This SWPPP was prepared in accordance with SPDES Permit No. GP-0-20-001 and must be kept on the job site and available for use of contractors and sub-contractors. Certifications by applicant/developer and by the contractors/subcontractors are included. A copy of the Notice of Intent (NOI), which must be filed at least 5 days prior to the commencement of any work along with the MS4 SWPPP acceptance form, is included herein. Notice of Termination (NOT) must be filed when all stormwater management facilities are in place and the site has been stabilized with specified vegetation. Sample inspection forms are included. Operation and maintenance plan is attached and included both temporary and permanent facilities maintenance. This SWPPP, together with all required plans, completed inspection forms and log of activities including any mitigation of items noted on inspection forms must be kept on the job site and available for inspection by all regulatory authorities.

FULL STORMWATER POLLUTION PREVENTION PLAN (SWPPP) REPORT

Prepared For:

SUMMERVILLE INDUSTRIAL PARK

Village of Chester, Orange County, New York

Prepared By:

ATZL, NASHER & ZIGLER
Engineers – Surveyors – Planners
232 North Main Street
New City, New York 10956
Tel. (845) 634-4694 • Fax (845) 634-5543

This plan has been prepared to comply with the provisions of the SPDES general permit no. GP-0-20-001, issued by the New York State Department of Environmental Conservation for storm water discharges from construction site activities.

I certify under penalty of law that this document and all attachments were prepared and revised under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment of knowing violations.

Date: July 26, 2023
Job No. 3390

Ryan A. Nasher, P.E. License No.: 89066
New York State Professional Engineer

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Section 1: O, I & M

SUMMERVILLE INDUSTRIAL PARK

VILLAGE OF CHESTER
ORANGE COUNTY
NEW YORK

SECTION 1:

OPERATION INSPECTION AND MAINTENANCE PLAN REPORT

BY

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1.0 INTRODUCTION

1.1 Notice of Intent:

Section 402 of the Clean Water Act requires permits for stormwater discharge from construction activities, which disturb one or more acres of land to obtain a permit. To implement this law, the New York State Department of Environmental Conservation (NYSDEC) issued the General Permit GP-0-20-001 for Stormwater Discharges from Construction Activities. The Notice of Intent (NOI) is the means to obtain coverage under this permit.

1.2 SWPPP Goals and Objective:

The goal of the Stormwater Pollution Prevention Plan (SWPPP) is to control runoff of pollutants from the project site during and after construction activities by complying with the NY State Pollutant Discharge Elimination System (SPDES) Stormwater Permit for construction activities and local rules and regulations. The SWPPP will implement the following practices:

- Reduction or elimination of erosion and sediment loading to waterbodies during construction;
- Control of the impact of stormwater runoff on the water quality of the receiving waters;
- Control of the increased volume and peak rate of runoff during and after construction; and
- Maintenance of stormwater controls during and after completion of construction.

The SWPPP will incorporate the proper selection, sizing and siting of the Stromwater Management Practices (SMPs) to protect water resources from stormwater impacts. The design of the proposed SMPs were determined using current engineering methodologies to provide appropriate sizing criteria to avoid overburdening stormwater conveyance structures. Erosion and Sediment Control (ESC), Water Quantity Control, and Water Quality Controls are inter-related components of the SWPPP.

The SWPPP is intended to be a "living" document. The document should be revised and updated by a qualified professional whenever site conditions dictate. Any proposed revisions shall undergo review by the owner or his designated representative prior to incorporation in the SWPPP and implementation at the site. Any proposed modifications shall be in accordance with the New York State Department of Environmental Conservation's technical standards.

2.0 SITE DESCRIPTION

2.1 Project Name & Location:

Summerville Industrial Park
Village of Chester
Orange County, New York
Village of Chester Tax Map: Section 116, Block 1, Lot 1.2 & 2

2.2 Owner/Operator Name & Address:

Trodale Developers Inc.
Attention: Berel Karniol
1 Executive Blvd Suite 101,
Suffern, NY 10901
Email: berel@trodale.com

2.3 General Contractor*:

_____
(Company Name)

_____
(Street Address)

_____
(City, State, Zip Code)

_____
(Phone Number)

*Note – General Contractor shall be identified prior to commencement of work.

2.4 Description:

The project is located southerly of Summerville Way and northly of Elizabeth Drive in the Village of Chester, Orange County, New York. The site has an area of about 19.457 acres. The existing site consists of a dirt road, gravel, and grass cover. The proposed development includes the construction of a two-story building, parking lots, access road, loading docks, and landscaping areas.

Soil Name	Soil Map Symbol	Hydrological Soil Group
Bath-Nassau channery silt loams, 3 to 8 percent slopes	BnB	C
Bath-Nassau channery silt loams, 8 to 15 percent slopes	BnC	C
Madalin silt loam	Ma	C/D
Mardin gravelly silt loam, 3 to 8 percent slopes	MdB	D
Mardin gravelly silt loam, 8 to 15 percent slopes	MdC	D
Otisville gravelly sandy loam, 8 to 15 percent slopes	OtC	A
Riverhead sandy loam, 3 to 8 percent slopes	RhB	A
Riverhead sandy loam, 8 to 15 percent slopes	RhC	A

* Source: https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx
** HSG "A, C, &D" were used in the drainage calculation.

Soil disturbing activities will include clearing and grubbing; grading (cuts & fills); excavation for the installation of drainage pipes, and the preparation for final planting and seeding.

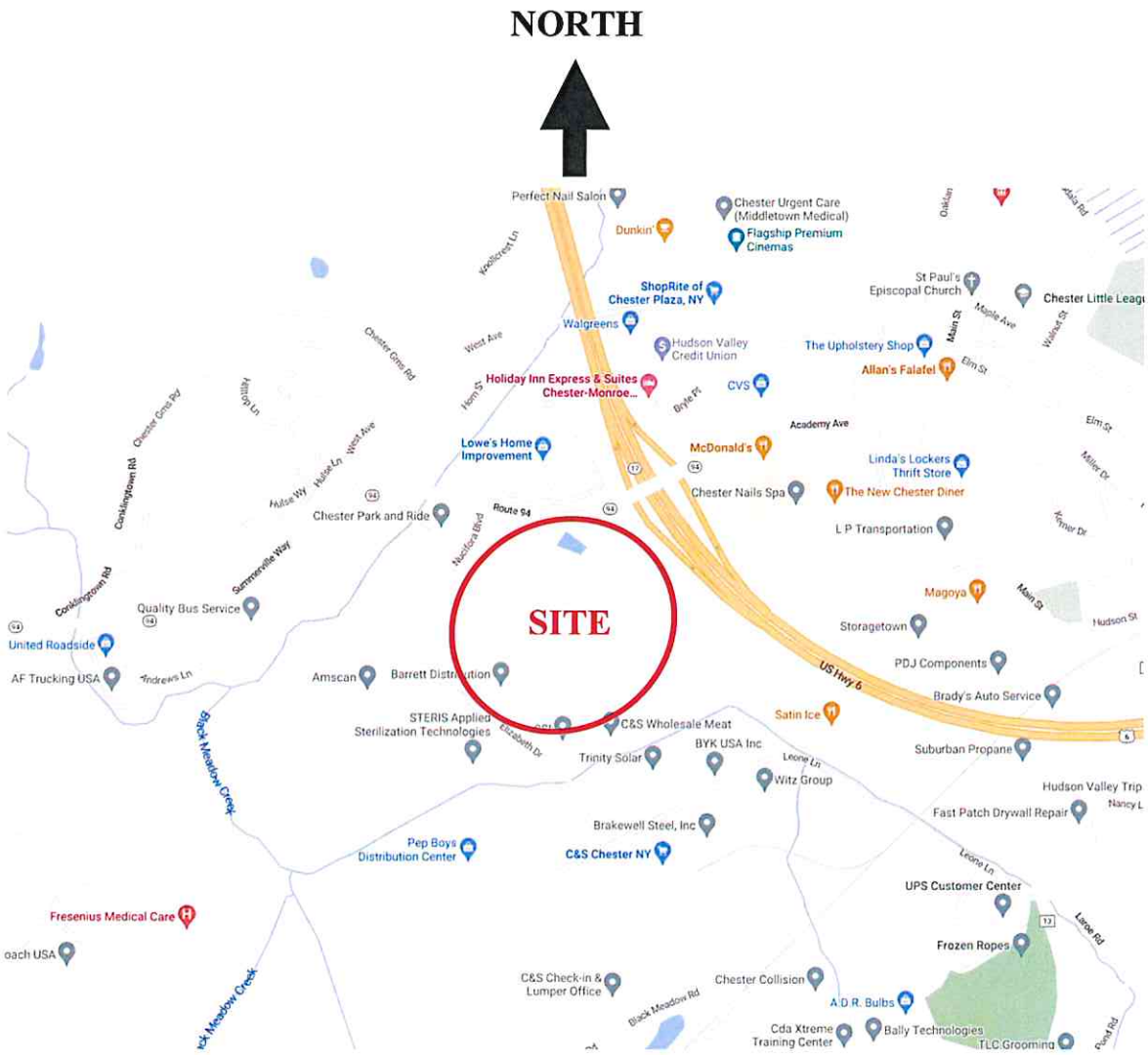
2.5 Impervious Cover:

Impervious cover within the planned disturbance will be increased from 6.692 acres in the existing condition to 15.386 acres in the proposed condition.

2.6 Site Area:

The site is approximately 39.97 acres and about 19.457 acres will be disturbed by the proposed improvement.

2.7 Location Map:



STREET MAP
Source: maps.google.com

2.8 Sequence of Major Activities:

Phasing and schedule of construction is as follows (several phases will overlap):

Phase 1: Clearing and grubbing of designated areas

Phase 2: Land grading according to the approved site development plan

Phase 3: Building construction

Phase 4: Paving and utilities construction

Phase 5: Final Grading, landscaping

The general order of activities will be as follows:

1. Schedule a pre-construction meeting.
2. Locate natural resources and the limit of disturbance per approved plans.
3. Install perimeter erosion and sediment control practices (silt fences).
4. Install construction entrances and temporary staging.
5. Limit grading for installation of E&SC practices.
6. Dispose clearing and grading materials as construction progresses.
7. Stockpile top soil and stabilize.
8. Perform rough grading/cut & fill and stabilize inactive areas.
9. Install utilities and drainage structures.
10. Proceed with partial road construction where applicable.
11. Construct foundation and building structure as per plan.
12. Apply soil restoration practices as described in the plan.
13. Perform final stabilization, i.e. top soil and landscaping.
14. Remove sediment accumulations and complete permanent post construction SMPs per the approved plan.
15. Remove E&SC practices and apply for a Notice of Termination (N.O.T.).

3.0 CONTROLS

3.1 Erosion and Sediment Controls Stabilization Practices:

3.1.1 Temporary Stabilization:

Topsoil, stockpiles, and soils that are exposed and left bare for a period of 14 days which are not being graded, not under active construction for 14 days or more, or not scheduled for permanent seeding within 14 days will be stabilized with temporary seed and mulch. All grass seed mixtures and application rates shall comply with Sediment and Erosion Control Plan.

Areas of the site, which are to be paved; will be temporarily stabilized by applying stone sub-base until bituminous pavement can be applied.

3.1.2 Permanent Stabilization:

Disturbed portions of the site where construction activities permanently cease shall be stabilized with permanent seed no later than 14 days after the last construction activity.

3.2 Structural Practices:

Proposed measures will include silt fences, super silt fence, stockpile, inlet protection, and stabilized construction entrance.

3.3 Stormwater Management Water Quality:

Stormwater runoff generated by the parking lot, two-story building, loading docks and access road will be directed towards the proposed underground infiltration system (Cultec R-902HD) and up-flow filter through a combination of sheet flow, catch basin, pipes, and a pretreatment system.

The stormwater management system has been designed to comply with the most recent NYSDEC design manual requirements. The underground infiltration system (Cultec R-902HD) and the up-flow filter are designed to treat the first flush water quality volume of the required impervious area, according to NYSDEC redevelopment rules.

The property owner shall be responsible for the long-term operation, maintenance and inspection of the proposed stormwater management facilities and provide maintenance records to the Village of Chester.

3.3.1 Name of Receiving Waters:

The site drains towards Black Meadow Creek. The site is not located in a designated TMDL watershed area.

3.4 Peak Flow Attenuation:

In order to provide the zero net increase of peak runoff, a solid pipe storage system has been proposed.

3.5 Runoff Conveyance Systems:

The stormwater pipes are design to convey the 10-year peak flow discharge.

3.6 Other Controls:

3.6.1 Waste Materials:

All waste materials will be collected and stored in securely lidded metal dumpsters rented from _____, a solid waste management company located in Orange County (name of carting company to be identified 30 days prior to commencement of work). The dumpsters will meet Village of Chester, Orange County, and New York State solid waste management regulations. All trash and construction debris from the site will be deposited in the dumpsters. The dumpsters will be emptied as necessary, and the trash will be hauled off site to _____(destination to be identified 30 days prior to commencement of work). No construction waste materials will be buried on site. All personnel will be instructed regarding the correct procedure for waste disposal. Notices stating these practices will be posted in the office trailer and _____, the Job Supervisor, individual who is responsible for managing the day to day site operations, will be responsible for seeing that these procedures are followed (Job Supervisor shall be identified 30 days prior to commencement of work).

3.6.2 Hazardous waste:

All hazardous waste materials will be disposed of in the manner specified by local or state regulation or by the manufacturer. Site personnel will be instructed in these practices and _____, Job Supervisor, individual who is responsible for managing the day to day site operations, will be responsible for seeing that these procedures are followed (Job Supervisor shall be identified 30 days prior to commencement of work).

3.6.3 Sanitary Waste:

A licensed sanitary waste management contractor (sanitary waste management contractor to be identified 30 days prior to commencement of work) will collect all sanitary waste from the portable units.

3.6.4 Offsite Vehicle Tracking:

A stabilized construction entrance and gravel pad will be provided to wash or spray-clean trucks over before leaving the site in order to prevent track-out of dirt, mud, debris and dust. In addition, trucks will be covered with a tarp and at least 6 inches of freeboard clearance will be maintained to keep excessive dust from escaping the truck during hauling operations.

3.7 Timing of Control Measures:

As indicated in the Sequence of Major Activities, the stabilized construction entrance and other sediment and erosion control activities will be constructed prior to earthwork activities on any part of the site. Any soil areas that are exposed and left bare for a period of 14 days which are not being graded, not under active construction for 14 days or more, or not scheduled for permanent seeding within 14 days will be treated with temporary seed and mulch. Once construction activity ceases permanently in an area, that area will be stabilized with permanent seed and mulch. After the entire site is stabilized, accumulated sediments will be removed from the sediment and erosion control structures and the controls will be removed.

3.8 Certification of Compliance With Federal, State And Local Regulations:

The stormwater pollution prevention plan reflects New York State Department of Environmental Conservation requirements for storm water management and erosion and sediment control, as established in Article 17, Titles 7, 8 and Article 70 of the Environmental Conservation Law. To ensure compliance, this plan was prepared in accordance with guidelines issued with the SPDES General Permit for Storm Water Discharges from Construction Activities that are Classified as "Associated with Construction Activity", published by the NYSDEC.

4.0 MAINTENANCE & INSPECTION PROCEDURES

4.1 Sediment & Erosion Control Inspection And Maintenance Practices:

The following are inspection and maintenance practices that will be used in coordination with the SWPPP Construction Log Book prepared for this project, the template which is included in Appendix A, to maintain sediment and erosion controls:

- The Operator shall have a qualified professional conduct an assessment of the site prior to the commencement of construction and certify in this inspection report that the appropriate erosion and sediment controls described in the SWPPP, an required by the SPDES General Permit for Stormwater Discharges, have been adequately installed or implemented to ensure overall preparedness of the site for commencement of construction. Qualified professional means a person knowledgeable in the principles and practice of erosion and sediment controls, such as a licensed professional engineer, Certified Professional in Erosion and Sediment Control (CPESC), soil scientist, or someone working under the direction and supervision of a licensed professional engineer, Certified Professional in Erosion and Sediment Control (CPESC), or soil scientist (person must have experience in the principles and practices of erosion and sediment control). The template for the initial inspection and assessment is included in Appendix A.
- All control measures will be inspected by a qualified professional at least once each week (7 days) and immediately following any storm event of 0.5 inches or greater.
- All measures will be maintained in good working order. If a repair is necessary, it will be initiated within 24 hours of discovery.
- Provide sprinkle water on the dirt road during hot summer or when appropriate to prevent particles to be air born.
- Built up sediment to be removed from the silt fence when it has reached 1/3 the height of the fence. Sediment traps will be cleaned when built up sediments reaches 25 percent of design capacity.
- Silt fence will be inspected for depth of sediment, tears, to see if the fabric is securely attached to the fence posts, and to see that the fence posts are firmly in the ground.
- Temporary and permanent seeding and planting will be inspected for bare spots, washouts, and healthy growth.
- A maintenance inspection report will be filled out after each inspection and will become part of the SWPPP.
- _____, Job Supervisor – Trained Individual per GP-0-20-001, will select individuals who will be responsible for coordinating efforts with the qualified professional for regular inspections, maintenance and repair activities, and filling out the inspection and maintenance report forms. Inspection reports will summarize:

1. Name of Inspector
2. Qualifications of Inspector
3. Date of Inspection
4. Weather Conditions
5. Areas inspected, including measurements
6. Areas that have undergone temporary and permanent stabilization
7. Indicate all disturbed areas that have not undergone active site work during the previous 14-day period
8. Observed condition of all erosion and sediment control practices
9. Inspect all sediment control practices and record approximate degree of sediment accumulation as a percentage of the sediment storage volume
10. Actions Taken to Correct Problems
11. Incorporate changes necessary to the SWPPP

The template for regular inspections is included in Appendix A.

- Personnel selected for inspection and maintenance responsibilities will receive training from the Job Supervisor and/or the qualified professional. They will be trained in all the inspection and maintenance practices necessary for keeping the erosion and sediment controls used on site in good working order.
- The Operator shall ensure that a record of all inspection reports is maintained in the SWPPP Construction Log Book. The site logbook shall be maintained on site and be made available to the permitting authorities upon request. Prior to the commencement of construction, the Operator shall certify in the site log book that the SWPPP was prepared in accordance with the State's standards and meets all Federal, State and local erosion and sediment control requirements. The Operator shall retain copies of SWPPPs and any reports submitted in conjunction with this permit, and records of all data used to complete the NOI to be covered by this permit, for a period of at least three years from the date that the site is finally stabilized. The Operator shall post at the site, in a publicly accessible location, a summary of the site inspection activities on a monthly basis. The template for SWPPP Construction Log Book is included in Appendix A.
- Prior to filing of the Notice of Termination (NOT) or the end of permit term, the Operator shall have the qualified professional perform a final site inspection. The qualified professional shall certify that the site has undergone final stabilization using either vegetative or structural stabilization methods and that all temporary erosion and sediment controls (such as silt fencing) not needed for long-term erosion control have been removed. Final stabilization means that all soil-disturbing activities at the site have been completed and a uniform, perennial vegetative cover with a density of 80% has been established, or equivalent stabilization measures (such as the use of mulches or geotextiles) have been employed on all unpaved areas and areas not covered by permanent structure. The template for final inspections is included in Appendix A.

- Clean out all **temporary** structures and pipes upon completion of the project.
- When the site has been finally stabilized, the operator must submit a Notice of Termination form to terminate coverage under the SPDES General Permit GP 0-20-001. The permittee must identify all of the permanent stormwater management structures that have been constructed. In addition, an manual describing the operation and maintenance practices that will be necessary for the structures to function as designed after the site is stabilized must be finalized and in-place. The permittee must also certify that the permanent structure have been constructed as described in the SWPPP.

The inspection procedures that will be used for the construction of the proposed Stormwater management facilities are included in the CONSTRUCTION INSPECTION CHECKLIST FORM prepared for this project, the template of which is included in Appendix B, to be used to ensure proper construction.

4.2 Summary of SWPPP Required Document Filings:

The following table provides a summary of the required forms and inspections that need to be completed as part of the SWPPP requirements and which checklist or report document forms need to be used for each:

Name of Document	Form to be Used	When to complete
Pre-Construction Meeting Documents Form	Appendix A – SWPPP Construction Site Log Book	Prior to beginning of construction
Owner/Operator Certification	Appendix A, SWPPP Report	Prior to beginning of construction
Prime Contractor Certification	SWPPP Report	Prior to beginning of construction
Sub-Contractor Certification	SWPPP Report	Prior to beginning of construction
Pre-Construction Site Assessment Form	Appendix A	Prior to beginning of construction
Construction Duration Inspection Forms	Appendix A	Every seven days
Three-Month Status Reports	Appendix A	Every three months
SMPs Construction Inspection Checklist Form	Appendix B	During the construction of the proposed stormwater facilities
Final Stabilization and Retention of Records	Appendix B	At completion of project
Spill Control & Prevention Log	Appendix C	Before and after completion of Project
Stormwater Facilities Maintenance Plan and Inspection Checklists	Appendix D	After completion of Project

5.0 NON-STORM WATER DISCHARGES

5.1 Non-Stormwater Discharges:

It is expected that the following non-storm water discharges will occur from the site during the construction period:

- Water from water line flushing.
- Pavement wash waters (where no spills or leaks of toxic or hazardous materials have occurred).
- Uncontaminated groundwater (from natural springs)

6.0 INVENTORY FOR POLLUTION PREVENTION PLAN

6.1 Material substances:

The materials or substances listed below are expected to be present on the site during construction:

- Concrete
- Detergents
- Paints (enamels and latex)
- Metal Studs
- Roofing Materials
- Tar and Paving Materials
- Fertilizers
- Petroleum Based Products
- Cleaning Solvents
- Wood
- Masonry Block

7.0 SPILL CONTROL & PREVENTION

7.1 Material Management Practices:

The following are the material management practices that will be used to reduce the risk of spills or other accidental exposure of materials and substances to storm water runoff:

7.1.1 Good Housekeeping:

The following good housekeeping practices will be followed on site during the construction project:

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

7.1.2 Hazardous Products:

The following practices will be used to reduce the risks associated with hazardous materials:

- Products will be kept in original containers unless they are not reseal able.
- Original labels and material safety data will be retained; they contain important product information.
- If surplus product must be disposed of, manufacturer's or local and State recommended methods for proper disposal will be followed.

7.2 Product Specific Practices:

The following product specific practices will be followed on site:

7.2.1 Petroleum Products:

All onsite vehicles will be monitored for leaks and receive regular preventative maintenance to reduce the chance of leakage. Petroleum products will be stored in tightly sealed containers, which are clearly labeled. Any asphalt substances used on site will be applied according to the manufacturer's recommendations.

7.2.2 Fertilizers:

Fertilizers will be applied only in the minimum amounts recommended by the manufacturer. Once applied, fertilizer will be worked into the soil to limit exposure to stormwater. Storage will be in a covered shed. The content of any partially used bags of fertilizer will be transferred to a sealable plastic bin to avoid spills.

7.2.3 Paints:

All containers will be tightly sealed and stored when not required for use. Excess paint will not be discharged to the storm drainage system, but will be properly disposed of according to manufacturer's instructions or State and local regulations.

7.2.4 Concrete Trucks:

Concrete trucks will not be allowed to wash out or discharge surplus concrete or drum wash water on the site.

7.3 Spill Control Practices:

In addition to the good housekeeping and material management practices discussed in the previous sections of this plan, the following practices will be followed for spill prevention and cleanups:

- Manufacturer's recommended methods for spill cleanup will be clearly posted and site personnel will be made aware of the procedures and the location of the information and cleanup supplies.
- Materials and equipment necessary for spill cleanup will be kept in the material storage areas on site. Equipment and materials will include, but not be limited to, brooms, dustpans, mops, rags, gloves, goggles, kitty litter, sand, sawdust, and plastic and metal trash containers specifically for this purpose.
- All spills will be cleaned up immediately after discovery.
- The spill area will be kept well ventilated, and personnel will wear appropriate protective clothing to prevent injury from contact with hazardous substances.
- Spills of toxic or hazardous material will be reported to the appropriate State or local government agency, regardless of the size of the spill. The Spill Control & Prevention Log form provided in Appendix C should be used for this purpose.
- The spill prevention plan will be adjusted to include measures to prevent a repetitive type of spill from re-occurring and how to clean up the spill if it does re-occur. A description of the spill, what caused it, and the cleanup measures will also be included.
- The Job Supervisor responsible for daily site operations, will be designated as the spill prevention and cleanup coordinator. He will designate at least

three other site personnel who will receive spill prevention and cleanup training. These individuals will each become responsible for a particular phase of prevention and cleanup. The names of the responsible spill personnel will be posted in the material storage area and in the office trailer on site.

8.0 SUPPORTING PLANS & REPORTS

1. Site Plan Drawings prepared by Atzl, Nasher & Zigler
2. Soil & Erosion Control Plans prepared by Atzl, Nasher & Zigler
3. Stormwater Management Design Report by Atzl, Nasher & Zigler

9.0 POLLUTION PREVENTION PLAN CERTIFICATION

9.1 OWNER/OPERATOR CERTIFICATION

"I have read or been advised of the permit conditions and believe that I understand them. I also understand that, under the terms of the permit, there may be reporting requirements. I also certify under penalty of law that this document and all corresponding attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person(s) who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. I further understand that coverage under the general permit will be identified in the acknowledgement that I will receive as a result of submitting this NOI. I also understand that, by submitting this NOI, I am acknowledging that the SWPPP has been developed and will be implemented as the first element of construction and agree to comply with all the terms and conditions of the general permit for which this NOI is being submitted."

Signed: _____ Date: _____
(Owner/Operator)

_____
(Printed Name & Title)

_____

_____

_____
(Company Name, Address & Telephone Number)

10.0 CERTIFICATION BY CONTRACTORS

Made pursuant to the State Pollution Discharge Elimination System (SPDES) General Permit for Stormwater Discharges from Construction Activity (Permit No. GP 0-20-001) for:

Summerville Industrial Park, Village of Chester, Orange County, New York

10.1 Prime Contractor Certification:

"I certify under penalty of law that I understand and agree to comply with the terms and conditions of the stormwater pollution prevention plan for the construction site identified in this plan as a condition of authorization to discharge stormwater. I also understand that the 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."

Prime Contractor:

_____	_____
(Signature)	(Company)
_____	_____
(Name)	(Street Address)
_____	_____
(Title)	(City, State, Zip Code)
_____	_____
(Date)	(Phone Number)

10.2 Sub-Contractor Certification:

"I certify under penalty of law that I understand and agree to comply with the terms and conditions of the stormwater pollution prevention plan for the construction site identified in this plan as a condition of authorization to discharge stormwater. I also understand that the 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."

Sub-Contractor:

(Signature)	(Company)
(Name)	(Street Address)
(Title)	(City, State, Zip Code)
(Date)	(Phone Number)

CONTRACTOR and SUBCONTRACTOR CERTIFICATION STATEMENT

for the New York State Department of Environmental Conservation (DEC) State Pollutant Discharge Elimination System Permit for Stormwater Discharges from Construction Activity (GP-0-20-001)

As per *Part III.A.6* on page 13 of *GP-0-20-001* (effective January 29, 2020):

'Prior to the *commencement of construction activity*, the *owner or operator* must identify the contractor(s) and subcontractor(s) that will be responsible for installing, constructing, repairing, replacing, inspecting and maintaining the erosion and sediment control practices included in the SWPPP; and the contractor(s) and subcontractor(s) that will be responsible for constructing the post-construction stormwater management practices included in the SWPPP. The *owner or operator* shall have each of the contractors and sub-contractors identify at least one person from their company that will be responsible for implementation of the SWPPP. This person shall be known as the *trained contractor*. The *owner or operator* shall ensure that at least one *trained contractor* is on site on a daily basis when soil disturbance activities are being performed.'

The *owner or operator* shall have each contractor and subcontractor involved in soil disturbance sign a copy of the following certification statement before they commence any *construction activity*:

_____	NYR _____	_____
Name of Construction Site	*DEC Permit ID*	*Municipality (MS4)*

"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.

Responsible Corporate Officer/Partner Signature	Date
Name of above Signatory	Name of Company
Title of above Signatory	Mailing Address
Telephone of Company	City, State, and Zip

Identify the specific elements of the SWPPP the contractor or subcontractor is responsible for:

***'TRAINED CONTRACTOR'* FOR THE CERTIFIED CONTRACTOR OR SUBCONTRACTOR**		
Name of Trained Employee	*Title of Trained Employee*	*NYSDEC SWT #*

A copy of this signed contractor certification statement must be maintained at the SWPPP on site

Appendix - A

SUMMERVILLE INDUSTRIAL PARK

VILLAGE OF CHESTER
ORANGE COUNTY
NEW YORK

APPENDIX-A

CONSTRUCTION SITE LOGBOOK

BY

ATZL, NASHER & ZIGLER
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NY STATE POLLUTANT DISCHARGE ELIMINATION SYSTEM
FOR CONSTRUCTION ACTIVITIES

SWPPP CONSTRUCTION SITE LOG BOOK

For

Summerville Industrial Park

Village of Chester
Orange County, New York

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IV. Monitoring, Reporting, and Three-Month Status Reports

a. Operator's Compliance Response Format

Properly completing forms such as those contained in this document meet the inspection requirement of NYSDEC SPDES GP for Construction Activities. Completed forms shall be kept on site at all times and made available to authorities upon request.

I. PRE-CONSTRUCTION MEETING DOCUMENTS

Project Name SUMMERVILLE INDUSTRIAL PARK
Permit No. _____ **Date of Authorization** _____
Name of Operator _____
Prime Contractor _____

a. Preamble to Site Assessment and Inspections -the following information to be read by all person's involved in the construction of stormwater related activities:

The Operator agrees to have a qualified professional[1] conduct an assessment of the site prior to the commencement of construction[2] and certify in this inspection report that the appropriate erosion and sediment controls described in the SWPPP have been adequately installed or implemented to ensure overall preparedness of the site for the commencement of construction.

Prior to the commencement of construction, the Operator shall certify in this site logbook that the SWPPP has been prepared in accordance with the State's standards and meets all Federal, State and local erosion and sediment control requirements.

When construction starts, site inspections shall be conducted by the qualified professional at least every 7 calendar days and within 24 hours of the end of a storm event of 0.5 inches or greater (Construction Duration Inspections). The Operator shall maintain a record of all inspection reports in this site log book. The site log book shall be maintained on site and be made available to the permitting authorities upon request. The Operator shall post at the site, in a publicly accessible location, a summary of the site inspection activities on a monthly basis (Monthly Summary Report).

The operator shall also prepare a written summary of compliance with this general permit at a minimum frequency of every three months (Operator's Compliance Response Form), while coverage exists. The summary should address the status of achieving each component of the SWPPP.

Prior to filing the Notice of Termination or the end of permit term, the Operator shall have a qualified professional perform a final site inspection. The qualified professional shall certify that the site has undergone final stabilization[3] using either vegetative or structural stabilization methods and that all temporary erosion and sediment controls (such as silt fencing) not needed for long-term erosion control have been removed. In addition, the Operator must identify and certify that all permanent structures described in the SWPPP have been constructed and provide the owner(s) with an operation and maintenance plan that ensures the structure(s) continuously functions as designed.

1 "Qualified Professional means a person knowledgeable in the principles and practice of erosion and sediment controls, such as a Certified Professional in Erosion and Sediment Control (CPESC), soil scientist, licensed engineer or someone working under the direction and supervision of a licensed engineer (person must have experience in the principles and practices of erosion and sediment control).

2 "Commencement of construction" means the initial removal of vegetation and disturbance of soils associated with clearing, grading or excavating activities or other construction activities.

3 "Final stabilization" means that all soil-disturbing activities at the site have been completed and a uniform, perennial vegetative cover with a density of eighty (80) percent has been established or equivalent stabilization measures (such as the use of mulches or geotextiles) have been employed on all unpaved areas and areas not covered by permanent structures.

b. Operators Certification

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. Further, I hereby certify that the SWPPP meets all Federal, State, and local erosion and sediment control requirements. I am aware that false statements made herein are punishable as a class A misdemeanor pursuant to Section 210.45 of the Penal Law. "

Name (Please Print):_____

Title _____**Date:**_____

Address: _____

Phone: _____ **Email:**_____

Signature:_____

c. Qualified Professional's Credentials & Certification

"I hereby certify that I meet the criteria set forth in the General Permit to conduct site inspections for this project and that the appropriate erosion and sediment controls described in the SWPPP and as described in the following Pre-construction Site Assessment Checklist have been adequately installed or implemented, ensuring the overall preparedness of this site for the commencement of construction."

Name (Please Print):_____

Title _____**Date:**_____

Address: _____

Phone: _____ **Email:**_____

Signature:_____

d. Pre-construction Site Assessment Checklist (NOTE: Provide comments below as necessary)

1. Notice of Intent, SWPPP, and Contractors Certification:

Yes No NA

[ ] [ ] [ ] Has a Notice of Intent been filed with the NYS Department of Conservation?
[ ] [ ] [ ] Is the SWPPP on-site? Where?_____
[ ] [ ] [ ] Is the Plan current? What is the latest revision date?_____
[ ] [ ] [ ] Is a copy of the NOI (with brief description) onsite? Where?_____
[ ] [ ] [ ] Have all contractors involved with stormwater related activities signed a contractor's certification?

Pre-construction Site Assessment Checklist (continued)

2. Resource Protection

Yes No NA

[ ] [ ] [ ] Are construction limits clearly flagged or fenced?

[ ] [ ] [ ] Important trees and associated rooting zones, on-site septic system absorption fields, existing vegetated areas suitable for filter strips, especially in perimeter areas, have been flagged for protection.

[ ] [ ] [ ] Creek crossings installed prior to land-disturbing activity, including clearing and blasting.

3. Surface Water Protection

Yes No NA

[ ] [ ] [ ] Clean stormwater runoff has been diverted from areas to be disturbed.

[ ] [ ] [ ] Bodies of water located either on site or in the vicinity of the site have been identified and protected.

[ ] [ ] [ ] Appropriate practices to protect on-site or downstream surface water are installed.

[ ] [ ] [ ] Are clearing and grading operations divided into areas <5 acres?

4. Stabilized Construction Entrance

Yes No NA

[ ] [ ] [ ] A temporary construction entrance to capture mud and debris from construction vehicles before they enter the public highway has been installed.

[ ] [ ] [ ] Other access areas (entrances, construction routes, equipment parking areas) are stabilized immediately as work takes place with gravel or other cover.

[ ] [ ] [ ] Sediment tracked onto public streets is removed or cleaned on a regular basis.

5. Perimeter Sediment Controls

Yes No NA

[ ] [ ] [ ] Silt fence material and installation comply with the standard drawing and specifications.

[ ] [ ] [ ] Silt fences are installed at appropriate spacing intervals

[ ] [ ] [ ] Sediment/detention basin was installed as first land disturbing activity.

[ ] [ ] [ ] Sediment traps and barriers are installed.

6. Pollution Prevention for Waste and Hazardous Materials

Yes No NA

[ ] [ ] [ ] The Operator or designated representative has been assigned to implement the spill prevention avoidance and response plan.

[ ] [ ] [ ] The plan is contained in the SWPPP on page _____

[ ] [ ] [ ] Appropriate materials to control spills are onsite. Where? _____

II. CONSTRUCTION DURATION INSPECTIONS

a. Directions:
Inspection Forms will be filled out during the entire construction phase of the project.
Required Elements:

(1) On a site map, indicate the extent of all disturbed site areas and drainage pathways. Indicate site areas that are expected to undergo initial disturbance or significant site work within the next
14-day period;

(2) Indicate on a site map all areas of the site that have undergone temporary or permanent stabilization;

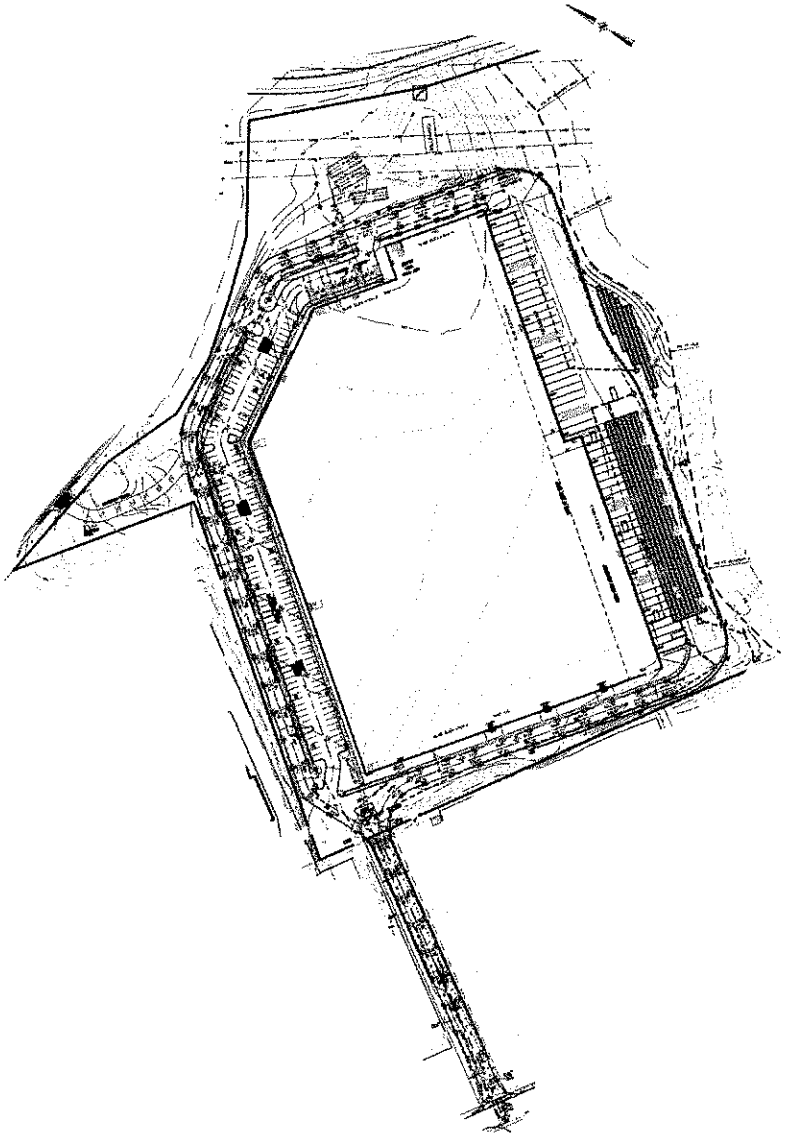
(3) Indicate all disturbed site areas that have not undergone active site work during the previous 14-day period;

(4) Inspect all sediment control practices and record the approximate degree of sediment accumulation as a percentage of sediment storage volume (for example, 10 percent, 20 percent, 50 percent);

(5) Inspect all erosion and sediment control practices and record all maintenance requirements such as verifying the integrity of barrier or diversion systems (earthen berms or silt fencing) and containment systems (sediment basins and sediment traps). Identify any evidence of rill or gully erosion occurring on slopes and any loss of stabilizing vegetation or seeding/mulching. Document any excessive deposition of sediment or ponding water along barrier or diversion systems. Record the depth of sediment within containment structures, any erosion near outlet and overflow structures, and verify the ability of rock filters around perforated riser pipes to pass water; and

(6) Immediately report to the Operator any deficiencies that are identifies with the implementation of the SWPPP.

CONSTRUCTION DURATION INSPECTIONS



SITE PLAN/SKETCH

Inspector (Print Name)	**Date of Inspection**
Qualified Professional (Print Name)	**Qualified Professional Signature**

The above signed acknowledges that, to the best of his/her knowledge, all information provided on the forms is accurate and complete.

CONSTRUCTION DURATION INSPECTIONS

Maintaining Water Quality

Yes No NA

[ ] [ ] [ ] Is there an increase in turbidity causing a substantial visible contrast to natural conditions?
[ ] [ ] [ ] Is there residue from oil and floating substances, visible oil film, or globules or grease?
[ ] [ ] [ ] All disturbance is within the limits of the approved plans.
[ ] [ ] [ ] Have receiving lake/bay, stream, and/or wetland been impacted by silt from project?

Housekeeping

1. General Site Conditions

Yes No NA

[ ] [ ] [ ] Is construction site litter and debris appropriately managed?
[ ] [ ] [ ] Are facilities and equipment necessary for implementation of erosion and sediment control in working order and/or properly maintained?
[ ] [ ] [ ] Is construction impacting the adjacent property?
[ ] [ ] [ ] Is dust adequately controlled?

2. Temporary Stream Crossing

Yes No NA

[ ] [ ] [ ] Maximum diameter pipes necessary to span creek without dredging are installed.
[ ] [ ] [ ] Installed non-woven geotextile fabric beneath approaches.
[ ] [ ] [ ] Is fill composed of aggregate (no earth or soil)?
[ ] [ ] [ ] Rock on approaches is clean enough to remove mud from vehicles & prevent sediment from entering stream during high flow.

Runoff Control Practices

1. Excavation Dewatering

Yes No NA

[ ] [ ] [ ] Upstream and downstream berms (sandbags, inflatable dams, etc.) are installed per plan.
[ ] [ ] [ ] Clean water from upstream pool is being pumped to the downstream pool.
[ ] [ ] [ ] Sediment laden water from work area is being discharged to a silt-trapping device.
[ ] [ ] [ ] Constructed upstream berm with one-foot minimum freeboard.

2. Level Spreader

Yes No NA

[ ] [ ] [ ] Installed per plan.
[ ] [ ] [ ] Constructed on undisturbed soil, not on fill, receiving only clear, non-sediment laden flow.
[ ] [ ] [ ] Flow sheets out of level spreader without erosion on downstream edge.

3. Interceptor Dikes and Swales

Yes No NA

[ ] [ ] [ ] Installed per plan with minimum side slopes 2H:1V or flatter.
[ ] [ ] [ ] Stabilized by geotextile fabric, seed, or mulch with no erosion occurring.
[ ] [ ] [ ] Sediment-laden runoff directed to sediment trapping structure

4. Stone Check Dam

Yes No NA

[ ] [ ] [ ] Is channel stable? (flow is not eroding soil underneath or around the structure).
[ ] [ ] [ ] Check is in good condition (rocks in place and no permanent pools behind the structure).
[ ] [ ] [ ] Has accumulated sediment been removed?.

5. Rock Outlet Protection

Yes No NA

[ ] [ ] [ ] Installed per plan.
[ ] [ ] [ ] Installed concurrently with pipe installation.

Soil Stabilization

1. Topsoil and Spoil Stockpiles

Yes No NA

[ ] [ ] [ ] Stockpiles are stabilized with vegetation and/or mulch.
[ ] [ ] [ ] Sediment control is installed at the toe of the slope.

2. Revegetation

Yes No NA

[ ] [ ] [ ] Temporary seedings and mulch have been applied to idle areas.
[ ] [ ] [ ] 4 inches minimum of topsoil has been applied under permanent seedings

Sediment Control

1. Stabilized Construction Entrance

Yes No NA

[ ] [ ] [ ] Stone is clean enough to effectively remove mud from vehicles.
[ ] [ ] [ ] Installed per standards and specifications?
[ ] [ ] [ ] Does all traffic use the stabilized entrance to enter and leave site?
[ ] [ ] [ ] Is adequate drainage provided to prevent ponding at entrance?

2. Silt Fence

Yes No NA

[ ] [ ] [ ] Installed on Contour, 10 feet from toe of slope (not across conveyance channels).
[ ] [ ] [ ] Joints constructed by wrapping the two ends together for continuous support.
[ ] [ ] [ ] Fabric buried 6 inches minimum.
[ ] [ ] [ ] Posts are stable, fabric is tight and without rips or frayed areas.
[ ] [ ] [ ] Sediment accumulation is ___% of design capacity.

3. Storm Drain Inlet Protection (Use for Stone & Block; Filter Fabric; Curb; or, Excavated practices)

Yes No NA

[ ] [ ] [ ] Installed concrete blocks lengthwise so open ends face outward, not upward.
[ ] [ ] [ ] Placed wire screen between No. 3 crushed stone and concrete blocks.
[ ] [ ] [ ] Drainage area is 1acre or less.
[ ] [ ] [ ] Excavated area is 900 cubic feet.

[ ] [ ] [ ] Excavated side slopes should be 2:1.
[ ] [ ] [ ] 2" x 4" frame is constructed and structurally sound.
[ ] [ ] [ ] Posts 3-foot maximum spacing between posts.
[ ] [ ] [ ] Fabric is embedded 1 to 1.5 feet below ground and secured to frame/posts with staples at max 8-inch spacing.
[ ] [ ] [ ] Posts are stable, fabric is tight and without rips or frayed areas.
[ ] [ ] [ ] Sediment accumulation ___% of design capacity.

4. Temporary Sediment Trap

Yes No NA

[ ] [ ] [ ] Outlet structure is constructed per the approved plan or drawing.
[ ] [ ] [ ] Geotextile fabric has been placed beneath rock fill.
[ ] [ ] [ ] Sediment accumulation is ___% of design capacity.

5. Temporary Sediment Basin

Yes No NA

[ ] [ ] [ ] Basin and outlet structure constructed per the approved plan.
[ ] [ ] [ ] Basin side slopes are stabilized with seed/mulch.
[ ] [ ] [ ] Drainage structure flushed and basin surface restored upon removal of sediment basin facility.
[ ] [ ] [ ] Sediment accumulation is ___% of design capacity.

Note: Not all erosion and sediment control practices are included in this listing. Add additional pages to this list as required by site specific design.
Construction inspection checklists for post-development stormwater management practices can be found in Appendix F of the New York Stormwater Management Design Manual.

CONSTRUCTION DURATION INSPECTIONS

b. Modifications to the SWPPP (To be completed as described below)

The Operator shall amend the SWPPP whenever:

1. There is a significant change in design, construction, operation, or maintenance which may have a significant effect on the potential for the discharge of pollutants to the waters of the United States and which has not otherwise been addressed in the SWPPP; or
2. The SWPPP proves to be ineffective in:
   a. Eliminating or significantly minimizing pollutants from sources identified in the SWPPP and as required by this permit; or
   b. Achieving the general objectives of controlling pollutants in stormwater discharges from permitted construction activity; and
3. Additionally, the SWPPP shall be amended to identify any new contractor or subcontractor that will implement any measure of the SWPPP.

Modification & Reason:

III. Monthly Summary of Site Inspection Activities

Name of Permitted Facility:	Today's Date:	Reporting Month:
Location:	Permit Identification #:	
Name and Telephone Number of Site Inspector:		

Date of Inspection	Regular / Rainfall based Inspection	Name of Inspector	Items of Concern

Owner/Operator Certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that false statements made herein are punishable as a class A misdemeanor pursuant to Section 210.45 of the Penal Law."

Signature of Permittee or Duly Authorized Representative

Name of Permittee or Duly Authorized Representative date

Duly authorized representatives must have written authorization, submitted to DEC, to sign any permit document

Appendix - B

SUMMERVILLE INDUSTRIAL PARK

VILLAGE OF CHESTER
ORANGE COUNTY
NEW YORK

APPENDIX-B

CONSTRUCTION INSPECTION CHECKLISTS

BY

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STORMWATER MANAGEMENT
CONSTRUCTION INSPECTION CHECKLIST FORM

Project: **SUMMERVILLE INDUSTRIAL PARK**

Location: Village of Chester, Orange County, NY

Site Status: _____

Date of Inspection: _____

Time of Inspection: _____

Weather Conditions
(including recent rainfall): _____

Inspector's Name: _____

CONSTRUCTION SEQUENCE	SATISFACTORY/ UNSATISFACTORY	COMMENTS
1. Pre-Construction/Materials and Equipment		
Pre-construction meeting		
Pipe and appurtenances on-site prior to construction and dimensions checked		
1. Material (including protective coating, if specified)		
2. Diameter		
3. Dimensions of metal riser or pre-cast concrete outlet structure		
4. Required dimensions between water control structures (orifices, weirs, etc.) are in accordance with approved plans		
5. Barrel stub for prefabricated pipe structures at proper angle for design barrel slope		
6. Number and dimensions of prefabricated anti-seep collars		
7. Watertight connectors and gaskets		
8. Outlet drain valve		
Project benchmark near pond site		
Equipment for temporary de-watering		
2. Subgrade Preparation		
Area beneath embankment stripped of all Vegetation, topsoil, and organic matter		
3. Pipe Spillway Installation		
Method of installation detailed on plans		
A. Bed preparation		
Installation trench excavated with specified side slopes		

CONSTRUCTION SEQUENCE	SATISFACTORY/ UNSATISFACTORY	COMMENTS
Stable, uniform, dry subgrade of relatively impervious material (If subgrade is wet, contractor shall have defined steps before proceeding with installation)		
Invert at proper elevation and grade		
B. Pipe placement		
Metal / plastic pipe		
1. Watertight connectors and gaskets properly installed		
2. Anti-seep collars properly spaced and having watertight connections to pipe		
3. Backfill placed and tamped by hand under "haunches" of pipe		
4. Remaining backfill placed in max. 8 inch lifts using small power tamping equipment until 2 feet cover over pipe is reached		
3. Pipe Spillway Installation		
Concrete pipe		
1. Pipe set on blocks or concrete slab for pouring of low cradle		
2. Pipe installed with rubber gasket joints with no spalling in gasket interface area		
3. Excavation for lower half of anti-seep collar(s) with reinforcing steel set		
4. Entire area where anti-seep collar(s) will come in contact with pipe coated with mastic or other approved waterproof sealant		
5. Low cradle and bottom half of anti-seep collar installed as monolithic pour and of an approved mix		
6. Upper half of anti-seep collar(s) formed with reinforcing steel set		
7. Concrete for collar of an approved mix and vibrated into place (protected from freezing while curing, if necessary)		
8. Forms stripped and collar inspected for honeycomb prior to backfilling. Parge if necessary.		
C. Backfilling		
Fill placed in maximum 8 inch lifts		
Backfill taken minimum 2 feet above top of anti-seep collar elevation before traversing with heavy equipment		
4. Riser / Outlet Structure Installation		
Riser located within embankment		
A. Metal riser		
Riser base excavated or formed on stable subgrade to design dimensions		

CONSTRUCTION SEQUENCE	SATISFACTORY/ UNSATISFACTORY	COMMENTS
Set on blocks to design elevations and plumbed		
Reinforcing bars placed at right angles and projecting into sides of riser		
Concrete poured so as to fill inside of riser to invert of barrel		
B. Pre-cast concrete structure		
Dry and stable subgrade		
Riser base set to design elevation		
If more than one section, no spalling in gasket interface area; gasket or approved caulking material placed securely		
Watertight and structurally sound collar or Gasket joint where structure connects to pipe spillway		
C. Poured concrete structure		
Footing excavated or formed on stable Subgrade, to design dimensions with reinforcing steel set		
Structure formed to design dimensions, with reinforcing steel set as per plan		
Concrete of an approved mix and vibrated into place (protected from freezing while curing, if necessary)		
Forms stripped & inspected for "honeycomb" prior to backfilling; parge if necessary		
5. Embankment Construction		
Fill material		
Compaction		
Embankment		
1. Fill placed in specified lifts and compacted with appropriate equipment		
2. Constructed to design cross-section, side slopes and top width		
3. Constructed to design elevation plus allowance for settlement		
6. Impounded Area Construction		
Excavated / graded to design contours and side slopes		
Inlet pipes have adequate outfall protection		
Forebay(s)		
Pond benches		
7. Earth Emergency Spillway Construction		
Spillway located in cut or structurally stabilized with riprap, gabions, concrete, etc.		
Excavated to proper cross-section, side slopes and bottom width		
Entrance channel, crest, and exit channel Constructed to design grades and elevations		

CONSTRUCTION SEQUENCE	SATISFACTORY/ UNSATISFACTORY	COMMENTS
8. Outlet Protection		
A. End section		
Securely in place and properly backfilled		
B. Endwall		
Footing excavated or formed on stable Subgrade, to design dimensions and reinforcing steel set, if specified		
Endwall formed to design dimensions with Reinforcing steel set as per plan		
Concrete of an approved mix and vibrated into place (protected from freezing, if necessary)		
Forms stripped and structure inspected for "honeycomb" prior to backfilling; parge if necessary		
C. Riprap apron / channel		
Apron / channel excavated to design cross-Section with proper transition to existing ground		
Filter fabric in place		
Stone sized as per plan and uniformly place at the thickness specified		
9. Vegetative Stabilization		
Approved seed mixture or sod		
Proper surface preparation and required soil Amendments		
Excelsior mat or other stabilization, as per plan		
10. Miscellaneous		
Drain for ponds having a permanent pool		
Trash rack / anti-vortex device secured to outlet structure		
Trash protection for low flow pipes, orifices, etc.		
Fencing (when required)		
Access road		
Set aside for clean-out maintenance		
11. Stormwater Wetlands		
Adequate water balance		
Variety of depth zones present		
Approved pondscaping plan in place reinforcement budget for additional plantings		
Plants and materials ordered 6 months prior to construction		
Construction planned to allow for adequate planting and establishment of plant community (April-June planting window)		
Wetland buffer area preserved to maximum extent possible		

Comments:

Actions to be Taken:

Appendix - C

SUMMERVILLE INDUSTRIAL PARK

VILLAGE OF CHESTER
ORANGE COUNTY
NEW YORK

APPENDIX-C

SPILL CONTROL AND PREVENTION LOG

BY

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SPILL CONTROL & PREVENTION LOG

SUMMERVILLE INDUSTRIAL PARK

Village of Chester
Orange County, New York

Date of Spill	Material Spilled	Spill Location	Cause	Cleanup	Agency Reported (Toxic/Hazardous)	Reoccurance Prevention Measure

Appendix - D

SUMMERVILLE INDUSTRIAL PARK

VILLAGE OF CHESTER
ORANGE COUNTY
NEW YORK

APPENDIX-D

MAINTENANCE AGREEMENT

BY

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STORMWATER CONTROL FACILITY MAINTENANCE AGREEMENT
RE: SUMMERVILLE INDUSTRIAL PARK
(Tax Map: Section 116, Block 1, Lot 1.2 & 2)

Whereas, the Village of Chester ("Village") and Trodale Developers LLC ("Facility Owner") want to enter into an agreement to provide for the long term maintenance and continuation of stormwater control measures approved by the Village for the above named project, and

Whereas, the Town and the Facility Owner desire that the stormwater control measures be built in accordance with the approved project plans and thereafter be maintained, cleaned, repaired, replaced and continued in perpetuity in order to ensure optimum performance of the components. Therefore, the Village and the Facility Owner agree as follows:

1. This agreement binds the Facility Owner, its successors and assigns, to the maintenance provisions depicted in the approved project plans which are attached as Schedule A-1 of this agreement.

2. The Facility Owner shall maintain, clean, repair, replace and continue the Stormwater control measures as listed in Schedule A-2 as necessary to ensure optimum performance of the measures to design specifications. The stormwater control measures shall include, but shall not be limited to, the following: drop inlets, pipes, culverts, underground infiltration system, solid pipe storage system, and up-flo filter system, but only to the extent that the same are shown on Schedule A-2.

3. The Facility Owner shall be responsible for all expenses related to the maintenance of the stormwater control measures and shall establish a means for the collection and distribution of expenses among parties for any commonly owned facilities.

4. The Facility Owner shall provide for the annual inspection of the stormwater control measures, in perpetuity, to determine the condition and integrity of the measures. A Professional Engineer licensed by the State of New York shall perform such inspection. The inspecting engineer shall prepare and submit to the Village within 30 days of the inspection, a written report of the findings including recommendations for those actions necessary for the continuation of the Stormwater control measures.

5. The Facility Owner shall not authorize, undertake or permit alteration, abandonment, modification or discontinuation of the Stormwater control measures except in accordance with written approval of the Village.

6. The Facility Owner shall undertake all necessary repairs and replacement of the stormwater control measures at the direction of the Village or in accordance with the recommendations of the inspecting engineer.

7. The Facility Owner shall provide to the Village, prior to Mayor's endorsement, a security for the maintenance and continuation of the stormwater control measures.

8. This agreement shall be recorded in the Office of the County Clerk, County of Orange. In the

event that the facility is a commercial or residential condominium, this agreement shall be included in any offering plan or prospectus.

9. If ever the Village determines that the Facility Owner has failed to construct or maintain the stormwater control measures in accordance with the project plan or has failed to undertake corrective action specified by the Village or by the inspecting engineer, the Village is authorized to undertake such steps as reasonably necessary for the preservation, continuation or maintenance of the stormwater control measures and to affix the expenses thereof as a tax lien against the property. By virtue of this agreement, the facility owner hereby grants on behalf of itself, its successors and/or assigns an irrevocable right of entry to the Village, its employees, contractors, vendees and/or officers to perform the corrective measures referred to in this paragraph and agrees to hold them harmless, defend and indemnify them for any damages, except gross negligence.

10. This agreement is effective as of the date of execution of the Stormwater Control Facility Maintenance Agreement.

Village of Chester

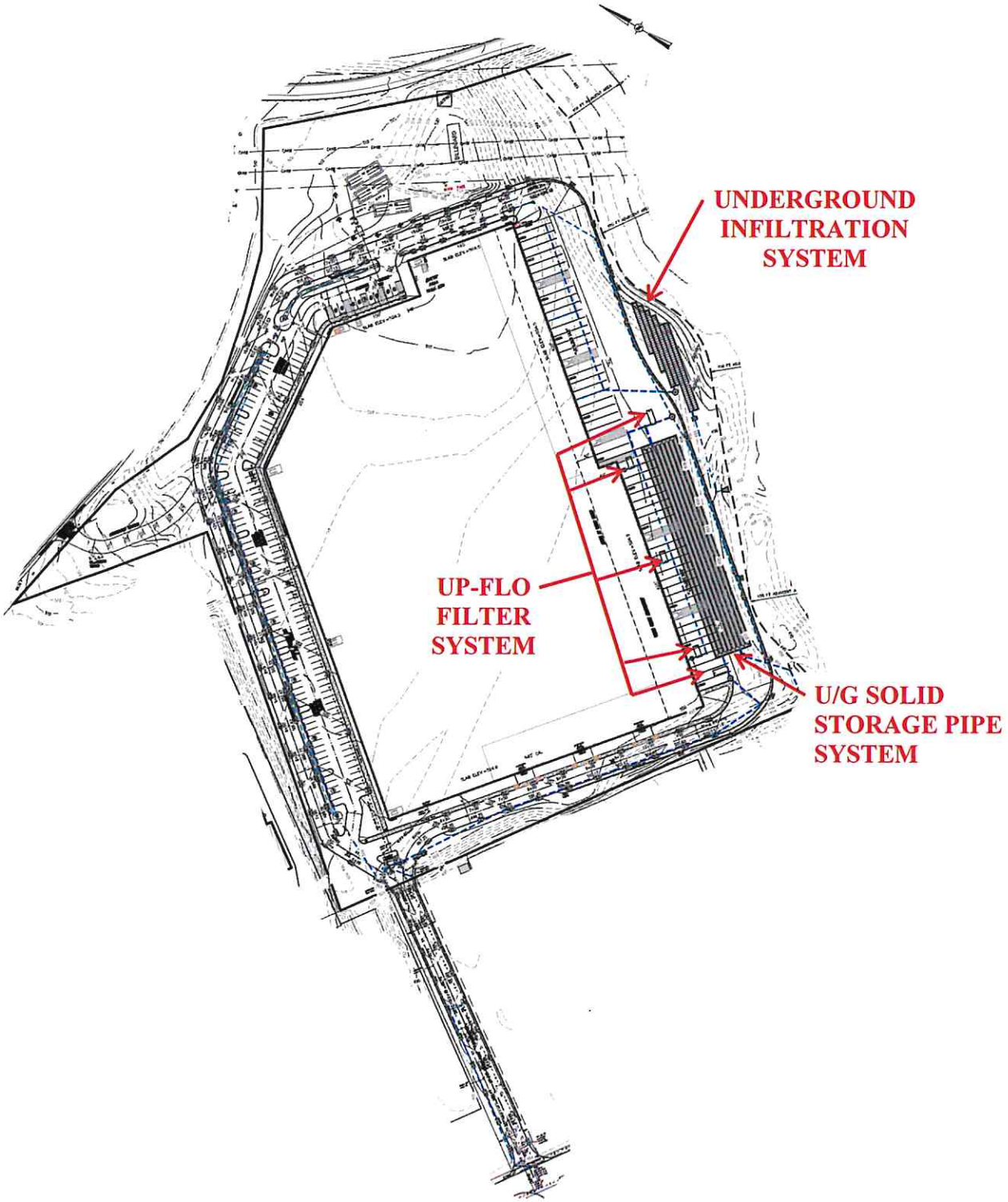
By: _____
John Queenan, Village Engineer

Summerville Industrial Park

By: _____
Berel Karniol

SCHEDULE "A-1"

STORMWATER MANAGEMENT FACILITIES
LAYOUT & LOCATION



SCHEDULE "A-2"

STORMWATER MANAGEMENT SYSTEM
INSPECTION AND MAINTENANCE SCHEDULE

Stormwater Management Structures:

- Stormwater Piping
- Catch Basins
- Manholes
- Pretreatment System (Hydro-International First Defense)
- Underground Infiltration System (Cultec R-902HD)
- Up-flo Filter System
- Underground Solid Pipe Storage System

Inspections Schedule:

- Stormwater Pipes, Catch Basins, and Manholes:
  - Biannual, after major storms: Check for debris at inlets, outlets, and cleanouts.
- Pretreatment System (Hydro-International First Defense):
  - Biannual after major storm: check for trash, excessive sediment and oil sheen.
- Underground Infiltration System (Cultec R-902HD):
  - Monthly, after major storm: Check that pipes are clear of debris.
  - Annual, after major storm: Check that sediment storage does not exceed 15% capacity.
  - Monthly, after major storm: Check that pipe dewaters.
  - Biannual, after major storm: Check for oil accumulation.
- Up-flo Filter System:
  - Biannual after major storm: check for trash, excessive sediment and oil sheen.
- Underground Solid Pipe Storage System:
  - Monthly, after major storm: Check that pipes are clear of debris.
  - Annual, after major storm: Check that sediment storage does not exceed 15% capacity.
  - Monthly, after major storm: Check that pipe dewaters.
  - Biannual, after major storm: Check for oil accumulation.

Maintenance Schedule:

- Stormwater Piping: Must be cleaned as found necessary by inspection.
- Catch Basins and Manholes: Must be cleaned as found necessary by inspection.
- Pretreatment device (Hydro-International First Defense):
  - Clean out trash, sediment, and oil when necessary.

- Underground Infiltration System (Cultec R-902HD):
    - Clear inlets, outlets, and control structure of debris.
    - Clean out oil, trash, and sediment.

- Up-flo Filter System:
    - Clean out trash, sediment, and oil when necessary.
    - Annual replacement of media bags and drain down filter.

- Underground Solid Pipe Storage System:
    - Clear inlets, outlets, and control structure of debris.
    - Clean out oil, trash, and sediment.

State of New York, County of Orange ss.:

On _____, before me, the undersigned, personally appeared John Queenan personally known to me or proved to me on the basis of satisfactory evidence to be the individual whose name is subscribed to the within instrument and acknowledged to me that he executed the same in his capacity, and that by his signature on the instrument, the individual, or the person upon behalf of which the individual acted, executed the instrument.

_____
Notary Public

State of New York, County of _____ ss.:

On _____, before me, the undersigned, personally appeared Berel Karniol personally known to me or proved to me on the basis of satisfactory evidence to be the individual whose name is subscribed to the within instrument and acknowledged to me that he executed the same in his capacity, and that by his signature on the instrument, the individual, or the person upon behalf of which the individual acted, executed the instrument.

_____
Notary Public

Stormwater Piping
Inspection and Maintenance Checklist

Project:

Location:

Site Status: _____

Date: _____ **Time:** _____

Inspector Signature: _____ **Inspector Name (print):** _____

Inspection/Maintenance Items	Satisfactory or Unsatisfactory	Comments/Corrective Action
1. Inspection (Quarter-annually, After Major Storms)		
1. Accumulated sediment exceeds 10% of the diameter of the pipe.		
2. Vegetation the reduces free movement of water through pipes.		
3. Pipe damage: Any dent that increases flow area by more than 10% or puncture that impacts performance		
4. Trash accumulated to reduce free movement of water through pipes.		

Inspector shall use one sheet for each individual pipe run.

(Provide sketch to show location of unsatisfactory items)

ACTIONS TO BE TAKEN:

_____
_____
_____
_____
_____

COMMENTS:

_____
_____
_____
_____
_____

Catch Basin & Manholes
Inspection and Maintenance Checklist

Project:

Location:

Site Status: _____

Date: _____ **Time:** _____

Inspector Signature: _____ **Inspector Name (print):** _____

Inspection/Maintenance Items	Satisfactory or Unsatisfactory	Comments/Corrective Action
1. Inspection (Quarter-annually, After Major Storms)		
1. Accumulated debris or sediment depth exceed sump or impedes flow from inlet or outlet pipes		
2. Inlet or outlet pipe damaged		
3. Contaminants & pollutants visible		
4. Cover/grate functioning properly		
5. Structure: no cracks larger than 1/2"		
6. Ladder		
7. Mosquito breeding habitat		
2. Sediment		
1. Depth of sediment (inches)*		
2. Depth of oil (inches)**		
3. Sediment and oil have been removed		

*If measured depth of sediment is greater than 3 inches, the system shall be cleaned as per the manufacturer recommendations.
**Any presence of oil shall be removed immediately.

Inspector shall use one sheet for each catch basin/manhole.
(Provide sketch to show location of unsatisfactory items.)

ACTIONS TO BE TAKEN:

COMMENTS:

Pre-Treatment (Hydro International First Defense) System Inspection and Maintenance Checklist

Project:

Location:

Site Status: _____

Date: _____ **Time:** _____

Inspector Signature: _____ **Inspector Name (print):** _____

Inspection/Maintenance Items	Satisfactory or Unsatisfactory	Comments/Corrective Action
1. Inlet/Outlet Structures (Quarter-annually, After Major Storms)		
1. Clear of debris and functional?		
2. Trash rack clear of debris and functional?		
3. Sediment accumulation?		
4. Condition of concrete/masonry?		
5. Outfall channels function, not eroding?		
6. If confined space entry is required; OSHA regulations should be followed.		
7. Other? (describe)		
2. Basin Bottom (Quarter-annually, After Major Storms)		
1. Excessive sedimentation?		
2. Any standing water?		
3. Structural Condition (Monthly or as needed)		
1. Structural repairs to inlet and outlets as needed?		
2. Any differential settlement?		

3. Other? (describe)		
4. Sediment		
1. Depth of sediment (inches)*		
2. Depth of oil (inches)**		
3. Sediment and oil have been removed		

*If measured depth of sediment is greater than 3 inches, the system shall be cleaned as per the manufacturer recommendations.
**Any presence of oil shall be removed immediately.

If any of the above inspection items are UNSATISFACTORY, list corrective actions and the corresponding completion dates below:

ACTIONS TO BE TAKEN:

COMMENTS:

Underground Infiltration System
Inspection and Maintenance Checklist

Project:

Location:

Site Status: _____

Date: _____ **Time:** _____

Inspector Signature: _____ **Inspector Name (print):** _____

Inspection/Maintenance Items	Satisfactory or Unsatisfactory	Comments/Corrective Action
1. Inlet/Outlet Structures (Quarter-annually, After Major Storms)		
1. Clear of debris and functional?		
2. Trash rack clear of debris and functional?		
3. Sediment accumulation?		
4. Condition of concrete/masonry?		
5. Outfall channels function, not eroding?		
6. If confined space entry is required; OSHA regulations should be followed.		
7. Other? (describe)		
3. Basin Bottom (Quarter-annually, After Major Storms)		
1. Excessive sedimentation?		
2. Any standing water?		
4. Structural Condition (Monthly or as needed)		
1. Structural repairs to inlet and outlets as needed?		
2. Any differential settlement?		

3. Other? (describe)		
5. Sediment		
1. Depth of sediment (inches)*		
2. Depth of oil (inches)**		
3. Sediment and oil have been removed		

*If measured depth of sediment is greater than 3 inches, the system shall be cleaned as per the manufacturer recommendations.
**Any presence of oil shall be removed immediately.

If any of the above inspection items are UNSATISFACTORY, list corrective actions and the corresponding completion dates below:

ACTIONS TO BE TAKEN:

_____
_____
_____
_____
_____

COMMENTS:

_____
_____
_____
_____
_____

Up-flo Filter System
Inspection and Maintenance Checklist

Project: _____

Location: _____

Site Status: _____

Date: _____ **Time:** _____

Inspector Signature: _____ **Inspector Name (print):** _____

Inspection/Maintenance Items	Satisfactory or Unsatisfactory	Comments/Corrective Action
1. Debris Removal (Monthly)		
1. Adjacent area free of debris?		
2. Inlets and Outlets free of debris?		
3. Facility (internally) free of debris?		
2. Vegetation		
1. Surrounding areas fully stabilized? (no evidence of eroding material into Up-Flo Filter) **(Annually)**		
2. Grass mowed? **(Monthly)**		
3. Water retention where required (Annually)		
1. Water holding chamber(s) at normal pool?		
2. Evidence of erosion?		
4. Sediment Deposition (Annually)		
1. Filtration Chamber free of sediments?		
2. Sedimentation sump not more than 50% full?		

5. Structural Components (Annually)		
1. Any evidence of structural deterioration?		
2. Grates in good condition?		
3. Spalling or cracking of structural parts?		
4. Outlet/Overflow Spillway		
6. Others		
1. Any evidence of filter(s) clogging? **(Monthly)**		
2. Noticeable odors? **(Annually)**		
3. Evidence of flow bypassing facility? **(Annually)**		

ACTIONS TO BE TAKEN:

COMMENTS:

Underground Solid Pipe Storage System
Inspection and Maintenance Checklist

Project: _____

Location: _____

Site Status: _____

Date: _____ **Time:** _____

Inspector Signature: _____ **Inspector Name (print):** _____

Inspection/Maintenance Items	Satisfactory or Unsatisfactory	Comments/Corrective Action
1. Debris Cleanout (Monthly)		
1. Pipes clear of debris		
2. Inflow clear of debris		
2. Dewatering (Monthly)		
1. Pipe dewaters between storms		
3. Sediment Cleanout (Biannual)		
1. No sediment accumulation		
2. No oil accumulation		
3. Sediment and oil accumulation does not yet require cleanout		
4. Inlets/Outlets (Annual)		
1. Good condition		

*If measured depth of sediment is greater than 3 inches, the system shall be cleaned as per the manufacturer recommendations.
**Any presence of oil shall be removed immediately.

Inspector shall use one sheet for each underground storage system.
(Provide sketch to show location of unsatisfactory items.)

ACTIONS TO BE TAKEN:

_____

_____

COMMENTS:

Appendix - E

SUMMERVILLE INDUSTRIAL PARK

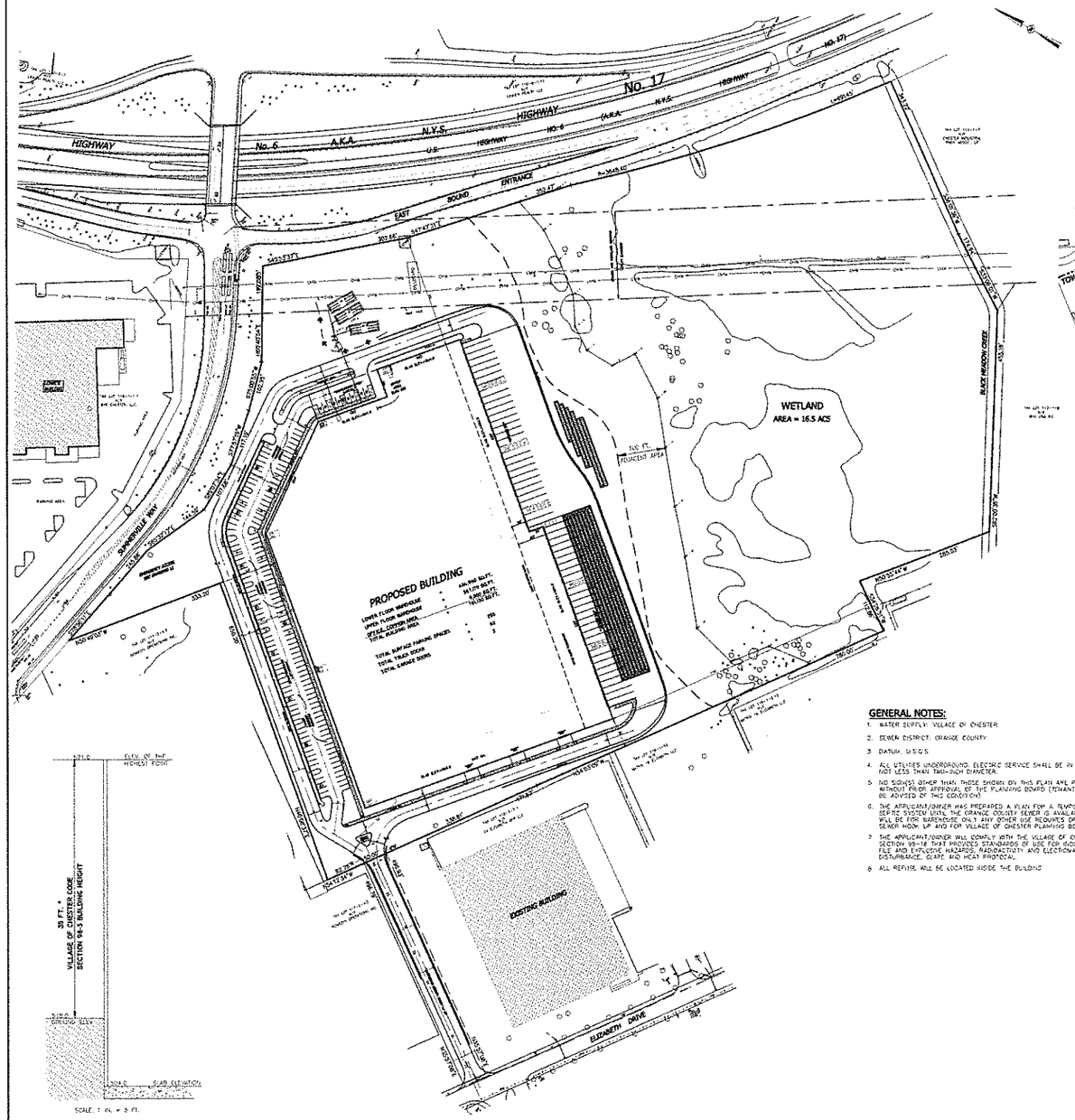
VILLAGE OF CHESTER
ORANGE COUNTY
NEW YORK

APPENDIX-E

CONSTRUCTION PLANS IN (11"X17") FORMAT

BY

ATZL, NASHER & ZIGLER
ENGINEERS-SURVEYORS-PLANNERS
232 NORTH MAIN STREET
NEW CITY, NY 10956
TEL: (845) 634-4694
FAX: (845) 634-5543
E-MAIL: rnasher@anzny.com



VICINITY MAP
SCALE: 1 IN. = 400 FT.

GENERAL NOTES:

1. WATER SUPPLY: VILLAGE OF CHESTER
2. SEWER DISTRICT: ORANGE COUNTY
3. DATUM: U.S.G.S.
4. ALL UTILITIES UNDERGROUND. ELECTRIC SERVICE SHALL BE IN CONDUIT OF NOT LESS THAN TWO-INCH DIAMETER.
5. NO SIGNS OTHER THAN THOSE SHOWN ON THIS PLAN ARE PERMITTED WITHOUT PRIOR APPROVAL OF THE PLANNING BOARD (TENANTS ARE TO BE ADVISED OF THIS CONDITION)
6. THE APPLICANT/OWNER HAS PREPARED A PLAN FOR A TEMPORARY SUBSURFACE SEPTIC SYSTEM UNTIL THE ORANGE COUNTY SEWER IS AVAILABLE. THE SYSTEM WILL BE FOR WAREHOUSE ONLY. ANY OTHER USE REQUIRES ORANGE COUNTY SEWER HOOK UP AND FOR VILLAGE OF CHESTER PLANNING BOARD REVIEW.
7. THE APPLICANT/OWNER WILL COMPLY WITH THE VILLAGE OF CHESTER CODE SECTION 98-14 THAT PROVIDES STANDARDS OF USE FOR INDUSTRIAL WASTE, FIRE AND EXPLOSIVE HAZARDS, RADIOACTIVITY AND ELECTROMAGNETIC DISTURBANCE, GLARE AND HEAT PROTECTION.
8. ALL REFUSE WILL BE LOCATED INSIDE THE BUILDING

DRAWING No.

SHEET NUMBER	DRAWING TITLE
1	SITE PLAN
2	EXISTING CONDITION PLAN
3	NYSDEC WETLAND BOUNDARY
4	BULK TABLE PLAN
5	OVERALL GRADING PLAN
6	GRADING PLAN (NORTH END)
7	GRADING PLAN (MIDDLE)
8	GRADING PLAN (SOUTH END)
9	DRAINAGE DETAILS
10	DRAINAGE DETAILS
11	EMERGENCY ACCESS PLAN
12	ENTRY WAY PLAN & PROFILE, SANITARY SEWER DETAILS
13	PAVEMENT, CURB AND SIDEWALK DETAILS
14	CONSTRUCTION DETAILS SEWAGE DISPOSAL SYSTEM
15	LIGHTING PLAN
16	EROSION SEDIMENT CONTROL PLAN
L701	LANDSCAPING PLAN (ACCESS DRIVE)
L70	LANDSCAPING PLAN (MAIN SITE) COLLERS CONCEPT
1	PLAN (ROUTE 94)
1	OCCUPIED TURNING TRACK PLAN

PLANNING BOARD APPROVAL

OWNER:

TROJANE DEVELOPERS LLC
ONE EXECUTIVE BLVD
SUITE 101
SUFFERN, NEW YORK 10901

REFERENCE:

DEPICTED AS LOT 3 ON FILE MAP ENTITLED
"FRANK J MURRAY CO., LLC" AS MAP NUMBER
9366-DS SHEET 1 FILED ON 12/7/2005

TAX DESIGNATION:

VILLAGE OF CHESTER TAX MAP
SECTION 118 BLOCK 1 LOT 1.2 AND 2
THE TWO LOTS ARE TO BE COMBINED

AREA:

TAX LOT 118-1-1.2 AREA = 39.335 ACRES.
TAX LOT 118-1-2 AREA = 0.685 ACRES.
TOTAL AREA = 40.020 ACRES

SITE ADDRESS:

SUMMERVILLE WAY
CHESTER, NEW YORK

TABLE OF ELEVATION

DESCRIPTION	ELEVATION
TOP ROOF	571
CEILING	566
20 FT. CLEAR	
TOP FLOOR	548
CEILING	544
40 FT. CLEAR	
FIN. FLR.	524

LEGEND

- EXISTING 2' CONTOUR
- EXISTING 10' CONTOUR
- EXISTING WATERLINE
- EXISTING WATER VALVE
- EXISTING FIRE HYDRANT
- EXISTING GAS LINE
- EXISTING GAS VALVE
- EXISTING CATCH BASIN
- EXISTING STORM DRAIN LINE
- EXISTING SEWER MANHOLE
- EXISTING SEWER LINE
- EXISTING SPOT ELEVATION
- EXISTING STONEWALL
- EXISTING UTILITY POLE

PARKING CALCULATIONS TABLE:

SURFACE PARKING SPACES:
181,320 SQ.FT./250 PARKING SPACES = 1 PARKING SPACE/0.075 SQ FT
TRUCK DOCKS
781,130 SQ.FT. 42 TRUCK DOCKS = 1 PARKING SPACES/12,600 SQ FT
OR

BODY SHIFT:	
DAY	100
EVENING	50
TOTAL (EMPLOYEES)	150
2 PARKING SPACES/3 EMPLOYEES	100
OFFICE 4,500 SQ.FT.:	
1 PARKING SPACE/200 SQ.FT	23
TOTAL REQUIRED	123
TOTAL PROVIDED	152
RESERVE ADDITIONAL	81

BULK REQUIREMENTS:

ZONE=M1	REQUIRED	EXISTING
MINIMUM LOT AREA	3 ACRES	39.97 ACRES
MINIMUM LOT WIDTH	200 FT.	1,260+ FT.
MINIMUM FRONT YARD	50 FT.	124 FT.
MINIMUM SIDE YARD	50 FT.	60 FT.
MINIMUM TOTAL SIDE YARD	100 FT.	230 FT.
MINIMUM REAR YARD	50 FT.	579 FT.
MAXIMUM BUILDING HEIGHT	40 FT.	35 FT. *
MAXIMUM BUILDING STORIES	2 STORIES	2 STORY
MAXIMUM DEVELOPMENT COVERAGE	50%	41%

* VARIANCE REQUIRED

UDIG-NY
Uniform Color Code
(for temporary marks)
White — Proposed Excavation
Pink — Temporary Survey
Red — Electric
Yellow — Gas, Oil, Steam, Petroleum
Orange — Communication, TV
Blue — Potable Water
Purple — Reclaimed Water, Irrigation
Green — Sewer and Drain Lines

IF YOU DIG- U811
UDIGNY.ORG

THE EDUCATION LAW OF THE STATE OF NEW YORK PROHIBITS ANY PERSON, WITHOUT AN VALID GENERATED RECORD OF THE ALTERATION OF ANY SURVEY MAP OR PLAN BEARING A LICENSED PROFESSIONAL ENGINEER'S OR LAND SURVEYOR'S SEAL AND/OR EMBOSSED SEAL, UNLESS SUCH PERSON IS ACTING UNDER THE DIRECTION OF SUCH LICENSED PROFESSIONAL ENGINEER, WHO ALTERS THE DOCUMENT AND ADDS TO THE DOCUMENT THE WORDS "ALTERED BY" FOLLOWED BY HIS NAME AND A DESCRIPTION OF THE ALTERATION MADE. PURSUANT TO SECTION 7209 SUBDIVISION 2 OF THE EDUCATION LAW OF THE STATE OF NEW YORK, ANY PERSON WHO ALTERS THIS DOCUMENT IN ANY WAY IS SUBJECT TO PROSECUTION FOR A CLASS E FELONY.

RYAN E. NASHER P.E.
N.Y.S. P.E. LIC. NO: 85066

JOHN A. ATZL
N.Y.S. L.L.S. LIC. NO. 50228

REVISION	DATE	DESCRIPTION
2	07-26-23	PRELIMINARY SUBMISSION
1	04-27-23	LAND & TULLY MEMO 3-24-23

ATZL, NASHER & ZIGLER P.C.
ENGINEERS - SURVEYORS - PLANNERS
232 North Main Street
New City, New York 10956
Tel: (845) 634-4694
Fax: (845) 634-5543
E-mail: info@anzny.com
Web: www.ANZNY.com

PROJECT:
SUMMERVILLE INDUSTRIAL PARK

VILLAGE OF CHESTER
ORANGE COUNTY, NEW YORK

TITLE:
SITE PLAN

DRAWN BY: VC	CHECKED BY: ENZ
DATE: AUGUST 03, 2022	SCALE: 1 IN. = 100 FT.
PROJECT NO. 3390	DRAWING NO. 1

P:\DRAWINGS\3390\SITE PLAN NEW BUILDING & GRADING 7-31-2023.DWG

LEGEND

- EXISTING 2' CONTOUR
- EXISTING 10' CONTOUR
- EXISTING WATERLINE
- EXISTING WATER VALVE
- EXISTING FIRE HYDRANT
- EXISTING GAS LINE
- EXISTING GAS VALVE
- EXISTING CATCH BASIN
- EXISTING STORM SEWER LINE
- EXISTING SEWER MANHOLE
- EXISTING SEWER LINE
- EXISTING SPOT ELEVATION
- EXISTING STONEWALL
- EXISTING UTILITY POLE

HIGHWAY No. 6 A.K.A. N.Y.S. HIGHWAY No. 17

TAX LOT 116-1-2
AREA 0.635 ACS.

TAX LOT 116-1-1,2
AREA 39.335 ACS.

LOWE'S BLDG.

SUMMERVILLE WAY

VICTORIA BLVD.

NUCIFORA BLVD.

ELIZABETH DRIVE

BLACK MEADOW CREEK

NYSDEC FRESHWATER WETLAND BOUNDARY VALIDATION

The freshwater wetland boundary as represented on these plans accurately depicts the limits of Freshwater Wetland _____ as delineated by _____ on _____

DEC Staff:_____ ___/___/___ Surveyor/Engineer:_____

Date Valid:_____ Expiration Date:_____ SEAL

Wetland boundary delineations as validated by the New York State Department of Environmental Conservation remain valid for five (5) years unless existing exempt activities, area hydrology, or land use practices change (e.g., agricultural to residential). After five (5) years the boundary must be revalidated by DEC staff. Revalidation may include a new delineation and survey of the wetland boundary.

Any proposed construction, grading, filling, excavating, clearing or other regulated activity in the freshwater wetland or within 100 feet of the wetland boundary as depicted on this plan requires a permit from the NYS Department of Environmental Conservation under Article 24 of the Environmental Conservation Law (Freshwater Wetlands Act) prior to commencement of work.

OWNER:
TRODALE DEVELOPERS LLC
ONE EXECUTIVE BLVD.
SUITE 101
SUFFERN, NEW YORK 10501

TAX DESIGNATION:
VILLAGE OF CHESTER TAX MAP
SECTION 116 BLOCK 1 LOT 2

REFERENCE:
DEPICTED AS LOT 2 ON FILE MAP ENTITLED "FRANK J MURRAY CO., LLC" AS MAP NUMBER X26-05 SHEET 1 FILED ON 12/7/2005

SITE ADDRESS:
3921 & 3923 SUMMERVILLE WAY
CHESTER, NEW YORK 10918

AREA:
TAX LOT 116-1-2 AREA = 39.335 ACRES
TAX LOT 116-1-2 AREA = 0.635 ACRES
TOTAL = 39.970 ACRES

REVISION	DATE	DESCRIPTION
2	07-26-23	PRELIMINARY SUBMISSION
1	04-11-23	LAND & TULLY MEMO 3-24-23

ATZL, NASHER & ZIGLER P.C.
ENGINEERS-SURVEYORS-PLANNERS
232 North Main Street
New City, New York 10956
Tel: (845) 634-4694
Fax: (845) 634-5510
E-mail: info@anzny.com
Web: www.ANZNY.com

PROJECT:
SUMMERVILLE INDUSTRIAL PARK

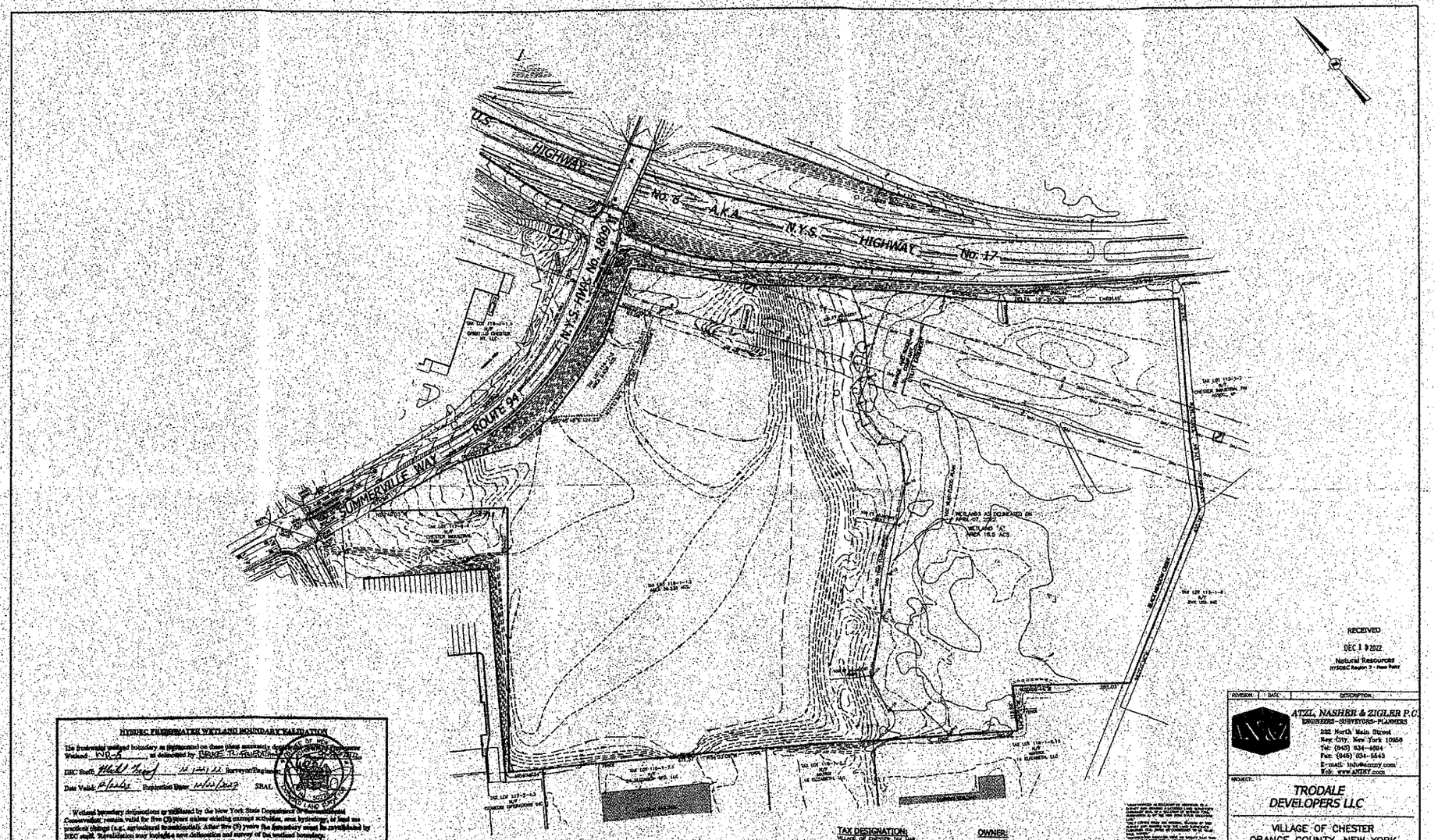
VILLAGE OF CHESTER
ORANGE COUNTY, NEW YORK

TITLE:
EXISTING CONDITION PLAN

DRAWN BY: VC	CHECKED BY: DMZ
DATE: AUGUST 05, 2022	SCALE: 1 IN. = 80 FT.
PROJECT NO. 3390	DRAWING NO. 2

RYAN A. NASHER, P.E.
N.Y.S. P.E. LIC. NO. 89066

JOHN R. ATZL
N.Y.S. L.L.S. LIC. NO. 50228



NYSDEC FRESHWATER WETLAND BOUNDARY VALIDATION

The freshwater wetland boundary as represented on these plans accurately depicts the NYSDEC Freshwater Wetland NR-A as delineated by BRUCE TUTHILL

DEC Staff: _____ 11/28/22 Surveyor/Engineer: _____

Date Valid: 11/28/27 Expiration Date: 11/28/2027 SEAL

Wetland boundary delineations as validated by the New York State Department of Environmental Conservation remain valid for five (5) years unless existing exempt activities, area hydrology, or land use practices change (e.g., agricultural reactivation). After five (5) years the boundary must be revalidated by DEC staff. Revalidation may include a new delineation and survey of the wetland boundary.

Any proposed construction, grading, filling, excavating, clearing or other regulated activity in the freshwater wetland or within 100 feet of the wetland boundary as depicted on this plan requires a permit from the NYS Department of Environmental Conservation, under Article 24 of the Environmental Conservation Law (Freshwater Wetlands Act) prior to commencement of work.

TAX DESIGNATION:
VILLAGE OF CHESTER TAX MAP
SECTION 119 BLOCK 1 LOT 2

REFERENCE:
DEPICTED AS LOT 2 ON FILE MAP ENTITLED
"TRODALE DEVELOPERS, LLC" AS MAP NUMBER
#18-09 SHEET 1 OF 2 DATED 12/7/2018

SITE ADDRESS:
3321 & 3323 SUMMERVILLE WAY
CHESTER, NEW YORK 10918

AREA:
TAX LOT 119-1-2 AREA = 2.100 ACRES
TAX LOT 119-1-1.3 AREA = 34.350 ACRES

OWNER:
TRODALE DEVELOPERS LLC
ONE EXECUTIVE BLVD
SUITE 101
SUFFERN, NEW YORK 10901

RECEIVED
DEC 1 9 2022
Natural Resources
NYSDEC Region 3 - New Paltz

REVISION	DATE	DESCRIPTION

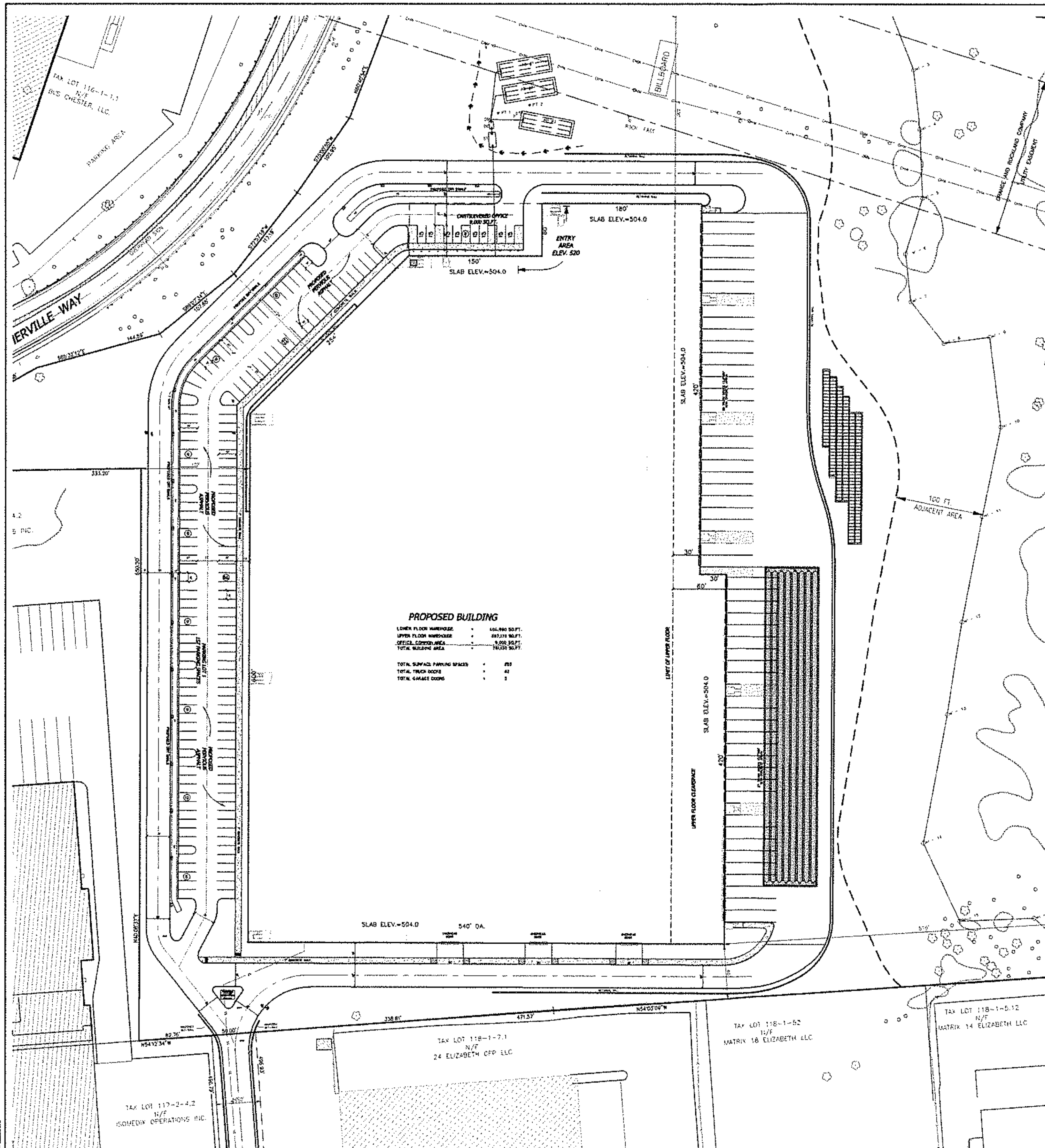
ATZL, NASHER & ZIGLER P.C.
ENGINEERS - SURVEYORS - PLANNERS
232 North Main Street
New City, New York 10956
Tel: (845) 634-4994
Fax: (845) 634-5643
E-mail: info@atzny.com
Web: www.ATZNY.com

PROJECT:
TRODALE DEVELOPERS LLC

VILLAGE OF CHESTER
ORANGE COUNTY, NEW YORK

TITLE:
NYSDEC WETLAND BOUNDARY

DRAWN BY: VC	CHECKED BY: CMZ
DATE: DECEMBER 10, 2022	SCALE: 1" IN. = 100 FT.
PROJECT NO: 3390	DRAWING NO: 3



BULK REQUIREMENTS:

ZONE-M1	REQUIRED	EXISTING
MINIMUM LOT AREA	3 ACRES	29.97 ACRES
MINIMUM LOT WIDTH	200 FT.	2,260± FT.
MINIMUM FRONT YARD	60 FT.	124 FT.
MINIMUM SIDE YARD	50 FT.	60 FT.
MINIMUM TOTAL SIDE YARD	100 FT.	230 FT.
MINIMUM REAR YARD	50 FT.	579 FT.
MAXIMUM BUILDING HEIGHT	40 FT.	53 FT. *
MAXIMUM BUILDING STORIES	3 STORIES	2 STORY
MAXIMUM DEVELOPMENT COVERAGE	50%	41%

* VARIANCE REQUIRED

PARKING CALCULATIONS TABLE:

SURFACE PARKING SPACES:

781,130 SQ.FT./255 PARKING SPACES = 1 PARKING SPACE/3,075 SQ.FT.

TRUCK DOCKS:

781,130 SQ.FT. 62 TRUCK DOCKS = 1 PARKING SPACES/12,600 SQ.FT.

OR

WORK SHIFT:	
DAY	100
EVENING	50
TOTAL (EMPLOYEES)	150
2 PARKING SPACES/3 EMPLOYEES	100
OFFICE 4,500 SQ.FT.:	
1 PARKING SPACE/200 SQ.FT.	23
TOTAL REQUIRED	123
TOTAL PROVIDED	157
RESERVE ADDITIONAL	91

REVISION	DATE	DESCRIPTION
2	07-26-23	PRELIMINARY SUBMISSION
1	04-11-23	LANC & TULLY MEMO 3-24-23

ATZL, NASHER & ZIGLER P.C.
ENGINEERS-SURVEYORS-PLANNERS
232 North Main Street
New City, New York 10956
Tel: (845) 634-4694
Fax. (845) 634-5543
E-mail: info@anzny.com
Web: www.ANZNY.com

PROJECT:

SUMMERVILLE INDUSTRIAL PARK

VILLAGE OF CHESTER
ORANGE COUNTY, NEW YORK

TITLE:

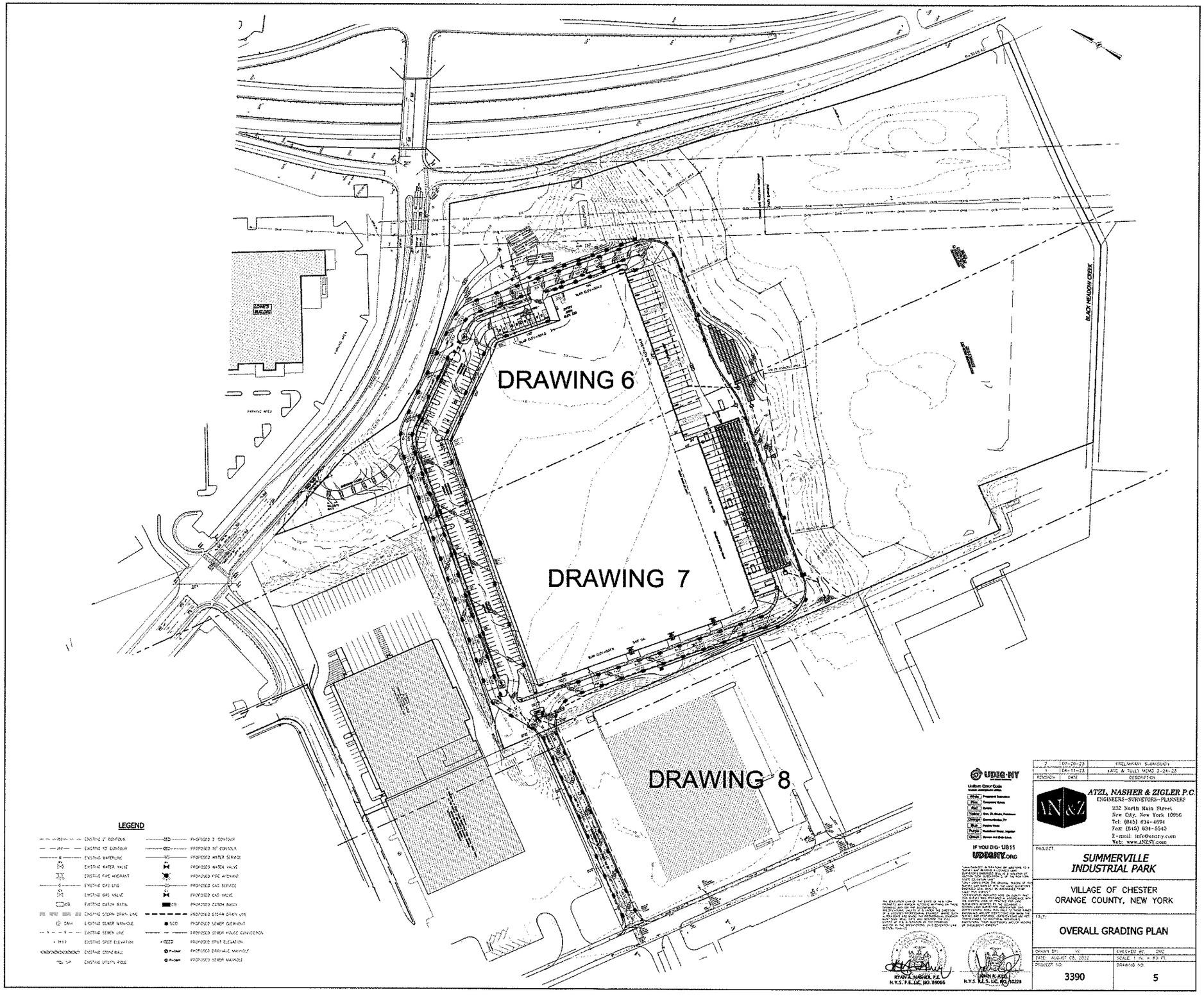
BULK TABLE PLAN

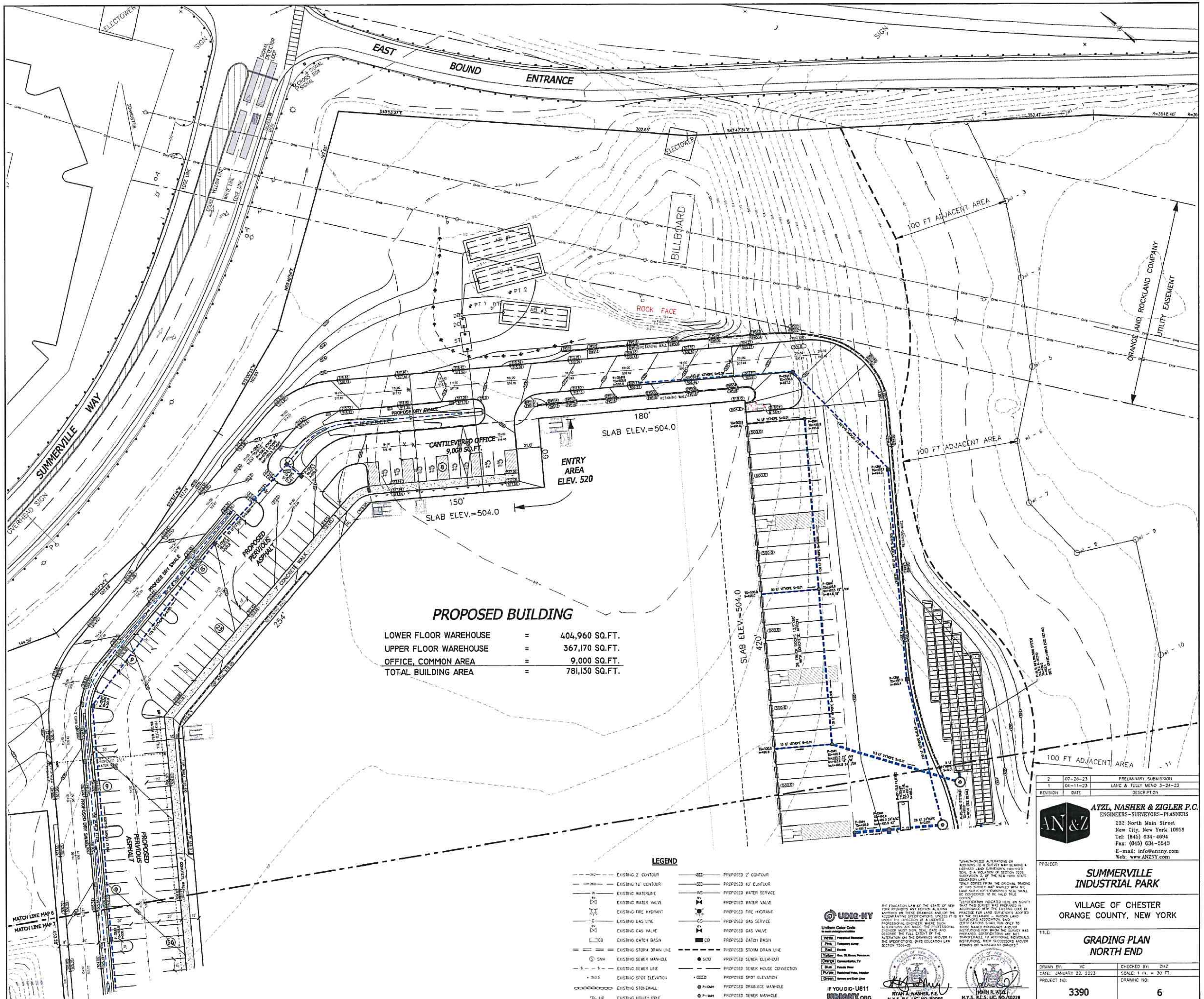
DRAWN BY: VC	CHECKED BY: DMZ
DATE: AUGUST 05, 2022	SCALE: 1 IN. = 100 FT.
PROJECT NO: 3390	DRAWING NO: 4

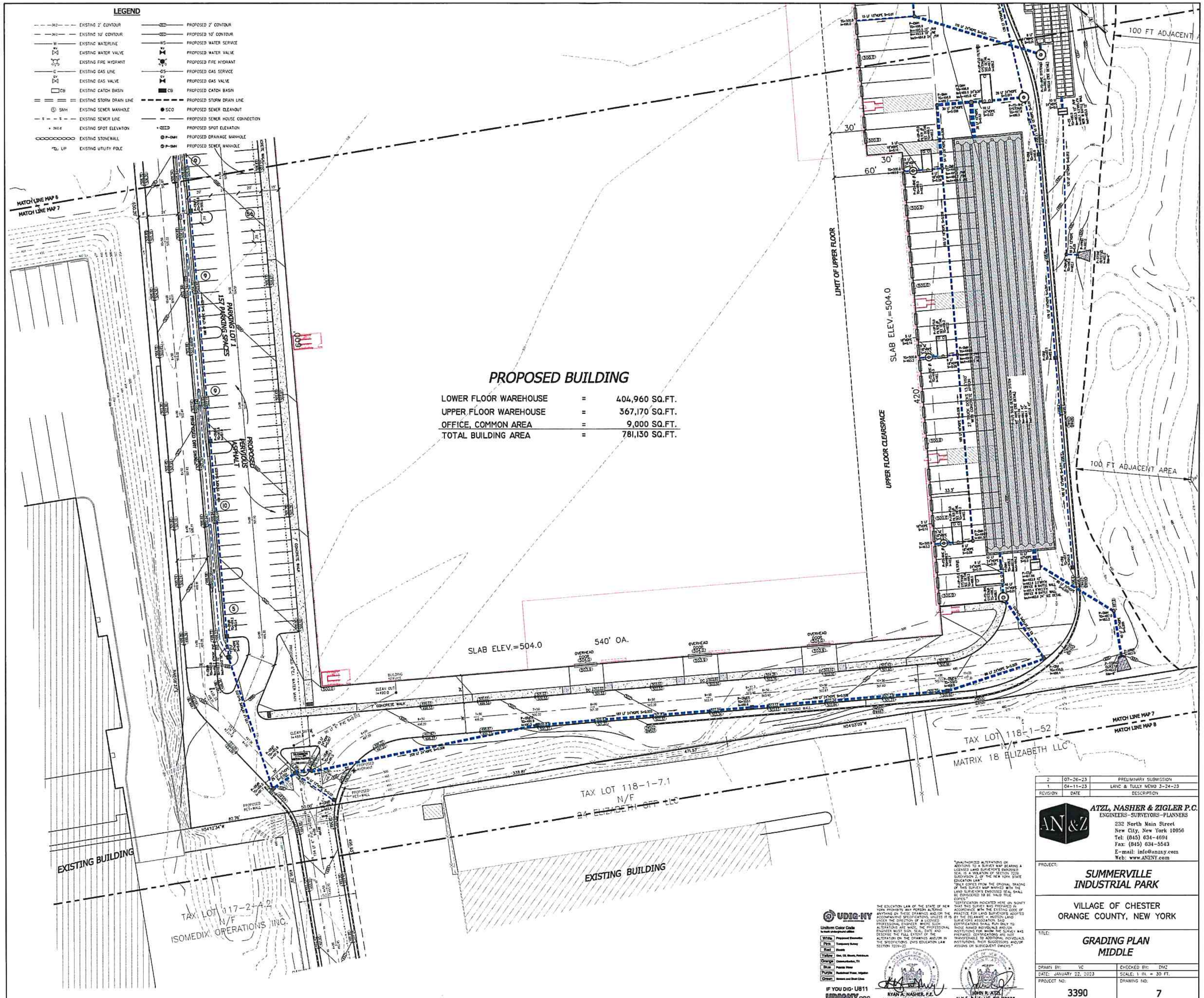
RYAN A. NASHER, P.E.
N.Y.S. P.E. LIC. NO. 89066

JOHN R. ATZL
N.Y.S. L.S. LIC. NO. 50228

UDIG NY
IF YOU DIG - U811
UDIGNY.ORG


DRAWING 6
DRAWING 7
DRAWING 8
BLACK MEADOW CREEK
LEGEND
EXISTING 2' CONTOUR
EXISTING 10' CONTOUR
EXISTING WATERLINE
EXISTING WATER VALVE
EXISTING FIRE HYDRANT
EXISTING GAS LINE
EXISTING GAS VALVE
EXISTING CATCH BASIN
EXISTING STORM DRAIN LINE
EXISTING SEWER MANHOLE
EXISTING SEWER LINE
EXISTING SPOT ELEVATION
EXISTING STONE WALL
EXISTING UTILITY POLE
PROPOSED 2' CONTOUR
PROPOSED 10' CONTOUR
PROPOSED WATER SERVICE
PROPOSED WATER VALVE
PROPOSED FIRE HYDRANT
PROPOSED GAS SERVICE
PROPOSED GAS VALVE
PROPOSED CATCH BASIN
PROPOSED STORM DRAIN LINE
PROPOSED SEWER CLEANOUT
PROPOSED SEWER HOUSE CONNECTION
PROPOSED SPOT ELEVATION
PROPOSED DRAINAGE MANHOLE
PROPOSED SEWER MANHOLE
IF YOU DIG- UB11
UDIGNY.ORG
KYLE A. NASHER, P.E.
N.Y.S. P.E. LIC. NO. 89065
JOHN E. ATZL
N.Y.S. L.S. LIC. NO. 50225
2 07-26-23 PRELIMINARY SUBMISSION
1 04-11-23 LATC & TOWN MEMO 3-24-23
REVISION DATE DESCRIPTION
ATZL, NASHER & ZIGLER P.C.
ENGINEERS - SURVEYORS - PLANNERS
302 North Main Street
New City, New York 10956
Tel: (845) 634-4694
Fax: (845) 634-5543
E-mail: info@anzpc.com
Web: www.ANZPC.com
PROJECT:
SUMMERVILLE INDUSTRIAL PARK
VILLAGE OF CHESTER
ORANGE COUNTY, NEW YORK
TITLE:
OVERALL GRADING PLAN
DRAWN BY: MC
CHECKED BY: DMC
DATE: AUGUST 25, 2022
SCALE: 1" = 80 FT.
PROJECT NO.: 3390
DRAWING NO.: 5


EAST BOUND ENTRANCE
SUMMERVILLE WAY
BILLBOARD
ROCK FACE
100 FT ADJACENT AREA
ORANGE AND ROCKLAND COMPANY UTILITY EASEMENT
CANTILEVERED OFFICE 9,000 SQ.FT.
ENTRY AREA ELEV. 520
SLAB ELEV.=504.0
180'
150'
420'
254'
60'
PROPOSED PERVIOUS ASPHALT
PROPOSED DRY SWALE
MATCH LINE MAP 6
MATCH LINE MAP 7
PROPOSED BUILDING
LOWER FLOOR WAREHOUSE = 404,960 SQ.FT.
UPPER FLOOR WAREHOUSE = 367,170 SQ.FT.
OFFICE, COMMON AREA = 9,000 SQ.FT.
TOTAL BUILDING AREA = 781,130 SQ.FT.
LEGEND
EXISTING 2' CONTOUR
EXISTING 10' CONTOUR
EXISTING WATERLINE
EXISTING WATER VALVE
EXISTING FIRE HYDRANT
EXISTING GAS LINE
EXISTING GAS VALVE
EXISTING CATCH BASIN
EXISTING STORM DRAIN LINE
EXISTING SEWER MANHOLE
EXISTING SEWER LINE
EXISTING SPOT ELEVATION
EXISTING STONEWALL
EXISTING UTILITY POLE
PROPOSED 2' CONTOUR
PROPOSED 10' CONTOUR
PROPOSED WATER SERVICE
PROPOSED WATER VALVE
PROPOSED FIRE HYDRANT
PROPOSED GAS SERVICE
PROPOSED GAS VALVE
PROPOSED CATCH BASIN
PROPOSED STORM DRAIN LINE
PROPOSED SEWER CLEANOUT
PROPOSED SEWER HOUSE CONNECTION
PROPOSED SPOT ELEVATION
PROPOSED DRAINAGE MANHOLE
PROPOSED SEWER MANHOLE
UDIG NY
IF YOU DIG- U811
UDIGNY.ORG
RYAN A. NASHER, P.E. N.Y.S. P.E. LIC. NO. 89066
JOHN R. ATZL N.Y.S. P.L.S. LIC. NO. 50228
2 | 07-26-23 | PRELIMINARY SUBMISSION
1 | 04-11-23 | LANC & TULLY MEMO 3-24-23
REVISION | DATE | DESCRIPTION
ATZL, NASHER & ZIGLER P.C.
ENGINEERS-SURVEYORS-PLANNERS
232 North Main Street
New City, New York 10956
Tel: (845) 634-4694
Fax: (845) 634-5543
E-mail: info@anzny.com
Web: www.ANZNY.com
PROJECT:
SUMMERVILLE INDUSTRIAL PARK
VILLAGE OF CHESTER
ORANGE COUNTY, NEW YORK
TITLE:
GRADING PLAN NORTH END
DRAWN BY: VC
CHECKED BY: DMZ
DATE: JANUARY 22, 2023
SCALE: 1 IN. = 30 FT.
PROJECT NO: 3390
DRAWING NO: 6


LEGEND
PROPOSED BUILDING
LOWER FLOOR WAREHOUSE = 404,960 SQ.FT.
UPPER FLOOR WAREHOUSE = 367,170 SQ.FT.
OFFICE, COMMON AREA = 9,000 SQ.FT.
TOTAL BUILDING AREA = 781,130 SQ.FT.
SLAB ELEV.=504.0
540' OA.
SLAB ELEV.=504.0
420'
LIMIT OF UPPER FLOOR
UPPER FLOOR CLEARSPACE
100 FT ADJACENT
100 FT ADJACENT AREA
MATCH LINE MAP 6
MATCH LINE MAP 7
MATCH LINE MAP 8
PARKING LOT 1
157 PARKING SPACES
PROPOSED POROUS ASPHALT
EXISTING BUILDING
EXISTING BUILDING
TAX LOT 118-1-52
N/F
MATRIX 18 ELIZABETH LLC
TAX LOT 118-1-7.1
N/F
24 ELIZABETH SPE LLC
TAX LOT 117-2-4.2
N/F
ISOMEDIX OPERATIONS INC.
UDIG-NY
IF YOU DIG · U811
UDIGNY.ORG
RYAN A. NASHER, P.E.
N.Y.S. P.E. LIC. NO. 89066
JOHN R. ATZL
N.Y.S. P.L.S. LIC. NO. 50228

REVISION	DATE	DESCRIPTION
2	07-26-23	PRELIMINARY SUBMISSION
1	04-11-23	LANC & TULLY MEMO 3-24-23

ATZL, NASHER & ZIGLER P.C.
ENGINEERS-SURVEYORS-PLANNERS
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New City, New York 10956
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E-mail: info@anzny.com
Web: www.ANZNY.com

PROJECT:

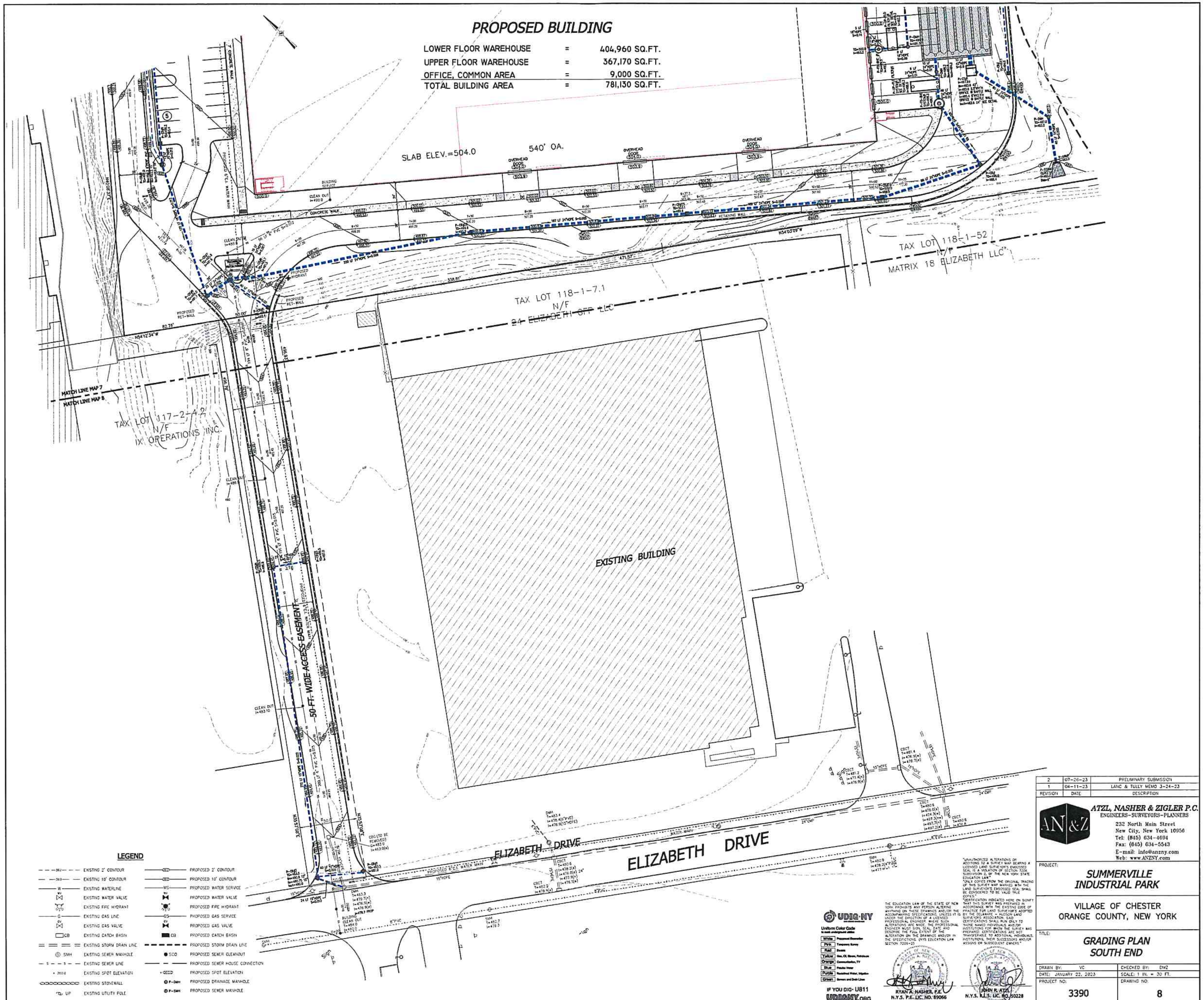
SUMMERVILLE INDUSTRIAL PARK

VILLAGE OF CHESTER
ORANGE COUNTY, NEW YORK

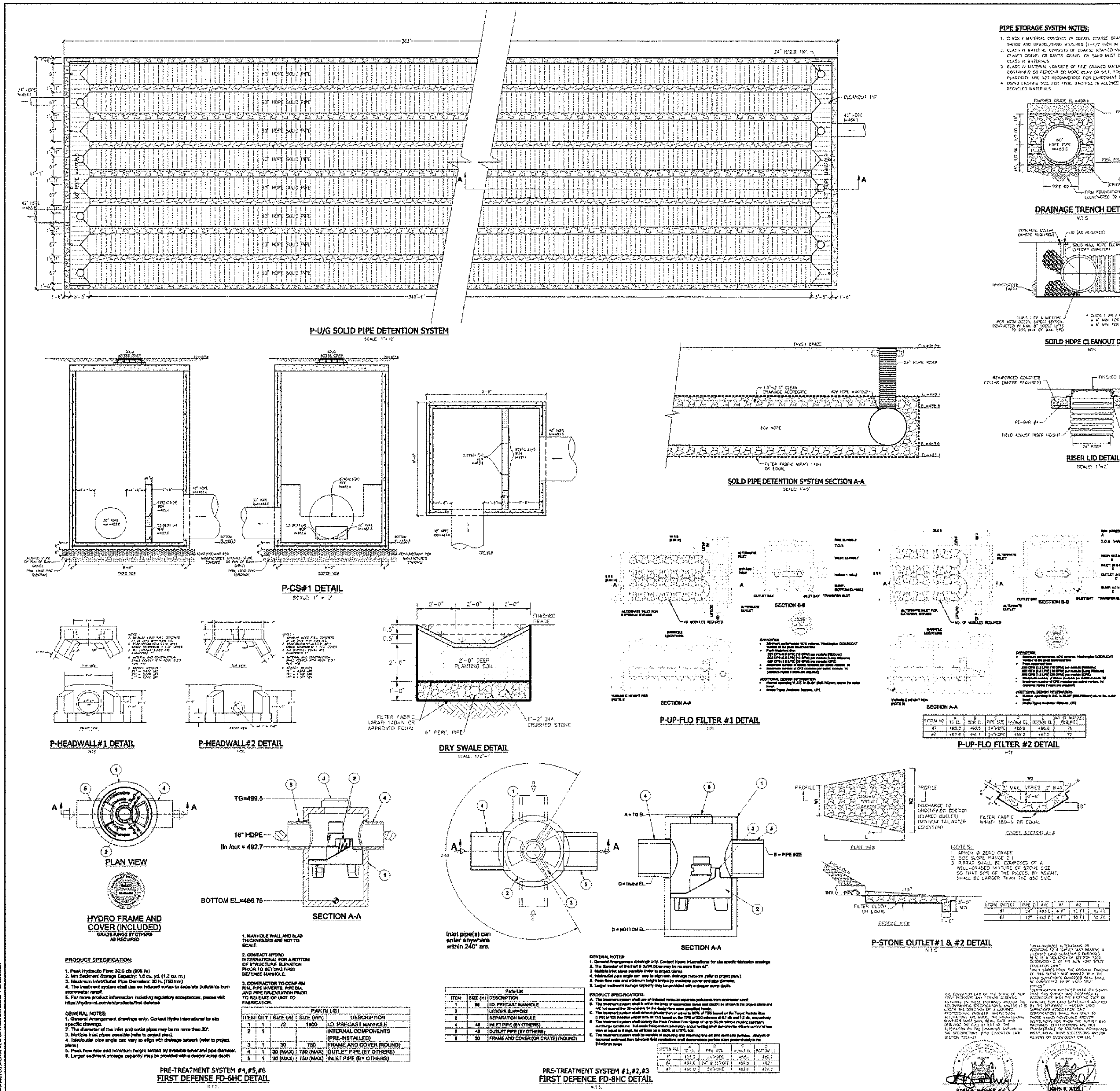
TITLE:

GRADING PLAN MIDDLE

DRAWN BY: VC	CHECKED BY: DMZ
DATE: JANUARY 22, 2023	SCALE: 1 IN. = 30 FT.
PROJECT NO: 3390	DRAWING NO: 7



PROPOSED BUILDING
LOWER FLOOR WAREHOUSE = 404,960 SQ.FT.
UPPER FLOOR WAREHOUSE = 367,170 SQ.FT.
OFFICE, COMMON AREA = 9,000 SQ.FT.
TOTAL BUILDING AREA = 781,130 SQ.FT.
SLAB ELEV.=504.0
540' OA.
TAX LOT 118-1-52
N/F
MATRIX 18 ELIZABETH LLC
TAX LOT 118-1-7.1
N/F
24 ELIZABETH OFF LLC
MATCH LINE MAP 7
MATCH LINE MAP 8
TAX LOT 117-2-4.2
N/F
IX OPERATIONS INC.
EXISTING BUILDING
50 FT. WIDE ACCESS EASEMENT
ELIZABETH DRIVE
ELIZABETH DRIVE
LEGEND
EXISTING 2' CONTOUR
EXISTING 10' CONTOUR
EXISTING WATERLINE
EXISTING WATER VALVE
EXISTING FIRE HYDRANT
EXISTING GAS LINE
EXISTING GAS VALVE
EXISTING CATCH BASIN
EXISTING STORM DRAIN LINE
EXISTING SEWER MANHOLE
EXISTING SEWER LINE
EXISTING SPOT ELEVATION
EXISTING STONEWALL
EXISTING UTILITY POLE
PROPOSED 2' CONTOUR
PROPOSED 10' CONTOUR
PROPOSED WATER SERVICE
PROPOSED WATER VALVE
PROPOSED FIRE HYDRANT
PROPOSED GAS SERVICE
PROPOSED GAS VALVE
PROPOSED CATCH BASIN
PROPOSED STORM DRAIN LINE
PROPOSED SEWER CLEANOUT
PROPOSED SEWER HOUSE CONNECTION
PROPOSED SPOT ELEVATION
PROPOSED DRAINAGE MANHOLE
PROPOSED SEWER MANHOLE
UDIG NY
IF YOU DIG- UB11
UDIGNY.ORG
RYAN A. NASHER, P.E.
N.Y.S. P.E. LIC. NO. 89066
JOHN R. ATZL
N.Y.S. L.S. LIC. NO. 50228
2 | 07-26-23 | PRELIMINARY SUBMISSION
1 | 04-11-23 | LANC & TULLY MEMO 3-24-23
REVISION | DATE | DESCRIPTION
ATZL, NASHER & ZIGLER P.C.
ENGINEERS-SURVEYORS-PLANNERS
232 North Main Street
New City, New York 10956
Tel: (845) 634-4694
Fax: (845) 634-5543
E-mail: info@anzny.com
Web: www.ANZNY.com
PROJECT:
SUMMERVILLE INDUSTRIAL PARK
VILLAGE OF CHESTER
ORANGE COUNTY, NEW YORK
TITLE:
GRADING PLAN SOUTH END
DRAWN BY: VC
CHECKED BY: DMZ
DATE: JANUARY 22, 2023
SCALE: 1 IN. = 30 FT.
PROJECT NO: 3390
DRAWING NO: 8



REVISION	DATE	DESCRIPTION
2	07-26-23	PRELIMINARY SUBMISSION
1	04-11-23	LAKE & TULLY MEMO 3-24-22

ATZL, NASHER & ZIGLER P.C.
ENGINEERS~SURVEYORS~PLANNERS
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New City, New York 10956
Tel: (845) 634-4694
Fax: (845) 634-5543
E-mail: info@anzny.com
Web: www.ANZNY.com

PROJECT:

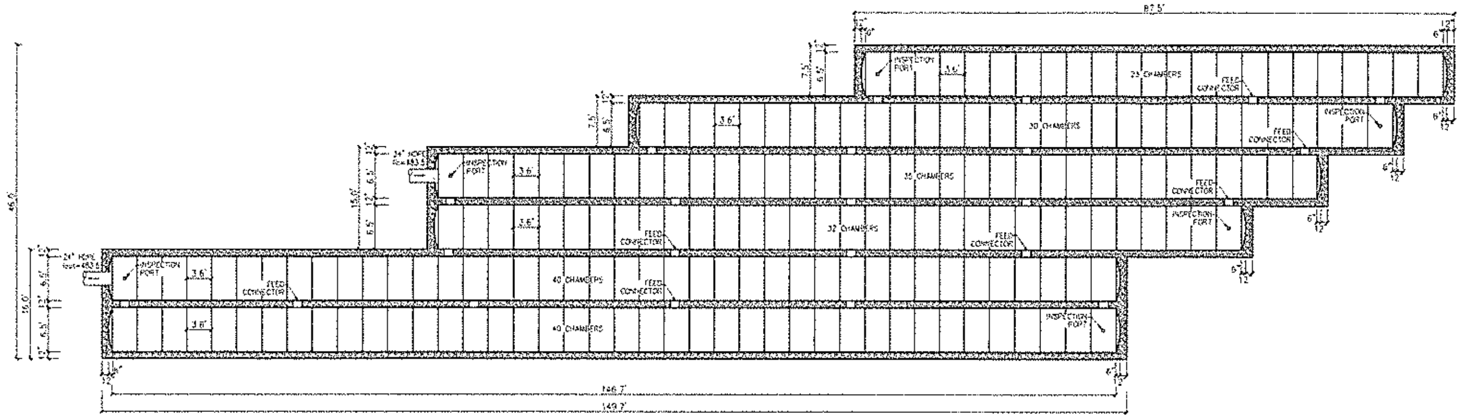
SUMMERVILLE INDUSTRIAL PARK

VILLAGE OF CHESTER
ORANGE COUNTY, NEW YORK

TITLE:

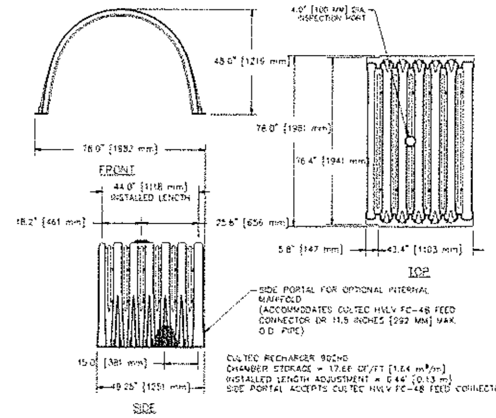
DRAINAGE DETAILS

DRAWN BY: VC	CHECKED BY: DMZ
DATE: JANUARY 23, 2023	SCALE: N.T.S.
PROJECT NO: 3390	DRAWING NO. 9



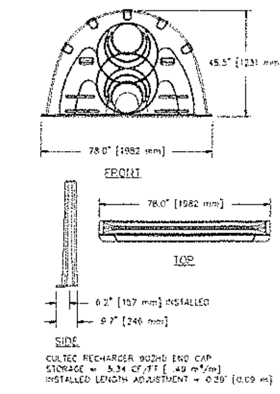
U/G INFILTRATION SYSTEM (CULTEC CHAMBER R-902 HD) DETAIL

SCALE: 1" = 10'



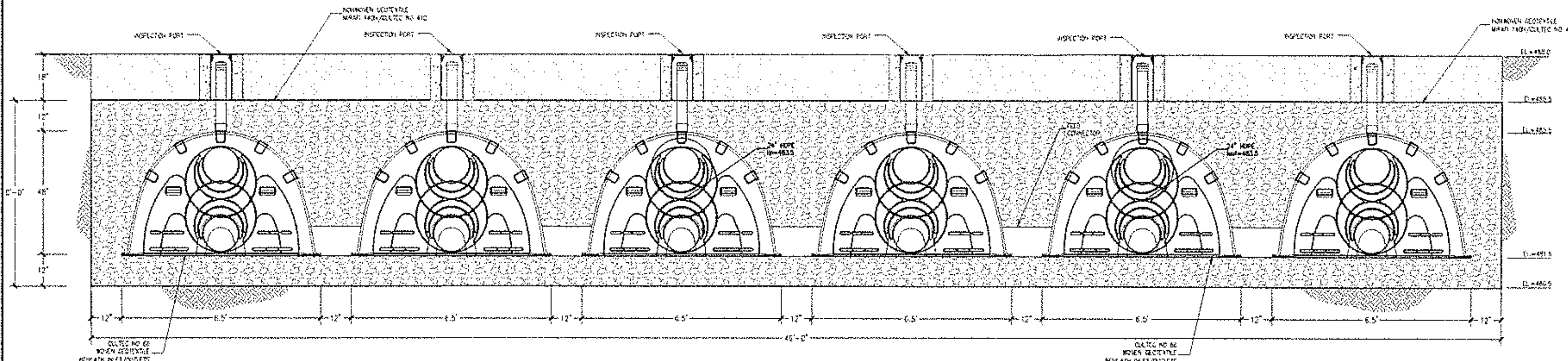
CULTEC RECHARGER 902HD HEAVY DUTY

N.T.S.



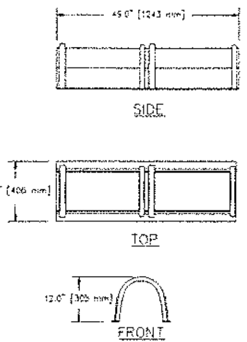
CULTEC RECHARGER 902HD HEAVY END CAP

N.T.S.



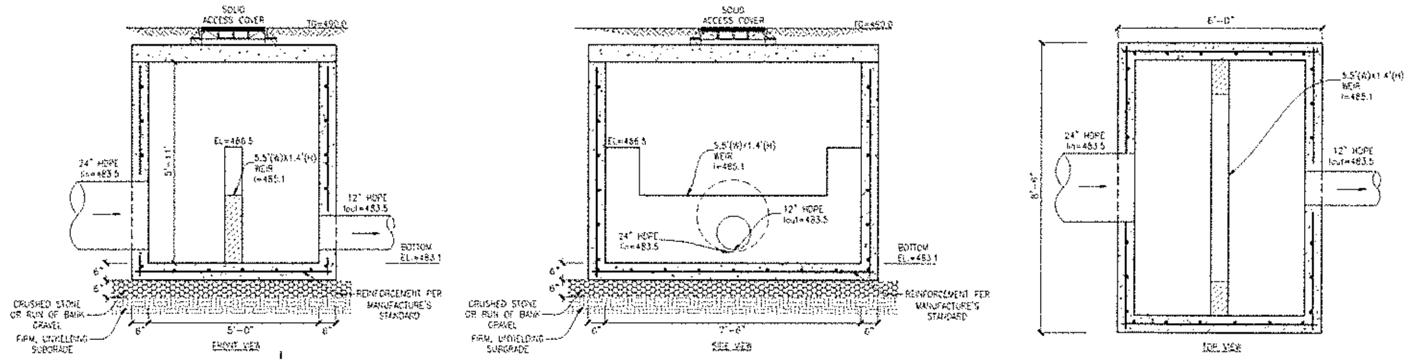
U/G INFILTRATION SYSTEM (CULTEC CHAMBER R-902 HD) SECTION DETAIL

SCALE: 1/2" = 1'



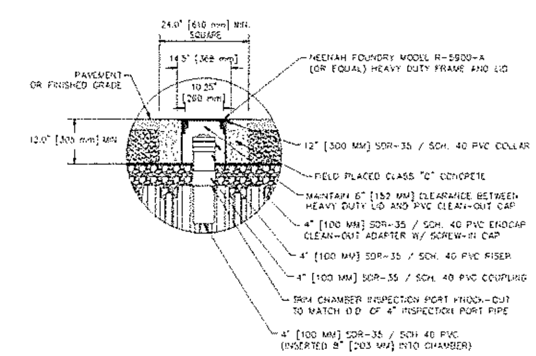
CULTEC HVLV FC-48 FEED CONNECTOR

N.T.S.



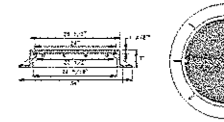
P-CS#2 DETAIL

SCALE: 1/2" = 1'



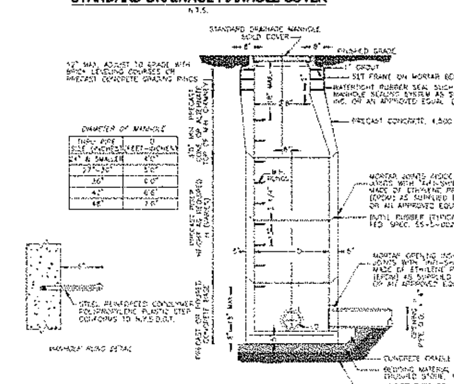
INSPECTION PORT DETAIL

N.T.S.



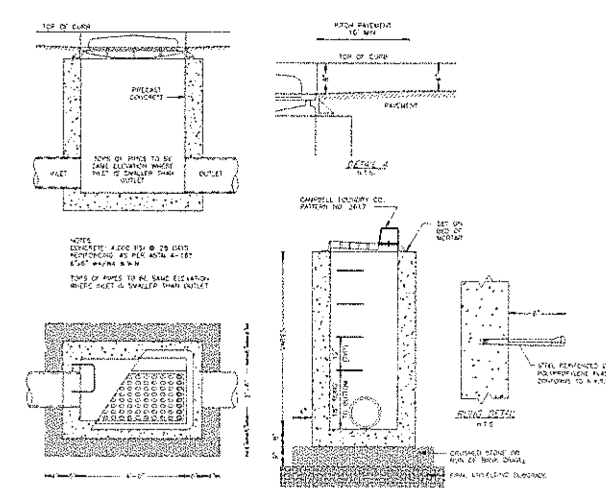
STANDARD DRAINAGE MANHOLE COVER

N.T.S.

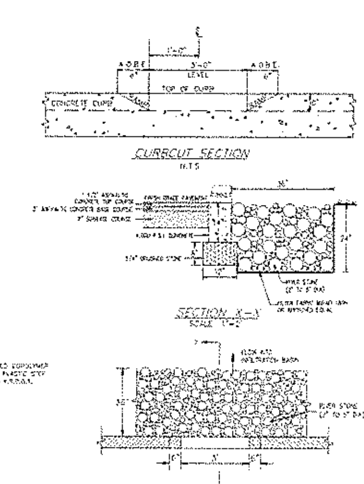


PRECAST STANDARD DRAINAGE MANHOLE SECTION

N.T.S.



PRECAST CATCH BASIN DETAIL



3 FT CURB BREAK DETAIL

REVISION	DATE	DESCRIPTION
2	07-26-23	PRELIMINARY SUBMISSION
1	04-11-23	LANC & TULLY MEMO 3-24-23

ATZL, NASHER & ZIGLER P.C.
ENGINEERS-SURVEYORS-PLANNERS
232 North Main Street
New City, New York 10956
Tel: (845) 634-4694
Fax. (845) 634-5543
E-mail: info@anzny.com
Web: www.ANZNY.com

PROJECT:

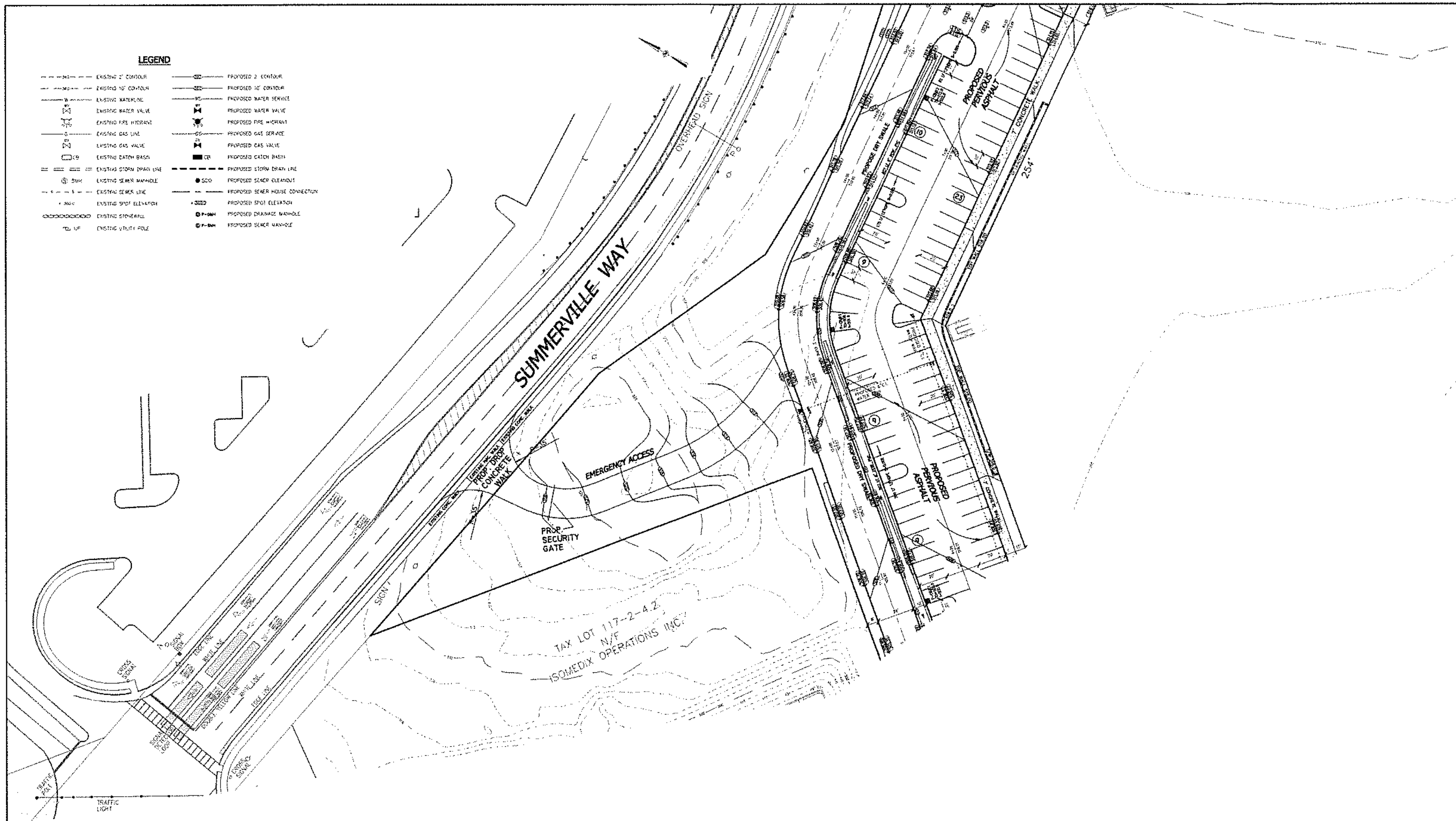
SUMMERVILLE INDUSTRIAL PARK

VILLAGE OF CHESTER
ORANGE COUNTY, NEW YORK

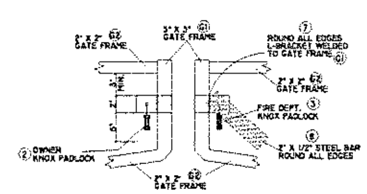
TITLE:

DRAINAGE DETAILS

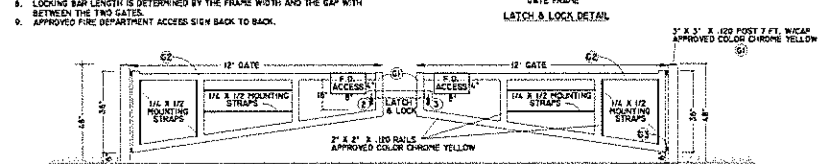
DRAWN BY: VC	CHECKED BY: DNZ
DATE: JANUARY 22, 2020	SCALE: N.T.S.
PROJECT NO. 3390	DRAWING NO. 10



NOTES:
1. 1/4" X 1/2" MOUNTING STRAPS FOR ACCESS ENTRANCE SIGN
2. OWNER PADLOCK
3. FIRE DEPARTMENT PADLOCK
4. APPROVED NO PARKING SIGNS BACK TO BACK WITH 1/4" X 1/2" MOUNTING STRAPS.
5. FIRE LANE STRIPING AT EACH MANUAL GATE.
6. THE MINIMUM OVERALL WITH OF THE GATE.
7. WELD MODIFIED L-BRACKET TO GATE FRAME.
8. LOCKING BAR LENGTH IS DETERMINED BY THE FRAME WIDTH AND THE GAP WITH BETWEEN THE TWO GATES.
9. APPROVED FIRE DEPARTMENT ACCESS SIGN BACK TO BACK.



LATCH & LOCK DETAIL

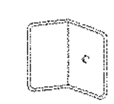


NOTES.
GATE MANUFACTURED IN 3 SIZES- 16 FT. 20 FT. & 24 FT.
RECOMMENDED POSTS / GATE COLOR CHROME YELLOW
SEE FIRE LANE STRIPING DETAILS.

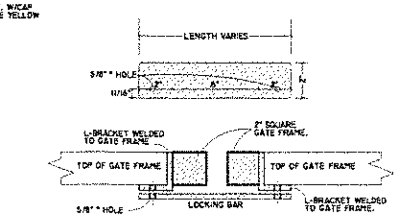
POST GATE NOTES:
G1- 3" X 3" X .102 POST 7 FT. W/CAP APPROVED COLOR CHROME YELLOW
G2- 2" X 2" X .120 RAILS APPROVED COLOR CHROME YELLOW G3- HEAVY DUTY BARREL HINGES (TYPICAL 4 PLACES)

NOTES:
CONCRETE: 4,000 PSI @ 28 DAYS

SECURITY GATE DETAIL
N.T.S.



L-BRACKET DETAIL
N.T.S.



LOCKING BAR DETAIL
N.T.S.

ACCESS SIGN DETAIL
N.T.S.

REVISION	DATE	DESCRIPTION
2	07-26-23	PRELIMINARY SUBMISSION
1	04-11-23	LANC & TULLY MEMO 3-24-23

ATZL, NASHER & ZIGLER P.C.
ENGINEERS-SURVEYORS-PLANNERS
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New City, New York 10956
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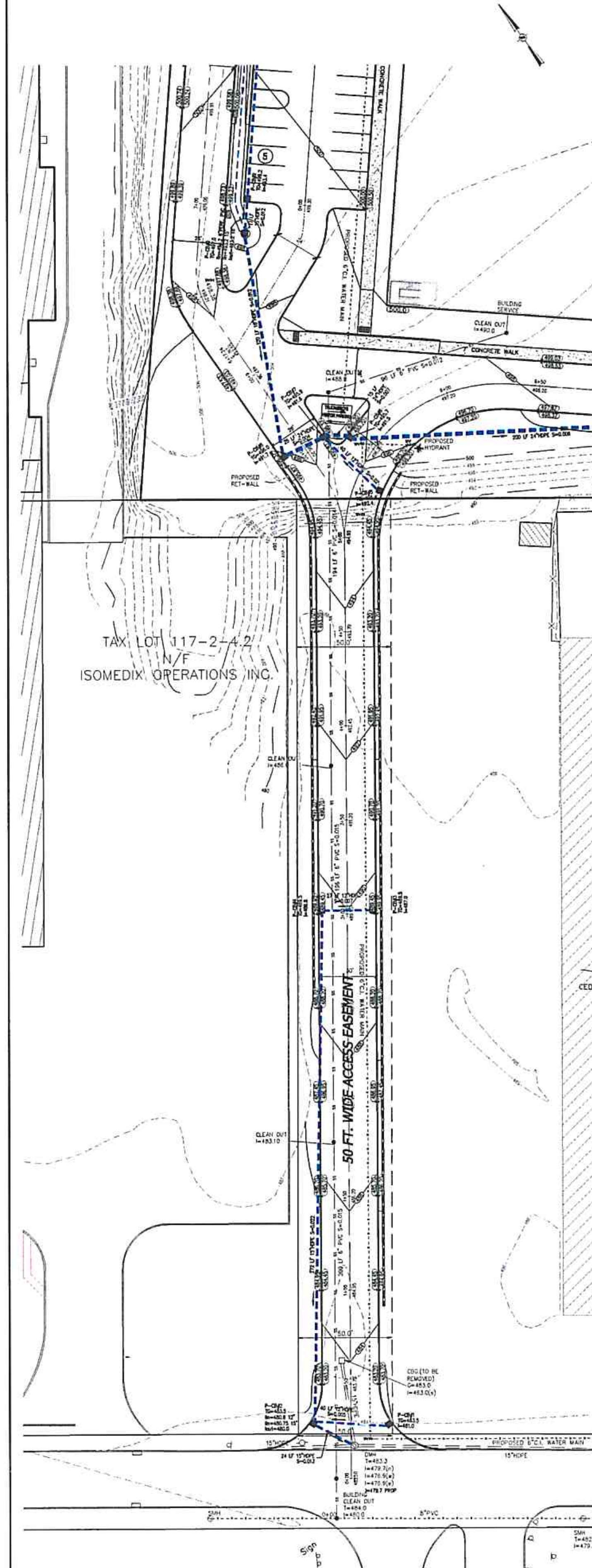
Fax: (845) 634-5543
E-mail: info@anzny.com
Web: www.ANZNY.com

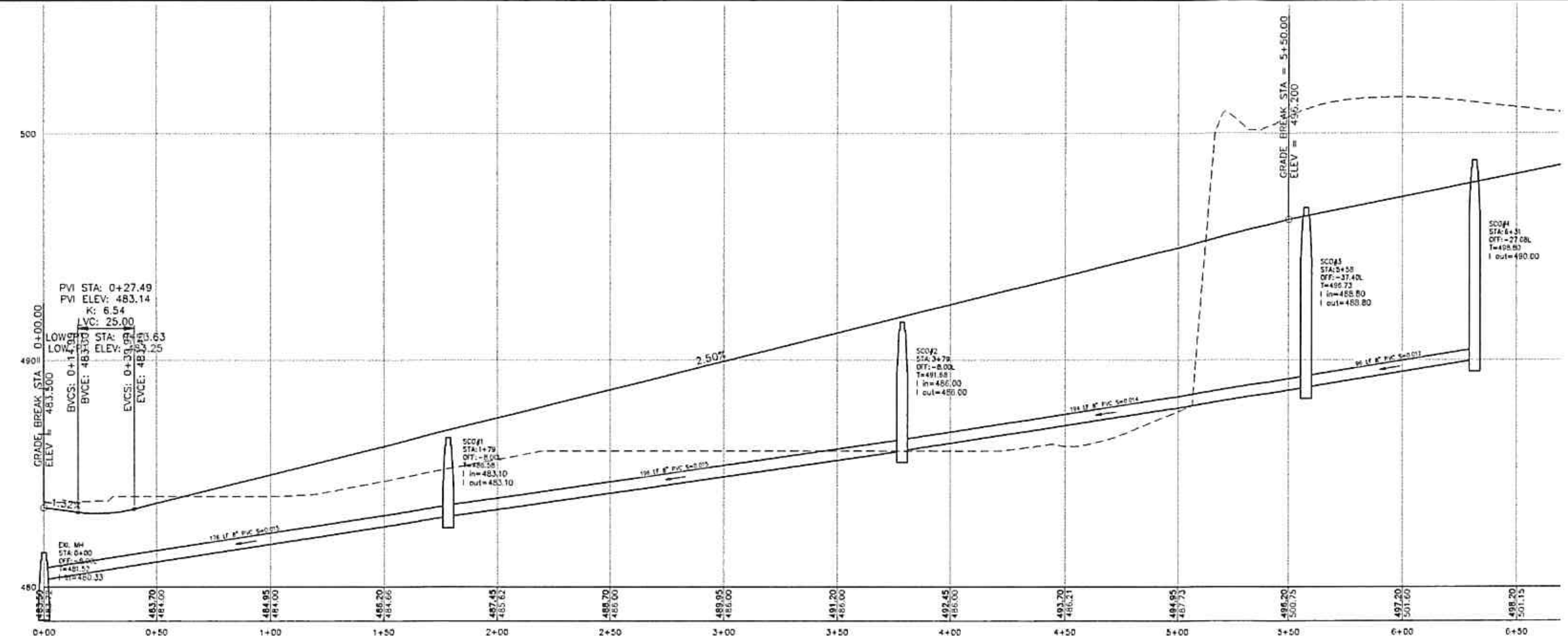
PROJECT:
SUMMERVILLE INDUSTRIAL PARK

VILLAGE OF CHESTER
ORANGE COUNTY, NEW YORK

TITLE:
EMERGENCY ACCESS PLAN

DRAWN BY: VC	CHECKED BY: DWZ
DATE: JANUARY 22, 2023	SCALE: 1 IN. = 30 FT.
PROJECT NO: 3390	DRAWING NO: 11



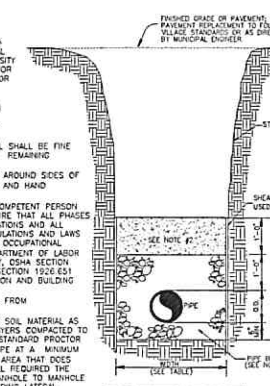


PROPOSED ENTRY WAY PROFILE

SCALE: 1"=30' /H, 1"=3' /V

NOTES:

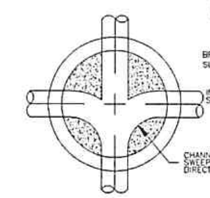
1) PIPE BEDDING SHALL BE A CLASS I ASTM D2321 EMBEDMENT MATERIAL THAT SHALL BE EITHER CRUSHED STONE OR WASHED GRAVEL PASSING A 3/4" SIEVE AND RETAINED ON A 3/8" SIEVE. THE EMBEDMENT MATERIAL SHALL BE HAD TAMPED AND COMPACTED TO 90% OF THE MAXIMUM DENSITY OF THE EMBEDMENT MATERIAL AS DETERMINED BY THE STANDARD PROCTOR TEST IN ACCORDANCE WITH AASHTO DESIGNATION T-99. THE CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE A GO-NO-GO TESTING GAUGE, AS DEFINED IN THE GREEN-TITE (TRADEMARK) PVC GRAVITY SEWER PIPE INSTALLATION GUIDE AS PUBLISHED BY J-M PIPE (OR APPROVED EQUAL) FOR TESTING DEFLECTION OF MAIN LINE SEWER PIPE, AS DIRECTED BY OCSD. MAXIMUM MAIN LINE SEWER DEFLECTION SHALL BE NO GREATER THAN 5%.
2) BACKFILL FROM 12 IN. TO 24 IN. ABOVE THE PIPE EMBEDMENT MATERIAL SHALL BE FINE EARTH, FREE FROM CINDERS AND SHALL BE MECHANICALLY COMPACTED. REMAINING BACKFILL SHALL BE FREE FROM LARGE CLODS, ROCKS, AND CINDERS.
3) PLACE EMBEDMENT MATERIAL BY HAND AND HAND COMPACT UNDER AND AROUND SIDES OF PIPE. PLACE EMBEDMENT MATERIAL IN 6" LAYERS ABOVE TOP OF PIPE, AND HAND COMPACT TO A POINT 12" MINIMUM ABOVE THE TOP OF PIPE.
4) THE OWNER AND CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE A COMPETENT PERSON DURING ALL PHASES OF CONSTRUCTION WHOSE DUTY SHALL BE TO INSURE THAT ALL PHASES OF CONSTRUCTION ARE IN FULL COMPLIANCE WITH OCSD NO.1 SPECIFICATIONS AND ALL APPLICABLE FEDERAL, STATE AND LOCAL STATUTES, CODES, RULES, REGULATIONS AND LAWS INCLUDING, BUT NOT LIMITED TO UNITED STATES DEPARTMENT OF LABOR OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) AND NEW YORK STATE DEPARTMENT OF LABOR FOR OSHA SECTION 1910.146 PERMIT REQUIRED CONFINED SPACE ENTRY, OSHA SECTION 1926.650 EXCAVATION GENERAL PROTECTION REQUIREMENTS AND OSHA SECTION 1926.651 TRENCHING AND SHORING, STATE OF NEW YORK UNIFORM FIRE PREVENTION AND BUILDING CODES AND NATIONAL FIRE PROTECTION ASSOCIATION CODES.
5) ALL APPROVED MAIN LINE SEWER PIPE SHALL BE THE SAME MATERIAL FROM MANHOLE TO MANHOLE.
6) FILL SECTION AREA MUST BE GRADED WITH THE PLACEMENT OF SUITABLE SOIL MATERIAL AS DETERMINED BY THE PROJECT SITE ENGINEER, IN 12 INCH MAXIMUM LAYERS COMPACTED TO 95 % OF THE MAXIMUM DENSITY OF THE SOIL AS DETERMINED BY THE STANDARD PROCTOR TEST (AASHTO DESIGNATION T-99) TO 2'-0" MINIMUM ABOVE TOP OF PIPE AT A MINIMUM WIDTH OD O.D. + 4' BEFORE TRENCH EXCAVATING. (ANY FILL SECTION AREA THAT DOES NOT CONFORM TO THIS FILL SECTION AREA COMPACTION STANDARD SHALL REQUIRED THE INSTALLATION OF CLASS 52 DIP, TAR COATED INSIDE AND OUT, FROM MANHOLE TO MANHOLE FOR SEWER MAINS AND ALONG THE ENTIRE SERVICE LINE RUN FOR BUILDING LATERAL SEWERS.) ALL FILL SECTION AREAS SHALL REQUIRE REVIEW AND APPROVAL BY OCSD1 BEFORE INSTALLING PIPE.
7) WHERE ROCK IS ENCOUNTERED IN THE TRENCH BOTTOM, UNDERCUT MUST BE MADE BETWEEN 12" MINIMUM TO 24" MAXIMUM.
8) WHERE UNSUITABLE MATERIAL IS ENCOUNTERED IN TRENCH BOTTOM, UNDERCUT TO SUITABLE MATERIAL (AS APPROVED).



PIPE O.D.	TRENCH WIDTH
24" AND SMALLER	O.D. + 1'-4"
30" AND LARGER	O.D. + 2'-0"

SANITARY SEWER TRENCH DETAIL

NTS

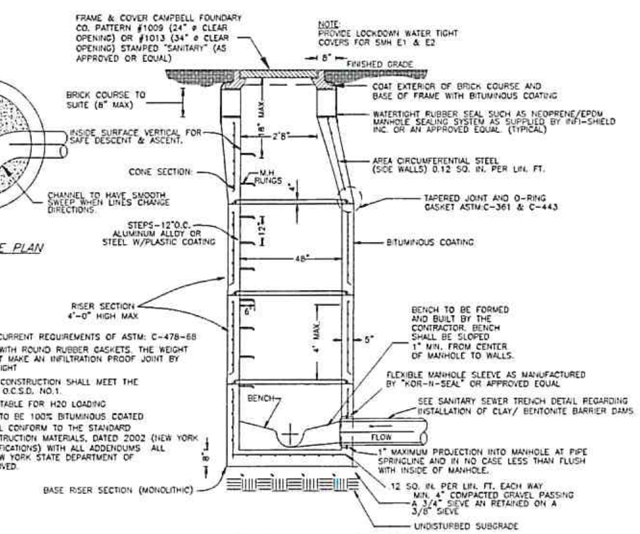


MANHOLE BASE PLAN

N.T.S.

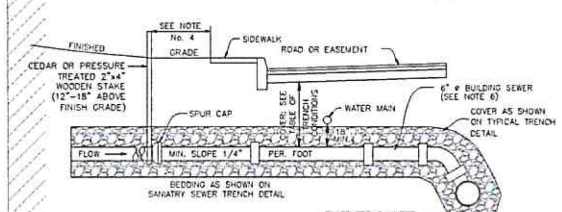
NOTES:

- MANHOLE TO MEET CURRENT REQUIREMENTS OF ASTM: C-478-68
- JOINTS: LOCK TYPE WITH ROUND RUBBER GASKETS. THE WEIGHT OF EACH SECTION MUST MAKE AN INFILTRATION PROOF JOINT BY FORCING THE GASKET TIGHT
- ALL MATERIALS AND CONSTRUCTION SHALL MEET THE REQUIREMENTS OF THE O.C.S.D. NO.1.
- MANHOLE TO BE SUITABLE FOR H20 LOADING
- MANHOLE EXTERIOR TO BE 100% BITUMINOUS COATED
- ALL MATERIALS SHALL CONFORM TO THE STANDARD SPECIFICATIONS, CONSTRUCTION MATERIALS, DATED 2002 (NEW YORK STATE STANDARD SPECIFICATIONS) WITH ALL ADDENDUMS. ALL FACILITIES MUST BE NEW YORK STATE DEPARTMENT OF TRANSPORTATION APPROVED.

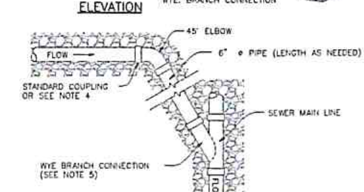


PRECAST REINFORCED CONCRETE MANHOLE DETAIL

NTS



ELEVATION



PLAN

SANITARY SEWER SPECIFICATIONS FOR BUILDING & SEWER MAIN LINE

1) AS PER ORANGE COUNTY DEPARTMENT OF HEALTH POLICY, SEWER LATERALS ARE TO BE CONSTRUCTED OF SCH 80 PVC.

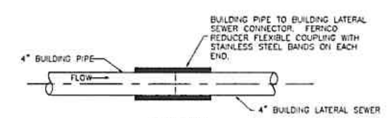
NOTES:

1. EACH 6" BUILDING LATERAL SEWER SHALL PROVIDE SERVICE FOR NO MORE THAN TWELVE (12) EQUIVALENT LIVING UNITS, AS DETERMINED BY OCSD NO. 1 UNLESS A REQUESTED DEVIATION IS APPROVED IN WRITING BY OCSD NO. 1.
2. ALL APPROVED BUILDING LATERAL SEWER PIPE MATERIAL FOR EACH CONNECTION MADE SHALL BE CONSTRUCTED FROM THE SAME MATERIAL.
3. MINIMUM HORIZONTAL SEPARATION BETWEEN SPUR CAP AND SIDEWALK SHALL BE 2'-0". IN ALL CASES THE SPUR CAP LOCATION SHALL EXTEND A MINIMUM HORIZONTAL DISTANCE OF 2'-0" ONTO ALL BUILDING LOT PROPERTIES.
4. TRANSITION BETWEEN DIFFERENT PIPE MATERIAL (AS APPROVED) SHALL BE MADE BY INSTALLING A TYPE 1, STYLE 62 DRESSER COUPLING OR DRESSER STYLE 262 HYMAX COUPLING (OR APPROVED EQUAL).
5. WYE BRANCH CONNECTION SHALL BE A FITTING CONSTRUCTED SPECIFICALLY FOR THE INSTALLED MAIN LINE SEWER MATERIAL CLASS (OR APPROVED EQUAL).
6. THE BUILDINGS LATERAL SEWER SHOWN FROM THE MAIN LINE SOURCE WYE BRANCH CONNECTION FITTING TO THE SPUR CAP SHALL MEET REQUIREMENTS FROM THE ORANGE COUNTY DEPARTMENT OF HEALTH.
7. 4" BUILDING LATERAL SEWER MAY BE APPROVED FOR CONSTRUCTION OF SINGLE (1) AND TWO (2) FAMILY DWELLINGS ONLY. ALL OTHER BUILDING LATERAL SEWER SHALL BE 6" IN DIAMETER.

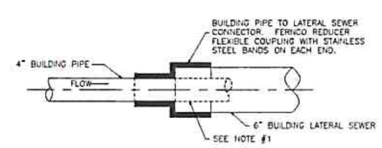
SPECIAL CONDITIONS FOR SHALLOW TRENCH CONDITIONS	
COVER	PIPE
LESS THAN 4'-0"	CLASS 52 DUCTILE IRON OR CAST IRON EXTRA HEAVY OR APPROVED EQUAL.

BUILDING LATERAL SEWER CONNECTION

NTS



DETAIL "A"



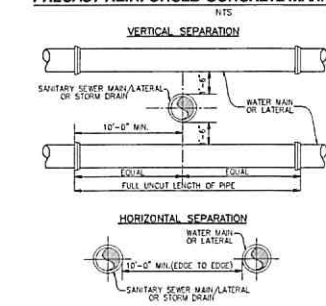
DETAIL "B"

NOTES:

1. 4" BUILDING PIPE TO STUB APPROXIMATELY 6" INTO 6" BUILDING LATERAL SEWER.
2. BUILDING PIPE SHALL NOT EXCEED MORE THAT 10' FROM EXTERIOR OF BUILDING FOUNDATION.
3. 6" BUILDING PIPE TO 6" BUILDING LATERAL SEWER SHALL BE MADE BY INSTALLING A TYPE 1, STYLE 62 DRESSER COUPLING OR DRESSER STYLE 262 HYMAX COUPLING (OR APPROVED EQUAL).

BUILDING PIPE TO BUILDING LATERAL SEWER CONNECTION

NTS



WATER/SEWER SEPARATION REQUIREMENTS

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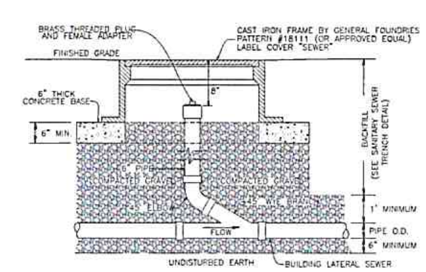

NOTE:

1. EACH BUILDING SEWER SHALL HAVE A CLEANOUT INSTALLED APPROXIMATELY 2' DOWNSTREAM OF THE BUILDING PIPE TO BUILDING SEWER CONNECTION. THEREAFTER, CLEANOUTS SHALL BE INSTALLED ALONG THE BUILDING SEWER APPROXIMATELY EVERY 75' (MAXIMUM). FOR THE PURPOSE OF CLEANOUT LOCATIONS DISTANCE SHALL BE MEASURED FROM THE FIRST CLEANOUT LOCATED DOWNSTREAM OF THE HOUSE PIPE TO BUILDING SEWER CONNECTION HENCE DOWNSTREAM ALONG THE BUILDING SEWER TO THE CENTER OF THE SEWER MAIN LINE (GENERALLY LOCATED IN THE CENTER OF THE STREET)
2. A CLEANOUT LOCATED IN A ROAD, DRIVEWAY OR PARKING AREA SHALL REQUIRE A CAMBELL FOUNDRY #4164 CAST IRON FRAME AND COVER. (OR APPROVED EQUAL)

BUILDING LATERAL SEWER CLEANOUT DETAIL

NTS

RYAN A. NASHER, P.E. N.Y.S. P.E. LIC. NO. 89066

JOHN R. ATZL N.Y.S. L.S. LIC. NO. 50228

REVISION	DATE	DESCRIPTION
2	07-26-23	PRELIMINARY SUBMISSION
1	04-11-23	LANC & TULLY MEMO 3-24-23

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PROJECT:

SUMMERVILLE INDUSTRIAL PARK

VILLAGE OF CHESTER
ORANGE COUNTY, NEW YORK

TITLE:

ENTRY WAY PLAN & PROFILE SANITARY SEWER DETAILS

DRAWN BY: VC	CHECKED BY: DMZ
DATE: JANUARY 22, 2023	SCALE: 1 IN. = 30 FT.
PROJECT NO: 3390	DRAWING NO: 12

GENERAL NOTES:

1. THESE SHEETS ARE IN ACCORDANCEW WITH THE AMERICANS WITH DISABILITIES ACT (ADA), AND THE REQUIREMENTS OF THE 2011 PROPOSED ACCESSIBILITY GUIDEKINES FOR PEDESTRIAN FACILITES IN THEIR PUBLIC RIGHT OF WAY (PROWAG)
2. THE DIMENSIONS SHOWN IN THE DETAIL AS MINIMUM AND MAXIMUMS ARE THE LIMITS FOR DESIGN AND FIELD LAYOUT. FRO WORK ACCEPTANCE VALUES SEE "CRITICAL ELEMENTS FOR THE DESIGN, LAYOUT, AND ACCEPTANCE OF PEDESTRAIN FACILITES" ON SHEET 11 OF 12 AND SHEET 12 OF 12
   A. THE CONTRACTORS SHALL BE RESPONSIBLE FOR FIELD VERIFYING ALL ELEVATIONS AND DIMENSIONS TO ENSURE THAT THE FINAL LAYOUT OF PEDESTRIAN FACILITIES MEETS ADA REQUIREMENTS. ANY SURVEY WORK NECESSARY TO MEET THESE REQUIREMENTS SHALL BE PAID FOR UNDER ITEM 625.01 – SURVEY OPERATIONS.
3. FACILITIES THAT CANNOT BE CONSTRUCTED TO MEET THE DESIGN STANDARDS, DUE TO DESIGN CONSTRAINTS, SHALL BE CONSTRUCTED TO MEET THE STANDARDS TO THE GREATEST EXTENT PRACTICABLE. FEATURES THAT CANNOT MEET THE VALUES FOR WORK ACCEPTANCE SHALL BE JUSTIFIED AS NONSTANDARD PER HIGHWAY DESIGN MANUEL CHAPTER 2.
4. TO CHECK FIELD LAYOUT AND TO VERIFY WORK ACCEPTANCE, ALL MEASUREMENTS SHALL BE MADE IN ACCORDANCE WITH THE "NOTES ON INSPECTION METHODS (MEASUREMENT) ON SHEET 11 OF 12.
5. JOINTS BETWEEN SIDEWALKS, CURB RAMP, TURNING SPACES AND ROADWAYS SHALL BE FLUSH AND FREE FROM ABRUPT VERTICAL CHANGES GREATER THAN ¼" VERTICAL SURFACE DISCONTINUITIES BETWEEN ¼" AND ½" SHALL BE BEVELED WITH A SLOPE NOT STEEPER THAN 1:2. THE BEVEL SHALL BE APPLIED ACROSS THE ENTIRE JOINT. SEE "VERTICAL SURFACE DISCONTINUITIES" DETAIL ON SHEET 2 OF 12.
6. SIDEWALKS ARE CONNECTED TO ROADWAYS BY BLENDED TRANSITIONS OR CURB RAMPS. BLENDED TRANSITIONS ARE CONNECTIONS BETWEEN THE SIDEWALK LEVEL AND THE ROADWAY LEVEL THAT HAVE A MAXIMUM GRADE (RUNNING SLOPE) OF 5%. CONNECTIONS WITH A MAXIMUM GRADE (RUNNING SLPOE) GREATER THAN 5% ARE CONSIDERED CURB RAMPS.
7. CURB RAMPS AND BLENDED TRANSITIONS MAY REQUIRE THE INSTALLATION OF DETECTABLE WARNINGS. SEE ADDITIONAL "DETECTABLE WARNING NOTES" ON THIS SHEET, AND THE DETAILS ON SHEET 2 OF 12 FOR DIMENSIONS AND ORIENTATION.
8. GRADE BREAKS WITHIN THE PEDESTRIAN ACCESS ROUTE SHOULD BE PERPENDICULAR TO THE DIRECTIONS OF TRAVEL AND SHALL NOT BE ROUNDED. VERTICAL ALIGNMENT SHALL BE GENERALLY PLANNER.
9. MATERIAL DEPTHS SHOWN ON THESE SHEETS ARE TYPICAL MINIMUM VALUES AND MAY BE DIFFERENT IN THE CONTRACT DOCUMENTS.
10. SIDEWALK GRADE (RUNNING SLOPE) SHALL NOT EXCEED 4.5% FOR DESIGN AND LAYOUT OR 5% FOR WORK ACCEPTANCE, EXCEPT WHEN MATCHING INTO EXISTING SIDEWALK OR WHEN THE ADJACENT HIGHWAY GRADE SHALL NOT EXCEED THE HIGHWAY GRADE
11. THE BROSS SOPE OF PEDESTRATION ACCESS ROUTES SHALL BE 1.5% MAXIMUM FOR DESIGN AND LAYOUT, AND 2% MAXIMUM FOR WORK ACCEPTANCE. THE FOLLOWING EXCEPTIONS ARE ALLOWED:
   A. WHERE PEDESTRIAN STREET CROSSING ARE PROVIDEDAT INTERSECTIONS WITHOUT YIELD – OR STOP–CONTROL, OR WHERE THERE IS ANY TRAFFIC SIGNAL WITHOUT A FLASHING RED, THE CROSS SLOPE OF A PEDESTRIAN ACCESS ROUTE CONTAINED WITHIN A STREET CROSSING SHALL BE 4.5% MAXIMUM FOR DESIGN AND LAYOUT, AND 5% MAXIMUM FOR WORK ACCEPTANCE.
   B. WHERE MIDBLOCK PEDESTRIAN STREET CROSSINGS ARE APPROVDED, THE CROSS SLOPE OF A PEDESTRIAN ACCESS ROUTE CONTAINED WITHIN A MIDBLOCK STREET CROSSING SHALL BE PERMITTED TO EQUAL THE STREET OR HIGHWAY GRADE.
12. THE MINIMUM CLEAR WIDTH FOR PEDESTRIAN ACCESS ROUTES IS 4'–0", EXCLUSIVE OF THE CURB. THE DEPARTMENT'S PREFERRED CLEAR WIDTH IS 5'–0". WHEN WALKWAY WIDTHS ARE LESS THAN 5'–0", 5'–0" X 5'–0" PASSING SPACES (SHOWN IN DETAIL A OR B THIS SHEET), OR A FEATURE OF EQUAL OR GREATER DIMENSIONS THAT MEETS THE SLOPE AND SURFACE CRITERIA, SHALL BE PROVIDED AT A MAXIMUM INTERNAL OF 200'. EXISTING DRIVEWAYS AND STREET CROSSINGS MAY SERVE AS PASSING SPACES, PROVIDED THEY MEET SLOPE AND SURFACE REQUIREMENTS FOR A PEDESTRIAN ACCESS ROUTE.
13. THE BUFFER ZONE IS A PHYSICAL DISTANCE SPERARATING THE PEDESTRIAN ACCESS ROUTE FROM THE VEHICLE TRAVELED WAY. THE BUFFER ZONE MAY BE PLANTED OR PAVED. WHERE THE BUFFER ZONE WIDTH, EXCLUSIVE OF CURB, IS LESS THAN 3'–0", THE SURFACE SHOULD BE PAVED OR CONSTRUCTED WITH OR CONSTRUCTED WITH HARDSCAPE MATERIALS
14. THE MAXIMUM RECOMMENDED CROSS SLOPE OF A TURF BUFFER ZONE OR SLOPE TRANSITION BEHIND SIDEWALK IS 25%. BUFFER ZONES WITH A CROSS SLOPE GREATER THAN 25% SHOULD BE PAVED, PLANTED OR CONSTRUCTED WITH HARDSCAPE MATERIALS.
15. WHEN CROSSING DRIVEWAYS, THE WORK SHALL BE IN CONFORMANCE WITH STANDARD SHEET 608–03.
16. FOR PEDESTRIAN SIGNALS AND PEDESDSTRIAN PUSH BUTTONS, REFER TO SHEET 12 TO 12 AND STANDARD SHEET 680–10 FOR DETAILS.
17. WHERE EXISTING ROADWAYS ARE SAWCUT TO INSTALL CURBING AND/OR SIDEWALK, THE ROADWAY SHOULD BE SAWCUT AT LEAST 2'–0" FROM THE PROPOSED CURB LINE TO ALLOW FOR ADEQUATE COMPACTION OF ASPHALT. IF THE SAWCUT IS LESS THAN 2'–0" FROM THE PROPOSED CURB LINE TO ALLOW FOR ADEQUATE COMPACTION OF ASPHALT. IF THE SAWCUT IS LESS THAN 2'–0" FROM THE PROPOSED CURB LINE, THE ROADWAY SHALL BE REBUILT USING CLASS A, C, OR D CONRETE. SEE DETAILS ON SHEET 9 OF 12

CURB RAMP NOTES:

18. THE MINIMUM CLEAR WIDTH OF A CURB RAMP BE 4'–0". THE DEPARTMENT'S PERFERRED CLEAR WIDTH IS 5'–0".
19. THE MAXIMUM GRADE [RUNNING SLOPE] FOR DESIGN AND LAYOUT OF A CURB RAMP SHALL BE 7.5%. THE GRADE FOR WORK ACCEPTANCE SHALL BE A MAXIMUM OF 8.3%
20. WHERE THE TERRAINDOES NOT ALLOW CONSTRUCTION OF A CURB RAMP WITH A GRADE (RUNNING SLOPE) OF 8.3% OR LESS WITHIN 15'–0" FOR WORK ACCEPTANCE.
21. THE CROSS SLOPE OF THE CURB RAMP SHALL BE AS FAST AS POSSIBLE AND STILL PROVIDE POSITIVE DRAINAGE. THE CROSS SLOPE OF A CURB RAMP SHALL BE 1.5% MAXIMUM FOR DESIGN AND LAYOUT, AND 2% MAXIMUM FOR WORK ACCEPTANCE. THE FOLLOWING EXCEPTIONS ARE ALLOWED:
   A. WHERE PEDESTRIAN STREET CROSSINGS ARE PROVIDED AT INTERSECTIONS WITHOUT YIELD – OR STOP–CONTROL, WHERE THERE IS ANY TRAFFIC SIGNAL WITHOUT A FLASHING RED, OR AT MIDBLOCK CROSSING, THE CROSS SLOPE OF THE CURB RAMP SHALL BE PERMITTED TO EUAL THE STREET OR HIGHWAY GRADE
22. WHERE THE EXISTING ROADWAY GRADE EXCEEDS THE MAXIMUM ALLOWABLE CROSS SLOPE FOR A CURB RAMP, AND CANNOT BE CORRECTED WITHIN THE SCOPE OF THE PROJECT, THE RAMP SHOULD BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH THE "CURB RAMP CROSS SLOPE TRANSITION" DETAIL ON SHEET 8 OF 12. THE RAMP MAY NEED TO BE JUSTIFIED AS A NONSTANDARD FEATURE. SEE NOTE 2 ON THE SHEET.
23. RAMP SIDE OPTIONS ARE DETAILED ON SHEET 3 OF 12. WHERE A PEDESTRIAN CIRCULATION PATH CROSSES THE CURB RAMP, FLARED SIDES SHALL BE INSTALLED WITH A MAXIMUM SLOPE OF 9.5% FOR DESIGN AND LAYOUT, AND 10% MAXIMUM FOR WORK ACCEPTANCE. A PEDESTRIAN CIRCULATION PATH IS ASSUMED TO CROSS THE CURB RAMP WHEN AREA ADJACENT TO THE RAMP IS PAVED AND FREE OF VERTICAL OBSTRUCTION THAT WOULD PREVENT PEDESTRIAN CIRCULATION PATH/
24. THE BACK SIDE OF A PARALLEL RAMP SHOULD BE GRADED TO A MAXIMUM SLOPE OF 25S TO MATCH EXISTING TERRIAN, UNLESS OTHERWISE SHOWN IN THE CONTRACT DOCUMENTS. WHERE GRADING IS NOT FEASIBLE DUE TO LIMITED ROW OR PHYSICAL CONSTRAINTS, A BACK CURB MAY BE INSTALLED. SEE DETAIL ON SHEET 3 OF 12 AND SHEET 9 OF 12.
25. THE DEPARTMENT'S PREFERENCE IS TO INSTALL TWO SEPARATE CURB RAMPS AT A STREET CORNER THAT SERVES TWO SEPERATE PEDESTRIAN CROSSINGS, WITH EACH RAMP ALIGNED TO THE CROSSING THAT IT SERVES. WHERE EXISTING PHYSICAL CONSTRAINTS PREVENT SEPARATE RAMPS, A SINGLE CURB RAMP (I.E., A DIAGONAL CURB RAMP) IS PERMITTED TO SERVE BOTH PEDESTRIAN CORSSINGS.

TURNING SPACE AND CLEAR SPACE NOTE:

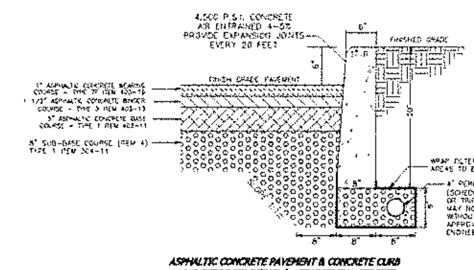
26. WHERE A CHANGE IN DIRECTION IS REQUIRED TO UTILIZE A CURB RAMP, A TURNING SPACE SHALL BE PROVIDED AT THE BASE OR THE TOP OF CURB RAMP, AS APPLICABLE. TURNING SPACES SHALL BE PERMITTED TO OVERLAP CLEAR SPACES
27. WHERE THERE ARE NO VERTICAL CONSTRAINTS AT THE BACK OF SIDEWALK, (E.G., BERTICAL CURBS, BUILDINGS, FENCES) THE TURNING SPACE DIMENSIONS SHALL BE 4'–0" X 4'–0" MINIMUM. WHERE THE TURNING SPACE IS CONSTRAINED AT THE BACK OF SIDEWALK, THE TURNING SPACE SHALL BE 4'–0" X 5'–0" MINIMUM. THE 5'–0" DIMENSION SHALL BE IN THE DIRECTION OF THE RAMP RUN.
28. TURNING SPACES SHALL NOT BE DESIGNED WITH A SLOPE GREATER THAN 1.5% IN ANY DIRECTION, WHILE PROVIDING POSITIVE DRAINAGE. THE MAXIMUM SLOPE FOR WORK ACCEPTANCE IS 2.0%.
29. BELOW THE BOTTOM GRADE BREAK OF A CURB RAMP, A CLEAR SPACE OF 4'–0" X 4'–0" MINIMUM SHALL BE PROVIDED WITHIN THE WIDTH OF THE PEDESTRIAN CROSSWALK,AND OUTSIDE THE PARALLEL VEHICLE TRAVEL LANE. THE CLEAR SPACE MAY OVERLAP TURNING SPACES, DETECTABLE WARNING SURFACES, AND DROP CURBS.

DETECTABLE WARNING NOTES:

30. DETECABLE WARNING SURFACES (DWS) SHALL BE PROVIDED AT THE FOLLOWING LOCATIONS ON PEDESTRIAN ACCESS ROUTES:

   A. CURB RAMPS AND BLENDED TRANSITIONS AT PEDESTRIAN STREET CROSSINGS
   B. PEDESTRIAN REFUGE ISLANDS (WHERE THE LENGTH OF THE PEDESTRIAN ACCESS ROUTE ACROSS THE REFUGE ISLAND IS GREATER THAN OR EQUAL TO 6')
   C. PEDESTRIAN AT–GRADE RAIL CROSSINGS NOT LOCATED WITHIN A STREET OR HIGHWAY.

31. DETECTABLE WARNING SURFACES SHALL BE PROVIDED WHERE THE PEDESTRAIN ACCESS ROUTE CROSSES DRIVEWAYS WITH SIGNAL, YIELD OR STOP CONTROL. DETECTABLE WARNING SURFACES SHALL NOT BE PROVIDED AT CROSSINGS OF UNCONTROLLED DRIVEWAYS.
32. WITH THE EXCEPTION OF THE DETECTABLE WARNING SURFACE TRUNCATED DOME DETAILS ON SHEETS 2 OF 12, DETECTABLE WARNING DOMES ARE NOT DEPICTED TO SCALE ON THESE SHEETS.
33. DETECTABLE WARNING FIELDS SHALL EXTEND 24" MINIMUM IN THE DIRECTION OF PEDESTRIAN TRAVEL ACROSS THE FULL WIDTH OF CURB RAMP OR FLUSH SURFACE, EXCLUDING ANY FLARED SIDES.
34. SOME DETECTABLE WARNING PRODUCTS REQUIRE A CONCRETE BORDER FOR PROPER INSTALLATION, IF REQUIRED, THE BORDER SHALL NOT EXCEED 2". WHERE THE BACK OF THE CURB EDGE IS TOOLED TP PROVIDE A RADIUS, THE BORDER DIMENSION SHALL BE MEASURED FROM THE INSIDE EDGER OF THE CURB RADIUS. BORDERS CANNOT BE INCLUDED AS PART OF THE 24" MINIMUM DIMENSION DESCRIBED IN NOTE 33
35. WHERE CURB IS NOT USED, THE EDGE OF PAVEMENT SHALL BE SUBSTITUTED FOR BACK OF CURB FOR PLACMENT OF DETECTABLE WARNINGS.
36. ON SLOPES OF 5% OR GREATER, THE ROWS OF DOMES SHALL BE ALIGNED TO BE PERPENDICULAR OR RADIAL TO THE LOWER GRADE BREAK ON THE RAMP RUN. WHERE DOMES ARE ARRAYED RADIALLY, THEY MAY DIFFER IN DIAMETER AND CENTER–TO–CENTER SPACING WITHIN THE RANGES SPECIFIED ON SHEET 2 OF 12. DOME ALIGNMENT THAT IS PERPENDICULAR OR RADIAL TO THE LOWER GRADE BREAK IS NOT REQUIRED ON SLOPES OF LESS THAN 5%
37. THE DETECTABLE WARNING FIELD SHALL BE THE COLOR SPECIFIED IN THE CONTRACT DOCUMENTS OR MEET THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS. DETECTABLE WARNING SURFACES SHALL CONTRAST VISUALLY WITH ADJACENT GUTTER, STREET OR HIGHWAY, OR PEDESTRIAN ACCESS ROUTE SURFACE, EITHER LIGHT–ON–DARK OR DARK–ON–LIGHT.



ASPHALTIC CONCRETE PAVEMENT & CONCRETE CURB and UNDERDRAIN DETAIL for COMMERCIAL STREETS
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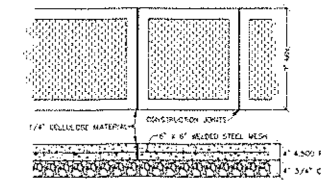
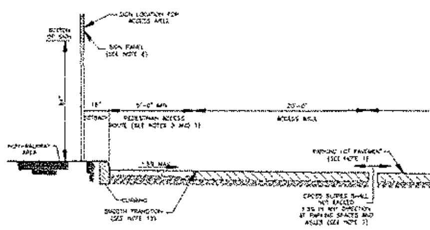


1. CONSTRUCTION JOINTS HAVING A 1/4 INCH RADIUS SHALL BE PLACED AT 4 FEET INTERVALS.
2. INSTALL EXPANSION JOINTS OF 1/4 INCH CELLULOSE MATERIAL OR EQUAL AT 20 FEET INTERVALS
3. CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4,500 PSI AT 28 DAYS.
4. CONCRETE SHALL BE AIR ENTRAINED 6% PLUS or MINUS 1%
5. SIDEWALK REINFORCEMENT SHALL CONSIST OF #8 GUAGE 6" X 6" STEEL MESH PLACED 2 INCHES FROM THE BOTTOM OF THE SIDEWALK SLAB.

CONCRETE SIDEWALK
N.T.S.



TYPICAL SECTION DETAIL
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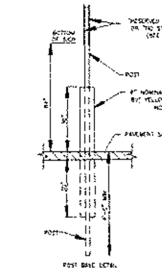
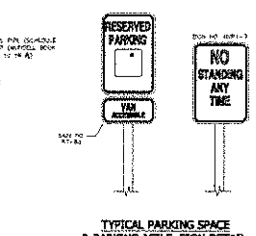


POST BASE DETAIL
N.T.S.



TYPICAL PARKING SPACE & PARKING ASILE SIGN DETAIL
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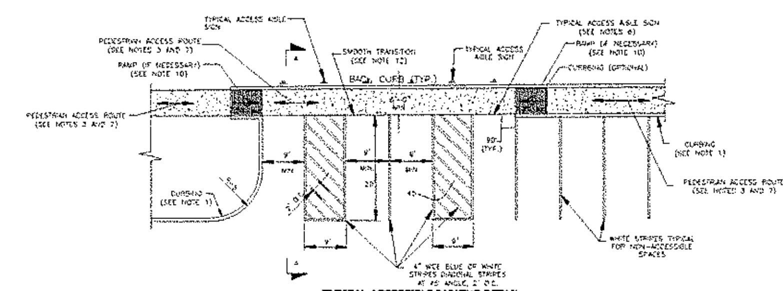
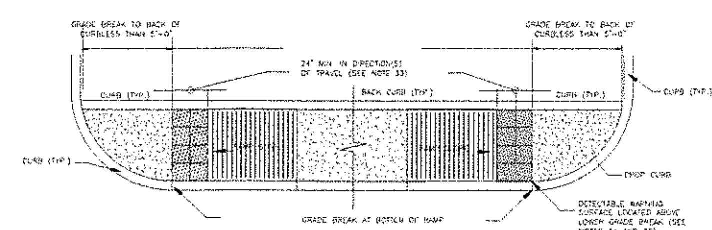
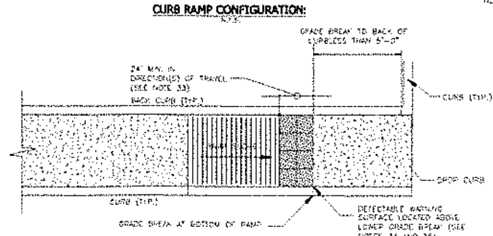


TYPICAL ACCESSIBLE PARKING DETAIL
N.T.S.



CURB RAMP CONFIGURATION
N.T.S.



RAMP BACK BACK CURB DETAIL
N.T.S.

RYAN A. NASHER, P.E.
N.Y.S. P.E. LIC. NO. 89066

JOHN R. ATZL
N.Y.S. L.S. LIC. NO. 50226

REVISION	DATE	DESCRIPTION
2	07–20–23	PRELIMINARY SUBMISSION
1	04–11–23	LANC & TULLY MEMO 3–24–23

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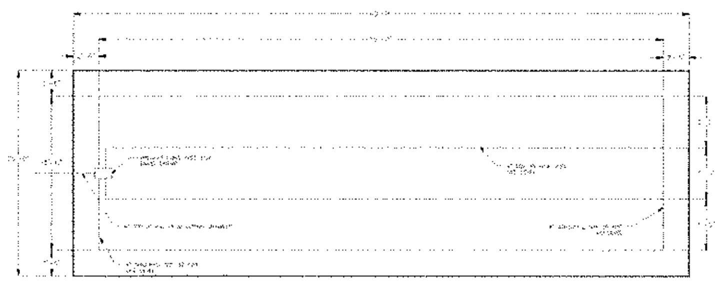
Web: www.ANZNY.com

PROJECT:
SUMMERVILLE INDUSTRIAL PARK

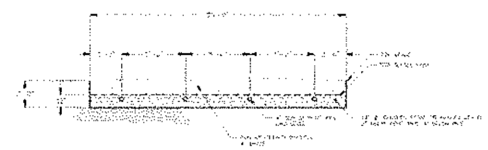
VILLAGE OF CHESTER
ORANGE COUNTY, NEW YORK

TITLE:
PAVEMENT, CURB AND SIDEWALK DETAILS

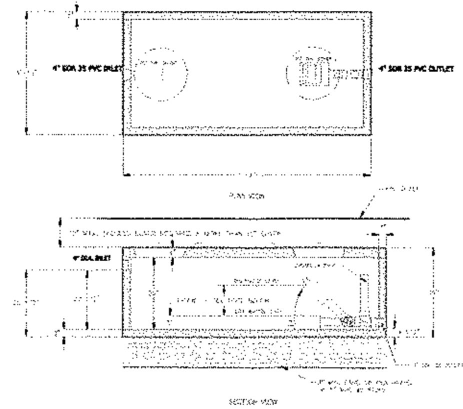
DRAWN BY: VC	CHECKED BY: ZMZ
DATE: JANUARY 22, 2023	SCALE: N.T.S.
PROJECT NO: 3390	DRAWING NO: 13



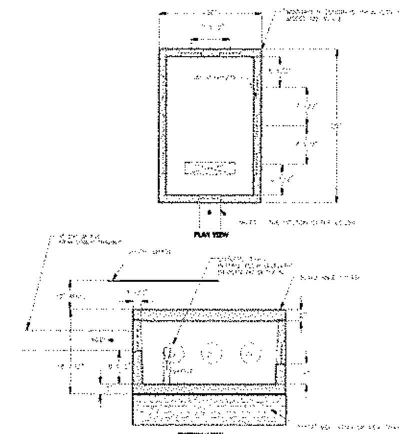
20' X 60' ABSORPTION BED DETAIL



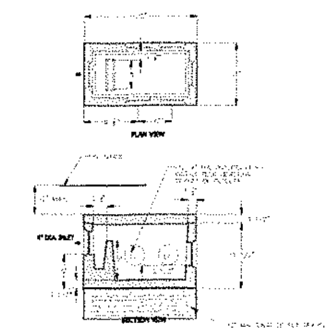
20' X 60' ABSORPTION BED SECTION DETAIL



DOSING CHAMBER DETAIL



DISTRIBUTION BOX DETAIL



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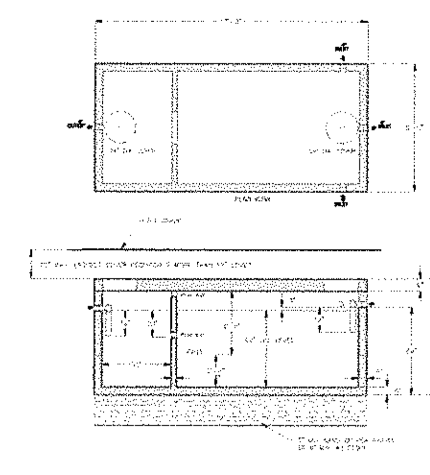

4,000-GALLON SEPTIC TANK DETAIL

Joseph Gottlieb, P.E., P.C.
Consulting Engineer
Phone: 845.794.5506
FAX: 845.794.5520
E-mail: gottlieb@verizon.net
P.O. Box 76
Monticello, New York 12701-0076

RYAN A. NASHER, P.E.
N.Y.S. P.E. LIC. NO. 89066

JOHN R. ATZL
N.Y.S. P.L.S. LIC. NO. 50226

REVISION	DATE	DESCRIPTION
2	07-26-23	PRELIMINARY SUBMISSION
1	04-11-23	LANC & TULLY MEMO 3-24-23

ATZL, NASHER & ZIGLER P.C.
ENGINEERS - SURVEYORS - PLANNERS
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New City, New York 10956
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PROJECT:

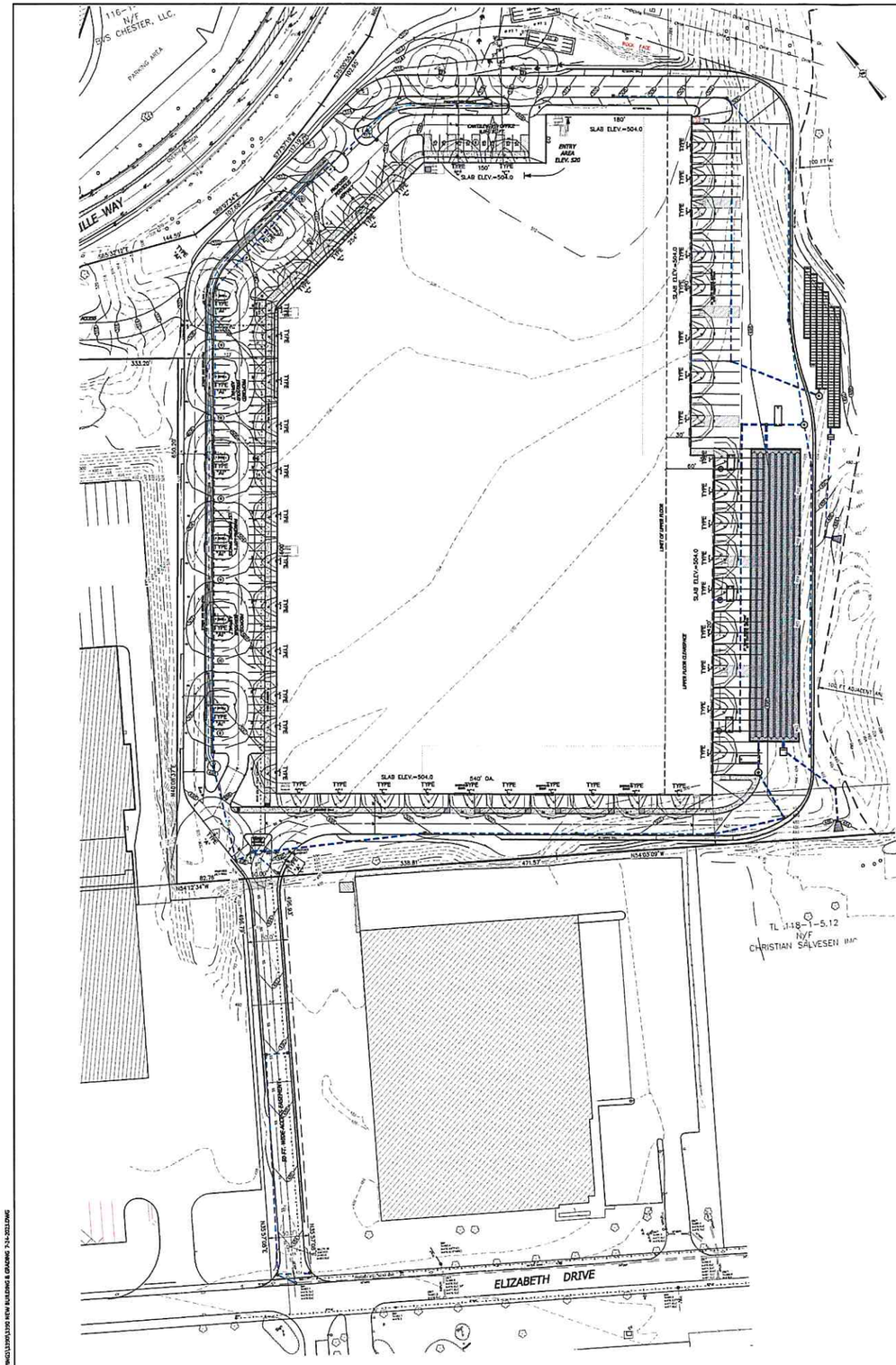
SUMMERVILLE INDUSTRIAL PARK

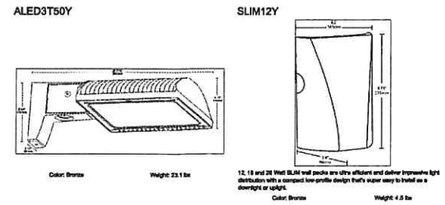
VILLAGE OF CHESTER
ORANGE COUNTY, NEW YORK

TITLE:

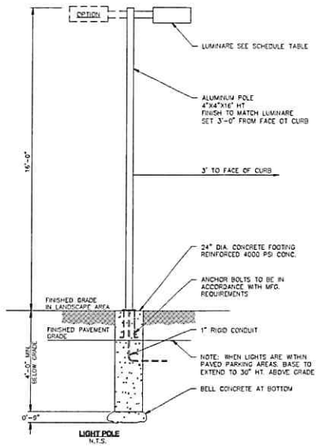
CONSTRUCTION DETAILS SEWAGE DISPOSAL SYSTEM

DRAWN BY: NC | CHECKED BY: DMZ
DATE: JANUARY 27, 2023 | SCALE: N.T.S.
PROJECT NO: 3390 | DRAWING NO: 14





NOTE:
LIGHT FIXTURES AT THE REAR SIDE OF THE BUILDING TO BE MOTION SENSOR FIXTURES.



LIGHT POLE
N.T.S.

Luminaire Schedule								
Symbol	Qty	Label	Arrangement	Total Lamp Lumens	LLF	Description	BUG Rating
	A	4	ALED3T50Y	SINGLE	N.A.	1.000	Pole Mount	B1-U0-G2
	C	45	SLIM12Y	SINGLE	N.A.	1.000	Wall Mount	B1-U0-G0
	A1	9	ALED3T50Y	DOUBLE	N.A.	1.000	Pole Mount	B1-U0-G0

Calculation Summary							
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
StatArea Back Parking	Illuminance	Fc	1.54	2.6	0.6	2.57	4.33
StatArea Parking	Illuminance	Fc	1.21	8.3	0.3	4.03	17.67

REVISION	DATE	DESCRIPTION
2	07-26-23	PRELIMINARY SUBMISSION
1	04-11-23	LANC & TULLY MEMO 3-24-23

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PROJECT:
SUMMERVILLE INDUSTRIAL PARK

VILLAGE OF CHESTER
ORANGE COUNTY, NEW YORK

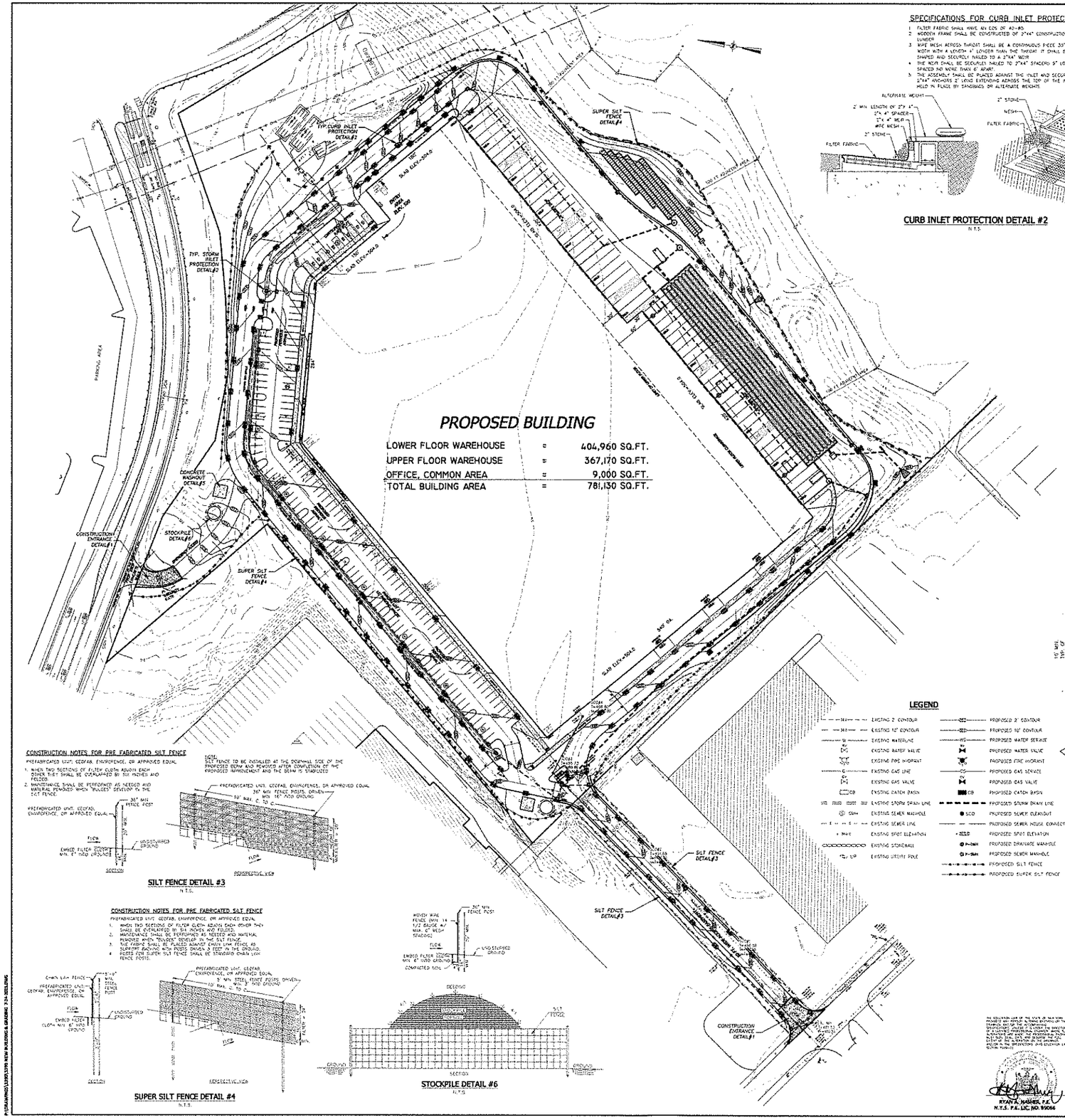
TITLE:
LIGHTING PLAN

RYAN A. NASHER, P.E.
N.Y.S. P.E. LIC. NO. 89066

JOHN R. ATZL
N.Y.S. L.L.S. LIC. NO. 50228

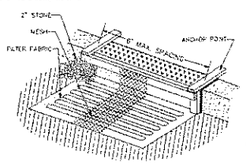
DRAWN BY: VC	CHECKED BY: DMZ
DATE: AUGUST 05, 2022	SCALE: 1 IN. = 60 FT.
PROJECT NO: 3390	DRAWING NO. 15

P:\DRAWINGS\3390\3390 NEW BUILDING & GRADING 7-31-2023.DWG



SPECIFICATIONS FOR CURB INLET PROTECTION

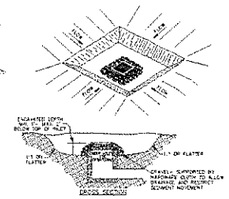
1. FILTER FABRIC SHALL HAVE AN EOS OF AO=85.
2. WOODEN FRAME SHALL BE CONSTRUCTED OF 2"x4" CONSTRUCTION GRADE LUMBER.
3. WIRE MESH ACROSS THROAT SHALL BE A CONTINUOUS PIECE 30" MINIMUM WIDTH WITH A LENGTH 4' LONGER THAN THE THROAT IT SHALL BE SHAPED AND SECURELY NAILED TO A 2"x4" WIER
4. THE WIRE SHALL BE SECURELY NAILED TO 2"x4" SPACERS 9" LONG SPACED NO MORE THAN 6' APART.
5. THE ASSEMBLY SHALL BE PLACED AGAINST THE INLET AND SECURED BY 2"x4" ANCHORS 2' LONG EXTENDING ACROSS THE TOP OF THE INLET AND HELD IN PLACE BY SANDBAGS OR ALTERNATE WEIGHTS.



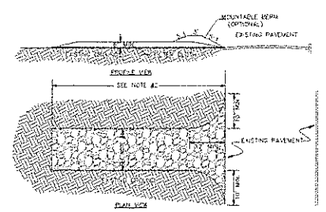
CURB INLET PROTECTION DETAIL #2
N.T.S.

SPECIFICATIONS FOR STORM INLET PROTECTION

1. GRAVELY SHALL BE REMOVED AND THE TRAP RESTORED TO ITS ORIGINAL DIMENSIONS WHEN THE SEDIMENT HAS ACCUMULATED TO 1/2 THE DESIGN DEPTH OF THE TRAP. REMOVED SEDIMENT SHALL BE DEPOSITED IN A SUITABLE AREA AND IN SUCH A MANNER THAT IT WILL NOT ERODE.
2. THE VOLUME OF SEDIMENT STORAGE SHALL BE 1800 CUBIC FEET PER ACRE OF CONTRIBUTORY DRAINAGE.
3. THE STRUCTURE SHALL BE INSPECTED AFTER EACH RAIN AND REPAIRS MADE AS NEEDED.
4. CONSTRUCTION OPERATIONS SHALL BE CARRIED OUT IN SUCH A MANNER THAT EROSION AND WATER POLLUTION SHALL BE MINIMIZED.
5. THE SEDIMENT TRAP SHALL BE REMOVED AND THE AREA STABILIZED WHEN THE CONTRIBUTING DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.
6. ALL CUT SLOPES SHALL BE 1:1 OR FLATTER



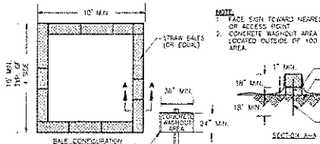
STORM INLET PROTECTION DETAIL #2
N.T.S.



SPECIFICATIONS FOR CONSTRUCTION ENTRANCE

1. STONE SIZE - USE 2" STONE OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH - NOT LESS THAN 50 FT. (EXCEPT ON A SINGLE RESIDENCE LOT WHERE A 30 FT. MINIMUM LENGTH WOULD APPLY).
3. THICKNESS - NOT LESS THAN 6 IN.
4. WIDTH - 12 FT. MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS AND EGRESS OCCUR. 24 FT. IF SINGLE ENTRANCE TO SITE.
5. FILTER CLOTH - WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO THE PLACEMENT OF STONE.
6. SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE. IF PIPING IS IMPRACTICAL A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
7. MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAYS. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHT-OF-WAYS MUST BE REMOVED IMMEDIATELY.
8. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE AND WHICH DRAINS TO AN APPROVED SEDIMENT TRAPPING DEVICE.
9. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.

CONSTRUCTION ENTRANCE DETAIL #1
N.T.S.



REPRESENTATION ONLY. STRAW BALE PERIMETER SHALL BE CONTINUOUS

CONCRETE WASHOUT DETAIL #5
N.T.S.

CONSTRUCTION NOTES FOR PRE FABRICATED SILT FENCE

PREFABRICATED UNIT, GEOFAB, ENVIROFENCE, OR APPROVED EQUAL

1. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVERLAPPED BY SIX INCHES AND FOLDED.
2. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.

SILT FENCE DETAIL #3
N.T.S.

CONSTRUCTION NOTES FOR PRE FABRICATED SILT FENCE

PREFABRICATED UNIT, GEOFAB, ENVIROFENCE, OR APPROVED EQUAL

1. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVERLAPPED BY SIX INCHES AND FOLDED.
2. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.
3. THE FABRIC SHALL BE PLACED AGAINST CHAIN LINK FENCE, AS SUPPORT BACKING WITH POSTS DRIVEN 3 FEET IN THE GROUND.
4. POSTS FOR SUPER SILT FENCE SHALL BE STANDARD CHAIN LINK FENCE POSTS.

SUPER SILT FENCE DETAIL #4
N.T.S.

STOCKPILE DETAIL #6
N.T.S.

LEGEND

EXISTING 2' CONTOUR	PROPOSED 2' CONTOUR
EXISTING 10' CONTOUR	PROPOSED 10' CONTOUR
EXISTING WATERLINE	PROPOSED WATER SERVICE
EXISTING WATER VALVE	PROPOSED WATER VALVE
EXISTING FIRE HYDRANT	PROPOSED FIRE HYDRANT
EXISTING GAS LINE	PROPOSED GAS SERVICE
EXISTING GAS VALVE	PROPOSED GAS VALVE
EXISTING CATCH BASIN	PROPOSED CATCH BASIN
EXISTING STORM DRAIN LINE	PROPOSED STORM DRAIN LINE
EXISTING SEWER MANHOLE	PROPOSED SEWER CLEANOUT
EXISTING SEWER LINE	PROPOSED SEWER HOUSE CONNECTION
EXISTING SPOT ELEVATION	PROPOSED SPOT ELEVATION
EXISTING STONEWALL	PROPOSED DRAINAGE MANHOLE
EXISTING UTILITY POLE	PROPOSED SEWER MANHOLE
	PROPOSED SILT FENCE
	PROPOSED SUPER SILT FENCE

UDIG-NY
Uniform Color Code
All work subsequent either
White: Proposed Excavation
Pink: Temporary Survey
Red: Electric
Yellow: Gas, Oil, Steam, Petroleum
Orange: Communications, TV
Blue: Potable Water
Purple: Reclaimed Water, Irrigation
Green: Sewers and Drain Lines
IF YOU DIG- U811
UDIGNY.org

REVISION	DATE	DESCRIPTION
2	07-26-23	PRELIMINARY SUBMISSION
1	04-11-23	LAND & TULLY MEMO 3-24-23

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PROJECT:
SUMMERVILLE INDUSTRIAL PARK

VILLAGE OF CHESTER
ORANGE COUNTY, NEW YORK

TITLE:
EROSION & SEDIMENT CONTROL PLAN

DRAWN BY: VC	CHECKED BY: DMZ
DATE: AUGUST 09, 2022	SCALE: 1 IN. = 60 FT.
PROJECT NO: 3390	DRAWING NO: 16

RYAN A. NASHER, P.E.
N.Y.S. P.E. LIC. NO. 89066

JOHN A. ATZL
N.Y.S. L.S. LIC. NO. 50228

P:\DRAWINGS\3390\3390 NEW BUILDING & GRADING 7-24-2023.DWG

Section 2 : Drainage

SUMMERVILLE INDUSTRIAL PARK

VILLAGE OF CHESTER
ORANGE COUNTY
NEW YORK

SECTION 2:

STORMWATER SYSTEM DESIGN REPORT COMPLYING WITH NYS STORMWATER MANAGEMENT DESIGN MANUAL

BY

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July 26, 2023

Village of Chester Planning Board
47 Main Street
Chester, NY 10918

Att.: John Queenan, P.E.
Village Engineer

Ref.: Summerville Industrial Park (Job #3390)
Village of Chester, Orange County, New York

Sub: Hydraulic and hydrological study

1.1 INTRODUCTION:

The following drainage study has been prepared for the above mentioned project in order to provide a zero net increase of peak runoff and water quality mitigation for the proposed development in the Village of Chester, Orange County, New York. The project disturbed area is about 19.457 acres. Since it is greater than 1-acre, a general construction permit coverage is required according to the NYSDEC 2015 version of design manual.

1.2 SITE LOCATION:

The project site is located southerly of Summerville way, and northly of Elizabeth Drive in the Village of Chester, Orange County, New York.

2.0 HYDROLOGICAL SOIL GROUP:

The soil symbol, name and Hydrological Soil Group is shown below:

Table 1: Hydrological Soil Group

Soil Name	Soil Map Symbol	Hydrological Soil Group
Bath-Nassau channery silt loams, 3 to 8 percent slopes	BnB	C
Bath-Nassau channery silt loams, 8 to 15 percent slopes	BnC	C

Madalin silt loam	Ma	C/D
Mardin gravelly silt loam, 3 to 8 percent slopes	MdB	D
Mardin gravelly silt loam, 8 to 15 percent slopes	MdC	D
Otisville gravelly sandy loam, 8 to 15 percent slopes	OtC	A
Riverhead sandy loam, 3 to 8 percent slopes	RhB	A
Riverhead sandy loam, 8 to 15 percent slopes	RhC	A

* Source: https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx

** HSG "A, C, &D" were used in the drainage calculation.

3.1 EXISTING CONDITION:

The existing drainage consists of one (1) watershed (WS#1), with a total area of about 19.457 acres. The existing condition consists of grass, dirt, and gravel. The runoff flows from the north towards the south side of the property. The drainage area delineation is shown on the Existing Condition Drainage Map (E-1).

3.2 DEVELOPED CONDITION:

The proposed development is a warehouse. The developed drainage area consists of four watersheds (WS#1A, WS#1B, WS#1C and WS#1D), with a total area of about 19.457 acres and consists of a two-story building, access road, parking lot cover, loading docks, and landscaping areas. The drainage area is delineated on Drainage Map Developed Condition (D-1).

4.0 DRAINAGE STUDY:

We have prepared the enclosed hydraulic/hydrological analysis to compare the existing and developed conditions. Due to the proposed development, the impervious areas such as roof tops and the parking areas will be increased at P.O.I.#1. Therefore, the peak runoff of all storm frequencies will be increased relatively. A drainage mitigation plan is prepared to provide water quality and peak flow attenuation, which is described under the mitigation measures section.

5.0 IMPACT AND MITIGATION MEASURES:

The hydrology and hydraulics study for this project has been undertaken to examine the pre and post construction drainage conditions.

To attenuate the post-developed peak flow to pre-developed peak flow, and addressing water quality mitigation requirements, three underground ground systems have been proposed. The proposed systems will be installed on the south and south-east side of the proposed building.

- Underground Infiltration Systems (Cultec R-902HD or approved equal).
- Up-flo Filter

- Solid Pipe Storage System (60" HDPE or approved equal).

HydroCad has been used to calculate peak flows for different storm events at the outlet "Point of Interest", for Existing and Developed Condition and to simulate stormwater being routed through the proposed stormwater management structures in order to determine the final peak runoff of the site. The peak flow in the proposed development site will be decreased by 9.4% to 24.5% at P.O.I.#1 after routing through the proposed SMPs.

If you have further questions or concerns, feel free to contact me. Thank you.

Very truly yours,

Ryan A. Nasher, P.E.

P:\STORMWATER MANAGEMENT\3390\SWPPP REPORT\SECTION 2 - DRAINAGE\3390 DRAINAGE NARRATIVE.docx

Summary Table

SUMMERVILLE INDUSTRIAL PARK

VILLAGE OF CHESTER
ORANGE COUNTY
NEW YORK

SUMMARY TABLE

BY

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Fax: (845) 634-5543

SUMMARY FLOW @ P.O.I.
EXISTING AND DEVELOPED CONDITIONS
1, 10, & 100 YEAR STORMS PEAK RUNOFF

STORM FREQUENCY (YEAR)	EXISTING CONDITION PEAK FLOW (CFS) (PER Hydrocad)	DEVELOPED CONDITION PEAK FLOW WITH ROUTING (CFS) (PER Hydrocad)	% CHANGE	REMARK
1	18.22	15.49	-15.0%	*
10	57.59	43.47	-24.5%	*
100	134.21	121.60	-9.4%	*

* Note: Peak flow mitigation will be provided by an underground solid pipe system and the required water quality treatment volume will be provided by the underground infiltration system (Cultec R-902HD or approved equal).

Location Maps

SUMMERVILLE INDUSTRIAL PARK

VILLAGE OF CHESTER
ORANGE COUNTY
NEW YORK

LOCATION MAPS

BY

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New City, NY 10956
Tel: (845) 634-4694
Fax: (845) 634-5543

JOB: SUMMERVILLE INDUSTRIAL PARK (3390)
CALCULATED BY: WS DATE: 07/26/23
CHECKED BY: RN DATE: 07/26/23

NORTH

STREET MAP
Source: maps.google.com

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JOB: SUMMERVILLE INDUSTRIAL PARK (3390)
CALCULATED BY: WS DATE: 07/26/23
CHECKED BY: RN DATE: 07/26/23

NORTH

SOIL MAP
Source: http://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx

Drainage Calculations

SUMMERVILLE INDUSTRIAL PARK

VILLAGE OF CHESTER
ORANGE COUNTY
NEW YORK

DRAINAGE CALCULATION

BY

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E-MAIL: rnasher@anzny.com

EXISTING CONDITION:

The existing site consists of one watershed. Watershed WS#1 has an area of 21.122 acres. The existing drainage area consists of a dirt road, gravel, and grass cover. The drainage area is delineated on the Existing Drainage Map Condition (E-1).

WS#1

The soil within WS#1 belongs to Hydrological Soil Group A, C, and D.

A = 19.457 acs

HSG "A"	HSG "C"	HSG "D"
A_{grass}= 3.838 acs	A_{grass}= 5.634 acs	A_{grass}= 2.094 acs
$A_{Dirt\ Road}$ = 0.076 acs	$A_{Dirt\ Road}$ = 1.065 acs	$A_{Dirt\ Road}$ = 0.058 acs
A_{Gravel} = 1.697 acs	A_{Gravel} = 4.335 acs	A_{Gravel} = 0.66 acs

Due to the dirt road and the gravel area, minimum time of concentration has been used:

Tc = 6 min

WS#1→E-P.O.I.

DEVELOPED CONDITION:

The proposed development includes four watersheds (WS#1A, WS#1B, WS#1C, and WS#1D). The proposed development consists in the construction of a two-story building, parking lots, driveway, and landscaping areas. The drainage area is delineated on Drainage Map Developed Condition (D-1).

WS#1A

The soil within WS#1A belongs to Hydrological Soil Group A, C, and D.

A = 3.521 acs

HSG "A, C, & D"
$A_{Rooftop}$= 3.521 acs

Due to the small drainage area, minimum time of concentration has been used:

Tc = 6 min

WS#1A→U/G INFILTRATION SYSTEM→P-P.O.I.

WS#1B

The soil within WS#1B belongs to Hydrological Soil Group A and D.

A = 5.983 acs

HSG "A, C, & D"
$A_{Rooftop}$= 5.983 acs

Due to the small drainage area, minimum time of concentration has been used:

Tc = 6 min

WS#1B→UP-FLO FILTER→U/G SOLID PIPE SYSTEM→P-P.O.I.

WS#1C

The soil within WS#1C belongs to Hydrological Soil Groups A & C.

A = 6.304 acs

HSG "A"	HSG "C"
A_{grass}= 0.408 acs	A_{grass}= 0.449 acs
$A_{Impervious}$ = 5.447 acs	

Due to the steep slopes and the proposed impervious cover, minimum time of concentration has been used:

Tc = 6 min

WS#1C→UP-FLO FILTER→U/G SOLID PIPE SYSTEM→P-P.O.I.

WS#1D

The soil within WS#1D belongs to Hydrological Soil Groups A, C, & D.

A = 3.649 acs

HSG "A"	HSG "C"	HSG "D"
A_{grass}= 1.176 acs	A_{grass}= 1.370 acs	A_{grass}= 0.668 acs
$A_{Impervious}$ = 3.557 acs		

Due to the steep slopes and the proposed impervious cover, minimum time of concentration has been used:

Tc = 6 min

WS#1D→U/G SOLID PIPE SYSTEM→P-P.O.I.

SMP Design

SUMMERVILLE INDUSTRIAL PARK

VILLAGE OF CHESTER
ORANGE COUNTY
NEW YORK

STORMWATER MANAGEMENT PRACTICE DESIGN CALCULATIONS

BY

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STORMWATER MANAGEMENT PRACTICE SIZING CALCULATIONS

The proposed systems will be installed/constructed on the southern side of the proposed building. The underground infiltration system and the up-flo filter systems will provide water quality treatment, the underground solid pipe system will provide peak flow mitigation for the required 1-yr, 10-yr, and 100-yr storm events at the P.O.I.

WQv Requirements:

1. **Base Data:**

- Drainage study area = 19.457 acres
- Existing Impervious area in disturbance (I_{Ext})= 6.692 acres
- Proposed impervious area in disturbance = 15.386 acres
- New Impervious (I_{New})= 15.386 acres – 6.692 acres = 8.694 acres

$$A_{Treat} = I_{New} + 0.25 * I_{Ext}$$

$$\rightarrow A_{Treat} = 8.694\ acres + (0.25 * 6.692\ acres) = 10.367\ acres$$

- 90% Rainfall Depth = 1.4 inches (Orange County)
- Hydrological Soil Group (HSG): A, B, & D

$S_A = 0.55$

$S_C = 0.30$

$S_D = 0.20$

$\boldsymbol{S_{avg} = 0.36}$

- HSG Specific Reduction Factor, S = 0.36

2. **Water Quality Volume required before Runoff Reduction:**

The impervious cover,

$$I = \frac{10.367\ acres}{19.457\ acres} \times 100\% = 53.1\%$$

The runoff coefficient,

$R_v = 0.05 + 0.009 \times I$

$\rightarrow R_v = 0.05 + 0.009 \times 53.1$

$\rightarrow R_v = 0.53$

Use the 90% rule 1.4" of rainfall in Orange County,

$WQ_v = 1.4" \times R_v \times A_{Disturbed}$

$\rightarrow WQ_v = 1.4inch\left(\frac{1ft}{12inch}\right) 0.53\ x\ 19.457\ acs$

$\rightarrow WQ_v = 1.2\ acs.ft. = 52{,}360\ cu.ft.$

The required water quality volume, (WQv) = 52,360 cu.ft or 1.2 acs.ft.

$(WQv)_{Required}$ = 1.2 acs.ft. or 52,360 cu.ft

3. **Minimum Runoff Reduction Volume (RRv) Calculations:**

$$RRv = \frac{90\%\ Rainfall\ Amount}{12} * 0.95 * S * AI_{New}$$

$S = 0.36$

$$RRv = 1.4inch\left(\frac{1ft}{12inch}\right) * 0.95 * 0.36 * 10.367\ acres$$

$RRv = 0.413\ acs.ft. = 18{,}018\ ft^3$

$(RRv)_{Minimum}$ = 0.413 acs.ft. or 18,018 cu.ft

4. **Area Reduction Practice:**

- No area reduction practice is proposed.

5. **Area Reduction Practice:**

N/A

6. **Recalculate WQv for Site Area Remaining After Area Reduction:**

The impervious cover,

$$I = \frac{10.367\ acres}{19.457\ acres} \times 100\% = 53.1\%$$

The runoff coefficient,

$R_v = 0.05 + 0.009 \times I$

$\rightarrow R_v = 0.05 + 0.009 \times 53.1$

$\rightarrow R_v = 0.53$

Use the 90% rule 1.4" of rainfall in Orange County,

$WQ_v = 1.4" \times R_v \times A_{Disturbed}$

$\rightarrow WQ_v = 1.4inch\left(\frac{1ft}{12inch}\right) 0.53\ x\ 19.457\ acs$

$\rightarrow WQ_v = 1.2\ acs.ft. = 52{,}360\ cu.ft.$

The required water quality volume, (WQv) = 52,360 cu.ft or 1.2 acs.ft.

$(WQv)_{Required}$ = 1.2 acs.ft. or 52,360 cu.ft

7. **Runoff Reduction Volume (RRv) Calculation Per Area Reduction:**

- The Runoff Reduction Volume (RRv) Credit:

$(RRv)_{Area\ Reduction}$ = (#2 Original WQv - #6 Area Reduced WQv)

$\Rightarrow (RRv)_{Area\ Reduction}$ = (1.2 acs.ft. – 1.2 acs.ft.)

$\Rightarrow (RRv)_{Area\ Reduction}$ = 0.00 acs.ft.

$(RRv)_{Per\ Area\ Reduction}$ = 0.0 acs.ft. or 0.0 cu.ft

8. **Incorporate Impervious Are Disconnection:**

- No rooftop disconnection practices are proposed.

9. **Recalculate WQv with Rv Modified for Impervious Disconnection:**

The impervious cover,

$I = \frac{10.367\ acres}{19.457\ acres} \times 100\% = 53.1\%$

The runoff coefficient,

$R_v = 0.05 + 0.009 \times I$

$\rightarrow R_v = 0.05 + 0.009 \times 53.1$

$\rightarrow R_v = 0.53$

Use the 90% rule 1.4" of rainfall in Orange County,

$$WQ_v = 1.4" \times R_v \times A_{Disturbed}$$

$$\rightarrow WQ_v = 1.4inch\left(\frac{1ft}{12inch}\right) 0.53\ x\ 19.457\ acs$$

$$\rightarrow WQ_v = 1.2\ acs.ft. = 52{,}360\ cu.ft.$$

The required water quality volume, (WQv) = 52,360 cu.ft or 1.2 acs.ft.

$(WQv)_{Required}$ = 1.2 acs.ft. or 52,360 cu.ft

10. Runoff Reduction Volume (RRv) Per Impervious Area Reduction:

- The Runoff Reduction Volume (RRv) Credit:

  $(RRv)_{AI\ Reduction}$ = (#6 Area Reduced WQv - #9 Area Reduced WQv)

  $\Rightarrow (RRv)_{AI\ Reduction}$ = (1.2 acs.ft – 1.2 acs.ft)

  $\Rightarrow (RRv)_{AI\ Reduction}$ = 0.00 acs.ft

$(WQv)_{Per\ Impervious\ Reduction}$ = 0.0 acs.ft. or 0.0 cu.ft

11. Source Control WQv Treatment Practice:

The WQv will be mitigated by the proposed underground infiltration system (Cultec R-902HD). The system will be located on the south side of the proposed building. The volume provided by the proposed system is 18,224 cu.ft @ EL: 485.10 per HydroCAD.

- WQv Provided = 18,224 cu.ft or 0.418 acs.ft.

$(WQv)_{Provided}$ = 0.418 acs.ft. or 18,224 cu.ft

12. The Total Provided Runoff Reduction Volume (RRv) Calculation:

- The Grand Total RRv:

  $(RRv)_{Grand\ Total}$ = (#7 $(RRv)_{Area\ Reduction}$ + #10 $(RRv)_{AI\ Reduction}$ + #11 $(RRv)_{SMP\ Provided}$)

  $\Rightarrow (RRv)_{Grand\ Total}$ = (0.0 acs.ft. + 0.0 acs.ft. + 0.418 acs.ft.

  $\Rightarrow (RRv)_{Grand\ Total}$ = 0.418 acs.ft.

$(RRv)_{Grand\ Total}$ = 0.418 acs.ft. or 18,224 cu.ft

13. Check if Total Provided RRv is Adequate Compared to the Original WQv:

- The $(RRv)_{Grand\ Total}$ = 0.418 acs.ft < $(WQv)_{Original}$ = 1.2 acs.ft.

↓

(Provide Additional WQv By Standard Practice)

14. Check if Total Provided RRv is Adequate Compared to the Minimum RRv:

- The $(RRv)_{Grand\ Total}$ = 0.418 acs.ft >= $(RRv)_{Minimum}$ = 0.413 acs.ft.

↓

(Minimum RRv Requirement is Satisfied)

15. Total Drainage area treated with runoff reduction or source control practices:

- Treated area = #4 DA + #8 DA + #11 DA = 0.0 + 0.00 + 3.521 = 3.521 acres
- Impervious Area = #4 IA + #8 IA + #11 IA = 0.0 + 0.00 + 3.521 = 3.521 acres

16. Are all required areas treated by runoff reduction or source control practices:

Not all the watersheds are treated by the source control. The remaining impervious area will be treated by standard practice.

17. Provide Treatment For the Remaining Untreated Watershed DA with Standard Practice:

- The Remaining Untreated Watershed Drainage Area (D-WS#1C),

$(DA)_{Remaining\ Untreated}$ = (#1 DA_{Total} - #15 $DA_{Treated}$)

$\Rightarrow (DA)_{Remaining\ Untreated}$ = (19.457 Acres – 3.521 Acres)

$\Rightarrow$ **$(DA)_{Remaining\ Untreated}$ = 15.936 Acres**

- The Remaining Untreated Impervious Area :

$(AI)_{Remaining\ Untreated}$ = (#1 AI_{Treat} - #15 $AI_{Treated}$)

$\Rightarrow (AI)_{Remaining\ Untreated}$ = (10.367 Acres – 3.521 Acres)

$\Rightarrow$ **$(AI)_{Remaining\ Untreated}$ = 6.846 Acres**

- Effective Watershed Drainage Area :

  $DA_{Effective}$= 15.936 Acres

- Remain Untreated Impervious Area

  $AI_{Contributing}$ = 6.846 Acres

Find impervious cover percentage:

$$I = \frac{6.846}{15.936} * 100\% = 43.0\%$$

Find runoff coefficient:

$$R_V = 0.05 + 0.009 * I$$

$$\rightarrow R_V = 0.05 + 0.009 * 43.0\%$$

$$\rightarrow R_V = 0.437$$

Find required WQv using 90% rainfall rule:

$$WQ_v = 1.4" \times R_v \times A_{Disturbed}$$

$$\rightarrow WQ_v = 1.4inch\left(\frac{1ft}{12inch}\right) 0.437\ x\ 15.936\ acs$$

$$\rightarrow WQ_v = 0.812\ acs.ft. = 35{,}362\ cu.ft.$$

$(WQv)_{Standard\ Practice}$ = 0.812 acs.ft. or 35,362 cu.ft

18. Compute Peak Water Quality Discharge:

Compute modified CN for 1.4" rainfall:

$P = 1.4"$ (Orange County)

$$Q_a = \frac{WQ_v}{Area}$$

$$Q_a = \frac{0.812\ ft^3}{15.936\ acres} * \frac{1\ acre - ft}{43{,}560\ ft^3} * \frac{12\ inch}{1\ ft}$$

$$Q_a = 0.61\ inch$$

$$CN = \left[\frac{1000}{10 + 5p + 10Q_a - 10 * (Q_a^2 + 1.25 * Q_a * p)^{0.5}}\right]$$

$$CN = \left[\frac{1000}{10 + (5 * 1.4") + (10 * 0.61") - 10 * (0.61"^2 + 1.25 * 0.61" * 1.4")^{0.5}}\right]$$

$$CN = 90.1$$

- Use $CN = 90.0$

- Compute $\frac{I_a}{p}$

$$I_a = 0.2 * S$$

$$S = \frac{1000}{CN} - 10$$

$$S = \frac{1000}{90} - 10$$

$$S = 1.1$$

$$I_a = 0.2 * 1.1$$

$$I_a = 0.22$$

$$\frac{I_a}{p} = \frac{0.22}{1.4}$$

$$\frac{I_a}{p} = 0.159$$

- Now, use the value of $\frac{I_a}{p}$ and t_c = 0.1 hour to find out q_u.

$$q_u = 642 \frac{csm}{in}$$ (Per Type III Rainfall Distribution)

- Now, calculate the peak water quality flow (Q_{wp}):

$$Q_{wp} = q_u * A * Q_a$$

$$Q_{wp} = \left(642 \frac{csm}{in}\right)\left(\frac{15.936\ acres}{640\ \frac{acres}{mi^2}}\right)(0.61\ inch)$$

$$Q_{wp} = 9.76\ cfs$$

So, the peak water quality discharge, $Q_{wp} = 9.76\ cfs$.

Hydro International Up Flo Filter Systems have been proposed to provide 100% of the WQv required. The Up Flo filter systems will house 295 modules at 0.056 cfs per module which will provide a Peak Treatment flow of 16.52 cfs.

The total water quality volume provided by the Up Flo Filter is 1.33 acs.ft
> Required Water Quality Volume = 0.812 cfs

(O.K.) √

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WATER QUANTITY CALCULATION

The proposed underground solid pipe storage system provides water quantity required for 1-yr, 10-yr, 100-yr storm events at the points of interest. The routing calculation through the proposed system shows that the zero net increase of peak run off from the site could be achieved as described in the following:

P.O.I:

1-yr storm:

Q1 (developed) = 15.49 cfs < Q1 (existing) = 18.22 cfs
Porous Asphalt Storage = 4,570 c.f.
U/G Infiltration System 1-yr Storage = 15,077 c.f. @ El. 485.48'

10-yr storm:

Q10 (developed) = 43.47 cfs < Q10 (existing) = 57.59 cfs
Porous Asphalt Storage = 8,704 c.f.
U/G Infiltration System 10-yr Storage = 29,323 c.f. @ El. 486.50'

100-yr storm:

Q100 (developed) = 121.60 cfs < Q100 (existing) = 134.21 cfs
Porous Asphalt Storage = 15,944 c.f.
U/G Infiltration System 100-yr Storage = 47,194 c.f. @ El. 487.84'

(Please see HydroCad calculations for details)

HydroCAD Model

SUMMERVILLE INDUSTRIAL PARK

VILLAGE OF CHESTER
ORANGE COUNTY
NEW YORK

HYDROCAD MODEL FOR EXISTING AND PROPOSED CONDITIONS 1, 10, AND 100 YEAR STORMS

BY

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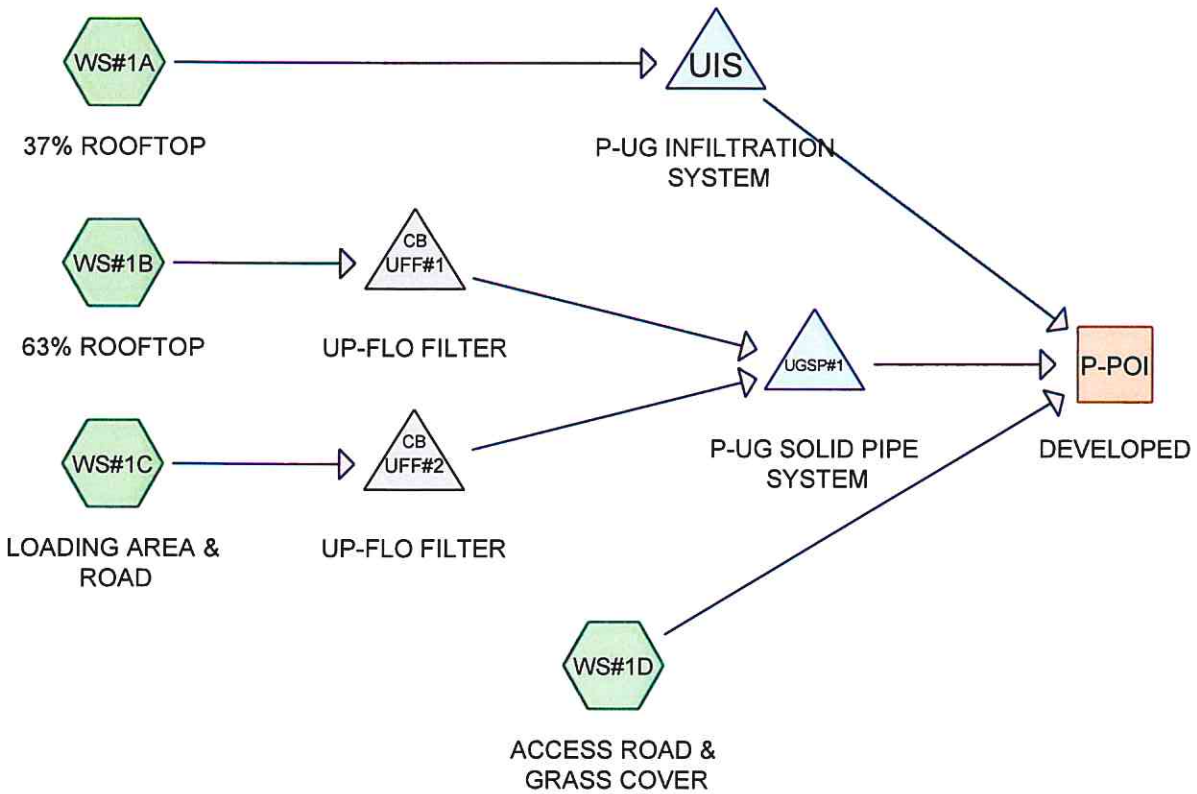
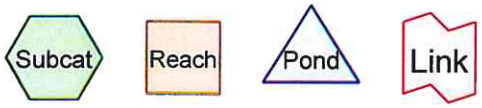
EXISTING CONDITION

DEVELOPED CONDITION





Routing Diagram for 3390 SUMMERVILLE INDUSTRIAL PARK
Prepared by ATZL NASHER & ZIGLER, Printed 7/24/2023
HydroCAD® 10.00-20 s/n 03403 © 2017 HydroCAD Software Solutions LLC

Time span=0.00-36.00 hrs, dt=0.05 hrs, 721 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 WS#1: EXISTING Runoff Area=19.457 ac 0.00% Impervious Runoff Depth=0.86"
Tc=6.0 min CN=76 Runoff=18.22 cfs 1.400 af

Subcatchment WS#1A: 37% ROOFTOP Runoff Area=3.521 ac 100.00% Impervious Runoff Depth=2.54"
Tc=6.0 min CN=98 Runoff=9.21 cfs 0.745 af

Subcatchment WS#1B: 63% ROOFTOP Runoff Area=5.983 ac 100.00% Impervious Runoff Depth=2.54"
Tc=6.0 min CN=98 Runoff=15.65 cfs 1.266 af

Subcatchment WS#1C: LOADING AREA & ROAD Runoff Area=6.304 ac 86.41% Impervious Runoff Depth=1.94"
Tc=6.0 min CN=92 Runoff=13.84 cfs 1.022 af

Subcatchment WS#1D: ACCESS ROAD & GRASS Runoff Area=3.649 ac 11.92% Impervious Runoff Depth=0.47"
Tc=6.0 min CN=67 Runoff=1.49 cfs 0.144 af

Reach E-POI: EXISTING Inflow=18.22 cfs 1.400 af
Outflow=18.22 cfs 1.400 af

Reach P-POI: DEVELOPED Inflow=15.49 cfs 2.432 af
Outflow=15.49 cfs 2.432 af

Pond UFF#1: UP-FLO FILTER Peak Elev=500.62' Inflow=15.65 cfs 1.266 af
Outflow=15.65 cfs 1.266 af

Pond UFF#2: UP-FLO FILTER Peak Elev=499.89' Inflow=13.84 cfs 1.022 af
Outflow=13.84 cfs 1.022 af

Pond UGSP#1: P-UG SOLID PIPE SYSTEM Peak Elev=485.48' Storage=15,076 cf Inflow=29.48 cfs 2.288 af
Outflow=14.45 cfs 2.288 af

Pond UIS: P-UG INFILTRATIONSYSTEM Peak Elev=483.28' Storage=10,752 cf Inflow=9.21 cfs 0.745 af
Discarded=1.29 cfs 0.745 af Primary=0.00 cfs 0.000 af Outflow=1.29 cfs 0.745 af

Total Runoff Area = 38.914 ac Runoff Volume = 4.577 af Average Runoff Depth = 1.41"
60.46% Pervious = 23.528 ac 39.54% Impervious = 15.386 ac

Summary for Subcatchment WS#1: EXISTING

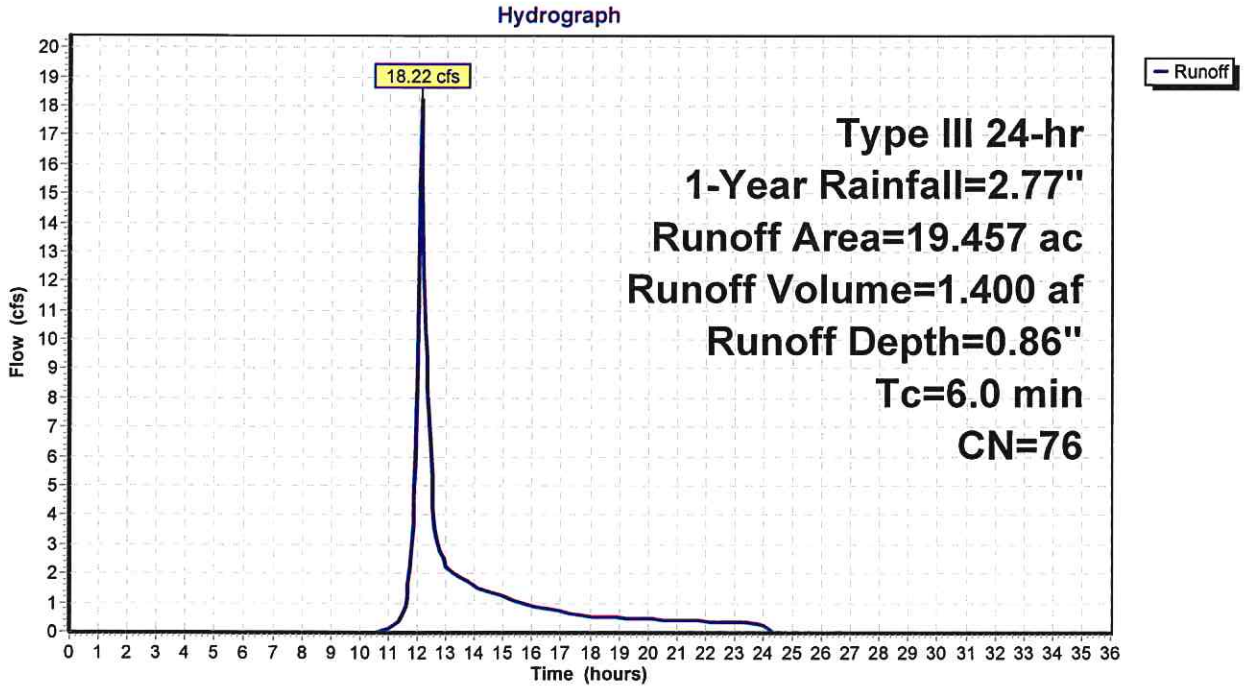
Runoff = 18.22 cfs @ 12.10 hrs, Volume= 1.400 af, Depth= 0.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Year Rainfall=2.77"

	Area (ac)	CN	Description
	3.838	39	>75% Grass cover, Good, HSG A
	5.634	74	>75% Grass cover, Good, HSG C
	2.094	80	>75% Grass cover, Good, HSG D
*	0.076	72	Dirt, HSG A
	1.065	87	Dirt roads, HSG C
	0.058	89	Dirt roads, HSG D
	1.697	96	Gravel surface, HSG A
	4.335	96	Gravel surface, HSG C
	0.660	96	Gravel surface, HSG D
	19.457	76	Weighted Average
	19.457		100.00% Pervious Area

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

Subcatchment WS#1: EXISTING



Summary for Subcatchment WS#1A: 37% ROOFTOP

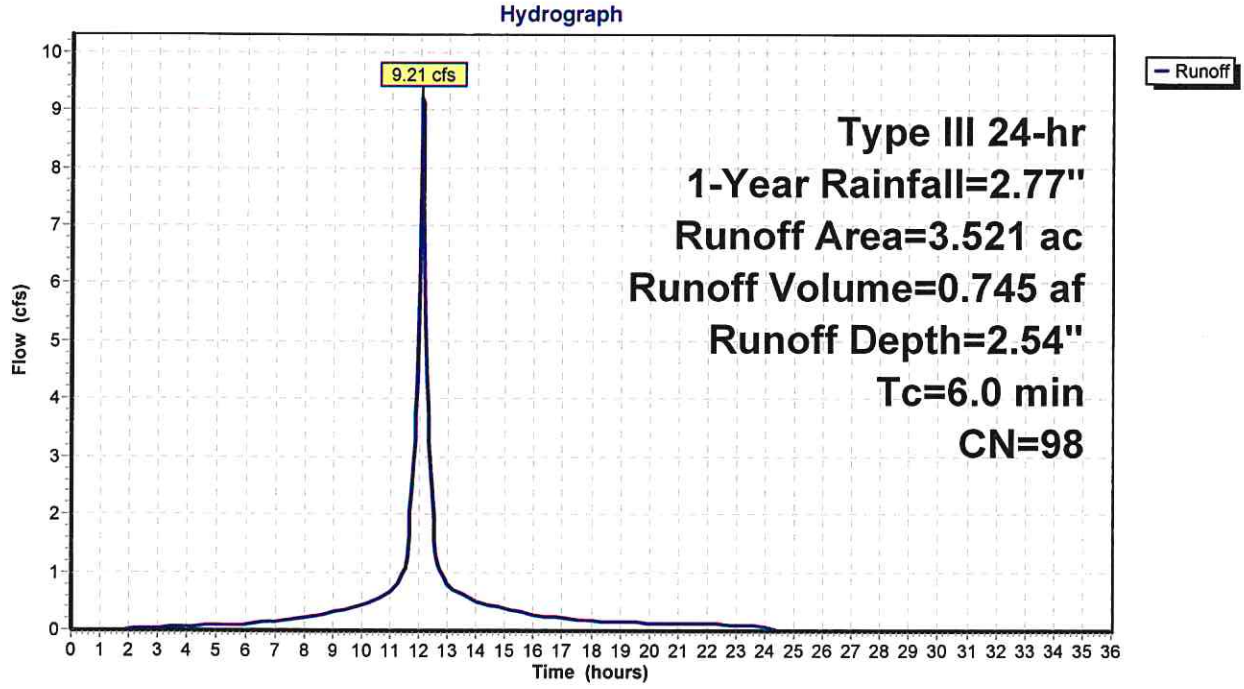
Runoff = 9.21 cfs @ 12.09 hrs, Volume= 0.745 af, Depth= 2.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Year Rainfall=2.77"

	Area (ac)	CN	Description
*	3.521	98	Rooftop, HSG A, C, D
	3.521		100.00% Impervious Area

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

Subcatchment WS#1A: 37% ROOFTOP



Summary for Subcatchment WS#1B: 63% ROOFTOP

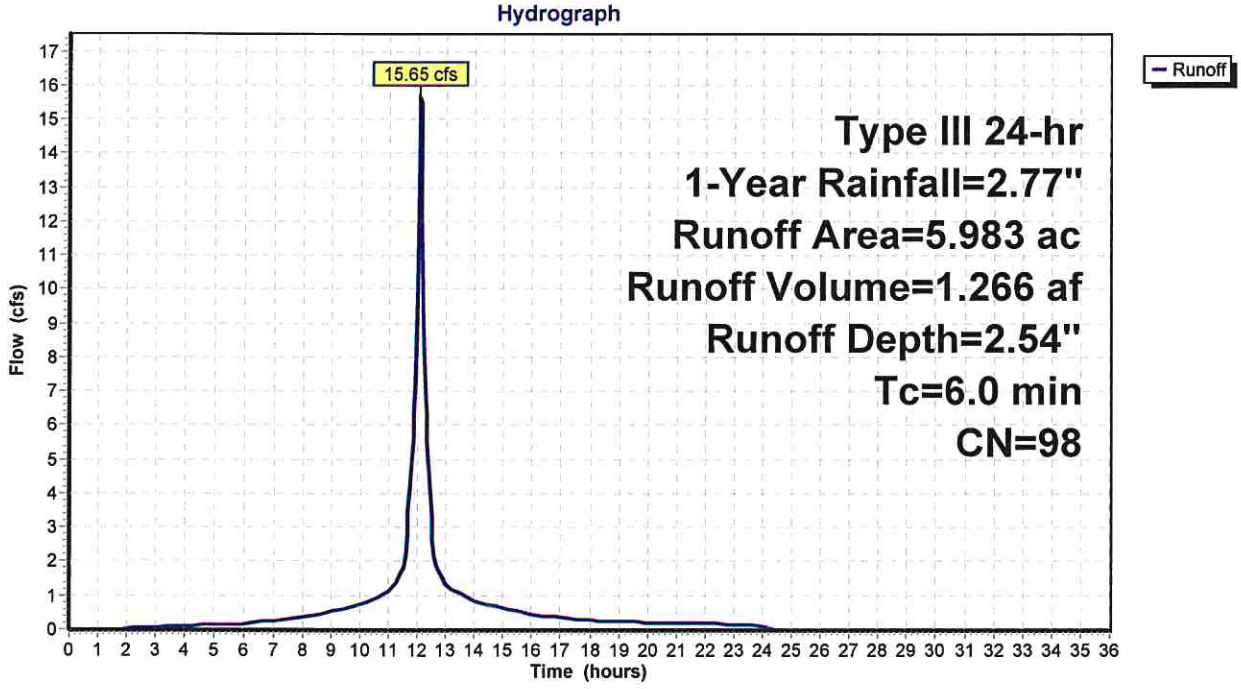
Runoff = 15.65 cfs @ 12.09 hrs, Volume= 1.266 af, Depth= 2.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Year Rainfall=2.77"

	Area (ac)	CN	Description
*	5.983	98	Rooftop, HSG A, C, D
	5.983		100.00% Impervious Area

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

Subcatchment WS#1B: 63% ROOFTOP



Summary for Subcatchment WS#1C: LOADING AREA & ROAD

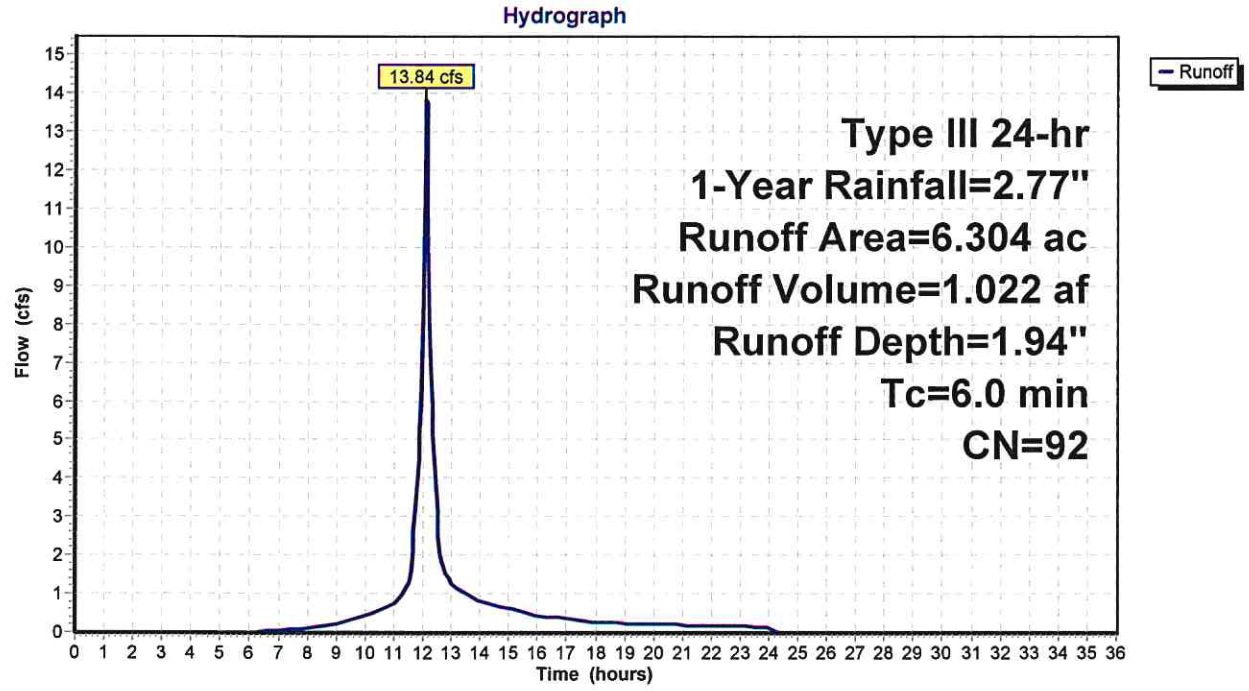
Runoff = 13.84 cfs @ 12.09 hrs, Volume= 1.022 af, Depth= 1.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Year Rainfall=2.77"

	Area (ac)	CN	Description
*	5.447	98	Impervious Cover, HSG A, C, D
	0.408	39	>75% Grass cover, Good, HSG A
	0.449	74	>75% Grass cover, Good, HSG C
	6.304	92	Weighted Average
	0.857		13.59% Pervious Area
	5.447		86.41% Impervious Area

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

Subcatchment WS#1C: LOADING AREA & ROAD



Summary for Subcatchment WS#1D: ACCESS ROAD & GRASS COVER

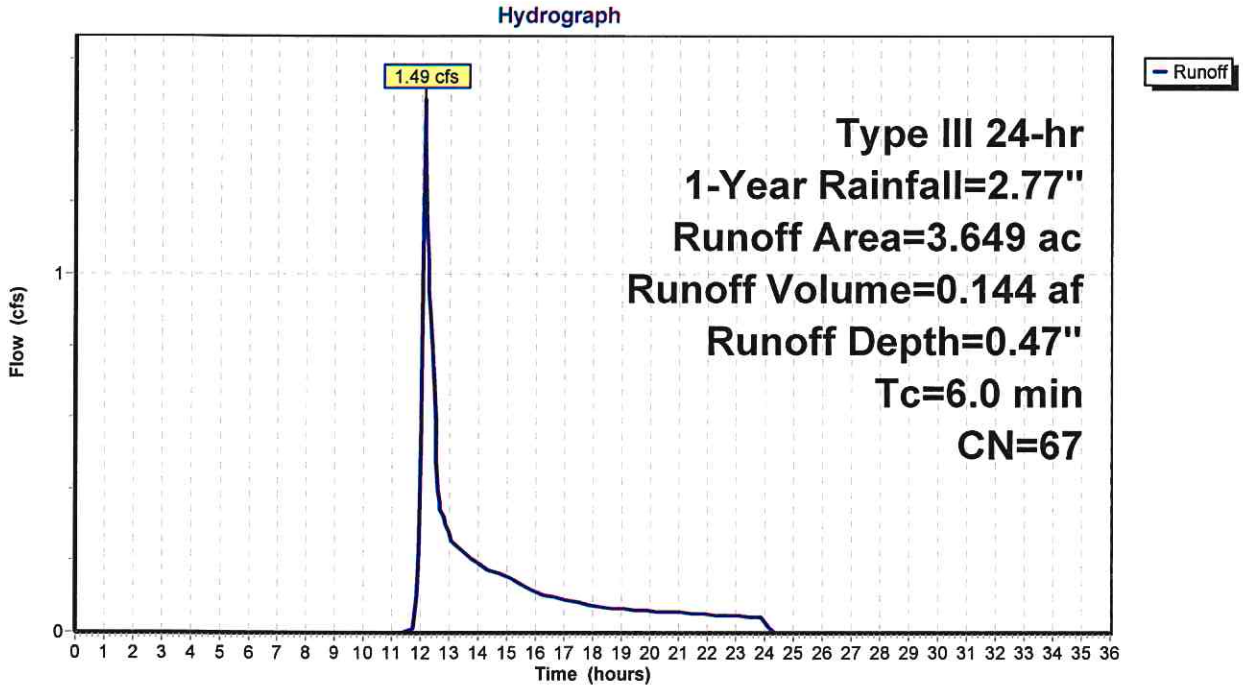
Runoff = 1.49 cfs @ 12.12 hrs, Volume= 0.144 af, Depth= 0.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Year Rainfall=2.77"

	Area (ac)	CN	Description
*	0.435	98	Impervious Cover, HSG. A, C & D
	1.176	39	>75% Grass cover, Good, HSG A
	1.370	74	>75% Grass cover, Good, HSG C
	0.668	80	>75% Grass cover, Good, HSG D
	3.649	67	Weighted Average
	3.214		88.08% Pervious Area
	0.435		11.92% Impervious Area

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

Subcatchment WS#1D: ACCESS ROAD & GRASS COVER

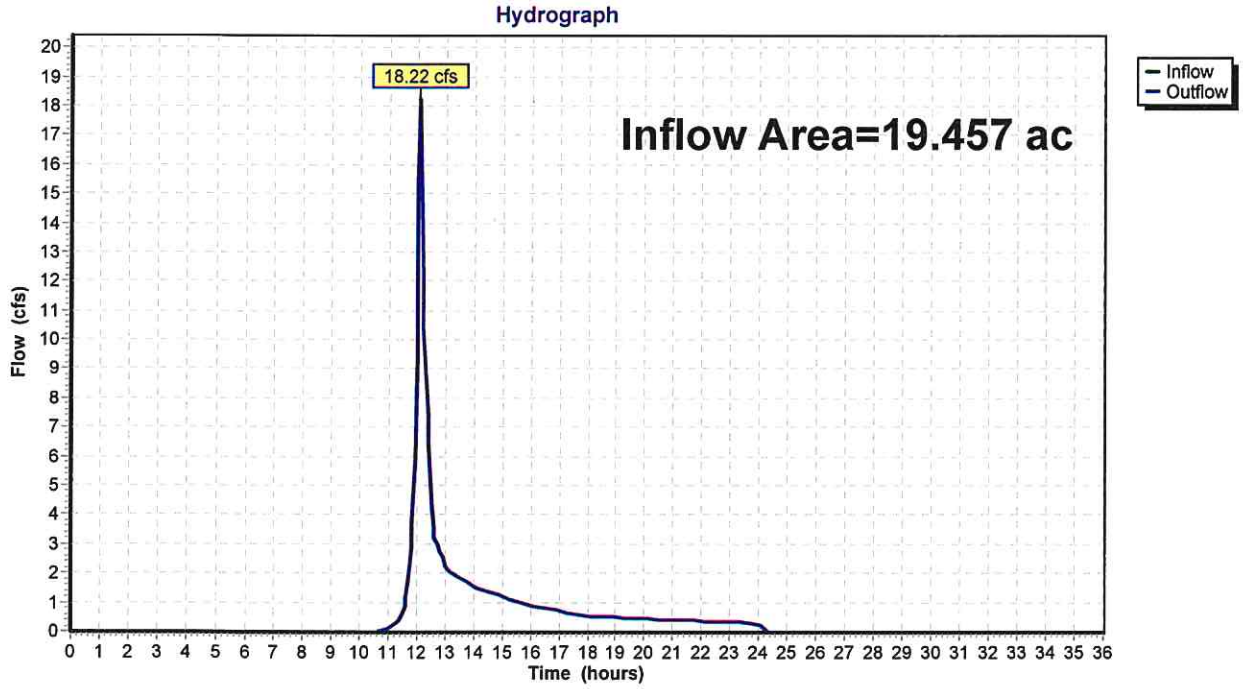


Summary for Reach E-POI: EXISTING

Inflow Area = 19.457 ac, 0.00% Impervious, Inflow Depth = 0.86" for 1-Year event
Inflow = 18.22 cfs @ 12.10 hrs, Volume= 1.400 af
Outflow = 18.22 cfs @ 12.10 hrs, Volume= 1.400 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Reach E-POI: EXISTING

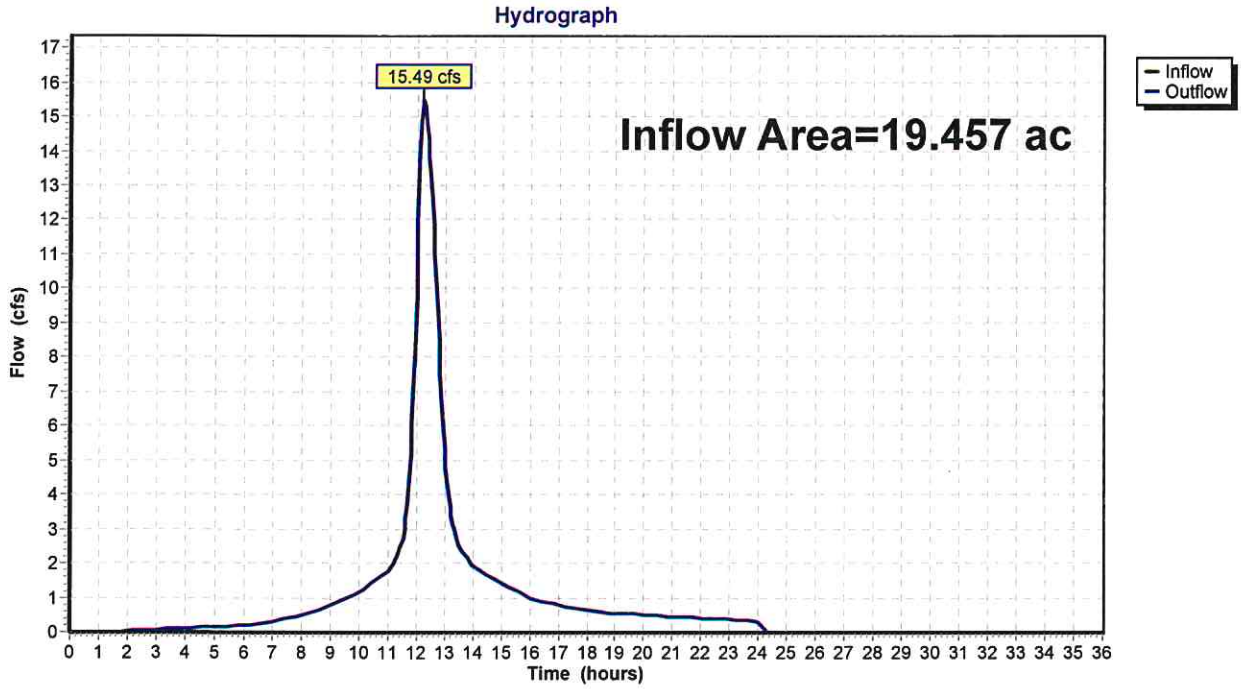


Summary for Reach P-POI: DEVELOPED

Inflow Area = 19.457 ac, 79.08% Impervious, Inflow Depth = 1.50" for 1-Year event
Inflow = 15.49 cfs @ 12.24 hrs, Volume= 2.432 af
Outflow = 15.49 cfs @ 12.24 hrs, Volume= 2.432 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Reach P-POI: DEVELOPED



Summary for Pond UFF#1: UP-FLO FILTER

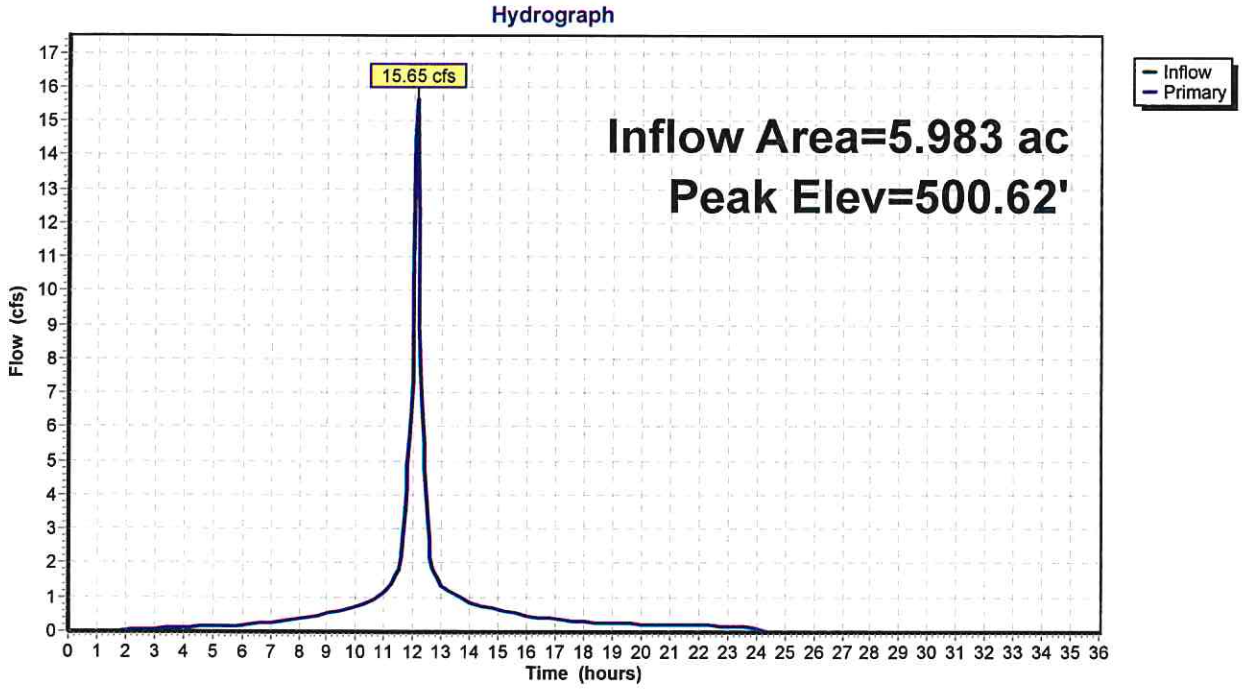
Inflow Area = 5.983 ac,100.00% Impervious, Inflow Depth = 2.54" for 1-Year event
Inflow = 15.65 cfs @ 12.09 hrs, Volume= 1.266 af
Outflow = 15.65 cfs @ 12.09 hrs, Volume= 1.266 af, Atten= 0%, Lag= 0.0 min
Primary = 15.65 cfs @ 12.09 hrs, Volume= 1.266 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 500.62' @ 12.09 hrs
Flood Elev= 500.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	496.50'	**18.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=15.23 cfs @ 12.09 hrs HW=500.46' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 15.23 cfs @ 8.62 fps)

Pond UFF#1: UP-FLO FILTER



Stage-Discharge for Pond UFF#1: UP-FLO FILTER

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
496.50	0.00	497.56	4.68	498.62	9.96	499.68	13.26
496.52	0.00	497.58	4.82	498.64	10.03	499.70	13.32
496.54	0.01	497.60	4.96	498.66	10.10	499.72	13.37
496.56	0.02	497.62	5.10	498.68	10.18	499.74	13.43
496.58	0.04	497.64	5.24	498.70	10.25	499.76	13.48
496.60	0.05	497.66	5.38	498.72	10.32	499.78	13.53
496.62	0.08	497.68	5.52	498.74	10.39	499.80	13.59
496.64	0.11	497.70	5.65	498.76	10.46	499.82	13.64
496.66	0.14	497.72	5.79	498.78	10.52	499.84	13.69
496.68	0.17	497.74	5.92	498.80	10.59	499.86	13.75
496.70	0.21	497.76	6.06	498.82	10.66	499.88	13.80
496.72	0.26	497.78	6.19	498.84	10.73	499.90	13.85
496.74	0.30	497.80	6.32	498.86	10.80	499.92	13.90
496.76	0.36	497.82	6.44	498.88	10.86	499.94	13.96
496.78	0.41	497.84	6.57	498.90	10.93	499.96	14.01
496.80	0.47	497.86	6.69	498.92	11.00	499.98	14.06
496.82	0.53	497.88	6.80	498.94	11.06	500.00	14.11
496.84	0.60	497.90	6.92	498.96	11.13	500.02	14.16
496.86	0.67	497.92	7.02	498.98	11.19	500.04	14.21
496.88	0.74	497.94	7.12	499.00	11.26	500.06	14.26
496.90	0.81	497.96	7.22	499.02	11.32	500.08	14.31
496.92	0.89	497.98	7.30	499.04	11.38	500.10	14.36
496.94	0.98	498.00	7.37	499.06	11.45	500.12	14.41
496.96	1.06	498.02	7.47	499.08	11.51	500.14	14.46
496.98	1.15	498.04	7.56	499.10	11.57	500.16	14.51
497.00	1.24	498.06	7.66	499.12	11.64	500.18	14.56
497.02	1.34	498.08	7.75	499.14	11.70	500.20	14.61
497.04	1.43	498.10	7.84	499.16	11.76	500.22	14.66
497.06	1.53	498.12	7.94	499.18	11.82	500.24	14.71
497.08	1.64	498.14	8.03	499.20	11.88	500.26	14.76
497.10	1.74	498.16	8.12	499.22	11.94	500.28	14.81
497.12	1.85	498.18	8.21	499.24	12.00	500.30	14.86
497.14	1.96	498.20	8.29	499.26	12.06	500.32	14.91
497.16	2.07	498.22	8.38	499.28	12.12	500.34	14.96
497.18	2.19	498.24	8.47	499.30	12.18	500.36	15.01
497.20	2.30	498.26	8.55	499.32	12.24	500.38	15.05
497.22	2.42	498.28	8.64	499.34	12.30	500.40	15.10
497.24	2.54	498.30	8.72	499.36	12.36	500.42	15.15
497.26	2.67	498.32	8.80	499.38	12.42	500.44	15.20
497.28	2.79	498.34	8.88	499.40	12.48	500.46	15.24
497.30	2.92	498.36	8.96	499.42	12.53	500.48	15.29
497.32	3.05	498.38	9.04	499.44	12.59	500.50	15.34
497.34	3.18	498.40	9.12	499.46	12.65	500.52	15.39
497.36	3.31	498.42	9.20	499.48	12.71	500.54	15.43
497.38	3.44	498.44	9.28	499.50	12.76	500.56	15.48
497.40	3.58	498.46	9.36	499.52	12.82	500.58	15.53
497.42	3.71	498.48	9.44	499.54	12.88	500.60	**15.57**
497.44	3.85	498.50	9.51	499.56	12.93		
497.46	3.98	498.52	9.59	499.58	12.99		
497.48	4.12	498.54	9.66	499.60	13.04		
497.50	4.26	498.56	9.74	499.62	13.10		
497.52	4.40	498.58	9.81	499.64	13.15		
497.54	4.54	498.60	9.89	499.66	13.21		

Stage-Area-Storage for Pond UFF#1: UP-FLO FILTER

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
496.50	0	497.56	0	498.62	0	499.68	0
496.52	0	497.58	0	498.64	0	499.70	0
496.54	0	497.60	0	498.66	0	499.72	0
496.56	0	497.62	0	498.68	0	499.74	0
496.58	0	497.64	0	498.70	0	499.76	0
496.60	0	497.66	0	498.72	0	499.78	0
496.62	0	497.68	0	498.74	0	499.80	0
496.64	0	497.70	0	498.76	0	499.82	0
496.66	0	497.72	0	498.78	0	499.84	0
496.68	0	497.74	0	498.80	0	499.86	0
496.70	0	497.76	0	498.82	0	499.88	0
496.72	0	497.78	0	498.84	0	499.90	0
496.74	0	497.80	0	498.86	0	499.92	0
496.76	0	497.82	0	498.88	0	499.94	0
496.78	0	497.84	0	498.90	0	499.96	0
496.80	0	497.86	0	498.92	0	499.98	0
496.82	0	497.88	0	498.94	0	500.00	0
496.84	0	497.90	0	498.96	0	500.02	0
496.86	0	497.92	0	498.98	0	500.04	0
496.88	0	497.94	0	499.00	0	500.06	0
496.90	0	497.96	0	499.02	0	500.08	0
496.92	0	497.98	0	499.04	0	500.10	0
496.94	0	498.00	0	499.06	0	500.12	0
496.96	0	498.02	0	499.08	0	500.14	0
496.98	0	498.04	0	499.10	0	500.16	0
497.00	0	498.06	0	499.12	0	500.18	0
497.02	0	498.08	0	499.14	0	500.20	0
497.04	0	498.10	0	499.16	0	500.22	0
497.06	0	498.12	0	499.18	0	500.24	0
497.08	0	498.14	0	499.20	0	500.26	0
497.10	0	498.16	0	499.22	0	500.28	0
497.12	0	498.18	0	499.24	0	500.30	0
497.14	0	498.20	0	499.26	0	500.32	0
497.16	0	498.22	0	499.28	0	500.34	0
497.18	0	498.24	0	499.30	0	500.36	0
497.20	0	498.26	0	499.32	0	500.38	0
497.22	0	498.28	0	499.34	0	500.40	0
497.24	0	498.30	0	499.36	0	500.42	0
497.26	0	498.32	0	499.38	0	500.44	0
497.28	0	498.34	0	499.40	0	500.46	0
497.30	0	498.36	0	499.42	0	500.48	0
497.32	0	498.38	0	499.44	0	500.50	0
497.34	0	498.40	0	499.46	0	500.52	0
497.36	0	498.42	0	499.48	0	500.54	0
497.38	0	498.44	0	499.50	0	500.56	0
497.40	0	498.46	0	499.52	0	500.58	0
497.42	0	498.48	0	499.54	0	500.60	0
497.44	0	498.50	0	499.56	0		
497.46	0	498.52	0	499.58	0		
497.48	0	498.54	0	499.60	0		
497.50	0	498.56	0	499.62	0		
497.52	0	498.58	0	499.64	0		
497.54	0	498.60	0	499.66	0		

Summary for Pond UFF#2: UP-FLO FILTER

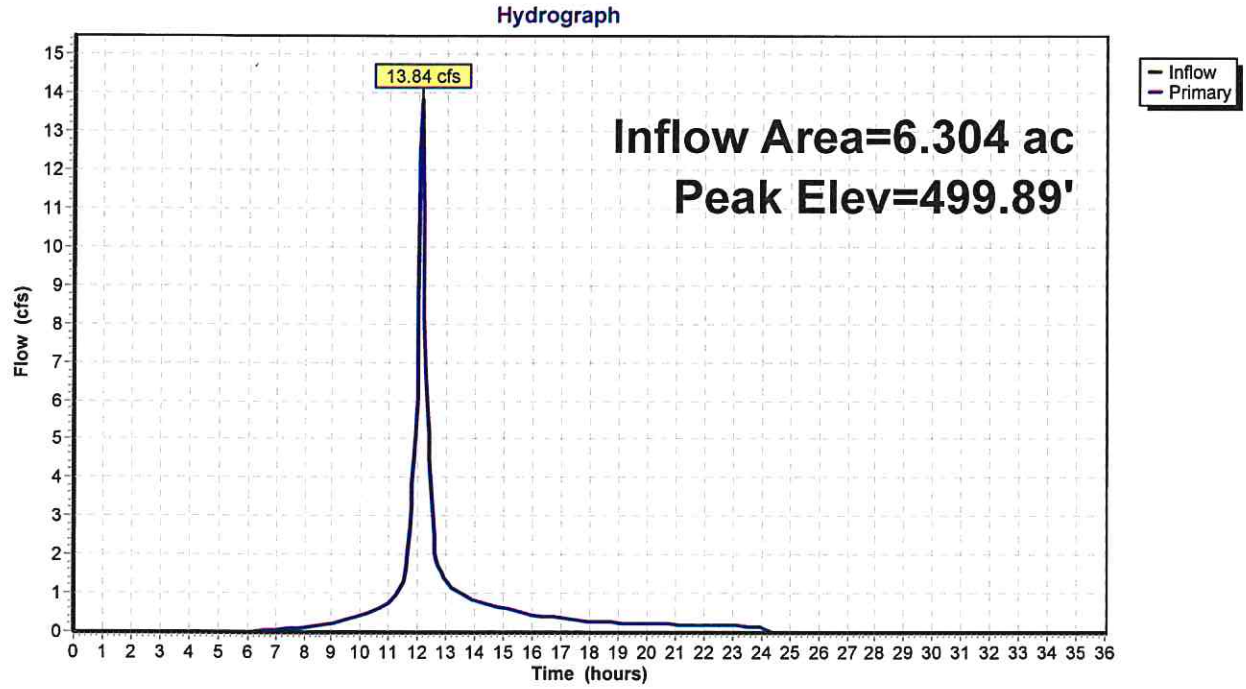
Inflow Area = 6.304 ac, 86.41% Impervious, Inflow Depth = 1.94" for 1-Year event
Inflow = 13.84 cfs @ 12.09 hrs, Volume= 1.022 af
Outflow = 13.84 cfs @ 12.09 hrs, Volume= 1.022 af, Atten= 0%, Lag= 0.0 min
Primary = 13.84 cfs @ 12.09 hrs, Volume= 1.022 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 499.89' @ 12.09 hrs
Flood Elev= 500.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	496.50'	**18.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=13.53 cfs @ 12.09 hrs HW=499.78' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 13.53 cfs @ 7.66 fps)

Pond UFF#2: UP-FLO FILTER



Stage-Discharge for Pond UFF#2: UP-FLO FILTER

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
496.50	0.00	497.56	4.68	498.62	9.96	499.68	13.26
496.52	0.00	497.58	4.82	498.64	10.03	499.70	13.32
496.54	0.01	497.60	4.96	498.66	10.10	499.72	13.37
496.56	0.02	497.62	5.10	498.68	10.18	499.74	13.43
496.58	0.04	497.64	5.24	498.70	10.25	499.76	13.48
496.60	0.05	497.66	5.38	498.72	10.32	499.78	13.53
496.62	0.08	497.68	5.52	498.74	10.39	499.80	13.59
496.64	0.11	497.70	5.65	498.76	10.46	499.82	13.64
496.66	0.14	497.72	5.79	498.78	10.52	499.84	13.69
496.68	0.17	497.74	5.92	498.80	10.59	499.86	13.75
496.70	0.21	497.76	6.06	498.82	10.66	499.88	13.80
496.72	0.26	497.78	6.19	498.84	10.73	499.90	13.85
496.74	0.30	497.80	6.32	498.86	10.80	499.92	13.90
496.76	0.36	497.82	6.44	498.88	10.86	499.94	13.96
496.78	0.41	497.84	6.57	498.90	10.93	499.96	14.01
496.80	0.47	497.86	6.69	498.92	11.00	499.98	14.06
496.82	0.53	497.88	6.80	498.94	11.06	500.00	**14.11**
496.84	0.60	497.90	6.92	498.96	11.13		
496.86	0.67	497.92	7.02	498.98	11.19		
496.88	0.74	497.94	7.12	499.00	11.26		
496.90	0.81	497.96	7.22	499.02	11.32		
496.92	0.89	497.98	7.30	499.04	11.38		
496.94	0.98	498.00	7.37	499.06	11.45		
496.96	1.06	498.02	7.47	499.08	11.51		
496.98	1.15	498.04	7.56	499.10	11.57		
497.00	1.24	498.06	7.66	499.12	11.64		
497.02	1.34	498.08	7.75	499.14	11.70		
497.04	1.43	498.10	7.84	499.16	11.76		
497.06	1.53	498.12	7.94	499.18	11.82		
497.08	1.64	498.14	8.03	499.20	11.88		
497.10	1.74	498.16	8.12	499.22	11.94		
497.12	1.85	498.18	8.21	499.24	12.00		
497.14	1.96	498.20	8.29	499.26	12.06		
497.16	2.07	498.22	8.38	499.28	12.12		
497.18	2.19	498.24	8.47	499.30	12.18		
497.20	2.30	498.26	8.55	499.32	12.24		
497.22	2.42	498.28	8.64	499.34	12.30		
497.24	2.54	498.30	8.72	499.36	12.36		
497.26	2.67	498.32	8.80	499.38	12.42		
497.28	2.79	498.34	8.88	499.40	12.48		
497.30	2.92	498.36	8.96	499.42	12.53		
497.32	3.05	498.38	9.04	499.44	12.59		
497.34	3.18	498.40	9.12	499.46	12.65		
497.36	3.31	498.42	9.20	499.48	12.71		
497.38	3.44	498.44	9.28	499.50	12.76		
497.40	3.58	498.46	9.36	499.52	12.82		
497.42	3.71	498.48	9.44	499.54	12.88		
497.44	3.85	498.50	9.51	499.56	12.93		
497.46	3.98	498.52	9.59	499.58	12.99		
497.48	4.12	498.54	9.66	499.60	13.04		
497.50	4.26	498.56	9.74	499.62	13.10		
497.52	4.40	498.58	9.81	499.64	13.15		
497.54	4.54	498.60	9.89	499.66	13.21		

Stage-Area-Storage for Pond UFF#2: UP-FLO FILTER

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
496.50	**0**	497.56	0	498.62	0	499.68	0
496.52	0	497.58	0	498.64	0	499.70	0
496.54	0	497.60	0	498.66	0	499.72	0
496.56	0	497.62	0	498.68	0	499.74	0
496.58	0	497.64	0	498.70	0	499.76	0
496.60	0	497.66	0	498.72	0	499.78	0
496.62	0	497.68	0	498.74	0	499.80	0
496.64	0	497.70	0	498.76	0	499.82	0
496.66	0	497.72	0	498.78	0	499.84	0
496.68	0	497.74	0	498.80	0	499.86	0
496.70	0	497.76	0	498.82	0	499.88	0
496.72	0	497.78	0	498.84	0	499.90	0
496.74	0	497.80	0	498.86	0	499.92	0
496.76	0	497.82	0	498.88	0	499.94	0
496.78	0	497.84	0	498.90	0	499.96	0
496.80	0	497.86	0	498.92	0	499.98	0
496.82	0	497.88	0	498.94	0	500.00	0
496.84	0	497.90	0	498.96	0		
496.86	0	497.92	0	498.98	0		
496.88	0	497.94	0	499.00	0		
496.90	0	497.96	0	499.02	0		
496.92	0	497.98	0	499.04	0		
496.94	0	498.00	0	499.06	0		
496.96	0	498.02	0	499.08	0		
496.98	0	498.04	0	499.10	0		
497.00	0	498.06	0	499.12	0		
497.02	0	498.08	0	499.14	0		
497.04	0	498.10	0	499.16	0		
497.06	0	498.12	0	499.18	0		
497.08	0	498.14	0	499.20	0		
497.10	0	498.16	0	499.22	0		
497.12	0	498.18	0	499.24	0		
497.14	0	498.20	0	499.26	0		
497.16	0	498.22	0	499.28	0		
497.18	0	498.24	0	499.30	0		
497.20	0	498.26	0	499.32	0		
497.22	0	498.28	0	499.34	0		
497.24	0	498.30	0	499.36	0		
497.26	0	498.32	0	499.38	0		
497.28	0	498.34	0	499.40	0		
497.30	0	498.36	0	499.42	0		
497.32	0	498.38	0	499.44	0		
497.34	0	498.40	0	499.46	0		
497.36	0	498.42	0	499.48	0		
497.38	0	498.44	0	499.50	0		
497.40	0	498.46	0	499.52	0		
497.42	0	498.48	0	499.54	0		
497.44	0	498.50	0	499.56	0		
497.46	0	498.52	0	499.58	0		
497.48	0	498.54	0	499.60	0		
497.50	0	498.56	0	499.62	0		
497.52	0	498.58	0	499.64	0		
497.54	0	498.60	0	499.66	0		

Summary for Pond UGSP#1: P-UG SOLID PIPE SYSTEM

Inflow Area = 12.287 ac, 93.03% Impervious, Inflow Depth = 2.23" for 1-Year event
Inflow = 29.48 cfs @ 12.09 hrs, Volume= 2.288 af
Outflow = 14.45 cfs @ 12.25 hrs, Volume= 2.288 af, Atten= 51%, Lag= 9.8 min
Primary = 14.45 cfs @ 12.25 hrs, Volume= 2.288 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 485.48' @ 12.25 hrs Surf.Area= 16,081 sf Storage= 15,076 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 6.9 min (785.9 - 779.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	483.60'	0 cf	**44.67'W x 360.00'L x 5.58'H Field A** 89,796 cf Overall - 65,984 cf Embedded = 23,812 cf x 0.0% Voids
#2A	483.60'	55,584 cf	**ADS N-12 60"** x 144 Inside #1 Inside= 59.5"W x 59.5"H => 19.30 sf x 20.00'L = 386.0 cf Outside= 67.0"W x 67.0"H => 22.92 sf x 20.00'L = 458.4 cf 8 Rows of 18 Chambers
		55,584 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	483.60'	**30.0" W x 12.0" H Vert. Orifice/Grate** C= 0.600
#2	Primary	485.40'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=14.43 cfs @ 12.25 hrs HW=485.48' (Free Discharge)
1=Orifice/Grate (Orifice Controls 14.06 cfs @ 5.62 fps)
2=Sharp-Crested Rectangular Weir (Weir Controls 0.37 cfs @ 0.92 fps)

Pond UGSP#1: P-UG SOLID PIPE SYSTEM - Chamber Wizard Field A

Chamber Model = ADS N-12 60" (ADS N-12® Pipe)
Inside= 59.5"W x 59.5"H => 19.30 sf x 20.00'L = 386.0 cf
Outside= 67.0"W x 67.0"H => 22.92 sf x 20.00'L = 458.4 cf

18 Chambers/Row x 20.00' Long = 360.00' Row Length
8 Rows x 67.0" Wide = 44.67' Base Width
67.0" Chamber Height = 5.58' Field Height

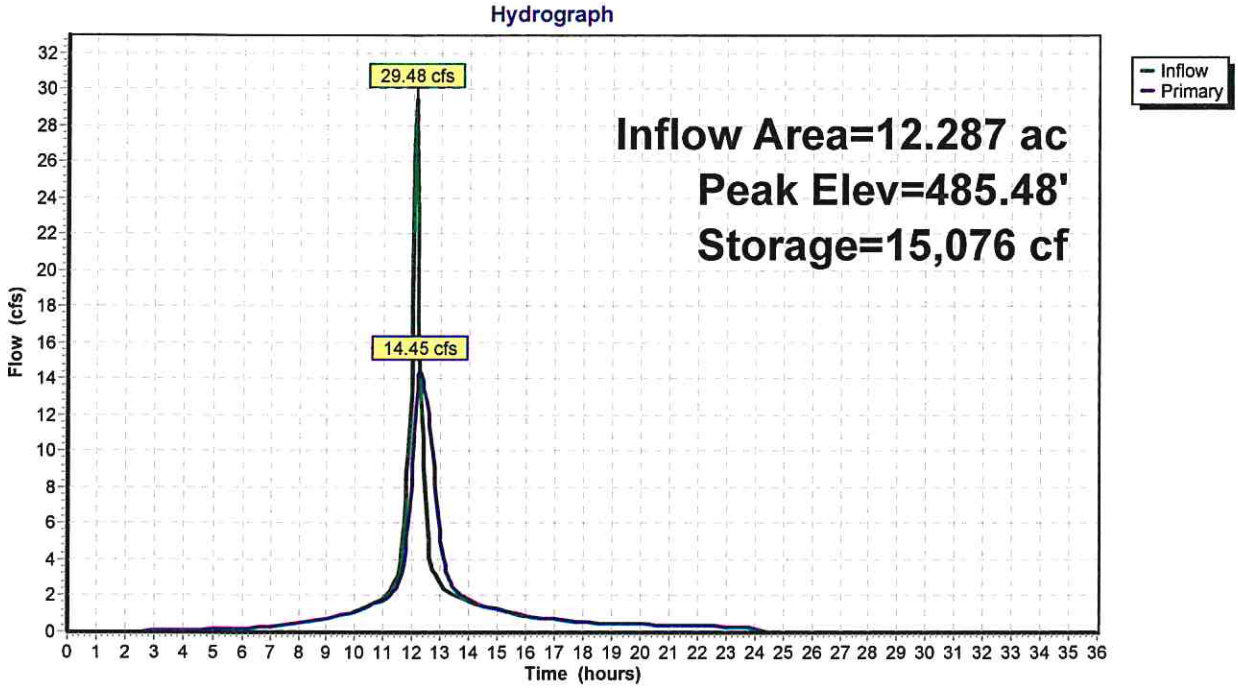
144 Chambers x 386.0 cf = 55,584.0 cf Chamber Storage
144 Chambers x 458.4 cf = 66,012.0 cf Displacement

89,796.1 cf Field - 66,012.0 cf Chambers = 23,784.0 cf Stone x 0.0% Voids = 0.0 cf Stone Storage

Chamber Storage = 55,584.0 cf = 1.276 af
Overall Storage Efficiency = 61.9%
Overall System Size = 360.00' x 44.67' x 5.58'

144 Chambers
3,325.8 cy Field
880.9 cy Stone

Pond UGSP#1: P-UG SOLID PIPE SYSTEM



Stage-Discharge for Pond UGSP#1: P-UG SOLID PIPE SYSTEM

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
483.60	0.00	485.72	18.18	487.84	79.50
483.64	0.06	485.76	18.93	487.88	80.91
483.68	0.18	485.80	19.71	487.92	82.32
483.72	0.33	485.84	20.51	487.96	83.75
483.76	0.51	485.88	21.34	488.00	85.17
483.80	0.72	485.92	22.19	488.04	86.60
483.84	0.94	485.96	23.07	488.08	88.04
483.88	1.19	486.00	23.96	488.12	89.48
483.92	1.45	486.04	24.88	488.16	90.93
483.96	1.73	486.08	25.81	488.20	92.38
484.00	2.03	486.12	26.77	488.24	93.84
484.04	2.34	486.16	27.74	488.28	95.30
484.08	2.67	486.20	28.73	488.32	96.77
484.12	3.01	486.24	29.73	488.36	98.24
484.16	3.36	486.28	30.76	488.40	99.71
484.20	3.73	486.32	31.79	488.44	101.19
484.24	4.11	486.36	32.85	488.48	102.67
484.28	4.50	486.40	33.92	488.52	104.15
484.32	4.90	486.44	35.00	488.56	105.64
484.36	5.32	486.48	36.09	488.60	107.14
484.40	5.74	486.52	37.20	488.64	108.63
484.44	6.18	486.56	38.33	488.68	110.13
484.48	6.62	486.60	39.46	488.72	111.63
484.52	7.08	486.64	40.61	488.76	113.14
484.56	7.55	486.68	41.77	488.80	114.65
484.60	8.02	486.72	42.94	488.84	116.16
484.64	8.45	486.76	44.12	488.88	117.67
484.68	8.83	486.80	45.32	488.92	119.19
484.72	9.18	486.84	46.52	488.96	120.71
484.76	9.51	486.88	47.74	489.00	122.23
484.80	9.83	486.92	48.96	489.04	123.76
484.84	10.14	486.96	50.20	489.08	125.28
484.88	10.43	487.00	51.45	489.12	126.81
484.92	10.72	487.04	52.70	489.16	**128.34**
484.96	10.99	487.08	53.97		
485.00	11.26	487.12	55.24		
485.04	11.52	487.16	56.52		
485.08	11.78	487.20	57.81		
485.12	12.03	487.24	59.11		
485.16	12.27	487.28	60.42		
485.20	12.51	487.32	61.74		
485.24	12.75	487.36	63.06		
485.28	12.97	487.40	64.39		
485.32	13.20	487.44	65.73		
485.36	13.42	487.48	67.08		
485.40	13.64	487.52	68.43		
485.44	13.98	487.56	69.79		
485.48	14.43	487.60	71.16		
485.52	14.94	487.64	72.53		
485.56	15.51	487.68	73.91		
485.60	16.12	487.72	75.30		
485.64	16.78	487.76	76.69		
485.68	17.46	487.80	78.09		

Stage-Area-Storage for Pond UGSP#1: P-UG SOLID PIPE SYSTEM

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
483.60	0	485.72	18,318	487.84	47,220
483.64	0	485.76	18,869	487.88	47,681
483.68	0	485.80	19,422	487.92	48,134
483.72	0	485.84	19,978	487.96	48,580
483.76	0	485.88	20,536	488.00	49,018
483.80	0	485.92	21,096	488.04	49,449
483.84	0	485.96	21,657	488.08	49,871
483.88	0	486.00	22,220	488.12	50,285
483.92	28	486.04	22,785	488.16	50,690
483.96	84	486.08	23,351	488.20	51,085
484.00	217	486.12	23,918	488.24	51,471
484.04	381	486.16	24,486	488.28	51,846
484.08	575	486.20	25,055	488.32	52,211
484.12	793	486.24	25,624	488.36	52,564
484.16	1,032	486.28	26,195	488.40	52,905
484.20	1,289	486.32	26,765	488.44	53,233
484.24	1,564	486.36	27,336	488.48	53,548
484.28	1,856	486.40	27,907	488.52	53,848
484.32	2,162	486.44	28,478	488.56	54,133
484.36	2,482	486.48	29,049	488.60	54,401
484.40	2,816	486.52	29,620	488.64	54,651
484.44	3,162	486.56	30,190	488.68	54,881
484.48	3,519	486.60	30,759	488.72	55,089
484.52	3,888	486.64	31,328	488.76	55,272
484.56	4,268	486.68	31,896	488.80	55,424
484.60	4,657	486.72	32,462	488.84	55,534
484.64	5,057	486.76	33,028	488.88	**55,599**
484.68	5,465	486.80	33,592	488.92	**55,584**
484.72	5,882	486.84	34,154	488.96	55,584
484.76	6,308	486.88	34,715	489.00	55,584
484.80	6,742	486.92	35,274	489.04	55,584
484.84	7,184	486.96	35,831	489.08	55,584
484.88	7,632	487.00	36,385	489.12	55,584
484.92	8,088	487.04	36,938	489.16	55,584
484.96	8,551	487.08	37,488		
485.00	9,021	487.12	38,035		
485.04	9,496	487.16	38,579		
485.08	9,978	487.20	39,121		
485.12	10,465	487.24	39,659		
485.16	10,958	487.28	40,194		
485.20	11,456	487.32	40,725		
485.24	11,959	487.36	41,253		
485.28	12,467	487.40	41,777		
485.32	12,980	487.44	42,296		
485.36	13,497	487.48	42,812		
485.40	14,018	487.52	43,322		
485.44	14,544	487.56	43,829		
485.48	15,073	487.60	44,330		
485.52	15,606	487.64	44,826		
485.56	16,142	487.68	45,316		
485.60	16,681	487.72	45,801		
485.64	17,224	487.76	46,281		
485.68	17,770	487.80	46,754		

Summary for Pond UIS: P-UG INFILTRATION SYSTEM

Inflow Area = 3.521 ac,100.00% Impervious, Inflow Depth = 2.54" for 1-Year event
Inflow = 9.21 cfs @ 12.09 hrs, Volume= 0.745 af
Outflow = 1.29 cfs @ 12.60 hrs, Volume= 0.745 af, Atten= 86%, Lag= 31.0 min
Discarded = 1.29 cfs @ 12.60 hrs, Volume= 0.745 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 483.28' @ 12.60 hrs Surf.Area= 5,777 sf Storage= 10,752 cf

Plug-Flow detention time= 63.0 min calculated for 0.744 af (100% of inflow)
Center-of-Mass det. time= 62.9 min (822.4 - 759.5)

Volume	Invert	Avail.Storage	Storage Description
#1A	480.50'	8,678 cf	**31.00'W x 186.37'L x 6.00'H Field A** 34,664 cf Overall - 12,969 cf Embedded = 21,695 cf x 40.0% Voids
#2A	481.50'	12,969 cf	**Cultec R-902HD** x 200 Inside #1 Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap 4 Rows of 50 Chambers Cap Storage= +2.8 cf x 2 x 4 rows = 22.1 cf
		21,647 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	480.50'	**5.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 477.50' Phase-In= 0.01'
#2	Primary	485.10'	**5.5' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Discarded OutFlow Max=1.29 cfs @ 12.60 hrs HW=483.28' (Free Discharge)
↑**1=Exfiltration** (Controls 1.29 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=480.50' (Free Discharge)
↑**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond UIS: P-UG INFILTRATION SYSTEM - Chamber Wizard Field A

Chamber Model = Cultec R-902HD (Cultec Recharger® 902HD)
Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf
Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap
Cap Storage= +2.8 cf x 2 x 4 rows = 22.1 cf

78.0" Wide + 12.0" Spacing = 90.0" C-C Row Spacing

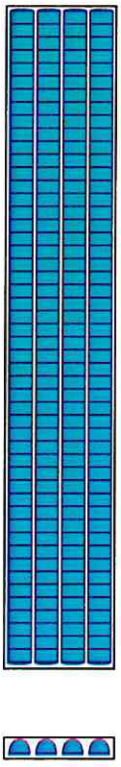
50 Chambers/Row x 3.67' Long +0.52' Cap Length x 2 = 184.37' Row Length +12.0" End Stone x 2 = 186.37' Base Length
4 Rows x 78.0" Wide + 12.0" Spacing x 3 + 12.0" Side Stone x 2 = 31.00' Base Width
12.0" Base + 48.0" Chamber Height + 12.0" Cover = 6.00' Field Height

200 Chambers x 64.7 cf + 2.8 cf Cap Volume x 2 x 4 Rows = 12,969.1 cf Chamber Storage

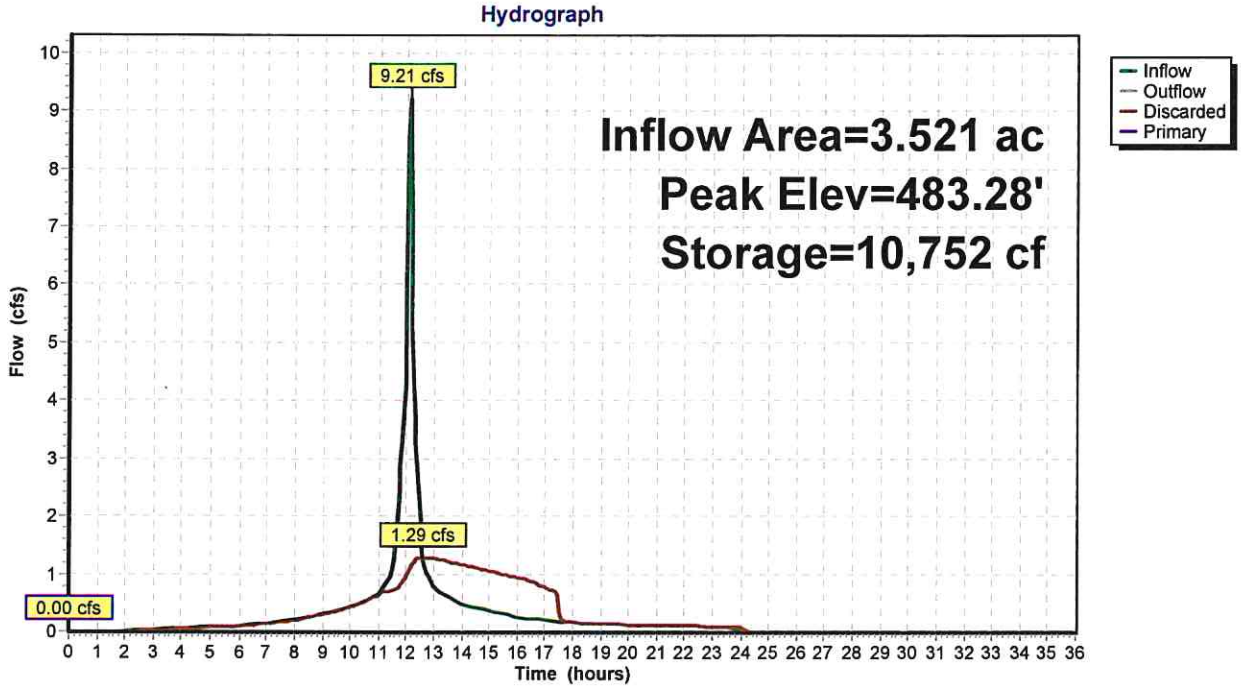
34,664.2 cf Field - 12,969.1 cf Chambers = 21,695.1 cf Stone x 40.0% Voids = 8,678.0 cf Stone Storage

Chamber Storage + Stone Storage = 21,647.1 cf = 0.497 af
Overall Storage Efficiency = 62.4%
Overall System Size = 186.37' x 31.00' x 6.00'

200 Chambers
1,283.9 cy Field
803.5 cy Stone



Pond UIS: P-UG INFILTRATION SYSTEM



Stage-Discharge for Pond UIS: P-UG INFILTRATION SYSTEM

Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)
480.50	0.00	0.00	0.00
480.60	0.69	0.69	0.00
480.70	0.71	0.71	0.00
480.80	0.74	0.74	0.00
480.90	0.76	0.76	0.00
481.00	0.78	0.78	0.00
481.10	0.80	0.80	0.00
481.20	0.82	0.82	0.00
481.30	0.85	0.85	0.00
481.40	0.87	0.87	0.00
481.50	0.89	0.89	0.00
481.60	0.91	0.91	0.00
481.70	0.94	0.94	0.00
481.80	0.96	0.96	0.00
481.90	0.98	0.98	0.00
482.00	1.00	1.00	0.00
482.10	1.03	1.03	0.00
482.20	1.05	1.05	0.00
482.30	1.07	1.07	0.00
482.40	1.09	1.09	0.00
482.50	1.11	1.11	0.00
482.60	1.14	1.14	0.00
482.70	1.16	1.16	0.00
482.80	1.18	1.18	0.00
482.90	1.20	1.20	0.00
483.00	1.23	1.23	0.00
483.10	1.25	1.25	0.00
483.20	1.27	1.27	0.00
483.30	1.29	1.29	0.00
483.40	1.32	1.32	0.00
483.50	1.34	1.34	0.00
483.60	1.36	1.36	0.00
483.70	1.38	1.38	0.00
483.80	1.40	1.40	0.00
483.90	1.43	1.43	0.00
484.00	1.45	1.45	0.00
484.10	1.47	1.47	0.00
484.20	1.49	1.49	0.00
484.30	1.52	1.52	0.00
484.40	1.54	1.54	0.00
484.50	1.56	1.56	0.00
484.60	1.58	1.58	0.00
484.70	1.60	1.60	0.00
484.80	1.63	1.63	0.00
484.90	1.65	1.65	0.00
485.00	1.67	1.67	0.00
485.10	1.69	1.69	0.00
485.20	2.28	1.72	0.57
485.30	3.34	1.74	1.60
485.40	4.68	1.76	2.92
485.50	6.27	1.78	4.48
485.60	8.05	1.81	6.24
485.70	10.00	1.83	8.18
485.80	12.12	1.85	10.27
485.90	14.37	1.87	12.49
486.00	16.75	1.89	14.85
486.10	19.25	1.92	17.33
486.20	21.86	1.94	19.92
486.30	24.57	1.96	22.61
486.40	27.38	1.98	25.40
486.50	**30.28**	**2.01**	**28.28**

Stage-Area-Storage for Pond UIS: P-UG INFILTRATION SYSTEM

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
480.50	**5,777**	0
480.60	5,777	231
480.70	5,777	462
480.80	5,777	693
480.90	5,777	924
481.00	5,777	1,155
481.10	5,777	1,387
481.20	5,777	1,618
481.30	5,777	1,849
481.40	5,777	2,080
481.50	5,777	2,311
481.60	5,777	2,796
481.70	5,777	3,283
481.80	5,777	3,768
481.90	5,777	4,250
482.00	5,777	4,731
482.10	5,777	5,211
482.20	5,777	5,691
482.30	5,777	6,168
482.40	5,777	6,641
482.50	5,777	7,113
482.60	5,777	7,585
482.70	5,777	8,055
482.80	5,777	8,521
482.90	5,777	8,985
483.00	5,777	9,448
483.10	5,777	9,907
483.20	5,777	10,366
483.30	5,777	10,822
483.40	5,777	11,275
483.50	5,777	11,727
483.60	5,777	12,175
483.70	5,777	12,620
483.80	5,777	13,062
483.90	5,777	13,499
484.00	5,777	13,933
484.10	5,777	14,362
484.20	5,777	14,784
484.30	5,777	15,202
484.40	5,777	15,612
484.50	5,777	16,016
484.60	5,777	16,411
484.70	5,777	16,798
484.80	5,777	17,174
484.90	5,777	17,540
485.00	5,777	17,894
485.10	5,777	18,232
485.20	5,777	18,547
485.30	5,777	18,833
485.40	5,777	19,093
485.50	5,777	19,336
485.60	5,777	19,567
485.70	5,777	19,798
485.80	5,777	20,029
485.90	5,777	20,261
486.00	5,777	20,492
486.10	5,777	20,723
486.20	5,777	20,954
486.30	5,777	21,185
486.40	5,777	21,416
486.50	5,777	**21,647**

Time span=0.00-36.00 hrs, dt=0.05 hrs, 721 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

SubcatchmentWS#1: EXISTING Runoff Area=19.457 ac 0.00% Impervious Runoff Depth=2.58"
Tc=6.0 min CN=76 Runoff=57.59 cfs 4.178 af

SubcatchmentWS#1A: 37% ROOFTOP Runoff Area=3.521 ac 100.00% Impervious Runoff Depth=4.81"
Tc=6.0 min CN=98 Runoff=16.99 cfs 1.412 af

SubcatchmentWS#1B: 63% ROOFTOP Runoff Area=5.983 ac 100.00% Impervious Runoff Depth=4.81"
Tc=6.0 min CN=98 Runoff=28.87 cfs 2.400 af

SubcatchmentWS#1C: LOADING AREA & ROAD Runoff Area=6.304 ac 86.41% Impervious Runoff Depth=4.14"
Tc=6.0 min CN=92 Runoff=28.35 cfs 2.174 af

SubcatchmentWS#1D: ACCESS ROAD & GRASS Runoff Area=3.649 ac 11.92% Impervious Runoff Depth=1.84"
Tc=6.0 min CN=67 Runoff=7.48 cfs 0.559 af

Reach E-POI: EXISTING Inflow=57.59 cfs 4.178 af
Outflow=57.59 cfs 4.178 af

Reach P-POI: DEVELOPED Inflow=43.47 cfs 5.262 af
Outflow=43.47 cfs 5.262 af

Pond UFF#1: UP-FLO FILTER Peak Elev=508.72' Inflow=28.87 cfs 2.400 af
Outflow=28.87 cfs 2.400 af

Pond UFF#2: UP-FLO FILTER Peak Elev=508.31' Inflow=28.35 cfs 2.174 af
Outflow=28.35 cfs 2.174 af

Pond UGSP#1: P-UG SOLID PIPE SYSTEM Peak Elev=486.50' Storage=29,323 cf Inflow=57.21 cfs 4.574 af
Outflow=36.62 cfs 4.574 af

Pond UIS: P-UG INFILTRATIONSYSTEM Peak Elev=485.55' Storage=19,461 cf Inflow=16.99 cfs 1.412 af
Discarded=1.80 cfs 1.283 af Primary=5.42 cfs 0.129 af Outflow=7.21 cfs 1.412 af

Total Runoff Area = 38.914 ac Runoff Volume = 10.723 af Average Runoff Depth = 3.31"
60.46% Pervious = 23.528 ac 39.54% Impervious = 15.386 ac

Summary for Subcatchment WS#1: EXISTING

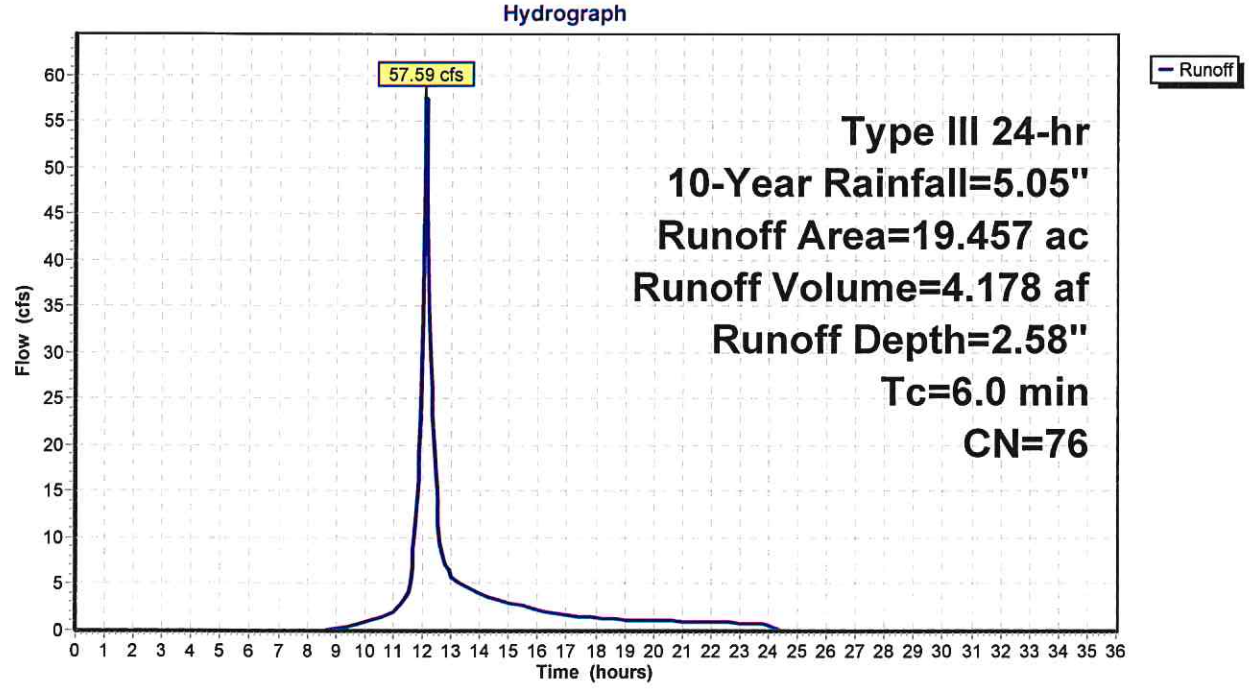
Runoff = 57.59 cfs @ 12.09 hrs, Volume= 4.178 af, Depth= 2.58"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.05"

	Area (ac)	CN	Description
	3.838	39	>75% Grass cover, Good, HSG A
	5.634	74	>75% Grass cover, Good, HSG C
	2.094	80	>75% Grass cover, Good, HSG D
*	0.076	72	Dirt, HSG A
	1.065	87	Dirt roads, HSG C
	0.058	89	Dirt roads, HSG D
	1.697	96	Gravel surface, HSG A
	4.335	96	Gravel surface, HSG C
	0.660	96	Gravel surface, HSG D
	19.457	76	Weighted Average
	19.457		100.00% Pervious Area

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

Subcatchment WS#1: EXISTING



Summary for Subcatchment WS#1A: 37% ROOFTOP

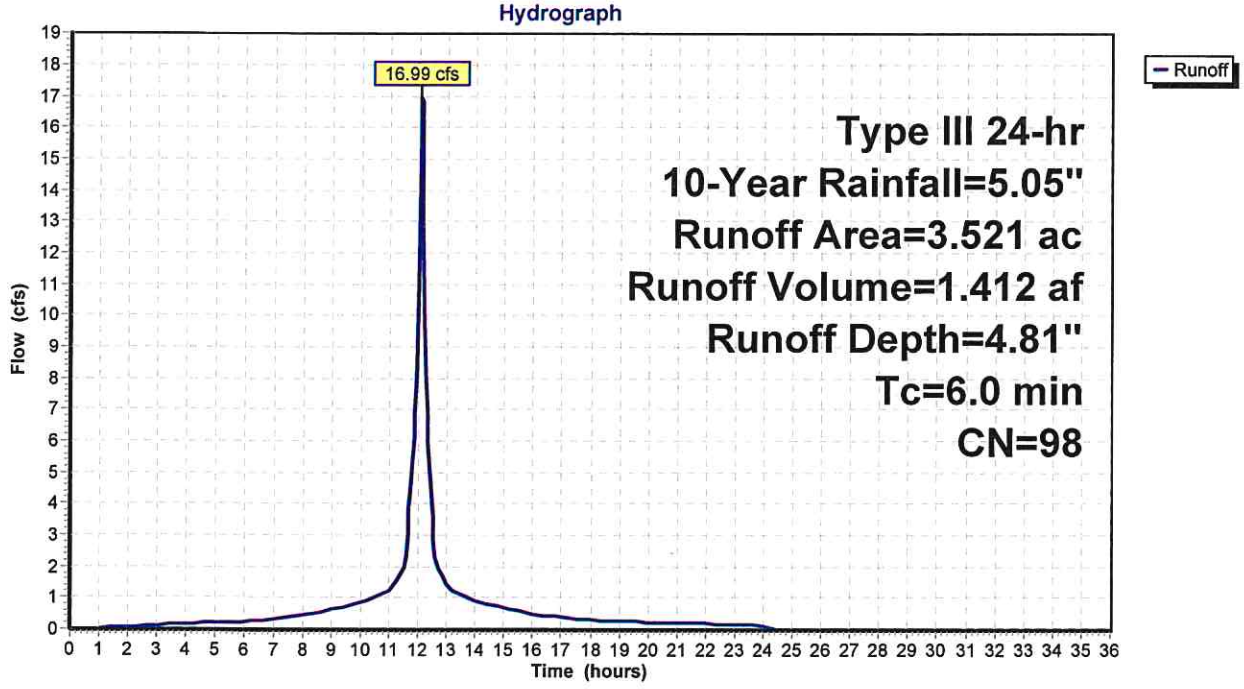
Runoff = 16.99 cfs @ 12.09 hrs, Volume= 1.412 af, Depth= 4.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.05"

	Area (ac)	CN	Description
*	3.521	98	Rooftop, HSG A, C, D
	3.521		100.00% Impervious Area

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

Subcatchment WS#1A: 37% ROOFTOP



Summary for Subcatchment WS#1B: 63% ROOFTOP

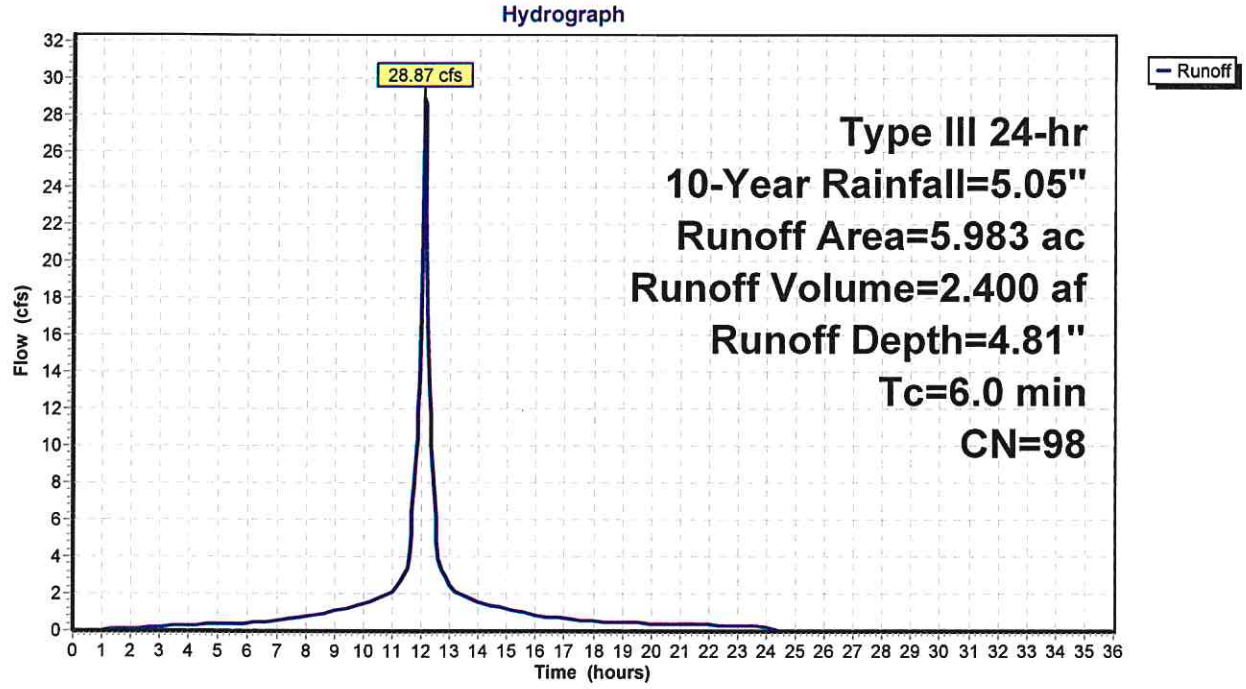
Runoff = 28.87 cfs @ 12.09 hrs, Volume= 2.400 af, Depth= 4.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.05"

	Area (ac)	CN	Description
*	5.983	98	Rooftop, HSG A, C, D
	5.983		100.00% Impervious Area

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

Subcatchment WS#1B: 63% ROOFTOP



Summary for Subcatchment WS#1C: LOADING AREA & ROAD

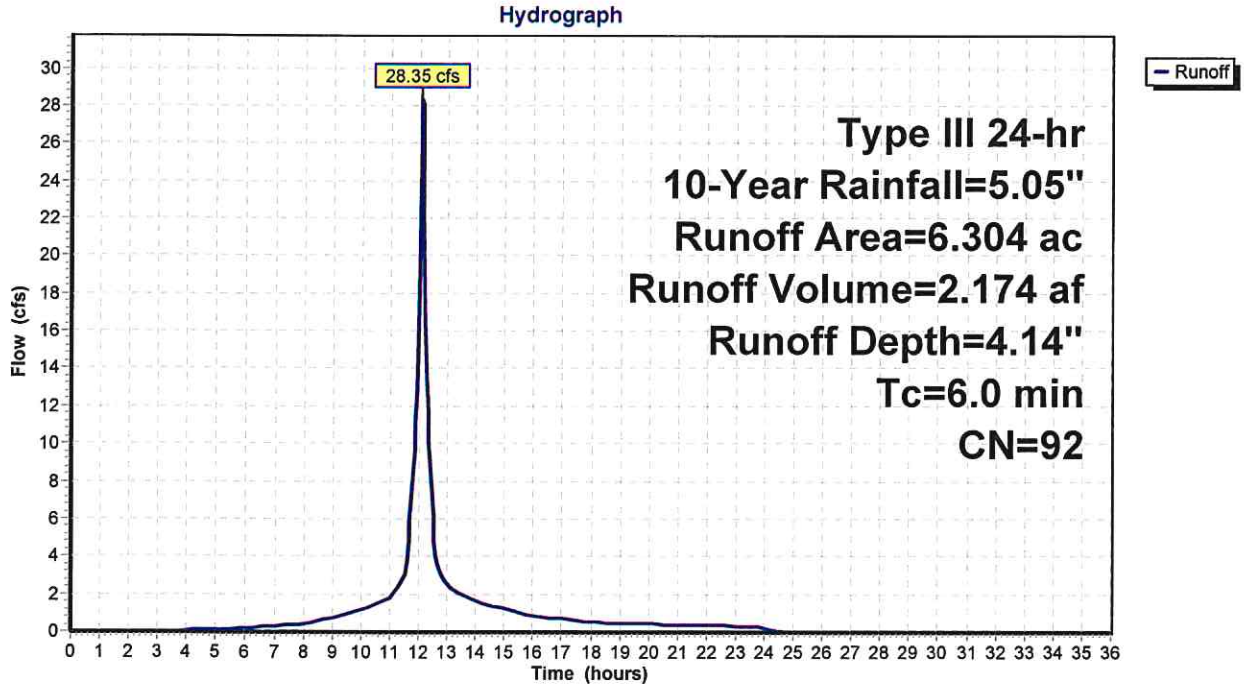
Runoff = 28.35 cfs @ 12.09 hrs, Volume= 2.174 af, Depth= 4.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.05"

	Area (ac)	CN	Description
*	5.447	98	Impervious Cover, HSG A, C, D
	0.408	39	>75% Grass cover, Good, HSG A
	0.449	74	>75% Grass cover, Good, HSG C
	6.304	92	Weighted Average
	0.857		13.59% Pervious Area
	5.447		86.41% Impervious Area

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

Subcatchment WS#1C: LOADING AREA & ROAD



Summary for Subcatchment WS#1D: ACCESS ROAD & GRASS COVER

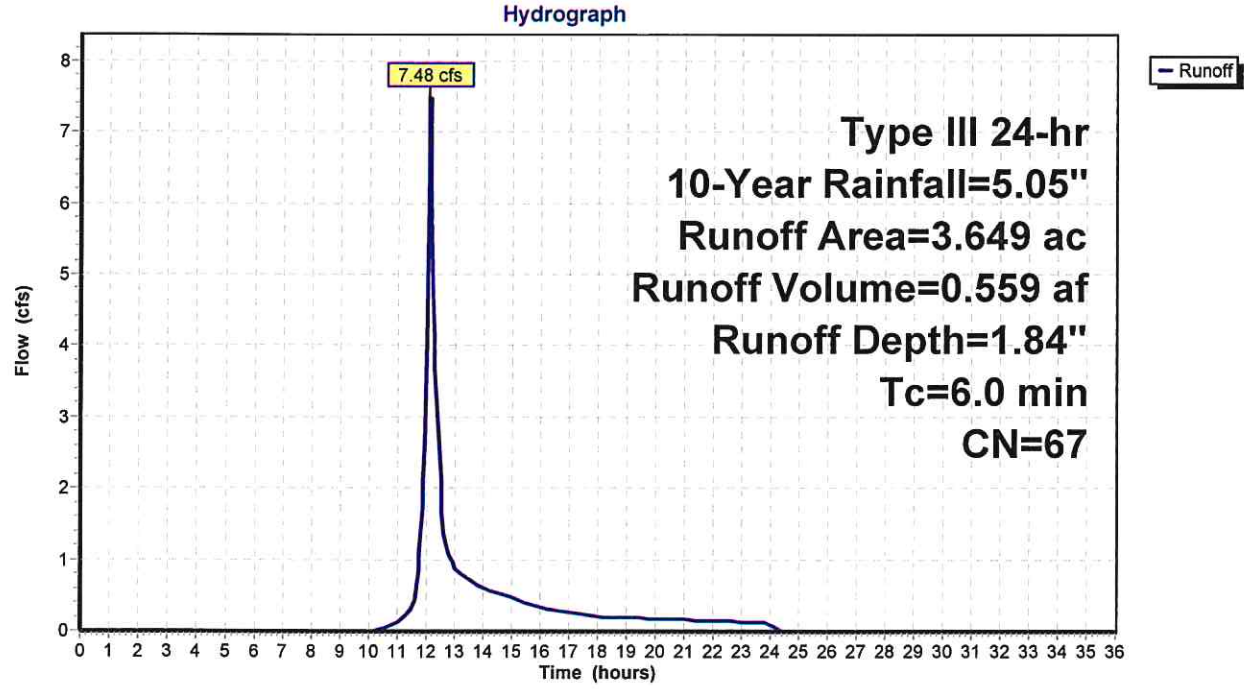
Runoff = 7.48 cfs @ 12.10 hrs, Volume= 0.559 af, Depth= 1.84"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.05"

	Area (ac)	CN	Description
*	0.435	98	Impervious Cover, HSG. A, C & D
	1.176	39	>75% Grass cover, Good, HSG A
	1.370	74	>75% Grass cover, Good, HSG C
	0.668	80	>75% Grass cover, Good, HSG D
	3.649	67	Weighted Average
	3.214		88.08% Pervious Area
	0.435		11.92% Impervious Area

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

Subcatchment WS#1D: ACCESS ROAD & GRASS COVER

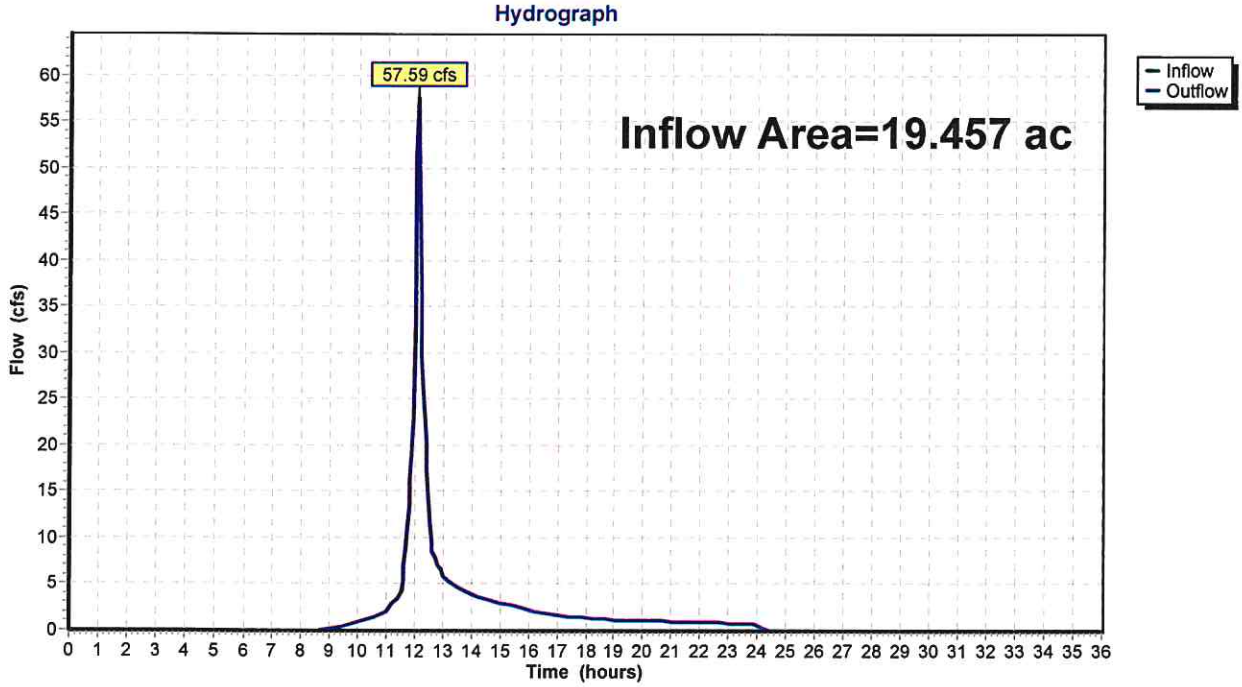


Summary for Reach E-POI: EXISTING

Inflow Area = 19.457 ac, 0.00% Impervious, Inflow Depth = 2.58" for 10-Year event
Inflow = 57.59 cfs @ 12.09 hrs, Volume= 4.178 af
Outflow = 57.59 cfs @ 12.09 hrs, Volume= 4.178 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Reach E-POI: EXISTING

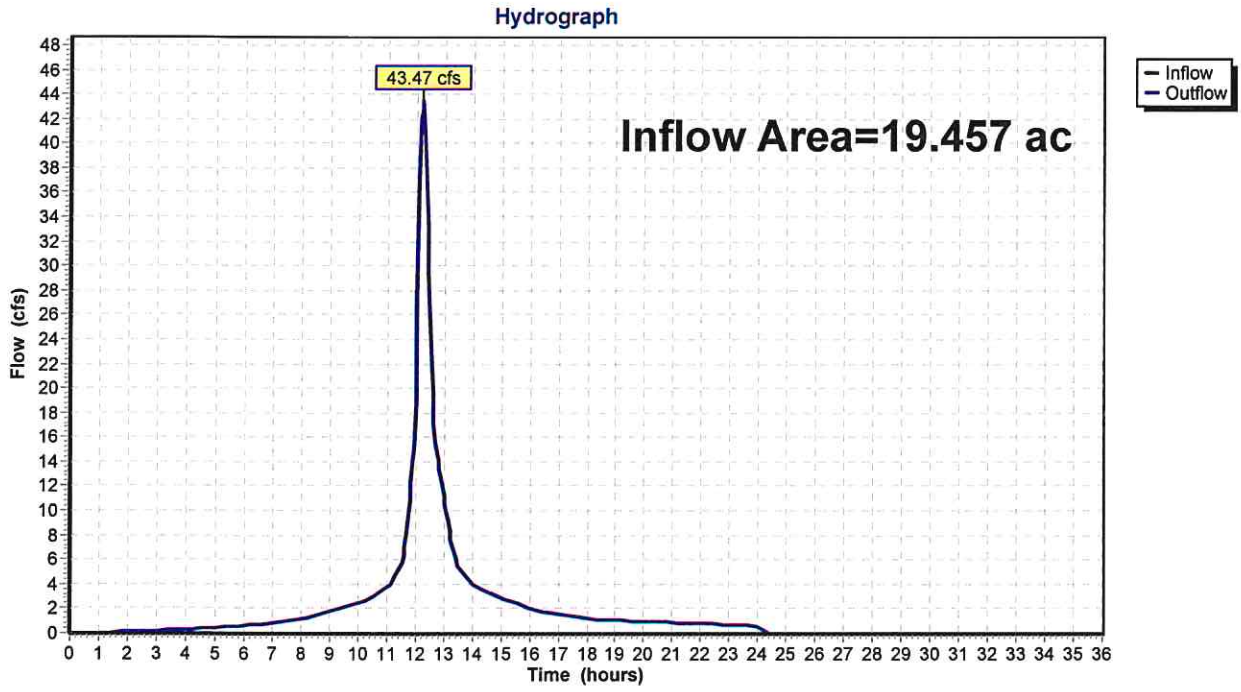


Summary for Reach P-POI: DEVELOPED

Inflow Area = 19.457 ac, 79.08% Impervious, Inflow Depth = 3.25" for 10-Year event
Inflow = 43.47 cfs @ 12.24 hrs, Volume= 5.262 af
Outflow = 43.47 cfs @ 12.24 hrs, Volume= 5.262 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Reach P-POI: DEVELOPED



Summary for Pond UFF#1: UP-FLO FILTER

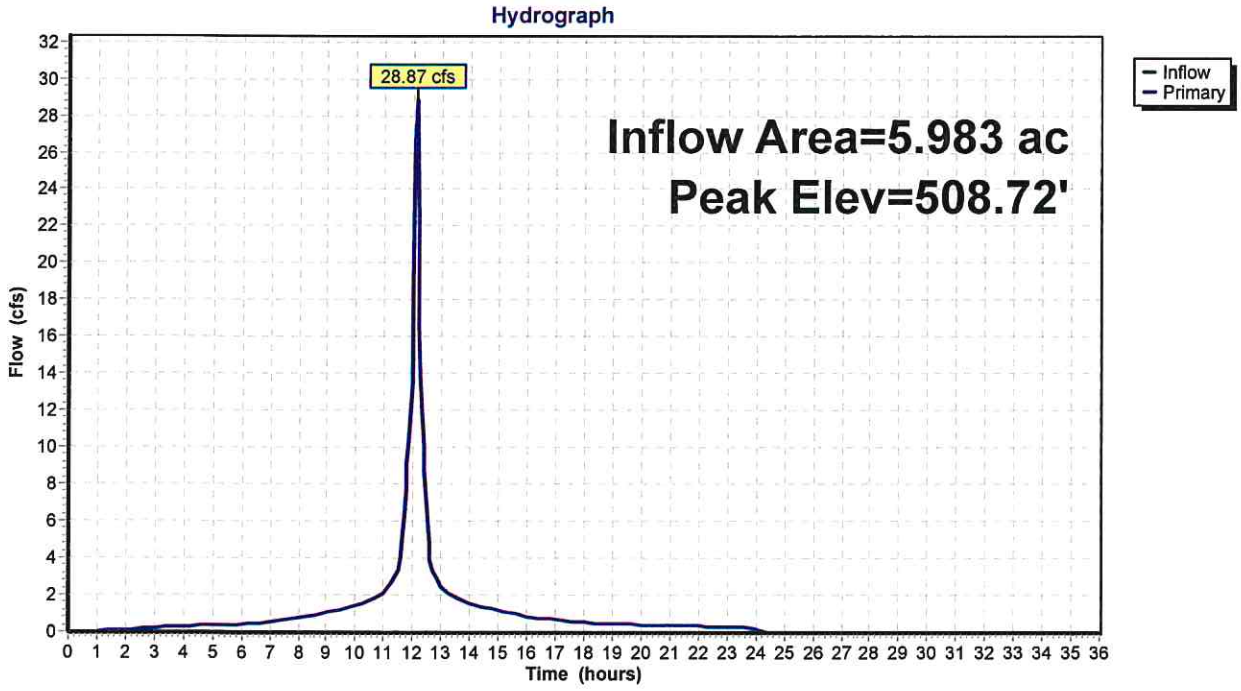
Inflow Area = 5.983 ac,100.00% Impervious, Inflow Depth = 4.81" for 10-Year event
Inflow = 28.87 cfs @ 12.09 hrs, Volume= 2.400 af
Outflow = 28.87 cfs @ 12.09 hrs, Volume= 2.400 af, Atten= 0%, Lag= 0.0 min
Primary = 28.87 cfs @ 12.09 hrs, Volume= 2.400 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 508.72' @ 12.09 hrs
Flood Elev= 500.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	496.50'	**18.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=28.10 cfs @ 12.09 hrs HW=508.15' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 28.10 cfs @ 15.90 fps)

Pond UFF#1: UP-FLO FILTER



Stage-Discharge for Pond UFF#1: UP-FLO FILTER

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
496.50	0.00	499.68	13.26	502.86	20.15	506.04	25.23
496.56	0.02	499.74	13.43	502.92	20.26	506.10	25.31
496.62	0.08	499.80	13.59	502.98	20.37	506.16	25.40
496.68	0.17	499.86	13.75	503.04	20.47	506.22	25.48
496.74	0.30	499.92	13.90	503.10	20.58	506.28	25.57
496.80	0.47	499.98	14.06	503.16	20.69	506.34	25.65
496.86	0.67	500.04	14.21	503.22	20.79	506.40	25.74
496.92	0.89	500.10	14.36	503.28	20.89	506.46	25.82
496.98	1.15	500.16	14.51	503.34	21.00	506.52	25.91
497.04	1.43	500.22	14.66	503.40	21.10	506.58	25.99
497.10	1.74	500.28	14.81	503.46	21.20	506.64	26.07
497.16	2.07	500.34	14.96	503.52	21.31	506.70	26.16
497.22	2.42	500.40	15.10	503.58	21.41	506.76	26.24
497.28	2.79	500.46	15.24	503.64	21.51	506.82	26.32
497.34	3.18	500.52	15.39	503.70	21.61	506.88	26.40
497.40	3.58	500.58	15.53	503.76	21.71	506.94	26.49
497.46	3.98	500.64	15.67	503.82	21.81	507.00	26.57
497.52	4.40	500.70	15.80	503.88	21.91	507.06	26.65
497.58	4.82	500.76	15.94	503.94	22.01	507.12	26.73
497.64	5.24	500.82	16.08	504.00	22.11	507.18	26.81
497.70	5.65	500.88	16.21	504.06	22.20	507.24	26.89
497.76	6.06	500.94	16.34	504.12	22.30	507.30	26.97
497.82	6.44	501.00	16.48	504.18	22.40	507.36	27.05
497.88	6.80	501.06	16.61	504.24	22.50	507.42	27.13
497.94	7.12	501.12	16.74	504.30	22.59	507.48	27.21
498.00	7.37	501.18	16.87	504.36	22.69	507.54	27.29
498.06	7.66	501.24	17.00	504.42	22.78	507.60	27.37
498.12	7.94	501.30	17.12	504.48	22.88	507.66	27.45
498.18	8.21	501.36	17.25	504.54	22.97	507.72	27.53
498.24	8.47	501.42	17.38	504.60	23.07	507.78	27.61
498.30	8.72	501.48	17.50	504.66	23.16	507.84	27.69
498.36	8.96	501.54	17.62	504.72	23.26	507.90	27.77
498.42	9.20	501.60	17.75	504.78	23.35	507.96	27.85
498.48	9.44	501.66	17.87	504.84	23.44	508.02	27.92
498.54	9.66	501.72	17.99	504.90	23.53	508.08	28.00
498.60	9.89	501.78	18.11	504.96	23.63	508.14	28.08
498.66	10.10	501.84	18.23	505.02	23.72	508.20	28.16
498.72	10.32	501.90	18.35	505.08	23.81	508.26	28.23
498.78	10.52	501.96	18.47	505.14	23.90	508.32	28.31
498.84	10.73	502.02	18.58	505.20	23.99	508.38	28.39
498.90	10.93	502.08	18.70	505.26	24.08	508.44	28.46
498.96	11.13	502.14	18.82	505.32	24.17	508.50	**28.54**
499.02	11.32	502.20	18.93	505.38	24.26		
499.08	11.51	502.26	19.05	505.44	24.35		
499.14	11.70	502.32	19.16	505.50	24.44		
499.20	11.88	502.38	19.27	505.56	24.53		
499.26	12.06	502.44	19.38	505.62	24.62		
499.32	12.24	502.50	19.50	505.68	24.70		
499.38	12.42	502.56	19.61	505.74	24.79		
499.44	12.59	502.62	19.72	505.80	24.88		
499.50	12.76	502.68	19.83	505.86	24.97		
499.56	12.93	502.74	19.94	505.92	25.05		
499.62	13.10	502.80	20.05	505.98	25.14		

Stage-Area-Storage for Pond UFF#1: UP-FLO FILTER

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
496.50	**0**	499.68	0	502.86	0	506.04	0
496.56	0	499.74	0	502.92	0	506.10	0
496.62	0	499.80	0	502.98	0	506.16	0
496.68	0	499.86	0	503.04	0	506.22	0
496.74	0	499.92	0	503.10	0	506.28	0
496.80	0	499.98	0	503.16	0	506.34	0
496.86	0	500.04	0	503.22	0	506.40	0
496.92	0	500.10	0	503.28	0	506.46	0
496.98	0	500.16	0	503.34	0	506.52	0
497.04	0	500.22	0	503.40	0	506.58	0
497.10	0	500.28	0	503.46	0	506.64	0
497.16	0	500.34	0	503.52	0	506.70	0
497.22	0	500.40	0	503.58	0	506.76	0
497.28	0	500.46	0	503.64	0	506.82	0
497.34	0	500.52	0	503.70	0	506.88	0
497.40	0	500.58	0	503.76	0	506.94	0
497.46	0	500.64	0	503.82	0	507.00	0
497.52	0	500.70	0	503.88	0	507.06	0
497.58	0	500.76	0	503.94	0	507.12	0
497.64	0	500.82	0	504.00	0	507.18	0
497.70	0	500.88	0	504.06	0	507.24	0
497.76	0	500.94	0	504.12	0	507.30	0
497.82	0	501.00	0	504.18	0	507.36	0
497.88	0	501.06	0	504.24	0	507.42	0
497.94	0	501.12	0	504.30	0	507.48	0
498.00	0	501.18	0	504.36	0	507.54	0
498.06	0	501.24	0	504.42	0	507.60	0
498.12	0	501.30	0	504.48	0	507.66	0
498.18	0	501.36	0	504.54	0	507.72	0
498.24	0	501.42	0	504.60	0	507.78	0
498.30	0	501.48	0	504.66	0	507.84	0
498.36	0	501.54	0	504.72	0	507.90	0
498.42	0	501.60	0	504.78	0	507.96	0
498.48	0	501.66	0	504.84	0	508.02	0
498.54	0	501.72	0	504.90	0	508.08	0
498.60	0	501.78	0	504.96	0	508.14	0
498.66	0	501.84	0	505.02	0	508.20	0
498.72	0	501.90	0	505.08	0	508.26	0
498.78	0	501.96	0	505.14	0	508.32	0
498.84	0	502.02	0	505.20	0	508.38	0
498.90	0	502.08	0	505.26	0	508.44	0
498.96	0	502.14	0	505.32	0	508.50	0
499.02	0	502.20	0	505.38	0		
499.08	0	502.26	0	505.44	0		
499.14	0	502.32	0	505.50	0		
499.20	0	502.38	0	505.56	0		
499.26	0	502.44	0	505.62	0		
499.32	0	502.50	0	505.68	0		
499.38	0	502.56	0	505.74	0		
499.44	0	502.62	0	505.80	0		
499.50	0	502.68	0	505.86	0		
499.56	0	502.74	0	505.92	0		
499.62	0	502.80	0	505.98	0		

Summary for Pond UFF#2: UP-FLO FILTER

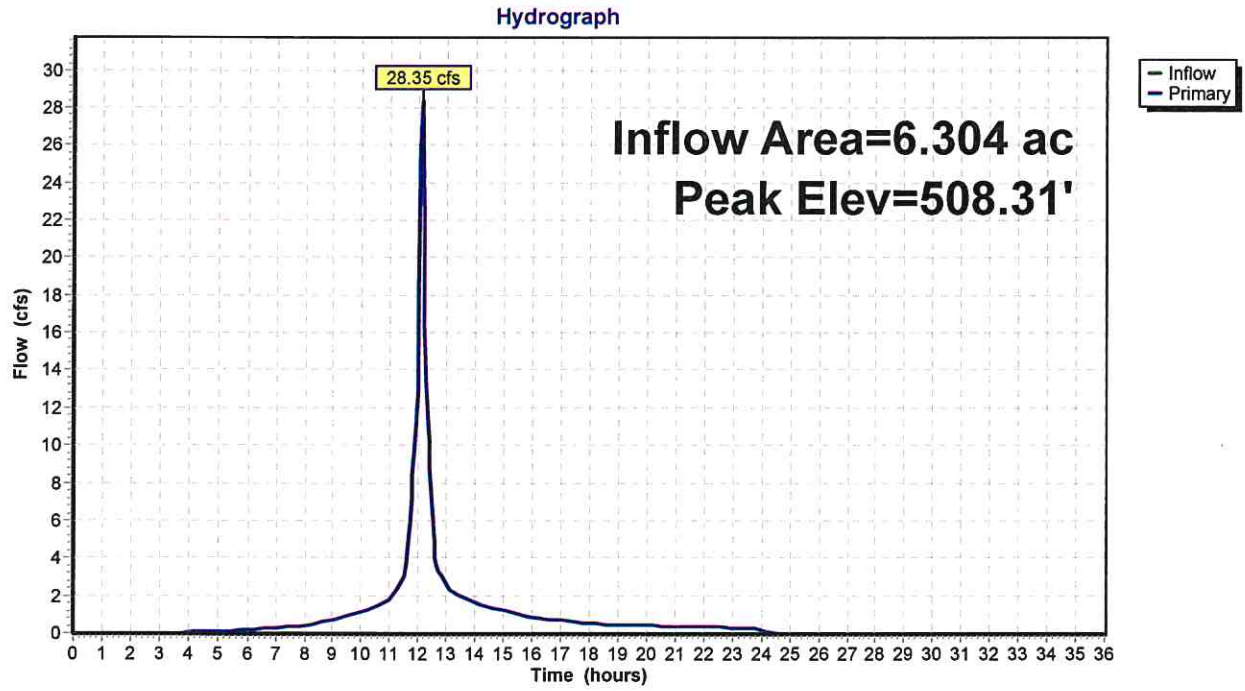
Inflow Area = 6.304 ac, 86.41% Impervious, Inflow Depth = 4.14" for 10-Year event
Inflow = 28.35 cfs @ 12.09 hrs, Volume= 2.174 af
Outflow = 28.35 cfs @ 12.09 hrs, Volume= 2.174 af, Atten= 0%, Lag= 0.0 min
Primary = 28.35 cfs @ 12.09 hrs, Volume= 2.174 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 508.31' @ 12.09 hrs
Flood Elev= 500.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	496.50'	**18.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=27.64 cfs @ 12.09 hrs HW=507.80' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 27.64 cfs @ 15.64 fps)

Pond UFF#2: UP-FLO FILTER



Stage-Discharge for Pond UFF#2: UP-FLO FILTER

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
496.50	0.00	499.68	13.26	502.86	20.15	506.04	25.23
496.56	0.02	499.74	13.43	502.92	20.26	506.10	25.31
496.62	0.08	499.80	13.59	502.98	20.37	506.16	25.40
496.68	0.17	499.86	13.75	503.04	20.47	506.22	25.48
496.74	0.30	499.92	13.90	503.10	20.58	506.28	25.57
496.80	0.47	499.98	14.06	503.16	20.69	506.34	25.65
496.86	0.67	500.04	14.21	503.22	20.79	506.40	25.74
496.92	0.89	500.10	14.36	503.28	20.89	506.46	25.82
496.98	1.15	500.16	14.51	503.34	21.00	506.52	25.91
497.04	1.43	500.22	14.66	503.40	21.10	506.58	25.99
497.10	1.74	500.28	14.81	503.46	21.20	506.64	26.07
497.16	2.07	500.34	14.96	503.52	21.31	506.70	26.16
497.22	2.42	500.40	15.10	503.58	21.41	506.76	26.24
497.28	2.79	500.46	15.24	503.64	21.51	506.82	26.32
497.34	3.18	500.52	15.39	503.70	21.61	506.88	26.40
497.40	3.58	500.58	15.53	503.76	21.71	506.94	26.49
497.46	3.98	500.64	15.67	503.82	21.81	507.00	26.57
497.52	4.40	500.70	15.80	503.88	21.91	507.06	26.65
497.58	4.82	500.76	15.94	503.94	22.01	507.12	26.73
497.64	5.24	500.82	16.08	504.00	22.11	507.18	26.81
497.70	5.65	500.88	16.21	504.06	22.20	507.24	26.89
497.76	6.06	500.94	16.34	504.12	22.30	507.30	26.97
497.82	6.44	501.00	16.48	504.18	22.40	507.36	27.05
497.88	6.80	501.06	16.61	504.24	22.50	507.42	27.13
497.94	7.12	501.12	16.74	504.30	22.59	507.48	27.21
498.00	7.37	501.18	16.87	504.36	22.69	507.54	27.29
498.06	7.66	501.24	17.00	504.42	22.78	507.60	27.37
498.12	7.94	501.30	17.12	504.48	22.88	507.66	27.45
498.18	8.21	501.36	17.25	504.54	22.97	507.72	27.53
498.24	8.47	501.42	17.38	504.60	23.07	507.78	27.61
498.30	8.72	501.48	17.50	504.66	23.16	507.84	27.69
498.36	8.96	501.54	17.62	504.72	23.26	507.90	27.77
498.42	9.20	501.60	17.75	504.78	23.35	507.96	27.85
498.48	9.44	501.66	17.87	504.84	23.44	508.02	27.92
498.54	9.66	501.72	17.99	504.90	23.53	508.08	28.00
498.60	9.89	501.78	18.11	504.96	23.63	508.14	**28.08**
498.66	10.10	501.84	18.23	505.02	23.72		
498.72	10.32	501.90	18.35	505.08	23.81		
498.78	10.52	501.96	18.47	505.14	23.90		
498.84	10.73	502.02	18.58	505.20	23.99		
498.90	10.93	502.08	18.70	505.26	24.08		
498.96	11.13	502.14	18.82	505.32	24.17		
499.02	11.32	502.20	18.93	505.38	24.26		
499.08	11.51	502.26	19.05	505.44	24.35		
499.14	11.70	502.32	19.16	505.50	24.44		
499.20	11.88	502.38	19.27	505.56	24.53		
499.26	12.06	502.44	19.38	505.62	24.62		
499.32	12.24	502.50	19.50	505.68	24.70		
499.38	12.42	502.56	19.61	505.74	24.79		
499.44	12.59	502.62	19.72	505.80	24.88		
499.50	12.76	502.68	19.83	505.86	24.97		
499.56	12.93	502.74	19.94	505.92	25.05		
499.62	13.10	502.80	20.05	505.98	25.14		

Stage-Area-Storage for Pond UFF#2: UP-FLO FILTER

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
496.50	**0**	499.68	0	502.86	0	506.04	0
496.56	0	499.74	0	502.92	0	506.10	0
496.62	0	499.80	0	502.98	0	506.16	0
496.68	0	499.86	0	503.04	0	506.22	0
496.74	0	499.92	0	503.10	0	506.28	0
496.80	0	499.98	0	503.16	0	506.34	0
496.86	0	500.04	0	503.22	0	506.40	0
496.92	0	500.10	0	503.28	0	506.46	0
496.98	0	500.16	0	503.34	0	506.52	0
497.04	0	500.22	0	503.40	0	506.58	0
497.10	0	500.28	0	503.46	0	506.64	0
497.16	0	500.34	0	503.52	0	506.70	0
497.22	0	500.40	0	503.58	0	506.76	0
497.28	0	500.46	0	503.64	0	506.82	0
497.34	0	500.52	0	503.70	0	506.88	0
497.40	0	500.58	0	503.76	0	506.94	0
497.46	0	500.64	0	503.82	0	507.00	0
497.52	0	500.70	0	503.88	0	507.06	0
497.58	0	500.76	0	503.94	0	507.12	0
497.64	0	500.82	0	504.00	0	507.18	0
497.70	0	500.88	0	504.06	0	507.24	0
497.76	0	500.94	0	504.12	0	507.30	0
497.82	0	501.00	0	504.18	0	507.36	0
497.88	0	501.06	0	504.24	0	507.42	0
497.94	0	501.12	0	504.30	0	507.48	0
498.00	0	501.18	0	504.36	0	507.54	0
498.06	0	501.24	0	504.42	0	507.60	0
498.12	0	501.30	0	504.48	0	507.66	0
498.18	0	501.36	0	504.54	0	507.72	0
498.24	0	501.42	0	504.60	0	507.78	0
498.30	0	501.48	0	504.66	0	507.84	0
498.36	0	501.54	0	504.72	0	507.90	0
498.42	0	501.60	0	504.78	0	507.96	0
498.48	0	501.66	0	504.84	0	508.02	0
498.54	0	501.72	0	504.90	0	508.08	0
498.60	0	501.78	0	504.96	0	508.14	0
498.66	0	501.84	0	505.02	0		
498.72	0	501.90	0	505.08	0		
498.78	0	501.96	0	505.14	0		
498.84	0	502.02	0	505.20	0		
498.90	0	502.08	0	505.26	0		
498.96	0	502.14	0	505.32	0		
499.02	0	502.20	0	505.38	0		
499.08	0	502.26	0	505.44	0		
499.14	0	502.32	0	505.50	0		
499.20	0	502.38	0	505.56	0		
499.26	0	502.44	0	505.62	0		
499.32	0	502.50	0	505.68	0		
499.38	0	502.56	0	505.74	0		
499.44	0	502.62	0	505.80	0		
499.50	0	502.68	0	505.86	0		
499.56	0	502.74	0	505.92	0		
499.62	0	502.80	0	505.98	0		

Summary for Pond UGSP#1: P-UG SOLID PIPE SYSTEM

Inflow Area = 12.287 ac, 93.03% Impervious, Inflow Depth = 4.47" for 10-Year event
Inflow = 57.21 cfs @ 12.09 hrs, Volume= 4.574 af
Outflow = 36.62 cfs @ 12.19 hrs, Volume= 4.574 af, Atten= 36%, Lag= 6.3 min
Primary = 36.62 cfs @ 12.19 hrs, Volume= 4.574 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 486.50' @ 12.19 hrs Surf.Area= 16,081 sf Storage= 29,323 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 8.5 min (772.7 - 764.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	483.60'	0 cf	**44.67'W x 360.00'L x 5.58'H Field A** 89,796 cf Overall - 65,984 cf Embedded = 23,812 cf x 0.0% Voids
#2A	483.60'	55,584 cf	**ADS N-12 60"** x 144 Inside #1 Inside= 59.5"W x 59.5"H => 19.30 sf x 20.00'L = 386.0 cf Outside= 67.0"W x 67.0"H => 22.92 sf x 20.00'L = 458.4 cf 8 Rows of 18 Chambers
		55,584 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	483.60'	**30.0" W x 12.0" H Vert. Orifice/Grate** C= 0.600
#2	Primary	485.40'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=36.42 cfs @ 12.19 hrs HW=486.49' (Free Discharge)
↑—**1=Orifice/Grate** (Orifice Controls 18.58 cfs @ 7.43 fps)
└—**2=Sharp-Crested Rectangular Weir** (Weir Controls 17.84 cfs @ 3.42 fps)

Pond UGSP#1: P-UG SOLID PIPE SYSTEM - Chamber Wizard Field A

Chamber Model = ADS N-12 60" (ADS N-12® Pipe)
Inside= 59.5"W x 59.5"H => 19.30 sf x 20.00'L = 386.0 cf
Outside= 67.0"W x 67.0"H => 22.92 sf x 20.00'L = 458.4 cf

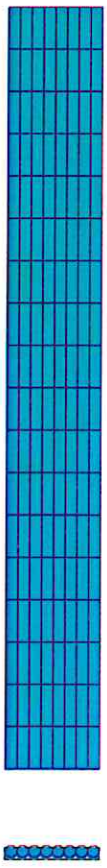
18 Chambers/Row x 20.00' Long = 360.00' Row Length
8 Rows x 67.0" Wide = 44.67' Base Width
67.0" Chamber Height = 5.58' Field Height

144 Chambers x 386.0 cf = 55,584.0 cf Chamber Storage
144 Chambers x 458.4 cf = 66,012.0 cf Displacement

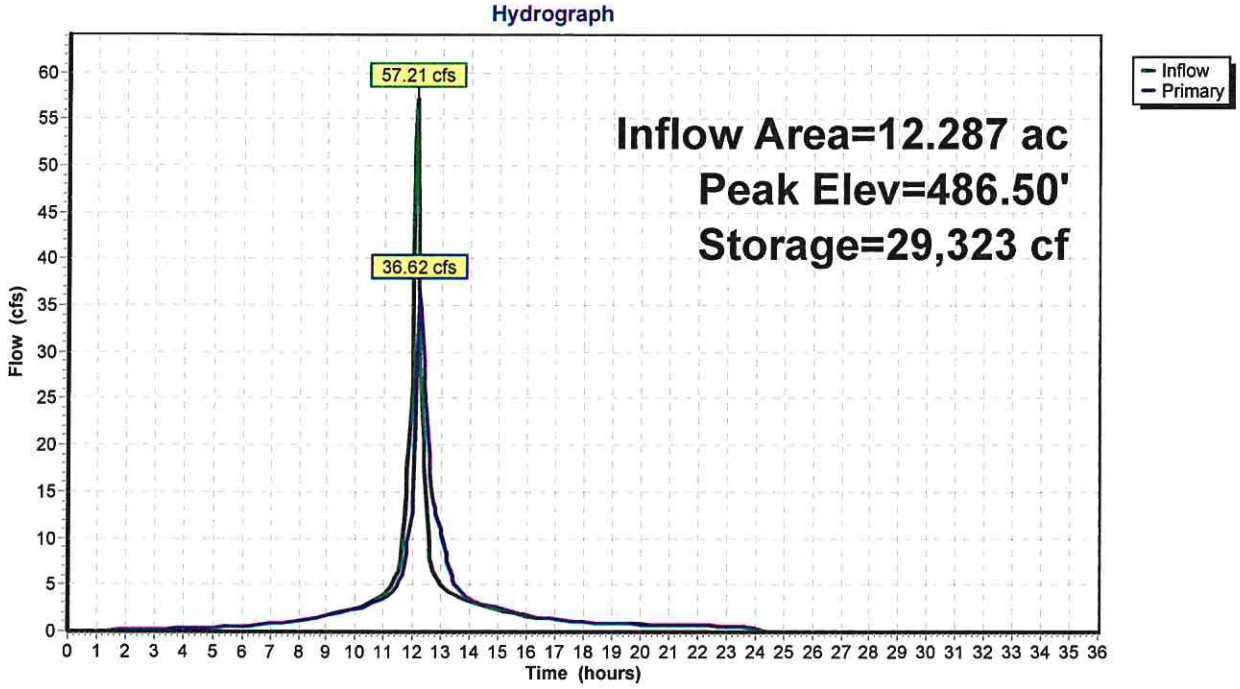
89,796.1 cf Field - 66,012.0 cf Chambers = 23,784.0 cf Stone x 0.0% Voids = 0.0 cf Stone Storage

Chamber Storage = 55,584.0 cf = 1.276 af
Overall Storage Efficiency = 61.9%
Overall System Size = 360.00' x 44.67' x 5.58'

144 Chambers
3,325.8 cy Field
880.9 cy Stone



Pond UGSP#1: P-UG SOLID PIPE SYSTEM



Stage-Discharge for Pond UGSP#1: P-UG SOLID PIPE SYSTEM

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
483.60	0.00	485.72	18.18	487.84	79.50
483.64	0.06	485.76	18.93	487.88	80.91
483.68	0.18	485.80	19.71	487.92	82.32
483.72	0.33	485.84	20.51	487.96	83.75
483.76	0.51	485.88	21.34	488.00	85.17
483.80	0.72	485.92	22.19	488.04	86.60
483.84	0.94	485.96	23.07	488.08	88.04
483.88	1.19	486.00	23.96	488.12	89.48
483.92	1.45	486.04	24.88	488.16	90.93
483.96	1.73	486.08	25.81	488.20	92.38
484.00	2.03	486.12	26.77	488.24	93.84
484.04	2.34	486.16	27.74	488.28	95.30
484.08	2.67	486.20	28.73	488.32	96.77
484.12	3.01	486.24	29.73	488.36	98.24
484.16	3.36	486.28	30.76	488.40	99.71
484.20	3.73	486.32	31.79	488.44	101.19
484.24	4.11	486.36	32.85	488.48	102.67
484.28	4.50	486.40	33.92	488.52	104.15
484.32	4.90	486.44	35.00	488.56	105.64
484.36	5.32	486.48	36.09	488.60	107.14
484.40	5.74	486.52	37.20	488.64	108.63
484.44	6.18	486.56	38.33	488.68	110.13
484.48	6.62	486.60	39.46	488.72	111.63
484.52	7.08	486.64	40.61	488.76	113.14
484.56	7.55	486.68	41.77	488.80	114.65
484.60	8.02	486.72	42.94	488.84	116.16
484.64	8.45	486.76	44.12	488.88	117.67
484.68	8.83	486.80	45.32	488.92	119.19
484.72	9.18	486.84	46.52	488.96	120.71
484.76	9.51	486.88	47.74	489.00	122.23
484.80	9.83	486.92	48.96	489.04	123.76
484.84	10.14	486.96	50.20	489.08	125.28
484.88	10.43	487.00	51.45	489.12	126.81
484.92	10.72	487.04	52.70	489.16	**128.34**
484.96	10.99	487.08	53.97		
485.00	11.26	487.12	55.24		
485.04	11.52	487.16	56.52		
485.08	11.78	487.20	57.81		
485.12	12.03	487.24	59.11		
485.16	12.27	487.28	60.42		
485.20	12.51	487.32	61.74		
485.24	12.75	487.36	63.06		
485.28	12.97	487.40	64.39		
485.32	13.20	487.44	65.73		
485.36	13.42	487.48	67.08		
485.40	13.64	487.52	68.43		
485.44	13.98	487.56	69.79		
485.48	14.43	487.60	71.16		
485.52	14.94	487.64	72.53		
485.56	15.51	487.68	73.91		
485.60	16.12	487.72	75.30		
485.64	16.78	487.76	76.69		
485.68	17.46	487.80	78.09		

Stage-Area-Storage for Pond UGSP#1: P-UG SOLID PIPE SYSTEM

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
483.60	0	485.72	18,318	487.84	47,220
483.64	0	485.76	18,869	487.88	47,681
483.68	0	485.80	19,422	487.92	48,134
483.72	0	485.84	19,978	487.96	48,580
483.76	0	485.88	20,536	488.00	49,018
483.80	0	485.92	21,096	488.04	49,449
483.84	0	485.96	21,657	488.08	49,871
483.88	0	486.00	22,220	488.12	50,285
483.92	28	486.04	22,785	488.16	50,690
483.96	84	486.08	23,351	488.20	51,085
484.00	217	486.12	23,918	488.24	51,471
484.04	381	486.16	24,486	488.28	51,846
484.08	575	486.20	25,055	488.32	52,211
484.12	793	486.24	25,624	488.36	52,564
484.16	1,032	486.28	26,195	488.40	52,905
484.20	1,289	486.32	26,765	488.44	53,233
484.24	1,564	486.36	27,336	488.48	53,548
484.28	1,856	486.40	27,907	488.52	53,848
484.32	2,162	486.44	28,478	488.56	54,133
484.36	2,482	486.48	29,049	488.60	54,401
484.40	2,816	486.52	29,620	488.64	54,651
484.44	3,162	486.56	30,190	488.68	54,881
484.48	3,519	486.60	30,759	488.72	55,089
484.52	3,888	486.64	31,328	488.76	55,272
484.56	4,268	486.68	31,896	488.80	55,424
484.60	4,657	486.72	32,462	488.84	55,534
484.64	5,057	486.76	33,028	488.88	**55,599**
484.68	5,465	486.80	33,592	488.92	**55,584**
484.72	5,882	486.84	34,154	488.96	55,584
484.76	6,308	486.88	34,715	489.00	55,584
484.80	6,742	486.92	35,274	489.04	55,584
484.84	7,184	486.96	35,831	489.08	55,584
484.88	7,632	487.00	36,385	489.12	55,584
484.92	8,088	487.04	36,938	489.16	55,584
484.96	8,551	487.08	37,488		
485.00	9,021	487.12	38,035		
485.04	9,496	487.16	38,579		
485.08	9,978	487.20	39,121		
485.12	10,465	487.24	39,659		
485.16	10,958	487.28	40,194		
485.20	11,456	487.32	40,725		
485.24	11,959	487.36	41,253		
485.28	12,467	487.40	41,777		
485.32	12,980	487.44	42,296		
485.36	13,497	487.48	42,812		
485.40	14,018	487.52	43,322		
485.44	14,544	487.56	43,829		
485.48	15,073	487.60	44,330		
485.52	15,606	487.64	44,826		
485.56	16,142	487.68	45,316		
485.60	16,681	487.72	45,801		
485.64	17,224	487.76	46,281		
485.68	17,770	487.80	46,754		

Summary for Pond UIS: P-UG INFILTRATION SYSTEM

Inflow Area = 3.521 ac,100.00% Impervious, Inflow Depth = 4.81" for 10-Year event
Inflow = 16.99 cfs @ 12.09 hrs, Volume= 1.412 af
Outflow = 7.21 cfs @ 12.30 hrs, Volume= 1.412 af, Atten= 58%, Lag= 12.9 min
Discarded = 1.80 cfs @ 12.30 hrs, Volume= 1.283 af
Primary = 5.42 cfs @ 12.30 hrs, Volume= 0.129 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 485.55' @ 12.30 hrs Surf.Area= 5,777 sf Storage= 19,461 cf

Plug-Flow detention time= 88.1 min calculated for 1.410 af (100% of inflow)
Center-of-Mass det. time= 88.0 min (835.8 - 747.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	480.50'	8,678 cf	**31.00'W x 186.37'L x 6.00'H Field A** 34,664 cf Overall - 12,969 cf Embedded = 21,695 cf x 40.0% Voids
#2A	481.50'	12,969 cf	**Cultec R-902HD** x 200 Inside #1 Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap 4 Rows of 50 Chambers Cap Storage= +2.8 cf x 2 x 4 rows = 22.1 cf
		21,647 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	480.50'	**5.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 477.50' Phase-In= 0.01'
#2	Primary	485.10'	**5.5' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Discarded OutFlow Max=1.79 cfs @ 12.30 hrs HW=485.55' (Free Discharge)
↑**1=Exfiltration** (Controls 1.79 cfs)

Primary OutFlow Max=5.38 cfs @ 12.30 hrs HW=485.55' (Free Discharge)
↑**2=Sharp-Crested Rectangular Weir** (Weir Controls 5.38 cfs @ 2.20 fps)

Pond UIS: P-UG INFILTRATION SYSTEM - Chamber Wizard Field A

Chamber Model = Cultec R-902HD (Cultec Recharger® 902HD)
Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf
Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap
Cap Storage= +2.8 cf x 2 x 4 rows = 22.1 cf

78.0" Wide + 12.0" Spacing = 90.0" C-C Row Spacing

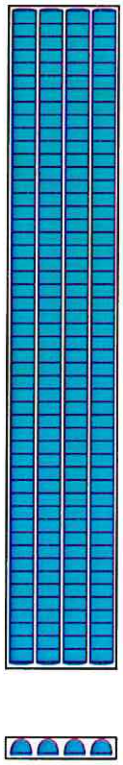
50 Chambers/Row x 3.67' Long +0.52' Cap Length x 2 = 184.37' Row Length +12.0" End Stone x 2 = 186.37' Base Length
4 Rows x 78.0" Wide + 12.0" Spacing x 3 + 12.0" Side Stone x 2 = 31.00' Base Width
12.0" Base + 48.0" Chamber Height + 12.0" Cover = 6.00' Field Height

200 Chambers x 64.7 cf + 2.8 cf Cap Volume x 2 x 4 Rows = 12,969.1 cf Chamber Storage

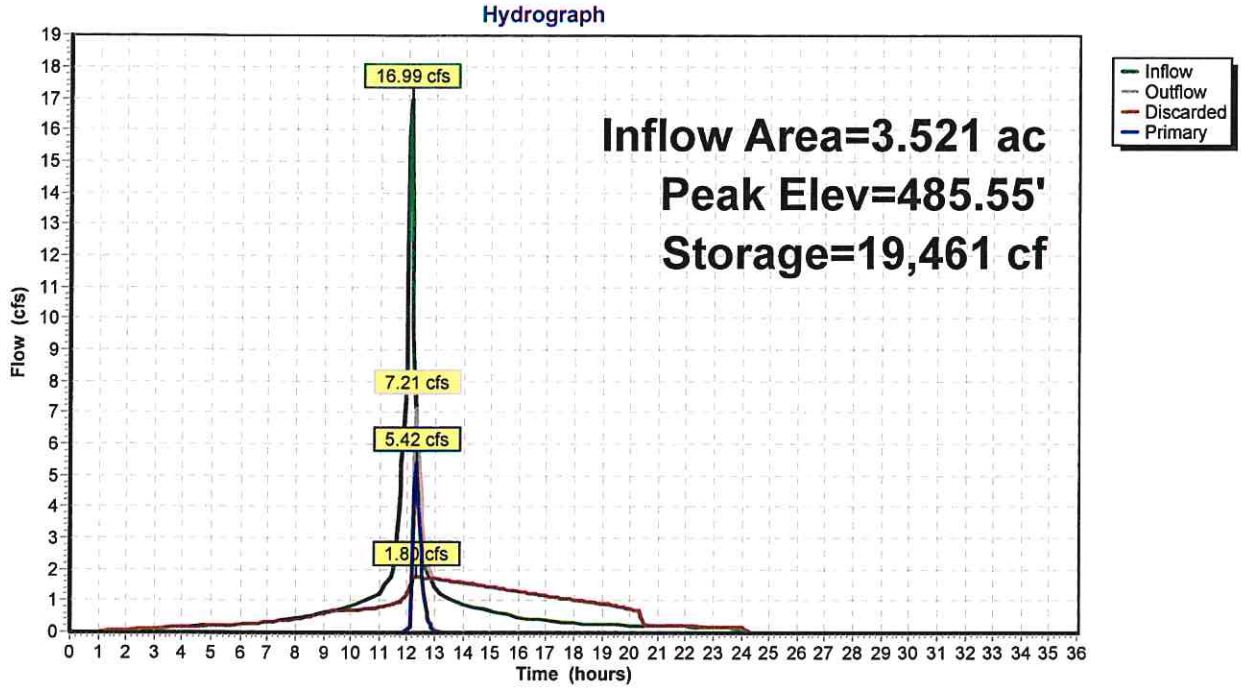
34,664.2 cf Field - 12,969.1 cf Chambers = 21,695.1 cf Stone x 40.0% Voids = 8,678.0 cf Stone Storage

Chamber Storage + Stone Storage = 21,647.1 cf = 0.497 af
Overall Storage Efficiency = 62.4%
Overall System Size = 186.37' x 31.00' x 6.00'

200 Chambers
1,283.9 cy Field
803.5 cy Stone



Pond UIS: P-UG INFILTRATION SYSTEM



Stage-Discharge for Pond UIS: P-UG INFILTRATION SYSTEM

Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)
480.50	0.00	0.00	0.00
480.60	0.69	0.69	0.00
480.70	0.71	0.71	0.00
480.80	0.74	0.74	0.00
480.90	0.76	0.76	0.00
481.00	0.78	0.78	0.00
481.10	0.80	0.80	0.00
481.20	0.82	0.82	0.00
481.30	0.85	0.85	0.00
481.40	0.87	0.87	0.00
481.50	0.89	0.89	0.00
481.60	0.91	0.91	0.00
481.70	0.94	0.94	0.00
481.80	0.96	0.96	0.00
481.90	0.98	0.98	0.00
482.00	1.00	1.00	0.00
482.10	1.03	1.03	0.00
482.20	1.05	1.05	0.00
482.30	1.07	1.07	0.00
482.40	1.09	1.09	0.00
482.50	1.11	1.11	0.00
482.60	1.14	1.14	0.00
482.70	1.16	1.16	0.00
482.80	1.18	1.18	0.00
482.90	1.20	1.20	0.00
483.00	1.23	1.23	0.00
483.10	1.25	1.25	0.00
483.20	1.27	1.27	0.00
483.30	1.29	1.29	0.00
483.40	1.32	1.32	0.00
483.50	1.34	1.34	0.00
483.60	1.36	1.36	0.00
483.70	1.38	1.38	0.00
483.80	1.40	1.40	0.00
483.90	1.43	1.43	0.00
484.00	1.45	1.45	0.00
484.10	1.47	1.47	0.00
484.20	1.49	1.49	0.00
484.30	1.52	1.52	0.00
484.40	1.54	1.54	0.00
484.50	1.56	1.56	0.00
484.60	1.58	1.58	0.00
484.70	1.60	1.60	0.00
484.80	1.63	1.63	0.00
484.90	1.65	1.65	0.00
485.00	1.67	1.67	0.00
485.10	1.69	1.69	0.00
485.20	2.28	1.72	0.57
485.30	3.34	1.74	1.60
485.40	4.68	1.76	2.92
485.50	6.27	1.78	4.48
485.60	8.05	1.81	6.24
485.70	10.00	1.83	8.18
485.80	12.12	1.85	10.27
485.90	14.37	1.87	12.49
486.00	16.75	1.89	14.85
486.10	19.25	1.92	17.33
486.20	21.86	1.94	19.92
486.30	24.57	1.96	22.61
486.40	27.38	1.98	25.40
486.50	**30.28**	**2.01**	**28.28**

Stage-Area-Storage for Pond UIS: P-UG INFILTRATION SYSTEM

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
480.50	5,777	0
480.60	5,777	231
480.70	5,777	462
480.80	5,777	693
480.90	5,777	924
481.00	5,777	1,155
481.10	5,777	1,387
481.20	5,777	1,618
481.30	5,777	1,849
481.40	5,777	2,080
481.50	5,777	2,311
481.60	5,777	2,796
481.70	5,777	3,283
481.80	5,777	3,768
481.90	5,777	4,250
482.00	5,777	4,731
482.10	5,777	5,211
482.20	5,777	5,691
482.30	5,777	6,168
482.40	5,777	6,641
482.50	5,777	7,113
482.60	5,777	7,585
482.70	5,777	8,055
482.80	5,777	8,521
482.90	5,777	8,985
483.00	5,777	9,448
483.10	5,777	9,907
483.20	5,777	10,366
483.30	5,777	10,822
483.40	5,777	11,275
483.50	5,777	11,727
483.60	5,777	12,175
483.70	5,777	12,620
483.80	5,777	13,062
483.90	5,777	13,499
484.00	5,777	13,933
484.10	5,777	14,362
484.20	5,777	14,784
484.30	5,777	15,202
484.40	5,777	15,612
484.50	5,777	16,016
484.60	5,777	16,411
484.70	5,777	16,798
484.80	5,777	17,174
484.90	5,777	17,540
485.00	5,777	17,894
485.10	5,777	18,232
485.20	5,777	18,547
485.30	5,777	18,833
485.40	5,777	19,093
485.50	5,777	19,336
485.60	5,777	19,567
485.70	5,777	19,798
485.80	5,777	20,029
485.90	5,777	20,261
486.00	5,777	20,492
486.10	5,777	20,723
486.20	5,777	20,954
486.30	5,777	21,185
486.40	5,777	21,416
486.50	5,777	**21,647**

Time span=0.00-36.00 hrs, dt=0.05 hrs, 721 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 WS#1: EXISTING Runoff Area=19.457 ac 0.00% Impervious Runoff Depth=6.08"
Tc=6.0 min CN=76 Runoff=134.21 cfs 9.851 af

Subcatchment WS#1A: 37% ROOFTOP Runoff Area=3.521 ac 100.00% Impervious Runoff Depth=8.76"
Tc=6.0 min CN=98 Runoff=30.39 cfs 2.570 af

Subcatchment WS#1B: 63% ROOFTOP Runoff Area=5.983 ac 100.00% Impervious Runoff Depth=8.76"
Tc=6.0 min CN=98 Runoff=51.65 cfs 4.367 af

Subcatchment WS#1C: LOADING AREA & ROAD Runoff Area=6.304 ac 86.41% Impervious Runoff Depth=8.03"
Tc=6.0 min CN=92 Runoff=52.98 cfs 4.221 af

Subcatchment WS#1D: ACCESS ROAD & GRASS Runoff Area=3.649 ac 11.92% Impervious Runoff Depth=4.96"
Tc=6.0 min CN=67 Runoff=20.82 cfs 1.510 af

Reach E-POI: EXISTING Inflow=134.21 cfs 9.851 af
Outflow=134.21 cfs 9.851 af

Reach P-POI: DEVELOPED Inflow=121.60 cfs 10.901 af
Outflow=121.60 cfs 10.901 af

Pond UFF#1: UP-FLO FILTER Peak Elev=533.95' Inflow=51.65 cfs 4.367 af
Outflow=51.65 cfs 4.367 af

Pond UFF#2: UP-FLO FILTER Peak Elev=535.88' Inflow=52.98 cfs 4.221 af
Outflow=52.98 cfs 4.221 af

Pond UGSP#1: P-UG SOLID PIPE SYSTEM Peak Elev=487.84' Storage=47,186 cf Inflow=104.63 cfs 8.588 af
Outflow=79.38 cfs 8.588 af

Pond UIS: P-UG INFILTRATIONSYSTEM Peak Elev=486.47' Storage=21,587 cf Inflow=30.39 cfs 2.570 af
Discarded=2.00 cfs 1.767 af Primary=27.51 cfs 0.803 af Outflow=29.51 cfs 2.570 af

Total Runoff Area = 38.914 ac Runoff Volume = 22.519 af Average Runoff Depth = 6.94"
60.46% Pervious = 23.528 ac 39.54% Impervious = 15.386 ac

Summary for Subcatchment WS#1: EXISTING

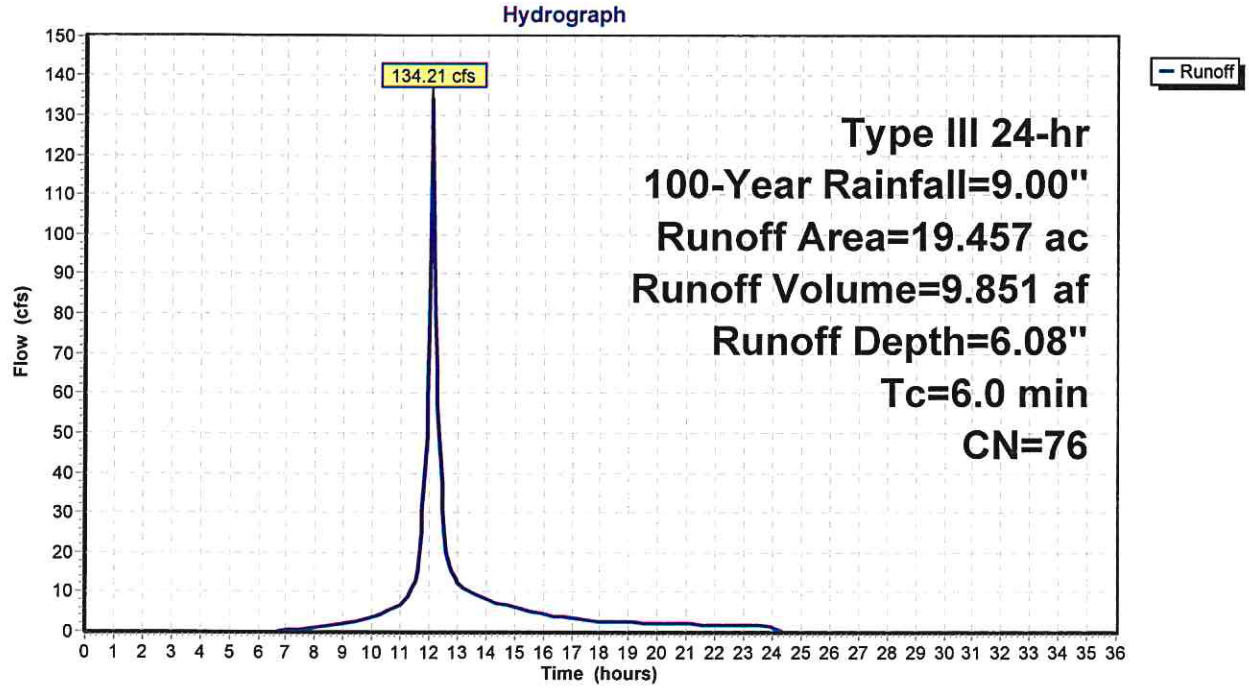
Runoff = 134.21 cfs @ 12.09 hrs, Volume= 9.851 af, Depth= 6.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=9.00"

	Area (ac)	CN	Description
	3.838	39	>75% Grass cover, Good, HSG A
	5.634	74	>75% Grass cover, Good, HSG C
	2.094	80	>75% Grass cover, Good, HSG D
*	0.076	72	Dirt, HSG A
	1.065	87	Dirt roads, HSG C
	0.058	89	Dirt roads, HSG D
	1.697	96	Gravel surface, HSG A
	4.335	96	Gravel surface, HSG C
	0.660	96	Gravel surface, HSG D
	19.457	76	Weighted Average
	19.457		100.00% Pervious Area

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

Subcatchment WS#1: EXISTING



Summary for Subcatchment WS#1A: 37% ROOFTOP

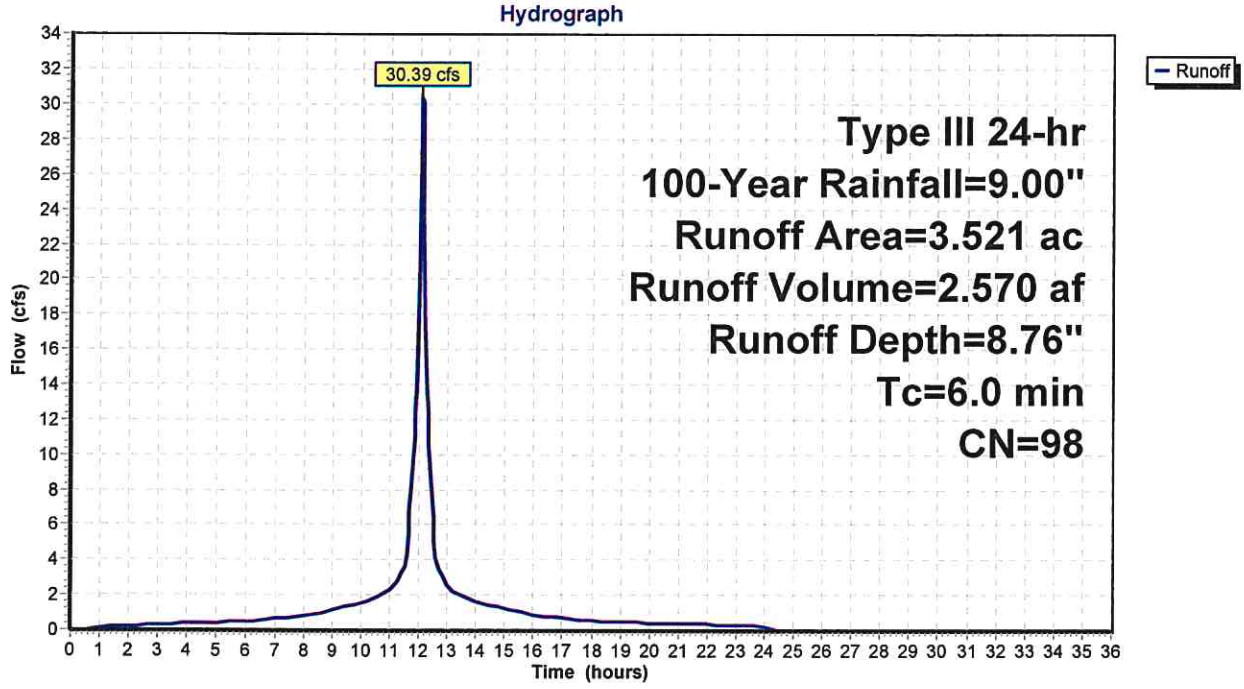
Runoff = 30.39 cfs @ 12.09 hrs, Volume= 2.570 af, Depth= 8.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=9.00"

	Area (ac)	CN	Description
*	3.521	98	Rooftop, HSG A, C, D
	3.521		100.00% Impervious Area

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

Subcatchment WS#1A: 37% ROOFTOP



Summary for Subcatchment WS#1B: 63% ROOFTOP

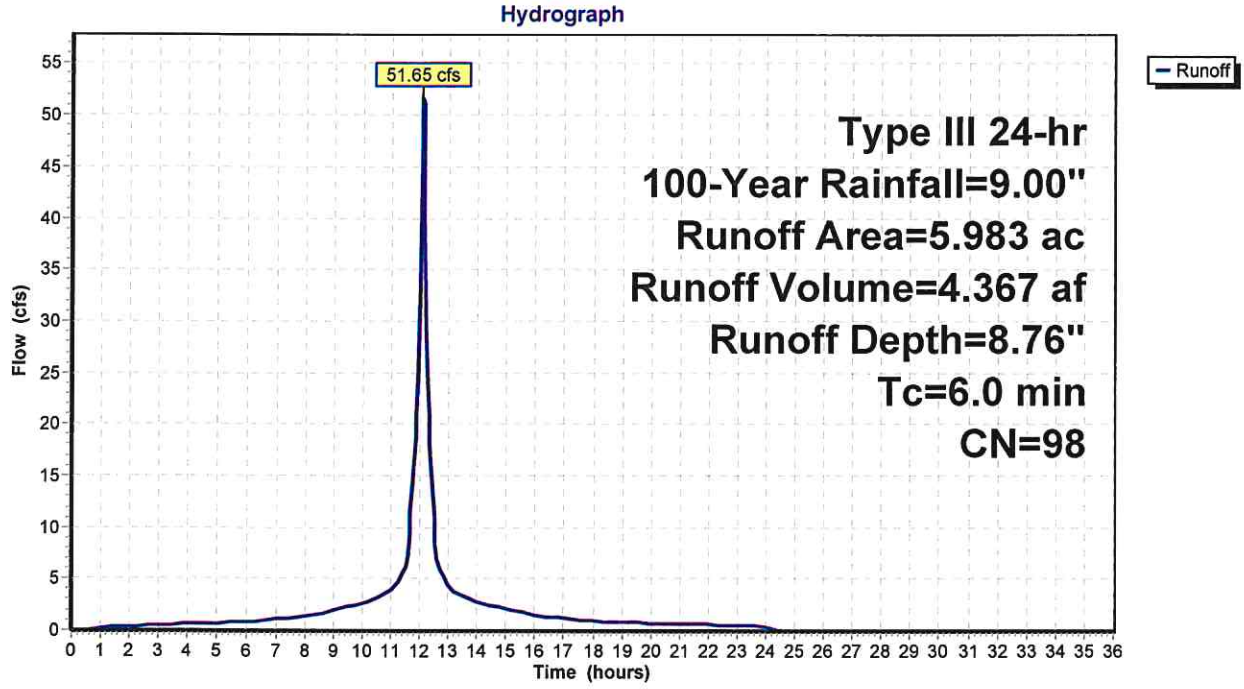
Runoff = 51.65 cfs @ 12.09 hrs, Volume= 4.367 af, Depth= 8.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=9.00"

	Area (ac)	CN	Description
*	5.983	98	Rooftop, HSG A, C, D
	5.983		100.00% Impervious Area

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

Subcatchment WS#1B: 63% ROOFTOP



Summary for Subcatchment WS#1C: LOADING AREA & ROAD

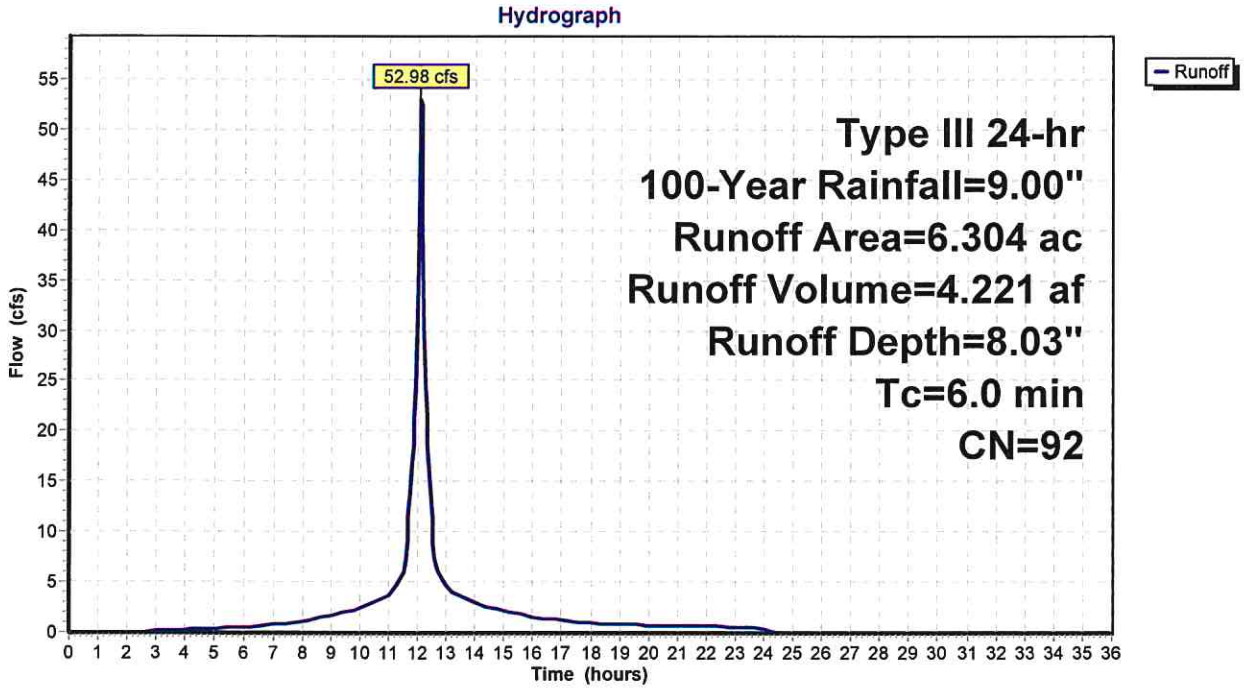
Runoff = 52.98 cfs @ 12.09 hrs, Volume= 4.221 af, Depth= 8.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=9.00"

	Area (ac)	CN	Description
*	5.447	98	Impervious Cover, HSG A, C, D
	0.408	39	>75% Grass cover, Good, HSG A
	0.449	74	>75% Grass cover, Good, HSG C
	6.304	92	Weighted Average
	0.857		13.59% Pervious Area
	5.447		86.41% Impervious Area

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

Subcatchment WS#1C: LOADING AREA & ROAD



Summary for Subcatchment WS#1D: ACCESS ROAD & GRASS COVER

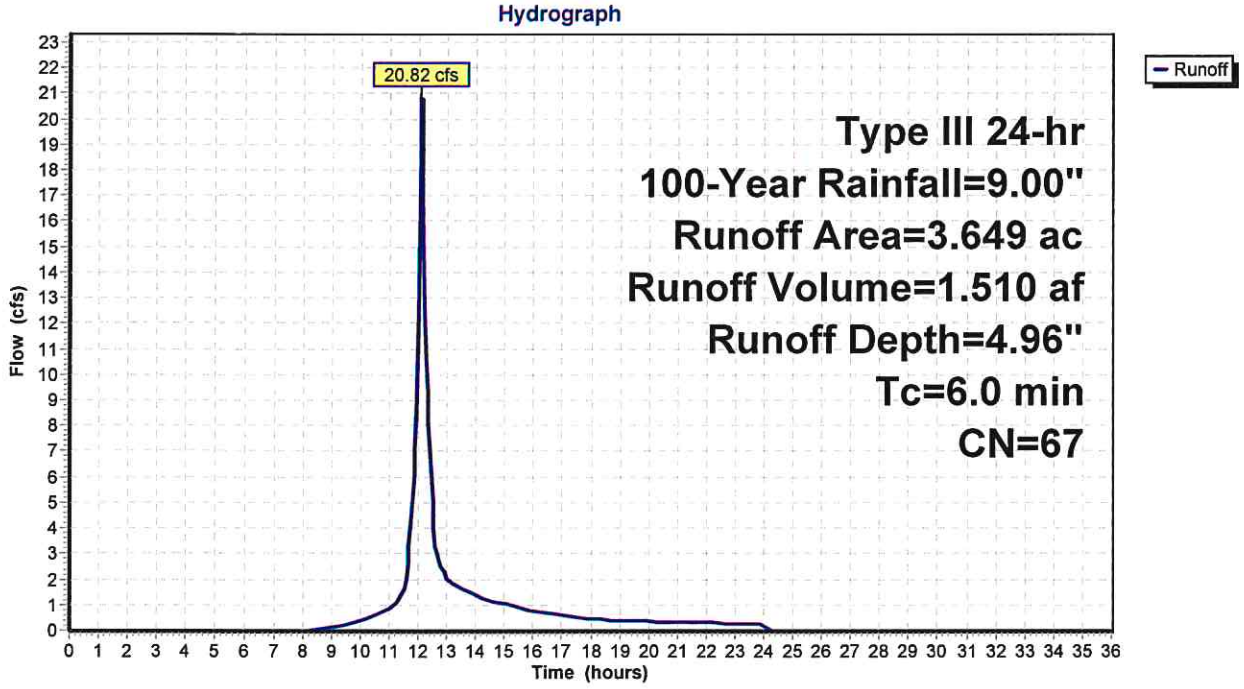
Runoff = 20.82 cfs @ 12.09 hrs, Volume= 1.510 af, Depth= 4.96"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=9.00"

	Area (ac)	CN	Description
*	0.435	98	Impervious Cover, HSG. A, C & D
	1.176	39	>75% Grass cover, Good, HSG A
	1.370	74	>75% Grass cover, Good, HSG C
	0.668	80	>75% Grass cover, Good, HSG D
	3.649	67	Weighted Average
	3.214		88.08% Pervious Area
	0.435		11.92% Impervious Area

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

Subcatchment WS#1D: ACCESS ROAD & GRASS COVER

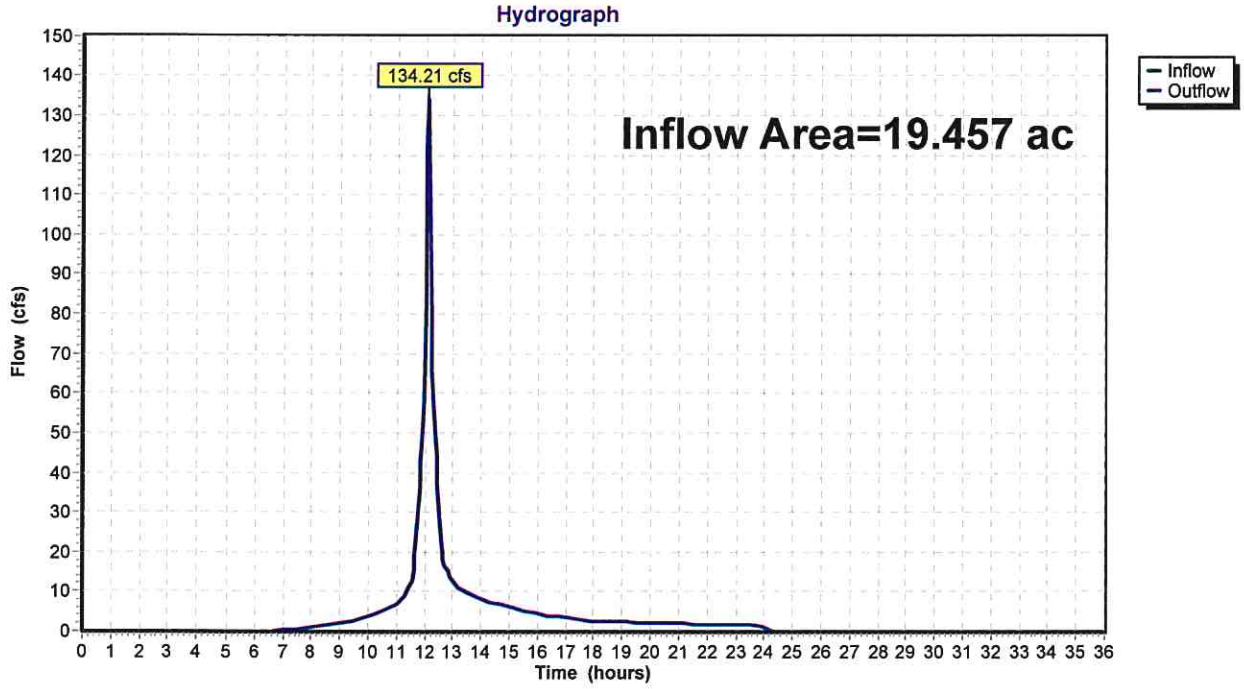


Summary for Reach E-POI: EXISTING

Inflow Area = 19.457 ac, 0.00% Impervious, Inflow Depth = 6.08" for 100-Year event
Inflow = 134.21 cfs @ 12.09 hrs, Volume= 9.851 af
Outflow = 134.21 cfs @ 12.09 hrs, Volume= 9.851 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Reach E-POI: EXISTING

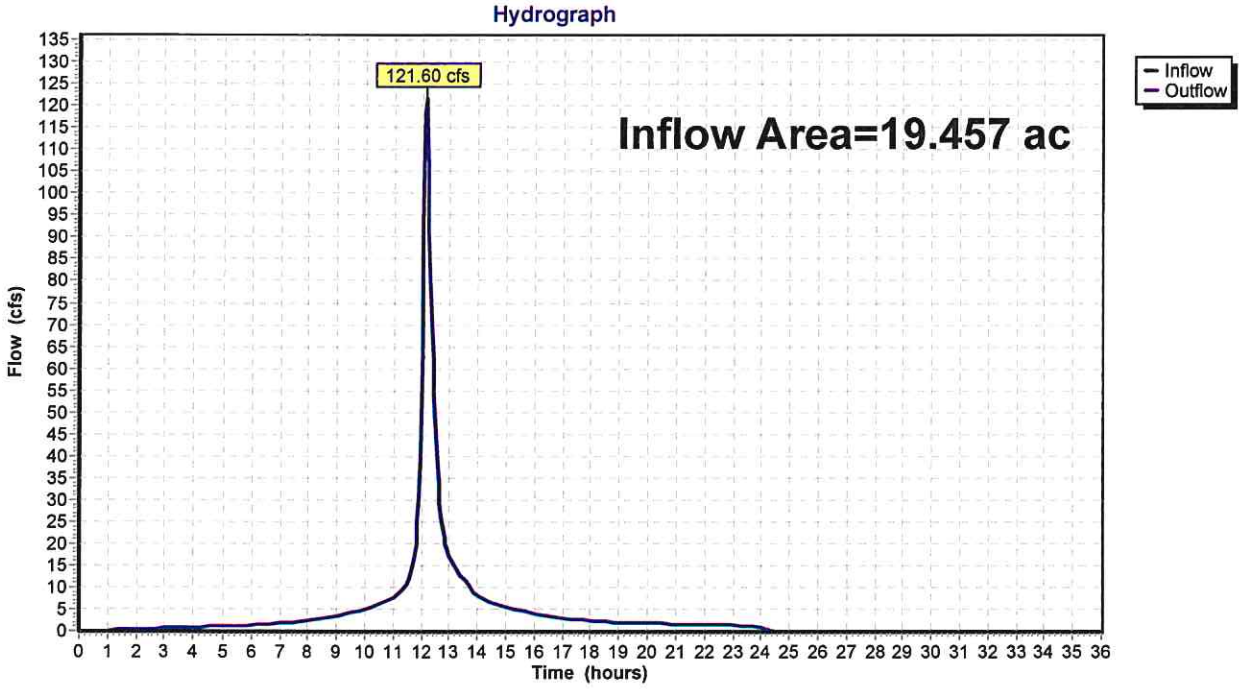


Summary for Reach P-POI: DEVELOPED

Inflow Area = 19.457 ac, 79.08% Impervious, Inflow Depth = 6.72" for 100-Year event
Inflow = 121.60 cfs @ 12.13 hrs, Volume= 10.901 af
Outflow = 121.60 cfs @ 12.13 hrs, Volume= 10.901 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Reach P-POI: DEVELOPED



Summary for Pond UFF#1: UP-FLO FILTER

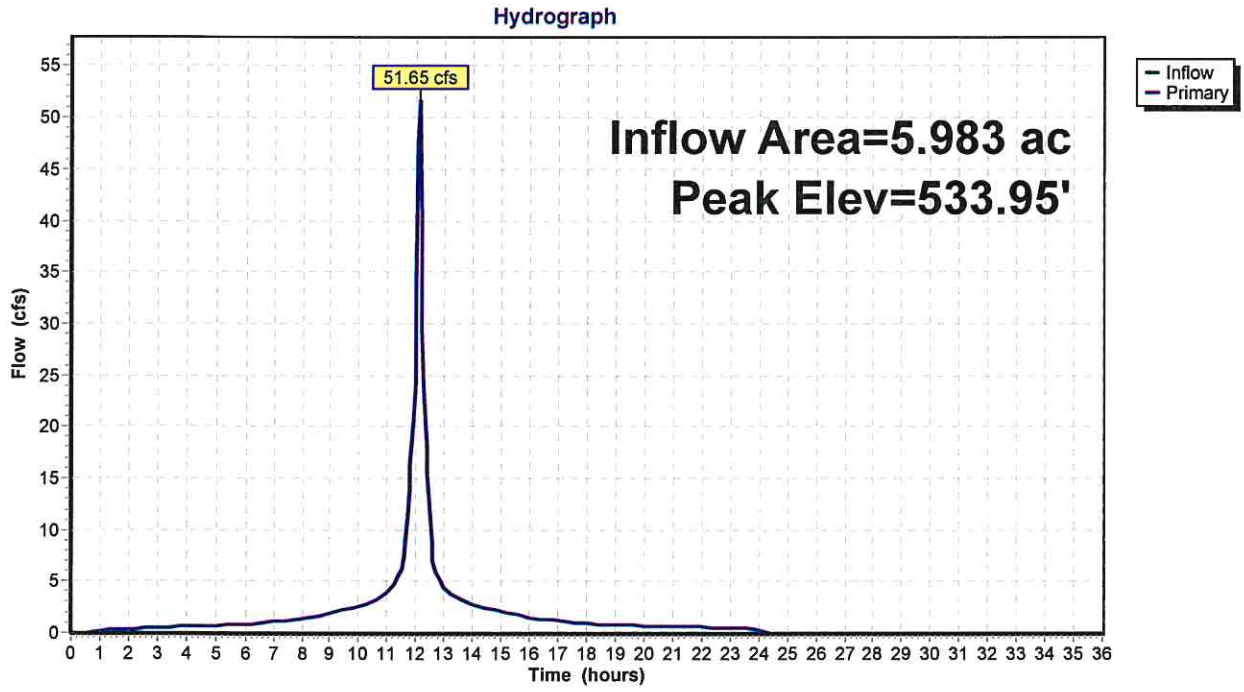
Inflow Area = 5.983 ac,100.00% Impervious, Inflow Depth = 8.76" for 100-Year event
Inflow = 51.65 cfs @ 12.09 hrs, Volume= 4.367 af
Outflow = 51.65 cfs @ 12.09 hrs, Volume= 4.367 af, Atten= 0%, Lag= 0.0 min
Primary = 51.65 cfs @ 12.09 hrs, Volume= 4.367 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 533.95' @ 12.09 hrs
Flood Elev= 500.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	496.50'	**18.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=50.27 cfs @ 12.09 hrs HW=532.15' (Free Discharge)
1=Orifice/Grate (Orifice Controls 50.27 cfs @ 28.44 fps)

Pond UFF#1: UP-FLO FILTER



Stage-Discharge for Pond UFF#1: UP-FLO FILTER

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
496.50	0.00	517.70	38.48
496.90	0.81	518.10	38.85
497.30	2.92	518.50	39.22
497.70	5.65	518.90	39.59
498.10	7.84	519.30	39.95
498.50	9.51	519.70	40.32
498.90	10.93	520.10	40.67
499.30	12.18	520.50	41.03
499.70	13.32	520.90	41.38
500.10	14.36	521.30	41.73
500.50	15.34	521.70	42.07
500.90	16.26	522.10	42.42
501.30	17.12	522.50	42.76
501.70	17.95	522.90	43.09
502.10	18.74	523.30	43.43
502.50	19.50	523.70	43.76
502.90	20.23	524.10	44.09
503.30	20.93	524.50	44.42
503.70	21.61	524.90	44.74
504.10	22.27	525.30	45.06
504.50	22.91	525.70	45.38
504.90	23.53	526.10	45.70
505.30	24.14	526.50	46.02
505.70	24.73	526.90	46.33
506.10	25.31	527.30	46.64
506.50	25.88	527.70	46.95
506.90	26.43	528.10	47.26
507.30	26.97	528.50	47.57
507.70	27.51	528.90	47.87
508.10	28.03	529.30	48.17
508.50	28.54	529.70	48.47
508.90	29.04	530.10	48.77
509.30	29.54	530.50	49.06
509.70	30.02	530.90	49.36
510.10	30.50	531.30	49.65
510.50	30.97	531.70	49.94
510.90	31.44	532.10	50.23
511.30	31.89	532.50	50.52
511.70	32.34	532.90	50.80
512.10	32.79	533.30	**51.09**
512.50	33.23		
512.90	33.66		
513.30	34.09		
513.70	34.51		
514.10	34.93		
514.50	35.34		
514.90	35.75		
515.30	36.15		
515.70	36.55		
516.10	36.94		
516.50	37.33		
516.90	37.72		
517.30	38.10		

Stage-Area-Storage for Pond UFF#1: UP-FLO FILTER

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
496.50	**0**	517.70	0
496.90	0	518.10	0
497.30	0	518.50	0
497.70	0	518.90	0
498.10	0	519.30	0
498.50	0	519.70	0
498.90	0	520.10	0
499.30	0	520.50	0
499.70	0	520.90	0
500.10	0	521.30	0
500.50	0	521.70	0
500.90	0	522.10	0
501.30	0	522.50	0
501.70	0	522.90	0
502.10	0	523.30	0
502.50	0	523.70	0
502.90	0	524.10	0
503.30	0	524.50	0
503.70	0	524.90	0
504.10	0	525.30	0
504.50	0	525.70	0
504.90	0	526.10	0
505.30	0	526.50	0
505.70	0	526.90	0
506.10	0	527.30	0
506.50	0	527.70	0
506.90	0	528.10	0
507.30	0	528.50	0
507.70	0	528.90	0
508.10	0	529.30	0
508.50	0	529.70	0
508.90	0	530.10	0
509.30	0	530.50	0
509.70	0	530.90	0
510.10	0	531.30	0
510.50	0	531.70	0
510.90	0	532.10	0
511.30	0	532.50	0
511.70	0	532.90	0
512.10	0	533.30	0
512.50	0		
512.90	0		
513.30	0		
513.70	0		
514.10	0		
514.50	0		
514.90	0		
515.30	0		
515.70	0		
516.10	0		
516.50	0		
516.90	0		
517.30	0		

Summary for Pond UFF#2: UP-FLO FILTER

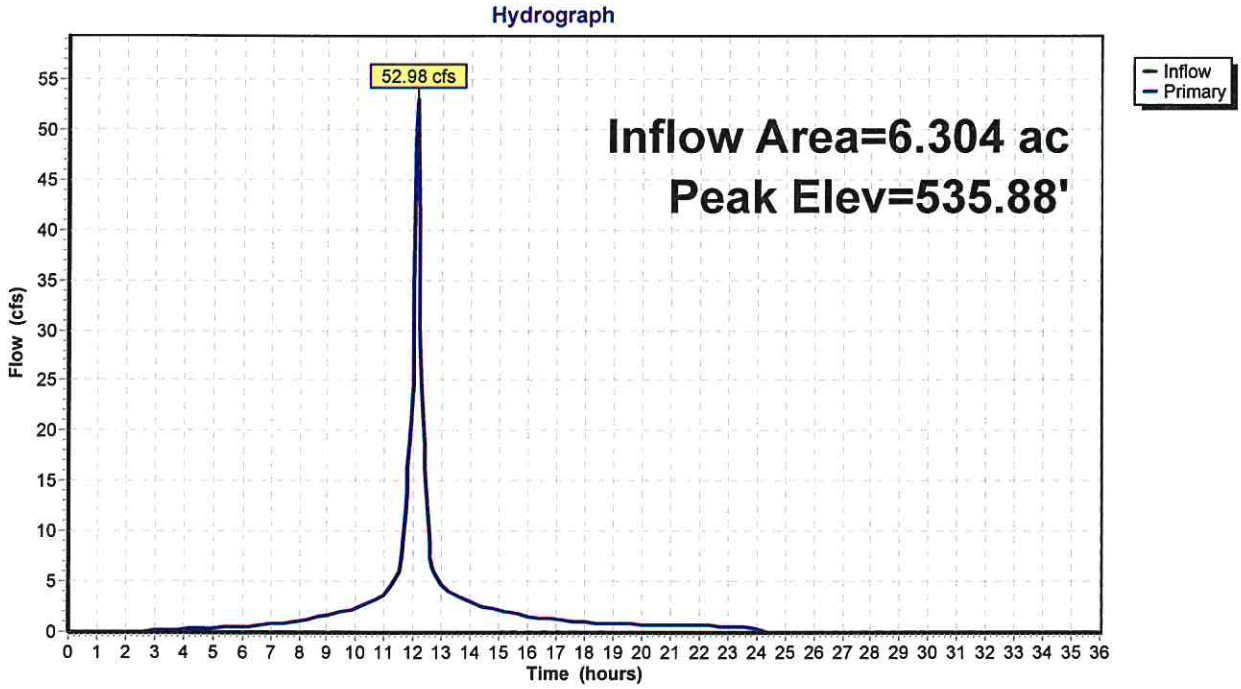
Inflow Area = 6.304 ac, 86.41% Impervious, Inflow Depth = 8.03" for 100-Year event
Inflow = 52.98 cfs @ 12.09 hrs, Volume= 4.221 af
Outflow = 52.98 cfs @ 12.09 hrs, Volume= 4.221 af, Atten= 0%, Lag= 0.0 min
Primary = 52.98 cfs @ 12.09 hrs, Volume= 4.221 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 535.88' @ 12.09 hrs
Flood Elev= 500.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	496.50'	**18.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=51.60 cfs @ 12.09 hrs HW=534.02' (Free Discharge)
1=Orifice/Grate (Orifice Controls 51.60 cfs @ 29.20 fps)

Pond UFF#2: UP-FLO FILTER



Stage-Discharge for Pond UFF#2: UP-FLO FILTER

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
496.50	0.00	517.70	38.48
496.90	0.81	518.10	38.85
497.30	2.92	518.50	39.22
497.70	5.65	518.90	39.59
498.10	7.84	519.30	39.95
498.50	9.51	519.70	40.32
498.90	10.93	520.10	40.67
499.30	12.18	520.50	41.03
499.70	13.32	520.90	41.38
500.10	14.36	521.30	41.73
500.50	15.34	521.70	42.07
500.90	16.26	522.10	42.42
501.30	17.12	522.50	42.76
501.70	17.95	522.90	43.09
502.10	18.74	523.30	43.43
502.50	19.50	523.70	43.76
502.90	20.23	524.10	44.09
503.30	20.93	524.50	44.42
503.70	21.61	524.90	44.74
504.10	22.27	525.30	45.06
504.50	22.91	525.70	45.38
504.90	23.53	526.10	45.70
505.30	24.14	526.50	46.02
505.70	24.73	526.90	46.33
506.10	25.31	527.30	46.64
506.50	25.88	527.70	46.95
506.90	26.43	528.10	47.26
507.30	26.97	528.50	47.57
507.70	27.51	528.90	47.87
508.10	28.03	529.30	48.17
508.50	28.54	529.70	48.47
508.90	29.04	530.10	48.77
509.30	29.54	530.50	49.06
509.70	30.02	530.90	49.36
510.10	30.50	531.30	49.65
510.50	30.97	531.70	49.94
510.90	31.44	532.10	50.23
511.30	31.89	532.50	50.52
511.70	32.34	532.90	50.80
512.10	32.79	533.30	51.09
512.50	33.23	533.70	51.37
512.90	33.66	534.10	51.65
513.30	34.09	534.50	51.93
513.70	34.51	534.90	52.21
514.10	34.93	535.30	**52.49**
514.50	35.34		
514.90	35.75		
515.30	36.15		
515.70	36.55		
516.10	36.94		
516.50	37.33		
516.90	37.72		
517.30	38.10		

Stage-Area-Storage for Pond UFF#2: UP-FLO FILTER

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
496.50	**0**	517.70	0
496.90	0	518.10	0
497.30	0	518.50	0
497.70	0	518.90	0
498.10	0	519.30	0
498.50	0	519.70	0
498.90	0	520.10	0
499.30	0	520.50	0
499.70	0	520.90	0
500.10	0	521.30	0
500.50	0	521.70	0
500.90	0	522.10	0
501.30	0	522.50	0
501.70	0	522.90	0
502.10	0	523.30	0
502.50	0	523.70	0
502.90	0	524.10	0
503.30	0	524.50	0
503.70	0	524.90	0
504.10	0	525.30	0
504.50	0	525.70	0
504.90	0	526.10	0
505.30	0	526.50	0
505.70	0	526.90	0
506.10	0	527.30	0
506.50	0	527.70	0
506.90	0	528.10	0
507.30	0	528.50	0
507.70	0	528.90	0
508.10	0	529.30	0
508.50	0	529.70	0
508.90	0	530.10	0
509.30	0	530.50	0
509.70	0	530.90	0
510.10	0	531.30	0
510.50	0	531.70	0
510.90	0	532.10	0
511.30	0	532.50	0
511.70	0	532.90	0
512.10	0	533.30	0
512.50	0	533.70	0
512.90	0	534.10	0
513.30	0	534.50	0
513.70	0	534.90	0
514.10	0	535.30	0
514.50	0		
514.90	0		
515.30	0		
515.70	0		
516.10	0		
516.50	0		
516.90	0		
517.30	0		

Summary for Pond UGSP#1: P-UG SOLID PIPE SYSTEM

Inflow Area = 12.287 ac, 93.03% Impervious, Inflow Depth = 8.39" for 100-Year event
Inflow = 104.63 cfs @ 12.09 hrs, Volume= 8.588 af
Outflow = 79.38 cfs @ 12.16 hrs, Volume= 8.588 af, Atten= 24%, Lag= 4.5 min
Primary = 79.38 cfs @ 12.16 hrs, Volume= 8.588 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 487.84' @ 12.16 hrs Surf.Area= 16,081 sf Storage= 47,186 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 9.1 min (761.8 - 752.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	483.60'	0 cf	**44.67'W x 360.00'L x 5.58'H Field A** 89,796 cf Overall - 65,984 cf Embedded = 23,812 cf x 0.0% Voids
#2A	483.60'	55,584 cf	**ADS N-12 60"** x 144 Inside #1 Inside= 59.5"W x 59.5"H => 19.30 sf x 20.00'L = 386.0 cf Outside= 67.0"W x 67.0"H => 22.92 sf x 20.00'L = 458.4 cf 8 Rows of 18 Chambers
		55,584 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	483.60'	**30.0" W x 12.0" H Vert. Orifice/Grate** C= 0.600
#2	Primary	485.40'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=78.24 cfs @ 12.16 hrs HW=487.80' (Free Discharge)
↑—**1=Orifice/Grate** (Orifice Controls 23.15 cfs @ 9.26 fps)
└—**2=Sharp-Crested Rectangular Weir** (Weir Controls 55.09 cfs @ 5.07 fps)

Pond UGSP#1: P-UG SOLID PIPE SYSTEM - Chamber Wizard Field A

Chamber Model = ADS N-12 60" (ADS N-12® Pipe)
Inside= 59.5"W x 59.5"H => 19.30 sf x 20.00'L = 386.0 cf
Outside= 67.0"W x 67.0"H => 22.92 sf x 20.00'L = 458.4 cf

18 Chambers/Row x 20.00' Long = 360.00' Row Length
8 Rows x 67.0" Wide = 44.67' Base Width
67.0" Chamber Height = 5.58' Field Height

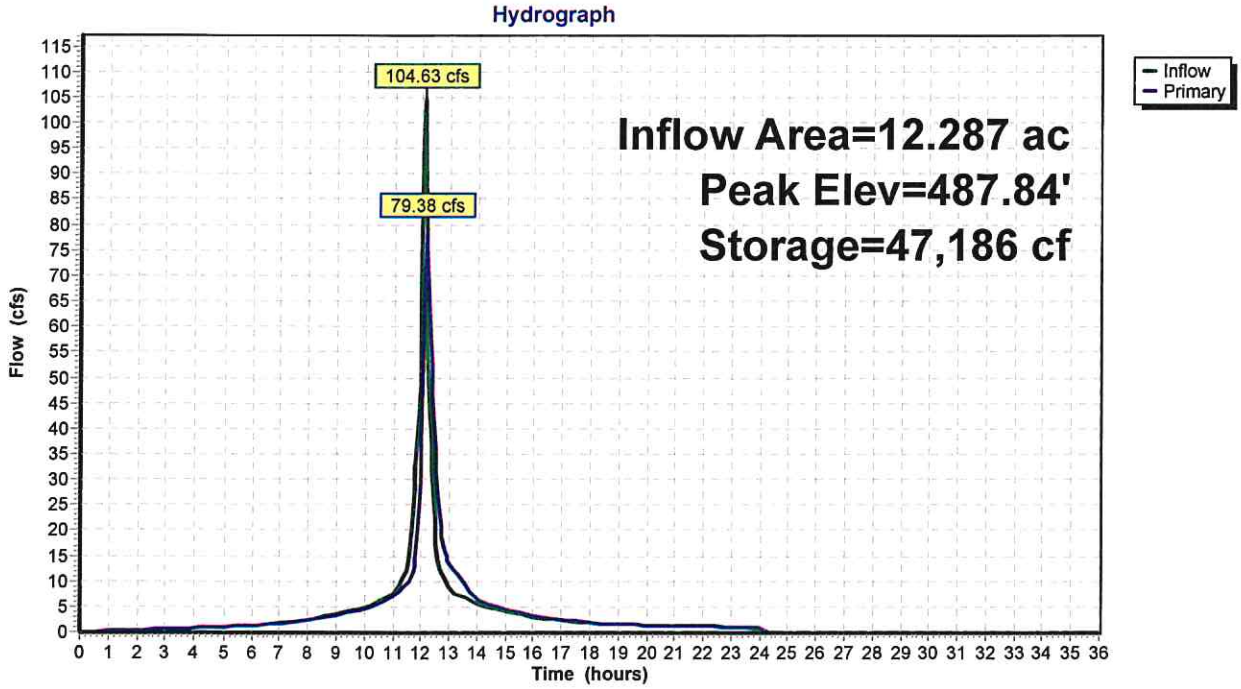
144 Chambers x 386.0 cf = 55,584.0 cf Chamber Storage
144 Chambers x 458.4 cf = 66,012.0 cf Displacement

89,796.1 cf Field - 66,012.0 cf Chambers = 23,784.0 cf Stone x 0.0% Voids = 0.0 cf Stone Storage

Chamber Storage = 55,584.0 cf = 1.276 af
Overall Storage Efficiency = 61.9%
Overall System Size = 360.00' x 44.67' x 5.58'

144 Chambers
3,325.8 cy Field
880.9 cy Stone

Pond UGSP#1: P-UG SOLID PIPE SYSTEM



Stage-Discharge for Pond UGSP#1: P-UG SOLID PIPE SYSTEM

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
483.60	0.00	485.72	18.18	487.84	79.50
483.64	0.06	485.76	18.93	487.88	80.91
483.68	0.18	485.80	19.71	487.92	82.32
483.72	0.33	485.84	20.51	487.96	83.75
483.76	0.51	485.88	21.34	488.00	85.17
483.80	0.72	485.92	22.19	488.04	86.60
483.84	0.94	485.96	23.07	488.08	88.04
483.88	1.19	486.00	23.96	488.12	89.48
483.92	1.45	486.04	24.88	488.16	90.93
483.96	1.73	486.08	25.81	488.20	92.38
484.00	2.03	486.12	26.77	488.24	93.84
484.04	2.34	486.16	27.74	488.28	95.30
484.08	2.67	486.20	28.73	488.32	96.77
484.12	3.01	486.24	29.73	488.36	98.24
484.16	3.36	486.28	30.76	488.40	99.71
484.20	3.73	486.32	31.79	488.44	101.19
484.24	4.11	486.36	32.85	488.48	102.67
484.28	4.50	486.40	33.92	488.52	104.15
484.32	4.90	486.44	35.00	488.56	105.64
484.36	5.32	486.48	36.09	488.60	107.14
484.40	5.74	486.52	37.20	488.64	108.63
484.44	6.18	486.56	38.33	488.68	110.13
484.48	6.62	486.60	39.46	488.72	111.63
484.52	7.08	486.64	40.61	488.76	113.14
484.56	7.55	486.68	41.77	488.80	114.65
484.60	8.02	486.72	42.94	488.84	116.16
484.64	8.45	486.76	44.12	488.88	117.67
484.68	8.83	486.80	45.32	488.92	119.19
484.72	9.18	486.84	46.52	488.96	120.71
484.76	9.51	486.88	47.74	489.00	122.23
484.80	9.83	486.92	48.96	489.04	123.76
484.84	10.14	486.96	50.20	489.08	125.28
484.88	10.43	487.00	51.45	489.12	126.81
484.92	10.72	487.04	52.70	489.16	**128.34**
484.96	10.99	487.08	53.97		
485.00	11.26	487.12	55.24		
485.04	11.52	487.16	56.52		
485.08	11.78	487.20	57.81		
485.12	12.03	487.24	59.11		
485.16	12.27	487.28	60.42		
485.20	12.51	487.32	61.74		
485.24	12.75	487.36	63.06		
485.28	12.97	487.40	64.39		
485.32	13.20	487.44	65.73		
485.36	13.42	487.48	67.08		
485.40	13.64	487.52	68.43		
485.44	13.98	487.56	69.79		
485.48	14.43	487.60	71.16		
485.52	14.94	487.64	72.53		
485.56	15.51	487.68	73.91		
485.60	16.12	487.72	75.30		
485.64	16.78	487.76	76.69		
485.68	17.46	487.80	78.09		

Stage-Area-Storage for Pond UGSP#1: P-UG SOLID PIPE SYSTEM

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
483.60	0	485.72	18,318	487.84	47,220
483.64	0	485.76	18,869	487.88	47,681
483.68	0	485.80	19,422	487.92	48,134
483.72	0	485.84	19,978	487.96	48,580
483.76	0	485.88	20,536	488.00	49,018
483.80	0	485.92	21,096	488.04	49,449
483.84	0	485.96	21,657	488.08	49,871
483.88	0	486.00	22,220	488.12	50,285
483.92	28	486.04	22,785	488.16	50,690
483.96	84	486.08	23,351	488.20	51,085
484.00	217	486.12	23,918	488.24	51,471
484.04	381	486.16	24,486	488.28	51,846
484.08	575	486.20	25,055	488.32	52,211
484.12	793	486.24	25,624	488.36	52,564
484.16	1,032	486.28	26,195	488.40	52,905
484.20	1,289	486.32	26,765	488.44	53,233
484.24	1,564	486.36	27,336	488.48	53,548
484.28	1,856	486.40	27,907	488.52	53,848
484.32	2,162	486.44	28,478	488.56	54,133
484.36	2,482	486.48	29,049	488.60	54,401
484.40	2,816	486.52	29,620	488.64	54,651
484.44	3,162	486.56	30,190	488.68	54,881
484.48	3,519	486.60	30,759	488.72	55,089
484.52	3,888	486.64	31,328	488.76	55,272
484.56	4,268	486.68	31,896	488.80	55,424
484.60	4,657	486.72	32,462	488.84	55,534
484.64	5,057	486.76	33,028	488.88	**55,599**
484.68	5,465	486.80	33,592	488.92	**55,584**
484.72	5,882	486.84	34,154	488.96	55,584
484.76	6,308	486.88	34,715	489.00	55,584
484.80	6,742	486.92	35,274	489.04	55,584
484.84	7,184	486.96	35,831	489.08	55,584
484.88	7,632	487.00	36,385	489.12	55,584
484.92	8,088	487.04	36,938	489.16	55,584
484.96	8,551	487.08	37,488		
485.00	9,021	487.12	38,035		
485.04	9,496	487.16	38,579		
485.08	9,978	487.20	39,121		
485.12	10,465	487.24	39,659		
485.16	10,958	487.28	40,194		
485.20	11,456	487.32	40,725		
485.24	11,959	487.36	41,253		
485.28	12,467	487.40	41,777		
485.32	12,980	487.44	42,296		
485.36	13,497	487.48	42,812		
485.40	14,018	487.52	43,322		
485.44	14,544	487.56	43,829		
485.48	15,073	487.60	44,330		
485.52	15,606	487.64	44,826		
485.56	16,142	487.68	45,316		
485.60	16,681	487.72	45,801		
485.64	17,224	487.76	46,281		
485.68	17,770	487.80	46,754		

Summary for Pond UIS: P-UG INFILTRATION SYSTEM

Inflow Area = 3.521 ac,100.00% Impervious, Inflow Depth = 8.76" for 100-Year event
Inflow = 30.39 cfs @ 12.09 hrs, Volume= 2.570 af
Outflow = 29.51 cfs @ 12.11 hrs, Volume= 2.570 af, Atten= 3%, Lag= 1.3 min
Discarded = 2.00 cfs @ 12.11 hrs, Volume= 1.767 af
Primary = 27.51 cfs @ 12.11 hrs, Volume= 0.803 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 486.47' @ 12.11 hrs Surf.Area= 5,777 sf Storage= 21,587 cf

Plug-Flow detention time= 74.6 min calculated for 2.567 af (100% of inflow)
Center-of-Mass det. time= 74.5 min (814.3 - 739.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	480.50'	8,678 cf	**31.00'W x 186.37'L x 6.00'H Field A** 34,664 cf Overall - 12,969 cf Embedded = 21,695 cf x 40.0% Voids
#2A	481.50'	12,969 cf	**Cultec R-902HD** x 200 Inside #1 Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap 4 Rows of 50 Chambers Cap Storage= +2.8 cf x 2 x 4 rows = 22.1 cf
		21,647 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	480.50'	**5.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 477.50' Phase-In= 0.01'
#2	Primary	485.10'	**5.5' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Discarded OutFlow Max=2.00 cfs @ 12.11 hrs HW=486.45' (Free Discharge)
↑—**1=Exfiltration** (Controls 2.00 cfs)

Primary OutFlow Max=26.94 cfs @ 12.11 hrs HW=486.45' (Free Discharge)
↑—**2=Sharp-Crested Rectangular Weir** (Weir Controls 26.94 cfs @ 3.81 fps)

Pond UIS: P-UG INFILTRATION SYSTEM - Chamber Wizard Field A

Chamber Model = Cultec R-902HD (Cultec Recharger® 902HD)
Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf
Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap
Cap Storage= +2.8 cf x 2 x 4 rows = 22.1 cf

78.0" Wide + 12.0" Spacing = 90.0" C-C Row Spacing

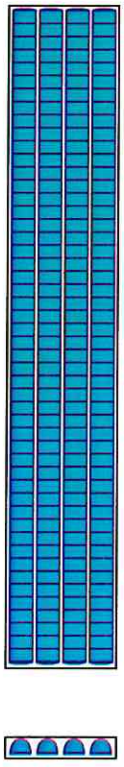
50 Chambers/Row x 3.67' Long +0.52' Cap Length x 2 = 184.37' Row Length +12.0" End Stone x 2 = 186.37' Base Length
4 Rows x 78.0" Wide + 12.0" Spacing x 3 + 12.0" Side Stone x 2 = 31.00' Base Width
12.0" Base + 48.0" Chamber Height + 12.0" Cover = 6.00' Field Height

200 Chambers x 64.7 cf + 2.8 cf Cap Volume x 2 x 4 Rows = 12,969.1 cf Chamber Storage

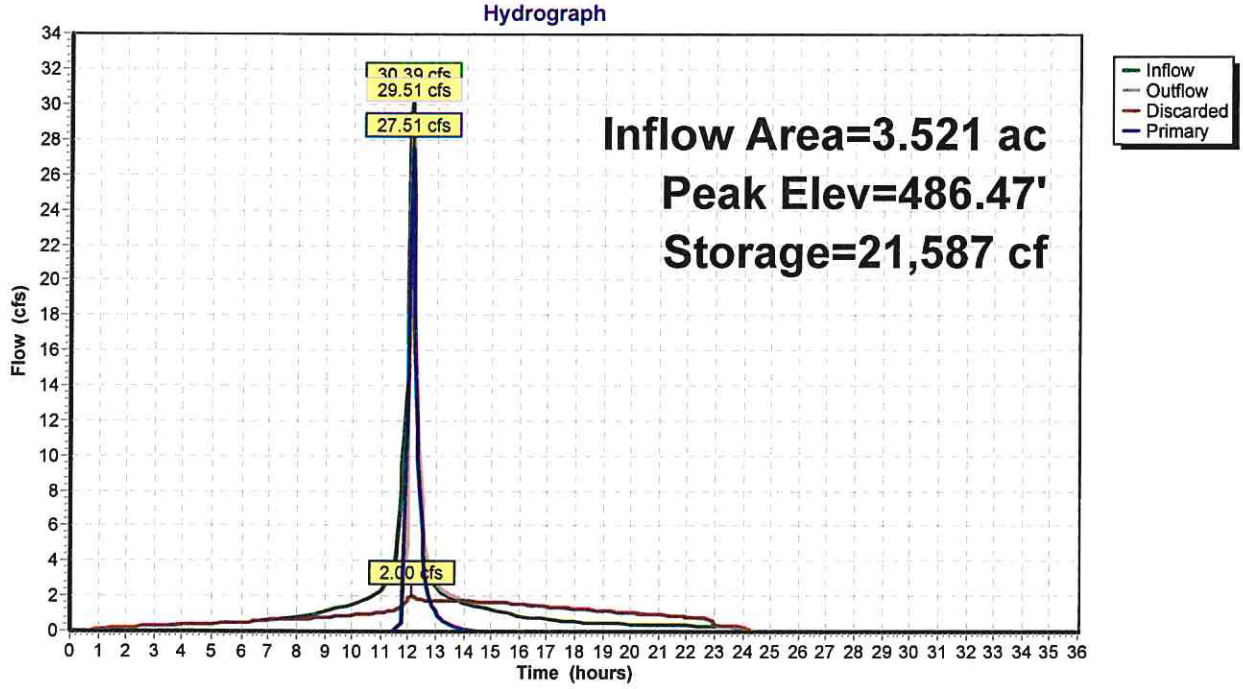
34,664.2 cf Field - 12,969.1 cf Chambers = 21,695.1 cf Stone x 40.0% Voids = 8,678.0 cf Stone Storage

Chamber Storage + Stone Storage = 21,647.1 cf = 0.497 af
Overall Storage Efficiency = 62.4%
Overall System Size = 186.37' x 31.00' x 6.00'

200 Chambers
1,283.9 cy Field
803.5 cy Stone



Pond UIS: P-UG INFILTRATION SYSTEM



Stage-Discharge for Pond UIS: P-UG INFILTRATION SYSTEM

Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)
480.50	0.00	0.00	0.00
480.60	0.69	0.69	0.00
480.70	0.71	0.71	0.00
480.80	0.74	0.74	0.00
480.90	0.76	0.76	0.00
481.00	0.78	0.78	0.00
481.10	0.80	0.80	0.00
481.20	0.82	0.82	0.00
481.30	0.85	0.85	0.00
481.40	0.87	0.87	0.00
481.50	0.89	0.89	0.00
481.60	0.91	0.91	0.00
481.70	0.94	0.94	0.00
481.80	0.96	0.96	0.00
481.90	0.98	0.98	0.00
482.00	1.00	1.00	0.00
482.10	1.03	1.03	0.00
482.20	1.05	1.05	0.00
482.30	1.07	1.07	0.00
482.40	1.09	1.09	0.00
482.50	1.11	1.11	0.00
482.60	1.14	1.14	0.00
482.70	1.16	1.16	0.00
482.80	1.18	1.18	0.00
482.90	1.20	1.20	0.00
483.00	1.23	1.23	0.00
483.10	1.25	1.25	0.00
483.20	1.27	1.27	0.00
483.30	1.29	1.29	0.00
483.40	1.32	1.32	0.00
483.50	1.34	1.34	0.00
483.60	1.36	1.36	0.00
483.70	1.38	1.38	0.00
483.80	1.40	1.40	0.00
483.90	1.43	1.43	0.00
484.00	1.45	1.45	0.00
484.10	1.47	1.47	0.00
484.20	1.49	1.49	0.00
484.30	1.52	1.52	0.00
484.40	1.54	1.54	0.00
484.50	1.56	1.56	0.00
484.60	1.58	1.58	0.00
484.70	1.60	1.60	0.00
484.80	1.63	1.63	0.00
484.90	1.65	1.65	0.00
485.00	1.67	1.67	0.00
485.10	1.69	1.69	0.00
485.20	2.28	1.72	0.57
485.30	3.34	1.74	1.60
485.40	4.68	1.76	2.92
485.50	6.27	1.78	4.48
485.60	8.05	1.81	6.24
485.70	10.00	1.83	8.18
485.80	12.12	1.85	10.27
485.90	14.37	1.87	12.49
486.00	16.75	1.89	14.85
486.10	19.25	1.92	17.33
486.20	21.86	1.94	19.92
486.30	24.57	1.96	22.61
486.40	27.38	1.98	25.40
486.50	**30.28**	**2.01**	**28.28**

Stage-Area-Storage for Pond UIS: P-UG INFILTRATION SYSTEM

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
480.50	5,777	0
480.60	5,777	231
480.70	5,777	462
480.80	5,777	693
480.90	5,777	924
481.00	5,777	1,155
481.10	5,777	1,387
481.20	5,777	1,618
481.30	5,777	1,849
481.40	5,777	2,080
481.50	5,777	2,311
481.60	5,777	2,796
481.70	5,777	3,283
481.80	5,777	3,768
481.90	5,777	4,250
482.00	5,777	4,731
482.10	5,777	5,211
482.20	5,777	5,691
482.30	5,777	6,168
482.40	5,777	6,641
482.50	5,777	7,113
482.60	5,777	7,585
482.70	5,777	8,055
482.80	5,777	8,521
482.90	5,777	8,985
483.00	5,777	9,448
483.10	5,777	9,907
483.20	5,777	10,366
483.30	5,777	10,822
483.40	5,777	11,275
483.50	5,777	11,727
483.60	5,777	12,175
483.70	5,777	12,620
483.80	5,777	13,062
483.90	5,777	13,499
484.00	5,777	13,933
484.10	5,777	14,362
484.20	5,777	14,784
484.30	5,777	15,202
484.40	5,777	15,612
484.50	5,777	16,016
484.60	5,777	16,411
484.70	5,777	16,798
484.80	5,777	17,174
484.90	5,777	17,540
485.00	5,777	17,894
485.10	5,777	18,232
485.20	5,777	18,547
485.30	5,777	18,833
485.40	5,777	19,093
485.50	5,777	19,336
485.60	5,777	19,567
485.70	5,777	19,798
485.80	5,777	20,029
485.90	5,777	20,261
486.00	5,777	20,492
486.10	5,777	20,723
486.20	5,777	20,954
486.30	5,777	21,185
486.40	5,777	21,416
486.50	5,777	**21,647**

Section 3: NOI & MS4

SUMMERVILLE INDUSTRIAL PARK

VILLAGE OF CHESTER
ORANGE COUNTY
NEW YORK

SECTION 3:

SPDES ACKNOWLEDGEMENT LETTER, FILLED OUT NOTICE OF INTENT (N.O.I.), AND MS4 SWPPP ACCEPTANCE FORM

BY

ATZL, NASHER & ZIGLER
ENGINEERS-SURVEYORS-PLANNERS
232 NORTH MAIN STREET
NEW CITY, NY 10956
TEL: (845) 634-4694
FAX: (845) 634-5543
E-MAIL: rnasher@anzny.com

0644089821

NOTICE OF INTENT

New York State Department of Environmental Conservation
Division of Water
625 Broadway, 4th Floor
Albany, New York 12233-3505

NYR ☐☐☐☐☐☐
(for DEC use only)

Stormwater Discharges Associated with Construction Activity Under State Pollutant Discharge Elimination System (SPDES) General Permit # GP-0-20-001

All sections must be completed unless otherwise noted. Failure to complete all items may result in this form being returned to you, thereby delaying your coverage under this General Permit. Applicants must read and understand the conditions of the permit and prepare a Stormwater Pollution Prevention Plan prior to submitting this NOI. Applicants are responsible for identifying and obtaining other DEC permits that may be required.

-IMPORTANT-

RETURN THIS FORM TO THE ADDRESS ABOVE

OWNER/OPERATOR **MUST SIGN FORM**

Owner/Operator Information

Owner/Operator (Company Name/Private Owner Name/Municipality Name)
TRODALE DEVELOPERS LLC

Owner/Operator Contact Person Last Name (NOT CONSULTANT)
KARNIOL

Owner/Operator Contact Person First Name
BEREL

Owner/Operator Mailing Address
1 EXECUTIVE BLVD SUITE 101

City
SUFFERN

State
NY

Zip
10901-

Phone (Owner/Operator)
845-367-9420

Fax (Owner/Operator)

Email (Owner/Operator)
BEREL@TRODALE.COM

FED TAX ID
--
(not required for individuals)

Project Site Information

Project/Site Name
SUMMERVILLE INDUSTRIAL PARK

Street Address (NOT P.O. BOX)
SUMMERVILLE WAY

Side of Street
○ **North** ● **South** ○ **East** ○ **West**

City/Town/Village (THAT ISSUES BUILDING PERMIT)
CHESTER

State: NY
Zip: 10918-
County: ORANGE
DEC Region: 3

Name of Nearest Cross Street
NUCIFORA BLVD

Distance to Nearest Cross Street (Feet)
510

Project In Relation to Cross Street
○ **North** ○ **South** ● **East** ○ **West**

Tax Map Numbers
Section-Block-Parcel
116-1-1.2

Tax Map Numbers
116-1-2

1. Provide the Geographic Coordinates for the project site. To do this, go to the NYSDEC Stormwater Interactive Map on the DEC website at:

https://gisservices.dec.ny.gov/gis/stormwater/

Zoom into your Project Location such that you can accurately click on the centroid of your site. Once you have located the centroid of your project site, go to the bottom right hand corner of the map for the X, Y coordinates. Enter the coordinates into the boxes below. For problems with the interactive map use the help function.

X Coordinates (Easting)
-7 4286
Ex. -73.749

Y Coordinates (Northing)
4135 3
Ex. 42.652

2. What is the nature of this construction project?

○ **New Construction**

● **Redevelopment with increase in impervious area**

○ **Redevelopment with no increase in impervious area**

3. Select the predominant land use for both pre and post development conditions.
SELECT ONLY ONE CHOICE FOR EACH

Pre-Development Existing Land Use

- ○ FOREST
- ○ PASTURE/OPEN LAND
- ○ CULTIVATED LAND
- ○ SINGLE FAMILY HOME
- ○ SINGLE FAMILY SUBDIVISION
- ○ TOWN HOME RESIDENTIAL
- ○ MULTIFAMILY RESIDENTIAL
- ○ INSTITUTIONAL/SCHOOL
- ● INDUSTRIAL
- ○ COMMERCIAL
- ○ ROAD/HIGHWAY
- ○ RECREATIONAL/SPORTS FIELD
- ○ BIKE PATH/TRAIL
- ○ LINEAR UTILITY
- ○ PARKING LOT
- ○ OTHER

Post-Development Future Land Use

- ○ SINGLE FAMILY HOME
- ○ SINGLE FAMILY SUBDIVISION — Number of Lots
- ○ TOWN HOME RESIDENTIAL
- ○ MULTIFAMILY RESIDENTIAL
- ○ INSTITUTIONAL/SCHOOL
- ● INDUSTRIAL
- ○ COMMERCIAL
- ○ MUNICIPAL
- ○ ROAD/HIGHWAY
- ○ RECREATIONAL/SPORTS FIELD
- ○ BIKE PATH/TRAIL
- ○ LINEAR UTILITY (water, sewer, gas, etc.)
- ○ PARKING LOT
- ○ CLEARING/GRADING ONLY
- ○ DEMOLITION, NO REDEVELOPMENT
- ○ WELL DRILLING ACTIVITY *(Oil, Gas, etc.)
- ○ OTHER

***Note:** for gas well drilling, non-high volume hydraulic fractured wells only

4. In accordance with the larger common plan of development or sale, enter the total project site area; the total area to be disturbed; existing impervious area to be disturbed (for redevelopment activities); and the future impervious area constructed within the disturbed area. (Round to the nearest tenth of an acre.)

Total Site Area	Total Area To Be Disturbed	Existing Impervious Area To Be Disturbed	Future Impervious Area Within Disturbed Area
40.0	19.5	6.7	15.4

5. Do you plan to disturb more than 5 acres of soil at any one time? ● **Yes** ○ **No**

6. Indicate the percentage of each Hydrologic Soil Group(HSG) at the site.

A	B	C	D
29 %	%	55 %	16 %

7. Is this a phased project? ● **Yes** ○ **No**

8. Enter the planned start and end dates of the disturbance activities.

Start Date	End Date
10/09/2023	10/17/2025

9. Identify the nearest surface waterbody(ies) to which construction site runoff will discharge.

Name

BLACK MEADOW CREEK

9a. Type of waterbody identified in Question 9?

- ○ Wetland / State Jurisdiction On Site (Answer 9b)
- ○ Wetland / State Jurisdiction Off Site
- ○ Wetland / Federal Jurisdiction On Site (Answer 9b)
- ○ Wetland / Federal Jurisdiction Off Site
- ○ Stream / Creek On Site
- ● Stream / Creek Off Site
- ○ River On Site
- ○ River Off Site
- ○ Lake On Site
- ○ Lake Off Site
- ○ Other Type On Site
- ○ Other Type Off Site

9b. How was the wetland identified?

- ○ Regulatory Map
- ○ Delineated by Consultant
- ○ Delineated by Army Corps of Engineers
- ● Other (identify)

NONE

10. Has the surface waterbody(ies) in question 9 been identified as a 303(d) segment in Appendix E of GP-0-20-001? ○ **Yes** ● **No**

11. Is this project located in one of the Watersheds identified in Appendix C of GP-0-20-001? ○ **Yes** ● **No**

12. Is the project located in one of the watershed areas associated with AA and AA-S classified waters? ○ **Yes** ● **No**
If no, skip question 13.

13. Does this construction activity disturb land with no existing impervious cover and where the Soil Slope Phase is identified as an E or F on the USDA Soil Survey? ○ **Yes** ● **No**
If Yes, what is the acreage to be disturbed?

.

14. Will the project disturb soils within a State regulated wetland or the protected 100 foot adjacent area? ○ **Yes** ● **No**

15. Does the site runoff enter a separate storm sewer system (including roadside drains, swales, ditches, culverts, etc)? ● Yes ○ No ○ Unknown

16. What is the name of the municipality/entity that owns the separate storm sewer system?

VILLAGE OF CHESTER

17. Does any runoff from the site enter a sewer classified as a Combined Sewer? ○ Yes ● No ○ Unknown

18. Will future use of this site be an agricultural property as defined by the NYS Agriculture and Markets Law? ○ Yes ● No

19. Is this property owned by a state authority, state agency, federal government or local government? ○ Yes ● No

20. Is this a remediation project being done under a Department approved work plan? (i.e. CERCLA, RCRA, Voluntary Cleanup Agreement, etc.) ○ Yes ● No

21. Has the required Erosion and Sediment Control component of the SWPPP been developed in conformance with the current NYS Standards and Specifications for Erosion and Sediment Control (aka Blue Book)? ● Yes ○ No

22. Does this construction activity require the development of a SWPPP that includes the post-construction stormwater management practice component (i.e. Runoff Reduction, Water Quality and Quantity Control practices/techniques)? ● Yes ○ No
If No, skip questions 23 and 27-39.

23. Has the post-construction stormwater management practice component of the SWPPP been developed in conformance with the current NYS Stormwater Management Design Manual? ● Yes ○ No

24. The Stormwater Pollution Prevention Plan (SWPPP) was prepared by:

- ● **Professional Engineer (P.E.)**
- ○ **Soil and Water Conservation District (SWCD)**
- ○ **Registered Landscape Architect (R.L.A)**
- ○ **Certified Professional in Erosion and Sediment Control (CPESC)**
- ○ **Owner/Operator**
- ○ **Other**

SWPPP Preparer

ATZL, NASHER & ZIGLER

Contact Name (Last, Space, First)

NASHER RYAN

Mailing Address

232 NORTH MAIN STREET

City

NEW CITY

State NY Zip 10956-

Phone 845-634-4694

Fax 845-634-5543

Email

RNASHER@ANZNY.COM

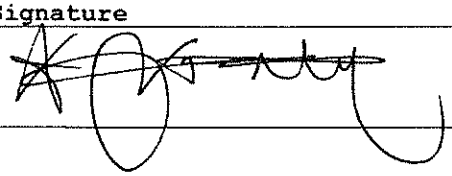
SWPPP Preparer Certification

I hereby certify that the Stormwater Pollution Prevention Plan (SWPPP) for this project has been prepared in accordance with the terms and conditions of the GP-0-20-001. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of this permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

First Name RYAN **MI** A

Last Name NASHER

Signature



Date 07/26/2023

25. Has a construction sequence schedule for the planned management practices been prepared? ● Yes ○ No

26. Select **all** of the erosion and sediment control practices that will be employed on the project site:

Temporary Structural

- ○ Check Dams
- ○ Construction Road Stabilization
- ○ Dust Control
- ○ Earth Dike
- ○ Level Spreader
- ○ Perimeter Dike/Swale
- ○ Pipe Slope Drain
- ○ Portable Sediment Tank
- ○ Rock Dam
- ○ Sediment Basin
- ○ Sediment Traps
- ● Silt Fence
- ● Stabilized Construction Entrance
- ● Storm Drain Inlet Protection
- ○ Straw/Hay Bale Dike
- ○ Temporary Access Waterway Crossing
- ○ Temporary Stormdrain Diversion
- ○ Temporary Swale
- ○ Turbidity Curtain
- ○ Water bars

Biotechnical

- ○ Brush Matting
- ○ Wattling

Vegetative Measures

- ○ Brush Matting
- ○ Dune Stabilization
- ○ Grassed Waterway
- ● Mulching
- ○ Protecting Vegetation
- ○ Recreation Area Improvement
- ● Seeding
- ○ Sodding
- ○ Straw/Hay Bale Dike
- ○ Streambank Protection
- ○ Temporary Swale
- ● Topsoiling
- ○ Vegetating Waterways

Permanent Structural

- ○ Debris Basin
- ○ Diversion
- ○ Grade Stabilization Structure
- ● Land Grading
- ○ Lined Waterway (Rock)
- ○ Paved Channel (Concrete)
- ○ Paved Flume
- ● Retaining Wall
- ○ Riprap Slope Protection
- ○ Rock Outlet Protection
- ○ Streambank Protection

Other

Post-construction Stormwater Management Practice (SMP) Requirements

Important: Completion of Questions 27-39 is not required if response to Question 22 is No.

27. Identify all site planning practices that were used to prepare the final site plan/layout for the project.

- ○ **Preservation of Undisturbed Areas**
- ○ **Preservation of Buffers**
- ○ **Reduction of Clearing and Grading**
- ● **Locating Development in Less Sensitive Areas**
- ○ **Roadway Reduction**
- ○ **Sidewalk Reduction**
- ○ **Driveway Reduction**
- ○ **Cul-de-sac Reduction**
- ○ **Building Footprint Reduction**
- ○ **Parking Reduction**

27a. Indicate which of the following soil restoration criteria was used to address the requirements in Section 5.1.6("Soil Restoration") of the Design Manual (2010 version).

- ● All disturbed areas will be restored in accordance with the Soil Restoration requirements in Table 5.3 of the Design Manual (see page 5-22).
- ○ Compacted areas were considered as impervious cover when calculating the **WQv Required**, and the compacted areas were assigned a post-construction Hydrologic Soil Group (HSG) designation that is one level less permeable than existing conditions for the hydrology analysis.

28. Provide the total Water Quality Volume (WQv) required for this project (based on final site plan/layout).

Total WQv Required

1.2 **acre-feet**

29. Identify the RR techniques (Area Reduction), RR techniques(Volume Reduction) and Standard SMPs with RRv Capacity in Table 1 (See Page 9) that were used to reduce the Total WQv Required(#28).

Also, provide in Table 1 the total impervious area that contributes runoff to each technique/practice selected. For the Area Reduction Techniques, provide the total contributing area (includes pervious area) and, if applicable, the total impervious area that contributes runoff to the technique/practice.

Note: Redevelopment projects shall use Tables 1 and 2 to identify the SMPs used to treat and/or reduce the WQv required. If runoff reduction techniques will not be used to reduce the required WQv, skip to question 33a after identifying the SMPs.

7738089822

Table 1 - Runoff Reduction (RR) Techniques and Standard Stormwater Management Practices (SMPs)

RR Techniques (Area Reduction)	Total Contributing Area (acres)		Total Contributing Impervious Area (acres)	
○ Conservation of Natural Areas (RR-1)		and/or		
○ Sheetflow to Riparian Buffers/Filters Strips (RR-2)		and/or		
○ Tree Planting/Tree Pit (RR-3)		and/or		
○ Disconnection of Rooftop Runoff (RR-4)		and/or		

RR Techniques (Volume Reduction)	
○ Vegetated Swale (RR-5)	
○ Rain Garden (RR-6)	
○ Stormwater Planter (RR-7)	
○ Rain Barrel/Cistern (RR-8)	
○ Porous Pavement (RR-9)	
○ Green Roof (RR-10)	

Standard SMPs with RRv Capacity	
○ Infiltration Trench (I-1)	
○ Infiltration Basin (I-2)	
○ Dry Well (I-3)	
● Underground Infiltration System (I-4)	3.521
○ Bioretention (F-5)	
○ Dry Swale (O-1)	

Standard SMPs	
○ Micropool Extended Detention (P-1)	
○ Wet Pond (P-2)	
○ Wet Extended Detention (P-3)	
○ Multiple Pond System (P-4)	
○ Pocket Pond (P-5)	
○ Surface Sand Filter (F-1)	
○ Underground Sand Filter (F-2)	
○ Perimeter Sand Filter (F-3)	
○ Organic Filter (F-4)	
○ Shallow Wetland (W-1)	
○ Extended Detention Wetland (W-2)	
○ Pond/Wetland System (W-3)	
○ Pocket Wetland (W-4)	
○ Wet Swale (O-2)	

Table 2 - Alternative SMPs
(DO NOT INCLUDE PRACTICES BEING USED FOR PRETREATMENT ONLY)

Alternative SMP	Total Contributing Impervious Area(acres)
○ Hydrodynamic	
○ Wet Vault	
● Media Filter	11.43
○ Other [ ]	

Provide the name and manufacturer of the Alternative SMPs (i.e. proprietary practice(s)) being used for WQv treatment.

Name: UP-FLO FILTER

Manufacturer: HYDRO INTERNATIONAL

Note: Redevelopment projects which do not use RR techniques, shall use questions 28, 29, 33 and 33a to provide SMPs used, total WQv required and total WQv provided for the project.

30. Indicate the Total RRv provided by the RR techniques (Area/Volume Reduction) and Standard SMPs with RRv capacity identified in question 29.

Total RRv provided

0.418 **acre-feet**

31. Is the Total RRv provided (#30) greater than or equal to the total WQv required (#28).

○ **Yes** ● **No**

If Yes, go to question 36.
If No, go to question 32.

32. Provide the Minimum RRv required based on HSG.
[Minimum RRv Required = (P)(0.95)(Ai)/12, Ai=(S)(Aic)]

Minimum RRv Required

0.413 **acre-feet**

32a. Is the Total RRv provided (#30) greater than or equal to the Minimum RRv Required (#32)?

● **Yes** ○ **No**

If Yes, go to question 33.
Note: Use the space provided in question #39 to summarize the specific site limitations and justification for not reducing 100% of WQv required (#28). A detailed evaluation of the specific site limitations and justification for not reducing 100% of the WQv required (#28) must also be included in the SWPPP.
If No, sizing criteria has not been met, so NOI can not be processed. SWPPP preparer must modify design to meet sizing criteria.

33. Identify the Standard SMPs in Table 1 and, if applicable, the Alternative SMPs in Table 2 that were used to treat the remaining total WQv(=Total WQv Required in 28 - Total RRv Provided in 30).

Also, provide in Table 1 and 2 the total impervious area that contributes runoff to each practice selected.

Note: Use Tables 1 and 2 to identify the SMPs used on Redevelopment projects.

33a. Indicate the Total WQv provided (i.e. WQv treated) by the SMPs identified in question #33 and Standard SMPs with RRv Capacity identified in question 29.

WQv Provided

1.33 **acre-feet**

Note: For the standard SMPs with RRv capacity, the WQv provided by each practice = the WQv calculated using the contributing drainage area to the practice - RRv provided by the practice. (See Table 3.5 in Design Manual)

34. Provide the sum of the Total RRv provided (#30) and the WQv provided (#33a). 1.748

35. Is the sum of the RRv provided (#30) and the WQv provided (#33a) greater than or equal to the total WQv required (#28)? ● **Yes** ○ **No**

If Yes, go to question 36.
If No, sizing criteria has not been met, so NOI can not be processed. SWPPP preparer must modify design to meet sizing criteria.

36. Provide the total Channel Protection Storage Volume (CPv) required and provided or select waiver (36a), if applicable.

CPv Required

0.00 **acre-feet**

CPv Provided

0.00 **acre-feet**

36a. The need to provide channel protection has been waived because:

○ Site discharges directly to tidal waters or a fifth order or larger stream.

● Reduction of the total CPv is achieved on site through runoff reduction techniques or infiltration systems.

37. Provide the Overbank Flood (Qp) and Extreme Flood (Qf) control criteria or select waiver (37a), if applicable.

Total Overbank Flood Control Criteria (Qp)

Pre-Development

57.59 **CFS**

Post-development

43.47 **CFS**

Total Extreme Flood Control Criteria (Qf)

Pre-Development

134.21 **CFS**

Post-development

121.60 **CFS**

37a. The need to meet the Qp and Qf criteria has been waived because:

- ○ Site discharges directly to tidal waters or a fifth order or larger stream.
- ○ Downstream analysis reveals that the Qp and Qf controls are not required

38. Has a long term Operation and Maintenance Plan for the post-construction stormwater management practice(s) been developed? ● Yes ○ No

If Yes, Identify the entity responsible for the long term Operation and Maintenance

THE PROPERTY OWNER

39. Use this space to summarize the specific site limitations and justification for not reducing 100% of WQv required(#28). (See question 32a) This space can also be used for other pertinent project information.

40. Identify other DEC permits, existing and new, that are required for this project/facility.

- ○ Air Pollution Control
- ○ Coastal Erosion
- ○ Hazardous Waste
- ○ Long Island Wells
- ○ Mined Land Reclamation
- ○ Solid Waste
- ○ Navigable Waters Protection / Article 15
- ○ Water Quality Certificate
- ○ Dam Safety
- ○ Water Supply
- ○ Freshwater Wetlands/Article 24
- ○ Tidal Wetlands
- ○ Wild, Scenic and Recreational Rivers
- ○ Stream Bed or Bank Protection / Article 15
- ○ Endangered or Threatened Species(Incidental Take Permit)
- ○ Individual SPDES
- ○ SPDES Multi-Sector GP [N][Y][R][ ][ ][ ][ ][ ][ ]
- ○ Other [ ]
- ● None

41. Does this project require a US Army Corps of Engineers Wetland Permit? ○ **Yes** ● **No**
If Yes, Indicate Size of Impact. [ ][ ][ ][ ][ ][ ].[ ]

42. Is this project subject to the requirements of a regulated, traditional land use control MS4? ● **Yes** ○ **No**
(If No, skip question 43)

43. Has the "MS4 SWPPP Acceptance" form been signed by the principal executive officer or ranking elected official and submitted along with this NOI? ● **Yes** ○ **No**

44. If this NOI is being submitted for the purpose of continuing or transferring coverage under a general permit for stormwater runoff from construction activities, please indicate the former SPDES number assigned. [N][Y][R][ ][ ][ ][ ][ ][ ]

Owner/Operator Certification

I have read or been advised of the permit conditions and believe that I understand them. I also understand that, under the terms of the permit, there may be reporting requirements. I hereby certify that this document and the corresponding documents were prepared under my direction or supervision. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. I further understand that coverage under the general permit will be identified in the acknowledgment that I will receive as a result of submitting this NOI and can be as long as sixty (60) business days as provided for in the general permit. I also understand that, by submitting this NOI, I am acknowledging that the SWPPP has been developed and will be implemented as the first element of construction, and agreeing to comply with all the terms and conditions of the general permit for which this NOI is being submitted.

Print First Name

BEREL

MI

Print Last Name

KARNIOL

Owner/Operator Signature

Date

__ / __ / ____

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

NYS Department of Environmental Conservation
Division of Water
625 Broadway, 4th Floor
Albany, New York 12233-3505

MS4 Stormwater Pollution Prevention Plan (SWPPP) Acceptance Form

for

Construction Activities Seeking Authorization Under SPDES General Permit

*(NOTE: Attach Completed Form to Notice Of Intent and Submit to Address Above)

I. Project Owner/Operator Information	
1. Owner/Operator Name:	TRODALE DEVELOPERS LLC
2. Contact Person:	BAREL KARNIOL
3. Street Address:	1 EXECUTIVE BLVD SUITE 101
4. City/State/Zip:	SUFFERN / NY / 10901
II. Project Site Information	
5. Project/Site Name:	SUMMERVILLE INDUSTRIAL PARK
6. Street Address:	SUMMERVILLE WAY
7. City/State/Zip:	CHESTER, NEW YORK 10918
III. Stormwater Pollution Prevention Plan (SWPPP) Review and Acceptance Information	
8. SWPPP Reviewed by:	LANC & TULLY
9. Title/Position:	VILLAGE ENGINEER
10. Date Final SWPPP Reviewed and Accepted:	
IV. Regulated MS4 Information	
11. Name of MS4:	VILLAGE OF CHESTER
12. MS4 SPDES Permit Identification Number: NYR20A	126
13. Contact Person:	JOHN QUEENAN, P.E.
14. Street Address:	P.O.BOX 687
15. City/State/Zip:	GOSHEN/NY/10924
16. Telephone Number:	(845)294-3700

MS4 SWPPP Acceptance Form - continued

V. Certification Statement - MS4 Official (principal executive officer or ranking elected official) or Duly Authorized Representative

I hereby certify that the final Stormwater Pollution Prevention Plan (SWPPP) for the construction project identified in question 5 has been reviewed and meets the substantive requirements in the SPDES General Permit For Stormwater Discharges from Municipal Separate Storm Sewer Systems (MS4s). Note: The MS4, through the acceptance of the SWPPP, assumes no responsibility for the accuracy and adequacy of the design included in the SWPPP. In addition, review and acceptance of the SWPPP by the MS4 does not relieve the owner/operator or their SWPPP preparer of responsibility or liability for errors or omissions in the plan.

Printed Name: JOHN QUEENAN, P.E.

Title/Position: VILLAGE ENGINEER

Signature:

Date:

VI. Additional Information

(NYS DEC - MS4 SWPPP Acceptance Form - January 2015)

Appendix - F

SUMMERVILLE INDUSTRIAL PARK

VILLAGE OF CHESTER
ORANGE COUNTY
NEW YORK

APPENDIX-F

INFILTRATION TEST CERTIFICATION

BY

ATZL, NASHER & ZIGLER
ENGINEERS-SURVEYORS-PLANNERS
232 NORTH MAIN STREET
NEW CITY, NY 10956
TEL: (845) 634-4694
FAX: (845) 634-5543
E-MAIL: rnasher@anzny.com

ATZL, NASHER & ZIGLER
ENGINEERS-SURVEYORS-PLANNERS
232 North Main Street, New City, NY 10956
Tel: (845) 634-4694 Fax: (845) 634-5543
Email: rnasher@anzny.com

July 26, 2023

Village of Chester Planning Board
47 Main Street
Chester, NY 10918

Att.: John Queenan, P.E.
Village Engineer

Re: Infiltration Test Certification
Summerville Industrial Park
(Job #3390)
Orange County, NY

Dear Mr. Queenan, P.E.,

A soil infiltration test and deep test hole were performed on June 15, 2023. A falling head test was performed with a 30-inch long, 6-inch diameter pipe. The bottom of the pipe was 2 feet below the elevation of the proposed infiltration practice which is shown in the infiltration test location map. The location map is attached to this report for your reference (Page-16). During the test, the water drop is measured in the 30-inch pipe after one (1) hour to determine the infiltration rate.

The results are as follows.

Test Hole #1

Infiltration test at a depth of 60-inches (5'-0") EL. 478.5.

Soil Log	**Soil Type**
0" to 12"	Topsoil
12" to 72"	Silty-sand

No groundwater, No Bedrock found at 72-inches (6'-0") deep (EL. 477.5).

Trial Number	**Time to drop 24-inch**
1	30 sec.
2	30 sec.
3	30 sec.
4	30 sec.

Average= $0.8\ \frac{inch}{sec}$ or $2{,}880\frac{inch}{hr}$

Test Hole #3

Infiltration test at a depth of 54-inches (4'-6") EL. 503.5.

Soil Log	Soil Type
0" to 12"	Topsoil & Slate
12" to 66"	Silty-clay

Groundwater was found at 2.5 feet (30-inch) deep EL. 505.5.

Test Hole #4

Infiltration test at a depth of 24-inches (2'-0") EL. 504.5.

Soil Log	Soil Type
0" to 12"	Topsoil & Slate
12" to 60"	Silty-clay

Groundwater was found at 2.0 feet (24-inch) deep EL. 504.5.

Test Hole #5

Infiltration test at a depth of 114-inches (9'-6") EL. 495.5.

Soil Log	Soil Type
0" to 12"	Topsoil & Slate
12" to 126"	Silty-clay

No groundwater, No Bedrock found at 126-inches (10'-6") deep (EL. 494.5).

Trial Number	Time to drop 24-inch
1	16 min.
2	27 min.
3	32 min.
4	38 min.

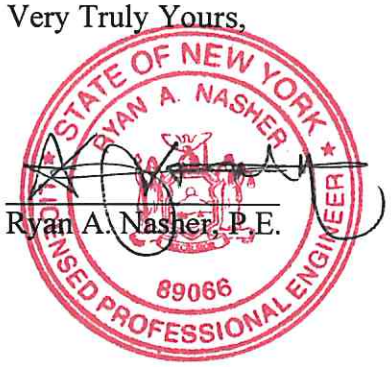
Average= $0.94\ \frac{inch}{sec}$ or $56\frac{inch}{hr}$

Note:

- The average infiltration rate for test hole #1 is 2,880 in/hr. The infiltration rate used to design the proposed infiltration system was 5.0 in/hr. Therefore, the design is adequate since the actual infiltration rate is way greater than the one used for the design of the proposed system.

If you have further questions or concerns, feel free to contact our office. Thank you.

Very Truly Yours,



Ryan A. Nasher, P.E.

Figure 1: View of deep test hole (Test Hole#1) at 72-inches deep and the 30-inch pvc pipe used to determine the infiltration rate.

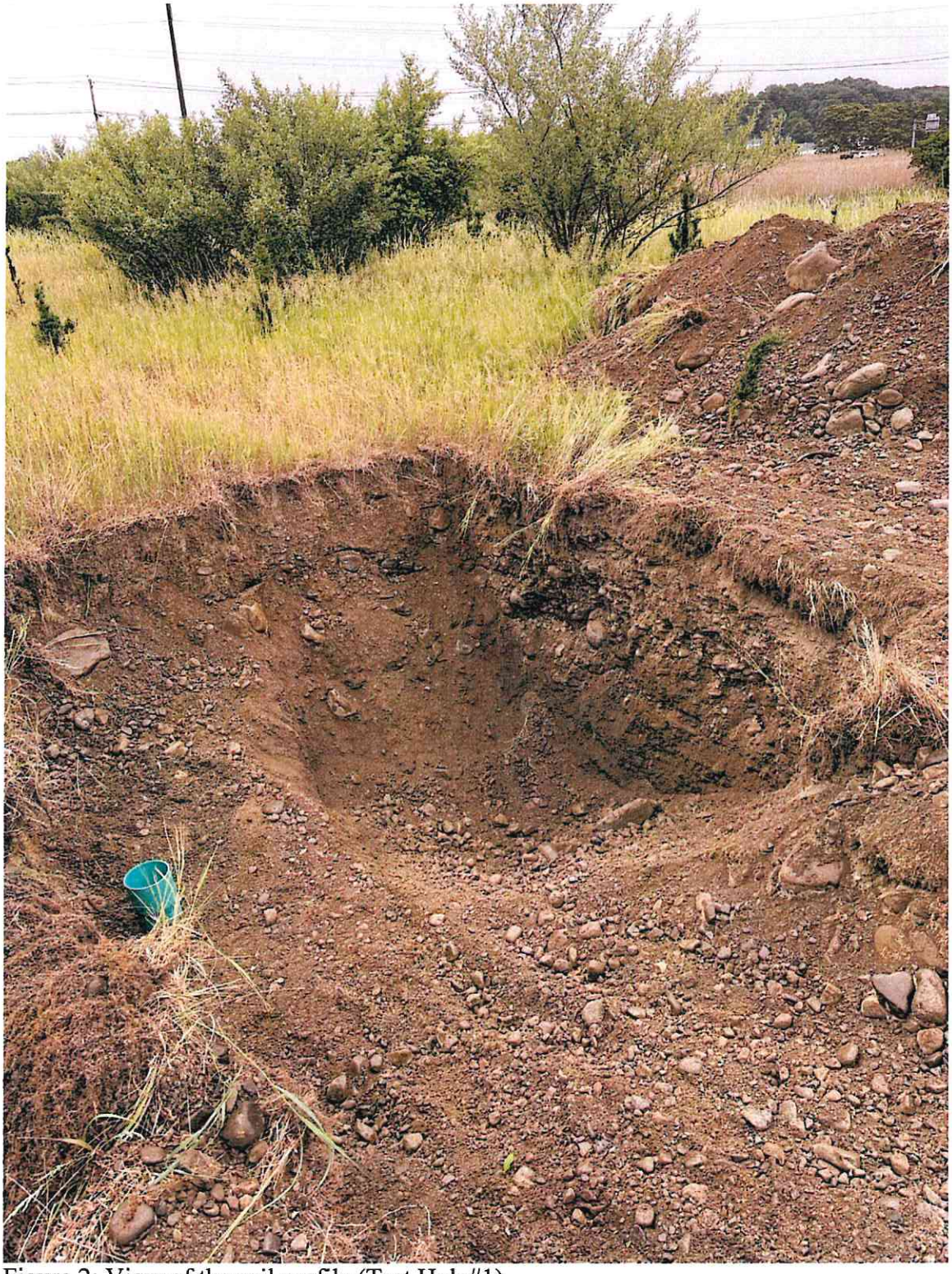


Figure 2: View of the soil profile (Test Hole#1).

Figure 3: View of deep test hole (Test Hole#3) at 66-inches deep and the 30-inch pvc pipe used to determine the infiltration rate.

Figure 4: View of test hole no. 3, groundwater found at 2.5 feet (30-inch) deep EL. 505.5.

Figure 5: View of deep test hole (Test Hole#4) at 60-inches deep and the 30-inch pvc pipe used to determine the infiltration rate.

Figure 6: View of test hole no. 4, groundwater found at 2.0 feet (24-inch) deep EL. 504.5.

Figure 7: View of deep test hole (Test Hole#5) at 126-inches deep and the 30-inch pvc pipe used to determine the infiltration rate.

Figure 8: View of the soil profile (Test Hole#5).

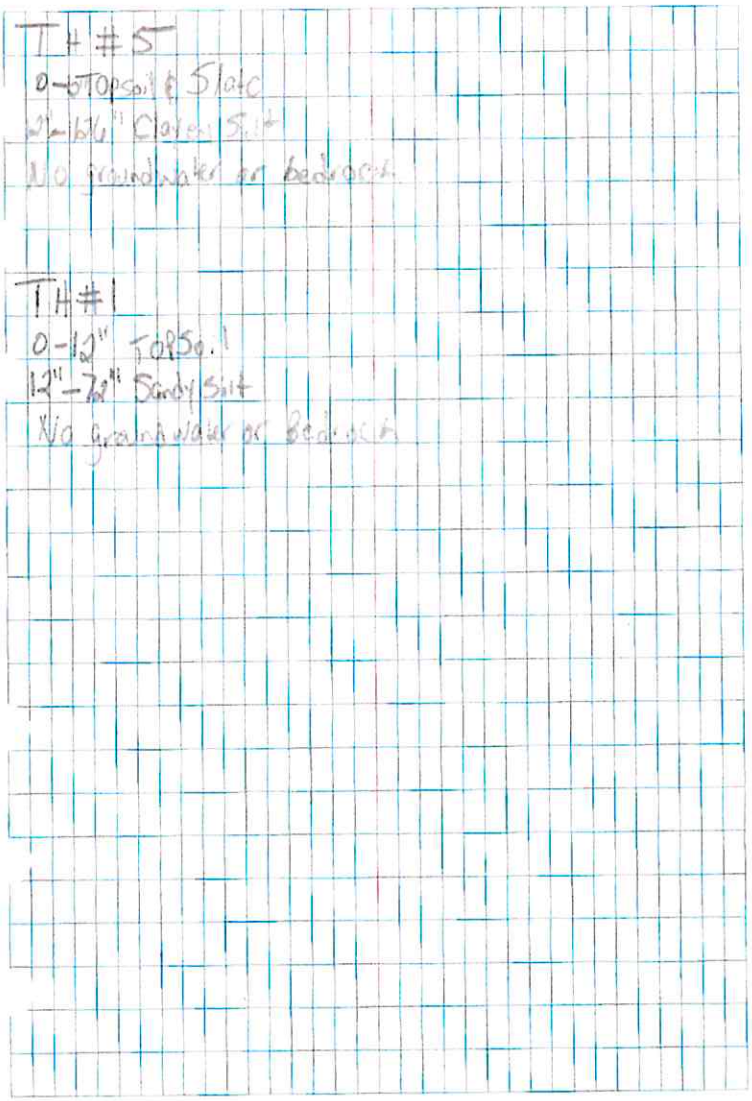


Figure 9: Field notes.

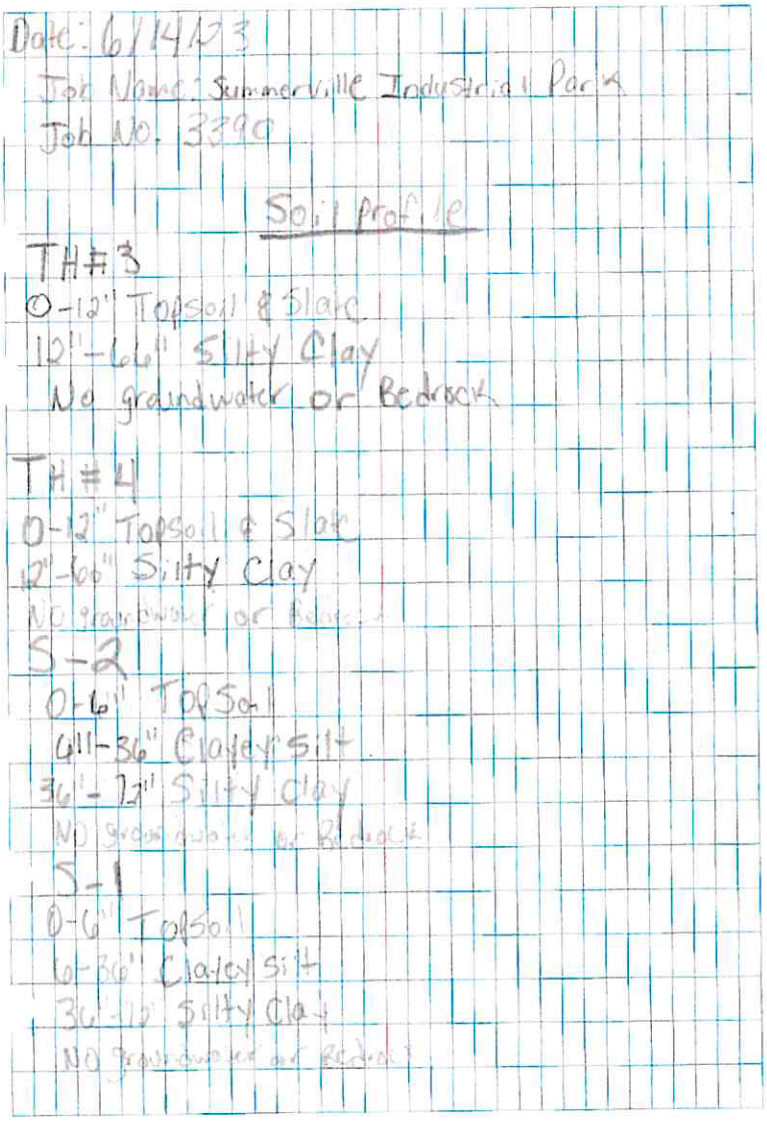


Figure 10: Field notes.

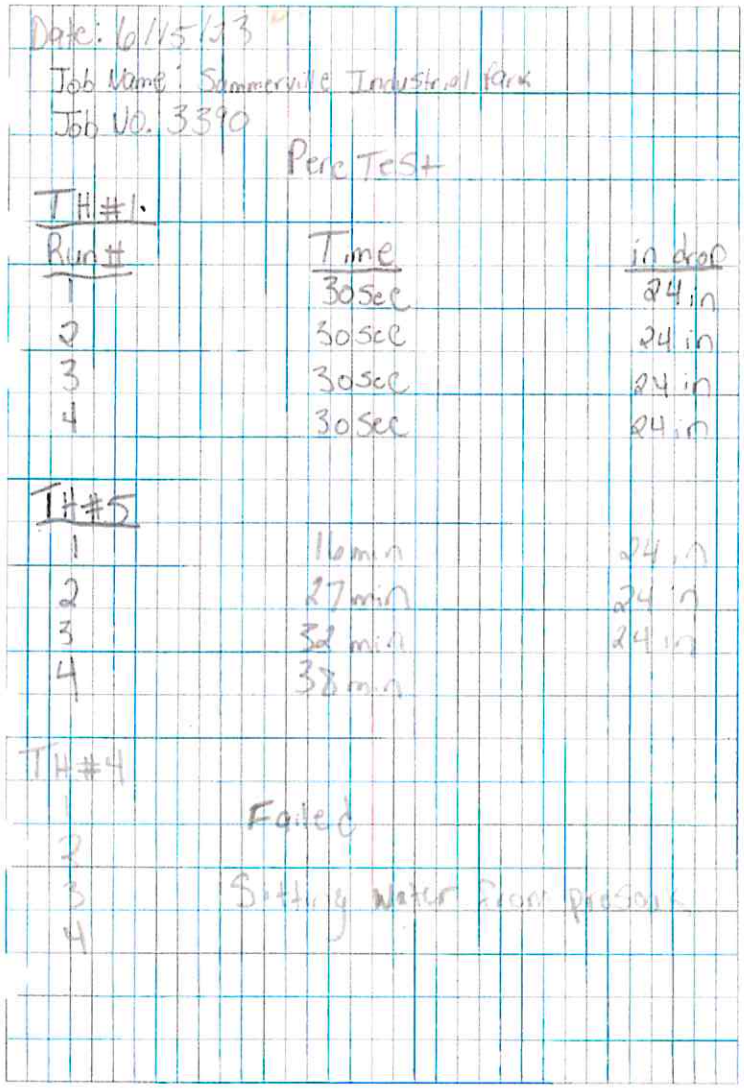


Figure 11: Field notes.

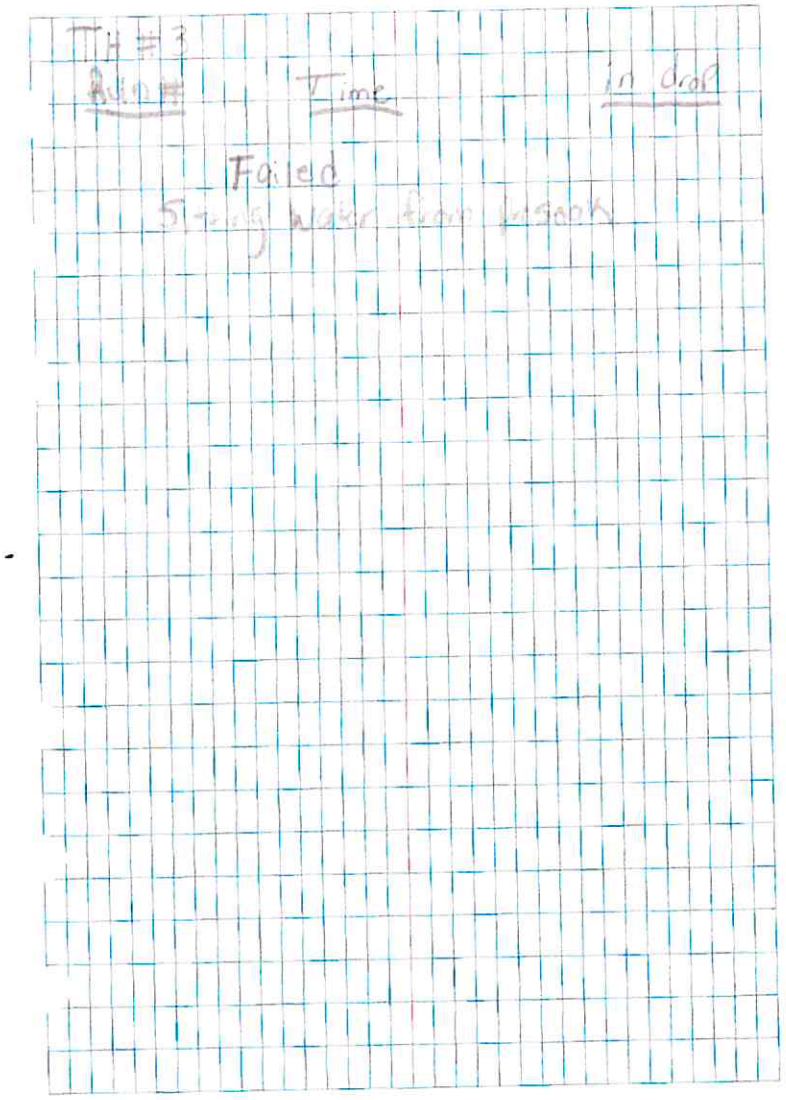
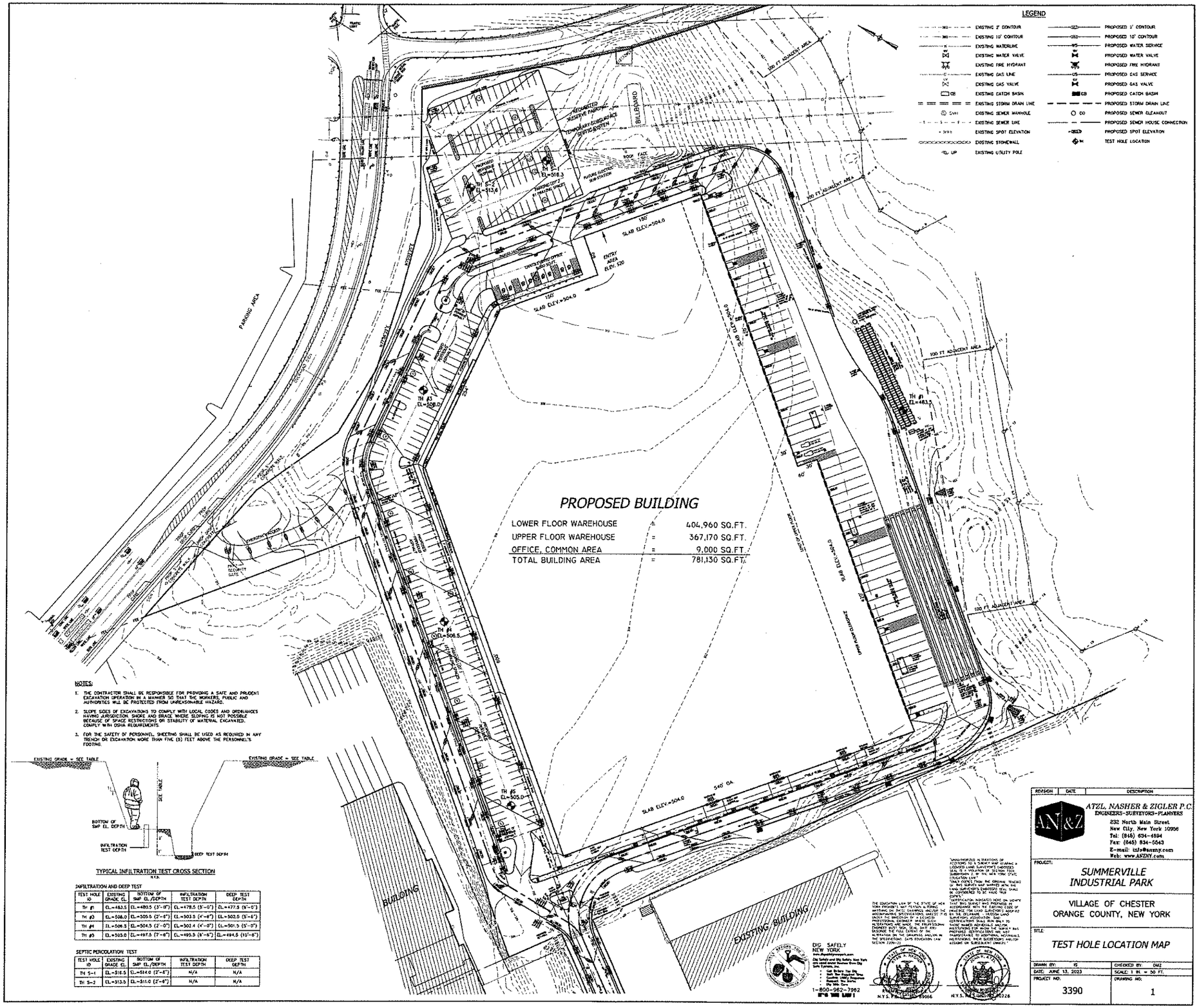


Figure 11: Field notes.


LEGEND
EXISTING 2' CONTOUR
EXISTING 10' CONTOUR
EXISTING WATERLINE
EXISTING WATER VALVE
EXISTING FIRE HYDRANT
EXISTING GAS LINE
EXISTING GAS VALVE
EXISTING CATCH BASIN
EXISTING STORM DRAIN LINE
EXISTING SEWER MANHOLE
EXISTING SEWER LINE
EXISTING SPOT ELEVATION
EXISTING STONEWALL
EXISTING UTILITY POLE
PROPOSED 2' CONTOUR
PROPOSED 10' CONTOUR
PROPOSED WATER SERVICE
PROPOSED WATER VALVE
PROPOSED FIRE HYDRANT
PROPOSED GAS SERVICE
PROPOSED GAS VALVE
PROPOSED CATCH BASIN
PROPOSED STORM DRAIN LINE
PROPOSED SEWER CLEANOUT
PROPOSED SEWER HOUSE CONNECTION
PROPOSED SPOT ELEVATION
TEST HOLE LOCATION
PROPOSED BUILDING
LOWER FLOOR WAREHOUSE = 404,960 SQ.FT.
UPPER FLOOR WAREHOUSE = 367,170 SQ.FT.
OFFICE, COMMON AREA = 9,000 SQ.FT.
TOTAL BUILDING AREA = 781,130 SQ.FT.
NOTES:
1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING A SAFE AND PRUDENT EXCAVATION OPERATION IN A MANNER SO THAT THE WORKERS, PUBLIC AND AUTHORITIES WILL BE PROTECTED FROM UNREASONABLE HAZARD.
2. SLOPE SIDES OF EXCAVATIONS TO COMPLY WITH LOCAL CODES AND ORDINANCES HAVING JURISDICTION. WHERE AND SPACE WHERE SLOPING IS NOT POSSIBLE BECAUSE OF SPACE RESTRICTIONS OR STABILITY OF MATERIAL EXCAVATED, COMPLY WITH OSHA REQUIREMENTS.
3. FOR THE SAFETY OF PERSONNEL, SHEETING SHALL BE USED AS REQUIRED IN ANY TRENCH OR EXCAVATION MORE THAN FIVE (5) FEET ABOVE THE PERSONNEL'S FOOTING.
EXISTING GRADE = SEE TABLE
BOTTOM OF SMP EL. DEPTH
INFILTRATION TEST DEPTH
DEEP TEST DEPTH
TYPICAL INFILTRATION TEST CROSS SECTION
N.T.S.
INFILTRATION AND DEEP TEST
TEST HOLE ID | EXISTING GRADE EL. | BOTTOM OF SMP EL./DEPTH | INFILTRATION TEST DEPTH | DEEP TEST DEPTH
TH #1 | EL.=483.5 | EL.=480.5 (3'-0") | EL.=478.5 (5'-0") | EL.=477.5 (6'-0")
TH #2 | EL.=508.0 | EL.=505.5 (2'-6") | EL.=503.5 (4'-6") | EL.=502.5 (5'-6")
TH #4 | EL.=506.5 | EL.=504.5 (2'-0") | EL.=503.4 (4'-0") | EL.=501.5 (5'-0")
TH #5 | EL.=503.0 | EL.=499.5 (3'-6") | EL.=495.5 (8'-6") | EL.=494.5 (10'-0")
SEPTIC PERCOLATION TEST
TEST HOLE ID | EXISTING GRADE EL. | BOTTOM OF SMP EL./DEPTH | INFILTRATION TEST DEPTH | DEEP TEST DEPTH
TH S-1 | EL.=516.5 | EL.=514.0 (2'-6") | N/A | N/A
TH S-2 | EL.=513.5 | EL.=511.0 (2'-6") | N/A | N/A
DIG SAFELY NEW YORK
1-800-962-7962
ATZL, NASHER & ZIGLER P.C.
ENGINEERS-SURVEYORS-PLANNERS
232 North Main Street
New City, New York 10956
Tel: (845) 634-4894
Fax: (845) 634-5643
E-mail: info@anzny.com
Web: www.ANZNY.com
REVISION | DATE | DESCRIPTION
PROJECT:
SUMMERVILLE INDUSTRIAL PARK
VILLAGE OF CHESTER
ORANGE COUNTY, NEW YORK
TITLE:
TEST HOLE LOCATION MAP
DRAWN BY: TC
CHECKED BY: DMZ
DATE: JUNE 13, 2023
SCALE: 1 IN. = 50 FT.
PROJECT NO: 3390
DRAWING NO: 1

Drainage Maps

SUMMERVILLE INDUSTRIAL PARK

VILLAGE OF CHESTER
ORANGE COUNTY
NEW YORK

DRAINAGE MAPS

BY

ATZL, NASHER & ZIGLER
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232 NORTH MAIN STREET
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E-MAIL: rnasher@anzny.com