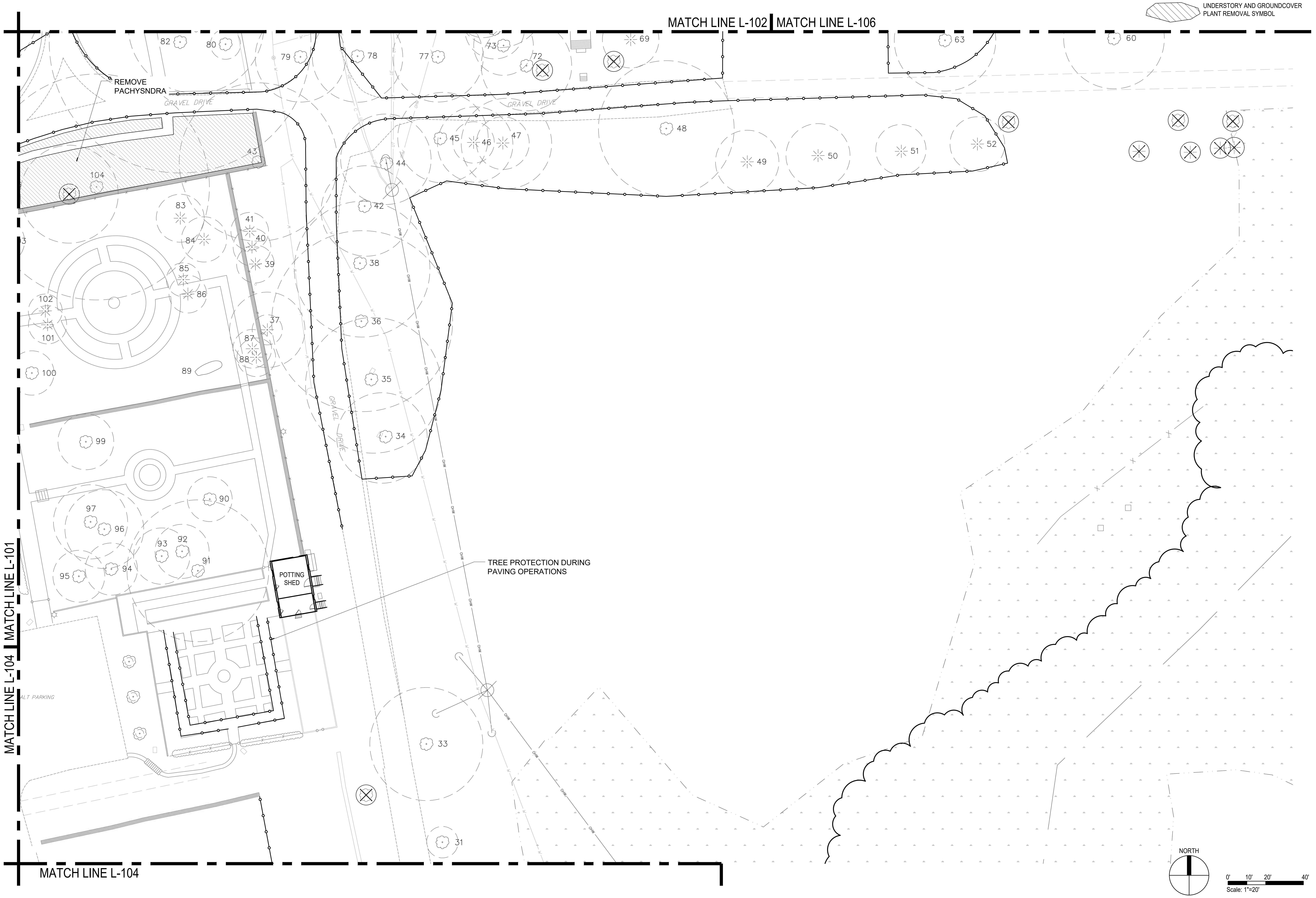
- ⊗ TREE REMOVAL BY NYS PARKS PRIOR TO CONSTRUCTION. CONTRACTOR TO REMOVE STUMPS
- ▨ UNDERSTORY AND GROUNDCOVER PLANT REMOVAL SYMBOL



New York State Parks, Recreation and Historic Preservation

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120 BROADWAY, 20TH FLOOR, NEW YORK, NY 10271

Structural Consultant
THORNTON TOMASETTI
120 BROADWAY, 15TH FLOOR, NEW YORK, NY 10271

MEP / FP / IT Consultant
LANDMARKS FACILITIES GROUP
252 EAST AVENUE, NORWALK, CT 06855

Civil Consultant
CHA CONSULTING, INC.
575 BROADWAY, SUITE 301, ALBANY, NY 12207

Landscape Consultant
RHODESIDE HARWELL LANDSCAPE ARCHITECTURE
347 WEST 36TH STREET, SUITE 1201, NEW YORK, NY 10018

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38 EAST 32ND STREET, 11TH FLOOR, NEW YORK, NY 10016

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LVCK - A BEYER BLINDER BELLE STUDIO
120 BROADWAY, 20TH FLOOR, NEW YORK, NY 10271

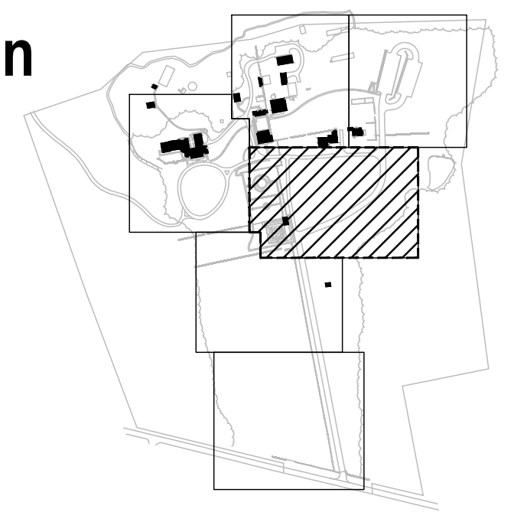
NYS OPRHP Taconic Region
9 Old Post Rd, PO Box 308
Staatsburg, NY 12580
(845) 889 - 4100

Regional Director: Linda Cooper
Capital District Manager: Garrett Jobson

Project Title:
John Jay Homestead Site And Building Enhancements

Project Location:
Katonah
NY 10536

Key Plan



REVISIONS

Rev No	Description	Date:
1	SCHEMATIC DESIGN SUBMISSION	10/2/2023
2	DESIGN DEVELOPMENT SUBMISSION	1/31/2024
3	PROGRESS CD SUBMISSION	4/10/2024
4	PROGRESS CD SUBMISSION	5/22/2024

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Checked By:
Approved By:
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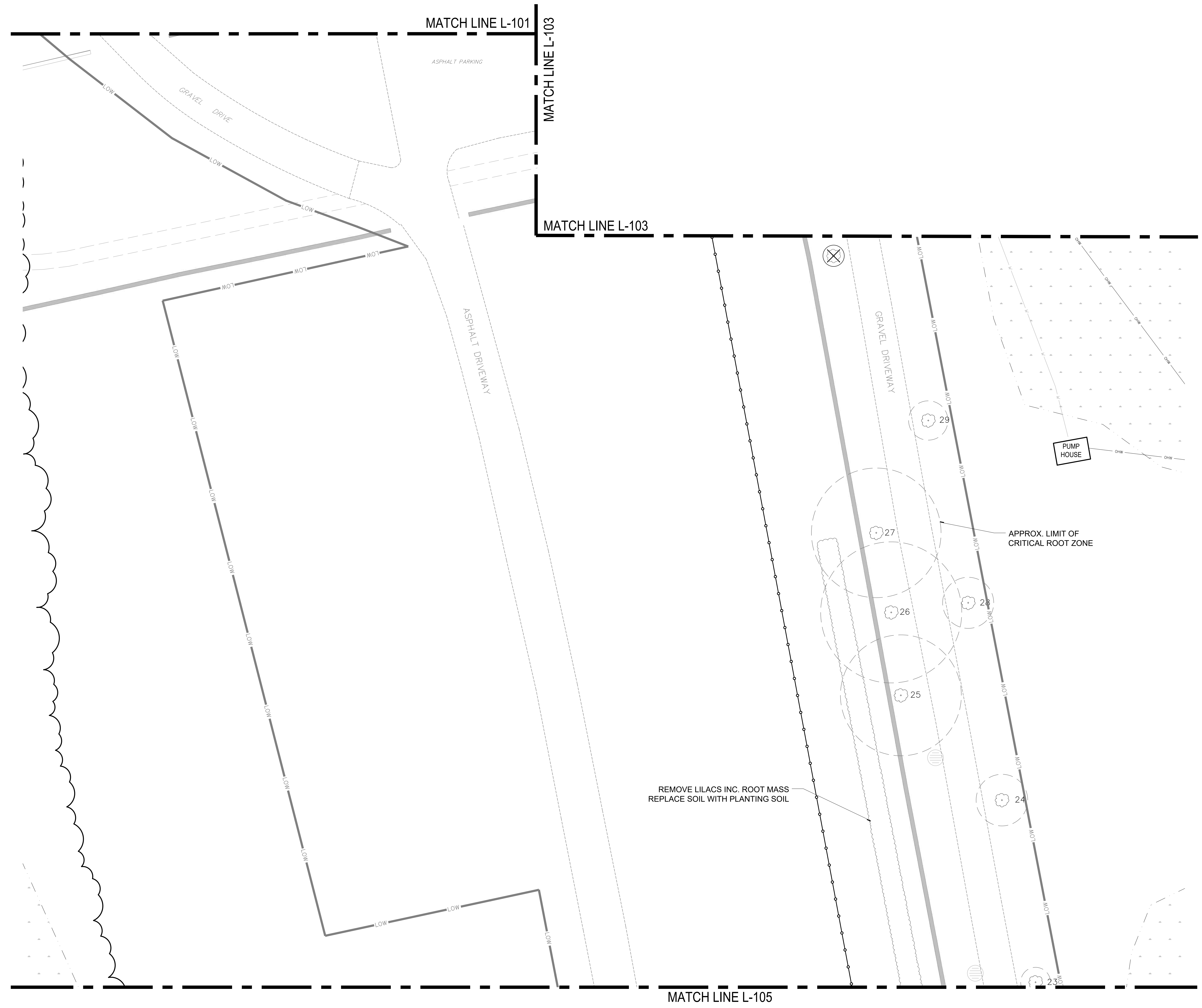
DATE
04/10/24

Sheet Title
TREE PROTECTION AND PLANT REMOVAL PLAN

Drawing Number
L-103

Project Number:
D006292

Sheet:
of 367



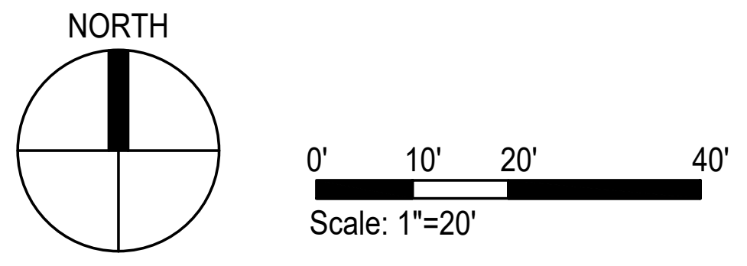
LINETYPES AND EXISTING SITE FEATURES

LIMIT OF WORK
GRAVEL ROAD / PATH
APPROX. PARK BOUNDARY
FENCELINE
STONE WALL
TREE PROTECTION FENCE
LIMIT OF WOODLAND
WETLAND
STRUCTURAL FOUNDATION / REMAINS
EXISTING DECIDUOUS TREE SYMBOL
CRITICAL ROOT ZONE (CRZ)
EXISTING EVERGREEN TREE SYMBOL
CRITICAL ROOT ZONE (CRZ)

PLANT REMOVAL LEGEND

⊗ TREE REMOVAL BY NYS PARKS PRIOR TO CONSTRUCTION. CONTRACTOR TO REMOVE STUMPS

▨ UNDERSTORY AND GROUNDCOVER PLANT REMOVAL SYMBOL



Scale: 1"=20'

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Architectural Consultant
BEYER BLINDER BELLE ARCHITECTS & PLANNERS
120 BROADWAY, 20TH FLOOR, NEW YORK, NY 10271

Structural Consultant
THORNTON TOMASETTI
120 BROADWAY, 15TH FLOOR, NEW YORK, NY 10271

MEP / FP / IT Consultant
LANDMARKS FACILITIES GROUP
252 EAST AVENUE, NORWALK, CT 06855

Civil Consultant
CHA CONSULTING, INC.
575 BROADWAY, SUITE 301, ALBANY, NY 12207

Landscape Consultant
RHODESIDE HARWELL LANDSCAPE ARCHITECTURE
347 WEST 36TH STREET, SUITE 1201, NEW YORK, NY 10018

Lighting Consultant
HLB LIGHTING
38 EAST 32ND STREET, 11TH FLOOR, NEW YORK, NY 10016

Signage Consultant
LVCK - A BEYER BLINDER BELLE STUDIO
120 BROADWAY, 20TH FLOOR, NEW YORK, NY 10271

NYS OPRHP Taconic Region
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Staatsburg, NY 12580
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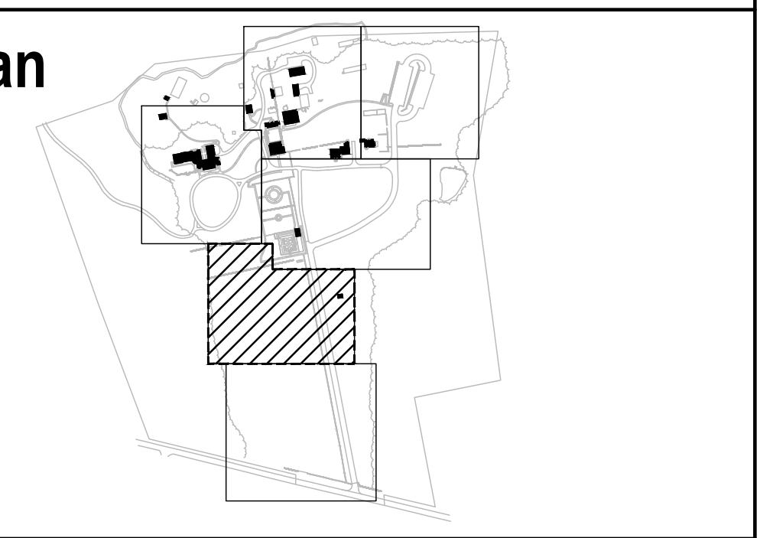
NY 10536

Key Plan



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4	PROGRESS CD SUBMISSION	5/22/2024

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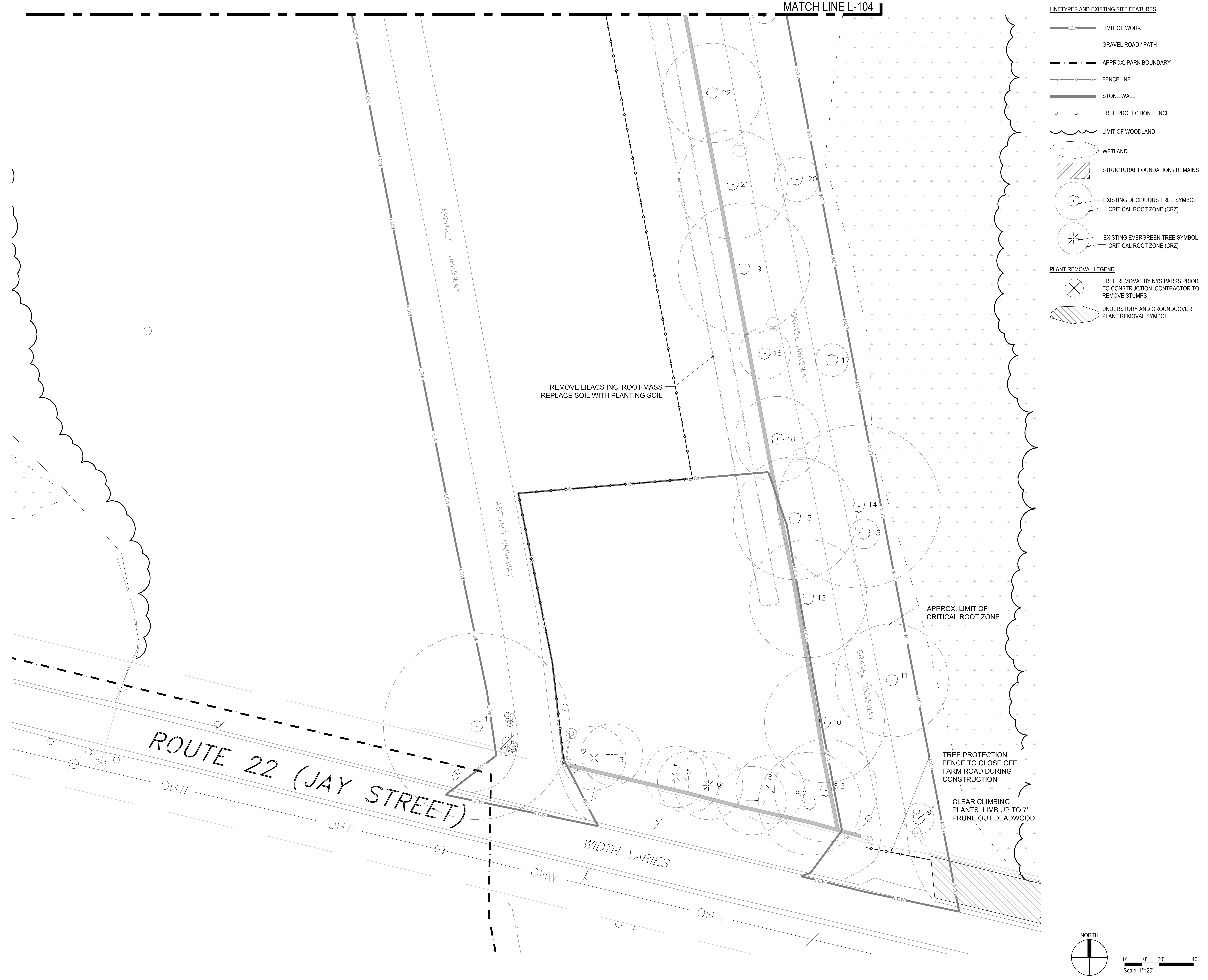
Sheet Title
TREE
PROTECTION
AND PLANT
REMOVAL
PLAN

Drawing Number
L-104

Project Number:
D006292

Sheet:
of 367



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THORNTON TOMASETTI
120 BROADWAY, 15TH FLOOR, NEW YORK, NY 10271

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252 EAST AVENUE, NORWALK, CT 06855

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CHA CONSULTING, INC.
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Landscape Consultant
RHODESIDE HARWELL LANDSCAPE ARCHITECTURE
347 WEST 36TH STREET, SUITE 1201, NEW YORK, NY 10018

Lighting Consultant
HLB LIGHTING
38 EAST 32ND STREET, 11TH FLOOR, NEW YORK, NY 10016

Signage Consultant
LVCK - A BEYER BLINDER BELLE STUDIO
120 BROADWAY, 20TH FLOOR, NEW YORK, NY 10271

NYS OPRHP Taconic Region
9 Old Post Rd, PO Box 308
Staatsburg, NY 12580
(845) 889 - 4100

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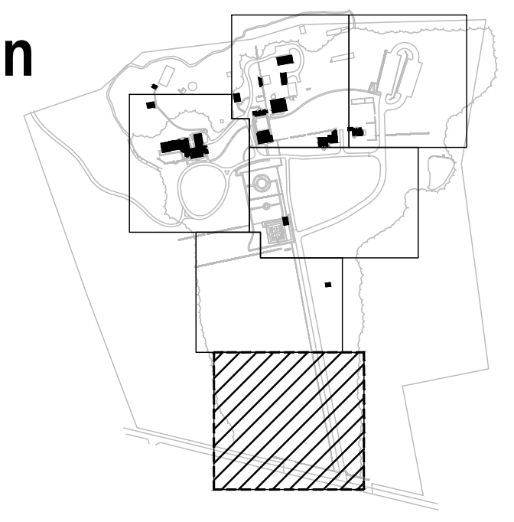
Project Location:
Katonah
NY 10536

Key Plan



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04/10/24

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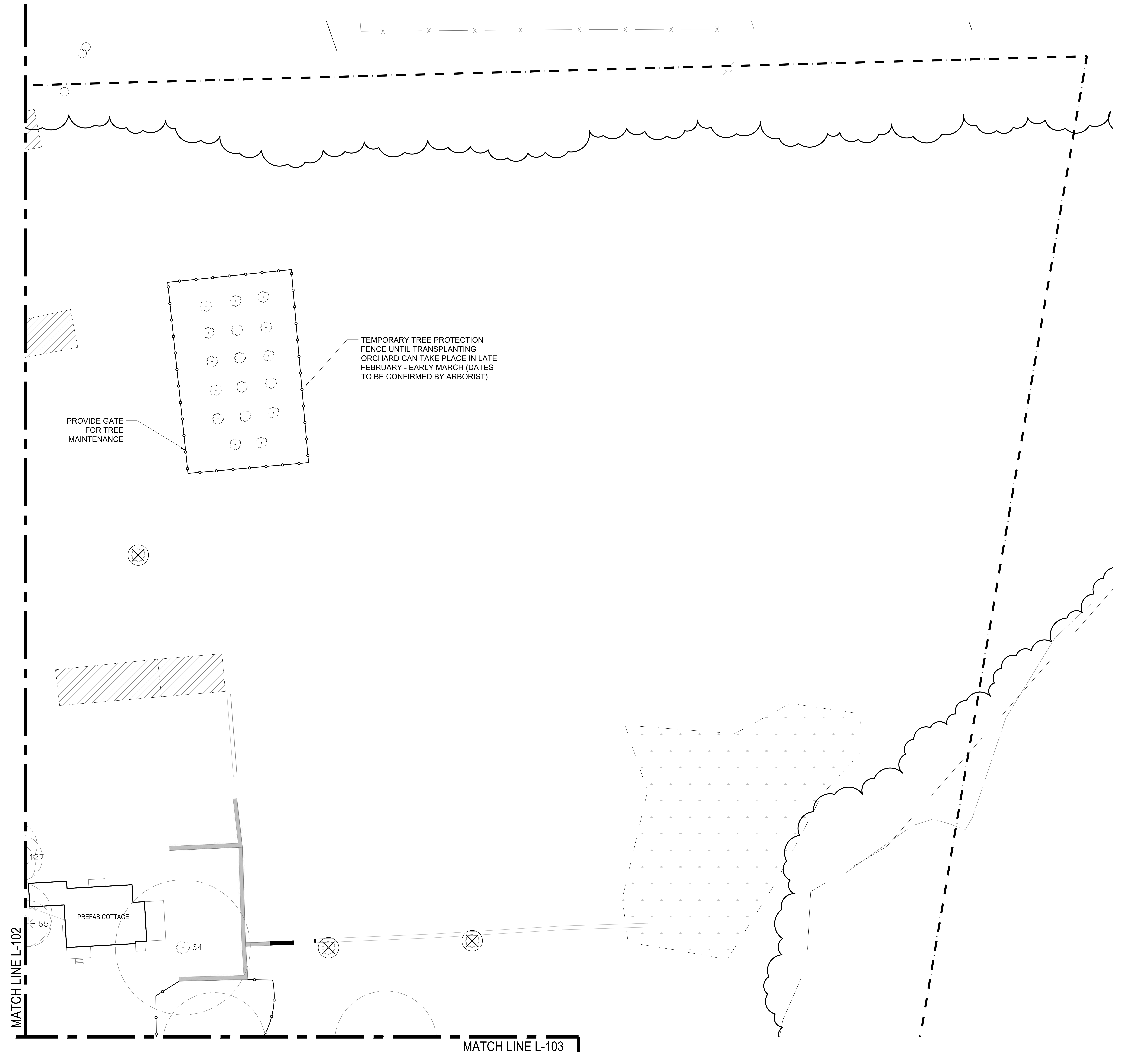
Sheet Title
TREE PROTECTION AND PLANT REMOVAL PLAN

Drawing Number
L-105

Project Number:
D006292

Sheet:
of 367



LINETYPES AND EXISTING SITE FEATURES

- LIMIT OF WORK
- GRAVEL ROAD / PATH
- APPROX. PARK BOUNDARY
- FENCELINE
- STONE WALL
- TREE PROTECTION FENCE
- LIMIT OF WOODLAND
- WETLAND
- STRUCTURAL FOUNDATION / REMAINS
- EXISTING DECIDUOUS TREE SYMBOL — CRITICAL ROOT ZONE (CRZ)
- EXISTING EVERGREEN TREE SYMBOL — CRITICAL ROOT ZONE (CRZ)

PLANT REMOVAL LEGEND

- ⊗ TREE REMOVAL BY NYS PARKS PRIOR TO CONSTRUCTION. CONTRACTOR TO REMOVE STUMPS
- ▨ UNDERSTORY AND GROUNDCOVER PLANT REMOVAL SYMBOL

New York State Parks, Recreation and Historic Preservation

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Commissioner Pro Tempore Randy Simons

Architectural Consultant
BEYER BLINDER BELLE ARCHITECTS & PLANNERS
120 BROADWAY, 20TH FLOOR, NEW YORK, NY 10271

Structural Consultant
THORNTON TOMASETTI
120 BROADWAY, 15TH FLOOR, NEW YORK, NY 10271

MEP / FP / IT Consultant
LANDMARKS FACILITIES GROUP
252 EAST AVENUE, NORWALK, CT 06855

Civil Consultant
CHA CONSULTING, INC.
575 BROADWAY, SUITE 301, ALBANY, NY 12207

Landscape Consultant
RHODESIDE HARWELL LANDSCAPE ARCHITECTURE
347 WEST 36TH STREET, SUITE 1201, NEW YORK, NY 10018

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38 EAST 32ND STREET, 11TH FLOOR, NEW YORK, NY 10016

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LVCK - A BEYER BLINDER BELLE STUDIO
120 BROADWAY, 20TH FLOOR, NEW YORK, NY 10271

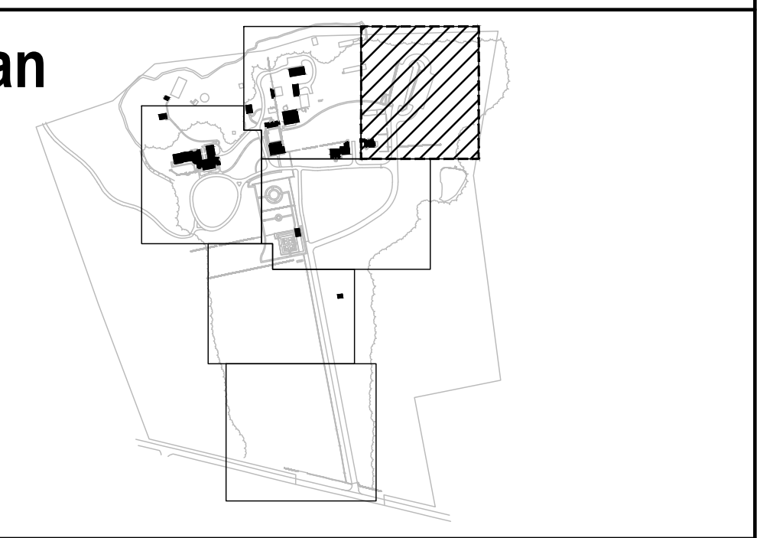
NYS OPRHP Taconic Region
9 Old Post Rd, PO Box 308
Staatsburg, NY 12580
(845) 889 - 4100

Regional Director: Linda Cooper
Capital District Manager: Garrett Jobson

Project Title:
John Jay Homestead Site And Building Enhancements

Project Location:
Katonah
NY 10536

Key Plan



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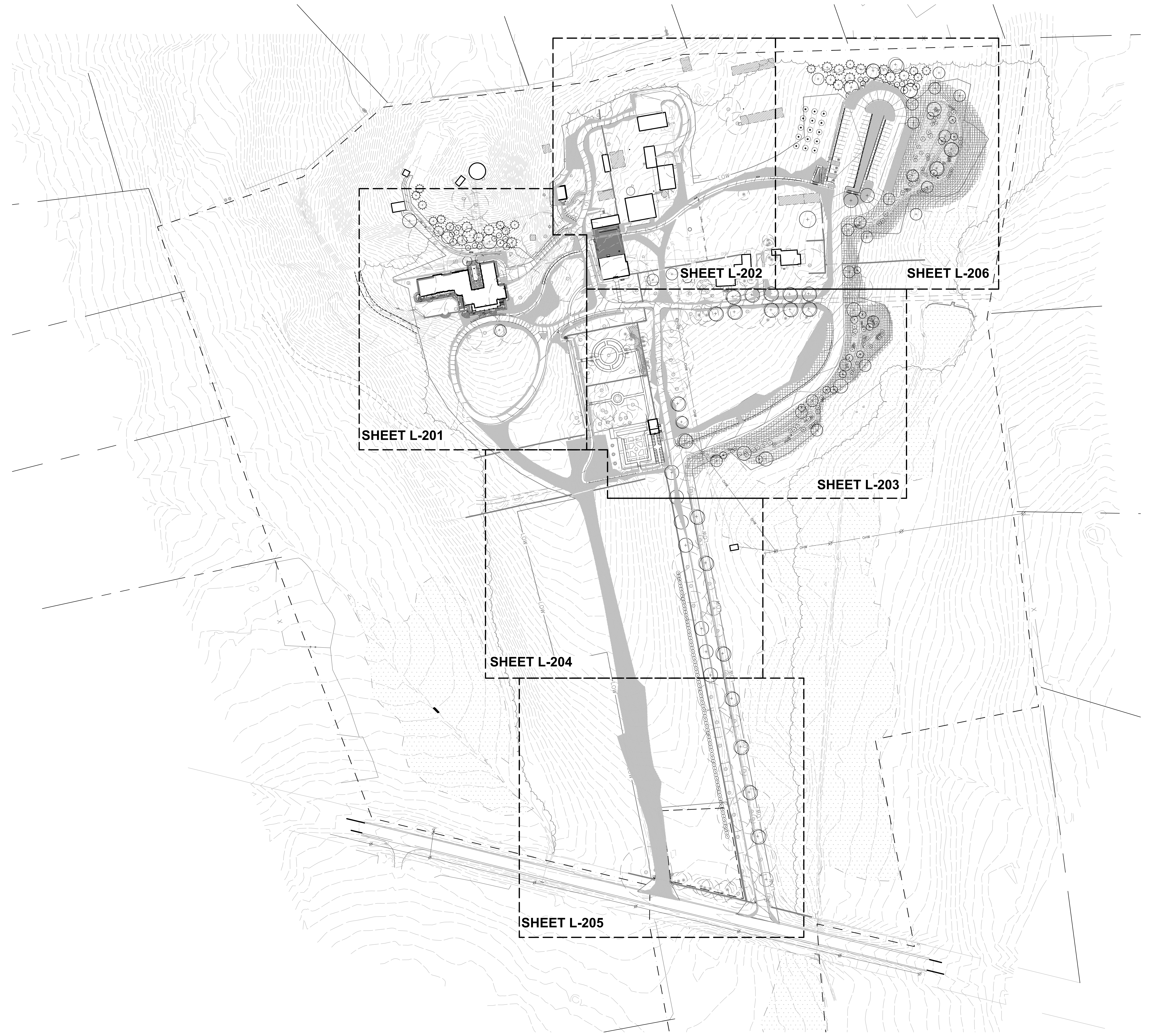
Sheet Title
TREE PROTECTION AND PLANT REMOVAL PLAN

Drawing Number
L-106

Project Number:
D006292

Sheet:
of 367



LINETYPES AND EXISTING SITE FEATURES

- LIMIT OF WORK
- GRAVEL ROAD / PATH
- APPROX. PARK BOUNDARY
- FENCELINE
- STONE WALL
- TREE PROTECTION FENCE
- LIMIT OF WOODLAND
- WETLAND
- STRUCTURAL FOUNDATION / REMAINS
- EXISTING DECIDUOUS TREE SYMBOL
  CRITICAL ROOT ZONE (CRZ)
- EXISTING EVERGREEN TREE SYMBOL
  CRITICAL ROOT ZONE (CRZ)

PROPOSED PLANTING LEGEND

- DECIDUOUS TREE
- MULTI-STEM UNDERSTORY TREE
- EVERGREEN TREE
- SHRUB PLANTINGS
- PERENNIAL/GROUNDCOVER
- MEADOW SEED MIX
- BIORETENTION SEED MIX
- LAWN RESTORATION

NOTE: SEE SHEET L-002 FOR PLANT SCHEDULE
AND SHEET L-602 FOR PLANT DETAILS

NORTH

0' 80' 160'
Scale: 1"=80'

New York State
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Architectural Consultant
BEYER BLINDER BELLE ARCHITECTS & PLANNERS
120 BROADWAY, 20TH FLOOR, NEW YORK, NY 10271

Structural Consultant
THORNTON TOMASETTI
120 BROADWAY, 15TH FLOOR, NEW YORK, NY 10271

MEP / FP / IT Consultant
LANDMARKS FACILITIES GROUP
252 EAST AVENUE, NORWALK, CT 06855

Civil Consultant
CHA CONSULTING, INC.
575 BROADWAY, SUITE 301, ALBANY, NY 12207

Landscape Consultant
RHODESIDE HARWELL LANDSCAPE ARCHITECTURE
347 WEST 36TH STREET, SUITE 1201, NEW YORK, NY 10018

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120 BROADWAY, 20TH FLOOR, NEW YORK, NY 10271

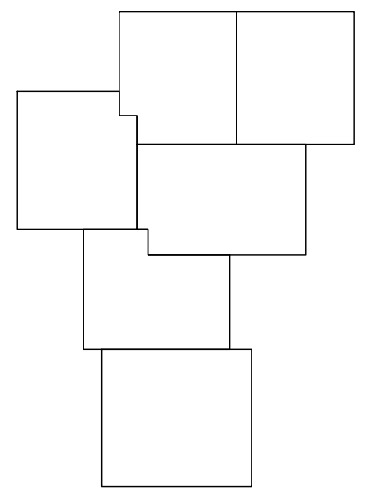
NYS OPRHP Taconic Region
9 Old Post Rd, PO Box 308
Staatsburg, NY 12580
(845) 889 - 4100

Regional Director: Linda Cooper
Capital District Manager: Garrett Jobson

Project Title:
John Jay Homestead Site And Building Enhancements

Project Location:
Katonah
NY 10536

Key Plan



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4	PROGRESS CD SUBMISSION	5/22/2024

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DATE
04/10/24

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Sheet Title
SITE PLANTING PLAN

Drawing Number
L-200

Project Number:
D006292

Sheet:
of 367

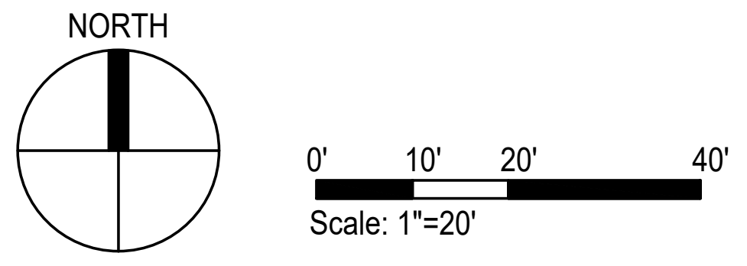
LINETYPES AND EXISTING SITE FEATURES

- LIMIT OF WORK
- GRAVEL ROAD / PATH
- APPROX. PARK BOUNDARY
- FENCELINE
- STONE WALL
- TREE PROTECTION FENCE
- LIMIT OF WOODLAND
- WETLAND
- STRUCTURAL FOUNDATION / REMAINS
- EXISTING DECIDUOUS TREE SYMBOL
  CRITICAL ROOT ZONE (CRZ)
- EXISTING EVERGREEN TREE SYMBOL
  CRITICAL ROOT ZONE (CRZ)

PROPOSED PLANTING LEGEND

- DECIDUOUS TREE
- MULTI-STEM UNDERSTORY TREE
- EVERGREEN TREE
- SHRUB PLANTINGS
- PERENNIAL/GROUNDCOVER
- MEADOW SEED MIX
- BIORETENTION SEED MIX
- LAWN RESTORATION

NOTE: SEE SHEET L-002 FOR PLANT SCHEDULE
AND SHEET L-602 FOR PLANT DETAILS



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Structural Consultant
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120 BROADWAY, 15TH FLOOR, NEW YORK, NY 10271

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LANDMARKS FACILITIES GROUP
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NYS OPRHP Taconic Region
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Regional Director: Linda Cooper
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Project Title:
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Project Location:
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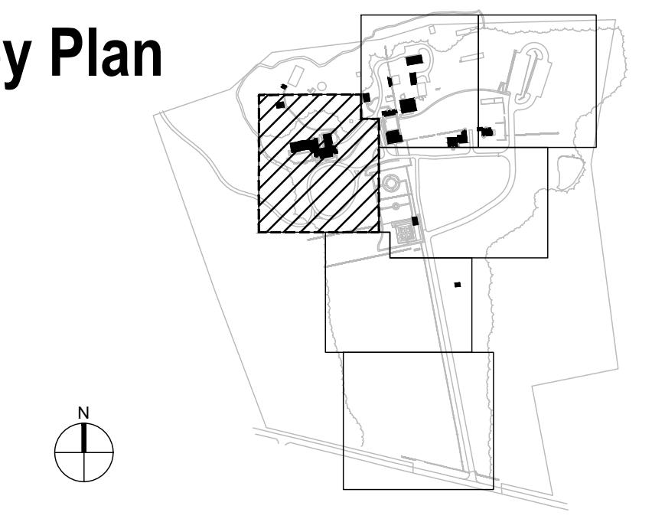
NY 10536

Key Plan



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4	PROGRESS CD SUBMISSION	5/22/2024

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04/10/24

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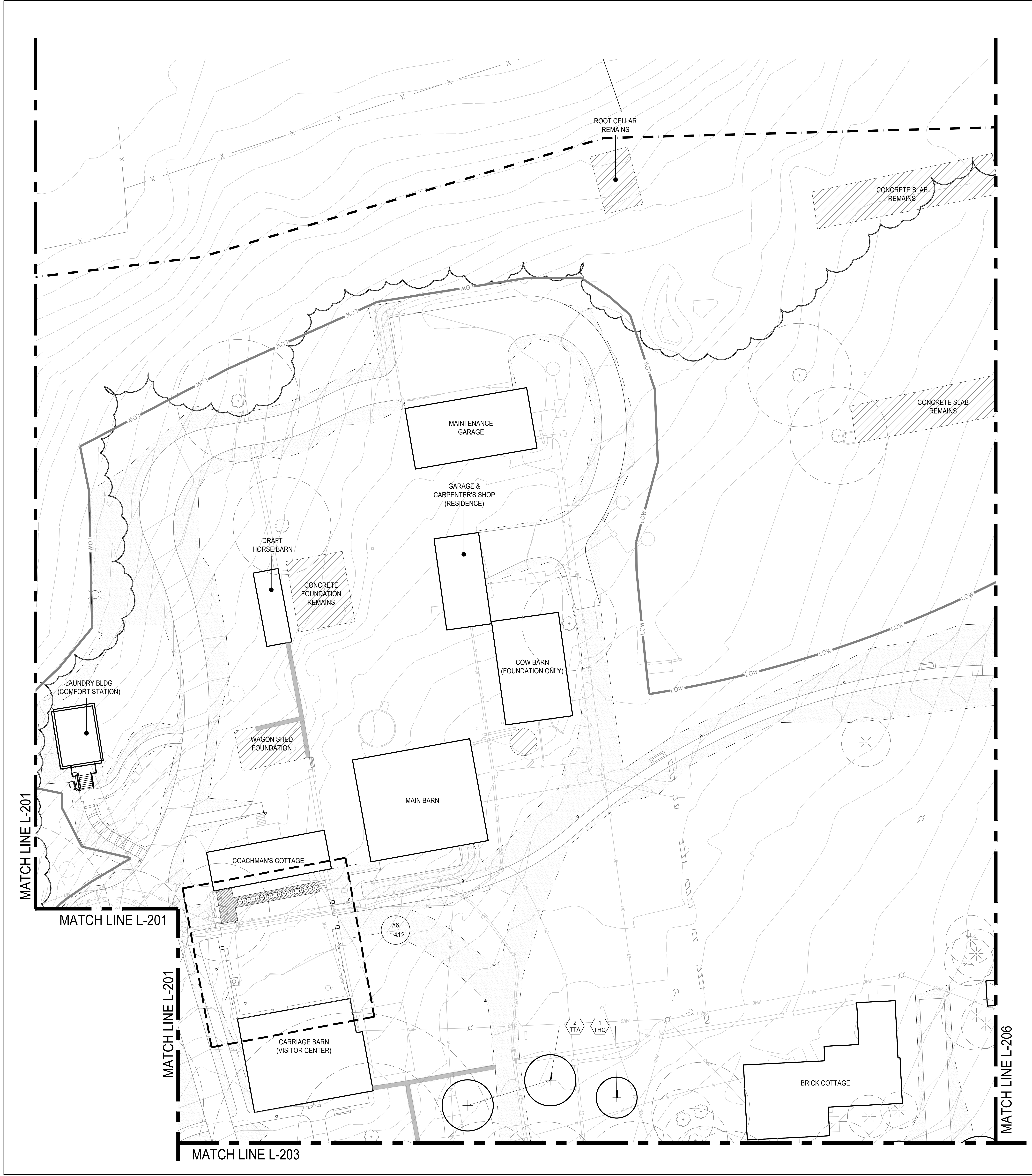
Sheet Title
PLANTING
PLAN

Drawing Number
L-201

Project Number:
D006292

Sheet:
of 367



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- PERENNIAL/GROUNDCOVER
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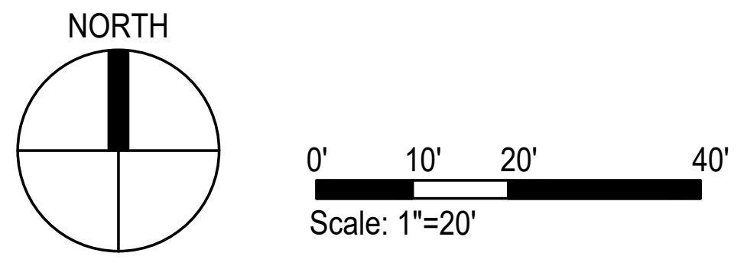
- LAWN RESTORATION

NOTE: SEE SHEET L-002 FOR PLANT SCHEDULE AND SHEET L-602 FOR PLANT DETAILS



New York State Parks, Recreation and Historic Preservation

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120 BROADWAY, 20TH FLOOR, NEW YORK, NY 10271

Structural Consultant
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Project Location:
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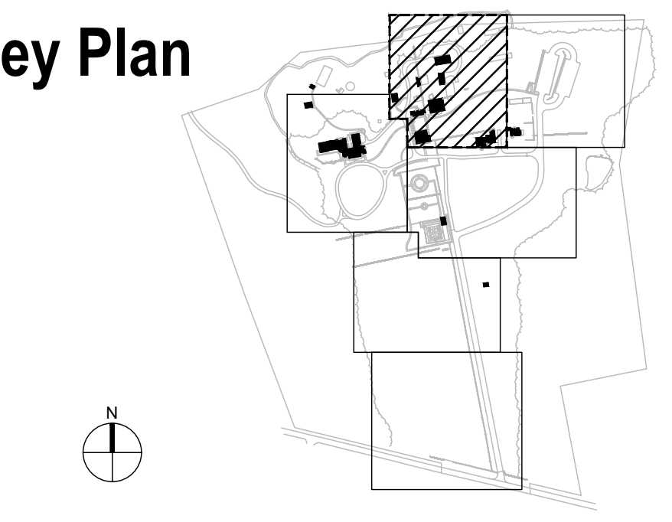
NY 10536

Key Plan



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DATE
04/10/24

Sheet Title

PLANTING
PLAN

Drawing Number

L-202

Project Number:
D006292

Sheet:
of 367

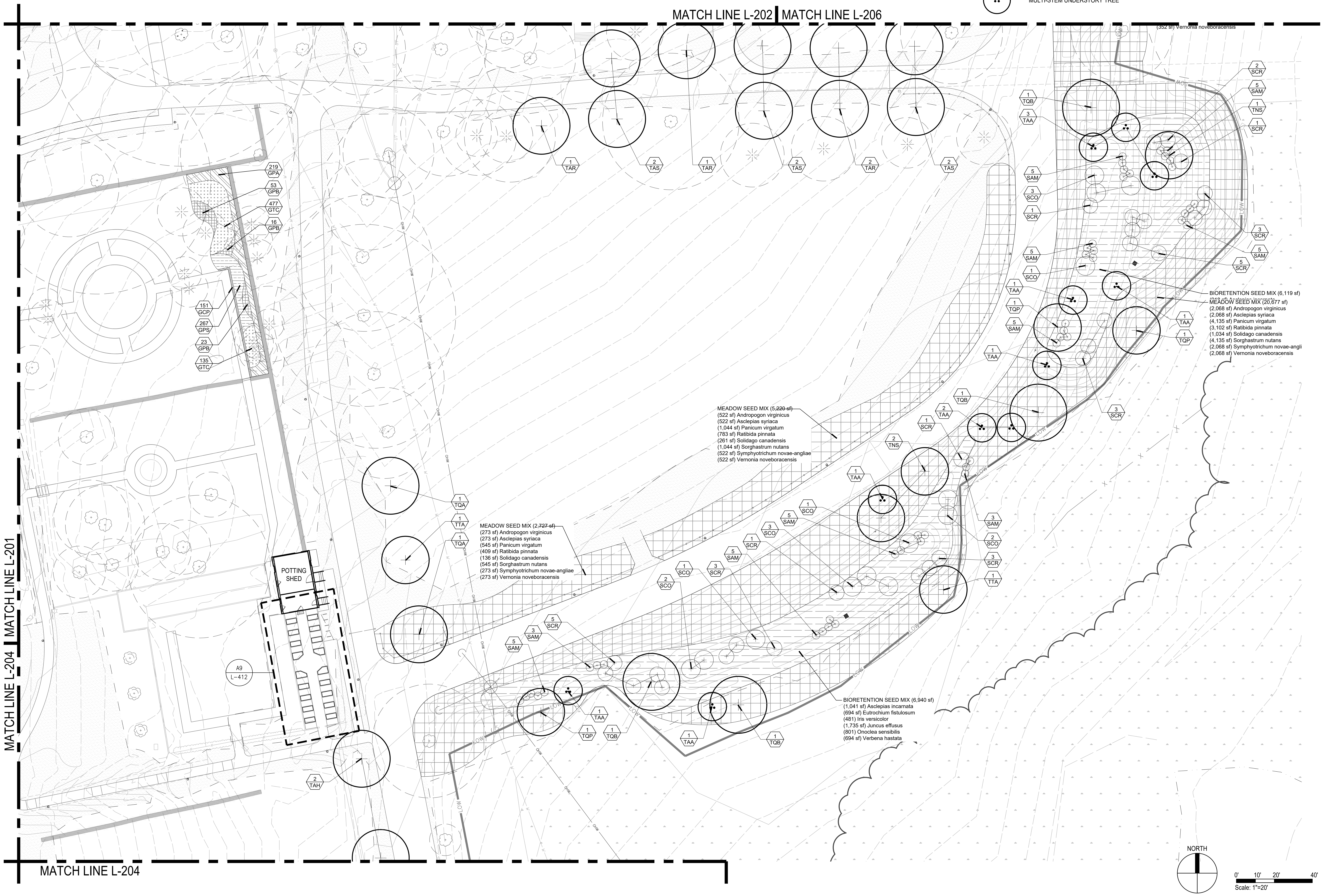
LINETYPES AND EXISTING SITE FEATURES

- LIMIT OF WORK
- GRAVEL ROAD / PATH
- APPROX. PARK BOUNDARY
- FENCELINE
- STONE WALL
- TREE PROTECTION FENCE
- LIMIT OF WOODLAND
- WETLAND
- STRUCTURAL FOUNDATION / REMAINS
- EXISTING DECIDUOUS TREE SYMBOL
  CRITICAL ROOT ZONE (CRZ)
- EXISTING EVERGREEN TREE SYMBOL
  CRITICAL ROOT ZONE (CRZ)

PROPOSED PLANTING LEGEND

- DECIDUOUS TREE
- MULTI-STEM UNDERSTORY TREE
- EVERGREEN TREE
- SHRUB PLANTINGS
- PERENNIAL/GROUNDCOVER
- MEADOW SEED MIX
- BIORETENTION SEED MIX
- LAWN RESTORATION

NOTE: SEE SHEET L-002 FOR PLANT SCHEDULE AND SHEET L-602 FOR PLANT DETAILS



(352 sf) Vernonia noveboracensis

BIORETENTION SEED MIX (6,119 sf)
(918 sf) Asclepias incarnata

MEADOW SEED MIX (20,677 sf)
(2,068 sf) Andropogon virginicus
(2,068 sf) Asclepias syriaca
(4,135 sf) Panicum virgatum
(3,102 sf) Ratibida pinnata
(1,034 sf) Solidago canadensis
(4,135 sf) Sorghastrum nutans
(2,068 sf) Symphyotrichum novae-angli
(2,068 sf) Vernonia noveboracensis

MEADOW SEED MIX (5,220 sf)
(522 sf) Andropogon virginicus
(522 sf) Asclepias syriaca
(1,044 sf) Panicum virgatum
(783 sf) Ratibida pinnata
(261 sf) Solidago canadensis
(1,044 sf) Sorghastrum nutans
(522 sf) Symphyotrichum novae-angliae
(522 sf) Vernonia noveboracensis

MEADOW SEED MIX (2,727 sf)
(273 sf) Andropogon virginicus
(273 sf) Asclepias syriaca
(545 sf) Panicum virgatum
(409 sf) Ratibida pinnata
(136 sf) Solidago canadensis
(545 sf) Sorghastrum nutans
(273 sf) Symphyotrichum novae-angliae
(273 sf) Vernonia noveboracensis

BIORETENTION SEED MIX (6,940 sf)
(1,041 sf) Asclepias incarnata
(694 sf) Eutrochium fistulosum
(481) Iris versicolor
(1,735 sf) Juncus effusus
(801) Onoclea sensibilis
(694 sf) Verbena hastata

New York State
Parks, Recreation and
Historic Preservation

Gouvernor Kathy Hochul
Commissioner Pro Tempore Randy Simons

Architectural Consultant
BEYER BLINDER BELLE ARCHITECTS & PLANNERS
120 BROADWAY, 20TH FLOOR, NEW YORK, NY 10271

Structural Consultant
THORNTON TOMASETTI
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LANDMARKS FACILITIES GROUP
252 EAST AVENUE, NORWALK, CT 06855

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Lighting Consultant
HLB LIGHTING
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Signage Consultant
LVCK - A BEYER BLINDER BELLE STUDIO
120 BROADWAY, 20TH FLOOR, NEW YORK, NY 10271

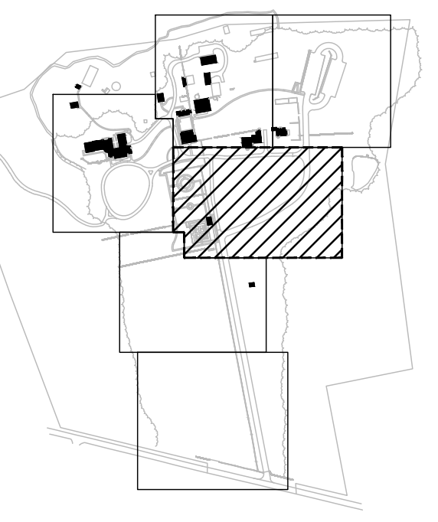
NYS OPRHP Taconic Region
9 Old Post Rd, PO Box 308
Staatsburg, NY 12580
(845) 889 - 4100

Regional Director: Linda Cooper
Capital District Manager: Garrett Jobson

Project Title:
John Jay Homestead Site And Building Enhancements

Project Location:
Katonah
NY 10536

Key Plan



REVISIONS

Rev No	*Description*	*Date:*
1	SCHEMATIC DESIGN SUBMISSION	10/2/2023
2	DESIGN DEVELOPMENT SUBMISSION	1/31/2024
3	PROGRESS CD SUBMISSION	4/10/2024
4	PROGRESS CD SUBMISSION	5/22/2024

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Design By

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DATE
04/10/24

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Sheet Title
PLANTING PLAN

Drawing Number
L-203

Project Number:
D006292

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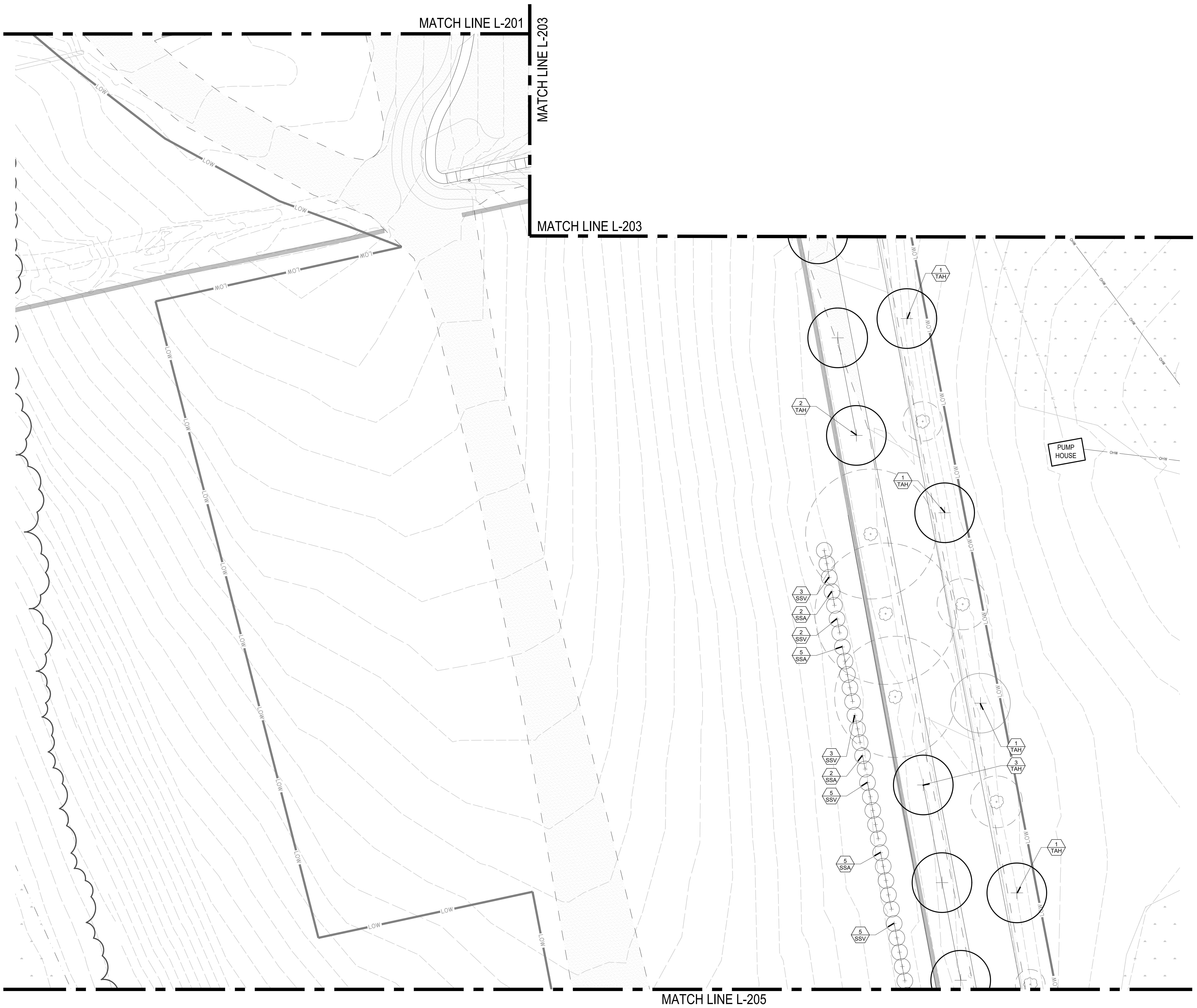
of 367



LINETYPES AND EXISTING SITE FEATURES

- LIMIT OF WORK
- GRAVEL ROAD / PATH
- APPROX. PARK BOUNDARY
- FENCELINE
- STONE WALL
- TREE PROTECTION FENCE
- LIMIT OF WOODLAND
- WETLAND
- STRUCTURAL FOUNDATION / REMAINS
- EXISTING DECIDUOUS TREE SYMBOL
  - CRITICAL ROOT ZONE (CRZ)
- EXISTING EVERGREEN TREE SYMBOL
  - CRITICAL ROOT ZONE (CRZ)

PROPOSED PLANTING LEGEND

- DECIDUOUS TREE
- MULTI-STEM UNDERSTORY TREE
- EVERGREEN TREE
- SHRUB PLANTINGS
- PERENNIAL/GROUNDCOVER
- MEADOW SEED MIX
- BIORETENTION SEED MIX
- LAWN RESTORATION

NOTE: SEE SHEET L-002 FOR PLANT SCHEDULE AND SHEET L-602 FOR PLANT DETAILS

NORTH

0' 10' 20' 40'
Scale: 1"=20'

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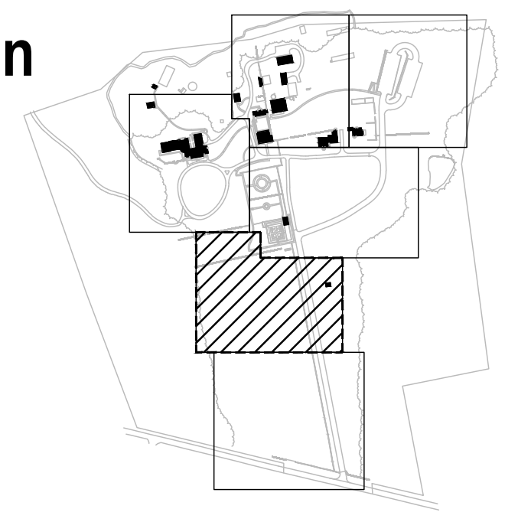

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Sheet Title
PLANTING
PLAN

Drawing Number
L-204

Project Number:
D006292

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- BIORETENTION SEED MIX
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NOTE: SEE SHEET L-002 FOR PLANT SCHEDULE
AND SHEET L-602 FOR PLANT DETAILS

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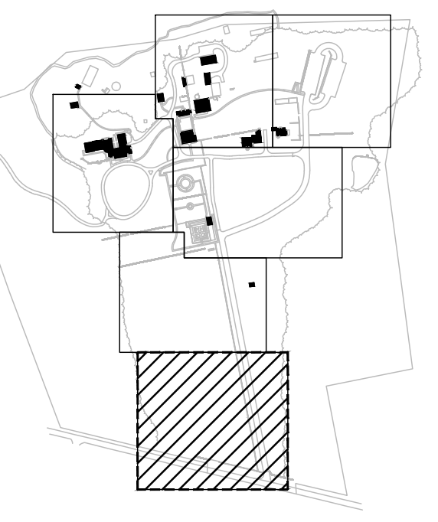

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Sheet Title
PLANTING
PLAN

Drawing Number
L-205

Project Number:
D006292

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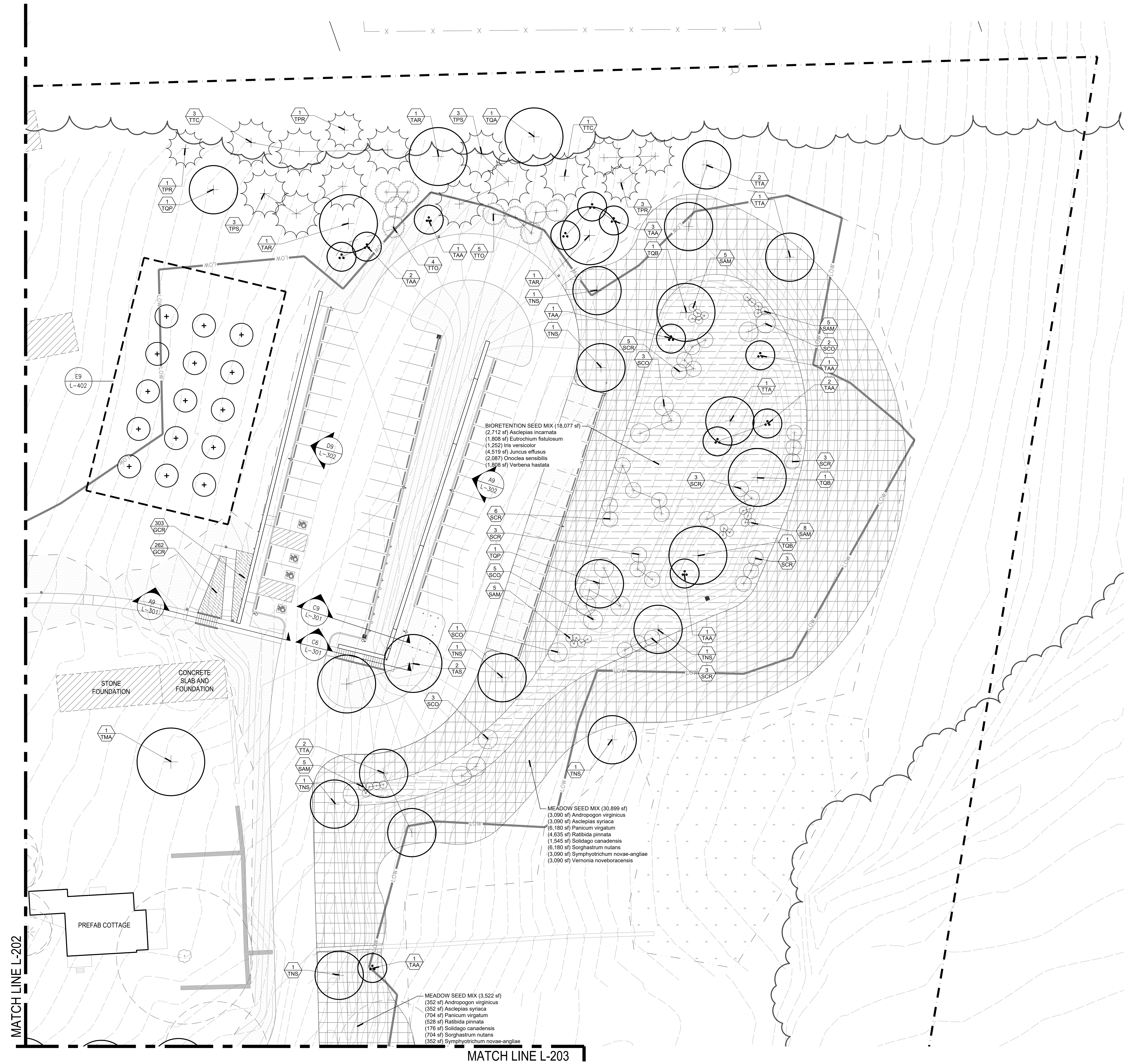
of 367



BIORETENTION SEED MIX (18,077 sf)
(2,712 sf) Asclepias incarnata
(1,808 sf) Eutrochium fistulosum
(1,252) Iris versicolor
(4,519 sf) Juncus effusus
(2,087) Onoclea sensibilis
(1,808 sf) Verbena hastata

MEADOW SEED MIX (30,899 sf)
(3,090 sf) Andropogon virginicus
(3,090 sf) Asclepias syriaca
(6,180 sf) Panicum virgatum
(4,635 sf) Ratibida pinnata
(1,545 sf) Solidago canadensis
(6,180 sf) Sorghastrum nutans
(3,090 sf) Symphyotrichum novae-angliae
(3,090 sf) Vernonia noveboracensis

MEADOW SEED MIX (3,522 sf)
(352 sf) Andropogon virginicus
(352 sf) Asclepias syriaca
(704 sf) Panicum virgatum
(528 sf) Ratibida pinnata
(176 sf) Solidago canadensis
(704 sf) Sorghastrum nutans
(352 sf) Symphyotrichum novae-angliae

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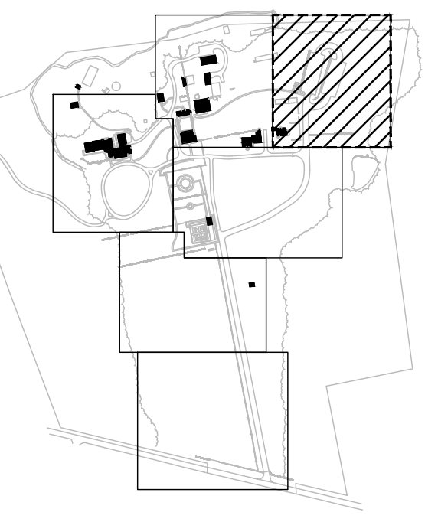

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DATE
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Sheet Title

PLANTING
PLAN

Drawing Number

L-206

Project Number:
D006292

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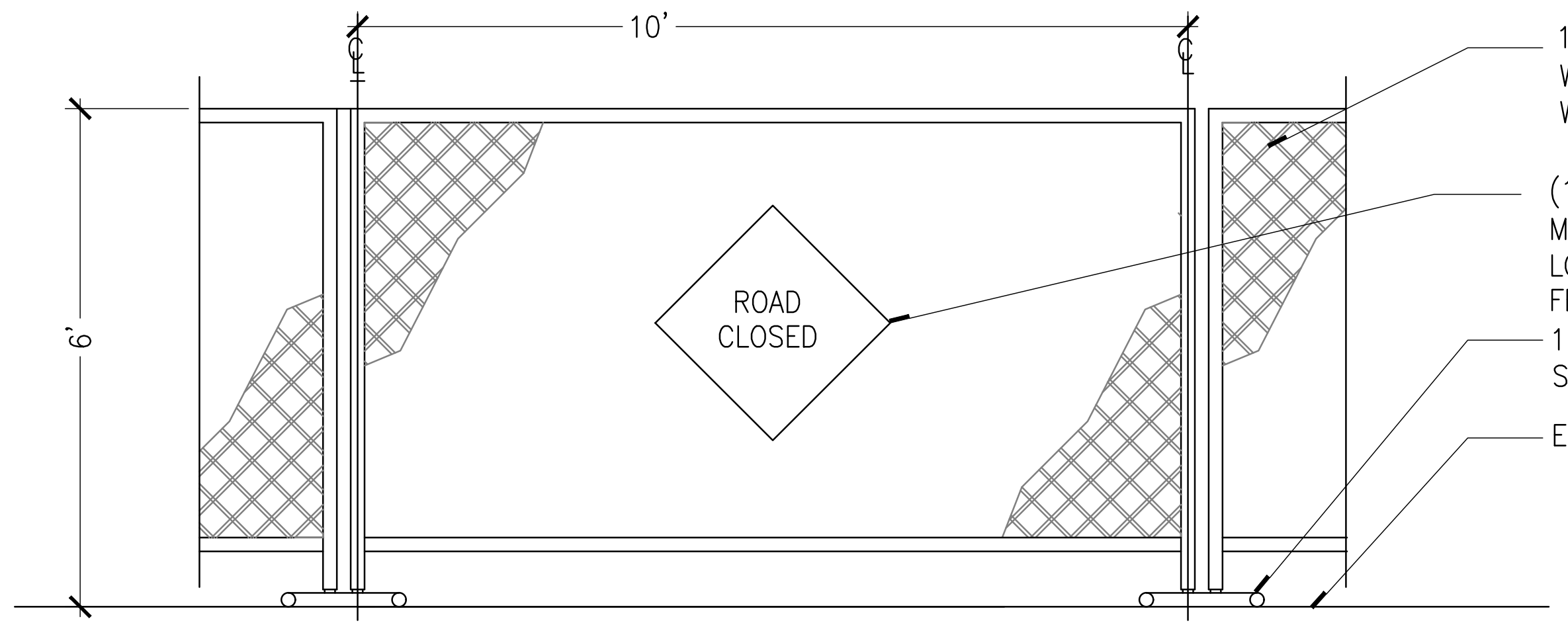
24" X 24" ALUM REFLECTIVE ROAD CLOSED SIGN

① ROAD CLOSED SIGN
NTS



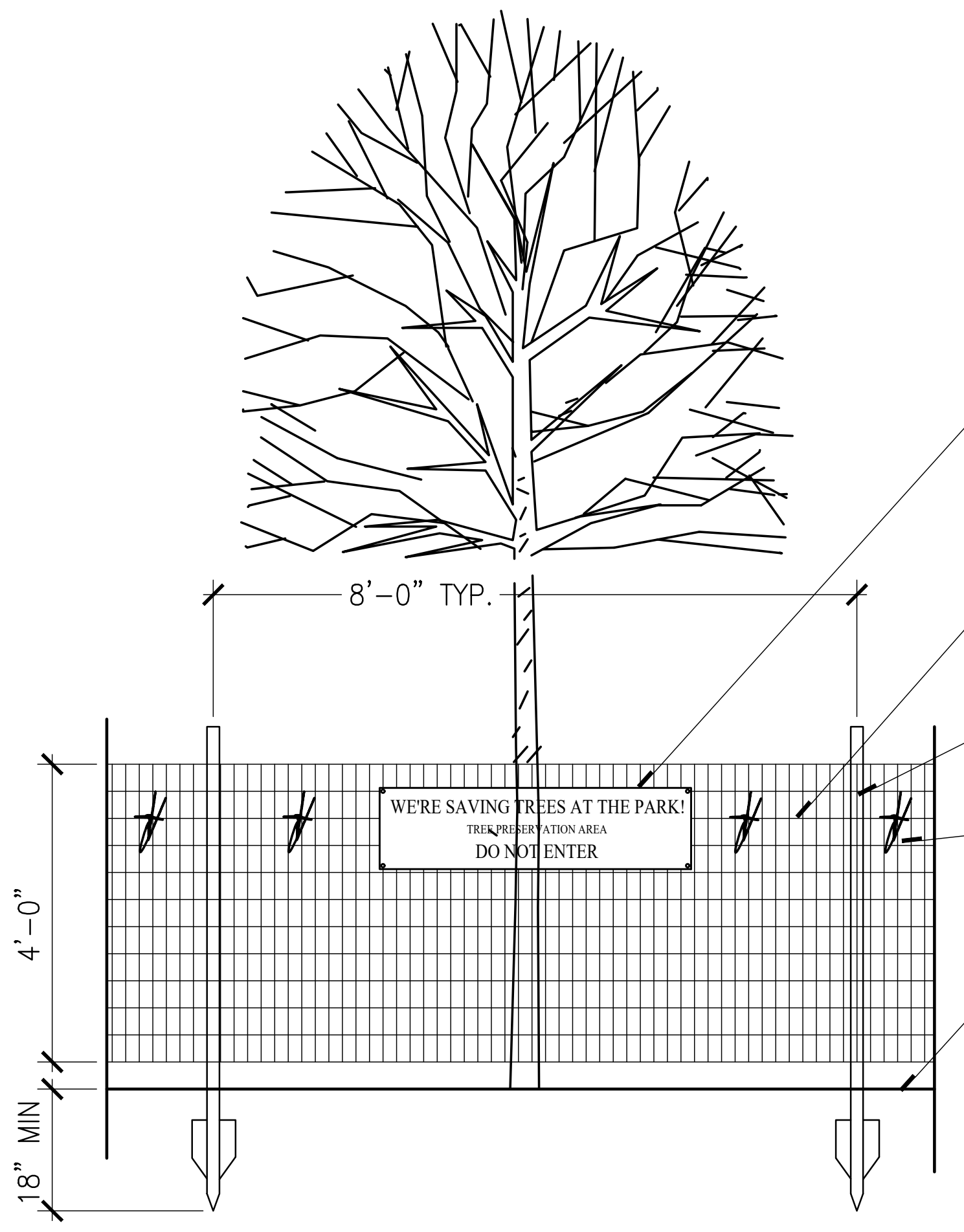
11 1/2 GA GALV FENCE FABRIC WITH 2 1/4" MESH W/ALUM WIRE TIES

(1)ROAD CLOSED SIGN ATTACH TO MESH W/GALV WIRE TIES, SIGN LOCATED IN THE MIDDLE OF THE FENCE LAYOUT

1 3/8" GALV. FENCE PANEL STAND

EXISTING GRADE

② ROAD CLOSED FENCE
1/2"=1'



TREE PROTECTION SIGN LOCATE AT EACH FENCE LOCATION AND EVERY 25' O.C. FOR LONG RUNS OF FENCE, SEE DETAIL THIS SHEET

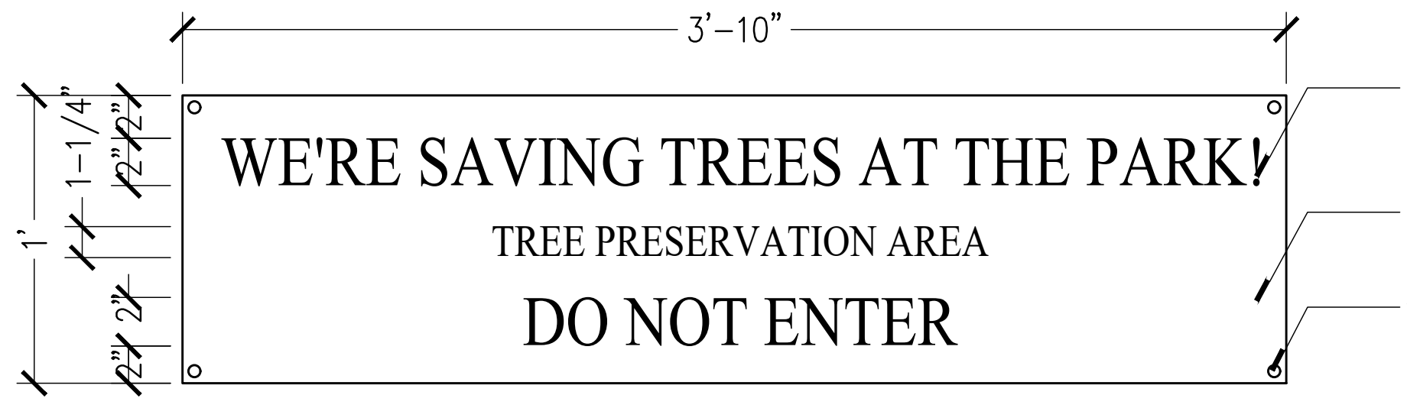
48" HT 10 GA VINYL COATED WELDED WIRE MESH, 2" X 4" OPENING, SECURE TO POST

3" X 3" X 6' HT HEAVY DUTY STEEL U-POST WITH ANCHOR PLATE.

ORANGE AWARENESS RIBBONS, AT LEAST 2 BETWEEN POSTS

EXISTING GRADE

④ TEMPORARY TREE PROTECTION FENCE
1/2"=1'



WHITE LETTERING

ALUMINIUM SHEET NYS PARKS GREEN

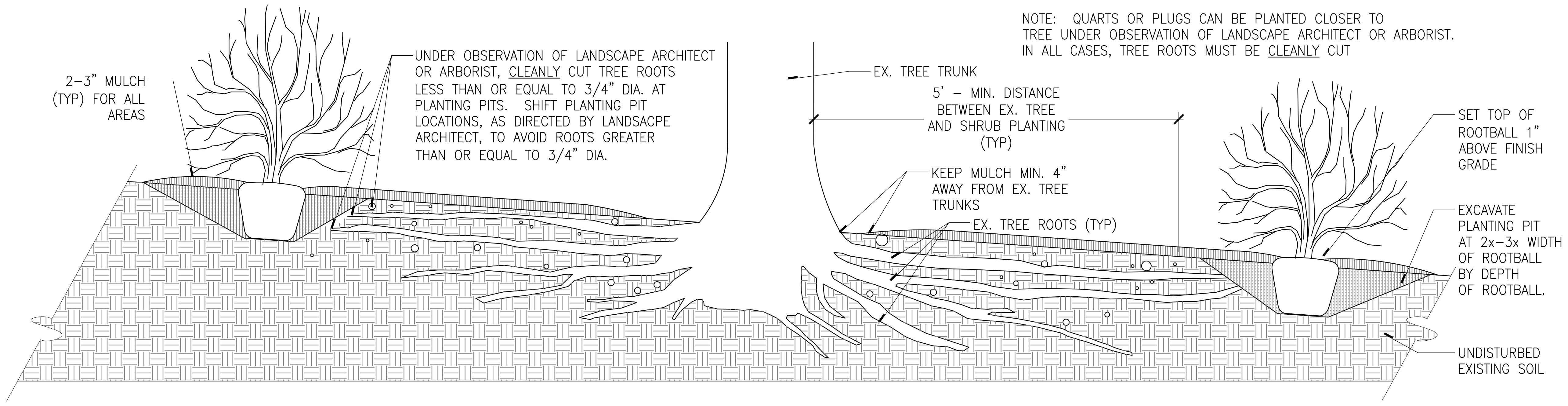
¼" HOLES AT EACH CORNER

NOTES:
1. TIE SIGN TO TREE PROTECTION FENCE WITH 18 GA. STEEL WIRE.

2. SEE TEMPORARY TREE PROTECTION PLANS FOR LOCATIONS.

③ TREE PROTECTION FENCE SIGN DETAIL
1-1/2"=1'

NOTE: QUARTS OR PLUGS CAN BE PLANTED CLOSER TO TREE UNDER OBSERVATION OF LANDSCAPE ARCHITECT OR ARBORIST. IN ALL CASES, TREE ROOTS MUST BE CLEANLY CUT



2-3" MULCH (TYP) FOR ALL AREAS

UNDER OBSERVATION OF LANDSCAPE ARCHITECT OR ARBORIST, CLEANLY CUT TREE ROOTS LESS THAN OR EQUAL TO 3/4" DIA. AT PLANTING PITS. SHIFT PLANTING PIT LOCATIONS, AS DIRECTED BY LANDSACPE ARCHITECT, TO AVOID ROOTS GREATER THAN OR EQUAL TO 3/4" DIA.

EX. TREE TRUNK

KEEP MULCH MIN. 4" AWAY FROM EX. TREE TRUNKS

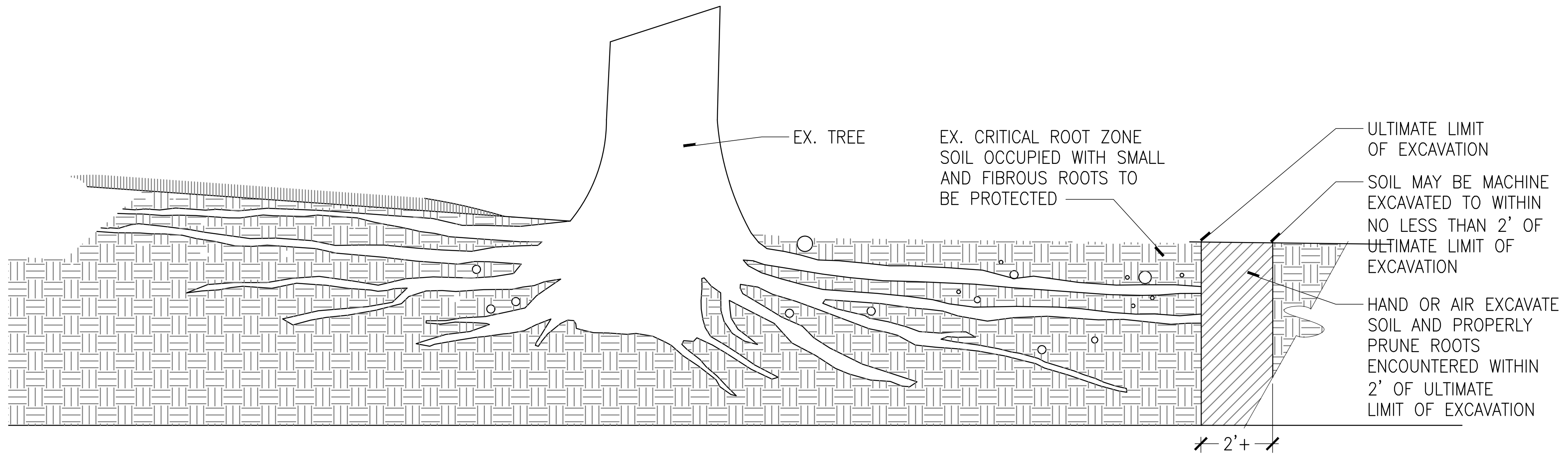
EX. TREE ROOTS (TYP)

SET TOP OF ROOTBALL 1" ABOVE FINISH GRADE

EXCAVATE PLANTING PIT AT 2x-3x WIDTH OF ROOTBALL BY DEPTH OF ROOTBALL.

UNDISTURBED EXISTING SOIL

② SOIL PREPARATION AND PLANTING IN TREE PRESERVATION AREA
3/4"=1'



EX. TREE

EX. CRITICAL ROOT ZONE SOIL OCCUPIED WITH SMALL AND FIBROUS ROOTS TO BE PROTECTED

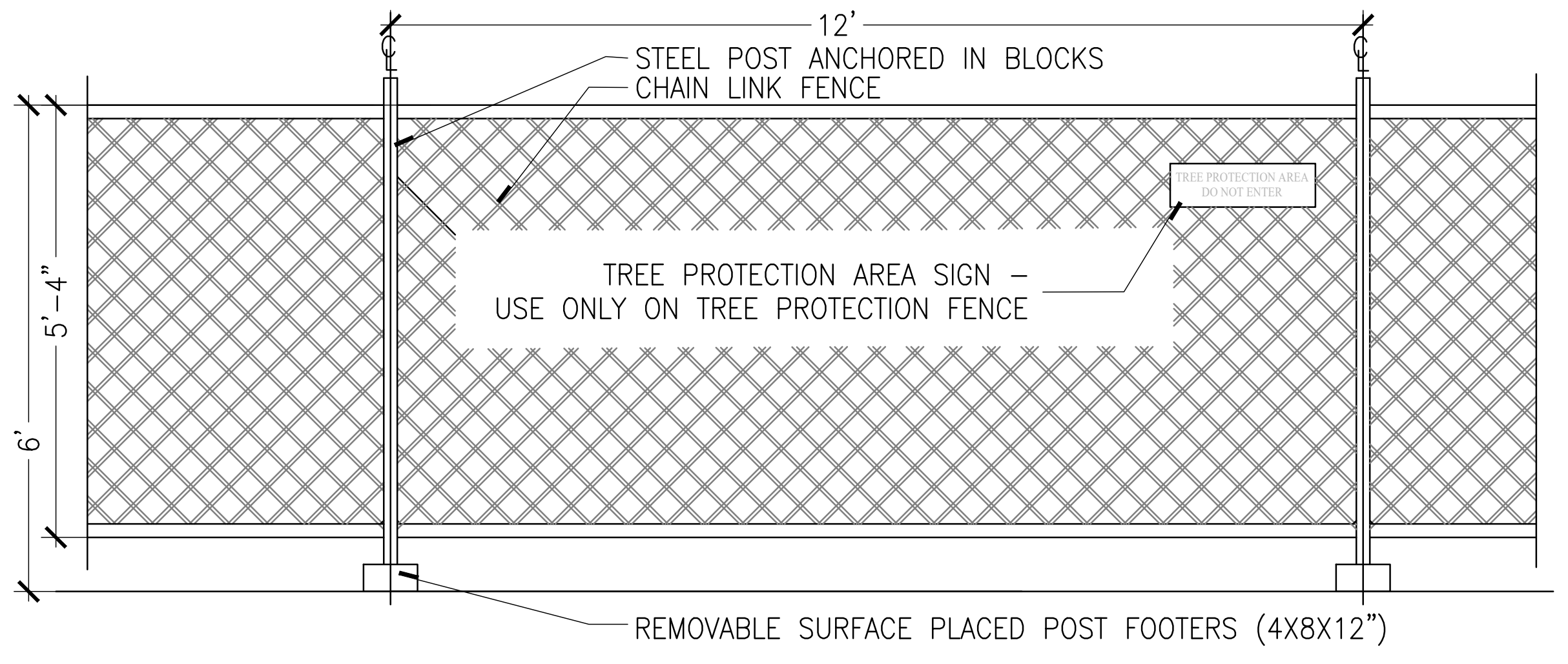
ULTIMATE LIMIT OF EXCAVATION

SOIL MAY BE MACHINE EXCAVATED TO WITHIN NO LESS THAN 2' OF ULTIMATE LIMIT OF EXCAVATION

HAND OR AIR EXCAVATE SOIL AND PROPERLY PRUNE ROOTS ENCOUNTERED WITHIN 2' OF ULTIMATE LIMIT OF EXCAVATION

① EXCAVATION WITHIN CRITICAL ROOT ZONE
N.T.S.

NOTES:
1) FENCE SHALL SEPARATE WORK AREAS FROM TREE/SOIL PROTECTION AREAS AT ALL TIMES. IT MAY NOT BE MOVED, EVEN TEMPORARILY, WITHOUT APPROVAL FROM THE LANDSCAPE ARCHITECT.



STEEL POST ANCHORED IN BLOCKS

CHAIN LINK FENCE

TREE PROTECTION AREA SIGN – USE ONLY ON TREE PROTECTION FENCE

REMOVABLE SURFACE PLACED POST FOOTERS (4X8X12")

① SOIL PROTECTION & TREE PRESERVATION FENCE
1/2"=1'

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Sheet Title
TREE
PROTECTION
DETAILS

Drawing Number
L-601

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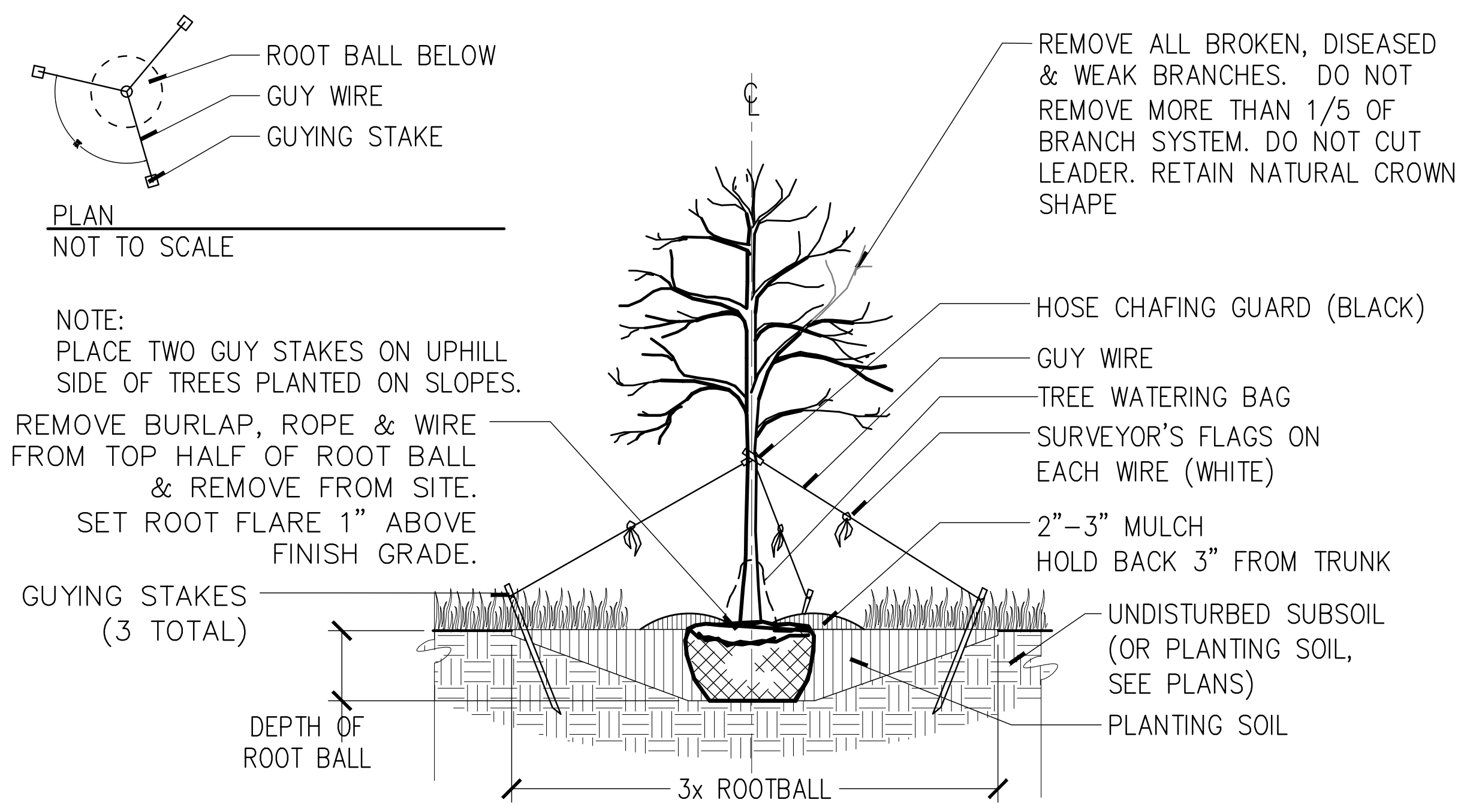
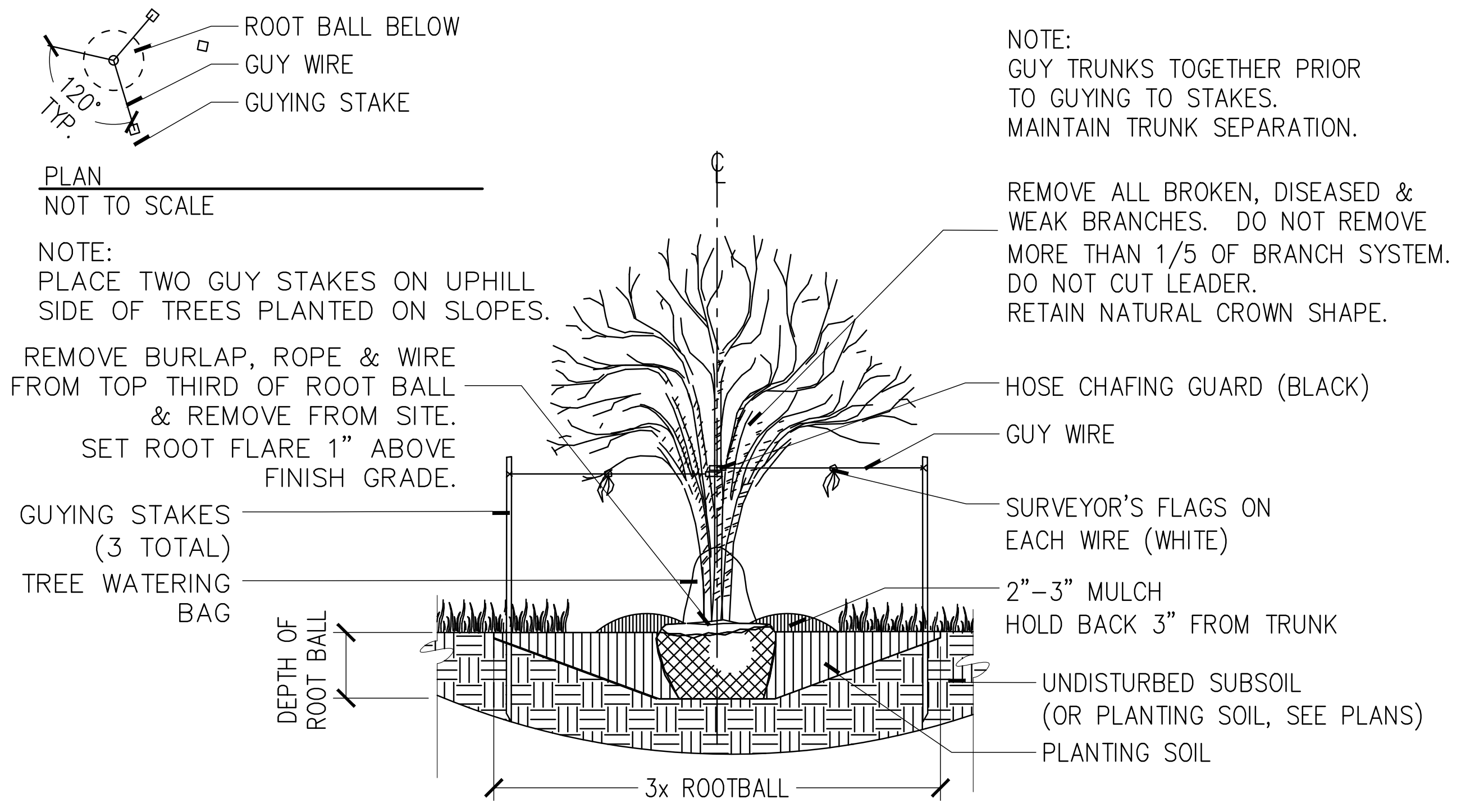
D006292

Sheet:
of 367



① DECIDUOUS TREE PLANTING DETAIL
NTS

NOTE:
THE TREE STAKES AND WATERING BAG CAN BE REMOVED FROM THE DETAIL, IF NOT NEEDED, BY FREEZING THOSE LAYERS.



③ MULTI-STEM TREE PLANTING DETAIL
NTS

NOTE:
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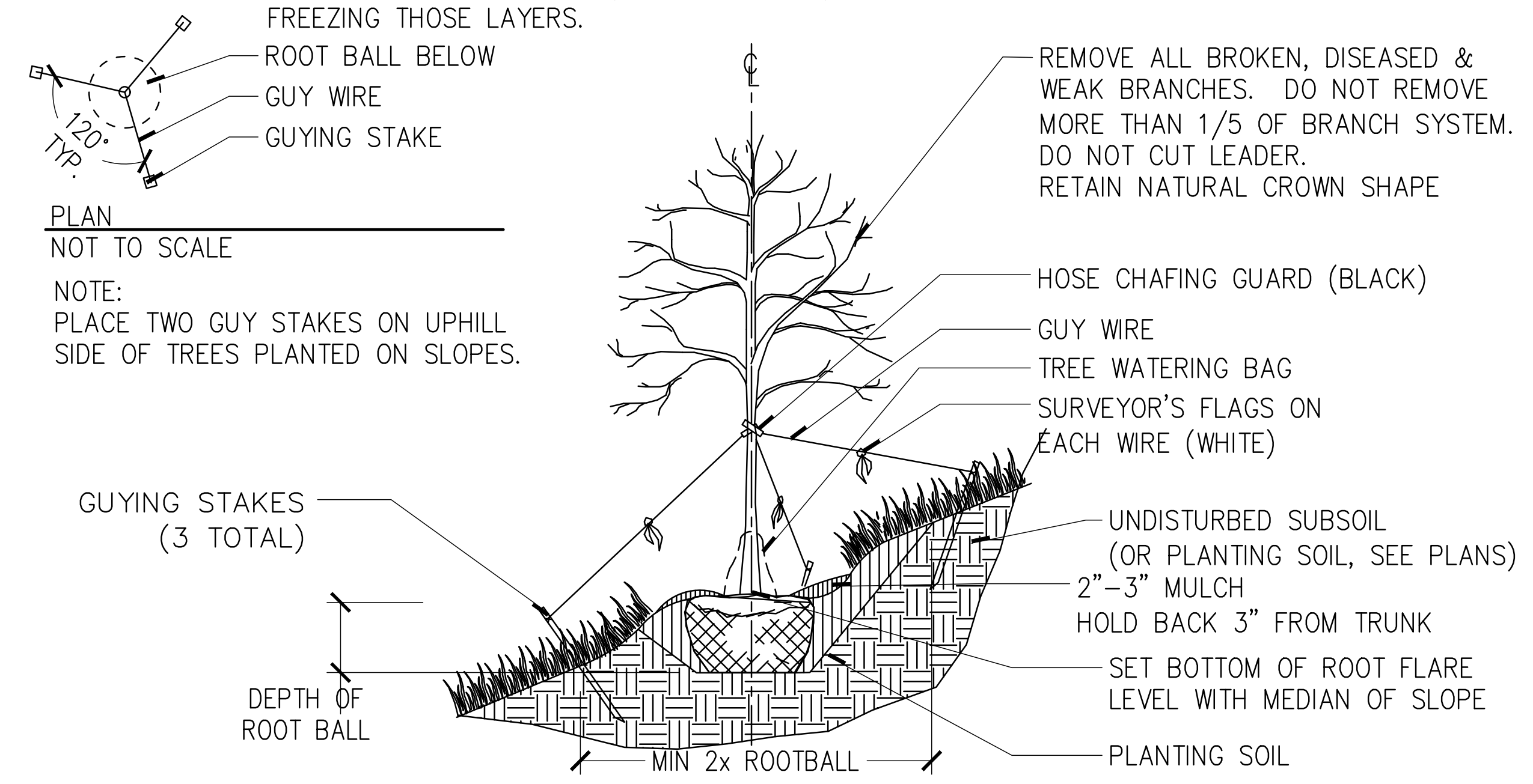
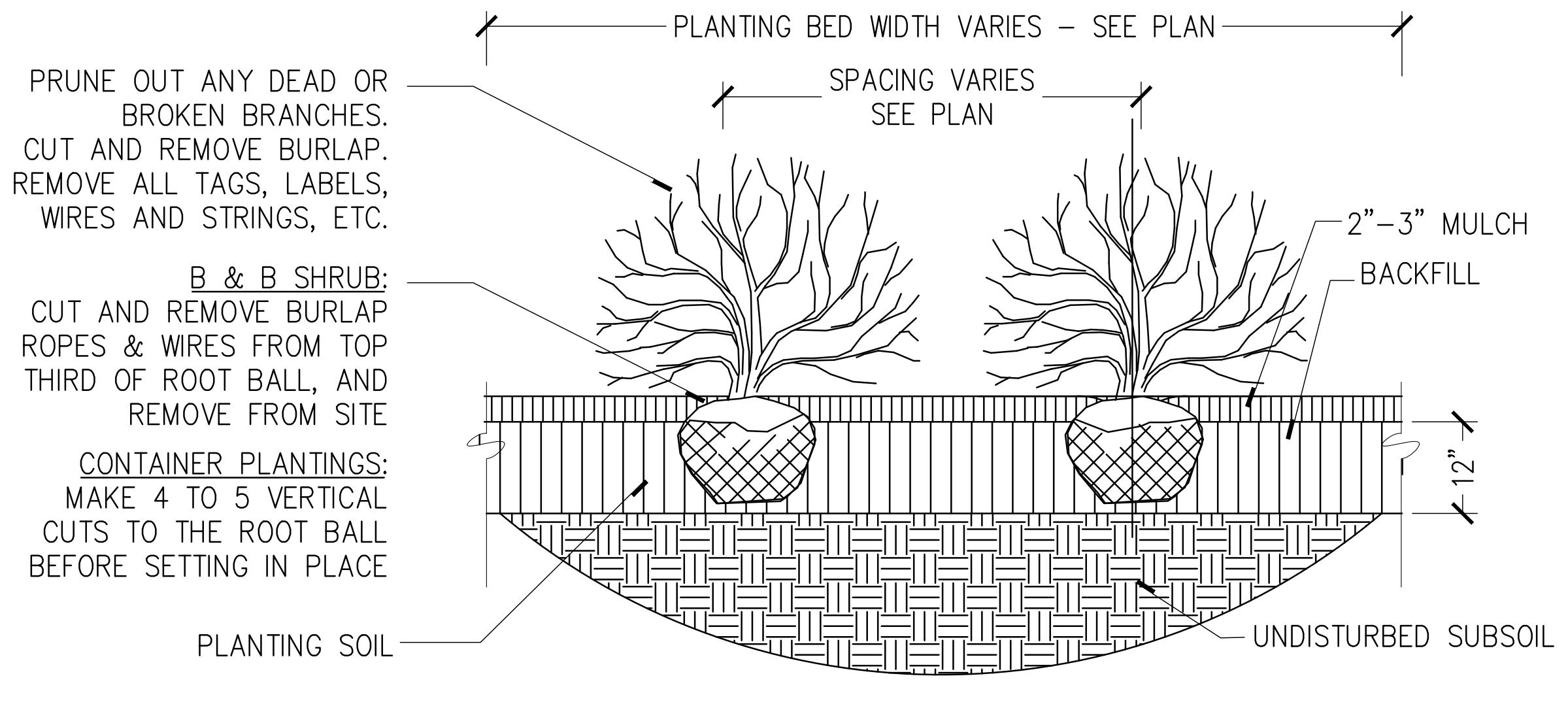
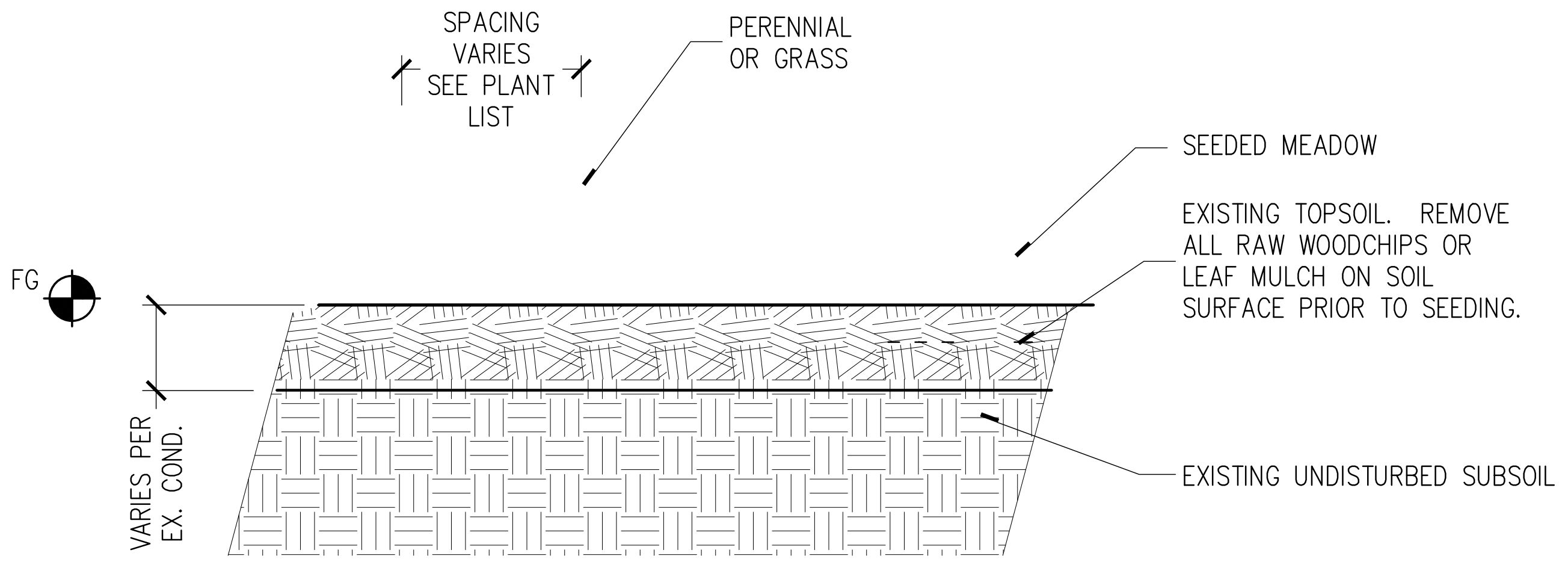


④ TREE PLANTING ON SLOPE
NTS

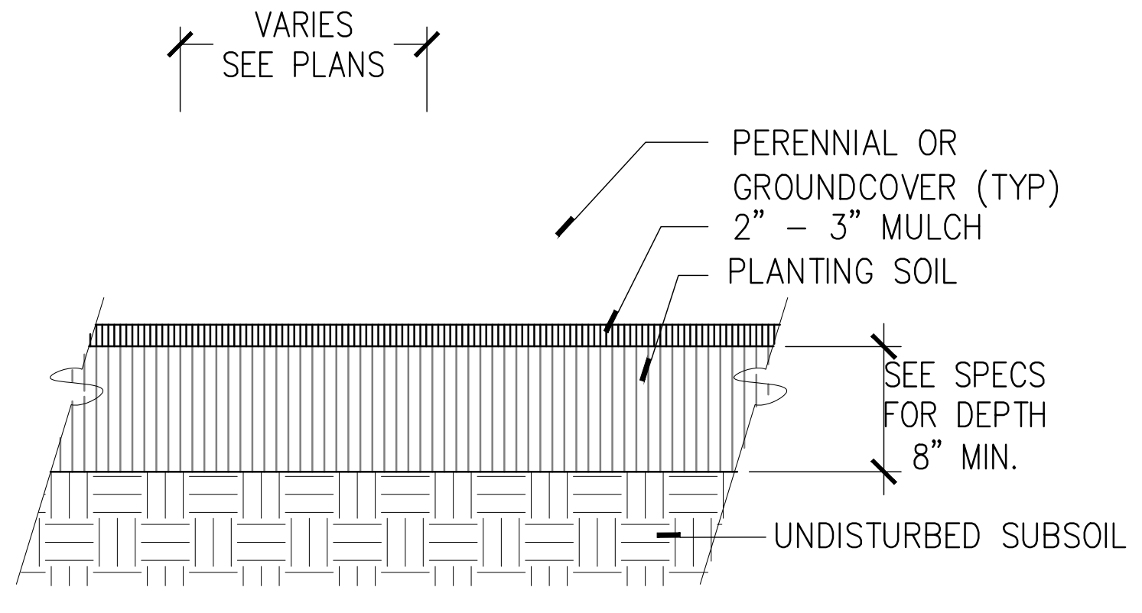


⑤ SHRUB PLANTING DETAIL
NTS

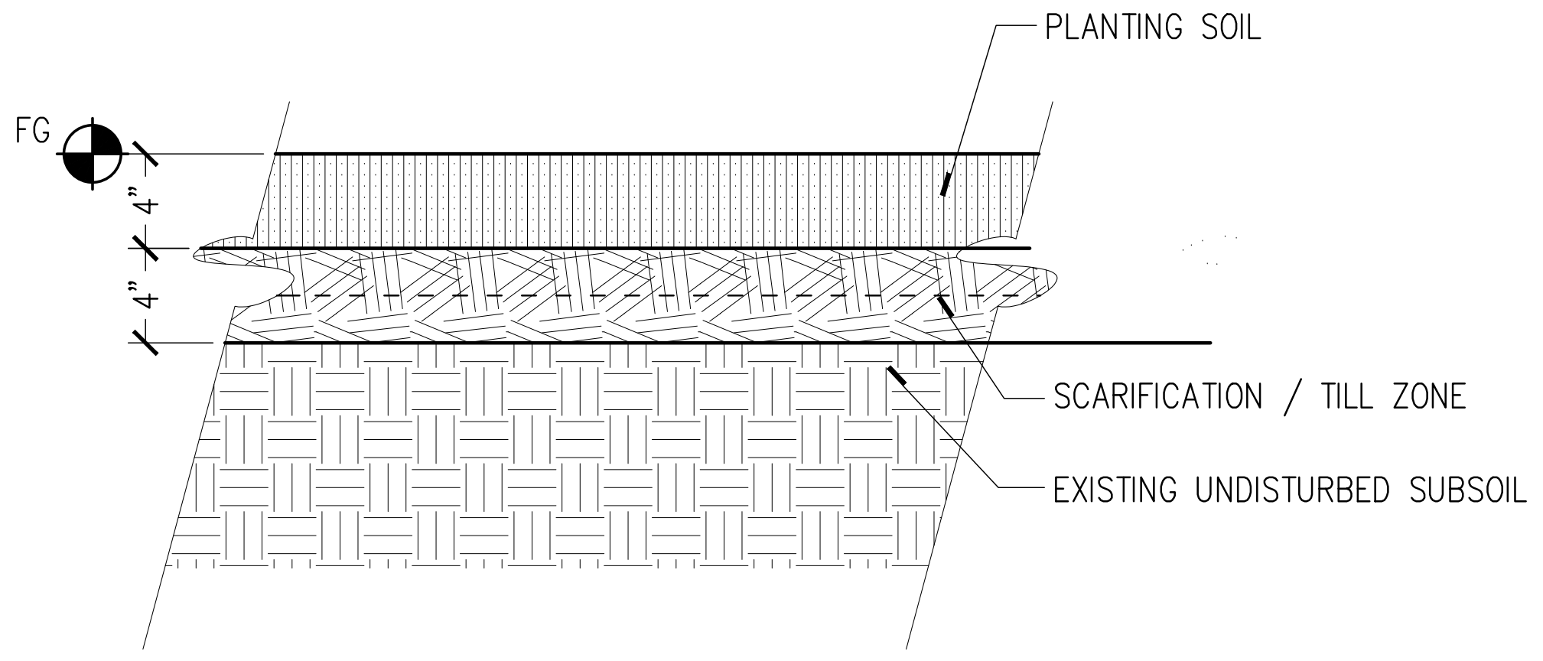
NOTES:
1. NO MULCH SHOULD BE APPLIED AROUND ANY HERBACEOUS PLANTS IN SEEDED AREAS.
2. INSTALL IN LOOSE INTERCONNECTING DRIFTS AT THE SPACING AND LOCATIONS AS SHOWN ON THE DRAWINGS.
3. PLANTS SHALL NOT BE PLANTED IN AN EVEN GRID OR UNIFORM PATTERN.
4. NO MORE THAN 5 PLANTS OF THE SAME SPECIES SHALL BE PLANTED ADJACENT TO ONE ANOTHER.



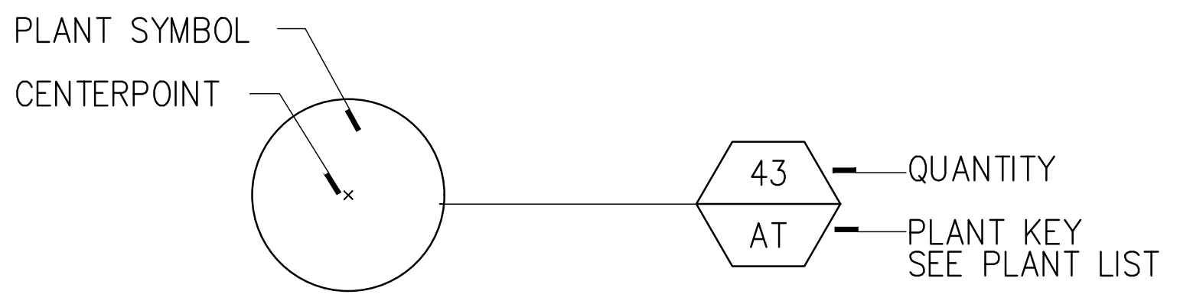
⑥ MEADOW PLANTING AND SOIL PREPARATION
1-1/2"=1'



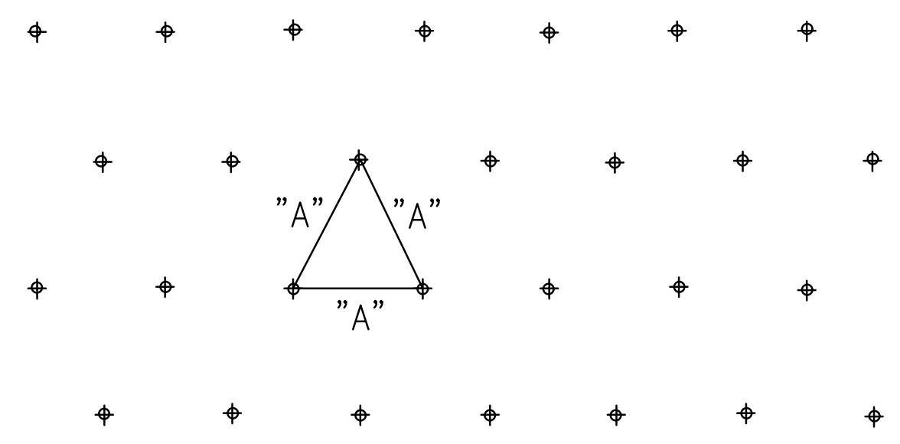
⑦ GROUNDCOVER AND PERENNIAL PLANTING DETAIL
N.T.S.



⑧ TURFGRASS PLANTING AND SOIL PREPARATION
1-1/2"=1'



⑨ PLANT KEY REFERENCE
N.T.S.



"A" REPRESENTS ON-CENTER PLANT SPACING, REFER TO PLANT LIST

INSTALL ALL SHRUBS AND GROUNDCOVERS USING TRIANGULAR SPACING UNLESS OTHERWISE SPECIFIED.

⑩ PLANT SPACING LAYOUT
NTS

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38 EAST 32ND STREET, 11TH FLOOR, NEW YORK, NY 10016

Signage Consultant
LVCK - A BEYER BLINDER BELLE STUDIO
120 BROADWAY, 20TH FLOOR, NEW YORK, NY 10271

NYS OPRHP Taconic Region
9 Old Post Rd, PO Box 308
Staatsburg, NY 12580
(845) 889 - 4100

Regional Director: Linda Cooper
Capital District Manager: Garrett Jobson

Project Title:
John Jay Homestead Site And Building Enhancements

Project Location:
Katonah
NY 10536

Key Plan

REVISIONS

Rev No	Description	Date:
1	SCHEMATIC DESIGN SUBMISSION	10/2/2023
2	DESIGN DEVELOPMENT SUBMISSION	1/31/2024
3	PROGRESS CD SUBMISSION	4/10/2024
4	PROGRESS CD SUBMISSION	5/22/2024

Drawn By:
Design By
Checked By:
Approved By:
DATE
04/10/24

Seal and Signature

Sheet Title
PLANTING
DETAILS

Drawing Number
L-602

Project Number:
D006292

Sheet:
of 367

APPENDIX I

Inspection Forms

John Jay Homestead Site and Building Enhancements

PERMIT NUMBER: NYR-

PRE-CONSTRUCTION MEETING DOCUMENTS

Project Name **John Jay Homestead Site and Building Enhancements**

GP-0-20-001 Permit No. **NYR** ____________________ **Date of Authorization** ____________

Name of Owner/Operator ______________________________

General Contractor ______________________________

The Following Information To Be Read By All Person's Involved in The Construction of Stormwater Related Activities:

Site Assessment and Inspections -

a. The Owner or Operator agrees to have a Qualified Inspector[1] conduct an assessment of the site prior to the commencement of construction. The Qualified Inspector shall 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.

b. For construction sites where soil disturbance activities have been temporarily suspended (e.g. winter shutdown) and temporary stabilization measures have been applied to all disturbed areas, the owner or operator can stop conducting inspections. The owner or operator shall resume inspections as soon as soil disturbance activities are reinitiated.

c. For construction sites where soil disturbance activities have been shut down with partial project completion, the owner or operator can stop conducting inspections if all areas disturbed (as of the project shutdown date) have achieved final stabilization and all post-construction stormwater management practices, required for the completed portion of the project, have been constructed in conformance with the SWPPP and are operational.

d. Following the commencement of construction, site inspections shall be conducted by the Qualified Inspector to ensure that erosion and sediment controls are being maintained in effective operating condition at all times. Inspections shall occur at least: (i) once every 7 calendar days for construction sites where soil disturbance activities are occurring; (ii) twice every 7 calendar days for construction sites where soil disturbance activities are occurring and the Owner/Operator has received authorization to disturb greater than five (5) acres of soil at any one time; (iii) once every thirty (30) calendar days for construction sites where soil disturbance activities have been temporarily suspended and temporary stabilization measures have been applied to all disturbed areas; and (iv) for construction sites where soil disturbance activities have been shut down with partial project completion, the Qualified Inspector can stop conducting inspections if all areas disturbed as of the project shutdown date have achieved final stabilization, and all post-construction stormwater management practices for the completed portion of the project have been constructed in conformance with the SWPPP and are operational.

e. The owner or operator shall notify the Regional Office stormwater contact person in writing prior to reducing the frequency of any inspections.

f. The Owner/Operator shall maintain a record of all inspection reports in the site log book. The site log book shall be maintained on site and be made available to the permitting authorities upon request. Prior to the commencement of construction,[2] the Owner/Operator shall certify in the site log book that the SWPPP is prepared in accordance with the State's standards and meets all Federal, State and local erosion and sediment control requirements.

g. Prior to filing of the Notice of Termination or the end of permit term, the Owner/Operator shall have the 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.

[1] "Qualified Inspector" means a person knowledgeable in the principles and practice of erosion and sediment controls, such as a Certified Professional in Erosion and Sediment Control (CPESC), soil scientist, licensed Professional Engineer (PE), licensed Landscape Architect, or other Department endorsed individual(s). It may also mean someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), or soil scientist provided that person has training in the principles and practices of erosion and sediment control. Training means that person has received four (4) hours of training endorsed by the Department and shall receive four (4) hours of training every three (3) years after the initial training session.

[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 disturbance activities at the site have been completed and a uniform, perennial vegetative cover with a density of eighty (80) percent over the entire pervious surface has been established, or equivalent stabilization measures (such as the use of mulches or geotextiles, rock rip-rap or washed/crushed stone) have been employed on all disturbed areas that are not covered by permanent structures, concrete or pavement.

John Jay Homestead Site and Building Enhancements

PRE-CONSTRUCTION SITE ASSESSMENT FORM

Inspector Name and Title

Date and Time of Inspection

Qualified Inspector

Qualified Inspector Signature

The above signed acknowledges that, to the best of his/her knowledge, all information provided on the following forms is accurate and complete.

a. 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? ____________________
☐	☐	☐	Have all contractors involved with implementing the erosion and sediment control portions of the SWPPP signed the contractor's certification?

b. 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, etc. have been flagged for protection.
☐	☐	☐	Creek crossings installed prior to land-disturbing activity, including clearing and blasting.

c. Surface Water Protection

Yes	No	NA	
☐	☐	☐	Clean stormwater runoff has been diverted away 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 waters are installed.

d. Stabilized Construction Entrance

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.

e. Perimeter 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
☐	☐	☐	Sediment traps and barriers are installed.

John Jay Homestead Site and Building Enhancements

PERMIT NUMBER: NYR- INSPECTION REPORT #__ :

John Jay Homestead Historic Site, Katonah, NY 10536
Location

Date and Time of Inspection

Qualified Inspector (name and title)

Qualified Inspector Signature

The above signed acknowledges that, to the best of his/her knowledge, all information provided on the following forms is accurate and complete.

☐ **Weekly Inspection**

Current Phase of Construction (if applicable):

Estimated Current Total Disturbed Area:

IMMEDIATE ACTION ITEMS / INSPECTION SUMMARY:

It is the responsibility of the Qualified Inspector to notify the owner/operator and appropriate contractor of any corrective actions that need to be taken within one (1) business day of the completion of an inspection. It is the responsibility of the contractor (subcontractor) to begin implementing the corrective actions within one (1) business day of this notification and complete the corrective action within a reasonable time frame. If there are action items from the previous inspection which have not been addressed, so note.

Per the GP-0-20-001, Digital photographs with date stamp, that clearly show the condition of all practices that have been identified as needing corrective actions shall be included with each inspection report. The qualified inspector shall attach paper color copies of the digital photographs to the inspection report being maintained onsite within seven (7) calendar days of the date of the inspection. The qualified inspector shall also take digital photographs, with date stamp, that clearly show the condition of the practice(s) after the corrective action has been completed. Paper color copies of these digital photographs shall be attached to the inspection report, documenting the completion of the corrective action work within seven (7) calendar days of that inspection.

1. GENERAL HOUSEKEEPING

Includes description of the weather and soil conditions (e.g. dry, wet, saturated) during the time of the inspection, a description of the condition of the runoff at all points of discharge from the construction site (including identification of any discharges of sediments from construction site), inspection for stream/pond turbidity, oil and floating substances, visible oil film, or globules or grease, contractor preparedness for implementation of erosion and sediment control, impact on adjacent property, and dust control.

Yes **No**

☐ ☐ Is there immediate action required regarding General Housekeeping?

Notes:

2. EXCAVATION DEWATERING

Includes inspection ensuring that clean water from upstream pool is being pumped to the downstream pool, that sediment laden water from work area is being discharged to a silt-trapping device, and that constructed upstream berm has one-foot minimum freeboard.

Yes **No**

☐ ☐ Is there immediate action required regarding Excavation Dewatering?

Notes:

3. INTERCEPTOR DIKES AND SWALES

Includes inspection ensuring that dikes and swales are installed per plan with minimum side slopes 2H:1V or flatter, are stabilized by geotextile fabric, seed, or mulch with no erosion occurring, and that sediment-laden runoff is directed to sediment trapping structure.

Yes **No**

☐ ☐ Is there immediate action required regarding an Interceptor Dike or Swale?

Notes:

4. EROSION & SEDIMENT CONTROL

Includes inspection ensuring that erosion and sediment control practices are located and installed correctly, BMPs are maintained per specifications, stockpiles are stabilized and contained, de-watering operations prevent direct discharges to sensitive features, and that clearing and grading operations are divided into stages for large areas. Identification of all erosion and sediment control practices that need repair or maintenance.

Yes **No**

☐ ☐ Is there immediate action required regarding Erosion & Sediment Control?

Notes:

5. AREAS OF DISTURBANCE

Includes description and sketch of areas that are disturbed at the time of the inspection and areas that have been stabilized (temporary and/or final) since last inspection.

Yes **No**

☐ ☐ Is there immediate action required regarding stabilizing disturbed areas?

Notes:

6. STABILIZED CONSTRUCTION ACCESS

Includes inspection ensuring that stone is clean enough to effectively remove mud from vehicles, is installed per standards and specifications, that all traffic use the stabilized entrance to enter and leave site, and that adequate drainage is provided to prevent ponding at entrance.

Yes **No**

☐ ☐ Is there immediate action required regarding a Stabilized Construction Entrance?

Notes:

7. REINFORCED SILT FENCE

Includes inspection ensuring that silt fence is installed on contour, 10 feet from toe of slope, joints are constructed by wrapping the two ends together for continuous support, steel posts installed (if applicable), installed on downstream side of slope, maximum 6' intervals with 6 x 6 inch 14 gage wire, fabric is buried minimum of 6 inches, posts are stable, fabric is tight and without rips or frayed areas, and that sediment accumulation is less than 1/3 the height of the silt fence.

Yes **No**
☐ ☐ Is there immediate action required regarding Silt Fence?

Notes:

8. STONE CHECK DAM

Includes inspection ensuring that stone check dam channels are without erosion (i.e., flow is not eroding soil underneath or around the structure), that check dam is in good condition (i.e., rocks have not been displaced and no permanent pools behind the structure), and that sediment accumulation is less than design capacity.

Yes **No**
☐ ☐ Is there immediate action required regarding a Stone Check Dam?

Notes:

9. COMPOST FILTER SOCK

Includes inspection ensuring that compost filter sock is anchored in earth with 2"x2" wooden stakes driven 12" into the soil on 10 foot centers on the centerline of the sock. On uneven terrain, effective ground contact can be enhanced by the placement of a fillet of filter media on the disturbed area side of the compost sock. Damaged filter socks shall be replaced or repaired according the manufacturer's recommendations.

Yes **No**

☐ ☐ Is there immediate action required regarding Compost Filter Sock?

Notes:

10. FILTER FABRIC (DROP) INLET PROTECTION

Includes inspection ensuring that protection is installed with 2-inch x 4-inch wood frame and wood posts, with maximum 3-foot spacing, is buried a minimum of 8 inches and secured to frame/posts with staples at max 8-inch spacing, has posts with 3-foot maximum spacing between posts, has posts that are stable, fabric is tight and without rips or frayed areas, and that sediment accumulation is within design capacity.

Yes **No**

☐ ☐ Is there immediate action required regarding Filter Fabric (Drop) Inlet Protection?

Notes:

11.TEMPORARY SEDIMENT TRAP

Includes inspection ensuring that outlet structure is constructed per the approved plan or drawing, that geotextile fabric has been placed beneath rock fill, and that sediment accumulation is within design capacity.

Yes **No**

☐ ☐ Is there immediate action required regarding Temporary Sediment Traps?

Notes:

12.CONCRETE WASHOUT

Includes inspection ensuring that the concrete washout is constructed and maintained per the approved plan or drawing.

Yes	No	
☐	☐	Is there immediate action required regarding Concrete Washouts?

Notes:

13.STORMWATER BASIN

Includes inspection ensuring that Permanent Stormwater Basins are installed per plans and specifications.

Yes	No	
☐	☐	Is there immediate action required regarding Stormwater Basins?

Notes:

14.CURRENT PHASE OF POST-CONSTRUCTION STORMWATER PRACTICES

Includes inspection of current phase of all post-construction stormwater management practices, identification of all construction that is not in conformance with the SWPPP and technical standards, identify corrective action(s) that must be taken to install, repair, replace or maintain erosion and sediment control practices, and to correct deficiencies identified with the construction of post-construction stormwater management practice(s).

Yes	No	
☐	☐	Is there immediate action required regarding the current phase of post-construction stormwater management practices?

Notes:

ADDITIONAL NOTES / MODIFICATIONS

New York State Department of Environmental Conservation
Division of Water
625 Broadway, 4th Floor
Albany, New York 12233-3505
(NOTE: Submit completed form to address above)

NOTICE OF TERMINATION for Storm Water Discharges Authorized under the SPDES General Permit for Construction Activity

Please indicate your permit identification number: NYR ___ ___ ___ ___ ___ ___

I. Owner or Operator Information

1. Owner/Operator Name:

2. Street Address:

3. City/State/Zip:

4. Contact Person:

4a.Telephone:

4b. Contact Person E-Mail:

II. Project Site Information

5. Project/Site Name:

6. Street Address:

7. City/Zip:

8. County:

III. Reason for Termination

9a. ☐ All disturbed areas have achieved final stabilization in accordance with the general permit and SWPPP. ***Date final stabilization completed** (month/year): ________________________________

9b. ☐ Permit coverage has been transferred to new owner/operator. Indicate new owner/operator's permit identification number: NYR ____ ____ ____ ____ ____ ____
(Note: Permit coverage can not be terminated by owner identified in I.1. above until new owner/operator obtains coverage under the general permit)

9c. ☐ Other (Explain on Page 2)

IV. Final Site Information:

10a. Did this construction activity require the development of a SWPPP that includes post-construction stormwater management practices? ☐ yes ☐ no (If no, go to question 10f.)

10b. Have all post-construction stormwater management practices included in the final SWPPP been constructed? ☐ yes ☐ no (If no, explain on Page 2)

10c. Identify the entity responsible for long-term operation and maintenance of practice(s)?

____

NOTICE OF TERMINATION for Storm Water Discharges Authorized under the SPDES General Permit for Construction Activity - continued

10d. Has the entity responsible for long-term operation and maintenance been given a copy of the operation and maintenance plan required by the general permit? ☐ yes ☐ no

10e. Indicate the method used to ensure long-term operation and maintenance of the post-construction stormwater management practice(s):

☐ Post-construction stormwater management practice(s) and any right-of-way(s) needed to maintain practice(s) have been deeded to the municipality.

☐ Executed maintenance agreement is in place with the municipality that will maintain the post-construction stormwater management practice(s).

☐ For post-construction stormwater management practices that are privately owned, a mechanism is in place that requires operation and maintenance of the practice(s) in accordance with the operation and maintenance plan, such as a deed covenant in the owner or operator's deed of record.

☐ For post-construction stormwater management practices that are owned by a public or private institution (e.g. school, university or hospital), government agency or authority, or public utility; policy and procedures are in place that ensures operation and maintenance of the practice(s) in accordance with the operation and maintenance plan.

10f. Provide the total area of impervious surface (i.e. roof, pavement, concrete, gravel, etc.) constructed within the disturbance area? ______________________________ (acres)

11. Is this project subject to the requirements of a regulated, traditional land use control MS4? ☐ yes ☐ no

(If Yes, complete section VI - "MS4 Acceptance" statement

V. Additional Information/Explanation:

(Use this section to answer questions 9c. and 10b., if applicable)

VI. MS4 Acceptance - MS4 Official (principal executive officer or ranking elected official) or Duly Authorized Representative (Note: Not required when 9b. is checked -transfer of coverage)

I have determined that it is acceptable for the owner or operator of the construction project identified in question 5 to submit the Notice of Termination at this time.

Printed Name:

Title/Position:

Signature: Date:

NOTICE OF TERMINATION for Storm Water Discharges Authorized under the SPDES General Permit for Construction Activity - continued

VII. Qualified Inspector Certification - Final Stabilization:

I hereby certify that all disturbed areas have achieved final stabilization as defined in the current version of the general permit, and that all temporary, structural erosion and sediment control measures have been removed. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

Printed Name:

Title/Position:

Signature: Date:

VIII. Qualified Inspector Certification - Post-construction Stormwater Management Practice(s):

I hereby certify that all post-construction stormwater management practices have been constructed in conformance with the SWPPP. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

Printed Name:

Title/Position:

Signature: Date:

IX. Owner or Operator Certification

I hereby certify that this document was prepared by me or under my direction or supervision. My determination, based upon my inquiry of the person(s) who managed the construction activity, or those persons directly responsible for gathering the information, is that the information provided in this document is true, accurate and complete. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

Printed Name:

Title/Position:

Signature: Date:

(NYS DEC Notice of Termination - January 2015)

APPENDIX J

Post Construction Operation and Maintenance

Bioretention Operation and Maintenance

Project: ______________________________
Location: ______________________________
Site Status: ______________________________
____

Date: ______________________________
Time: ______________________________

Inspector: ______________________________

Maintenance Item	**Maintenance Required**	**Comments**
1. Debris Cleanout	**(Monthly)**	
1. Bioretention and contributing areas clean of debris	YES ☐ NO ☐	
2. No dumping of yard wastes into practice	YES ☐ NO ☐	
3. Litter (branches, etc.) have been removed	YES ☐ NO ☐	
2. Vegetation	**(Monthly)**	
1. Plant height not less that water depth	YES ☐ NO ☐	
2. Fertilized per specifications	YES ☐ NO ☐	
3. Plant composition according to Approved plans	YES ☐ NO ☐	
4. No placement of inappropriate plants	YES ☐ NO ☐	
5. Grass height not greater than 6 inches	YES ☐ NO ☐	
6. No evidence of erosion	YES ☐ NO ☐	

Bioretention Operation and Maintenance

Maintenance Item	Maintenance Required	Comments
3. Check Dams/Energy Dissipaters/sumps (Annual, After Major Storms)		
1. No evidence of structural deterioration	YES ☐ NO ☐	
2. Any grates are in good condition	YES ☐ NO ☐	
3. No evidence of spalling or cracking of Structural parts	YES ☐ NO ☐	
4. Outlet/Overflow Spillway (Annual)		
1. Good Condition, no need for repairs	YES ☐ NO ☐	
2. No evidence of erosion (if draining into a Natural channel)	YES ☐ NO ☐	
5. Overall Function of Facility (Annual)		
1. Evidence of flow bypassing facility	YES ☐ NO ☐	
2. No noticeable odors outside of facility	YES ☐ NO ☐	

Comments:

Actions to be Taken:

Tree Planting / Tree Pit Operation and Maintenance

Project: ____
Location: ____
Site Status: ____
____

Date: ____
Time: ____

Inspector: ____

Maintenance Item	**Maintenance Required**	**Comments**
1. Assess Tree Health	**(Quarterly, After Major Storms)**	
1. Provide necessary mulching, watering, and fertilized per specifications	YES ☐ NO ☐	
2. Inspect tree for damages or dead limbs; prune as necessary	YES ☐ NO ☐	
3. Inspect tree for evidence of insect and disease damage; treat as necessary	YES ☐ NO ☐	
4. No evidence of erosion and dumping of yard wastes	YES ☐ NO ☐	

Comments:

____
____
____
____

Actions to be Taken:

____
____
____
____

APPENDIX K

Notice of Intent (NOI) and
SPDES General Permit (GP-0-20-001)

NOI for coverage under Stormwater General Permit for Construction Activity

version 1.37

(Submission #: HQ0-KM9J-F68EM, version 1)

Details

Originally Started By	hugo bouillon
Alternate Identifier	John Jay Homestead Site and Building Enhancements
Submission ID	HQ0-KM9J-F68EM
Submission Reason	New
Status	Draft

Form Input

Owner/Operator Information

Owner/Operator Name (Company/Private Owner/Municipality/Agency/Institution, etc.)
NYS Parks, Recreation and Historic Preservation Taconic Region

Owner/Operator Contact Person Last Name (NOT CONSULTANT)
Cooper

Owner/Operator Contact Person First Name
Linda

Owner/Operator Mailing Address
9 Old Post Road, PO Box 308

City
Staatsburg

State
NY

Zip
12580

Phone
8458893811

Email
Linda.Cooper@parks.ny.gov

Federal Tax ID
14-601-3200

> If the owner/operator is an organization, provide the Federal Tax ID number, or Employer Identification Number (EIN), in the format xx-xxxxxxx. If the owner/operator is an individual and not an organization, enter "Not Applicable" or "N/A" and do not provide the individual’s social security number.

Project Location

Project/Site Name
John Jay Homestead Site and Building Enhancements

Street Address (Not P.O. Box)
400 Jay St

Side of Street
North

City/Town/Village (THAT ISSUES BUILDING PERMIT)
Bedford

State
NY

Zip
10536

DEC Region
3

> The DEC Region must be provided. Please use the NYSDEC Stormwater Interactive Map (https://gisservices.dec.ny.gov/gis/stormwater/) to confirm which DEC Region this site is located in. To view the DEC Regions, click on “Other Useful Reference Layers” on the left side of the map, then click on “DEC Administrative Boundary.” Zoom out as needed to see the Region boundaries.
> For projects that span multiple Regions, please select a primary Region and then provide the additional Regions as a note in Question 39.

County
WESTCHESTER

Name of Nearest Cross Street
Katonah Woods Road

Distance to Nearest Cross Street (Feet)
200

Project In Relation to Cross Street
South

Tax Map Numbers Section-Block-Parcel
61.5-1-6

Tax Map Numbers
NONE PROVIDED

> If the project does not have tax map numbers (e.g. linear projects), enter “Not Applicable” or "N/A".

1. Coordinates

Provide the Geographic Coordinates for the project site. The two methods are:
- Navigate to the project location on the map (below) and click to place a marker and obtain the XY coordinates.
- The "Find Me" button will provide the lat/long for the person filling out this form. Then pan the map to the correct location and click the map to place a marker and obtain the XY coordinates.

Navigate to your location and click on the map to get the X,Y coordinates
41.251574,-73.66010779999999

Project Details

2. What is the nature of this project?
Redevelopment with increase in impervious area

> For the purposes of this eNOI, “New Construction” refers to any project that does not involve the disturbance of existing impervious area (i.e. 0 acres). If existing impervious area will be disturbed on the project site, it is considered redevelopment with either increase in impervious area or no increase in impervious area.

3. Select the predominant land use for both pre and post development conditions.

Pre-Development Existing Landuse
Other: Historical, Educational, Recreational Land

Post-Development Future Land Use
Other: Historical, Educational, Recreational Land

3a. If Single Family Subdivision was selected in question 3, enter the number of subdivision lots.
NONE PROVIDED

---

4. In accordance with the larger common plan of development or sale, enter the total project site acreage, the acreage to be disturbed and the future impervious area (acreage)within the disturbed area.

*** ROUND TO THE NEAREST TENTH OF AN ACRE. ***

Total Site Area (acres)
62.0

Total Area to be Disturbed (acres)
8.3

Existing Impervious Area to be Disturbed (acres)
2.2

Future Impervious Area Within Disturbed Area (acres)
2.7

5. Do you plan to disturb more than 5 acres of soil at any one time?
No

---

6. Indicate the percentage (%) of each Hydrologic Soil Group(HSG) at the site.

A (%)
0

B (%)
0

C (%)
97

D (%)
3

7. Is this a phased project?
Yes

8. Enter the planned start and end dates of the disturbance activities.

Start Date
06/03/2024

End Date
03/31/2026

9. Identify the nearest surface waterbody(ies) to which construction site runoff will discharge.
Wetlands and tributary to Cross River Reservoir and tributary to Stone Hill River

> Drainage ditches and storm sewer systems are not considered surface waterbodies. Please identify the surface waterbody that they discharge to. If the nearest surface waterbody is unnamed, provide a description of the waterbody, such as, “Unnamed tributary to Niagara River.”

9a. Type of waterbody identified in question 9?
Lake Off Site
Stream/Creek On Site
Wetland/State Jurisdiction On Site (Answer 9b)

Other Waterbody Type Off Site Description
NONE PROVIDED

9b. If "wetland" was selected in 9A, how was the wetland identified?
Delineated by Consultant

10. Has the surface waterbody(ies) in question 9 been identified as a 303(d) segment in Appendix E of GP-0-20-001?
No

11. Is this project located in one of the Watersheds identified in Appendix C of GP-0-20-001?
Yes

12. Is the project located in one of the watershed areas associated with AA and AA-S classified waters?
Yes

> Please use the DEC Stormwater Interactive Map (https://gisservices.dec.ny.gov/gis/stormwater/) to confirm if this site is located in one of the watersheds of an AA or AA-S classified water. To view the watershed areas, click on “Permit Related Layers” on the left side of the map, then click on “Class AA AAS Watersheds.”

If No, skip question 13.

13. Does this construction activity disturb land with no existing impervious cover and where the Soil Slope Phase is identified as D (provided the map unit name is inclusive of slopes greater than 25%), E or F on the USDA Soil Survey?
No

If Yes, what is the acreage to be disturbed?
NONE PROVIDED

14. Will the project disturb soils within a State regulated wetland or the protected 100 foot adjacent area?
No

15. Does the site runoff enter a separate storm sewer system (including roadside drains, swales, ditches, culverts, etc)?
No

16. What is the name of the municipality/entity that owns the separate storm sewer system?
NONE PROVIDED

17. Does any runoff from the site enter a sewer classified as a Combined Sewer?
No

18. Will future use of this site be an agricultural property as defined by the NYS Agriculture and Markets Law?
No

19. Is this property owned by a state authority, state agency, federal government or local government?
Yes

20. Is this a remediation project being done under a Department approved work plan? (i.e. CERCLA, RCRA, Voluntary Cleanup Agreement, etc.)
No

Required SWPPP Components

21. Has the required Erosion and Sediment Control component of the SWPPP been developed in conformance with the current NYS Standards and Specifications for Erosion and Sediment Control (aka Blue Book)?
Yes

22. Does this construction activity require the development of a SWPPP that includes the post-construction stormwater management practice component (i.e. Runoff Reduction, Water Quality and Quantity Control practices/techniques)?
Yes

If you answered No in question 22, skip question 23 and the Post-construction Criteria and Post-construction SMP Identification sections.

23. Has the post-construction stormwater management practice component of the SWPPP been developed in conformance with the current NYS Stormwater Management Design Manual?
Yes

24. The Stormwater Pollution Prevention Plan (SWPPP) was prepared by:
Professional Engineer (P.E.)

SWPPP Preparer
CHA Consulting

Contact Name (Last, First)
Bennett, Samuel

Mailing Address
3 Winners Circle

City
Albany

State
New York

Zip
12205

Phone
(518) 453-8254

Email
sbennett@chasolutions.com

Download SWPPP Preparer Certification Form

Please take the following steps to prepare and upload your preparer certification form:

1) Click on the link below to download a blank certification form
2) The certified SWPPP preparer should sign this form
3) Scan the signed form
4) Upload the scanned document

Download SWPPP Preparer Certification Form

Please upload the SWPPP Preparer Certification

> NONE PROVIDED
> **Comment**
> NONE PROVIDED

Erosion & Sediment Control Criteria

25. Has a construction sequence schedule for the planned management practices been prepared?
Yes

26. Select all of the erosion and sediment control practices that will be employed on the project site:

Temporary Structural
Dust Control
Stabilized Construction Entrance
Silt Fence
Straw/Hay Bale Dike
Storm Drain Inlet Protection

Biotechnical
None

Vegetative Measures
Topsoiling
Straw/Hay Bale Dike
Seeding
Protecting Vegetation
Mulching

Permanent Structural
Land Grading
Retaining Wall
Rock Outlet Protection

Other
NONE PROVIDED

Post-Construction Criteria

*** IMPORTANT: Completion of Questions 27-39 is not required if response to Question 22 is No.**

27. Identify all site planning practices that were used to prepare the final site plan/layout for the project.
Preservation of Undisturbed Area
Reduction of Clearing and Grading
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).

28. Provide the total Water Quality Volume (WQv) required for this project (based on final site plan/layout). (Acre-feet)
0.362

29. Post-construction SMP Identification

Use the Post-construction SMP Identification section to identify the RR techniques (Area Reduction), RR techniques(Volume Reduction) and Standard SMPs with RRv Capacity that were used to reduce the Total WQv Required (#28).

Identify the SMPs to be used by providing the total impervious area that contributes runoff to each technique/practice selected. For the Area Reduction Techniques, provide the total contributing area (includes pervious area) and, if applicable, the total impervious area that contributes runoff to the technique/practice.

Note: Redevelopment projects shall use the Post-Construction SMP Identification section to identify the SMPs used to treat and/or reduce the WQv required. If runoff reduction techniques will not be used to reduce the required WQv, skip to question 33a after identifying the SMPs.

30. Indicate the Total RRv provided by the RR techniques (Area/Volume Reduction) and Standard SMPs with RRv capacity identified in question 29. (acre-feet)
0.233

31. Is the Total RRv provided (#30) greater than or equal to the total WQv required (#28)?
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)] (acre-feet)
0.073

32a. Is the Total RRv provided (#30) greater than or equal to the Minimum RRv Required (#32)?
Yes

If Yes, go to question 33.

Note: Use the space provided in question #39 to summarize the specific site limitations and justification for not reducing 100% of WQv required (#28). A detailed evaluation of the specific site limitations and justification for not reducing 100% of the WQv required (#28) must also be included in the SWPPP.

If No, sizing criteria has not been met; therefore, NOI can not be processed. SWPPP preparer must modify design to meet sizing criteria.

33. SMPs

Use the Post-construction SMP Identification section to identify the Standard SMPs and, if applicable, the Alternative SMPs to be used to treat the remaining total WQv (=Total WQv Required in #28 - Total RRv Provided in #30).

Also, provide the total impervious area that contributes runoff to each practice selected.

NOTE: Use the Post-construction SMP Identification section to identify the SMPs used on Redevelopment projects.

33a. Indicate the Total WQv provided (i.e. WQv treated) by the SMPs identified in question #33 and Standard SMPs with RRv Capacity identified in question #29. (acre-feet)
0.129

Note: For the standard SMPs with RRv capacity, the WQv provided by each practice = the WQv calculated using the contributing drainage area to the practice - provided by the practice. (See Table 3.5 in Design Manual)

34. Provide the sum of the Total RRv provided (#30) and the WQv provided (#33a).
0.362

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

If Yes, go to question 36.

If No, sizing criteria has not been met; therefore, NOI can not be processed. SWPPP preparer must modify design to meet sizing criteria.

36. Provide the total Channel Protection Storage Volume (CPv required and provided or select waiver (#36a), if applicable.

CPv Required (acre-feet)
0.0

CPv Provided (acre-feet)
0.0

36a. The need to provide channel protection has been waived because:
NONE PROVIDED

37. Provide the Overbank Flood (Qp) and Extreme Flood (Qf) control criteria or select waiver (#37a), if applicable.

Overbank Flood Control Criteria (Qp)

Pre-Development (CFS)
52.11

Post-Development (CFS)
44.23

Total Extreme Flood Control Criteria (Qf)

Pre-Development (CFS)
117.27

Post-Development (CFS)
95.63

37a. The need to meet the Qp and Qf criteria has been waived because:
NONE PROVIDED

38. Has a long term Operation and Maintenance Plan for the post-construction stormwater management practice(s) been developed?
Yes

If Yes, Identify the entity responsible for the long term Operation and Maintenance
NYS OPRHP Taconic Region

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.
Since the proposed redevelopment project is located within the NYC Watershed East of the Hudson River as shown in Appendix C of the SPDES Permit, the WQv and RRv required were calculated based on the 1-year, 24-hour storm over the new impervious areas within the disturbance limits. The project proposes to install 3 new bioretention areas, 2 dry ponds, and new tree planting to provide WQv and RRv treatment and peak flow mitigation to discharge into the existing wetlands and unnamed tributary to Cross River Reservoir. Also, the project proposes to remove an existing entrance drive that will reduce over 25% impervious area within the disturbed drainage sub-area discharging into the existing wetlands and unnamed tributary to Stone Hill River. The SWPPP will be reviewed and approved by the NYCDEP prior to submission of the NOI.

Post-Construction SMP Identification

Runoff Reduction (RR) Techniques, Standard Stormwater Management Practices (SMPs) and Alternative SMPs

Identify the Post-construction SMPs to be used by providing the total impervious area that contributes runoff to each technique/practice selected. For the Area Reduction Techniques, provide the total contributing area (includes pervious area) and, if applicable, the total impervious area that contributes runoff to the technique/practice.

RR Techniques (Area Reduction)

Round to the nearest tenth

Total Contributing Acres for Conservation of Natural Area (RR-1)
NONE PROVIDED

Total Contributing Impervious Acres for Conservation of Natural Area (RR-1)
NONE PROVIDED

Total Contributing Acres for Sheetflow to Riparian Buffers/Filter Strips (RR-2)
NONE PROVIDED

Total Contributing Impervious Acres for Sheetflow to Riparian Buffers/Filter Strips (RR-2)
NONE PROVIDED

Total Contributing Acres for Tree Planting/Tree Pit (RR-3)
8.16

Total Contributing Impervious Acres for Tree Planting/Tree Pit (RR-3)
0.14

Total Contributing Acres for Disconnection of Rooftop Runoff (RR-4)
NONE PROVIDED

RR Techniques (Volume Reduction)

Total Contributing Impervious Acres for Disconnection of Rooftop Runoff (RR-4)
NONE PROVIDED

Total Contributing Impervious Acres for Vegetated Swale (RR-5)
NONE PROVIDED

Total Contributing Impervious Acres for Rain Garden (RR-6)
NONE PROVIDED

Total Contributing Impervious Acres for Stormwater Planter (RR-7)
NONE PROVIDED

Total Contributing Impervious Acres for Rain Barrel/Cistern (RR-8)
NONE PROVIDED

Total Contributing Impervious Acres for Porous Pavement (RR-9)
NONE PROVIDED

Total Contributing Impervious Acres for Green Roof (RR-10)
NONE PROVIDED

Standard SMPs with RRv Capacity

Total Contributing Impervious Acres for Infiltration Trench (I-1)
NONE PROVIDED

Total Contributing Impervious Acres for Infiltration Basin (I-2)
NONE PROVIDED

Total Contributing Impervious Acres for Dry Well (I-3)
NONE PROVIDED

Total Contributing Impervious Acres for Underground Infiltration System (I-4)
NONE PROVIDED

Total Contributing Impervious Acres for Bioretention (F-5)
0.88

Total Contributing Impervious Acres for Dry Swale (O-1)
NONE PROVIDED

Standard SMPs

Total Contributing Impervious Acres for Micropool Extended Detention (P-1)
NONE PROVIDED

Total Contributing Impervious Acres for Wet Pond (P-2)
NONE PROVIDED

Total Contributing Impervious Acres for Wet Extended Detention (P-3)
NONE PROVIDED

Total Contributing Impervious Acres for Multiple Pond System (P-4)
NONE PROVIDED

Total Contributing Impervious Acres for Pocket Pond (P-5)
NONE PROVIDED

Total Contributing Impervious Acres for Surface Sand Filter (F-1)
NONE PROVIDED

Total Contributing Impervious Acres for Underground Sand Filter (F-2)
NONE PROVIDED

Total Contributing Impervious Acres for Perimeter Sand Filter (F-3)
NONE PROVIDED

Total Contributing Impervious Acres for Organic Filter (F-4)
NONE PROVIDED

Total Contributing Impervious Acres for Shallow Wetland (W-1)
NONE PROVIDED

Total Contributing Impervious Acres for Extended Detention Wetland (W-2)
NONE PROVIDED

Total Contributing Impervious Acres for Pond/Wetland System (W-3)
NONE PROVIDED

Total Contributing Impervious Acres for Pocket Wetland (W-4)
NONE PROVIDED

Total Contributing Impervious Acres for Wet Swale (O-2)
NONE PROVIDED

Alternative SMPs (DO NOT INCLUDE PRACTICES BEING USED FOR PRETREATMENT ONLY)

Total Contributing Impervious Area for Hydrodynamic
NONE PROVIDED

Total Contributing Impervious Area for Wet Vault
NONE PROVIDED

Total Contributing Impervious Area for Media Filter
NONE PROVIDED

"Other" Alternative SMP?
NONE PROVIDED

Total Contributing Impervious Area for "Other"
NONE PROVIDED

Provide the name and manufaturer of the alternative SMPs (i.e. proprietary practice(s)) being used for WQv treatment.

Note: Redevelopment projects which do not use RR techniques, shall use questions 28, 29, 33 and 33a to provide SMPs used, total WQv required and total WQv provided for the project.

Manufacturer of Alternative SMP
NONE PROVIDED

Name of Alternative SMP
NONE PROVIDED

Other Permits

40. Identify other DEC permits, existing and new, that are required for this project/facility.
None

If SPDES Multi-Sector GP, then give permit ID
NONE PROVIDED

If Other, then identify
NONE PROVIDED

41. Does this project require a US Army Corps of Engineers Wetland Permit?
No

If "Yes," then indicate Size of Impact, in acres, to the nearest tenth
NONE PROVIDED

42. If this NOI is being submitted for the purpose of continuing or transferring coverage under a general permit for stormwater runoff from construction activities, please indicate the former SPDES number assigned.
NONE PROVIDED

MS4 SWPPP Acceptance

43. Is this project subject to the requirements of a regulated, traditional land use control MS4?
No

If No, skip question 44

44. Has the "MS4 SWPPP Acceptance" form been signed by the principal executive officer or ranking elected official and submitted along with this NOI?
No

> Please note that per Part VII.H.4. of GP-0-20-001, the MS4 SWPPP Acceptance Form must be signed by a principal executive officer or ranking elected official of the MS4, or a duly authorized representative of that person.

MS4 SWPPP Acceptance Form Download

Download form from the link below. Complete, sign, and upload.
MS4 SWPPP Acceptance Form

MS4 Acceptance Form Upload

> NONE PROVIDED
> **Comment**
> NONE PROVIDED

Owner/Operator Certification

Owner/Operator Certification Form Download

Download the certification form by clicking the link below. Complete, sign, scan, and upload the form.
Owner/Operator Certification Form (PDF, 45KB)

Upload Owner/Operator Certification Form

> NONE PROVIDED
> **Comment**
> NONE PROVIDED

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

SWPPP Preparer Certification Form

SPDES General Permit for Stormwater Discharges From Construction Activity (GP-0-20-001)

Project Site Information

Project/Site Name

John Jay Homestead Site and Building Enhancements

Owner/Operator Information

Owner/Operator (Company Name/Private Owner/Municipality Name)

NYS Parks, Recreation and Historic Preservation Taconic Region

Certification Statement – SWPPP Preparer

I hereby certify that the Stormwater Pollution Prevention Plan (SWPPP) for this project has been prepared in accordance with the terms and conditions of the GP-0-20-001. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of this permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

Samuel	K.	Bennett
First name	MI	Last Name

Signature

Date

Revised: January 2020

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Owner/Operator Certification Form

SPDES General Permit For Stormwater Discharges From Construction Activity (GP-0-20-001)

Project/Site Name: John Jay Homestead State Historic Site

eNOI Submission Number: HQ0-KM9J-F68EM

eNOI Submitted by: ☐ **Owner/Operator** ☑ **SWPPP Preparer** ☐ **Other**

Certification Statement - Owner/Operator

I have read or been advised of the permit conditions and believe that I understand them. I also understand that, under the terms of the permit, there may be reporting requirements. I hereby certify that this document and the corresponding documents were prepared under my direction or supervision. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. I further understand that coverage under the general permit will be identified in the acknowledgment that I will receive as a result of submitting this NOI and can be as long as sixty (60) business days as provided for in the general permit. I also understand that, by submitting this NOI, I am acknowledging that the SWPPP has been developed and will be implemented as the first element of construction, and agreeing to comply with all the terms and conditions of the general permit for which this NOI is being submitted.

Owner/Operator First Name M.I. Last Name

Signature

Date

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SPDES GENERAL PERMIT
FOR STORMWATER DISCHARGES

From

CONSTRUCTION ACTIVITY

Permit No. GP- 0-20-001

Issued Pursuant to Article 17, Titles 7, 8 and Article 70

of the Environmental Conservation Law

Effective Date: January 29, 2020

Expiration Date: January 28, 2025

John J. Ferguson

Chief Permit Administrator

Authorized Signature

1-23-20

Date

Address: NYS DEC
Division of Environmental Permits
625 Broadway, 4th Floor
Albany, N.Y. 12233-1750

PREFACE

Pursuant to Section 402 of the Clean Water Act ("CWA"), stormwater *discharges* from certain *construction activities* are unlawful unless they are authorized by a *National Pollutant Discharge Elimination System ("NPDES")* permit or by a state permit program. New York administers the approved State Pollutant Discharge Elimination System (SPDES) program with permits issued in accordance with the New York State Environmental Conservation Law (ECL) Article 17, Titles 7, 8 and Article 70.

An *owner or operator* of a *construction activity* that is eligible for coverage under this permit must obtain coverage prior to the *commencement of construction activity*. Activities that fit the definition of "*construction activity*", as defined under 40 CFR 122.26(b)(14)(x), (15)(i), and (15)(ii), constitute construction of a *point source* and therefore, pursuant to ECL section 17-0505 and 17-0701, the *owner or operator* must have coverage under a SPDES permit prior to *commencing construction activity*. The *owner or operator* cannot wait until there is an actual *discharge* from the *construction site* to obtain permit coverage.

***Note: The italicized words/phrases within this permit are defined in Appendix A.**

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
SPDES GENERAL PERMIT FOR STORMWATER DISCHARGES FROM CONSTRUCTION ACTIVITIES

Table of Contents

Part 1. PERMIT COVERAGE AND LIMITATIONS

A. Permit Application

This permit authorizes stormwater *discharges* to *surface waters of the State* from the following *construction activities* identified within 40 CFR Parts 122.26(b)(14)(x), 122.26(b)(15)(i) and 122.26(b)(15)(ii), provided all of the eligibility provisions of this permit are met:

1. *Construction activities* involving soil disturbances of one (1) or more acres; including disturbances of less than one acre that are part of a *larger common plan of development or sale* that will ultimately disturb one or more acres of land; excluding *routine maintenance activity* that is performed to maintain the original line and grade, hydraulic capacity or original purpose of a facility;

2. *Construction activities* involving soil disturbances of less than one (1) acre where the Department has determined that a *SPDES* permit is required for stormwater *discharges* based on the potential for contribution to a violation of a *water quality standard* or for significant contribution of *pollutants* to *surface waters of the State.*

3. *Construction activities* located in the watershed(s) identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.

B. Effluent Limitations Applicable to Discharges from Construction Activities

*Discharge*s authorized by this permit must achieve, at a minimum, the effluent limitations in Part I.B.1. (a) – (f) of this permit. These limitations represent the degree of effluent reduction attainable by the application of best practicable technology currently available.

1. Erosion and Sediment Control Requirements - The *owner or operator* must select, design, install, implement and maintain control measures to *minimize* the *discharge* of *pollutants* and prevent a violation of the *water quality standards*. The selection, design, installation, implementation, and maintenance of these control measures must meet the non-numeric effluent limitations in Part I.B.1.(a) – (f) of this permit and be in accordance with the New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016, using sound engineering judgment. Where control measures are not designed in conformance with the design criteria included in the technical standard, the *owner or operator* must include in the *Stormwater Pollution Prevention Plan* (“SWPPP”) the reason(s) for the

deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

a. **Erosion and Sediment Controls.** Design, install and maintain effective erosion and sediment controls to *minimize* the *discharge* of *pollutants* and prevent a violation of the *water quality standards*. At a minimum, such controls must be designed, installed and maintained to:

   (i) *Minimize* soil erosion through application of runoff control and soil stabilization control measure to *minimize pollutant discharge*s;

   (ii) Control stormwater *discharge*s, including both peak flowrates and total stormwater volume, to *minimize* channel and *streambank* erosion and scour in the immediate vicinity of the *discharge* points;

   (iii) *Minimize* the amount of soil exposed during *construction activity*;

   (iv) *Minimize* the disturbance of *steep slopes*;

   (v) *Minimize* sediment *discharge*s from the site;

   (vi) Provide and maintain *natural buffer*s around surface waters, direct stormwater to vegetated areas and maximize stormwater infiltration to reduce *pollutant discharge*s, unless *infeasible*;

   (vii) *Minimize* soil compaction. Minimizing soil compaction is not required where the intended function of a specific area of the site dictates that it be compacted;

   (viii) Unless *infeasible*, preserve a sufficient amount of topsoil to complete soil restoration and establish a uniform, dense vegetative cover; and

   (ix) *Minimize* dust. On areas of exposed soil, *minimize* dust through the appropriate application of water or other dust suppression techniques to control the generation of pollutants that could be discharged from the site.

b. **Soil Stabilization**. In areas where soil disturbance activity has temporarily or permanently ceased, the application of soil stabilization measures must be initiated by the end of the next business day and completed within fourteen (14) days from the date the current soil disturbance activity ceased. For construction sites that *directly discharge* to one of the 303(d) segments listed in Appendix E or is located in one of the watersheds listed in Appendix C, the application of soil stabilization measures must be initiated by the end of the next business day and completed within seven (7) days from the date the current soil disturbance activity ceased. See Appendix A for definition of *Temporarily Ceased*.

c. **Dewatering**. *Discharge*s from *dewatering* activities, including *discharge*s from *dewatering* of trenches and excavations, must be managed by appropriate control measures.

d. **Pollution Prevention Measures**. Design, install, implement, and maintain effective pollution prevention measures to *minimize* the *discharge* of *pollutants* and prevent a violation of the *water quality standards*. At a minimum, such measures must be designed, installed, implemented and maintained to:

  (i) *Minimize* the *discharge* of *pollutants* from equipment and vehicle washing, wheel wash water, and other wash waters. This applies to washing operations that use clean water only. Soaps, detergents and solvents cannot be used;

  (ii) *Minimize* the exposure of building materials, building products, construction wastes, trash, landscape materials, fertilizers, pesticides, herbicides, detergents, sanitary waste, hazardous and toxic waste, and other materials present on the site to precipitation and to stormwater. Minimization of exposure is not required in cases where the exposure to precipitation and to stormwater will not result in a *discharge* of *pollutants*, or where exposure of a specific material or product poses little risk of stormwater contamination (such as final products and materials intended for outdoor use) ; and

  (iii) Prevent the *discharge* of *pollutants* from spills and leaks and implement chemical spill and leak prevention and response procedures.

e. **Prohibited *Discharge*s.** The following *discharge*s are prohibited:

  (i) Wastewater from washout of concrete;

  (ii) Wastewater from washout and cleanout of stucco, paint, form release oils, curing compounds and other construction materials;

(iii) Fuels, oils, or other *pollutants* used in vehicle and equipment operation and maintenance;

(iv) Soaps or solvents used in vehicle and equipment washing; and

(v) Toxic or hazardous substances from a spill or other release.

f. Surface Outlets. When discharging from basins and impoundments, the outlets shall be designed, constructed and maintained in such a manner that sediment does not leave the basin or impoundment and that erosion at or below the outlet does not occur.

C. Post-construction Stormwater Management Practice Requirements

1. The *owner or operator* of a *construction activity* that requires post-construction stormwater management practices pursuant to Part III.C. of this permit must select, design, install, and maintain the practices to meet the *performance criteria* in the New York State Stormwater Management Design Manual ("Design Manual"), dated January 2015, using sound engineering judgment. Where post-construction stormwater management practices ("SMPs") are not designed in conformance with the *performance criteria* in the Design Manual, the *owner or operator* must include in the SWPPP the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

2. The *owner or operator* of a *construction activity* that requires post-construction stormwater management practices pursuant to Part III.C. of this permit must design the practices to meet the applicable *sizing criteria* in Part I.C.2.a., b., c. or d. of this permit.

a. Sizing Criteria for New Development

(i) Runoff Reduction Volume ("RRv"): Reduce the total Water Quality Volume ("WQv") by application of RR techniques and standard SMPs with RRv capacity. The total WQv shall be calculated in accordance with the criteria in Section 4.2 of the Design Manual.

(ii) Minimum RRv and Treatment of Remaining Total WQv: Construction activities that cannot meet the criteria in Part I.C.2.a.(i) of this permit due to site limitations shall direct runoff from all newly constructed impervious areas to a RR technique or standard SMP with RRv capacity unless infeasible. The specific site limitations that prevent the reduction of 100% of the WQv shall be documented in the SWPPP.

For each impervious area that is not directed to a RR technique or standard SMP with RRv capacity, the SWPPP must include documentation which demonstrates that all options were considered and for each option explains why it is considered infeasible.

In no case shall the runoff reduction achieved from the newly constructed impervious areas be less than the Minimum RRv as calculated using the criteria in Section 4.3 of the Design Manual. The remaining portion of the total WQv that cannot be reduced shall be treated by application of standard SMPs.

(iii) Channel Protection Volume ("Cpv"): Provide 24 hour extended detention of the post-developed 1-year, 24-hour storm event; remaining after runoff reduction. The Cpv requirement does not apply when:
(1) Reduction of the entire Cpv is achieved by application of runoff reduction techniques or infiltration systems, or
(2) The site discharges directly to tidal waters, or fifth order or larger streams.

(iv) *Overbank* Flood Control Criteria ("Qp"): Requires storage to attenuate the post-development 10-year, 24-hour peak discharge rate (Qp) to predevelopment rates. The Qp requirement does not apply when:
(1) the site discharges directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that *overbank* control is not required.

(v) Extreme Flood Control Criteria ("Qf"): Requires storage to attenuate the post-development 100-year, 24-hour peak discharge rate (Qf) to predevelopment rates. The Qf requirement does not apply when:
(1) the site discharges directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that *overbank* control is not required.

b. *Sizing Criteria* for *New Development* in Enhanced Phosphorus Removal Watershed

(i) Runoff Reduction Volume (RRv): Reduce the total Water Quality Volume (WQv) by application of RR techniques and standard SMPs with RRv capacity. The total WQv is the runoff volume from the 1-year, 24 hour design storm over the post-developed watershed and shall be calculated in accordance with the criteria in Section 10.3 of the Design Manual.

(ii) Minimum RRv and Treatment of Remaining Total WQv: *Construction activities* that cannot meet the criteria in Part I.C.2.b.(i) of this permit due to *site limitations* shall direct runoff from all newly constructed *impervious areas* to a RR technique or standard SMP with RRv capacity unless *infeasible*. The specific *site limitations* that prevent the reduction of 100% of the WQv shall be documented in the SWPPP. For each *impervious area* that is not directed to a RR technique or standard SMP with RRv capacity, the SWPPP must include documentation which demonstrates that all options were considered and for each option explains why it is considered *infeasible.*

In no case shall the runoff reduction achieved from the newly constructed *impervious areas* be less than the Minimum RRv as calculated using the criteria in Section 10.3 of the Design Manual. The remaining portion of the total WQv that cannot be reduced shall be treated by application of standard SMPs.

(iii) Channel Protection Volume (Cpv): Provide 24 hour extended detention of the post-developed 1-year, 24-hour storm event; remaining after runoff reduction. The Cpv requirement does not apply when:
(1) Reduction of the entire Cpv is achieved by application of runoff reduction techniques or infiltration systems, or
(2) The site *discharge*s directly to tidal waters, or fifth order or larger streams.

(iv) *Overbank* Flood Control Criteria (Qp): Requires storage to attenuate the post-development 10-year, 24-hour peak *discharge* rate (Qp) to predevelopment rates. The Qp requirement does not apply when:
(1) the site *discharge*s directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that *overbank* control is not required.

(v) Extreme Flood Control Criteria (Qf): Requires storage to attenuate the post-development 100-year, 24-hour peak *discharge* rate (Qf) to predevelopment rates. The Qf requirement does not apply when:
(1) the site *discharge*s directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that *overbank* control is not required.

c. Sizing Criteria for Redevelopment Activity

(i) Water Quality Volume (WQv): The WQv treatment objective for *redevelopment activity* shall be addressed by one of the following options. *Redevelopment activities* located in an Enhanced Phosphorus Removal Watershed (see Part III.B.3. and Appendix C of this permit) shall calculate the WQv in accordance with Section 10.3 of the Design Manual. All other *redevelopment activities* shall calculate the WQv in accordance with Section 4.2 of the Design Manual.

(1) Reduce the existing *impervious cover* by a minimum of 25% of the total disturbed, *impervious area*. The Soil Restoration criteria in Section 5.1.6 of the Design Manual must be applied to all newly created pervious areas, or

(2) Capture and treat a minimum of 25% of the WQv from the disturbed, *impervious area* by the application of standard SMPs; or reduce 25% of the WQv from the disturbed, *impervious area* by the application of RR techniques or standard SMPs with RRv capacity., or

(3) Capture and treat a minimum of 75% of the WQv from the disturbed, *impervious area* as well as any additional runoff from tributary areas by application of the alternative practices discussed in Sections 9.3 and 9.4 of the Design Manual., or

(4) Application of a combination of 1, 2 and 3 above that provide a weighted average of at least two of the above methods. Application of this method shall be in accordance with the criteria in Section 9.2.1(B) (IV) of the Design Manual.

If there is an existing post-construction stormwater management practice located on the site that captures and treats runoff from the *impervious area* that is being disturbed, the WQv treatment option selected must, at a minimum, provide treatment equal to the treatment that was being provided by the existing practice(s) if that treatment is greater than the treatment required by options 1 – 4 above.

(ii) Channel Protection Volume (Cpv): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site.

(iii) *Overbank* Flood Control Criteria (Qp): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site.

(iv) Extreme Flood Control Criteria (Qf): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site

d. Sizing Criteria for Combination of Redevelopment Activity and New Development

Construction projects that include both New Development and Redevelopment Activity shall provide post-construction stormwater management controls that meet the sizing criteria calculated as an aggregate of the Sizing Criteria in Part I.C.2.a. or b. of this permit for the New Development portion of the project and Part I.C.2.c of this permit for Redevelopment Activity portion of the project.

D. Maintaining Water Quality

The Department expects that compliance with the conditions of this permit will control *discharge*s necessary to meet applicable *water quality standards*. It shall be a violation of the *ECL* for any discharge to either cause or contribute to a violation of *water quality standards* as contained in Parts 700 through 705 of Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York, such as:

1. There shall be no increase in turbidity that will cause a substantial visible contrast to natural conditions;

2. There shall be no increase in suspended, colloidal or settleable solids that will cause deposition or impair the waters for their best usages; and

3. There shall be no residue from oil and floating substances, nor visible oil film, nor globules of grease.

If there is evidence indicating that the stormwater *discharge*s authorized by this permit are causing, have the reasonable potential to cause, or are contributing to a violation of the *water quality standards*; the *owner or operator* must take appropriate corrective action in accordance with Part IV.C.5. of this general permit and document in accordance with Part IV.C.4. of this general permit. To address the *water quality standard* violation the *owner or operator* may need to provide additional information, include and implement appropriate controls in the SWPPP to correct the problem, or obtain an individual SPDES permit.

If there is evidence indicating that despite compliance with the terms and conditions of this general permit it is demonstrated that the stormwater *discharge*s authorized by this permit are causing or contributing to a violation of *water quality standards*, or if the Department determines that a modification of the permit is necessary to prevent a violation of *water quality standards*, the authorized *discharge*s will no longer be eligible for coverage under this permit. The Department may require the *owner or operator* to obtain an individual SPDES permit to continue discharging.

E. Eligibility Under This General Permit

1. This permit may authorize all *discharges* of stormwater from *construction activity* to *surface waters of the State* and *groundwaters* except for ineligible *discharges* identified under subparagraph F. of this Part.

2. Except for non-stormwater *discharges* explicitly listed in the next paragraph, this permit only authorizes stormwater *discharge*s; including stormwater runoff, snowmelt runoff, and surface runoff and drainage, from *construction activities*.

3. Notwithstanding paragraphs E.1 and E.2 above, the following non-stormwater discharges are authorized by this permit: those listed in 6 NYCRR 750-1.2(a)(29)(vi), with the following exception: "Discharges from firefighting activities are authorized only when the firefighting activities are emergencies/unplanned"; waters to which other components have not been added that are used to control dust in accordance with the SWPPP; and uncontaminated *discharge*s from *construction site* de-watering operations. All non-stormwater discharges must be identified in the SWPPP. Under all circumstances, the *owner or operator* must still comply with *water quality standards* in Part I.D of this permit.

4. The *owner or operator* must maintain permit eligibility to *discharge* under this permit. Any *discharges* that are not compliant with the eligibility conditions of this permit are not authorized by the permit and the *owner or operator* must either apply for a separate permit to cover those ineligible *discharges* or take steps necessary to make the *discharge* eligible for coverage.

F. Activities Which Are Ineligible for Coverage Under This General Permit

All of the following are **not** authorized by this permit:

1. *Discharge*s after *construction activities* have been completed and the site has undergone *final stabilization*;

2. *Discharge*s that are mixed with sources of non-stormwater other than those expressly authorized under subsection E.3. of this Part and identified in the SWPPP required by this permit;

3. *Discharges* that are required to obtain an individual SPDES permit or another SPDES general permit pursuant to Part VII.K. of this permit;

4. *Construction activities* or *discharges* from *construction activities* that may adversely affect an *endangered or threatened species* unless the *owner or*

operator has obtained a permit issued pursuant to 6 NYCRR Part 182 for the project or the Department has issued a letter of non-jurisdiction for the project. All documentation necessary to demonstrate eligibility shall be maintained on site in accordance with Part II.D.2 of this permit;

5. *Discharges* which either cause or contribute to a violation of *water quality standards* adopted pursuant to the *ECL* and its accompanying regulations;

6. *Construction activities* for residential, commercial and institutional projects:

   a. Where the *discharge*s from the *construction activities* are tributary to waters of the state classified as AA or AA-s; and

   b. Which are undertaken on land with no existing *impervious cover*; and

   c. Which disturb one (1) or more acres of land designated on the current United States Department of Agriculture ("USDA") Soil Survey as Soil Slope Phase "D", (provided the map unit name is inclusive of slopes greater than 25%), or Soil Slope Phase "E" or "F" (regardless of the map unit name), or a combination of the three designations.

7. *Construction activities* for linear transportation projects and linear utility projects:

   a. Where the *discharge*s from the *construction activities* are tributary to waters of the state classified as AA or AA-s; and

   b. Which are undertaken on land with no existing *impervious cover*; and

   c. Which disturb two (2) or more acres of land designated on the current USDA Soil Survey as Soil Slope Phase "D" (provided the map unit name is inclusive of slopes greater than 25%), or Soil Slope Phase "E" or "F" (regardless of the map unit name), or a combination of the three designations.

8. *Construction activities* that have the potential to affect an *historic property*, unless there is documentation that such impacts have been resolved. The following documentation necessary to demonstrate eligibility with this requirement shall be maintained on site in accordance with Part II.D.2 of this permit and made available to the Department in accordance with Part VII.F of this permit:

    a. Documentation that the *construction activity* is not within an archeologically sensitive area indicated on the sensitivity map, and that the *construction activity* is not located on or immediately adjacent to a property listed or determined to be eligible for listing on the National or State Registers of Historic Places, and that there is no new permanent building on the *construction site* within the following distances from a building, structure, or object that is more than 50 years old, or if there is such a new permanent building on the *construction site* within those parameters that NYS Office of Parks, Recreation and Historic Preservation (OPRHP), a Historic Preservation Commission of a Certified Local Government, or a qualified preservation professional has determined that the building, structure, or object more than 50 years old is not historically/archeologically significant.

        - 1-5 acres of disturbance - 20 feet
        - 5-20 acres of disturbance - 50 feet
        - 20+ acres of disturbance - 100 feet, or

    b. DEC consultation form sent to OPRHP, and copied to the NYS DEC Agency Historic Preservation Officer (APO), and
        (i) the State Environmental Quality Review (SEQR) Environmental Assessment Form (EAF) with a negative declaration or the Findings Statement, with documentation of OPRHP’s agreement with the resolution; or
        (ii) documentation from OPRHP that the *construction activity* will result in No Impact; or
        (iii) documentation from OPRHP providing a determination of No Adverse Impact; or
        (iv) a Letter of Resolution signed by the owner/operator, OPRHP and the DEC APO which allows for this *construction activity* to be eligible for coverage under the general permit in terms of the State Historic Preservation Act (SHPA); or

    c. Documentation of satisfactory compliance with Section 106 of the National Historic Preservation Act for a coterminous project area:

(i) No Affect
(ii) No Adverse Affect
(iii) Executed Memorandum of Agreement, or

d. Documentation that:

(i) SHPA Section 14.09 has been completed by NYS DEC or another state agency.

9. *Discharge*s from *construction activities* that are subject to an existing SPDES individual or general permit where a SPDES permit for *construction activity* has been terminated or denied; or where the *owner or operator* has failed to renew an expired individual permit.

Part II. PERMIT COVERAGE

A. How to Obtain Coverage

1. An *owner or operator* of a *construction activity* that is not subject to the requirements of a regulated, traditional land use control MS4 must first prepare a SWPPP in accordance with all applicable requirements of this permit and then submit a completed Notice of Intent (NOI) to the Department to be authorized to discharge under this permit.

2. An *owner or operator* of a *construction activity* that is subject to the requirements of a *regulated, traditional land use control MS4* must first prepare a SWPPP in accordance with all applicable requirements of this permit and then have the SWPPP reviewed and accepted by the *regulated, traditional land use control MS4* prior to submitting the NOI to the Department. The *owner or operator* shall have the “MS4 SWPPP Acceptance” form signed in accordance with Part VII.H., and then submit that form along with a completed NOI to the Department.

3. The requirement for an *owner or operator* to have its SWPPP reviewed and accepted by the *regulated, traditional land use control MS4* prior to submitting the NOI to the Department does not apply to an *owner or operator* that is obtaining permit coverage in accordance with the requirements in Part II.F. (Change of *Owner or Operator*) or where the *owner or operator* of the *construction activity* is the *regulated, traditional land use control MS4* . This exemption does not apply to *construction activities* subject to the New York City Administrative Code.

B. Notice of Intent (NOI) Submittal

1. Prior to December 21, 2020, an owner or operator shall use either the electronic (eNOI) or paper version of the NOI that the Department prepared. Both versions of the NOI are located on the Department's website (http://www.dec.ny.gov/). The paper version of the NOI shall be signed in accordance with Part VII.H. of this permit and submitted to the following address:

   NOTICE OF INTENT
   NYS DEC, Bureau of Water Permits
   625 Broadway, 4th Floor
   Albany, New York 12233-3505

2. Beginning December 21, 2020 and in accordance with EPA's 2015 NPDES Electronic Reporting Rule (40 CFR Part 127), the *owner or operator* must submit the NOI electronically using the *Department's* online NOI.

3. The *owner or operator* shall have the SWPPP preparer sign the "SWPPP Preparer Certification" statement on the NOI prior to submitting the form to the Department.

4. As of the date the NOI is submitted to the Department, the *owner or operator* shall make the NOI and SWPPP available for review and copying in accordance with the requirements in Part VII.F. of this permit.

C. Permit Authorization

1. An *owner or operator* shall not *commence construction activity* until their authorization to *discharge* under this permit goes into effect.

2. Authorization to *discharge* under this permit will be effective when the *owner or operator* has satisfied all of the following criteria:

   a. project review pursuant to the State Environmental Quality Review Act ("SEQRA") have been satisfied, when SEQRA is applicable. See the Department's website (http://www.dec.ny.gov/) for more information,

   b. where required, all necessary Department permits subject to the *Uniform Procedures Act ("UPA")* (see 6 NYCRR Part 621), or the equivalent from another New York State agency, have been obtained, unless otherwise notified by the Department pursuant to 6 NYCRR 621.3(a)(4). *Owners or operators* of *construction activities* that are required to obtain *UPA* permits must submit a preliminary SWPPP to the appropriate DEC Permit Administrator at the Regional Office listed in Appendix F at the time all other necessary *UPA* permit applications are submitted. The preliminary SWPPP must include sufficient information to demonstrate that the *construction activity* qualifies for authorization under this permit,

c. the final SWPPP has been prepared, and

d. a complete NOI has been submitted to the Department in accordance with the requirements of this permit.

3. An *owner or operator* that has satisfied the requirements of Part II.C.2 above will be authorized to *discharge* stormwater from their *construction activity* in accordance with the following schedule:

   a. For *construction activities* that are not subject to the requirements of a *regulated, traditional land use control MS4*:

      (i) Five (5) business days from the date the Department receives a complete electronic version of the NOI (eNOI) for *construction activities* with a SWPPP that has been prepared in conformance with the design criteria in the technical standard referenced in Part III.B.1 and the *performance criteria* in the technical standard referenced in Parts III.B., 2 or 3, for *construction activities* that require post-construction stormwater management practices pursuant to Part III.C.; or

      (ii) Sixty (60) business days from the date the Department receives a complete NOI (electronic or paper version) for *construction activities* with a SWPPP that has not been prepared in conformance with the design criteria in technical standard referenced in Part III.B.1. or, for *construction activities* that require post-construction stormwater management practices pursuant to Part III.C., the *performance criteria* in the technical standard referenced in Parts III.B., 2 or 3, or;

      (iii) Ten (10) business days from the date the Department receives a complete paper version of the NOI for *construction activities* with a SWPPP that has been prepared in conformance with the design criteria in the technical standard referenced in Part III.B.1 and the *performance criteria* in the technical standard referenced in Parts III.B., 2 or 3, for *construction activities* that require post-construction stormwater management practices pursuant to Part III.C.

b. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4*:

   (i) Five (5) business days from the date the Department receives both a complete electronic version of the NOI (eNOI) and signed "*MS4* SWPPP Acceptance" form, or

   (ii) Ten (10) business days from the date the Department receives both a complete paper version of the NOI and signed "MS4 SWPPP Acceptance" form.

4. Coverage under this permit authorizes stormwater *discharges* from only those areas of disturbance that are identified in the NOI. If an *owner or operator* wishes to have stormwater *discharges* from future or additional areas of disturbance authorized, they must submit a new NOI that addresses that phase of the development, unless otherwise notified by the Department. The *owner or operator* shall not *commence construction activity* on the future or additional areas until their authorization to *discharge* under this permit goes into effect in accordance with Part II.C. of this permit.

D. General Requirements For Owners or Operators With Permit Coverage

1. The *owner or operator* shall ensure that the provisions of the SWPPP are implemented from the *commencement of construction activity* until all areas of disturbance have achieved *final stabilization* and the Notice of Termination ("NOT") has been submitted to the Department in accordance with Part V. of this permit. This includes any changes made to the SWPPP pursuant to Part III.A.4. of this permit.

2. The *owner or operator* shall maintain a copy of the General Permit (GP-0-20-001), NOI, *NOI Acknowledgment Letter*, SWPPP, MS4 SWPPP Acceptance form, inspection reports, responsible contractor's or subcontractor's certification statement (see Part III.A.6.), and all documentation necessary to demonstrate eligibility with this permit at the *construction site* until all disturbed areas have achieved *final stabilization* and the NOT has been submitted to the Department. The documents must be maintained in a secure location, such as a job trailer, on-site construction office, or mailbox with lock. The secure location must be accessible during normal business hours to an individual performing a compliance inspection.

3. The *owner or operator* of a *construction activity* shall not disturb greater than five (5) acres of soil at any one time without prior written authorization from the Department or, in areas under the jurisdiction of a *regulated, traditional land* *use control MS4,* the *regulated, traditional land use control MS4* (provided the *regulated, traditional land use control MS4* is not the *owner or operator* of the *construction activity*). At a minimum, the *owner or operator* must comply with the following requirements in order to be authorized to disturb greater than five (5) acres of soil at any one time:

a. The *owner or operator* shall have a *qualified inspector* conduct **at least** two (2) site inspections in accordance with Part IV.C. of this permit every seven (7) calendar days, for as long as greater than five (5) acres of soil remain disturbed. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.

b. In areas where soil disturbance activity has temporarily or permanently ceased, the application of soil stabilization measures must be initiated by the end of the next business day and completed within seven (7) days from the date the current soil disturbance activity ceased. The soil stabilization measures selected shall be in conformance with the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016.

c. The *owner or operator* shall prepare a phasing plan that defines maximum disturbed area per phase and shows required cuts and fills.

d. The *owner or operator* shall install any additional site-specific practices needed to protect water quality.

e. The *owner or operator* shall include the requirements above in their SWPPP.

4. In accordance with statute, regulations, and the terms and conditions of this permit, the Department may suspend or revoke an *owner's or operator's* coverage under this permit at any time if the Department determines that the SWPPP does not meet the permit requirements or consistent with Part VII.K..

5. Upon a finding of significant non-compliance with the practices described in the SWPPP or violation of this permit, the Department may order an immediate stop to all activity at the site until the non-compliance is remedied. The stop work order shall be in writing, describe the non-compliance in detail, and be sent to the *owner or operator*.

6. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4*, the *owner or operator* shall notify the

regulated, traditional land use control MS4 in writing of any planned amendments or modifications to the post-construction stormwater management practice component of the SWPPP required by Part III.A. 4. and 5. of this permit. Unless otherwise notified by the *regulated, traditional land use control MS4*, the *owner or operator* shall have the SWPPP amendments or modifications reviewed and accepted by the *regulated, traditional land use control MS4* prior to commencing construction of the post-construction stormwater management practice.

E. Permit Coverage for Discharges Authorized Under GP-0-15-002

1. Upon renewal of SPDES General Permit for Stormwater Discharges from *Construction Activity* (Permit No. GP-0-15-002), an *owner or operator* of *a construction activity* with coverage under GP-0-15-002, as of the effective date of GP- 0-20-001, shall be authorized to *discharge* in accordance with GP- 0-20-001, unless otherwise notified by the Department.

   An *owner or operator* may continue to implement the technical/design components of the post-construction stormwater management controls provided that such design was done in conformance with the technical standards in place at the time of initial project authorization. However, they must comply with the other, non-design provisions of GP-0-20-001.

F. Change of Owner or Operator

1. When property ownership changes or when there is a change in operational control over the construction plans and specifications, the original *owner or operator* must notify the new *owner or operator*, in writing, of the requirement to obtain permit coverage by submitting a NOI with the Department. For *construction activities* subject to the requirements of a *regulated, traditional land use control MS4,* the original *owner or operator* must also notify the MS4, in writing, of the change in ownership at least 30 calendar days prior to the change in ownership.

2. Once the new *owner or operator* obtains permit coverage, the original *owner or operator* shall then submit a completed NOT with the name and permit identification number of the new *owner or operator* to the Department at the address in Part II.B.1. of this permit. If the original *owner or operator* maintains ownership of a portion of the *construction activity* and will disturb soil, they must maintain their coverage under the permit.

3. Permit coverage for the new *owner or operator* will be effective as of the date the Department receives a complete NOI, provided the original *owner or*

operator was not subject to a sixty (60) business day authorization period that has not expired as of the date the Department receives the NOI from the new *owner or operator*.

Part III. STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

A. General SWPPP Requirements

1. A SWPPP shall be prepared and implemented by the *owner or operator* of each *construction activity* covered by this permit. The SWPPP must document the selection, design, installation, implementation and maintenance of the control measures and practices that will be used to meet the effluent limitations in Part I.B. of this permit and where applicable, the post-construction stormwater management practice requirements in Part I.C. of this permit. The SWPPP shall be prepared prior to the submittal of the NOI. The NOI shall be submitted to the Department prior to the *commencement of construction activity*. A copy of the completed, final NOI shall be included in the SWPPP.

2. The SWPPP shall describe the erosion and sediment control practices and where required, post-construction stormwater management practices that will be used and/or constructed to reduce the *pollutants* in stormwater *discharges* and to assure compliance with the terms and conditions of this permit. In addition, the SWPPP shall identify potential sources of pollution which may reasonably be expected to affect the quality of stormwater *discharges*.

3. All SWPPPs that require the post-construction stormwater management practice component shall be prepared by a *qualified professional* that is knowledgeable in the principles and practices of stormwater management and treatment.

4. The *owner or operator* must keep the SWPPP current so that it at all times accurately documents the erosion and sediment controls practices that are being used or will be used during construction, and all post-construction stormwater management practices that will be constructed on the site. At a minimum, the *owner or operator* shall amend the SWPPP, including construction drawings:

    a. whenever the current provisions prove to be ineffective in minimizing *pollutants* in stormwater *discharges* from the site;

b. whenever there is a change in design, construction, or operation at the *construction site* that has or could have an effect on the *discharge* of *pollutants*;

c. to address issues or deficiencies identified during an inspection by the *qualified inspector,* the Department or other regulatory authority; and

d. to document the final construction conditions.

5. The Department may notify the *owner or operator* at any time that the SWPPP does not meet one or more of the minimum requirements of this permit. The notification shall be in writing and identify the provisions of the SWPPP that require modification. Within fourteen (14) calendar days of such notification, or as otherwise indicated by the Department, the *owner or operator* shall make the required changes to the SWPPP and submit written notification to the Department that the changes have been made. If the *owner or operator* does not respond to the Department's comments in the specified time frame, the Department may suspend the *owner's or operator's* coverage under this permit or require the *owner or operator* to obtain coverage under an individual SPDES permit in accordance with Part II.D.4. of this permit.

6. Prior to the *commencement of construction activity*, the *owner or operator* must identify the contractor(s) and subcontractor(s) that will be responsible for installing, constructing, repairing, replacing, inspecting and maintaining the erosion and sediment control practices included in the SWPPP; and the contractor(s) and subcontractor(s) that will be responsible for constructing the post-construction stormwater management practices included in the SWPPP. The *owner or operator* shall have each of the contractors and subcontractors identify at least one person from their company that will be responsible for implementation of the SWPPP. This person shall be known as the *trained contractor.* The *owner or operator* shall ensure that at least one *trained contractor* is on site on a daily basis when soil disturbance activities are being performed.

   The *owner or operator* shall have each of the contractors and subcontractors identified above sign a copy of the following certification statement below before they commence any *construction activity*:

   > "I hereby certify under penalty of law that I understand and agree to comply with the terms and conditions of the SWPPP and agree to implement any corrective actions identified by the *qualified inspector* during a site inspection. I also understand that the *owner or operator* must comply with

the terms and conditions of the most current version of the New York State Pollutant Discharge Elimination System ("SPDES") general permit for stormwater *discharge*s from *construction activities* and that it is unlawful for any person to cause or contribute to a violation of *water quality standards*. Furthermore, I am aware that there are significant penalties for submitting false information, that I do not believe to be true, including the possibility of fine and imprisonment for knowing violations"

In addition to providing the certification statement above, the certification page must also identify the specific elements of the SWPPP that each contractor and subcontractor will be responsible for and include the name and title of the person providing the signature; the name and title of the *trained contractor* responsible for SWPPP implementation; the name, address and telephone number of the contracting firm; the address (or other identifying description) of the site; and the date the certification statement is signed. The *owner or operator* shall attach the certification statement(s) to the copy of the SWPPP that is maintained at the *construction site*. If new or additional contractors are hired to implement measures identified in the SWPPP after construction has commenced, they must also sign the certification statement and provide the information listed above.

7. For projects where the Department requests a copy of the SWPPP or inspection reports, the *owner or operator* shall submit the documents in both electronic (PDF only) and paper format within five (5) business days, unless otherwise notified by the Department.

B. Required SWPPP Contents

1. Erosion and sediment control component - All SWPPPs prepared pursuant to this permit shall include erosion and sediment control practices designed in conformance with the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016. Where erosion and sediment control practices are not designed in conformance with the design criteria included in the technical standard, the *owner or operator* must demonstrate *equivalence* to the technical standard. At a minimum, the erosion and sediment control component of the SWPPP shall include the following:

   a. Background information about the scope of the project, including the location, type and size of project

b. A site map/construction drawing(s) for the project, including a general location map. At a minimum, the site map shall show the total site area; all improvements; areas of disturbance; areas that will not be disturbed; existing vegetation; on-site and adjacent off-site surface water(s); floodplain/floodway boundaries; wetlands and drainage patterns that could be affected by the *construction activity*; existing and final contours ; locations of different soil types with boundaries; material, waste, borrow or equipment storage areas located on adjacent properties; and location(s) of the stormwater *discharge*(s);

c. A description of the soil(s) present at the site, including an identification of the Hydrologic Soil Group (HSG);

d. A construction phasing plan and sequence of operations describing the intended order of *construction activities*, including clearing and grubbing, excavation and grading, utility and infrastructure installation and any other activity at the site that results in soil disturbance;

e. A description of the minimum erosion and sediment control practices to be installed or implemented for each *construction activity* that will result in soil disturbance. Include a schedule that identifies the timing of initial placement or implementation of each erosion and sediment control practice and the minimum time frames that each practice should remain in place or be implemented;

f. A temporary and permanent soil stabilization plan that meets the requirements of this general permit and the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016, for each stage of the project, including initial land clearing and grubbing to project completion and achievement of *final stabilization*;

g. A site map/construction drawing(s) showing the specific location(s), size(s), and length(s) of each erosion and sediment control practice;

h. The dimensions, material specifications, installation details, and operation and maintenance requirements for all erosion and sediment control practices. Include the location and sizing of any temporary sediment basins and structural practices that will be used to divert flows from exposed soils;

i. A maintenance inspection schedule for the contractor(s) identified in Part III.A.6. of this permit, to ensure continuous and effective operation of the erosion and sediment control practices. The maintenance inspection schedule shall be in accordance with the requirements in the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016;

j. A description of the pollution prevention measures that will be used to control litter, construction chemicals and construction debris from becoming a *pollutant* source in the stormwater *discharges*;

k. A description and location of any stormwater *discharges* associated with industrial activity other than construction at the site, including, but not limited to, stormwater *discharges* from asphalt plants and concrete plants located on the *construction site*; and

l. Identification of any elements of the design that are not in conformance with the design criteria in the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016. Include the reason for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

2. Post-construction stormwater management practice component – The *owner or operator* of any construction project identified in Table 2 of Appendix B as needing post-construction stormwater management practices shall prepare a SWPPP that includes practices designed in conformance with the applicable *sizing criteria* in Part I.C.2.a., c. or d. of this permit and the *performance criteria* in the technical standard, New York State Stormwater Management Design Manual dated January 2015

   Where post-construction stormwater management practices are not designed in conformance with the *performance criteria* in the technical standard, the *owner or operator* must include in the SWPPP the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

   The post-construction stormwater management practice component of the SWPPP shall include the following:

   a. Identification of all post-construction stormwater management practices to be constructed as part of the project. Include the dimensions, material specifications and installation details for each post-construction stormwater management practice;

b. A site map/construction drawing(s) showing the specific location and size of each post-construction stormwater management practice;

c. A Stormwater Modeling and Analysis Report that includes:
   (i) Map(s) showing pre-development conditions, including watershed/subcatchments boundaries, flow paths/routing, and design points;

   (ii) Map(s) showing post-development conditions, including watershed/subcatchments boundaries, flow paths/routing, design points and post-construction stormwater management practices;

   (iii) Results of stormwater modeling (i.e. hydrology and hydraulic analysis) for the required storm events. Include supporting calculations (model runs), methodology, and a summary table that compares pre and post-development runoff rates and volumes for the different storm events;

   (iv) Summary table, with supporting calculations, which demonstrates that each post-construction stormwater management practice has been designed in conformance with the *sizing criteria* included in the Design Manual;

   (v) Identification of any *sizing criteria* that is not required based on the requirements included in Part I.C. of this permit; and

   (vi) Identification of any elements of the design that are not in conformance with the *performance criteria* in the Design Manual. Include the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the Design Manual;

d. Soil testing results and locations (test pits, borings);

e. Infiltration test results, when required; and

f. An operations and maintenance plan that includes inspection and maintenance schedules and actions to ensure continuous and effective operation of each post-construction stormwater management practice. The plan shall identify the entity that will be responsible for the long term operation and maintenance of each practice.

3. Enhanced Phosphorus Removal Standards - All construction projects identified in Table 2 of Appendix B that are located in the watersheds identified in Appendix C shall prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the applicable *sizing criteria* in Part I.C.2. b., c. or d. of this permit and the *performance criteria,* Enhanced Phosphorus Removal Standards included in the Design Manual. At a minimum, the post-construction stormwater management practice component of the SWPPP shall include items 2.a - 2.f. above.

C. Required SWPPP Components by Project Type

Unless otherwise notified by the Department, *owners or operators* of *construction activities* identified in Table 1 of Appendix B are required to prepare a SWPPP that only includes erosion and sediment control practices designed in conformance with Part III.B.1 of this permit. *Owners or operators* of the *construction activities* identified in Table 2 of Appendix B shall prepare a SWPPP that also includes post-construction stormwater management practices designed in conformance with Part III.B.2 or 3 of this permit.

Part IV. INSPECTION AND MAINTENANCE REQUIREMENTS

A. General Construction Site Inspection and Maintenance Requirements

1. The *owner or operator* must ensure that all erosion and sediment control practices (including pollution prevention measures) and all post-construction stormwater management practices identified in the SWPPP are inspected and maintained in accordance with Part IV.B. and C. of this permit.

2. The terms of this permit shall not be construed to prohibit the State of New York from exercising any authority pursuant to the ECL, common law or federal law, or prohibit New York State from taking any measures, whether civil or criminal, to prevent violations of the laws of the State of New York or protect the public health and safety and/or the environment.

B. Contractor Maintenance Inspection Requirements

1. The *owner or operator* of each *construction activity* identified in Tables 1 and 2 of Appendix B shall have a *trained contractor* inspect the erosion and sediment control practices and pollution prevention measures being implemented within the active work area daily to ensure that they are being maintained in effective operating condition at all times. If deficiencies are identified, the contractor shall

begin implementing corrective actions within one business day and shall complete the corrective actions in a reasonable time frame.

2. For construction sites where soil disturbance activities have been temporarily suspended (e.g. winter shutdown) and *temporary stabilization* measures have been applied to all disturbed areas, the *trained contractor* can stop conducting the maintenance inspections. The *trained contractor* shall begin conducting the maintenance inspections in accordance with Part IV.B.1. of this permit as soon as soil disturbance activities resume.

3. For construction sites where soil disturbance activities have been shut down with partial project completion, the *trained contractor* can stop conducting the maintenance inspections if all areas disturbed as of the project shutdown date have achieved *final stabilization* and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational.

C. Qualified Inspector Inspection Requirements

The *owner or operator* shall have a *qualified inspector* conduct site inspections in conformance with the following requirements:

[Note: The *trained contractor* identified in Part III.A.6. and IV.B. of this permit **cannot** conduct the *qualified inspector* site inspections unless they meet the *qualified inspector* qualifications included in Appendix A. In order to perform these inspections, the *trained contractor* would have to be a:

- licensed Professional Engineer,
- Certified Professional in Erosion and Sediment Control (CPESC),
- New York State Erosion and Sediment Control Certificate Program holder
- Registered Landscape Architect, or
- someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided they have received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity].

1. A *qualified inspector* shall conduct site inspections for all *construction activities* identified in Tables 1 and 2 of Appendix B, with the exception of:

    a. the construction of a single family residential subdivision with 25% or less *impervious cover* at total site build-out that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres and is not located in one of the watersheds listed in Appendix C and <u>not</u> directly discharging to one of the 303(d) segments listed in Appendix E;

   b. the construction of a single family home that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres and is <u>not</u> located in one of the watersheds listed in Appendix C and <u>not</u> directly discharging to one of the 303(d) segments listed in Appendix E;

   c. construction on agricultural property that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres; and

   d. *construction activities* located in the watersheds identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.

2. Unless otherwise notified by the Department, the *qualified inspector* shall conduct site inspections in accordance with the following timetable:

   a. For construction sites where soil disturbance activities are on-going, the *qualified inspector* shall conduct a site inspection at least once every seven (7) calendar days.

   b. For construction sites where soil disturbance activities are on-going and the *owner or operator* has received authorization in accordance with Part II.D.3 to disturb greater than five (5) acres of soil at any one time, the *qualified inspector* shall conduct at least two (2) site inspections every seven (7) calendar days. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.

   c. For construction sites where soil disturbance activities have been temporarily suspended (e.g. winter shutdown) and *temporary stabilization* measures have been applied to all disturbed areas, the *qualified inspector* shall conduct a site inspection at least once every thirty (30) calendar days. The *owner or operator* shall notify the DOW Water (SPDES) Program contact at the Regional Office (see contact information in Appendix F) or, in areas under the jurisdiction of a *regulated, traditional land use control MS4,* the *regulated, traditional land use control MS4* (provided the *regulated, traditional land use control MS4* is not the *owner or operator* of the *construction activity*) in writing prior to reducing the frequency of inspections.

d. For construction sites where soil disturbance activities have been shut down with partial project completion, the *qualified inspector* can stop conducting inspections if all areas disturbed as of the project shutdown date have achieved *final stabilization* and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational. The *owner or operator* shall notify the DOW Water (SPDES) Program contact at the Regional Office (see contact information in Appendix F) or, in areas under the jurisdiction of a *regulated, traditional land use control MS4,* the *regulated, traditional land use control MS4* (provided the *regulated, traditional land use control MS4* is not the *owner or operator* of the *construction activity*) in writing prior to the shutdown. If soil disturbance activities are not resumed within 2 years from the date of shutdown, the *owner or operator* shall have the *qualified inspector* perform a final inspection and certify that all disturbed areas have achieved *final stabilization,* and all temporary, structural erosion and sediment control measures have been removed*;* and that all post-construction stormwater management practices have been constructed in conformance with the SWPPP by signing the "*Final Stabilization*" and "Post-Construction Stormwater Management Practice" certification statements on the NOT. The *owner or operator* shall then submit the completed NOT form to the address in Part II.B.1 of this permit.

e. For construction sites that directly *discharge* to one of the 303(d) segments listed in Appendix E or is located in one of the watersheds listed in Appendix C, the *qualified inspector* shall conduct at least two (2) site inspections every seven (7) calendar days. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.

3. At a minimum, the *qualified inspector* shall inspect all erosion and sediment control practices and pollution prevention measures to ensure integrity and effectiveness, all post-construction stormwater management practices under construction to ensure that they are constructed in conformance with the SWPPP, all areas of disturbance that have not achieved *final stabilization,* all points of *discharge* to natural surface waterbodies located within, or immediately adjacent to, the property boundaries of the *construction site*, and all points of *discharge* from the *construction site*.

4. The *qualified inspector* shall prepare an inspection report subsequent to each and every inspection. At a minimum, the inspection report shall include and/or address the following:

a. Date and time of inspection;

b. Name and title of person(s) performing inspection;

c. A description of the weather and soil conditions (e.g. dry, wet, saturated) at the time of the inspection;

d. A description of the condition of the runoff at all points of *discharge* from the *construction site*. This shall include identification of any *discharges* of sediment from the *construction site*. Include *discharges* from conveyance systems (i.e. pipes, culverts, ditches, etc.) and overland flow;

e. A description of the condition of all natural surface waterbodies located within, or immediately adjacent to, the property boundaries of the *construction site* which receive runoff from disturbed areas. This shall include identification of any *discharges* of sediment to the surface waterbody;

f. Identification of all erosion and sediment control practices and pollution prevention measures that need repair or maintenance;

g. Identification of all erosion and sediment control practices and pollution prevention measures that were not installed properly or are not functioning as designed and need to be reinstalled or replaced;

h. Description and sketch of areas with active soil disturbance activity, areas that have been disturbed but are inactive at the time of the inspection, and areas that have been stabilized (temporary and/or final) since the last inspection;

i. Current phase of construction of all post-construction stormwater management practices and identification of all construction that is not in conformance with the SWPPP and technical standards;

j. Corrective action(s) that must be taken to install, repair, replace or maintain erosion and sediment control practices and pollution prevention measures; and to correct deficiencies identified with the construction of the post-construction stormwater management practice(s);

k. Identification and status of all corrective actions that were required by previous inspection; and

l. Digital photographs, with date stamp, that clearly show the condition of all practices that have been identified as needing corrective actions. The *qualified inspector* shall attach paper color copies of the digital photographs to the inspection report being maintained onsite within seven (7) calendar days of the date of the inspection. The *qualified inspector* shall also take digital photographs, with date stamp, that clearly show the condition of the practice(s) after the corrective action has been completed. The *qualified inspector* shall attach paper color copies of the digital photographs to the inspection report that documents the completion of the corrective action work within seven (7) calendar days of that inspection.

5. Within one business day of the completion of an inspection, the *qualified inspector* shall notify the *owner or operator* and appropriate contractor or subcontractor identified in Part III.A.6. of this permit of any corrective actions that need to be taken. The contractor or subcontractor shall begin implementing the corrective actions within one business day of this notification and shall complete the corrective actions in a reasonable time frame.

6. All inspection reports shall be signed by the *qualified inspector.* Pursuant to Part II.D.2. of this permit, the inspection reports shall be maintained on site with the SWPPP.

Part V. TERMINATION OF PERMIT COVERAGE

A. Termination of Permit Coverage

1. An *owner or operator* that is eligible to terminate coverage under this permit must submit a completed NOT form to the address in Part II.B.1 of this permit. The NOT form shall be one which is associated with this permit, signed in accordance with Part VII.H of this permit.

2. An *owner or operator* may terminate coverage when one or more the following conditions have been met:

   a. Total project completion - All *construction activity* identified in the SWPPP has been completed; and all areas of disturbance have achieved *final stabilization*; and all temporary, structural erosion and sediment control measures have been removed; and all post-construction stormwater management practices have been constructed in conformance with the SWPPP and are operational;

b. Planned shutdown with partial project completion - All soil disturbance activities have ceased; <u>and</u> all areas disturbed as of the project shutdown date have achieved *final stabilization*; <u>and</u> all temporary, structural erosion and sediment control measures have been removed; <u>and</u> all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational;

c. A new *owner or operator* has obtained coverage under this permit in accordance with Part II.F. of this permit.

d. The *owner or operator* obtains coverage under an alternative SPDES general permit or an individual SPDES permit.

3. For *construction activities* meeting subdivision 2a. or 2b. of this Part, the *owner or operator* shall have the *qualified inspector* perform a final site inspection prior to submitting the NOT. The *qualified inspector* shall, by signing the "*Final Stabilization*" and "Post-Construction Stormwater Management Practice certification statements on the NOT, certify that all the requirements in Part V.A.2.a. or b. of this permit have been achieved.

4. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4* and meet subdivision 2a. or 2b. of this Part, the *owner or operator* shall have the *regulated, traditional land use control MS4* sign the "MS4 Acceptance" statement on the NOT in accordance with the requirements in Part VII.H. of this permit. The *regulated, traditional land use control MS4* official, by signing this statement, has determined that it is acceptable for the *owner or operator* to submit the NOT in accordance with the requirements of this Part. The *regulated, traditional land use control MS4* can make this determination by performing a final site inspection themselves or by accepting the *qualified inspector*'s final site inspection certification(s) required in Part V.A.3. of this permit.

5. For *construction activities* that require post-construction stormwater management practices and meet subdivision 2a. of this Part, the *owner or operator* must, prior to submitting the NOT, ensure one of the following:

a. the post-construction stormwater management practice(s) and any right-of-way(s) needed to maintain such practice(s) have been deeded to the municipality in which the practice(s) is located,

b. an executed maintenance agreement is in place with the municipality that will maintain the post-construction stormwater management practice(s),

c. for post-construction stormwater management practices that are privately owned, the *owner or operator* has a mechanism in place that requires operation and maintenance of the practice(s) in accordance with the operation and maintenance plan, such as a deed covenant in the *owner or operator's* deed of record,

d. for post-construction stormwater management practices that are owned by a public or private institution (e.g. school, university, hospital), government agency or authority, or public utility; the *owner or operator* has policy and procedures in place that ensures operation and maintenance of the practices in accordance with the operation and maintenance plan.

Part VI. REPORTING AND RETENTION RECORDS

A. Record Retention

The *owner or operator* shall retain a copy of the NOI, NOI Acknowledgment Letter, SWPPP, MS4 SWPPP Acceptance form and any inspection reports that were prepared in conjunction with this permit for a period of at least five (5) years from the date that the Department receives a complete NOT submitted in accordance with Part V. of this general permit.

B. Addresses

With the exception of the NOI, NOT, and MS4 SWPPP Acceptance form (which must be submitted to the address referenced in Part II.B.1 of this permit), all written correspondence requested by the Department, including individual permit applications, shall be sent to the address of the appropriate DOW Water (SPDES) Program contact at the Regional Office listed in Appendix F.

Part VII. STANDARD PERMIT CONDITIONS

A. Duty to Comply

The *owner or operator* must comply with all conditions of this permit. All contractors and subcontractors associated with the project must comply with the terms of the SWPPP. Any non-compliance with this permit constitutes a violation of the Clean Water

Act (CWA) and the ECL and is grounds for an enforcement action against the *owner or operator* and/or the contractor/subcontractor; permit revocation, suspension or modification; or denial of a permit renewal application. Upon a finding of significant non-compliance with this permit or the applicable SWPPP, the Department may order an immediate stop to all *construction activity* at the site until the non-compliance is remedied. The stop work order shall be in writing, shall describe the non-compliance in detail, and shall be sent to the *owner or operator*.

If any human remains or archaeological remains are encountered during excavation, the *owner or operator* must immediately cease, or cause to cease, all *construction activity* in the area of the remains and notify the appropriate Regional Water Engineer (RWE). *Construction activity* shall not resume until written permission to do so has been received from the RWE.

B. Continuation of the Expired General Permit

This permit expires five (5) years from the effective date. If a new general permit is not issued prior to the expiration of this general permit, an *owner or operator* with coverage under this permit may continue to operate and *discharge* in accordance with the terms and conditions of this general permit, if it is extended pursuant to the State Administrative Procedure Act and 6 NYCRR Part 621, until a new general permit is issued.

C. Enforcement

Failure of the *owner or operator,* its contractors, subcontractors, agents and/or assigns to strictly adhere to any of the permit requirements contained herein shall constitute a violation of this permit. There are substantial criminal, civil, and administrative penalties associated with violating the provisions of this permit. Fines of up to $37,500 per day for each violation and imprisonment for up to fifteen (15) years may be assessed depending upon the nature and degree of the offense.

D. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for an *owner or operator* in an enforcement action that it would have been necessary to halt or reduce the *construction activity* in order to maintain compliance with the conditions of this permit.

E. Duty to Mitigate

The *owner or operator* and its contractors and subcontractors shall take all reasonable steps to *minimize* or prevent any *discharge* in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

F. Duty to Provide Information

The *owner or operator* shall furnish to the Department, within a reasonable specified time period of a written request, all documentation necessary to demonstrate eligibility and any information to determine compliance with this permit or to determine whether cause exists for modifying or revoking this permit, or suspending or denying coverage under this permit, in accordance with the terms and conditions of this permit. The NOI, SWPPP and inspection reports required by this permit are public documents that the *owner or operator* must make available for review and copying by any person within five (5) business days of the *owner or operator* receiving a written request by any such person to review these documents. Copying of documents will be done at the requester's expense.

G. Other Information

When the *owner or operator* becomes aware that they failed to submit any relevant facts, or submitted incorrect information in the NOI or in any of the documents required by this permit , or have made substantive revisions to the SWPPP (e.g. the scope of the project changes significantly, the type of post-construction stormwater management practice(s) changes, there is a reduction in the sizing of the post-construction stormwater management practice, or there is an increase in the disturbance area or *impervious area*), which were not reflected in the original NOI submitted to the Department, they shall promptly submit such facts or information to the Department using the contact information in Part II.A. of this permit. Failure of the *owner or operator* to correct or supplement any relevant facts within five (5) business days of becoming aware of the deficiency shall constitute a violation of this permit.

H. Signatory Requirements

1. All NOIs and NOTs shall be signed as follows:

    a. For a corporation these forms shall be signed by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means:

(i) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation; or

(ii) the manager of one or more manufacturing, production or operating facilities, provided the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;

b. For a partnership or sole proprietorship these forms shall be signed by a general partner or the proprietor, respectively; or

c. For a municipality, State, Federal, or other public agency these forms shall be signed by either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes:

(i) the chief executive officer of the agency, or

(ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of EPA).

2. The SWPPP and other information requested by the Department shall be signed by a person described in Part VII.H.1. of this permit or by a duly authorized representative of that person. A person is a duly authorized representative only if:

a. The authorization is made in writing by a person described in Part VII.H.1. of this permit;

b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field, superintendent, position of *equivalent* responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position) and,

c. The written authorization shall include the name, title and signature of the authorized representative and be attached to the SWPPP.

3. All inspection reports shall be signed by the *qualified inspector* that performs the inspection.

4. The MS4 SWPPP Acceptance form shall be signed by the principal executive officer or ranking elected official from the *regulated, traditional land use control MS4,* or by a duly authorized representative of that person.

   It shall constitute a permit violation if an incorrect and/or improper signatory authorizes any required forms, SWPPP and/or inspection reports.

I. Property Rights

The issuance of this permit does not convey any property rights of any sort, nor any exclusive privileges, nor does it authorize any injury to private property nor any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations. *Owners or operators* must obtain any applicable conveyances, easements, licenses and/or access to real property prior to *commencing construction activity*.

J. Severability

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit shall not be affected thereby.

K. Requirement to Obtain Coverage Under an Alternative Permit

1. The Department may require any owner or operator authorized by this permit to apply for and/or obtain either an individual SPDES permit or another SPDES general permit. When the Department requires any discharger authorized by a general permit to apply for an individual SPDES permit, it shall notify the discharger in writing that a permit application is required. This notice shall

include a brief statement of the reasons for this decision, an application form, a statement setting a time frame for the owner or operator to file the application for an individual SPDES permit, and a deadline, not sooner than 180 days from owner or operator receipt of the notification letter, whereby the authorization to discharge under this general permit shall be terminated. Applications must be submitted to the appropriate Permit Administrator at the Regional Office. The Department may grant additional time upon demonstration, to the satisfaction of the Department, that additional time to apply for an alternative authorization is necessary or where the Department has not provided a permit determination in accordance with Part 621 of this Title.

2. When an individual SPDES permit is issued to a discharger authorized to *discharge* under a general SPDES permit for the same *discharge*(s), the general permit authorization for outfalls authorized under the individual SPDES permit is automatically terminated on the effective date of the individual permit unless termination is earlier in accordance with 6 NYCRR Part 750.

L. Proper Operation and Maintenance

The *owner or operator* shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the *owner or operator* to achieve compliance with the conditions of this permit and with the requirements of the SWPPP.

M. Inspection and Entry

The *owner or operator* shall allow an authorized representative of the Department, EPA, applicable county health department, or, in the case of a *construction site* which *discharges* through an *MS4*, an authorized representative of the *MS4* receiving the discharge, upon the presentation of credentials and other documents as may be required by law, to:

1. Enter upon the owner’s or operator's premises where a regulated facility or activity is located or conducted or where records must be kept under the conditions of this permit;

2. Have access to and copy at reasonable times, any records that must be kept under the conditions of this permit; and

3. Inspect at reasonable times any facilities or equipment (including monitoring and control equipment), practices or operations regulated or required by this permit.

4. Sample or monitor at reasonable times, for purposes of assuring permit compliance or as otherwise authorized by the Act or ECL, any substances or parameters at any location.

N. Permit Actions

This permit may, at any time, be modified, suspended, revoked, or renewed by the Department in accordance with 6 NYCRR Part 621. The filing of a request by the *owner or operator* for a permit modification, revocation and reissuance, termination, a notification of planned changes or anticipated noncompliance does not limit, diminish and/or stay compliance with any terms of this permit.

O. Definitions

Definitions of key terms are included in Appendix A of this permit.

P. Re-Opener Clause

1. If there is evidence indicating potential or realized impacts on water quality due to any stormwater discharge associated with construction activity covered by this permit, the owner or operator of such discharge may be required to obtain an individual permit or alternative general permit in accordance with Part VII.K. of this permit or the permit may be modified to include different limitations and/or requirements.

2. Any Department initiated permit modification, suspension or revocation will be conducted in accordance with 6 NYCRR Part 621, 6 NYCRR 750-1.18, and 6 NYCRR 750-1.20.

Q. Penalties for Falsification of Forms and Reports

In accordance with 6NYCRR Part 750-2.4 and 750-2.5, any person who knowingly makes any false material statement, representation, or certification in any application, record, report or other document filed or required to be maintained under this permit, including reports of compliance or noncompliance shall, upon conviction, be punished in accordance with ECL §71-1933 and or Articles 175 and 210 of the New York State Penal Law.

R. Other Permits

Nothing in this permit relieves the *owner or operator* from a requirement to obtain any other permits required by law.

APPENDIX A – Acronyms and Definitions

Acronyms

APO – Agency Preservation Officer
BMP – Best Management Practice
CPESC – Certified Professional in Erosion and Sediment Control
Cpv – Channel Protection Volume
CWA – Clean Water Act (or the Federal Water Pollution Control Act, 33 U.S.C. §1251 et seq)
DOW – Division of Water
EAF – Environmental Assessment Form
ECL - Environmental Conservation Law
EPA – U. S. Environmental Protection Agency
HSG – Hydrologic Soil Group
MS4 – Municipal Separate Storm Sewer System
NOI – Notice of Intent
NOT – Notice of Termination
NPDES – National Pollutant Discharge Elimination System
OPRHP – Office of Parks, Recreation and Historic Places
Qf – Extreme Flood
Qp – Overbank Flood
RRv – Runoff Reduction Volume
RWE – Regional Water Engineer
SEQR – State Environmental Quality Review
SEQRA - State Environmental Quality Review Act
SHPA – State Historic Preservation Act
SPDES – State Pollutant Discharge Elimination System
SWPPP – Stormwater Pollution Prevention Plan
TMDL – Total Maximum Daily Load
UPA – Uniform Procedures Act
USDA – United States Department of Agriculture
WQv – Water Quality Volume

Definitions

All definitions in this section are solely for the purposes of this permit.

Agricultural Building – a structure designed and constructed to house farm implements, hay, grain, poultry, livestock or other horticultural products; excluding any structure designed, constructed or used, in whole or in part, for human habitation, as a place of employment where agricultural products are processed, treated or packaged, or as a place used by the public.

Agricultural Property –means the land for construction of a barn, *agricultural building*, silo, stockyard, pen or other structural practices identified in Table II in the "Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State" prepared by the Department in cooperation with agencies of New York Nonpoint Source Coordinating Committee (dated June 2007).

Alter Hydrology from Pre to Post-Development Conditions - means the post-development peak flow rate(s) has increased by more than 5% of the pre-developed condition for the design storm of interest (e.g. 10 yr and 100 yr).

Combined Sewer - means a sewer that is designed to collect and convey both "sewage" and "stormwater".

Commence (Commencement of) Construction Activities - means the initial disturbance of soils associated with clearing, grading or excavation activities; or other construction related activities that disturb or expose soils such as demolition, stockpiling of fill material, and the initial installation of erosion and sediment control practices required in the SWPPP. See definition for "*Construction Activity(ies)*" also.

Construction Activity(ies) - means any clearing, grading, excavation, filling, demolition or stockpiling activities that result in soil disturbance. Clearing activities can include, but are not limited to, logging equipment operation, the cutting and skidding of trees, stump removal and/or brush root removal. Construction activity does not include routine maintenance that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of a facility.

Construction Site – means the land area where *construction activity(ies)* will occur. See definition for "*Commence (Commencement of) Construction Activities*" and "*Larger Common Plan of Development or Sale" also.*

Dewatering – means the act of draining rainwater and/or groundwater from building foundations, vaults or excavations/trenches.

Direct Discharge (to a specific surface waterbody) - means that runoff flows from a *construction site* by overland flow and the first point of discharge is the specific surface waterbody, or runoff flows from a *construction site* to a separate storm sewer system and the first point of discharge from the separate storm sewer system is the specific surface waterbody.

Discharge(s) - means any addition of any pollutant to waters of the State through an outlet or *point source*.

Embankment –means an earthen or rock slope that supports a road/highway.

Endangered or Threatened Species – see 6 NYCRR Part 182 of the Department's rules and regulations for definition of terms and requirements.

Environmental Conservation Law (ECL) - means chapter 43-B of the Consolidated Laws of the State of New York, entitled the Environmental Conservation Law.

Equivalent (Equivalence) – means that the practice or measure meets all the performance, longevity, maintenance, and safety objectives of the technical standard and will provide an equal or greater degree of water quality protection.

Final Stabilization - means that all soil disturbance activities have ceased and a uniform, perennial vegetative cover with a density of eighty (80) percent over the entire pervious surface has been established; or other equivalent stabilization measures, such as permanent landscape mulches, rock rip-rap or washed/crushed stone have been applied on all disturbed areas that are not covered by permanent structures, concrete or pavement.

General SPDES permit - means a SPDES permit issued pursuant to 6 NYCRR Part 750-1.21 and Section 70-0117 of the ECL authorizing a category of discharges.

Groundwater(s) - means waters in the saturated zone. The saturated zone is a subsurface zone in which all the interstices are filled with water under pressure greater than that of the atmosphere. Although the zone may contain gas-filled interstices or interstices filled with fluids other than water, it is still considered saturated.

Historic Property – means any building, structure, site, object or district that is listed on the State or National Registers of Historic Places or is determined to be eligible for listing on the State or National Registers of Historic Places.

Impervious Area (Cover) - means all impermeable surfaces that cannot effectively infiltrate rainfall. This includes paved, concrete and gravel surfaces (i.e. parking lots, driveways, roads, runways and sidewalks); building rooftops and miscellaneous impermeable structures such as patios, pools, and sheds.

Infeasible – means not technologically possible, or not economically practicable and achievable in light of best industry practices.

Larger Common Plan of Development or Sale - means a contiguous area where multiple separate and distinct *construction activities* are occurring, or will occur, under one plan. The term “plan” in “larger common plan of development or sale” is broadly defined as any announcement or piece of documentation (including a sign, public notice or hearing, marketing plan, advertisement, drawing, permit application, State Environmental Quality Review Act (SEQRA) environmental assessment form or other documents, zoning request, computer design, etc.) or physical demarcation (including boundary signs, lot stakes, surveyor markings, etc.) indicating that *construction activities* may occur on a specific plot.

For discrete construction projects that are located within a larger common plan of development or sale that are at least 1/4 mile apart, each project can be treated as a separate plan of development or sale provided any interconnecting road, pipeline or utility project that is part of the same “common plan” is not concurrently being disturbed.

Minimize – means reduce and/or eliminate to the extent achievable using control measures (including best management practices) that are technologically available and economically practicable and achievable in light of best industry practices.

Municipal Separate Storm Sewer (MS4) - a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains):

(i) Owned or operated by a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, stormwater, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the CWA that discharges to surface waters of the State*;*
(ii) Designed or used for collecting or conveying stormwater;
(iii) Which is not a *combined sewer*; and
(iv) Which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR 122.2.

National Pollutant Discharge Elimination System (NPDES) - means the national system for the issuance of wastewater and stormwater permits under the Federal Water Pollution Control Act (Clean Water Act).

Natural Buffer –means an undisturbed area with natural cover running along a surface water (e.g. wetland, stream, river, lake, etc.).

New Development – means any land disturbance that does not meet the definition of Redevelopment Activity included in this appendix.

New York State Erosion and Sediment Control Certificate Program – a certificate program that establishes and maintains a process to identify and recognize individuals who are capable of developing, designing, inspecting and maintaining erosion and sediment control plans on projects that disturb soils in New York State. The certificate program is administered by the New York State Conservation District Employees Association.

NOI Acknowledgment Letter - means the letter that the Department sends to an owner or operator to acknowledge the Department's receipt and acceptance of a complete Notice of Intent. This letter documents the owner's or operator's authorization to discharge in accordance with the general permit for stormwater discharges from *construction activity*.

Nonpoint Source - means any source of water pollution or pollutants which is not a discrete conveyance or *point source* permitted pursuant to Title 7 or 8 of Article 17 of the Environmental Conservation Law (see ECL Section 17-1403).

Overbank –means flow events that exceed the capacity of the stream channel and spill out into the adjacent floodplain.

Owner or Operator - means the person, persons or legal entity which owns or leases the property on which the *construction activity* is occurring; an entity that has operational control over the construction plans and specifications, including the ability to make modifications to the plans and specifications; and/or an entity that has day-to-day operational control of those activities at a project that are necessary to ensure compliance with the permit conditions.

Performance Criteria – means the design criteria listed under the "Required Elements" sections in Chapters 5, 6 and 10 of the technical standard, New York State Stormwater Management Design Manual, dated January 2015. It does not include the Sizing Criteria (i.e. WQv, RRv, Cpv, Qp and Qf) in Part I.C.2. of the permit.

Point Source - means any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, vessel or other floating craft, or landfill leachate collection system from which *pollutants* are or may be discharged.

Pollutant - means dredged spoil, filter backwash, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand and industrial, municipal, agricultural waste and ballast discharged into water; which may cause or might reasonably be expected to cause pollution of the waters of the state in contravention of the standards or guidance values adopted as provided in 6 NYCRR Parts 700 et seq .

Qualified Inspector - means a person that is knowledgeable in the principles and practices of erosion and sediment control, such as a licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), Registered Landscape Architect, New York State Erosion and Sediment Control Certificate Program holder or other Department endorsed individual(s).

It can also mean someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided that person has training in the principles and practices of erosion and sediment control. Training in the principles and practices of erosion and sediment control means that the individual working under the direct supervision of the licensed Professional Engineer or Registered Landscape Architect has received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity. After receiving the initial training, the individual working under the direct supervision of the licensed Professional Engineer or Registered Landscape Architect shall receive four (4) hours of training every three (3) years.

It can also mean a person that meets the *Qualified Professional* qualifications in addition to the *Qualified Inspector* qualifications.

Note: Inspections of any post-construction stormwater management practices that include structural components, such as a dam for an impoundment, shall be performed by a licensed Professional Engineer.

Qualified Professional - means a person that is knowledgeable in the principles and practices of stormwater management and treatment, such as a licensed Professional Engineer, Registered Landscape Architect or other Department endorsed individual(s). Individuals preparing SWPPPs that require the post-construction stormwater management practice component must have an understanding of the principles of hydrology, water quality management practice design, water quantity control design, and, in many cases, the principles of hydraulics. All components of the SWPPP that involve the practice of engineering, as defined by the NYS Education Law (see Article 145), shall be prepared by, or under the direct supervision of, a professional engineer licensed to practice in the State of New York.

Redevelopment Activity(ies) – means the disturbance and reconstruction of existing impervious area, including impervious areas that were removed from a project site within five (5) years of preliminary project plan submission to the local government (i.e. site plan, subdivision, etc.).

Regulated, Traditional Land Use Control MS4 - means a city, town or village with land use control authority that is authorized to discharge under New York State DEC's

SPDES General Permit For Stormwater Discharges from Municipal Separate Stormwater Sewer Systems (MS4s) or the City of New York's Individual SPDES Permit for their Municipal Separate Storm Sewer Systems (NY-0287890).

Routine Maintenance Activity - means *construction activity* that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of a facility, including, but not limited to:

- Re-grading of gravel roads or parking lots,
- Cleaning and shaping of existing roadside ditches and culverts that maintains the approximate original line and grade, and hydraulic capacity of the ditch,
- Cleaning and shaping of existing roadside ditches that does not maintain the approximate original grade, hydraulic capacity and purpose of the ditch if the changes to the line and grade, hydraulic capacity or purpose of the ditch are installed to improve water quality and quantity controls (e.g. installing grass lined ditch),
- Placement of aggregate shoulder backing that stabilizes the transition between the road shoulder and the ditch or *embankment*,
- Full depth milling and filling of existing asphalt pavements, replacement of concrete pavement slabs, and similar work that does not expose soil or disturb the bottom six (6) inches of subbase material,
- Long-term use of equipment storage areas at or near highway maintenance facilities,
- Removal of sediment from the edge of the highway to restore a previously existing sheet-flow drainage connection from the highway surface to the highway ditch or *embankment*,
- Existing use of Canal Corp owned upland disposal sites for the canal, and
- Replacement of curbs, gutters, sidewalks and guide rail posts.

Site limitations – means site conditions that prevent the use of an infiltration technique and or infiltration of the total WQv. Typical site limitations include: seasonal high groundwater, shallow depth to bedrock, and soils with an infiltration rate less than 0.5 inches/hour. The existence of site limitations shall be confirmed and documented using actual field testing (i.e. test pits, soil borings, and infiltration test) or using information from the most current United States Department of Agriculture (USDA) Soil Survey for the County where the project is located.

Sizing Criteria – means the criteria included in Part I.C.2 of the permit that are used to size post-construction stormwater management control practices. The criteria include; Water Quality Volume (WQv), Runoff Reduction Volume (RRv), Channel Protection Volume (Cpv), *Overbank* Flood (Qp), and Extreme Flood (Qf).

State Pollutant Discharge Elimination System (SPDES) - means the system established pursuant to Article 17 of the ECL and 6 NYCRR Part 750 for issuance of permits authorizing discharges to the waters of the state.

Steep Slope – means land area designated on the current United States Department of Agriculture ("USDA") Soil Survey as Soil Slope Phase "D", (provided the map unit name is inclusive of slopes greater than 25%) , or Soil Slope Phase E or F, (regardless of the map unit name), or a combination of the three designations.

Streambank – as used in this permit, means the terrain alongside the bed of a creek or stream. The bank consists of the sides of the channel, between which the flow is confined.

Stormwater Pollution Prevention Plan (SWPPP) – means a project specific report, including construction drawings, that among other things: describes the construction activity(ies), identifies the potential sources of pollution at the *construction site*; describes and shows the stormwater controls that will be used to control the pollutants (i.e. erosion and sediment controls; for many projects, includes post-construction stormwater management controls); and identifies procedures the *owner or operator* will implement to comply with the terms and conditions of the permit. See Part III of the permit for a complete description of the information that must be included in the SWPPP.

Surface Waters of the State - shall be construed to include lakes, bays, sounds, ponds, impounding reservoirs, springs, rivers, streams, creeks, estuaries, marshes, inlets, canals, the Atlantic ocean within the territorial seas of the state of New York and all other bodies of surface water, natural or artificial, inland or coastal, fresh or salt, public or private (except those private waters that do not combine or effect a junction with natural surface waters), which are wholly or partially within or bordering the state or within its jurisdiction. Waters of the state are further defined in 6 NYCRR Parts 800 to 941.

Temporarily Ceased – means that an existing disturbed area will not be disturbed again within 14 calendar days of the previous soil disturbance.

Temporary Stabilization - means that exposed soil has been covered with material(s) as set forth in the technical standard, New York Standards and Specifications for Erosion and Sediment Control, to prevent the exposed soil from eroding. The materials can include, but are not limited to, mulch, seed and mulch, and erosion control mats (e.g. jute twisted yarn, excelsior wood fiber mats).

Total Maximum Daily Loads (TMDLs) - A TMDL is the sum of the allowable loads of a single pollutant from all contributing point and *nonpoint source*s. It is a calculation of the maximum amount of a pollutant that a waterbody can receive on a daily basis and still meet *water quality standards*, and an allocation of that amount to the pollutant's sources. A TMDL stipulates wasteload allocations (WLAs) for *point source* discharges, load allocations (LAs) for *nonpoint source*s, and a margin of safety (MOS).

Trained Contractor - means an employee from the contracting (construction) company, identified in Part III.A.6., that has received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity. After receiving the initial training, the *trained contractor* shall receive four (4) hours of training every three (3) years.

It can also mean an employee from the contracting (construction) company, identified in Part III.A.6., that meets the *qualified inspector* qualifications (e.g. licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), Registered Landscape Architect, New York State Erosion and Sediment Control Certificate Program holder, or someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided they have received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity).

The *trained contractor* is responsible for the day to day implementation of the SWPPP.

Uniform Procedures Act (UPA) Permit - means a permit required under 6 NYCRR Part 621 of the Environmental Conservation Law (ECL), Article 70.

Water Quality Standard - means such measures of purity or quality for any waters in relation to their reasonable and necessary use as promulgated in 6 NYCRR Part 700 et seq.

APPENDIX B – Required SWPPP Components by Project Type

Table 1

Construction Activities that Require the Preparation of a SWPPP That Only Includes Erosion and Sediment Controls

The following construction activities that involve soil disturbances of one (1) or more acres of land, but less than five (5) acres:

- Single family home not located in one of the watersheds listed in Appendix C or not *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family residential subdivisions with 25% or less impervious cover at total site build-out and not located in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix E
- Construction of a barn or other *agricultural building*, silo, stock yard or pen.

The following construction activities that involve soil disturbances between five thousand (5000) square feet and one (1) acre of land:

All construction activities located in the watersheds identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Installation of underground, linear utilities; such as gas lines, fiber-optic cable, cable TV, electric, telephone, sewer mains, and water mains
- Environmental enhancement projects, such as wetland mitigation projects, stormwater retrofits and stream restoration projects
- Pond construction
- Linear bike paths running through areas with vegetative cover, including bike paths surfaced with an impervious cover
- Cross-country ski trails and walking/hiking trails
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are not part of residential, commercial or institutional development;
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that include incidental shoulder or curb work along an existing highway to support construction of the sidewalk, bike path or walking path.
- Slope stabilization projects
- Slope flattening that changes the grade of the site, but does not significantly change the runoff characteristics

Table 1 (Continued) CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP
THAT ONLY INCLUDES EROSION AND SEDIMENT CONTROLS

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Spoil areas that will be covered with vegetation
- Vegetated open space projects (i.e. recreational parks, lawns, meadows, fields, downhill ski trails) excluding projects that *alter hydrology from pre to post development* conditions,
- Athletic fields (natural grass) that do not include the construction or reconstruction of *impervious area* and do not *alter hydrology from pre to post development* conditions
- Demolition project where vegetation will be established, and no redevelopment is planned
- Overhead electric transmission line project that does not include the construction of permanent access roads or parking areas surfaced with *impervious cover*
- Structural practices as identified in Table II in the “Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State”, excluding projects that involve soil disturbances of greater than five acres and construction activities that include the construction or reconstruction of impervious area
- Temporary access roads, median crossovers, detour roads, lanes, or other temporary impervious areas that will be restored to pre-construction conditions once the construction activity is complete

Table 2

CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP THAT INCLUDES POST-CONSTRUCTION STORMWATER MANAGEMENT PRACTICES

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Single family home located in one of the watersheds listed in Appendix C or *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family home that disturbs five (5) or more acres of land
- Single family residential subdivisions located in one of the watersheds listed in Appendix C or *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family residential subdivisions that involve soil disturbances of between one (1) and five (5) acres of land with greater than 25% impervious cover at total site build-out
- Single family residential subdivisions that involve soil disturbances of five (5) or more acres of land, and single family residential subdivisions that involve soil disturbances of less than five (5) acres that are part of a larger common plan of development or sale that will ultimately disturb five or more acres of land
- Multi-family residential developments; includes duplexes, townhomes, condominiums, senior housing complexes, apartment complexes, and mobile home parks
- Airports
- Amusement parks
- Breweries, cideries, and wineries, including establishments constructed on agricultural land
- Campgrounds
- Cemeteries that include the construction or reconstruction of impervious area (>5% of disturbed area) or *alter the hydrology from pre to post development* conditions
- Commercial developments
- Churches and other places of worship
- Construction of a barn or other *agricultural building* (e.g. silo) and structural practices as identified in Table II in the “Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State” that include the construction or reconstruction of *impervious area*, excluding projects that involve soil disturbances of less than five acres.
- Golf courses
- Institutional development; includes hospitals, prisons, schools and colleges
- Industrial facilities; includes industrial parks
- Landfills
- Municipal facilities; includes highway garages, transfer stations, office buildings, POTW’s, water treatment plants, and water storage tanks
- Office complexes
- Playgrounds that include the construction or reconstruction of impervious area
- Sports complexes
- Racetracks; includes racetracks with earthen (dirt) surface
- Road construction or reconstruction, including roads constructed as part of the construction activities listed in Table 1

Table 2 (Continued)

CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP THAT INCLUDES POST-CONSTRUCTION STORMWATER MANAGEMENT PRACTICES

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Parking lot construction or reconstruction, including parking lots constructed as part of the construction activities listed in Table 1
- Athletic fields (natural grass) that include the construction or reconstruction of impervious area (>5% of disturbed area) or *alter the hydrology from pre to post development* conditions
- Athletic fields with artificial turf
- Permanent access roads, parking areas, substations, compressor stations and well drilling pads, surfaced with *impervious cover,* and constructed as part of an over-head electric transmission line project, wind-power project, cell tower project, oil or gas well drilling project, sewer or water main project or other linear utility project
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are part of a residential, commercial or institutional development
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are part of a highway construction or reconstruction project
- All other construction activities that include the construction or reconstruction of *impervious area* or *alter the hydrology from pre to post development* conditions, and are not listed in Table 1

APPENDIX C – Watersheds Requiring Enhanced Phosphorus Removal

Watersheds where *owners or operators* of construction activities identified in Table 2 of Appendix B must prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the Enhanced Phosphorus Removal Standards included in the technical standard, New York State Stormwater Management Design Manual ("Design Manual").

- Entire New York City Watershed located east of the Hudson River **-** Figure 1
- Onondaga Lake Watershed **-** Figure 2
- Greenwood Lake Watershed **-**Figure 3
- Oscawana Lake Watershed – Figure 4
- Kinderhook Lake Watershed – Figure 5

Figure 1 - New York City Watershed East of the Hudson

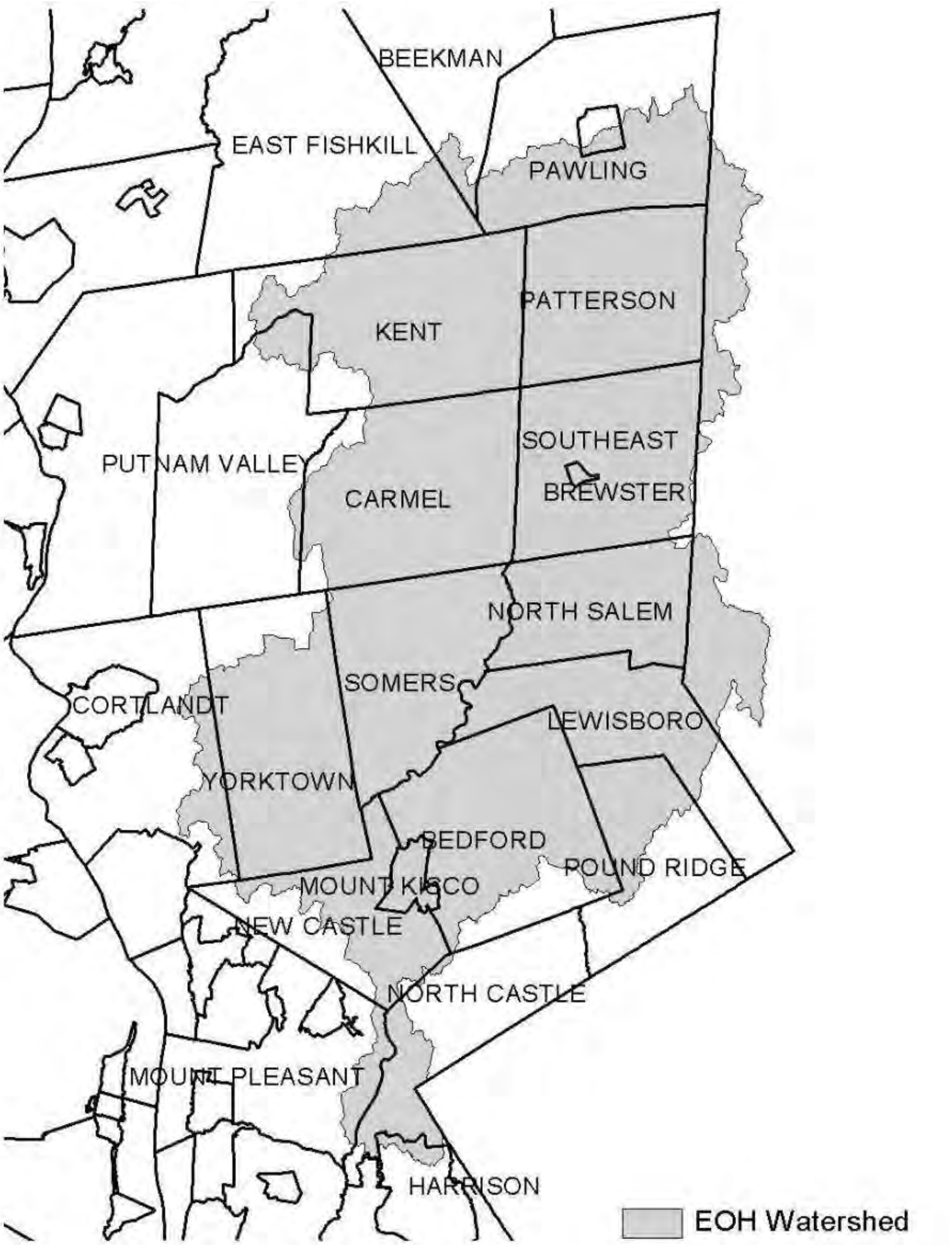


Figure 2 - Onondaga Lake Watershed

Figure 3 - Greenwood Lake Watershed

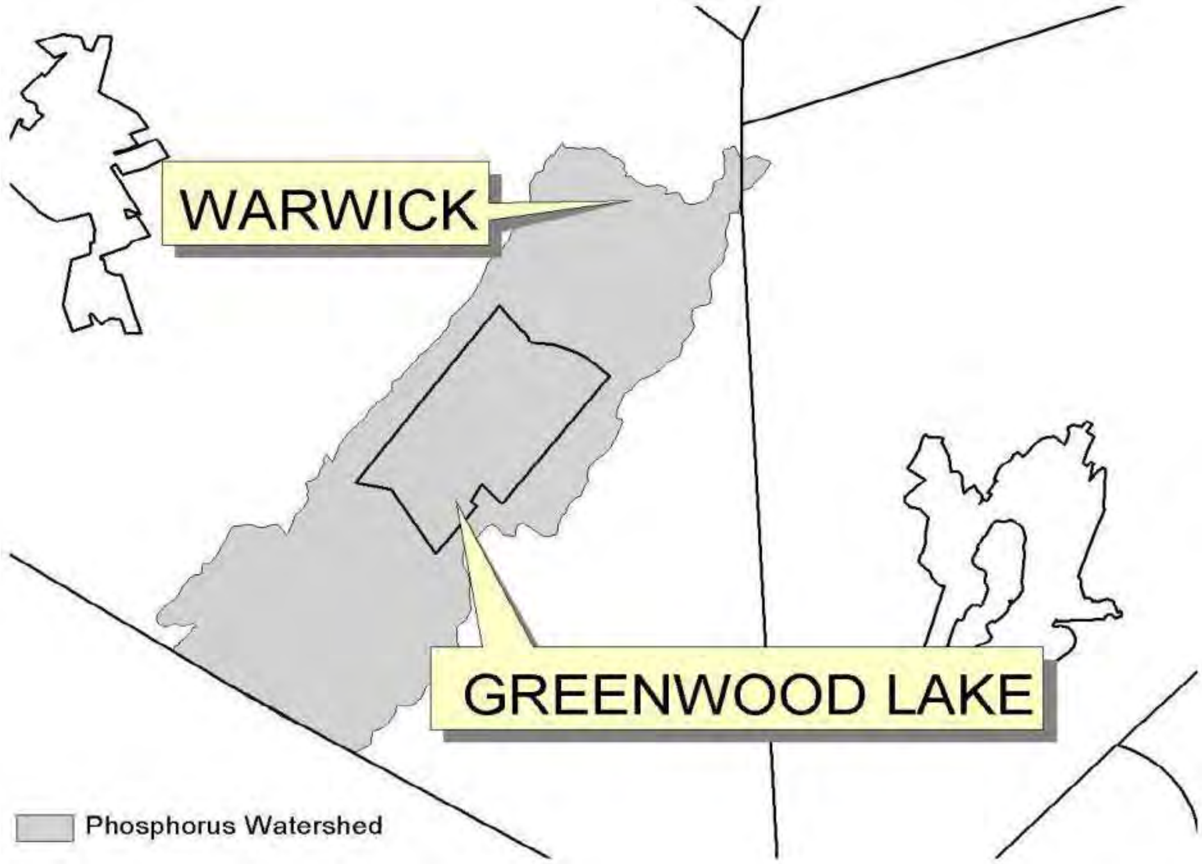


Figure 4 - Oscawana Lake Watershed

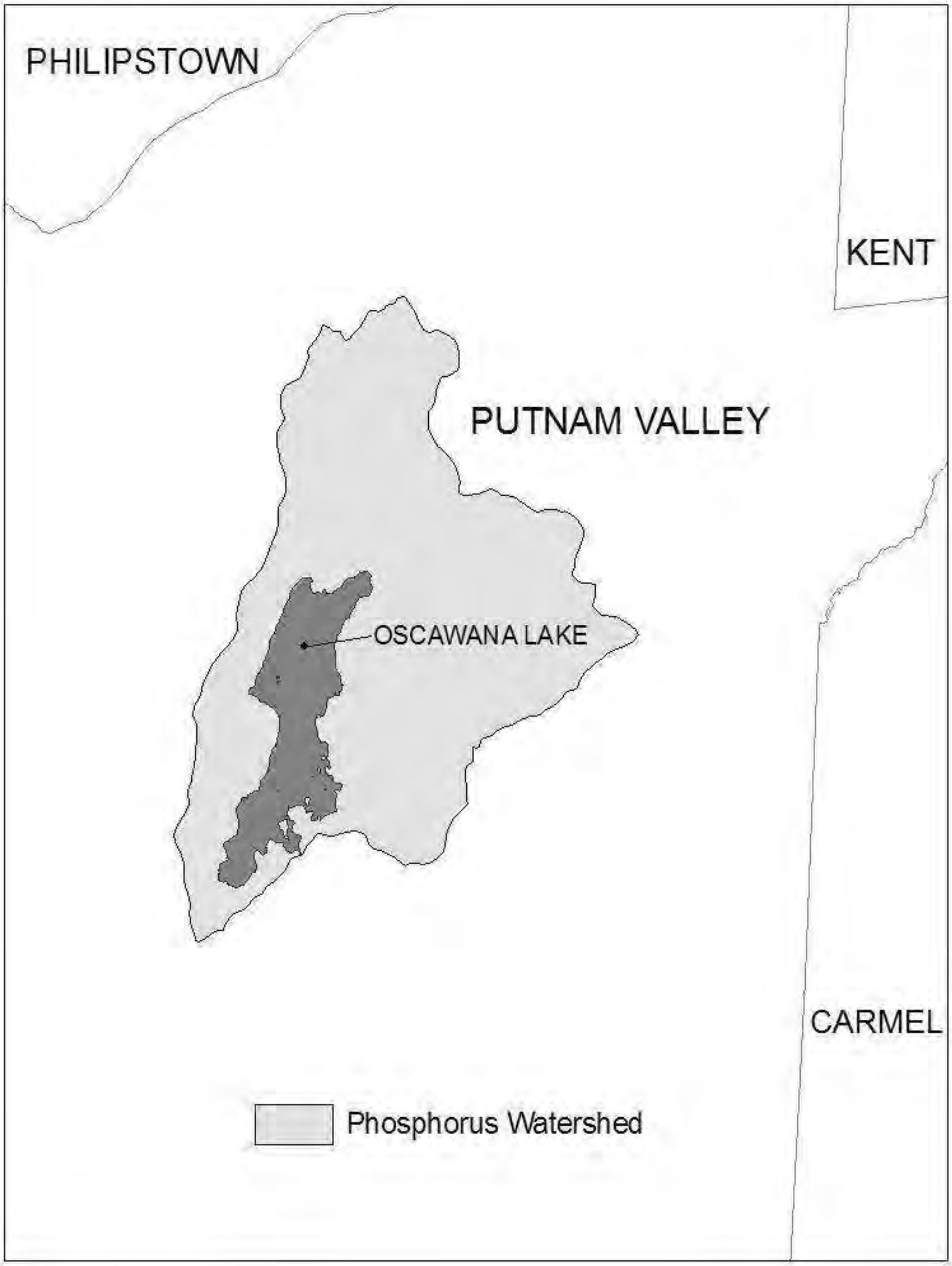
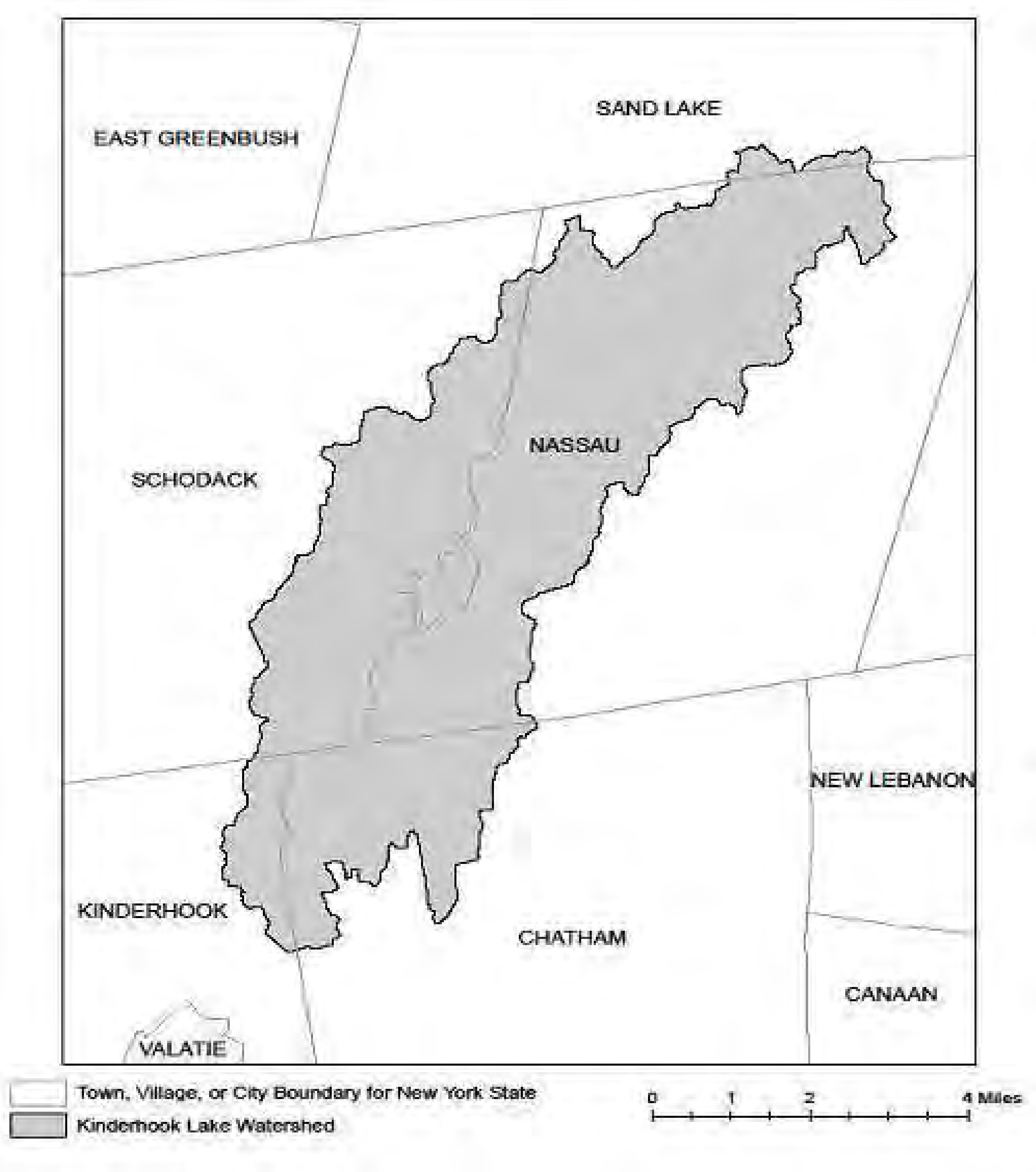


Figure 5 - Kinderhook Lake Watershed



APPENDIX D – Watersheds with Lower Disturbance Threshold

Watersheds where *owners or operators* of construction activities that involve soil disturbances between five thousand (5000) square feet and one (1) acre of land must obtain coverage under this permit.

Entire New York City Watershed that is located east of the Hudson River **-** See Figure 1 in Appendix C

APPENDIX E – 303(d) Segments Impaired by Construction Related Pollutant(s)

List of 303(d) segments impaired by pollutants related to *construction activity* (e.g. silt, sediment or nutrients). The list was developed using "The Final New York State 2016 Section 303(d) List of Impaired Waters Requiring a TMDL/Other Strategy" dated November 2016. *Owners or operators* of single family home and single family residential subdivisions with 25% or less total impervious cover at total site build-out that involve soil disturbances of one or more acres of land, but less than 5 acres, and *directly discharge* to one of the listed segments below shall prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the New York State Stormwater Management Design Manual ("Design Manual"), dated January 2015.

COUNTY	WATERBODY	POLLUTANT
Albany	Ann Lee (Shakers) Pond, Stump Pond	Nutrients
Albany	Basic Creek Reservoir	Nutrients
Allegany	Amity Lake, Saunders Pond	Nutrients
Bronx	Long Island Sound, Bronx	Nutrients
Bronx	Van Cortlandt Lake	Nutrients
Broome	Fly Pond, Deer Lake, Sky Lake	Nutrients
Broome	Minor Tribs to Lower Susquehanna (north)	Nutrients
Broome	Whitney Point Lake/Reservoir	Nutrients
Cattaraugus	Allegheny River/Reservoir	Nutrients
Cattaraugus	Beaver (Alma) Lake	Nutrients
Cattaraugus	Case Lake	Nutrients
Cattaraugus	Linlyco/Club Pond	Nutrients
Cayuga	Duck Lake	Nutrients
Cayuga	Little Sodus Bay	Nutrients
Chautauqua	Bear Lake	Nutrients
Chautauqua	Chadakoin River and tribs	Nutrients
Chautauqua	Chautauqua Lake, North	Nutrients
Chautauqua	Chautauqua Lake, South	Nutrients
Chautauqua	Findley Lake	Nutrients
Chautauqua	Hulburt/Clymer Pond	Nutrients
Clinton	Great Chazy River, Lower, Main Stem	Silt/Sediment
Clinton	Lake Champlain, Main Lake, Middle	Nutrients
Clinton	Lake Champlain, Main Lake, North	Nutrients
Columbia	Kinderhook Lake	Nutrients
Columbia	Robinson Pond	Nutrients
Cortland	Dean Pond	Nutrients

303(d) Segments Impaired by Construction Related Pollutant(s)

Dutchess	Fall Kill and tribs	Nutrients
Dutchess	Hillside Lake	Nutrients
Dutchess	Wappingers Lake	Nutrients
Dutchess	Wappingers Lake	Silt/Sediment
Erie	Beeman Creek and tribs	Nutrients
Erie	Ellicott Creek, Lower, and tribs	Silt/Sediment
Erie	Ellicott Creek, Lower, and tribs	Nutrients
Erie	Green Lake	Nutrients
Erie	Little Sister Creek, Lower, and tribs	Nutrients
Erie	Murder Creek, Lower, and tribs	Nutrients
Erie	Rush Creek and tribs	Nutrients
Erie	Scajaquada Creek, Lower, and tribs	Nutrients
Erie	Scajaquada Creek, Middle, and tribs	Nutrients
Erie	Scajaquada Creek, Upper, and tribs	Nutrients
Erie	South Branch Smoke Cr, Lower, and tribs	Silt/Sediment
Erie	South Branch Smoke Cr, Lower, and tribs	Nutrients
Essex	Lake Champlain, Main Lake, South	Nutrients
Essex	Lake Champlain, South Lake	Nutrients
Essex	Willsboro Bay	Nutrients
Genesee	Bigelow Creek and tribs	Nutrients
Genesee	Black Creek, Middle, and minor tribs	Nutrients
Genesee	Black Creek, Upper, and minor tribs	Nutrients
Genesee	Bowen Brook and tribs	Nutrients
Genesee	LeRoy Reservoir	Nutrients
Genesee	Oak Orchard Cr, Upper, and tribs	Nutrients
Genesee	Tonawanda Creek, Middle, Main Stem	Nutrients
Greene	Schoharie Reservoir	Silt/Sediment
Greene	Sleepy Hollow Lake	Silt/Sediment
Herkimer	Steele Creek tribs	Silt/Sediment
Herkimer	Steele Creek tribs	Nutrients
Jefferson	Moon Lake	Nutrients
Kings	Hendrix Creek	Nutrients
Kings	Prospect Park Lake	Nutrients
Lewis	Mill Creek/South Branch, and tribs	Nutrients
Livingston	Christie Creek and tribs	Nutrients
Livingston	Conesus Lake	Nutrients
Livingston	Mill Creek and minor tribs	Silt/Sediment
Monroe	Black Creek, Lower, and minor tribs	Nutrients
Monroe	Buck Pond	Nutrients
Monroe	Cranberry Pond	Nutrients

303(d) Segments Impaired by Construction Related Pollutant(s)

Monroe	Lake Ontario Shoreline, Western	Nutrients
Monroe	Long Pond	Nutrients
Monroe	Mill Creek and tribs	Nutrients
Monroe	Mill Creek/Blue Pond Outlet and tribs	Nutrients
Monroe	Minor Tribs to Irondequoit Bay	Nutrients
Monroe	Rochester Embayment - East	Nutrients
Monroe	Rochester Embayment - West	Nutrients
Monroe	Shipbuilders Creek and tribs	Nutrients
Monroe	Thomas Creek/White Brook and tribs	Nutrients
Nassau	Beaver Lake	Nutrients
Nassau	Camaans Pond	Nutrients
Nassau	East Meadow Brook, Upper, and tribs	Silt/Sediment
Nassau	East Rockaway Channel	Nutrients
Nassau	Grant Park Pond	Nutrients
Nassau	Hempstead Bay	Nutrients
Nassau	Hempstead Lake	Nutrients
Nassau	Hewlett Bay	Nutrients
Nassau	Hog Island Channel	Nutrients
Nassau	Long Island Sound, Nassau County Waters	Nutrients
Nassau	Massapequa Creek and tribs	Nutrients
Nassau	Milburn/Parsonage Creeks, Upp, and tribs	Nutrients
Nassau	Reynolds Channel, west	Nutrients
Nassau	Tidal Tribs to Hempstead Bay	Nutrients
Nassau	Tribs (fresh) to East Bay	Nutrients
Nassau	Tribs (fresh) to East Bay	Silt/Sediment
Nassau	Tribs to Smith/Halls Ponds	Nutrients
Nassau	Woodmere Channel	Nutrients
New York	Harlem Meer	Nutrients
New York	The Lake in Central Park	Nutrients
Niagara	Bergholtz Creek and tribs	Nutrients
Niagara	Hyde Park Lake	Nutrients
Niagara	Lake Ontario Shoreline, Western	Nutrients
Niagara	Lake Ontario Shoreline, Western	Nutrients
Oneida	Ballou, Nail Creeks and tribs	Nutrients
Onondaga	Harbor Brook, Lower, and tribs	Nutrients
Onondaga	Ley Creek and tribs	Nutrients
Onondaga	Minor Tribs to Onondaga Lake	Nutrients
Onondaga	Ninemile Creek, Lower, and tribs	Nutrients
Onondaga	Onondaga Creek, Lower, and tribs	Nutrients
Onondaga	Onondaga Creek, Middle, and tribs	Nutrients

303(d) Segments Impaired by Construction Related Pollutant(s)

Onondaga	Onondaga Lake, northern end	Nutrients
Onondaga	Onondaga Lake, southern end	Nutrients
Ontario	Great Brook and minor tribs	Silt/Sediment
Ontario	Great Brook and minor tribs	Nutrients
Ontario	Hemlock Lake Outlet and minor tribs	Nutrients
Ontario	Honeoye Lake	Nutrients
Orange	Greenwood Lake	Nutrients
Orange	Monhagen Brook and tribs	Nutrients
Orange	Orange Lake	Nutrients
Orleans	Lake Ontario Shoreline, Western	Nutrients
Orleans	Lake Ontario Shoreline, Western	Nutrients
Oswego	Lake Neatahwanta	Nutrients
Oswego	Pleasant Lake	Nutrients
Putnam	Bog Brook Reservoir	Nutrients
Putnam	Boyd Corners Reservoir	Nutrients
Putnam	Croton Falls Reservoir	Nutrients
Putnam	Diverting Reservoir	Nutrients
Putnam	East Branch Reservoir	Nutrients
Putnam	Lake Carmel	Nutrients
Putnam	Middle Branch Reservoir	Nutrients
Putnam	Oscawana Lake	Nutrients
Putnam	Palmer Lake	Nutrients
Putnam	West Branch Reservoir	Nutrients
Queens	Bergen Basin	Nutrients
Queens	Flushing Creek/Bay	Nutrients
Queens	Jamaica Bay, Eastern, and tribs (Queens)	Nutrients
Queens	Kissena Lake	Nutrients
Queens	Meadow Lake	Nutrients
Queens	Willow Lake	Nutrients
Rensselaer	Nassau Lake	Nutrients
Rensselaer	Snyders Lake	Nutrients
Richmond	Grasmere Lake/Bradys Pond	Nutrients
Rockland	Congers Lake, Swartout Lake	Nutrients
Rockland	Rockland Lake	Nutrients
Saratoga	Ballston Lake	Nutrients
Saratoga	Dwaas Kill and tribs	Silt/Sediment
Saratoga	Dwaas Kill and tribs	Nutrients
Saratoga	Lake Lonely	Nutrients
Saratoga	Round Lake	Nutrients
Saratoga	Tribs to Lake Lonely	Nutrients

303(d) Segments Impaired by Construction Related Pollutant(s)

Schenectady	Collins Lake	Nutrients
Schenectady	Duane Lake	Nutrients
Schenectady	Mariaville Lake	Nutrients
Schoharie	Engleville Pond	Nutrients
Schoharie	Summit Lake	Nutrients
Seneca	Reeder Creek and tribs	Nutrients
St.Lawrence	Black Lake Outlet/Black Lake	Nutrients
St.Lawrence	Fish Creek and minor tribs	Nutrients
Steuben	Smith Pond	Nutrients
Suffolk	Agawam Lake	Nutrients
Suffolk	Big/Little Fresh Ponds	Nutrients
Suffolk	Canaan Lake	Silt/Sediment
Suffolk	Canaan Lake	Nutrients
Suffolk	Flanders Bay, West/Lower Sawmill Creek	Nutrients
Suffolk	Fresh Pond	Nutrients
Suffolk	Great South Bay, East	Nutrients
Suffolk	Great South Bay, Middle	Nutrients
Suffolk	Great South Bay, West	Nutrients
Suffolk	Lake Ronkonkoma	Nutrients
Suffolk	Long Island Sound, Suffolk County, West	Nutrients
Suffolk	Mattituck (Marratooka) Pond	Nutrients
Suffolk	Meetinghouse/Terrys Creeks and tribs	Nutrients
Suffolk	Mill and Seven Ponds	Nutrients
Suffolk	Millers Pond	Nutrients
Suffolk	Moriches Bay, East	Nutrients
Suffolk	Moriches Bay, West	Nutrients
Suffolk	Peconic River, Lower, and tidal tribs	Nutrients
Suffolk	Quantuck Bay	Nutrients
Suffolk	Shinnecock Bay and Inlet	Nutrients
Suffolk	Tidal tribs to West Moriches Bay	Nutrients
Sullivan	Bodine, Montgomery Lakes	Nutrients
Sullivan	Davies Lake	Nutrients
Sullivan	Evens Lake	Nutrients
Sullivan	Pleasure Lake	Nutrients
Tompkins	Cayuga Lake, Southern End	Nutrients
Tompkins	Cayuga Lake, Southern End	Silt/Sediment
Tompkins	Owasco Inlet, Upper, and tribs	Nutrients
Ulster	Ashokan Reservoir	Silt/Sediment
Ulster	Esopus Creek, Upper, and minor tribs	Silt/Sediment
Warren	Hague Brook and tribs	Silt/Sediment

303(d) Segments Impaired by Construction Related Pollutant(s)

Warren	Huddle/Finkle Brooks and tribs	Silt/Sediment
Warren	Indian Brook and tribs	Silt/Sediment
Warren	Lake George	Silt/Sediment
Warren	Tribs to L.George, Village of L George	Silt/Sediment
Washington	Cossayuna Lake	Nutrients
Washington	Lake Champlain, South Bay	Nutrients
Washington	Tribs to L.George, East Shore	Silt/Sediment
Washington	Wood Cr/Champlain Canal and minor tribs	Nutrients
Wayne	Port Bay	Nutrients
Westchester	Amawalk Reservoir	Nutrients
Westchester	Blind Brook, Upper, and tribs	Silt/Sediment
Westchester	Cross River Reservoir	Nutrients
Westchester	Lake Katonah	Nutrients
Westchester	Lake Lincolndale	Nutrients
Westchester	Lake Meahagh	Nutrients
Westchester	Lake Mohegan	Nutrients
Westchester	Lake Shenorock	Nutrients
Westchester	Long Island Sound, Westchester (East)	Nutrients
Westchester	Mamaroneck River, Lower	Silt/Sediment
Westchester	Mamaroneck River, Upper, and minor tribs	Silt/Sediment
Westchester	Muscoot/Upper New Croton Reservoir	Nutrients
Westchester	New Croton Reservoir	Nutrients
Westchester	Peach Lake	Nutrients
Westchester	Reservoir No.1 (Lake Isle)	Nutrients
Westchester	Saw Mill River, Lower, and tribs	Nutrients
Westchester	Saw Mill River, Middle, and tribs	Nutrients
Westchester	Sheldrake River and tribs	Silt/Sediment
Westchester	Sheldrake River and tribs	Nutrients
Westchester	Silver Lake	Nutrients
Westchester	Teatown Lake	Nutrients
Westchester	Titicus Reservoir	Nutrients
Westchester	Truesdale Lake	Nutrients
Westchester	Wallace Pond	Nutrients
Wyoming	Java Lake	Nutrients
Wyoming	Silver Lake	Nutrients

APPENDIX F – List of NYS DEC Regional Offices

Region	COVERING THE FOLLOWING COUNTIES:	DIVISION OF ENVIRONMENTAL PERMITS (DEP) PERMIT ADMINISTRATORS	DIVISION OF WATER (DOW) WATER (SPDES) PROGRAM
1	NASSAU AND SUFFOLK	50 CIRCLE ROAD STONY BROOK, NY 11790 TEL. (631) 444-0365	50 CIRCLE ROAD STONY BROOK, NY 11790-3409 TEL. (631) 444-0405
2	BRONX, KINGS, NEW YORK, QUEENS AND RICHMOND	1 HUNTERS POINT PLAZA, 47-40 21ST ST. LONG ISLAND CITY, NY 11101-5407 TEL. (718) 482-4997	1 HUNTERS POINT PLAZA, 47-40 21ST ST. LONG ISLAND CITY, NY 11101-5407 TEL. (718) 482-4933
3	DUTCHESS, ORANGE, PUTNAM, ROCKLAND, SULLIVAN, ULSTER AND WESTCHESTER	21 SOUTH PUTT CORNERS ROAD NEW PALTZ, NY 12561-1696 TEL. (845) 256-3059	100 HILLSIDE AVENUE, SUITE 1W WHITE PLAINS, NY 10603 TEL. (914) 428 - 2505
4	ALBANY, COLUMBIA, DELAWARE, GREENE, MONTGOMERY, OTSEGO, RENSSELAER, SCHENECTADY AND SCHOHARIE	1150 NORTH WESTCOTT ROAD SCHENECTADY, NY 12306-2014 TEL. (518) 357-2069	1130 NORTH WESTCOTT ROAD SCHENECTADY, NY 12306-2014 TEL. (518) 357-2045
5	CLINTON, ESSEX, FRANKLIN, FULTON, HAMILTON, SARATOGA, WARREN AND WASHINGTON	1115 STATE ROUTE 86, PO BOX 296 RAY BROOK, NY 12977-0296 TEL. (518) 897-1234	232 GOLF COURSE ROAD WARRENSBURG, NY 12885-1172 TEL. (518) 623-1200
6	HERKIMER, JEFFERSON, LEWIS, ONEIDA AND ST. LAWRENCE	STATE OFFICE BUILDING 317 WASHINGTON STREET WATERTOWN, NY 13601-3787 TEL. (315) 785-2245	STATE OFFICE BUILDING 207 GENESEE STREET UTICA, NY 13501-2885 TEL. (315) 793-2554
7	BROOME, CAYUGA, CHENANGO, CORTLAND, MADISON, ONONDAGA, OSWEGO, TIOGA AND TOMPKINS	615 ERIE BLVD. WEST SYRACUSE, NY 13204-2400 TEL. (315) 426-7438	615 ERIE BLVD. WEST SYRACUSE, NY 13204-2400 TEL. (315) 426-7500
8	CHEMUNG, GENESEE, LIVINGSTON, MONROE, ONTARIO, ORLEANS, SCHUYLER, SENECA, STEUBEN, WAYNE AND YATES	6274 EAST AVON-LIMA ROADAVON, NY 14414-9519 TEL. (585) 226-2466	6274 EAST AVON-LIMA RD. AVON, NY 14414-9519 TEL. (585) 226-2466
9	ALLEGANY, CATTARAUGUS, CHAUTAUQUA, ERIE, NIAGARA AND WYOMING	270 MICHIGAN AVENUE BUFFALO, NY 14203-2999 TEL. (716) 851-7165	270 MICHIGAN AVENUE BUFFALO, NY 14203-2999 TEL. (716) 851-7070

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APPENDIX 8

Geotechnical Engineering Report – May 2024

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Geotechnical Engineering Report

John Jay Homestead Site and Building Enhancements

Katonah, NY

Prepared for:

Beyer Blinder Belle Architects & Planners LLP

120 Broadway, 20th Floor
New York, NY 10271

March 2024, Revised May 2024

CHA Project No.:
80675

CHA

III Winners Circle,
Albany, NY 12205

This report has been prepared and reviewed by the following qualified engineers employed by CHA.

Report Prepared By:

Adam J Bryant

Adam J. Bryant, P.E.
Geotechnical Engineer

Report Reviewed By:

Scott M. Doehla

Scott M. Doehla, P.E.
Senior Geotechnical Engineer

STATE OF NEW YORK
SCOTT MICHAEL DOEHLA
083448
LICENSED PROFESSIONAL ENGINEER

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APPENDICES

1.0 INTRODUCTION

CHA was retained by Beyer, Blinder, Belle Architects & Planners, LLP to complete a geotechnical exploration and evaluation for the design of the brick cottage reconstruction at John Jay Homestead State Historic Site located at 400 Jay Street in Katonah, New York. The project site is shown on *Figure 1 - Site Location Map*, included in Appendix A.

The primary objectives of the exploration were to evaluate the subsurface conditions at the site and to provide geotechnical recommendations for the design of the proposed brick cottage reconstruction and paving of the existing access road.

2.0 SITE AND PROJECT DESCRIPTION

The project site is located in the John Jay Homestead State Historic Site in Katonah, New York. The John Jay Homestead State Historic Site is an approximately 62-acre site comprised of 10 buildings, including the original 1787 John Jay House, with access roads, stone walls, and wooded areas throughout the site. The project site consists of the brick cottage located east of the John Jay House, and an access road and open fields located to the north, east and south of the John Jay House. Wetland areas and a small pond are located to the south and east of the project site. Standing water was observed in the wetland area approximately 100 feet east of the existing access road in April 2024. NYS Route 22 is located to the south, and the Cross River Reservoir is located approximately 3,000 feet northeast of the project site. The ground surface at the project site slopes down from northwest to the southeast from about El. 470 feet to El. 440 feet based on a site survey. The ground surface at the brick cottage slopes down from the northwest to southeast between El. 470 feet to El. 467 feet. The brick cottage has a two-story section with a partially below grade basement of unknown height and a one-story area without a basement. The total approximate footprint of the brick cottage is 3,000 square feet. The brick cottage has a finished floor elevation (FFE) of El. 471.8 feet. An approximately 3-foot-tall stone wall is located to the north of the building. Photographs of the site are included in Appendix B.

The project involves the design of repairs to the existing brick cottage and an existing access road, a new access road, a parking area and stormwater improvements. The repairs to the brick cottage will include partial or full reconstruction of the foundations and basement walls. The existing main access road, proposed access road and parking lot will be paved with asphalt. The existing access road will not include cuts and will be constructed at grades similar to the existing grade. The new access road requires cuts of up to 2 feet and fills of up to 2 feet. The new parking area requires cuts of up to 3 feet and fills of up to 4 feet. The new parking area will have a retaining wall with a north to south orientation, dividing the parking lot in half. The retaining wall will have exposed heights ranging from 2 to 8 feet and a total length of approximately 200 feet. The parking lot area to the east of the retaining wall will have a ground surface elevation of approximately 449 feet and the area to the west will have a ground surface elevation of approximately 459 feet. Stormwater areas will consist of three bioretention ponds located to the east of the proposed new access road and parking area. The bioretention ponds will have footprints of approximately 2,500 to 5,500 square feet. Foundation work was originally being considered at the maintenance garage but was removed from the project scope by the client. Additional park access roads will be paved, the design of which is outside the scope of this report. The existing and proposed site features are shown on *Figure 2 – Subsurface Exploration Plan*, included in Appendix A.

3.0 SUBSURFACE EXPLORATION

The subsurface explorations and laboratory testing performed for this project are described in the following sections.

3.1 Boring Program

CHA conducted a subsurface exploration program consisting of fourteen total borings designated as B-1 through B-6, B-6A, B-7 through B-10, and B-101 through B-103. Borings B-1 through B-6, B-6A and B-7 through B-10 were completed between January 16 and 19, 2024. Borings B-101 through B-103 were completed on April 15, 2024. CHA retained Underground Surveying, LLC to perform a non-destructive, non-intrusive subsurface utility survey prior to drilling. Borings B-1 and B-2 were performed adjacent to the brick cottage and extended to depths of 20.9 to 22 feet. Boring B-3 was performed adjacent to the maintenance garage and extended to a depth of 22 feet. Borings B-4 and B-5 were performed along the existing access road to depths of 10 feet. Borings B-6, B-6A and B-7 through B-10 were performed for roadway and preliminary stormwater design purposes in the eastern portion of the site to depths of 12 feet. Boring B-7 is located in the vicinity of the parking area site retaining wall, which was added after the completion of the subsurface exploration. Borings B-101 through B-103 were performed for final stormwater design purposes in the eastern portion of the site to depths of 10.5 to 12 feet.

Borings B-1 through B-3 were located onsite by measuring from existing site features. Borings B-4 through B-6, B-6A, B-7 through B-10 and B-101 through B-103 were located onsite using a backpack GPS unit accurate to 1 meter. Ground surface elevations at boring locations were estimated based on interpolation between contours on the site survey and are based on NAVD88. The locations and elevations should be considered accurate only to the degree implied by the method used to determine them. The approximate boring locations are shown on *Figure 2 – Subsurface Exploration Plan*, included in Appendix A.

New England Boring Contractors of Glastonbury, Connecticut was retained by CHA to advance the borings. The field exploration was performed under the observation of a CHA geotechnical engineer who confirmed proper drilling and sampling methods were utilized for the exploration, observed and described soil samples, prepared field logs documenting the subsurface conditions, and conducted infiltration testing.

The borings were advanced with a Mobile Drill B53 truck mounted drill rig and Mobile Drill B53 rubber track mounted drill rig using hollow stem augers (HSA) with an inside diameter of 4.25 inches or solid stem augers (SSA) with an inside diameter of 2.25 inches. Continuous split spoon sampling was generally performed to a depth of up to 12 feet below ground surface, and then at standard 5-foot intervals thereafter to the boring termination depths. Standard Penetration Testing (SPT) was utilized during split-spoon sampling in general accordance with ASTM International (ASTM) Standard D-1586 “Standard Test Method for Standard Penetration Test (SPT) and Split-Barrel Sampling of Soils.” The split spoon samples were advanced using an automatic 140 (±) pound hammer falling 30 (±) inches. “Blow counts” recorded on the boring logs indicate the penetration resistance for a 6-inch advancement of the split soon. Initially, the spoon is driven 6 inches to seat the sampler in undisturbed material. The number of blows required to drive the sampler the next 12 inches is taken as the SPT resistance or N-value. This value is indicative of the soil’s in-place density or consistency. The final 6-inch increment that the spoon is driven is not included in the determination of the N-value. Boreholes B-1 through B-6 were backfilled with soil cuttings upon completion.

Infiltration tests were planned adjacent to borings B-6A, B-7 through B-10 and B-101 through B-103. Infiltration tests were not performed adjacent to B-8 through B-10 and B-101 through B-103 due to shallow groundwater. The infiltration tests conducted adjacent to B-6A and B-7 were designated as IT-6 and IT-7, respectively. Infiltration testing was conducted according to Appendix D of the 2022 New York State Stormwater Management Design Manual. After a presoak was conducted, water was added to the infiltration casing to set it to 24 inches above the bottom of the casing. The distance that the water within the casing dropped in an hour was measured and recorded. Water was added to bring the level back to 24 inches above the bottom of casing for the next testing interval. The test was terminated after five test intervals. Infiltration test holes were backfilled with soil cuttings upon completion. A New York City Department of Environmental Conservation (NYCDEP) representative was onsite to oversee the infiltration testing.

Water level observations were made during and upon completion of drilling. Observation wells were installed in borings B-6A and B-7 through B-10 to depths of 12 feet. Details of the observation well construction are shown on the boring logs included in Appendix C. The water levels within the wells were recorded during the subsurface exploration, and are included in *Section 4.3 – Groundwater* Conditions and on the boring logs in Appendix C.

3.2 Laboratory Analysis

Select soil samples were submitted for laboratory analysis to confirm visual descriptions. Testing included five tests for particle-size analysis (ASTM D422), one test for Atterberg Limits analysis (ASTM D4318) and one test for water content of soil (ASTM D2216). The results of the laboratory testing are included in Appendix D.

4.0 SUBSURFACE CONDITIONS

Subsurface conditions at the site were assessed based on a review of published geologic maps and the results of the subsurface exploration performed on-site and are summarized below.

4.1 Regional Geology

According to the Surficial *Geologic Map of New York – Lower Hudson Sheet*, (Cadwell, D.H. 1991), the surficial soil at the site consists of glacial till.

According to the *Geologic Map of New York – Lower Hudson Sheet*, (Fisher, D.W., Isachsen, Y.W., and Rickard, L.V., 1970), the bedrock underlying the site consists of Fordham Gneiss.

4.2 Subsurface Stratigraphy

Subsurface conditions encountered in individual borings are detailed and described on the boring logs included in Appendix C. Subsurface conditions can generally be described as follows, in order of increasing depth:

Topsoil – Topsoil was encountered at the ground surface in borings B-1 through B-3, B-6 through B-10 and B-101 through B-103 and extended to depths ranging from 0.1 to 0.2 feet.

Fill – A layer of existing fill was encountered below the topsoil in borings B-1 and B-2 and at the ground surface in borings B-4 and B-5 and extended to depths ranging from 2 to 4 feet. The layer consisted of varying amounts of fine to coarse sand, silt, fine to coarse gravel, wood and organics. The fill was brown or gray and visually classified as moist, and some near-surface samples appeared frozen. The SPT N-values ranged from 4 to 74, indicating a very loose to very compact density, however, the presence of frost likely affected N-values within the samples taken at shallow depths.

Silt/Clayey Silt/Silty Clay – A layer of silt, clayey silt or silty clay was encountered below the topsoil layer in boring B-3, B-6, B-7, and B-101 through B-103, and below the fill in borings B-1 and B-5 and extended to depths ranging from 2 to 6 feet. The layer consisted of silt, clayey silt, or silty clay with varying amounts of fine to coarse sand, fine gravel and organics. The soil was brown and visually classified as moist. The SPT N-values ranged from 2 to 8, indicating a medium stiff consistency for cohesive samples and a very loose to loose density for cohesionless samples.

Glacial Till – Glacial till was encountered below the topsoil layer in borings B-8 through B-10, below the fill in borings B-2 and B-4, below the silt, clayey silt and silty clay layer in borings B-1, B-3, B-5 through B-7 and B-101 through B-103. The glacial till layer extended to depths ranging from 10 to 22 feet. Borings B-2, B-4 through B-10 and B-101 through B-103 terminated within the glacial till layer. The layer generally consisted of various proportions of fine to coarse sand, fine to coarse gravel, silt, clay and organics. The soil was brown and visually classified as moist to wet. The SPT N-values ranged from 5 to split spoon refusal, indicating a very stiff to hard consistency for cohesive samples and a loose to very compact density for cohesionless samples.

Completely Weathered Rock – Completely weathered rock was encountered below the glacial till layer in borings B-1 and B-3 and extended to depths of 20.9 to 22 feet. Borings B-1 and B-3 terminated within the completely weathered rock. The layer consisted of fine to coarse sand with little silt and trace fine gravel. The soil was brown and visually classified as wet. The SPT N-values ranged from 85 to split spoon refusal, indicating a very compact density.

4.3 Groundwater Observations

Table 1 summarizes the observation well measurements.

Table 1: Groundwater Observation Well Measurements

Boring ID	Surface Elevation (Feet)	Screen Interval Elevation (Feet)	Date	Water Depth (Feet)	Water Elevation (Feet)
B-6A	459.5	447.5 to 452.5	1/17/2024	11.7	447.8
			1/18/2024	11.7	447.8
			1/19/2024	11.7	447.8
			4/15/2024	12.4	447.1
			4/16/2024	12.4	447.1
B-7	451.0	439.0 to 444.0	1/18/2024	7.0	444.0
			1/19/2024	7.3	443.7
			4/15/2024	8.2	442.8
			4/16/2024	7.9	443.1
B-8	451.0	439.0 to 444.0	1/18/2024	9.1	441.9
			1/19/2024	3.5	447.5
			4/15/2024	0.1	450.9
			4/16/2024	0.1	450.9
B-9	449.5	437.5 to 442.5	1/18/2024	1.1	448.4
			1/19/2024	0.8	448.7
			4/15/2024	0.7	448.8
			4/16/2024	0.7	448.8
B-10	448.5	436.5 to 441.5	1/18/2024	4.2	444.3
			1/19/2024	3.0	445.5
			4/15/2024	2.5	446
			4/16/2024	2.8	445.7

Groundwater levels were estimated based upon measurements or observed soil sample moisture content in the remaining boreholes during drilling operations and at the completion of drilling. These estimates are indicated on the boring logs included in Appendix C. Groundwater was estimated at depths ranging from 0.4 to 13.2 feet during drilling. Standing water was observed at the ground surface at boring B-101. The boreholes were only open for a short duration and seasonal factors such as temperature and precipitation affect groundwater levels. For these reasons, long-term groundwater levels may differ from those described in this report.

4.4 Infiltration Test Results

NYCDEP requires two phases of subsurface exploration and testing for stormwater management design. Borings for preliminary design consisted of B-6, B-6A and B-7 through B-10 and borings for final design consisted of B-101 through B-103. Infiltration testing was not performed at the B-8, B-9, B-10, B-101, B-102 and B-103 locations due to shallow groundwater. The results of the testing adjacent to borings B-6A and B-7 are outlined in Table 2.

Table 2: Infiltration Test Results

Boring Location	Depth Performed (ft)	Approx. Elevation Performed (ft)	Observed Infiltration Rate (in/hour)				
			Infiltration Test Run No.				
			1	2	3	4	5
IT-6A	2.0	457.5	0.0	0.0	0.0	0.0	0.0
IT-7	2.0	449.0	0.0	0.0	0.0	0.0	0.0

5.0 GEOTECHNICAL RECOMMENDATIONS

The following sections provide geotechnical recommendations for design of the project. These recommendations are based on our review of the results of the subsurface exploration.

5.1 Shallow Foundations

Shallow foundations are recommended for support of the reconstruction of the existing brick cottage and the parking area site retaining wall. The foundations should bear on the natural clayey silt or glacial till soil. Spread footings should be designed based on a maximum net allowable bearing capacity of 3 kips per square foot (ksf). Foundations should be founded at a minimum depth of 4.0 feet below finished grade to provide frost protection. We recommend that isolated footings be a minimum of 3.0 feet wide and continuous strip footings be a minimum of 18 inches wide.

Foundations should be constructed as soon as possible after excavation to minimize the risk of disturbance to the bearing surface by exposure to precipitation or other adverse conditions. Foundation excavations should be backfilled with structural fill in accordance with the placement and compaction procedures included in *Section 5.6 - Structural Fill*.

Footing subgrade shall be protected from freezing during construction. Any disturbed, frozen or softened subgrade should be removed and replaced with structural fill as required to minimize detrimental impacts to foundation performance.

The natural soil is moisture sensitive and prone to disturbance when wet or when exposed to excessive foot traffic. Foundations should be constructed as soon as possible after excavation to minimize the risk of disturbance to the bearing surface by exposure to precipitation or other adverse conditions. To protect the footing subgrade and to provide a stable working surface a minimum of 6-inches of crushed stone over separation geotextile fabric or a 2-inch to 3-inch concrete mud mat should be placed below the footing subgrade. The separation geotextile shall be a non-woven geotextile with an apparent opening size (AOS) equal to or smaller than the U.S. Standard sieve size of 70, such as Mirafi 160N. Crushed stone should consist of a 50:50 mix of NYSDOT size designation No. 1 and No. 2 crushed stone.

A detailed settlement analysis was beyond the scope of this report. However, based on the information obtained during the subsurface exploration and the recommendations outlined in this report, we anticipate that total foundation settlement will be less than 1 inch, with differential settlement of about 1/2 inch across a distance of 20 feet. These estimates are based on the assumption that foundations are constructed as recommended herein and that proper site preparation and construction monitoring is performed.

5.2 Lateral Earth Pressures

The new basement walls and the parking area site retaining wall should be designed to resist lateral soil pressure as well as surcharges from adjacent loads. Basement walls restrained against lateral movement should be designed to resist at-rest earth pressures.

New basement walls and the parking area site retaining wall should be backfilled with structural fill meeting the requirements of *Section 5.6 – Structural Fill* for a lateral distance equal to at least one-half of the wall height. Walls backfilled with structural fill should be designed to resist lateral earth pressures based on the following soil properties:

• Total Unit Weight	125 pcf
• Angle of Internal Friction	32 Degrees
• Coefficient of At-Rest Earth Pressure[1]	0.47
• Coefficient of Active Earth Pressure[1]	0.31
• Coefficient of Sliding (Mass concrete on Natural Soil)	0.3

Notes:

1. Earth pressure coefficients assume level backfill behind walls and should be adjusted if non-level backfill is proposed.

Design for new basement walls should incorporate drainage measures to prevent hydrostatic build-up and to provide positive drainage. Drainage measures should include a minimum 1-foot-thick horizontal layer of drainage stone from the surrounding soil by a separation geotextile having an AOS equal to or smaller than the U.S. Standard sieve size of 70, such as Mirafi 160N. A prefabricated drainage board may be utilized in lieu of the crushed stone layer. New basement walls that do not include drainage features should be designed for full hydrostatic pressure.

5.3 Pavement

The existing fill, natural clayey silt and silt and glacial till soils anticipated at pavement subgrade elevation are suitable for support of the proposed paved main access road, additional new access road and proposed parking area. The flexible pavement section should be designed using a California Bearing Ratio (CBR) of 5. The anticipated subgrade soils contain a significant amount of fine-grained soil and are poor draining. This soil is considered susceptible to frost heave, particularly if water is available for formation of ice lenses. Subbase course drainage is essential for successful pavement performance and longevity. The subbase course should be maintained in a drained condition at all times. Underdrains should be constructed along portions of the proposed new access road and consist of 4-inch diameter drain, spaced at 15 feet and drained to positive outlet. The underdrains should be a minimum of two feet below the proposed final grade and should be located in the access road areas that have a finished grade of less than or equal to El. 250 feet. Along the existing main access road, drainage may consist of either installing underdrains or sloping the subgrades to planned draining systems or otherwise.

The subgrade should be prepared in accordance with *Section 5.5 – Site and Subgrade Preparation*. The pavement section should include an aggregate subbase course such as NYSDOT Type 2 Subbase. The subbase along the existing access road should be underlain by a woven separation and stabilization geotextile. The geotextile should have an AOS equal to or smaller than the U.S. Standard sieve size of 40, such as Mirafi 600X.

5.4 Seismic Site Classification and Design Parameters

Based on the site location, and in accordance with the 2020 Building Code of New York State (NYSBC) Section 1613, the following spectral response accelerations should be used for seismic design:

- Mapped Spectral Response Acceleration at Short Periods (S_s)..................0.27g
- Mapped Spectral Response Acceleration at 1 Second Period (S_1).............0.06g

The location based spectral response accelerations are based on seismic Site Class B and must be adjusted for the project site class based on subsurface conditions. Site class D is recommended based on the subsurface conditions. In accordance with section 1613 of the NYSBC the following seismic design coefficients shall be used:

- Site Coefficient F_a..1.6
- Site Coefficient F_v..2.4

The potential for earthquake induced soil liquefaction was not required based on the subsurface conditions encountered and seismic design category of B for the project site.

5.5 Site and Subgrade Preparation

The areas within the improvements shall be stripped of any vegetation, topsoil and other deleterious materials. Subsequent to excavating to proposed grades, the exposed subgrade should be proofrolled with a smooth drum roller with a minimum static weight of 10 tons. The roller should operate in its vibratory mode, and complete at least six passes over the subgrade at a speed not exceeding 3 feet per second (fps). Areas which pump or weave during proof rolling shall be undercut by a minimum of 12 inches and stabilized with structural fill meeting the requirements of *Section 5.6 - Structural Fill*. If the vibration roller tends to "bring up" moisture, the subgrade should be proof rolled with the roller operating in the static mode.

5.6 Structural Fill

Structural fill should be used for backfilling foundation excavations, for raising grade behind he site retaining wall, and overexcavations. Structural fill shall consist of sound, durable, non-plastic sand and gravel, free of stumps, roots, organics, and any frozen or deleterious materials.

Structural fill shall be placed in loose lifts not exceeding 8 inches in thickness and should be compacted to at least 95 percent of the maximum laboratory dry density as determined by the modified Proctor test (ASTM D-1557). Structural fill shall conform to the gradation requirements in Table 3.

Table 3: Gradation Requirements for Structural Fill

Sieve Size	Percent Passing by Weight
4 inch	100
No. 40	0 to 70
No. 200	0 to 10

The on-site soil generally does not meet the requirements for Structural Fill.

5.7 Groundwater and Control of Water

Groundwater may be encountered when excavating during foundation construction and when excavating to establish roadway subgrades. At the brick cottage, a design groundwater elevation of 465 feet is recommended. At the existing access road, a design groundwater elevation of 448 feet is recommended. At proposed parking area, design groundwater elevations of 448 feet for the western side and 444 feet for the eastern side and site retaining wall are recommended. At the new access road, a design groundwater elevation of 449 feet is recommended. Project specifications should require that groundwater be maintained at a minimum depth of 2.0 feet below the excavation bottom at all times. It is the responsibility of the contractor to determine the most appropriate dewatering methods and to maintain dry conditions so that foundation construction may be completed in the dry.

6.0 EXCAVATIONS

All excavations should be performed in accordance with the Occupational Safety and Health Administration (OSHA) standards, and applicable state and local codes. Where adequate sloping or benching is not possible, excavation support should be provided. The design of a temporary excavation system shall be performed by a registered Professional Engineer licensed in the State of New York.

7.0 OBSERVATION DURING CONSTRUCTION

A qualified geotechnical engineer should carefully inspect all excavations, backfilling, and final bearing surfaces for foundations to ascertain that subgrades have been properly prepared. The inspection of soil subgrades should include probing of select areas to confirm density. The materials used as fill should be tested by a qualified soils laboratory to verify they meet the specified gradations and to determine their optimum moisture content and maximum dry density for compaction. In-place density tests should be performed to verify that compaction methods and equipment achieve the required densities.

8.0 CLOSURE

The geotechnical recommendations presented in this report are based, in part, on project and subsurface information available at the time this report was prepared and in accordance with generally accepted soil and foundation engineering practices. No other warranty, expressed or implied, is made. Some variation of subsurface conditions may occur between locations explored that may not become evident until construction. Depending on the nature and extent of the variations, it may be necessary to re-evaluate the data presented in this report.

This report has been prepared solely for design purposes and shall not be incorporated by reference of other means in the Contract Documents. If this report is included in the Contract Documents, it shall be for information only. Specifications shall take precedence.

CHA does not accept responsibility for designs based upon our recommendations unless we are engaged to review the final plans and specifications to determine whether any changes in the project affect the validity of our recommendations and whether our recommendations have been properly implemented in the design.

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