

Site Design Consultants

Civil Engineers • Land Planners

Via Email: planning@northcastleny.com

September 11, 2023

Town of North Castle Planning Department
Attn: Joseline Huerta
15 Bedford Road
Armonk, NY 10504



Re: Rault
209 Bedford Banksville Road
Section 95.03, Block 2, Lot 35

Dear Joseline:

Enclosed please find the following submission for review:

- One (1) full digital set of Septic Plans titled OWTS prepared for Joseph and Celeste Rault, pages 1-2 of 2, dated 10-02-22, last revised 09-08-23
- One (1) full digital set of Site Plans titled Site Plan prepared for Joseph and Celeste Rault, pages 1-5 of 5, dated 11-25-22, last revised 9-08-23
- One Stormwater Pollution Prevention Plan dated August 2023

Please contact us if you have any questions or require anything further. Thank you.

Yours Truly,

A handwritten signature in black ink, appearing to read "Joseph C. Riina".

Joseph C. Riina, P.E.

JCR/dmd/enc./sdc 21-29

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STORMWATER MANAGEMENT PLAN

Prepared for

**Joseph and Celeste Rault
209 Bedford - Banksville Road
Town of North Castle
Westchester County, NY**

Prepared by:

**Site Design Consultants
251F Underhill Avenue
Yorktown Heights, New York 10598
914-962-4488**

**Joseph C. Riina, P.E.
NYS Lic. No. 64431**

August 2023

STORMWATER MANAGEMENT PLAN

Prepared for

Gregory J. Waters and Monika Proslowicz
209 Bedford Banksville Road
Town of New Castle, NY

Property Owner: Joseph and Celeste Rault
209 Bedford Banksville Road
Bedford, NY 10506

Site Engineer: Joseph C. Riina, P.E.
NYS Lic. No. 64431

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August 2023

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Appendix A List of Required Approvals and Applications

- Town of North Castle Site Plan Approval – approval pending
- Town of North Castle Building Permit – approval pending.
- New York State Department of Environmental Conservation General Permit GP-0-20-001 “Notice of Intent;”
- New York State Department of Environmental Conservation SWPPP MS4 Acceptance Form.
- New York State Department of Environmental Conservation “Notice of Termination;”

Appendix B Regulatory Ordinances

- NYS DEC Permit No. GP-0-20-001
- Local Ordinance – Town of North Castle Chapter 267 of the Town Code

Appendix C Construction Sequence

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Appendix I Project Plans

1.0 Project Description

The subject property is located at 209 Bedford Banksville Road in the Town of North Castle, New York. The existing lot has an area of 6.02 acres and is zoned R-4A Single Family Residential. The project site is developed with an existing house, driveway, deck and pool. Coverage within the site consists of open lawn, landscaping, with shrubs. There is a watercourse located in the southwestern portion of the property. The property has slight to moderately sloped in a southerly and westerly direction.

The proposal includes expanding the current residence, the addition of a guest cottage, the addition of a pool house and renovation of the pool. The impervious area is going to increase by 13,368 sf. The existing driveway will be modified and expanded as shown in the plans. A stormwater management system is proposed to capture and retain the 100-year storm event. A new septic system will be installed to accommodate all the structures on the property.

The total disturbance proposed for the site will be 1.36 AC. This disturbance will be managed during construction by implementing this stormwater management plan which will control stormwater runoff and related erosion potential. During construction, temporary erosion and sediment control measures will be installed and maintained. After construction surface runoff will be drain to a subsurface chamber system.

The following Report and Plans describe in detail the design and implementation of the Stormwater Management Plan.

2. Stormwater Regulatory Requirements

2.1 Stormwater Impacts

Urban stormwater impacts relate to significant changes to stormwater quantity and quality as a result of land development. "Urban Development has a profound influence on the quality of New York's waters."¹ This proposed development will change the runoff characteristics of this site altering the quantity and quality of the surface stormwater. The impacts of this must be mitigated by managing the stormwater prior to discharge. This would be accomplished by the capture and treatment of surface runoff prior to discharge.

Development of a site alters hydrology therefore changing the characteristics of the surface and groundwater discharge of runoff. Changing the surface conditions alters a site's natural ability to store, treat, or infiltrate runoff. The change also allows for the discharge of potentially damaging pollutants and sediments to adjoining water bodies. This can occur during the construction phase, and long-term after development. During the construction phase, graded, destabilized, areas are subject to erosion which can cause the displacement of sediment. After development, changes in the surface conditions, such as impervious surfaces, roofs and pavement, or lawn surfaces can generate pollutants which would be collected and discharged through runoff. Some of the pollutants of concern are: Total Suspended Solids (TSS); Biological Oxygen Demand (BOD); Total Phosphorus (TP); and Total Nitrogen (TN), as well as oil or grease, and chloride.

The most common sources of these pollutants from developed sites are atmospheric deposition, fertilizers, pesticides, and leaked discharges from vehicles. These pollutants would collect on these impervious surfaces and quickly wash off during even the smallest storm event.

In the planning and design of the development, stormwater will be managed to minimize potential impacts. A Stormwater Management and Pollution Prevention Plan will be prepared. This Plan will deal with all aspects of the stormwater management programs such as identifying potential pollutant sources, design of temporary and permanent features, implementation, and maintenance.

¹ New York State Stormwater Management Design Manual, January 2015, Page 2-1.

2.2 Regulatory Obligation

2.2.1 USEPA/NYSDEC

The Federal Government's Clean Water Act (CWA), Section 402 states "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 State is a NPDES delegated State. The necessary permitting is administered through the State Pollutant Discharge Elimination System (SPDES) under the General Permit, GP-0-20-001, for Stormwater Discharges from Construction Activity. The Permit requires that any development meeting the disturbance thresholds listed in Tables 1 and 2 of Appendix B of the General Permit must prepare a SWPPP. Activities listed in Table 1 requires preparation of only an Erosion and Sediment Control Plan. Those listed in Table 2 would additionally require post-construction stormwater management practices. This project does require an E&SC and a SWPPP.

This project requires filing a Notice of Intent under the New York State Department of Environmental Conservation General Permit 0-15-002, It is in an Enhanced Phosphorus Watershed (EPW) and disturbs more than 5,000 sf; therefore, it only requires an Erosion and Sediment Control Plan.

The Plan identifies the potential sources of pollution, and a design prepared and implemented to reduce pollutant loadings. This project will be required to prepare the following to be in compliance:

- Notice of Intent registered with the NYS DEC.
- MS4 SWPPP Acceptance Form signed by an authorized representative of the Municipality.
- Prepare an Erosion and Sediment Control Plan.
- Design and implement a stormwater quality treatment system to capture and treat the stormwater runoff volume generated by the 90% rainfall event.
- Design and implement a stormwater management system to capture and attenuate all storm events up to the 100-year storm.

2.2.2 Local Municipality

In addition, this project requires approval under Chapter 267, Stormwater Management and Erosion and Sediment Control, of the Town of North Castle Code. The Code requires compliance for projects with a land disturbance activity of 5,000 s.f. or more and new impervious areas greater than 1,000 square feet. The Code requires compliance with the NYS DEC GP-0-20-001

3.1 Reducing Pollutant Impacts

3.2 Sources of Impact

For this project, the potential for contamination of stormwater occurs both during construction and after the completion of development. The goal to achieve reduced impacts involves containment and treatment of the various pollutants.

Each phase will require temporary sediment and erosion control measures. The greatest source of pollutants during these phases is the potential of soil erosion. The nature of the construction plan is to have exposed soils which can erode and potentially discharge to sensitive areas. During construction, existing vegetation is removed exposing soils. Also, stockpiling of soil takes place. These conditions, if not stabilized, are subject to erosion during rainfall events and wind conditions. Sediment discharged to a wetland can destroy vegetation and habitat affecting the function of the wetland. This degradation potential can be irreversible and eliminate its function in the ecosystem. Increases in turbidity to open water bodies such as streams, ponds, etc., are an additional environmental impact.

The implementation of proper erosion control measures and sediment containment along with a planned construction sequence can minimize or eliminate these potential impacts. The selection and implementation of erosion and sediment practices are described in a later section of this Report.

3.3 Stormwater Management During Construction

The Erosion and Sediment Control plan will be implemented during all phases of construction until the completion of the project. This will minimize or eliminate the potential short-term adverse impacts which may occur during construction. After completion, the erosion and sediment control will become a maintenance plan to ensure that permanent erosion and sediment controls continue to function and prevent the transport of sediments.

The Erosion and Sediment Control plan includes the Sequence of Construction and designed measures to be installed, operated, and maintained during all aspects of construction. The appropriate measures were selected and detailed in the plan for implementation by the site contractor. The main objective of the plan is to prevent erosion from occurring by stabilization of the construction site where possible. Sediment controls are to be used as a containment system to allow the removal of sediment from runoff to the greatest extent possible before leaving the work site. Control methods and standards utilized are provided in the NYSSESC.

Potential sources of destabilization of the site have been determined so that proper measures will be used. The locations and methods designed for erosion and sediment control measures change as the construction sequence progresses. The priority is to stabilize disturbed areas subject to erosion and use containment and / or

filtering practices where sediment may concentrate. Some of the practices and methods that will be used for this project are:

- Minimization of open disturbance by use of stabilizers such as seed, mulch, and erosion blankets, stone, etc. Areas not subject to construction traffic for extended periods will be temporarily stabilized.
- The work areas will be contained. Down grade perimeters will be lined with barriers such as silt fence, diversions, berms, etc.
- Where possible, clean stormwater will be diverted away or around the work site to reduce the amount of runoff requiring treatment.
- Sediment traps will be constructed where heavy concentrations of runoff may accumulate.
- Dust control measures will be maintained on-site such as water trucks.
- Runoff will be prevented from gaining erosive velocities on long slopes. This can be achieved with seed and mulch, erosion control blankets, curb dams and multiple rows of silt fence.
- Existing drainage structures will be protected from sediment-laden runoff.
- Regular weekly inspections and reports (see Appendix K for report form) to be filed with the Operator and Town.

Additional methods of practices may be employed dependent on the situation. The NYSSESC consists of NYS DEC accepted and recommended practices. The design requirements of temporary and permanent erosion and sediment control practices of this Manual have been followed.

Prior to completion of the project, all permanent structural features will be cleaned, restored, and re-vegetated as necessary. The erosion and sediment control phase of the project is complete when all work is done, and all areas are stabilized. The post-construction Stormwater Management Inspection and Maintenance Agreement (Schedule "B" in Appendix L) will describe the long-term inspection schedule, periodic maintenance requirements, and the responsible party.

3.4 Stormwater Management Post-Construction

The post-construction design of the project must be included in the Stormwater Pollution Prevention and Stormwater Management Plans to minimize or eliminate potential long-term adverse impacts which might be caused by surface runoff from the site. This will deal with the management of the stormwater upon completion and operation of the site. The plan will be an analysis of all potential impacts due to stormwater and the means of protecting adjoining water bodies.

4. Site Characteristics

4.1 Soils

On-site soils were classified by using the USDA Natural Resources Conservation Service (NRCS) Websoil survey for Westchester County, NY, see Figure 4.1 – Soil Map.

The predominant soil types for this project are Charlton, a fine Sandy Loam, Leicester loam, and Sutton loam. These soils are moderately well-drained soils that

are subject to seasonal groundwater. The Hydrologic classification of all three soils "B". The erosion hazard level for these soils is slight to moderate. These soil properties are essential in the design and proper construction management of the site. Independent soil tests were performed, and the results are in Appendix E of this Report.

Sect 4.1

- Charlton, ChC, Hydrologic Soil Group B – very deep, well drained sandy loam soils; moderate erosion hazard; deep water table and depth to bedrock.
- Charlton, ChB, Hydrologic Soil Group B – 3-8% slopes, well drained fine sandy loam
- Chatfield-Charlton, CsD, Hydrologic Soil Group B – 15-35% slope, well drained, deep water table and depth to bedrock
- Fredon, Fr, Hydrologic Soil Group B/D – poorly drained, short depth to water table
- Riverhead, RhC, Hydrologic Soil Group A – well drained, 8-15% slopes, deep depth to water table
- Riverhead, RhB, Hydrologic Soil Group A – well drained, 3-8% slopes, deep depth to water table
- Riverhead, RhD, Hydrologic Soil Group A – well drained, 15-25% slopes, deep depth to water table
- Riverhead, RhE, Hydrologic Soil Group A – well drained, 25-50% slopes, deep depth to water table

Deep Test Soil Logs and soil percolation test data are included in Appendix E of this Report. The locations of these deep soil tests are indicated on the Construction Drawings. On-site soil investigation and knowledge of the soil groups facilitated the selection of coefficient values used for the pre- and post-development pollutant load scenarios. Additionally, curve numbers were determined for use in the analysis.

4.2 Hydrology

The proposed improvements will not significantly change the surface runoff patterns. Currently, the surface runoff pattern is in a easterly direction, toward the wetland. The surface runoff pattern is a combination of sheet flow and concentrated flow ultimately discharging toward the wetland.

The proposed development is outside the 100-foot wetland buffer. Under the proposed condition the general direction of the surface runoff will not be altered. The entire amount of surface runoff from the impervious areas will be collected and treated. The proposed improvements as shown will result in an increase in the imperviousness of the drainage area. Therefore, there will be an increase in the volume of runoff as well as the pollutant loads generated by the site for a given rainfall event. This will be mitigated with stormwater management practices.

In the planning, design and construction of the development, stormwater will be managed to minimize or eliminate potential off-site impacts. The proper implementation of temporary sediment and erosion control measures are used to achieve this goal.

An Erosion and Sediment Control Plan has been established and will be implemented during all phases of construction until the completion of the project. The Erosion and Sediment Control Plan incorporates the sequence of construction and designed measures to be installed, operated and maintained during all aspects of

each phase. The erosion and sediment controls are designed in accordance with the NYS Standards and Specifications for Erosion and Sediment Control.

5.1 Hydrologic Analysis

The method used to compute project runoff was the Soil Conservation Service TR-55. The basis for the analysis was Type III, 24-hour storm, for the 1 year, 2-year, 10-year, 25 year, and 100-year storm event. The rainfall depth for the respective storm events is 2.78, 3.41, 5.13, 6.49, and 9.28. The runoff coefficient “CN” and Time of Concentration for existing and post-development conditions were computed using Standard TR-55 criteria.

5.2 Pre-Development Condition

A hydrologic analysis was performed for the area of interest or subject to development site for existing and proposed conditions. For the purpose of this analysis the existing and proposed conditions were compared to determine the increase in runoff volume to be controlled. The method used to compute project runoff was the Soil Conservation Service TR-55. The basis for the analysis was the Type III, 24-hour storm, for the 1 year, 2 year, 10 year, 25 year, and 100-year storm event. The rainfall depth for the respective storm events are 2.78, 3.41, 5.13, 6.49, and 9.28. The runoff coefficient “CN” and Time of Concentration for existing and post-development conditions were computed using Standard TR-55 criteria.

The Drainage Basin sizes, curve numbers and travel times used in the analysis are summarized in the Table below:

Pre-Development Conditions Watershed Analysis Variables

Drainage Basin	Area (acres)	Curve Number CN	Travel Time, Tc (hrs)
Pre DA1	0.836	76	0.083

5.3 Post-Development Condition

A hydrologic analysis has been done for each of the new lots and the proposed parking area to determine the expected runoff depth for each storm event. The results of this analysis were used to calculate the stormwater infiltration sizes required for each lot. The infiltration units were sized to accommodate the 100-year storm event. The contributing watersheds are shown on Figure 5.2 – Post-Development Watershed Map.

The hydrologic analysis assumes that full soil restoration as required in Chapter 5 (Table 5.3) of SMDM will be implemented. The areas of soil restoration will be shown on the E&SC Plan if required (See Figure 5.3).

The entire volume of runoff generated from the watersheds analyzed is being infiltrated into the ground. Therefore, there is no increase in the peak rate of runoff discharge or volume up to the 100-year 24-hour rainfall for the project.

The Drainage Basin sizes, curve numbers and travel times used in the analysis are summarized in the Table below:

Impervious Areas

	Pre-Developed	Post Developed
Impervious Areas (SF)	14,589	27,956

Post-Development Conditions Watershed Analysis Variables

Drainage Basin	Area (acres)	Curve Number CN	Travel Time, Tc (hrs)
Post DA1	0.836	88	0.083

6.1 Unified Stormwater Sizing Criteria

6.2 Methodology

To satisfy the requirements of the NYS DEC General Permit and the Town of North Castle standard practices have been selected. These practices meet attenuation as well as stormwater quality goals. The guidelines and practices used in selecting and the sizing analyses are found in Chapters 4, 5, and 6 of the NYS DEC Stormwater Management Design Manual.

6.3 Water Quality Volume (WQv)

The Treatment volumes are determined as prescribed by the standard methods as outlined in the NYS DEC SMDM. This Water Quality Volume WQv requirement is based on the 90% rainfall event. This is totally treated in the proposed infiltrator system.

6.4 Stream Channel Protection Volume Requirements (CPv)

This requirement is for the protection of stream channels from receiving erosive velocities. This goal is accomplished by providing 24-hour extended detention of the one-year, 24-hour storm event that remains after runoff reduction is applied to the project. Trout waters may be exempted to only provide 12-hour detention. It is also not required if the discharge is to a pipe or hardened channel. The detention time is measured by the center of mass method or plug flow calculation method. Further criteria for the application of the Cpv can be found in Section 4.4 of the SMDM.

6.5 Overbank Flood Control (Qp)

The purpose of this sizing criteria for overbank flood control is to avoid an increase in the frequency and magnitude of out-of-bank flooding that may be the result of development. These are flow events where channel capacity is exceeded and spill over to flood plains. To meet the criteria the proposed stormwater management system for the project must attenuate the 10-year, 24-hour storm event to pre-

development peak discharge rate. Detailed criteria can be found in Section 4.5 of the SMDM.

6.6 Extreme Flood Control Criteria (Qf)

The purpose of the extreme flood analysis is to prevent flood damage from large storm events by maintaining predevelopment 100-year flood plain boundaries and protecting the integrity of stormwater management practices. The basis of the analysis is to maintain pre-development peak rates of runoff for the 100-year, 24-hour storm event with proper stormwater management. Detailed criteria can be found in Section 4.6 of the SMDM.

A summary of peak discharge rates at each design point for the pre and post- developed storm events analyzed for each drainage basin is summarized in the tables below:

Design Point 1:

Storm Event (year)	Pre-Dev. Peak Flow (cfs)	Post-Dev. Peak Flow (cfs)	Net Change of Peak Flow (cfs)	% Reduction
1	0.78	0.14	0.64	-82.05
2	1.19	0.18	1.01	-84.87
10	2.45	0.31	2.14	-87.35
25	3.73	0.41	3.32	-89.01
*100	5.74	0.50	5.24	-91.29

*100-year Storm Event has been used for WQv.

As can be seen by the results, the peak flow(cfs) in all storm events decreases because of the stormwater chambers that are to be installed.

7.1 Stormwater Management Practices Selection, Justification and Design

The stormwater management practices selection process detailed in Chapters 3 and 7 of the NYS Stormwater Management Design Manual was followed to help select the practices chosen. These Chapters provide a series of matrices which allows logical selection of treatment practices based on several factors. The factors are as follows:

- Land Use – rural.
- Physical Feasibility – location, slope, drainage area, groundwater table.
- Watershed / Regional Factors – Inland Long Island Sound Basin;
- Stormwater Management Capability – can meet all requirements.
- Community and Environmental Factors – meets all requirements.

Infiltration – Subsurface Chambers (I-3) NYS DEC SMDM:

Stormwater Infiltration Practices capture and temporarily store stormwater. The stormwater is then infiltrated into the existing soil strata over an extended period of time allowing recharge into the groundwater.

Required Elements:

Pre-Treatment Volume	
Required	Provided
If Fc for underlying soils is less than 2.0 in/hr minimum pre-treatment volume of 25% is required.	N/A
If Fc for underlying soil greater than 2.0 in/hour, minimum pretreatment volume of 50% is required	N/A
If Fc for underlying soil greater than 5.0 in/hour, 100% of WQv must be pretreated	100%
Exit velocities from pretreatment volume shall be non-erosive (3.5 to 5.0 fps) during the 2-year storm event	Exit velocities are not a concern since there are no significant surface discharges.

Treatment Volume	
Required	Provided
Infiltration practice designed to exfiltrate entire WQv through floor of practice (side walls not included in sizing);	All criteria have been met. The subsurface infiltration system has been designed to exfiltrate the entire WQv and has been sized based solely on the surface area of the bottom.
Installation shall carefully follow the construction sequence.	All criteria have been met. The surface infiltration system has been designed to exfiltrate the entire WQv and has been sized based solely on the surface area of the bottom.
The surface area of the infiltration practice shall be sized based on $A_p = V_w / n d t$ A_p = surface area (SF) V_w = Water Quality Volume (cf) n = porosity (one used since open cavity) $d t$ = depth of practice	All criteria have been met. The surface infiltration system has been designed to exfiltrate the entire WQv and has been sized based solely on the surface area of the bottom.

Landscaping:

Does not apply.

Maintenance	
Required	Provided
Infiltration practice shall never serve as a temporary sediment trap during construction.	This Erosion and Sediment Control Plan includes separate locations for temporary sediment traps which do not coincide with the practice locations.
An observation well shall be installed in every practice and shall have lockable cap.	The subsurface stormwater management system will have access manholes.
Direct access shall be provided to the practice for maintenance and rehabilitation.	Direct access and observation will be served by a manhole cover.

See Routing Calculations in Appendix F and H for sizing calculations.

In General:

- Controls should be inspected periodically for the first few months after construction and on a semi-annual basis thereafter. They should also be inspected after major storm events (greater than 0.5 inches).
- All stormwater controls shall be inspected and cleaned of any debris or sediment.
- Any erosion shall be repaired and stabilized with seeding and mulch or stone.

Please note that additional notes regarding maintenance activities are contained on the project Construction Drawings and should be adhered to during and after construction.

The selection and justification of green practices can be found in Appendix G of this Report. The design of the practices can be found in Appendix H of this Report.

8.0 Erosion and Sediment Control

Erosion and sediment control practices were selected and designed in accordance with the NYSSESC. The practices proposed for this project are described below. Standard details and specifications are included in Appendix J as well as on the Construction Plans. Initial locations of each practice are shown on the Plans as construction progresses it may become necessary to repair, replace or relocate these practices as conditions warrant.

Stabilized Construction Entrance:

This has been specified for the entrance of the driveway. The installation will occur at the beginning of the project as described in the Suggested Construction Sequence. It will be maintained so as to prevent the tracking of sediment off-site.

Silt / Sediment Fence and Haybales:

Silt fence and haybales have been specified to control and contain sediment from leaving areas under disturbance to undisturbed areas. The fence shall be installed as best as possible following the contours and will be spaced in accordance with the NYSSESC. The fence will be inspected daily, repaired, and sediment removed as necessary.

Soil Stockpile:

Areas are provided for temporary stockpiling of delivered soil material for the construction. These areas will be contained with sediment fence to prevent the movement of sediment. The stockpiles, if not active for more than seven (7) days, will be seeded and mulched. The stockpile areas were placed to best suit the proposed construction activity. The stockpile will be installed as described in the Construction Sequence.

Storm Drain Inlet Protection:

The inlet protection is specified to provide a permeable barrier around drainage inlets to reduce sediment content in runoff before entering the storm drain system.

Soil Restoration:

Soil restoration is a required practice for construction projects where soil compaction occurs to soils which will be permanently vegetated. This compaction is typically a result of heavy vehicle traffic, cutting or filling, and areas which may receive heavy surcharges. This becomes more pronounced in soils with greater fines content specifically when wet. These actions can change soil properties which affect its ability to drain or absorb surface water and will also affect the survivability of vegetation. In order to maintain the integrity of the stormwater management plan these areas must receive soil restoration. See Figure 8.1 (add Table) taken from the NYSSMDM for requirements.

This project has soils which fall in the hydrologic soil group HSG "C." Therefore, for most instances, soil restorations are required for the development areas subject to permanent vegetation. Soil restoration can be done by tilling or aerating the soil to a depth of 12-inches. In heavy traffic areas, 3-inches of compost shall be placed over the compacted areas prior to the tilling. After the restoration, a 3/8" metal bar should be able to be hand pushed into the soil. Areas within the drip-line of trees should not be tilled.

Rock Outlet Protection:

Rock outlet protection is specified at discharge points of pipes and channels to reduce depth, velocity, and the energy of water to avoid downstream erosion. The sizing criteria used is from the NYSSESC Manual.

9.0 Construction Sequence

A key objective of the SWPPP is to reduce erosion and sedimentation potentials for the project. As a means to accomplish this, a suggested construction sequence was developed to assist the developer with incorporating, into the project, various controls designed to reduce such potential. The sequence considers the performance of development activities in a phased approach, in conjunction with the installation, construction and monitoring of erosion and sedimentation control devices prior to and during construction.

Appendix D contains the project specific Suggested Construction Sequence. Essentially, the sequence has been broken down into various activities designed to ensure that certain erosion/sedimentation controls are in place, prior to and during construction, in recognition of site development.

Prior to any construction activities, the Owner, Engineer and any Contactors to perform land-disturbing activities shall meet to review this SWPPP to insure a thorough understanding of its contents and overall intent. Certifications to this effect shall be signed by the Owner and Contractor. Certifications are provided on the Construction Plans and in Appendix C.

The Responsible Party during and after Construction is as follows:

Joseph and Celeste Rault
209 Bedford Banksville Road
Bedford, NY 10506

10.1 Inspection and Reporting

Unless notified by the NYSDEC, the Owner or Operator shall have a qualified inspector conduct site inspections in accordance with the Permit requirements; for a site with on-going soil disturbance activities, a qualified inspector shall conduct a site inspection at least once every seven (7) calendar days. If a project has received prior written approval by the NYSDEC for the disturbance of greater than five (5) acres of soils at any one time, the inspection frequency shall be increased to a minimum of two (2) per seven (7) calendar day period separated by two (2) calendar days for as long as the five (5) acre threshold is exceeded. The qualified inspector, as defined in SPEDES General Permit guidelines, shall prepare an inspection report subsequent to each and every inspection. At a minimum, the inspection report shall include and/or address the following:

1. Date and time of inspection.
2. Name and title of person(s) performing inspection.

3. A description of the weather and soil conditions (e.g. dry, wet, saturated) at the time of inspection.
4. 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.
5. 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.
6. Identification of all erosion and sediment control practices that need repair or maintenance.
7. Identification of all erosion and sediment control practice that were not installed properly or are not functioning as designed and need to be reinstalled or replaced.
8. 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 the last inspection.
9. 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.
10. Corrective action(s) that must be taken to install, repair, replace or maintain erosion and sediment control practices; and to correct deficiencies identified with the construction of the post-construction stormwater management practices.
11. Digital photographs, with date stamp, that clearly show the condition of all practices that have been identified as needing correction actions. 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.

Within one business day of the completion of an inspection, the qualified inspector shall notify the Owner or Operator and appropriate Contractor (or Subcontractor) of any corrective actions that need to be taken. The Contractor (or Subcontractor) shall begin implementing the corrective action within one business day of this notification and shall complete the corrective actions in a reasonable time frame. All inspection reports shall be signed by the qualified inspector. A sample inspection report is included in Appendix K.

The Owner or Operator shall maintain a record of all inspection reports in a site logbook until all disturbed areas have achieved final stabilization and the N.O.T. has been submitted to the DEC. The site logbook shall be maintained on site and be made available to the permitting authority upon request.

Prior to filing the Notice of Termination or the end of permit term, the Owner or Operator shall have the qualified professional perform a final site inspection. The qualified professional shall be provided with a certified final asbuilt survey. The survey shall locate and provide detailed information for the permanent stormwater facilities. The information provided shall include and not be limited to the following: rim and invert elevations of all structures, outlets, weirs, etc.; pipe material and sizes; basin dimensions, elevations, and topography; and any other pertinent information specific to the stormwater practice constructed.

Upon final review of the asbuilt survey and completed site improvements, the qualified professional shall certify that the site has undergone final stabilization using either vegetative or structural stabilization methods and that all temporary erosion and sediment controls (such as silt fencing) not needed for long-term erosion control have been removed.

The qualified professional shall then complete the Notice of Termination (NOT) to be signed by the Owner. The NOT with the required supporting documentation shall be submitted to the MS4 for signature of approval which will then be forwarded to the NYS DEC.

11.1 Installation and Maintenance of Stormwater Management Practices

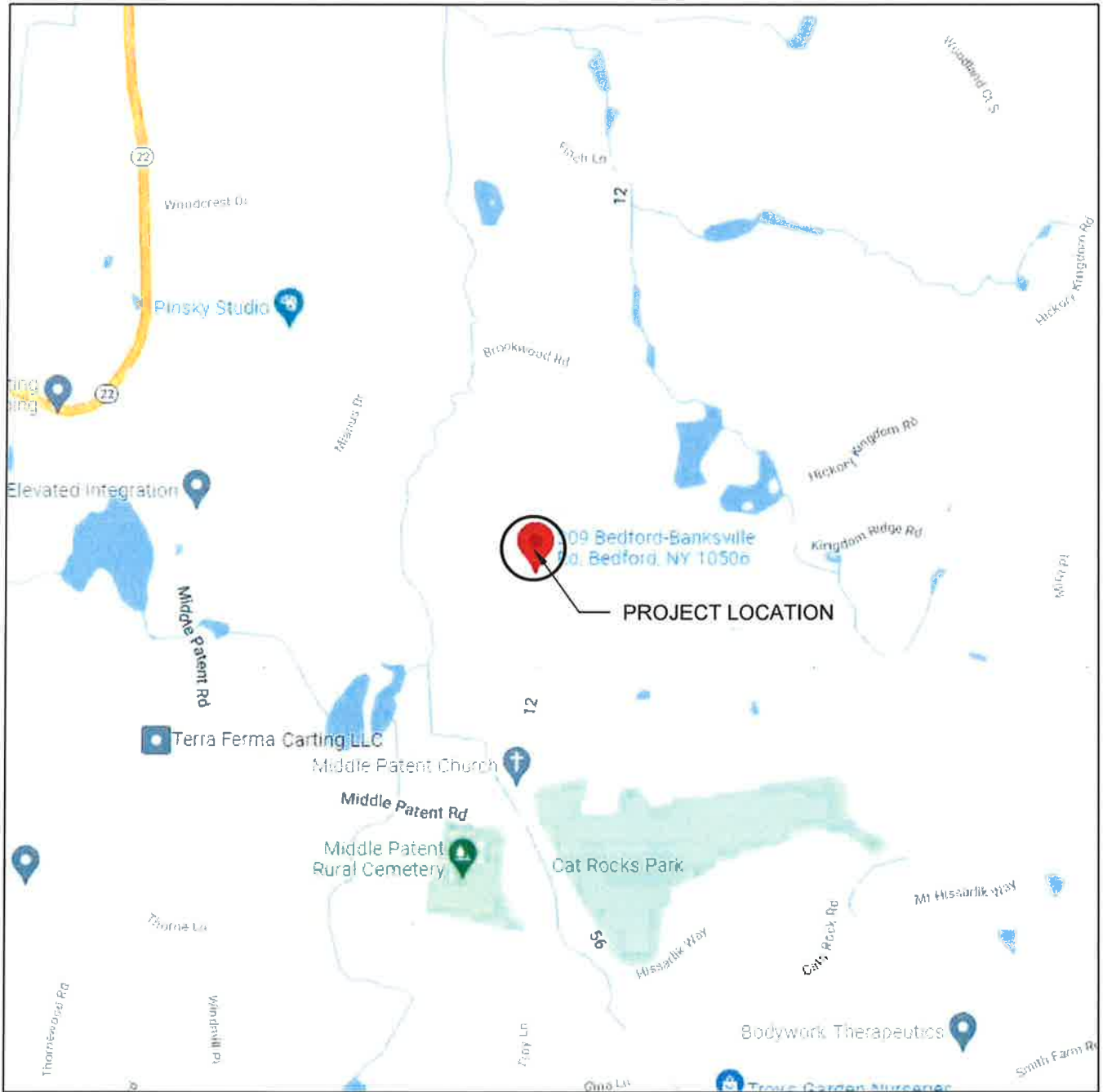
11.2 During Construction

The Contractor shall be responsible for the installation and maintenance of all temporary erosion control measures. The Contractor shall also be responsible for the installation of permanent control measures. The Operator shall be responsible for the maintenance of all permanent control measures.

All temporary erosion control measures installed on the project site shall be observed and maintained to ensure that they are operating as intended as follows:

1. Temporary measures will be inspected by the trained Contractor daily. Any necessary repairs, replacements, or upgrades will be made immediately.
2. Accumulated sediments will be removed as required to keep the measures functional. In the case of silt fencing and haybales (if applicable), remove deposits where accumulations reach half the height of the fence or bale. In the case of sediment basins, remove deposits whenever their capacity has been reduced by fifty percent (50%) from the design capacity.
3. All erosion of the silt fence will be repaired immediately with compacted backfill materials.
4. Disturbed areas, stockpile areas, areas used for storage of materials that are exposed to precipitation shall be inspected for evidence of, or the potential for, pollutants entering the drainage system or downstream.

FIGURES



NOTE:

- 1. Google Maps

FIG 1.1 Location Map

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Town of North Castle

Westchester County, New York

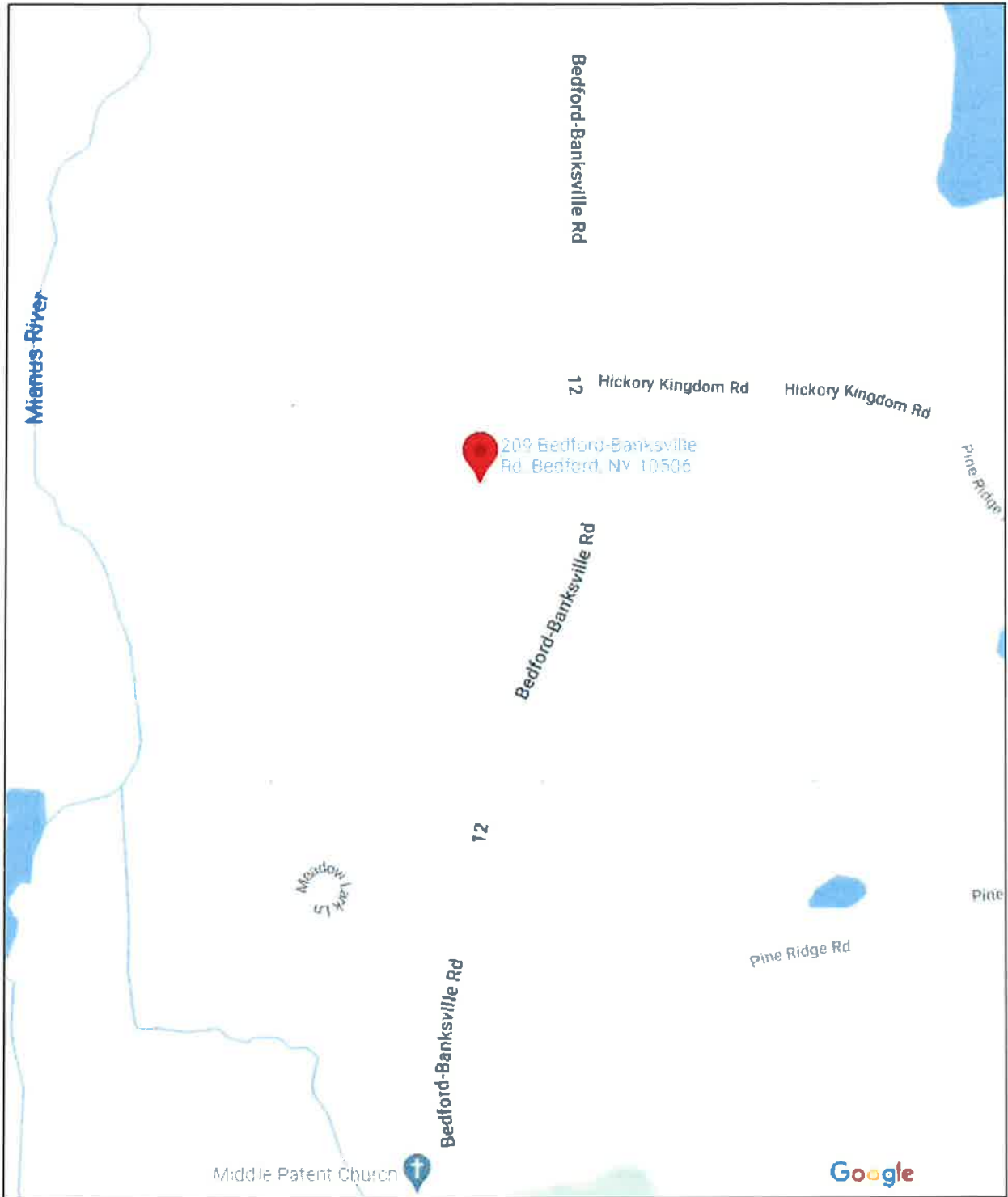
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NOTE:

- 1. Map Source: Google Maps.

FIG 1.2 Vicinity Map

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Westchester County, New York

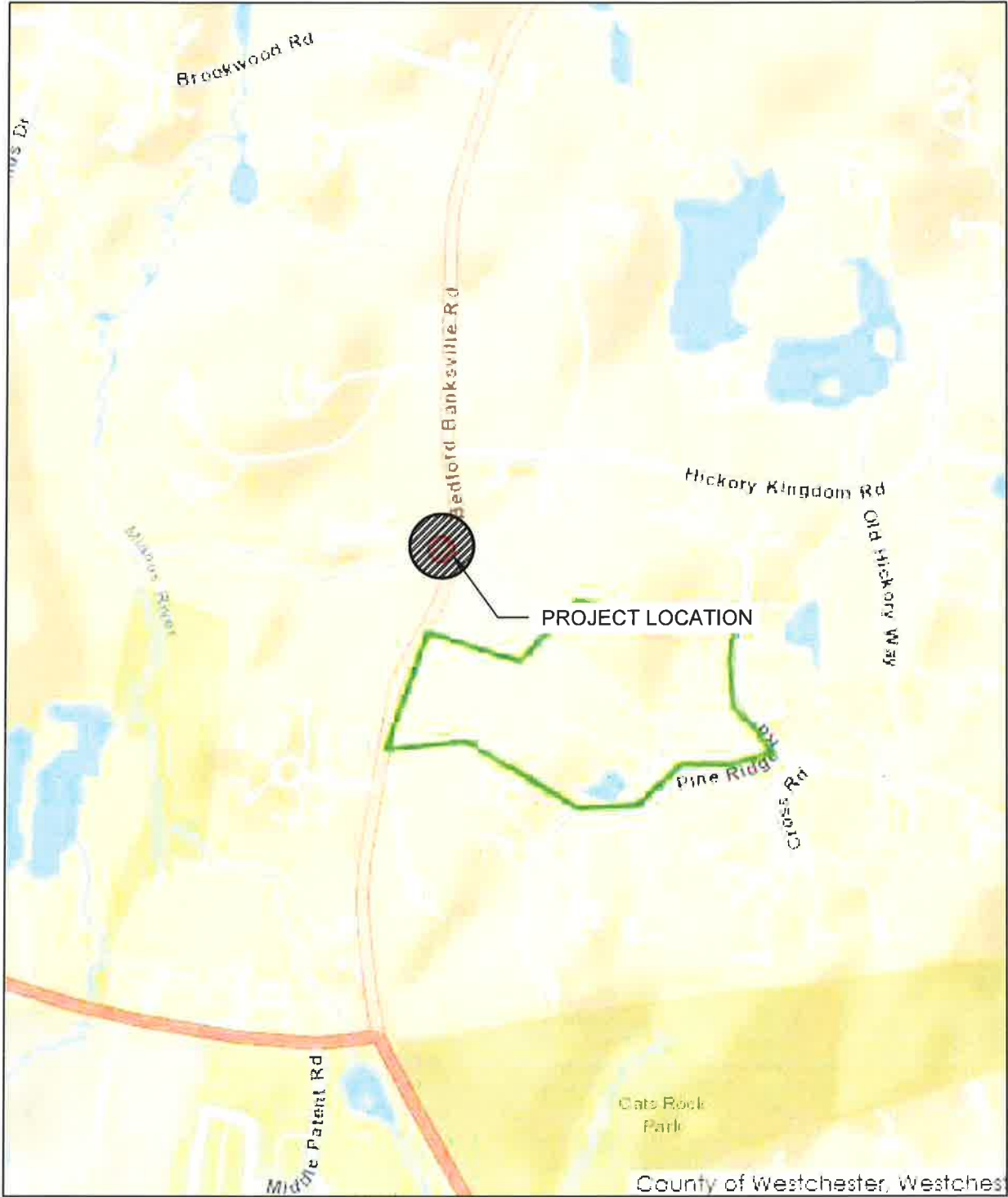
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NOTE:

- 1. Map Source: CRIS.parks.ny.gov

FIG 1.3 CRIS Map

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MAP LEGEND

	Area of Interest (AOI)		Spoil Area
	Soils		Stony Spot
	Soil Map Unit Polygons		Very Stony Spot
	Soil Map Unit Lines		Wet Spot
	Soil Map Unit Points		Other
	Special Point Features		Special Line Features
	Blowout		Streams and Canals
	Borrow Pit		Transportation
	Clay Spot		Rails
	Closed Depression		Interstate Highways
	Gravel Pit		US Routes
	Gravelly Spot		Major Roads
	Landfill		Local Roads
	Lava Flow		Background
	Marsh or swamp		Aerial Photography
	Mine or Quarry		
	Miscellaneous Water		
	Perennial Water		
	Rock Outcrop		
	Saline Spot		
	Sandy Spot		
	Severely Eroded Spot		
	Sinkhole		
	Slide or Slip		
	Sodic Spot		

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: www.nrcs.usda.gov/wss
 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 16, Sep 10, 2022

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

Date(s) aerial images were photographed: 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.

Web Soil Survey
National Cooperative Soil Survey

8/22/2023
Page 2 of 3

NOTE:

1. Map Source: USDA National Resources Conservation Service, National Cooperative Soil Survey, Web Soil Survey Map.

FIG 4.1 Soils Map

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Soil Map—Westchester County, New York

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
ChB	Charlton fine sandy loam, 3 to 8 percent slopes	2.3	31.4%
ChC	Charlton fine sandy loam, 8 to 15 percent slopes	1.5	21.2%
CsD	Chatfield-Charlton complex, 15 to 35 percent slopes, very rocky	0.0	0.6%
Fr	Fredon silt loam	1.7	23.7%
RhB	Riverhead loam, 3 to 8 percent slopes	0.2	2.3%
RhC	Riverhead loam, 8 to 15 percent slopes	1.1	14.6%
RhD	Riverhead loam, 15 to 25 percent slopes	0.4	5.2%
RhE	Riverhead loam, 25 to 50 percent slopes	0.1	1.0%
Totals for Area of Interest		7.3	100.0%

 **Natural Resources Conservation Service**

Web Soil Survey
National Cooperative Soil Survey

8/22/2023
Page 3 of 3

NOTE:

1. Map Source: USDA National Resources Conservation Service, National Cooperative Soil Survey, Web Soil Survey Map.

FIG 4.1 Soils Map

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FIG 1A. PRE DEVELOPMENT CONDITION WATERSHED
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 REVISED: 8/31/23



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F:\2021\21-29 JOSEPH & CELESTE RAULT-209 BEDFORD BANKSVILLE RD\ENGINEERING\CAD\CAD3D-21-29 JOSEPH & CELESTE RAULT-209 BEDFORD BANKSVILLE RD\DWG1-29 SNP FIGURES COPY 9-1-23.DWG 1/18/2017 3:19:52 PM

FIG 1B. POST DEVELOPMENT CONDITION WATERSHED
 PREPARED FOR
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 Town of North Castle Westchester County, New York

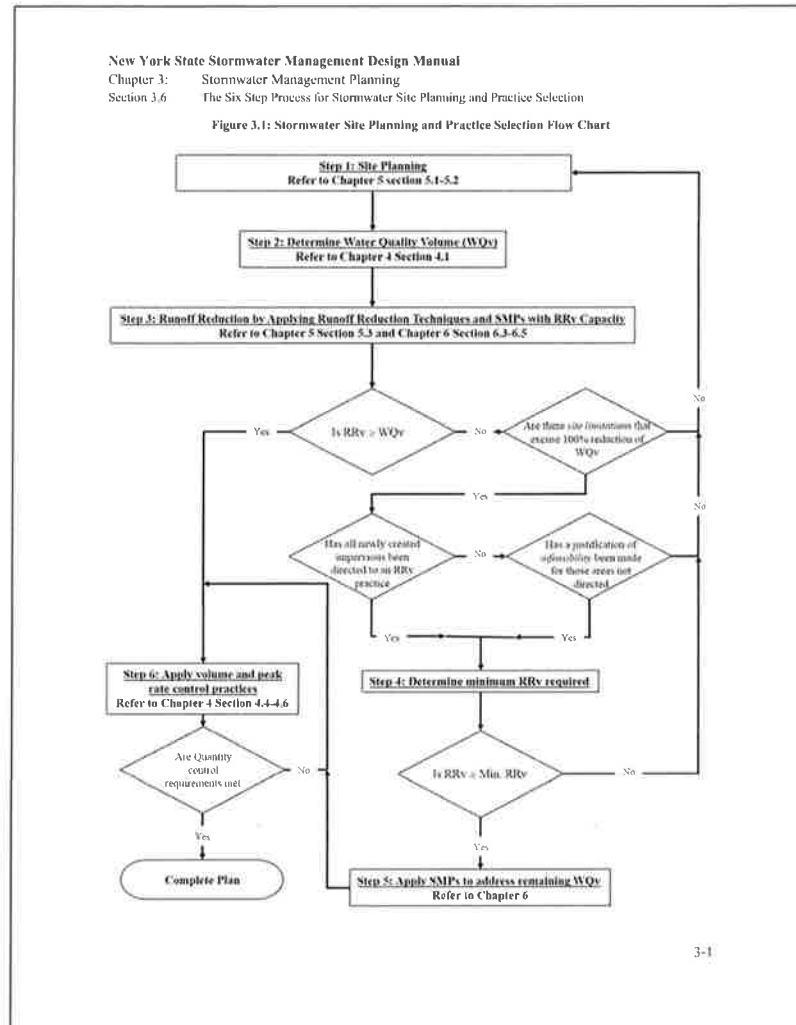
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DATE: 6-09-23
 REVISED: 8-31-23

New York State Stormwater Management Design Manual
 Chapter 3: Stormwater Management Planning
 Section 3.6 The Six Step Process for Stormwater Site Planning and Practice Selection

Figure 3.1: Stormwater Site Planning and Practice Selection Flow Chart



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NOTE:

1. Source: NYS DEC Stormwater Design Manual - August 2010

FIGURE 3.1 - Stormwater Site Planning and Practice Selection Flow Chart

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NOTE:

1. Source: NYS DEC Stormwater Design Manual - August 2010

FIGURE 3.1 - Stormwater Site Planning and Practice Selection Flow Chart

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New York State Stormwater Management Design Manual
 Chapter 5: Green Infrastructure Practices
 Section 5.1 Planning for Green Infrastructure: Preservation of Natural Features and Conservation Design

Table 5.3: Soil Restoration Requirements			
Type of Soil Disturbance	Soil Restoration Requirement		Comments/Examples
No soil disturbance	Restoration not permitted		Preservation of Natural Features
Minimal soil disturbance	Restoration not required		Clearing and grubbing
Areas where topsoil is stripped only - no change in grade	HSG A & B apply 6 inches of topsoil	HSG C & D Aerate* and apply 6 inches of topsoil	Protect area from any ongoing construction activities.
Areas of cut or fill	HSG A & B Aerate and apply 6 inches of topsoil	HSG C & D Apply full Soil Restoration **	
Heavy traffic areas on site (especially in a zone 5-25 feet around buildings but not within a 5 foot perimeter around foundation walls)	Apply full Soil Restoration (de-compaction and compost enhancement)		
Areas where Runoff Reduction and/or Infiltration practices are applied	Restoration not required, but may be applied to enhance the reduction specified for appropriate practices.		Keep construction equipment from crossing these areas. To protect newly installed practice from any ongoing construction activities construct a single phase operation fence area
Redevelopment projects	Soil Restoration is required on redevelopment projects in areas where existing impervious area will be converted to pervious area.		

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

** Per "Deep Ripping and De-compaction, DEC 2008".

Using this Practice

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

- 1) Apply 3 inches of compost over subsoil

5-19

NOTE:

1. Map Source: USDA National Resources Conservation Service, National Cooperative Soil Survey, Web Soil Survey Map.

FIG 8.1 Soil Restoration JOSEPH & CELESTE RAULT Town of North Castle Westchester County, New York	Site Design Consultants Civil Engineers • Land Planners 251 F Underhill Avenue Yorktown Heights, NY 10598 (914) 962-4488 - Fax (914) 962-7386 www.sitedesignconsultants.com	 NOT TO SCALE DATE: 8/31/2023
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NOTE:

1. Map Source: USDA National Resources Conservation Service, National Cooperative Soil Survey, Web Soil Survey Map.

FIG 8.1 Soil Restoration JOSEPH & CELESTE RAULT Town of North Castle Westchester County, New York	Site Design Consultants Civil Engineers • Land Planners 251 F Underhill Avenue Yorktown Heights, NY 10598 (914) 962-4488 - Fax (914) 962-7386 www.sitedesignconsultants.com	 NOT TO SCALE DATE: 8/31/2023
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List of Required Approvals and Applications:

Town of North Castle Site Plan Approval – approval pending

Town of North Castle Building Permit – approval pending

New York State Department of Environmental Conservation General Permit GP-0-20-001 “Notice of Intent”

New York State Department of Environmental Conservation SWPPP MS4 Acceptance Form

New York State Department of Environmental Conservation “Notice of Termination”

APPENDIX B

Regulatory Ordinances:

Local Ordinance

Chapter 267

STORMWATER MANAGEMENT

[HISTORY: Adopted by the Town Board of the Town of North Castle 12-19-2007 by L.L. No. 22-2007 (Ch. 173 of the 1987 Code). Amendments noted where applicable.]

GENERAL REFERENCES

Building code administration and enforcement — See Ch. 127. Sewers — See Ch. 250.

Excavations — See Ch. 157.

Subdivision of land — See Ch. 275.

Filling and grading — See Ch. 161.

Water — See Ch. 336.

Flood damage prevention — See Ch. 177.

Wetlands and watercourses — See Ch. 340.

Zoning — See Ch. 355.

ARTICLE I
Stormwater Management and Erosion and Sediment Control

§ 267-1. Title.

This chapter shall be known and cited as the "Stormwater Management, Erosion and Sediment Control Law and Illicit Discharges, Activities and Connections to Separate Storm Sewer System of the Town of North Castle."

§ 267-2. Statutory authority.

In accordance with § 10 of the Municipal Home Rule Law of the State of New York, the Town Board of North Castle has the authority to enact local laws and amend local laws for the purpose of promoting the health, safety or general welfare of the Town of North Castle and for the protection and enhancement of its physical environment. The Town Board of North Castle may include in any such local law provisions for the appointment of any municipal officer, employees or independent contractor to effectuate, administer and enforce such local law.

§ 267-3. Findings; purpose; applicability; exemptions.

A. Findings. The Town Board of the Town of North Castle hereby finds that:

- (1) Land development activities and associated increases in site impervious cover often alter the hydrologic response of local watersheds and increase stormwater runoff rates and volumes, flooding, stream channel erosion, or sediment transport and deposition.
- (2) This stormwater runoff contributes to increased quantities of waterborne pollutants, including siltation of aquatic habitat for fish and other desirable species.
- (3) Clearing and grading during construction tends to increase soil erosion and add to the loss of native vegetation necessary for terrestrial and aquatic habitat.
- (4) Improper design and construction of stormwater management practices can increase the velocity of stormwater runoff, thereby increasing stream bank erosion and sedimentation.
- (5) Impervious surfaces allow less water to percolate into the soil, thereby decreasing groundwater recharge and stream base flow.
- (6) Substantial economic losses can result from these adverse impacts on the waters of the municipality.
- (7) Stormwater runoff, soil erosion and nonpoint source pollution can be controlled and minimized through the regulation of stormwater runoff from land development activities.
- (8) The regulation of stormwater runoff discharges from land development activities in order to control and minimize increases in stormwater runoff rates and volumes, soil erosion, stream channel erosion, and nonpoint source pollution associated with stormwater runoff is in the public interest and will

minimize threats to public health and safety.

- (9) Regulation of land development activities by means of performance standards governing stormwater management and site design will produce development compatible with the natural functions of a particular site or an entire watershed and thereby mitigate the adverse effects of erosion and sedimentation from development.
- B. Purpose. The purpose of this chapter is to establish minimum stormwater management requirements and controls to protect and safeguard the general health, safety and welfare of the public residing within this jurisdiction and to address the findings of fact identified in § 267-3 of this chapter. This chapter seeks to meet those purposes by achieving the following objectives:
- (1) Meet the requirements of Minimum Control Measures four and five of the New York State Department of Environmental Conservation (NYSDEC) State Pollutant Discharge Elimination System SPDES General Permit for Stormwater Discharges from Municipal Separate Stormwater Sewer Systems (MS4s), Permit No. GP-15-003, or as amended or revised; **[Amended 11-18-2015 by L.L. No. 9-2015]**
 - (2) Require land development activities to conform to the substantive requirements of the New York State Department of Environmental Conservation State Pollutant Discharge Elimination System (SPDES) General Permit for Construction Activities, Permit No. GP-15-002, or as amended or revised; **[Amended 11-18-2015 by L.L. No. 9-2015]**
 - (3) Minimize increases in stormwater runoff from land development activities in order to reduce flooding, siltation, increases in stream temperature and stream bank erosion and maintain the integrity of stream channels;
 - (4) Minimize increases in pollution caused by stormwater runoff from land development activities which would otherwise degrade local water quality;
 - (5) Minimize the total annual volume of stormwater runoff which flows from any specific site during and following development to the maximum extent practicable; and
 - (6) Reduce stormwater runoff rates and volumes, soil erosion and nonpoint source pollution, wherever possible, through stormwater management practices and to ensure that these management practices are properly maintained and eliminate threats to public safety.
- C. Applicability.
- (1) This chapter shall be applicable to all land development activities as defined in § 267-4B of this chapter.
 - (2) The municipality shall designate a Stormwater Management Officer (SMO), who shall accept and review all stormwater pollution prevention plans and forward such plans to the applicable municipal board. The Stormwater Management Officer may:

- (a) Review the plans.
- (b) Upon approval by the Town Board of the Town of North Castle, engage the services of a registered professional engineer to review the plans, specifications and related documents.
- (3) All land development activities subject to review and approval by the applicable board of the Town of North Castle under subdivision, site plan and/or special permit regulations shall be reviewed subject to the standards contained in this chapter.
- (4) All land development activities not subject to review as stated in § 267-3C(3) of this chapter shall be required to submit a stormwater pollution prevention plan (SWPPP) to the Stormwater Management Officer, who shall approve the SWPPP if it complies with the requirements of this chapter.
- (5) The provisions of this chapter shall not apply to any project that has been physically completed prior to the effective date of this chapter. **[Added 11-18-2015 by L.L. No. 9-2015]**
- (6) A project that was approved prior to the effective date of this chapter, but which is not in conformity with the provisions of this chapter, may be continued, subject to the following: **[Added 11-18-2015 by L.L. No. 9-2015]**
 - (a) All such activities shall continue to be governed by the present regulations of the Town of North Castle.
 - (b) No such activity shall be expanded, changed, enlarged or altered without compliance with this chapter.
 - (c) If such activity is discontinued for 12 consecutive months, any resumption of the activity shall conform to this chapter.
 - (d) If any use or activity is destroyed by human activities, a force of nature or an act of God, it shall not be resumed except in conformity with the provisions of this chapter.

D. Exemptions.

- (1) Repairs to any stormwater management practice or facility deemed necessary by the Stormwater Management Officer.
- (2) Any part of a subdivision if a plat for the subdivision has been approved by the Town of North Castle on or before the effective date of this chapter.
- (3) Land development activities for which a building permit has been approved on or before the effective date of this chapter.
- (4) Cemetery graves.
- (5) Installation of fence, sign, telephone and electric poles and other kinds of posts or poles.
- (6) Emergency activity immediately necessary to protect life, property or natural

resources.

- (7) Activities of an individual engaging in home gardening by growing flowers, vegetables and other plants primarily for use by that person and his or her family.
- (8) Landscaping and horticultural activities in connection with an existing structure.

§ 267-4. Definitions and word usage.

- A. Unless specifically defined below, words and phrases used in this chapter shall be interpreted to have the meaning they have in common English usage, to give effect to the purpose set forth in § 267-3B, and to provide reasonable application of this chapter.
- B. As used in this chapter, the following terms shall have the meanings indicated:

AGRICULTURAL ACTIVITY — The activity of an active farm, including grazing and watering livestock, irrigating crops, harvesting crops, using land for growing agricultural products, and cutting timber for sale, but shall not include the operation of a dude ranch or similar operation or the construction of new structures associated with agricultural activities.

APPLICANT — A property owner or agent of a property owner who has filed an application for a land development activity.

BEST MANAGEMENT PRACTICES (BMPs) — Schedules of activities, prohibitions of practices, general good housekeeping practices, pollution prevention and educational practices, maintenance procedures and other management practices to prevent or reduce the discharge of pollutants directly or indirectly to stormwater, receiving waters or stormwater conveyance systems. BMPs also include treatment practices, operating procedures and practices to control site runoff, spillage or leaks, sludge or water disposal, or drainage from raw materials storage.

BUILDING — Any structure, either temporary or permanent, having walls and a roof, designed for the shelter of any person, animal or property, and occupying more than 100 square feet of area.

CHANNEL — A natural or artificial watercourse with a definite bed and banks that conducts continuously or periodically flowing water.

CLEAN WATER ACT — The Federal Water Pollution Control Act (33 U.S.C. § 1251 et seq.), and any subsequent amendments thereto.

CLEARING — Any activity that removes the vegetative surface cover.

CONSTRUCTION ACTIVITY — Activity requiring authorization under the NYSDEC SPDES General Permit for Stormwater Discharges from Construction Activity, GP-15-002, as amended or revised. These activities include construction projects resulting in land disturbance of one or more acres. Such activities include, but are not limited to, clearing and grubbing, grading, excavating and demolition. **[Amended 11-18-2015 by L.L. No. 9-2015]**

DEDICATION — The deliberate appropriation of property by its owner for general public use.

DEPARTMENT — The New York State Department of Environmental Conservation.

DESIGN MANUAL — The New York State Stormwater Management Design Manual, most recent version, including applicable updates, that serve as the official guide for stormwater management principles, methods and practices.

DEVELOPER — A person who undertakes land development activities.

EROSION CONTROL MANUAL — The most recent version of the New York Standards and Specifications for Erosion and Sediment Control manual, commonly known as the "Blue Book."

GREEN INFRASTRUCTURE PRACTICE — As set forth in Chapter 5 of the New York State Stormwater Management Design Manual. **[Added 11-18-2015 by L.L. No. 9-2015]**

GRADING — Excavation or fill of material, including the resulting conditions thereof.

HAZARDOUS MATERIAL — Any material, including any substance, waste or combination thereof, which, because of its quantity, concentration or physical, chemical or infectious characteristics, may cause or significantly contribute to a substantial present or potential hazard to human health, safety, property or the environment when improperly treated, stored, transported, disposed of or otherwise managed.

ILLICIT CONNECTION — Any drain or conveyance, whether on the surface or subsurface, which allows an illegal discharge to enter the MS4, including but not limited to:

- (1) Any conveyances which allow any nonstormwater discharge, including treated or untreated sewage, process wastewater and wash water, to enter the MS4 and any connections to the storm drain system from indoor drains and sinks, regardless of whether said drain or connection had been previously allowed, permitted or approved by an authorized enforcement agency; or
- (2) Any drain or conveyance connected from a commercial or industrial land use to the MS4 which has not been documented in plans, maps or equivalent records and approved by an authorized enforcement agency.

ILLICIT DISCHARGE — Any direct or indirect nonstormwater discharge to the MS4, except as exempted in § 267-12 of this chapter.

IMPERVIOUS COVER — Those surfaces, improvements and structures that cannot effectively infiltrate rainfall, snowmelt and water (e.g., building rooftops, pavement, sidewalks, driveways, etc.).

INDUSTRIAL ACTIVITY — Activities requiring the NYSDEC SPDES Multi-Sector General Permit for Stormwater Discharges Associated with Industrial Activity, GP-0-12-001, as amended or revised. **[Amended 11-18-2015 by L.L. No. 9-2015]**

INDUSTRIAL STORMWATER PERMIT — A State Pollutant Discharge Elimination System permit issued to a commercial industry or group of industries, which regulates the pollutant levels associated with industrial stormwater discharges or specifies on-site pollution control strategies.

INFILTRATION — The process of percolating stormwater into the subsoil.

JURISDICTIONAL WETLAND — An area that is inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support a prevalence of vegetation typically adapted for life in saturated soil conditions, commonly known as "hydrophytic vegetation."

LAND DEVELOPMENT ACTIVITY — Construction activity, including clearing, grubbing, grading, filling, excavating or stockpiling activities, that results in soil disturbance equal to or greater than 5,000 square feet. Clearing activities include, but are not limited to, logging equipment operations, the cutting and skidding of trees, and stump removal and/or brush root removal. Land development activity does not include routine maintenance that is performed to maintain the original line and grade, hydraulic capacity or original purpose of a facility. **[Amended 11-18-2015 by L.L. No. 9-2015]**

LANDOWNER — The legal or beneficial owner of land, including those holding the right to purchase or lease the land, or any other person holding proprietary rights in the land.

LARGER COMMON PLAN OF DEVELOPMENT OR SALE — A contiguous area where multiple separate and distinct land development 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) application, zoning request, computer design, etc.) or physical demarcation (including signs, lot stakes, surveyor markings, etc.) indicating that land development 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 activity 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. **[Added 11-18-2015 by L.L. No. 9-2015]**

MAINTENANCE AGREEMENT — A legally recorded document that acts as a property deed restriction and which provides for long-term maintenance of stormwater management practices.

MS4 — Municipal separate storm sewer system.

MUNICIPALITY — The Town of North Castle.

MUNICIPAL SEPARATE STORM SEWER SYSTEM — A conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels or storm drains):

- (1) Owned or operated by the Town of North Castle;
- (2) Designed or used for collecting or conveying stormwater;

- (3) Which is not a combined sewer; and
- (4) Which is not part of a publicly owned treatment works (POTW) as defined at 40 CFR 122.2.

NONPOINT SOURCE POLLUTION — Pollution from any source other than from any discernible, confined and discrete conveyances and shall include, but not be limited to, pollutants from agricultural, silvicultural, mining, construction, subsurface disposal and urban runoff sources.

NONSTORMWATER DISCHARGE — Any discharge to the MS4 that is not composed entirely of stormwater.

PERSON — Any individual, association, organization, partnership, firm, corporation or other entity recognized by law and acting as either the owner or as the owner's agent.

PHASING — Clearing a parcel of land in distinct pieces or parts, with the stabilization of each piece completed before the clearing of the next.

POINT SOURCE POLLUTION — Pollution from a single identifiable localized source, typically a discernible, confined and discrete conveyance. **[Added 11-18-2015 by L.L. No. 9-2015]**

POLLUTANT — Dredged spoil, filter backwash, solid waste, incinerator residue, treated or untreated 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.

POLLUTANT OF CONCERN — Sediment or a water quality measurement that addresses sediment (such as total suspended solids, turbidity or siltation) and any other pollutant that has been identified as a cause of impairment of any water body that will receive a discharge from the land development activity.

PREMISES — Any building, lot, parcel of land or portion of land, whether improved or unimproved, including adjacent sidewalks and parking strips.

PROJECT — Land development activity.

QUALIFIED INSPECTOR — 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, or other NYSDEC 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 hours of NYSDEC endorsed training in proper erosion and sediment control principles every three years. **[Added 11-18-2015 by L.L. No. 9-2015]**

QUALIFIED PROFESSIONAL — 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 NYSDEC endorsed individual(s). Individuals preparing SWPPPs that require post-construction stormwater management practices 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, in order to prepare a SWPPP that conforms to the NYSDEC's technical standard. All components of the SWPPP that involve the practice of engineering, as defined by the New York State Education Law, shall be prepared by, or under the direct supervision of, a professional engineer licensed to practice in the State of New York. **[Added 11-18-2015 by L.L. No. 9-2015]**

RECHARGE — The replenishment of underground water reserves.

SEDIMENT CONTROL — Measures that prevent eroded sediment from leaving the site.

SENSITIVE AREAS — Cold-water fisheries, shellfish beds, swimming beaches, groundwater recharge areas, water supply reservoirs, habitats for threatened, endangered or special concern species.

SPDES GENERAL PERMIT FOR CONSTRUCTION ACTIVITIES GP-15-002 — A permit under the New York State Pollutant Discharge Elimination System (SPDES) issued to developers of construction activities to regulate disturbance of one or more acres of land, or 5,000 square feet or more within the New York City east of Hudson Watershed. **[Amended 11-18-2015 by L.L. No. 9-2015]**

SPDES GENERAL PERMIT FOR STORMWATER DISCHARGES FROM MUNICIPAL SEPARATE STORMWATER SEWER SYSTEMS GP-15-003 — A permit under the New York State Pollutant Discharge Elimination System (SPDES) issued to municipalities to regulate discharges from municipal separate storm sewers for compliance with EPA-established water quality standards and/or to specify stormwater control standards. **[Amended 11-18-2015 by L.L. No. 9-2015]**

SPECIAL CONDITION —

- (1) Discharge compliance with water quality standards: the condition that applies where a municipality has been notified that the discharge of stormwater authorized under its MS4 permit may have caused or has the reasonable potential to cause or contribute to the violation of an applicable water quality standard. Under this condition, the municipality must take all necessary actions to ensure future discharges do not cause or contribute to a violation of water quality standards.
- (2) Section 303(d)-listed waters: the condition in the municipality's MS4 permit that applies where the MS4 discharges to a 303(d)-listed water. Under this condition, the stormwater management program must ensure no increase of the listed pollutant of concern to the 303(d)-listed water.
- (3) Total maximum daily load (TMDL) strategy: the condition in the municipality's MS4 permit where a TMDL including requirements for control of stormwater discharges has been approved by the EPA for a water body or watershed into which the MS4 discharges. If the discharge from the MS4 did not meet the TMDL stormwater allocations prior to September 10, 2007, the municipality was required to modify its stormwater management program to

ensure that reduction of the pollutant of concern specified in the TMDL is achieved.

- (4) The condition in the municipality's MS4 permit that applies if a TMDL is approved in the future by the EPA for any water body or watershed into which an MS4 discharges. Under this condition, the municipality must review the applicable TMDL to see if it includes requirements for control of stormwater discharges. If an MS4 is not meeting the TMDL stormwater allocations, the municipality must, within six months of the TMDL's approval, modify its stormwater management program to ensure that reduction of the pollutant of concern specified in the TMDL is achieved.

303(D) LIST — A list of all surface waters in the state for which beneficial uses of the water (drinking, recreation, aquatic habitat and industrial use) are impaired by pollutants, prepared periodically by the Department as required by Section 303(d) of the Clean Water Act. Section 303(d)-listed waters are estuaries, lakes and streams that fall short of state surface water quality standards and are not expected to improve within the next two years.

STABILIZATION — The use of practices that prevent exposed soil from eroding.

STABILIZED — That all soil disturbance activities have ceased and a uniform, perennial vegetative cover with a minimum density of 80% over the entire pervious surface has been established; or other equivalent stabilization measures, such as permanent landscape mulches, rock riprap or washed/crushed stone have been applied on all disturbed areas that are not covered by permanent structures, concrete or pavement. **[Added 11-18-2015 by L.L. No. 9-2015]**

STATE POLLUTANT DISCHARGE ELIMINATION SYSTEM (SPDES) STORMWATER DISCHARGE PERMIT — A permit issued by the Department that authorizes the discharge of pollutants to waters of the state.

STOP-WORK ORDER — An order issued which requires that all construction activity on a site be stopped.

STORMWATER — Rainwater, surface runoff, snowmelt and drainage.

STORMWATER HOT SPOT — A land use or activity that generates higher concentrations of hydrocarbons, trace metals or toxicants than are found in typical stormwater runoff, based on monitoring studies.

STORMWATER MANAGEMENT — The use of structural or nonstructural practices that are designed to reduce stormwater runoff and mitigate its adverse impacts on property, natural resources and the environment.

STORMWATER MANAGEMENT FACILITY — One or a series of stormwater management practices installed, stabilized and operating for the purpose of controlling stormwater runoff.

STORMWATER MANAGEMENT OFFICER (SMO) — An employee or officer designated by the municipality to accept and review stormwater pollution prevention plans, forward the plans to the applicable municipal board and inspect stormwater management practices. In addition, the SMO enforces the prohibition of illicit discharges, activities and connections to the separate storm sewer system.

STORMWATER MANAGEMENT PRACTICES (SMPS) — Measures, either

structural or nonstructural, that are determined to be the most-effective practical means of preventing flood damage and preventing or reducing point source or nonpoint source pollution inputs to stormwater runoff and water bodies.

STORMWATER POLLUTION PREVENTION PLAN (SWPPP) — A plan for controlling stormwater runoff and pollutants from a site during and after construction activities, prepared in conformance with this chapter, the SPDES General Permit for Construction Activities, and applicable NYSDEC technical standards.**[Amended 11-18-2015 by L.L. No. 9-2015]**

STORMWATER RUNOFF — Flow on the surface of the ground, resulting from precipitation.

SURFACE WATERS OF THE STATE OF NEW YORK — Lakes, bays, sounds, ponds, impounding reservoirs, springs, wells, 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 or underground waters), which are wholly or partially within or bordering the state or within its jurisdiction. Storm sewers and waste treatment systems, including treatment ponds or lagoons which also meet the criteria of this definition, are not waters of the state. This exclusion applies only to man-made bodies of water which neither were originally created in waters of the state (such as a disposal area in wetlands) nor resulted from impoundment of waters of the state.

TMDL — Total maximum daily load.

TOTAL MAXIMUM DAILY LOAD — The maximum amount of a pollutant to be allowed to be released into a water body so as not to impair uses of the water, allocated among the sources of that pollutant.

TRAINED CONTRACTOR — An employee from the contracting (construction) company that has received four hours of NYSDEC-endorsed training in proper erosion and sediment control principles. After receiving the initial training, the trained contractor shall receive four hours of training every three years. It can also mean an employee from the contracting (construction) company that meets the qualified inspector qualifications as defined herein.**[Added 11-18-2015 by L.L. No. 9-2015]**

WASTEWATER — Water that is not stormwater, is contaminated with pollutants, and is or will be discarded.

WATERCOURSE — A permanent or intermittent stream or other body of water, either natural or man-made, which gathers or carries surface water.

WATERWAY — A channel that directs surface runoff to a watercourse or to the public storm drain.

§ 267-5. Stormwater pollution prevention plans. [Amended 11-18-2015 by L.L. No. 9-2015]

- A. Stormwater pollution prevention plan requirement. No application for approval of a land development activity shall be reviewed until either the SMO or the

appropriate board has received a stormwater pollution prevention plan (SWPPP) prepared in accordance with the specifications in this chapter. For projects also requiring coverage under the SPDES General Permit for Construction Activities, applications must also be accompanied by all related NYSDEC forms and certifications.

- B. All SWPPPs shall be prepared by a qualified professional, as defined in § 267-4 of this chapter.
- C. All SWPPPs shall be prepared in conformance with this chapter, the SPDES General Permit for Construction Activities, and the NYSDEC technical standards, as applicable.
- D. Contents of stormwater pollution prevention plans.
 - (1) All SWPPPs shall provide the following background information and erosion and sediment controls:
 - (a) Background information about the scope of the project, including location, type and size of project;
 - (b) Site map/construction drawing(s) for the project, including a general location map. At a minimum, the site map should 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); wetlands and drainage patterns that could be affected by the construction activity; existing and final slopes; locations of off-site material, waste, borrow or equipment storage areas; and location(s) of the stormwater discharge(s);
 - (c) Description of the soil(s) present at the site;
 - (d) Construction phasing plan describing the intended sequence 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. Consistent with the New York Standards and Specifications for Erosion and Sediment Control (Erosion Control Manual), not more than five acres shall be disturbed at any one time unless a greater amount is determined necessary pursuant to an approved SWPPP;
 - (e) Description of the pollution prevention measures that will be used to control litter, construction chemicals and construction debris from becoming a pollutant source in stormwater runoff;
 - (f) Description of construction and waste materials expected to be stored on site, with updates as appropriate, and a description of controls to reduce pollutants from these materials, including storage practices to minimize exposure of the materials to stormwater, and spill prevention and response;
 - (g) Temporary and permanent structural and vegetative measures to be used for soil stabilization, runoff control and sediment control for each stage

of the project, from initial land clearing and grubbing to project closeout;

- (h) A site map/construction drawing(s) specifying the location(s), size(s) and length(s) of each erosion and sediment control practice;
 - (i) Dimensions, material specifications and installation details for all erosion and sediment control practices, including the siting and sizing of any temporary sediment basins;
 - (j) Temporary practices that will be converted to permanent control measures;
 - (k) Implementation schedule for staging temporary erosion and sediment control practices, including the timing of initial placement and the duration that each practice should remain in place;
 - (l) Maintenance schedule to ensure continuous and effective operation of the erosion and sediment control practice;
 - (m) Name(s) of the receiving water(s);
 - (n) Delineation of SWPPP implementation responsibilities for each part of the site;
 - (o) Description of structural practices designed to divert flows from exposed soils, store flows or otherwise limit runoff and the discharge of pollutants from exposed areas of the site to the degree attainable;
 - (p) Any existing data that describes the stormwater runoff at the site; and
 - (q) Post-construction stormwater quantity and quality controls, at the discretion of the SMO and/or the Town Engineer, may be required.
- (2) Post-construction stormwater management practice component.
- (a) All construction projects identified as needing post-construction stormwater management practices pursuant to the SPDES General Permit for Construction Activities shall prepare a SWPPP that includes practices designed in conformance with the Design Manual, including green infrastructure practices, in addition to the items listed under § 267-5D(1) above. Where post-construction stormwater management practices are not designed in conformance with this technical standard, the applicant must demonstrate equivalence to the technical standard.
 - (b) At a minimum, the post-construction stormwater practice component of the SWPPP shall include the following:
 - [1] Identification of all post-construction stormwater management practices to be constructed as part of the project.
 - [2] Site map/construction drawing(s) showing the specific location(s) and size(s) of each post-construction stormwater management practice.

- [3] Hydrologic and hydraulic analysis for all structural components of the stormwater management control system for the applicable design storms. The analysis shall include tributary area maps with two-foot contours for the predevelopment and post-development conditions.
 - [4] Detailed summary (including calculations) of the sizing criteria that was used to design all post-construction stormwater management practices. At a minimum, the summary shall address the required design criteria from the applicable chapter of the Design Manual; including the identification of and justification for any deviations from the Design Manual, and identification of any design criteria that are not required based on the design criteria or waiver criteria included in the Design Manual.
 - [5] Identification of any elements of the design that are not in conformance with the Design Manual. 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 standards.
 - [6] Comparison of post-development stormwater runoff conditions with predevelopment conditions.
 - [7] Dimensions, material specifications and installation details for each post-construction stormwater management practice or facility.
 - [8] Site maps must include existing topography with two-foot contours, a proposed grading plan with a limit of disturbance line, and the calculated area of disturbance in acres.
 - [9] 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 or facility. The plan shall identify the entity that will be responsible for the long-term operation and maintenance of each practice.
 - [10] Maintenance easements to ensure access to all stormwater management practices at the site for the purpose of inspection and repair. Easements shall be recorded on the plan and shall remain in effect with transfer of title to the property.
 - [11] Inspection and maintenance agreement binding on all subsequent landowners served by the on-site stormwater management measures in accordance with § 267-7 of this chapter.
- (3) Enhanced phosphorus. All projects that are required to conform to the Enhanced Phosphorus Removal Standards, pursuant to the SPDES General Permit for Construction Activities, shall prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the 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 D(2)(b)[1] through D(2)(b)[11] above.

- E. Other environmental permits. The applicant shall assure that all other applicable environmental permits have been or will be acquired for the land development activity prior to approval of the final stormwater design plan.
- F. Contractor certification.
 - (1) All certifications required pursuant to the SPDES General Permit for Construction Activities shall be submitted, endorsed and incorporated into the SWPPP.
 - (2) Each contractor and subcontractor identified in the SWPPP who will be responsible for installing, constructing, repairing, inspecting and maintaining the erosion and sediment control practices included in the SWPPP and the post-construction stormwater management practice installation must sign and date a copy of the following contractor certification statement before undertaking any land development activity: "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 most current version 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."
 - (3) The certification must include the name and title of the person providing the signature, address and telephone number of the contracting firm, the address (or other identifying description) of the site, and the date the certification is made.
 - (4) The certification statement(s) shall become part of the SWPPP for the land development activity.
- G. A copy of the SWPPP shall be retained at the site of the land development activity during construction from the date of initiation of construction activities to the date of final stabilization.

§ 267-6. Performance and design criteria.

All land development activities shall be subject to the following performance and design criteria:

- A. Technical standards. For the purpose of this chapter, the following documents shall serve as the official guides and specifications for stormwater management. Stormwater management practices that are designed and constructed in accordance with these technical documents shall be presumed to meet the standards imposed

by this chapter.

- (1) The New York State Stormwater Management Design Manual (New York State Department of Environmental Conservation, most current version or its successor, hereafter referred to as the "Design Manual").
 - (2) New York Standards and Specifications for Erosion and Sediment Control (Empire State Chapter of the Soil and Water Conservation Society, 2004, most current version or its successor, hereafter referred to as the "Erosion Control Manual").
- B. Equivalence to technical standards. Where stormwater management practices are not in accordance with technical standards, the applicant or developer must demonstrate equivalence to the technical standards set forth in Subsection A of this section, and the SWPPP shall be prepared by a licensed professional.
- C. Water quality standards. Any land development activity shall not cause an increase in turbidity that will result in substantial visible contrast to natural conditions in surface waters of the State of New York.

§ 267-7. Maintenance, inspection and repair of stormwater facilities.

- A. Maintenance and inspection during construction. [Amended 11-18-2015 by L.L. No. 9-2015]
- (1) Inspection requirements shall be as specified within the SPDES General Permit for Construction Activities.
 - (2) The applicant or developer of the land development activity or his or her representative 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 applicant or developer to achieve compliance with the conditions of this chapter. Sediment shall be removed from sediment traps or sediment ponds whenever their design capacity has been reduced by 50%.
 - (3) The applicant/developer must ensure that all erosion and sediment control practices and all post-construction stormwater management practices identified in the SWPPP are maintained in effective operating condition at all times.
 - (4) The applicant/developer shall inspect, in accordance with the requirements of the most current version of the Erosion Control Manual, the erosion and sediment controls identified in the SWPPP to ensure that they are being maintained in effective operating condition at all times. The applicant/developer 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 applicant/developer shall ensure that at least one trained contractor is on site on a daily basis when soil disturbance activities are being performed.
 - (5) For land development activities that disturb one or more acres of land, the

applicant shall have a qualified inspector conduct site inspections and document the effectiveness of all erosion and sediment control practices every seven calendar days. Inspection reports shall be prepared in compliance with standards outlined within the SPDES General Permit for Construction Activities. Inspection reports shall be maintained on site and copies furnished to the SMO upon request.

- (6) Inspections of any post-construction stormwater management practice that includes structural components shall be performed by a New York State licensed professional engineer.
- B. Maintenance easement(s). Prior to the issuance of any approval that has a stormwater management facility as one of the requirements, the applicant or developer must execute a maintenance easement agreement that shall be binding on all subsequent landowners served by the stormwater management facility. The easement shall provide for access to the facility at reasonable times for periodic inspection by the Town of North Castle to ensure that the facility is maintained in proper working condition to meet design standards and any other provisions established by this chapter. The easement shall be recorded by the grantor in the office of the County Clerk after approval by the North Castle Town Attorney.
- C. Maintenance after construction. The owner or operator of permanent stormwater management practices installed in accordance with this chapter shall ensure they are operated and maintained to achieve the goals of this chapter. Proper operation and maintenance also includes, as a minimum, the following:
- (1) A preventive/corrective maintenance program for all critical facilities and systems of treatment and control (or related appurtenances) which are installed or used by the owner or operator to achieve the goals of this chapter.
 - (2) Written procedures for operation and maintenance and training new maintenance personnel.
 - (3) Discharges from the SMPs shall not exceed design criteria or cause or contribute to water quality standard violations in accordance with § 267-6C of this chapter.
- D. Maintenance agreements. The Town of North Castle shall approve a formal maintenance agreement for stormwater management facilities binding on all subsequent landowners and recorded in the office of the County Clerk as a deed restriction on the property prior to final plan approval. The maintenance agreement shall be consistent with the terms and conditions of the Town of North Castle Stormwater Control Facility Maintenance Agreement on file with the Town Attorney. The Town of North Castle, in lieu of a maintenance agreement, at its sole discretion, may accept dedication of any existing or future stormwater management facility, provided such facility meets all the requirements of this chapter and includes adequate and perpetual access and sufficient area, by easement or otherwise, for inspection and regular maintenance.

§ 267-8. Inspections; performance guarantees; enforcement; penalties for offenses; fees.

A. Construction inspections.

- (1) Erosion and sediment control inspection.
 - (a) The Town of North Castle Stormwater Management Officer may require such inspections as necessary to determine compliance with this Chapter 267 of the Town Code and may either approve that portion of the work completed or notify the applicant wherein the work fails to comply with the requirements of this Chapter 267 of the Town Code and the stormwater pollution prevention plan (SWPPP) as approved. To obtain inspections, the applicant shall notify the Town of North Castle Building Department at least 48 hours before any of the following, as required by the Stormwater Management Officer:
 - [1] Start of construction.
 - [2] Installation of sediment and erosion control measures.
 - [3] Completion of site clearing.
 - [4] Completion of rough grading.
 - [5] Completion of final grading.
 - [6] Close of the construction season.
 - [7] Completion of final landscaping.
 - [8] Successful establishment of landscaping in public areas.
 - (b) If any violations are found, the applicant and developer shall be notified in writing of the nature of the violation and the required corrective actions. No further land development activity shall be conducted except for site stabilization until any violations are corrected and all work previously completed has received approval by the Stormwater Management Officer.
- (2) Stormwater management practice inspections. The Town of North Castle Stormwater Management Officer is responsible for conducting inspections of stormwater management practices (SMPs). All applicants are required to submit as-built plans for any stormwater management practices located on site after final construction is completed. The plan must show the final design specifications for all stormwater management facilities and must be certified by a professional engineer.
- (3) Inspection of stormwater facilities after project completion. Inspection programs shall be established on any reasonable basis, including but not limited to routine inspections; random inspections; inspections based upon complaints or other notice of possible violations; inspection of drainage basins or areas identified as higher-than-typical sources of sediment or other contaminants or pollutants; inspections of businesses or industries of a type associated with higher-than-usual discharges of contaminants or pollutants or with discharges of a type which are more likely than the typical discharge to

cause violations of state or federal water or sediment quality standards or the SPDES stormwater permit; and joint inspections with other agencies inspecting under environmental or safety laws. Inspections may include, but are not limited to, reviewing maintenance and repair records; sampling discharges, surface water, groundwater and material or water in drainage control facilities; and evaluating the condition of drainage control facilities and other stormwater management practices.

- (4) Submission of reports. The Town of North Castle Stormwater Management Officer may require monitoring and reporting from entities subject to Chapter 267 of the Town Code as are necessary to determine compliance with this Chapter 267 of the Town Code.
- (5) Right of entry for inspection. When any new stormwater management facility is installed on private property or when any new connection is made between private property and the public stormwater system, the landowner shall grant to the Town of North Castle the right to enter the property at reasonable times and in a reasonable manner for the purpose of inspection as specified in Subsection A(3) of this section.

B. Performance guarantee.

- (1) Construction completion guarantee. In order to ensure the full and faithful completion of all land development activities related to compliance with all conditions set forth by the Town of North Castle in its approval of the stormwater pollution prevention plan, the Town of North Castle may require the applicant or developer to provide, prior to construction, a performance bond, cash escrow or irrevocable letter of credit from an appropriate financial or surety institution which guarantees satisfactory completion of the project and names the Town of North Castle as the beneficiary. The security shall be in an amount to be determined by the Town of North Castle based on submission of final design plans, with reference to actual construction and landscaping costs. The performance guarantee shall remain in force until the surety is released from liability by the Town of North Castle, provided that such period shall not be less than one year from the date of final acceptance or such other certification that the facility(ies) has (have) been constructed in accordance with the approved plans and specifications and that a one-year inspection has been conducted and the facilities have been found to be acceptable to the Town of North Castle. Per annum interest on cash escrow deposits shall be reinvested in the account until the surety is released from liability.
- (2) Maintenance guarantee. Where stormwater management and erosion and sediment control facilities are to be operated and maintained by the developer or by a corporation that owns or manages a commercial or industrial facility, the developer, prior to construction, may be required to provide the Town of North Castle with an irrevocable letter of credit from an approved financial institution or surety to ensure proper operation and maintenance of all stormwater management and erosion control facilities both during and after construction and until the facilities are removed from operation. If the developer or landowner fails to properly operate and maintain stormwater

management and erosion and sediment control facilities, the Town of North Castle may draw upon the account to cover the costs of proper operation and maintenance, including engineering and inspection costs.

- (3) Recordkeeping. The Town of North Castle may require entities subject to Chapter 267 of the Town Code to maintain records demonstrating compliance with this Chapter 267 of the Town Code.

C. Enforcement and penalties.

- (1) Notice of violation. When the Town of North Castle determines that a land development activity is not being carried out in accordance with the requirements of this Chapter 267 of the Town Code, it may issue a written notice of violation to the landowner. The notice of violation shall contain:
 - (a) The name and address of the landowner, developer or applicant.
 - (b) The address, when available, or a description of the building, structure or land upon which the violation is occurring.
 - (c) A statement specifying the nature of the violation.
 - (d) A description of the remedial measures necessary to bring the land development activity into compliance with this chapter and a time schedule for the completion of such remedial action.
 - (e) A statement of the penalty or penalties that shall or may be assessed against the person to whom the notice of violation is directed.
 - (f) A statement that the determination of violation may be appealed to the municipality by filing a written notice of appeal within 15 days of service of notice of violation.
- (2) Stop-work orders. The Town of North Castle may issue a stop-work order for violations of Chapter 267 of the Town Code. Persons receiving a stop-work order shall be required to halt all land development activities, except those activities that address the violations leading to the stop-work order. The stop-work order shall be in effect until the Town of North Castle confirms that the land development activity is in compliance and the violation has been satisfactorily addressed. Failure to address a stop-work order in a timely manner may result in civil, criminal or monetary penalties in accordance with the enforcement measures authorized in this Chapter 267 of the Town Code.
- (3) Violations. Any land development activity that is commenced or is conducted contrary to this chapter may be restrained by injunction or otherwise abated in a manner provided by law.
- (4) Penalties. In addition to or as an alternative to any penalty provided herein or by law, any person who violates the provisions of this article shall be guilty of a violation punishable by a fine not exceeding \$350 or imprisonment for a period not to exceed six months, or both, for conviction of a first offense; for conviction of a second offense, both of which were committed within a period of five years, punishable by a fine not less than \$350 nor more than \$700 or

imprisonment for a period not to exceed six months, or both; and upon conviction for a third or subsequent offense, all of which were committed within a period of five years, punishable by a fine not less than \$700 nor more than \$1,000 or imprisonment for a period not to exceed six months, or both. However, for the purpose of conferring jurisdiction upon courts and judicial officers generally, violations of this article shall be deemed misdemeanors, and for such purpose only, all provisions of law relating to misdemeanors shall apply to such violations. Each week's continued violation shall constitute a separate additional violation.

- (5) Withholding of certificate of occupancy. If any building or land development activity is installed or conducted in violation of this chapter, the Stormwater Management Officer may prevent the occupancy of said building or land.
 - (6) Restoration of lands. Any violator may be required to restore land to its undisturbed condition. In the event that restoration is not undertaken within a reasonable time after notice, the Town of North Castle may take necessary corrective action, the cost of which shall become a lien upon the property until paid.
- D. Fees for services. The Town of North Castle may require any person undertaking land development activities regulated by Chapter 267 of the Town Code to pay reasonable costs at prevailing rates for review of SWPPPs, inspections or SMP maintenance performed by the Town of North Castle or performed by a third party for the Town of North Castle in such amounts as set forth in the Master Fee Schedule.¹ **[Amended 8-14-2013 by L.L. No. 7-2013]**

1. Editor's Note: See Ch. A370, Master Fee Schedule.

ARTICLE II
Illicit Discharges and Connections to Storm Sewer System

§ 267-9. Purpose.

The purpose of this article is to provide for the health, safety and general welfare of the citizens of the Town of North Castle through the regulation of nonstormwater discharges to the municipal separate storm sewer system (MS4) to the maximum extent practicable as required by federal and state law. This chapter establishes methods for controlling the introduction of pollutants into the MS4 in order to comply with requirements of the SPDES General Permit for Municipal Separate Storm Sewer Systems. The objectives of this article are:

- A. To meet the requirements of the SPDES General Permit for Stormwater Discharges from MS4s, Permit No. GP-15-003, or as amended or revised; [**Amended 11-18-2015 by L.L. No. 9-2015**]
- B. To regulate the contribution of pollutants to the MS4 since such systems are not designed to accept, process or discharge nonstormwater wastes;
- C. To prohibit illicit connections, activities and discharges to the MS4;
- D. To establish legal authority to carry out all inspection, surveillance and monitoring procedures necessary to ensure compliance with this chapter; and
- E. To promote public awareness of the hazards involved in the improper discharge of trash, yard waste, lawn chemicals, pet waste, wastewater, grease, oil, petroleum products, cleaning products, paint products, hazardous waste, sediment and other pollutants into the MS4.

§ 267-10. Applicability.

This article shall apply to all water entering the MS4 generated on any developed and undeveloped lands unless explicitly exempted by an authorized enforcement agency.

§ 267-11. Responsibility for administration.

The Stormwater Management Officer(s) [SMO(s)] shall administer, implement and enforce the provisions of this article. Such powers granted or duties imposed upon the authorized enforcement official may be delegated in writing by the SMO as may be authorized by the municipality.

§ 267-12. Discharge prohibitions.

- A. Prohibition of illegal discharges. No person shall discharge or cause to be discharged into the MS4 any materials other than stormwater except as provided in Subsection A(1). The commencement, conduct or continuance of any illegal discharge to the MS4 is prohibited except as described as follows:
 - (1) The following discharges are exempt from discharge prohibitions established by this chapter, unless the Department or the municipality has determined them to be substantial contributors of pollutants: waterline flushing or other

potable water sources; landscape irrigation or lawn watering; existing diverted stream flows; rising groundwater; uncontaminated groundwater infiltration to storm drains; uncontaminated pumped groundwater; foundation or footing drains; crawl space or basement sump pumps; air-conditioning condensate; irrigation water; springs; water from individual residential car washing; natural riparian habitat or wetland flows; dechlorinated swimming pool discharges; residential street wash water; water from firefighting activities; and any other water source not containing pollutants. Such exempt discharges shall be made in accordance with an appropriate plan for reducing pollutants.

- (2) Discharges approved in writing by the SMO to protect life or property from imminent harm or damage, provided that such approval shall not be construed to constitute compliance with other applicable laws and requirements, and further provided that such discharges may be permitted for a specified time period and under such conditions as the SMO may deem appropriate to protect such life and property while reasonably maintaining the purpose and intent of this chapter.
- (3) Dye testing in compliance with applicable state and local laws is an allowable discharge but requires a verbal notification to the SMO prior to the time of the test.
- (4) The prohibition shall not apply to any discharge permitted under an SPDES permit, waiver or waste discharge order issued to the discharger and administered under the authority of the Department, provided that the discharger is in full compliance with all requirements of the permit, waiver or order and other applicable laws and regulations, and provided that written approval has been granted for any discharge to the MS4.

B. Prohibition of illicit connections.

- (1) The construction, use, maintenance or continued existence of illicit connections to the MS4 is prohibited.
- (2) This prohibition expressly includes, without limitation, illicit connections made in the past, regardless of whether the connection was permissible under law or practices applicable or prevailing at the time of connection.
- (3) A person is considered to be in violation of this article if the person connects a line conveying sewage to the municipality's MS4 or allows such a connection to continue.

§ 267-13. Prohibition against activities contaminating stormwater.

- A. Activities that are subject to the requirement of this article are those types of activities that:
 - (1) Cause or contribute to a violation of the municipality's MS4 SPDES permit.
 - (2) Cause or contribute to the municipality being subject to a special condition, as defined in § 267-4 of this chapter.
- B. Upon notification to a person that he or she is engaged in activities that cause or

contribute to violations of the municipality's MS4 SPDES permit authorization, that person shall take all reasonable actions to correct such activities such that he or she no longer causes or contributes to violations of the municipality's MS4 SPDES permit authorization.

§ 267-14. Use of best management practices to prevent, control and reduce stormwater pollutants.

- A. Best management practices. Where the SMO has identified illicit discharges as defined in § 267-4 of this chapter or activities contaminating stormwater as defined in § 267-13, the municipality may require implementation of best management practices (BMPs) to control those illicit discharges and activities.
- (1) The owner or operator of a commercial or industrial establishment shall provide, at its own expense, reasonable protection from accidental discharge of prohibited materials or other wastes into the MS4 through the use of structural and nonstructural BMPs.
 - (2) Any person responsible for a property or premises, which is or may be the source of an illicit discharge as defined in § 267-4 of this chapter or an activity contaminating stormwater as defined in § 267-13, may be required to implement, at said person's expense, additional structural and nonstructural BMPs to reduce or eliminate the source of pollutant(s) to the MS4.
 - (3) Compliance with all terms and conditions of a valid SPDES permit authorizing the discharge of stormwater associated with industrial activity, to the extent practicable, shall be deemed compliance with the provisions of this article.

§ 267-15. Suspension of access to MS4; illicit discharges in emergency situations.

- A. The SMO may, without prior notice, suspend MS4 discharge access to a person when such suspension is necessary to stop an actual or threatened discharge which presents or may present imminent and substantial danger to the environment, to the health or welfare of persons, or to the MS4. The SMO shall notify the person of such suspension within a reasonable time thereafter, in writing, of the reasons for the suspension. If the violator fails to comply with a suspension order issued in an emergency, the SMO may take such steps as deemed necessary to prevent or minimize damage to the MS4 or to minimize danger to persons.
- B. Suspension due to the detection of illicit discharge. Any person discharging to the municipality's MS4 in violation of this chapter may have his or her MS4 access terminated if such termination would abate or reduce an illicit discharge. The SMO will notify a violator in writing of the proposed termination of its MS4 access and the reasons therefor. The violator may petition the SMO for a reconsideration and hearing. Access may be granted by the SMO if he/she finds that the illicit discharge has ceased and the discharger has taken steps to prevent its recurrence. Access may be denied if the SMO determines in writing that the illicit discharge has not ceased or is likely to recur. A person commits an offense if the person reinstates MS4 access to premises terminated pursuant to this section without the prior approval of the SMO.

§ 267-16. Industrial or construction activity discharges.

Any person subject to an industrial or construction activity SPDES stormwater discharge permit shall comply with all provisions of such permit. Proof of compliance with said permit may be required in a form acceptable to the Town prior to the allowing of discharges to the MS4.

§ 267-17. Access to facilities; monitoring of discharges.

- A. Applicability. This section applies to all facilities that the SMO must inspect to enforce any provision of this article or whenever the authorized enforcement agency has cause to believe that there exists, or potentially exists, in or upon any premises, any condition which constitutes a violation of this article.
- B. Access to facilities.
- (1) The SMO shall be permitted to enter and inspect facilities subject to regulation under this chapter as often as may be necessary to determine compliance with this article. If a discharger has security measures in force which require proper identification and clearance before entry into its premises, the discharger shall make the necessary arrangements to allow access to the SMO.
 - (2) Facility operators shall allow the SMO ready access to all parts of the premises for the purposes of inspection, sampling, examination and the copying of records as may be required to implement this article.
 - (3) The Town shall have the right to set up on any facility subject to this chapter such devices as are necessary in the opinion of the SMO to conduct monitoring and/or sampling of the facility's stormwater discharge.
 - (4) The Town has the right to require the facilities subject to this article to install monitoring equipment as is reasonably necessary to determine compliance with this article. The facility's sampling and monitoring equipment shall be maintained at all times in a safe and proper operating condition by the discharger at its own expense. All devices used to measure stormwater flow and quality shall be calibrated to ensure their accuracy.
 - (5) Unreasonable delays in allowing the Town access to a facility subject to this chapter are a violation of this article. A person who is the operator of a facility subject to this article commits an offense if the person denies the Town reasonable access to the facility for the purpose of conducting any activity authorized or required by this article.
 - (6) If the SMO has been refused access to any part of the premises from which stormwater is discharged and he/she is able to demonstrate probable cause to believe that there may be a violation of this article or that there is a need to inspect and/or sample as part of a routine inspection and sampling program designed to verify compliance with this article or any order issued hereunder, then the SMO may seek issuance of a search warrant from any court of competent jurisdiction.

§ 267-18. Notification of spills.

Notwithstanding other requirements of law, as soon as any person responsible for a facility or operation, or responsible for emergency response for a facility or operation, has information of any known or suspected release of materials which are resulting or may result in illegal discharges or pollutants discharging into the MS4, said person shall take all necessary steps to ensure the discovery, containment and cleanup of such release. In the event of such a release of hazardous materials, said person shall immediately notify emergency response agencies of the occurrence via emergency dispatch services. In the event of a release of nonhazardous materials, said person shall notify the Town in person or by telephone or facsimile no later than the next business day. Notifications in person or by telephone shall be confirmed by written notice addressed and mailed to the Town within three business days of the telephone notice. If the discharge of prohibited materials emanates from a commercial or industrial establishment, the owner or operator of such establishment shall also retain an on-site written record of the discharge and the actions taken to prevent its recurrence. Such records shall be retained for at least three years.

§ 267-19. Enforcement.**A. Notice of violation.**

- (1) When the Town's SMO finds that a person has violated a prohibition or failed to meet a requirement of this article, he/she may order compliance by written notice of violation to the responsible person. Such notice may require, without limitation:
 - (a) The elimination of illicit connections or discharges;
 - (b) That violating discharges, practices or operations shall cease and desist;
 - (c) The abatement or remediation of stormwater pollution or contamination hazards and the restoration of any affected property;
 - (d) The performance of monitoring, analyses and reporting;
 - (e) Payment of a fine; and
 - (f) The implementation of source control or treatment BMPs.
- (2) If abatement of a violation and/or restoration of affected property is required, the notice shall set forth a deadline within which such remediation or restoration must be completed. Said notice shall further advise that, should the violator fail to remediate or restore within the established deadline, the work will be done by a designated governmental agency or a contractor, and the expense thereof shall be charged to the violator.

- B. Penalties.** In addition to or as an alternative to any penalty provided herein or by law, any person who violates the provisions of this article shall be guilty of a violation punishable by a fine not exceeding \$1,000 or by imprisonment for a period not to exceed 15 days, or by both such fine and imprisonment. However, for the purposes of conferring jurisdiction upon courts and judicial officers generally, violations of this article shall be deemed misdemeanors, and for such purpose only,

all provisions of law relating to misdemeanors shall apply to such violations. Each day's continued violation shall constitute a separate additional violation. [Amended 4-29-2020 by L.L. No. 3-2020]

§ 267-20. Appeal of notice of violation.

Any person receiving a notice of violation may appeal the determination of the SMO to the Town Board within 15 days of its issuance, which Board shall hear the appeal within 30 days after the filing of the appeal and, within five days of making its decision, file its decision in the office of the Town Clerk and mail a copy of its decision by certified mail to the discharger.

§ 267-21. Corrective measures after appeal.

- A. If the violation has not been corrected pursuant to the requirements set forth in the notice of violation or, in the event of an appeal, within five business days of the decision of the municipal authority upholding the decision of the SMO, then the SMO shall request the owner's permission for access to the subject private property to take any and all measures reasonably necessary to abate the violation and/or restore the property.
- B. If refused access to the subject private property, the SMO may seek a warrant in a court of competent jurisdiction to be authorized to enter upon the property to determine whether a violation has occurred. Upon determination that a violation has occurred, the SMO may seek a court order to take any and all measures reasonably necessary to abate the violation and/or restore the property. The cost of implementing and maintaining such measures shall be the sole responsibility of the discharger.

§ 267-22. Injunctive relief.

It shall be unlawful for any person to violate any provision or fail to comply with any of the requirements of this article. If a person has violated or continues to violate the provisions of this article, the SMO may petition for a preliminary or permanent injunction restraining the person from activities which would create further violations or compelling the person to perform abatement or remediation of the violation.

§ 267-23. Alternative remedies.

- A. Where a person has violated a provision of this article, he/she may be eligible for alternative remedies in lieu of a civil penalty, upon recommendation of the Town Attorney and concurrence of the Town Building Inspector, where:
 - (1) The violation was unintentional.
 - (2) The violator has no history of previous violations of this article.
 - (3) Environmental damage was minimal.
 - (4) The violator acted quickly to remedy the violation.
 - (5) The violator cooperated in investigation and resolution.

B. Alternative remedies may consist of one or more of the following:

- (1) Attendance at compliance workshops.
- (2) Storm drain stenciling or storm drain marking.
- (3) River, stream or creek cleanup activities.

§ 267-24. Violations deemed public nuisance.

In addition to the enforcement processes and penalties provided, any condition caused or permitted to exist in violation of any of the provisions of this article is a threat to public health, safety and welfare and is declared and deemed a nuisance, and may be summarily abated or restored at the violator's expense, and/or a civil action to abate, enjoin or otherwise compel the cessation of such nuisance may be taken.

§ 267-25. Remedies not exclusive.

The remedies listed in this article are not exclusive of any other remedies available under any applicable federal, state or local law, and it is within the discretion of the authorized enforcement agency to seek cumulative remedies.

APPENDIX C

Owner/Operator Certification

Contractor Certification

CONTRACTOR CERTIFICATION

Contractor Certification Statement – All contractors and subcontractors identified in a SWPPP in accordance with Part III.E.1 (SPDES General Permit for Stormwater Runoff from Construction Activity, GP-0-20-001, January 2015) of this permit shall sign a copy of the following certification statement before undertaking any construction activity at the site identified in the SWPPP:

“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.”

Individual Contractor:

Name and Title (please print) _____ Signature of Contractor

_____ Name of Trained Individual

Company / Contracting Firm:

Name of Company _____

Address of Company _____

Telephone Number / Cell Number _____

Site Information:

Address of Site _____

Today's Date: _____

APPENDIX D

Construction Sequence

Construction Sequence

1. Prior to the beginning of any site work the major features of the construction must be field staked by a licensed surveyor. These include the building, limits of disturbance, utility lines, and Stormwater practices.
2. Prior to commencement of work, an on-site preconstruction meeting will be held. This will be attended by the Owner responsible for any fines or penalties, the Operator responsible for complying with the approved construction drawings including the E&SC plan and details, the Environmental Planner responsible for E&SC monitoring during construction, Town representatives from the Engineering Department and Code Enforcement.
3. Temporary erosion and sediment controls (E&SCs) as shown on the approved construction drawings shall be installed as detailed. Install temporary sediment traps. Construct the temporary sediment trap. The trap shall be constructed to size requirements shown on the Drawings and stabilized with seeding and erosion blankets. Upon full stabilization of site the sediment traps will be eliminated. Install permanent stabilization or vegetation where work is complete.
4. Remove existing vegetative cover and other surface features in the limit of construction only for work to be immediately done.
5. Excavate for and install foundation. Upon completion of foundation walls backfill and grade area around building.
6. Construction of the remainder of the building.
7. Install all underground utilities. Install the drainage system. Entry points to infiltrators to be blocked until site is stable. All erosion controls remain in place.
8. Construction of the remainder of the building can run simultaneously.
9. Install curbing and base course material for driveway and parking area.
10. Topsoil, rake, seed and mulch all disturbed areas.
11. Install walks, fences, other site improvements and final plantings.
12. Once all disturbances have received and final stabilization measures are established, unblock piping to drywells and remove the sediment trap. This shall be done during optimum weather conditions if possible to avoid sediment transport. This work shall not occur if precipitation is forecasted during the work.
13. Upon stabilization of all disturbed areas and approval from the Town representative remove all temporary erosion and sediment controls.

Use of erosion and sediment control structures and practices are important to maintaining site stability under runoff and during daily construction activities. Construction sequence should be staged with erosion and sediment controls as follows with all controls in place and implemented prior to respective infrastructure construction.

APPENDIX E

Soil Testing Data

WESTCHESTER COUNTY DEPARTMENT OF HEALTH
Bureau of Environmental Quality
25 Moore Ave
Mount Kisco, NY 10549

DESIGN DATA SHEET – SEPARATE SEWAGE SYSTEM FILE NO. _____

Owner Joseph & Celeste Rault Address 209 Bedford Banksville Road

Located at (Street) Hickory Kingdom Road Sec. 95.03 Block 2 Lot 35
(Indicate nearest cross street)

Municipality Town of North Castle Watershed Inland Long Island Sound Basin

SOIL PERCOLATION TEST DATA REQUIRED TO BE SUBMITTED WITH APPLICATION

Presoak Date: 10/5/22 Run Date: 10/6/2022

Hole #	CLOCK TIME				PERCOLATION			
Hole Number	Run No.	Start	Stop	Elapse Time Min.	Depth to Water From Ground Surface		Water Level Drop In Inches	Soil Rate Min/in Drop
					Start Inches	Stop Inches		
1 D=28"	1	1:30	1:34	4	22	23	1	4
	2	1:34	1:37	3	22	23	1	3
	3	1:37	1:40	3	22	23	1	3
	4							
	5							
2 D=28"	1	12:59	1:04	5	22	23	1	5
	2	1:05	1:09	4	22	23	1	4
	3	1:11	1:15	4	22	23	1	4
	4							
	5							
3 D=27"	1	1:19	1:22	3	21	22	1	3
	2	1:23	1:26	3	21	22	1	3
	3	1:27			21	22	1	3
	4							
	5							



Perc test done by: Site Design Consultants
Personnel present: Xinxin Li

Notes:

1. Tests to be repeated at same depth until approximately equal soil rates are obtained at each percolation test hole. All data to be submitted for review.
2. Depth measurements to be made from top of hole. DO NOT REPORT INCREMENTS OF LESS THAN ONE INCH.

WESTCHESTER COUNTY DEPARTMENT OF HEALTH
 Bureau of Environmental Quality
 25 Moore Ave
 Mount Kisco, NY 10549

DESIGN DATA SHEET – SEPARATE SEWAGE SYSTEM FILE NO. _____

Owner Joseph & Celeste Rault Address 209 Bedford Banksville Road

Located at (Street) Hickory Kingdom Road Sec. 95.03 Block 2 Lot 35
(Indicate nearest cross street)

Municipality Town of North Castle Watershed Inland Long Island Sound Basin

SOIL PERCOLATION TEST DATA REQUIRED TO BE SUBMITTED WITH APPLICATION

Presoak Date: 10/5/22 Run Date: 10/6/2022

Hole #	CLOCK TIME				PERCOLATION				
	Hole Number	Run No.	Start	Stop	Elapse Time Min.	Depth to Water From Ground Surface Start Inches	Stop Inches	Water Level Drop In Inches	Soil Rate Min/in Drop
4	1		9:06	9:10	4	22	23	1	4
	D= 30"	2	9:12	9:16	4	22	23	1	4
		3	9:17	9:21	4	22	23	1	4
		4							
		5							
5	1		9:08	9:13	5	22	23	1	5
	D=28"	2	9:14	9:18	4	22	23	1	4
		3	9:19	9:23	4	22	23	1	4
		4							
		5							
	1								
	2								
	3								
	4								
	5								

Perc test done by: Site Design Consultants
 WCDOH Personnel present: Xinxin Li

Notes:

- Tests to be repeated at same depth until approximately equal soil rates are obtained at each percolation test hole. All data to be submitted for review.
- Depth measurements to be made from top of hole. DO NOT REPORT INCREMENTS OF LESS THAN ONE INCH.

**TEST PIT DATA REQUIRED TO BE SUBMITTED WITH APPLICATION
DESCRIPTION OF SOILS ENCOUNTERED IN TEST HOLES**

DEPTH G.L.	HOLE NO. <u>1</u>	HOLE NO. <u>2</u>	HOLE NO. <u>3</u>	HOLE NO. _____
	6" Topsoil	6" Topsoil	6" Topsoil	
6"	6"-62" Mod. Sandy Loam	6"-42" Mod. Comp. Sandy Loam	6"-48" Mod. Comp. Sandy Loam	
12"				
18"				
24"				
30"				
36"				
42"		42"-86" Mod. Comp. Sandy Loam		
48"			48"-86" Loose Comp. Sand	
54"				
60"	62"-86" Loose Comp. Sand			
66"				
72"				
78"	No GW, No Ledge	No GW, No Ledge	No GW, No Ledge	
84"				
	Total Depth=86"	Total Depth=86"	Total Depth=86"	

WAS GROUNDWATER ENCOUNTERED? YES/NO _____
 INDICATE LEVEL AT WHICH GROUND WATER IS ENCOUNTERED _____ Ft/In
 INDICATED LEVEL FOR WHICH WATER LEVEL RISES AFTER BEING ENCOUNTERED _____ Ft/In
 DEEP TEST MADE BY Site Design Consultants DATE OF DEEP TESTS 10/6/2022
 WCDOH PERSONNEL PRESENT: Xinxin Li

DESIGN

Soil Rate Used 4 Min/1" Drop: S.D. Usable Area Provided _____

No. of Bedrooms _____ Septic Tank Capacity _____ Gals. Masonry _____ Metal _____

Absorption Area Prov. by _____ L.F. x 24" _____ width trench. Other _____

Name _____ Signature _____

Address _____ Seal _____

Westchester County Health Department

Soil Rate Approved _____ Sq. Ft./Gal Checked by _____

**TEST PIT DATA REQUIRED TO BE SUBMITTED WITH APPLICATION
DESCRIPTION OF SOILS ENCOUNTERED IN TEST HOLES**

DEPTH	HOLE NO. <u>4</u>	HOLE NO. <u>5</u>	HOLE NO. _____	HOLE NO. _____
G.L.	12" Topsoil	6" Topsoil		
6"				
12"				
18"	6"-48" Mod. Comp M-f Sands w/ some silt	12" to 48" Mod to Comp Sandy Silt Loam		
24"				
30"				
36"		36"-60" C-M Gray sands and gravel		
42"				
48"	84"-84" Gray C-M Sands			
54"				
60"		60" to 84" C-M Sands		
66"				
72"				
78"	No GW, No Ledge	No GW, No Ledge		
84"				
	Total Depth=84"	Total Depth=84"		

WAS GROUNDWATER ENCOUNTERED? YES/NO

INDICATE LEVEL AT WHICH GROUND WATER IS ENCOUNTERED _____ Ft/In

INDICATED LEVEL FOR WHICH WATER LEVEL RISES AFTER BEING ENCOUNTERED _____ Ft/In

DEEP TEST MADE BY Site Design Consultants DATE OF DEEP TESTS 10/6/2022 & 3/23/23

WCDOH PERSONNEL PRESENT: Xinxin Li

DESIGN

Soil Rate Used 4 Min/1" Drop: S.D. Usable Area Provided _____

No. of Bedrooms _____ Septic Tank Capacity _____ Gals. Masonry _____ Metal _____

Absorption Area Prov. by _____ L.F. x 24" _____ width trench. Other _____

Name _____

Signature _____

Address _____

Seal

Westchester County Health Department

Soil Rate Approved _____ Sq. Ft./Gal

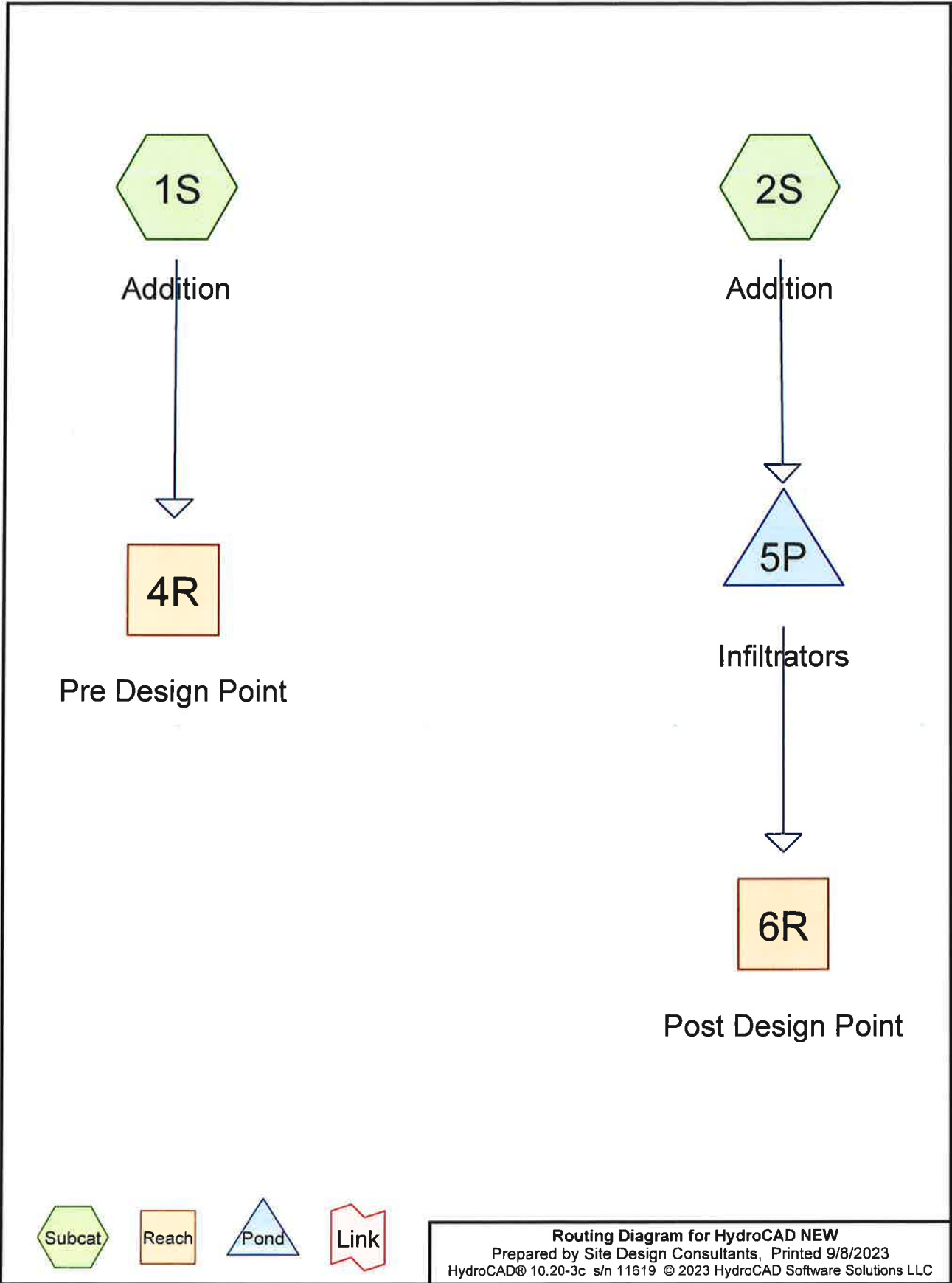
Checked by _____

S.D. 27.6

1/22

APPENDIX F

Hydrologic Analysis



Project Notes

Rainfall events imported from "NRCS-Rain.txt" for 7139 NY Westchester

Rainfall events imported from "NRCS-Rain.txt" for 7139 NY Westchester

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-Year	NRCC 24-hr	D	Default	24.00	1	2.78	2
2	2-Year	NRCC 24-hr	D	Default	24.00	1	3.41	2
3	10-Year	NRCC 24-hr	D	Default	24.00	1	5.13	2
4	25-Year	Type III 24-hr		Default	24.00	1	6.49	2
5	100-Year	NRCC 24-hr	D	Default	24.00	1	9.28	2

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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.720	61	>75% Grass cover, Good, HSG B (1S, 2S)
0.953	98	Paved parking, HSG B (1S, 2S)
1.672	82	TOTAL AREA

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Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
1.672	HSG B	1S, 2S
0.000	HSG C	
0.000	HSG D	
0.000	Other	
1.672		TOTAL AREA

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Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.720	0.000	0.000	0.000	0.720	>75% Grass cover, Good	1S, 2S
0.000	0.953	0.000	0.000	0.000	0.953	Paved parking	1S, 2S
0.000	1.672	0.000	0.000	0.000	1.672	TOTAL AREA	

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Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)	Node Name
1	5P	296.00	294.70	62.0	0.0210	0.012	0.0	4.0	0.0	

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NRCC 24-hr D 1-Year Rainfall=2.78"

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Time span=0.00-20.00 hrs, dt=0.05 hrs, 401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Addition

Runoff Area=36,427 sf 39.86% Impervious Runoff Depth>0.75"
Tc=5.0 min CN=76 Runoff=0.78 cfs 0.053 af

Subcatchment 2S: Addition

Runoff Area=36,427 sf 74.05% Impervious Runoff Depth>1.47"
Tc=5.0 min CN=88 Runoff=1.50 cfs 0.102 af

Reach 4R: Pre Design Point

Inflow=0.78 cfs 0.053 af
Outflow=0.78 cfs 0.053 af

Reach 6R: Post Design Point

Inflow=0.14 cfs 0.009 af
Outflow=0.14 cfs 0.009 af

Pond 5P: Infiltrators

Peak Elev=297.51' Storage=0.000 af Inflow=1.50 cfs 0.102 af
Discarded=1.35 cfs 0.093 af Primary=0.14 cfs 0.009 af Outflow=1.49 cfs 0.102 af

Total Runoff Area = 1.672 ac Runoff Volume = 0.155 af Average Runoff Depth = 1.11"
43.04% Pervious = 0.720 ac 56.96% Impervious = 0.953 ac

Summary for Subcatchment 1S: Addition

Runoff = 0.78 cfs @ 12.12 hrs, Volume= 0.053 af, Depth> 0.75"
 Routed to Reach 4R : Pre Design Point

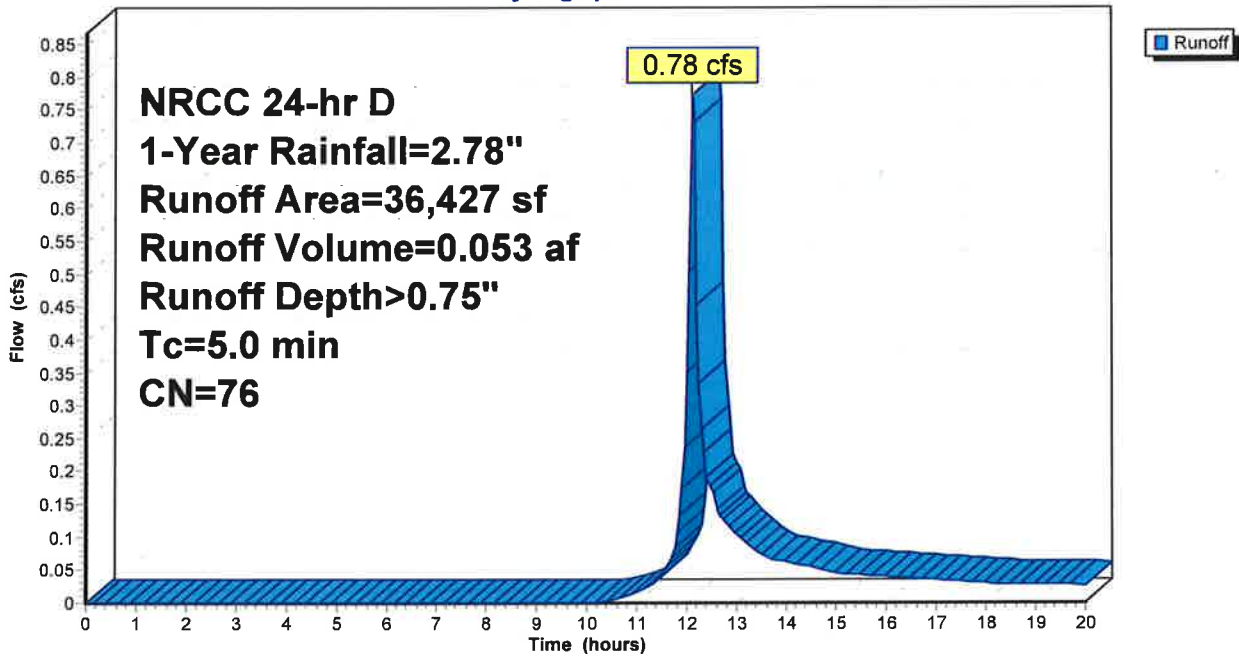
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs
 NRCC 24-hr D 1-Year Rainfall=2.78"

Area (sf)	CN	Description
14,518	98	Paved parking, HSG B
21,909	61	>75% Grass cover, Good, HSG B
36,427	76	Weighted Average
21,909		60.14% Pervious Area
14,518		39.86% Impervious Area

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

Subcatchment 1S: Addition

Hydrograph



Summary for Subcatchment 2S: Addition

Runoff = 1.50 cfs @ 12.11 hrs, Volume= 0.102 af, Depth> 1.47"
 Routed to Pond 5P : Infiltrators

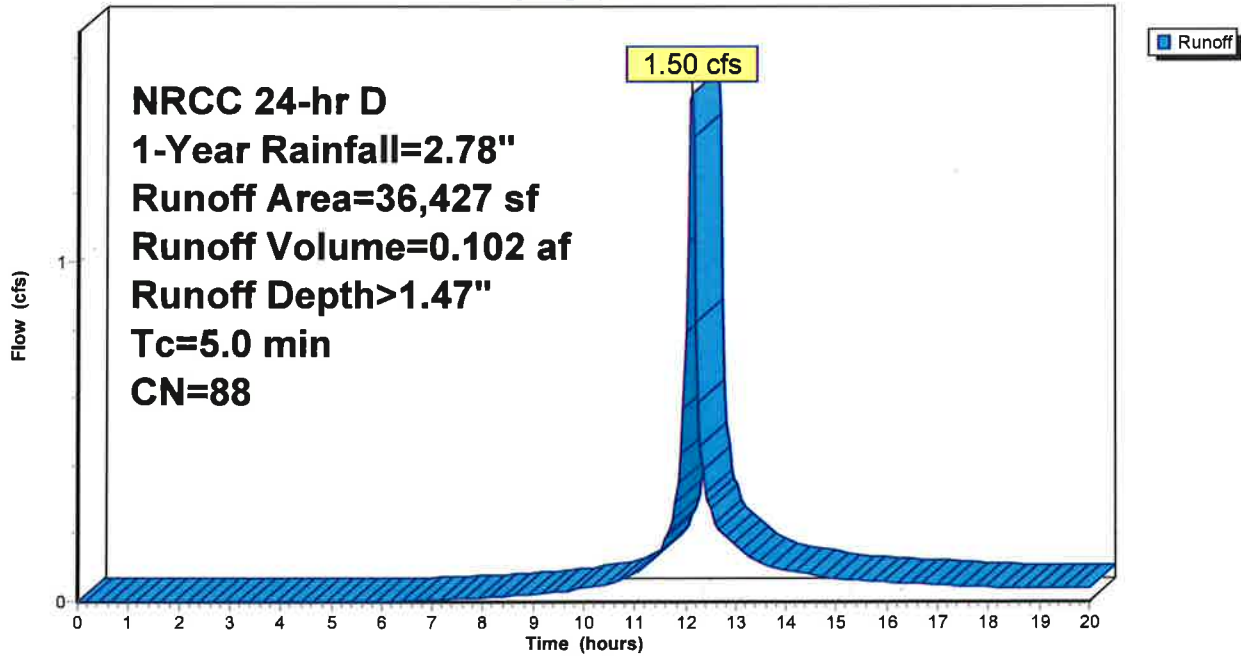
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs
 NRCC 24-hr D 1-Year Rainfall=2.78"

Area (sf)	CN	Description
26,976	98	Paved parking, HSG B
9,451	61	>75% Grass cover, Good, HSG B
36,427	88	Weighted Average
9,451		25.95% Pervious Area
26,976		74.05% Impervious Area

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

Subcatchment 2S: Addition

Hydrograph

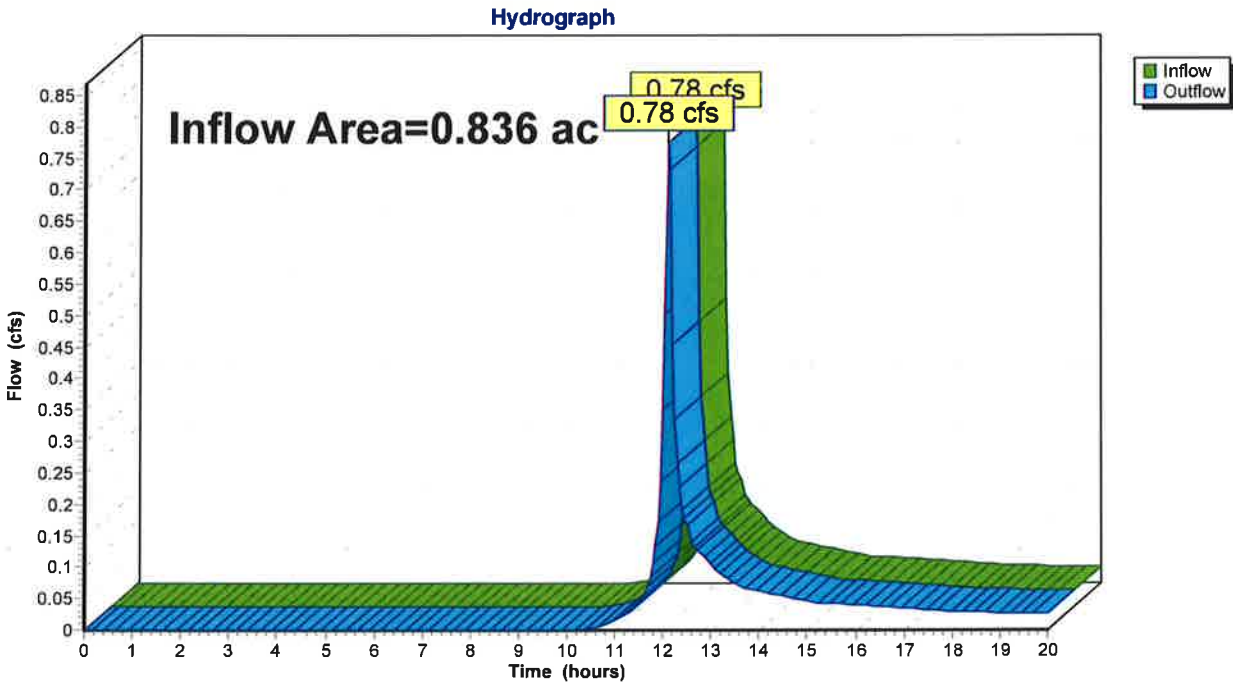


Summary for Reach 4R: Pre Design Point

Inflow Area = 0.836 ac, 39.86% Impervious, Inflow Depth > 0.75" for 1-Year event
Inflow = 0.78 cfs @ 12.12 hrs, Volume= 0.053 af
Outflow = 0.78 cfs @ 12.12 hrs, Volume= 0.053 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs

Reach 4R: Pre Design Point

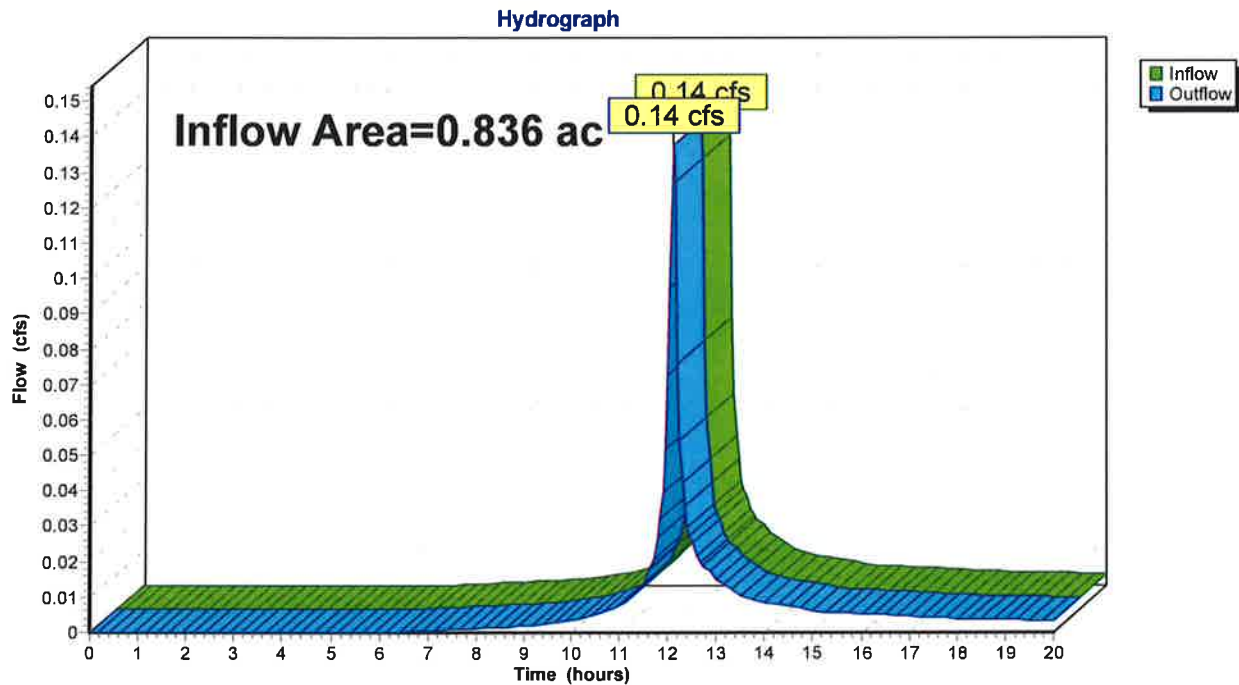


Summary for Reach 6R: Post Design Point

Inflow Area = 0.836 ac, 74.05% Impervious, Inflow Depth > 0.14" for 1-Year event
Inflow = 0.14 cfs @ 12.12 hrs, Volume= 0.009 af
Outflow = 0.14 cfs @ 12.12 hrs, Volume= 0.009 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs

Reach 6R: Post Design Point



Summary for Pond 5P: Infiltrators

Inflow Area = 0.836 ac, 74.05% Impervious, Inflow Depth > 1.47" for 1-Year event
 Inflow = 1.50 cfs @ 12.11 hrs, Volume= 0.102 af
 Outflow = 1.49 cfs @ 12.12 hrs, Volume= 0.102 af, Atten= 0%, Lag= 0.1 min
 Discarded = 1.35 cfs @ 12.12 hrs, Volume= 0.093 af
 Primary = 0.14 cfs @ 12.12 hrs, Volume= 0.009 af
 Routed to Reach 6R : Post Design Point

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 297.51' @ 12.12 hrs Surf.Area= 0.015 ac Storage= 0.000 af

Plug-Flow detention time= 0.0 min calculated for 0.102 af (100% of inflow)
 Center-of-Mass det. time= 0.0 min (790.2 - 790.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	297.50'	0.014 af	20.50'W x 32.10'L x 3.50'H Field A 0.053 af Overall - 0.017 af Embedded = 0.036 af x 40.0% Voids
#2A	298.00'	0.017 af	ADS_StormTech SC-740 +Cap x 16 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 16 Chambers in 4 Rows
		0.031 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	297.50'	240.000 in/hr Exfiltration over Surface area Phase-In= 0.01'
#2	Primary	296.00'	4.0" Round Culvert L= 62.0' CMP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 296.00' / 294.70' S= 0.0210 '/ Cc= 0.900 n= 0.012, Flow Area= 0.09 sf

Discarded OutFlow Max=3.66 cfs @ 12.12 hrs HW=297.51' (Free Discharge)
 ↑1=Exfiltration (Exfiltration Controls 3.66 cfs @ 0.01 fps)

Primary OutFlow Max=0.37 cfs @ 12.12 hrs HW=297.51' (Free Discharge)
 ↑2=Culvert (Barrel Controls 0.37 cfs @ 4.24 fps)

Pond 5P: Infiltrators - Chamber Wizard Field A

Chamber Model = ADS_StormTechSC-740 +Cap (ADS StormTech® SC-740 with cap length)

Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf

Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

4 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 30.10' Row Length +12.0" End Stone x 2 = 32.10' Base Length

4 Rows x 51.0" Wide + 6.0" Spacing x 3 + 12.0" Side Stone x 2 = 20.50' Base Width

6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

16 Chambers x 45.9 cf = 735.0 cf Chamber Storage

2,302.9 cf Field - 735.0 cf Chambers = 1,567.9 cf Stone x 40.0% Voids = 627.2 cf Stone Storage

Chamber Storage + Stone Storage = 1,362.2 cf = 0.031 af

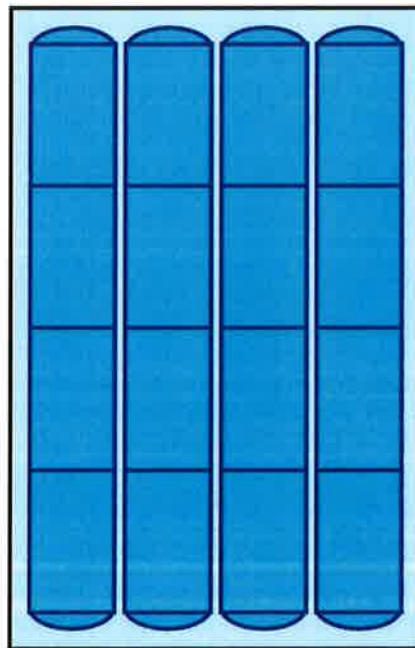
Overall Storage Efficiency = 59.2%

Overall System Size = 32.10' x 20.50' x 3.50'

16 Chambers

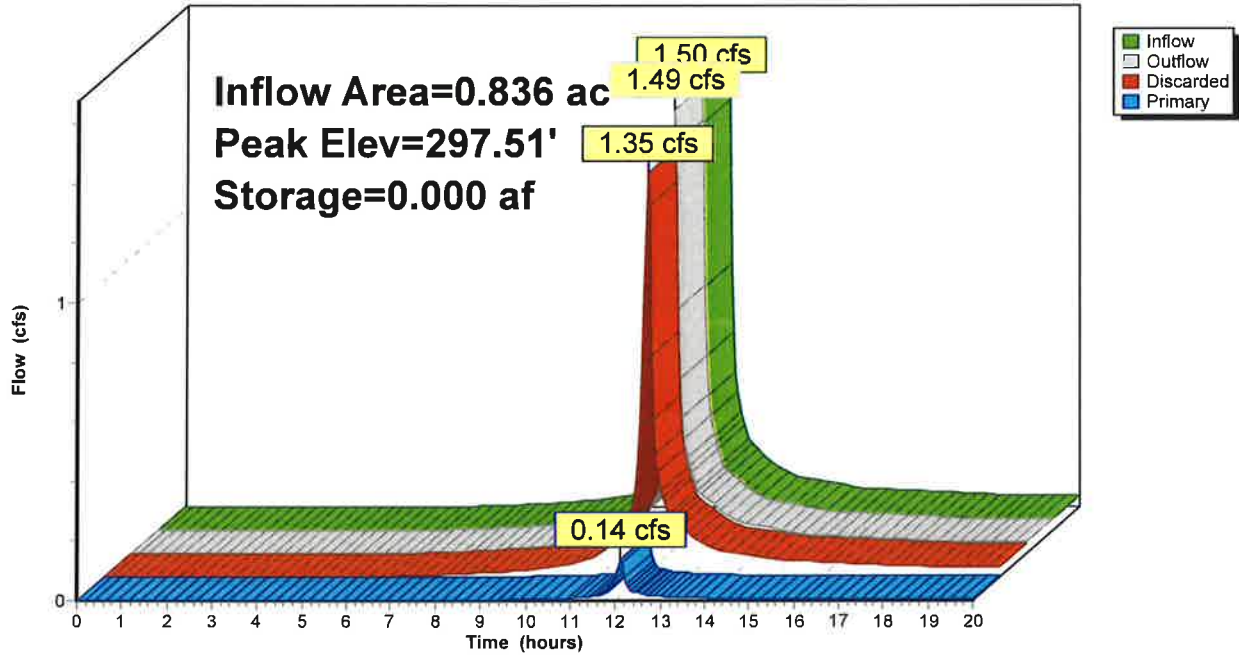
85.3 cy Field

58.1 cy Stone



Pond 5P: Infiltrators

Hydrograph



HydroCAD NEW

NRCC 24-hr D 2-Year Rainfall=3.41"

Prepared by Site Design Consultants

Printed 9/8/2023

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Time span=0.00-20.00 hrs, dt=0.05 hrs, 401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Addition Runoff Area=36,427 sf 39.86% Impervious Runoff Depth>1.14"
Tc=5.0 min CN=76 Runoff=1.19 cfs 0.080 af

Subcatchment 2S: Addition Runoff Area=36,427 sf 74.05% Impervious Runoff Depth>1.99"
Tc=5.0 min CN=88 Runoff=2.00 cfs 0.138 af

Reach 4R: Pre Design Point Inflow=1.19 cfs 0.080 af
Outflow=1.19 cfs 0.080 af

Reach 6R: Post Design Point Inflow=0.18 cfs 0.013 af
Outflow=0.18 cfs 0.013 af

Pond 5P: Infiltrators Peak Elev=297.52' Storage=0.000 af Inflow=2.00 cfs 0.138 af
Discarded=1.81 cfs 0.126 af Primary=0.18 cfs 0.013 af Outflow=1.99 cfs 0.138 af

Total Runoff Area = 1.672 ac Runoff Volume = 0.218 af Average Runoff Depth = 1.56"
43.04% Pervious = 0.720 ac 56.96% Impervious = 0.953 ac

Summary for Subcatchment 1S: Addition

Runoff = 1.19 cfs @ 12.12 hrs, Volume= 0.080 af, Depth> 1.14"
 Routed to Reach 4R : Pre Design Point

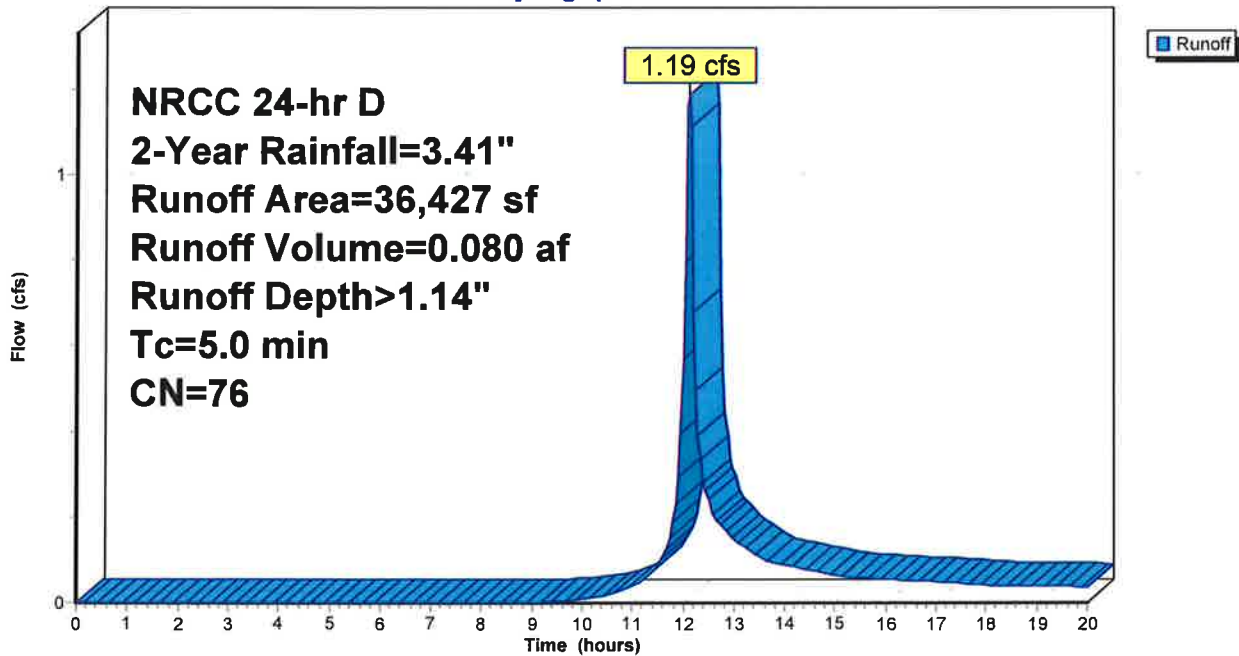
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs
 NRCC 24-hr D 2-Year Rainfall=3.41"

Area (sf)	CN	Description
14,518	98	Paved parking, HSG B
21,909	61	>75% Grass cover, Good, HSG B
36,427	76	Weighted Average
21,909		60.14% Pervious Area
14,518		39.86% Impervious Area

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

Subcatchment 1S: Addition

Hydrograph



Summary for Subcatchment 2S: Addition

Runoff = 2.00 cfs @ 12.11 hrs, Volume= 0.138 af, Depth> 1.99"

Routed to Pond 5P : Infiltrators

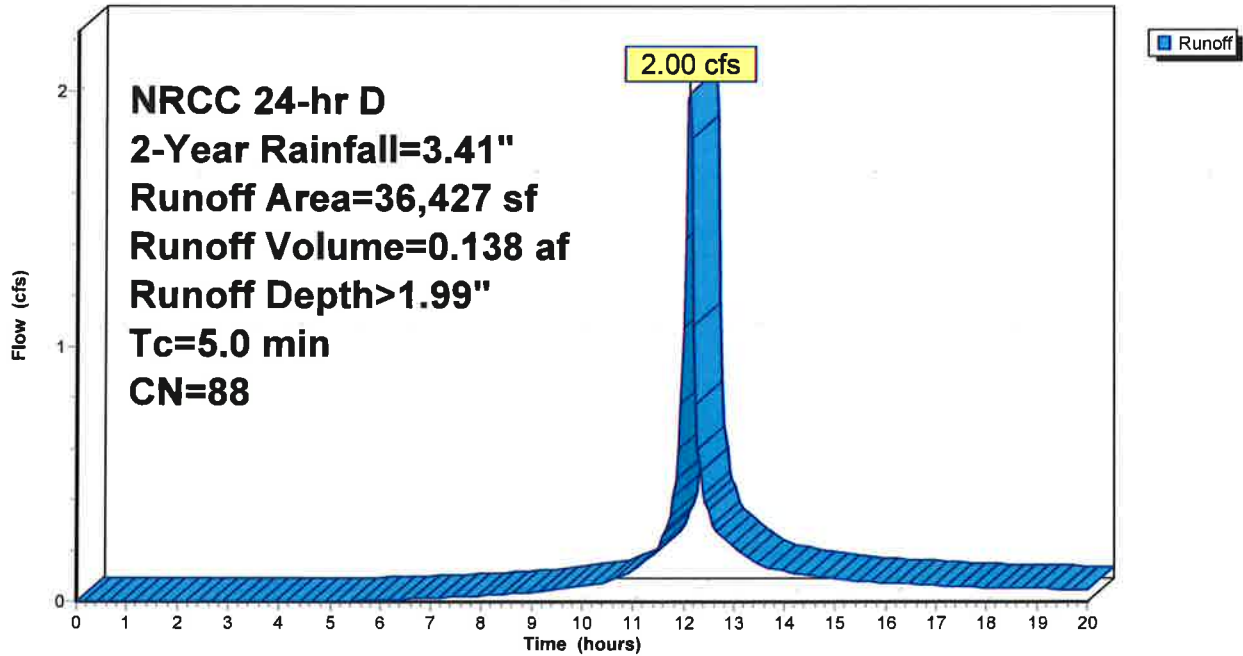
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 2-Year Rainfall=3.41"

Area (sf)	CN	Description
26,976	98	Paved parking, HSG B
9,451	61	>75% Grass cover, Good, HSG B
36,427	88	Weighted Average
9,451		25.95% Pervious Area
26,976		74.05% Impervious Area

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

Subcatchment 2S: Addition

Hydrograph

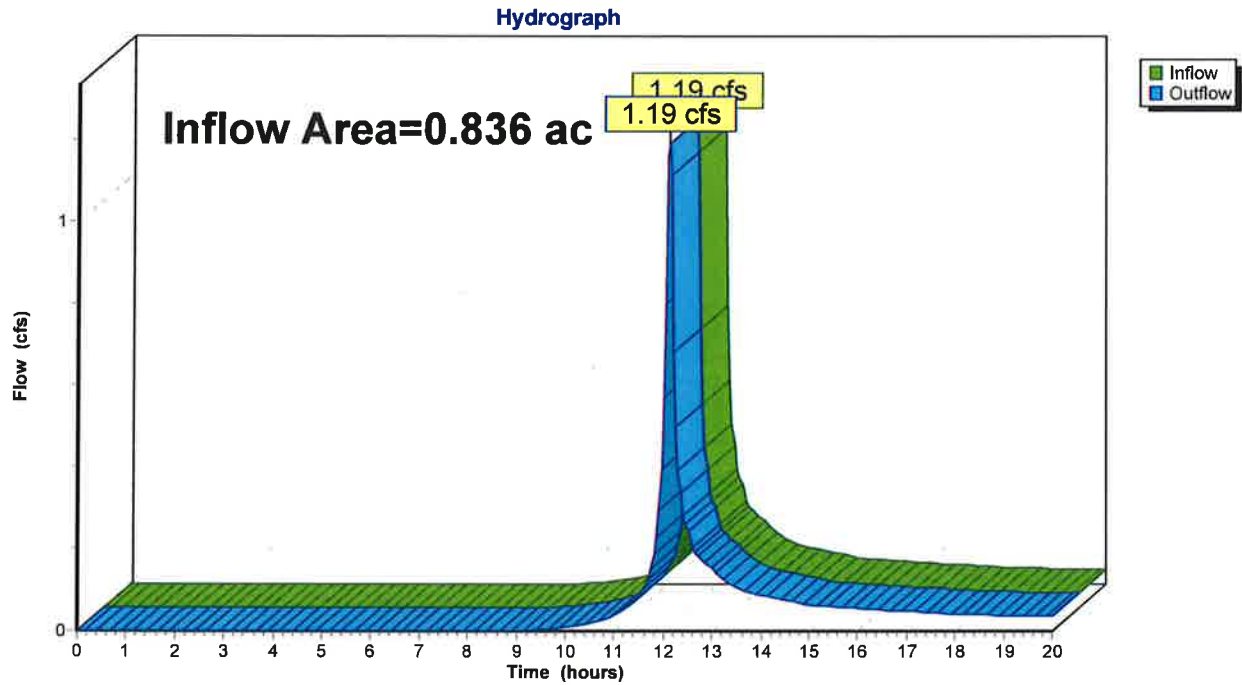


Summary for Reach 4R: Pre Design Point

Inflow Area = 0.836 ac, 39.86% Impervious, Inflow Depth > 1.14" for 2-Year event
Inflow = 1.19 cfs @ 12.12 hrs, Volume= 0.080 af
Outflow = 1.19 cfs @ 12.12 hrs, Volume= 0.080 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs

Reach 4R: Pre Design Point

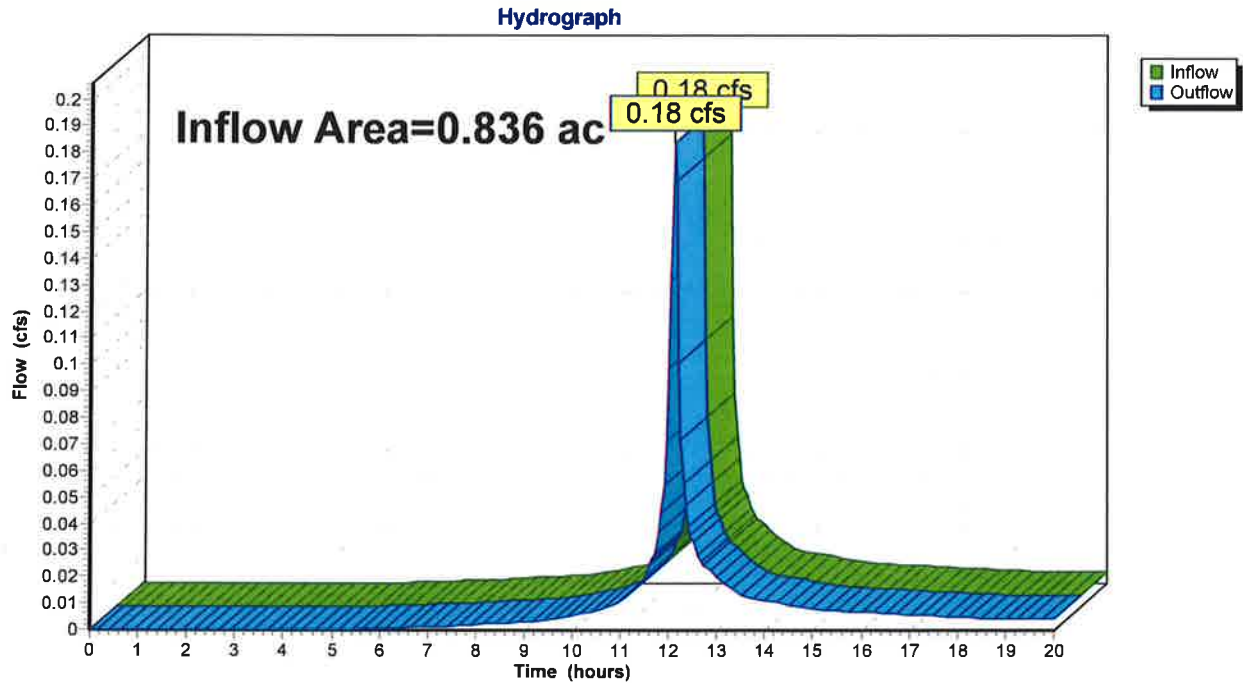


Summary for Reach 6R: Post Design Point

Inflow Area = 0.836 ac, 74.05% Impervious, Inflow Depth > 0.18" for 2-Year event
Inflow = 0.18 cfs @ 12.12 hrs, Volume= 0.013 af
Outflow = 0.18 cfs @ 12.12 hrs, Volume= 0.013 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs

Reach 6R: Post Design Point



Summary for Pond 5P: Infiltrators

Inflow Area = 0.836 ac, 74.05% Impervious, Inflow Depth > 1.99" for 2-Year event
 Inflow = 2.00 cfs @ 12.11 hrs, Volume= 0.138 af
 Outflow = 1.99 cfs @ 12.12 hrs, Volume= 0.138 af, Atten= 0%, Lag= 0.1 min
 Discarded = 1.81 cfs @ 12.12 hrs, Volume= 0.126 af
 Primary = 0.18 cfs @ 12.12 hrs, Volume= 0.013 af
 Routed to Reach 6R : Post Design Point

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 297.52' @ 12.12 hrs Surf.Area= 0.015 ac Storage= 0.000 af

Plug-Flow detention time= 0.0 min calculated for 0.138 af (100% of inflow)
 Center-of-Mass det. time= 0.0 min (781.1 - 781.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	297.50'	0.014 af	20.50'W x 32.10'L x 3.50'H Field A 0.053 af Overall - 0.017 af Embedded = 0.036 af x 40.0% Voids
#2A	298.00'	0.017 af	ADS_StormTech SC-740 +Cap x 16 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 16 Chambers in 4 Rows
		0.031 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	297.50'	240.000 in/hr Exfiltration over Surface area Phase-In= 0.01'
#2	Primary	296.00'	4.0" Round Culvert L= 62.0' CMP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 296.00' / 294.70' S= 0.0210 '/ Cc= 0.900 n= 0.012, Flow Area= 0.09 sf

Discarded OutFlow Max=3.66 cfs @ 12.12 hrs HW=297.52' (Free Discharge)
 ↑1=Exfiltration (Exfiltration Controls 3.66 cfs @ 0.01 fps)

Primary OutFlow Max=0.37 cfs @ 12.12 hrs HW=297.52' (Free Discharge)
 ↑2=Culvert (Barrel Controls 0.37 cfs @ 4.25 fps)

Pond 5P: Infiltrators - Chamber Wizard Field A

Chamber Model = ADS_StormTech SC-740 +Cap (ADS StormTech® SC-740 with cap length)

Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf

Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

4 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 30.10' Row Length +12.0" End Stone x 2 = 32.10' Base Length

4 Rows x 51.0" Wide + 6.0" Spacing x 3 + 12.0" Side Stone x 2 = 20.50' Base Width

6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

16 Chambers x 45.9 cf = 735.0 cf Chamber Storage

2,302.9 cf Field - 735.0 cf Chambers = 1,567.9 cf Stone x 40.0% Voids = 627.2 cf Stone Storage

Chamber Storage + Stone Storage = 1,362.2 cf = 0.031 af

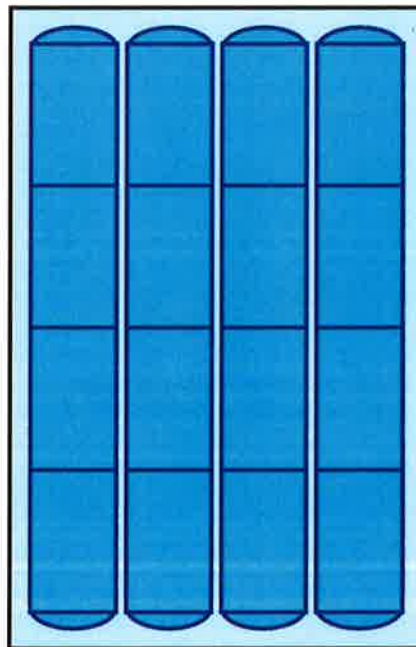
Overall Storage Efficiency = 59.2%

Overall System Size = 32.10' x 20.50' x 3.50'

16 Chambers

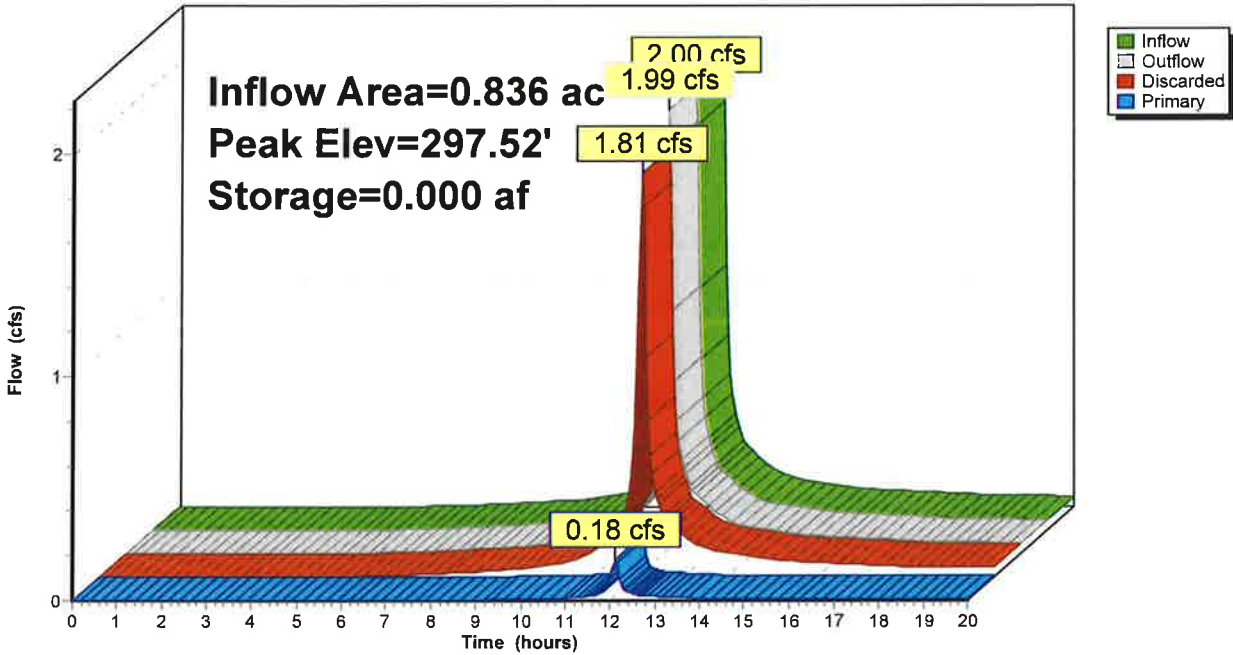
85.3 cy Field

58.1 cy Stone



Pond 5P: Infiltrators

Hydrograph



Time span=0.00-20.00 hrs, dt=0.05 hrs, 401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Addition

Runoff Area=36,427 sf 39.86% Impervious Runoff Depth>2.37"
Tc=5.0 min CN=76 Runoff=2.45 cfs 0.165 af

Subcatchment 2S: Addition

Runoff Area=36,427 sf 74.05% Impervious Runoff Depth>3.47"
Tc=5.0 min CN=88 Runoff=3.38 cfs 0.242 af

Reach 4R: Pre Design Point

Inflow=2.45 cfs 0.165 af
Outflow=2.45 cfs 0.165 af

Reach 6R: Post Design Point

Inflow=0.31 cfs 0.022 af
Outflow=0.31 cfs 0.022 af

Pond 5P: Infiltrators

Peak Elev=297.53' Storage=0.000 af Inflow=3.38 cfs 0.242 af
Discarded=3.06 cfs 0.220 af Primary=0.31 cfs 0.022 af Outflow=3.37 cfs 0.242 af

Total Runoff Area = 1.672 ac Runoff Volume = 0.407 af Average Runoff Depth = 2.92"
43.04% Pervious = 0.720 ac 56.96% Impervious = 0.953 ac

Summary for Subcatchment 1S: Addition

Runoff = 2.45 cfs @ 12.12 hrs, Volume= 0.165 af, Depth> 2.37"

Routed to Reach 4R : Pre Design Point

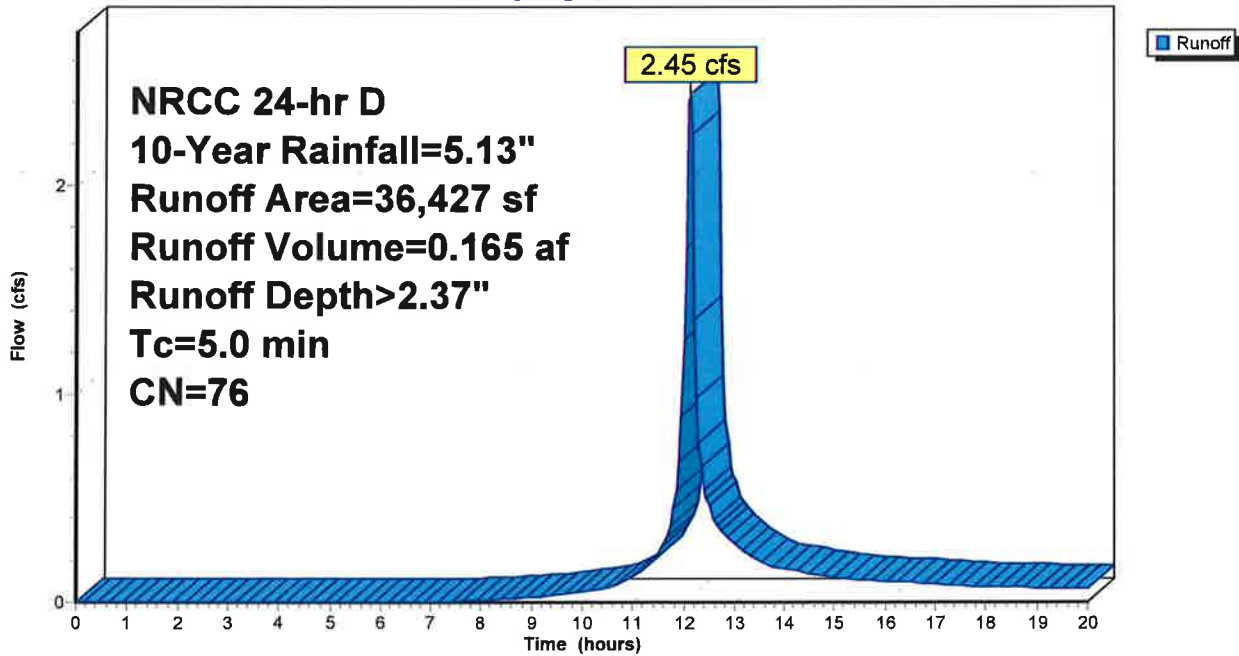
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 10-Year Rainfall=5.13"

Area (sf)	CN	Description
14,518	98	Paved parking, HSG B
21,909	61	>75% Grass cover, Good, HSG B
36,427	76	Weighted Average
21,909		60.14% Pervious Area
14,518		39.86% Impervious Area

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

Subcatchment 1S: Addition

Hydrograph



Summary for Subcatchment 2S: Addition

Runoff = 3.38 cfs @ 12.11 hrs, Volume= 0.242 af, Depth> 3.47"

Routed to Pond 5P : Infiltrators

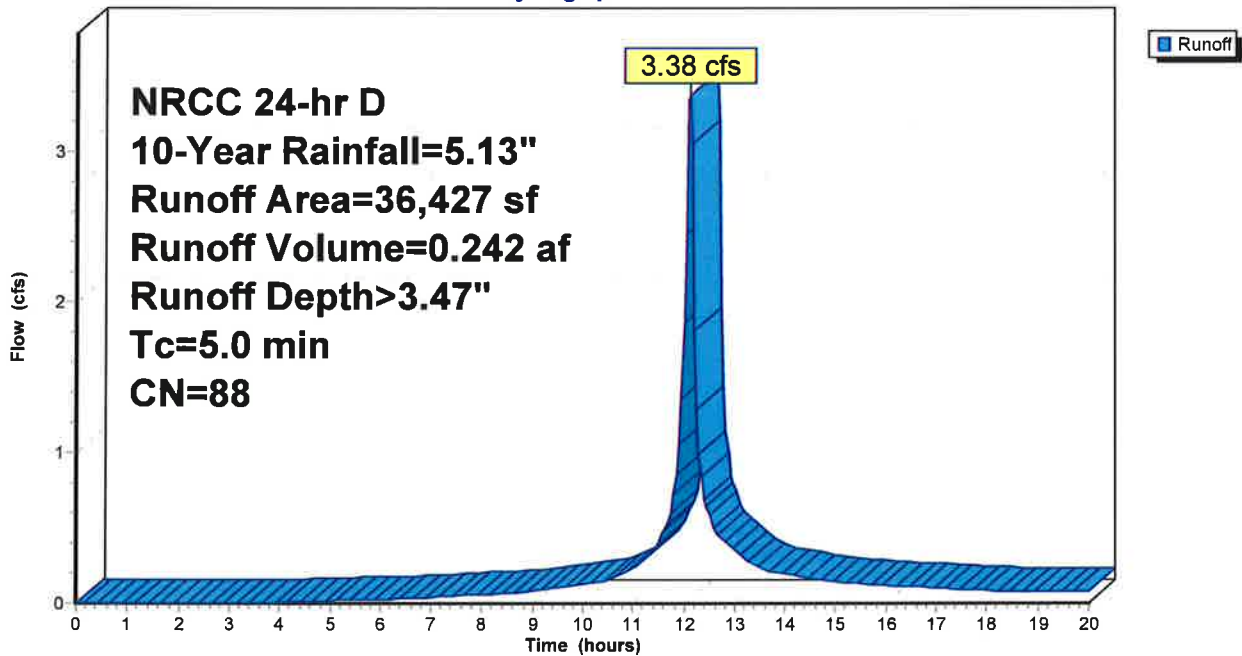
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 10-Year Rainfall=5.13"

Area (sf)	CN	Description
26,976	98	Paved parking, HSG B
9,451	61	>75% Grass cover, Good, HSG B
36,427	88	Weighted Average
9,451		25.95% Pervious Area
26,976		74.05% Impervious Area

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

Subcatchment 2S: Addition

Hydrograph

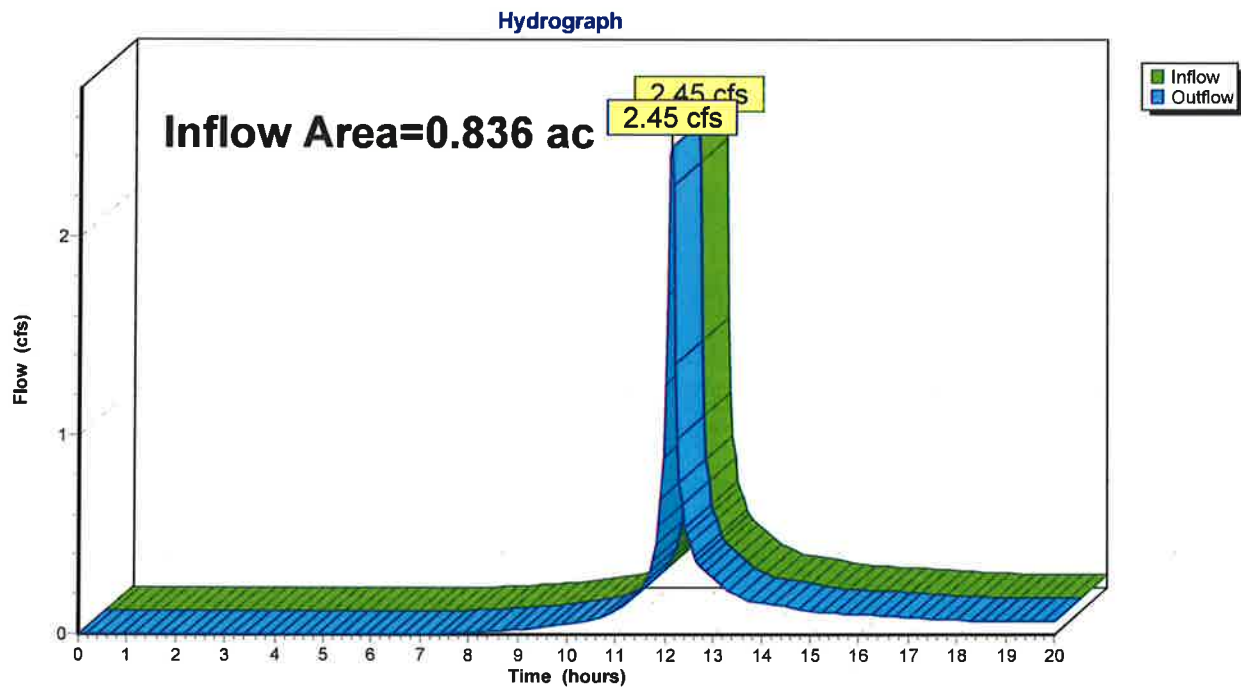


Summary for Reach 4R: Pre Design Point

Inflow Area = 0.836 ac, 39.86% Impervious, Inflow Depth > 2.37" for 10-Year event
Inflow = 2.45 cfs @ 12.12 hrs, Volume= 0.165 af
Outflow = 2.45 cfs @ 12.12 hrs, Volume= 0.165 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs

Reach 4R: Pre Design Point

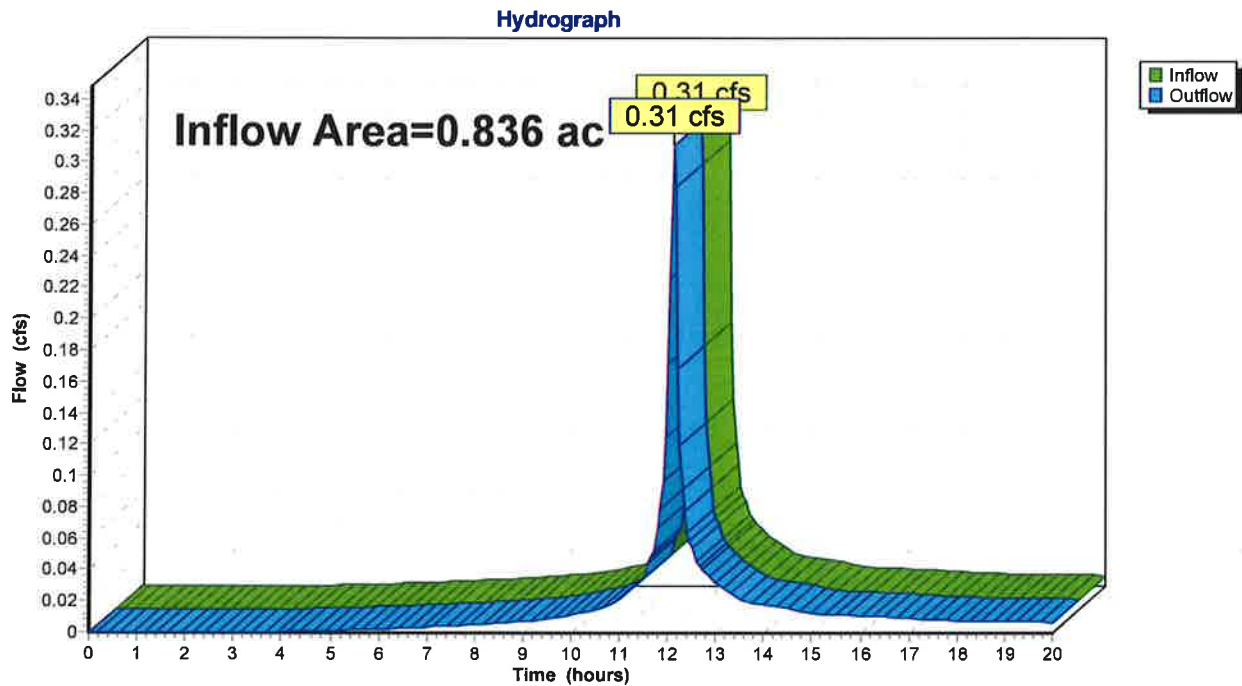


Summary for Reach 6R: Post Design Point

Inflow Area = 0.836 ac, 74.05% Impervious, Inflow Depth > 0.32" for 10-Year event
Inflow = 0.31 cfs @ 12.11 hrs, Volume= 0.022 af
Outflow = 0.31 cfs @ 12.11 hrs, Volume= 0.022 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs

Reach 6R: Post Design Point



Summary for Pond 5P: Infiltrators

Inflow Area = 0.836 ac, 74.05% Impervious, Inflow Depth > 3.47" for 10-Year event
 Inflow = 3.38 cfs @ 12.11 hrs, Volume= 0.242 af
 Outflow = 3.37 cfs @ 12.11 hrs, Volume= 0.242 af, Atten= 0%, Lag= 0.1 min
 Discarded = 3.06 cfs @ 12.11 hrs, Volume= 0.220 af
 Primary = 0.31 cfs @ 12.11 hrs, Volume= 0.022 af
 Routed to Reach 6R : Post Design Point

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 297.53' @ 12.11 hrs Surf.Area= 0.015 ac Storage= 0.000 af

Plug-Flow detention time= 0.0 min calculated for 0.241 af (100% of inflow)
 Center-of-Mass det. time= 0.0 min (763.9 - 763.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	297.50'	0.014 af	20.50'W x 32.10'L x 3.50'H Field A 0.053 af Overall - 0.017 af Embedded = 0.036 af x 40.0% Voids
#2A	298.00'	0.017 af	ADS_StormTech SC-740 +Cap x 16 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 16 Chambers in 4 Rows
		0.031 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	297.50'	240.000 in/hr Exfiltration over Surface area Phase-In= 0.01'
#2	Primary	296.00'	4.0" Round Culvert L= 62.0' CMP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 296.00' / 294.70' S= 0.0210 '/ Cc= 0.900 n= 0.012, Flow Area= 0.09 sf

Discarded OutFlow Max=3.66 cfs @ 12.11 hrs HW=297.53' (Free Discharge)
 ↑1=Exfiltration (Exfiltration Controls 3.66 cfs @ 0.01 fps)

Primary OutFlow Max=0.37 cfs @ 12.11 hrs HW=297.53' (Free Discharge)
 ↑2=Culvert (Barrel Controls 0.37 cfs @ 4.26 fps)

Pond 5P: Infiltrators - Chamber Wizard Field A

Chamber Model = ADS_StormTechSC-740 +Cap (ADS StormTech® SC-740 with cap length)

Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf

Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

4 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 30.10' Row Length +12.0" End Stone x 2 = 32.10' Base Length

4 Rows x 51.0" Wide + 6.0" Spacing x 3 + 12.0" Side Stone x 2 = 20.50' Base Width

6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

16 Chambers x 45.9 cf = 735.0 cf Chamber Storage

2,302.9 cf Field - 735.0 cf Chambers = 1,567.9 cf Stone x 40.0% Voids = 627.2 cf Stone Storage

Chamber Storage + Stone Storage = 1,362.2 cf = 0.031 af

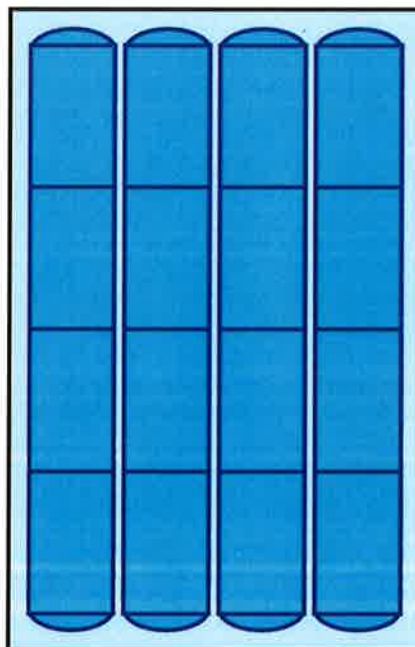
Overall Storage Efficiency = 59.2%

Overall System Size = 32.10' x 20.50' x 3.50'

16 Chambers

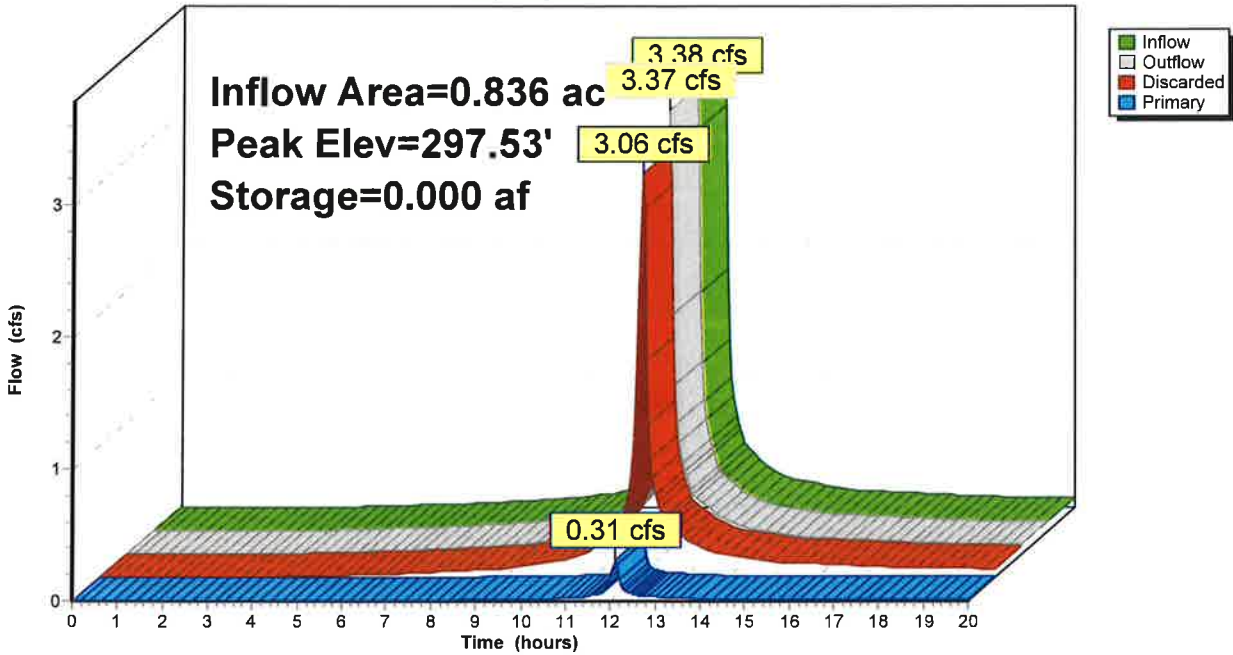
85.3 cy Field

58.1 cy Stone



Pond 5P: Infiltrators

Hydrograph



HydroCAD NEW

Type III 24-hr 25-Year Rainfall=6.49"

Prepared by Site Design Consultants

Printed 9/8/2023

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Time span=0.00-20.00 hrs, dt=0.05 hrs, 401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Addition Runoff Area=36,427 sf 39.86% Impervious Runoff Depth>3.56"
Tc=5.0 min CN=76 Runoff=3.73 cfs 0.248 af

Subcatchment 2S: Addition Runoff Area=36,427 sf 74.05% Impervious Runoff Depth>4.82"
Tc=5.0 min CN=88 Runoff=4.83 cfs 0.336 af

Reach 4R: Pre Design Point Inflow=3.73 cfs 0.248 af
Outflow=3.73 cfs 0.248 af

Reach 6R: Post Design Point Inflow=0.41 cfs 0.031 af
Outflow=0.41 cfs 0.031 af

Pond 5P: Infiltrators Peak Elev=298.12' Storage=0.004 af Inflow=4.83 cfs 0.336 af
Discarded=3.66 cfs 0.305 af Primary=0.41 cfs 0.031 af Outflow=4.07 cfs 0.336 af

Total Runoff Area = 1.672 ac Runoff Volume = 0.584 af Average Runoff Depth = 4.19"
43.04% Pervious = 0.720 ac 56.96% Impervious = 0.953 ac

Summary for Subcatchment 1S: Addition

Runoff = 3.73 cfs @ 12.08 hrs, Volume= 0.248 af, Depth> 3.56"
 Routed to Reach 4R : Pre Design Point

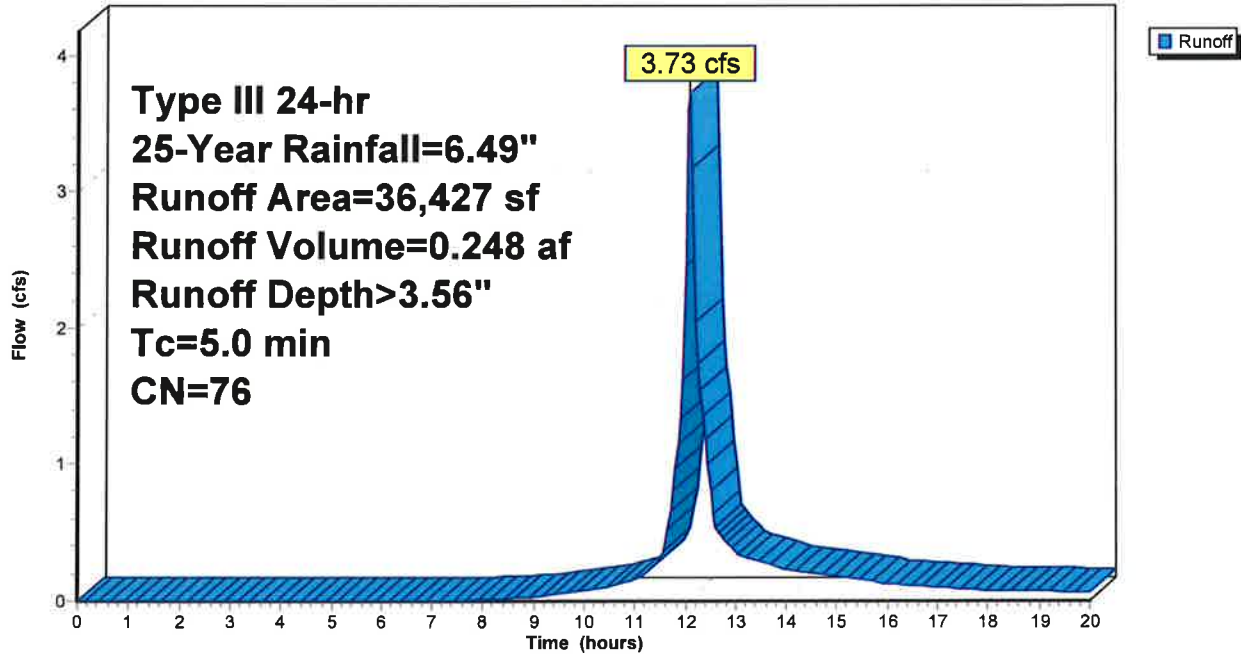
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 25-Year Rainfall=6.49"

Area (sf)	CN	Description
14,518	98	Paved parking, HSG B
21,909	61	>75% Grass cover, Good, HSG B
36,427	76	Weighted Average
21,909		60.14% Pervious Area
14,518		39.86% Impervious Area

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

Subcatchment 1S: Addition

Hydrograph



Summary for Subcatchment 2S: Addition

Runoff = 4.83 cfs @ 12.07 hrs, Volume= 0.336 af, Depth> 4.82"
 Routed to Pond 5P : Infiltrators

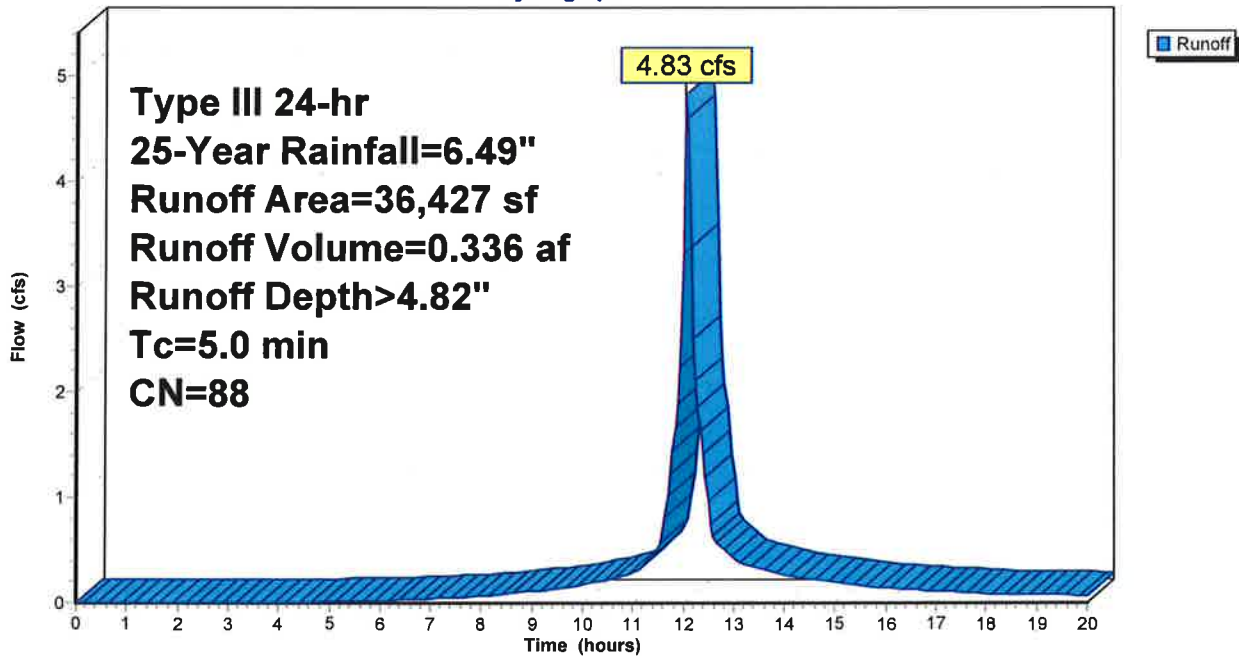
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 25-Year Rainfall=6.49"

Area (sf)	CN	Description
26,976	98	Paved parking, HSG B
9,451	61	>75% Grass cover, Good, HSG B
36,427	88	Weighted Average
9,451		25.95% Pervious Area
26,976		74.05% Impervious Area

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

Subcatchment 2S: Addition

Hydrograph

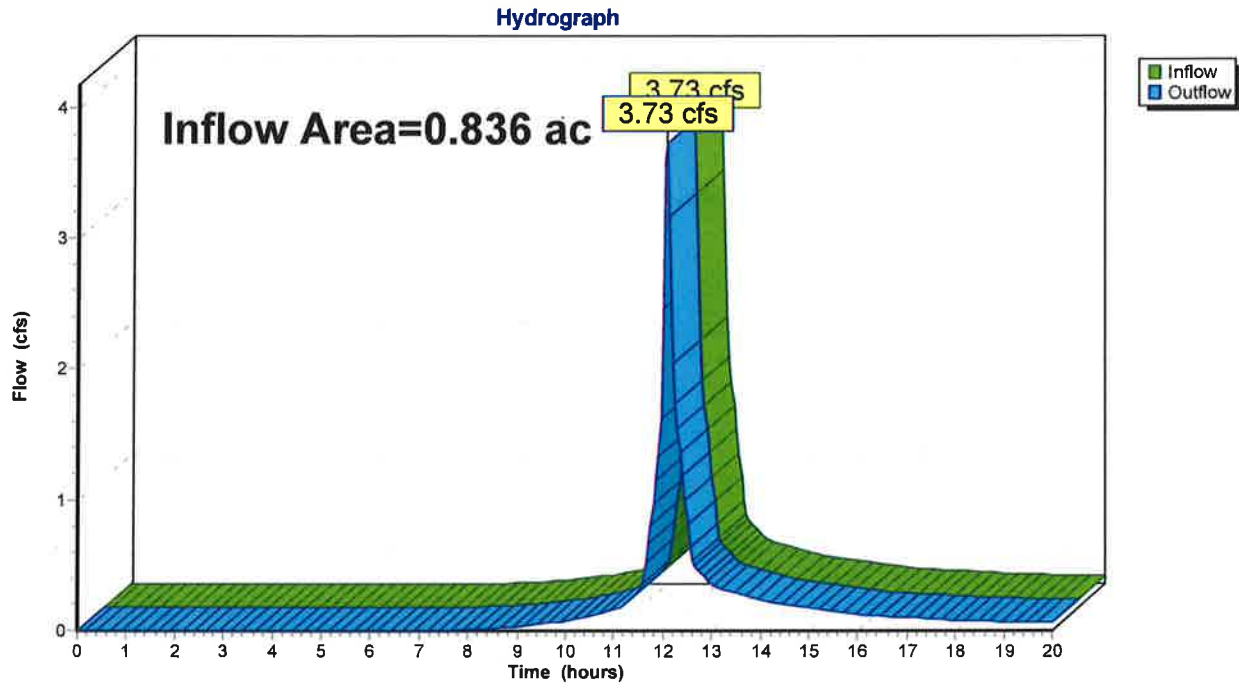


Summary for Reach 4R: Pre Design Point

Inflow Area = 0.836 ac, 39.86% Impervious, Inflow Depth > 3.56" for 25-Year event
Inflow = 3.73 cfs @ 12.08 hrs, Volume= 0.248 af
Outflow = 3.73 cfs @ 12.08 hrs, Volume= 0.248 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs

Reach 4R: Pre Design Point

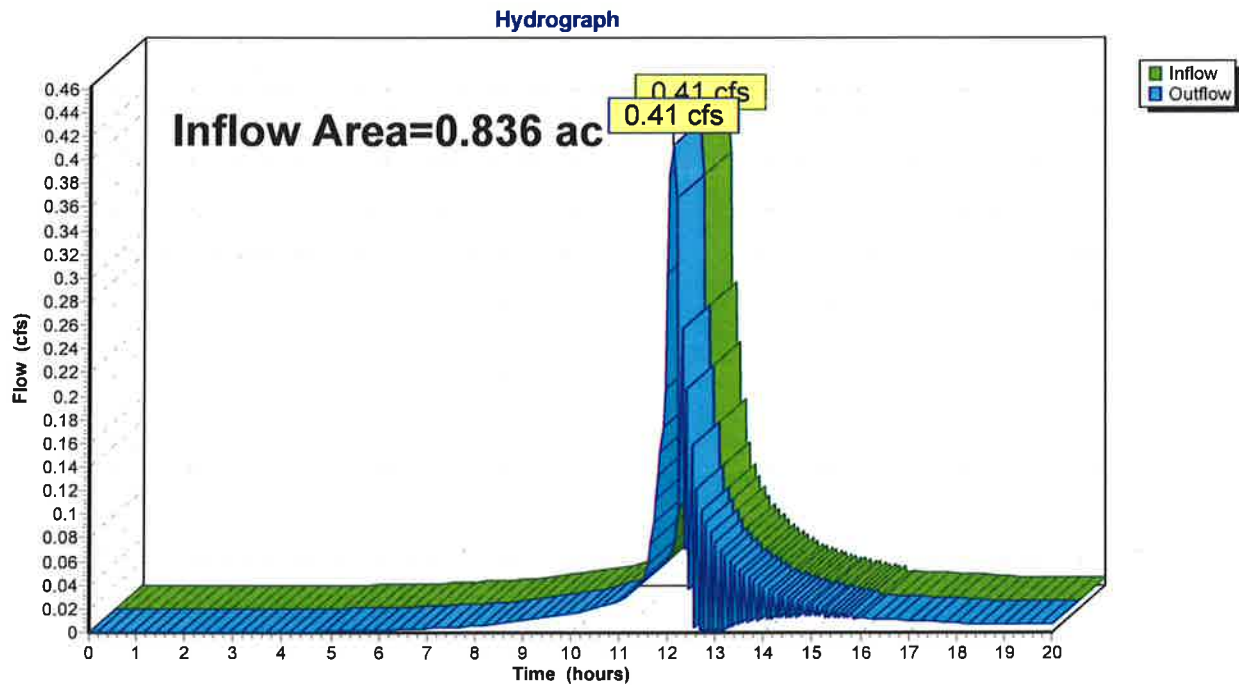


Summary for Reach 6R: Post Design Point

Inflow Area = 0.836 ac, 74.05% Impervious, Inflow Depth > 0.45" for 25-Year event
Inflow = 0.41 cfs @ 12.12 hrs, Volume= 0.031 af
Outflow = 0.41 cfs @ 12.12 hrs, Volume= 0.031 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs

Reach 6R: Post Design Point



Summary for Pond 5P: Infiltrators

Inflow Area = 0.836 ac, 74.05% Impervious, Inflow Depth > 4.82" for 25-Year event
 Inflow = 4.83 cfs @ 12.07 hrs, Volume= 0.336 af
 Outflow = 4.07 cfs @ 12.12 hrs, Volume= 0.336 af, Atten= 16%, Lag= 3.0 min
 Discarded = 3.66 cfs @ 12.05 hrs, Volume= 0.305 af
 Primary = 0.41 cfs @ 12.12 hrs, Volume= 0.031 af
 Routed to Reach 6R : Post Design Point

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 298.12' @ 12.12 hrs Surf.Area= 0.015 ac Storage= 0.004 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 0.1 min (758.1 - 758.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	297.50'	0.014 af	20.50'W x 32.10'L x 3.50'H Field A 0.053 af Overall - 0.017 af Embedded = 0.036 af x 40.0% Voids
#2A	298.00'	0.017 af	ADS_StormTech SC-740 +Cap x 16 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 16 Chambers in 4 Rows
		0.031 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	297.50'	240.000 in/hr Exfiltration over Surface area Phase-In= 0.01'
#2	Primary	296.00'	4.0" Round Culvert L= 62.0' CMP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 296.00' / 294.70' S= 0.0210 '/ Cc= 0.900 n= 0.012, Flow Area= 0.09 sf

Discarded OutFlow Max=3.66 cfs @ 12.05 hrs HW=297.76' (Free Discharge)
 ↑1=Exfiltration (Exfiltration Controls 3.66 cfs @ 0.01 fps)

Primary OutFlow Max=0.41 cfs @ 12.12 hrs HW=298.07' (Free Discharge)
 ↑2=Culvert (Barrel Controls 0.41 cfs @ 4.70 fps)

Pond 5P: Infiltrators - Chamber Wizard Field A

Chamber Model = ADS_StormTechSC-740 +Cap (ADS StormTech®SC-740 with cap length)

Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf

Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

4 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 30.10' Row Length +12.0" End Stone x 2 = 32.10' Base Length

4 Rows x 51.0" Wide + 6.0" Spacing x 3 + 12.0" Side Stone x 2 = 20.50' Base Width

6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

16 Chambers x 45.9 cf = 735.0 cf Chamber Storage

2,302.9 cf Field - 735.0 cf Chambers = 1,567.9 cf Stone x 40.0% Voids = 627.2 cf Stone Storage

Chamber Storage + Stone Storage = 1,362.2 cf = 0.031 af

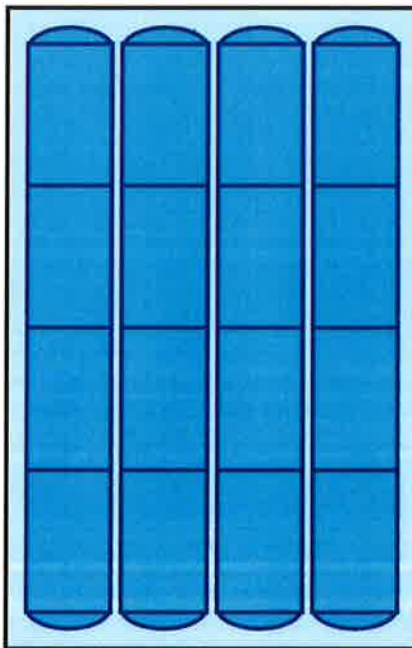
Overall Storage Efficiency = 59.2%

Overall System Size = 32.10' x 20.50' x 3.50'

16 Chambers

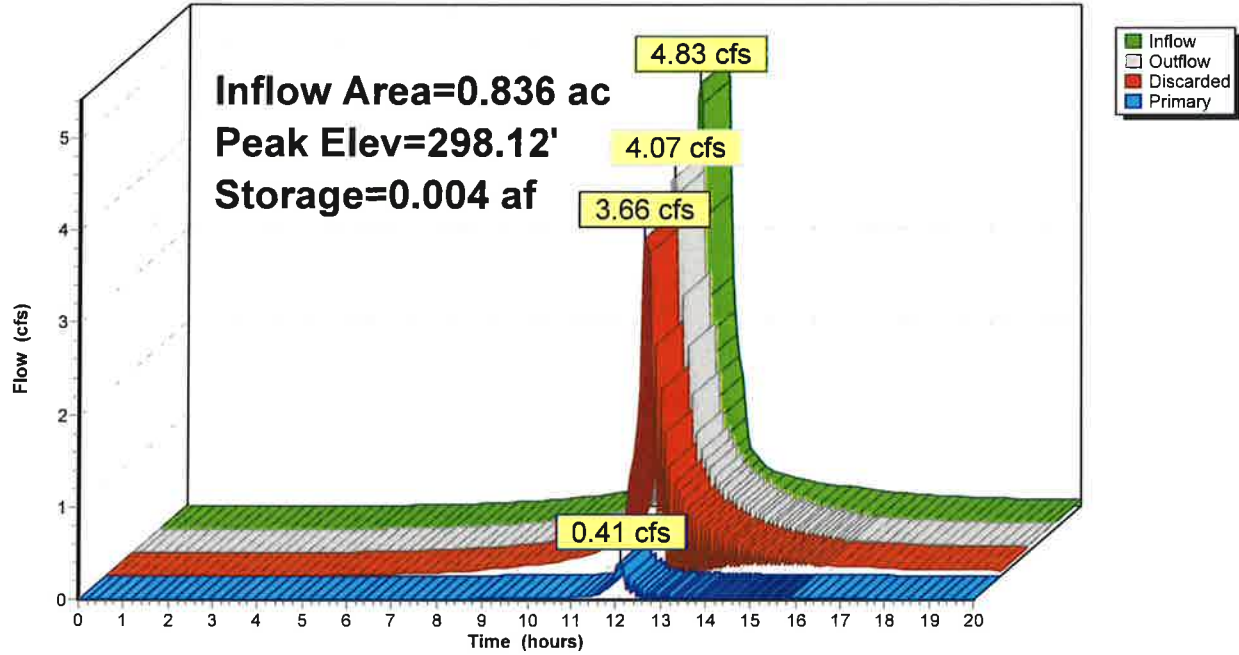
85.3 cy Field

58.1 cy Stone



Pond 5P: Infiltrators

Hydrograph



HydroCAD NEW

NRCC 24-hr D 100-Year Rainfall=9.28"

Prepared by Site Design Consultants

Printed 9/8/2023

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Time span=0.00-20.00 hrs, dt=0.05 hrs, 401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Addition

Runoff Area=36,427 sf 39.86% Impervious Runoff Depth>5.77"
Tc=5.0 min CN=76 Runoff=5.74 cfs 0.402 af

Subcatchment2S: Addition

Runoff Area=36,427 sf 74.05% Impervious Runoff Depth>7.23"
Tc=5.0 min CN=88 Runoff=6.67 cfs 0.504 af

Reach 4R: Pre Design Point

Inflow=5.74 cfs 0.402 af
Outflow=5.74 cfs 0.402 af

Reach 6R: Post Design Point

Inflow=0.50 cfs 0.048 af
Outflow=0.50 cfs 0.048 af

Pond 5P: Infiltrators

Peak Elev=299.57' Storage=0.021 af Inflow=6.67 cfs 0.504 af
Discarded=3.66 cfs 0.456 af Primary=0.50 cfs 0.048 af Outflow=4.16 cfs 0.504 af

Total Runoff Area = 1.672 ac Runoff Volume = 0.906 af Average Runoff Depth = 6.50"
43.04% Pervious = 0.720 ac 56.96% Impervious = 0.953 ac

Summary for Subcatchment 1S: Addition

Runoff = 5.74 cfs @ 12.11 hrs, Volume= 0.402 af, Depth> 5.77"
 Routed to Reach 4R : Pre Design Point

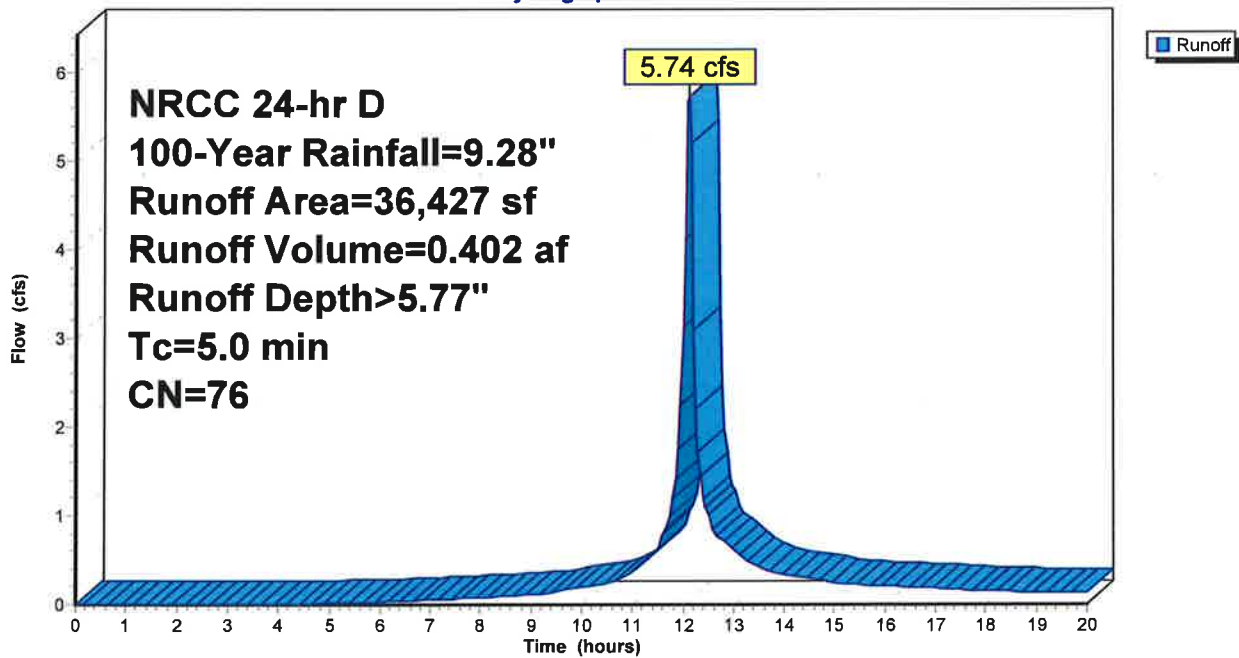
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs
 NRCC 24-hr D 100-Year Rainfall=9.28"

Area (sf)	CN	Description
14,518	98	Paved parking, HSG B
21,909	61	>75% Grass cover, Good, HSG B
36,427	76	Weighted Average
21,909		60.14% Pervious Area
14,518		39.86% Impervious Area

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

Subcatchment 1S: Addition

Hydrograph



Summary for Subcatchment 2S: Addition

Runoff = 6.67 cfs @ 12.11 hrs, Volume= 0.504 af, Depth> 7.23"
 Routed to Pond 5P : Infiltrators

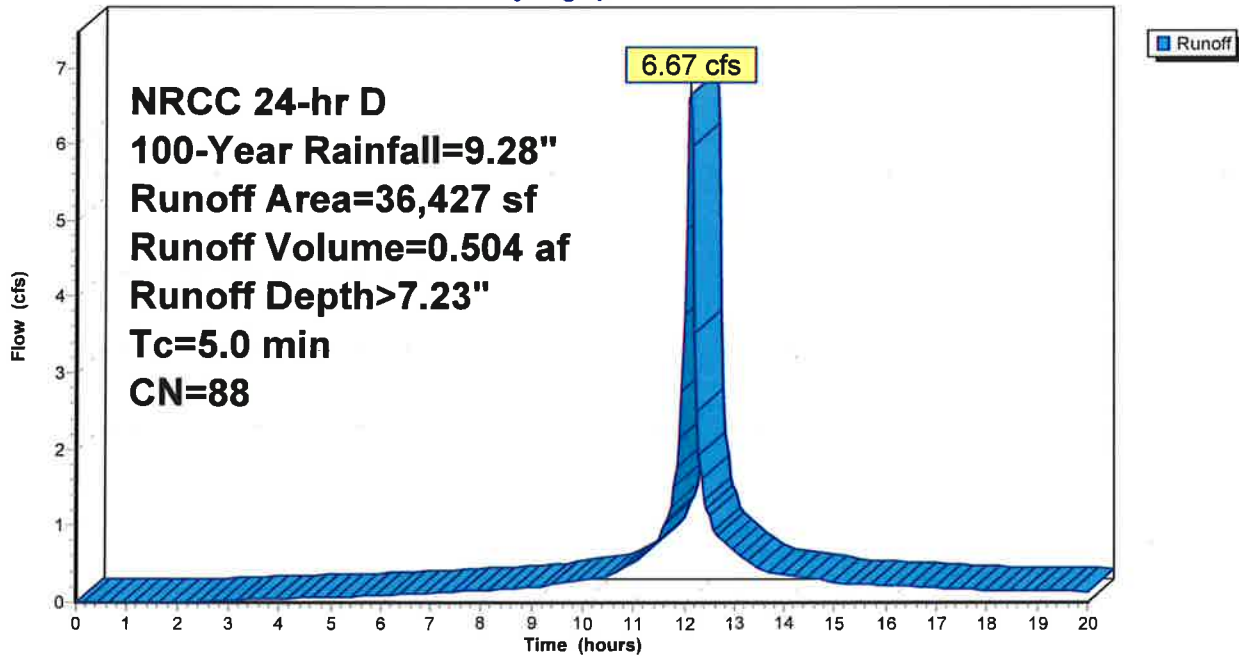
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs
 NRCC 24-hr D 100-Year Rainfall=9.28"

Area (sf)	CN	Description
26,976	98	Paved parking, HSG B
9,451	61	>75% Grass cover, Good, HSG B
36,427	88	Weighted Average
9,451		25.95% Pervious Area
26,976		74.05% Impervious Area

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

Subcatchment 2S: Addition

Hydrograph

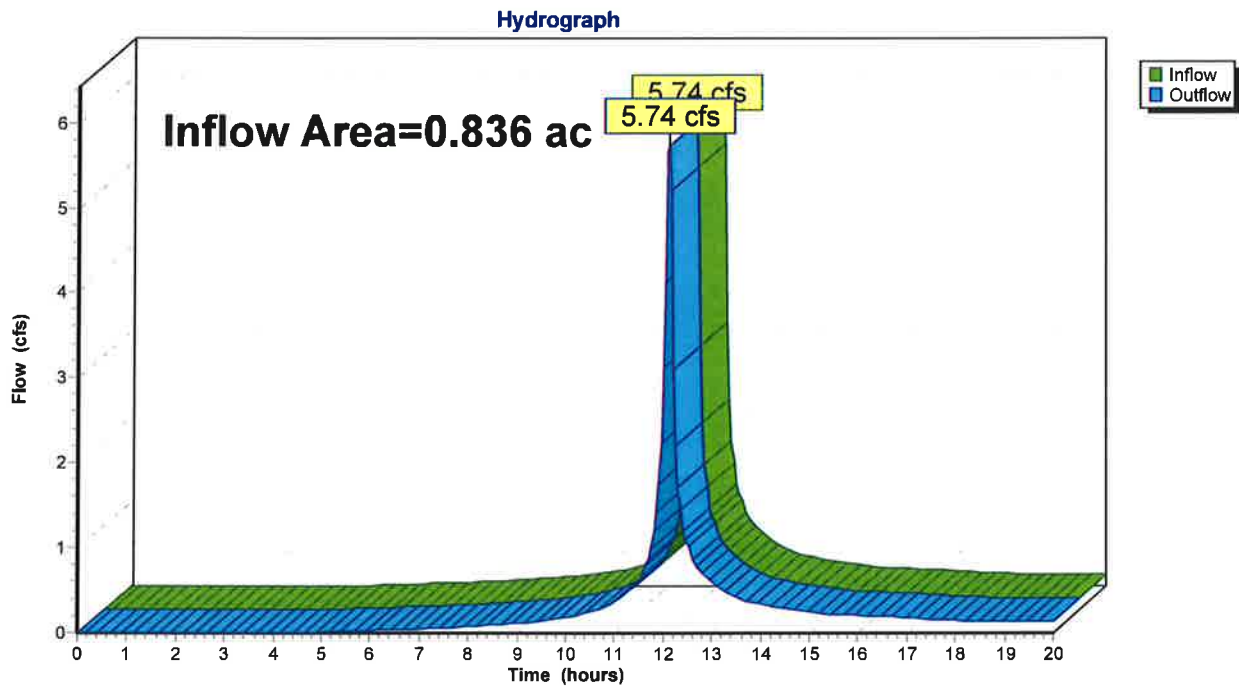


Summary for Reach 4R: Pre Design Point

Inflow Area = 0.836 ac, 39.86% Impervious, Inflow Depth > 5.77" for 100-Year event
Inflow = 5.74 cfs @ 12.11 hrs, Volume= 0.402 af
Outflow = 5.74 cfs @ 12.11 hrs, Volume= 0.402 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs

Reach 4R: Pre Design Point

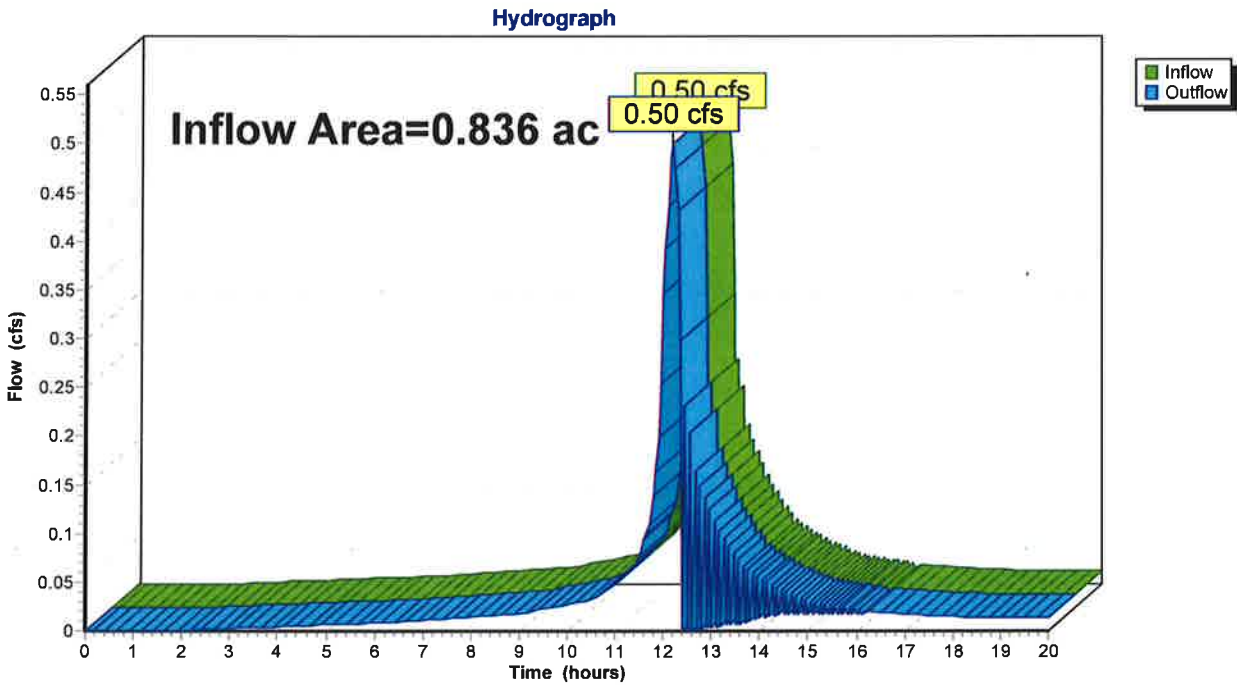


Summary for Reach 6R: Post Design Point

Inflow Area = 0.836 ac, 74.05% Impervious, Inflow Depth > 0.69" for 100-Year event
Inflow = 0.50 cfs @ 12.19 hrs, Volume= 0.048 af
Outflow = 0.50 cfs @ 12.19 hrs, Volume= 0.048 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs

Reach 6R: Post Design Point



Summary for Pond 5P: Infiltrators

Inflow Area = 0.836 ac, 74.05% Impervious, Inflow Depth > 7.23" for 100-Year event
 Inflow = 6.67 cfs @ 12.11 hrs, Volume= 0.504 af
 Outflow = 4.16 cfs @ 12.19 hrs, Volume= 0.504 af, Atten= 38%, Lag= 4.9 min
 Discarded = 3.66 cfs @ 12.05 hrs, Volume= 0.456 af
 Primary = 0.50 cfs @ 12.19 hrs, Volume= 0.048 af
 Routed to Reach 6R : Post Design Point

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 299.57' @ 12.19 hrs Surf.Area= 0.015 ac Storage= 0.021 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 0.5 min (742.2 - 741.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	297.50'	0.014 af	20.50'W x 32.10'L x 3.50'H Field A 0.053 af Overall - 0.017 af Embedded = 0.036 af x 40.0% Voids
#2A	298.00'	0.017 af	ADS_StormTech SC-740 +Cap x 16 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 16 Chambers in 4 Rows
		0.031 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	297.50'	240.000 in/hr Exfiltration over Surface area Phase-In= 0.01'
#2	Primary	296.00'	4.0" Round Culvert L= 62.0' CMP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 296.00' / 294.70' S= 0.0210 '/ Cc= 0.900 n= 0.012, Flow Area= 0.09 sf

Discarded OutFlow Max=3.66 cfs @ 12.05 hrs HW=297.83' (Free Discharge)
 ↑1=Exfiltration (Exfiltration Controls 3.66 cfs @ 0.01 fps)

Primary OutFlow Max=0.50 cfs @ 12.19 hrs HW=299.53' (Free Discharge)
 ↑2=Culvert (Barrel Controls 0.50 cfs @ 5.71 fps)

Pond 5P: Infiltrators - Chamber Wizard Field A

Chamber Model = ADS_StormTech SC-740 +Cap (ADS StormTech®SC-740 with cap length)

Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf

Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

4 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 30.10' Row Length +12.0" End Stone x 2 = 32.10' Base Length

4 Rows x 51.0" Wide + 6.0" Spacing x 3 + 12.0" Side Stone x 2 = 20.50' Base Width

6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

16 Chambers x 45.9 cf = 735.0 cf Chamber Storage

2,302.9 cf Field - 735.0 cf Chambers = 1,567.9 cf Stone x 40.0% Voids = 627.2 cf Stone Storage

Chamber Storage + Stone Storage = 1,362.2 cf = 0.031 af

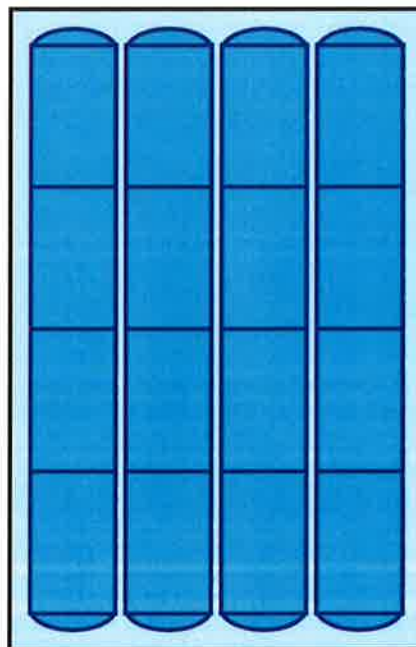
Overall Storage Efficiency = 59.2%

Overall System Size = 32.10' x 20.50' x 3.50'

16 Chambers

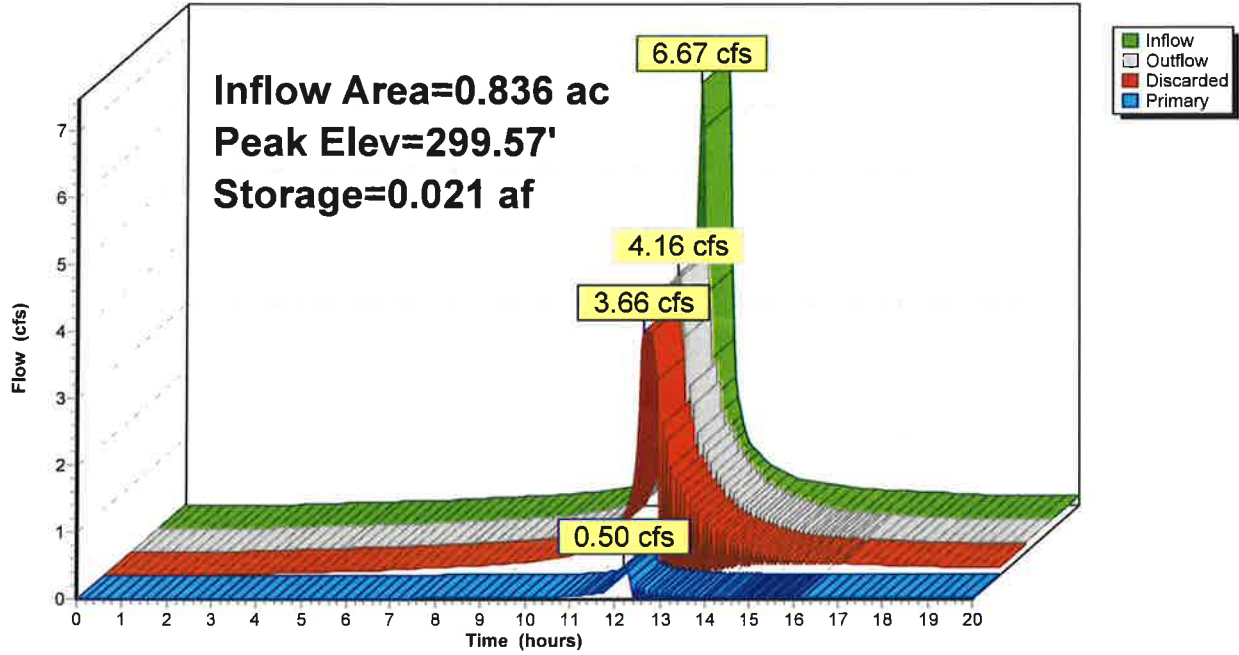
85.3 cy Field

58.1 cy Stone



Pond 5P: Infiltrators

Hydrograph



Events for Subcatchment 1S: Addition

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
1-Year	2.78	0.78	0.053	0.75
2-Year	3.41	1.19	0.080	1.14
10-Year	5.13	2.45	0.165	2.37
25-Year	6.49	3.73	0.248	3.56
100-Year	9.28	5.74	0.402	5.77

Events for Subcatchment 2S: Addition

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
1-Year	2.78	1.50	0.102	1.47
2-Year	3.41	2.00	0.138	1.99
10-Year	5.13	3.38	0.242	3.47
25-Year	6.49	4.83	0.336	4.82
100-Year	9.28	6.67	0.504	7.23

Events for Reach 4R: Pre Design Point

Event	Inflow (cfs)	Outflow (cfs)	Elevation (feet)	Storage (cubic-feet)
1-Year	0.78	0.78	0.00	0
2-Year	1.19	1.19	0.00	0
10-Year	2.45	2.45	0.00	0
25-Year	3.73	3.73	0.00	0
100-Year	5.74	5.74	0.00	0

Events for Reach 6R: Post Design Point

Event	Inflow (cfs)	Outflow (cfs)	Elevation (feet)	Storage (cubic-feet)
1-Year	0.14	0.14	0.00	0
2-Year	0.18	0.18	0.00	0
10-Year	0.31	0.31	0.00	0
25-Year	0.41	0.41	0.00	0
100-Year	0.50	0.50	0.00	0

Events for Pond 5P: Infiltrators

Event	Inflow (cfs)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)	Elevation (feet)	Storage (acre-feet)
1-Year	1.50	1.49	1.35	0.14	297.51	0.000
2-Year	2.00	1.99	1.81	0.18	297.52	0.000
10-Year	3.38	3.37	3.06	0.31	297.53	0.000
25-Year	4.83	4.07	3.66	0.41	298.12	0.004
100-Year	6.67	4.16	3.66	0.50	299.57	0.021

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Prepared by Site Design Consultants

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APPENDIX G

Stormwater Management Practices Design:

Subsurface Stormwater Management System Volume Calculations

**Standard and Specifications for Erosion and Sediment
Control Measures**

STANDARD AND SPECIFICATIONS FOR SILT FENCE



Definition & Scope

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

Conditions Where Practice Applies

A silt fence may be used subject to the following conditions:

1. Maximum allowable slope length and fence length will not exceed the limits shown in the Design Criteria for the specific type of silt fence used ; and
2. Maximum ponding depth of 1.5 feet behind the fence; and
3. Erosion would occur in the form of sheet erosion; and
4. There is no concentration of water flowing to the barrier; and
5. Soil conditions allow for proper keying of fabric, or other anchorage, to prevent blowouts.

Design Criteria

1. Design computations are not required for installations of 1 month or less. Longer installation periods should be designed for expected runoff.
2. All silt fences shall be placed as close to the disturbed area as possible, but at least 10 feet from the toe of a slope steeper than 3H:1V, to allow for maintenance and

roll down. The area beyond the fence must be undisturbed or stabilized.

3. The type of silt fence specified for each location on the plan shall not exceed the maximum slope length and maximum fence length requirements shown in the following table:

		Slope Length/Fence Length (ft.)		
Slope	Steepness	Standard	Reinforced	Super
<2%	< 50:1	300/1500	N/A	N/A
2-10%	50:1 to 10:1	125/1000	250/2000	300/2500
10-20%	10:1 to 5:1	100/750	150/1000	200/1000
20-33%	5:1 to 3:1	60/500	80/750	100/1000
33-50%	3:1 to 2:1	40/250	70/350	100/500
>50%	> 2:1	20/125	30/175	50/250

Standard Silt Fence (SF) is fabric rolls stapled to wooden stakes driven 16 inches in the ground.
Reinforced Silt Fence (RSF) is fabric placed against welded wire fabric with anchored steel posts driven 16 inches in the ground.
Super Silt Fence (SSF) is fabric placed against chain link fence as support backing with posts driven 3 feet in the ground.

4. Silt fence shall be removed as soon as the disturbed area has achieved final stabilization.

The silt fence shall be installed in accordance with the appropriate details. Where ends of filter cloth come together, they shall be overlapped, folded and stapled to prevent sediment bypass. Butt joints are not acceptable. A detail of the silt fence shall be shown on the plan. See Figure 5.30 on page 5.56 for Reinforced Silt Fence as an example of details to be provided.

Criteria for Silt Fence Materials

1. Silt Fence Fabric: The fabric shall meet the following specifications unless otherwise approved by the appropriate erosion and sediment control plan approval authority. Such approval shall not constitute statewide acceptance.

Super Silt Fence

Fabric Properties	Minimum Acceptable Value	Test Method
Grab Tensile Strength (lbs)	110	ASTM D 4632
Elongation at Failure (%)	20	ASTM D 4632
Mullen Burst Strength (PSI)	300	ASTM D 3786
Puncture Strength (lbs)	60	ASTM D 4833
Minimum Trapezoidal Tear Strength (lbs)	50	ASTM D 4533
Flow Through Rate (gal/min/sf)	25	ASTM D 4491
Equivalent Opening Size	40-80	US Std Sieve ASTM D 4751
Minimum UV Residual (%)	70	ASTM D 4355

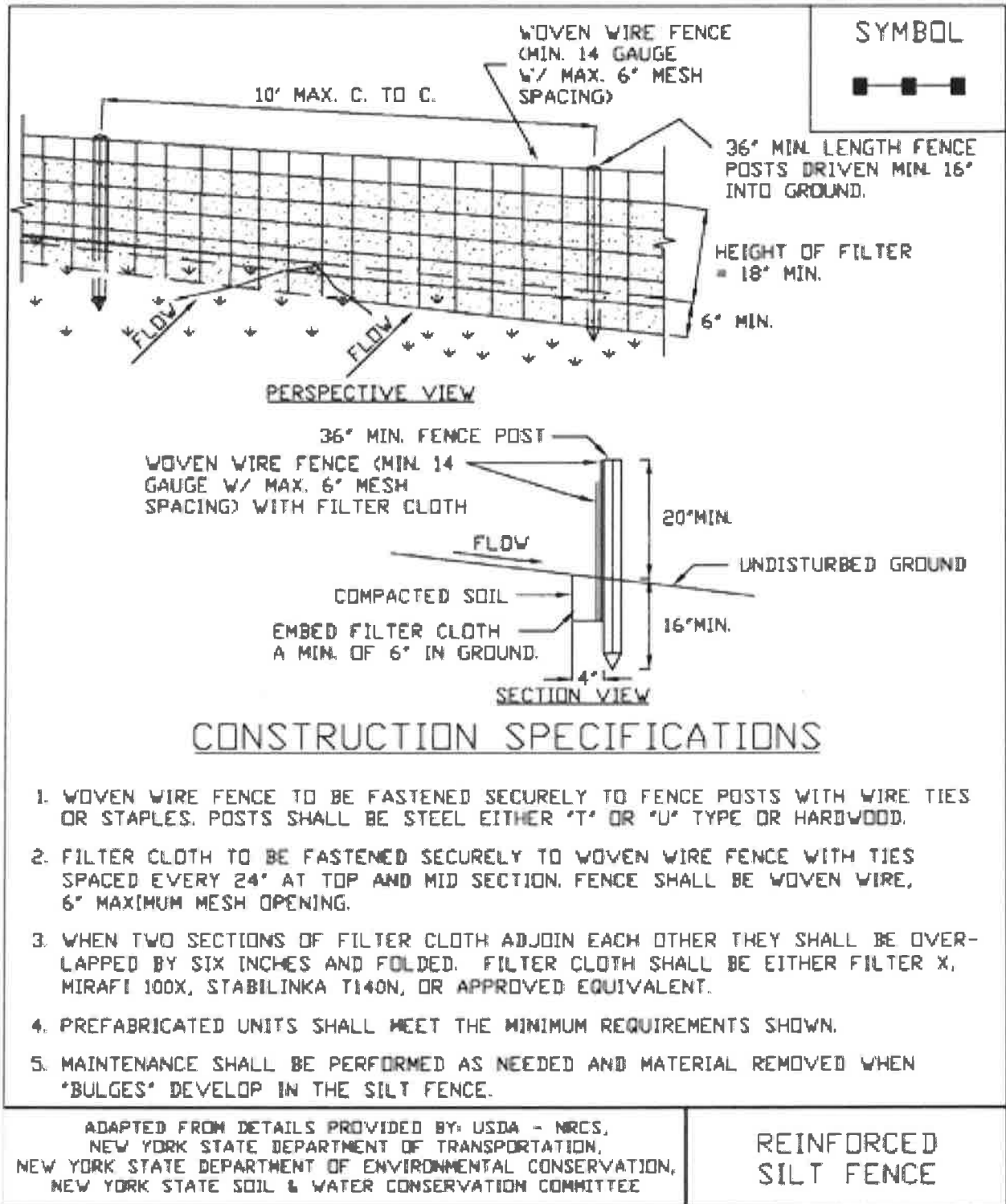


2. Fence Posts (for fabricated units): The length shall be a minimum of 36 inches long. Wood posts will be of sound quality hardwood with a minimum cross sectional area of 3.5 square inches. Steel posts will be standard T and U section weighing not less than 1.00 pound per linear foot. Posts for super silt fence shall be standard chain link fence posts.
3. Wire Fence for reinforced silt fence: Wire fencing shall be a minimum 14 gage with a maximum 6 in. mesh opening, or as approved.
4. Prefabricated silt fence is acceptable as long as all material specifications are met.

Reinforced Silt Fence



Figure 5.30
Reinforced Silt Fence



STANDARD AND SPECIFICATIONS FOR STORM DRAIN INLET PROTECTION



Definition & Scope

A **temporary** barrier with low permeability, installed around inlets in the form of a fence, berm or excavation around an opening, detaining water and thereby reducing the sediment content of sediment laden water by settling thus preventing heavily sediment laden water from entering a storm drain system.

Conditions Where Practice Applies

This practice shall be used where the drainage area to an inlet is disturbed, it is not possible to temporarily divert the storm drain outfall into a trapping device, and watertight blocking of inlets is not advisable. **It is not to be used in place of sediment trapping devices.** This practice shall be used with an upstream buffer strip if placed at a storm drain inlet on a paved surface. It may be used in conjunction with storm drain diversion to help prevent siltation of pipes installed with low slope angle.

Types of Storm Drain Inlet Practices

There are five (5) specific types of storm drain inlet protection practices that vary according to their function, location, drainage area, and availability of materials:

- I. Excavated Drop Inlet Protection
- II. Fabric Drop Inlet Protection
- III. Stone & Block Drop Inlet Protection
- IV. Paved Surface Inlet Protection
- V. Manufactured Insert Inlet Protection

Design Criteria

Drainage Area – The drainage area for storm drain inlets shall not exceed one acre. Erosion control/temporary stabilization measures must be implemented on the disturbed

drainage area tributary to the inlet. The crest elevations of these practices shall provide storage and minimize bypass flow.

Type I – Excavated Drop Inlet Protection

This practice is generally used during initial overlot grading after the storm drain trunk line is installed.

Limit the drainage area to the inlet device to 1 acre. Excavated side slopes shall be no steeper than 2:1. The minimum depth shall be 1 foot and the maximum depth 2 feet as measured from the crest of the inlet structure. Shape the excavated basin to fit conditions with the longest dimension oriented toward the longest inflow area to provide maximum trap efficiency. The capacity of the excavated basin should be established to contain 900 cubic feet per acre of disturbed area. Weep holes, protected by fabric and stone, should be provided for draining the temporary pool.

Inspect and clean the excavated basin after every storm. Sediment should be removed when 50 percent of the storage volume is achieved. This material should be incorporated into the site in a stabilized manner.

Type II – Fabric Drop Inlet Protection



This practice is generally used during final elevation grading phases after the storm drain system is completed.

Limit the drainage area to 1 acre per inlet device. Land area slope immediately surrounding this device should not exceed 1 percent. The maximum height of the fabric above the inlet crest shall not exceed 1.5 feet unless reinforced.

The top of the barrier should be maintained to allow overflow to drop into the drop inlet and not bypass the inlet to

unprotected lower areas. Support stakes for fabric shall be a minimum of 3 feet long, spaced a maximum 3 feet apart. They should be driven close to the inlet so any overflow drops into the inlet and not on the unprotected soil. Improved performance and sediment storage volume can be obtained by excavating the area.

Inspect the fabric barrier after each rain event and make repairs as needed. Remove sediment from the pool area as necessary with care not to undercut or damage the filter fabric. Upon stabilization of the drainage area, remove all materials and unstable sediment and dispose of properly. Bring the adjacent area of the drop inlet to grade, smooth and compact and stabilize in the appropriate manner to the site.

Type III – Stone and Block Drop Inlet Protection

This practice is generally used during the initial and intermediate overlot grading of a construction site.

Limit the drainage area to 1 acre at the drop inlet. The stone barrier should have a minimum height of 1 foot and a maximum height of 2 feet. Do not use mortar. The height should be limited to prevent excess ponding and bypass flow.

Recess the first course of blocks at least 2 inches below the crest opening of the storm drain for lateral support. Subsequent courses can be supported laterally if needed by placing a 2x4 inch wood stud through the block openings perpendicular to the course. The bottom row should have a few blocks oriented so flow can drain through the block to dewater the basin area.

The stone should be placed just below the top of the blocks on slopes of 2:1 or flatter. Place hardware cloth of wire mesh with ½ inch openings over all block openings to hold stone in place.

As an optional design, the concrete blocks may be omitted and the entire structure constructed of stone, ringing the outlet (“doughnut”). The stone should be kept at a 3:1 slope toward the inlet to keep it from being washed into the inlet. A level area 1 foot wide and four inches below the crest will further prevent wash. Stone on the slope toward the inlet should be at least 3 inches in size for stability and 1 inch or smaller away from the inlet to control flow rate. The elevation of the top of the stone crest must be maintained 6 inches lower than the ground elevation down slope from the inlet to ensure that all storm flows pass over the stone into the storm drain and not past the structure. Temporary diking should be used as necessary to prevent bypass flow.

The barrier should be inspected after each rain event and repairs made where needed. Remove sediment as necessary to provide for accurate storage volume for subsequent rains. Upon stabilization of contributing drainage area, remove all

materials and any unstable soil and dispose of properly.

Bring the disturbed area to proper grade, smooth, compact and stabilize in a manner appropriate to the site.

Type IV – Paved Surface Inlet Protection



This practice is generally used after pavement construction has been done while final grading and soil stabilization is occurring. These practices should be used with upstream buffer strips in linear construction applications, and with temporary surface stabilization for overlot areas, to reduce the sediment load at the practice. This practice includes sand bags, compost filter socks, geo-tubes filled with ballast, and manufactured surface barriers. Pea gravel can also be used in conjunction with these practices to improve performance. When the inlet is not at a low point, and is offset from the pavement or gutter line, protection should be selected and installed so that flows are not diverted around the inlet.



The drainage area should be limited to 1 acre at the drain inlet. All practices will be placed at the inlet perimeter or beyond to maximize the flow capacity of the inlet. Practices shall be weighted, braced, tied, or otherwise anchored to prevent movement or shifting of location on paved surfaces. Traffic safety shall be integrated with the use of this practice. All practices should be marked with traffic safety cones as appropriate. Structure height shall not cause flooding or by-pass flow that would cause additional erosion.

The structure should be inspected after every storm event. Any sediment should be removed and disposed of on the site. Any broken or damaged components should be replaced. Check all materials for proper anchorage and secure as necessary.

Type V - Manufactured Insert Inlet Protection



The drainage area shall be limited to 1 acre at the drain inlet. All inserts will be installed and anchored in accordance with the manufacturers recommendations and design details. The fabric portion of the structure will equal or exceed the performance standard for the silt fence fabric. The inserts will be installed to preserve a minimum of 50 percent of the open, unobstructed design flow area of the storm drain inlet opening to maintain capacity for storm events.

**Figure 5.31
Excavated Drop Inlet Protection**

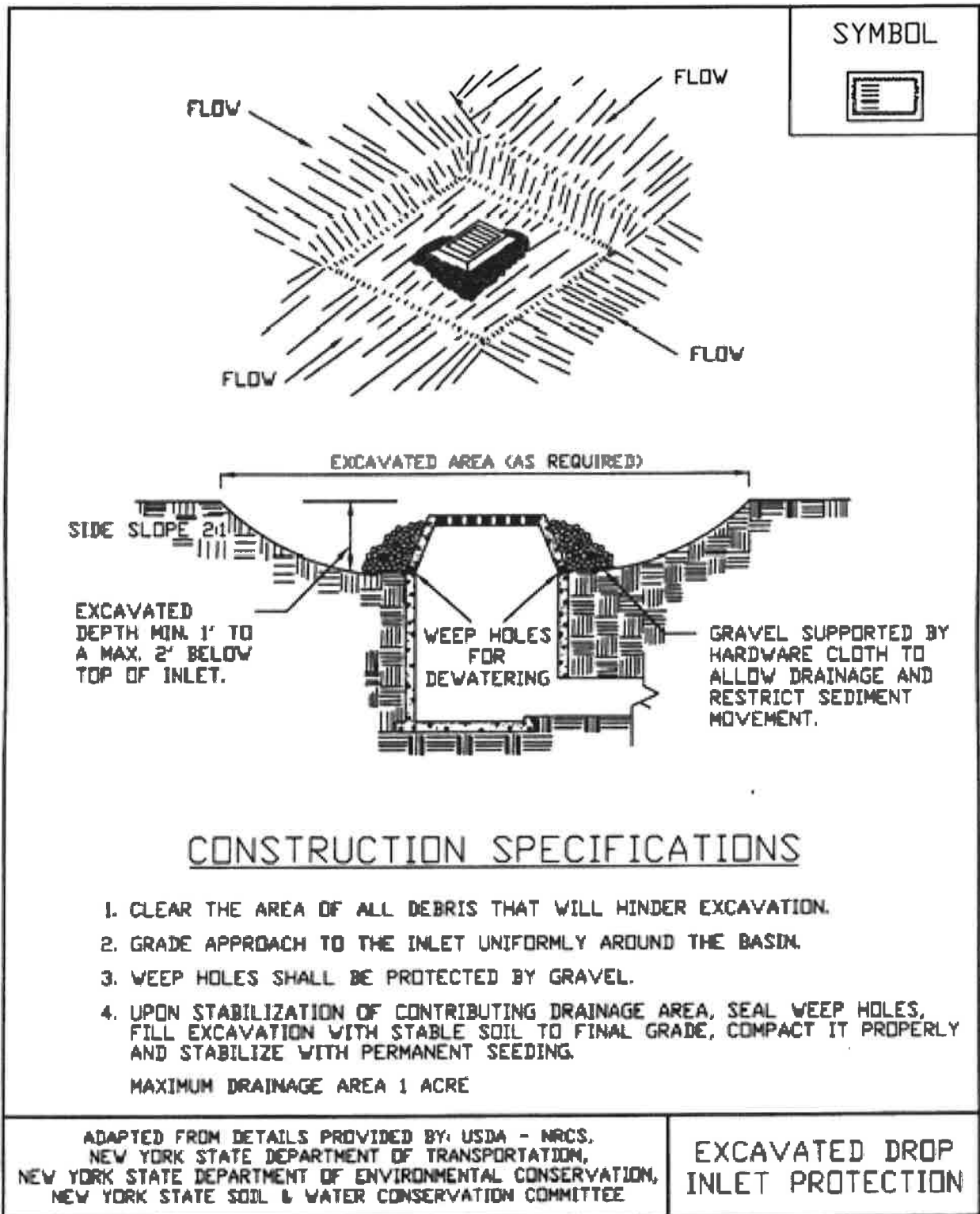


Figure 5.32
Fabric Drop Inlet Protection

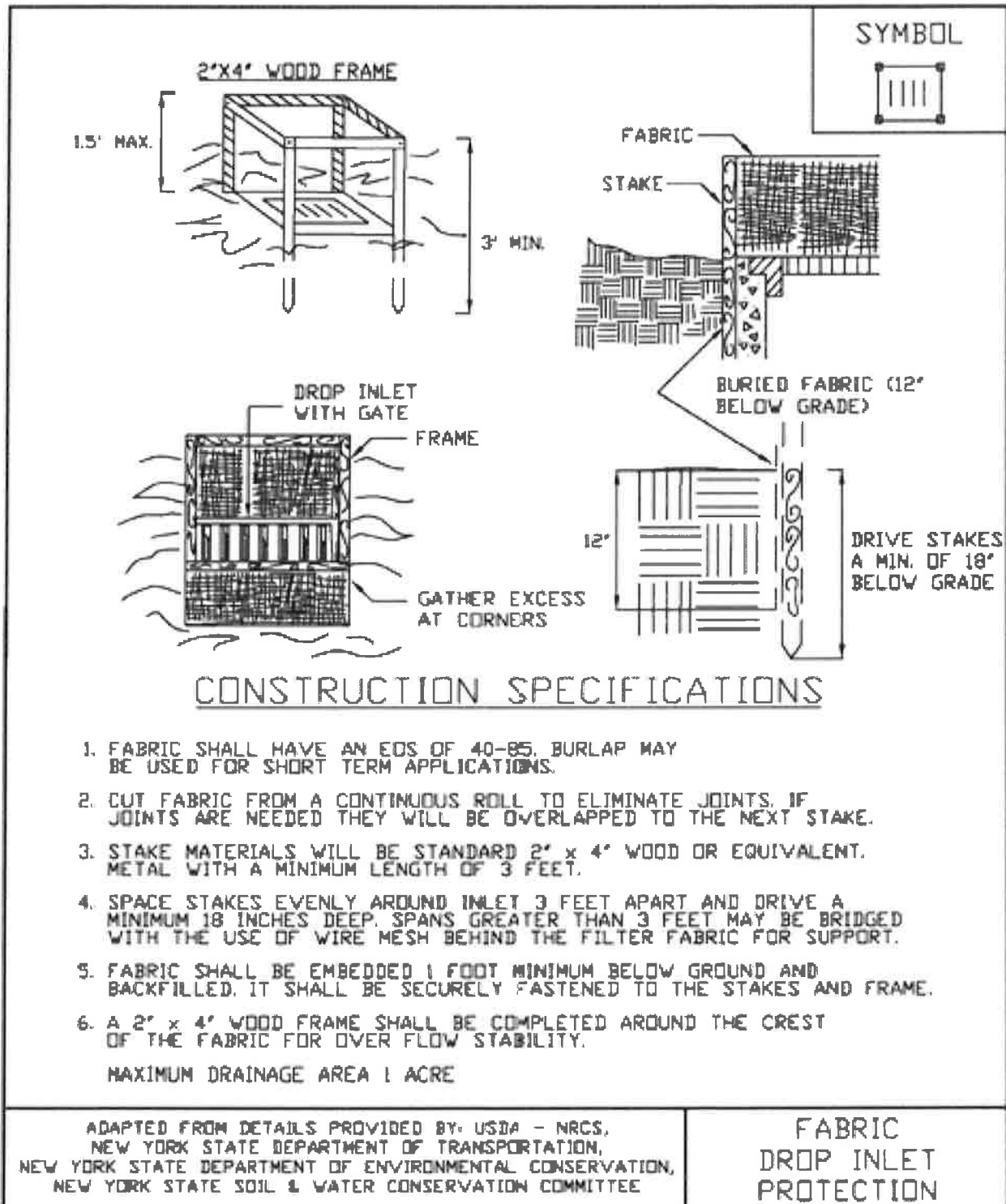
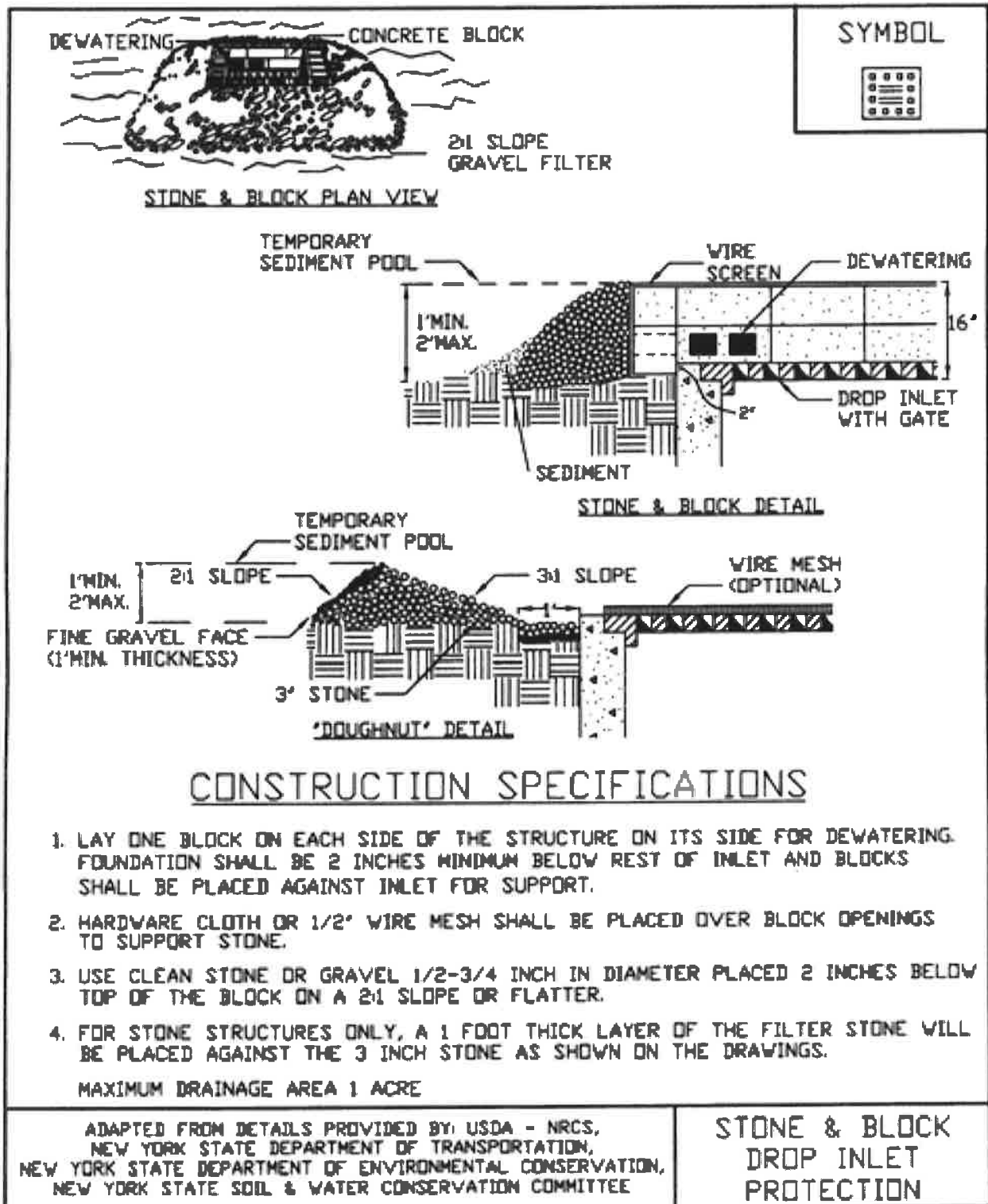


Figure 5.33
Stone & Block Drop Inlet Protection



STANDARD AND SPECIFICATIONS FOR STABILIZED CONSTRUCTION ACCESS



Definition & Scope

A stabilized pad of aggregate underlain with geotextile located at any point where traffic will be entering or leaving a construction site to or from a public right-of-way, street, alley, sidewalk, or parking area. The purpose of stabilized construction access is to reduce or eliminate the tracking of sediment onto public rights-of-way or streets.

Conditions Where Practice Applies

A stabilized construction access shall be used at all points of construction ingress and egress.

Design Criteria

See Figure 2.1 on page 2.31 for details.

Aggregate Size: Use a matrix of 1-4 inch stone, or reclaimed or recycled concrete equivalent.

Thickness: Not less than six (6) inches.

Width: 12-foot minimum but not less than the full width of points where ingress or egress occurs. 24-foot minimum if there is only one access to the site.

Length: As required, but not less than 50 feet (except on a single residence lot where a 30 foot minimum would apply).

Geotextile: To be placed over the entire area to be covered with aggregate. Filter cloth will not be required on a single-family residence lot. Piping of surface water under entrance shall be provided as required. If piping is impossible, a mountable berm with 5:1 slopes will be permitted.

Criteria for Geotextile: The geotextile shall be woven or nonwoven fabric consisting only of continuous chain polymeric filaments or yarns of polyester. The fabric shall be

inert to commonly encountered chemicals, hydro-carbons, mildew, rot resistant, and conform to the fabric properties as shown:

Fabric Properties ³	Light Duty ¹ Roads Grade Sub- grade	Heavy Duty ² Haul Roads Rough Graded	Test Meth- od
Grab Tensile Strength (lbs)	200	220	ASTM D1682
Elongation at Failure (%)	50	60	ASTM D1682
Mullen Burst Strength (lbs)	190	430	ASTM D3786
Puncture Strength (lbs)	40	125	ASTM D751 Modified
Equivalent	40-80	40-80	US Std Sieve
Opening Size			CW-02215
Aggregate Depth	6	10	-

¹Light Duty Road: Area sites that have been graded to subgrade and where most travel would be single axle vehicles and an occasional multi-axle truck. Acceptable materials are Trevira Spunbond 1115, Mirafi 100X, Typar 3401, or equivalent.

²Heavy Duty Road: Area sites with only rough grading, and where most travel would be multi-axle vehicles. Acceptable materials are Trevira Spunbond 1135, Mirafi 600X, or equivalent.

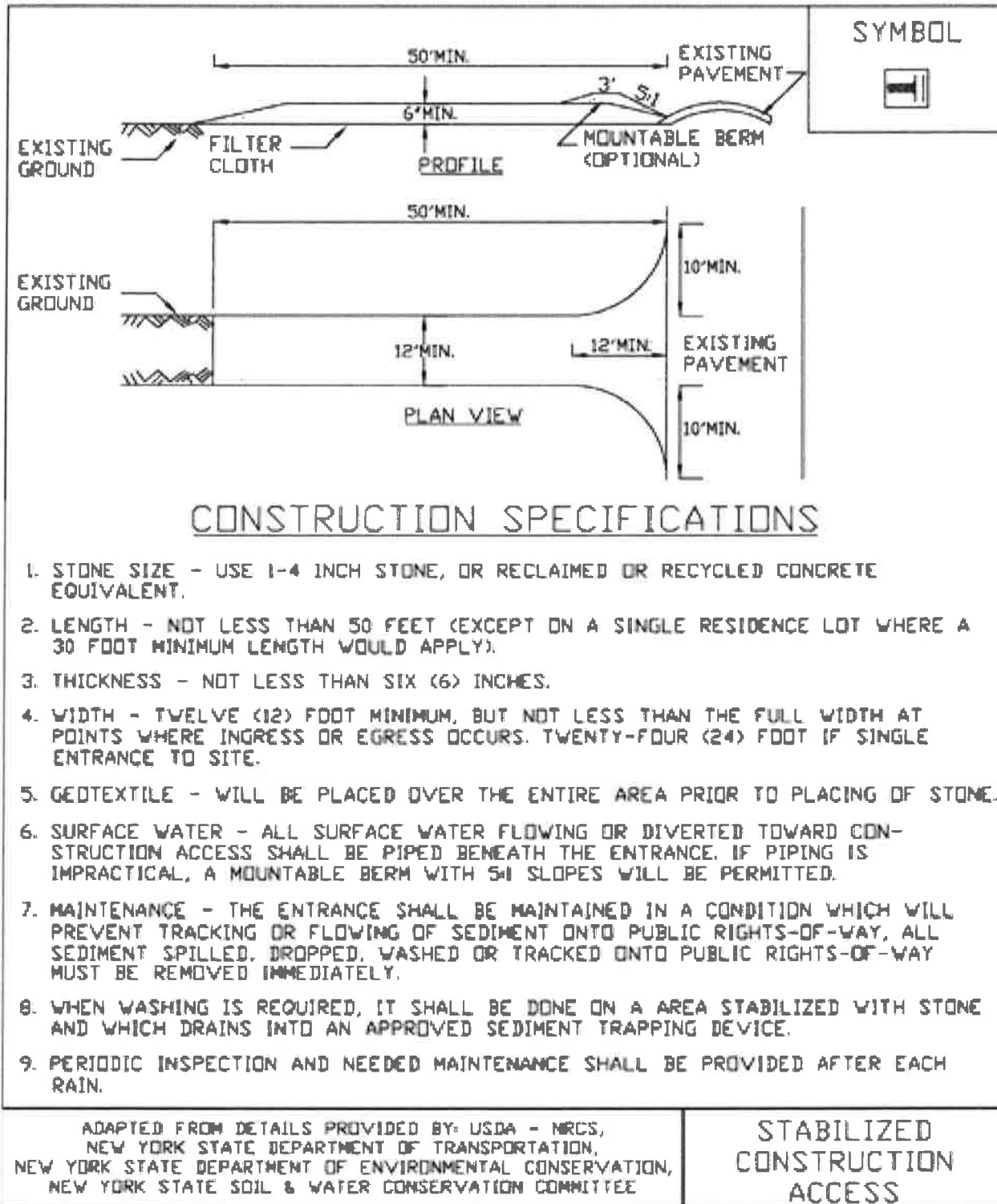
³Fabrics not meeting these specifications may be used only when design procedure and supporting documentation are supplied to determine aggregate depth and fabric strength.

Maintenance

The access shall be maintained in a condition which will prevent tracking of sediment onto public rights-of-way or streets. This may require periodic top dressing with additional aggregate. All sediment spilled, dropped, or washed onto public rights-of-way must be removed immediately.

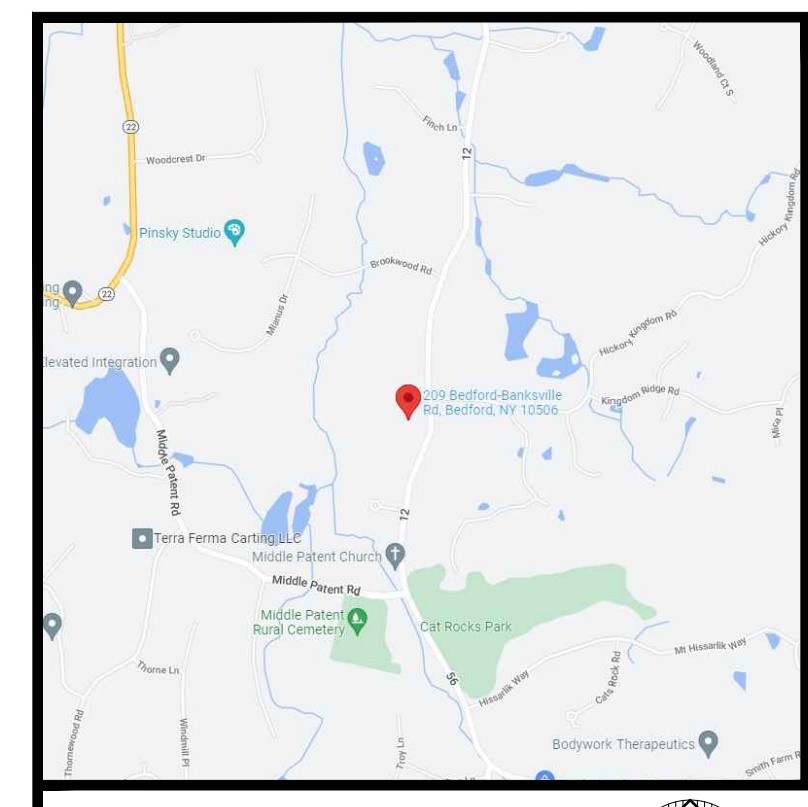
When necessary, wheels must be cleaned to remove sediment prior to entrance onto public rights-of-way. When washing is required, it shall be done on an area stabilized with aggregate, which drains into an approved sediment-trapping device. All sediment shall be prevented from entering storm drains, ditches, or watercourses.

**Figure 2.1
Stabilized Construction Access**



APPENDIX I

Project Plans



SITE DATA:

OWNER / DEVELOPER: JOSEPH & CELESTE RAULT
209 BEDFORD BANKSVILLE ROAD
BEDFORD, NY, 10506
PROJECT LOCATION: 209 BEDFORD BANKSVILLE ROAD
BEDFORD, NY, 10506
EXISTING TOWN ZONING: R-2A, ONE FAMILY RESIDENCE DISTRICT (2 ACRES)
REALTY SUBDIVISION: CLAIRE PERKINS FILED MAP: 25078 DATE FILED: 12/16/93 LOT: 1
TOWN TAX MAP DATA: SECTION 95.03, BLOCK 2, LOT 35
SITE AREA: 6.022 ACRES (262,318.32 SF)
SEWAGE FACILITIES: ONSITE SUBSURFACE TREATMENT SYSTEM
WATER FACILITIES: PRIVATE WELL
WATERSHED: LI SOUND

DESIGN BASIS:

9 BEDROOM NEW RESIDENCE @ 150 GAL/BDRM = 1,350 GAL
5 BEDROOM EXIST. COTTAGE @ 110 GAL/BDRM = 550 GAL x 1.25 (25% INCREASE) = 688 GAL
1 BEDROOM POOL HOUSE @ 110 GAL/BDRM = 110 X 1.25% = 137.5
TOTAL DESIGN FLOW = 2,176 GAL.

LENGTH OF FIELDS:

PERCOLATION DESIGN RATE: 1-5 MIN/IN
APPLICATION RATE: 1.2 GPD/SF
L = (2,176 GPD / 1.2 GPD/SF) 2 SF/LF = 907 LF REQUIRED

SEPTIC ABANDONMENT NOTES:

- 1. The existing septic system shall be abandoned in accordance with the latest rules and regulations of the Westchester County Department of Health.
- 2. The septic system shall either be buried on site or hauled off site. If hauled off site, it shall be done by a hauler licensed to haul hazardous waste in the State of New York and disposed of at a NYS permitted/licensed hazardous waste disposal facility.
- 3. Disposal manifest records for off site disposal shall be maintained by the Owner and provided to the Engineer and WCHD for their records.
- 4. No portion of any septic system or associated appurtenances shall remain within 20 ft of the footprint of any structure including but not limited to the house, patio, deck or accessory buildings.
- 5. Abandonment and removal of the septic system is the full responsibility of the owner. The Engineer shall not be held responsible and disclaims any liability for damage or loss incurred during or after construction. The Engineer whose seal appears hereon is not responsible for construction and therefore assumes no responsibility for construction practices, procedures, and results therefrom for the removal of said systems.

PRIVATE DRILLED WELL CONSTRUCTION REQUIREMENTS:

- 1. All water supply drilled wells may not be constructed without a valid permit issued by the WCHD. Wells shall be constructed in accordance with NYSDOH and WCHD standards.
- 2. Wells must be sited to meet all minimum restrictive distances. Wells must be sited as per plan. Any deviation must be approved by the Engineer and, if required, by the WCHD.
- 3. There are no sources of contamination within 200' of the proposed well (where new wells are proposed).
- 4. The top of the well must be 18" above finished grade which shall slope away in all directions to provide positive drainage.
- 5. Minimum well yield shall be 5 gpm based on a 6 hour pump test and have a minimum 42 gallon pressure tank. Yield tests below 5 gpm will require a special designee WCHD standards. Well yields below 2 gpm are not acceptable. If a well yield of less than 5 gpm is encountered, contact the WCHD immediately.
- 6. Well locations shown on plan are based on setback requirements and does not guarantee adequate water supply. A hydrogeologist should be consulted for confirmation of water supply, if desired.
- 7. No discharge from the well filtering system is allowed to be discharged into the OWTS.
- 8. Well shall be installed by a New York State Department of Environmental Conservation Registered well driller.
- 9. Drilled well to be sampled and tested in accordance with WCHD Private Well testing law.

MULTI-WEELS NOTES:

- 1. In accordance with the requirements of Chapter 873, Article VII, Section 873.700 (4) of the Westchester County Sanitary Code, the Department will only issue an approval for a proposed additional well(s) on a single parcel off and within an area not served by a public water supply when one of the following conditions outlined below are met:
 - a. When a new well is drilled and the yield of the new well is above 5 gallons per minute (gpm), the existing well is required to be abandoned, in accordance with the requirements of the Westchester County Health Department Rules and regulations. Any request to retain the existing well must be accompanied by a 6 hour stabilized yield test demonstrating that the existing well is less than 5 gpm.

(OR)

- 2. If the existing well(s) and the new individual yields, each are above 5 gpm, off site wells located immediately around the subject property must be identified and monitored and demonstrated to the satisfaction of the Department that there is no direct influence on any of the off site well yielding the 6 hour stabilized simultaneous yield testing on all onsite wells. In this case, offsite well monitoring plans must be submitted to the Department for approval prior to the scheduled yield testing.

MINIMUM RESTRICTIVE DISTANCES TO WELL:

- 1. Property Line 10 feet
- 2. Sewage System Tankage 50 feet
- 3. Foundation 10 feet
- 4. Swimming Pools 10 feet
- 5. Watercourse or Waterbody 50 feet
- 6. Absorption Trench 100 feet, 200 feet general path of drainage
- 7. Seepage Pit 150 feet, 200 feet general path of drainage
- 8. Tri-gallery, 4x4 150 feet, 200 feet general path of drainage
- 9. Flow Diffuser 100 feet, 200 feet general path of drainage

***NOTE*: IRRIGATION WELLS TO BE REVIEWED AND APPROVED BY WCHD**

GENERAL NOTES:

- 1. A written permit and/or approval issued by the WCHD to construct an individual sewerage system shall terminate and therefore be null and void unless construction is undertaken within one (1) year of the date of issuance.
- 2. If for any reason the approved construction plan is not followed, a revised plan must be prepared, submitted and approved by the WCHD.
- 3. All construction to be in accordance with these plans and last revised set of WCHD Rules and Regulations.
- 4. All SSTS and wells shall be located in the exact location as shown on this plan unless otherwise authorized by the WCHD.
- 5. Existing wells and SDS shown on this map were installed prior to approval date and are not part of this approval.
- 6. All laundry and kitchen wastes shall be discharged into the SSTS.
- 7. No cellar, roof or footing drains shall be connected to the SSTS or within 25' of any well.
- 8. Within 24-hours of the completion of the OWTS, the design professional must notify the Westchester County Department of Health (WCHD) that the OWTS is ready for inspection, and procedures and for coordinating all portions of the work under the contract.
- 9. Prior to commencement of operation, a Certificate of Compliance shall be submitted for and received from WCHD.
- 10. The proposed SSTS shall be isolated and protected against damage by erosion, storage of earth or materials, displacement, compaction or other adverse physical changes in the characteristics of the soil or in the drainage of area.
- 11. Proposed septic area to be kept free of traffic and debris during house construction and install adequate drainage to prevent erosion after septic is installed.
- 12. Any modifications or deviations from this plan must be approved by the Design Engineer and WCHD prior to construction.
- 13. The Engineer shall not be held responsible or held accountable for any structures constructed or under construction prior to the approval of the plans.
- 14. All conditions, locations, and dimensions shall be field verified and the Engineer shall be immediately notified of any discrepancies.
- 15. All written dimensions on the drawings shall take precedence over any scaled dimensions.
- 16. The Design Engineer shall supervise the construction of the SSTS and make an open works inspection.
- 17. The Design Engineer disclaims any liability for damage or loss incurred during or after construction.
- 18. The proposed OWTS shall be installed by a Westchester County licensed septic contractor.
- 19. Contractor to verify all substructures encountered during construction.
- 20. The Contractor shall supervise and direct the work using his best skill and attention. He shall be solely responsible for all construction means, methods, techniques, sequences, and procedures and for coordinating all portions of the work under the contract.
- 21. The Contractor shall be responsible to the owner for the acts and omissions of his employees, subcontractors, and their agents and employees, and any other persons performing any of the work under a contract with the Contractor.
- 22. Unauthorized alterations or additions to this drawing is a violation of Section 7209 (2) of the New York State Education Law.
- 23. Survey and topographical information shown hereon prepared by surveyor: R.K.W. Land Surveying.

SEPTIC CONSTRUCTION REQUIREMENTS:

- 1. The installation of the OWTS shall be in accordance with the most recently enacted Rules and Regulations for the Design and Construction of Residential Subsurface Sewerage Treatment Systems and Drilled Wells in Westchester County, NY.
- 2. The Westchester County Health Department approval expires one year from the date on the approval stamp and is required to be renewed on or before the expiration date. The approval is revocable for cause or may be amended or modified when considered necessary by the department.
- 3. All work performed including new installations, repairs, relocations, etc. shall have all current required permits or approvals.
- 4. No repairing in SSTS area except as shown on this plan.
- 5. Boulders, if any on surface of ground shall be cleared away prior to construction of the SSTS.
- 6. Prior to any excavation all underground utilities must be located. Call 1-800-962-7962.
- 7. Pool filter equipment cannot be discharged into the OWTS.

House Connection & Tanks

- 1. The house sewer to tank connection shall be a minimum 4" diameter at a minimum slope of 2.0%. The pipe shall be cast iron, ductile iron, or sewer grade PVC. All materials shall comply to the NYS Uniform Fire Prevention and Building Code (NYCRR). The house trap shall have a cleanout and fresh air intake having a minimum diameter of one-half inch.
- 2. If cover exceeds 2 ft over any installed tank or chamber, a manhole and collar to grade is required for access. Minimum requirement of 6-12" of cover over all tanks and chambers.

Absorption Fields

- 10. Absorption Fields to be constructed of 4" perforated PVC pipe or equal, encased in crushed stone over pipe with standard precast junction boxes at inlet and outlet and 4" solid PVC pipe running from septic tank outlet to and between junction boxes.
- 11. Minimum Trench Depth = 18", Trench Width = 24".
- 12. Total depth of stone in trench = 12" (washed gravel 3/4" to 1 1/2").
- 13. Maximum backfill over trench = 14".
- 14. All septic field laterals shall be of equal length (60' max. w/o dosing and 100' max. if dosed) and parallel to contours at a slope rate of 1/16" per foot.
- 15. All pipes connecting to tank and boxes shall be cut flush with the inside wall of box.
- 16. PVC pipe to meet minimum standards of ASTM D-2729.
- 17. Absorption trenches shall not be installed or backfilled in wet, frozen, frost or snow covered soils.
- 18. Backfill material for the trenches shall contain no particles with any dimension greater than 4". Backfill septic material must be inspected and approved by the WCHD before installation.
- 19. No laterals shall be placed beneath a driveway or paved areas.
- 20. There shall be no trees within 10 feet of the absorption fields.
- 21. End caps to be placed at end of all 4" perforated P.V.C. pipe in absorption fields.

Fill Section

- 22. R.O.B. gravel and impervious material to be inspected and approved by the Design Engineer prior to installation of the proposed system. Fill shall contain no particles greater than 4" in diameter. Fill shall be placed over expansion area where shown as required by WCHD.
- 23. Fill stabilization may not be achieved by mechanical compaction Only by a natural setting, for a period required by W.C.H.D., which may include a freeze-thaw cycle. Percolation tests must be done in stabilized fill and must meet the design rate.
- 24. Prior to submission of Certificate of Compliance to WCHD, fill section must be stabilized with grass seed and hay cover.

WCHD NOTES:

- 1. The design professional shall supervise the construction of the SSTS and make an open works inspection.
- 2. Within 24-hours of the completion of the SSTS, the design professional must notify the Westchester County Department of Health that the SSTS is ready for inspection by submitting a completed request for an open works inspection on the appropriate form to the Department.
- 3. The proposed Well shall be installed by a New York State Department of Environmental Conservation Registered well driller.
- 4. Drilled well to be sampled and tested in accordance with the WCHD Private Well testing law.
- 5. There are no sources of contamination within 200 feet of the proposed well.
- 6. There shall be no trees within 10 feet of the OWTS.
- 7. That no backfilling of a completed OWTS can occur until after it has been inspected and accepted by the Westchester County Department of Health.
- 8. After backfilling the OWTS, the area shall be covered with a minimum of 4 inches of clean top soil seeded and mulched.
- 9. There are DEC wetlands, streams, ponds etc. within 200' of SSTS. There are no reservoir/reservoir stems or controlled lake with in 500' of SSTS.
- 10. There is 1.82 AC of proposed disturbance.
- 11. There are no existing or proposed wells within 200 feet of the proposed OWTS.
- 12. There are no existing SSTS within 200 ft of well unless otherwise shown on this plan.
- 13. Estimated construction and completion date: JULY 2023 to JULY 2024.

SEPARATION DISTANCES FROM WASTEWATER SOURCES

WASTEWATER SOURCES	DRILLED WELL OR SECTION LINE (R) (FT)	TO STREAM LAKE WATERCOURSE (R) OR WETLAND (FT)	DWELLING (FT)	PROPERTY LINES (FT)	DRAINAGE GUTTER GARDEN (R) (FT)	INGROUND POOL (FT)
HOUSE SEWER	25' CIP 50' OTHER	25'	3'	10'	10'	10'
SEPTIC TANK	50'	50'	10' (H)	10'	10'	20'
EFFLUENT LINE / FORCE MAIN	50'	50'	10'	10'	10'	10'
DISTRIBUTION BOX / JUNCTION BOX	100'	100'	20' (D)	10'	20'	20'
ABSORPTION FIELD (F)	100' (A)	100'	20' (D)	10'	20'	35'
SEEPAGE PIT	150' (A)	100'	20' (D)	10'	20'	50'
DRY WELL (D)	50'	50'	20'	10'	10'	20'
ROOF & FOOTINGS ROADS & DRIVEWAY	50' 100'	25' 25'	20' 20'	10' 10'	10' 10'	20' 20'

NOTES:

- A. Wells located in the general path of drainage of a SSTS must be located 200 feet or more away. All public water supply wells must be 200 feet from absorption fields or seepage pits.
- B. Mean high water mark of defined stream or lake.
- C. Driveways are not allowed above OWTS (driveways, stormwater infiltrator or other subsurface stormwater infiltrator units).
- D. For slab on grade foundations with no walls, sillstone can be reduced to half.
- E. For all systems involving placement of fill, separation distances are measured from the toe of slope of the fill.
- F. Closed part of OWTS shall be located at least ten (10) feet from any water service line (i.e., PWS main, deck service connection, well).
- G. Recommended.
- H. Septic tanks are not permitted beneath raised decks and require a minimum of five (5) feet separation from water pipes (sanitizers).

ADDITIONAL SEPARATION DISTANCES FROM SSTA TO:

- 1. Flood Drainage 25 feet
- 2. Open Channel Drainage 50 feet
- 3. Curtain Drain (Lograds from SSTS) 15 feet
- 4. Curtain Drain (downgrade from SSTS) 50 feet
- 5. Catch Basin 50 feet
- 6. Driveway 5 feet
- 7. Stormwater Basin 100 feet (High water elevation)
- 8. Above Ground Heat 10 feet
- 9. Deck with Piling / Sonotube 10 feet
- 10. Slab on Grade Foundation 10 feet
- 11. Roof & Footing Drain Discharge Pipe 10 feet

SOILS CLASSIFICATIONS

TYPE	NAME	DESCRIPTION	HYDROLOGICAL GROUP
C1D	CHARFIELD/CHARLTON	FINE SANDY LOAM	B
C1C	CHARLTON/CHARFIELD	FINE SANDY LOAM	B

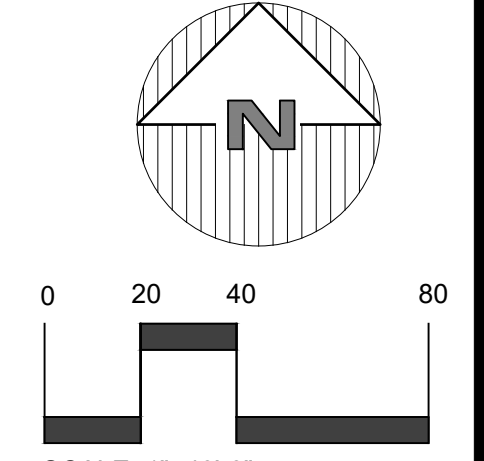
HEALTH DEPARTMENT SEPTIC SCHEDULE

LOT NO.	S.S.T.A. AREA (S.F.)	LOT AREA (S.F.)	TEST HOLE NO.	DEEP TEST PIT DESCRIPTION	TOTAL DEPTH	DEPTH TO WATER	DEPTH TO ROCK	PERCENT SLOPE AREA	PERC TEST NO.	PERC. RATE (MIN/IN)	MIN. DESIGN RATE	APPLICATION RATE (GPD/SF)	NO. OF BEDROOMS	SEWER FLOW RATE	TANK SIZE	REG. TRENCH LENGTH	BANK RUN FILL DEPTH	CURTAIN DRAIN DEPTH	REMARKS				
35	12,062 S.F.	262,318 S.F.	TP-#1	6" T.S.OIL, 6"-82" MOD. SANDY LOAM, 82"-86" LOOSE COMP. SAND	7'-2"				PT-1	1-5 MIN.													
			TP-#2	6" T.S.OIL, 6"-42" MOD. COMP. SANDY LOAM, 42"-86" MOD. COMP. SANDY LOAM	7'-2"					PT-2	1-5 MIN.												
			TP-#3	6" T.S.OIL, 6"-48" MOD. COMP. SANDY LOAM, 48"-86" LOOSE COMP. SAND	7'-2"						PT-3	1-5 MIN.	1-5 MIN.	1.20	15 BRM	3,130 GPD	TWO 2000 GAL TANKS	907 LF					
			TP-#4	12" T.S.OIL, 12"-48" MOD. COMP. M.F. SANDY LOAM, 48"-86" GRAY MOD. COMP. SAND	7'-2"						PT-4	1-5 MIN.											
			TP-#5	12" T.S.OIL, 12"-30" MOD. COMP. M.F. SANDY LOAM, 30"-60" C.M. GREY SANDS & GRAVEL, 60"-84" C.M. GREY SANDS	7'-2"																		

NOTE: Required trench length taken from table in WCHD Rules and Regulations. (Based on Perc Test)

NOTE

THE ENTIRE PROPERTY IS SERVED BY A 100 KW BACKUP GENERATION SYSTEM.



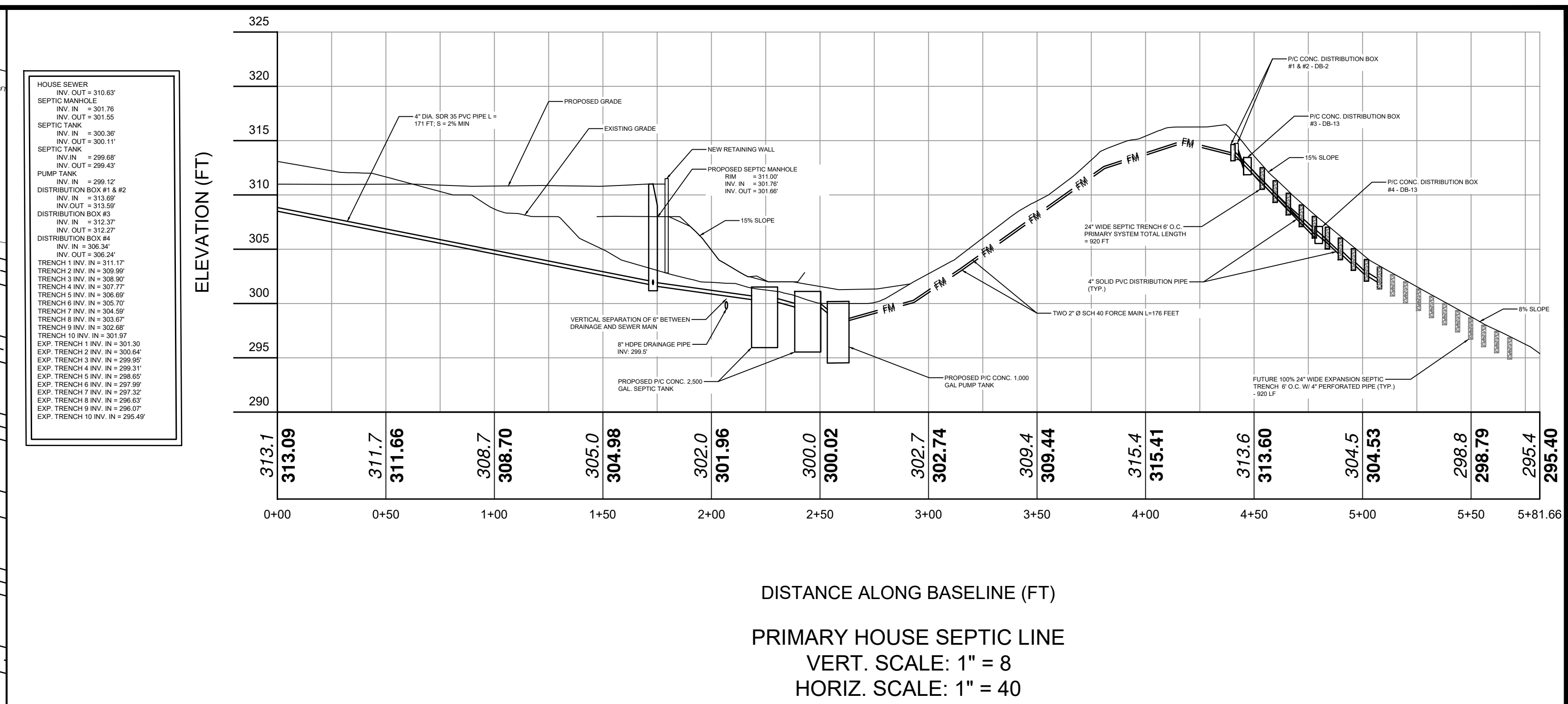
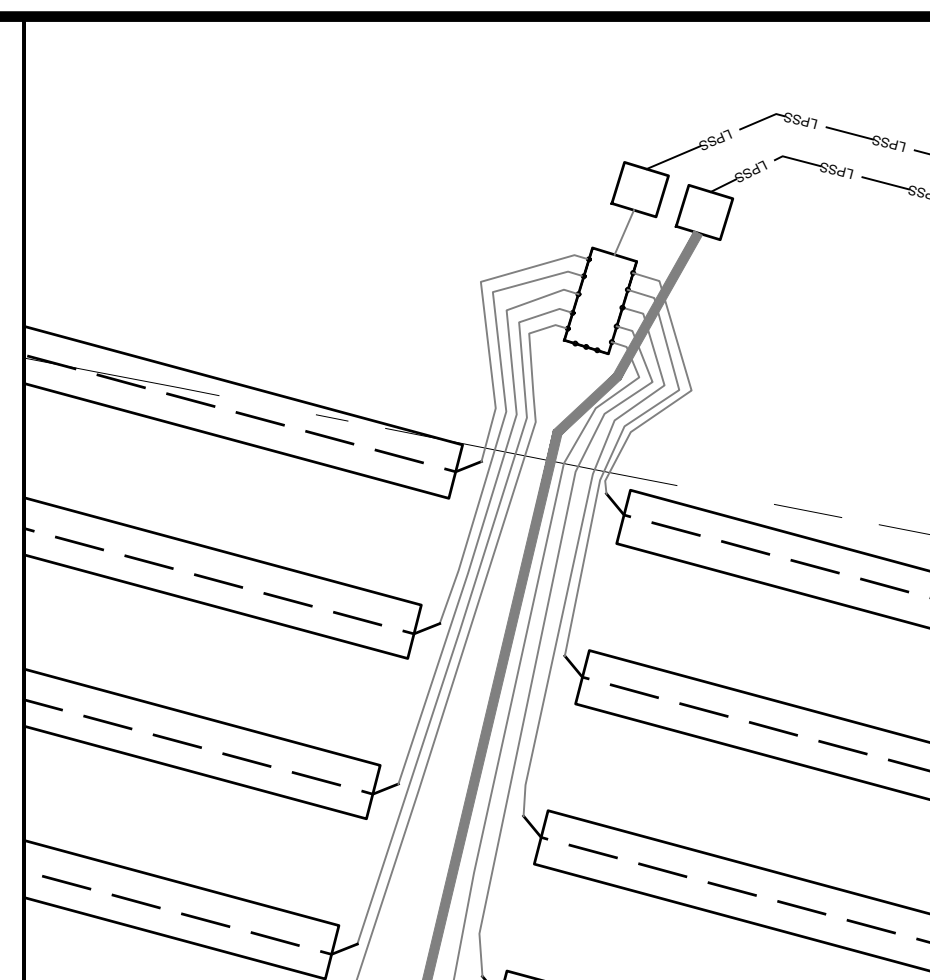
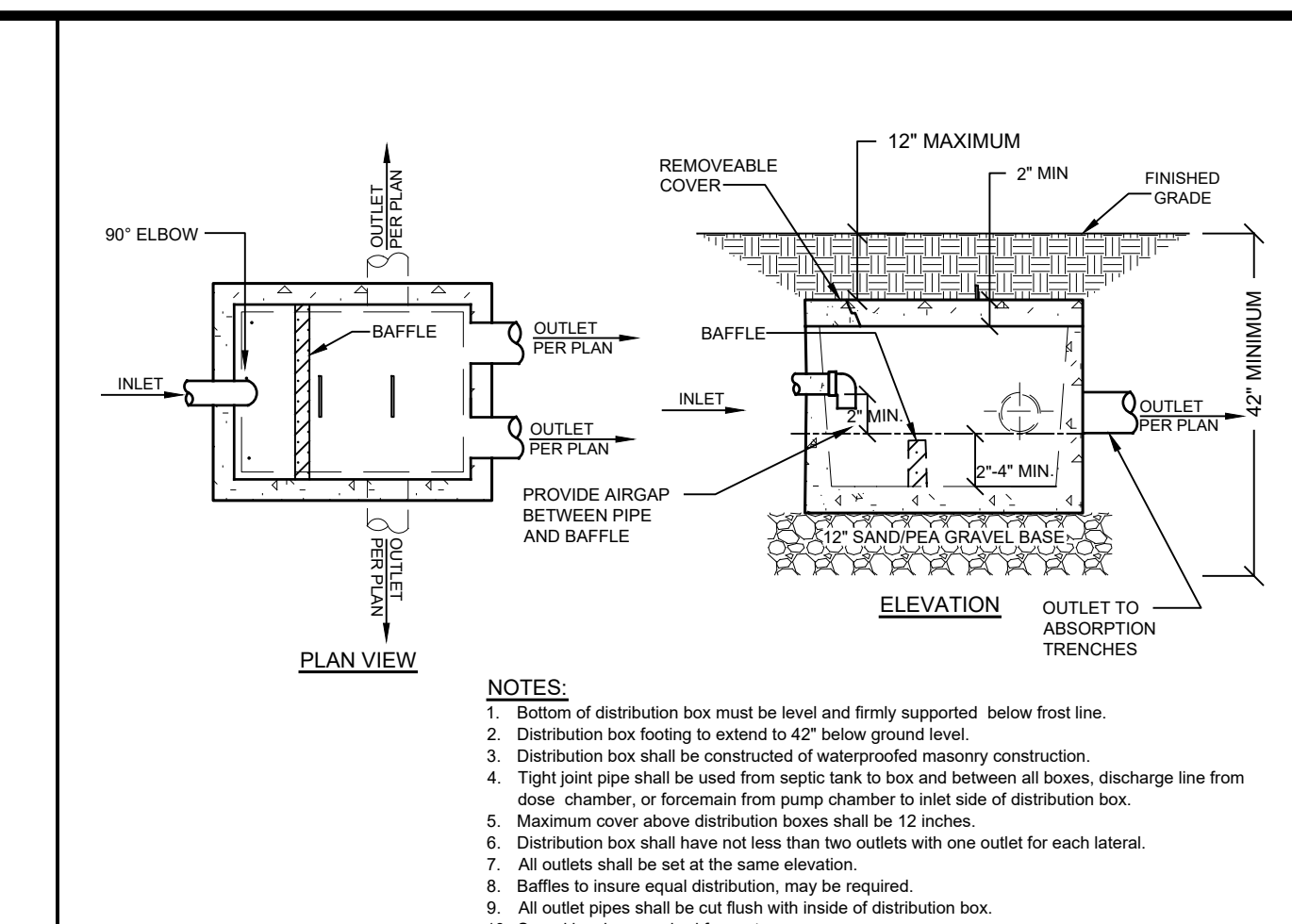
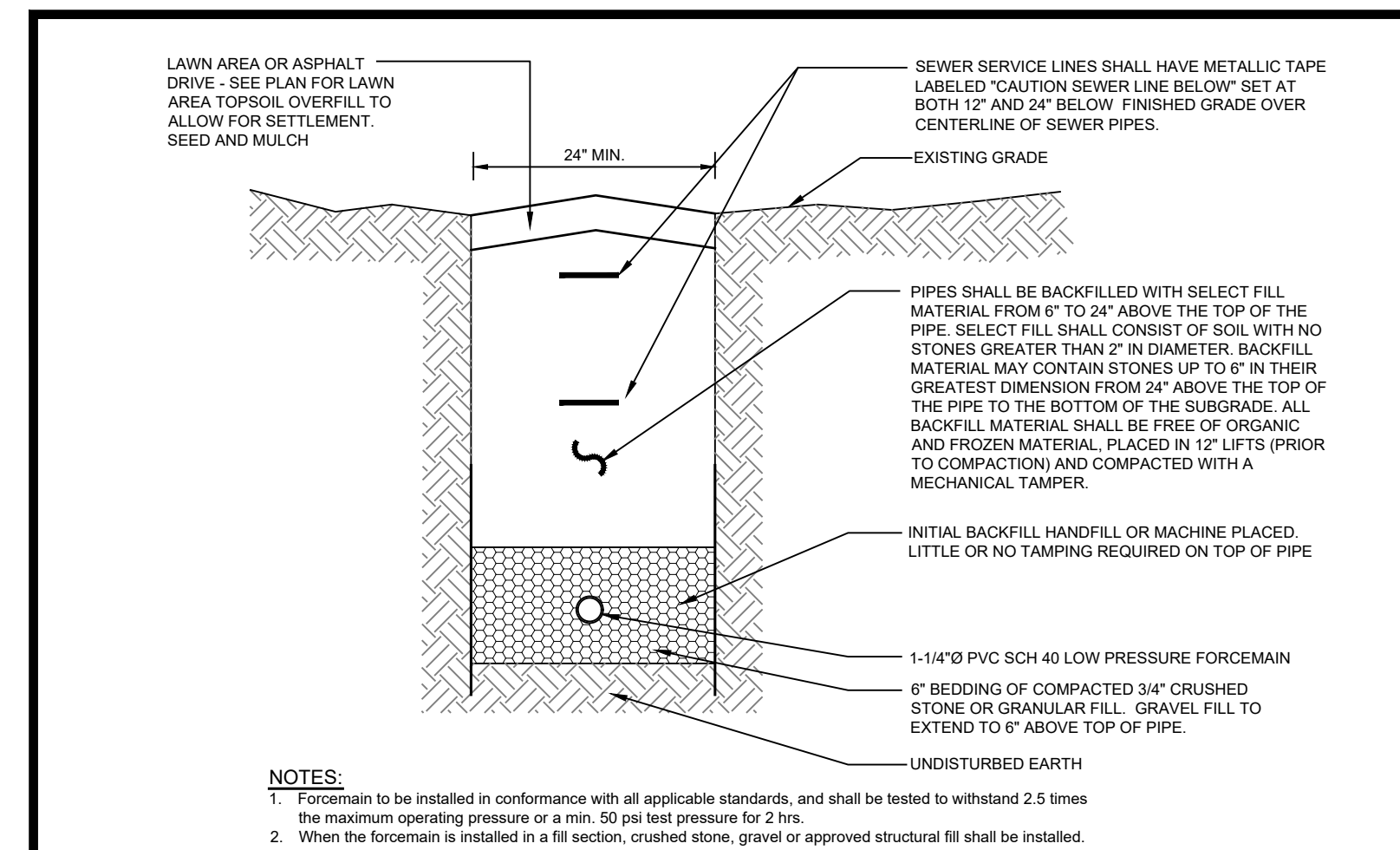
NOTE: UNAUTHORIZED ALTERATIONS OR ADDITIONS TO THIS DRAWING IS A VIOLATION OF SECTION 7209 (2) OF THE NEW YORK STATE EDUCATION LAW.

Site Design Consultants
Civil Engineers • Land Planners
251-F Underhill Avenue, Yorktown Heights, NY 10598
(914) 962-4488 • Fax: (914) 962-7386
www.sitedesignconsultants.com

OWTS PLAN

Joseph & Celeste Rault
209 Bedford Banksville Road
Bedford, NY 10506

Project # 2129
Sheet 1 of 2

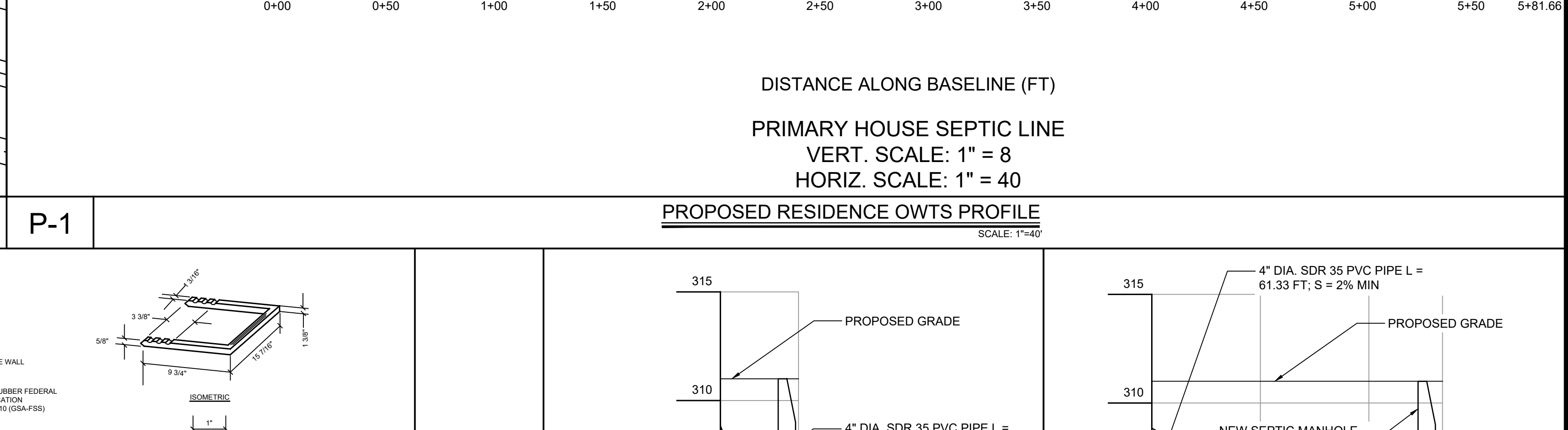
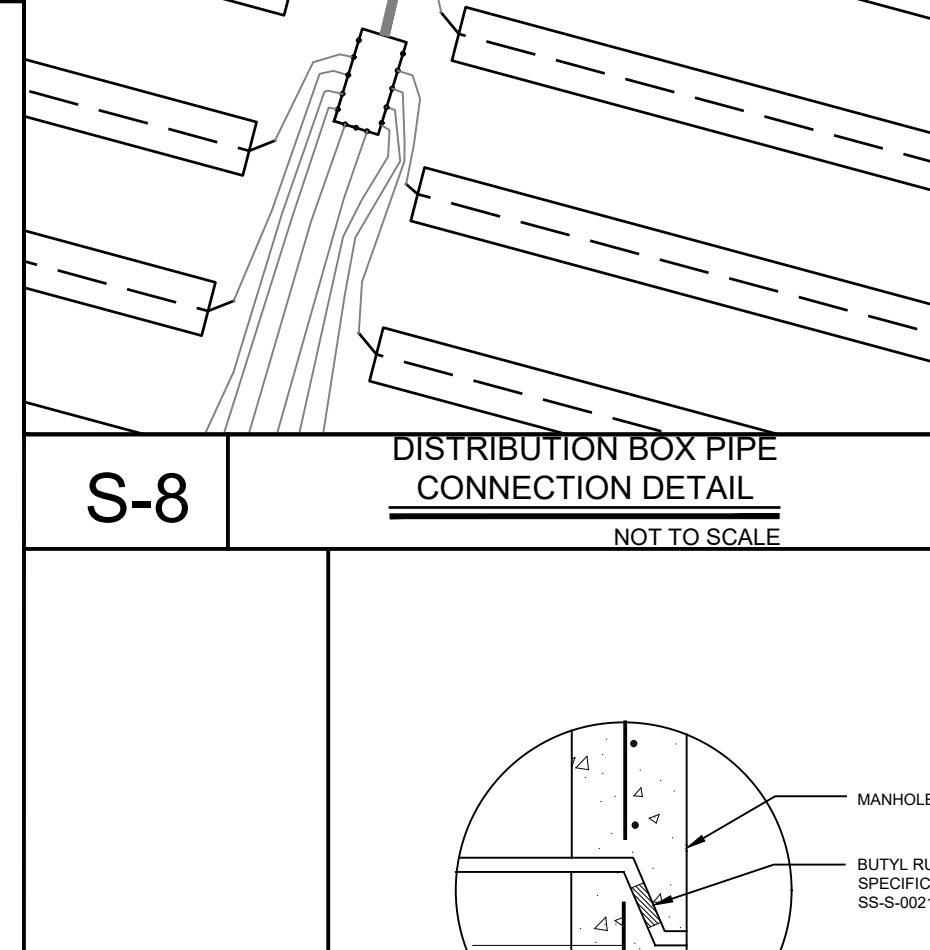
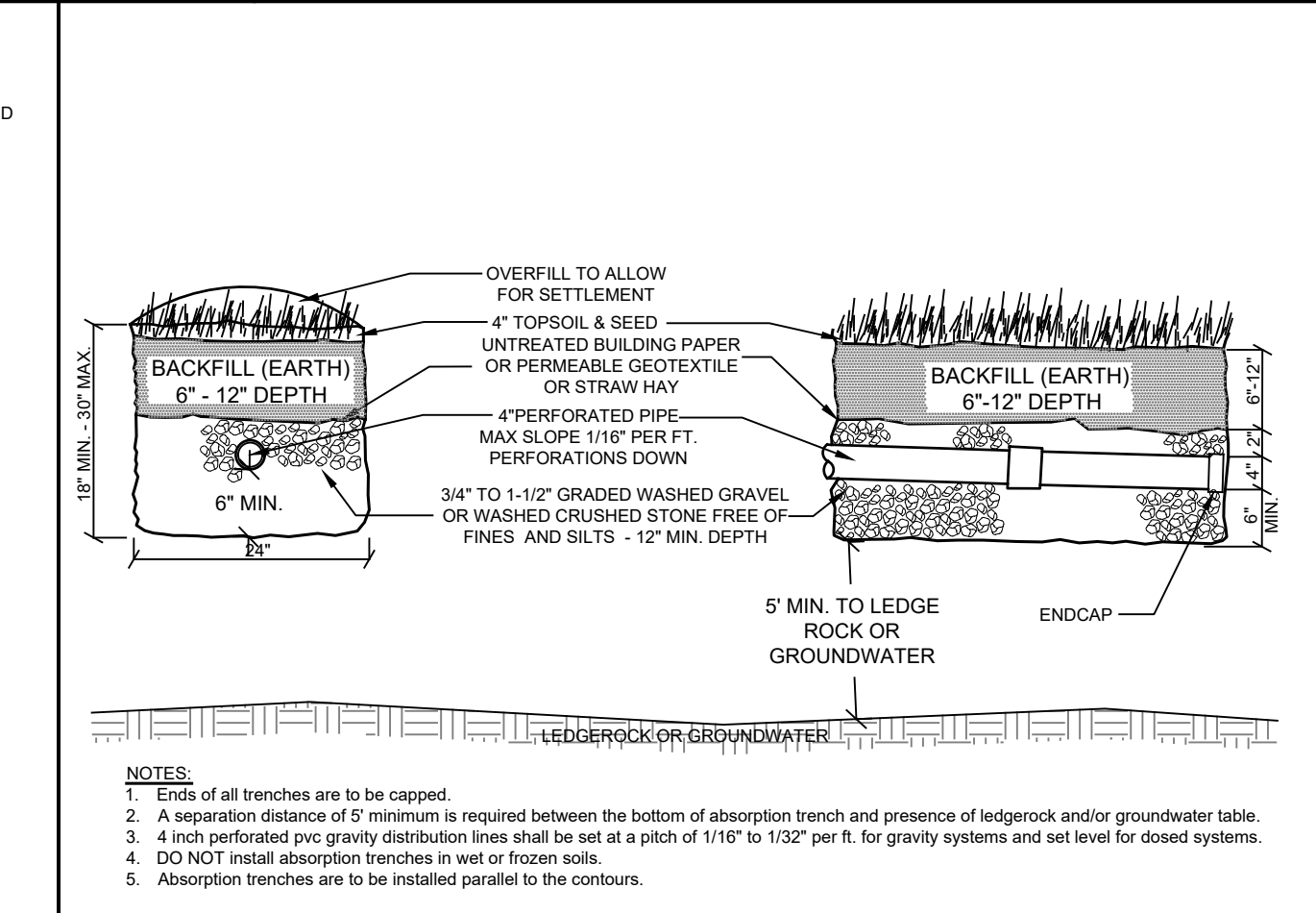
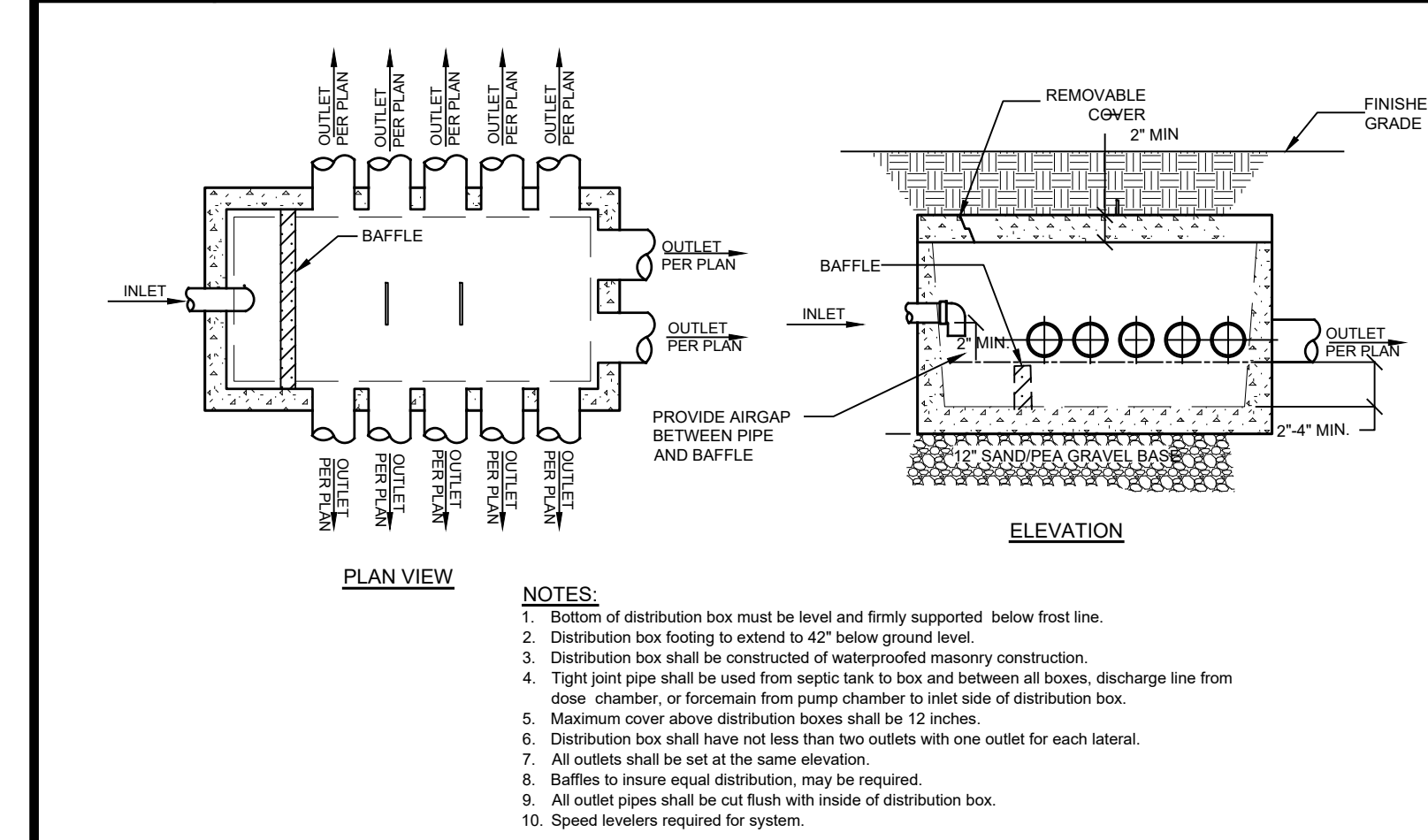


S-1 LOW PRESSURE FORCE MAIN DETAIL
NOT TO SCALE

S-4 DB-2 DISTRIBUTION BOX DETAIL
NOT TO SCALE

S-8 DISTRIBUTION BOX PIPE CONNECTION DETAIL
NOT TO SCALE

P-1 PROPOSED RESIDENCE OWTS PROFILE
SCALE: 1"=40'

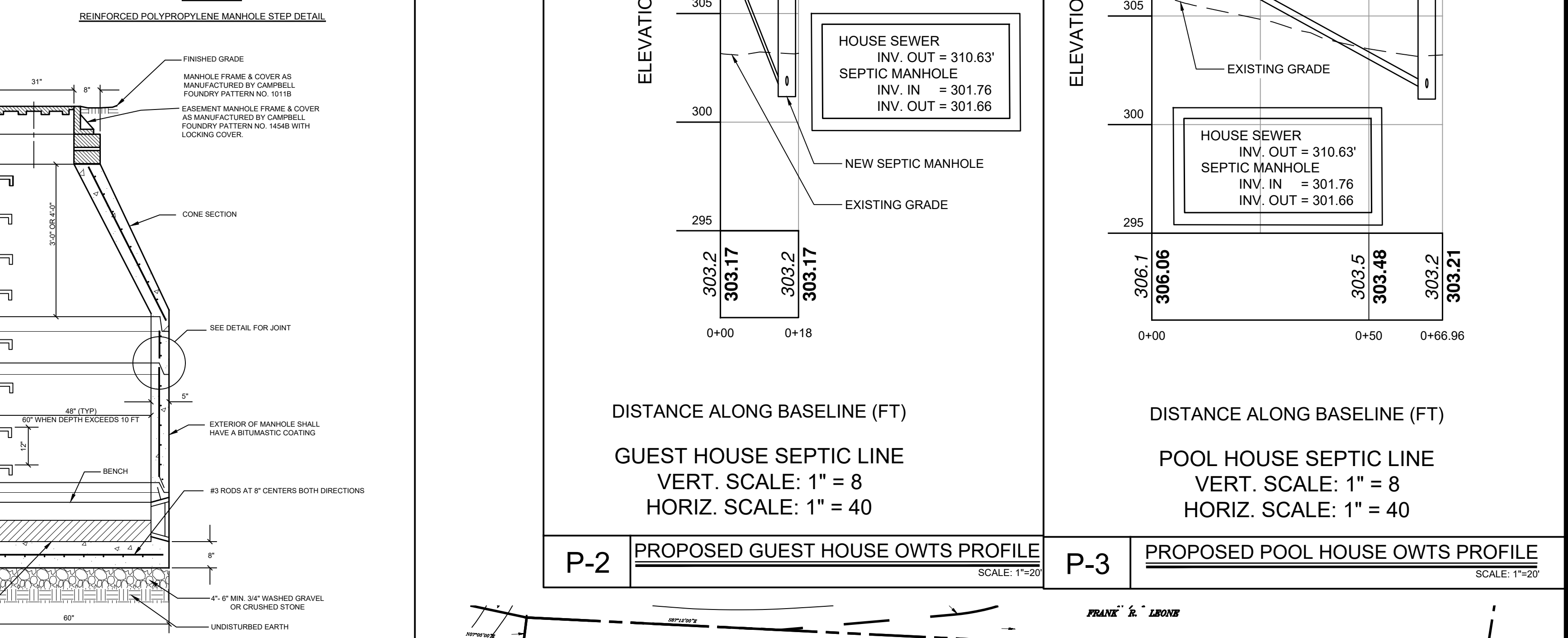
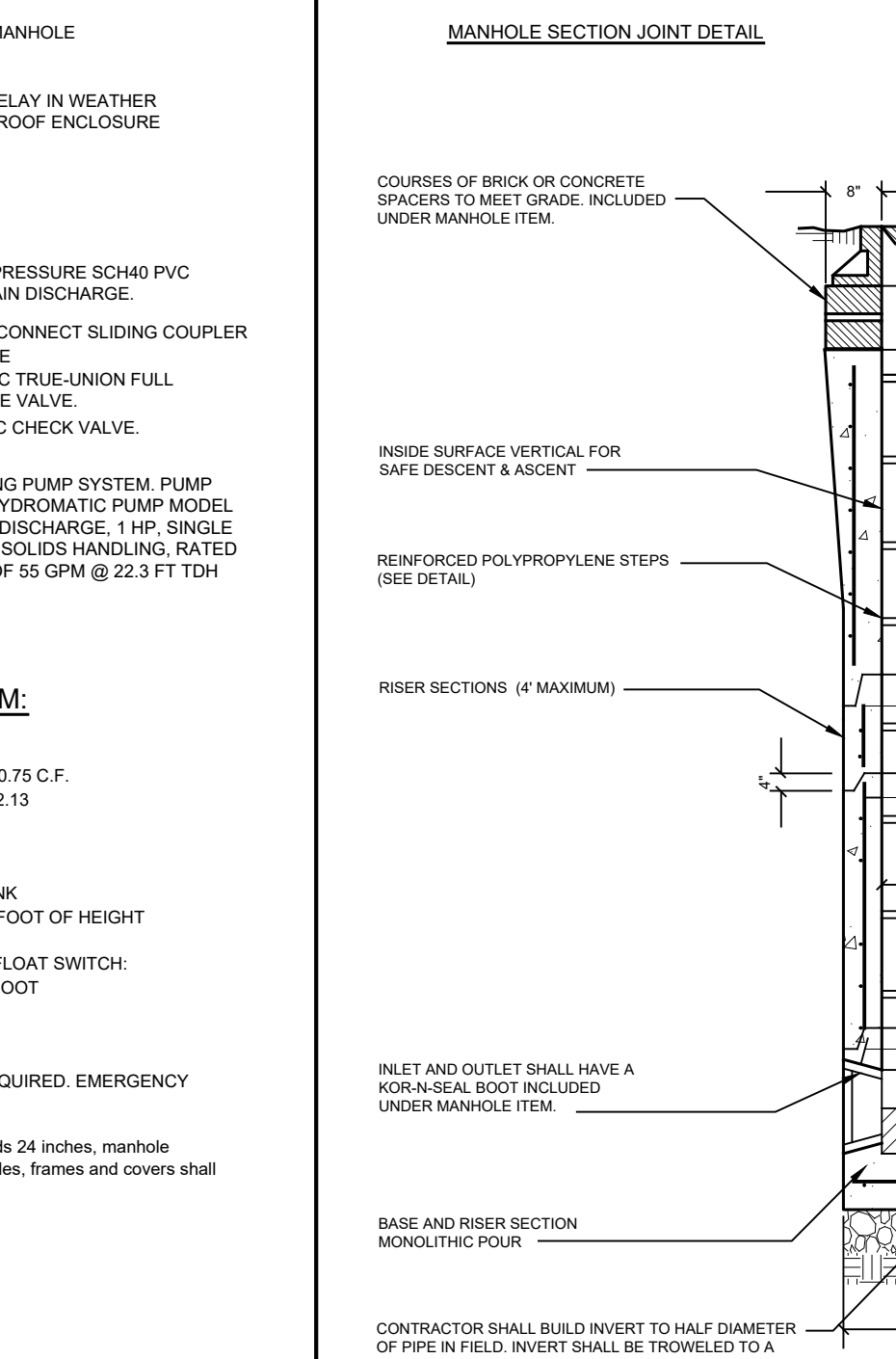
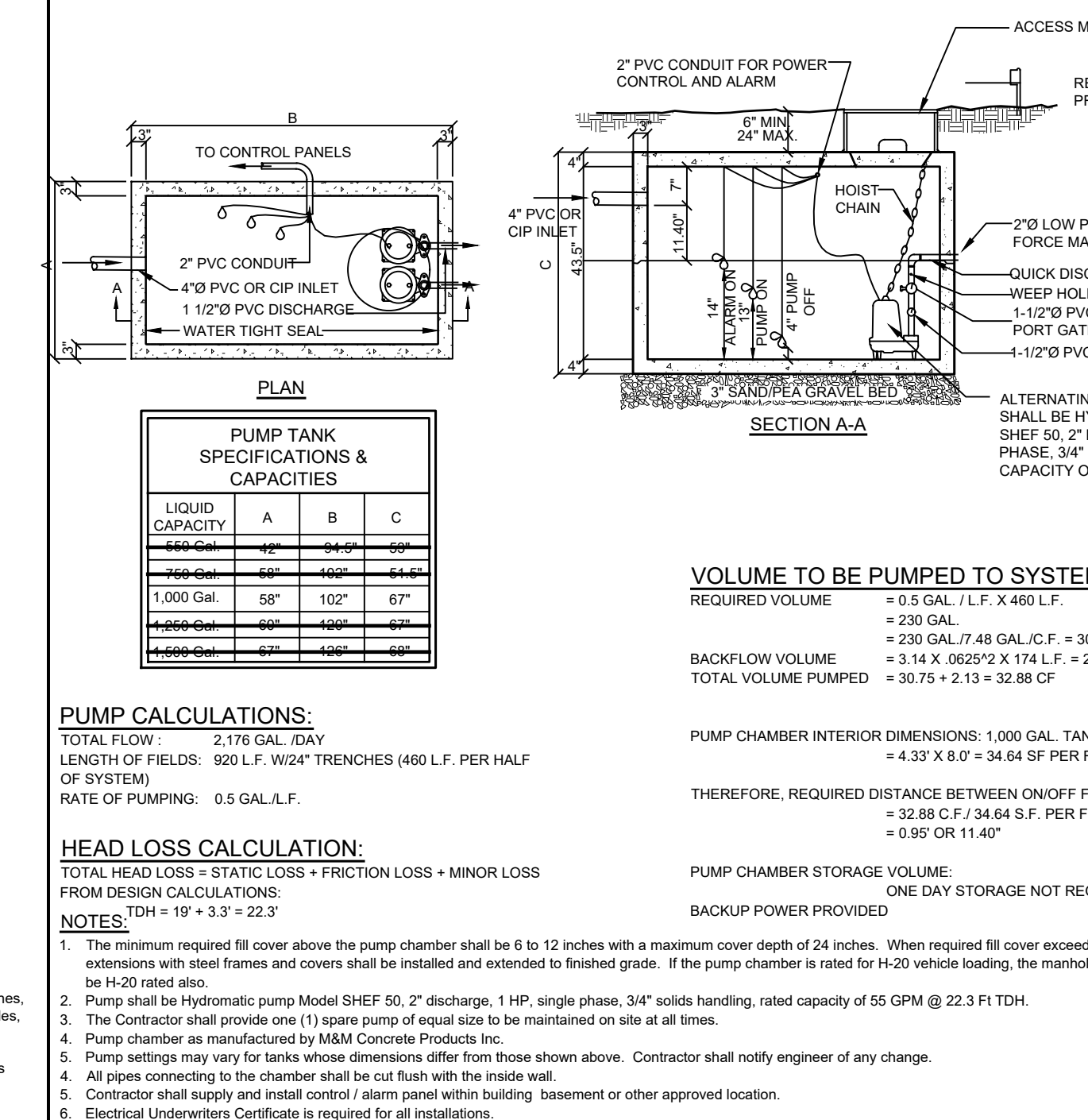
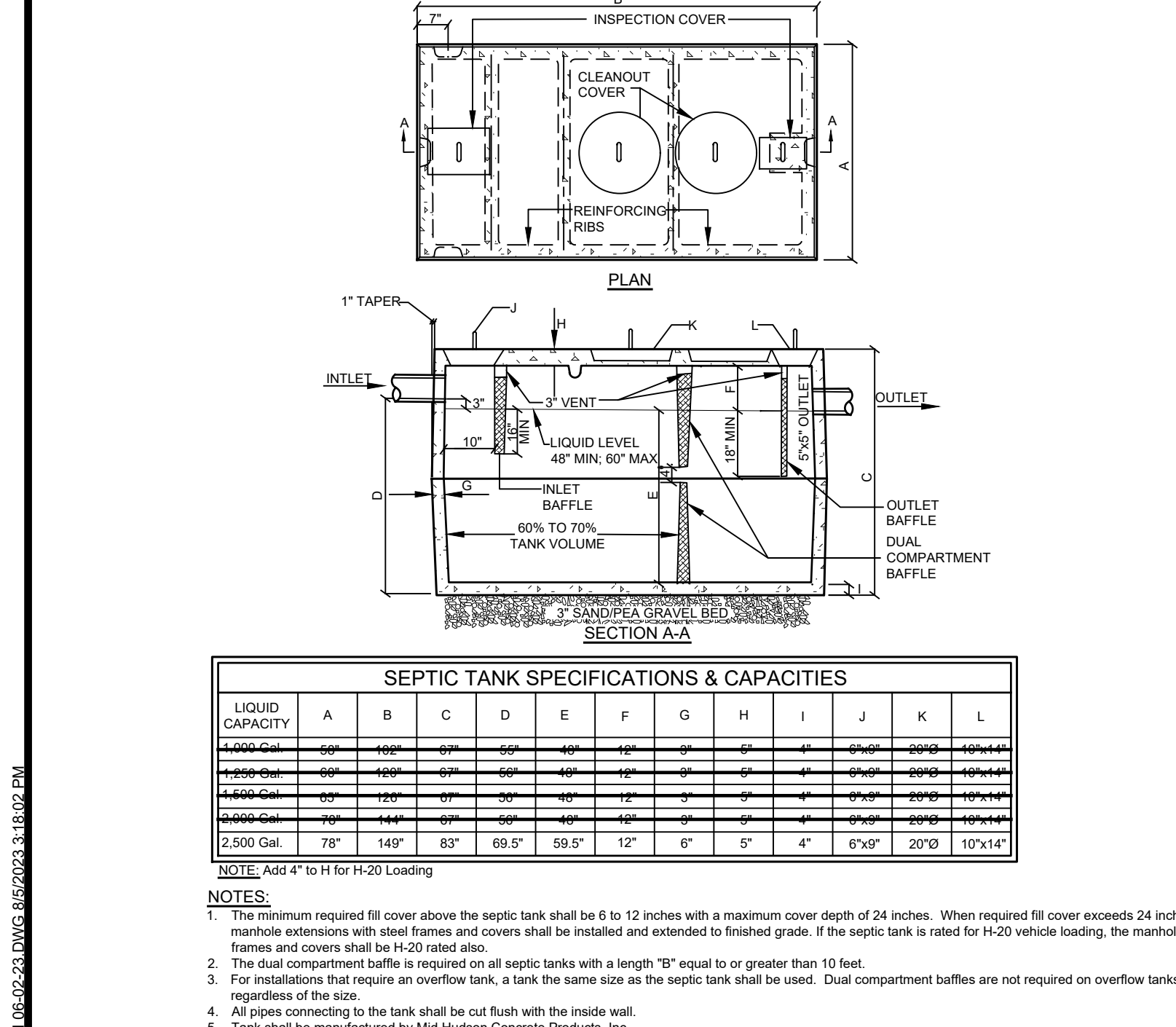


S-2 DB-13 DISTRIBUTION BOX DETAIL
NOT TO SCALE

S-5 PERFORATED PIPE TRENCH DETAIL
NOT TO SCALE

S-7 PRECAST CONCRETE SEWER MANHOLE DETAIL - CONE SECTION
NOT TO SCALE

P-2 PROPOSED GUEST HOUSE OWTS PROFILE SCALE: 1"=20'
P-3 PROPOSED POOL HOUSE OWTS PROFILE SCALE: 1"=20'

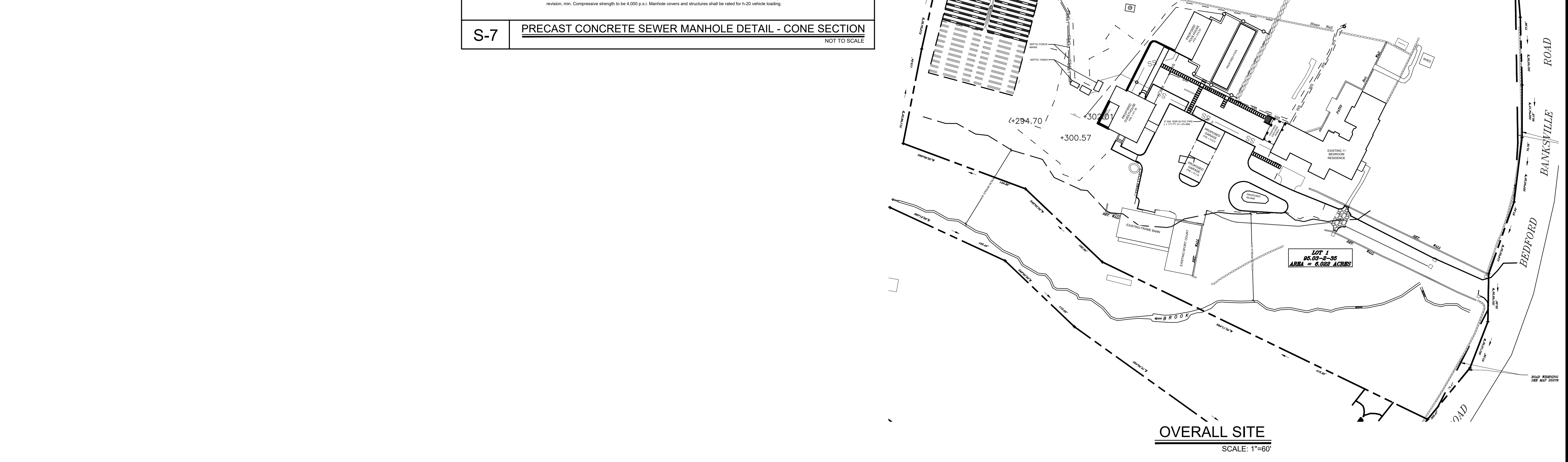
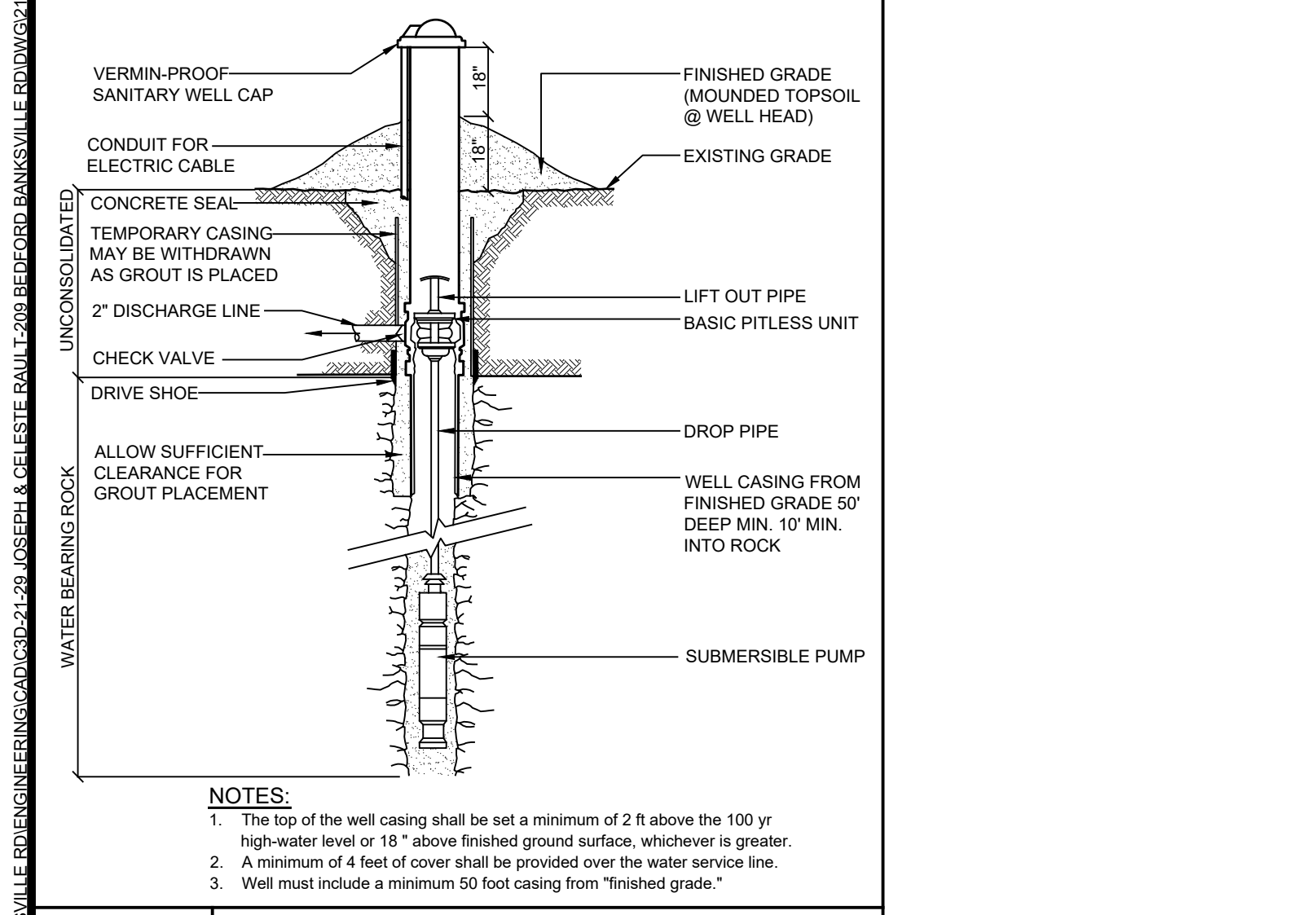


S-3 PRECAST CONCRETE SEPTIC TANK DETAIL AND OVERFLOW TANK DETAIL
NOT TO SCALE

S-6 DUPLEX PUMP CHAMBER DETAIL
NOT TO SCALE

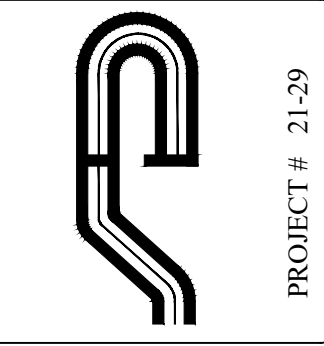
S-7 PRECAST CONCRETE SEWER MANHOLE DETAIL - CONE SECTION
NOT TO SCALE

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P-3 PROPOSED POOL HOUSE OWTS PROFILE SCALE: 1"=20'

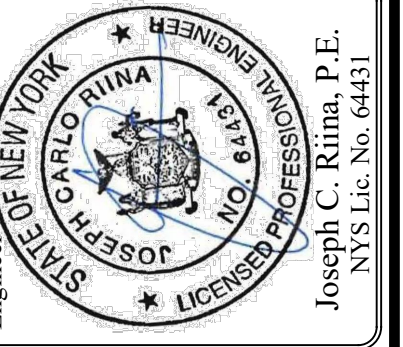


W-1 DRILLED WELL DETAIL
NOT TO SCALE

OVERALL SITE SCALE: 1"=60'



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Joseph C. Rima, P.E.
NYS Lic. No. 6451

Revisions:

NO.	DATE	DESCRIPTION
1	11/23	Plan Update
2	6/23	W.C.H.D. Comments
3	6/23	W.C.H.D. Comments
4	8/08/23	W.C.H.D. Comments

SCALE: AS NOTED
DRAWN BY: AB
DATE: 10/21/22

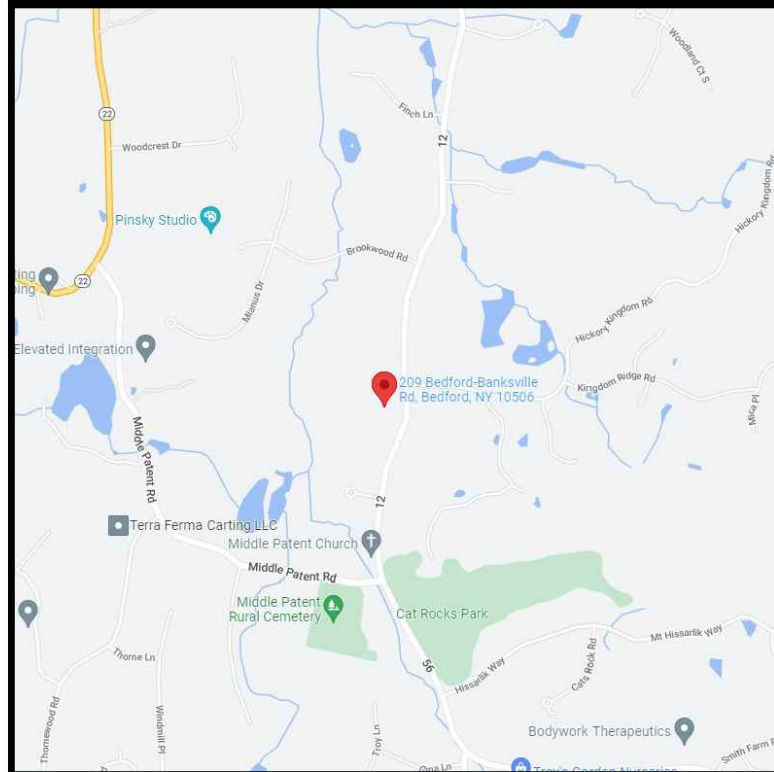
OWTS DETAILS

Joseph & Celeste Rault
209 Bedford Banksville Road
Town of New Castle
Westchester County, New York

OWTS PLAN PREPARED FOR
Joseph & Celeste Rault
209 Bedford Banksville Road
Town of New Castle
Westchester County, New York

Sheet 2 of 2

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SITE DATA:

OWNER / DEVELOPER: JOSEPH & CELESTE RAULT
 209 BEDFORD BANKSVILLE ROAD
 BEDFORD, NY, 10506

PROJECT LOCATION: 209 BEDFORD BANKSVILLE ROAD
 BEDFORD, NY, 10506

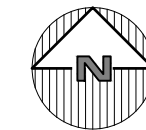
EXISTING TOWN ZONING: R-4A, ONE FAMILY RESIDENCE DISTRICT (4 ACRES)
 PROPOSED USE: R-4A, ONE FAMILY RESIDENCE DISTRICT (4 ACRES)
 TOWN TAX MAP DATA: SECTION 95.03, BLOCK 2, LOT 35
 SITE AREA: 6.022 ACRES (262,318.32 SF)
 SEWAGE FACILITIES: ONSITE SUBSURFACE TREATMENT SYSTEM
 WATER FACILITIES: PRIVATE WELL
 WATERSHED: INLAND LONG ISLAND SOUND BASIN

ZONING SCHEDULE:

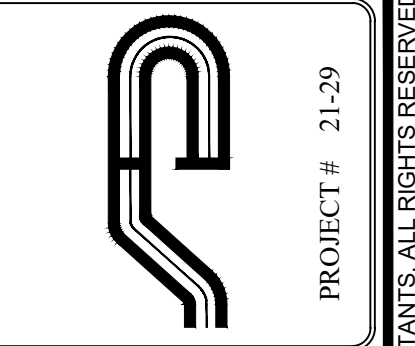
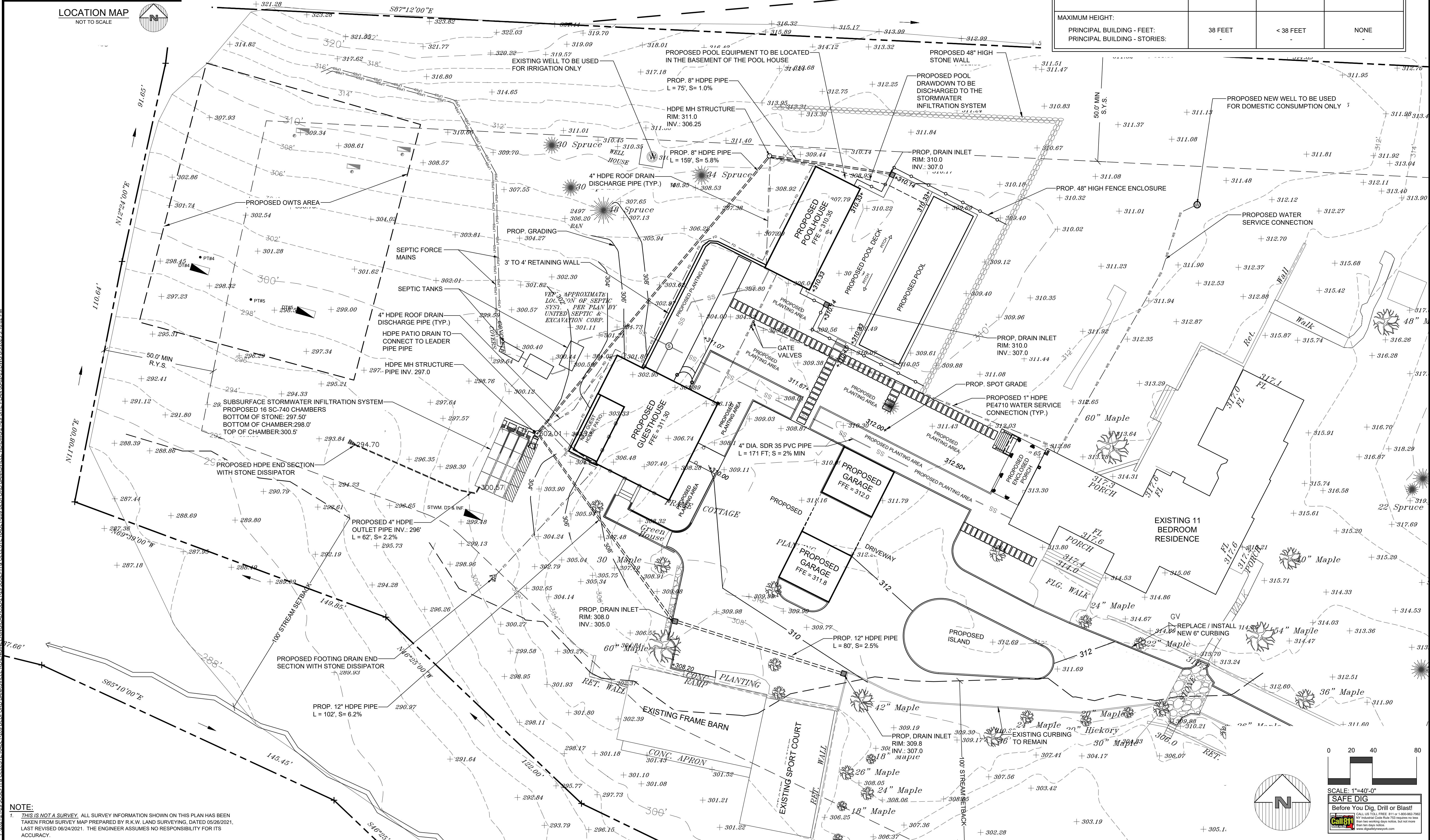
ZONING DISTRICT:		R-4A, SINGLE FAMILY RESIDENTIAL		
DIMENSIONAL REGULATIONS:	REQUIRED	PROVIDED	VARIANCE REQUIRED	
MINIMUM SIZE OF LOT:	4 ACRES.	6.022 AC.	NONE	
MINIMUM LOT AREA:	250 FT.	474 FT.	NONE	
MINIMUM LOT WIDTH:	150 FT.	701 FT.	NONE	
MINIMUM LOT DEPTH:				
MINIMUM YARD DIMENSIONS:				
PRINCIPAL BUILDING:	75 FT.	156 FT.	NONE	
FRONT YARD SETBACK:	50 FT.	208 FT.	NONE	
REAR YARD SETBACK:	50 FT.	58 FT.	NONE	
ONE SIDE YARD SETBACK:				
MAXIMUM % OF LOT TO BE OCCUPIED:	6% OF LOT AREA	1.33% OF LOT AREA	NONE	
PRINCIPAL BUILDING COVERAGE:				
MAXIMUM HEIGHT:				
PRINCIPAL BUILDING - FEET:	38 FEET	< 38 FEET	NONE	
PRINCIPAL BUILDING - STORIES:				

LOCATION MAP

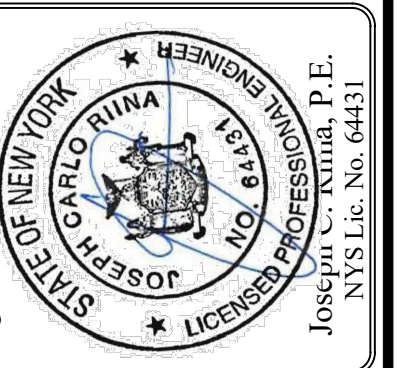
NOT TO SCALE



COMMON DRIVEWAY
 EASEMENT SEE MAP 25078



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Revisions:

No.	Date	Comments
1	6/27/23	Town Comments
2	8/4/23	Town Comments
3	9/08/23	WCHD Comments

SCALE: 1" = 20'
 DRAWN BY: AB
 DATE: 11/25/2022

SITE PLAN

SITE PLAN PREPARED FOR
Joseph & Celeste Rault
 209 Bedford Banksville Road
 Westchester County, New York

NOTE:
 1. THIS IS NOT A SURVEY. ALL SURVEY INFORMATION SHOWN ON THIS PLAN HAS BEEN TAKEN FROM SURVEY MAP PREPARED BY R.K.W. LAND SURVEYING, DATED 06/28/2021, LAST REVISED 06/24/2021. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

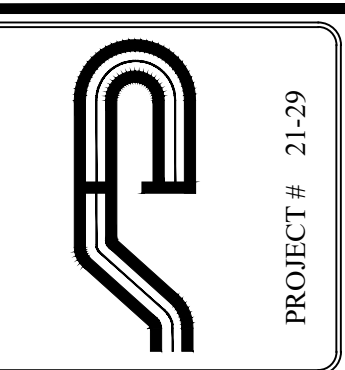


NOTE: UNAUTHORIZED ALTERATIONS OR ADDITIONS TO THIS DRAWING IS A VIOLATION OF SECTION 7209 (2)(F) OF THE NEW YORK STATE EDUCATION LAW.



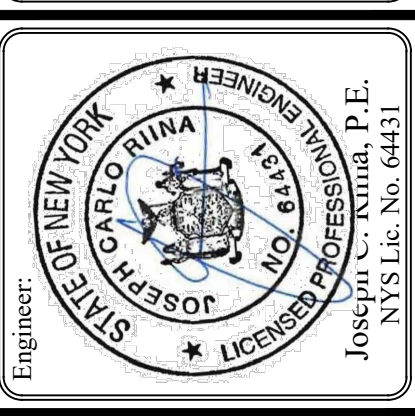
NOTE:
 1. THIS IS NOT A SURVEY. ALL SURVEY INFORMATION SHOWN ON THIS PLAN HAS BEEN TAKEN FROM SURVEY MAP PREPARED BY R.K.W. LAND SURVEYING, DATED 05/28/2021, LAST REVISED 06/24/2021. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

NOTE: UNAUTHORIZED ALTERATIONS OR ADDITIONS TO THIS DRAWING IS A VIOLATION OF SECTION 1209 (2)(f) OF THE NEW YORK STATE EDUCATION LAW.



PROJECT # 21-29

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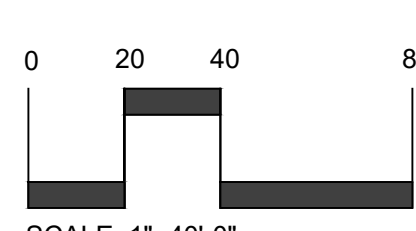
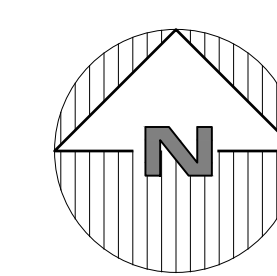
Revisions:	No.	Date	Comments
	1	6/22/23	TOWN COMMENTS
	2	8/4/23	TOWN COMMENTS
	3	9/08/23	WCHD COMMENTS

SCALE: 1" = 40'
 DRAWN BY: AB
 DATE: 11/25/22

EXISTING CONDITIONS PLAN

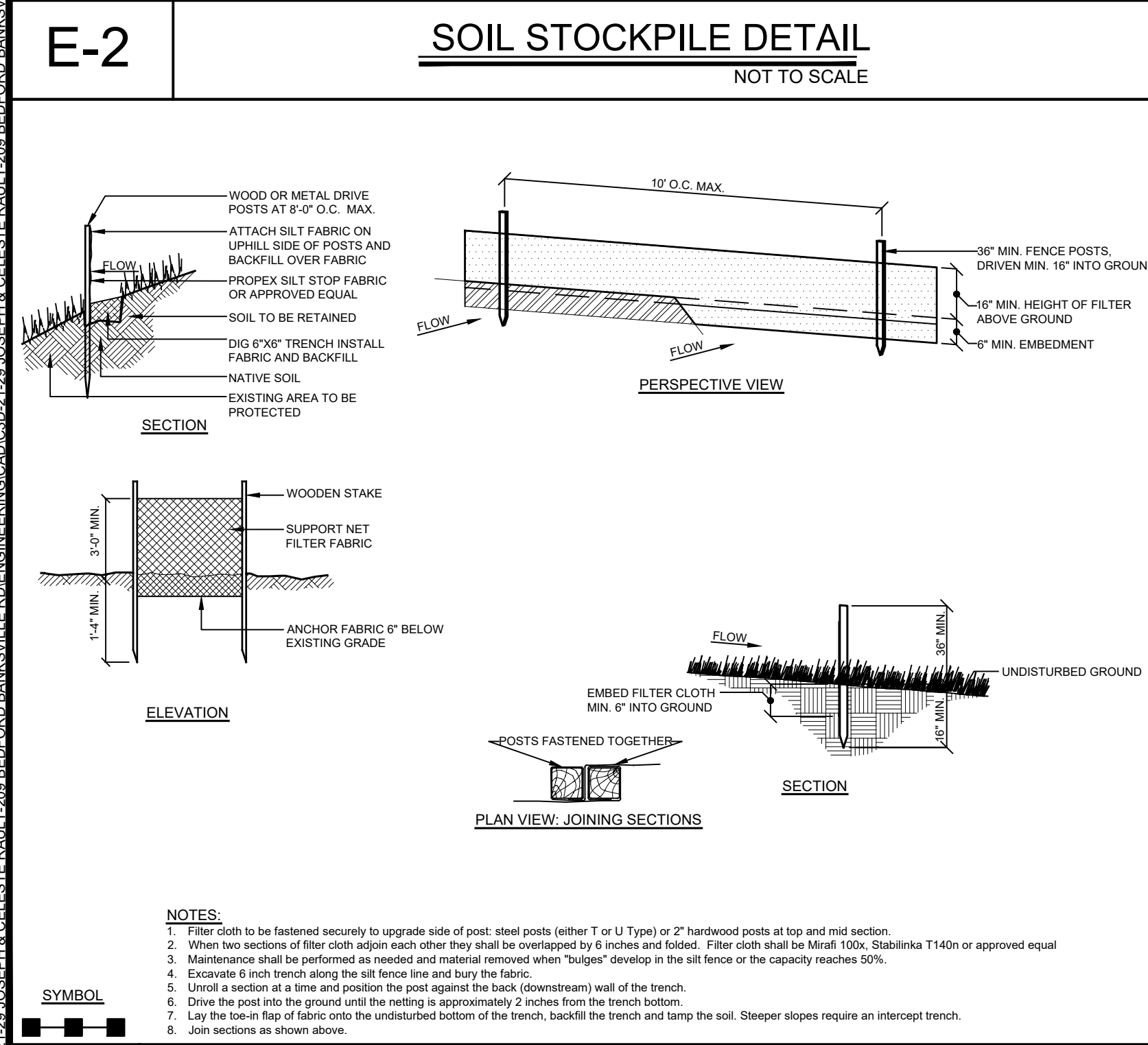
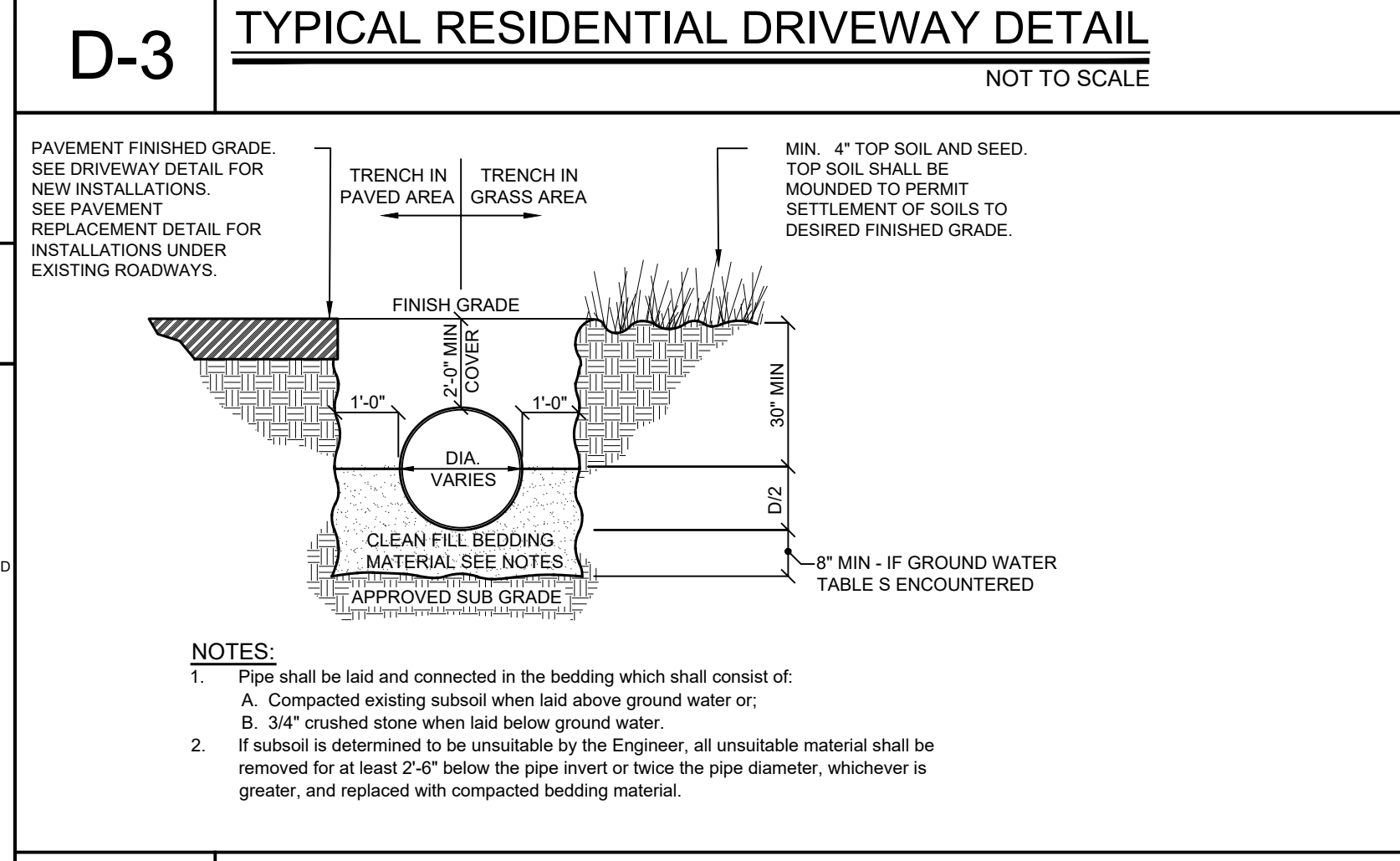
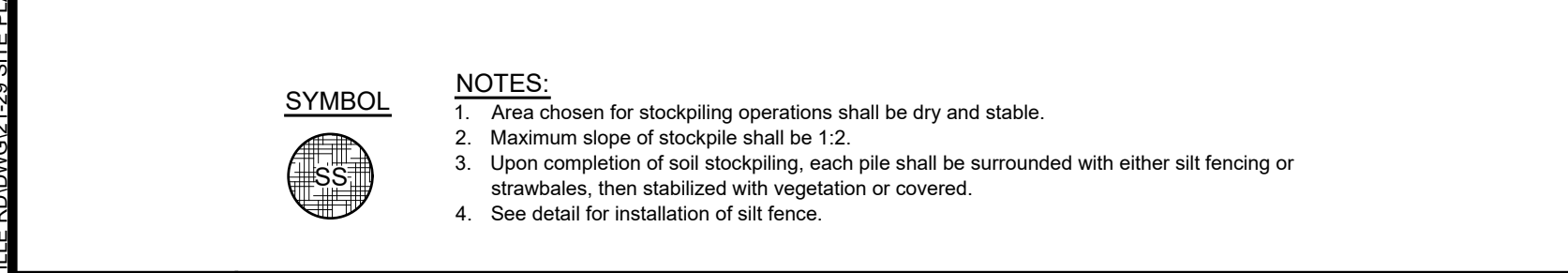
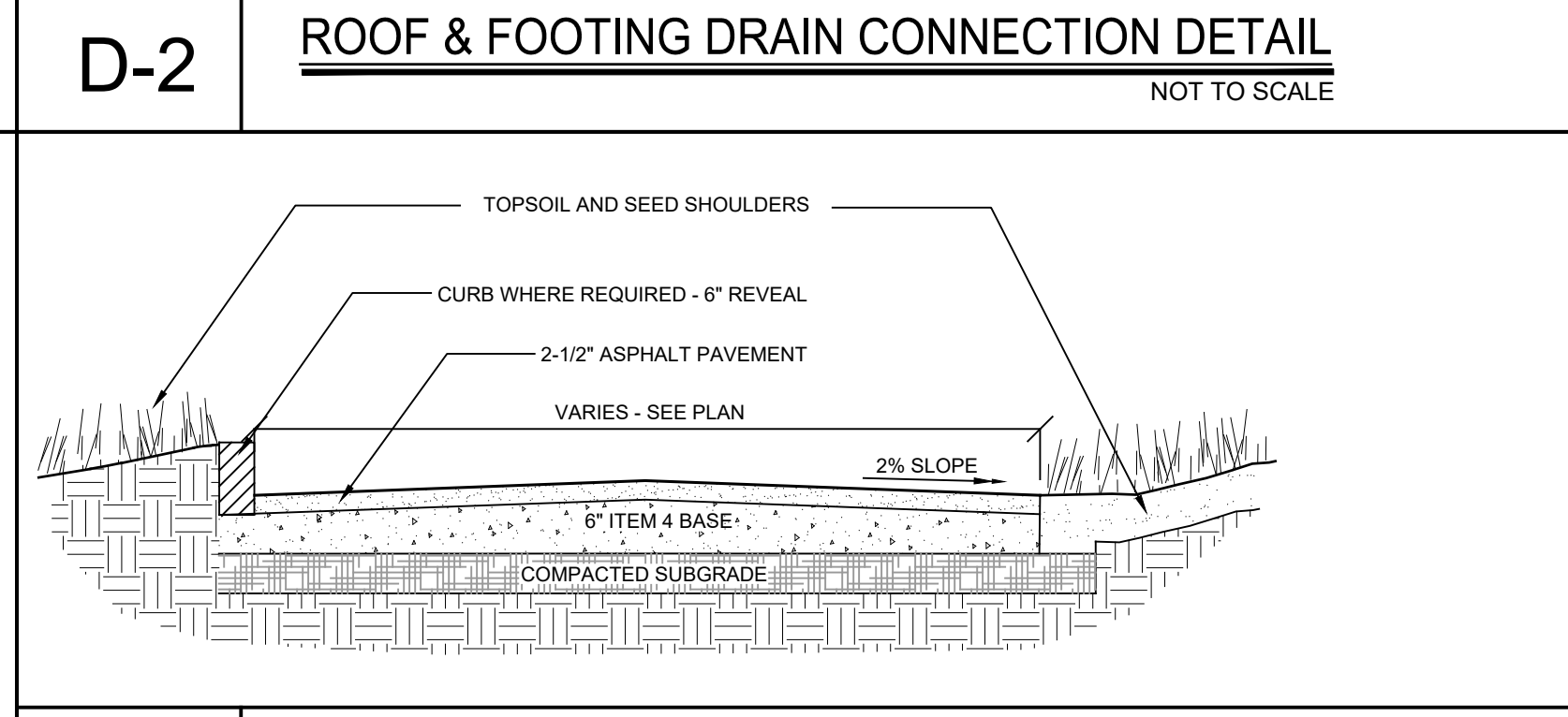
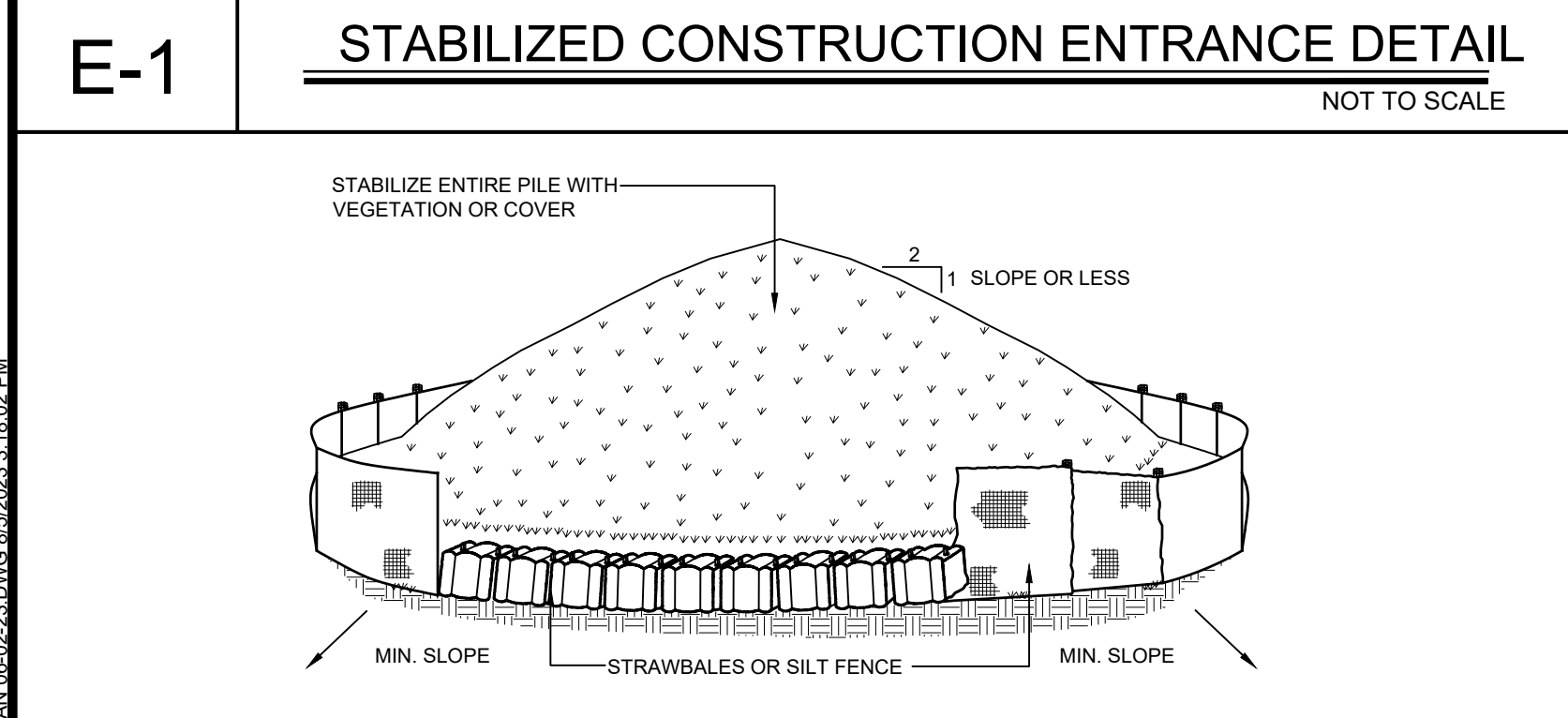
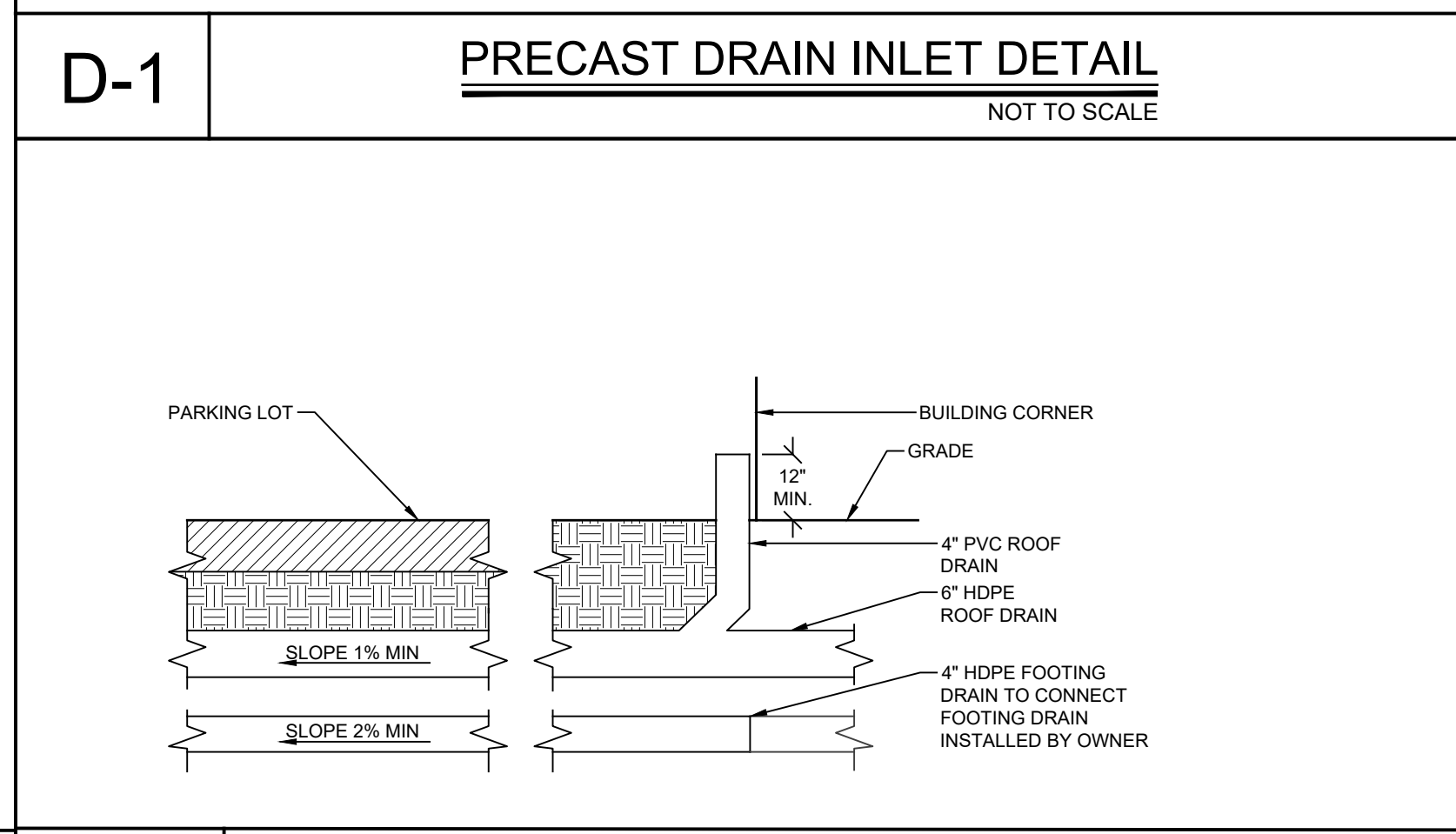
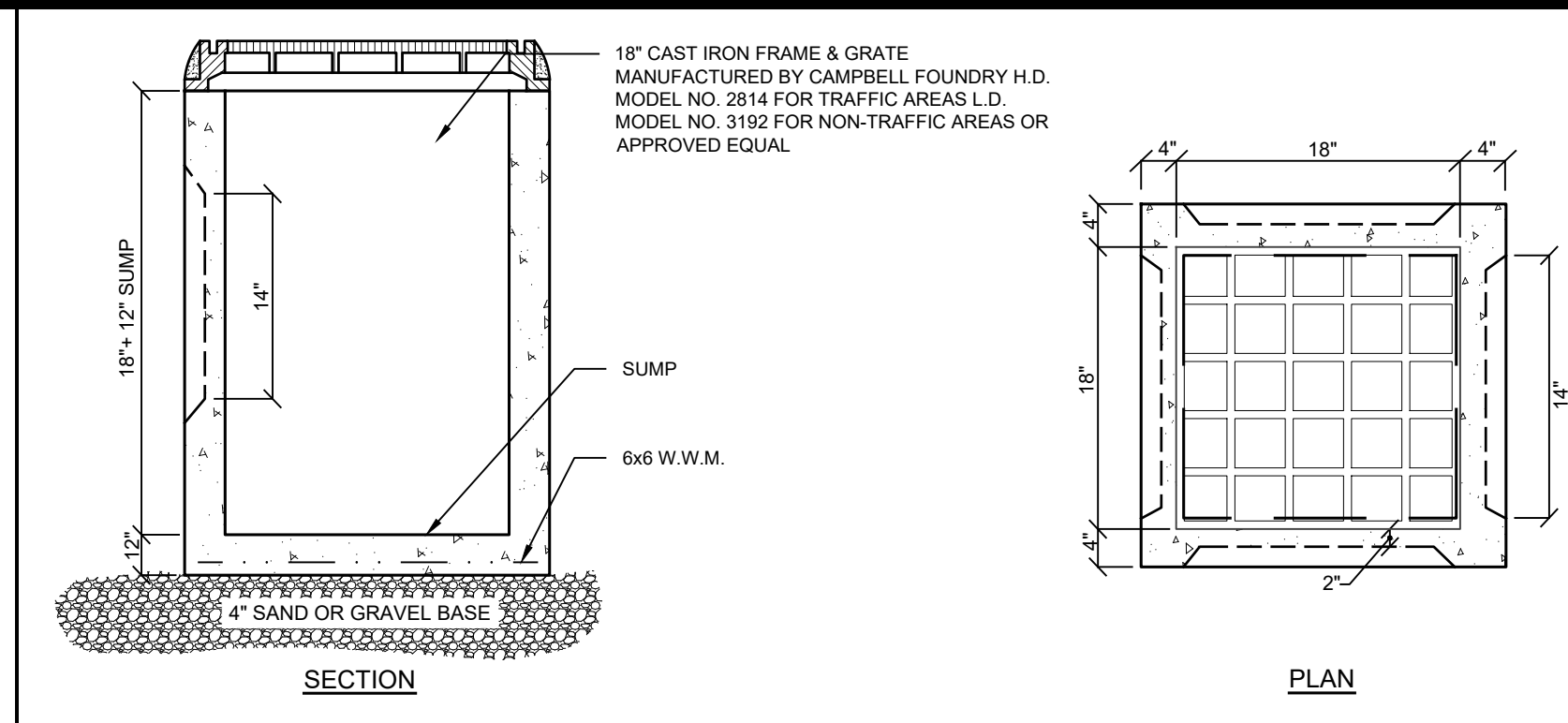
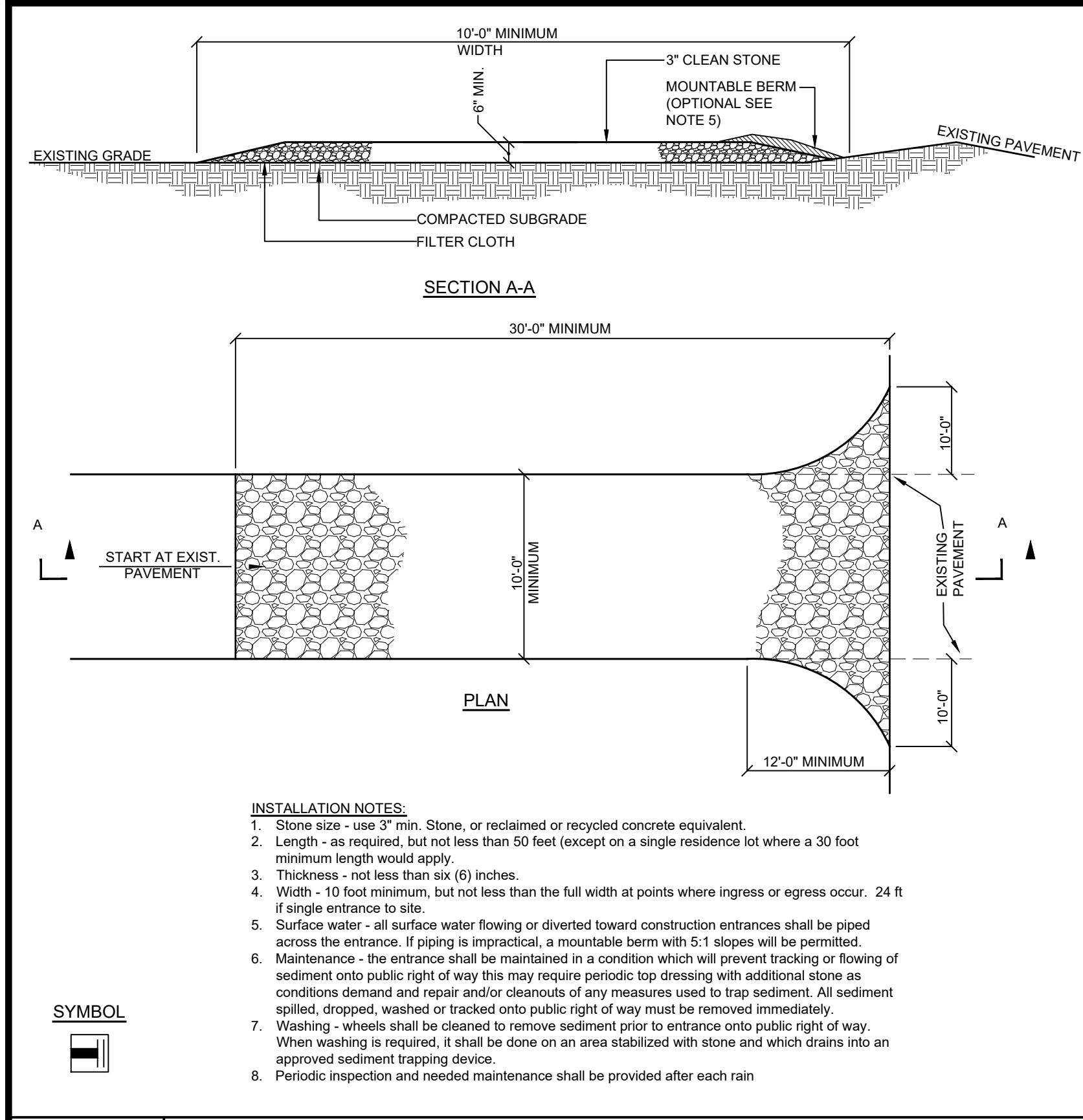
SITE PLAN PREPARED FOR
Joseph & Celeste Rault
 209 Bedford Banksville Road
 Town of North Castle, Westchester County, New York

Sheet 2 of 5



SAFE DIG
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 Call 811

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GENERAL EROSION CONTROL NOTES:

- Contractor shall be responsible for compliance with all sediment and erosion control practices. The sediment and erosion control practices are to be installed prior to any major soil disturbances, and maintained until permanent protection is established. Road surface flows from the site should be dissipated with tracking pad or appropriate measures during adjacent road shoulder regrading. Contractor is responsible for the installation and maintenance of all soil erosion and sedimentation control devices throughout the course of construction.
- Catch basin inlet protection must be installed and operating at all times until tributary areas and basin have been stabilized. When possible flows should be stabilized before reaching inlet protection structure. Timely maintenance of sediment control structures is the responsibility of the Contractor.
- All structures shall be maintained in good working order at all times. The sediment level in all sediment traps shall be closely monitored and sediment removed promptly when maximum levels are reached or as ordered by the engineer. All sediment control structures shall be inspected on a regular basis, and after each heavy rain to insure proper operation as designed. An inspection schedule shall be set forth prior to the start of construction.
- The locations and the installation times of the sediment capturing standards shall be as specified in these plans, as ordered by the Engineer, and in accordance with the latest edition of the "New York Standards and Specifications for Erosion and Sediment Control" (NYSSESC).
- All topsoil shall be placed in a stabilized stockpile for reuse on the site. All stockpile material required for final grading and stored on site shall be temporarily seeded and mulched within 7 days. Refer to soil stockpile details.
- Any disturbed areas that will be left exposed more than 7 days and not subject to construction traffic, shall immediately receive temporary seeding. Mulch shall be used if the season prevents the establishment of a temporary cover. Disturbed areas shall not be limed and fertilized prior to temporary seeding.
- All disturbed areas within 500 feet of an inhabited dwelling shall be wetted as necessary to provide dust control.
- The contractor shall keep the roadways within the project clear of soil and debris and is responsible for any street cleaning necessary during the course of the project.
- Sediment and erosion control structures shall be removed and the area stabilized when the drainage area has been properly stabilized by permanent measures.
- All sediment and erosion control measures shall be installed in accordance with current edition of NYSSESC.
- All regraded areas must be stabilized appropriately prior to any rock blasting, cutting, and/or filling of soils. Special care should be taken during construction to insure stability during maintenance and integrity of control structures.
- Any slopes graded at 3:1 or greater shall be stabilized with erosion blankets to be staked into place in accordance with the manufactures requirements. Erosion blankets may also be required at the discretion of Town officials or Project Engineer. When stabilized blanket is utilized for channel stabilization, place one half the volume of seed mix prior to laying net, and place the remaining seed after laying the stabilized blanket.
- To prevent heavy construction equipment and trucks from tracking soil off-site, construct a pervious crushed stone pad. Locate and construct pads as detailed in these plans.
- Contractor is responsible for controlling dust by sprinkling exposed soil areas periodically with water as required. Contractor to supply all equipment and water.
- Contractor shall be responsible for construction inspections as per the Town of North Castle requirements.

MAINTENANCE OF TEMPORARY EROSION AND SEDIMENT CONTROL STRUCTURES:

- Trees and vegetation shall be protected at all times as shown on the detail drawing and as directed by the Engineer.
- Care should be taken so as not to channel concentrated runoff through the areas of construction activity on the site.
- Fill and site disturbances should not be created which causes water to pond off site or on adjacent properties.
- Runoff from land disturbances shall not be discharged or have the potential to discharge off site without first being intercepted by a control structure, such as a sediment trap or the sediment pond. Sediment shall be removed before exceeding 50% of the retention structure's capacity.
- For finished grading, adequate grade shall be provided so that water will not pond on lawns for more than 24 hours after rainfall, except in swale flow areas which may drain for as long as 48 hours after rainfall.
- All swales and other areas of concentrated flow shall be properly stabilized with temporary control measures to prevent erosion and sediment travel. Surface flows over cut and fill areas shall be stabilized at all times.
- All sites shall be stabilized with erosion control materials within 7 days of final grading.
- Temporary sediment trapping devices shall be removed from the site within 30 days of final stabilization.

MAINTENANCE SCHEDULE:

	DAILY	WEEKLY	MONTHLY	AFTER RAINFALL	NECESSARY TO MAINTAIN FUNCTION	AFTER APPROVAL OF INSPECTOR
SILT FENCE	---	---	---	---	CLEAN/REPLACE	REMOVE

MAINTENANCE OF PERMANENT CONTROL STRUCTURES DURING CONSTRUCTION:

The stormwater management system and outlet structure shall be inspected on a regular basis and after every rainfall event. Sediment build up shall be removed from the inlet protection regularly to insure detention capacity and proper drainage. Outlet structure shall be free of obstructions. All piping and drain inlets shall be free of obstruction. Any sediment build up shall be removed.

MAINTENANCE OF CONTROLS AFTER CONSTRUCTION:

Controls (including respective outlet structures) should be inspected periodically for the first few months after construction and on an annual basis thereafter. They should also be inspected after major storm events.

DEBRIS AND LITTER REMOVAL:

Twice a year, inspect outlet structure and drain inlets for accumulated debris. Also, remove any accumulations during each mowing operation.

STRUCTURAL REPAIR/REPLACEMENT:

Outlet structure must be inspected twice a year for evidence of structural damage and repaired immediately.

EROSION CONTROL:

Unstable areas tributary to the basin shall immediately be stabilized with vegetation or other appropriate erosion control measures.

SEDIMENT REMOVAL:

Sediment should be removed after it has reached a maximum depth of five inches above the stormwater management system floor.

TOPSOIL:

Existing topsoil will be removed and stored in piles sufficiently as to avoid mixing with other excavation. Stockpiles shall be surrounded by erosion control as outlined on these plans. The furnishing of new topsoil shall be of a better or equal to the following criteria (SS713.01 NYSDOT):

- The pH of the material shall be 5.5 to 7.6.
- The organic content shall not be less than 2% or more than 70%.
- Gradation:

SIEVE SIZE	% PASSING BY WGT.
2 INCH	100
1 INCH	85 TO 100
1/4 INCH	65 TO 100
NO. 200 MESH	20 TO 80

PERMANENT VEGETATIVE COVER:

- Site preparation:
 - 1.1. Install erosion control measures.
 - 1.2. Scarify compacted soil areas.
 - 1.3. Lime as required to pH 6.5.
 - 1.4. Fertilize with 10-6-4 4 lbs/1,000 S.F.
 - 1.5. Incorporate amendments into soil with disc harrow.
- Seed mixtures for use on swales and cut and fill areas.

MIXTURE	LBS./ACRE
ALT. A	
KENTUCKY BLUE GRASS	20
CREeping RED FESCUE	28
RYE GRASS OR REDTOP	5
ALT. B	
CREeping RED FESCUE	20
REDTOP	2
TALL FESCUE/SMOOTH BLOOMGRASS	20
- SEEDING
 - 3.1. Prepare seed bed by raking to remove stones, twigs, roots and other foreign material.
 - 3.2. Apply soil amendments and integrate into soil.
 - 3.3. Apply seed uniformly by cyclone seeder culti-packer or hydro-seeder at rate indicated.
 - 3.4. Stabilize seeded areas in drainage swales.
 - 3.5. Irrigate to fully saturate soil layer, but not to dislodge planting soil.
 - 3.6. Seed between April 1st and May 15th or August 15th and October 15th.
 - 3.7. Seeding may occur May 15th and August 15th if adequate irrigation is provided.

TEMPORARY VEGETATIVE COVER:

SITE PREPARATION:

1. Install erosion control measures.
2. Scarify areas of compacted soil.
3. Fertilize with 10-10-10 at 400/acre.
4. Lime as required to pH 6.5.

SEED SPECIES:

MIXTURE	LBS./ACRE
Rapidly germinating annual ryegrass	20
Perennial ryegrass	20
Cereal oats	36

SEEDING:

Same as permanent vegetative cover

WINTER STABILIZATION NOTES:

12. If construction activities are expected to extend into or occur during the winter season the contractor shall anticipate proper stabilization and sequencing. construction shall be sequenced such that wherever possible areas of disturbance that can be completed and permanently stabilized shall be done by applying and establishing permanent vegetative cover before the first frost. areas subject to temporary disturbance that will not be worked for an extended period of time shall be treated with temporary seed, mulch, and/or erosion blankets.

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PROJECT # 21-29

STATE OF NEW YORK
JOSEPH & CELESTE RAULT
LICENSED PROFESSIONAL ENGINEER
NYS Lic. No. 64431

Revisions:
No. Date Comments
1. 6/2/23 Town Comments
2. 8/4/23 TOWN COMMENTS
3. 9/08/23 WCHD COMMENTS

SCALE: N.T.S.
DRAWN BY: AB
DATE: 11/25/22

DRAINAGE & ESC DETAILS

SITE PLAN PREPARED FOR
Joseph & Celeste Rault
209 Bedford Banksville Road
Westchester County, New York

Sheet 4 of 5

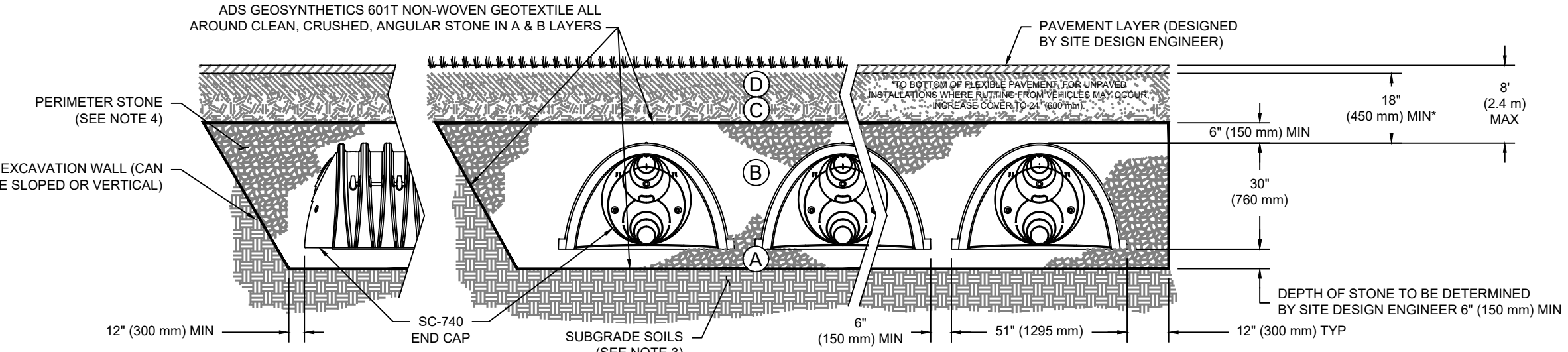
11/20/23 2:26 JOSEPH & CELESTE RAULT 209 BEDFORD BANKSVILLE RD CIVIL ENGINEERING CAD/CD 21-29 JOSEPH & CELESTE RAULT 209 BEDFORD BANKSVILLE RD CIVIL ENGINEERING CAD/CD 21-29 SITE PLAN 05/02/23 DWG 862028 3.18.02 BA

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

ACCEPTABLE FILL MATERIALS: STORMTECH SC-740 CHAMBER SYSTEMS

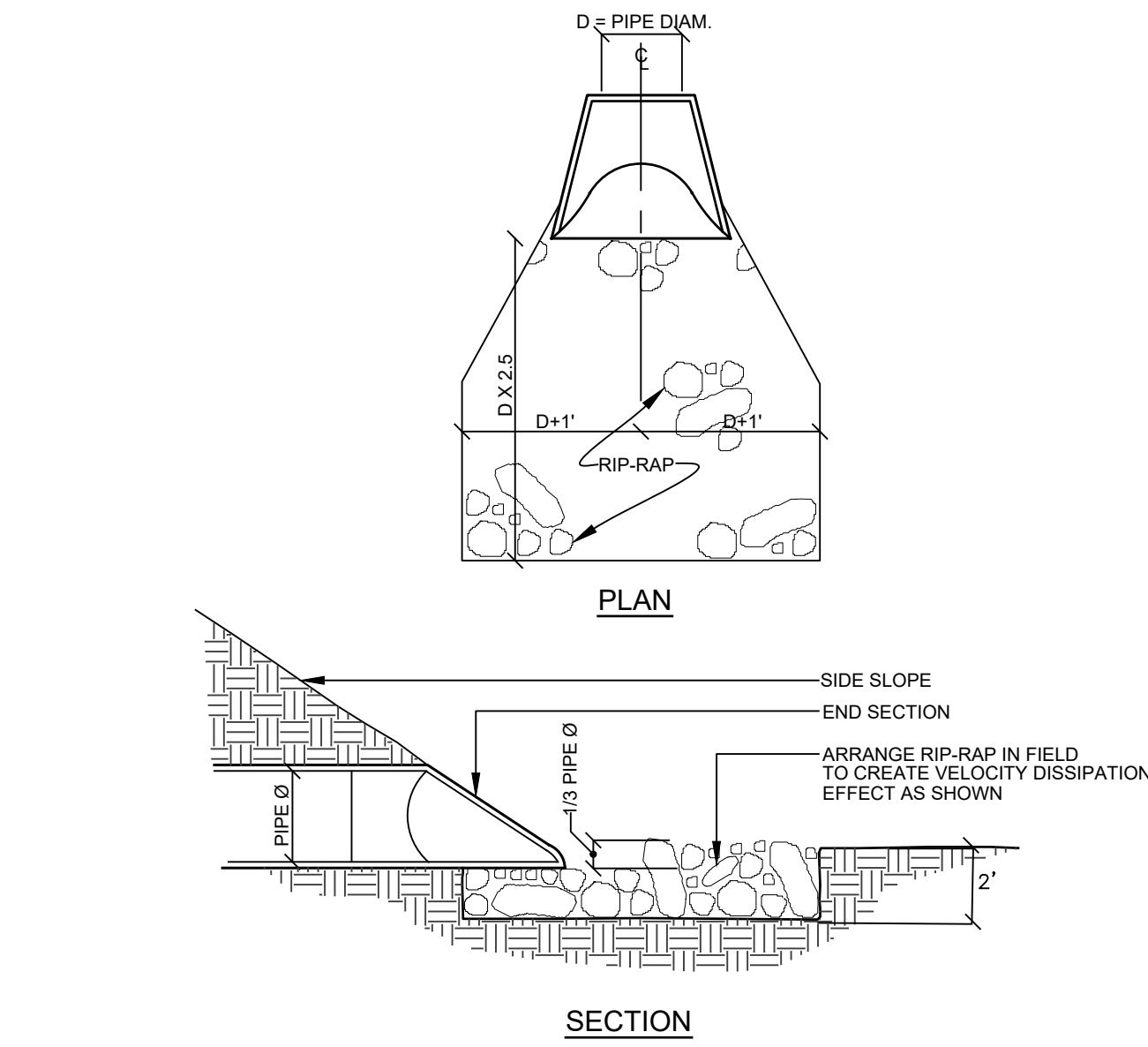
MATERIAL LOCATION	DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	FINAL FILL: FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER.	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A
C	INITIAL FILL: FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 18" (450 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	BEGIN COMPACTIONS AFTER 12" (300 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 6" (150 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS. ROLLER GROSS VEHICLE WEIGHT NOT TO EXCEED 12,000 LB (53 kN). DYNAMIC FORCE NOT TO EXCEED 20,000 LB (89 kN).
B	EMBEDMENT STONE: FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE	NO COMPACTION REQUIRED.
A	FOUNDATION STONE: FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE. ^{2,3}

PLEASE NOTE:
 1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
 2. STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 4" (100 mm) MAX LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
 3. WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.
 4. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.



NOTES:

- CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
- SC-740 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
- THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
- PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
- REQUIREMENTS FOR HANDLING AND INSTALLATION:
 - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
 - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 2".
 - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT SHALL BE GREATER THAN OR EQUAL TO 550 LBS/FT³. THE ASC IS DEFINED IN SECTION 6.2.8 OF ASTM F2418. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.



D-5 RIP-RAP APRON/ENERGY DISSIPATER DETAIL
NOT TO SCALE

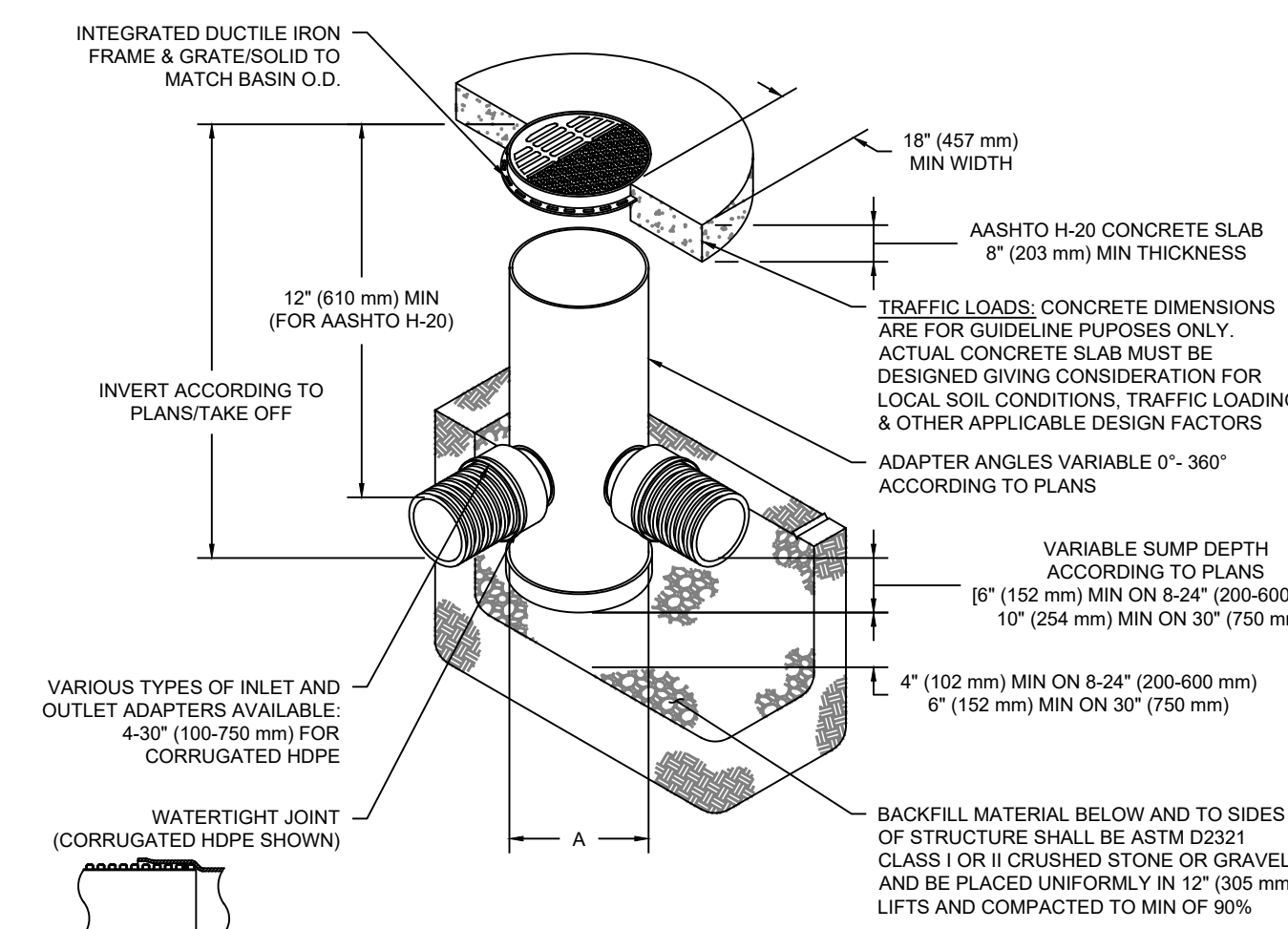
INSPECTION & MAINTENANCE

- STEP 1) INSPECT ISOLATOR ROW PLUS FOR SEDIMENT
- INSPECTION PORTS (IF PRESENT)
 - REMOVE/OPEN LID ON NYLOPLAST IN-LINE DRAIN
 - REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED
 - USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
 - LOWER A CAMERA INTO ISOLATOR ROW PLUS FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)
 - IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
 - ALL ISOLATOR ROW PLUS ROWS
 - REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW PLUS
 - USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW PLUS THROUGH OUTLET PIPE
 - MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY
 - FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MANHOLE
 - IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
- STEP 2) CLEAN OUT ISOLATOR ROW PLUS USING THE JETVAC PROCESS
- A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45° (1.1 m) OR MORE IS PREFERRED
 - APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
 - VACUUM STRUCTURE SUMP AS REQUIRED
- STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS.
- STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.

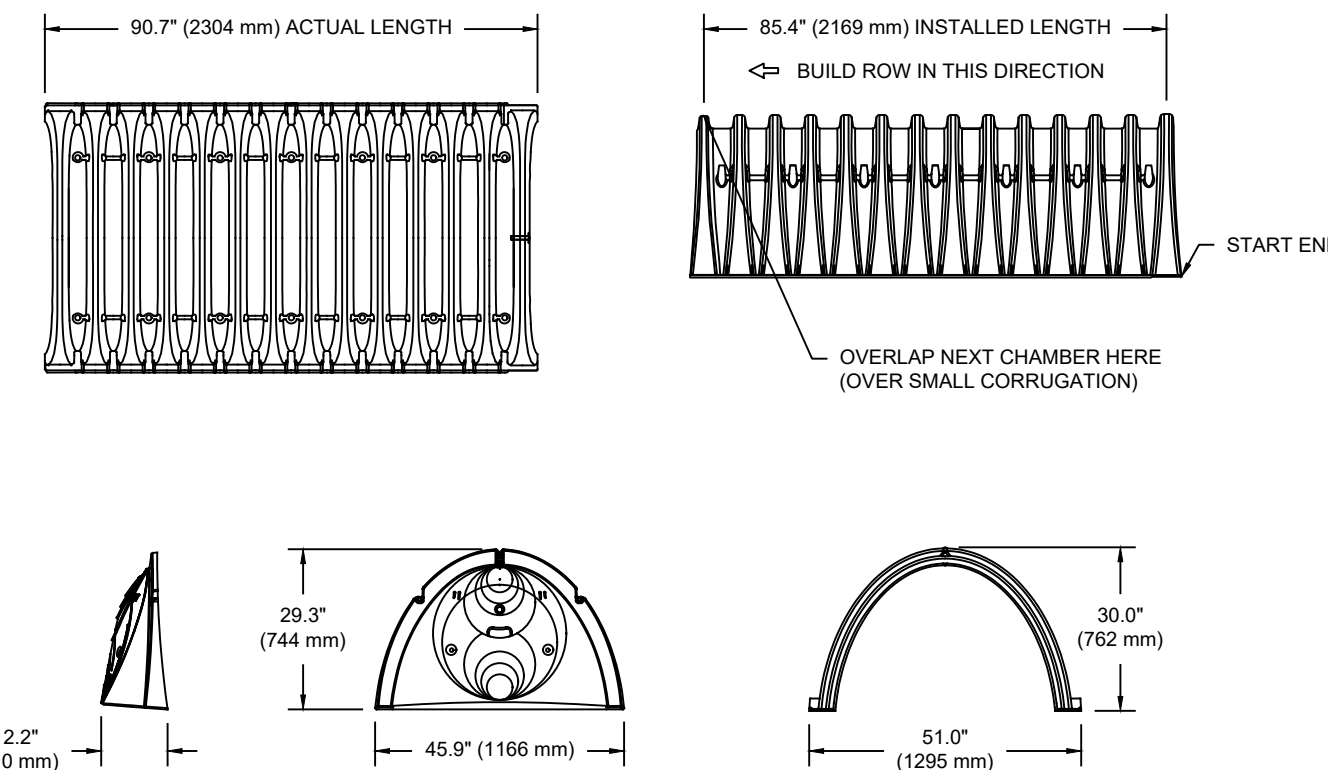
NOTES

- INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.
- CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.

NYLOPLAST DRAIN BASIN
NTS



SC-740 TECHNICAL SPECIFICATION
NTS



NOMINAL CHAMBER SPECIFICATIONS

SIZE (W X H X INSTALLED LENGTH)	CHAMBER STORAGE	MINIMUM INSTALLED STORAGE*	WEIGHT
51.0" X 30.0" X 85.4"	45.9 CUBIC FEET (1.30 m ³)	74.9 CUBIC FEET (2.12 m ³)	75.0 lbs. (33.6 kg)
(1295 mm X 762 mm X 2169 mm)			

*ASSUMES 6" (152 mm) STONE ABOVE, BELOW, AND BETWEEN CHAMBERS

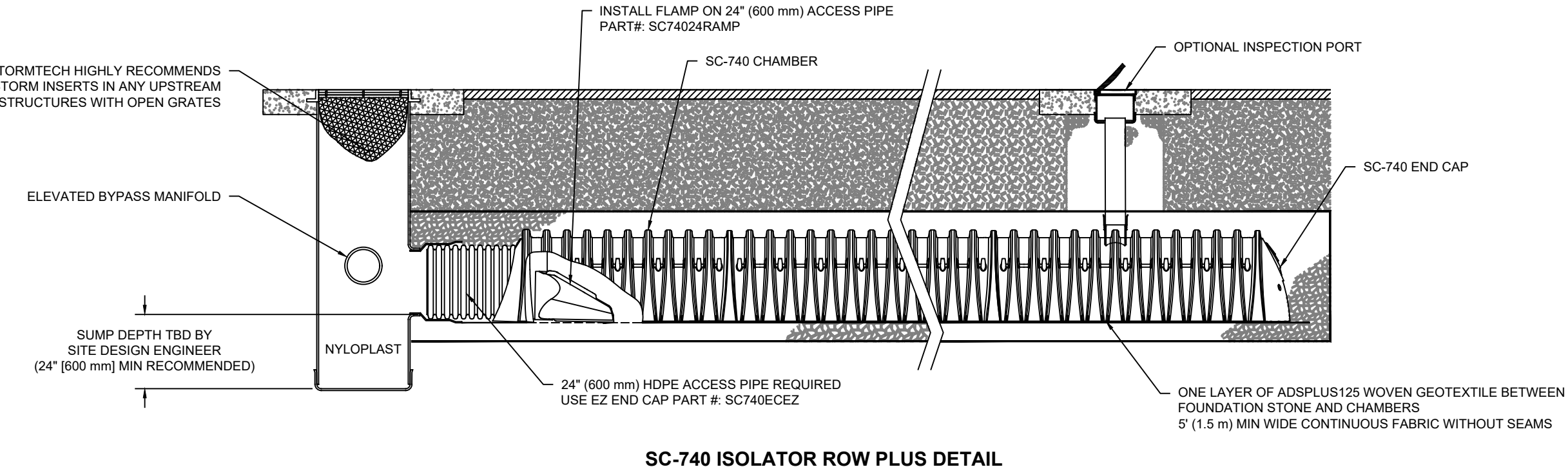
PRE-FAB STUB AT BOTTOM OF END CAP WITH FLAMP END WITH "B"
 PRE-FAB STUBS AT TOP OF END CAP FOR PART NUMBERS ENDING WITH "B"
 PRE-FAB STUBS AT TOP OF END CAP FOR PART NUMBERS ENDING WITH "T"
 PRE-CORED END CAPS END WITH "PC"

PART #	STUB	A	B	C
SC740EPE001 / SC740EPE001PC	6" (150 mm)	10.9" (277 mm)	18.5" (470 mm)	---
SC740EPE008 / SC740EPE008PC	---	---	---	0.5" (13 mm)
SC740EPE007 / SC740EPE007PC	8" (200 mm)	12.2" (310 mm)	16.5" (419 mm)	---
SC740EPE008 / SC740EPE008PC	---	---	---	0.6" (15 mm)
SC740EPE101 / SC740EPE101PC	10" (250 mm)	13.4" (340 mm)	14.5" (368 mm)	---
SC740EPE108 / SC740EPE108PC	---	---	---	0.7" (18 mm)
SC740EPE121 / SC740EPE121PC	12" (300 mm)	14.7" (373 mm)	12.5" (318 mm)	---
SC740EPE128 / SC740EPE128PC	---	---	---	1.2" (30 mm)
SC740EPE151 / SC740EPE151PC	15" (375 mm)	18.4" (467 mm)	9.0" (229 mm)	---
SC740EPE158 / SC740EPE158PC	---	---	---	1.3" (33 mm)
SC740EPE181 / SC740EPE181PC	18" (450 mm)	19.7" (500 mm)	5.0" (127 mm)	---
SC740EPE188 / SC740EPE188PC	---	---	---	1.6" (41 mm)
SC740ECEZ*	24" (600 mm)	18.5" (470 mm)	---	0.1" (3 mm)

ALL STUBS, EXCEPT FOR THE SC740ECEZ ARE PLACED AT BOTTOM OF END CAP SUCH THAT THE OUTSIDE DIAMETER OF THE STUB IS FLUSH WITH THE BOTTOM OF THE END CAP. FOR ADDITIONAL INFORMATION CONTACT STORMTECH AT 1-888-892-2694.

* FOR THE SC740ECEZ THE 24" (600 mm) STUB LIES BELOW THE BOTTOM OF THE END CAP APPROXIMATELY 1.75" (44 mm). BACKFILL MATERIAL SHOULD BE REMOVED FROM BELOW THE N-12 STUB SO THAT THE FITTING SITS LEVEL.

NOTE: ALL DIMENSIONS ARE NOMINAL



SC-740 STORMTECH CHAMBER SPECIFICATIONS

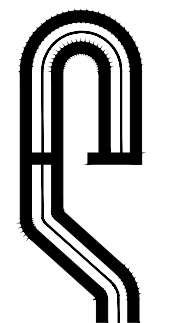
- CHAMBERS SHALL BE STORMTECH SC-740.
- CHAMBERS SHALL BE ARCH-SHAPED AND SHALL BE MANUFACTURED FROM VIRGIN, IMPACT-MODIFIED POLYPROPYLENE COPOLYMERS.
- CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
- CHAMBER ROWS SHALL PROVIDE CONTINUOUS, UNOBSTRUCTED INTERNAL SPACE WITH NO INTERNAL SUPPORTS THAT WOULD IMPEDE FLOW OR LIMIT ACCESS FOR INSPECTION.
- THE STRUCTURAL DESIGN OF THE CHAMBERS, THE STRUCTURAL BACKFILL, AND THE INSTALLATION REQUIREMENTS SHALL ENSURE THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12, ARE MET FOR: 1) LONG-DURATION DEAD LOADS AND 2) SHORT-DURATION LIVE LOADS, BASED ON THE AASHTO DESIGN TRUCK WITH CONSIDERATION FOR IMPACT AND MULTIPLE VEHICLE PRESENCES.
- CHAMBERS SHALL BE DESIGNED, TESTED AND ALLOWABLE LOAD CONFIGURATIONS DETERMINED IN ACCORDANCE WITH ASTM F2787, "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS". LOAD CONFIGURATIONS SHALL INCLUDE: 1) INSTANTANEOUS (<1 MIN) AASHTO DESIGN TRUCK LIVE LOAD ON MINIMUM COVER 2) MAXIMUM PERMANENT (75-YR) COVER LOAD AND 3) ALLOWABLE COVER WITH PARKED (1-WEEK) AASHTO DESIGN TRUCK.
- REQUIREMENTS FOR HANDLING AND INSTALLATION:
 - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
 - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 2".
 - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT SHALL BE GREATER THAN OR EQUAL TO 550 LBS/FT³. THE ASC IS DEFINED IN SECTION 6.2.8 OF ASTM F2418. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.
- ONLY CHAMBERS THAT ARE APPROVED BY THE SITE DESIGN ENGINEER WILL BE ALLOWED. UPON REQUEST BY THE SITE DESIGN ENGINEER OR OWNER, THE CHAMBER MANUFACTURER SHALL SUBMIT A STRUCTURAL EVALUATION FOR APPROVAL BEFORE DELIVERING CHAMBERS TO THE PROJECT SITE AS FOLLOWS:
 - THE STRUCTURAL EVALUATION SHALL BE SEALED BY A REGISTERED PROFESSIONAL ENGINEER.
 - THE STRUCTURAL EVALUATION SHALL DEMONSTRATE THAT THE SAFETY FACTORS ARE GREATER THAN OR EQUAL TO 1.95 FOR DEAD LOAD AND 1.75 FOR LIVE LOAD. THE MINIMUM REQUIRED BY ASTM F2787 AND BY SECTIONS 3 AND 12.12 OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS FOR THERMOPLASTIC PIPE.
 - THE TEST DERIVED CREEP MODULUS AS SPECIFIED IN ASTM F2418 SHALL BE USED FOR PERMANENT DEAD LOAD DESIGN EXCEPT THAT IT SHALL BE THE 75-YEAR MODULUS USED FOR DESIGN.
- CHAMBERS AND END CAPS SHALL BE PRODUCED AT AN ISO 9001 CERTIFIED MANUFACTURING FACILITY.

IMPORTANT - NOTES FOR THE BIDDING AND INSTALLATION OF THE SC-740 SYSTEM

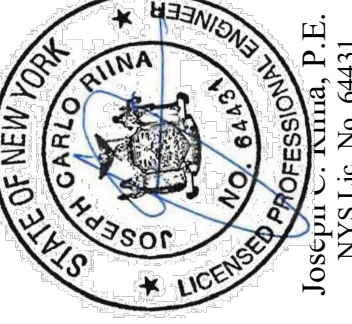
- STORMTECH SC-740 CHAMBERS SHALL NOT BE INSTALLED UNTIL THE MANUFACTURER'S REPRESENTATIVE HAS COMPLETED A PRE-CONSTRUCTION MEETING WITH THE INSTALLERS.
- STORMTECH SC-740 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
- CHAMBERS ARE NOT TO BE BACKFILLED WITH A DOZER OR AN EXCAVATOR SITUATED OVER THE CHAMBERS. STORMTECH RECOMMENDS 3 BACKFILL METHODS:
 - STONES/HOOTER LOCATED OFF THE CHAMBER BED.
 - BACKFILL AS ROWS ARE BUILT USING AN EXCAVATOR ON THE FOUNDATION STONE OR SUBGRADE.
 - BACKFILL FROM OUTSIDE THE EXCAVATION USING A LONG BOOM HOE OR EXCAVATOR.
- THE FOUNDATION STONE SHALL BE LEVELED AND COMPACTED PRIOR TO PLACING CHAMBERS.
- JOINTS BETWEEN CHAMBERS SHALL BE PROPERLY SEATED PRIOR TO PLACING STONE.
- MAINTAIN MINIMUM 6" (150 mm) SPACING BETWEEN THE CHAMBER ROWS.
- EMBEDMENT STONE SURROUNDING CHAMBERS MUST BE A CLEAN, CRUSHED, ANGULAR STONE 3/4-2" (20-50 mm).
- THE CONTRACTOR MUST REPORT ANY DISCREPANCIES WITH CHAMBER FOUNDATION MATERIALS BEARING CAPACITIES TO THE SITE DESIGN ENGINEER.
- STORMTECH RECOMMENDS THE USE OF "FLEXSTORM CATCH IT" INSERTS DURING CONSTRUCTION FOR ALL INLETS TO PROTECT THE SUBSURFACE STORMWATER MANAGEMENT SYSTEM FROM CONSTRUCTION SITE RUNOFF.

NOTES FOR CONSTRUCTION EQUIPMENT

- STORMTECH SC-740 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
 - THE USE OF CONSTRUCTION EQUIPMENT OVER SC-740 CHAMBERS IS LIMITED:
 - NO EQUIPMENT IS ALLOWED ON BARE CHAMBERS.
 - NO RUBBER Tired LOADERS, DUMP TRUCKS, OR EXCAVATORS ARE ALLOWED UNTIL PROPER FILL DEPTHS ARE REACHED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
 - WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT CAN BE FOUND IN THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
 - FULL 36" (900 mm) OF STABILIZED COVER MATERIALS OVER THE CHAMBERS IS REQUIRED FOR DUMP TRUCK TRAVEL OR DUMPING.
 - USE OF A DOZER TO PUSH EMBEDMENT STONE BETWEEN THE ROWS OF CHAMBERS MAY CAUSE DAMAGE TO THE CHAMBERS AND IS NOT AN ACCEPTABLE BACKFILL METHOD. ANY CHAMBERS DAMAGED BY THE "DUMP AND PUSH" METHOD ARE NOT COVERED UNDER THE STORMTECH STANDARD WARRANTY.
- CONTACT STORMTECH AT 1-888-892-2694 WITH ANY QUESTIONS ON INSTALLATION REQUIREMENTS OR WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT.



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Revisions:	No.	Date	Comments
	1.	6/27/23	Town Comments
	2.	8/4/23	Town Comments
	3.	9/08/23	WCHD Comments

SCALE: N.T.S.	DRAWN BY: AB	DATE: 11/25/22
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STORMWATER DETAILS

SITE PLAN PREPARED FOR
Joseph & Celeste Rault
 209 Bedford Banksville Road
 Westchester County, New York