CITY OF DOVER

PLANNING TECHNICAL REVIEW COMMITTEE –AGENDA

REVISED

Meeting Type: Regular Meeting
Meeting Location: Council Conference Room – City Hall, Dover NH
Meeting Date: **Thursday, March 3, 2022**
Meeting Time: **10:30 AM**

1. 10:30 AM – 11:00 AM: Site Review for Unitil, (Owner: Hennessey Revocable Trust of 2008), Assessor's Map K, Lot 17-P-3, zoned R-12, located at 55 Applevale Drive. (Proposal is to build a new natural gas regulator station). A related Lot Line Adjustment application will also appear before the Planning Board. (P22-14)

2. 11:00 AM – 11:45 AM: Subdivision for Stonearch Development Corp., (Owners: Mulcah L., George T., Lutsk D., Barnes D. and Eugene A & Donna L Scrignuoli), Assessor's Map E, Lots 65-1 & 65-A, zoned R-20, located between 53 & 65 Tolend Road & 22 Sun Hawk Lane. (Proposal is to construct 30 duplex buildings containing 60 units). A related CUP and Lot Line Adjustment applications will also appear before the Planning Board. (P22-10)

City of Dover, New Hampshire

Minor Lot Line Adjustment Application and

Site Review Application

Project: John Davis Station

55 Applevale Drive

Dover, NH

Prepared For:

Unitil

Prepared By:

PROCESS PIPELINE SERVICES
4 Broad Street
Plainville, MA 02762
781.829.0524
processpipelineservices.com

Table of Contents

1. Project Summary
2. Minor Lot Line Adjustment Application and Checklist
3. Site Review Application and Checklist
4. Site Survey Plan
5. Lot Line Revision Plan
6. Project Plans
7. Station 3D Rendering
8. Abutter List
9. Property Record Cards
10. Zoning District Summary
11. Flood Map
12. US Soil Survey Data

1. Project Summary

PROCESS PIPELINE SERVICES
4 Broad St
Plainville, MA 02762
781.829.0524
processpipeline.com

February 16, 2022

Planning Department
City of Dover, New Hampshire
288 Central Ave
Dover, New Hampshire 03820

Subject: Minor Lot Line Adjustment Application and Site Review Application
John Davis Station

To Whom it May Concern,

Unitil is pleased to submit the accompanying plans related to the proposed project to build a new natural gas regulator station at 55 Applevale Drive.

Currently Until has two existing stations in the area that serve natural gas to residents in Dover and the surrounding cities. The first, Hawthorn Station, is located in vaults in the public right of way along Hawthorn Road. The second, Applevale Station, is located above ground in a fenced in area on Unitil's property at 31 Kent Ave. This property does not have direct access from the public right of way. Currently Unitil utilizes an easement through 55 Applevale Drive for access to it. Unitil is proposing to replace these two existing stations with one above ground station along Hawthorn Rd on the 55 Applevale Drive lot. Unitil and the Hennessey's (owners of 55 Applevale Drive) have come to an agreement where the Hennessey's would absorb Unitil's 31 Kent Ave property and Unitil would obtain a portion of the 55 Applevale Drive property for the new station. It is proposed to do this through a Lot Line Adjustment.

The proposed property for Unitil's John Davis Station will be 5,854 sq. ft. It will be fully enclosed by a vinyl chain-link fence with privacy slats and will have additional screening all around the station in the form of arborvitaes. Guardrail will be placed within the fencing along the sides abutting the roadway for protection from vehicles. The station will have two accesses from Hawthorn Rd. One access will be a paved primary access that will be used for routine maintenance, which will be approximately a couple times a month. The second access will be crushed stone and used for emergency access into the station and to also allow the Hennessey's access from Hawthorn Rd to the back portion of their lot for maintenance. Besides the primary paved access, the entire site will be covered with pervious crushed stone. Inside the station area there will be above and below grade piping, sonotube foundations for pipe supports, a backup generator, and a building with a concrete grade beam foundation. The building will be a 20' x 40' pre-cast concrete building with a red brick stucco exterior. The building will be one floor with two rooms. One room will be for piping and the other for SCADA (supervisory control and data acquisition). SCADA allows for the station to be remotely monitored 24/7. The purpose of the building is to keep key piping components out of the elements, ease of maintenance on those key piping components, and added security.

PROCESS PIPELINE SERVICES
4 Broad St
Plainville, MA 02762
781.829.0524
processpipeline.com

Alternate locations and designs were considered for this project. Locations along Middle Rd were considered but no land was available for purchase. Locations near Central Ave and Rutland St were considered but thousands of feet of gas pipeline would need to be replaced and was deemed impractical and too costly. The design and locations of the existing stations do not allow for the proper updates and changes that would be needed. The proposed location for the new station is ideal due to its close proximity to the existing stations it will be replacing.

The reasoning for the project is to replace the existing aging stations with a new consolidated station that is fully up to date with current design standards that will be able to handle the current load demand more efficiently and also be able to handle future growth in Dover and the surrounding areas.

Unitil and PPS look forward to your review of this project. If you have any questions or comments regarding our applications, please feel free to contact me.

Sincerely,
Matt Pelletier
Senior Engineer
Process Pipeline Services
774-276-0364

2. Minor Lot Line Adjustment Application and Checklist

DocuSign Envelope ID: F468BA2E-7054-4968-83A7-8902AECD48D6

City of Dover, New Hampshire
MINOR LOT LINE ADJUSTMENT APPLICATION

[Revision Date: June 4, 2019]

Office Use Only	Project #:		Date Received:	
	Amount Paid:		Time Received:	

APPLICANT INFORMATION

Name of Applicant: Unitil Telephone #207-752-1551

Address of Applicant: 325 West Road Portsmouth, NH 03801

FIRST PROPERTY OWNER AND PARCEL INFORMATION

Name of 1st Property Owner (*if different from applicant*): Unitil Telephone #207-752-1551

Address of 1st Property Owner: 325 West Road Portsmouth, NH 03801

Address of Property: 31 Kent Avenue

Assessor's Map # K Lot(s) # 18-Y

Property Deed: Book 727 Page: 353

Zoning District(s) R-12 Overlay District(s) N/A

Size of Existing Parcel (sq. ft.): 600 Size of Proposed Parcel (sq. ft.): 5,854

SECOND PROPERTY OWNER AND PARCEL INFORMATION

Name of 2nd Property Owner (*if different from applicant*): Barry & Janis Hennessey Telephone #603-749-1520

Address of 2nd Property Owner: 55 Applevale Drive

Address of Property: 55 Applevale Drive

Assessor's Map # K Lot(s) # 17-P3

Property Deed: Book 1053 Page: 161

Zoning District(s) R-12 Overlay District(s) N/A

Size of Existing Parcel (sq. ft.): 25,652 Size of Proposed Parcel (sq. ft.): 20,398

THIRD PROPERTY OWNER AND PARCEL INFORMATION

Name of 3rd Property Owner (*if different from applicant*): N/A Telephone #

Address of 3rd Property Owner:

Address of Property:

DocuSign Envelope ID: F468BA2E-7054-4968-83A7-8902AECD48D6

Assessor's Map # _____ Lot(s) # _____

Property Deed: Book _____ Page: _____

Zoning District(s) _____ Overlay District(s) _____

Size of Existing Parcel (sq. ft.): _____ Size of Proposed Parcel (sq. ft.): _____

[Use additional application form if more than two lots are being adjusted]

SURVEYOR INFORMATION

Name of Surveyor and Company (Licensed in N.H.) John Kaiser, Doucet Survey LLC

Address 102 Kent Place Newmarket, NH 03857 Telephone #: 603-659-6560

Professional License #: 937 E-mail address: Jack@doucetsurvey.com

CONSERVATION EASEMENT HOLDER (s)

Name of Easement Holder: N/A Telephone #_____

Address Easement Holder: _____

Name of 2nd Easement Holder: _____ Telephone #_____

Address 2nd Easement Holder: _____

SIGNATURES

I/We hereby submit this application to the City of Dover Planning Board and attest that to the best of my knowledge all of the information on this application form and in the accompanying application materials and documentation is true and accurate. As applicant or as agent, I attest that I am duly authorized to act in this capacity.

Signature of First Property Owner: DocuSigned by: Chris LeBlanc 0C99C46F051B47C... Date: 2/14/2022

Signature of Second Property Owner: DocuSigned by: Barry Hennessey D2D8C123578248D... Date: 2/15/2022

Signature of Applicant (*if different from owner*): DocuSigned by: Chris LeBlanc 0C99C46F051B47C... Date: 2/14/2022

Signature of Agent: DocuSigned by: Matt Pelletier 36E04A369C934E1... Date: 2/11/2022

AUTHORIZATION TO ENTER SUBJECT PROPERTY

I hereby authorize members of the Dover Planning Board, Planning Department and other pertinent City Departments and boards to enter my property for the purpose of evaluating this application, including performing inspections during the application phase, post-approval phase, construction phase and occupancy phase. It is understood that these individuals must use all reasonable care, courtesy, and diligence when on the property.

Signature of Property Owner: DocuSigned by: Chris LeBlanc 0C99C46F051B47C... Date: 2/14/2022

DocuSign Envelope ID: F468BA2E-7054-4968-83A7-8902AECD48D6

City of Dover, New Hampshire
LOT LINE ADJUSTMENT SUBMISSION CHECKLIST

[Revision Date: June 4, 2019]

This review checklist is intended to assist the applicant in the planning process of preparing a Subdivision application for Planning Board action. The size of the project will determine the types of information required for review, therefore, a **pre-application conference** with the Planning Department to determine the list of items that must be completed is strongly encouraged.

Plan Review Fees are due along with three (3) full size and twelve (12) half size (11x17), folded, copies of the plan set and materials, 3 weeks prior to the Planning Board meeting. Abutter/Notice Fees will be invoiced and are due 28 hours prior to Planning Board.

The applicant is cautioned that this checklist is only a guide and is not intended to be a complete list of all subdivision requirements. Please refer to the Subdivision Regulations for full details.

APPLICANT: Unitil File Number: _____

PROPERTY LOCATION: 55 Applevale Drive and 31 Kent Ave Tax Map: K Lot: 17-P3 and Lot: 18-Y

	Where/How Provided	Reviewed
1. Completed and signed Application form	Submitted	
2. Plan Review Fees are provided	Paid	
3. Electronic copy of the surveyed plat layout	Submitted	
4. Electronic copy of supplementary materials and application	Submitted	
5. Fifteen copies of LLA plan w/scale of not less than 1"=50' or 1"=100' for larger adjustments. Plans shall contain the following items as appropriate:	Submitted	
Location map at appropriate scale	LLR Plan	
Planning File #	LLR Plan	
Date, north arrow and scale	LLR Plan	
Names of all abutting property owners	LLR Plan	
Name and address of owners	LLR Plan	
Signature & stamp of NH licensed land surveyor	LLR Plan	
Zoning District boundaries, including any special or overlay districts	LLR Plan	
Location of Conservation District areas	N/A	
Location, names and widths of existing and streets, including pavement widths, grades, curbs and crosswalks	LLR Plan	
Location and widths of existing & proposed easements & right of ways	LLR Plan	
Existing and proposed property lines with dimensions and bearings tied into Dover's Geographic Information System coordinate system	LLR Plan	
Existing and proposed lot areas in square feet	LLR Plan	
Existing and proposed buildings and structure locations	LLR Plan	
Minimum building setbacks or build to lines on all lots	LLR Plan	
Map and lot numbers for existing and proposed lots as assigned by Tax Assessor	LLR Plan	
Location, material and size of existing and proposed permanent monuments	LLR Plan	
All applicable Dover Common Subdivision notes	LLR Plan	

REVIEWED BY: _____ DATE_____

3. Site Review Application and Checklist

DocuSign Envelope ID: F468BA2E-7054-4968-83A7-8902AECD48D6

City of Dover, New Hampshire
SITE REVIEW APPLICATION

[Revision Date: July 1, 2021]

Office Use Only	Project #:		Date Received:	
	Amount Paid:		Time Received:	

APPLICANT AND OWNER INFORMATION

Name of Applicant: Unitil Telephone # 207-752-1551

Address of Applicant: 325 West Road Portsmouth, NH 03801

E-Mail Address: masons@unitil.com

Name of Property Owner (*if different from applicant*): Barry Hennessey Telephone # 603-749-1520

Address of Property Owner: 55 Applevale Drive Dover, NH

PROPERTY INFORMATION

Address of Property: 55 Applevale Drive Dover, NH

Assessor's Map # K Lot(s) # 17-P3

Zoning District(s) R-12 Overlay District(s) N/A

Size of Parcel: 25,652 sq. ft. 0.589 ac. Property Deed: Book 1053 Page: 161

Existing Use of Property: _____

SITE PLAN INFORMATION

Describe Proposed Use: Utility Natural Gas Station

Area of Parcel to be Developed: 5,854 sq. ft.

If Multi-family Residential: N/A Number of Units _____ & Buildings Proposed _____

If lodging: N/A Number of Units _____ & number of Buildings _____

Number of Parking Spaces: Existing 0 Proposed 0

Highway Access (check where applicable): X City Street ____ State Highway

Number of Employees Total: 0 In Maximum Shift: 0

Disposition of Parcel:

Building Footprint 600 sq. ft.

Total Building Area 600 sq. ft.

Paved Area 1,440 sq. ft.

Building Setbacks:

Front Yard 24 ft.

Rear Yard 30 ft.

Side Yard: Right 24 ft. Left 21 ft.

DocuSign Envelope ID: F468BA2E-7054-4968-83A7-8902AECD48D6

City Water? ___Yes ___ No N/A How far is city water from the property? _____

City Sewer? ___Yes ___ No N/A How far is city sewer from the property? _____

TRANSFER OF DEVELOPMENT RIGHTS INFORMATION

Type of TRANSFER OF DEVELOPMENT RIGHT REQUEST (Check All That Apply): N/A

□ Residential □ Residential (reduced size) □ Industrial | □ Purchase □ Land Preservation

Relief sought (Check All That Apply):

□ Lot Size □ Frontage □ Setback □ 30' Buffer □ Increase by _____ units

Describe Proposed Use or Activity that requires TDR; describe any impacts and document mitigation:

_____

_____

_____

BUILDING INFORMATION

Type of Building to be Built: Pre-cast concrete building

Height of Building: 11'-2" Finished Floor Elevation: 8" above grade

Number of Seats (where applicable) N/A

Estimated value of construction: 300,000 Refuse removal: Public/Private (circle one)

WAIVER REQUESTS

Site Review Regulations section(s) to be waived: Traffic Impact Analysis, Landscape Plan

Justification for waiver request(s) (*attach additional sheets as needed*):

Traffic Impact Analysis: Traffic will not change due to this project. Unitil has two existing stations in this area which will be consolidated into one station. The only existing traffic is from a utility truck doing routine maintenance a couple times a month on the two existing stations, which will be the same for the proposed station.

Landscape Plan: We feel that a Landscape Plan by a licensed Professional Landscape Architect is not warranted for a utility station project such as this. Screening in the form or arborvitaes and vinyl coated chain-link fence with privacy slats around the entire station is specified on the plans. Unitil will work further with the City on the details for the station screening (fence color, types of arbovitaes, etc.)

DocuSign Envelope ID: F468BA2E-7054-4968-83A7-8902AECD48D6

SURVEYOR INFORMATION

Name of Surveyor and Company (Licensed in N.H.) John Kaiser, Doucet Survey LLC

Address 102 Kent Place Newmarket, NH 03857 Telephone #: 603-659-6560

Professional License #: 937 E-mail address: Jack@doucetsurvey.com

ENGINEER INFORMATION

Name of Engineer and Company (Licensed in N.H.) Steve Reade, Process Pipeline Services

Address 4 Broad Street Plainville, MA 02762 Telephone #: 781-829-0524e

Professional License #: 15580 E-mail address: sreade@processpipeline.com

ARCHITECT INFORMATION

Name of Architect and Company (Licensed in N.H.) TBD, United Concrete

Address 173 Church Street Yalesville, CT 06492 Telephone #: 800-234-3119

Professional License #: TBD E-mail address: patty@unitedconcrete.com

LANDSCAPE ARCHITECT INFORMATION

Name of Landscape Architect and Company (Licensed in N.H.) None

Address _____ Telephone #: _____

Professional License #: _____ E-mail address: _____

SOIL SCIENTIST INFORMATION

Name of Soil Scientist and Company (Licensed in N.H.) None

Address _____ Telephone #: _____

Professional License #: _____ E-mail address: _____

CONSERVATION EASEMENT HOLDER

Name of Easement Holder: N/A Telephone #_____

Address Easement Holder: _____

DocuSign Envelope ID: F468BA2E-7054-4968-83A7-8902AECD48D6

SIGNATURES

I/We hereby submit this application to the City of Dover Planning Board and attest that to the best of my knowledge all of the information on this application form and in the accompanying application materials and documentation is true and accurate. Furthermore, I/we submit that the existing conditions sheet of the plan represents the lot in question, and that no alteration of the site shall take place during Planning Board review up to and including the pre-construction meeting. As applicant or as agent, I attest that I am duly authorized to act in this capacity.

Signature of Property Owner: DocuSigned by: Barry Hennessey D2D8C123578248D... Date: 2/15/2022

Signature of Applicant (*if different from owner*): DocuSigned by: Chris LeBlanc 0C99C46F051B47C... Date: 2/14/2022

Signature of Agent: DocuSigned by: Matt Pelletier 36E04A369C934E1... Date: 2/11/2022

AUTHORIZATION TO ENTER SUBJECT PROPERTY

I, and my successors, hereby authorize members of the Dover Planning Board, Planning Department and other pertinent City Departments and boards to enter my property for the purpose of evaluating this application, including performing inspections during the application phase, post-approval phase, construction phase and occupancy phase. It is understood that these individuals must use all reasonable care, courtesy, and diligence when on the property.

Signature of Property Owner: DocuSigned by: Barry Hennessey D2D8C123578248D... Date: 2/15/2022

AUTHORIZATION TO COMPLETE THE PROJECT ON SUBJECT PROPERTY

I, and my successors, hereby the City of Dover or its assigns to enter my property for the purpose of completing the site work as required by the approved plan should the letter or credit or other surety be called. It is understood that these individuals must use all reasonable care, courtesy, and diligence when on the property.

Signature of Property Owner: DocuSigned by: Barry Hennessey D2D8C123578248D... Date: 2/15/2022

Signature of Applicant (*if different from owner*): DocuSigned by: Chris LeBlanc 0C99C46F051B47C... Date: 2/14/2022

CERTIFICATION OF FEES

I, and my successors, hereby certify that I understand that the City of Dover collects impact fees, utility investment fees and inspection fees for projects developed in Dover. Said fees must be paid before a Certificate of Occupancy can be obtained for a structure, unless a different payment schedule is agreed to by the applicant and the City prior to approvals being issued by the Dover Planning Board. Additionally, should the property be in "Current Use" it will be subject to the Land Use Change Tax.

Signature of Property Owner: DocuSigned by: Barry Hennessey D2D8C123578248D... Date: 2/15/2022

Signature of Applicant (*if different from owner*): DocuSigned by: Chris LeBlanc 0C99C46F051B47C... Date: 2/14/2022

DocuSign Envelope ID: F468BA2E-7054-4968-83A7-8902AECD48D6

City of Dover, New Hampshire
SITE PLAN REVIEW SUBMISSION CHECKLIST

[Revision Date: June 4, 2019]

This site plan review checklist, as required by Chapter 153-6-B(2), should be completed by the applicant. It is intended to assist the applicant in the planning process of preparing a Site Plan Review application for Planning Board action. The size of the project will determine the types of information required for review, therefore, a **pre-application conference** with the Planning Department to determine the list of items that must be completed is strongly encouraged.

The first step would be to appear before the Technical Review Committee, to apply, eight (8) folded copies of the site plan with scale of not less than 1"=50' or 1" =100' for larger site plans, need to be provided, along with payment of plan review fees.

Two weeks prior to Planning Board, three (3) full size and twelve (12) half size (11x17), folded, copies of the plan set and materials, including response to TRC comments, will be due. Abutter/Notice Fees will be invoiced and need to be paid 28 hours prior to the Planning Board meeting.

The applicant is cautioned that this checklist is only a guide and is not intended to be a complete list of all site plan review requirements. Please refer to the Site Plan Review Regulations for full details.

APPLICANT: UnitI File Number: _____

PROJECT TITLE: John Davis Station

PROPERTY LOCATION: 55 Applevale Drive Tax Map: K Lot: 17-P3

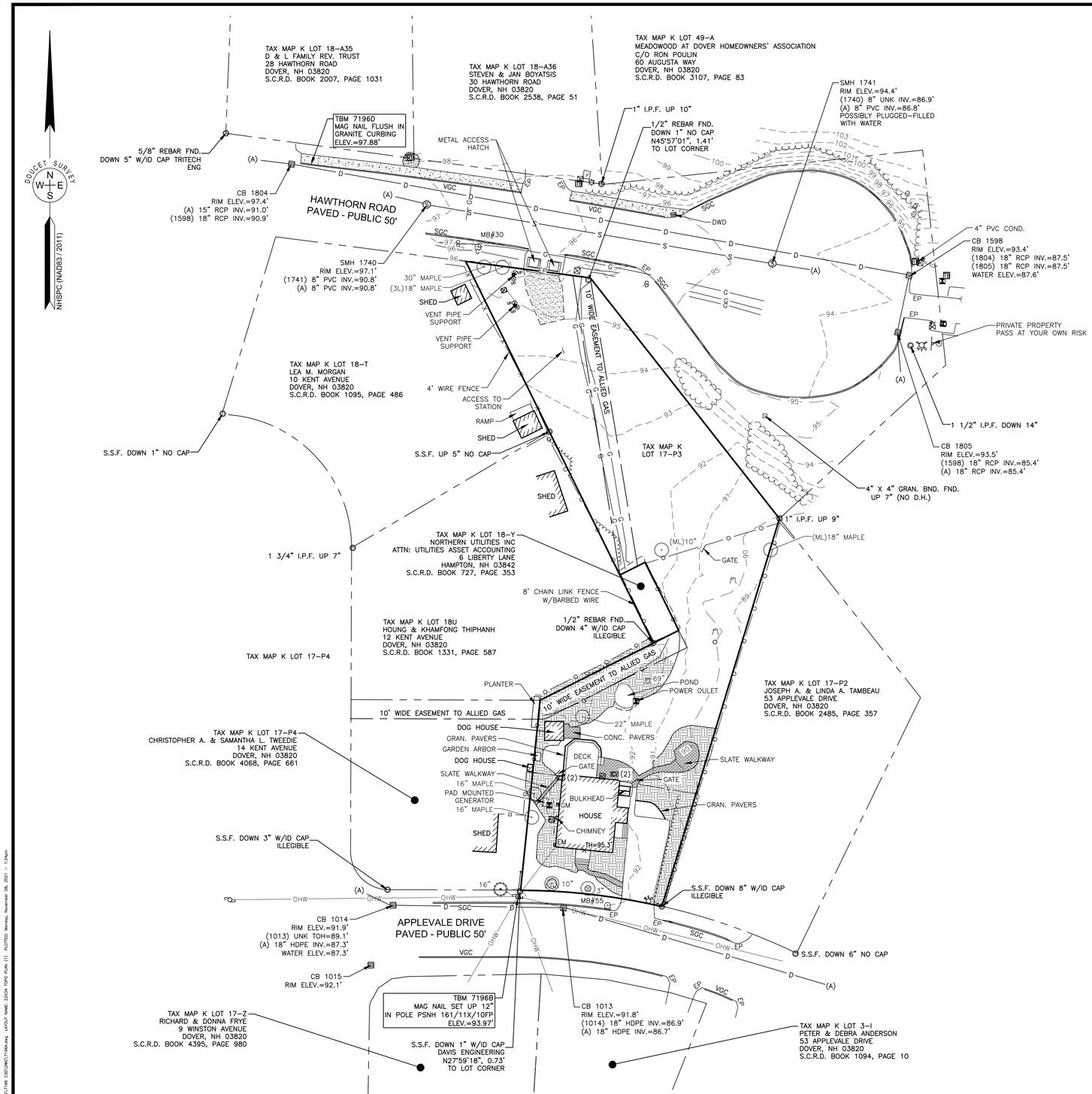
	Where/How Provided	Reviewed
1. Completed and signed Application form	Submitted	
2. Plan Review Fees are provided	Paid	
3. Electronic copy of the engineered/surveyed plan layout	Submitted	
4. Electronic copy of supplementary materials and application	Submitted	
5. Traffic Impact Assessment and Analysis (Standard or Advanced)	Waiver	
6. Waiver requests to the Site Plan Review Regulations, with written justification	Submitted	
7. Conditional Use Permit applications	N/A	
8. A colored rendering of the streetscape that will be created along the existing public right-of-way	3D Rendering	
9. A colored architectural plan showing all sides of buildings	Building Sections	
10. Folded copies of site plan w/scale of not less than 1"=50' or 1"=100' for larger site plans, for TRC. Plans shall contain the following items as appropriate:	Submitted	
Location map at appropriate scale	Title Sheet	
Proposed Project name and title and Planning File #	Title Sheet	
Date, north arrow and scale	Site Plan/Survey Plan/LLR Plan	
Names of all abutting property owners	Site Plan/Survey Plan/LLR Plan	
Name and address of owners and/or applicants	Site Plan/Survey Plan/LLR Plan	
Signature & stamp of NH licensed land surveyor and/or engineer	Site Plan/Survey Plan/LLR Plan	
Zoning District boundaries, including any special or overlay districts	Site Plan/Survey Plan/LLR Plan	
Location of Conservation District areas	N/A	
Location, names and widths of existing and proposed streets, including pavement widths, grades, curbs and crosswalks	Site Plan/Survey Plan/LLR Plan	
Location and widths of existing & proposed easements & right of ways	Site Plan/Survey Plan/LLR Plan	
Location and width of existing and proposed access/egress ways	Site Plan/Survey Plan/LLR Plan	

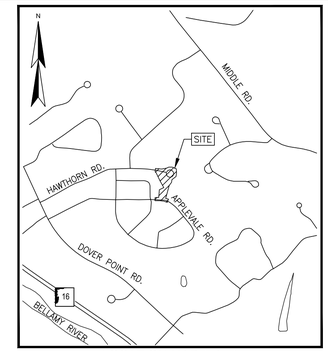
DocuSign Envelope ID: F468BA2E-7054-4968-83A7-8902AECD48D6

	Explain How Provided	Reviewed
Depict pedestrian walkways and accessible access	Ex Conditions/Site Plan	
Existing and proposed property lines with dimensions and bearings tied into Dover's Geographic Information System coordinate system	Site Plan	
Existing and proposed topographic information at two foot intervals	Grading and Foundation Plan	
Existing and proposed buildings and structure locations	Site Plan	
Minimum building setbacks or build to lines on all lots	Site Plan/Piping Plan	
Location and size of existing and proposed electric, telephone, gas cable and other underground utilities	Site Plan	
Existing and proposed water lines and fire hydrants, including materials and capacity needed	Site Plan	
Location and materials of sanitary sewage facilities within project site and projected additional peak hour sewer load	N/A	
Existing and proposed stormwater lines and facilities	Ex Conditions/Site Plan	
Lighting plan depicting all existing and proposed exterior light fixtures and a lighting level analysis for parking lots	Site Lighting Plan	
Location of Flood Hazard Zone	Survey Plan	
Location of all bodies of water and watercourses	N/A	
Location of wetlands and buffers	N/A	
Neighborhood plan with aerial underlay showing how project relates to abutting uses within the plan set	Site Aerial Plan	
Existing natural features and/or significant vegetation on property	Ex Conditions	
Depict existing contours up to 100 ft. beyond project limits	Survey Plan	
Landscape plan depicting existing and proposed landscaping, prepared by a licensed Professional Landscape Architect	Waiver	
Location of parking layout delineating spaces and arrangement; note addressing maximum required spaces	N/A	
Location, material and size of existing and proposed pavement area	Site Plan	
Location of proposed fire lanes	N/A	
Specify finished floor elevations of buildings	Building Sections	
Location of solid waste disposal facilities (dumpster, pad and screening, etc.), including required screening	N/A	
Depict all service, storage, loading bays and utility areas	N/A	
All applicable Dover Common Site Plan notes	Survey Plan/LLR Plan	
11. Additional Information if appropriate		
Stormwater Management Plan depicting the existing & proposed storm drainage system and engineered drainage analysis	N/A	
Stormwater Management System Operation and Maintenance Plan	N/A	
Letter to Serve from Public and Private Utilities	N/A	
Erosion and Sedimentation Control Plan	Erosion and Sedimentation Control Plan	
Landscape Operation and Maintenance Plan	N/A	
Proposed restrictive covenants or homeowners association documents	N/A	
Dates and permit numbers of all required state and federal permits	N/A	
If wetland buffer, indicate placards locations, as applicable	N/A	
Depict test boring locations, groundwater elevations and soil profiles and/or soils types call-outs	US Survey Soil Data	
Location of proposed drive-in facilities	N/A	
Provide additional exhibits/technical data determined appropriate by the Planning Board or its staff as required	N/A	

REVIEWED BY: _____ DATE_____ TRC DATE_____

4. Site Survey Plan





LOCATION MAP (n.t.s.)

LEGEND

- EXISTING LOT LINE
- APPROXIMATE ABUTTERS LOT LINE
- 100 MAJOR CONTOUR LINE
- 99 MINOR CONTOUR LINE
- CHAIN LINK FENCE
- STOCKADE FENCE
- PICKET FENCE
- WIRE FENCE
- OHW OVERHEAD WIRE
- D DRAIN LINE
- S SEWER LINE
- G GAS LINE
- TREE LINE
- SHRUB LINE
- CONCRETE
- LANDSCAPED AREA
- CRUSHED STONE
- BRICK
- BOUND FOUND (BND. FND.)
- PIPE/ROD FOUND
- UTILITY POLE
- UTILITY POLE & GUY WIRE
- LIGHT POST
- DRAIN MANHOLE
- CATCH BASIN
- SEWER MANHOLE
- FIRE HYDRANT
- WATER GATE VALVE
- WATER SHUTOFF VALVE
- IRRIGATION CONTROL VALVE
- GAS METER
- GAS LINE MARKER POST
- TELEPHONE BOX
- UNIDENTIFIED UTILITY BOX
- SQUARE POST
- POST
- BOLLARD
- MAIL BOX
- CONIFEROUS TREE 10" DIA. OR GREATER
- DECIDUOUS TREE 10" DIA. OR GREATER
- TREE STUMP

BND. FND.	BOUND FOUND
I.P.F.	IRON PIPE FOUND
S.S.F.	STEAL STAKE FOUND
TH	THRESHOLD ELEVATION
EP	EDGE OF PAVEMENT
VGC	VERTICAL GRANITE CURB
SGC	SLOPED GRANITE CURB
RCP	REINFORCED CONCRETE PIPE
HDPE	HIGH DENSITY POLYETHYLENE PIPE
TOH	TOP OF PIPE HOOD
UNK	UNKNOWN
(X)	INVERT I.D. CONNECTION UNKNOWN
EM	ELECTRIC METER
VP	VERTICAL PIPE

NOTES:

1. REFERENCE: DOVER, NEW HAMPSHIRE
55 APPLEVALE DRIVE
D.S. PROJECT NO. 7196
2. TOTAL PARCEL AREA: LOT 17-P3 25,652 SQ. FT. OR 0.589 AC.
LOT 18-Y 600 SQ. FT.
3. OWNER OF RECORD: TAX MAP K LOT 17-P3
HENNESSEY REVOCABLE TRUST OF 2008
BARRY J. & JANIS M. HENNESSEY TRUSTEES
55 APPLEVALE DRIVE
DOVER, NH 03820
S.C.R.D. BOOK 1053, PAGE 161

TAX MAP K LOT 18-Y
NORTHERN UTILITIES INC
ATTN: UTILITIES ASSET ACCOUNTING
6 LIBERTY LANE
HAMPTON, NH 03842
S.C.R.D. BOOK 727, PAGE 353

4. FIELD SURVEY PERFORMED BY J.H.H. & K.J.L. DURING NOVEMBER 1, 2021 USING A TRIMBLE S7 TOTAL STATION AND A TRIMBLE R12 SURVEY GRADE GPS WITH A TRIMBLE TSC3 DATA COLLECTOR AND A TRIMBLE DINI DIGITAL AUTO LEVEL. TRAVERSE ADJUSTMENT BASED ON LEAST SQUARE ANALYSIS.
5. HORIZONTAL DATUM BASED ON NAD83(2011) NEW HAMPSHIRE STATE PLANE COORDINATE ZONE (2800) DERIVED FROM REDUNDANT GPS OBSERVATIONS UTILIZING THE KEYNET GPS VRS NETWORK.
6. VERTICAL DATUM IS BASED ON APPROXIMATE NAVD88(GEOID12A) (±.2') DERIVED FROM REDUNDANT GPS OBSERVATIONS UTILIZING THE KEYNET GPS VRS NETWORK.
7. FLOOD HAZARD ZONE:"X", PER FIRM MAP #33017C0340E, DATED 9/30/2015.
8. PROPER FIELD PROCEDURES WERE FOLLOWED IN ORDER TO GENERATE CONTOURS AT 1' INTERVALS. ANY MODIFICATION OF THIS INTERVAL WILL DIMINISH THE INTEGRITY OF THE DATA, AND DOUCET SURVEY. WILL NOT BE RESPONSIBLE FOR ANY SUCH ALTERATION PERFORMED BY THE USER.
9. UNDERGROUND UTILITIES SHOWN HEREON ARE BASED ON OBSERVED PHYSICAL EVIDENCE AND PAINT MARKS FOUND ON-SITE.
10. SITE WAS INVESTIGATED BY GOVE ENVIRONMENTAL SERVICES ON OCTOBER 29, 2021 FOR JURISDICTIONAL WETLANDS. NO WETLANDS WERE DELINEATED ON THE SITE.
11. THE ACCURACY OF MEASURED UTILITY INVERTS AND PIPE SIZES/TYPES IS SUBJECT TO NUMEROUS FIELD CONDITIONS, INCLUDING; THE ABILITY TO MAKE VISUAL OBSERVATIONS, DIRECT ACCESS TO THE VARIOUS ELEMENTS, MANHOLE CONFIGURATION, ETC.
12. THE INTENT OF THIS PLAN IS TO SHOW THE LOCATION OF BOUNDARIES IN ACCORDANCE WITH AND IN RELATION TO THE CURRENT LEGAL DESCRIPTION, AND IS NOT AN ATTEMPT TO DEFINE UNWRITTEN RIGHTS, DETERMINE THE EXTENT OF OWNERSHIP, OR DEFINE THE LIMITS OF TITLE.
13. ALL UNDERGROUND UTILITIES (ELECTRIC, GAS, TEL. WATER, SEWER DRAIN SERVICES) ARE SHOWN IN SCHEMATIC FASHION, THEIR LOCATIONS ARE NOT PRECISE OR NECESSARILY ACCURATE. NO WORK WHATSOEVER SHALL BE UNDERTAKEN USING THIS PLAN TO LOCATE THE ABOVE SERVICES. CONSULT WITH THE PROPER AUTHORITIES CONCERNED WITH THE SUBJECT SERVICE LOCATIONS FOR INFORMATION REGARDING SUCH. CALL DIG-SAFE AT 1-888-DIG-SAFE.

30 0 30 60
SCALE: 1 INCH = 30 FT.

EXISTING CONDITIONS PLAN
FOR
PROCESS PIPELINE SERVICES
OF
HENNESSEY REVOCABLE TRUST OF 2008
(TAX MAP K LOT 17-P3)
&
NORTHERN UTILITIES, INC.
(TAX MAP K LOT 18-Y)
APPLEVALE DRIVE & HAWTHORN ROAD
DOVER, NEW HAMPSHIRE

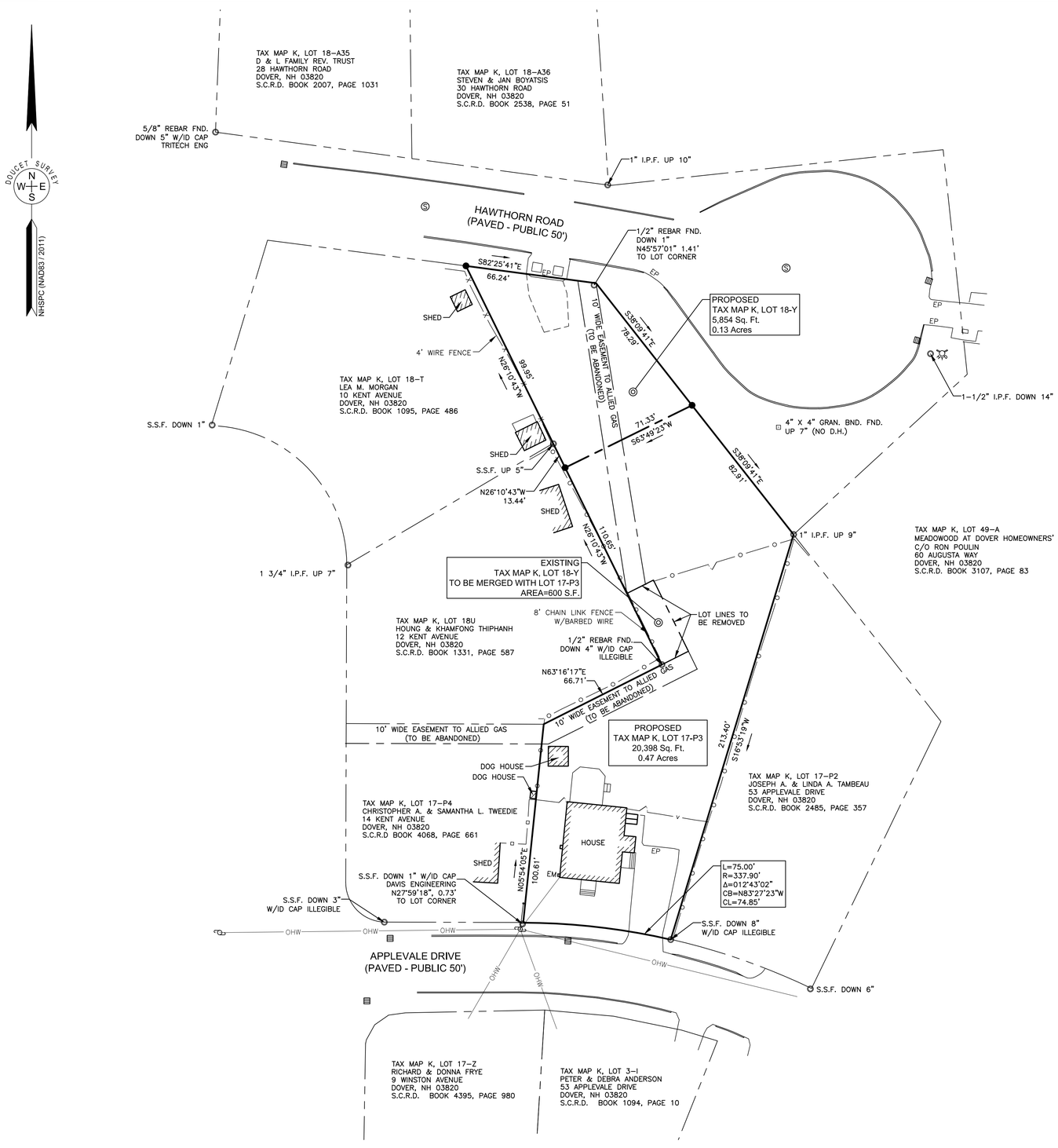
NO.	DATE	DESCRIPTION	BY

DRAWN BY:	E.D.P.	DATE:	NOVEMBER 8, 2021
CHECKED BY:	J.F.K.	DRAWING NO.	7196A
JOB NO.	7196	SHEET	1 OF 1

DOUCET SURVEY LLC
Serving Your Professional Surveying & Mapping Needs
102 Kent Place, Newmarket, NH 03857 (603) 659-6560
Offices in Bedford & Keene, NH and Kennebunk, ME
http://www.doucetsurvey.com

FILE NAME: Y:\PROJECTS\7196 CSD\DWG\7196A.dwg LAYOUT NAME: 22X34 TOPO PLAN (1) PLOTTED: Monday, November 08, 2021 - 1:34pm

5. Lot Line Revision Plan



NOTES:

1. REFERENCE: DOVER, NEW HAMPSHIRE
   55 APPLEVALE DRIVE
   D.S. PROJECT NO. 7196

2. TOTAL PARCEL AREA:

EXISTING		
LOT 17-P3	25,652 SQ. FT. OR 0.589 AC.	
LOT 18-Y	600 SQ. FT.	
PROPOSED		
LOT 17-P3	20,398 SQ. FT. OR 0.47 AC.	
LOT 18-Y	5,854 SQ. FT. OR 0.13 AC.	

3. OWNER OF RECORD: TAX MAP K LOT 17-P3
   HENNESSEY REVOCABLE TRUST OF 2008
   BARRY J. & JANIS M. HENNESSEY TRUSTEES
   55 APPLEVALE DRIVE
   DOVER, NH 03820
   S.C.R.D. BOOK 1053, PAGE 161

   TAX MAP K LOT 18-Y
   NORTHERN UTILITIES INC
   ATTN: UTILITIES ASSET ACCOUNTING
   6 LIBERTY LANE
   HAMPTON, NH 03842
   S.C.R.D. BOOK 727, PAGE 353

4. ZONE: MEDIUM DENSITY RESIDENTIAL (R12) DISTRICT
   DIMENSIONAL REQUIREMENTS:

MIN. LOT AREA	12,000 sq.ft. OR 0.27 AC.
MIN. FRONTAGE	100 ft.
MIN. FRONT SETBACK	15 ft.
MIN. SIDE/REAR SETBACK	10 ft.
MAX. BUILDING HEIGHT	35 ft.
MAX. BUILDING COVERAGE	30 %

   ZONING INFORMATION LISTED HEREON IS BASED ON THE CITY OF DOVER ZONING ORDINANCE DATED 2018 AS AVAILABLE ON THE DOVER CITY WEBSITE ON 10/18/21. ADDITIONAL REGULATIONS APPLY, AND REFERENCE IS HEREBY MADE TO THE EFFECTIVE ZONING ORDINANCE. THE LAND OWNER IS RESPONSIBLE FOR COMPLYING WITH ALL APPLICABLE MUNICIPAL, STATE AND FEDERAL REGULATIONS.

5. FIELD SURVEY PERFORMED BY J.H.H. & K.J.L. DURING NOVEMBER 1, 2021 USING A TRIMBLE S7 TOTAL STATION AND A TRIMBLE R12 SURVEY GRADE GPS WITH A TRIMBLE TSC3 DATA COLLECTOR AND A TRIMBLE DINI DIGITAL AUTO LEVEL. TRAVERSE ADJUSTMENT BASED ON LEAST SQUARE ANALYSIS.

6. HORIZONTAL DATUM BASED ON NAD83(2011) NEW HAMPSHIRE STATE PLANE COORDINATE ZONE (2800) DERIVED FROM REDUNDANT GPS OBSERVATIONS UTILIZING THE KEYNET GPS VRS NETWORK.

7. FLOOD HAZARD ZONE:"X", PER FIRM MAP #33017C0340E, DATED 9/30/2015.

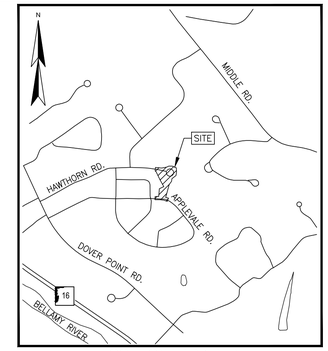
8. SITE WAS INVESTIGATED BY GOVE ENVIRONMENTAL SERVICES ON OCTOBER 29, 2021 FOR JURISDICTIONAL WETLANDS. NO WETLANDS WERE DELINEATED ON THE SITE.

9. THE INTENT OF THIS PLAN IS TO SHOW THE LOCATION OF BOUNDARIES IN ACCORDANCE WITH AND IN RELATION TO THE CURRENT LEGAL DESCRIPTION, AND IS NOT AN ATTEMPT TO DEFINE UNWRITTEN RIGHTS, DETERMINE THE EXTENT OF OWNERSHIP, OR DEFINE THE LIMITS OF TITLE.

   THE PLAN INTENT IS ALSO TO MERGE THE EXISTING 600 S.F. LOT 18-Y WITH THE EXISTING 25,652 S.F. LOT 17-P3. THE LOTS ARE TO BE REVISED SUCH THAT LOT 18-Y SHALL FRONT ON HAWTHORN ROAD AND HAVE A SIZE OF 5,854 S.F. THE EASEMENTS SHOWN HEREON ADJACENT TO THE EXISTING SUBSTATION ARE TO BE EXTINGUISHED BY THE PARTIES INVOLVED. THE REVISED LOT 17-P3 SHALL FRONT SOLELY ON APPLEVALE DRIVE AND HAVE A SIZE OF 20,396 S.F.

REFERENCE PLANS:

1. "MEADOWOOD AT DOVER AN ALTERNATIVE DESIGN SUBDIVISION" DATED SEPTEMBER 13, 1999 BY MCENEANEY SURVEY ASSOCIATES, INC. S.C.R.D. PLAN P58-36.
2. "WAMACA, INC. – REVISED FINAL PLAN – PORTION OF MIDDLEBROOK " DATED JULY 1962 BY G.L. DAVIS & ASSOCIATES ENGINEERS S.C.R.D. PLAN P15-F1-PLAN 2D.
3. "LOT LINE REVISIONS FOR FREE TRADE, INC." DATED APRIL 12, 1993 BY SEACOAST ENGINEERING ASSOCIATION, INC. S.C.R.D. PLAN P42-12.



LOCATION MAP (n.t.s.)

LEGEND

	EXISTING LOT LINE
	PROPOSED LOT LINE
	APPROXIMATE ABUTTERS LOT LINE
O	CHAIN LINK FENCE
□	STOCKADE FENCE
V	PICKET FENCE
X	WIRE FENCE
OHW	OVERHEAD WIRE
	CRUSHED STONE
⊡	BOUND FOUND (BND. FND.)
○	PIPE/ROD FOUND
●	5/8" REBAR W/ID CAP TO BE SET
	UTILITY POLE
	UTILITY POLE & GUY WIRE
Ⓓ	DRAIN MANHOLE
	CATCH BASIN
Ⓢ	SEWER MANHOLE
	FIRE HYDRANT
EP	EDGE OF PAVEMENT

30 0 30 60

SCALE: 1 INCH = 30 FT.

LOT LINE REVISION PLAN

OF

HENNESSEY REVOCABLE TRUST OF 2008

(TAX MAP K LOT 17-P3)

&

NORTHERN UTILITIES, INC.

(TAX MAP K LOT 18-Y)

APPLEVALE DRIVE & HAWTHORN ROAD

DOVER, NEW HAMPSHIRE

DOVER CITY PLANNING FILE NUMBER P22-?

NO.	DATE	DESCRIPTION	BY

DRAWN BY:	E.D.P.	DATE:	JANUARY 9, 2022
CHECKED BY:	J.F.K.	DRAWING NO.	7196B
JOB NO.	7196	SHEET	1 OF 1

I CERTIFY THAT THIS SURVEY AND PLAN WERE PREPARED BY ME OR BY THOSE UNDER MY DIRECT SUPERVISION AND FALLS UNDER THE URBAN SURVEY CLASSIFICATION OF THE NH CODE OF ADMINISTRATIVE RULES OF THE BOARD OF LICENSURE FOR LAND SURVEYORS. I CERTIFY THAT THIS SURVEY WAS MADE ON THE GROUND AND IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF. RANDOM TRAVERSE SURVEY BY TOTAL STATION, WITH A PRECISION GREATER THAN 1:15,000.

John Kaiser L.L.S. #937

1/10/22 DATE

THE CERTIFICATIONS SHOWN HEREON ARE INTENDED TO MEET REGISTRY OF DEED REQUIREMENTS AND ARE NOT A CERTIFICATION TO TITLE OR OWNERSHIP OF PROPERTY SHOWN. OWNERS OF ADJOINING PROPERTIES ARE ACCORDING TO CURRENT TOWN ASSESSORS RECORDS.

STATE OF NEW HAMPSHIRE — No. 937 JOHN F. KAISER — LICENSED LAND SURVEYOR — John Kaiser SIGNATURE

DOUCET SURVEY LLC
Serving Your Professional Surveying & Mapping Needs
102 Kent Place, Newmarket, NH 03857 (603) 659-6560
Offices in Bedford & Keene, NH and Kennebunk, ME
http://www.doucetsurvey.com

FILE NAME: Y:\PROJECTS\7196 CSD\DWG\7196B.dwg LAYOUT NAME: LOT LINE REV. (1) PLOTTED: Monday, January 10, 2022 - 3:19pm

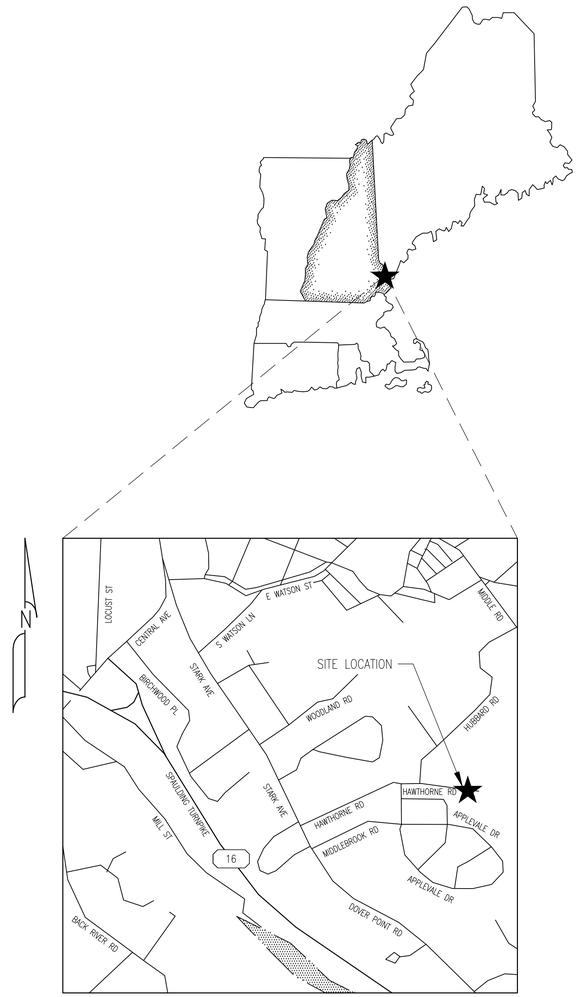
6. Project Plans

Unitil

JOHN DAVIS STATION

55 APPLEVALE DRIVE
DOVER, NH 03820

INDEX OF SHEETS		
SHEET	NAME	TITLE
1	T101	COVER SHEET
2	D001	PIPING AND INSTRUMENTATION LEGEND
3	D002	PIPING AND INSTRUMENTATION DIAGRAM
4	A001	EXISTING CONDITIONS
5	R001	DEMOLITION PLAN
6	A002	SITE PLAN
7	A003	SITE AERIAL PLAN
8	A004	SITE PLAN (ENLARGED)
9	A005	GRADING AND FOUNDATION PLAN
10	A006	EROSION AND SEDIMENTATION CONTROL PLAN
11	P001	PIPING PLAN
12	P101	TYPICAL BUILDING AND YARD PIPING SECTIONS
13	B001	BUILDING PLAN
14	B002	BUILDING SECTIONS
15	E001	ELECTRICAL AREA CLASSIFICATION PLAN
16	E002	SITE LIGHTING PLAN
17	C001	STANDARD DETAILS – 1 OF 3
18	C002	STANDARD DETAILS – 2 OF 3
19	C003	STANDARD DETAILS – 3 OF 4
20	C004	STANDARD DETAILS – 4 OF 4



LOCUS
SCALE: NTS

PERMITTING					
	ISSUE STATUS	DATE	REVIEWED	CHECKED	APPROVED
	PRELIMINARY	–			
	25% SUBMISSION	–			
	50% SUBMISSION	–			
	90% SUBMISSION	–			
■	PERMITTING	02/15/22			
	ISSUED FOR REVIEW				
	ISSUED FOR BID				
	ISSUED FOR CONSTRUCTION				
	AS CONSTRUCTED				

PROCESS PIPELINE SERVICES
4 Broad Street
Plainville, MA 02762
781.829.0524
processpipelineservices.com

STATE OF NEW HAMPSHIRE
STEPHEN M READE
No.15580
LICENSED PROFESSIONAL ENGINEER
02/15/2022

FILE NAME: 5361_T000.DWG	SIZE	NAME	REV
PLOT DATE: 02/15/2022 3:19 PM	22X34	T101	P
		SHEET 1 OF 20	

MISCELLANEOUS SYMBOLS

CS300 CS600 — POINT OF CHANGE IN LINE CLASS

IB / OB — INSIDE BUILDING/OUTSIDE BUILDING

AG / BG — ABOVE GROUND/BELOW GROUND

PIPING LINETYPES

PRIMARY (AG & UG)

SECONDARY / UTILITY (AG & UG)

FUTURE OR EXISTING ON NEW P&IDs

OTHER LINETYPES

INSTRUMENT SUPPLY OR CONNECTION TO PROCESS

PNEUMATIC SIGNAL

ELECTRIC SIGNAL

CAPILLARY TUBE

HEAT TRACE

SOFTWARE OR DATA LINK

PIPING SPECIALTY ITEMS

Y-TYPE STRAINER
T-TYPE STRAINER
BASKET STRAINER
TEMPORARY CONE STRAINER
FILTER
INSULATING FLANGE
PILOT
RS REMOVABLE SPOOL
FLEXIBLE HOSE
EXPANSION JOINT
VENT COVER
YALE CLOSURE
IN-LINE MIXER
PCRH ELECTRIC ISOLATION

PIPING FITTINGS

FLANGE
BLIND FLANGE
WELDED CONNECTION
SOCKETWELD
THREADED JOINT
INSULATING UNION
NON-INSULATING UNION
W-EI WELD END INSULATOR
TF TRANSITION FITTING
D CAP
HOSE CONNECTION
CONCENTRIC REDUCER
ECCENTRIC REDUCER
SPACER
BLANK
OPEN FIGURE 8 BLIND
CLOSED FIGURE 8 BLIND
PLUG
O-LET WITH PLUG
TEMPERATURE GAUGE (ANALOG)
PRESSURE GAUGE (ANALOG)

LINE DATA IDENTIFICATION

UNIT/AREA (NUMERIC)	SERVICE (ALPHA)	SEQUENCE (NUMERIC)	SIZE (NUMERIC)	LINE CLASS
XX	XXX	XXXXX	XXXX	XXXXXXXXXX

XXXX – XXXX – XXXX

INSUL. TYPE — THICKNESS (NUMERIC) — OPTIONAL (USER DEFINED)

AREA DESIGNATIONS	SERVICE DESIGNATIONS
0. NOT ASSIGNED	AV – ATMOSPHERE VENT
1. METER RUN	BD – BLOWDOWN
2. SPECIAL	DR – DRAIN
3. YARD	FG – FUEL GAS
4. FILTER	GLR – GLYCOL RETURN
5. REGULATOR RUN	GLS – GLYCOL SUPPLY
6. FLOW CONTROL	IA – INSTRUMENT AIR
7. HEATER	LNG – LIQUIFIED NATURAL GAS
8. AUXILIARY BUILDING	N – NITROGEN
9. MISCELLANEOUS BUILDINGS	NG – NATURAL GAS

OFF-PAGE CONNECTORS AND TIE-IN SYMBOL

A. OFF-PLOT CONNECTOR

CONNECTOR NUMBER — SERVICE DESCRIPTION / XXXXX | P&ID NO / ORIGIN/DESTINATION

B. PRIMARY/SECONDARY LINES AND INSTRUMENT SIGNAL CONNECTOR

CONNECTOR NUMBER — SERVICE DESCRIPTION / XXXXX | P&ID NO / ORIGIN/DESTINATION

C. TIE-IN SYMBOL

TIE-IN NUMBER — T / XXXX

EQUIPMENT SYMBOLS

HEAT EXCHANGER
WATER BATH HEATER
AIR SEPARATOR
FLOOR MOUNTED PUMP
WALL MOUNTED PUMP
TANK

CONTROL VALVE ACTUATOR SYMBOLS

MANUAL OPERATOR
DIAPHRAGM
CYLINDER – PISTON
MOTOR OPERATED
SINGLE SOLENOID
SINGLE SOLENOID – MANUAL RESET
SINGLE SOLENOID – REMOTE RESET
SPRING

SELF-ACTUATED DEVICES

RUPTURE DISC – PRESSURE RELIEF SAFETY HEAD FOR PRESSURE RELIEF (EXPLOSION PANEL)
PRESSURE RELIEF – SAFETY VALVE
PRESSURE REDUCING REGULATOR (SELF-CONTAINED)
BACK PRESSURE REGULATOR W/EXTERNAL TYP
PRESSURE REDUCING REGULATOR W/EXTERNAL TAP
BACK PRESSURE REGULATOR (SELF-CONTAINED)

PRIMARY ELEMENT SYMBOLS (FLOW)

XX — GENERAL SYMBOL IN-LINE ELEMENT XX = FS, FG, FE, FT
FT / XXXX — IN-LINE FLOW ELEMENT WITH INTEGRAL TRANSMITTER XXXX = MASS, CORIOLIS, THERMAL, INT. ORIFICE ...
FT / FE / XXXX — IN-LINE FLOW ELEMENT WITH SEPARATE TRANSMITTER XXXX = MASS, CORIOLIS, THERMAL...
FO — RESTRICTION ORIFICE
ORIFICE
FLOW CONDITIONING DEVICES (e.g., STRAIGHTENING VANES)
CORRECTOR
POSITIVE DISPLACEMENT
FLOW METER
M MAGNETIC
TURBINE OR PROPELLER
ULTRASONIC

VALVES

NORMALLY OPEN		NORMALLY CLOSED
	BALL VALVE	
	GATE VALVE	
	GLOBE VALVE	
	PLUG VALVE	
	NEEDLE VALVE	
	CHECK VALVE	NA
	BUTTERFLY VALVE	
	3-WAY VALVE	
	ANGLE VALVE	

VALVE NOMENCLATURE

4V4A33-01

- VALVE SIZE
- TYPE CODE
- PRESSURE CLASS
- CONNECTION TYPE
- SEQUENCE NUMBER

VALVE SIZE			
1	1/2"	10	8"
2	3/4"	11	10"
3	1"	12	12"
4	1-1/4"	13	14"
5	1-1/2"	14	16"
6	2"	15	18"
7	3"	16	20"
8	4"	17	24"
9	6"		

TYPE CODE	
1	BALL
2	GATE
3	GLOBE
4	PLUG
5	NEEDLE
6	CHECK
7	BUTTERFLY

PRESSURE CLASS		
	ANSI (A)	WOG (W)
1	125	125
2	150	150, 175, 200, 275
3	300	
4	400	
5	600	1440, 2000
6	900	
7	1500	3000
8	2500	6000
9		9000

PIPE CONNECTION TYPE	
1	THREADED
2	LUG
3	FLANGED
4	WAFER
5	SOCKET WELD
6	BUTT WELD
7	MECHANICAL JOINT
8	SOLDER
9	OTHER CONNECTIONS

GENERAL P&ID ABBREVIATIONS

AC – ANALOG CONTROLLER
ACFM – ACTUAL CUBIC FEET PER MINUTE
AI – ANALOG INPUT
ANSI – AMERICAN NATIONAL STANDARDS INSTITUTE
AO – ANALOG OUTPUT
ASME – AMERICAN SOCIETY OF MECHANICAL ENGINEERS
BAH – BURNER ALARM HIGH
BAL – BURNER ALARM LOW
BBL – BARREL
BC – BURNER CONTROLLER
BO – BLOW-OFF
BS – BURNER SWITCH
BTU – BRITISH THERMAL UNIT
CGLI – COMBUSTIBLE GAS LEVEL INDICATOR
CGLIT – COMBUSTIBLE GAS LEVEL INDICATOR TRANSMITTER
CGLT – COMBUSTIBLE GAS LEVEL TRANSMITTER
CONN – CONNECTION
CTMP – COMPRESSOR
CV – CONTROL VALVE
CYL – CYLINDER
DC – DENSITY CONTROLLER
DI – DISCRETE INPUT (DIGITAL INPUT)
DO – DISCRETE OUTPUT (DIGITAL OUTPUT)
DPAH – DENSITY POINT ALARM HIGH
DPS – DENSITY POINT SWITCH
DPT – DENSITY POINT TRANSMITTER
DRN – DRAIN
DS – DOOR SWITCH
DV – DUMP VALVE
ESD – EMERGENCY SHUT-DOWN
ESDV – EMERGENCY SHUT-DOWN VALVE
EYC – VOLTAGE RELAY CLOSED
EYO – VOLTAGE RELAY OPEN
F – FILTER
FC – FAIL CLOSE
FCV – FLOW RATE CONTROL VALVE
FE – FLOW ELEMENT
FFA – FLAME FAILURE ALARM
FLP – FAIL LAST POSITION
FM – FLOW METER
FNPT – FEMALE NATIONAL PIPE THREAD
FO – FAIL OPEN
FOR – RESTRICTION ORIFICE
FQI – FLOW QUANTITY INDICATOR
FQIC – FLOW QUANTITY INDICATOR CONTROLLER
FQIT – FLOW QUANTITY INDICATOR TRANSMITTER
FQT – FLOW QUANTITY TRANSMITTER
FSL – FLOW SWITCH LOW
GAH – GAS ALARM HIGH
GAHH – GAS ALARM HIGH HIGH
GAL – GALLONS
GE – GAS ELEMENT
GHP – GAS HORSEPOWER
GO – GAS OPERATOR
GPM – GALLONS PER MINUTE
HAH – HEATER ALARM HIGH
H.P. – HORSEPOWER
HP – HIGH PRESSURE
HTR – HEATER
HV – HAND OPERATED VALVE
I – INDICATOR
IG – INSULATING GASKET
IGS – INSTRUMENT GAS SUPPLY
I/P – CURRENT TO PNEUMATIC CONVERTER
ISA – CURRENT SWITCH ALARM
JA – POWER ALARM (LOSS OF POWER)
JI – POWER INDICATOR
LAH – LEVEL ALARM HIGH
LC – LOCK CLOSED
LG – LEVEL GLASS
LO – LOCKED OPEN
LOL – LATERAL-O-LET
LP – LOW PRESSURE
LSH – LEVEL SWITCH HIGH
LSHH – LEVEL SWITCH HIGH HIGH
LSL – LEVEL SWITCH LOW
LSLL – LEVEL SWITCH LOW LOW
LT – LEVEL TRANSMITTER
LUB – LUBRICATOR
MAX – MAXIMUM
MIN – MINUTE OR MINIMUM
MMSCFD – MILLION STANDARD CUBIC FEET PER DAY
MNPT – MALE NATIONAL PIPE THREAD
MAOP – MAXIMUM ALLOWABLE OPERATING PRESSURE
MVIT – MULTIVARIABLE INDICATOR TRANSMITTER
MVT – MULTIVARIABLE TRANSMITTER
NWP – NORMAL WORKING PRESSURE
NC – NORMALLY CLOSED
NO – NORMALLY OPEN
P – PILOT
PB – PUSH BUTTON
PCRH – POLARIZATION CELL REPLACEMENT HAZARDOUS
PCV – PRESSURE CONTROL VALVE
PDAH – PRESSURE DIFFERENTIAL ALARM HIGH
PDI – DIFFERENTIAL PRESSURE INDICATOR
PDIT – DIFFERENTIAL PRESSURE INDICATOR TRANSMITTER
PDS – PRESSURE DIFFERENTIAL SWITCH
PDT – PRESSURE DIFFERENTIAL TRANSMITTER
PI – PRESSURE INDICATOR (DIGITAL)
PIT – PRESSURE INDICATOR TRANSMITTER (DIGITAL)
PM – PRESSURE MONITOR
PMV – PRESSURE MONITOR VALVE
PRV – PRESSURE RELIEF VALVE
PSIA – POUNDS PER SQUARE INCH – ATMOSPHERE
PSIG – POUNDS PER SQUARE INCH – GAUGE
PSV – PRESSURE SAFETY VALVE
PT – PRESSURE TRANSMITTER
R – REGULATOR
RD – RUPTURE DISK
RF – RAISED FACE (FLANGE)
RFWN – RAISED FACE WELD NECK (FLANGE)
RPM – REVOLUTIONS PER MINUTE
RSV – REMOTE SAFETY VALVE
RTU – REMOTE TERMINAL UNIT
RV – RELIEF VALVE
SCFD – STANDARD CUBIC FEET PER DAY
SCFM – STANDARD CUBIC FEET PER MINUTE
SCRD – SCREWED (CONNECTION)
SR – SLAM RETARDER
SST – STAINLESS STEEL TUBING
TC – TEMPERATURE CONTROLLER
TCV – TEMPERATURE CONTROL VALVE
TE – TEMPERATURE ELEMENT
TI – TEMPERATURE INDICATOR (DIGITAL)
TIT – TEMPERATURE INDICATOR TRANSMITTER (DIGITAL)
TNK – TANK
TOL – THREAD-O-LET
TS – TEST STATION
TSE – TEMPERATURE SAFETY ELEMENT
TW – TEMPERATURE WELL
TT – TEMPERATURE TRANSMITTER
V – VENT
WT – WALL THICKNESS
WE – WELD END (CONNECTION)
WOG – WATER OIL GAS
WOL – WELD-O-LET
XA – GENERAL HEATER ALARM
ZC – POSITION CONTROLLER
ZI – POSITION INDICATOR
ZSC – POSITION SWITCH CLOSED
ZSO – POSITION SWITCH OPEN
ZT – POSITION TRANSMITTER

GENERAL INSTRUMENT SYMBOLS

LOCATION/ACCESSIBILITY	DISCRETE INSTRUMENTS	SHARED DISPLAY AND CONTROL (DCS)	PLC	DISCRETE HARDWARE INTERLOCK
FIELD MOUNTED 1. FIELD OR LOCALLY MOUNTED. 2. ACCESSIBLE TO AN OPERATOR AT DEVICE.	○	○	◇	◇
PRIMARY LOCATION NORMALLY ACCESSIBLE TO AN OPERATOR 1. CENTRAL OR MAIN CONTROL ROOM. 2. FRONT OF MAIN PANEL OR CONSOLE MOUNTED. 3. VISIBLE ON VIDEO DISPLAY 4. ACCESSIBLE TO AN OPERATOR AT DEVICE OR CONSOLE	⊖	⊖	◇	
PRIMARY LOCATION NORMALLY INACCESSIBLE TO AN OPERATOR 1. CENTRAL OR MAIN CONTROL ROOM. 2. REAR OF PANEL OR CABINET MOUNTED. 3. NOT VISIBLE ON VIDEO DISPLAY. 4. NOT NORMALLY ACCESSIBLE TO AN OPERATOR AT DEVICE OR CONSOLE.	⊖	⊖	◇	
AUXILIARY LOCATION NORMALLY ACCESSIBLE TO AN OPERATOR 1. SECONDARY OR LOCAL CONTROL ROOM. 2. FIELD OR LOCAL CONTROL PANEL. 3. FRONT OF SECONDARY OR LOCAL PANEL MOUNTED. 4. VISIBLE ON VIDEO DISPLAY. 5. ACCESSIBLE TO AN OPERATOR AT DEVICE OR CONSOLE.	⊖	⊖	◇	
AUXILIARY LOCATION NORMALLY INACCESSIBLE TO AN OPERATOR 1. SECONDARY OR LOCAL PANEL. 2. FIELD OR LOCAL CONTROL PANEL. 3. REAR OF SECONDARY OR LOCAL PANEL CABINET MOUNTED. 4. NOT VISIBLE ON VIDEO DISPLAY. 5. NOT NORMALLY ACCESSIBLE TO AN OPERATOR AT DEVICE OR CONSOLE.	⊖	⊖	◇	

INSTRUMENTATION IDENTIFICATION LETTERS

	FIRST-LETTER		SUCCEEDING-LETTERS		
	MEASURED OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALYSIS		ALARM		
B	BURNER, FLAME, COMBUSTION		USER'S CHOICE	USERS CHOICE	USERS CHOICE
C	USER'S CHOICE (TYPICALLY CONDUCTIVITY – ELECTRICAL)			CONTROL	CLOSE
D	USER'S CHOICE (TYPICALLY DENSITY OR SPECIFIC GRAVITY)	DIFFERENTIAL			
E	VOLTAGE		SENSOR (PRIMARY ELEMENT)		
F	FLOW RATE	RATIO (FRACTION)			
G	USER'S CHOICE OR GAUGING (DIMENSIONAL)		GLASS VIEWING DEVICE		
H	HAND				HIGH
I	CURRENT (ELECTRICAL)		INDICATE		
J	POWER	SCAN			
K	TIME, TIME SCHEDULE	TIME RATE OF CHANGE		CONTROL STATION	
L	LEVEL		LIGHT		LOW
M	USER'S CHOICE (TYPICALLY MOISTURE OR HUMIDITY)	MOMENTARY			MIDDLE INTERMEDIATE
N	USER'S CHOICE		USER'S CHOICE	USERS CHOICE	USERS CHOICE
O	USER'S CHOICE		ORIFICE, RESTRICTION		OPEN
P	PRESSURE, VACUUM		POINT (TEST) CONNECTION		
Q	QUANTITY OR HEAT DUTY	INTEGRATE, TOTALIZE			
R	RADIATION		RELIEF	RECORD	
S	SPEED, FREQUENCY	SAFETY		SWITCH	
T	TEMPERATURE			TRANSMIT	THROUGH
U	MULTIVARIABLE		MULTIFUNCTION	MULTIFUNCTION	MULTIFUNCTION
V	VIBRATION, MECHANICAL ANALYSIS			VALVE, DAMPER, LOUVER	
W	WEIGHT, FORCE		WELL		
X	UNCLASSIFIED	X AXIS	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED
Y	EVENT, STATE OR PRESENCE	Y AXIS		RELAY, COMPUTE, CONVERT	
Z	POSITION, DIMENSION	Z AXIS		DRIVER, ACTUATOR UNCLASSIFIED FINAL CONTROL ELEMENT	

REV	BY	DATE	DESCRIPTION

STATE OF NEW HAMPSHIRE — STEPHEN M READE No.15580 — PROFESSIONAL ENGINEER — 02/15/2022

SEAL AND SIGNATURE

PRJ MANAGER: MARK D. WOOD		
PRJ ENGINEER: MATT PELLETIER		
PRJ NAME: JOHN DAVIS STATION		
PRJ NUMBER: 5361		
PRJ MILESTONE: PERMITTING		
PRJ PHASE: PERMITTING		
DESIGNED BY:	MPP	02/15/22
DRAFTED BY:	DMG/RPG	02/15/22
CHECKED BY:	SMR	02/15/22
APPROVED BY:	MDW	02/15/22

CLIENT INFORMATION: Unitil Northern Utilities, Inc.

DESIGN MANAGER: TIM BICKFORD	REVIEWED BY:		
DESIGN ENGINEER: SHEENA MASON	CHECKED BY:		
ACTIVATION ORDER:	APPROVED BY:		

PERMITTING

SHEET TITLE: PIPING AND INSTRUMENTATION LEGEND

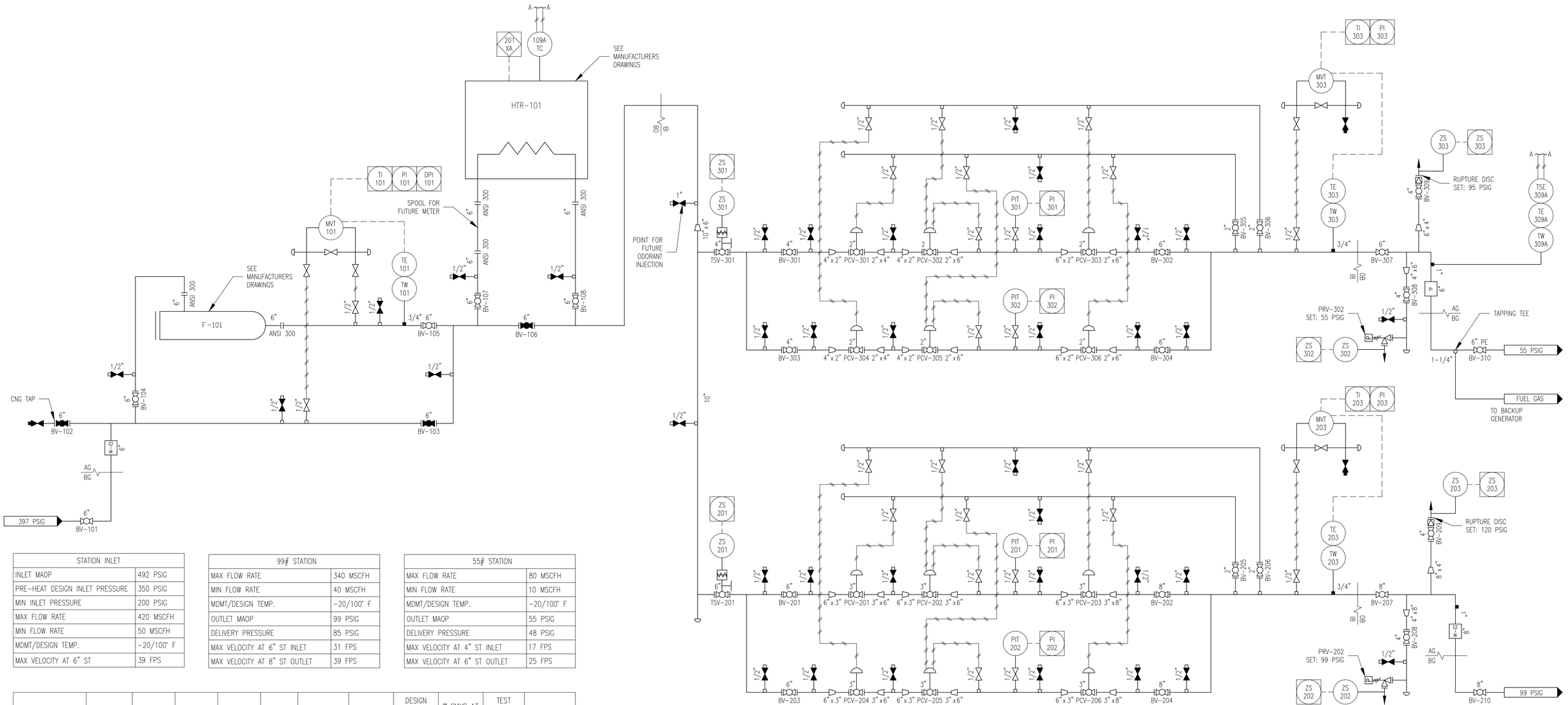
PROJECT NAME: JOHN DAVIS STATION

PROJECT LOCATION: 55 APPLEVALE DRIVE, DOVER, NH 03820

PROCESS PIPELINE SERVICES
4 Broad Street
Plainville, MA 02762
781.829.0524
processpipelineservices.com

FILE NAME: 5361_D000.DWG	SIZE	NAME	REV
PLOT DATE: 02/15/2022 3:20 PM	22X34	D001	P
SCALE: N/A	SHEET 2 OF 20		

F-101	HTR-101	TSV-201	TSV-301	PCV-201, 204	PCV-301, 304	PCV-202, 205	PCV-302, 305	PCV-203, 206	PCV-303, 306	PRV-202, 302
FILTER PEERLESS MFG CO. HORIZONTAL ORIENTATION 6" ANSI 300 RF	INDIRECT WATERBATH HEATER TOTAL ENERGY RESOURCES, INC. VERTICAL ORIENTATION 6" ANSI 300 RF	FIRE SAFETY VALVE BI-TORQ 6" ANSI 300 RF	FIRE SAFETY VALVE BI-TORQ 4" ANSI 300 RF	SUPERMONITOR REGULATOR MOONEY FLOWMAX HP 100% THROTTLE PLATE 3" ANSI 300 RF	SUPERMONITOR REGULATOR MOONEY FLOWMAX HP 100% THROTTLE PLATE 2" ANSI 300 RF	WORKING-MONITOR REGULATOR GROVE MODEL 900TE 100% CAGE 3" ANSI 300 RF	WORKING-MONITOR REGULATOR GROVE MODEL 900TE 50% CAGE 2" ANSI 300 RF	WORKING REGULATOR GROVE MODEL 900TE 100% CAGE 3" ANSI 300 RF	WORKING REGULATOR GROVE MODEL 900TE 50% CAGE 2" ANSI 300 RF	PRESSURE RELIEF VALVE MERCER VALVE 9500 SERIES PILOT OPERATED FB ORIFICE 4"x6" ANSI 300 x ANSI 150 RF



STATION INLET	
INLET MAOP	492 PSIG
PRE-HEAT DESIGN INLET PRESSURE	350 PSIG
MIN INLET PRESSURE	200 PSIG
MAX FLOW RATE	420 MSCFH
MIN FLOW RATE	50 MSCFH
MDMT/DESIGN TEMP.	-20/100° F
MAX VELOCITY AT 6" ST	39 FPS

99# STATION	
MAX FLOW RATE	340 MSCFH
MIN FLOW RATE	40 MSCFH
MDMT/DESIGN TEMP.	-20/100° F
OUTLET MAOP	99 PSIG
DELIVERY PRESSURE	85 PSIG
MAX VELOCITY AT 6" ST INLET	31 FPS
MAX VELOCITY AT 8" ST OUTLET	39 FPS

55# STATION	
MAX FLOW RATE	80 MSCFH
MIN FLOW RATE	10 MSCFH
MDMT/DESIGN TEMP.	-20/100° F
OUTLET MAOP	55 PSIG
DELIVERY PRESSURE	48 PSIG
MAX VELOCITY AT 4" ST INLET	17 FPS
MAX VELOCITY AT 6" ST OUTLET	25 FPS

PIPE	MAOP	D	W.T.	SCHED	GRADE	S	F	DESIGN PRESSURE (PSIG)	% SMYS AT MAOP	TEST PRESSURE (PSIG)	% SMYS AT TP
2" STEEL	492	2.375	0.218	XS	B	35,000	0.4	2570	7.7%	750	11.7%
4" STEEL	492	4.500	0.237	STD	X42	42,000	0.4	1770	11.1%	750	17.0%
6" STEEL	492	6.625	0.280	STD	X52	52,000	0.4	1758	11.2%	750	17.1%
8" STEEL	492	8.625	0.500	XS	X42	42,000	0.4	1948	10.1%	750	15.4%
10" STEEL	492	10.750	0.500	XS	X52	52,000	0.4	1935	10.2%	750	15.5%

REV	BY	DATE	DESCRIPTION

STATE OF NEW HAMPSHIRE
STEPHEN M READE
No. 15580
LICENSED PROFESSIONAL ENGINEER
02/15/2022

SEAL AND SIGNATURE

PRJ MANAGER: MARK D. WOOD		
PRJ ENGINEER: MATT PELLETIER		
PRJ NAME: JOHN DAVIS STATION		
PRJ NUMBER: 5361		
PRJ MILESTONE: PERMITTING		
PRJ PHASE: PERMITTING		
DESIGNED BY:	MPP	02/15/22
DRAFTED BY:	DMG/RPG	02/15/22
CHECKED BY:	SMR	02/15/22
APPROVED BY:	MDW	02/15/22

CLIENT INFORMATION

Unitil
Northern Utilities, Inc.

DESIGN MANAGER: TIM BICKFORD	REVIEWED BY:				
DESIGN ENGINEER: SHEENA MASON	CHECKED BY:				
ACTIVATION ORDER:	APPROVED BY:				

P E R M I T T I N G

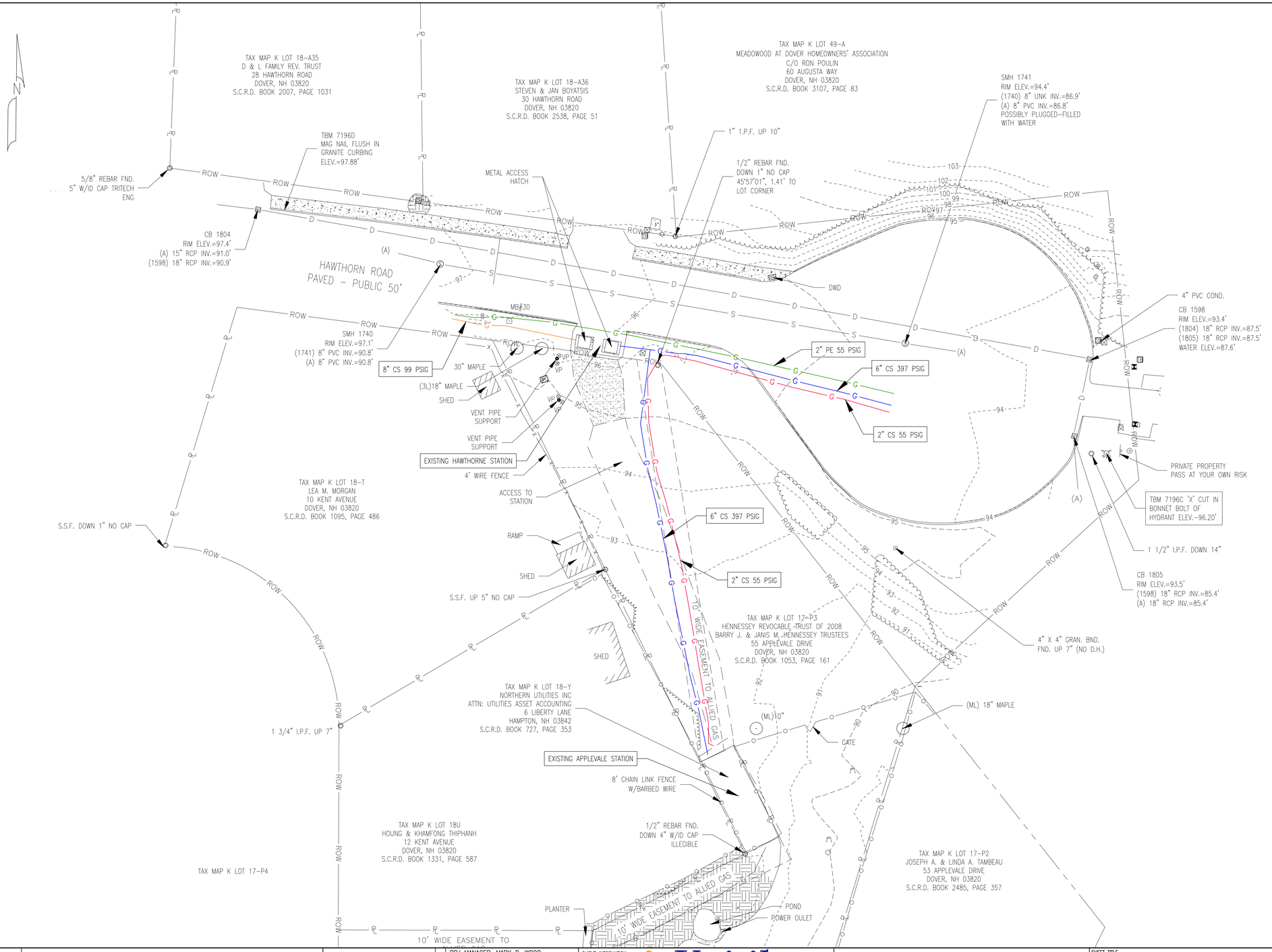
SHEET TITLE
PIPING AND INSTRUMENTATION DIAGRAM

PROJECT NAME
JOHN DAVIS STATION

PROJECT LOCATION
55 APPLEVALE DRIVE
DOVER, NH 03820

PROCESS PIPELINE SERVICES
4 Broad Street
Plainville, MA 02762
781.829.0524
processpipelineservices.com

FILE NAME: 5361_D000.DWG	SIZE	NAME	REV
PLOT DATE: 02/15/2022 3:20 PM	22X34	D002	P
SCALE: N/A	SHEET 3 OF 20		



LEGEND

- BOUNDARY LINE
- CONTOUR MAJOR
- CONTOUR MINOR
- DRAINAGE
- EASEMENT
- ELECTRIC
- FENCE CHAIN LINK
- FENCE POST
- FENCE STOCKADE
- EDGE OF GRAVEL
- EDGE OF PAVEMENT
- EDGE OF RIVER
- EDGE OF WETLAND
- GAS
- GUARDRAIL
- OVER HEAD WIRES
- OVER HEAD TELEPHONE
- OVER HEAD ELECTRIC
- PROPERTY LINE
- RETAINING WALL
- RIGHT OF WAY
- SEWER
- SILT FENCE
- STONEWALL
- STREAM
- TELEPHONE
- TREELINE
- WATER

GAS LEGEND

- 6" CS 397 PSIG
- 8" CS 99 PSIG
- 2" CS 55 PSIG
- 2" PE 55 PSIG

SURVEY NOTE:

1. EXISTING CONDITIONS ARE BASED ON A PLAN TITLED: EXISTING CONDITIONS PLAN; PREPARED FOR PROCESS PIPELINE SERVICES OF HENNESSEY REVOCABLE TRUST OF 2008 (TAX MAP K LOT 17-P-3) & NORTHERN UTILITIES, INC. (TAX MAP K LOT 17-P-3) APPLEVALE DRIVE & HAWTHORN ROAD DOVER, NEW HAMPSHIRE; PREPARED BY DOUCET SURVEY LLC; DATED: NOVEMBER 6, 2021; SCALE: 1" = 30'; SHEET 1 OF 1

REV	BY	DATE	DESCRIPTION

STATE OF NEW HAMPSHIRE — STEPHEN M READE No.15580 — PROFESSIONAL ENGINEER — 02/15/2022

SEAL AND SIGNATURE

PRJ MANAGER: MARK D. WOOD		
PRJ ENGINEER: MATT PELLETIER		
PRJ NAME: JOHN DAVIS STATION		
PRJ NUMBER: 5361		
PRJ MILESTONE: PERMITTING		
PRJ PHASE: PERMITTING		
DESIGNED BY:	MPP	02/15/22
DRAFTED BY:	DMG/RPG	02/15/22
CHECKED BY:	SMR	02/15/22
APPROVED BY:	MDW	02/15/22

CLIENT INFORMATION: Unitil — Northern Utilities, Inc.

DESIGN MANAGER: TIM BICKFORD		REVIEWED BY:		
DESIGN ENGINEER: SHEENA MASON		CHECKED BY:		
ACTIVATION ORDER:		APPROVED BY:		

GRAPHIC SCALE 1" = 20'-0" (20' 10' 0 20' 40' 60')

P E R M I T T I N G

SHEET TITLE: EXISTING CONDITIONS

PROJECT NAME: JOHN DAVIS STATION

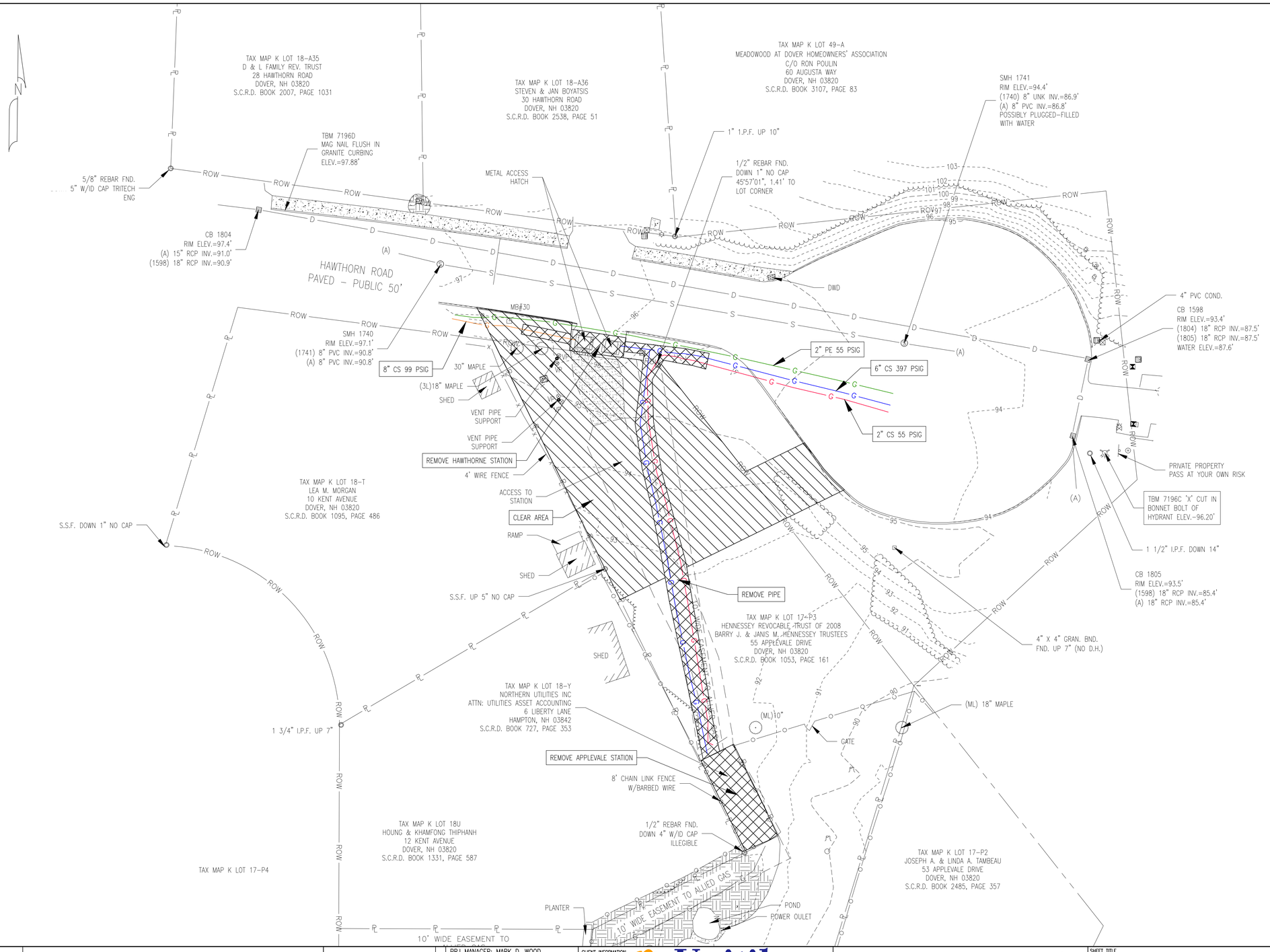
PROJECT LOCATION: 55 APPLEVALE DRIVE, DOVER, NH 03820

PROCESS PIPELINE SERVICES
4 Broad Street
Plainville, MA 02762
781.829.0524
processpipelineservices.com

FILE NAME: 5361_C000.DWG
PLOT DATE: 02/15/2022 3:20 PM
SCALE: 1" = 20'-0"

SIZE	NAME	REV
22X34	A001	P

SHEET 4 OF 20



LEGEND

- BOUNDARY LINE
- CONTOUR MAJOR
- CONTOUR MINOR
- DRAINAGE
- EASEMENT
- ELECTRIC
- FENCE CHAIN LINK
- FENCE POST
- FENCE STOCKADE
- EDGE OF GRAVEL
- EDGE OF PAVEMENT
- EDGE OF RIVER
- EDGE OF WETLAND
- GAS
- GUARDRAIL
- OVER HEAD WIRES
- OVER HEAD TELEPHONE
- OVER HEAD ELECTRIC
- PROPERTY LINE
- RETAINING WALL
- RIGHT OF WAY
- SEWER
- SILT FENCE
- STONEWALL
- STREAM
- TELEPHONE
- TREELINE
- WATER

GAS LEGEND

- 6" CS 397 PSIG
- 8" CS 99 PSIG
- 2" CS 55 PSIG
- 2" PE 55 PSIG

DEMOLITION LEGEND

EQUIPMENT TO BE REMOVED

AREA TO BE CLEARED

SURVEY NOTE:

1. EXISTING CONDITIONS ARE BASED ON A PLAN TITLED: EXISTING CONDITIONS PLAN; PREPARED FOR PROCESS PIPELINE SERVICES OF HENNESSEY REVOCABLE TRUST OF 2008 (TAX MAP K LOT 17-P-3) & NORTHERN UTILITIES, INC. (TAX MAP K LOT 17-P-3) APPLEVALE DRIVE & HAWTHORN ROAD DOVER, NEW HAMPSHIRE; PREPARED BY DOUCET SURVEY LLC; DATED: NOVEMBER 6, 2021; SCALE: 1" = 30'; SHEET 1 OF 1

REV	BY	DATE	DESCRIPTION

STATE OF NEW HAMPSHIRE
STEPHEN M READE
No. 15580
PROFESSIONAL ENGINEER
02/15/2022

SEAL AND SIGNATURE

PRJ MANAGER: MARK D. WOOD		
PRJ ENGINEER: MATT PELLETIER		
PRJ NAME: JOHN DAVIS STATION		
PRJ NUMBER: 5361		
PRJ MILESTONE: PERMITTING		
PRJ PHASE: PERMITTING		
DESIGNED BY:	MPP	02/15/22
DRAFTED BY:	DMG/RPG	02/15/22
CHECKED BY:	SMR	02/15/22
APPROVED BY:	MDW	02/15/22

CLIENT INFORMATION

Unitil
Northern Utilities, Inc.

DESIGN MANAGER: TIM BICKFORD			REVIEWED BY:		
DESIGN ENGINEER: SHEENA MASON			CHECKED BY:		
ACTIVATION ORDER:			APPROVED BY:		

GRAPHIC SCALE 1" = 20'-0"
20' 10' 0 20' 40' 60'

P E R M I T T I N G

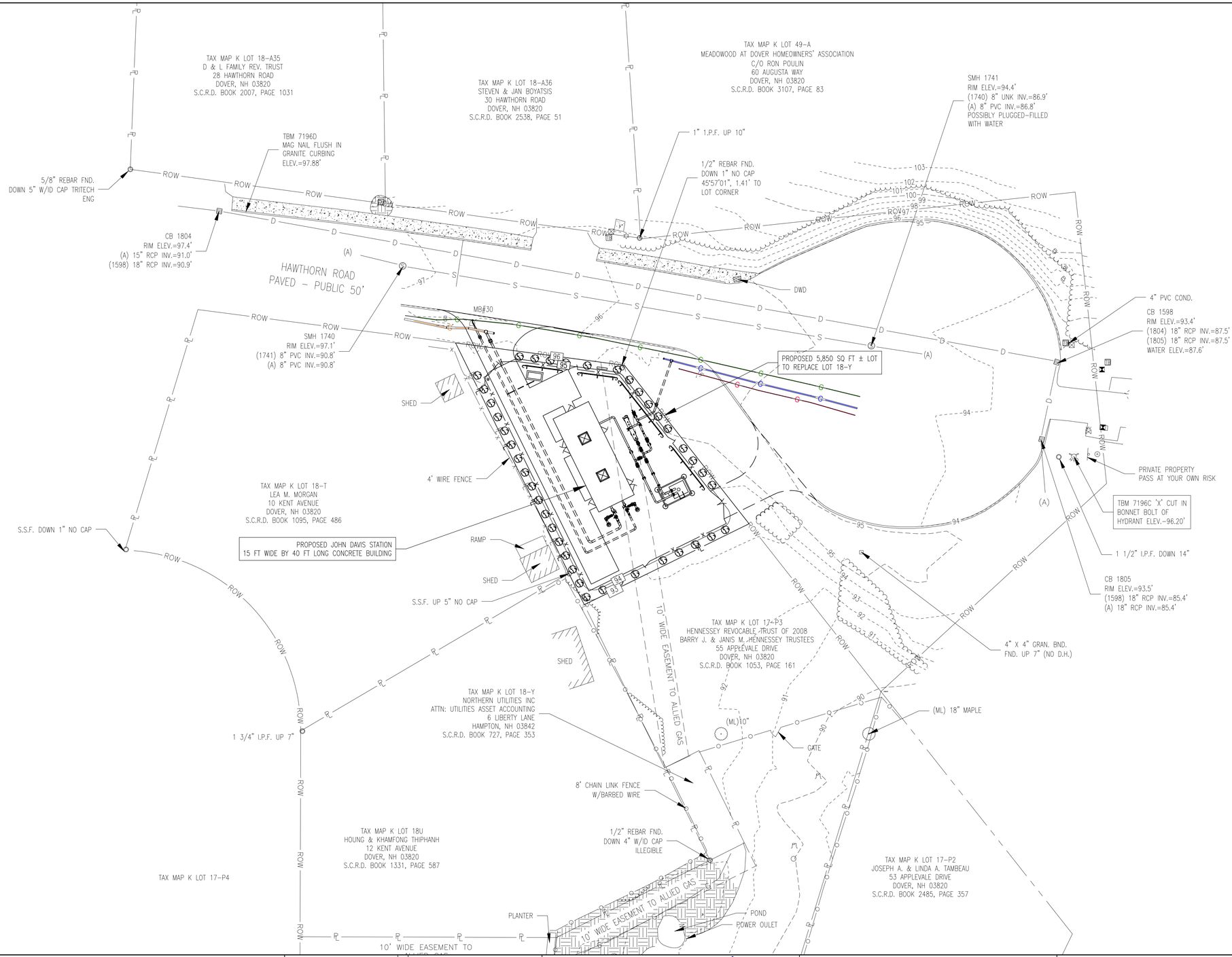
SHEET TITLE
DEMOLITION PLAN

PROJECT NAME
JOHN DAVIS STATION

PROJECT LOCATION
55 APPLEVALE DRIVE
DOVER, NH 03820

PROCESS PIPELINE SERVICES
4 Broad Street
Plainville, MA 02762
781.829.0524
processpipelineservices.com

FILE NAME: 5361_C000.DWG			
PLOT DATE: 02/15/2022 3:20 PM	SIZE	NAME	REV
SCALE: 1" = 20'-0"	22X34	R001	P
	SHEET 5 OF 20		



LEGEND

EXISTING		PROPOSED
P/L	BOUNDARY LINE	P/L
XXX	CONTOUR MAJOR	XXX
	CONTOUR MINOR	
D	DRAINAGE	D
	EASEMENT	
E	ELECTRIC	E
X X	FENCE CHAIN LINK	X X
O O	FENCE POST	O O
□ □	FENCE STOCKADE	□ □
	EDGE OF GRAVEL	
	EDGE OF PAVEMENT	
	EDGE OF RIVER	
	EDGE OF WETLAND	
G	GAS	G
□ □	GUARDRAIL	□ □
OHW	OVER HEAD WIRES	OHW
OHE	OVER HEAD TELEPHONE	OHT
OHE	OVER HEAD ELECTRIC	OHE
P/L	PROPERTY LINE	P/L
	RETAINING WALL	
ROW	RIGHT OF WAY	ROW
S	SEWER	S
SF	SILT FENCE	SF
	STONEWALL	
	STREAM	
T	TELEPHONE	T
	TREELINE	
W	WATER	W

GAS LEGEND

G	6" CS 397 PSIG
G	8" CS 99 PSIG
G	2" CS 55 PSIG
G	2" PE 55 PSIG

SURVEY NOTE:

1. EXISTING CONDITIONS ARE BASED ON A PLAN TITLED: EXISTING CONDITIONS PLAN; PREPARED FOR PROCESS PIPELINE SERVICES OF HENNESSEY REVOCABLE TRUST OF 2008 (TAX MAP K LOT 17-P-3) & NORTHERN UTILITIES, INC. (TAX MAP K LOT 17-P-3) APPLEVALE DRIVE & HAWTHORN ROAD DOVER, NEW HAMPSHIRE; PREPARED BY DOUCET SURVEY LLC; DATED: NOVEMBER 6, 2021; SCALE: 1" = 30'; SHEET 1 OF 1

REV	BY	DATE	DESCRIPTION

STATE OF NEW HAMPSHIRE
STEPHEN M READE
No. 15580
LICENSED PROFESSIONAL ENGINEER
02/15/2022

SEAL AND SIGNATURE

PRJ MANAGER: MARK D. WOOD		
PRJ ENGINEER: MATT PELLETIER		
PRJ NAME: JOHN DAVIS STATION		
PRJ NUMBER: 5361		
PRJ MILESTONE: PERMITTING		
PRJ PHASE: PERMITTING		
DESIGNED BY:	MPP	02/15/22
DRAFTED BY:	DMG/RPG	02/15/22
CHECKED BY:	SMR	02/15/22
APPROVED BY:	MDW	02/15/22

CLIENT INFORMATION

Unitil
Northern Utilities, Inc.

DESIGN MANAGER: TIM BICKFORD	REVIEWED BY:		
DESIGN ENGINEER: SHEENA MASON	CHECKED BY:		
ACTIVATION ORDER:	APPROVED BY:		

GRAPHIC SCALE 1" = 20'-0"
20' 10' 0 20' 40' 60'

P E R M I T T I N G

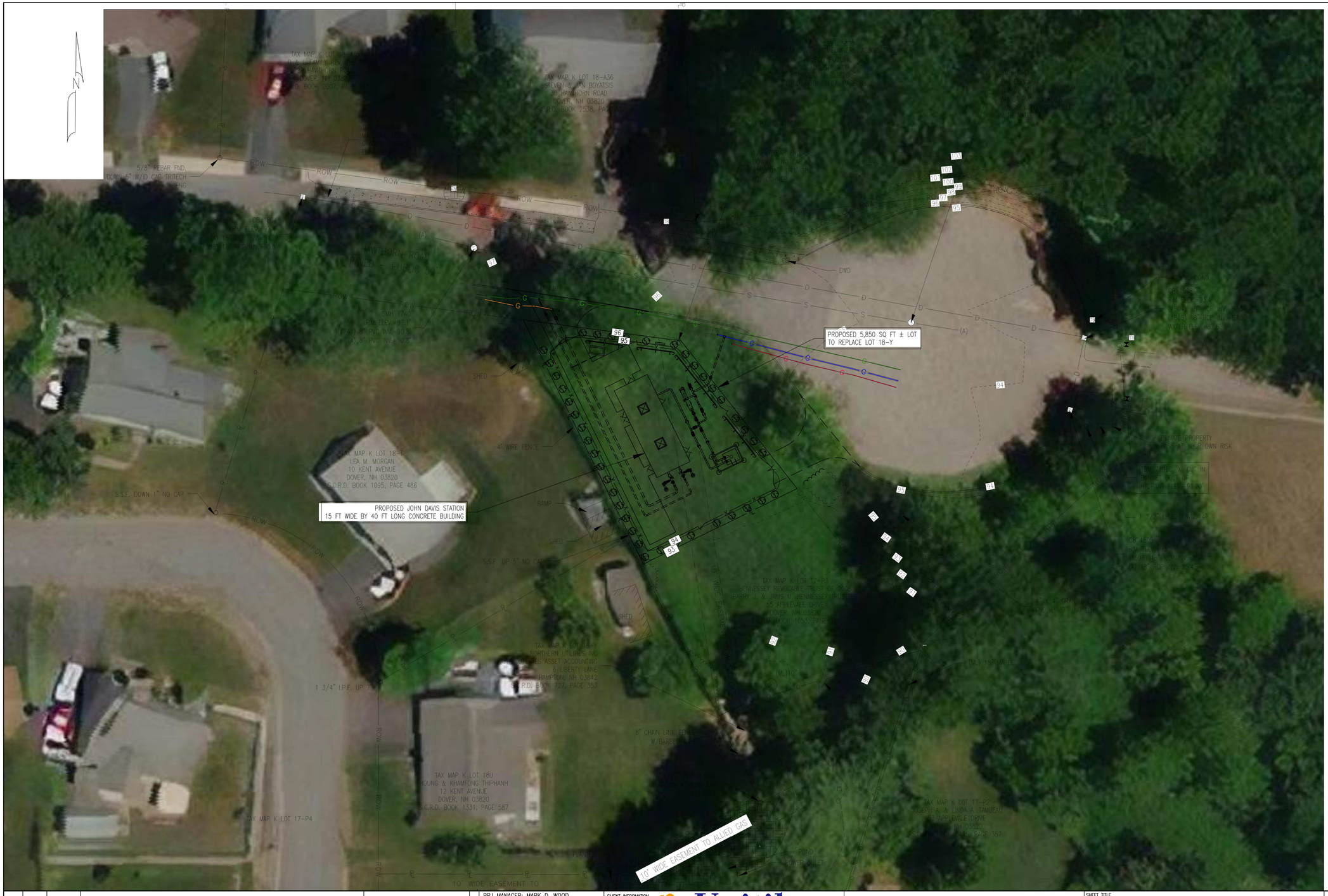
SHEET TITLE
SITE PLAN

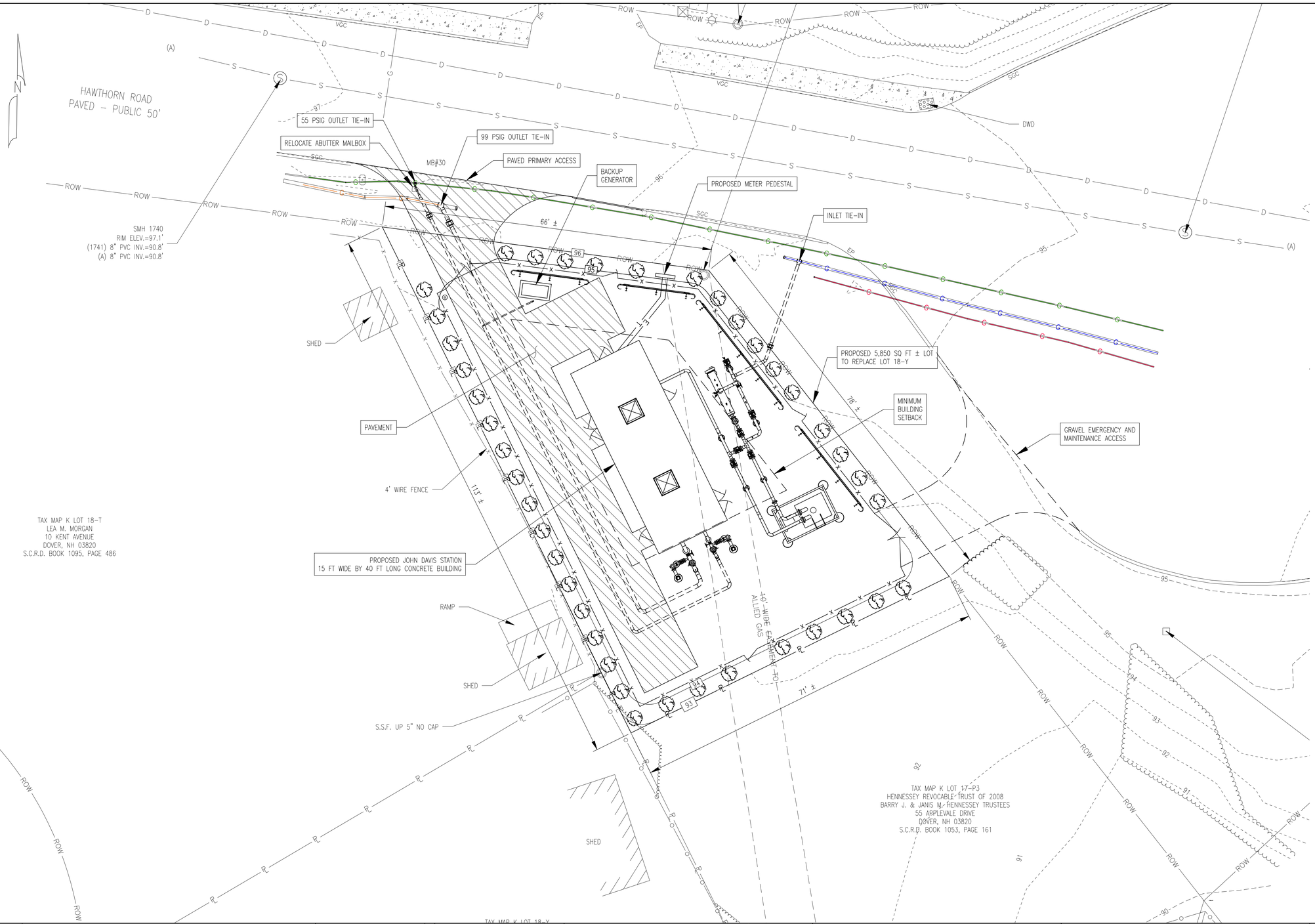
PROJECT NAME
JOHN DAVIS STATION

PROJECT LOCATION
55 APPLEVALE DRIVE
DOVER, NH 03820

PROCESS PIPELINE SERVICES
4 Broad Street
Plainville, MA 02762
781.829.0524
processpipelineservices.com

FILE NAME: 5361_C000.DWG	SIZE	NAME	REV
PLOT DATE: 02/15/2022 3:20 PM	22X34	A002	P
SCALE: 1" = 20'-0"	SHEET 6 OF 20		


TAX MAP K LOT 18-A36
STEVEN & ANN BOYATSIS
30 HAWTHORN ROAD
DOVER, NH 03820
S.C.R.D. BOOK 2538, PAGE
5/8" REBAR FND.
DOWN 6" W/ID CAP TRITECH
HAWTHORN ROAD
PUBLIC
ROW
SMH 1740
RIM ELEV=97.1
(A) 8" PVC INV=90.5
(A) 8" PVC INV=90.8
DWD
PROPOSED 5,850 SQ FT ± LOT
TO REPLACE LOT 18-Y
SHED
4' WIRE FENCE
RAMP
TAX MAP K LOT 18-1
LEA M. MORGAN
10 KENT AVENUE
DOVER, NH 03820
S.C.R.D. BOOK 1095, PAGE 486
PROPOSED JOHN DAVIS STATION
15 FT WIDE BY 40 FT LONG CONCRETE BUILDING
S.S.F. DOWN 1" NO CAP
S.S.F. UP 5" NO CAP
TAX MAP K LOT 17-P3
HENNESSEY REVOCABLE TRUST OF 2008
BARRY J. & JANIS T. HENNESSEY TRUSTEES
55 APPLEVALE DRIVE
DOVER, NH 03820
S.C.R.D. BOOK 1053, PAGE
TAX MAP K LOT 18-Y
NORTHERN UTILITIES INC
C/O ASSET ACCOUNTING
6 LIBERTY LANE
HAMPTON, NH 03842
S.C.R.D. BOOK 727, PAGE 353
1 3/4" I.P.F. UP 7"
8" CHAIN LINK FENCE
W/BARBED
TAX MAP K LOT 18U
HOUNG & KHAMFONG THIPHANH
12 KENT AVENUE
DOVER, NH 03820
S.C.R.D. BOOK 1331, PAGE 587
TAX MAP K LOT 17-P4
10' WIDE EASEMENT TO ALLIED GAS
10' WIDE EASEMENT TO
POND
OUTER BOUNDARY
TAX MAP K LOT 17-P2
JOSEPH A. & LINDA A. TAMBEAU
7 APPLEVALE DRIVE
DOVER, NH 03820
S.C.R.D. BOOK 1053, PAGE 357
PRIVATE PROPERTY
USE AT YOUR OWN RISK
CUT IN
CURB
HYDRANT ELEV=98.67
(MULTIPLE)
(MULTIPLE)
(MULTIPLE)



LEGEND

EXISTING		PROPOSED
PL	BOUNDARY LINE	PL
XXX	CONTOUR MAJOR	XXX
	CONTOUR MINOR	
D	DRAINAGE	D
	EASEMENT	
E	ELECTRIC	E
X X	FENCE CHAIN LINK	X X
O O	FENCE POST	O O
□ □	FENCE STOCKADE	□ □
	EDGE OF GRAVEL	
	EDGE OF PAVEMENT	
	EDGE OF RIVER	
	EDGE OF WETLAND	
G	GAS	G
□ □	GUARDRAIL	□ □
OHW	OVER HEAD WIRES	OHW
OHE	OVER HEAD TELEPHONE	OHT
OHE	OVER HEAD ELECTRIC	OHE
PL	PROPERTY LINE	PL
	RETAINING WALL	
ROW	RIGHT OF WAY	ROW
S	SEWER	S
SF	SILT FENCE	SF
	STONEWALL	
	STREAM	
T	TELEPHONE	T
	TREELINE	
W	WATER	W

GAS LEGEND

G	6" CS 397 PSIG
G	8" CS 99 PSIG
G	2" CS 55 PSIG
G	2" PE 55 PSIG

SURVEY NOTE:

1. EXISTING CONDITIONS ARE BASED ON A PLAN TITLED: EXISTING CONDITIONS PLAN; PREPARED FOR PROCESS PIPELINE SERVICES OF HENNESSEY REVOCABLE TRUST OF 2008 (TAX MAP K LOT 17-P-3) & NORTHERN UTILITIES, INC. (TAX MAP K LOT 17-P-3) APPLEVALE DRIVE & HAWTHORN ROAD DOVER, NEW HAMPSHIRE; PREPARED BY DOUCET SURVEY LLC; DATED: NOVEMBER 6, 2021; SCALE: 1" = 30'; SHEET 1 OF 1

REV	BY	DATE	DESCRIPTION

STATE OF NEW HAMPSHIRE
STEPHEN M READE
No. 15580
LICENSED
PROFESSIONAL ENGINEER
02/15/2022

SEAL AND SIGNATURE

PRJ MANAGER: MARK D. WOOD		
PRJ ENGINEER: MATT PELLETIER		
PRJ NAME: JOHN DAVIS STATION		
PRJ NUMBER: 5361		
PRJ MILESTONE: PERMITTING		
PRJ PHASE: PERMITTING		
DESIGNED BY:	MPP	02/15/22
DRAFTED BY:	DMG/RPG	02/15/22
CHECKED BY:	SMR	02/15/22
APPROVED BY:	MDW	02/15/22

CLIENT INFORMATION

Unitil
Northern Utilities, Inc.

DESIGN MANAGER: TIM BICKFORD			REVIEWED BY:		
DESIGN ENGINEER: SHEENA MASON			CHECKED BY:		
ACTIVATION ORDER:			APPROVED BY:		

GRAPHIC SCALE 1" = 10'-0"
10' 5' 0 10' 20' 30'

PERMITTING

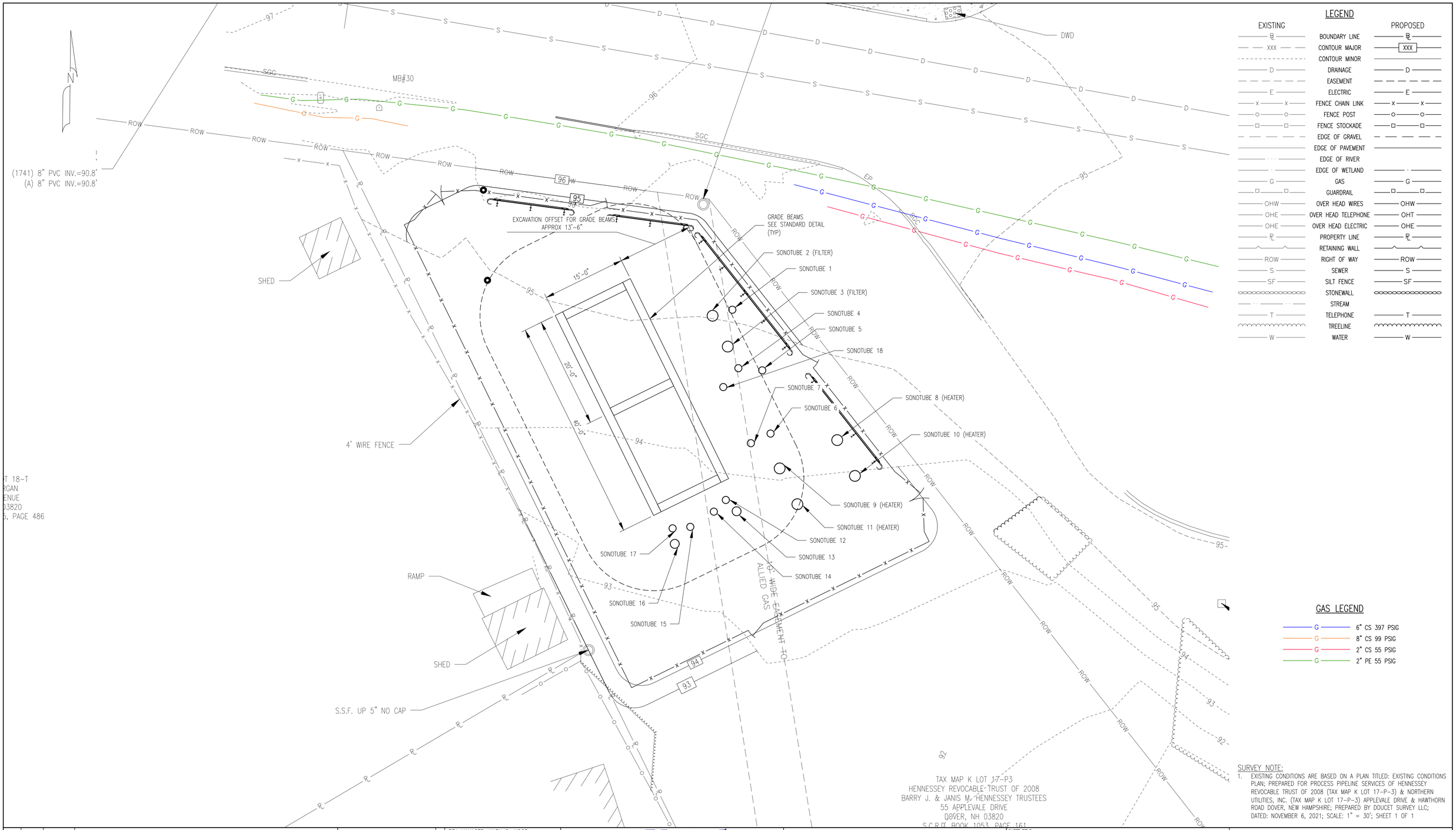
SHEET TITLE
SITE PLAN (ENLARGED)

PROJECT NAME
JOHN DAVIS STATION

PROJECT LOCATION
55 APPLEVALE DRIVE
DOVER, NH 03820

PROCESS PIPELINE SERVICES
4 Broad Street
Plainville, MA 02762
781.829.0524
processpipelineservices.com

FILE NAME: 5361_C000.DWG		SIZE	REV
PLOT DATE: 02/15/2022 3:20 PM		22X34 | NAME: A004	P
SCALE: 1" = 10'-0"		SHEET 8 OF 20	



LEGEND

EXISTING		PROPOSED
	BOUNDARY LINE	
XXX	CONTOUR MAJOR	XXX
	CONTOUR MINOR	
D	DRAINAGE	D
	EASEMENT	
E	ELECTRIC	E
X X	FENCE CHAIN LINK	X X
O O	FENCE POST	O O
□ □	FENCE STOCKADE	□ □
	EDGE OF GRAVEL	
	EDGE OF PAVEMENT	
	EDGE OF RIVER	
	EDGE OF WETLAND	
G	GAS	G
□ □	GUARDRAIL	□ □
OHW	OVER HEAD WIRES	OHW
OHE	OVER HEAD TELEPHONE	OHT
OHE	OVER HEAD ELECTRIC	OHE
	PROPERTY LINE	
	RETAINING WALL	
ROW	RIGHT OF WAY	ROW
S	SEWER	S
SF	SILT FENCE	SF
	STONEWALL	
	STREAM	
T	TELEPHONE	T
	TREELINE	
W	WATER	W

GAS LEGEND

G	6" CS 397 PSIG
G	8" CS 99 PSIG
G	2" CS 55 PSIG
G	2" PE 55 PSIG

SURVEY NOTE:

1. EXISTING CONDITIONS ARE BASED ON A PLAN TITLED: EXISTING CONDITIONS PLAN; PREPARED FOR PROCESS PIPELINE SERVICES OF HENNESSEY REVOCABLE TRUST OF 2008 (TAX MAP K LOT 17-P-3) & NORTHERN UTILITIES, INC. (TAX MAP K LOT 17-P-3) APPLEVALE DRIVE & HAWTHORN ROAD DOVER, NEW HAMPSHIRE; PREPARED BY DOUCET SURVEY LLC; DATED: NOVEMBER 6, 2021; SCALE: 1" = 30'; SHEET 1 OF 1

REV	BY	DATE	DESCRIPTION

STATE OF NEW HAMPSHIRE
STEPHEN M READE
No. 15580
PROFESSIONAL ENGINEER
02/15/2022

SEAL AND SIGNATURE

PRJ MANAGER: MARK D. WOOD		
PRJ ENGINEER: MATT PELLETIER		
PRJ NAME: JOHN DAVIS STATION		
PRJ NUMBER: 5361		
PRJ MILESTONE: PERMITTING		
PRJ PHASE: PERMITTING		
DESIGNED BY:	MPP	02/15/22
DRAFTED BY:	DMG/RPG	02/15/22
CHECKED BY:	SMR	02/15/22
APPROVED BY:	MDW	02/15/22

CLIENT INFORMATION

Unitil
Northern Utilities, Inc.

DESIGN MANAGER: TIM BICKFORD	REVIEWED BY:		
DESIGN ENGINEER: SHEENA MASON	CHECKED BY:		
ACTIVATION ORDER:	APPROVED BY:		

GRAPHIC SCALE 1/8" = 1'-0"
8' 4' 0 8' 16' 24'

P E R M I T T I N G

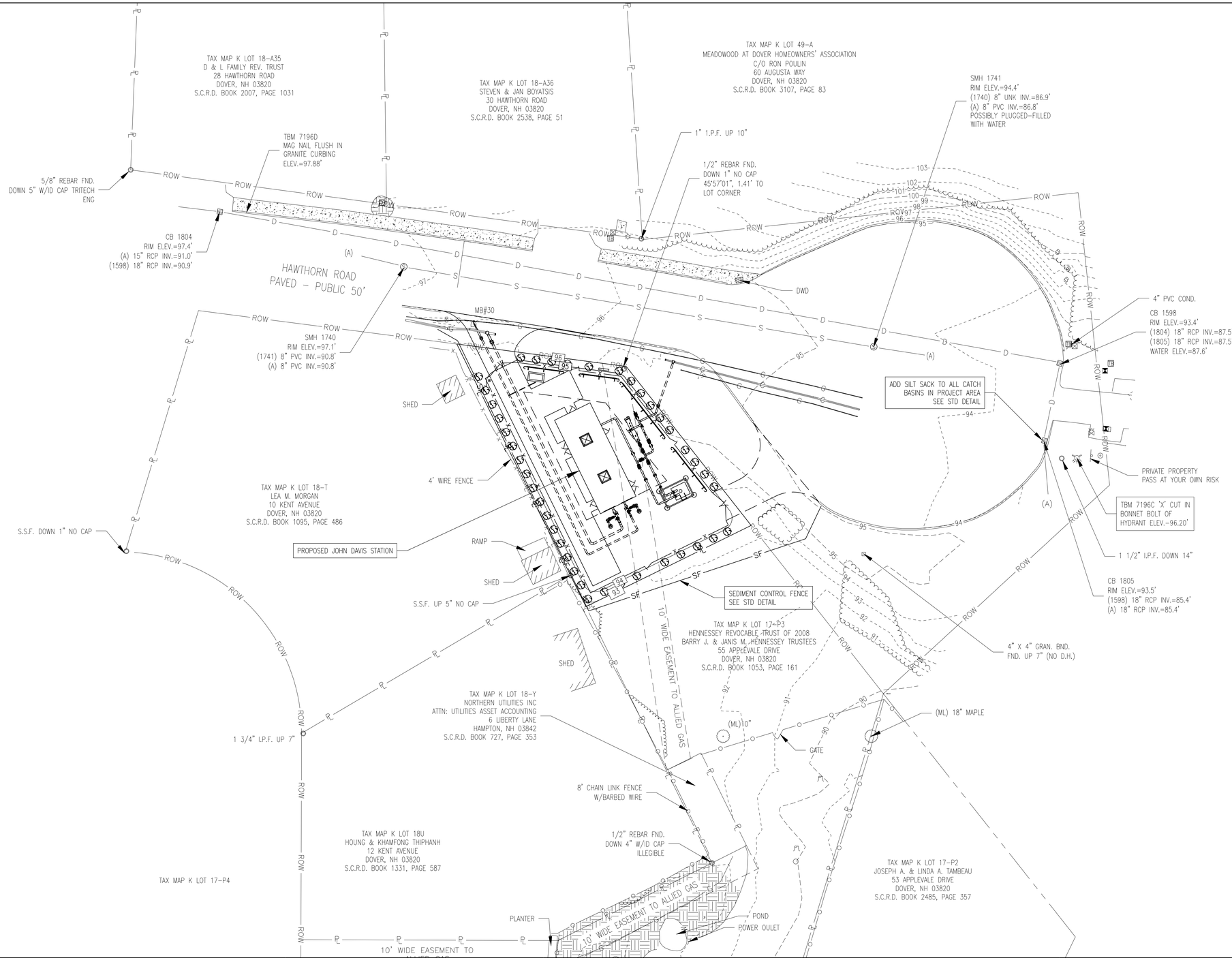
SHEET TITLE
GRADING AND FOUNDATION PLAN

PROJECT NAME
JOHN DAVIS STATION

PROJECT LOCATION
55 APPLEVALE DRIVE
DOVER, NH 03820

PROCESS PIPELINE SERVICES
4 Broad Street
Plainville, MA 02762
781.829.0524
processpipelineservices.com

FILE NAME: 5361_C000.DWG	SIZE	NAME	REV
PLOT DATE: 02/15/2022 3:20 PM	22X34	A005	P
SCALE: 1/8" = 1'-0"	SHEET 9 OF 20		



LEGEND

EXISTING		PROPOSED
℄	BOUNDARY LINE	℄
XXX	CONTOUR MAJOR	XXX
	CONTOUR MINOR	
D	DRAINAGE	D
	EASEMENT	
E	ELECTRIC	E
X X	FENCE CHAIN LINK	X X
O O	FENCE POST	O O
□ □	FENCE STOCKADE	□ □
	EDGE OF GRAVEL	
	EDGE OF PAVEMENT	
	EDGE OF RIVER	
	EDGE OF WETLAND	
G	GAS	G
□ □	GUARDRAIL	□ □
OHW	OVER HEAD WIRES	OHW
OHE	OVER HEAD TELEPHONE	OHT
OHE	OVER HEAD ELECTRIC	OHE
℄	PROPERTY LINE	℄
	RETAINING WALL	
ROW	RIGHT OF WAY	ROW
S	SEWER	S
SF	SILT FENCE	SF
	STONEWALL	
	STREAM	
T	TELEPHONE	T
	TREELINE	
W	WATER	W

GENERAL EROSION CONTROL NOTES

1. SOIL DISTURBANCE SHALL BE CONDUCTED IN A MANNER AS TO MINIMIZE EROSION TO ONLY AREAS OF ACTIVE CONSTRUCTION. STABILIZE ALL AREAS THAT HAVE REACHED FINISH GRADE AS SOON AS POSSIBLE.
2. IF SEDIMENT IS TRANSPORTED OFF-SITE IT IS TO BE MONITORED. CONSTRUCT STABILIZED STONE PAD TO HELP REMOVE SEDIMENT FROM TIRES BEFORE LEAVING SITE.
3. IF MATERIAL IS STOCKPILED ONSITE IT SHALL BE ENCOMPASSED BY A SEDIMENT CONTROL FENCE. STOCKPILES SHALL NOT BE PLACED IN FLOOD PRONE AREAS, WETLANDS, OR BUFFERS.
4. IF DEWATERING IS REQUIRED, CONTRACTOR IS TO PREVENT SEDIMENT LADEN WATER FROM EXITING THE PROJECT SITE AND IS TO CREATE A NON EROSIVE CONVEYANCE OF THE WATER AS REQUIRED. DEWATERING SYSTEMS SHOULD BE INSPECTED DAILY DURING OPERATIONAL PERIODS.
5. ALL TEMPORARY AND PERMANENT EROSION CONTROL MEASURES MUST BE MAINTAINED AND REPAIRED AS NEEDED.
6. ALL TEMPORARY SEDIMENT CONTROL MEASURES SHALL BE REMOVED WITHIN 30 DAYS AFTER FINAL SITE STABILIZATION OR AFTER THE TEMPORARY MEASURES ARE NO LONGER NEEDED.
7. THE EROSION CONTROL MEASURES INDICATED ON THESE PLANS ARE THE MINIMUM REQUIREMENTS. ADDITIONAL MEASURES MAY BE REQUIRED.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR RETURNING ALL EXISTING AREAS AFFECTED BY CONSTRUCTION ACTIVITIES TO THE ORIGINAL UNDISTURBED CONDITIONS.

CONTRACTOR IS REQUIRED TO IMPLEMENT ALL APPLICABLE EROSION CONTROL MEASURES IN ACCORDANCE WITH GUIDELINES ESTABLISHED WITHIN THE CURRENT "NH STORMWATER MANUAL, VOL. 3, EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION" DATED 10/2008 OR LATER.

REV	BY	DATE	DESCRIPTION

STATE OF NEW HAMPSHIRE
STEPHEN M READE No.15580 LICENSED PROFESSIONAL ENGINEER
02/15/2022

SEAL AND SIGNATURE

PRJ MANAGER: MARK D. WOOD					
PRJ ENGINEER: MATT PELLETIER					
PRJ NAME: JOHN DAVIS STATION					
PRJ NUMBER: 5361					
PRJ MILESTONE: PERMITTING					
PRJ PHASE: PERMITTING					
DESIGNED BY:	MPP	02/15/22			
DRAFTED BY:	DMG/RPG	02/15/22	DESIGN MANAGER: TIM BICKFORD	REVIEWED BY:	
CHECKED BY:	SMR	02/15/22	DESIGN ENGINEER: SHEENA MASON	CHECKED BY:	
APPROVED BY:	MDW	02/15/22	ACTIVATION ORDER:	APPROVED BY:	

CLIENT INFORMATION
Unitil
Northern Utilities, Inc.

GRAPHIC SCALE 1" = 20'-0"
20' 10' 0 20' 40' 60'

P E R M I T T I N G

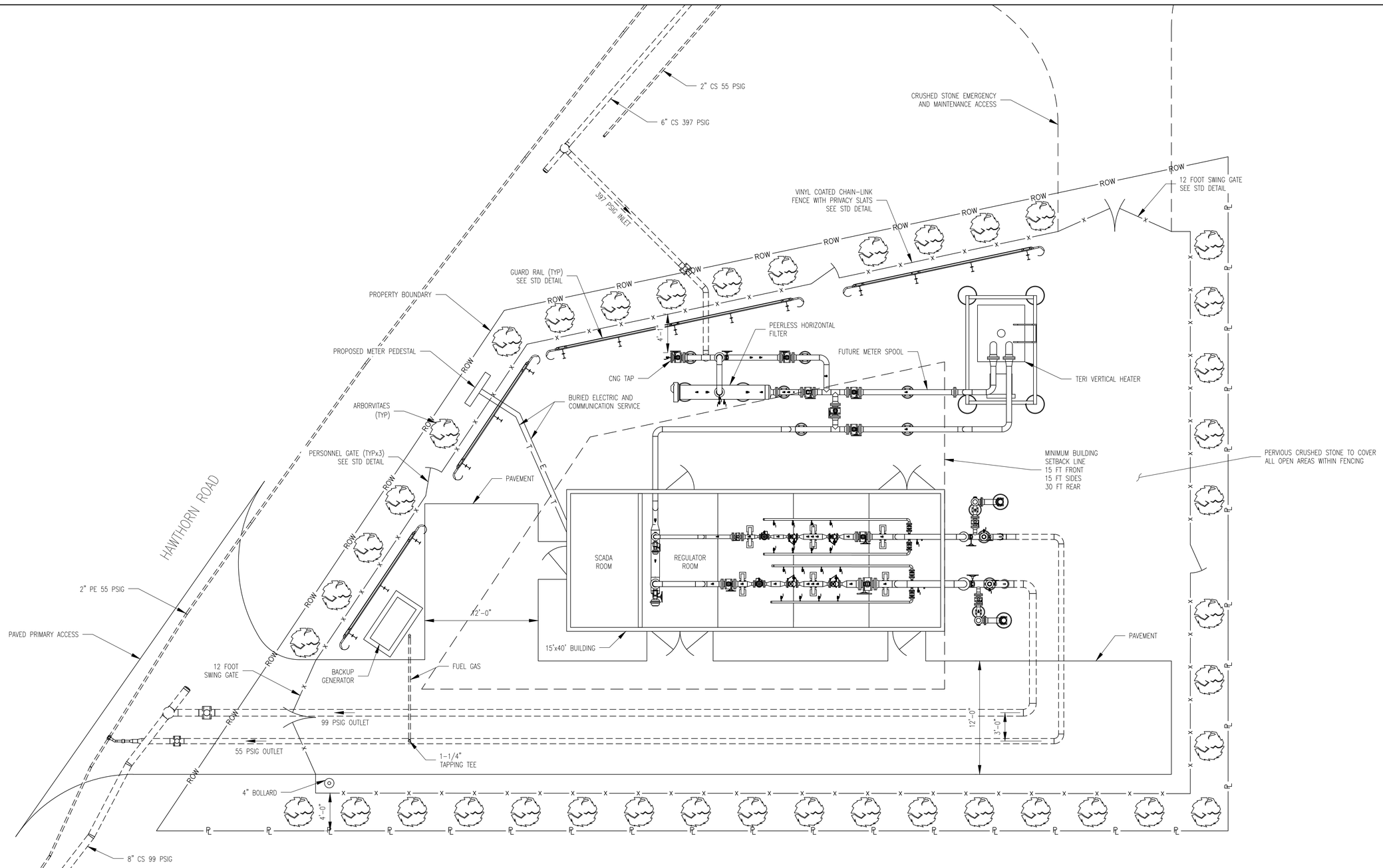
SHEET TITLE
EROSION AND SEDIMENTATION CONTROL PLAN

PROJECT NAME
JOHN DAVIS STATION

PROJECT LOCATION
55 APPLEVALE DRIVE
DOVER, NH 03820

PROCESS PIPELINE SERVICES
4 Broad Street
Plainville, MA 02762
781.829.0524
processpipelineservices.com

FILE NAME: 5361_C000.DWG	SIZE	NAME	REV
PLOT DATE: 02/15/2022 3:20 PM	22X34	A006	P
SCALE: 1" = 20'-0"	SHEET 10 OF 20		



REV	BY	DATE	DESCRIPTION

STATE OF NEW HAMPSHIRE
STEPHEN M READE No.15580
PROFESSIONAL ENGINEER
02/15/2022

SEAL AND SIGNATURE

PRJ MANAGER: MARK D. WOOD		
PRJ ENGINEER: MATT PELLETIER		
PRJ NAME: JOHN DAVIS STATION		
PRJ NUMBER: 5361		
PRJ MILESTONE: PERMITTING		
PRJ PHASE: PERMITTING		
DESIGNED BY:	MPP	02/15/22
DRAFTED BY:	DMG/RPG	02/15/22
CHECKED BY:	SMR	02/15/22
APPROVED BY:	MDW	02/15/22

CLIENT INFORMATION

Unitil
Northern Utilities, Inc.

DESIGN MANAGER: TIM BICKFORD	REVIEWED BY:		
DESIGN ENGINEER: SHEENA MASON	CHECKED BY:		
ACTIVATION ORDER:	APPROVED BY:		

GRAPHIC SCALE 3/16" = 1'-0"
5' 0 5' 10' 15'

P E R M I T T I N G

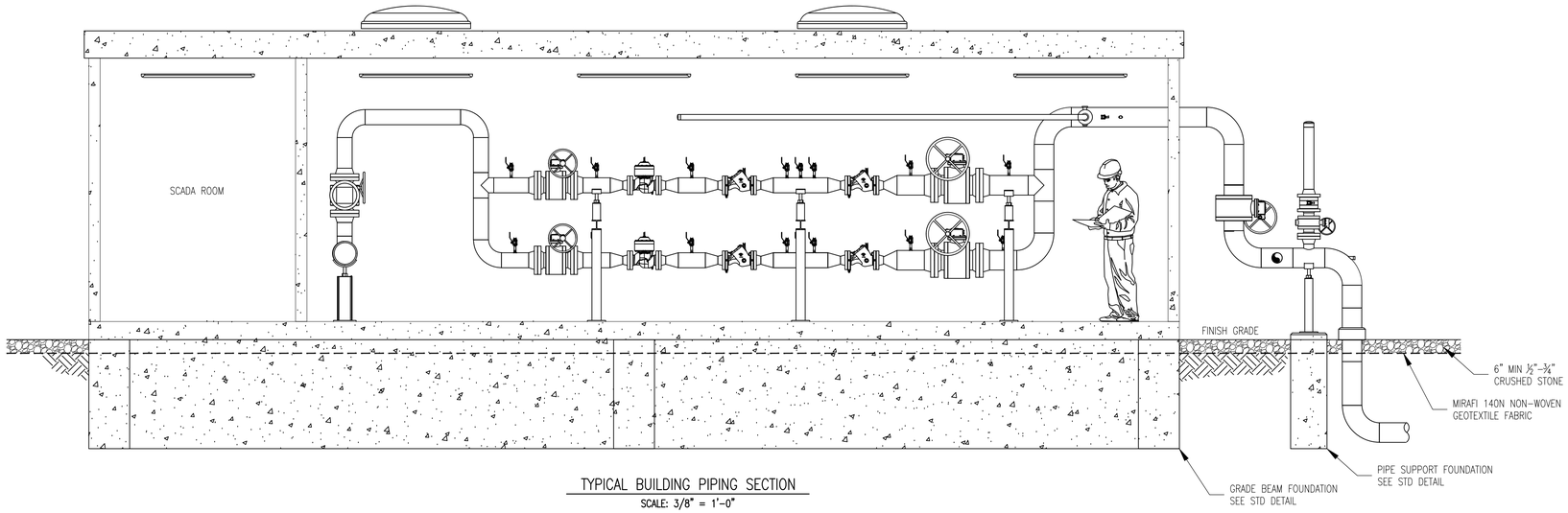
SHEET TITLE
PIPING PLAN

PROJECT NAME
JOHN DAVIS STATION

PROJECT LOCATION
55 APPLEVALE DRIVE
DOVER, NH 03820

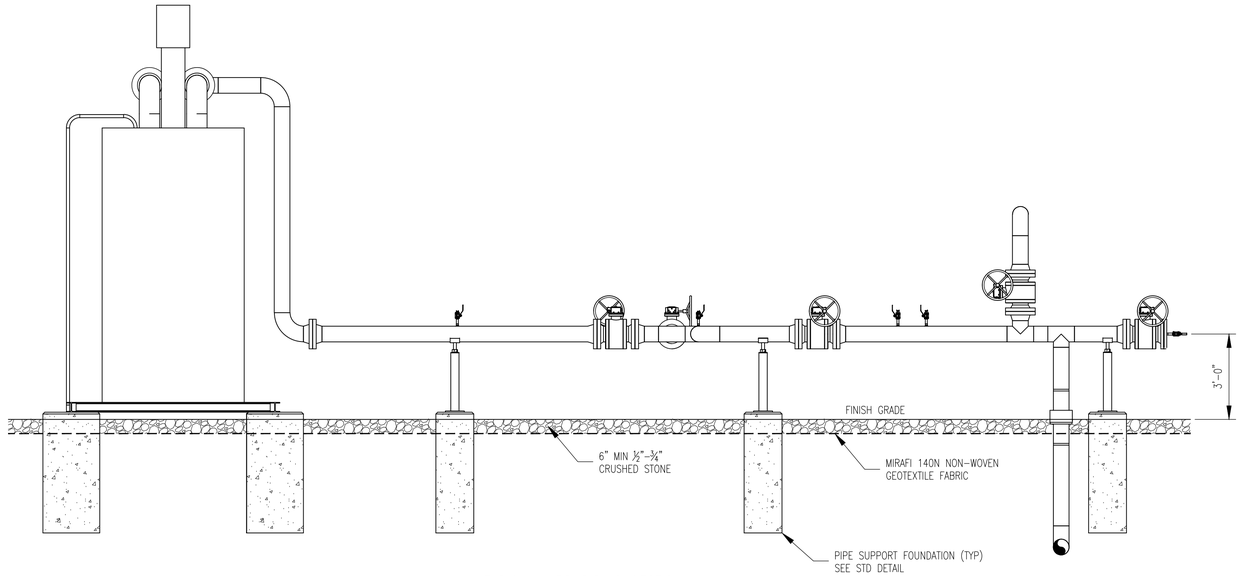
PROCESS PIPELINE SERVICES
4 Broad Street
Plainville, MA 02762
781.829.0524
processpipelineservices.com

FILE NAME: 5361_P000.DWG	SIZE	NAME	REV
PLOT DATE: 02/15/2022 3:20 PM	22X34	P001	P
SCALE: 3/16" = 1'-0"	SHEET 11 OF 20		



TYPICAL BUILDING PIPING SECTION

SCALE: 3/8" = 1'–0"



TYPICAL YARD PIPING SECTION

SCALE: 3/8" = 1'–0"

REV	BY	DATE	DESCRIPTION

STATE OF NEW HAMPSHIRE
STEPHEN M READE
No. 15580
PROFESSIONAL ENGINEER
02/15/2022

SEAL AND SIGNATURE

PRJ MANAGER: MARK D. WOOD		
PRJ ENGINEER: MATT PELLETIER		
PRJ NAME: JOHN DAVIS STATION		
PRJ NUMBER: 5361		
PRJ MILESTONE: PERMITTING		
PRJ PHASE: PERMITTING		
DESIGNED BY:	MPP	02/15/22
DRAFTED BY:	DMG/RPG	02/15/22
CHECKED BY:	SMR	02/15/22
APPROVED BY:	MDW	02/15/22

CLIENT INFORMATION

Unitil
Northern Utilities, Inc.

DESIGN MANAGER: TIM BICKFORD	REVIEWED BY:		
DESIGN ENGINEER: SHEENA MASON	CHECKED BY:		
ACTIVATION ORDER:	APPROVED BY:		

GRAPHIC SCALE 3/8" = 1'–0"

3' 0 3' 6' 9'

P E R M I T T I N G

SHEET TITLE

TYPICAL BUILDING AND YARD PIPING SECTIONS

PROJECT NAME

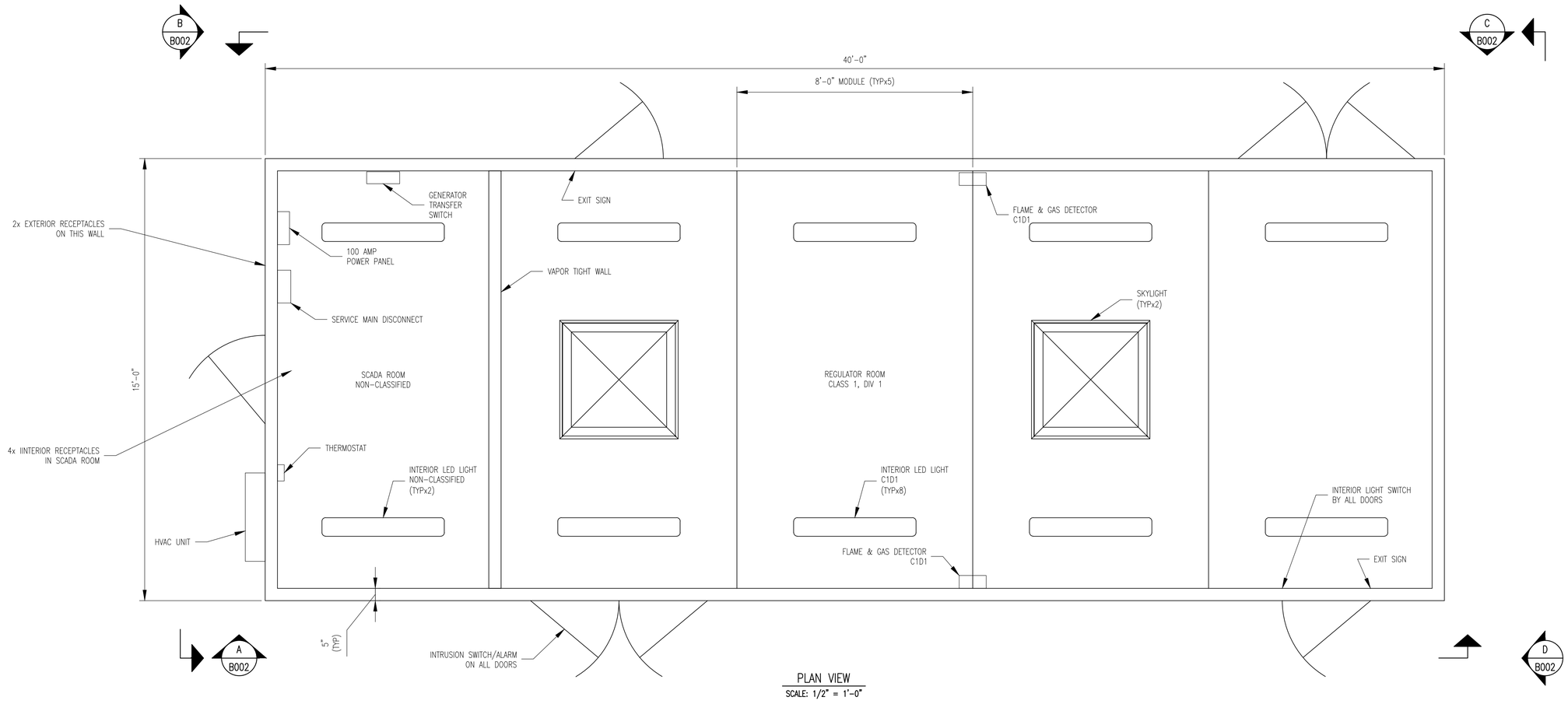
JOHN DAVIS STATION

PROJECT LOCATION

55 APPLEVALE DRIVE
DOVER, NH 03820

PROCESS PIPELINE SERVICES
4 Broad Street
Plainville, MA 02762
781.829.0524
processpipelineservices.com

FILE NAME: 5361_P000.DWG		SIZE	REV
PLOT DATE: 02/15/2022 3:20 PM		22X34	P
SCALE: 3/8" = 1'–0"		NAME	P101
		SHEET 12 OF 20	



PLAN VIEW
SCALE: 1/2" = 1'-0"

REV	BY	DATE	DESCRIPTION

STEPHEN M READE No.15580 PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE 02/15/2022

SEAL AND SIGNATURE

PRJ MANAGER: MARK D. WOOD		
PRJ ENGINEER: MATT PELLETIER		
PRJ NAME: JOHN DAVIS STATION		
PRJ NUMBER: 5361		
PRJ MILESTONE: PERMITTING		
PRJ PHASE: PERMITTING		
DESIGNED BY:	MPP	02/15/22
DRAFTED BY:	DMG/RPG	02/15/22
CHECKED BY:	SMR	02/15/22
APPROVED BY:	MDW	02/15/22

CLIENT INFORMATION

Unitil
Northern Utilities, Inc.

DESIGN MANAGER: TIM BICKFORD	REVIEWED BY:		
DESIGN ENGINEER: SHEENA MASON	CHECKED BY:		
ACTIVATION ORDER:	APPROVED BY:		

GRAPHIC SCALE 1/2" = 1'-0"
2' 1' 0 2' 4' 6'

P E R M I T T I N G

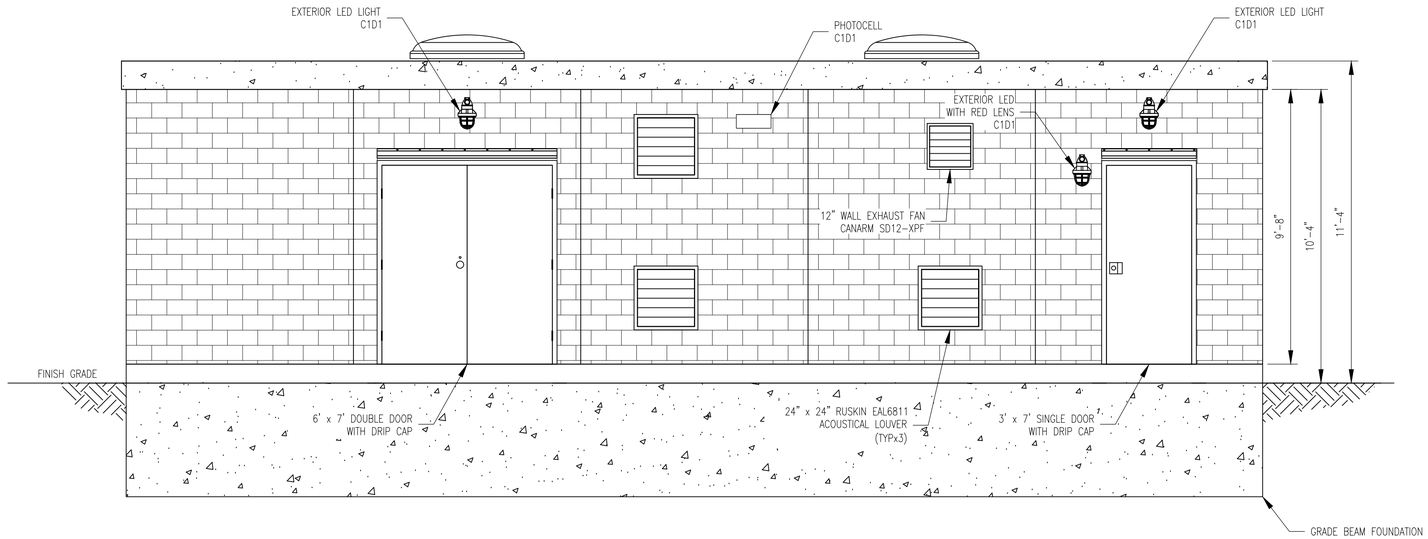
SHEET TITLE
BUILDING PLAN

PROJECT NAME
JOHN DAVIS STATION

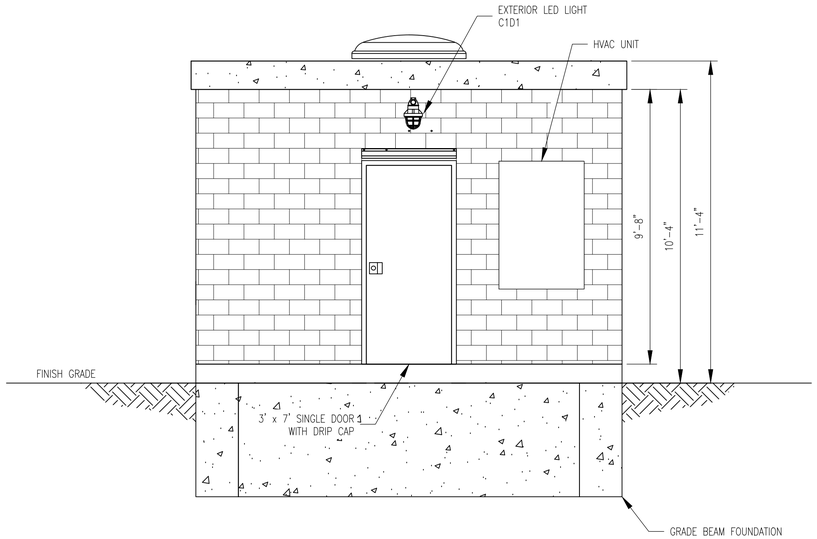
PROJECT LOCATION
55 APPLEVALE DRIVE
DOVER, NH 03820

PROCESS PIPELINE SERVICES
4 Broad Street
Plainville, MA 02762
781.829.0524
processpipelineservices.com

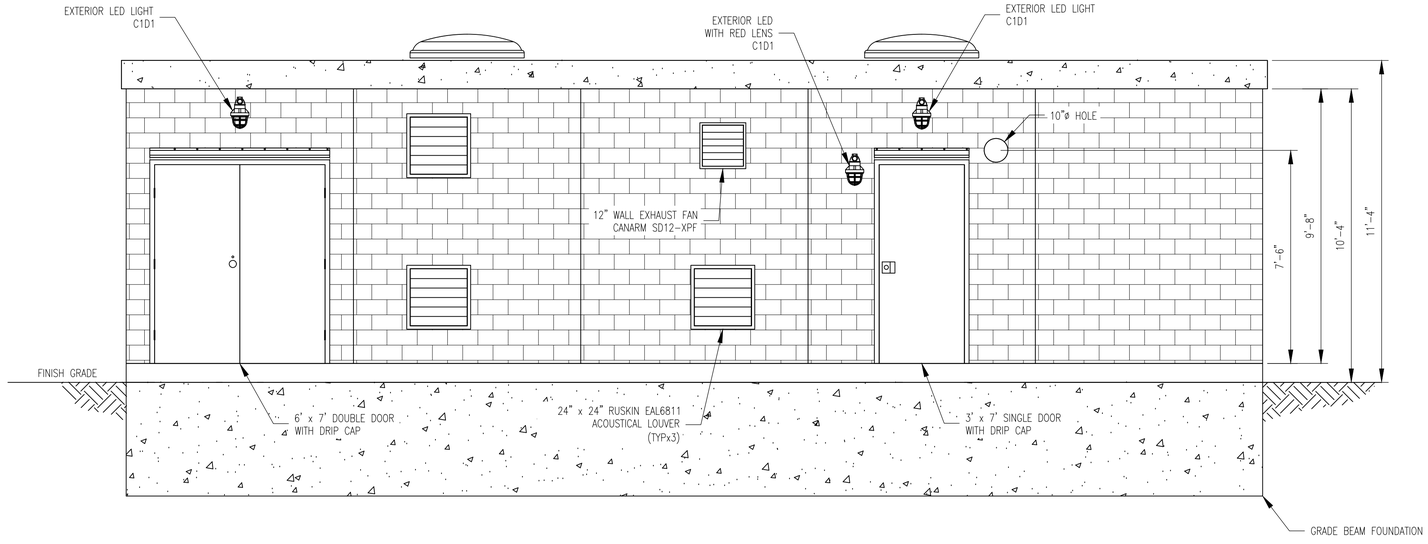
FILE NAME: 5361_P100.DWG		SIZE	NAME / REV
PLOT DATE: 02/15/2022 3:20 PM		22X34	B001 / P
SCALE: 1/2" = 1'-0"		SHEET 13 OF 20	



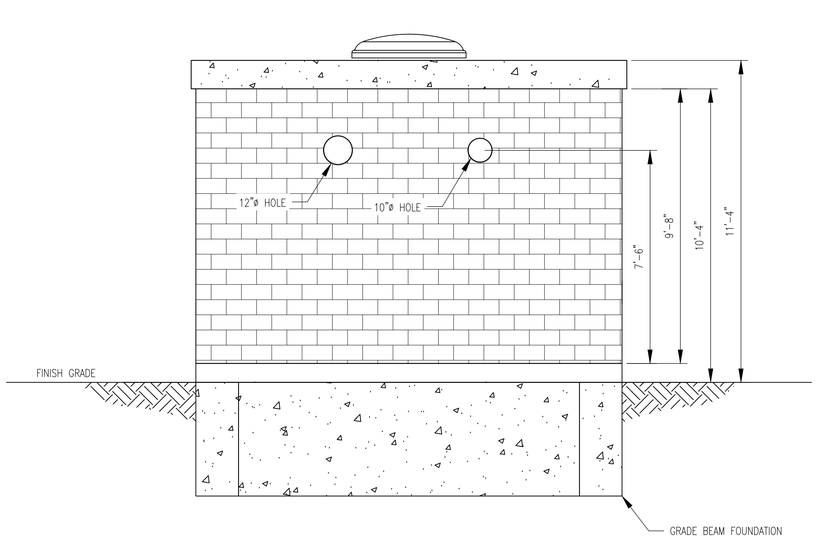
SECTION A B001
SCALE: 3/8" = 1'-0"



SECTION B B001
SCALE: 3/8" = 1'-0"



SECTION C B001
SCALE: 3/8" = 1'-0"



SECTION D B001
SCALE: 3/8" = 1'-0"

REV	BY	DATE	DESCRIPTION

STATE OF NEW HAMPSHIRE
STEPHEN M READE
No. 15580
PROFESSIONAL ENGINEER
02/15/2022

SEAL AND SIGNATURE

PRJ MANAGER: MARK D. WOOD		
PRJ ENGINEER: MATT PELLETIER		
PRJ NAME: JOHN DAVIS STATION		
PRJ NUMBER: 5361		
PRJ MILESTONE: PERMITTING		
PRJ PHASE: PERMITTING		
DESIGNED BY:	MPP	02/15/22
DRAFTED BY:	DMG/RPG	02/15/22
CHECKED BY:	SMR	02/15/22
APPROVED BY:	MDW	02/15/22

CLIENT INFORMATION
Unitil
Northern Utilities, Inc.

DESIGN MANAGER: TIM BICKFORD	REVIEWED BY:		
DESIGN ENGINEER: SHEENA MASON	CHECKED BY:		
ACTIVATION ORDER:	APPROVED BY:		

GRAPHIC SCALE 3/8" = 1'-0"
3' 0 3' 6' 9'

PERMITTING

SHEET TITLE
BUILDING SECTIONS

PROJECT NAME
JOHN DAVIS STATION

PROJECT LOCATION
55 APPLEVALE DRIVE
DOVER, NH 03820

PROCESS PIPELINE SERVICES
4 Broad Street
Plainville, MA 02762
781.829.0524
processpipelineservices.com

FILE NAME: 5361_P100.DWG	SIZE	NAME	REV
PLOT DATE: 02/15/2022 3:20 PM	22X34	B002	P
SCALE: 3/8" = 1'-0"	SHEET 14 OF 20		

HAWTHORN ROAD
PAVED – PUBLIC 50'

SMH 1740
RIM ELEV.=97.1'
(1741) 8" PVC INV.=90.8'
(A) 8" PVC INV.=90.8'

SHED

SCADA ROOM

REGULATOR ROOM

R5' (TYP)

R15' (TYP)

R10' (TYP)

4' WIRE FENCE

RAMP

SHED

S.S.F. UP 5" NO CAP

SHED

50' WIDE EASEMENT TO ALGAS

DWD

MB#30

TAX MAP K LOT 18-T
LEA M. MORGAN
10 KENT AVENUE
DOVER, NH 03820
S.C.R.D. BOOK 1095, PAGE 486

TAX MAP K LOT 17-P3
HENNESSEY REVOCABLE TRUST OF 2008
BARRY J. & JANIS M. HENNESSEY TRUSTEES
55 APPLEVALE DRIVE
DOVER, NH 03820
S.C.R.D. BOOK 1053, PAGE 161

TAX MAP K LOT 18-Y

LEGEND

EXISTING		PROPOSED
PL	BOUNDARY LINE	PL
XXX	CONTOUR MAJOR	XXX
	CONTOUR MINOR	
D	DRAINAGE	D
	EASEMENT	
E	ELECTRIC	E
X	FENCE CHAIN LINK	X
	FENCE POST	
	FENCE STOCKADE	
	EDGE OF GRAVEL	
	EDGE OF PAVEMENT	
	EDGE OF RIVER	
	EDGE OF WETLAND	
G	GAS	G
	GUARDRAIL	
OHW	OVER HEAD WIRES	OHW
OHE	OVER HEAD TELEPHONE	OHT
OHE	OVER HEAD ELECTRIC	OHE
PL	PROPERTY LINE	PL
	RETAINING WALL	
ROW	RIGHT OF WAY	ROW
S	SEWER	S
SF	SILT FENCE	SF
	STONEWALL	
	STREAM	
T	TELEPHONE	T
	TREELINE	
W	WATER	W

ELECTRICAL AREA CLASSIFICATION LEGEND

CLASS 1 DIVISION 1 AREA

CLASS 1 DIVISION 2 AREA

NOTES:
1. PER AMERICAN GAS ASSOCIATION CATALOG No. XL1001 CLASSIFICATION OF LOCATIONS FOR ELECTRICAL INSTALLATIONS IN GAS UTILITY AREAS.

REV	BY	DATE	DESCRIPTION

STATE OF NEW HAMPSHIRE
STEPHEN M READE
No. 15580
PROFESSIONAL ENGINEER
02/15/2022

SEAL AND SIGNATURE

PRJ MANAGER: MARK D. WOOD		
PRJ ENGINEER: MATT PELLETIER		
PRJ NAME: JOHN DAVIS STATION		
PRJ NUMBER: 5361		
PRJ MILESTONE: PERMITTING		
PRJ PHASE: PERMITTING		
DESIGNED BY:	MPP	02/15/22
DRAFTED BY:	DMG/RPG	02/15/22
CHECKED BY:	SMR	02/15/22
APPROVED BY:	MDW	02/15/22

CLIENT INFORMATION
Unitil
Northern Utilities, Inc.

DESIGN MANAGER: TIM BICKFORD	REVIEWED BY:		
DESIGN ENGINEER: SHEENA MASON	CHECKED BY:		
ACTIVATION ORDER:	APPROVED BY:		

GRAPHIC SCALE 1" = 10'-0"
10' 5' 0 10' 20' 30'

PERMITTING

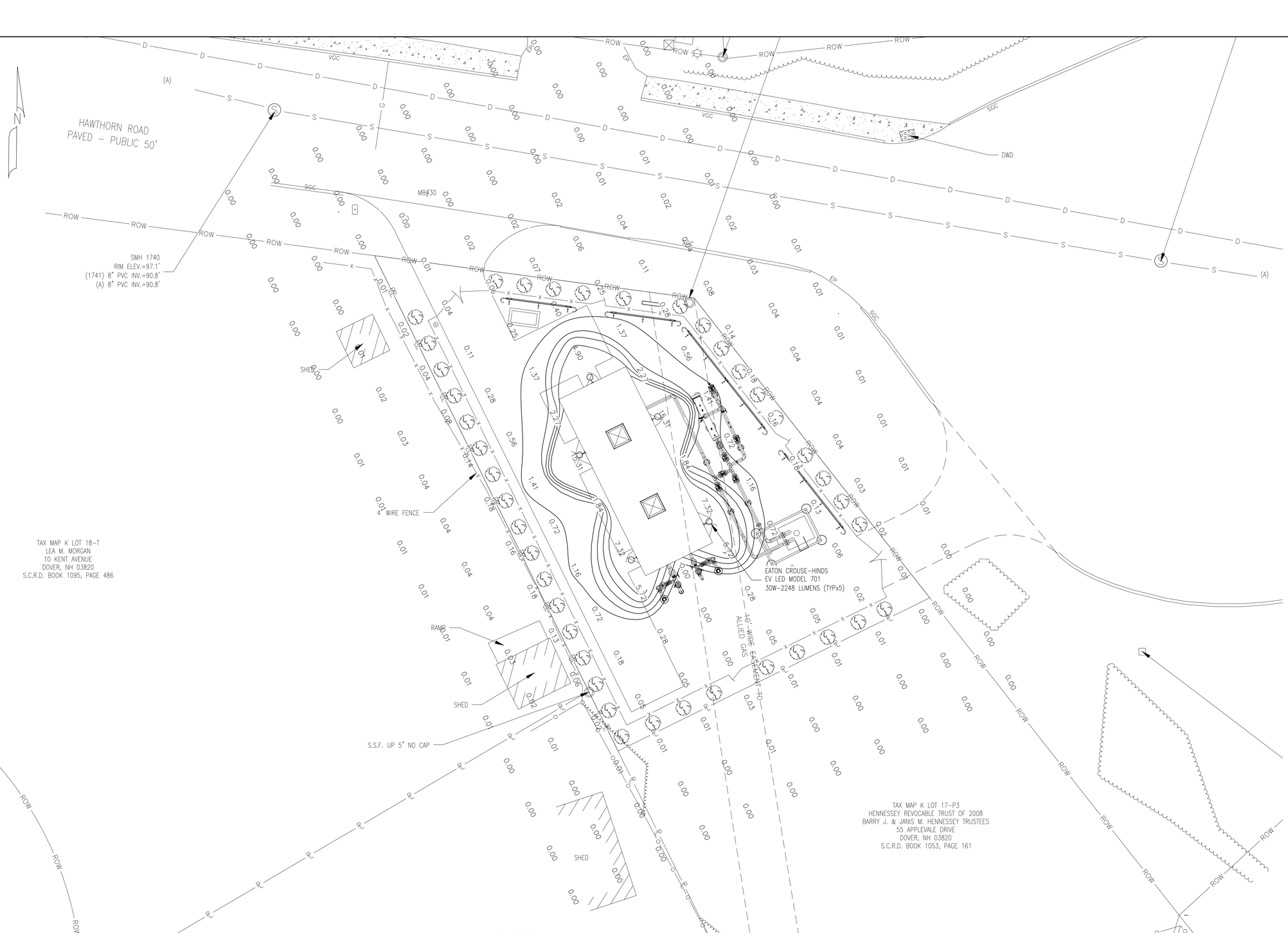
SHEET TITLE
ELECTRICAL AREA CLASSIFICATION PLAN

PROJECT NAME
JOHN DAVIS STATION

PROJECT LOCATION
55 APPLEVALE DRIVE
DOVER, NH 03820

PROCESS PIPELINE SERVICES
4 Broad Street
Plainville, MA 02762
781.829.0524
processpipelineservices.com

FILE NAME: 5361_C000.DWG	SIZE	NAME	REV
PLOT DATE: 02/15/2022 3:21 PM	22X34	E001	P
SCALE: 1" = 10'-0"	SHEET 15 OF 20		



LEGEND

EXISTING		PROPOSED
PL	BOUNDARY LINE	PL
XXX	CONTOUR MAJOR	XXX
	CONTOUR MINOR	
D	DRAINAGE	D
	EASEMENT	
E	ELECTRIC	E
X X	FENCE CHAIN LINK	X X
O O	FENCE POST	O O
□ □	FENCE STOCKADE	□ □
	EDGE OF GRAVEL	
	EDGE OF PAVEMENT	
	EDGE OF RIVER	
	EDGE OF WETLAND	
G	GAS	G
□ □	GUARDRAIL	□ □
OHW	OVER HEAD WIRES	OHW
OHE	OVER HEAD TELEPHONE	OHT
OHE	OVER HEAD ELECTRIC	OHE
PL	PROPERTY LINE	PL
	RETAINING WALL	
ROW	RIGHT OF WAY	ROW
S	SEWER	S
SF	SILT FENCE	SF
	STONEWALL	
	STREAM	
T	TELEPHONE	T
	TREELINE	
W	WATER	W

NOTE:
1. NUMBERS IN PLAN VIEW REPRESENT FOOTCANDLE VALUES.
2. CONTOURS ARE SHOWN AT 1, 2, 3, 4, AND 5 FOOT CANDLE INTERVALS.

REV	BY	DATE	DESCRIPTION

STATE OF NEW HAMPSHIRE
STEPHEN W READE
No. 15580
LICENSED PROFESSIONAL ENGINEER
02/15/2022

SEAL AND SIGNATURE

PRJ MANAGER: MARK D. WOOD		
PRJ ENGINEER: MATT PELLETIER		
PRJ NAME: JOHN DAVIS STATION		
PRJ NUMBER: 5361		
PRJ MILESTONE: PERMITTING		
PRJ PHASE: PERMITTING		
DESIGNED BY:	MPP	02/15/22
DRAFTED BY:	DMG/RPG	02/15/22
CHECKED BY:	SMR	02/15/22
APPROVED BY:	MDW	02/15/22

CLIENT INFORMATION
Unitil
Northern Utilities, Inc.

DESIGN MANAGER: TIM BICKFORD	REVIEWED BY:		
DESIGN ENGINEER: SHEENA MASON	CHECKED BY:		
ACTIVATION ORDER:	APPROVED BY:		

GRAPHIC SCALE 1" = 10'-0"
10' 5' 0 10' 20' 30'

P E R M I T T I N G

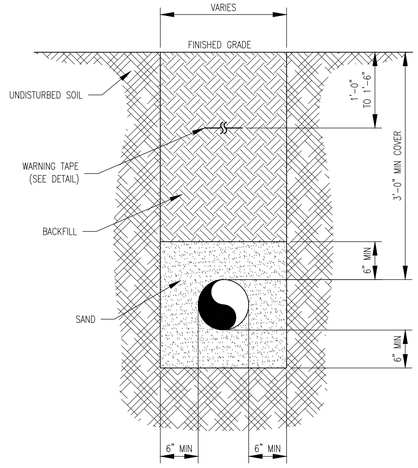
SHEET TITLE
SITE LIGHTING PLAN

PROJECT NAME
JOHN DAVIS STATION

PROJECT LOCATION
55 APPLEVALE DRIVE
DOVER, NH 03820

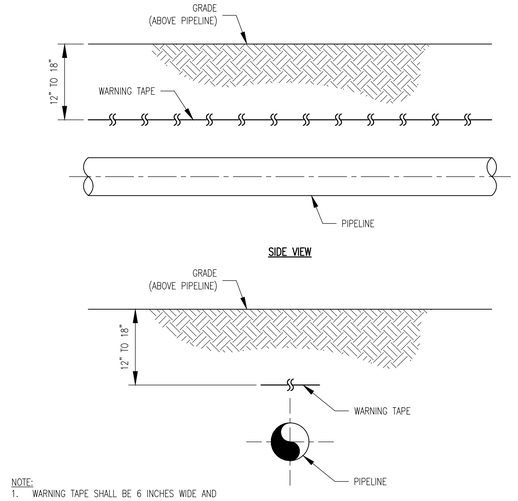
PROCESS PIPELINE SERVICES
4 Broad Street
Plainville, MA 02762
781.829.0524
processpipelineservices.com

FILE NAME: 5361_C000.DWG	SIZE	NAME	REV
PLOT DATE: 02/15/2022 3:21 PM	22X34	E002	P
SCALE: 1" = 10'-0"	SHEET 16 OF 20		



TYPICAL TRENCH DETAIL

SCALE: 1" = 1'-0"



NOTE:
1. WARNING TAPE SHALL BE 6 INCHES WIDE AND YELLOW WITH BLACK LETTERS AS FOLLOWS: "CAUTION GAS LINE BURIED BELOW".

UNDERGROUND WARNING TAPE INSTALLATION DETAIL

SCALE: 1" = 1'-0"

FOUNDATION MATERIAL SPECIFICATIONS:

1. CONCRETE
   - 1.1. ULTIMATE COMPRESSIVE STRENGTH AT 28 DAYS F'C = 4,000 PSI.
   - 1.2. SLUMP/DESIGNATED COARSE AGGREGATE 4"±1"13/4"
   - 1.3. AIR ENTRAINMENT 5-7%
   - 1.4. PLACE CONCRETE IN ACCORDANCE WITH ACI 301
   - 1.5. ALL CONCRETE WORK TO CONFORM TO ACI318
   - 1.6. USE ADMIXTURES ONLY WHEN APPROVED BY ENGINEER
2. REINFORCEMENT
   - 2.1. ALL REINFORCEMENT TO BE GRADE 60 AND CONFORM TO ASTM A615
   - 2.2. COMPLETE REINFORCING WORK IN ACCORDANCE WITH ACI 318
   - 2.3. SPLICE #4 REBAR A MINIMUM OF 18 INCHES
   - 2.4. SPLICE #5 REBAR A MINIMUM OF 24 INCHES
   - 2.5. SPLICE #6 REBAR A MINIMUM OF 30 INCHES
3. STRUCTURAL FILL

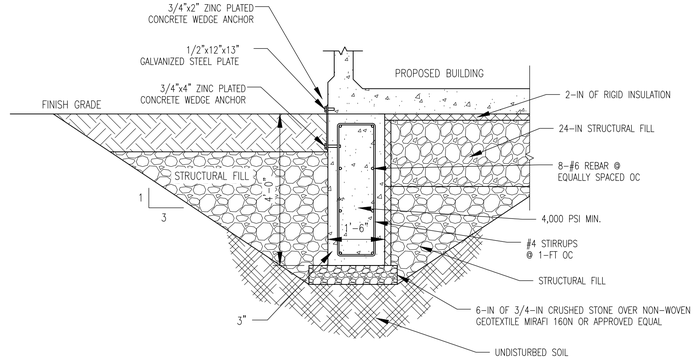
   WE RECOMMEND THAT FILL BE PLACED BELOW THE STRUCTURES AND AS FOUNDATION BACKFILL BE A CLEAN MATERIAL MEETING THE FOLLOWING GRADATION REQUIREMENTS:

SIEVE SIZE	PERCENT FINER BY WEIGHT
4 1NCH	100
3 1NCH	90 TO 100
¼	1NCH 25 TO 90
#40	0 TO 30
#200	0 TO 5

BACKFILL SHOULD BE PLACED IN HORIZONTAL LIFTS AND BE COMPACTED TO AT LEAST 95 PERCENT OF ITS MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D-1557. LIFT THICKNESS SHOULD BE SUCH THAT 95 PERCENT COMPACTION IS ACHIEVED THROUGHOUT THE LIFT THICKNESS WITH 3 TO 5 PASSES OF THE COMPACTION EQUIPMENT.

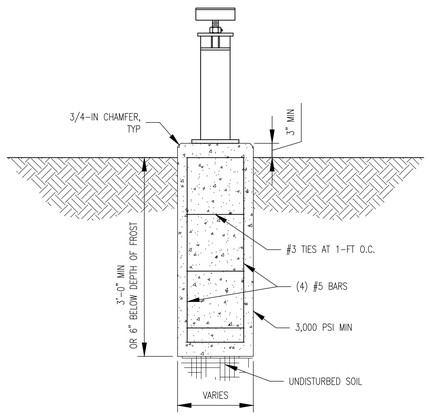
FOUNDATION GENERAL NOTES:

1. FOUNDATIONS TO BEAR ON NATURAL UNDISTURBED SOIL OR CRUSHED STONE. LOOSE SOILS SHALL BE OVER EXCAVATED TO UNDISTURBED SOIL AND REPLACED WITH CRUSHED STONE FILL COMPACTED TO 95 PERCENT MAXIMUM DENSITY. CONCRETE SHALL NOT BE PLACED IN WATER OR ON FROZEN GROUND.
2. WHERE LEDGE IS ENCOUNTERED, FOUNDATIONS SHALL BEAR DIRECTLY ON LEDGE. IN CASES OF PARTIAL LEDGE CONDITIONS, PROVIDE A MINIMUM OF 12 INCHES OF CRUSHED STONE BELOW FOUNDATION. IN NO CASE SHALL FOUNDATIONS BEAR PARTIALLY ON LEDGE AND PARTIALLY ON SOIL.



GRADE BEAM DETAIL

SCALE: 1/2" = 1'-0"



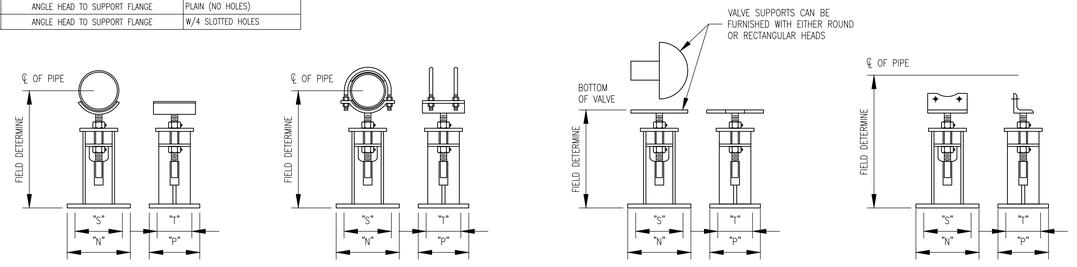
PIPE SUPPORT FOUNDATION DETAIL

SCALE: 3/4" = 1'-0"

E-Z LINE FIGURE NUMBER LEGEND		
FIGURE #	HEAD TYPE	BASE PLATE TYPE
PIPE SUPPORTS		
"A"	120ø CRADLE (FORMED TO FIT PIPE SIZE)	NONE
"C"	120ø CRADLE (FORMED TO FIT PIPE SIZE)	PLAIN (NO HOLES)
"E"	120ø CRADLE (FORMED TO FIT PIPE SIZE)	W/4 SLOTTED HOLES
"B"	120ø CRADLE W/2 U-BOLTS	NONE
"D"	120ø CRADLE W/2 U-BOLTS	PLAIN (NO HOLES)
"F"	120ø CRADLE W/2 U-BOLTS	W/4 SLOTTED HOLES
VALVE SUPPORTS		
"A" VS	RECTANGULAR OR CIRCULAR PLATE TO SUPPORT VALVE	NONE
"C" VS	RECTANGULAR OR CIRCULAR PLATE	PLAIN (NO HOLES)
"E" VS	RECTANGULAR OR CIRCULAR PLATE	W/4 SLOTTED HOLES
FLANGE SUPPORTS		
"A" FS	ANGLE HEAD TO SUPPORT FLANGE	NONE
"C" FS	ANGLE HEAD TO SUPPORT FLANGE	PLAIN (NO HOLES)
"E" FS	ANGLE HEAD TO SUPPORT FLANGE	W/4 SLOTTED HOLES

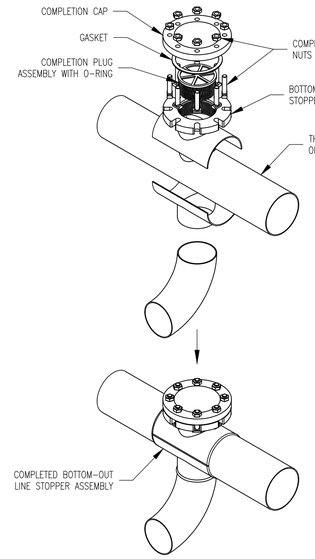
E-Z LINE PIPE SUPPORT SCHEDULE							
PIPE SIZE	MODEL #	BASE PLATE SIZE		THICK	HOLE CENTER		HOLE SIZE
		"N"	"P"		"T"	"S"	
2"	204	8"	6"	1/2"	5"	3-1/2"	5/8"
2-1/2"	204	8"	6"	1/2"	5"	3-1/2"	5/8"
3"	204	8"	6"	1/2"	5"	3-1/2"	5/8"
3-1/2"	204	8"	6"	1/2"	5"	3-1/2"	5/8"
4"	204	8"	6"	1/2"	5"	3-1/2"	5/8"
6"	510	10"	8"	1/2"	7"	5-1/2"	5/8"
8"	510	10"	8"	1/2"	7"	5-1/2"	5/8"
10"	510	10"	8"	1/2"	7"	5-1/2"	5/8"
12"	1218	12"	10"	5/8"	9"	7-1/2"	5/8"
14"	1218	12"	10"	5/8"	9"	7-1/2"	3/4"

E-Z LINE PIPE SUPPORT SCHEDULE							
PIPE SIZE	MODEL #	BASE PLATE SIZE		THICK	HOLE CENTER		HOLE SIZE
		"N"	"P"		"T"	"S"	
16"	1218	12"	10"	5/8"	9"	7-1/2"	3/4"
18"	1218	12"	10"	5/8"	9"	7-1/2"	3/4"
20"	2024	12"	10"	5/8"	9"	7-1/2"	7/8"
22"	2024	12"	10"	5/8"	9"	7-1/2"	7/8"
24"	2024	12"	10"	5/8"	9"	7-1/2"	7/8"
26"	2636	14"	12"	3/4"	11"	9-1/2"	7/8"
28"	2636	14"	12"	3/4"	11"	9-1/2"	7/8"
30"	2636	14"	12"	3/4"	11"	9-1/2"	7/8"
32"	2636	14"	12"	3/4"	11"	9-1/2"	7/8"
36"	2636	14"	12"	3/4"	11"	9-1/2"	7/8"



E-Z LINE PIPE SUPPORT DETAIL

SCALE: NTS



BOTTOM-OUT LINE STOPPER DETAIL

SCALE: NTS

REV	BY	DATE	DESCRIPTION

STATE OF NEW HAMPSHIRE — STEPHEN M READE No.15580 — PROFESSIONAL ENGINEER — 02/15/2022

SEAL AND SIGNATURE

PRJ MANAGER: MARK D. WOOD		
PRJ ENGINEER: MATT PELLETIER		
PRJ NAME: JOHN DAVIS STATION		
PRJ NUMBER: 5361		
PRJ MILESTONE: PERMITTING		
PRJ PHASE: PERMITTING		
DESIGNED BY:	MPP	02/15/22
DRAFTED BY:	DMG/RPG	02/15/22
CHECKED BY:	SMR	02/15/22
APPROVED BY:	MDW	02/15/22

CLIENT INFORMATION

Unitil
Northern Utilities, Inc.

DESIGN MANAGER: TIM BICKFORD	REVIEWED BY:		
DESIGN ENGINEER: SHEENA MASON	CHECKED BY:		
ACTIVATION ORDER:	APPROVED BY:		

P E R M I T T I N G

SHEET TITLE: STANDARD DETAILS 1 OF 4

PROJECT NAME: JOHN DAVIS STATION

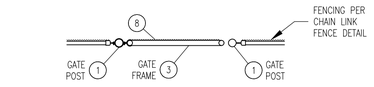
PROJECT LOCATION: 55 APPLEVALE DRIVE, DOVER, NH 03820

PROCESS PIPELINE SERVICES
4 Broad Street
Plainville, MA 02762
781.829.0524
processpipelineservices.com

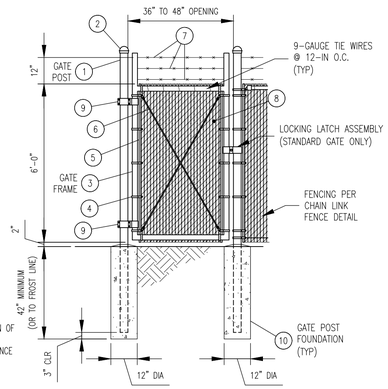
FILE NAME: 5361_T000.DWG	SIZE	NAME	REV
PLOT DATE: 02/15/2022 3:21 PM	22X34	C001	P
SCALE: AS SHOWN	SHEET 17 OF 20		

BILL OF MATERIALS	
ITEM	DESCRIPTION
1	SCH 40 GALVANIZED STEEL GATE POST, OR APPROVED EQUAL
2	GALVANIZED STEEL POST CAP
3	GALVANIZED STEEL GATE FRAME
4	GALVANIZED STEEL TENSION BAND
5	GALVANIZED STEEL TENSION BAR
6	DOUBLE TRUSS ROD ASSEMBLY
	(FOUR) GALVANIZED STEEL TRUSS TIGHTENERS
	(TWO) 3/8"ø GALVANIZED STEEL TRUSS RODS
7	12-1/2" GAUGE GALVANIZED STEEL 4-POINT BARBED WIRE
8	9-GAUGE, ASTM-392, CLASS I, 2" MESH, GALVANIZED CHAIN LINK FABRIC
9	INDUSTRIAL HINGE ASSEMBLY
10	ALL CONCRETE SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 300 PSI
	BILL OF MATERIALS FOR EMERGENCY GATE ONLY
11	24" TALL GALVANIZED STEEL MOUNTING PLATE, PLATE IS TO SPAN WIDTH OF GATE AND TO BE WELDED TO THE INSIDE OF THE VERTICAL GATE FRAME
12	PANIC BAR ASSEMBLY W/ SS MOUNTING HARDWARE
13	LOCKING LATCH ASSEMBLY W/ SS MOUNTING HARDWARE
14	24" TALL GALVANIZED STEEL PL OR ANGLE WELDED TO THE OUTSIDE OF THE VERTICAL GATE FRAME SO THAT IT OVERLAPS THE ADJACENT GATE POST WHEN GATE IS IN THE CLOSED POSITION TO PREVENT INTRUSION OR ACCESS TO LATCH ASSEMBLY BETWEEN THE FRAME AND POST

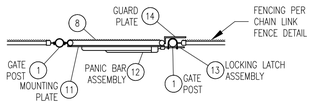
NOTES:
1. DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL SHALL BE IN ACCORDANCE WITH THE CURRENT EDITION OF THE AISC MANUAL OF STEEL CONSTRUCTION UNLESS NOTED OTHERWISE.
2. ALL STEEL ANGLE, BAR, CHANNEL, FLATS, PLATE AND PIPE SHALL BE ASTM A36 HOT DIP GALVANIZED IN ACCORDANCE WITH ASTM A123 UNLESS NOTED OTHERWISE.
3. ALL WELDING SHALL CONFORM TO AWS D1.1.
4. ALL GALVANIZED SURFACES DAMAGED DURING CONSTRUCTION SHALL BE COATED WITH AN APPROVED COLD ZINC COMPOUND. REMOVE ALL SCALE & FOREIGN MATTER FROM THE SURFACE BEFORE APPLYING THE ZINC COMPOUND.
5. GATE POST FOOTING SIZES ARE THE RECOMMENDED MINIMUM AND SHOULD BE REDESIGNED FOR POOR SOIL CONDITIONS.
6. PRIVACY SLATS SHALL BE INSTALLED TO PROVIDE A TIGHT FIT IN FENCE FABRIC AND PROVIDE A 98% (APPROX) PRIVACY. THE SLATS SHALL BE PROVIDED IN FOREST GREEN COLOR. PRIVACY SLATS SHALL BE MANUFACTURED AND INSTALLED PER ASTM F3000/F3000M.
7. CONTRACTOR TO SUPPLY AND INSTALL ALL MATERIALS UNLESS NOTED OTHERWISE.



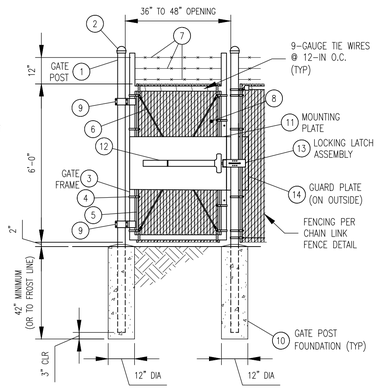
PLAN VIEW



STANDARD GATE



PLAN VIEW



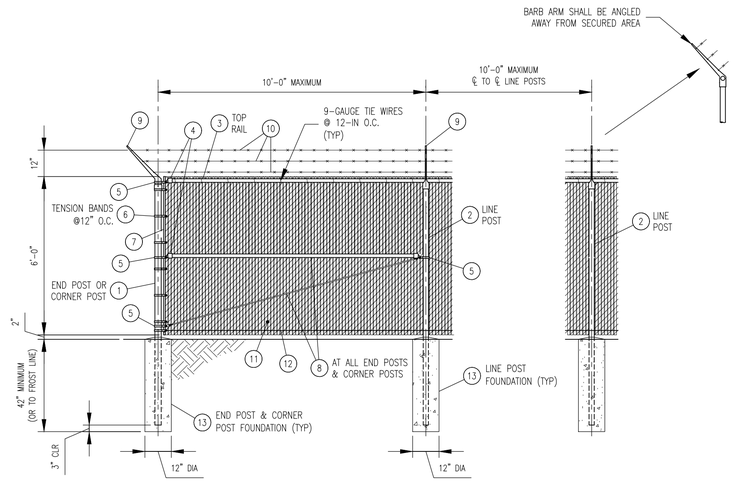
OPTIONAL PERSONNEL GATE W/ PANIC BAR
(IF SPECIFICALLY REQUESTED)

PANIC BAR PERSONNEL GATE DETAIL WITH BARBWIRE AND PRIVACY SLATS

SCALE: NTS

BILL OF MATERIALS	
ITEM	DESCRIPTION
1	2-1/2" SCH 40 GALVANIZED STEEL PIPE
2	2" SCH 40 GALVANIZED STEEL PIPE
3	1-1/4" SCH 40 GALVANIZED STEEL PIPE
4	1-1/4" GALVANIZED STEEL RAIL END CAP
5	GALVANIZED STEEL BRACE BAND
6	GALVANIZED STEEL TENSION BAND
7	GALVANIZED STEEL TENSION BAR
8	BRACE RAIL & TRUSS ASSEMBLY
	1-1/4" SCH 40 GALVANIZED STEEL PIPE
	GALVANIZED STEEL TRUSS TIGHTENERS
	5/16" DIA GALVANIZED STEEL TRUSS ROD
9	3-WIRE 45 GALVANIZED STEEL BARB ARM
10	12-1/2 GAUGE GALVANIZED STEEL 4-POINT BARBED WIRE
11	9-GAUGE, ASTM-392, CLASS I, 2" MESH, GALVANIZED CHAIN LINK FABRIC
12	7-GAUGE GALVANIZED STEEL TENSION WIRE
13	ALL CONCRETE SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 3000 PSI

NOTES:
1. DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL SHALL BE IN ACCORDANCE WITH THE CURRENT EDITION OF THE AISC MANUAL OF STEEL CONSTRUCTION UNLESS NOTED OTHERWISE.
2. ALL STEEL ANGLE, BAR, CHANNEL, FLATS, PLATE AND PIPE SHALL BE ASTM A36 HOT DIP GALVANIZED IN ACCORDANCE WITH ASTM A123 UNLESS NOTED OTHERWISE.
3. ALL WELDING SHALL CONFORM TO AWS D1.1.
4. ALL GALVANIZED SURFACES DAMAGED DURING CONSTRUCTION SHALL BE COATED WITH AN APPROVED COLD ZINC COMPOUND. REMOVE ALL SCALE & FOREIGN MATTER FROM THE SURFACE BEFORE APPLYING THE ZINC COMPOUND.
5. GATE POST FOOTING SIZES ARE THE RECOMMENDED MINIMUM AND SHOULD BE REDESIGNED FOR POOR SOIL CONDITIONS.
6. PRIVACY SLATS SHALL BE INSTALLED TO PROVIDE A TIGHT FIT IN FENCE FABRIC AND PROVIDE A 98% (APPROX) PRIVACY. THE SLATS SHALL BE PROVIDED IN FOREST GREEN COLOR. PRIVACY SLATS SHALL BE MANUFACTURED AND INSTALLED PER ASTM F3000/F3000M.
7. CONTRACTOR TO SUPPLY AND INSTALL ALL MATERIALS UNLESS NOTED OTHERWISE.

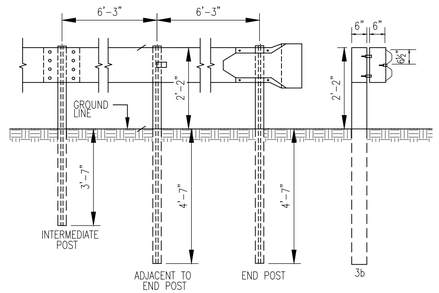


ELEVATION SECTION

CHAIN LINK FENCE DETAIL WITH BARBWIRE AND PRIVACY SLATS

SCALE: NTS

DIMENSIONS ARE ALONG FACE OF BEAM



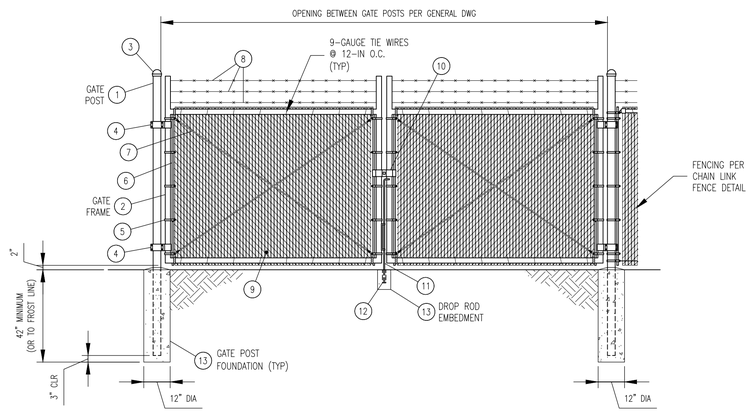
NOTES:
1. INTERMEDIATE POST SPACING SHALL BE 6'-3" UNLESS OTHERWISE SHOWN.
2. POSTS AND OFFSET BRACKETS FOR TYPE 3b GUARD RAIL SHALL BE W 6x8.5 OR APPROVED EQUAL.
3. ALL HOLES IN BEAM TO BE SHOP-PUNCHED BEFORE GALVANIZING.

GUARDRAIL TYPE 3b

SCALE: NTS

BILL OF MATERIALS	
ITEM	DESCRIPTION
1	3" SCH 40 GALVANIZED STEEL PIPE
2	2" SCH 40 GALVANIZED STEEL PIPE
3	GALVANIZED STEEL POST CAP
4	1-1/4" INDUSTRIAL GATE POST HINGE
5	GALVANIZED STEEL TENSION BAND
6	GALVANIZED STEEL TENSION BAR
7	DOUBLE TRUSS ROD ASSEMBLY
	(FOUR) GALVANIZED STEEL TRUSS TIGHTNERS
	(TWO) 3/8"ø GALVANIZED STEEL TRUSS RODS
8	12-1/2" GAUGE GALVANIZED STEEL 4-POINT BARBED WIRE
9	9-GAUGE, ASTM-392, CLASS I, 2" MESH, GALVANIZED CHAIN LINK FABRIC
10	GALVANIZED STEEL LOCKING LATCH ASSEMBLY
11	GALVANIZED STEEL DROP ROD ASSEMBLY
12	GALVANIZED STEEL DROP ROD SLEEVE
13	ALL CONCRETE SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 3000 PSI

NOTES:
1. DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL SHALL BE IN ACCORDANCE WITH THE CURRENT EDITION OF THE AISC MANUAL OF STEEL CONSTRUCTION UNLESS NOTED OTHERWISE.
2. ALL STEEL ANGLE, BAR, CHANNEL, FLATS, PLATE AND PIPE SHALL BE ASTM A36 HOT DIP GALVANIZED IN ACCORDANCE WITH ASTM A123 UNLESS NOTED OTHERWISE.
3. ALL WELDING SHALL CONFORM TO AWS D1.1.
4. ALL GALVANIZED SURFACES DAMAGED DURING CONSTRUCTION SHALL BE COATED WITH AN APPROVED COLD ZINC COMPOUND. REMOVE ALL SCALE & FOREIGN MATTER FROM THE SURFACE BEFORE APPLYING THE ZINC COMPOUND.
5. GATE POST FOOTING SIZES ARE THE RECOMMENDED MINIMUM AND SHOULD BE REDESIGNED FOR POOR SOIL CONDITIONS.
6. PRIVACY SLATS SHALL BE INSTALLED TO PROVIDE A TIGHT FIT IN FENCE FABRIC AND PROVIDE A 98% (APPROX) PRIVACY. THE SLATS SHALL BE PROVIDED IN FOREST GREEN COLOR. PRIVACY SLATS SHALL BE MANUFACTURED AND INSTALLED PER ASTM F3000/F3000M.
7. CONTRACTOR TO SUPPLY AND INSTALL ALL MATERIALS UNLESS NOTED OTHERWISE.



ELEVATION

SWING GATE DETAIL WITH BARBWIRE AND PRIVACY SLATS

SCALE: NTS

REV	BY	DATE	DESCRIPTION

STEPHEN M READE No.15580 PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE 02/15/2022

SEAL AND SIGNATURE

PRJ MANAGER: MARK D. WOOD			CLIENT INFORMATION: Unitil Northern Utilities, Inc.				
PRJ ENGINEER: MATT PELLETIER							
PRJ NAME: JOHN DAVIS STATION							
PRJ NUMBER: 5361							
PRJ MILESTONE: PERMITTING							
PRJ PHASE: PERMITTING							
DESIGNED BY:	MPP	02/15/22	DESIGN MANAGER: TIM BICKFORD	REVIEWED BY:			
DRAFTED BY:	DMG/RPG	02/15/22	DESIGN ENGINEER: SHEENA MASON	CHECKED BY:			
CHECKED BY:	SMR	02/15/22	ACTIVATION ORDER:	APPROVED BY:			
APPROVED BY:	MDW	02/15/22					

P E R M I T T I N G

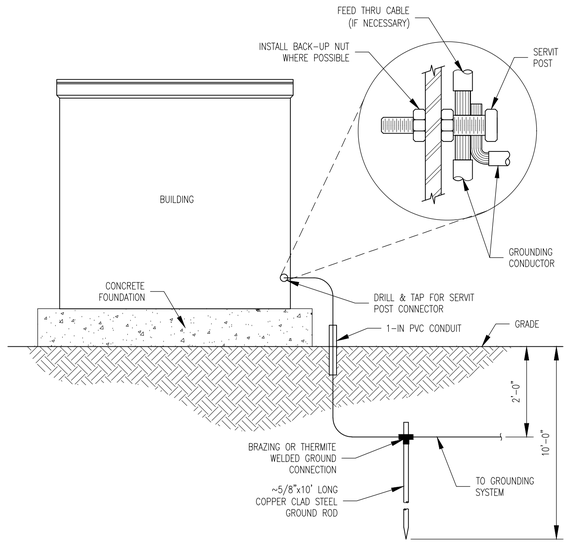
SHEET TITLE: STANDARD DETAILS 2 OF 4

PROJECT NAME: JOHN DAVIS STATION

PROJECT LOCATION: 55 APPLEVALE DRIVE, DOVER, NH 03820

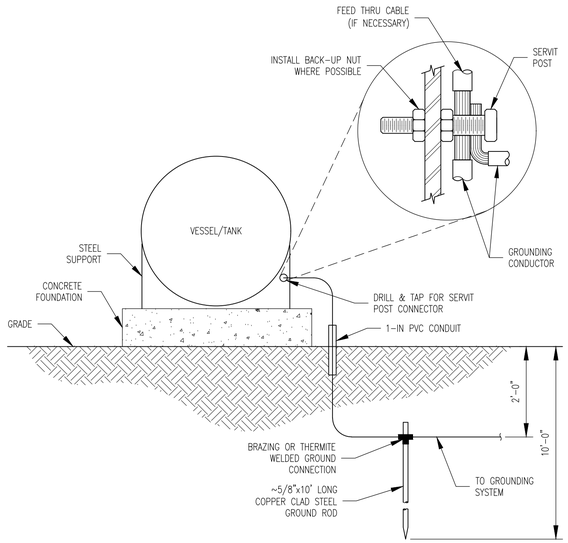
PROCESS PIPELINE SERVICES
4 Broad Street
Plainville, MA 02762
781.829.0524
processpipelineservices.com

FILE NAME: 5361_T000.DWG	SIZE	NAME	REV
PLOT DATE: 02/15/2022 3:21 PM	22X34	C002	P
SCALE: AS SHOWN	SHEET 18 OF 20		



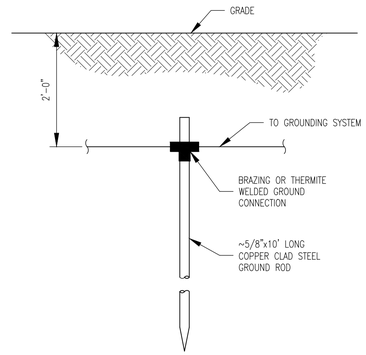
BUILDING GROUNDING DETAIL

SCALE: NTS



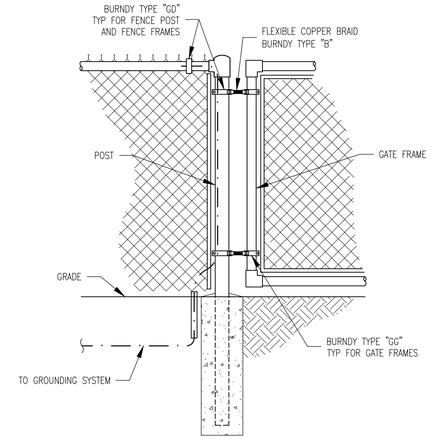
VESSEL OR TANK GROUNDING DETAIL

SCALE: NTS



GROUND ROD INSTALLATION DETAIL

SCALE: 3/4" = 1'-0"

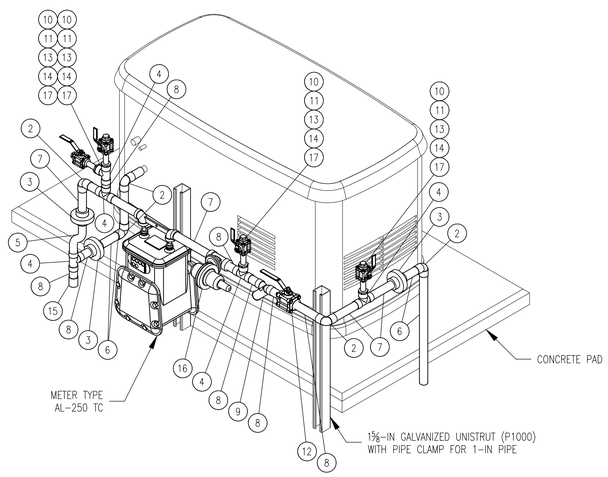


FENCE AND SWING GATE GROUNDING DETAIL

SCALE: NTS

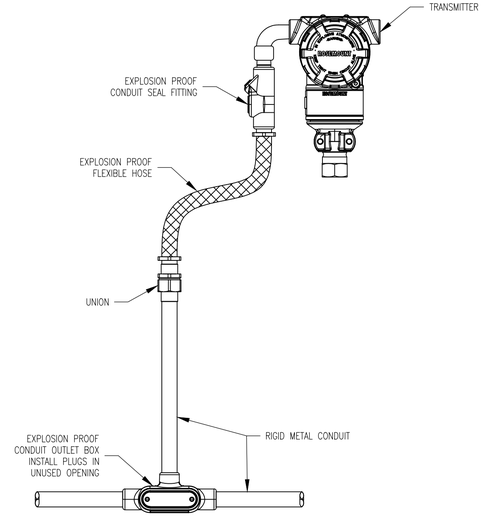
BILL OF MATERIALS				
ITEM	QTY	UOM	SIZE (IN)	DESCRIPTION
1	3	LF	1	PIPE, SCHD 80, ASTM A-106
2	3	EA	1	ELBOW, 90 DEG, FNPT, 3000 LB, ASTM A-105
3	3	EA	1	UNION, FNPT, 3000 LB, ASTM A-105
4	4	EA	1	TEE, FNPT, 3000 LB, ASTM A-105
5	1	EA	1	"CORRUGATED FLEXIBLE METAL HOSE, 316 STAINLESS STEEL, 8-INCHES LONG, MNPT X MNPT, PRESSURE RATING 650 PSIG MIN."
6	2	EA	1 X 8	NIPPLE, MNPT X MNPT, XH, ASTM A-106
7	1	EA	1 X 6	NIPPLE, MNPT X MNPT, XH, ASTM A-106
8	10	EA	1 X 3	NIPPLE, MNPT X MNPT, XH, ASTM A-106
9	1	EA	1	Y-STRAINER, FNPT, 600 LB, ASME A-216, GR WCB
10	4	EA	1	HEX BUSHING, MNPT X FNPT, 3000 LB, ASTM A-105
11	4	EA	1/2 X 3	NIPPLE, MNPT X MNPT, XH, ASTM A-106
12	1	EA	1	BALL VALVE, 3-PIECE, FULL PORT, FNPT X FNPT, 3000 LB, WITH LOCKING LEVER
13	4	EA	1/2	BALL VALVE, 2-PIECE, FULL PORT, FNPT X FNPT, 3000 LB, WITH LOCKING LEVER
14	4	EA	1/4	PETE'S PLUG, MNPT, 3-INCHES LONG, PRESSURE RATING 1000 PSI MAX.
15	1	EA	1	CAP, FNPT, 3000 LB, SCHD 160, ASME B16.11
16	1	EA	1	"FISHER REGULATOR, TYPE HSR, FNPT X FNPT, PRESSURE RATING 125 PSIG MAX, INLET 100 PSIG, OUTLET 7-INWC, 1750 SCFH MAX, SPRING COLOR YELLOW, ORIFICE 1/8-INCH"
17	4	EA	1/2 X 1/4	HEX BUSHING, MNPT X FNPT, 3000 LB, ASTM A-105
18	6	EA	1-5/8	UNISTRUT CHANNEL, HOT DIPPED GALVANIZED, 12 GAUGE, P1000
19	2	EA	1	PIPE CLAMP, GALVANIZED, UNISTRUT, PART NO. UC1113EG(1")AS

NOTES:
1. CONTRACTOR SHALL FURNISH ALL MATERIAL.
2. ALL ANCHOR BOLTS SHALL CONFORM TO ASTM A-307 UNLESS NOTED OTHERWISE.
3. ALL ANCHOR BOLTS SHALL BE FURNISHED WITH THREE (3) HEAVY HEX NUTS EACH UNLESS NOTED OTHERWISE.
4. ALL ANCHOR BOLTS SHALL BE FURNISHED WITH CUT WASHERS OF SPECIFICATIONS COMPATIBLE WITH THOSE OF THE THREADED SHANKS UNLESS NOTED OTHERWISE.
5. ALL ANCHOR BOLTS SHALL BE HOT DIPPED GALVANIZED WITH NUTS RETAPPED UNLESS NOTED OTHERWISE.
6. THREAD LENGTH "T" SHALL BE AS SHOWN ON THIS STANDARD UNLESS NOTED OTHERWISE.
7. ANCHOR BOLT LENGTH "L" SHALL BE AS SHOWN ON THIS STANDARD UNLESS NOTED OTHERWISE.



GENERATOR FUEL GAS TRAIN DETAIL

SCALE: NTS



CONDUIT DETAIL

SCALE: NTS

REV	BY	DATE	DESCRIPTION

STATE OF NEW HAMPSHIRE
STEPHEN W READE
No. 15580
LICENSED PROFESSIONAL ENGINEER
02/15/2022

SEAL AND SIGNATURE

PRJ MANAGER: MARK D. WOOD			
PRJ ENGINEER: MATT PELLETIER			
PRJ NAME: JOHN DAVIS STATION			
PRJ NUMBER: 5361			
PRJ MILESTONE: PERMITTING			
PRJ PHASE: PERMITTING			
DESIGNED BY:	MPP	02/15/22	
DRAFTED BY:	DMG/RPG	02/15/22	
CHECKED BY:	SMR	02/15/22	
APPROVED BY:	MDW	02/15/22	

CLIENT INFORMATION

Unitil
Northern Utilities, Inc.

DESIGN MANAGER: TIM BICKFORD	REVIEWED BY:		
DESIGN ENGINEER: SHEENA MASON	CHECKED BY:		
ACTIVATION ORDER:	APPROVED BY:		

P E R M I T T I N G

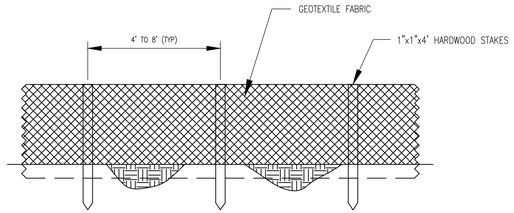
SHEET TITLE
STANDARD DETAILS
3 OF 4

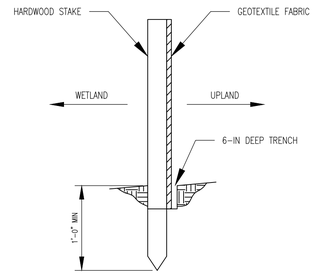
PROJECT NAME
JOHN DAVIS STATION

PROJECT LOCATION
55 APPLEVALE DRIVE
DOVER, NH 03820

PROCESS PIPELINE SERVICES
4 Broad Street
Plainville, MA 02762
781.829.0524
processpipelineservices.com

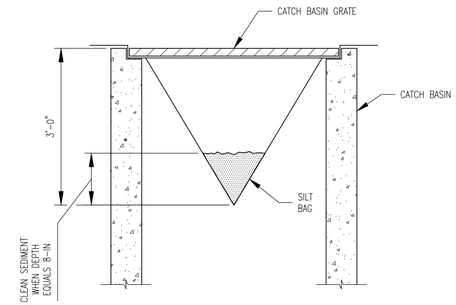
FILE NAME: 5361_T000.DWG	SIZE	NAME	REV
PLOT DATE: 02/15/2022 3:21 PM	22X34	C003	P
SCALE: AS SHOWN	SHEET 19 OF 20		





NOTES:
1. THE GEOTEXTILE FABRIC SHALL BE PLACED IN THE EXCAVATED TRENCH, BACKFILLED, AND COMPACTED TO EXISTING GRADE.
2. THE GEOTEXTILE FABRIC SHALL BE ATTACHED DIRECTLY TO THE UPLAND SIDE OF WOODEN POSTS WITH WIRE STAPLES IN AT LEAST (3) PLACES, OR WITH WOODEN LATHS AND NAILS.
3. A WIRE SUPPORT FENCE MAY BE INSTALLED TO WHICH THE GEOTEXTILE FABRIC IS ATTACHED. THE WIRE SHALL BE A MINIMUM OF 14-1/2 GAGE WOVEN WIRE WITH A MAXIMUM MESH SPACING OF 6 INCHES. THE GEOTEXTILE FABRIC SHALL BE FOLDED 3 INCHES OVER THE WIRE FENCE AND SECURED WITH STAPLES.
4. THE GEOTEXTILE FABRIC MAY CONSIST OF EITHER WOVEN OR NON-WOVEN POLYESTER, POLYPROPYLENE, STABILIZED NYLON, POLYETHYLENE, OR POLYVINYLIDENE CHLORIDE.
5. A DOUBLE ROW OF FENCING IS TO BE INSTALLED ADJACENT TO WETLANDS. FENCE SHALL NOT BE INSTALLED IN THE WETLAND.

SEDIMENT CONTROL FENCE DETAIL
SCALE: NTS



SILT SACK DETAIL
SCALE: NTS

REV	BY	DATE	DESCRIPTION

STATE OF NEW HAMPSHIRE — STEPHEN M READE — No.15580 — LICENSED PROFESSIONAL ENGINEER — 02/15/2022

SEAL AND SIGNATURE

PRJ MANAGER: MARK D. WOOD		
PRJ ENGINEER: MATT PELLETIER		
PRJ NAME: JOHN DAVIS STATION		
PRJ NUMBER: 5361		
PRJ MILESTONE: PERMITTING		
PRJ PHASE: PERMITTING		
DESIGNED BY:	MPP	02/15/22
DRAFTED BY:	DMG/RPG	02/15/22
CHECKED BY:	SMR	02/15/22
APPROVED BY:	MDW	02/15/22

CLIENT INFORMATION

Unitil
Northern Utilities, Inc.

DESIGN MANAGER: TIM BICKFORD	REVIEWED BY:		
DESIGN ENGINEER: SHEENA MASON	CHECKED BY:		
ACTIVATION ORDER:	APPROVED BY:		

P E R M I T T I N G

SHEET TITLE
STANDARD DETAILS
4 OF 4

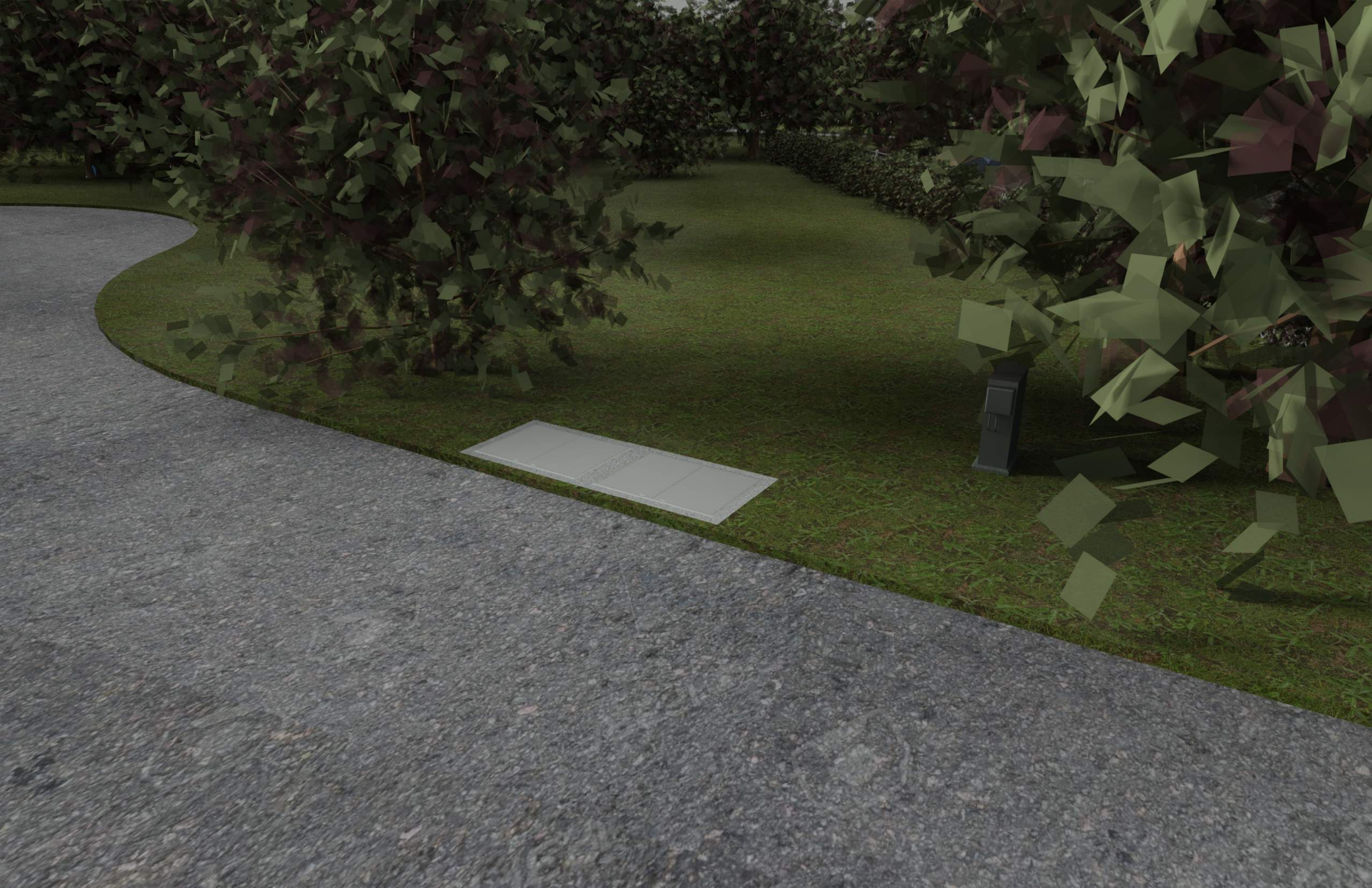
PROJECT NAME
JOHN DAVIS STATION

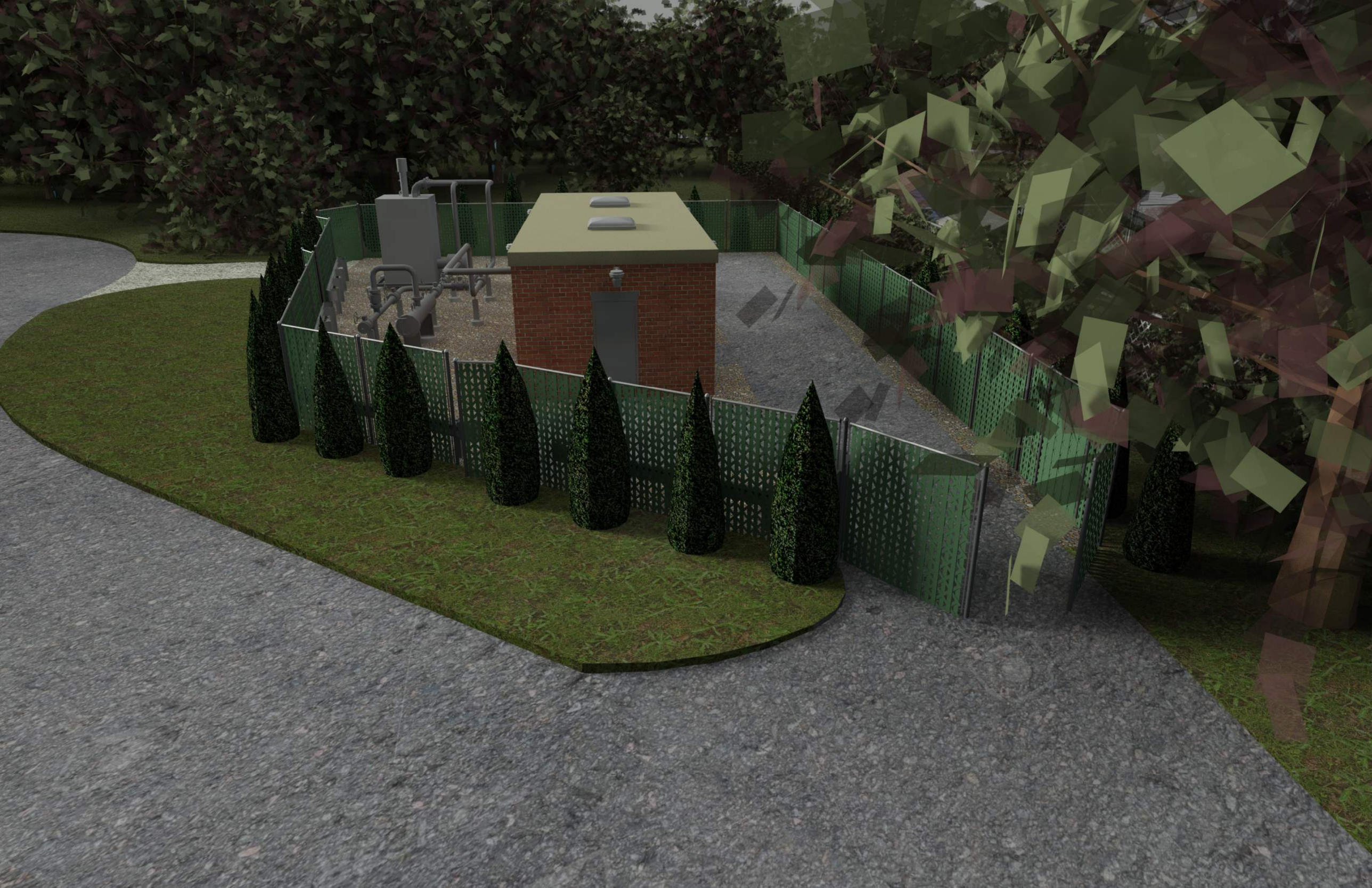
PROJECT LOCATION
55 APPLEVALE DRIVE
DOVER, NH 03820

PROCESS PIPELINE SERVICES
4 Broad Street
Plainville, MA 02762
781.829.0524
processpipelineservices.com

FILE NAME: 5361_T000.DWG		SIZE	NAME / REV
PLOT DATE: 02/15/2022 3:21 PM		22X34	C004 / P
SCALE: AS SHOWN		SHEET 20 OF 20	

7. Station 3D Rendering





8. Abutter List

List of Abutters			
Lot Line Adjustment and Site Review			
Owner:			
Tax Map	Lot#	Property Owner	Mailing Address
K	18-Y	Unitil (Sheena Mason)	325 West Road Portsmouth, NH 03801
K	17-P3	Barry and Janis Hennessey	55 Applevale Drive Dover, NH 03820
Surveyor/Engineer:			
Name		Company	Mailing Address
Matt Pelletier		Process Pipeline Services	4 Broad Street Plainville, MA 02762
Jack Kaiser		Doucet Survey	102 Kent Place Newmarket, NH 03857

9. Property Record Cards

Commercial Property Record Card - Dover, New Hampshire

Property Location: Kent Av

Parcel ID: K0018-Y00000 **Map Block No.** K-18-Y-0 **Class:** U1 **Use:** 427 **Card 1 of 1**

Current Owner

Northern Utilities Inc
Attn: Utilities Asset Accounting
6 Liberty Lane West
Hampton Nh 03842

Previous Owner History

Name	Deed	Date

Miscellaneous

Deed Info: 727/353·
Zoning: R-12
Neighborhd: 400
Units: 0
Street/Road: Public

Assessment Information

Assessed Value: *

	Inc:	Prior
Land:	1,300	1,200
Bldg:		
Total:	1,300	1,200

Assessed Information: Value: 1,300

Effective DOV: 4/1/2021
Value Flag: COST VALUE

Notes

Fee-Owned Site - Pipeline
See Pcl U-3 For Asset Values

Entrance Information

Date	Time	ID	Actv	Entrance Code	Source
01/16/1992		NP		Entry Gained	
				Entry & Sign	
				Entry & Sign	

Sales History

Book/Page	Date	Price	Type	Validity
727/353				

Permit Information

Date	Permit #	Price	Purpose	% Comp.
				0
				0

Land Information

Type		Size	Grade	Influence Factor 1, 2 and %			Value
Primary	A	0.01	0	Shape/Size	Restriction	-99	1,320
Total Acres for this Parcel		0.01		***Total Land Value***			1,300

No Picture Available

Inspection witness by: _____

univers (7.5.2.4)

Printed Wed, Oct 13, 2021

April 1, 2021 Assessment

Property Location: Kent Av

Commercial Property Record Card - Dover, New Hampshire

Parcel ID: K0018-Y00000 **Map Block No.** K-18-Y-0 **Class:** U1 **Use:** 427 **Card 1 of 1**

Exterior/Interior Information

Sec	Levels	Size	Perimeter	Use Type	Height	Exterior Walls	Construction Type	Finish	Partitions	Heating	A/C	Plumbing	Physical Condition	Functional Utility	%Good Override	Unadjusted RCNLD
0	-	0x0	0		0			0							0%	0
0	-	0x0	0		0			0							0%	0
0	-	0x0	0		0			0							0%	0
0	-	0x0	0		0			0							0%	0
0	-	0x0	0		0			0							0%	0
0	-	0x0	0		0			0							0%	0
0	-	0x0	0		0			0							0%	0
0	-	0x0	0		0			0							0%	0

Building Information

Building No:	0
Year Built:	0
No of Units:	0
Structure Type:	
Grade:	
Identical Units:	0
Efficiencies:	0
1 Bedroom Apts:	0
2 Bedroom Apts:	0
3 Bedroom Apts:	0
Covered Park:	0
Uncovered Park:	0
Notes:	

Building Summary

Total Unadjusted RCN:		0
Average Percent Good:	.00	
Total Unadj. RCNLD:		0
Grade Factor:	0.00	
No of Identical Units:	0	
Economic Cond Factor:	0.00	
RCNLD:		0

Income Approach Summary

Net Rentable Area:

Out Building Information

StructureCode	+/-	Width	Lgth/ SqFt	Ident. Units	Gr	Physical Condition	Functional Utility	Percent Year	Percent Good	RCNLD
		0	0	0				0	0%	0
		0	0	0				0	0%	0
		0	0	0				0	0%	0
		0	0	0				0	0%	0
		0	0	0				0	0%	0
		0	0	0				0	0%	0

Descriptor/Area

Other Improvements

Description	+/-	RCNLD
		0

Building Other Information

Line	StructureCode	+/-	Measure 1	Measure 2		IdenticalUnits
0			0	0	0	0
0			0	0	0	0
0			0	0	0	0
0			0	0	0	0
0			0	0	0	0
0			0	0	0	0
0			0	0	0	0
0			0	0	0	0

Total Other Features 0

Residential Property Record Card - Dover, New Hampshire

Property Location: 55 Applevale Dr

Parcel ID: K0017-P00003 **Map Block No.** K-17-P-3 **Class:** R **Use:** 101 **Card 1 of 1**

Current Owner

Hennessey Barry J & Janis M Trustees
Hennessey Revocable Trust Of 2008
55 Applevale Drive
Dover Nh 03820

Previous Owner History

Name	Deed	Date
Hennessey Janis	1053/161	

Miscellaneous

Deed Info: 3628/554·03/27/2008
Zoning: R-12
Neighborhd: 171
Living Units: 1
Street/Road: Public

Estimates
MRA:
Weighted:
Market:

Assessment Information

Assessed Value:	*	Prior
Land:	141,600	128,300
Building:	201,000	164,100
Total:	342,600	292,400

Assessed Information: Value: 342,600

Effective DOV: 4/1/2021
Value Flag: COST VALUE

Notes

Entrance Information

Date	Time	ID	Actv	Entrance Code	Source
09/04/1991		TS		Entry Gained	
06/15/2009	P	TC		Ext. Insp.	
10/13/2006	C	TC		Ext. Insp.	

Sales History

Book/Page	Date	Price	Type	Validity
3628/554	03/17/2008		2	44
1053/161				

Permit Information

Date	Permit #	Price	Purpose	% Comp.
04/02/2008	08-54	38,000	Add 18x18 Efp	100
				0

Land Information

Type		Size	Grade	Influence Factor 1, 2 and %		Value
Primary	A	0.54	0		0	141,600
Residual	A	0	0		0	

Total Acres for this Parcel 0.54 **Total Land Value** 141,600

Out Building Information

Type	Qty	Year	Size1	Size2	Grade	Cond	%Good	Value
Shed-Frame	1	2004	10	10	C	A	40%	1,040
	0	0	0	0			0%	0
	0	0	0	0			0%	0
	0	0	0	0			0%	0
	0	0	0	0			0%	0
	0	0	0	0			0%	0
	0	0	0	0			0%	0
								0
								0
							Total OBY for this card	1,040

Inspection witness by: _____

Residential Property Record Card - Dover, New Hampshire

Property Location: 55 Applevale Dr

Parcel ID: K0017-P00003 **Map Block No.** K-17-P-3 **Class:** R **Use:** 101 **Card 1 of 1**

Dwelling Information

Style:	Cape
Condo Style:	
Exterior Walls:	Alum/Vinyl
Story Height:	1.0
Attic:	Full Finsh
Interior/Exterior:	Same
Basement:	Full
Bsmt Garage:	0
Rec Room size:	1 336
FBLA size:	0 0
Unfinished Area:	0
WB Fireplace:	**Stacks** 0 **Openings** 0
MTL Fireplace:	**Stacks** 0 **Openings** 0
Heating Type:	Central A/C
Fuel:	Gas
Heating System:	Forced Air
Year Built:	1955
Eff. Yr Built:	0
Ground Flr Area:	720
Tot Living Area:	1428
Basement Area:	0
Grade:	C
Condition:	Good
CDU:	GD

Building Notes:

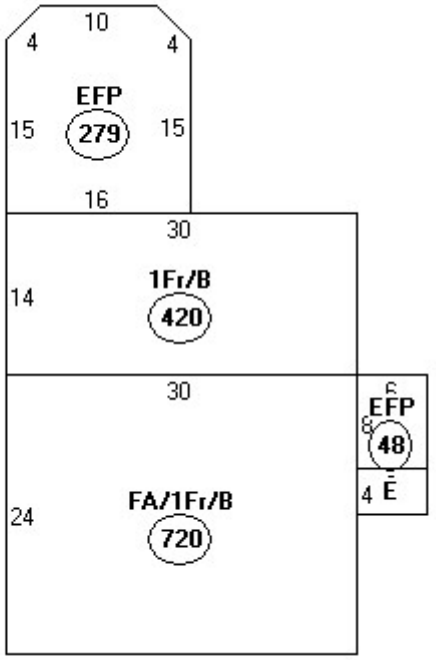
	Low	1st	2nd	3rd	Tot
Rooms:	0	0	0	0	8
Bedrooms:	0	0	0	0	5
Full Baths:	0	0	0	0	2
Half Baths:	0	0	0	0	0
Add'l Fixtures:	0	0	0	0	0

Replacement Costs

Base Price:	125,570
Additions:	80,000
Unfinished Area:	0
Basement:	0
Attic:	25,870
Plumbing:	5,800
Heating A/C Adj.:	4,630
FBLA:	0
Rec Room:	8,110
Fire Place:	0
Basement Garage:	0
Exterior Trim:	0
Subtotal:	249,980
Grade Factor:	1.00
C & D Factor:	0.00
Total RCN:	249,980
Percent Good:	0.80
Eco Depr:	0
Func Depr:	0
Under Constcn %:	0
Market Adj.:	0.00
Total RCNLD:	200,000

Addition Information

Low	1st	2nd	3rd	Area	Points
50	10			420	50200
	12			279	24100
	12			48	4300
	11			24	1400



Descriptor/Area

A: FA/1Fr/B
720 sqft

B: 1Fr/B
420 sqft

C: EFP
279 sqft

D: EFP
48 sqft

E: OFP
24 sqft

10. Zoning District Summary

Medium Density Residential (R-12) District

Amended: 11-28-2012 by Ord. No. 2012-11.14-24, 08-19-2015 by Ord. No. O-2015.07.22-017

Permitted Uses

- ACCESSORY DWELLING UNIT
- ASSEMBLY HALL
- BED and BREAKFAST
- CHILD CARE FACILITY
- CONSERVATION LOT
- CHILD CARE HOME
- Conversion of Existing Dwelling to Accommodate not more than 2 units [6]
- Dwelling, 2 Family [7]
- DWELLING, SINGLE FAMILY
- EDUCATIONAL INSTITUTION, K-12
- EDUCATIONAL INSTITUTION, POST SECONDARY
- FARM [8]
- FARM ANIMALS FOR FAMILY USE, for non-commercial purposes, on lots containing a one or two family dwelling [9]
- OFFICE [10]
- PUBLIC RECREATION
- Public Utility [11]
- ROADSIDE FARM STAND [12]

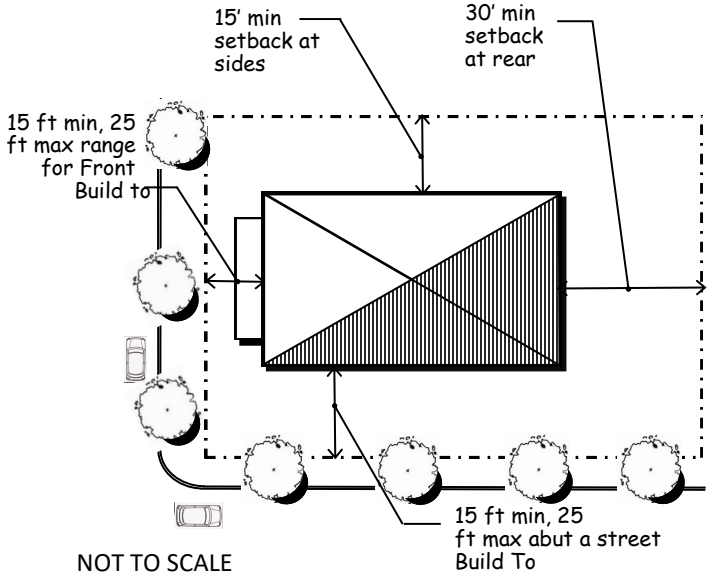
Dimensional Regulations [1] [2]

LOT	
Minimum LOT Size [3] [4]	12,000 sf
Maximum LOT COVERAGE	30%
Minimum FRONTAGE	100 ft
PRINCIPAL BUILDING	
Front BUILD TO LINE	15 ft min, 25 ft max [5]
Abut a Street BUILD TO LINE	15 ft min, 25 ft max [5]
Side SETBACK	15 ft
Rear SETBACK	30 ft
OUTBUILDING/ACCESSORY USE	
Front SETBACK	No closer than the principal BUILDING
Abut a Street SETBACK	No closer than the principal BUILDING
Side SETBACK	10 ft
Rear SETBACK	10 ft
HEIGHT OF BUILDING	
PRINCIPAL BUILDING	35 ft max
OUTBUILDING	35 ft max

Uses Permitted by Special Exception

- ELDERLY ASSISTED CARE HOME

Principal Building Placement



Sign Regulations

Size	R-12 District
Total SIGNS permitted	1
Total area permitted	16 sf (CUSTOMARY HOME OCCUPATION SIGN max 2 sf, development identification sign 20 sf max)
Type	
FREESTANDING	permitted (10 ft setback required)
PROJECTING	permitted
WALL/ Awning	not permitted
Temporary	not permitted

Footnotes

[1] In the case of an Open Space Subdivision, in accordance with Article IV of Chapter 157 of the Code of Dover, the dimensional requirements shall be as specified in 157-21 of the Code of the City of Dover, 1983. [Added 6-10-87 by Ord. No. 13-87]

[2] Refer to 170-13 and 170-14 for exceptions to lot size, frontage and setback requirements.

[3] All land containing wetlands shall not be counted in determining the gross land area of a lot for the purposes of minimum lot size or minimum density requirements for residential uses. The minimum non-wetland portion of any newly created lot shall be contiguous. For the purposes of this calculation, wetlands shall include areas that meet the definition of wetland in the NH Code of Administrative Rules – Wt. 101.87 and the 1987 Federal Manual For Identifying Jurisdictional Wetlands. [Amended 1-22-2003 by Ord. No. 35]. Wetland buffers shall only be allowed to count for 40 percent of the minimum lot size required.

[4] Refer to Chapter 157, Subdivision of Land, Article IV for the minimum lot size for a major Subdivision. Any major subdivision in an R-12 district, must follow the procedures for an OSS if the original lot meets the minimum lot size required. [Amended 1-22-2003 by Ord. No. 35]

[5] Expansions to, or renovations of, STRUCTURES on existing lots have a five (5) foot SETBACK.

[6] Any dwelling unit existing on or before May 27, 1964, may be converted, provided that the lot shall contain at least four thousand (4,000) square feet per dwelling unit and a minimum floor area of five hundred (500) square feet per dwelling unit.

[7] Two family dwellings are permitted in the R-12 Districts when incorporated in an open space subdivision and comply with all regulations specified in Chapter 157, Subdivision of Land, Article IV, Open Space Subdivisions, of the Code of the City of Dover, 1983. [Added 9-14-88 by Ord No. 13-88] [Amended 1-15-03 by Ord No. 35-11]

[8] Shall not include the raising and sale of FARM ANIMALS; the breeding, boarding, and training of equines, and equine riding instruction; the commercial raising, harvesting, and sale of fresh water fish or other aquaculture products; and/or the breeding of poultry or game birds.

[9] Use is allowed on the portion of the lot that is behind the principal structure, provided the following standards are met: Chickens: No more than six (6) chickens and no roosters, with three (3) square feet of chicken coop and twenty (20) square feet of a fenced enclosure yard per chicken; all coops and enclosures shall be twenty (20) feet from any property line. Sheep or goats: one animal per 10,000 square feet of lot area, with a maximum of six (6) animals; ten (10) square feet of shelter and thirty (30) square feet of a fenced enclosure yard per animal; all shelters and enclosures shall be thirty (30) feet from any property line. [Amended 12-08-10 by Ord. No. 2010-10.27-13]

[10] Permitted only if operated as a CUSTOMARY HOME OCCUPATION (Refer to definition in 170-6B).

[11] The Utility Facility shall be appropriately fenced to protect the public. Landscaping materials shall be required to provide a visual screen from any structures and storage within. [Amended 10-28-88 by Ord. No. 18-88]

[12] ROADSIDE FARM STANDS shall be set back a minimum of twenty (20) feet from all abutting vehicular rights-of-way. The area of any BUILDING associated with the ROADSIDE FARM STAND shall not be greater than two hundred (200) square feet in area, and shall be considered an accessory structure if a residence is also located on the property. The total of the display area, including the building, shall not exceed four hundred (400) sq. ft. Off-street parking shall be provided in the amount of one (1) off-street parking space per 250 sq. ft. of display and building area, and all required parking spaces shall have safe access to and from a public street. A certificate of use issued by the Zoning Administrator and a driveway permit shall be required in all cases."

Special Exception Criteria **(see 170-52(C)(3) for additional regulations)**

ELDERLY ASSISTED CARE HOME [Added 09-15-93 by Ord. No. 19-93]:

ELDERLY ASSISTED CARE HOME is allowed by Special Exception in accordance with the densities and provisions stated below:

A. ELDERLY ASSISTED CARE HOME Is larger than 6 bedrooms shall meet the following density requirements: In the R-12 District at a density of one bedroom per 3,000 sq. ft.

B. Provided that parking and service areas are screened from abutting residential uses.

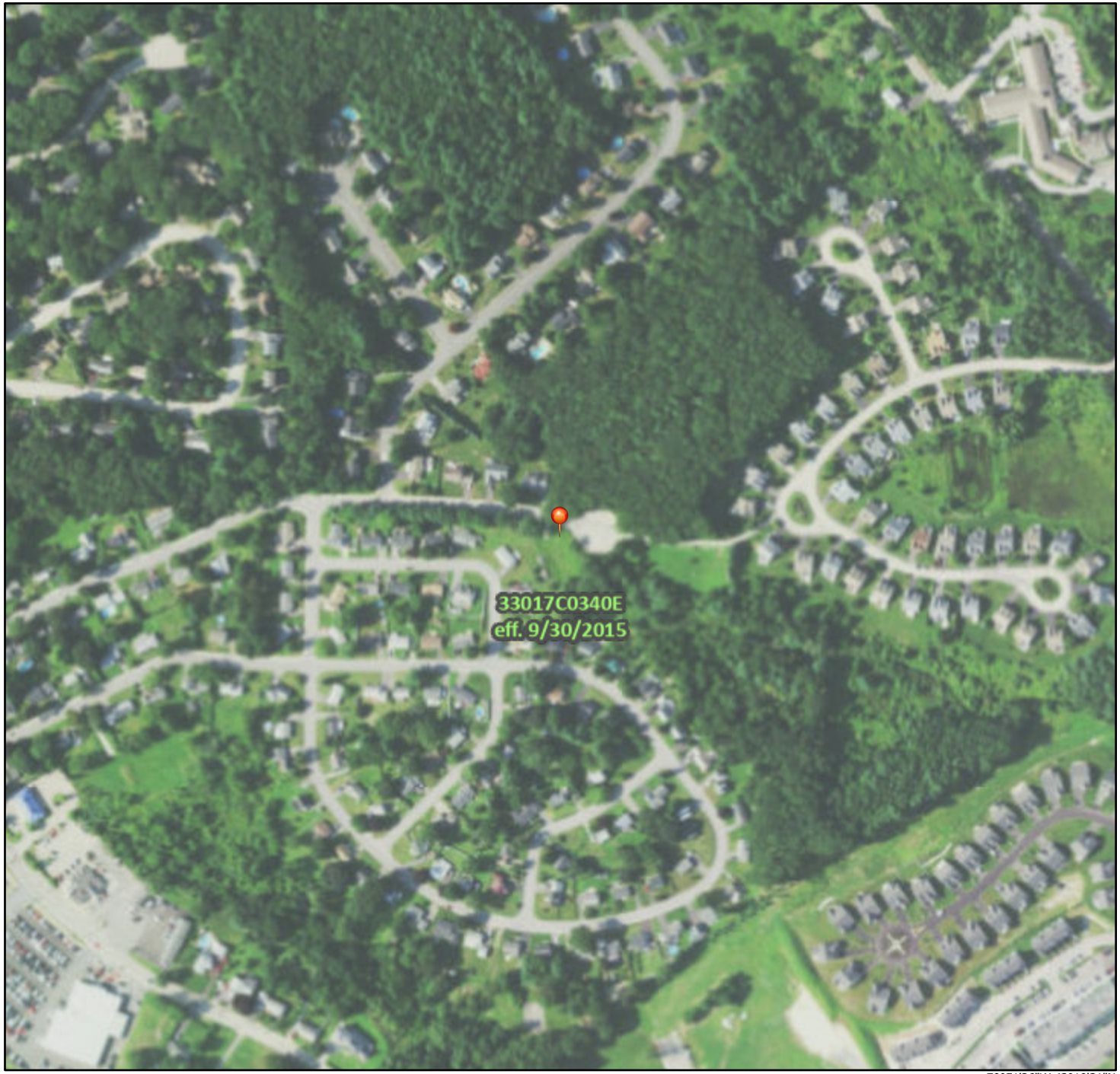
C. Notwithstanding the above requirements, the maximum number of bedrooms and residents allowed in a facility may be increased provided the increase is found not to be detrimental to the surrounding properties and conforms with parking standards in Chapter 170-44 (Off Street Parking). Furthermore, any increase to an existing structure must be contained within or contiguous to the original structure. [Added 01-22-03 by Ord. No. 35-02]

11. Flood Map

National Flood Hazard Layer FIRMette

FEMA

70°52'3"W 43°10'57"N



70°51'26"W 43°10'31"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 1/26/2022 at 1:55 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

12. US Survey Soil Data

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Strafford County, New Hampshire

55 Applevale Drive Dover, NH

February 3, 2022

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

Contents

Preface.....2
How Soil Surveys Are Made.....5
Soil Map.....8
Soil Map.....9
Legend.....10
Map Unit Legend.....11
Map Unit Descriptions.....11
Strafford County, New Hampshire.....13
BzB—Buxton silt loam, 3 to 8 percent slopes.....13
References.....15

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

Map Scale: 1:206 if printed on B landscape (17" x 11") sheet.

N

Meters
0 3 6 12 18

Feet
0 10 20 40 60

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Strafford County, New Hampshire
Survey Area Data: Version 22, Aug 31, 2021

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

Date(s) aerial images were photographed: Dec 31, 2009—Sep 9, 2017

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BzB	Buxton silt loam, 3 to 8 percent slopes	0.2	100.0%
Totals for Area of Interest		**0.2**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Strafford County, New Hampshire

BzB—Buxton silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 9d6p
Elevation: 0 to 260 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Buxton and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Buxton

Setting

Parent material: Glaciomarine

Typical profile

H1 - 0 to 10 inches: silt loam
H2 - 10 to 28 inches: silty clay loam
H3 - 28 to 43 inches: silty clay

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 12 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 7.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C/D
Ecological site: F145XY006CT - Semi-Rich Moist Lake Plain
Hydric soil rating: No

Minor Components

Elmwood

Percent of map unit: 10 percent
Hydric soil rating: No

Not named

Percent of map unit: 5 percent
Hydric soil rating: No

References

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

National Research Council. 1995. Wetlands: Characteristics and boundaries.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_054262

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053577

Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053580

Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.

United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.

United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2_053374

United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf

City of Dover, New Hampshire
SUBDIVISION APPLICATION

[Revision Date: July 1, 2021]

Office Use Only	Project #:		Date Received:	
	Amount Paid:		Time Received:	

APPLICANT AND OWNER INFORMATION

Name of Applicant: Stonearch Development Corp. Telephone # 1-978-375-3153

Address of Applicant: 42J Dover Point Road, Dover, NH 03820

Name of Property Owner (*if different from applicant*): Mulcah L., George T., Lutsk D. and Barnes D. Telephone #_____

Address of Property Owner: 245 N. Bend Drive, Manchester, NH 03104

E-Mail Address: Scrignuoli, Eugene A. & Donna L., 22 Sun Hawk Lane, Dover, NH oneillfamilydevelopment@gmail.com

PROPERTY INFORMATION

Address of Property: Between 53 & 65 Tolend Road, and 22 Sun Hawk Lane

Assessor's Map # E Lot(s) # 65-1 & 65-A

Zoning District(s) R20 Overlay District(s) Wetlands and Conservation Combined Area

Size of Parcel: 44.42 Property Deed: Book 4918-158 Page: 1571-86

Existing Use of Property: Vacant Lane and Single Family Home

SUBDIVISION INFORMATION

Subdivision Type: Conventional: _____ Open Space: X TDR: _____

Existing Number of Lots: 2 Proposed Number of Lots: 60 Units (30 Duplex)

TDR Relief sought (Check All That Apply): □ Lot Size □ Frontage □ Setback □ 30' Buffer □ Purchase ____ units

Describe Proposed Use or Activity that requires TDR; describe any impacts and document mitigation:

_____

_____

Circle one for each category:

Water: City/Well (circle one) How far is city water from the property? At the site

Sewer: City/Septic (circle one) How far is city sewer from the property? Over a Mile

Highway Access City Street/State Highway (circle one) | Roadway Public or Private Road (circle one)

Refuse removal: Public/Private (circle one) | Estimated Length of Proposed Road: 2840 feet

Estimated value of construction: 18M New impervious area (in s.f.): 189,001

WAIVER REQUESTS

Subdivision Regulations section(s) to be waived: Road Entrance Grade and 40' OSS Buffer

Justification for waiver request(s) (*attach additional sheets as needed*): _____

_____

_____

SURVEYOR INFORMATION

Name of Surveyor and Company (Licensed in N.H.) Kenneth A. Berry
Berry Surveying & Engineering

Address 335 Second Crown Point Road, Barrington, NH 03825 Telephone #: 603-332-2863

Professional License #: 805 E-mail address: Crberry@metrocast.net

ENGINEER INFORMATION

Name of Engineer and Company (Licensed in N.H.) Kenneth A. Berry
Berry Surveying & Engineering

Address 335 Second Crown Point Road Barrington, NH 03825 Telephone #: 603-332-2863

Professional License #: 14243 E-mail address: Crberry@metrocast.net

LANDSCAPE ARCHITECT INFORMATION

Name of Landscape Architect and Company (Licensed in N.H.) Terrain Planning & Design LLC
Eric Buck

Address 311 Kast Hill Road, Hopkinton, NH 03229 Telephone #: 603-491-2322

Professional License #: 79 E-mail address: _____

SOIL SCIENTIST INFORMATION

Name of Soil Scientist and Company (Licensed in N.H.) John P. Hayes III

Address 7 Limestone Way, North Hampton, NH 03862 Telephone #: 603-776-5825

Professional License #: CWS 18 E-mail address: johnphayes@comcast.net

CONSERVATION EASEMENT HOLDER

Name of Easement Holder: _____ Telephone #_____

Address Easement Holder: _____

SIGNATURES

I/We hereby submit this application to the City of Dover Planning Board and attest that to the best of my knowledge all of the information on this application form and in the accompanying application materials and documentation is true and accurate. Furthermore, I/We submit that the existing conditions sheet of the plan represents the lot in question, and that no alteration of the site shall take

place during Planning Board review up to and including the pre-construction meeting. As applicant or as agent, I attest that I am duly authorized to act in this capacity.

Signature of Property Owner: _____ Date: _____

Signature of Applicant (*if different from owner*): _____ Date: 2-14-22

Signature of Agent: _____ Date: 2-14-22

AUTHORIZATION TO ENTER SUBJECT PROPERTY

I, and my successors, hereby authorize members of the Dover Planning Board, Planning Department and other pertinent City Departments and boards to enter my property for the purpose of evaluating this application, including performing inspections during the application phase, post-approval phase, construction phase and occupancy phase. It is understood that these individuals must use all reasonable care, courtesy, and diligence when on the property.

Signature of Property Owner: _____ Date: 2-14-22

AUTHORIZATION TO COMPLETE THE PROJECT ON SUBJECT PROPERTY

I, and my successors, hereby authorize the City of Dover and its assigns to enter my property for the purpose of completing the site work as required by the approved plan should the letter or credit or other surety be called. It is understood that these individuals must use all reasonable care, courtesy, and diligence when on the property.

Signature of Property Owner: _____ Date: _____

Signature of Applicant (*if different from owner*): _____ Date: 2-14-22

CERTIFICATION OF FEES

I, and my successors, hereby certify that I understand that the City of Dover collects impact fees, utility investment fees and inspection fees for projects developed in Dover. Said fees must be paid before a Certificate of Occupancy can be obtained for a structure, unless a different payment schedule is agreed to by the applicant and the City prior to approvals being issued by the Dover Planning Board. Additionally, should the property be in "Current Use" it will be subject to the Land Use Change Tax.

Signature of Property Owner: _____ Date: _____

Signature of Applicant (*if different from owner*): _____ Date: 2-14-22

CERTIFICATION OF PUBLIC ROADWAY ACCEPTANCE

I, and my successors, hereby certify that I understand that the acceptance of a roadway as a public road is an action of the City Council in its sole and complete discretion. In order for the City Council to consider accepting a road as public, it must be free of encumbrances. No roadway with private utility easements shall be accepted as a public road by the City unless the easements are expunged prior to the transfer of land to the City. License agreements for any and all private utilities within the right of way may be granted by the City upon acceptance of the unencumbered roadway consistent with applicable state law.

Signature of Property Owner: _____ Date: _____

Signature of Applicant (*if different from owner*): _____ Date: 2-14-22

PLANNING BOARD FEE SCHEDULE/INVOICE

(Revised July 1, 2021)

Below are the fees associated with plan review and are subject to a nonrefundable application fee to cover administrative expenses. Please complete the information below and provide payment with your application submittal. **Plan Review Fees shall be paid prior to technical review committee (TRC) being scheduled.** For plans not requiring TRC review, **fees are due 21 days prior** to the Planning Board meeting. Staff will coordinate abutter/notice fees, which will be invoiced and must be paid 28 hours before the Planning Board meeting for an application to be heard. Fees shall be paid by cash or check made payable to "City of Dover".

A. Plan Review Fees

1. Application fee for the following (SELECT ALL THAT APPLY):

- ☐ SUBDIVISION Application fee $200.00 + $150.00 x # _____ new lots created = $_____
- ☐ LOT LINE ADJUSTMENT Application fee $200.00 + $100.00 X # ___ of lots involved = $_____
- ☐ TRANSFER OF DEVELOPMENT RIGHTS Application fee $200.00 = $_____
- ☐ SITE REVIEW – RESIDENTIAL Application fee $200.00+ $100.00 x # __ per dwelling unit =$_____
- ☐ SITE REVIEW – NON-RESIDENTIAL Application fee $200.00 + (not to exceed $10,000)
  - New construction $.15 sq. ft. x # _____ sq. ft.= $_____
  - Additions (new floor space) $.10 per sq. ft. x # _____sq. ft.= $_____
- ☐ MOTEL/HOTEL $35.00 x # ___ per lodging unit= $_____
- ☐ CHANGE OF USE Application fee $200.00 + (not to exceed $5,000)
  - Existing floor spaces $.10 per sq. ft. x # _____ sq. ft. = $_____
- ☐ CONDITIONAL USE PERMIT Application fee $200.00 x # _____ per Application = $_____
- ☐ GRAVEL PIT/ EXCAVATIONS
  - Application fee $50.00= $_____
  - Permit fee $75.00= $_____
- ☐ EXTENSIONS/AMENDMENTS/WAIVERS FOR AN APPROVED PLAN Application fee $200.00 = $_____
- ☐ REQUEST FOR REZONING Application fee $200.00 = $_____
- ☐ DRIVEWAY WAIVER Application fee $200.00 = $_____

2. TOTAL IMPERVIOUS PAVED AREA (for new development, roadways or additions to existing parking lots, (not to exceed $10,000)) Application fee of $200.00 is N/A if it is part of a Site Review or Subdivision Plan. $200.00 + $.07 per sq. ft. x # _____ sq. ft. = $_____

SUBTOTAL PLAN REVIEW FEE (A) = $_____

AND

B. Abutter Notification/Mailing Labels - this office will create and print the abutter list and provide labels in triplicate for each abutter. The applicant/owner will review the list for accuracy and provide to us the engineer, architect, licensed land surveyor (LLS), licensed landscape architect (LLA) and/or soil scientist whose professional seal appears on the plan with names and addresses for notices.

- ☐ Applicant & Owner, engineer, architect, LLS, LLA and/or soil scientist
  - Certified letters fee # _____ of x $8.00= $_____
- ☐ Certified letters fee: # of abutters _____ X $8.00= $_____
- ☐ First Class Mail fee (for individual owner of units within a condominium or other collective form of ownership): # of abutters _____ X $1.00= $_____
- ☐ Creating/Printing Abutter Labels in triplicate per sheet _____ x $10.00= $_____

C. Foster's newspaper public notice fee $100.00 x # _____ applications = $_____

SUBTOTAL NOTICE FEE (B & C) = $_____

TOTAL INVOICE AMOUNT (A, B & C) = $_____

PLAN REVIEW FEE COLLECTED/PAID = $ _____

BALANCE DUE = $ _____

The balance due must be paid 28 hours prior to the Planning Board Meeting, to be heard.

City of Dover, New Hampshire
SUBDIVISION SUBMISSION CHECKLIST

[Revision Date: May 18, 2019]

This review checklist is intended to assist the applicant in the planning process of preparing a Subdivision application for Planning Board action. The size of the project will determine the types of information required for review, therefore, a **pre-application conference** with the Planning Department to determine the list of items that must be completed is strongly encouraged.

The first step would be to appear before the Technical Review Committee, to apply, eight (8) folded copies of the site plan with scale of not less than 1"=50' or 1" =100' for larger site plans, need to be provided, along with payment of plan review fees.

Two weeks prior to Planning Board, three (3) full size and twelve (12) half size (11x17), folded, copies of the plan set and materials, including response to TRC comments, will be due. Abutter/Notice Fees will be invoiced and need to be paid 28 hours prior to the Planning Board meeting.

The applicant is cautioned that this checklist is only a guide and is not intended to be a complete list of all subdivision requirements. Please refer to the Subdivision Regulations for full details.

APPLICANT: Stonearch Development Corp. File Number: _____

PROJECT TITLE: River Side Estates

PROPERTY LOCATION: Tolend and Sun Hawk Tax Map: E Lot: 65-1 & 65-A

	Where/How Provided	Reviewed
1. Completed and signed Application form	x See Letters	
2. Plan Review Fees are provided	X	
3. Electronic copy of the surveyed plat layout	X	
4. Electronic copy of supplementary materials and application	X	
5. Traffic Impact Assessment and Analysis (Standard or Advanced)	X	
6. Waiver requests to the Subdivision Regulations, with written justification	X	
7. Conditional Use Permit applications	X	
8. Narrative describing yield plan and cost analysis	X	
9. Folded copies of subdivision plan w/scale of not less than 1"=50' or 1"=100' for larger subdivisions. Plans shall contain the following items as appropriate:	X	
Location map at appropriate scale	X	
Proposed subdivision name and title and Planning File #	X	
Date, north arrow and scale	X	
Names of all abutting property owners	X	
Name and address of owners and/or applicants	X	
Signature & stamp of NH licensed land surveyor and/or engineer	X	
Zoning District boundaries, including any special or overlay districts	X	
Location of Conservation District areas	X	
Location, names and widths of existing and proposed streets, including pavement widths, grades, curbs and crosswalks	X	
Location and widths of existing & proposed easements & right of ways	X	
Location and widths of existing and proposed sidewalks	X	
Existing and proposed property lines with dimensions and bearings tied into Dover's Geographic Information System coordinate system	X	
Existing and proposed lot areas in square feet	X	
Existing and proposed topographic information at two foot intervals	X	
Minimum building setbacks or build to lines on all lots	X	

	Explain How Provided	Reviewed
Existing and proposed buildings and structure locations	X	
Location and size of existing and proposed electric, telephone, gas cable and other underground utilities	X	
Existing and proposed water lines and fire hydrants, including materials and capacity needed	X	
Location and materials of sanitary sewage facilities within project site and projected additional peak hour sewer load	X	
Existing and proposed septic system, including test pit locations and results and NHDES subdivision permit number	X	
Existing and proposed stormwater lines and facilities	X	
Existing and proposed streetlights	X	
Location of Flood Hazard Zone	X	
Location of all bodies of water and watercourses	X	
Location of wetlands and buffers	X	
Neighborhood plan with aerial underlay showing how project relates to abutting uses	X	
Existing natural features and/or significant vegetation on property	X	
Depict existing contours up to 100 ft. beyond project limits	X	
Soil types	X	
Map and lot numbers for existing and proposed lots as assigned by Tax Assessor	X	
Location of all land offered for dedication for public use or land to be held in common by property owners of the subdivision	X	
Location of all land offered for dedication for public use or land to be held in common by property owners of the subdivision	X	
Location, material and size of existing and proposed permanent monuments	X	
Existing railroad lines	N/A	
Note regarding solid waste disposal	X	
All applicable Dover Common Subdivision notes	X	
10. Construction Detail Sheets shall contain the following:		
Profiles showing existing & proposed elevations along the center lines of proposed streets & within 100' of intersections with existing streets	X	
Profiles showing the locations & a typical cross-section detail of streets	X	
Location of street trees, street lighting poles and street signs	X	
Location, size and invert elevations of existing and proposed sanitary sewers, stormwater drains and fire hydrants	X	
Location and size of all water, gas and other underground utilities	X	
11. Additional Information if appropriate		
Stormwater Management Plan depicting the existing and proposed storm drainage system and engineered drainage analysis	X	
Stormwater Management System Operation and Maintenance Plan	X	
Letter to Serve from Public and Private Utilities	X Requested	
Erosion and Sedimentation Control Plan	X	
Perimeter Landscaping Plan	X	
Proposed restrictive covenants or homeowners association documents	To Be Provided	
Dates and permit numbers of all required state and federal permits	X	
If wetland buffer, indicate placards locations, as applicable	X	
Hydrogeologic study if located in Groundwater Protection Zone	N/A	
Provide additional exhibits/technical data determined appropriate by the Planning Board or its staff as required		

REVIEWED BY: _____ DATE_____ TRC DATE_____

CITY OF DOVER PLANNING DEPARTMENT
Revised August 10, 2020

APPLICANT: _____ FILE NUMBER: _____

List of Common Subdivision Plan Notes

The following list of commonly required notes is intended to be used as a guide to applicants and should not be construed as a comprehensive note requirement list for all projects. A pre-application conference with the Planning Department is suggested to help determine the actual notes that may be required.

1. The intent of this plan is to *(describe the purpose of the plan).*

2. Owners of Record are: Name
   Street address
   Municipality, State, Zip Code
   _____
   Authorized Signature

3. The parcel(*s*) is (*are*) shown as Lot No. _____, Map ____ of the City of Dover Tax Assessor's Maps.

4. The subject parcel(s) contains ____ acres or _____ sq. ft. area of land.

5. Title reference for the project parcel(*s*) is the Strafford County Registry of Deeds, Book No. ___, Page No. ___.

6. Reference Plans: (*List all reference plans and their SCRD #)*

7. All applicable right-of-way, conservation, slope, construction, power line, cross travel, or other easements shall be referenced in a note.

8. Zoning dimensional and density requirements are as follows:

   Required: Provided:

   a. Zoning district _____ sub-district _____
   b. Minimum lot size: _____ acres (sq. ft.)
   c. Minimum lot frontage: _____ ft.
   d. Minimum yard setbacks/build-to-lines:
      Front _____ft.
      Side _____ft.
      Rear _____ft.
      Abut-a-street _____ ft.
   e. Maximum/minimum lot coverage _____ %
   f. Minimum/maximum bldg. height _____ ft./stories

   This property falls within the following zoning overlay districts: *(List districts)*

9. List any variances or special exceptions granted by the Zoning Board of Adjustment or Conditional Use Permits granted by the Planning Board for the proposed use or structure, including the case number and date of decision and any conditions.

10. Property line information has been obtained from a survey performed by *(surveyor)* on (*date*) with an error not greater than 1 in 10,000 (*or has been obtained from _____ Plan, prepared by (surveyor)*).

11. Subject parcel is (*is not*) located within a Federally designated flood hazard area (Community panel number 33017C0xxxD, Effective Date: September 30, 2015).

12. Wetlands were delineated by _____, Certified Wetlands Scientist, Certification Number ____, in accordance with Chapter 170-27.1 of the Zoning Ordinance, on _____, 20___.

13. As-built plans of the subdivision shall be submitted on paper and in digital format AutoCAD DWG, AutoCAD DXF or ESRI format to the City of Dover Engineer's Office upon completion of project if a street is proposed for City acceptance. As-built plans shall be prepared and certified correct by a L.L.S. or P.E. Digital files shall be geo-referenced to New Hampshire State Plane Coordinates NAD83 and shall be expressed in feet.

14. The installation of electric power, cable television and telephone lines shall be underground throughout the site for which development is proposed. Subdivision plans shall show any easements for these services.

15. The subject parcel(s) is (are) served by municipal water and sewer (*or is served by on-site well and septic system*).

16. All construction shall conform with the State of New Hampshire Department of Transportation (NHDOT) "Standard Specifications for Road and Bridge Construction" and with the City of Dover Community Services Regulations and standard specification for construction. The more stringent specification shall apply.

17. All erosion control notes shall include provisions for construction sequencing, temporary erosion control measures, and permanent standards such as loam spread rate for disturbed areas, rates of lime, type and rates for fertilizer, and seed and mulch mixture with rates of application.

18. The limits of construction disturbance that are located in or within the 50 ft. of Conservation and Wetland Districts shall be staked, flagged and clearly identified prior any earth disturbing activity occurs.

19. All treatment swales to be constructed shall have sod bottoms.

20. A letter of credit for the cost of revegetating all disturbed areas on the site shall be submitted, and the approved construction sign installed prior to any earth disturbing activity occurs.

21. A pre-construction conference with the developer, the design engineer, the earthwork contractor and the City Engineer shall occur prior to any earth disturbing activity.

22. Site Construction hours shall be limited to Monday-Friday 7 AM-6 PM, Saturday and Sunday 9 AM-4 PM. Hours of construction must be documented on a site construction sign along with the contact information for the general contractor. Said signage must be located and approved by the City Engineer or Assistant City Manager.

23. Building addresses (including apt/unit numbers if applicable) shall be assigned by the Building Official at the time of issuance of a building permit.

24. The proposed use for the site (structure) is _____. (More specific uses are encouraged, such as single family, duplex, multi-family, restaurant, hotel, doctor's office, etc. Should more than one use be proposed, an indication of the percentage of each use is suggested.)

25. The following federal and state permits have been issued for the subject property: (*List permit type, number and date of issuance.)*

26. Commercial vehicle route during construction shall conform to Dover City Code or be coordinated with the Community Services Director.

27. Any retaining wall taller than four feet (4') requires issuance of a building permit from Inspection Services.

28. Any fence taller than seven feet (7') requires the issuance of a building permit from Inspection Services.

29. Applicant shall complete Land Use Development Tracking Form, most recently revised version, utilizing the online Pollution Tracking and Accounting Pilot Project (PTAPP) portal. https://www.unh.edu/unhsc/ptapp

30. The owner of record shall record at the Registry of Deeds documentation sufficient to provide notice to all persons/entities that may acquire any property subject to the requirements and responsibilities described in the approved STORMWATER Management Plan. The notice shall comply with the applicable requirements for recording contained in RSA 477 and 478. The notice need not set forth the requirements at length, so long as it is sufficient to provide notice to prospective purchasers to the requirements for maintenance and reporting.

31. Fire department access road(s) shall be installed and maintained to support the imposed loads of fire apparatus in all weather conditions at all times.

32. No roadway with private utility easements shall be accepted as a public road by the City unless the easements are expunged prior to the transfer of land to the City. License agreements for any and all private utilities within the right of way may be granted by the City upon acceptance of the unencumbered roadway consistent with applicable state law.

33. Topography depicted is based on U.S.G.S. NVD 1988. (**or** Topography depicted is based on information obtained from the City Engineer's Office and was derived from coordinates for control stations _____ and _____. These coordinates have not been adjusted to 1983 datum).

34. Basis of bearing is the City of Dover GIS system stations _____ and _____ which were used to determine location, orientation and vertical datum.

CHRISTOPHER G. PARKER, AICP
Assistant City Manager
Planning & Strategic Initiatives
c.parker@dover.nh.gov

288 Central Avenue
Dover, New Hampshire 03820-4169
(603) 516-6008
Fax: (603) 516-6049
www.dover.nh.gov

City of Dover, New Hampshire

DEPARTMENT OF PLANNING AND COMMUNITY DEVELOPMENT

INSTRUCTIONS TO APPLICANTS TO THE DOVER PLANNING BOARD

IMPORTANT: PLEASE READ ALL INSTRUCTIONS CAREFULLY BEFORE FILLING OUT ATTACHED APPLICATION.
INCOMPLETE APPLICATIONS WILL NOT BE ACCEPTED FOR REVIEW.

Dear Applicant:

This will serve to briefly inform you regarding the process to have the Dover Planning Board (the Board) review a land use application. Please refer to the NH Statutes on Land Use and Regulation the Dover Code, and our Developer's Handbook for more specific information.

The Board primarily reviews 5 types of applications:

1. **Site Plans** - A site plan is a professionally rendered drawing which delineates the proposed development of a site. This plan is required for non-residential development, creation of multi-family residential structures, and for extensions of parking lots and alteration of an acre or more of land. These plans require meeting with the Technical Review Committee before Planning Board review.

2. **Subdivisions** - A subdivision is the division of the lot, tract, or parcel of land into two (2) or more lots, plats, sites or other divisions of land for the purpose, whether immediate or future, of sale, rent, lease or building development. It includes re-subdivision and, when appropriate to the context, relates to the process of subdividing or to the land or territory subdivided. Major subdivision plans (4+) require meeting with the Technical Review Committee before Planning Board review.

3. **Lot Line Adjustments** - A lot line adjustment alters the size of two (2) or more lots, but does not create a new buildable lot.

4. **Conditional Use Permits** - A conditional use permit is required for any alteration of wetlands, wetland buffers or work within the City's conservation district. Additionally, a conditional use permit could be issued as to offer relief in the Central Business District, for plans in the Residential Mixed Use Overlay District, or parking relief. Environmental Conditional Use Permits are acted on after Conservation Commission review.

5. **Excavation Permits** – NH RSA Chapter 155-E grants municipalities the authority to regulate earth excavations within their borders. This authority rests with the Planning Board.

The Board cannot and will not review applications that do not meet zoning requirements. **Please review the need to apply to the Zoning Board of Adjustment prior to applying to the Board.**

Professional agents will prepare your application; however, you may represent yourself or authorize, in writing, someone else to represent you before the Planning Board.

In most cases, the first step would be to appear before the Technical Review Committee, to apply, eight (8) folded copies of the site plan with scale of not less than 1"=50' or 1" =100' for larger site plans, and a PDF, need to be provided, along with payment of plan review fees. These meetings occur on Thursday, and materials and payment must be submitted three (3) weeks prior to meeting. Meetings are scheduled, upon receipt of completed applications with the full checklist and payment.

The next step would be to provide, two weeks prior to Planning Board, the final plan sets (three (3) full size and twelve (12) half size (11x 17), folded, copies of the plan), and 15 copies, and a PDF, of all supporting materials, including response to TRC comments. Please print all materials on both sides of paper.

For projects not appearing before the Technical Review Committee, Plan Review Fees are due along with three (3) full size and twelve (12) half size (11x17), folded, copies of the plan set and 15 copies, plus a PDF, of plans and materials, 3 weeks prior to the Planning Board meeting. Please print all materials on both sides of paper.

Staff will generate an abutter list, and Abutter/Notice Fees will be invoiced. They are due 28 hours prior to Planning Board. If they are not paid, the application will not be heard.

Once an item is placed upon an agenda the following process is used:

- The Board will hold a public hearing on your application at a regularly scheduled meeting
    - Typically the second or fourth Tuesday of the Month.
- Public notice of the hearing will be posted at the City Clerk's office and the Planning Department office and printed in the newspaper.
- Certified letters will be mailed to you and to all abutters at least ten days before the date of the hearing.
- 28 hours prior to the meeting, abutter/notice fees must be paid
- At the meeting
    - Staff will introduce your project
    - You and all other parties will be invited to appear in person or by agent or counsel to present your application.
        - Your project will be pre-loaded onto a laptop for review by the Board and public
    - The Board may ask clarifying questions
    - The Board will vote to accept jurisdiction on the application
    - If accepted:
        - The Board will hold a public hearing
        - The Board may ask additional questions
        - The Board will deliberate on your application
            - Typically decisions are made the night of the presentation, but an application may be tabled
        - After deliberation, a decision will be made.
            - You will be sent a notice of the decision.

City of Dover, New Hampshire
MINOR LOT LINE ADJUSTMENT APPLICATION

[Revision Date: June 4, 2019]

Office Use Only	Project #:		Date Received:	
	Amount Paid:		Time Received:	

APPLICANT INFORMATION

Name of Applicant: Stonearch Development Corp. Telephone # 1-978-375-3153

Address of Applicant: 42J Dover Point Road, Dover, NH 03820

FIRST PROPERTY OWNER AND PARCEL INFORMATION

Name of 1st Property Owner (*if different from applicant*): Mulcah L., George T., Lutsk D. and Barnes D. Telephone #_____

Address of 1st Property Owner: 245 N. Bend Drive, Manchester, NH 03104

Address of Property: Between 53 & 65 Tolend Road

Assessor's Map # E Lot(s) # 65-1

Property Deed: Book 4918 Page: 158

Zoning District(s) R20 Overlay District(s) Wetlands and Conservation

Size of Existing Parcel (sq. ft.): 1,388,402 Size of Proposed Parcel (sq. ft.): 1,824,109

SECOND PROPERTY OWNER AND PARCEL INFORMATION

Name of 2nd Property Owner (*if different from applicant*): Scrignuoli, Eugene A. & Donna L., 22 Sun Hawk Lane, Dover, NH Telephone #_____

Address of 2nd Property Owner: 22 Sun Hawk Lane, Dover, NH 03820

Address of Property: 22 Sun Hawk Lane

Assessor's Map # E Lot(s) # 65-A

Property Deed: Book 1571 Page: 86

Zoning District(s) R20 Overlay District(s) Wetlands & Conservation

Size of Existing Parcel (sq. ft.): 546,546 Size of Proposed Parcel (sq. ft.): 110,839

THIRD PROPERTY OWNER AND PARCEL INFORMATION

Name of 3rd Property Owner (*if different from applicant*): _____ Telephone #_____

Address of 3rd Property Owner: _____

Address of Property: _____

Assessor's Map # _____ Lot(s) # _____

Property Deed: Book _____ Page: _____

Zoning District(s) _____ Overlay District(s) _____

Size of Existing Parcel (sq. ft.): _____ Size of Proposed Parcel (sq. ft.): _____

[Use additional application form if more than two lots are being adjusted]

SURVEYOR INFORMATION

Name of Surveyor and Company (Licensed in N.H.) Berry Surveying & Engineering Kenneth A. Berry

Address 335 Second Crown Point Road Barrington, NH 03820 Telephone #: 603-332-2863

Professional License #: 805 E-mail address: crberry@metrocast.net

CONSERVATION EASEMENT HOLDER (s)

Name of Easement Holder: _____ Telephone #_____

Address Easement Holder: _____

Name of 2nd Easement Holder: _____ Telephone #_____

Address 2nd Easement Holder: _____

SIGNATURES

I/We hereby submit this application to the City of Dover Planning Board and attest that to the best of my knowledge all of the information on this application form and in the accompanying application materials and documentation is true and accurate. As applicant or as agent, I attest that I am duly authorized to act in this capacity.

Signature of First Property Owner: See Letters Date: _____

Signature of Second Property Owner: _____ Date: _____

Signature of Applicant (*if different from owner*): _____ Date: _____

Signature of Agent: _____ Date: 2-14-22

AUTHORIZATION TO ENTER SUBJECT PROPERTY

I hereby authorize members of the Dover Planning Board, Planning Department and other pertinent City Departments and boards to enter my property for the purpose of evaluating this application, including performing inspections during the application phase, post-approval phase, construction phase and occupancy phase. It is understood that these individuals must use all reasonable care, courtesy, and diligence when on the property.

Signature of Property Owner: _____ Date: 2-14-22

CITY OF DOVER MINOR LOT LINE ADJUSTMENT
LIST OF ABUTTERS

Pursuant to RSA 676:4, the State Law of New Hampshire, the City of Dover is required to notify the applicant, abutters (including holders of conservation easements), and any professional whose seal is on the plan, of the public hearing by certified mail, return receipt requested. Staff will provide the abutter information, while the applicant must provide accurate contact information for the owner, applicant and professional agents representing the project.

Owner:

TAX MAP	LOT #	PROPERTY OWNER	MAILING ADDRESS

Applicant (if different from owner):

APPLICANT NAME	APPLICANT COMPANY	MAILING ADDRESS

Surveyor and/or Engineer/Professional Agent:

NAME	COMPANY	MAILING ADDRESS

Conservation Easement Holder:

TAX MAP	LOT #	NAME OF EASEMENT HOLDER	MAILING ADDRESS

City of Dover, New Hampshire
LOT LINE ADJUSTMENT SUBMISSION CHECKLIST

[Revision Date: June 4, 2019]

This review checklist is intended to assist the applicant in the planning process of preparing a Subdivision application for Planning Board action. The size of the project will determine the types of information required for review, therefore, a **pre-application conference** with the Planning Department to determine the list of items that must be completed is strongly encouraged.

Plan Review Fees are due along with three (3) full size and twelve (12) half size (11x17), folded, copies of the plan set and materials, 3 weeks prior to the Planning Board meeting. Abutter/Notice Fees will be invoiced and are due 28 hours prior to Planning Board.

The applicant is cautioned that this checklist is only a guide and is not intended to be a complete list of all subdivision requirements. Please refer to the Subdivision Regulations for full details.

APPLICANT: Stonearch Development Corp. File Number: _____

PROPERTY LOCATION: Tolend & Sun Hawk Tax Map: E Lot: 65-1 and Lot: 65-A

	Where/How Provided	Reviewed
1. Completed and signed Application form	X	
2. Plan Review Fees are provided	X	
3. Electronic copy of the surveyed plat layout	X	
4. Electronic copy of supplementary materials and application	X	
5. Fifteen copies of LLA plan w/scale of not less than 1"=50' or 1"=100' for larger adjustments. Plans shall contain the following items as appropriate:	X	
Location map at appropriate scale	X	
Planning File #		
Date, north arrow and scale	X	
Names of all abutting property owners	X	
Name and address of owners	X	
Signature & stamp of NH licensed land surveyor	X	
Zoning District boundaries, including any special or overlay districts	X	
Location of Conservation District areas	X	
Location, names and widths of existing and streets, including pavement widths, grades, curbs and crosswalks	X	
Location and widths of existing & proposed easements & right of ways	X	
Existing and proposed property lines with dimensions and bearings tied into Dover's Geographic Information System coordinate system	X	
Existing and proposed lot areas in square feet	X	
Existing and proposed buildings and structure locations	X	
Minimum building setbacks or build to lines on all lots	X	
Map and lot numbers for existing and proposed lots as assigned by Tax Assessor	X	
Location, material and size of existing and proposed permanent monuments	X	
All applicable Dover Common Subdivision notes	X	

REVIEWED BY: _____ DATE_____

CITY OF DOVER PLANNING DEPARTMENT
Created June 4, 2019

APPLICANT: _____ FILE NUMBER: _____

List of Common Lot Line Adjustment Plan Notes

The following list of commonly required notes is intended to be used as a guide to applicants and should not be construed as a comprehensive note requirement list for all projects. A preapplication conference with the Planning Department is suggested to help determine the actual notes that may be required.

1. The intent of this plan is to *(describe the purpose of the plan).*

2. Owners of Record are: Name
   Street address
   Municipality, State, Zip Code
   _____
   Authorized Signature

3. The parcels are shown as Lot Nos. _____, and _____ on Map ____ of the City of Dover Tax Assessor's Maps.

4. The subject parcels contains ____ acres or _____ sq. ft. area of land. *(existing and proposed)*

5. Title reference for the project parcels are the Strafford County Registry of Deeds, Book No. ___, Page No. ___ and Book No. ___, Page No. ___

6. Reference Plans: (*List all reference plans and their SCRD #)*

7. All applicable right-of-way, conservation, slope, construction, power line, cross travel, or other easements shall be referenced in a note.

8. Zoning dimensional and density requirements are as follows:

Required:	Provided:
a. Zoning district _____ sub-district _____	
b. Minimum lot size: _____ acres (sq. ft.)	
c. Minimum lot frontage: _____ ft.	
d. Minimum yard setbacks/build-to-lines:	
Front _____ft.	
Side _____ft.	
Rear _____ft.	
Abut-a-street _____ ft.	
e. Maximum/minimum lot coverage _____ %	
f. Minimum/maximum bldg. height _____ ft./stories	

These properties falls within the following zoning overlay districts: *(List districts)*

9. List any variances or special exceptions granted by the Zoning Board of Adjustment or Conditional Use Permits granted by the Planning Board for the subject parcels, including the case number and date of decision and any conditions.

10. Property line information has been obtained from a survey performed by *(surveyor)* on (*date*) with an error not greater than 1 in 10,000 (*or has been obtained from _____ Plan, prepared by (surveyor)*).

11. Subject parcels are (*are not*) located within a Federally designated flood hazard area (Community panel number 33017C0xxxD, Effective Date: September 30, 2015).

12. The subject parcels are served by municipal water and sewer (*or are served by on-site well and septic system*).

13. Basis of bearing is the City of Dover GIS system stations _____ and _____ which were used to determine location, orientation and vertical datum.

REMARKS:

_____

_____

_____

_____

_____

_____

_____

_____

City of Dover, New Hampshire
CONDITIONAL USE PERMIT APPLICATION

[Revision Date: October 19, 2020]

Office Use Only	Project #:		Date Received:	
	Amount Paid:		Time Received:	

APPLICANT AND OWNER INFORMATION

Name of Applicant: Stonearch Development Corp. Telephone # 1-978-375-3153

Address of Applicant: 42J Dover Point Road, Dover, NH 03820

E-Mail Address: oneillfamilydevelopment@gmail.com

Name of Property Owner (if different from applicant): Mulcah L., George T., Lutsk D. and Barnes D. Telephone #_____

Address of Property Owner: 245 N. Bend Drive, Manchester, NH 03104

Scrignuoli, Eugene A. & Donna L., 22 Sun Hawk Lane, Dover, NH

PROPERTY INFORMATION

Assessor's Map # E Lot(s) # 65-1 & 65-A

Address of Property: Between 53 & 65 Tolen & 22 Sun Hawk Lane

Zoning District(s) R20 Overlay District(s) Wetlands and Conservation

Existing Use of Property: Vacant Land and Single Family

CONDITIONAL USE PERMIT INFORMATION

Type of Conditional Use Permit (Check All That Apply):

☒ Conservation District	☐ RCM Use Overlay District	☐ Gateway District
☐ Groundwater Protection	☐ Off-Street Parking and Loading	☐ Alternative Treatment Center
☒ Wetland Protection District	☐ Central Business District	☐ Heritage Residential District

Describe Proposed Use or Activity That Requires Conditional Use Permit and Describe Any Impacts:

The project proposes two wetlands crossings, which require impacts to the 50' buffer on either side. The project also proposes impacts to 50' buffers for storm water systems. There are small areas of steep slope impacts to slopes over 20%.

List Any Associated State or Federal Permits That Have Been or Will Be Applied For and Indicate Their Status: NHDES Wetlands Permit, NHDES Alteration of Terrain Permit, NHDES Subsurface Permit, NHDES Shoreland Permit.

Name of Professional That Prepared Plans: Berry Surveying & Engineering

Address 335 Second Crown Point Road Barrington, NH 03825 Telephone #: 603-332-2863

Professional License #: PE 14243, LLS 805 E-mail address: Crberry@metrocast.net

SIGNATURES

I/We hereby submit this application to the City of Dover Planning Board and attest that to the best of my knowledge all of the information on this application form and in the accompanying application materials and documentation is true and accurate. As applicant or as agent, I attest that I am duly authorized to act in this capacity.

Signature of Property Owner: See Letters Date: 2-14-22

Signature of Applicant (if different from owner): _____ Date: _____

Signature of Agent: _____ Date: 2-9-22

AUTHORIZATION TO ENTER SUBJECT PROPERTY

I, and my successors, hereby authorize members of the Dover Planning Board, Planning Department and other pertinent City Departments and boards to enter my property for the purpose of evaluating this application, including performing inspections during the application phase, post-approval phase, construction phase and occupancy phase. It is understood that these individuals must use all reasonable care, courtesy, and diligence when on the property.

Signature of Property Owner: _____ Date: 2-14-22

BERRY SURVEYING & ENGINEERING
335 Second Crown Point Road
Barrington, NH 03825
Phone: (603) 332-2863
Fax: (603) 335-4623
www.BerrySurveying.Com
crberry@metrocast.net

February 14, 2022

City of Dover
Attention: Donna Benton Director of Planning and Community Development
288 Central Ave
Dover, NH 03820

Re: Proposed Open Space Cluster Subdivision
Stonearch Development Corp.
Tolend Road & Sun Hawk Lane, Dover, NH
Tax Map E, Lot 65-1 & 65-A

Dear Mrs. Benton,

On behalf of our client Stonearch Development Corp, Berry Surveying & Engineering (BS&E) is submitting a proposed Open Space Cluster Subdivision off Tolend Road and Sun Hawk Lane.

Background and General Narrative:

Stonearch Development Corp. is under agreement to purchase Tax Map E, Lot 65-1 and a portion of 65-A. Lot 65-1 is off from Tolend Road and 65-A is off from Sun Hawk Lane. BS&E has conducted a full boundary survey of both parcels of land which included a topographic survey as well as a wetlands survey. John P. Hayes CWS and CSS conducted an on the ground wetlands analysis of both parcels as well as a site-specific soils map. The site generally slopes from Tolend Road to the Cochecho River. There are slopes that exceed 20% and intermingling wetlands areas. There are no vernal pools or streams on the project site.

The Proposal:

The site is located within the R-20 Zone with a wetlands overlay district as well as the conservation overlay district due to steep slopes and proximity to the Cochecho River. The project proposes to construct 30 duplex buildings (60 units) using the Open Space Subdivision (OSS) (cluster method) where the applicant conducts a yield plan to generate the maximum yield of the parcel using the underlying conventional zoning, and then designs a subdivision using the flexibility found within the OSS. The underlying Zone now permits duplex units to be constructed on lots that contain 30,000 SF of suitable upland and 18,000 SF of area outside of the wetlands buffer. Each of the lots within the yield plan contain these requirements generating a total yield of 30 duplex structures or 60 units. 58 of the units will be built and either sold or

operated by Stonearch Development Corp. while units 59 and 60 will be in a duplex off the end of Sun Hawk Lane and will be retained by the current land owner. A re-configured lot will be provided around that new structure and the existing house will be removed.

After meeting with the planning department, it was determined that keeping as much open space internal to the project adjacent to the wetlands areas, in close proximity to the abutters and connected to the Cochecho River was preferred. This keeps the larges un-interrupted area of open space and protects uplands and wetlands which feed the river. The lot lines will be revised on site and then subdivided to create the open space areas required for the project as well as areas that are proposed to be transferred to the City of Dover. In addition to the required open space in the OSS, the applicant has designed the project to allow a large portion of uplands to the east to be transferred to the City as well as land within 100' of the Cochecho. There is an existing trail adjacent to the river and generally within the 100' setback from the river. However, in some cases the trail extends outside the 100' and the area to be transferred is increased to ensure the trail is encompassed within the proposed transfer. There are other easements granted along the river which connect this trail with other parcels to the east and west. A connection is being proposed from the project site to the open space with three parking spaces to encourage public use.

Theodore Drive is proposed to be the major access into the subdivision, which extends down to a cul-de-sac behind the existing home on Lot 65-A. The home on 65-A is proposed to be removed and replaced in a modified location in a duplex form off the end of Sun Hawk Lane. A fire access road is proposed off Theodore Drive shown as Sun Hawk Extension to allow for a second means of egress in the event of an emergency. A gate with a knox box is proposed with only a small section off Theodore being paved. It will be the responsibility of the applicants to keep the fire access road open and clear to Sun Hawk Lane during all seasons.

The project proposes bituminous curbing and sidewalks throughout, whereas there is walkable infrastructure on Tolend Road, and the internal project is designed to be walkable. There are various passive and active recreational areas scattered throughout the project.

The proposal includes municipal water service to each structure. Sewer is handled with small force mains as well as gravity mains to pump systems, which then lift effluent to the effluent disposal areas throughout the project site. Tanks are proposed for each building so that problems can be isolated to each if needed. The pump systems are proposed to dual alternating to dose each geo mat field on an alternating basis. Power utility is proposed to be underground throughout with the potential need for a drop pole. The plans have been submitted to Eversource for a final design and a letter to serve. Lamps shown on site are proposed to be solar.

The stormwater from the proposal flows to various basins and discharged to one of 4 rain gardens for attenuation and treatment. Peak rates for each analysis point are reduced with volumetric flows being held to the Alteration of Terrain (AoT) standard for channel flow protection. Rain Gardens are the preferred method for treatment on this site over Gravel

Wetlands due to size considerations and integration into the existing and proposed landscape. The ponds are designed at strategic low points in the project, which in some instances are either within the 50' wetlands buffer or require a small disturbance for outlet elevation considerations. Due to these locations, the flexibility in design is needed to reduce impacts within these areas. None of the basins within the project are equipped with deep sumps or hoods due to wild life concerns, and therefore forebays are proposed on each pond device. Other considerations for wild life include:

- Where basins are proposed with grass lined areas (limited) a bee hive grate is proposed to reduce the likely hood of entrapment.
- Outlet structures within the ponds do not have sumps, and the rim of the structure is held 9" above the surrounding grade, to prevent climbing.
- Culverts are either over sized within wetlands crossings with a 6" bury depth or are proposed to be box culverts with simulated bottoms. Culverts within crossings are proposed to be reinforced concrete pipes, which is the preferred method by NH Fish and Game.
- Stabilization matting is proposed to be Bio-Net which is a natural product with no plastic components.
- Siltation controls are proposed to be mulch berm and silt sox which have no plastic components.
- Low lighting is proposed on the structures and roadway systems to prevent spill into buffers and wetlands areas.
- Known state wide species of concern are included in the plan set with a small piece of educational instruction to aid the contractor in the event of contact.

The project does propose conditional use permits within the 50' wetlands buffers and a small amount of steep slope disturbance. The wetlands buffer disturbance has been minimized using steep slopes, retaining features, and general avoidance and minimization methods. The steep slope disturbance on units 19-22 will be reduced or removed on future designs as well as the disturbance currently shown on EDA #2.

The project requires the following Local Approvals:

- Lot Line Revision
- Subdivision
- Site Review
- Waiver Request for the entrance road grade and 40' OSS buffer.

BERRY SURVEYING & ENGINEERING
335 Second Crown Pt. Rd., Barrington, NH 03825
(603) 332-2863 / (603) 335-4623 FAX
www.BerrySurveying.Com

The project requires the following State and Federal Approvals:

- NHDES Wetlands Permit
- Army Corps. Permit under the PGP
- NHDES AoT Permit
- NHDES Subsurface Permit
- NHDES Shoreland Permit
- NHDES Water Systems
- EPA Notice of Intent and SWPPP

Respectfully Submitted,
BERRY SURVEYING & ENGINEERING

Christopher R. Berry SIT, Project Manager
Principal, President

BERRY SURVEYING & ENGINEERING
335 Second Crown Pt. Rd., Barrington, NH 03825
(603) 332-2863 / (603) 335-4623 FAX
www.BerrySurveying.Com

b. Strict conformity to the regulations would pose an unnecessary hardship to the applicant.

Requiring the applicant meet the grading requirement would increase the disturbance and filling required at the wetlands crossing. This would also increase the fill required in the two wetlands buffers for the crossing in and out of the wetlands.

Identification of Waiver Request: Required 100' buffer that fronts existing public roadways per Dover Subdivision 157-21F.

- Proposed grading within the front 40' perimeter buffer as required in the OSS.

2. Explanation:

The applicant is proposing to construct a roadway into the subject property to gain access to productive upland areas, on the back side of a small wetlands area which will need to be crossed. Given the need to demonstrate minimization and avoidance within the disturbance area of not only the wetlands, but also the wetlands buffers, the narrowest crossing was chosen which also has the best topographic advantage.

The design is careful to balance the required 40' perimeter needs with the environmental impacts. The proposed roadway (pavement) was set to 40' from the closest corner point of the abutting land owner on Tax Map E, Lot 65-B, so that the area of impact within the 40' is only side slope grading. Additionally, to mitigate the proposed tree removal adjacent to the boundary line, the proposal is to install a staggering row of White Spruce Trees, to increase the screening against the roadway. It is important to point out that the existing abutting structure is 178' away from the impact area to the buffer and is 8' higher in elevation, with a large platform between the two. With the provided buffer and these existing topographic attributes, the impact area will not be viewed by the abutting land owner. The remainder of the 40' buffer along the western edge of Lot 65-B is respected.

3. Waiver Justification:

a. Granting the waiver will properly carry out the purpose and intent of the regulations.

The purpose of the 40' buffer is to reduce the impact on the most abutting land owners. In this case, granting the waiver with the mitigation proposed will carry out the purpose and intent of the regulation.

b. Strict conformity to the regulations would pose an unnecessary hardship to the applicant.

Requiring the applicant to not disturb the 40' buffer would increase to the environmental impact of the project without increasing the benefit of the 40' buffer given the mitigation proposed along with the topographic relief between the existing structure on Lot 65-B and the proposed impact area.

Respectfully Submitted,
BERRY SURVEYING & ENGINEERING

Christopher R. Berry, SIT Project Manager
Principal, President

Kevin Poulin, EIT
Project Engineer

BERRY SURVEYING & ENGINEERING
335 Second Crown Point Road
Barrington, NH 03825
Phone: (603) 332-2863
Fax: (603) 335-4623
www.BerrySurveying.Com

Fiscal Analysis of Yield Plan

For

River Side Estates
Tax Map E, Lots 65-1 & 65-A
Tolend Road

Stonearch Development Corp.
42J Dover Point Road
Dover, NH 03820

Prepared By

Berry Surveying & Engineering
335 Second Crown Point Road
Barrington, NH 03825
603-332-2863

File Number
DB2020-107

The yield plan provides for 30 total duplex lots. The proposed road for the yield plan is 4,200 linear feet to the back side of each cul-de-sac and includes the connection to Sun Hawk with a fire access road. This roadway would have cuts and fills, as the does the development plan, curbing, sidewalk, and water utility. Septic systems would be placed on their own lots without the need to gravity sewer lines.

We have conducted an engineer's estimate on a roadway of this nature recently using the NHDOT weighted standard construction numbers and have found that a roadway and was confirmed by contractor bid and construction. The road contained the same utilities and cross sections which would be required to build the enclosed yield plan. Water utilities and onsite effluent disposal systems. The proposed yield plan would require sidewalk and curbing which would add to the price of the road comparison above. The cost per foot is assumed to be $650.00 a linear foot.

Acquisition Cost: $900,000
4,200.00 feet of Road with full utilities @ $650.00 a linear foot: $2,730,000
Engineering: $180,000.00

Total Approximate cost to build the Yield Plan = $2,910,900
Total number of Lots/Units = 30
Total cost per unit = $97,030

The retail price in Dover at the moment for lots is approximately $175,000.00 with no price adjustment for the available duplex units assumed. It is important to point out that the developers of this project are also the builders of the proposed homes.

Respectfully submitted,
Berry Surveying & Engineering

Christopher R. Berry
Principal, President

BERRY SURVEYING & ENGINEERING
335 Second Crown Point Road
Barrington, NH 03825
Phone: (603) 332-2863
Fax: (603) 335-4623
www.BerrySurveying.Com

February 11, 2022

Re: Project Design
Tolend Road & Sun Hawk Lane
Dover, NH

To whom it may concern:

We, Deborah Lutsk, Delores Silva, Timothy George, and Lisa Mulcahy, co owners, authorize any member of Berry Surveying & Engineering to represent the us as the agent to a project located in Dover, off Sun Hawk Lane and Tolend Road. This includes any and all, Local, State and Federal Approval needed to final approval of the project.

Deborah Lutsk _____ Dated: 2/11/22

Delores Silva Delores Barnes Dated: 2-11-22

Timothy George _____ Dated: 2-11-22

Lisa Mulcahy _____ Dated: 2-11-22

BERRY SURVEYING & ENGINEERING
335 Second Crown Point Road
Barrington, NH 03825
Phone: (603) 332-2863
Fax: (603) 335-4623
www.BerrySurveying.Com

February 11, 2022

Re: Project Design
Tolend Road & Sun Hawk Lane
Dover, NH

To whom it may concern:

We, Deborah Lutsk, Delores Silva, Timothy George, and Lisa Mulcahy, co owners, authorize any member of Berry Surveying & Engineering to represent the us as the agent to a project located in Dover, off Sun Hawk Lane and Tolend Road. This includes any and all, Local, State and Federal Approval needed to final approval of the project.

Deborah Lutsk _____ Dated: _____

Delores Silva Delores Barnes Dated: 2.11.22

Timothy George _____ Dated: _____

Lisa Mulcahy _____ Dated: _____

BERRY SURVEYING & ENGINEERING
335 Second Crown Point Road
Barrington, NH 03825
Phone: (603) 332-2863
Fax: (603) 335-4623
www.BerrySurveying.Com

February 11, 2022

Re: Project Design
Tolend Road & Sun Hawk Lane
Dover, NH

To whom it may concern:

We, Deborah Lutsk, Delores Silva, Timothy George, and Lisa Mulcahy, co owners, authorize any member of Berry Surveying & Engineering to represent the us as the agent to a project located in Dover, off Sun Hawk Lane and Tolend Road. This includes any and all, Local, State and Federal Approval needed to final approval of the project.

Deborah Lutsk _____ Dated: _____

Delores Silva Delores Barnes Dated: 2.11.22

Timothy George Timothy George Dated: 2.11.22

Lisa Mulcahy _____ Dated: _____

BERRY SURVEYING & ENGINEERING
335 Second Crown Point Road
Barrington, NH 03825
Phone: (603) 332-2863
Fax: (603) 335-4623
www.BerrySurveying.Com

February 11, 2022

Re: Project Design
Tolend Road & Sun Hawk Lane
Dover, NH

To whom it may concern:

We, Deborah Lutsk, Delores Silva, Timothy George, and Lisa Mulcahy, co owners, authorize any member of Berry Surveying & Engineering to represent the us as the agent to a project located in Dover, off Sun Hawk Lane and Tolend Road. This includes any and all, Local, State and Federal Approval needed to final approval of the project.

Deborah Lutsk _____ Dated: 2.11.22

Delores Silva Delores Barnes Dated: 2.11.22

Timothy George _____ Dated: 2.11.22

Lisa Mulcahy _____ Dated: _____

FRONT ELEVATION

SCALE: 1/4" = 1'-0"

LEFT ELEVATION

SCALE: 1/4" = 1'-0"

REAR ELEVATION

SCALE: 1/4" = 1'-0"

RIGHT ELEVATION

SCALE: 1/4" = 1'-0"

StoneArch Development

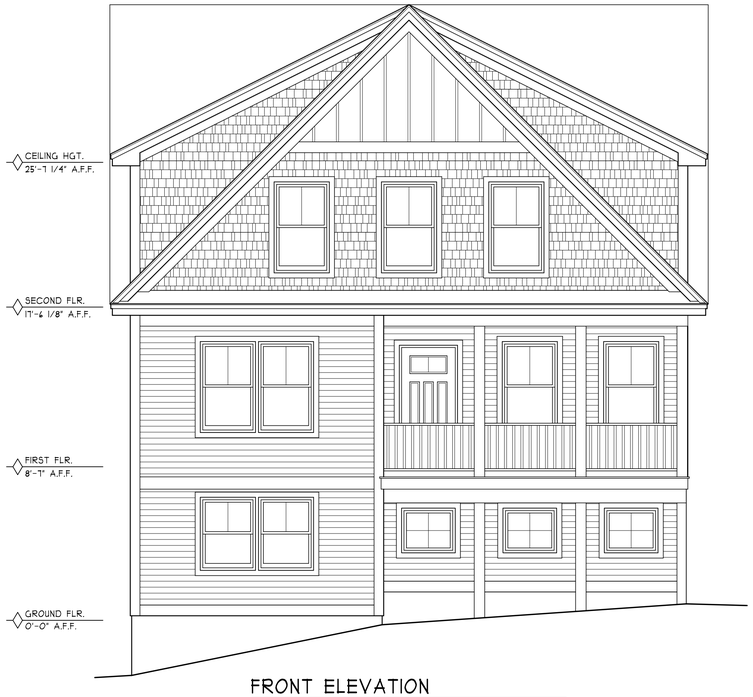
REVISIONS

NO.	DATE	REVISION
1	1/12/22	PROPOSED ELEVATIONS ISSUED FOR REVIEW.

PROPOSED ELEVATIONS

DUPLEX - UNITS 1 & 2
TOLEND ROAD
DOVER, NEW HAMPSHIRE

A-1



FRONT ELEVATION

SCALE: 1/4" = 1'-0"

LEFT ELEVATION

SCALE: 1/4" = 1'-0"

REAR ELEVATION

SCALE: 1/4" = 1'-0"

RIGHT ELEVATION

SCALE: 1/4" = 1'-0"

StoneArch Development

REVISIONS

NO.	DATE	REVISION
1	1/12/22	PROPOSED ELEVATIONS ISSUED FOR REVIEW.

PROPOSED ELEVATIONS

DUPLEX - UNITS 1 & 8
TOLEND ROAD
DOVER, NEW HAMPSHIRE

FRONT ELEVATION

SCALE: 1/4" = 1'-0"

LEFT ELEVATION

SCALE: 1/4" = 1'-0"

REAR ELEVATION

SCALE: 1/4" = 1'-0"

RIGHT ELEVATION

SCALE: 1/4" = 1'-0"

StoneArch Development

REVISIONS

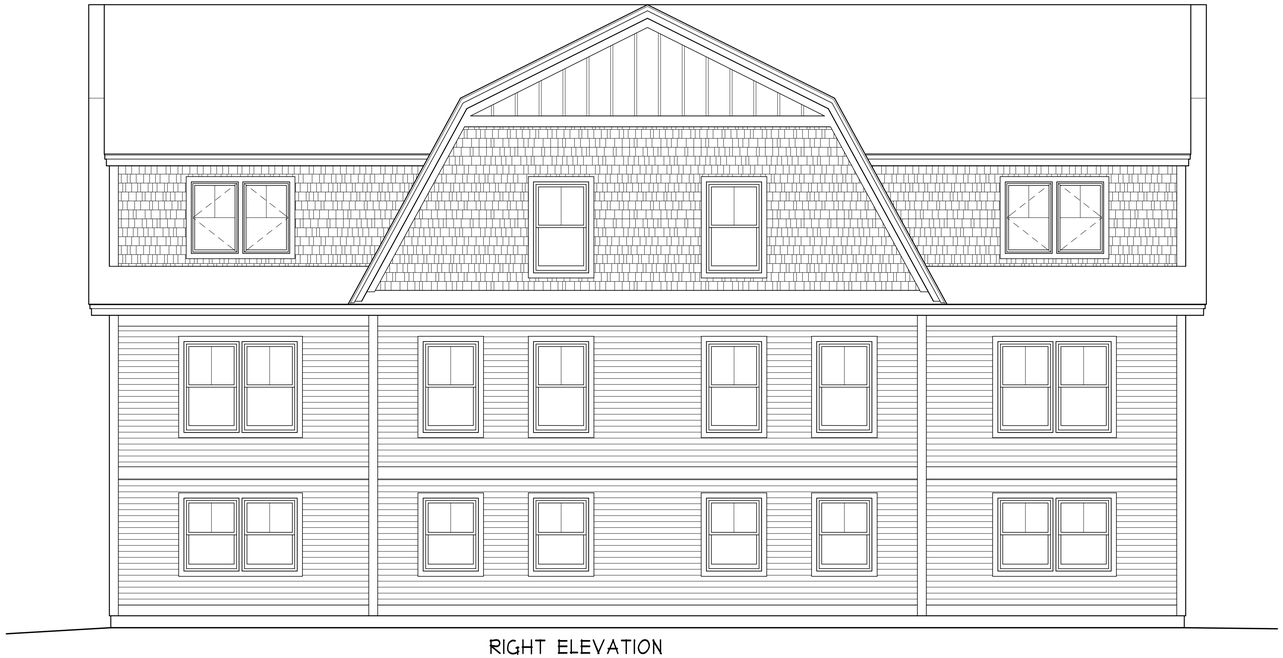
NO.	DATE	REVISION
1	1/12/22	PROPOSED ELEVATIONS ISSUED FOR REVIEW.

PROPOSED ELEVATIONS

DUPLEX - UNITS 27 & 28
TOLEND ROAD
DOVER, NEW HAMPSHIRE

FRONT ELEVATION

SCALE: 1/4" = 1'-0"



RIGHT ELEVATION

SCALE: 1/4" = 1'-0"

REAR ELEVATION

SCALE: 1/4" = 1'-0"

LEFT ELEVATION

SCALE: 1/4" = 1'-0"

StoneArch Development

REVISIONS

NO.	DATE	REVISION
1	1/12/22	PROPOSED ELEVATIONS ISSUED FOR REVIEW.

PROPOSED ELEVATIONS

DUPLEX - UNITS 13 & 14
TOLEND ROAD
DOVER, NEW HAMPSHIRE

RIVER SIDE ESTATES
OPEN SPACE CLUSTER SUBDIVISION
DUPLEX DEVELOPMENT
FOR
STONEARCH DEVELOPMENT CORP.
TOLEND ROAD
DOVER, N.H.
TAX MAP E, LOTS 65-1 & 65-A

TABLE OF CONTENTS:

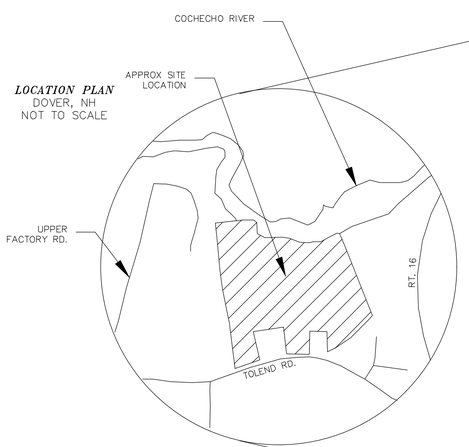
SHEET 1	~ NEIGHBORHOOD PLAN
SHEET 2	~ NOTES AND LEGEND PLAN
SHEET 3	~ LEGEND PLAN
SHEET 4	~ BOUNDARY PLAN
SHEETS 5-9	~ EXISTING CONDITIONS PLANS
SHEETS 10-16	~ SITE SPECIFIC SOILS MAP
SHEET 17	~ YIELD PLAN
SHEET 18	~ LOT LINE REVISION PLAN
SHEET 19-20	~ SUBDIVISION PLANS
SHEET 21	~ PHASING PLAN
SHEETS 22-26	~ SITE PLANS
SHEETS 27-34	~ GRADING & DRAINAGE PLANS - P&P
SHEETS 35-39	~ GRADING & DRAINAGE PLANS - UNIT PADS
SHEETS 40-44	~ STORMWATER BMP PLANS
SHEETS 45-46	~ EROSION & SEDIMENT CONTROL PLANS
SHEETS 47-58	~ UTILITY PLANS
SHEETS 59-64	~ GEOMAT EDA PLANS
SHEETS 65-68	~ LANDSCAPING PLANS
SHEET 69	~ LIGHTING PLAN
SHEETS 70-76	~ CROSS SECTION PLANS
SHEETS 77-78	~ ROADWAY ACCESS / SIGHT DISTANCE PLANS
SHEETS 79-82	~ TRUCK TURNING PLANS
SHEETS 83-84	~ DEWATERING PLANS
SHEETS 85-86	~ EROSION & SEDIMENT CONTROL DETAILS (E-101 - E-102)
SHEETS 87-89	~ CONSTRUCTION DETAILS (C-101 - C-103)
SHEETS 90-91	~ DRAINAGE DETAILS (D-101 - D-102)
SHEETS 92-95	~ UTILITY DETAILS (U-101 - U-104)
SHEET 96	~ LANDSCAPING DETAILS (L-101)
SHEET 97	~ WILDLIFE IDENTIFICATION PLAN (W-101)

1.) OWNER LOT 65-1: D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY
245 N BEND DRIVE
MANCHESTER, NH 03104

2.) OWNER LOT 65-A: EUGENE A. & DONNA L., SGRIGNUOLI
22 SUN HAWK LANE
DOVER, NH 03820

APPLICANT: STONEARCH DEVELOPMENT CORP.
42J DOVER POINT ROAD
DOVER, NH 03820

LOCATION PLAN
DOVER, NH
NOT TO SCALE



SURVEYOR OF RECORD: KENNETH A. BERRY, PE, LLS
CPSWQ, CPESC, CESSWI
BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825
(603) 332-2863

ENGINEER OF RECORD: KENNETH A. BERRY, PE, LLS
CPSWQ, CPESC, CESSWI
BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825
(603) 332-2863

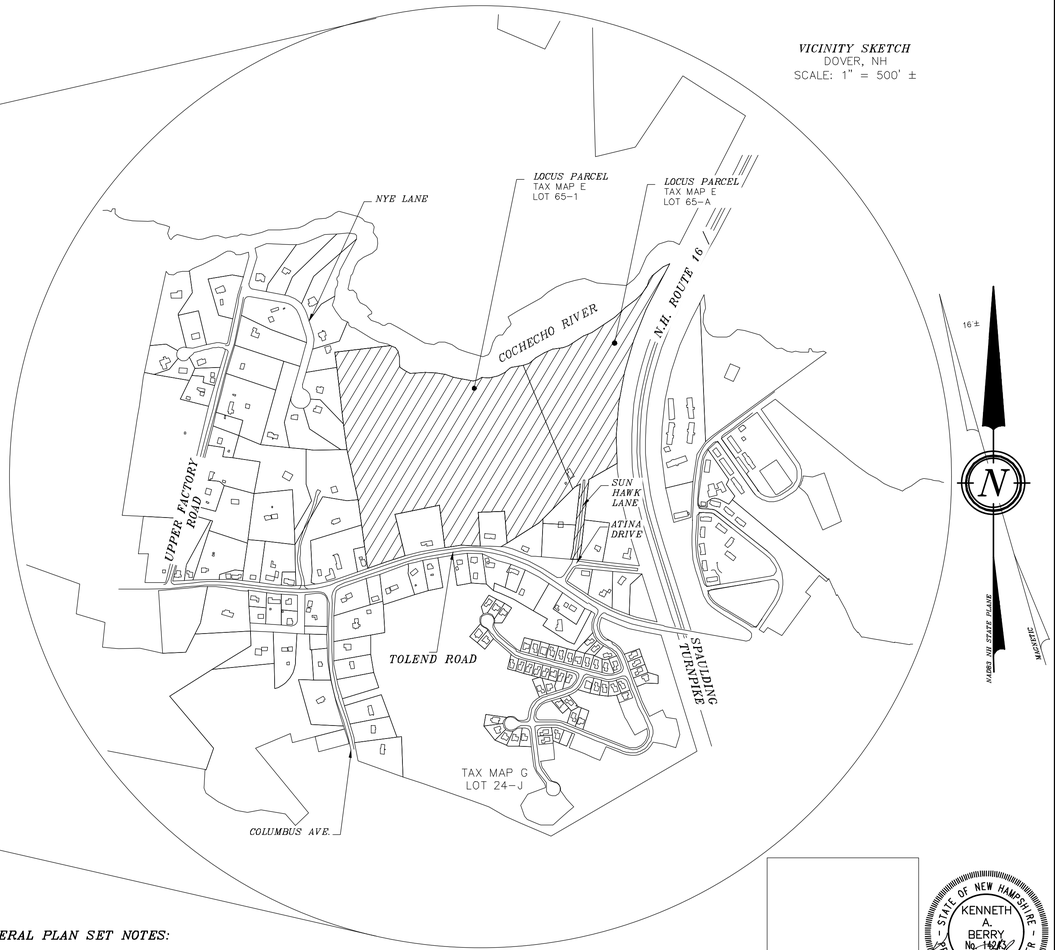
WETLAND SCIENTIST: JOHN P. HAYES III, CWS
7 LIMESTONE WAY
NORTH HAMPTON, NH 03862
(603) 776-5825

SOIL SCIENTIST: JOHN P. HAYES III, CWS
7 LIMESTONE WAY
NORTH HAMPTON, NH 03862
(603) 776-5825

WILDLIFE CONSULTANT: FRAGGLE ROCK ENVIRONMENTAL
DAMON BURT, CWS
38 GARLAND ROAD
STRAFFORD, NH 03884
603-969-5574

ARCHAEOLOGICAL CONSULTANT: MONADNOCK ARCHAEOLOGICAL
CONSULTING LLC.
ROBERT G. GOODBY, Ph.D
144 GREENWOOD ROAD
DUBLIN, NH 03444

VICINITY SKETCH
DOVER, NH
SCALE: 1" = 500' ±



NOTE:

BERRY SURVEYING & ENGINEERING HAS PREPARED AN INSPECTION & MAINTENANCE MANUAL AS PART OF THIS PROJECTS DOCUMENTATION. ALL USERS ARE BOUND TO THIS DOCUMENT AS PART OF THE APPROVAL OF THE PLANNING BOARD. COPIES OF THE YEARLY INSPECTIONS ARE TO BE DELIVERED TO THE CITY OF DOVER COMMUNITY SERVICES DEPARTMENT.

REVISION	DATE	DESCRIPTION

OPEN SPACE SUBDIVISION
LAND OF
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY &
EUGENE A. & DONNA L. SGRIGNUOLI
TOLEND ROAD
DOVER, N.H.
TAX MAP E, LOT 65-1 & 65-A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : AS SHOWN
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 - 107

STATE OF NEW HAMPSHIRE — No. 805 — KENNETH A. BERRY — LICENSED LAND SURVEYOR
SIGNATURE

WHETHER OR NOT OTHERWISE EXPRESSLY RECITED ON THIS SITE PLAN, THE SITE PLAN APPROVAL GRANTED IS CONDITIONED ON FAITHFUL AND DILIGENT ADHERENCE BY THE OWNER/SUBDIVIDER/DEVELOPER OF ALL TERMS, CONDITIONS, PROVISIONS AND SPECIFICATIONS OF THE CITY OF DOVER LAND SITE PLAN REGULATIONS AS AMENDED OR AS MAY LATER BE AMENDED, IN EFFECT ON THE DATE OF APPROVAL, UNLESS OR EXCEPT INSOFAR AS EXPRESSLY WAIVED, IN ANY PARTICULAR, BELOW. NON - ADHERENCE MAY RESULT IN A REVOCATION OF APPROVAL. ANY VARIATION FROM THE APPROVED PLAN WILL REQUIRE A RESUBMISSION FOR SITE PLAN APPROVAL.

REQUIRED PERMITS:

~ NHDES SHORELAND IMPACT PERMIT	(NOT YET SUBMITTED)
~ NHDES ALTERATION OF TERRAIN PERMIT	(NOT YET SUBMITTED)
~ NHDES SUBSURFACE SEPTIC PERMIT	(NOT YET SUBMITTED)
~ NATURAL HERITAGE BUREAU	(NHB20-2562)
~ NH DIVISION OF HISTORICAL RESOURCES	(PENDING)
~ NOTICE OF INTENT	(NOT YET SUBMITTED)
~ EVERSOURCE WORK NUMBER	7773758

GENERAL PLAN SET NOTES:

1.) 11x17" PLANS ARE HALF THE PUBLISHED SCALE.

2.) ALL PLANS ARE CONSIDERED TO BE NOT FOR CONSTRUCTION UNLESS THEY CONTAIN THE APPROVAL STAMP OF THE CITY OF DOVER.

APPROVED DOVER

STATE OF NEW HAMPSHIRE — KENNETH A. BERRY No. 14042 — LICENSED PROFESSIONAL ENGINEER

ABUTTERS WITHIN 200':

1. N/F SICARD, RHONDA J. & BASTINELLI, GREGORY
14 ATINA WAY
DOVER, NH 03820
TAX MAP E, LOT 74
S.C.R.D. BOOK 4505, PAGE 898

2. N/F SUNDSTROM, SCOTT A. & AIMEE E.
8 ATINA WAY
DOVER, NH 03820
TAX MAP E, LOT 74-1
S.C.R.D. BOOK 3061, PAGE 364

3. N/F POMEROY, CAROLINE S.
56 DURHAM ROAD UNIT 48
DOVER, NH 03820
TAX MAP E, LOT 74-B
S.C.R.D. BOOK 4805, PAGE 138

4. N/F FINN, CAROL ANNE
10 SUNHAWK LANE
DOVER, NH 03820
TAX MAP E, LOT 74-C
S.C.R.D. BOOK 1598, PAGE 215

5. N/F CLOUGH, VERNON L. & OLGA
43 TOLEND ROAD
DOVER, NH 03820
TAX MAP E, LOT 74-D
S.C.R.D. BOOK 2703, PAGE 371

6. N/F BSTANDIG, MARTHA A. REV. TRUST
BSTANDIG, MARTHA A. TRUSTEE
53 TOLEND ROAD
DOVER, NH 03820
TAX MAP E, LOT 65-B
S.C.R.D. BOOK 4639, PAGE 921

7. N/F GEORGE, DOUGLAS A.
65 TOLEND ROAD
DOVER, NH 03820
TAX MAP E, LOT 65
S.C.R.D. BOOK 3953, PAGE 464

8. N/F FORBES, DONALD W. & LINDA R.
181 OLD FIELDS ROAD
SOUTH BERWICK, ME 03908
TAX MAP E, LOT 64
S.C.R.D. BOOK 1906, PAGE 249

9. N/F MAXON FAMILY TRUST
MAXON, THOMAS & PATRICIA, TRUSTEES
40 BALDPATE ROAD
GEORGETOWN, MA 01833
TAX MAP E, LOT 67-G
S.C.R.D. BOOK 4018, PAGE 118

10. N/F MONE, FLORENCE & KEVIN
1 MONES FOLLY
DOVER, NH 03820
TAX MAP E, LOT 67-G-1
S.C.R.D. BOOK 1240, PAGE 44

ABUTTERS WITHIN 200':

11. N/F MARTEL, PAUL J.
P.O. BOX 182
DOVER, NH 03821
TAX MAP E, LOT 67-3
S.C.R.D. BOOK 1433, PAGE 200

12. N/F THIBAULT, DANIEL JACOB
40 NYE LANE
DOVER, NH 03820
TAX MAP E, LOT 49-9
S.C.R.D. BOOK 4631, PAGE 150

13. N/F BERGSTROM, EVA K. & EDDINS, KURT
38 NYE LANE
DOVER, NH 03820
TAX MAP E, LOT 49-8
S.C.R.D. BOOK 4499, PAGE 734

14. N/F CHAKRAVARTY, DILIP & MITALI
11411 RUNNING BEAR COURT
BELTSVILLE, MD 20705
TAX MAP E, LOT 49-7
S.C.R.D. BOOK 3988, PAGE 795

15. N/F BRODERICK, BRIDGET
26 NYE LANE
DOVER, NH 03820
TAX MAP E, LOT 49-6
S.C.R.D. BOOK 4034, PAGE 254

16. N/F RICHBURG, NORMAN R. & BETSY J.
22 NYE LANE
DOVER, NH 03820
TAX MAP E, LOT 49-5
S.C.R.D. BOOK 3999, PAGE 266

17. N/F ROBIDAS, ZACKERY
71 UPPER FACTORY ROAD
DOVER, NH 03820
TAX MAP E, LOT 57-1
S.C.R.D. BOOK 4449, PAGE 106

18. N/F CHAGNON, MICHAEL C. & KRISTINE E.
69 UPPER FACTORY ROAD
DOVER, NH 03908
TAX MAP E, LOT 57
S.C.R.D. BOOK 2203, PAGE 519

19. N/F MILLER, JASON S. & CHRISTINE S.
94 TOLEND ROAD
DOVER, NH 03820
TAX MAP C, LOT 24-A
S.C.R.D. BOOK, 3077, PAGE 1

20. N/F SMITH THAYER FAMILY REV. TRUST
SMITH, TRAVIS K. & THAYER, MEGAN TRUSTEES
88 TOLEND ROAD
DOVER, NH 03820
TAX MAP C, LOT 24-C
S.C.R.D. BOOK, 4347, PAGE 303

ABUTTERS WITHIN 200':

21. N/F GERVAIS, ANDREW TODD
80 TOLEND ROAD
DOVER, NH 03820
TAX MAP C, LOT 24-M
S.C.R.D. BOOK 4250, PAGE 900

22. N/F ROBERTSON, JAMES M. & LINDA S.
78 TOLEND ROAD
DOVER, NH 03820
TAX MAP C, LOT 24-L
S.C.R.D. BOOK 2611, PAGE 738

23. N/F ROBERTS, MEREDITH
74 TOLEND ROAD
DOVER, NH 03820
TAX MAP C, LOT 24-P
S.C.R.D. BOOK 4542, PAGE 440

24. N/F WYNDBROOK AT DOVER HOMEOWNERS ASSOCIATION
P.O. BOX 1685
DOVER, NH 03821
TAX MAP C, LOT 24-I
S.C.R.D. BOOK 4359, PAGE 116

25. N/F DAMON, TIMOTHY JAMES & CATHERINE E.
64 TOLEND ROAD
DOVER, NH 03820
TAX MAP C, LOT 24-C
S.C.R.D. BOOK 4228, PAGE 316

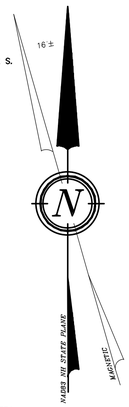
26. N/F WILLIAMS, THOMAS R. & CAROLYN E.
60 TOLEND ROAD
DOVER, NH 03820
TAX MAP C, LOT 24-B
S.C.R.D. BOOK 2073, PAGE 290

27. N/F KEEFE, PATRICIA
54 TOLEND ROAD
DOVER, NH 03820
TAX MAP C, LOT 24-H
S.C.R.D. BOOK 1484, PAGE 700

28. N/F BEAN, BONNIE E, & CITAK, TERESA
48 TOLEND ROAD
DOVER, NH 03820
TAX MAP C, LOT 24-E
S.C.R.D. BOOK 4438, PAGE 210

29. N/F KEEFE, VERNA S. & RICHARD E.
3 ATINA WAY
DOVER, NH 03820
TAX MAP C, LOT 24
S.C.R.D. BOOK 1112, PAGE 441

30. N/F JOHNSTON, JEFFERY A,
15 TOLEND ROAD
DOVER, NH 03820
TAX MAP C, LOT 24-1
S.C.R.D. BOOK 4567, PAGE 361



GIS SKETCH
DOVER, NH
SCALE: 1" = 300' ±

SIGN ID NUMBER	SIGN SIZE (WIDTH x HEIGHT)	SIGN	TEXT DIMENSIONS	NO. OF SIGNS	BACKGROUND	LEGEND	BORDER	POST SIZE & QUANTITY
R1-1	30"x30"	STOP	SEE STANDARD HIGHWAY SIGNS 2004 EDITION PUBLISHED BY USDOT – FHWA	2	RED	WHITE	WHITE	U-CHANNEL (2)
R2-1	24"x30"	SPEED LIMIT 25	SEE STANDARD HIGHWAY SIGNS 2004 EDITION PUBLISHED BY USDOT – FHWA	3	WHITE	GREEN	GREEN	U-CHANNEL (3)
R6-1R	36"x12"	ONE WAY	SEE STANDARD HIGHWAY SIGNS 2004 EDITION PUBLISHED BY USDOT – FHWA	2	BLACK W/ WHITE ARROW	BLACK	WHITE	U-CHANNEL (2)
R8-31	24"x30"	NO PARKING FIRE LANE	SEE STANDARD HIGHWAY SIGNS 2004 EDITION PUBLISHED BY USDOT – FHWA	1	WHITE	BLACK	BLACK	U-CHANNEL (1)
W14-2	30"x30"	NO OUTLET	SEE STANDARD HIGHWAY SIGNS 2004 EDITION PUBLISHED BY USDOT – FHWA	2	YELLOW	BLACK	BLACK	U-CHANNEL (2)
	24"x12"	THEODORE DRIVE (PVT)	SEE STANDARD HIGHWAY SIGNS 2004 EDITION PUBLISHED BY USDOT – FHWA	1	GREEN	WHITE	GREEN	U-CHANNEL (1)
	24"x12"	LIAM DRIVE (PVT)	SEE STANDARD HIGHWAY SIGNS 2004 EDITION PUBLISHED BY USDOT – FHWA	1	GREEN	WHITE	GREEN	U-CHANNEL (1)
R5-1	30"x30"	DO NOT ENTER	SEE STANDARD HIGHWAY SIGNS 2004 EDITION PUBLISHED BY USDOT – FHWA	2	RED	WHITE	WHITE	U-CHANNEL (2)
W3-1	30"x30"		SEE STANDARD HIGHWAY SIGNS 2004 EDITION PUBLISHED BY USDOT – FHWA	2	YELLOW	BLACK W/RED SYMBOL	BLACK	U-CHANNEL (2)
W1-2L	30"x30"		SEE STANDARD HIGHWAY SIGNS 2004 EDITION PUBLISHED BY USDOT – FHWA	2	YELLOW	BLACK W/RED SYMBOL	BLACK	U-CHANNEL (2)
W1-2R	30"x30"		SEE STANDARD HIGHWAY SIGNS 2004 EDITION PUBLISHED BY USDOT – FHWA	2	YELLOW	BLACK W/RED SYMBOL	BLACK	U-CHANNEL (2)
RL-100	12"x12"		SEE STANDARD HIGHWAY SIGNS 2004 EDITION PUBLISHED BY USDOT – FHWA	1	BROWN	WHITE	WHITE	U-CHANNEL (1)

SIGN ID NUMBER	SIGN SIZE (WIDTH x HEIGHT)	SIGN	TEXT DIMENSIONS	NO. OF SIGNS	BACKGROUND	LEGEND	BORDER	POST SIZE & QUANTITY
	4"x4"	CITY OF DOVER WETLAND BUFFER	SEE STANDARD HIGHWAY SIGNS 2004 EDITION PUBLISHED BY USDOT – FHWA	TBD IN FIELD	GREEN	WHITE	WHITE	U-CHANNEL OR TREE
	4"x4"	BIO-RETENTION SYSTEM	SEE STANDARD HIGHWAY SIGNS 2004 EDITION PUBLISHED BY USDOT – FHWA	4	GREEN	WHITE	WHITE	U-CHANNEL (3)

REVISION	DATE	DESCRIPTION

NEIGHBORHOOD PLAN
LAND OF
D. LUTSK, D. BARNES, T. GEORGE & L. MULCAHY &
EUGENE A. & DONNA L. SGTIGNOULI
TOLEND ROAD
DOVER, N.H.
TAX MAP E, LOT 65-1 & 65-A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : AS SHOWN
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 – 107

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14243
LICENSED
PROFESSIONAL ENGINEER

SITE PLAN NOTES:

1.) OWNER LOT 65-1: D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY
245 N BEND DRIVE
MANCHESTER, NH 03104

OWNER LOT 65-A: EUGENE A. & DONNA L., SGRIGNUOLI
22 SUN HAWK LANE
DOVER, NH 03820

1a.) APPLICANT: STONE ARCH DEVELOPMENT CORP.
42J DOVER POINT ROAD
DOVER, NH 03820

2.) LOT OF RECORD: TAX MAP E, LOT 65-1
TAX MAP E, LOT 65-A

3.) LOT AREA LOT 65-1: 1,388,409 Sq. Ft., 31.87 Ac. +/- AREA FROM PROPOSED LOT LINE REVISION: 1,824,109 Sq. Ft., 41.88 Ac. +/-
LOT AREA LOT 65-A: 544,070 Sq. Ft., 12.49 Ac. +/- AREA FROM PROPOSED LOT LINE REVISION: 110,839 Sq. Ft., 2.54 Ac. +/-

4.) S.C.R.D. BOOK 4918, PAGE 158
S.C.R.D. BOOK 1571, PAGE 86

5.) ZONING: (R-20) LOW DENSITY:

	PROVIDED:
MIN. FRONTAGE ~ 125'	177.85' & 266.94' (LOT 65-A 65.86' NO CHANGE)
MIN. LOT SIZE ~ 20,000 Sq. Ft. SINGLE FAMILY	N/A
MIN. LOT SIZE ~ 30,000 Sq.Ft., TWO FAMILY	DUPLEXES PROPOSED AS AN OSS CLUSTER SEE BELOW
FRONT BUILD-TO ~ 20' - 35'	OSS PROPOSED SEE BELOW
REAR SETBACK ~ 30'	SEE BELOW
SIDE SETBACK ~ 20'	SEE BELOW
WETLANDS BUFFER ~ 50.0'	50.0'
MAX. BUILDING HEIGHT: 35'	35'
MAX. LOT COVERAGE: 30%	53,940 SF (3.0%) LOT 65-1, 3,469 SF (3.1%) LOT 65-A (FUNCTION OF LLR)
OPEN SPACE SUBDIVISION (OSS)	
15 Ac. MINIMUM	41.88 Ac
MIN. LOT SIZE ~ 12,000 Sq. Ft.,	CLUSTER PROVIDED WITH NO LOT LINES
MIN. FRONTAGE ~ 30'	NO SPECIFIC FRONTAGE PROVIDED IN CLUSTER FORMAT
MIN. BUFFER ALONG FRONTAGE ~ 100'	100' (CURB CUT EXCEPTED)
STREET SIDE ~ 15'	VARIES 15' MIN.
BETWEEN UNITS ~ 25'	VARIES 25' MIN.
MIN. DISTANCE TO ABUTTING STRUCTURES ~ 75'	BETWEEN 235' AND 238' TO THE CLOSEST ABUTTING STRUCTURE TO A PROPOSED STRUCTURE
	88' FROM CLOSEST STRUCTURE TO PROPOSED THEODORE DRIVE.
MIN. DISTANCE TO EXTERNAL BOUNDARIES ~ 40'	18' AT THE CLOSEST FOR ROAD CONSTRUCTION. WAIVER REQUESTED
CONSERVATION OVERLAY DISTRICT:	
COCHECHO RIVER ~ 100'	
STEEP SLOPES LARGER THEN 2,000 Sq.Ft., IN SIZE	

6.) I HEREBY CERTIFY THAT, TO THE BEST OF MY KNOWLEDGE & BELIEF, A PORTION OF THIS PARCEL DOES FALL WITHIN THE FLOOD PLAIN FLOOD HAZARD. REF.: FEMA COMMUNITY #330145, MAP #33017C0310E, DATED: SEPTEMBER 30, 2015.

7.) VERTICAL DATUM BASED ON NAVD88 ELEVATIONS. HORIZONTAL DATUM BASED ON NAD83 STATE PLANE. COORDINATES GATHERED USING CARLSON BRX7 SURVEY GRADE GPS RECEIVERS.

8.) THE BOUNDARY LINES SHOWN ON THIS PLAN ARE THE RESULT OF A CLOSED TRAVERSE PERFORMED BY THIS OFFICE IN WINTER OF 2020, WITH NO SNOW CONDITIONS, WITH AN ERROR OF CLOSURE BETTER THAN 1 PART IN 10,000.

9.) TOPOGRAPHY WAS CONDUCTED BY ON THE GROUND SURVEY DURING NO SNOW CONDITIONS IN 2021 AND IS PROVIDED AT 2' CONTOUR INTERVALS ON EXISTING CONDITIONS PLANS AND 1' CONTOUR INTERVALS ON GRADING AND DRAINAGE PLANS

10.) LIST ANY VARIANCES OR SPECIAL EXCEPTIONS GRANTED BY THE ZONING BOARD OF ADJUSTMENT OR CONDITIONAL USE PERMITS GRANTED BY THE PLANNING BOARD FOR THE PROPOSED USE OR STRUCTURE:
NONE KNOWN

11.) WETLANDS WERE DELINEATED BY JOHN P. HAYES, CERTIFIED WETLANDS SCIENTIST, IN ACCORDANCE WITH CHAPTER 170-27.1 OF THE ZONING ORDINANCE, IN WINTER OF 2020.

12.) AS-BUILT PLANS OF THE SITE PLAN SHALL BE SUBMITTED ON PAPER AND IN DIGITAL FORMAT AUTOCAD DWG, AUTOCAD DXF OR ESRI FORMAT TO THE CITY OF DOVER ENGINEER'S OFFICE UPON COMPLETION OF PROJECT IF A STREET IS PROPOSED FOR CITY ACCEPTANCE. AS-BUILT PLANS SHALL BE PREPARED AND CERTIFIED CORRECT BY A L.L.S. OR P.E. DIGITAL FILES SHALL BE GEO-REFERENCED TO NEW HAMPSHIRE STATE PLANE COORDINATES NAD83 AND SHALL BE EXPRESSED IN FEET.

13.) THE INSTALLATION OF ELECTRIC POWER, CABLE TELEVISION AND TELEPHONE LINES SHALL BE UNDERGROUND THROUGHOUT THE SITE FOR WHICH DEVELOPMENT IS PROPOSED. ONE DROP POLE MAY BE REQUIRED. COORDINATION WITH EVERSOURCE IS REQUIRED. SEE COVER SHEET FOR WORK ORDER NUMBER

14.) THE SUBJECT PARCEL IS SERVED BY MUNICIPAL WATER AND ONSITE SEWAGE DISPOSAL THROUGH THE USE OF EFFLUENT DISPOSAL AREAS.

15.) ALL CONSTRUCTION SHALL CONFORM WITH THE STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION (NHDOT) "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION" AND WITH THE CITY OF DOVER COMMUNITY SERVICES REGULATIONS AND STANDARD SPECIFICATION FOR CONSTRUCTION. THE MORE STRINGENT SPECIFICATION SHALL APPLY.

16.) ALL EROSION CONTROL NOTES SHALL INCLUDE PROVISIONS FOR CONSTRUCTION SEQUENCING, TEMPORARY EROSION CONTROL MEASURES, AND PERMANENT STANDARDS SUCH AS LOAM SPREAD RATE FOR DISTURBED AREAS, RATES OF LIME, TYPE AND RATES FOR FERTILIZER, AND SEED AND MULCH MIXTURE WITH RATES OF APPLICATION.

17.) THE LIMITS OF CONSTRUCTION DISTURBANCE THAT ARE LOCATED IN OR WITHIN THE 50 FT. OF CONSERVATION AND WETLAND DISTRICTS SHALL BE STAKED WITH 4' GRADE STAKES, FLAGGED AND CLEARLY IDENTIFIED PRIOR ANY EARTH DISTURBING ACTIVITY OCCURS. WETLAND FLAGS ARE TO BE REFRESHED IN THE FIELD PRIOR TO THE START OF CONSTRUCTION. WETLAND PLACARDS ARE REQUIRED TO BE INSTALLED IN AREAS WHERE DEVELOPMENT HAS THE POTENTIAL TO CREEP INTO THE BUFFER ZONES. SEE THE SITE PLANS FOR REQUIRED LOCATIONS. PLACARDS SHOULD BE INSTALLED AFTER CONSTRUCTION AN PRIOR TO CERTIFICATE OF OCCUPANCY OF THE FIRST BUILDING IN THE FIRST PHASE.

18.) ALL TREATMENT SWALES TO BE CONSTRUCTED SHALL HAVE SOD BOTTOMS.

19.) A LETTER OF CREDIT FOR THE COST OF RE-VEGETATING ALL DISTURBED AREAS ON THE SITE SHALL BE SUBMITTED, AND THE APPROVED CONSTRUCTION SIGN INSTALLED PRIOR TO ANY EARTH DISTURBING ACTIVITY OCCURS. THE PROPOSED PROJECT WILL CONSIST OF TWO PHASES AND WILL DISTURB 479,500 Sq.Ft. 11.01 Ac.

20.) A PRE-CONSTRUCTION CONFERENCE WITH THE DEVELOPER, THE DESIGN ENGINEER, THE EARTHWORK CONTRACTOR AND THE CITY ENGINEER SHALL OCCUR PRIOR TO ANY EARTH DISTURBING ACTIVITY.

21.) SITE CONSTRUCTION HOURS SHALL BE LIMITED TO MONDAY-FRIDAY 7 AM-6 PM, SATURDAY 8 AM - 4 PM NO SUNDAY HOURS. NO FEDERAL HOLIDAYS. HOURS OF CONSTRUCTION MUST BE DOCUMENTED ON A SITE CONSTRUCTION SIGN ALONG WITH THE CONTACT INFORMATION FOR THE GENERAL CONTRACTOR. SAID SIGNAGE MUST BE LOCATED AND APPROVED BY THE CITY ENGINEER OR ASSISTANT CITY MANAGER.

22.) BUILDING ADDRESSES SHALL BE ASSIGNED BY THE BUILDING OFFICIAL AT THE TIME OF ISSUANCE OF A BUILDING PERMIT.

23.) THE PROPOSED USE IS FOR 29 DUPLEX BUILDINGS (58 UNITS) AND ONE EXISTING HOUSE, TO BE CONVERTED TO A DUPLEX TO A TOTAL OF 60 UNITS.

24.) THE FOLLOWING FEDERAL AND STATE PERMITS HAVE BEEN ISSUED FOR THE SUBJECT PROPERTY:

NHDES SHORELAND PROTECTION	(NOT YET SUBMITTED)
NHDES SUBSURFACE SEPTIC PERMIT	(NOT YET SUBMITTED)
NHDES ALTERATION OF TERRAIN PERMIT	(NOT YET SUBMITTED)
US EPA NOI & SWPPP	(NOT YET SUBMITTED)
NATURAL HERITAGE BUREAU	(PENDING)
NH DIVISION OF HISTORICAL RESOURCES	(PENDING)
EVERSOURCE WORK ORDER NUMBER	6288326

25.) COMMERCIAL VEHICLE ROUTE DURING CONSTRUCTION SHALL CONFORM TO DOVER CITY CODE OR BE COORDINATED WITH THE COMMUNITY SERVICES DIRECTOR.

26.) ANY RETAINING WALL TALLER THAN FOUR FEET (4') REQUIRES ISSUANCE OF A BUILDING PERMIT FROM INSPECTION SERVICES.

27.) ANY FENCE TALLER THAN SEVEN FEET (7') REQUIRES THE ISSUANCE OF A BUILDING PERMIT FROM INSPECTION SERVICES.

28.) APPLICANT SHALL COMPLETE LAND USE DEVELOPMENT TRACKING FORM, MOST RECENTLY REVISED VERSION, UTILIZING THE ONLINE POLLUTION TRACKING AND ACCOUNTING PILOT PROJECT (PTAPP) PORTAL.

29.) THE OWNER OF RECORD SHALL RECORD AT THE REGISTRY OF DEEDS DOCUMENTATION SUFFICIENT TO PROVIDE NOTICE TO ALL PERSONS/ENTITIES THAT MAY ACQUIRE ANY PROPERTY SUBJECT TO THE REQUIREMENTS AND RESPONSIBILITIES DESCRIBED IN THE APPROVED STORMWATER MANAGEMENT PLAN. THE NOTICE SHALL COMPLY WITH THE APPLICABLE REQUIREMENTS FOR RECORDING CONTAINED IN RSA 477 AND 478. THE NOTICE NEED NOT SET FORTH THE REQUIREMENTS AT LENGTH, SO LONG AS IT IS SUFFICIENT TO PROVIDE NOTICE TO PROSPECTIVE PURCHASERS TO THE REQUIREMENTS FOR MAINTENANCE AND REPORTING.

30.) FIRE DEPARTMENT ACCESS ROAD SHALL BE INSTALLED AND MAINTAINED TO SUPPORT THE IMPOSED LOADS OF FIRE APPARATUS IN ALL WEATHER CONDITIONS AT ALL TIMES. THE SECONDARY ACCESS PROVIDED TO SUN HAWK LANE WILL BE CONSTRUCTED AS PART OF PHASE 1 AND WILL BE COMPLETED TO A PASSABLE STATUS PRIOR TO THE ISSUANCE OF THE WOOD PORTION OF A BUILDING PERMIT IN THE FIRST PHASE. A GATE WITH A KNOX BOX WILL BE CONSTRUCTED ALONG THE ACCESS ROAD. SPRINKLES ARE NOT REQUIRED FOR THE DUPLEXES IN THIS PROJECT.

31.) EXTERIOR LIGHTING SHALL BE CUT-OFF TYPE FIXTURES PER CHAPTER 153-14-E AND SHALL PROVIDE LIGHTING DIRECTED ON-SITE ONLY.

32.) A SECURITY SYSTEM SHALL BE INSTALLED AS REQUIRED BY CHAPTER 45, ARTICLE I, SECTION 45-2 OF THE CODE OF THE CITY OF DOVER IF REQUIRED IN A DUPLEX.

33.) APPROVED BACKFLOW PREVENTERS SHALL BE PROVIDED FOR THE DOMESTIC WATER LINES.

34.) THE PROPOSED STRUCTURE SHALL BE SERVED BY A SPRINKLER SYSTEM AS REQUIRED BY CHAPTER 81- 30 OF THE CODE OF THE CITY OF DOVER AND THE ADOPTED STATE OF NH BUILDING AND FIRE CODES. NOT APPLICABLE TO THIS PROJECT.

35.) LAMP BASES ARE TO BE A MINIMUM OF 3' OFF THE EDGE OF PAVEMENT AND PAINTED A NEUTRAL COLOR.

36.) FIRE DEPARTMENT CONNECTION(S) SHALL BE LOCATED ON THE STREET SIDE OF THE BUILDING PER NFPA 13. ACCESS TO THE FDC SHALL MAINTAIN A CLEAR AND UNOBSTRUCTED PATH AT ALL TIMES. NOT APPLICABLE TO THIS PROJECT.

37.) THE SITE LAYOUT IS DESIGNED IN COMPLIANCE WITH APPLICABLE ACCESSIBILITY REGULATIONS. THE PROPOSED STRUCTURE WILL BE ALSO BE DESIGNED IN ACCORDANCE WITH APPLICABLE ACCESSIBILITY REGULATIONS IN THE IRC (NONE KNOWN) AND NH RSA 155-A:5.

SITE PLAN NOTES CONTINUED:

38.) THE EXISTING STRUCTURE ON TAX MAP E, LOT 65-A WILL BE REMOVED AND REBUILT IN A MODIFICATION AS A DUPLEX STRUCTURE. A NEW SEPTIC SYSTEM WILL BE DESIGNED AND PLACED FOR THAT EFFORT.

39.) PRIVATE TRASH PICKUP WILL BE USED THROUGH THE USE OF TOTERS FOR BOTH THE DUPLEX UNITS.

40.) WRITTEN DIMENSION ON THIS PLAN TAKE PRECEDENCE OVER SCALED DIMENSIONS. THE CONTRACTOR SHALL USE CAUTION WHEN SCALING REPRODUCED PLANS. IN THE EVENT OF A CONFLICT BETWEEN THIS PLAN SET AND ANY OTHER DRAWINGS AND/OR SPECIFICATIONS, THE ENGINEER SHALL BE NOTIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. CONTRACTOR IS TO CONFIRM ALL ELEVATIONS. CONFLICTS WILL BE REPORTED TO THE DESIGN ENGINEER PRIOR TO CONSTRUCTION.

41.) THERE IS CLEAR SITE DISTANCE IN BOTH THE EAST AND WEST DIRECTIONS AT THE EXISTING ENTRANCE OF THEODORE DRIVE ONTO TOLEND ROAD.

GRADING NOTES:

42.) CONTRACTOR SHALL TAKE SPECIAL CARE IN NOT DISTURBING EXISTING MONUMENTS BOUNDS, AND OR BENCHMARKS WITHOUT FIRST MAKING PROVISIONS FOR RELOCATION.

43.) THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO LOCATE EXACTLY AND TO PRESERVE ANY AND ALL UNDERGROUND UTILITIES CALL "DIG-SAFE" 1-888-DIGSAFE (344-7233) AT LEAST 72 HOURS BEFORE COMMENCING CONSTRUCTION

44.) WHERE AN EXISTING UNDERGROUND UTILITY IS FOUND TO CONFLICT WITH THE PROPOSED WORK, THE LOCATION, ELEVATION AND SIZE OF THE UTILITY SHALL BE ACCURATELY DETERMINED WITHOUT DELAY BY THE CONTRACTOR, AND THE INFORMATION FURNISHED TO THE ENGINEER FOR RESOLUTION OF THE CONFLICT.

45.) THE CONTRACTOR SHALL MAKE ALL ARRANGEMENTS FOR THE ALTERATION AND ADJUSTMENT OF GAS, ELECTRIC, TELEPHONE AND ANY OTHER PRIVATE UTILITIES BY THE UTILITY COMPANIES.

46.) AREAS OUTSIDE THE LIMITS OF PROPOSED WORK DISTURBED BY THE CONTRACTOR'S OPERATIONS SHALL BE RESTORED BY THE CONTRACTOR TO THEIR ORIGINAL CONDITION AT THE CONTRACTOR'S EXPENSE. LIMIT OF GRADING SHOULD NOT BE EXPANDED WITHOUT CONSULTING THE DESIGN ENGINEER. SEE ALSO E&SC PLAN.

47.) THE TERM "PROPOSED" (PROP.) MEANS WORK TO BE CONSTRUCTED USING NEW MATERIALS, OR, WHERE APPLICABLE, RE-USING EXISTING MATERIALS IDENTIFIED AS "REMOVE & RESET" (R & R).

48.) ALL SYMBOLS, WORDS, TRANSVERSE MARKINGS (STOP BARS, CROSSWALK LINES, AND RAILROAD SYMBOLS), LANE LINES, AND ALL OTHER MARKINGS NOTED WITH "T" SHALL BE THERMOPLASTIC.

49.) ALL DISTURBED AREAS NOT DESIGNATED TO BE PAVED SHALL HAVE LOAM PLACED AND SEEDED. THE LOAM SHALL HAVE A MINIMUM DEPTH OF 4 INCHES AND SHALL BE PLACED FLUSH WITH THE TOP OF THE ADJACENT CURB, EDGING, BERM OR PAVEMENT SURFACE.

50.) ALL ELEVATIONS TO BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. THE DESIGN ENGINEER IS TO BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCY. TEMPORARY BENCHMARKS (T.B.M.) ARE TO BE PROVIDED BY THE DESIGN ENGINEER.

51.) UPON FINAL COMPLETION AND 85% STABILIZATION THE DRAINAGE SYSTEM IS TO BE CLEANED OF ALL DEBRIS TO INCLUDE THE PUMPING OF THE BASINS. SEE SHEET E102, DETAIL E18 FOR DEFINITION OF STABLE.

52.) ALL DRAINAGE PIPE IS TO BE HDPE N-12. INDIVIDUAL PIPE SIZES ARE SPECIFIED, RECYCLED PIPE IS APPROVED FOR PROJECT SITE. RECYCLED HDPE PIPE "GREEN PIPE" IS ACCEPTABLE FOR THIS PROJECT SITE.

53.) ALL BASINS AND DRAINS ARE PROPOSED WITH NO SUMPS OR HOODS. BASINS WITHIN ANY GRASS LINED AREAS OUTSIDE THE ROADWAY WILL HAVE "BEE HIVE" GRATES TO NOT ALLOW FOR ENTRAPMENT OF ANIMALS IN THE STRUCTURE. OUTLET CONTROL STRUCTURES WILL NOT HAVE SUMPS. IF REQUIRED TO BE INSTALLED DURING THE PRE-CASTING PROCESS THEY ARE TO BE FILLED WITH FLOWABLE FILL. BASINS ARE TO HAVE NH STANDARD FRAMES AND GRATES MADE IN NORTH AMERICA. PLEASE NOTE SOME GRATES ARE SPECIALIZED FOR THE LOCATION AND USE AND ARE CALLED OUT ON THE GRADING PLANS. GRATES ARE TO BE INSTALLED BINDER FLUSH PRIOR TO BASE PAVE. UPON PROJECT COMPLETION FRAMES AND GRATES ARE TO BE CUT AND RIM RAISED TO FINAL PAVEMENT SURFACE. THIS IS TO ENSURE STORWATER ENTERS THE SYSTEM AS DESIGN DURING THE INTERIM CONSTRUCTION PERIOD.

54.) SEE DETAILS CONCERNING SITE LAYOUT, DRAINAGE, UTILITY, AND SEDIMENT AND EROSION CONTROLS.

UTILITY NOTES:

55.) UNDERGROUND UTILITY LOCATIONS ARE BASED UPON BEST AVAILABLE EVIDENCE AND ARE NOT FIELD VERIFIED. LOCATING AND PROTECTING ANY ABOVE AND BELOW GROUND UTILITIES IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR. ANY UTILITY CONFLICTS SHOULD BE REPORTED IMMEDIATELY TO THE DESIGN ENGINEER.

56.) PROTECTION OF SUBGRADE: THE CONTRACTOR SHALL BE REQUIRED TO MAINTAIN STABLE, DE-WATERED SUBGRADES, TRENCHES, AND OTHER AREAS DURING CONSTRUCTION. SUBGRADE DISTURBANCE MAY BE INFLUENCED BY EXCAVATION METHODS, MOISTURE, PRECIPITATION, GROUNDWATER CONTROL, AND CONSTRUCTION ACTIVITIES. THE CONTRACTOR SHALL TAKE PRECAUTIONS TO PREVENT SUBGRADE DISTURBANCE. SUCH PRECAUTIONS MAY INCLUDE DIVERTING STORMWATER RUNOFF AWAY FROM CONSTRUCTION AREAS, REDUCING TRAFFIC IN SENSITIVE AREAS, AND MAINTAINING AN EFFECTIVE DEWATERING PROGRAM. SOILS EXHIBITING HEAVING OR INSTABILITY SHALL BE OVER EXCAVATED TO MORE COMPETENT BEARING SOIL AND REPLACED WITH FREE DRAINING STRUCTURAL FILL MEETING THE ENGINEERS SPECIFIC RECOMMENDED CRITERIA.

57.) IF THE EARTHWORK IS PERFORMED DURING FREEZING WEATHER (NOT ALLOWED IN CITY R.O.W.), EXPOSED SUBGRADES ARE SUSCEPTIBLE TO FROST. NO FILL OR UTILITIES SHALL BE PLACED ON FROZEN GROUND. THIS WILL LIKELY REQUIRE REMOVAL OF A FROZEN SOIL CRUST AT THE COMMENCEMENT OF EACH DAY'S OPERATION. THE FINAL SUBGRADE ELEVATION WOULD ALSO REQUIRE AN APPROPRIATE DEGREE OF INSULATION AGAINST FREEZING.

58.) PLACEMENT OF BORROW MATERIALS SHALL BE PERFORMED IN A MANNER THAT PREVENTS LONG TERM DIFFERENTIAL SETTLEMENT. EXCESSIVELY WET MATERIALS SHALL BE STOCKPILED AND ALLOWED TO DRAIN BEFORE PLACEMENT. FROZEN MATERIAL SHALL NOT BE USED FOR CONSTRUCTION. VOIDS BETWEEN STONES AND CLUMPS OF MATERIAL SHALL BE FILLED WITH FINE MATERIALS.

59.) FINAL UTILITY LOCATIONS TO BE COORDINATED BETWEEN THE CONTRACTOR, ALL APPROPRIATE UTILITY COMPANIES AND THE DOVER DPW.

60.) CONTRACTOR TO CONTACT DOVER DPW A MINIMUM OF TWO WEEKS PRIOR TO ANY CONSTRUCTION TO COORDINATE ALL WORK CONCERNING INSTALLATION OF ANY PROPOSED WATER LINE IMPROVEMENTS.

61.) ALL WATER MAIN AND SERVICE INSTALLATIONS SHALL CONFORM TO CITY OF DOVER STANDARDS. ALL HIGHWAY CONSTRUCTION WILL MEET THE CITY OF DOVER STANDARDS.

62.) CONTRACTOR SHALL COORDINATE ALL ELECTRICAL INSTALLATIONS WITH EVERSOURCE AT (800) 662-7764. ALL ELECTRIC CONDUIT INSTALLATION SHALL BE INSPECTED BY EVERSOURCE PRIOR TO BACKFILL. A 48-HOUR MINIMUM NOTICE IS REQUIRED.

63.) CONTRACTOR SHALL COORDINATE ALL TELECOMMUNICATIONS INSTALLATIONS WITH FAIRPOINT COMMUNICATIONS AT (603) 427-5525.

64.) THE APPLICANT IS ABLE TO MAKE LIKE CHANGES TO PRODUCTS SO LONG AS THE DESIGN ENGINEER APPROVES THAT THEY MEET THE DESIGN INTENT. THE DESIGN ENGINEER IS TO NOTE THE PROPOSED PRODUCT CHANGE AND SEND REQUEST FOR REVIEW TO THE CITY ENGINEER AND OR PLANNING DEPARTMENT AS MY BE APPLICABLE.

65.) CONTRACTOR SHALL COORDINATE ALL CABLE INSTALLATIONS WITH COMCAST.

66.) PROPANE GAS UTILITY WITH ONSITE BURIED TANKS IS PROPOSED.

67.) ALL SEWER MAN HOLE RIMS & COVERS ARE TO BE NH STANDARD AND MADE IN NORTH AMERICA.

68.) ALL WATER SERVICES ARE TO BE WITNESSED WITH A 2"X4" PAINTED BLUE. ALL SEWER SERVICES ARE TO BE WITNESSED WITH A 2"X4" PAINTED YELLOW, IS STUBBED PRIOR TO BUILDING CONSTRUCTION.

69.) CURB BOXES SHOULD BE PLACED IN THE LAWN AREA, OR IF PLACED IN PAVEMENT, A ROAD BOX IS REQUIRED.

70.) SEE EXISTING CONDITIONS PLAN FOR DATUM. VERTICAL DATUM BASED ON NAVD88 ELEVATIONS. HORIZONTAL DATUM BASED ON NAD83 STATE PLANE COORDINATES GATHERED USING CARLSON BRX7 SURVEY GRADE GPS.

71.) MINIMUM SLOPE FOR ALL SEWER SERVICE CONNECTIONS IS TO BE NO LESS THAN 0.0104'/' PER THE NHDES DESIGN MANUAL. DUE TO THE INTRODUCTION OF THE SEPTIC TANKS ONLY EFFLUENT IS PROPOSED IN THE SEWER MAIN AND PUMP STATIONS.

72.) ALL SEWER INSTALLATIONS SHALL CONFORM TO THE REQUIREMENTS OF NHDES & DOVER DPW SEWER DIVISION STANDARDS. ALL PVC SEWER PIPE IS TO CONFORM WITH ENV-WQ 704.05 (c)-(e) FOR SDR 35 GRAVITY SEWER PIPE, CONFORM WITH ENV-WQ 704.08 FOR SDR 21 / 11 / 9 FORCE MAIN PRESSURE PIPE, AND CONFORM WITH ASTM D3034. PVC JOINT SEALS SHALL CONFORM WITH ASTM D3121. THE FORCE MAIN SHALL BE TESTED IN ACCORDANCE WITH ENV-WQ 704.09.

73.) CONTRACTOR TO TRANSFER TEMPORARY BENCHMARK TO A SUITABLE BENCHMARK TO CONTROL CONSTRUCTION. ANY ELEVATION DISCREPANCIES ARE TO BE REPORTED TO THE THE DESIGN ENGINEER IMMEDIATELY.

74.) ALL SEWER AND WATER CROSSINGS ARE TO MAINTAIN A 1.5' OF SEPARATION. OTHERWISE, 2" RIGID INSULATION WILL BE REQUIRED.

75.) IF DIGGING UNDER EXISTING AC WATER MAIN OCCURS, FLOWABLE FILL IS REQUIRED FOR PIPE SUPPORT.

EROSION CONTROL AND SEDIMENTATION NOTES:

76.) UPON FINAL COMPLETION AND 85% STABILIZATION, THE DRAINAGE SYSTEM IS TO BE CLEANED OF ALL DEBRIS. SEDIMENT CONTROL PRACTICES REMOVED AND DISPOSED OF PROPERLY, AND ANNUAL MAINTENANCE PREFORMED ON ALL DRAINAGE PRACTICES.

77.) NOTE THAT THE PROJECT IS SUBJECT TO THE EPA NPDES PHASE II. THE NOTICE OF INTENT (NOI) MUST BE FILED ALONG WITH A STORMWATER POLLUTION PREVENTION PLAN (SWPPP). EROSION AND SEDIMENT CONTROL INSPECTIONS TO BE CONDUCTED ONCE PER EVERY SEVEN DAYS AND AT AN INCREASED FREQUENCY INCLUDING WITHIN 24-HOURS OF A 0.25 INCH RAIN EVENT. INSPECTIONS TO BE CONDUCTED BY A "QUALIFIED PERSON" AS DEFINED BY EPA CGP 4.1.1 AND INSPECTION REPORTS SUBMITTED TO THE CITY OF DOVER, NH, ENGINEERING DEPARTMENT WITHIN 24 HOURS IN ACCORDANCE WITH CGP 4.1.7 AND MAINTAINED BY THE OWNER FOR A PERIOD OF THREE YEARS AFTER THE PROJECT IS COMPLETED. SEE ALSO CITY OF DOVER ADDITIONAL INSPECTION REQUIREMENTS BELOW.

78.) SILT FENCE MAY BE SUBSTITUTED WITH FILTREXX SILT SOXX OR EROSION CONTROL MIX BERM. SILT FENCE IS NOT A SUBSTITUTE FOR FILTREXX SILT SOXX OR APPROVED EQUAL.

79.) CITY OF DOVER: IN ACCORDANCE WITH SITE PLAN REVIEW REGULATIONS (149-14) THE FOLLOWNG STORMWATER MEASURES ARE REQUIRED.

A.) ALL PROPOSED BMPs WILL CONFORM TO THE NH STORMWATER MANUAL VOLUME 3.
B.) EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED PRIOR TO ANY SOIL LAND DISTURBANCE AND MUST BE REVIEWED AND APPROVED BY COMMUNITY SERVICE.
C.) TEMPORARY STABILIZATION MEASURES SHOULD BE IN PLACE WITHIN SEVEN CALENDAR DAYS FOR EXPOSED SOILS AREAS THAT ARE WITHIN ONE HUNDRED FEET OF A SURFACE WATER BODY OR A WETLAND AND NO MORE THAN 14 CALENDAR DAYS FOR ALL OTHER AREAS. PERMANENT STABILIZATION SHOULD BE IN PLACE WITHIN THREE CALENDAR DAYS FOLLOWING COMPLETION OF FINAL GRADING OF EXPOSED SOIL AREAS.
D.) ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE MAINTAINED IN FUNCTIONING CONDITION UNTIL FINAL STABILIZATION IS ACCOMPLISHED.
E.) COMMUNITY SERVICES DEPARTMENT OR THEIR DESIGNATED AGENT SHALL HAVE ACCESS TO THE SITE TO COMPLETE ROUTINE INSPECTIONS AND SHALL BE NOTIFIED 24-HOURS PRIOR TO INSTALLATION OF A STORMWATER BMP IN ORDER TO SCHEDULE AN INSPECTION, DURING NORMAL WORKING HOURS.
F.) THE PLANNING BOARD OR COMMUNITY SERVICES MAY REQUIRE THE DESIGN ENGINEER AND/OR AN INDEPENDENT, THIRD-PARTY INSPECTION AND OVERSIGHT OF THE CONSTRUCTION OF STORMWATER MANAGEMENT FACILITIES AND EROSION AND SEDIMENT CONTROL AT THEIR DISCRETION. THE OWNER / APPLICANT IS RESPONSIBLE FOR ALL FEES ASSOCIATED WITH INSPECTIONS.
G.) ALL SWPPP INSPECTIONS MUST BE CONDUCTED BY A QUALIFIED PROFESSIONAL SUCH AS A PROFESSIONAL ENGINEER (PE), A CERTIFIED PROFESSIONAL IN EROSION AND SEDIMENT CONTROL (PESC), A CERTIFIED EROSION SEDIMENT AND STORMWATER INSPECTOR (CESSWI), OR A CERTIFIED PROFESSIONAL IN STORMWATER QUALITY (CPSWQ). INSPECTION REPORTS WILL BE SUBMITTED TO THE COMMUNITY SERVICES DEPARTMENT.

EROSION CONTROL AND SEDIMENTATION NOTES CONTINUED

80.) PER EPA CGP 2.1.2.2 (INSTALL PERIMETER CONTROL), "YOU MUST INSTALL SEDIMENT CONTROLS ALONG THOSE PERIMETER AREAS OF YOUR SITE THAT WILL RECEIVE STORMWATER FROM EARTH DISTURBING ACTIVITIES." AS A RESULT OF SWPPP INSPECTIONS, THE CONTRACTOR MAY HAVE TO EXPAND PERIMETER CONTROLS TO MEET THIS REQUIREMENT. THE E&SC PLAN IS INITIAL GUIDANCE AS TO THE ANTICIPATED REQUIREMENTS AND IT THE CONTRACTORS RESPONSIBILITY TO ENSURE THAT STORMWATER VIOLATION DO NOT OCCUR.

81.) THE ENVIRONMENTAL MONITOR SHALL: (1) INSPECT THE PROJECT SITE AT LEAST ONCE EACH WEEK FROM THE START OF TERRAIN ALTERATION ACTIVITIES UNTIL ALL TERRAIN ALTERATION ACTIVITIES ARE COMPLETED AND THE SITE IS STABILIZED; (2) IN ADDITION TO REGULAR WEEKLY INSPECTIONS, INSPECT THE PROJECT SITE DURING ANY RAIN EVENT IN WHICH 0.5 INCH OF PRECIPITATION OR MORE FALLS WITHIN A 24 HOUR PERIOD, PROVIDED THAT IF THE ENVIRONMENTAL MONITOR IS UNABLE TO BE PRESENT DURING SUCH A STORM, THE MONITOR SHALL INSPECT THE SITE WITHIN 24 HOURS OF THE RAIN EVENT; (3) SUBMIT A WRITTEN REPORT, STAMPED BY A QUALIFIED ENGINEER OR A CPESC SPECIALIST, TO THE DEPARTMENT WITHIN 24 HOURS OF EACH INSPECTION THAT: A. DESCRIBES THE PROGRESS OF THE PROJECT, INCLUDING WHETHER ALL CONDITIONS OF THE PERMIT ARE BEING MET AND, IF NOT, WHICH REQUIREMENTS ARE NOT BEING MET; B. IF ANY REQUIREMENTS ARE NOT BEING MET, AN EXPLANATION OF THE CORRECTIVE ACTION(S) THAT WILL BE OR ARE BEING TAKEN TO BRING THE PROJECT INTO COMPLIANCE WITH APPLICABLE REQUIREMENTS AND THE DEADLINE BY WHICH SUCH ACTIONS WILL BE COMPLETED; AND C. INCLUDES PHOTOGRAPHS OF THE SITE THAT ARE REPRESENTATIVE OF THE PROJECT; AND (4) RETAIN A COPY OF THE REPORT PREPARED PURSUANT TO (3), ABOVE, ON-SITE FOR REVIEW DURING SITE INSPECTIONS BY FEDERAL, STATE, AND LOCAL OFFICIALS.

82.) CONTRACTOR IS REQUIRED TO HAVE A CONSTRUCTION ENTRANCE.

83.) CONTRACTOR IS RESPONSIBLE FOR SWEEPING THE PARKING LOT, SIDEWALKS AND ANYTHING DISTURBED, TO ENSURE THAT NO SEDIMENT IS BEING TRACKED ONTO CHESTNUT STREET OR FOURTH STREET.

84.) CONTRACTOR IS RESPONSIBLE FOR CLEANING AND MAINTAINING THE INLET PROTECTION ONCE INSTALLED.

85.) FUGITIVE DUST IS TO BE CONTROLLED THROUGHOUT THE CONSTRUCTION PROCESS IN ACCORDANCE WITH ENV-A 1000.

86.) CONTRACTOR IT TO MEET THE REQUIREMENTS SPECIFIED IN RSA 430:51-57 AND AGR 3800, RELATING TO INVASIVE SPECIES.

87.) CONTRACTOR IS RESPONS

ABBREVIATION LEGEND:

E.O.P.	EDGE OF PAVEMENT
S.G.C.	SLOPED GRANITE CURB
V.G.C.	VERTICAL GRANITE CURB
B.C.C.	BITUMINOUS CONCRETE CURB
A.C.P.	ASBESTOS CLAY PIPE
BITUM.	BITUMINOUS
E.S.H.W.T	ESTIMATE SEASONAL HIGH WATER TABLE
TYP.	TYPICAL
U.G.E	UNDER GROUND ELECTRIC / UTILITY
CLDI	CONCRETE LINED DUCTILE IRON
DI	DUCTILE IRON
U.D.	UNDER DRAIN
C.O.	CLEAN OUT
CMP	CORRUGATED METAL PIPE
INV.	INVERT
ELEV.	ELEVATION
F.E.S.	FLARED END SECTION
HDPE	HIGH DENSITY POLYETHYLENE
RCP	REINFORCED CONCRETE PIPE
RECB	ROLLED EROSION CONTROL BLANKET
F.G.	FINISHED GRADE
E.G.	EXISTING GRADE
E.T.W.	EDGE OF TRAVELED WAY
T.B.R.	TO BE REMOVED
PL	PROPERTY LINE
EL	EASEMENT LINE
CL	CENTER LINE
CF	CUBIC FEET
P.C.	POINT OF CURVATURE
P.T.	POINT OF TANGENCY
P.V.P.	POINT OF VERTICAL CURVE
P.V.I.	POINT OF VERTICAL INTERSECTION
P.V.T.	POINT OF VERTICAL TANGENCY
EX.	EXISTING
PROP.	PROPOSED
STA.	STATION
EDA	EFFLUENT DISPOSAL AREA
BMP	BEST MANAGEMENT PRACTICE
'/,	FEET / FEET
TP	TEST PIT

{ } SSL ( ) ~ {SIZE} SINGLE SOLID LINE (COLOR W=WHITE, Y=YELLOW)
{ } DSL ( ) ~ {SIZE} DOUBLE SOLID LINE (COLOR W=WHITE, Y=YELLOW)
{ } SSB ( ) ~ {SIZE} SINGLE SOLID W/ BROKEN LINE (COLOR W=WHITE, Y=YELLOW)
{ } SBL ( ) ~ {SIZE} SINGLE BROKEN LINE (COLOR W=WHITE, Y=YELLOW)
{ } DBL ( ) ~ {SIZE} DOUBLE BROKEN LINE (COLOR W=WHITE, Y=YELLOW)

EXISTING LEGEND:

- DRILL HOLE ~FND~
- IRON PIPE ~FND~
- IRON BOUND ~FND~
- ANGLE IRON ~FND~
- NHHB GRANITE BOUND ~FND~
- UTILITY POLE/GUY WIRE
- CB — CATCH BASIN (CB)
- TEST PIT
- LEDGE PROBE
- TEMPORARY BENCHMARK (T.B.M.)
- BLAZED/PAINTED TREE
- POORLY DRAINED JURISDICTIONAL WETLAND LINE
- BUILDING SETBACK LINE
- EASEMENT LINE
- WETLAND SETBACK 50' TO POORLY DRAINED
- STONE WALL
- STONE WALL REMAINS
- NRCS SOIL DELINEATION LINE
- SITE SPECIFIC SOIL LINE
- LIMIT OF SOIL SURVEY
- OHU — OVERHEAD UTILITIES LINE
- EXISTING DRAIN PIPE / CULVERT
- 242 — CONTOUR MINOR, EXISTING
- 240 — CONTOUR MAJOR, EXISTING
- EWL — EXISTING WATER LINE
- EXISTING STREAM
- EXISTING TRAIL
- FEMA FLOOD ZONE
- 50 NHDES — 50' NHDES PRIMARY SETBACK
- 150 NHDES — 150' NHDES NATURAL WOODLAND BUFFER
- 250 NHDES — 250' NHDES SHORELAND PROTECTION ZONE
- 100' LOCAL CONSERVATION OVERLAY ZONE
- AREA OF GREATER THAN 20% SLOPES
- **448A** *CsB* S.C.R.D. TYP. FND — SOIL SERIES, NRCS SOIL LABEL, STRAFFORD COUNTY REGISTRY OF DEEDS, TYPICAL, FOUND
- (A) — ABUTTER REFERENCE

PROPOSED LEGEND:

- 4"X4" GRANITE BOUND ~TBS~
- 3/4" REBAR W/ ID CAP ~TBS~
- 1/2" EASEMENT REBAR W/ ID CAP ~TBS~
- PROPOSED LOT LINE REVISION LINE
- PROPOSED EASEMENT LINE
- UTILITY POLE
- LIGHT TYPE "A" MOUNTED LIGHT POLE
- LIGHT TYPE "B" MOUNTED LIGHT POLE
- LIGHT TYPE "C" MOUNTED ON BUILDING
- LIGHT TYPE "D" MOUNTED ON CONDOMINIUM
- INLINE FLUSHING MANHOLE W/ STRUCTURE
- DRAIN MANHOLE W/STRUCTURE
- CATCH BASIN
- OUTLET CONTROL STRUCTURE
- SIGNAGE
- CHECK DAM-MATERIAL AS SPECIFIED
- FLOW ARROW
- W — WELL
- TEMPORARY BENCHMARK (T.B.M.)
- E101 / E6 — DETAIL SHEET / DETAIL
- MATCH POINT
- MATCH LINE
- P241 — CONTOUR MINOR, PROPOSED
- P240 — CONTOUR MAJOR, PROPOSED
- d — DRAIN CULVERT W/ FLARED END SECTION (F.E.S.)
- SHOULDER
- CENTER LINE
- BUILDING SETBACK LINE
- NHDES PROTECTIVE WELL RADIUS
- TRANSFORMER / J.BOX
- UGE — UNDERGROUND UTILITY
- U.D — UNDER DRAIN
- SF — SILT FENCE / EROSION MIX BERM
- SS — FILTREXX 8" – 12" SILT SOXX AS SPECIFIED
- C — ORANGE CONSTRUCTION PERIMETER FENCE
- P/C — PERIMETER CONTROL
- *CsB* — NRCS SOIL DELINEATION, SOIL TYPE
- RIP RAP
- STORMWATER BEST MANAGEMENT PRACTICE (BMP)
- BERM
- SNOW STORAGE AREA
- WV — GATE VALVE
- CURB STOP
- BLOW OFF HYDRANT
- THRUST BLOCKS
- *F230.31* — PROPOSED SPOT ELEVATION
- PROPOSED WATER LINE
- PROPOSED SEWER LINE
- G — PROPOSED GAS LINE
- PROPOSED UNDERGROUND LP TANK
- PUMP OR SEPTIC TANK
- PROPOSED TREE LINE
- PROPOSED GUARD RAIL
- PROPOSED GRAVEL SHOULDER
- CLEAR ZONE
- SAW CUT AND MILL

OPEN SPACE CALCULATIONS:

30 PROPOSED LOTS ON YIELD PLAN REQUIRING
30,000 Sq.Ft. / PER UNIT = 900,000 Sq.Ft,
OPEN SPACE REQUIRED = 450,000 Sq.Ft.
UPLAND REQUIREMENT FOR OPEN SPACE = 225,000 Sq.Ft.,

TOTAL OPEN SPACE PROVIDED = 767,695 Sq.Ft,
TOTAL UPLAND IN OPEN SPACE PROVIDED = 526,733 Sq.Ft.

TOTAL AREA TO BE TRANSFERRED TO THE CITY OF DOVER EXCLUSIVE OF OPEN SPACE AREA = 492,461 Sq.Ft.
TOTAL UPLAND AREA: 389,123 Sq.Ft.

CONDITIONAL USE PERMITS:

CONSTRUCTION WITHIN THE 50' BUFFER (23,966 Sq. Ft. PROPOSED): PENDING
TOTAL WETLANDS AREA OF IMPACT: 5,902 Sq.Ft.
PERMANENT WETLANDS IMPACT: 4,172 Sq.Ft.,
TEMPORARY WETLANDS IMPACT: 1,730 Sq.Ft.,

WAIVER REQUEST:

MINIMUM PERIMETER BUFFER TO PERMIT OSS
BUFFER LESS THAN 40' IN ONE LOCATION

4% WHERE 3% MAX WITHIN 75'

RECREATION SPACE REQUIREMENTS (DOVER CODE ARTICLE V , 170-15.)

PROPOSED NUMBER OF BEDROOMS: 116
RE-BUILT DUPLEX NOT COUNTED WHEREAS IT IS EXISTING
OPEN SPACE REQUIREMENT (100 SF PER BEDROOM): 11,600 SF
½ RECREATION SPACE FOR PASSIVE USE: 5,800 SF
5,846 SF (SATISFIED ON SITE)
½ RECREATION SPACE FOR ACTIVE USE: 5,800 SF
11,520 SF (SATISFIED ON SITE)

PARKING REQUIREMENTS:

CHAPTER 153-14D PARKING TABLE
- RESIDENTIAL
  - RESIDENTIAL (NON CBD-G) 1.4 SPACES PER UNIT:
    - VISITOR 0.5 SPACES PER UNIT:
    - EACH UNIT CONTAINS TWO PARKING SPACES BEHIND THE PROPOSED TWO CAR GARAGE.

REVISION	DATE	DESCRIPTION

PROJECT SPECIFIC LEGEND AND NOTES
LAND OF
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY &
EUGENE A. & DONNA L. SGITGNOULI
TOLEND ROAD
DOVER, N.H.
TAX MAP 8, LOT 65-1 & 65-4

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : AS SHOWN
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 – 107

STATE OF NEW HAMPSHIRE — KENNETH A. BERRY No. 14243 LICENSED PROFESSIONAL ENGINEER

LEGEND:

- ● 3/4" REBAR W/ ID CAP ~TBS~
- ⊕ STEEL STAKE ~FND~
- ○ IRON PIPE ~FND~
- ○ IRON BOUND/REBAR/IRON ROD ~FND~
- ⊠ NHHB/GRANITE BOUND
- UTILITY POLE
- APPROX. ABUTTING LOT LINE
- PERIMETER BOUNDARY LINE
- SURVEY TIE LINE
- HIGHWAY FENCE

FND FOUND
TBS TO BE SET
S.C.R.D. STRAFFORD COUNTY REGISTRY OF DEEDS

N/F BRODERICK, BRIDGET
26 NYE LANE
DOVER, NH 03820
TAX MAP E, LOT 49-6
S.C.R.D. BOOK 4034, PAGE 254

6"x10" GRANITE BOUND ~FND~ (1.0' HIGH)

N81°35'55"E 254.77'

41'±

TRITECH IRON BOUND ~FND~ (0.3' HIGH) NH GRID COORD. N.:257829.09 E.:1187222.41 ELEV.:91.13

N09°16'14"W 100.92'

N09°15'04"W 85.67'

N/F CHAKRAVARTY, DILIP & MITALI
11411 RUNNING BEAR COURT
BELTSVILLE, MD 20705-1478
TAX MAP E, LOT 49-7
S.C.R.D. BOOK 3988, PAGE 795

N08°11'53"W 216.79'

1/4" REBAR ~FND~ (1.2' HIGH)

TRITECH IRON BOUND ~FND~ (0.1' HIGH)

74.31' N08°28'56"W

29.52' N08°21'44"W

N/F BERGSTROM, EVA K. & EDDINS, KURT
38 NYE LANE
DOVER, NH 03820
TAX MAP E, LOT 49-8
S.C.R.D. BOOK 4499, PAGE 734

N08°37'16"W 141.30'

TRITECH IRON BOUND ~FND~ (0.6' HIGH)

29.50' N08°29'24"W

1 1/2" IRON PIPE ~FND~ (3.3' HIGH)

N/F MARTEL, PAUL J.
P.O. BOX 182
DOVER, NH 03821-0182
TAX MAP E, LOT 57-3
S.C.R.D. BOOK 1433, PAGE 200

N08°38'08"W 337.62'

HAM FAMILY CEMETERY

1" IRON PIPE ~FND~ (1.3' HIGH) W/ WITNESS POST

N07°54'49"W 162.76'

N/F MONE, SEAMUS D.
1 MONE'S FOLLY DRIVE
DOVER, NH 03820
TAX MAP E, LOT 57-G-1
S.C.R.D. BOOK 4833, PAGE 841

82.82' N05°23'19"W

45.17' N11°06'19"W

N/F MAXON FAMILY REVOCABLE TRUST
MAXON, THOMAS & PATRICIA TRUSTEES
40 BALDPATE ROAD
GEORGETOWN, MA 01833
TAX MAP E, LOT 57-C
S.C.R.D. BOOK 4018, PAGE 118

N11°06'19"W 150.00'

N/F FORBES, DONALD W. & LINDA R.
181 OLD FIELDS ROAD
SOUTH BERWICK, ME 03908
TAX MAP E, LOT 64
S.C.R.D. BOOK 1906, PAGE 249

CIVIL CONSULTANTS IRON BOUND ~FND~ (FLUSH)

266.94' S71°43'49"W

10.00' S75°43'58"W

CIVIL CONSULTANTS IRON BOUND ~FND~ (0.8' HIGH)

316.21' S78°15'10"W

CIVIL CONSULTANTS IRON BOUND ~FND~ (1.4' HIGH) NH GRID COORD. N.:256925.91 E:1187926.32 ELEV.:112.29

S14°16'11"E 295.09'

N/F GEORGE, DOUGLAS A.
65 TOLEND ROAD
DOVER, NH 03820
TAX MAP E, LOT 65
S.C.R.D. BOOK 3953, PAGE 464

N07°23'51"W 284.69'

CIVIL CONSULTANTS IRON BOUND ~FND~ (0.3' HIGH)

82.07' S82°40'56"W

TOLEND ROAD

95.78' S88°53'19"W

DAVIS STEEL STAKE ~FND~ (FLUSH) LOCATED AT BASE

S05°57'45"W 220.35'

181.20' N84°02'15"W

N02°39'47"E 196.80'

STEEL STAKE ~FND~ (FLUSH) LOCATED AT BASE

63.30' S55°13'36"W

103.27' S73°48'07"W

N/F BSTANDIG, MARTHA A. REVOCABLE TRUST
BSTANDIG, MARTHA A. TRUSTEE
53 TOLEND ROAD
DOVER, NH 03820
TAX MAP E, LOT 65-B
S.C.R.D. BOOK 4639, PAGE 921

N/F CLOUGH, VERNON L. & OLGA
43 TOLEND ROAD
DOVER, NH 03820
TAX MAP E, LOT 74-D
S.C.R.D. BOOK 2703, PAGE 371

16'±

N/F DEBORAH LUTSK, DELORES SILVA, TIMOTHY GEORGE, AND LISA MULCAHY
245 N. BEND DRIVE
MANCHESTER, NH 03104
TAX MAP E, LOT 65-1
S.C.R.D. BOOK 3990, PAGE 107
1,388,402 Sq. Ft.±, 31.87 Ac.±

S76°42'27"E 999.34'

COCHECHO RIVER

1096'± ALONG SOUTHERLY SIDE OF RIVER

77'± S17°20'03"E

28" HEMLOCK W/ BARBED WIRE (HELD)

S19°05'01"E 146.79'

24" PINE W/ BARBED WIRE (HELD)

SURVEY TIE LINE ~NOT A BOUNDARY~

N53°43'34"E 1,154.25'

1243'± ALONG SOUTHERLY SIDE OF RIVER

N/F SGRIGNUOLI, EUGENE A. & DONNA L.
22 SUN HAWK LANE
DOVER, NH 03820
TAX MAP E, LOT 65-A
S.C.R.D. BOOK 1571, PAGE 86
546,546 Sq. Ft.±, 12.55 Ac.±

NHHB ~FND~ (0.5' HIGH)

71'±

N27°10'54"W 796.78'

N27°10'54"W 178.08'

NHHB ~FND~ (0.1' HIGH)

L=0.71' R=2,060.00'

N.H. ROUTE 16 / SPAULDING TURNPIKE

R=2,060.00' L=1,126.51'

HIGHWAY FENCE

S27°10'54"E 650.84'

EXISTING SHED

EXISTING BILLBOARD

3/4" IRON PIPE ~FND~ (2.1' HIGH) NOT HELD OFF LINE 1.88'

EXISTING HOUSE

1/4" IRON ROD ~FND~ (3.0' HIGH) NOT HELD OFF LINE 1.14'

LLS 223 IRON BOUND ~FND~ (0.1' HIGH)

LLS 211 IRON BOUND ~FND~ (0.1' HIGH) HELD FOR LINE DETAIL "A"

S65°13'07"W 205.42'

7.20' S64°55'26"W

CIVIL CONSULTANTS IRON BOUND ~FND~ (0.9' HIGH)

164.15' S54°12'54"W

CIVIL CONSULTANTS IRON BOUND ~FND~ (0.7' HIGH)

12.10' N22°26'01"W

77.02' S48°21'04"W

28.02' S41°27'33"W

112.94' S38°43'33"W

159.96' S41°11'58"W

CIVIL CONSULTANTS IRON BOUND ~FND~

CIVIL CONSULTANTS IRON BOUND ~FND~ (0.9' HIGH)

SUN HAWK LANE

N/F SICARD RHONDA J. & BASTIANELLI GREGORY
14 ATINA WAY
DOVER, NH 03820
TAX MAP E, LOT 74
S.C.R.D. BOOK 4505, PAGE 898

N/F FINN, CAROL ANNE
10 SUN HAWK LANE
DOVER, NH 03820
TAX MAP E, LOT 74-C
S.C.R.D. BOOK 1598, PAGE 215

R=2,060.00' L=473.08'

NHHB ~FND~ (0.4' HIGH)

261.08' S17°19'42"W

NHHB ~FND~ (0.1' HIGH)

DETAIL "A"
SCALE: 1" = 5'

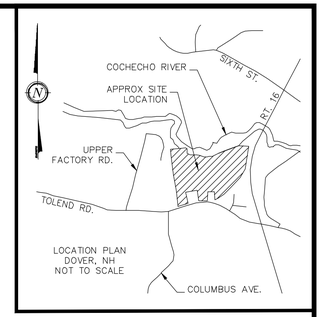
R=2,060.00' L=1,126.51'

HIGHWAY FENCE

LLS 211 IRON BOUND ~FND~ (0.1' HIGH) HELD FOR LINE

0.31' S65°13'07"W

205.42' S65°13'07"W



NOTES:

1.) OWNER LOT 65-1: D. LUTSK, D. BARNES, T. GEORGE, AND L. MULCAHY
245 N. BEND DRIVE
MANCHESTER, NH 03104

OWNER LOT 65-A: EUGENE A. & DONNA L. SGRIGNUOLI
22 SUN HAWK LANE
DOVER, NH 03820

2.) LOT OF RECORD: TAX MAP E, LOT 65-1
TAX MAP E, LOT 65-A

3.) LOT AREA LOT 65-1: 1,388,402 Sq. Ft.±, 31.87 Ac.±
LOT AREA LOT 65-A: 546,546 Sq. Ft.±, 12.55 Ac.±

4.) S.C.R.D. BOOK 4918, PAGE 163, LOT 65-1
S.C.R.D. BOOK 1571, PAGE 86, LOT 65-A

5.) THE INTENT OF THIS PLAN IS TO SHOW THE LOCATION OF BOUNDARIES OF TAX MAP 231, LOT 24 IN ACCORDANCE WITH AND IN RELATION TO THE CURRENT AND ORIGINAL LEGAL DESCRIPTIONS, AND IS NOT AN ATTEMPT TO DEFINE UNWRITTEN RIGHTS, DETERMINE THE EXTENT OF OWNERSHIP, OR DEFINE THE LIMITS OF TITLE.

6.) NH STANDARD PROPERTY SURVEY WITH A CLOSURE BETTER THAN 1:10,000.

PLAN REFERENCES:

1.) STANDARD PROPERTY SURVEY AND SUBDIVISION OF LAND OF THE EDWARD J. GEORGE FAMILY TRUST
BY: CIVIL CONSULTANTS
DATED: APRIL 2, 2011
S.C.R.D.: PLAN #102-24

2.) PLAN OF LAND PREPARED FOR FAIRVIEW PARNERS, LLC
TAX MAP E, LOT NO. 74B 35 TOLEND ROAD CITY OF DOVER COUNTY OF STRAFFORD STATE OF NEW HAMPSHIRE
BY: MCENEANEY SURVEY ASSOCIATES INC.
DATED: MARCH 4, 2016

3.) SUBDIVISION OF LAND FOR KAREN & JAMES BECKINGHAM & MARY & SCOTT MCEWAN IN DOVER, N.H.
BY: BRUCE L. POHOPEK
DATED: FEBRUARY 19, 1986
S.C.R.D.: PLAN #29-67

4.) SUBDIVISION OF LAND FOR PAUL MARTEL IN DOVER, N.H.
BY: BRUCE L. POHOPEK
DATED: OCTOBER 4, 1978
S.C.R.D.: PLAN #19A-47

5.) PLAN OF LOT ERNEST BSTANDIG DOVER NEW HAMPSHIRE
BY: G.L. DAVIS & ASSOCIATES
DATED: MAY, 1969
S.C.R.D.: BOOK 858, PAGE 159

6.) PLAN OF LAND, HAROLD A. & YVONNE M. CLEWLEY & LINDA J. NOURY, NORTH SIDE OF TOLEND ROAD, DOVER, NH
BY: R.W. MCCRONE
DATED: MARCH 1986
S.C.R.D. PLAN #28A-04

7.) BOUNDARY LINE ADJUSTMENT, THE HEIRS OF KENNETH & IRENE M. NYE AND PAUL & KATHERINE MARTEL, UPPER FACTORY ROAD, DOVER, NH
BY: TRITECH ENGINEERING CORPORATION
DATED: OCTOBER 25, 2004
S.C.R.D. PLAN #77-87

8.) SUBDIVISION OF LAND FOR ANTONIO BASTIANELLI IN DOVER, N.H.
BY: BRUCE L. POHOPEK, LAND SURVEYOR
DATED: JULY 31, 1989, AS REVISED 5/28/90
S.C.R.D. PLAN #32-149

9.) STATE OF NEW HAMPSHIRE, DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS, PLAN OF PROPOSED LS1824(1). SPAULDING TURNPIKE
DATED: OCTOBER 19, 1955
S.C.R.D. PLAN #32, POCKET 15, FOLDER 3 &
S.C.R.D. PLAN #36, POCKET 15, FOLDER 3 &
ON FILE AT NH DOT RIGHTS-OF-WAY, CONCORD, NH

GRAPHIC SCALE

100 0 50 100 200 400

(IN FEET)
1 inch = 100 ft.

REVISION	DATE	DESCRIPTION

BOUNDARY SURVEY
LAND OF
D. LUTSK, T. GEORGE, L. MULCAHY, D. BARNES AND
EUGENE A. & DONNA L. SGRIGNUOLI
TOLEND ROAD
DOVER, N.H.
TAX MAP E, LOT 65-1 & 65-A

I CERTIFY THAT THIS SURVEY PLAT IS NOT A SUBDIVISION PURSUANT TO THIS TITLE AND THAT THE LINES OF STREETS AND WAYS SHOWN ARE THOSE OF PUBLIC OR PRIVATE STREETS OR WAYS ALREADY ESTABLISHED AND THAT NO NEW WAYS ARE SHOWN.

KENNETH A. BERRY L.L.S. 805 DATE

STATE OF NEW HAMPSHIRE NO. 805 KENNETH A. BERRY LICENSED LAND SURVEYOR SIGNATURE

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT RD.
BARRINGTON, N.H. (603)332-2863

SCALE :	1 IN. EQUALS 100 FT.
DATE :	FEBRUARY 10, 2022
FILE NO. :	DB 2020-107

ABUTTERS LIST:

(A) GEORGE, DOUGLAS A.
65 TOLEND ROAD
DOVER, NH 03820
TAX MAP E, LOT 65
S.C.R.D. BOOK 3953, PAGE 464

(B) BSTANDIG, MARTHA A. REVOCABLE TRUST
BSTANDIG, MARTHA A. TRUSTEE
53 TOLEND ROAD
DOVER, NH 03820
TAX MAP E, LOT 65–B
S.C.R.D. BOOK 4639, PAGE 921

(C) CLOUGH, VERNON L. & OLGA
43 TOLEND ROAD
DOVER, NH 03820
TAX MAP E, LOT 74–D
S.C.R.D. BOOK 2703, PAGE 371

(D) FINN, CAROL ANNE
10 SUN HAWK LANE
DOVER, NH 03820
TAX MAP E, LOT 74–C
S.C.R.D. BOOK 1598, PAGE 215

(E) SGRIGNUOLI, EUGENE A. & DONNA L.
22 SUN HAWK LANE
DOVER, NH 03820
TAX MAP E, LOT 65–A
S.C.R.D. BOOK 1571, PAGE 86

(F) LIBERTY MUTUAL INSURANCE COMPANY
ATTN: BRAGG, JOANNE
175 BERKELEY STREET MS 03L
BOSTON, MA 02116
TAX MAP E, LOT 24
S.C.R.D. BOOK 1364, PAGE 453

(G) BRODERICK, BRIDGET
26 NYE LANE
DOVER, NH 03820
TAX MAP E, LOT 49–6
S.C.R.D. BOOK 4034, PAGE 254

(H) CHAKRAVARTY, DILIP & MITALI
11411 RUNNING BEAR COURT
BELTSVILLE, MD 20705–1478
TAX MAP E, LOT 49–7
S.C.R.D. BOOK 3988, PAGE 795

(I) BERGSTROM, EVA K. & EDDINS, KURT
38 NYE LANE
DOVER, NH 03820
TAX MAP E, LOT 49–8
S.C.R.D. BOOK 4499, PAGE 734

(J) MARTEL, PAUL J.
P.O. BOX 182
DOVER, NH 03821–0182
TAX MAP E, LOT 57–3
S.C.R.D. BOOK 1433, PAGE 200

(K) MONE, SEAMUS D.
1 MONE'S FOLLY DRIVE
DOVER, NH 03820
TAX MAP E, LOT 57–C–1
S.C.R.D. BOOK 4833, PAGE 841

(L) MAXON FAMILY REVOCABLE TRUST
MAXON, THOMAS & PATRICIA TRUSTEES
40 BALDPATE ROAD
GEORGETOWN, MA 01833
TAX MAP E, LOT 57–C
S.C.R.D. BOOK 4018, PAGE 118

(M) FORBES, DONALD W. & LINDA R.
181 OLD FIELDS ROAD
SOUTH BERWICK, ME 03908
TAX MAP E, LOT 64
S.C.R.D. BOOK 1906, PAGE 249

ABUTTERS LIST:

(N) THAYER SMITH FAMILY REVOCABLE TRUST
SMITH, TRAVIS & THAYER, MEGAN TRUSTEES
88 TOLEND ROAD
DOVER, NH 03820
TAX MAP G, LOT 24–C
S.C.R.D. BOOK 4347, PAGE 303

(O) GERVAIS, ANDREW TODD
80 TOLEND ROAD
DOVER, NH 03820
TAX MAP G, LOT 24–M
S.C.R.D. BOOK 4687, PAGE 178

(P) ROBERTSON, JAMES M. & LINDA S.
78 TOLEND ROAD
DOVER, NH 03820
TAX MAP G, LOT 24–L
S.C.R.D. BOOK 2611, PAGE 738

(Q) ROBERTS, MEREDITH
74 TOLEND ROAD
DOVER, NH 03820
TAX MAP G, LOT 24–F
S.C.R.D. BOOK 4542, PAGE 440

(R) WYNDBROOK AT DOVER
HOMEOWNERS ASSOCIATION
P.O. BOX 1685
DOVER, NH 03821–1685
TAX MAP G, LOT 24–J
S.C.R.D. BOOK 4359, PAGE 116

(S) DAMON, TIMOTHY JAMES & CATHERINE E.
64 TOLEND ROAD
DOVER, NH 03820
TAX MAP G, LOT 24–G
S.C.R.D. BOOK 4228, PAGE 316

(T) WILLIAMS, THOMAS R. & CAROLYN E.
60 TOLEND ROAD
DOVER, NH 03820
TAX MAP G, LOT 24–B
S.C.R.D. BOOK 2851, PAGE 409

(U) KEEFE, PATRICIA
54 TOLEND ROAD
DOVER, NH 03820
TAX MAP G, LOT 24–H
S.C.R.D. BOOK 1484, PAGE 700

(V) SICARD RHONDA J. & BASTIANELLI GREGORY
14 ATINA WAY
DOVER, NH 03820
TAX MAP E, LOT 74
S.C.R.D. BOOK 4505, PAGE 898

(W) WHITTIER FALLS INC.
62 WHITTIER STREET
DOVER, NH 03820
TAX MAP E, LOT 65–C
S.C.R.D. BOOK 4224, PAGE 554

(X) STEARNS, CASEY & ANDREA
62 WHITTIER FALLS WAY
DOVER, NH 03820
TAX MAP E, LOT 67–B
S.C.R.D. BOOK 4776, PAGE 127

PLAN REFERENCES:

1.) STANDARD PROPERTY SURVEY AND SUBDIVISION OF LAND OF THE EDWARD J. GEORGE FAMILY TRUST
BY: CIVIL CONSULTANTS
DATED: APRIL 2, 2011
S.C.R.D.: PLAN #102–24

2.) PLAN OF LAND PREPARED FOR FAIRVIEW PARNERS, LLC TAX MAP E, LOT NO. 74B 35 TOLEND ROAD CITY OF DOVER COUNTY OF STRAFFORD STATE OF NEW HAMPSHIRE
BY: MCENEANEY SURVEY ASSOCIATES INC.
DATED: MARCH 4, 2016

3.) SUBDIVISION OF LAND FOR KAREN & JAMES BECKINGHAM & MARY & SCOTT MCEWAN IN DOVER, N.H.
BY: BRUCE L. POHOPEK
DATED: FEBRUARY 19, 1986
S.C.R.D.: PLAN #29–67

4.) SUBDIVISION OF LAND FOR PAUL MARTEL IN DOVER, N.H.
BY: BRUCE L. POHOPEK
DATED: OCTOBER 4, 1978
S.C.R.D.: PLAN #19A–47

5.) PLAN OF LOT ERNEST BSTANDIG DOVER NEW HAMPSHIRE
BY: G.L. DAVIS & ASSOCIATES
DATED: MAY, 1969
S.C.R.D.: BOOK 858, PAGE 159

6.) PLAN OF LAND, HAROLD A. & YVONNE M. CLEWLEY & LINDA J. NOURY, NORTH SIDE OF TOLEND ROAD, DOVER, NH
BY: R.W. MCCRONE
DATED: MARCH 1986
S.C.R.D. PLAN #28A–04

7.) BOUNDARY LINE ADJUSTMENT, THE HEIRS OF KENNETH & IRENE M. NYE AND PAUL & KATHERINE MARTEL, UPPER FACTORY ROAD, DOVER, NH
BY: TRITECH ENGINEERING CORPORATION
DATED: OCTOBER 25, 2004
S.C.R.D. PLAN #77–87

8.) SUBDIVISION OF LAND FOR ANTONIO BASTIANELLI IN DOVER, N.H.
BY: BRUCE L. POHOPEK, LAND SURVEYOR
DATED: JULY 31, 1989, AS REVISED 5/28/90
S.C.R.D. PLAN #32–149

9.) STATE OF NEW HAMPSHIRE, DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS, PLAN OF PROPOSED LS1824(1), SPAULDING TURNPIKE
DATED: OCTOBER 19, 1955
S.C.R.D. PLAN #32, POCKET 15, FOLDER 3 &
S.C.R.D. PLAN #36, POCKET 15, FOLDER 3 &
ON FILE AT NH DOT RIGHTS–OF–WAY, CONCORD, NH

WETLAND NOTES:

WETLANDS WERE DELINEATED BY JOHN P. HAYES SPRING 2021

1. REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION, (VERSION 2.0) JANUARY 2012, U.S. ARMY CORPS OF ENGINEERS.
2. FIELD INDICATORS OF HYDRIC SOILS IN THE UNITED STATES, A GUIDE FOR IDENTIFYING AND DELINEATING HYDRIC SOILS, VERSION 8.0. UNITED STATES DEPARTMENT OF AGRICULTURE (2016).
3. NATIONAL WETLAND PLANT LIST (CURRENT VERSION).

STATE OF NEW HAMPSHIRE — JOHN P. HAYES, III — NWI 18 — CERTIFIED WETLAND SCIENTIST

JOHN P. HAYES III, CWS #18

NRCS SOILS:

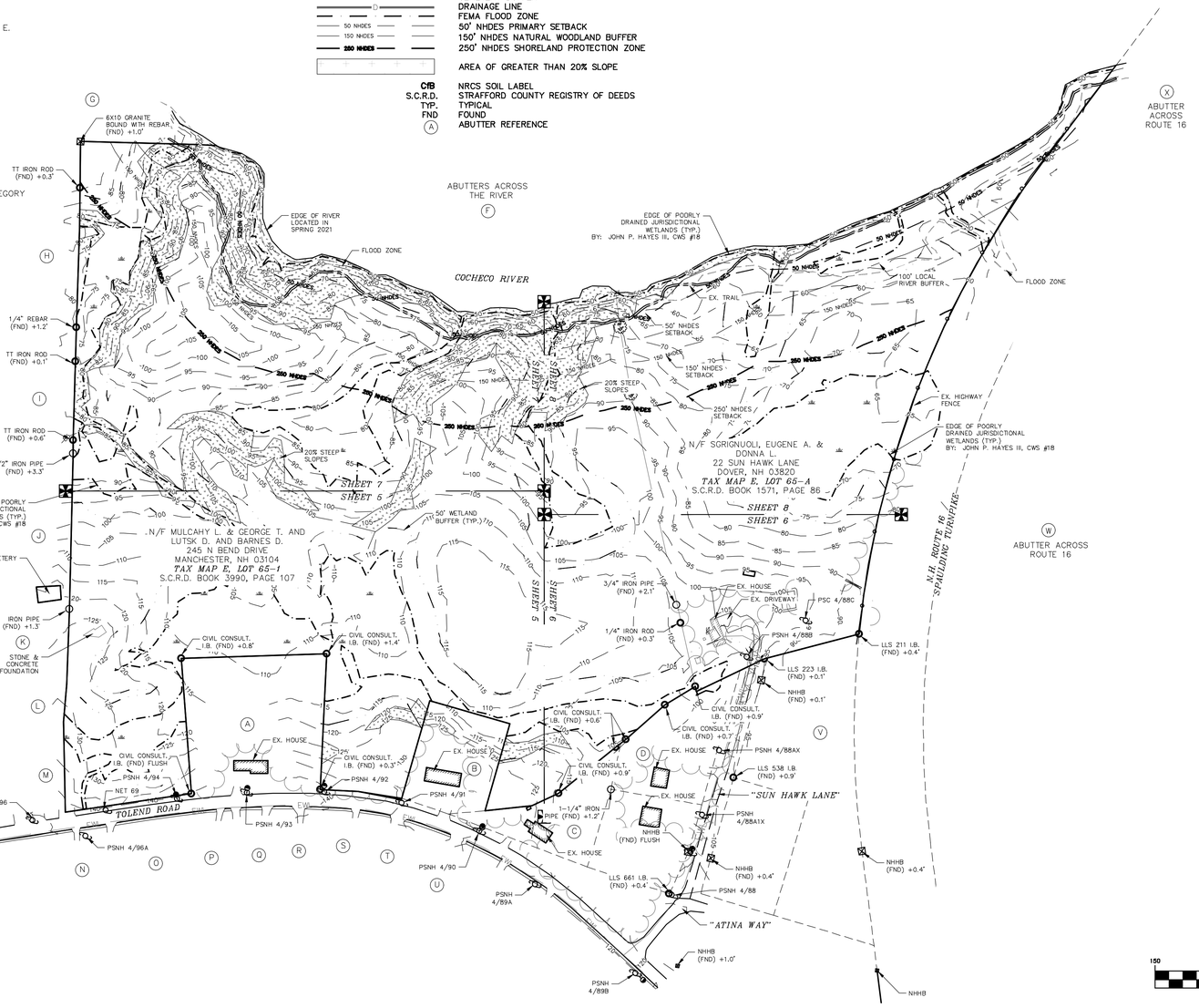
BsB – BUXTON SILT LOAM, 3 TO 8 PERCENT SLOPES
HcB – HOLLIS–CHARLTON FINE SANDY LOAMS, 3 TO 8 PERCENT SLOPES
ScA – SCANTIC SILT LOAM, 0 TO 3 PERCENT SLOPES
ScB – SCANTIC SILT LOAM, 3 TO 8 PERCENT SLOPES
SfC – SUFFIELD SILT LOAM, 8 TO 15 PERCENT SLOPES
SfE – SUFFIELD SILT LOAM, 15 TO 35 PERCENT SLOPES

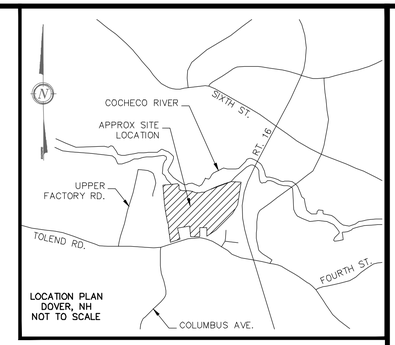
SEE WEBSOIL USDA–NRCS

LEGEND:

- IRON BOUND ~FND~
- IRON PIPE ~FND~
- NHHB BOUND ~FND~
- UTILITY POLE / GUY WIRE
- NRCS SOIL DELINEATION LINE
- BUILDING SETBACK LINE
- OVERHEAD UTILITIES LINE
- WATER LINE
- CONTOUR LINE, MINOR
- CONTOUR LINE, MAJOR
- WETLAND LINE
- EXISTING STREAM
- EXISTING TRAIL
- WETLAND BUFFER
- CEMETERY BUFFER
- DRAINAGE LINE
- FEMA FLOOD ZONE
- 50' NHDES PRIMARY SETBACK
- 150' NHDES NATURAL WOODLAND BUFFER
- 250' NHDES SHORELAND PROTECTION ZONE
- AREA OF GREATER THAN 20% SLOPE

CfB — NRCS SOIL LABEL
S.C.R.D. — STRAFFORD COUNTY REGISTRY OF DEEDS
TYP. — TYPICAL
FND — FOUND
(A) — ABUTTER REFERENCE





LOCATION PLAN
DOVER, NH
NOT TO SCALE

NOTES:

1.) OWNER LOT 65–1: D.LUTSK, D.BARNES, T. GEORGE, & L. MULCAHY
245 N BEND DRIVE
MANCHESTER, NH 03104

OWNER LOT 65–A: SGRIGNUOLI, EUGENE A. & DONNA L.
22 SUN HAWK LANE
DOVER, NH 03820

1A.) APPLICANT: STONEARCH DEVELOPMENT CORP.
42J DOVER POINT ROAD
DOVER, NH 03820

2.) LOT OF RECORD: TAX MAP E, LOT 65–1
TAX MAP E, LOT 65–A

3.) LOT AREA LOT 65–1: 1,388,409 Sq. Ft., 31.87 Ac. +/–
LOT AREA LOT 65–A: 544,070 Sq. Ft., 12.49 Ac. +/–

4.) S.C.R.D. BOOK 4918, PAGE 158
S.C.R.D. BOOK 1571, PAGE 86

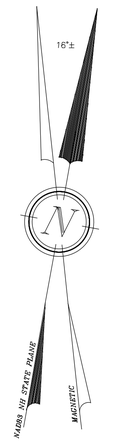
5.) ZONING: (R–20) LOW DENSITY
MINIMUM FRONTAGE ~ 125'
MINIMUM LOT SIZE ~ 20,000 Sq. Ft.
FRONT SETBACK ~ 20'
REAR SETBACK ~ 30'
SIDE SETBACK ~ 20'
WETLANDS BUFFER ~ 50.0'
MAX. BUILDING HEIGHT: 35'
MAX. LOT COVERAGE: 30%

6.) I HEREBY CERTIFY THAT, TO THE BEST OF MY KNOWLEDGE & BELIEF, A PORTION OF THIS PARCEL DOES FALL WITHIN THE FLOOD PLAIN FLOOD HAZARD, REF.: FEMA COMMUNITY #330145, MAP #33017C0310E, DATED: SEPTEMBER 30, 2015.

7.) VERTICAL DATUM BASED ON NAVD88 ELEVATIONS. HORIZONTAL COORDINATES BASED ON NAD83. COORDINATES GATHERED USING TOPCON HIPER SR SURVEY GRADE GPS RECEIVERS.

8.) THE BOUNDARY LINES SHOWN ON THIS PLAN ARE THE RESULT OF A CLOSED TRAVERSE PERFORMED BY THIS OFFICE IN WINTER OF 2021, WITH A BETTER ERROR OF CLOSURE OF 1 PART IN 10,000.

9.) THE INTENT OF THIS PLAN IS TO SHOW THE OVERVIEW EXISTING CONDITIONS ON TAX MAP E, LOT 65–1 AND LOT 65–A AS OF THE DATE OF THE FIELD WORK: MARCH 2021.



GRAPHIC SCALE

150 0 75 150 300 600

(IN FEET)
1 inch = 150 ft.

REVISION	DATE	DESCRIPTION

EXISTING CONDITIONS PLAN OVERVIEW
LAND OF
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY &
EUGENE A. & DONNA L. SGRIGNUOLI
22 TOLEND ROAD
DOVER, N.H.
TAX MAP E, LOT 65–1 & 65–A

BERRY & SURVEYING ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332–2863

SCALE : 1 IN. EQUALS 150 FT.
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 – 107

STATE OF NEW HAMPSHIRE — No. 805 — KENNETH A. BERRY — LICENSED LAND SURVEYOR — SIGNATURE

PLAN REFERENCES:

1.) STANDARD PROPERTY SURVEY AND SUBDIVISION OF LAND OF THE EDWARD J. GEORGE FAMILY TRUST
BY: CIVIL CONSULTANTS
DATED: APRIL 2, 2011
S.C.R.D.: PLAN #102–24

2.) PLAN OF LAND PREPARED FOR FAIRVIEW PARNERS, LLC TAX MAP E, LOT NO. 74B 35 TOLEND ROAD CITY OF DOVER COUNTY OF STRAFFORD STATE OF NEW HAMPSHIRE
BY: MCENEANEY SURVEY ASSOCIATES INC.
DATED: MARCH 4, 2016

3.) SUBDIVISION OF LAND FOR KAREN & JAMES BECKINGHAM & MARY & SCOTT MCEWAN IN DOVER, N.H.
BY: BRUCE L. POHOPEK
DATED: FEBRUARY 19, 1986
S.C.R.D.: PLAN #29–67

4.) SUBDIVISION OF LAND FOR PAUL MARTEL IN DOVER, N.H.
BY: BRUCE L. POHOPEK
DATED: OCTOBER 4, 1978
S.C.R.D.: PLAN #19A–47

PLAN REFERENCES CONTINUED:

5.) PLAN OF LOT ERNEST BSTANDIG DOVER NEW HAMPSHIRE
BY: G.L. DAVIS & ASSOCIATES
DATED: MAY, 1969
S.C.R.D.: BOOK 858, PAGE 159

6.) PLAN OF LAND, HAROLD A. & YVONNE M. CLEWLEY & LINDA J. NOURY, NORTH SIDE OF TOLEND ROAD. DOVER, NH
BY: R.W. MCCRONE
DATED: MARCH 1986
S.C.R.D. PLAN #28A–04

7.) BOUNDARY LINE ADJUSTMENT, THE HEIRS OF KENNETH & IRENE M. NYE AND PAUL & KATHERINE MARTEL, UPPER FACTORY ROAD, DOVER, NH
BY: TRITECH ENGINEERING CORPORATION
DATED: OCTOBER 25, 2004
S.C.R.D. PLAN #77–87

PLAN REFERENCES CONTINUED:

8.) SUBDIVISION OF LAND FOR ANTONIO BASTIANELLI IN DOVER, N.H.
BY: BRUCE L. POHOPEK, LAND SURVEYOR
DATED: JULY 31, 1989, AS REVISED 5/28/90
S.C.R.D. PLAN #32–149

9.) STATE OF NEW HAMPSHIRE, DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS, PLAN OF PROPOSED LS1824(1), SPAULDING TURNPIKE
DATED: OCTOBER 19, 1955
S.C.R.D. PLAN #32, POCKET 15, FOLDER 3 &
S.C.R.D. PLAN #36, POCKET 15, FOLDER 3 &
ON FILE AT NH DOT RIGHTS–OF–WAY, CONCORD, NH

STATE OF NEW HAMPSHIRE · JOHN P. HAYES, III · CERTIFIED WETLAND SCIENTIST · MAR 16

JOHN P. HAYES III, CWS #18

WETLAND NOTES:

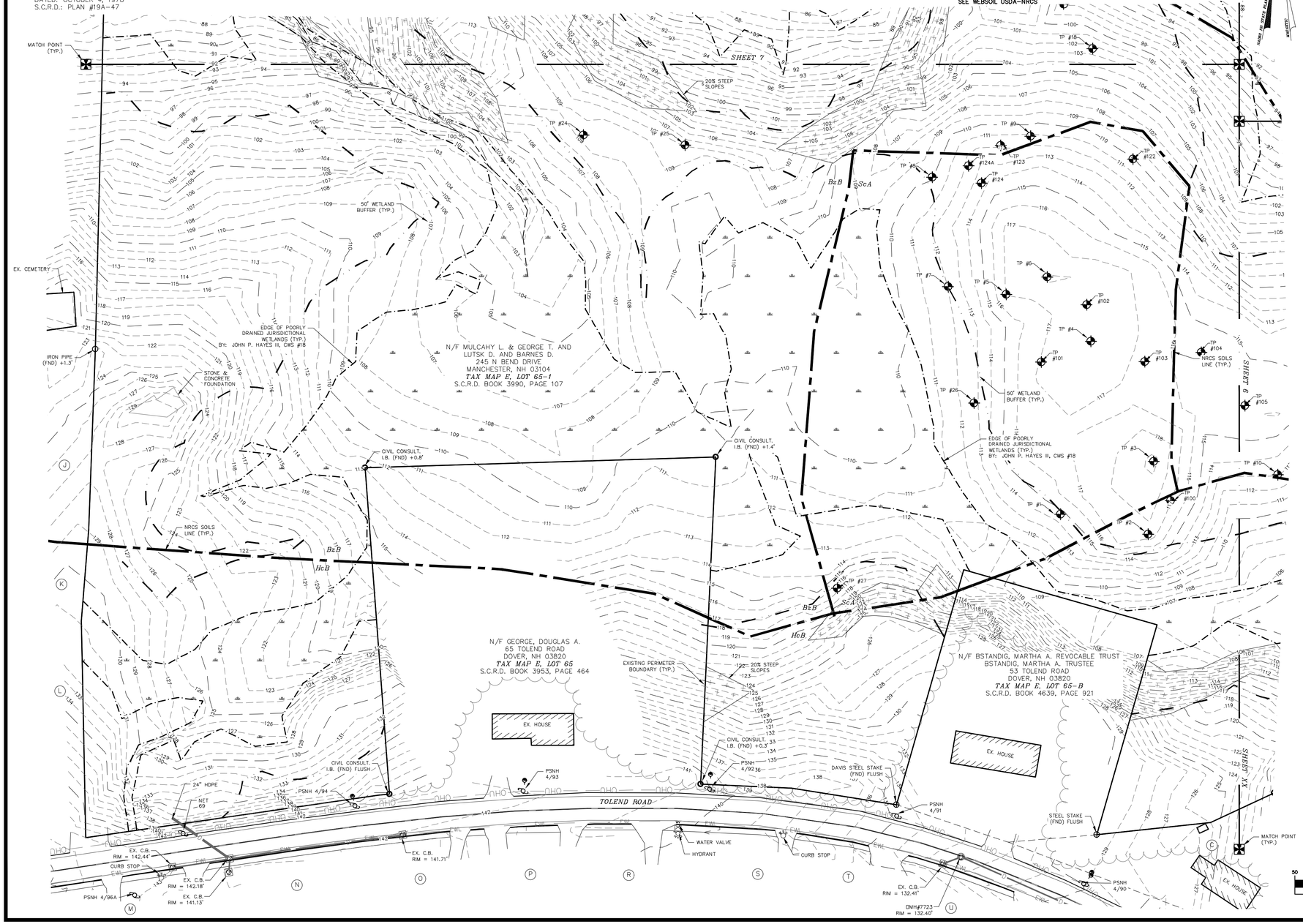
WETLANDS WERE DELINEATED BY JOHN P. HAYES SPRING 2021

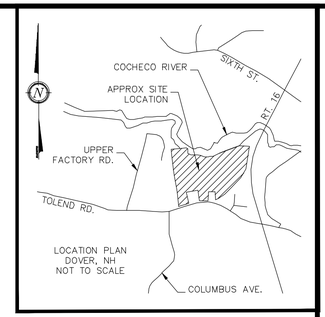
1. REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION, (VERSION 2.0) JANUARY 2012, U.S. ARMY CORPS OF ENGINEERS.
2. FIELD INDICATORS OF HYDRIC SOILS IN THE UNITED STATES, A GUIDE FOR IDENTIFYING AND DELINEATING HYDRIC SOILS, VERSION 8.0. UNITED STATES DEPARTMENT OF AGRICULTURE (2016).
3. NATIONAL WETLAND PLANT LIST (CURRENT VERSION).

NRCS SOILS:

SEE WEBSOIL USDA–NRCS

BzB – BUXTON SILT LOAM, 3 TO 8 PERCENT SLOPES
HcB – HOLLIS–CHARLTON FINE SANDY LOAMS, 3 TO 8 PERCENT SLOPES
ScA – SCANTIC SILT LOAM, 0 TO 3 PERCENT SLOPES
ScB – SCANTIC SILT LOAM, 3 TO 8 PERCENT SLOPES
SfC – SUFFIELD SILT LOAM, 8 TO 15 PERCENT SLOPES
SfE – SUFFIELD SILT LOAM, 15 TO 35 PERCENT SLOPES





NOTES:

1.) OWNER LOT 65–1: MULCAHY L. AND GEORGE T. AND LUTSK D. AND BARNES, D.
245 N BEND DRIVE
MANCHESTER, NH 03104

OWNER LOT 65–A: SGRIGNUOLI, EUGENE A. & DONNA L.
22 SUN HAWK LANE
DOVER, NH 03820

1A.) APPLICANT: STONE ARCH DEVELOPMENT CORP.
42J DOVER POINT ROAD
DOVER, NH 03820

2.) LOT OF RECORD: TAX MAP E, LOT 65–1
TAX MAP E, LOT 65–A

3.) LOT AREA LOT 65–1: 1,388,409 Sq. Ft., 31.87 Ac. +/–
LOT AREA LOT 65–A: 544,070 Sq. Ft., 12.49 Ac. +/–

4.) S.C.R.D. BOOK 4918, PAGE 158
S.C.R.D. BOOK 1571, PAGE 86

5.) ZONING: (R–20) LOW DENSITY
MINIMUM FRONTAGE ~ 125'
MINIMUM LOT SIZE ~ 20,000 Sq. Ft.
FRONT SETBACK ~ 20'
REAR SETBACK ~ 30'
SIDE SETBACK ~ 20'
WETLANDS BUFFER ~ 50.0'
MAX. BUILDING HEIGHT: 35'
MAX. LOT COVERAGE: 30%

6.) I HEREBY CERTIFY THAT, TO THE BEST OF MY KNOWLEDGE & BELIEF, A PORTION OF THIS PARCEL DOES FALL WITHIN THE FLOOD PLAIN FLOOD HAZARD. REF.: FEMA COMMUNITY #330145, MAP #33017C0310E, DATED: SEPTEMBER 30, 2015.

7.) VERTICAL DATUM BASED ON NAVD88 ELEVATIONS. HORIZONTAL COORDINATES BASED ON NAD83. COORDINATES GATHERED USING TOPCON HIPER SR SURVEY GRADE GPS RECEIVERS.

8.) THE BOUNDARY LINES SHOWN ON THIS PLAN ARE THE RESULT OF A CLOSED TRAVERSE PERFORMED BY THIS OFFICE IN WINTER OF 2021, WITH A BETTER ERROR OF CLOSURE OF 1 PART IN 10,000.

9.) THE INTENT OF THIS PLAN IS TO SHOW THE BOUNDARIES OF TAX MAP E, LOT 65–1 AND LOT 65–A AS OF THE DATE OF THE FIELD WORK: MARCH 2021.

10.) SEE OVERVIEW EXISTING CONDITIONS PLAN FOR ABUTTERS LIST.

LEGEND:

- IRON BOUND ~FND~
- IRON PIPE ~FND~
- NHHB BOUND ~FND~
- UTILITY POLE / GUY WIRE
- NRCS SOIL DELINEATION LINE
- BUILDING SETBACK LINE
- OHU — OHU — OVERHEAD UTILITIES LINE
- EW — EW — WATER LINE
- CONTOUR LINE, MINOR
- CONTOUR LINE, MAJOR
- WETLAND LINE
- EXISTING STREAM
- EXISTING TRAIL
- WETLAND BUFFER
- CEMETERY BUFFER
- D — DRAINAGE LINE
- FEMA FLOOD ZONE
- 50 NHDES — 50' NHDES PRIMARY SETBACK
- 150 NHDES — 150' NHDES NATURAL WOODLAND BUFFER
- 250 NHDES — 250' NHDES SHORELAND PROTECTION ZONE
- 100' LOCAL CONSERVATION OVERLAY ZONE
- AREA OF GREATER THAN 20% SLOPE
- C/B — NRCS SOIL LABEL
- S.C.R.D. — STRAFFORD COUNTY REGISTRY OF DEEDS
- TYP. — TYPICAL
- FND — FOUND
- (A) — ABUTTER REFERENCE

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

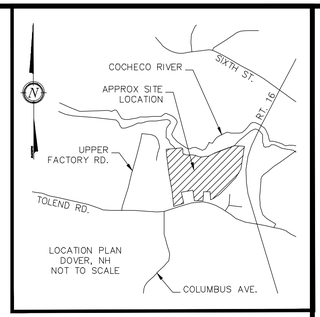
REVISION	DATE	DESCRIPTION

EXISTING CONDITIONS PLAN SOUTHWEST
LAND OF
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY &
EUGENE A. & DONNA L. SGRIGNUOLI
TOLEND ROAD
DOVER, N.H.
TAX MAP E, LOT 65–1 & 65–A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332–2863

SCALE : 1 IN. EQUALS 50 FT.
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 – 107

STATE OF NEW HAMPSHIRE · NO. 805 · KENNETH A. BERRY · LICENSED LAND SURVEYOR
SIGNATURE



LOCATION PLAN
DOVER, NH
NOT TO SCALE

NOTES:

1.) OWNER LOT 65–1: MULCAHY L. AND GEORGE T. AND LUTSK D. AND BARNES, D.
245 N BEND DRIVE
MANCHESTER, NH 03104

OWNER LOT 65–A: SGRIGNUOLI, EUGENE A. & DONNA L.
22 SUN HAWK LANE
DOVER, NH 03820

1A.) APPLICANT: STONE ARCH DEVELOPMENT CORP.
421 DOVER POINT ROAD
DOVER, NH 03820

2.) LOT OF RECORD: TAX MAP E, LOT 65–1
TAX MAP E, LOT 65–A

3.) LOT AREA LOT 65–1: 1,388,409 Sq. Ft., 31.87 Ac. +/–
LOT AREA LOT 65–A: 544,070 Sq. Ft., 12.49 Ac. +/–

4.) S.C.R.D. BOOK 4918, PAGE 158
S.C.R.D. BOOK 1571, PAGE 86

5.) ZONING: (R–20) LOW DENSITY
MINIMUM FRONTAGE ~ 125'
MINIMUM LOT SIZE ~ 20,000 Sq. Ft.
FRONT SETBACK ~ 20'
REAR SETBACK ~ 30'
SIDE SETBACK ~ 20'
WETLANDS BUFFER ~ 50.0'
MAX. BUILDING HEIGHT: 35'
MAX. LOT COVERAGE: 30%

6.) I HEREBY CERTIFY THAT, TO THE BEST OF MY KNOWLEDGE & BELIEF, A PORTION OF THIS PARCEL DOES FALL WITHIN THE FLOOD PLAIN FLOOD HAZARD. REF.: FEMA COMMUNITY #330145, MAP #33017C0310E, DATED: SEPTEMBER 30, 2015.

7.) VERTICAL DATUM BASED ON NAVD88 ELEVATIONS. HORIZONTAL COORDINATES BASED ON NAD83. COORDINATES GATHERED USING TOPCON HIPER SR SURVEY GRADE GPS RECEIVERS.

8.) THE BOUNDARY LINES SHOWN ON THIS PLAN ARE THE RESULT OF A CLOSED TRAVERSE PERFORMED BY THIS OFFICE IN WINTER OF 2021, WITH A BETTER ERROR OF CLOSURE OF 1 PART IN 10,000.

9.) THE INTENT OF THIS PLAN IS TO SHOW THE BOUNDARIES OF TAX MAP E, LOT 65–1 AND LOT 65–A AS OF THE DATE OF THE FIELD WORK: MARCH 2021Y.

10.) SEE OVERVIEW EXISTING CONDITIONS PLAN FOR ABUTTERS LIST.

STATE OF NEW HAMPSHIRE
JOHN P. HAYES, III
CERTIFIED WETLAND SCIENTIST
JOHN P. HAYES III, CWS #18

WETLAND NOTES:

WETLANDS WERE DELINEATED BY JOHN P. HAYES SPRING 2021
1. REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION, (VERSION 2.0) JANUARY 2012, U.S. ARMY CORPS OF ENGINEERS.
2. FIELD INDICATORS OF HYDRIC SOILS IN THE UNITED STATES, A GUIDE FOR IDENTIFYING AND DELINEATING HYDRIC SOILS, VERSION 8.0. UNITED STATES DEPARTMENT OF AGRICULTURE (2016).
3. NATIONAL WETLAND PLANT LIST (CURRENT VERSION).

NRCS SOILS:

BzB – BUXTON SILT LOAM, 3 TO 8 PERCENT SLOPES
HcB – HOLLIS–CHARLTON FINE SANDY LOAMS, 3 TO 8 PERCENT SLOPES
ScA – SCANTIC SILT LOAM, 0 TO 3 PERCENT SLOPES
ScB – SCANTIC SILT LOAM, 3 TO 8 PERCENT SLOPES
SfC – SUFFIELD SILT LOAM, 8 TO 15 PERCENT SLOPES
SfE – SUFFIELD SILT LOAM, 15 TO 35 PERCENT SLOPES

SEE WEBSOIL USDA–NRCS

PLAN REFERENCES:

1.) STANDARD PROPERTY SURVEY AND SUBDIVISION OF LAND OF THE EDWARD J. GEORGE FAMILY TRUST
BY: CIVIL CONSULTANTS
DATED: APRIL 2, 2011
S.C.R.D.: PLAN #102–24

2.) PLAN OF LAND PREPARED FOR FAIRVIEW PARNERS, LLC TAX MAP E, LOT NO. 74B 35 TOLEND ROAD CITY OF DOVER COUNTY OF STRAFFORD STATE OF NEW HAMPSHIRE
BY: MCENEANEY SURVEY ASSOCIATES INC.
DATED: MARCH 4, 2016

3.) SUBDIVISION OF LAND FOR KAREN & JAMES BECKINGHAM & MARY & SCOTT MCEWAN IN DOVER, N.H.
BY: BRUCE L. POHOPEK
DATED: FEBRUARY 19, 1986
S.C.R.D.: PLAN #29–67

4.) SUBDIVISION OF LAND FOR PAUL MARTEL IN DOVER, N.H.
BY: BRUCE L. POHOPEK
DATED: OCTOBER 4, 1978
S.C.R.D.: PLAN #19A–47

5.) PLAN OF LOT ERNEST BSTANDIG DOVER NEW HAMPSHIRE
BY: G.L. DAVIS & ASSOCIATES
DATED: MAY, 1969
S.C.R.D.: BOOK 858, PAGE 159

6.) PLAN OF LAND, HAROLD A. & YVONNE M. CLEWLEY & LINDA J. NOURY, NORTH SIDE OF TOLEND ROAD, DOVER, NH
BY: R.W. MCCRONE
DATED: MARCH 1986
S.C.R.D. PLAN #28A–04

7.) BOUNDARY LINE ADJUSTMENT, THE HEIRS OF KENNETH & IRENE M. NYE AND PAUL & KATHERINE MARTEL, UPPER FACTORY ROAD, DOVER, NH
BY: TRITECH ENGINEERING CORPORATION
DATED: OCTOBER 25, 2004
S.C.R.D. PLAN #77–87

8.) SUBDIVISION OF LAND FOR ANTONIO BASTIANELLI IN DOVER, N.H.
BY: BRUCE L. POHOPEK, LAND SURVEYOR
DATED: JULY 31, 1989, AS REVISED 5/28/90
S.C.R.D. PLAN #32–149

9.) STATE OF NEW HAMPSHIRE, DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS, PLAN OF PROPOSED LS1824(1), SPAULDING TURNPIKE
DATED: OCTOBER 19, 1955
S.C.R.D. PLAN #32, POCKET 15, FOLDER 3 &
S.C.R.D. PLAN #36, POCKET 15, FOLDER 3 &
ON FILE AT NH DOT RIGHTS–OF–WAY, CONCORD, NH

LEGEND:

- IRON BOUND ~FND~
- IRON PIPE ~FND~
- NHHB BOUND ~FND~
- UTILITY POLE / GUY WIRE
- NRCS SOIL DELINEATION LINE
- BUILDING SETBACK LINE
- OVERHEAD UTILITIES LINE
- WATER LINE
- CONTOUR LINE, MINOR
- CONTOUR LINE, MAJOR
- WETLAND LINE
- EXISTING STREAM
- EXISTING TRAIL
- WETLAND BUFFER
- CEMETERY BUFFER
- DRAINAGE LINE
- FEMA FLOOD ZONE
- 50' NHDES PRIMARY SETBACK
- 150' NHDES NATURAL WOODLAND BUFFER
- 250' NHDES SHORELAND PROTECTION ZONE
- 100' LOCAL CONSERVATION OVERLAY ZONE
- AREA OF GREATER THAN 20% SLOPE

CfB – NRCS SOIL LABEL
S.C.R.D. – STRAFFORD COUNTY REGISTRY OF DEEDS
TYP. – TYPICAL
FND – FOUND
(A) – ABUTTER REFERENCE

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

REVISION	DATE	DESCRIPTION

EXISTING CONDITIONS PLAN SOUTHEAST
LAND OF
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY &
EUGENE A. & DONNA L. SGRIGNUOLI
TOLEND ROAD
DOVER, N.H.
TAX MAP E, LOT 65–1 & 65–A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332–2863

SCALE : 1 IN. EQUALS 50 FT.
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 – 107

STATE OF NEW HAMPSHIRE
No. 805
KENNETH A. BERRY
LICENSED LAND SURVEYOR
SIGNATURE

NRCS SOILS:

BeB – BUXTON SILT LOAM, 3 TO 8 PERCENT SLOPES
HcB – HOLLIS-CHARLTON FINE SANDY LOAMS, 3 TO 8 PERCENT SLOPES
ScA – SCANTIC SILT LOAM, 0 TO 3 PERCENT SLOPES
ScB – SCANTIC SILT LOAM, 3 TO 8 PERCENT SLOPES
SfC – SUFFIELD SILT LOAM, 8 TO 15 PERCENT SLOPES
SfE – SUFFIELD SILT LOAM, 15 TO 35 PERCENT SLOPES

SEE WEBSOIL USDA-NRCS

WETLAND NOTES:

WETLANDS WERE DELINEATED BY JOHN P. HAYES SPRING 2021
1. REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION, (VERSION 2.0) JANUARY 2012, U.S. ARMY CORPS OF ENGINEERS.
2. FIELD INDICATORS OF HYDRIC SOILS IN THE UNITED STATES, A GUIDE FOR IDENTIFYING AND DELINEATING HYDRIC SOILS, VERSION 8.0. UNITED STATES DEPARTMENT OF AGRICULTURE (2016).
3. NATIONAL WETLAND PLANT LIST (CURRENT VERSION).

STATE OF NEW HAMPSHIRE · JOHN P. HAYES, III · CERTIFIED WETLAND SCIENTIST · #18

JOHN P. HAYES III, CWS #18

PLAN REFERENCES:

1.) STANDARD PROPERTY SURVEY AND SUBDIVISION OF LAND OF THE EDWARD J. GEORGE FAMILY TRUST
BY: CIVIL CONSULTANTS
DATED: APRIL 2, 2011
S.C.R.D.: PLAN #102–24

2.) PLAN OF LAND PREPARED FOR FAIRVIEW PARNERS, LLC TAX MAP E, LOT NO. 74B 35 TOLEND ROAD CITY OF DOVER COUNTY OF STRAFFORD STATE OF NEW HAMPSHIRE
BY: MCENEANEY SURVEY ASSOCIATES INC.
DATED: MARCH 4, 2016

3.) SUBDIVISION OF LAND FOR KAREN & JAMES BECKINGHAM & MARY & SCOTT MCEWAN IN DOVER, N.H.
BY: BRUCE L. POHOPEK
DATED: FEBRUARY 19, 1986
S.C.R.D.: PLAN #29–67

4.) SUBDIVISION OF LAND FOR PAUL MARTEL IN DOVER, N.H.
BY: BRUCE L. POHOPEK
DATED: OCTOBER 4, 1978
S.C.R.D.: PLAN #19A–47

5.) PLAN OF LOT ERNEST BSTANDIG DOVER NEW HAMPSHIRE
BY: G.L. DAVIS & ASSOCIATES
DATED: MAY, 1969
S.C.R.D.: BOOK 858, PAGE 159

6.) PLAN OF LAND, HAROLD A. & YVONNE M. CLEWLEY & LINDA J. NOURY, NORTH SIDE OF TOLEND ROAD, DOVER, NH
BY: R.W. MCCRONE
DATED: MARCH 1986
S.C.R.D. PLAN #28A–04

7.) BOUNDARY LINE ADJUSTMENT, THE HEIRS OF KENNETH & IRENE M. NYE AND PAUL & KATHERINE MARTEL, UPPER FACTORY ROAD, DOVER, NH
BY: TRITECH ENGINEERING CORPORATION
DATED: OCTOBER 25, 2004
S.C.R.D. PLAN #77–87

PLAN REFERENCES CONTINUED:

8.) SUBDIVISION OF LAND FOR ANTONIO BASTIANELLI IN DOVER, N.H.
BY: BRUCE L. POHOPEK, LAND SURVEYOR
DATED: JULY 31, 1989, AS REVISED 5/28/90
S.C.R.D. PLAN #32–149

9.) STATE OF NEW HAMPSHIRE, DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS, PLAN OF PROPOSED LS1824(1), SPAULDING TURNPIKE
DATED: OCTOBER 19, 1955
S.C.R.D. PLAN #32, POCKET 15, FOLDER 3 &
S.C.R.D. PLAN #36, POCKET 15, FOLDER 3 &
ON FILE AT NH DOT RIGHTS–OF–WAY, CONCORD, NH

ABUTTERS LIST:

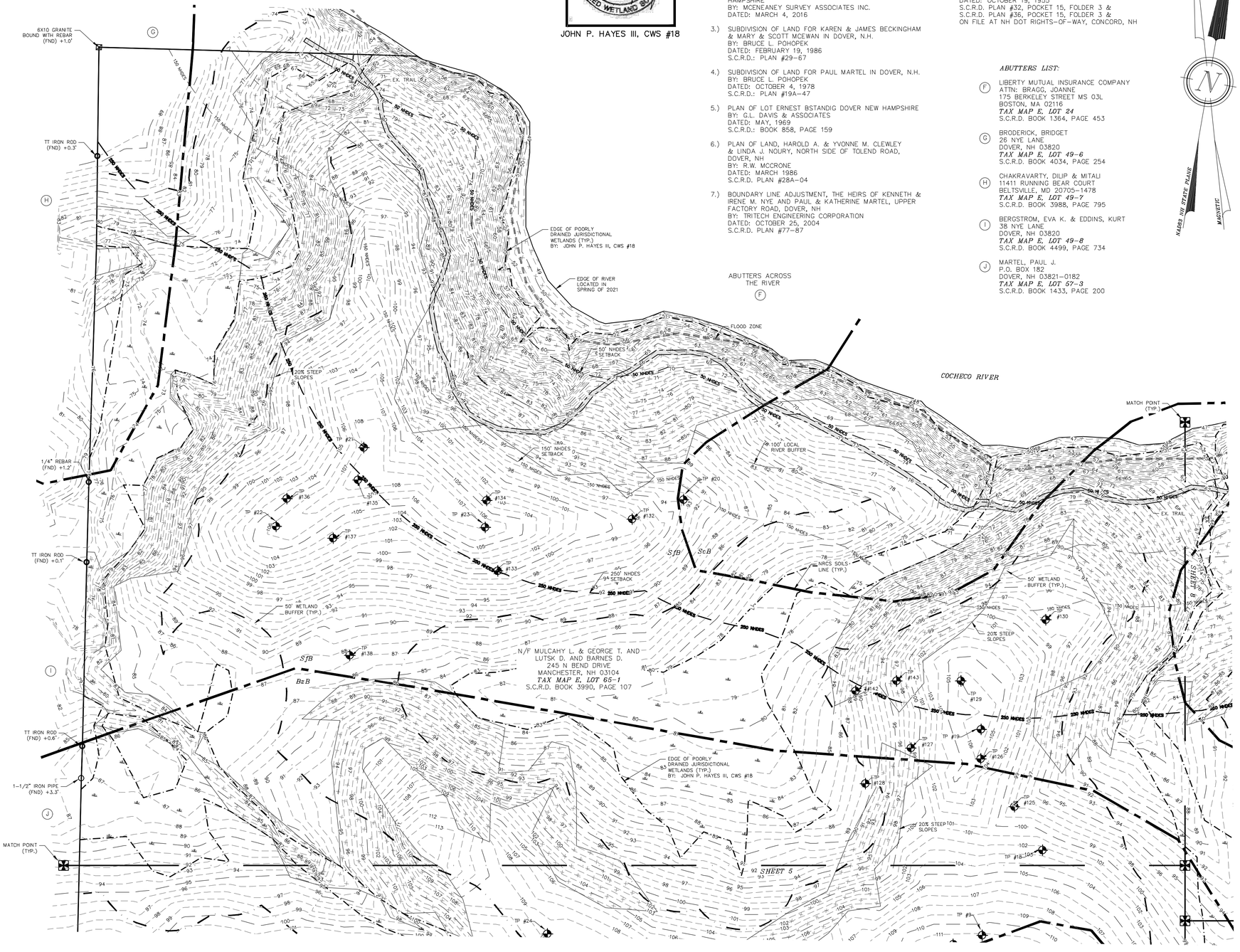
(F) LIBERTY MUTUAL INSURANCE COMPANY
ATTN: BRAGG, JOANNE
175 BERKELEY STREET MS 03L
BOSTON, MA 02116
TAX MAP E, LOT 24
S.C.R.D. BOOK 1364, PAGE 453

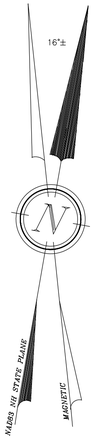
(G) BRODERICK, BRIDGET
26 NYE LANE
DOVER, NH 03820
TAX MAP E, LOT 49–6
S.C.R.D. BOOK 4034, PAGE 254

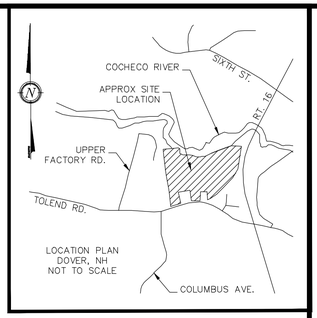
(H) CHAKRAVARTY, DILIP & MITALI
11411 RUNNING BEAR COURT
BELTSVILLE, MD 20705–1478
TAX MAP E, LOT 49–7
S.C.R.D. BOOK 3988, PAGE 795

(I) BERGSTROM, EVA K. & EDDINS, KURT
38 NYE LANE
DOVER, NH 03820
TAX MAP E, LOT 49–8
S.C.R.D. BOOK 4499, PAGE 734

(J) MARTEL, PAUL J.
P.O. BOX 182
DOVER, NH 03821–0182
TAX MAP E, LOT 57–3
S.C.R.D. BOOK 1433, PAGE 200







NOTES:

1.) OWNER LOT 65–1: D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY
245 N BEND DRIVE
MANCHESTER, NH 03104

OWNER LOT 65–A: EUGENE A. & DONNA L. SGRIGNUOLI
22 SUN HAWK LANE
DOVER, NH 03820

1A.) APPLICANT: STONEARCH DEVELOPMENT CORP.
42J DOVER POINT ROAD
DOVER, NH 03820

2.) LOT OF RECORD: TAX MAP E, LOT 65–1
TAX MAP E, LOT 65–A

3.) LOT AREA LOT 65–1: 1,388,409 Sq. Ft., 31.87 Ac. +/–
LOT AREA LOT 65–A: 544,070 Sq. Ft., 12.49 Ac. +/–

4.) S.C.R.D. BOOK 4918, PAGE 158
S.C.R.D. BOOK 1571, PAGE 86

5.) ZONING: (R–20) LOW DENSITY
MINIMUM FRONTAGE ~ 125'
MINIMUM LOT SIZE ~ 20,000 Sq. Ft.
FRONT SETBACK ~ 20'
REAR SETBACK ~ 30'
SIDE SETBACK ~ 20'
WETLANDS BUFFER ~ 50.0'
MAX. BUILDING HEIGHT: 35'
MAX. LOT COVERAGE: 30%

6.) I HEREBY CERTIFY THAT, TO THE BEST OF MY KNOWLEDGE & BELIEF, A PORTION OF THIS PARCEL DOES FALL WITHIN THE FLOOD PLAIN FLOOD HAZARD. REF.: FEMA COMMUNITY #330145, MAP #33017C0310E, DATED: SEPTEMBER 30, 2015.

7.) VERTICAL DATUM BASED ON NAVD88 ELEVATIONS. HORIZONTAL COORDINATES BASED ON NAD83. COORDINATES GATHERED USING TOPCON HIPER SR SURVEY GRADE GPS RECEIVERS.

8.) THE BOUNDARY LINES SHOWN ON THIS PLAN ARE THE RESULT OF A CLOSED TRAVERSE PERFORMED BY THIS OFFICE IN WINTER OF 2021, WITH A BETTER ERROR OF CLOSURE OF 1 PART IN 10,000.

9.) THE INTENT OF THIS PLAN IS TO SHOW THE BOUNDARIES OF TAX MAP E, LOT 65–1 AND LOT 65–A AS OF THE DATE OF THE FIELD WORK: MARCH 2021.

10.) SEE OVERVIEW EXISTING CONDITIONS PLAN FOR ABUTTERS LIST.

LEGEND:

- IRON BOUND ~FND~
- IRON PIPE ~FND~
- NHHB BOUND ~FND~
- UTILITY POLE / GUY WIRE
- NRCS SOIL DELINEATION LINE
- BUILDING SETBACK LINE
- OHU OHU — OVERHEAD UTILITIES LINE
- EWL — WATER LINE
- CONTOUR LINE, MINOR
- CONTOUR LINE, MAJOR
- WETLAND LINE
- EXISTING STREAM
- EXISTING TRAIL
- WETLAND BUFFER
- CEMETERY BUFFER
- D — DRAINAGE LINE
- FEMA FLOOD ZONE
- 50 NHDES — 50' NHDES PRIMARY SETBACK
- 150 NHDES — 150' NHDES NATURAL WOODLAND BUFFER
- 250 NHDES — 250' NHDES SHORELAND PROTECTION ZONE
- 100' LOCAL CONSERVATION OVERLAY ZONE
- AREA OF GREATER THAN 20% SLOPE
- CfB — NRCS SOIL LABEL
- S.C.R.D. — STRAFFORD COUNTY REGISTRY OF DEEDS
- TYP. — TYPICAL
- FND — FOUND
- (A) — ABUTTER REFERENCE

GRAPHIC SCALE

50 0 25 50 100 200
(IN FEET)
1 inch = 50 ft.

REVISION	DATE	DESCRIPTION

EXISTING CONDITIONS PLAN NORTHWEST
LAND OF
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY &
EUGENE A. & DONNA L. SGRIGNUOLI
TOLEND ROAD
DOVER, N.H.
TAX MAP E, LOT 65–1 & 65–A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332–2863

SCALE : 1 IN. EQUALS 50 FT.
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 – 107

STATE OF NEW HAMPSHIRE · No. 805 · KENNETH A. BERRY · LICENSED LAND SURVEYOR · SIGNATURE

LOCATION PLAN
DOVER, NH
NOT TO SCALE

PLAN REFERENCES:

1.) STANDARD PROPERTY SURVEY AND SUBDIVISION OF LAND OF THE EDWARD J. GEORGE FAMILY TRUST
BY: CIVIL CONSULTANTS
DATED: APRIL 2, 2011
S.C.R.D.: PLAN #102–24

2.) PLAN OF LAND PREPARED FOR FAIRVIEW PARNERS, LLC TAX MAP E, LOT NO. 74B 35 TOLEND ROAD CITY OF DOVER COUNTY OF STRAFFORD STATE OF NEW HAMPSHIRE
BY: MCENEANEY SURVEY ASSOCIATES INC.
DATED: MARCH 4, 2016

3.) SUBDIVISION OF LAND FOR KAREN & JAMES BECKINGHAM & MARY & SCOTT MCEWAN IN DOVER, N.H.
BY: BRUCE L. POHOPEK
DATED: FEBRUARY 19, 1986
S.C.R.D.: PLAN #29–67

4.) SUBDIVISION OF LAND FOR PAUL MARTEL IN DOVER, N.H.
BY: BRUCE L. POHOPEK
DATED: OCTOBER 4, 1978
S.C.R.D.: PLAN #19A–47

5.) PLAN OF LOT ERNEST BSTANDIG DOVER NEW HAMPSHIRE
BY: G.L. DAVIS & ASSOCIATES
DATED: MAY, 1969
S.C.R.D.: BOOK 858, PAGE 159

6.) PLAN OF LAND, HAROLD A. & YVONNE M. CLEWLEY & LINDA J. NOURY, NORTH SIDE OF TOLEND ROAD, DOVER, NH
BY: R.W. MCCRONE
DATED: MARCH 1986
S.C.R.D. PLAN #28A–04

7.) BOUNDARY LINE ADJUSTMENT, THE HEIRS OF KENNETH & IRENE M. NYE AND PAUL & KATHERINE MARTEL, UPPER FACTORY ROAD, DOVER, NH
BY: TRITECH ENGINEERING CORPORATION
DATED: OCTOBER 25, 2004
S.C.R.D. PLAN #77–87

PLAN REFERENCES CONTINUED:

8.) SUBDIVISION OF LAND FOR ANTONIO BASTIANELLI IN DOVER, N.H.
BY: BRUCE L. POHOPEK, LAND SURVEYOR
DATED: JULY 31, 1989, AS REVISED 5/28/90
S.C.R.D. PLAN #32–149

9.) STATE OF NEW HAMPSHIRE, DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS, PLAN OF PROPOSED LS1824(1), SPAULDING TURNPIKE
DATED: OCTOBER 19, 1955
S.C.R.D. PLAN #32, POCKET 15, FOLDER 3 &
S.C.R.D. PLAN #36, POCKET 15, FOLDER 3 &
ON FILE AT NH DOT RIGHTS–OF–WAY, CONCORD, NH

WETLAND NOTES:

WETLANDS WERE DELINEATED BY JOHN P. HAYES SPRING 2021

1. REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION, (VERSION 2.0) JANUARY 2012, U.S. ARMY CORPS OF ENGINEERS.
2. FIELD INDICATORS OF HYDRIC SOILS IN THE UNITED STATES, A GUIDE FOR IDENTIFYING AND DELINEATING HYDRIC SOILS, VERSION 8.0. UNITED STATES DEPARTMENT OF AGRICULTURE (2016).
3. NATIONAL WETLAND PLANT LIST (CURRENT VERSION).

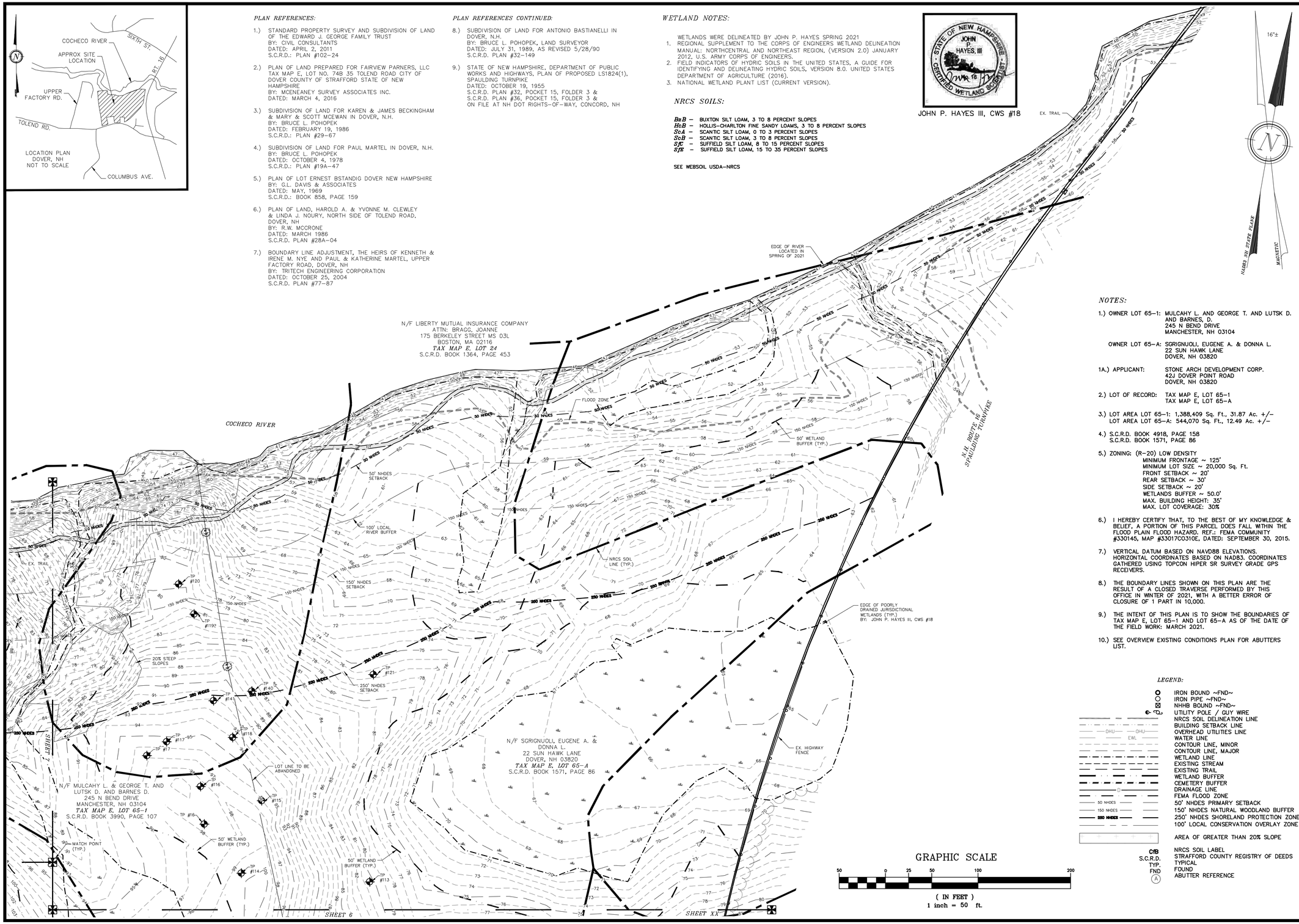
NRCS SOILS:

BsB – BUXTON SILT LOAM, 3 TO 8 PERCENT SLOPES
HcB – HOLLIS–CHARLTON FINE SANDY LOAMS, 3 TO 8 PERCENT SLOPES
ScA – SCANTIC SILT LOAM, 0 TO 3 PERCENT SLOPES
ScB – SCANTIC SILT LOAM, 3 TO 8 PERCENT SLOPES
SfC – SUFFIELD SILT LOAM, 8 TO 15 PERCENT SLOPES
SfE – SUFFIELD SILT LOAM, 15 TO 35 PERCENT SLOPES

SEE WEBSOIL USDA–NRCS

STATE OF NEW HAMPSHIRE · JOHN P. HAYES, III · CERTIFIED WETLAND SCIENTIST · 1041

JOHN P. HAYES III, CWS #18



NOTES:

1.) OWNER LOT 65–1: MULCAHY L. AND GEORGE T. AND LUTSK D. AND BARNES, D.
245 N BEND DRIVE
MANCHESTER, NH 03104

OWNER LOT 65–A: SGRIGNUOLI, EUGENE A. & DONNA L.
22 SUN HAWK LANE
DOVER, NH 03820

1A.) APPLICANT: STONE ARCH DEVELOPMENT CORP.
42J DOVER POINT ROAD
DOVER, NH 03820

2.) LOT OF RECORD: TAX MAP E, LOT 65–1
TAX MAP E, LOT 65–A

3.) LOT AREA LOT 65–1: 1,388,409 Sq. Ft., 31.87 Ac. +/–
LOT AREA LOT 65–A: 544,070 Sq. Ft., 12.49 Ac. +/–

4.) S.C.R.D. BOOK 4918, PAGE 158
S.C.R.D. BOOK 1571, PAGE 86

5.) ZONING: (R–20) LOW DENSITY
MINIMUM FRONTAGE ~ 125'
MINIMUM LOT SIZE ~ 20,000 Sq. Ft.
FRONT SETBACK ~ 20'
REAR SETBACK ~ 30'
SIDE SETBACK ~ 20'
WETLANDS BUFFER ~ 50.0'
MAX. BUILDING HEIGHT: 35'
MAX. LOT COVERAGE: 30%

6.) I HEREBY CERTIFY THAT, TO THE BEST OF MY KNOWLEDGE & BELIEF, A PORTION OF THIS PARCEL DOES FALL WITHIN THE FLOOD PLAIN FLOOD HAZARD. REF.: FEMA COMMUNITY #330145, MAP #33017C0310E, DATED: SEPTEMBER 30, 2015.

7.) VERTICAL DATUM BASED ON NAVD88 ELEVATIONS. HORIZONTAL COORDINATES BASED ON NAD83. COORDINATES GATHERED USING TOPCON HIPER SR SURVEY GRADE GPS RECEIVERS.

8.) THE BOUNDARY LINES SHOWN ON THIS PLAN ARE THE RESULT OF A CLOSED TRAVERSE PERFORMED BY THIS OFFICE IN WINTER OF 2021, WITH A BETTER ERROR OF CLOSURE OF 1 PART IN 10,000.

9.) THE INTENT OF THIS PLAN IS TO SHOW THE BOUNDARIES OF TAX MAP E, LOT 65–1 AND LOT 65–A AS OF THE DATE OF THE FIELD WORK: MARCH 2021.

10.) SEE OVERVIEW EXISTING CONDITIONS PLAN FOR ABUTTERS LIST.

LEGEND:

- IRON BOUND ~FND~
- IRON PIPE ~FND~
- NHHB BOUND ~FND~
- UTILITY POLE / GUY WIRE
- NRCS SOIL DELINEATION LINE
- BUILDING SETBACK LINE
- OVERHEAD UTILITIES LINE
- WATER LINE
- CONTOUR LINE, MINOR
- CONTOUR LINE, MAJOR
- WETLAND LINE
- EXISTING STREAM
- EXISTING TRAIL
- WETLAND BUFFER
- CEMETERY BUFFER
- DRAINAGE LINE
- FEMA FLOOD ZONE
- 50' NHDES PRIMARY SETBACK
- 150' NHDES NATURAL WOODLAND BUFFER
- 250' NHDES SHORELAND PROTECTION ZONE
- 100' LOCAL CONSERVATION OVERLAY ZONE
- AREA OF GREATER THAN 20% SLOPE
- CfB — NRCS SOIL LABEL
- S.C.R.D. — STRAFFORD COUNTY REGISTRY OF DEEDS
- TYP. — TYPICAL
- FND — FOUND
- (A) — ABUTTER REFERENCE

GRAPHIC SCALE
50 0 25 50 100 200
(IN FEET)
1 inch = 50 ft.

REVISION	DATE	DESCRIPTION

EXISTING CONDITIONS PLAN NORTHEAST
LAND OF
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY &
EUGENE A. & DONNA L. SGRIGNUOLI
TOLEND ROAD
DOVER, N.H.
TAX MAP E, LOT 65–1 & 65–A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332–2863

SCALE : 1 IN. EQUALS 50 FT.
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 – 107

STATE OF NEW HAMPSHIRE · No. 809 · KENNETH A. BERRY · LICENSED LAND SURVEYOR · SIGNATURE

SHEET 9 OF 97

SITE SPECIFIC SOILS LEGEND

SYMBOL	SOIL TAXONOMIC NAME	HYDROLOGIC SOIL GROUP
BeB	BIDDEFORD	D
BzA	BUXTON	C
BzB	BUXTON	C
BzC	BUXTON	C
BzD	BUXTON	C
BzE	BUXTON	C
CsB	CHARLTON (VERY STONY)	B
CsC	CHARLTON (VERY STONY)	B
CsD	CHARLTON (VERY STONY)	B
CsE	CHARLTON (VERY STONY)	B
HdA/Rk	HOLLIS–CHARLTON COMPLEX (VERY ROCKY)	B/D
HdB/Rk	HOLLIS–CHARLTON COMPLEX (VERY ROCKY)	B/D
HdC/Rk	HOLLIS–CHARLTON COMPLEX (VERY ROCKY)	B/D
HdD/Rk	HOLLIS–CHARLTON COMPLEX (VERY ROCKY)	B/D
HdE/Rk	HOLLIS–CHARLTON COMPLEX (VERY ROCKY)	B/D
MlB/P	MIXED ALLUVIAL LAND (POORLY DRAINED)	C/D
MlC/P	MIXED ALLUVIAL LAND (POORLY DRAINED)	C/D

SLOPE: A = 0–3% B = 3–8% C = 8–15% D = 15–25% E = 25–50% F = 50%+

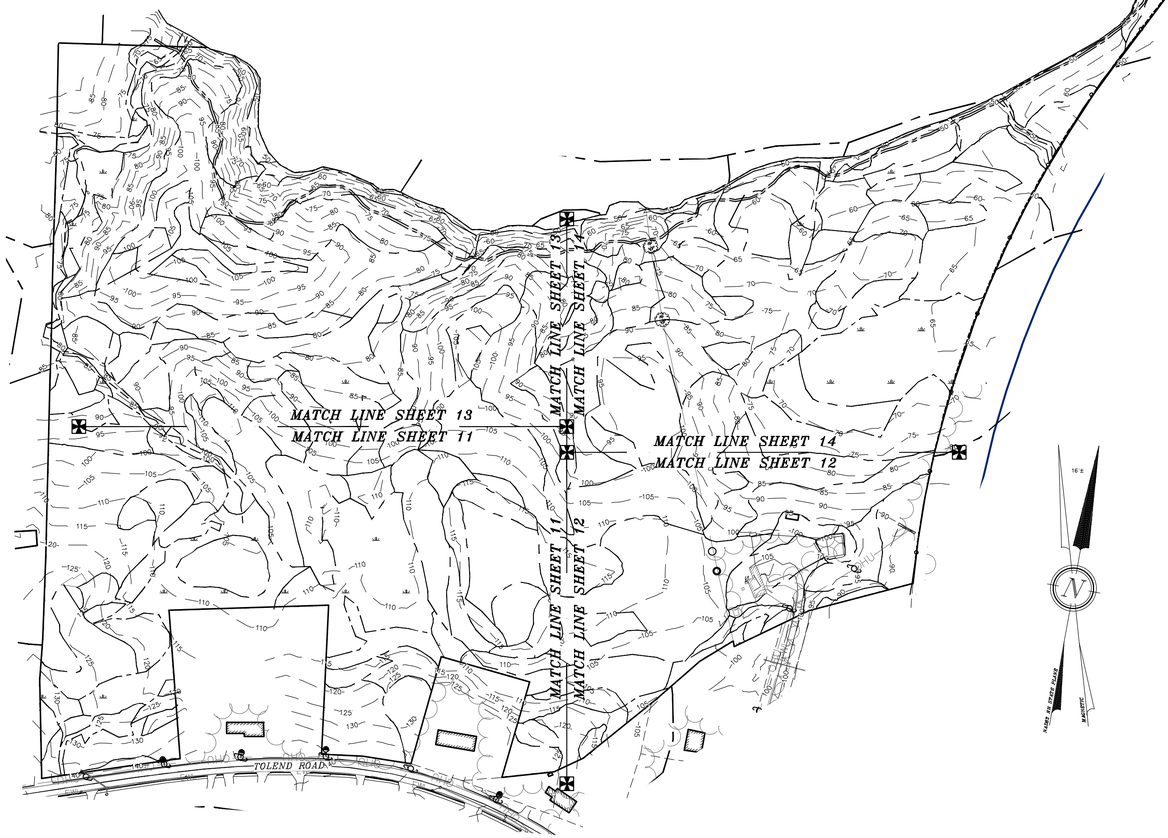
DENOMINATOR: /Rk = ROCKY /VPD = VERY POORLY DRAINED /PD = POORLY DRAINED /SWPD = SOMEWHAT POORLY DRAINED /MWD = MODERATELY WELL DRAINED

SITE SPECIFIC SOILS LEGEND (CONT'D)

SYMBOL	SOIL TAXONOMIC NAME	HYDROLOGIC SOIL GROUP
MlB	MIXED ALLUVIAL LAND	A
MlC	MIXED ALLUVIAL LAND	A
MlD	MIXED ALLUVIAL LAND	A
MlE	MIXED ALLUVIAL LAND	A
ScA/P	SCANTIC	D
ScB/P	SCANTIC	D
ScC/P	SCANTIC	D
ScD/P	SCANTIC	D
ScE/P	SCANTIC	D
SfA	SUFFIELD	C
SfB	SUFFIELD	C
SfC	SUFFIELD	C
SfD	SUFFIELD	C
SfE	SUFFIELD	C
500B	UDORTHENTS	C
500C	UDORTHENTS	C
500D	UDORTHENTS	C
500E	UDORTHENTS	C

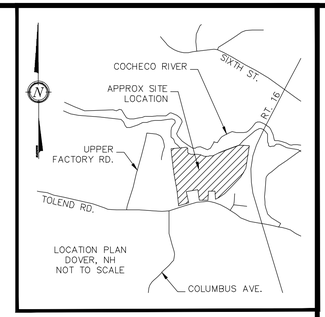
SLOPE: A = 0–3% B = 3–8% C = 8–15% D = 15–25% E = 25–50% F = 50%+

DENOMINATOR: /Rk = ROCKY /VPD = VERY POORLY DRAINED /PD = POORLY DRAINED /SWPD = SOMEWHAT POORLY DRAINED /MWD = MODERATELY WELL DRAINED



LEGEND:

- IRON BOUND (TBS)
- IRON BOUND (FND)
- DRILL HOLE (FND)
- GRANITE BOUND (TBS)
- UTILITY POLE/GUY WIRE
- TEST HOLE
- BENCHMARK
- STONE WALL
- WETLAND LINE
- 50' WETLAND BUFFER
- OHU — OVERHEAD UTILITIES LINE
- 276 — EXISTING CONTOUR MINOR
- 275 — EXISTING CONTOUR MAJOR
- SOIL LINE
- LIMIT OF SOIL SURVEY
- 448A — SOIL SERIES
- S.C.R.D. — STRAFFORD COUNTY REGISTRY OF DEEDS
- TYP. — TYPICAL
- FND — FOUND
- TBA — TO BE ABANDONED



NOTES:

1.) OWNER LOT 65–1: D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY
245 N BEND DRIVE
MANCHESTER, NH 03104

OWNER LOT 65–A: EUGENE A. & DONNA L. SGRIGNUOLI
22 SUN HAWK LANE
DOVER, NH 03820

1A.) APPLICANT: STONEARCH DEVELOPMENT CORP.
42J DOVER POINT ROAD
DOVER, NH 03820

2.) LOT OF RECORD: TAX MAP E, LOT 65–1
TAX MAP E, LOT 65–A

3.) LOT AREA LOT 65–1: 1,388,409 Sq. Ft., 31.87 Ac. +/–
LOT AREA LOT 65–A: 544,070 Sq. Ft., 12.49 Ac. +/–

4.) S.C.R.D. BOOK 4918, PAGE 158
S.C.R.D. BOOK 1571, PAGE 86

5.) I HEREBY CERTIFY THAT, TO THE BEST OF MY KNOWLEDGE & BELIEF, A PORTION OF THIS PARCEL DOES FALL WITHIN THE FLOOD PLAIN FLOOD HAZARD. REF.: FEMA COMMUNITY #330145, MAP #33017C0310E, DATED: SEPTEMBER 30, 2015.

6.) VERTICAL DATUM BASED ON NAVD88 ELEVATIONS. HORIZONTAL COORDINATES BASED ON NAD83. COORDINATES GATHERED USING TOPCON HIPER SR SURVEY GRADE GPS RECEIVERS.

7.) THE BOUNDARY LINES SHOWN ON THIS PLAN ARE THE RESULT OF A CLOSED TRAVERSE PERFORMED BY THIS OFFICE IN WINTER OF 2021, WITH A BETTER ERROR OF CLOSURE OF 1 PART IN 10,000.

8.) THE INTENT OF THIS PLAN IS TO SHOW THE SITE SPECIFIC SOIL SURVEY OF TAX MAP E, LOT 65–1 AND LOT 65–A AS OF THE DATE OF THE SURVEY (WINTER 2020)..

STATE OF NEW HAMPSHIRE — JOHN P. HAYES, III — CERTIFIED WETLAND SCIENTIST — MAR 18

JOHN P. HAYES III, CWS #18

STATE OF NEW HAMPSHIRE — JOHN P. HAYES III — LICENSED LAND SURVEYOR — 867

JOHN P. HAYES III, CSS #87

GRAPHIC SCALE

150 0 75 150 300 600

(IN FEET)
1 inch = 150 ft.

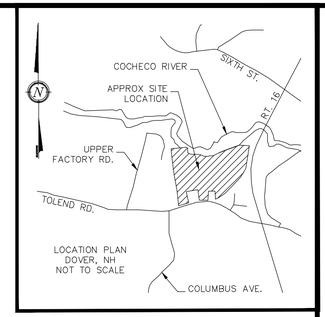
REVISION	DATE	DESCRIPTION

OVERVIEW SITE SPECIFIC SOILS MAP
LAND OF
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY &
EUGENE A. & DONNA L. SGRIGNUOLI
TOLEND ROAD
DOVER, N.H.
TAX MAP E, LOT 65–1 & 65–A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332–2863

SCALE : 1 IN. EQUALS 150 FT.
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 – 107

STATE OF NEW HAMPSHIRE — KENNETH A. BERRY No. 19641 LICENSED PROFESSIONAL ENGINEER



NOTES:

1.) OWNER LOT 65–1: D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY
245 N BEND DRIVE
MANCHESTER, NH 03104

OWNER LOT 65–A: EUGENE A. & DONNA L. SGRIGNUOLI
22 SUN HAWK LANE
DOVER, NH 03820

1A.) APPLICANT: STONEARCH DEVELOPMENT CORP.
42J DOVER POINT ROAD
DOVER, NH 03820

2.) LOT OF RECORD: TAX MAP E, LOT 65–1
TAX MAP E, LOT 65–A

3.) LOT AREA LOT 65–1: 1,388,409 Sq. Ft., 31.87 Ac. +/–
LOT AREA LOT 65–A: 544,070 Sq. Ft., 12.49 Ac. +/–

4.) S.C.R.D. BOOK 4918, PAGE 158
S.C.R.D. BOOK 1571, PAGE 86

5.) I HEREBY CERTIFY THAT, TO THE BEST OF MY KNOWLEDGE & BELIEF, A PORTION OF THIS PARCEL DOES FALL WITHIN THE FLOOD PLAIN FLOOD HAZARD. REF.: FEMA COMMUNITY #330145, MAP #33017C0310E, DATED: SEPTEMBER 30, 2015.

6.) VERTICAL DATUM BASED ON NAVD88 ELEVATIONS. HORIZONTAL COORDINATES BASED ON NAD83. COORDINATES GATHERED USING TOPCON HIPER SR SURVEY GRADE GPS RECEIVERS.

7.) THE BOUNDARY LINES SHOWN ON THIS PLAN ARE THE RESULT OF A CLOSED TRAVERSE PERFORMED BY THIS OFFICE IN WINTER OF 2021, WITH A BETTER ERROR OF CLOSURE OF 1 PART IN 10,000.

8.) THE INTENT OF THIS PLAN IS TO SHOW THE SITE SPECIFIC SOIL SURVEY OF TAX MAP E, LOT 65–1 AND LOT 65–A AS OF THE DATE OF THE SURVEY (WINTER 2020)..

LEGEND:

- IRON BOUND (TBS)
- IRON BOUND (FND)
- DRILL HOLE (FND)
- GRANITE BOUND (TBS)
- UTILITY POLE/GUY WIRE
- TEST HOLE
- BENCHMARK

- STONE WALL
- WETLAND LINE
- 50' WETLAND BUFFER
- OVERHEAD UTILITIES LINE
- EXISTING CONTOUR MINOR
- EXISTING CONTOUR MAJOR
- SOIL LINE
- LIMIT OF SOIL SURVEY

448A SOIL SERIES
S.C.R.D. STRAFFORD COUNTY REGISTRY OF DEEDS
TYP. TYPICAL
FND FOUND
TBA TO BE ABANDONED

JOHN P. HAYES III, CWS #18

JOHN P. HAYES III, CSS #87

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

REVISION	DATE	DESCRIPTION

SITE SPECIFIC SOILS MAP – SOUTHWEST
LAND OF
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY &
EUGENE A. & DONNA L. SGRIGNUOLI
TOLEND ROAD
DOVER, N.H.
TAX MAP E, LOT 65–1 & 65–A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332–2863

SCALE : 1 IN. EQUALS 50 FT.
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 – 107

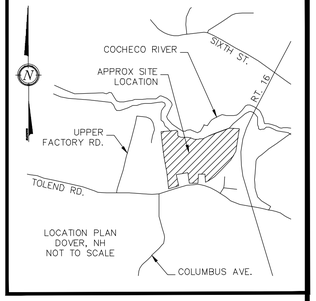
KENNETH A. BERRY No. 14242 LICENSED PROFESSIONAL ENGINEER – STATE OF NEW HAMPSHIRE

LEGEND:

- IRON BOUND (TBS)
- IRON BOUND (FND)
- DRILL HOLE (FND)
- GRANITE BOUND (TBS)
- UTILITY POLE/GUY WIRE
- TEST HOLE
- BENCHMARK

- STONE WALL
- WETLAND LINE
- 50' WETLAND BUFFER
- OVERHEAD UTILITIES LINE
- EXISTING CONTOUR MINOR
- EXISTING CONTOUR MAJOR
- SOIL LINE
- LIMIT OF SOIL SURVEY

448A SOIL SERIES
S.C.R.D. STRAFFORD COUNTY REGISTRY OF DEEDS
TYP. TYPICAL
FND FOUND
TBA TO BE ABANDONED



NOTES:

1.) OWNER LOT 65–1: D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY
245 N BEND DRIVE
MANCHESTER, NH 03104

OWNER LOT 65–A: EUGENE A. & DONNA L. SGRIGNUOLI
22 SUN HAWK LANE
DOVER, NH 03820

1A.) APPLICANT: STONEARCH DEVELOPMENT CORP.
42J DOVER POINT ROAD
DOVER, NH 03820

2.) LOT OF RECORD: TAX MAP E, LOT 65–1
TAX MAP E, LOT 65–A

3.) LOT AREA LOT 65–1: 1,388,409 Sq. Ft., 31.87 Ac. +/–
LOT AREA LOT 65–A: 544,070 Sq. Ft., 12.49 Ac. +/–

4.) S.C.R.D. BOOK 4918, PAGE 158
S.C.R.D. BOOK 1571, PAGE 86

5.) I HEREBY CERTIFY THAT, TO THE BEST OF MY KNOWLEDGE & BELIEF, A PORTION OF THIS PARCEL DOES FALL WITHIN THE FLOOD PLAIN FLOOD HAZARD. REF.: FEMA COMMUNITY #330145, MAP #33017C0310E, DATED: SEPTEMBER 30, 2015.

6.) VERTICAL DATUM BASED ON NAVD88 ELEVATIONS. HORIZONTAL COORDINATES BASED ON NAD83. COORDINATES GATHERED USING TOPCON HIPER SR SURVEY GRADE GPS RECEIVERS.

7.) THE BOUNDARY LINES SHOWN ON THIS PLAN ARE THE RESULT OF A CLOSED TRAVERSE PERFORMED BY THIS OFFICE IN WINTER OF 2021, WITH A BETTER ERROR OF CLOSURE OF 1 PART IN 10,000.

8.) THE INTENT OF THIS PLAN IS TO SHOW THE SITE SPECIFIC SOIL SURVEY OF TAX MAP E, LOT 65–1 AND LOT 65–A AS OF THE DATE OF THE SURVEY (WINTER 2020)..

STATE OF NEW HAMPSHIRE · JOHN P. HAYES, III · CERTIFIED WETLAND SCIENTIST · NO. 18
JOHN P. HAYES III, CWS #18

STATE OF NEW HAMPSHIRE · JOHN P. HAYES III · NO. 087 · LICENSED LAND SURVEYOR
JOHN P. HAYES III, CSS #87

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

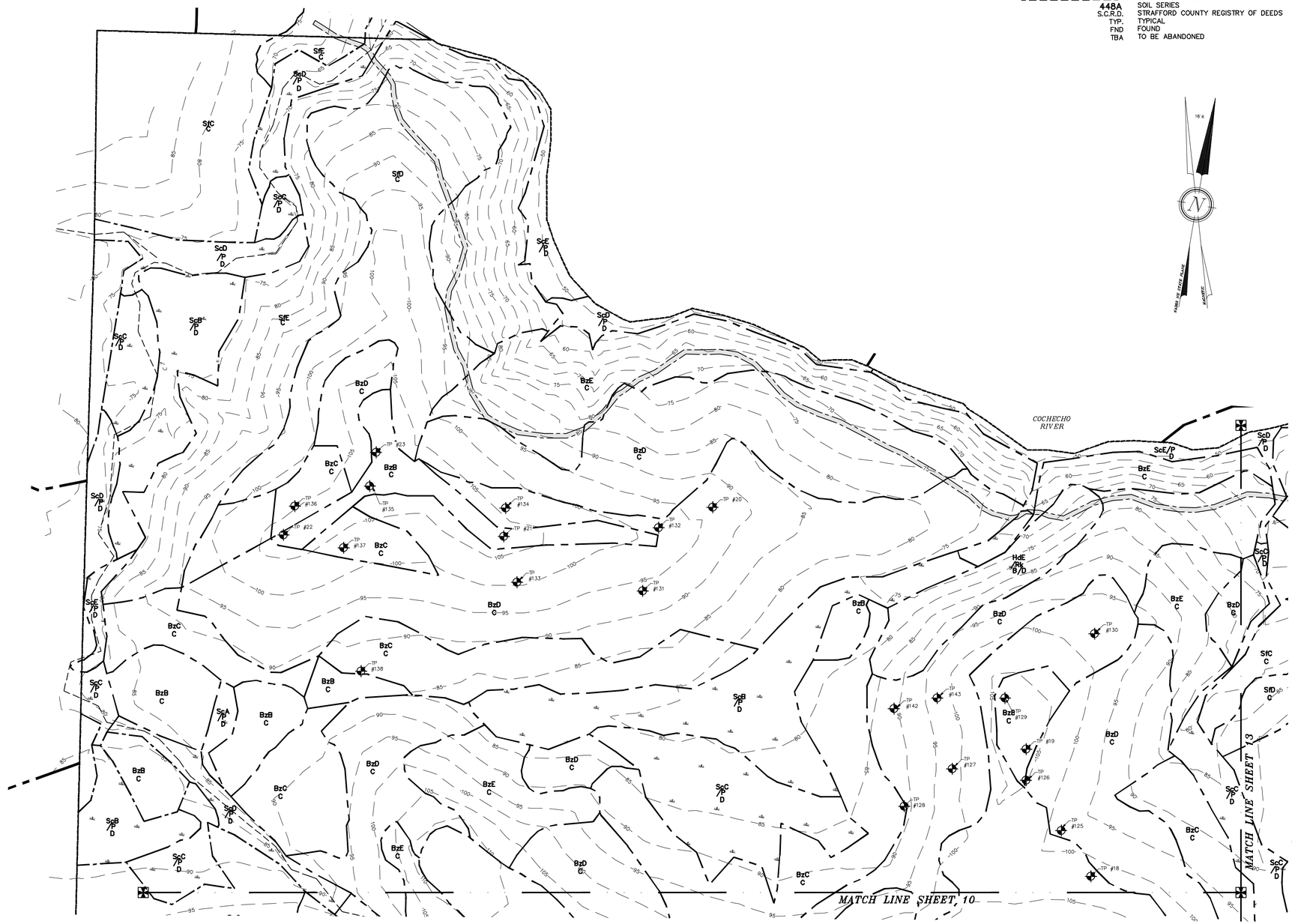
REVISION	DATE	DESCRIPTION

SITE SPECIFIC SOILS MAP – SOUTHEAST
LAND OF
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY &
EUGENE A. & DONNA L. SGRIGNUOLI
TOLEND ROAD
DOVER, N.H.
TAX MAP E, LOT 65–1 & 65–A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332–2863

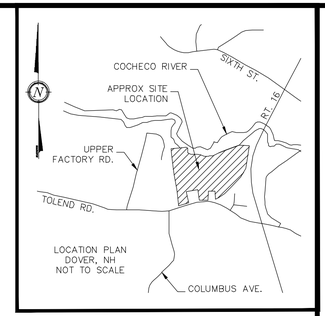
SCALE : 1 IN. EQUALS 50 FT.
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 – 107

STATE OF NEW HAMPSHIRE · KENNETH A. BERRY · NO. 9447 · LICENSED PROFESSIONAL ENGINEER



LEGEND:

- IRON BOUND (TBS)
- IRON BOUND (FND)
- DRILL HOLE (FND)
- GRANITE BOUND (TBS)
- UTILITY POLE/GUY WIRE
- TEST HOLE
- BENCHMARK
- STONE WALL
- WETLAND LINE
- 50' WETLAND BUFFER
- OHU — OVERHEAD UTILITIES LINE
- 276 — EXISTING CONTOUR MINOR
- 275 — EXISTING CONTOUR MAJOR
- SOIL LINE
- LIMIT OF SOIL SURVEY
- 44BA — SOIL SERIES
- S.C.R.D. — STRAFFORD COUNTY REGISTRY OF DEEDS
- TYP. — TYPICAL
- FND — FOUND
- TBA — TO BE ABANDONED



LOCATION PLAN
DOVER, NH
NOT TO SCALE

NOTES:

1.) OWNER LOT 65–1: D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY
245 N BEND DRIVE
MANCHESTER, NH 03104

OWNER LOT 65–A: EUGENE A. & DONNA L. SGRIGNUOLI
22 SUN HAWK LANE
DOVER, NH 03820

1A.) APPLICANT: STONEARCH DEVELOPMENT CORP.
42J DOVER POINT ROAD
DOVER, NH 03820

2.) LOT OF RECORD: TAX MAP E, LOT 65–1
TAX MAP E, LOT 65–A

3.) LOT AREA LOT 65–1: 1,388,409 Sq. Ft., 31.87 Ac. +/–
LOT AREA LOT 65–A: 544,070 Sq. Ft., 12.49 Ac. +/–

4.) S.C.R.D. BOOK 4918, PAGE 158
S.C.R.D. BOOK 1571, PAGE 86

5.) I HEREBY CERTIFY THAT, TO THE BEST OF MY KNOWLEDGE & BELIEF, A PORTION OF THIS PARCEL DOES FALL WITHIN THE FLOOD PLAIN FLOOD HAZARD, REF.: FEMA COMMUNITY #330145, MAP #33017C0310E, DATED: SEPTEMBER 30, 2015.

6.) VERTICAL DATUM BASED ON NAVD88 ELEVATIONS. HORIZONTAL COORDINATES BASED ON NAD83. COORDINATES GATHERED USING TOPCON HIPER SR SURVEY GRADE GPS RECEIVERS.

7.) THE BOUNDARY LINES SHOWN ON THIS PLAN ARE THE RESULT OF A CLOSED TRAVERSE PERFORMED BY THIS OFFICE IN WINTER OF 2021, WITH A BETTER ERROR OF CLOSURE OF 1 PART IN 10,000.

8.) THE INTENT OF THIS PLAN IS TO SHOW THE SITE SPECIFIC SOIL SURVEY OF TAX MAP E, LOT 65–1 AND LOT 65–A AS OF THE DATE OF THE SURVEY (WINTER 2020)..

JOHN P. HAYES III, CWS #18

JOHN P. HAYES III, CSS #87

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

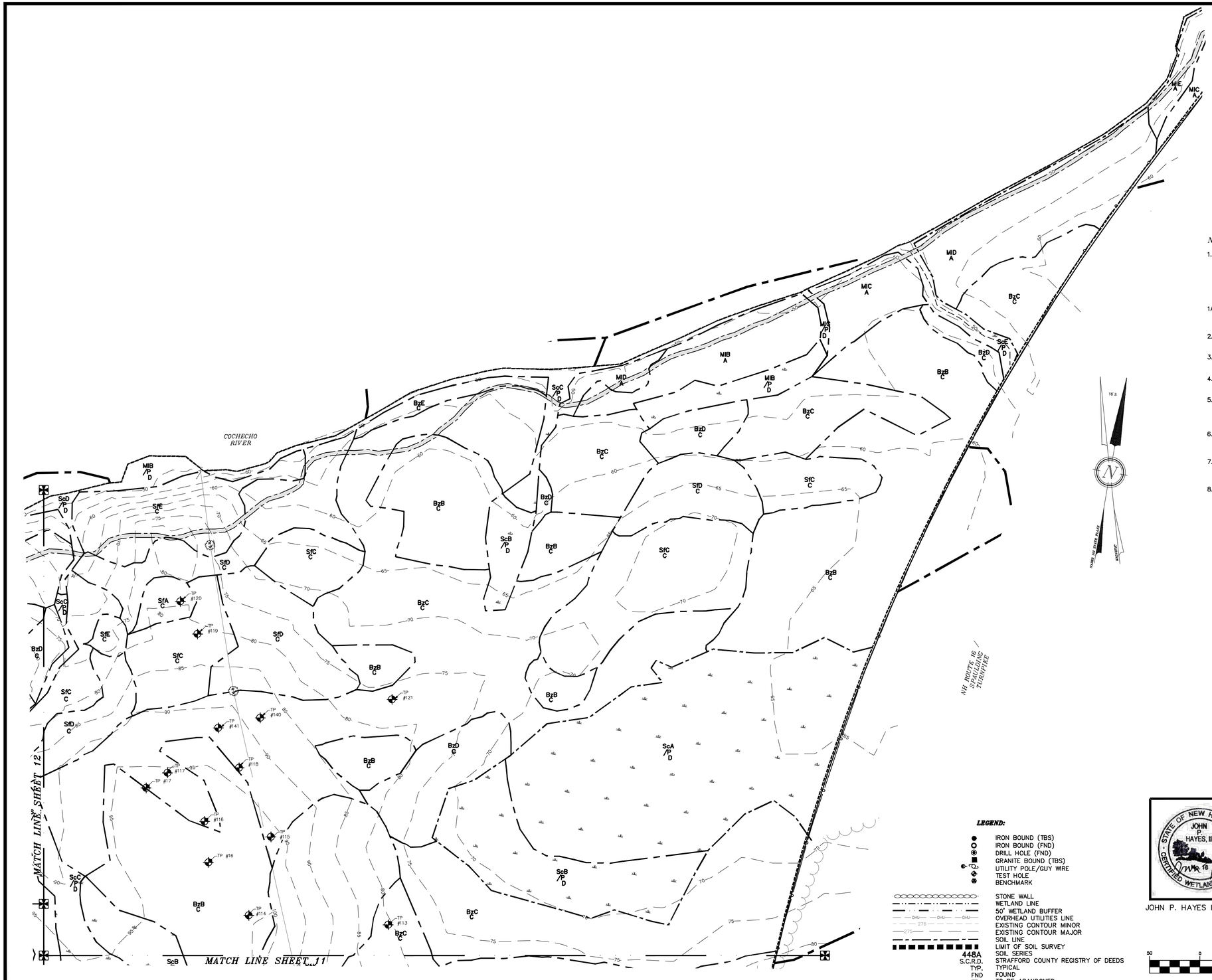
REVISION	DATE	DESCRIPTION

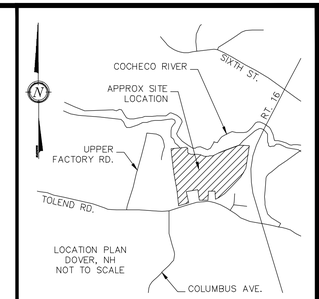
SITE SPECIFIC SOILS MAP – NORTHWEST
LAND OF
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY &
EUGENE A. & DONNA L. SGRIGNUOLI
TOLEND ROAD
DOVER, N.H.
TAX MAP E, LOT 65–1 & 65–A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332–2863

SCALE : 1 IN. EQUALS 50 FT.
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 – 107

KENNETH A. BERRY No. 10676 LICENSED PROFESSIONAL ENGINEER – STATE OF NEW HAMPSHIRE





NOTES:

1.) OWNER LOT 65–1: D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY
245 N BEND DRIVE
MANCHESTER, NH 03104

OWNER LOT 65–A: EUGENE A. & DONNA L. SGRIGNUOLI
22 SUN HAWK LANE
DOVER, NH 03820

1A.) APPLICANT: STONEARCH DEVELOPMENT CORP.
42J DOVER POINT ROAD
DOVER, NH 03820

2.) LOT OF RECORD: TAX MAP E, LOT 65–1
TAX MAP E, LOT 65–A

3.) LOT AREA LOT 65–1: 1,388,409 Sq. Ft., 31.87 Ac. +/–
LOT AREA LOT 65–A: 544,070 Sq. Ft., 12.49 Ac. +/–

4.) S.C.R.D. BOOK 4918, PAGE 158
S.C.R.D. BOOK 1571, PAGE 86

5.) I HEREBY CERTIFY THAT, TO THE BEST OF MY KNOWLEDGE & BELIEF, A PORTION OF THIS PARCEL DOES FALL WITHIN THE FLOOD PLAIN FLOOD HAZARD. REF.: FEMA COMMUNITY #330145, MAP #33017C0310E, DATED: SEPTEMBER 30, 2015.

6.) VERTICAL DATUM BASED ON NAVD88 ELEVATIONS. HORIZONTAL COORDINATES BASED ON NAD83. COORDINATES GATHERED USING TOPCON HIPER SR SURVEY GRADE GPS RECEIVERS.

7.) THE BOUNDARY LINES SHOWN ON THIS PLAN ARE THE RESULT OF A CLOSED TRAVERSE PERFORMED BY THIS OFFICE IN WINTER OF 2021, WITH A BETTER ERROR OF CLOSURE OF 1 PART IN 10,000.

8.) THE INTENT OF THIS PLAN IS TO SHOW THE SITE SPECIFIC SOIL SURVEY OF TAX MAP E, LOT 65–1 AND LOT 65–A AS OF THE DATE OF THE SURVEY (WINTER 2020)..

LEGEND:

- IRON BOUND (TBS)
- IRON BOUND (FND)
- DRILL HOLE (FND)
- GRANITE BOUND (TBS)
- UTILITY POLE/GUY WIRE
- TEST HOLE
- BENCHMARK
- STONE WALL
- WETLAND LINE
- 50' WETLAND BUFFER
- OVERHEAD UTILITIES LINE
- EXISTING CONTOUR MINOR
- EXISTING CONTOUR MAJOR
- SOIL LINE
- LIMIT OF SOIL SURVEY
- 448A SOIL SERIES
- S.C.R.D. STRAFFORD COUNTY REGISTRY OF DEEDS
- TYP. TYPICAL
- FND FOUND
- TBA TO BE ABANDONED

JOHN P. HAYES III, CWS #18

JOHN P. HAYES III, CSS #87

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

REVISION	DATE	DESCRIPTION

SITE SPECIFIC SOILS MAP – NORTHEAST
LAND OF
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY &
EUGENE A. & DONNA L. SGRIGNUOLI
TOLEND ROAD
DOVER, N.H.
TAX MAP E, LOT 65–1 & 65–A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332–2863

SCALE : 1 IN. EQUALS 50 FT.
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 – 107

KENNETH A. BERRY No. 14245 LICENSED PROFESSIONAL ENGINEER

TEST PIT DATA:

TEST PIT #1
0–7 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
7–14 10YR 4/6 DARK YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
14–20 2.5Y 5/4 LIGHT OLIVE BROWN, GRAVELLY FINE SANDY LOAM, GRANULAR, FRIABLE
20–42 2.5Y 5/2 GRAYISH BROWN, GRAVELLY FINE SANDY LOAM WITH REDOX. FEAT. PRESENT, MASSIVE, FRIABLE
E.S.H.W.T. @ 20"
RESTRICTIVE LAYER @ N/A
GROUND WATER @ N/A
TERMINATED @ 42"
REFUSAL @ 42"

TEST PIT #2
0–7 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
7–18 10YR 4/4 DARK YELLOWISH BROWN, GRAVELLY FINE SANDY LOAM, GRANULAR, FRIABLE
18–24 10YR 4/6 DARK YELLOWISH BROWN, GRAVELLY FINE SANDY LOAM, MASSIVE, FRIABLE
E.S.H.W.T. @ N/A
RESTRICTIVE LAYER @ N/A
GROUND WATER @ N/A
TERMINATED @ 24"
REFUSAL @ 24"

TEST PIT #3
0–7 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
7–18 10YR 4/4 DARK YELLOWISH BROWN, GRAVELLY FINE SANDY LOAM, GRANULAR, FRIABLE
18–24 10YR 4/6 DARK YELLOWISH BROWN, GRAVELLY FINE SANDY LOAM, MASSIVE, FRIABLE
E.S.H.W.T. @ N/A
RESTRICTIVE LAYER @ N/A
GROUND WATER @ N/A
TERMINATED @ 24"
REFUSAL @ 24"

TEST PIT #4
0–4 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
4–14 10YR 5/6 YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
14–30 2.5Y 5/4 LIGHT OLIVE BROWN, GRAVELLY FINE SANDY LOAM, GRANULAR, FRIABLE
30–62 2.5Y 5/2 GRAYISH BROWN, GRAVELLY FINE SANDY LOAM WITH REDOX. FEAT. PRESENT, MASSIVE, FRIABLE
E.S.H.W.T. @ 30"
RESTRICTIVE LAYER @ N/A
GROUND WATER @ N/A
TERMINATED @ 62"
REFUSAL @ N/A

TEST PIT #5
E.S.H.W.T. @ N/A
RESTRICTIVE LAYER @ N/A
GROUND WATER @ N/A
TERMINATED < 20"
REFUSAL < 20"

TEST PIT #6
E.S.H.W.T. @ N/A
RESTRICTIVE LAYER @ N/A
GROUND WATER @ N/A
TERMINATED < 20"
REFUSAL < 20"

TEST PIT #7
0–9 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
9–18 10YR 5/6 YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
18–28 2.5Y 5/4 LIGHT OLIVE BROWN, GRAVELLY FINE SANDY LOAM, GRANULAR, FRIABLE
28–38 2.5Y 5/2 GRAYISH BROWN, GRAVELLY FINE SANDY LOAM WITH REDOX. FEAT. PRESENT, MASSIVE, FRIABLE
38–64 2.5Y 5/2 GRAYISH BROWN, LOAMY SAND WITH REDOX. FEAT. PRESENT, MASSIVE, FRIABLE
E.S.H.W.T. @ 28"
RESTRICTIVE LAYER @ N/A
GROUND WATER @ N/A
TERMINATED @ 64"
REFUSAL @ N/A

TEST PIT #8
0–4 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
4–18 10YR 4/6 DARK YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
18–26 2.5Y 5/4 LIGHT OLIVE BROWN, GRAVELLY FINE SANDY LOAM, GRANULAR, FRIABLE
26–60 2.5Y 5/2 GRAYISH BROWN, GRAVELLY FINE SANDY LOAM WITH REDOX. FEAT. PRESENT, MASSIVE, FRIABLE
E.S.H.W.T. @ 26"
RESTRICTIVE LAYER @ N/A
GROUND WATER @ N/A
TERMINATED @ 60"
REFUSAL @ N/A

TEST PIT #9
0–8 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
8–22 10YR 4/4 DARK YELLOWISH BROWN, SILT LOAM, GRANULAR, FRIABLE
22–38 5Y 5/3 OLIVE, SILTY CLAY LOAM WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
38–60 5Y 4/2 OLIVE GRAY, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 22"
RESTRICTIVE LAYER @ 22"
GROUND WATER @ N/A
TERMINATED @ 60"
REFUSAL @ N/A

TEST PIT #10
0–8 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
8–20 10YR 5/6 YELLOWISH BROWN, GRAVELLY FINE SANDY LOAM, GRANULAR, FRIABLE
20–34 10YR 4/6 DARK YELLOWISH BROWN, GRAVELLY FINE SANDY LOAM, MASSIVE, FRIABLE
34–65 2.5Y 5/2 GRAYISH BROWN, GRAVELLY FINE SANDY LOAM WITH REDOX. FEAT. PRESENT, MASSIVE, FRIABLE
E.S.H.W.T. @ 34"
RESTRICTIVE LAYER @ N/A
GROUND WATER @ N/A
TERMINATED @ 65"
REFUSAL @ N/A

TEST PIT #11
0–8 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
8–16 10YR 4/4 DARK YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
16–24 10YR 4/4 DARK YELLOWISH BROWN, SILT LOAM, GRANULAR, FRIABLE
24–60 5Y 5/3 OLIVE, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 24"
RESTRICTIVE LAYER @ 24"
GROUND WATER @ N/A
TERMINATED @ 60"
REFUSAL @ N/A

TEST PIT #12
0–8 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
8–14 10YR 4/4 DARK YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
14–18 10YR 4/4 DARK YELLOWISH BROWN, SILT LOAM, GRANULAR, FRIABLE
18–60 5Y 5/3 OLIVE, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 18"
RESTRICTIVE LAYER @ 18"
GROUND WATER @ N/A
TERMINATED @ 60"
REFUSAL @ N/A

TEST PIT DATA:

TEST PIT #13
0–8 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
8–14 10YR 4/4 DARK YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
14–24 10YR 4/4 DARK YELLOWISH BROWN, SILT LOAM, GRANULAR, FRIABLE
24–38 5Y 5/3 OLIVE, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
38–60 5Y 4/2 OLIVE GRAY, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 24"
RESTRICTIVE LAYER @ 24"
GROUND WATER @ N/A
TERMINATED @ 60"
REFUSAL @ N/A

TEST PIT #14
0–8 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
8–16 10YR 4/4 DARK YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
16–24 10YR 4/4 DARK YELLOWISH BROWN, SILT LOAM, GRANULAR, FRIABLE
24–36 5Y 5/3 OLIVE, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
36–64 5Y 4/2 OLIVE GRAY, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 24"
RESTRICTIVE LAYER @ 24"
GROUND WATER @ N/A
TERMINATED @ 64"
REFUSAL @ N/A

TEST PIT #15
0–8 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
8–16 2.5Y 5/4 LIGHT OLIVE BROWN, SILT LOAM, GRANULAR, FRIABLE
16–28 5Y 5/3 OLIVE, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
28–60 5Y 4/2 OLIVE GRAY, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 16"
RESTRICTIVE LAYER @ 16"
GROUND WATER @ N/A
TERMINATED @ 60"
REFUSAL @ N/A

TEST PIT #16
0–8 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
8–16 10YR 4/4 DARK YELLOWISH BROWN, SILT LOAM, GRANULAR, FRIABLE
16–24 5Y 5/3 OLIVE, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
24–64 5Y 4/2 OLIVE GRAY, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 16"
RESTRICTIVE LAYER @ 16"
GROUND WATER @ N/A
TERMINATED @ 64"
REFUSAL @ N/A

TEST PIT #17
0–8 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
8–16 2.5Y 5/4 LIGHT OLIVE BROWN, SILT LOAM, GRANULAR, FRIABLE
16–26 5Y 5/3 OLIVE, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
26–60 5Y 4/2 OLIVE GRAY, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 16"
RESTRICTIVE LAYER @ 16"
GROUND WATER @ N/A
TERMINATED @ 60"
REFUSAL @ N/A

TEST PIT #18
0–8 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
8–16 10YR 4/4 DARK YELLOWISH BROWN, SILT LOAM, GRANULAR, FRIABLE
16–24 5Y 5/3 OLIVE, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
24–64 5Y 4/2 OLIVE GRAY, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 16"
RESTRICTIVE LAYER @ 16"
GROUND WATER @ N/A
TERMINATED @ 64"
REFUSAL @ N/A

TEST PIT #19
0–6 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
6–12 10YR 4/6 DARK YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
12–18 2.5Y 5/4 LIGHT OLIVE BROWN, SILT LOAM, GRANULAR, FRIABLE
18–30 5Y 5/3 OLIVE, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
30–62 5Y 4/2 OLIVE GRAY, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 18"
RESTRICTIVE LAYER @ 18"
GROUND WATER @ N/A
TERMINATED @ 62"
REFUSAL @ N/A

TEST PIT #20
0–8 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
8–20 2.5Y 5/4 LIGHT OLIVE BROWN, SILT LOAM, GRANULAR, FRIABLE
20–28 5Y 5/3 OLIVE, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
28–60 5Y 4/2 OLIVE GRAY, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 20"
RESTRICTIVE LAYER @ 16"
GROUND WATER @ N/A
TERMINATED @ 60"
REFUSAL @ N/A

TEST PIT #21
0–8 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
8–18 2.5Y 5/4 LIGHT OLIVE BROWN, SILT LOAM, GRANULAR, FRIABLE
18–28 2.5Y 5/3 LIGHT OLIVE BROWN, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
28–62 5Y 5/3 LIGHT OLIVE BROWN, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 18"
RESTRICTIVE LAYER @ 18"
GROUND WATER @ N/A
TERMINATED @ 62"
REFUSAL @ N/A

TEST PIT #22
0–8 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
8–18 2.5Y 5/4 LIGHT OLIVE BROWN, SILT LOAM, GRANULAR, FRIABLE
18–28 2.5Y 5/3 LIGHT OLIVE BROWN, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
28–60 5Y 4/2 OLIVE GRAY, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 18"
RESTRICTIVE LAYER @ 18"
GROUND WATER @ N/A
TERMINATED @ 60"
REFUSAL @ N/A

TEST PIT #23
0–8 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
8–18 2.5Y 5/4 LIGHT OLIVE BROWN, SILT LOAM, GRANULAR, FRIABLE
18–28 2.5Y 5/3 LIGHT OLIVE BROWN, SILTY CLAY LOAM WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
28–62 5Y 4/2 OLIVE GRAY, SILTY CLAY LOAM WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 18"
RESTRICTIVE LAYER @ 18"
GROUND WATER @ N/A
TERMINATED @ 62"
REFUSAL @ N/A

TEST PIT DATA:

TEST PIT #24
0–8 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
8–14 10YR 4/4 DARK YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
14–18 10YR 4/4 DARK YELLOWISH BROWN, SILT LOAM, GRANULAR, FRIABLE
18–60 5Y 5/3 OLIVE, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 18"
RESTRICTIVE LAYER @ 18"
GROUND WATER @ N/A
TERMINATED @ 60"
REFUSAL @ N/A

TEST PIT #25
0–8 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
8–18 2.5Y 5/4 LIGHT OLIVE BROWN, SILT LOAM, GRANULAR, FRIABLE
18–28 2.5Y 5/3 LIGHT OLIVE BROWN, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
28–64 5Y 5/3 LIGHT OLIVE BROWN, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 18"
RESTRICTIVE LAYER @ 18"
GROUND WATER @ N/A
TERMINATED @ 64"
REFUSAL @ N/A

TEST PIT #26
0–6 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
6–18 10YR 4/6 DARK YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
18–24 2.5Y 5/4 LIGHT OLIVE BROWN, GRAVELLY FINE SANDY LOAM, GRANULAR, FRIABLE
24–64 2.5Y 5/2 GRAYISH BROWN, LOAMY FINE SAND WITH REDOX. FEAT. PRESENT, MASSIVE, FRIABLE
E.S.H.W.T. @ 24"
RESTRICTIVE LAYER @ N/A
GROUND WATER @ N/A
TERMINATED @ 64"
REFUSAL @ N/A

TEST PIT #27
0–8 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
8–24 10YR 4/6 LIGHT OLIVE BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
24–32 2.5Y 5/4 LIGHT OLIVE BROWN, GRAVELLY FINE SANDY LOAM, GRANULAR, FRIABLE
32–64 5Y 5/3 OLIVE, SILTY CLAY LOAM WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 32"
RESTRICTIVE LAYER @ 32"
GROUND WATER @ N/A
TERMINATED @ 64"
REFUSAL @ N/A

REVISION	DATE	DESCRIPTION

TEST PITS
LAND OF
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY &
EUGENE A. & DONNA L. SGTIGNOULI
TOLEND ROAD
DOVER, N.H.
TAX MAP E, LOT 65-1 & 65-4

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332–2863

DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 – 107

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 7045
LICENSED
PROFESSIONAL ENGINEER

TEST PIT DATA:

TEST PIT #100
0–8 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
8–14 10YR 4/6 DARK YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
14–34 2.5Y 5/4 LIGHT OLIVE BROWN, GRAVELLY FINE SANDY LOAM, GRANULAR, FRIABLE
E.S.H.W.T. @ N/A
RESTRICTIVE LAYER @ N/A
GROUND WATER @ N/A
TERMINATED @ 34"
REFUSAL @ 34"

TEST PIT #101
0–3 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
3–14 10YR 4/4 DARK YELLOWISH BROWN, GRAVELLY FINE SANDY LOAM, GRANULAR, FRIABLE
14–30 2.5Y 5/4 LIGHT OLIVE BROWN, SILT LOAM, BLOCKY, FRIABLE
30–60 2.5Y 5/2 GRAYISH BROWN, GRAVELLY FINE SANDY LOAM WITH REDOX. FEAT. PRESENT, GRANULAR, FRIABLE
E.S.H.W.T. @ 30"
RESTRICTIVE LAYER @ N/A
GROUND WATER @ N/A
TERMINATED @ 60"
REFUSAL @ 60"

TEST PIT #102
0–6 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
6–18 10YR 4/4 DARK YELLOWISH BROWN, GRAVELLY FINE SANDY LOAM, GRANULAR, FRIABLE
18–30 2.5Y 5/4 LIGHT OLIVE BROWN, GRAVELLY FINE SANDY LOAM, MASSIVE, FRIABLE
30–48 2.5Y 5/2 GRAYISH BROWN, GRAVELLY FINE SANDY LOAM WITH REDOX. FEAT. PRESENT, MASSIVE, FRIABLE
E.S.H.W.T. @ N/A
RESTRICTIVE LAYER @ N/A
GROUND WATER @ N/A
TERMINATED @ 48"
REFUSAL @ 48"

TEST PIT #103
0–3 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
3–16 10YR 4/6 DARK YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
16–30 2.5Y 5/4 LIGHT OLIVE BROWN, VERY FINE SANDY LOAM, MASSIVE, FRIABLE
30–58 2.5Y 5/2 GRAYISH BROWN, GRAVELLY FINE SANDY LOAM WITH REDOX. FEAT. PRESENT, MASSIVE, FRIABLE
E.S.H.W.T. @ 30"
RESTRICTIVE LAYER @ N/A
GROUND WATER @ N/A
TERMINATED @ 58"
REFUSAL @ N/A

TEST PIT #104
0–7 10YR 3/2 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
7–18 10YR 4/4 DARK YELLOWISH BROWN, SILT LOAM, GRANULAR, FRIABLE
18–58 2.5Y 5/3 LIGHT OLIVE BROWN, SILTY CLAY LOAM WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 18"
RESTRICTIVE LAYER @ 18"
GROUND WATER @ 50"
TERMINATED 58"
REFUSAL @ N/A

TEST PIT #105
0–7 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
7–16 10YR 4/4 DARK YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
16–32 10YR 4/4 DARK YELLOWISH BROWN, SILT LOAM, BLOCKY, FRIABLE
32–72 2.5Y 5/3 LIGHT OLIVE BROWN, SILTY CLAY LOAM WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 32"
RESTRICTIVE LAYER @ 32"
GROUND WATER @ N/A
TERMINATED @ 72"
REFUSAL @ 72"

TEST PIT #106
0–7 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
7–18 10YR 4/4 DARK YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
18–50 2.5Y 5/3 LIGHT OLIVE BROWN, SILTY CLAY LOAM WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
50–96 5Y 5/3 LIGHT OLIVE BROWN, SILTY CLAY LOAM WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 18"
RESTRICTIVE LAYER @ 18"
GROUND WATER @ N/A
TERMINATED @ 96"
REFUSAL @ N/A

TEST PIT #108
0–6 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
6–18 10 YR 4/4 DARK YELLOWISH BROWN, SILT LOAM, BLOCKY, FRIABLE
18–48 2.5Y 5/3 LIGHT OLIVE BROWN, SILTY CLAY LOAM WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
48–60 5Y 5/3 LIGHT OLIVE BROWN, SILTY CLAY LOAM WITH REDOX. FEAT PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 18"
RESTRICTIVE LAYER @ 18"
GROUND WATER @ 32"
TERMINATED @ 60"
REFUSAL @ N/A

TEST PIT #109
0–5 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
5–24 10YR 4/4 DARK YELLOWISH BROWN, SILT LOAM, BLOCKY, FRIABLE
24–45 5Y 5/3 OLIVE, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
45–60 5Y 4/2 OLIVE GRAY, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 24"
RESTRICTIVE LAYER @ 24"
GROUND WATER @ N/A
TERMINATED @ 60"
REFUSAL @ N/A

TEST PIT #110
0–8 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
8–22 10YR 4/4 DARK YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
22–44 5Y 5/3 OLIVE, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
44–60 5Y 4/2 OLIVE GRAY, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 22"
RESTRICTIVE LAYER @ 22"
GROUND WATER @ N/A
TERMINATED @ 60"
REFUSAL @ N/A

TEST PIT #111
0–12 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
12–18 10YR 4/4 DARK YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
18–24 2.5Y 5/4 LIGHT OLIVE BROWN, SILT LOAM, BLOCKY, FRIABLE
24–60 2.5Y 5/3 LIGHT OLIVE BROWN, SILTY CLAY LOAM WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 24"
RESTRICTIVE LAYER @ 24"
GROUND WATER @ N/A
TERMINATED @ 60"
REFUSAL @ N/A

TEST PIT DATA:

TEST PIT #112
0–9 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
9–16 10YR 4/4 DARK YELLOWISH BROWN, SILT LOAM, BLOCKY, FRIABLE
16–45 2.5Y 5/3 LIGHT OLIVE BROWN, SILTY CLAY LOAM WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
44–60 5Y 5/3 LIGHT OLIVE BROWN, SILTY CLAY LOAM WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 16"
RESTRICTIVE LAYER @ 16"
GROUND WATER @ N/A
TERMINATED @ 60"
REFUSAL @ N/A

TEST PIT #113
0–8 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
8–18 10YR 4/4 DARK YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
18–24 10YR 4/4 DARK YELLOWISH BROWN, SILT LOAM, BLOCKY, FRIABLE
24–45 5Y 5/3 OLIVE, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
45–62 5Y 4/2 OLIVE GRAY, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 24"
RESTRICTIVE LAYER @ 24"
GROUND WATER @ N/A
TERMINATED @ 62"
REFUSAL @ N/A

TEST PIT #114
0–8 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
8–18 10YR 4/4 DARK YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
18–24 10YR 4/4 DARK YELLOWISH BROWN, SILT LOAM, BLOCKY, FRIABLE
24–48 5Y 5/3 OLIVE, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
48–85 5Y 4/2 OLIVE GRAY, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 24"
RESTRICTIVE LAYER @ 24"
GROUND WATER @ N/A
TERMINATED @ 85"
REFUSAL @ N/A

TEST PIT #115
0–10 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
10–22 10YR 4/4 DARK YELLOWISH BROWN, FINE SANDY LOAM, BLOCKY, FRIABLE
22–52 5Y 5/3 OLIVE, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
52–84 5Y 4/2 OLIVE GRAY, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 22"
RESTRICTIVE LAYER @ 22"
GROUND WATER @ N/A
TERMINATED @ 84"
REFUSAL @ N/A

TEST PIT #116
0–8 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
8–18 10YR 4/4 DARK YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
18–50 2.5Y 5/3 LIGHT OLIVE BROWN, SILTY CLAY LOAM WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
50–64 5Y 4/2 OLIVE GRAY, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
64–96 2.5Y 6/3 LIGHT YELLOWISH BROWN, SAND WITH REDOX. FEAT. PRESENT, MASSIVE, FRIABLE
E.S.H.W.T. @ 18"
RESTRICTIVE LAYER @ 18"
GROUND WATER @ N/A
TERMINATED @ 96"
REFUSAL @ N/A

TEST PIT #117
0–6 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
6–24 10YR 4/4 DARK YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
24–52 2.5Y 5/3 LIGHT OLIVE BROWN, SILTY CLAY LOAM WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
52–72 5Y 4/2 OLIVE GRAY, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
72–90 2.5Y 6/3 LIGHT YELLOWISH BROWN, SAND WITH REDOX. FEAT. PRESENT, MASSIVE, FRIABLE
E.S.H.W.T. @ 24"
RESTRICTIVE LAYER @ 24"
GROUND WATER @ N/A
TERMINATED @ 90"
REFUSAL @ N/A

TEST PIT #118
0–8 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
8–18 10YR 4/4 DARK YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
18–46 2.5Y 5/3 LIGHT OLIVE BROWN, SILTY CLAY LOAM WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
46–68 5Y 4/2 OLIVE GRAY, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
68–85 2.5Y 6/3 LIGHT YELLOWISH BROWN, SAND WITH REDOX. FEAT. PRESENT, MASSIVE, FRIABLE
E.S.H.W.T. @ 18"
RESTRICTIVE LAYER @ 18"
GROUND WATER @ N/A
TERMINATED @ 85"
REFUSAL @ N/A

TEST PIT #119
0–9 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
9–18 10YR 4/4 DARK YELLOWISH BROWN, SILT LOAM, BLOCKY, FRIABLE
18–45 2.5Y 5/3 LIGHT OLIVE BROWN, SILTY CLAY LOAM WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
44–62 5Y 5/3 LIGHT OLIVE BROWN, SILTY CLAY LOAM WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 18"
RESTRICTIVE LAYER @ 18"
GROUND WATER @ N/A
TERMINATED @ 62"
REFUSAL @ N/A

TEST PIT #120
0–9 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
9–24 10YR 4/4 DARK YELLOWISH BROWN, SILT LOAM, BLOCKY, FRIABLE
24–42 2.5Y 5/3 LIGHT OLIVE BROWN, SILTY CLAY LOAM WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
42–64 5Y 5/3 LIGHT OLIVE BROWN, SILTY CLAY LOAM WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 24"
RESTRICTIVE LAYER @ 24"
GROUND WATER @ N/A
TERMINATED @ 64"
REFUSAL @ N/A

TEST PIT #121
0–6 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
6–18 10YR 4/6 DARK YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
18–44 5Y 5/3 OLIVE, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
44–64 5Y 4/2 OLIVE GRAY, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 18"
RESTRICTIVE LAYER @ 18"
GROUND WATER @ N/A
TERMINATED @ 64"
REFUSAL @ N/A

TEST PIT DATA:

TEST PIT #122
0–6 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
6–16 10YR 4/6 DARK YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
16–22 2.5Y 5/4 LIGHT OLIVE BROWN, SILT LOAM, BLOCKY, FRIABLE
22–32 5Y 5/3 OLIVE, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
32–64 5Y 4/2 OLIVE GRAY, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 22"
RESTRICTIVE LAYER @ 22"
GROUND WATER @ N/A
TERMINATED @ 64"
REFUSAL @ N/A

TEST PIT #123
0–6 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
6–18 10YR 4/6 DARK YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
18–30 2.5Y 5/4 LIGHT OLIVE BROWN, GRAVELLY FINE SANDY LOAM, MASSIVE, FRIABLE
30–40 5Y 5/3 OLIVE, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
40–68 5Y 4/2 OLIVE GRAY, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 30"
RESTRICTIVE LAYER @ 30"
GROUND WATER @ N/A
TERMINATED @ 68"
REFUSAL @ N/A

TEST PIT #124
E.S.H.W.T. @ N/A
RESTRICTIVE LAYER @ N/A
GROUND WATER @ N/A
TERMINATED @ 24"
REFUSAL @ 24"

TEST PIT #124A
0–6 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
6–18 10YR 4/6 DARK YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
18–28 2.5Y 5/4 LIGHT OLIVE BROWN, GRAVELLY FINE SANDY LOAM, MASSIVE, FRIABLE
28–68 2.5Y 5/2 GRAYISH BROWN, GRAVELLY FINE SANDY LOAM WITH REDOX. FEAT. PRESENT, MASSIVE, FRIABLE
E.S.H.W.T. @ 28"
RESTRICTIVE LAYER @ N/A
GROUND WATER @ N/A
TERMINATED @ 68"
REFUSAL @ N/A

TEST PIT #125
0–6 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
6–16 10YR 4/6 DARK YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
16–22 2.5Y 5/4 LIGHT OLIVE BROWN, GRAVELLY FINE SANDY LOAM, MASSIVE, FRIABLE
22–38 5Y 5/3 OLIVE, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
38–90 5Y 4/2 OLIVE GRAY, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 22"
RESTRICTIVE LAYER @ 22"
GROUND WATER @ N/A
TERMINATED @ 90"
REFUSAL @ N/A

TEST PIT #126
0–6 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
6–18 10YR 4/6 DARK YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
18–22 2.5Y 5/4 LIGHT OLIVE BROWN, GRAVELLY FINE SANDY LOAM, MASSIVE, FRIABLE
22–30 5Y 5/3 OLIVE, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
30–90 5Y 4/2 OLIVE GRAY, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 22"
RESTRICTIVE LAYER @ 22"
GROUND WATER @ N/A
TERMINATED @ 90"
REFUSAL @ N/A

TEST PIT #127
0–6 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
6–14 10YR 4/6 DARK YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
14–18 2.5Y 5/4 LIGHT OLIVE BROWN, GRAVELLY FINE SANDY LOAM, GRANULAR, FRIABLE
18–34 5Y 5/3 OLIVE, SILT LOAM WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
34–50 5Y 4/2 OLIVE GRAY, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
50–82 2.5Y 5/3 LIGHT OLIVE BROWN, GRAVELLY FINE SANDY LOAM WITH REDOX. FEAT. PRESENT, GRANULAR, FRIABLE
E.S.H.W.T. @ 18"
RESTRICTIVE LAYER @ 18"
GROUND WATER @ N/A
TERMINATED @ 82"
REFUSAL @ 82"

TEST PIT #128
0–6 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
6–16 10YR 4/6 DARK YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
16–24 2.5Y 5/4 LIGHT OLIVE BROWN, SILT LOAM, BLOCKY, FRIABLE
24–40 5Y 5/3 OLIVE, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
40–82 5Y 4/2 OLIVE GRAY, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 24"
RESTRICTIVE LAYER @ 24"
GROUND WATER @ 40"
TERMINATED @ 82"
REFUSAL @ N/A

TEST PIT #129
0–6 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
6–12 10YR 4/6 DARK YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
12–18 2.5 Y 5/4 LIGHT OLIVE BROWN, SILT LOAM, BLOCKY, FRIABLE
18–30 5Y 5/3 OLIVE, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
30–92 5Y 4/2 OLIVE GRAY, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 18"
RESTRICTIVE LAYER @ 18"
GROUND WATER @ N/A
TERMINATED @ 92"
REFUSAL @ N/A

TEST PIT #130
0–6 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
6–24 10YR 4/6 DARK YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
24–30 5Y 5/3 OLIVE, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
30–60 5Y 4/2 OLIVE GRAY, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 24"
RESTRICTIVE LAYER @ 24"
GROUND WATER @ N/A
TERMINATED @ 60"
REFUSAL @ N/A

TEST PIT #131
0–6 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
6–20 10YR 4/4 DARK YELLOWISH BROWN, SILT LOAM, GRANULAR, FRIABLE
20–48 2.5Y 5/3 LIGHT OLIVE BROWN, SILTY CLAY LOAM WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
48–84 5Y 5/3 LIGHT OLIVE BROWN, SILTY CLAY LOAM WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 20"
RESTRICTIVE LAYER @ 20"
GROUND WATER @ N/A
TERMINATED @ 84"
REFUSAL @ N/A

TEST PIT DATA:

TEST PIT #132
0–6 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
6– 18 10YR 4/4 DARK YELLOWISH BROWN, SILT LOAM, GRANULAR, FRIABLE
18–30 2.5Y 5/3 LIGHT OLIVE BROWN, SILTY CLAY LOAM WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
30–84 5Y 5/3 LIGHT OLIVE BROWN, SILTY CLAY LOAM WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 18"
RESTRICTIVE LAYER @ 18"
GROUND WATER @ N/A
TERMINATED @ 84"
REFUSAL @ N/A

TEST PIT #133
0–6 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
6–18 10YR 4/4 DARK YELLOWISH BROWN, SILT LOAM, GRANULAR, FRIABLE
18–36 2.5Y 5/3 LIGHT OLIVE BROWN, SILTY CLAY LOAM WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
36–90 5Y 5/3 LIGHT OLIVE BROWN, SILTY CLAY LOAM WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 18"
RESTRICTIVE LAYER @ 18"
GROUND WATER @ N/A
TERMINATED @ 90"
REFUSAL @ N/A

TEST PIT #134
0–6 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
6– 18 10YR 4/4 DARK YELLOWISH BROWN, SILT LOAM, GRANULAR, FRIABLE
18–48 2.5Y 5/3 LIGHT OLIVE BROWN, SILTY CLAY LOAM WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
48–96 2.5Y 5/3 LIGHT OLIVE BROWN, STRATIFIED GRAVELLY LOAMY SAND AND SILT LOAM WITH REDOX. FEAT. PRESENT, MASSIVE, FIRM
E.S.H.W.T. @ 18"
RESTRICTIVE LAYER @ 18"
GROUND WATER @ N/A
TERMINATED @ 96"
REFUSAL @ N/A

TEST PIT #135
0–6 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
6–18 10YR 4/6 DARK YELLOWISH BROWN, SILT LOAM, GRANULAR, FRIABLE
18–53 2.5Y 5/3 LIGHT OLIVE BROWN, SILTY CLAY LOAM WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
53–84 2.5Y 5/3 LIGHT OLIVE BROWN, STRATIFIED GRAVELLY LOAMY SAND AND SILT LOAM WITH REDOX. FEAT. PRESENT, MASSIVE, FIRM
E.S.H.W.T. @ 18"
RESTRICTIVE LAYER @ 18"
GROUND WATER @ N/A
TERMINATED @ 84"
REFUSAL @ N/A

TEST PIT #136
0–6 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
6– 20 10YR 4/4 DARK YELLOWISH BROWN, SILT LOAM, GRANULAR, FRIABLE
20–50 2.5Y 5/3 LIGHT OLIVE BROWN, SILTY CLAY LOAM WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
50–85 2.5Y 5/3 LIGHT OLIVE BROWN, STRATIFIED GRAVELLY LOAMY SAND AND SILT LOAM WITH REDOX. FEAT. PRESENT, MASSIVE, FIRM
E.S.H.W.T. @ 20"
RESTRICTIVE LAYER @ 20"
GROUND WATER @ N/A
TERMINATED @ 85"
REFUSAL @ N/A

TEST PIT #137
0–6 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
6–18 10YR 4/6 DARK YELLOWISH BROWN, SILT LOAM, GRANULAR, FRIABLE
18–53 2.5Y 5/3 LIGHT OLIVE BROWN, SILTY CLAY LOAM WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
53–85 2.5Y 5/3 LIGHT OLIVE BROWN, STRATIFIED GRAVELLY LOAMY SAND AND SILT LOAM WITH REDOX. FEAT. PRESENT, MASSIVE, FIRM
E.S.H.W.T. @ 18"
RESTRICTIVE LAYER @ 18"
GROUND WATER @ N/A
TERMINATED @ 85"
REFUSAL @ N/A

TEST PIT #138
0–8 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
8–16 10YR 4/6 DARK YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
16–22 5Y 5/3 OLIVE, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
22–70 5Y 4/2 OLIVE GRAY, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 22"
RESTRICTIVE LAYER @ 22"
GROUND WATER @ N/A
TERMINATED @ 70"
REFUSAL @ N/A

TEST PIT #139
0–8 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
8–18 10YR 4/6 DARK YELLOWISH BROWN, SILT LOAM, GRANULAR, FRIABLE
18–58 2.5Y 5/3 LIGHT OLIVE BROWN, SILTY CLAY LOAM WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
58–80 2.5Y 5/3 LIGHT OLIVE BROWN, STRATIFIED GRAVELLY LOAMY SAND AND SILT LOAM WITH REDOX. FEAT. PRESENT, MASSIVE, FIRM
E.S.H.W.T. @ 18"
RESTRICTIVE LAYER @ 18"
GROUND WATER @ N/A
TERMINATED @ 80"
REFUSAL @ N/A

TEST PIT #140
0–8 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
8–20 10YR 4/6 DARK YELLOWISH BROWN, SILT LOAM, GRANULAR, FRIABLE
20–70 2.5Y 5/3 LIGHT OLIVE BROWN, SILTY CLAY LOAM WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
70–84 2.5Y 5/3 LIGHT OLIVE BROWN, STRATIFIED GRAVELLY LOAMY SAND AND SILT LOAM WITH REDOX. FEAT. PRESENT, MASSIVE, FIRM
E.S.H.W.T. @ 20"
RESTRICTIVE LAYER @ 20"
GROUND WATER @ N/A
TERMINATED @ 84"
REFUSAL @ N/A

TEST PIT #141
0–8 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
8–22 10YR 4/6 DARK YELLOWISH BROWN, SILT LOAM, GRANULAR, FRIABLE
22–62 2.5Y 5/3 LIGHT OLIVE BROWN, SILTY CLAY LOAM WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
62–82 2.5Y 5/3 LIGHT OLIVE BROWN, STRATIFIED GRAVELLY LOAMY SAND AND SILT LOAM WITH REDOX. FEAT. PRESENT, MASSIVE, FIRM
E.S.H.W.T. @ 22"
RESTRICTIVE LAYER @ 22"
GROUND WATER @ N/A
TERMINATED @ 82"
REFUSAL @ N/A

REVISION	DATE	DESCRIPTION

TEST PITS
LAND OF
D. LUTSK, D. BARNES, T. GEORGE & L. MULCAHY &
EUGENE A. & DONNA L. SGTIGNOULI
TOLEND ROAD
DOVER, N.H.
TAX MAP 8, LOT 65-1 & 65-4

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 – 107

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14247
LICENSED PROFESSIONAL ENGINEER

GRAPHIC SCALE

100 0 50 100 200 400

(IN FEET)
1 inch = 100 ft.

EXISTING LEGEND:

- DRILL HOLE ~FND~
- IRON PIPE ~FND~
- IRON BOUND ~FND~
- ANGLE IRON ~FND~
- NHHB GRANITE BOUND ~FND~
- UTILITY POLE/GUY WIRE
- POORLY DRAINED JURISDICTIONAL WETLAND LINE
- BUILDING SETBACK LINE
- EASEMENT LINE
- WETLAND SETBACK 50' TO POORLY DRAINED
- STONE WALL
- STONE WALL REMAINS
- EXISTING STREAM
- EXISTING TRAIL
- FEMA FLOOD ZONE
- 50' NHDES PRIMARY SETBACK
- 150' NHDES NATURAL WOODLAND BUFFER
- 250' NHDES SHORELAND PROTECTION ZONE
- 100' LOCAL CONSERVATION OVERLAY ZONE
- AREA OF GREATER THAN 20% SLOPES

S.C.R.D. STRAFFORD COUNTY REGISTRY OF DEEDS
TYP. TYPICAL
FND FOUND
(A) ABUTTER REFERENCE

16±

HAM JR STATE RIDGE

MONUMENT

N/F BRODERICK, BRIDGET
26 NYE LANE
DOVER, NH 03820
TAX MAP E, LOT 49-6
S.C.R.D. BOOK 4034, PAGE 254

N/F CHAKRAVARTY, DILIP & MITALI
11411 RUNNING BEAR COURT
BELTSVILLE, MD 20705-1478
TAX MAP E, LOT 49-7
S.C.R.D. BOOK 3988, PAGE 795

N/F BERGSTROM, EVA K. & EDDINS, KURT
38 NYE LANE
DOVER, NH 03820
TAX MAP E, LOT 49-8
S.C.R.D. BOOK 4499, PAGE 734

N/F MARTEL, PAUL J.
P.O. BOX 182
DOVER, NH 03821-0182
TAX MAP E, LOT 57-3
S.C.R.D. BOOK 1433, PAGE 200

N/F MONE, SEAMUS D.
1 MONE'S FOLLY DRIVE
DOVER, NH 03820
TAX MAP E, LOT 57-C-1
S.C.R.D. BOOK 4833, PAGE 841

N/F MAXON FAMILY REVOCABLE TRUST
MAXON, THOMAS & PATRICIA TRUSTEES
40 BALDPATE ROAD
GEORGETOWN, MA 01833
TAX MAP E, LOT 57-C
S.C.R.D. BOOK 4018, PAGE 118

N/F FORBES, DONALD W. & LINDA R.
181 OLD FIELDS ROAD
SOUTH BERWICK, ME 03908
TAX MAP E, LOT 64
S.C.R.D. BOOK 1906, PAGE 249

N/F GEORGE, DOUGLAS A.
65 TOLEND ROAD
DOVER, NH 03820
TAX MAP E, LOT 65
S.C.R.D. BOOK 3953, PAGE 464

N/F BSTANDIG, MARTHA A. REVOCABLE TRUST
BSTANDIG, MARTHA A. TRUSTEE
53 TOLEND ROAD
DOVER, NH 03820
TAX MAP E, LOT 65-B
S.C.R.D. BOOK 4639, PAGE 921

N/F CLOUGH, VERNON L. & OLGA
43 TOLEND ROAD
DOVER, NH 03820
TAX MAP E, LOT 74-D
S.C.R.D. BOOK 2703, PAGE 371

N/F SICARD RHONDA J. & BASTIANELLI GREGORY
14 ATINA WAY
DOVER, NH 03820
TAX MAP E, LOT 74
S.C.R.D. BOOK 4505, PAGE 898

N/F FINN, CAROL ANNE
10 SUN HAWK LANE
DOVER, NH 03820
TAX MAP E, LOT 74-C
S.C.R.D. BOOK 1598, PAGE 215

HAM FAMILY CEMETERY

COCHECHO RIVER

2334'± ALONG SOUTHERLY SIDE OF RIVER

100' CITY OF DOVER SETBACK / CONSERVATION DISTRICT

150' NHDES WOODLAND BUFFER ZONE

50' PRIMARY SETBACK

N.H. ROUTE 16 SPAULDING TURNPIKE

TOLEND ROAD

SUN HAWK LANE

LOT #1 LOT #2 LOT #3 LOT #4 LOT #5 LOT #6 LOT #7 LOT #8 LOT #9 LOT #10 LOT #11 LOT #12 LOT #13 LOT #14 LOT #15 LOT #16 LOT #17 LOT #18 LOT #19 LOT #20 LOT #21 LOT #22 LOT #23 LOT #24 LOT #25 LOT #26 LOT #27 LOT #28 LOT #29 LOT #30

50' NHDES
150' NHDES
250' NHDES

20' FRONT & SIDE SETBACK (TYP.)
30' REAR SETBACK (TYP.)
40' X 40' FOOTPRINT
32' X 50' FOOTPRINT
50' WETLAND BUFFER (TYP.)
EDGE OF POORLY DRAINED JURISDICTIONAL WETLANDS (TYP.) BY: JOHN P. HAYES III, CWS #18
EMERGENCY ACCESS

NHHB ~FND~ (0.1' HIGH)
NHHB ~FND~ (0.4' HIGH)
261.08' S17°19'42"W

PSNH 4/89a PSNH 4/90 PSNH 4/91 PSNH 4/92 PSNH 4/93 PSNH 4/94 PSNH 4/96 PSNH 4/96A NET 69

NOTES:

1.) OWNER LOT 65-1: D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY
245 N BEND DRIVE
MANCHESTER, NH 03104

OWNER LOT 65-A: EUGENE A. & DONNA L. SGRIGNUOLI
22 SUN HAWK LANE
DOVER, NH 03820

1A.) APPLICANT: STONEARCH DEVELOPMENT CORP.
42J DOVER POINT ROAD
DOVER, NH 03820

2.) LOT OF RECORD: TAX MAP E, LOT 65-1
TAX MAP E, LOT 65-A

3.) LOT AREA LOT 65-1: 1,388,402 Sq. Ft.±, 31.87 Ac.±
LOT AREA LOT 65-A: 546,546 Sq. Ft.±, 12.55 Ac.±

4.) S.C.R.D. BOOK 4918, PAGE 158
S.C.R.D. BOOK 1571, PAGE 86

5.) ZONING: (R-20) LOW DENSITY
MINIMUM FRONTAGE ~ 125'
MINIMUM LOT SIZE ~ 20,000 Sq. Ft. (SINGLE FAMILY)
MINIMUM LOT SIZE ~ 30,000 Sq. Ft. (DUPLEX)
FRONT SETBACK ~ 20'
REAR SETBACK ~ 30'
SIDE SETBACK ~ 20'
WETLANDS BUFFER ~ 50.0'
MAX. BUILDING HEIGHT: 35'
MAX. LOT COVERAGE: 30%

6.) I HEREBY CERTIFY THAT, TO THE BEST OF MY KNOWLEDGE & BELIEF, A PORTION OF THIS PARCEL DOES FALL WITHIN THE FLOOD PLAIN FLOOD HAZARD. REF.: FEMA COMMUNITY #330145, MAP #33017C0310E, DATED: SEPTEMBER 30, 2015.

7.) VERTICAL DATUM BASED ON NAVD88 ELEVATIONS. HORIZONTAL COORDINATES BASED ON NAD83. COORDINATES GATHERED USING TOPCON HIPER SR SURVEY GRADE GPS RECEIVERS.

8.) THE BOUNDARY LINES SHOWN ON THIS PLAN ARE THE RESULT OF A CLOSED TRAVERSE PERFORMED BY THIS OFFICE IN WINTER OF 2020, WITH A BETTER ERROR OF CLOSURE OF 1 PART IN 10,000.

9.) THE INTENT OF THIS PLAN IS TO SHOW THE DUPLEX SUBDIVISION YIELD OF 30 DUXPLES USING R-20 ZONING ON TAX MAP E, LOT 65-1 AND LOT 65-A.

LOT FRONTAGE	LOT AREA	UPLAND AREA	AREA OUTSIDE BUFFERS
TAX MAP E, LOT 65-1 FRONTAGE: 125.00 L.F.	TAX MAP E, LOT 65-1 AREA: 50,148 S.F.	TAX MAP E, LOT 65-1 AREA: 32,034 S.F.	TAX MAP E, LOT 65-1 AREA: 18,629 S.F.
TAX MAP E, LOT 65-2 FRONTAGE: 165.18 L.F.	TAX MAP E, LOT 65-2 AREA: 54,521 S.F.	TAX MAP E, LOT 65-2 AREA: 30,037 S.F.	TAX MAP E, LOT 65-2 AREA: 20,093 S.F.
TAX MAP E, LOT 65-3 FRONTAGE: 156.55 L.F.	TAX MAP E, LOT 65-3 AREA: 35,631 S.F.	TAX MAP E, LOT 65-3 AREA: 30,300 S.F.	TAX MAP E, LOT 65-3 AREA: 20,564 S.F.
TAX MAP E, LOT 65-4 FRONTAGE: 438.03 L.F.	TAX MAP E, LOT 65-4 AREA: 41,098 S.F.	TAX MAP E, LOT 65-4 AREA: 38,034 S.F.	TAX MAP E, LOT 65-4 AREA: 27,519 S.F.
TAX MAP E, LOT 65-5 FRONTAGE: 375.75 L.F.	TAX MAP E, LOT 65-5 AREA: 30,244 S.F.	TAX MAP E, LOT 65-5 AREA: 30,244 S.F.	TAX MAP E, LOT 65-5 AREA: 30,244 S.F.
TAX MAP E, LOT 65-6 FRONTAGE: 125.36 L.F.	TAX MAP E, LOT 65-6 AREA: 40,419 S.F.	TAX MAP E, LOT 65-6 AREA: 30,399 S.F.	TAX MAP E, LOT 65-6 AREA: 18,952 S.F.
TAX MAP E, LOT 65-7 FRONTAGE: 236.09 L.F.	TAX MAP E, LOT 65-7 AREA: 49,948 S.F.	TAX MAP E, LOT 65-7 AREA: 30,192 S.F.	TAX MAP E, LOT 65-7 AREA: 20,714 S.F.
TAX MAP E, LOT 65-8 FRONTAGE: 431.92 L.F.	TAX MAP E, LOT 65-8 AREA: 37,041 S.F.	TAX MAP E, LOT 65-8 AREA: 33,347 S.F.	TAX MAP E, LOT 65-8 AREA: 23,326 S.F.
TAX MAP E, LOT 65-9 FRONTAGE: 481.55 L.F.	TAX MAP E, LOT 65-9 AREA: 78,677 S.F.	TAX MAP E, LOT 65-9 AREA: 42,556 S.F.	TAX MAP E, LOT 65-9 AREA: 18,869 S.F.
TAX MAP E, LOT 65-10 FRONTAGE: 174.50 L.F.	TAX MAP E, LOT 65-10 AREA: 111,874 S.F.	TAX MAP E, LOT 65-10 AREA: 63,163 S.F.	TAX MAP E, LOT 65-10 AREA: 26,102 S.F.
TAX MAP E, LOT 65-11 FRONTAGE: 282.87 L.F.	TAX MAP E, LOT 65-11 AREA: 71,379 S.F.	TAX MAP E, LOT 65-11 AREA: 64,333 S.F.	TAX MAP E, LOT 65-11 AREA: 18,003 S.F.
TAX MAP E, LOT 65-12 FRONTAGE: 125.00 L.F.	TAX MAP E, LOT 65-12 AREA: 37,410 S.F.	TAX MAP E, LOT 65-12 AREA: 34,319 S.F.	TAX MAP E, LOT 65-12 AREA: 18,043 S.F.
TAX MAP E, LOT 65-13 FRONTAGE: 125.00 L.F.	TAX MAP E, LOT 65-13 AREA: 38,618 S.F.	TAX MAP E, LOT 65-13 AREA: 31,208 S.F.	TAX MAP E, LOT 65-13 AREA: 20,276 S.F.
TAX MAP E, LOT 65-14 FRONTAGE: 125.00 L.F.	TAX MAP E, LOT 65-14 AREA: 35,215 S.F.	TAX MAP E, LOT 65-14 AREA: 35,135 S.F.	TAX MAP E, LOT 65-14 AREA: 24,585 S.F.
TAX MAP E, LOT 65-15 FRONTAGE: 257.29 L.F.	TAX MAP E, LOT 65-15 AREA: 39,811 S.F.	TAX MAP E, LOT 65-15 AREA: 31,118 S.F.	TAX MAP E, LOT 65-15 AREA: 18,865 S.F.
TAX MAP E, LOT 65-16 FRONTAGE: 330.49 L.F.	TAX MAP E, LOT 65-16 AREA: 35,150 S.F.	TAX MAP E, LOT 65-16 AREA: 31,280 S.F.	TAX MAP E, LOT 65-16 AREA: 21,397 S.F.
TAX MAP E, LOT 65-17 FRONTAGE: 218.45 L.F.	TAX MAP E, LOT 65-17 AREA: 36,804 S.F.	TAX MAP E, LOT 65-17 AREA: 30,371 S.F.	TAX MAP E, LOT 65-17 AREA: 20,058 S.F.
TAX MAP E, LOT 65-18 FRONTAGE: 241.25 L.F.	TAX MAP E, LOT 65-18 AREA: 63,029 S.F.	TAX MAP E, LOT 65-18 AREA: 51,191 S.F.	TAX MAP E, LOT 65-18 AREA: 24,816 S.F.
TAX MAP E, LOT 65-19 FRONTAGE: 234.29 L.F.	TAX MAP E, LOT 65-19 AREA: 59,612 S.F.	TAX MAP E, LOT 65-19 AREA: 56,003 S.F.	TAX MAP E, LOT 65-19 AREA: 18,077 S.F.
TAX MAP E, LOT 65-20 FRONTAGE: 125.00 L.F.	TAX MAP E, LOT 65-20 AREA: 58,075 S.F.	TAX MAP E, LOT 65-20 AREA: 43,002 S.F.	TAX MAP E, LOT 65-20 AREA: 18,074 S.F.
TAX MAP E, LOT 65-21 FRONTAGE: 125.00 L.F.	TAX MAP E, LOT 65-21 AREA: 48,114 S.F.	TAX MAP E, LOT 65-21 AREA: 42,444 S.F.	TAX MAP E, LOT 65-21 AREA: 33,910 S.F.
TAX MAP E, LOT 65-22 FRONTAGE: 125.00 L.F.	TAX MAP E, LOT 65-22 AREA: 88,935 S.F.	TAX MAP E, LOT 65-22 AREA: 42,643 S.F.	TAX MAP E, LOT 65-22 AREA: 29,264 S.F.
TAX MAP E, LOT 65-23 FRONTAGE: 131.14 L.F.	TAX MAP E, LOT 65-23 AREA: 90,630 S.F.	TAX MAP E, LOT 65-23 AREA: 52,215 S.F.	TAX MAP E, LOT 65-23 AREA: 18,345 S.F.
TAX MAP E, LOT 65-24 FRONTAGE: 426.18 L.F.	TAX MAP E, LOT 65-24 AREA: 30,601 S.F.	TAX MAP E, LOT 65-24 AREA: 30,634 S.F.	TAX MAP E, LOT 65-24 AREA: 22,948 S.F.
TAX MAP E, LOT 65-25 FRONTAGE: 704.55 L.F.	TAX MAP E, LOT 65-25 AREA: 152,497 S.F.	TAX MAP E, LOT 65-25 AREA: 69,657 S.F.	TAX MAP E, LOT 65-25 AREA: 20,358 S.F.
TAX MAP E, LOT 65-26 FRONTAGE: 132.51 L.F.	TAX MAP E, LOT 65-26 AREA: 82,041 S.F.	TAX MAP E, LOT 65-26 AREA: 58,916 S.F.	TAX MAP E, LOT 65-26 AREA: 18,841 S.F.
TAX MAP E, LOT 65-27 FRONTAGE: 453.58 L.F.	TAX MAP E, LOT 65-27 AREA: 75,146 S.F.	TAX MAP E, LOT 65-27 AREA: 46,570 S.F.	TAX MAP E, LOT 65-27 AREA: 18,983 S.F.
TAX MAP E, LOT 65-28 FRONTAGE: 353.60 L.F.	TAX MAP E, LOT 65-28 AREA: 51,499 S.F.	TAX MAP E, LOT 65-28 AREA: 47,904 S.F.	TAX MAP E, LOT 65-28 AREA: 28,004 S.F.
TAX MAP E, LOT 65-29 FRONTAGE: 383.35 L.F.	TAX MAP E, LOT 65-29 AREA: 59,280 S.F.	TAX MAP E, LOT 65-29 AREA: 42,752 S.F.	TAX MAP E, LOT 65-29 AREA: 25,074 S.F.
TAX MAP E, LOT 65-30 FRONTAGE: 312.48 L.F.	TAX MAP E, LOT 65-30 AREA: 65,009 S.F.	TAX MAP E, LOT 65-30 AREA: 38,122 S.F.	TAX MAP E, LOT 65-30 AREA: 25,938 S.F.

REVISION	DATE	DESCRIPTION

YIELD PLAN (30 DUPLEX LOTS)
LAND OF
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY &
EUGENE A. & DONNA L. SGRIGNUOLI
TOLEND ROAD
DOVER, N.H.
TAX MAP E, LOT 65-1 & 65-A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 100 FT.
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 - 107

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY No. 14243
LICENSED PROFESSIONAL ENGINEER

LEGEND:

- ● 3/4" REBAR W/ ID CAP ~TBS~
- ⊕ STEEL STAKE ~FND~
- ○ IRON PIPE ~FND~
- ⊙ IRON BOUND/REBAR/IRON ROD ~FND~
- ⊠ NHHB/GRANITE BOUND
- UTILITY POLE
- PROPOSED BOUNDARY LINE
- BOUNDARY LINE ~TO BE ABANDONED~
- APPROX. ABUTTING LOT LINE
- PERIMETER BOUNDARY LINE
- SURVEY TIE LINE
- HIGHWAY FENCE

FND FOUND
TBS TO BE SET
S.C.R.D. STRAFFORD COUNTY REGISTRY OF DEEDS

N/F BRODERICK, BRIDGET
26 NYE LANE
DOVER, NH 03820
TAX MAP E, LOT 49-6
S.C.R.D. BOOK 4034, PAGE 254

6"x10" GRANITE BOUND ~FND~ (1.0' HIGH)

N81°35'55"E 254.77'

41'±

N09°16'14"W 100.92'

TRITECH IRON BOUND ~FND~ (0.3' HIGH) NH GRID COORD. N.: 257829.09 E.: 1187222.41 ELEV.: 91.13

N09°15'04"W 85.67'

N/F CHAKRAVARTY, DILIP & MITALI
11411 RUNNING BEAR COURT
BELTSVILLE, MD 20705-1478
TAX MAP E, LOT 49-7
S.C.R.D. BOOK 3988, PAGE 795

N08°11'05"W 216.79'

1/4" REBAR ~FND~ (1.2' HIGH)

TRITECH IRON BOUND ~FND~ (0.1' HIGH)

74.31' N08°28'56"W

29.52' N08°21'44"W

N/F BERGSTROM, EVA K. & EDDINS, KURT
38 NYE LANE
DOVER, NH 03820
TAX MAP E, LOT 49-8
S.C.R.D. BOOK 4499, PAGE 734

N08°37'16"W 141.30'

TRITECH IRON BOUND ~FND~ (0.6' HIGH)

29.50' N08°29'24"W

1 1/2" IRON PIPE ~FND~ (3.3' HIGH)

N/F MARTEL, PAUL J.
P.O. BOX 182
DOVER, NH 03821-0182
TAX MAP E, LOT 57-3
S.C.R.D. BOOK 1433, PAGE 200

N08°38'08"W 337.62'

HAM FAMILY CEMETERY

1" IRON PIPE ~FND~ (1.3' HIGH) W/ WITNESS POST

N/F MONE, SEAMUS D.
1 MONE'S FOLLY DRIVE
DOVER, NH 03820
TAX MAP E, LOT 57-C-1
S.C.R.D. BOOK 4833, PAGE 841

N07°54'49"W 162.76'

N/F MAXON FAMILY REVOCABLE TRUST
MAXON, THOMAS & PATRICIA TRUSTEES
40 BALDPATE ROAD
GEORGETOWN, MA 01833
TAX MAP E, LOT 57-C
S.C.R.D. BOOK 4018, PAGE 118

82.82' N05°23'19"W

45.17' N11°06'19"W

N/F FORBES, DONALD W. & LINDA R.
181 OLD FIELDS ROAD
SOUTH BERWICK, ME 03908
TAX MAP E, LOT 64
S.C.R.D. BOOK 1906, PAGE 249

N11°41'06"W 150.00'

CIVIL CONSULTANTS IRON BOUND ~FND~ (FLUSH)

266.94' S71°43'49"W

10.00' S75°43'58"W

CIVIL CONSULTANTS IRON BOUND ~FND~ (0.3' HIGH)

TOLEND ROAD

82.07' S82°40'56"W

95.78' S88°53'19"W

DAVIS STEEL STAKE ~FND~ (FLUSH) LOCATED AT BASE

CIVIL CONSULTANTS IRON BOUND ~FND~ (1.4' HIGH) NH GRID COORD. N.: 256925.91 E: 1187926.32 ELEV.: 112.29

316.21' S78°15'10"W

CIVIL CONSULTANTS IRON BOUND ~FND~ (0.8' HIGH)

S11°19'14"E 60.56'

N/F GEORGE, DOUGLAS A.
65 TOLEND ROAD
DOVER, NH 03820
TAX MAP E, LOT 65
S.C.R.D. BOOK 3953, PAGE 464

N07°21'51"W 294.99'

181.20' N84°02'15"W

S00°57'45"W 220.35'

N05°39'47"E 196.80'

63.30' S55°13'36"W

103.27' S73°48'07"W

STEEL STAKE ~FND~ (FLUSH) LOCATED AT BASE

N/F BSTANDIG, MARTHA A. REVOCABLE TRUST
BSTANDIG, MARTHA A. TRUSTEE
53 TOLEND ROAD
DOVER, NH 03820
TAX MAP E, LOT 65-B
S.C.R.D. BOOK 4639, PAGE 921

N/F CLOUGH, VERNON L. & OLGA
43 TOLEND ROAD
DOVER, NH 03820
TAX MAP E, LOT 74-D
S.C.R.D. BOOK 2703, PAGE 371

16"±

NAD83 NH STATE PLANE

MAGNETIC

TAX MAP E, LOT 65-1
EX. LOT AREA:
1,388,402 Sq. Ft.±
31.87 Ac.±

PRO. LOT AREA:
1,824,109 Sq.Ft.±
41.88 Ac.±

ADDITIONAL ABUTTERS:

(N) THAYER SMITH FAMILY REVOCABLE TRUST
SMITH, TRAWS & THAYER, MEGAN TRUSTEES
88 TOLEND ROAD
DOVER, NH 03820
TAX MAP C, LOT 24-C
S.C.R.D. BOOK 4347, PAGE 303

(O) GERVAIS, ANDREW TODD
80 TOLEND ROAD
DOVER, NH 03820
TAX MAP C, LOT 24-M
S.C.R.D. BOOK 4687, PAGE 178

(P) ROBERTSON, JAMES M. & LINDA S.
78 TOLEND ROAD
DOVER, NH 03820
TAX MAP C, LOT 24-L
S.C.R.D. BOOK 2611, PAGE 738

(Q) ROBERTS, MEREDITH
74 TOLEND ROAD
DOVER, NH 03820
TAX MAP C, LOT 24-F
S.C.R.D. BOOK 4542, PAGE 440

ADDITIONAL ABUTTERS:

(R) WYNDBROOK AT DOVER
HOMEOWNERS ASSOCIATION
P.O. BOX 1685
DOVER, NH 03821-1685
TAX MAP C, LOT 24-J
S.C.R.D. BOOK 4359, PAGE 116

(S) DAMON, TIMOTHY JAMES & CATHERINE E.
64 TOLEND ROAD
DOVER, NH 03820
TAX MAP C, LOT 24-G
S.C.R.D. BOOK 4228, PAGE 316

(T) WILLIAMS, THOMAS R. & CAROLYN E.
60 TOLEND ROAD
DOVER, NH 03820
TAX MAP C, LOT 24-B
S.C.R.D. BOOK 2851, PAGE 409

(U) KEEFE, PATRICIA
54 TOLEND ROAD
DOVER, NH 03820
TAX MAP C, LOT 24-H
S.C.R.D. BOOK 1484, PAGE 700

(V) LIBERTY MUTUAL INSURANCE COMPANY
ATTN: BRAGG, JOANNE
175 BERKELEY STREET MS 03L
BOSTON, MA 02116
TAX MAP E, LOT 24
S.C.R.D. BOOK 1364, PAGE 453

ADDITIONAL ABUTTERS:

(W) WHITTIER FALLS INC.
62 WHITTIER STREET
DOVER, NH 03820
TAX MAP E, LOT 65-C
S.C.R.D. BOOK 4224, PAGE 554

(X) STEARNS, CASEY & ANDREA
62 WHITTIER FALLS WAY
DOVER, NH 03820
TAX MAP E, LOT 67-B
S.C.R.D. BOOK 4776, PAGE 127

COCHECHO RIVER

2339'± ALONG SOUTHERLY SIDE OF RIVER

S76°42'27"E 999.34'

77'± S17°20'03"E

28" HEMLOCK W/ BARBED WIRE (HELD)

S19°05'01"E 146.79'

24" PINE W/ BARBED WIRE (HELD)

BOUNDARY LINE ~TBA~

S22°26'01"E 650.84'

3/4" IRON PIPE ~FND~ (2.1" HIGH) NOT HELD OFF LINE 1.88'

1/4" IRON ROD ~FND~ (3.0" HIGH) NOT HELD OFF LINE 1.14'

N02°20'32"E 179.17'

CIVIL CONSULTANTS IRON BOUND ~FND~ (0.9" HIGH)

CIVIL CONSULTANTS IRON BOUND ~FND~ (0.7" HIGH)

12.10' N22°26'01"W

77.02' S48°21'04"W

28.02' S41°27'33"W

S38°43'33"W 172.94'

159.96' S41°11'58"W

CIVIL CONSULTANTS IRON BOUND ~FND~

CIVIL CONSULTANTS IRON BOUND ~FND~ (0.9' HIGH)

SURVEY TIE LINE ~NOT A BOUNDARY~

N53°43'34"E 1,154.25'

AREA TO BE TRANSFERRED FROM LOT 65-A TO 65-1
435,707 Sq.Ft.±
10.00 Ac.±

TAX MAP E, LOT 65-A
EX. LOT AREA:
546,546 Sq.Ft.±
12.55 Ac.±

PRO. LOT AREA:
110,839 Sq.Ft.
2.54 Ac.

3/4" REBAR W/ ID CAP ~TBS~ (TYP.)

S88°10'16"E 118.82'

N12°41'10"E 279.96'

PROPOSED BOUNDARY LINE

EXISTING SHED

EXISTING HOUSE ~TBR~

LLS 223 IRON BOUND ~FND~ (0.1" HIGH)

205.42' S65°13'07"W

7.20' S64°55'26"W

S54°12'54"W 164.15'

N/F SICARD RHONDA J. & BASTIANELLI GREGORY
14 ATINA WAY
DOVER, NH 03820
TAX MAP E, LOT 74
S.C.R.D. BOOK 4505, PAGE 898

SUN HAWK LANE

N/F FINN, CAROL ANNE
10 SUN HAWK LANE
DOVER, NH 03820
TAX MAP E, LOT 74-C
S.C.R.D. BOOK 1598, PAGE 215

NHHB ~FND~ (0.4' HIGH)

261.08' S17°19'42"W

NHHB ~FND~ (0.1' HIGH)

63.80' S83°32'03"E

N25°04'40"E 145.89'

HIGHWAY FENCE

EXISTING BILLBOARD

LLS 211 IRON BOUND ~FND~ (0.1' HIGH) HELD FOR LINE DETAIL "A"

L=473.08' R=2,060.00'

R=2,060.00' L=385.53'

ABUTTER ACROSS RIVER (V)

NHHB ~FND~ (0.5' HIGH)

71'±

179.08' S27°10'54"W

L=0.71' R=2,060.0'

ABUTTER ACROSS ROUTE 16 (X)

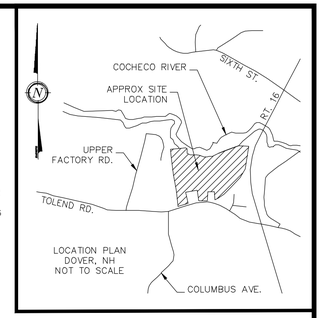
NHHB ~FND~ (0.1' HIGH)

R=2,060.00' L=740.08'

N.H. ROUTE 16 SPAULDING TURNPIKE

ABUTTER ACROSS ROUTE 16 (W)

DETAIL "A"
SCALE: 1" = 5'



LOCATION PLAN
DOVER, NH
NOT TO SCALE

NOTES:

1.) OWNER: D. LUTSK, D. BARNES, T. GEORGE, AND L. MULCAHY
245 N. BEND DRIVE
MANCHESTER, NH 03104

A.) TAX MAP E, LOT 65-1

B.) EXISTING LOT AREA: 1,388,402 Sq.Ft.±, 31.87 Ac.±
PROPOSED LOT AREA: 1,824,109 Sq.Ft., 41.88 Ac.±

C.) S.C.R.D. BOOK 4618, PAGE 163

2.) OWNER: EUGENE A. & DONNA L. SGRIGNUOLI
22 SUN HAWK LANE
DOVER, NH 03820

A.) TAX MAP E, LOT 65-A

B.) EXISTING LOT AREA: 546,546 Sq.Ft.±, 12.55 Ac.±
PROPOSED LOT AREA: 110,839 Sq.Ft., 2.54 Ac.

C.) S.C.R.D. BOOK 1571, PAGE 86

3.) ZONING: (R-20) LOW DENSITY
MINIMUM FRONTAGE ~ 125'
MINIMUM LOT SIZE ~ 20,000 Sq. Ft.
FRONT SETBACK ~ 20'
REAR SETBACK ~ 30'
SIDE SETBACK ~ 20'
WETLANDS BUFFER ~ 50.0'
MAX. BUILDING HEIGHT: 35'
MAX. LOT COVERAGE: 30%

PLAN REFERENCES:

1.) STANDARD PROPERTY SURVEY AND SUBDIVISION OF LAND OF THE EDWARD J. GEORGE FAMILY TRUST
BY: CIVIL CONSULTANTS
DATED: APRIL 2, 2011
S.C.R.D.: PLAN #102-24

2.) PLAN OF LAND PREPARED FOR FAIRVIEW PARNERS, LLC
TAX MAP E, LOT NO. 74B 35 TOLEND ROAD CITY OF DOVER COUNTY OF STRAFFORD STATE OF NEW HAMPSHIRE
BY: MCENEANEY SURVEY ASSOCIATES INC.
DATED: MARCH 4, 2016

3.) SUBDIVISION OF LAND FOR KAREN & JAMES BECKINGHAM & MARY & SCOTT MCEWAN IN DOVER, N.H.
BY: BRUCE L. POHOPEK
DATED: FEBRUARY 19, 1986
S.C.R.D.: PLAN #29-67

4.) SUBDIVISION OF LAND FOR PAUL MARTEL IN DOVER, N.H.
BY: BRUCE L. POHOPEK
DATED: OCTOBER 4, 1978
S.C.R.D.: PLAN #19A-47

5.) PLAN OF LOT ERNEST BSTANDIG DOVER NEW HAMPSHIRE
BY: G.L. DAVIS & ASSOCIATES
DATED: MAY, 1969
S.C.R.D.: BOOK 858, PAGE 159

PLAN REFERENCES:

6.) PLAN OF LAND, HAROLD A. & YVONNE M. CLEWLEY & LINDA J. NOURY, NORTH SIDE OF TOLEND ROAD, DOVER, NH
BY: R.W. MCCRONE
DATED: MARCH 1986
S.C.R.D. PLAN #28A-04

7.) BOUNDARY LINE ADJUSTMENT, THE HEIRS OF KENNETH & IRENE M. NYE AND PAUL & KATHERINE MARTEL, UPPER FACTORY ROAD, DOVER, NH
BY: TRITECH ENGINEERING CORPORATION
DATED: OCTOBER 25, 2004
S.C.R.D. PLAN #77-87

8.) SUBDIVISION OF LAND FOR ANTONIO BASTIANELLI IN DOVER, N.H.
BY: BRUCE L. POHOPEK, LAND SURVEYOR
DATED: JULY 31, 1989, AS REVISED 5/28/90
S.C.R.D. PLAN #32-149

9.) STATE OF NEW HAMPSHIRE, DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS, PLAN OF PROPOSED LS1824(1), SPAULDING TURNPIKE
DATED: OCTOBER 19, 1955
S.C.R.D. PLAN #32, POCKET 15, FOLDER 3 &
S.C.R.D. PLAN #36, POCKET 15, FOLDER 3 &
ON FILE AT NH DOT RIGHTS-OF-WAY, CONCORD, NH

GRAPHIC SCALE

100 0 50 100 200 400

(IN FEET)
1 inch = 100 ft.

REVISION	DATE	DESCRIPTION

LOT LINE REVISION
LAND OF
D. LUTSK, T. GEORGE, L. MULCAHY, D. BARNES AND
EUGENE A. & DONNA L. SGRIGNUOLI
TOLEND ROAD
DOVER, N.H.
TAX MAP E, LOT 65-1 & 65-A

I CERTIFY THAT THIS PLAT EXCEEDS THE MINIMUM REQUIREMENT FOR ACCURACY AND COMPLETENESS OF THE STATE OF N.H. AND OF THE CITY OF DOVER, N.H. – 1:10,000–

KENNETH A. BERRY L.L.S. 805 DATE

STATE OF NEW HAMPSHIRE No. 805 KENNETH A. BERRY LICENSED LAND SURVEYOR SIGNATURE

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT RD.
BARRINGTON, N.H. (603)332-2863

SCALE : 1 IN. EQUALS 100 FT.
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020-107

APPROVED DOVER

LEGEND:

- ● 3/4" REBAR W/ ID CAP ~TBS~
- STEEL STAKE ~FND~
- ○ IRON PIPE ~FND~
- IRON BOUND/REBAR/IRON ROD ~FND~
- NHHB/GRANITE BOUND
- UTILITY POLE
- PROPOSED BOUNDARY LINE
- APPROX. ABUTTING LOT LINE
- PERIMETER BOUNDARY LINE
- SURVEY TIE LINE
- HIGHWAY FENCE
- FND FOUND
- TBS TO BE SET
- S.C.R.D. STRAFFORD COUNTY REGISTRY OF DEEDS

ADDITIONAL ABUTTERS:

(N) THAYER SMITH FAMILY REVOCABLE TRUST
SMITH, TRAWS & THAYER, MEGAN TRUSTEES
88 TOLEND ROAD
DOVER, NH 03820
TAX MAP C, LOT 24-C
S.C.R.D. BOOK 4347, PAGE 303

(O) GERVAIS, ANDREW TODD
80 TOLEND ROAD
DOVER, NH 03820
TAX MAP C, LOT 24-M
S.C.R.D. BOOK 4687, PAGE 178

(P) ROBERTSON, JAMES M. & LINDA S.
78 TOLEND ROAD
DOVER, NH 03820
TAX MAP C, LOT 24-L
S.C.R.D. BOOK 2611, PAGE 738

(Q) ROBERTS, MEREDITH
74 TOLEND ROAD
DOVER, NH 03820
TAX MAP C, LOT 24-F
S.C.R.D. BOOK 4542, PAGE 440

ADDITIONAL ABUTTERS:

(R) WYNDBROOK AT DOVER
HOMEOWNERS ASSOCIATION
P.O. BOX 1685
DOVER, NH 03821-1685
TAX MAP C, LOT 24-A
S.C.R.D. BOOK 4359, PAGE 116

(S) DAMON, TIMOTHY JAMES & CATHERINE E.
64 TOLEND ROAD
DOVER, NH 03820
TAX MAP C, LOT 24-G
S.C.R.D. BOOK 4228, PAGE 316

(T) WILLIAMS, THOMAS R. & CAROLYN E.
60 TOLEND ROAD
DOVER, NH 03820
TAX MAP C, LOT 24-B
S.C.R.D. BOOK 2851, PAGE 409

(U) KEEFE, PATRICIA
54 TOLEND ROAD
DOVER, NH 03820
TAX MAP C, LOT 24-H
S.C.R.D. BOOK 1484, PAGE 700

(V) LIBERTY MUTUAL INSURANCE COMPANY
ATTN: BRAGG, JOANNE
175 BERKELEY STREET MS 03L
BOSTON, MA 02116
TAX MAP E, LOT 24
S.C.R.D. BOOK 1364, PAGE 453

ADDITIONAL ABUTTERS:

(W) WHITTIER FALLS INC.
62 WHITTIER STREET
DOVER, NH 03820
TAX MAP E, LOT 65-C
S.C.R.D. BOOK 4224, PAGE 554

(X) STEARNS, CASEY & ANDREA
62 WHITTIER FALLS WAY
DOVER, NH 03820
TAX MAP E, LOT 67-B
S.C.R.D. BOOK 4776, PAGE 127

N/F BRODERICK, BRIDGET
26 NYE LANE
DOVER, NH 03820
TAX MAP E, LOT 49-6
S.C.R.D. BOOK 4034, PAGE 254

6"x10" GRANITE BOUND ~FND~ (1.0' HIGH)

TRITECH IRON BOUND ~FND~ (0.3' HIGH)
NH GRID COORD.
N.: 257829.09
E.: 1187222.41
ELEV.: 91.13

N/F CHAKRAVARTY, DILIP & MITALI
11411 RUNNING BEAR COURT
BELTSVILLE, MD 20705-1478
TAX MAP E, LOT 49-7
S.C.R.D. BOOK 3988, PAGE 795

1/4" REBAR ~FND~ (1.2' HIGH)

TRITECH IRON BOUND ~FND~ (0.1' HIGH)

N/F BERGSTROM, EVA K. & EDDINS, KURT
38 NYE LANE
DOVER, NH 03820
TAX MAP E, LOT 49-8
S.C.R.D. BOOK 4499, PAGE 734

TRITECH IRON BOUND ~FND~ (0.6' HIGH)

1 1/2" IRON PIPE ~FND~ (3.3' HIGH)

N/F MARTEL, PAUL J.
P.O. BOX 182
DOVER, NH 03821-0182
TAX MAP E, LOT 57-3
S.C.R.D. BOOK 1433, PAGE 200

HAM FAMILY CEMETERY

1" IRON PIPE ~FND~ (1.3' HIGH) W/ WITNESS POST

N/F MONE, SEAMUS D.
1 MONE'S FOLLY DRIVE
DOVER, NH 03820
TAX MAP E, LOT 57-C-1
S.C.R.D. BOOK 4833, PAGE 841

N/F MAXON FAMILY REVOCABLE TRUST
MAXON, THOMAS & PATRICIA TRUSTEES
40 BALDPATE ROAD
GEORGETOWN, MA 01833
TAX MAP E, LOT 57-C
S.C.R.D. BOOK 4018, PAGE 118

N/F FORBES, DONALD W. & LINDA R.
181 OLD FIELDS ROAD
SOUTH BERWICK, ME 03908
TAX MAP E, LOT 64
S.C.R.D. BOOK 1906, PAGE 249

APPROVED DOVER

COCHECHO RIVER

SURVEY TIE LINE ~NOT A BOUNDARY~

APPROX. TRAIL LOCATION

EDGE OF RIVER LOCATED IN SPRING 2021

2339'± ALONG SOUTHERLY SIDE OF RIVER

APPROX. TRAIL LOCATION

SURVEY TIE LINE ~NOT A BOUNDARY~

ABUTTER ACROSS RIVER (V)

NHHB ~FND~ (0.5' HIGH)

NHHB ~FND~ (0.1' HIGH)

ABUTTER ACROSS ROUTE 16 (X)

ABUTTER ACROSS ROUTE 16 (W)

N.H. ROUTE 16 SPAULDING TURNPIKE

AREA TO BE TRANSFERRED TO THE CITY OF DOVER
TOTAL AREA:
492,461 Sq.Ft.±
11.31 Ac.±

TOTAL UPLAND AREA:
389,123 Sq.Ft.
8.93 Ac.

OPEN SPACE #2
TOTAL AREA:
607,584 Sq.Ft.
13.92 Ac.

TOTAL UPLAND AREA:
407,351 Sq.Ft.
9.35 Ac.

OPEN SPACE #3
TOTAL AREA:
80,138 Sq.Ft.
1.84 Ac.

TOTAL UPLAND AREA:
61,392 Sq.Ft.
1.41 Ac.

PROPOSED PROPERTY LINE (TYP.)

TAX MAP E, LOT 65-A
EX. LOT AREA:
546,546 Sq.Ft.±
12.55 Ac.±

PRO. LOT AREA:
110,839 Sq.Ft.
2.54 Ac.

SEE LOT LINE REVISION

EXISTING HOUSE TO BE REMOVED

DEVELOPED AREA
TOTAL AREA:
563,956 Sq.Ft.
12.95 Ac.

TOTAL UPLAND AREA:
552,685 Sq.Ft.
12.68 Ac.

HIGHWAY FENCE

16'±

CIVIL CONSULTANTS IRON BOUND ~FND~ (1.4' HIGH)
NH GRID COORD.
N.: 256925.91
E: 1187926.32
ELEV.: 112.29

CIVIL CONSULTANTS IRON BOUND ~FND~ (0.8' HIGH)

N/F GEORGE, DOUGLAS A.
65 TOLEND ROAD
DOVER, NH 03820
TAX MAP E, LOT 65
S.C.R.D. BOOK 3953, PAGE 464

CIVIL CONSULTANTS IRON BOUND ~FND~ (FLUSH)

CIVIL CONSULTANTS IRON BOUND ~FND~ (0.3' HIGH)

TOLEND ROAD

DAVIS STEEL STAKE ~FND~ (FLUSH) LOCATED AT BASE

STEEL STAKE ~FND~ (FLUSH) LOCATED AT BASE

N/F BSTANDIG, MARTHA A. REVOCABLE TRUST
BSTANDIG, MARTHA A. TRUSTEE
53 TOLEND ROAD
DOVER, NH 03820
TAX MAP E, LOT 65-B
S.C.R.D. BOOK 4639, PAGE 921

N/F CLOUGH, VERNON L. & OLGA
43 TOLEND ROAD
DOVER, NH 03820
TAX MAP E, LOT 74-D
S.C.R.D. BOOK 2703, PAGE 371

OPEN SPACE #1
TOTAL AREA:
79,973 Sq.Ft.
1.84 Ac.

TOTAL UPLAND AREA:
57,990 Sq.Ft.
1.33 Ac.

CIVIL CONSULTANTS IRON BOUND ~FND~ (0.9' HIGH)

CIVIL CONSULTANTS IRON BOUND ~FND~ (0.7' HIGH)

CIVIL CONSULTANTS IRON BOUND ~FND~

CIVIL CONSULTANTS IRON BOUND ~FND~ (0.9' HIGH)

N/F SICARD RHONDA J. & BASTIANELLI GREGORY
14 ATINA WAY
DOVER, NH 03820
TAX MAP E, LOT 74
S.C.R.D. BOOK 4505, PAGE 898

N/F FINN, CAROL ANNE
10 SUN HAWK LANE
DOVER, NH 03820
TAX MAP E, LOT 74-C
S.C.R.D. BOOK 1598, PAGE 215

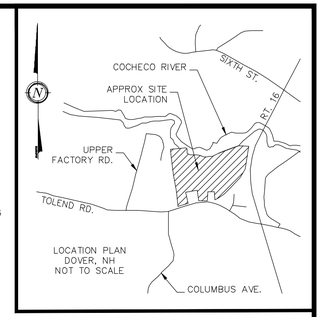
SUN HAWK LANE

NHHB ~FND~ (0.4' HIGH)

NHHB ~FND~ (0.1' HIGH)

NAD83 NH STATE PLANE

MAGNETIC



LOCATION PLAN
DOVER, NH
NOT TO SCALE

NOTES:

1.) OWNER: D. LUTSK, D. BARNES, T. GEORGE, AND L. MULCAHY
245 N. BEND DRIVE
MANCHESTER, NH 03104

A.) TAX MAP E, LOT 65-1

B.) EXISTING LOT AREA: 1,388,402 Sq.Ft.±, 31.87 Ac.±
PROPOSED LOT AREA: 1,824,109 Sq.Ft., 41.88 Ac.±

C.) S.C.R.D. BOOK 4918, PAGE 163

2.) OWNER: EUGENE A. & DONNA L. SGRIGNUOLI
22 SUN HAWK LANE
DOVER, NH 03820

A.) TAX MAP E, LOT 65-A

B.) EXISTING LOT AREA: 546,546 Sq.Ft.±, 12.55 Ac.±
PROPOSED LOT AREA: 110,839 Sq.Ft., 2.54 Ac.

C.) S.C.R.D. BOOK 1571, PAGE 86

3A.) ZONING: OPEN SPACE SUBDIVISION (OSS)
15 Ac. MINIMUM
MIN. LOT SIZE ~ 12,000 Sq. Ft.,
MIN. FRONTAGE ~ 30'
MIN. BUFFER ALONG FRONTAGE ~ 100'
STREET SIDE ~ 15'
BETWEEN UNITS ~ 25'
MIN. DISTANCE TO ABUTTING STRUCTURES ~ 75'
MIN. DISTANCE TO EXTERNAL BOUNDARIES ~ 40'

3B.) ZONING: (R-20) LOW DENSITY
MINIMUM FRONTAGE ~ 125'
MINIMUM LOT SIZE ~ 20,000 Sq. Ft.
FRONT SETBACK ~ 20'
REAR SETBACK ~ 30'
SIDE SETBACK ~ 20'
WETLANDS BUFFER ~ 50.0'
MAX. BUILDING HEIGHT: 35'
MAX. LOT COVERAGE: 30%

PLAN REFERENCES:

1.) STANDARD PROPERTY SURVEY AND SUBDIVISION OF LAND OF THE EDWARD J. GEORGE FAMILY TRUST
BY: CIVIL CONSULTANTS
DATED: APRIL 2, 2011
S.C.R.D.: PLAN #102-24

2.) PLAN OF LAND PREPARED FOR FAIRVIEW PARNERS, LLC
TAX MAP E, LOT NO. 74B 35 TOLEND ROAD CITY OF DOVER COUNTY OF STRAFFORD STATE OF NEW HAMPSHIRE
BY: MCENEANEY SURVEY ASSOCIATES INC.
DATED: MARCH 4, 2016

3.) SUBDIVISION OF LAND FOR KAREN & JAMES BECKINGHAM & MARY & SCOTT MCEWAN IN DOVER, N.H.
BY: BRUCE L. POHOPEK
DATED: FEBRUARY 19, 1986
S.C.R.D.: PLAN #29-67

4.) SUBDIVISION OF LAND FOR PAUL MARTEL IN DOVER, N.H.
BY: BRUCE L. POHOPEK
DATED: OCTOBER 4, 1978
S.C.R.D.: PLAN #19A-47

5.) PLAN OF LOT ERNEST BSTANDIG DOVER NEW HAMPSHIRE
BY: G.L. DAVIS & ASSOCIATES
DATED: MAY, 1969
S.C.R.D.: BOOK 858, PAGE 159

PLAN REFERENCES:

6.) PLAN OF LAND, HAROLD A. & YVONNE M. CLEWLEY & LINDA J. NOURY, NORTH SIDE OF TOLEND ROAD, DOVER, NH
BY: R.W. MCCRONE
DATED: MARCH 1986
S.C.R.D. PLAN #28A-04

7.) BOUNDARY LINE ADJUSTMENT, THE HEIRS OF KENNETH & IRENE M. NYE AND PAUL & KATHERINE MARTEL, UPPER FACTORY ROAD, DOVER, NH
BY: TRITECH ENGINEERING CORPORATION
DATED: OCTOBER 25, 2004
S.C.R.D. PLAN #77-87

8.) SUBDIVISION OF LAND FOR ANTONIO BASTIANELLI IN DOVER, N.H.
BY: BRUCE L. POHOPEK, LAND SURVEYOR
DATED: JULY 31, 1989, AS REVISED 5/28/90
S.C.R.D. PLAN #32-149

9.) STATE OF NEW HAMPSHIRE, DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS, PLAN OF PROPOSED LS1824(1), SPAULDING TURNPIKE
DATED: OCTOBER 19, 1955
S.C.R.D. PLAN #32, POCKET 15, FOLDER 3 &
S.C.R.D. PLAN #36, POCKET 15, FOLDER 3 &
ON FILE AT NH DOT RIGHTS-OF-WAY, CONCORD, NH

GRAPHIC SCALE

100 0 50 100 200 400

(IN FEET)
1 inch = 100 ft.

I CERTIFY THAT THIS PLAT EXCEEDS THE MINIMUM REQUIREMENT FOR ACCURACY AND COMPLETENESS OF THE STATE OF N.H. AND OF THE CITY OF DOVER, N.H. - 1:10,000-

KENNETH A. BERRY L.L.S. 805 DATE

REVISION	DATE	DESCRIPTION

SUBDIVISION PLAN
LAND OF
D. LUTSK, T. GEORGE, L. MULCAHY, D. BARNES AND
EUGENE A. & DONNA L. SGRIGNUOLI
TOLEND ROAD
DOVER, N.H.
TAX MAP E, LOT 65-1 & 65-A

STATE OF NEW HAMPSHIRE — NO. 805 — KENNETH A. BERRY — LICENSED LAND SURVEYOR — SIGNATURE

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT RD.
BARRINGTON, N.H. (603)332-2863

SCALE : 1 IN. EQUALS 100 FT.
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020-107

LEGEND:

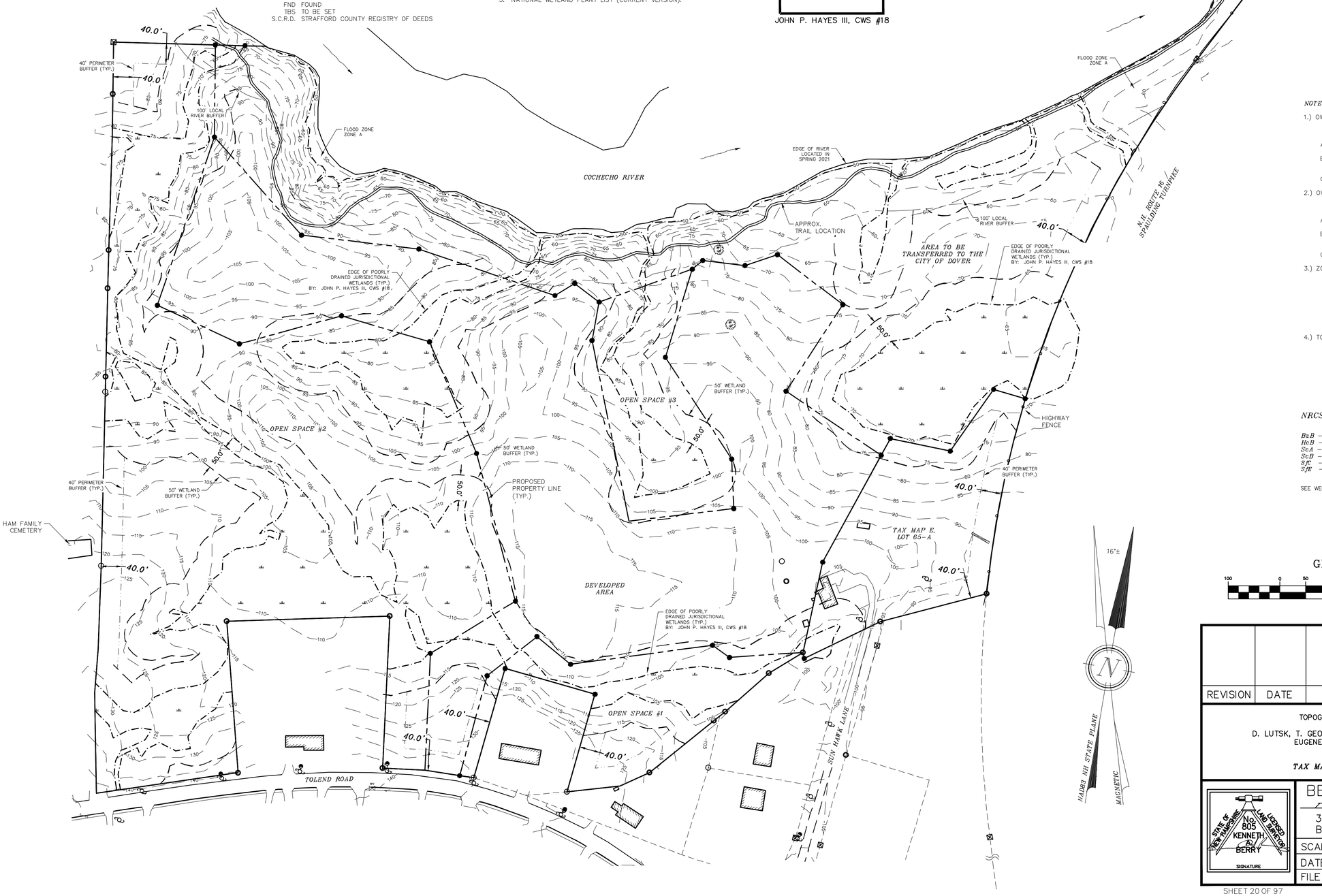
- 3/4" REBAR W/ ID CAP ~TBS~
- STEEL STAKE ~FND~
- IRON PIPE ~FND~
- IRON BOUND/REBAR/IRON ROD ~FND~
- NHHB/GRANITE BOUND
- UTILITY POLE
- PROPOSED BOUNDARY LINE
- APPROX. ABUTTING LOT LINE
- 40' PERIMETER BUFFER
- PERIMETER BOUNDARY LINE
- SURVEY TIE LINE
- HIGHWAY FENCE
- FLOOD ZONE
- FND FOUND
- TBS TO BE SET
- S.C.R.D. STRAFFORD COUNTY REGISTRY OF DEEDS

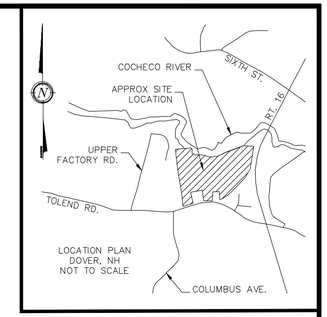
WETLAND NOTES:

WETLANDS WERE DELINEATED BY JOHN P. HAYES SPRING 2021

1. REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION, (VERSION 2.0) JANUARY 2012, U.S. ARMY CORPS OF ENGINEERS.
2. FIELD INDICATORS OF HYDRIC SOILS IN THE UNITED STATES, A GUIDE FOR IDENTIFYING AND DELINEATING HYDRIC SOILS, VERSION 8.0. UNITED STATES DEPARTMENT OF AGRICULTURE (2016).
3. NATIONAL WETLAND PLANT LIST (CURRENT VERSION).

JOHN P. HAYES III, CWS #18





NOTES:

1.) OWNER: D. LUTSK, D. BARNES, T. GEORGE, AND L. MULCAHY
245 N. BEND DRIVE
MANCHESTER, NH 03104

A.) TAX MAP E, LOT 65-1

B.) EXISTING LOT AREA: 1,388,402 Sq.Ft.±, 31.87 Ac.±
PROPOSED LOT AREA: 1,824,109 Sq.Ft., 41.88 Ac.±

C.) S.C.R.D. BOOK 4918, PAGE 163

2.) OWNER: EUGENE A. & DONNA L. SGRIGNUOLI
22 SUN HAWK LANE
DOVER, NH 03820

A.) TAX MAP E, LOT 65-A

B.) EXISTING LOT AREA: 546,546 Sq.Ft.±, 12.55 Ac.±
PROPOSED LOT AREA: 110,839 Sq.Ft., 2.54 Ac.

C.) S.C.R.D. BOOK 1571, PAGE 86

3.) ZONING: (R-20) LOW DENSITY
MINIMUM FRONTAGE ~ 125'
MINIMUM LOT SIZE ~ 20,000 Sq. Ft.
FRONT SETBACK ~ 20'
REAR SETBACK ~ 30'
SIDE SETBACK ~ 20'
WETLANDS BUFFER ~ 50.0'
MAX. BUILDING HEIGHT: 35'
MAX. LOT COVERAGE: 30%

4.) TOPOGRAPHY SHOWN AT 5' INTERVALS.

NRCS SOILS:

BsB – BUXTON SILT LOAM, 3 TO 8 PERCENT SLOPES
HcB – HOLLIS-CHARLTON FINE SANDY LOAMS, 3 TO 8 PERCENT SLOPES
ScA – SCANTIC SILT LOAM, 0 TO 3 PERCENT SLOPES
ScB – SCANTIC SILT LOAM, 3 TO 8 PERCENT SLOPES
SfC – SUFFIELD SILT LOAM, 8 TO 15 PERCENT SLOPES
SfE – SUFFIELD SILT LOAM, 15 TO 35 PERCENT SLOPES

SEE WEBSOIL USDA-NRCS

GRAPHIC SCALE

100 0 50 100 200 400

(IN FEET)
1 inch = 100 ft.

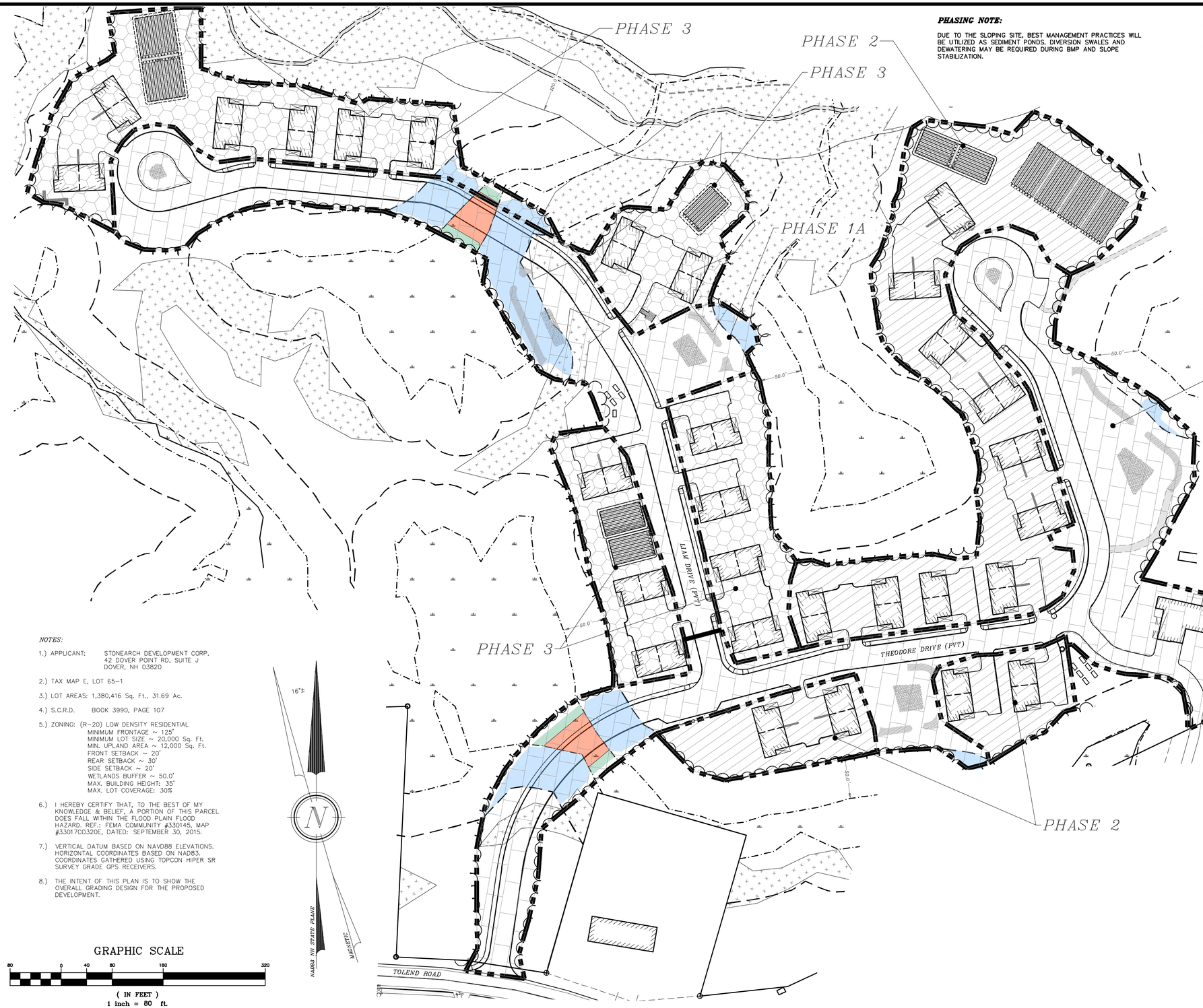
REVISION	DATE	DESCRIPTION

TOPOGRAPHIC SUBDIVISION PLAN
LAND OF
D. LUTSK, T. GEORGE, L. MULCAHY, D. BARNES AND
EUGENE A. & DONNA L. SGRIGNUOLI
TOLEND ROAD
DOVER, N.H.
TAX MAP E, LOT 65-1 & 65-A

STATE OF NEW HAMPSHIRE LICENSED LAND SURVEYOR No. 805 KENNETH R. BERRY SIGNATURE

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT RD.
BARRINGTON, N.H. (603)332-2863

SCALE :	1 IN. EQUALS 100 FT.
DATE :	FEBRUARY 10, 2022
FILE NO. :	DB 2020-107



PHASING NOTE:

DUE TO THE SLOPING SITE, BEST MANAGEMENT PRACTICES WILL BE UTILIZED AS SEDIMENT PONDS, DIVERSION SWALES AND DEWATERING MAY BE REQUIRED DURING BMP AND SLOPE STABILIZATION.

DISTURBANCE PER PHASES:

PHASE 1: 142,285 Sq. Ft., 3.27 Ac. TOTAL DISTURBANCE

- THEODORE DRIVE
- STORMWATER BMPs (RAIN GARDENS #101 & #102, DETENTION PONDS #105)
- ALL THEODORE DRIVE DRAINAGE STRUCTURES AND UTILITIES.
- EMERGENCY ACCESS ROAD
- RESIDENTIAL UNITS #59 & #60
- EDA #6

– PHASE 1A CAN NOT BEGIN UNTIL PHASE 1 IS STABILIZED

PHASE 1A: 84,950 Sq. Ft., 1.95 Ac. TOTAL DISTURBANCE

- LIAM DRIVE
- STORMWATER BMPs (RAIN GARDENS #103 & #104, DETENTION #106)
- ALL LIAM DRIVE DRAINAGE STRUCTURES AND UTILITIES.

– PHASE 2 CAN NOT BEGIN UNTIL PHASE 1A IS STABILIZED

PHASE 2: 135,449 Sq. Ft., 3.10 Ac. TOTAL DISTURBANCE

- RESIDENTIAL UNITS #31–#58
- EDAs #4 & #5

– PHASE 3 CAN NOT BEGIN UNTIL PHASE 2 IS STABILIZED

PHASE 3: 136,192 Sq. Ft., 3.12 Ac. TOTAL DISTURBANCE

- RESIDENTIAL UNITS #1–#30
- EDAs #1–#3

TOTAL IMPACT: 479,500 SQ. FT., 11.01 Ac.

BS&E TO STAKEOUT THE LIMIT OF DISTURBANCE PER PHASE PRIOR TO PHASE CONSTRUCTION. AS PHASE IS STABILIZED AND COMPLETED, BS&E TO STAKEOUT THE NEXT PHASE PRIOR TO ADDITIONAL DISTURBANCE.

PHASE 2 AND PHASE 3 WILL NOT BE DISTURBED UNTIL THE PREVIOUS PHASES ARE STABILIZED. SEE ALSO WINTER CONSTRUCTION NOTES.

ENVIRONMENTAL MONITOR:

1.) AN ENVIRONMENTAL MONITOR WILL BE REQUIRED DUE TO DISTURBANCE OF STEEP SLOPES.

2.) THE ENVIRONMENTAL MONITOR SHALL: (1) INSPECT THE PROJECT SITE AT LEAST ONCE EACH WEEK FROM THE START OF TERRAIN ALTERATION ACTIVITIES UNTIL ALL TERRAIN ALTERATION ACTIVITIES ARE COMPLETED AND THE SITE IS STABILIZED; (2) IN ADDITION TO REGULAR WEEKLY INSPECTIONS, INSPECT THE PROJECT SITE DURING ANY RAIN EVENT IN WHICH 0.5 INCH OF PRECIPITATION OR MORE FALLS WITHIN A 24 HOUR PERIOD, PROVIDED THAT IF THE ENVIRONMENTAL MONITOR IS UNABLE TO BE PRESENT DURING SUCH A STORM, THE MONITOR SHALL INSPECT THE SITE WITHIN 24 HOURS OF THE RAIN EVENT; (3) SUBMIT A WRITTEN REPORT, STAMPED BY A QUALIFIED ENGINEER OR A CPESC SPECIALIST, TO THE DEPARTMENT WITHIN 24 HOURS OF EACH INSPECTION THAT: A. DESCRIBES THE PROGRESS OF THE PROJECT, INCLUDING WHETHER ALL CONDITIONS OF THE PERMIT ARE BEING MET AND, IF NOT, WHICH REQUIREMENTS ARE NOT BEING MET; B. IF ANY REQUIREMENTS ARE NOT BEING MET, AN EXPLANATION OF THE CORRECTIVE ACTION(S) THAT WILL BE OR ARE BEING TAKEN TO BRING THE PROJECT INTO COMPLIANCE WITH APPLICABLE REQUIREMENTS AND THE DEADLINE BY WHICH SUCH ACTIONS WILL BE COMPLETED; AND C. INCLUDES PHOTOGRAPHS OF THE SITE THAT ARE REPRESENTATIVE OF THE PROJECT; AND (4) RETAIN A COPY OF THE REPORT PREPARED PURSUANT TO (3), ABOVE, ON-SITE FOR REVIEW DURING SITE INSPECTIONS BY FEDERAL, STATE, AND LOCAL OFFICIALS.

NOTES:

1.) APPLICANT: STONEARCH DEVELOPMENT CORP.
42 DOVER POINT RD, SUITE J
DOVER, NH 03820

2.) TAX MAP E, LOT 65–1

3.) LOT AREAS: 1,380,416 Sq. Ft., 31.69 Ac.

4.) S.C.R.D. BOOK 3990, PAGE 107

5.) ZONING: (R–20) LOW DENSITY RESIDENTIAL
MINIMUM FRONTAGE ~ 125'
MINIMUM LOT SIZE ~ 20,000 Sq. Ft.
MIN. UPLAND AREA ~ 12,000 Sq. Ft.
FRONT SETBACK ~ 20'
REAR SETBACK ~ 30'
SIDE SETBACK ~ 20'
WETLANDS BUFFER ~ 50.0'
MAX. BUILDING HEIGHT: 35'
MAX. LOT COVERAGE: 30%

6.) I HEREBY CERTIFY THAT, TO THE BEST OF MY KNOWLEDGE & BELIEF, A PORTION OF THIS PARCEL DOES FALL WITHIN THE FLOOD PLAIN FLOOD HAZARD, REF.: FEMA COMMUNITY #330145, MAP #33017C0320E, DATED: SEPTEMBER 30, 2015.

7.) VERTICAL DATUM BASED ON NAVD88 ELEVATIONS. HORIZONTAL COORDINATES BASED ON NADB3. COORDINATES GATHERED USING TOPCON HIPER SR SURVEY GRADE GPS RECEIVERS.

8.) THE INTENT OF THIS PLAN IS TO SHOW THE OVERALL GRADING DESIGN FOR THE PROPOSED DEVELOPMENT.

GRAPHIC SCALE

80 0 40 80 160 320

(IN FEET)
1 inch = 80 ft.

LEGEND:

- PROPOSED EASEMENT LINE
- EXISTING EASEMENT LINE
- BOUNDARY LINE
- WETLAND LINE
- PHASE LINE/LIMIT OF DISTURBANCE
- PHASE 1 & PHASE 1A
- PHASE 2
- PHASE 3

REVISION	DATE	DESCRIPTION

OVERVIEW GRADING PLAN
LAND OF
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY &
EUGENE A. & DONNA L. SGTIGNOULI
TOLEND ROAD
DOVER, N.H.
TAX MAP E, LOT 65–1 & 65–4

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332–2863

SCALE : 1 IN. EQUALS 60 FT.
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 – 107

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14243
LICENSED
PROFESSIONAL ENGINEER

GRAPHIC SCALE

100 0 50 100 200 400

(IN FEET)
1 inch = 100 ft.

N/F BRODERICK, BRIDGET
26 NYE LANE
DOVER, NH 03820
TAX MAP E, LOT 49-6
S.C.R.D. BOOK 4034, PAGE 254

N/F CHAKRAVARTY, DILIP & MITALI
11411 RUNNING BEAR COURT
BELTSVILLE, MD 20705-1478
TAX MAP E, LOT 49-7
S.C.R.D. BOOK 3988, PAGE 795

N/F BERGSTROM, EVA K. & EDDINS, KURT
38 NYE LANE
DOVER, NH 03820
TAX MAP E, LOT 49-8
S.C.R.D. BOOK 4499, PAGE 734

N/F MARTEL, PAUL J.
P.O. BOX 182
DOVER, NH 03821-0182
TAX MAP E, LOT 57-3
S.C.R.D. BOOK 1433, PAGE 200

HAM FAMILY CEMETERY

N/F MONE, SEAMUS D.
1 MONE'S FOLLY DRIVE
DOVER, NH 03820
TAX MAP E, LOT 57-G-1
S.C.R.D. BOOK 4833, PAGE 841

N/F MAXON FAMILY REVOCABLE TRUST
MAXON, THOMAS & PATRICIA TRUSTEES
40 BALDPATE ROAD
GEORGETOWN, MA 01833
TAX MAP E, LOT 57-C
S.C.R.D. BOOK 4018, PAGE 118

N/F FORBES, DONALD W. & LINDA R.
181 OLD FIELDS ROAD
SOUTH BERWICK, ME 03908
TAX MAP E, LOT 64
S.C.R.D. BOOK 1906, PAGE 249

N/F GEORGE, DOUGLAS A.
65 TOLEND ROAD
DOVER, NH 03820
TAX MAP E, LOT 65
S.C.R.D. BOOK 3953, PAGE 464

N/F BSTANDIG, MARTHA A.
REVOCABLE TRUST
BSTANDIG, MARTHA A. TRUSTEE
53 TOLEND ROAD
DOVER, NH 03820
TAX MAP E, LOT 65-B
S.C.R.D. BOOK 4639, PAGE 921

N/F CLOUGH, VERNON L. & OLGA
43 TOLEND ROAD
DOVER, NH 03820
TAX MAP E, LOT 74-D
S.C.R.D. BOOK 2703, PAGE 371

N/F SICARD RHONDA J. & BASTIANELLI GREGORY
14 ATINA WAY
DOVER, NH 03820
TAX MAP E, LOT 74
S.C.R.D. BOOK 4505, PAGE 898

N/F FINN, CAROL ANNE
10 SUN HAWK LANE
DOVER, NH 03820
TAX MAP E, LOT 74-C
S.C.R.D. BOOK 1598, PAGE 215

COCHECHO RIVER

100' CITY OF DOVER SETBACK / CONSERVATION DISTRICT

150' NHDES WOODLAND BUFFER ZONE

50' PRIMARY SETBACK

2334'± ALONG SOUTHERLY SIDE OF RIVER

NHDES 250' LIMIT OF SHORELAND PROTECTION

NHDES 250' BUFFER

50' WETLAND BUFFER (TYP.)

EDGE OF POORLY DRAINED JURISDICTIONAL WETLANDS (TYP.) BY: JOHN P. HAYES III, CWS #18

AREA TO BE TRANSFERRED TO THE CITY OF DOVER
TOTAL AREA: 492,461 Sq.Ft.± 11.31 Ac.±

TOTAL UPLAND AREA: 389,123 Sq.Ft. 8.93 Ac.

DEVELOPED AREA
TOTAL AREA: 563,956 Sq.Ft. 12.95 Ac.

TOTAL UPLAND AREA: 552,685 Sq.Ft. 12.68 Ac.

OPEN SPACE #2
TOTAL AREA: 607,584 Sq.Ft. 13.92 Ac.

TOTAL UPLAND AREA: 407,351 Sq.Ft. 9.35 Ac.

OPEN SPACE #3
TOTAL AREA: 80,138 Sq.Ft. 1.84 Ac.

TOTAL UPLAND AREA: 61,392 Sq.Ft. 1.41 Ac.

OPEN SPACE #1
TOTAL AREA: 79,973 Sq.Ft. 1.84 Ac.

TOTAL UPLAND AREA: 57,990 Sq.Ft. 1.33 Ac.

TAX MAP E, LOT 65-A
EX. LOT AREA: 546,546 Sq.Ft.± 12.55 Ac.±

PRO. LOT AREA: 110,839 Sq.Ft. 2.54 Ac.

SEE LOT LINE REVISION

EDA #1 EDA #2 EDA #3 EDA #4 EDA #5

BUFFER IMPACT AREA #1 BUFFER IMPACT AREA #2 BUFFER IMPACT AREA #3 BUFFER IMPACT AREA #4 BUFFER IMPACT AREA #5 BUFFER IMPACT AREA #6 BUFFER IMPACT AREA #7

WETLAND IMPACT AREA #1 WETLAND IMPACT AREA #2

RAIN GARDEN #101 SEE P-101
RAIN GARDEN #102 SEE P-102
RAIN GARDEN #103 SEE P-103
RAIN GARDEN #104 SEE P-104

RECREATION SPACE

LAM DRIVE (PVT)
THEODORE DRIVE (PVT)
SUN HAWK LANE
TOLEND ROAD

PSNH 4/90 PSNH 4/91 PSNH 4/92 PSNH 4/93 PSNH 4/94 PSNH 4/96 PSNH 4/96Aa PSNH 4/89a
NET 69

N.H. ROUTE 16 SPAULDING TURNPIKE

~FND~ (0.1' HIGH) NHHB

~FND~ (0.4' HIGH) NHHB

261.08' S17°19'42"W

~FND~ (0.1' HIGH) NHHB

EXISTING SHED

EXISTING BILLBOARD

HIGHWAY FENCE

PROPOSED BOUNDARY LINE

ABUTTER ACROSS ROUTE 16

ADDITIONAL ABUTTERS:

(N) THAYER SMITH FAMILY REVOCABLE TRUST
SMITH, TRAVIS & THAYER, MEGAN TRUSTEES
88 TOLEND ROAD
DOVER, NH 03820
TAX MAP C, LOT 24-C
S.C.R.D. BOOK 4347, PAGE 303

(O) GERVAIS, ANDREW TODD
80 TOLEND ROAD
DOVER, NH 03820
TAX MAP C, LOT 24-M
S.C.R.D. BOOK 4687, PAGE 178

(P) ROBERTSON, JAMES M. & LINDA S.
78 TOLEND ROAD
DOVER, NH 03820
TAX MAP C, LOT 24-L
S.C.R.D. BOOK 2611, PAGE 738

(Q) ROBERTS, MEREDITH
74 TOLEND ROAD
DOVER, NH 03820
TAX MAP C, LOT 24-F
S.C.R.D. BOOK 4542, PAGE 440

(R) WYNDBROOK AT DOVER
HOMEOWNERS ASSOCIATION
P.O. BOX 1685
DOVER, NH 03821-1685
TAX MAP C, LOT 24-J
S.C.R.D. BOOK 4359, PAGE 116

(S) DAMON, TIMOTHY JAMES & CATHERINE E.
64 TOLEND ROAD
DOVER, NH 03820
TAX MAP C, LOT 24-G
S.C.R.D. BOOK 4228, PAGE 316

(T) WILLIAMS, THOMAS R. & CAROLYN E.
60 TOLEND ROAD
DOVER, NH 03820
TAX MAP C, LOT 24-B
S.C.R.D. BOOK 2851, PAGE 409

(U) KEEFE, PATRICIA
54 TOLEND ROAD
DOVER, NH 03820
TAX MAP C, LOT 24-H
S.C.R.D. BOOK 1484, PAGE 700

(V) LIBERTY MUTUAL INSURANCE COMPANY
ATTN: BRAGG, JOANNE
175 BERKELEY STREET MS 03L
BOSTON, MA 02116
TAX MAP E, LOT 24
S.C.R.D. BOOK 1364, PAGE 453

(W) WHITTIER FALLS INC.
62 WHITTIER STREET
DOVER, NH 03820
TAX MAP E, LOT 65-C
S.C.R.D. BOOK 4224, PAGE 554

(X) STEARNS, CASEY & ANDREA
62 WHITTIER FALLS WAY
DOVER, NH 03820
TAX MAP E, LOT 67-B
S.C.R.D. BOOK 4776, PAGE 127

NOTES:

1.) OWNER LOT 65-1: D.LUTSK, D.BARNES, T. GEORGE, & L. MULCAHY
245 N BEND DRIVE
MANCHESTER, NH 03104

OWNER LOT 65-A: SGRIGNUOLI, EUGENE A. & DONNA L.
22 SUN HAWK LANE
DOVER, NH 03820

1A.) APPLICANT: STONEARCH DEVELOPMENT CORP.
42J DOVER POINT ROAD
DOVER, NH 03820

2.) LOT OF RECORD: TAX MAP E, LOT 65-1
TAX MAP E, LOT 65-A

3.) LOT AREA LOT 65-1: 1,824,109 Sq. Ft., 41.88 Ac. +/-
LOT AREA LOT 65-A: 110,839 Sq. Ft., 2.54 Ac. +/-

4.) S.C.R.D. BOOK 4918, PAGE 158
S.C.R.D. BOOK 1571, PAGE 86

OPEN SPACE CALCULATIONS:
30 PROPOSED LOTS ON YIELD PLAN REQUIRING 30,000 Sq.Ft. / PER UNIT = 900,000 Sq.Ft.
OPEN SPACE REQUIRED = 450,000 Sq.Ft.
UPLAND REQUIREMENT FOR OPEN SPACE = 225,000 Sq.Ft.,
TOTAL OPEN SPACE PROVIDED = 767,695 Sq.Ft.
TOTAL UPLAND IN OPEN SPACE PROVIDED = 526,733 Sq.Ft.
TOTAL AREA TO BE TRANSFERRED TO THE CITY OF DOVER EXCLUSIVE OF OPEN SPACE AREA = 492,461 Sq.Ft.
TOTAL UPLAND AREA: 389,123 Sq.Ft.

CONDITIONAL USE PERMITS:
CONSTRUCTION WITHIN THE 50' BUFFER (23,966 Sq. Ft. PROPOSED): PENDING
TOTAL WETLANDS AREA OF IMPACT: 5,902 Sq.Ft.
PERMANENT WETLANDS IMPACT: 4,172 Sq.Ft.,
TEMPORARY WETLANDS IMPACT: 1,730 Sq.Ft.,

WAIVER REQUEST:
MINIMUM PERIMETER BUFFER TO PERMIT OSS BUFFER LESS THAN 40' IN ONE LOCATION
4% WHERE 3% MAX WITHIN 75' OF INTERSECTION

RECREATION SPACE REQUIREMENTS (DOVER CODE ARTICLE V , 170-15.)
PROPOSED NUMBER OF BEDROOMS: 116
RE-BUILT DUPLEX NOT COUNTED WHEREAS IT IS EXISTING
OPEN SPACE REQUIREMENT (100 SF PER BEDROOM): 11,600 SF
½ RECREATION SPACE FOR PASSIVE USE: 5,800 SF
5,846 SF (SATISFIED ON SITE)
½ RECREATION SPACE FOR ACTIVE USE: 5,800 SF
11,520 SF (SATISFIED ON SITE)

IMPERVIOUS COVERAGE (LOT 65-1)
EXISTING BUILDING IMPERVIOUS AREA: 0 Sq. Ft. (0.0%) (PRE-LLR)
EXISTING PAVED/GRAVEL IMPERVIOUS AREA: 0 Sq. Ft. (0.0%) (PRE-LLR)
TOTAL EXISTING IMPERVIOUS COVER IS 0 Sq. Ft. (0.0%) (PRE-LLR)
PROPOSED BUILDING IMPERVIOUS AREA: 53,940 Sq. Ft. (3.0%) (POST-LLR)
PROPOSED PAVED/GRAVEL IMPERVIOUS AREA: 131,923 Sq. Ft. (7.2%) (POST-LLR)
TOTAL PROPOSED IMPERVIOUS COVER IS 185,863 Sq. Ft. (10.2%) (POST-LLR)
IMPERVIOUS COVERAGE (LOT 65-A)
EXISTING BUILDING IMPERVIOUS AREA: 1,383 Sq. Ft. (0.3%) (PRE-LLR)
EXISTING PAVED/GRAVEL IMPERVIOUS AREA: 3,164 Sq. Ft. (0.5%) (PRE-LLR)
TOTAL EXISTING IMPERVIOUS COVER IS 4,547 Sq. Ft. (0.8%) (PRE-LLR)
PROPOSED BUILDING IMPERVIOUS AREA: 3,469 Sq. Ft. (3.1%) (POST-LLR)
PROPOSED PAVED/GRAVEL IMPERVIOUS AREA: 3,346 Sq. Ft. (3.1%) (POST-LLR)
TOTAL PROPOSED IMPERVIOUS COVER IS 6,938 Sq. Ft. (6.2%) (POST-LLR)

REVISION	DATE	DESCRIPTION

OVERVIEW SITE PLAN
LAND OF
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY &
EUGENE A. & DONNA L. SGRIGNUOLI
22 SUN HAWK LANE & 0 TOLEND ROAD
DOVER, N.H.
TAX MAP E, LOT 65-1 & 65-A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 100 FT.
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 - 107

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY No. 14243
LICENSED PROFESSIONAL ENGINEER

NOTES:

1.) OWNER LOT 65–1: MULCAHY L. AND GEORGE T. AND LUTSK D. AND BARNES, D.
245 N BEND DRIVE (PVT.)
MANCHESTER, NH 03104

OWNER LOT 65–A: SGRIGNUOLI, EUGENE A. & DONNA L.
22 SUN HAWK LANE
DOVER, NH 03820

1A.) APPLICANT: STONE ARCH DEVELOPMENT CORP.
42J DOVER POINT ROAD
DOVER, NH 03820

2.) LOT OF RECORD: TAX MAP E, LOT 65–1
TAX MAP E, LOT 65–A

3.) LOT AREA LOT 65–1: 1,824,109 Sq. Ft., 41.88 Ac. +/–
LOT AREA LOT 65–A: 110,839 Sq. Ft., 2.54 Ac. +/–

4.) S.C.R.D. BOOK 4918, PAGE 158
S.C.R.D. BOOK 1571, PAGE 86

5.) THE INTENT OF THIS PLAN IS TO SHOW THE AN OVERVIEW OF THE PROPOSED DEVELOPMENT.

GRAPHIC SCALE
60 0 30 60 120 240
(IN FEET)
1 inch = 60 ft.

REVISION	DATE	DESCRIPTION

OVERVIEW SITE PLAN
LAND OF
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY &
EUGENE A. & DONNA L. SGRIGNUOLI
22 TOLEND ROAD
DOVER, N.H.
TAX MAP E, LOT 65–1 & 65–A

BERRY & SURVEYING ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332–2863

SCALE : 1 IN. EQUALS 60 FT.
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 – 107

KENNETH A. BERRY No. 14243 LICENSED PROFESSIONAL ENGINEER – STATE OF NEW HAMPSHIRE

PROP. STOP AHEAD SIGN PER MUTCD W3-1 STA.: 1+70 (LT. 21')

WOODEN GUARDRAIL 246 L.F.

LAMP "A" HEIGHT = 12'

WETLANDS CROSSING #1
TOTAL PERMANENT AREA = 2,156 SF
TOTAL TEMPORARY AREA = 1,001 SF

5' WIDE RAISED SIDEWALK

PROP. WARNING SIGN PER MUTCD W1-2L STA.: 3+85 (LT. 21')

50' WETLAND BUFFER (TYP.)

WOODEN GUARDRAIL STA.: 1+50.00 (Lt. 20')

THEODORE DRIVE (PVT.)
L268.87'
R230.00'
D66°58'40"

WOODEN GUARDRAIL STA.: 3+77 (Lt. 20')

PROPOSED TRANSFORMER

RESIDENTIAL LAMP "B" (TYP.)

UNITS 1 & 2

12" STOP BAR (W) (T.)

PROP. STOP SIGN PER MUTCD R1-1 STA.: 0+24.16 (Lt. 19')

STOP

5' WIDE RAISED SIDEWALK

0+75 V.G.C. END B.C.C START

ADA RAMP WITH TRUNCATED DOMES CURB TIP DOWN

4" DYSL (T.)

SEE SHEET 26

NO OUTLET

PROP. STOP SIGN PER MUTCD R1-1 STA.: 0+23 (Lt. 29')

PROP. 12" STOP BAR (W) (T.)

4" DYSL

4" SWSL

PROP. 4" DYSL

12' TRAVEL LANE WITH 2' GRAVEL SHOULDER (RT.) SIDEWALK (LT.) AND 2'/, CROWN

WOODEN GUARDRAIL STA.: 1+50.00 (Rt. 15')

PROP. "SPEED LIMIT" PER MUTCD R2-1 STA.: 1+50 (Rt. 15')

CONDITIONAL USE AREA #1
TOTAL PERMANENT AREA = 4,456 SF

50' WETLAND BUFFER (TYP.)

CONDITIONAL USE AREA #2
TOTAL PERMANENT AREA = 3,398 SF

12' TRAVEL LANE WITH 5' RAISED SIDEWALK AND 2'/, CROWN

WET LAND BUFFER PLACARD

SPLIT RAIL FENCE STA.: 4+20 (Rt. 25')

SPEED LIMIT 25

PROP. WARNING SIGN PER MUTCD W1-2R STA.: 1+15 (Rt. 15')

PROP. "NO OUTLET" PER MUTCD W14-2 STA.: 0+60 (Rt. 15')

0+75 S.G.C. END B.C.C START

STREET TREE (MIX) (TYP.)
AMUR MAPLE
ACER GINNALA (L.)
OR
GREEN ASH
FRAXINUS PENNSYLVANICA (L.)
OR
MAACKIA AMURENSIS STARDUST
SPACED APPROXIMATELY 100' APART OR AS SHOWN

EDGE OF POORLY DRAINED JURISDICTIONAL WETLANDS (TYP.) BY: JOHN P. HAYES III, CWS #18

SPLIT RAIL FENCE 82 LF

PASSIVE REC. AREA 3,896 Sq.Ft.

BENCH AND REFUSE BARREL ON CONC. PAD (TYP.) (4)

MAIL KIOSK COORDINATE WITH POST MASTER

PROPOSED TRANSFORMER TO BE SCREENED TO THE SATISFACTION OF THE DIRECTOR OF PLANNING AND COMMUNITY DEVELOPMENT COORDINATE WITH EVERSOURCE (TYP.) FOR ALL

BIKE RACK

WET LAND BUFFER PLACARD

MATCH POINT

PROPOSED FIRE HYDRANT STA.: 5+32

5' WIDE RAISED SIDEWALK

PROPOSED TRANSFORMER

INSTALL ADA RAMP W/ TRUNCATED DOMES TIP DOWNS ON BOTH EDGES. DOMES TO RUN PARALLEL TO TRAVEL PATH. CURB TIP DOWN AT WALKS

5' PAINTED WALK (T) (W)

UNITS 29 & 30

NO OUTLET

PROP. "NO OUTLET" PER MUTCD W14-2 STA.: 20+60 (Rt.20')

4" SWSL

EX. BITUM. WALKWAY AND CURB

TOLEND ROAD

LAMP "A" HEIGHT = 12'

SEE ABOVE

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

PLAN VIEW THEODORE DRIVE (PVT.) 0+00 TO 5+00

PLAN VIEW THEODORE DRIVE (PVT.) 5+00 TO 10+00

SNOW STORAGE

B.C.C. END

GRAVEL SHOULDER

UNITS 31 & 32

UNITS 33 & 34

UNITS 35 & 36

UNITS 37 & 38

UNITS 29 & 30

RESIDENTIAL LAMP "B" (TYP.)

12' TRAVEL LANE WITH 2' GRAVEL SHOULDER AND 2'/, CROWN

SEE SHEET 25

MATCH POINT

STORMWATER ACCESS ROAD

PROPOSED FIRE HYDRANT STA.: 9+78

PROP. WARNING SIGN PER MUTCD W1-2L STA.: 9+50 (Rt. 15')

PROP. WARNING SIGN PER MUTCD W1-2R STA.: 10+15 (Lt. 19')

PROP. HYDRANT STA.: 5+32

PROPOSED TRANSFORMER

5' WIDE RAISED SIDEWALK

12' TRAVEL LANE WITH 5' RAISED SIDEWALK AND 2'/, CROWN

CURB AND SIDEWALK TIP DOWN AT ALL DRIVEWAYS

THEODORE DRIVE (PVT.)
N72°07'28"E
212.58'

L24.13'
R200.00'
D6°54'45"

B.C.C. START

LAMP "A" HEIGHT = 12'

NO PARKING FIRE LANE

PROP. NO PARKING SIGN R8-3I STA.: 40+30 (Lt. 11')

20' WIDE PAVED FIRE LANE W/ 1' SHOULDER

B.C.C. TIP DOWNS AT DRIVES (TYP.)

B.C.C. END

DO NOT ENTER

PROP. DO NOT ENTER SIGN R5-1 STA.: 40+36 (Rt. 12') STA.: 40+40 (Lt. 12')

GATE WITH KNOX BOX

RAISED PLANTERS PASSIVE REC. AREA 775 Sq.Ft.

WOOD RAIL STA.: 0+83 (Lt. 9')

INSTALL WOOD RAIL TO PREVENT SNOW STORAGE IN WETLANDS BUFFER

WETLAND BUFFER PLACARD

FRONT PORCH (TYP.)

PROPOSED TRANSFORMER

BID-RETENTION SIGN (2)

STREET TREE (MIX) (TYP.)
AMUR MAPLE
ACER GINNALA (L.)
OR
GREEN ASH
FRAXINUS PENNSYLVANICA (L.)
OR
MAACKIA AMURENSIS STARDUST
SPACED APPROXIMATELY 100' APART OR AS SHOWN

LANDSCAPING RET. WALL TO PROVIDE GRADE BREAK (TYP.)

RAIN GARDEN #101
SEE P-101 FOR DETAILS

UNITS 55 & 56

UNITS 57 & 58

UNITS 53 & 54

UNITS 51 & 52

UNITS 59 & 60

REAR PORCH (TYP.)

RESIDENTIAL LAMP "B" (TYP.)

WOOD RAIL

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

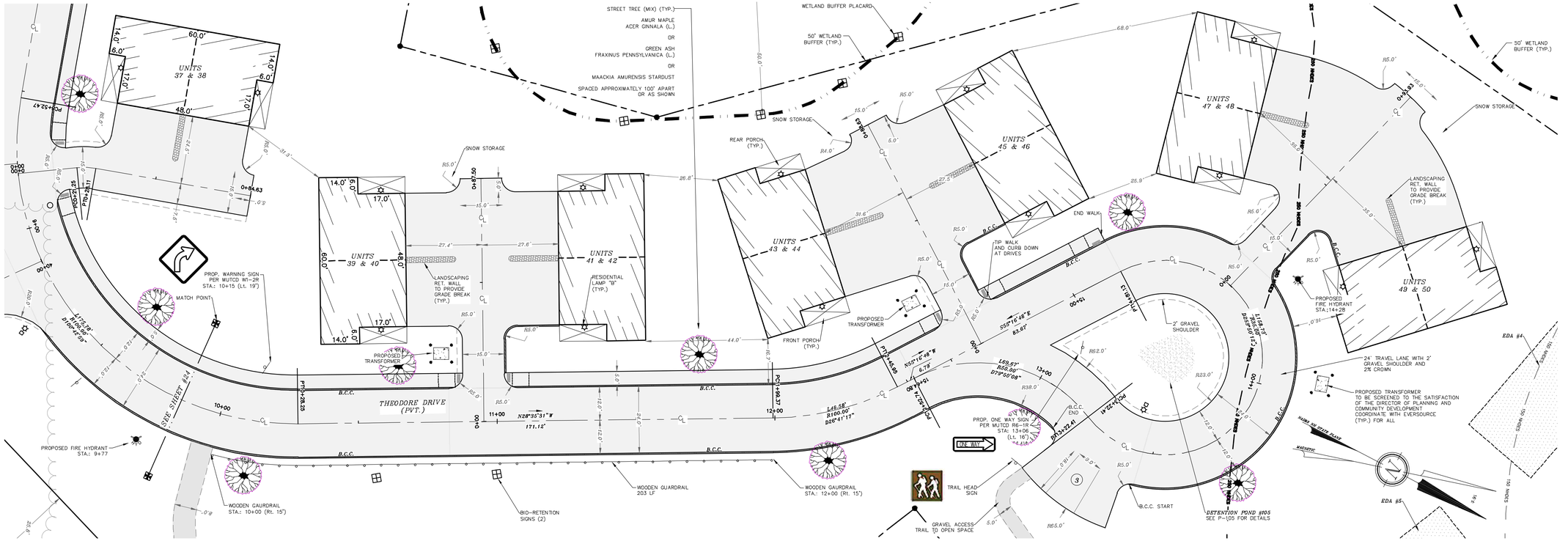
REVISION	DATE	DESCRIPTION

SITE PLAN THEODORE DRIVE (PVT.) 0+00 TO 10+00
LAND OF
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY &
EUGENE A. & DONNA L. SGTIGNOLI
TOLEND ROAD
DOVER, N.H.
TAX MAP 8, LOT 65-1 & 65-4

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 20 FT.
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 – 107

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14243
LICENSED PROFESSIONAL ENGINEER



REVISION	DATE	DESCRIPTION

SITE PLAN THEODORE DRIVE (PVT.) & SUN HAWK LANE EXT.
LAND OF
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY &
EUGENE A. & DONNA L. SGITGNOULI
TOLEND ROAD
DOVER, N.H.
TAX MAP E, LOT 65-1 & 65-4

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 20 FT.
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 – 107

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY No. 14243 LICENSED
PROFESSIONAL ENGINEER

PLAN VIEW LIAM DRIVE 20+00 TO 25+50

PLAN VIEW LIAM DRIVE 25+50 TO END

REVISION	DATE	DESCRIPTION

SITE PLAN LIAM DRIVE (PVT.)
LAND OF
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY &
EUGENE A. & DONNA L. SGTIGNOLI
TOLEND ROAD
DOVER, N.H.
TAX MAP 6, LOT 4-2 & 4-4 P, LOT 65-1 & 65-4

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 80 FT.
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 – 107

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14243
LICENSED PROFESSIONAL ENGINEER

NOTES:

1.) OWNER LOT 65–1: D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY
245 N BEND DRIVE
MANCHESTER, NH 03104

OWNER LOT 65–A: EUGENE A. & DONNA L. SORIGNUOLI
22 SUN HAWK LANE
DOVER, NH 03820

1A.) APPLICANT: STONEARCH DEVELOPMENT CORP.
42J DOVER POINT ROAD
DOVER, NH 03820

2.) LOT OF RECORD: TAX MAP E, LOT 65–1
TAX MAP E, LOT 65–A

3.) LOT AREA LOT 65–1: 1,824,109 Sq. Ft., 41.88 Ac. +/–
LOT AREA LOT 65–A: 110,839 Sq. Ft., 2.54 Ac. +/–

4.) S.C.R.D. BOOK 4918, PAGE 158
S.C.R.D. BOOK 1571, PAGE 8

5.) THE INTENT OF THIS PLAN IS TO PROVIDE AN OVERVIEW OF GRADING & ENGINEERING OF THEODORE DRIVE AND TAX MAP E, LOTS 65–1 & 65–A.

6.) SEE EROSION & SEDIMENT CONTROL PLANS FOR DETAILS ON PERIMETER CONTROL (MULCH BERM / FENCE / SILT SOXX).

7.) BS&E IS TO PROVIDE ADDITIONAL BENCHMARKS PRIOR TO CONSTRUCTION.

8.) EXISTING AND PROPOSED CONTOURS ARE PROVIDED AT 1' INTERVALS WITH DRAINAGE FEATURES AT MORE PRECISE INTERVALS.

9.) SEE SHEET 2 FOR ALL OTHER STANDARD CONSTRUCTION NOTES.

GRADING PLAN TABLE OF CONTENTS:

SHEET #27: OVERVIEW GRADING PLAN
SHEET #28: GRADING P&P THEODORE DRIVE 0+00 – 5+00
SHEET #29: GRADING P&P THEODORE DRIVE 5+00 – 10+00
SHEET #30: GRADING P&P THEODORE DRIVE 10+00 – END
SHEET #31: GRADING P&P LIAM DRIVE 20+00 – 25+00
SHEET #32: GRADING P&P LIAM DRIVE 25+00 – 29+00
SHEET #33: GRADING P&P LIAM DRIVE 29+00 – END
SHEET #34: GRADING P&P EMERGENCY ACCESS 40+00 – END
SHEET #35: GRADING P&P UNITS 1 – 14
SHEET #36: GRADING P&P UNITS 15 – 26
SHEET #37: GRADING P&P UNITS 27 – 38
SHEET #38: GRADING P&P UNITS 39 – 52
SHEET #39: GRADING P&P UNITS 53 – 60

GRAPHIC SCALE

60 0 30 60 120 240

(IN FEET)
1 inch = 60 ft.

EXISTING LEGEND:

- IRON BOUND ~FND~
- IRON PIPE ~FND~
- NHHB BOUND ~FND~
- UTILITY POLE / GUY WIRE
- NRCS SOIL DELINEATION LINE
- BUILDING SETBACK LINE
- OVERHEAD UTILITIES LINE
- CONTOUR LINE, MINOR
- CONTOUR LINE, MAJOR
- WETLAND LINE
- EXISTING STREAM
- EXISTING TRAIL
- WETLAND BUFFER
- DRAINAGE LINE
- 50' NHDES PRIMARY SETBACK
- 150' NHDES NATURAL WOODLAND BUFFER
- 250' NHDES SHORELAND PROTECTION ZONE
- 100' LOCAL CONSERVATION OVERLAY ZONE
- TEST PIT
- S.C.R.D. STRAFFORD COUNTY REGISTRY OF DEEDS
- TYP. TYPICAL
- FND FOUND

PROPOSED LEGEND:

- 3/4" REBAR W/ ID CAP ~TBS~
- PROPOSED LOT LINE REVISION LINE
- DRAIN MANHOLE W/STRUCTURE
- CATCH BASIN W/ STRUCTURE
- FLOW ARROW
- TEMPORARY BENCHMARK (T.B.M.)
- E101 / E6 DETAIL SHEET / DETAIL
- MATCH POINT
- MATCH LINE
- F241 CONTOUR MINOR, PROPOSED
- F240 CONTOUR MAJOR, PROPOSED
- DRAIN CULVERT W/ FLARED END SECTION (F.E.S.)
- SHOULDER
- CENTER LINE
- BUILDING SETBACK LINE
- U.D UNDER DRAIN
- RIP RAP
- STORMWATER BEST MANAGEMENT PRACTICE (BMP)
- BERM
- F103.31 PROPOSED SPOT ELEVATION
- EDA EFFLUENT DISPOSAL AREA

16'± N

NAD83 NH STATE PLANE MODERIC

COCHECHO RIVER

EDGE OF RIVER LOCATED IN SPRING 2021

100' CITY OF DOVER SETBACK / CONSERVATION DISTRICT

50' PRIMARY SETBACK

150' NHDES WOODLAND BUFFER ZONE

250' NHDES LIMIT OF SHORELAND PROTECTION

50' WETLAND BUFFER (TYP.)

EDGE OF POORLY DRAINED JURISDICTIONAL WETLANDS (TYP.) BY: JOHN P. HAYES III, CWS #18

TAX MAP E, LOT 65–1

TAX MAP E, LOT 65–A

TOLEND ROAD

WETLAND CROSSING #1

WETLAND CROSSING #2

THEODORE DRIVE

LIAM DRIVE

SUN HAWK LANE

PROPOSED EMERGENCY ACCESS ROAD

GEOMAT EDA #1 UNITS 1–6, 29–30

GEOMAT EDA #2 UNITS 7–10

GEOMAT EDA #3 UNITS 19–22

GEOMAT EDA #4 UNITS 43–50

GEOMAT EDA #5 UNITS 31–42, 51–58

GEOMAT EDA #6 UNITS 58–60

DETENTION POND #106 (POND 106P)

DETENTION POND #107 (POND 107P)

DETENTION POND #105 (POND 105P)

RAIN GARDEN #104 (POND 104P)

RAIN GARDEN #103 (POND 103P)

RAIN GARDEN #102 (POND 102P)

RAIN GARDEN #101 (POND 101P)

PROP. DRAIN MANHOLE #4 (POND 104P)

PROP. DRAIN MANHOLE #3 (POND 103P)

PROP. DRAIN MANHOLE #2 (POND 102P)

PROP. DRAIN MANHOLE #1 (POND 101P)

4'x 6' BOX CULVERT (POND 14P)

12" RCP (POND 15P)

30" RCP (POND 20P)

25' LEVEL SPREADER

20' LEVEL SPREADER

SHEET #28 SHEET #29 SHEET #30 SHEET #31 SHEET #32 SHEET #33 SHEET #34

N/F GEORGE, DOUGLAS A.
65 TOLEND ROAD
DOVER, NH 03820
TAX MAP E, LOT 65
S.C.R.D. BOOK 3953, PAGE 464

N/F BSTANDIG, MARTHA A. REVOCABLE TRUST
BSTANDIG, MARTHA A. TRUSTEE
53 TOLEND ROAD
DOVER, NH 03820
TAX MAP E, LOT 65–B
S.C.R.D. BOOK 4639, PAGE 921

N/F SICARD RHONDA J. & BASTIANELLI GREGORY
14 ATINA WAY
DOVER, NH 03820
TAX MAP E, LOT 74
S.C.R.D. BOOK 4505, PAGE 898

N/F FINN, CAROL ANNE
10 SUN HAWK LANE
DOVER, NH 03820
TAX MAP E, LOT 74–C
S.C.R.D. BOOK 1598, PAGE 215

N/F CLOUGH, VERNON L. & OLGA
43 TOLEND ROAD
DOVER, NH 03820
TAX MAP E, LOT 74–D
S.C.R.D. BOOK 2703, PAGE 371

REVISION	DATE	DESCRIPTION

OVERVIEW GRADING PLAN
LAND OF
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY &
EUGENE A. & DONNA L. SORIGNUOLI
TOLEND ROAD
DOVER, N.H.
TAX MAP E, LOT 65–1 & 65–A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332–2863

SCALE : 1 IN. EQUALS 60 FT.
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 – 107

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14243
LICENSED PROFESSIONAL ENGINEER

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

CONDITIONAL USE AREA #1
TOTAL PERMANENT AREA = 4,456 SF

2:1 SIDE SLOPES LINE WITH NAG BIONET SC 150 BN (TYP.)
STA: 1+50–3+90

WETLANDS CROSSING #1
TOTAL PERMANENT AREA = 2,156 SF
TOTAL TEMPORARY AREA = 1,001 SF

BLOCK RETAINING WALL TO BE DESIGNED BY OTHERS
T.O.W. = 114 – 119
B.O.W. = 112 – 111

30" RCP (POND 20P)
6" BURY DEPTH
INV. IN BURY = 111.00
INV. OUT BURY = 110.50
L = 52.00', S = 0.014'/.

PROP. CATCH BASIN #1
(POND C01P)

EDGE OF POORLY DRAINED JURISDICTIONAL WETLANDS (TYP.)
BY: JOHN P. HAYES III, CWS #18

12" HDPE N–12
INV. IN = 117.61
INV. OUT = 117.46
L = 18.00', S = 0.008'/.

12" HDPE N–12
INV. IN = 117.36
INV. OUT = 115.89
L = 128.50', S = 0.011'/.

50' WETLAND BUFFER (TYP.)

2:1 SIDE SLOPES LINE WITH RIP–RAP & MIRAFI 180N
D50 = 0.5', T = 1.2'

SEE SHEET #35

UNITS GARAGE FF = 118.75
8' WALL

12" HDPE N–12
INV. IN = 116.27
INV. OUT = 115.89
L = 17.00', S = 0.022'/.

PROP. CATCH BASIN #3
(POND C03P)

LIAM DRIVE (PVT.)

SEE SHEET #31

PROP. CLEANOUT

PROP. CLEANOUT

PROP. DRAIN MANHOLE #1
(POND D01P)

12" HDPE N–12
INV. IN = 115.79
INV. OUT = 112.62
L = 157.50', S = 0.020'/.

SEE SHEET #29

50' WETLAND BUFFER (TYP.)

EDGE OF POORLY DRAINED JURISDICTIONAL WETLANDS (TYP.)
BY: JOHN P. HAYES III, CWS #18

3:1 FILL SLOPES TO BE STABILIZED WITH VEGETATION

CONDITIONAL USE AREA #2
TOTAL PERMANENT AREA = 3,398 SF

PROPOSED TREELINE

PROP. CATCH BASIN #4
(POND C04P)

12" HDPE N–12
INV. IN = 116.11
INV. OUT = 115.89
L = 5.00', S = 0.044'/.

PROP. CATCH BASIN #2
(POND C02P)

BLOCK RETAINING WALL TO BE DESIGNED BY OTHERS
T.O.W. = 114 – 119
B.O.W. = 112 – 111

12' TRAVEL LANE (24' ROAD)
B.C.C. (Lt. & Rt.)
5' RAISED WALK (Lt.)
2' CURB BACKING (Rt.)
2'/. CROWN

WOODEN SAFETY RAIL (TYP.)

0+75 V.G.C. END
B.C.C START

0+75 S.G.C. END
B.C.C START

3:1 FILL SLOPES TO BE STABILIZED WITH VEGETATION

WOODEN SAFETY RAIL (TYP.)

TAX MAP E, LOT 65–1

TAX MAP E, LOT 65–B

THEODORE DRIVE (PVT.)

TOLEND ROAD

TP #27

TP #26

TP #101

TP #1

CIVIL CONSULT. LB. (FND) +0.3'

PSNH 4/92

PLAN VIEW THEODORE DRIVE 0+00 TO 5+00

STRUCTURES TABLE:

PROP. CATCH BASIN #1 (POND C01P)
4'ø STRUCTURE W/ TYPE "B" GRATE
STA: 3+15.00 (Lt. 11.00')
RIM = 120.86 (FLUSH)
INV. IN = 117.46 (12" HDPE N–12) (CB #2)
INV. OUT = 117.36 (12" HDPE N–12) (DMH #1)

PROP. CATCH BASIN #2 (POND C02P)
4'ø STRUCTURE W/ TYPE "B" GRATE
STA: 3+15.00 (Rt. 11.00')
RIM = 120.86 (FLUSH)
INV. OUT = 117.61 (12" HDPE N–12) (CB #1)

PROP. CATCH BASIN #3 (POND C03P)
4'ø STRUCTURE W/ TYPE "B" GRATE
STA: 4+45.50 (Lt. 11.00')
RIM = 119.52 (FLUSH)
INV. OUT = 116.27 (12" HDPE N–12) (DMH #1)

PROP. CATCH BASIN #4 (POND C04P)
4'ø STRUCTURE W/ TYPE "B" GRATE
STA: 4+45.50 (Rt. 19.00')
RIM = 119.36 (FLUSH)
INV. OUT = 116.11 (12" HDPE N–12) (DMH #1)

PROP. DRAIN MANHOLE #1 (POND D01P)
4'ø STRUCTURE W/ NH STANDARD RIM
STA: 4+45.50 (Rt. 10.00')
RIM = 119.54 (FLUSH)
INV. IN = 115.89 (12" HDPE N–12) (CB #1)
INV. IN = 115.89 (12" HDPE N–12) (CB #3)
INV. IN = 115.89 (12" HDPE N–12) (CB #4)
INV. OUT = 115.79 (12" HDPE N–12) (DMH #2)

PLAN VIEW THEODORE DRIVE 0+00 TO 5+00

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.
VERTICAL SCALE: 1" = 4'

CL TOLEND ROAD
EDGE OF PAVEMENT
THEODORE DRIVE STA: 0+14.50 ELEV: 137.15
–4.00%
PVC STA:0+90.00 PVC ELEV:134.13
50.00 VC K 12.50
PVI STA:1+15.00 PVI ELEV:133.13
PVT STA:1+40.00 PVT ELEV:131.13
PROPOSED GRADE
EXISTING CONTOUR
–8.00%
PVC STA:1+80.00 PVC ELEV:127.21
PVI STA:2+59.00 PVI
140.00 VC K 20.00
PVT STA:3+29.00 PVT ELEV:120.91
CATCH BASINS #1 & #2 (POND C01P & C02P)
PROPOSED GRADE
12" HDPE N–12 L = 18.00'
12" HDPE N–12 L = 128.50'
30" RCP W/ 6" BURY DEPTH (POND 20P) L = 52.00'
EXISTING CONTOUR
CATCH BASINS #3 & #4 (POND C03P & C04P)
DRAIN MANHOLE #1 (POND D01P)
CL LIAM DRIVE
LIAM DRIVE STA: 4+85.25 ELEV: 119.11
CLEANOUT (TYP.)
PVC STA:5+00.00 PVC ELEV:119.20
TEST PIT #3 SURFACE = 119.25 REFUSAL (24") = 117.25
PROPOSED GRADE
12" HDPE N–12 (2) L = 17.00', 5.00'
APPROX. TOP OF LEDGE (TYP.)
EXISTING CONTOUR
6" UNDERDRAIN (Lt. & Rt.)
12" HDPE N–12 L = 157.50'
LEDGE CONSTRUCTION

	E 136.82	E 137.70	E 136.21	E 132.44	E 128.25	E 126.63	E 125.82	E 125.70	E 123.32	E 118.66	E 114.87	E 112.62	E 111.18	E 111.32	E 112.01	E 114.45	E 115.98	E 116.42	E 117.25	E 117.60
	F 136.73	**F 135.73**	**F 134.73**	**F 133.69**	**F 132.24**	**F 130.93**	**F 128.33**	**F 126.36**	**F 124.65**	**F 123.26**	**F 122.18**	**F 121.41**	**F 120.95**	**F 120.70**	**F 120.45**	**F 120.20**	**F 119.95**	**F 119.70**	**F 119.45**
	0+00	0+25	0+50	0+75	1+00	1+25	1+50	1+75	2+00	2+25	2+50	2+75	3+00	3+25	3+50	3+75	4+00	4+25	4+50	4+75	5+00

NOTES:

1.) OWNER LOT 65–1: D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY
245 N BEND DRIVE
MANCHESTER, NH 03104

OWNER LOT 65–A: EUGENE A. & DONNA L. SGRIGNUOLI
22 SUN HAWK LANE
DOVER, NH 03820

1A.) APPLICANT: STONEARCH DEVELOPMENT CORP.
42J DOVER POINT ROAD
DOVER, NH 03820

2.) LOT OF RECORD: TAX MAP E, LOT 65–1
TAX MAP E, LOT 65–A

3.) LOT AREA LOT 65–1: 1,824,109 Sq. Ft., 41.88 Ac. +/–
LOT AREA LOT 65–A: 110,839 Sq. Ft., 2.54 Ac. +/–

4.) S.C.R.D. BOOK 4918, PAGE 158
S.C.R.D. BOOK 1571, PAGE 8

5.) THE INTENT OF THIS PLAN IS TO PROVIDE GRADING & ENGINEERING DETAILS OF THEODORE DRIVE AND TAX MAP E, LOTS 65–1 & 65–A.

6.) SEE EROSION & SEDIMENT CONTROL PLANS FOR DETAILS ON PERIMETER CONTROL (MULCH BERM / FENCE / SILT SOXX).

7.) BS&E IS TO PROVIDE ADDITIONAL BENCHMARKS PRIOR TO CONSTRUCTION.

8.) EXISTING AND PROPOSED CONTOURS ARE PROVIDED AT 1' INTERVALS WITH DRAINAGE FEATURES AT MORE PRECISE INTERVALS.

9.) SEE SHEET 2 FOR ALL OTHER STANDARD CONSTRUCTION NOTES.

REVISION	DATE	DESCRIPTION

PLAN & PROFILE THEODORE DRIVE 0+00 TO 5+00
LAND OF
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY &
EUGENE A. & DONNA L. SGRIGNUOLI
TOLEND ROAD
DOVER, N.H.
TAX MAP E, LOT 65–1 & 65–A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332–2863

SCALE : 1 IN. EQUALS 20 FT.
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 – 107

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY No. 14243 LICENSED PROFESSIONAL ENGINEER

STRUCTURES TABLE:

PROP. CATCH BASIN #5 (POND C05P)
4'ø STRUCTURE W/ TYPE "B" GRATE
STA: 0+87.50 (CL)
RIM = 114.66 (FLUSH)
INV. OUT = 111.41 (12" HDPE N-12) (DMH #2)

PROP. CATCH BASIN #6 (POND C06P)
4'ø STRUCTURE W/ TYPE "B" GRATE
STA: 0+86.57 (CL)
RIM = 112.71 (FLUSH)
INV. OUT = 109.46 (12" HDPE N-12) (CB #7)

PROP. CATCH BASIN #7 (POND C07P)
4'ø STRUCTURE W/ TYPE "B" GRATE
STA: 6+75.00 (Lt. 11.00')
RIM = 113.48 (FLUSH)
INV. IN = 109.08 (12" HDPE N-12) (CB #6)
INV. OUT = 108.98 (12" HDPE N-12) (CB #8)

PROP. CATCH BASIN #8 (POND C08P)
4'ø STRUCTURE W/ TYPE "B" GRATE
STA: 6+75.00 (Rt. 11.00')
RIM = 113.48 (FLUSH)
INV. IN = 108.73 (12" HDPE N-12) (CB #7)
INV. IN = 109.98 (15" HDPE N-12) (DMH #2)
INV. OUT = 108.23 (18" HDPE N-12) (RG #101)

PROP. CATCH BASIN #9 (POND C09P)
4'ø STRUCTURE W/ TYPE "I" GRATE
STA: 8+65.00 (Lt. 11.00')
RIM = 103.91 (FLUSH)
INV. OUT = 100.66 (12" HDPE N-12) (CB #10)

STRUCTURES TABLE CONT'D:

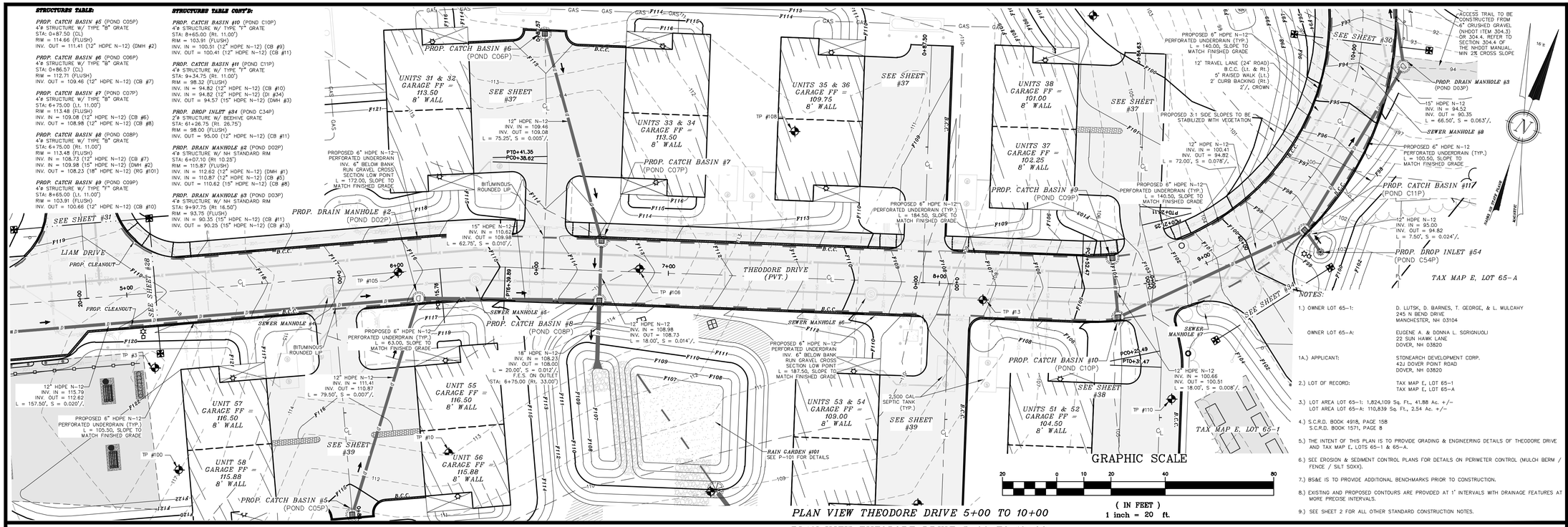
PROP. CATCH BASIN #10 (POND C10P)
4'ø STRUCTURE W/ TYPE "I" GRATE
STA: 8+65.00 (Rt. 11.00')
RIM = 103.91 (FLUSH)
INV. IN = 100.51 (12" HDPE N-12) (CB #9)
INV. OUT = 100.41 (12" HDPE N-12) (CB #11)

PROP. CATCH BASIN #11 (POND C11P)
4'ø STRUCTURE W/ TYPE "I" GRATE
STA: 9+34.75 (Rt. 11.00')
RIM = 98.32 (FLUSH)
INV. IN = 94.82 (12" HDPE N-12) (CB #10)
INV. IN = 94.82 (12" HDPE N-12) (DI #54)
INV. OUT = 94.57 (15" HDPE N-12) (DMH #3)

PROP. DROP INLET #54 (POND C54P)
2'ø STRUCTURE W/ BEEHIVE GRATE
STA: 61+26.75 (Rt. 26.75')
RIM = 98.00 (FLUSH)
INV. OUT = 95.00 (12" HDPE N-12) (CB #11)

PROP. DRAIN MANHOLE #2 (POND D02P)
4'ø STRUCTURE W/ NH STANDARD RIM
STA: 6+07.10 (Rt 10.25')
RIM = 115.87 (FLUSH)
INV. IN = 112.62 (12" HDPE N-12) (DMH #1)
INV. IN = 110.87 (12" HDPE N-12) (CB #5)
INV. OUT = 110.62 (15" HDPE N-12) (CB #5)

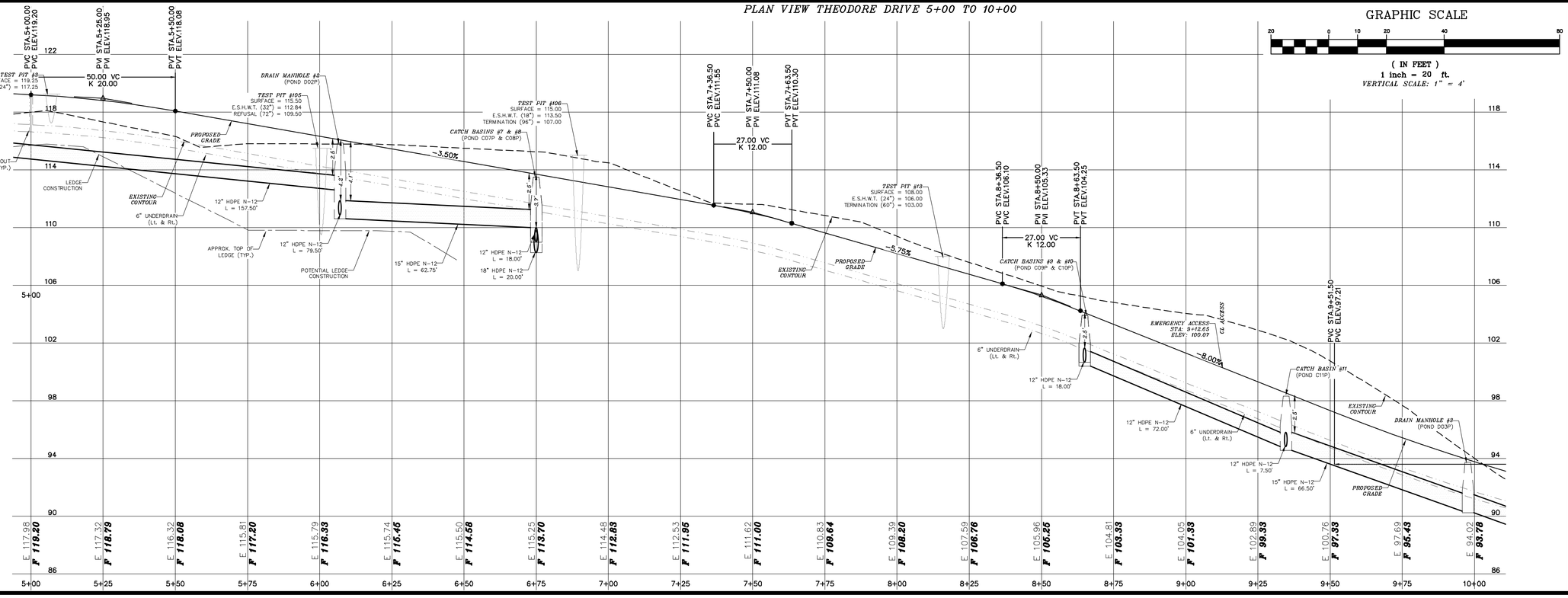
PROP. DRAIN MANHOLE #3 (POND D03P)
4'ø STRUCTURE W/ NH STANDARD RIM
STA: 9+97.75 (Rt 16.50')
RIM = 93.75 (FLUSH)
INV. IN = 90.35 (15" HDPE N-12) (CB #11)
INV. OUT = 90.25 (15" HDPE N-12) (CB #13)



PLAN VIEW THEODORE DRIVE 5+00 TO 10+00

PLAN VIEW THEODORE DRIVE 5+00 TO 10+00

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.
VERTICAL SCALE: 1" = 4'



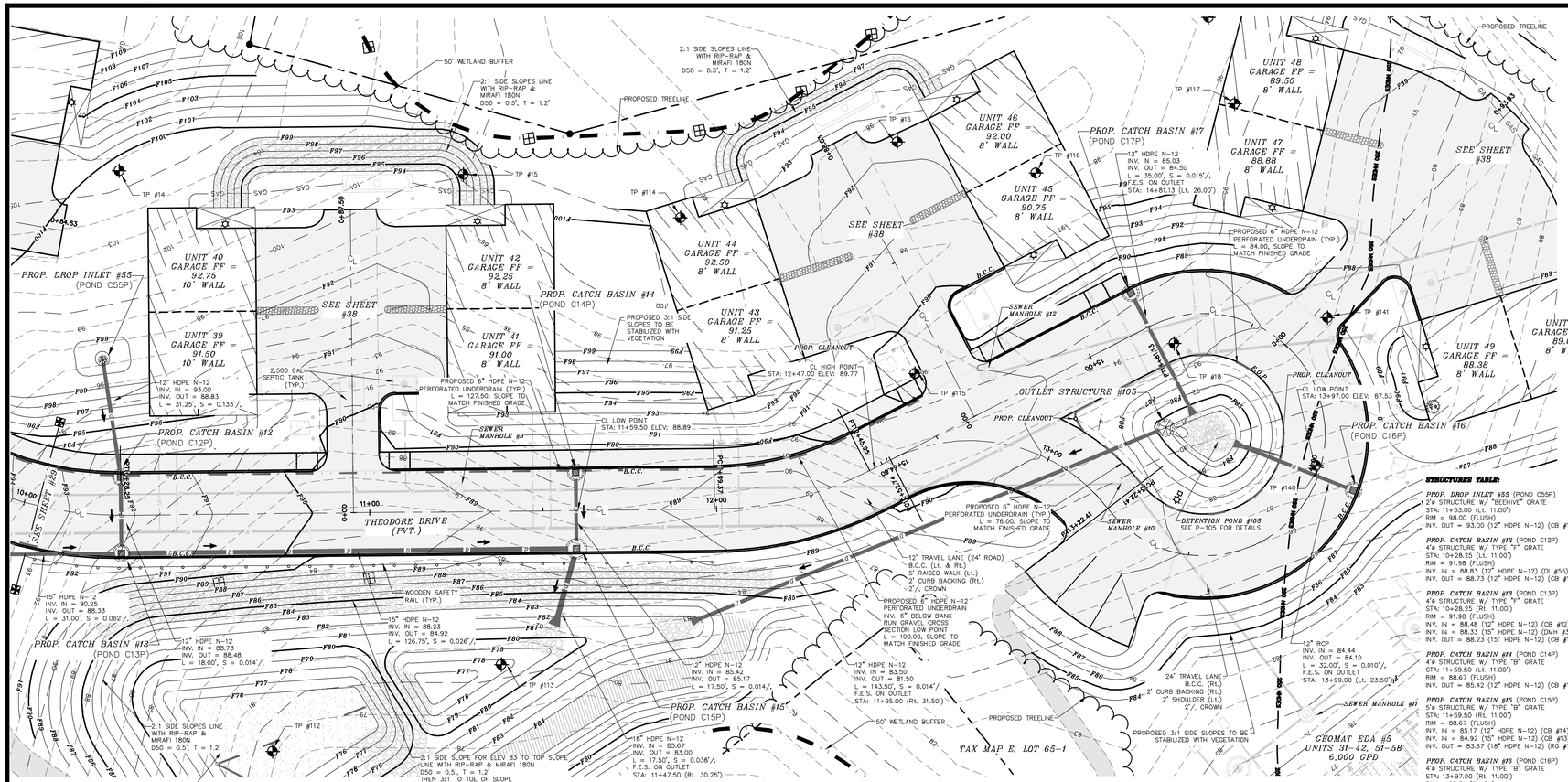
REVISION	DATE	DESCRIPTION

PLAN & PROFILE THEODORE DRIVE 5+00 TO 10+00
LAND OF
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY &
EUGENE A. & DONNA L. SGRIGNUOLI
TOLEND ROAD
DOVER, N.H.
TAX MAP E, LOT 65-1 & 65-A

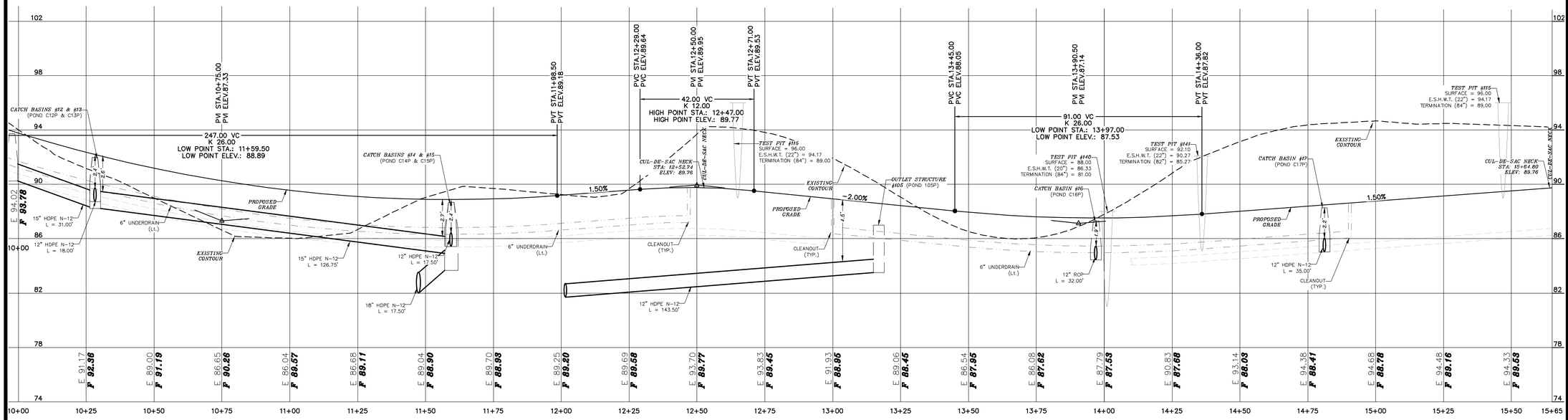
BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 20 FT.
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 – 107

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14243
LICENSED PROFESSIONAL ENGINEER



PLAN VIEW THEODORE DRIVE 10+00 TO END



PROFILE VIEW THEODORE DRIVE 10+00 TO END

NOTES:

1.) OWNER LOT 65-1: D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY, 245 N BEND DRIVE, MANCHESTER, NH 03104

OWNER LOT 65-A: EUGENE A. & DONNA L. SGRIGNUOLI, 22 SUN HAWK LANE, DOVER, NH 03820

1A.) APPLICANT: STONECREST DEVELOPMENT CORP., 42J DOVER POINT ROAD, DOVER, NH 03820

2.) LOT OF RECORD: TAX MAP E, LOT 65-1; TAX MAP E, LOT 65-A

3.) LOT AREA LOT 65-1: 1,824,109 Sq. Ft., 41.88 Ac. +/- LOT AREA LOT 65-A: 110,839 Sq. Ft., 2.54 Ac. +/-

4.) S.C.R.D. BOOK 4918, PAGE 158 S.C.R.D. BOOK 1571, PAGE 8

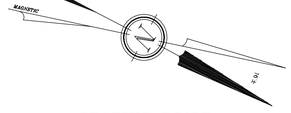
5.) THE INTENT OF THIS PLAN IS TO PROVIDE GRADING & ENGINEERING DETAILS OF THEODORE DRIVE AND TAX MAP E, LOTS 65-1 & 65-A.

6.) SEE EROSION & SEDIMENT CONTROL PLANS FOR DETAILS ON PERIMETER CONTROL (MULCH BERM / FENCE / SILT SOXX).

7.) BS&E IS TO PROVIDE ADDITIONAL BENCHMARKS PRIOR TO CONSTRUCTION.

8.) EXISTING AND PROPOSED CONTOURS ARE PROVIDED AT 1' INTERVALS WITH DRAINAGE FEATURES AT MORE PRECISE INTERVALS.

9.) SEE SHEET 2 FOR ALL OTHER STANDARD CONSTRUCTION NOTES.



GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

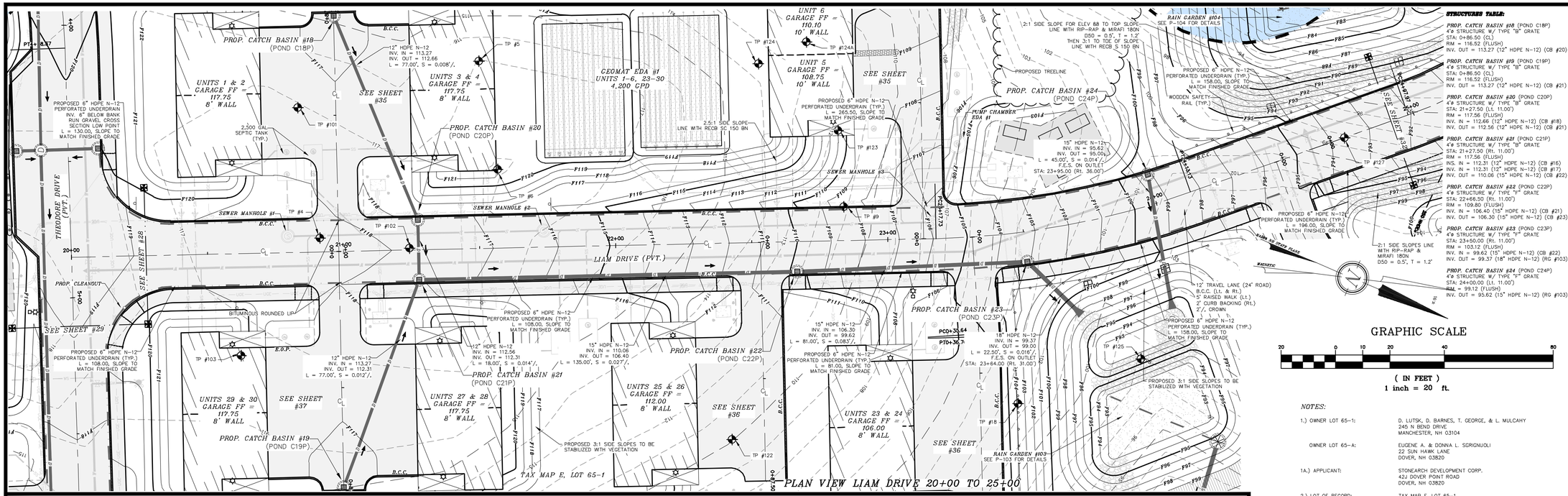
REVISION	DATE	DESCRIPTION

PLAN & PROFILE THEODORE DRIVE 10+00 TO END
LAND OF
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY &
EUGENE A. & DONNA L. SGRIGNUOLI
TOLEND ROAD
DOVER, N.H.
TAX MAP E, LOT 65-1 & 65-A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 20 FT.
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 – 107

KENNETH A. BERRY No. 14243 LICENSED PROFESSIONAL ENGINEER - STATE OF NEW HAMPSHIRE



STRUCTURES TABLE:

PROP. CATCH BASIN #18 (POND C18P)
4'ø STRUCTURE W/ TYPE "B" GRATE
STA: 0+86.50 (CL)
RIM = 116.52 (FLUSH)
INV. OUT = 113.27 (12" HDPE N-12) (CB #20)

PROP. CATCH BASIN #19 (POND C19P)
4'ø STRUCTURE W/ TYPE "B" GRATE
STA: 0+86.50 (CL)
RIM = 116.52 (FLUSH)
INV. OUT = 113.27 (12" HDPE N-12) (CB #21)

PROP. CATCH BASIN #20 (POND C20P)
4'ø STRUCTURE W/ TYPE "B" GRATE
STA: 21+27.50 (Lt. 11.00')
RIM = 117.56 (FLUSH)
INV. IN = 112.66 (12" HDPE N-12) (CB #18)
INV. OUT = 112.56 (12" HDPE N-12) (CB #21)

PROP. CATCH BASIN #21 (POND C21P)
4'ø STRUCTURE W/ TYPE "B" GRATE
STA: 21+27.50 (Rt. 11.00')
RIM = 117.56 (FLUSH)
INS. IN = 112.31 (12" HDPE N-12) (CB #16)
INV. IN = 112.31 (12" HDPE N-12) (CB #17)
INV. OUT = 110.06 (15" HDPE N-12) (CB #22)

PROP. CATCH BASIN #22 (POND C22P)
4'ø STRUCTURE W/ TYPE "B" GRATE
STA: 22+66.50 (Rt. 11.00')
RIM = 109.80 (FLUSH)
INV. IN = 106.40 (15" HDPE N-12) (CB #21)
INV. OUT = 106.30 (15" HDPE N-12) (CB #23)

PROP. CATCH BASIN #23 (POND C23P)
4'ø STRUCTURE W/ TYPE "B" GRATE
STA: 23+50.00 (Rt. 11.00')
RIM = 103.12 (FLUSH)
INV. IN = 99.62 (15" HDPE N-12) (CB #22)
INV. OUT = 99.37 (18" HDPE N-12) (RG #103)

PROP. CATCH BASIN #24 (POND C24P)
4'ø STRUCTURE W/ TYPE "B" GRATE
STA: 24+00.00 (Lt. 11.00')
RIM = 99.12 (FLUSH)
INV. OUT = 95.62 (15" HDPE N-12) (RG #103)

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

NOTES:

1.) OWNER LOT 65-1: D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY, 245 N BEND DRIVE, MANCHESTER, NH 03104

OWNER LOT 65-A: EUGENE A. & DONNA L. SCRIGNUOLI, 22 SUN HAWK LANE, DOVER, NH 03820

1A.) APPLICANT: STONEARCH DEVELOPMENT CORP., 42U DOVER POINT ROAD, DOVER, NH 03820

2.) LOT OF RECORD: TAX MAP E, LOT 65-1; TAX MAP E, LOT 65-A

3.) LOT AREA LOT 65-1: 1,824,109 Sq. Ft., 41.88 Ac. +/-; LOT AREA LOT 65-A: 110,839 Sq. Ft., 2.54 Ac. +/-

4.) S.C.R.D. BOOK 4918, PAGE 158; S.C.R.D. BOOK 1571, PAGE 8

5.) THE INTENT OF THIS PLAN IS TO PROVIDE GRADING & ENGINEERING DETAILS OF LIAM DRIVE AND TAX MAP E, LOTS 65-1 & 65-A.

6.) SEE EROSION & SEDIMENT CONTROL PLANS FOR DETAILS ON PERIMETER CONTROL (MULCH BERM / FENCE / SILT SOXX).

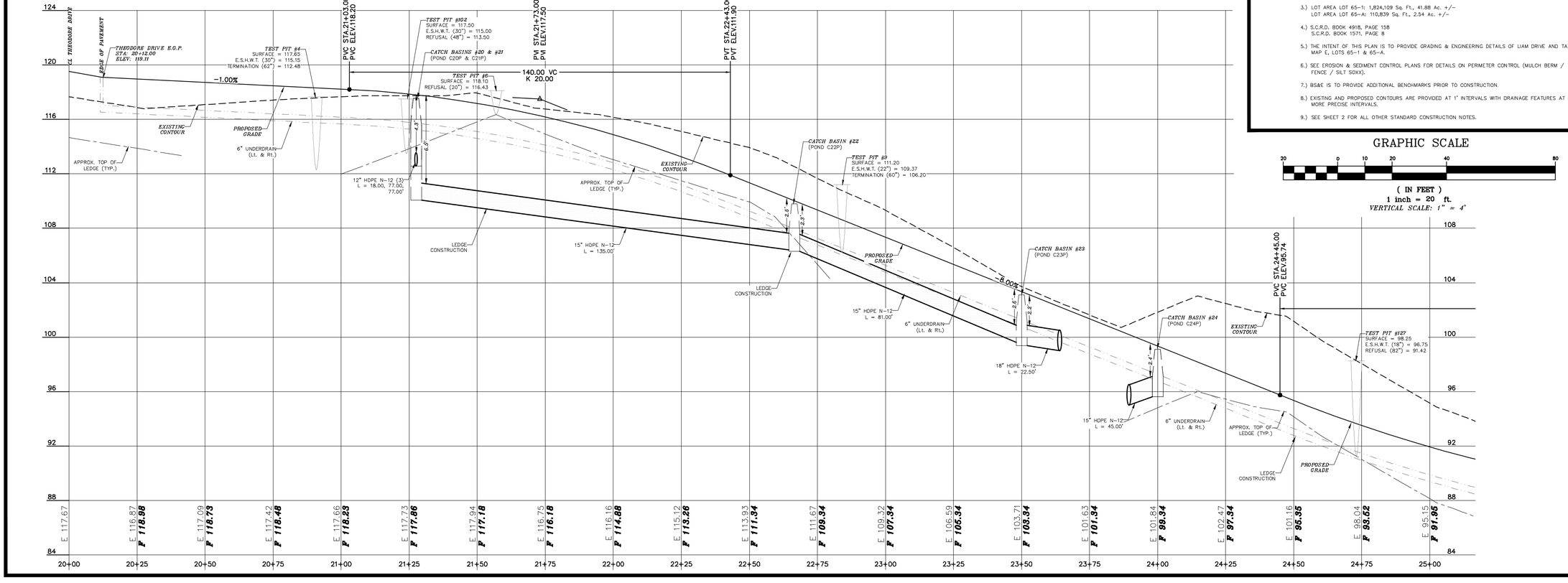
7.) BS&E IS TO PROVIDE ADDITIONAL BENCHMARKS PRIOR TO CONSTRUCTION.

8.) EXISTING AND PROPOSED CONTOURS ARE PROVIDED AT 1' INTERVALS WITH DRAINAGE FEATURES AT MORE PRECISE INTERVALS.

9.) SEE SHEET 2 FOR ALL OTHER STANDARD CONSTRUCTION NOTES.

REVISION	DATE	DESCRIPTION

PLAN & PROFILE LIAM DRIVE 20+00 TO 25+00
LAND OF
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY &
EUGENE A. & DONNA L. SCRIGNUOLI
TOLEND ROAD
DOVER, N.H.
TAX MAP E, LOT 65-1 & 65-A

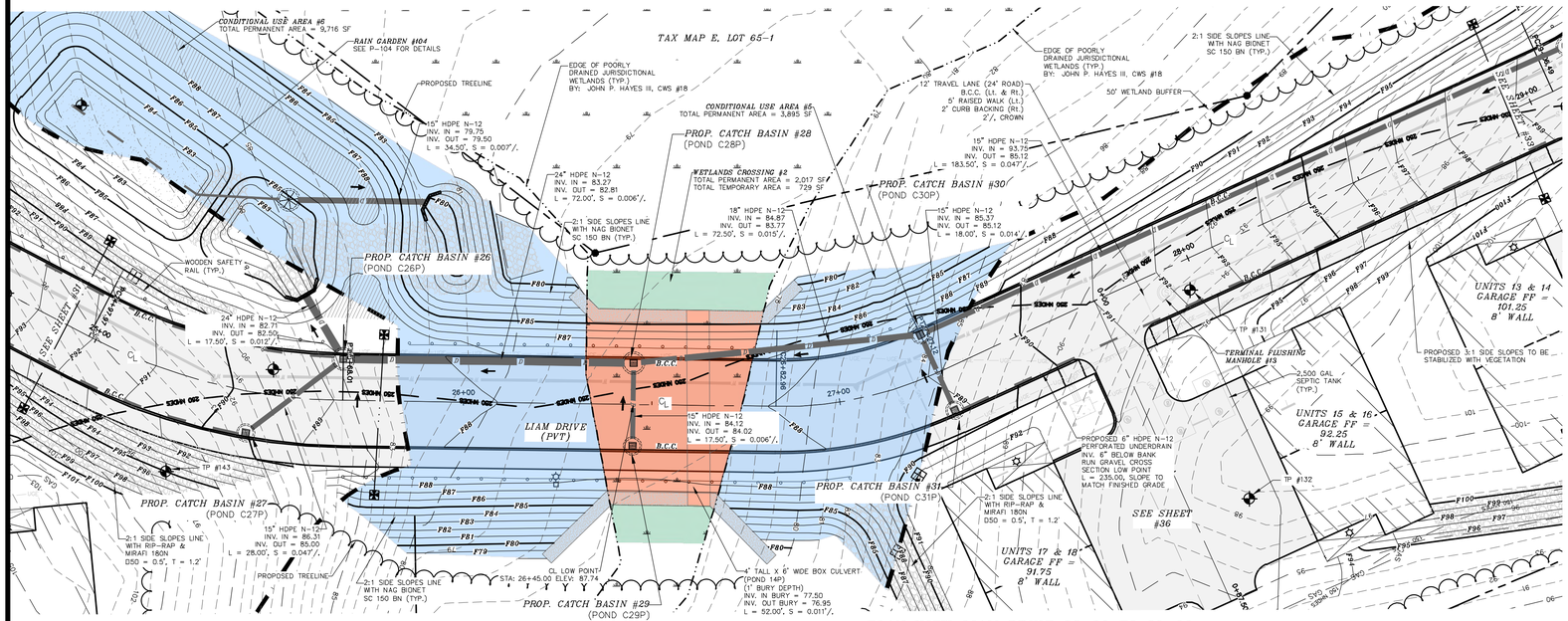


GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.
VERTICAL SCALE: 1" = 4'

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 20 FT.
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 - 107

STATE OF NEW HAMPSHIRE - KENNETH A. BERRY No. 14243 LICENSED PROFESSIONAL ENGINEER



PLAN VIEW LIAM DRIVE 25+00 TO 29+00

STRUCTURES TABLE:

PROP. CATCH BASIN #26 (POND C26P)
5'ø STRUCTURE W/ TYPE "B" GRATE
STA: 25+68.01 (Lt. 11.00')
RIM = 88.71 (FLUSH)
INV. IN = 85.00 (15" HDPE N-12) (CB #27)
INV. IN = 82.81 (24" HDPE N-12) (CB #28)
INV. OUT = 82.71 (24" HDPE N-12) (RG #104)

PROP. CATCH BASIN #27 (POND C27P)
4'ø STRUCTURE W/ TYPE "B" GRATE
STA: 25+44.00 (Rt. 11.00')
RIM = 89.56 (FLUSH)
INV. OUT = 86.31 (12" HDPE N-12) (CB #26)

PROP. CATCH BASIN #28 (POND C28P)
5'ø STRUCTURE W/ TYPE "B" GRATE
STA: 26+45.00 (Lt. 11.00')
RIM = 87.52 (FLUSH)
INV. IN = 84.02 (15" HDPE N-12) (CB #29)
INV. IN = 83.77 (18" HDPE N-12) (CB #30)
INV. OUT = 83.27 (24" HDPE N-12) (CB #26)

PROP. CATCH BASIN #29 (POND C29P)
4'ø STRUCTURE W/ TYPE "B" GRATE
STA: 26+45.00 (Rt. 11.00')
RIM = 87.52 (FLUSH)
INV. OUT = 84.12 (15" HDPE N-12) (CB #28)

PROP. CATCH BASIN #30 (POND C30P)
4'ø STRUCTURE W/ TYPE "T" GRATE
STA: 27+27.12 (Lt. 11.00')
RIM = 88.87 (FLUSH)
INV. IN = 85.12 (15" HDPE N-12) (DMH #4)
INV. IN = 85.12 (15" HDPE N-12) (CB #31)
INV. OUT = 84.87 (18" HDPE N-12) (CB #28)

PROP. CATCH BASIN #31 (POND C31P)
4'ø STRUCTURE W/ TYPE "T" GRATE
STA: 27+27.12 (Rt. 11.00')
RIM = 88.87 (FLUSH)
INV. OUT = 85.37 (15" HDPE N-12) (CB #30)

NOTES:

1.) OWNER LOT 65-1: D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY, 245 N BEND DRIVE, MANCHESTER, NH 03104

OWNER LOT 65-A: EUGENE A. & DONNA L. SORIGNUOLI, 22 SUN HAWK LANE, DOVER, NH 03820

1A.) APPLICANT: STONEARCH DEVELOPMENT CORP., 42J DOVER POINT ROAD, DOVER, NH 03820

2.) LOT OF RECORD: TAX MAP E, LOT 65-1; TAX MAP E, LOT 65-A

3.) LOT AREA LOT 65-1: 1,824,109 Sq. Ft., 41.88 Ac. +/- ; LOT AREA LOT 65-A: 110,839 Sq. Ft., 2.54 Ac. +/-

4.) S.C.R.D. BOOK 4918, PAGE 158; S.C.R.D. BOOK 1571, PAGE 8

5.) THE INTENT OF THIS PLAN IS TO PROVIDE GRADING & ENGINEERING DETAILS OF LIAM DRIVE AND TAX MAP E, LOTS 65-1 & 65-A.

6.) SEE EROSION & SEDIMENT CONTROL PLANS FOR DETAILS ON PERIMETER CONTROL (MULCH BERM / FENCE / SILT SOXX).

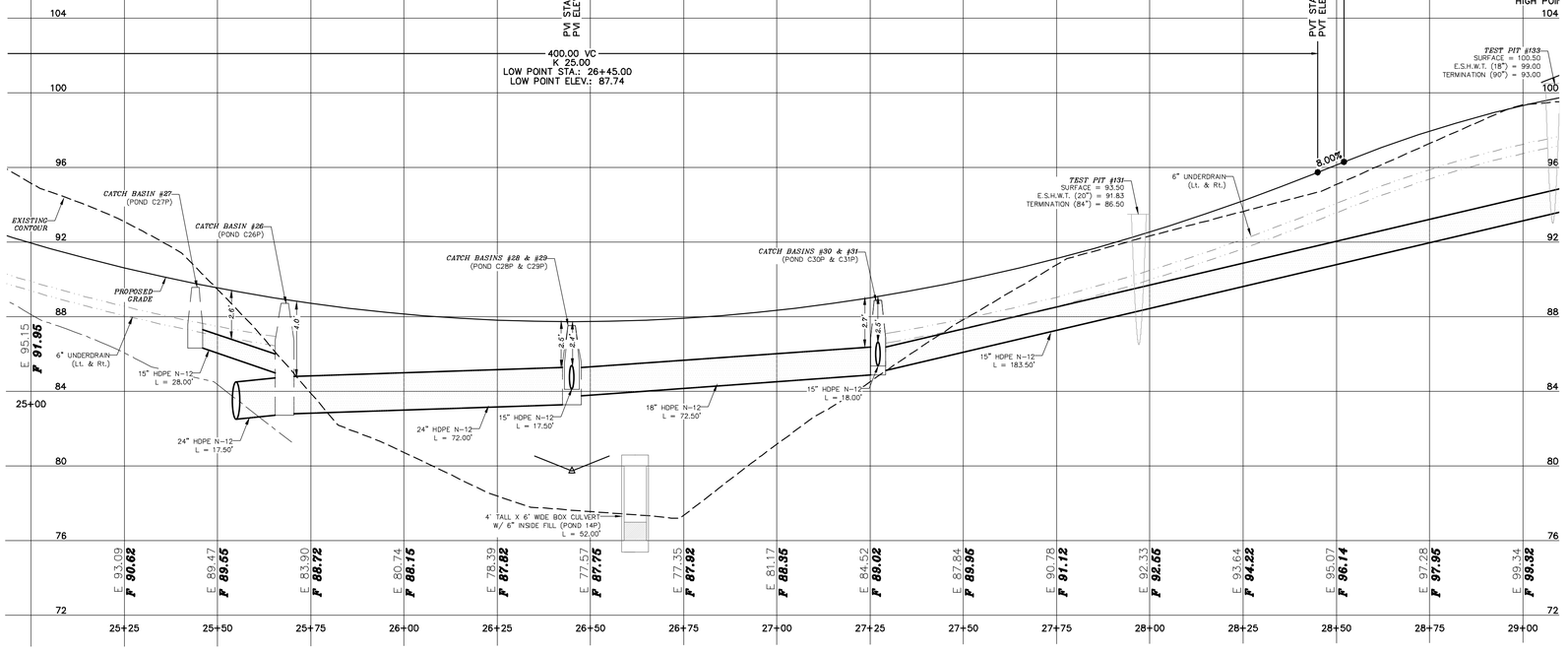
7.) BS&E IS TO PROVIDE ADDITIONAL BENCHMARKS PRIOR TO CONSTRUCTION.

8.) EXISTING AND PROPOSED CONTOURS ARE PROVIDED AT 1' INTERVALS WITH DRAINAGE FEATURES AT MORE PRECISE INTERVALS.

9.) SEE SHEET 2 FOR ALL OTHER STANDARD CONSTRUCTION NOTES.

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

PROFILE VIEW LIAM DRIVE 25+00 TO 29+00



GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.
VERTICAL SCALE: 1" = 4'

REVISION	DATE	DESCRIPTION

PLAN & PROFILE LIAM DRIVE 25+00 TO 29+00
LAND OF
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY &
EUGENE A. & DONNA L. SORIGNUOLI
TOLEND ROAD
DOVER, N.H.
TAX MAP E, LOT 65-1 & 65-A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 20 FT.
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 - 107

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14243
LICENSED PROFESSIONAL ENGINEER

STRUCTURES TABLE:

PROP. CATCH BASIN #32 (POND C32P)
4'ø STRUCTURE W/ TYPE "B" GRATE
STA: 0+18.50 (CL)
RIM = 99.76 (FLUSH)
INV. OUT = 96.51 (12" HDPE N-12) (DMH #4)

PROP. CATCH BASIN #33 (POND C33P)
4'ø STRUCTURE W/ TYPE "B" GRATE
STA: 30+93.75 (Rt. 13.00')
RIM = 99.81 (FLUSH)
INV. OUT = 96.56 (12" HDPE N-12) (DET #106)

PROP. DRAIN MANHOLE #4 (POND D04P)
4'ø STRUCTURE W/ NH STANDARD RIM
STA: 29+15.25 (Lt. 9.25')
RIM = 99.75 (FLUSH)
INV. IN = 96.00 (12" HDPE N-12) (CB #32)
INV. IN = 94.00 (12" HDPE N-12) (OS #106)
INV. OUT = 93.75 (15" HDPE N-12) (CB #30)

OUTLET STRUCTURE #106
4'ø STRUCTURE W/ CONE GRATE
STA: 31+84.75 (Lt. 25.25')
RIM = 99.00
INV. IN = 95.50 (6" ORIFICE)
INV. IN = 98.25 (6" ORIFICE)
INV. OUT = 95.50 (12" HDPE N-12) (DMH #4)

NOTES:

1.) OWNER LOT 65-1: D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY
245 N BEND DRIVE
MANCHESTER, NH 03104

OWNER LOT 65-A: EUGENE A. & DONNA L. SGRIGNUOLI
22 SUN HAWK LANE
DOVER, NH 03820

1A.) APPLICANT: STONEARCH DEVELOPMENT CORP.
42J DOVER POINT ROAD
DOVER, NH 03820

2.) LOT OF RECORD: TAX MAP E, LOT 65-1
TAX MAP E, LOT 65-A

3.) LOT AREA LOT 65-1: 1,824,109 Sq. Ft., 41.88 Ac. +/-
LOT AREA LOT 65-A: 110,839 Sq. Ft., 2.54 Ac. +/-

4.) S.C.R.D. BOOK 4918, PAGE 158
S.C.R.D. BOOK 1571, PAGE 8

5.) THE INTENT OF THIS PLAN IS TO PROVIDE GRADING & ENGINEERING DETAILS OF LIAM DRIVE AND TAX MAP E, LOTS 65-1 & 65-A.

6.) SEE EROSION & SEDIMENT CONTROL PLANS FOR DETAILS ON PERIMETER CONTROL (MULCH BERM / FENCE / SILT SOXX).

7.) BS&E IS TO PROVIDE ADDITIONAL BENCHMARKS PRIOR TO CONSTRUCTION.

8.) EXISTING AND PROPOSED CONTOURS ARE PROVIDED AT 1' INTERVALS WITH DRAINAGE FEATURES AT MORE PRECISE INTERVALS.

9.) SEE SHEET 2 FOR ALL OTHER STANDARD CONSTRUCTION NOTES.

N/F CHAKRAVARTY, DILIP & MITALI
11411 RUNNING BEAR COURT
BELTSVILLE, MD 20705-1478
TAX MAP E, LOT 49-7
S.C.R.D. BOOK 3988, PAGE 79

PLAN VIEW LIAM DRIVE 29+00 TO END

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

PROFILE VIEW LIAM DRIVE 29+00 TO END

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.
VERTICAL SCALE: 1" = 4'

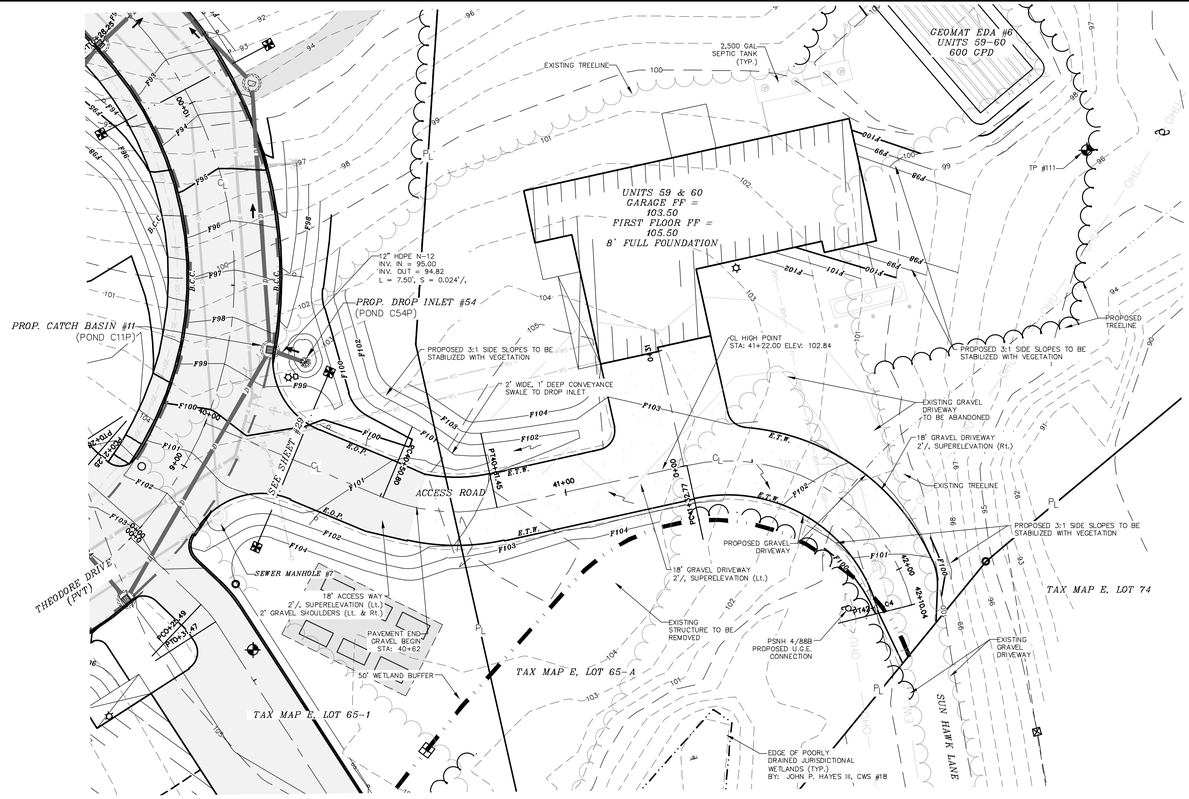
REVISION	DATE	DESCRIPTION

PLAN & PROFILE LIAM DRIVE 29+00 TO END
LAND OF
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY &
EUGENE A. & DONNA L. SGRIGNUOLI
TOLEND ROAD
DOVER, N.H.
TAX MAP E, LOT 65-1 & 65-A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 20 FT.
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 - 107

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14243
LICENSED
PROFESSIONAL ENGINEER



PLAN VIEW ACCESS ROAD 40+00 TO END

NOTES:

1.) OWNER LOT 65-1: D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY
245 N BEND DRIVE
MANCHESTER, NH 03104

OWNER LOT 65-A: EUGENE A. & DONNA L. SGRIGNUOLI
22 SUN HAWK LANE
DOVER, NH 03820

1A.) APPLICANT: STONEARCH DEVELOPMENT CORP.
42J DOVER POINT ROAD
DOVER, NH 03820

2.) LOT OF RECORD: TAX MAP E, LOT 65-1
TAX MAP E, LOT 65-A

3.) LOT AREA LOT 65-1: 1,824,109 Sq. Ft., 41.88 Ac. +/-
LOT AREA LOT 65-A: 110,839 Sq. Ft., 2.54 Ac. +/-

4.) S.C.R.D. BOOK 4918, PAGE 158
S.C.R.D. BOOK 1571, PAGE 8

5.) THE INTENT OF THIS PLAN IS TO PROVIDE GRADING & ENGINEERING DETAILS OF THE PROPOSED EMERGENCY ACCESS/DRIVEWAY RELOCATION AND TAX MAP E, LOTS 65-1 & 65-A.

6.) SEE EROSION & SEDIMENT CONTROL PLANS FOR DETAILS ON PERIMETER CONTROL (MULCH BERM / FENCE / SILT SOXX).

7.) BS&E IS TO PROVIDE ADDITIONAL BENCHMARKS PRIOR TO CONSTRUCTION.

8.) EXISTING AND PROPOSED CONTOURS ARE PROVIDED AT 1' INTERVALS WITH DRAINAGE FEATURES AT MORE PRECISE INTERVALS.

9.) SEE SHEET 2 FOR ALL OTHER STANDARD CONSTRUCTION NOTES.

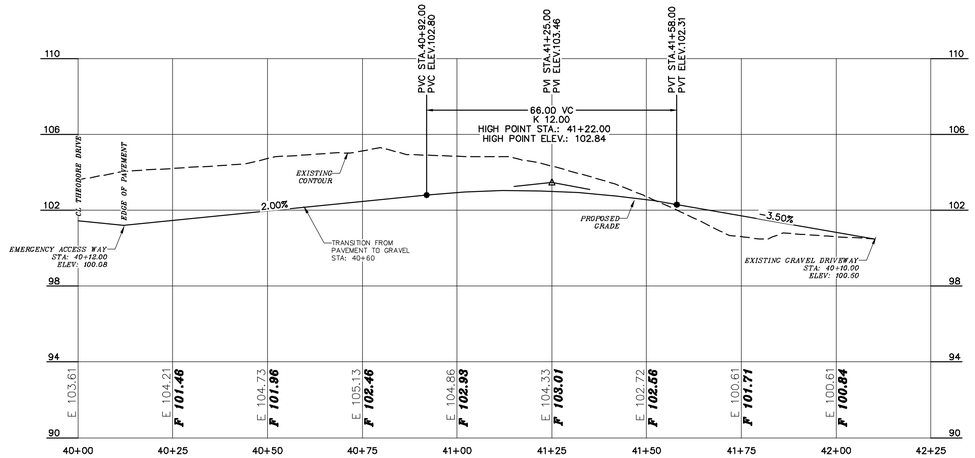
GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

PLAN VIEW ACCESS ROAD 40+00 TO END

PROFILE VIEW ACCESS ROAD 40+00 TO END



GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.
VERTICAL SCALE: 1" = 4'

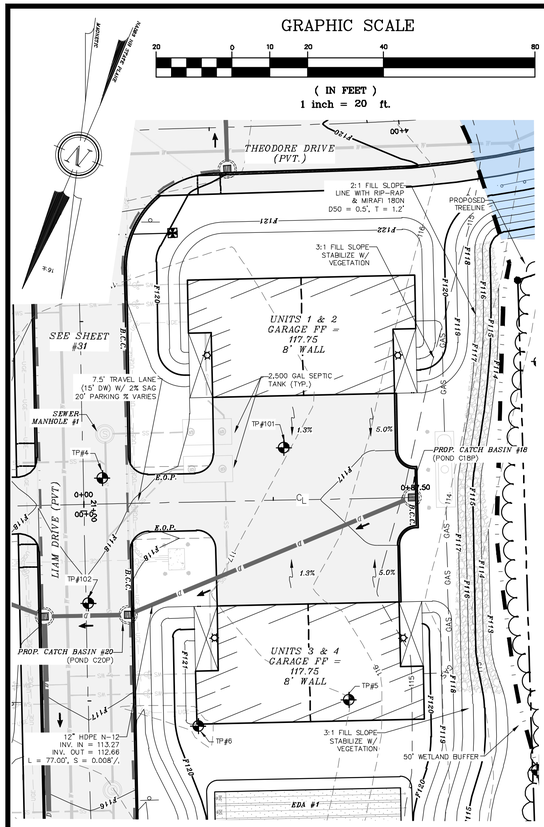
REVISION	DATE	DESCRIPTION

PLAN & PROFILE ACCESS ROAD 40+00 TO END
LAND OF
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY &
EUGENE A. & DONNA L. SGRIGNUOLI
TOLEND ROAD
DOVER, N.H.
TAX MAP E, LOT 65-1 & 65-A

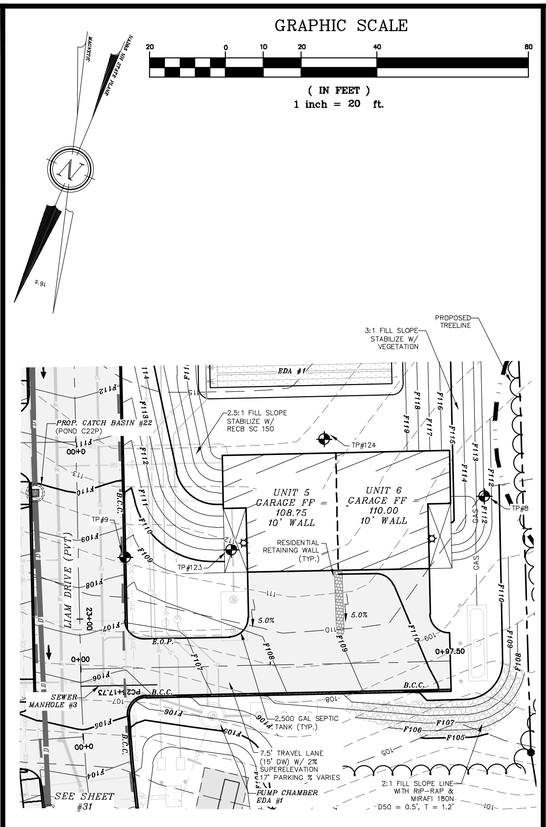
BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 20 FT.
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 – 107

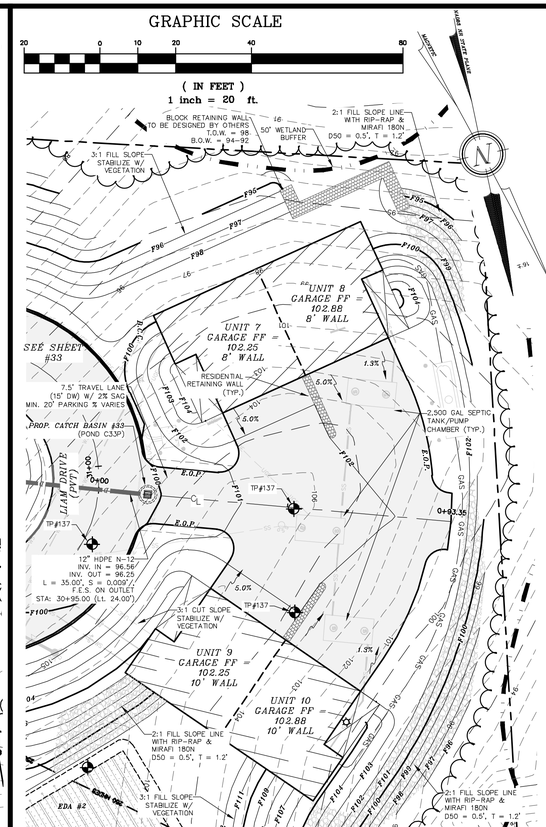
STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14243
LICENSED
PROFESSIONAL ENGINEER



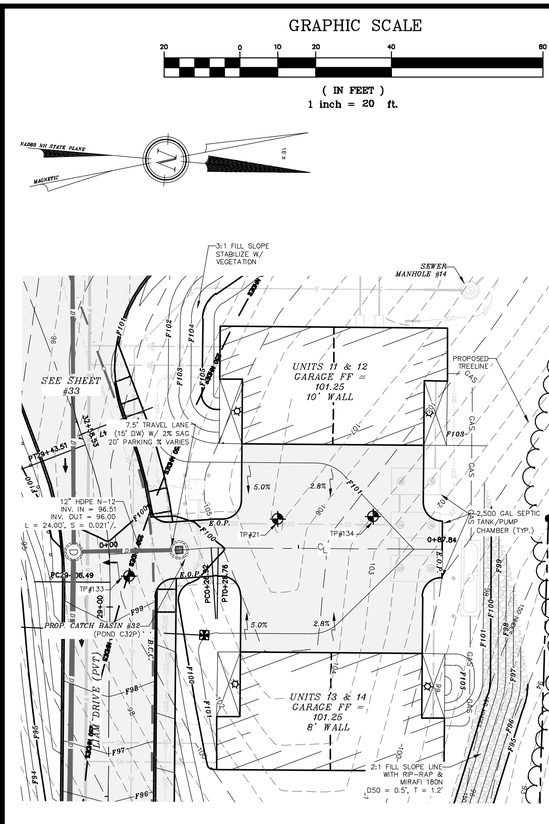
PLAN VIEW UNITS 1–4 0+00 TO END



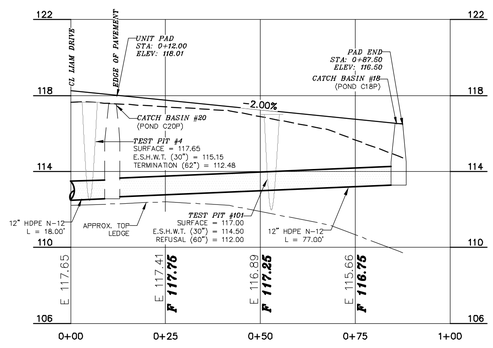
PLAN VIEW UNITS 5–6 0+00 TO END



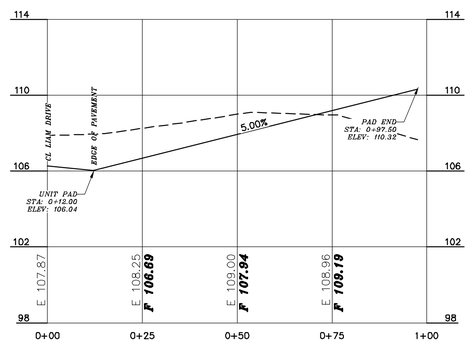
PLAN VIEW UNITS 7–10 0+00 TO END



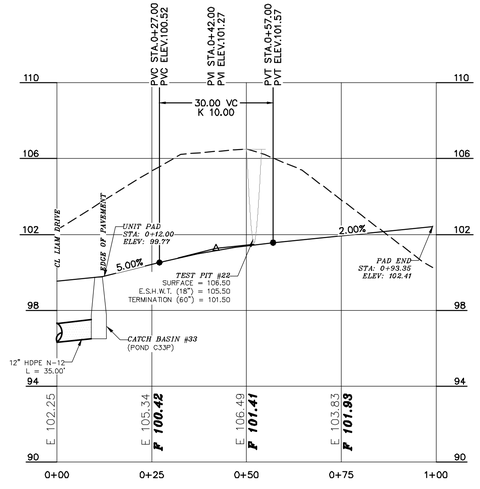
PLAN VIEW UNITS 11–14 0+00 TO END



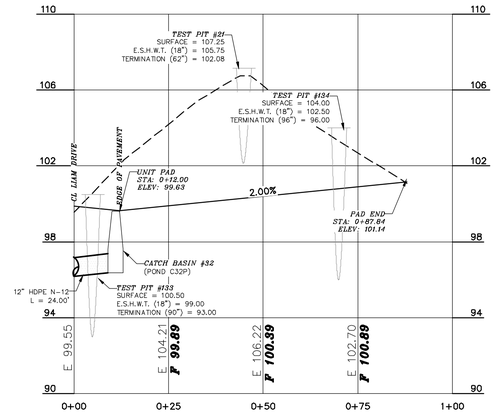
PROFILE VIEW UNITS 1–4 0+00 TO END



PROFILE VIEW UNITS 5–6 0+00 TO END



PROFILE VIEW UNITS 7–10 0+00 TO END



PROFILE VIEW UNITS 11–14 0+00 TO END

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.
VERTICAL SCALE: 1" = 4'

REVISION	DATE	DESCRIPTION

PLAN & PROFILE PAD SITES UNITS #1–14
LAND OF
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY &
EUGENE A. & DONNA L. SGTIGNOULI
TOLEND ROAD
DOVER, N.H.
TAX MAP E, LOT 65-1 & 65-4

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

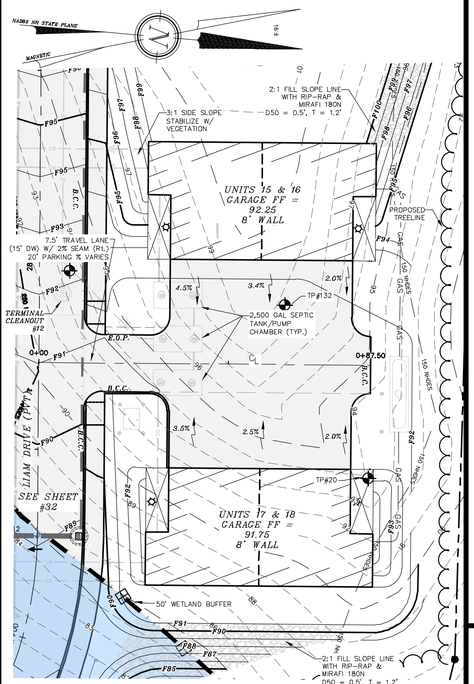
SCALE : 1 IN. EQUALS 20 FT.
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 – 107

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14243
LICENSED PROFESSIONAL ENGINEER

GRAPHIC SCALE

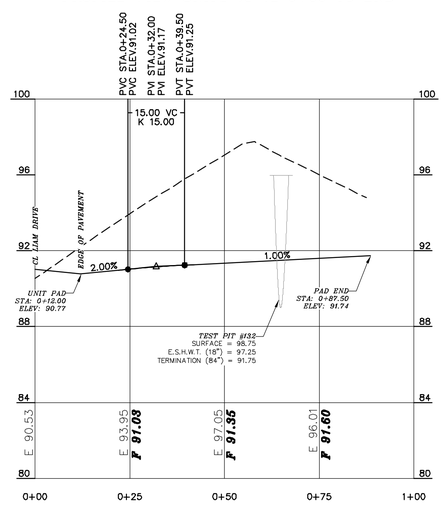
20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.



PLAN VIEW UNITS 15–18 0+00 TO END

PROFILE VIEW UNITS 15–18 0+00 TO END



GRAPHIC SCALE

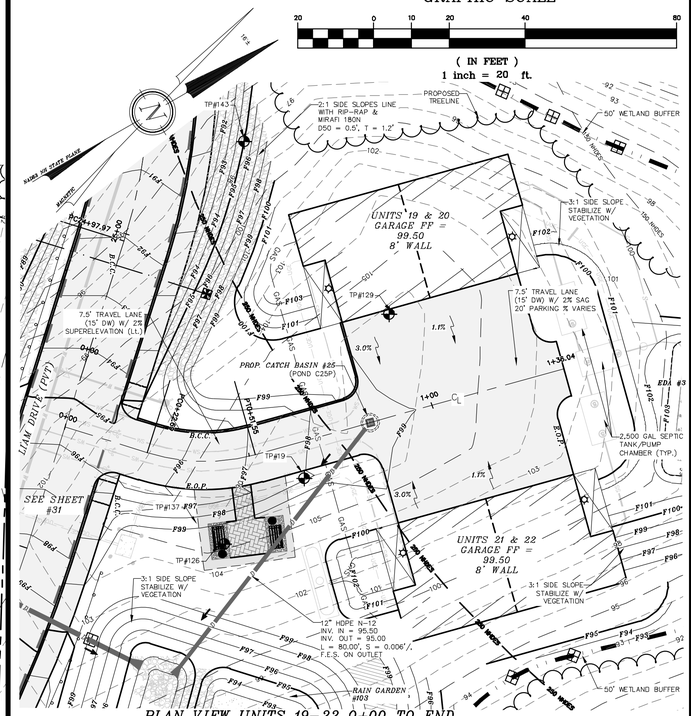
20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.
VERTICAL SCALE: 1" = 4'

GRAPHIC SCALE

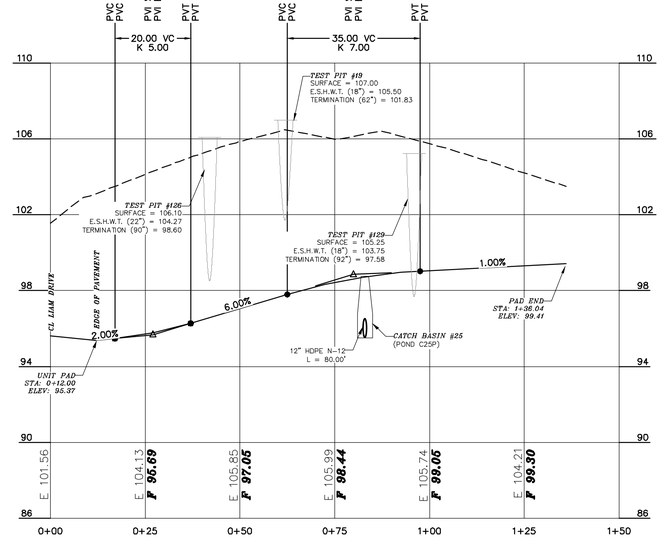
20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.



PLAN VIEW UNITS 19–22 0+00 TO END

PROFILE VIEW UNITS 19–22 0+00 TO END



GRAPHIC SCALE

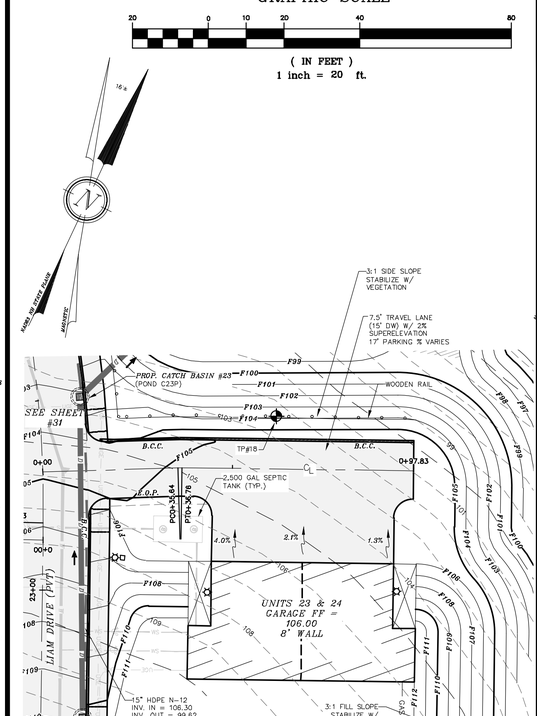
20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.
VERTICAL SCALE: 1" = 4'

GRAPHIC SCALE

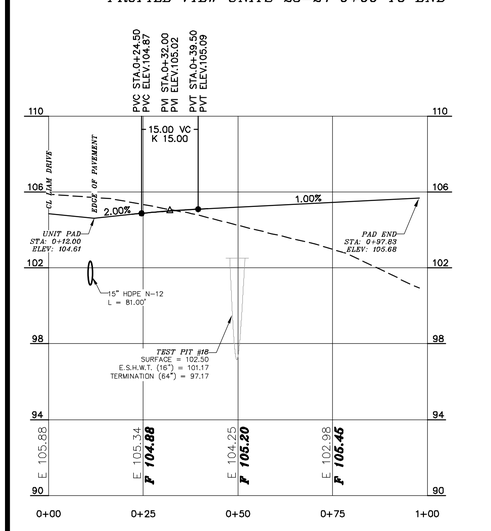
20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.



PLAN VIEW UNITS 23–24 0+00 TO END

PROFILE VIEW UNITS 23–24 0+00 TO END



GRAPHIC SCALE

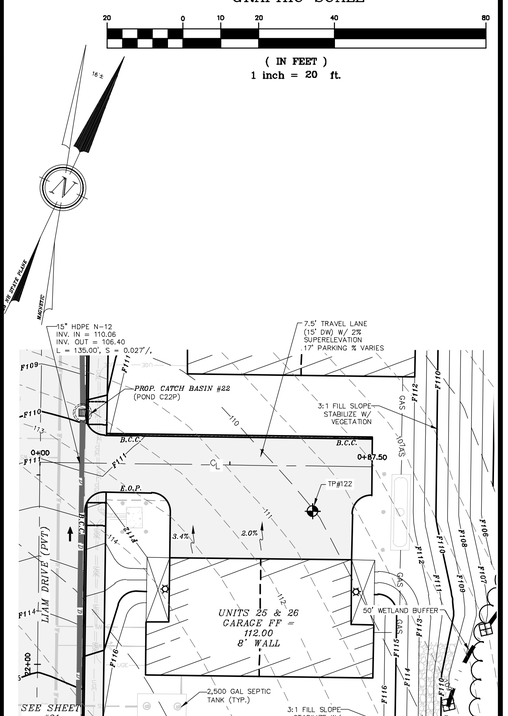
20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.
VERTICAL SCALE: 1" = 4'

GRAPHIC SCALE

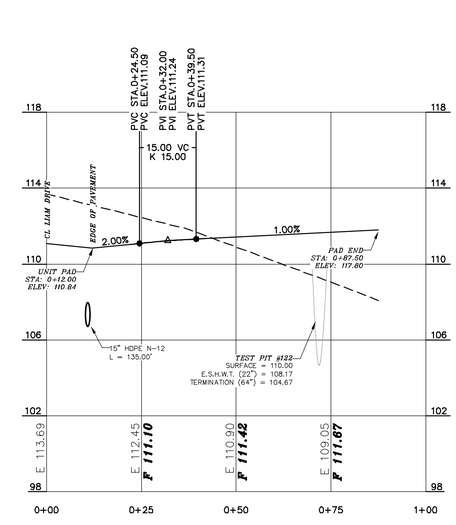
20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.



PLAN VIEW UNITS 25–26 0+00 TO END

PROFILE VIEW UNITS 25–26 0+00 TO END



GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.
VERTICAL SCALE: 1" = 4'

REVISION	DATE	DESCRIPTION

PLAN & PROFILE PAD SITES UNITS #15-26
LAND OF
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY &
EUGENE A. & DONNA L. SGTIGNOULI
TOLEND ROAD
DOVER, N.H.
TAX MAP E, LOT 65-1 & 65-4

BERRY & SURVEYING ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

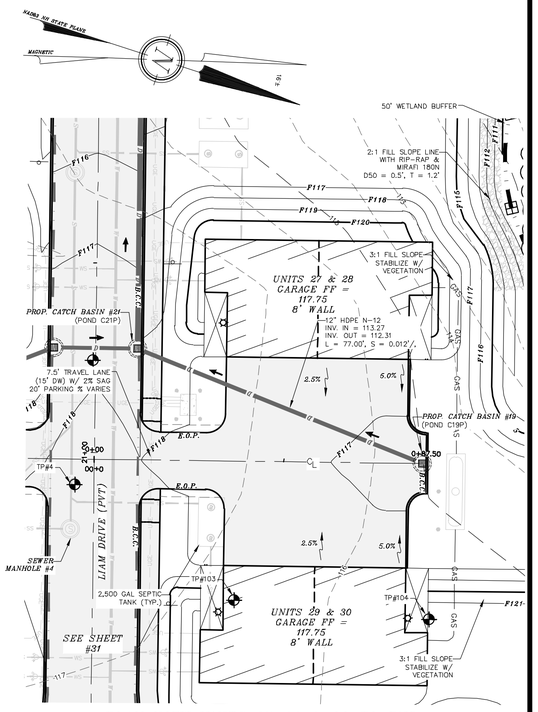
SCALE : 1 IN. EQUALS 20 FT.
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 – 107

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14243
LICENSED PROFESSIONAL ENGINEER

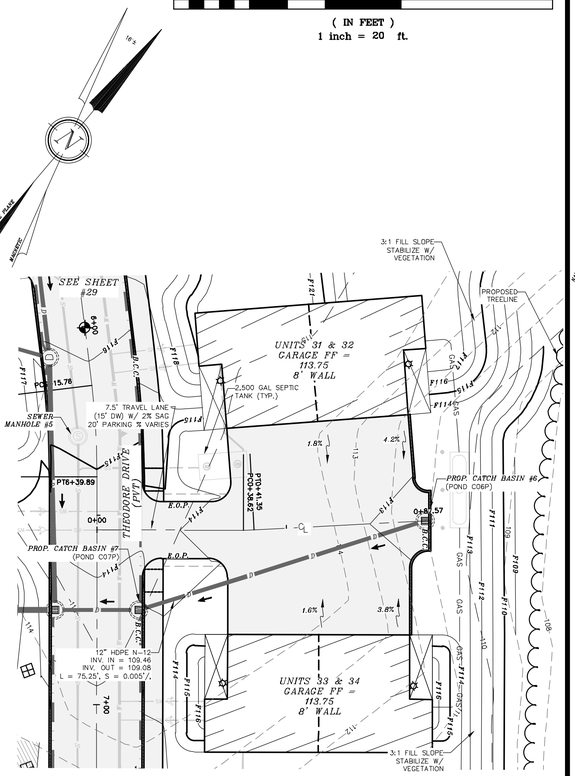
GRAPHIC SCALE

20 0 10 20 40 80

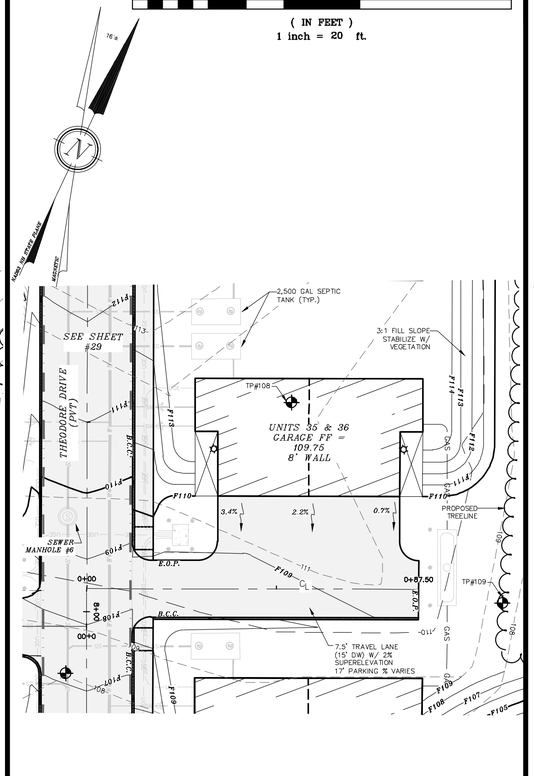
(IN FEET)
1 inch = 20 ft.



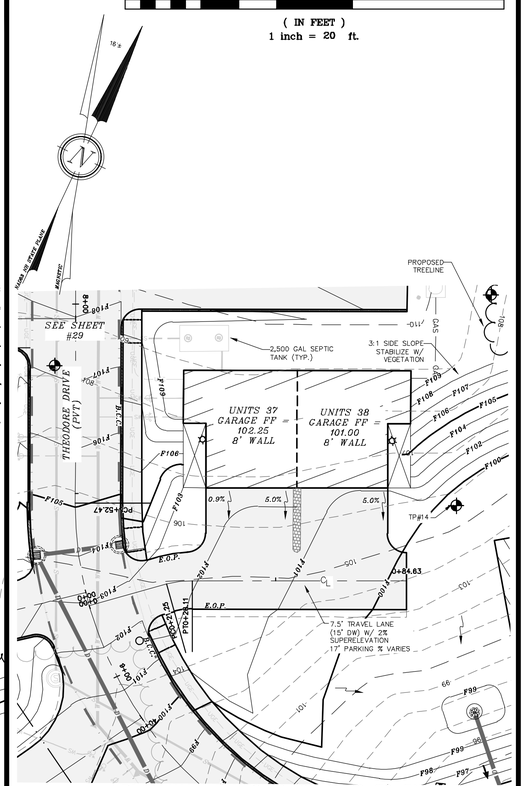
PLAN VIEW UNITS 27–30 0+00 TO END



PLAN VIEW UNITS 31–34 0+00 TO END

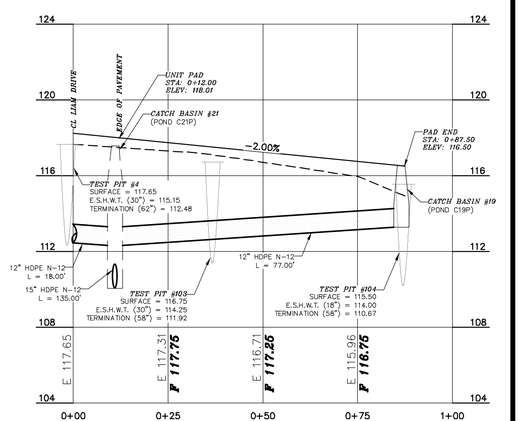


PLAN VIEW UNITS 35–36 0+00 TO END



PLAN VIEW UNITS 37–38 0+00 TO END

PROFILE VIEW UNITS 27–30 0+00 TO END

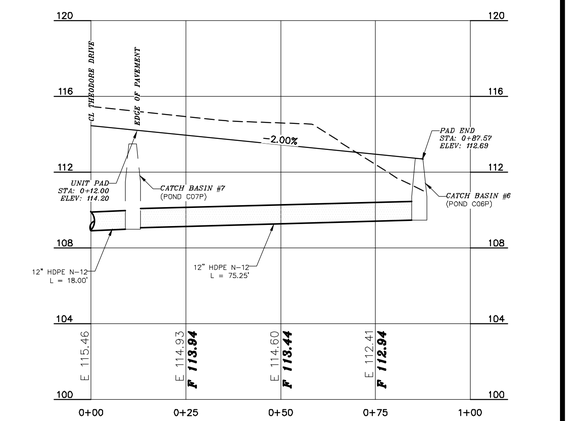


GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.
VERTICAL SCALE: 1" = 4'

PROFILE VIEW UNITS 31–34 0+00 TO END

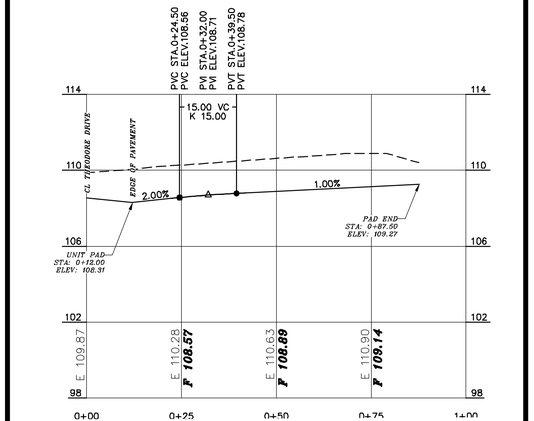


GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.
VERTICAL SCALE: 1" = 4'

PROFILE VIEW UNITS 35–36 0+00 TO END

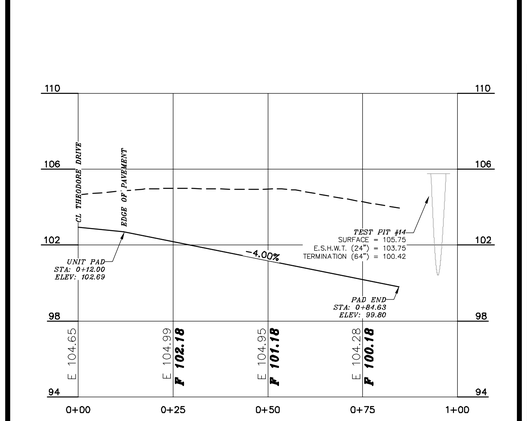


GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.
VERTICAL SCALE: 1" = 4'

PROFILE VIEW UNITS 37–38 0+00 TO END



GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.
VERTICAL SCALE: 1" = 4'

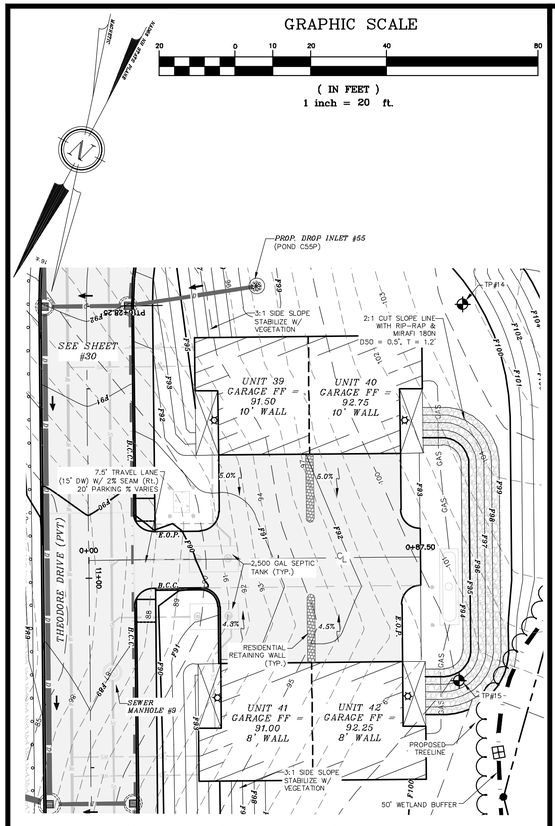
REVISION	DATE	DESCRIPTION

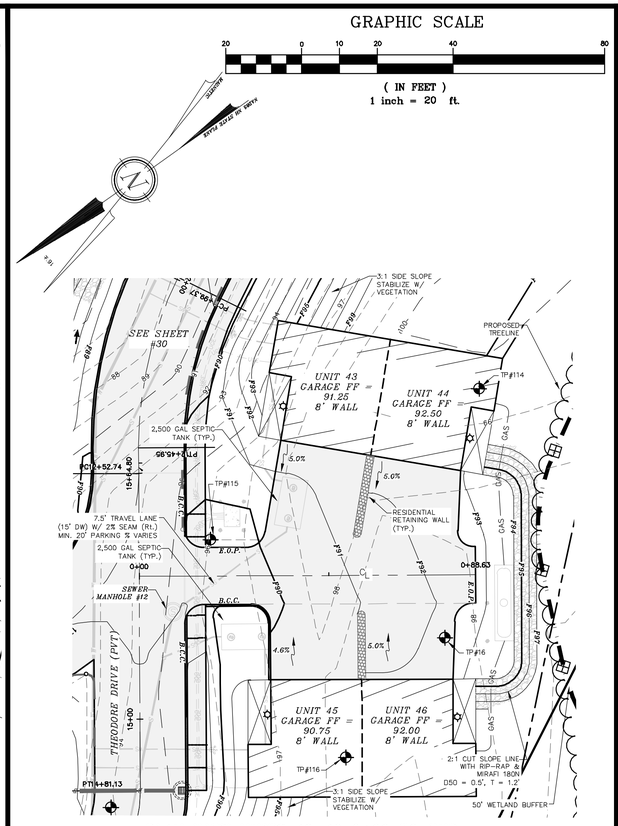
PLAN & PROFILE PAD SITES UNITS #27–38
LAND OF
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY &
EUGENE A. & DONNA L. SGITGNOULI
TOLEND ROAD
DOVER, N.H.
TAX MAP E, LOT 65–1 & 65–4

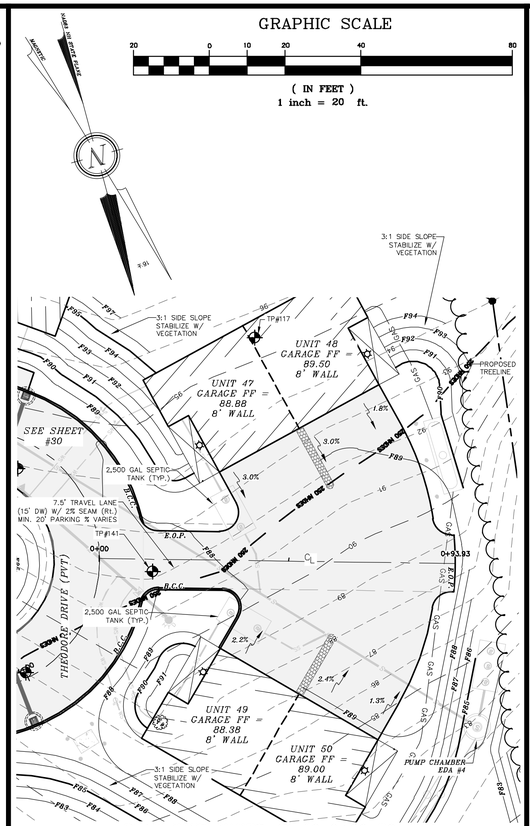
BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332–2863

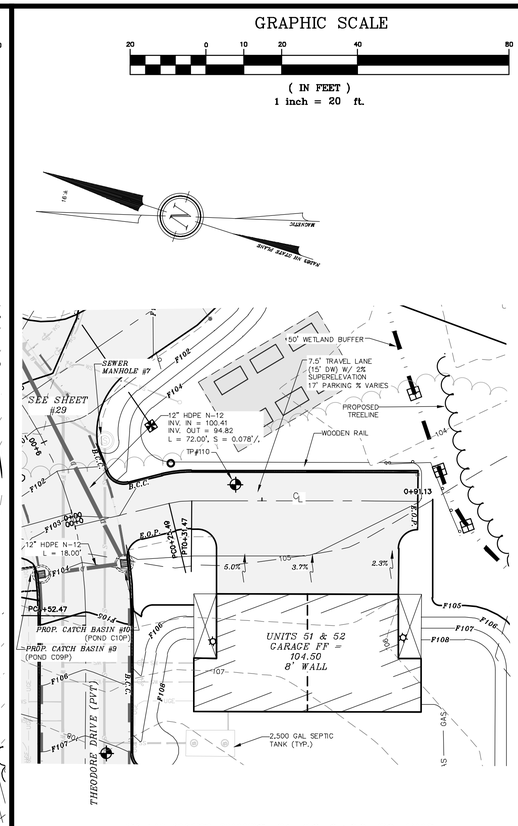
SCALE : 1 IN. EQUALS 20 FT.
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 – 107

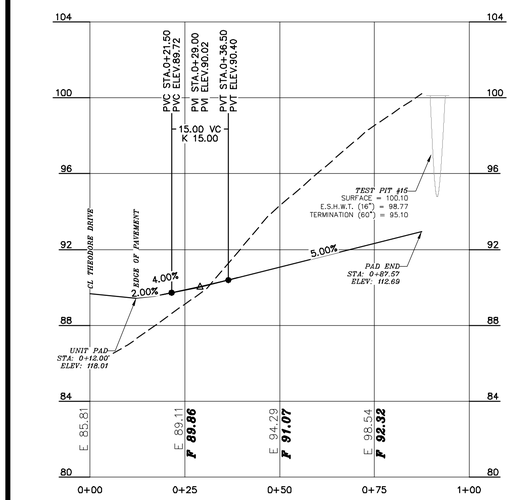
STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14243
LICENSED PROFESSIONAL ENGINEER

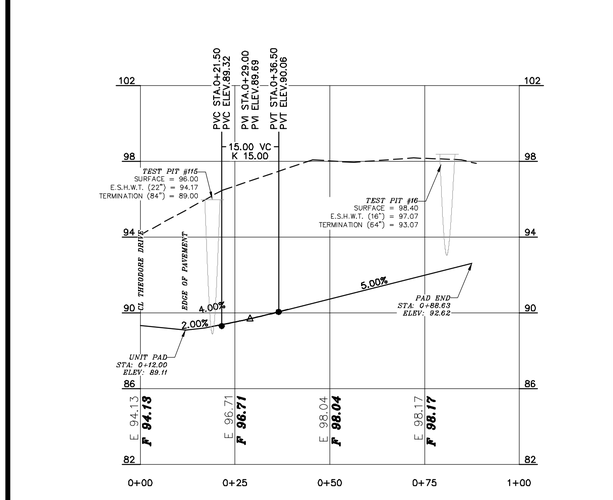


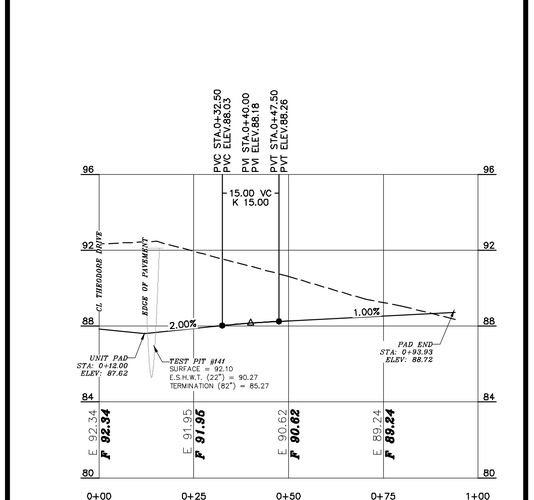


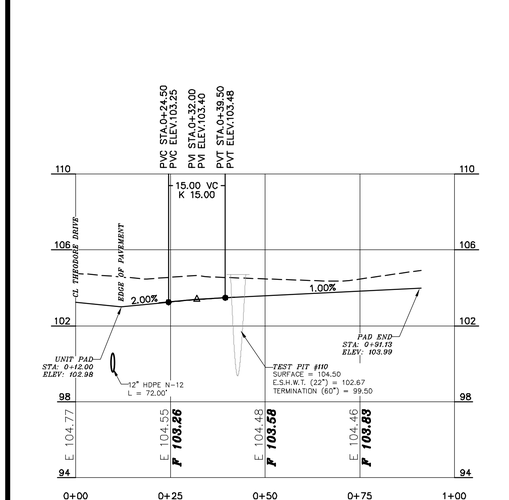












REVISION	DATE	DESCRIPTION

PLAN & PROFILE PAD SITES UNITS #39–52
LAND OF
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY &
EUGENE A. & DONNA L. SGTIGNOULI
TOLEND ROAD
DOVER, N.H.
TAX MAP E, LOT 65-1 & 65-4

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

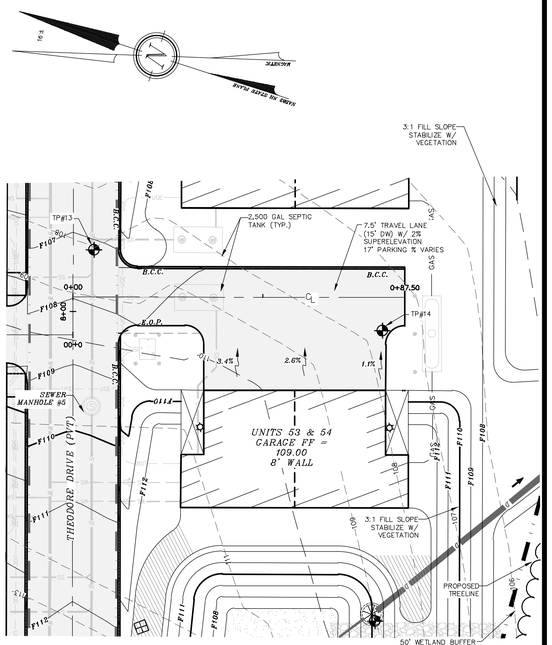
SCALE : 1 IN. EQUALS 20 FT.
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 – 107

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14243
LICENSED PROFESSIONAL ENGINEER

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

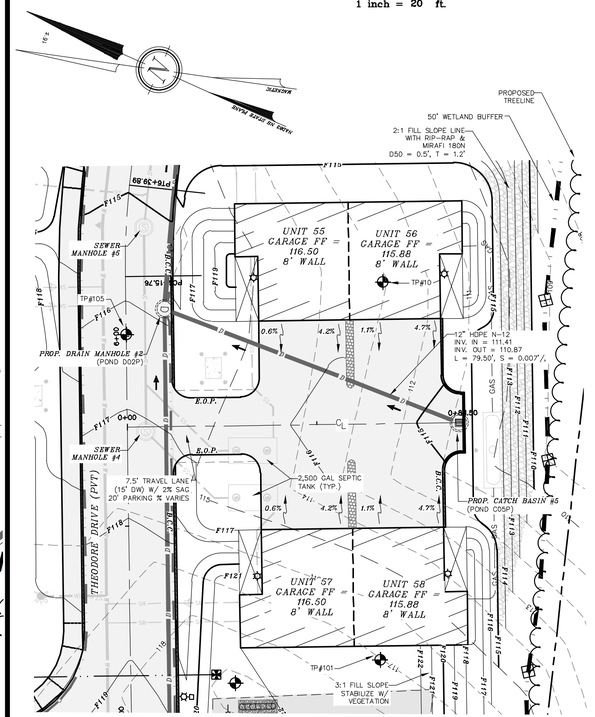


PLAN VIEW UNITS 53–54 0+00 TO END

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

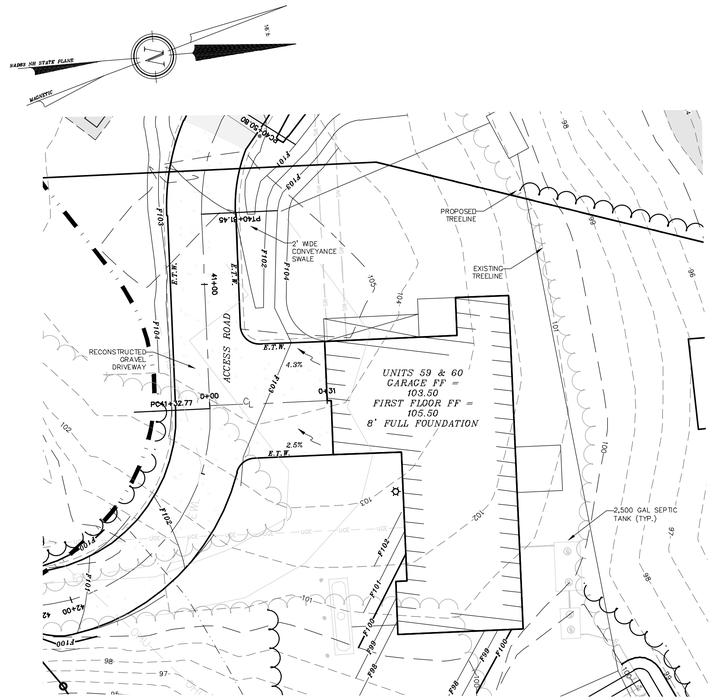


PLAN VIEW UNITS 55–58 0+00 TO END

GRAPHIC SCALE

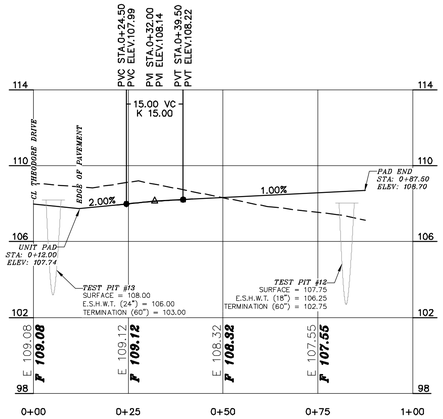
20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.



PLAN VIEW UNITS 59–60 0+00 TO END

PROFILE VIEW UNITS 53–54 0+00 TO END

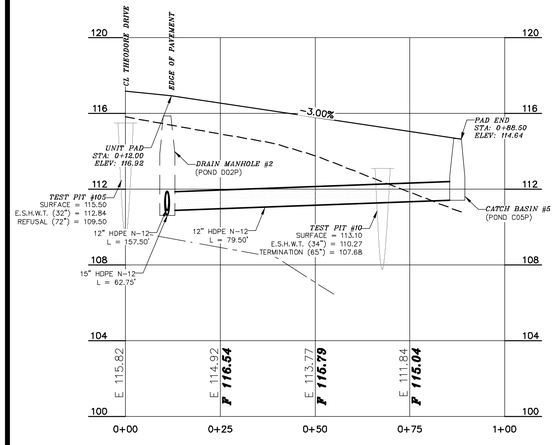


GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.
VERTICAL SCALE: 1" = 4'

PROFILE VIEW UNITS 55–58 0+00 TO END



GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.
VERTICAL SCALE: 1" = 4'

REVISION	DATE	DESCRIPTION

PLAN & PROFILE PAD SITES UNITS #53-60
LAND OF
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY &
EUGENE A. & DONNA L. SGTIGNOULI
TOLEND ROAD
DOVER, N.H.
TAX MAP E, LOT 65-1 & 65-4

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 20 FT.
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 – 107

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14243
LICENSED PROFESSIONAL ENGINEER

BIORETENTION FILTER MEDIA MIXTURES

Component Material	Percent of Mixture by Volume	Gradation of material	
		Sieve No.	Percent by Weight Passing Standard Sieve
Bioretention Filter Media Option A			
ASTM C-33 concrete sand	50 to 55		
Loamy sand topsoil, with fines as indicated	20 to 30	200	15 to 25
Moderately fine shredded bark or wood fiber mulch, with fines as indicated	20 to 30	200	< 5

3/8" WASHED CRUSHED STONE*

SIEVE SIZE	% PASSING BY WEIGHT
1/2"	100
3/8"	95 – 100
# 4	22 – 55
# 8	0 – 10

* EQUIVALENT TO STANDARD WASHED STONE – SECTION 702 OF NHDOT NHDOT STANDARD SPECIFICATIONS

1-1/2" WASHED CRUSHED STONE*

SIEVE SIZE	% PASSING BY WEIGHT
2"	100
1-1/2"	90 – 100
1"	20 – 55
1/2"	0 –15
3/8"	0 –5

* EQUIVALENT TO STANDARD WASHED STONE – SECTION 702 OF NHDOT NHDOT STANDARD SPECIFICATIONS

NOTES

1. WHEN CONTRACTOR EXCAVATES RAIN GARDEN AREA TO SUBGRADE, DESIGN ENGINEER SHALL PERFORM SUBSURFACE EVALUATION PRIOR TO THE PLACEMENT OF ANY SELECT MATERIAL OR OTHER BACKFILL.
2. SOIL BIORETENTION FILTER MEDIA SHALL BE AS SHOWN ABOVE. "BIO MEDIA" MEANS BIORETENTION FILTER MADIA.
3. COMPACTION IS NOT TO OCCUR IN THE RAIN GARDEN AREAS PRIOR TO CONSTRUCTION. SCARIFICATION REQUIRED IN THE EVENT COMPACTION TAKES PLACE.
4. DO NOT PLACE THE BIORETENTION SYSTEM INTO SERVICE UNTIL THE BMP HAS BEEN PLANTED AND ITS CONTRIBUTING AREAS HAVE BEEN FULLY STABILIZED.
5. DO NOT DISCHARGE SEDIMENT-LADEN WATERS FROM CONSTRUCTION ACTIVITIES (RUNOFF WATER FROM EXCAVATIONS) TO THE BIORETENTION AREA DURING ANY STAGE OF CONSTRUCTION.
6. DO NOT TRAFFIC EXPOSED SOIL SURFACE WITH CONSTRUCTION EQUIPMENT. IF FEASIBLE PERFORM EXCAVATIONS WITH EQUIPMENT POSITIONED OUTSIDE THE LIMITS OF THE INFILTRATION COMPONENTS OF THE SYSTEM.

MAINTENANCE REQUIREMENTS

1 SYSTEMS SHOULD BE INSPECTED AT LEAST TWICE ANNUALLY, AND FOLLOWING ANY RAINFALL EXCEEDING 0.25 INCHES IN A 24-HOUR PERIOD, WITH MAINTENANCE OR REHABILITATION CONDUCTED AS A WARRANTED BY SUCH INSPECTION.

2 PRETREATMENT MEASURES SHOULD BE INSPECTED AT LEAST TWICE ANNUALLY, AND CLEANED OF ACCUMULATED SEDIMENT AS WARRANTED BY INSPECTION, BUT NO LESS THAN ONCE ANNUALLY.

3 AT LEAST ONCE ANNUALLY, SYSTEM SHOULD BE INSPECTED FOR DRAWDOWN TIME. IF BIORETENTION SYSTEM DOES NOT DRAIN WITHIN 72-HOURS FOLLOWING A RAINFALL EVENT, THEN A QUALIFIED PROFESSIONAL SHOULD ASSESS THE CONDITION OF THE FACILITY TO DETERMINE MEASURES REQUIRED TO RESTORE FILTRATION FUNCTION OR INFILTRATION FUNCTION (AS APPLICABLE), INCLUDING BUT NOT LIMITED TO REMOVAL OF ACCUMULATED SEDIMENTS OR RECONSTRUCTION OF THE FILTER MEDIA.

4 VEGETATION SHOULD BE INSPECTED AT LEAST ANNUALLY, AND MAINTAINED IN HEALTHY CONDITION, INCLUDING, PRUNING, REMOVAL, AND REPLACEMENT OF DEAD OR DISEASED VEGETATION, AND REMOVAL OF INVASIVE SPECIES.

DESIGN REFERENCES

1 UNH STORMWATER CENTER
2 NEW HAMPSHIRE STORMWATER MANAGEMENT MANUAL, VOLUME 2, DECEMBER 2008 AS AMENDED.

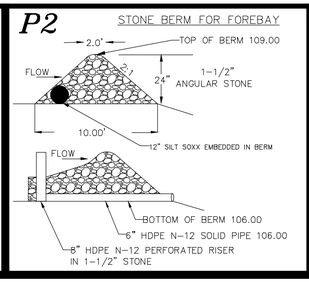
P1

RAIN GARDEN MIX

THE GRASS THAT IS PLANTED WITHIN A RAIN GARDEN BIO-FILTRATION SYSTEM WITHIN THE BIO-MEDIA MUST CONSIST OF A COMBINATION OF WARM SEASON GRASS SEED AND COLD SEASON GRASS SEED IN ORDER FOR THE GRASS TO START GROWING FOR STABILIZATION AND CONTINUE GROWING IN THE SANDY WELL-DRAINED ENVIRONMENT. PLANTING SPECIFICATION WILL MEET THE REQUIREMENTS AS OUTLINED IN "VEGETATION NEW HAMPSHIRE SAND AND GRAVEL PITS" MIX 1 (WARM SEASON GRASSES) (15 LBS/AC) AND INCLUDE ANNUAL AND PERENNIAL RYE GRASS SEED (15 LBS/AC); THE NEW ENGLAND NATIVE WARM SEASON GRASS MIX (23 LBS/AC) BY NEW ENGLAND WETLAND PLANTS, INC.; RAIN GARDEN MIX 180 (15 LBS/AC & 15 LBS/AC OF RYE) / RAIN GARDEN GRASS MIX 180-1 (20 LBS/AC & 10 LBS/AC OF RYE) BY ERNST CONSERVATION SEEDS; OR APPROVED EQUAL.

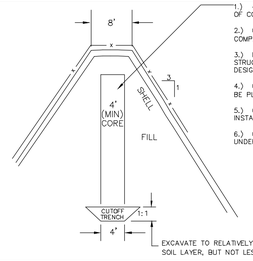
P2

STONE BERM FOR FOREBAY



P3

LOW PERMEABILITY MATERIAL GRADATION	
SIEVE SIZE	% PASSING BY WEIGHT
#4	95 – 100
#40	60 – 95
#100	40 – 60
#200	25 – 45



1.) 4" CORE IS TO BE CONSTRUCTED OF COMPACTED LOAM MATERIAL.

2.) CORE IS TO BE INSTALLED & COMPACTED IN 12" LIFTS.

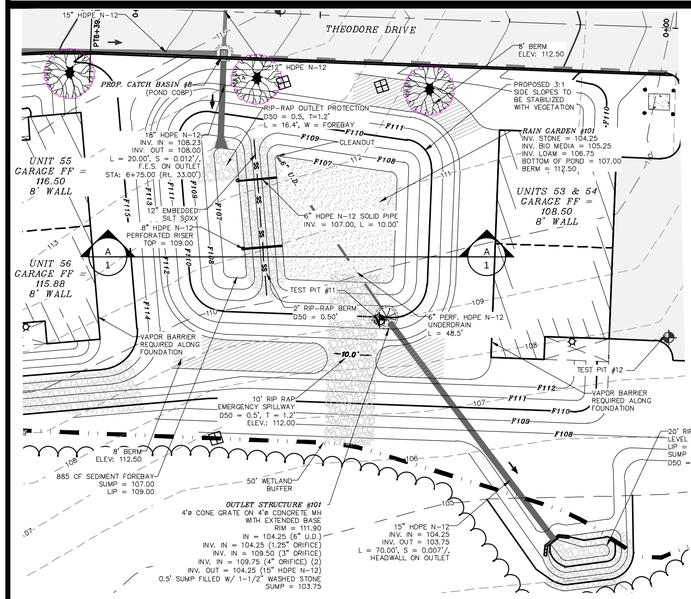
3.) INSTALLATION OF ENTIRE DRAINAGE STRUCTURE IS TO BE OVERSEEN BY DESIGN ENGINEER.

4.) GENERAL FILL MATERIALS ARE TO BE PLACED & COMPACTED IN 12" LIFTS.

5.) GENERAL FILL MATERIAL MAY BE INSTALLED USING ONSITE MATERIALS.

6.) CORE IS TO BE CONSTRUCTED UNDERNEATH THE PROPOSED SPILLWAY.

EXCAVATE TO RELATIVELY IMPERVIOUS SOIL LAYER, BUT NOT LESS THAN 3'

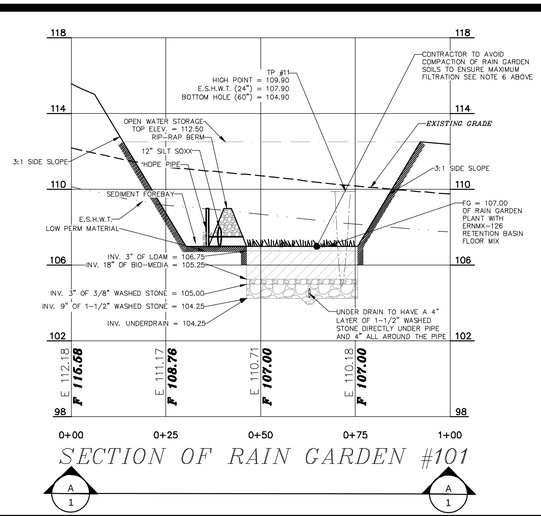


GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

PLAN VIEW RAIN GARDEN #101



SECTION OF RAIN GARDEN #101

GRAPHIC SCALE

20 0 10 20 40 80

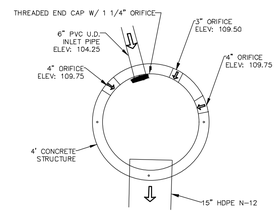
(IN FEET)
1 inch = 20 ft.

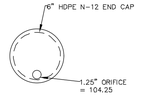
VERTICAL SCALE: 1" = 4'

TABLE 7-24--RECOMMENDED RIP RAP GRADATION RANGES			
d50 SIZE=	0.5	FEET 6	INCHES
% OF WEIGHT SMALLER THAN THE GIVEN d50 SIZE		SIZE OF STONE (INCHES) FROM	TO
100%		9	12
85%		8	11
50%		6	9
15%		2	3

P4

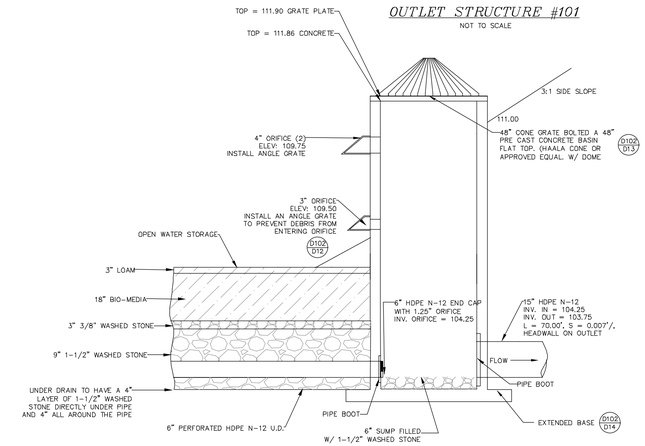
TOP VIEW
NOT TO SCALE





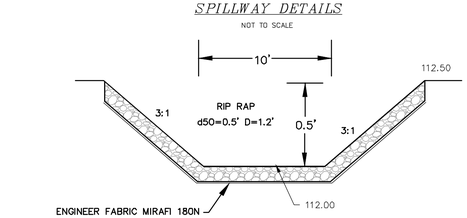
CAP WITH CONTROL ORIFICE
NOT TO SCALE

OUTLET STRUCTURE #101
NOT TO SCALE



P5

SPILLWAY DETAILS
NOT TO SCALE



EMERGENCY SPILLWAY PROFILE

P-101

REVISION	DATE	DESCRIPTION

RAIN GARDEN #101
LAND OF
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY &
EUGENE A. & DONNA L. SGTIGNOULI
TOLEND ROAD
DOVER, NH
TAX MAP E, LOT 65-1 & 65-4

BERRY & SURVEYING ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 20 FT.
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 – 107

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY No. 14243
LICENSED PROFESSIONAL ENGINEER

BIORETENTION FILTER MEDIA MIXTURES			
Component Material	Percent of Mixture by Volume	Gradation of material	
		Sieve No.	Percent by Weight Passing Standard Sieve
Bioretention Filter Media Option A			
ASTM C-33 concrete sand	50 to 55		
Loamy sand topsoil, with fines as indicated	20 to 30	200	15 to 25
Moderately fine shredded bark or wood fiber mulch, with fines as indicated	20 to 30	200	< 5

3/8" WASHED CRUSHED STONE*

SIEVE SIZE	% PASSING BY WEIGHT
1/2"	100
3/8"	95 – 100
# 4	22 – 55
# 8	0 – 10

* EQUIVALENT TO STANDARD WASHED STONE – SECTION 702 OF NHDOT NHDOT STANDARD SPECIFICATIONS

1-1/2" WASHED CRUSHED STONE*

SIEVE SIZE	% PASSING BY WEIGHT
2"	100
1-1/2"	90 – 100
1"	20 – 55
1/2"	0 –15
3/8"	0 –5

* EQUIVALENT TO STANDARD WASHED STONE – SECTION 702 OF NHDOT NHDOT STANDARD SPECIFICATIONS

NOTES

1. WHEN CONTRACTOR EXCAVATES RAIN GARDEN AREA TO SUBGRADE, DESIGN ENGINEER SHALL PERFORM SUBSURFACE EVALUATION PRIOR TO THE PLACEMENT OF ANY SELECT MATERIAL OR OTHER BACKFILL.
2. SOIL BIORETENTION FILTER MEDIA SHALL BE AS SHOWN ABOVE. "BIO MEDIA" MEANS BIORETENTION FILTER MADIA.
3. COMPACTION IS NOT TO OCCUR IN THE RAIN GARDEN AREAS PRIOR TO CONSTRUCTION. SCARIFICATION REQUIRED IN THE EVENT COMPACTION TAKES PLACE.
4. DO NOT PLACE THE BIORETENTION SYSTEM INTO SERVICE UNTIL THE BMP HAS BEEN PLANTED AND ITS CONTRIBUTING AREAS HAVE BEEN FULLY STABILIZED.
5. DO NOT DISCHARGE SEDIMENT-LADEN WATERS FROM CONSTRUCTION ACTIVITIES (RUNOFF WATER FROM EXCAVATIONS) TO THE BIORETENTION AREA DURING ANY STAGE OF CONSTRUCTION.
6. DO NOT TRAFFIC EXPOSED SOIL SURFACE WITH CONSTRUCTION EQUIPMENT. IF FEASIBLE PERFORM EXCAVATIONS WITH EQUIPMENT POSITIONED OUTSIDE THE LIMITS OF THE INFILTRATION COMPONENTS OF THE SYSTEM.

MAINTENANCE REQUIREMENTS

1 SYSTEMS SHOULD BE INSPECTED AT LEAST TWICE ANNUALLY, AND FOLLOWING ANY RAINFALL EXCEEDING 0.25 INCHES IN A 24-HOUR PERIOD, WITH MAINTENANCE OR REHABILITATION CONDUCTED AS A WARRANTED BY SUCH INSPECTION.

2 PRETREATMENT MEASURES SHOULD BE INSPECTED AT LEAST TWICE ANNUALLY, AND CLEANED OF ACCUMULATED SEDIMENT AS WARRANTED BY INSPECTION, BUT NO LESS THAN ONCE ANNUALLY.

3 AT LEAST ONCE ANNUALLY, SYSTEM SHOULD BE INSPECTED FOR DRAWDOWN TIME. IF BIORETENTION SYSTEM DOES NOT DRAIN WITHIN 72-HOURS FOLLOWING A RAINFALL EVENT, THEN A QUALIFIED PROFESSIONAL SHOULD ASSESS THE CONDITION OF THE FACILITY TO DETERMINE MEASURES REQUIRED TO RESTORE FILTRATION FUNCTION OR INFILTRATION FUNCTION (AS APPLICABLE), INCLUDING BUT NOT LIMITED TO REMOVAL OF ACCUMULATED SEDIMENTS OR RECONSTRUCTION OF THE FILTER MEDIA.

4 VEGETATION SHOULD BE INSPECTED AT LEAST ANNUALLY, AND MAINTAINED IN HEALTHY CONDITION, INCLUDING, PRUNING, REMOVAL, AND REPLACEMENT OF DEAD OR DISEASED VEGETATION, AND REMOVAL OF INVASIVE SPECIES.

DESIGN REFERENCES

1 UNH STORMWATER CENTER
2 NEW HAMPSHIRE STORMWATER MANAGEMENT MANUAL, VOLUME 2, DECEMBER 2008 AS AMENDED.

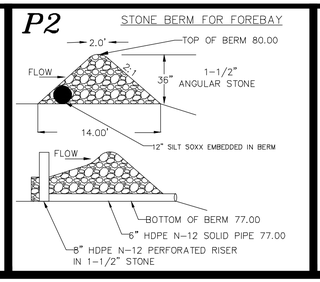
P1

RAIN GARDEN MIX

THE GRASS THAT IS PLANTED WITHIN A RAIN GARDEN BIO-FILTRATION SYSTEM WITHIN THE BIO-MEDIA MUST CONSIST OF A COMBINATION OF WARM SEASON GRASS SEED AND COLD SEASON GRASS SEED IN ORDER FOR THE GRASS TO START GROWING FOR STABILIZATION AND CONTINUE GROWING IN THE SANDY WELL-DRAINED ENVIRONMENT. PLANTING SPECIFICATION WILL MEET THE REQUIREMENTS AS OUTLINED IN "VEGETATION NEW HAMPSHIRE SAND AND GRAVEL PITS" MIX 1 (WARM SEASON GRASSES) (15 LBS/AC) AND INCLUDE ANNUAL AND PERENNIAL RYE GRASS SEED (15 LBS/AC); THE NEW ENGLAND NATIVE WARM SEASON GRASS MIX (23 LBS/AC) BY NEW ENGLAND WETLAND PLANTS, INC.; RAIN GARDEN MIX 180 (15 LBS/AC & 15 LBS/AC OF RYE) / RAIN GARDEN GRASS MIX 180-1 (20 LBS/AC & 10 LBS/AC OF RYE) BY ERNST CONSERVATION SEEDS; OR APPROVED EQUAL.

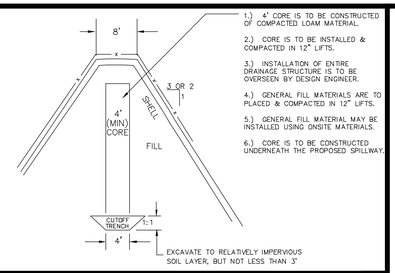
P2

STONE BERM FOR FOREBAY



P3

LOW PERMEABILITY MATERIAL GRADATION	
SIEVE SIZE	% PASSING BY WEIGHT
#4	95 – 100
#40	60 – 95
#100	40 – 60
#200	25 – 45



1.) 4" CORE IS TO BE CONSTRUCTED OF COMPACTED LOAM MATERIAL.

2.) CORE IS TO BE INSTALLED & COMPACTED IN 12" LIFTS.

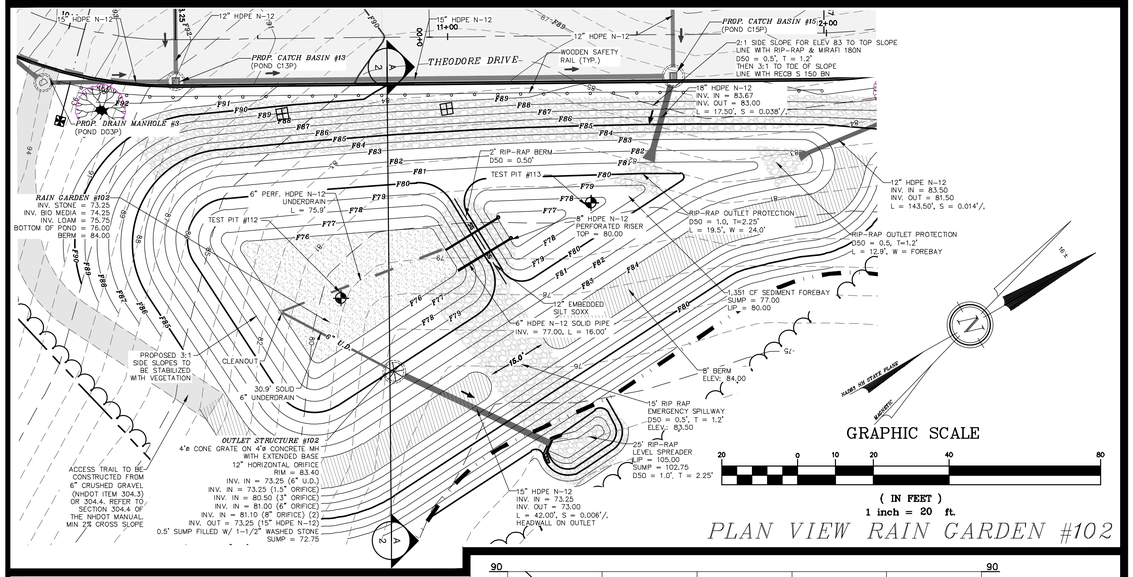
3.) INSTALLATION OF ENTIRE DRAINAGE STRUCTURE IS TO BE OVERSEEN BY DESIGN ENGINEER.

4.) GENERAL FILL MATERIALS ARE TO PLACED & COMPACTED IN 12" LIFTS.

5.) GENERAL FILL MATERIAL MAY BE INSTALLED USING ONSITE MATERIALS.

6.) CORE IS TO BE CONSTRUCTED UNDERNEATH THE PROPOSED SPILLWAY.

P4



GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

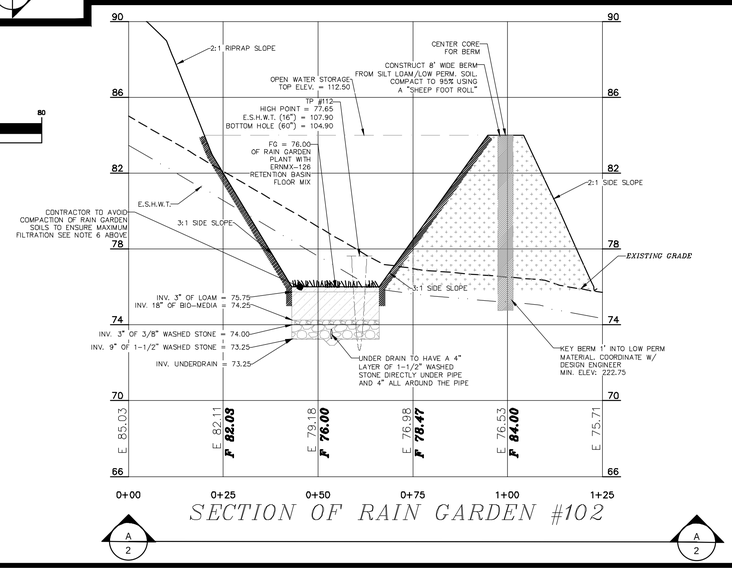
PLAN VIEW RAIN GARDEN #102

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

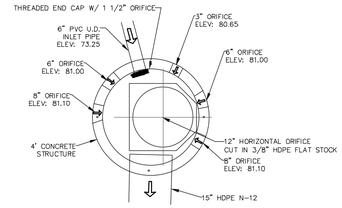
VERTICAL SCALE: 1" = 4'

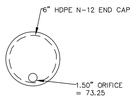


SECTION OF RAIN GARDEN #102

TABLE 7-24--RECOMMENDED RIP RAP GRADATION RANGES			
d50 SIZE=	0.5	FEET 6	INCHES
% OF WEIGHT SMALLER THAN THE GIVEN d50 SIZE		SIZE OF STONE (INCHES) FROM	TO
100%		9	12
85%		8	11
50%		6	9
15%		2	3

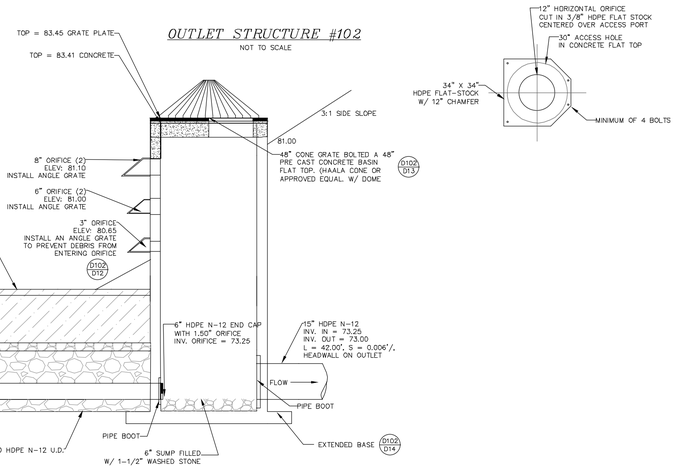
TOP VIEW
NOT TO SCALE





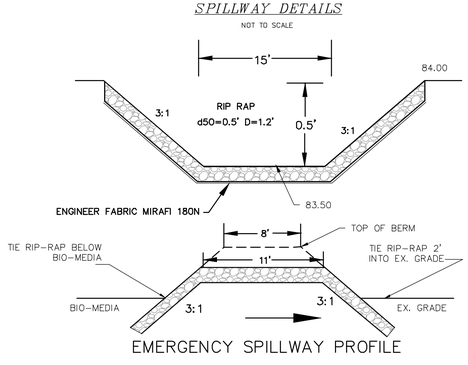
CAP WITH CONTROL ORIFICE
NOT TO SCALE

OUTLET STRUCTURE #102
NOT TO SCALE



P5

SPILLWAY DETAILS
NOT TO SCALE



EMERGENCY SPILLWAY PROFILE

P-102

REVISION	DATE	DESCRIPTION

RAIN GARDEN #102
LAND OF
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY & EUGENE A. & DONNA L. SGITGNOULI
TOLEND ROAD
DOVER, NH
TAX MAP E, LOT 65-1 & 65-4

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 20 FT.
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 – 107

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14243
LICENSED PROFESSIONAL ENGINEER

BIORETENTION FILTER MEDIA MIXTURES			
Component Material	Percent of Mixture by Volume	Gradation of material	
		Sieve No.	Percent by Weight Passing Standard Sieve
Bioretention Filter Media Option A			
ASTM C-33 concrete sand	50 to 55		
Loamy sand topsoil, with fines as indicated	20 to 30	200	15 to 25
Moderately fine shredded bark or wood fiber mulch, with fines as indicated	20 to 30	200	< 5

3/8" WASHED CRUSHED STONE*

SIEVE SIZE	% PASSING BY WEIGHT
1/2"	100
3/8"	95 – 100
# 4	22 – 55
# 8	0 – 10

* EQUIVALENT TO STANDARD WASHED STONE – SECTION 702 OF NHDOT NHDOT STANDARD SPECIFICATIONS

1-1/2" WASHED CRUSHED STONE*

SIEVE SIZE	% PASSING BY WEIGHT
2"	100
1-1/2"	90 – 100
1"	20 – 55
1/2"	0 –15
3/8"	0 –5

* EQUIVALENT TO STANDARD WASHED STONE – SECTION 702 OF NHDOT NHDOT STANDARD SPECIFICATIONS

NOTES

1. WHEN CONTRACTOR EXCAVATES RAIN GARDEN AREA TO SUBGRADE, DESIGN ENGINEER SHALL PERFORM SUBSURFACE EVALUATION PRIOR TO THE PLACEMENT OF ANY SELECT MATERIAL OR OTHER BACKFILL.
2. SOIL BIORETENTION FILTER MEDIA SHALL BE AS SHOWN ABOVE. "BIO MEDIA" MEANS BIORETENTION FILTER MADIA.
3. COMPACTION IS NOT TO OCCUR IN THE RAIN GARDEN AREAS PRIOR TO CONSTRUCTION. SCARIFICATION REQUIRED IN THE EVENT COMPACTION TAKES PLACE.
4. DO NOT PLACE THE BIORETENTION SYSTEM INTO SERVICE UNTIL THE BMP HAS BEEN PLANTED AND ITS CONTRIBUTING AREAS HAVE BEEN FULLY STABILIZED.
5. DO NOT DISCHARGE SEDIMENT-LADEN WATERS FROM CONSTRUCTION ACTIVITIES (RUNOFF WATER FROM EXCAVATIONS) TO THE BIORETENTION AREA DURING ANY STAGE OF CONSTRUCTION.
6. DO NOT TRAFFIC EXPOSED SOIL SURFACE WITH CONSTRUCTION EQUIPMENT. IF FEASIBLE PERFORM EXCAVATIONS WITH EQUIPMENT POSITIONED OUTSIDE THE LIMITS OF THE INFILTRATION COMPONENTS OF THE SYSTEM.

MAINTENANCE REQUIREMENTS

1 SYSTEMS SHOULD BE INSPECTED AT LEAST TWICE ANNUALLY, AND FOLLOWING ANY RAINFALL EXCEEDING 0.25 INCHES IN A 24-HOUR PERIOD, WITH MAINTENANCE OR REHABILITATION CONDUCTED AS A WARRANTED BY SUCH INSPECTION.

2 PRETREATMENT MEASURES SHOULD BE INSPECTED AT LEAST TWICE ANNUALLY, AND CLEANED OF ACCUMULATED SEDIMENT AS WARRANTED BY INSPECTION, BUT NO LESS THAN ONCE ANNUALLY.

3 AT LEAST ONCE ANNUALLY, SYSTEM SHOULD BE INSPECTED FOR DRAWDOWN TIME. IF BIORETENTION SYSTEM DOES NOT DRAIN WITHIN 72-HOURS FOLLOWING A RAINFALL EVENT, THEN A QUALIFIED PROFESSIONAL SHOULD ASSESS THE CONDITION OF THE FACILITY TO DETERMINE MEASURES REQUIRED TO RESTORE FILTRATION FUNCTION OR INFILTRATION FUNCTION (AS APPLICABLE), INCLUDING BUT NOT LIMITED TO REMOVAL OF ACCUMULATED SEDIMENTS OR RECONSTRUCTION OF THE FILTER MEDIA.

4 VEGETATION SHOULD BE INSPECTED AT LEAST ANNUALLY, AND MAINTAINED IN HEALTHY CONDITION, INCLUDING, PRUNING, REMOVAL, AND REPLACEMENT OF DEAD OR DISEASED VEGETATION, AND REMOVAL OF INVASIVE SPECIES.

DESIGN REFERENCES

1 UNH STORMWATER CENTER
2 NEW HAMPSHIRE STORMWATER MANAGEMENT MANUAL, VOLUME 2, DECEMBER 2008 AS AMENDED.

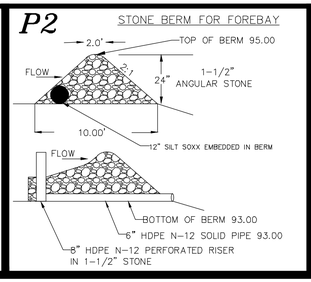
P1

RAIN GARDEN MIX

THE GRASS THAT IS PLANTED WITHIN A RAIN GARDEN BIO-FILTRATION SYSTEM WITHIN THE BIO-MEDIA MUST CONSIST OF A COMBINATION OF WARM SEASON GRASS SEED AND COLD SEASON GRASS SEED IN ORDER FOR THE GRASS TO START GROWING FOR STABILIZATION AND CONTINUE GROWING IN THE SANDY WELL-DRAINED ENVIRONMENT. PLANTING SPECIFICATION WILL MEET THE REQUIREMENTS AS OUTLINED IN "VEGETATION NEW HAMPSHIRE SAND AND GRAVEL PITS" MIX 1 (WARM SEASON GRASSES) (15 LBS/AC) AND INCLUDE ANNUAL AND PERENNIAL RYE GRASS SEED (15 LBS/AC); THE NEW ENGLAND NATIVE WARM SEASON GRASS MIX (23 LBS/AC) BY NEW ENGLAND WETLAND PLANTS, INC.; RAIN GARDEN MIX 180 (15 LBS/AC & 15 LBS/AC OF RYE) / RAIN GARDEN GRASS MIX 180-1 (20 LBS/AC & 10 LBS/AC OF RYE) BY ERNST CONSERVATION SEEDS; OR APPROVED EQUAL.

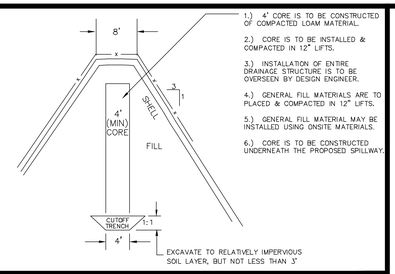
P2

STONE BERM FOR FOREBAY



P3

LOW PERMEABILITY MATERIAL GRADATION	
SIEVE SIZE	% PASSING BY WEIGHT
#4	95 – 100
#40	60 – 95
#100	40 – 60
#200	25 – 45



1.) 4" CORE IS TO BE CONSTRUCTED OF COMPACTED LOAM MATERIAL.

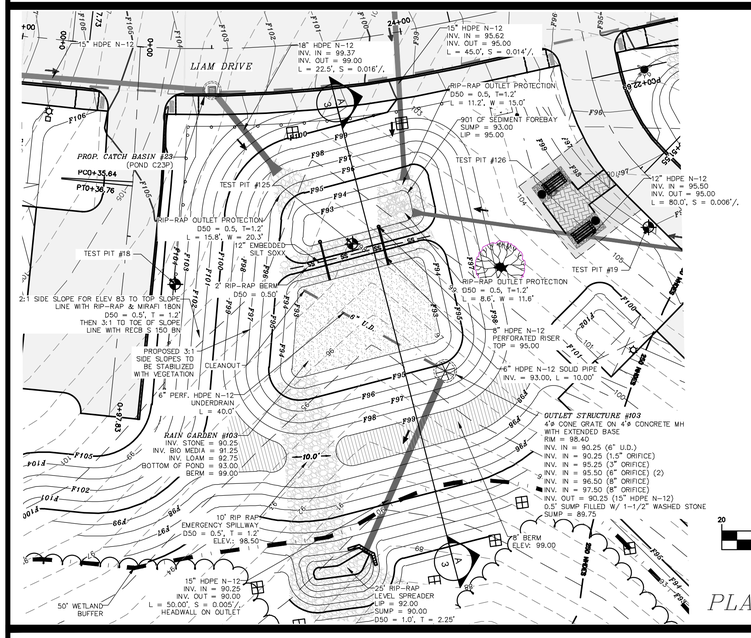
2.) CORE IS TO BE INSTALLED & COMPACTED IN 12" LIFTS.

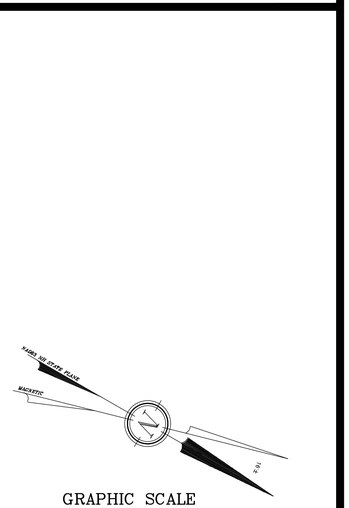
3.) INSTALLATION OF ENTIRE DRAINAGE STRUCTURE IS TO BE OVERSEEN BY DESIGN ENGINEER.

4.) GENERAL FILL MATERIALS ARE TO PLACED & COMPACTED IN 12" LIFTS.

5.) GENERAL FILL MATERIAL MAY BE INSTALLED USING ONSITE MATERIALS.

6.) CORE IS TO BE CONSTRUCTED UNDERNEATH THE PROPOSED SPILLWAY.



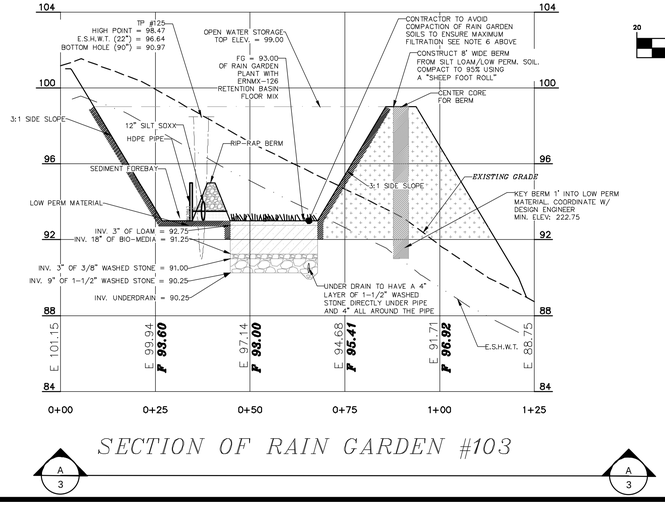


GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

PLAN VIEW RAIN GARDEN #103



SECTION OF RAIN GARDEN #103

GRAPHIC SCALE

20 0 10 20 40 80

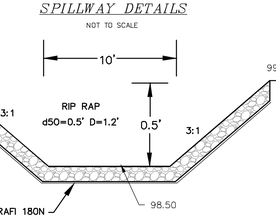
(IN FEET)
1 inch = 20 ft.

VERTICAL SCALE: 1" = 4'

TABLE 7-24--RECOMMENDED RIP RAP GRADATION RANGES			
d50 SIZE=	0.5	FEET	6 INCHES
% OF WEIGHT SMALLER THAN THE GIVEN d50 SIZE	SIZE OF STONE (INCHES) FROM		TO
100%	9		12
85%	8		11
50%	6		9
15%	2		3

P4

TOP VIEW
NOT TO SCALE



OUTLET STRUCTURE #103
NOT TO SCALE

P5

SPILLWAY DETAILS
NOT TO SCALE

EMERGENCY SPILLWAY PROFILE

P-103

REVISION	DATE	DESCRIPTION

RAIN GARDEN #103
LAND OF
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY &
EUGENE A. & DONNA L. SGTGNOULI
TOLEND ROAD
DOVER, N.H.
TAX MAP 8, LOT 65-1 & 65-4

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 20 FT.
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 – 107

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14243
LICENSED PROFESSIONAL ENGINEER

BIORETENTION FILTER MEDIA MIXTURES			
Component Material	Percent of Mixture by Volume	Gradation of material	
		Sieve No.	Percent by Weight Passing Standard Sieve
Bioretention Filter Media Option A			
ASTM C-33 concrete sand	50 to 55		
Loamy sand topsoil, with fines as indicated	20 to 30	200	15 to 25
Moderately fine shredded bark or wood fiber mulch, with fines as indicated	20 to 30	200	< 5

3/8" WASHED CRUSHED STONE*

SIEVE SIZE	% PASSING BY WEIGHT
1/2"	100
3/8"	95 – 100
# 4	22 – 55
# 8	0 – 10

* EQUIVALENT TO STANDARD WASHED STONE – SECTION 702 OF NHDOT NHDOT STANDARD SPECIFICATIONS

1-1/2" WASHED CRUSHED STONE*

SIEVE SIZE	% PASSING BY WEIGHT
2"	100
1-1/2"	90 – 100
1"	20 – 55
1/2"	0 –15
3/8"	0 –5

* EQUIVALENT TO STANDARD WASHED STONE – SECTION 702 OF NHDOT NHDOT STANDARD SPECIFICATIONS

NOTES

1. WHEN CONTRACTOR EXCAVATES RAIN GARDEN AREA TO SUBGRADE, DESIGN ENGINEER SHALL PERFORM SUBSURFACE EVALUATION PRIOR TO THE PLACEMENT OF ANY SELECT MATERIAL OR OTHER BACKFILL.
2. SOIL BIORETENTION FILTER MEDIA SHALL BE AS SHOWN ABOVE. "BIO MEDIA" MEANS BIORETENTION FILTER MADIA.
3. COMPACTION IS NOT TO OCCUR IN THE RAIN GARDEN AREAS PRIOR TO CONSTRUCTION. SCARIFICATION REQUIRED IN THE EVENT COMPACTION TAKES PLACE.
4. DO NOT PLACE THE BIORETENTION SYSTEM INTO SERVICE UNTIL THE BMP HAS BEEN PLANTED AND ITS CONTRIBUTING AREAS HAVE BEEN FULLY STABILIZED.
5. DO NOT DISCHARGE SEDIMENT-LADEN WATERS FROM CONSTRUCTION ACTIVITIES (RUNOFF WATER FROM EXCAVATIONS) TO THE BIORETENTION AREA DURING ANY STAGE OF CONSTRUCTION.
6. DO NOT TRAFFIC EXPOSED SOIL SURFACE WITH CONSTRUCTION EQUIPMENT. IF FEASIBLE PERFORM EXCAVATIONS WITH EQUIPMENT POSITIONED OUTSIDE THE LIMITS OF THE INFILTRATION COMPONENTS OF THE SYSTEM.

MAINTENANCE REQUIREMENTS

1 SYSTEMS SHOULD BE INSPECTED AT LEAST TWICE ANNUALLY, AND FOLLOWING ANY RAINFALL EXCEEDING 0.25 INCHES IN A 24-HOUR PERIOD, WITH MAINTENANCE OR REHABILITATION CONDUCTED AS A WARRANTED BY SUCH INSPECTION.

2 PRETREATMENT MEASURES SHOULD BE INSPECTED AT LEAST TWICE ANNUALLY, AND CLEANED OF ACCUMULATED SEDIMENT AS WARRANTED BY INSPECTION, BUT NO LESS THAN ONCE ANNUALLY.

3 AT LEAST ONCE ANNUALLY, SYSTEM SHOULD BE INSPECTED FOR DRAWDOWN TIME. IF BIORETENTION SYSTEM DOES NOT DRAIN WITHIN 72-HOURS FOLLOWING A RAINFALL EVENT, THEN A QUALIFIED PROFESSIONAL SHOULD ASSESS THE CONDITION OF THE FACILITY TO DETERMINE MEASURES REQUIRED TO RESTORE FILTRATION FUNCTION OR INFILTRATION FUNCTION (AS APPLICABLE), INCLUDING BUT NOT LIMITED TO REMOVAL OF ACCUMULATED SEDIMENTS OR RECONSTRUCTION OF THE FILTER MEDIA.

4 VEGETATION SHOULD BE INSPECTED AT LEAST ANNUALLY, AND MAINTAINED IN HEALTHY CONDITION, INCLUDING, PRUNING, REMOVAL, AND REPLACEMENT OF DEAD OR DISEASED VEGETATION, AND REMOVAL OF INVASIVE SPECIES.

DESIGN REFERENCES

1 UNH STORMWATER CENTER
2 NEW HAMPSHIRE STORMWATER MANAGEMENT MANUAL, VOLUME 2, DECEMBER 2008 AS AMENDED.

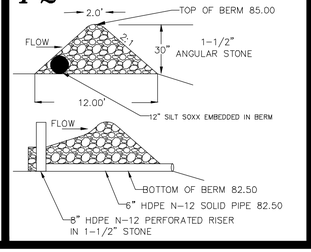
P1

RAIN GARDEN MIX

THE GRASS THAT IS PLANTED WITHIN A RAIN GARDEN BIO-FILTRATION SYSTEM WITHIN THE BIO-MEDIA MUST CONSIST OF A COMBINATION OF WARM SEASON GRASS SEED AND COLD SEASON GRASS SEED IN ORDER FOR THE GRASS TO START GROWING FOR STABILIZATION AND CONTINUE GROWING IN THE SANDY WELL-DRAINED ENVIRONMENT. PLANTING SPECIFICATION WILL MEET THE REQUIREMENTS AS OUTLINED IN "VEGETATION NEW HAMPSHIRE SAND AND GRAVEL PITS" MIX 1 (WARM SEASON GRASSES) (15 LBS/AC) AND INCLUDE ANNUAL AND PERENNIAL RYE GRASS SEED (15 LBS/AC); THE NEW ENGLAND NATIVE WARM SEASON GRASS MIX (23 LBS/AC) BY NEW ENGLAND WETLAND PLANTS, INC.; RAIN GARDEN MIX 180 (15 LBS/AC & 15 LBS/AC OF RYE) / RAIN GARDEN GRASS MIX 180-1 (20 LBS/AC & 10 LBS/AC OF RYE) BY ERNST CONSERVATION SEEDS; OR APPROVED EQUAL.

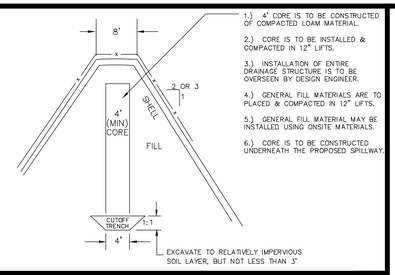
P2

STONE BERM FOR FOREBAY



P3

LOW PERMEABILITY MATERIAL GRADATION	
SIEVE SIZE	% PASSING BY WEIGHT
#4	95 – 100
#40	60 – 95
#100	40 – 60
#200	25 – 45



1.) 4" CORE IS TO BE CONSTRUCTED OF COMPACTED LOAM MATERIAL.

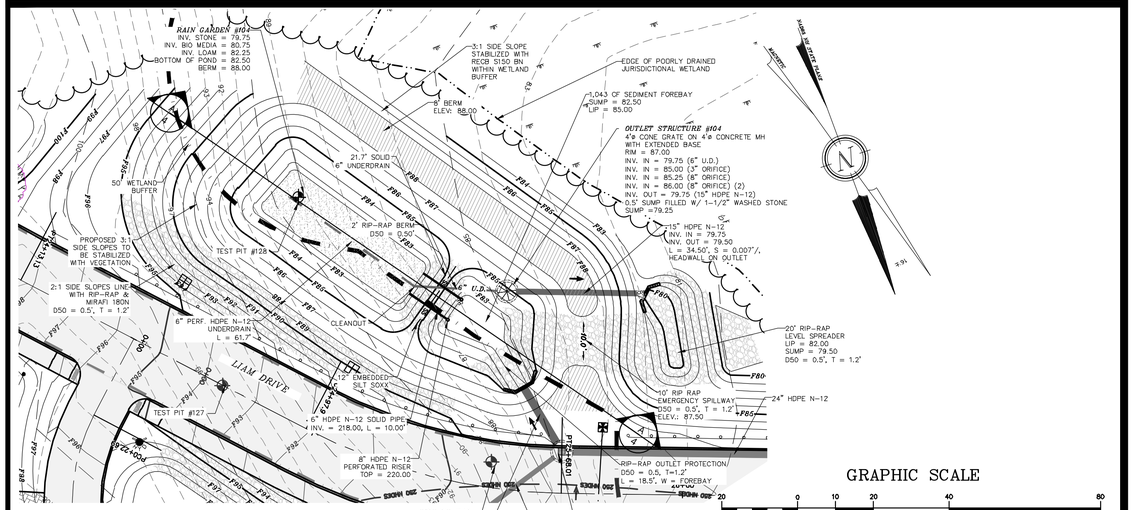
2.) CORE IS TO BE INSTALLED & COMPACTED IN 12" LIFTS.

3.) INSTALLATION OF ENTIRE DRAINAGE STRUCTURE IS TO BE OVERSEEN BY DESIGN ENGINEER.

4.) GENERAL FILL MATERIALS ARE TO PLACED & COMPACTED IN 12" LIFTS.

5.) GENERAL FILL MATERIAL MAY BE INSTALLED USING ONSITE MATERIALS.

6.) CORE IS TO BE CONSTRUCTED UNDERNEATH THE PROPOSED SPILLWAY.

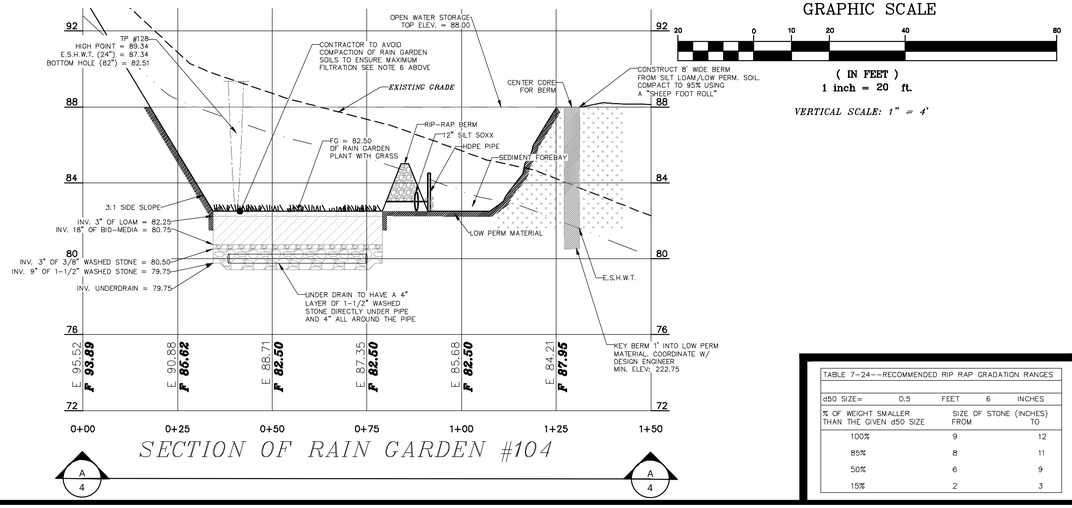


GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

PLAN VIEW RAIN GARDEN #104



GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

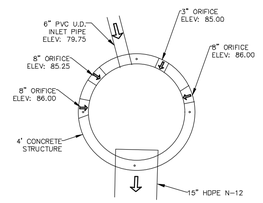
VERTICAL SCALE: 1" = 4'

SECTION OF RAIN GARDEN #104

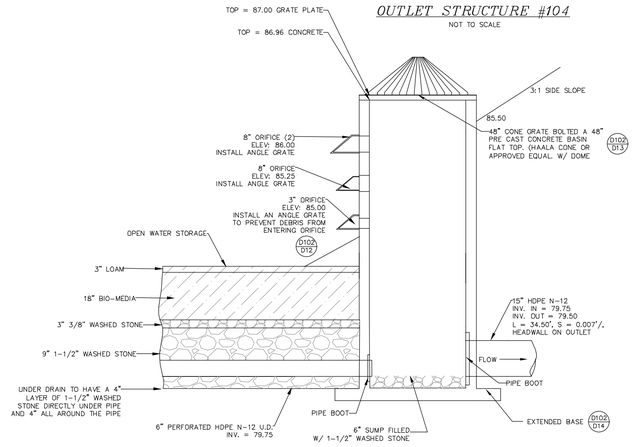
TABLE 7-24--RECOMMENDED RIP RAP GRADATION RANGES			
d50 SIZE= 0.5	FEET	6	INCHES
% OF WEIGHT SMALLER THAN THE GIVEN d50 SIZE	SIZE OF STONE (INCHES) FROM		TO
100%	9		12
85%	8		11
50%	6		9
15%	2		3

P4

TOP VIEW
NOT TO SCALE

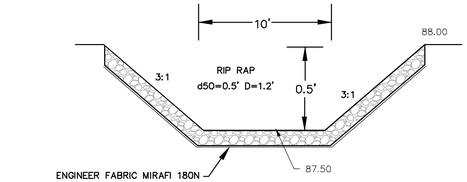


OUTLET STRUCTURE #104
NOT TO SCALE



P5

SPILLWAY DETAILS
NOT TO SCALE



EMERGENCY SPILLWAY PROFILE

P-104

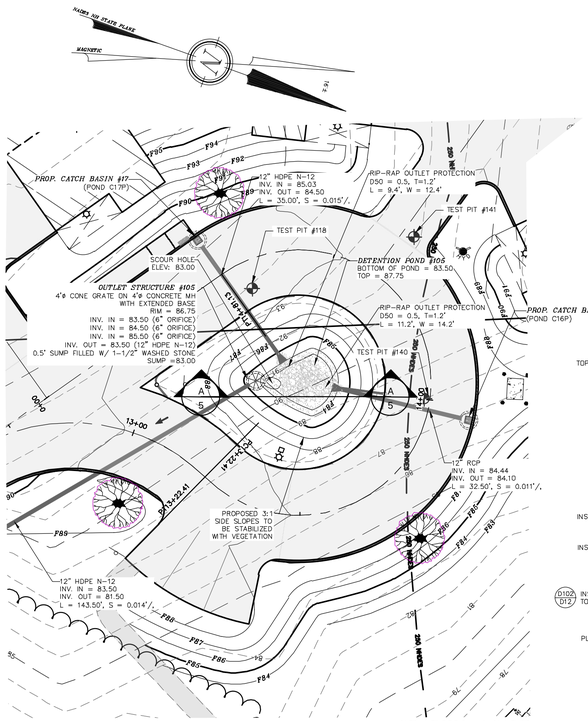
REVISION	DATE	DESCRIPTION

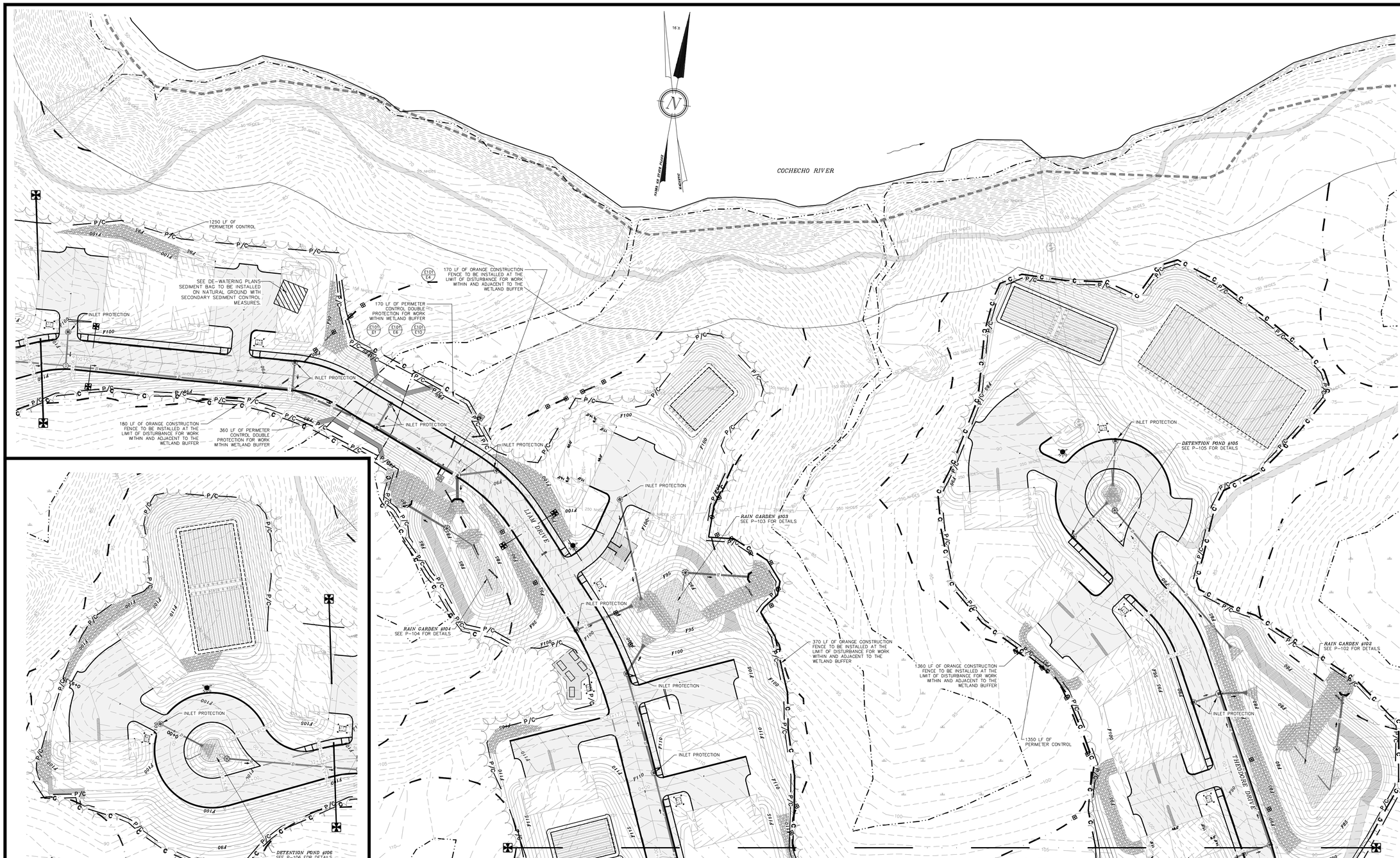
RAIN GARDEN #104
LAND OF
D. LUTSKY, D. BARNES, T. GEORGE, & L. MULCAHY & EUGENE A. & DONNA L. SGITGNOULI
TOLEND ROAD
DOVER, N.H.
TAX MAP 8, LOT 65-1 & 65-4

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 20 FT.
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 – 107

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14243
LICENSED PROFESSIONAL ENGINEER


PROP. CATCH BASIN #17
(POND C17P)
12" HDPE N-12
INV. IN = 85.03
INV. OUT = 84.50
L = 35.00', S = 0.015'/'
RIP-RAP OUTLET PROTECTION
D50 = 0.5, T=1.2'
L = 9.4', W = 12.4'
TEST PIT #141
TEST PIT #118
SCOUR HOLE
ELEV: 83.00
DETENTION POND #106
BOTTOM OF POND = 83.50
TOP = 87.75
OUTLET STRUCTURE #105
4'ø CONE GRATE ON 4'ø CONCRETE MH
WITH EXTENDED BASE
RIM = 86.75
INV. IN = 83.50 (6" ORIFICE)
INV. IN = 84.50 (6" ORIFICE)
INV. IN = 85.50 (6" ORIFICE)
INV. OUT = 83.50 (12" HDPE N-12)
0.5' SUMP FILLED W/ 1-1/2" WASHED STONE
SUMP =83.00
RIP-RAP OUTLET PROTECTION
D50 = 0.5, T=1.2'
L = 11.2', W = 14.2'
PROP. CATCH BASIN #16
(POND C16P)
TEST PIT #140
12" RCP
INV. IN = 84.44
INV. OUT = 84.10
L = 32.50', S = 0.011'/'
PROPOSED 3:1
SIDE SLOPES TO
BE STABILIZED
WITH VEGETATION
12" HDPE N-12
INV. IN = 83.50
INV. OUT = 81.50
L = 143.50', S = 0.014'/'
SCOUR HOLE
SCOUR HOLE
SCOUR HOLE
13+00
12+00
11+00
10+00
9+00
8+00
7+00
6+00
5+00
4+00
3+00
2+00
1+00
0+00
F89
F90
F91
F92
F93
F94
F95
F96
F97
F98
F99
F100
F101
F102
F103
F104
F105
F106
F107
F108
F109
F110
F111
F112
F113
F114
F115
F116
F117
F118
F119
F120
F121
F122
F123
F124
F125
F126
F127
F128



GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

REVISION	DATE	DESCRIPTION

EROSION AND SEDIMENT CONTROL PLAN
LAND OF
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY &
EUGENE A. & DONNA L. SGTIGNOULI
TOLEND ROAD
DOVER, N.H.
TAX MAP E, LOT 65-1 & 65-4

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 40 FT.
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 – 107

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14243
LICENSED PROFESSIONAL ENGINEER

LEGEND:

- (B) BMP / SUBSURFACE GRAVEL WETLAND PROTECTION
- (P) PERIMETER CONTROL
- (C) RESIDENTIAL/ROADWAY CONSTRUCTION
- IRON PIPE (FND)
- IRON BOUND (FND)
- REBAR (FND)
- UTILITY POLE
- GUY WIRE
- BENCH MARK
- RIP RAP
- STORMWATER BMP
- BERM
- P/C PERIMETER CONTROL (SEE E-101)
- SF SILT FENCE
- SS FILTREXX SILTSOXX (NOTE SIZE)
- TREE LINE
- C CONSTRUCTION FENCE

SOILS & DEWATERING:

BeB	BIDDEFORD	VERY DEEP, VERY POORLY DRAINED SOIL	
Bs	BUXTON	SILTY CLAY LOAM	K= 0.49
Cs	CHARLTON	FINE SANDY LOAM	K= 0.43
Hs	HOLLIS-CHARLTON	FINE SANDY LOAM (VERY ROCKY)	K= 0.43
Sc	SCANTIC	SILT	K= 0.43
Sf	SUFFIELD	VERY DEEP WELL DRAINED SOIL	
Wl	MIXED ALLUVIAL LAND	POORLY DRAINED WET BOTTOM LAND	
500	UDORTHENTS	LOAMY SOIL MIXED	

SEE SITE SPECIFIC SOILS MAP (SSSM)
SEE WEBSOIL USDA-NRCS
ERODIBILITY FACTOR - K, CPESC MANUAL, ENVIROCERT INTERNATIONAL INC.

CONTRACTOR TO BE AWARE OF THE SOIL PROFILES AND ENSURE THAT PROPER EROSION PREVENTION AND SEDIMENT CONTROL MEASURES ARE TAKEN AT ALL TIMES. ANY DEWATERING REQUIREMENTS IN NEW HAMPSHIRE REQUIRE SPECIAL PROVISIONS IN ACCORDANCE WITH THE "CLARIFICATION OF SECTION 9.1.2 (STATE OF NEW HAMPSHIRE CONDITIONS) AND OTHER NH SPECIFIC INFORMATION FOR THE U.S. EPA 2012 NPDES CONSTRUCTION GENERAL PERMIT (CGP)" DATED MAY 3, 2012 INCLUDED IN THE SWPPP.

COVER MANAGEMENT DURING CONSTRUCTION FOR EXPOSED SOIL WILL INCLUDE HAY / STRAW APPLIED AT A RATE OF 2.0 TONS PER ACRE, TEMPORARY SEEDING OF ANNUAL RYE GRASS, AND PERMANENT SEEDING AT THE EARLIES OPPORTUNITY. SEE ADDITIONAL REQUIREMENT FOR STABILIZATION ON THE EROSION AND SEDIMENT CONTROL DETAIL SHEETS, E-101 AND E-102.

THE CONSTRUCTION SCHEDULE WILL BE MANAGED SO THAT ALL STORMWATER STRUCTURES WILL BE BUILT AND STABILIZED PRIOR TO RECEIVING SURFACE WATER RUNOFF. CONTRACTOR TO BE RESPONSIBLE FOR ALL DIVERSIONS DURING CONSTRUCTION AND FOR INTERIM SEDIMENT AND EROSION CONTROL MEASURES.

SEE SHEET 3 FOR ALL OTHER EROSION & SEDIMENT CONTROL NOTES.

NOTES:

1.) OWNER LOT 65-1: D.LUTSK, D.BARNES, T. GEORGE, & L. MULCAHY
245 N BEND DRIVE
MANCHESTER, NH 03104

OWNER LOT 65-A: SGRIGNUOLI, EUGENE A. & DONNA L.
22 SUN HAWK LANE
DOVER, NH 03820

1A.) APPLICANT: STONEARCH DEVELOPMENT CORP.
42J DOVER POINT ROAD
DOVER, NH 03820

2.) LOT OF RECORD: TAX MAP E, LOT 65-1
TAX MAP E, LOT 65-A

3.) LOT AREA LOT 65-1: 1,388,409 Sq. Ft., 31.87 Ac. +/-
LOT AREA LOT 65-A: 544,070 Sq. Ft., 12.49 Ac. +/-

4.) SEE SHEET 3 FOR E&SC NOTES.

GRAPHIC SCALE
40 0 20 40 80 160
(IN FEET)
1 inch = 40 ft.

REVISION	DATE	DESCRIPTION

EROSION AND SEDIMENT CONTROL PLAN
LAND OF
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY &
EUGENE A. & DONNA L. SGRIGNUOLI
TOLEND ROAD
DOVER, N.H.
TAX MAP E, LOT 65-1 & 65-4

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 40 FT.
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 - 107

STATE OF NEW HAMPSHIRE - KENNETH A. BERRY No. 14243 LICENSED PROFESSIONAL ENGINEER -

NOTES:

1.) OWNER LOT 65–1: D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY
245 N BEND DRIVE
MANCHESTER, NH 03104

OWNER LOT 65–A: EUGENE A. & DONNA L., SGRIGNUOLI
22 SUN HAWK LANE
DOVER, NH 03820

1A.) APPLICANT: STONEARCH DEVELOPMENT CORP.
42J DOVER POINT ROAD
DOVER, NH 03820

2.) LOT OF RECORD: TAX MAP E, LOT 65–1
TAX MAP E, LOT 65–A

3.) LOT AREA LOT 65–1: 1,824,109 Sq. Ft., 41.88 Ac. +/–
LOT AREA LOT 65–A: 110,839 Sq. Ft., 2.54 Ac. +/–

4.) S.C.R.D. BOOK 4918, PAGE 158
S.C.R.D. BOOK 1571, PAGE 8

5.) THE INTENT OF THIS PLAN IS TO PROVIDE AN OVERVIEW OF UTILITY & ENGINEERING OVERVIEW OF THEODORE DRIVE, LIAM DRIVE AND TAX MAP E, LOTS 65–1 & 65–A.

6.) SEE EROSION & SEDIMENT CONTROL PLANS FOR DETAILS ON PERIMETER CONTROL (MULCH BERM / FENCE / SILT SOXX).

7.) BS&E IS TO PROVIDE ADDITIONAL BENCHMARKS PRIOR TO CONSTRUCTION.

8.) EXISTING AND PROPOSED CONTOURS ARE PROVIDED AT 1' INTERVALS WITH DRAINAGE FEATURES AT MORE PRECISE INTERVALS.

9.) SEE SHEET 2 FOR ALL OTHER STANDARD CONSTRUCTION NOTES.

UTILITY PLAN TABLE OF CONTENTS:

SHEET #47: OVERVIEW UTILITY PLAN
SHEET #48: UTILITY P&P THEODORE DRIVE 0+00 – 5+00
SHEET #49: UTILITY P&P THEODORE DRIVE 5+00 – 10+00
SHEET #50: UTILITY P&P THEODORE DRIVE 10+00 – END
SHEET #51: UTILITY P&P LIAM DRIVE 20+00 – 25+00
SHEET #52: UTILITY P&P LIAM DRIVE 25+00 – 29+00
SHEET #53: UTILITY P&P LIAM DRIVE 29+00 – END
SHEET #54: UTILITY PLAN UNITS 1 – 14
SHEET #55: UTILITY PLAN UNITS 15 – 26
SHEET #56: UTILITY PLAN UNITS 27 – 38
SHEET #57: UTILITY PLAN UNITS 39 – 52
SHEET #58: UTILITY PLAN UNITS 53 – 60

GRAPHIC SCALE

60 0 30 60 120 240

(IN FEET)
1 inch = 60 ft.

EXISTING LEGEND:

- IRON BOUND ~FND~
- IRON PIPE ~FND~
- NHHB BOUND ~FND~
- UTILITY POLE / GUY WIRE
- NRCS SOIL DELINEATION LINE
- BUILDING SETBACK LINE
- OVERHEAD UTILITIES LINE
- CONTOUR LINE, MINOR
- CONTOUR LINE, MAJOR
- WETLAND LINE
- EXISTING STREAM
- EXISTING TRAIL
- WETLAND BUFFER
- DRAINAGE LINE
- 50' NHDES PRIMARY SETBACK
- 150' NHDES NATURAL WOODLAND BUFFER
- 250' NHDES SHORELAND PROTECTION ZONE
- 100' LOCAL CONSERVATION OVERLAY ZONE
- TEST PIT
- S.C.R.D. STRAFFORD COUNTY REGISTRY OF DEEDS
- TYP. TYPICAL
- FND FOUND

PROPOSED LEGEND:

- 3/4" REBAR W/ ID CAP ~TBS~
- PROPOSED LOT LINE REVISION LINE
- LIGHT TYPE "A" MOUNTED LIGHT POLE
- LIGHT TYPE "B" MOUNTED ON UNIT
- SEWER OR TERMINAL FLUSHING MANHOLE W/ STRUCTURE
- DRAIN MANHOLE W/STRUCTURE
- CATCH BASIN W/ STRUCTURE
- TEMPORARY BENCHMARK (T.B.M.)
- E101 / E6 DETAIL SHEET / DETAIL
- MATCH POINT
- MATCH LINE
- CONTOUR MINOR, PROPOSED
- CONTOUR MAJOR, PROPOSED
- DRAIN CULVERT W/ FLARED END SECTION (F.E.S.)
- SHOULDER
- CENTER LINE
- TRANSFORMER / J.BOX
- UNDERGROUND UTILITY
- UNDER DRAIN
- GATE VALVE
- CURB STOP
- FIRE HYDRANT
- THRUST BLOCKS
- PROPOSED WATER LINE
- PROPOSED SEWER LINE
- PROPOSED GAS LINE
- PROPOSED UNDERGROUND LP TANK
- SEPTIC OR PUMP TANK

REVISION	DATE	DESCRIPTION

OVERVIEW UTILITY PLAN
LAND OF
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY &
EUGENE A. & DONNA L. SGRIGNUOLI
TOLEND ROAD
DOVER, N.H.
TAX MAP E, LOT 65–1 & 65–A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332–2863

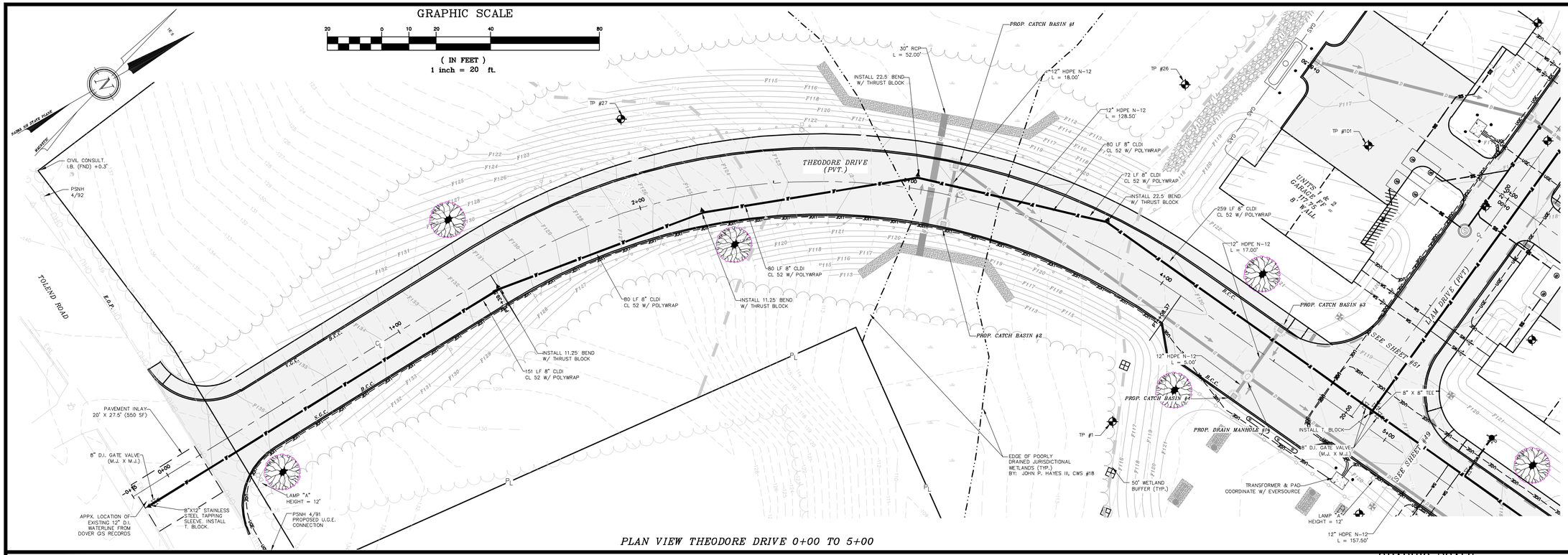
SCALE : 1 IN. EQUALS 60 FT.
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 – 107

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY No. 14243 LICENSED
PROFESSIONAL ENGINEER

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

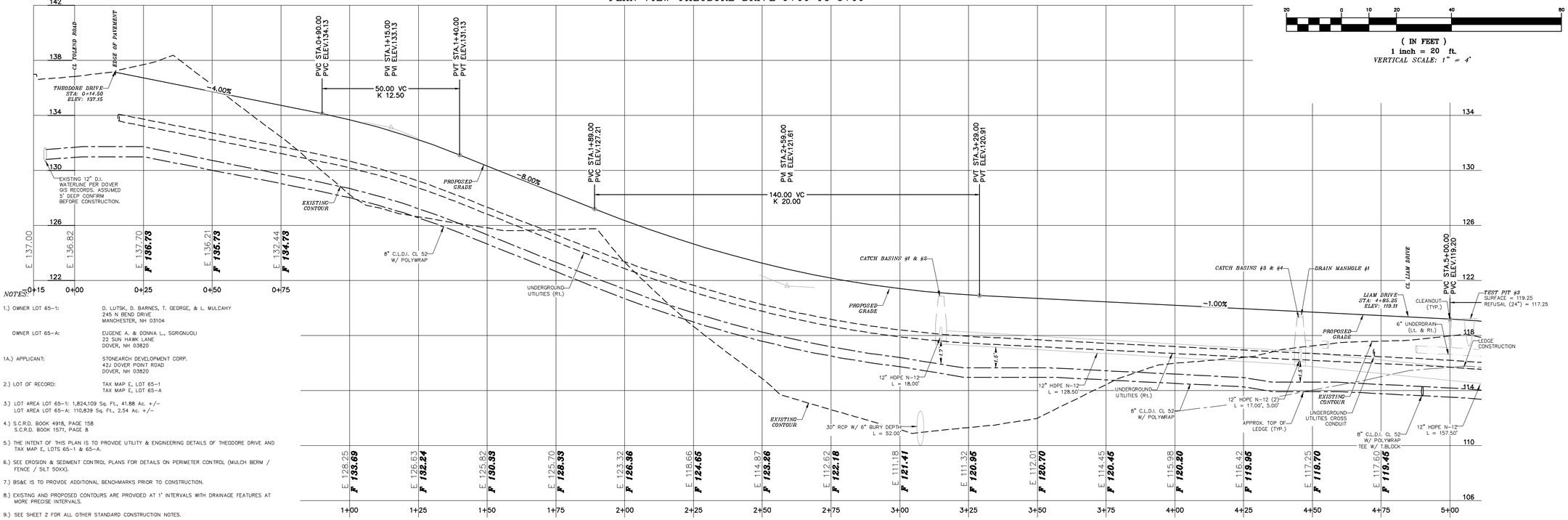


PLAN VIEW THEODORE DRIVE 0+00 TO 5+00

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.
VERTICAL SCALE: 1" = 4'



NOTES:

1.) OWNER LOT 65-1: D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY, 245 N BEND DRIVE, MANCHESTER, NH 03104

OWNER LOT 65-A: EUGENE A. & DONNA L., SGRIGNUOLI, 22 SUN HAWK LANE, DOVER, NH 03820

1A.) APPLICANT: STONEARCH DEVELOPMENT CORP., 42J DOVER POINT ROAD, DOVER, NH 03820

2.) LOT OF RECORD: TAX MAP E, LOT 65-1; TAX MAP E, LOT 65-A

3.) LOT AREA LOT 65-1: 1,824,109 Sq. Ft., 41.88 Ac. +/- LOT AREA LOT 65-A: 110,839 Sq. Ft., 2.54 Ac. +/-

4.) S.C.R.D. BOOK 4918, PAGE 158 S.C.R.D. BOOK 1571, PAGE 8

5.) THE INTENT OF THIS PLAN IS TO PROVIDE UTILITY & ENGINEERING DETAILS OF THEODORE DRIVE AND TAX MAP E, LOTS 65-1 & 65-A.

6.) SEE EROSION & SEDIMENT CONTROL PLANS FOR DETAILS ON PERIMETER CONTROL (MULCH BERM / FENCE / SILT SOXX).

7.) BS&E IS TO PROVIDE ADDITIONAL BENCHMARKS PRIOR TO CONSTRUCTION.

8.) EXISTING AND PROPOSED CONTOURS ARE PROVIDED AT 1' INTERVALS WITH DRAINAGE FEATURES AT MORE PRECISE INTERVALS.

9.) SEE SHEET 2 FOR ALL OTHER STANDARD CONSTRUCTION NOTES.

REVISION	DATE	DESCRIPTION

UTILITY PLAN & PROFILE THEODORE DRIVE 0+00 TO 5+00
LAND OF
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY &
EUGENE A. & DONNA L. SGRIGNUOLI
TOLEND ROAD
DOVER, N.H.
TAX MAP E, LOT 65-1 & 65-A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 20 FT.
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 - 107

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14243
LICENSED PROFESSIONAL ENGINEER

STRUCTURES TABLE:

PROP. SEWER MANHOLE #4
4'ø STRUCTURE W/ NH STANDARD RIM
STA.: 5+75.75 (Rt. 5.00')
RIM = 117.11 (FLUSH)
INV. IN = 110.53 (4" SDR 35)
INV. OUT = 110.36 (6" SDR 35)

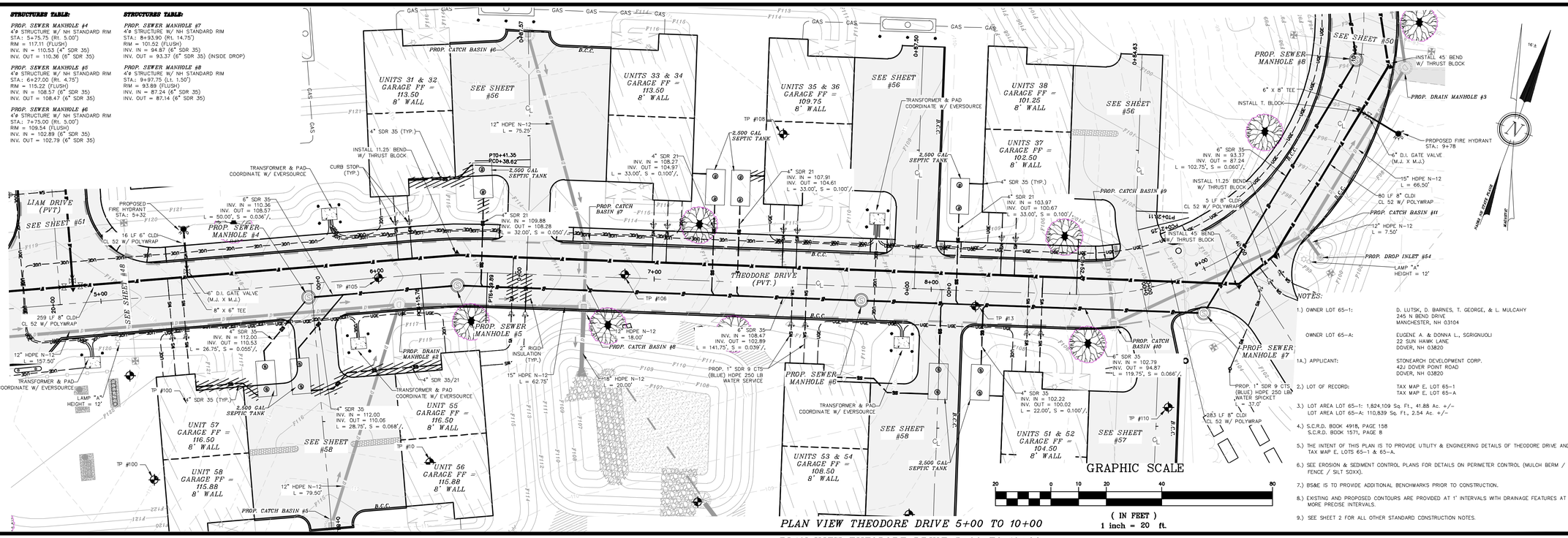
PROP. SEWER MANHOLE #5
4'ø STRUCTURE W/ NH STANDARD RIM
STA.: 6+27.00 (Rt. 4.75')
RIM = 115.22 (FLUSH)
INV. IN = 108.57 (6" SDR 35)
INV. OUT = 108.47 (6" SDR 35)

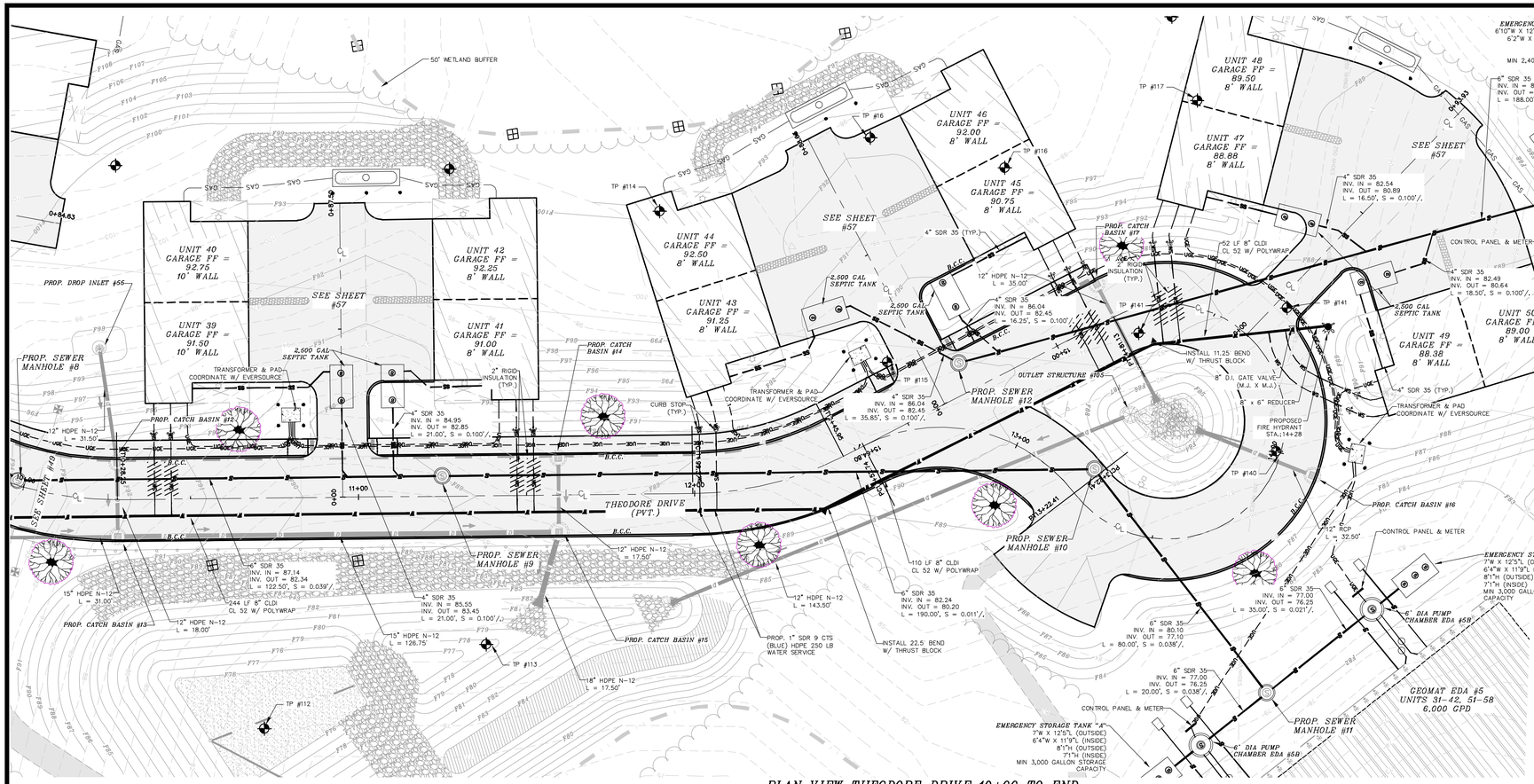
PROP. SEWER MANHOLE #6
4'ø STRUCTURE W/ NH STANDARD RIM
STA.: 7+75.00 (Rt. 5.00')
RIM = 109.54 (FLUSH)
INV. IN = 102.89 (6" SDR 35)
INV. OUT = 102.79 (6" SDR 35)

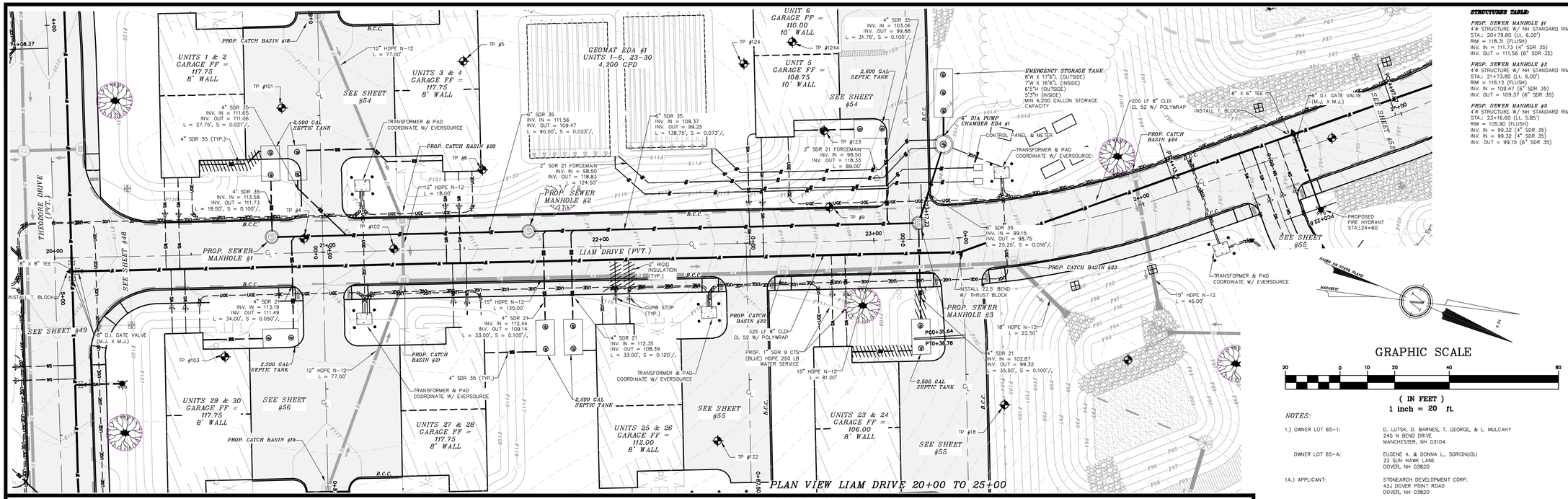
STRUCTURES TABLE:

PROP. SEWER MANHOLE #7
4'ø STRUCTURE W/ NH STANDARD RIM
STA.: 8+93.90 (Rt. 14.75')
RIM = 101.52 (FLUSH)
INV. IN = 94.87 (6" SDR 35)
INV. OUT = 93.37 (6" SDR 35) (INSIDE DROP)

PROP. SEWER MANHOLE #8
4'ø STRUCTURE W/ NH STANDARD RIM
STA.: 9+97.75 (Lt. 1.50')
RIM = 93.89 (FLUSH)
INV. IN = 87.24 (6" SDR 35)
INV. OUT = 87.14 (6" SDR 35)


LIAM DRIVE (PVT.)
SEE SHEET #51
SEE SHEET #8
PROPOSED FIRE HYDRANT STA.: 5+32
16 LF 6" CLDI CL 52 W/ POLYWRAP
6" SDR 35 INV. IN = 110.36 INV. OUT = 108.57 L = 50.00', S = 0.036'/-
PROP. SEWER MANHOLE #4
6" D.I. GATE VALVE (M.J. X M.J.)
8" X 6" TEE
259 LF 8" CLDI CL 52 W/ POLYWRAP
12" HDPE N-12 L = 157.50'
TRANSFORMER & PAD COORDINATE W/ EVERSOURCE
LAMP "A" HEIGHT = 12'
TP #100
4" SDR 35 (TYP.)
2,500 GAL SEPTIC TANK
UNIT 57 GARAGE FF = 116.50 8' WALL
UNIT 58 GARAGE FF = 115.88 8' WALL
4" SDR 35 INV. IN = 112.00 INV. OUT = 110.53 L = 26.75', S = 0.055'/-
4" SDR 35 INV. IN = 112.00 INV. OUT = 110.06 L = 28.75', S = 0.068'/-
PROP. DRAIN MANHOLE #3
PROP. SEWER MANHOLE #5
2" RIGID INSULATION (TYP.)
15" HDPE N-12 L = 62.75'
4" SDR 35/21
SEE SHEET #58
UNIT 55 GARAGE FF = 116.50 8' WALL
UNIT 56 GARAGE FF = 115.88 8' WALL
TP #10
12" HDPE N-12 L = 79.50'
PROP. CATCH BASIN #5
B.C.C.C.
PROP. CATCH BASIN #6
INSTALL 11.25' BEND W/ THRUST BLOCK
CURB STOP (TYP.)
PT0+41.35 PC0+38.62
2,500 GAL SEPTIC TANK
12" HDPE N-12 L = 75.25'
UNITS 31 & 32 GARAGE FF = 113.50 8' WALL
SEE SHEET #56
UNITS 33 & 34 GARAGE FF = 113.50 8' WALL
4" SDR 21 INV. IN = 109.88 INV. OUT = 108.28 L = 32.00', S = 0.050'/-
4" SDR 21 INV. IN = 108.27 INV. OUT = 104.97 L = 33.00', S = 0.100'/-
PROP. CATCH BASIN #7
THEODORE DRIVE (PVT.)
TP #105
TP #106
TP #107
TP #108
18" HDPE N-12 L = 20.00'
12" HDPE N-12 L = 18.00'
6" SDR 35 INV. IN = 108.47 INV. OUT = 102.89 L = 141.75', S = 0.039'/-
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SERVICE
PROP. SEWER MANHOLE #6
TRANSFORMER & PAD COORDINATE W/ EVERSOURCE
2,500 GAL SEPTIC TANK
UNITS 35 & 36 GARAGE FF = 109.75 8' WALL
SEE SHEET #56
4" SDR 21 INV. IN = 107.91 INV. OUT = 104.61 L = 33.00', S = 0.100'/-
UNITS 53 & 54 GARAGE FF = 108.50 8' WALL
SEE SHEET #58
UNITS 37 GARAGE FF = 102.50 8' WALL
4" SDR 35 (TYP.)
4" SDR 21 INV. IN = 103.97 INV. OUT = 100.67 L = 33.00', S = 0.100'/-
PROP. CATCH BASIN #9
UNITS 51 & 52 GARAGE FF = 104.50 8' WALL
SEE SHEET #57
TP #110
TP #113
PROP. CATCH BASIN #10
6" SDR 35 INV. IN = 102.79 INV. OUT = 94.87 L = 119.75', S = 0.066'/-
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SPICKET L = 37.0'
083 LF 8" CLDI CL 52 W/ POLYWRAP
PROP. SEWER MANHOLE #7
UNITS 38 GARAGE FF = 101.25 8' WALL
SEE SHEET #56
6" SDR 35 INV. IN = 93.37 INV. OUT = 87.24 L = 102.75', S = 0.060'/-
INSTALL 11.25' BEND W/ THRUST BLOCK
9 LF 8" CLDI CL 52 W/ POLYWRAP
INSTALL 45° BEND W/ THRUST BLOCK
PROP. SEWER MANHOLE #8
SEE SHEET #50
INSTALL 45° BEND W/ THRUST BLOCK
6" X 8" TEE
INSTALL T. BLOCK
PROP. DRAIN MANHOLE #3
PROPOSED FIRE HYDRANT STA.: 9+78
6" D.I. GATE VALVE (M.J. X M.J.)
15" HDPE N-12 L = 66.50'
80 LF 8" CLDI CL 52 W/ POLYWRAP
PROP. CATCH BASIN #11
12" HDPE N-12 L = 7.50'
PROP. DROP INLET #54
LAMP "A" HEIGHT = 12'
TRANSFORMER & PAD COORDINATE W/ EVERSOURCE
2,500 GAL SEPTIC TANK
UNITS 41 & 42 GARAGE FF = 98.50 8' WALL
SEE SHEET #55
4" SDR 35 INV. IN = 98.37 INV. OUT = 94.87 L = 70.00', S = 0.050'/-
PROP. CATCH BASIN #12
PROP. SEWER MANHOLE #9
6" SDR 35 INV. IN = 93.37 INV. OUT = 87.24 L = 102.75', S = 0.060'/-
PROP. DRAIN MANHOLE #4
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SERVICE
PROP. CATCH BASIN #13
PROP. SEWER MANHOLE #10
6" SDR 35 INV. IN = 87.14 INV. OUT = 82.89 L = 83.25', S = 0.051'/-
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SPICKET L = 37.0'
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SERVICE
PROP. SEWER MANHOLE #11
UNITS 43 & 44 GARAGE FF = 94.50 8' WALL
SEE SHEET #55
4" SDR 35 INV. IN = 93.37 INV. OUT = 89.87 L = 70.00', S = 0.050'/-
PROP. CATCH BASIN #14
PROP. SEWER MANHOLE #12
6" SDR 35 INV. IN = 89.37 INV. OUT = 84.87 L = 90.00', S = 0.050'/-
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SPICKET L = 37.0'
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SERVICE
PROP. DRAIN MANHOLE #5
UNITS 45 & 46 GARAGE FF = 90.50 8' WALL
SEE SHEET #54
4" SDR 35 INV. IN = 89.37 INV. OUT = 84.87 L = 90.00', S = 0.050'/-
PROP. CATCH BASIN #15
PROP. SEWER MANHOLE #13
6" SDR 35 INV. IN = 85.37 INV. OUT = 80.87 L = 90.00', S = 0.050'/-
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SPICKET L = 37.0'
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SERVICE
PROP. CATCH BASIN #16
UNITS 47 & 48 GARAGE FF = 86.50 8' WALL
SEE SHEET #53
4" SDR 35 INV. IN = 85.37 INV. OUT = 80.87 L = 90.00', S = 0.050'/-
PROP. CATCH BASIN #17
PROP. SEWER MANHOLE #14
6" SDR 35 INV. IN = 81.37 INV. OUT = 76.87 L = 90.00', S = 0.050'/-
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SPICKET L = 37.0'
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SERVICE
PROP. CATCH BASIN #18
UNITS 49 & 50 GARAGE FF = 82.50 8' WALL
SEE SHEET #52
4" SDR 35 INV. IN = 81.37 INV. OUT = 76.87 L = 90.00', S = 0.050'/-
PROP. CATCH BASIN #19
PROP. SEWER MANHOLE #15
6" SDR 35 INV. IN = 77.37 INV. OUT = 72.87 L = 90.00', S = 0.050'/-
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SPICKET L = 37.0'
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SERVICE
PROP. CATCH BASIN #20
UNITS 51 & 52 GARAGE FF = 78.50 8' WALL
SEE SHEET #51
4" SDR 35 INV. IN = 77.37 INV. OUT = 72.87 L = 90.00', S = 0.050'/-
PROP. CATCH BASIN #21
PROP. SEWER MANHOLE #16
6" SDR 35 INV. IN = 73.37 INV. OUT = 68.87 L = 90.00', S = 0.050'/-
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SPICKET L = 37.0'
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SERVICE
PROP. CATCH BASIN #22
UNITS 53 & 54 GARAGE FF = 74.50 8' WALL
SEE SHEET #50
4" SDR 35 INV. IN = 73.37 INV. OUT = 68.87 L = 90.00', S = 0.050'/-
PROP. CATCH BASIN #23
PROP. SEWER MANHOLE #17
6" SDR 35 INV. IN = 69.37 INV. OUT = 64.87 L = 90.00', S = 0.050'/-
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SPICKET L = 37.0'
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SERVICE
PROP. CATCH BASIN #24
UNITS 55 & 56 GARAGE FF = 70.50 8' WALL
SEE SHEET #49
4" SDR 35 INV. IN = 69.37 INV. OUT = 64.87 L = 90.00', S = 0.050'/-
PROP. CATCH BASIN #25
PROP. SEWER MANHOLE #18
6" SDR 35 INV. IN = 65.37 INV. OUT = 60.87 L = 90.00', S = 0.050'/-
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SPICKET L = 37.0'
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SERVICE
PROP. CATCH BASIN #26
UNITS 57 GARAGE FF = 66.50 8' WALL
SEE SHEET #48
4" SDR 35 INV. IN = 65.37 INV. OUT = 60.87 L = 90.00', S = 0.050'/-
PROP. CATCH BASIN #27
PROP. SEWER MANHOLE #19
6" SDR 35 INV. IN = 61.37 INV. OUT = 56.87 L = 90.00', S = 0.050'/-
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SPICKET L = 37.0'
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SERVICE
PROP. CATCH BASIN #28
UNITS 59 & 60 GARAGE FF = 62.50 8' WALL
SEE SHEET #47
4" SDR 35 INV. IN = 61.37 INV. OUT = 56.87 L = 90.00', S = 0.050'/-
PROP. CATCH BASIN #29
PROP. SEWER MANHOLE #20
6" SDR 35 INV. IN = 57.37 INV. OUT = 52.87 L = 90.00', S = 0.050'/-
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SPICKET L = 37.0'
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SERVICE
PROP. CATCH BASIN #30
UNITS 61 & 62 GARAGE FF = 58.50 8' WALL
SEE SHEET #46
4" SDR 35 INV. IN = 57.37 INV. OUT = 52.87 L = 90.00', S = 0.050'/-
PROP. CATCH BASIN #31
PROP. SEWER MANHOLE #21
6" SDR 35 INV. IN = 53.37 INV. OUT = 48.87 L = 90.00', S = 0.050'/-
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SPICKET L = 37.0'
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SERVICE
PROP. CATCH BASIN #32
UNITS 63 & 64 GARAGE FF = 54.50 8' WALL
SEE SHEET #45
4" SDR 35 INV. IN = 53.37 INV. OUT = 48.87 L = 90.00', S = 0.050'/-
PROP. CATCH BASIN #33
PROP. SEWER MANHOLE #22
6" SDR 35 INV. IN = 49.37 INV. OUT = 44.87 L = 90.00', S = 0.050'/-
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SPICKET L = 37.0'
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SERVICE
PROP. CATCH BASIN #34
UNITS 65 & 66 GARAGE FF = 50.50 8' WALL
SEE SHEET #44
4" SDR 35 INV. IN = 49.37 INV. OUT = 44.87 L = 90.00', S = 0.050'/-
PROP. CATCH BASIN #35
PROP. SEWER MANHOLE #23
6" SDR 35 INV. IN = 45.37 INV. OUT = 40.87 L = 90.00', S = 0.050'/-
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SPICKET L = 37.0'
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SERVICE
PROP. CATCH BASIN #36
UNITS 67 & 68 GARAGE FF = 46.50 8' WALL
SEE SHEET #43
4" SDR 35 INV. IN = 45.37 INV. OUT = 40.87 L = 90.00', S = 0.050'/-
PROP. CATCH BASIN #37
PROP. SEWER MANHOLE #24
6" SDR 35 INV. IN = 41.37 INV. OUT = 36.87 L = 90.00', S = 0.050'/-
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SPICKET L = 37.0'
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SERVICE
PROP. CATCH BASIN #38
UNITS 69 & 70 GARAGE FF = 42.50 8' WALL
SEE SHEET #42
4" SDR 35 INV. IN = 41.37 INV. OUT = 36.87 L = 90.00', S = 0.050'/-
PROP. CATCH BASIN #39
PROP. SEWER MANHOLE #25
6" SDR 35 INV. IN = 37.37 INV. OUT = 32.87 L = 90.00', S = 0.050'/-
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SPICKET L = 37.0'
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SERVICE
PROP. CATCH BASIN #40
UNITS 71 & 72 GARAGE FF = 38.50 8' WALL
SEE SHEET #41
4" SDR 35 INV. IN = 37.37 INV. OUT = 32.87 L = 90.00', S = 0.050'/-
PROP. CATCH BASIN #41
PROP. SEWER MANHOLE #26
6" SDR 35 INV. IN = 33.37 INV. OUT = 28.87 L = 90.00', S = 0.050'/-
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SPICKET L = 37.0'
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SERVICE
PROP. CATCH BASIN #42
UNITS 73 & 74 GARAGE FF = 34.50 8' WALL
SEE SHEET #40
4" SDR 35 INV. IN = 33.37 INV. OUT = 28.87 L = 90.00', S = 0.050'/-
PROP. CATCH BASIN #43
PROP. SEWER MANHOLE #27
6" SDR 35 INV. IN = 29.37 INV. OUT = 24.87 L = 90.00', S = 0.050'/-
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SPICKET L = 37.0'
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SERVICE
PROP. CATCH BASIN #44
UNITS 75 & 76 GARAGE FF = 30.50 8' WALL
SEE SHEET #39
4" SDR 35 INV. IN = 29.37 INV. OUT = 24.87 L = 90.00', S = 0.050'/-
PROP. CATCH BASIN #45
PROP. SEWER MANHOLE #28
6" SDR 35 INV. IN = 25.37 INV. OUT = 20.87 L = 90.00', S = 0.050'/-
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SPICKET L = 37.0'
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SERVICE
PROP. CATCH BASIN #46
UNITS 77 & 78 GARAGE FF = 26.50 8' WALL
SEE SHEET #38
4" SDR 35 INV. IN = 25.37 INV. OUT = 20.87 L = 90.00', S = 0.050'/-
PROP. CATCH BASIN #47
PROP. SEWER MANHOLE #29
6" SDR 35 INV. IN = 21.37 INV. OUT = 16.87 L = 90.00', S = 0.050'/-
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SPICKET L = 37.0'
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SERVICE
PROP. CATCH BASIN #48
UNITS 79 & 80 GARAGE FF = 22.50 8' WALL
SEE SHEET #37
4" SDR 35 INV. IN = 21.37 INV. OUT = 16.87 L = 90.00', S = 0.050'/-
PROP. CATCH BASIN #49
PROP. SEWER MANHOLE #30
6" SDR 35 INV. IN = 17.37 INV. OUT = 12.87 L = 90.00', S = 0.050'/-
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SPICKET L = 37.0'
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SERVICE
PROP. CATCH BASIN #50
UNITS 81 & 82 GARAGE FF = 18.50 8' WALL
SEE SHEET #36
4" SDR 35 INV. IN = 17.37 INV. OUT = 12.87 L = 90.00', S = 0.050'/-
PROP. CATCH BASIN #51
PROP. SEWER MANHOLE #31
6" SDR 35 INV. IN = 13.37 INV. OUT = 8.87 L = 90.00', S = 0.050'/-
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SPICKET L = 37.0'
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SERVICE
PROP. CATCH BASIN #52
UNITS 83 & 84 GARAGE FF = 14.50 8' WALL
SEE SHEET #35
4" SDR 35 INV. IN = 13.37 INV. OUT = 8.87 L = 90.00', S = 0.050'/-
PROP. CATCH BASIN #53
PROP. SEWER MANHOLE #32
6" SDR 35 INV. IN = 9.37 INV. OUT = 4.87 L = 90.00', S = 0.050'/-
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SPICKET L = 37.0'
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SERVICE
PROP. CATCH BASIN #54
UNITS 85 & 86 GARAGE FF = 10.50 8' WALL
SEE SHEET #34
4" SDR 35 INV. IN = 9.37 INV. OUT = 4.87 L = 90.00', S = 0.050'/-
PROP. CATCH BASIN #55
PROP. SEWER MANHOLE #33
6" SDR 35 INV. IN = 5.37 INV. OUT = 0.87 L = 90.00', S = 0.050'/-
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SPICKET L = 37.0'
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SERVICE
PROP. CATCH BASIN #56
UNITS 87 & 88 GARAGE FF = 6.50 8' WALL
SEE SHEET #33
4" SDR 35 INV. IN = 5.37 INV. OUT = 0.87 L = 90.00', S = 0.050'/-
PROP. CATCH BASIN #57
PROP. SEWER MANHOLE #34
6" SDR 35 INV. IN = 1.37 INV. OUT = -3.13 L = 90.00', S = 0.050'/-
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SPICKET L = 37.0'
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SERVICE
PROP. CATCH BASIN #58
UNITS 89 & 90 GARAGE FF = 2.50 8' WALL
SEE SHEET #32
4" SDR 35 INV. IN = 1.37 INV. OUT = -3.13 L = 90.00', S = 0.050'/-
PROP. CATCH BASIN #59
PROP. SEWER MANHOLE #35
6" SDR 35 INV. IN = -2.63 INV. OUT = -7.13 L = 90.00', S = 0.050'/-
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SPICKET L = 37.0'
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SERVICE
PROP. CATCH BASIN #60
UNITS 91 & 92 GARAGE FF = -1.50 8' WALL
SEE SHEET #31
4" SDR 35 INV. IN = -2.63 INV. OUT = -7.13 L = 90.00', S = 0.050'/-
PROP. CATCH BASIN #61
PROP. SEWER MANHOLE #36
6" SDR 35 INV. IN = -6.63 INV. OUT = -11.13 L = 90.00', S = 0.050'/-
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SPICKET L = 37.0'
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SERVICE
PROP. CATCH BASIN #62
UNITS 93 & 94 GARAGE FF = -5.50 8' WALL
SEE SHEET #30
4" SDR 35 INV. IN = -6.63 INV. OUT = -11.13 L = 90.00', S = 0.050'/-
PROP. CATCH BASIN #63
PROP. SEWER MANHOLE #37
6" SDR 35 INV. IN = -10.63 INV. OUT = -15.13 L = 90.00', S = 0.050'/-
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SPICKET L = 37.0'
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SERVICE
PROP. CATCH BASIN #64
UNITS 95 & 96 GARAGE FF = -9.50 8' WALL
SEE SHEET #29
4" SDR 35 INV. IN = -10.63 INV. OUT = -15.13 L = 90.00', S = 0.050'/-
PROP. CATCH BASIN #65
PROP. SEWER MANHOLE #38
6" SDR 35 INV. IN = -14.63 INV. OUT = -19.13 L = 90.00', S = 0.050'/-
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SPICKET L = 37.0'
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SERVICE
PROP. CATCH BASIN #66
UNITS 97 & 98 GARAGE FF = -13.50 8' WALL
SEE SHEET #28
4" SDR 35 INV. IN = -14.63 INV. OUT = -19.13 L = 90.00', S = 0.050'/-
PROP. CATCH BASIN #67
PROP. SEWER MANHOLE #39
6" SDR 35 INV. IN = -18.63 INV. OUT = -23.13 L = 90.00', S = 0.050'/-
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SPICKET L = 37.0'
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SERVICE
PROP. CATCH BASIN #68
UNITS 99 & 100 GARAGE FF = -17.50 8' WALL
SEE SHEET #27
4" SDR 35 INV. IN = -18.63 INV. OUT = -23.13 L = 90.00', S = 0.050'/-
PROP. CATCH BASIN #69
PROP. SEWER MANHOLE #40
6" SDR 35 INV. IN = -22.63 INV. OUT = -27.13 L = 90.00', S = 0.050'/-
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SPICKET L = 37.0'
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SERVICE
PROP. CATCH BASIN #70
UNITS 101 & 102 GARAGE FF = -21.50 8' WALL
SEE SHEET #26
4" SDR 35 INV. IN = -22.63 INV. OUT = -27.13 L = 90.00', S = 0.050'/-
PROP. CATCH BASIN #71
PROP. SEWER MANHOLE #41
6" SDR 35 INV. IN = -26.63 INV. OUT = -31.13 L = 90.00', S = 0.050'/-
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SPICKET L = 37.0'
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SERVICE
PROP. CATCH BASIN #72
UNITS 103 & 104 GARAGE FF = -25.50 8' WALL
SEE SHEET #25
4" SDR 35 INV. IN = -26.63 INV. OUT = -31.13 L = 90.00', S = 0.050'/-
PROP. CATCH BASIN #73
PROP. SEWER MANHOLE #42
6" SDR 35 INV. IN = -30.63 INV. OUT = -35.13 L = 90.00', S = 0.050'/-
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SPICKET L = 37.0'
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SERVICE
PROP. CATCH BASIN #74
UNITS 105 & 106 GARAGE FF = -29.50 8' WALL
SEE SHEET #24
4" SDR 35 INV. IN = -30.63 INV. OUT = -35.13 L = 90.00', S = 0.050'/-
PROP. CATCH BASIN #75
PROP. SEWER MANHOLE #43
6" SDR 35 INV. IN = -34.63 INV. OUT = -39.13 L = 90.00', S = 0.050'/-
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SPICKET L = 37.0'
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SERVICE
PROP. CATCH BASIN #76
UNITS 107 & 108 GARAGE FF = -33.50 8' WALL
SEE SHEET #23
4" SDR 35 INV. IN = -34.63 INV. OUT = -39.13 L = 90.00', S = 0.050'/-
PROP. CATCH BASIN #77
PROP. SEWER MANHOLE #44
6" SDR 35 INV. IN = -38.63 INV. OUT = -43.13 L = 90.00', S = 0.050'/-
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SPICKET L = 37.0'
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SERVICE
PROP. CATCH BASIN #78
UNITS 109 & 110 GARAGE FF = -37.50 8' WALL
SEE SHEET #22
4" SDR 35 INV. IN = -38.63 INV. OUT = -43.13 L = 90.00', S = 0.050'/-
PROP. CATCH BASIN #79
PROP. SEWER MANHOLE #45
6" SDR 35 INV. IN = -42.63 INV. OUT = -47.13 L = 90.00', S = 0.050'/-
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SPICKET L = 37.0'
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SERVICE
PROP. CATCH BASIN #80
UNITS 111 & 112 GARAGE FF = -41.50 8' WALL
SEE SHEET #21
4" SDR 35 INV. IN = -42.63 INV. OUT = -47.13 L = 90.00', S = 0.050'/-
PROP. CATCH BASIN #81
PROP. SEWER MANHOLE #46
6" SDR 35 INV. IN = -46.63 INV. OUT = -51.13 L = 90.00', S = 0.050'/-
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SPICKET L = 37.0'
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SERVICE
PROP. CATCH BASIN #82
UNITS 113 & 114 GARAGE FF = -45.50 8' WALL
SEE SHEET #20
4" SDR 35 INV. IN = -46.63 INV. OUT = -51.13 L = 90.00', S = 0.050'/-
PROP. CATCH BASIN #83
PROP. SEWER MANHOLE #47
6" SDR 35 INV. IN = -50.63 INV. OUT = -55.13 L = 90.00', S = 0.050'/-
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SPICKET L = 37.0'
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SERVICE
PROP. CATCH BASIN #84
UNITS 115 & 116 GARAGE FF = -49.50 8' WALL
SEE SHEET #19
4" SDR 35 INV. IN = -50.63 INV. OUT = -55.13 L = 90.00', S = 0.050'/-
PROP. CATCH BASIN #85
PROP. SEWER MANHOLE #48
6" SDR 35 INV. IN = -54.63 INV. OUT = -59.13 L = 90.00', S = 0.050'/-
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SPICKET L = 37.0'
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SERVICE
PROP. CATCH BASIN #86
UNITS 117 & 118 GARAGE FF = -53.50 8' WALL
SEE SHEET #18
4" SDR 35 INV. IN = -54.63 INV. OUT = -59.13 L = 90.00', S = 0.050'/-
PROP. CATCH BASIN #87
PROP. SEWER MANHOLE #49
6" SDR 35 INV. IN = -58.63 INV. OUT = -63.13 L = 90.00', S = 0.050'/-
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SPICKET L = 37.0'
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SERVICE
PROP. CATCH BASIN #88
UNITS 119 & 120 GARAGE FF = -57.50 8' WALL
SEE SHEET #17
4" SDR 35 INV. IN = -58.63 INV. OUT = -63.13 L = 90.00', S = 0.050'/-
PROP. CATCH BASIN #89
PROP. SEWER MANHOLE #50
6" SDR 35 INV. IN = -62.63 INV. OUT = -67.13 L = 90.00', S = 0.050'/-
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SPICKET L = 37.0'
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SERVICE
PROP. CATCH BASIN #90
UNITS 121 & 122 GARAGE FF = -61.50 8' WALL
SEE SHEET #16
4" SDR 35 INV. IN = -62.63 INV. OUT = -67.13 L = 90.00', S = 0.050'/-
PROP. CATCH BASIN #91
PROP. SEWER MANHOLE #51
6" SDR 35 INV. IN = -66.63 INV. OUT = -71.13 L = 90.00', S = 0.050'/-
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SPICKET L = 37.0'
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SERVICE
PROP. CATCH BASIN #92
UNITS 123 & 124 GARAGE FF = -65.50 8' WALL
SEE SHEET #15
4" SDR 35 INV. IN = -66.63 INV. OUT = -71.13 L = 90.00', S = 0.050'/-
PROP. CATCH BASIN #93
PROP. SEWER MANHOLE #52
6" SDR 35 INV. IN = -70.63 INV. OUT = -75.13 L = 90.00', S = 0.050'/-
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SPICKET L = 37.0'
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SERVICE
PROP. CATCH BASIN #94
UNITS 125 & 126 GARAGE FF = -69.50 8' WALL
SEE SHEET #14
4" SDR 35 INV. IN = -70.63 INV. OUT = -75.13 L = 90.00', S = 0.050'/-
PROP. CATCH BASIN #95
PROP. SEWER MANHOLE #53
6" SDR 35 INV. IN = -74.63 INV. OUT = -79.13 L = 90.00', S = 0.050'/-
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SPICKET L = 37.0'
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SERVICE
PROP. CATCH BASIN #96
UNITS 127 & 128 GARAGE FF = -73.50 8' WALL
SEE SHEET #13
4" SDR 35 INV. IN = -74.63 INV. OUT = -79.13 L = 90.00', S = 0.050'/-
PROP. CATCH BASIN #97
PROP. SEWER MANHOLE #54
6" SDR 35 INV. IN = -78.63 INV. OUT = -83.13 L = 90.00', S = 0.050'/-
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SPICKET L = 37.0'
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SERVICE
PROP. CATCH BASIN #98
UNITS 129 & 130 GARAGE FF = -77.50 8' WALL
SEE SHEET #12
4" SDR 35 INV. IN = -78.63 INV. OUT = -83.13 L = 90.00', S = 0.050'/-
PROP. CATCH BASIN #99
PROP. SEWER MANHOLE #55
6" SDR 35 INV. IN = -82.63 INV. OUT = -87.13 L = 90.00', S = 0.050'/-
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SPICKET L = 37.0'
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SERVICE
PROP. CATCH BASIN #100
UNITS 131 & 132 GARAGE FF = -81.50 8' WALL
SEE SHEET #11
4" SDR 35 INV. IN = -82.63 INV. OUT = -87.13 L = 90.00', S = 0.050'/-
PROP. CATCH BASIN #101
PROP. SEWER MANHOLE #56
6" SDR 35 INV. IN = -86.63 INV. OUT = -91.13 L = 90.00', S = 0.050'/-
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SPICKET L = 37.0'
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SERVICE
PROP. CATCH BASIN #102
UNITS 133 & 134 GARAGE FF = -85.50 8' WALL
SEE SHEET #10
4" SDR 35 INV. IN = -86.63 INV. OUT = -91.13 L = 90.00', S = 0.050'/-
PROP. CATCH BASIN #103
PROP. SEWER MANHOLE #57
6" SDR 35 INV. IN = -90.63 INV. OUT = -95.13 L = 90.00', S = 0.050'/-
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SPICKET L = 37.0'
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SERVICE
PROP. CATCH BASIN #104
UNITS 135 & 136 GARAGE FF = -89.50 8' WALL
SEE SHEET #9
4" SDR 35 INV. IN = -90.63 INV. OUT = -95.13 L = 90.00', S = 0.050'/-
PROP. CATCH BASIN #105
PROP. SEWER MANHOLE #58
6" SDR 35 INV. IN = -94.63 INV. OUT = -99.13 L = 90.00', S = 0.050'/-
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SPICKET L = 37.0'
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SERVICE
PROP. CATCH BASIN #106
UNITS 137 & 138 GARAGE FF = -93.50 8' WALL
SEE SHEET #8
4" SDR 35 INV. IN = -94.63 INV. OUT = -99.13 L = 90.00', S = 0.050'/-
PROP. CATCH BASIN #107
PROP. SEWER MANHOLE #59
6" SD


50' WETLAND BUFFER
UNIT 40 GARAGE FF = 92.75 10' WALL
UNIT 39 GARAGE FF = 91.50 10' WALL
UNIT 42 GARAGE FF = 92.25 8' WALL
UNIT 41 GARAGE FF = 91.00 8' WALL
UNIT 46 GARAGE FF = 92.00 8' WALL
UNIT 45 GARAGE FF = 90.75 8' WALL
UNIT 44 GARAGE FF = 92.50 8' WALL
UNIT 43 GARAGE FF = 91.25 8' WALL
UNIT 48 GARAGE FF = 89.50 8' WALL
UNIT 47 GARAGE FF = 88.88 8' WALL
UNIT 49 GARAGE FF = 88.38 8' WALL
UNIT 50 GARAGE FF = 89.00 8' WALL
SEE SHEET #57
SEE SHEET #58
SEE SHEET #59
THEODORE DRIVE (PVT.)
PROP. DROP INLET #56
PROP. SEWER MANHOLE #8
PROP. SEWER MANHOLE #9
PROP. SEWER MANHOLE #10
PROP. SEWER MANHOLE #11
PROP. SEWER MANHOLE #12
PROP. CATCH BASIN #13
PROP. CATCH BASIN #14
PROP. CATCH BASIN #15
PROP. CATCH BASIN #16
PROP. CATCH BASIN #17
2,500 GAL SEPTIC TANK
TRANSFORMER & PAD COORDINATE W/ EVERSOURCE
OUTLET STRUCTURE #105
INSTALL 11.25° BEND W/ THRUST BLOCK
8" DI. GATE VALVE (M.J. X M.J.)
6" x 6" REDUCER
PROPOSED FIRE HYDRANT STA.:14+28
CURB STOP (TYP.)
2" RIGID INSULATION (TYP.)
EMERGENCY STORAGE TANK 6'10"W X 12'10 1/2"L (OUTSIDE) 6'2"W X 12'2 1/2"L (INSIDE) 6'5"H (OUTSIDE) 5'9"H (INSIDE) MIN 2,400 GALLON STORAGE CAPACITY
EMERGENCY STORAGE TANK "B" 7'W X 12'5"L (OUTSIDE) 6'4"W X 11'9"L (INSIDE) 8'1"H (OUTSIDE) 7'1"H (INSIDE) MIN 3,000 GALLON STORAGE CAPACITY
EMERGENCY STORAGE TANK "A" 7'W X 12'5"L (OUTSIDE) 6'4"W X 11'9"L (INSIDE) 8'1"H (OUTSIDE) 7'1"H (INSIDE) MIN 3,000 GALLON STORAGE CAPACITY
6' DIA PUMP CHAMBER EDA #4
6' DIA PUMP CHAMBER EDA #5A
6' DIA PUMP CHAMBER EDA #5B
CONTROL PANEL & METER
GEOMAT EDA #4 UNITS 43-50 2,400 GPD
GEOMAT EDA #5 UNITS 31-42, 51-58 6,000 GPD
TP #112
TP #113
TP #114
TP #115
TP #116
TP #117
TP #120
TP #140
TP #141
0+84.63
0+00
11+00
12+00
13+00
14+00
15" HDPE N-12 L = 31.00'
12" HDPE N-12 L = 18.00'
12" HDPE N-12 L = 31.50'
4" SDR 35 INV. IN = 87.14 INV. OUT = 82.34 L = 122.50', S = 0.039'/-
244 LF 8" CLDI CL 52 W/ POLYWRAP
15" HDPE N-12 L = 126.75'
18" HDPE N-12 L = 17.50'
12" HDPE N-12 L = 17.50'
4" SDR 35 INV. IN = 84.95 INV. OUT = 82.85 L = 21.00', S = 0.100'/-
4" SDR 35 INV. IN = 85.55 INV. OUT = 83.45 L = 21.00', S = 0.100'/-
12" HDPE N-12 L = 143.50'
110 LF 8" CLDI CL 52 W/ POLYWRAP
INSTALL 22.5° BEND W/ THRUST BLOCK
PROP. 1" SDR 9 CTS (BLUE) HDPE 250 LB WATER SERVICE
4" SDR 35 INV. IN = 86.04 INV. OUT = 82.45 L = 35.85', S = 0.100'/-
12" HDPE N-12 L = 35.00'
4" SDR 35 INV. IN = 86.04 INV. OUT = 82.45 L = 16.25', S = 0.100'/-
52 LF 8" CLDI CL 52 W/ POLYWRAP
4" SDR 35 INV. IN = 82.54 INV. OUT = 80.89 L = 16.50', S = 0.100'/-
4" SDR 35 INV. IN = 82.49 INV. OUT = 80.64 L = 18.50', S = 0.100'/-
6" SDR 35 INV. IN = 82.28 INV. OUT = 79.50 L = 188.00', S = 0.015'/-
6" SDR 35 INV. IN = 82.24 INV. OUT = 80.20 L = 190.00', S = 0.011'/-
6" SDR 35 INV. IN = 80.10 INV. OUT = 77.10 L = 80.00', S = 0.038'/-
6" SDR 35 INV. IN = 77.00 INV. OUT = 76.25 L = 20.00', S = 0.038'/-
6" SDR 35 INV. IN = 77.00 INV. OUT = 75.25 L = 35.00', S = 0.029'/-
12" RCP L = 32.50'
4" SDR 35 (TYP.)
B.C.C.
UGE
OHE
GAS
SVO
F89
F90
F91
F92
F93
F94
F95
F96
F97
F98
F99
F100
F101
F102
F103
F104
F105
F106
F107
F108
F109
F110
F111
F112
F113
F114
F115
F116
F117
F118
F119
F120
F121
F122
F123
F124
F125
F126
F127
F128



STRUCTURES TABLE:

PROP. SEWER MANHOLE #1
4'ø STRUCTURE W/ NH STANDARD RIM
STA.: 20+79.80 (Lt. 6.00')
RIM = 118.31 (FLUSH)
INV. IN = 111.73 (4" SDR 35)
INV. OUT = 111.56 (6" SDR 35)

PROP. SEWER MANHOLE #2
4'ø STRUCTURE W/ NH STANDARD RIM
STA.: 21+73.80 (Lt. 6.00')
RIM = 116.12 (FLUSH)
INV. IN = 109.47 (6" SDR 35)
INV. OUT = 109.37 (6" SDR 35)

PROP. SEWER MANHOLE #3
4'ø STRUCTURE W/ NH STANDARD RIM
STA.: 23+16.60 (Lt. 5.85')
RIM = 105.90 (FLUSH)
INV. IN = 99.32 (4" SDR 35)
INV. IN = 99.32 (4" SDR 35)
INV. OUT = 99.15 (6" SDR 35)

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

NOTES:

1.) OWNER LOT 65-1: D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY, 245 N BEND DRIVE, MANCHESTER, NH 03104

OWNER LOT 65-A: EUGENE A. & DONNA L., SGRIGNUOLI, 22 SUN HAWK LANE, DOVER, NH 03820

1A.) APPLICANT: STONEARCH DEVELOPMENT CORP., 42J DOVER POINT ROAD, DOVER, NH 03820

2.) LOT OF RECORD: TAX MAP E, LOT 65-1; TAX MAP E, LOT 65-A

3.) LOT AREA LOT 65-1: 1,824,109 Sq. Ft., 41.88 Ac. +/-; LOT AREA LOT 65-A: 110,839 Sq. Ft., 2.54 Ac. +/-

4.) S.C.R.D. BOOK 4918, PAGE 158; S.C.R.D. BOOK 1571, PAGE 8

5.) THE INTENT OF THIS PLAN IS TO PROVIDE UTILITY & ENGINEERING DETAILS OF LIAM DRIVE AND TAX MAP E, LOTS 65-1 & 65-A.

6.) SEE EROSION & SEDIMENT CONTROL PLANS FOR DETAILS ON PERIMETER CONTROL (MULCH BERM / FENCE / SILT SOXX).

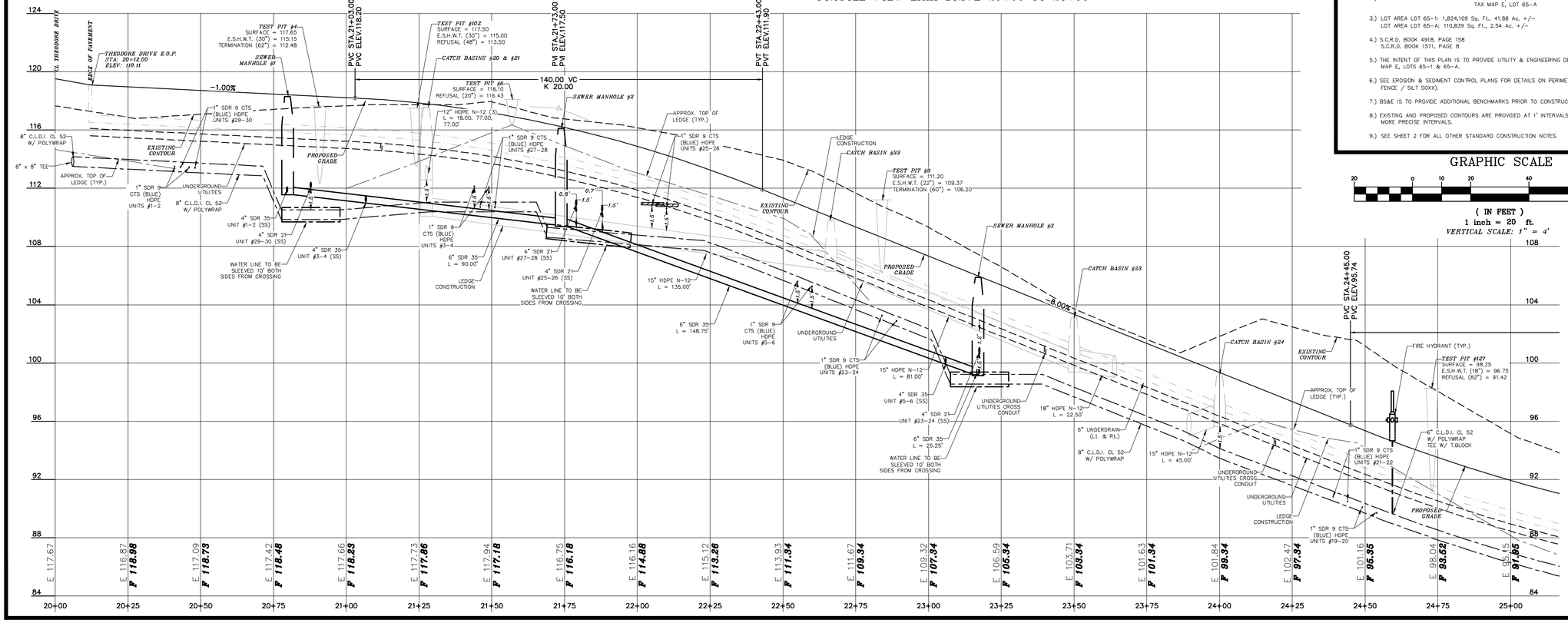
7.) BS&E IS TO PROVIDE ADDITIONAL BENCHMARKS PRIOR TO CONSTRUCTION.

8.) EXISTING AND PROPOSED CONTOURS ARE PROVIDED AT 1' INTERVALS WITH DRAINAGE FEATURES AT MORE PRECISE INTERVALS.

9.) SEE SHEET 2 FOR ALL OTHER STANDARD CONSTRUCTION NOTES.

PLAN VIEW LIAM DRIVE 20+00 TO 25+00

PROFILE VIEW LIAM DRIVE 20+00 TO 25+00



GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.
VERTICAL SCALE: 1" = 4'

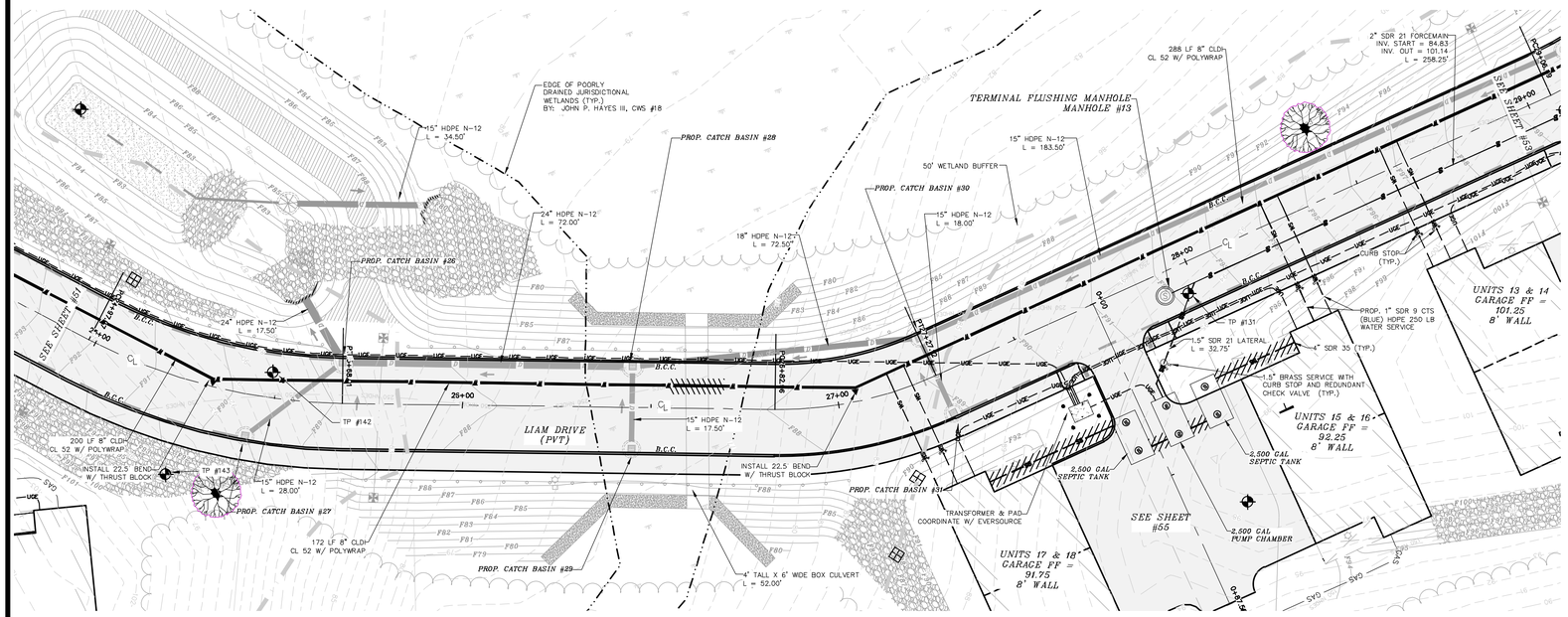
REVISION	DATE	DESCRIPTION

PLAN & PROFILE LIAM DRIVE 20+00 TO 25+00
LAND OF
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY &
EUGENE A. & DONNA L. SGRIGNUOLI
TOLEND ROAD
DOVER, N.H.
TAX MAP E, LOT 65-1 & 65-A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 20 FT.
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 – 107

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14243
LICENSED PROFESSIONAL ENGINEER



PLAN VIEW LIAM DRIVE 25+00 TO 29+00

STRUCTURES TABLE:

PROP. TERMINAL FLUSHING MANHOLE #13
4'ø STRUCTURE W/ NH STANDARD RIM
STA.: 27+90.00 (RT. 6.00')
RIM = 91.83 (FLUSH)
INV. OUT = 84.83 (2" SDR 21)

NOTES:

1.) OWNER LOT 65-1: D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY, 245 N BEND DRIVE, MANCHESTER, NH 03104

OWNER LOT 65-A: EUGENE A. & DONNA L., SGRIGNUOLI, 22 SUN HAWK LANE, DOVER, NH 03820

1A.) APPLICANT: STONEARCH DEVELOPMENT CORP., 42J DOVER POINT ROAD, DOVER, NH 03820

2.) LOT OF RECORD: TAX MAP E, LOT 65-1; TAX MAP E, LOT 65-A

3.) LOT AREA LOT 65-1: 1,824,109 Sq. Ft., 41.88 Ac. +/-; LOT AREA LOT 65-A: 110,839 Sq. Ft., 2.54 Ac. +/-

4.) S.C.R.D. BOOK 4918, PAGE 158; S.C.R.D. BOOK 1571, PAGE 8

5.) THE INTENT OF THIS PLAN IS TO PROVIDE UTILITY & ENGINEERING DETAILS OF LIAM DRIVE AND TAX MAP E, LOTS 65-1 & 65-A.

6.) SEE EROSION & SEDIMENT CONTROL PLANS FOR DETAILS ON PERIMETER CONTROL (MULCH BERM / FENCE / SILT SOXX).

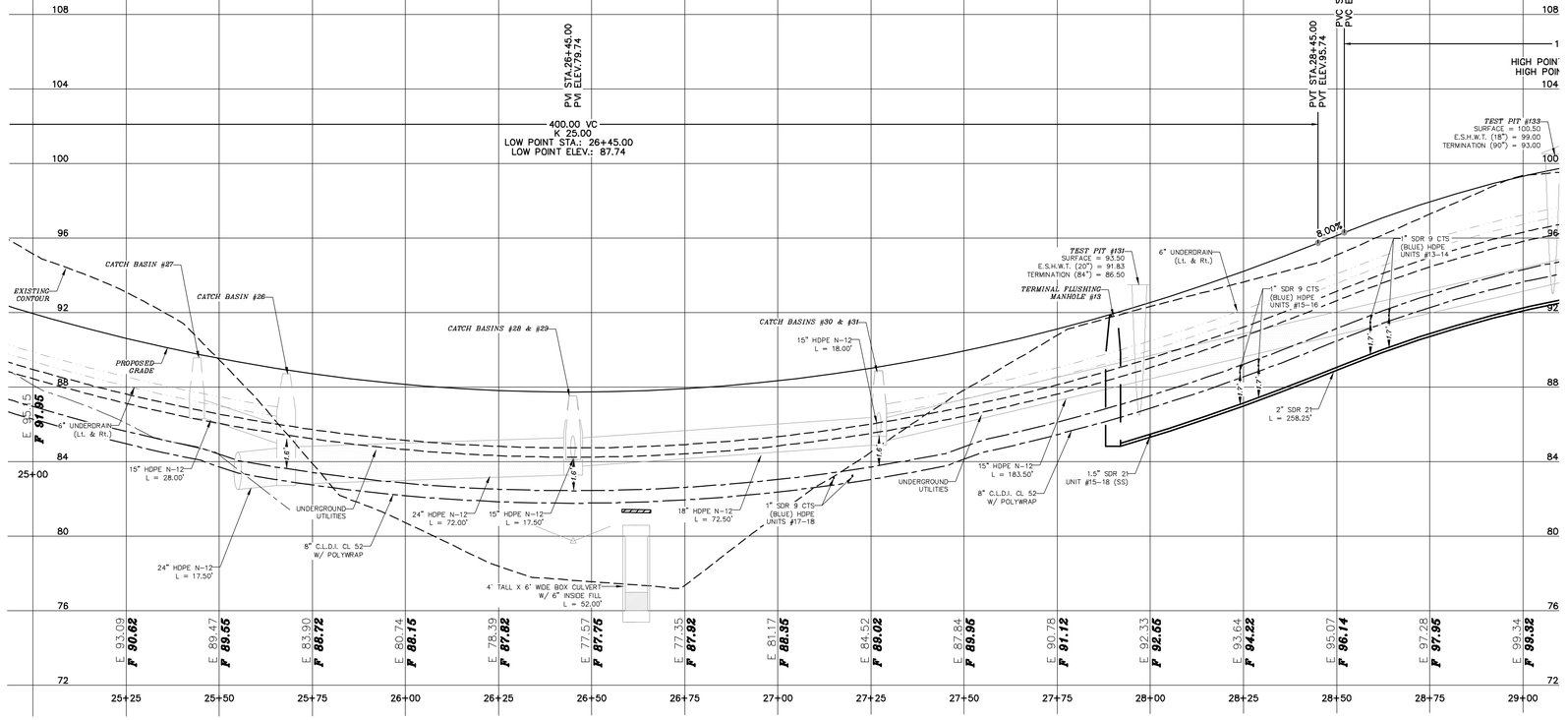
7.) BS&E IS TO PROVIDE ADDITIONAL BENCHMARKS PRIOR TO CONSTRUCTION.

8.) EXISTING AND PROPOSED CONTOURS ARE PROVIDED AT 1' INTERVALS WITH DRAINAGE FEATURES AT MORE PRECISE INTERVALS.

9.) SEE SHEET 2 FOR ALL OTHER STANDARD CONSTRUCTION NOTES.

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

PROFILE VIEW LIAM DRIVE 25+00 TO 29+00



GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.
VERTICAL SCALE: 1" = 4'

REVISION	DATE	DESCRIPTION

PLAN & PROFILE LIAM DRIVE 25+00 TO 29+00
LAND OF
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY &
EUGENE A. & DONNA L. SGRIGNUOLI
22 TOLEND ROAD
DOVER, N.H.
TAX MAP E, LOT 65-1 & 65-A

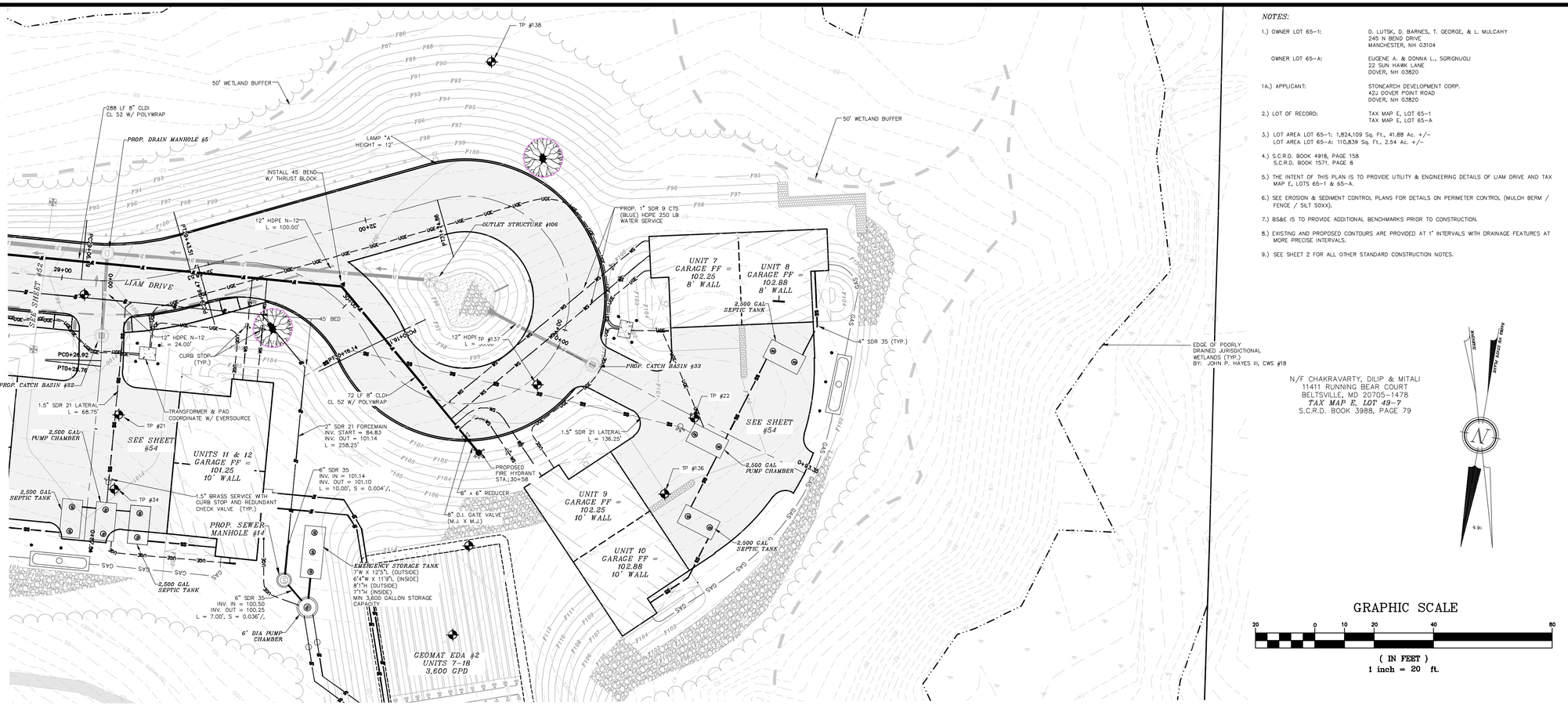
BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 20 FT.
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 – 107

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14243
LICENSED PROFESSIONAL ENGINEER

STRUCTURES TABLE:

PROP. SEWER MANHOLE #14
4'ø STRUCTURE W/ NH STANDARD RIM
RIM = 106.00 (FLUSH)
INV. IN = 101.10 (6" SDR 21)
INV. OUT = 100.50 (6" SDR 35)
INV. OUT = 100.50 (6" SDR 35)



NOTES:

1.) OWNER LOT 65-1: D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY
245 N BEND DRIVE
MANCHESTER, NH 03104

OWNER LOT 65-A: EUGENE A. & DONNA L., SGRIGNUOLI
22 SUN HAWK LANE
DOVER, NH 03820

1A.) APPLICANT: STONEARCH DEVELOPMENT CORP.
42J DOVER POINT ROAD
DOVER, NH 03820

2.) LOT OF RECORD: TAX MAP E, LOT 65-1
TAX MAP E, LOT 65-A

3.) LOT AREA LOT 65-1: 1,824,109 Sq. Ft., 41.88 Ac. +/-
LOT AREA LOT 65-A: 110,839 Sq. Ft., 2.54 Ac. +/-

4.) S.C.R.D. BOOK 4918, PAGE 158
S.C.R.D. BOOK 1571, PAGE 8

5.) THE INTENT OF THIS PLAN IS TO PROVIDE UTILITY & ENGINEERING DETAILS OF LIAM DRIVE AND TAX MAP E, LOTS 65-1 & 65-A.

6.) SEE EROSION & SEDIMENT CONTROL PLANS FOR DETAILS ON PERIMETER CONTROL (MULCH BERM / FENCE / SILT SOXX).

7.) BS&E IS TO PROVIDE ADDITIONAL BENCHMARKS PRIOR TO CONSTRUCTION.

8.) EXISTING AND PROPOSED CONTOURS ARE PROVIDED AT 1' INTERVALS WITH DRAINAGE FEATURES AT MORE PRECISE INTERVALS.

9.) SEE SHEET 2 FOR ALL OTHER STANDARD CONSTRUCTION NOTES.

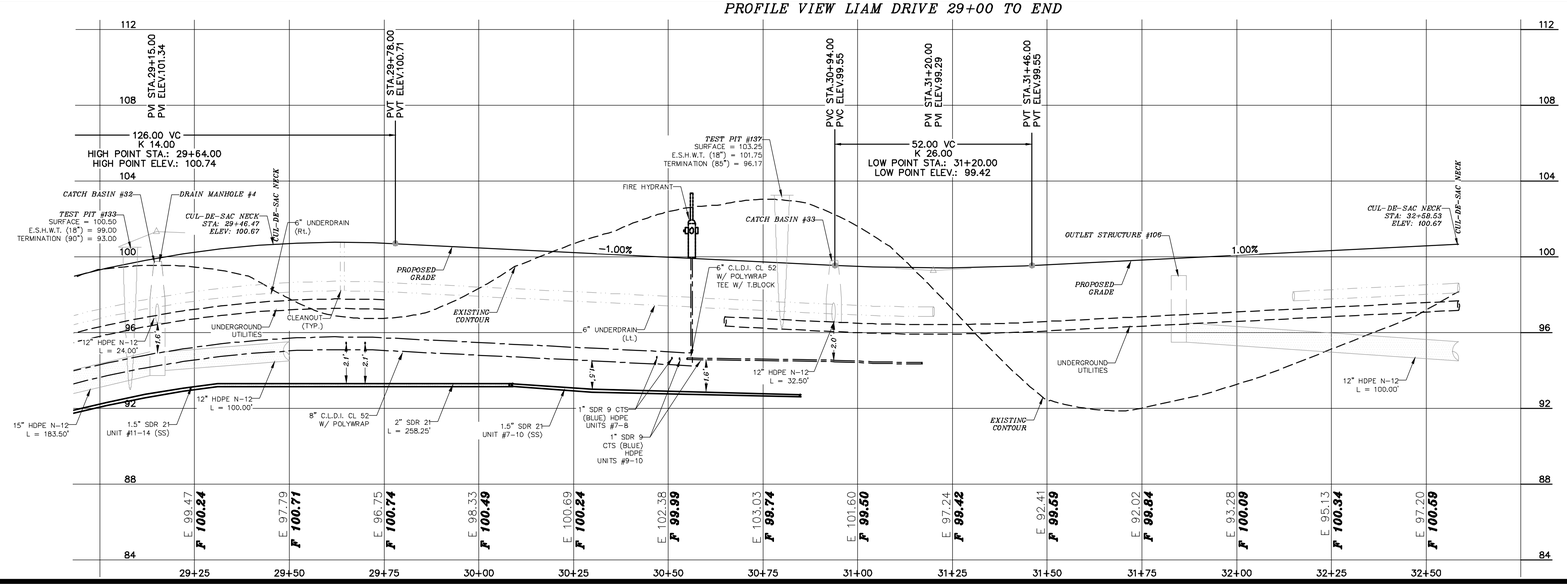
GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

PLAN VIEW LIAM DRIVE 29+00 TO END

PROFILE VIEW LIAM DRIVE 29+00 TO END



GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.
VERTICAL SCALE: 1" = 4'

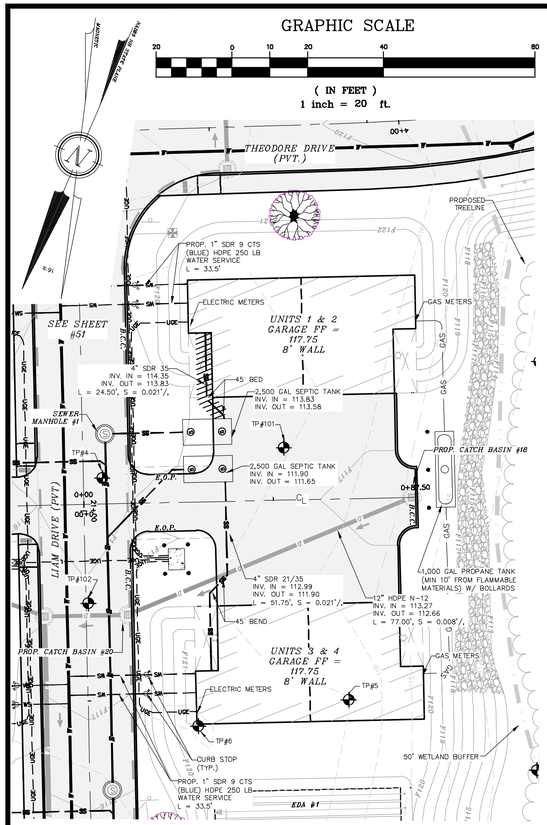
REVISION	DATE	DESCRIPTION

PLAN & PROFILE LIAM DRIVE 29+00 TO END
LAND OF
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY &
EUGENE A. & DONNA L. SGRIGNUOLI
TOLEND ROAD
DOVER, N.H.
TAX MAP E, LOT 65-1 & 65-A

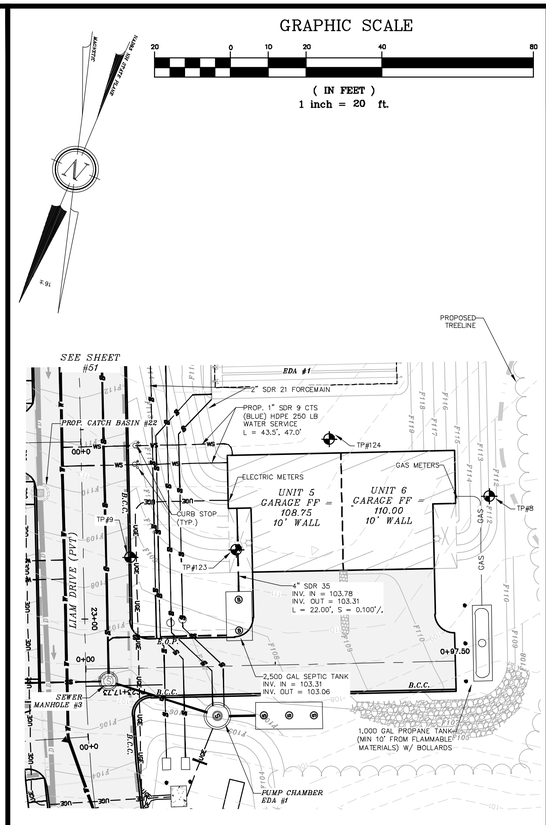
BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 20 FT.
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 - 107

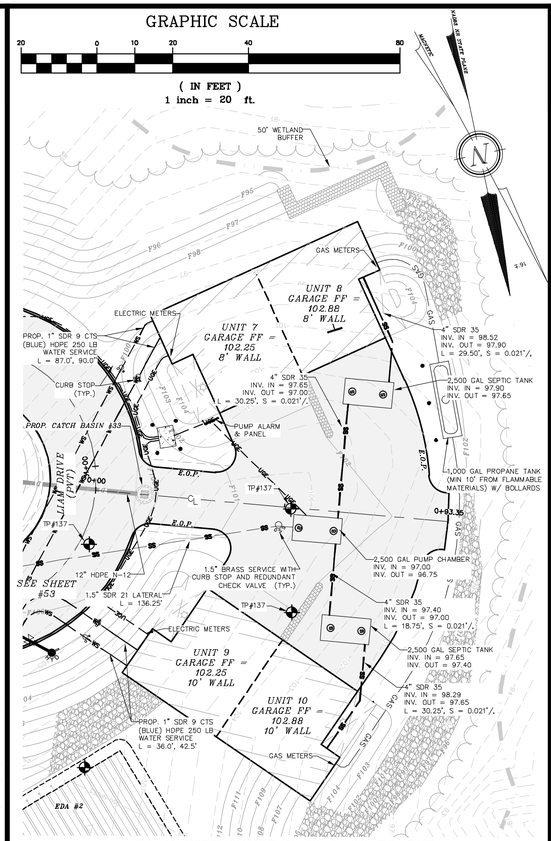
STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14243
LICENSED
PROFESSIONAL ENGINEER



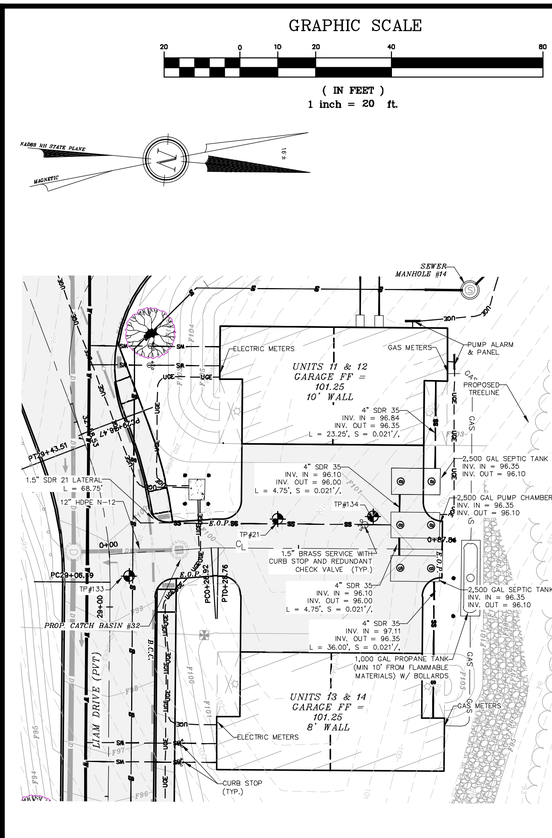
PLAN VIEW UNITS 1–4 0+00 TO END



PLAN VIEW UNITS 5–6 0+00 TO END



PLAN VIEW UNITS 7–10 0+00 TO END



PLAN VIEW UNITS 11–14 0+00 TO END

REVISION	DATE	DESCRIPTION

UTILITY PLAN PAD SITES UNITS #1–14
LAND OF
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY &
EUGENE A. & DONNA L. SGITGNOULI
TOLEND ROAD
DOVER, N.H.
TAX MAP E, LOT 65-1 & 65-4

BERRY & SURVEYING ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

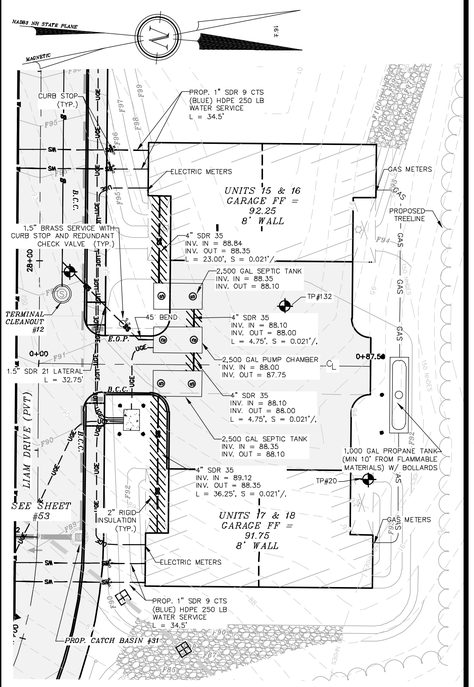
SCALE : 1 IN. EQUALS 20 FT.
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 – 107

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14243
LICENSED
PROFESSIONAL ENGINEER

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.



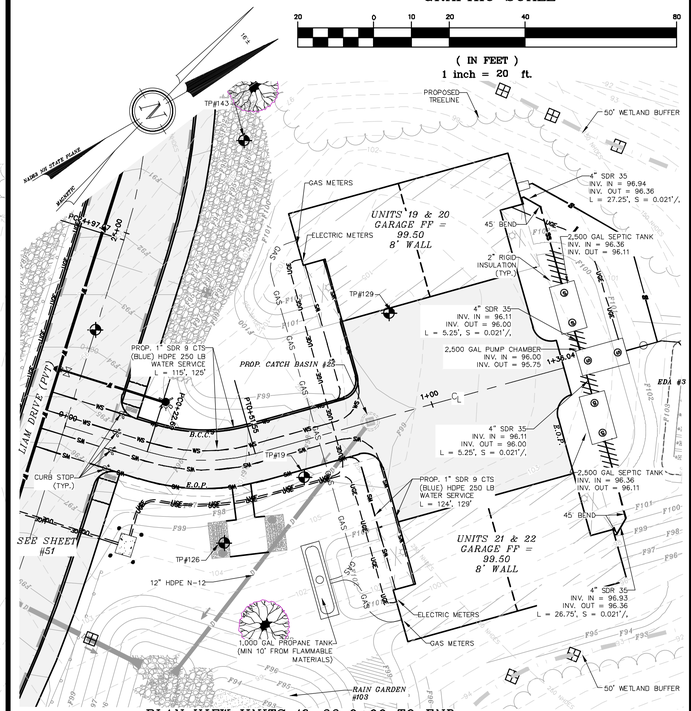
PLAN VIEW UNITS 15–18 0+00 TO END

PLAN VIEW UNITS 15–18 0+00 TO END

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

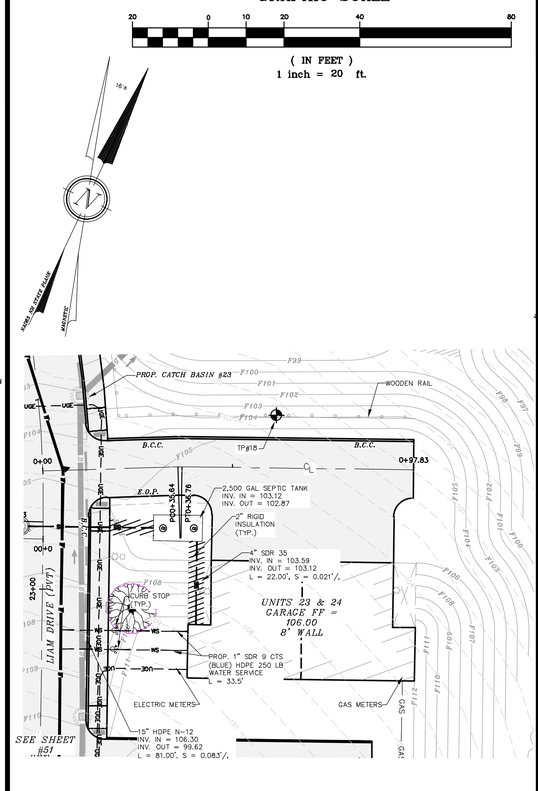


PLAN VIEW UNITS 19–22 0+00 TO END

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

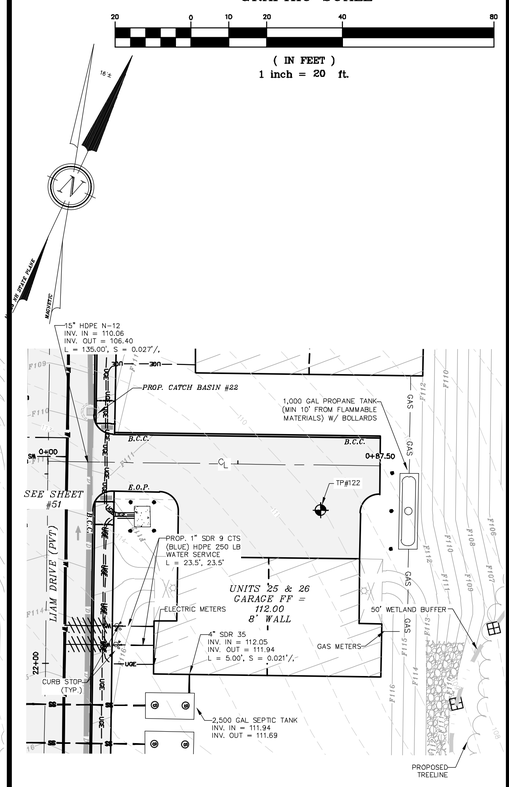


PLAN VIEW UNITS 23–24 0+00 TO END

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.



PLAN VIEW UNITS 25–26 0+00 TO END

REVISION	DATE	DESCRIPTION

UTILITY PLAN PAD SITES UNITS #15–26
LAND OF
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY &
EUGENE A. & DONNA L. SGTIGNOULI
TOLEND ROAD
DOVER, N.H.
TAX MAP E, LOT 65-1 & 65-4

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

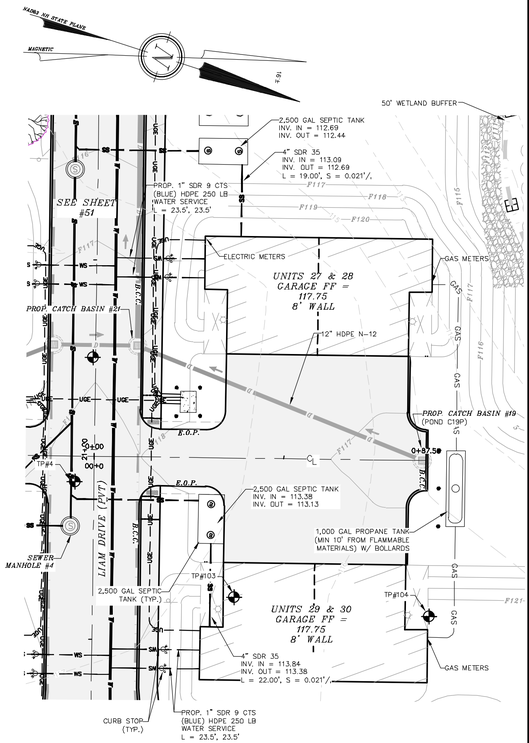
SCALE : 1 IN. EQUALS 20 FT.
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 – 107

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14243
LICENSED
PROFESSIONAL ENGINEER

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

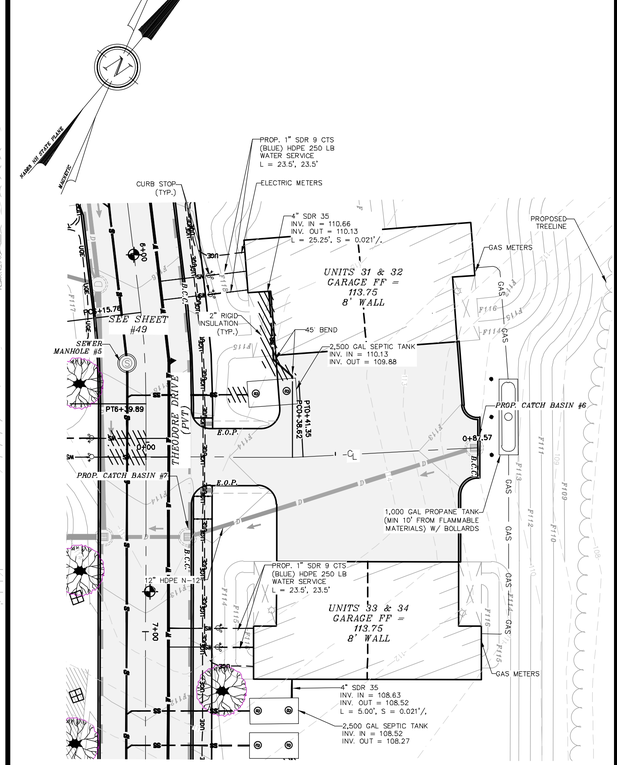


PLAN VIEW UNITS 27–30 0+00 TO END

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

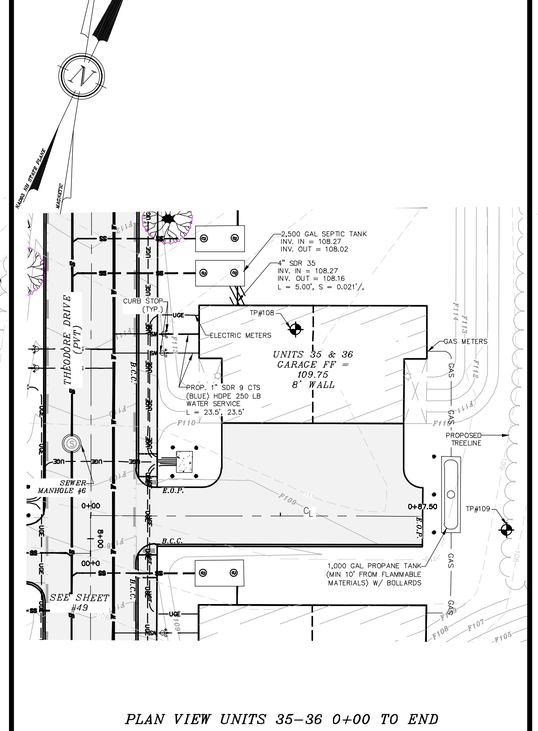


PLAN VIEW UNITS 31–34 0+00 TO END

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

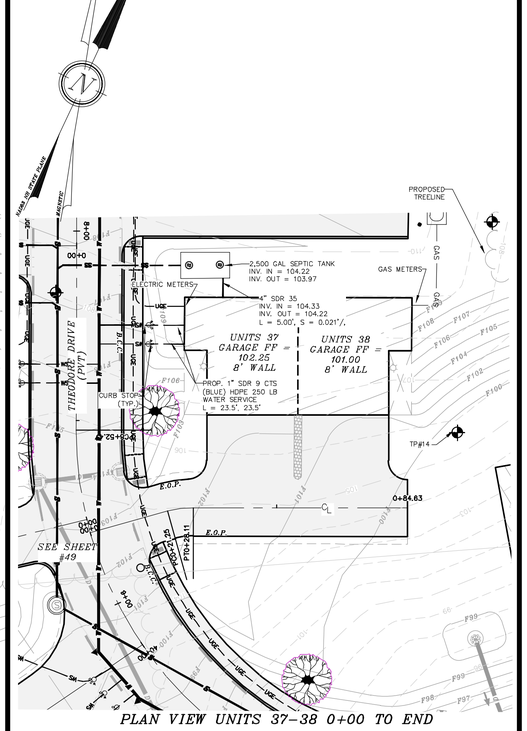


PLAN VIEW UNITS 35–36 0+00 TO END

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.



PLAN VIEW UNITS 37–38 0+00 TO END

REVISION	DATE	DESCRIPTION

UTILITY PLAN PAD SITES UNITS #27–38
LAND OF
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY &
EUGENE A. & DONNA L. SGITGNOULI
TOLEND ROAD
DOVER, N.H.
TAX MAP E, LOT 65–1 & 65–4

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332–2863

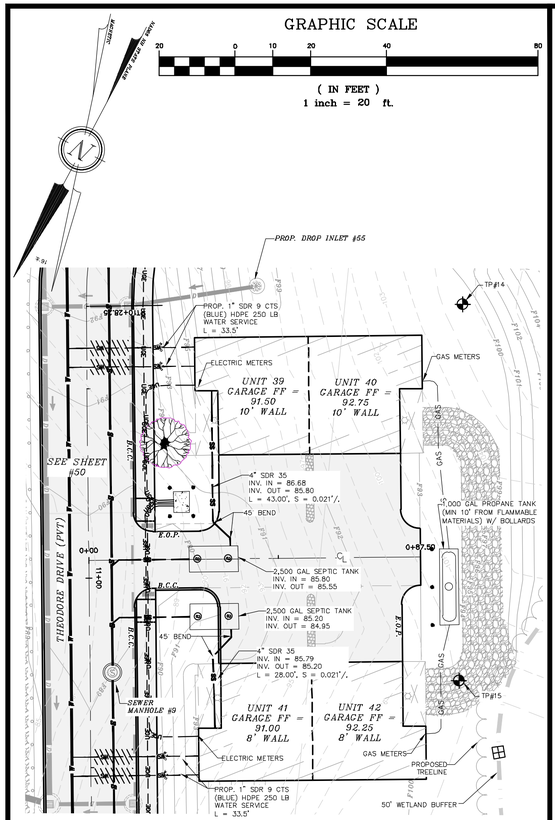
SCALE : 1 IN. EQUALS 20 FT.
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 – 107

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14243
LICENSED
PROFESSIONAL ENGINEER

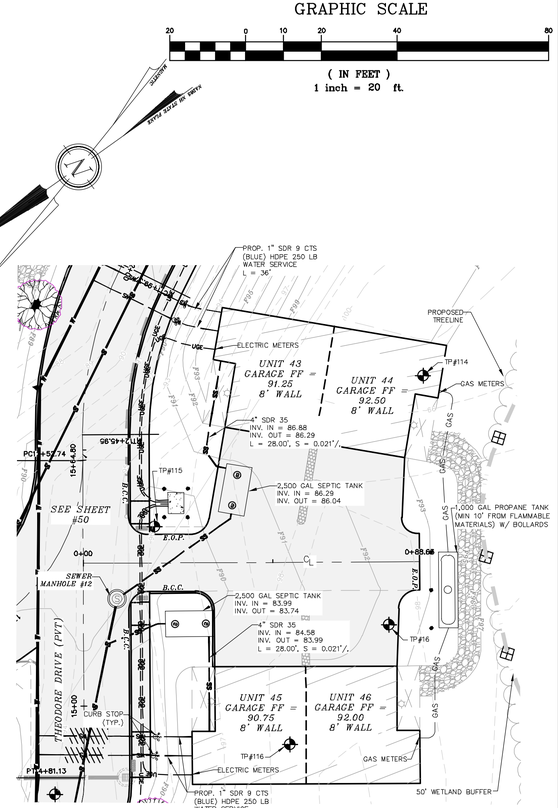
GRAPHIC SCALE

20 0 10 20 40 80

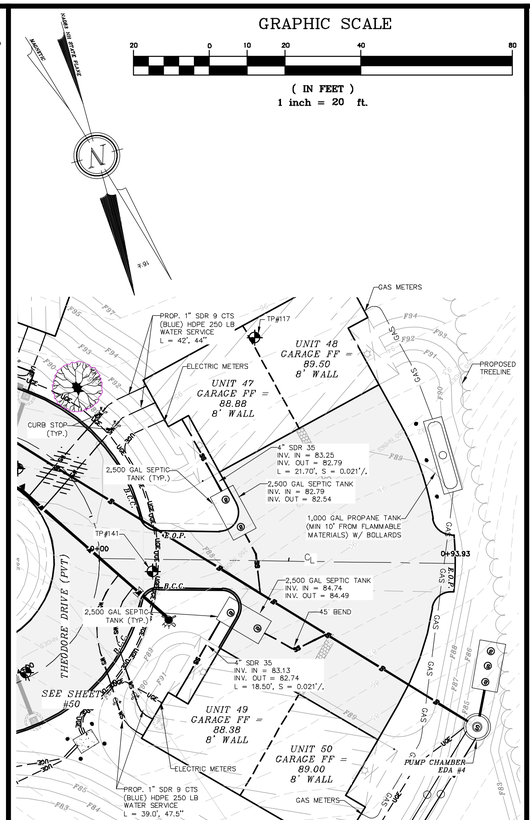
(IN FEET)
1 inch = 20 ft.



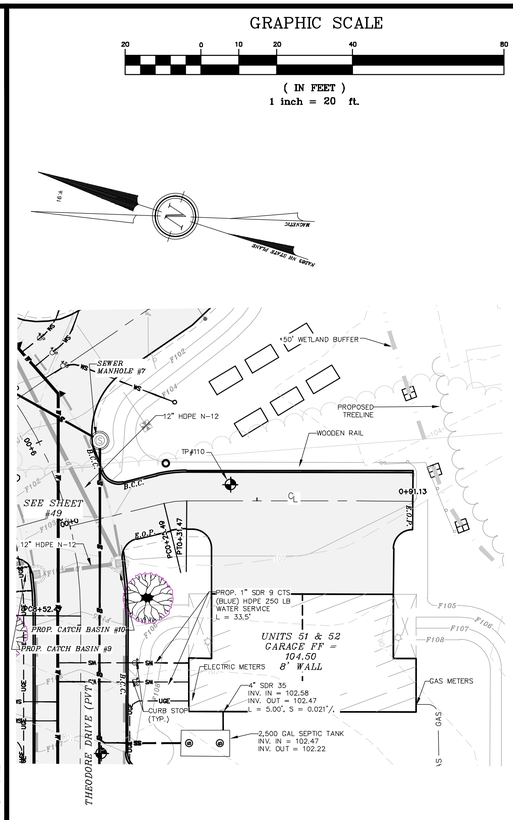
PLAN VIEW UNITS 39–42 0+00 TO END



PLAN VIEW UNITS 43–46 0+00 TO END



PLAN VIEW UNITS 47–50 0+00 TO END



PLAN VIEW UNITS 51–52 0+00 TO END

REVISION	DATE	DESCRIPTION

UTILITY PLAN PAD SITES UNITS #39–52
LAND OF
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY &
EUGENE A. & DONNA L. SGTIGNOULI
TOLEND ROAD
DOVER, N.H.
TAX MAP E, LOT 65-1 & 65-4

BERRY & SURVEYING ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

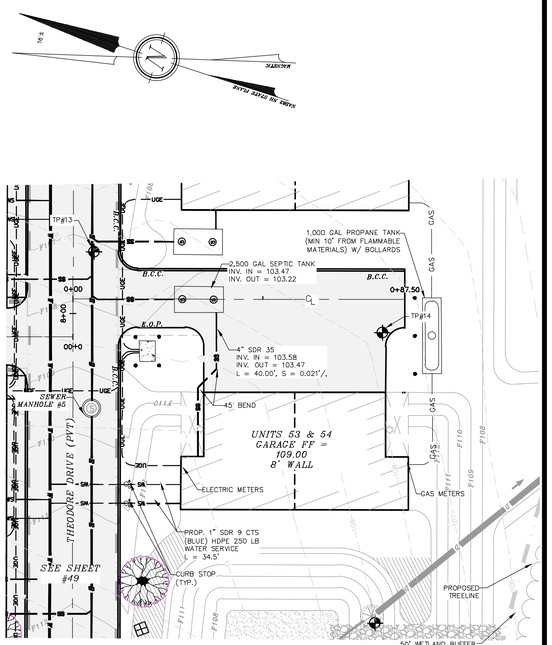
SCALE : 1 IN. EQUALS 20 FT.
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 – 107

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14243
LICENSED PROFESSIONAL ENGINEER

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

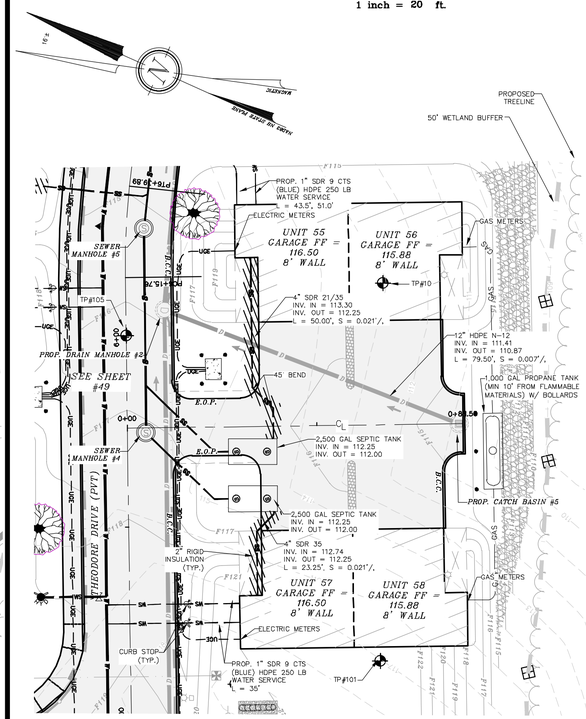


PLAN VIEW UNITS 53–54 0+00 TO END

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

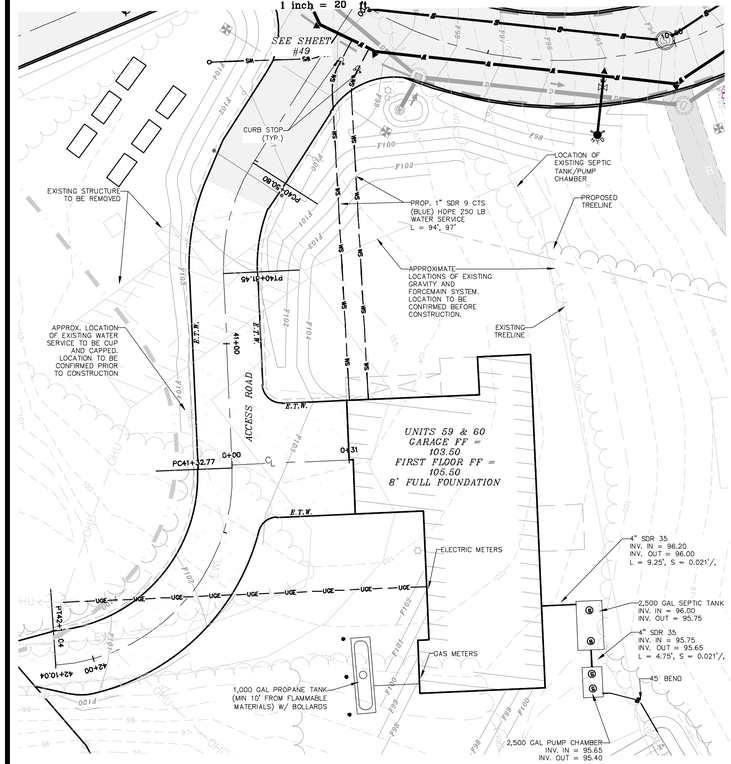


PLAN VIEW UNITS 55–58 0+00 TO END

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.



PLAN VIEW UNITS 59–60 0+00 TO END

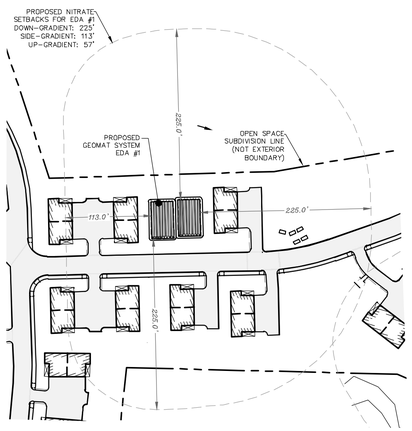
REVISION	DATE	DESCRIPTION

UTILITY PLAN PAD SITES UNITS #53–60
LAND OF
D. LUTSK, D. BARNES, & L. MULCAHY &
EUGENE A. & DONNA L. SGTIGNOULI
TOLEND ROAD
DOVER, N.H.
TAX MAP E, LOT 65-1 & 65-4

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 20 FT.
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 – 107

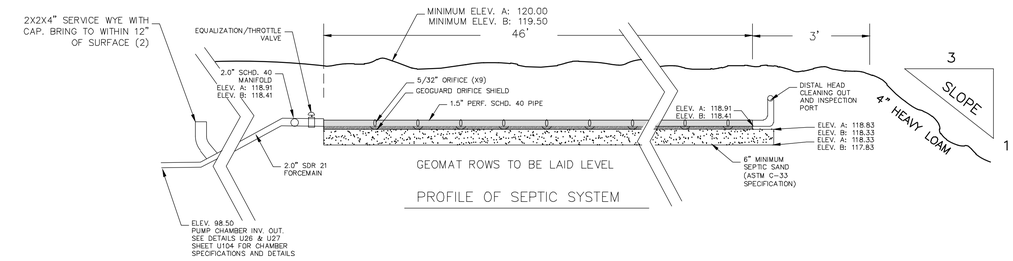
STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14243
LICENSED PROFESSIONAL ENGINEER



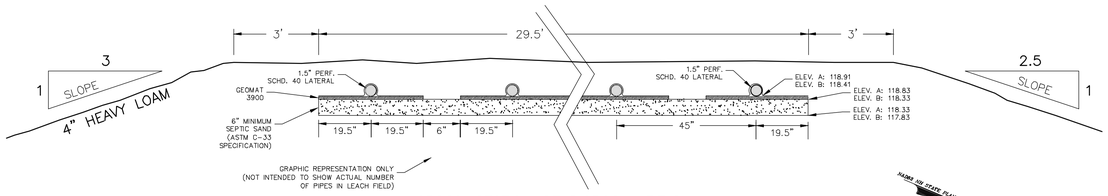
NITRATE SETBACKS FOR EDA #1

VENTING NOTE:

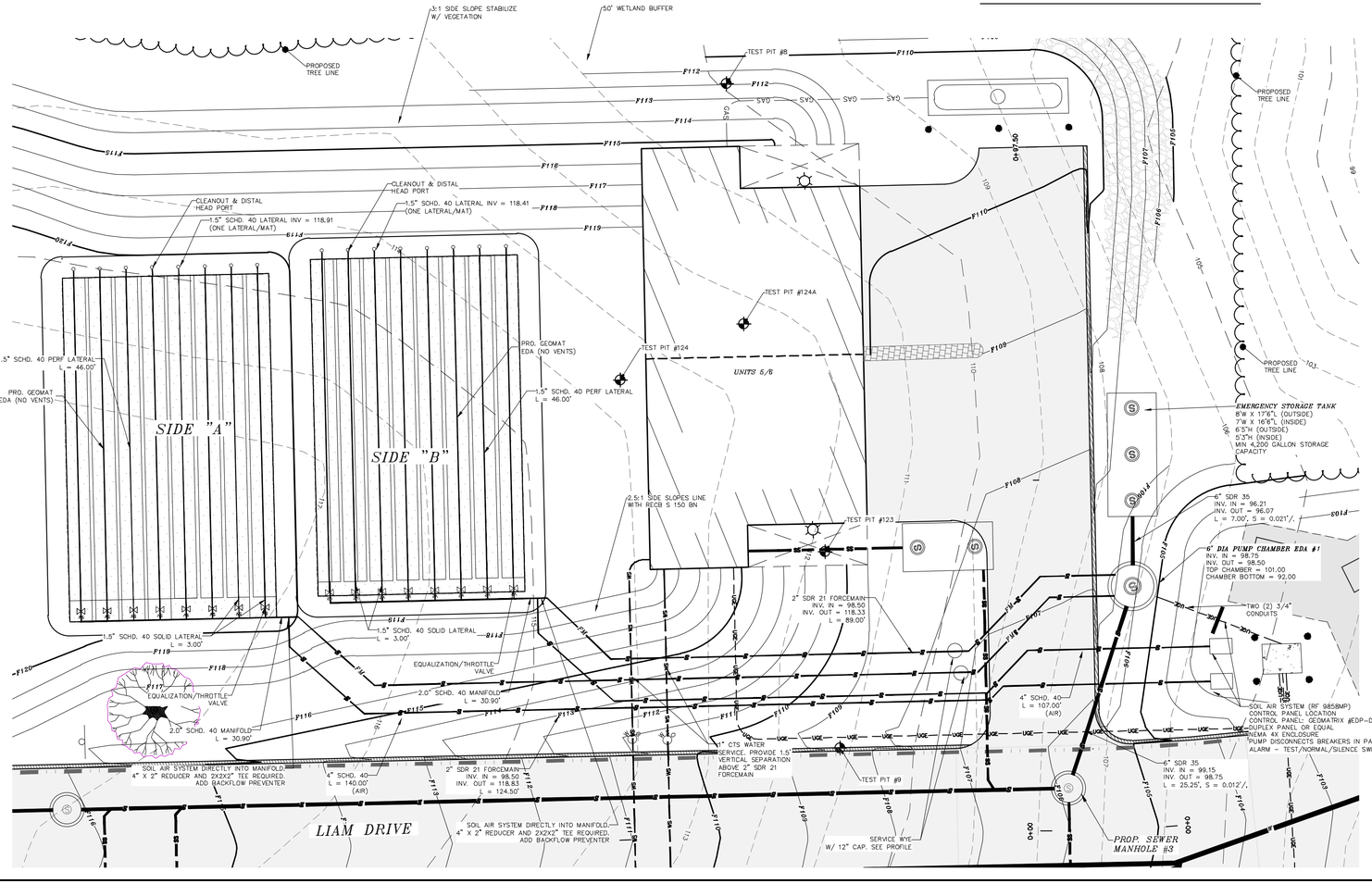
THE MANUFACTURERS SPECIFICATIONS FOR GEOMAT INSTALLATIONS PROHIBIT THE INSTALLATION OF A VENT.



PROFILE OF SEPTIC SYSTEM



CROSS-SECTION OF DISPOSAL FIELD



GRAPHIC SCALE

20 0 5 10 20 40

(IN FEET)
1 inch = 10 ft.

CALCULATIONS :

28 BEDROOMS TOTAL, 4,200 GPD
USE 6' DIA. CIRCULAR CONCRETE PUMP CHAMBER
(FROM SHEA CONCRETE OR EQUIV.)

xxxx MIN./IN MEASURED PERC RATE
10 MIN/IN DESIGN PERC RATE
1.79 GPD/SF HYDRAULIC LOADING
772 – MIN. LENGTH GEOMAT SEPTIC PIPE REQUIRED
736 – PROPOSED LENGTH OF GEOMAT SEPTIC PIPE
2 ZONES
8 ROWS OF GEOMAT SEPTIC PIPE PER ZONE, EACH ROW 46' LONG
276– MAX. GAL/DOSE/ZONE (2 ZONES IN FIELD)
2" RESIDUAL HEAD AT LAST ORIFICE
3/16" ORIFICE SIZE
4' ORIFICE SPACING
STATIC HEAD = 26.08'

PUMP SIZING :

DESIGN FLOW RATE: 59.3 GPM
TOTAL DYNAMIC HEAD: 45.0 FT
PUMP: LIBERTY FL70 EFFLUENT PUMP

ELEVATIONS :

117.50 – HIGH POINT OF LEACH BED A
118.00 – HIGH POINT OF LEACH BED B
115.83 – S.H.W.T. A
116.33 – S.H.W.T. B
115.83 – IMPERVIOUS LAYER A
116.33 – IMPERVIOUS LAYER B
118.91 – BOTTOM OF GEOMAT-SEPTIC PIPES A
119.41 – BOTTOM OF GEOMAT-SEPTIC PIPES B

PLAN INTENT :

THE SEPTIC SYSTEM IS TO BE CONSTRUCTED WITH THE BOTTOM OF THE LEACH BED 1.33' ABOVE THE HIGH POINT OF THE EXISTING LAND.
IN THE EVENT OF LEACH BED FAILURE, IT MAY BE REBUILT IN PLACE WITH NHDES APPROVAL.

CAUTION !!!!!

ANY DEVIATION FROM THIS PLAN IN GRADE OR LOCATION OF THE SEPTIC SYSTEM WHEN CONSTRUCTED WITHOUT THE APPROVAL OF THE DESIGNER AND NH-DES SUBSURFACE SYSTEMS BUREAU MAY RESULT IN THE FAILURE OF THE SYSTEM TO PASS INSPECTION BY NH-DES SUBSURFACE SYSTEMS BUREAU PRIOR TO OPERATION APPROVAL, OR FUNCTION PROPERLY AND SAFELY.

THE WETLAND DELINEATION WAS COMPLETED WINTER, 2020 IN ACCORDANCE WITH THE 1987 CORP OF ENGINEERS WETLAND DELINEATION MANUAL. JURISDICTIONAL WETLANDS WERE IDENTIFIED AND DELINEATED USING THE ROUTINE DETERMINATIONS METHOD AS OUTLINED IN THE MANUAL. THE DELINEATION WAS DONE BY:

JOHN P. HAYES III, CWS #18

NOTES:

1.) OWNER LOT 65-1: D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY
245 N BEND DRIVE
MANCHESTER, NH 03104

OWNER LOT 65-A: EUGENE A. & DONNA L. SGRIGNUOLI
22 SUN HAWK LANE
DOVER, NH 03820

1A.) APPLICANT: STONEARCH DEVELOPMENT CORP.
42J DOVER POINT ROAD
DOVER, NH 03820

2.) DESIGNER: KENNETH A. BERRY, PERMIT #125
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825

3.) LOT OF RECORD: TAX MAP E, LOT 65-1
TAX MAP E, LOT 65-A

4.) LOT AREA LOT 65-1: 1,824,109 Sq. Ft., 41.88 Ac. +/-
LOT AREA LOT 65-A: 110,839 Sq. Ft., 2.54 Ac. +/-

5.) S.C.R.D. BOOK 4918, PAGE 158
S.C.R.D. BOOK 1571, PAGE 86

6.) SUBDIVISION STATUS: N/A

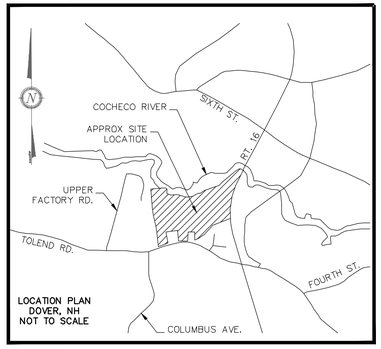
7.) FOUNDATION DRAINS WILL START AT LEAST 15' FROM THE LEACH FIELD, AND AT LEAST 5' FROM THE SEPTIC TANK.

8.) THERE IS NO SURFACE WATER OR VERY POORLY DRAINED SOILS WITHIN 50', OR POORLY DRAINED SOILS WITHIN 75' OF THE PROPOSED SEPTIC SYSTEM.

9.) THIS DESIGN DOES NOT ALLOW FOR THE USE OF A GARBAGE GRINDER. IF A GRINDER IS TO BE INCORPORATED A LARGER SEPTIC TANK WILL BE REQUIRED.

10.) THIS DESIGN DOES NOT ALLOW FOR THE ACCEPTANCE OF WATER TREATMENT BACKWASH. IF A WATER TREATMENT SYSTEM IS TO BE INCORPORATED A LARGER LEACHFIELD WILL BE REQUIRED.

11.) IN THE EVENT A DISCREPANCY IS FOUND ON THIS PLAN, THE DESIGNER SHOULD BE CONTACTED IMMEDIATELY AT 603-332-2863 TO DISCUSS AN APPROPRIATE PLAN OF ACTION.



LOCATION PLAN
DOVER, NH
NOT TO SCALE

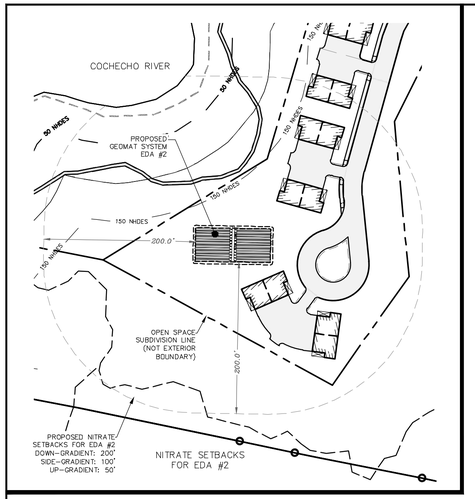
REVISION	DATE	DESCRIPTION

GEOMAT 3900 SEPTIC SYSTEM
LAND OF
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY
AND EUGENE A. & DONNA L. SGRIGNUOLI
TOLEND ROAD
DOVER, NH 03820
TAX MAP E LOTS 65-1 & 65-A
FOR STONEARCH DEVELOPMENT CORP.
SYSTEM #1

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 10243
LICENSED PROFESSIONAL ENGINEER

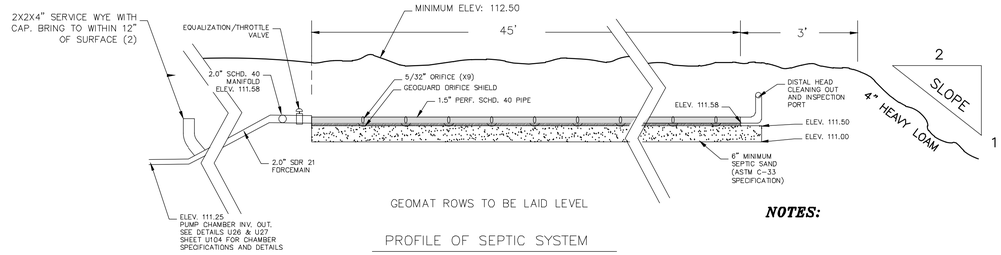
BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT RD.
BARRINGTON, N.H. 332-2863

SCALE : 1 IN. EQUALS 10 FT.
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 – 107

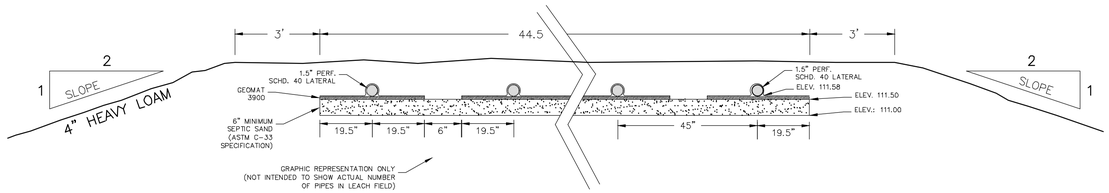


VENTING NOTE:

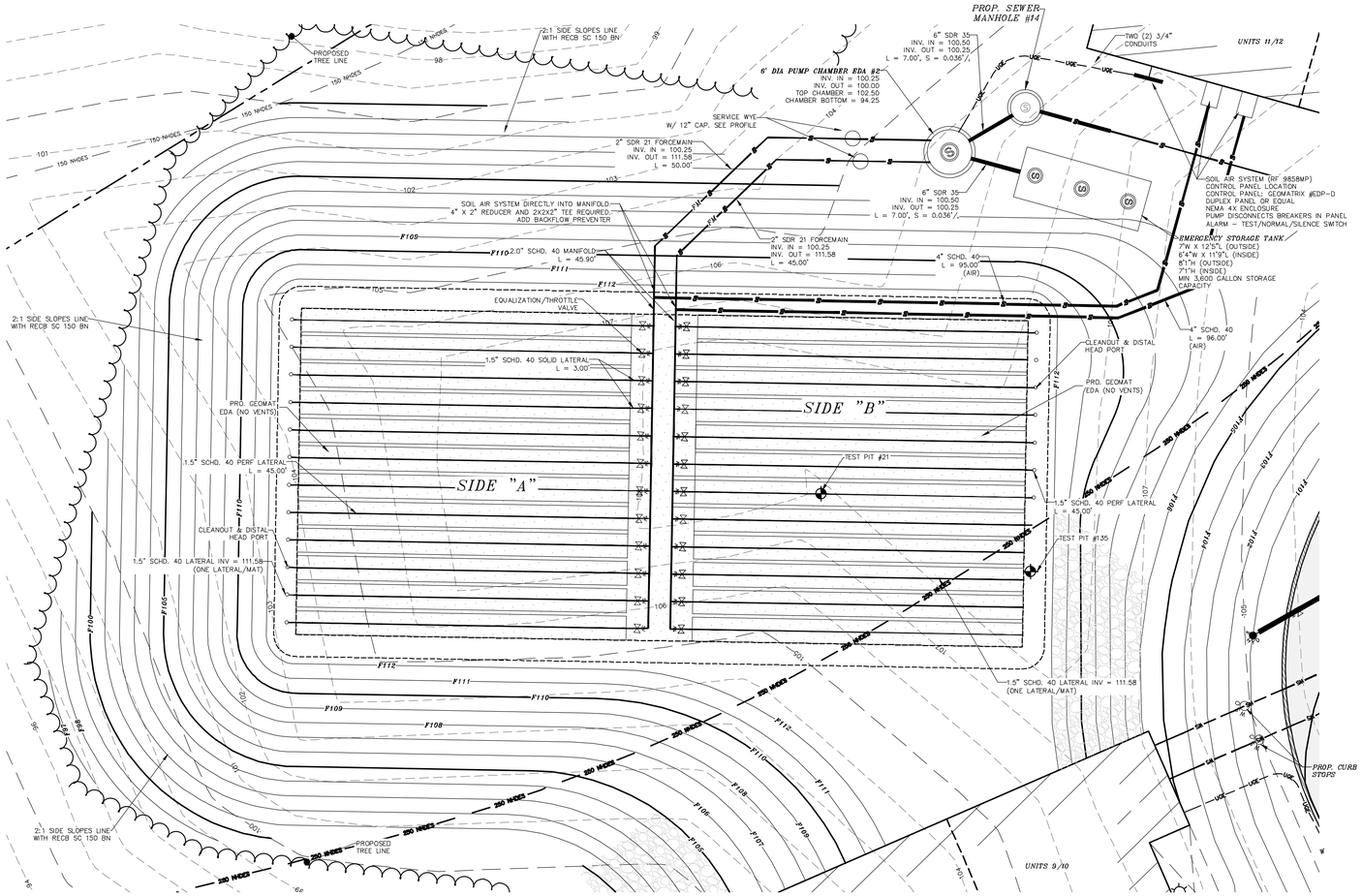
THE MANUFACTURERS SPECIFICATIONS FOR GEOMAT INSTALLATIONS PROHIBIT THE INSTALLATION OF A VENT.

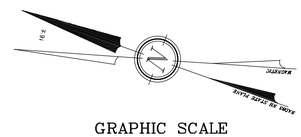


PROFILE OF SEPTIC SYSTEM



CROSS-SECTION OF DISPOSAL FIELD





GRAPHIC SCALE

20 0 5 10 20 40

(IN FEET)
1 inch = 10 ft.

CALCULATIONS :

24 BEDROOMS TOTAL, 3,600 GPD
USE 6' DIA CIRCULAR CONCRETE PUMP CHAMBER
(FROM SHEA CONCRETE OR EQUIV.)

xxxx MIN/IN MEASURED PERC RATE
40 MIN/IN DESIGN PERC RATE
1.02 GPD/SF HYDRAULIC LOADING
1,086 – MIN. LENGTH GEOMAT SEPTIC PIPE REQUIRED
1,104 – PROPOSED LENGTH OF GEOMAT SEPTIC PIPE
2 ZONES
12 ROWS OF GEOMAT SEPTIC PIPE PER ZONE, EACH ROW 46' LONG
414– MAX. GAL/DOSE/ZONE (2 ZONES IN FIELD)
2' RESIDUAL HEAD AT LAST ORIFICE
5/32" ORIFICE SIZE
4' ORIFICE SPACING
STATIC HEAD = 17.25'

PUMP SIZING :

DESIGN FLOW RATE: 59.5 GPM
TOTAL DYNAMIC HEAD: 31.1 GPM
PUMP: LIBERTY FLH60 EFFLUENT PUMP

ELEVATIONS :

108.75 – HIGH POINT OF LEACH BED
107.50 – S.H.W.T.
107.50 – IMPERVIOUS LAYER
111.58 – BOTTOM OF GEOMAT–SEPTIC PIPES

PLAN INTENT :

THE SEPTIC SYSTEM IS TO BE CONSTRUCTED WITH THE BOTTOM OF THE LEACH BED 2.75' ABOVE THE HIGH POINT OF THE EXISTING LAND.
IN THE EVENT OF LEACH BED FAILURE, IT MAY BE REBUILT IN PLACE WITH NHDES APPROVAL.

CAUTION !!!!!

ANY DEVIATION FROM THIS PLAN IN GRADE OR LOCATION OF THE SEPTIC SYSTEM WHEN CONSTRUCTED WITHOUT THE APPROVAL OF THE DESIGNER AND NH-DES SUBSURFACE SYSTEMS BUREAU MAY RESULT IN THE FAILURE OF THE SYSTEM TO PASS INSPECTION BY NH-DES SUBSURFACE SYSTEMS BUREAU PRIOR TO OPERATION APPROVAL, OR FUNCTION PROPERLY AND SAFELY.

THE WETLAND DELINEATION WAS COMPLETED WINTER, 2020 IN ACCORDANCE WITH THE 1987 CORP OF ENGINEERS WETLAND DELINEATION MANUAL. JURISDICTIONAL WETLANDS WERE IDENTIFIED AND DELINEATED USING THE ROUTINE DETERMINATIONS METHOD AS OUTLINED IN THE MANUAL. THE DELINEATION WAS DONE BY:

JOHN P. HAYES III, CWS #18

NOTES:

1.) OWNER LOT 65–1: D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY
245 N BEND DRIVE
MANCHESTER, NH 03104

OWNER LOT 65–A: EUGENE A. & DONNA L. SGRIGNUOLI
22 SUN HAWK LANE
DOVER, NH 03820

1A.) APPLICANT: STONEARCH DEVELOPMENT CORP.
42J DOVER POINT ROAD
DOVER, NH 03820

2.) DESIGNER: KENNETH A. BERRY, PERMIT #125
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825

3.) LOT OF RECORD: TAX MAP E, LOT 65–1
TAX MAP E, LOT 65–A

4.) LOT AREA LOT 65–1: 1,824,109 Sq. Ft., 41.88 Ac. +/–
LOT AREA LOT 65–A: 110,839 Sq. Ft., 2.54 Ac. +/–

5.) S.C.R.D. BOOK 4918, PAGE 158
S.C.R.D. BOOK 1571, PAGE 86

6.) SUBDIVISION STATUS: N/A

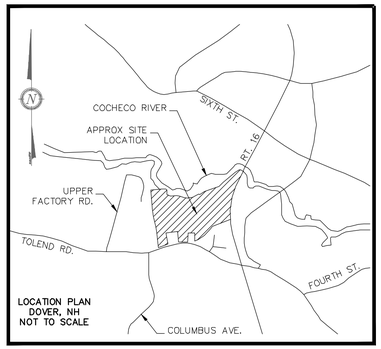
7.) FOUNDATION DRAINS WILL START AT LEAST 15' FROM THE LEACH FIELD, AND AT LEAST 5' FROM THE SEPTIC TANK.

8.) THERE IS NO SURFACE WATER OR VERY POORLY DRAINED SOILS WITHIN 50', OR POORLY DRAINED SOILS WITHIN 75' OF THE PROPOSED SEPTIC SYSTEM.

9.) THIS DESIGN DOES NOT ALLOW FOR THE USE OF A GARBAGE GRINDER. IF A GRINDER IS TO BE INCORPORATED A LARGER SEPTIC TANK WILL BE REQUIRED.

10.) THIS DESIGN DOES NOT ALLOW FOR THE ACCEPTANCE OF WATER TREATMENT BACKWASH. IF A WATER TREATMENT SYSTEM IS TO BE INCORPORATED A LARGER LEACHFIELD WILL BE REQUIRED.

11.) IN THE EVENT A DISCREPANCY IS FOUND ON THIS PLAN, THE DESIGNER SHOULD BE CONTACTED IMMEDIATELY AT 603–332–2863 TO DISCUSS AN APPROPRIATE PLAN OF ACTION.



LOCATION PLAN
DOVER, NH
NOT TO SCALE

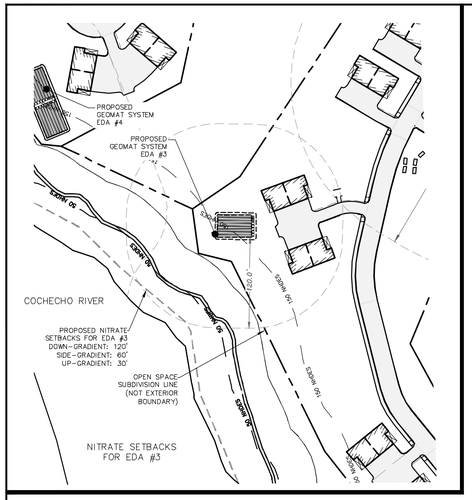
REVISION	DATE	DESCRIPTION

GEOMAT 3900 SEPTIC SYSTEM
LAND OF
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY
AND EUGENE A. & DONNA L. SGRIGNUOLI
TOLEND ROAD
DOVER, NH 03820
TAX MAP E LOTS 65–1 & 65–A
FOR STONEARCH DEVELOPMENT CORP.
SYSTEM #2

STATE OF NEW HAMPSHIRE – KENNETH A. BERRY No. 1434 LICENSED PROFESSIONAL ENGINEER

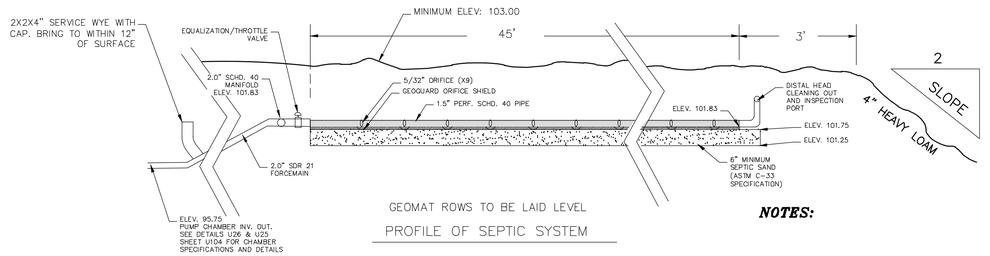
BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT RD.
BARRINGTON, N.H. 332–2863

SCALE : 1 IN. EQUALS 10 FT.
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 – 107



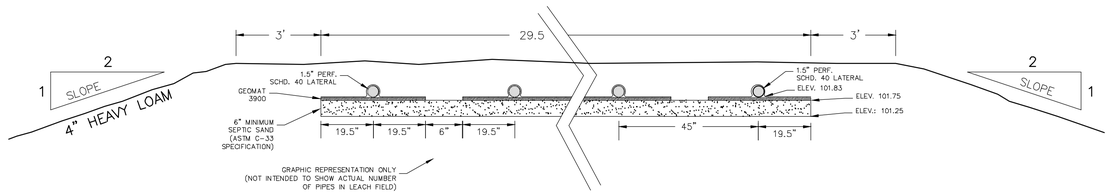
VENTING NOTE:

THE MANUFACTURERS SPECIFICATIONS FOR GEOMAT INSTALLATIONS PROHIBIT THE INSTALLATION OF A VENT.

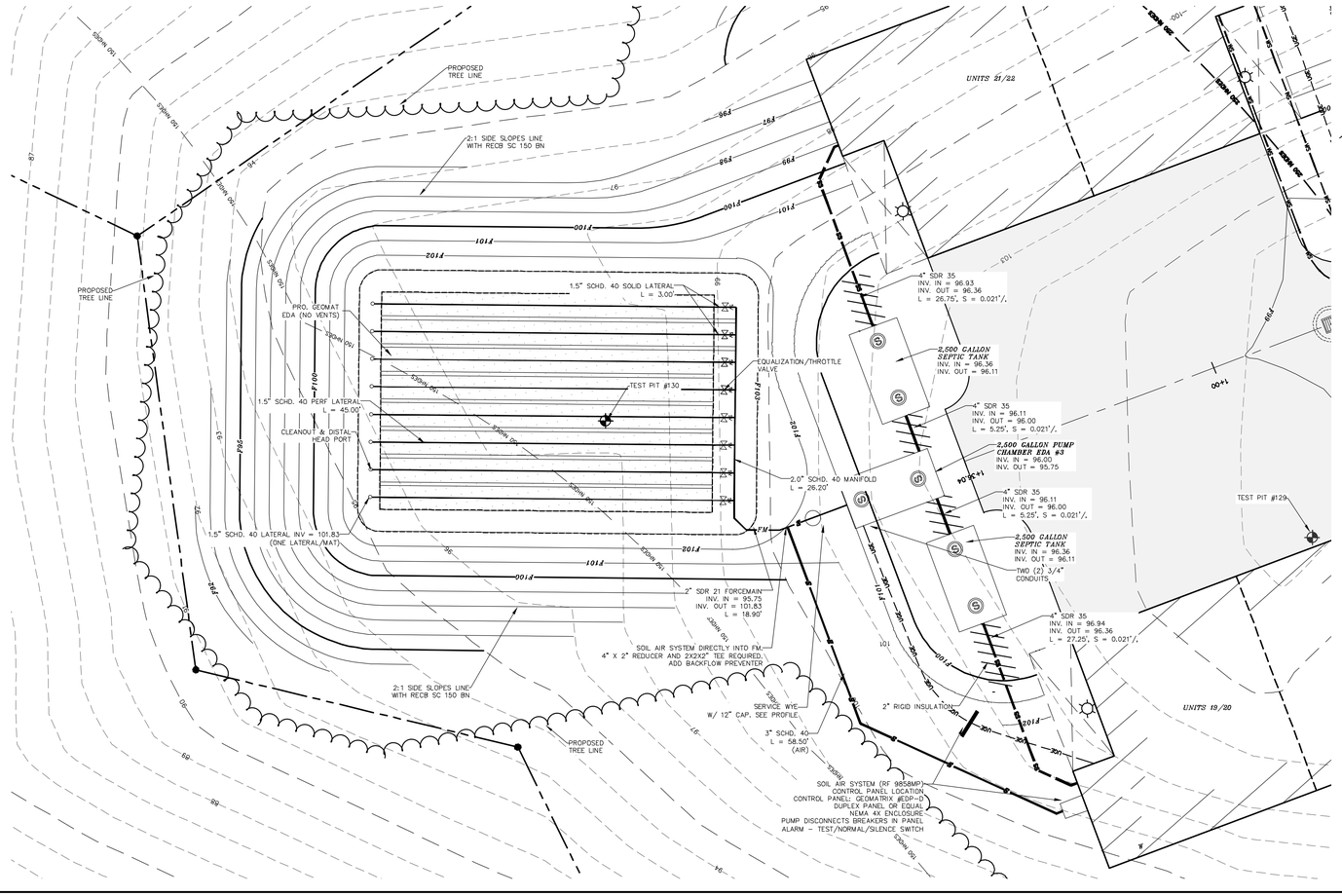


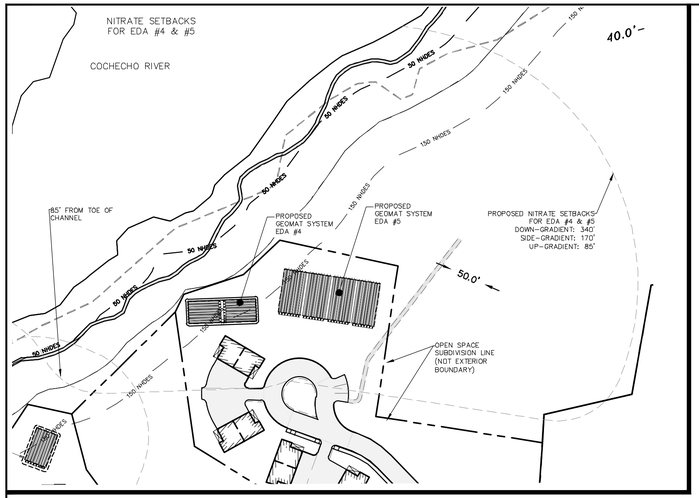
GEOMAT ROWS TO BE LAID LEVEL

PROFILE OF SEPTIC SYSTEM



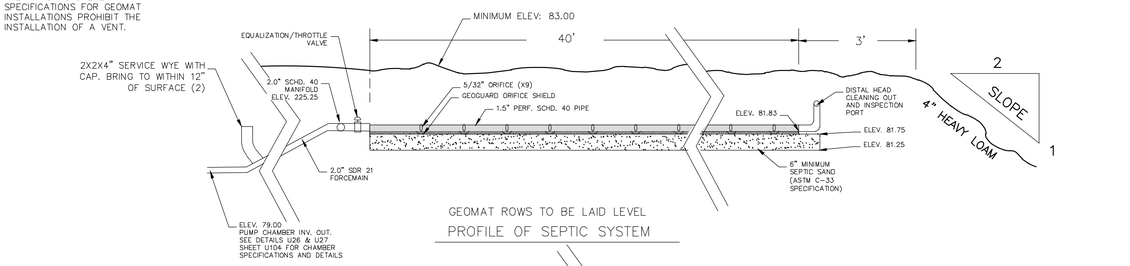
CROSS-SECTION OF DISPOSAL FIELD


PROPOSED TREE LINE
2:1 SIDE SLOPES LINE WITH RECB SC 150 BN
PROPOSED TREE LINE
PRO. GEOMAT EDA (NO VENTS)
1.5" SCHD. 40 SOLID LATERAL L = 3.00'
1.5" SCHD. 40 PERF LATERAL L = 45.00'
CLEANOUT & DISTAL HEAD PORT
1.5" SCHD. 40 LATERAL INV = 101.83 (ONE LATERAL/MAT)
EQUALIZATION/THROTTLE VALVE
TEST PIT #130
2.0" SCHD. 40 MANIFOLD L = 26.20'
2" SDR 21 FORCEMAIN INV. IN = 95.75 INV. OUT = 101.83 L = 18.90'
SOIL AIR SYSTEM DIRECTLY INTO FM, 4" X 2" REDUCER AND 2X2X2" TEE REQUIRED, ADD BACKFLOW PREVENTER
2:1 SIDE SLOPES LINE WITH RECB SC 150 BN
PROPOSED TREE LINE
SERVICE WYE W/ 12" CAP, SEE PROFILE
3" SCHD. 40 L = 58.50' (AIR)
SOIL AIR SYSTEM (RF 9858MP) CONTROL PANEL LOCATION CONTROL PANEL: GEOMATRIX #EDP-D DUPLEX PANEL OR EQUAL NEMA 4X ENCLOSURE PUMP DISCONNECTS, BREAKERS IN PANEL ALARM - TEST/NORMAL/SILENCE SWITCH
2" RIGID INSULATION
4" SDR 35 INV. IN = 96.93 INV. OUT = 96.36 L = 26.75', S = 0.021'/.
2,500 GALLON SEPTIC TANK INV. IN = 96.36 INV. OUT = 96.11
4" SDR 35 INV. IN = 96.11 INV. OUT = 96.00 L = 5.25', S = 0.021'/.
2,500 GALLON PUMP CHAMBER #3 INV. IN = 96.00 INV. OUT = 95.75
4" SDR 35 INV. IN = 96.11 INV. OUT = 96.00 L = 5.25', S = 0.021'/.
2,500 GALLON SEPTIC TANK INV. IN = 96.36 INV. OUT = 96.11
TWO (2) 3/4" CONDUITS
4" SDR 35 INV. IN = 96.94 INV. OUT = 96.36 L = 27.25', S = 0.021'/.
TEST PIT #129
UNITS 21/22
UNITS 19/20
S50°W 150'
S50°W 100'
S50°W 150'
S50°W 150'
S50°W 150'
S50°W 150'
S50°W 150



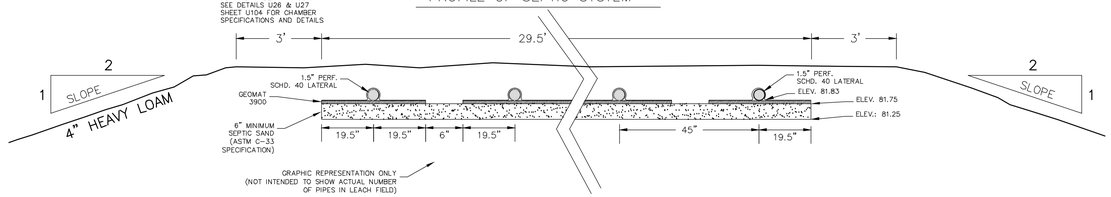
VENTING NOTE:

THE MANUFACTURERS SPECIFICATIONS FOR GEOMAT INSTALLATIONS PROHIBIT THE INSTALLATION OF A VENT.

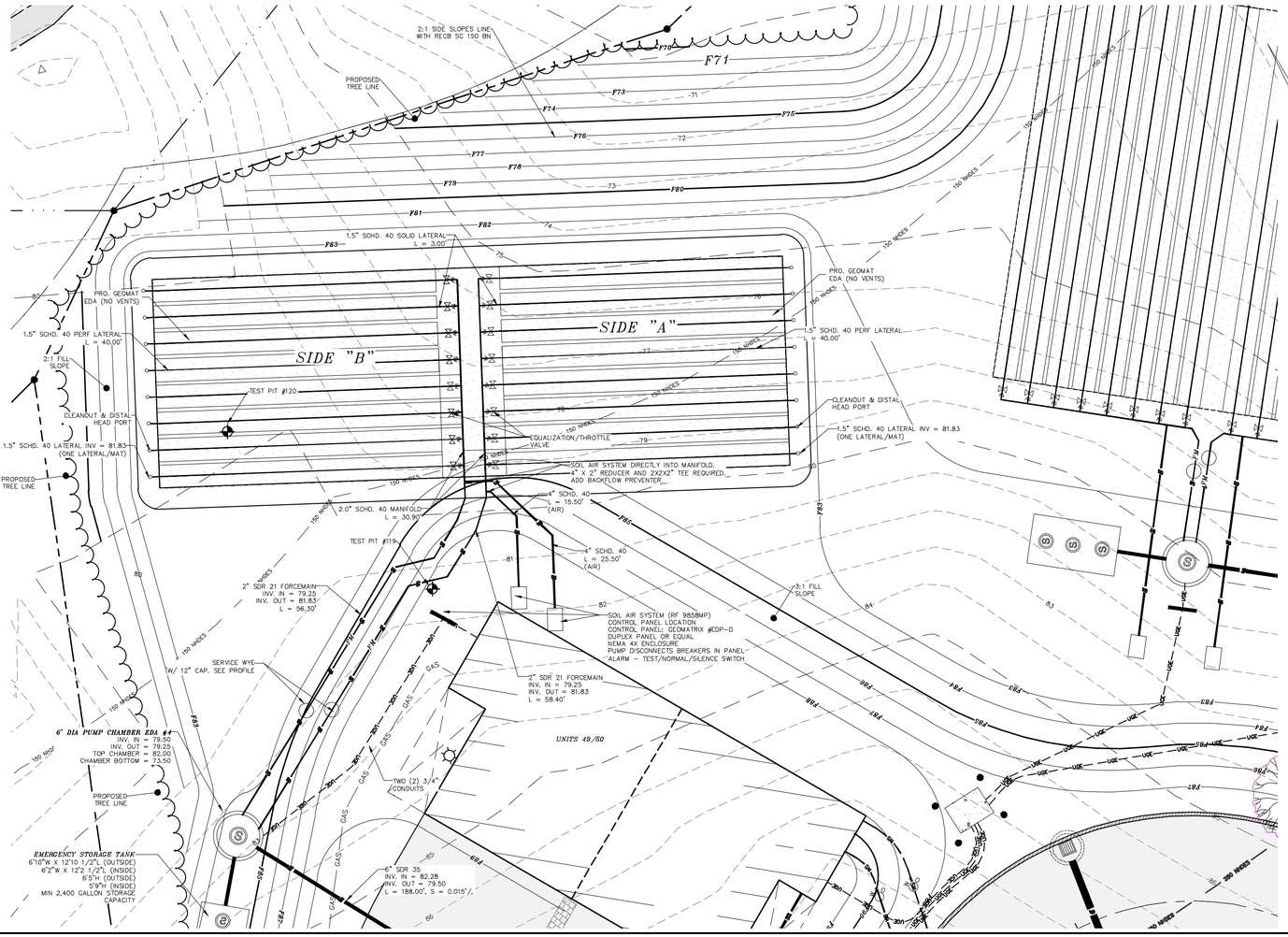


GEOMAT ROWS TO BE LAID LEVEL

PROFILE OF SEPTIC SYSTEM



CROSS-SECTION OF DISPOSAL FIELD



GRAPHIC SCALE

20 0 5 10 20 40

(IN FEET)
1 inch = 10 ft.

CALCULATIONS :

16 BEDROOMS TOTAL, 2,400 GPD
USE ONE XXXX GAL CIRCULAR CONCRETE PUMP CHAMBER
ONE 2,500 GAL. RECTANGULAR CONCRETE PUMP CHAMBER
(FROM SHEA CONCRETE OR EQUIV.)

xxxx MIN/IN MEASURED PERC RATE
40 MIN/IN DESIGN PERC RATE
1.02 GPD/SF HYDRAULIC LOADING
724 – MIN. LENGTH GEOMAT SEPTIC PIPE REQUIRED
736 – PROPOSED LENGTH OF GEOMAT SEPTIC PIPE
2 ZONES
8 ROWS OF GEOMAT SEPTIC PIPE PER ZONE, EACH ROW 40' LONG
276– MAX. GAL/DOSE/ZONE (2 ZONES IN FIELD)
2' RESIDUAL HEAD AT LAST ORIFICE
3/16" ORIFICE SIZE
4' ORIFICE SPACING
STATIC HEAD = 8.25'

PUMP SIZING :

DESIGN FLOW RATE: 54.3 GPM
TOTAL DYNAMIC HEAD: 22.8 FT
PUMP: LIBERTY 290 SERIES EFFLUENT PUMP

ELEVATIONS :

80.00 – HIGH POINT OF LEACH BED
78.75 – S.H.W.T.
78.75 – IMPERVIOUS LAYER
81.83 – BOTTOM OF GEOMAT–SEPTIC PIPES

PLAN INTENT :

THE SEPTIC SYSTEM IS TO BE CONSTRUCTED WITH THE BOTTOM OF THE LEACH BED 2.75' ABOVE THE HIGH POINT OF THE EXISTING LAND.
IN THE EVENT OF LEACH BED FAILURE, IT MAY BE REBUILT IN PLACE WITH NHDES APPROVAL.

CAUTION !!!!!

ANY DEVIATION FROM THIS PLAN IN GRADE OR LOCATION OF THE SEPTIC SYSTEM WHEN CONSTRUCTED WITHOUT THE APPROVAL OF THE DESIGNER AND NH-DES SUBSURFACE SYSTEMS BUREAU MAY RESULT IN THE FAILURE OF THE SYSTEM TO PASS INSPECTION BY NH-DES SUBSURFACE SYSTEMS BUREAU PRIOR TO OPERATION APPROVAL, OR FUNCTION PROPERLY AND SAFELY.

THE WETLAND DELINEATION WAS COMPLETED WINTER, 2020 IN ACCORDANCE WITH THE 1987 CORP OF ENGINEERS WETLAND DELINEATION MANUAL. JURISDICTIONAL WETLANDS WERE IDENTIFIED AND DELINEATED USING THE ROUTINE DETERMINATIONS METHOD AS OUTLINED IN THE MANUAL. THE DELINEATION WAS DONE BY:

JOHN P. HAYES III, CWS #18

NOTES:

1.) OWNER LOT 65–1: D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY
245 N BEND DRIVE
MANCHESTER, NH 03104

OWNER LOT 65–A: EUGENE A. & DONNA L. SGRIGNUOLI
22 SUN HAWK LANE
DOVER, NH 03820

1A.) APPLICANT: STONEARCH DEVELOPMENT CORP.
42J DOVER POINT ROAD
DOVER, NH 03820

2.) DESIGNER: KENNETH A. BERRY, PERMIT #125
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825

3.) LOT OF RECORD: TAX MAP E, LOT 65–1
TAX MAP E, LOT 65–A

4.) LOT AREA LOT 65–1: 1,824,109 Sq. Ft., 41.88 Ac. +/–
LOT AREA LOT 65–A: 110,839 Sq. Ft., 2.54 Ac. +/–

5.) S.C.R.D. BOOK 4918, PAGE 158
S.C.R.D. BOOK 1571, PAGE 86

6.) SUBDIVISION STATUS: N/A

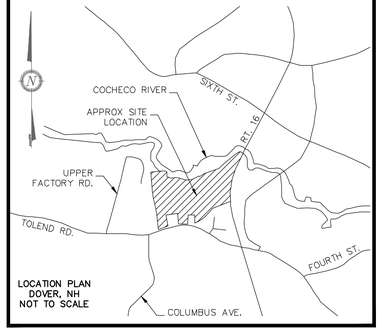
7.) FOUNDATION DRAINS WILL START AT LEAST 15' FROM THE LEACH FIELD, AND AT LEAST 5' FROM THE SEPTIC TANK.

8.) THERE IS NO SURFACE WATER OR VERY POORLY DRAINED SOILS WITHIN 50', OR POORLY DRAINED SOILS WITHIN 75' OF THE PROPOSED SEPTIC SYSTEM.

9.) THIS DESIGN DOES NOT ALLOW FOR THE USE OF A GARBAGE GRINDER. IF A GRINDER IS TO BE INCORPORATED A LARGER SEPTIC TANK WILL BE REQUIRED.

10.) THIS DESIGN DOES NOT ALLOW FOR THE ACCEPTANCE OF WATER TREATMENT BACKWASH. IF A WATER TREATMENT SYSTEM IS TO BE INCORPORATED A LARGER LEACHFIELD WILL BE REQUIRED.

11.) IN THE EVENT A DISCREPANCY IS FOUND ON THIS PLAN, THE DESIGNER SHOULD BE CONTACTED IMMEDIATELY AT 603–332–2863 TO DISCUSS AN APPROPRIATE PLAN OF ACTION.



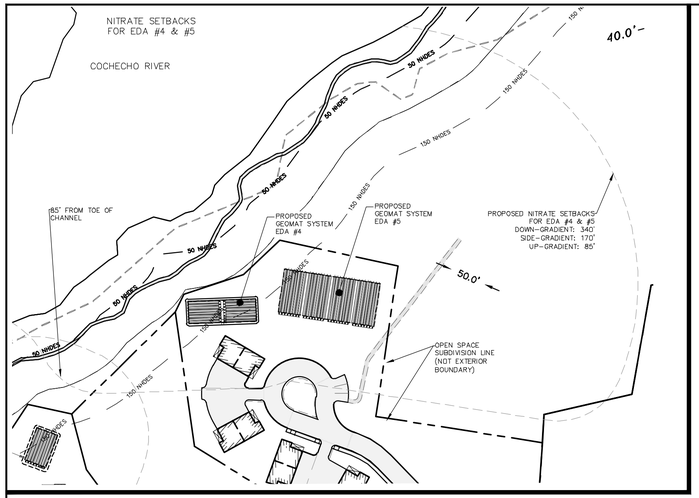
REVISION	DATE	DESCRIPTION

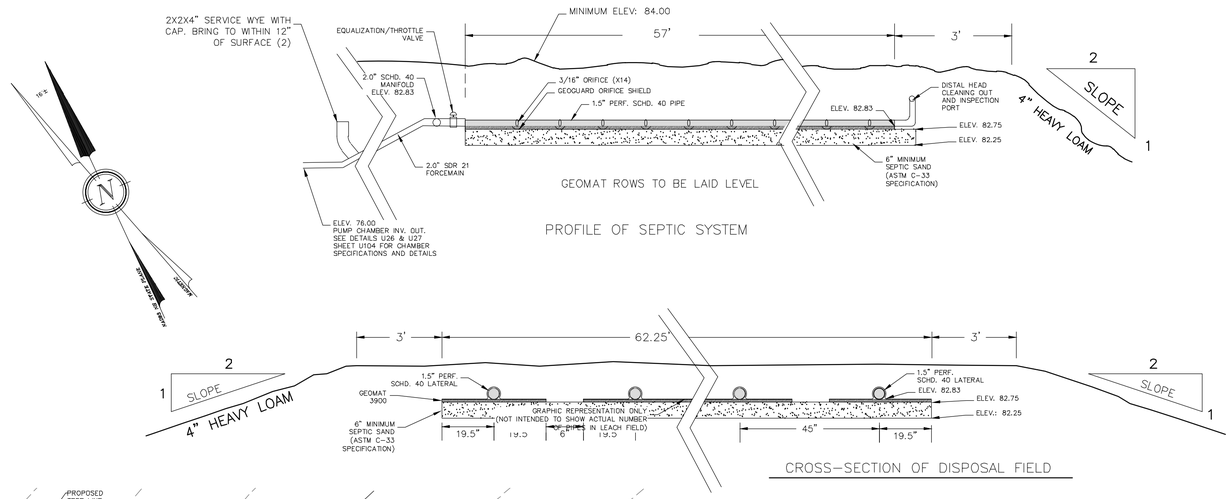
GEOMAT 3900 SEPTIC SYSTEM
LAND OF
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY
AND EUGENE A. & DONNA L. SGRIGNUOLI
TOLEND ROAD
DOVER, NH 03820
TAX MAP E LOTS 65–1 & 65–A
FOR STONEARCH DEVELOPMENT CORP.
SYSTEM #4

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14241
LICENSED PROFESSIONAL ENGINEER

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT RD.
BARRINGTON, N.H. 332–2863

SCALE : 1 IN. EQUALS 10 FT.
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 – 107





NOTES:

1.) OWNER LOT 65-1: D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY
245 N BEND DRIVE
MANCHESTER, NH 03104

OWNER LOT 65-A: EUGENE A. & DONNA L. SGRIGNUOLI
22 SUN HAWK LANE
DOVER, NH 03820

1A.) APPLICANT: STONEARCH DEVELOPMENT CORP.
42J DOVER POINT ROAD
DOVER, NH 03820

2.) DESIGNER: KENNETH A. BERRY, PERMIT #1125
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825

3.) LOT OF RECORD: TAX MAP E, LOT 65-1
TAX MAP E, LOT 65-A

4.) LOT AREA LOT 65-1: 1,824,109 Sq. Ft., 41.88 Ac. +/-
LOT AREA LOT 65-A: 110,839 Sq. Ft., 2.54 Ac. +/-

5.) S.C.R.D. BOOK 4918, PAGE 158
S.C.R.D. BOOK 1571, PAGE 86

6.) SUBDIVISION STATUS: N/A

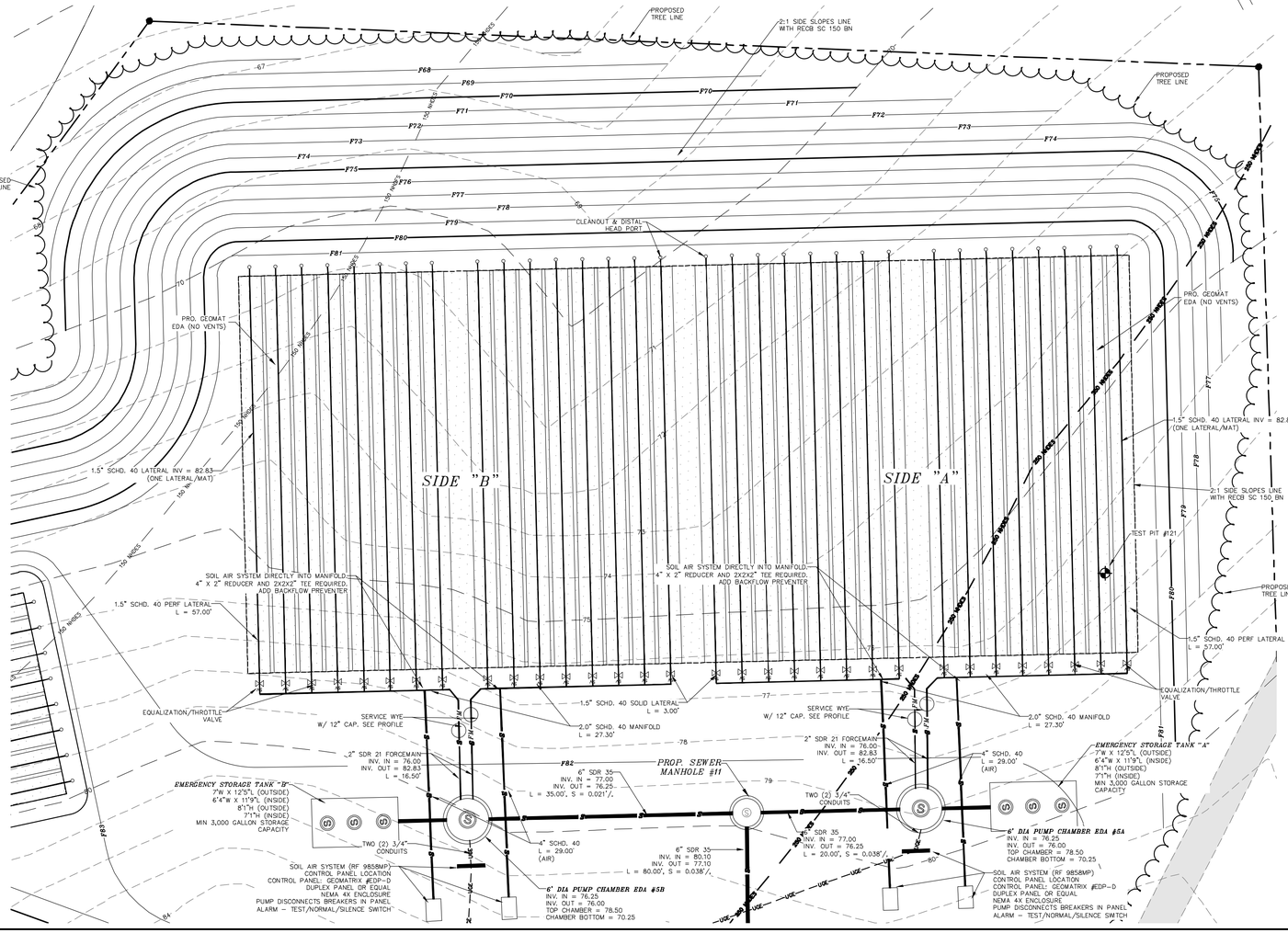
7.) FOUNDATION DRAINS WILL START AT LEAST 15' FROM THE LEACH FIELD, AND AT LEAST 5' FROM THE SEPTIC TANK.

8.) THERE IS NO SURFACE WATER OR VERY POORLY DRAINED SOILS WITHIN 50', OR POORLY DRAINED SOILS WITHIN 75' OF THE PROPOSED SEPTIC SYSTEM.

9.) THIS DESIGN DOES NOT ALLOW FOR THE USE OF A GARBAGE GRINDER. IF A GRINDER IS TO BE INCORPORATED A LARGER SEPTIC TANK WILL BE REQUIRED.

10.) THIS DESIGN DOES NOT ALLOW FOR THE ACCEPTANCE OF WATER TREATMENT BACKWASH. IF A WATER TREATMENT SYSTEM IS TO BE INCORPORATED A LARGER LEACHFIELD WILL BE REQUIRED.

11.) IN THE EVENT A DISCREPANCY IS FOUND ON THIS PLAN, THE DESIGNER SHOULD BE CONTACTED IMMEDIATELY AT 603-332-2863 TO DISCUSS AN APPROPRIATE PLAN OF ACTION.



GRAPHIC SCALE

20 0 5 10 20 40

(IN FEET)
1 inch = 10 ft.

CALCULATIONS :

40 BEDROOMS TOTAL, 6,000 GPD
USE TWO XXXX GAL. CIRCULAR CONCRETE PUMP CHAMBER
TWO 3,000 GAL. RECTANGULAR CONCRETE PUMP CHAMBER
(FROM SHEA CONCRETE OR EQUIV.)

xxxx MIN/IN MEASURED PERC RATE
40 MIN/IN DESIGN PERC RATE
1.02 GPD/SF HYDRAULIC LOADING
1,810 - MIN. LENGTH GEOMAT SEPTIC PIPE REQUIRED
1,824 - PROPOSED LENGTH OF GEOMAT SEPTIC PIPE
4 ZONES
8 ROWS OF GEOMAT SEPTIC PIPE PER ZONE, EACH ROW 57' LONG
304- MAX. GAL/DOSE/ZONE (4 ZONES IN FIELD)
2" RESIDUAL HEAD AT LAST ORIFICE
3/16" ORIFICE SIZE
4' ORIFICE SPACING
STATIC HEAD = 12.71'

PUMP SIZING :

DESIGN FLOW RATE: 74.5 GPM
TOTAL DYNAMIC HEAD: 28.9 GPM
PUMP: LIBERTY FL70 EFFLUENT PUMP

ELEVATIONS :

81.00 - HIGH POINT OF LEACH BED
79.75 - S.H.W.T.
79.75 - IMPERVIOUS LAYER
82.83 - BOTTOM OF GEOMAT-SEPTIC PIPES

PLAN INTENT :

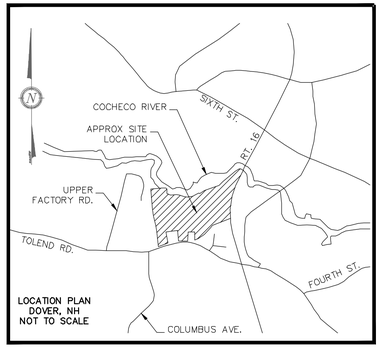
THE SEPTIC SYSTEM IS TO BE CONSTRUCTED WITH THE BOTTOM OF THE LEACH BED 3' ABOVE THE HIGH POINT OF THE EXISTING LAND.
IN THE EVENT OF LEACH BED FAILURE, IT MAY BE REBUILT IN PLACE WITH NHDES APPROVAL.

CAUTION !!!!

ANY DEVIATION FROM THIS PLAN IN GRADE OR LOCATION OF THE SEPTIC SYSTEM WHEN CONSTRUCTED WITHOUT THE APPROVAL OF THE DESIGNER AND NH-DES SUBSURFACE SYSTEMS BUREAU MAY RESULT IN THE FAILURE OF THE SYSTEM TO PASS INSPECTION BY NH-DES SUBSURFACE SYSTEMS BUREAU PRIOR TO OPERATION APPROVAL, OR FUNCTION PROPERLY AND SAFELY.

THE WETLAND DELINEATION WAS COMPLETED WINTER, 2020 IN ACCORDANCE WITH THE 1987 CORPP OF ENGINEERS WETLAND DELINEATION MANUAL. JURISDICTIONAL WETLANDS WERE IDENTIFIED AND DELINEATED USING THE ROUTINE DETERMINATIONS METHOD AS OUTLINED IN THE MANUAL. THE DELINEATION WAS DONE BY:

JOHN P. HAYES III, CWS #18



REVISION	DATE	DESCRIPTION

GEOMAT 3900 SEPTIC SYSTEM
LAND OF
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY
AND EUGENE A. & DONNA L. SGRIGNUOLI
TOLEND ROAD
DOVER, NH 03820
TAX MAP E LOTS 65-1 & 65-A
FOR STONEARCH DEVELOPMENT CORP.
SYSTEM #5

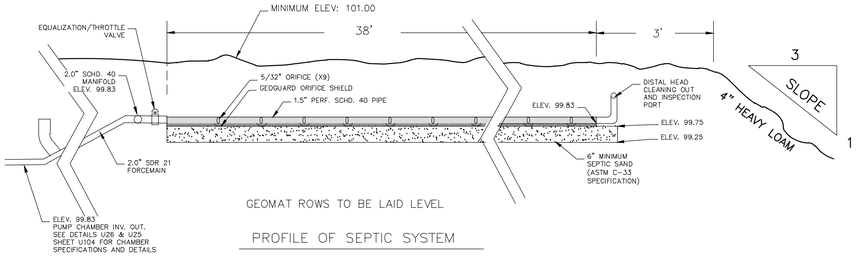
STATE OF NEW HAMPSHIRE - KENNETH A. BERRY No. 1125 LICENSED PROFESSIONAL ENGINEER

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT RD.
BARRINGTON, N.H. 332-2863

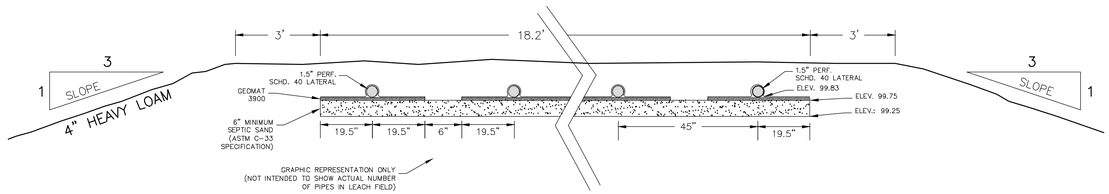
SCALE : 1 IN. EQUALS 10 FT.
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 - 107

VENTING NOTE:

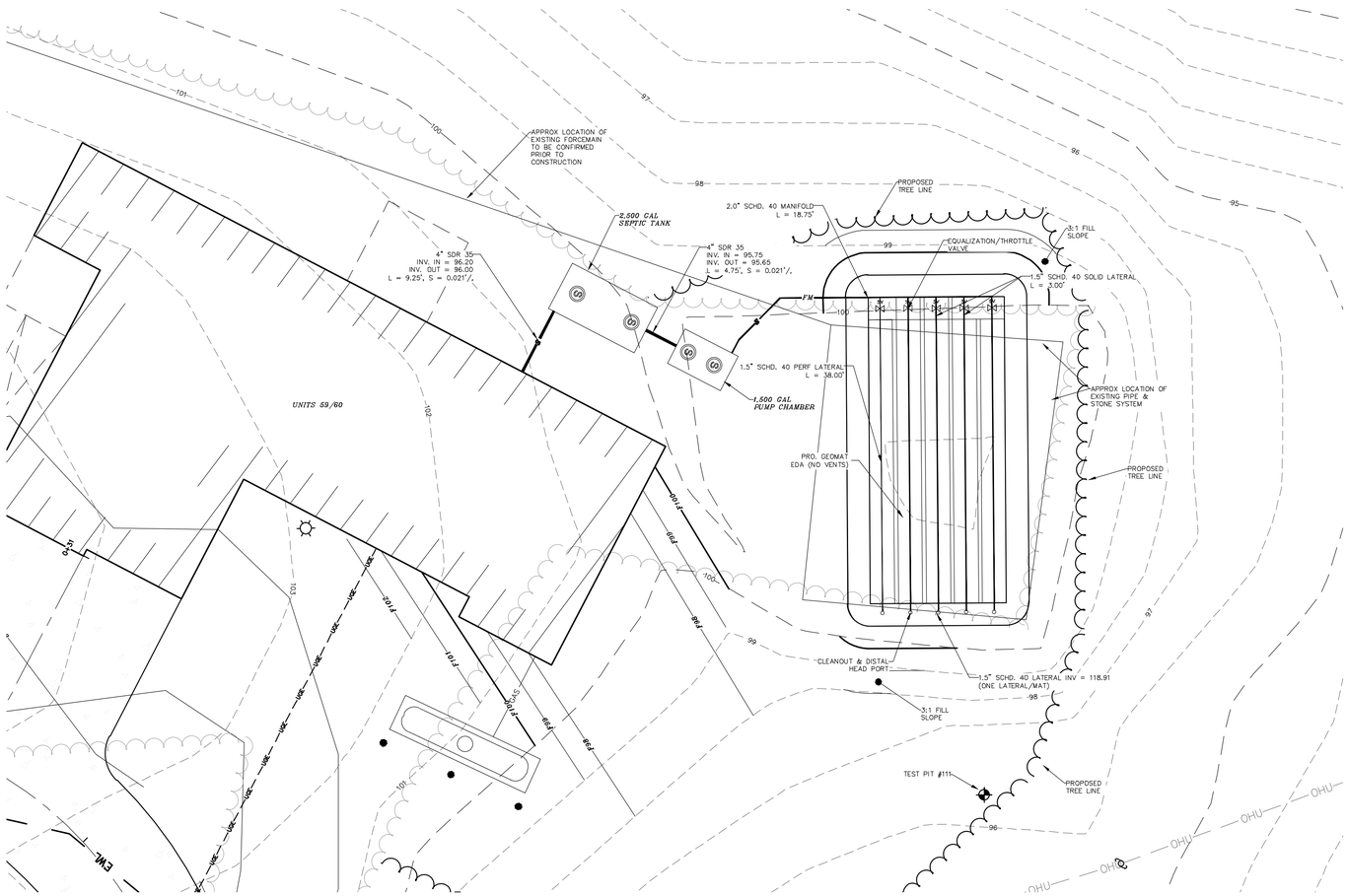
THE MANUFACTURERS SPECIFICATIONS FOR GEOMAT INSTALLATIONS PROHIBIT THE INSTALLATION OF A VENT.



PROFILE OF SEPTIC SYSTEM



CROSS-SECTION OF DISPOSAL FIELD



GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

CALCULATIONS :

4 BEDROOMS TOTAL, 600 GPD
USE 1,500 GAL RECTANGULAR CONCRETE PUMP CHAMBER
(FROM SHEA CONCRETE OR EQUIV.)

xxxx MIN/IN MEASURED PERC RATE
40 MIN/IN DESIGN PERC RATE
1.02 GPD/SF HYDRAULIC LOADING
181 – MIN. LENGTH GEOMAT SEPTIC PIPE REQUIRED
246 – PROPOSED LENGTH OF GEOMAT SEPTIC PIPE
1 ZONE
5 ROWS OF GEOMAT SEPTIC PIPE PER ZONE, EACH ROW 38' LONG
143– MAX. GAL/DOSE
2' RESIDUAL HEAD AT LAST ORIFICE
7/32" ORIFICE SIZE
4' ORIFICE SPACING
STATIC HEAD = 10.10'

PUMP SIZING :

DESIGN FLOW RATE: 42.1 GPM
TOTAL DYNAMIC HEAD: 18.6 GPM
PUMP: LIBERTY 280 SERIES EFFLUENT PUMP

ELEVATIONS :

98.00 – HIGH POINT OF LEACH BED
96.75 – S.H.W.T.
96.75 – IMPERVIOUS LAYER
99.83 – BOTTOM OF GEOMAT–SEPTIC PIPES

PLAN INTENT :

THE SEPTIC SYSTEM IS TO BE CONSTRUCTED WITH THE BOTTOM OF THE LEACH BED 3' BELOW THE HIGH POINT OF THE EXISTING LAND.
IN THE EVENT OF LEACH BED FAILURE, IT MAY BE REBUILT IN PLACE WITH NHDES APPROVAL.

CAUTION !!!!!

ANY DEVIATION FROM THIS PLAN IN GRADE OR LOCATION OF THE SEPTIC SYSTEM WHEN CONSTRUCTED WITHOUT THE APPROVAL OF THE DESIGNER AND NH–DES SUBSURFACE SYSTEMS BUREAU MAY RESULT IN THE FAILURE OF THE SYSTEM TO PASS INSPECTION BY NH–DES SUBSURFACE SYSTEMS BUREAU PRIOR TO OPERATION APPROVAL, OR FUNCTION PROPERLY AND SAFELY.

THE WETLAND DELINEATION WAS COMPLETED WINTER, 2020 IN ACCORDANCE WITH THE 1987 CORP OF ENGINEERS WETLAND DELINEATION MANUAL. JURISDICTIONAL WETLANDS WERE IDENTIFIED AND DELINEATED USING THE ROUTINE DETERMINATIONS METHOD AS OUTLINED IN THE MANUAL. THE DELINEATION WAS DONE BY:

JOHN P. HAYES III, CWS #18

NOTES:

1.) OWNER LOT 65–1: D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY
245 N BEND DRIVE
MANCHESTER, NH 03104

OWNER LOT 65–A: EUGENE A. & DONNA L. SGRIGNUOLI
22 SUN HAWK LANE
DOVER, NH 03820

1A.) APPLICANT: STONEARCH DEVELOPMENT CORP.
42J DOVER POINT ROAD
DOVER, NH 03820

2.) DESIGNER: KENNETH A. BERRY, PERMIT #125
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825

3.) LOT OF RECORD: TAX MAP E, LOT 65–1
TAX MAP E, LOT 65–A

4.) LOT AREA LOT 65–1: 1,824,109 Sq. Ft., 41.88 Ac. +/–
LOT AREA LOT 65–A: 110,839 Sq. Ft., 2.54 Ac. +/–

5.) S.C.R.D. BOOK 4918, PAGE 158
S.C.R.D. BOOK 1571, PAGE 86

6.) SUBDIVISION STATUS: N/A

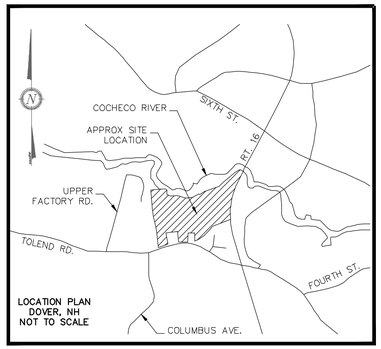
7.) FOUNDATION DRAINS WILL START AT LEAST 15' FROM THE LEACH FIELD, AND AT LEAST 5' FROM THE SEPTIC TANK.

8.) THERE IS NO SURFACE WATER OR VERY POORLY DRAINED SOILS WITHIN 50', OR POORLY DRAINED SOILS WITHIN 75' OF THE PROPOSED SEPTIC SYSTEM.

9.) THIS DESIGN DOES NOT ALLOW FOR THE USE OF A GARBAGE GRINDER. IF A GRINDER IS TO BE INCORPORATED A LARGER SEPTIC TANK WILL BE REQUIRED.

10.) THIS DESIGN DOES NOT ALLOW FOR THE ACCEPTANCE OF WATER TREATMENT BACKWASH. IF A WATER TREATMENT SYSTEM IS TO BE INCORPORATED A LARGER LEACHFIELD WILL BE REQUIRED.

11.) IN THE EVENT A DISCREPANCY IS FOUND ON THIS PLAN, THE DESIGNER SHOULD BE CONTACTED IMMEDIATELY AT 603–332–2863 TO DISCUSS AN APPROPRIATE PLAN OF ACTION.



LOCATION PLAN
DOVER, NH
NOT TO SCALE

REVISION	DATE	DESCRIPTION

GEOMAT 3900 SEPTIC SYSTEM
LAND OF
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY
AND EUGENE A. & DONNA L. SGRIGNUOLI
TOLEND ROAD
DOVER, NH 03820
TAX MAP E LOTS 65–1 & 65–A
FOR STONEARCH DEVELOPMENT CORP.
SYSTEM #6

STATE OF NEW HAMPSHIRE · KENNETH A. BERRY No. 7243 · LICENSED PROFESSIONAL ENGINEER

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT RD.
BARRINGTON, N.H. 332–2863

SCALE : 1 IN. EQUALS 10 FT.
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 – 107

PLANTING NOTES

1. CONTRACTOR SHALL OBTAIN APPROVAL FROM L.A. PRIOR TO PURCHASING &/OR INSTALLING SUBSTITUTE PLANT MATERIAL PRIOR TO PURCHASE OF ANY SUBSTITUTE MATERIALS.

2. CONSTRUCTION ACCESS WILL BE AS DIRECTED BY L.A.. CONTRACTOR IS RESPONSIBLE FOR RESTORATION OF ACCESS ROUTE AND ALL AREAS DISTURBED BY PLANTING OPERATIONS UPON COMPLETION OF CONSTRUCTION OPERATIONS, AT NO ADDITIONAL COST TO THE OWNER.

3. LAYOUT OF ALL PLANTING BEDS AND LOCATION OF PLANTS TO BE APPROVED BY L.A. ON SITE PRIOR TO CONSTRUCTION AND INSTALLATION.

4. CONTRACTOR TO REMOVE ALL DEBRIS GENERATED BY PLANT INSTALLATION. DEBRIS TO BE DISPOSED OF IN A LEGAL MANNER.

5. ALL PLANT MATERIAL SHALL BE GUARANTEED TO BE IN GOOD, HEALTHY & FLOURISHING CONDITION FOR ONE YEAR FROM THE DATE OF FINAL INSTALLATION APPROVAL BY L.A. CONTRACTOR SHALL REPLACE, WITHOUT COST TO OWNER, AND AS SOON AS WEATHER CONDITIONS PERMIT, ALL DEAD AND NON-FLOURISHING PLANTS AS DETERMINED BY THE L.A. REPLACEMENT PLANTS SHALL BE BE GUARANTEED IDENTICALLY TO ORIGINAL PLANTS, TIME PERIOD COMMENCING FROM DATE OF REPLACEMENT PLANTING APPROVAL BY L.A.

6. ALL BEDS TO BE MULCHED WITH 3" DEPTH SHREDDED BARK MULCH UNLESS NOTED OTHERWISE.

7. CONTRACTOR TO PROVIDE NECESSARY TEMPORARY IRRIGATION IF NEEDED BASED ON TIME OF YEAR THE PROJECT IS IMPLEMENTED.

8. ALL PLANT MATERIAL TO COMPLY WITH THE CITY OF DOVER'S SITE REVIEW REGULATIONS, 149-14(G), SUCH THAT THERE SHALL BE DECIDUOUS SHADE TREES PLANTED 40 FEET O.C. ALONG THE PERIMETERE OF THE PARKING LOTS AND SHRUBS PLANTED 5 FEET O.C. WITHIN THE PERIMETER BUFFER. SEE PLANT LIST FOR SPECIES AND SIZE OF PLANTS.

TEMPORARY WATERING NOTES

1. CONTRACTOR IS RESPONSIBLE FOR MAKING SURE ALL PLANT MATERIAL HAS ADEQUATE WATER DURING THE ESTABLISHMENT PERIOD.

2. THE USE OF GATOR BAGS, SOAKER HOSE, HAND WATERING AND OTHER TECHNIQUES SHOULD BE USED TO ASSURE PROPER HYDRATION OF THE PLANTINGS IS MAINTAINED.

3. TEMPORARY IRRIGATION SYSTEMS CAN BE SET UP TO ASSIST IN WATERING ACTIVITIES.

PLANTING SCHEDULE
River Side Estates
Botanical Name / Common Name

	Size	Qty	Label
Trees			
Plantanus acerifolia/London Planetree	3" Cal.	25	PA
Acer Rubrum / Red maple	3" Cal.	29	AR
Thuja / arborvitae	3" Cal.	0	TH
Maackia amurensis 'Starburst' / Starburst Amur Maackia	3" Cal.	30	AM
Cornus kousa / White Kousa Dogwood	3" Cal	19	CK
Shrubs			
Weigela / Weigela	3 Gal.	31	WG
Prunus pumila / Sand Cherry	3 Gal.	41	PP
Physocarpus opulifolius / Ninebark	3 Gal.	43	PO
Viburnum / Viburnum	3 Gal.	35	VB
Cornus sanguina 'Winter Flame' / Winter Flame Dogwood Red Twig or Yellow Twig	2 Gal.	29	CS
Vaccinium corymbosum / High Bush Bluberry	2 Gal.	23	VC
Juniperus hirzontalis / Blue Rug Juniper	2 Gal.	23	JH
Perennials			
Geranium sanguineum 'New Hampshire Purple' / Cransebill	#1	12	CB
Hemerocallis 'Happy Returns' / Happy Returns Daylily	#1	12	SD
Astilbe x arendsii 'Bridal Veil' / Bridal Veil Astilbe	#1	30	AF
Hosta 'Big Daddy' / Big Daddy Plantain Lily	#1	18	HB
Hosta 'Gluacamole' / Guacamole Plantain Lily	#1	24	HG
Grasses			
Calamagrostis acutifolia 'Karl Foerster' / Feather Reed Grass	#2	188	KF

terrain
planning & design llc

General Plant Maintenance Guide

General Plant Bed Maintenance:
- All plant maintenance should be performed by a qualified horticulturalist or licensed arborist. Cleaning the dead masarial out of the planting bed in the fall helps keep litter from building up around the plants and in some cases killing the plants. Watering the first year during dry periods will help get the plants established. Mulching every year is not necessary. Raking the old mulch and turning it over is all that is needed. When necessary only install one inch of mulch and do not place the mulch closer than 3" to the trunks or stems of woody plants.

Trees
- The first year watering during dry periods will be necessary.
- 3" inches of mulch maybe used. The mulch should be kept 3 inches from the trunk.
- Fertilizing is not necessary for the first year. Fertilizing in subsequent years only when and if the foliage is looking weak.
- Fertilization should occur prior to Mat 31st or after trees have dropped their leaves for the year.
- Prune dead wood once a year.
- Depending on the amount of compaction the bed area receives, deep root aeration may be needed over time

Woody Shrubs
- The first year watering during dry periods will be necessary.
- 3" inches of mulch maybe used. The mulch should be kept 3 inches from the stems.
- Fertilizing is not necessary for the first year. Fertilizing in subsequent years only when and if the foliage is looking weak.
- Fertilization should occur prior to Mat 31st or after shrubs have dropped their leaves or gone dormant for the year.
- Prune dead wood once a year.

Grasses
- Grasses only need to be clipped back at the end of the growing season and all the clippings removed from the area.
- Do not over mulch. Too much mulch will prohibit the grass from developing into a strong clump.

Perennials
- All perennials need to be pruned back after the first or second hard frost. A two-step method: first dead head all the flower heads and let drop to the ground for re-seeding. Second cut the stems back to 3" above the ground and remove the stem and leaf litter and place in compost. Do not over mulch. Too much mulch will prohibit the growth and development
- Fertilize perennials once in the spring with a low phosphate fertilizer will help the plants to get started in the spring.

NOTES:

1. CALL DIG SAFE PRIOR TO BEGINNING WORK. (1-888-344-7233). THE LANDSCAPE CONTRACTOR IS ADVISED OF THE PRESENCE OF UNDERGROUND UTILITIES AND SHALL VERIFY THE EXISTENCE AND LOCATION OF THE SAME BEFORE COMMENCING AND DIGGING OPERATIONS. THE LANDSCAPE CONTRACTOR SHALL REPLACE OR REPAIR UTILITIES, PAVING, WALKS, CURBING, ETC DAMAGED IN PERFORMANCE OF THIS JOB AT NO ADDITIONAL COST TO THE OWNER OR GENERAL CONTRACTOR.
2. CONTRACTOR SHALL THOROUGHLY FAMILIARIZE THEMSELVES WITH ALL SITE CONDITIONS PRIOR TO CONSTRUCTION BIDDING.
3. THE CONTRACTOR SHALL SUPPLY ALL PLANT MATERIALS IN QUANTITIES SUFFICIENT TO COMPLETE THE PLANTINGS SHOWN ON THE DRAWINGS. VARIATIONS IN QUANTITIES ARE TO BE APPROVED BY THE DESIGN ENGINEER.
4. PROVIDED SMOOTH TRANSITION WHERE NEW WORK MEETS EXISTING CONDITIONS.
5. ALL PLANT MATERIAL INSTALLED SHALL MEET THE SPECIFICATIONS OF "AMERICAN STANDARD FOR NURSERY STOCK" BY THE AMERICAN ASSOCIATION OF NURSERYMEN
6. ALL PLANT MATERIALS SHALL BE FREE FROM INSECTS AND DISEASE.
7. ALL PLANTINGS SHALL BE DONE IN ACCORDANCE WITH ACCEPTABLE HORTICULTURAL PRACTICES. THIS IS TO INCLUDE PROPER PLANTING MIX, PLANT BED AND TREE PIT PREPARATION, PRUNING STAKING OR GUYING, WRAPPING, SPRAYING, FERTILIZATION, PLANTING AND ADEQUATE MAINTENANCE UNTIL ACCEPTANCE FROM OWNER.
8. ALL GRASS, OTHER VEGETATION AND DEBRIS SHALL BE REMOVED FROM ALL PLANTING AREAS PRIOR TO PLANTING.
9. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF EXISTING AND NEWLY PLANTED TREES AND SHRUBS DURING THE CONSTRUCTION PROCESS. WHERE REQUIRED, THE CONTRACTOR SHALL INSTALL TEMPORARY FENCING (SNOW OR EQUAL) AROUND EXISTING TREES AND SHRUBS THAT COULD BE IMPACTED BY THE CONSTRUCTION PROCESS. STORAGE OF CONSTRUCTION EQUIPMENT, CONSTRUCTION MATERIALS, SNOW STORAGE AND OR VEHICLE PARKING SHALL NOT BE PERMITTED WITHIN THE DRIP LINE OF TREES OR TWENTY FEET WHICH EVER IS GREATER.
10. NEW PLANTINGS SHALL BE INSTALLED PER PROJECT DRAWINGS AND SPECIFICATION THAT INCLUDE FERTILIZATION AND MULCHING AS REQUIRED.
11. ALL SHRUB BEDS AND TREE PITS SHALL BE MULCHED WITH 3" CLEAN SHREDDED BLACK MULCH
12. WHERE INDICATED ON PLAN, PLANTING SOIL MIXTURE FOR GROUND COVER AND PERENNIAL BED AREAS SHALL CONSIST OF FOUR PARTS TOPSOIL, TWO PARTS SPHAGNUM PEAT MOSS, AND ONE PART HORTICULTURAL PERLITE BY VOLUME. PEAT MOSS MAY BE SUBSTITUTED WITH WELL-ROTTED OR DEHYDRATED MANURE OR COMPOST. ROTOTILL BEDS TO A DEPTH OF 8 INCHES.
13. MAINTENANCE OF NEW PLANTINGS AND LAWNS SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR AND OR LANDSCAPE SUBCONTRACTOR UNTIL ACCEPTANCE BY THE OWNER. RESPONSIBILITIES SHALL INCLUDE WATERING WEEDING AND MOWING AS NECESSARY. ALL PLANT MATERIAL SHALL BE GUARANTEED FOR A PERIOD OF ONE YEAR FROM THE DATE OF ACCEPTANCE, REPLACEMENT MATERIAL SHALL BE GUARANTEED FOR AND ADDITIONAL YEAR FROM TIME OF INSTALLATION.
14. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL TEMPORARY EROSION CONTROL MEASURES DURING THE CONSTRUCTION PHASE AND UNTIL ALL AREAS HAVE BEEN STABILIZED AND ACCEPTED BY THE OWNER. THE GENERAL CONTRACTOR SHALL PROVIDE WEEKLY INSPECTIONS OF EROSION MEASURE AND IMMEDIATELY AFTER STORM EVENTS AND REPAIR AS NECESSARY.
15. THE GENERAL CONTRACTOR AND OR THE LANDSCAPE SUBCONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL OF ALL THREE GUYING MATERIAL ONCE PLANT MATERIAL HAS BEEN ESTABLISHED. (MINIMUM OF ONE GROWING SEASON). ALL TEMPORARY EROSION CONTROL MEASURE SHALL BE REMOVED ONCE STABILIZATION OF DISTURBANCE HAS BEEN ACCEPTED BY OWNER.
16. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR A MINIMUM OF TWO MOWINGS FOR ALL TURF AREAS OR UNTIL ACCEPTANCE BY THE OWNER. A MINIMUM UNIFORM 75% CATCH OF TURF IS REQUIRED FOR ACCEPTANCE.
17. ALL PLANTINGS SHALL BE WATERED REGULARLY DURING THEIR FIRST YEAR AND MAINTAINED PERMANENTLY IN GOOD GROWING CONDITION AS AN EFFECTIVE VISUAL SCREEN.
18. SHRUBS OR TREES WHICH DIE SHALL BE REPLACED WITHIN ONE GROWING SEASON WITH NEW SHRUBS OR TREES TO ENSURE CONTINUED COMPLIANCE WITH APPLICABLE LANDSCAPING REQUIREMENTS.
19. ALL REQUIRED LANDSCAPING SHALL BE INSTALLED BEFORE OCCUPANCY, OR WITHIN SIX MONTHS IF OCCUPANCY OCCURS DURING WINTER CONDITIONS.
20. TREES ARE TO BE 6' TALL AT PLANTING.
21. ALL PLANT STOCK SHALL CONFORM TO ANSI Z260.1 – NURSERY STOCK, LATEST EDITIONS (AMERICAN ASSOCIATION OF NURSERYMEN, INC.)
22. 4" AGED PINEBARK MULCH AND A WEED BARRIER (TY-PAR FABRIC OR APPROVED EQUAL) SHALL BE APPLIED TO ALL SHRUB AND GROUND COVER BEDS. INSTALL WEED BARRIER AS PER MANUFACTURERS RECOMMENDATIONS.
23. PLANT-PIT BACK-FILL SHALL BE MIXED AT A RATE OF 7 PARTS OF TOPSOIL TO 2 PARTS OF DEHYDRATED COW MANURE. SLOW RELEASE FERTILIZER SHALL BE APPLIED AS PER MANUFACTURERS RECOMMENDATIONS. USE EXISTING ON-SITE TOPSOIL AS PART OF BACK FILL WHEN AVAILABLE.
24. ALL LANDSCAPED AREAS NOT PLANTED WITH TREES, SHRUBS OR GROUNDCOVER SHALL BE RESTORED WITH SEED OR SOD AS INDICATED ON PLANS.
25. TOPSOIL WILL BE TESTED FOR FERTILIZATION REQUIREMENTS, AND SLOW RELEASE ENVIRONMENTALLY FRIENDLY FERTILIZER WILL BE APPLIED AT THE RECOMMENDED RATES.
26. ALL DISTURBED WETLAND BUFFER AREAS, EXCEPT FOR AREAS THAT ARE PART OF THE DRAINAGE SYSTEM, ARE TO BE RESEEDED WITH A CONSERVATION SEED MIX AND ONLY MOWED TWICE PER YEAR.
27. ALL PLANT SUBSTITUTIONS MUST BE APPROVED BY THE ENGINEER.
28. PLANTS SHALL BE SUBJECT TO INSPECTION AND APPROVAL AT THE PLACE OF GROWTH, UPON DELIVERY OR AT THE JOB SITE WHILE WORK IS ONGOING TO CONFORMITY TO SPECIFIED QUALITY, SIZE AND VARIETY.
29. PLANTS FURNISHED IN CONTAINERS SHALL HAVE THE ROOTS WELL ESTABLISHED IN THE SOIL MASS AND SHALL HAVE AT LEAST ONE (1) GROWNG SEASON. ROOT-BOUND PLANTS OR INADEQUATELY SIZED CONTAINERS TO SUPPORT THE PLANT MAY BE DEEMED UNACCEPTABLE.
30. ALL PLANTS SHALL BE GUARANTEED BY THE CONTRACTOR FOR NO LESS THAN ONE FULL YEAR FROM THE TIME OF INSTALLATION. DURING THIS TIME, THE OWNER SHALL MAINTAIN ALL PLANT MATERIALS IN THE ABOVE MANNER. IT IS THE CONTRACTOR'S RESPONSIBILITY TO INSPECT THE PLANTS TO ENSURE PROPER CARE. IF THE CONTRACTOR IS DISSATISFIED WITH THE CARE GIVEN, HE SHALL IMMEDIATELY, AND IN SUFFICIENT TIME TO PERMIT THE CONDITION TO BE RECTIFIED, NOTIFY THE OWNER IN WRITING OR OTHERWISE FORFEIT HIS CLAIM.
31. BY THE END OF THE GUARANTEE PERIOD, THE CONTRACTOR SHALL HAVE REPLACED ANY PLANT MATERIAL THAT IS MISSING, NOT TRUE TO SIZE AS SPECIFIED, THAT HAS DIED, THAT HAS LOST NATURAL SHAPE DUE TO DEAD BRANCHES, EXCESS PRUNING OR INADEQUATE OR IMPROPER CARE, OR IS, IN THE OPINION OF THE OWNER, IN UNHEALTHY OR UNSIGHTLY CONDITION.
32. THE CONTRACTOR IS TO USE TEMPORARY MEASURES FOR WATERING PLANTS DURING THE ESTABLISHMENT PERIOD. INCLUDING CONNECTING TEMPORARY HOSES TO THE STRUCTURE WATER SUPPLY LINE AND UTILIZING SPRINKLERS UNTIL 85% GROWTH OCCURS.

terrain
planning & design llc
311 kast hill road
hopkinton, nh 03229
603. 491. 2322
terrainplanning.com

TOLEND ROAD

Site Location:
Tolend Road
Dover, NH
TAX MAP: E
Lot: 65-1 & 65-A

Prepared For:
Berry Surveying & Engineering
335 Second Crown Point Rd
Barrington, NH 03825

LANDSCAPE PLAN

DATE:

SCALE: 1" = 100'

PROJECT #: 1802

Drawn By: ID

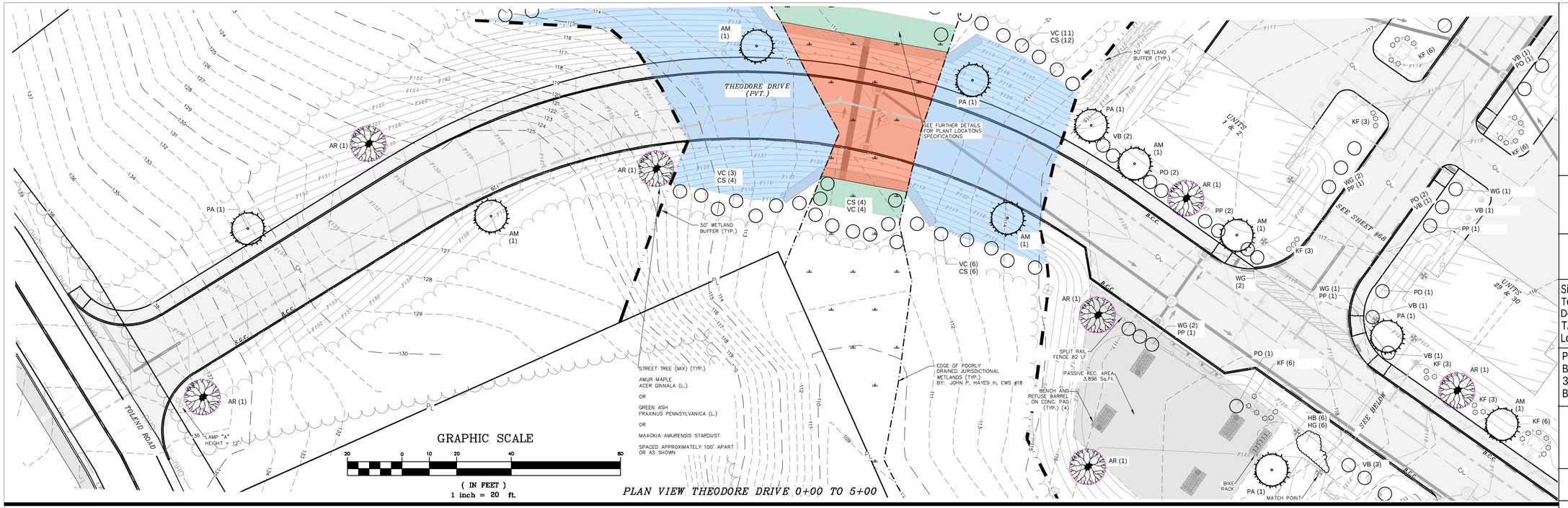
Checked By: ERB

REVISIONS: DATE:
Issued for Client Review

This plan is the property of Terrain Planning & Design LLC. Use or reproduction of this plan by any means without permission or purchase from Terrain Planning & Design LLC is prohibited.

L - 01

LICENSED LANDSCAPE ARCHITECT
ERIC R. BUCK
078
STATE OF NEW HAMPSHIRE



PLAN VIEW THEODORE DRIVE 0+00 TO 5+00

PLAN VIEW THEODORE DRIVE 5+00 TO 10+00

terrain
planning & design llc
311 kast hill road
hopkinton, nh 03229
603. 491. 2322
terrainplanning.com

TOLEND ROAD

Site Location:
Tolend Road
Dover, NH
TAX MAP: E
Lot: 65-1 & 65-A

Prepared For:
Berry Surveying & Engineering
335 Second Crown Point Rd
Barrington, NH 03825

LANDSCAPE PLAN

DATE:

SCALE: 1" = 20'

PROJECT #: 1802

Drawn By: ID

Checked By: ERB

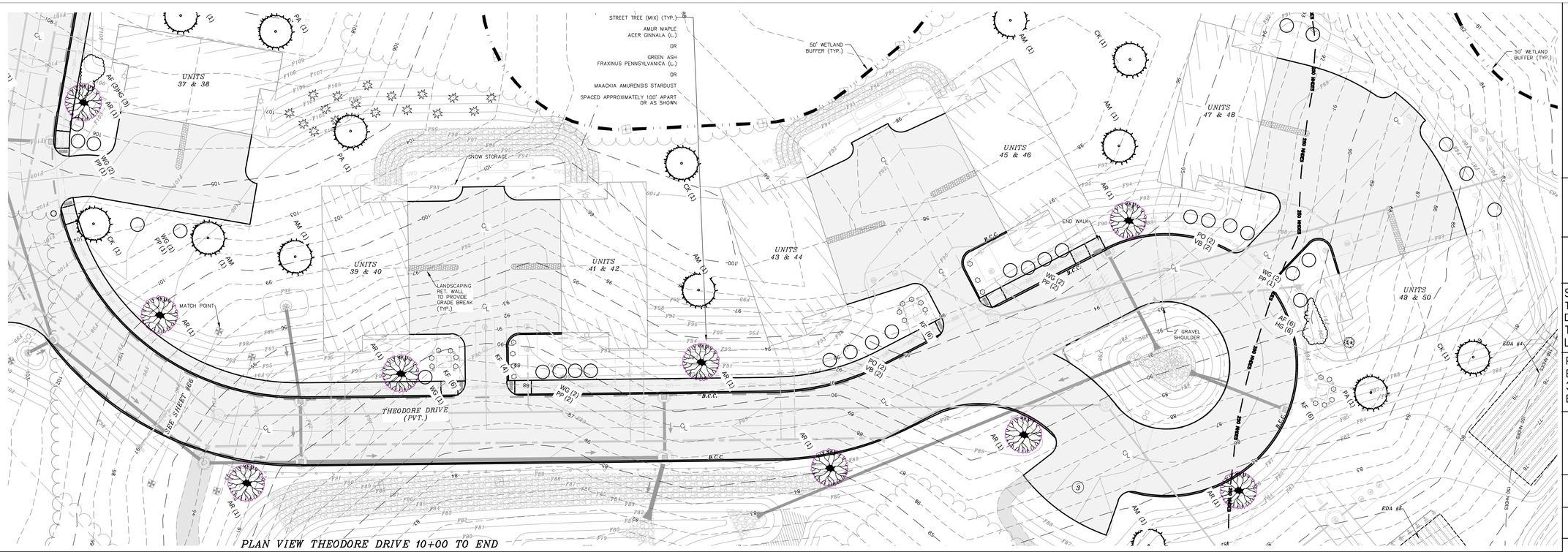
REVISIONS: DATE:
Issued for Client Review

This plan is the property of Terrain Planning & Design LLC. Use or reproduction of this plan by any means without permission or purchase from Terrain Planning & Design LLC is prohibited.

L - 02

SHEET 66 OF 97

LICENSED LANDSCAPE ARCHITECT
ERIC R. BUCK
078
STATE OF NEW HAMPSHIRE



PLAN VIEW THEODORE DRIVE 10+00 TO END

PLAN VIEW SUN HAWK LANE EXTENSION

terrain
planning & design llc
311 kast hill road
hopkinton, nh 03229
603. 491. 2322
terrainplanning.com

TOLEND ROAD

Site Location:
Tolend Road
Dover, NH
TAX MAP: E
Lot: 65-1 & 65-A

Prepared For:
Berry Surveying & Engineering
335 Second Crown Point Rd
Barrington, NH 03825

LANDSCAPE PLAN

DATE:

SCALE: 1" = 20'

PROJECT #: 1802

Drawn By: ID

Checked By: ERB

REVISIONS: DATE:
Issued for Client Review

This plan is the property of Terrain Planning & Design LLC. Use or reproduction of this plan by any means without permission or purchase from Terrain Planning & Design LLC is prohibited.

L - 03

SHEET 67 OF 97

LICENSED LANDSCAPE ARCHITECT
ERIC R BUCK
078
STATE OF NEW HAMPSHIRE

PLAN VIEW LIAM DRIVE 20+00 TO 25+50

PLAN VIEW LIAM DRIVE 25+50 TO END

terrain
planning & design llc
311 kast hill road
hopkinton, nh 03229
603. 491. 2322
terrainplanning.com

TOLEND ROAD

Site Location:
Tolend Road
Dover, NH
TAX MAP: E
Lot: 65-1 & 65-A

Prepared For:
Berry Surveying & Engineering
335 Second Crown Point Rd
Barrington, NH 03825

LANDSCAPE PLAN

DATE:

SCALE: 1" = 20'

PROJECT #: 1802

Drawn By: ID

Checked By: ERB

REVISIONS: DATE:
Issued for Client Review

This plan is the property of Terrain Planning & Design LLC. Use or reproduction of this plan by any means without permission or purchase from Terrain Planning & Design LLC is prohibited.

L - 04

CERTIFIED LANDSCAPE ARCHITECT
ERIC R. BUCK
078
STATE OF NEW HAMPSHIRE

COCHECHO RIVER

THEODORE DRIVE

N DUVAL DRIVE

SUN HAWK LANE

TOLEND ROAD

Schedule										
Symbol	Label	Image	Quantity	Manufacturer	Catalog Number	Description	Number Lamps	Lumens Per Lamp	Total Lamp Watts	Mounting	Plot
	A		6	Lithonia Lighting	DSX1 LED P1 30K T3M DDBXD SPA DNAXD		1	6229	1	20	
	B		18	Lithonia Lighting	WDGE3 LED	CONTROL FULL MOUNTED 3000 K, TYPE 3 DISTRIBUTION WITH BUILT-IN DIM TO 10% DRIVER, BLACK	1	609	1	12.8	

NOTES:

1.) OWNER LOT 65-1: D.LUTSK, D.BARNES, T. GEORGE, & L. MULCAHY
245 N BEND DRIVE
MANCHESTER, NH 03104

OWNER LOT 65-A: SGRIGNUOLI, EUGENE A. & DONNA L.
22 SUN HAWK LANE
DOVER, NH 03820

1A.) APPLICANT: STONEARCH DEVELOPMENT CORP.
42J DOVER POINT ROAD
DOVER, NH 03820

2.) LOT OF RECORD: TAX MAP E, LOT 65-1
TAX MAP E, LOT 65-A

3.) LOT AREA LOT 65-1: 1,824,109 Sq. Ft., 41.88 Ac. +/-
LOT AREA LOT 65-A: 110,839 Sq. Ft., 2.54 Ac. +/-

4.) S.C.R.D. BOOK 4918, PAGE 158
S.C.R.D. BOOK 1571, PAGE 86

5.) THE INTENT OF THIS PLAN IS SHOW THE PROPOSED LIGHTING DESIGN.

6.) LAMP "A" IS MOUNTED 12' ABOVE GRADE
LAMP "B" IS MOUNTED 8' ON THE BUILDINGS

7.) SEE CONSTRUCTION DETAILS FOR LIGHT CUT SHEETS.

8.) EXTERIOR LIGHTING SHALL BE CUT-OFF TYPE FIXTURES PER CHAPTER 153-14-E AND SHALL PROVIDE LIGHTING DIRECTED ON-SITE ONLY.

GRAPHIC SCALE

60 0 30 60 120 240

(IN FEET)
1 inch = 60 ft.

16°±

MAGNETIC

NAD83 NH STATE PLANE

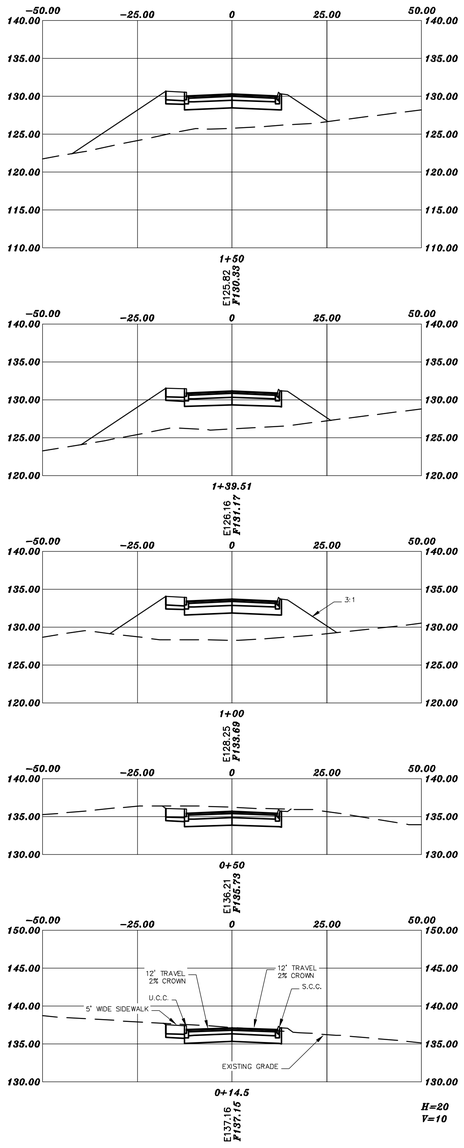
REVISION	DATE	DESCRIPTION

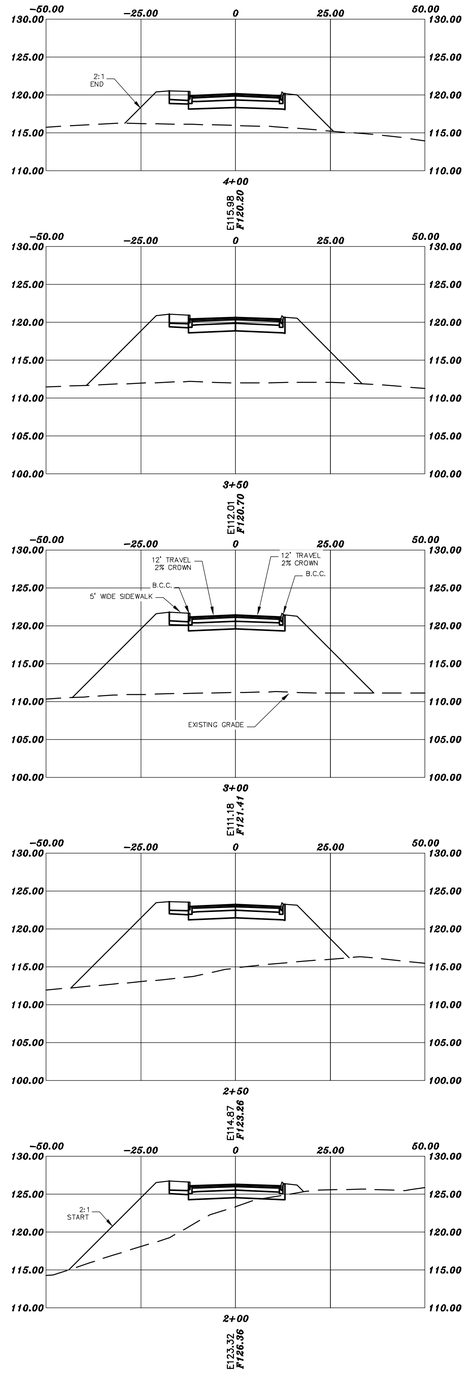
LIGHTING PLAN
LAND OF
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY &
EUGENE A. & DONNA L. SGRIGNUOLI
TOLEND ROAD
DOVER, N.H.
TAX MAP E, LOT 65-1 & 65-A

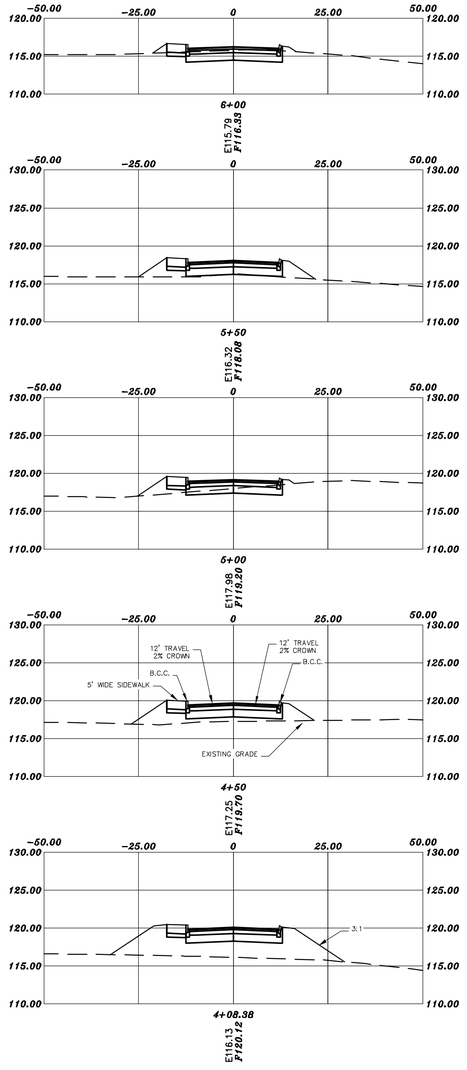
BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 60 FT.
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 – 107

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14243
LICENSED PROFESSIONAL ENGINEER







GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.
Vertical Scale 10

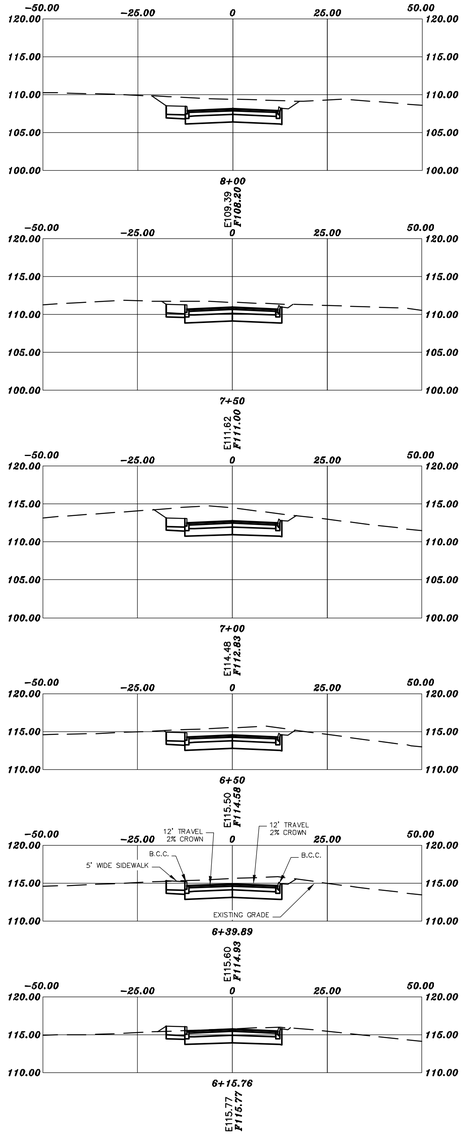
REVISION	DATE	DESCRIPTION

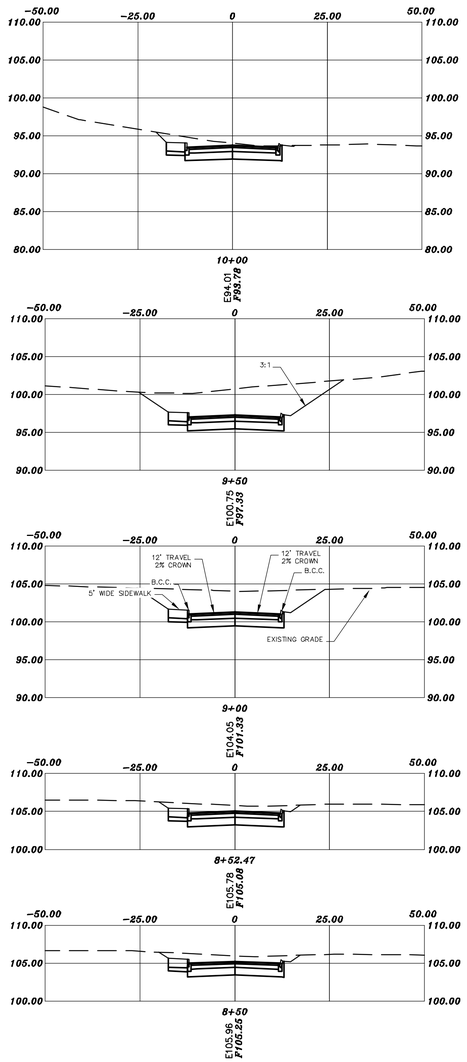
THEODORE DRIVE CROSS SECTIONS 0+00 – 6+00
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY &
EUGENE A. & DONNA L. SGTIGNOULI
LAND OF
TOLEND ROAD
DOVER, N.H.
TAX MAP E, LOT 65-1 & 65-4

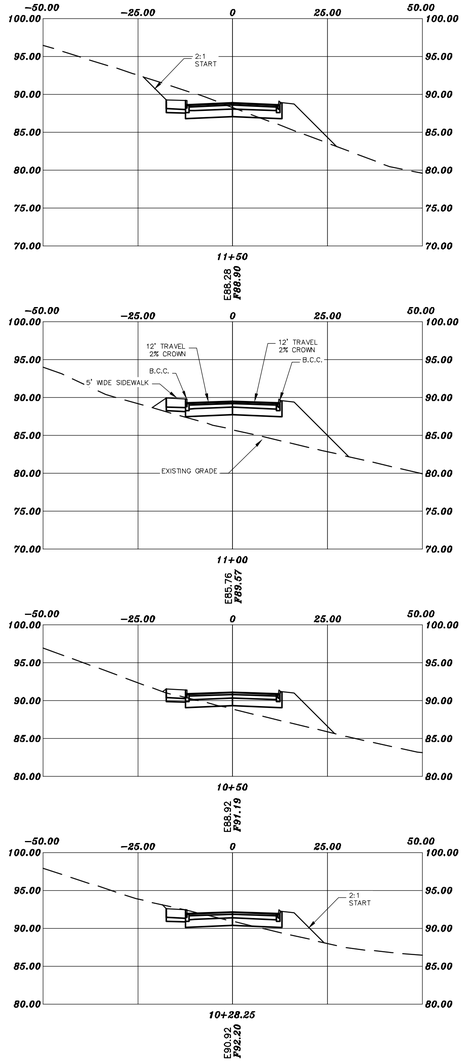
BERRY & SURVEYING ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 20 FT.
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 – 107

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14243
LICENSED
PROFESSIONAL ENGINEER







GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)

1 inch = 20 ft.

Vertical Scale 10

REVISION	DATE	DESCRIPTION

THEODORE DRIVE CROSS SECTIONS 6+15.76 – 11+50

LAND OF

D. LUTSK, D. BARNES, T. GEORGE & L. MULCAHY &

EUGENE A. & DONNA L. SGITGNOULI

TOLEND ROAD

DOVER, N.H.

TAX MAP E, LOT 65-1 & 65-4

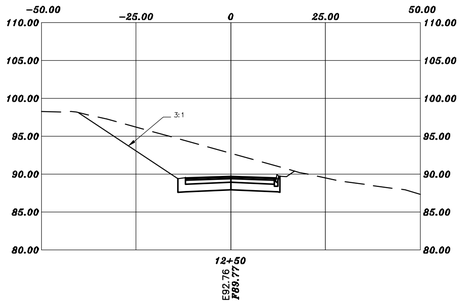
BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

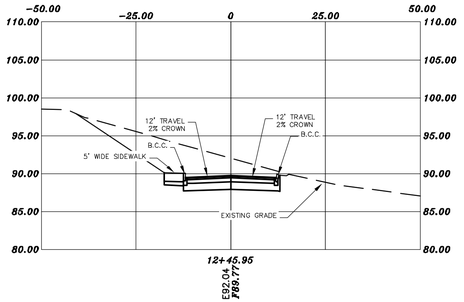
SCALE : 1 IN. EQUALS 20 FT.

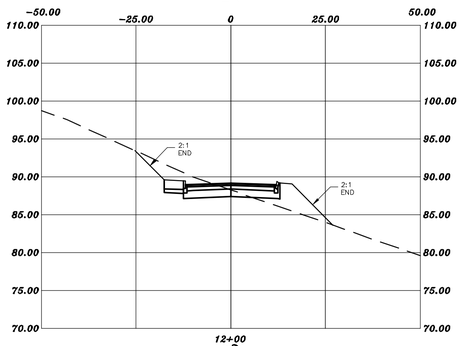
DATE : FEBRUARY 10, 2022

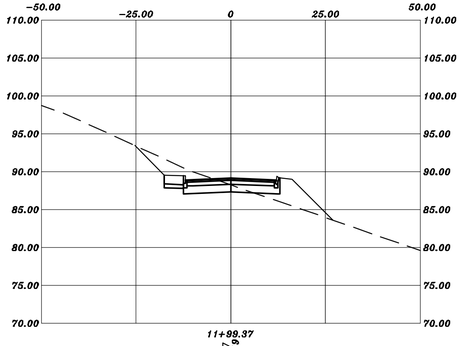
FILE NO. : DB 2020 – 107

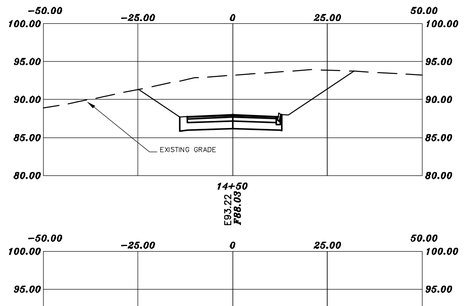
STATE OF NEW HAMPSHIRE - KENNETH A. BERRY No. 14243 LICENSED PROFESSIONAL ENGINEER -

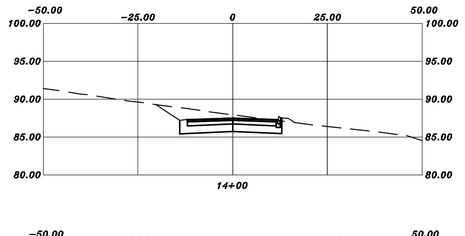


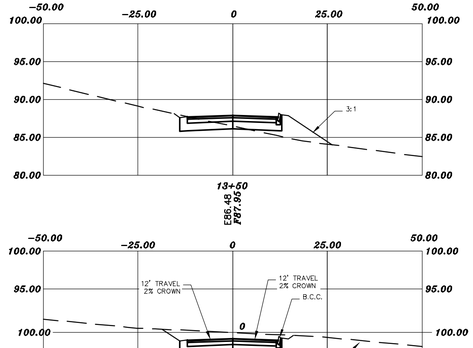


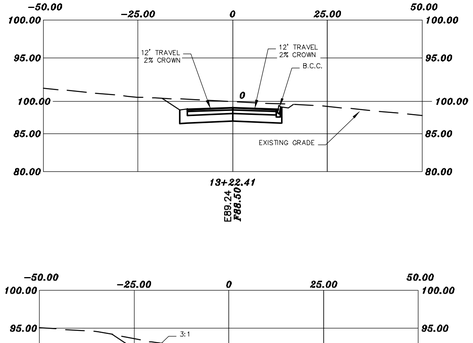


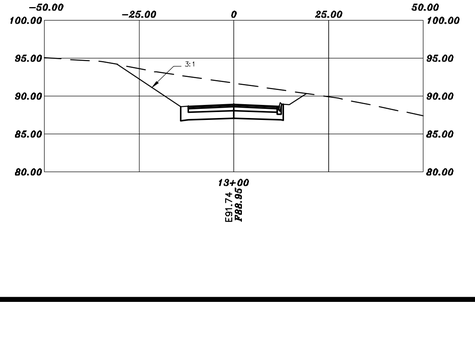


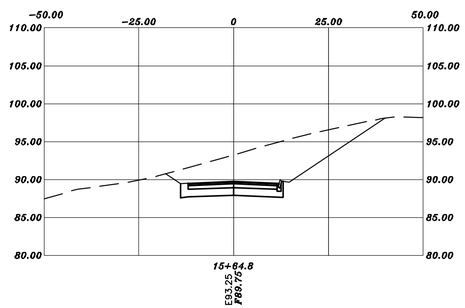


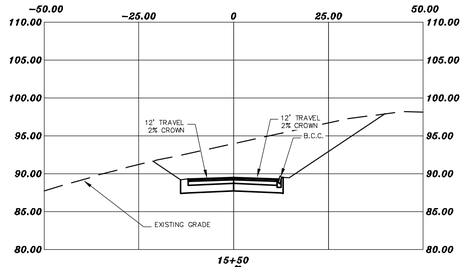


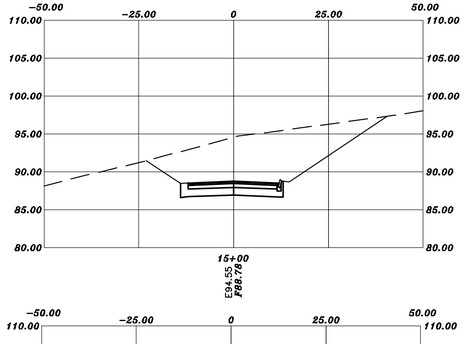


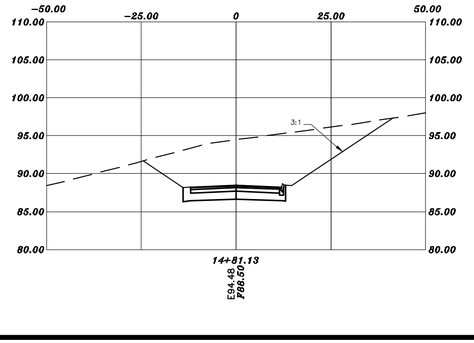












GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)

1 inch = 20 ft.

Vertical Scale 10

REVISION	DATE	DESCRIPTION

THEODORE DRIVE CROSS SECTIONS 11+99.37 – 15+64.8

LAND OF

D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY &

EUGENE A. & DONNA L. SGTIGNOULI

TOLEND ROAD

DOVER, N.H.

TAX MAP 8, LOT 65-1 & 65-4

BERRY SURVEYING & ENGINEERING

335 SECOND CROWN POINT ROAD

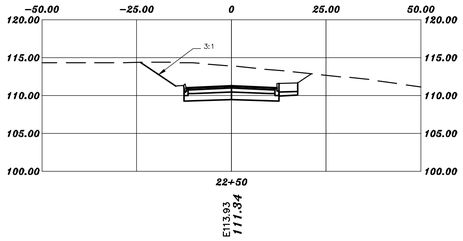
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 20 FT.

DATE : FEBRUARY 10, 2022

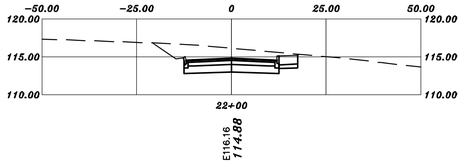
FILE NO. : DB 2020 – 107

STATE OF NEW HAMPSHIRE - KENNETH A. BERRY No. 14243 LICENSED PROFESSIONAL ENGINEER -



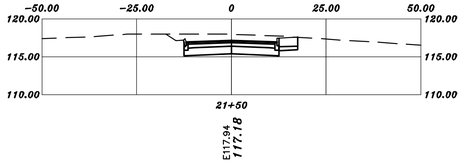
22+50

E113.93
111.34



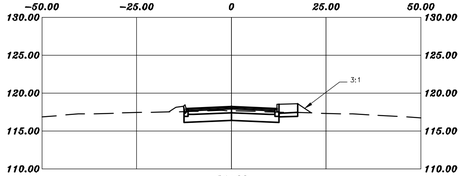
22+00

E116.16
114.88



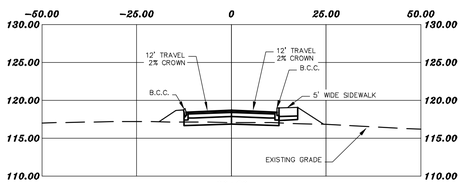
21+50

E117.94
117.18



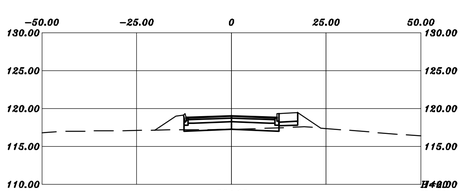
21+00

E117.66
118.23



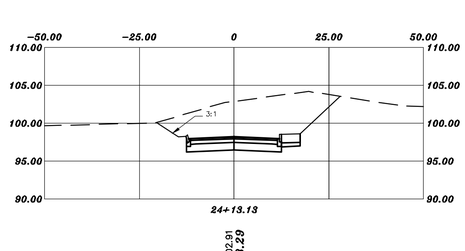
20+50

E117.09
118.73



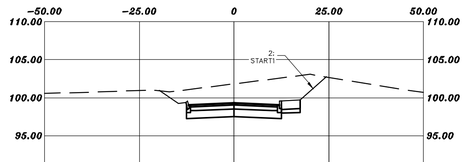
20+12

E117.28
119.11



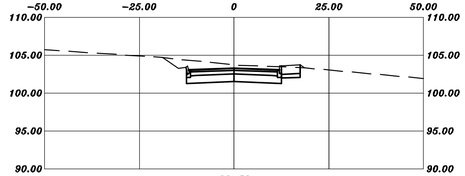
24+13.13

E102.91
98.29



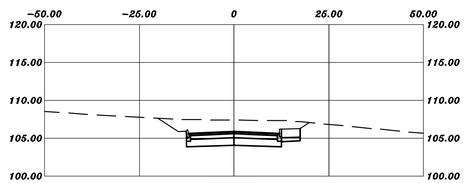
24+00

E101.84
99.34



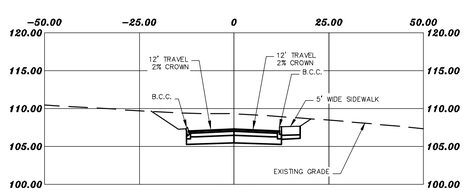
23+50

E103.71
103.34



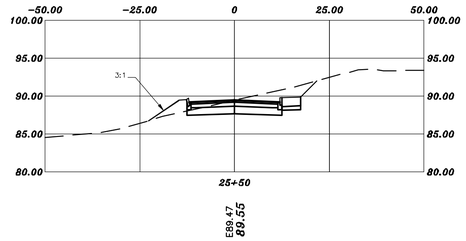
23+17.73

E107.38
105.82



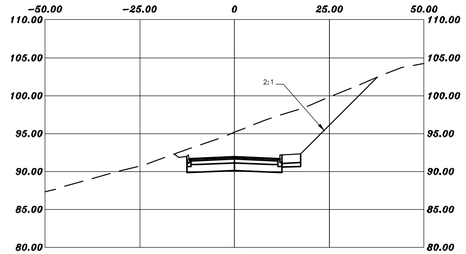
23+00

E109.32
107.34



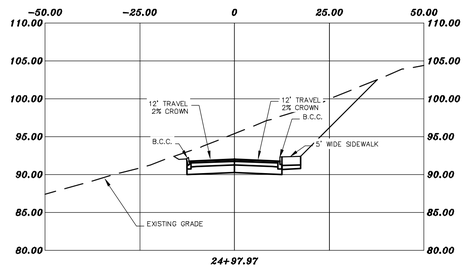
25+50

E88.47
89.55



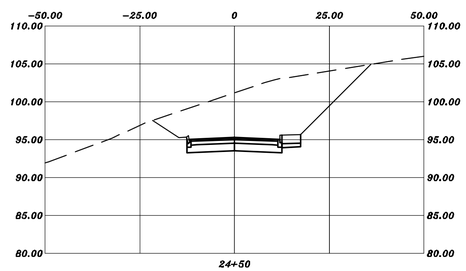
25+00

E95.15
91.95



24+97.97

E95.39
92.06



24+50

E101.16
96.85

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.
Vertical Scale 10

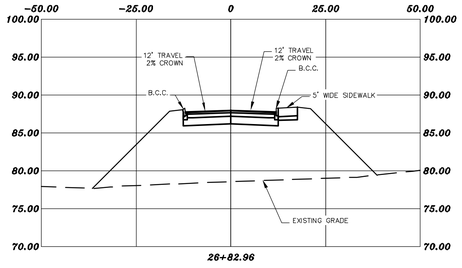
REVISION	DATE	DESCRIPTION

LIAM DRIVE CROSS SECTIONS 20+00 – 25+50
LAND OF
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY &
EUGENE A. & DONNA L. SGITGNOULI
TOLEND ROAD
DOVER, N.H.
TAX MAP E, LOT 65-1 & 65-4

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

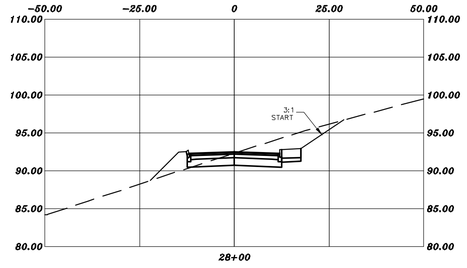
SCALE : 1 IN. EQUALS 20 FT.
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 – 107

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14243
LICENSED
PROFESSIONAL ENGINEER



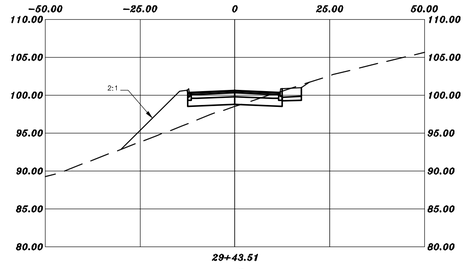
26+82.96

E78.58
88.03



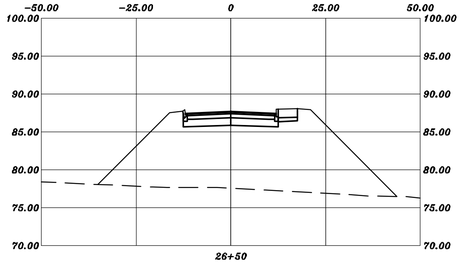
28+00

E92.33
92.55



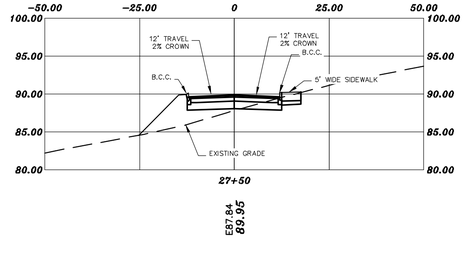
29+43.51

E98.51
100.63



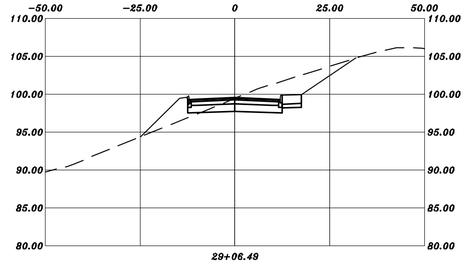
26+50

E77.57
87.75



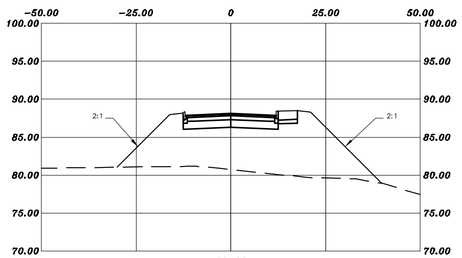
27+50

E87.84
89.95



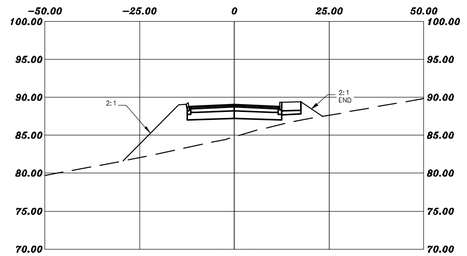
29+06.49

E99.47
99.60



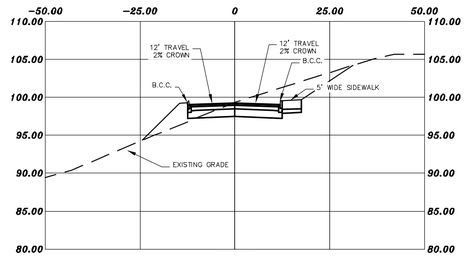
26+00

E80.74
88.15



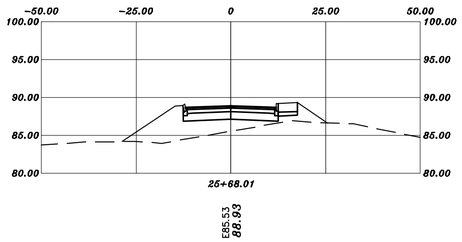
27+27.12

E84.81
89.09



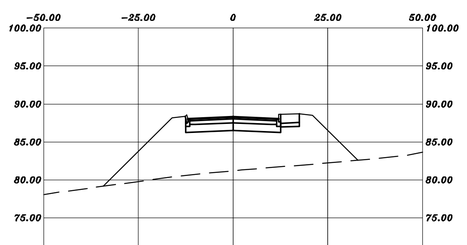
29+00

E99.34
99.32



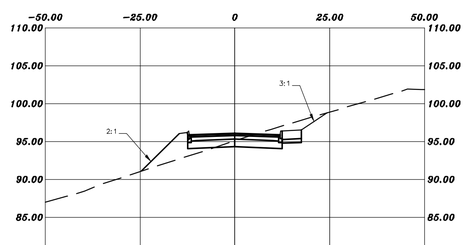
25+68.01

E85.53
88.93



27+00

E81.17
88.34



28+50

E96.07
96.14

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.
Vertical Scale 10

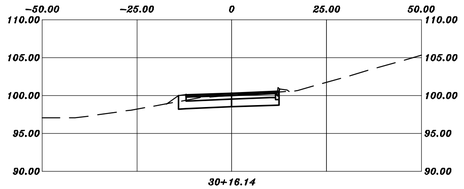
REVISION	DATE	DESCRIPTION

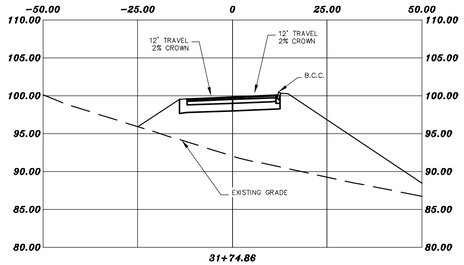
LIAM DRIVE CROSS SECTIONS 25+50 – 29+43.51
LAND OF
D. LUTSK, D. BARNES, T. GEORGE & L. MULCAHY &
EUGENE A. & DONNA L. SGITGNOULI
TOLEND ROAD
DOVER, N.H.
TAX MAP E, LOT 65-1 & 65-4

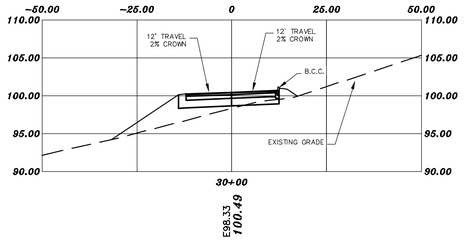
BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

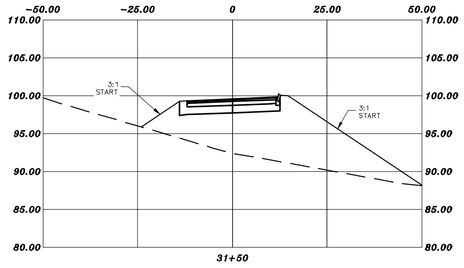
SCALE : 1 IN. EQUALS 20 FT.
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 – 107

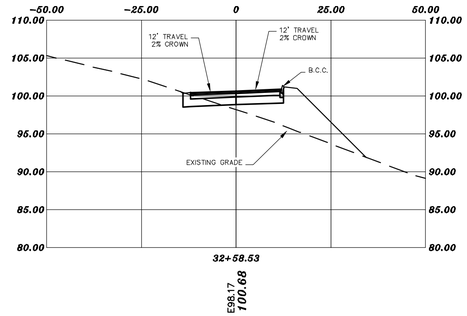
STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14243
LICENSED
PROFESSIONAL ENGINEER

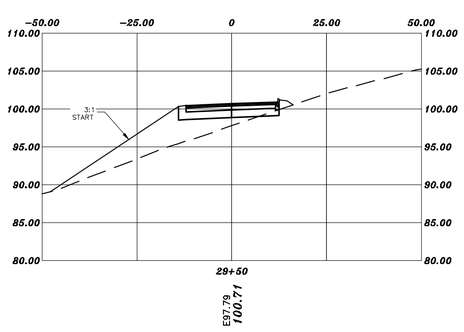


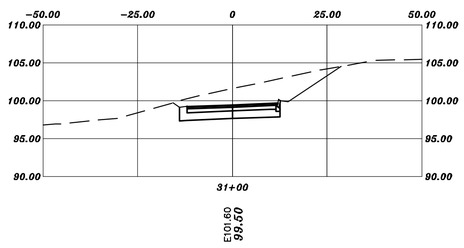


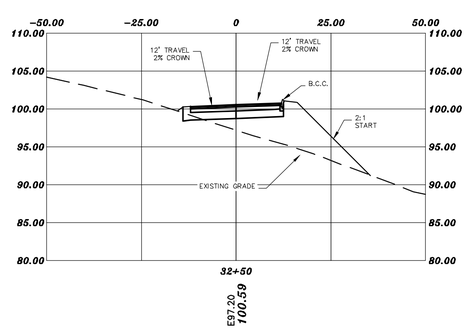


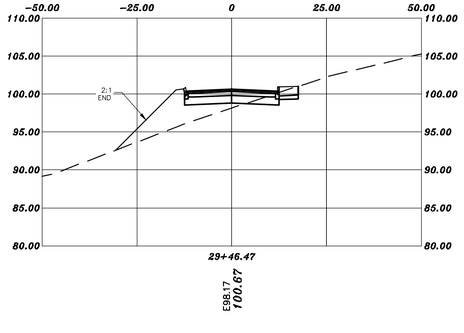


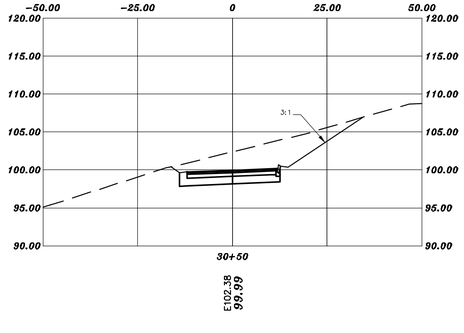


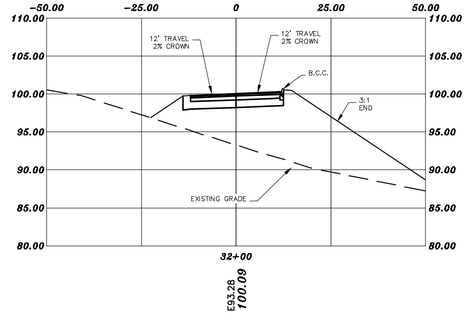












GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.
Vertical Scale 10

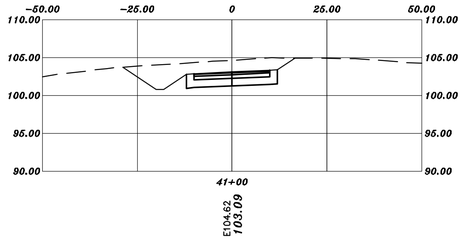
REVISION	DATE	DESCRIPTION

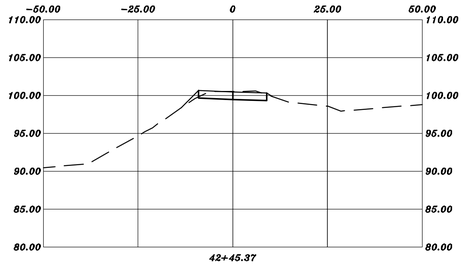
LIAM DRIVE CROSS SECTIONS 29+43.51 – END
LAND OF
D. LUTSK, D. BARNES, T. GEORGE & L. MULCAHY &
EUGENE A. & DONNA L. SGITGNOULI
TOLEND ROAD
DOVER, N.H.
TAX MAP 8, LOT 65-1 & 65-4

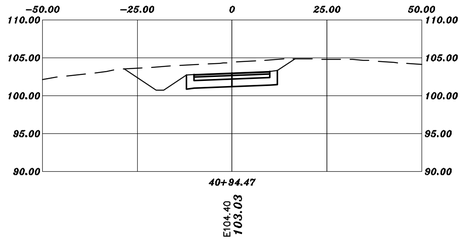
BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

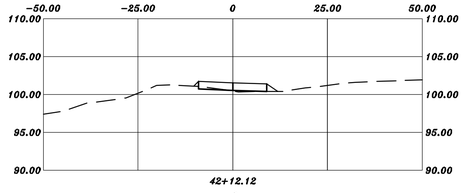
SCALE : 1 IN. EQUALS 20 FT.
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 – 107

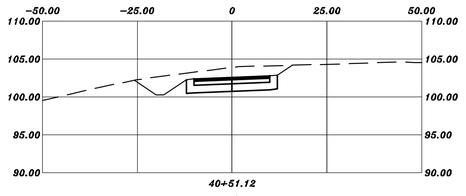
STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14243
LICENSED
PROFESSIONAL ENGINEER

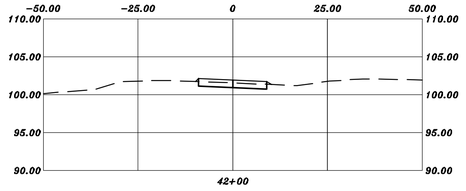


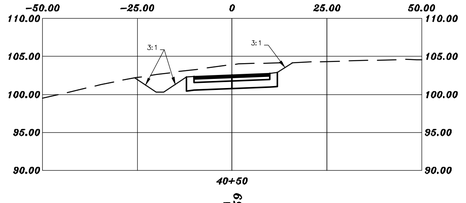


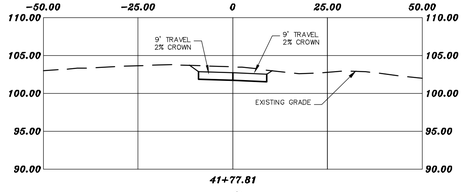


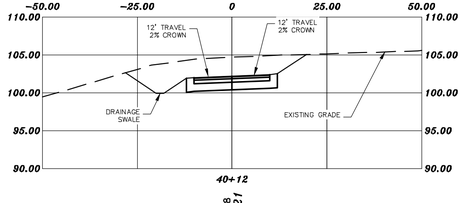




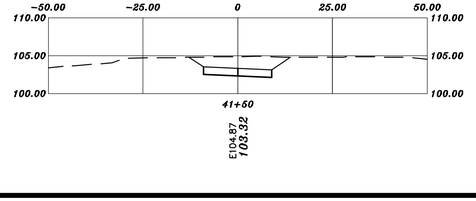




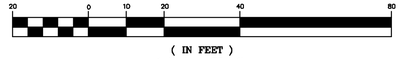




H=20
V=10



GRAPHIC SCALE



(IN FEET)
1 inch = 20 ft.
Vertical Scale 10

REVISION	DATE	DESCRIPTION

ACCESS ROAD CROSS SECTIONS 40+12 – 42+45.37
LAND OF
D. LUTSK, D. BARNES, T. GEORGE & L. MULCAHY &
EUGENE A. & DONNA L. SGTIGNOULI
TOLEND ROAD
DOVER, N.H.
TAX MAP 8, LOT 65-1 & 65-4

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 20 FT.
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 – 107

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14243
LICENSED
PROFESSIONAL ENGINEER

NOTES:

1.) OWNER LOT 65–1: D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY
245 N BEND DRIVE
MANCHESTER, NH 03104

OWNER LOT 65–A: EUGENE A. & DONNA L. SGRIGNUOLI
22 SUN HAWK LANE
DOVER, NH 03820

1A.) APPLICANT: STONEARCH DEVELOPMENT CORP.
42J DOVER POINT ROAD
DOVER, NH 03820

2.) LOT OF RECORD: TAX MAP E, LOT 65–1
TAX MAP E, LOT 65–A

3.) LOT AREA LOT 65–1: 1,824,109 Sq. Ft., 41.88 Ac. +/–
LOT AREA LOT 65–A: 110,839 Sq. Ft., 2.54 Ac. +/–

4.) S.C.R.D. BOOK 4918, PAGE 158
S.C.R.D. BOOK 1571, PAGE 86

NOTES CONT.:

5.) THIS IS A RESIDENTIAL SUBDIVISION.

6.) THE INTENT OF THIS PLAN IS TO DEMONSTRATE THE AVAILABLE SIGHT DISTANCE FROM THE PROPOSED ROADWAY KNOWN AS THEODORE DRIVE.

7.) EXISTING CONDITIONS INFORMATION IS BASED ON A SURVEY PERFORMED BY BERRY SURVEYING & ENGINEERING AND IS ENCLOSED IN THIS PACKAGE. EXISTING AND PROPOSED CONTOURS ARE PROVIDED AT 2' INTERVALS WITH DRAINAGE FEATURES AT MORE PRECISE 1' INTERVALS.

8.) THIS PROJECT SHALL BE CONSTRUCTED IN ACCORDANCE WITH NHDOT STANDARD SPECIFICATIONS DATED 2010. CURRENT STANDARD PLANS, SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS INCLUDED IN THE PROPOSAL.

9.) WHERE AN EXISTING UNDERGROUND UTILITY IS FOUND TO CONFLICT WITH THE PROPOSED WORK, THE LOCATION, ELEVATION AND SIZE OF THE UTILITY SHALL BE ACCURATELY DETERMINED WITHOUT DELAY BY THE CONTRACTOR, AND THE INFORMATION FURNISHED TO THE ENGINEER FOR RESOLUTION OF THE CONFLICT.

10.) THE CONTRACTOR SHALL MAKE ALL ARRANGEMENTS FOR THE ALTERATION AND ADJUSTMENT OF GAS, ELECTRIC, TELEPHONE AND ANY OTHER PRIVATE UTILITIES BY THE UTILITY COMPANIES.

NOTES CONT.:

11.) AREAS OUTSIDE THE LIMITS OF PROPOSED WORK DISTURBED BY THE CONTRACTOR'S OPERATIONS SHALL BE RESTORED BY THE CONTRACTOR TO THEIR ORIGINAL CONDITION AT THE CONTRACTOR'S EXPENSE.

12.) THE TERM "PROPOSED" (PROP.) MEANS WORK TO BE CONSTRUCTED USING NEW MATERIALS, OR, WHERE APPLICABLE, RE–USING EXISTING MATERIALS IDENTIFIED AS "REMOVE & RESET" (R & R).

13.) ALL EXISTING SIGNS WITHIN THE PROJECT LIMITS SHALL BE RETAINED UNLESS NOTED OTHERWISE.

14.) ALL SYMBOLS, WORDS, TRANSVERSE MARKINGS (STOP BARS, CROSSWALK LINES, AND RAILROAD SYMBOLS), LANE LINES, AND ALL OTHER MARKINGS NOTED WITH (T) SHALL BE THERMOPLASTIC.

15.) ALL DISTURBED AREAS NOT DESIGNATED TO BE PAVED SHALL HAVE LOAM PLACED AND SEEDED. THE LOAM SHALL HAVE A MINIMUM DEPTH OF 4 INCHES AND SHALL BE PLACED FLUSH WITH THE TOP OF THE ADJACENT CURB, EDGING, BERM OR PAVEMENT SURFACE.

16.) THE SPEED LIMIT ON TOLEND ROAD IS 30 MPH. 85TH PERCENTILE OF TRAFFIC IS ASSUMED TO BE 40 MPH.

LEGEND:

- IRON PIPE ~FND~
- IRON BOUND ~FND~
- NH HIGHWAY BOUND ~FND~
- 3/4" IRON BOUND W/ ID CAP ~TBS~
- GRANITE BOUND ~TBS~
- SIGNAGE
- UTILITY POLE
- GUY WIRE
- OHU — OHU — OHU — OVERHEAD UTILITIES LINE
- POORLY DRAINED WETLAND LINE
- 50' POORLY DRAINED WETLAND BUFFER
- SHOULDER
- BUILDING SETBACK LINE
- SUBDIVISION BOUNDARY LINE
- EASEMENT LINE
- CENTER LINE
- CLEAR ZONE LINE
- MILL

S.C.R.D. STRAFFORD COUNTY REGISTRY OF DEEDS
TYP. TYPICAL
FND FOUND
PL PROPERTY LINE
EL EASEMENT LINE
R.O.W. RIGHT OF WAY
E.O.P. EDGE OF PAVEMENT
SSL (W) SINGLE SOLID LINE (WHITE)
DSL (Y) DOUBLE SOLID LINE (YELLOW)

SIGHT DISTANCE REQUIREMENT:

DESIGN SPEED: 30 MPH / 85TH ASSUMED 40 MPH

FROM AASHTO GEOMETRIC DESIGN OF HIGHWAYS AND STREETS (2011) EXHIBIT 3.1

289' 3% UP GRADE, 315' DOWN GRADE REQUIRED BY AASHTO

289' AND 315' PROVIDED

TOLEND ROAD AADT (2019): 1,835 (NHDOT)

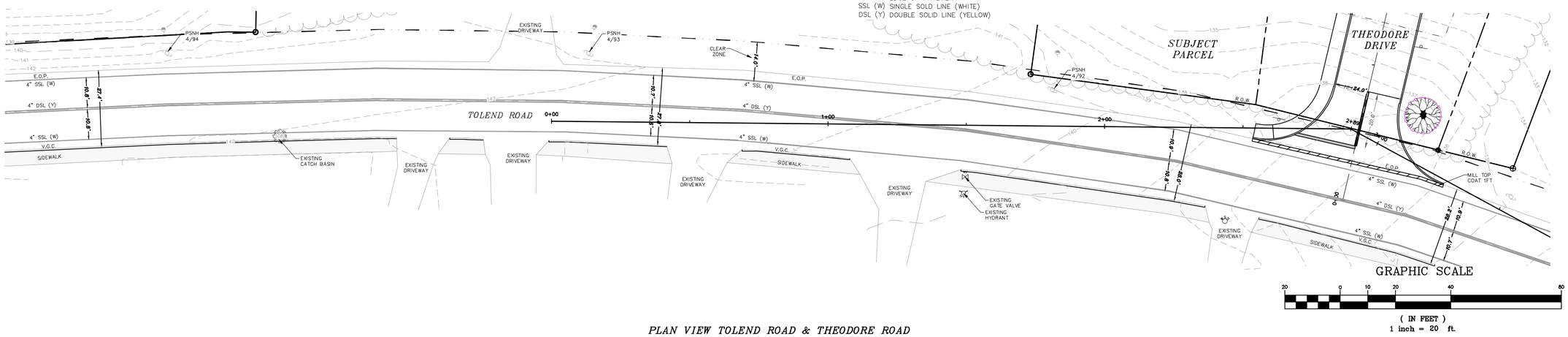
CLEAR ZONE CALCULATION:

DESIGN SPEED: 30 MPH / 85TH ASSUMED 40 MPH

WESTBOUND DESIGN ADT (2019): 935 (NHDOT)

FROM AASHTO ROADSIDE DESIGN GUIDE (2004) TABLE 3.1 PAGE 3–6

CLEAR ZONE REQUIRED TO BE 12–14 FEET (1V:5H TO 1V:4H)
–14 FEET HAS BEEN SELECTED

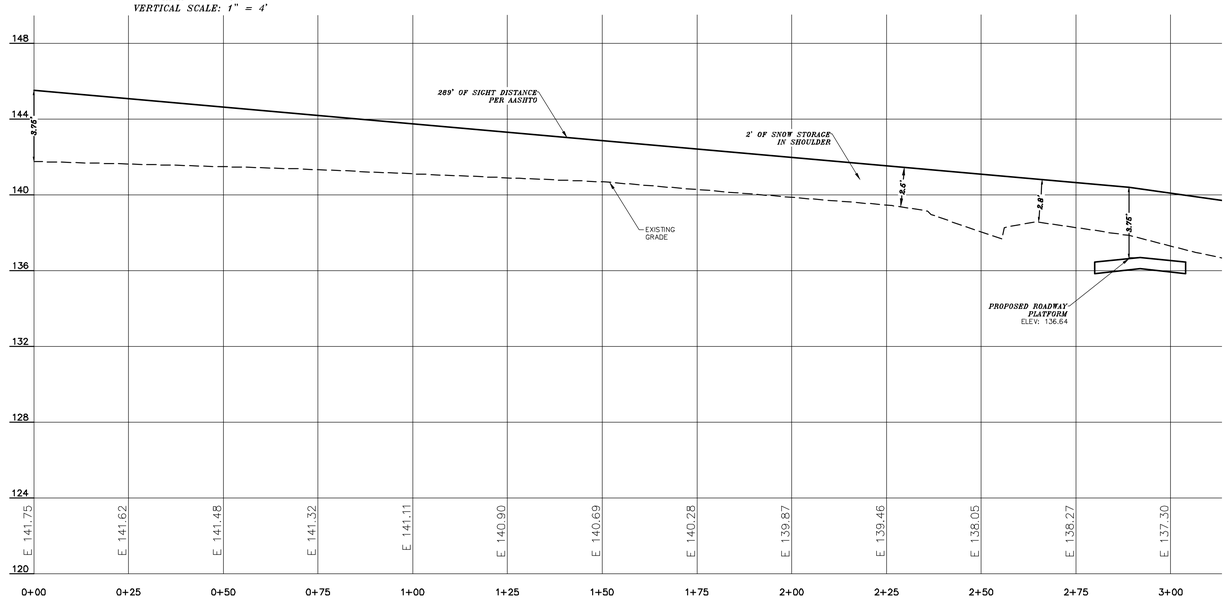


PLAN VIEW TOLEND ROAD & THEODORE ROAD

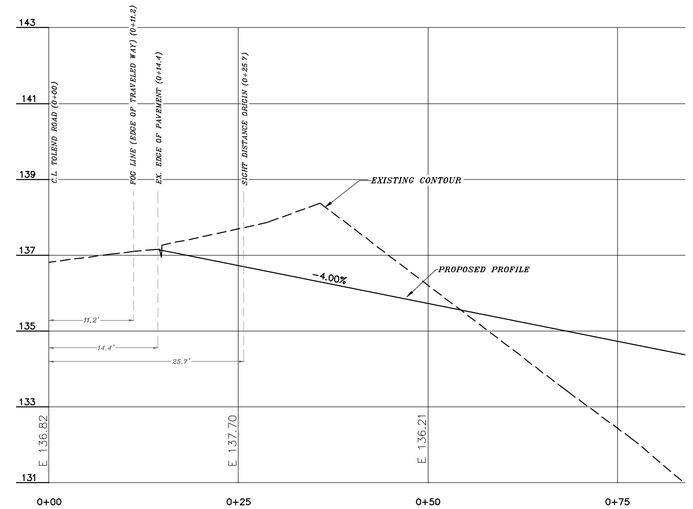
PROFILE VIEW SIGHT LINE TOLEND ROAD

GRAPHIC SCALE

(IN FEET)
1 inch = 20 ft.
VERTICAL SCALE: 1" = 4'



PROFILE THEODORE DRIVE



GRAPHIC SCALE

(IN FEET)
1 inch = 10 ft.
VERTICAL SCALE: 1" = 2'

RWA–1

REVISION	DATE	DESCRIPTION

ROADWAY ACCESS PLAN EASTBOUND
LAND OF
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY &
EUGENE A. & DONNA L. SGRIGNUOLI
TOLEND ROAD
DOVER, N.H.
TAX MAP E, LOT 65–1 & 65–A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332–2863

SCALE : 1 IN. EQUALS 20 FT.
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 – 107

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14243
LICENSED PROFESSIONAL ENGINEER

LEGEND:

- IRON PIPE ~FND~
- IRON BOUND ~FND~
- NH HIGHWAY BOUND ~FND~
- 3/4" IRON BOUND W/ ID CAP ~TBS~
- GRANITE BOUND ~TBS~
- SIGNAGE
- UTILITY POLE
- GUY WIRE
- OHU — OVERHEAD UTILITIES LINE
- POORLY DRAINED WETLAND LINE
- 50' POORLY DRAINED WETLAND BUFFER
- SHOULDER
- BUILDING SETBACK LINE
- SUBDIVISION BOUNDARY LINE
- EASEMENT LINE
- CENTER LINE
- CLEAR ZONE LINE
- MILL

S.C.R.D. STRAFFORD COUNTY REGISTRY OF DEEDS
TYP. TYPICAL
FND FOUND
PL PROPERTY LINE
EL EASEMENT LINE
R.O.W. RIGHT OF WAY
E.O.P. EDGE OF PAVEMENT
SSL (W) SINGLE SOLD LINE (WHITE)
DSL (Y) DOUBLE SOLID LINE (YELLOW)

NOTES CONT.:

5.) THIS IS A RESIDENTIAL SUBDIVISION.

6.) THE INTENT OF THIS PLAN IS TO DEMONSTRATE THE AVAILABLE SIGHT DISTANCE FROM THE PROPOSED ROADWAY KNOWN AS THEODORE DRIVE.

7.) EXISTING CONDITIONS INFORMATION IS BASED ON A SURVEY PERFORMED BY BERRY SURVEYING & ENGINEERING AND IS ENCLOSED IN THIS PACKAGE. EXISTING AND PROPOSED CONTOURS ARE PROVIDED AT 2' INTERVALS WITH DRAINAGE FEATURES AT MORE PRECISE 1' INTERVALS.

8.) THIS PROJECT SHALL BE CONSTRUCTED IN ACCORDANCE WITH NHDOT STANDARD SPECIFICATIONS DATED 2010, CURRENT STANDARD PLANS, SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS INCLUDED IN THE PROPOSAL.

9.) WHERE AN EXISTING UNDERGROUND UTILITY IS FOUND TO CONFLICT WITH THE PROPOSED WORK, THE LOCATION, ELEVATION AND SIZE OF THE UTILITY SHALL BE ACCURATELY DETERMINED WITHOUT DELAY BY THE CONTRACTOR, AND THE INFORMATION FURNISHED TO THE ENGINEER FOR RESOLUTION OF THE CONFLICT.

10.) THE CONTRACTOR SHALL MAKE ALL ARRANGEMENTS FOR THE ALTERATION AND ADJUSTMENT OF GAS, ELECTRIC, TELEPHONE AND ANY OTHER PRIVATE UTILITIES BY THE UTILITY COMPANIES.

NOTES CONT.:

11.) AREAS OUTSIDE THE LIMITS OF PROPOSED WORK DISTURBED BY THE CONTRACTOR'S OPERATIONS SHALL BE RESTORED BY THE CONTRACTOR TO THEIR ORIGINAL CONDITION AT THE CONTRACTOR'S EXPENSE.

12.) THE TERM "PROPOSED" (PROP.) MEANS WORK TO BE CONSTRUCTED USING NEW MATERIALS, OR, WHERE APPLICABLE, RE-USING EXISTING MATERIALS IDENTIFIED AS "REMOVE & RESET" (R & R).

13.) ALL EXISTING SIGNS WITHIN THE PROJECT LIMITS SHALL BE RETAINED UNLESS NOTED OTHERWISE.

14.) ALL SYMBOLS, WORDS, TRANSVERSE MARKINGS (STOP BARS, CROSSWALK LINES, AND RAILROAD SYMBOLS), LANE LINES, AND ALL OTHER MARKINGS NOTED WITH (T) SHALL BE THERMOPLASTIC.

15.) ALL DISTURBED AREAS NOT DESIGNATED TO BE PAVED SHALL HAVE LOAM PLACED AND SEEDED. THE LOAM SHALL HAVE A MINIMUM DEPTH OF 4 INCHES AND SHALL BE PLACED FLUSH WITH THE TOP OF THE ADJACENT CURB, EDGING, BERM OR PAVEMENT SURFACE.

16.) THE SPEED LIMIT ON TOLEND ROAD IS 30 MPH. 85TH PERCENTILE OF TRAFFIC IS ASSUMED TO BE 40 MPH.

NOTES:

1.) OWNER LOT 65-1: D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY
245 N BEND DRIVE
MANCHESTER, NH 03104

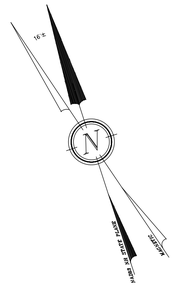
OWNER LOT 65-A: EUGENE A. & DONNA L. SORIGNUOLI
22 SUN HAWK LANE
DOVER, NH 03820

1A.) APPLICANT: STONEARCH DEVELOPMENT CORP.
42J DOVER POINT ROAD
DOVER, NH 03820

2.) LOT OF RECORD: TAX MAP E, LOT 65-1
TAX MAP E, LOT 65-A

3.) LOT AREA LOT 65-1: 1,824,109 Sq. Ft., 41.88 Ac. +/-
LOT AREA LOT 65-A: 110,839 Sq. Ft., 2.54 Ac. +/-

4.) S.C.R.D. BOOK 4918, PAGE 158
S.C.R.D. BOOK 1571, PAGE 86



SIGHT DISTANCE REQUIREMENT:

DESIGN SPEED: 30 MPH / 85TH ASSUMED 40 MPH

FROM AASHTO GEOMETRIC DESIGN OF HIGHWAYS AND STREETS (2011) EXHIBIT 3.1

289' 3% UP GRADE, 315' DOWN GRADE REQUIRED BY AASHTO

289' AND 315' PROVIDED

TOLEND ROAD AADT (2019): 1,835 (NHDOT)

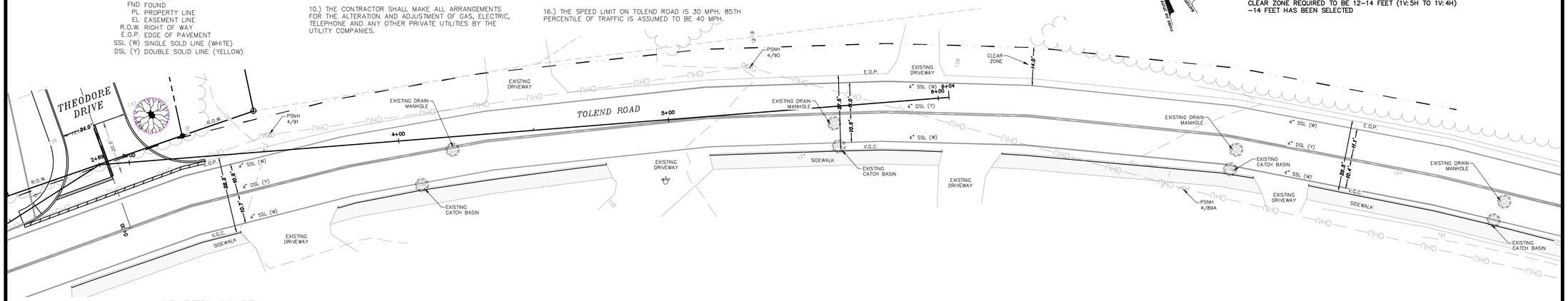
CLEAR ZONE CALCULATION:

DESIGN SPEED: 30 MPH / 85TH ASSUMED 40 MPH

WESTBOUND DESIGN ADT (2019): 935 (NHDOT)

FROM AASHTO ROADSIDE DESIGN GUIDE (2004) TABLE 3.1 PAGE 3-6

CLEAR ZONE REQUIRED TO BE 12-14 FEET (1V:5H TO 1V:4H)
-14 FEET HAS BEEN SELECTED



GRAPHIC SCALE

20 0 10 20 40 80

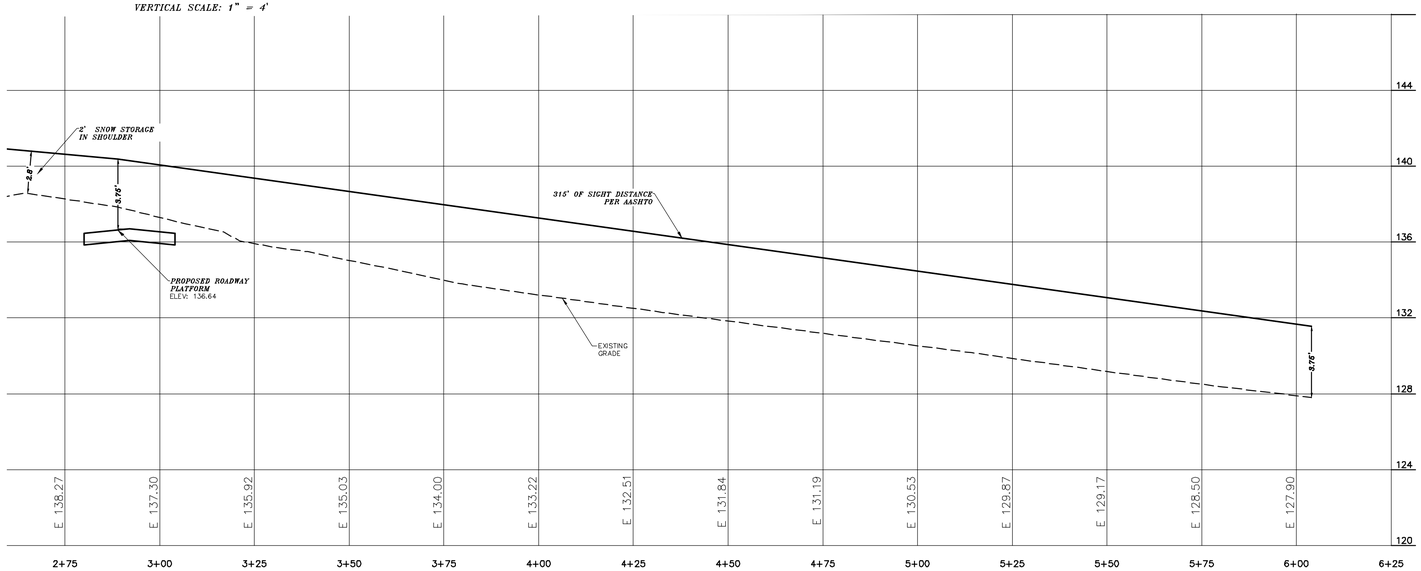
(IN FEET)
1 inch = 20 ft.

PLAN VIEW TOLEND ROAD

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.
VERTICAL SCALE: 1" = 4'



PROFILE VIEW SIGHT LINE TOLEND ROAD

REVISION	DATE	DESCRIPTION

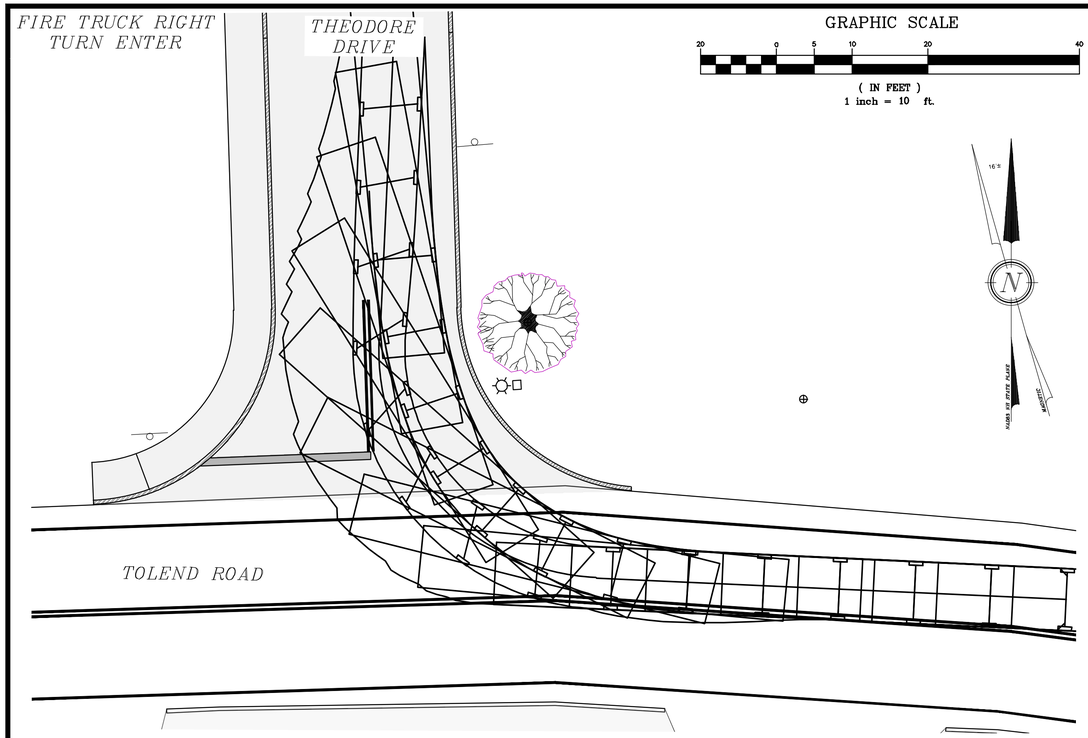
ROADWAY ACCESS PLAN WESTBOUND
LAND OF
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY &
EUGENE A. & DONNA L. SORIGNUOLI
TOLEND ROAD
DOVER, N.H.
TAX MAP E, LOT 65-1 & 65-A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 20 FT.
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 - 107

STATE OF NEW HAMPSHIRE
KENNETH A BERRY
No. 14243
LICENSED
PROFESSIONAL ENGINEER

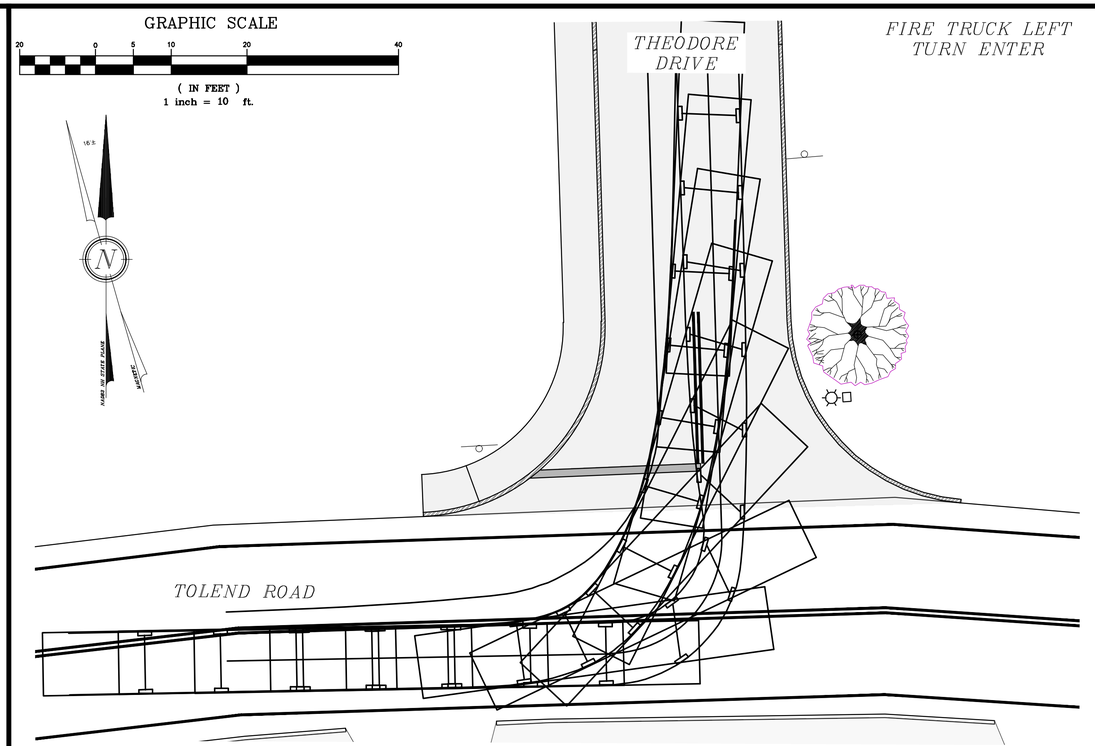
RWA-2



GRAPHIC SCALE

20 0 5 10 20 40

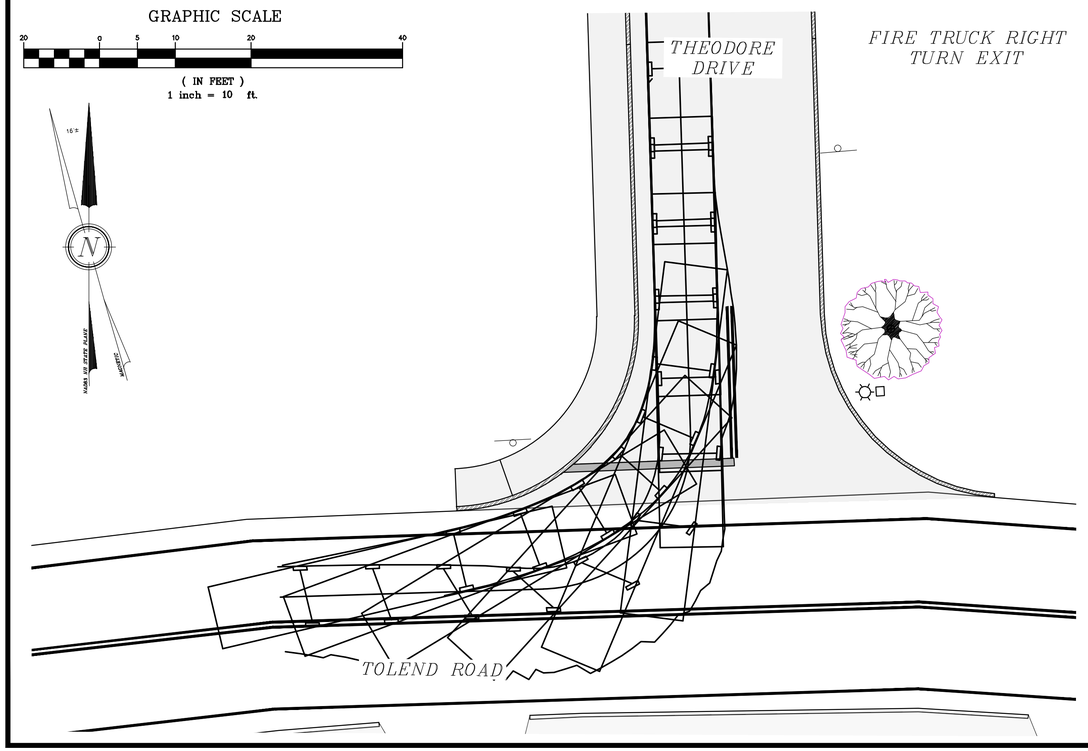
(IN FEET)
1 inch = 10 ft.



GRAPHIC SCALE

20 0 5 10 20 40

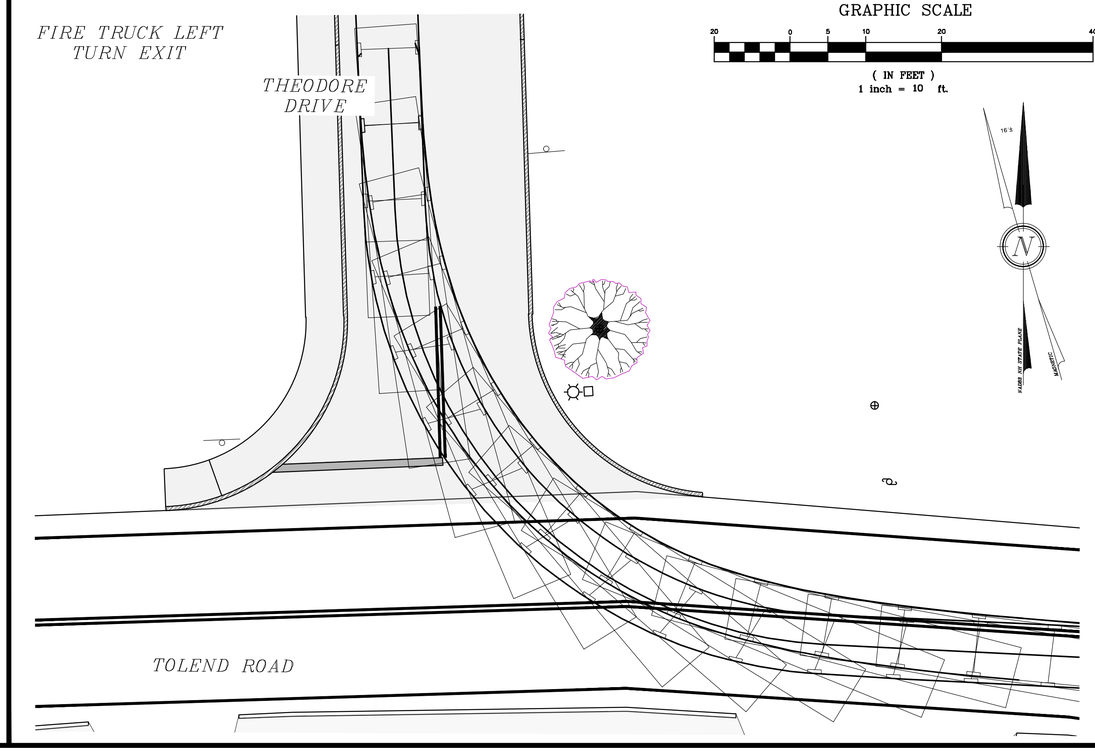
(IN FEET)
1 inch = 10 ft.



GRAPHIC SCALE

20 0 5 10 20 40

(IN FEET)
1 inch = 10 ft.



GRAPHIC SCALE

20 0 5 10 20 40

(IN FEET)
1 inch = 10 ft.

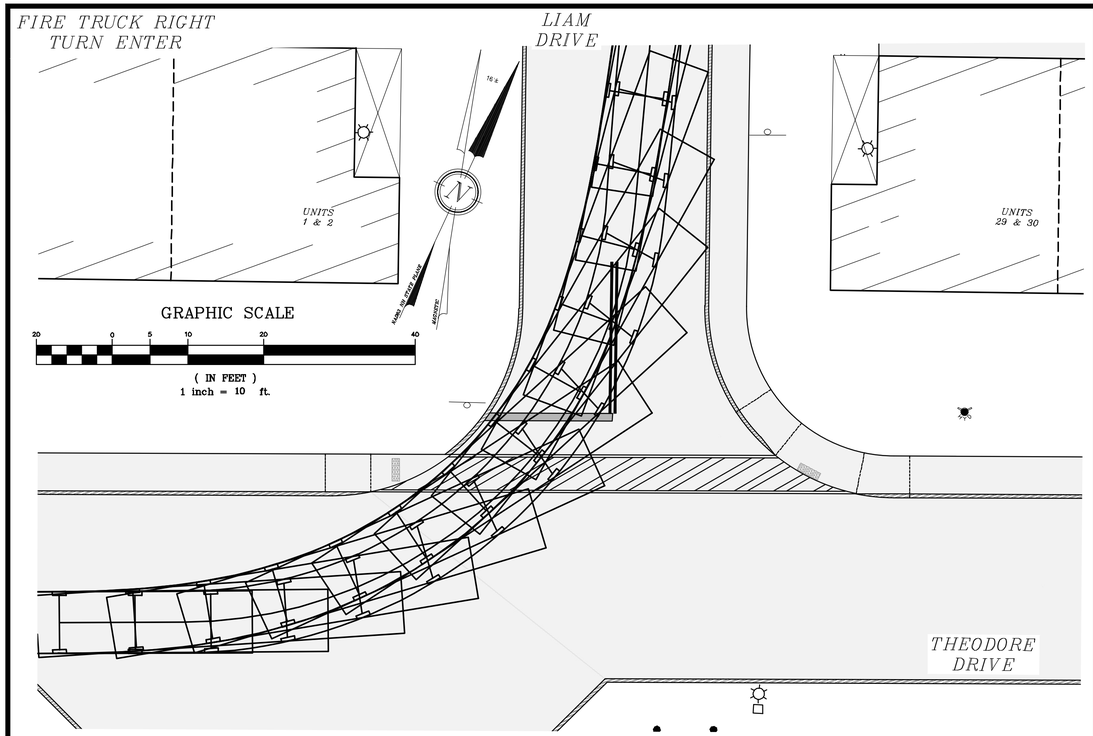
REVISION	DATE	DESCRIPTION

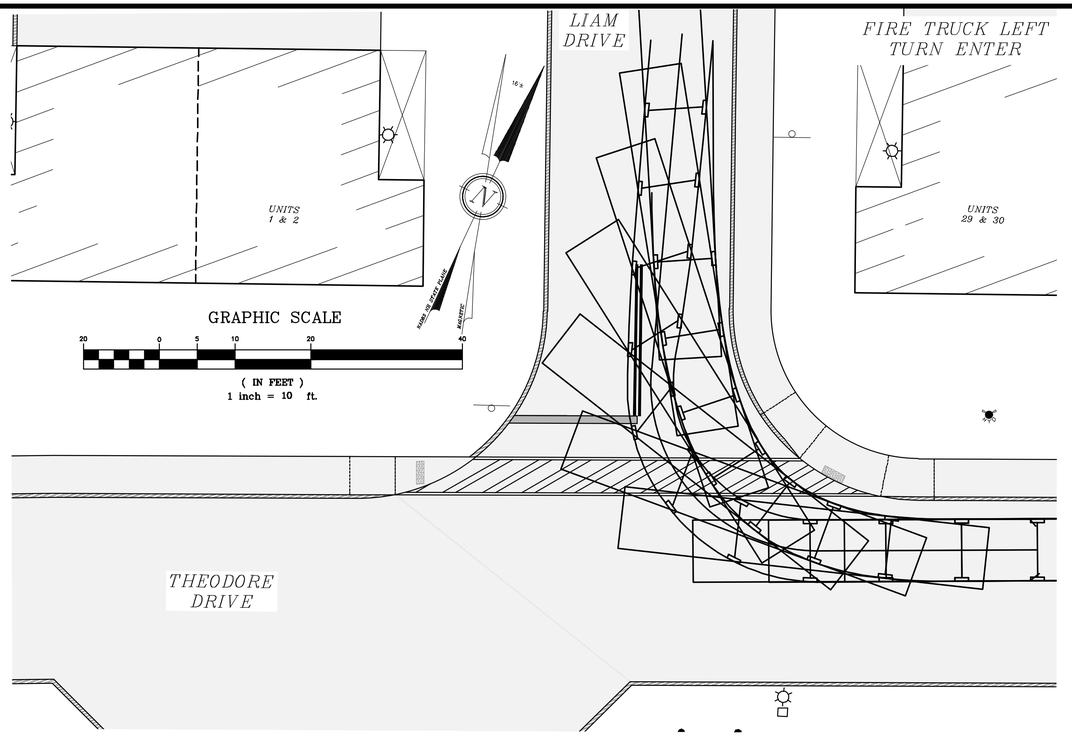
THEODORE DRIVE AND TOLAND ROAD INTERSECTION T1 TURNING
LAND OF
D. LUTSK, D. BARNES, T. GEORGE & L. MULCAHY &
EUGENE A. & DONNA L. SGTIGNOULI
TOLEND ROAD
DOVER, N.H.
TAX MAP E, LOT 65-1 & 65-4

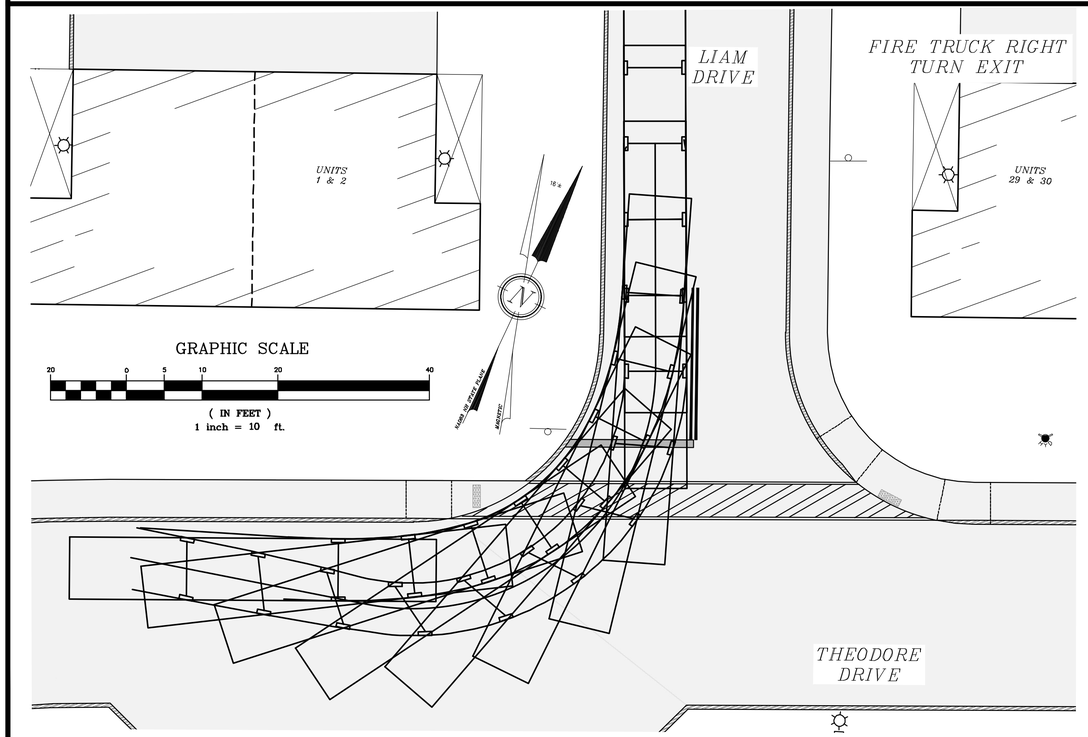
BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

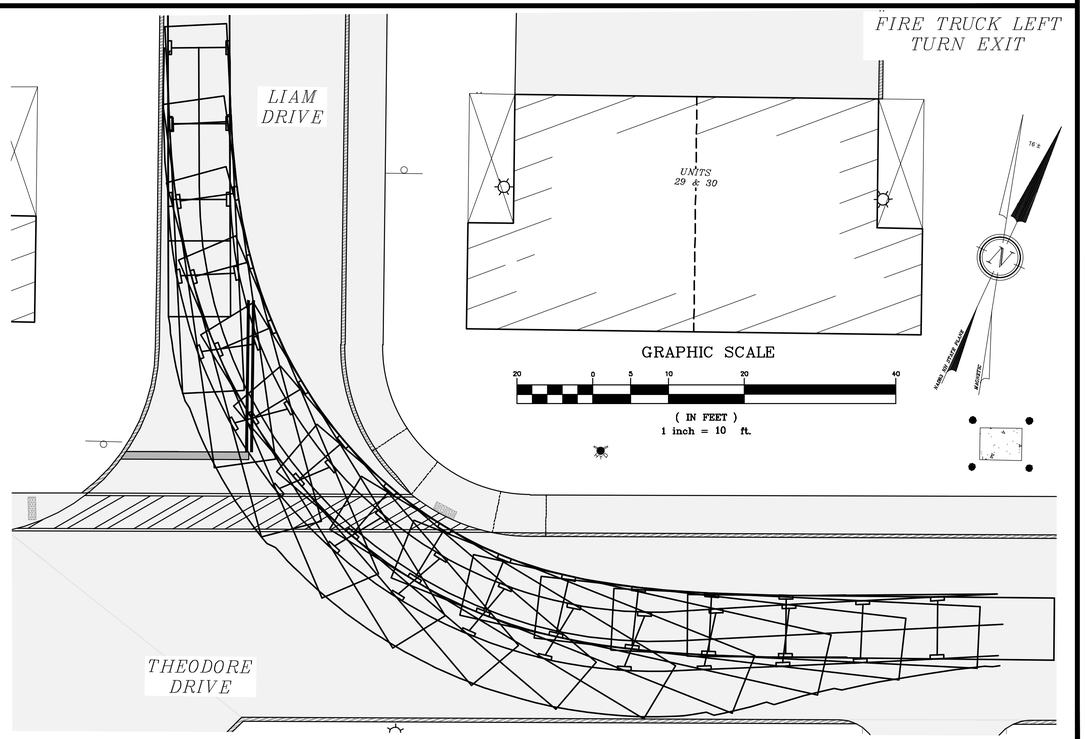
SCALE : 1 IN. EQUALS 10 FT.
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 - 107

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14242
LICENSED
PROFESSIONAL ENGINEER









REVISION	DATE	DESCRIPTION

THEODORE DRIVE AND LIAM DRIVE INTERSECTION T1 TURNING
LAND OF
D. LUTSK, D. BARNES, T. GEORGE & L. MULCAHY &
EUGENE A. & DONNA L. SGTIGNOULI
TOLEND ROAD
DOVER, N.H.
TAX MAP E, LOT 65-1 & 65-4

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 10 FT.
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 – 107

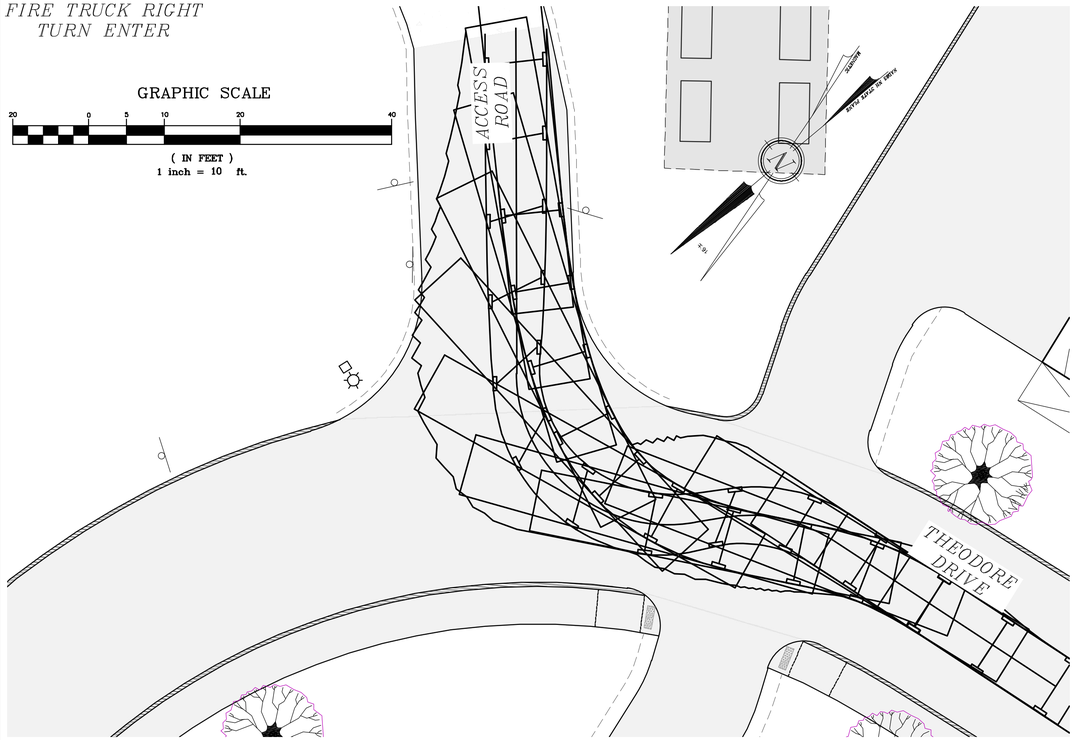
STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14243
LICENSED
PROFESSIONAL ENGINEER

FIRE TRUCK RIGHT TURN ENTER

GRAPHIC SCALE

20 0 5 10 20 40

(IN FEET)
1 inch = 10 ft.

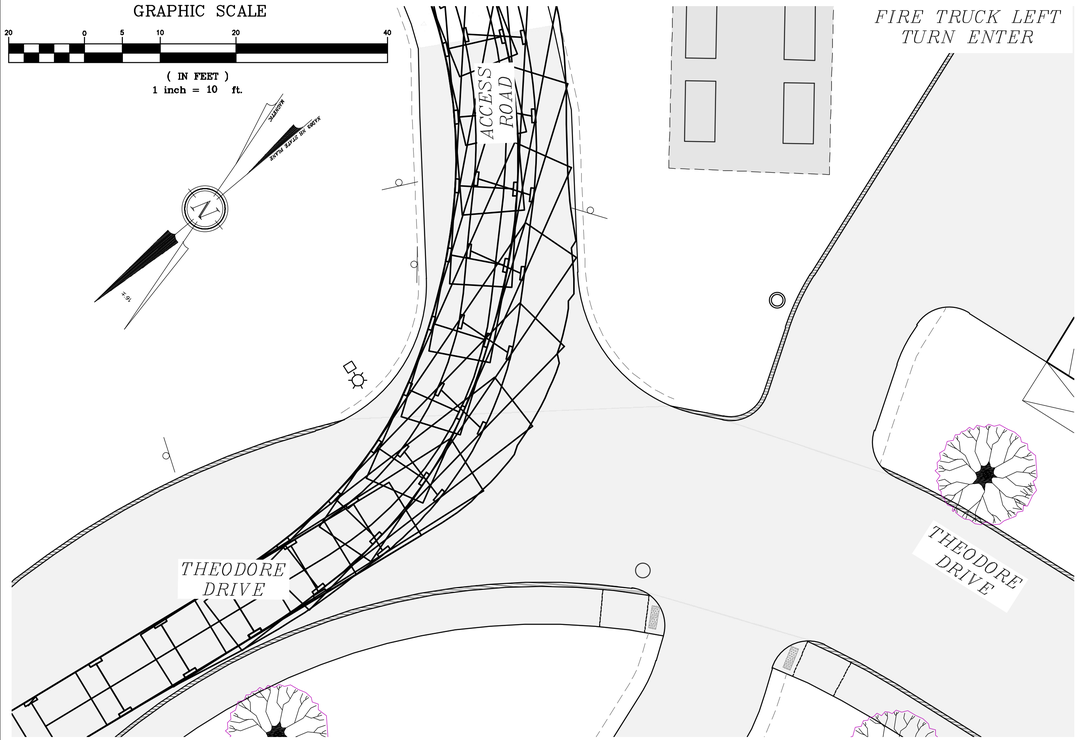


GRAPHIC SCALE

20 0 5 10 20 40

(IN FEET)
1 inch = 10 ft.

FIRE TRUCK LEFT TURN ENTER

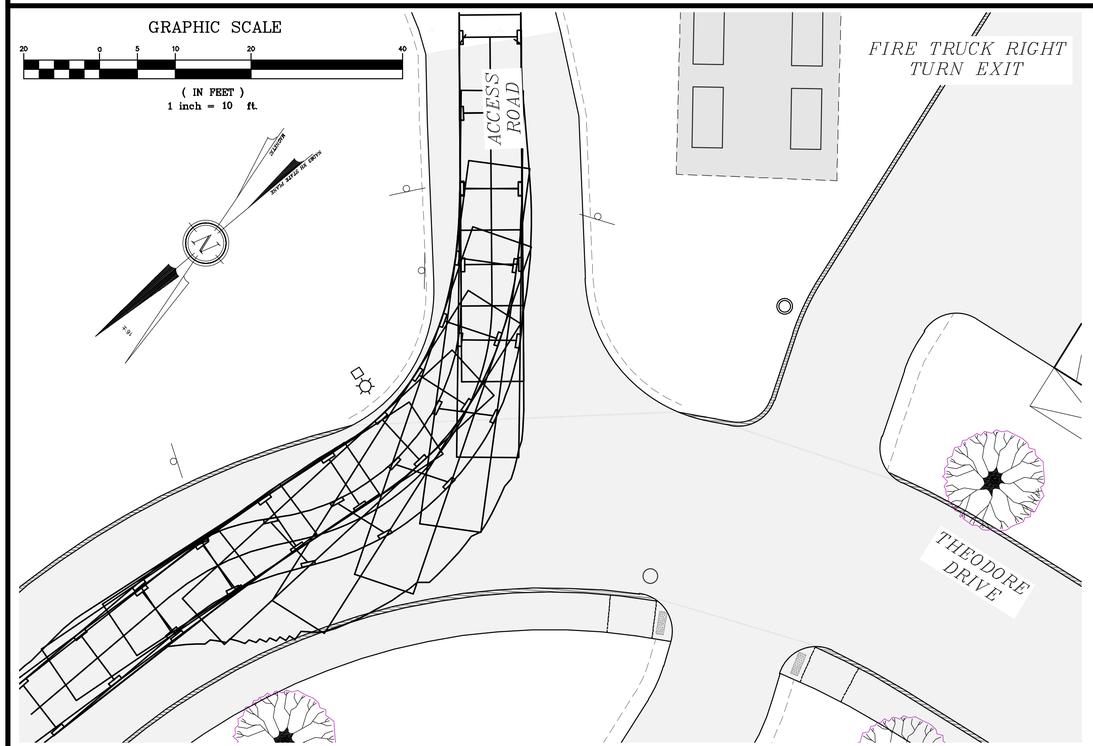


GRAPHIC SCALE

20 0 5 10 20 40

(IN FEET)
1 inch = 10 ft.

FIRE TRUCK RIGHT TURN EXIT

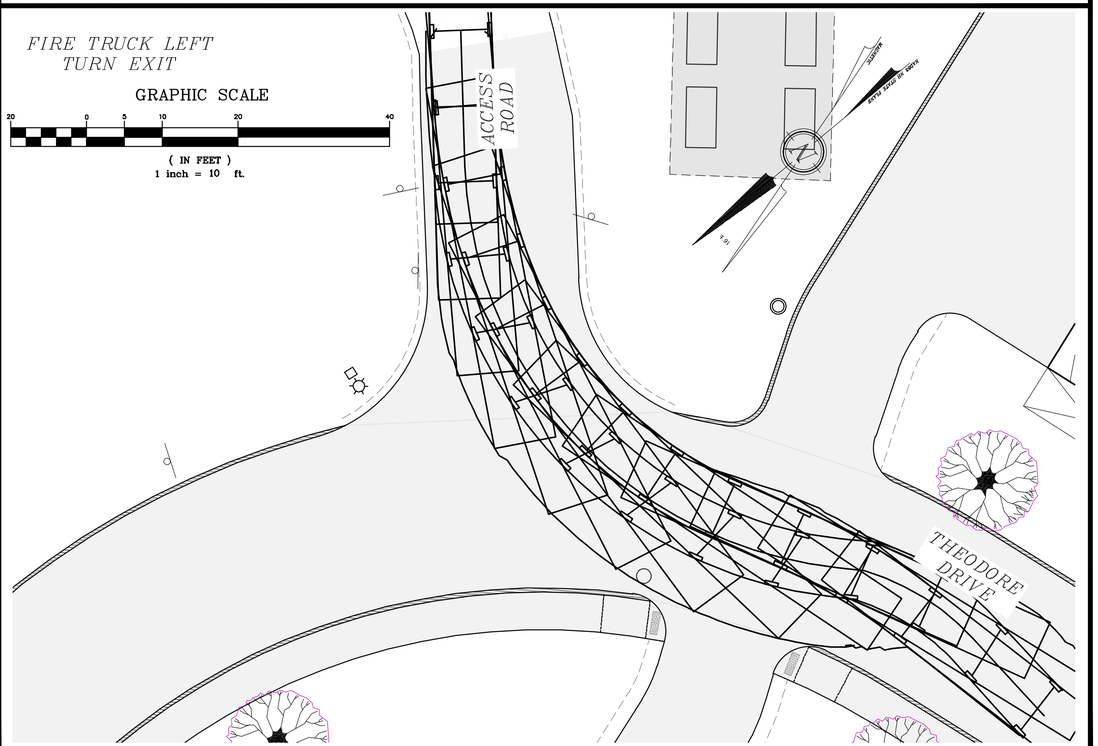


FIRE TRUCK LEFT TURN EXIT

GRAPHIC SCALE

20 0 5 10 20 40

(IN FEET)
1 inch = 10 ft.



REVISION	DATE	DESCRIPTION

THEODORE DRIVE & ACCESS ROAD INTERSECTION T1 TURNING
LAND OF
D. LUTSK, D. BARNES, T. GEORGE & L. MULCAHY &
EUGENE A. & DONNA L. SGITGNOULI
TOLEND ROAD
DOVER, N.H.
TAX MAP E, LOT 65-1 & 65-4

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 10 FT.
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 - 107

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14242
LICENSED
PROFESSIONAL ENGINEER

GRAPHIC SCALE

20 0 5 10 20 40

(IN FEET)
1 inch = 10 ft.

KAME TERRACE PLAINS

MAGNETIC

16.5°

FIRE TRUCK TURN RADIUS

UNITS 11 & 12

LIAM DRIVE

UNITS 47 & 48

16.5°

KAME TERRACE PLAINS

MAGNETIC

FIRE TRUCK TURN RADIUS

THEODORE DRIVE

GRAPHIC SCALE

20 0 5 10 20 40

(IN FEET)
1 inch = 10 ft.

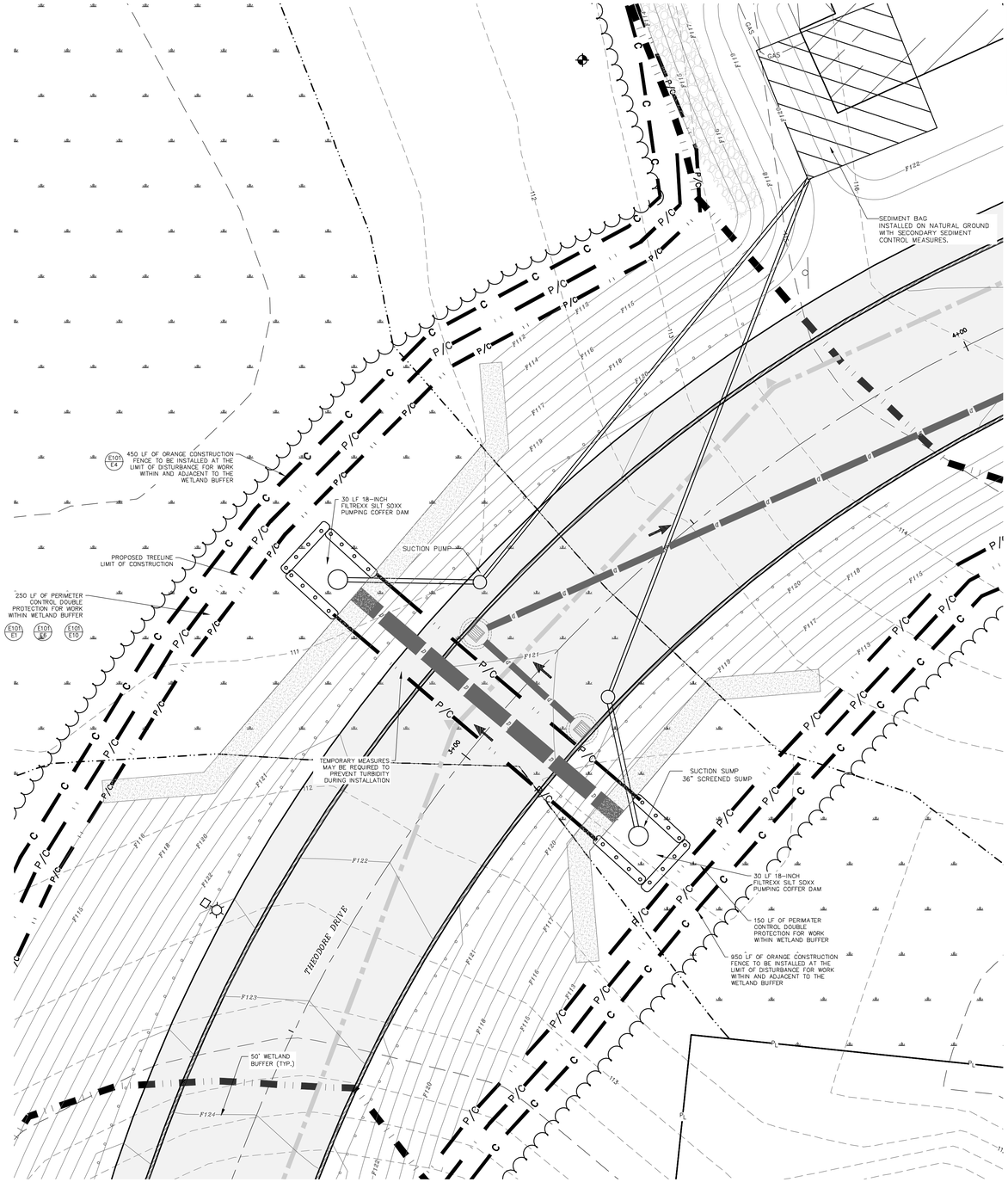
REVISION	DATE	DESCRIPTION

LIAM DRIVE & THEODORE DRIVE CUL-DE-SAC T1 TURNING
LAND OF
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY &
EUGENE A. & DONNA L. SGTIGNOULI
TOLEND ROAD
DOVER, N.H.
TAX MAP E, LOT 65-1 & 65-4

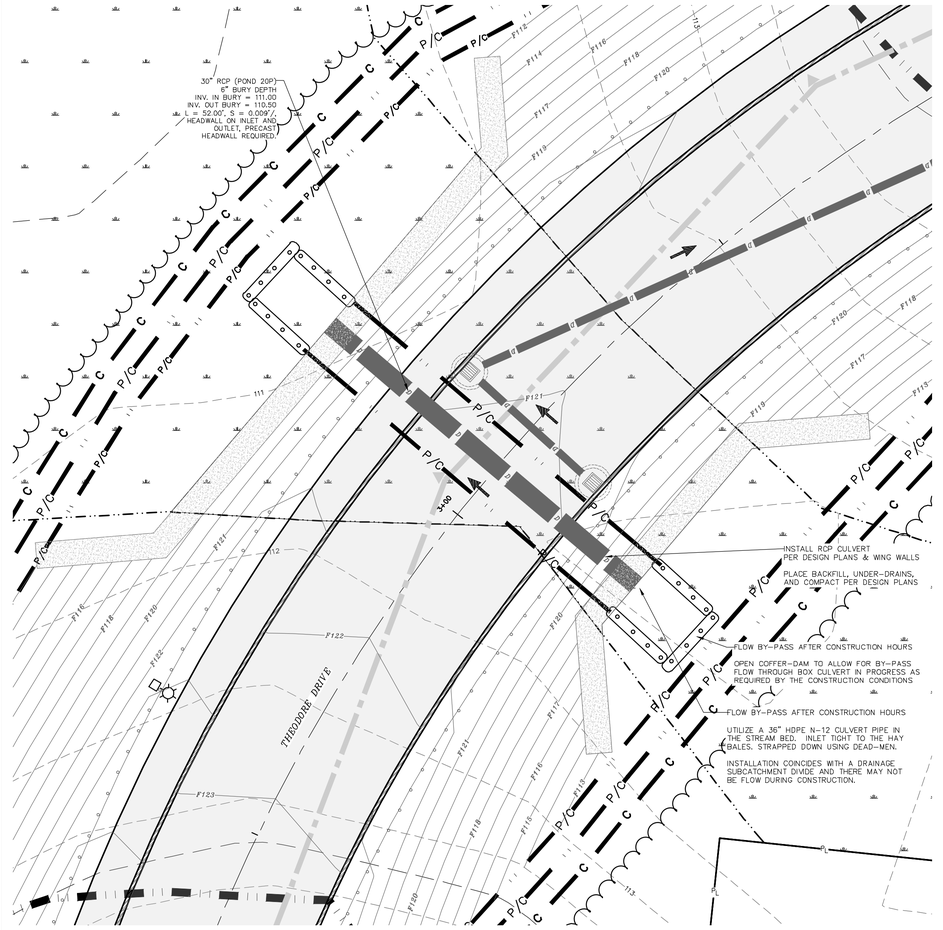
BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 10 FT.
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 - 107

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14243
LICENSED
PROFESSIONAL ENGINEER



PROPOSED CROSSING DE-WATERING 3+10



CONSTRUCTION DIVERSION PLAN 3+10

NOTES:

1.) EROSION AND SEDIMENT CONTROL INSPECTIONS TO BE CONDUCTED ONCE PER EVERY SEVEN DAYS AND AT AN INCREASED FREQUENCY INCLUDING WITHIN 24-HOURS OF A 0.25 INCH RAIN EVENT. INSPECTIONS TO BE CONDUCTED BY A "QUALIFIED PERSON" AS DEFINED BY EPA CGP 6.31 AND INSPECTION REPORTS SUBMITTED TO THE CITY OF DOVER, NH, ENGINEERING DEPARTMENT WITHIN 24 HOURS IN ACCORDANCE WITH CGP 4.3 AND MAINTAINED BY THE OWNER FOR A PERIOD OF THREE YEARS AFTER THE PROJECT IS COMPLETED. SEE ALSO CITY OF DOVER ADDITIONAL INSPECTION REQUIREMENTS BELOW. A QUALIFIED PERSON WILL BE TRAINED IN EROSION AND SEDIMENT CONTROL MEASURES AND HAVE A PROFESSIONAL CERTIFICATION.

2.) THE DESIGN ENGINEER WILL BE PRESENT DURING THE INSTALLATION OF THE CULVERT AND PROVIDED TWO-DAYS NOTICE PRIOR TO CONSTRUCTION. THE DESIGN ENGINEER AND SWPPP INSPECTOR WILL BE NOTIFIED WHEN DEWATERING IS TO TAKE PLACE AND WILL ENSURE THAT THE DISCHARGE FROM THE SEDIMENT BAG AD SECONDARY CONTAINMENT IS CLEAN WATER. THE INTENT OF THE DISCHARGE IS TO FLOW OVER NATURAL EARTH AND TO BE CONDUCTED UP-SLOPE OF THE PERIMETER CONTROL.

3.) SEDIMENT WILL BE CONFINED WITHIN THE LIMITS OF CONSTRUCTION AND THERE IS TO BE NO TURBIDITY WITHIN THE JURISDICTIONAL WETLANDS. THE CONTRACTOR IS REQUIRED TO TAKE ANY AND ALL ADDITIONAL MEASURES TO CONTROL EROSION AND SEDIMENT CONTROL. THE USE OF STRAW OR HAY ON EXPOSED SOILS MAY BE REQUIRED AS A TEMPORARY STABILIZATION MEASURE. SLOPES WILL BE STABILIZED WITHIN THREE-DAYS OF ACHIEVING FINISH GRADE AND WITHIN 14 DAYS OF DISTURBING THE SOIL.

LEGEND:

- (B) BMP / SUBSURFACE GRAVEL WETLAND PROTECTION
- (P) PERIMETER CONTROL
- (C) RESIDENTIAL/ROADWAY CONSTRUCTION
- IRON PIPE (FND)
- IRON BOUND (FND)
- REBAR (FND)
- UTILITY POLE
- GUY WIRE
- BENCH MARK
- RIP RAP
- STORMWATER BMP
- BERM
- P/C — PERIMETER CONTROL (SEE E-101)
- SF — SILT FENCE
- SS SS SS — FILTREXX SILTSOXX (NOTE SIZE)
- TREE LINE
- C C — CONSTRUCTION FENCE

GRAPHIC SCALE

20 0 5 10 20 40

(IN FEET)
1 inch = 10 ft.

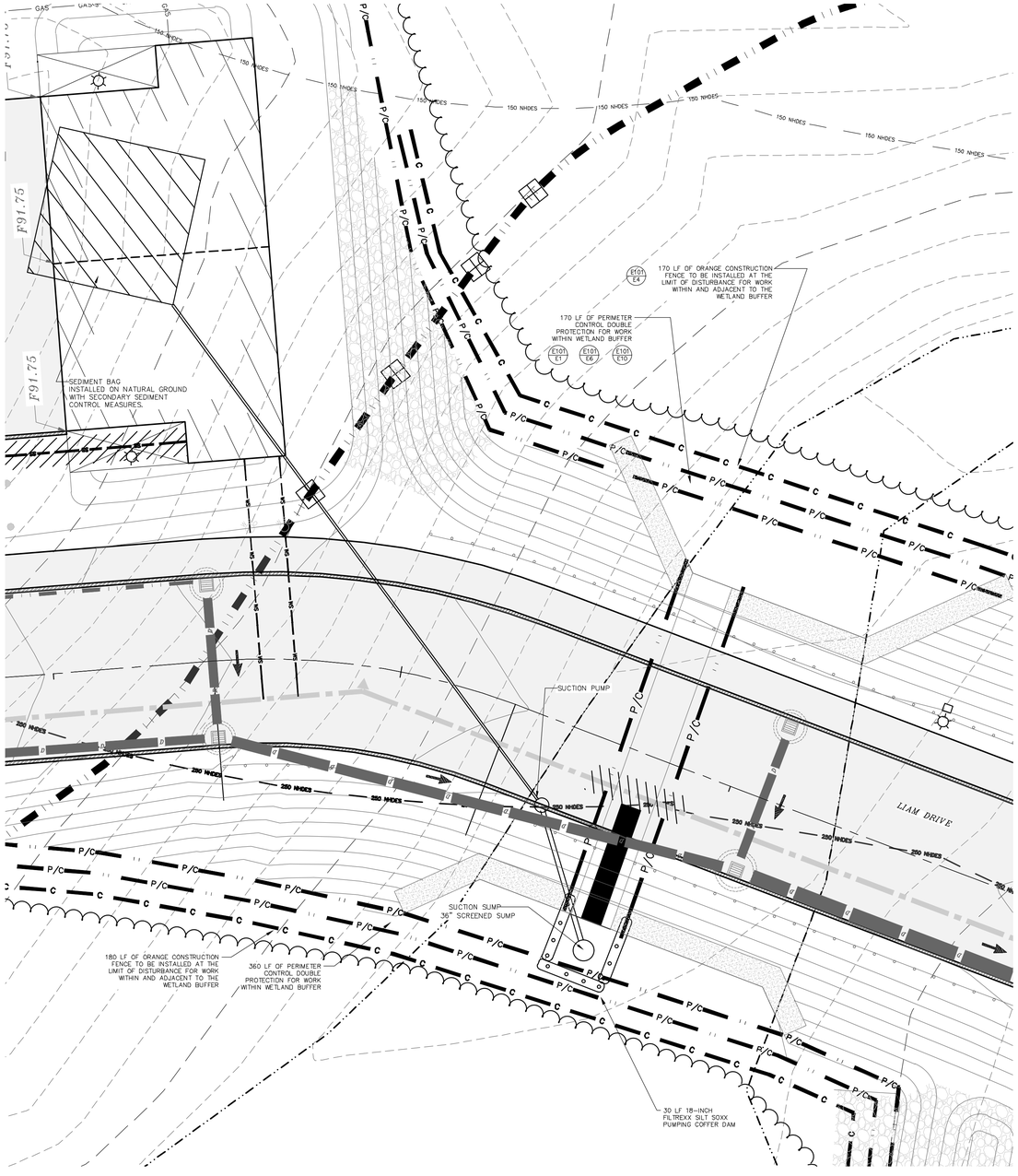
REVISION	DATE	DESCRIPTION

CULVERT CROSSING 3+10 AND DE-WATERING PLAN
LAND OF
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY &
EUGENE A. & DONNA L. SGITNOULI
TOLEND ROAD
DOVER, N.H.
TAX MAP E, LOT 65-1 & 65-4

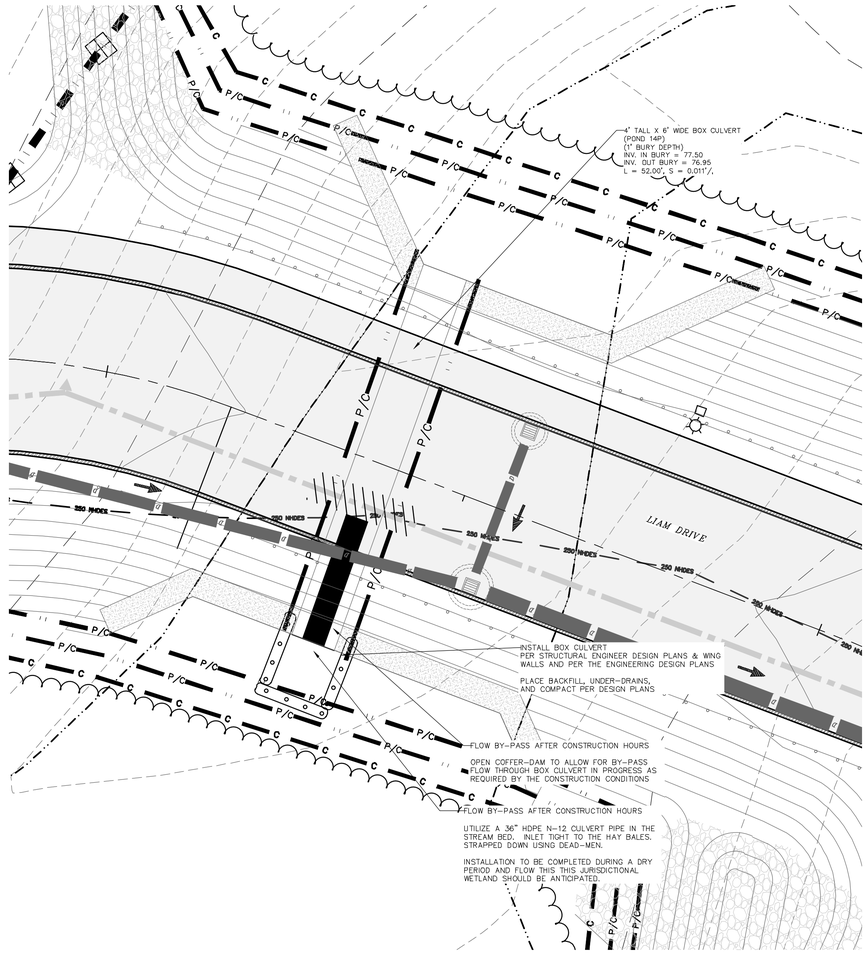
BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 10 FT.
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 - 107

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14243
LICENSED PROFESSIONAL ENGINEER



PROPOSED CROSSING DE-WATERING 26+60



CONSTRUCTION DIVERSION PLAN 26+60

NOTES:

1.) EROSION AND SEDIMENT CONTROL INSPECTIONS TO BE CONDUCTED ONCE PER EVERY SEVEN DAYS AND AT AN INCREASED FREQUENCY INCLUDING WITHIN 24-HOURS OF A 0.25 INCH RAIN EVENT. INSPECTIONS TO BE CONDUCTED BY A "QUALIFIED PERSON" AS DEFINED BY EPA CGP 6.31 AND INSPECTION REPORTS SUBMITTED TO THE CITY OF DOVER, NH, ENGINEERING DEPARTMENT WITHIN 24 HOURS IN ACCORDANCE WITH CGP 4.3 AND MAINTAINED BY THE OWNER FOR A PERIOD OF THREE YEARS AFTER THE PROJECT IS COMPLETED. SEE ALSO CITY OF DOVER ADDITIONAL INSPECTION REQUIREMENTS BELOW. A QUALIFIED PERSON WILL BE TRAINED IN EROSION AND SEDIMENT CONTROL MEASURES AND HAVE A PROFESSIONAL CERTIFICATION.

2.) THE DESIGN ENGINEER WILL BE PRESENT DURING THE INSTALLATION OF THE CULVERT AND PROVIDED TWO-DAYS NOTICE PRIOR TO CONSTRUCTION. THE DESIGN ENGINEER AND SWPPP INSPECTOR WILL BE NOTIFIED WHEN DEWATERING IS TO TAKE PLACE AND WILL ENSURE THAT THE DISCHARGE FROM THE SEDIMENT BAG AD SECONDARY CONTAINMENT IS CLEAN WATER. THE INTENT OF THE DISCHARGE IS TO FLOW OVER NATURAL EARTH AND TO BE CONDUCTED UP-SLOPE OF THE PERIMETER CONTROL.

3.) SEDIMENT WILL BE CONFINED WITHIN THE LIMITS OF CONSTRUCTION AND THERE IS TO BE NO TURBIDITY WITHIN THE JURISDICTIONAL WETLANDS. THE CONTRACTOR IS REQUIRED TO TAKE ANY AND ALL ADDITIONAL MEASURES TO CONTROL EROSION AND SEDIMENT CONTROL. THE USE OF STRAW OR HAY ON EXPOSED SOILS MAY BE REQUIRED AS A TEMPORARY STABILIZATION MEASURE. SLOPES WILL BE STABILIZED WITHIN THREE-DAYS OF ACHIEVING FINISH GRADE AND WITHIN 14 DAYS OF DISTURBING THE SOIL.

LEGEND:

- (B) BMP / SUBSURFACE GRAVEL WETLAND PROTECTION
- (P) PERIMETER CONTROL
- (C) RESIDENTIAL/ROADWAY CONSTRUCTION
- IRON PIPE (FND)
- IRON BOUND (FND)
- REBAR (FND)
- UTILITY POLE
- GUY WIRE
- BENCH MARK
- RIP RAP
- STORMWATER BMP
- BERM
- P/C — PERIMETER CONTROL (SEE E-101)
- SF — SILT FENCE
- SS — FILTREXX SILTSOXX (NOTE SIZE)
- TREE LINE
- C — CONSTRUCTION FENCE

GRAPHIC SCALE

20 0 5 10 20 40

(IN FEET)
1 inch = 10 ft.

REVISION	DATE	DESCRIPTION

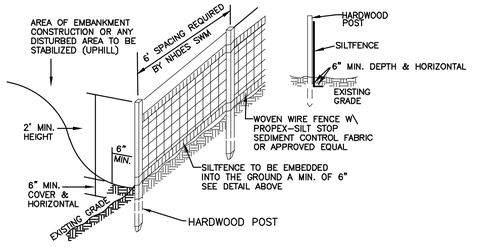
BOX CULVERT CROSSING 26+60 AND DE-WATERING PLAN
LAND OF
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY &
EUGENE A. & DONNA L. SGTIGNOULI
TOLEND ROAD
DOVER, N.H.
TAX MAP E, LOT 65-1 & 65-4

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 10 FT.
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 - 107

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14243
LICENSED
PROFESSIONAL ENGINEER

E1



SILT FENCE CONSTRUCTION SPECIFICATIONS

1. WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES AND FILTER CLOTH SHALL BE FASTENED TO WOVEN WIRE EVERY 24" AT TOP MID AND BOTTOM SECTIONS AND BE EMBEDDED INTO GROUND A MINIMUM OF 8" THE FENCE POSTS SHALL BE A MINIMUM 48" LONG, SPACED A MAXIMUM 6' APART, AND DRIVEN A MINIMUM OF 16" INTO THE GROUND.
2. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER, THE ENDS OF THE FABRIC SHALL BE OVERLAPPED BY SIX INCHES, FOLDED AND STAPLED TO PREVENT SEDIMENT FROM BY-PASSING.
3. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND SEDIMENT REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE AND PROPERLY DISPOSED OF. SEE MAINTENANCE NOTE BELOW.
4. REMOVAL OF SEDIMENT REQUIRED AT A DEPTH OF 6-INCHES.
4. PLACE THE ENDS OF THE SILT FENCE UP CONTOUR TO PROVIDE FOR SEDIMENT STORAGE.
5. SILT FENCES SHALL BE REMOVED WHEN NO LONGER NEEDED AND THE SEDIMENT COLLECTED SHALL BE DISPOSED AS DIRECTED BY THE ENGINEER.
6. THE AREA DISTURBED BY THE REMOVAL SHALL BE SMOOTHED AND RE-VEGETATED.
7. TO BE CONSTRUCTED IAW NH SWM #3 4-2 SEDIMENT CONTROL PRACTICES, SILT FENCE, PAGE 90.

SILT FENCE MAINTENANCE

1. SILT FENCES SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. ANY REPAIRS THAT ARE REQUIRED SHALL BE MADE IMMEDIATELY.
2. IF THE FABRIC ON A SILT FENCE SHOULD DECOMPOSE OR BECOME INEFFECTIVE DURING THE EXPECTED LIFE OF THE FENCE, THE FABRIC SHALL BE REPLACED PROMPTLY.
3. SEDIMENT DEPOSITS SHOULD BE REMOVED WHEN THEY REACH SIX-INCHES IN DEPTH.
4. SEDIMENT DEPOSITS THAT ARE REMOVED OR LEFT IN PLACE AFTER THE FABRIC HAS BEEN REMOVED SHALL BE GRADED TO CONFORM WITH THE EXISTING TOPOGRAPHY AND VEGETATED.

SILT FENCE DETAIL
NOT TO SCALE

E2

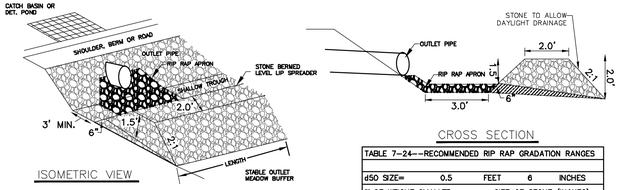
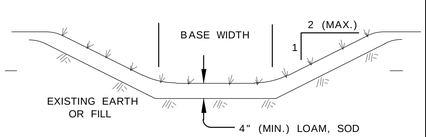


TABLE 7-24--RECOMMENDED RIP RAP GRADATION RANGES			
d50 SIZE=	0.5	FEET	6 INCHES
% OF WEIGHT SMALLER THAN THE GIVEN d50 SIZE	SIZE OF STONE (INCHES) FROM		TO
100%	9		12
85%	8		11
50%	6		9
15%	2		3

1. CONSTRUCT THE LEVEL SPREADER LIP ON A 0% GRADE TO INSURE UNIFORM SPREADING OF RUNOFF.
2. LEVEL SPREADER SHALL BE CONSTRUCTED ON UNDISTURBED SOIL AND NOT ON FILL.
3. THE ENTIRE LEVEL LIP AREA SHALL BE PROTECTED BY PLACING EXCELSIOR ENFORCER MATTING BENEATH THE STONE. EACH STRIP SHALL OVERLAP BY AT LEAST SIX INCHES.
4. THE FLOW FROM THE LEVEL SPREADER SHALL OUTLET ONTO STABILIZED AREAS. WATER SHOULD NOT RE-CONCENTRATE IMMEDIATELY BELOW THE SPREADER.
5. MAINTENANCE: THE LEVEL SPREADER SHOULD BE CHECKED PERIODICALLY AND AFTER EVERY MAJOR STORM TO DETERMINE IF THE LIP HAS BEEN DAMAGED AND THE DESIGN CONDITIONS HAVE NOT CHANGED. ANY DETRIMENTAL SEDIMENT ACCUMULATION SHOULD BE REMOVED. IF STONE REMOVAL HAS TAKEN PLACE ON THE LIP, THEN THE DAMAGE SHOULD BE REPAIRED.
6. REFERENCE IS MADE TO NHDES SWM VOL. 2, 4-6, STONE BERM LEVEL SPREADERS, PAGE 162

STONE BERM LEVEL SPREADER
NOT TO SCALE

E3



GRASS CONVEYANCE SWALE
NOT TO SCALE

INSPECT ANNUALLY FOR EROSION, SEDIMENT ACCUMULATIONS, VEGETATION LOSS, & INVASIVE SPECIES. REPAIR AS NECESSARY.

MOW GRASS ANNUALLY TO A DEPTH OF 4".

INSTALL STABILIZATION MATTING DURING CONSTRUCATION

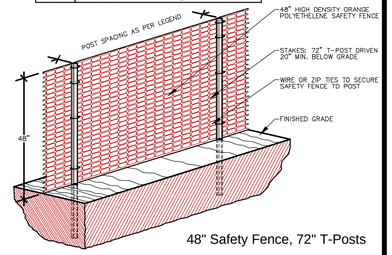
TO BE CONSTRUCTED IAW NH SWM #2 CHAPTER 4, #5 TREATMENT SWALES, PAGE 123.

E4

CONSTRUCTION SAFETY FENCE
NOT TO SCALE

LEGEND

SAF12	48" ORANGE FENCE, 12 FEET O.C.
SAF11	48" ORANGE FENCE, 11 FEET O.C..
SAF10	48" ORANGE FENCE, 10 FEET O.C.
SAF9	48" ORANGE FENCE, 9 FEET O.C.
SAF8	48" ORANGE FENCE, 8 FEET O.C..
SAF7	48" ORANGE FENCE, 7 FEET O.C.
SAF6	48" ORANGE FENCE, 6 FEET O.C.

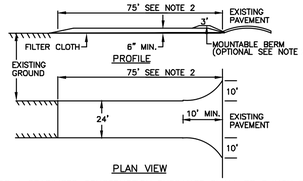


48" Safety Fence, 72" T-Posts

1. ALL SENSITIVE AREAS SHALL BE PROTECTED AS PER PLAN.
2. ALL TREES IN THE CONSTRUCTION AREA NOT SPECIFICALLY DESIGNATED FOR REMOVAL SHALL BE PRESERVED AND PROTECTED WITH HIGH VISIBILITY FENCE AS PER PLAN.
3. WHEN PRACTICABLE, INSTALL HIGH VISIBILITY 3 FEET OUTSIDE OF THE DRIP LINE OF THE TREE.
4. SAFETY FENCE SHOULD BE FASTENED SECURELY TO THE T-POSTS.
5. THE FENCING MUST REMAIN IN PLACE DURING ALL PHASES OF CONSTRUCTION; ANY CHANGE OF THE PROTECTIVE FENCING MUST BE APPROVED.

E5

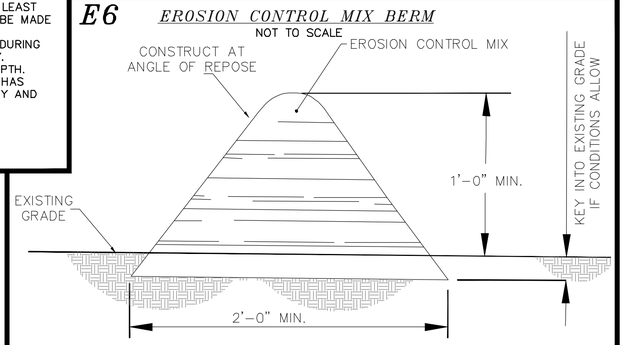
STABILIZED CONSTRUCTION ENTRANCE
NOT TO SCALE



1. STONE FOR A STABILIZED CONSTRUCTION ENTRANCE SHALL BE 3 INCH STONE, RECLAIMED STONE, OR RECYCLED CONCRETE EQUIVALENT.
2. THE LENGTH OF THE STABILIZED ENTRANCE SHALL NOT BE LESS THAN 75 FEET, EXCEPT THAT THE MINIMUM LENGTH MAY BE REDUCED TO 50 FEET IF A 3-INCH TO 6-INCH BERM IS INSTALLED AT THE ENTRANCE OF THE PROJECT SITE.
3. THE THICKNESS OF THE STONE FOR THE STABILIZED ENTRANCE SHALL NOT BE LESS THAN 6 INCHES.
4. THE WIDTH OF THE ENTRANCE SHALL NOT BE LESS THAN THE FULL WIDTH OF THE ENTRANCE WHERE INGRESS OR EGRESS OCCURS OR 10 FEET, WHICH EVER IS GREATER.
5. GEOTEXTILE FILTER CLOTH SHALL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING
6. ALL SURFACE WATER THAT IS FLOWING TO OR DIVERTED TOWARD THE CONSTRUCTION ENTRANCE SHALL BE PIPED BENEATH THE ENTRANCE. IF PIPING IS IMPRACTICAL, A BERM WITH 5:1 SLOPES THAT CAN BE CROSSED BY VEHICLES MAY BE SUBSTITUTED FOR THE PIPE.
7. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEAN OUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, WASHED, OR TRACKED ONTO PUBLIC RIGHT-OF-WAY MUST BE REMOVED PROMPTLY.
8. TO BE CONSTRUCTED IAW NH SWM #3 4-2 SEDIMENT CONTROL PRACTICES, TEMPORARY CONSTRUCTION EXIT, PAGE 124.

E6

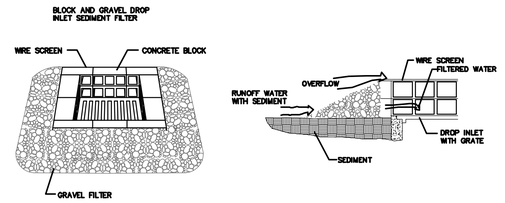
EROSION CONTROL MIX BERM
NOT TO SCALE



EROSION CONTROL MIX BERMS SHALL BE USED ONLY AS FOLLOWS:

1. BERMS SHALL BE USED IN AREAS WHERE EROSION WILL OCCUR ONLY IN THE FORM OF SHEET EROSION AND THERE IS NO CONCENTRATION OF WATER IN A CHANNEL OR DRAINAGE WAY ABOVE THE BERM.
2. THE BERMS SHALL BE INSTALLED FOLLOWING THE CONTOUR OF THE LAND AS CLOSLY AS POSSIBLE.
3. THE BERMS SHALL BE INSTALLED ON SLOPES LESS THAN 5%.
4. SUBJECT TO (E), BELOW, THE MIX SHALL HAVE AN ORGANIC PORTION BETWEEN 80 AND 100%, DRY WEIGHT BASIS, AND BE FIBROUS AND ELONGATED SUCH AS FROM SHREDDED BARK, STUMP GRINDINGS, COMPOSED BARK, OR EQUIVALENT MANUFACTURED PRODUCTS.
5. WOOD AND BARK CHIPS, GROUND CONSTRUCTION DEBRIS, OR REPROCESSED WOOD PRODUCTS SHALL NOT BE USED AS ORGANIC MATERIAL.
6. THE MIX SHALL NOT CONTAIN SILTS, CLAY, OR FINE SANDS.
7. THE MIX SHALL HAVE A PARTICLE SIZE BY WEIGHT OF 70 TO 85% PASSING A 6-INCH SCREEN AND A MAXIMUM OF 85% PASSING THE 0.75-INCH SCREEN.
8. THE MIX PH SHALL BE BETWEEN 5.0 AND 8.0.
9. THE BERM SHALL BE AT LEAST 12 INCHES HIGH AND AT LEAST 2 FEET WIDE.
10. TO BE CONSTRUCTED IAW NH SWM #3 4-2 SEDIMENT CONTROL PRACTICES, EROSION CONTROL MIX BERMS, PAGE 106.

E7



MAINTENANCE

ALL STRUCTURES SHOULD BE INSPECTED AFTER EVERY RAIN STORM AND REPAIRS MADE AS NECESSARY. SEDIMENT SHOULD BE REMOVED FROM TRAPPING DEVICES AFTER THE SEDIMENT HAS REACHED A MAXIMUM OF ONE HALF THE DEPTH OF THE TRAP. THE SEDIMENT SHOULD BE DISPOSED OF IN A SUITABLE AREA AND PROTECTED FROM EROSION BY EITHER STRUCTURE OR VEGETATIVE MEANS. THE TEMPORARY TRAPS SHOULD BE REMOVED AND THE AREA REPAIRED AS SOON AS THE CONTRIBUTING DRAINAGE AREA TO THE INLET HAS BEEN COMPLETELY STABILIZED.

BLOCK & GRAVEL DROP INLET SEDIMENT FILTER
NOT TO SCALE

TO BE USED IN ALL AREAS WHERE THERE WILL BE NO TRAFFIC.

TO BE CONSTRUCTED IAW NH SWM #3 4-2 SEDIMENT CONTROL PRACTICES, TEMPORARY STORM DRAIN INLET PROTECTION, PAGE 118.

E8

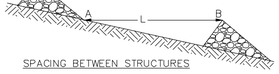
TEMPORARY EROSION CONTROL MEASURES

1. THE SMALLEST PRACTICAL AREA OF LAND SHALL BE EXPOSED AT ANY ONE TIME.
2. EROSION, SEDIMENT AND DETENTION MEASURES SHALL BE INSTALLED AS SHOWN ON THE PLANS AND AT LOCATIONS AS REQUIRED, DIRECTED BY THE ENGINEER.
3. ALL DISTURBED AREAS SHALL BE RETURNED TO ORIGINAL GRADES AND ELEVATIONS. DISTURBED AREAS SHALL BE LOAMED WITH A MINIMUM OF 4" OF LOAM AND SEEDED WITH NOT LESS THAN ONE POUND OF SEED PER 50 SQUARE YARDS OF AREA. (SEE SEED SPECIFICATIONS THIS SHEET)
4. ALL DISTURBED AREAS WILL BE RESTABILIZED WITHIN 45 DAYS. AT ANY ONE TIME, NO MORE THAN 5 ACRES, (217,800 Sq. Ft.) WILL BE DISTURBED.
5. SILT FENCES AND PERIMETER BARRIERS SHALL BE INSPECTED PERIODICALLY AND AFTER EVERY RAIN DURING THE LIFE OF THE PROJECT. ALL DAMAGED AREAS SHALL BE REPAIRED, SEDIMENT DEPOSITS SHALL PERIODICALLY BE REMOVED AND DISPOSED OF.
6. AFTER ALL DISTURBED AREAS HAVE BEEN STABILIZED, THE TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE REMOVED AND THE AREA DISTURBED BY THE REMOVAL SMOOTHED AND RE-VEGETATED.
7. PER THE EPA CGP REQUIREMENTS THERE WILL BE REPORTS OF THE EROSION CONTROL INSPECTIONS IAW SWPPP PREPARED BY BS&E. ALL EROSION CONTROLS SHALL BE INSPECTED WEEKLY AND WITHIN 24 HOURS AFTER 0.25" OR GREATER RAIN EVENT.
8. DITCHES, SWALES, AND BASINS SHALL BE STABILIZED PRIOR TO DIRECTING RUNOFF TO THEM.
9. DO NOT TRAFFIC EXPOSED SOIL SURFACES WITH CONSTRUCTION EQUIPMENT. IF FEASIBLE, PERFORM EXCAVATIONS WITH EQUIPMENT POSITIONED OUTSIDE THE LIMITS OF THE INFILTRATION SYSTEM.
10. ROADWAYS, DRIVEWAYS AND CUT AND FILL SLOPES MUST BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINAL GRADE.
11. STABILIZATION MEANS:
    - 11.1. A MINIMUM OF 85% OF VEGETATIVE COVER HAS BEEN ESTABLISHED.
    - 11.2. A MINIMUM OF 3 INCHES OF NON-EROSIVE MATERIAL SUCH AS STONE OR RIP RAP HAS BEEN INSTALLED, OR
    - 11.3. EROSION CONTROL BLANKETS HAVE BEEN INSTALLED.
12. THIS PROJECT IS TO BE MANAGED IN A MANNER THAT MEETS THE REQUIREMENTS AND INTENT OF RSA 430:53 AND CHAPTER AGR 3800 RELATIVE TO INVASIVE SPECIES.
13. THE NHDES STORMWATER MANUAL, IN THREE VOLUMES, DATED DECEMBER 2008, IS A PART OF THIS PLAN SET AND THE MORE RESTRICTIVE WILL GOVERN. (NH SWM)

E9

STONE CHECK DAM
NOT TO SCALE

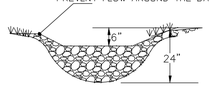
THE DISTANCE SUCH THAT POINTS A AND B ARE OF EQUAL ELEVATION.

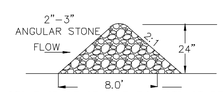


SPACING BETWEEN STRUCTURES

1.) CHECK DAMS SHOULD BE INSTALLED BEFORE RUNOFF IS DIRECTED TO THE SWALE OR DRAINAGE DITCH.
2.) THE MAXIMUM CONTRIBUTING DRAINAGE AREA TO THE DAM SHOULD BE LESS THEN ONE ACRE.
3.) THE MAXIMUM HEIGHT OF THE DAM SHOULD BE TWO FEET.
4.) THE CENTER OF THE DAM SHOULD BE AT LEAST SIX INCHES LOWER THAN THE OUTER EDGES.
5.) THE MAXIMUM SPACING IS AS SHOWN ON THE PROJECT SITE PLANS.
6.) CHECK DAMS WILL NOT BE USED IN A FLOWING STREAM.
7.) TEMPORARY CHECK DAMS WILL BE REMOVED ONCE THE SWALE OR DITCH IS DETERMINED STABLE.
8.) TO BE CONSTRUCTED IAW NH SWM #3 4-2 SEDIMENT CONTROL PRACTICES, TEMPORARY CHECK DAMS, PAGE 114.

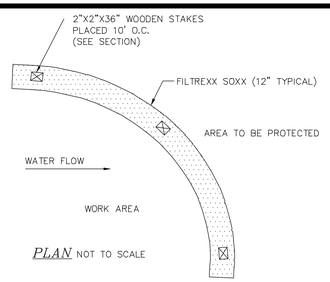
NOTE: KEY STONE INTO CHANNEL BANKS AND EXTEND IT BEYOND THE ABUTMENTS A MINIUM OF 18" TO PREVENT FLOW AROUND THE DAM.





STONE GRADE STABILIZATION STRUCTURE

E10

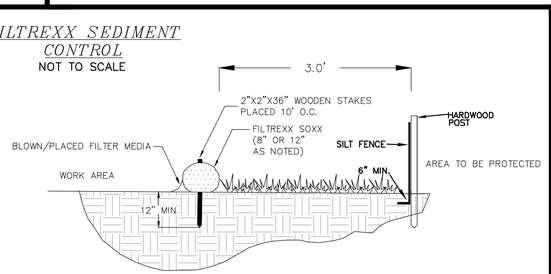


PLAN NOT TO SCALE

NOTES

1. ALL MATERIAL TO MEET FILTREXX SPECIFICATIONS.
2. FILTER MEDIA FILL TO MEET APPLICATION REQUIRMENTS.
3. COMPOST MATERIAL TO BE DISPERSED ON SITE, AS DETERMINED BY ENGINEER.
4. SILTSOXX MAY BE USED IN PLACE OF SILT FENCE OR OTHER SEDIMENT BARRIERS.
5. SILTSOXX COMPOST/SOIL/ROCK/SEED FILL MATERIAL SHALL BE ADJUSTED AS NECESSARY TO MEET THE REQUIRMENTS OF THE SPECIFIC APPLICATION.
6. FILTREXX SOXX IS A REGISTERED TRADEMARK OF FILTREXXIN TERNATIONAL, LLC.
7. SILT FENCE IS NOT A SUBSTITUTION FOR SILT SOXX AND ANY EQUAL SUBSTITUTION TO BE APPROVED.
8. TO BE CONSTRUCTED IAW FILTREXX, SECTION 1:EROSION & SEDIMENT CONTROL (PAGE 323) - CONSTRUCTION ACTIVITIES, SWPPP CUT SHEET: FILTREXX SEDIMENT CONTROL

FILTREXX SEDIMENT CONTROL
NOT TO SCALE

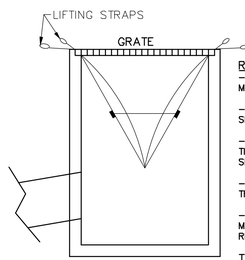


Filtrexx International, LLC
35481 Grafton Eastern Rd | Grafton, Oh 44044
440-926-2607 | fax: 440-926-4021
WWW.FILTREXX.COM
OR APPROVED EQUAL

NOTE: FOR AREAS REQUIRING DOUBLE PERIMETER CONTROL WITHIN 50' OF JURISDICTIONAL WETLANDS AND NOT FOR ALL SILT SOXX APPLICATIONS. THIS DUPLICATION MAY BE SPECIFIED AS 12" SILT SOXX OR ORANGE CONSTRUCTION FENCE AS NOTED.

SECTION NOT TO SCALE

E11



RECOMMENDED MAINTENANCE SCHEDULE

-EACH SILTSACK SHOULD BE INSPECTED AFTER EVERY MAJOR RAIN EVENT, AND MUST BE MAINTAINED.

-IF THERE HAVE BEEN NO MAJOR EVENTS, SILTSACK SHOULD BE INSPECTED EVERY 2-3 WEEKS.

-THE RESTRAINT CORD SHOULD BE VISIBLE AT ALL TIMES. IF CORD IS COVERED WITH SEDIMENT, THE SILTSACK SHOULD BE EMPTIED.

-TO BE USED IN ALL AREAS WHERE THERE WILL BE TRAFFIC.

- ARE SUBJECT TO DAMAGE BY SNOW PLOWS, AND MUST BE INSPECTED AFTER ANY SNOW EVENT AND REPLACED AS REQUIRED.

TO BE CONSTRUCTED IAW NH SWM #3 4-2 SEDIMENT CONTROL PRACTICES, TEMPORARY STORM DRAIN INLET PROTECTION, PAGE 118.

SILTSACK DETAIL
NOT TO SCALE

E-101

REVISION	DATE	DESCRIPTION

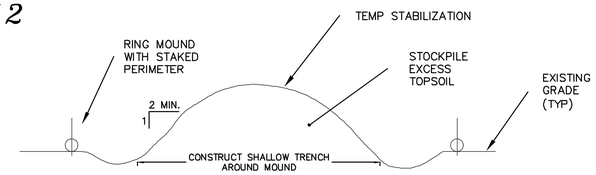
EROSION & SEDIMENT CONTROL DETAILS
LAND OF
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY &
EUGENE A. & DONNA L. SGITGNOULI
TOLEND ROAD
DOVER, N.H.
TAX MAP E, LOT 65-1 & 65-4

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : AS NOTED
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 - 107

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14243
LICENSED PROFESSIONAL ENGINEER

E12



TO BE CONSTRUCTED IAW NH SWM #3 4-1 EROSION CONTROL PRACTICES, SOIL STOCKPILE PRACTICES, PAGE 46.

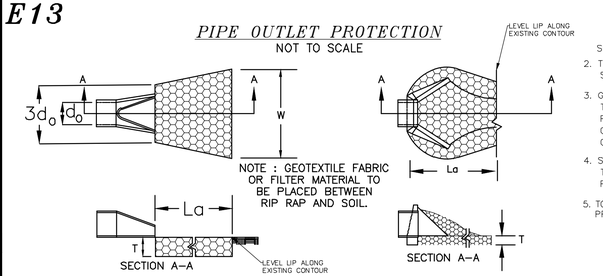
TOPSOIL STOCKPILE MOUND

NOT TO SCALE

E13

PIPE OUTLET PROTECTION

NOT TO SCALE



PIPE OUTLET TO FLAT AREA WITH NO DEFINED CHANNEL

PIPE OUTLET TO WELL-DEFINED CHANNEL

PIPE OUTLET PROTECTION CONSTRUCTION SPECIFICATIONS

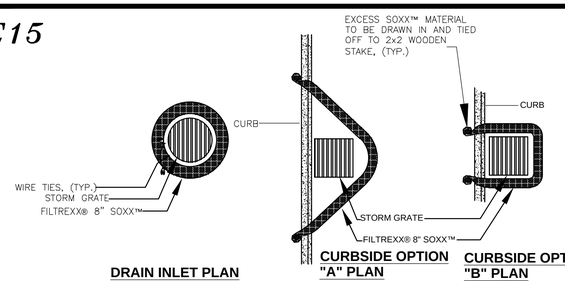
SPECIFIED GRADATION.

2. THE ROCK OR GRAVEL USED FOR FILTER OF RIP RAP SHALL CONFORM TO NHDOT SECTION 583.
3. GEOTEXTILE FABRICS SHALL BE PROTECTED FROM PUNCTURE OR TEARING DURING THE PLACEMENT OF THE ROCK RIP RAP DAMAGED AREAS IN THE FABRIC SHALL BE REPAIRED BY PLACING A PIECE OF FABRIC OVER THE DAMAGED AREA OR BY COMPLETE REPLACEMENT OF THE FABRIC. ALL OVERLAPS REQUIRED FOR REPAIRS OR JOINING TWO PIECES OF FABRIC SHALL BE A MINIMUM OF 12 INCHES.
4. STONE FOR THE RIP RAP MAY BE PLACED BY EQUIPMENT AND SHALL BE CONSTRUCTED TO THE FULL LAYER THICKNESS IN ONE OPERATION AND IN SUCH A MANNER AS TO PREVENT SEGREGATION OF THE STONE SIZES.
5. TO BE CONSTRUCTED IAW NH SWM #2 4-6 CONVEYANCE PRACTICES, 6. OUTLET PROTECTION, PAGE 172.

E14

TABLE 7-24--RECOMMENDED RIP RAP GRADATION RANGES		
d50 SIZE= 0.5	FEET 6	INCHES
% OF WEIGHT SMALLER THAN THE GIVEN d50 SIZE	SIZE OF STONE (INCHES) FROM	TO
100%	9	12
85%	8	11
50%	6	9
15%	2	3

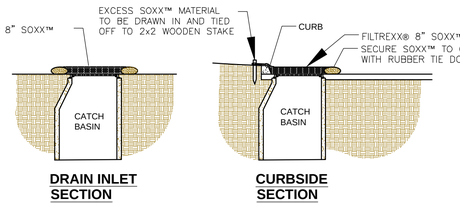
E15



DRAIN INLET PLAN

CURBSIDE OPTION "A" PLAN

CURBSIDE OPTION "B" PLAN



DRAIN INLET SECTION

CURBSIDE SECTION

NOTES:
1. ALL MATERIAL TO MEET FILTREXX® SPECIFICATIONS.
2. FILTER MEDIA™ FILL TO MEET APPLICATION REQUIREMENTS.
3. COMPOST MATERIAL TO BE DISPERSED ON SITE, AS DETERMINED BY ENGINEER.

FILTREXX INLET PROTECTION

NOT TO SCALE

E16

NOTE: THIS PROJECT IS TO BE MANAGED IN A MANNER THAT MEETS THE REQUIREMENTS AND INTENT OF RSA 430:53 AND CHAPTER AGR 3800 RELATIVE TO INVASIVE SPECIES.

NOTE: Temporary seed mix for stabilization of turf shall be winter rye or oats at a rate of 2.5 lbs. per 1000 s.f. and shall be placed prior to OCT. 15, if permanent seeding not yet complete.

SEEDING GUIDE

USE	SEEDING MIXTURE 1/	DROUGHTY	WELL DRAINED	MODERATELY WELL DRAINED	POORLY DRAINED
STEEP CUTS AND FILLS, BORROW AND DISPOSAL AREAS	A	FAIR	GOOD	GOOD	FAIR
	B	POOR	GOOD	FAIR	FAIR
	C	POOR	GOOD	EXCELLENT	GOOD
	D	FAIR	FAIR	GOOD	EXCELLENT
	E	FAIR	EXCELLENT	EXCELLENT	POOR
WATERWAYS, EMERGENCY SPILLWAYS, AND OTHER CHANNELS WITH FLOWING WATER.	A	GOOD	GOOD	GOOD	FAIR
	C	GOOD	EXCELLENT	EXCELLENT	FAIR
	D	GOOD	EXCELLENT	EXCELLENT	FAIR
LIGHTLY USED PARKING LOTS, ODD AREAS, UNUSED LANDS, AND LOW INTENSITY USE RECREATION SITES.	A	GOOD	GOOD	GOOD	FAIR
	B	GOOD	GOOD	GOOD	POOR
	C	GOOD	EXCELLENT	EXCELLENT	FAIR
	D	FAIR	GOOD	GOOD	EXCELLENT
PLAY AREAS AND ATHLETIC FIELDS. (TOPSOIL IS ESSENTIAL FOR GOOD TURF.)	F	FAIR	EXCELLENT	EXCELLENT	2/
	G	FAIR	EXCELLENT	EXCELLENT	2/

GRAVEL PIT, SEE NH-PM-.24 IN APPENDIX FOR RECOMMENDATION REGARDING RECLAMATION OF SAND AND GRAVEL PITS.

1/ REFER TO SEEDING MIXTURES AND RATES IN TABLE 7-36.
2/ POORLY DRAINED SOILS ARE NOT DESIRABLE FOR USE AS PLAYING AREA AND ATHLETIC FIELDS.

RECOMMENDED *

SEEDING RATES

MIXTURE	POUNDS PER ACRE	POUNDS PER 1,000 Sq. Ft.
A. TALL FESCUE	20	0.45
CREEPING RED FESCUE	20	0.45
RED TOP	2	0.05
TOTAL	42	0.95
B. TALL FESCUE	15	0.35
CREEPING RED FESCUE	10	0.25
CROWN VETCH	15	0.35
OR		
FLAT PEA	30	0.75
TOTAL	40 OR 55	0.95 OR 1.35
C. TALL FESCUE	24	0.55
CREEPING RED FESCUE	24	0.55
BIRDS FOOT TREFOIL	REMOVED	REMOVED
TOTAL	48	1.10
D. TALL FESCUE	30	0.45
FLAT PEA	20	0.75
TOTAL	50	1.20
E. CREEPING RED FESCUE 1/	50	1.15
KENTUCKY BLUEGRASS 1/	50	1.15
TOTAL	100	2.30
F. TALL FESCUE 1	150	3.60

CONSERVATION MIX	POUNDS PER ACRE	POUNDS PER 1,000 S.F.
TALL FESCUE (35%)	15	0.35
CREEPING RED FESCUE (25%)	15	0.35
ANNUAL RYEGRASS (12%)	5	0.12
PERENNIAL RYEGRASS (10%)	5	0.12
KENTUCKY BLUEGRASS (10%)	15	0.35
WHITE CLOVER (3%)	7	0.16

SEEDING SPECIFICATIONS

1. GRADING AND SHAPING
   A. SLOPES SHALL NOT BE STEEPER THAN 2:1;3:1 SLOPES OR FLATTER ARE PREFERRED.
   WHERE MOWING WILL BE DONE, 3:1 SLOPES OR FLATTER ARE RECOMMENDED.
2. SEEDBED PREPARATION
   A. SURFACE AND SEEPAGE WATER SHOULD BE DRAINED OR DIVERTED FROM THE SITE TO PREVENT DROWNING OR WINTER KILLING OF THE PLANTS.
   B. STONES LARGER THAN 4 INCHES AND TRASH SHOULD BE REMOVED BECAUSE THEY INTERFERE WITH SEEDING AND FUTURE MAINTENANCE OF THE AREA. WHERE FEASIBLE, THE SOIL SHOULD BE TILLED TO A DEPTH OF ABOUT 4 INCHES TO PREPARE A SEED BED AND MIX FERTILIZER AND LIME INTO THE SOIL. THE SEEDBED SHOULD BE LEFT IN REASONABLY FIRM AND SMOOTH CONDITION. THE LAST TILLAGE OPERATION SHOULD BE PERFORMED ACROSS THE SLOPE WHEREVER PRACTICAL.
3. ESTABLISHING A STAND
   A. LIME AND FERTILIZER SHOULD BE APPLIED PRIOR TO OR AT THE TIME OF SEEDING
   AND INCORPORATED INTO THE SOIL KINDS AND AMOUNTS OF LIME AND FERTILIZER SHOULD BE BASED ON AN EVALUATION OF SOIL TESTS. WHEN A SOIL TEST IS NOT AVAILABLE,
   THE FOLLOWING MINIMUM AMOUNTS SHOULD BE APPLIED:
   AGRICULTURAL LIMESTONE, 2 TONS PER ACRE OR 100LBS. PER 1,000 SQ.FT.
   NITROGEN(N), 50LBS. PER ACRE OR 1.1LBS. PER 1,000 SQ.FT.
   PHOSPHATE(P2O5), 100LBS. PER ACRE OR 2.2LBS. PER 1,000 SQ.FT.
   POTASH(K2O), 100LBS. PER ACRE OR 2.2LBS. PER 1,000 SQ.FT.
   (NOTE: THIS IS THE EQUIVALENT OF 500LBS. PER ACRE OF 10-20-20 FERTILIZER OR 1,000LBS. PER ACRE OF 5-10-10.)
   B. SEED SHOULD BE SPREAD UNIFORMLY BY THE METHOD MOST APPROPRIATE FOR THE SITE. METHODS INCLUDE BROADCASTING, DRILLING AND HYDROSEEDING. WHERE BROADCASTING IS USED, COVER SEED WITH .25 INCH OF SOIL OR LESS, BY CULTIPACKING OR RAKING.
   C. REFER TO TABLE(G-E1 THIS SHEET) FOR APPROPRIATE SEED MIXTURES AND TABLE(H-E1 THIS SHEET) FOR RATES OF SEEDING. ALL LEGUMES (CROWNVETCH, BIRDSFOOT TREFOIL, AND FLATPEA) MUST BE INOCULATED WITH THEIR SPECIFIC INOCULANT.
   D. WHEN SEEDED AREAS ARE MULCHED, PLANTINGS MAY BE MADE FROM EARLY SPRING TO EARLY OCTOBER. WHEN SEEDED AREAS ARE NOT MULCHED, PLANTINGS SHOULD BE MADE FROM EARLY SPRING TO MAY 20 OR FROM AUGUST 10 TO SEPTEMBER 1.
4. MULCH
   A. HAY, STRAW, OR OTHER MULCH, WHEN NEEDED, SHOULD BE APPLIED IMMEDIATELY AFTER SEEDING.
   B. MULCH WILL BE HELD IN PLACE USING APPROPRIATE TECHNIQUES FROM THE BEST MANAGEMENT PRACTICE FOR MULCHING. HAY OR STRAW MULCH SHALL BE PLACED AT A RATE OF 90LBS PER 1000 S.F.
5. MAINTENANCE TO ESTABLISH A STAND
   A. PLANTED AREA SHOULD BE PROTECTED FROM DAMAGE BY FIRE, GRAZING, TRAFFIC, AND DENSE WEED GROWTH.
   B. FERTILIZATION NEEDS SHOULD BE DETERMINED BY ONSITE INSPECTIONS. SUPPLEMENTAL FERTILIZER IS USUALLY THE KEY TO FULLY COMPLETE THE ESTABLISHMENT OF THE STAND BECAUSE MOST PERENNIAL STAKE 2 TO 3 YEARS TO BECOME ESTABLISHED.
   C. IN WATERWAYS, CHANNELS, OR SWALES WHERE UNIFORM FLOW CONDITIONS ARE ANTICIPATED, OCCASIONAL MOWING MAY BE NECESSARY TO CONTROL GROWTH OF WOODY VEGETATION.
6. TO BE CONSTRUCTED IAW NH SWM #3 4-1 EROSION CONTROL PRACTICES, PERMANENT VEGETATION, PAGE 60.
7. SEE RAIN GARDEN AND INFILTRATION DETAIL SHEETS FOR SPECIFIC PLANTING INSTRUCTIONS AND SEEDING.

E17

CONSTRUCTION SEQUENCE:

1.) CUT AND REMOVE TREES IN CONSTRUCTION AREA ONLY AS REQUIRED, RELOCATE ANY PROJECT T.B.M.

2.) CONSTRUCT AND/OR INSTALL TEMPORARY AND PERMANENT SEDIMENT EROSION AND DETENTION CONTROL FACILITIES AS SPECIFIED. EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED PRIOR TO ANY SOIL LAND DISTURBANCE AND MUST BE REVIEWED AND APPROVED BY THE COMMUNITY SERVICES DEPARTMENT.

3.) EROSION, SEDIMENT AND DETENTION CONTROL FACILITY SHALL BE INSTALLED & STABILIZED PRIOR TO DIRECTING RUNOFF TO THEM.TEMPORARY DIVERSIONS MAY BE REQUIRED. POST CONSTRUCTION STORM WATER MANAGEMENT PRACTICES MUST BE INITIATED AND STABILIZED EARLY IN THE PROCESS. RUNOFF MUST BE DIRECTED TO TEMPORARY PRACTICES UNTIL STORMWATER BMPs ARE STABILIZED.

4.) CLEAR, CUT AND DISPOSE OF DEBRIS IN APPROVED FACILITY

5.) CONSTRUCT TEMPORARY CULVERTS AS REQUIRED, OR DIRECTED

6.) CONSTRUCT ROADWAYS FOR ACCESS TO DESIRED CONSTRUCTION AREAS. ALL ROADS SHALL BE STABILIZED IMMEDIATELY. SEE BEST MANAGEMENT PRACTICES FOR BLASTING ON SHEET C-102.

7.) START BUILDING CONSTRUCTION.

8.) INSTALL PIPE AND CONSTRUCTION ASSOCIATED APPURTENANCES AS REQUIRED OR DIRECTED. INSTALL RAIN GARDENS. ALL DISTURBED AREAS SHALL STABILIZED IMMEDIATELY AFTER GRADING.

9.) BEGIN PERMANENT AND TEMPORARY SEEDING AND MULCHING. ALL CUT AND FILL SLOPES AND DISTURBED AREAS SHALL BE SEEDED OR MULCHED AS REQUIRED, OR DIRECTED. NO AREA IS ALLOWED TO BE DISTURBED FOR A LENGTH OF TIME THAT EXCEEDS 45 DAYS BEFORE BEING STABILIZED, DAILY, OR AS REQUIRED. ALL ROADWAYS AND PARKING AREAS SHALL BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADES. ALL CUT AND FILL SLOPES SHALL BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADES. LIMIT THE LENGTH OF EXPOSURE OF UNSTABILIZED SOIL TO 45 DAYS OR LESS.

10.) CONSTRUCT TEMPORARY BERMS, DRAINS DITCHES, SILT FENCES, SEDIMENT TRAPS, ETC. MULCH AND SEED AS REQUIRED.

11.) INSPECT AND MAINTAIN ALL EROSION AND SEDIMENT CONTROL MEASURES DURING CONSTRUCTION. ALL SWPPP INSPECTIONS MUST BE CONDUCTED BY A QUALIFIED PROFESSIONAL SUCH AS A PROFESSIONAL ENGINEER (PE), A CERTIFIED PROFESSIONAL IN EROSION AND SEDIMENT CONTROL (CPESC), A CERTIFIED EROSION SEDIMENT AND STORM WATER INSPECTOR (CESSW), OR A CERTIFIED PROFESSIONAL IN STORM WATER QUALITY (CPSWQ). INSPECTION REPORTS SHALL BE SUBMITTED TO THE COMMUNITY SERVICES DEPARTMENT. EROSION AND SEDITMENT CONTROL PRACTICES ARE TO BE INSPECTED WEEKLY AND AFTER 0.5" OF RAINFALL.

12.) COMPLETE PERMANENT SEEDING AND LANDSCAPING.

13.) REMOVE TEMPORARY EROSION CONTROL MEASURES AFTER SEEDING AREAS HAVE ESTABLISHED THEMSELVES AND SITE IMPROVEMENTS ARE COMPLETE.

14.) SMOOTH AND REVEGETATE ALL DISTURBED AREAS.

15.) FINISH PAVING ALL ROADWAYS.

16.) LOT DISTURBANCE, OTHER THAN THAT SHOWN ON THE APPROVED PLANS, SHALL NOT COMMENCE UNTIL AFTER THE ROADWAY HAS THE BASE COURSE TO DESIGN ELEVATION AND THE ASSOCIATED DRAINAGE IS COMPLETE AND STABLE.

E18 *DEFINITION OF STABLE:*

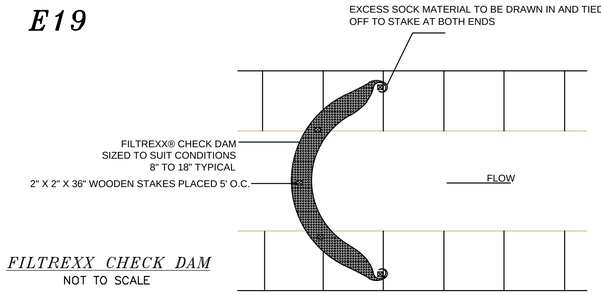
PER ENV-WQ 1500 ALTERATION OF TERRAIN

1. BASE COURSE GRAVELS HAVE BEEN INSTALLED IN AREAS TO BE PAVED.
2. A MINIMUM OF 85 PERCENT VEGETATED GROWTH HAS BEEN ESTABLISHED..
3. A MINIMUM OF 3 INCHES OF NON-EROSIVE MATERIAL SUCH AS STONE OR RIP-RAP HAS BEEN INSTALLED.
4. OR, EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.

ADDITION STABILIZATION NOTES:

5. HAY MULCH OR OTHER APPROVED METHODS SHALL BE USED TO CONTROL EROSION OF NEWLY GRADED AREAS. ALL CUT AND FILL SLOPES SHALL BE SEEDED AND MULCHED WITHIN 72 HOURS AFTER THEIR CONSTRUCTION.
6. DISTURBED SOIL AREAS SHALL BE EITHER TEMPORARILY OR PERMANENTLY STABILIZED. IN AREAS WHERE FINAL GRADING HAS NOT OCCURRED, TEMPORARY STABILIZATION MEASURES SHOULD BE IN PLACE WITHIN SEVEN (7) CALENDAR DAYS FOR EXPOSED SOIL AREAS THAT ARE WITHIN ONE HUNDRED (100) FEET OF A SURFACE WATER BODY OR A WETLAND AND NO MORE THAN 14 CALENDAR DAYS FOR ALL OTHER AREAS. PERMANENT STABILIZATION SHOULD BE IN PLACE WITHIN THREE (3) CALENDAR DAYS FOLLOWING COMPLETION OF FINAL GRADING OF EXPOSED SOIL AREAS.

E19

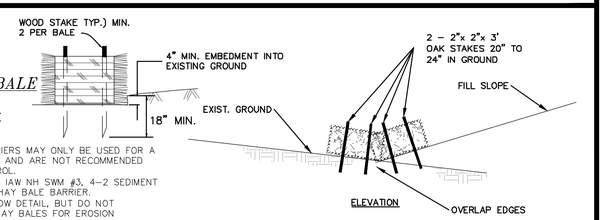


FILTREXX CHECK DAM

NOT TO SCALE

NOTES:
1. ALL MATERIAL TO MEET FILTREXX® SPECIFICATIONS.
2. CHECK DAM SHOULD BE USED IN AREAS THAT DRAIN 1 ACRE OR LESS.
3. SEDIMENT SHOULD BE REMOVED FROM BEHIND CHECK DAM ONCE THE ACCUMULATED HEIGHT HAS REACHED ½ THE HEIGHT OF THE CHECK DAM.
4. CHECK DAM CAN BE DIRECT SEEDED AT THE TIME OF INSTALLATION.
5. CONTRACTOR IS REQUIRED TO BE A FILTREXX CERTIFIED™ INSTALLER.

E20

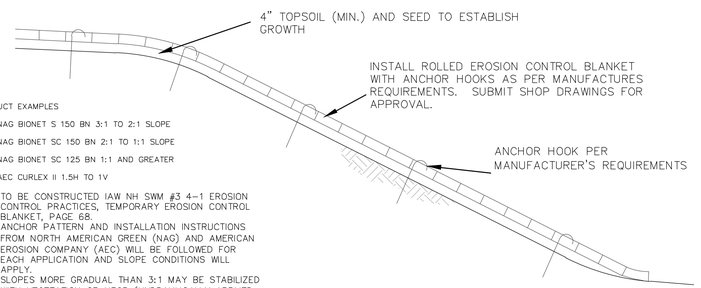


STAKED HAYBALE DETAIL

NOT TO SCALE

1.) HAY BALES BARRIERS MAY ONLY BE USED FOR A MAXIMUM OF 60 DAYS AND ARE NOT RECOMMENDED FOR PERIMETER CONTROL.
2.) TO BE INSTALLED IAW NH SWM #3, 4-2 SEDIMENT CONTROL, STRAW OR HAY BALE BARRIER.
3.) REQUIRED TO SHOW DETAIL, BUT DO NOT RECCOMEND USE OF HAY BALES FOR EROSION CONTROL.

E21



PRODUCT EXAMPLES

1.) NAG BIONET S 150 BN 3:1 TO 2:1 SLOPE
2.) NAG BIONET SC 150 BN 2:1 TO 1:1 SLOPE
3.) NAG BIONET SC 125 BN 1:1 AND GREATER
4.) AEC CURLEX II 1.5H TO 1V

1. TO BE CONSTRUCTED IAW NH SWM #3 4-1 EROSION CONTROL PRACTICES, TEMPORARY EROSION CONTROL BLANKET, PAGE 68.
2. ANCHOR PATTERN AND INSTALLATION INSTRUCTIONS FROM NORTH AMERICAN GREEN (NAG) AND AMERICAN EROSION COMPANY (AEC) WILL BE FOLLOWED FOR EACH APPLICATION AND SLOPE CONDITIONS WILL APPLY.
3. SLOPES MORE GRADUAL THAN 3:1 MAY BE STABILIZED WITH VEGETATION OR HECP (HYDRAULICALLY APPLIED EROSION CONTROL MIX)/BONDED FIBER MATRIX. HOWEVER THE ENGINEER RESERVES THE RIGHT TO REQUEST INCREASED RECB TO BE INSTALLED ON ANY SLOPE.
4. ALL RECB IS TO CONSIST OF ALL NATURAL MATERIAL WITH NO SYNTHETIC COMPONENTS (NO PHOTO BIODEGRADABLE NETTING)

ROLLED EROSION CONTROL BLANKET (RECB) SLOPE STABILIZATION DETAIL

E22

WINTER STABILIZATION NOTES

1. ALL DISTURBED AREAS THAT DO NOT HAVE AT LEAST 85% VEGETATIVE COVERAGE PRIOR TO OCTOBER 15TH SHALL BE STABILIZED BY APPLYING MULCH AT A RATE OF 3-4 TONS PER ACRE. ALL SIDE SLOPES, STEEPER THAN 4:1, THAT ARE NOT DIRECTED TO SWALES OR DETENTION BASINS, SHALL BE LINED WITH BIODEGRADABLE/PHOTODEGRADABLE "JUTE MATTING" (EXCELSIOR'S CURLEX II OR EQUAL). ALL OTHER SLOPES SHALL BE MULCHED AND TACKED AT A RATE OF 3-4 TONS PER ACRE. THE APPLICATION OF MULCH AND/OR JUTE MATTING SHALL NOT OCCUR OVER EXISTING SNOW COVER. IF THE SITE IS ACTIVE AFTER OCTOBER 15TH, ANY SNOW THAT ACCUMULATES ON DISTURBED AREAS SHALL BE REMOVED. PRIOR TO SPRING THAW ALL AREAS WILL BE STABILIZED, AS DIRECTED ABOVE.

2. ALL SWALES THAT DO NOT HAVE FULLY ESTABLISHED VEGETATION SHALL BE EITHER LINED WITH TEMPORARY JUTE MATTING OR TEMPORARY STONE CHECK DAMS (APPROPRIATELY SPACED). STONE CHECK DAMS WILL BE MAINTAINED THROUGHOUT THE WINTER MONTHS. IF THE SWALES ARE TO BE MATTED WITH PERMANENT LINERS OR RIPRAP WITH ENGINEERING FABRIC, THIS SHALL BE COMPLETED PRIOR TO WINTER SHUTDOWN OR AS SOON AS THEY ARE PROPERLY GRADED AND SHAPED.

3. PRIOR TO OCT. 15TH ALL ROADWAY AND PARKING AREAS SHALL BE BROUGHT UP TO AND THROUGH THE BANK RUN GRAVEL APPLICATION. IF THESE AREAS' ELEVATIONS ARE PROPOSED TO REMAIN BELOW THE PROPOSED SUBGRADE ELEVATION, THE SUBGRADE MATERIAL SHALL BE ROUGHLY CROWNED AND A 3" LAYER OF CRUSHED GRAVEL SHALL BE PLACED AND COMPACTED. THIS WILL ALLOW THE SUBGRADE TO SHED RUNOFF AND WILL REDUCE ROADWAY EROSION. THIS CRUSHED GRAVEL DOES NOT HAVE TO CONFORM TO NH DOT 304.3, BUT SHALL HAVE BETWEEN 15-25% PASSING THE #200 SIEVE AND THE LARGEST STONE SIZE SHALL BE 2". IF THE SITE IS ACTIVE AFTER OCTOBER 15TH, ANY ACCUMULATED SNOW SHALL BE REMOVED FROM ALL ROADWAY AND PARKING AREAS.

4. AFTER OCTOBER 15TH, THE END OF NEW HAMPSHIRE'S AVERAGE GROWNG SEASON, NO ADDITIONAL LOAM SHALL BE SPREAD ON SIDE SLOPES AND SWALES. THE STOCKPILES THAT WILL BE LEFT UNDISTURBED UNTIL SPRING SHALL BE SEEDED BY THIS DATE. AFTER OCTOBER 15TH, ANY NEW OR DISTURBED PILES SHALL BE MULCHED AT A RATE OF 3-4 TONS PER ACRE. ALL STOCKPILES THAT WILL REMAIN THROUGHOUT THE WINTER SHALL BE SURROUNDED WITH SILT FENCING.

5. ENV-WQ 1505.06 COLD WEATHER SITE STABILIZATION (B)(1) LIMITS AREA OF EXPOSURE TO ONE ACRE OF UNSTABILIZED SOIL WITHOUT OBTAINING A WAIVER AND WINTER CONSTRUCTION PLAN.

E-102

REVISION	DATE	DESCRIPTION

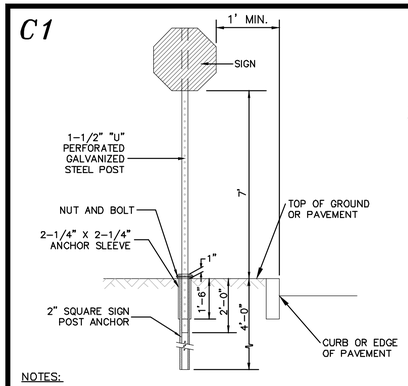
EROSION & SEDIMENT CONTROL DETAILS
LAND OF
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY &
EUGENE A. & DONNA L. SGTIGNOULI
TOLEND ROAD
DOVER, N.H.
TAX MAP E, LOT 65-1 & 65-4

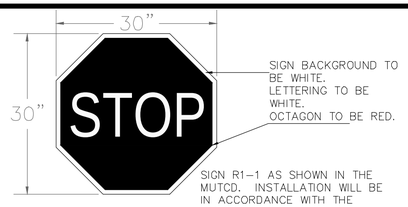
BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

AS NOTED
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 - 107

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY No. 14243 LICENSED
PROFESSIONAL ENGINEER

C1

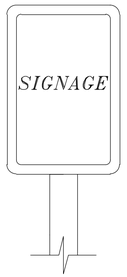




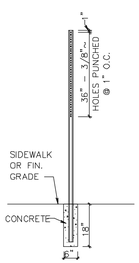
NOTES:

1. ALL SIGNAGE SHALL BE TO THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) STANDARDS AND NHDOT STANDARDS.
2. THE CONTRACTOR SHALL PROVIDE SHOP DRAWINGS/CATALOG CUTS TO THE ENGINEER FOR REVIEW AND APPROVAL PRIOR TO ERECTING SIGNS.
3. THE LOCATION OF THE SIGNS SHALL BE AS INDICATED ON THE DRAWINGS AND/OR AS DIRECTED BY THE CITY OF DOVER DEPARTMENT OF PUBLIC WORKS.

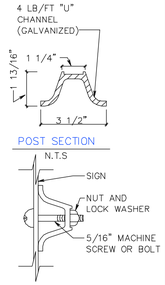
TYPICAL SIGN POST
(NOT TO SCALE)



PARTIAL ELEVATION
N.T.S.

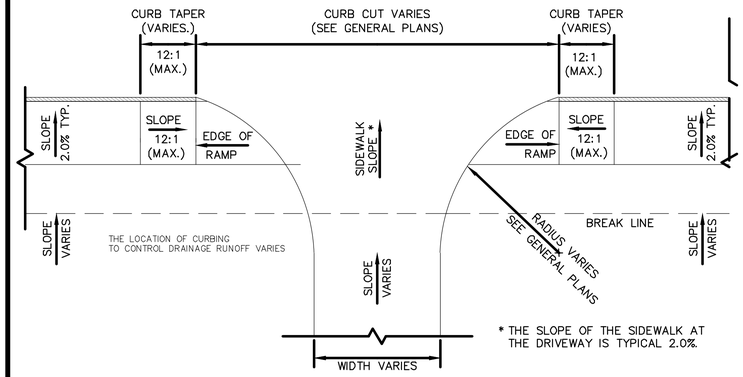


POST
N.T.S.



MOUNTING
N.T.S.

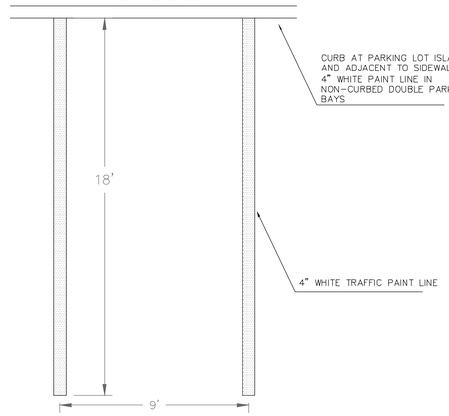
C2



PLAN VIEW (DRIVEWAY & SIDEWALK)
NOT TO SCALE

C3

PARKING SPACE DETAIL
NOT TO SCALE



NOTES:

1.) PROVIDE TWO COATS OF PAINT ON ALL PARKING LINES.
2.) SEE PROPOSED SITE PLANS FOR LOCATION OF PARKING SPACES.
3.) PAINTED SPACES ONLY WHERE MARKED ON SITE PLAN

C4

See Redi-Rock.com for Detailed Section Drawings of Each Condition Shown in the Design Charts

NOTES:

1.) USE THE 41" BOTTOM BLOCK TO INSTALL THE FIRST COURSE. NOTE EMBEDMENT REQUIREMENT. COURSE DEPTH IS 1.5'

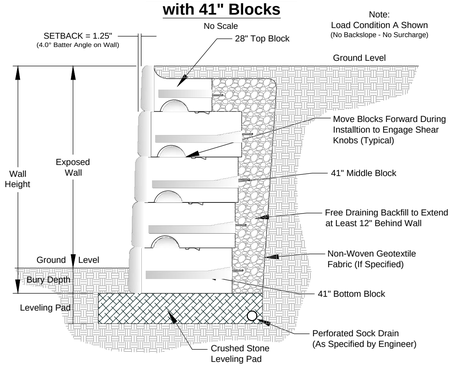
3.) USE 41" MIDDLE BLOCK FOR MIDDLE ROWS, APPROXIMATELY 7 COURSES DEPENDING ON WALL HEIGHT.

4.) USE 41" TOP BLOCK ALONG TOP OF WALL. NOTE WALL DROPS ARE TO BE FULL BLOCK DEPTHS.

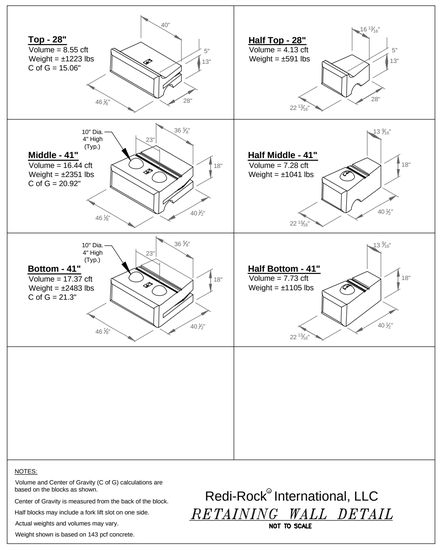
5.) USE 41" HALF BLOCKS FOR RADIAL TURNS AND END SECTIONS.

6.) THE WALL MANUFACTURER TYPICALLY PROVIDES WALL PROFILE AND BLOCK COUNT TO THE CONTRACTOR AS REQUIRED FOR CONSTRUCTION. THIS IS TO BE REVIEWED BY BOTH DPW AND DESIGN ENGINEER FOR CORRELATION WITH PROJECT SITE PLANS AND IS TO BE DESIGNED AND STAMPED BY A STRUCTURAL ENGINEER (OTHERS).

Typical Gravity Wall with 41" Blocks



41" SERIES BLOCKS

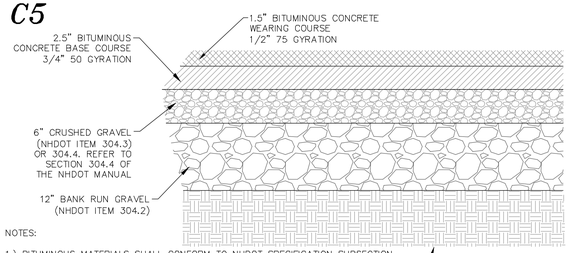


NOTES:
Volume and Center of Gravity (C of G) calculations are based on the blocks as shown.
Center of Gravity is measured from the back of the block.
Half blocks may include a fork lift slot on one side.
Actual weights and volumes may vary.
Weight shown is based on 143 pcf concrete.

Redi-Rock® International, LLC
RETAINING WALL DETAIL
NOT TO SCALE

NOTE: RETAINING WALL TO BE DESIGNED BY A LICENSED PROFESSIONAL GEOTECHNICAL/STRUCTURAL ENGINEER.

C5



NOTES:

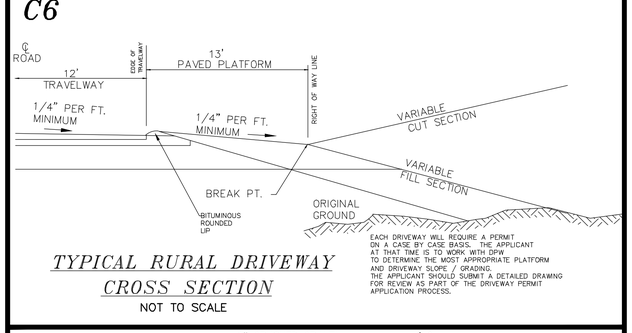
1.) BITUMINOUS MATERIALS SHALL CONFORM TO NHDOT SPECIFICATION SUBSECTION 401.3.6.

2.) PAVEMENT BASE COURSE AGGEGATE SHALL CONFORM TO NHDOT SPECIFICATION SECTION 304, ITEM 304.3 AND COMPACTED TO A MINIMUM OF 95% OF MODIFIED PROCTOR MAXIMUM DRY DENSITY.

3.) PAVEMENT SUBBASE COURSE AGGREGATE AND AGGREGATE FOR SUBGRADE REPAIR AREAS SHALL BE SUITABLE FOR USE AS STRUCTURAL FILL AND BE PROOFROLLED AND COMPABED TO 95% OF MODIFIED PROCTOR MAXIMUM DRY DENSITY. FOR NEW CONSTRUCTION AREAS ONLY. IN EXISTING PAVEMENT AREAS THE CONTRACTOR IS TO ENSURE THE BASE MATERIAL IS SUITABLE TO THE OWNER FOR RE-PAVING

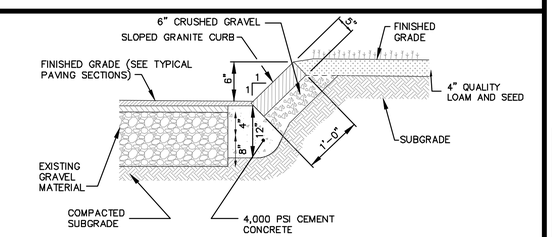
BITUMINOUS CONCRETE PAVEMENT SECTION
NOT TO SCALE

C6



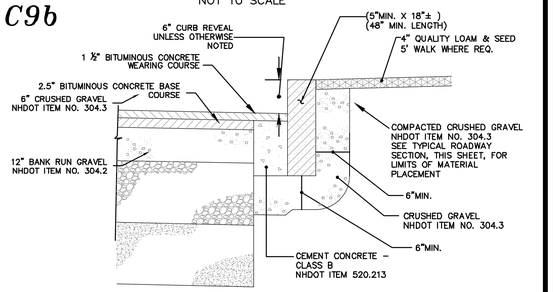
TYPICAL RURAL DRIVEWAY CROSS SECTION
NOT TO SCALE

C9a



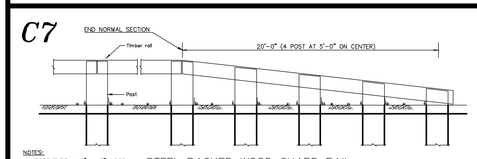
SLOPE GRANITE CURB DETAIL
NOT TO SCALE

C9b



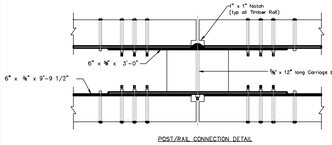
VERTICAL GRANITE CURB DETAIL
NOT TO SCALE

C7

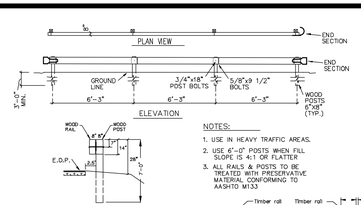


NOTES:
1. POST TYPE : 10" x 12" WOOD
2. BEAM TYPE : 6" x 10" WOOD
3. POST SPACING : 5'-0" O.C.
4. NOMINAL BARRIER HEIGHT : 27"

STEEL BACKED WOOD GUARD RAIL TERMINAL UNIT DETAIL

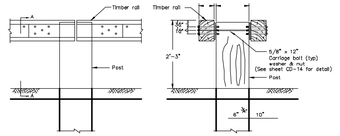


POST/RAIL CONNECTION DETAIL



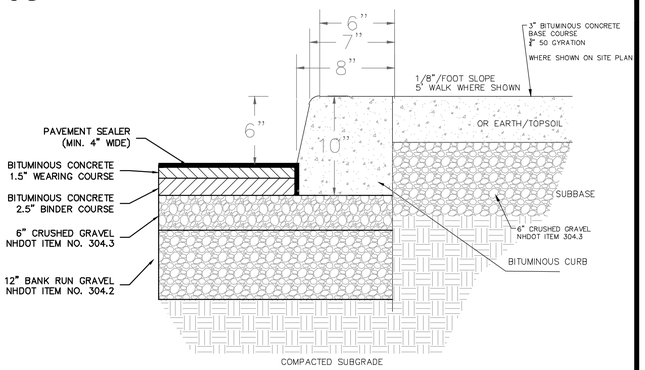
NOTES:
1. USE IN HEAVY TRAFFIC AREAS.
2. USE 6'-0" POSTS WHEN FILL SLOPE IS 4:1 OR FLATTER
3. ALL RAILS & POSTS TO BE TREATED WITH PRESERVATIVE MATERIAL CONFORMING TO AASHTO M133

NOTES:
1. POST TYPE : 10" x 12" WOOD
2. BEAM TYPE : 6" x 10" WOOD WITH STEEL PLATE BACKING
3. POST SPACING : 10'-0" O.C.
4. NOMINAL BARRIER HEIGHT : 27"
5. STEEL PLATE BACKING AND SPLICE PLATE – A36 GALVANIZED STEEL
6. ALL BOLTS & WASHERS TO BE GALVANIZED



GUARD RAIL STEEL PLATE BACKED (WOODEN RAIL)
NOT TO SCALE

C8



BITUMINOUS CONCRETE CURB
NOT TO SCALE

REVISION	DATE	DESCRIPTION

CONSTRUCTION DETAILS
LAND OF
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY &
EUGENE A. & DONNA L. SGTIGNOULI
TOLEND ROAD
DOVER, N.H.
TAX MAP E, LOT 65-1 & 65-4

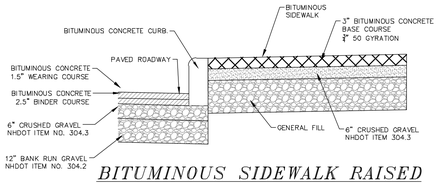
BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

AS NOTED
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 – 107

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14243
LICENSED PROFESSIONAL ENGINEER

C-101

C10

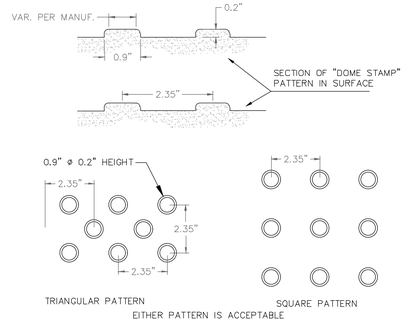


BITUMINOUS SIDEWALK RAISED

NOT TO SCALE

SEE C-101, DETAIL C8

C11



DETECTABLE WARNING SURFACE

NOT TO SCALE

C12

Scarborough™ Bench, 24" Backed, with Horizontal Strap Seat

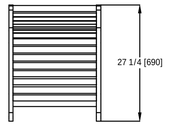
Scarborough™ Bench, 24" Backed, with Horizontal Strap Seat

Product Drawing

www.landscapeforms.com

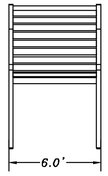
Date: 5/19/2010

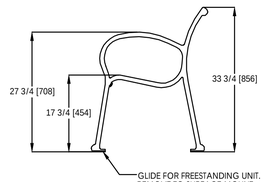
Ph: 800.521.2546



BENCH DETAIL

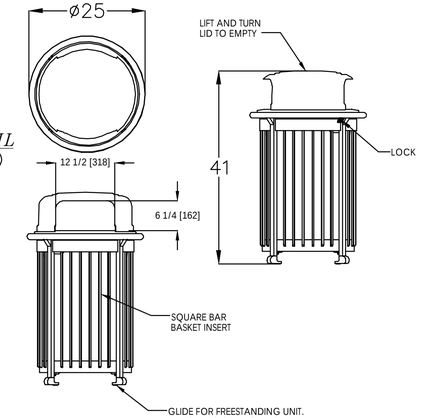
(NOT TO SCALE)





BIN DETAIL

(NOT TO SCALE)



landscapeforms

Drawing: SC173-02
Dimensions are in inches [mm]

landscapeforms

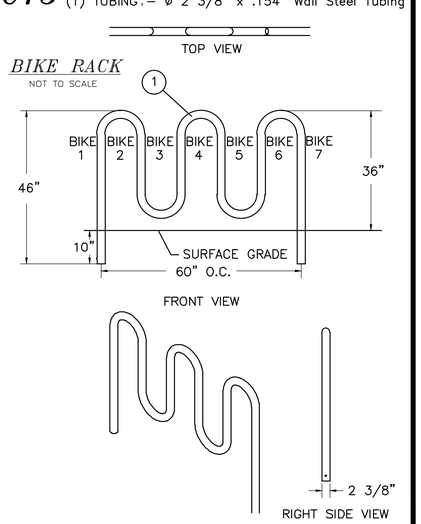
Drawing: SC173-02
Dimensions are in inches [mm]

CONFIDENTIAL DRAWING INFORMATION CONTAINED HEREIN IS THE PROPERTY OF LANDSCAPE FORMS, INC. INTENDED USE IS LIMITED TO DESIGN PROFESSIONALS SPECIFYING LANDSCAPE FORMS, INC. PRODUCTS AND THEIR DIRECT CLIENTS. DRAWING IS NOT TO BE COPIED OR DISCLOSED TO OTHERS WITHOUT THE CONSENT OF LANDSCAPE FORMS, INC.
© 2013 LANDSCAPE FORMS, INC. ALL RIGHTS RESERVED.

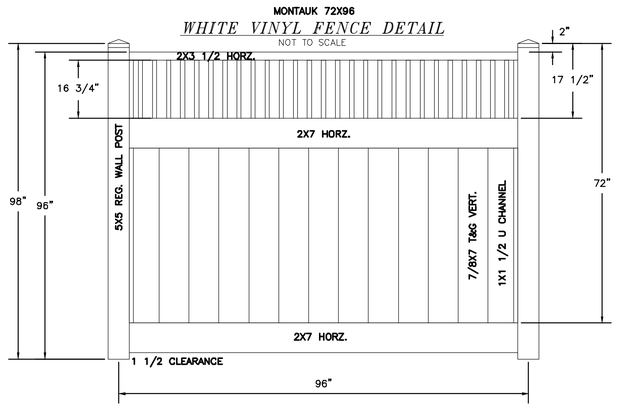
C13

MATERIALS LIST

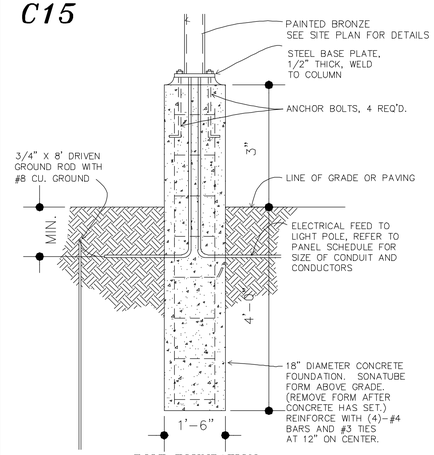
(1) TUBING, – ø 2 3/8" x .154" Wall Steel Tubing



C14



C15



LIGHT BASE DETAIL

NOT TO SCALE

TYPICAL RESIDENTIAL LAMP "B"

NOT TO SCALE

D-Series Size 1 Solar

LED Area Luminaire

Catalog Number

Notes

Type

Hit the Tab key or mouse over the page to see all interactive elements.

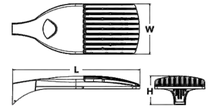
Introduction

The modern styling of the D-Series is striking yet unobtrusive - making a bold, progressive statement even as it blends seamlessly with its environment.

The D-Series distills the benefits of the latest in LED technology into a high performance, high efficacy, long-life luminaire. The outstanding photometric performance results in sites with excellent uniformity, greater pole spacing and lower power density.

Specifications

EPA:	1.01 ft² (0.09 m²)
Length:	33" (83.8 cm)
Width:	13" (33.0 cm)
Height:	7-1/2" (19.0 cm)
Weight (max):	27 lbs (12.2 kg)



Ordering Information EXAMPLE: DSX1 LED P1 40K T3M SOLAR SPA DDBXD

DSX1 LED

Series	LEDs	Color temperature	Distribution	Voltage	Mounting	Other options	Finish
DSX1 LED	Forward optics P1 11,000 lumens	30K 3000K 40K 4000K 50K 5000K	T1S Type I short T2S Type II short T2M Type II medium T3S Type III short T3M Type III medium T4M Type IV medium TFTM Forward throw medium T5VS Type V very short T5S Type V short T5M Type V medium T5W Type V wide BLC Backlight control [1] LCCO Left corner cutoff [1] RCCO Right corner cutoff [1]	24 VDC 24 Volt DC drivers [2] SOLAR Compatible with Sol by Sunna [3]	Shipped included SPA Square pole mounting RPA Round pole mounting WBA Wall bracket SPUMBA Square pole universal mounting adaptor [4] RPUMBA Round pole universal mounting adaptor [4]	Shipped installed HS House-side shield [5] BAA Buy American(a) Act Compliant	DDBXD Dark bronze DBLBD Black DNATXD Natural aluminum DWHXD White DDBTXD Textured dark bronze DBLBXD Textured black DNATXD Textured natural aluminum DWHGXD Textured white

NOTES

1 Not available with HS.
2 Suitable for use with 24Volt DC systems only. Owner is responsable for confirming that luminaire will work with your system.
3 No driver included, compatible with Sol by Sunna solar panel.
4 Available as a separate combination accessory: PUMBA (Kit#) U. For retrofit onto metal poles not drilled with Template A8.
5 Also available as a separate accessory; see Accessories Information.
6 Not available with BLC, LCCO or RCCO.

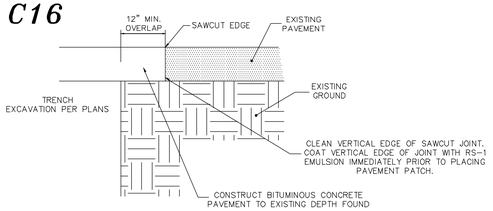
LITHONIA LIGHTING COMMERCIAL OUTDOOR One Lithonia Way • Conyers, Georgia 30012 • Phone: 800-705-SERV (7378) • www.lithonia.com

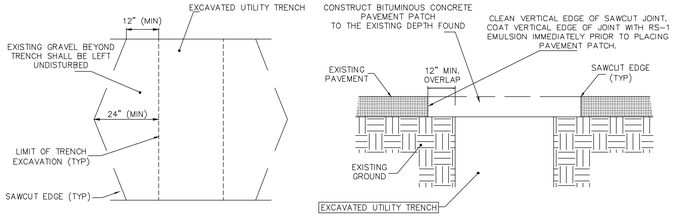
© 2011-2021 Acuity Brands Lighting, Inc. All rights reserved.

DSX1-LED Special Solar Rev. 05/11/21
Page 1 of 3

LAMP "A" MOUNTED 12'

C16



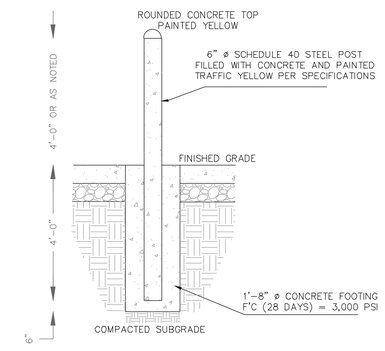


NOTES

1. MACHINE CUT EXISTING PAVEMENT.
2. ALL TEMPORARY, DAMAGED, OR DEFECTIVE PAVEMENT SHALL BE REMOVED PRIOR TO PLACEMENT OF PERMANENT TRENCH REPAIRS.
3. DIAMOND PATCHES, SHALL BE REQUIRED FOR ALL TRENCHES CROSSING ROADWAY. DIAMOND PATCHES SHALL MEET NHDOT REQUIREMENTS.

TYPICAL TRENCH PATCH

C17



BOLLARD DETAIL

NOT TO SCALE

CONSTRUCTION DETAILS
LAND OF
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY &
EUGENE A. & DONNA L. SGTIGNOULI
TOLEND ROAD
DOVER, N.H.
TAX MAP 8, LOT 65-1 & 65-4

REVISION	DATE	DESCRIPTION

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

AS NOTED

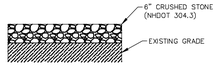
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 – 107

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14243
LICENSED PROFESSIONAL ENGINEER

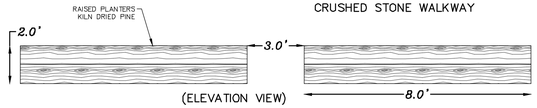
C-102

C18

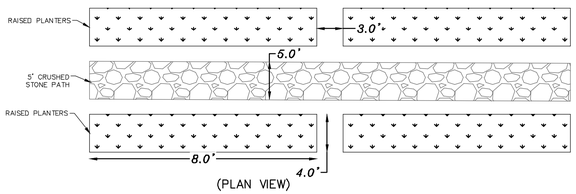
RAISED PLANTER
(NOT TO SCALE)



CRUSHED STONE WALKWAY



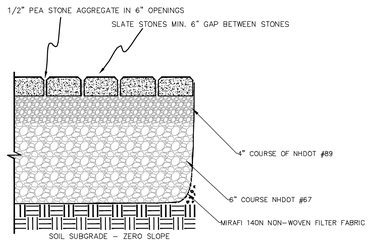
(ELEVATION VIEW)



(PLAN VIEW)

C19

PERVIOUS PATIO DETAIL
NOT TO SCALE



1.) INSTALL AT THE REAR OF UNITS 9-13 AS SHOWN ON THE SITE PLAN. INSTALL IN PLACE OF POROUS PAVEMENT AS DESCRIBED ON SITE PLAN AT THE OWNERS DISCRETION.

2.) STONE TO MEET THE SPECIFICATIONS PROVIDED.

COMPACTED SUBGRADE - CONTRACTOR SHALL SCARIFY SUBGRADE TO A DEPTH OF 24 INCHES. ALL STONES GREATER THAN 6" IN DIAMETER SHALL BE REMOVED FROM THE SCARIFIED LAYER. ANY IMPORTED FILL SHALL BE FREE OF ORGANICS AND FROST AND SHALL HAVE NO ROCKS LARGER THAN 6" IN DIAMETER. FILL MATERIAL SHALL BE APPROVED BY THE CITY'S AGENT AND/OR THE CITY'S ENGINEER.

CRUSHED STONE BEDDING *

SIEVE SIZE	% PASSING BY WEIGHT
1/2"	100
3/8"	90 - 100
#4"	20 - 55
# 8	5 -30
# 16	0 - 10
# 50	0 - 5

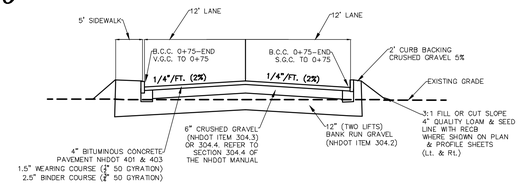
* EQUIVALENT TO STANDARD STONE SIZE #89 - SECTION 702 OF NHDOT NHDOT STANDARD SPECIFICATIONS

CRUSHED STONE BEDDING

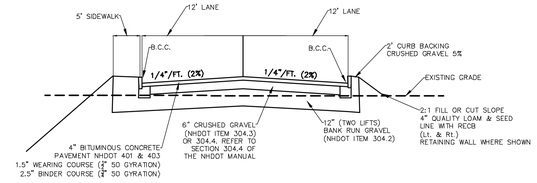
SIEVE SIZE	% PASSING BY WEIGHT
1"	100
3/4"	90 - 100
3/8"	20 - 55
# 4	0 -10
# 8	0 - 5

* EQUIVALENT TO STANDARD STONE SIZE #67 - SECTION 702 OF NHDOT NHDOT STANDARD SPECIFICATIONS

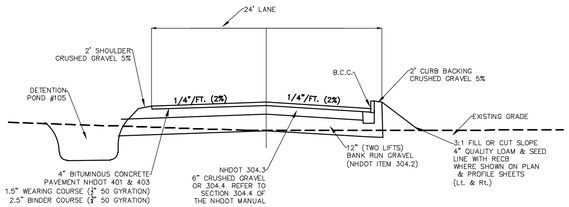
C20



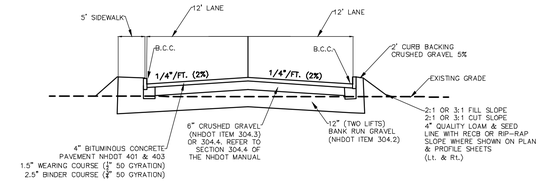
TYPICAL ROADWAY SECTION THEODORE DRIVE
0+00-1+50, 4+00-12+52.74



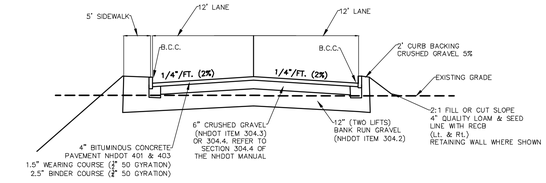
TYPICAL ROADWAY SECTION THEODORE DRIVE
1+50-4+00



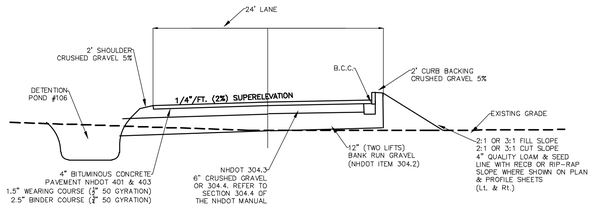
TYPICAL ROADWAY SECTION THEODORE DRIVE
12+52.74-END
NOT TO SCALE



TYPICAL ROADWAY SECTION LIAM DRIVE
20+00-25+50, 27+50-29+46.47



TYPICAL ROADWAY SECTION LIAM DRIVE
25+50-27+50



TYPICAL ROADWAY SECTION THEODORE DRIVE
12+52.74-END
NOT TO SCALE

CROSS SECTION NOTES

1. ALL ROADWAY FILL TO BRING ROAD TO SUBGRADE SHALL BE INSTALLED IN LIFTS NO GREATER THAN 12".
2. ALL FILL SHALL BE COMPACTED TO 95% MINIMUM. COMPACTION TESTS TO BE CONDUCTED AT THE START OF THE PROJECT AND NO FURTHER THAN 100 FEET APART.
3. GUARD RAIL REQUIRED AS NOTED ON PLAN & PROFILE SHEETS.
4. TEST PITTING WAS DONE WITHIN THE ROADWAY ALIGNMENT BY JOHN P. HAYES III. IN SOME LOCATIONS, UNSUITABLE MATERIALS WERE ENCOUNTERED IN THOSE TEST PITS. UNSUITABLE MATERIALS TO BE REMOVED DURING CONSTRUCTION (LEDGE).

COMPACTED SUBGRADE - CONTRACTOR SHALL SCARIFY SUBGRADE TO A DEPTH OF 30 INCHES BELOW F-GRADE. ALL STONES GREATER THAN 6" IN DIAMETER SHALL BE REMOVED FROM THE SCARIFIED LAYER. ANY IMPORTED FILL SHALL BE FREE OF ORGANICS AND FROST AND SHALL HAVE NO ROCKS LARGER THAN 6" IN DIAMETER. FILL MATERIAL SHALL BE APPROVED BY THE TOWNS AGENT AND/OR THE TOWNS ENGINEER.

REVISION	DATE	DESCRIPTION

CONSTRUCTION DETAILS
LAND OF
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY &
EUGENE A. & DONNA L. SGTIGNOULI
TOLEND ROAD
DOVER, N.H.
TAX MAP E, LOT 65-1 & 65-4

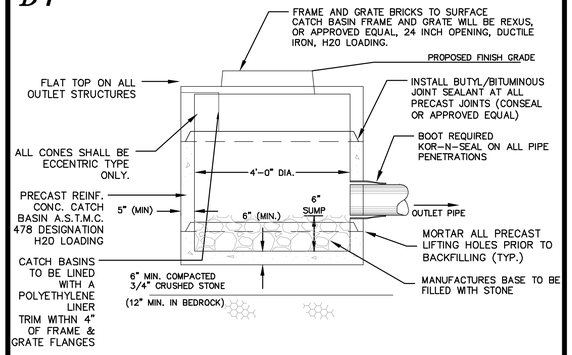
BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

AS NOTED
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 - 107

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14243
LICENSED
PROFESSIONAL ENGINEER

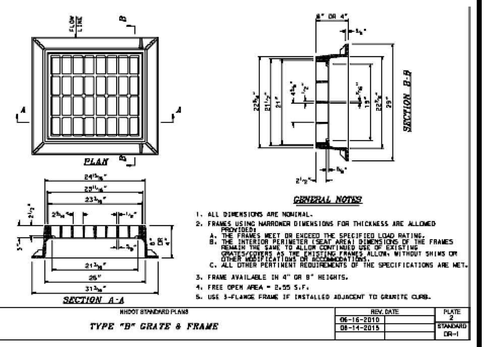
C-103

D1



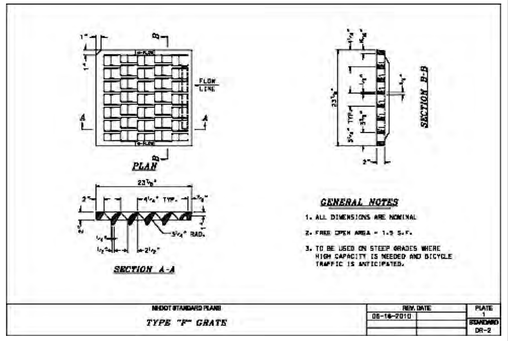
CATCH BASIN DETAIL
NOT TO SCALE

D2



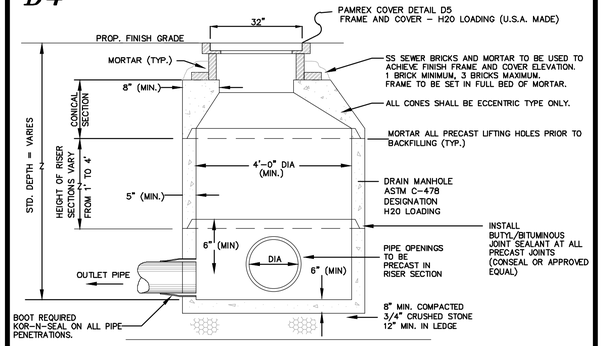
CATCH BASIN GRATE (TYPE "B")
NOT TO SCALE

D3



CATCH BASIN GRATE (TYPE "F")
NOT TO SCALE

D4

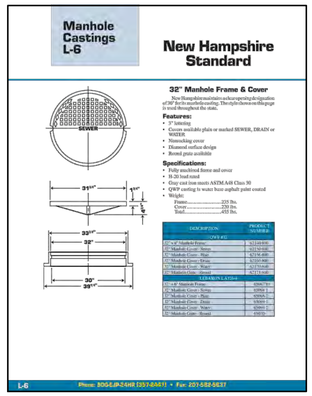


PRECAST DRAIN MANHOLE DETAIL
NOT TO SCALE

REVISION	DATE	DESCRIPTION

DRAINAGE DETAILS
LAND OF
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY &
EUGENE A. & DONNA L. SGTIGNOULI
TOLEND ROAD
DOVER, N.H.
TAX MAP E, LOT 65-1 & 65-4

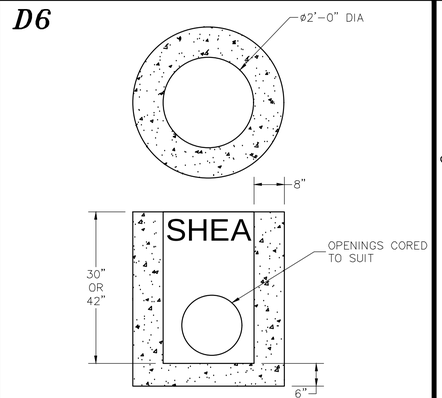
D5



DRAIN MANHOLE FRAME AND GRATE WILL BE NEW HAMPSHIRE STANDARD, OR APPROVED EQUAL, 32 INCH OPENING, CAST IRON, H20 LOADING.

DRAIN MANHOLE COVER DETAIL
NOT TO SCALE

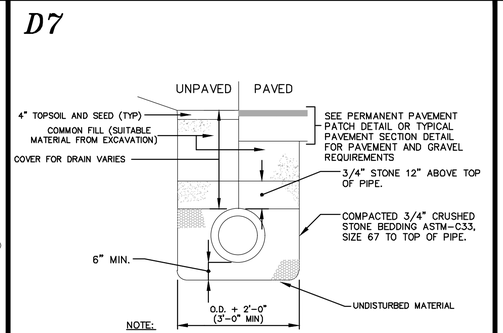
D6



NOTES:
1. CONCRETE: 4,000 PSI MINIMUM AFTER 28 DAYS.
2. DESIGNED FOR AASHTO HS-20 LOADING, 1 TO 5 FEET COVER.

GUTTER INLET DROP INLET TYPE B
NOT TO SCALE

D7



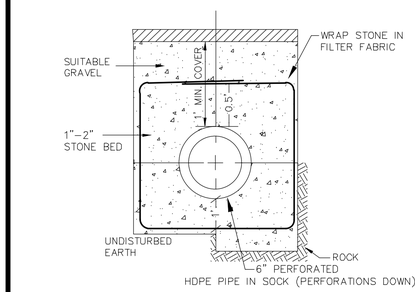
NOTE:
PLASTIC DRAIN PIPE (HDPE) SHALL BE ADS N-12 (CORRUGATED EXTERIOR/SMOOTH INTERIOR) OR EQUAL MEETING AASHTO M-252 AND H-20 LOADING.

DI DRAIN PIPE SHALL BE CL. 50.

RC DRAIN PIPE SHALL BE CLASS III UNLESS OTHERWISE NOTED.

TYPICAL DRAIN PIPE TRENCH
NOT TO SCALE

D8



NOTE:
1. PAVEMENT REPAIR IN EXISTING ROADWAYS SHALL CONFORM TO STREET OPENING REGULATIONS.

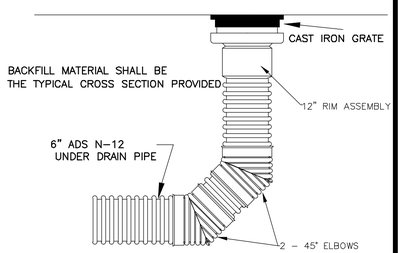
UNDERDRAIN TRENCH DETAIL
NOT TO SCALE

D9

CASTINGS ARE RATED FOR H20 WHEEL LOAD TRAFFIC

PAINT: CASTINGS ARE FURNISHED WITH A BLACK PAINT

12" CAST IRON GRATE
NOT TO SCALE

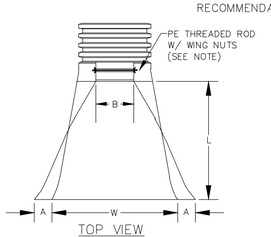


ADS N-12 INLINE DRAIN
NOT TO SCALE USED FOR CLEANOUTS

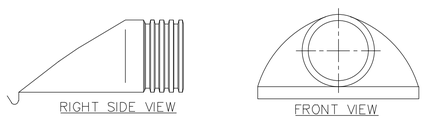
D10

PART No.	PIPE SIZE	A	B(MAX)	H	L	W
1510-NP	15" 375 mm	6.5" 165 mm	10" 254 mm	6.5" 165 mm	25" 635 mm	29" 735 mm
1810-NP	18" 450 mm	7.5" 190 mm	15" 380 mm	6.5" 165 mm	32" 812 mm	35" 890 mm
2410-NP	24" 600 mm	7.5" 190 mm	18" 450 mm	6.5" 165 mm	36" 900 mm	45" 1140 mm
3010-NP	30" 750 mm	10.5" 266 mm	N/A	7.0" 178 mm	53" 1345 mm	68" 1725 mm
3610-NP	36" 900 mm	10.5" 266 mm	N/A	7.0" 178 mm	53" 1345 mm	68" 1725 mm

NOTE: PE THREADED ROD W/ WING NUTS PROVIDED FOR END SECTIONS 15"-24". 30" & 36" END SECTIONS TO BE WELDED PER MANUFACTURER'S RECOMMENDATIONS.

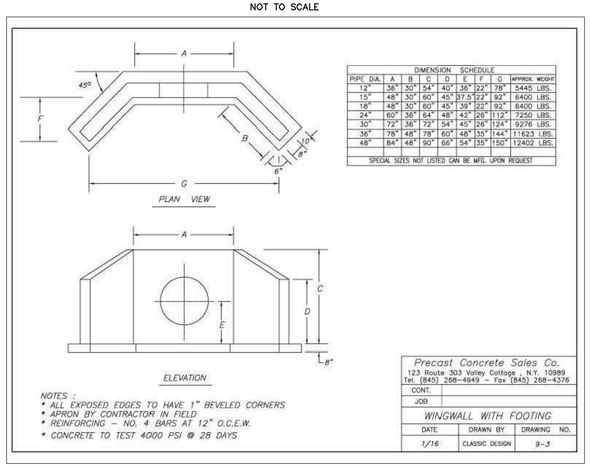


ADS N-12 FLARED END SECTIONS
NOT TO SCALE (ALL DIMENSIONS ARE NOMINAL)



D11

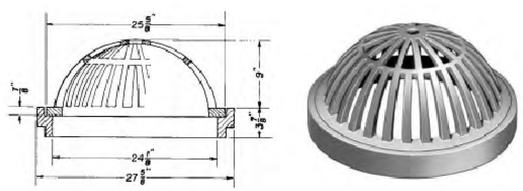
HEADWALL (CONCRETE)
NOT TO SCALE



D12

R-4353
Beehive Grate, Frame
Light Duty

CATALOG NUMBER	GRATE TYPE	SQ. FT. OPEN	WEIR PERIMETER LINEAL FEET
R-4353	Beehive	1.8	6.7



Also available with 2 - 7/8" tall frame, if requested.

CATCH BASIN IN GRASSED AREA FRAME & GRATE DETAIL
NOT TO SCALE

REFERENCE IS MADE TO A LONG TERM MAINTENANCE MANUAL PREPARED BY BERRY SURVEYING & ENGINEERING, WHICH IS ON FILE AT THE CITY OF ROCHESTER PLANNING DEPARTMENT, AND CAN BE FOUND AT THE OFFICE OF BERRY SURVEYING & ENGINEERING. (603) 332-2863

D-101

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

AS NOTED
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 - 107

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY No. 14243 LICENSED PROFESSIONAL ENGINEER

D13

CONE GRATE
NOT TO SCALE

NOTE:
MUST BE HAALA INDUSTRIES INC.
OR EQUAL.

Cone Grates Top Mount

CG12TM
Part No. CG12TM

Save Trees

Top Mount Cone Grates are designed to mount on the top of round manhole inlet or outlet structures to keep debris from entering the storm water system. Top mount cone grates are easy to install and allow for at grade manhole installations but can be used in a variety of applications. Grates 96" and larger are made as a two piece, bolt together design.

- Plate and bar hybrid design is both clean and cost effective
- Made from 1/2" plate with 3/4" or 1" round bars depending on grate size
- Anti vortex plate can be added upon request
- Hinged and lockable access doors can be added upon request
- Galvanized steel construction. Can be made from aluminum or stainless steel.

D14

ANGLE GRATE
NOT TO SCALE

NOTE:
MUST BE HAALA INDUSTRIES INC.
OR EQUAL.

Angle Grates For Manholes

AG0808-58
Part No. AG0808-58

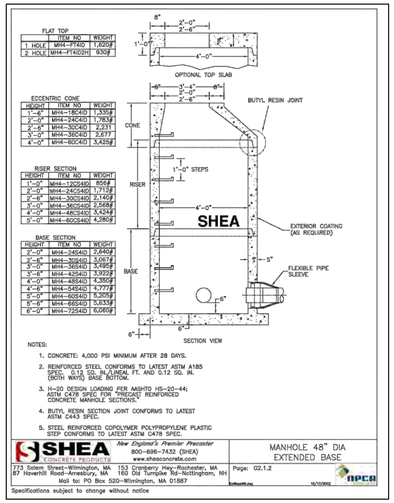
Save Trees

Angle Grates are designed to cover inlet orifices and prevent small to medium debris from passing through. The top angled design helps to minimize the amount of debris that settles on top after the water receeds. All grates are made from plate for a clean and smooth contact surface.

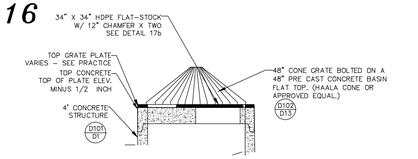
- Plate design for a clean appearance
- Standard 2" openings (other sizes can be made)
- Angled top/front plate to maximize debris deflection
- Mounting flanges on 3 sides allows grate to be mounted at floor level inverts
- Galvanized steel construction. Can be made from aluminum or stainless steel.

D15

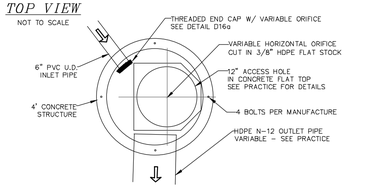
48" MANHOLE ROUND EXTENDED BASE
NOT TO SCALE



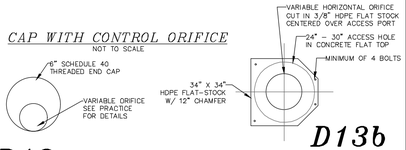
D16



TOP VIEW
NOT TO SCALE



CAP WITH CONTROL ORIFICE
NOT TO SCALE



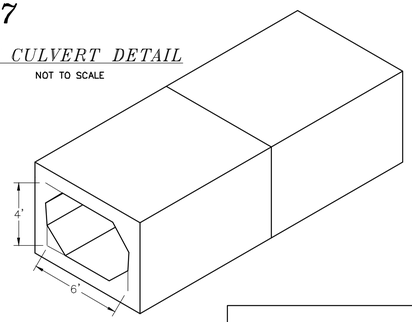
D13a

D13b

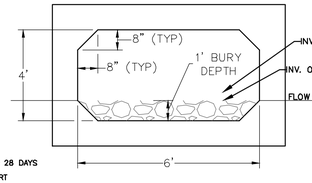
ORIFICE SCHEMATIC – GENERAL
NOT TO SCALE

D17

BOX CULVERT DETAIL
NOT TO SCALE



TYP JOINT DETAIL

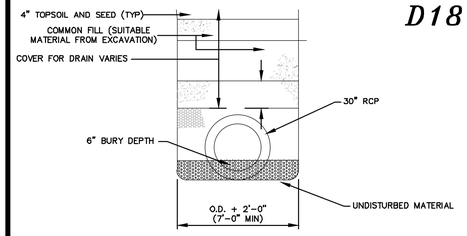


END VIEW

NOTES:
1. CONCRETE: 5,000 PSI MINIMUM AFTER 28 DAYS
2. DESIGN PER ASTM C1433 BOX CULVERT
3. ALL REINFORCEMENT PER ASTM A615
4. DESIGNED FOR AASHTO HS-20 LOADING
5. MUST BE SHEA CONCRETE OR EQUAL.
6. HEADWALLS ARE TO BE INSTALLED PER GRADING PLAN.

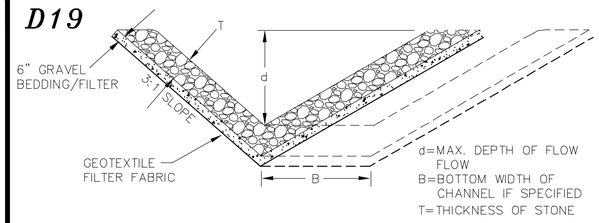
DESIGNED FOR LOADS/SIZES AS NEEDED

D18



WETLAND CROSSING #1 CULVERT DETAIL
NOT TO SCALE

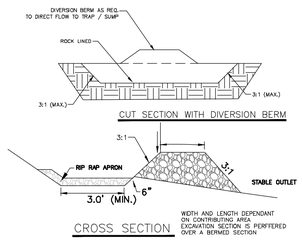
D19



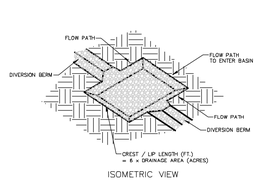
TYPICAL SECTION FOR A RIPRAP LINED CHANNEL
NOT TO SCALE

D20

1. TRAP TO BE INSTALLED AS CLOSE TO THE DISTURBED AREA OR SOURCE OF SEDIMENT AS POSSIBLE.
2. THE MAXIMUM CONTRIBUTING DRAINAGE AREA TO THE TRAP SHALL BE LESS THAN 5 ACRES.
3. THE MINIMUM VOLUME OF THE TRAP SHALL BE 3,600 CUBIC FEET OF STORAGE FOR EACH ACRE OF DRAINAGE AREA.
4. THE SIDE SLOPES OF THE TRAP SHALL BE 3:1 OR FLATTER AND SHALL BE STABILIZED IMMEDIATELY AFTER THEIR CONSTRUCTION.
5. THE OUTLET OF THE TRAP SHALL BE A MINIMUM OF ONE FOOT BELOW THE CREST OF THE TRAP AND SHALL DISCHARGE TO A STABILIZED AREA.
6. THE TRAP SHALL BE CLEANED WHEN 50 PERCENT OF THE ORIGINAL VOLUME IS FILLED.
7. THE MATERIALS REMOVED FROM THE TRAP SHALL BE PROPERLY DISPOSED OF AND STABILIZED.



CROSS SECTION

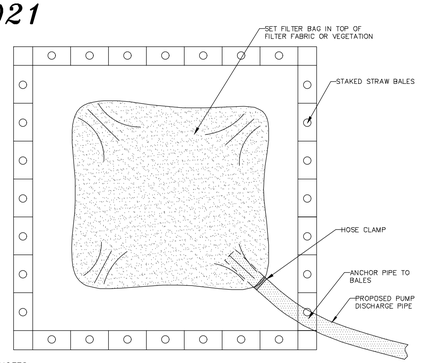


ISOMETRIC VIEW

STONE LINED SEDIMENT TRAP
NOT TO SCALE

SIEVE DESIGNATION	SIZE OF STONE (INCHES)
100%	12
84–100%	6
68–83%	3
42–55%	1
8–12%	NO. 4

D21



NOTES:

1.) ENSURE DISCHARGE POINT IS STABILIZED WITH VEGETATION OR PROPER EROSION AND SEDIMENT CONTROL PRACTICES.

2.) USE DIFFUSER NOZZLE OR LOW DISCHARGE RATE TO PREVENT SCOURING.

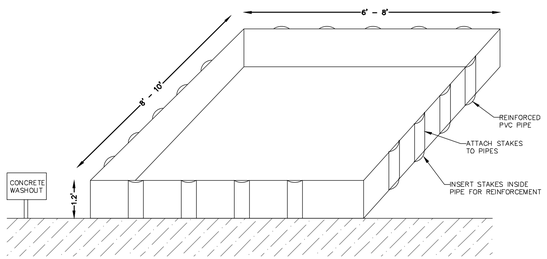
3.) TO BE PLACED AT AN UPLAND LOCATION THAT WILL ALLOW WATER TO DRAIN INTO THE GROUND.

4.) SIZE OF DE-WATERING AREA TO BE 10' X 10', ADJUST SIZE DEPENDING ON VOLUME AND USE.

5.) ADDITIONAL BALES MAY BE USED TO INCREASE RETENTION AND FILTERING.

DE-WATERING BASIN
NOT TO SCALE

D22



NOTES:

1.) CONCRETE WASHOUT SHALL BE INSTALLED PRIOR TO ANY CONCRETE POURS.

2.) SIGNS SHALL BE INSTILLED TO CLEARLY INDICATE WHERE THE LOCATION OF THE WASHOUT AREA IS.

3.) CONTRACTOR IS IRRESPONSIBLE TO MAINTAIN AND REPLACE WASHOUT AREA AS NEEDED.

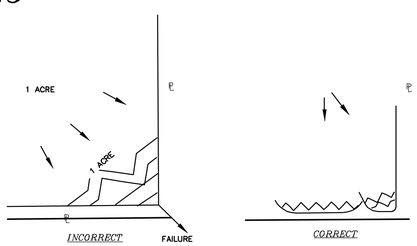
4.) RESIDUE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF PROPERLY.

5.) DO NOT WASH CONCRETE TRUCKS OUT INTO DRAINAGE AREAS, SWALES, STREETS OR UNDISTURBED AREAS.

6.) WASHOUT AREA SHALL BE PLACED AWAY FROM DRAINAGE FEATURES AND OUTSIDE AND WETLAND BUFFERS.

CONCRETE WASHOUT
NOT TO SCALE

D23



PERIMETER CONTROL
NOT TO SCALE

DESIGN CONSITERATIONS:

1. THE MAXIMUM LENGTH OF SLOPE ABOVE PERIMETER CONTROL IS 100 FEET.
2. THE MAXIMUM GRADIENT BEHIND CONTROL WILL NOT EXCEED 5%.
3. THE MAXIMUM CONTRIBUTING DRAINAGE AREA OF ONE-QUARTER ACRE PER 100-FEET OF PRACTICE LENGTH.
4. PERIMETER CONTROL IS TO BE INSTALLED PRIOR TO EARTH MOVING ACTIVITEIS, INCLUDING GRUBBING AND CLEARING.

NOTES

1. DO NOT LAYOUT PERIMETER CONTROL ALONG SLOPING PROPERTY PERIMETER WITHOUT INSTALLING "J HOOKS" AT HIGH CONCENTRATION AREAS. RUNOFF WILL CONCENTRATE AND CAUSE FAILURES ALONG THE PERIMETER.
2. "J HOOKS" CAN BE USED TO HELP LIMIT THE CONCENTRATION OF RUNOFF AND PROVIDE MORE STABILITY TO THE PERIMETER.
3. SILT FENCE AND EROSION CONTROL MULCH BERM MAY BE USED INTERCHANGEABLY. IN SPECIFIED AREA, SILT FENCE MAY NOT BE SUBSTITUTED FOR FILTREXX SILT SOXX OR APPROVED ALTERNATIVE.
4. SEE HAMPSHIRE STORM WATER MANUAL: VOLUME 3, PAGE 99 FOR FURTHER DETAILS AND SPECIFICATIONS

D-102

REVISION	DATE	DESCRIPTION

DRAINAGE DETAILS
LAND OF
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY &
EUGENE A. & DONNA L. SGITGNOULI
TOLEND ROAD
DOVER, N.H.
TAX MAP E, LOT 65-1 & 65-4

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

AS NOTED
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 – 107

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14243
LICENSED PROFESSIONAL ENGINEER

U1

NOTES ON MANHOLE AND SEWER CONSTRUCTION:

1) IT IS THE INTENTION THAT THE MANHOLE, INCLUDING ALL COMPONENT PARTS, HAVE ADEQUATE SPACE, STRENGTH AND LEAKPROOF QUALITIES CONSIDERED NECESSARY FOR THE INTENDED SERVICE. SPACE REQUIREMENTS AND CONFIGURATIONS, SHALL BE AS SHOWN ON THE DRAWING. MANHOLES SHALL BE AN ASSEMBLY OF PRECAST SECTIONS, WITH STEEL REINFORCEMENT AND ADEQUATE JOINTING. THE COMPLETE STRUCTURE SHALL BE OF SUCH MATERIAL AND QUALITY AS TO WITHSTAND HS-20-44 LOADING, INCLUDING THE COVER. ALL SMH CONSTRUCTION AND MATERIALS WILL BE IAW ENV.-WQ 704.13 ADOPTED OCTOBER 15, 2014

2) BARRELS AND CONE SECTIONS SHALL BE PRECAST REINFORCED CONCRETE. (IAW ENV.-WQ 704.12 (d))

3) SEWER MANHOLE DIAMETER SHALL BE AS INDICATED ON THE PLANS.

4) PRECAST CONCRETE BARREL SECTIONS, CONES AND BASES SHALL CONFORM TO ASTM C478.

5) GRAVITY SEWER PIPE TESTING WILL BE IN ACCORDANCE WITH ENV.-WQ 704.06 AND MAN HOLE TESTING IAW ENV.-WQ 704.17 DATED OCTOBER 15, 2014.

6) INVERTS AND SHELVES: MANHOLES SHALL HAVE A BRICK PAVED SHELF AND INVERT, CONSTRUCTED TO CONFORM TO THE SIZE OF THE PIPE AND FLOW. INVERT BRICKS SHALL BE LAID ON EDGE AND THE BASE SECTION SHALL BE FULL. AT CHANGES IN DIRECTIONS, THE INVERTS SHALL BE LAID OUT IN CURVES OF THE LONGEST RADIUS POSSIBLE TANGENT TO THE CENTER LINE OF THE SEWER PIPES. CARE SHALL BE TAKEN TO ENSURE THAT THE BRICK INVERT IS A SMOOTH CONTINUATION OF THE SEWER INVERT. SHELVES SHALL BE CONSTRUCTED TO THE ELEVATION OF THE HIGHEST PIPE CROWN AND SLOPE TO DRAIN TOWARD THE FLOWING THROUGH CHANNEL. UNDERLAYMENT OF INVERT AND SHELF SHALL CONSIST OF BRICK MASONRY. (IAW ENV.-WQ 704.13 (a) (9)), MORTAR SHALL CONFORM WITH REQUIREMENTS OF IAW ENV.-WQ 704.13 (c).

7) FRAMES AND COVERS: MANHOLES FRAMES AND COVERS SHALL BE OF HEAVY DUTY DESIGN AND PROVIDE A 30-INCH CLEAR OPENING. 3-INCH (MINIMUM HEIGHT) LETTERS WITH THE WORD "SEWER" SHALL BE PLAINLY CAST INTO THE CENTER OF EACH MANHOLE COVER. (IAW ENV.-WQ 704.13 (a) (4-6)) SEWER MAN HOLE COVERS ARE TO PAMREX.

8) SHALLOW MANHOLE: IN LIEU OF A CONE SECTION, WHEN MANHOLE DEPTH IS LESS THAN 6 FEET, A REINFORCED CONCRETE SLAB COVER MAY BE USED HAVING AN ECCENTRIC ENTRANCE OPENING AND CAPABLE OF SUPPORTING H-20 LOADS.

9) HORIZONTAL JOINTS BETWEEN SECTIONS OF PRECAST CONCRETE BARRELS SHALL BE OF A TYPE APPROVED BY THE DOVER DPW, WHICH TYPE SHALL, IN GENERAL, DEPEND FOR WATERTIGHTNESS UPON A DOUBLE ROW OF AN OVERLAPPING TYPE ELASTOMERIC OR MASTIC-LIKE GASKET. APPROVED ELASTOMERIC SEALANTS ARE: RAM-NEK, KENT SEAL NO. 2, EZ, OR EQUAL.

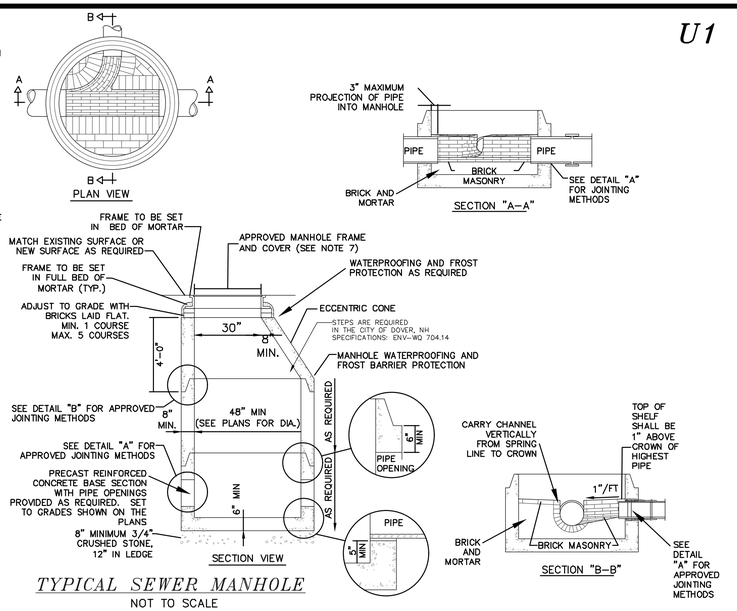
10) IN CROSS COUNTRY AREAS OUTSIDE OF THE PAVED ROADWAY SURFACE, THE MANHOLE FRAME ELEVATION SHALL BE A MINIMUM OF 6" ABOVE FINISHED GRADE. GRADE TO PROVIDE POSITIVE DRAINAGE AWAY FROM THE MANHOLE. SEE TYPICAL TRENCH DETAIL ON SHEET D-102.

11.) ALL FRAMES AND GRATES ARE TO BE U.S.A. MADE. MANHOLE STEPS ARE REQUIRED IN THIS MUNICIPALITY AND MUST CONFORM TO THE REQUIREMENTS OF ENV-WQ 704.14.

12.) THE CONTRACTOR TO WORK WITH CITY OF DOVER REVIEW ENGINEER AND SEWER DEPARTMENT ON THE MEANS AND METHODS USED TO INSTALL ALL SEWER STRUCTURES.

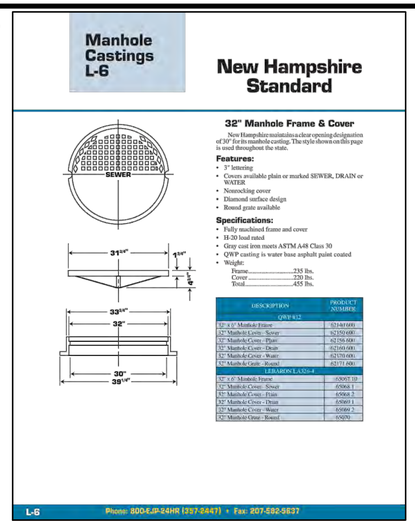
13.) ANY WORK INVOLVING THE CUTTING INTO THE EXISTING A.C. PIPE SHALL MEET THE REQUIREMENTS OF ENV-A 1800.

14.) THE "CITY OF DOVER, NEW HAMPSHIRE, DEPARTMENT OF COMMUNITY SERVICES, CONSTRUCTION GUIDELINES, PERMITS, RULES, AND REGULATIONS" (DATED MARCH 13, 2018) ARE A PART OF THE CONSTRUCTION DETAILS AND TO BE FOLLOWED.



TYPICAL SEWER MANHOLE
NOT TO SCALE

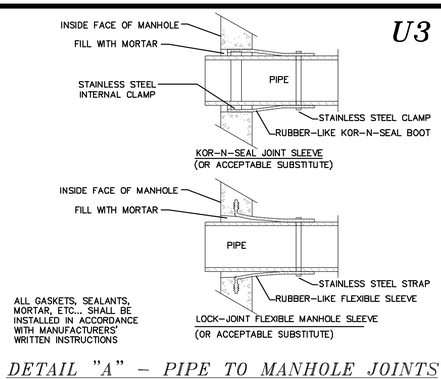
U2



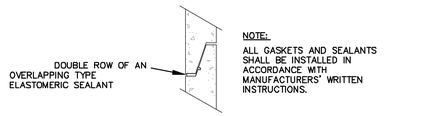
SEWER MANHOLE FRAME AND GRATE WILL BE PAMREX, OR APPROVED EQUAL, 24 INCH OPENING, DUCTILE IRON, H20 LOADING.

SEWER MANHOLE COVER DETAIL
NOT TO SCALE

U3

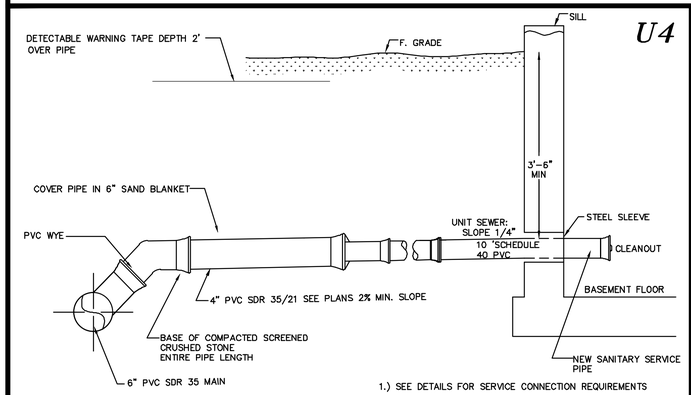


DETAIL "A" - PIPE TO MANHOLE JOINTS
NOT TO SCALE



DETAIL "B" HORIZONTAL JOINTS
NOT TO SCALE

U4



1.) SEE DETAILS FOR SERVICE CONNECTION REQUIREMENTS

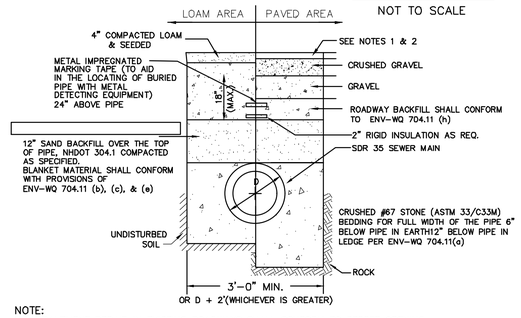
2.) SERVICE CONNECTION SHALL BE INSTALLED BELOW WATER MAIN WHERE POSSIBLE.

3.) CLEANOUTS SHALL BE INSTALLED INSIDE EACH BUILDING EXIT POINT

4.) INSULATION REQUIRED ON A UNIT BY UNIT BASIS. SEE PLANS.

DETAIL OF UNIT SEWER SERVICE
NOT TO SCALE

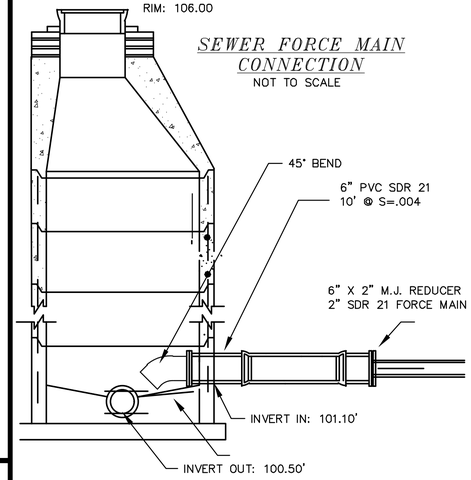
U5



TYPICAL SEWER PIPE TRENCH
NOT TO SCALE

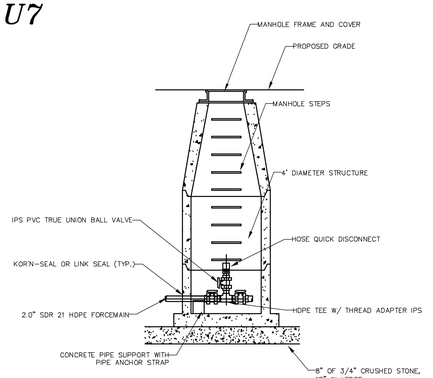
NOTE:
1. PAVEMENT REPAIR IN EXISTING ROADWAYS SHALL CONFORM TO STREET OPENING REGULATIONS.
2. NEW ROADWAY CONSTRUCTION SHALL CONFORM TO SUBDIVISION SPEC'S.
3. ANTI-SEEP COLLARS OR CLAY CHECK DAMS ON STEEP RUNS IN WET CONDITIONS.
4. ALL SEWER INSTALLATIONS SHALL CONFORM TO THE REQUIREMENTS OF NHDES & MUNICIPAL DPW SEWER DIVISION STANDARDS. ALL PVC SEWER PIPE IS TO CONFORM WITH ENV-WQ 704.05 (c)-(e) AND CONFORM WITH ASTM D3034. PVC JOINT SEALS SHALL CONFORM WITH ASTM D3121. SDR-21 PVC FORCE MAIN PIPE MATERIAL IS REQUIRED IN LOCATIONS AS SHOWN. SDR-21 PVC FORCEMAIN PIPE WILL CONFORM TO ENV-WQ 704.08.

U6

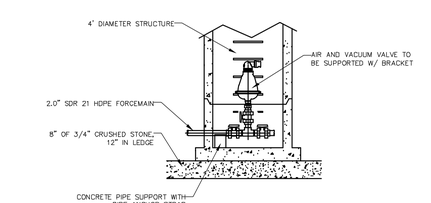


SEWER FORCE MAIN CONNECTION
NOT TO SCALE

U7



TERMINAL FLUSHING MANHOLE DETAIL
NOT TO SCALE

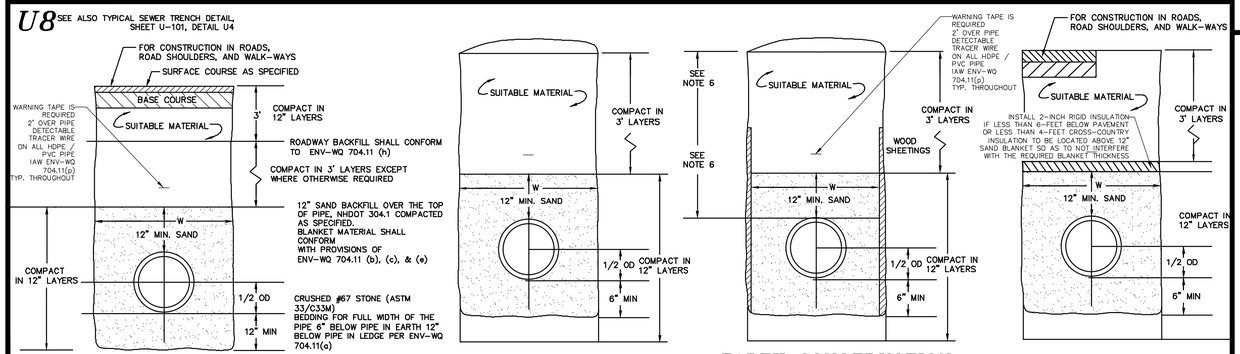


OPTIONAL ELEVATION VIEW
NOT TO SCALE

AIR & VACUUM VALVE MTG. DETAIL

NOTES: 1.) SDR9 HDPE FITTINGS TO BE ELECTRO-FUSED
2.) AIR AND VACUUM RELEASE VALVES REQUIRE VENTING TO ATMOSPHERE

U8



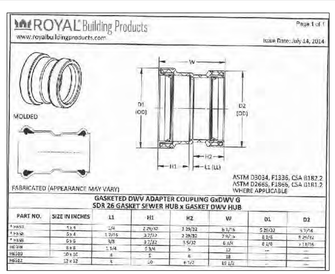
LEDGE CONSTRUCTION
NOT TO SCALE

EARTH CONSTRUCTION
NOT TO SCALE

EARTH CONSTRUCTION WITH SHEETING
NOT TO SCALE

TRENCH INSULATION
NOT TO SCALE

U9



COUPLING DETAIL
NOT TO SCALE

REVISION	DATE	DESCRIPTION

UTILITY DETAILS
LAND OF
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY &
EUGENE A. & DONNA L. SGITGNOULI
TOLENDAL ROAD
DOVER, N.H.
TAX MAP E, LOT 65-1 & 65-4

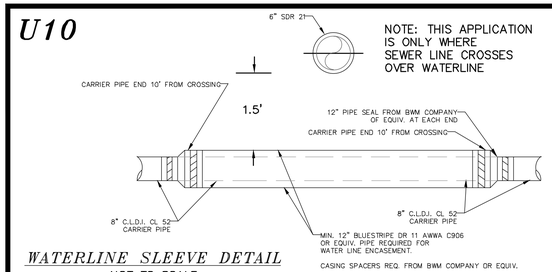
BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

AS NOTED
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 - 107

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY No. 14243 LICENSED
PROFESSIONAL ENGINEER

U-101

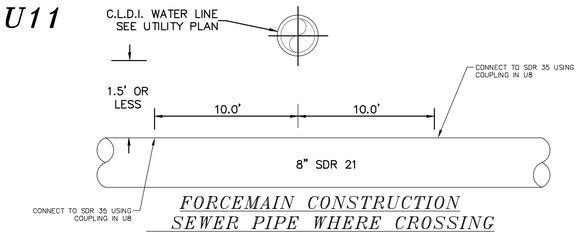
U10



WATERLINE SLEEVE DETAIL

NOT TO SCALE

U11



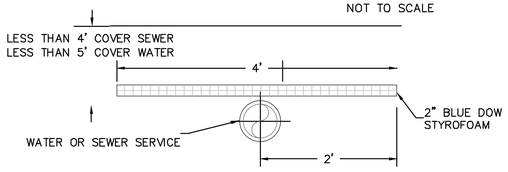
FORCEMAIN CONSTRUCTION SEWER PIPE WHERE CROSSING UNDER WATER LINE

NOT TO SCALE

U12

INSULATION OF WATER & SEWER SERVICES

NOT TO SCALE



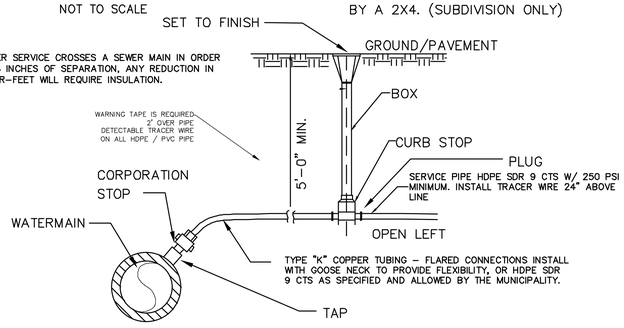
U13

TYPICAL WATER SERVICE CONNECTION

NOT TO SCALE

THE END OF THE INSTALLED WATER SERVICE TO BE MARKED BY A 2X4. (SUBDIVISION ONLY)

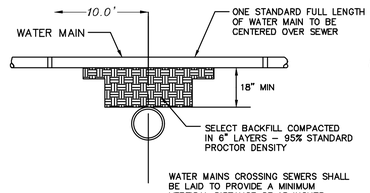
WHERE A WATER SERVICE CROSSES A SEWER MAIN IN ORDER TO PROVIDE 18 INCHES OF SEPARATION, ANY REDUCTION IN DEPTH TO FOUR-FEET WILL REQUIRE INSULATION.



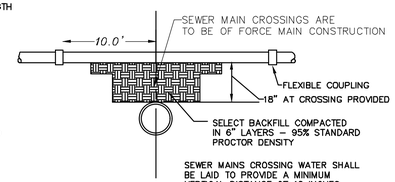
U14

SEPERATION NOTES:

1. WATER MAIN SHALL BE IN ACCORDANCE WITH THE "RECOMMENDED STANDARDS FOR WATER WORKS" SO-CALLED TEN STATE STANDARDS AND NEW HAMPSHIRE WATER SUPPLY AND POLLUTION CONTROL DESIGN STANDARDS, ENV-WQ 700 ADOPTED OCTOBER 14, 2014.
2. WATER MAINS SHALL BE LAID AT LEAST 10 FEET HORIZONTALLY FROM ANY EXISTING OR PROPOSED SEWERS. THE DISTANCE SHALL BE MEASURED EDGE TO EDGE. IF THIS DISTANCE CANNOT BE OBTAINED, THEN THE PIPES SHALL BE INSTALLED IN A SEPARATE TRENCH AT AN ELEVATION SO THE BOTTOM OF THE WATER MAIN IS AT LEAST 18 INCHES ABOVE THE TOP OF THE SEWER.
3. VERTICAL SEPARATION REQUIREMENTS APPLY TO WATER AND SEWER MAINS AND SERVICE LINES. WHERE SEWER CROSSES WATER MAIN AND WATER SERVICE CROSSES SEWER MAIN, 18 INCH VERTICAL CLEARANCE SHALL BE PROVIDED WITH WATER OVER SEWER.



WATER MAIN ABOVE SEWER

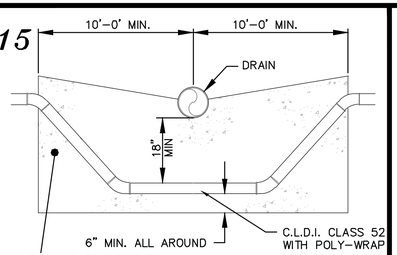


WATER MAIN BELOW SEWER

TYPICAL WATER/SEWER SEPERATION DETAILS

NOT TO SCALE

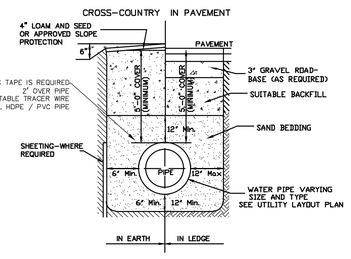
U15



WATER MAIN INSTALLATION - BELOW DRAIN & SEWER

NOT TO SCALE

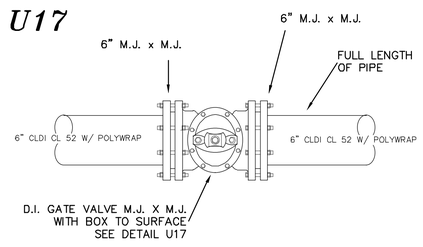
U16



TYPICAL TRENCH DETAIL FOR WATER SYSTEM

NOT TO SCALE

U17



SHUTOFF VALVE DETAIL

NOT TO SCALE

1.) ALL VALVES ARE TO OPEN RIGHT
2.) SEE CITY OF DOVER STANDARDS OF INFRASTRUCTURE DESIGN FOR POTABLE WATER DETAILS

U18

TYPICAL THRUST BLOCKS

NOT TO SCALE

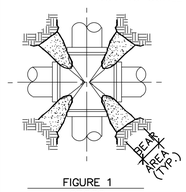


FIGURE 1
CROSS

(ONLY REQ'D IF ANY LEG IS LESS THAN 60 FT. LONG)

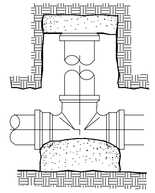


FIGURE 2
TEE, PLUG OR CAP

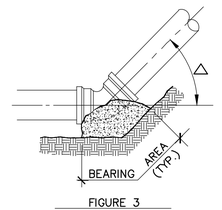


FIGURE 3
HORIZONTAL OR UPWARD VERTICAL BEND

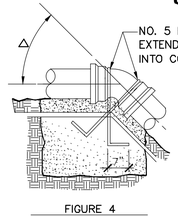


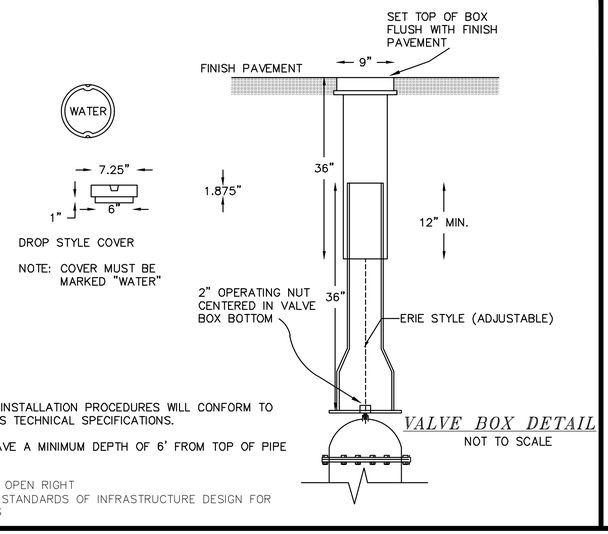
FIGURE 4
DOWNWARD VERTICAL BEND

PIPE I.D.	BEARING AREA, SQUARE FEET		FIGURE 3, △				VOLUME OF CONC. CU.YD		
	FIGURE 1	FIGURE 2	90°	45°	22-1/2°	11-1/4°	FIGURE 4, △ 45°	22-1/2°	11-1/4°
4"	2	2	2	1	1	1	1.0	.5	.5
6"	2	3	3	2	1	1	1.5	1.0	.5
8"	2	5	6	3	2	1	2.0	1.0	.5
10"	3	7	10	5	3	1	4.0	2.0	1.0
12"	3	10	14	8	4	2			
14"	4	14	20	10	5	3			
16"	4	20	24	12	7	4			
18"	5	24	30	16	10	5			
20"	5	28	40	20	12	6			

GENERAL NOTES:

1. ALL FITTINGS & EXPOSED REBAR TO BE RAPPED W/ TWO LAYERS OF 6 MIL. POLYETHYLENE WHERE COVERED WITH CONCRETE.
2. ALL CONCRETE SHALL BE CLASS C 3000 P.S.I. MINIMUM 28 DAYS COMPRESSIVE STRENGTH.
3. PLACE CONCRETE AGAINST UNDISTURBED EARTH.
4. TABLE DENOTES MINIMUM BEARING AREA OR VOLUME OF THRUST BLOCK. SPECIAL DESIGN FOR EACH INSTALLATION IS REQUIRED IF ALLOWABLE SOIL BEARING CAPACITY IS LESS THAN 3000 P.S.F.
5. VERTICAL SURFACES NOT BEARING AGAINST UNDISTURBED EARTH SHALL BE FORMED.
6. KEEP CONCRETE AWAY FROM FLANGE BOLTS AND FITTINGS.
7. MECHANICAL JOINTS AT ALL FITTINGS IE: BENDS,
8. TEES, CROSSES, AND VALVES SHALL BE THRUST RESTRAINT. (MEGA-LUG OR APPROVED EQUAL.

U19



DROP STYLE COVER

NOTE: COVER MUST BE MARKED "WATER"

VALVE BOX DETAIL

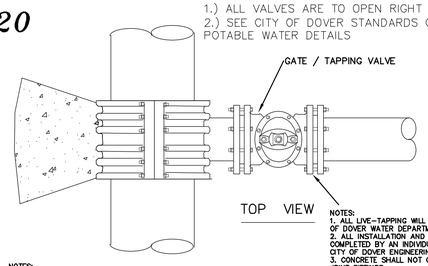
NOT TO SCALE

NOTES:

1.) ALL MATERIALS AND INSTALLATION PROCEDURES WILL CONFORM TO LOCAL WATER WORKS TECHNICAL SPECIFICATIONS.
2.) ALL PIPE SHOULD HAVE A MINIMUM DEPTH OF 6' FROM TOP OF PIPE TO FINISH GRADE.
3.) ALL VALVES ARE TO OPEN RIGHT
4.) SEE CITY OF DOVER STANDARDS OF INFRASTRUCTURE DESIGN FOR POTABLE WATER DETAILS

U20

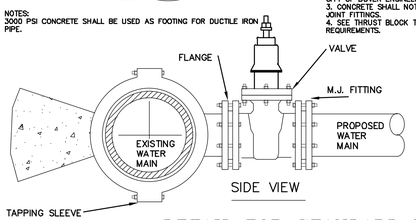
1.) ALL VALVES ARE TO OPEN RIGHT
2.) SEE CITY OF DOVER STANDARDS OF INFRASTRUCTURE DESIGN FOR POTABLE WATER DETAILS



TOP VIEW

NOTES:
1. ALL LIVE-TAPPING WILL BE COMPLETED IN ACCORDANCE WITH CITY OF DOVER WATER DEPARTMENT REGULATIONS.
2. ALL INSTALLATION AND TAPPING OF EXISTING WATER MAINS WILL BE COMPLETED BY AN INDIVIDUAL OR FIRM THAT IS APPROVED BY THE CITY OF DOVER ENGINEERING.
3. CONCRETE SHALL NOT CONTACT BOLTS OR END OF MECHANICAL JOINT FITTINGS.
4. SEE THRUST BLOCK TABLES FOR AREA OF CONCRETE REQUIREMENTS.

NOTES:
3000 PSI CONCRETE SHALL BE USED AS FOOTING FOR DUCTILE IRON PIPE.



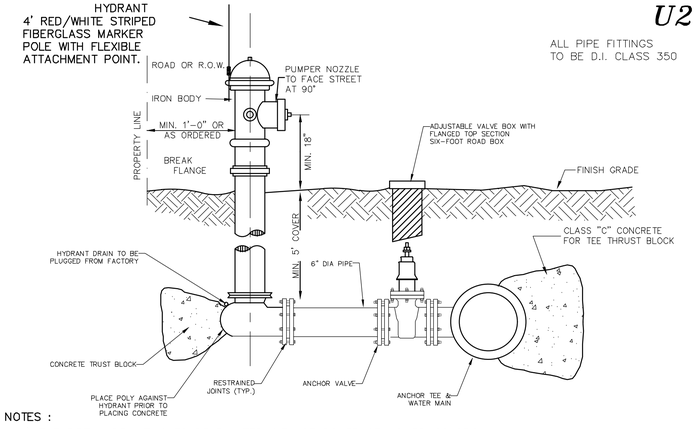
SIDE VIEW

DETAIL FOR STANDARD TAPPING SLEEVE AND VALVE ASSEMBLY

NOT TO SCALE

U21

ALL PIPE FITTINGS TO BE D.I. CLASS 350



NOTES :

1.) THE FIRE HYDRANT IS TO BE PAINTED CITY OF DOVER STANDARD COLORS AND BE EQUIPPED WITH A HYDRANT LOCATOR.
2.) THE FIRE HYDRANT SHALL BE THE "EDDY" TYPE.
3.) GATE VALVES OPEN LEFT.

HYDRANT INSTALLATION DETAIL

NOT TO SCALE

U-102

REVISION	DATE	DESCRIPTION

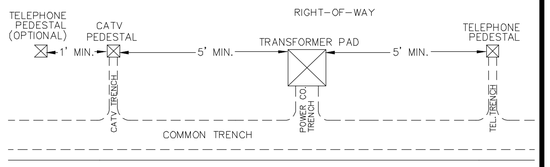
UTILITY DETAILS
LAND OF
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY &
D. BARNES, T. G
EUGENE A. & DONNA L. SGTIGNOULI
TOLEND ROAD
DOVER, N.H.
TAX MAP 8, LOT 65-1 & 65-4

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

AS NOTED
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 - 107

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14243
LICENSED PROFESSIONAL ENGINEER

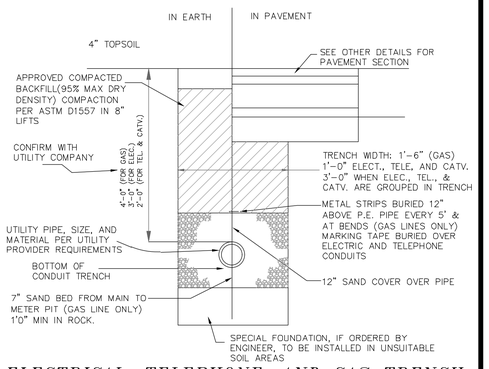
U22



PEDESTAL PLACEMENT

NOT TO SCALE

U23



ELECTRICAL, TELEPHONE, AND GAS TRENCH

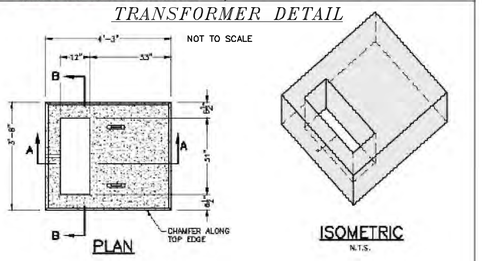
NOT TO SCALE

U24

SHEA CONCRETE PRODUCTS — New England's Premier Precaster — 800-696-7432 (SHEA) — www.sheaconcrete.com — MAILING ADDRESS: 87 HAVERHILL RD AMESBURY, MA 01913

EVERSOURCE-NH 53-102
TRANSFORMER PAD 25-75 KVA

TRANSFORMER DETAIL



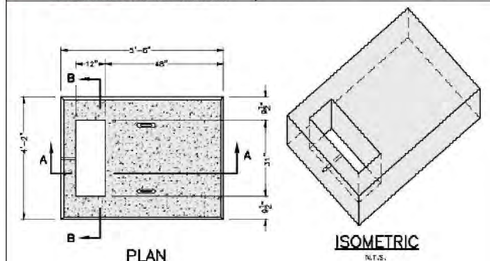
NOTES:
1. CONCRETE MINIMUM STRENGTH 4,000 PSI AFTER 28 DAYS.
2. REINFORCEMENT STEEL CONFORMS TO ASTM A615 GRADE 60 #6 REBAR.
3. MEETS OR EXCEEDS EVERSOURCE SPECIFICATIONS.

SHEA PRODUCT ID:	25-75 KVA	FILE NAME:	ES-NH TP 53-102	
WEIGHT (LBS):	1,936#	DRAWN BY: MNN	DATE: 01/02/2018	PAGE: III.C.1

773 Salem Street-Wilmington, MA | 153 Cranberry Hwy-Rochester, MA | 87 Haverhill Road-Amesbury, MA | 160 Old Turnpike Rd-Northgrton, NH

Specifications subject to change without notice

EVERSOURCE-NH 53-102L
TRANSFORMER PAD 100 TO 250 KVA



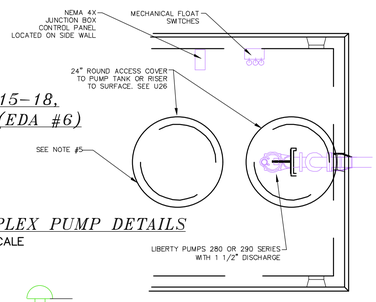
NOTES:
1. CONCRETE MINIMUM STRENGTH 4,000 PSI AFTER 28 DAYS.
2. REINFORCEMENT STEEL CONFORMS TO ASTM A615 GRADE 60 #6 REBAR.
3. MEETS OR EXCEEDS EVERSOURCE SPECIFICATIONS.

SHEA PRODUCT ID:	100-250 KVA	FILE NAME:	ES-NH TP 53-102L	
WEIGHT (LBS):	3,022#	DRAWN BY: MNN	DATE: 01/02/2018	PAGE: III.C.2

773 Salem Street-Wilmington, MA | 153 Cranberry Hwy-Rochester, MA | 87 Haverhill Road-Amesbury, MA | 160 Old Turnpike Rd-Northgrton, NH

Specifications subject to change without notice

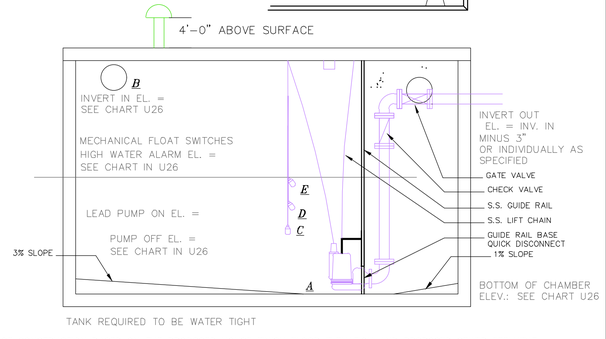
U25



UNITS 7-10, 11-14, 15-18, 19-22 (EDA #3, 59-60 (EDA #6)

PUMP CHAMBER & SIMPLEX PUMP DETAILS

NOT TO SCALE



NOTES:
1. AT THE TIME OF CONSTRUCTION BASED ON THE PROPOSED HOUSE FINISH FLOOR ELEVATION AND PROPOSED SEWER EFFLUENT FOUNDATION INVERT, AN INDIVIDUAL DESIGN WILL BE COMPLETED BY A PROFESSIONAL ENGINEER AND SUBMITTED TO THE CITY ENGINEER, DPW, COMMUNITY SERVICES.
2. EACH APPLICABLE LOT WILL BE EQUIPPED WITH A 1000-GALLON HOLDING TANK AND A LIBERTY PUMP OMNIVOR GRINDER PUMP LSG200 SERIES OR APPROVED EQUAL.
3. THE BOTTOM OF THE PUMP CHAMBER WILL BE SLOPED AT A 1% SLOPE IN ALL DIRECTIONS CREATING A SUMP AROUND THE BASE OF THE PUMP. THE LIFT STATION WILL BE EQUIPPED WITH A GR20 GUIDE RAIL BASE AND RAIL SYSTEM AND LIFT CHAIN. THE PUMP DISCHARGE WILL BE EQUIPPED WITH A CHECK VALVE AND A GATE VALVE BETWEEN THE PUMP AND THE TANK WALL, IN THAT ORDER. THE DISCHARGE WILL LEAVE THE TANK AT A POINT FOUR-FEET BELOW GRADE, INSULATED OR SIX-FEET IF UNDER PAVEMENT, AND THE FORCE MAIN WILL BE DESIGNED UP-HILL TO THE INTERSECTION OF THE COMMON FORCE MAIN.
4. WET WELL/SEPTIC TANK SHALL BE LEAK TESTED USING METHOD ACI 350.1 METHOD HST-NML.
5. SUBMERSIBLE PUMPS AND ALL OTHER ELECTRICAL SYSTEMS/COMPONENTS IN THE WET WELL/SEPTIC TANK SHALL MEET NEC REQUIREMENTS FOR CLASS I, DIVISION I ENVIRONMENT.
6. POWER SOURCE FOR ALARM SYSTEM SHALL BE AN INDEPENDENT BATTERY WITH CONTINUOUS CHARGE, OR MAIN LINE POWER WITH BACK UP BATTERY SYSTEM.
7. 36" CONCRETE RISER TO SURFACE. NORTH AMERICAN MADE, RIM & COVER.

U26

PUMP CALCULATION TABLE

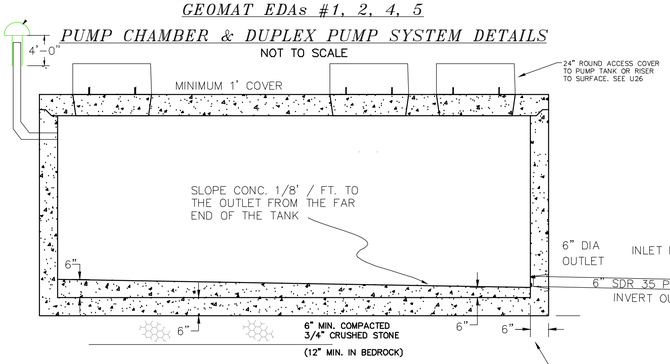
	A	B	C	D	E				
UNIT #	TOTAL DYNAMIC HEAD	PUMP RATE	PUMP CHAMBER BOTTOM	PUMP CHAMBER INVERT IN	PUMP OFF ELEVATION	PUMP ON ELEVATION	ALARM ON ELEVATION	FLOW (GPD)	SYSTEM TYPE	PUMP TYPE
7-10	29.0'	45.0 GPM	92.42'	97.00'	93.83'	94.10'	94.20'	1,200	SINGLE	LIBERTY 290 SERIES
11-14	26.5'	47.0 GPM	91.42'	96.00	92.83'	93.10'	93.20'	1,200	SINGLE	LIBERTY 290 SERIES
15-18	31.0'	40.5 GPM	83.42'	88.00'	84.83'	85.10'	95.20'	1,200	SINGLE	LIBERTY 290 SERIES
19-22 (EDA 3)	19.2'	59.3 GPM	91.42'	96.00'	92.83'	93.32'	93.42'	1,200	SINGLE	LIBERTY 290 SERIES
59-60 (EDA 6)	18.6'	42.1 GPM	91.65'	95.65'	93.07'	93.44'	93.54'	600	SINGLE	LIBERTY 280 SERIES
EDA 1	42.8'	59.3 GPM	98.75'	98.75'	94.67'	95.97'	96.07'	4,200	DUAL ALTERNATING	LIBERTY FL 70 SERIES (2)
EDA 2	31.1'	61.7 GPM	94.25'	100.25'	95.67'	97.63'	97.73'	3,600	DUAL ALTERNATING	LIBERTY FLH 60 SERIES (2)
EDA 4	22.8'	54.3 GPM	73.50'	79.50'	74.92'	76.22'	76.32'	2,400	DUAL ALTERNATING	LIBERTY 290 SERIES (2)
EDA 5	28.3'	74.5 GPM	76.25'	76.25'	71.67'	73.28'	73.38'	6,000	DUAL ALTERNATING	LIBERTY FL 70 SERIES (2)

U27

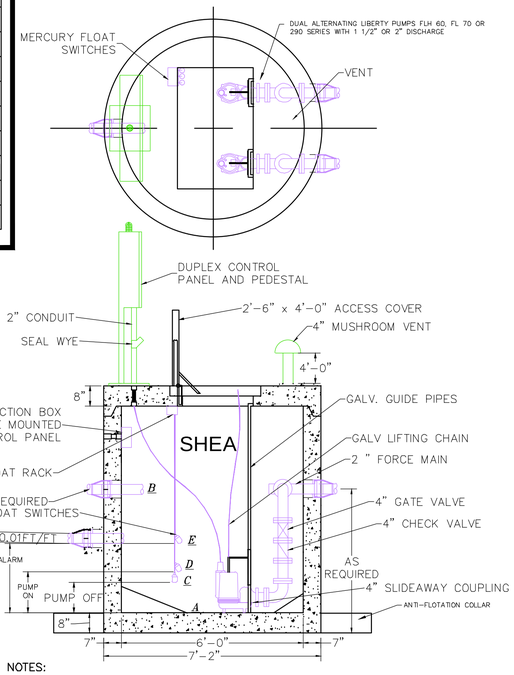
GEOMAT EDAs #1, 2, 4, 5

PUMP CHAMBER & DUPLEX PUMP SYSTEM DETAILS

NOT TO SCALE



NOTES:
1. CONCRETE: 5,000 PSI MINIMUM AFTER 28 DAYS.
2. ALL REINFORCEMENT PER ASTM C1227.
3. DESIGNED FOR H-20 LOADING.
4. TONGUE & GROOVE JOINT SEALED WITH BUTYL RESIN.



NOTES:
1. CONCRETE: 4,000 PSI MINIMUM AFTER 28 DAYS.
2. REINFORNCED STEEL CONFORMS TO LATEST ASTM A185
3. BUTYL RESIN SECTION JOINT CONFORMS TO LATEST ASTM C990 SPECIFICATION.

U-103

REVISION	DATE	DESCRIPTION

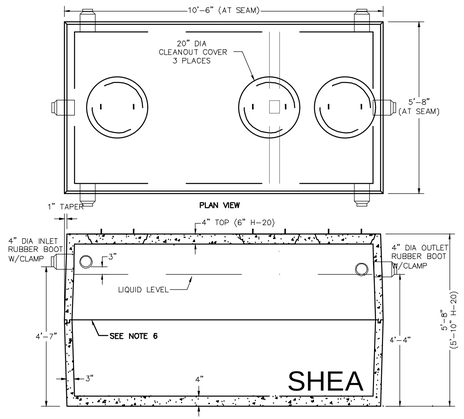
UTILITY DETAILS
LAND OF
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY &
EUGENE A. & DONNA L. SGITONOULI
TOLEND ROAD
DOVER, N.H.
TAX MAP 6, LOT 65-1 & 65-4

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

AS NOTED
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 - 107

STATE OF NEW HAMPSHIRE — KENNETH A. BERRY No. 14243 LICENSED PROFESSIONAL ENGINEER

U28

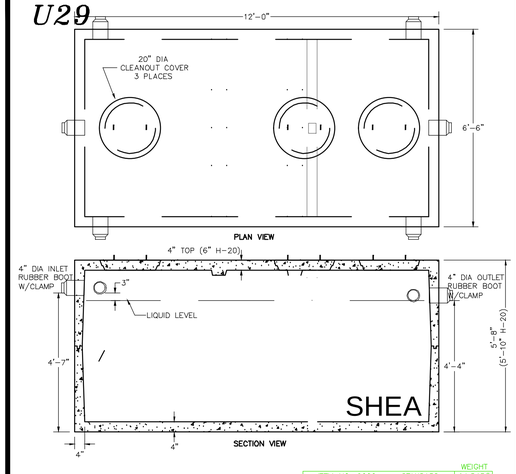


NOTES:
1. CONCRETE: 4,000 PSI MINIMUM AFTER 28 DAYS.
2. CONSTRUCTION OF SEPTIC TANK CONFORMS WITH 310 CMR, SECTION 15.00 DEP TITLE 5 REGS.
3. ALL REINFORCEMENT PER ASTM C1227.
4. BAFFLE WALL OPTIONAL FOR TWO COMPARTMENT TANKS.
5. TEES AND GAS BAFFLE SOLD SEPARATELY.
6. TONGUE & GROOVE JOINT SEALED WITH BUTYL RESIN.
7. IF COVER EXCEEDS 4 FEET, HEAVY DUTY TANK REQUIRED. ALSO AVAILABLE IN AASHTO HS-20 LOADING.

ITEM NO.	STANDARD	WEIGHT
1500	STANDARD	11,670#
1500H	H-20	13,135#
1500 2C	STANDARD	12,930#
1500 2CH	H-20	14,395#

1,500 GALLON PUMP CHAMBER
NOT TO SCALE

U29

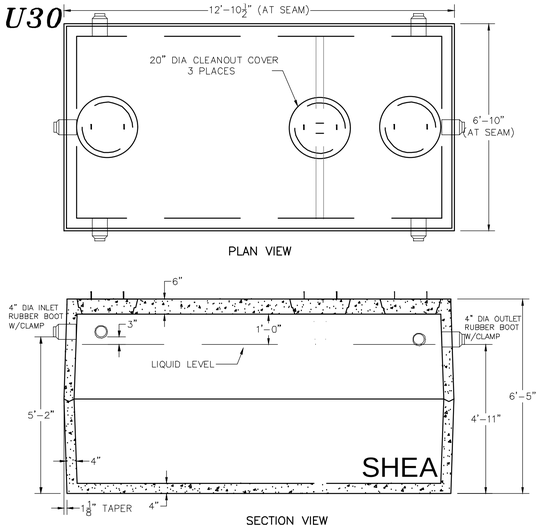


2,000 GALLON STORAGE TANK
NOT TO SCALE

ITEM NO.	STANDARD	WEIGHT
2000	STANDARD	14,245#
2000H	H-20	16,170#
2000 2C	STANDARD	15,685#
2000 2CH	H-20	17,610#

NOTES:
1. CONCRETE: 4,000 PSI MINIMUM AFTER 28 DAYS.
2. CONSTRUCTION OF SEPTIC TANK CONFORMS WITH 310 CMR, SECTION 15.00 DEP TITLE 5 REGS.
3. ALL REINFORCEMENT PER ASTM C1227.
4. BAFFLE WALL OPTIONAL FOR TWO COMPARTMENT TANKS.
5. TEES AND GAS BAFFLE SOLD SEPARATELY.
6. TONGUE & GROOVE JOINT SEALED WITH BUTYL RESIN.
7. IF COVER EXCEEDS 4 FEET, HEAVY DUTY TANK REQUIRED. ALSO AVAILABLE IN AASHTO HS-20

U30

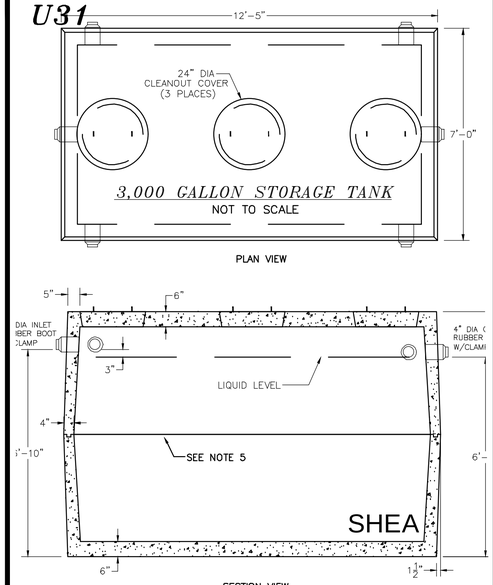


NOTES:
1. CONCRETE: 4,000 PSI MINIMUM AFTER 28 DAYS.
2. CONSTRUCTION OF SEPTIC TANK CONFORMS WITH 310 CMR, SECTION 15.00 DEP TITLE 5 REGS.
3. ALL REINFORCEMENT PER ASTM C1227.
4. TEES AND GAS BAFFLE SOLD SEPARATELY.
5. TONGUE & GROOVE JOINT SEALED WITH BUTYL RESIN.
6. IF COVER EXCEEDS 4 FEET, HEAVY DUTY TANK REQUIRED. ALSO AVAILABLE IN AASHTO HS-20 LOADING.

ITEM NO.	STANDARD	WEIGHT
2500	STANDARD	21,750#
2500H	H2O	21,750#
2500 2CH	H2O	22,650#
2500 2CH	H2O	22,650#

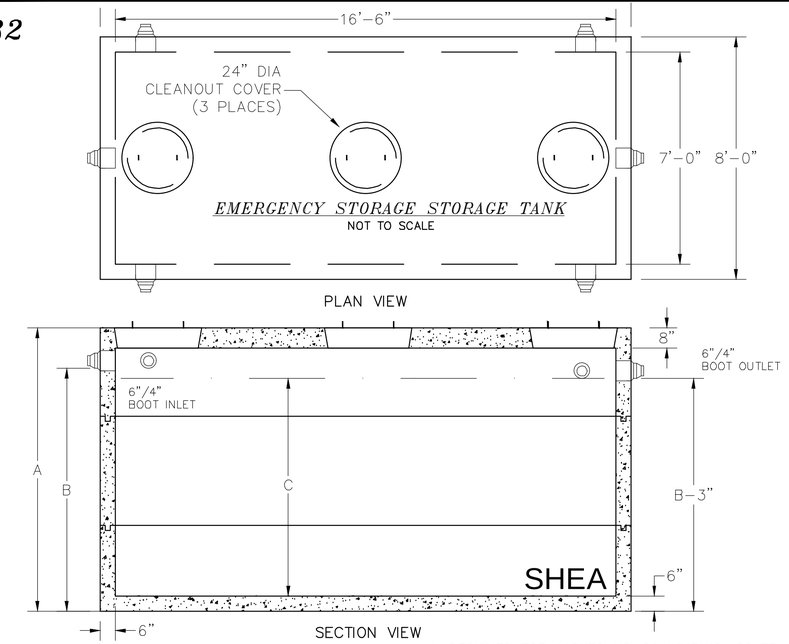
2,500 GALLON SEPTIC TANK & PUMP CHAMBER
NOT TO SCALE

U31



NOTES:
1. CONCRETE: 4,000 PSI MINIMUM AFTER 28 DAYS.
2. DESIGN CONFORMS WITH 310 CMR, SECTION 15.00 DEP TITLE 5 REGS FOR SEPTIC TANI
4. ALL REINFORCEMENT PER ASTM C1227.TEES AND GAS BAFFLE SOLD SEPARATELY.
5. TONGUE & GROOVE JOINT SEALED WITH BUTYL RESIN.
6. DESIGNED FOR 1 TO 5 FEET COVER. ALSO AVAILABLE IN AASHTO HS-20 LOADING.

U32

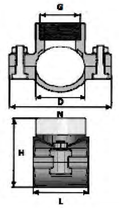


NOTES:
1. CONCRETE: 5,000 PSI MINIMUM AFTER 28 DAYS.
2. DESIGN CONFORMS WITH 310 CMR 15.00 DEP TITLE 5 REGS FOR SEPTIC TANKS.
3. ALL REINFORCEMENT PER ASTM C1227
4. DESIGNED FOR AASHTO HS-20 LOADING, COVER 1-5 FT.
5. TONGUE AND GROOVE JOINT SEALED WITH BUTYL RESIN, INLET HEIGHT MAY INCREASE SLIGHTLY DUE TO THE BUTYL RESIN USED.
6. TEES AND BAFFLES SOLD SEPARATELY.

GALLONS	ITEM NO.	A (HEIGHT)	B* (INLET) 6" BOOT	B* (INLET) 4" BOOT	C (LIQUID)	WEIGHT (LBS)	TOP (HEIGHT)	BOTTOM (HEIGHT)	RISER 1 (HEIGHT)	RISER 2 (HEIGHT)
3,500	8X17-35	77"	61"	62"	52"	45,929	28"	49"	0"	0"

U33

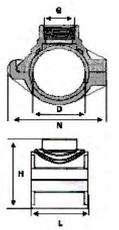
PP SADDLES



CEPEX

CEPEX IPS 2-BOLT x FIPT OUTLET

SIZE	CODE	D	G	N	H	L
1-1/2" x 3/4"	LPS-15007SSS	1.90	3/4"	3.35	2.93	1.97
1-1/2" X 1"	LPS-15010SSS	1.90	1"	3.35	2.93	1.97



TLC IPS HINGED 2-BOLT x FIPT OUTLET

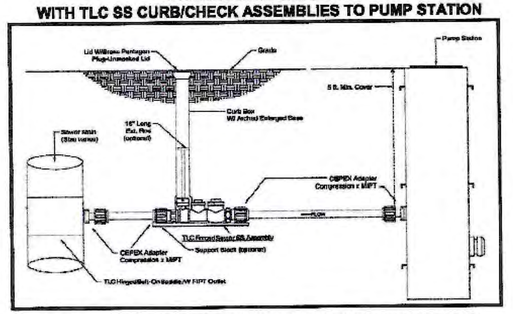
SIZE	CODE	D	G	N	H	L
2" x 1/2"	LPS-20005SSS	2.38	1/2"	4.37	3.78	3.00
2" x 3/4"	LPS-20007SSS	2.38	3/4"	4.37	3.78	3.00
2" x 1"	LPS-20010SSS	2.38	1"	4.37	3.78	3.00
2" x 1-1/4"	LPS-20012SSS	2.38	1-1/4"	4.37	3.78	3.00
2" x 1-1/2"	LPS-20015SSS	2.38	1-1/2"	4.37	3.78	3.00
3" x 3/4"	LPS-30007SSS	3.50	3/4"	5.50	5.00	3.63
3" x 1"	LPS-30010SSS	3.50	1"	5.50	5.00	3.63
3" x 1-1/4"	LPS-30012SSS	3.50	1-1/4"	5.50	5.00	3.63
3" x 1-1/2"	LPS-30015SSS	3.50	1-1/2"	5.50	5.00	3.63
3" x 2"	LPS-30020SSS	3.50	2"	5.50	5.00	3.63
4" x 3/4"	LPS-40007SSS	4.50	3/4"	6.57	6.14	3.88
4" x 1"	LPS-40010SSS	4.50	1"	6.57	6.14	3.88
4" x 1-1/4"	LPS-40012SSS	4.50	1-1/4"	6.57	6.14	3.88
4" x 1-1/2"	LPS-40015SSS	4.50	1-1/2"	6.57	6.14	3.88
4" x 2"	LPS-40020SSS	4.50	2"	6.57	6.14	3.88

LATERAL CONNECTION
www.lateralconnection.com
#101 - 26921 Gloucester Way - Langley, BC - V4W 3Y3
t. 604-856-7253 / 855-292-8240 - f. 604-381-2148
sales@lateralconnection.com

U34

LATERAL CONNECTION

FORCED SEWER MODEL
WITH TLC SS CURB/CHECK ASSEMBLIES TO PUMP STATION



CURB STOP/SWING CHECK FORCED SEWER ASSEMBLIES
LIST PRICING

FORCED SEWER ASSEMBLY THREADED FIPT x FIPT 316 SS BODY	PART NO.	SIZE	WORKING PRESSURE	WT EA. LBS	LIST PRICE
	GR1125-SS	1-1/4"	200 PSI	6.38	POA
	GR3150-SS	1-1/2"	200 PSI	6.56	POA
	GR6211-SS	2"	200 PSI	10.28	POA

U-104

UTILITY DETAILS
LAND OF
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY &
EUGENE A. & DONNA L. SGITGNOULI
TOLEND ROAD
DOVER, N.H.
TAX MAP 8, LOT 65-1 & 65-4

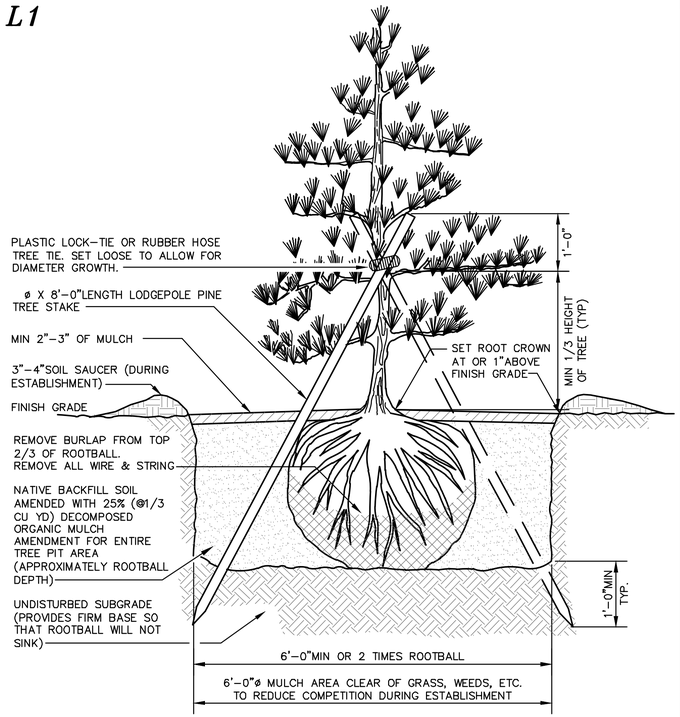
REVISION	DATE	DESCRIPTION

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

AS NOTED
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 - 107

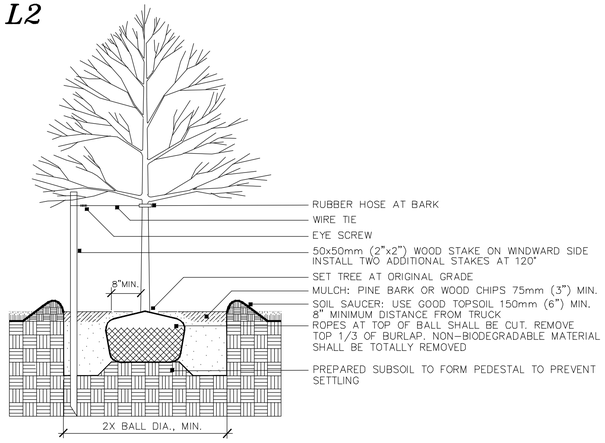
STATE OF NEW HAMPSHIRE - KENNETH A. BERRY No. 14243 LICENSED PROFESSIONAL ENGINEER

L1



CONIFEROUS TREE PLANTING

L2



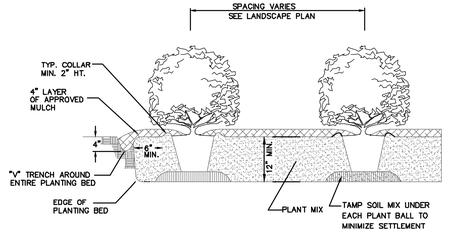
DECIDUOUS TREE PLANTING

NOTE: STAKING TO BE USED IN PARKING ISLANDS AND OTHER CONFINED AREAS AS NECESSARY TO AVOID CONFLICTS WITH PEDESTRIANS

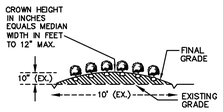
L3

NOTES:

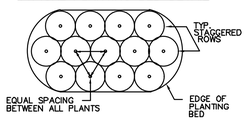
1. SCARIFY ROOT MASS OF CONTAINERIZED PLANT MATERIAL.
2. INSTALL CONTAINERIZED PLANTS AT FINSHED GRADE
3. TAMP PLANTING MIX FIRMLY AS PIT IS FILLED AROUND EACH PLANT BALL.
4. OMIT COLLAR AROUND EACH SHRUB WHEN IRRIGATION SYSTEM IS PRESENT.
5. SOAK EACH PLANT BALL AND PIT IMMEDIATELY AFTER INSTALLATION.



TYPICAL PLANTING BED DETAIL



TYPICAL BED CROWNING

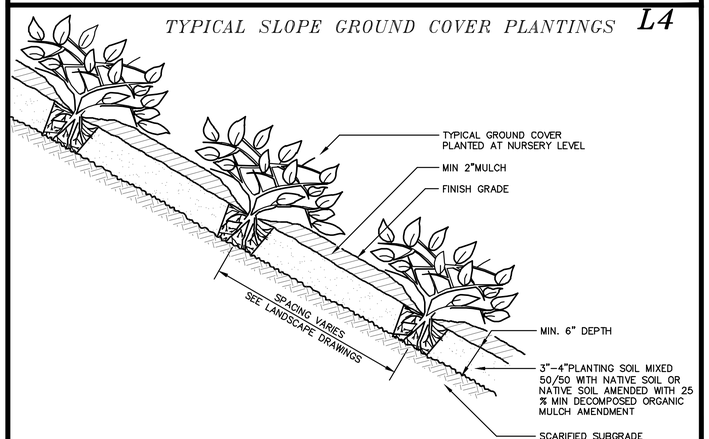


TYPICAL PLANTING BED PLAN

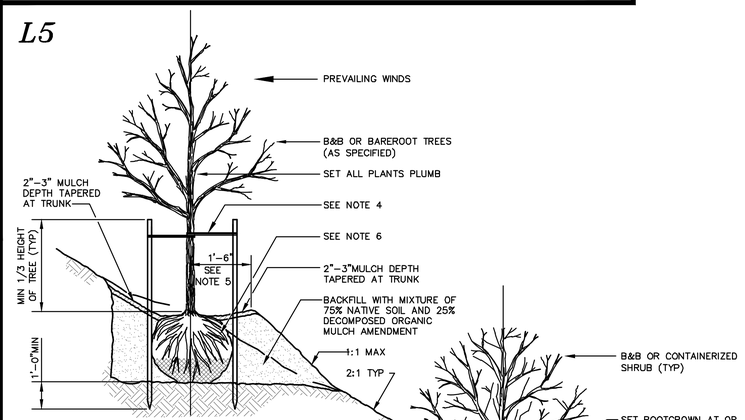
SHRUB & HEDGE PLANTING

L4

TYPICAL SLOPE GROUND COVER PLANTINGS



L5



NOTES:
1. STAKE TREES PER STD PLAN NO 100a
2. ONE STAKE PER TREE ON WINDWARD SIDE; SECOND STAKE ON LEEWARD SIDE
3. SLOPES STEEPER THAN 2:1 MAY REQUIRE AN APPROVED EMBANKMENT STABILIZATION SYSTEM TO CREATE A LEVEL TREE PIT SUCH AS:
   –ROCK FACING
   –PRECAST CONCRETE WALL UNITS
   –TIMBER WALL
   –MANUFACTURED SLOPE RETENTION UNITS
4. CHAINLOCK TREE TIE. LOOP EACH TIE AROUND TREE LOOSELY TO PROVIDE 1" SLACK FOR DIAMETER GROWTH.
5. SHAPE SOIL TO PROVIDE 3' DIAMETER OR ROOTBALL DIAMETER, WHICHEVER IS GREATER, WATERING RING.
6. REMOVE ALL WIRE AND STRING. REMOVE TOP 2/3 OF BURLAP.

TREE PLANTING ON SLOPES

L6

NOTES:

1.) CALL DIG SAFE PRIOR TO BEGINNING WORK. (1–888–344–7233). THE LANDSCAPE CONTRACTOR IS ADVISED OF THE PRESENCE OF UNDERGROUND UTILITIES AND SHALL VERIFY THE EXISTENCE AND LOCATION OF THE SAME BEFORE COMMENCING AND DIGGING OPERATIONS. THE LANDSCAPE CONTRACTOR SHALL REPLACE OR REPAIR UTILITIES, PAVING, WALKS, CURBING, ETC DAMAGED IN PERFORMANCE OF THIS JOB AT NO ADDITIONAL COST TO THE OWNER OR GENERAL CONTRACTOR.

2.) CONTRACTOR SHALL THOROUGHLY FAMILIARIZE THEMSELVES WITH ALL SITE CONDITIONS PRIOR TO CONSTRUCTION BIDDING.

3.) PROVIDED SMOOTH TRANSITION WHERE NEW WORK MEETS EXISTING CONDITIONS.

4.) ALL PLANT MATERIAL INSTALLED SHALL MEET THE SPECIFICATIONS OF "AMERICAN STANDARD FOR NURSERY STOCK" BY THE AMERICAN ASSOCIATION OF NURSERYMEN.

5.) ALL PLANT MATERIALS SHALL BE FREE FROM INSECTS AND DISEASE.

6.) ALL PLANTINGS SHALL BE DONE IN ACCORDANCE WITH ACCEPTABLE HORTICULTURAL PRACTICES. THIS IS TO INCLUDE PROPER PLANTING MIX, PLANT BED AND TREE PIT PREPARATION, PRUNING STAKING OR GUYING, WRAPPING, SPRAYING, FERTILIZATION, PLANTING AND ADEQUATE MAINTENANCE UNTIL ACCEPTANCE FROM OWNER.

7.) ALL GRASS, OTHER VEGETATION AND DEBRIS SHALL BE REMOVED FROM ALL PLANTING AREAS PRIOR TO PLANTING.

8.) THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF EXISTING AND NEWLY PLANTED TREES AND SHRUBS DURING THE CONSTRUCTION PROCESS. WHERE REQUIRED, THE CONTRACTOR SHALL INSTALL TEMPORARY FENCING (SNOW OR EQUAL) AROUND EXISTING TREES AND SHRUBS THAT COULD BE IMPACTED BY THE CONSTRUCTION PROCESS. STORAGE OF CONSTRUCTION EQUIPMENT, CONSTRUCTION MATERIALS, SNOW STORAGE AND OR VEHICLE PARKING SHALL NOT BE PERMITTED WITHIN THE DRIP LINE OF TREES OR TWENTY FEET WHICH EVER IS GREATER.

9.) NEW PLANTINGS SHALL BE INSTALLED PER PROJECT DRAWINGS AND SPECIFICATION THAT INCLUDE FERTILIZATION AND MULCHING AS REQUIRED.

10.) ALL SHRUB BEDS AND TREE PITS SHALL BE MULCHED WITH 3" CLEAN SHREDDED BLACK MULCH.

11.) WHERE INDICATED ON PLAN, PLANTING SOIL MIXTURE FOR GROUND COVER AND PERENNIAL BED AREAS SHALL CONSIST OF FOUR PARTS TOPSOIL, TWO PARTS SPHAGNUM PEAT MOSS, AND ONE PART HORTICULTURAL PERLITE BY VOLUME. PEAT MOSS MAY BE SUBSTITUTED WITH WELL–ROTTED OR DEHYDRATED MANURE OR COMPOST. ROTOTILL BEDS TO A DEPTH OF 8 INCHES.

12.) MAINTENANCE OF NEW PLANTINGS AND LAWNS SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR AND OR LANDSCAPE SUBCONTRACTOR UNTIL ACCEPTANCE BY THE OWNER. RESPONSIBILITIES SHALL INCLUDE WATERING WEEDING AND MOWING AS NECESSARY. ALL PLANT MATERIAL SHALL BE GUARANTEED FOR A PERIOD OF ONE YEAR FROM THE DATE OF ACCEPTANCE, REPLACEMENT MATERIAL SHALL BE GUARANTEED FOR AND ADDITIONAL YEAR FROM TIME OF INSTALLATION.

13.) THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL TEMPORARY EROSION CONTROL MEASURES DURING THE CONSTRUCTION PHASE AND UNTIL ALL AREAS HAVE BEEN STABILIZED AND ACCEPTED BY THE OWNER. THE GENERAL CONTRACTOR SHALL PROVIDE WEEKLY INSPECTIONS OF EROSION MEASURE AND IMMEDIATELY AFTER STORM EVENTS AND REPAIR AS NECESSARY.

14.) THE GENERAL CONTRACTOR AND OR THE LANDSCAPE SUBCONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL OF ALL THREE GUYING MATERIAL ONCE PLANT MATERIAL HAS BEEN ESTABLISHED. (MINIMUM OF ONE GROWNG SEASON). ALL TEMPORARY EROSION CONTROL MEASURE SHALL BE REMOVED ONCE STABILIZATION OF DISTURBANCE HAS BEEN ACCEPTED BY OWNER.

15.) THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR A MINIMUM OF TWO MOWINGS FOR ALL TURF AREAS OR UNTIL ACCEPTANCE BY THE OWNER. A MINIMUM UNIFORM 75% CATCH OF TURF IS REQUIRED FOR ACCEPTANCE.

16.) ALL PLANTINGS SHALL BE WATERED REGULARLY DURING THEIR FIRST YEAR AND MAINTAINED PERMANENTLY IN GOOD GROWING CONDITION AS AN EFFECTIVE VISUAL SCREEN.

17.) SHRUBS OR TREES WHICH DIE SHALL BE REPLACED WITHIN ONE GROWING SEASON WITH NEW SHRUBS OR TREES TO ENSURE CONTINUED COMPLIANCE WITH APPLICABLE LANDSCAPING REQUIREMENTS.

18.) ALL REQUIRED LANDSCAPING SHALL BE INSTALLED BEFORE OCCUPANCY, OR WITHIN SIX MONTHS IF OCCUPANCY OCCURS DURING WINTER CONDITIONS.

19.) TREES ARE TO BE 3.5" CALIPER 6" OFF THE ROOT BALL.

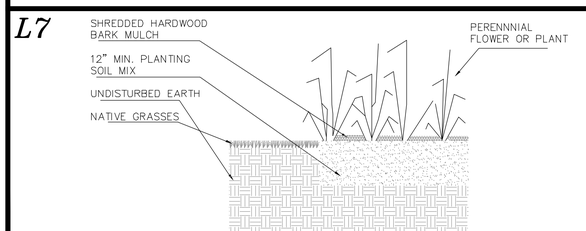
20.) ALL PLANT STOCK SHALL CONFORM TO ANSI Z260.1 – NURSERY STOCK, LATEST EDITIONS (AMERICAN ASSOCIATION OF NURSERYMEN, INC.)

21.) 4" AGED PINEBARK MULCH AND A WEED BARRIER (TY–PAR FABRIC OR APPROVED EQUAL) SHALL BE APPLIED TO ALL SHRUB AND GROUND COVER BEDS. INSTALL WEED BARRIER AS PER MANUFACTURERS RECOMMENDATIONS.

22.) PLANT–PIT BACK–FILL SHALL BE MIXED AT A RATE OF 7 PARTS OF TOPSOIL TO 2 PARTS OF DEHYDRATED COW MANURE. SLOW RELEASE FERTILIZER SHALL BE APPLIED AS PER MANUFACTURERS RECOMMENDATIONS. USE EXISTING ON–SITE TOPSOIL AS PART OF BACK FILL WHEN AVAILABLE.

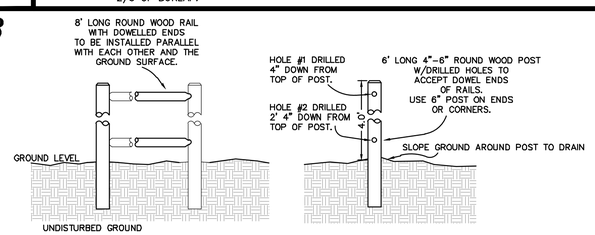
23.) ALL LANDSCAPED AREAS NOT PLANTED WITH TREES, SHRUBS OR GROUNDCOVER SHALL BE RESTORED WITH SEED OR SOD AS INDICATED ON PLANS.

L7



PERENNIAL PLANTING DETAIL

L8



TYPICAL POST & RAIL FENCE DETAIL

NOT TO SCALE

L–101

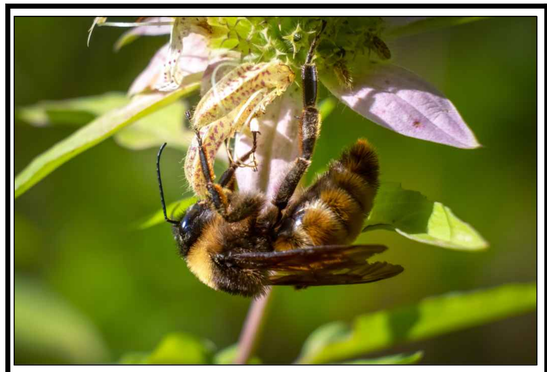
REVISION	DATE	DESCRIPTION

LANDSCAPING DETAILS
LAND OF
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY &
EUGENE A. & DONNA L. SGITGNOULI
TOLEND ROAD
DOVER, N.H.
TAX MAP 8, LOT 65–1 & 65–4

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332–2863

AS NOTED
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 – 107

STATE OF NEW HAMPSHIRE – KENNETH A. BERRY No. 14243 LICENSED PROFESSIONAL ENGINEER



AMERICAN BUMBLE BEE

IDENTIFICATION/DESCRIPTION:

BOMBUS PENSYLVANICUS IS A LARGE BUMBLE BEE WITH THE QUEEN MEASURING 1 IN, THE WORKER FROM 0.5 IN, AND THE MALE FROM 0.75 IN IN LENGTH. THE QUEEN IS MOSTLY BLACK, INCLUDING THE LEGS, SPURS AND TEGULAE (BASE OF WING). TERGITE 1, OR THE MOST ANTERIOR BACK PORTION OF THE QUEEN IS OFTEN YELLOW ESPECIALLY IN THE MIDDLE. WORKER BEES' MIDDLE TERGITES ARE YELLOW, THE TAIL BLACK, AND FACE LONG. THEIR CHEEKS ARE SLIGHTLY LONGER THAN BROAD, AND THE CLYPEUS (NOSE) HAS LARGE PUNCTURES EXCEPT ON THE MID LINE. THE HAIR ON THE TOP OF THE HEAD IS BLACK, SHORT AND EVEN. MALES HAVE A YELLOW ABDOMEN WITH A BLACK HEAD AND BLACK STRIPING IN THE LOWER THORAX.

BLANDINGS TURTLE

IDENTIFICATION/DESCRIPTION:

A 7– TO 9–INCH TURTLE WITH YELLOW SPECKLES THAT OFTEN RUN TOGETHER TO FORM STREAKS ON THE CARAPACE. EASILY IDENTIFIED WHEN BASKING FROM ITS CHARACTERISTIC YELLOW THROAT AND CHIN.

NORTHERN BLACK RACER

IDENTIFICATION/DESCRIPTION:

A SLENDER BLACK SNAKE MEASURING 36–60 INCHES. BLACK RACERS ARE GLOSSY BLACK ON THE TOP AND BOTTOM WITH A WHITE THROAT AND CHIN. YOUNG RACERS ARE PATTERNED WITH BROWN OR REDDISH PATCHES ON A LIGHTER BASE OF GRAY.

SMOOTH GREEN SNAKE

IDENTIFICATION/DESCRIPTION:

A THIN, SLENDER BRIGHT–GREEN SNAKE MEASURING 10–20 INCHES. THE UNDERSIDE IS WHITE OR A PALE YELLOW.

LITTLE BROWN BAT

IDENTIFICATION/DESCRIPTION:

THE LITTLE BROWN BAT IS A SMALL MAMMAL WITH A BODY LENGTH OF 2 1/2 – 4" AND WEIGHING APPROXIMATELY 1/8 TO 1/2 AN OUNCE. THE WINGSPAN OF LITTLE BROWN BATS RANGE FROM 9 – 11". BATS ARE THE ONLY MAMMALS THAT ENGAGE IN TRULY ACTIVE FLIGHT. AS THEIR NAME SUGGESTS THEY ARE GLOSSY BROWN ABOVE WITH A LIGHTER GRAY COLOR BELOW. THESE BATS CAN LIVE 20 TO 30 YEARS.

NORTHERN LONG–EARED BAT

IDENTIFICATION/DESCRIPTION:

THE NORTHERN LONG–EARED BAT IS A MEDIUM–SIZED BAT WITH A BODY LENGTH OF 3 TO 3.7 INCHES BUT A WINGSPAN OF 9 TO 10 INCHES. THEIR FUR COLOR CAN BE MEDIUM TO DARK BROWN ON THE BACK AND TAWNY TO PALE–BROWN ON THE UNDERSIDE. AS ITS NAME SUGGESTS, THIS BAT IS DISTINGUISHED BY ITS LONG EARS, PARTICULARLY AS COMPARED TO OTHER BATS IN ITS GENUS, MYOTIS

EASTERN SMALL–FOOTED BAT

IDENTIFICATION/DESCRIPTION:

THE EASTERN SMALL–FOOTED BAT HAS BROWNISH FUR, OFTEN WITH A GOLDEN SHEEN, THAT CONTRASTS WITH ITS BLACKISH FACE AND EARS, AND BLACKISH–BROWN WINGS AND TAIL MEMBRANE. IT CAN BE DISTINGUISHED FROM OTHER MYOTIS SPECIES BY ITS BLACK MASK AND SMALL SIZE. THE BODY IS LITTLE MORE THAN 3½ INCHES LONG, INCLUDING A 1½–INCH TAIL. ITS SMALL FEET, WHICH PROVIDE THE COMMON NAME, ARE LESS THAN A HALF–INCH AND ITS WINGSPAN RANGES FROM 8¼ TO 9¾ INCHES. THIS SPECIES FLIES SLOWLY AND ERRATICALLY, USUALLY ABOUT ONE TO THREE YARDS ABOVE THE GROUND.

SILVER HAIRED BAT

IDENTIFICATION/DESCRIPTION:

THE SILVER–HAIRED BAT IS A MEDIUM–SIZED BAT WITH VERY DARK FUR TIPPED WITH SILVER OR WHITE. THE WINGS AND TAIL MEMBRANE ARE BLACK. EARS ARE SHORT AND ROUND WITH A SHORT, BLUNT–TIPPED TRAGUS. THE DORSAL SURFACE OF THE TAIL MEMBRANE IS PARTIALLY FURRED AND THE CALCAR LACKS A KEEL

TRI–COLORED BAT

IDENTIFICATION/DESCRIPTION:

THE TRICOLORED BAT, FORMERLY KNOWN AS THE EASTERN PIPISTRELLE (PIPISTRELLUS SUBFLAVUS), IS A SMALL BAT WEIGHING 0.2 TO 0.3 OUNCES (5 TO 8 GR) AND HAS A WINGSPAN OF 8 TO 10 INCHES. THE TERM "TRICOLORED" REFERS TO THE BAT'S YELLOWISHBROWN COAT THAT IS DARK AT THE BASE, YELLOWISH–BROWN IN THE MIDDLE, AND DARK AT THE TIPS. THE WING MEMBRANES ARE BLACKISH, BUT THE FACE AND EARS HAVE A PINKISH COLOR. AN OBVIOUS IDENTIFYING CHARACTERISTIC OF THIS SPECIES IS THE PINK COLOR OF THE SKIN ON THE RADIUS BONE. THE FEET ARE ALSO RELATIVELY LARGE COMPARED TO ITS BODY SIZE.

SPOTTED TURTLE

IDENTIFICATION/DESCRIPTION:

A SMALL 3–5 INCH TURTLE RECOGNIZED BY NUMEROUS YELLOW SPOTS COVERING A DARK CARAPACE. THE NUMBER OF SPOTS IS VARIABLE. SPOTS CAN ALSO BE FOUND ON THE HEAD AND LIMBS.

WOOD TURTLE

IDENTIFICATION/DESCRIPTION:

A 5–8 INCH TURTLE CHARACTERIZED BY ITS HIGHLY SCULPTED SHELL WHERE EACH LARGE SCUTE TAKES AN IRREGULAR PYRAMIDAL SHAPE. THE NECK AND FORELIMBS ARE ORANGE.

W–101

REVISION	DATE	DESCRIPTION

WILDLIFE IDENTIFICATION PLAN
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY &
EUGENE A. & DONNA L. SGTIGNOULI
TOLEND ROAD
DOVER, N.H.
TAX MAP E, LOT 65–1 & 65–4

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332–2863

DATE : FEBRUARY 10, 2022
AS NOTED
FILE NO. : DB 2020 – 107

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14243
LICENSED PROFESSIONAL ENGINEER

BERRY SURVEYING & ENGINEERING
335 Second Crown Point Road
Barrington, NH 03825
Phone: (603) 332-2863
Fax: (603) 335-4623
www.BerrySurveying.Com

City of Dover Planning Department
Attention: Director of Department of Planning & Community Development
Ms. Donna Benton
288 Central Ave.
Dover, NH 03820

February 10, 2022

RE: Traffic Impact Analysis & Distribution
Stonearch Development Corp.
Tax Map E, Lots 65-A & 65-1
Tolend Road & Sun Hawk Lane
Dover, NH 03820

Ms. Benton,

Pursuant to the City of Dover Site Review Regulations, Berry Surveying & Engineering (BS&E), on behalf of Stonearch Development Corp., has prepared a Standard Traffic Impact Analysis for the development of 60 duplex units on Tax Map E, Lot 65-1 & Lot 65-A. An existing single family home on Lot 65-A is proposed to be demolished and rebuilt as a duplex. This lot will continue use the existing driveway access over Sunhawk Drive and not the proposed development. Theodore Drive is the proposed mean of ingress/egress for the remaining 58 units. The point of analysis is the intersection of the Theodore Drive and Tolend Road.

The following conclusions were reached as a result Traffic Impact Analysis:

- A total of 43 vehicle trips (11 enter/32 exit) are predicted to occur at the weekday AM peak hour and 57 vehicle trips (36 enter/21 exit) at the PM peak hour.

- The 2022 and 2032 build traffic volumes DO NOT satisfy the NCHRP 457 guidelines for the implementation of a left-turn lane for all peak hours.

- The 2022 and 2032 build traffic volumes DO NOT satisfy the NCHRP 457 guidelines for the implementation of a right-turn lane for all peak hours.

- It is recommended that the surrounding infrastructure will be sufficient to handle the projected increase in vehicle trips and peak hour and all other hours.

Table of Contents

Table of Contents 2
List of Tables 3
List of Figures 4
Proposed Development & Introduction 5
Existing Conditions 5
Existing Site Description 5
Tolend Road Roadway Description 5
Existing Traffic Volumes 7
Existing Vehicle Speeds 9
Proposed Trip Generation 9
Build Traffic Projections and Turning Analysis 10
Left-Turn Warrants Analysis 11
Right-Turn Warrants Analysis 12
Sight Distance and Safety Analysis 13
Conclusions and Recommendations 14
Appendix A 15
Traffic Counts 15
Appendix B 25
Data Used in Left-Turn Bay Warrants Analysis 25
Left-Turn Bay Warrants Analysis 26
Data Used in Right-Turn Bay Warrants Analysis 28
Right-Turn Bay Warrants Analysis 29
Appendix C 31
Miscellaneous 31
Appendix D 33
Trip Generation Derivation 33

List of Tables

Table 1: Directional breakdown of trips occurring on Tolend Road 7
Table 2: (Single Family Detached Housing) Peak hr of adjacent street traffic AM, PM, & weekday total 10
Table 3: Proposed trip generation from the project site during AM, PM, & weekday total..... 10
Table 4: Weekday AM peak hour build turning movements to and from Theodore Drive..... 11
Table 5: Weekday PM peak hour build turning movements to and from Theodore Drive 11
Table 6: Summary of Weekday AM peak hour NCHRP 457 left-turn bay analysis..... 12
Table 7: Summary of Weekday PM peak hour NCHRP 457 left-turn bay analysis..... 12
Table 8: Summary of Weekday AM peak hour NCHRP 457 right-turn bay analysis..... 13
Table 9: Summary of Weekday PM peak hour NCHRP 457 right-turn bay analysis 13
Table 10: Derivation of the seasonal peaking factor 31

List of Figures

Figure 1: Tolend Road with surrounding roadways (NHDOT) 6
Figure 2: Graph of Tolend Road 2019 two-way hourly variation 8
Figure 3: Graph of Tolend Road 2019 eastbound hourly variation 8
Figure 4: Graph of Tolend Road 2019 westbound hourly variation with peak values 9
Figure 5: 2022 & 2032 build projected traffic volumes & turn movement weekday AM peak ... 10
Figure 6: 2022 & 2032 build projected traffic volumes & turn movement weekday PM peak ... 11
Figure 7: History of AADT values and classification for Tolend Road 15
Figure 8: Tuesday June 11th, 2019 Tolend Road Two-Way traffic count 16
Figure 9: Wednesday June 12th, 2019 Tolend Road Two-Way traffic count 17
Figure 10: Thursday June 13th, 2019 Tolend Road Two-Way traffic count 18
Figure 11: Tuesday August 9th, 2016 Tolend Road eastbound traffic count 19
Figure 12: Tuesday August 9th, 2016 Tolend Road westbound traffic count 20
Figure 13: Wednesday August 10th, 2016 Tolend Road eastbound traffic count 21
Figure 14: Wednesday August 10th, 2016 Tolend Road westbound traffic count 22
Figure 15: Thursday August 11th, 2016 Tolend Road eastbound traffic count 23
Figure 16: Wednesday August 11th, 2016 Tolend Road westbound traffic count 24
Figure 17: Data used for Weekday AM peak hour left-turn warrant analyses 25
Figure 18: Data used for Weekday PM peak hour left-turn warrant analyses 25
Figure 19: 2022 Weekday AM peak hour NCHRP 457 left-turn bay warrant analysis 26
Figure 20: 2032 Weekday AM peak hour NCHRP 457 left-turn bay warrant analysis 26
Figure 21: 2022 Weekday PM peak hour NCHRP 457 left-turn bay warrant analysis 27
Figure 22: 2032 Weekday PM peak hour NCHRP 457 left-turn bay warrant analysis 27
Figure 23: Data used for Weekday AM peak hour right-turn warrant analyses 28
Figure 24: Data used for Weekday PM peak hour right-turn warrant analyses 28
Figure 25: 2022 Weekday AM peak hour NCHRP 457 right-turn bay warrant analysis 29
Figure 26: 2032 Weekday AM peak hour NCHRP 457 right-turn bay warrant analysis 29
Figure 27: 2022 Weekday PM peak hour NCHRP 457 right-turn bay warrant analysis 30
Figure 28: 2031 Weekday PM peak hour NCHRP 457 right-turn bay warrant analysis 30
Figure 29: Derivation of stopping sight distance requirements 32
Figure 30: ITE Trip Generation, 10th Edition 33
Figure 31: ITE Trip Generation, 10th Edition 34

Proposed Development & Introduction

The proposal is to develop Tax Map E, Lot 65-1 to contain 58 duplex units and redevelop the single family home on Lot 65-A to contain a duplex unit. Lot 65-A will continue to utilize Sun Hawk Lane for access. The proposed access to Lot 65-1 is a 24 foot wide roadway, known as Theodore Drive, with 25 foot pavement entrance radii for vehicle turning and a 5' raised walk on the left side. Theodore Drive is 1,252LF to the neck of the cul-de-sac, and a total of 1,564 LF. An emergency fire access way will connect from Lot 65-A to Lot 65-1 and is gated with a knox box for emergency access only. Located 500' into Theodore Drive is Liam Drive. Each proposed roadway provides access to approximately half of the duplex units. The Theodore is located at the eastern edge of the subject parcels frontage to place Theodore Drive closer to the apex of the curve on Tolend Road. The purpose of this analysis is to determine the maximum number of trips coming to and leaving the proposed project site during certain peak periods of the day. This information is then used in determining the impact on safety as it relates to the existing roadway infrastructure. The following components of the analysis are typical for a project of this size pursuant to the Institute of Traffic Engineers (ITE) manual.

Existing Conditions

Existing Site Description

The subject parcels area known as Tax Map E, Lot 65-1 containing 1,388,409 Sq. Ft. (31.87Ac.) of land and Tax Map E, Lot 65-A containing 544,070 Sq. Ft. (12.49 Ac.) of land. The subject parcels are located within the Low Density (R-20) zoning district and Lot 65-1 contains frontage on Tolend Road. Tax Map E, Lot 65-1 is a vacant wooded lot and Tax Map E, Lot 65-A contains a single family house, which is proposed to be torn-down and rebuilt as a duplex. There are eleven single family homes and driveways along the southern side of Tolend Road adjacent to the subject parcel frontage and three single family homes and driveways along the northern side of Tolend Road. Nearby roadways include the intersection of Tolend Road and Stocklan Circle 0.2 miles to the east and Tolend Road and Columbus Avenue 0.2 miles to the west of proposed Theodore Drive.

Tolend Road Roadway Description

Tolend Road is a two lane major collector road, according to the NHDOT MS2 Transportation Management System (NHDOT). This portion of Tolend Road runs east to west, crossing over N.H. Route 16 and provides access to Dover to the east and N.H. Route 125 to the west (Rochester, Barrington). It has an Average Daily Traffic (ADT) of approximately 4,347 (2019) divided between east and west in the data provided by the NHDOT.

Tolend Road, in the area of the project, is composed of a twenty-eight foot wide paved surface with twelve foot travel lanes, variable width paved shoulders on the north and south sides of the road. There is centerline delineation and fog / edge lines. The posted speed limit of the roadway

is 30 miles per hour (MPH). The geometry of Tolend Road is relatively flat (3% grade) and subject parcel frontage is located along a curve. There are is sidewalk along the southern side of Tolend Road that crosses over NH Route 16 and provides pedestrian access into downtown Dover. While it is over 1/4 mile away from the intersection of Tolend Road and Theodore Drive, there is an opportunity for public transit at the intersection of Tolend Road and Whittier Street over the NH Route 16 bridge (0.4 miles east).

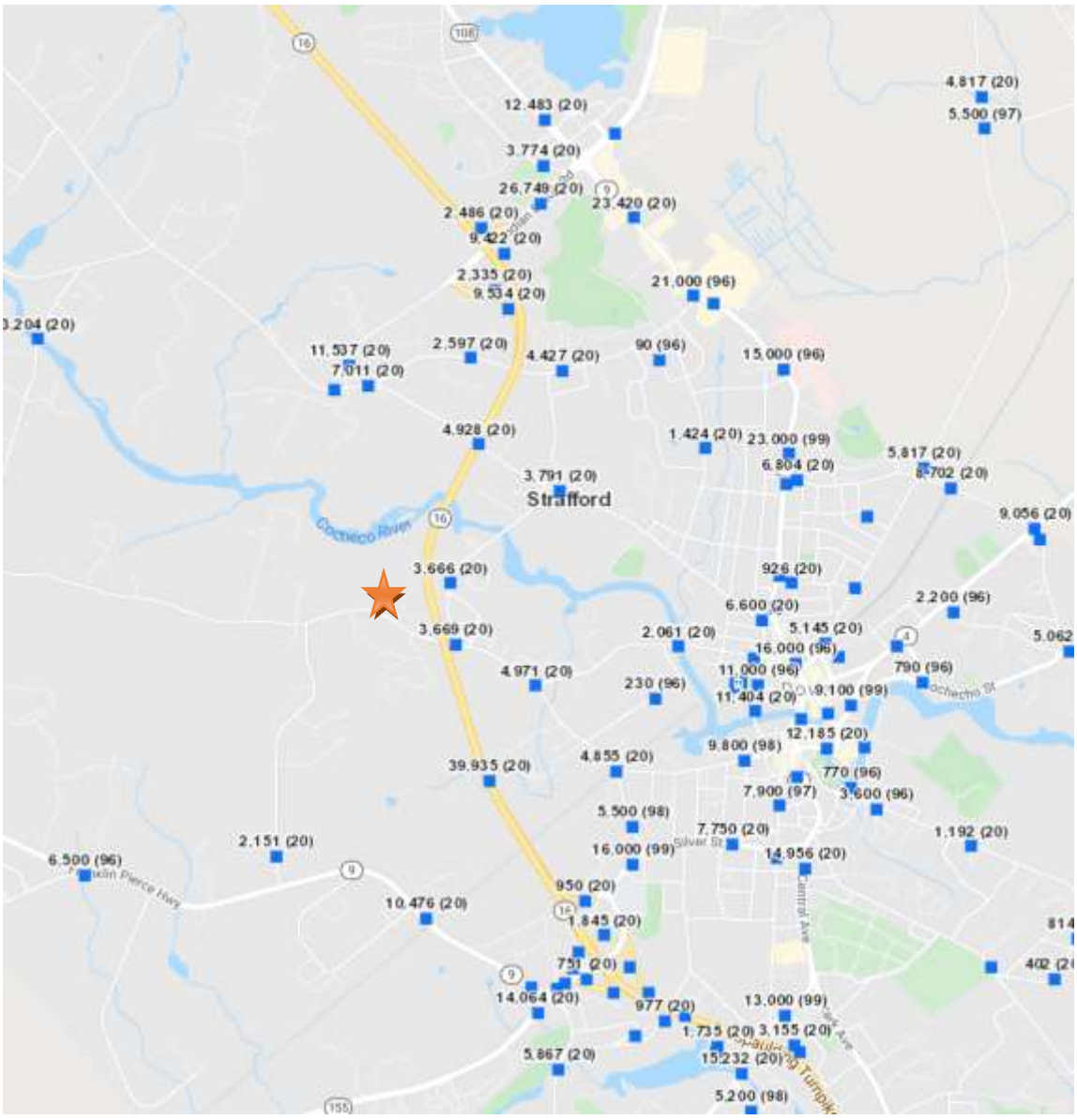


Figure 1: Tolend Road with surrounding roadways (NHDOT)

Existing Traffic Volumes

According to traffic counts recorded by the NHDOT for June 11th - June 13th 2019, the Tolend Road AM and PM weekday two-way peaks were 422 trips and 539 trips, respectively. It is shown by the NHDOT that this portion of Tolend Road has an AADT of 4,347 (2019) vehicles. This 2019 count provided by the NHDOT is only two-way volumes. In order to obtain a directional distribution, 2016 NHDOT counts at the same location were used. Directional volumes from 2016 were applied for 2019 volumes and increased based upon the 2019 two-way volumes.

The highest weekday peak hour traffic volume on this section of Tolend Road eastbound occurred from 7-8 AM with 280 vehicles and from 4-5 PM with 233 vehicles. Westbound highest weekday peak hour traffic volume occurred from 7-8 AM with 142 vehicles and from 5-6 PM with 314 vehicles. Table #1 shows the traffic direction breakdown of Tolend Road and Figures #2-4 are graphical representations of the traffic variations occurring throughout the day. It can be seen from the directional percent distribution that the primary direction of travel during the Weekday AM peak hour is eastbound towards downtown Dover. The primary direction of travel during the PM peak hour is westbound towards NH Route 125. Traffic counts of Tolend Road provided by the NHDOT are included in Appendix A as Figures 7-16.

Traffic Distribution Tolend Road						
Date	Eastbound		Westbound		Two-Way	
Tuesday 6/11/19	AM Peak	268	AM Peak	136	AM Peak	401
	PM Peak	232	PM Peak	281	PM Peak	499
Wednesday 6/12/19	AM Peak	280	AM Peak	142	AM Peak	422
	PM Peak	233	PM Peak	314	PM Peak	539
Thursday 6/13/19	AM Peak	245	AM Peak	135	AM Peak	379
	PM Peak	205	PM Peak	240	PM Peak	429
Average Peak Hour Traffic	AM Peak	264	AM Peak	138	AM Peak	401
	PM Peak	223	PM Peak	278	PM Peak	489
% Distribution	AM Peak	65.7	AM Peak	34.3		
	PM Peak	44.5	PM Peak	55.5		

Table 1: Directional breakdown of trips occurring on Tolend Road

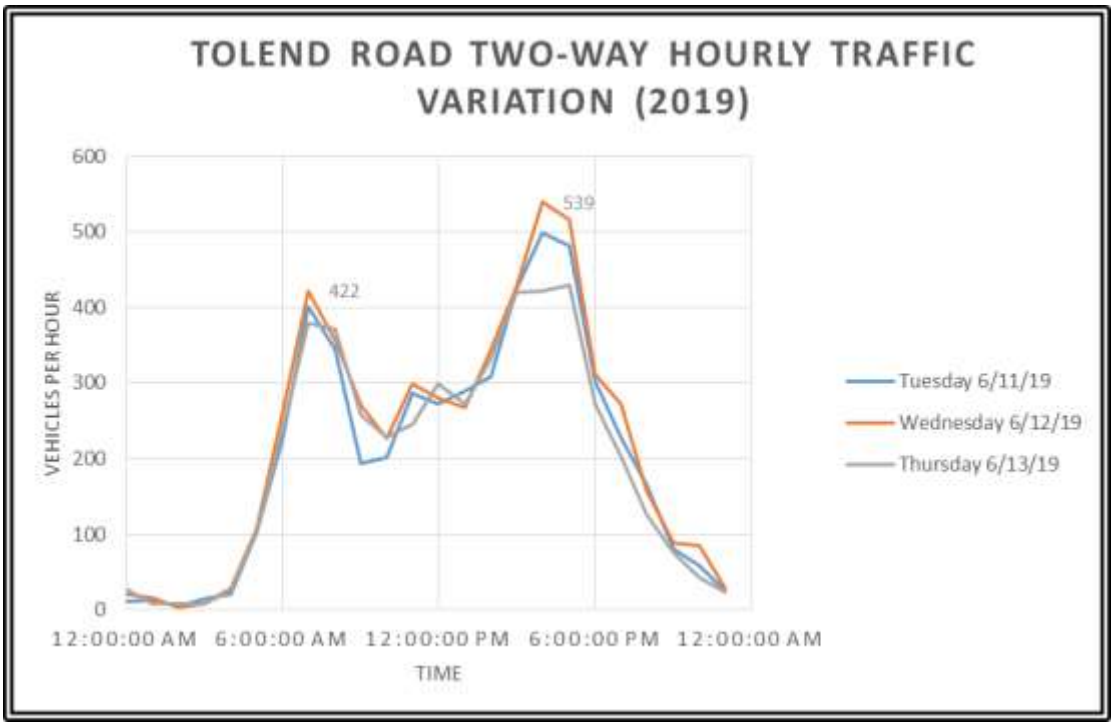


Figure 2: Graph of Tolend Road 2019 two-way hourly variation

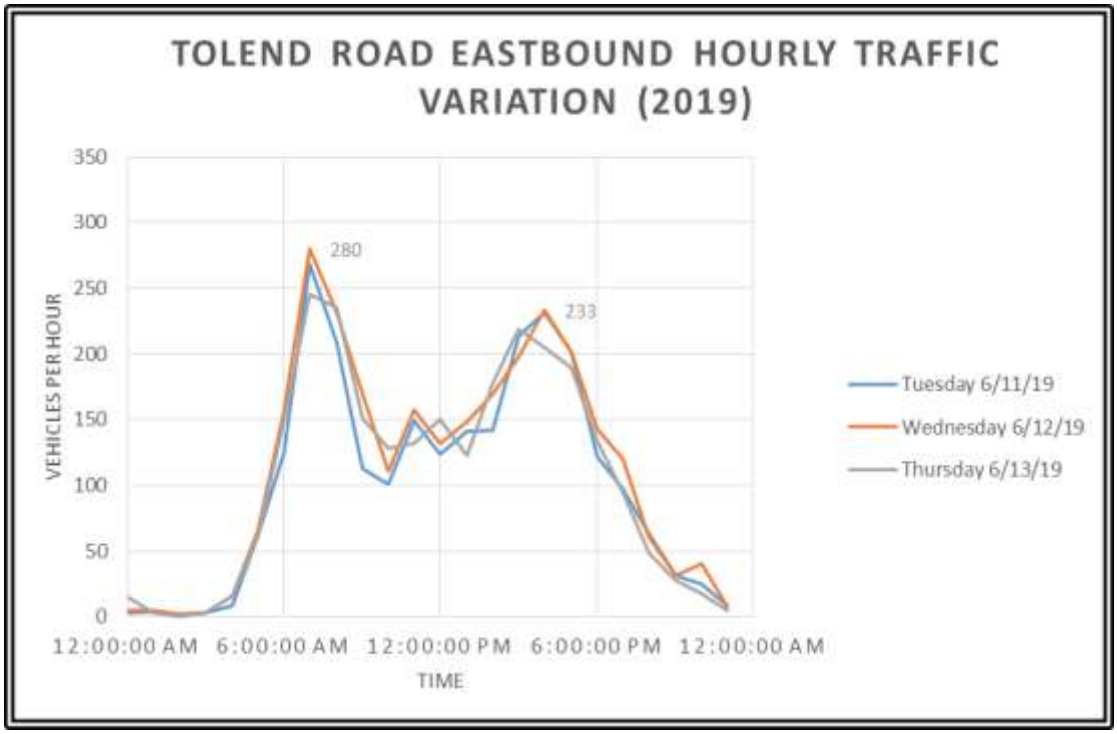


Figure 3: Graph of Tolend Road 2019 eastbound hourly variation

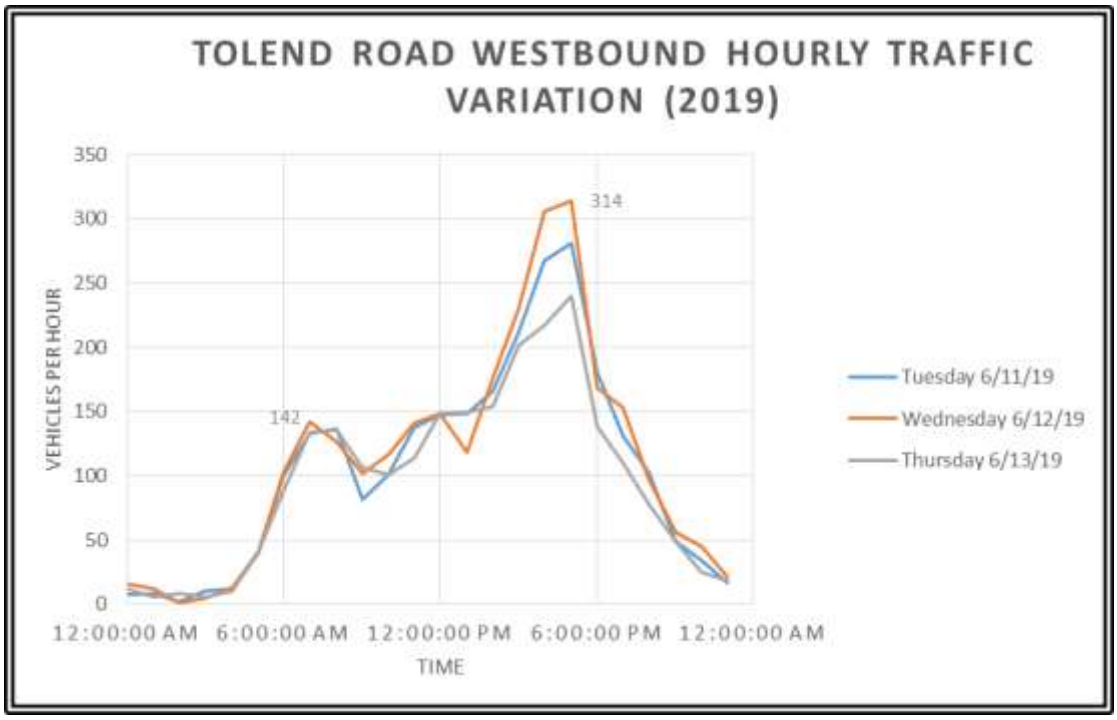


Figure 4: Graph of Tolend Road 2019 westbound hourly variation with peak values

Existing Vehicle Speeds

As previously mentioned, the posted speed limit of Tolend Road is 30 MPH. For the purposes of the safety analysis below, the 85th percentile of speed is required. This particular section of Tolend Road was observed by Berry Surveying & Engineering to analyze the pass by traffic, reviewing speed. Excessive speeds were rare, and most operators obeyed the posted speed limits within a deviation of 10 MPH. This is consistent with speeds found on urban roads. The 85th percentile derived by observation and consistency with general practice is 40 MPH.

Proposed Trip Generation

The 10th Edition ITE Trip Generation Manual was used to determine the proposed volume of trips. Included is the percentage of entrance-to-exit traffic experienced during the weekday AM & PM peak hours between 7 and 9 AM and 4 and 6 PM. Land Use Code Single Family Detached Housing (210) was used in deriving the proposed trip generation from the project site. Tables 2 & 3 provides average trip rate, total trips generated, enter to exit ratio, and the enter to exit distribution. White these are proposed as duplex units, the intention is for the units to function as single family homes. Utilizing the single family detached trip generation also produces a conservative (higher) generation for the evaluation of turning movement safety along Tolend Road than Multi-Family (Low-Rise 220) would generate.

Single Family Detached Housing:

Time Method	Weekday Total (Page 2) Dwelling Units			Time Method	AM Peak Adj. Street (Page 3) Dwelling Units			Time Method	PM Peak Adj. Street (Page 4) Dwelling Units		
# Units	58			# Units	58			# Units	58		
Avg. Rate	9.44			Avg. Rate	0.74			Avg. Rate	0.99		
Total Trips	547.5			Total Trips	42.9			Total Trips	57.4		
% Enter	50	Total Enter	273.8	% Enter	25	Total Enter	10.7	% Enter	63	Total Enter	36.2
% Exit	50	Total Exit	273.8	% Exit	75	Total Exit	32.2	% Exit	37	Total Exit	21.2

Table 2: (Single Family Detached Housing) Peak hr of adjacent street traffic AM, PM, & weekday total

Total Proposed Trip Generation:

Time Method	Weekday Total (Page 2) Dwelling Units			Time Method	AM Peak Adj. Street (Page 3) Dwelling Units			Time Method	PM Peak Adj. Street (Page 4) Dwelling Units		
Total Trips	547.5			Total Trips	42.9			Total Trips	57.4		
% Enter	50	Total Enter	273.8	% Enter	25	Total Enter	10.7	% Enter	63	Total Enter	36.2
% Exit	50	Total Exit	273.8	% Exit	75	Total Exit	32.2	% Exit	37	Total Exit	21.2

Table 3: Proposed trip generation from the project site during AM, PM, & weekday total

Build Traffic Projections and Turning Analysis

Traffic data obtained from the NHDOT in 2016/2019 has been projected to 2022 and ten years further to 2032. This has been done using a June peak seasonal adjustment factor of 1.08 (AM, PM & Saturday) and using an annual growth rate of 1%, compounded annually. The derivation of the peak seasonal adjustment factor comes from an average series of values from other urban highways from across New Hampshire, which can be found as Table 10 in Appendix C. Figures 5 and 6 show the build turning movements to and from the proposed site during weekday AM and PM peak hours. These figures also show the projected volume of traffic eastbound and westbound on Tolend Road for 2022 and 2032. This data is then used to preform NCHRP 457 left-turn and right-turn bay warrant analyses. Appendix B contains the data that was used to conduct the analyses as Figures 17-18 and 23-24. A visual of these turning movements is shown in the following figures.

Figure 5: 2022 & 2032 build projected traffic volumes & turn movement weekday AM peak

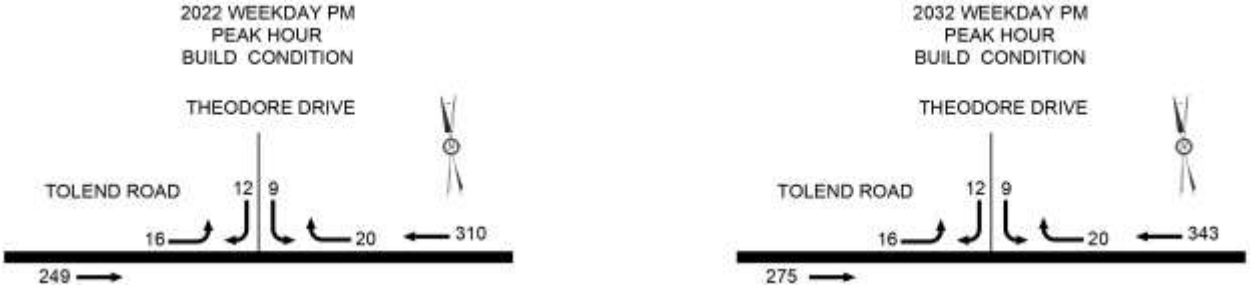


Figure 6: 2022 & 2032 build projected traffic volumes & turn movement weekday PM peak

Tables 4 & 5 show in a tabular format the total trips that are calculated to occur to and from the proposed site entrance are shown at the weekday peak hours analyzed in a build situation. These trips are further broken down into enter and exit to and from the site as well as percentage of left and right turns.

Time	AM Peak Hour	# Trips	Turn Type	% Distribution
Total Trips	42.9			
Trips Enter from Tolend Road Eastbound		7.1	Left	16.4
Trips Enter from Tolend Road Westbound		3.7	Right	8.6
Trips Exit to Tolend Road Eastbound		21.2	Left	49.3
Trips Exit to Tolend Road Westbound		11.0	Right	25.7

Table 4: Weekday AM peak hour build turning movements to and from Theodore Drive

Time	PM Peak Hour	# Trips	Turn Type	% Distribution
Total Trips	57.4			
Trips Enter from Tolend Road Eastbound		16.1	Left	28.0
Trips Enter from Tolend Road Westbound		20.1	Right	35.0
Trips Exit to Tolend Road Eastbound		9.5	Left	16.5
Trips Exit to Tolend Road Westbound		11.8	Right	20.5

Table 5: Weekday PM peak hour build turning movements to and from Theodore Drive

Left-Turn Warrants Analysis

Depending on vehicle speed, advancing vehicular volumes, opposing vehicular volumes, and the percent of left turns that vehicles are predicted to make, certain roadways may require special treatment for vehicles making left turning maneuvers. The determination of this special treatment is determined by the NCHRP 457 left-turn bay guidelines. Calibration constants of 3.0 seconds are used for average left turn time, 5.0 seconds for critical headway, and 1.9 seconds for vehicles to clear the advancing lane. If warranted, the left turn bay would allow for deceleration of vehicles and storage in the queue to wait safely for advancing traffic to pass.

The traffic volumes obtained from the NHDOT from 2019 projected to 2022 and 2032 were used to determine if a left-turn bay is warranted to safely enter the site. It has been calculated that approximately 7 trips are to occur turning left into the site during the weekday AM peak hour and 4 trips during the PM peak hour. The projection of the traffic volumes and data used to conduct the left-turn bay warrant analyses are included in Appendix B as Figures 17-18. The full warrant analyses can be found in Appendix B as Figures 19-22. Tables 6 & 7 are summaries of the left-turn bay warrant analyses for the proposed site entrance. Using the 85th percentile speed of 40 MPH, it was determined that a left-turn bay IS NOT warranted to safely enter the proposed site.

Left-Turn Lane Warrants Analysis Theodore Drive		
Factors	2022 Weekday AM Build Volume	2032 Weekday AM Build Volume
Left-Turn Volume (EB)	7	7
Advancing Volume (EB) (L+TR+R)	331	362
Opposing Volume (WB) (TR+R)	174	190
Percent Lefts	5%	4%
85th Percentile Speed (MPH)	40	40
Limiting Adv. Volume (veh/hr)	657	673
Left-Turn Bay Warranted	NO	NO

Table 6: Summary of Weekday AM peak hour NCHRP 457 left-turn bay analysis

Left-Turn Lane Warrants Analysis Theodore Drive		
Factors	2022 Weekday PM Build Volume	2032 Weekday PM Build Volume
Left-Turn Volume (EB)	16	16
Advancing Volume (EB) (L+TR+R)	285	311
Opposing Volume (WB) (TR+R)	330	363
Percent Lefts	6%	5%
85th Percentile Speed (MPH)	40	40
Limiting Adv. Volume (veh/hr)	515	518
Left-Turn Bay Warranted	NO	NO

Table 7: Summary of Weekday PM peak hour NCHRP 457 left-turn bay analysis

Right-Turn Warrants Analysis

Depending on vehicle speed, advancing vehicular volumes, and the percent of right turns that vehicles are predicted to make, certain roadways may require special treatment for vehicles making right turning maneuvers. The determination of this special treatment is determined by the NCHRP 457 right turn bay guidelines. If warranted, the right-turn bay would allow for deceleration of vehicles and storage in the queue to wait safely for right turning traffic to clear.

The traffic volumes obtained from the NHDOT from 2019 projected to 2022 and 2032 were used to determine if a right-turn bay is warranted to safely enter the site. It has been calculated that

approximately 4 trips are to occur turning left into the site during the weekday AM peak hour and 20 trips during the PM peak hour. The projection of the traffic volumes and data used to conduct the right-turn bay warrant analyses are included in Appendix B as Figures 23-24. The full warrant analyses can be found in Appendix B as Figures 25-28. Tables 8 & 9 are summaries of the right-turn bay warrant analyses for the proposed site entrance. Using the 85th percentile speed of 40 MPH, it was determined that a right-turn bay IS NOT warranted to safely enter the proposed site.

Right-Turn Lane Warrants Analysis Theodore Drive		
Factors	2022 Weekday AM Build Volume	2032 Weekday AM Build Volume
Right-Turn Volume (WB)	4	4
Advancing Volume (WB) (L+TR+R)	164	180
85th Percentile Speed (MPH)	40	40
Limiting Right-Turn Volume (veh/hr)	1659	1297
Right-Turn Bay Warranted	NO	NO

Table 8: Summary of Weekday AM peak hour NCHRP 457 right-turn bay analysis

Right-Turn Lane Warrants Analysis Theodore Drive		
Factors	2022 Weekday PM Build Volume	2032 Weekday PM Build Volume
Right-Turn Volume (WB)	20	20
Advancing Volume (WB) (L+TR+R)	346	379
85th Percentile Speed (MPH)	40	40
Limiting Right-Turn Volume (veh/hr)	232	183
Right-Turn Bay Warranted	NO	NO

Table 9: Summary of Weekday PM peak hour NCHRP 457 right-turn bay analysis

Sight Distance and Safety Analysis

Sight distance on Tolend Road to the east and west, as well as roadway alignment are the two determining factors of safety. For the proposed entrance, sight distance to the east un-obstructed for well over 315 feet (measured), while sight distance to the west is un-obstructed for well over 289 feet (measured). In this instance both the northerly and southerly sight distances exceed the standard AASHTO 40MPH standard practice of 289’ on a 3% downgrade and 315’ on a 3% upgrade feet. There are no improvements required to obtain this sight distance.

With respect to general safety of Tolend Road in relation to the peak hour trip generation and AADT, it is our assessment that the cross section of pavement and shoulder widths are appropriate.

*****AASHTO Geometric Design of Highways and Streets (2011)

Conclusions and Recommendations

1.) A total of 43 vehicle trips (11 enter/32 exit) are predicted to occur at the weekday AM peak hour and 57 vehicle trips (36 enter/21 exit) at the PM peak hour.

2.) The 2022 and 2032 build traffic volumes DO NOT satisfy the NCHRP 457 guidelines for the implementation of a left-turn lane for all peak hours.

3.) The 2022 and 2032 build traffic volumes DO NOT satisfy the NCHRP 457 guidelines for the implementation of a right-turn lane for all peak hours.

4.) It is recommended that the surrounding infrastructure will be sufficient to handle the projected increase in vehicle trips and peak hour and all other hours.

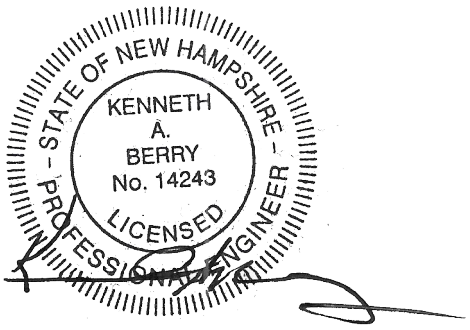
Respectfully Submitted,

BERRY SURVEYING & ENGINEERING

Christopher R. Berry, SIT
Principal, President

Kenneth A. Berry, PE, LLS,
CPSWQ, CPESC, CESSWI
Principal, VP-Technical Operations

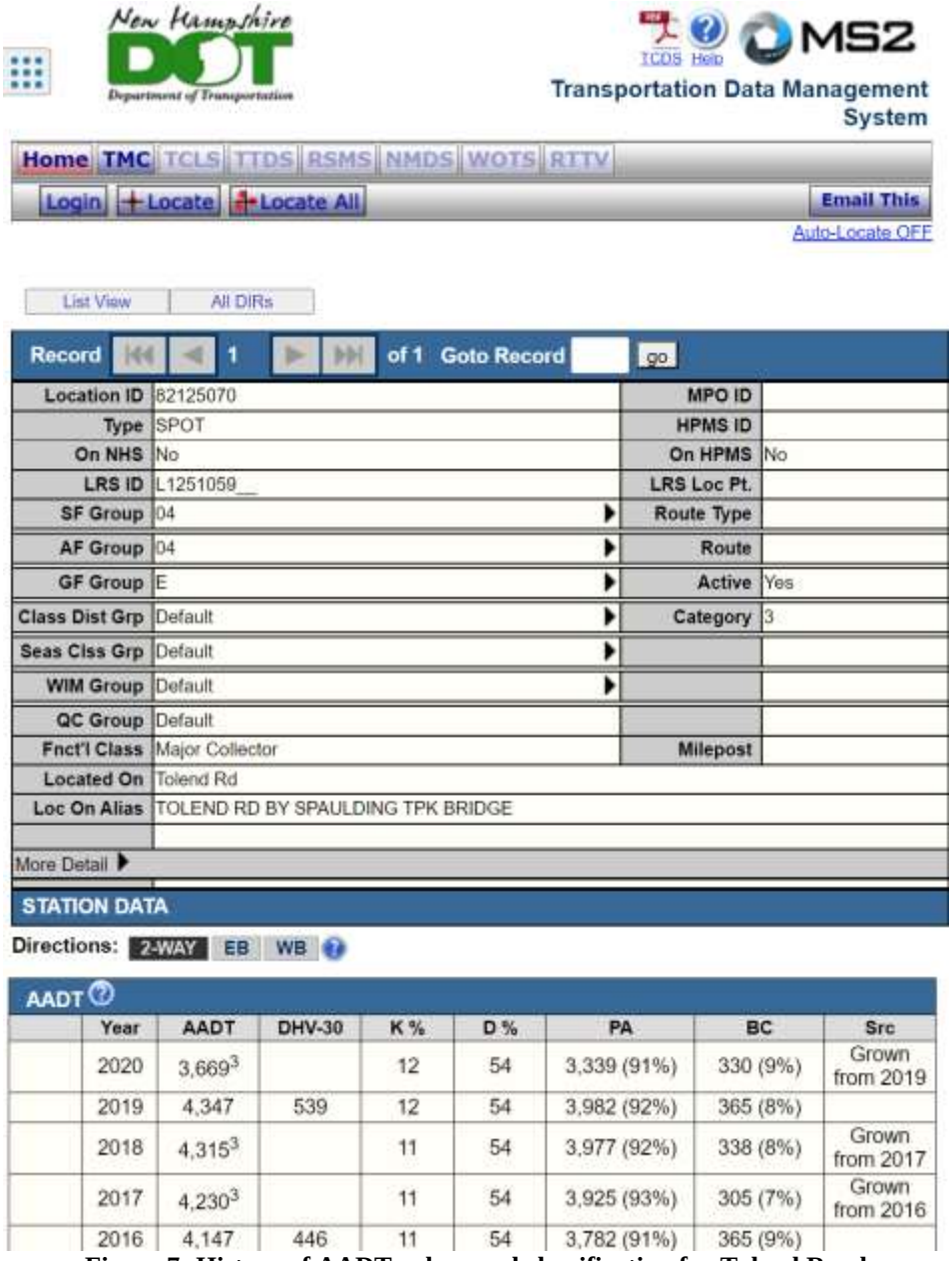
Kevin R. Poulin, EIT
Project Engineer



BERRY SURVEYING & ENGINEERING
335 Second Crown Pt. Rd., Barrington, NH 03825
(603) 332-2863 / (603) 335-4623 FAX
www.BerrySurveying.Com

Appendix A

Traffic Counts



	Year	AADT	DHV-30	K %	D %	PA	BC	Src
	2020	3,669[3]		12	54	3,339 (91%)	330 (9%)	Grown from 2019
	2019	4,347	539	12	54	3,982 (92%)	365 (8%)	
	2018	4,315[3]		11	54	3,977 (92%)	338 (8%)	Grown from 2017
	2017	4,230[3]		11	54	3,925 (93%)	305 (7%)	Grown from 2016
	2016	4,147	446	11	54	3,782 (91%)	365 (9%)	

Figure 7: History of AADT values and classification for Tolend Road

New Hampshire DOT Department of Transportation

TCDS Help MS2

Transportation Data Management System

Home | TMC | TCLS | TTDS | RSMS | NMDS | WOTS | RTTV

Back | Login | +Locate | +Locate All

Auto-Locate OFF

Volume Count Report

LOCATION INFO	
Location ID	82125070
Type	SPOT
Fnct'l Class	5
Located On	Tolend Rd
Loc On Alias	TOLEND RD BY SPAULDING TPK BRIDGE
Direction	2-WAY
County	STRAFFORD
Community	DOVER
MPO ID	
HPMS ID	
Agency	New Hampshire DOT

COUNT DATA INFO	
Count Status	Accepted
Start Date	Tue 6/11/2019
End Date	Wed 6/12/2019
Start Time	12:00:00 AM
End Time	12:00:00 AM
Direction	
Notes	nhdot
Station	821250700000
Study	
Speed Limit	
Description	
Sensor Type	Axle/Tube
Source	
Latitude,Longitude	

INTERVAL:60-MIN	
Time	Hourly Count
0:00-1:00	11
1:00-2:00	13
2:00-3:00	5
3:00-4:00	14
4:00-5:00	21
5:00-6:00	102
6:00-7:00	226
7:00-8:00	401
8:00-9:00	345
9:00-10:00	194
10:00-11:00	201
11:00-12:00	287
12:00-13:00	272
13:00-14:00	290
14:00-15:00	308
15:00-16:00	425
16:00-17:00	499
17:00-18:00	482
18:00-19:00	302
19:00-20:00	228
20:00-21:00	166
21:00-22:00	80
22:00-23:00	59
23:00-24:00	25
Total	4,956
AADT	4,357
AM Peak	07:00-08:00 401
PM Peak	16:00-17:00 499

Figure 8: Tuesday June 11th, 2019 Tolend Road Two-Way traffic count

New Hampshire DOT Department of Transportation

TCDS Help MS2

Transportation Data Management System

Home | TMC | TCLS | TTDS | RSMS | NMDS | WOTS | RTTV

Back | Login | +Locate | +Locate All

Auto-Locate OFF

Volume Count Report

LOCATION INFO	
Location ID	82125070
Type	SPOT
Fnct'l Class	5
Located On	Tolend Rd
Loc On Alias	TOLEND RD BY SPAULDING TPK BRIDGE
Direction	2-WAY
County	STRAFFORD
Community	DOVER
MPO ID	
HPMS ID	
Agency	New Hampshire DOT

COUNT DATA INFO	
Count Status	Accepted
Start Date	Wed 6/12/2019
End Date	Thu 6/13/2019
Start Time	12:00:00 AM
End Time	12:00:00 AM
Direction	
Notes	nhdot
Station	821250700000
Study	
Speed Limit	
Description	
Sensor Type	Axle/Tube
Source	
Latitude,Longitude	

INTERVAL:60-MIN	
Time	Hourly Count
0:00-1:00	21
1:00-2:00	17
2:00-3:00	3
3:00-4:00	8
4:00-5:00	29
5:00-6:00	107
6:00-7:00	260
7:00-8:00	422
8:00-9:00	358
9:00-10:00	271
10:00-11:00	227
11:00-12:00	299
12:00-13:00	281
13:00-14:00	267
14:00-15:00	345
15:00-16:00	428
16:00-17:00	539
17:00-18:00	516
18:00-19:00	312
19:00-20:00	273
20:00-21:00	158
21:00-22:00	88
22:00-23:00	86
23:00-24:00	29
Total	5,344
AADT	4,551
AM Peak	07:00-08:00 422
PM Peak	16:00-17:00 539

Figure 9: Wednesday June 12th, 2019 Tolend Road Two-Way traffic count

New Hampshire DOT Department of Transportation

TCDS Help MS2 Transportation Data Management System

Home | TMC | TCLS | TTDS | RSMS | NMDS | WOTS | RTTV

Back | Login | +Locate | +Locate All

Auto-Locate OFF

Volume Count Report

LOCATION INFO	
Location ID	82125070
Type	SPOT
Fnct'l Class	5
Located On	Tolend Rd
Loc On Alias	TOLEND RD BY SPAULDING TPK BRIDGE
Direction	2-WAY
County	STRAFFORD
Community	DOVER
MPO ID	
HPMS ID	
Agency	New Hampshire DOT

COUNT DATA INFO	
Count Status	Accepted
Start Date	Thu 6/13/2019
End Date	Fri 6/14/2019
Start Time	12:00:00 AM
End Time	12:00:00 AM
Direction	
Notes	nhdot
Station	821250700000
Study	
Speed Limit	
Description	
Sensor Type	Axle/Tube
Source	
Latitude,Longitude	

INTERVAL:60-MIN	
Time	Hourly Count
0:00-1:00	27
1:00-2:00	9
2:00-3:00	9
3:00-4:00	9
4:00-5:00	26
5:00-6:00	103
6:00-7:00	238
7:00-8:00	379
8:00-9:00	371
9:00-10:00	258
10:00-11:00	229
11:00-12:00	246
12:00-13:00	299
13:00-14:00	272
14:00-15:00	332
15:00-16:00	420
16:00-17:00	422
17:00-18:00	429
18:00-19:00	273
19:00-20:00	204
20:00-21:00	127
21:00-22:00	76
22:00-23:00	43
23:00-24:00	24
Total	4,825
AADT	4,133
AM Peak	07:00-08:00 379
PM Peak	17:00-18:00 429

Figure 10: Thursday June 13th, 2019 Tolend Road Two-Way traffic count

New Hampshire DOT Department of Transportation

TCDS Help MS2

Transportation Data Management System

Home | TMC | TCLS | TTDS | RSMS | NMDS | WOTS | RTTV

Back | Login | +Locate | +Locate All

Auto-Locate OFF

Volume Count Report

LOCATION INFO	
Location ID	82125070_EB
Type	SPOT
Fnct'l Class	5
Located On	Tolend Rd
Loc On Alias	TOLEND RD BY SPAULDING TPK BRIDGE
Direction	EB
County	STRAFFORD
Community	DOVER
MPO ID	
HPMS ID	
Agency	New Hampshire DOT

COUNT DATA INFO	
Count Status	Accepted
Start Date	Tue 8/9/2016
End Date	Wed 8/10/2016
Start Time	12:00:00 AM
End Time	12:00:00 AM
Direction	
Notes	nhdot
Station	821250703070
Study	
Speed Limit	
Description	
Sensor Type	Tube Class
Source	
Latitude,Longitude	

INTERVAL:60-MIN	
Time	Hourly Count
0:00-1:00	3
1:00-2:00	1
2:00-3:00	2
3:00-4:00	4
4:00-5:00	12
5:00-6:00	55
6:00-7:00	114
7:00-8:00	224
8:00-9:00	187
9:00-10:00	152
10:00-11:00	117
11:00-12:00	152
12:00-13:00	126
13:00-14:00	132
14:00-15:00	136
15:00-16:00	173
16:00-17:00	207
17:00-18:00	174
18:00-19:00	122
19:00-20:00	99
20:00-21:00	61
21:00-22:00	36
22:00-23:00	33
23:00-24:00	12
Total	2,334
AM Peak	07:00-08:00 224
PM Peak	16:00-17:00 207

Figure 11: Tuesday August 9th, 2016 Tolend Road eastbound traffic count

New Hampshire DOT Department of Transportation

TCDS Help MS2

Transportation Data Management System

Home | TMC | TCLS | TTDS | RSMS | NMDS | WOTS | RTTV

Back | Login | Locate | Locate All

Auto-Locate OFF

Volume Count Report

LOCATION INFO	
Location ID	82125070_WB
Type	SPOT
Fnct'l Class	5
Located On	Tolend Rd
Loc On Alias	TOLEND RD BY SPAULDING TPK BRIDGE
Direction	WB
County	STRAFFORD
Community	DOVER
MPO ID	
HPMS ID	
Agency	New Hampshire DOT

COUNT DATA INFO	
Count Status	Accepted
Start Date	Tue 8/9/2016
End Date	Wed 8/10/2016
Start Time	12:00:00 AM
End Time	12:00:00 AM
Direction	
Notes	nhdot
Station	821250703070
Study	
Speed Limit	
Description	
Sensor Type	Tube Class
Source	
Latitude,Longitude	

INTERVAL:60-MIN	
Time	Hourly Count
0:00-1:00	7
1:00-2:00	2
2:00-3:00	2
3:00-4:00	12
4:00-5:00	16
5:00-6:00	35
6:00-7:00	92
7:00-8:00	111
8:00-9:00	122
9:00-10:00	110
10:00-11:00	117
11:00-12:00	140
12:00-13:00	150
13:00-14:00	139
14:00-15:00	159
15:00-16:00	171
16:00-17:00	239
17:00-18:00	243
18:00-19:00	180
19:00-20:00	133
20:00-21:00	99
21:00-22:00	56
22:00-23:00	46
23:00-24:00	25
Total	2,406
AM Peak	11:00-12:00 140
PM Peak	17:00-18:00 243

Figure 12: Tuesday August 9th, 2016 Tolend Road westbound traffic count

New Hampshire DOT Department of Transportation

TCDS Help MS2

Transportation Data Management System

Home | TMC | TCLS | TTDS | RSMS | NMDS | WOTS | RTTV

Back | Login | Locate | Locate All

Auto-Locate OFF

Volume Count Report

LOCATION INFO	
Location ID	82125070_EB
Type	SPOT
Fnct'l Class	5
Located On	Tolend Rd
Loc On Alias	TOLEND RD BY SPAULDING TPK BRIDGE
Direction	EB
County	STRAFFORD
Community	DOVER
MPO ID	
HPMS ID	
Agency	New Hampshire DOT

COUNT DATA INFO	
Count Status	Accepted
Start Date	Wed 8/10/2016
End Date	Thu 8/11/2016
Start Time	12:00:00 AM
End Time	12:00:00 AM
Direction	
Notes	nhdot
Station	821250703070
Study	
Speed Limit	
Description	
Sensor Type	Tube Class
Source	
Latitude,Longitude	

INTERVAL:60-MIN	
Time	Hourly Count
0:00-1:00	3
1:00-2:00	2
2:00-3:00	5
3:00-4:00	6
4:00-5:00	16
5:00-6:00	62
6:00-7:00	120
7:00-8:00	205
8:00-9:00	203
9:00-10:00	142
10:00-11:00	102
11:00-12:00	130
12:00-13:00	138
13:00-14:00	144
14:00-15:00	140
15:00-16:00	163
16:00-17:00	183
17:00-18:00	145
18:00-19:00	124
19:00-20:00	88
20:00-21:00	51
21:00-22:00	34
22:00-23:00	36
23:00-24:00	7
Total	2,249
AM Peak	07:00-08:00 205
PM Peak	16:00-17:00 183

Figure 13: Wednesday August 10th, 2016 Tolend Road eastbound traffic count

New Hampshire DOT Department of Transportation

TCDS Help MS2

Transportation Data Management System

Home | TMC | TCLS | TTDS | RSMS | NMDS | WOTS | RTTV

Back | Login | Locate | Locate All

Auto-Locate OFF

Volume Count Report

LOCATION INFO	
Location ID	82125070_WB
Type	SPOT
Fnct'l Class	5
Located On	Tolend Rd
Loc On Alias	TOLEND RD BY SPAULDING TPK BRIDGE
Direction	WB
County	STRAFFORD
Community	DOVER
MPO ID	
HPMS ID	
Agency	New Hampshire DOT

COUNT DATA INFO	
Count Status	Accepted
Start Date	Wed 8/10/2016
End Date	Thu 8/11/2016
Start Time	12:00:00 AM
End Time	12:00:00 AM
Direction	
Notes	nhdot
Station	821250703070
Study	
Speed Limit	
Description	
Sensor Type	Tube Class
Source	
Latitude,Longitude	

INTERVAL:60-MIN	
Time	Hourly Count
0:00-1:00	10
1:00-2:00	5
2:00-3:00	2
3:00-4:00	9
4:00-5:00	14
5:00-6:00	38
6:00-7:00	79
7:00-8:00	104
8:00-9:00	111
9:00-10:00	85
10:00-11:00	107
11:00-12:00	116
12:00-13:00	155
13:00-14:00	115
14:00-15:00	145
15:00-16:00	189
16:00-17:00	240
17:00-18:00	226
18:00-19:00	146
19:00-20:00	112
20:00-21:00	81
21:00-22:00	61
22:00-23:00	40
23:00-24:00	21
Total	2,211
AM Peak	11:00-12:00 116
PM Peak	16:00-17:00 240

Figure 14: Wednesday August 10th, 2016 Tolend Road westbound traffic count

New Hampshire DOT Department of Transportation

TCDS Help MS2

Transportation Data Management System

Home | TMC | TCLS | TTDS | RSMS | NMDS | WOTS | RTTV

Back | Login | Locate | Locate All

Auto-Locate OFF

Volume Count Report

LOCATION INFO	
Location ID	82125070_EB
Type	SPOT
Fnct'l Class	5
Located On	Tolend Rd
Loc On Alias	TOLEND RD BY SPAULDING TPK BRIDGE
Direction	EB
County	STRAFFORD
Community	DOVER
MPO ID	
HPMS ID	
Agency	New Hampshire DOT

COUNT DATA INFO	
Count Status	Accepted
Start Date	Thu 8/11/2016
End Date	Fri 8/12/2016
Start Time	12:00:00 AM
End Time	12:00:00 AM
Direction	
Notes	nhdot
Station	821250703070
Study	
Speed Limit	
Description	
Sensor Type	Tube Class
Source	
Latitude,Longitude	

INTERVAL:60-MIN	
Time	Hourly Count
0:00-1:00	7
1:00-2:00	4
2:00-3:00	0
3:00-4:00	4
4:00-5:00	14
5:00-6:00	56
6:00-7:00	121
7:00-8:00	212
8:00-9:00	193
9:00-10:00	139
10:00-11:00	126
11:00-12:00	149
12:00-13:00	158
13:00-14:00	118
14:00-15:00	145
15:00-16:00	168
16:00-17:00	208
17:00-18:00	172
18:00-19:00	148
19:00-20:00	103
20:00-21:00	77
21:00-22:00	30
22:00-23:00	25
23:00-24:00	8
Total	2,385
AM Peak	07:00-08:00 212
PM Peak	16:00-17:00 208

Figure 15: Thursday August 11th, 2016 Tolend Road eastbound traffic count

New Hampshire DOT Department of Transportation

TCDS Help MS2

Transportation Data Management System

Home | TMC | TCLS | TTDS | RSMS | NMDS | WOTS | RTTV

Back | Login | Locate | Locate All

Auto-Locate OFF

Volume Count Report

LOCATION INFO	
Location ID	82125070_WB
Type	SPOT
Fnct'l Class	5
Located On	Tolend Rd
Loc On Alias	TOLEND RD BY SPAULDING TPK BRIDGE
Direction	WB
County	STRAFFORD
Community	DOVER
MPO ID	
HPMS ID	
Agency	New Hampshire DOT

COUNT DATA INFO	
Count Status	Accepted
Start Date	Thu 8/11/2016
End Date	Fri 8/12/2016
Start Time	12:00:00 AM
End Time	12:00:00 AM
Direction	
Notes	nhdot
Station	821250703070
Study	
Speed Limit	
Description	
Sensor Type	Tube Class
Source	
Latitude,Longitude	

INTERVAL:60-MIN	
Time	Hourly Count
0:00-1:00	6
1:00-2:00	7
2:00-3:00	3
3:00-4:00	8
4:00-5:00	9
5:00-6:00	37
6:00-7:00	72
7:00-8:00	116
8:00-9:00	111
9:00-10:00	98
10:00-11:00	99
11:00-12:00	128
12:00-13:00	156
13:00-14:00	144
14:00-15:00	126
15:00-16:00	155
16:00-17:00	220
17:00-18:00	218
18:00-19:00	153
19:00-20:00	120
20:00-21:00	124
21:00-22:00	53
22:00-23:00	36
23:00-24:00	31
Total	2,230
AM Peak	11:00-12:00 128
PM Peak	16:00-17:00 220

Figure 16: Wednesday August 11th, 2016 Tolend Road westbound traffic count

Appendix B

Data Used in Left-Turn Bay Warrants Analysis

Year	Advancing Volume	Advancing Volume Peaked (TR)	Left Turns (L)	Right Turns (R)	Total Advancing Volume (L+TR+R)	% of Left Turn
2019	264	285.9				
2020	267	288.7				
2021	270	291.6				
2022	272	294.5	16.1	20.1	330.7	0.05
2023	275	297.5	16.1	20.1	333.7	0.05
2024	278	300.5	16.1	20.1	336.6	0.05
2025	281	303.5	16.1	20.1	339.6	0.05
2026	283	306.5	16.1	20.1	342.7	0.05
2027	286	309.6	16.1	20.1	345.7	0.05
2028	289	312.7	16.1	20.1	348.8	0.05
2029	292	315.8	16.1	20.1	352.0	0.05
2030	295	318.9	16.1	20.1	355.1	0.05
2031	298	322.1	16.1	20.1	358.3	0.04
2032	301	325.4	16.1	20.1	361.5	0.04
Year	Opposing Volume	Opposing Volume Peaked (TR)	Right Turns (R)		Total Opposing Volume (TR+R)	
2019	138	149.1				
2020	139	150.6				
2021	141	152.1				
2022	142	153.6	20.1		173.7	
2023	144	155.2	20.1		175.3	
2024	145	156.7	20.1		176.8	
2025	146	158.3	20.1		178.4	
2026	148	159.9	20.1		180.0	
2027	149	161.5	20.1		181.6	
2028	151	163.1	20.1		183.2	
2029	152	164.7	20.1		184.8	
2030	154	166.4	20.1		186.5	
2031	155	168.0	20.1		188.1	
2032	157	169.7	20.1		189.8	
Seasonal Peaking Factor (June)		1.08				

Figure 17: Data used for Weekday AM peak hour left-turn warrant analyses

Year	Advancing Volume	Advancing Volume Peaked (TR)	Left Turns (L)	Right Turns (R)	Total Advancing Volume (L+TR+R)	% of Left Turn
2019	223	241.5				
2020	226	243.9				
2021	228	246.3				
2022	230	248.8	16.1	20.1	285.0	0.06
2023	232	251.3	16.1	20.1	287.4	0.06
2024	235	253.8	16.1	20.1	290.0	0.06
2025	237	256.3	16.1	20.1	292.5	0.06
2026	239	258.9	16.1	20.1	295.1	0.05
2027	242	261.5	16.1	20.1	297.6	0.05
2028	244	264.1	16.1	20.1	300.3	0.05
2029	247	266.7	16.1	20.1	302.9	0.05
2030	249	269.4	16.1	20.1	305.6	0.05
2031	252	272.1	16.1	20.1	308.3	0.05
2032	254	274.8	16.1	20.1	311.0	0.05
Year	Opposing Volume	Opposing Volume Peaked (TR)	Right Turns (R)		Total Opposing Volume (TR+R)	
2019	278	301.0				
2020	281	304.0				
2021	284	307.0				
2022	287	310.1	20.1		330.2	
2023	290	313.2	20.1		333.3	
2024	293	316.3	20.1		336.4	
2025	295	319.5	20.1		339.6	
2026	298	322.7	20.1		342.8	
2027	301	325.9	20.1		346.0	
2028	304	329.2	20.1		349.3	
2029	307	332.5	20.1		352.6	
2030	311	335.8	20.1		355.9	
2031	314	339.2	20.1		359.2	
2032	317	342.6	20.1		362.6	
Seasonal Peaking Factor (June)		1.08				

Figure 18: Data used for Weekday PM peak hour left-turn warrant analyses

Left-Turn Bay Warrants Analysis

Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

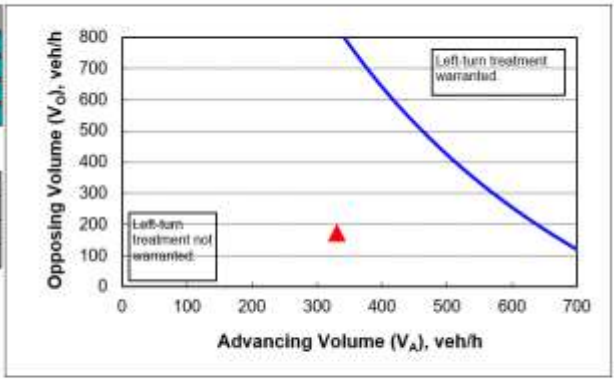
2-lane roadway (English)

INPUT

Variable	Value
85th percentile speed, mph:	40
Percent of left-turns in advancing volume (V_A), %:	5%
Advancing volume (V_A), veh/h:	331
Opposing volume (V_O), veh/h:	174

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	657
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Figure 19: 2022 Weekday AM peak hour NCHRP 457 left-turn bay warrant analysis

Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

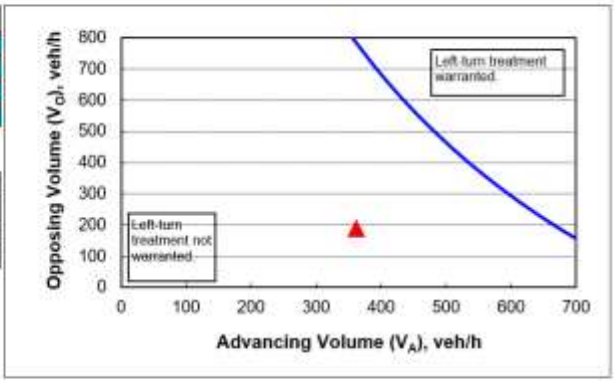
2-lane roadway (English)

INPUT

Variable	Value
85th percentile speed, mph:	40
Percent of left-turns in advancing volume (V_A), %:	4%
Advancing volume (V_A), veh/h:	362
Opposing volume (V_O), veh/h:	190

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	673
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Figure 20: 2032 Weekday AM peak hour NCHRP 457 left-turn bay warrant analysis

Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

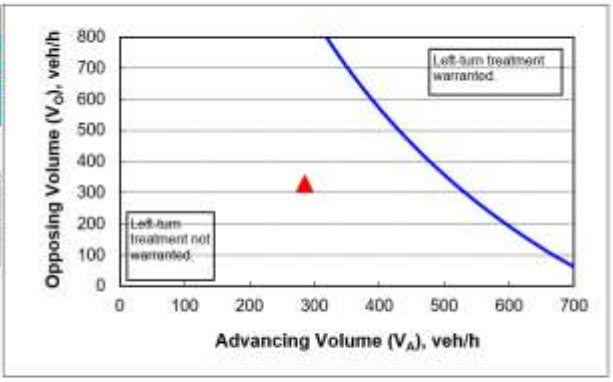
2-lane roadway (English)

INPUT

Variable	Value
85th percentile speed, mph:	40
Percent of left-turns in advancing volume (V_A), %:	6%
Advancing volume (V_A), veh/h:	285
Opposing volume (V_O), veh/h:	330

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	515
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Figure 21: 2022 Weekday PM peak hour NCHRP 457 left-turn bay warrant analysis

Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

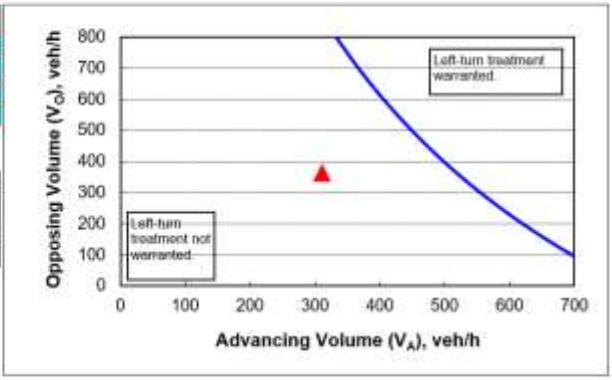
2-lane roadway (English)

INPUT

Variable	Value
85th percentile speed, mph:	40
Percent of left-turns in advancing volume (V_A), %:	5%
Advancing volume (V_A), veh/h:	311
Opposing volume (V_O), veh/h:	363

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	518
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Figure 22: 2032 Weekday PM peak hour NCHRP 457 left-turn bay warrant analysis

Data Used in Right-Turn Bay Warrants Analysis

Year	Advancing Volume	Advancing Volume Peaked (TR)	Left Turns (L)	Right Turns (R)	Total Advancing Volume (L+TR+R)
2019	138	149.1			
2020	139	150.6			
2021	141	152.1			
2022	142	153.6	7.1	3.7	164.4
2023	144	155.2	7.1	3.7	165.9
2024	145	156.7	7.1	3.7	167.5
2025	146	158.3	7.1	3.7	169.0
2026	148	159.9	7.1	3.7	170.6
2027	149	161.5	7.1	3.7	172.2
2028	151	163.1	7.1	3.7	173.8
2029	152	164.7	7.1	3.7	175.5
2030	154	166.4	7.1	3.7	177.1
2031	155	168.0	7.1	3.7	178.8
2032	157	169.7	7.1	3.7	180.5
Seasonal Peaking Factor (June)		1.08			

Figure 23: Data used for Weekday AM peak hour right-turn warrant analyses

Year	Advancing Volume	Advancing Volume Peaked (TR)	Left Turns (L)	Right Turns (R)	Total Advancing Volume (L+TR+R)
2019	278	301.0			
2020	281	304.0			
2021	284	307.0			
2022	287	310.1	16.1	20.1	346.3
2023	290	313.2	16.1	20.1	349.4
2024	293	316.3	16.1	20.1	352.5
2025	295	319.5	16.1	20.1	355.7
2026	298	322.7	16.1	20.1	358.9
2027	301	325.9	16.1	20.1	362.1
2028	304	329.2	16.1	20.1	365.4
2029	307	332.5	16.1	20.1	368.7
2030	311	335.8	16.1	20.1	372.0
2031	314	339.2	16.1	20.1	375.3
2032	317	342.6	16.1	20.1	378.7
Seasonal Peaking Factor (June)		1.08			

Figure 24: Data used for Weekday PM peak hour right-turn warrant analyses

Right-Turn Bay Warrants Analysis

Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.

INPUT

Roadway geometry:	2-lane roadway
Variable	Value
Major-road speed, mph:	40
Major-road volume (one direction), veh/h:	164
Right-turn volume, veh/h:	4

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	1659
Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:	
Do NOT add right-turn bay.	

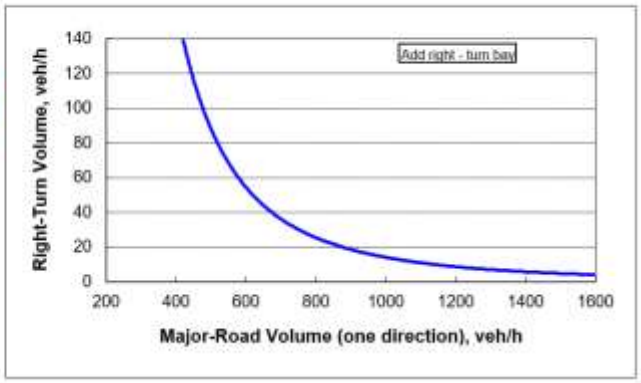


Figure 25: 2022 Weekday AM peak hour NCHRP 457 right-turn bay warrant analysis

Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.

INPUT

Roadway geometry:	2-lane roadway
Variable	Value
Major-road speed, mph:	40
Major-road volume (one direction), veh/h:	180
Right-turn volume, veh/h:	4

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	1297
Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:	
Do NOT add right-turn bay.	

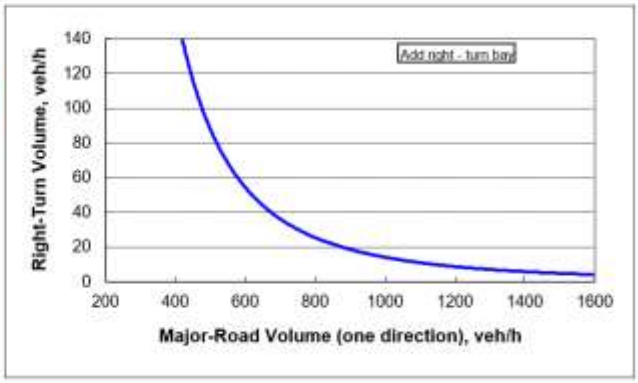


Figure 26: 2032 Weekday AM peak hour NCHRP 457 right-turn bay warrant analysis

Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.

INPUT

Roadway geometry:	2-lane roadway
Variable	Value
Major-road speed, mph:	40
Major-road volume (one direction), veh/h:	346
Right-turn volume, veh/h:	20

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	232
Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:	
Do NOT add right-turn bay.	

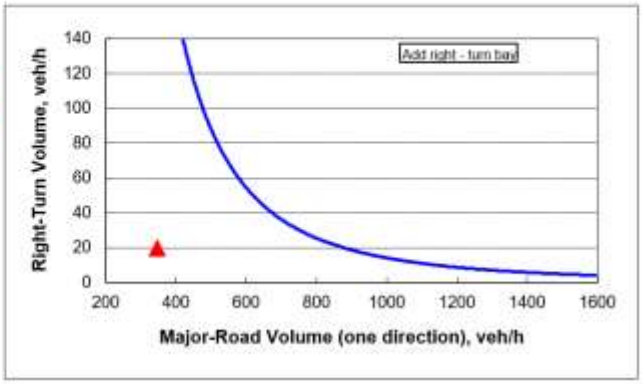


Figure 27: 2022 Weekday PM peak hour NCHRP 457 right-turn bay warrant analysis

Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.

INPUT

Roadway geometry:	2-lane roadway
Variable	Value
Major-road speed, mph:	40
Major-road volume (one direction), veh/h:	379
Right-turn volume, veh/h:	20

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	183
Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:	
Do NOT add right-turn bay.	

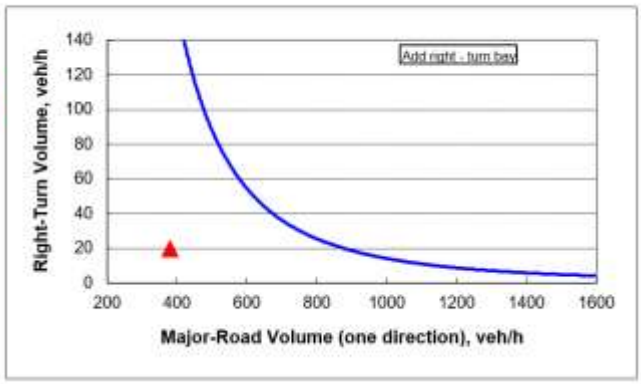


Figure 28: 2031 Weekday PM peak hour NCHRP 457 right-turn bay warrant analysis

Appendix C

Miscellaneous

Year 2019 Monthly Data Group 2 Averages: Rural Highways			
		Adjustment to	
Month	ADT	Average	Peak
January	5,992	1.19	1.40
February	6,342	1.12	1.33
March	6,493	1.10	1.30
April	6,819	1.05	1.23
May	7,434	0.96	1.13
June	7,776	0.92	1.08
July	8,207	0.87	1.02
August	8,409	0.85	1.00
September	7,770	0.92	1.08
October	7,477	0.95	1.12
November	6,712	1.06	1.25
December	6,173	1.16	1.36
Average ADT:	7,134		
Peak ADT:	8,409		

Table 10: Derivation of the seasonal peaking factor

Table 3-1. Stopping Sight Distance on Level Roadways

U.S. Customary					Metric				
Design Speed (mph)	Brake Reaction Distance (ft)	Braking Distance on Level (ft)	Stopping Sight Distance		Design Speed (km/h)	Brake Reaction Distance (m)	Braking Distance on Level (m)	Stopping Sight Distance	
			Calculated (ft)	Design (ft)				Calculated (m)	Design (m)
15	55.1	21.6	76.7	80	20	13.9	4.6	18.5	20
20	73.5	38.4	111.9	115	30	20.9	10.3	31.2	35
25	91.9	60.0	151.9	155	40	27.8	18.4	46.2	50
30	110.3	86.4	196.7	200	50	34.8	28.7	63.5	65
35	128.6	117.6	246.2	250	60	41.7	41.3	83.0	85
40	147.0	153.6	300.6	305	70	48.7	56.2	104.9	105
45	165.4	194.4	359.8	360	80	55.6	73.4	129.0	130
50	183.8	240.0	423.8	425	90	62.6	92.9	155.5	160
55	202.1	290.3	492.4	495	100	69.5	114.7	184.2	185
60	220.5	345.5	566.0	570	110	76.5	138.8	215.3	220
65	238.9	405.5	644.4	645	120	83.4	165.2	248.6	250
70	257.3	470.3	727.6	730	130	90.4	193.8	284.2	285
75	275.6	539.9	815.5	820	140	97.3	224.8	322.1	325
80	294.0	614.3	908.3	910					
85	313.5	693.5	1007.0	1010					

Note: Brake reaction distance predicated on a time of 2.5 s; deceleration rate of 11.2 ft/s² [3.4 m/s²] used to determine calculated sight distance.

Figure 29: Derivation of stopping sight distance requirements

Appendix D

Trip Generation Derivation

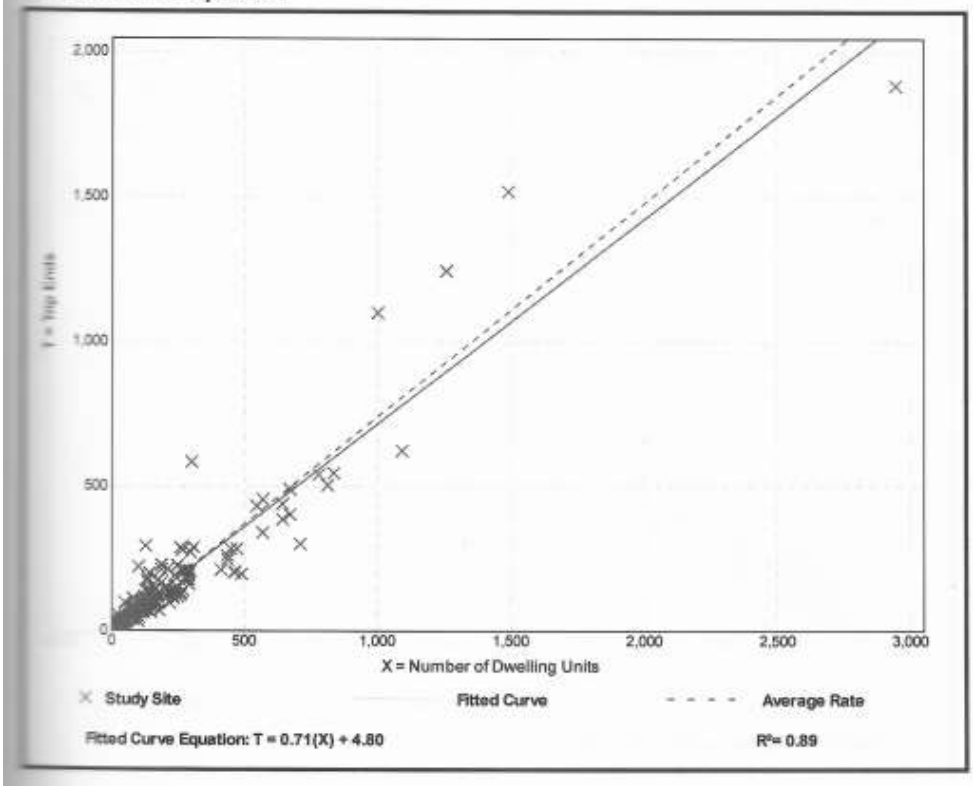
Single-Family Detached Housing
(210)

Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 173
Avg. Num. of Dwelling Units: 219
Directional Distribution: 25% entering, 75% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.74	0.33 - 2.27	0.27

Data Plot and Equation



Trip Generation Manual 10th Edition • Volume 2: Data • Residential (Land Uses 200–299) 3

Figure 30: ITE Trip Generation, 10th Edition

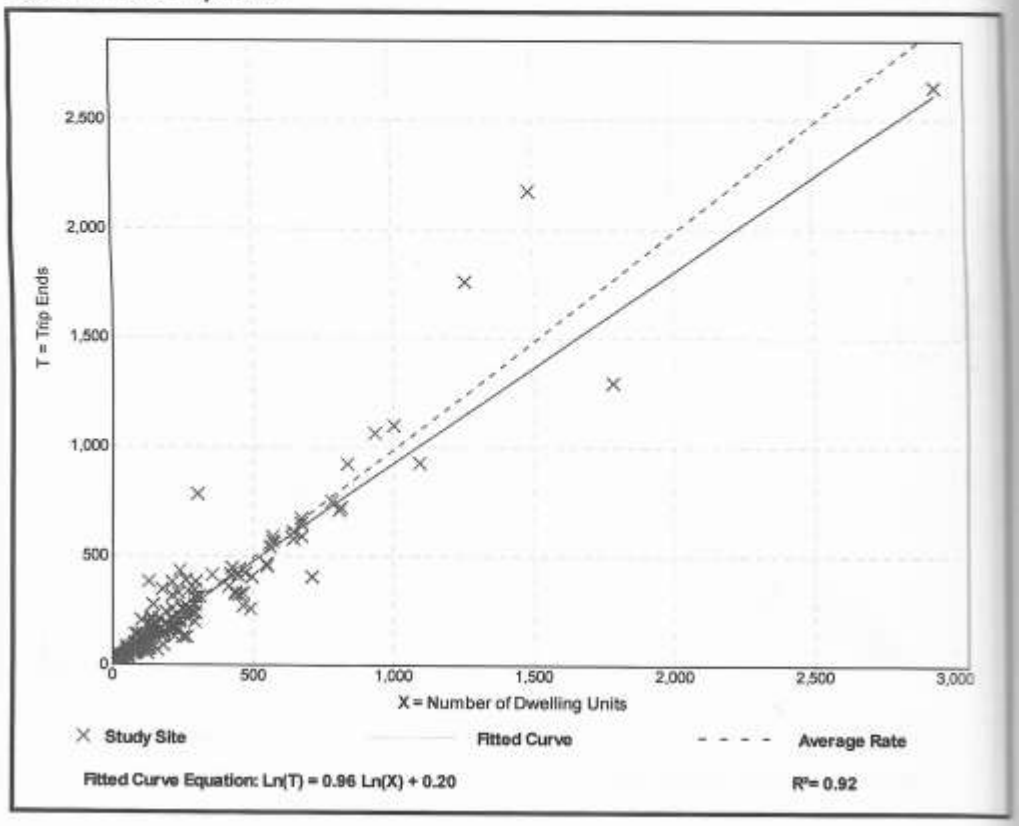
Single-Family Detached Housing
(210)

Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 190
Avg. Num. of Dwelling Units: 242
Directional Distribution: 63% entering, 37% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.99	0.44 - 2.98	0.31

Data Plot and Equation



4 Trip Generation Manual 10th Edition • Volume 2: Data • Residential (Land Uses 200–299)

Figure 31: ITE Trip Generation, 10th Edition

DRAINAGE ANALYSIS
&
EROSION & SEDIMENT
CONTROL PLAN

Prepared for:

Stonearch Development Corp.
42 Dover Point Road, Suite J
Dover, NH 03820

Land of:

Tax Map E, Lot 65-1
D. Lutsk, D. Barnes, T. George, & L. Mulcahy

Tax Map E, Lot 65A
Eugene A. & Donna L. Sgrignuoli

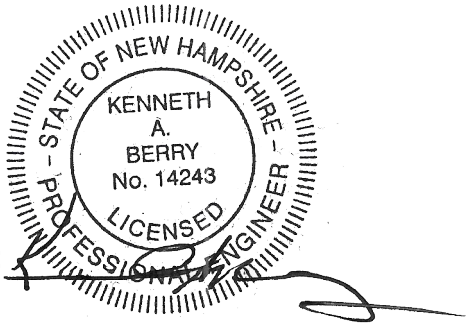
Tolend Road
Dover, NH 03820

LOCATION

Tax Map E, Lot 65-1

Prepared by:

Berry Surveying & Engineering
335 Second Crown Point Road
Barrington, NH 03825



Project Number:
DB 2020-107

February 10, 2022

Table of Contents

USGS Quadrangle Location Map

Design Method Objectives Page 2

1.0 Existing Conditions Analysis Page 2

2.0 Proposed Subdivision Analysis Page 5

3.0 Full Comparative Analysis Page 8

4.0 Erosion and Sediment Control, BMP's Page 10

5.0 Conclusion Page 15

Appendix I - Existing Conditions Analysis

2 Yr- 24 Hr Node Listing
10 Yr -24 Hr. Node Listing
25 Yr-24 Hr. Node Listing
50 Yr-24 Hr. Node Listing
100 Yr-24 Hr. Node Listing
25 Yr-24 Hr. Full Summary

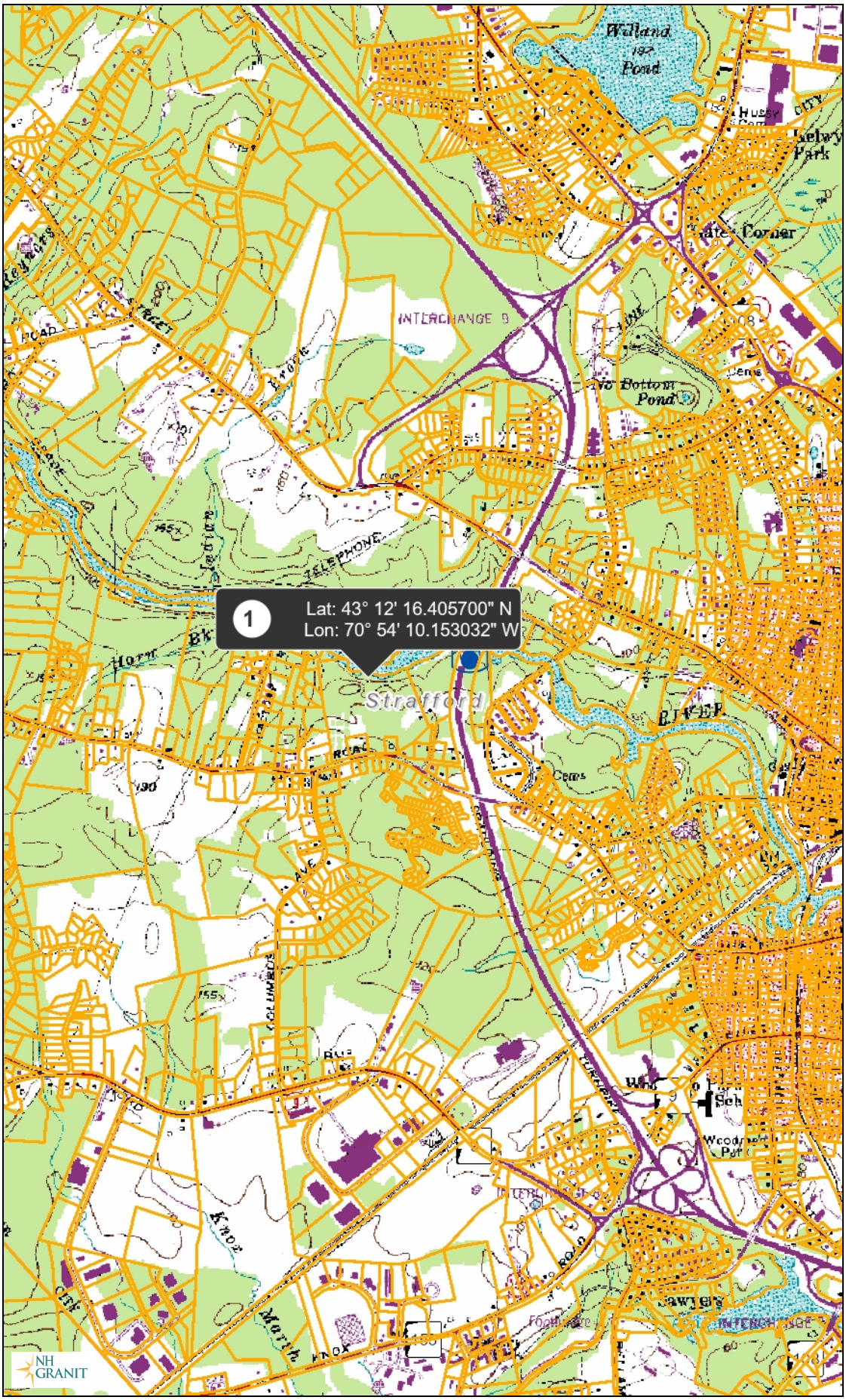
Appendix II - Proposed Conditions Analysis

2 Yr-24 Hr. Node Listing
10 Yr-24 Hr. Node Listing
25 Yr-24 HR. Node Listing
50 Yr-24 Hr. Node Listing
100 Yr-24 Hr. Node Listing
25 Yr-24 Hr. Full Summary

Appendix III - Calculations, Charts, & Graphs
Extreme Precipitation Tables
Rip Rap Calculations
AoT Stormwater Treatment Shreadsheets
NCRS USDA Web-soil Map
Inspection and Maintenance Manual Stormwater System Management
Watershed Report Card, 303(d) List, & ORW List

Enclosed: W-1 Sheet Existing Conditions Watershed Plan Sheets 1-5
W-2 Sheet Post Construction Watershed Plan Sheets 6-10
Erosion & Sediment Control Plan

Map by NH GRANIT



Legend

- Polygons
- State
- County
- City/Town

Map Scale

1: 24,000

© NH GRANIT, www.granit.unh.edu

Map Generated: 8/25/2020

Notes

Map by NH GRANIT

Legend

- Polygons
- State
- County
- City/Town

Map Scale

1: 10,000

© NH GRANIT, www.granit.unh.edu

Map Generated: 8/25/2020

Notes

DESIGN METHOD OBJECTIVES

The owner / developer of Tax Map E, Lot 65-1, Stonearch Development Corp., is proposing to develop the property on Tolend Road. The site currently is vacant land.

An Existing and Proposed Conditions analysis was conducted for the purpose of estimating the peak rate of stormwater run-off and to subsequently design adequate mitigation of drainage. There are two existing drainage discharge points which was identified in the existing analysis and duplicated in the proposed conditions analysis. There are also two depressions in the existing analysis that capture and hold surface water runoff. Designing two watershed models we have compared the differences in these rates of peak run-off and surface water volume. Sheet W1, Existing Conditions Watershed Plan, outlines the characteristics of the site in its existing or pre-construction conditions. The second analysis displays the proposed (post-construction) conditions (See Sheet W2). The analysis was conducted using data for; 2 Yr-24 Hr (3.61"), 10 Yr-24 Hr (5.44"), 25 Yr-24 Hr (6.87"), 50 Yr-24 Hr (8.21"), and 100 YR-24 Hr (9.81") storm events. Storm event analysis was accomplished using the USDA SCS TR-20 method within the HydroCAD Stormwater Modeling System environment. Rainfall quantities are based on the Extreme Precipitation Table for this location from the Northeast Regional Climate Center / Cornell University (http://precip.eas.cornell.edu). Dover is considered a part of the Coastal Region, and therefore a 15% escalation on rain fall depths has been applied to this application, reflected in the totals above.

1.0 Existing Conditions Analysis:

Reference: Sheet W1 - Existing Conditions Watershed Plan (Enclosed)
Existing Conditions Plan

The existing parcel of land is vacant land currently, The soils within the development area are made up of multiple soil types, containing Hydrologic Soil Group (HSG) A, B, C & D. See Site Specific Soils Map and report for more information. The land cover types involved are grass land, woods, roofs, and road pavement.

The land area analyzed consists of 52.93 acres, of which 44.36 acres of land make up the two parcels of ownership. The parcel has been divided into 14 subcatchments. Ten of which drain to nine separate analysis points along the Cochecho River, also known as, Cocheco River, NHDES. The other four subcatchments flow to three different offsite final analysis reaches which flow away from the Cochecho River initially.

The Cocheco River (NHRIV600030608-05) watershed will receive all of the runoff from the site either directly or indirectly. The impairment of the watershed are as follows:

Mercury, NE Regional Mercury TMDL, December 20, 2008, TMDL #33883
Escherichia coli, Bacteria, NH Statewide Bacteria, 9-21-2010, TMDL #39272
pH, Low Priority, Non-ORW.

Reach #100

Subcatchment #1, is land area in the southwest corner of the property and extends up the western property line to the Cochecho River. Runoff in this subcatchment drains through a delineated wetland to a point on the Cochecho River being analyzed as Analysis **Reach #100**.

Subcatchments #16-#19 make up a portion of Tolend Road abutting the locus parcel. Runoff is collected in a series of offsite catch basins (**Ponds #1-#4**) and directed on to the property, eventually flowing to **Final Reach #100** through a series of overland reaches (**Reaches #1a & #1b**).

Reach #200

Subcatchment #2, consists of a small portion of land adjacent to the Cochecho River and is being analyzed at Analysis **Reach #200**.

Reach #300

Subcatchment #3 consists of a small portion of land also adjacent to the Cochecho River. Runoff flows to a small channel and into the river and is being analyzed as **Reach #300**.

Reach #400

Subcatchment #4 consists of a portion of land adjacent to the Cochecho River toward the middle of the northern edge of the parcel. Runoff flows to the river and is being analyzed at **Reach #400**.

Reach #500

Subcatchment #5 consists of a portion of land along the Cochecho River in the middle of the northern edge of the parcel. Runoff flows to the river and is being analyzed at **Reach #500**. Runoff is also received from **Subcatchment #14** through an overland reach (**Reach #14**) flowing through the wetlands to **Reach #500**.

Subcatchment #14 is made up of land in the middle of the eastern portion of the parcel. Runoff flows north toward the Cochecho River. The northern edge of the subcatchment where runoff flows to within the wetland is analyzed at an approximate high point where there would be a proposed wetland crossing. Runoff eventually flows to **Reach #500** through an overland reach (**Reach #14**). This subcatchment is analyzed in this way so that we may better analyze and show the effects the development would have on the wetland.

Reach #600

Subcatchment #6 consists of a portion of land adjacent to the Cochecho River toward the middle of the parcel extending a majority of the way to the south side of the parcel. Runoff flows to the river, mostly through a wetland, and is being analyzed at **Reach #600**.

Reach #700

Subcatchment #7 consists of a portion of land adjacent to the Cochecho River toward the eastern side of the northern edge of the parcel. Runoff flows to the river and is being analyzed at **Reach #700**.

Reach #800

Subcatchment #8 consists of a small portion of land adjacent to the Cochecho River near the northeastern corner of the parcel. Runoff flows to the river and is being analyzed at **Reach #800**.

Final Reach #900

The Final Reach being analyzed is representative of the properties impact to the Cochecho River, however the river itself is not being analyzed. **Final Reach #900** is the successive sum of the hydrographs from **Reaches #100-#800** where the cumulative runoff combines with the runoff from **Subcatchment #9**.

Subcatchment #9 consists of the majority of the northeastern corner of the parcel extending from just over the eastern property line to the Cochecho River. Runoff flows mostly through a small wetland directed toward the river where it combines with runoff from **Reaches #100-#800** and is analyzed as **Final Reach #900**.

Final Reach #1100

Subcatchment #11 consists of a portion of the southeastern edge of the parcel as well as a portion of offsite land. Runoff flows offsite to a nonpoint area and is being analyzed as **Reach #1100**.

Subcatchment #15 consists of the southeastern corner of the parcel as well as a portion of offsite land between the parcel and Tolend Road. Runoff is collected in a small inlet pond and directed through a culvert under Sun Hawk Lane (**Pond #15**). Exiting the culvert, runoff flows through **Subcatchment #11** by way of an overland reach (**Reach #15**) flowing to **Final Reach #1100**.

Final Reach #1200

Subcatchment #12 consists of a majority of the land along the eastern edge of the parcel as well as a portion of offsite land. Runoff flows offsite to a culvert which is being analyzed as **Final Reach #1200**.

Final Reach #1300

Subcatchment #13 consists of a small portion of land along the eastern edge of the parcel as well as a portion of offsite land. Runoff flows offsite to a nonpoint area and is being analyzed as **Final Reach #1300**.

2.0 Proposed Conditions Analysis:

Reference: Sheet W2 - Proposed Conditions Watershed Plan (Enclosed)
Proposed Grading & Drainage Plan

The proposal for development includes 30 duplex structures for a total of 60 dwelling units 2 cul-de-sac roads consisting of a total of 2,825 feet of roadway and an emergency access roadway that is 305 feet in length connecting the development to Sun Hawk Drive. The proposal is supported by two detention ponds and five rain gardens.

Prior to discharge to surface waters of the state, runoff is treated and released through a level spreader, overland, through undeveloped area.

Reach #100

Subcatchment #1 is somewhat decreased in size by the proposed construction of Liam Drive and a portion of the related buildings. Runoff still drains to **Reach #100**.

Subcatchments #16-#19 are offsite subcatchments and therefore remain unchanged.

Reach #200

Subcatchment #2 marginally increased in size due to proposed grading of leach fields near Liam Drive. Runoff still flows to **Reach #200**.

Reach #300

Subcatchment #3 is moderately reduced in size by the proposed construction of Liam drive and a portion of the related buildings. Runoff continues to flow to **Reach #300**.

Reach #400

Subcatchment #4 is reduced in size as a result of the proposed construction of two residential buildings shortly before the mouth of the cul-de-sac of Liam Drive. Runoff continues to flow to the river and is being analyzed at **Reach #400**.

Reach #500

Subcatchment #5 is reduced in size as a result of the proposed construction of multiple residential buildings and the related leach fields off Liam Drive. Runoff still flows to the river and is being analyzed at **Reach #500**.

Subcatchment #14 is considerably reduced in size as a result of the construction of Liam Drive and some of the related drainage practices. Runoff still flows to **Reach #500** through an overland reach (**Reach #14**) from the proposed wetland crossing box culvert (**Pond #14**). Part of this subcatchment still flows to **Reach #500**, but is detached by the proposed construction of Theodore Drive and is now referred to as **Subcatchment #20.** Runoff from **Subcatchment #20** flows through a box culvert (**Pond #20**) under Theodore Drive and a series of overland reaches to **Reach #500**.

Reach #600

Subcatchment #6 considerably decreased in size as a result of the proposed construction of Theodore Drive, Liam Drive, and a number of the proposed buildings as well as one of the proposed rain gardens (**Pond #103**). Runoff continues to flow to the river, mostly through a wetland, and is being analyzed at **Reach #600**.

Rain Garden #103 (**Pond #103**) receives runoff from a series of catch basins (**Ponds #C18-#C25**) which collect runoff from the majority of Liam Drive and the roofs of a portion of the residential buildings (**Subcatchments #38-#45**)

Reach #700

Subcatchment #7 decreased in size due to the proposed construction of the cul-de-sac of Theodore Drive, a number of the related buildings, and one of the rain gardens (**Pond #102**). Runoff still flows to the river and is being analyzed at **Reach #700**.

Reach #800

Subcatchment #8 remains unchanged.

Final Reach #900

Subcatchment #9 remains unchanged. Runoff still flows mostly through a small wetland directed toward the river where it combines with runoff from **Reaches #100-#800** and is analyzed as **Final Reach #900**.

Final Reach #1100

Subcatchment #11 increased in size as a result of the proposed construction of the emergency access road connecting Theodore Drive to Sun Hawk Lane. Runoff still flows offsite to a nonpoint area analyzed as **Reach #1100**.

Subcatchment #15 is reduced in size due to the construction of Theodore Drive, a portion of the related buildings, and one of the rain gardens (**Pond #101**). Runoff is still directed through a culvert under Sun Hawk Lane (**Pond #15**) and through **Subcatchment #11** by way of **Reach #15** to **Final Reach #1100**.

Rain Garden #101 (**Pond #101**) receives runoff from a series of catch basins and drain manholes (**Ponds #C01-#C08, #D01, #D02**). These structures capture runoff from the front portion of Theodore Drive and the surrounding land area as well as the roofs of the surrounding residential buildings (**Subcatchments #21-28**). Runoff is directed to an inlet sump under Sun Hawk Lane and subsequently to **Final Reach #1100** through a pair of overland reaches.

Final Reach #1200

Subcatchment #12 moderately decreased in size due to the proposed construction of Theodore Drive and a portion of the related buildings as well as one of the rain gardens (**Pond #102**). Runoff continues to flow offsite to a culvert which is being analyzed as **Final Reach #1200**.

Detention Pond #105 (**Pond #105**) receives runoff from the cul-de-sac of Theodore Drive and the surrounding land area (**Subcatchments #65, #36, and #37** respectively. This includes two catch basins (**Ponds #C17 & #C18**) which collect runoff from the portion of the roadway that does not flow directly into **Pond #105** as well as parts of three of the residential roofs. Runoff is directed into **Pond #102** and eventually to **Final Reach #1200**.

Rain Garden #102 (**Pond #102**) receives runoff from a series of catch basins (**Ponds #C09-#C15**) which collect runoff from the end of Theodore Drive and the surrounding residential buildings and lawn areas (**Subcatchments #29-#35**). There are also two drop inlets (**Ponds #C54 & #C55**) that collect runoff from small areas surrounding either side of the corner of Theodore Drive (**Subcatchments #54 & #55**). Runoff is directed to **Final Reach #1200** through an outlet structure and an emergency spillway.

Final Reach #1300

Subcatchment #13 remains unchanged.

Stormwater Treatment:

Treatment takes place within the rain gardens designed to support the development on site. Pre-treatment will be provided in the sediment forebay's of the rain gardens. The stormwater quality volume capability is treated within provided treatment area of the practice.

3.0 FULL COMPARATIVE ANALYSIS

ANALYSIS COMPONENT: PEAK RATE DISCHARGE (Cubic Feet / Second)

		2 Yr	10 Yr	25 Yr	50 Yr	100 Yr
Final Reach #100	Existing	10.35	24.11	36.09	47.82	62.18
	Proposed	10.27	23.92	35.81	47.45	61.69
Final Reach #200	Existing	10.80	25.08	37.51	49.68	64.56
	Proposed	10.72	24.90	37.24	49.32	64.09
Final Reach #300	Existing	11.03	25.60	38.27	50.67	65.84
	Proposed	10.97	25.44	38.01	50.32	65.37
Final Reach #400	Existing	12.05	27.94	41.78	55.33	71.97
	Proposed	11.80	27.25	40.68	53.82	69.89
Final Reach #500	Existing	17.96	41.76	62.49	82.79	107.65
	Proposed	17.23	41.19	61.36	80.67	104.22
Final Reach #600	Existing	21.86	50.64	75.68	100.19	130.18
	Proposed	20.29	49.61	74.42	97.78	126.43
Final Reach #700	Existing	23.96	55.56	83.09	110.04	143.04
	Proposed	22.20	54.05	81.09	106.80	138.16
Final Reach #800	Existing	24.55	57.42	86.16	114.36	148.94
	Proposed	22.79	55.93	84.22	111.27	144.29
Final Reach #900	Existing	24.80	58.17	87.39	116.09	151.43
	Proposed	23.04	56.70	85.54	113.08	146.78
Final Reach #1100	Existing	5.60	10.06	13.37	16.31	19.72
	Proposed	5.39	9.90	13.20	16.09	19.47
Final Reach #1200	Existing	4.35	9.94	14.78	19.50	25.26
	Proposed	3.31	8.25	14.60	19.26	25.16
Final Reach #1300	Existing	0.75	1.63	2.39	3.12	4.01
	Proposed	0.75	1.63	2.39	3.12	4.01

ANALYSIS COMPONENT: VOLUME (Acre Feet)

		2 Yr	10 Yr	25 Yr	50 Yr	100 Yr
Final Reach #100	Existing	1.300	2.844	4.208	5.563	7.245
	Proposed	1.290	2.822	4.175	5.519	7.188
Final Reach #200	Existing	1.373	3.003	4.442	5.871	7.544
	Proposed	1.364	2.982	4.411	5.830	7.591
Final Reach #300	Existing	1.413	3.091	4.572	6.043	7.869
	Proposed	1.409	3.078	4.551	6.014	7.829
Final Reach #400	Existing	1.547	3.384	5.007	6.619	8.619
	Proposed	1.533	3.346	4.947	6.535	8.506
Final Reach #500	Existing	2.383	5.222	7.730	10.221	13.314
	Proposed	2.465	5.256	7.708	10.135	13.143
Final Reach #600	Existing	2.884	6.308	9.331	12.330	16.053
	Proposed	3.087	6.470	9.433	12.365	15.995
Final Reach #700	Existing	3.158	6.910	10.224	13.512	17.594
	Proposed	3.348	7.036	10.267	13.464	17.423
Final Reach #800	Existing	3.241	7.128	10.571	13.992	18.243
	Proposed	3.431	7.254	10.614	13.944	18.072
Final Reach #900	Existing	3.277	7.223	10.721	14.200	18.525
	Proposed	3.467	7.349	10.765	14.152	18.353
Final Reach #1100	Existing	0.745	1.655	2.462	3.266	4.266
	Proposed	0.832	1.820	2.685	3.539	4.594
Final Reach #1200	Existing	0.466	1.008	1.485	1.957	2.542
	Proposed	0.557	1.295	1.919	2.525	3.268
Final Reach #1300	Existing	0.080	0.168	0.244	0.319	0.412
	Proposed	0.072	0.157	0.231	0.304	0.395

4.0 EROSION and SEDIMENT CONTROL PLAN & BEST MANAGEMENT PRACTICES (BMP's)

Reference: Proposed Site Plan and Grading Plan
Erosion & Sediment Control Plan
Erosion & Sediment Control Details

The proposed site development is protected from erosion and the abutting properties are protected from sediment by the use of Best Management Practices as outlined in the New Hampshire Stormwater Manual, Volume 2, Post-Construction Best Management Practices Selection & Design (December 2008, NHDES & US EPA). Any area disturbed by construction will be re-stabilized within 14 days and abutting properties will not be adversely affected by this development. All swales and drainage structures will be constructed and stabilized prior to having run-off directed to them. Reference is also made to the Stormwater System Management: Inspection & Maintenance Manual which has been written specifically for this project and available to the owner.

Perimeter Control (Silt Fence / SiltSoxx / Erosion Control Mix Berm)

The plan set demonstrates the location of perimeter sediment control. The Erosion and Sediment Control Details, Sheet E-101, has the specifications for installation and maintenance of the silt fence, Filtrexx mulch filled SiltSoxx (or approved equal), and Erosion Control Mix Berm. There are locations on the site, for example bio-media rain garden protection, where SiltSoxx protection is specified

Detention Ponds

Description: Detention Ponds are also constructed ponds with the purpose of detaining runoff but not necessarily for infiltration purposes. During construction it is important that the ground surface not be exposed to traffic or construction equipment to preserve the infiltration capabilities of the existing soil. Construction specifications are included in the plan set and New Hampshire Stormwater Manual, Volume 2, 4-3 Treatment Practices, 3B, In-ground Infiltration Basin and Section 4-6, Conveyance Practices, 2. Detention Basins.

Maintenance Considerations:
Infiltration Basins and Detention Ponds should be inspected at least twice annually and following any rainfall event exceeding 0.25 inches in a twenty-four hour period. Maintenance rehabilitation will be conducted as warranted by each inspection. Trash and debris will be removed at each inspection.

On an annual basis the infiltration capabilities need to be confirmed by evaluation the drawdown time. If the infiltration system does not drain within 72-hours following a rainfall event, a qualified professional will assess the condition of the basin to determine

measures required to restore the infiltration function. This is normally the direct result of sediment accumulation which will be removed to restore the filter media ratio.

Also on an annual basis the vegetation should be inspected to ensure healthy condition. Invasive species need to be removed along with dead or diseased vegetation.

Vegetated Stabilization

All areas that are disturbed during construction will be stabilized with vegetated material within 30 days of breaking ground. Construction will be managed in such a manner that erosion is prevented and that no abutter's property will be subjected to any siltation, unless otherwise permitted. All areas to be planted with grass for long-term cover will follow the specification and on Sheet E-102 using seeding mixture C, as follows:

Mixture	Pounds per Acre	Pounds per 1,000 Sq. Ft.
Tall Fescue	24	0.55
Creeping Red Fescue	24	0.55
Total	48	1.10

Conservation Mix

Tall Fescue	15	0.35
Creeping Red Fescue	15	0.35
Annual Ryegrass	5	0.12
Perennial Ryegrass	5	0.12
Kentucky Bluegrass	15	0.35
White Clover	7	0.16
Total	**62**	**1.45**

Conservation Mix will used to stabilize all 2:1 slopes and all land area disturbed within the wetland buffer. (If applicable).

Rain Garden Mix: The grass that is planted within a rain garden bio-filtration system within the bio-media must consist of a combination of warm season grass seed and cold season grass seed in order for the grass to start growing for stabilization and continue growing in the sandy well-drained environment. Planting specification will meet the requirements as outlined in 'Vegetation New Hampshire Sand and Gravel Pits' mix 1 (warm season grasses) (15 lbs/ac) and include annual and perennial rye grass seed (15 lbs/ac); the New England native warm season grass mix (23 lbs/ac) by New England Wetland Plants, Inc.; rain garden mix 180 (15 lbs/ac & 15 lbs/ac of rye) / rain garden grass mix 180-1 (20 lbs/ac & 10 lbs/ac of rye) by Ernst Conservation Seeds; or approved equal.

Detention Pond Mix: The grass that is planted within a Detention Pond will be a mix designed for both inundation and dry conditions such as Ernst Seeds, Retention Basin Floor Mix ERNMX-126.

Stabilized Construction Entrance

A temporary gravel construction entrance provides an area where mud can be dislodged from tires before the vehicle leaves the construction site to reduce the amount of mud and sediment transported onto paved municipal and state roads. The stone size for the pad should be 3" coarse aggregate, and the pad itself constructed to a minimum length of 75' for the full width of the access road. The aggregate should be placed at least six inches thick. A plan view and profile are shown on Sheet E-101- Erosion & Sediment Control Detail Plan. (If applicable).

Environmental Dust Control

Dust will be controlled on the site by the use of multiple Best Management Practices. Mulching and temporary seeding will be the first line of protection to be utilized where problems occur. If dust problems are not solved by these applications, the use of water and calcium chloride can be applied. Calcium chloride will be applied at a rate that will keep the surface moist but not cause pollution.

Vegetated Filter Strips / Buffers

Filter strips are areas of land with natural or planted vegetation designed to receive sheet run-off from up gradient development. These natural areas, preferably wooded, are effective in removing sediment and sediment-laden pollutants from such run-off, although their effectiveness is severely diminished when forced to deal with concentrated flow and must therefore be equipped with a level-spreading device. Filter strips should not have a slope exceeding fifteen percent and have a minimum length of seventy-five feet. Each buffer is individually specified and limits are located on the Sediment & Erosion Control Plan

Drainage Swales / Stormwater Conveyance Channels

Drainage swales will be stabilized with vegetation for long term cover as outlined below, and on Sheet E-102 using seed mixture C. As a general rule, velocities in the swale should not exceed 3.0 feet per second for a vegetated swale although velocities as high as 4.5 FPS are allowed under certain soil conditions (If applicable).

Construction Sequence

1. Cut and remove trees in construction area only as required.

2. Construct and/or install temporary and permanent sediment erosion and detention control facilities as required.

3. Erosion, sediment and detention control facility shall be installed & stabilized prior to any earth moving operation & or directing runoff to them.

4. Clear, cut and dispose of debris in approved facility.

5. Construct temporary culverts as required, or directed.

6. Construct roadways for access to desired construction areas. All roads shall be stabilized immediately.

7. Install pipe and construction associated appurtenances as required or directed. Install rain gardens. All disturbed areas shall stabilized immediately after grading.

8. Begin permanent and temporary seeding and mulching. All cut and fill slopes and disturbed areas shall be seeded or mulched as required, or directed. No area is allowed to be disturbed for a length of time that exceeds 60 days before being stabilized. Daily, or as required. All roadways and parking areas shall be stabilized within 72 hours of achieving finished grades. All cut and fill slopes shall be stabilized within 72 hours of achieving finished grades.

9. Construct temporary berms, drains ditches, silt fences, sediment traps, etc. mulch and seed as required.

10. Inspect and maintain all erosion and sediment control measures during construction.

11. Complete permanent seeding and landscaping.

12. Remove temporary erosion control measures after seeding areas have established themselves and site improvements are complete.

13. Smooth and revegetate all disturbed areas.

14. Finish paving all roadways.

Temporary Erosion Control Measures

1. The smallest practical area of land shall be exposed at any one time.

2. Erosion, sediment control measures shall be installed as shown on the plans and at locations as required, or directed by the engineer.

3. All disturbed areas shall be returned to original grades and elevations. Disturbed areas shall be loamed with a minimum of 4" of loam and seeded with not less than 1.10 pound of seed per 1,000 square feet (48 pounds per acre) of area.

4. Silt fences and other barriers shall be inspected periodically and after every rainstorm during the life of the project. All damaged areas shall be repaired, sediment deposits shall periodically be removed and properly disposed of.

5. After all disturbed areas have been stabilized, the temporary erosion control measures are to be removed and the area disturbed by the removal smoothed and re-vegetated.

6. Areas must be seeded and mulched within 5 days of final grading, permanently stabilized within 15 days of final grading, or temporarily stabilized within 30 days of initial disturbance of soil.

Inspection and Maintenance Schedule

Fencing (if used) will be inspected during and after storm events to ensure that the fence still has integrity and is not allowing sediment to pass. Depending on SWPPP criteria, all controls will be inspected either once every 7 days and after storm events. Inspection reports must be submitted to City of Dover Engineering Department. See also Stormwater System Management: Inspection & Maintenance Manual published separately also by Berry Surveying & Engineering. See also Storm Water Pollution Prevention Plan (SWPPP) developed in accordance with EPA NPDES requirements & the City of Dover Stormwater regulations. In accordance with the City of Dover Site Plan Review Ordinance and US EPA 2022 Construction General Permit, Inspections will be conducted by a qualified person. This requirement includes Erosion and Sediment Control Education and Professional Certification.

Corrective Action measures will be made in accordance with SWPPP requirements and records maintained on site by the Contractor.

5.0 **CONCLUSION**

Peak rates of runoff flow are modeled to be equal or reduced in the post-construction analysis / condition, as compared to the pre-construction peak rates of runoff flow during all storm events due to the installation of the low impact development stormwater devices.

Channel protection volume is met at all reaches that do not discharge to the Cochecho River (Final Reaches #1100, #1200, & #1300). The Cochecho River is a 4th order water body, therefore channel protection requirements are satisfied by the reduction in the 2 Yr.-24 Hr. peak rates at the combined discharge point Final Reach #900.

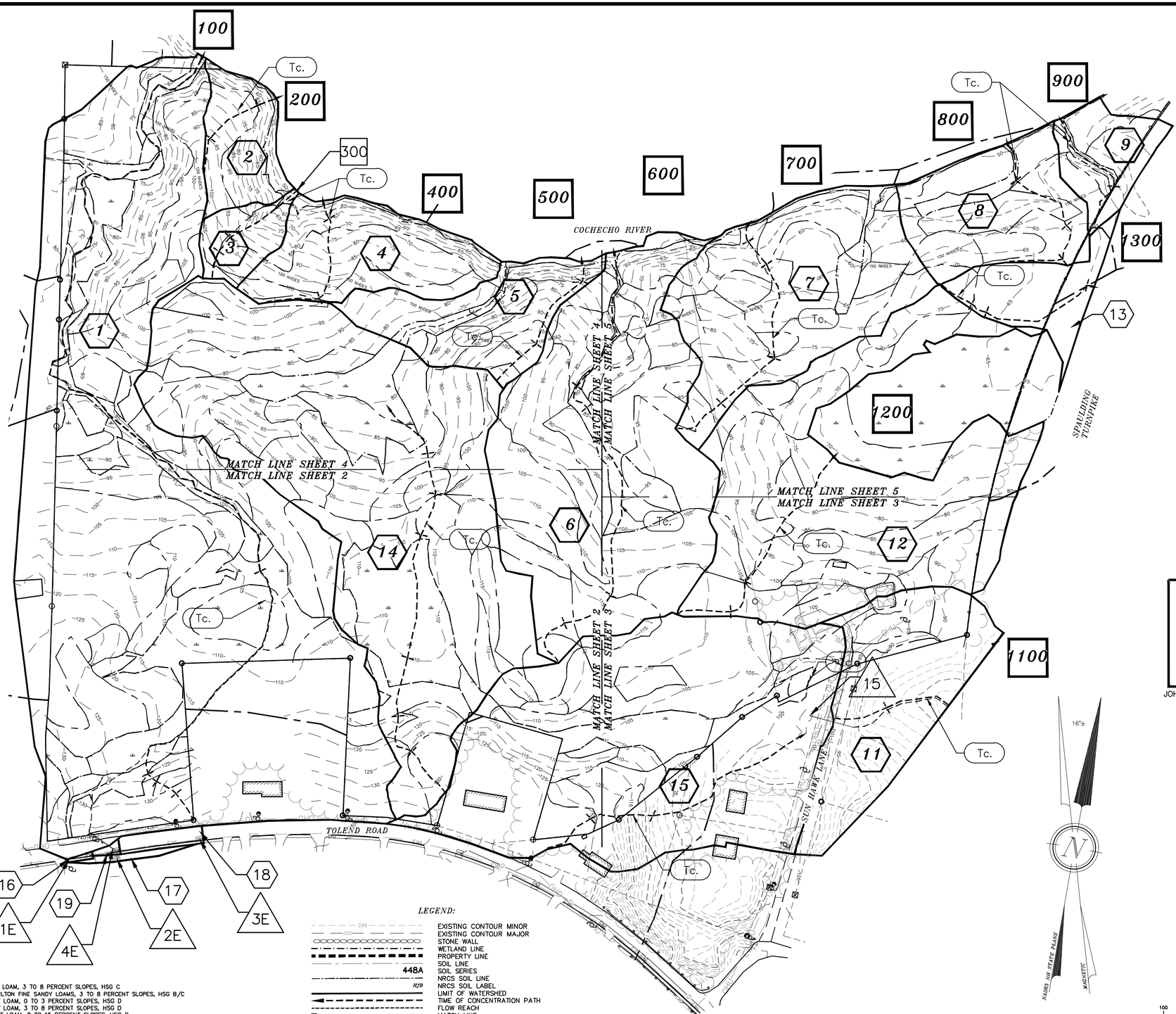
A Site Specific, Terrain Alteration Permit (RSA 485: A-17) is required for this site plan due to the area of disturbance being greater than 100,000 SF. The impact is approximately 479,500 square feet, so that an EPA Notice of Intent will be required to be filed prior to construction and a Stormwater Pollution Prevention Plan prepared.

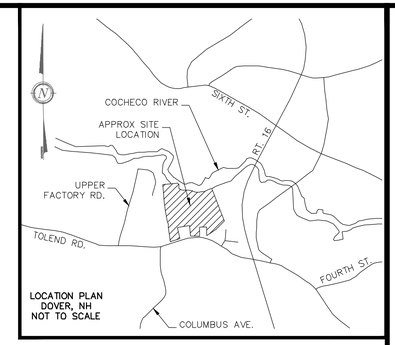
Respectfully Submitted,
BERRY SURVEYING & ENGINEERING

Christopher R. Berry, SIT 567
Principal, President

Kenneth A. Berry PE, LLS,
CPSWQ, CPESC, CESSWI
Principal, VP - Technical Operations

Kevin R. Poulin, EIT
Design Engineer / Project Manager





LOCATION PLAN
DOVER, NH
NOT TO SCALE

NOTES:

1.) OWNER LOT 65–1: D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY
245 N BEND DRIVE
MANCHESTER, NH 03104

OWNER LOT 65–A: EUGENE A. & DONNA L. SGRIGNUOLI
22 SUN HAWK LANE
DOVER, NH 03820

1A.) APPLICANT: STONEARCH DEVELOPMENT CORP.
42J DOVER POINT ROAD
DOVER, NH 03820

2.) LOT OF RECORD: TAX MAP E, LOT 65–1
TAX MAP E, LOT 65–A

3.) LOT AREA LOT 65–1: 1,388,402 Sq. Ft., 31.87 Ac. +/–
LOT AREA LOT 65–A: 546,546 Sq. Ft., 12.49 Ac. +/–

4.) S.C.R.D. BOOK 4918, PAGE 158
S.C.R.D. BOOK 1571, PAGE 8

5.) I HEREBY CERTIFY THAT, TO THE BEST OF MY KNOWLEDGE & BELIEF, A PORTION OF THIS PARCEL DOES FALL WITHIN THE FLOOD PLAIN FLOOD HAZARD. REF.: FEMA COMMUNITY #330145, MAP #33017C0310E, DATED: SEPTEMBER 30, 2015.

6.) VERTICAL DATUM BASED ON NAVD88 ELEVATIONS. HORIZONTAL COORDINATES BASED ON NAD83. COORDINATES GATHERED USING TOPCON HIPER SR SURVEY GRADE GPS RECEIVERS.

7.) THE INTENT OF THIS PLAN IS TO SHOW THE EXISTING WATERSHED CONDITIONS ON TAX MAP E, LOT 65–1 AS OF THE DATE OF THE SURVEY (WINTER, 2021).

8.) SEE EXISTING CONDITIONS PLAN FOR EXPLANATION OF JURISDICTIONAL WETLANDS. SEE SITE SPECIFIC SOIL SURVEY FOR SOILS EXPLANATION. SOILS LEGEND ALSO LOCATED ON SHEET 5 OF 10.

JOHN P. HAYES III, CWS #18

JOHN P. HAYES III, CSS #87

NRCS SOILS:

BeB	– BUXTON SILT LOAM, 3 TO 8 PERCENT SLOPES, HSG C
HcB	– HOLLIS–CHARLTON FINE SANDY LOAMS, 3 TO 8 PERCENT SLOPES, HSG B/C
ScA	– SCANTIC SILT LOAM, 0 TO 3 PERCENT SLOPES, HSG D
ScB	– SCANTIC SILT LOAM, 3 TO 8 PERCENT SLOPES, HSG D
SfC	– SUFFIELD SILT LOAM, 8 TO 15 PERCENT SLOPES, HSG C
SfE	– SUFFIELD SILT LOAM, 15 TO 35 PERCENT SLOPES, HSG C

SEE WEBSOIL USDA–NRCS

LEGEND:

299	EXISTING CONTOUR MINOR
300	EXISTING CONTOUR MAJOR
	STONE WALL
	WETLAND LINE
	PROPERTY LINE
	SOIL LINE
448A	SOIL SERIES
	NRCS SOIL LINE
HyB	NRCS SOIL LABEL
	LIMIT OF WATERSHED
	TIME OF CONCENTRATION PATH
	FLOW REACH
	MATCH LINE
S.C.R.D.	STRAFFORD COUNTY REGISTRY OF DEEDS
TYP.	TYPICAL
FND	FOUND
TBR	TO BE REMOVED

SYMBOLS LEGEND:

- # — SUBCATCHMENT AREA SYMBOL
- # — FLOW REACH SYMBOL
- # — POND DEVICE SYMBOL
- Tc. / # — TIME OF CONCENTRATION SEGMENT

GRAPHIC SCALE

100 0 50 100 200 400

(IN FEET)
1 inch = 100 ft.

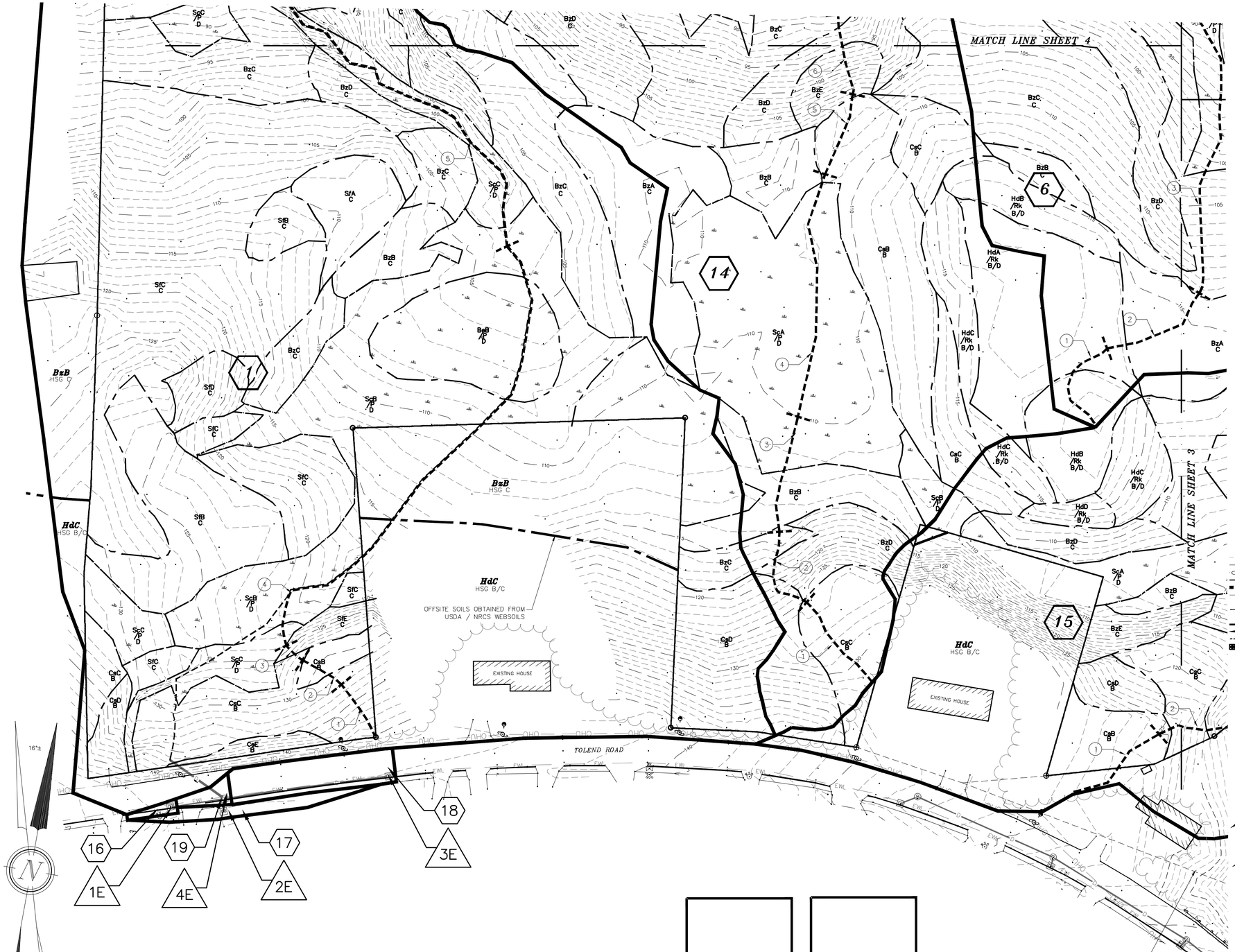
REVISION	DATE	DESCRIPTION

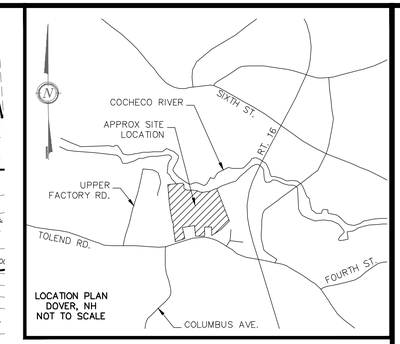
W–1 EXISTING WATERSHED OVERVIEW
LAND OF
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY &
EUGENE A. & DONNA L. SGRIGNUOLI
TOLEND ROAD
DOVER, N.H.
TAX MAP E, LOT 65–1 & 65–A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332–2863

SCALE : 1 IN. EQUALS 100 FT.
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 – 107

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 7447
LICENSED PROFESSIONAL ENGINEER





NOTES:

1.) OWNER LOT 65–1: D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY
245 N BEND DRIVE
MANCHESTER, NH 03104

OWNER LOT 65–A: EUGENE A. & DONNA L. SGRIGNUOLI
22 SUN HAWK LANE
DOVER, NH 03820

1A.) APPLICANT: STONEARCH DEVELOPMENT CORP.
42J DOVER POINT ROAD
DOVER, NH 03820

2.) LOT OF RECORD: TAX MAP E, LOT 65–1
TAX MAP E, LOT 65–A

3.) LOT AREA LOT 65–1: 1,388,402 Sq. Ft., 31.87 Ac. +/–
LOT AREA LOT 65–A: 546,546 Sq. Ft., 12.49 Ac. +/–

4.) S.C.R.D. BOOK 4918, PAGE 158
S.C.R.D. BOOK 1571, PAGE 8

5.) I HEREBY CERTIFY THAT, TO THE BEST OF MY KNOWLEDGE & BELIEF, A PORTION OF THIS PARCEL DOES FALL WITHIN THE FLOOD PLAIN FLOOD HAZARD. REF.: FEMA COMMUNITY #330145, MAP #33017C0310E, DATED: SEPTEMBER 30, 2015.

6.) VERTICAL DATUM BASED ON NAVD88 ELEVATIONS. HORIZONTAL COORDINATES BASED ON NAD83. COORDINATES GATHERED USING TOPCON HIPER SR SURVEY GRADE GPS RECEIVERS.

7.) THE INTENT OF THIS PLAN IS TO SHOW THE EXISTING WATERSHED CONDITIONS ON TAX MAP E, LOT 65–1 AS OF THE DATE OF THE SURVEY (WINTER, 2021).

8.) SEE EXISTING CONDITIONS PLAN FOR EXPLANATION OF JURISDICTIONAL WETLANDS. SEE SITE SPECIFIC SOIL SURVEY FOR SOILS EXPLANATION. SOILS LEGEND ALSO LOCATED ON SHEET 5 OF 10.

LEGEND:

299 / 100	EXISTING CONTOUR MINOR / EXISTING CONTOUR MAJOR
	STONE WALL
	WETLAND LINE
	PROPERTY LINE
	SOIL LINE
448A	SOIL SERIES
	NRCS SOIL LINE
HfB	NRCS SOIL LABEL
	LIMIT OF WATERSHED
	TIME OF CONCENTRATION PATH
	FLOW REACH
BB	MATCH LINE
S.C.R.D.	STRAFFORD COUNTY REGISTRY OF DEEDS
TYP.	TYPICAL
FND	FOUND
TBR	TO BE REMOVED

SYMBOLS LEGEND:

#	SUBCATCHMENT AREA SYMBOL
#	FLOW REACH SYMBOL
#	POND DEVICE SYMBOL
Tc. / #	TIME OF CONCENTRATION SEGMENT

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

JOHN P. HAYES III, CWS #18 JOHN P. HAYES III, CSS #87

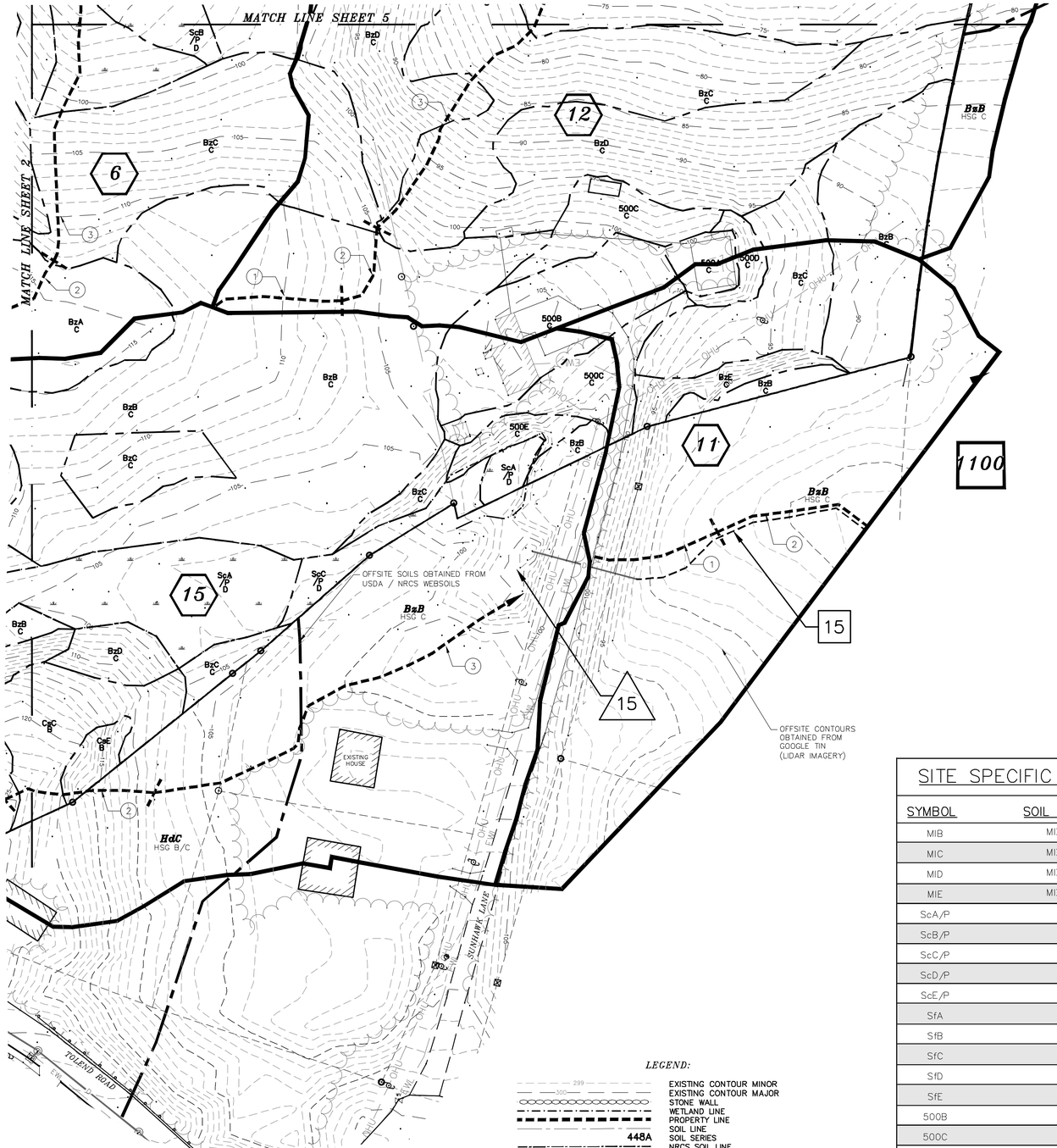
REVISION	DATE	DESCRIPTION

W-1 EXISTING WATERSHED DETAIL – SOUTHWEST
LAND OF
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY &
EUGENE A. & DONNA L. SGTIGNUOLI
TOLEND ROAD
DOVER, N.H.
TAX MAP E, LOT 65–1 & 65–4

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332–2863

SCALE : 1 IN. EQUALS 50 FT.
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 – 107

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14243
LICENSED PROFESSIONAL ENGINEER



NRCS SOILS:

BzB – BUXTON SILT LOAM, 3 TO 8 PERCENT SLOPES, HSG C
HcB – HOLLIS–CHARLTON FINE SANDY LOAMS, 3 TO 8 PERCENT SLOPES, HSG B/C
ScA – SCANTIC SILT LOAM, 0 TO 3 PERCENT SLOPES, HSG D
ScB – SCANTIC SILT LOAM, 3 TO 8 PERCENT SLOPES, HSG D
SfC – SUFFIELD SILT LOAM, 8 TO 15 PERCENT SLOPES, HSG C
SfE – SUFFIELD SILT LOAM, 15 TO 35 PERCENT SLOPES, HSG C

SEE WEBSOIL USDA–NRCS

LEGEND:

299	EXISTING CONTOUR MINOR
300	EXISTING CONTOUR MAJOR
	STONE WALL
	WETLAND LINE
	PROPERTY LINE
	SOIL LINE
448A	SOIL SERIES
HSB	NRCS SOIL LINE
	NRCS SOIL LABEL
	LIMIT OF WATERSHED
	TIME OF CONCENTRATION PATH
	FLOW REACH
	MATCH LINE
S.C.R.D.	STRAFFORD COUNTY REGISTRY OF DEEDS
TYP.	TYPICAL
FND	FOUND
TBR	TO BE REMOVED

SITE SPECIFIC SOILS LEGEND

SYMBOL	SOIL TAXONOMIC NAME	HYDROLOGIC SOIL GROUP
BeB	BIDDEFORD	D
BzA	BUXTON	C
BzB	BUXTON	C
BzC	BUXTON	C
BzD	BUXTON	C
BzE	BUXTON	C
CsB	CHARLTON (VERY STONY)	B
CsC	CHARLTON (VERY STONY)	B
CsD	CHARLTON (VERY STONY)	B
CsE	CHARLTON (VERY STONY)	B
HdA/Rk	HOLLIS–CHARLTON COMPLEX (VERY ROCKY)	B/D
HdB/Rk	HOLLIS–CHARLTON COMPLEX (VERY ROCKY)	B/D
HdC/Rk	HOLLIS–CHARLTON COMPLEX (VERY ROCKY)	B/D
HdD/Rk	HOLLIS–CHARLTON COMPLEX (VERY ROCKY)	B/D
HdE/Rk	HOLLIS–CHARLTON COMPLEX (VERY ROCKY)	B/D
MlB/P	MIXED ALLUVIAL LAND (POORLY DRAINED)	C/D
MlC/P	MIXED ALLUVIAL LAND (POORLY DRAINED)	C/D

SLOPE: A = 0–3% B = 3–8% C = 8–15% D = 15–25% E = 25–50% F = 50%+

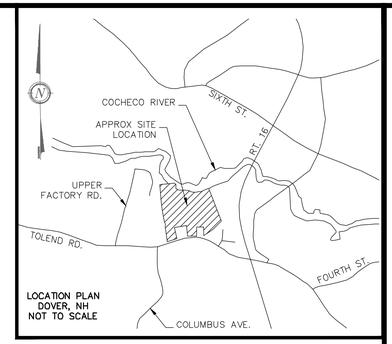
DENOMINATOR: /Rk = ROCKY /VPD = VERY POORLY DRAINED /PD = POORLY DRAINED /SWPD = SOMEWHAT POORLY DRAINED /MWD = MODERATELY WELL DRAINED

SITE SPECIFIC SOILS LEGEND (CONT'D)

SYMBOL	SOIL TAXONOMIC NAME	HYDROLOGIC SOIL GROUP
MlB	MIXED ALLUVIAL LAND	A
MlC	MIXED ALLUVIAL LAND	A
MlD	MIXED ALLUVIAL LAND	A
MlE	MIXED ALLUVIAL LAND	A
ScA/P	SCANTIC	D
ScB/P	SCANTIC	D
ScC/P	SCANTIC	D
ScD/P	SCANTIC	D
ScE/P	SCANTIC	D
SfA	SUFFIELD	C
SfB	SUFFIELD	C
SfC	SUFFIELD	C
SfD	SUFFIELD	C
SfE	SUFFIELD	C
500B	UDORTHENTS	C
500C	UDORTHENTS	C
500D	UDORTHENTS	C
500E	UDORTHENTS	C

SLOPE: A = 0–3% B = 3–8% C = 8–15% D = 15–25% E = 25–50% F = 50%+

DENOMINATOR: /Rk = ROCKY /VPD = VERY POORLY DRAINED /PD = POORLY DRAINED /SWPD = SOMEWHAT POORLY DRAINED /MWD = MODERATELY WELL DRAINED



NOTES:

1.) OWNER LOT 65–1: D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY
245 N BEND DRIVE
MANCHESTER, NH 03104

OWNER LOT 65–A: EUGENE A. & DONNA L. SGRIGNUOLI
22 SUN HAWK LANE
DOVER, NH 03820

1A.) APPLICANT: STONEARCH DEVELOPMENT CORP.
42J DOVER POINT ROAD
DOVER, NH 03820

2.) LOT OF RECORD: TAX MAP E, LOT 65–1
TAX MAP E, LOT 65–A

3.) LOT AREA LOT 65–1: 1,388,402 Sq. Ft., 31.87 Ac. +/–
LOT AREA LOT 65–A: 546,546 Sq. Ft., 12.49 Ac. +/–

4.) S.C.R.D. BOOK 4918, PAGE 158
S.C.R.D. BOOK 1571, PAGE 8

5.) I HEREBY CERTIFY THAT, TO THE BEST OF MY KNOWLEDGE & BELIEF, A PORTION OF THIS PARCEL DOES FALL WITHIN THE FLOOD PLAIN FLOOD HAZARD. REF.: FEMA COMMUNITY #330145, MAP #33017C0310E, DATED: SEPTEMBER 30, 2015.

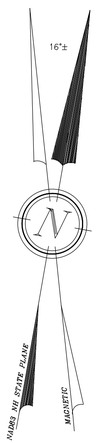
6.) VERTICAL DATUM BASED ON NAVD88 ELEVATIONS. HORIZONTAL COORDINATES BASED ON NAD83. COORDINATES GATHERED USING TOPCON HIPER SR SURVEY GRADE GPS RECEIVERS.

7.) THE INTENT OF THIS PLAN IS TO SHOW THE EXISTING WATERSHED CONDITIONS ON TAX MAP E, LOT 65–1 AS OF THE DATE OF THE SURVEY (WINTER, 2021).

8.) SEE EXISTING CONDITIONS PLAN FOR EXPLANATION OF JURISDICTIONAL WETLANDS. SEE SITE SPECIFIC SOIL SURVEY FOR SOILS EXPLANATION. SOILS LEGEND ALSO LOCATED ON SHEET 5 OF 10.

JOHN P. HAYES III, CWS #18

JOHN P. HAYES III, CSS #87



SYMBOLS LEGEND:

- # — SUBCATCHMENT AREA SYMBOL
- # — FLOW REACH SYMBOL
- # — POND DEVICE SYMBOL
- Tc. — TIME OF CONCENTRATION SEGMENT

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

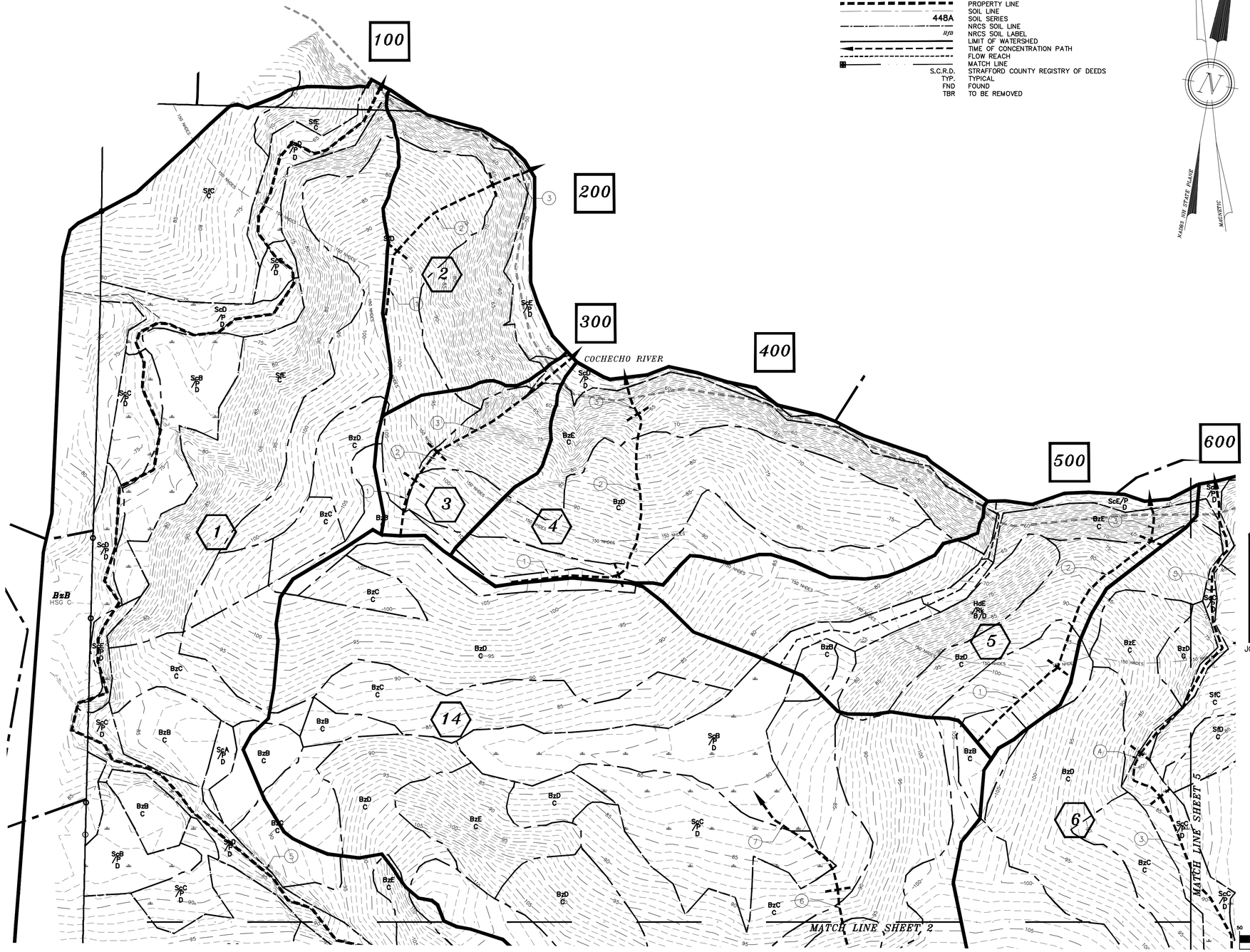
REVISION	DATE	DESCRIPTION

W–1 EXISTING WATERSHED DETAIL – SOUTHEAST
LAND OF
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY &
EUGENE A. & DONNA L. SGTIGNOULI
TOLEND ROAD
DOVER, N.H.
TAX MAP E, LOT 65–1 & 65–4

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332–2863

SCALE : 1 IN. EQUALS 50 FT.
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 – 107

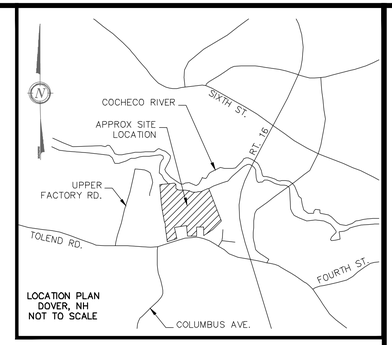
STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14243
LICENSED PROFESSIONAL ENGINEER



LEGEND:

299	EXISTING CONTOUR MINOR
300	EXISTING CONTOUR MAJOR
	STONE WALL
	WETLAND LINE
	PROPERTY LINE
	SOIL LINE
448A	SOIL SERIES
	NRCS SOIL LINE
HfB	NRCS SOIL LABEL
	LIMIT OF WATERSHED
	TIME OF CONCENTRATION PATH
	FLOW REACH
	MATCH LINE
S.C.R.D.	STRAFFORD COUNTY REGISTRY OF DEEDS
TYP.	TYPICAL
FND	FOUND
TBR	TO BE REMOVED

16°± MAGNETIC NORTH AS OF STATE PLANE



LOCATION PLAN
DOVER, NH
NOT TO SCALE

NOTES:

1.) OWNER LOT 65–1: D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY
245 N BEND DRIVE
MANCHESTER, NH 03104

OWNER LOT 65–A: EUGENE A. & DONNA L. SGRIGNUOLI
22 SUN HAWK LANE
DOVER, NH 03820

1A.) APPLICANT: STONEARCH DEVELOPMENT CORP.
42J DOVER POINT ROAD
DOVER, NH 03820

2.) LOT OF RECORD: TAX MAP E, LOT 65–1
TAX MAP E, LOT 65–A

3.) LOT AREA LOT 65–1: 1,388,402 Sq. Ft., 31.87 Ac. +/–
LOT AREA LOT 65–A: 546,546 Sq. Ft., 12.49 Ac. +/–

4.) S.C.R.D. BOOK 4918, PAGE 158
S.C.R.D. BOOK 1571, PAGE 8

5.) I HEREBY CERTIFY THAT, TO THE BEST OF MY KNOWLEDGE & BELIEF, A PORTION OF THIS PARCEL DOES FALL WITHIN THE FLOOD PLAIN FLOOD HAZARD. REF.: FEMA COMMUNITY #330145, MAP #33017C0310E, DATED: SEPTEMBER 30, 2015.

6.) VERTICAL DATUM BASED ON NAVD88 ELEVATIONS. HORIZONTAL COORDINATES BASED ON NAD83. COORDINATES GATHERED USING TOPCON HIPER SR SURVEY GRADE GPS RECEIVERS.

7.) THE INTENT OF THIS PLAN IS TO SHOW THE EXISTING WATERSHED CONDITIONS ON TAX MAP E, LOT 65–1 AS OF THE DATE OF THE SURVEY (MINTER, 2021).

8.) SEE EXISTING CONDITIONS PLAN FOR EXPLANATION OF JURISDICTIONAL WETLANDS. SEE SITE SPECIFIC SOIL SURVEY FOR SOILS EXPLANATION. SOILS LEGEND ALSO LOCATED ON SHEET 5 OF 10.

JOHN P. HAYES III, CWS #18

JOHN P. HAYES III, CSS #87

SYMBOLS LEGEND:

#	SUBCATCHMENT AREA SYMBOL
#	FLOW REACH SYMBOL
#	POND DEVICE SYMBOL
Tc.	TIME OF CONCENTRATION SEGMENT

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

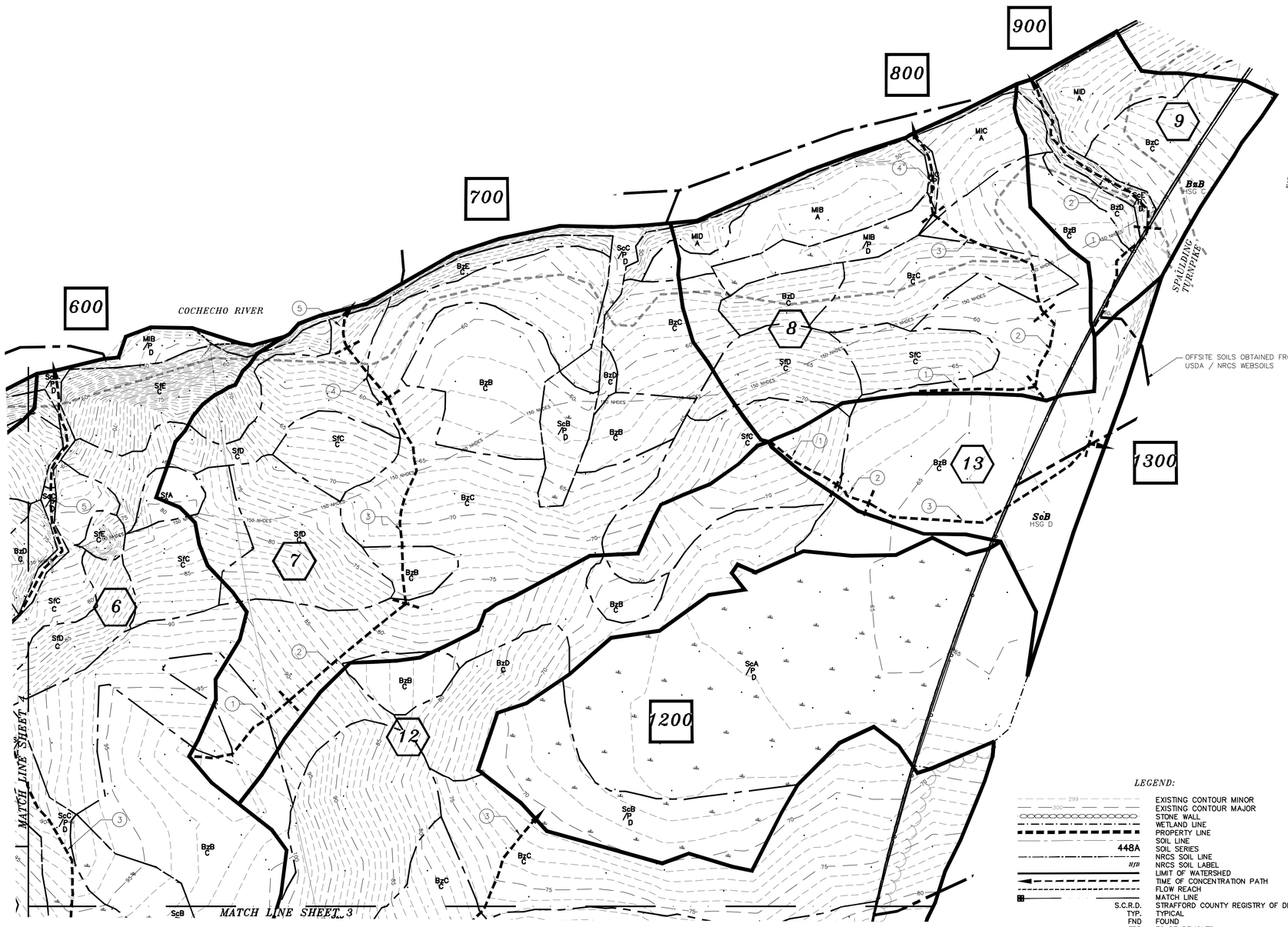
REVISION	DATE	DESCRIPTION

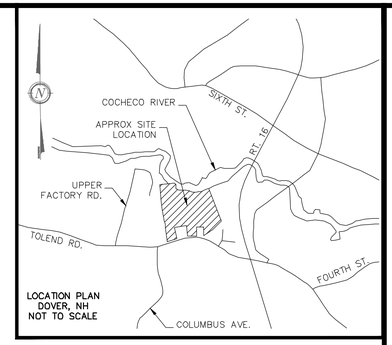
W–1 EXISTING WATERSHED DETAIL – NORTHWEST
LAND OF
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY &
EUGENE A. & DONNA L. SGRIGNUOLI
TOLEND ROAD
DOVER, N.H.
TAX MAP E, LOT 65–1 & 65–A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332–2863

SCALE : 1 IN. EQUALS 50 FT.
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 – 107

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14247
LICENSED PROFESSIONAL ENGINEER





NOTES:

1.) OWNER LOT 65–1: D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY
245 N BEND DRIVE
MANCHESTER, NH 03104

OWNER LOT 65–A: EUGENE A. & DONNA L. SGRIGNUOLI
22 SUN HAWK LANE
DOVER, NH 03820

1A.) APPLICANT: STONEARCH DEVELOPMENT CORP.
42J DOVER POINT ROAD
DOVER, NH 03820

2.) LOT OF RECORD: TAX MAP E, LOT 65–1
TAX MAP E, LOT 65–A

3.) LOT AREA LOT 65–1: 1,388,402 Sq. Ft., 31.87 Ac. +/–
LOT AREA LOT 65–A: 546,546 Sq. Ft., 12.49 Ac. +/–

4.) S.C.R.D. BOOK 4918, PAGE 158
S.C.R.D. BOOK 1571, PAGE 8

5.) I HEREBY CERTIFY THAT, TO THE BEST OF MY KNOWLEDGE & BELIEF, A PORTION OF THIS PARCEL DOES FALL WITHIN THE FLOOD PLAIN FLOOD HAZARD. REF.: FEMA COMMUNITY #330145, MAP #33017C0310E, DATED: SEPTEMBER 30, 2015.

6.) VERTICAL DATUM BASED ON NAVD88 ELEVATIONS. HORIZONTAL COORDINATES BASED ON NAD83. COORDINATES GATHERED USING TOPCON HIPER SR SURVEY GRADE GPS RECEIVERS.

7.) THE INTENT OF THIS PLAN IS TO SHOW THE EXISTING WATERSHED CONDITIONS ON TAX MAP E, LOT 65–1 AS OF THE DATE OF THE SURVEY (WINTER, 2021).

8.) SEE EXISTING CONDITIONS PLAN FOR EXPLANATION OF JURISDICTIONAL WETLANDS. SEE SITE SPECIFIC SOIL SURVEY FOR SOILS EXPLANATION. SOILS LEGEND ALSO LOCATED ON SHEET 10 OF 10.

JOHN P. HAYES III, CWS #18

JOHN P. HAYES III, CSS #87

LEGEND:

299	EXISTING CONTOUR MINOR
300	EXISTING CONTOUR MAJOR
	STONE WALL
	WETLAND LINE
	PROPERTY LINE
	SOIL LINE
448A	SOIL SERIES
MIB	NRCS SOIL LINE
	NRCS SOIL LABEL
	LIMIT OF WATERSHED
	TIME OF CONCENTRATION PATH
	FLOW REACH
	MATCH LINE
S.C.R.D.	STRAFFORD COUNTY REGISTRY OF DEEDS
TYP.	TYPICAL
FND	FOUND
TBR	TO BE REMOVED

SYMBOLS LEGEND:

SUBCATCHMENT AREA SYMBOL

FLOW REACH SYMBOL

POND DEVICE SYMBOL

TIME OF CONCENTRATION SEGMENT

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

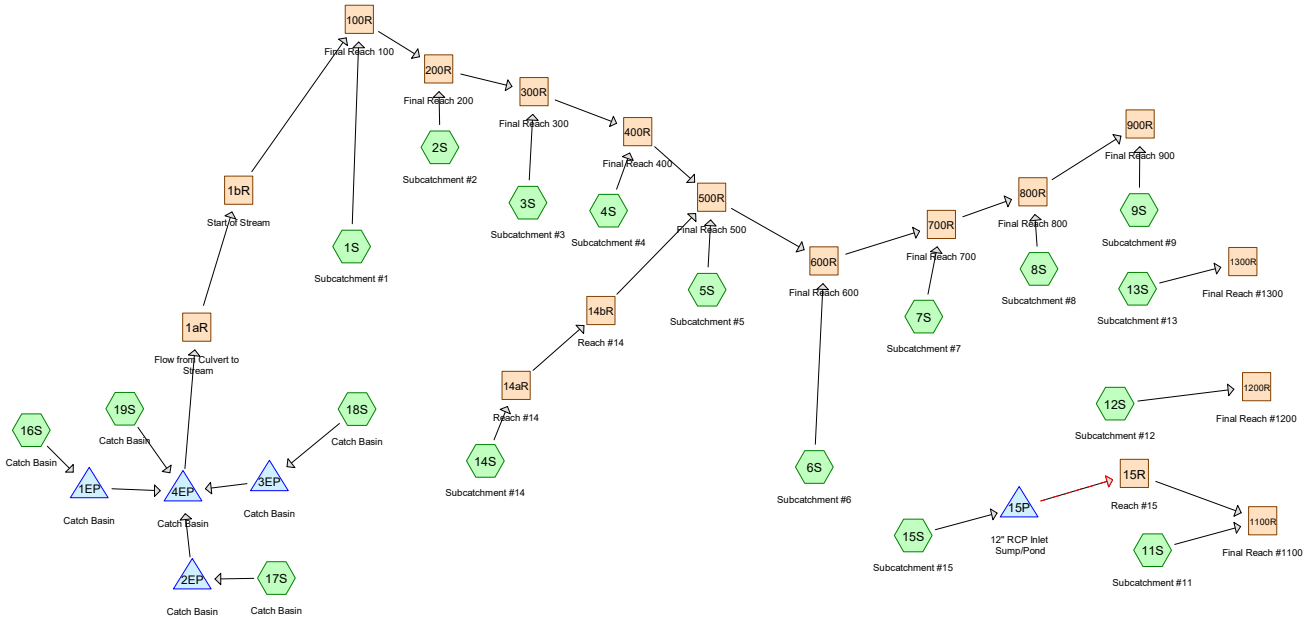
REVISION	DATE	DESCRIPTION

W–1 EXISTING WATERSHED DETAIL – NORTHEAST
LAND OF
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY &
EUGENE A. & DONNA L. SGRIGNUOLI
TOLEND ROAD
DOVER, N.H.
TAX MAP E, LOT 65–1 & 65–A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332–2863

SCALE : 1 IN. EQUALS 50 FT.
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 – 107

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14047
PROFESSIONAL ENGINEER



Subcat Reach Pond Link

Routing Diagram for 20-107 Existing Analysis

Prepared by Berry Surveying & Engineering, Printed 2/11/2022

HydroCAD® 10.00-25 s/n 10221 © 2019 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.557	61	>75% Grass cover, Good, HSG B (1S, 14S, 15S, 16S, 17S, 18S, 19S)
1.684	74	>75% Grass cover, Good, HSG C (1S, 11S, 12S, 15S, 16S, 17S, 18S, 19S)
0.136	80	>75% Grass cover, Good, HSG D (12S)
0.011	96	Gravel surface, HSG C (15S)
0.133	98	Paved parking, HSG B (1S, 15S, 16S, 17S, 18S, 19S)
0.267	98	Paved parking, HSG C (1S, 12S, 15S, 16S, 17S, 18S, 19S)
0.056	98	Roofs, HSG B (1S, 15S)
0.121	98	Roofs, HSG C (1S, 12S, 15S)
0.095	98	Unconnected pavement, HSG C (11S)
0.579	30	Woods, Good, HSG A (7S, 8S, 9S)
3.908	55	Woods, Good, HSG B (1S, 5S, 6S, 14S, 15S)
36.045	70	Woods, Good, HSG C (1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 11S, 12S, 13S, 14S, 15S)
7.809	77	Woods, Good, HSG D (1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 12S, 13S, 14S, 15S)
51.401	**70**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.579	HSG A	7S, 8S, 9S
4.653	HSG B	1S, 5S, 6S, 14S, 15S, 16S, 17S, 18S, 19S
38.224	HSG C	1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 11S, 12S, 13S, 14S, 15S, 16S, 17S, 18S, 19S
7.945	HSG D	1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 12S, 13S, 14S, 15S
0.000	Other	
51.401		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.557	1.684	0.136	0.000	2.377	>75% Grass cover, Good	1S, 11S, 12S, 14S, 15S, 16S, 17S, 18S, 19S
0.000	0.000	0.011	0.000	0.000	0.011	Gravel surface	15S
0.000	0.133	0.267	0.000	0.000	0.400	Paved parking	1S, 12S, 15S, 16S, 17S, 18S, 19S
0.000	0.056	0.121	0.000	0.000	0.177	Roofs	1S, 12S, 15S
0.000	0.000	0.095	0.000	0.000	0.095	Unconnected pavement	11S
0.579	3.908	36.045	7.809	0.000	48.341	Woods, Good	1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 11S, 12S, 13S, 14S, 15S
0.579	**4.653**	**38.224**	**7.945**	**0.000**	**51.401**	**TOTAL AREA**	

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	1EP	137.94	137.70	48.0	0.0050	0.012	12.0	0.0	0.0
2	2EP	137.74	137.70	8.3	0.0048	0.012	12.0	0.0	0.0
3	3EP	138.47	137.70	153.7	0.0050	0.012	12.0	0.0	0.0
4	4EP	136.70	136.39	61.5	0.0050	0.012	24.0	0.0	0.0
5	15P	92.91	90.32	84.3	0.0307	0.012	12.0	0.0	0.0

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Subcatchment #1 Runoff Area=616,631 sf 0.96% Impervious Runoff Depth>3.49"
Flow Length=2,050' Tc=25.3 min CN=70 Runoff=35.41 cfs 4.120 af

Subcatchment 2S: Subcatchment #2 Runoff Area=33,802 sf 0.00% Impervious Runoff Depth>3.61"
Flow Length=215' Tc=8.3 min CN=71 Runoff=2.99 cfs 0.233 af

Subcatchment 3S: Subcatchment #3 Runoff Area=19,435 sf 0.00% Impervious Runoff Depth>3.51"
Flow Length=240' Tc=7.0 min CN=70 Runoff=1.75 cfs 0.130 af

Subcatchment 4S: Subcatchment #4 Runoff Area=64,929 sf 0.00% Impervious Runoff Depth>3.50"
Flow Length=293' Tc=14.1 min CN=70 Runoff=4.71 cfs 0.435 af

Subcatchment 5S: Subcatchment #5 Runoff Area=59,177 sf 0.00% Impervious Runoff Depth>3.61"
Flow Length=289' Tc=12.4 min CN=71 Runoff=4.64 cfs 0.408 af

Subcatchment 6S: Subcatchment #6 Runoff Area=232,739 sf 0.00% Impervious Runoff Depth>3.59"
Flow Length=927' Tc=27.5 min CN=71 Runoff=13.27 cfs 1.600 af

Subcatchment 7S: Subcatchment #7 Runoff Area=133,394 sf 0.00% Impervious Runoff Depth>3.50"
Flow Length=505' Tc=16.0 min CN=70 Runoff=9.25 cfs 0.893 af

Subcatchment 8S: Subcatchment #8 Runoff Area=69,837 sf 0.00% Impervious Runoff Depth>2.60"
Flow Length=381' Tc=18.1 min CN=61 Runoff=3.33 cfs 0.347 af

Subcatchment 9S: Subcatchment #9 Runoff Area=30,235 sf 0.00% Impervious Runoff Depth>2.60"
Flow Length=273' Tc=13.9 min CN=61 Runoff=1.59 cfs 0.150 af

Subcatchment 11S: Subcatchment #11 Runoff Area=93,998 sf 4.40% Impervious Runoff Depth>3.61"
Flow Length=226' Tc=12.7 min CN=71 Runoff=7.27 cfs 0.648 af

Subcatchment 12S: Subcatchment #12 Runoff Area=215,562 sf 0.67% Impervious Runoff Depth>3.60"
Flow Length=462' Tc=17.7 min CN=71 Runoff=14.78 cfs 1.485 af

Subcatchment 13S: Subcatchment #13 Runoff Area=33,510 sf 0.00% Impervious Runoff Depth>3.60"
Flow Length=329' Tc=18.6 min CN=71 Runoff=2.26 cfs 0.231 af

Subcatchment 14S: Subcatchment #14 Runoff Area=347,062 sf 0.00% Impervious Runoff Depth>3.49"
Flow Length=805' Tc=29.5 min CN=70 Runoff=18.61 cfs 2.317 af

Subcatchment 15S: Subcatchment #15 Runoff Area=279,874 sf 4.36% Impervious Runoff Depth>3.39"
Flow Length=553' Tc=23.7 min CN=69 Runoff=15.99 cfs 1.816 af

Subcatchment 16S: Catch Basin Runoff Area=459 sf 45.75% Impervious Runoff Depth>4.68"
Tc=6.0 min CN=81 Runoff=0.06 cfs 0.004 af

Subcatchment 17S: Catch Basin Runoff Area=2,300 sf 9.70% Impervious Runoff Depth>3.51"
Tc=6.0 min CN=70 Runoff=0.21 cfs 0.015 af

Subcatchment 18S: Catch Basin Runoff Area=5,195 sf 84.79% Impervious Runoff Depth>6.04"
Tc=6.0 min CN=93 Runoff=0.76 cfs 0.060 af

Subcatchment 19S: Catch Basin Runoff Area=880 sf 88.86% Impervious Runoff Depth>6.27"
Tc=6.0 min CN=95 Runoff=0.13 cfs 0.011 af

Reach 1aR: Flow from Culvert to Stream Avg. Flow Depth=0.12' Max Vel=1.73 fps Inflow=1.16 cfs 0.090 af
n=0.035 L=655.5' S=0.0506 '/' Capacity=22.92 cfs Outflow=0.96 cfs 0.090 af

Reach 1bR: Start of Stream Avg. Flow Depth=0.13' Max Vel=1.91 fps Inflow=0.96 cfs 0.090 af
n=0.035 L=1,438.0' S=0.0351 '/' Capacity=6.96 cfs Outflow=0.74 cfs 0.089 af

Reach 14aR: Reach #14 Avg. Flow Depth=0.72' Max Vel=4.56 fps Inflow=18.61 cfs 2.317 af
n=0.035 L=190.2' S=0.0315 '/' Capacity=37.71 cfs Outflow=18.59 cfs 2.315 af

Reach 14bR: Reach #14 Avg. Flow Depth=0.45' Max Vel=9.24 fps Inflow=18.59 cfs 2.315 af
n=0.035 L=93.6' S=0.2404 '/' Capacity=104.10 cfs Outflow=18.59 cfs 2.315 af

Reach 15R: Reach #15 Avg. Flow Depth=0.34' Max Vel=2.93 fps Inflow=8.20 cfs 1.815 af
n=0.035 L=198.0' S=0.0344 '/' Capacity=18.90 cfs Outflow=8.20 cfs 1.814 af

Reach 100R: Final Reach 100 Inflow=36.09 cfs 4.208 af
Outflow=36.09 cfs 4.208 af

Reach 200R: Final Reach 200 Inflow=37.51 cfs 4.442 af
Outflow=37.51 cfs 4.442 af

Reach 300R: Final Reach 300 Inflow=38.27 cfs 4.572 af
Outflow=38.27 cfs 4.572 af

Reach 400R: Final Reach 400 Inflow=41.78 cfs 5.007 af
Outflow=41.78 cfs 5.007 af

Reach 500R: Final Reach 500 Inflow=62.49 cfs 7.730 af
Outflow=62.49 cfs 7.730 af

Reach 600R: Final Reach 600 Inflow=75.68 cfs 9.331 af
Outflow=75.68 cfs 9.331 af

Reach 700R: Final Reach 700 Inflow=83.09 cfs 10.224 af
Outflow=83.09 cfs 10.224 af

Reach 800R: Final Reach 800 Inflow=86.16 cfs 10.571 af
Outflow=86.16 cfs 10.571 af

Reach 900R: Final Reach 900 Inflow=87.39 cfs 10.721 af
Outflow=87.39 cfs 10.721 af

Reach 1100R: Final Reach #1100 Inflow=13.37 cfs 2.462 af
Outflow=13.37 cfs 2.462 af

Reach 1200R: Final Reach #1200 Inflow=14.78 cfs 1.485 af
Outflow=14.78 cfs 1.485 af

Reach 1300R: Final Reach #1300 Inflow=2.26 cfs 0.231 af
Outflow=2.26 cfs 0.231 af

Pond 1EP: Catch Basin Peak Elev=138.07' Storage=2 cf Inflow=0.06 cfs 0.004 af
12.0" Round Culvert n=0.012 L=48.0' S=0.0050 '/' Outflow=0.06 cfs 0.004 af

Pond 2EP: Catch Basin Peak Elev=138.01' Storage=3 cf Inflow=0.21 cfs 0.015 af
12.0" Round Culvert n=0.012 L=8.3' S=0.0048 '/' Outflow=0.21 cfs 0.015 af

Pond 3EP: Catch Basin Peak Elev=138.96' Storage=6 cf Inflow=0.76 cfs 0.060 af
12.0" Round Culvert n=0.012 L=153.7' S=0.0050 '/' Outflow=0.76 cfs 0.060 af

Pond 4EP: Catch Basin Peak Elev=137.20' Storage=6 cf Inflow=1.16 cfs 0.090 af
24.0" Round Culvert n=0.012 L=61.5' S=0.0050 '/' Outflow=1.16 cfs 0.090 af

Pond 15P: 12" RCP Inlet Sump/Pond Peak Elev=98.12' Storage=12,599 cf Inflow=15.99 cfs 1.816 af
Primary=8.20 cfs 1.815 af Secondary=0.00 cfs 0.000 af Outflow=8.20 cfs 1.815 af

Total Runoff Area = 51.401 ac Runoff Volume = 14.904 af Average Runoff Depth = 3.48"
98.69% Pervious = 50.728 ac 1.31% Impervious = 0.672 ac

Summary for Subcatchment 1S: Subcatchment #1

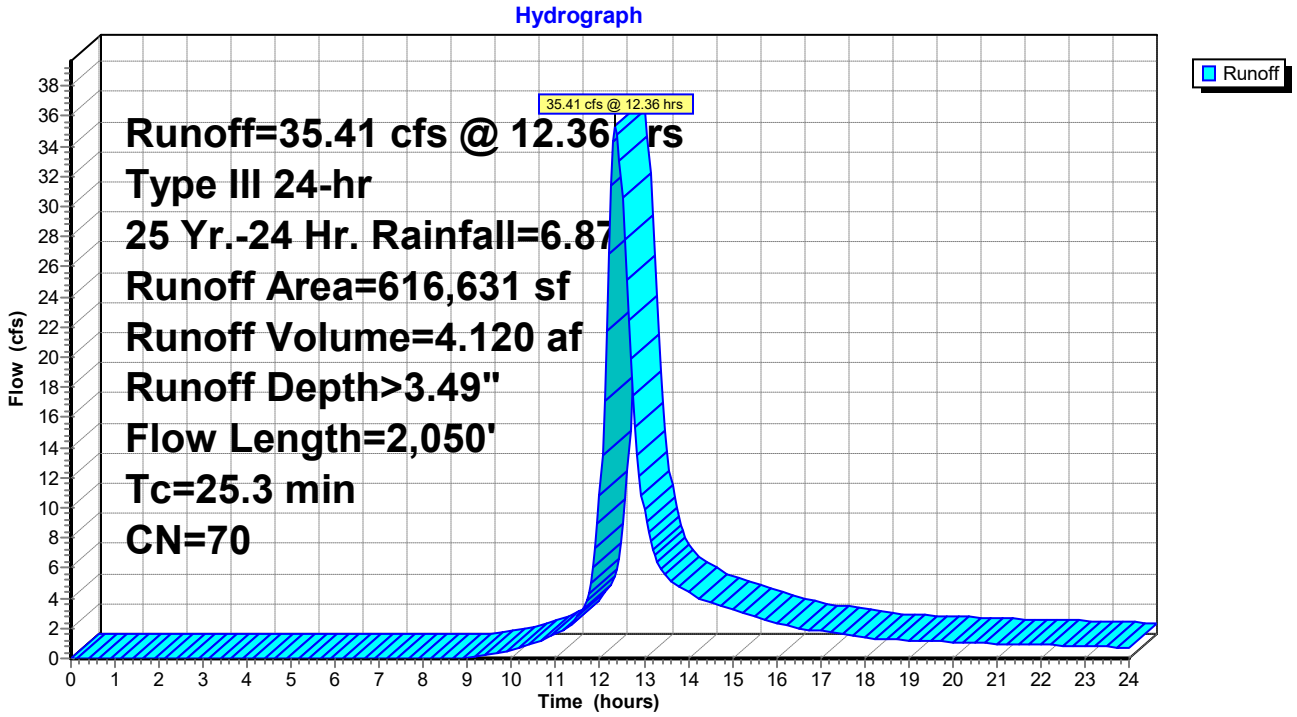
Runoff = 35.41 cfs @ 12.36 hrs, Volume= 4.120 af, Depth> 3.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Yr.-24 Hr. Rainfall=6.87"

Area (sf)	CN	Description
8,381	74	>75% Grass cover, Good, HSG C
8,381	61	>75% Grass cover, Good, HSG B
2,012	98	Paved parking, HSG C
2,012	98	Paved parking, HSG B
936	98	Roofs, HSG C
936	98	Roofs, HSG B
59,956	55	Woods, Good, HSG B
402,659	70	Woods, Good, HSG C
131,358	77	Woods, Good, HSG D
616,631	70	Weighted Average
610,735		99.04% Pervious Area
5,896		0.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	60	0.1500	0.17		**Sheet Flow, Segment #1** Woods: Light underbrush n= 0.400 P2= 3.61"
5.7	40	0.0750	0.12		**Sheet Flow, Segment #2** Woods: Light underbrush n= 0.400 P2= 3.61"
0.1	20	0.2500	2.50		**Shallow Concentrated Flow, Segment #3** Woodland Kv= 5.0 fps
7.9	492	0.0427	1.03		**Shallow Concentrated Flow, Segment #4** Woodland Kv= 5.0 fps
5.6	1,438	0.0351	4.28	6.95	**Trap/Vee/Rect Channel Flow, Segment #5** Bot.W=3.00' D=0.50' Z= 0.5 '/' Top.W=3.50' n= 0.035 Earth, dense weeds
25.3	2,050	Total			

Subcatchment 1S: Subcatchment #1



Summary for Subcatchment 2S: Subcatchment #2

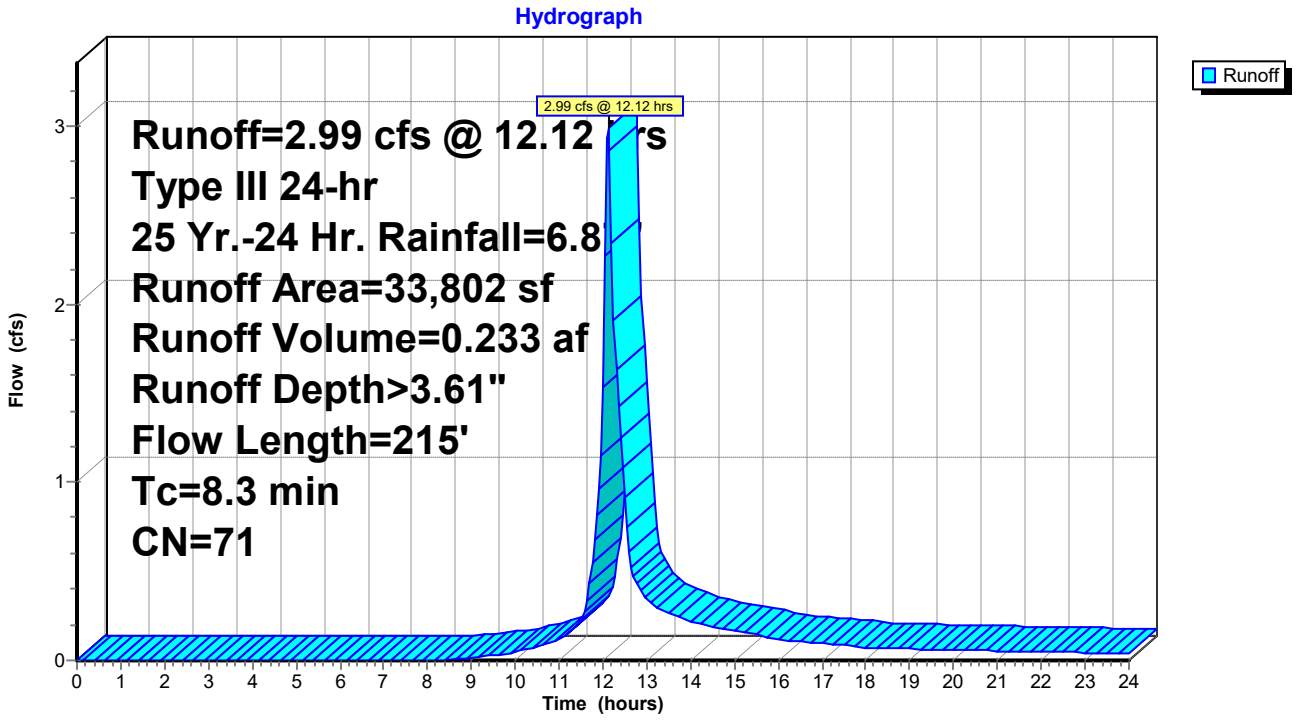
Runoff = 2.99 cfs @ 12.12 hrs, Volume= 0.233 af, Depth> 3.61"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Yr.-24 Hr. Rainfall=6.87"

Area (sf)	CN	Description
29,699	70	Woods, Good, HSG C
4,103	77	Woods, Good, HSG D
33,802	71	Weighted Average
33,802		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	69	0.1159	0.15		**Sheet Flow, Segment #1** Woods: Light underbrush n= 0.400 P2= 3.61"
0.7	109	0.2477	2.49		**Shallow Concentrated Flow, Segment #2** Woodland Kv= 5.0 fps
0.2	37	0.4852	3.48		**Shallow Concentrated Flow, Segment #3** Woodland Kv= 5.0 fps
8.3	215	Total			

Subcatchment 2S: Subcatchment #2



Summary for Subcatchment 3S: Subcatchment #3

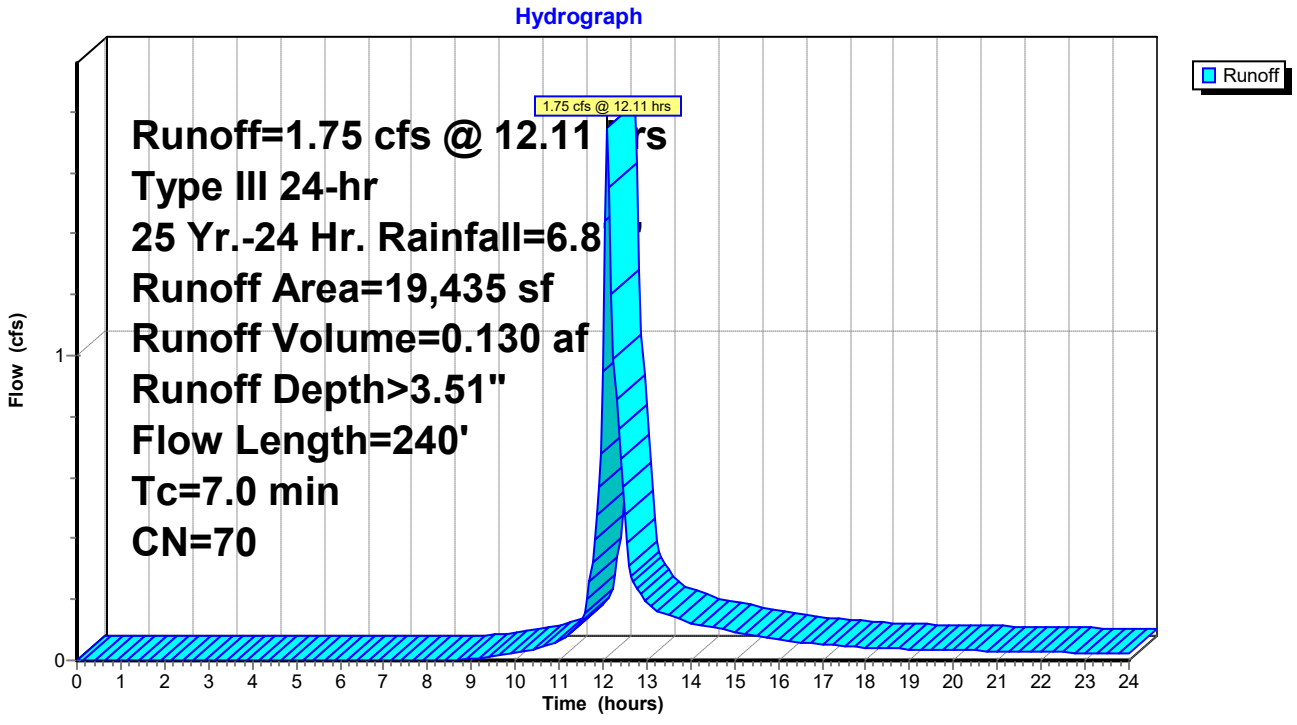
Runoff = 1.75 cfs @ 12.11 hrs, Volume= 0.130 af, Depth> 3.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Yr.-24 Hr. Rainfall=6.87"

Area (sf)	CN	Description
18,831	70	Woods, Good, HSG C
604	77	Woods, Good, HSG D
19,435	70	Weighted Average
19,435		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.9	53	0.1226	0.15		**Sheet Flow, Segment #1** Woods: Light underbrush n= 0.400 P2= 3.61"
0.2	33	0.2406	2.45		**Shallow Concentrated Flow, Segment #2** Woodland Kv= 5.0 fps
0.9	154	0.3052	2.76		**Shallow Concentrated Flow, Segment #3** Woodland Kv= 5.0 fps
7.0	240	Total			

Subcatchment 3S: Subcatchment #3



Summary for Subcatchment 4S: Subcatchment #4

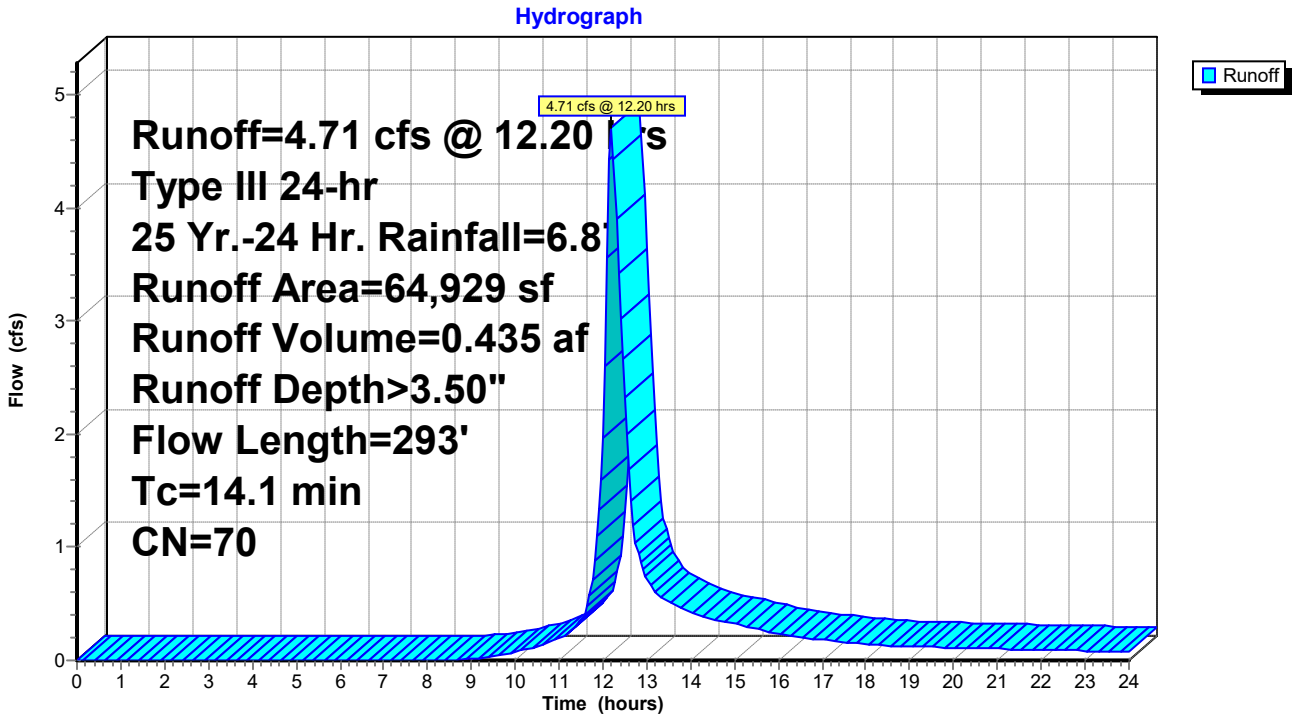
Runoff = 4.71 cfs @ 12.20 hrs, Volume= 0.435 af, Depth> 3.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Yr.-24 Hr. Rainfall=6.87"

Area (sf)	CN	Description
61,644	70	Woods, Good, HSG C
3,285	77	Woods, Good, HSG D
64,929	70	Weighted Average
64,929		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.8	100	0.0625	0.13		**Sheet Flow, Segment #1** Woods: Light underbrush n= 0.400 P2= 3.61"
1.1	157	0.2299	2.40		**Shallow Concentrated Flow, Segment #2** Woodland Kv= 5.0 fps
0.2	36	0.4049	3.18		**Shallow Concentrated Flow, Segment #3** Woodland Kv= 5.0 fps
14.1	293	Total			

Subcatchment 4S: Subcatchment #4



Summary for Subcatchment 5S: Subcatchment #5

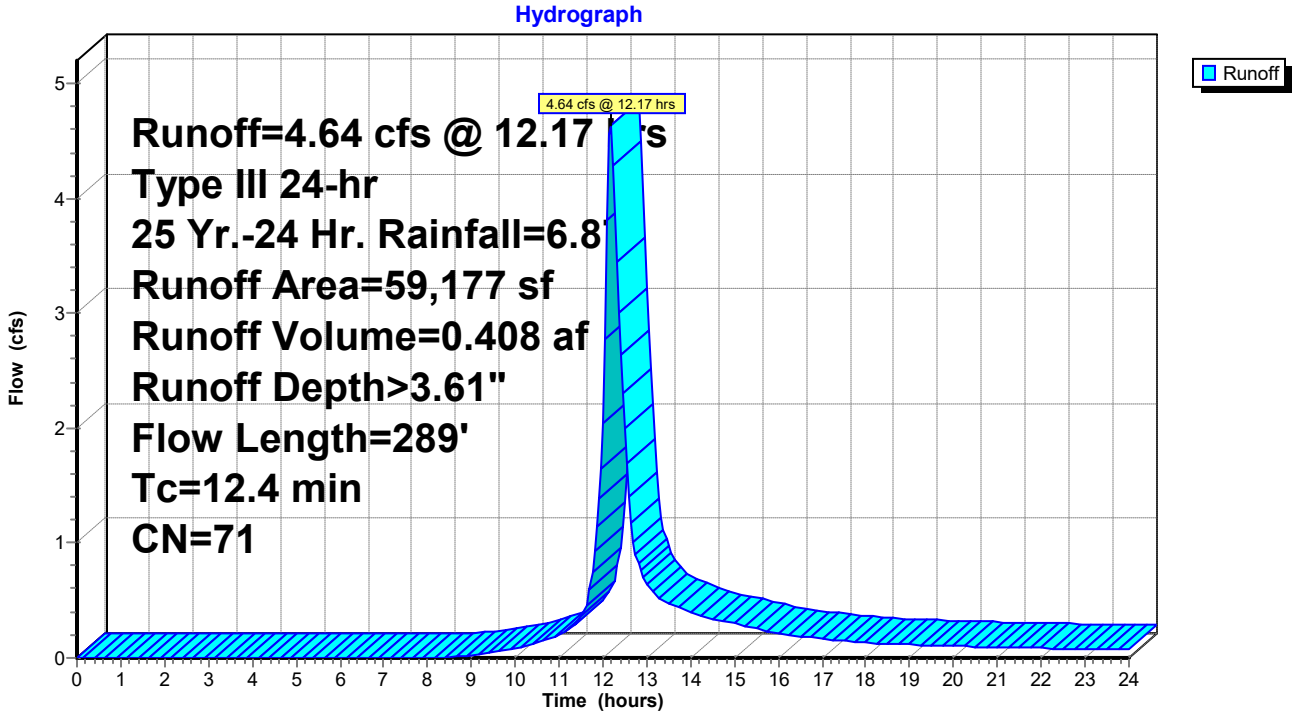
Runoff = 4.64 cfs @ 12.17 hrs, Volume= 0.408 af, Depth> 3.61"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Yr.-24 Hr. Rainfall=6.87"

Area (sf)	CN	Description
3,004	55	Woods, Good, HSG B
42,428	70	Woods, Good, HSG C
13,745	77	Woods, Good, HSG D
59,177	71	Weighted Average
59,177		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.0	100	0.0925	0.15		**Sheet Flow, Segment #1** Woods: Light underbrush n= 0.400 P2= 3.61"
1.2	151	0.1884	2.17		**Shallow Concentrated Flow, Segment #2** Woodland Kv= 5.0 fps
0.2	38	0.5907	3.84		**Shallow Concentrated Flow, Segment #3** Woodland Kv= 5.0 fps
12.4	289	Total			

Subcatchment 5S: Subcatchment #5



Summary for Subcatchment 6S: Subcatchment #6

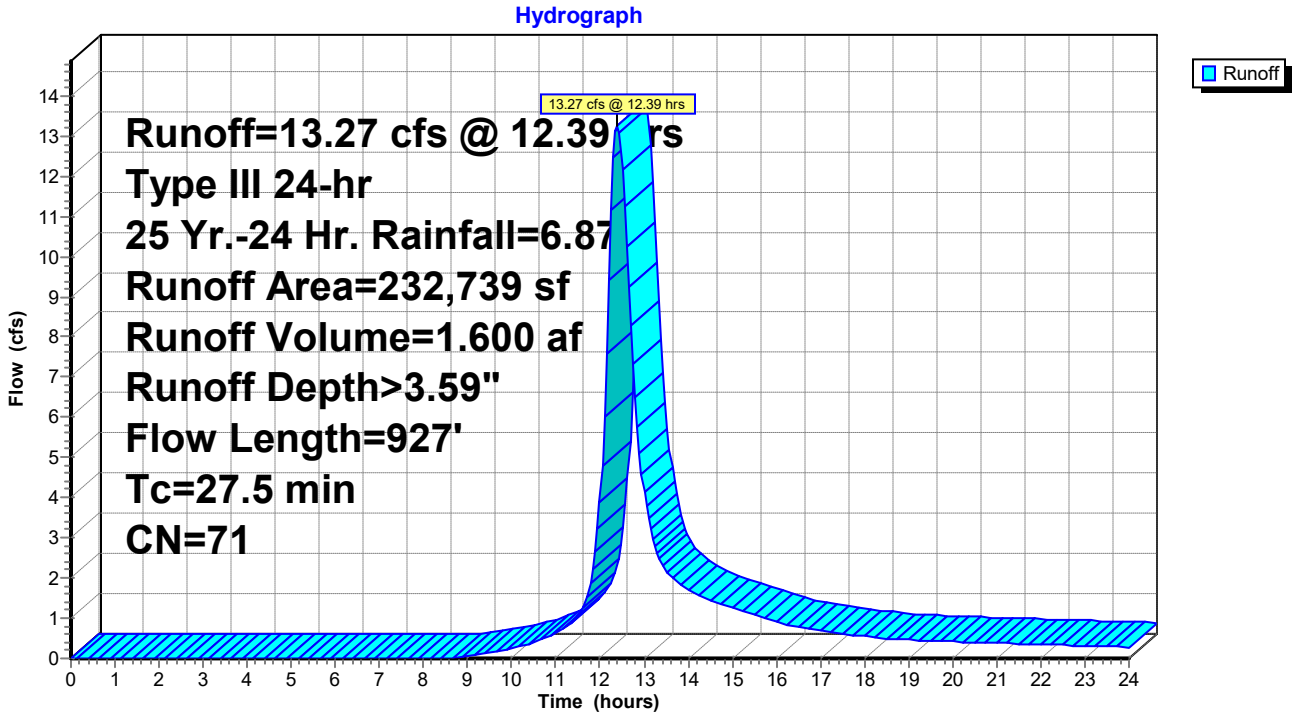
Runoff = 13.27 cfs @ 12.39 hrs, Volume= 1.600 af, Depth> 3.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Yr.-24 Hr. Rainfall=6.87"

Area (sf)	CN	Description
5,898	55	Woods, Good, HSG B
191,340	70	Woods, Good, HSG C
35,501	77	Woods, Good, HSG D
232,739	71	Weighted Average
232,739		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.2	100	0.0300	0.10		**Sheet Flow, Segment #1** Woods: Light underbrush n= 0.400 P2= 3.61"
2.4	110	0.0228	0.75		**Shallow Concentrated Flow, Segment #2** Woodland Kv= 5.0 fps
4.4	374	0.0803	1.42		**Shallow Concentrated Flow, Segment #3** Woodland Kv= 5.0 fps
0.6	56	0.0887	1.49		**Shallow Concentrated Flow, Segment #4** Woodland Kv= 5.0 fps
2.9	287	0.1125	1.68		**Shallow Concentrated Flow, Segment #5** Woodland Kv= 5.0 fps
27.5	927	Total			

Subcatchment 6S: Subcatchment #6



Summary for Subcatchment 7S: Subcatchment #7

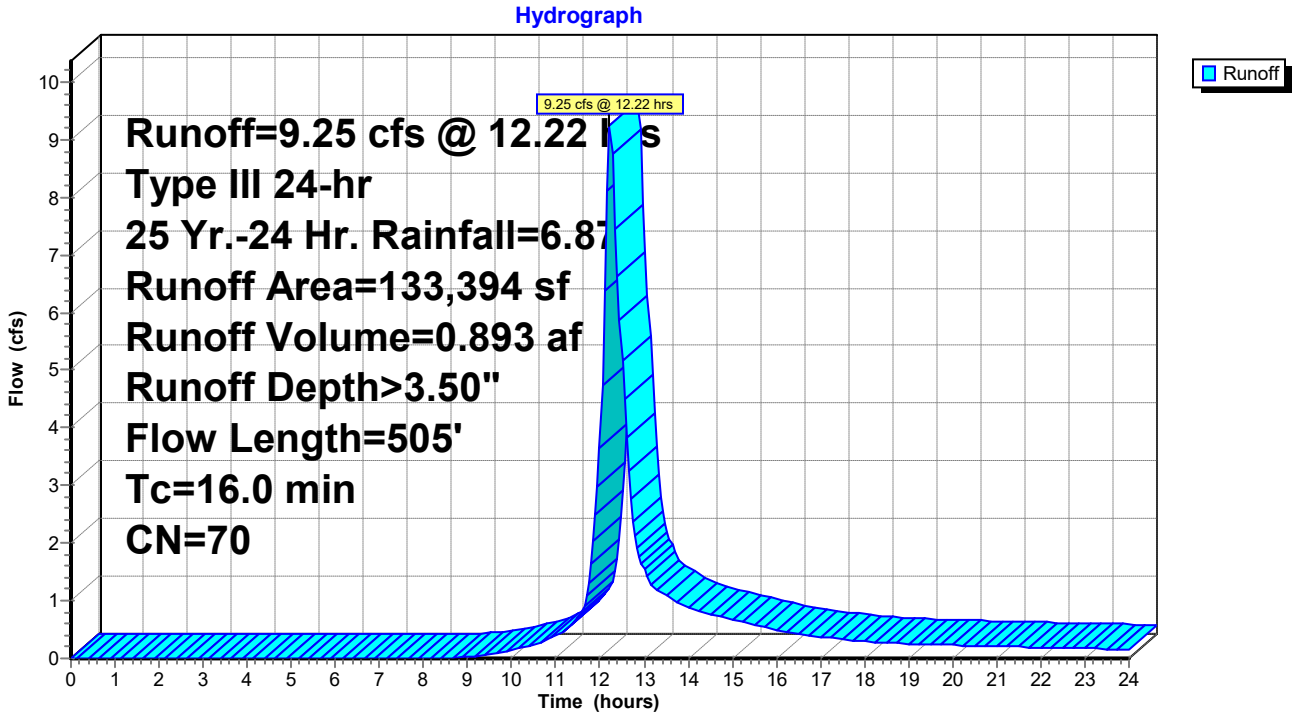
Runoff = 9.25 cfs @ 12.22 hrs, Volume= 0.893 af, Depth> 3.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Yr.-24 Hr. Rainfall=6.87"

Area (sf)	CN	Description
1,591	30	Woods, Good, HSG A
123,735	70	Woods, Good, HSG C
8,068	77	Woods, Good, HSG D
133,394	70	Weighted Average
133,394		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.9	100	0.0750	0.14		**Sheet Flow, Segment #1** Woods: Light underbrush n= 0.400 P2= 3.61"
1.2	131	0.1226	1.75		**Shallow Concentrated Flow, Segment #2** Woodland Kv= 5.0 fps
2.0	185	0.0917	1.51		**Shallow Concentrated Flow, Segment #3** Woodland Kv= 5.0 fps
0.7	55	0.0721	1.34		**Shallow Concentrated Flow, Segment #4** Woodland Kv= 5.0 fps
0.2	34	0.2640	2.57		**Shallow Concentrated Flow, Segment #5** Woodland Kv= 5.0 fps
16.0	505	Total			

Subcatchment 7S: Subcatchment #7



Summary for Subcatchment 8S: Subcatchment #8

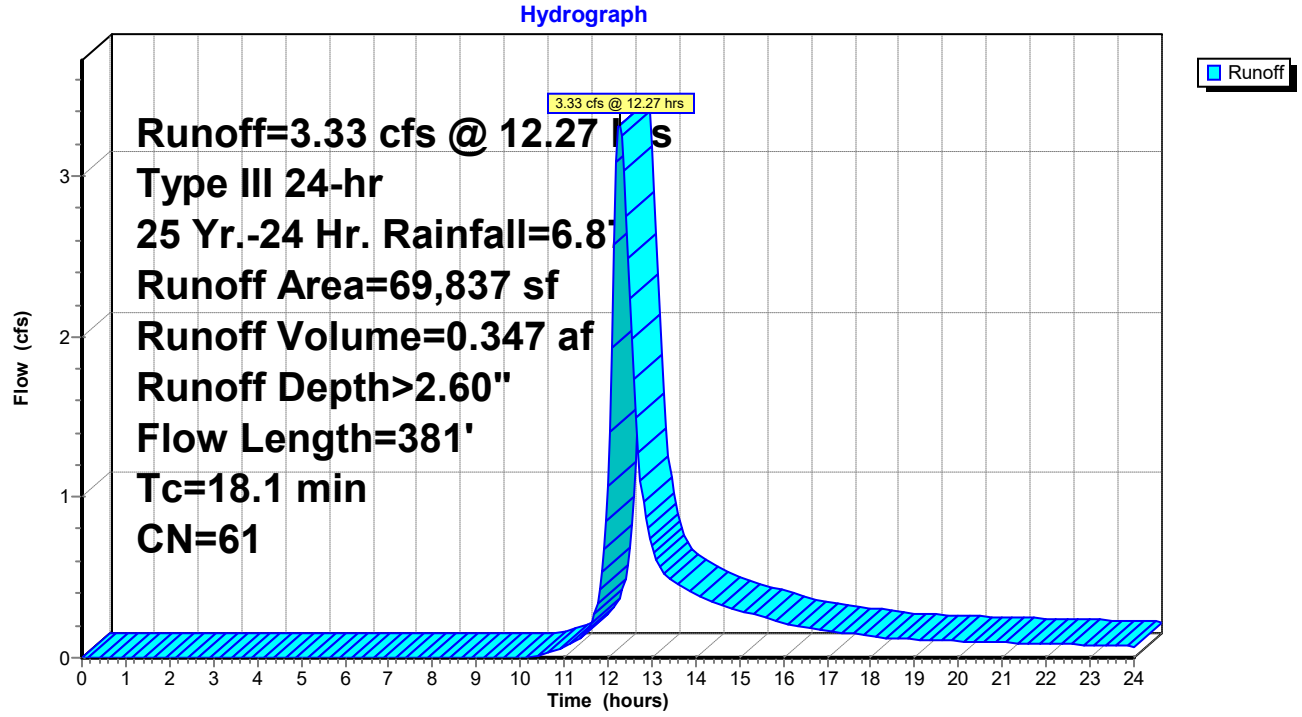
Runoff = 3.33 cfs @ 12.27 hrs, Volume= 0.347 af, Depth> 2.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Yr.-24 Hr. Rainfall=6.87"

Area (sf)	CN	Description
16,548	30	Woods, Good, HSG A
47,189	70	Woods, Good, HSG C
6,100	77	Woods, Good, HSG D
69,837	61	Weighted Average
69,837		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.3	100	0.0475	0.12		**Sheet Flow, Segment #1** Woods: Light underbrush n= 0.400 P2= 3.61"
1.1	70	0.0429	1.04		**Shallow Concentrated Flow, Segment #2** Woodland Kv= 5.0 fps
1.9	139	0.0612	1.24		**Shallow Concentrated Flow, Segment #3** Woodland Kv= 5.0 fps
0.8	72	0.0900	1.50		**Shallow Concentrated Flow, Segment #4** Woodland Kv= 5.0 fps
18.1	381	Total			

Subcatchment 8S: Subcatchment #8



Summary for Subcatchment 9S: Subcatchment #9

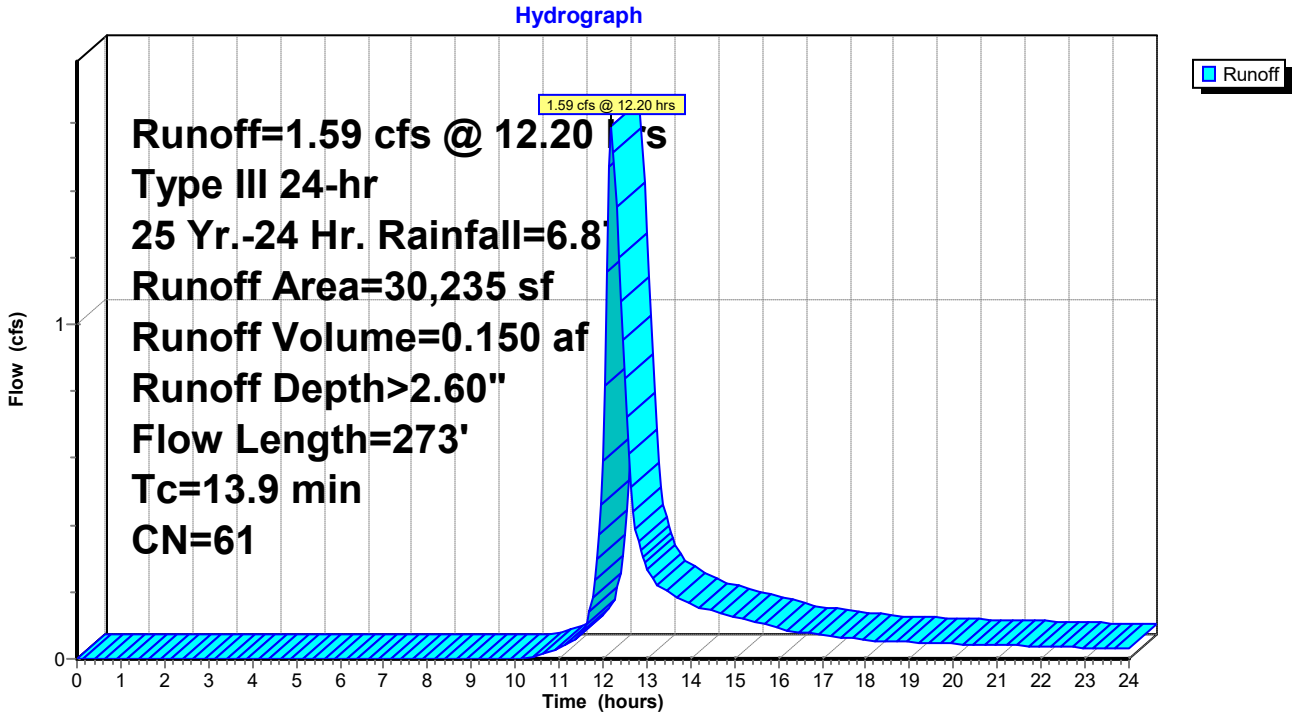
Runoff = 1.59 cfs @ 12.20 hrs, Volume= 0.150 af, Depth> 2.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Yr.-24 Hr. Rainfall=6.87"

Area (sf)	CN	Description
7,072	30	Woods, Good, HSG A
20,587	70	Woods, Good, HSG C
2,576	77	Woods, Good, HSG D
30,235	61	Weighted Average
30,235		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.0	100	0.0925	0.15		**Sheet Flow, Segment #1** Woods: Light underbrush n= 0.400 P2= 3.61"
2.9	173	0.0404	1.00		**Shallow Concentrated Flow, Segment #2** Woodland Kv= 5.0 fps
13.9	273	Total			

Subcatchment 9S: Subcatchment #9



Summary for Subcatchment 11S: Subcatchment #11

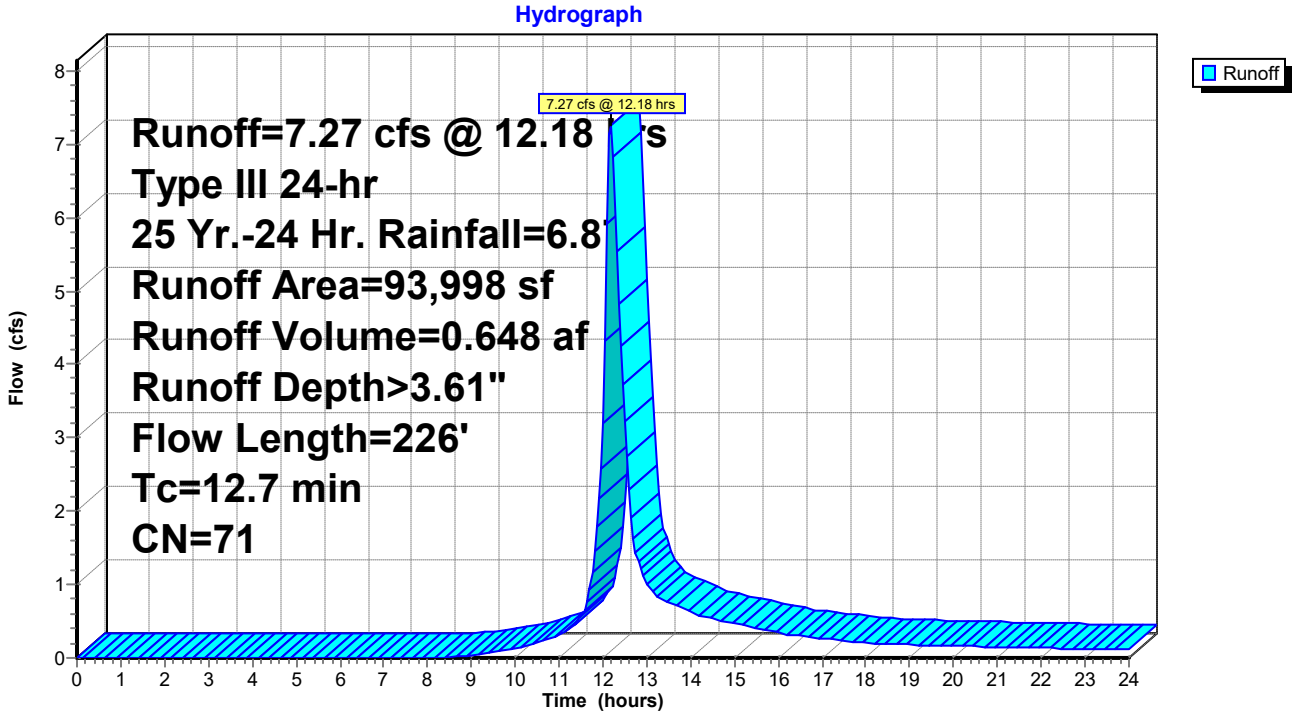
Runoff = 7.27 cfs @ 12.18 hrs, Volume= 0.648 af, Depth> 3.61"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Yr.-24 Hr. Rainfall=6.87"

Area (sf)	CN	Description
3,719	74	>75% Grass cover, Good, HSG C
4,138	98	Unconnected pavement, HSG C
86,141	70	Woods, Good, HSG C
93,998	71	Weighted Average
89,860		95.60% Pervious Area
4,138		4.40% Impervious Area
4,138		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	100	0.1100	0.16		**Sheet Flow, Segment #1** Woods: Light underbrush n= 0.400 P2= 3.61"
2.5	126	0.0277	0.83		**Shallow Concentrated Flow, Segment #2** Woodland Kv= 5.0 fps
12.7	226	Total			

Subcatchment 11S: Subcatchment #11



Summary for Subcatchment 12S: Subcatchment #12

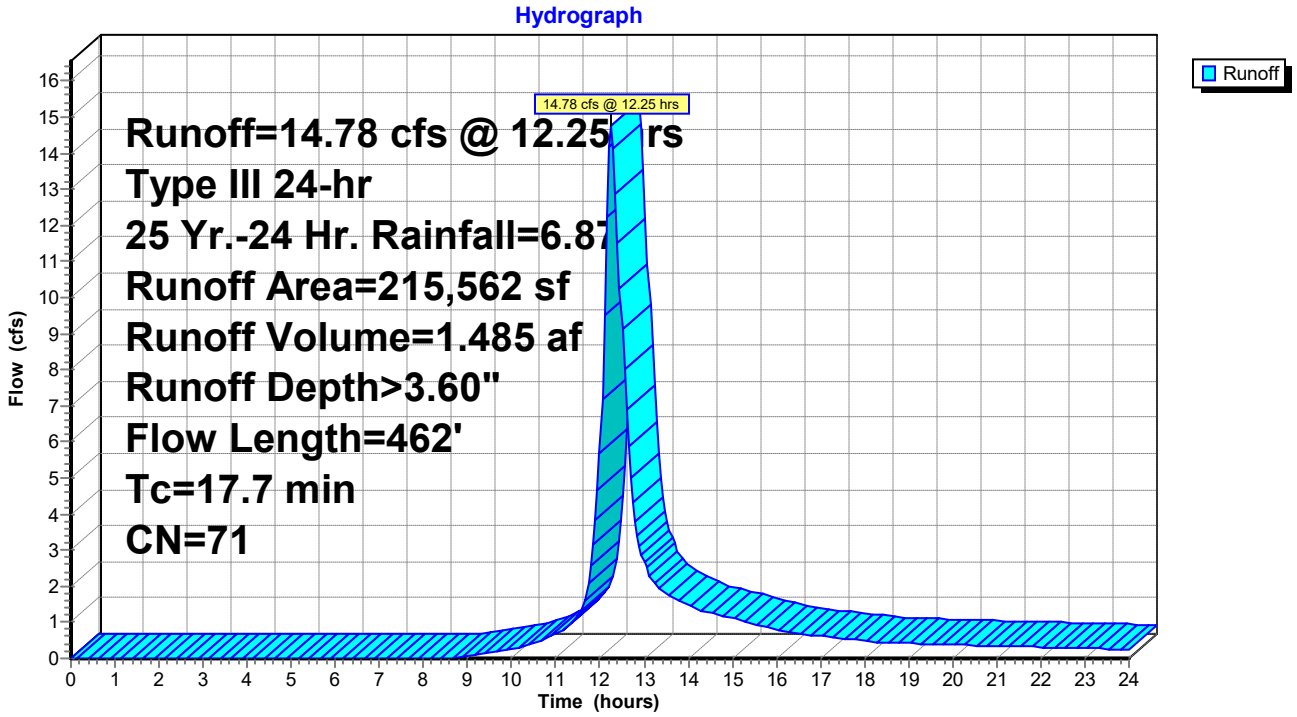
Runoff = 14.78 cfs @ 12.25 hrs, Volume= 1.485 af, Depth> 3.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Yr.-24 Hr. Rainfall=6.87"

Area (sf)	CN	Description
319	98	Roofs, HSG C
24,044	74	>75% Grass cover, Good, HSG C
1,116	98	Paved parking, HSG C
182,591	70	Woods, Good, HSG C
5,915	80	>75% Grass cover, Good, HSG D
1,577	77	Woods, Good, HSG D
215,562	71	Weighted Average
214,127		99.33% Pervious Area
1,435		0.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.5	100	0.0550	0.12		**Sheet Flow, Segment #1** Woods: Light underbrush n= 0.400 P2= 3.61"
1.4	71	0.0281	0.84		**Shallow Concentrated Flow, Segment #2** Woodland Kv= 5.0 fps
2.8	291	0.1170	1.71		**Shallow Concentrated Flow, Segment #3** Woodland Kv= 5.0 fps
17.7	462	Total			

Subcatchment 12S: Subcatchment #12



Summary for Subcatchment 13S: Subcatchment #13

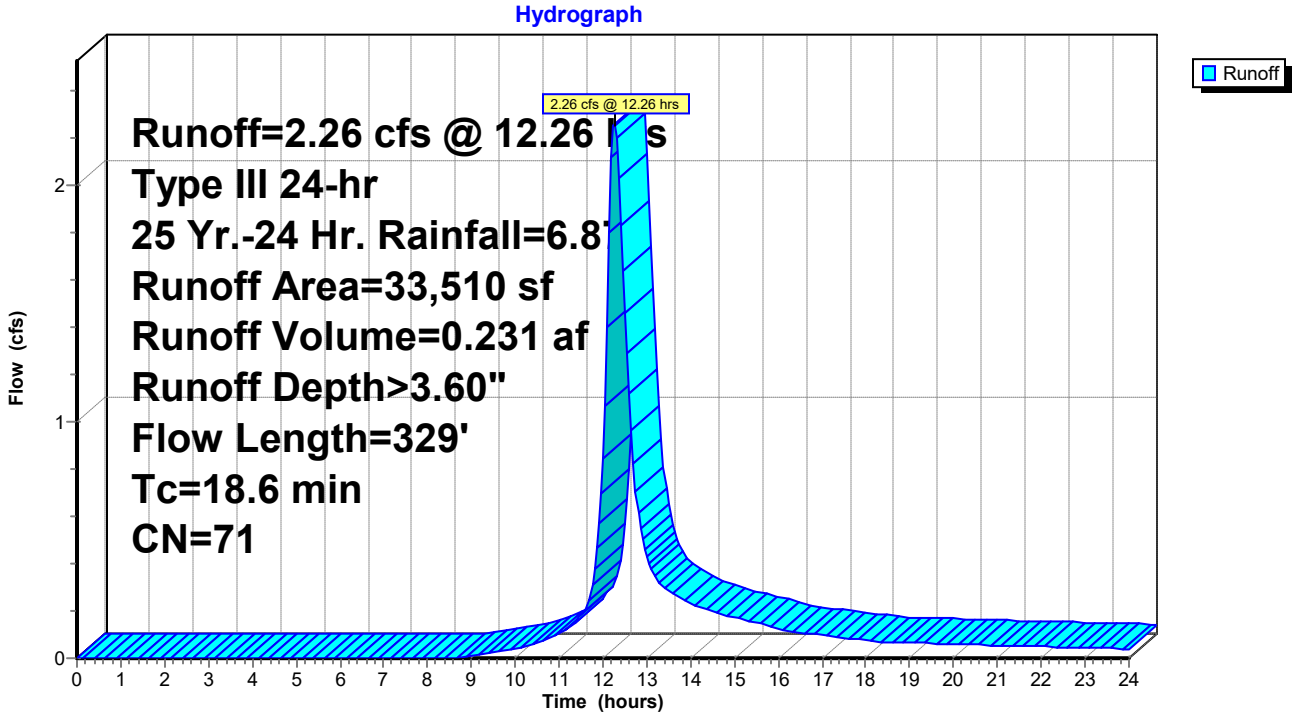
Runoff = 2.26 cfs @ 12.26 hrs, Volume= 0.231 af, Depth> 3.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Yr.-24 Hr. Rainfall=6.87"

Area (sf)	CN	Description
26,508	70	Woods, Good, HSG C
7,002	77	Woods, Good, HSG D
33,510	71	Weighted Average
33,510		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5	67	0.1084	0.15		**Sheet Flow, Segment #1** Woods: Light underbrush n= 0.400 P2= 3.61"
6.0	33	0.0453	0.09		**Sheet Flow, Segment #2** Woods: Light underbrush n= 0.400 P2= 3.61"
5.0	215	0.0209	0.72		**Shallow Concentrated Flow, Segment #3** Woodland Kv= 5.0 fps
0.1	14	0.1817	2.13		**Shallow Concentrated Flow, Segment #4** Woodland Kv= 5.0 fps
18.6	329	Total			

Subcatchment 13S: Subcatchment #13



Summary for Subcatchment 14S: Subcatchment #14

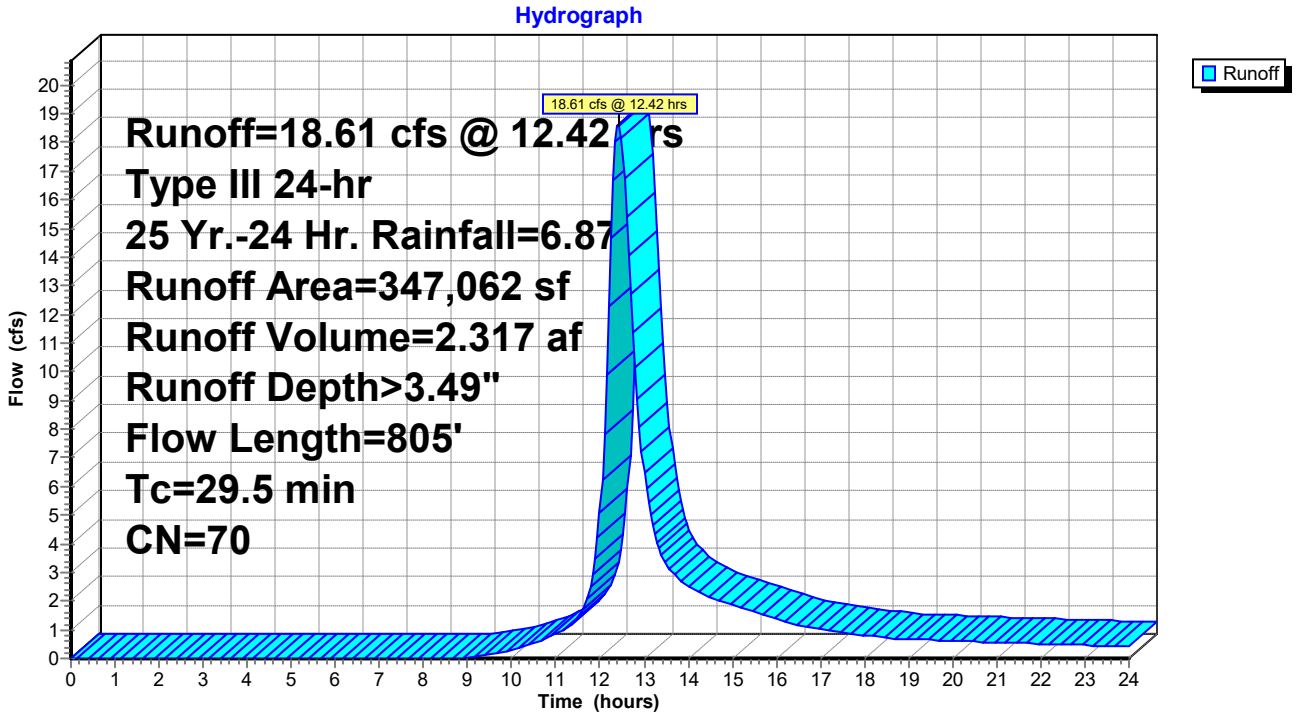
Runoff = 18.61 cfs @ 12.42 hrs, Volume= 2.317 af, Depth> 3.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Yr.-24 Hr. Rainfall=6.87"

Area (sf)	CN	Description
51,131	55	Woods, Good, HSG B
203,356	70	Woods, Good, HSG C
92,291	77	Woods, Good, HSG D
284	61	>75% Grass cover, Good, HSG B
347,062	70	Weighted Average
347,062		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.2	100	0.0700	0.14		**Sheet Flow, Segment #1** Woods: Light underbrush n= 0.400 P2= 3.61"
0.8	88	0.1371	1.85		**Shallow Concentrated Flow, Segment #2** Woodland Kv= 5.0 fps
2.0	112	0.0359	0.95		**Shallow Concentrated Flow, Segment #3** Woodland Kv= 5.0 fps
11.2	237	0.0050	0.35		**Shallow Concentrated Flow, Segment #4** Woodland Kv= 5.0 fps
1.4	81	0.0370	0.96		**Shallow Concentrated Flow, Segment #5** Woodland Kv= 5.0 fps
0.6	78	0.2175	2.33		**Shallow Concentrated Flow, Segment #6** Woodland Kv= 5.0 fps
1.3	109	0.0734	1.35		**Shallow Concentrated Flow, Segment #7** Woodland Kv= 5.0 fps
29.5	805	Total			

Subcatchment 14S: Subcatchment #14



Summary for Subcatchment 15S: Subcatchment #15

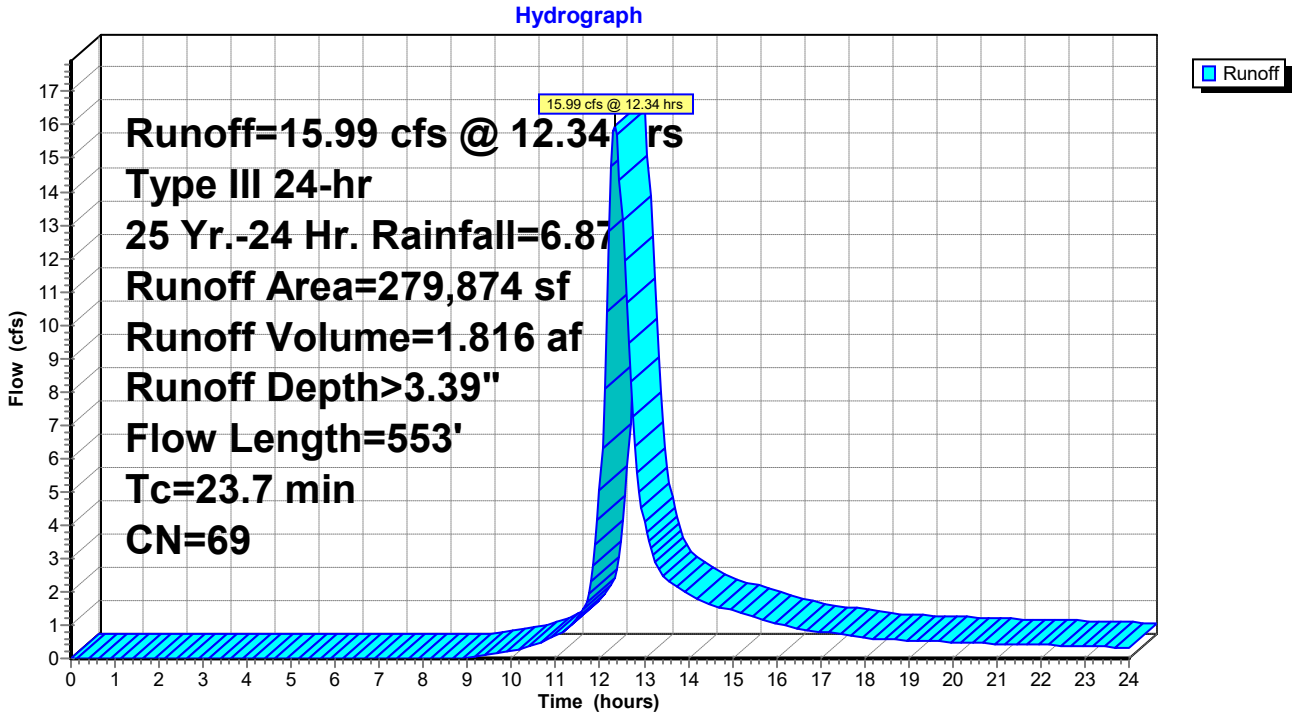
Runoff = 15.99 cfs @ 12.34 hrs, Volume= 1.816 af, Depth> 3.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Yr.-24 Hr. Rainfall=6.87"

Area (sf)	CN	Description
13,970	61	>75% Grass cover, Good, HSG B
35,618	74	>75% Grass cover, Good, HSG C
5,710	98	Paved parking, HSG C
963	98	Paved parking, HSG B
4,027	98	Roofs, HSG C
1,498	98	Roofs, HSG B
50,246	55	Woods, Good, HSG B
133,416	70	Woods, Good, HSG C
33,955	77	Woods, Good, HSG D
471	96	Gravel surface, HSG C
279,874	69	Weighted Average
267,676		95.64% Pervious Area
12,198		4.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.2	100	0.0300	0.10		**Sheet Flow, Segment #1** Woods: Light underbrush n= 0.400 P2= 3.61"
1.1	119	0.1426	1.89		**Shallow Concentrated Flow, Segment #2** Woodland Kv= 5.0 fps
5.4	334	0.0420	1.02		**Shallow Concentrated Flow, Segment #3** Woodland Kv= 5.0 fps
23.7	553	Total			

Subcatchment 15S: Subcatchment #15



Summary for Subcatchment 16S: Catch Basin

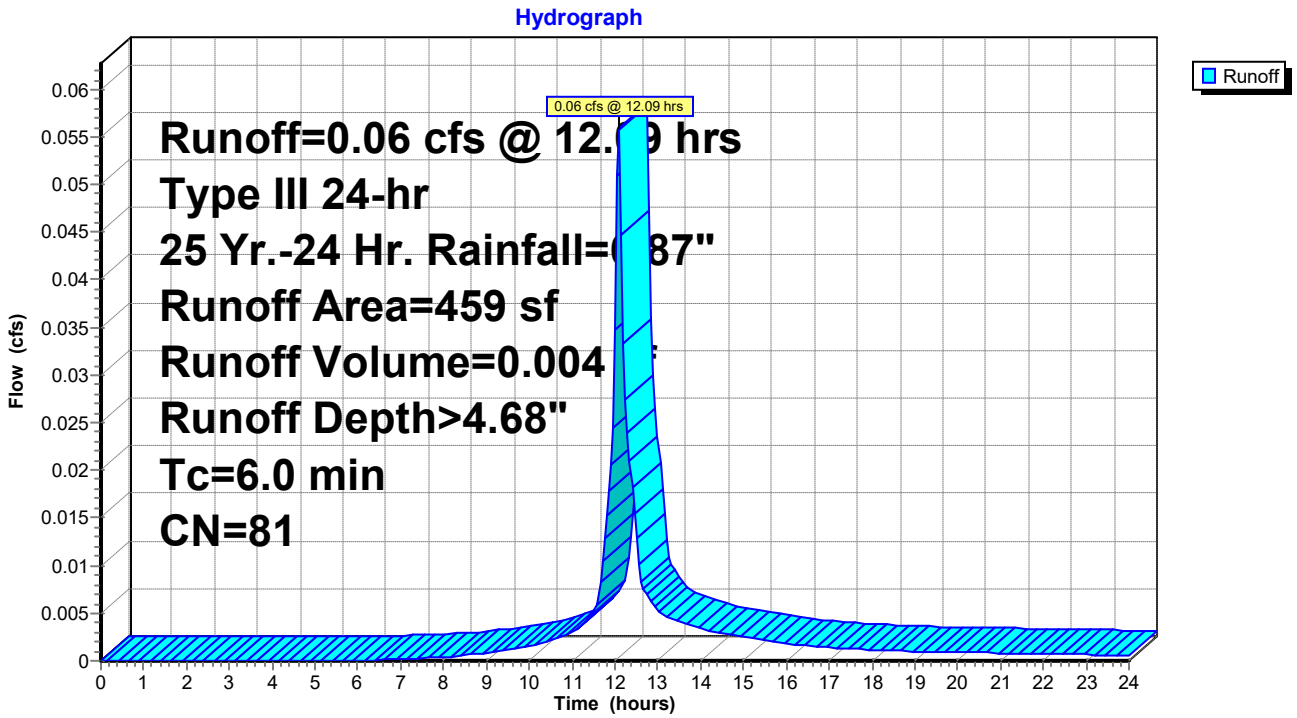
Runoff = 0.06 cfs @ 12.09 hrs, Volume= 0.004 af, Depth> 4.68"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Yr.-24 Hr. Rainfall=6.87"

Area (sf)	CN	Description
124	61	>75% Grass cover, Good, HSG B
125	74	>75% Grass cover, Good, HSG C
105	98	Paved parking, HSG B
105	98	Paved parking, HSG C
459	81	Weighted Average
249		54.25% Pervious Area
210		45.75% Impervious Area

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

Subcatchment 16S: Catch Basin



Summary for Subcatchment 17S: Catch Basin

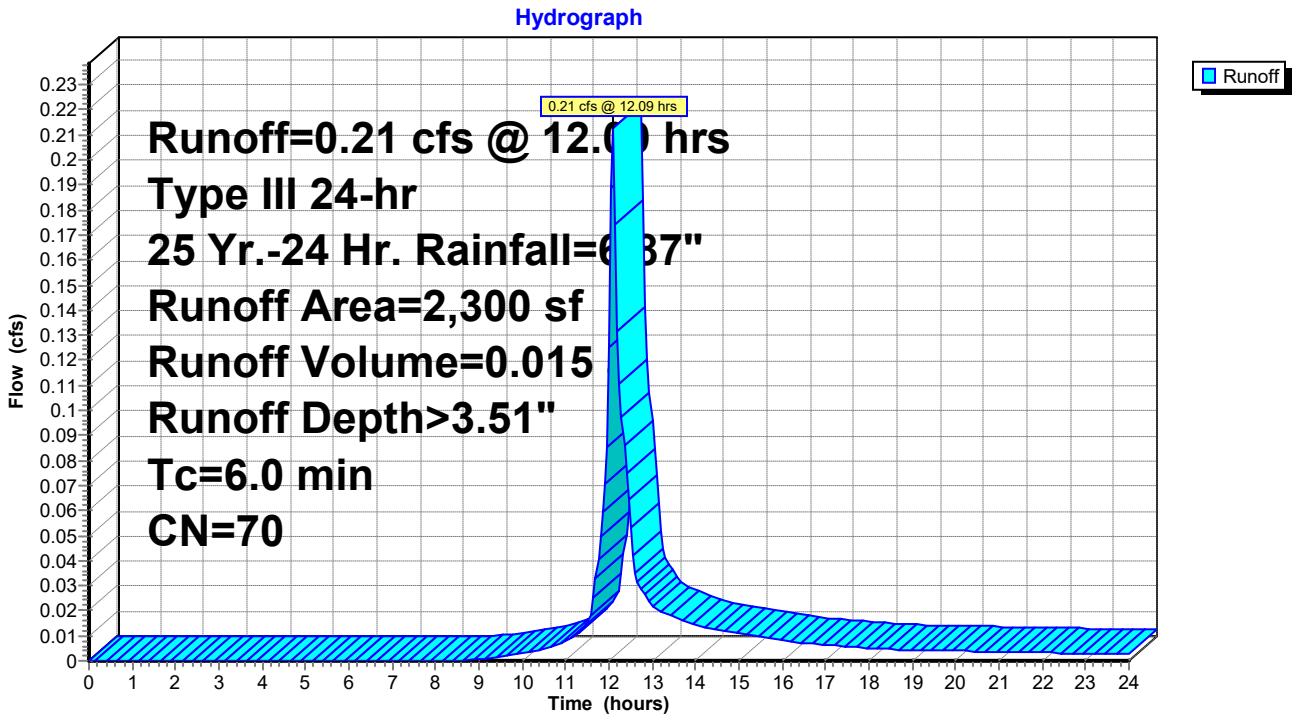
Runoff = 0.21 cfs @ 12.09 hrs, Volume= 0.015 af, Depth> 3.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Yr.-24 Hr. Rainfall=6.87"

Area (sf)	CN	Description
1,038	74	>75% Grass cover, Good, HSG C
1,039	61	>75% Grass cover, Good, HSG B
112	98	Paved parking, HSG C
111	98	Paved parking, HSG B
2,300	70	Weighted Average
2,077		90.30% Pervious Area
223		9.70% Impervious Area

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

Subcatchment 17S: Catch Basin



Summary for Subcatchment 18S: Catch Basin

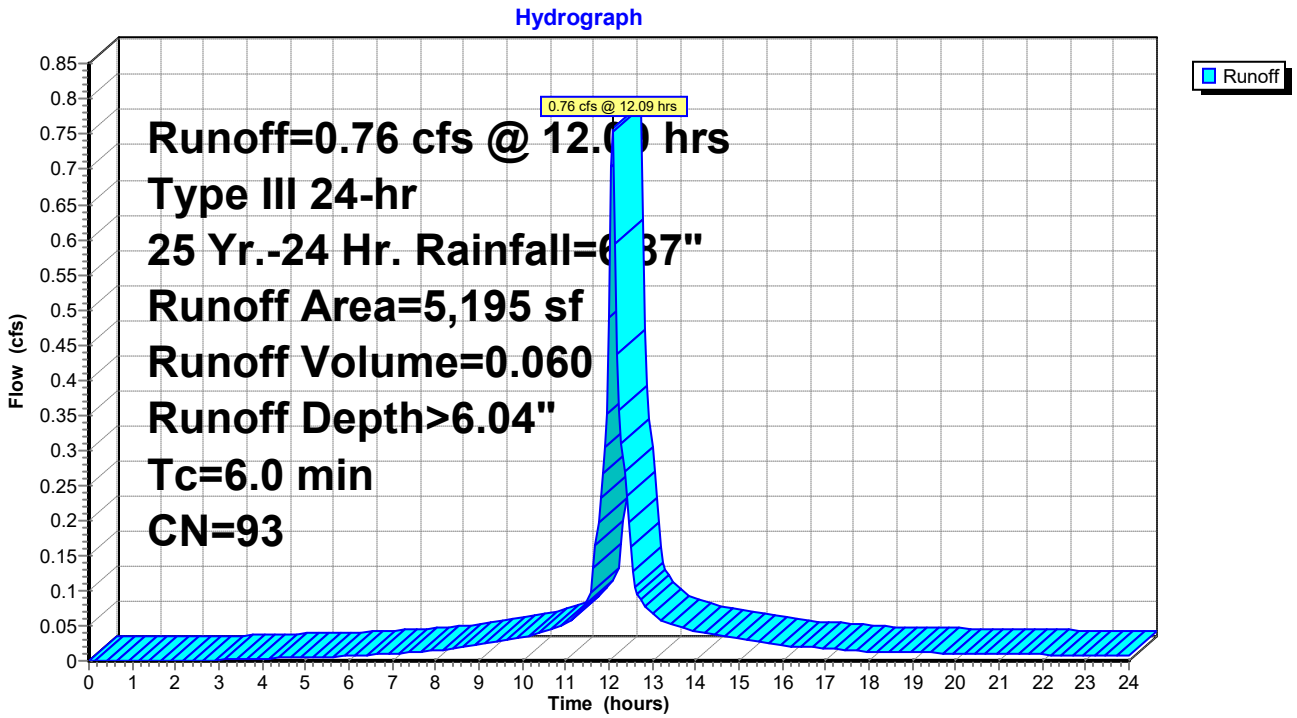
Runoff = 0.76 cfs @ 12.09 hrs, Volume= 0.060 af, Depth> 6.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Yr.-24 Hr. Rainfall=6.87"

Area (sf)	CN	Description
395	61	>75% Grass cover, Good, HSG B
395	74	>75% Grass cover, Good, HSG C
2,203	98	Paved parking, HSG B
2,202	98	Paved parking, HSG C
5,195	93	Weighted Average
790		15.21% Pervious Area
4,405		84.79% Impervious Area

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

Subcatchment 18S: Catch Basin



Summary for Subcatchment 19S: Catch Basin

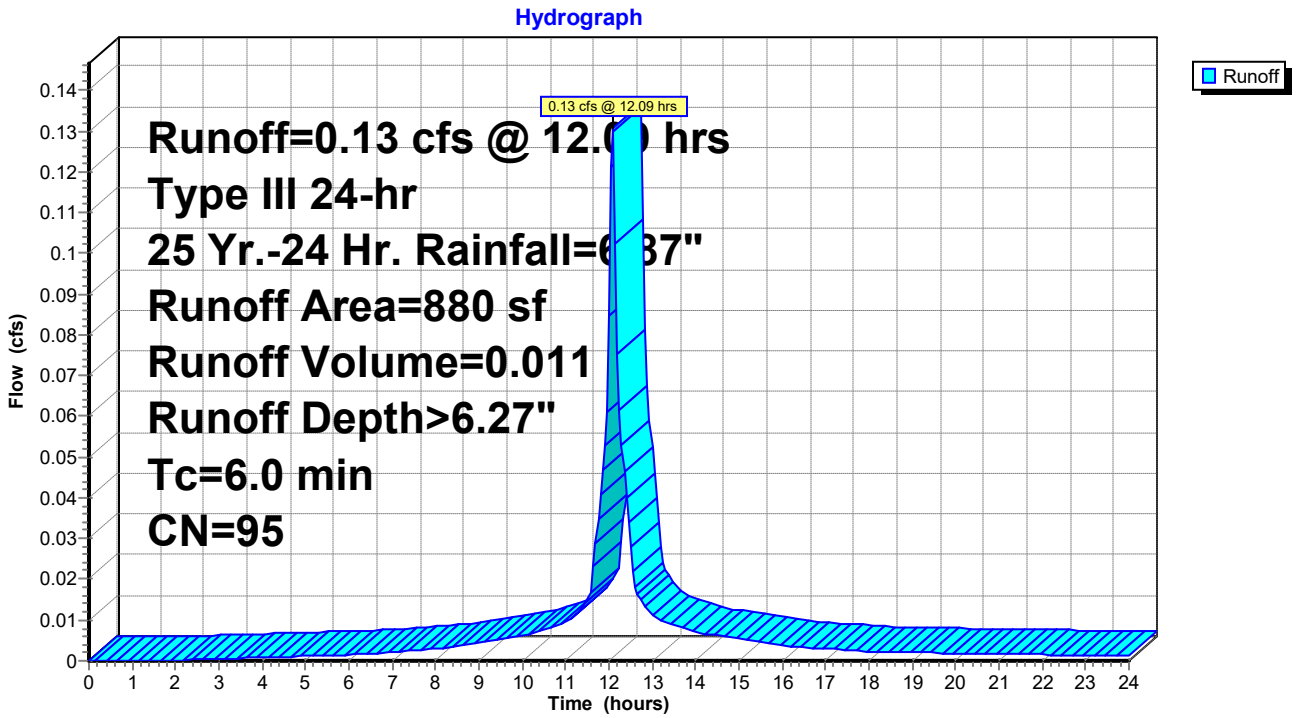
Runoff = 0.13 cfs @ 12.09 hrs, Volume= 0.011 af, Depth> 6.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Yr.-24 Hr. Rainfall=6.87"

Area (sf)	CN	Description
49	61	>75% Grass cover, Good, HSG B
49	74	>75% Grass cover, Good, HSG C
391	98	Paved parking, HSG B
391	98	Paved parking, HSG C
880	95	Weighted Average
98		11.14% Pervious Area
782		88.86% Impervious Area

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

Subcatchment 19S: Catch Basin



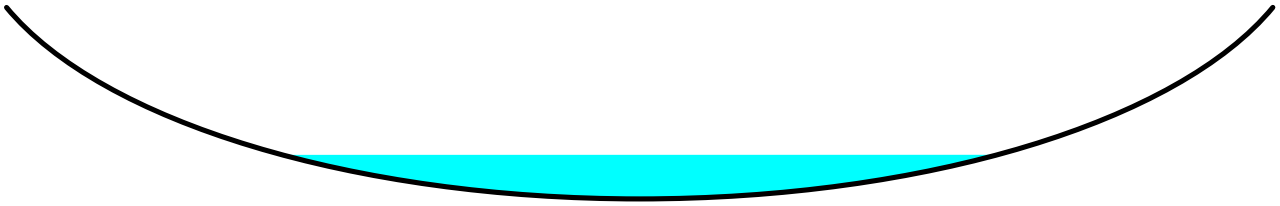
Summary for Reach 1aR: Flow from Culvert to Stream

Inflow Area = 0.203 ac, 63.62% Impervious, Inflow Depth > 5.33" for 25 Yr.-24 Hr. event
Inflow = 1.16 cfs @ 12.09 hrs, Volume= 0.090 af
Outflow = 0.96 cfs @ 12.15 hrs, Volume= 0.090 af, Atten= 17%, Lag= 3.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.73 fps, Min. Travel Time= 6.3 min
Avg. Velocity = 0.57 fps, Avg. Travel Time= 19.1 min

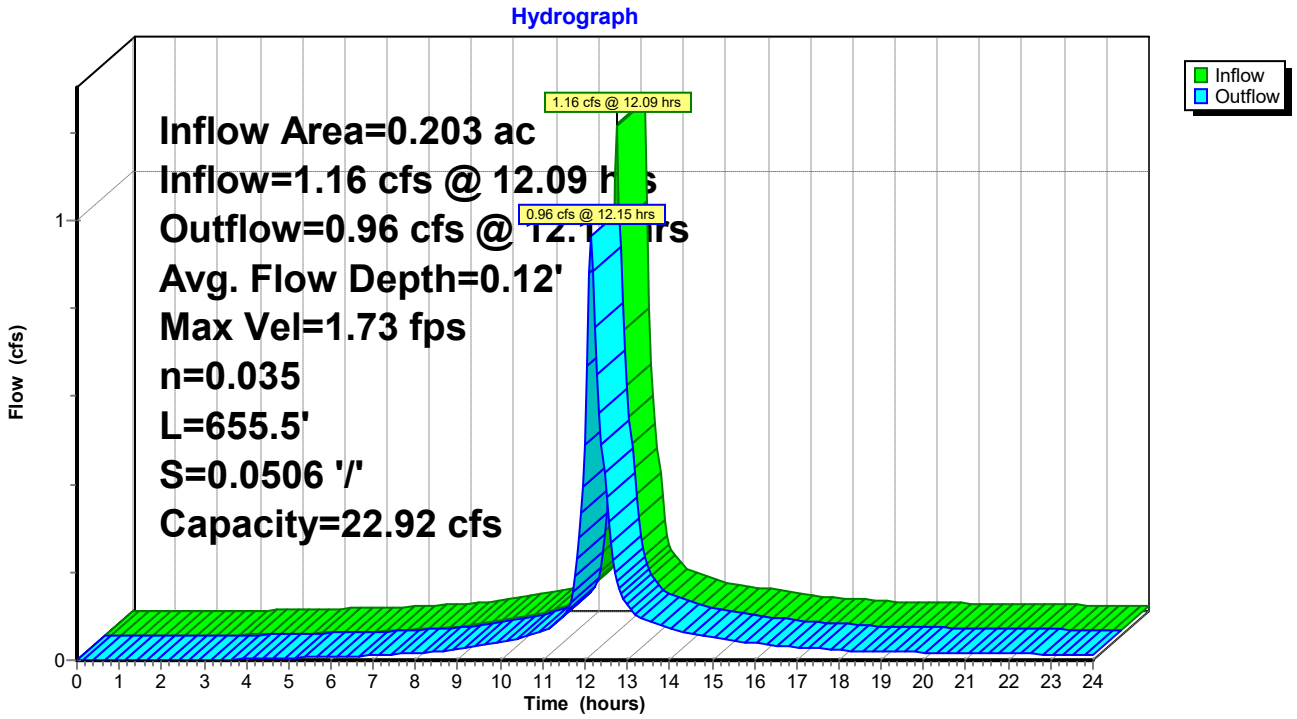
Peak Storage= 364 cf @ 12.15 hrs
Average Depth at Peak Storage= 0.12'
Bank-Full Depth= 0.50' Flow Area= 5.0 sf, Capacity= 22.92 cfs

15.00' x 0.50' deep Parabolic Channel, n= 0.035
Length= 655.5' Slope= 0.0506 '/'
Inlet Invert= 136.39', Outlet Invert= 103.20'



‡

Reach 1aR: Flow from Culvert to Stream



Summary for Reach 1bR: Start of Stream

[62] Hint: Exceeded Reach 1aR OUTLET depth by 0.03' @ 12.40 hrs

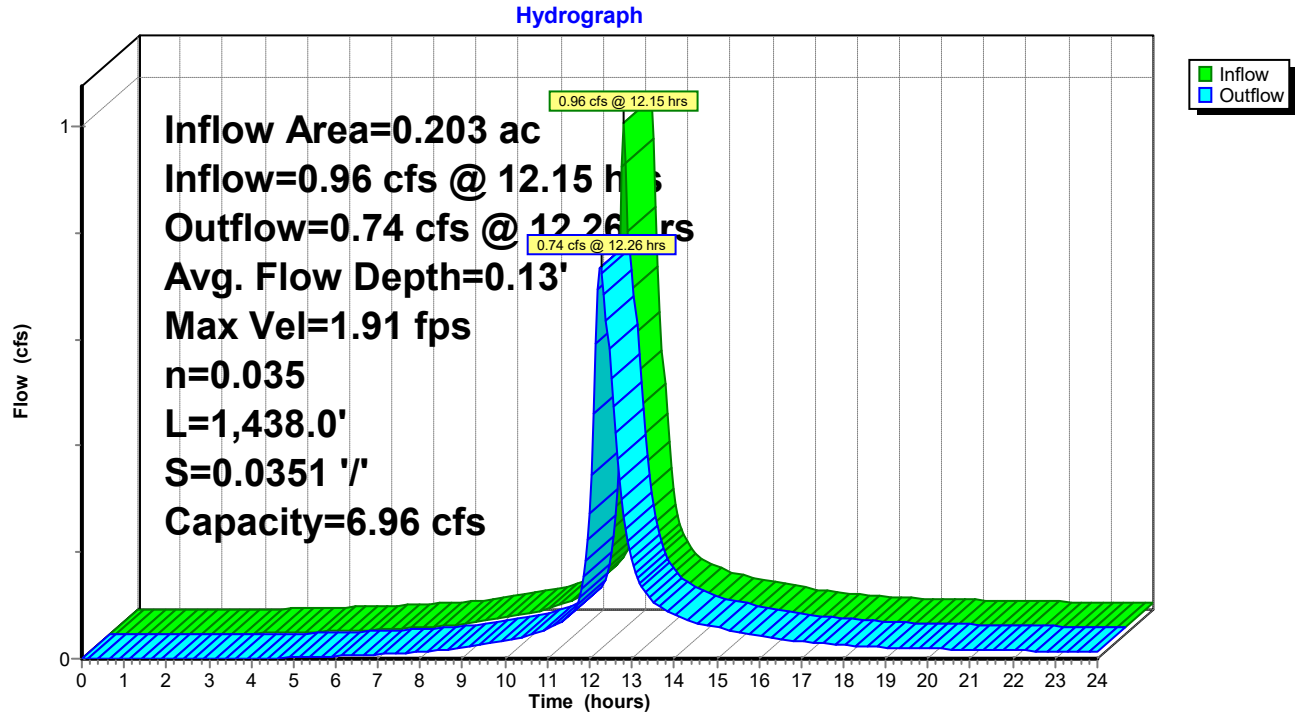
Inflow Area = 0.203 ac, 63.62% Impervious, Inflow Depth > 5.31" for 25 Yr.-24 Hr. event
Inflow = 0.96 cfs @ 12.15 hrs, Volume= 0.090 af
Outflow = 0.74 cfs @ 12.26 hrs, Volume= 0.089 af, Atten= 23%, Lag= 6.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.91 fps, Min. Travel Time= 12.6 min
Avg. Velocity = 0.55 fps, Avg. Travel Time= 43.9 min

Peak Storage= 555 cf @ 12.26 hrs
Average Depth at Peak Storage= 0.13'
Bank-Full Depth= 0.50' Flow Area= 1.6 sf, Capacity= 6.96 cfs

3.00' x 0.50' deep channel, n= 0.035
Side Slope Z-value= 0.5 '/' Top Width= 3.50'
Length= 1,438.0' Slope= 0.0351 '/'
Inlet Invert= 103.20', Outlet Invert= 52.70'

Reach 1bR: Start of Stream



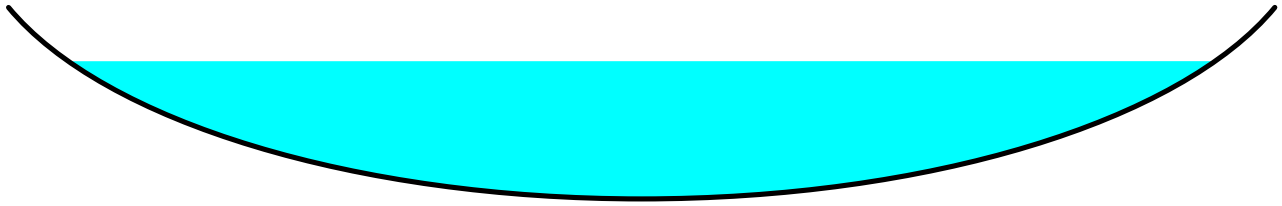
Summary for Reach 14aR: Reach #14

Inflow Area = 7.967 ac, 0.00% Impervious, Inflow Depth > 3.49" for 25 Yr.-24 Hr. event
Inflow = 18.61 cfs @ 12.42 hrs, Volume= 2.317 af
Outflow = 18.59 cfs @ 12.43 hrs, Volume= 2.315 af, Atten= 0%, Lag= 0.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.56 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 1.90 fps, Avg. Travel Time= 1.7 min

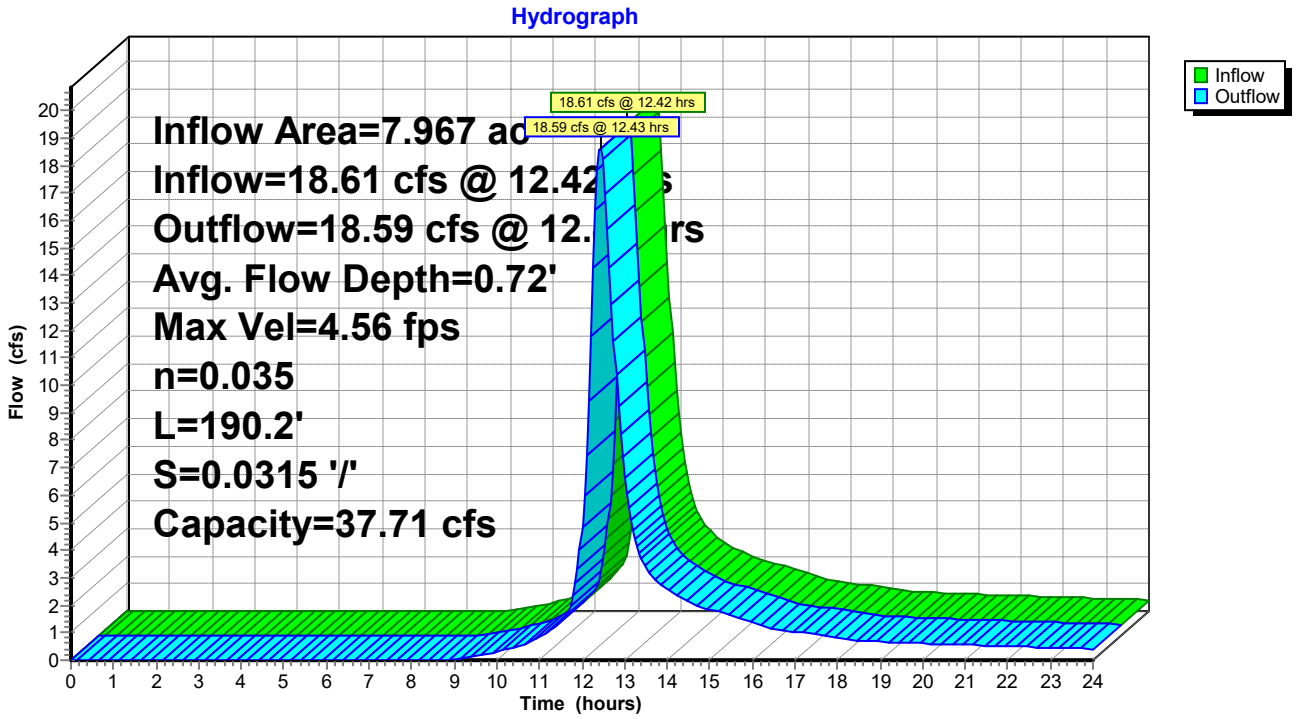
Peak Storage= 775 cf @ 12.43 hrs
Average Depth at Peak Storage= 0.72'
Bank-Full Depth= 1.00' Flow Area= 6.7 sf, Capacity= 37.71 cfs

10.00' x 1.00' deep Parabolic Channel, n= 0.035 Earth, dense weeds
Length= 190.2' Slope= 0.0315 '/'
Inlet Invert= 77.00', Outlet Invert= 71.00'



‡

Reach 14aR: Reach #14



Summary for Reach 14bR: Reach #14

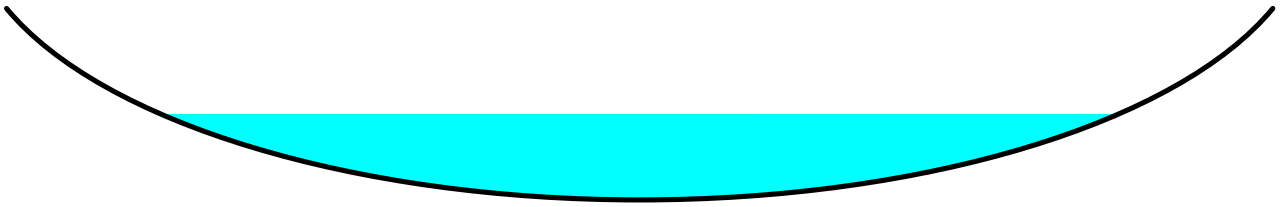
[61] Hint: Exceeded Reach 14aR outlet invert by 0.45' @ 12.45 hrs

Inflow Area = 7.967 ac, 0.00% Impervious, Inflow Depth > 3.49" for 25 Yr.-24 Hr. event
Inflow = 18.59 cfs @ 12.43 hrs, Volume= 2.315 af
Outflow = 18.59 cfs @ 12.43 hrs, Volume= 2.315 af, Atten= 0%, Lag= 0.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 9.24 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 3.85 fps, Avg. Travel Time= 0.4 min

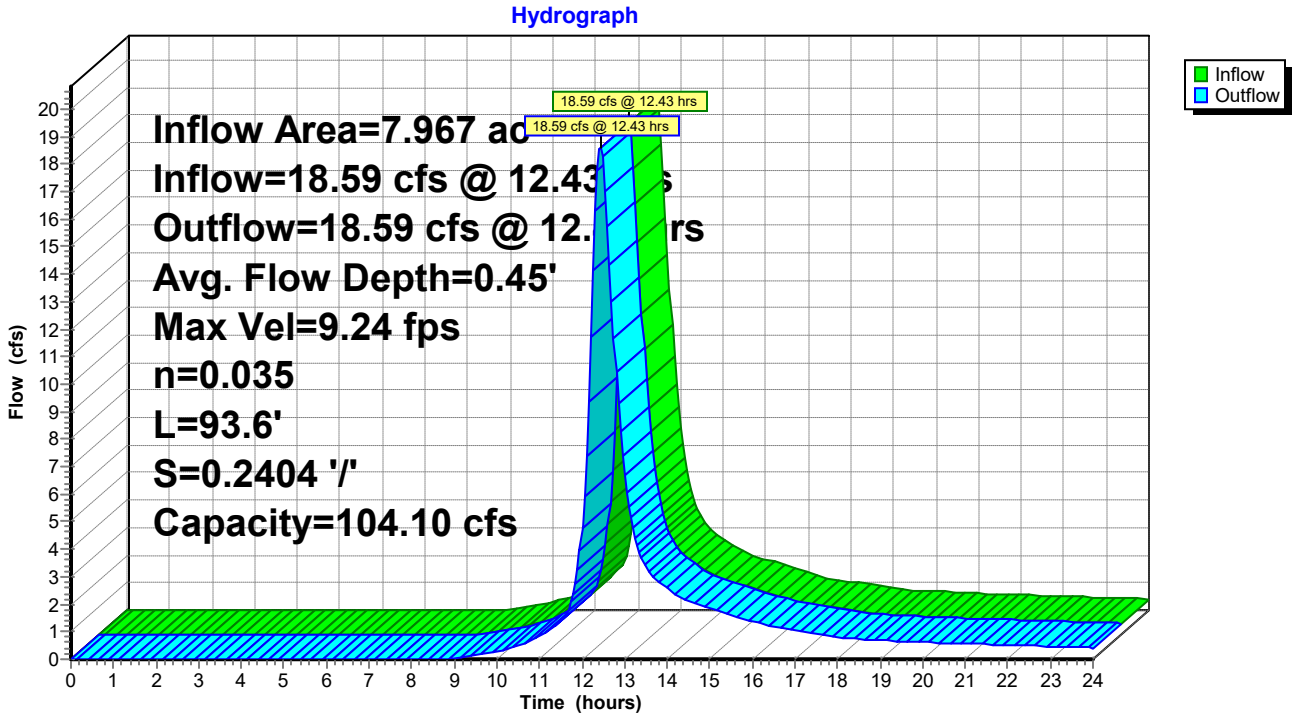
Peak Storage= 188 cf @ 12.43 hrs
Average Depth at Peak Storage= 0.45'
Bank-Full Depth= 1.00' Flow Area= 6.7 sf, Capacity= 104.10 cfs

10.00' x 1.00' deep Parabolic Channel, n= 0.035 Earth, dense weeds
Length= 93.6' Slope= 0.2404 '/'
Inlet Invert= 71.00', Outlet Invert= 48.50'



‡

Reach 14bR: Reach #14



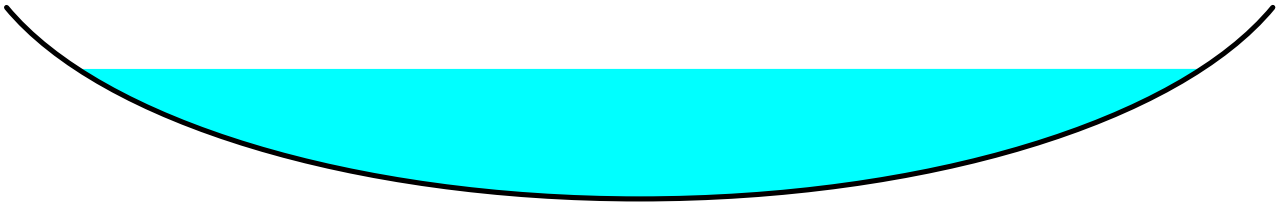
Summary for Reach 15R: Reach #15

Inflow Area = 6.425 ac, 4.36% Impervious, Inflow Depth > 3.39" for 25 Yr.-24 Hr. event
Inflow = 8.20 cfs @ 12.71 hrs, Volume= 1.815 af
Outflow = 8.20 cfs @ 12.72 hrs, Volume= 1.814 af, Atten= 0%, Lag= 0.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.93 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 1.46 fps, Avg. Travel Time= 2.3 min

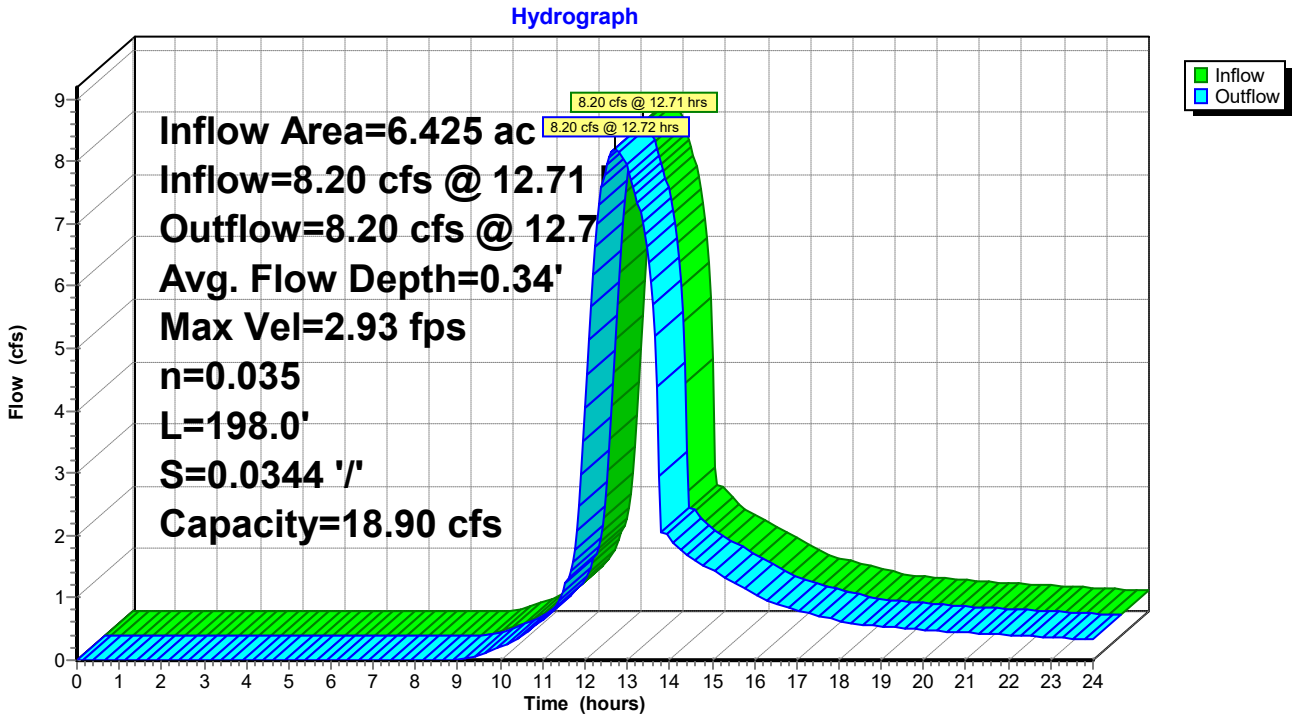
Peak Storage= 555 cf @ 12.72 hrs
Average Depth at Peak Storage= 0.34'
Bank-Full Depth= 0.50' Flow Area= 5.0 sf, Capacity= 18.90 cfs

15.00' x 0.50' deep Parabolic Channel, n= 0.035 Earth, dense weeds
Length= 198.0' Slope= 0.0344 '/'
Inlet Invert= 90.32', Outlet Invert= 83.50'



‡

Reach 15R: Reach #15



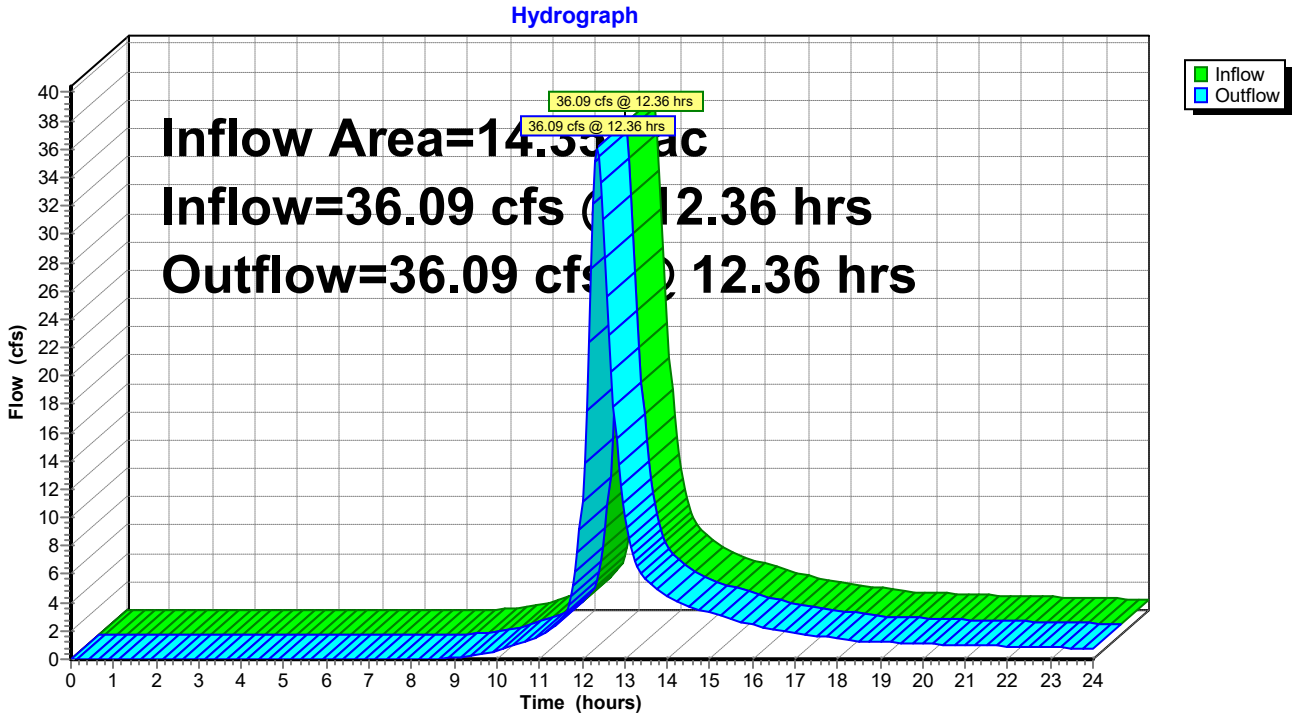
Summary for Reach 100R: Final Reach 100

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 14.359 ac, 1.84% Impervious, Inflow Depth > 3.52" for 25 Yr.-24 Hr. event
Inflow = 36.09 cfs @ 12.36 hrs, Volume= 4.208 af
Outflow = 36.09 cfs @ 12.36 hrs, Volume= 4.208 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Reach 100R: Final Reach 100



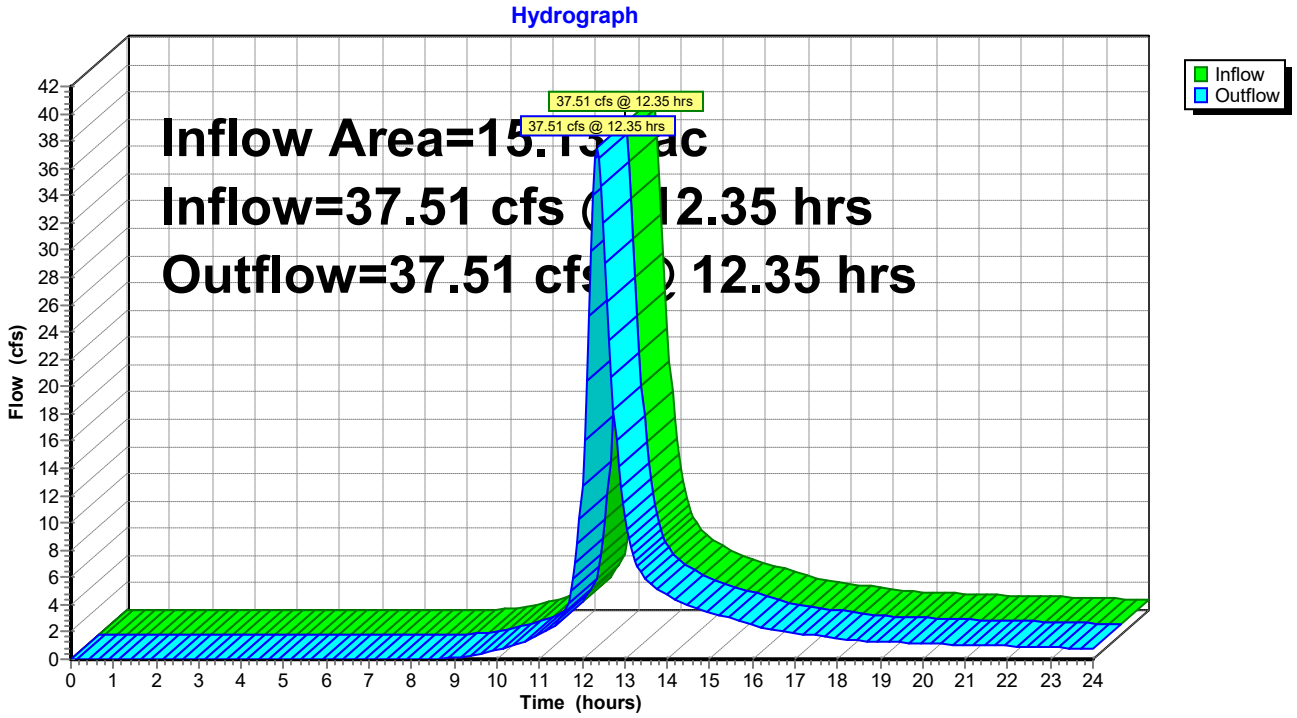
Summary for Reach 200R: Final Reach 200

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 15.135 ac, 1.75% Impervious, Inflow Depth > 3.52" for 25 Yr.-24 Hr. event
Inflow = 37.51 cfs @ 12.35 hrs, Volume= 4.442 af
Outflow = 37.51 cfs @ 12.35 hrs, Volume= 4.442 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Reach 200R: Final Reach 200



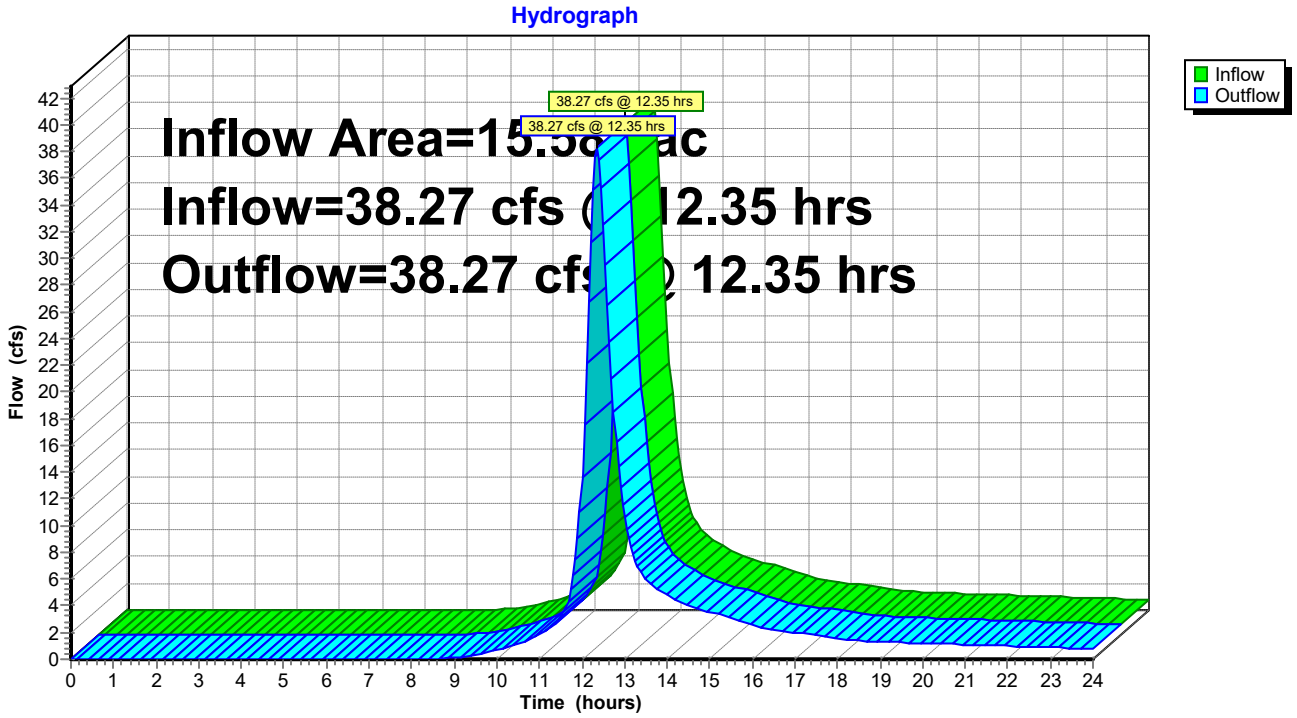
Summary for Reach 300R: Final Reach 300

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 15.581 ac, 1.70% Impervious, Inflow Depth > 3.52" for 25 Yr.-24 Hr. event
Inflow = 38.27 cfs @ 12.35 hrs, Volume= 4.572 af
Outflow = 38.27 cfs @ 12.35 hrs, Volume= 4.572 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Reach 300R: Final Reach 300



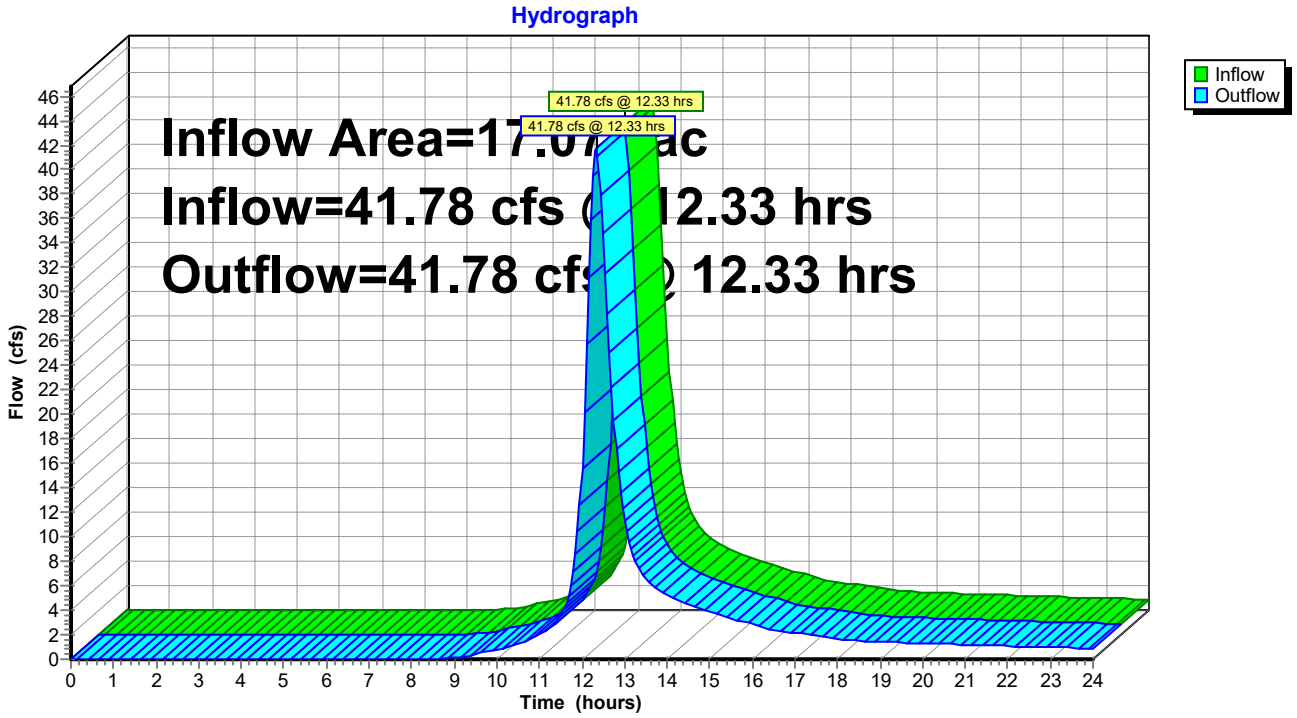
Summary for Reach 400R: Final Reach 400

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 17.071 ac, 1.55% Impervious, Inflow Depth > 3.52" for 25 Yr.-24 Hr. event
Inflow = 41.78 cfs @ 12.33 hrs, Volume= 5.007 af
Outflow = 41.78 cfs @ 12.33 hrs, Volume= 5.007 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Reach 400R: Final Reach 400



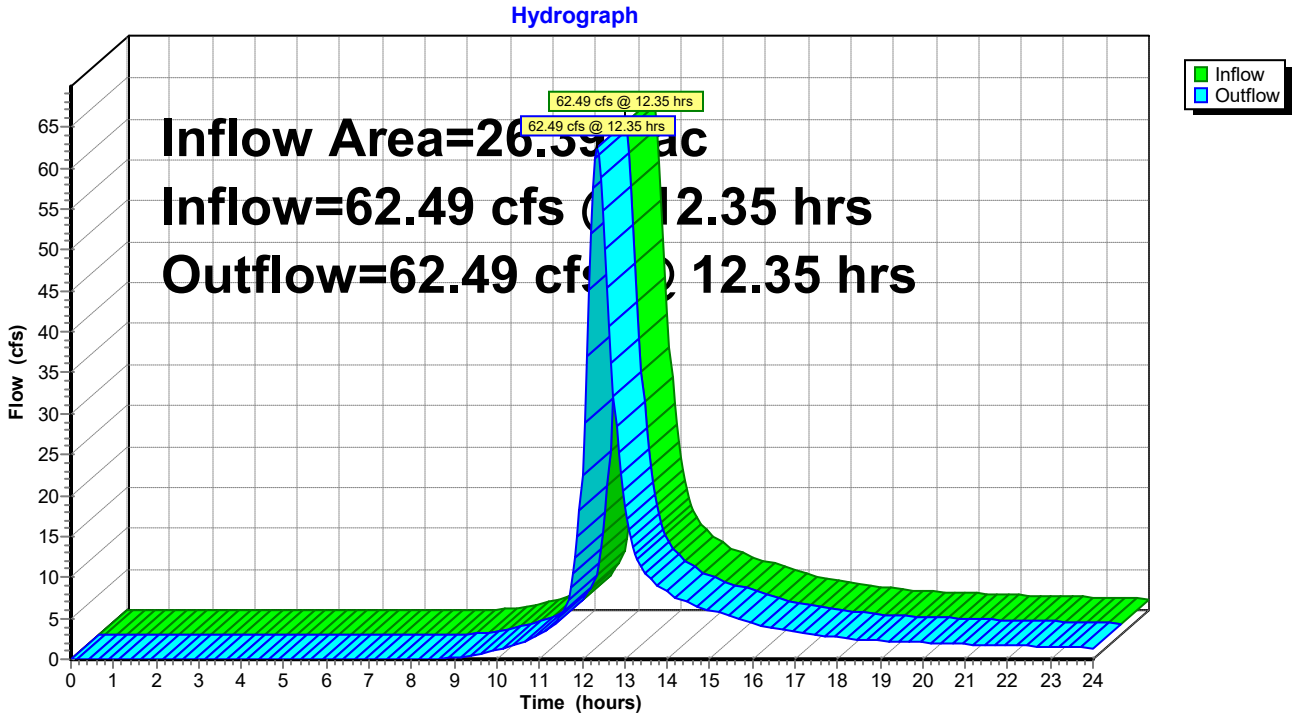
Summary for Reach 500R: Final Reach 500

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 26.397 ac, 1.00% Impervious, Inflow Depth > 3.51" for 25 Yr.-24 Hr. event
Inflow = 62.49 cfs @ 12.35 hrs, Volume= 7.730 af
Outflow = 62.49 cfs @ 12.35 hrs, Volume= 7.730 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Reach 500R: Final Reach 500



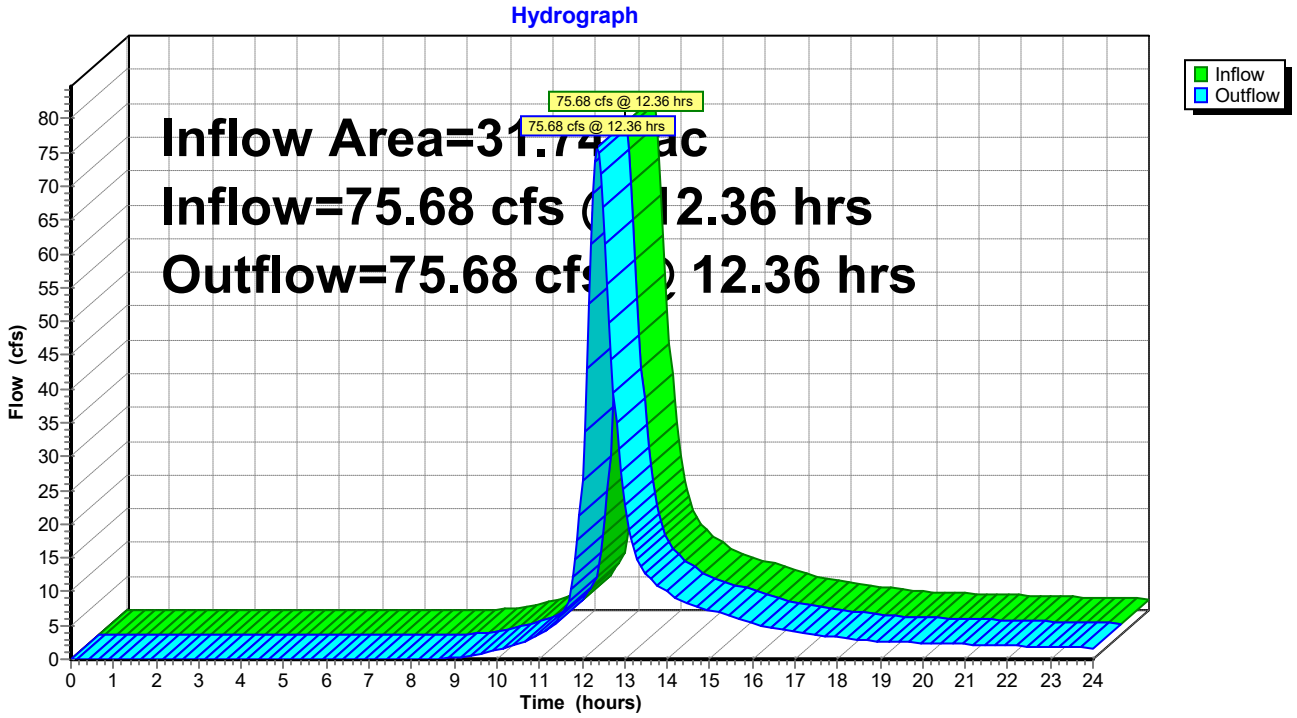
Summary for Reach 600R: Final Reach 600

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 31.740 ac, 0.83% Impervious, Inflow Depth > 3.53" for 25 Yr.-24 Hr. event
Inflow = 75.68 cfs @ 12.36 hrs, Volume= 9.331 af
Outflow = 75.68 cfs @ 12.36 hrs, Volume= 9.331 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Reach 600R: Final Reach 600



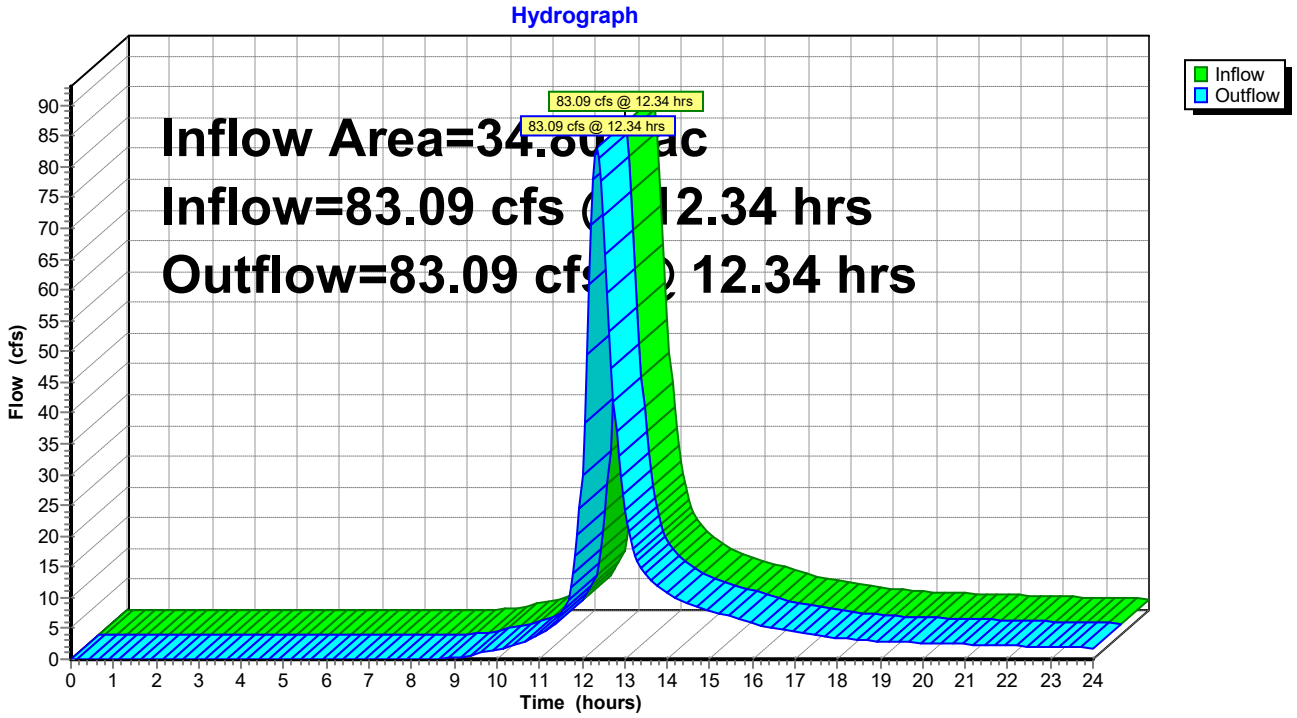
Summary for Reach 700R: Final Reach 700

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 34.803 ac, 0.76% Impervious, Inflow Depth > 3.53" for 25 Yr.-24 Hr. event
Inflow = 83.09 cfs @ 12.34 hrs, Volume= 10.224 af
Outflow = 83.09 cfs @ 12.34 hrs, Volume= 10.224 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Reach 700R: Final Reach 700



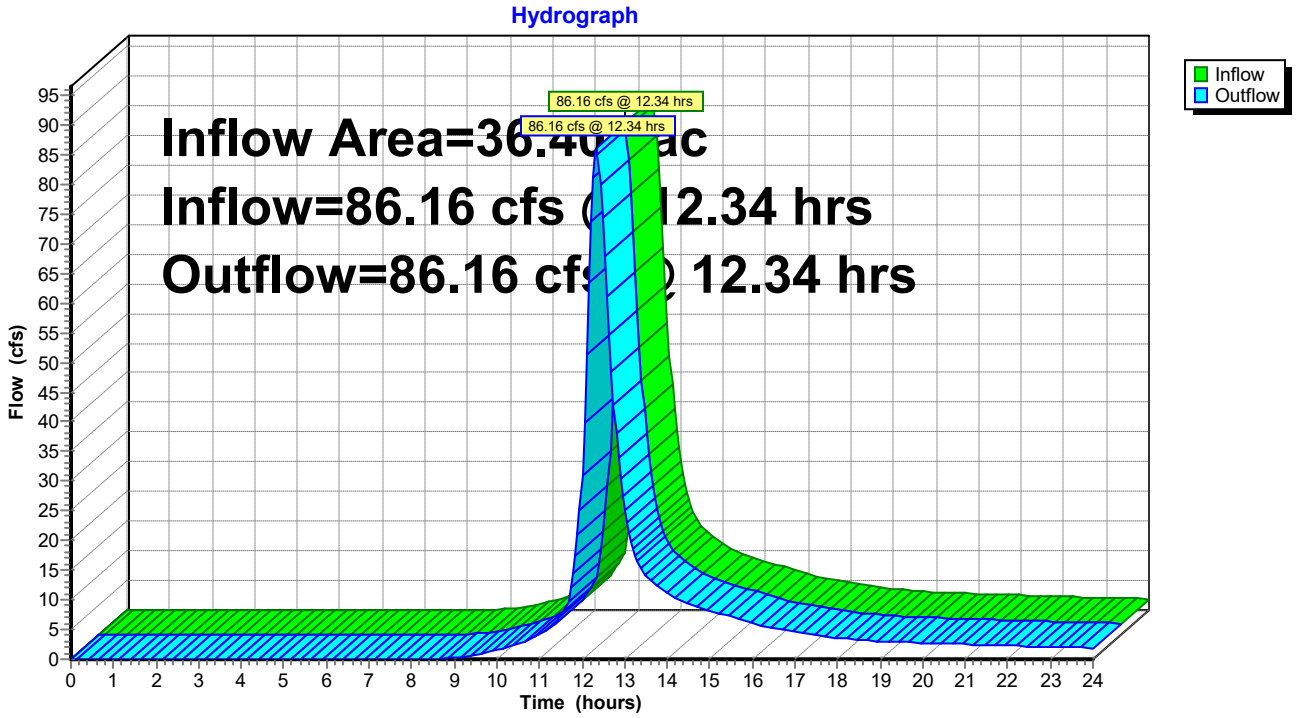
Summary for Reach 800R: Final Reach 800

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 36.406 ac, 0.73% Impervious, Inflow Depth > 3.48" for 25 Yr.-24 Hr. event
Inflow = 86.16 cfs @ 12.34 hrs, Volume= 10.571 af
Outflow = 86.16 cfs @ 12.34 hrs, Volume= 10.571 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Reach 800R: Final Reach 800



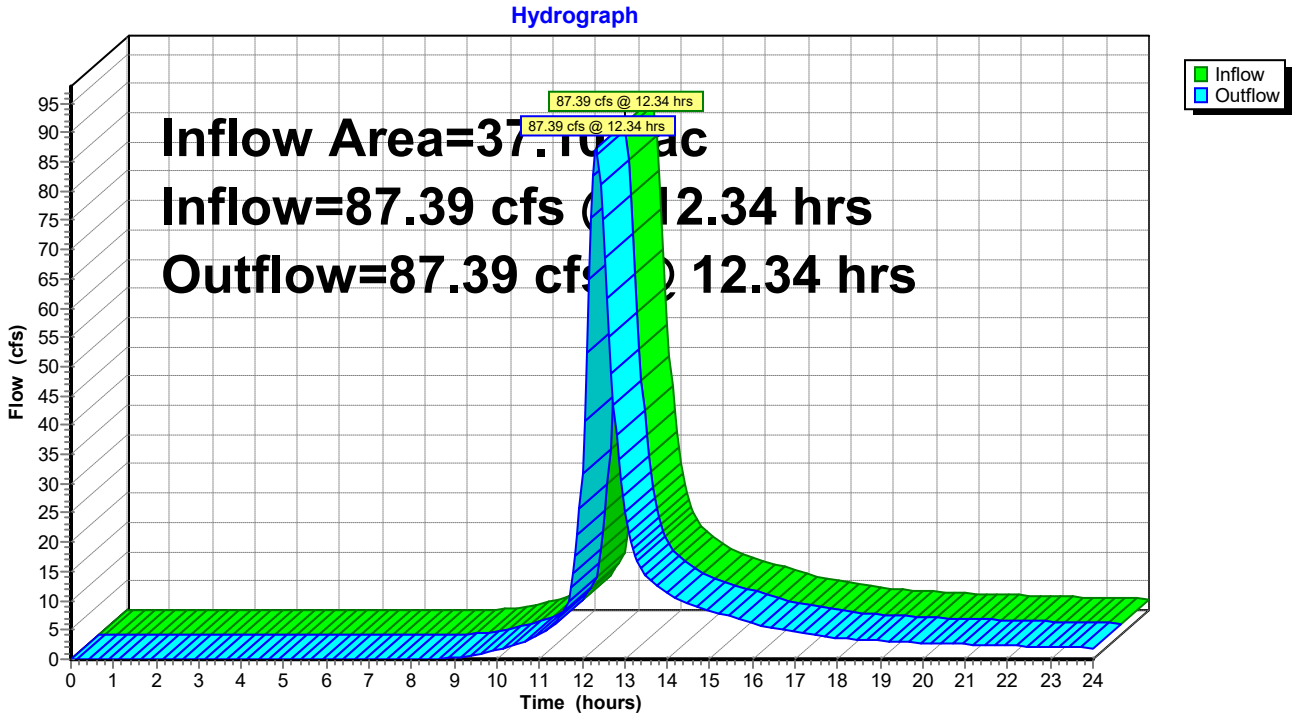
Summary for Reach 900R: Final Reach 900

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 37.100 ac, 0.71% Impervious, Inflow Depth > 3.47" for 25 Yr.-24 Hr. event
Inflow = 87.39 cfs @ 12.34 hrs, Volume= 10.721 af
Outflow = 87.39 cfs @ 12.34 hrs, Volume= 10.721 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Reach 900R: Final Reach 900



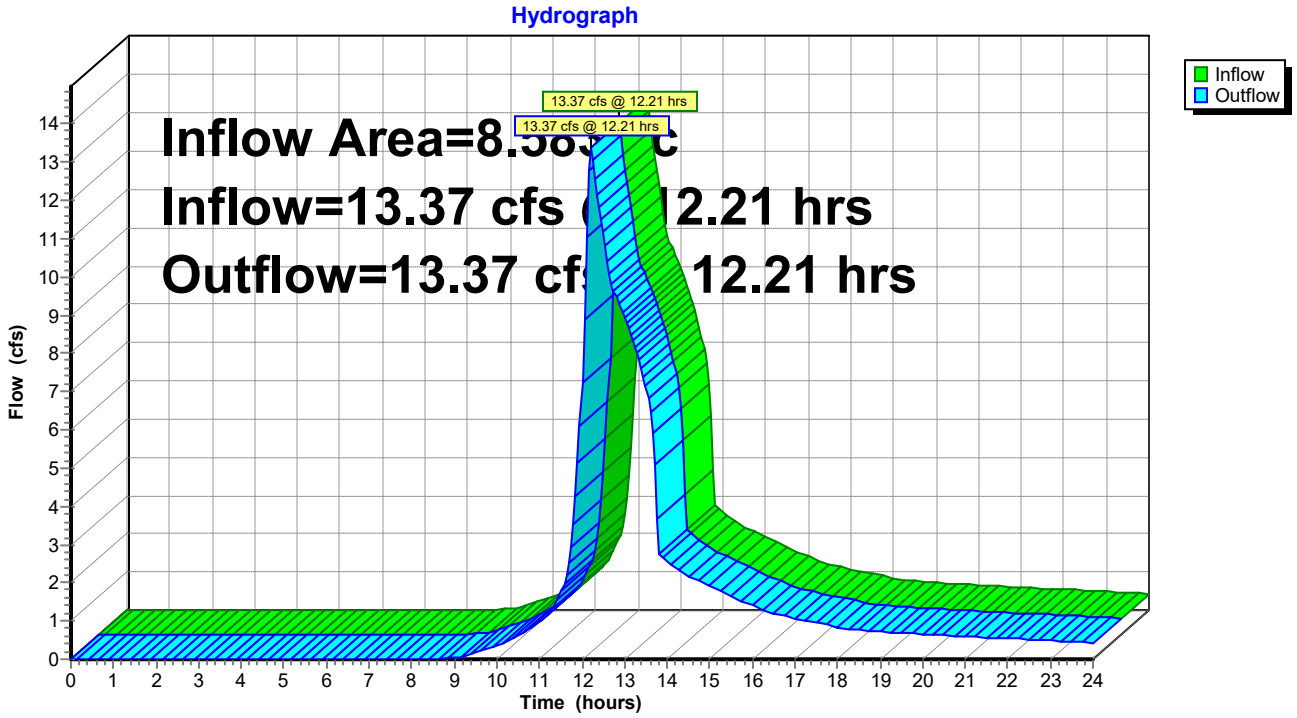
Summary for Reach 1100R: Final Reach #1100

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 8.583 ac, 4.37% Impervious, Inflow Depth > 3.44" for 25 Yr.-24 Hr. event
Inflow = 13.37 cfs @ 12.21 hrs, Volume= 2.462 af
Outflow = 13.37 cfs @ 12.21 hrs, Volume= 2.462 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Reach 1100R: Final Reach #1100



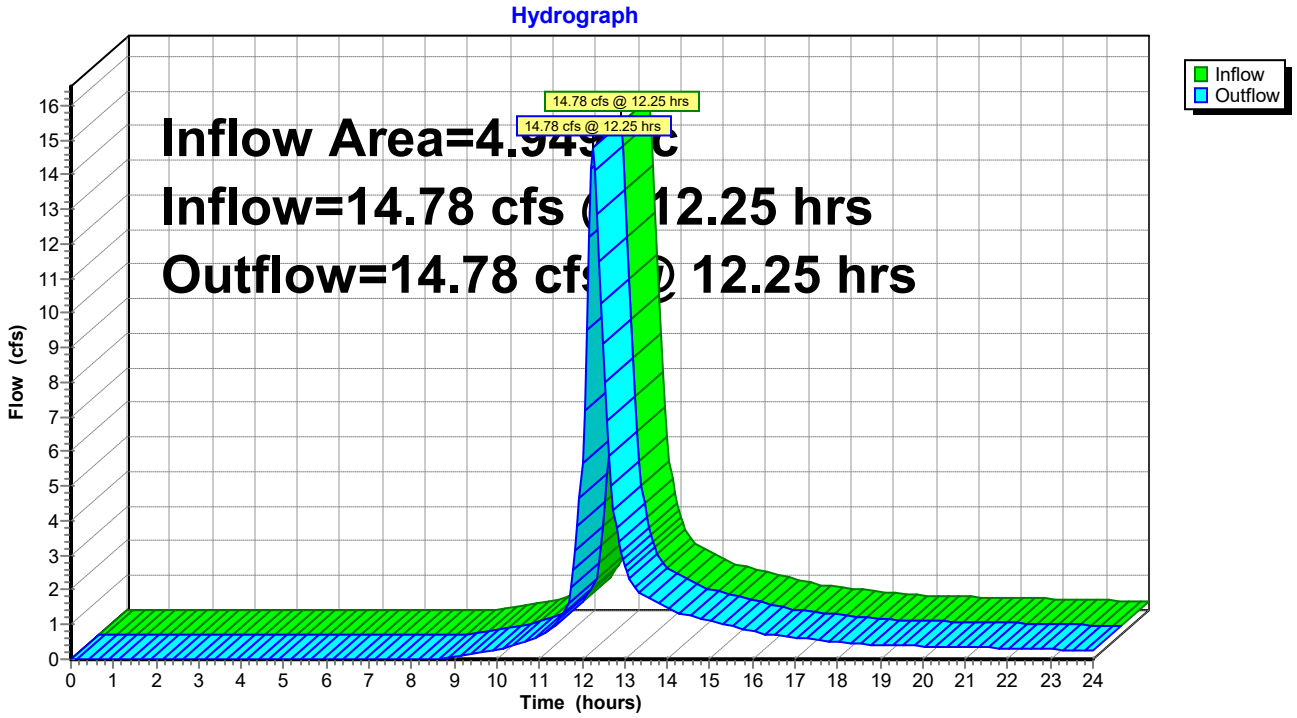
Summary for Reach 1200R: Final Reach #1200

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 4.949 ac, 0.67% Impervious, Inflow Depth > 3.60" for 25 Yr.-24 Hr. event
Inflow = 14.78 cfs @ 12.25 hrs, Volume= 1.485 af
Outflow = 14.78 cfs @ 12.25 hrs, Volume= 1.485 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Reach 1200R: Final Reach #1200



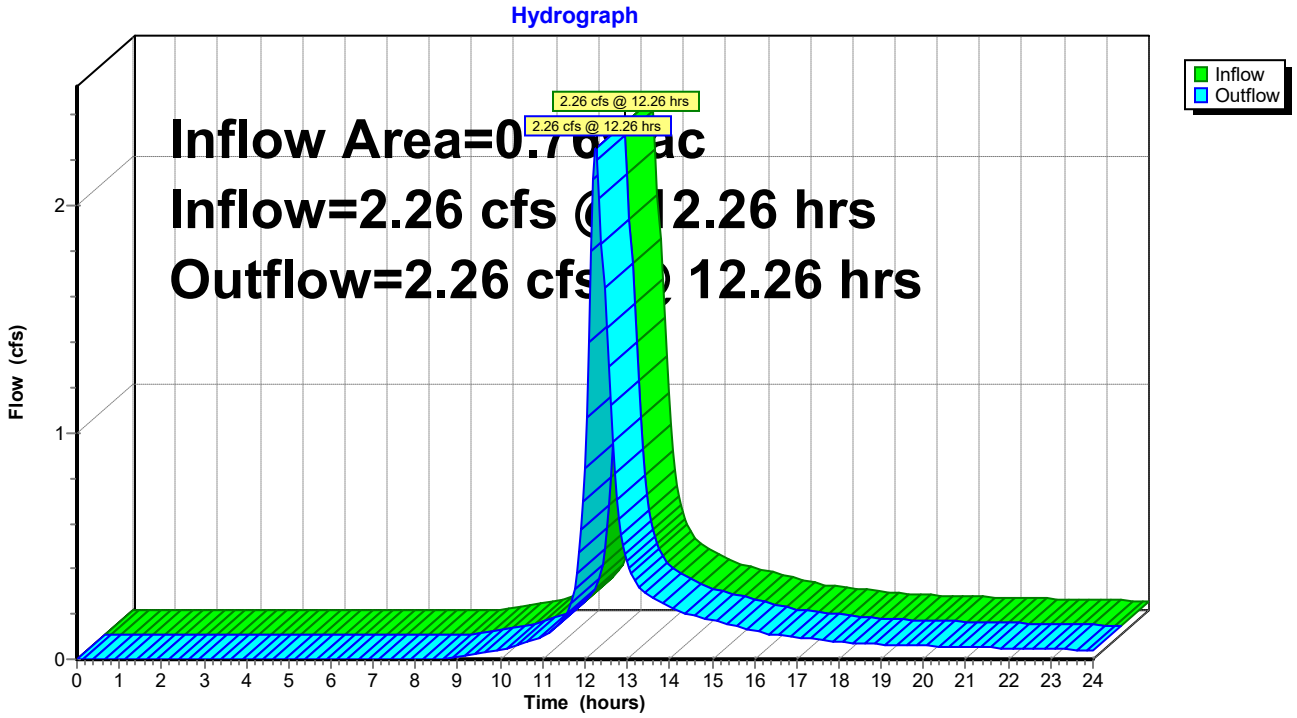
Summary for Reach 1300R: Final Reach #1300

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.769 ac, 0.00% Impervious, Inflow Depth > 3.60" for 25 Yr.-24 Hr. event
Inflow = 2.26 cfs @ 12.26 hrs, Volume= 0.231 af
Outflow = 2.26 cfs @ 12.26 hrs, Volume= 0.231 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Reach 1300R: Final Reach #1300



Summary for Pond 1EP: Catch Basin

Inflow Area = 0.011 ac, 45.75% Impervious, Inflow Depth > 4.68" for 25 Yr.-24 Hr. event
Inflow = 0.06 cfs @ 12.09 hrs, Volume= 0.004 af
Outflow = 0.06 cfs @ 12.09 hrs, Volume= 0.004 af, Atten= 0%, Lag= 0.3 min
Primary = 0.06 cfs @ 12.09 hrs, Volume= 0.004 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 138.07' @ 12.09 hrs Surf.Area= 13 sf Storage= 2 cf

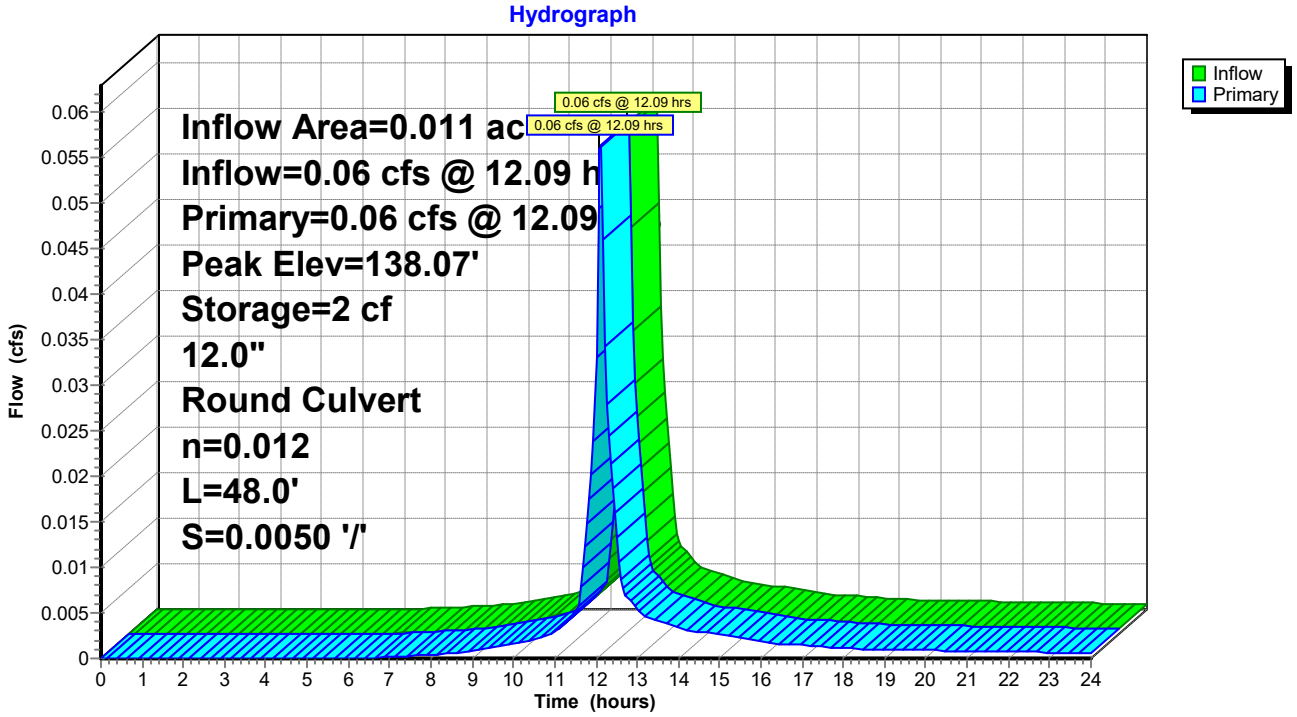
Plug-Flow detention time= 1.9 min calculated for 0.004 af (100% of inflow)
Center-of-Mass det. time= 1.3 min (807.0 - 805.7)

Volume	Invert	Avail.Storage	Storage Description
#1	137.94'	57 cf	**4.00'D x 4.50'H 4' Structure**

Device	Routing	Invert	Outlet Devices
#1	Primary	137.94'	**12.0" Round 12" HDPE** L= 48.0' Ke= 0.500 Inlet / Outlet Invert= 137.94' / 137.70' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.06 cfs @ 12.09 hrs HW=138.07' TW=137.19' (Dynamic Tailwater)
↑—**1=12" HDPE** (Barrel Controls 0.06 cfs @ 1.36 fps)

Pond 1EP: Catch Basin



Summary for Pond 2EP: Catch Basin

Inflow Area = 0.053 ac, 9.70% Impervious, Inflow Depth > 3.51" for 25 Yr.-24 Hr. event
Inflow = 0.21 cfs @ 12.09 hrs, Volume= 0.015 af
Outflow = 0.21 cfs @ 12.10 hrs, Volume= 0.015 af, Atten= 0%, Lag= 0.2 min
Primary = 0.21 cfs @ 12.10 hrs, Volume= 0.015 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 138.01' @ 12.10 hrs Surf.Area= 13 sf Storage= 3 cf

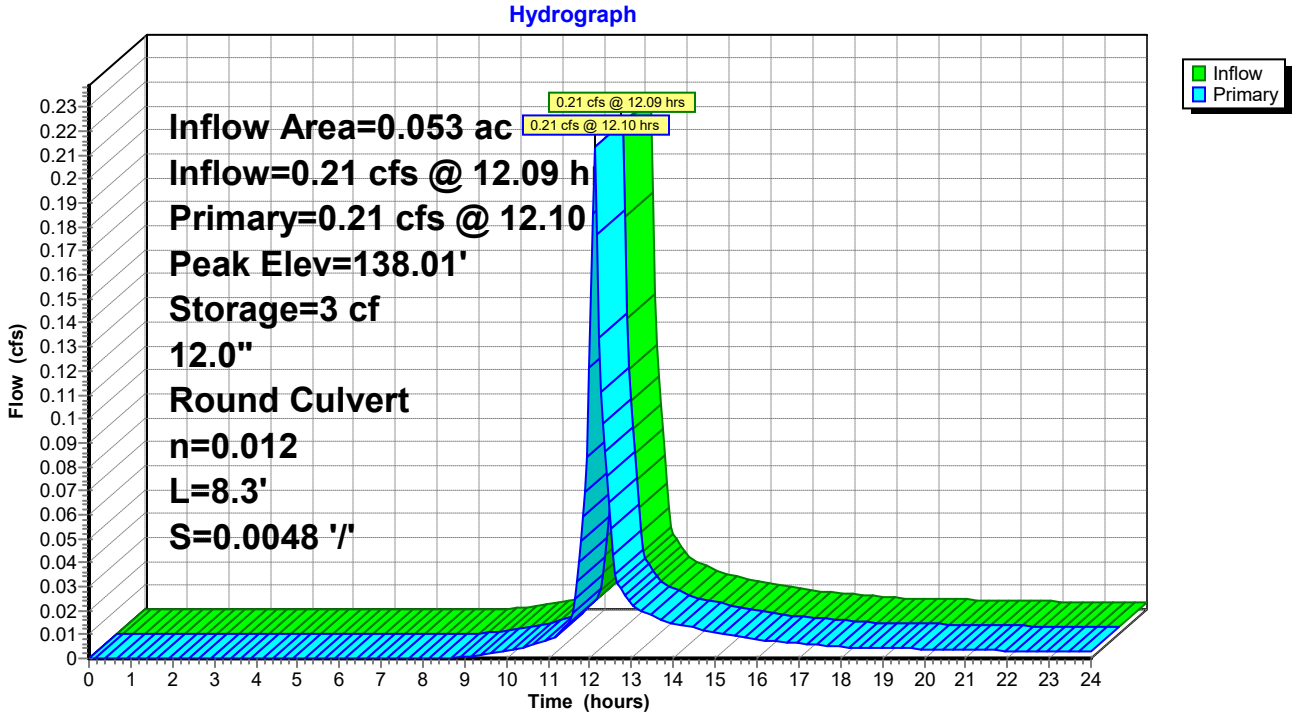
Plug-Flow detention time= 0.9 min calculated for 0.015 af (100% of inflow)
Center-of-Mass det. time= 0.6 min (831.7 - 831.2)

Volume	Invert	Avail.Storage	Storage Description
#1	137.74'	43 cf	**4.00'D x 3.40'H 4' Structure**

Device	Routing	Invert	Outlet Devices
#1	Primary	137.74'	**12.0" Round 12" HDPE** L= 8.3' Ke= 0.500 Inlet / Outlet Invert= 137.74' / 137.70' S= 0.0048 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.21 cfs @ 12.10 hrs HW=138.01' TW=137.19' (Dynamic Tailwater)
↑—**1=12" HDPE** (Barrel Controls 0.21 cfs @ 1.83 fps)

Pond 2EP: Catch Basin



Summary for Pond 3EP: Catch Basin

Inflow Area = 0.119 ac, 84.79% Impervious, Inflow Depth > 6.04" for 25 Yr.-24 Hr. event
Inflow = 0.76 cfs @ 12.09 hrs, Volume= 0.060 af
Outflow = 0.76 cfs @ 12.09 hrs, Volume= 0.060 af, Atten= 0%, Lag= 0.1 min
Primary = 0.76 cfs @ 12.09 hrs, Volume= 0.060 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 138.96' @ 12.09 hrs Surf.Area= 13 sf Storage= 6 cf

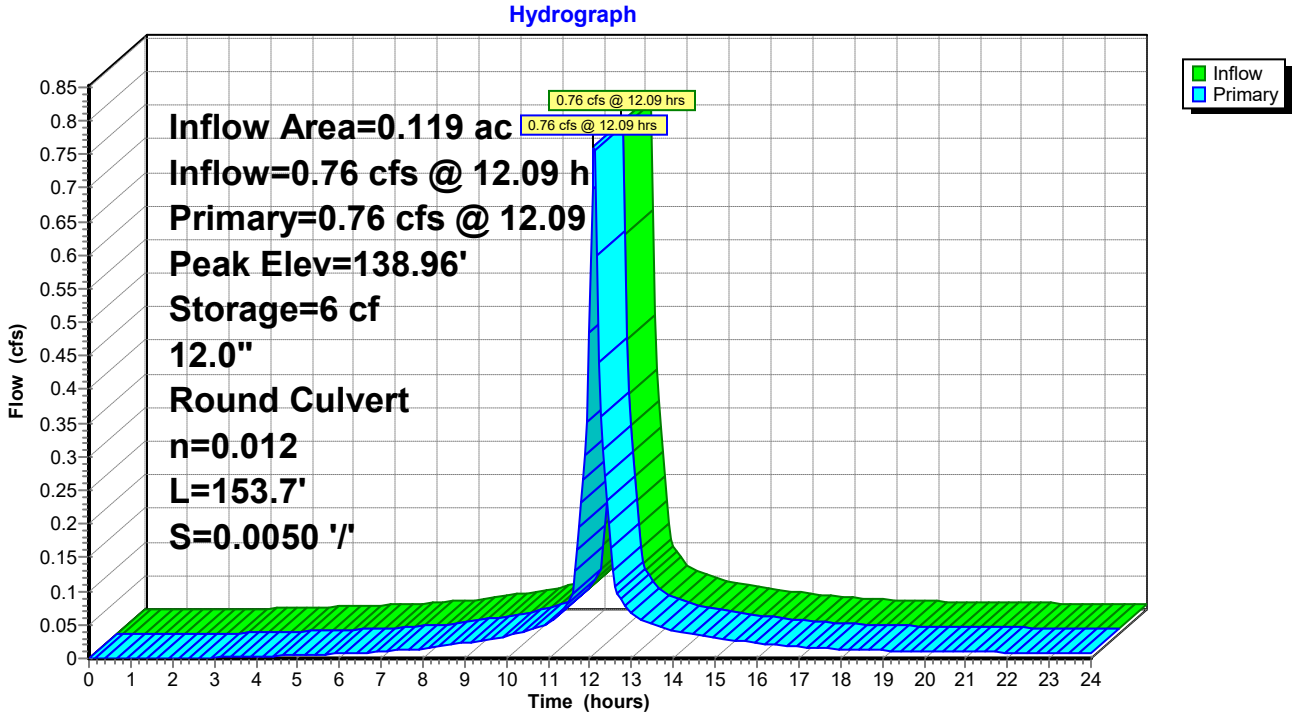
Plug-Flow detention time= 0.5 min calculated for 0.060 af (100% of inflow)
Center-of-Mass det. time= 0.4 min (769.2 - 768.9)

Volume	Invert	Avail.Storage	Storage Description
#1	138.47'	41 cf	**4.00'D x 3.23'H 4' Structure**

Device	Routing	Invert	Outlet Devices
#1	Primary	138.47'	**12.0" Round 12" HDPE** L= 153.7' Ke= 0.500 Inlet / Outlet Invert= 138.47' / 137.70' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.74 cfs @ 12.09 hrs HW=138.96' TW=137.19' (Dynamic Tailwater)
↑—**1=12" HDPE** (Barrel Controls 0.74 cfs @ 2.86 fps)

Pond 3EP: Catch Basin



Summary for Pond 4EP: Catch Basin

Inflow Area = 0.203 ac, 63.62% Impervious, Inflow Depth > 5.33" for 25 Yr.-24 Hr. event
Inflow = 1.16 cfs @ 12.09 hrs, Volume= 0.090 af
Outflow = 1.16 cfs @ 12.09 hrs, Volume= 0.090 af, Atten= 0%, Lag= 0.1 min
Primary = 1.16 cfs @ 12.09 hrs, Volume= 0.090 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 137.20' @ 12.09 hrs Surf.Area= 13 sf Storage= 6 cf

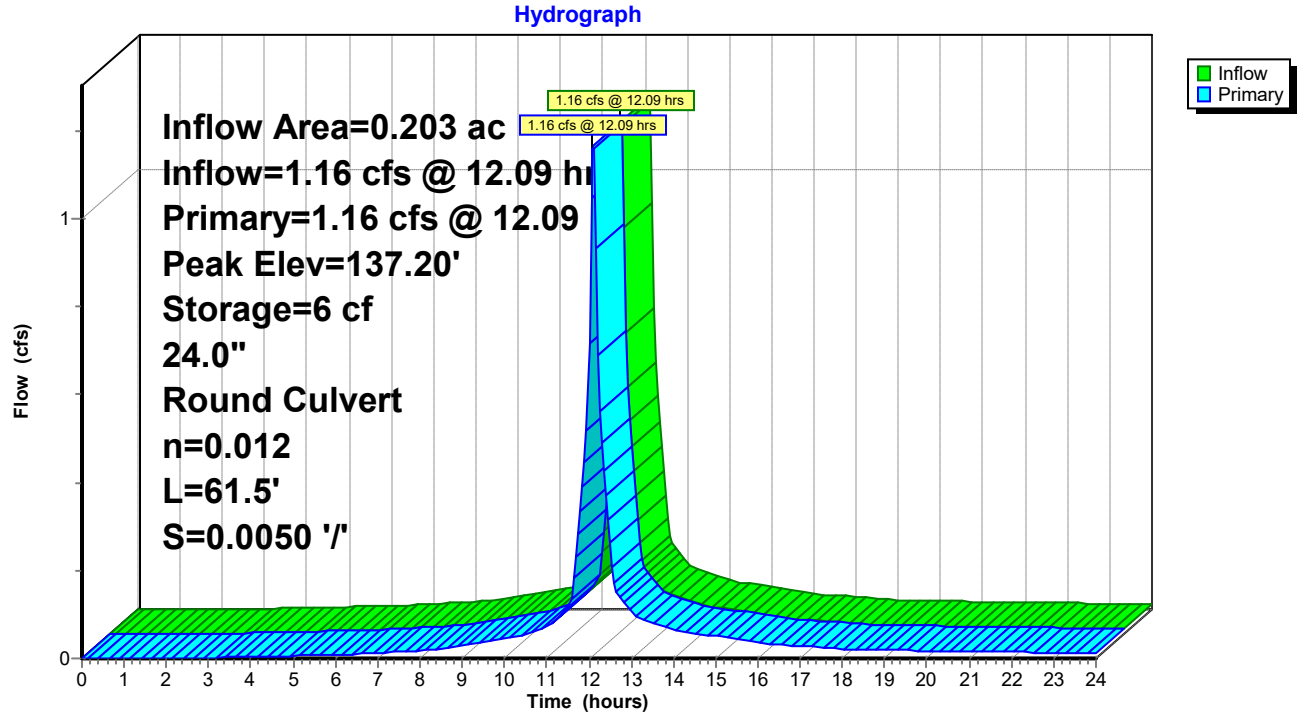
Plug-Flow detention time= 0.3 min calculated for 0.090 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (780.8 - 780.6)

Volume	Invert	Avail.Storage	Storage Description
#1	136.70'	69 cf	**4.00'D x 5.48'H 4' Structure**

Device	Routing	Invert	Outlet Devices
#1	Primary	136.70'	**24.0" Round 24 " HDPE** L= 61.5' Ke= 0.500 Inlet / Outlet Invert= 136.70' / 136.39' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

Primary OutFlow Max=1.14 cfs @ 12.09 hrs HW=137.19' TW=136.50' (Dynamic Tailwater)
↑—**1=24 " HDPE** (Barrel Controls 1.14 cfs @ 2.86 fps)

Pond 4EP: Catch Basin



Summary for Pond 15P: 12" RCP Inlet Sump/Pond

Inflow Area = 6.425 ac, 4.36% Impervious, Inflow Depth > 3.39" for 25 Yr.-24 Hr. event
Inflow = 15.99 cfs @ 12.34 hrs, Volume= 1.816 af
Outflow = 8.20 cfs @ 12.71 hrs, Volume= 1.815 af, Atten= 49%, Lag= 22.2 min
Primary = 8.20 cfs @ 12.71 hrs, Volume= 1.815 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 98.12' @ 12.71 hrs Surf.Area= 7,480 sf Storage= 12,599 cf
Flood Elev= 100.50' Surf.Area= 20,281 sf Storage= 43,715 cf

Plug-Flow detention time= 9.2 min calculated for 1.811 af (100% of inflow)
Center-of-Mass det. time= 9.0 min (856.4 - 847.4)

Volume	Invert	Avail.Storage	Storage Description
#1	92.91'	43,715 cf	**Open Water Storage (Irregular)** Listed below (Recalc)

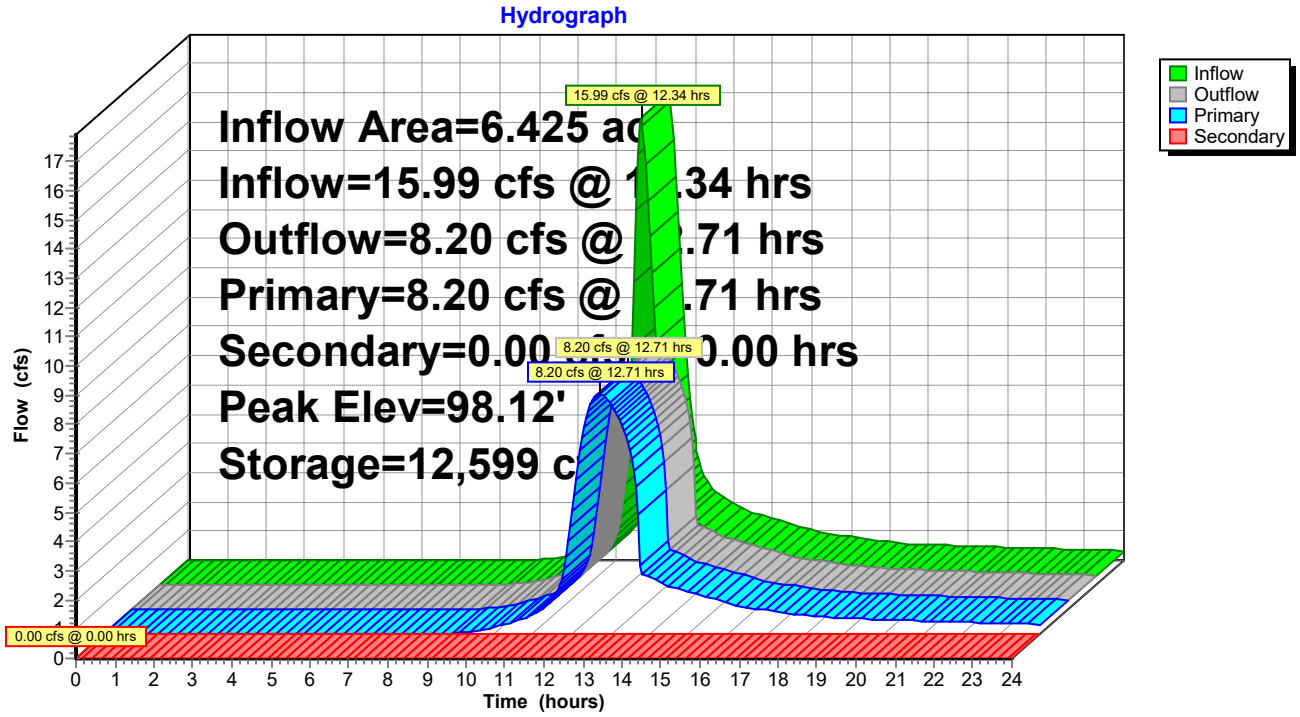
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
92.91	4	8.0	0	0	4
93.00	76	32.8	3	3	85
94.00	145	50.2	109	112	207
95.00	785	142.0	422	534	1,614
96.00	2,440	333.7	1,536	2,070	8,875
97.00	5,015	384.4	3,651	5,721	11,794
98.00	7,121	421.5	6,037	11,759	14,207
99.00	10,534	551.3	8,772	20,531	24,267
100.00	17,329	664.7	13,791	34,322	35,257
100.50	20,281	657.0	9,393	43,715	36,132

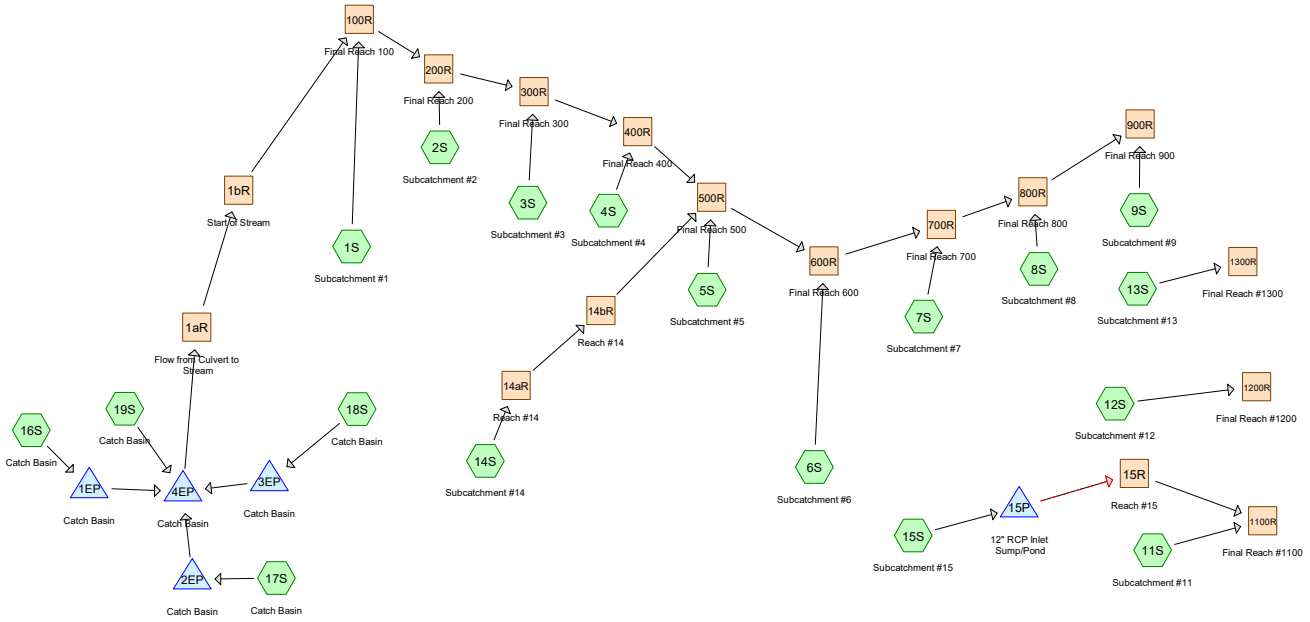
Device	Routing	Invert	Outlet Devices
#1	Primary	92.91'	**12.0" Round 12" RCP** L= 84.3' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 92.91' / 90.32' S= 0.0307 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Secondary	100.25'	**50.0' long x 15.0' breadth Flow Over Road** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=8.20 cfs @ 12.71 hrs HW=98.11' TW=90.66' (Dynamic Tailwater)
1=12" RCP (Inlet Controls 8.20 cfs @ 10.44 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=92.91' TW=90.32' (Dynamic Tailwater)
2=Flow Over Road (Controls 0.00 cfs)

Pond 15P: 12" RCP Inlet Sump/Pond





Subcat Reach Pond Link

Routing Diagram for 20-107 Existing Analysis

Prepared by Berry Surveying & Engineering, Printed 2/11/2022

HydroCAD® 10.00-25 s/n 10221 © 2019 HydroCAD Software Solutions LLC

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	1EP	137.94	137.70	48.0	0.0050	0.012	12.0	0.0	0.0
2	2EP	137.74	137.70	8.3	0.0048	0.012	12.0	0.0	0.0
3	3EP	138.47	137.70	153.7	0.0050	0.012	12.0	0.0	0.0
4	4EP	136.70	136.39	61.5	0.0050	0.012	24.0	0.0	0.0
5	15P	92.91	90.32	84.3	0.0307	0.012	12.0	0.0	0.0

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Subcatchment #1 Runoff Area=616,631 sf 0.96% Impervious Runoff Depth>1.07"
Flow Length=2,050' Tc=25.3 min CN=70 Runoff=10.08 cfs 1.262 af

Subcatchment 2S: Subcatchment #2 Runoff Area=33,802 sf 0.00% Impervious Runoff Depth>1.13"
Flow Length=215' Tc=8.3 min CN=71 Runoff=0.87 cfs 0.073 af

Subcatchment 3S: Subcatchment #3 Runoff Area=19,435 sf 0.00% Impervious Runoff Depth>1.08"
Flow Length=240' Tc=7.0 min CN=70 Runoff=0.50 cfs 0.040 af

Subcatchment 4S: Subcatchment #4 Runoff Area=64,929 sf 0.00% Impervious Runoff Depth>1.07"
Flow Length=293' Tc=14.1 min CN=70 Runoff=1.34 cfs 0.133 af

Subcatchment 5S: Subcatchment #5 Runoff Area=59,177 sf 0.00% Impervious Runoff Depth>1.13"
Flow Length=289' Tc=12.4 min CN=71 Runoff=1.36 cfs 0.128 af

Subcatchment 6S: Subcatchment #6 Runoff Area=232,739 sf 0.00% Impervious Runoff Depth>1.13"
Flow Length=927' Tc=27.5 min CN=71 Runoff=3.92 cfs 0.501 af

Subcatchment 7S: Subcatchment #7 Runoff Area=133,394 sf 0.00% Impervious Runoff Depth>1.07"
Flow Length=505' Tc=16.0 min CN=70 Runoff=2.61 cfs 0.274 af

Subcatchment 8S: Subcatchment #8 Runoff Area=69,837 sf 0.00% Impervious Runoff Depth>0.62"
Flow Length=381' Tc=18.1 min CN=61 Runoff=0.61 cfs 0.083 af

Subcatchment 9S: Subcatchment #9 Runoff Area=30,235 sf 0.00% Impervious Runoff Depth>0.62"
Flow Length=273' Tc=13.9 min CN=61 Runoff=0.29 cfs 0.036 af

Subcatchment 11S: Subcatchment #11 Runoff Area=93,998 sf 4.40% Impervious Runoff Depth>1.13"
Flow Length=226' Tc=12.7 min CN=71 Runoff=2.14 cfs 0.203 af

Subcatchment 12S: Subcatchment #12 Runoff Area=215,562 sf 0.67% Impervious Runoff Depth>1.13"
Flow Length=462' Tc=17.7 min CN=71 Runoff=4.35 cfs 0.466 af

Subcatchment 13S: Subcatchment #13 Runoff Area=33,510 sf 0.00% Impervious Runoff Depth>1.13"
Flow Length=329' Tc=18.6 min CN=71 Runoff=0.66 cfs 0.072 af

Subcatchment 14S: Subcatchment #14 Runoff Area=347,062 sf 0.00% Impervious Runoff Depth>1.07"
Flow Length=805' Tc=29.5 min CN=70 Runoff=5.31 cfs 0.709 af

Subcatchment 15S: Subcatchment #15 Runoff Area=279,874 sf 4.36% Impervious Runoff Depth>1.01"
Flow Length=553' Tc=23.7 min CN=69 Runoff=4.40 cfs 0.543 af

Subcatchment 16S: Catch Basin Runoff Area=459 sf 45.75% Impervious Runoff Depth>1.80"
Tc=6.0 min CN=81 Runoff=0.02 cfs 0.002 af

Subcatchment 17S: Catch Basin Runoff Area=2,300 sf 9.70% Impervious Runoff Depth>1.08"
Tc=6.0 min CN=70 Runoff=0.06 cfs 0.005 af

Subcatchment 18S: Catch Basin Runoff Area=5,195 sf 84.79% Impervious Runoff Depth>2.84"
Tc=6.0 min CN=93 Runoff=0.37 cfs 0.028 af

Subcatchment 19S: Catch Basin Runoff Area=880 sf 88.86% Impervious Runoff Depth>3.05"
Tc=6.0 min CN=95 Runoff=0.07 cfs 0.005 af

Reach 1aR: Flow from Culvert to Stream Avg. Flow Depth=0.08' Max Vel=1.32 fps Inflow=0.52 cfs 0.040 af
n=0.035 L=655.5' S=0.0506 '/' Capacity=22.92 cfs Outflow=0.40 cfs 0.039 af

Reach 1bR: Start of Stream Avg. Flow Depth=0.07' Max Vel=1.32 fps Inflow=0.40 cfs 0.039 af
n=0.035 L=1,438.0' S=0.0351 '/' Capacity=6.96 cfs Outflow=0.28 cfs 0.039 af

Reach 14aR: Reach #14 Avg. Flow Depth=0.40' Max Vel=3.11 fps Inflow=5.31 cfs 0.709 af
n=0.035 L=190.2' S=0.0315 '/' Capacity=37.71 cfs Outflow=5.31 cfs 0.708 af

Reach 14bR: Reach #14 Avg. Flow Depth=0.25' Max Vel=6.30 fps Inflow=5.31 cfs 0.708 af
n=0.035 L=93.6' S=0.2404 '/' Capacity=104.10 cfs Outflow=5.31 cfs 0.708 af

Reach 15R: Reach #15 Avg. Flow Depth=0.25' Max Vel=2.39 fps Inflow=4.25 cfs 0.543 af
n=0.035 L=198.0' S=0.0344 '/' Capacity=18.90 cfs Outflow=4.24 cfs 0.542 af

Reach 100R: Final Reach 100 Inflow=10.35 cfs 1.300 af
Outflow=10.35 cfs 1.300 af

Reach 200R: Final Reach 200 Inflow=10.80 cfs 1.373 af
Outflow=10.80 cfs 1.373 af

Reach 300R: Final Reach 300 Inflow=11.03 cfs 1.413 af
Outflow=11.03 cfs 1.413 af

Reach 400R: Final Reach 400 Inflow=12.05 cfs 1.547 af
Outflow=12.05 cfs 1.547 af

Reach 500R: Final Reach 500 Inflow=17.96 cfs 2.383 af
Outflow=17.96 cfs 2.383 af

Reach 600R: Final Reach 600 Inflow=21.86 cfs 2.884 af
Outflow=21.86 cfs 2.884 af

Reach 700R: Final Reach 700 Inflow=23.96 cfs 3.158 af
Outflow=23.96 cfs 3.158 af

Reach 800R: Final Reach 800 Inflow=24.55 cfs 3.241 af
Outflow=24.55 cfs 3.241 af

Reach 900R: Final Reach 900 Inflow=24.80 cfs 3.277 af
Outflow=24.80 cfs 3.277 af

Reach 1100R: Final Reach #1100 Inflow=5.60 cfs 0.745 af
Outflow=5.60 cfs 0.745 af

Reach 1200R: Final Reach #1200 Inflow=4.35 cfs 0.466 af
Outflow=4.35 cfs 0.466 af

Reach 1300R: Final Reach #1300 Inflow=0.66 cfs 0.072 af
Outflow=0.66 cfs 0.072 af

Pond 1EP: Catch Basin Peak Elev=138.03' Storage=1 cf Inflow=0.02 cfs 0.002 af
12.0" Round Culvert n=0.012 L=48.0' S=0.0050 '/' Outflow=0.02 cfs 0.002 af

Pond 2EP: Catch Basin Peak Elev=137.88' Storage=2 cf Inflow=0.06 cfs 0.005 af
12.0" Round Culvert n=0.012 L=8.3' S=0.0048 '/' Outflow=0.06 cfs 0.005 af

Pond 3EP: Catch Basin Peak Elev=138.81' Storage=4 cf Inflow=0.37 cfs 0.028 af
12.0" Round Culvert n=0.012 L=153.7' S=0.0050 '/' Outflow=0.37 cfs 0.028 af

Pond 4EP: Catch Basin Peak Elev=137.03' Storage=4 cf Inflow=0.52 cfs 0.040 af
24.0" Round Culvert n=0.012 L=61.5' S=0.0050 '/' Outflow=0.52 cfs 0.040 af

Pond 15P: 12" RCP Inlet Sump/Pond Peak Elev=94.67' Storage=322 cf Inflow=4.40 cfs 0.543 af
Primary=4.25 cfs 0.543 af Secondary=0.00 cfs 0.000 af Outflow=4.25 cfs 0.543 af

Total Runoff Area = 51.401 ac Runoff Volume = 4.563 af Average Runoff Depth = 1.07"
98.69% Pervious = 50.728 ac 1.31% Impervious = 0.672 ac

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Subcatchment #1 Runoff Area=616,631 sf 0.96% Impervious Runoff Depth>2.35"
Flow Length=2,050' Tc=25.3 min CN=70 Runoff=23.61 cfs 2.778 af

Subcatchment 2S: Subcatchment #2 Runoff Area=33,802 sf 0.00% Impervious Runoff Depth>2.45"
Flow Length=215' Tc=8.3 min CN=71 Runoff=2.02 cfs 0.158 af

Subcatchment 3S: Subcatchment #3 Runoff Area=19,435 sf 0.00% Impervious Runoff Depth>2.37"
Flow Length=240' Tc=7.0 min CN=70 Runoff=1.17 cfs 0.088 af

Subcatchment 4S: Subcatchment #4 Runoff Area=64,929 sf 0.00% Impervious Runoff Depth>2.36"
Flow Length=293' Tc=14.1 min CN=70 Runoff=3.14 cfs 0.293 af

Subcatchment 5S: Subcatchment #5 Runoff Area=59,177 sf 0.00% Impervious Runoff Depth>2.45"
Flow Length=289' Tc=12.4 min CN=71 Runoff=3.10 cfs 0.277 af

Subcatchment 6S: Subcatchment #6 Runoff Area=232,739 sf 0.00% Impervious Runoff Depth>2.44"
Flow Length=927' Tc=27.5 min CN=71 Runoff=8.93 cfs 1.086 af

Subcatchment 7S: Subcatchment #7 Runoff Area=133,394 sf 0.00% Impervious Runoff Depth>2.36"
Flow Length=505' Tc=16.0 min CN=70 Runoff=6.13 cfs 0.602 af

Subcatchment 8S: Subcatchment #8 Runoff Area=69,837 sf 0.00% Impervious Runoff Depth>1.63"
Flow Length=381' Tc=18.1 min CN=61 Runoff=2.00 cfs 0.218 af

Subcatchment 9S: Subcatchment #9 Runoff Area=30,235 sf 0.00% Impervious Runoff Depth>1.63"
Flow Length=273' Tc=13.9 min CN=61 Runoff=0.96 cfs 0.095 af

Subcatchment 11S: Subcatchment #11 Runoff Area=93,998 sf 4.40% Impervious Runoff Depth>2.45"
Flow Length=226' Tc=12.7 min CN=71 Runoff=4.89 cfs 0.440 af

Subcatchment 12S: Subcatchment #12 Runoff Area=215,562 sf 0.67% Impervious Runoff Depth>2.45"
Flow Length=462' Tc=17.7 min CN=71 Runoff=9.94 cfs 1.008 af

Subcatchment 13S: Subcatchment #13 Runoff Area=33,510 sf 0.00% Impervious Runoff Depth>2.44"
Flow Length=329' Tc=18.6 min CN=71 Runoff=1.52 cfs 0.157 af

Subcatchment 14S: Subcatchment #14 Runoff Area=347,062 sf 0.00% Impervious Runoff Depth>2.35"
Flow Length=805' Tc=29.5 min CN=70 Runoff=12.40 cfs 1.562 af

Subcatchment 15S: Subcatchment #15 Runoff Area=279,874 sf 4.36% Impervious Runoff Depth>2.27"
Flow Length=553' Tc=23.7 min CN=69 Runoff=10.57 cfs 1.216 af

Subcatchment 16S: Catch Basin Runoff Area=459 sf 45.75% Impervious Runoff Depth>3.37"
Tc=6.0 min CN=81 Runoff=0.04 cfs 0.003 af

Subcatchment 17S: Catch Basin Runoff Area=2,300 sf 9.70% Impervious Runoff Depth>2.37"
Tc=6.0 min CN=70 Runoff=0.14 cfs 0.010 af

Subcatchment 18S: Catch Basin Runoff Area=5,195 sf 84.79% Impervious Runoff Depth>4.63"
Tc=6.0 min CN=93 Runoff=0.59 cfs 0.046 af

Subcatchment 19S: Catch Basin Runoff Area=880 sf 88.86% Impervious Runoff Depth>4.85"
Tc=6.0 min CN=95 Runoff=0.10 cfs 0.008 af

Reach 1aR: Flow from Culvert to Stream Avg. Flow Depth=0.10' Max Vel=1.58 fps Inflow=0.88 cfs 0.067 af
n=0.035 L=655.5' S=0.0506 '/' Capacity=22.92 cfs Outflow=0.71 cfs 0.067 af

Reach 1bR: Start of Stream Avg. Flow Depth=0.10' Max Vel=1.68 fps Inflow=0.71 cfs 0.067 af
n=0.035 L=1,438.0' S=0.0351 '/' Capacity=6.96 cfs Outflow=0.53 cfs 0.066 af

Reach 14aR: Reach #14 Avg. Flow Depth=0.60' Max Vel=4.03 fps Inflow=12.40 cfs 1.562 af
n=0.035 L=190.2' S=0.0315 '/' Capacity=37.71 cfs Outflow=12.40 cfs 1.561 af

Reach 14bR: Reach #14 Avg. Flow Depth=0.37' Max Vel=8.17 fps Inflow=12.40 cfs 1.561 af
n=0.035 L=93.6' S=0.2404 '/' Capacity=104.10 cfs Outflow=12.40 cfs 1.561 af

Reach 15R: Reach #15 Avg. Flow Depth=0.32' Max Vel=2.79 fps Inflow=7.03 cfs 1.215 af
n=0.035 L=198.0' S=0.0344 '/' Capacity=18.90 cfs Outflow=7.03 cfs 1.214 af

Reach 100R: Final Reach 100 Inflow=24.11 cfs 2.844 af
Outflow=24.11 cfs 2.844 af

Reach 200R: Final Reach 200 Inflow=25.08 cfs 3.003 af
Outflow=25.08 cfs 3.003 af

Reach 300R: Final Reach 300 Inflow=25.60 cfs 3.091 af
Outflow=25.60 cfs 3.091 af

Reach 400R: Final Reach 400 Inflow=27.94 cfs 3.384 af
Outflow=27.94 cfs 3.384 af

Reach 500R: Final Reach 500 Inflow=41.76 cfs 5.222 af
Outflow=41.76 cfs 5.222 af

Reach 600R: Final Reach 600 Inflow=50.64 cfs 6.308 af
Outflow=50.64 cfs 6.308 af

Reach 700R: Final Reach 700 Inflow=55.56 cfs 6.910 af
Outflow=55.56 cfs 6.910 af

Reach 800R: Final Reach 800 Inflow=57.42 cfs 7.128 af
Outflow=57.42 cfs 7.128 af

Reach 900R: Final Reach 900 Inflow=58.17 cfs 7.223 af
Outflow=58.17 cfs 7.223 af

Reach 1100R: Final Reach #1100 Inflow=10.06 cfs 1.655 af
Outflow=10.06 cfs 1.655 af

Reach 1200R: Final Reach #1200 Inflow=9.94 cfs 1.008 af
Outflow=9.94 cfs 1.008 af

Reach 1300R: Final Reach #1300 Inflow=1.52 cfs 0.157 af
Outflow=1.52 cfs 0.157 af

Pond 1EP: Catch Basin Peak Elev=138.05' Storage=1 cf Inflow=0.04 cfs 0.003 af
12.0" Round Culvert n=0.012 L=48.0' S=0.0050 '/' Outflow=0.04 cfs 0.003 af

Pond 2EP: Catch Basin Peak Elev=137.96' Storage=3 cf Inflow=0.14 cfs 0.010 af
12.0" Round Culvert n=0.012 L=8.3' S=0.0048 '/' Outflow=0.14 cfs 0.010 af

Pond 3EP: Catch Basin Peak Elev=138.90' Storage=5 cf Inflow=0.59 cfs 0.046 af
12.0" Round Culvert n=0.012 L=153.7' S=0.0050 '/' Outflow=0.59 cfs 0.046 af

Pond 4EP: Catch Basin Peak Elev=137.13' Storage=5 cf Inflow=0.88 cfs 0.068 af
24.0" Round Culvert n=0.012 L=61.5' S=0.0050 '/' Outflow=0.88 cfs 0.067 af

Pond 15P: 12" RCP Inlet Sump/Pond Peak Elev=96.87' Storage=5,097 cf Inflow=10.57 cfs 1.216 af
Primary=7.03 cfs 1.215 af Secondary=0.00 cfs 0.000 af Outflow=7.03 cfs 1.215 af

Total Runoff Area = 51.401 ac Runoff Volume = 10.047 af Average Runoff Depth = 2.35"
98.69% Pervious = 50.728 ac 1.31% Impervious = 0.672 ac

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Subcatchment #1 Runoff Area=616,631 sf 0.96% Impervious Runoff Depth>3.49"
Flow Length=2,050' Tc=25.3 min CN=70 Runoff=35.41 cfs 4.120 af

Subcatchment 2S: Subcatchment #2 Runoff Area=33,802 sf 0.00% Impervious Runoff Depth>3.61"
Flow Length=215' Tc=8.3 min CN=71 Runoff=2.99 cfs 0.233 af

Subcatchment 3S: Subcatchment #3 Runoff Area=19,435 sf 0.00% Impervious Runoff Depth>3.51"
Flow Length=240' Tc=7.0 min CN=70 Runoff=1.75 cfs 0.130 af

Subcatchment 4S: Subcatchment #4 Runoff Area=64,929 sf 0.00% Impervious Runoff Depth>3.50"
Flow Length=293' Tc=14.1 min CN=70 Runoff=4.71 cfs 0.435 af

Subcatchment 5S: Subcatchment #5 Runoff Area=59,177 sf 0.00% Impervious Runoff Depth>3.61"
Flow Length=289' Tc=12.4 min CN=71 Runoff=4.64 cfs 0.408 af

Subcatchment 6S: Subcatchment #6 Runoff Area=232,739 sf 0.00% Impervious Runoff Depth>3.59"
Flow Length=927' Tc=27.5 min CN=71 Runoff=13.27 cfs 1.600 af

Subcatchment 7S: Subcatchment #7 Runoff Area=133,394 sf 0.00% Impervious Runoff Depth>3.50"
Flow Length=505' Tc=16.0 min CN=70 Runoff=9.25 cfs 0.893 af

Subcatchment 8S: Subcatchment #8 Runoff Area=69,837 sf 0.00% Impervious Runoff Depth>2.60"
Flow Length=381' Tc=18.1 min CN=61 Runoff=3.33 cfs 0.347 af

Subcatchment 9S: Subcatchment #9 Runoff Area=30,235 sf 0.00% Impervious Runoff Depth>2.60"
Flow Length=273' Tc=13.9 min CN=61 Runoff=1.59 cfs 0.150 af

Subcatchment 11S: Subcatchment #11 Runoff Area=93,998 sf 4.40% Impervious Runoff Depth>3.61"
Flow Length=226' Tc=12.7 min CN=71 Runoff=7.27 cfs 0.648 af

Subcatchment 12S: Subcatchment #12 Runoff Area=215,562 sf 0.67% Impervious Runoff Depth>3.60"
Flow Length=462' Tc=17.7 min CN=71 Runoff=14.78 cfs 1.485 af

Subcatchment 13S: Subcatchment #13 Runoff Area=33,510 sf 0.00% Impervious Runoff Depth>3.60"
Flow Length=329' Tc=18.6 min CN=71 Runoff=2.26 cfs 0.231 af

Subcatchment 14S: Subcatchment #14 Runoff Area=347,062 sf 0.00% Impervious Runoff Depth>3.49"
Flow Length=805' Tc=29.5 min CN=70 Runoff=18.61 cfs 2.317 af

Subcatchment 15S: Subcatchment #15 Runoff Area=279,874 sf 4.36% Impervious Runoff Depth>3.39"
Flow Length=553' Tc=23.7 min CN=69 Runoff=15.99 cfs 1.816 af

Subcatchment 16S: Catch Basin Runoff Area=459 sf 45.75% Impervious Runoff Depth>4.68"
Tc=6.0 min CN=81 Runoff=0.06 cfs 0.004 af

Subcatchment 17S: Catch Basin Runoff Area=2,300 sf 9.70% Impervious Runoff Depth>3.51"
Tc=6.0 min CN=70 Runoff=0.21 cfs 0.015 af

Subcatchment 18S: Catch Basin Runoff Area=5,195 sf 84.79% Impervious Runoff Depth>6.04"
Tc=6.0 min CN=93 Runoff=0.76 cfs 0.060 af

Subcatchment 19S: Catch Basin Runoff Area=880 sf 88.86% Impervious Runoff Depth>6.27"
Tc=6.0 min CN=95 Runoff=0.13 cfs 0.011 af

Reach 1aR: Flow from Culvert to Stream Avg. Flow Depth=0.12' Max Vel=1.73 fps Inflow=1.16 cfs 0.090 af
n=0.035 L=655.5' S=0.0506 '/' Capacity=22.92 cfs Outflow=0.96 cfs 0.090 af

Reach 1bR: Start of Stream Avg. Flow Depth=0.13' Max Vel=1.91 fps Inflow=0.96 cfs 0.090 af
n=0.035 L=1,438.0' S=0.0351 '/' Capacity=6.96 cfs Outflow=0.74 cfs 0.089 af

Reach 14aR: Reach #14 Avg. Flow Depth=0.72' Max Vel=4.56 fps Inflow=18.61 cfs 2.317 af
n=0.035 L=190.2' S=0.0315 '/' Capacity=37.71 cfs Outflow=18.59 cfs 2.315 af

Reach 14bR: Reach #14 Avg. Flow Depth=0.45' Max Vel=9.24 fps Inflow=18.59 cfs 2.315 af
n=0.035 L=93.6' S=0.2404 '/' Capacity=104.10 cfs Outflow=18.59 cfs 2.315 af

Reach 15R: Reach #15 Avg. Flow Depth=0.34' Max Vel=2.93 fps Inflow=8.20 cfs 1.815 af
n=0.035 L=198.0' S=0.0344 '/' Capacity=18.90 cfs Outflow=8.20 cfs 1.814 af

Reach 100R: Final Reach 100 Inflow=36.09 cfs 4.208 af
Outflow=36.09 cfs 4.208 af

Reach 200R: Final Reach 200 Inflow=37.51 cfs 4.442 af
Outflow=37.51 cfs 4.442 af

Reach 300R: Final Reach 300 Inflow=38.27 cfs 4.572 af
Outflow=38.27 cfs 4.572 af

Reach 400R: Final Reach 400 Inflow=41.78 cfs 5.007 af
Outflow=41.78 cfs 5.007 af

Reach 500R: Final Reach 500 Inflow=62.49 cfs 7.730 af
Outflow=62.49 cfs 7.730 af

Reach 600R: Final Reach 600 Inflow=75.68 cfs 9.331 af
Outflow=75.68 cfs 9.331 af

Reach 700R: Final Reach 700 Inflow=83.09 cfs 10.224 af
Outflow=83.09 cfs 10.224 af

Reach 800R: Final Reach 800 Inflow=86.16 cfs 10.571 af
Outflow=86.16 cfs 10.571 af

Reach 900R: Final Reach 900 Inflow=87.39 cfs 10.721 af
Outflow=87.39 cfs 10.721 af

Reach 1100R: Final Reach #1100 Inflow=13.37 cfs 2.462 af
Outflow=13.37 cfs 2.462 af

Reach 1200R: Final Reach #1200 Inflow=14.78 cfs 1.485 af
Outflow=14.78 cfs 1.485 af

Reach 1300R: Final Reach #1300 Inflow=2.26 cfs 0.231 af
Outflow=2.26 cfs 0.231 af

Pond 1EP: Catch Basin Peak Elev=138.07' Storage=2 cf Inflow=0.06 cfs 0.004 af
12.0" Round Culvert n=0.012 L=48.0' S=0.0050 '/' Outflow=0.06 cfs 0.004 af

Pond 2EP: Catch Basin Peak Elev=138.01' Storage=3 cf Inflow=0.21 cfs 0.015 af
12.0" Round Culvert n=0.012 L=8.3' S=0.0048 '/' Outflow=0.21 cfs 0.015 af

Pond 3EP: Catch Basin Peak Elev=138.96' Storage=6 cf Inflow=0.76 cfs 0.060 af
12.0" Round Culvert n=0.012 L=153.7' S=0.0050 '/' Outflow=0.76 cfs 0.060 af

Pond 4EP: Catch Basin Peak Elev=137.20' Storage=6 cf Inflow=1.16 cfs 0.090 af
24.0" Round Culvert n=0.012 L=61.5' S=0.0050 '/' Outflow=1.16 cfs 0.090 af

Pond 15P: 12" RCP Inlet Sump/Pond Peak Elev=98.12' Storage=12,599 cf Inflow=15.99 cfs 1.816 af
Primary=8.20 cfs 1.815 af Secondary=0.00 cfs 0.000 af Outflow=8.20 cfs 1.815 af

Total Runoff Area = 51.401 ac Runoff Volume = 14.904 af Average Runoff Depth = 3.48"
98.69% Pervious = 50.728 ac 1.31% Impervious = 0.672 ac

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Subcatchment #1 Runoff Area=616,631 sf 0.96% Impervious Runoff Depth>4.62"
Flow Length=2,050' Tc=25.3 min CN=70 Runoff=46.98 cfs 5.453 af

Subcatchment 2S: Subcatchment #2 Runoff Area=33,802 sf 0.00% Impervious Runoff Depth>4.76"
Flow Length=215' Tc=8.3 min CN=71 Runoff=3.95 cfs 0.308 af

Subcatchment 3S: Subcatchment #3 Runoff Area=19,435 sf 0.00% Impervious Runoff Depth>4.64"
Flow Length=240' Tc=7.0 min CN=70 Runoff=2.32 cfs 0.173 af

Subcatchment 4S: Subcatchment #4 Runoff Area=64,929 sf 0.00% Impervious Runoff Depth>4.63"
Flow Length=293' Tc=14.1 min CN=70 Runoff=6.25 cfs 0.576 af

Subcatchment 5S: Subcatchment #5 Runoff Area=59,177 sf 0.00% Impervious Runoff Depth>4.75"
Flow Length=289' Tc=12.4 min CN=71 Runoff=6.12 cfs 0.538 af

Subcatchment 6S: Subcatchment #6 Runoff Area=232,739 sf 0.00% Impervious Runoff Depth>4.74"
Flow Length=927' Tc=27.5 min CN=71 Runoff=17.51 cfs 2.109 af

Subcatchment 7S: Subcatchment #7 Runoff Area=133,394 sf 0.00% Impervious Runoff Depth>4.63"
Flow Length=505' Tc=16.0 min CN=70 Runoff=12.27 cfs 1.182 af

Subcatchment 8S: Subcatchment #8 Runoff Area=69,837 sf 0.00% Impervious Runoff Depth>3.59"
Flow Length=381' Tc=18.1 min CN=61 Runoff=4.68 cfs 0.480 af

Subcatchment 9S: Subcatchment #9 Runoff Area=30,235 sf 0.00% Impervious Runoff Depth>3.60"
Flow Length=273' Tc=13.9 min CN=61 Runoff=2.24 cfs 0.208 af

Subcatchment 11S: Subcatchment #11 Runoff Area=93,998 sf 4.40% Impervious Runoff Depth>4.75"
Flow Length=226' Tc=12.7 min CN=71 Runoff=9.59 cfs 0.854 af

Subcatchment 12S: Subcatchment #12 Runoff Area=215,562 sf 0.67% Impervious Runoff Depth>4.75"
Flow Length=462' Tc=17.7 min CN=71 Runoff=19.50 cfs 1.957 af

Subcatchment 13S: Subcatchment #13 Runoff Area=33,510 sf 0.00% Impervious Runoff Depth>4.75"
Flow Length=329' Tc=18.6 min CN=71 Runoff=2.98 cfs 0.304 af

Subcatchment 14S: Subcatchment #14 Runoff Area=347,062 sf 0.00% Impervious Runoff Depth>4.62"
Flow Length=805' Tc=29.5 min CN=70 Runoff=24.68 cfs 3.066 af

Subcatchment 15S: Subcatchment #15 Runoff Area=279,874 sf 4.36% Impervious Runoff Depth>4.51"
Flow Length=553' Tc=23.7 min CN=69 Runoff=21.34 cfs 2.414 af

Subcatchment 16S: Catch Basin Runoff Area=459 sf 45.75% Impervious Runoff Depth>5.94"
Tc=6.0 min CN=81 Runoff=0.07 cfs 0.005 af

Subcatchment 17S: Catch Basin Runoff Area=2,300 sf 9.70% Impervious Runoff Depth>4.64"
Tc=6.0 min CN=70 Runoff=0.28 cfs 0.020 af

Subcatchment 18S: Catch Basin Runoff Area=5,195 sf 84.79% Impervious Runoff Depth>7.37"
Tc=6.0 min CN=93 Runoff=0.92 cfs 0.073 af

Subcatchment 19S: Catch Basin Runoff Area=880 sf 88.86% Impervious Runoff Depth>7.61"
Tc=6.0 min CN=95 Runoff=0.16 cfs 0.013 af

Reach 1aR: Flow from Culvert to Stream Avg. Flow Depth=0.13' Max Vel=1.85 fps Inflow=1.43 cfs 0.112 af
n=0.035 L=655.5' S=0.0506 '/' Capacity=22.92 cfs Outflow=1.20 cfs 0.111 af

Reach 1bR: Start of Stream Avg. Flow Depth=0.15' Max Vel=2.09 fps Inflow=1.20 cfs 0.111 af
n=0.035 L=1,438.0' S=0.0351 '/' Capacity=6.96 cfs Outflow=0.94 cfs 0.110 af

Reach 14aR: Reach #14 Avg. Flow Depth=0.82' Max Vel=4.97 fps Inflow=24.68 cfs 3.066 af
n=0.035 L=190.2' S=0.0315 '/' Capacity=37.71 cfs Outflow=24.68 cfs 3.065 af

Reach 14bR: Reach #14 Avg. Flow Depth=0.51' Max Vel=10.08 fps Inflow=24.68 cfs 3.065 af
n=0.035 L=93.6' S=0.2404 '/' Capacity=104.10 cfs Outflow=24.68 cfs 3.065 af

Reach 15R: Reach #15 Avg. Flow Depth=0.36' Max Vel=3.01 fps Inflow=9.01 cfs 2.413 af
n=0.035 L=198.0' S=0.0344 '/' Capacity=18.90 cfs Outflow=9.01 cfs 2.411 af

Reach 100R: Final Reach 100 Inflow=47.82 cfs 5.563 af
Outflow=47.82 cfs 5.563 af

Reach 200R: Final Reach 200 Inflow=49.68 cfs 5.871 af
Outflow=49.68 cfs 5.871 af

Reach 300R: Final Reach 300 Inflow=50.67 cfs 6.043 af
Outflow=50.67 cfs 6.043 af

Reach 400R: Final Reach 400 Inflow=55.33 cfs 6.619 af
Outflow=55.33 cfs 6.619 af

Reach 500R: Final Reach 500 Inflow=82.79 cfs 10.221 af
Outflow=82.79 cfs 10.221 af

Reach 600R: Final Reach 600 Inflow=100.19 cfs 12.330 af
Outflow=100.19 cfs 12.330 af

Reach 700R: Final Reach 700 Inflow=110.04 cfs 13.512 af
Outflow=110.04 cfs 13.512 af

Reach 800R: Final Reach 800 Inflow=114.36 cfs 13.992 af
Outflow=114.36 cfs 13.992 af

Reach 900R: Final Reach 900 Inflow=116.09 cfs 14.200 af
Outflow=116.09 cfs 14.200 af

Reach 1100R: Final Reach #1100 Inflow=16.31 cfs 3.266 af
Outflow=16.31 cfs 3.266 af

Reach 1200R: Final Reach #1200 Inflow=19.50 cfs 1.957 af
Outflow=19.50 cfs 1.957 af

Reach 1300R: Final Reach #1300 Inflow=2.98 cfs 0.304 af
Outflow=2.98 cfs 0.304 af

Pond 1EP: Catch Basin Peak Elev=138.09' Storage=2 cf Inflow=0.07 cfs 0.005 af
12.0" Round Culvert n=0.012 L=48.0' S=0.0050 '/' Outflow=0.07 cfs 0.005 af

Pond 2EP: Catch Basin Peak Elev=138.06' Storage=4 cf Inflow=0.28 cfs 0.020 af
12.0" Round Culvert n=0.012 L=8.3' S=0.0048 '/' Outflow=0.28 cfs 0.020 af

Pond 3EP: Catch Basin Peak Elev=139.02' Storage=7 cf Inflow=0.92 cfs 0.073 af
12.0" Round Culvert n=0.012 L=153.7' S=0.0050 '/' Outflow=0.92 cfs 0.073 af

Pond 4EP: Catch Basin Peak Elev=137.25' Storage=7 cf Inflow=1.43 cfs 0.112 af
24.0" Round Culvert n=0.012 L=61.5' S=0.0050 '/' Outflow=1.43 cfs 0.112 af

Pond 15P: 12" RCP Inlet Sump/Pond Peak Elev=99.09' Storage=21,457 cf Inflow=21.34 cfs 2.414 af
Primary=9.01 cfs 2.413 af Secondary=0.00 cfs 0.000 af Outflow=9.01 cfs 2.413 af

Total Runoff Area = 51.401 ac Runoff Volume = 19.733 af Average Runoff Depth = 4.61"
98.69% Pervious = 50.728 ac 1.31% Impervious = 0.672 ac

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Subcatchment #1 Runoff Area=616,631 sf 0.96% Impervious Runoff Depth>6.03"
Flow Length=2,050' Tc=25.3 min CN=70 Runoff=61.14 cfs 7.109 af

Subcatchment 2S: Subcatchment #2 Runoff Area=33,802 sf 0.00% Impervious Runoff Depth>6.18"
Flow Length=215' Tc=8.3 min CN=71 Runoff=5.11 cfs 0.399 af

Subcatchment 3S: Subcatchment #3 Runoff Area=19,435 sf 0.00% Impervious Runoff Depth>6.05"
Flow Length=240' Tc=7.0 min CN=70 Runoff=3.01 cfs 0.225 af

Subcatchment 4S: Subcatchment #4 Runoff Area=64,929 sf 0.00% Impervious Runoff Depth>6.04"
Flow Length=293' Tc=14.1 min CN=70 Runoff=8.13 cfs 0.750 af

Subcatchment 5S: Subcatchment #5 Runoff Area=59,177 sf 0.00% Impervious Runoff Depth>6.17"
Flow Length=289' Tc=12.4 min CN=71 Runoff=7.93 cfs 0.699 af

Subcatchment 6S: Subcatchment #6 Runoff Area=232,739 sf 0.00% Impervious Runoff Depth>6.15"
Flow Length=927' Tc=27.5 min CN=71 Runoff=22.69 cfs 2.740 af

Subcatchment 7S: Subcatchment #7 Runoff Area=133,394 sf 0.00% Impervious Runoff Depth>6.04"
Flow Length=505' Tc=16.0 min CN=70 Runoff=15.97 cfs 1.541 af

Subcatchment 8S: Subcatchment #8 Runoff Area=69,837 sf 0.00% Impervious Runoff Depth>4.86"
Flow Length=381' Tc=18.1 min CN=61 Runoff=6.39 cfs 0.649 af

Subcatchment 9S: Subcatchment #9 Runoff Area=30,235 sf 0.00% Impervious Runoff Depth>4.86"
Flow Length=273' Tc=13.9 min CN=61 Runoff=3.06 cfs 0.281 af

Subcatchment 11S: Subcatchment #11 Runoff Area=93,998 sf 4.40% Impervious Runoff Depth>6.17"
Flow Length=226' Tc=12.7 min CN=71 Runoff=12.48 cfs 1.110 af

Subcatchment 12S: Subcatchment #12 Runoff Area=215,562 sf 0.67% Impervious Runoff Depth>6.17"
Flow Length=462' Tc=17.7 min CN=71 Runoff=25.26 cfs 2.542 af

Subcatchment 13S: Subcatchment #13 Runoff Area=33,510 sf 0.00% Impervious Runoff Depth>6.16"
Flow Length=329' Tc=18.6 min CN=71 Runoff=3.86 cfs 0.395 af

Subcatchment 14S: Subcatchment #14 Runoff Area=347,062 sf 0.00% Impervious Runoff Depth>6.02"
Flow Length=805' Tc=29.5 min CN=70 Runoff=32.13 cfs 3.998 af

Subcatchment 15S: Subcatchment #15 Runoff Area=279,874 sf 4.36% Impervious Runoff Depth>5.90"
Flow Length=553' Tc=23.7 min CN=69 Runoff=27.91 cfs 3.158 af

Subcatchment 16S: Catch Basin Runoff Area=459 sf 45.75% Impervious Runoff Depth>7.46"
Tc=6.0 min CN=81 Runoff=0.09 cfs 0.007 af

Subcatchment 17S: Catch Basin Runoff Area=2,300 sf 9.70% Impervious Runoff Depth>6.05"
Tc=6.0 min CN=70 Runoff=0.37 cfs 0.027 af

Subcatchment 18S: Catch Basin Runoff Area=5,195 sf 84.79% Impervious Runoff Depth>8.96"
Tc=6.0 min CN=93 Runoff=1.10 cfs 0.089 af

Subcatchment 19S: Catch Basin Runoff Area=880 sf 88.86% Impervious Runoff Depth>9.20"
Tc=6.0 min CN=95 Runoff=0.19 cfs 0.015 af

Reach 1aR: Flow from Culvert to Stream Avg. Flow Depth=0.14' Max Vel=1.98 fps Inflow=1.75 cfs 0.138 af
n=0.035 L=655.5' S=0.0506 '/' Capacity=22.92 cfs Outflow=1.49 cfs 0.137 af

Reach 1bR: Start of Stream Avg. Flow Depth=0.17' Max Vel=2.28 fps Inflow=1.49 cfs 0.137 af
n=0.035 L=1,438.0' S=0.0351 '/' Capacity=6.96 cfs Outflow=1.18 cfs 0.136 af

Reach 14aR: Reach #14 Avg. Flow Depth=0.93' Max Vel=5.39 fps Inflow=32.13 cfs 3.998 af
n=0.035 L=190.2' S=0.0315 '/' Capacity=37.71 cfs Outflow=32.13 cfs 3.996 af

Reach 14bR: Reach #14 Avg. Flow Depth=0.58' Max Vel=10.92 fps Inflow=32.13 cfs 3.996 af
n=0.035 L=93.6' S=0.2404 '/' Capacity=104.10 cfs Outflow=32.13 cfs 3.996 af

Reach 15R: Reach #15 Avg. Flow Depth=0.37' Max Vel=3.07 fps Inflow=9.57 cfs 3.158 af
n=0.035 L=198.0' S=0.0344 '/' Capacity=18.90 cfs Outflow=9.57 cfs 3.156 af

Reach 100R: Final Reach 100 Inflow=62.18 cfs 7.245 af
Outflow=62.18 cfs 7.245 af

Reach 200R: Final Reach 200 Inflow=64.56 cfs 7.644 af
Outflow=64.56 cfs 7.644 af

Reach 300R: Final Reach 300 Inflow=65.84 cfs 7.869 af
Outflow=65.84 cfs 7.869 af

Reach 400R: Final Reach 400 Inflow=71.97 cfs 8.619 af
Outflow=71.97 cfs 8.619 af

Reach 500R: Final Reach 500 Inflow=107.65 cfs 13.314 af
Outflow=107.65 cfs 13.314 af

Reach 600R: Final Reach 600 Inflow=130.18 cfs 16.053 af
Outflow=130.18 cfs 16.053 af

Reach 700R: Final Reach 700 Inflow=143.04 cfs 17.594 af
Outflow=143.04 cfs 17.594 af

Reach 800R: Final Reach 800 Inflow=148.94 cfs 18.243 af
Outflow=148.94 cfs 18.243 af

Reach 900R: Final Reach 900 Inflow=151.43 cfs 18.525 af
Outflow=151.43 cfs 18.525 af

Reach 1100R: Final Reach #1100 Inflow=19.72 cfs 4.266 af
Outflow=19.72 cfs 4.266 af

Reach 1200R: Final Reach #1200 Inflow=25.26 cfs 2.542 af
Outflow=25.26 cfs 2.542 af

Reach 1300R: Final Reach #1300 Inflow=3.86 cfs 0.395 af
Outflow=3.86 cfs 0.395 af

Pond 1EP: Catch Basin Peak Elev=138.11' Storage=2 cf Inflow=0.09 cfs 0.007 af
12.0" Round Culvert n=0.012 L=48.0' S=0.0050 '/' Outflow=0.09 cfs 0.007 af

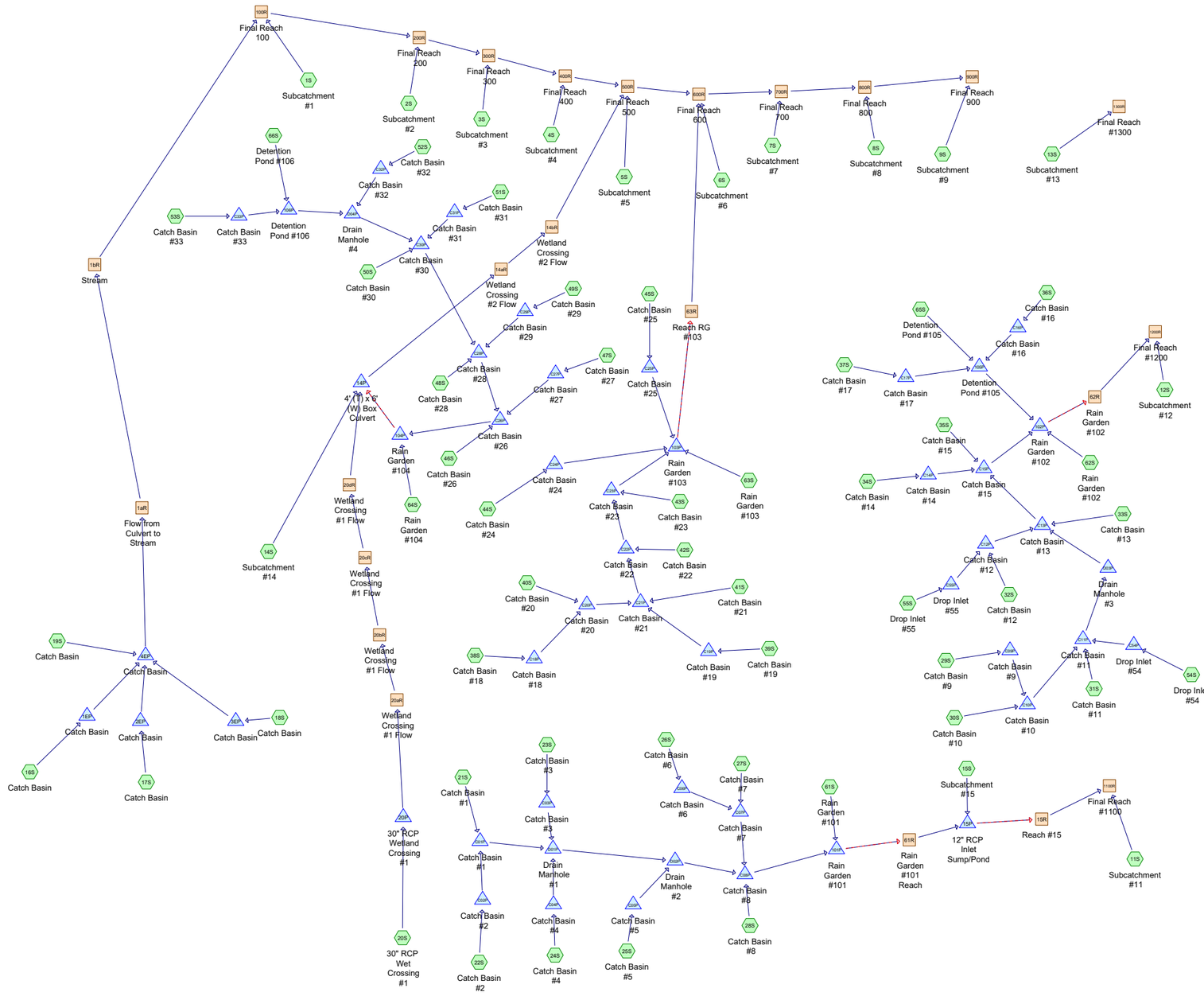
Pond 2EP: Catch Basin Peak Elev=138.10' Storage=5 cf Inflow=0.37 cfs 0.027 af
12.0" Round Culvert n=0.012 L=8.3' S=0.0048 '/' Outflow=0.37 cfs 0.027 af

Pond 3EP: Catch Basin Peak Elev=139.08' Storage=8 cf Inflow=1.10 cfs 0.089 af
12.0" Round Culvert n=0.012 L=153.7' S=0.0050 '/' Outflow=1.10 cfs 0.089 af

Pond 4EP: Catch Basin Peak Elev=137.32' Storage=8 cf Inflow=1.75 cfs 0.138 af
24.0" Round Culvert n=0.012 L=61.5' S=0.0050 '/' Outflow=1.75 cfs 0.138 af

Pond 15P: 12" RCP Inlet Sump/Pond Peak Elev=99.97' Storage=33,847 cf Inflow=27.91 cfs 3.158 af
Primary=9.57 cfs 3.158 af Secondary=0.00 cfs 0.000 af Outflow=9.57 cfs 3.158 af

Total Runoff Area = 51.401 ac Runoff Volume = 25.734 af Average Runoff Depth = 6.01"
98.69% Pervious = 50.728 ac 1.31% Impervious = 0.672 ac

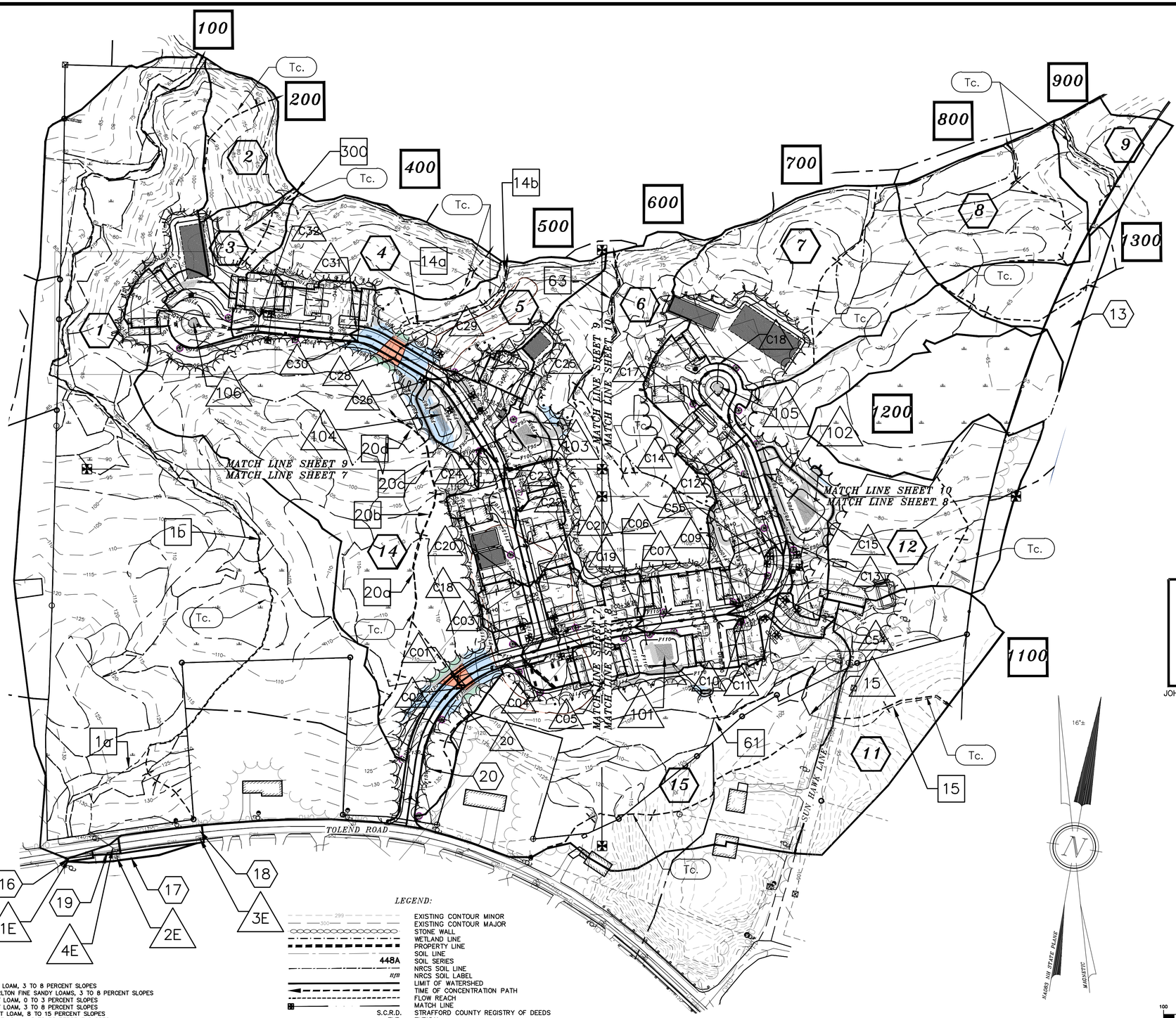


Subcat | Reach | Pond | Link

Routing Diagram for 20-107 Proposed Analysis

Prepared by Berry Surveying & Engineering, Printed 2/14/2022

HydroCAD® 10.00-25 s/n 10221 © 2019 HydroCAD Software Solutions LLC



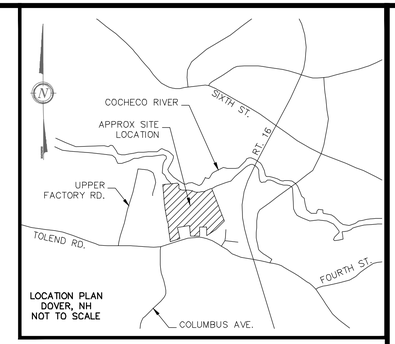
NRCS SOILS:

BeB – BUXTON SILT LOAM, 3 TO 8 PERCENT SLOPES
HcB – HOLLIS–CHARLTON FINE SANDY LOAMS, 3 TO 8 PERCENT SLOPES
ScA – SCANTIC SILT LOAM, 0 TO 3 PERCENT SLOPES
ScB – SCANTIC SILT LOAM, 3 TO 8 PERCENT SLOPES
SfC – SUFFIELD SILT LOAM, 8 TO 15 PERCENT SLOPES
SfE – SUFFIELD SILT LOAM, 15 TO 35 PERCENT SLOPES

SEE WEBSOIL USDA–NRCS

LEGEND:

299	EXISTING CONTOUR MINOR
300	EXISTING CONTOUR MAJOR
	STONE WALL
	WETLAND LINE
	PROPERTY LINE
	SOIL LINE
448A	SOIL SERIES
n/a	NRCS SOIL LINE
	NRCS SOIL LABEL
	LIMIT OF WATERSHED
	TIME OF CONCENTRATION PATH
	FLOW REACH
	MATCH LINE
S.C.R.D.	STRAFFORD COUNTY REGISTRY OF DEEDS
TYP.	TYPICAL
FND	FOUND
TBR	TO BE REMOVED



LOCATION PLAN
DOVER, NH
NOT TO SCALE

NOTES:

1.) OWNER LOT 65–1: D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY
245 N BEND DRIVE
MANCHESTER, NH 03104

OWNER LOT 65–A: EUGENE A. & DONNA L. SGRIGNUOLI
22 SUN HAWK LANE
DOVER, NH 03820

1A.) APPLICANT: STONEARCH DEVELOPMENT CORP.
42J DOVER POINT ROAD
DOVER, NH 03820

2.) LOT OF RECORD: TAX MAP E, LOT 65–1
TAX MAP E, LOT 65–A

3.) LOT AREA LOT 65–1: 1,388,402 Sq. Ft., 31.87 Ac. +/–
LOT AREA LOT 65–A: 546,546 Sq. Ft., 12.49 Ac. +/–

4.) S.C.R.D. BOOK 4918, PAGE 158
S.C.R.D. BOOK 1571, PAGE 8

5.) I HEREBY CERTIFY THAT, TO THE BEST OF MY KNOWLEDGE & BELIEF, A PORTION OF THIS PARCEL DOES FALL WITHIN THE FLOOD PLAIN FLOOD HAZARD. REF.: FEMA COMMUNITY #330145, MAP #33017C0310E, DATED: SEPTEMBER 30, 2015.

6.) VERTICAL DATUM BASED ON NAVD88 ELEVATIONS. HORIZONTAL COORDINATES BASED ON NAD83. COORDINATES GATHERED USING TOPCON HIPER SR SURVEY GRADE GPS RECEIVERS.

7.) THE INTENT OF THIS PLAN IS TO SHOW THE EXISTING WATERSHED CONDITIONS ON TAX MAP E, LOT 65–1 AS OF THE DATE OF THE SURVEY (WINTER 2021).

8.) SEE EXISTING CONDITIONS PLAN FOR EXPLANATION OF JURISDICTIONAL WETLANDS. SEE SITE SPECIFIC SOIL SURVEY FOR SOILS EXPLANATION. SOILS LEGEND ALSO LOCATED ON SHEET 5 OF 10.

JOHN P. HAYES III, CWS #18

JOHN P. HAYES III, CSS #87

16°±

NORTH NH STATE PLANE

MAGNETIC

SYMBOLS LEGEND:

SUBCATCHMENT AREA SYMBOL

FLOW REACH SYMBOL

POND DEVICE SYMBOL

TIME OF CONCENTRATION SEGMENT

GRAPHIC SCALE

100 0 50 100 200 400

(IN FEET)
1 inch = 100 ft.

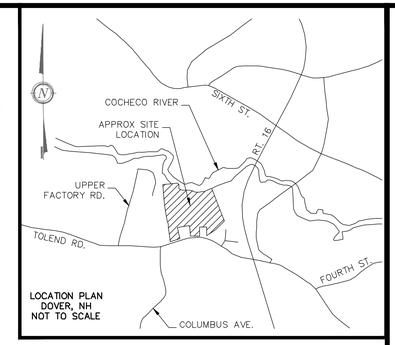
REVISION	DATE	DESCRIPTION

W–2 PROPOSED WATERSHED OVERVIEW
LAND OF
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY &
EUGENE A. & DONNA L. SGRIGNUOLI
TOLEND ROAD
DOVER, N.H.
TAX MAP E, LOT 65–1 & 65–4

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332–2863

SCALE : 1 IN. EQUALS 100 FT.
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 – 107

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
NO. 7435
LICENSED PROFESSIONAL ENGINEER



NOTES:

1.) OWNER LOT 65–1: D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY
245 N BEND DRIVE
MANCHESTER, NH 03104

OWNER LOT 65–A: EUGENE A. & DONNA L. SGRIGNUOLI
22 SUN HAWK LANE
DOVER, NH 03820

1A.) APPLICANT: STONEARCH DEVELOPMENT CORP.
42J DOVER POINT ROAD
DOVER, NH 03820

2.) LOT OF RECORD: TAX MAP E, LOT 65–1
TAX MAP E, LOT 65–A

3.) LOT AREA LOT 65–1: 1,388,402 Sq. Ft., 31.87 Ac. +/–
LOT AREA LOT 65–A: 546,546 Sq. Ft., 12.49 Ac. +/–

4.) S.C.R.D. BOOK 4918, PAGE 158
S.C.R.D. BOOK 1571, PAGE 8

5.) I HEREBY CERTIFY THAT, TO THE BEST OF MY KNOWLEDGE & BELIEF, A PORTION OF THIS PARCEL DOES FALL WITHIN THE FLOOD PLAIN FLOOD HAZARD. REF.: FEMA COMMUNITY #330145, MAP #33017C0310E, DATED: SEPTEMBER 30, 2015.

6.) VERTICAL DATUM BASED ON NAVD88 ELEVATIONS. HORIZONTAL COORDINATES BASED ON NAD83. COORDINATES GATHERED USING TOPCON HIPER SR SURVEY GRADE GPS RECEIVERS.

7.) THE INTENT OF THIS PLAN IS TO SHOW THE EXISTING WATERSHED CONDITIONS ON TAX MAP E, LOT 65–1 AS OF THE DATE OF THE SURVEY (WINTER 2021).

8.) SEE EXISTING CONDITIONS PLAN FOR EXPLANATION OF JURISDICTIONAL WETLANDS. SEE SITE SPECIFIC SOIL SURVEY FOR SOILS EXPLANATION. SOILS LEGEND ALSO LOCATED ON SHEET 5 OF 10.

LEGEND:

299	EXISTING CONTOUR MINOR
110	EXISTING CONTOUR MAJOR
	STONE WALL
	WETLAND LINE
	PROPERTY LINE
	SOIL LINE
448A	SOIL SERIES
	NRCS SOIL LINE
HdB	NRCS SOIL LABEL
	LIMIT OF WATERSHED
	TIME OF CONCENTRATION PATH
	FLOW REACH
	MATCH LINE
S.C.R.D.	STRAFFORD COUNTY REGISTRY OF DEEDS
TYP.	TYPICAL
FND	FOUND
TBR	TO BE REMOVED

SYMBOLS LEGEND:

#	SUBCATCHMENT AREA SYMBOL
#	FLOW REACH SYMBOL
#	POND DEVICE SYMBOL
Tc.	TIME OF CONCENTRATION SEGMENT

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

JOHN P. HAYES III, CWS #18

JOHN P. HAYES III, CSS #87

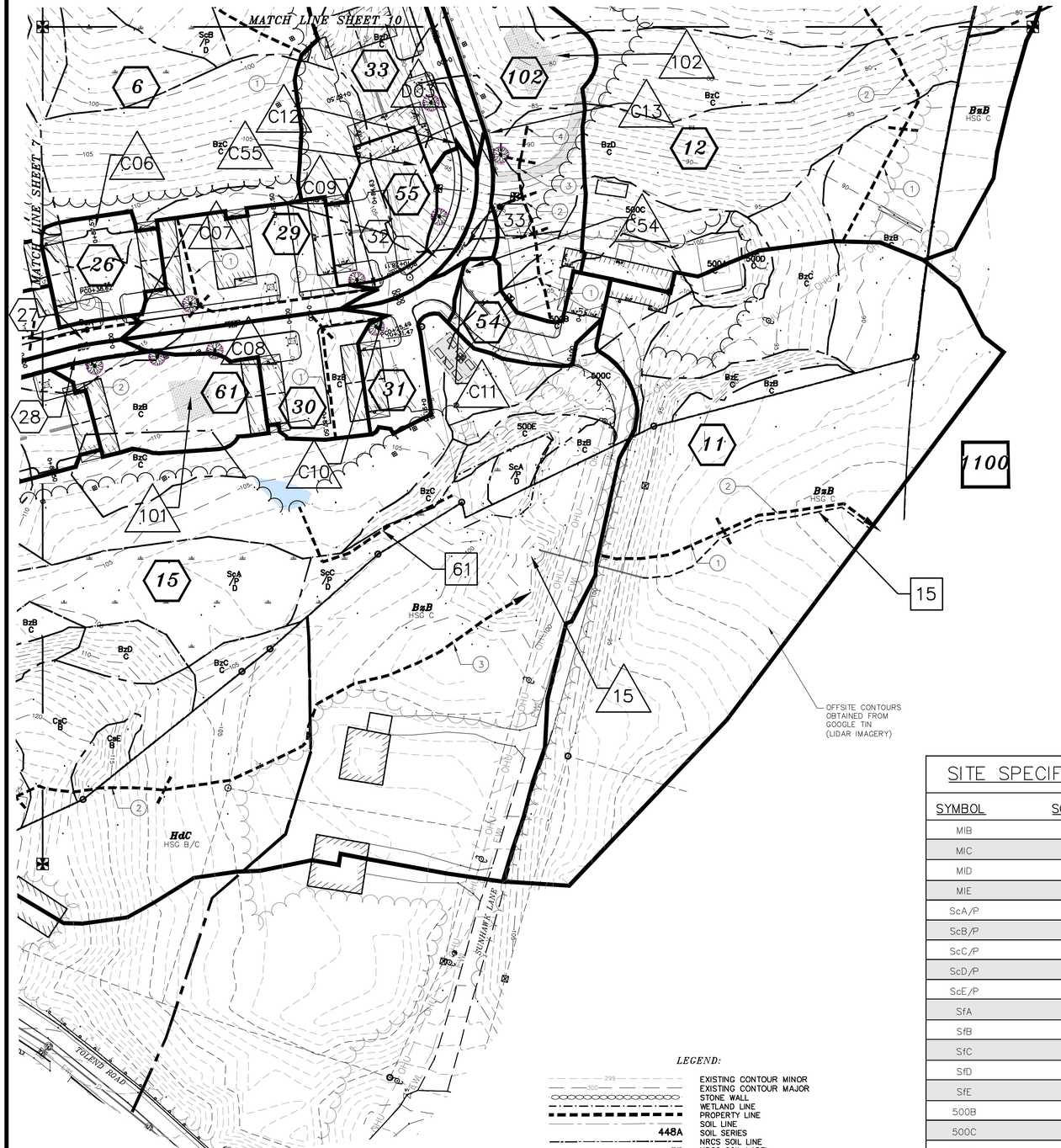
REVISION	DATE	DESCRIPTION

W–2 PROPOSED WATERSHED DETAIL – SOUTHWEST
LAND OF
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY &
EUGENE A. & DONNA L. SGRIGNUOLI
TOLEND ROAD
DOVER, N.H.
TAX MAP E, LOT 65–1 & 65–A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332–2863

SCALE : 1 IN. EQUALS 50 FT.
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 – 107

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 10141
LICENSED PROFESSIONAL ENGINEER



LEGEND:

- EXISTING CONTOUR MINOR
- EXISTING CONTOUR MAJOR
- STONE WALL
- WETLAND LINE
- PROPERTY LINE
- SOIL LINE
- 448A — SOIL SERIES
- NRCS SOIL LINE
- HfB — NRCS SOIL LABEL
- LIMIT OF WATERSHED
- TIME OF CONCENTRATION PATH
- FLOW REACH
- MATCH LINE
- S.C.R.D. — STRAFFORD COUNTY REGISTRY OF DEEDS
- TYP. — TYPICAL
- FND — FOUND
- TBR — TO BE REMOVED

SITE SPECIFIC SOILS LEGEND

SYMBOL	SOIL TAXONOMIC NAME	HYDROLOGIC SOIL GROUP
BeB	BIDDEFORD	D
BzA	BUXTON	C
BzB	BUXTON	C
BzC	BUXTON	C
BzD	BUXTON	C
BzE	BUXTON	C
CsB	CHARLTON (VERY STONY)	B
CsC	CHARLTON (VERY STONY)	B
CsD	CHARLTON (VERY STONY)	B
CsE	CHARLTON (VERY STONY)	B
HdA/Rk	HOLLIS–CHARLTON COMPLEX (VERY ROCKY)	B/D
HdB/Rk	HOLLIS–CHARLTON COMPLEX (VERY ROCKY)	B/D
HdC/Rk	HOLLIS–CHARLTON COMPLEX (VERY ROCKY)	B/D
HdD/Rk	HOLLIS–CHARLTON COMPLEX (VERY ROCKY)	B/D
HdE/Rk	HOLLIS–CHARLTON COMPLEX (VERY ROCKY)	B/D
MlB/P	MIXED ALLUVIAL LAND (POORLY DRAINED)	C/D
MlC/P	MIXED ALLUVIAL LAND (POORLY DRAINED)	C/D

SLOPE: A = 0–3% B = 3–8% C = 8–15% D = 15–25% E = 25–50% F = 50%+

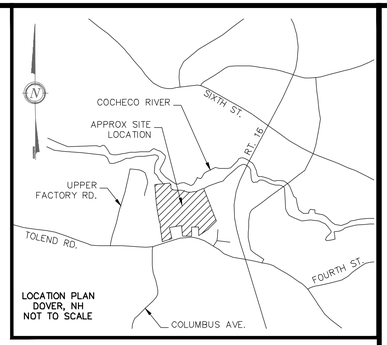
DENOMINATOR: /Rk = ROCKY /VPD = VERY POORLY DRAINED /PD = POORLY DRAINED /SWPD = SOMEWHAT POORLY DRAINED /MWD = MODERATELY WELL DRAINED

SITE SPECIFIC SOILS LEGEND (CONT'D)

SYMBOL	SOIL TAXONOMIC NAME	HYDROLOGIC SOIL GROUP
MlB	MIXED ALLUVIAL LAND	A
MlC	MIXED ALLUVIAL LAND	A
MlD	MIXED ALLUVIAL LAND	A
MlE	MIXED ALLUVIAL LAND	A
ScA/P	SCANTIC	D
ScB/P	SCANTIC	D
ScC/P	SCANTIC	D
ScD/P	SCANTIC	D
ScE/P	SCANTIC	D
SfA	SUFFIELD	C
SfB	SUFFIELD	C
SfC	SUFFIELD	C
SfD	SUFFIELD	C
SfE	SUFFIELD	C
500B	UDORTHENTS	C
500C	UDORTHENTS	C
500D	UDORTHENTS	C
500E	UDORTHENTS	C

SLOPE: A = 0–3% B = 3–8% C = 8–15% D = 15–25% E = 25–50% F = 50%+

DENOMINATOR: /Rk = ROCKY /VPD = VERY POORLY DRAINED /PD = POORLY DRAINED /SWPD = SOMEWHAT POORLY DRAINED /MWD = MODERATELY WELL DRAINED



LOCATION PLAN
DOVER, NH
NOT TO SCALE

NOTES:

1.) OWNER LOT 65–1: D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY
245 N BEND DRIVE
MANCHESTER, NH 03104

OWNER LOT 65–A: EUGENE A. & DONNA L. SGRIGNUOLI
22 SUN HAWK LANE
DOVER, NH 03820

1A.) APPLICANT: STONEARCH DEVELOPMENT CORP.
42J DOVER POINT ROAD
DOVER, NH 03820

2.) LOT OF RECORD: TAX MAP E, LOT 65–1
TAX MAP E, LOT 65–A

3.) LOT AREA LOT 65–1: 1,388,402 Sq. Ft., 31.87 Ac. +/–
LOT AREA LOT 65–A: 546,546 Sq. Ft., 12.49 Ac. +/–

4.) S.C.R.D. BOOK 4918, PAGE 158
S.C.R.D. BOOK 1571, PAGE 8

5.) I HEREBY CERTIFY THAT, TO THE BEST OF MY KNOWLEDGE & BELIEF, A PORTION OF THIS PARCEL DOES FALL WITHIN THE FLOOD PLAIN FLOOD HAZARD. REF.: FEMA COMMUNITY #330145, MAP #33017C0310E, DATED: SEPTEMBER 30, 2015.

6.) VERTICAL DATUM BASED ON NAVD88 ELEVATIONS. HORIZONTAL COORDINATES BASED ON NAD83. COORDINATES GATHERED USING TOPCON HIPER SR SURVEY GRADE GPS RECEIVERS.

7.) THE INTENT OF THIS PLAN IS TO SHOW THE EXISTING WATERSHED CONDITIONS ON TAX MAP E, LOT 65–1 AS OF THE DATE OF THE SURVEY (WINTER 2021).

8.) SEE EXISTING CONDITIONS PLAN FOR EXPLANATION OF JURISDICTIONAL WETLANDS. SEE SITE SPECIFIC SOIL SURVEY FOR SOILS EXPLANATION. SOILS LEGEND ALSO LOCATED ON SHEET 5 OF 10.

JOHN P. HAYES III, CWS #18

JOHN P. HAYES III, CSS #87

SYMBOLS LEGEND:

- SUBCATCHMENT AREA SYMBOL
- FLOW REACH SYMBOL
- POND DEVICE SYMBOL
- TIME OF CONCENTRATION SEGMENT

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

REVISION	DATE	DESCRIPTION

W–2 PROPOSED WATERSHED DETAIL – SOUTHEAST
LAND OF
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY &
EUGENE A. & DONNA L. SGRIGNUOLI
TOLEND ROAD
DOVER, N.H.
TAX MAP E, LOT 65–1 & 65–4

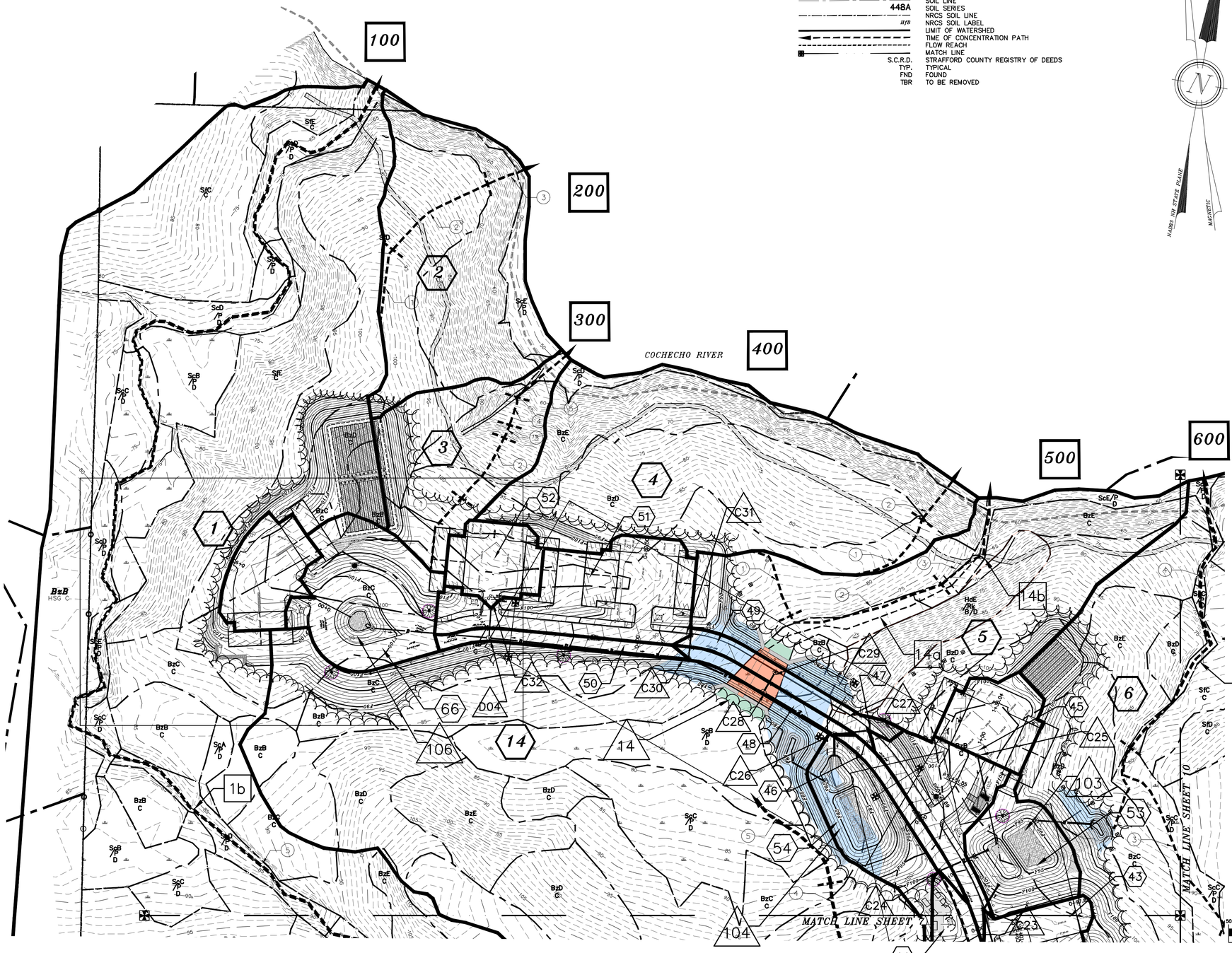
BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332–2863

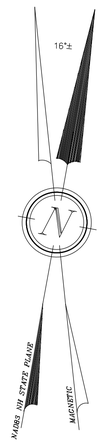
SCALE : 1 IN. EQUALS 50 FT.
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 – 107

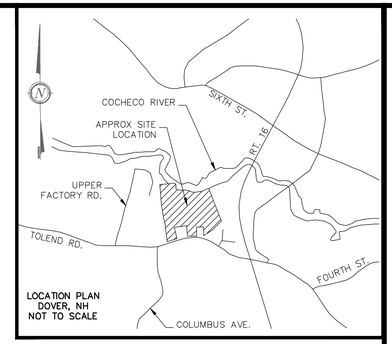
STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 11047
LICENSED PROFESSIONAL ENGINEER

LEGEND:

299	EXISTING CONTOUR MINOR
300	EXISTING CONTOUR MAJOR
	STONE WALL
	WETLAND LINE
	PROPERTY LINE
	SOIL LINE
448A	SOIL SERIES
	NRCS SOIL LINE
HfB	NRCS SOIL LABEL
	LIMIT OF WATERSHED
	TIME OF CONCENTRATION PATH
	FLOW REACH
	MATCH LINE
S.C.R.D.	STRAFFORD COUNTY REGISTRY OF DEEDS
TYP.	TYPICAL
FND	FOUND
TBR	TO BE REMOVED







LOCATION PLAN
DOVER, NH
NOT TO SCALE

NOTES:

1.) OWNER LOT 65–1: D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY
245 N BEND DRIVE
MANCHESTER, NH 03104

OWNER LOT 65–A: EUGENE A. & DONNA L. SGRIGNUOLI
22 SUN HAWK LANE
DOVER, NH 03820

1A.) APPLICANT: STONEARCH DEVELOPMENT CORP.
42J DOVER POINT ROAD
DOVER, NH 03820

2.) LOT OF RECORD: TAX MAP E, LOT 65–1
TAX MAP E, LOT 65–A

3.) LOT AREA LOT 65–1: 1,388,402 Sq. Ft., 31.87 Ac. +/–
LOT AREA LOT 65–A: 546,546 Sq. Ft., 12.49 Ac. +/–

4.) S.C.R.D. BOOK 4918, PAGE 158
S.C.R.D. BOOK 1571, PAGE 8

5.) I HEREBY CERTIFY THAT, TO THE BEST OF MY KNOWLEDGE & BELIEF, A PORTION OF THIS PARCEL DOES FALL WITHIN THE FLOOD PLAIN FLOOD HAZARD. REF.: FEMA COMMUNITY #330145, MAP #33017C0310E, DATED: SEPTEMBER 30, 2015.

6.) VERTICAL DATUM BASED ON NAVD88 ELEVATIONS. HORIZONTAL COORDINATES BASED ON NAD83. COORDINATES GATHERED USING TOPCON HIPER SR SURVEY GRADE GPS RECEIVERS.

7.) THE INTENT OF THIS PLAN IS TO SHOW THE EXISTING WATERSHED CONDITIONS ON TAX MAP E, LOT 65–1 AS OF THE DATE OF THE SURVEY (WINTER 2021).

8.) SEE EXISTING CONDITIONS PLAN FOR EXPLANATION OF JURISDICTIONAL WETLANDS. SEE SITE SPECIFIC SOIL SURVEY FOR SOILS EXPLANATION. SOILS LEGEND ALSO LOCATED ON SHEET 5 OF 10.

JOHN P. HAYES III, CWS #18

JOHN P. HAYES III, CSS #87

SYMBOLS LEGEND:

- # — SUBCATCHMENT AREA SYMBOL
- # — FLOW REACH SYMBOL
- # — POND DEVICE SYMBOL
- Tc. / # — TIME OF CONCENTRATION SEGMENT

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

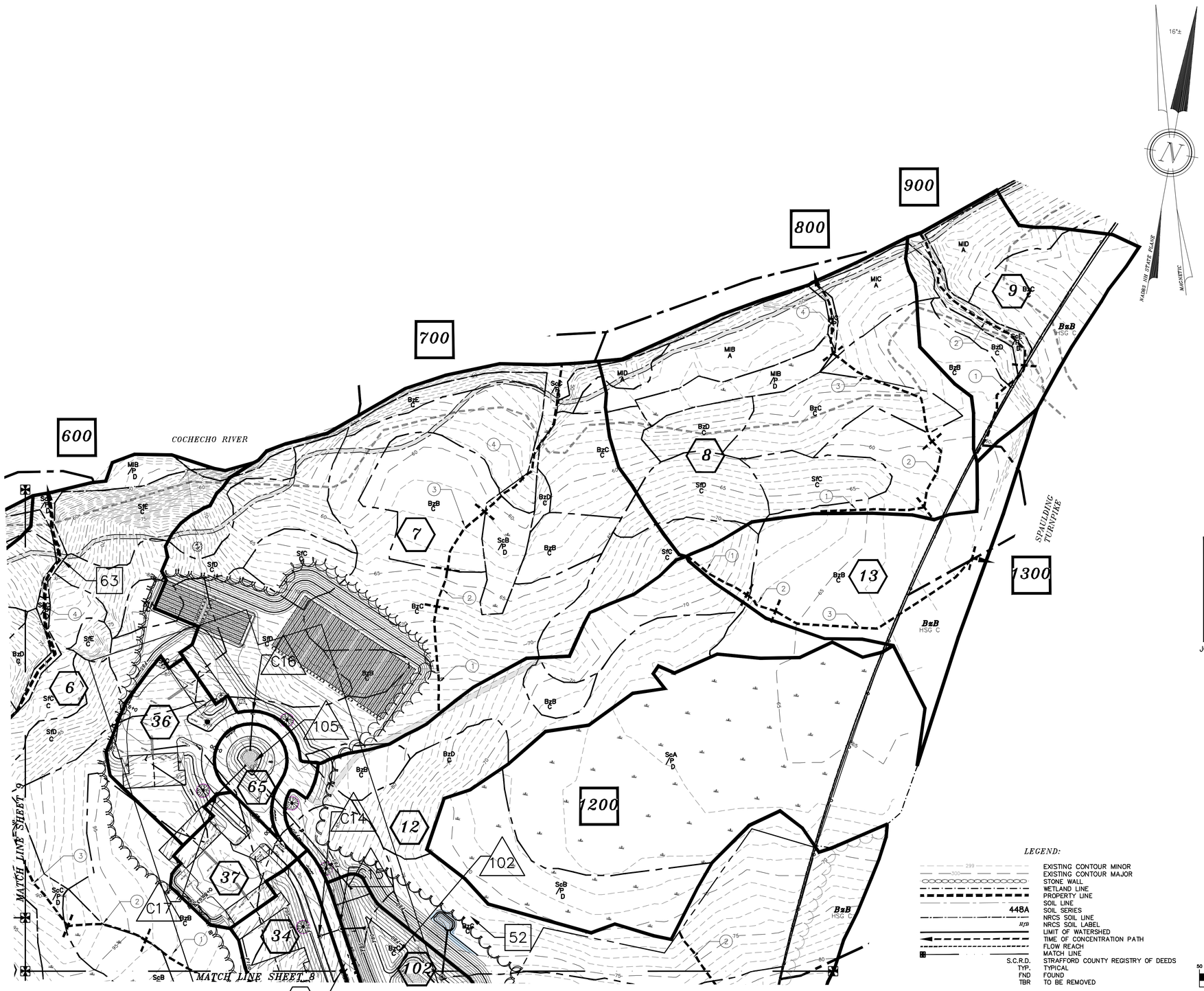
REVISION	DATE	DESCRIPTION

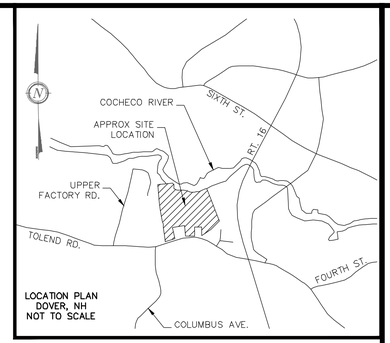
W–2 PROPOSED WATERSHED DETAIL – NORTHWEST
LAND OF
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY &
EUGENE A. & DONNA L. SGRIGNUOLI
TOLEND ROAD
DOVER, N.H.
TAX MAP E, LOT 65–1 & 65–A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332–2863

SCALE : 1 IN. EQUALS 50 FT.
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 – 107

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 10433
LICENSED PROFESSIONAL ENGINEER





NOTES:

1.) OWNER LOT 65–1: D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY
245 N BEND DRIVE
MANCHESTER, NH 03104

OWNER LOT 65–A: EUGENE A. & DONNA L. SGRIGNUOLI
22 SUN HAWK LANE
DOVER, NH 03820

1A.) APPLICANT: STONEARCH DEVELOPMENT CORP.
42J DOVER POINT ROAD
DOVER, NH 03820

2.) LOT OF RECORD: TAX MAP E, LOT 65–1
TAX MAP E, LOT 65–A

3.) LOT AREA LOT 65–1: 1,388,402 Sq. Ft., 31.87 Ac. +/–
LOT AREA LOT 65–A: 546,546 Sq. Ft., 12.49 Ac. +/–

4.) S.C.R.D. BOOK 4918, PAGE 158
S.C.R.D. BOOK 1571, PAGE 8

5.) I HEREBY CERTIFY THAT, TO THE BEST OF MY KNOWLEDGE & BELIEF, A PORTION OF THIS PARCEL DOES FALL WITHIN THE FLOOD PLAIN FLOOD HAZARD. REF.: FEMA COMMUNITY #330145, MAP #33017C0310E, DATED: SEPTEMBER 30, 2015.

6.) VERTICAL DATUM BASED ON NAVD88 ELEVATIONS. HORIZONTAL COORDINATES BASED ON NAD83. COORDINATES GATHERED USING TOPCON HIPER SR SURVEY GRADE GPS RECEIVERS.

7.) THE INTENT OF THIS PLAN IS TO SHOW THE EXISTING WATERSHED CONDITIONS ON TAX MAP E, LOT 65–1 AS OF THE DATE OF THE SURVEY (WINTER 2021).

8.) SEE EXISTING CONDITIONS PLAN FOR EXPLANATION OF JURISDICTIONAL WETLANDS. SEE SITE SPECIFIC SOIL SURVEY FOR SOILS EXPLANATION. SOILS LEGEND ALSO LOCATED ON SHEET 5 OF 10.

JOHN P. HAYES III, CWS #18

JOHN P. HAYES III, CSS #87

LEGEND:

299	EXISTING CONTOUR MINOR
300	EXISTING CONTOUR MAJOR
	STONE WALL
	WETLAND LINE
	PROPERTY LINE
	SOIL LINE
448A	SOIL SERIES
HYB	NRCS SOIL LINE
	NRCS SOIL LABEL
	LIMIT OF WATERSHED
	TIME OF CONCENTRATION PATH
	FLOW REACH
	MATCH LINE
S.C.R.D.	STRAFFORD COUNTY REGISTRY OF DEEDS
TYP.	TYPICAL
FND	FOUND
TBR	TO BE REMOVED

SYMBOLS LEGEND:

SUBCATCHMENT AREA SYMBOL

FLOW REACH SYMBOL

POND DEVICE SYMBOL

TIME OF CONCENTRATION SEGMENT

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

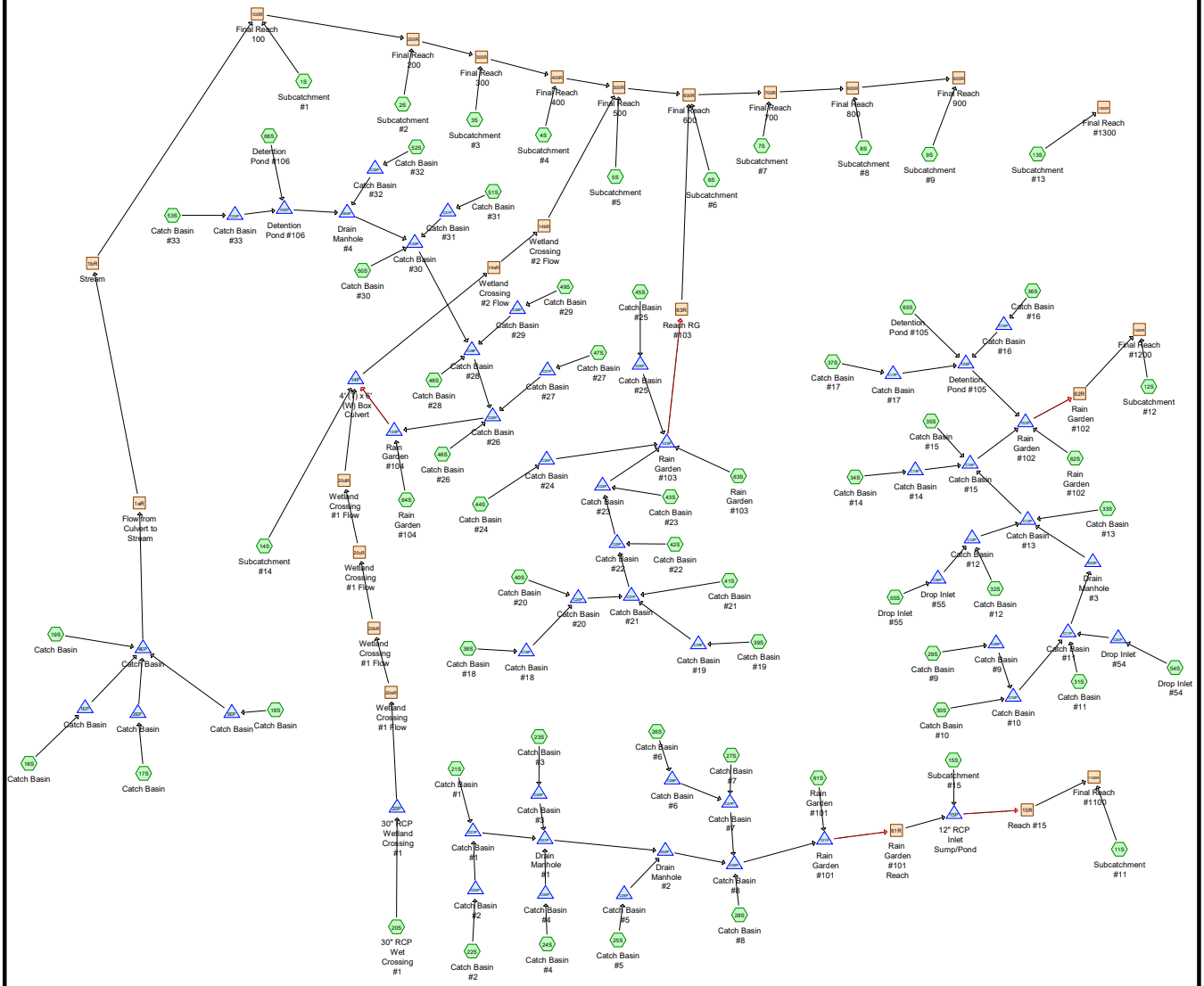
REVISION	DATE	DESCRIPTION

W-2 PROPOSED WATERSHED DETAIL – NORTHEAST
LAND OF
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY &
EUGENE A. & DONNA L. SGRIGNUOLI
TOLEND ROAD
DOVER, N.H.
TAX MAP E, LOT 65–1 & 65–A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332–2863

SCALE : 1 IN. EQUALS 50 FT.
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 – 107

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 10443
LICENSED PROFESSIONAL ENGINEER



Routing Diagram for 20-107 Proposed Analysis

Prepared by Berry Surveying & Engineering, Printed 2/11/2022

HydroCAD® 10.00-25 s/n 10221 © 2019 HydroCAD Software Solutions LLC

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Subcatchment #1 Runoff Area=611,661 sf 1.15% Impervious Runoff Depth>1.07"
Flow Length=2,050' Tc=25.3 min CN=70 Runoff=10.00 cfs 1.251 af

Subcatchment 2S: Subcatchment #2 Runoff Area=34,126 sf 0.00% Impervious Runoff Depth>1.13"
Flow Length=215' Tc=8.3 min CN=71 Runoff=0.88 cfs 0.074 af

Subcatchment 3S: Subcatchment #3 Runoff Area=19,748 sf 3.38% Impervious Runoff Depth>1.19"
Flow Length=243' Tc=6.0 min CN=72 Runoff=0.59 cfs 0.045 af

Subcatchment 4S: Subcatchment #4 Runoff Area=57,278 sf 0.79% Impervious Runoff Depth>1.13"
Flow Length=133' Tc=9.9 min CN=71 Runoff=1.42 cfs 0.124 af

Subcatchment 5S: Subcatchment #5 Runoff Area=52,634 sf 3.28% Impervious Runoff Depth>1.25"
Flow Length=321' Tc=11.9 min CN=73 Runoff=1.38 cfs 0.126 af

Subcatchment 6S: Subcatchment #6 Runoff Area=150,165 sf 0.97% Impervious Runoff Depth>1.19"
Flow Length=665' Tc=25.1 min CN=72 Runoff=2.79 cfs 0.341 af

Subcatchment 7S: Subcatchment #7 Runoff Area=120,943 sf 0.69% Impervious Runoff Depth>1.13"
Flow Length=376' Tc=13.9 min CN=71 Runoff=2.67 cfs 0.262 af

Subcatchment 8S: Subcatchment #8 Runoff Area=69,837 sf 0.00% Impervious Runoff Depth>0.62"
Flow Length=381' Tc=18.1 min CN=61 Runoff=0.61 cfs 0.083 af

Subcatchment 9S: Subcatchment #9 Runoff Area=30,235 sf 0.00% Impervious Runoff Depth>0.62"
Flow Length=273' Tc=13.9 min CN=61 Runoff=0.29 cfs 0.036 af

Subcatchment 11S: Subcatchment #11 Runoff Area=91,934 sf 0.75% Impervious Runoff Depth>1.13"
Flow Length=226' Tc=12.7 min CN=71 Runoff=2.09 cfs 0.199 af

Subcatchment 12S: Subcatchment #12 Runoff Area=141,116 sf 0.95% Impervious Runoff Depth>1.19"
Flow Length=238' Tc=15.6 min CN=72 Runoff=3.16 cfs 0.321 af

Subcatchment 13S: Subcatchment #13 Runoff Area=33,510 sf 0.00% Impervious Runoff Depth>1.13"
Flow Length=329' Tc=18.6 min CN=71 Runoff=0.66 cfs 0.072 af

Subcatchment 14S: Subcatchment #14 Runoff Area=237,389 sf 0.12% Impervious Runoff Depth>1.13"
Flow Length=639' Tc=28.2 min CN=71 Runoff=3.95 cfs 0.511 af

Subcatchment 15S: Subcatchment #15 Runoff Area=241,596 sf 5.85% Impervious Runoff Depth>1.07"
Flow Length=553' Tc=23.7 min CN=70 Runoff=4.06 cfs 0.494 af

Subcatchment 16S: Catch Basin Runoff Area=459 sf 45.75% Impervious Runoff Depth>1.80"
Tc=6.0 min CN=81 Runoff=0.02 cfs 0.002 af

Subcatchment 17S: Catch Basin Runoff Area=2,300 sf 9.70% Impervious Runoff Depth>1.08"
Tc=6.0 min CN=70 Runoff=0.06 cfs 0.005 af

Subcatchment 18S: Catch Basin Runoff Area=5,195 sf 84.79% Impervious Runoff Depth>2.84"
Tc=6.0 min CN=93 Runoff=0.37 cfs 0.028 af

Subcatchment 19S: Catch Basin Runoff Area=880 sf 88.86% Impervious Runoff Depth>3.05"
Tc=6.0 min CN=95 Runoff=0.07 cfs 0.005 af

Subcatchment 20S: 30" RCP Wet Crossing Runoff Area=13,867 sf 0.00% Impervious Runoff Depth>0.71"
Flow Length=138' Tc=8.8 min CN=63 Runoff=0.19 cfs 0.019 af

Subcatchment 21S: Catch Basin #1 Runoff Area=5,478 sf 100.00% Impervious Runoff Depth>3.37"
Tc=6.0 min CN=98 Runoff=0.43 cfs 0.035 af

Subcatchment 22S: Catch Basin #2 Runoff Area=3,780 sf 100.00% Impervious Runoff Depth>3.37"
Tc=6.0 min CN=98 Runoff=0.30 cfs 0.024 af

Subcatchment 23S: Catch Basin #3 Runoff Area=4,071 sf 74.55% Impervious Runoff Depth>2.74"
Tc=6.0 min CN=92 Runoff=0.28 cfs 0.021 af

Subcatchment 24S: Catch Basin #4 Runoff Area=3,414 sf 46.43% Impervious Runoff Depth>2.11"
Flow Length=65' Slope=0.0250 '/' Tc=6.0 min CN=85 Runoff=0.19 cfs 0.014 af

Subcatchment 25S: Catch Basin #5 Runoff Area=6,366 sf 76.59% Impervious Runoff Depth>2.84"
Tc=6.0 min CN=93 Runoff=0.46 cfs 0.035 af

Subcatchment 26S: Catch Basin #6 Runoff Area=6,637 sf 73.62% Impervious Runoff Depth>2.74"
Tc=6.0 min CN=92 Runoff=0.46 cfs 0.035 af

Subcatchment 27S: Catch Basin #7 Runoff Area=6,215 sf 62.28% Impervious Runoff Depth>2.46"
Flow Length=160' Tc=6.4 min CN=89 Runoff=0.39 cfs 0.029 af

Subcatchment 28S: Catch Basin #8 Runoff Area=7,309 sf 51.17% Impervious Runoff Depth>2.19"
Flow Length=296' Tc=7.4 min CN=86 Runoff=0.41 cfs 0.031 af

Subcatchment 29S: Catch Basin #9 Runoff Area=12,199 sf 70.46% Impervious Runoff Depth>2.64"
Flow Length=212' Tc=9.8 min CN=91 Runoff=0.74 cfs 0.062 af

Subcatchment 30S: Catch Basin #10 Runoff Area=9,786 sf 62.42% Impervious Runoff Depth>2.45"
Flow Length=138' Tc=11.1 min CN=89 Runoff=0.54 cfs 0.046 af

Subcatchment 31S: Catch Basin #11 Runoff Area=5,704 sf 75.18% Impervious Runoff Depth>2.74"
Tc=6.0 min CN=92 Runoff=0.40 cfs 0.030 af

Subcatchment 32S: Catch Basin #12 Runoff Area=3,577 sf 76.10% Impervious Runoff Depth>2.74"
Tc=6.0 min CN=92 Runoff=0.25 cfs 0.019 af

Subcatchment 33S: Catch Basin #13 Runoff Area=1,754 sf 73.95% Impervious Runoff Depth>2.74"
Tc=6.0 min CN=92 Runoff=0.12 cfs 0.009 af

Subcatchment 34S: Catch Basin #14 Runoff Area=19,871 sf 54.57% Impervious Runoff Depth>2.28"
Tc=6.0 min CN=87 Runoff=1.19 cfs 0.087 af

Subcatchment 35S: Catch Basin #15 Runoff Area=2,771 sf 100.00% Impervious Runoff Depth>3.37"
Tc=6.0 min CN=98 Runoff=0.22 cfs 0.018 af

Subcatchment 36S: Catch Basin #16 Runoff Area=16,606 sf 68.54% Impervious Runoff Depth>2.64"
Tc=6.0 min CN=91 Runoff=1.13 cfs 0.084 af

Subcatchment 37S: Catch Basin #17 Runoff Area=9,277 sf 73.40% Impervious Runoff Depth>2.74"
Tc=6.0 min CN=92 Runoff=0.65 cfs 0.049 af

Subcatchment 38S: Catch Basin #18 Runoff Area=7,434 sf 68.46% Impervious Runoff Depth>2.37"
Tc=6.0 min CN=88 Runoff=0.46 cfs 0.034 af

Subcatchment 39S: Catch Basin #19 Runoff Area=8,476 sf 64.19% Impervious Runoff Depth>2.55"
Tc=6.0 min CN=90 Runoff=0.56 cfs 0.041 af

Subcatchment 40S: Catch Basin #20 Runoff Area=3,024 sf 71.96% Impervious Runoff Depth>2.64"
Tc=6.0 min CN=91 Runoff=0.21 cfs 0.015 af

Subcatchment 41S: Catch Basin #21 Runoff Area=2,937 sf 88.32% Impervious Runoff Depth>3.05"
Tc=6.0 min CN=95 Runoff=0.22 cfs 0.017 af

Subcatchment 42S: Catch Basin #22 Runoff Area=12,582 sf 61.56% Impervious Runoff Depth>2.46"
Flow Length=173' Tc=10.5 min CN=89 Runoff=0.70 cfs 0.059 af

Subcatchment 43S: Catch Basin #23 Runoff Area=6,076 sf 73.49% Impervious Runoff Depth>2.74"
Tc=6.0 min CN=92 Runoff=0.43 cfs 0.032 af

Subcatchment 44S: Catch Basin #24 Runoff Area=19,261 sf 40.57% Impervious Runoff Depth>1.72"
Flow Length=289' Tc=11.8 min CN=80 Runoff=0.73 cfs 0.063 af

Subcatchment 45S: Catch Basin #25 Runoff Area=6,238 sf 70.95% Impervious Runoff Depth>2.64"
Tc=6.0 min CN=91 Runoff=0.42 cfs 0.032 af

Subcatchment 46S: Catch Basin #26 Runoff Area=2,200 sf 100.00% Impervious Runoff Depth>3.37"
Tc=6.0 min CN=98 Runoff=0.17 cfs 0.014 af

Subcatchment 47S: Catch Basin #27 Runoff Area=8,986 sf 52.60% Impervious Runoff Depth>2.28"
Tc=6.0 min CN=87 Runoff=0.54 cfs 0.039 af

Subcatchment 48S: Catch Basin #28 Runoff Area=2,148 sf 100.00% Impervious Runoff Depth>3.37"
Tc=6.0 min CN=98 Runoff=0.17 cfs 0.014 af

Subcatchment 49S: Catch Basin #29 Runoff Area=3,931 sf 91.10% Impervious Runoff Depth>3.15"
Tc=6.0 min CN=96 Runoff=0.30 cfs 0.024 af

Subcatchment 50S: Catch Basin #30 Runoff Area=2,894 sf 100.00% Impervious Runoff Depth>3.37"
Tc=6.0 min CN=98 Runoff=0.23 cfs 0.019 af

Subcatchment 51S: Catch Basin #31 Runoff Area=15,610 sf 68.28% Impervious Runoff Depth>2.55"
Tc=6.0 min CN=90 Runoff=1.03 cfs 0.076 af

Subcatchment 52S: Catch Basin #32 Runoff Area=5,691 sf 81.04% Impervious Runoff Depth>2.94"
Tc=6.0 min CN=94 Runoff=0.42 cfs 0.032 af

Subcatchment 53S: Catch Basin #33 Runoff Area=6,775 sf 83.23% Impervious Runoff Depth>2.94"
Tc=6.0 min CN=94 Runoff=0.50 cfs 0.038 af

Subcatchment 54S: Drop Inlet #54 Runoff Area=6,825 sf 58.42% Impervious Runoff Depth>2.94"
Tc=6.0 min CN=94 Runoff=0.50 cfs 0.038 af

Subcatchment 55S: Drop Inlet #55 Runoff Area=7,390 sf 46.96% Impervious Runoff Depth>2.19"
Tc=6.0 min CN=86 Runoff=0.43 cfs 0.031 af

Subcatchment 61S: Rain Garden #101 Runoff Area=10,199 sf 16.95% Impervious Runoff Depth>1.58"
Tc=6.0 min CN=78 Runoff=0.42 cfs 0.031 af

Subcatchment 62S: Rain Garden #102 Runoff Area=22,519 sf 2.14% Impervious Runoff Depth>1.38"
Flow Length=154' Tc=6.1 min CN=75 Runoff=0.80 cfs 0.059 af

Subcatchment 63S: Rain Garden #103 Runoff Area=8,959 sf 0.69% Impervious Runoff Depth>1.31"
Tc=6.0 min CN=74 Runoff=0.30 cfs 0.023 af

Subcatchment 64S: Rain Garden #104 Runoff Area=9,576 sf 0.00% Impervious Runoff Depth>1.31"
Tc=6.0 min CN=74 Runoff=0.32 cfs 0.024 af

Subcatchment 65S: Detention Pond #105 Runoff Area=4,593 sf 58.79% Impervious Runoff Depth>2.55"
Tc=6.0 min CN=90 Runoff=0.30 cfs 0.022 af

Subcatchment 66S: Detention Pond #106 Runoff Area=15,019 sf 49.21% Impervious Runoff Depth>2.19"
Tc=6.0 min CN=86 Runoff=0.87 cfs 0.063 af

Reach 1aR: Flow from Culvert to Stream Avg. Flow Depth=0.08' Max Vel=1.32 fps Inflow=0.52 cfs 0.040 af
n=0.035 L=655.5' S=0.0506 '/' Capacity=22.92 cfs Outflow=0.40 cfs 0.039 af

Reach 1bR: Stream Avg. Flow Depth=0.07' Max Vel=1.32 fps Inflow=0.40 cfs 0.039 af
n=0.035 L=1,438.0' S=0.0351 '/' Capacity=6.96 cfs Outflow=0.28 cfs 0.039 af

Reach 14aR: Wetland Crossing #2 Flow Avg. Flow Depth=0.39' Max Vel=3.07 fps Inflow=4.96 cfs 0.807 af
n=0.035 L=184.0' S=0.0323 '/' Capacity=38.18 cfs Outflow=4.95 cfs 0.806 af

Reach 14bR: Wetland Crossing #2 Flow Avg. Flow Depth=0.24' Max Vel=6.17 fps Inflow=4.95 cfs 0.806 af
n=0.035 L=93.6' S=0.2404 '/' Capacity=104.10 cfs Outflow=4.95 cfs 0.806 af

Reach 15R: Reach #15 Avg. Flow Depth=0.25' Max Vel=2.35 fps Inflow=4.04 cfs 0.634 af
n=0.035 L=198.0' S=0.0344 '/' Capacity=18.90 cfs Outflow=4.03 cfs 0.633 af

Reach 20aR: Wetland Crossing #1 Flow Avg. Flow Depth=0.06' Max Vel=0.37 fps Inflow=0.18 cfs 0.019 af
n=0.035 L=274.0' S=0.0055 '/' Capacity=12.58 cfs Outflow=0.13 cfs 0.019 af

Reach 20bR: Wetland Crossing #1 Flow Avg. Flow Depth=0.05' Max Vel=0.83 fps Inflow=0.13 cfs 0.019 af
n=0.035 L=81.0' S=0.0370 '/' Capacity=19.60 cfs Outflow=0.13 cfs 0.019 af

Reach 20cR: Wetland Crossing #1 Flow Avg. Flow Depth=0.03' Max Vel=1.54 fps Inflow=0.13 cfs 0.019 af
n=0.035 L=78.0' S=0.2179 '/' Capacity=47.55 cfs Outflow=0.13 cfs 0.019 af

Reach 20dR: Wetland Crossing #1 Flow Avg. Flow Depth=0.04' Max Vel=1.05 fps Inflow=0.13 cfs 0.019 af
n=0.035 L=109.0' S=0.0734 '/' Capacity=27.59 cfs Outflow=0.13 cfs 0.018 af

Reach 61R: Rain Garden #101 Reach Avg. Flow Depth=0.07' Max Vel=0.92 fps Inflow=0.22 cfs 0.140 af
n=0.035 L=162.0' S=0.0309 '/' Capacity=17.89 cfs Outflow=0.22 cfs 0.139 af

Reach 62R: Rain Garden #102 Avg. Flow Depth=0.09' Max Vel=1.67 fps Inflow=0.28 cfs 0.236 af
n=0.035 L=32.0' S=0.0703 '/' Capacity=56.30 cfs Outflow=0.28 cfs 0.236 af

Reach 63R: Reach RG #103 Avg. Flow Depth=0.11' Max Vel=2.53 fps Inflow=0.64 cfs 0.282 af
n=0.035 L=367.0' S=0.1131 '/' Capacity=71.40 cfs Outflow=0.64 cfs 0.281 af

Reach 100R: Final Reach 100 Inflow=10.27 cfs 1.290 af
Outflow=10.27 cfs 1.290 af

Reach 200R: Final Reach 200 Inflow=10.72 cfs 1.364 af
Outflow=10.72 cfs 1.364 af

Reach 300R: Final Reach 300 Inflow=10.97 cfs 1.409 af
Outflow=10.97 cfs 1.409 af

Reach 400R: Final Reach 400 Inflow=11.80 cfs 1.533 af
Outflow=11.80 cfs 1.533 af

Reach 500R: Final Reach 500 Inflow=17.23 cfs 2.465 af
Outflow=17.23 cfs 2.465 af

Reach 600R: Final Reach 600 Inflow=20.29 cfs 3.087 af
Outflow=20.29 cfs 3.087 af

Reach 700R: Final Reach 700 Inflow=22.20 cfs 3.349 af
Outflow=22.20 cfs 3.349 af

Reach 800R: Final Reach 800 Inflow=22.79 cfs 3.432 af
Outflow=22.79 cfs 3.432 af

Reach 900R: Final Reach 900 Inflow=23.04 cfs 3.467 af
Outflow=23.04 cfs 3.467 af

Reach 1100R: Final Reach #1100 Inflow=5.39 cfs 0.832 af
Outflow=5.39 cfs 0.832 af

Reach 1200R: Final Reach #1200 Inflow=3.31 cfs 0.557 af
Outflow=3.31 cfs 0.557 af

Reach 1300R: Final Reach #1300 Inflow=0.66 cfs 0.072 af
Outflow=0.66 cfs 0.072 af

Pond 1EP: Catch Basin Peak Elev=138.03' Storage=1 cf Inflow=0.02 cfs 0.002 af
12.0" Round Culvert n=0.012 L=48.0' S=0.0050 '/' Outflow=0.02 cfs 0.002 af

Pond 2EP: Catch Basin Peak Elev=137.88' Storage=2 cf Inflow=0.06 cfs 0.005 af
12.0" Round Culvert n=0.012 L=8.3' S=0.0048 '/' Outflow=0.06 cfs 0.005 af

Pond 3EP: Catch Basin Peak Elev=138.81' Storage=4 cf Inflow=0.37 cfs 0.028 af
12.0" Round Culvert n=0.012 L=153.7' S=0.0050 '/' Outflow=0.37 cfs 0.028 af

Pond 4EP: Catch Basin Peak Elev=137.03' Storage=4 cf Inflow=0.52 cfs 0.040 af
24.0" Round Culvert n=0.012 L=61.5' S=0.0050 '/' Outflow=0.52 cfs 0.040 af

Pond 14P: 4' (T) x 6' (W) Box Culvert Peak Elev=77.93' Storage=163 cf Inflow=4.96 cfs 0.808 af
72.0" x 48.0" Box Culvert w/ 12.0" inside fill n=0.024 L=52.0' S=0.0106 '/' Outflow=4.96 cfs 0.807 af

Pond 15P: 12" RCP Inlet Sump/Pond Peak Elev=94.55' Storage=264 cf Inflow=4.14 cfs 0.634 af
Primary=4.04 cfs 0.634 af Secondary=0.00 cfs 0.000 af Outflow=4.04 cfs 0.634 af

Pond 20P: 30" RCP Wetland Crossing #1 Peak Elev=111.11' Storage=35 cf Inflow=0.19 cfs 0.019 af
30.0" Round Culvert w/ 6.0" inside fill n=0.024 L=52.0' S=0.0096 '/' Outflow=0.18 cfs 0.019 af

Pond 101P: Rain Garden #101 Peak Elev=109.82' Storage=6,466 cf Inflow=3.34 cfs 0.254 af
Primary=0.22 cfs 0.140 af Secondary=0.00 cfs 0.000 af Outflow=0.22 cfs 0.140 af

Pond 102P: Rain Garden #102 Peak Elev=81.00' Storage=15,982 cf Inflow=6.67 cfs 0.553 af
Primary=0.28 cfs 0.236 af Secondary=0.00 cfs 0.000 af Outflow=0.28 cfs 0.236 af

Pond 103P: Rain Garden #103 Peak Elev=95.73' Storage=5,900 cf Inflow=3.86 cfs 0.316 af
Primary=0.64 cfs 0.282 af Secondary=0.00 cfs 0.000 af Outflow=0.64 cfs 0.282 af

Pond 104P: Rain Garden #104 Peak Elev=85.74' Storage=6,130 cf Inflow=3.93 cfs 0.341 af
Primary=0.99 cfs 0.278 af Secondary=0.00 cfs 0.000 af Outflow=0.99 cfs 0.278 af

Pond 105P: Detention Pond #105 Peak Elev=85.12' Storage=496 cf Inflow=2.07 cfs 0.155 af
Outflow=1.69 cfs 0.155 af

Pond 106P: Detention Pond #106 Peak Elev=96.65' Storage=448 cf Inflow=1.37 cfs 0.101 af
Outflow=0.89 cfs 0.101 af

Pond C01P: Catch Basin #1 Peak Elev=117.79' Storage=0.000 af Inflow=0.73 cfs 0.060 af
12.0" Round Culvert n=0.012 L=128.5' S=0.0114 '/' Outflow=0.73 cfs 0.060 af

Pond C02P: Catch Basin #2 Peak Elev=117.93' Storage=0.000 af Inflow=0.30 cfs 0.024 af
12.0" Round Culvert n=0.012 L=18.0' S=0.0083 '/' Outflow=0.30 cfs 0.024 af

Pond C03P: Catch Basin #3 Peak Elev=116.55' Storage=0.000 af Inflow=0.28 cfs 0.021 af
12.0" Round Culvert n=0.012 L=17.0' S=0.0224 '/' Outflow=0.28 cfs 0.021 af

Pond C04P: Catch Basin #4 Peak Elev=116.41' Storage=0.000 af Inflow=0.19 cfs 0.014 af
12.0" Round Culvert n=0.012 L=5.0' S=0.0440 '/' Outflow=0.19 cfs 0.014 af

Pond C05P: Catch Basin #5 Peak Elev=111.78' Storage=5 cf Inflow=0.46 cfs 0.035 af
12.0" Round Culvert n=0.012 L=79.5' S=0.0068 '/' Outflow=0.46 cfs 0.035 af

Pond C06P: Catch Basin #6 Peak Elev=109.86' Storage=5 cf Inflow=0.46 cfs 0.035 af
12.0" Round Culvert n=0.012 L=75.2' S=0.0051 '/' Outflow=0.46 cfs 0.035 af

Pond C07P: Catch Basin #7 Peak Elev=109.82' Storage=0.000 af Inflow=0.86 cfs 0.064 af
12.0" Round Culvert n=0.012 L=18.0' S=0.0139 '/' Outflow=0.86 cfs 0.064 af

Pond C08P: Catch Basin #8 Peak Elev=109.82' Storage=0.000 af Inflow=2.92 cfs 0.224 af
18.0" Round Culvert n=0.012 L=20.0' S=0.0115 '/' Outflow=2.92 cfs 0.224 af

Pond C09P: Catch Basin #9 Peak Elev=101.19' Storage=0.000 af Inflow=0.74 cfs 0.062 af
12.0" Round Culvert n=0.012 L=18.0' S=0.0083 '/' Outflow=0.73 cfs 0.062 af

Pond C10P: Catch Basin #10 Peak Elev=101.00' Storage=0.000 af Inflow=1.27 cfs 0.108 af
12.0" Round Culvert n=0.012 L=72.0' S=0.0776 '/' Outflow=1.27 cfs 0.108 af

Pond C11P: Catch Basin #11 Peak Elev=95.23' Storage=0.000 af Inflow=2.09 cfs 0.176 af
15.0" Round Culvert n=0.012 L=66.5' S=0.0627 '/' Outflow=2.09 cfs 0.176 af

Pond C12P: Catch Basin #12 Peak Elev=89.23' Storage=0.000 af Inflow=0.68 cfs 0.050 af
12.0" Round Culvert n=0.012 L=18.0' S=0.0139 '/' Outflow=0.67 cfs 0.050 af

Pond C13P: Catch Basin #13 Peak Elev=89.09' Storage=0.000 af Inflow=2.86 cfs 0.235 af
15.0" Round Culvert n=0.012 L=126.7' S=0.0261 '/' Outflow=2.86 cfs 0.235 af

Pond C14P: Catch Basin #14 Peak Elev=86.01' Storage=0.000 af Inflow=1.19 cfs 0.087 af
12.0" Round Culvert n=0.012 L=17.5' S=0.0143 '/' Outflow=1.19 cfs 0.087 af

Pond C15P: Catch Basin #15 Peak Elev=84.67' Storage=0.000 af Inflow=4.26 cfs 0.339 af
18.0" Round Culvert n=0.012 L=17.5' S=0.0383 '/' Outflow=4.26 cfs 0.339 af

Pond C16P: Catch Basin #16 Peak Elev=85.20' Storage=15 cf Inflow=1.13 cfs 0.084 af
12.0" Round Culvert n=0.012 L=32.5' S=0.0105 '/' Outflow=1.11 cfs 0.084 af

Pond C17P: Catch Basin #17 Peak Elev=85.44' Storage=0.000 af Inflow=0.65 cfs 0.049 af
12.0" Round Culvert n=0.012 L=35.0' S=0.0151 '/' Outflow=0.65 cfs 0.049 af

Pond C18P: Catch Basin #18 Peak Elev=113.62' Storage=0.000 af Inflow=0.46 cfs 0.034 af
12.0" Round Culvert n=0.012 L=77.0' S=0.0079 '/' Outflow=0.46 cfs 0.034 af

Pond C19P: Catch Basin #19 Peak Elev=113.64' Storage=0.000 af Inflow=0.56 cfs 0.041 af
12.0" Round Culvert n=0.012 L=77.0' S=0.0125 '/' Outflow=0.56 cfs 0.041 af

Pond C20P: Catch Basin #20 Peak Elev=112.98' Storage=0.000 af Inflow=0.67 cfs 0.049 af
12.0" Round Culvert n=0.012 L=18.0' S=0.0139 '/' Outflow=0.67 cfs 0.049 af

Pond C21P: Catch Basin #21 Peak Elev=110.64' Storage=7 cf Inflow=1.45 cfs 0.107 af
15.0" Round Culvert n=0.012 L=135.0' S=0.0271 '/' Outflow=1.45 cfs 0.107 af

Pond C22P: Catch Basin #22 Peak Elev=107.02' Storage=0.000 af Inflow=2.09 cfs 0.166 af
15.0" Round Culvert n=0.012 L=81.0' S=0.0825 '/' Outflow=2.09 cfs 0.166 af

Pond C23P: Catch Basin #23 Peak Elev=100.11' Storage=0.000 af Inflow=2.51 cfs 0.198 af
18.0" Round Culvert n=0.012 L=22.5' S=0.0164 '/' Outflow=2.51 cfs 0.198 af

Pond C24P: Catch Basin #24 Peak Elev=96.02' Storage=0.000 af Inflow=0.73 cfs 0.063 af
15.0" Round Culvert n=0.012 L=45.0' S=0.0138 '/' Outflow=0.73 cfs 0.063 af

Pond C25P: Catch Basin #25 Peak Elev=95.85' Storage=0.000 af Inflow=0.42 cfs 0.032 af
12.0" Round Culvert n=0.012 L=80.0' S=0.0063 '/' Outflow=0.43 cfs 0.032 af

Pond C26P: Catch Basin #26 Peak Elev=85.74' Storage=0.001 af Inflow=3.64 cfs 0.318 af
24.0" Round Culvert n=0.012 L=17.5' S=0.0120 '/' Outflow=3.61 cfs 0.317 af

Pond C27P: Catch Basin #27 Peak Elev=86.65' Storage=0.000 af Inflow=0.54 cfs 0.039 af
15.0" Round Culvert n=0.012 L=28.0' S=0.0468 '/' Outflow=0.54 cfs 0.039 af

Pond C28P: Catch Basin #28 Peak Elev=85.75' Storage=49 cf Inflow=2.95 cfs 0.265 af
24.0" Round Culvert n=0.012 L=72.0' S=0.0064 '/' Outflow=2.93 cfs 0.264 af

Pond C29P: Catch Basin #29 Peak Elev=85.75' Storage=20 cf Inflow=0.30 cfs 0.024 af
15.0" Round Culvert n=0.012 L=17.5' S=0.0057 '/' Outflow=0.30 cfs 0.024 af

Pond C30P: Catch Basin #30 Peak Elev=85.76' Storage=0.000 af Inflow=2.48 cfs 0.228 af
18.0" Round Culvert n=0.012 L=72.5' S=0.0152 '/' Outflow=2.48 cfs 0.227 af

Pond C31P: Catch Basin #31 Peak Elev=85.88' Storage=0.000 af Inflow=1.03 cfs 0.076 af
15.0" Round Culvert n=0.012 L=18.0' S=0.0139 '/' Outflow=1.03 cfs 0.076 af

Pond C32P: Catch Basin #32 Peak Elev=96.83' Storage=0.000 af Inflow=0.42 cfs 0.032 af
12.0" Round Culvert n=0.012 L=24.0' S=0.0213 '/' Outflow=0.42 cfs 0.032 af

Pond C33P: Catch Basin #33 Peak Elev=96.93' Storage=0.000 af Inflow=0.50 cfs 0.038 af
12.0" Round Culvert n=0.012 L=35.0' S=0.0089 '/' Outflow=0.50 cfs 0.038 af

Pond C54P: Drop Inlet #54 Peak Elev=95.38' Storage=1 cf Inflow=0.50 cfs 0.038 af
12.0" Round Culvert n=0.012 L=7.5' S=0.0240 '/' Outflow=0.50 cfs 0.038 af

Pond C55P: Drop Inlet #55 Peak Elev=93.32' Storage=1 cf Inflow=0.43 cfs 0.031 af
12.0" Round Culvert n=0.012 L=31.2' S=0.1337 '/' Outflow=0.43 cfs 0.031 af

Pond D01P: Drain Manhole #1 Peak Elev=116.36' Storage=0.000 af Inflow=1.20 cfs 0.095 af
12.0" Round Culvert n=0.012 L=157.5' S=0.0201 '/' Outflow=1.20 cfs 0.095 af

Pond D02P: Drain Manhole #2 Peak Elev=111.25' Storage=0.000 af Inflow=1.65 cfs 0.129 af
15.0" Round Culvert n=0.012 L=62.7' S=0.0102 '/' Outflow=1.66 cfs 0.129 af

Pond D03P: Drain Manhole #3 Peak Elev=90.96' Storage=0.000 af Inflow=2.09 cfs 0.176 af
15.0" Round Culvert n=0.012 L=31.0' S=0.0619 '/' Outflow=2.09 cfs 0.176 af

Pond D04P: Drain Manhole #4 Peak Elev=94.28' Storage=0.000 af Inflow=1.24 cfs 0.133 af
15.0" Round Culvert n=0.012 L=183.5' S=0.0470 '/' Outflow=1.24 cfs 0.133 af

Total Runoff Area = 51.401 ac Runoff Volume = 5.465 af Average Runoff Depth = 1.28"
90.34% Pervious = 46.434 ac 9.66% Impervious = 4.967 ac

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Subcatchment #1 Runoff Area=611,661 sf 1.15% Impervious Runoff Depth>2.35"
Flow Length=2,050' Tc=25.3 min CN=70 Runoff=23.42 cfs 2.756 af

Subcatchment 2S: Subcatchment #2 Runoff Area=34,126 sf 0.00% Impervious Runoff Depth>2.45"
Flow Length=215' Tc=8.3 min CN=71 Runoff=2.03 cfs 0.160 af

Subcatchment 3S: Subcatchment #3 Runoff Area=19,748 sf 3.38% Impervious Runoff Depth>2.54"
Flow Length=243' Tc=6.0 min CN=72 Runoff=1.32 cfs 0.096 af

Subcatchment 4S: Subcatchment #4 Runoff Area=57,278 sf 0.79% Impervious Runoff Depth>2.45"
Flow Length=133' Tc=9.9 min CN=71 Runoff=3.25 cfs 0.268 af

Subcatchment 5S: Subcatchment #5 Runoff Area=52,634 sf 3.28% Impervious Runoff Depth>2.62"
Flow Length=321' Tc=11.9 min CN=73 Runoff=3.04 cfs 0.264 af

Subcatchment 6S: Subcatchment #6 Runoff Area=150,165 sf 0.97% Impervious Runoff Depth>2.53"
Flow Length=665' Tc=25.1 min CN=72 Runoff=6.23 cfs 0.726 af

Subcatchment 7S: Subcatchment #7 Runoff Area=120,943 sf 0.69% Impervious Runoff Depth>2.45"
Flow Length=376' Tc=13.9 min CN=71 Runoff=6.12 cfs 0.566 af

Subcatchment 8S: Subcatchment #8 Runoff Area=69,837 sf 0.00% Impervious Runoff Depth>1.63"
Flow Length=381' Tc=18.1 min CN=61 Runoff=2.00 cfs 0.218 af

Subcatchment 9S: Subcatchment #9 Runoff Area=30,235 sf 0.00% Impervious Runoff Depth>1.63"
Flow Length=273' Tc=13.9 min CN=61 Runoff=0.96 cfs 0.095 af

Subcatchment 11S: Subcatchment #11 Runoff Area=91,934 sf 0.75% Impervious Runoff Depth>2.45"
Flow Length=226' Tc=12.7 min CN=71 Runoff=4.78 cfs 0.431 af

Subcatchment 12S: Subcatchment #12 Runoff Area=141,116 sf 0.95% Impervious Runoff Depth>2.53"
Flow Length=238' Tc=15.6 min CN=72 Runoff=7.11 cfs 0.684 af

Subcatchment 13S: Subcatchment #13 Runoff Area=33,510 sf 0.00% Impervious Runoff Depth>2.44"
Flow Length=329' Tc=18.6 min CN=71 Runoff=1.52 cfs 0.157 af

Subcatchment 14S: Subcatchment #14 Runoff Area=237,389 sf 0.12% Impervious Runoff Depth>2.44"
Flow Length=639' Tc=28.2 min CN=71 Runoff=9.01 cfs 1.108 af

Subcatchment 15S: Subcatchment #15 Runoff Area=241,596 sf 5.85% Impervious Runoff Depth>2.36"
Flow Length=553' Tc=23.7 min CN=70 Runoff=9.50 cfs 1.089 af

Subcatchment 16S: Catch Basin Runoff Area=459 sf 45.75% Impervious Runoff Depth>3.37"
Tc=6.0 min CN=81 Runoff=0.04 cfs 0.003 af

Subcatchment 17S: Catch Basin Runoff Area=2,300 sf 9.70% Impervious Runoff Depth>2.37"
Tc=6.0 min CN=70 Runoff=0.14 cfs 0.010 af

Subcatchment 18S: Catch Basin Runoff Area=5,195 sf 84.79% Impervious Runoff Depth>4.63"
Tc=6.0 min CN=93 Runoff=0.59 cfs 0.046 af

Subcatchment 19S: Catch Basin Runoff Area=880 sf 88.86% Impervious Runoff Depth>4.85"
Tc=6.0 min CN=95 Runoff=0.10 cfs 0.008 af

Subcatchment 20S: 30" RCP Wet Crossing Runoff Area=13,867 sf 0.00% Impervious Runoff Depth>1.79"
Flow Length=138' Tc=8.8 min CN=63 Runoff=0.57 cfs 0.048 af

Subcatchment 21S: Catch Basin #1 Runoff Area=5,478 sf 100.00% Impervious Runoff Depth>5.20"
Tc=6.0 min CN=98 Runoff=0.65 cfs 0.054 af

Subcatchment 22S: Catch Basin #2 Runoff Area=3,780 sf 100.00% Impervious Runoff Depth>5.20"
Tc=6.0 min CN=98 Runoff=0.45 cfs 0.038 af

Subcatchment 23S: Catch Basin #3 Runoff Area=4,071 sf 74.55% Impervious Runoff Depth>4.52"
Tc=6.0 min CN=92 Runoff=0.46 cfs 0.035 af

Subcatchment 24S: Catch Basin #4 Runoff Area=3,414 sf 46.43% Impervious Runoff Depth>3.77"
Flow Length=65' Slope=0.0250 '/' Tc=6.0 min CN=85 Runoff=0.33 cfs 0.025 af

Subcatchment 25S: Catch Basin #5 Runoff Area=6,366 sf 76.59% Impervious Runoff Depth>4.63"
Tc=6.0 min CN=93 Runoff=0.72 cfs 0.056 af

Subcatchment 26S: Catch Basin #6 Runoff Area=6,637 sf 73.62% Impervious Runoff Depth>4.52"
Tc=6.0 min CN=92 Runoff=0.74 cfs 0.057 af

Subcatchment 27S: Catch Basin #7 Runoff Area=6,215 sf 62.28% Impervious Runoff Depth>4.19"
Flow Length=160' Tc=6.4 min CN=89 Runoff=0.66 cfs 0.050 af

Subcatchment 28S: Catch Basin #8 Runoff Area=7,309 sf 51.17% Impervious Runoff Depth>3.88"
Flow Length=296' Tc=7.4 min CN=86 Runoff=0.71 cfs 0.054 af

Subcatchment 29S: Catch Basin #9 Runoff Area=12,199 sf 70.46% Impervious Runoff Depth>4.40"
Flow Length=212' Tc=9.8 min CN=91 Runoff=1.20 cfs 0.103 af

Subcatchment 30S: Catch Basin #10 Runoff Area=9,786 sf 62.42% Impervious Runoff Depth>4.19"
Flow Length=138' Tc=11.1 min CN=89 Runoff=0.90 cfs 0.078 af

Subcatchment 31S: Catch Basin #11 Runoff Area=5,704 sf 75.18% Impervious Runoff Depth>4.52"
Tc=6.0 min CN=92 Runoff=0.64 cfs 0.049 af

Subcatchment 32S: Catch Basin #12 Runoff Area=3,577 sf 76.10% Impervious Runoff Depth>4.52"
Tc=6.0 min CN=92 Runoff=0.40 cfs 0.031 af

Subcatchment 33S: Catch Basin #13 Runoff Area=1,754 sf 73.95% Impervious Runoff Depth>4.52"
Tc=6.0 min CN=92 Runoff=0.20 cfs 0.015 af

Subcatchment 34S: Catch Basin #14 Runoff Area=19,871 sf 54.57% Impervious Runoff Depth>3.98"
Tc=6.0 min CN=87 Runoff=2.04 cfs 0.151 af

Subcatchment 35S: Catch Basin #15 Runoff Area=2,771 sf 100.00% Impervious Runoff Depth>5.20"
Tc=6.0 min CN=98 Runoff=0.33 cfs 0.028 af

Subcatchment 36S: Catch Basin #16 Runoff Area=16,606 sf 68.54% Impervious Runoff Depth>4.41"
Tc=6.0 min CN=91 Runoff=1.83 cfs 0.140 af

Subcatchment 37S: Catch Basin #17 Runoff Area=9,277 sf 73.40% Impervious Runoff Depth>4.52"
Tc=6.0 min CN=92 Runoff=1.04 cfs 0.080 af

Subcatchment 38S: Catch Basin #18 Runoff Area=7,434 sf 68.46% Impervious Runoff Depth>4.09"
Tc=6.0 min CN=88 Runoff=0.78 cfs 0.058 af

Subcatchment 39S: Catch Basin #19 Runoff Area=8,476 sf 64.19% Impervious Runoff Depth>4.30"
Tc=6.0 min CN=90 Runoff=0.92 cfs 0.070 af

Subcatchment 40S: Catch Basin #20 Runoff Area=3,024 sf 71.96% Impervious Runoff Depth>4.41"
Tc=6.0 min CN=91 Runoff=0.33 cfs 0.025 af

Subcatchment 41S: Catch Basin #21 Runoff Area=2,937 sf 88.32% Impervious Runoff Depth>4.85"
Tc=6.0 min CN=95 Runoff=0.34 cfs 0.027 af

Subcatchment 42S: Catch Basin #22 Runoff Area=12,582 sf 61.56% Impervious Runoff Depth>4.19"
Flow Length=173' Tc=10.5 min CN=89 Runoff=1.17 cfs 0.101 af

Subcatchment 43S: Catch Basin #23 Runoff Area=6,076 sf 73.49% Impervious Runoff Depth>4.52"
Tc=6.0 min CN=92 Runoff=0.68 cfs 0.053 af

Subcatchment 44S: Catch Basin #24 Runoff Area=19,261 sf 40.57% Impervious Runoff Depth>3.27"
Flow Length=289' Tc=11.8 min CN=80 Runoff=1.40 cfs 0.121 af

Subcatchment 45S: Catch Basin #25 Runoff Area=6,238 sf 70.95% Impervious Runoff Depth>4.41"
Tc=6.0 min CN=91 Runoff=0.69 cfs 0.053 af

Subcatchment 46S: Catch Basin #26 Runoff Area=2,200 sf 100.00% Impervious Runoff Depth>5.20"
Tc=6.0 min CN=98 Runoff=0.26 cfs 0.022 af

Subcatchment 47S: Catch Basin #27 Runoff Area=8,986 sf 52.60% Impervious Runoff Depth>3.98"
Tc=6.0 min CN=87 Runoff=0.92 cfs 0.068 af

Subcatchment 48S: Catch Basin #28 Runoff Area=2,148 sf 100.00% Impervious Runoff Depth>5.20"
Tc=6.0 min CN=98 Runoff=0.26 cfs 0.021 af

Subcatchment 49S: Catch Basin #29 Runoff Area=3,931 sf 91.10% Impervious Runoff Depth>4.97"
Tc=6.0 min CN=96 Runoff=0.46 cfs 0.037 af

Subcatchment 50S: Catch Basin #30 Runoff Area=2,894 sf 100.00% Impervious Runoff Depth>5.20"
Tc=6.0 min CN=98 Runoff=0.35 cfs 0.029 af

Subcatchment 51S: Catch Basin #31 Runoff Area=15,610 sf 68.28% Impervious Runoff Depth>4.30"
Tc=6.0 min CN=90 Runoff=1.69 cfs 0.128 af

Subcatchment 52S: Catch Basin #32 Runoff Area=5,691 sf 81.04% Impervious Runoff Depth>4.74"
Tc=6.0 min CN=94 Runoff=0.66 cfs 0.052 af

Subcatchment 53S: Catch Basin #33 Runoff Area=6,775 sf 83.23% Impervious Runoff Depth>4.74"
Tc=6.0 min CN=94 Runoff=0.78 cfs 0.061 af

Subcatchment 54S: Drop Inlet #54 Runoff Area=6,825 sf 58.42% Impervious Runoff Depth>4.74"
Tc=6.0 min CN=94 Runoff=0.79 cfs 0.062 af

Subcatchment 55S: Drop Inlet #55 Runoff Area=7,390 sf 46.96% Impervious Runoff Depth>3.88"
Tc=6.0 min CN=86 Runoff=0.74 cfs 0.055 af

Subcatchment 61S: Rain Garden #101 Runoff Area=10,199 sf 16.95% Impervious Runoff Depth>3.09"
Tc=6.0 min CN=78 Runoff=0.83 cfs 0.060 af

Subcatchment 62S: Rain Garden #102 Runoff Area=22,519 sf 2.14% Impervious Runoff Depth>2.81"
Flow Length=154' Tc=6.1 min CN=75 Runoff=1.67 cfs 0.121 af

Subcatchment 63S: Rain Garden #103 Runoff Area=8,959 sf 0.69% Impervious Runoff Depth>2.72"
Tc=6.0 min CN=74 Runoff=0.64 cfs 0.047 af

Subcatchment 64S: Rain Garden #104 Runoff Area=9,576 sf 0.00% Impervious Runoff Depth>2.72"
Tc=6.0 min CN=74 Runoff=0.69 cfs 0.050 af

Subcatchment 65S: Detention Pond #105 Runoff Area=4,593 sf 58.79% Impervious Runoff Depth>4.30"
Tc=6.0 min CN=90 Runoff=0.50 cfs 0.038 af

Subcatchment 66S: Detention Pond #106 Runoff Area=15,019 sf 49.21% Impervious Runoff Depth>3.88"
Tc=6.0 min CN=86 Runoff=1.51 cfs 0.111 af

Reach 1aR: Flow from Culvert to Stream Avg. Flow Depth=0.10' Max Vel=1.58 fps Inflow=0.88 cfs 0.067 af
n=0.035 L=655.5' S=0.0506 '/' Capacity=22.92 cfs Outflow=0.71 cfs 0.067 af

Reach 1bR: Stream Avg. Flow Depth=0.10' Max Vel=1.68 fps Inflow=0.71 cfs 0.067 af
n=0.035 L=1,438.0' S=0.0351 '/' Capacity=6.96 cfs Outflow=0.53 cfs 0.066 af

Reach 14aR: Wetland Crossing #2 Flow Avg. Flow Depth=0.59' Max Vel=4.07 fps Inflow=12.42 cfs 1.647 af
n=0.035 L=184.0' S=0.0323 '/' Capacity=38.18 cfs Outflow=12.42 cfs 1.646 af

Reach 14bR: Wetland Crossing #2 Flow Avg. Flow Depth=0.37' Max Vel=8.17 fps Inflow=12.42 cfs 1.646 af
n=0.035 L=93.6' S=0.2404 '/' Capacity=104.10 cfs Outflow=12.42 cfs 1.646 af

Reach 15R: Reach #15 Avg. Flow Depth=0.32' Max Vel=2.79 fps Inflow=7.04 cfs 1.391 af
n=0.035 L=198.0' S=0.0344 '/' Capacity=18.90 cfs Outflow=7.03 cfs 1.390 af

Reach 20aR: Wetland Crossing #1 Flow Avg. Flow Depth=0.11' Max Vel=0.54 fps Inflow=0.56 cfs 0.047 af
n=0.035 L=274.0' S=0.0055 '/' Capacity=12.58 cfs Outflow=0.44 cfs 0.047 af

Reach 20bR: Wetland Crossing #1 Flow Avg. Flow Depth=0.09' Max Vel=1.22 fps Inflow=0.44 cfs 0.047 af
n=0.035 L=81.0' S=0.0370 '/' Capacity=19.60 cfs Outflow=0.44 cfs 0.047 af

Reach 20cR: Wetland Crossing #1 Flow Avg. Flow Depth=0.06' Max Vel=2.25 fps Inflow=0.44 cfs 0.047 af
n=0.035 L=78.0' S=0.2179 '/' Capacity=47.55 cfs Outflow=0.44 cfs 0.047 af

Reach 20dR: Wetland Crossing #1 Flow Avg. Flow Depth=0.07' Max Vel=1.54 fps Inflow=0.44 cfs 0.047 af
n=0.035 L=109.0' S=0.0734 '/' Capacity=27.59 cfs Outflow=0.44 cfs 0.047 af

Reach 61R: Rain Garden #101 Reach Avg. Flow Depth=0.13' Max Vel=1.50 fps Inflow=1.05 cfs 0.303 af
n=0.035 L=162.0' S=0.0309 '/' Capacity=17.89 cfs Outflow=1.05 cfs 0.303 af

Reach 62R: Rain Garden #102 Avg. Flow Depth=0.26' Max Vel=3.46 fps Inflow=3.02 cfs 0.611 af
n=0.035 L=32.0' S=0.0703 '/' Capacity=56.30 cfs Outflow=3.03 cfs 0.611 af

Reach 63R: Reach RG #103 Avg. Flow Depth=0.20' Max Vel=3.75 fps Inflow=2.30 cfs 0.488 af
n=0.035 L=367.0' S=0.1131 '/' Capacity=71.40 cfs Outflow=2.30 cfs 0.487 af

Reach 100R: Final Reach 100 Inflow=23.92 cfs 2.822 af
Outflow=23.92 cfs 2.822 af

Reach 200R: Final Reach 200 Inflow=24.90 cfs 2.982 af
Outflow=24.90 cfs 2.982 af

Reach 300R: Final Reach 300 Inflow=25.44 cfs 3.078 af
Outflow=25.44 cfs 3.078 af

Reach 400R: Final Reach 400 Inflow=27.25 cfs 3.346 af
Outflow=27.25 cfs 3.346 af

Reach 500R: Final Reach 500 Inflow=41.18 cfs 5.256 af
Outflow=41.18 cfs 5.256 af

Reach 600R: Final Reach 600 Inflow=49.61 cfs 6.470 af
Outflow=49.61 cfs 6.470 af

Reach 700R: Final Reach 700 Inflow=54.05 cfs 7.036 af
Outflow=54.05 cfs 7.036 af

Reach 800R: Final Reach 800 Inflow=55.93 cfs 7.255 af
Outflow=55.93 cfs 7.255 af

Reach 900R: Final Reach 900 Inflow=56.69 cfs 7.349 af
Outflow=56.69 cfs 7.349 af

Reach 1100R: Final Reach #1100 Inflow=9.90 cfs 1.820 af
Outflow=9.90 cfs 1.820 af

Reach 1200R: Final Reach #1200 Inflow=8.25 cfs 1.295 af
Outflow=8.25 cfs 1.295 af

Reach 1300R: Final Reach #1300 Inflow=1.52 cfs 0.157 af
Outflow=1.52 cfs 0.157 af

Pond 1EP: Catch Basin Peak Elev=138.05' Storage=1 cf Inflow=0.04 cfs 0.003 af
12.0" Round Culvert n=0.012 L=48.0' S=0.0050 '/' Outflow=0.04 cfs 0.003 af

Pond 2EP: Catch Basin Peak Elev=137.96' Storage=3 cf Inflow=0.14 cfs 0.010 af
12.0" Round Culvert n=0.012 L=8.3' S=0.0048 '/' Outflow=0.14 cfs 0.010 af

Pond 3EP: Catch Basin Peak Elev=138.90' Storage=5 cf Inflow=0.59 cfs 0.046 af
12.0" Round Culvert n=0.012 L=153.7' S=0.0050 '/' Outflow=0.59 cfs 0.046 af

Pond 4EP: Catch Basin Peak Elev=137.13' Storage=5 cf Inflow=0.88 cfs 0.068 af
24.0" Round Culvert n=0.012 L=61.5' S=0.0050 '/' Outflow=0.88 cfs 0.067 af

Pond 14P: 4' (T) x 6' (W) Box Culvert Peak Elev=78.28' Storage=511 cf Inflow=12.45 cfs 1.648 af
72.0" x 48.0" Box Culvert w/ 12.0" inside fill n=0.024 L=52.0' S=0.0106 '/' Outflow=12.42 cfs 1.647 af

Pond 15P: 12" RCP Inlet Sump/Pond Peak Elev=96.87' Storage=5,101 cf Inflow=10.46 cfs 1.391 af
Primary=7.04 cfs 1.391 af Secondary=0.00 cfs 0.000 af Outflow=7.04 cfs 1.391 af

Pond 20P: 30" RCP Wetland Crossing #1 Peak Elev=111.21' Storage=72 cf Inflow=0.57 cfs 0.048 af
30.0" Round Culvert w/ 6.0" inside fill n=0.024 L=52.0' S=0.0096 '/' Outflow=0.56 cfs 0.047 af

Pond 101P: Rain Garden #101 Peak Elev=110.64' Storage=9,175 cf Inflow=5.51 cfs 0.429 af
Primary=1.05 cfs 0.303 af Secondary=0.00 cfs 0.000 af Outflow=1.05 cfs 0.303 af

Pond 102P: Rain Garden #102 Peak Elev=81.76' Storage=20,449 cf Inflow=11.00 cfs 0.950 af
Primary=3.02 cfs 0.611 af Secondary=0.00 cfs 0.000 af Outflow=3.02 cfs 0.611 af

Pond 103P: Rain Garden #103 Peak Elev=96.63' Storage=8,727 cf Inflow=6.66 cfs 0.554 af
Primary=2.30 cfs 0.488 af Secondary=0.00 cfs 0.000 af Outflow=2.30 cfs 0.488 af

Pond 104P: Rain Garden #104 Peak Elev=86.44' Storage=8,287 cf Inflow=6.28 cfs 0.578 af
Primary=3.09 cfs 0.493 af Secondary=0.00 cfs 0.000 af Outflow=3.09 cfs 0.493 af

Pond 105P: Detention Pond #105 Peak Elev=85.82' Storage=891 cf Inflow=3.34 cfs 0.258 af
Outflow=2.59 cfs 0.257 af

Pond 106P: Detention Pond #106 Peak Elev=97.45' Storage=962 cf Inflow=2.28 cfs 0.173 af
Outflow=1.23 cfs 0.172 af

Pond C01P: Catch Basin #1 Peak Elev=117.91' Storage=0.000 af Inflow=1.10 cfs 0.092 af
12.0" Round Culvert n=0.012 L=128.5' S=0.0114 '/' Outflow=1.10 cfs 0.092 af

Pond C02P: Catch Basin #2 Peak Elev=118.03' Storage=0.000 af Inflow=0.45 cfs 0.038 af
12.0" Round Culvert n=0.012 L=18.0' S=0.0083 '/' Outflow=0.45 cfs 0.038 af

Pond C03P: Catch Basin #3 Peak Elev=116.68' Storage=0.000 af Inflow=0.46 cfs 0.035 af
12.0" Round Culvert n=0.012 L=17.0' S=0.0224 '/' Outflow=0.45 cfs 0.035 af

Pond C04P: Catch Basin #4 Peak Elev=116.58' Storage=0.000 af Inflow=0.33 cfs 0.025 af
12.0" Round Culvert n=0.012 L=5.0' S=0.0440 '/' Outflow=0.33 cfs 0.025 af

Pond C05P: Catch Basin #5 Peak Elev=111.90' Storage=6 cf Inflow=0.72 cfs 0.056 af
12.0" Round Culvert n=0.012 L=79.5' S=0.0068 '/' Outflow=0.72 cfs 0.056 af

Pond C06P: Catch Basin #6 Peak Elev=110.65' Storage=15 cf Inflow=0.74 cfs 0.057 af
12.0" Round Culvert n=0.012 L=75.2' S=0.0051 '/' Outflow=0.74 cfs 0.057 af

Pond C07P: Catch Basin #7 Peak Elev=110.65' Storage=0.000 af Inflow=1.40 cfs 0.107 af
12.0" Round Culvert n=0.012 L=18.0' S=0.0139 '/' Outflow=1.39 cfs 0.107 af

Pond C08P: Catch Basin #8 Peak Elev=110.65' Storage=0.001 af Inflow=4.70 cfs 0.369 af
18.0" Round Culvert n=0.012 L=20.0' S=0.0115 '/' Outflow=4.68 cfs 0.369 af

Pond C09P: Catch Basin #9 Peak Elev=101.40' Storage=0.000 af Inflow=1.20 cfs 0.103 af
12.0" Round Culvert n=0.012 L=18.0' S=0.0083 '/' Outflow=1.19 cfs 0.103 af

Pond C10P: Catch Basin #10 Peak Elev=101.22' Storage=0.000 af Inflow=2.09 cfs 0.181 af
12.0" Round Culvert n=0.012 L=72.0' S=0.0776 '/' Outflow=2.09 cfs 0.181 af

Pond C11P: Catch Basin #11 Peak Elev=95.48' Storage=0.000 af Inflow=3.38 cfs 0.292 af
15.0" Round Culvert n=0.012 L=66.5' S=0.0627 '/' Outflow=3.38 cfs 0.292 af

Pond C12P: Catch Basin #12 Peak Elev=89.57' Storage=0.000 af Inflow=1.14 cfs 0.086 af
12.0" Round Culvert n=0.012 L=18.0' S=0.0139 '/' Outflow=1.13 cfs 0.086 af

Pond C13P: Catch Basin #13 Peak Elev=89.48' Storage=0.000 af Inflow=4.68 cfs 0.393 af
15.0" Round Culvert n=0.012 L=126.7' S=0.0261 '/' Outflow=4.67 cfs 0.393 af

Pond C14P: Catch Basin #14 Peak Elev=86.25' Storage=0.000 af Inflow=2.04 cfs 0.151 af
12.0" Round Culvert n=0.012 L=17.5' S=0.0143 '/' Outflow=2.04 cfs 0.151 af

Pond C15P: Catch Basin #15 Peak Elev=85.09' Storage=0.001 af Inflow=7.02 cfs 0.572 af
18.0" Round Culvert n=0.012 L=17.5' S=0.0383 '/' Outflow=7.02 cfs 0.572 af

Pond C16P: Catch Basin #16 Peak Elev=85.90' Storage=29 cf Inflow=1.83 cfs 0.140 af
12.0" Round Culvert n=0.012 L=32.5' S=0.0105 '/' Outflow=1.81 cfs 0.140 af

Pond C17P: Catch Basin #17 Peak Elev=85.86' Storage=0.000 af Inflow=1.04 cfs 0.080 af
12.0" Round Culvert n=0.012 L=35.0' S=0.0151 '/' Outflow=1.03 cfs 0.080 af

Pond C18P: Catch Basin #18 Peak Elev=113.74' Storage=0.000 af Inflow=0.78 cfs 0.058 af
12.0" Round Culvert n=0.012 L=77.0' S=0.0079 '/' Outflow=0.78 cfs 0.058 af

Pond C19P: Catch Basin #19 Peak Elev=113.76' Storage=0.000 af Inflow=0.92 cfs 0.070 af
12.0" Round Culvert n=0.012 L=77.0' S=0.0125 '/' Outflow=0.92 cfs 0.070 af

Pond C20P: Catch Basin #20 Peak Elev=113.13' Storage=0.000 af Inflow=1.11 cfs 0.084 af
12.0" Round Culvert n=0.012 L=18.0' S=0.0139 '/' Outflow=1.11 cfs 0.084 af

Pond C21P: Catch Basin #21 Peak Elev=110.83' Storage=10 cf Inflow=2.37 cfs 0.181 af
15.0" Round Culvert n=0.012 L=135.0' S=0.0271 '/' Outflow=2.38 cfs 0.181 af

Pond C22P: Catch Basin #22 Peak Elev=107.27' Storage=0.000 af Inflow=3.45 cfs 0.281 af
15.0" Round Culvert n=0.012 L=81.0' S=0.0825 '/' Outflow=3.45 cfs 0.281 af

Pond C23P: Catch Basin #23 Peak Elev=100.37' Storage=0.000 af Inflow=4.13 cfs 0.334 af
18.0" Round Culvert n=0.012 L=22.5' S=0.0164 '/' Outflow=4.13 cfs 0.334 af

Pond C24P: Catch Basin #24 Peak Elev=96.65' Storage=0.000 af Inflow=1.40 cfs 0.121 af
15.0" Round Culvert n=0.012 L=45.0' S=0.0138 '/' Outflow=1.39 cfs 0.121 af

Pond C25P: Catch Basin #25 Peak Elev=96.63' Storage=0.000 af Inflow=0.69 cfs 0.053 af
12.0" Round Culvert n=0.012 L=80.0' S=0.0063 '/' Outflow=0.69 cfs 0.053 af

Pond C26P: Catch Basin #26 Peak Elev=86.47' Storage=0.002 af Inflow=5.63 cfs 0.529 af
24.0" Round Culvert n=0.012 L=17.5' S=0.0120 '/' Outflow=5.59 cfs 0.528 af

Pond C27P: Catch Basin #27 Peak Elev=86.76' Storage=0.000 af Inflow=0.92 cfs 0.068 af
15.0" Round Culvert n=0.012 L=28.0' S=0.0468 '/' Outflow=0.92 cfs 0.068 af

Pond C28P: Catch Basin #28 Peak Elev=86.49' Storage=63 cf Inflow=4.48 cfs 0.439 af
24.0" Round Culvert n=0.012 L=72.0' S=0.0064 '/' Outflow=4.44 cfs 0.439 af

Pond C29P: Catch Basin #29 Peak Elev=86.49' Storage=30 cf Inflow=0.46 cfs 0.037 af
15.0" Round Culvert n=0.012 L=17.5' S=0.0057 '/' Outflow=0.45 cfs 0.037 af

Pond C30P: Catch Basin #30 Peak Elev=86.54' Storage=0.000 af Inflow=3.78 cfs 0.381 af
18.0" Round Culvert n=0.012 L=72.5' S=0.0152 '/' Outflow=3.78 cfs 0.381 af

Pond C31P: Catch Basin #31 Peak Elev=86.54' Storage=0.000 af Inflow=1.69 cfs 0.128 af
15.0" Round Culvert n=0.012 L=18.0' S=0.0139 '/' Outflow=1.69 cfs 0.128 af

Pond C32P: Catch Basin #32 Peak Elev=96.92' Storage=0.000 af Inflow=0.66 cfs 0.052 af
12.0" Round Culvert n=0.012 L=24.0' S=0.0213 '/' Outflow=0.66 cfs 0.052 af

Pond C33P: Catch Basin #33 Peak Elev=97.46' Storage=0.000 af Inflow=0.78 cfs 0.061 af
12.0" Round Culvert n=0.012 L=35.0' S=0.0089 '/' Outflow=0.78 cfs 0.061 af

Pond C54P: Drop Inlet #54 Peak Elev=95.57' Storage=2 cf Inflow=0.79 cfs 0.062 af
12.0" Round Culvert n=0.012 L=7.5' S=0.0240 '/' Outflow=0.79 cfs 0.062 af

Pond C55P: Drop Inlet #55 Peak Elev=93.44' Storage=1 cf Inflow=0.74 cfs 0.055 af
12.0" Round Culvert n=0.012 L=31.2' S=0.1337 '/' Outflow=0.74 cfs 0.055 af

Pond D01P: Drain Manhole #1 Peak Elev=116.55' Storage=0.000 af Inflow=1.88 cfs 0.152 af
12.0" Round Culvert n=0.012 L=157.5' S=0.0201 '/' Outflow=1.89 cfs 0.152 af

Pond D02P: Drain Manhole #2 Peak Elev=111.44' Storage=0.000 af Inflow=2.61 cfs 0.208 af
15.0" Round Culvert n=0.012 L=62.7' S=0.0102 '/' Outflow=2.61 cfs 0.208 af

Pond D03P: Drain Manhole #3 Peak Elev=91.21' Storage=0.000 af Inflow=3.38 cfs 0.292 af
15.0" Round Culvert n=0.012 L=31.0' S=0.0619 '/' Outflow=3.38 cfs 0.292 af

Pond D04P: Drain Manhole #4 Peak Elev=94.40' Storage=0.000 af Inflow=1.77 cfs 0.224 af
15.0" Round Culvert n=0.012 L=183.5' S=0.0470 '/' Outflow=1.77 cfs 0.224 af

Total Runoff Area = 51.401 ac Runoff Volume = 11.247 af Average Runoff Depth = 2.63"
90.34% Pervious = 46.434 ac 9.66% Impervious = 4.967 ac

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Subcatchment #1 Runoff Area=611,661 sf 1.15% Impervious Runoff Depth>3.49"
Flow Length=2,050' Tc=25.3 min CN=70 Runoff=35.13 cfs 4.087 af

Subcatchment 2S: Subcatchment #2 Runoff Area=34,126 sf 0.00% Impervious Runoff Depth>3.61"
Flow Length=215' Tc=8.3 min CN=71 Runoff=3.02 cfs 0.236 af

Subcatchment 3S: Subcatchment #3 Runoff Area=19,748 sf 3.38% Impervious Runoff Depth>3.72"
Flow Length=243' Tc=6.0 min CN=72 Runoff=1.94 cfs 0.140 af

Subcatchment 4S: Subcatchment #4 Runoff Area=57,278 sf 0.79% Impervious Runoff Depth>3.61"
Flow Length=133' Tc=9.9 min CN=71 Runoff=4.82 cfs 0.395 af

Subcatchment 5S: Subcatchment #5 Runoff Area=52,634 sf 3.28% Impervious Runoff Depth>3.82"
Flow Length=321' Tc=11.9 min CN=73 Runoff=4.44 cfs 0.384 af

Subcatchment 6S: Subcatchment #6 Runoff Area=150,165 sf 0.97% Impervious Runoff Depth>3.70"
Flow Length=665' Tc=25.1 min CN=72 Runoff=9.18 cfs 1.063 af

Subcatchment 7S: Subcatchment #7 Runoff Area=120,943 sf 0.69% Impervious Runoff Depth>3.60"
Flow Length=376' Tc=13.9 min CN=71 Runoff=9.09 cfs 0.834 af

Subcatchment 8S: Subcatchment #8 Runoff Area=69,837 sf 0.00% Impervious Runoff Depth>2.60"
Flow Length=381' Tc=18.1 min CN=61 Runoff=3.33 cfs 0.347 af

Subcatchment 9S: Subcatchment #9 Runoff Area=30,235 sf 0.00% Impervious Runoff Depth>2.60"
Flow Length=273' Tc=13.9 min CN=61 Runoff=1.59 cfs 0.150 af

Subcatchment 11S: Subcatchment #11 Runoff Area=91,934 sf 0.75% Impervious Runoff Depth>3.61"
Flow Length=226' Tc=12.7 min CN=71 Runoff=7.11 cfs 0.634 af

Subcatchment 12S: Subcatchment #12 Runoff Area=141,116 sf 0.95% Impervious Runoff Depth>3.71"
Flow Length=238' Tc=15.6 min CN=72 Runoff=10.49 cfs 1.001 af

Subcatchment 13S: Subcatchment #13 Runoff Area=33,510 sf 0.00% Impervious Runoff Depth>3.60"
Flow Length=329' Tc=18.6 min CN=71 Runoff=2.26 cfs 0.231 af

Subcatchment 14S: Subcatchment #14 Runoff Area=237,389 sf 0.12% Impervious Runoff Depth>3.59"
Flow Length=639' Tc=28.2 min CN=71 Runoff=13.39 cfs 1.632 af

Subcatchment 15S: Subcatchment #15 Runoff Area=241,596 sf 5.85% Impervious Runoff Depth>3.49"
Flow Length=553' Tc=23.7 min CN=70 Runoff=14.25 cfs 1.615 af

Subcatchment 16S: Catch Basin Runoff Area=459 sf 45.75% Impervious Runoff Depth>4.68"
Tc=6.0 min CN=81 Runoff=0.06 cfs 0.004 af

Subcatchment 17S: Catch Basin Runoff Area=2,300 sf 9.70% Impervious Runoff Depth>3.51"
Tc=6.0 min CN=70 Runoff=0.21 cfs 0.015 af

Subcatchment 18S: Catch Basin Runoff Area=5,195 sf 84.79% Impervious Runoff Depth>6.04"
Tc=6.0 min CN=93 Runoff=0.76 cfs 0.060 af

Subcatchment 19S: Catch Basin Runoff Area=880 sf 88.86% Impervious Runoff Depth>6.27"
Tc=6.0 min CN=95 Runoff=0.13 cfs 0.011 af

Subcatchment 20S: 30" RCP Wet Crossing Runoff Area=13,867 sf 0.00% Impervious Runoff Depth>2.80"
Flow Length=138' Tc=8.8 min CN=63 Runoff=0.91 cfs 0.074 af

Subcatchment 21S: Catch Basin #1 Runoff Area=5,478 sf 100.00% Impervious Runoff Depth>6.63"
Tc=6.0 min CN=98 Runoff=0.83 cfs 0.069 af

Subcatchment 22S: Catch Basin #2 Runoff Area=3,780 sf 100.00% Impervious Runoff Depth>6.63"
Tc=6.0 min CN=98 Runoff=0.57 cfs 0.048 af

Subcatchment 23S: Catch Basin #3 Runoff Area=4,071 sf 74.55% Impervious Runoff Depth>5.92"
Tc=6.0 min CN=92 Runoff=0.59 cfs 0.046 af

Subcatchment 24S: Catch Basin #4 Runoff Area=3,414 sf 46.43% Impervious Runoff Depth>5.12"
Flow Length=65' Slope=0.0250 '/' Tc=6.0 min CN=85 Runoff=0.45 cfs 0.033 af

Subcatchment 25S: Catch Basin #5 Runoff Area=6,366 sf 76.59% Impervious Runoff Depth>6.04"
Tc=6.0 min CN=93 Runoff=0.93 cfs 0.074 af

Subcatchment 26S: Catch Basin #6 Runoff Area=6,637 sf 73.62% Impervious Runoff Depth>5.92"
Tc=6.0 min CN=92 Runoff=0.96 cfs 0.075 af

Subcatchment 27S: Catch Basin #7 Runoff Area=6,215 sf 62.28% Impervious Runoff Depth>5.58"
Flow Length=160' Tc=6.4 min CN=89 Runoff=0.86 cfs 0.066 af

Subcatchment 28S: Catch Basin #8 Runoff Area=7,309 sf 51.17% Impervious Runoff Depth>5.24"
Flow Length=296' Tc=7.4 min CN=86 Runoff=0.94 cfs 0.073 af

Subcatchment 29S: Catch Basin #9 Runoff Area=12,199 sf 70.46% Impervious Runoff Depth>5.80"
Flow Length=212' Tc=9.8 min CN=91 Runoff=1.55 cfs 0.135 af

Subcatchment 30S: Catch Basin #10 Runoff Area=9,786 sf 62.42% Impervious Runoff Depth>5.57"
Flow Length=138' Tc=11.1 min CN=89 Runoff=1.18 cfs 0.104 af

Subcatchment 31S: Catch Basin #11 Runoff Area=5,704 sf 75.18% Impervious Runoff Depth>5.92"
Tc=6.0 min CN=92 Runoff=0.83 cfs 0.065 af

Subcatchment 32S: Catch Basin #12 Runoff Area=3,577 sf 76.10% Impervious Runoff Depth>5.92"
Tc=6.0 min CN=92 Runoff=0.52 cfs 0.041 af

Subcatchment 33S: Catch Basin #13 Runoff Area=1,754 sf 73.95% Impervious Runoff Depth>5.92"
Tc=6.0 min CN=92 Runoff=0.25 cfs 0.020 af

Subcatchment 34S: Catch Basin #14 Runoff Area=19,871 sf 54.57% Impervious Runoff Depth>5.35"
Tc=6.0 min CN=87 Runoff=2.70 cfs 0.203 af

Subcatchment 35S: Catch Basin #15 Runoff Area=2,771 sf 100.00% Impervious Runoff Depth>6.63"
Tc=6.0 min CN=98 Runoff=0.42 cfs 0.035 af

Subcatchment 36S: Catch Basin #16 Runoff Area=16,606 sf 68.54% Impervious Runoff Depth>5.81"
Tc=6.0 min CN=91 Runoff=2.38 cfs 0.184 af

Subcatchment 37S: Catch Basin #17 Runoff Area=9,277 sf 73.40% Impervious Runoff Depth>5.92"
Tc=6.0 min CN=92 Runoff=1.34 cfs 0.105 af

Subcatchment 38S: Catch Basin #18 Runoff Area=7,434 sf 68.46% Impervious Runoff Depth>5.46"
Tc=6.0 min CN=88 Runoff=1.02 cfs 0.078 af

Subcatchment 39S: Catch Basin #19 Runoff Area=8,476 sf 64.19% Impervious Runoff Depth>5.69"
Tc=6.0 min CN=90 Runoff=1.20 cfs 0.092 af

Subcatchment 40S: Catch Basin #20 Runoff Area=3,024 sf 71.96% Impervious Runoff Depth>5.81"
Tc=6.0 min CN=91 Runoff=0.43 cfs 0.034 af

Subcatchment 41S: Catch Basin #21 Runoff Area=2,937 sf 88.32% Impervious Runoff Depth>6.27"
Tc=6.0 min CN=95 Runoff=0.44 cfs 0.035 af

Subcatchment 42S: Catch Basin #22 Runoff Area=12,582 sf 61.56% Impervious Runoff Depth>5.57"
Flow Length=173' Tc=10.5 min CN=89 Runoff=1.54 cfs 0.134 af

Subcatchment 43S: Catch Basin #23 Runoff Area=6,076 sf 73.49% Impervious Runoff Depth>5.92"
Tc=6.0 min CN=92 Runoff=0.88 cfs 0.069 af

Subcatchment 44S: Catch Basin #24 Runoff Area=19,261 sf 40.57% Impervious Runoff Depth>4.57"
Flow Length=289' Tc=11.8 min CN=80 Runoff=1.93 cfs 0.168 af

Subcatchment 45S: Catch Basin #25 Runoff Area=6,238 sf 70.95% Impervious Runoff Depth>5.81"
Tc=6.0 min CN=91 Runoff=0.89 cfs 0.069 af

Subcatchment 46S: Catch Basin #26 Runoff Area=2,200 sf 100.00% Impervious Runoff Depth>6.63"
Tc=6.0 min CN=98 Runoff=0.33 cfs 0.028 af

Subcatchment 47S: Catch Basin #27 Runoff Area=8,986 sf 52.60% Impervious Runoff Depth>5.35"
Tc=6.0 min CN=87 Runoff=1.22 cfs 0.092 af

Subcatchment 48S: Catch Basin #28 Runoff Area=2,148 sf 100.00% Impervious Runoff Depth>6.63"
Tc=6.0 min CN=98 Runoff=0.32 cfs 0.027 af

Subcatchment 49S: Catch Basin #29 Runoff Area=3,931 sf 91.10% Impervious Runoff Depth>6.39"
Tc=6.0 min CN=96 Runoff=0.59 cfs 0.048 af

Subcatchment 50S: Catch Basin #30 Runoff Area=2,894 sf 100.00% Impervious Runoff Depth>6.63"
Tc=6.0 min CN=98 Runoff=0.44 cfs 0.037 af

Subcatchment 51S: Catch Basin #31 Runoff Area=15,610 sf 68.28% Impervious Runoff Depth>5.69"
Tc=6.0 min CN=90 Runoff=2.21 cfs 0.170 af

Subcatchment 52S: Catch Basin #32 Runoff Area=5,691 sf 81.04% Impervious Runoff Depth>6.16"
Tc=6.0 min CN=94 Runoff=0.84 cfs 0.067 af

Subcatchment 53S: Catch Basin #33 Runoff Area=6,775 sf 83.23% Impervious Runoff Depth>6.16"
Tc=6.0 min CN=94 Runoff=1.00 cfs 0.080 af

Subcatchment 54S: Drop Inlet #54 Runoff Area=6,825 sf 58.42% Impervious Runoff Depth>6.16"
Tc=6.0 min CN=94 Runoff=1.01 cfs 0.080 af

Subcatchment 55S: Drop Inlet #55 Runoff Area=7,390 sf 46.96% Impervious Runoff Depth>5.24"
Tc=6.0 min CN=86 Runoff=0.99 cfs 0.074 af

Subcatchment 61S: Rain Garden #101 Runoff Area=10,199 sf 16.95% Impervious Runoff Depth>4.35"
Tc=6.0 min CN=78 Runoff=1.17 cfs 0.085 af

Subcatchment 62S: Rain Garden #102 Runoff Area=22,519 sf 2.14% Impervious Runoff Depth>4.03"
Flow Length=154' Tc=6.1 min CN=75 Runoff=2.39 cfs 0.174 af

Subcatchment 63S: Rain Garden #103 Runoff Area=8,959 sf 0.69% Impervious Runoff Depth>3.93"
Tc=6.0 min CN=74 Runoff=0.93 cfs 0.067 af

Subcatchment 64S: Rain Garden #104 Runoff Area=9,576 sf 0.00% Impervious Runoff Depth>3.93"
Tc=6.0 min CN=74 Runoff=0.99 cfs 0.072 af

Subcatchment 65S: Detention Pond #105 Runoff Area=4,593 sf 58.79% Impervious Runoff Depth>5.69"
Tc=6.0 min CN=90 Runoff=0.65 cfs 0.050 af

Subcatchment 66S: Detention Pond #106 Runoff Area=15,019 sf 49.21% Impervious Runoff Depth>5.24"
Tc=6.0 min CN=86 Runoff=2.01 cfs 0.150 af

Reach 1aR: Flow from Culvert to Stream Avg. Flow Depth=0.12' Max Vel=1.73 fps Inflow=1.16 cfs 0.090 af
n=0.035 L=655.5' S=0.0506 '/' Capacity=22.92 cfs Outflow=0.96 cfs 0.090 af

Reach 1bR: Stream Avg. Flow Depth=0.13' Max Vel=1.91 fps Inflow=0.96 cfs 0.090 af
n=0.035 L=1,438.0' S=0.0351 '/' Capacity=6.96 cfs Outflow=0.74 cfs 0.089 af

Reach 14aR: Wetland Crossing #2 Flow Avg. Flow Depth=0.71' Max Vel=4.59 fps Inflow=18.43 cfs 2.379 af
n=0.035 L=184.0' S=0.0323 '/' Capacity=38.18 cfs Outflow=18.42 cfs 2.377 af

Reach 14bR: Wetland Crossing #2 Flow Avg. Flow Depth=0.45' Max Vel=9.22 fps Inflow=18.42 cfs 2.377 af
n=0.035 L=93.6' S=0.2404 '/' Capacity=104.10 cfs Outflow=18.42 cfs 2.377 af

Reach 15R: Reach #15 Avg. Flow Depth=0.34' Max Vel=2.92 fps Inflow=8.19 cfs 2.053 af
n=0.035 L=198.0' S=0.0344 '/' Capacity=18.90 cfs Outflow=8.19 cfs 2.051 af

Reach 20aR: Wetland Crossing #1 Flow Avg. Flow Depth=0.14' Max Vel=0.63 fps Inflow=0.90 cfs 0.074 af
n=0.035 L=274.0' S=0.0055 '/' Capacity=12.58 cfs Outflow=0.74 cfs 0.074 af

Reach 20bR: Wetland Crossing #1 Flow Avg. Flow Depth=0.11' Max Vel=1.44 fps Inflow=0.74 cfs 0.074 af
n=0.035 L=81.0' S=0.0370 '/' Capacity=19.60 cfs Outflow=0.75 cfs 0.074 af

Reach 20cR: Wetland Crossing #1 Flow Avg. Flow Depth=0.07' Max Vel=2.65 fps Inflow=0.75 cfs 0.074 af
n=0.035 L=78.0' S=0.2179 '/' Capacity=47.55 cfs Outflow=0.75 cfs 0.074 af

Reach 20dR: Wetland Crossing #1 Flow Avg. Flow Depth=0.09' Max Vel=1.82 fps Inflow=0.75 cfs 0.074 af
n=0.035 L=109.0' S=0.0734 '/' Capacity=27.59 cfs Outflow=0.75 cfs 0.073 af

Reach 61R: Rain Garden #101 Reach Avg. Flow Depth=0.16' Max Vel=1.65 fps Inflow=1.43 cfs 0.439 af
n=0.035 L=162.0' S=0.0309 '/' Capacity=17.89 cfs Outflow=1.43 cfs 0.438 af

Reach 62R: Rain Garden #102 Avg. Flow Depth=0.32' Max Vel=4.02 fps Inflow=4.92 cfs 0.918 af
n=0.035 L=32.0' S=0.0703 '/' Capacity=56.30 cfs Outflow=4.93 cfs 0.918 af

Reach 63R: Reach RG #103 Avg. Flow Depth=0.26' Max Vel=4.41 fps Inflow=3.90 cfs 0.664 af
n=0.035 L=367.0' S=0.1131 '/' Capacity=71.40 cfs Outflow=3.90 cfs 0.663 af

Reach 100R: Final Reach 100 Inflow=35.81 cfs 4.175 af
Outflow=35.81 cfs 4.175 af

Reach 200R: Final Reach 200 Inflow=37.24 cfs 4.411 af
Outflow=37.24 cfs 4.411 af

Reach 300R: Final Reach 300 Inflow=38.01 cfs 4.551 af
Outflow=38.01 cfs 4.551 af

Reach 400R: Final Reach 400 Inflow=40.68 cfs 4.947 af
Outflow=40.68 cfs 4.947 af

Reach 500R: Final Reach 500 Inflow=61.34 cfs 7.708 af
Outflow=61.34 cfs 7.708 af

Reach 600R: Final Reach 600 Inflow=74.40 cfs 9.434 af
Outflow=74.40 cfs 9.434 af

Reach 700R: Final Reach 700 Inflow=81.07 cfs 10.268 af
Outflow=81.07 cfs 10.268 af

Reach 800R: Final Reach 800 Inflow=84.20 cfs 10.615 af
Outflow=84.20 cfs 10.615 af

Reach 900R: Final Reach 900 Inflow=85.51 cfs 10.765 af
Outflow=85.51 cfs 10.765 af

Reach 1100R: Final Reach #1100 Inflow=13.20 cfs 2.685 af
Outflow=13.20 cfs 2.685 af

Reach 1200R: Final Reach #1200 Inflow=14.60 cfs 1.919 af
Outflow=14.60 cfs 1.919 af

Reach 1300R: Final Reach #1300 Inflow=2.26 cfs 0.231 af
Outflow=2.26 cfs 0.231 af

Pond 1EP: Catch Basin Peak Elev=138.07' Storage=2 cf Inflow=0.06 cfs 0.004 af
12.0" Round Culvert n=0.012 L=48.0' S=0.0050 '/' Outflow=0.06 cfs 0.004 af

Pond 2EP: Catch Basin Peak Elev=138.01' Storage=3 cf Inflow=0.21 cfs 0.015 af
12.0" Round Culvert n=0.012 L=8.3' S=0.0048 '/' Outflow=0.21 cfs 0.015 af

Pond 3EP: Catch Basin Peak Elev=138.96' Storage=6 cf Inflow=0.76 cfs 0.060 af
12.0" Round Culvert n=0.012 L=153.7' S=0.0050 '/' Outflow=0.76 cfs 0.060 af

Pond 4EP: Catch Basin Peak Elev=137.20' Storage=6 cf Inflow=1.16 cfs 0.090 af
24.0" Round Culvert n=0.012 L=61.5' S=0.0050 '/' Outflow=1.16 cfs 0.090 af

Pond 14P: 4' (T) x 6' (W) Box Culvert Peak Elev=78.52' Storage=958 cf Inflow=18.49 cfs 2.379 af
72.0" x 48.0" Box Culvert w/ 12.0" inside fill n=0.024 L=52.0' S=0.0106 '/' Outflow=18.43 cfs 2.379 af

Pond 15P: 12" RCP Inlet Sump/Pond Peak Elev=98.10' Storage=12,496 cf Inflow=15.61 cfs 2.053 af
Primary=8.19 cfs 2.053 af Secondary=0.00 cfs 0.000 af Outflow=8.19 cfs 2.053 af

Pond 20P: 30" RCP Wetland Crossing #1 Peak Elev=111.29' Storage=99 cf Inflow=0.91 cfs 0.074 af
30.0" Round Culvert w/ 6.0" inside fill n=0.024 L=52.0' S=0.0096 '/' Outflow=0.90 cfs 0.074 af

Pond 101P: Rain Garden #101 Peak Elev=111.38' Storage=12,012 cf Inflow=7.20 cfs 0.569 af
Primary=1.43 cfs 0.439 af Secondary=0.00 cfs 0.000 af Outflow=1.43 cfs 0.439 af

Pond 102P: Rain Garden #102 Peak Elev=82.46' Storage=25,132 cf Inflow=14.62 cfs 1.270 af
Primary=4.92 cfs 0.918 af Secondary=0.00 cfs 0.000 af Outflow=4.92 cfs 0.918 af

Pond 103P: Rain Garden #103 Peak Elev=97.24' Storage=10,940 cf Inflow=8.85 cfs 0.746 af
Primary=3.90 cfs 0.664 af Secondary=0.00 cfs 0.000 af Outflow=3.90 cfs 0.664 af

Pond 104P: Rain Garden #104 Peak Elev=86.83' Storage=9,618 cf Inflow=8.10 cfs 0.768 af
Primary=4.68 cfs 0.674 af Secondary=0.00 cfs 0.000 af Outflow=4.68 cfs 0.674 af

Pond 105P: Detention Pond #105 Peak Elev=86.23' Storage=1,188 cf Inflow=4.30 cfs 0.340 af
Outflow=3.30 cfs 0.339 af

Pond 106P: Detention Pond #106 Peak Elev=98.04' Storage=1,458 cf Inflow=2.99 cfs 0.230 af
Outflow=1.43 cfs 0.230 af

Pond C01P: Catch Basin #1 Peak Elev=117.99' Storage=0.000 af Inflow=1.39 cfs 0.117 af
12.0" Round Culvert n=0.012 L=128.5' S=0.0114 '/' Outflow=1.40 cfs 0.117 af

Pond C02P: Catch Basin #2 Peak Elev=118.11' Storage=0.000 af Inflow=0.57 cfs 0.048 af
12.0" Round Culvert n=0.012 L=18.0' S=0.0083 '/' Outflow=0.57 cfs 0.048 af

Pond C03P: Catch Basin #3 Peak Elev=116.79' Storage=0.000 af Inflow=0.59 cfs 0.046 af
12.0" Round Culvert n=0.012 L=17.0' S=0.0224 '/' Outflow=0.58 cfs 0.046 af

Pond C04P: Catch Basin #4 Peak Elev=116.72' Storage=0.000 af Inflow=0.45 cfs 0.033 af
12.0" Round Culvert n=0.012 L=5.0' S=0.0440 '/' Outflow=0.44 cfs 0.033 af

Pond C05P: Catch Basin #5 Peak Elev=111.99' Storage=7 cf Inflow=0.93 cfs 0.074 af
12.0" Round Culvert n=0.012 L=79.5' S=0.0068 '/' Outflow=0.93 cfs 0.074 af

Pond C06P: Catch Basin #6 Peak Elev=111.40' Storage=24 cf Inflow=0.96 cfs 0.075 af
12.0" Round Culvert n=0.012 L=75.2' S=0.0051 '/' Outflow=0.95 cfs 0.075 af

Pond C07P: Catch Basin #7 Peak Elev=111.40' Storage=0.001 af Inflow=1.81 cfs 0.141 af
12.0" Round Culvert n=0.012 L=18.0' S=0.0139 '/' Outflow=1.77 cfs 0.141 af

Pond C08P: Catch Basin #8 Peak Elev=111.39' Storage=0.001 af Inflow=6.05 cfs 0.485 af
18.0" Round Culvert n=0.012 L=20.0' S=0.0115 '/' Outflow=6.03 cfs 0.485 af

Pond C09P: Catch Basin #9 Peak Elev=101.59' Storage=0.000 af Inflow=1.55 cfs 0.135 af
12.0" Round Culvert n=0.012 L=18.0' S=0.0083 '/' Outflow=1.55 cfs 0.135 af

Pond C10P: Catch Basin #10 Peak Elev=101.43' Storage=0.000 af Inflow=2.72 cfs 0.240 af
12.0" Round Culvert n=0.012 L=72.0' S=0.0776 '/' Outflow=2.72 cfs 0.240 af

Pond C11P: Catch Basin #11 Peak Elev=95.68' Storage=0.000 af Inflow=4.38 cfs 0.385 af
15.0" Round Culvert n=0.012 L=66.5' S=0.0627 '/' Outflow=4.38 cfs 0.385 af

Pond C12P: Catch Basin #12 Peak Elev=90.00' Storage=0.000 af Inflow=1.51 cfs 0.115 af
12.0" Round Culvert n=0.012 L=18.0' S=0.0139 '/' Outflow=1.48 cfs 0.115 af

Pond C13P: Catch Basin #13 Peak Elev=89.91' Storage=0.000 af Inflow=6.07 cfs 0.519 af
15.0" Round Culvert n=0.012 L=126.7' S=0.0261 '/' Outflow=6.07 cfs 0.519 af

Pond C14P: Catch Basin #14 Peak Elev=86.44' Storage=0.000 af Inflow=2.70 cfs 0.203 af
12.0" Round Culvert n=0.012 L=17.5' S=0.0143 '/' Outflow=2.70 cfs 0.203 af

Pond C15P: Catch Basin #15 Peak Elev=85.58' Storage=0.001 af Inflow=9.15 cfs 0.758 af
18.0" Round Culvert n=0.012 L=17.5' S=0.0383 '/' Outflow=9.15 cfs 0.757 af

Pond C16P: Catch Basin #16 Peak Elev=86.36' Storage=38 cf Inflow=2.38 cfs 0.184 af
12.0" Round Culvert n=0.012 L=32.5' S=0.0105 '/' Outflow=2.32 cfs 0.184 af

Pond C17P: Catch Basin #17 Peak Elev=86.27' Storage=0.000 af Inflow=1.34 cfs 0.105 af
12.0" Round Culvert n=0.012 L=35.0' S=0.0151 '/' Outflow=1.33 cfs 0.105 af

Pond C18P: Catch Basin #18 Peak Elev=113.83' Storage=0.000 af Inflow=1.02 cfs 0.078 af
12.0" Round Culvert n=0.012 L=77.0' S=0.0079 '/' Outflow=1.02 cfs 0.078 af

Pond C19P: Catch Basin #19 Peak Elev=113.84' Storage=0.000 af Inflow=1.20 cfs 0.092 af
12.0" Round Culvert n=0.012 L=77.0' S=0.0125 '/' Outflow=1.20 cfs 0.092 af

Pond C20P: Catch Basin #20 Peak Elev=113.23' Storage=0.000 af Inflow=1.46 cfs 0.111 af
12.0" Round Culvert n=0.012 L=18.0' S=0.0139 '/' Outflow=1.46 cfs 0.111 af

Pond C21P: Catch Basin #21 Peak Elev=110.97' Storage=11 cf Inflow=3.09 cfs 0.239 af
15.0" Round Culvert n=0.012 L=135.0' S=0.0271 '/' Outflow=3.10 cfs 0.239 af

Pond C22P: Catch Basin #22 Peak Elev=107.50' Storage=0.000 af Inflow=4.50 cfs 0.373 af
15.0" Round Culvert n=0.012 L=81.0' S=0.0825 '/' Outflow=4.50 cfs 0.373 af

Pond C23P: Catch Basin #23 Peak Elev=100.56' Storage=0.000 af Inflow=5.37 cfs 0.442 af
18.0" Round Culvert n=0.012 L=22.5' S=0.0164 '/' Outflow=5.38 cfs 0.442 af

Pond C24P: Catch Basin #24 Peak Elev=97.27' Storage=0.000 af Inflow=1.93 cfs 0.168 af
15.0" Round Culvert n=0.012 L=45.0' S=0.0138 '/' Outflow=1.92 cfs 0.168 af

Pond C25P: Catch Basin #25 Peak Elev=97.25' Storage=0.001 af Inflow=0.89 cfs 0.069 af
12.0" Round Culvert n=0.012 L=80.0' S=0.0063 '/' Outflow=0.88 cfs 0.069 af

Pond C26P: Catch Basin #26 Peak Elev=86.89' Storage=0.002 af Inflow=7.13 cfs 0.697 af
24.0" Round Culvert n=0.012 L=17.5' S=0.0120 '/' Outflow=7.10 cfs 0.696 af

Pond C27P: Catch Basin #27 Peak Elev=86.94' Storage=0.000 af Inflow=1.22 cfs 0.092 af
15.0" Round Culvert n=0.012 L=28.0' S=0.0468 '/' Outflow=1.22 cfs 0.092 af

Pond C28P: Catch Basin #28 Peak Elev=86.93' Storage=72 cf Inflow=5.62 cfs 0.578 af
24.0" Round Culvert n=0.012 L=72.0' S=0.0064 '/' Outflow=5.58 cfs 0.577 af

Pond C29P: Catch Basin #29 Peak Elev=86.93' Storage=35 cf Inflow=0.59 cfs 0.048 af
15.0" Round Culvert n=0.012 L=17.5' S=0.0057 '/' Outflow=0.57 cfs 0.048 af

Pond C30P: Catch Basin #30 Peak Elev=87.03' Storage=0.001 af Inflow=4.74 cfs 0.503 af
18.0" Round Culvert n=0.012 L=72.5' S=0.0152 '/' Outflow=4.73 cfs 0.503 af

Pond C31P: Catch Basin #31 Peak Elev=87.04' Storage=0.000 af Inflow=2.21 cfs 0.170 af
15.0" Round Culvert n=0.012 L=18.0' S=0.0139 '/' Outflow=2.20 cfs 0.170 af

Pond C32P: Catch Basin #32 Peak Elev=96.98' Storage=0.000 af Inflow=0.84 cfs 0.067 af
12.0" Round Culvert n=0.012 L=24.0' S=0.0213 '/' Outflow=0.84 cfs 0.067 af

Pond C33P: Catch Basin #33 Peak Elev=98.05' Storage=0.000 af Inflow=1.00 cfs 0.080 af
12.0" Round Culvert n=0.012 L=35.0' S=0.0089 '/' Outflow=0.99 cfs 0.080 af

Pond C54P: Drop Inlet #54 Peak Elev=95.75' Storage=2 cf Inflow=1.01 cfs 0.080 af
12.0" Round Culvert n=0.012 L=7.5' S=0.0240 '/' Outflow=1.00 cfs 0.080 af

Pond C55P: Drop Inlet #55 Peak Elev=93.51' Storage=2 cf Inflow=0.99 cfs 0.074 af
12.0" Round Culvert n=0.012 L=31.2' S=0.1337 '/' Outflow=0.99 cfs 0.074 af

Pond D01P: Drain Manhole #1 Peak Elev=116.69' Storage=0.000 af Inflow=2.42 cfs 0.197 af
12.0" Round Culvert n=0.012 L=157.5' S=0.0201 '/' Outflow=2.42 cfs 0.197 af

Pond D02P: Drain Manhole #2 Peak Elev=111.57' Storage=0.000 af Inflow=3.35 cfs 0.270 af
15.0" Round Culvert n=0.012 L=62.7' S=0.0102 '/' Outflow=3.35 cfs 0.270 af

Pond D03P: Drain Manhole #3 Peak Elev=91.41' Storage=0.000 af Inflow=4.38 cfs 0.385 af
15.0" Round Culvert n=0.012 L=31.0' S=0.0619 '/' Outflow=4.38 cfs 0.385 af

Pond D04P: Drain Manhole #4 Peak Elev=94.47' Storage=0.000 af Inflow=2.13 cfs 0.297 af
15.0" Round Culvert n=0.012 L=183.5' S=0.0470 '/' Outflow=2.13 cfs 0.297 af

Total Runoff Area = 51.401 ac Runoff Volume = 16.272 af Average Runoff Depth = 3.80"
90.34% Pervious = 46.434 ac 9.66% Impervious = 4.967 ac

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Subcatchment #1 Runoff Area=611,661 sf 1.15% Impervious Runoff Depth>4.62"
Flow Length=2,050' Tc=25.3 min CN=70 Runoff=46.60 cfs 5.409 af

Subcatchment 2S: Subcatchment #2 Runoff Area=34,126 sf 0.00% Impervious Runoff Depth>4.76"
Flow Length=215' Tc=8.3 min CN=71 Runoff=3.99 cfs 0.310 af

Subcatchment 3S: Subcatchment #3 Runoff Area=19,748 sf 3.38% Impervious Runoff Depth>4.87"
Flow Length=243' Tc=6.0 min CN=72 Runoff=2.54 cfs 0.184 af

Subcatchment 4S: Subcatchment #4 Runoff Area=57,278 sf 0.79% Impervious Runoff Depth>4.75"
Flow Length=133' Tc=9.9 min CN=71 Runoff=6.35 cfs 0.521 af

Subcatchment 5S: Subcatchment #5 Runoff Area=52,634 sf 3.28% Impervious Runoff Depth>4.99"
Flow Length=321' Tc=11.9 min CN=73 Runoff=5.79 cfs 0.502 af

Subcatchment 6S: Subcatchment #6 Runoff Area=150,165 sf 0.97% Impervious Runoff Depth>4.86"
Flow Length=665' Tc=25.1 min CN=72 Runoff=12.05 cfs 1.395 af

Subcatchment 7S: Subcatchment #7 Runoff Area=120,943 sf 0.69% Impervious Runoff Depth>4.75"
Flow Length=376' Tc=13.9 min CN=71 Runoff=11.99 cfs 1.099 af

Subcatchment 8S: Subcatchment #8 Runoff Area=69,837 sf 0.00% Impervious Runoff Depth>3.59"
Flow Length=381' Tc=18.1 min CN=61 Runoff=4.68 cfs 0.480 af

Subcatchment 9S: Subcatchment #9 Runoff Area=30,235 sf 0.00% Impervious Runoff Depth>3.60"
Flow Length=273' Tc=13.9 min CN=61 Runoff=2.24 cfs 0.208 af

Subcatchment 11S: Subcatchment #11 Runoff Area=91,934 sf 0.75% Impervious Runoff Depth>4.75"
Flow Length=226' Tc=12.7 min CN=71 Runoff=9.37 cfs 0.836 af

Subcatchment 12S: Subcatchment #12 Runoff Area=141,116 sf 0.95% Impervious Runoff Depth>4.87"
Flow Length=238' Tc=15.6 min CN=72 Runoff=13.77 cfs 1.314 af

Subcatchment 13S: Subcatchment #13 Runoff Area=33,510 sf 0.00% Impervious Runoff Depth>4.75"
Flow Length=329' Tc=18.6 min CN=71 Runoff=2.98 cfs 0.304 af

Subcatchment 14S: Subcatchment #14 Runoff Area=237,389 sf 0.12% Impervious Runoff Depth>4.74"
Flow Length=639' Tc=28.2 min CN=71 Runoff=17.67 cfs 2.151 af

Subcatchment 15S: Subcatchment #15 Runoff Area=241,596 sf 5.85% Impervious Runoff Depth>4.62"
Flow Length=553' Tc=23.7 min CN=70 Runoff=18.90 cfs 2.137 af

Subcatchment 16S: Catch Basin Runoff Area=459 sf 45.75% Impervious Runoff Depth>5.94"
Tc=6.0 min CN=81 Runoff=0.07 cfs 0.005 af

Subcatchment 17S: Catch Basin Runoff Area=2,300 sf 9.70% Impervious Runoff Depth>4.64"
Tc=6.0 min CN=70 Runoff=0.28 cfs 0.020 af

Subcatchment 18S: Catch Basin Runoff Area=5,195 sf 84.79% Impervious Runoff Depth>7.37"
Tc=6.0 min CN=93 Runoff=0.92 cfs 0.073 af

Subcatchment 19S: Catch Basin Runoff Area=880 sf 88.86% Impervious Runoff Depth>7.61"
Tc=6.0 min CN=95 Runoff=0.16 cfs 0.013 af

Subcatchment 20S: 30" RCP Wet Crossing Runoff Area=13,867 sf 0.00% Impervious Runoff Depth>3.83"
Flow Length=138' Tc=8.8 min CN=63 Runoff=1.26 cfs 0.102 af

Subcatchment 21S: Catch Basin #1 Runoff Area=5,478 sf 100.00% Impervious Runoff Depth>7.97"
Tc=6.0 min CN=98 Runoff=0.99 cfs 0.083 af

Subcatchment 22S: Catch Basin #2 Runoff Area=3,780 sf 100.00% Impervious Runoff Depth>7.97"
Tc=6.0 min CN=98 Runoff=0.68 cfs 0.058 af

Subcatchment 23S: Catch Basin #3 Runoff Area=4,071 sf 74.55% Impervious Runoff Depth>7.25"
Tc=6.0 min CN=92 Runoff=0.71 cfs 0.056 af

Subcatchment 24S: Catch Basin #4 Runoff Area=3,414 sf 46.43% Impervious Runoff Depth>6.41"
Flow Length=65' Slope=0.0250 '/' Tc=6.0 min CN=85 Runoff=0.55 cfs 0.042 af

Subcatchment 25S: Catch Basin #5 Runoff Area=6,366 sf 76.59% Impervious Runoff Depth>7.37"
Tc=6.0 min CN=93 Runoff=1.12 cfs 0.090 af

Subcatchment 26S: Catch Basin #6 Runoff Area=6,637 sf 73.62% Impervious Runoff Depth>7.25"
Tc=6.0 min CN=92 Runoff=1.16 cfs 0.092 af

Subcatchment 27S: Catch Basin #7 Runoff Area=6,215 sf 62.28% Impervious Runoff Depth>6.89"
Flow Length=160' Tc=6.4 min CN=89 Runoff=1.05 cfs 0.082 af

Subcatchment 28S: Catch Basin #8 Runoff Area=7,309 sf 51.17% Impervious Runoff Depth>6.53"
Flow Length=296' Tc=7.4 min CN=86 Runoff=1.16 cfs 0.091 af

Subcatchment 29S: Catch Basin #9 Runoff Area=12,199 sf 70.46% Impervious Runoff Depth>7.12"
Flow Length=212' Tc=9.8 min CN=91 Runoff=1.88 cfs 0.166 af

Subcatchment 30S: Catch Basin #10 Runoff Area=9,786 sf 62.42% Impervious Runoff Depth>6.88"
Flow Length=138' Tc=11.1 min CN=89 Runoff=1.44 cfs 0.129 af

Subcatchment 31S: Catch Basin #11 Runoff Area=5,704 sf 75.18% Impervious Runoff Depth>7.25"
Tc=6.0 min CN=92 Runoff=1.00 cfs 0.079 af

Subcatchment 32S: Catch Basin #12 Runoff Area=3,577 sf 76.10% Impervious Runoff Depth>7.25"
Tc=6.0 min CN=92 Runoff=0.63 cfs 0.050 af

Subcatchment 33S: Catch Basin #13 Runoff Area=1,754 sf 73.95% Impervious Runoff Depth>7.25"
Tc=6.0 min CN=92 Runoff=0.31 cfs 0.024 af

Subcatchment 34S: Catch Basin #14 Runoff Area=19,871 sf 54.57% Impervious Runoff Depth>6.65"
Tc=6.0 min CN=87 Runoff=3.31 cfs 0.253 af

Subcatchment 35S: Catch Basin #15 Runoff Area=2,771 sf 100.00% Impervious Runoff Depth>7.97"
Tc=6.0 min CN=98 Runoff=0.50 cfs 0.042 af

Subcatchment 36S: Catch Basin #16 Runoff Area=16,606 sf 68.54% Impervious Runoff Depth>7.13"
Tc=6.0 min CN=91 Runoff=2.88 cfs 0.226 af

Subcatchment 37S: Catch Basin #17 Runoff Area=9,277 sf 73.40% Impervious Runoff Depth>7.25"
Tc=6.0 min CN=92 Runoff=1.62 cfs 0.129 af

Subcatchment 38S: Catch Basin #18 Runoff Area=7,434 sf 68.46% Impervious Runoff Depth>6.77"
Tc=6.0 min CN=88 Runoff=1.25 cfs 0.096 af

Subcatchment 39S: Catch Basin #19 Runoff Area=8,476 sf 64.19% Impervious Runoff Depth>7.01"
Tc=6.0 min CN=90 Runoff=1.46 cfs 0.114 af

Subcatchment 40S: Catch Basin #20 Runoff Area=3,024 sf 71.96% Impervious Runoff Depth>7.13"
Tc=6.0 min CN=91 Runoff=0.53 cfs 0.041 af

Subcatchment 41S: Catch Basin #21 Runoff Area=2,937 sf 88.32% Impervious Runoff Depth>7.61"
Tc=6.0 min CN=95 Runoff=0.52 cfs 0.043 af

Subcatchment 42S: Catch Basin #22 Runoff Area=12,582 sf 61.56% Impervious Runoff Depth>6.88"
Flow Length=173' Tc=10.5 min CN=89 Runoff=1.87 cfs 0.166 af

Subcatchment 43S: Catch Basin #23 Runoff Area=6,076 sf 73.49% Impervious Runoff Depth>7.25"
Tc=6.0 min CN=92 Runoff=1.06 cfs 0.084 af

Subcatchment 44S: Catch Basin #24 Runoff Area=19,261 sf 40.57% Impervious Runoff Depth>5.81"
Flow Length=289' Tc=11.8 min CN=80 Runoff=2.44 cfs 0.214 af

Subcatchment 45S: Catch Basin #25 Runoff Area=6,238 sf 70.95% Impervious Runoff Depth>7.13"
Tc=6.0 min CN=91 Runoff=1.08 cfs 0.085 af

Subcatchment 46S: Catch Basin #26 Runoff Area=2,200 sf 100.00% Impervious Runoff Depth>7.97"
Tc=6.0 min CN=98 Runoff=0.40 cfs 0.034 af

Subcatchment 47S: Catch Basin #27 Runoff Area=8,986 sf 52.60% Impervious Runoff Depth>6.65"
Tc=6.0 min CN=87 Runoff=1.50 cfs 0.114 af

Subcatchment 48S: Catch Basin #28 Runoff Area=2,148 sf 100.00% Impervious Runoff Depth>7.97"
Tc=6.0 min CN=98 Runoff=0.39 cfs 0.033 af

Subcatchment 49S: Catch Basin #29 Runoff Area=3,931 sf 91.10% Impervious Runoff Depth>7.73"
Tc=6.0 min CN=96 Runoff=0.71 cfs 0.058 af

Subcatchment 50S: Catch Basin #30 Runoff Area=2,894 sf 100.00% Impervious Runoff Depth>7.97"
Tc=6.0 min CN=98 Runoff=0.52 cfs 0.044 af

Subcatchment 51S: Catch Basin #31 Runoff Area=15,610 sf 68.28% Impervious Runoff Depth>7.01"
Tc=6.0 min CN=90 Runoff=2.69 cfs 0.209 af

Subcatchment 52S: Catch Basin #32 Runoff Area=5,691 sf 81.04% Impervious Runoff Depth>7.49"
Tc=6.0 min CN=94 Runoff=1.01 cfs 0.082 af

Subcatchment 53S: Catch Basin #33 Runoff Area=6,775 sf 83.23% Impervious Runoff Depth>7.49"
Tc=6.0 min CN=94 Runoff=1.20 cfs 0.097 af

Subcatchment 54S: Drop Inlet #54 Runoff Area=6,825 sf 58.42% Impervious Runoff Depth>7.49"
Tc=6.0 min CN=94 Runoff=1.21 cfs 0.098 af

Subcatchment 55S: Drop Inlet #55 Runoff Area=7,390 sf 46.96% Impervious Runoff Depth>6.53"
Tc=6.0 min CN=86 Runoff=1.22 cfs 0.092 af

Subcatchment 61S: Rain Garden #101 Runoff Area=10,199 sf 16.95% Impervious Runoff Depth>5.58"
Tc=6.0 min CN=78 Runoff=1.48 cfs 0.109 af

Subcatchment 62S: Rain Garden #102 Runoff Area=22,519 sf 2.14% Impervious Runoff Depth>5.23"
Flow Length=154' Tc=6.1 min CN=75 Runoff=3.08 cfs 0.225 af

Subcatchment 63S: Rain Garden #103 Runoff Area=8,959 sf 0.69% Impervious Runoff Depth>5.11"
Tc=6.0 min CN=74 Runoff=1.20 cfs 0.088 af

Subcatchment 64S: Rain Garden #104 Runoff Area=9,576 sf 0.00% Impervious Runoff Depth>5.11"
Tc=6.0 min CN=74 Runoff=1.29 cfs 0.094 af

Subcatchment 65S: Detention Pond #105 Runoff Area=4,593 sf 58.79% Impervious Runoff Depth>7.01"
Tc=6.0 min CN=90 Runoff=0.79 cfs 0.062 af

Subcatchment 66S: Detention Pond #106 Runoff Area=15,019 sf 49.21% Impervious Runoff Depth>6.53"
Tc=6.0 min CN=86 Runoff=2.47 cfs 0.188 af

Reach 1aR: Flow from Culvert to Stream Avg. Flow Depth=0.13' Max Vel=1.85 fps Inflow=1.43 cfs 0.112 af
n=0.035 L=655.5' S=0.0506 '/' Capacity=22.92 cfs Outflow=1.20 cfs 0.111 af

Reach 1bR: Stream Avg. Flow Depth=0.15' Max Vel=2.09 fps Inflow=1.20 cfs 0.111 af
n=0.035 L=1,438.0' S=0.0351 '/' Capacity=6.96 cfs Outflow=0.94 cfs 0.110 af

Reach 14aR: Wetland Crossing #2 Flow Avg. Flow Depth=0.80' Max Vel=4.96 fps Inflow=23.67 cfs 3.100 af
n=0.035 L=184.0' S=0.0323 '/' Capacity=38.18 cfs Outflow=23.67 cfs 3.099 af

Reach 14bR: Wetland Crossing #2 Flow Avg. Flow Depth=0.50' Max Vel=9.96 fps Inflow=23.67 cfs 3.099 af
n=0.035 L=93.6' S=0.2404 '/' Capacity=104.10 cfs Outflow=23.67 cfs 3.099 af

Reach 15R: Reach #15 Avg. Flow Depth=0.35' Max Vel=3.01 fps Inflow=9.00 cfs 2.705 af
n=0.035 L=198.0' S=0.0344 '/' Capacity=18.90 cfs Outflow=9.00 cfs 2.703 af

Reach 20aR: Wetland Crossing #1 Flow Avg. Flow Depth=0.16' Max Vel=0.70 fps Inflow=1.25 cfs 0.101 af
n=0.035 L=274.0' S=0.0055 '/' Capacity=12.58 cfs Outflow=1.07 cfs 0.101 af

Reach 20bR: Wetland Crossing #1 Flow Avg. Flow Depth=0.13' Max Vel=1.60 fps Inflow=1.07 cfs 0.101 af
n=0.035 L=81.0' S=0.0370 '/' Capacity=19.60 cfs Outflow=1.06 cfs 0.101 af

Reach 20cR: Wetland Crossing #1 Flow Avg. Flow Depth=0.09' Max Vel=2.95 fps Inflow=1.06 cfs 0.101 af
n=0.035 L=78.0' S=0.2179 '/' Capacity=47.55 cfs Outflow=1.06 cfs 0.101 af

Reach 20dR: Wetland Crossing #1 Flow Avg. Flow Depth=0.11' Max Vel=2.03 fps Inflow=1.06 cfs 0.101 af
n=0.035 L=109.0' S=0.0734 '/' Capacity=27.59 cfs Outflow=1.06 cfs 0.101 af

Reach 61R: Rain Garden #101 Reach Avg. Flow Depth=0.19' Max Vel=1.91 fps Inflow=2.35 cfs 0.569 af
n=0.035 L=162.0' S=0.0309 '/' Capacity=17.89 cfs Outflow=2.32 cfs 0.568 af

Reach 62R: Rain Garden #102 Avg. Flow Depth=0.36' Max Vel=4.32 fps Inflow=6.20 cfs 1.211 af
n=0.035 L=32.0' S=0.0703 '/' Capacity=56.30 cfs Outflow=6.20 cfs 1.211 af

Reach 63R: Reach RG #103 Avg. Flow Depth=0.29' Max Vel=4.79 fps Inflow=5.10 cfs 0.836 af
n=0.035 L=367.0' S=0.1131 '/' Capacity=71.40 cfs Outflow=5.10 cfs 0.835 af

Reach 100R: Final Reach 100 Inflow=47.45 cfs 5.519 af
Outflow=47.45 cfs 5.519 af

Reach 200R: Final Reach 200 Inflow=49.32 cfs 5.830 af
Outflow=49.32 cfs 5.830 af

Reach 300R: Final Reach 300 Inflow=50.32 cfs 6.014 af
Outflow=50.32 cfs 6.014 af

Reach 400R: Final Reach 400 Inflow=53.82 cfs 6.535 af
Outflow=53.82 cfs 6.535 af

Reach 500R: Final Reach 500 Inflow=80.64 cfs 10.135 af
Outflow=80.64 cfs 10.135 af

Reach 600R: Final Reach 600 Inflow=97.76 cfs 12.365 af
Outflow=97.76 cfs 12.365 af

Reach 700R: Final Reach 700 Inflow=106.77 cfs 13.464 af
Outflow=106.77 cfs 13.464 af

Reach 800R: Final Reach 800 Inflow=111.24 cfs 13.944 af
Outflow=111.24 cfs 13.944 af

Reach 900R: Final Reach 900 Inflow=113.05 cfs 14.152 af
Outflow=113.05 cfs 14.152 af

Reach 1100R: Final Reach #1100 Inflow=16.09 cfs 3.539 af
Outflow=16.09 cfs 3.539 af

Reach 1200R: Final Reach #1200 Inflow=19.26 cfs 2.525 af
Outflow=19.26 cfs 2.525 af

Reach 1300R: Final Reach #1300 Inflow=2.98 cfs 0.304 af
Outflow=2.98 cfs 0.304 af

Pond 1EP: Catch Basin Peak Elev=138.09' Storage=2 cf Inflow=0.07 cfs 0.005 af
12.0" Round Culvert n=0.012 L=48.0' S=0.0050 '/' Outflow=0.07 cfs 0.005 af

Pond 2EP: Catch Basin Peak Elev=138.06' Storage=4 cf Inflow=0.28 cfs 0.020 af
12.0" Round Culvert n=0.012 L=8.3' S=0.0048 '/' Outflow=0.28 cfs 0.020 af

Pond 3EP: Catch Basin Peak Elev=139.02' Storage=7 cf Inflow=0.92 cfs 0.073 af
12.0" Round Culvert n=0.012 L=153.7' S=0.0050 '/' Outflow=0.92 cfs 0.073 af

Pond 4EP: Catch Basin Peak Elev=137.25' Storage=7 cf Inflow=1.43 cfs 0.112 af
24.0" Round Culvert n=0.012 L=61.5' S=0.0050 '/' Outflow=1.43 cfs 0.112 af

Pond 14P: 4' (T) x 6' (W) Box Culvert Peak Elev=78.71' Storage=1,476 cf Inflow=23.76 cfs 3.101 af
72.0" x 48.0" Box Culvert w/ 12.0" inside fill n=0.024 L=52.0' S=0.0106 '/' Outflow=23.67 cfs 3.100 af

Pond 15P: 12" RCP Inlet Sump/Pond Peak Elev=99.07' Storage=21,325 cf Inflow=20.50 cfs 2.705 af
Primary=9.00 cfs 2.705 af Secondary=0.00 cfs 0.000 af Outflow=9.00 cfs 2.705 af

Pond 20P: 30" RCP Wetland Crossing #1 Peak Elev=111.36' Storage=123 cf Inflow=1.26 cfs 0.102 af
30.0" Round Culvert w/ 6.0" inside fill n=0.024 L=52.0' S=0.0096 '/' Outflow=1.25 cfs 0.101 af

Pond 101P: Rain Garden #101 Peak Elev=111.96' Storage=14,543 cf Inflow=8.77 cfs 0.702 af
Primary=2.35 cfs 0.569 af Secondary=0.00 cfs 0.000 af Outflow=2.35 cfs 0.569 af

Pond 102P: Rain Garden #102 Peak Elev=83.12' Storage=30,140 cf Inflow=17.72 cfs 1.574 af
Primary=6.20 cfs 1.211 af Secondary=0.00 cfs 0.000 af Outflow=6.20 cfs 1.211 af

Pond 103P: Rain Garden #103 Peak Elev=97.77' Storage=13,058 cf Inflow=10.91 cfs 0.930 af
Primary=5.10 cfs 0.836 af Secondary=0.00 cfs 0.000 af Outflow=5.10 cfs 0.836 af

Pond 104P: Rain Garden #104 Peak Elev=87.10' Storage=10,655 cf Inflow=9.75 cfs 0.949 af
Primary=6.88 cfs 0.849 af Secondary=0.00 cfs 0.000 af Outflow=6.88 cfs 0.849 af

Pond 105P: Detention Pond #105 Peak Elev=86.63' Storage=1,527 cf Inflow=5.24 cfs 0.417 af
Outflow=3.79 cfs 0.416 af

Pond 106P: Detention Pond #106 Peak Elev=98.51' Storage=1,940 cf Inflow=3.65 cfs 0.285 af
Outflow=1.74 cfs 0.284 af

Pond C01P: Catch Basin #1 Peak Elev=118.06' Storage=0.000 af Inflow=1.67 cfs 0.141 af
12.0" Round Culvert n=0.012 L=128.5' S=0.0114 '/' Outflow=1.67 cfs 0.141 af

Pond C02P: Catch Basin #2 Peak Elev=118.18' Storage=0.000 af Inflow=0.68 cfs 0.058 af
12.0" Round Culvert n=0.012 L=18.0' S=0.0083 '/' Outflow=0.68 cfs 0.058 af

Pond C03P: Catch Basin #3 Peak Elev=116.95' Storage=0.000 af Inflow=0.71 cfs 0.056 af
12.0" Round Culvert n=0.012 L=17.0' S=0.0224 '/' Outflow=0.70 cfs 0.056 af

Pond C04P: Catch Basin #4 Peak Elev=116.90' Storage=0.000 af Inflow=0.55 cfs 0.042 af
12.0" Round Culvert n=0.012 L=5.0' S=0.0440 '/' Outflow=0.54 cfs 0.042 af

Pond C05P: Catch Basin #5 Peak Elev=112.09' Storage=9 cf Inflow=1.12 cfs 0.090 af
12.0" Round Culvert n=0.012 L=79.5' S=0.0068 '/' Outflow=1.12 cfs 0.090 af

Pond C06P: Catch Basin #6 Peak Elev=112.02' Storage=32 cf Inflow=1.16 cfs 0.092 af
12.0" Round Culvert n=0.012 L=75.2' S=0.0051 '/' Outflow=1.13 cfs 0.092 af

Pond C07P: Catch Basin #7 Peak Elev=112.02' Storage=0.001 af Inflow=2.17 cfs 0.174 af
12.0" Round Culvert n=0.012 L=18.0' S=0.0139 '/' Outflow=2.13 cfs 0.174 af

Pond C08P: Catch Basin #8 Peak Elev=112.01' Storage=0.001 af Inflow=7.30 cfs 0.594 af
18.0" Round Culvert n=0.012 L=20.0' S=0.0115 '/' Outflow=7.28 cfs 0.594 af

Pond C09P: Catch Basin #9 Peak Elev=101.86' Storage=0.000 af Inflow=1.88 cfs 0.166 af
12.0" Round Culvert n=0.012 L=18.0' S=0.0083 '/' Outflow=1.86 cfs 0.166 af

Pond C10P: Catch Basin #10 Peak Elev=101.67' Storage=0.000 af Inflow=3.29 cfs 0.295 af
12.0" Round Culvert n=0.012 L=72.0' S=0.0776 '/' Outflow=3.30 cfs 0.295 af

Pond C11P: Catch Basin #11 Peak Elev=95.95' Storage=0.000 af Inflow=5.30 cfs 0.472 af
15.0" Round Culvert n=0.012 L=66.5' S=0.0627 '/' Outflow=5.30 cfs 0.472 af

Pond C12P: Catch Basin #12 Peak Elev=90.54' Storage=0.001 af Inflow=1.84 cfs 0.142 af
12.0" Round Culvert n=0.012 L=18.0' S=0.0139 '/' Outflow=1.79 cfs 0.142 af

Pond C13P: Catch Basin #13 Peak Elev=90.39' Storage=0.001 af Inflow=7.33 cfs 0.638 af
15.0" Round Culvert n=0.012 L=126.7' S=0.0261 '/' Outflow=7.33 cfs 0.638 af

Pond C14P: Catch Basin #14 Peak Elev=86.68' Storage=0.000 af Inflow=3.31 cfs 0.253 af
12.0" Round Culvert n=0.012 L=17.5' S=0.0143 '/' Outflow=3.31 cfs 0.253 af

Pond C15P: Catch Basin #15 Peak Elev=86.12' Storage=0.001 af Inflow=11.10 cfs 0.933 af
18.0" Round Culvert n=0.012 L=17.5' S=0.0383 '/' Outflow=11.11 cfs 0.933 af

Pond C16P: Catch Basin #16 Peak Elev=86.81' Storage=47 cf Inflow=2.88 cfs 0.226 af
12.0" Round Culvert n=0.012 L=32.5' S=0.0105 '/' Outflow=2.84 cfs 0.226 af

Pond C17P: Catch Basin #17 Peak Elev=86.69' Storage=0.000 af Inflow=1.62 cfs 0.129 af
12.0" Round Culvert n=0.012 L=35.0' S=0.0151 '/' Outflow=1.60 cfs 0.129 af

Pond C18P: Catch Basin #18 Peak Elev=113.91' Storage=0.000 af Inflow=1.25 cfs 0.096 af
12.0" Round Culvert n=0.012 L=77.0' S=0.0079 '/' Outflow=1.25 cfs 0.096 af

Pond C19P: Catch Basin #19 Peak Elev=113.91' Storage=0.000 af Inflow=1.46 cfs 0.114 af
12.0" Round Culvert n=0.012 L=77.0' S=0.0125 '/' Outflow=1.46 cfs 0.114 af

Pond C20P: Catch Basin #20 Peak Elev=113.32' Storage=0.000 af Inflow=1.78 cfs 0.137 af
12.0" Round Culvert n=0.012 L=18.0' S=0.0139 '/' Outflow=1.78 cfs 0.137 af

Pond C21P: Catch Basin #21 Peak Elev=111.10' Storage=13 cf Inflow=3.76 cfs 0.294 af
15.0" Round Culvert n=0.012 L=135.0' S=0.0271 '/' Outflow=3.76 cfs 0.294 af

Pond C22P: Catch Basin #22 Peak Elev=107.79' Storage=0.000 af Inflow=5.49 cfs 0.459 af
15.0" Round Culvert n=0.012 L=81.0' S=0.0825 '/' Outflow=5.48 cfs 0.459 af

Pond C23P: Catch Basin #23 Peak Elev=100.74' Storage=0.000 af Inflow=6.54 cfs 0.544 af
18.0" Round Culvert n=0.012 L=22.5' S=0.0164 '/' Outflow=6.54 cfs 0.544 af

Pond C24P: Catch Basin #24 Peak Elev=97.82' Storage=0.001 af Inflow=2.44 cfs 0.214 af
15.0" Round Culvert n=0.012 L=45.0' S=0.0138 '/' Outflow=2.42 cfs 0.214 af

Pond C25P: Catch Basin #25 Peak Elev=97.78' Storage=0.001 af Inflow=1.08 cfs 0.085 af
12.0" Round Culvert n=0.012 L=80.0' S=0.0063 '/' Outflow=1.06 cfs 0.085 af

Pond C26P: Catch Basin #26 Peak Elev=87.22' Storage=0.002 af Inflow=8.48 cfs 0.856 af
24.0" Round Culvert n=0.012 L=17.5' S=0.0120 '/' Outflow=8.46 cfs 0.855 af

Pond C27P: Catch Basin #27 Peak Elev=87.25' Storage=0.000 af Inflow=1.50 cfs 0.114 af
15.0" Round Culvert n=0.012 L=28.0' S=0.0468 '/' Outflow=1.49 cfs 0.114 af

Pond C28P: Catch Basin #28 Peak Elev=87.29' Storage=79 cf Inflow=6.63 cfs 0.709 af
24.0" Round Culvert n=0.012 L=72.0' S=0.0064 '/' Outflow=6.60 cfs 0.708 af

Pond C29P: Catch Basin #29 Peak Elev=87.30' Storage=40 cf Inflow=0.71 cfs 0.058 af
15.0" Round Culvert n=0.012 L=17.5' S=0.0057 '/' Outflow=0.68 cfs 0.058 af

Pond C30P: Catch Basin #30 Peak Elev=87.45' Storage=0.001 af Inflow=5.59 cfs 0.619 af
18.0" Round Culvert n=0.012 L=72.5' S=0.0152 '/' Outflow=5.56 cfs 0.619 af

Pond C31P: Catch Basin #31 Peak Elev=87.47' Storage=0.001 af Inflow=2.69 cfs 0.209 af
15.0" Round Culvert n=0.012 L=18.0' S=0.0139 '/' Outflow=2.66 cfs 0.209 af

Pond C32P: Catch Basin #32 Peak Elev=97.03' Storage=0.000 af Inflow=1.01 cfs 0.082 af
12.0" Round Culvert n=0.012 L=24.0' S=0.0213 '/' Outflow=1.01 cfs 0.081 af

Pond C33P: Catch Basin #33 Peak Elev=98.52' Storage=0.001 af Inflow=1.20 cfs 0.097 af
12.0" Round Culvert n=0.012 L=35.0' S=0.0089 '/' Outflow=1.18 cfs 0.097 af

Pond C54P: Drop Inlet #54 Peak Elev=96.00' Storage=3 cf Inflow=1.21 cfs 0.098 af
12.0" Round Culvert n=0.012 L=7.5' S=0.0240 '/' Outflow=1.21 cfs 0.098 af

Pond C55P: Drop Inlet #55 Peak Elev=93.58' Storage=2 cf Inflow=1.22 cfs 0.092 af
12.0" Round Culvert n=0.012 L=31.2' S=0.1337 '/' Outflow=1.22 cfs 0.092 af

Pond D01P: Drain Manhole #1 Peak Elev=116.88' Storage=0.000 af Inflow=2.91 cfs 0.239 af
12.0" Round Culvert n=0.012 L=157.5' S=0.0201 '/' Outflow=2.91 cfs 0.239 af

Pond D02P: Drain Manhole #2 Peak Elev=112.03' Storage=0.000 af Inflow=4.03 cfs 0.329 af
15.0" Round Culvert n=0.012 L=62.7' S=0.0102 '/' Outflow=4.02 cfs 0.329 af

Pond D03P: Drain Manhole #3 Peak Elev=91.68' Storage=0.000 af Inflow=5.30 cfs 0.472 af
15.0" Round Culvert n=0.012 L=31.0' S=0.0619 '/' Outflow=5.29 cfs 0.472 af

Pond D04P: Drain Manhole #4 Peak Elev=94.53' Storage=0.000 af Inflow=2.43 cfs 0.365 af
15.0" Round Culvert n=0.012 L=183.5' S=0.0470 '/' Outflow=2.43 cfs 0.365 af

Total Runoff Area = 51.401 ac Runoff Volume = 21.224 af Average Runoff Depth = 4.95"
90.34% Pervious = 46.434 ac 9.66% Impervious = 4.967 ac

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Subcatchment #1 Runoff Area=611,661 sf 1.15% Impervious Runoff Depth>6.03"
Flow Length=2,050' Tc=25.3 min CN=70 Runoff=60.65 cfs 7.052 af

Subcatchment 2S: Subcatchment #2 Runoff Area=34,126 sf 0.00% Impervious Runoff Depth>6.18"
Flow Length=215' Tc=8.3 min CN=71 Runoff=5.16 cfs 0.403 af

Subcatchment 3S: Subcatchment #3 Runoff Area=19,748 sf 3.38% Impervious Runoff Depth>6.31"
Flow Length=243' Tc=6.0 min CN=72 Runoff=3.27 cfs 0.238 af

Subcatchment 4S: Subcatchment #4 Runoff Area=57,278 sf 0.79% Impervious Runoff Depth>6.17"
Flow Length=133' Tc=9.9 min CN=71 Runoff=8.22 cfs 0.677 af

Subcatchment 5S: Subcatchment #5 Runoff Area=52,634 sf 3.28% Impervious Runoff Depth>6.43"
Flow Length=321' Tc=11.9 min CN=73 Runoff=7.43 cfs 0.648 af

Subcatchment 6S: Subcatchment #6 Runoff Area=150,165 sf 0.97% Impervious Runoff Depth>6.29"
Flow Length=665' Tc=25.1 min CN=72 Runoff=15.54 cfs 1.806 af

Subcatchment 7S: Subcatchment #7 Runoff Area=120,943 sf 0.69% Impervious Runoff Depth>6.17"
Flow Length=376' Tc=13.9 min CN=71 Runoff=15.53 cfs 1.428 af

Subcatchment 8S: Subcatchment #8 Runoff Area=69,837 sf 0.00% Impervious Runoff Depth>4.86"
Flow Length=381' Tc=18.1 min CN=61 Runoff=6.39 cfs 0.649 af

Subcatchment 9S: Subcatchment #9 Runoff Area=30,235 sf 0.00% Impervious Runoff Depth>4.86"
Flow Length=273' Tc=13.9 min CN=61 Runoff=3.06 cfs 0.281 af

Subcatchment 11S: Subcatchment #11 Runoff Area=91,934 sf 0.75% Impervious Runoff Depth>6.17"
Flow Length=226' Tc=12.7 min CN=71 Runoff=12.21 cfs 1.085 af

Subcatchment 12S: Subcatchment #12 Runoff Area=141,116 sf 0.95% Impervious Runoff Depth>6.30"
Flow Length=238' Tc=15.6 min CN=72 Runoff=17.75 cfs 1.700 af

Subcatchment 13S: Subcatchment #13 Runoff Area=33,510 sf 0.00% Impervious Runoff Depth>6.16"
Flow Length=329' Tc=18.6 min CN=71 Runoff=3.86 cfs 0.395 af

Subcatchment 14S: Subcatchment #14 Runoff Area=237,389 sf 0.12% Impervious Runoff Depth>6.15"
Flow Length=639' Tc=28.2 min CN=71 Runoff=22.89 cfs 2.794 af

Subcatchment 15S: Subcatchment #15 Runoff Area=241,596 sf 5.85% Impervious Runoff Depth>6.03"
Flow Length=553' Tc=23.7 min CN=70 Runoff=24.64 cfs 2.786 af

Subcatchment 16S: Catch Basin Runoff Area=459 sf 45.75% Impervious Runoff Depth>7.46"
Tc=6.0 min CN=81 Runoff=0.09 cfs 0.007 af

Subcatchment 17S: Catch Basin Runoff Area=2,300 sf 9.70% Impervious Runoff Depth>6.05"
Tc=6.0 min CN=70 Runoff=0.37 cfs 0.027 af

Subcatchment 18S: Catch Basin Runoff Area=5,195 sf 84.79% Impervious Runoff Depth>8.96"
Tc=6.0 min CN=93 Runoff=1.10 cfs 0.089 af

Subcatchment 19S: Catch Basin Runoff Area=880 sf 88.86% Impervious Runoff Depth>9.20"
Tc=6.0 min CN=95 Runoff=0.19 cfs 0.015 af

Subcatchment 20S: 30" RCP Wet Crossing Runoff Area=13,867 sf 0.00% Impervious Runoff Depth>5.13"
Flow Length=138' Tc=8.8 min CN=63 Runoff=1.70 cfs 0.136 af

Subcatchment 21S: Catch Basin #1 Runoff Area=5,478 sf 100.00% Impervious Runoff Depth>9.56"
Tc=6.0 min CN=98 Runoff=1.18 cfs 0.100 af

Subcatchment 22S: Catch Basin #2 Runoff Area=3,780 sf 100.00% Impervious Runoff Depth>9.56"
Tc=6.0 min CN=98 Runoff=0.82 cfs 0.069 af

Subcatchment 23S: Catch Basin #3 Runoff Area=4,071 sf 74.55% Impervious Runoff Depth>8.83"
Tc=6.0 min CN=92 Runoff=0.86 cfs 0.069 af

Subcatchment 24S: Catch Basin #4 Runoff Area=3,414 sf 46.43% Impervious Runoff Depth>7.96"
Flow Length=65' Slope=0.0250 '/' Tc=6.0 min CN=85 Runoff=0.68 cfs 0.052 af

Subcatchment 25S: Catch Basin #5 Runoff Area=6,366 sf 76.59% Impervious Runoff Depth>8.96"
Tc=6.0 min CN=93 Runoff=1.35 cfs 0.109 af

Subcatchment 26S: Catch Basin #6 Runoff Area=6,637 sf 73.62% Impervious Runoff Depth>8.83"
Tc=6.0 min CN=92 Runoff=1.40 cfs 0.112 af

Subcatchment 27S: Catch Basin #7 Runoff Area=6,215 sf 62.28% Impervious Runoff Depth>8.46"
Flow Length=160' Tc=6.4 min CN=89 Runoff=1.27 cfs 0.101 af

Subcatchment 28S: Catch Basin #8 Runoff Area=7,309 sf 51.17% Impervious Runoff Depth>8.09"
Flow Length=296' Tc=7.4 min CN=86 Runoff=1.42 cfs 0.113 af

Subcatchment 29S: Catch Basin #9 Runoff Area=12,199 sf 70.46% Impervious Runoff Depth>8.70"
Flow Length=212' Tc=9.8 min CN=91 Runoff=2.28 cfs 0.203 af

Subcatchment 30S: Catch Basin #10 Runoff Area=9,786 sf 62.42% Impervious Runoff Depth>8.46"
Flow Length=138' Tc=11.1 min CN=89 Runoff=1.74 cfs 0.158 af

Subcatchment 31S: Catch Basin #11 Runoff Area=5,704 sf 75.18% Impervious Runoff Depth>8.83"
Tc=6.0 min CN=92 Runoff=1.20 cfs 0.096 af

Subcatchment 32S: Catch Basin #12 Runoff Area=3,577 sf 76.10% Impervious Runoff Depth>8.83"
Tc=6.0 min CN=92 Runoff=0.76 cfs 0.060 af

Subcatchment 33S: Catch Basin #13 Runoff Area=1,754 sf 73.95% Impervious Runoff Depth>8.83"
Tc=6.0 min CN=92 Runoff=0.37 cfs 0.030 af

Subcatchment 34S: Catch Basin #14 Runoff Area=19,871 sf 54.57% Impervious Runoff Depth>8.21"
Tc=6.0 min CN=87 Runoff=4.04 cfs 0.312 af

Subcatchment 35S: Catch Basin #15 Runoff Area=2,771 sf 100.00% Impervious Runoff Depth>9.56"
Tc=6.0 min CN=98 Runoff=0.60 cfs 0.051 af

Subcatchment 36S: Catch Basin #16 Runoff Area=16,606 sf 68.54% Impervious Runoff Depth>8.71"
Tc=6.0 min CN=91 Runoff=3.48 cfs 0.277 af

Subcatchment 37S: Catch Basin #17 Runoff Area=9,277 sf 73.40% Impervious Runoff Depth>8.83"
Tc=6.0 min CN=92 Runoff=1.96 cfs 0.157 af

Subcatchment 38S: Catch Basin #18 Runoff Area=7,434 sf 68.46% Impervious Runoff Depth>8.34"
Tc=6.0 min CN=88 Runoff=1.52 cfs 0.119 af

Subcatchment 39S: Catch Basin #19 Runoff Area=8,476 sf 64.19% Impervious Runoff Depth>8.59"
Tc=6.0 min CN=90 Runoff=1.77 cfs 0.139 af

Subcatchment 40S: Catch Basin #20 Runoff Area=3,024 sf 71.96% Impervious Runoff Depth>8.71"
Tc=6.0 min CN=91 Runoff=0.63 cfs 0.050 af

Subcatchment 41S: Catch Basin #21 Runoff Area=2,937 sf 88.32% Impervious Runoff Depth>9.20"
Tc=6.0 min CN=95 Runoff=0.63 cfs 0.052 af

Subcatchment 42S: Catch Basin #22 Runoff Area=12,582 sf 61.56% Impervious Runoff Depth>8.46"
Flow Length=173' Tc=10.5 min CN=89 Runoff=2.28 cfs 0.204 af

Subcatchment 43S: Catch Basin #23 Runoff Area=6,076 sf 73.49% Impervious Runoff Depth>8.83"
Tc=6.0 min CN=92 Runoff=1.28 cfs 0.103 af

Subcatchment 44S: Catch Basin #24 Runoff Area=19,261 sf 40.57% Impervious Runoff Depth>7.33"
Flow Length=289' Tc=11.8 min CN=80 Runoff=3.05 cfs 0.270 af

Subcatchment 45S: Catch Basin #25 Runoff Area=6,238 sf 70.95% Impervious Runoff Depth>8.71"
Tc=6.0 min CN=91 Runoff=1.31 cfs 0.104 af

Subcatchment 46S: Catch Basin #26 Runoff Area=2,200 sf 100.00% Impervious Runoff Depth>9.56"
Tc=6.0 min CN=98 Runoff=0.48 cfs 0.040 af

Subcatchment 47S: Catch Basin #27 Runoff Area=8,986 sf 52.60% Impervious Runoff Depth>8.21"
Tc=6.0 min CN=87 Runoff=1.83 cfs 0.141 af

Subcatchment 48S: Catch Basin #28 Runoff Area=2,148 sf 100.00% Impervious Runoff Depth>9.56"
Tc=6.0 min CN=98 Runoff=0.46 cfs 0.039 af

Subcatchment 49S: Catch Basin #29 Runoff Area=3,931 sf 91.10% Impervious Runoff Depth>9.32"
Tc=6.0 min CN=96 Runoff=0.85 cfs 0.070 af

Subcatchment 50S: Catch Basin #30 Runoff Area=2,894 sf 100.00% Impervious Runoff Depth>9.56"
Tc=6.0 min CN=98 Runoff=0.63 cfs 0.053 af

Subcatchment 51S: Catch Basin #31 Runoff Area=15,610 sf 68.28% Impervious Runoff Depth>8.59"
Tc=6.0 min CN=90 Runoff=3.25 cfs 0.256 af

Subcatchment 52S: Catch Basin #32 Runoff Area=5,691 sf 81.04% Impervious Runoff Depth>9.08"
Tc=6.0 min CN=94 Runoff=1.21 cfs 0.099 af

Subcatchment 53S: Catch Basin #33 Runoff Area=6,775 sf 83.23% Impervious Runoff Depth>9.08"
Tc=6.0 min CN=94 Runoff=1.45 cfs 0.118 af

Subcatchment 54S: Drop Inlet #54 Runoff Area=6,825 sf 58.42% Impervious Runoff Depth>9.08"
Tc=6.0 min CN=94 Runoff=1.46 cfs 0.119 af

Subcatchment 55S: Drop Inlet #55 Runoff Area=7,390 sf 46.96% Impervious Runoff Depth>8.09"
Tc=6.0 min CN=86 Runoff=1.49 cfs 0.114 af

Subcatchment 61S: Rain Garden #101 Runoff Area=10,199 sf 16.95% Impervious Runoff Depth>7.08"
Tc=6.0 min CN=78 Runoff=1.86 cfs 0.138 af

Subcatchment 62S: Rain Garden #102 Runoff Area=22,519 sf 2.14% Impervious Runoff Depth>6.70"
Flow Length=154' Tc=6.1 min CN=75 Runoff=3.92 cfs 0.288 af

Subcatchment 63S: Rain Garden #103 Runoff Area=8,959 sf 0.69% Impervious Runoff Depth>6.57"
Tc=6.0 min CN=74 Runoff=1.54 cfs 0.113 af

Subcatchment 64S: Rain Garden #104 Runoff Area=9,576 sf 0.00% Impervious Runoff Depth>6.57"
Tc=6.0 min CN=74 Runoff=1.64 cfs 0.120 af

Subcatchment 65S: Detention Pond #105 Runoff Area=4,593 sf 58.79% Impervious Runoff Depth>8.59"
Tc=6.0 min CN=90 Runoff=0.96 cfs 0.075 af

Subcatchment 66S: Detention Pond #106 Runoff Area=15,019 sf 49.21% Impervious Runoff Depth>8.09"
Tc=6.0 min CN=86 Runoff=3.03 cfs 0.232 af

Reach 1aR: Flow from Culvert to Stream Avg. Flow Depth=0.14' Max Vel=1.98 fps Inflow=1.75 cfs 0.138 af
n=0.035 L=655.5' S=0.0506 '/' Capacity=22.92 cfs Outflow=1.49 cfs 0.137 af

Reach 1bR: Stream Avg. Flow Depth=0.17' Max Vel=2.28 fps Inflow=1.49 cfs 0.137 af
n=0.035 L=1,438.0' S=0.0351 '/' Capacity=6.96 cfs Outflow=1.18 cfs 0.136 af

Reach 14aR: Wetland Crossing #2 Flow Avg. Flow Depth=0.90' Max Vel=5.33 fps Inflow=30.14 cfs 3.991 af
n=0.035 L=184.0' S=0.0323 '/' Capacity=38.18 cfs Outflow=30.13 cfs 3.990 af

Reach 14bR: Wetland Crossing #2 Avg. Flow Depth=0.56' Max Vel=10.72 fps Inflow=30.13 cfs 3.990 af
n=0.035 L=93.6' S=0.2404 '/' Capacity=104.10 cfs Outflow=30.13 cfs 3.989 af

Reach 15R: Reach #15 Avg. Flow Depth=0.37' Max Vel=3.07 fps Inflow=9.63 cfs 3.511 af
n=0.035 L=198.0' S=0.0344 '/' Capacity=18.90 cfs Outflow=9.63 cfs 3.509 af

Reach 20aR: Wetland Crossing #1 Flow Avg. Flow Depth=0.19' Max Vel=0.78 fps Inflow=1.69 cfs 0.136 af
n=0.035 L=274.0' S=0.0055 '/' Capacity=12.58 cfs Outflow=1.47 cfs 0.135 af

Reach 20bR: Wetland Crossing #1 Flow Avg. Flow Depth=0.15' Max Vel=1.76 fps Inflow=1.47 cfs 0.135 af
n=0.035 L=81.0' S=0.0370 '/' Capacity=19.60 cfs Outflow=1.47 cfs 0.135 af

Reach 20cR: Wetland Crossing #1 Flow Avg. Flow Depth=0.10' Max Vel=3.25 fps Inflow=1.47 cfs 0.135 af
n=0.035 L=78.0' S=0.2179 '/' Capacity=47.55 cfs Outflow=1.46 cfs 0.135 af

Reach 20dR: Wetland Crossing #1 Flow Avg. Flow Depth=0.13' Max Vel=2.24 fps Inflow=1.46 cfs 0.135 af
n=0.035 L=109.0' S=0.0734 '/' Capacity=27.59 cfs Outflow=1.46 cfs 0.135 af

Reach 61R: Rain Garden #101 Reach Avg. Flow Depth=0.31' Max Vel=2.61 fps Inflow=6.52 cfs 0.726 af
n=0.035 L=162.0' S=0.0309 '/' Capacity=17.89 cfs Outflow=6.45 cfs 0.725 af

Reach 62R: Rain Garden #102 Avg. Flow Depth=0.46' Max Vel=5.05 fps Inflow=10.39 cfs 1.568 af
n=0.035 L=32.0' S=0.0703 '/' Capacity=56.30 cfs Outflow=10.42 cfs 1.568 af

Reach 63R: Reach RG #103 Avg. Flow Depth=0.33' Max Vel=5.21 fps Inflow=6.70 cfs 1.048 af
n=0.035 L=367.0' S=0.1131 '/' Capacity=71.40 cfs Outflow=6.69 cfs 1.048 af

Reach 100R: Final Reach 100 Inflow=61.69 cfs 7.188 af
Outflow=61.69 cfs 7.188 af

Reach 200R: Final Reach 200 Inflow=64.09 cfs 7.591 af
Outflow=64.09 cfs 7.591 af

Reach 300R: Final Reach 300 Inflow=65.37 cfs 7.829 af
Outflow=65.37 cfs 7.829 af

Reach 400R: Final Reach 400 Inflow=69.89 cfs 8.506 af
Outflow=69.89 cfs 8.506 af

Reach 500R: Final Reach 500 Inflow=104.19 cfs 13.143 af
Outflow=104.19 cfs 13.143 af

Reach 600R: Final Reach 600 Inflow=126.40 cfs 15.996 af
Outflow=126.40 cfs 15.996 af

Reach 700R: Final Reach 700 Inflow=138.12 cfs 17.423 af
Outflow=138.12 cfs 17.423 af

Reach 800R: Final Reach 800 Inflow=144.25 cfs 18.072 af
Outflow=144.25 cfs 18.072 af

Reach 900R: Final Reach 900 Inflow=146.74 cfs 18.354 af
Outflow=146.74 cfs 18.354 af

Reach 1100R: Final Reach #1100 Inflow=19.47 cfs 4.594 af
Outflow=19.47 cfs 4.594 af

Reach 1200R: Final Reach #1200 Inflow=25.16 cfs 3.268 af
Outflow=25.16 cfs 3.268 af

Reach 1300R: Final Reach #1300 Inflow=3.86 cfs 0.395 af
Outflow=3.86 cfs 0.395 af

Pond 1EP: Catch Basin Peak Elev=138.11' Storage=2 cf Inflow=0.09 cfs 0.007 af
12.0" Round Culvert n=0.012 L=48.0' S=0.0050 '/' Outflow=0.09 cfs 0.007 af

Pond 2EP: Catch Basin Peak Elev=138.10' Storage=5 cf Inflow=0.37 cfs 0.027 af
12.0" Round Culvert n=0.012 L=8.3' S=0.0048 '/' Outflow=0.37 cfs 0.027 af

Pond 3EP: Catch Basin Peak Elev=139.08' Storage=8 cf Inflow=1.10 cfs 0.089 af
12.0" Round Culvert n=0.012 L=153.7' S=0.0050 '/' Outflow=1.10 cfs 0.089 af

Pond 4EP: Catch Basin Peak Elev=137.32' Storage=8 cf Inflow=1.75 cfs 0.138 af
24.0" Round Culvert n=0.012 L=61.5' S=0.0050 '/' Outflow=1.75 cfs 0.138 af

Pond 14P: 4' (T) x 6' (W) Box Culvert Peak Elev=78.94' Storage=2,281 cf Inflow=30.37 cfs 3.992 af
72.0" x 48.0" Box Culvert w/ 12.0" inside fill n=0.024 L=52.0' S=0.0106 '/' Outflow=30.14 cfs 3.991 af

Pond 15P: 12" RCP Inlet Sump/Pond Peak Elev=100.08' Storage=35,806 cf Inflow=29.71 cfs 3.511 af
Primary=9.63 cfs 3.511 af Secondary=0.00 cfs 0.000 af Outflow=9.63 cfs 3.511 af

Pond 20P: 30" RCP Wetland Crossing #1 Peak Elev=111.43' Storage=151 cf Inflow=1.70 cfs 0.136 af
30.0" Round Culvert w/ 6.0" inside fill n=0.024 L=52.0' S=0.0096 '/' Outflow=1.69 cfs 0.136 af

Pond 101P: Rain Garden #101 Peak Elev=112.11' Storage=15,223 cf Inflow=10.60 cfs 0.862 af
Primary=5.67 cfs 0.715 af Secondary=0.85 cfs 0.010 af Outflow=6.52 cfs 0.726 af

Pond 102P: Rain Garden #102 Peak Elev=83.66' Storage=34,651 cf Inflow=21.63 cfs 1.940 af
Primary=8.04 cfs 1.529 af Secondary=2.36 cfs 0.040 af Outflow=10.39 cfs 1.568 af

Pond 103P: Rain Garden #103 Peak Elev=98.26' Storage=15,234 cf Inflow=13.37 cfs 1.152 af
Primary=6.70 cfs 1.048 af Secondary=0.00 cfs 0.000 af Outflow=6.70 cfs 1.048 af

Pond 104P: Rain Garden #104 Peak Elev=87.23' Storage=11,152 cf Inflow=11.77 cfs 1.166 af
Primary=10.43 cfs 1.063 af Secondary=0.00 cfs 0.000 af Outflow=10.43 cfs 1.063 af

Pond 105P: Detention Pond #105 Peak Elev=86.92' Storage=1,802 cf Inflow=6.31 cfs 0.509 af
Outflow=5.56 cfs 0.508 af

Pond 106P: Detention Pond #106 Peak Elev=98.90' Storage=2,403 cf Inflow=4.43 cfs 0.350 af
Outflow=2.27 cfs 0.349 af

Pond C01P: Catch Basin #1 Peak Elev=118.16' Storage=0.000 af Inflow=1.99 cfs 0.169 af
12.0" Round Culvert n=0.012 L=128.5' S=0.0114 '/' Outflow=1.99 cfs 0.169 af

Pond C02P: Catch Basin #2 Peak Elev=118.26' Storage=0.000 af Inflow=0.82 cfs 0.069 af
12.0" Round Culvert n=0.012 L=18.0' S=0.0083 '/' Outflow=0.81 cfs 0.069 af

Pond C03P: Catch Basin #3 Peak Elev=117.18' Storage=0.000 af Inflow=0.86 cfs 0.069 af
12.0" Round Culvert n=0.012 L=17.0' S=0.0224 '/' Outflow=0.84 cfs 0.069 af

Pond C04P: Catch Basin #4 Peak Elev=117.16' Storage=0.000 af Inflow=0.68 cfs 0.052 af
12.0" Round Culvert n=0.012 L=5.0' S=0.0440 '/' Outflow=0.65 cfs 0.052 af

Pond C05P: Catch Basin #5 Peak Elev=112.81' Storage=18 cf Inflow=1.35 cfs 0.109 af
12.0" Round Culvert n=0.012 L=79.5' S=0.0068 '/' Outflow=1.34 cfs 0.109 af

Pond C06P: Catch Basin #6 Peak Elev=112.70' Storage=41 cf Inflow=1.40 cfs 0.112 af
12.0" Round Culvert n=0.012 L=75.2' S=0.0051 '/' Outflow=1.36 cfs 0.112 af

Pond C07P: Catch Basin #7 Peak Elev=112.65' Storage=0.001 af Inflow=2.63 cfs 0.213 af
12.0" Round Culvert n=0.012 L=18.0' S=0.0139 '/' Outflow=2.57 cfs 0.213 af

Pond C08P: Catch Basin #8 Peak Elev=112.37' Storage=0.001 af Inflow=8.75 cfs 0.725 af
18.0" Round Culvert n=0.012 L=20.0' S=0.0115 '/' Outflow=8.74 cfs 0.724 af

Pond C09P: Catch Basin #9 Peak Elev=102.30' Storage=0.000 af Inflow=2.28 cfs 0.203 af
12.0" Round Culvert n=0.012 L=18.0' S=0.0083 '/' Outflow=2.24 cfs 0.203 af

Pond C10P: Catch Basin #10 Peak Elev=102.02' Storage=0.000 af Inflow=3.98 cfs 0.361 af
12.0" Round Culvert n=0.012 L=72.0' S=0.0776 '/' Outflow=3.98 cfs 0.361 af

Pond C11P: Catch Basin #11 Peak Elev=96.31' Storage=0.001 af Inflow=6.39 cfs 0.576 af
15.0" Round Culvert n=0.012 L=66.5' S=0.0627 '/' Outflow=6.39 cfs 0.576 af

Pond C12P: Catch Basin #12 Peak Elev=91.30' Storage=0.001 af Inflow=2.24 cfs 0.175 af
12.0" Round Culvert n=0.012 L=18.0' S=0.0139 '/' Outflow=2.17 cfs 0.175 af

Pond C13P: Catch Basin #13 Peak Elev=91.10' Storage=0.001 af Inflow=8.85 cfs 0.781 af
15.0" Round Culvert n=0.012 L=126.7' S=0.0261 '/' Outflow=8.85 cfs 0.781 af

Pond C14P: Catch Basin #14 Peak Elev=87.65' Storage=0.001 af Inflow=4.04 cfs 0.312 af
12.0" Round Culvert n=0.012 L=17.5' S=0.0143 '/' Outflow=4.00 cfs 0.312 af

Pond C15P: Catch Basin #15 Peak Elev=86.90' Storage=0.001 af Inflow=13.39 cfs 1.144 af
18.0" Round Culvert n=0.012 L=17.5' S=0.0383 '/' Outflow=13.39 cfs 1.143 af

Pond C16P: Catch Basin #16 Peak Elev=87.31' Storage=56 cf Inflow=3.48 cfs 0.277 af
12.0" Round Culvert n=0.012 L=32.5' S=0.0105 '/' Outflow=3.43 cfs 0.277 af

Pond C17P: Catch Basin #17 Peak Elev=87.01' Storage=0.001 af Inflow=1.96 cfs 0.157 af
12.0" Round Culvert n=0.012 L=35.0' S=0.0151 '/' Outflow=1.92 cfs 0.157 af

Pond C18P: Catch Basin #18 Peak Elev=114.00' Storage=0.000 af Inflow=1.52 cfs 0.119 af
12.0" Round Culvert n=0.012 L=77.0' S=0.0079 '/' Outflow=1.52 cfs 0.119 af

Pond C19P: Catch Basin #19 Peak Elev=114.00' Storage=0.000 af Inflow=1.77 cfs 0.139 af
12.0" Round Culvert n=0.012 L=77.0' S=0.0125 '/' Outflow=1.77 cfs 0.139 af

Pond C20P: Catch Basin #20 Peak Elev=113.43' Storage=0.000 af Inflow=2.16 cfs 0.169 af
12.0" Round Culvert n=0.012 L=18.0' S=0.0139 '/' Outflow=2.16 cfs 0.169 af

Pond C21P: Catch Basin #21 Peak Elev=111.27' Storage=15 cf Inflow=4.56 cfs 0.360 af
15.0" Round Culvert n=0.012 L=135.0' S=0.0271 '/' Outflow=4.56 cfs 0.360 af

Pond C22P: Catch Basin #22 Peak Elev=108.19' Storage=0.001 af Inflow=6.65 cfs 0.563 af
15.0" Round Culvert n=0.012 L=81.0' S=0.0825 '/' Outflow=6.65 cfs 0.563 af

Pond C23P: Catch Basin #23 Peak Elev=100.99' Storage=0.000 af Inflow=7.92 cfs 0.666 af
18.0" Round Culvert n=0.012 L=22.5' S=0.0164 '/' Outflow=7.92 cfs 0.666 af

Pond C24P: Catch Basin #24 Peak Elev=98.35' Storage=0.001 af Inflow=3.05 cfs 0.270 af
15.0" Round Culvert n=0.012 L=45.0' S=0.0138 '/' Outflow=3.03 cfs 0.270 af

Pond C25P: Catch Basin #25 Peak Elev=98.28' Storage=0.001 af Inflow=1.31 cfs 0.104 af
12.0" Round Culvert n=0.012 L=80.0' S=0.0063 '/' Outflow=1.29 cfs 0.104 af

Pond C26P: Catch Basin #26 Peak Elev=87.49' Storage=0.002 af Inflow=10.16 cfs 1.047 af
24.0" Round Culvert n=0.012 L=17.5' S=0.0120 '/' Outflow=10.13 cfs 1.045 af

Pond C27P: Catch Basin #27 Peak Elev=87.52' Storage=0.000 af Inflow=1.83 cfs 0.141 af
15.0" Round Culvert n=0.012 L=28.0' S=0.0468 '/' Outflow=1.81 cfs 0.141 af

Pond C28P: Catch Basin #28 Peak Elev=87.64' Storage=91 cf Inflow=7.92 cfs 0.866 af
24.0" Round Culvert n=0.012 L=72.0' S=0.0064 '/' Outflow=7.88 cfs 0.865 af

Pond C29P: Catch Basin #29 Peak Elev=87.64' Storage=50 cf Inflow=0.85 cfs 0.070 af
15.0" Round Culvert n=0.012 L=17.5' S=0.0057 '/' Outflow=0.82 cfs 0.070 af

Pond C30P: Catch Basin #30 Peak Elev=87.96' Storage=0.001 af Inflow=6.67 cfs 0.757 af
18.0" Round Culvert n=0.012 L=72.5' S=0.0152 '/' Outflow=6.65 cfs 0.757 af

Pond C31P: Catch Basin #31 Peak Elev=88.02' Storage=0.001 af Inflow=3.25 cfs 0.256 af
15.0" Round Culvert n=0.012 L=18.0' S=0.0139 '/' Outflow=3.22 cfs 0.256 af

Pond C32P: Catch Basin #32 Peak Elev=97.09' Storage=0.000 af Inflow=1.21 cfs 0.099 af
12.0" Round Culvert n=0.012 L=24.0' S=0.0213 '/' Outflow=1.22 cfs 0.099 af

Pond C33P: Catch Basin #33 Peak Elev=98.93' Storage=0.001 af Inflow=1.45 cfs 0.118 af
12.0" Round Culvert n=0.012 L=35.0' S=0.0089 '/' Outflow=1.41 cfs 0.118 af

Pond C54P: Drop Inlet #54 Peak Elev=96.39' Storage=4 cf Inflow=1.46 cfs 0.119 af
12.0" Round Culvert n=0.012 L=7.5' S=0.0240 '/' Outflow=1.45 cfs 0.119 af

Pond C55P: Drop Inlet #55 Peak Elev=93.65' Storage=2 cf Inflow=1.49 cfs 0.114 af
12.0" Round Culvert n=0.012 L=31.2' S=0.1337 '/' Outflow=1.49 cfs 0.114 af

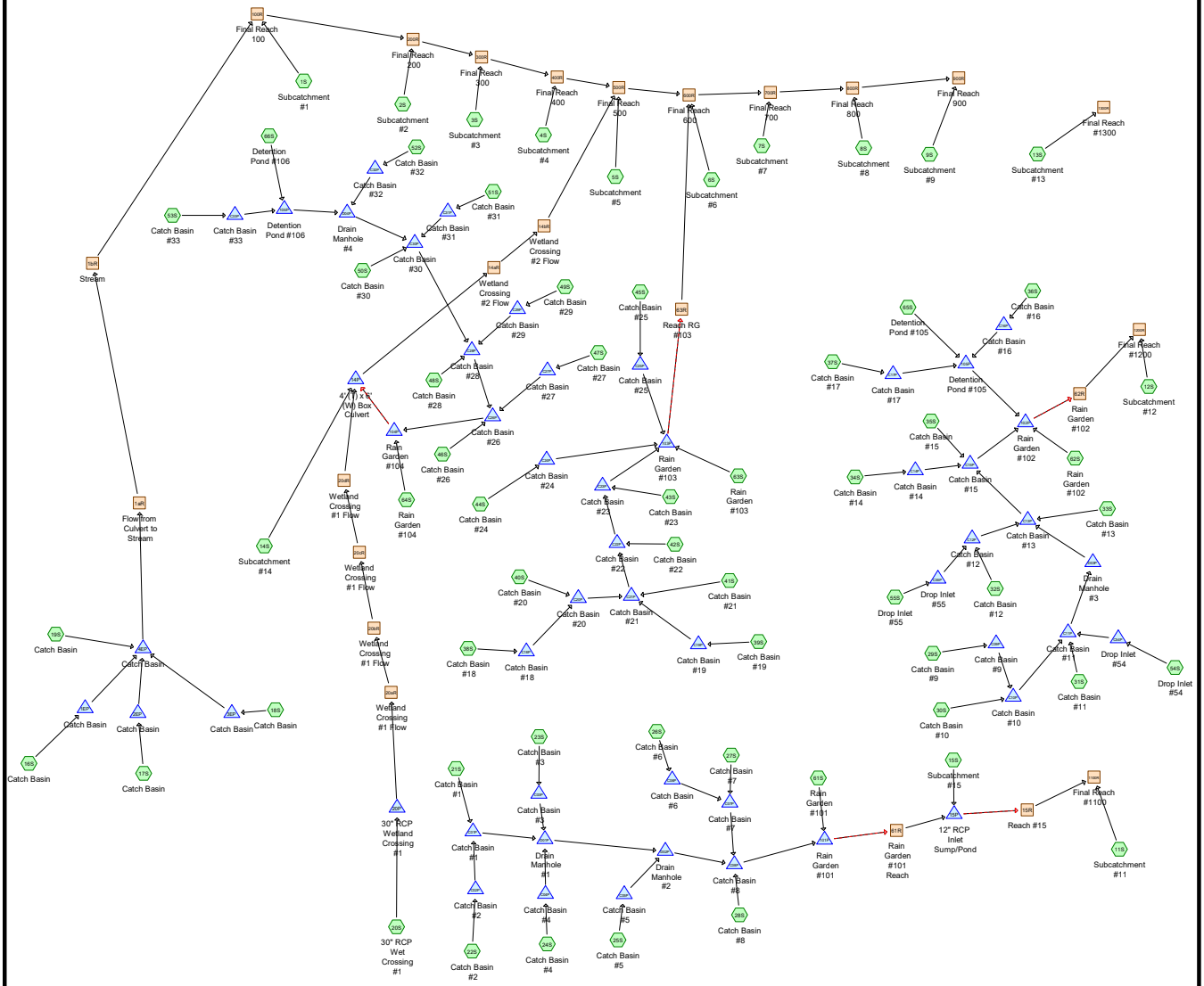
Pond D01P: Drain Manhole #1 Peak Elev=117.14' Storage=0.000 af Inflow=3.48 cfs 0.290 af
12.0" Round Culvert n=0.012 L=157.5' S=0.0201 '/' Outflow=3.49 cfs 0.290 af

Pond D02P: Drain Manhole #2 Peak Elev=112.76' Storage=0.001 af Inflow=4.83 cfs 0.399 af
15.0" Round Culvert n=0.012 L=62.7' S=0.0102 '/' Outflow=4.78 cfs 0.399 af

Pond D03P: Drain Manhole #3 Peak Elev=92.17' Storage=0.001 af Inflow=6.39 cfs 0.576 af
15.0" Round Culvert n=0.012 L=31.0' S=0.0619 '/' Outflow=6.38 cfs 0.576 af

Pond D04P: Drain Manhole #4 Peak Elev=94.66' Storage=0.000 af Inflow=3.08 cfs 0.448 af
15.0" Round Culvert n=0.012 L=183.5' S=0.0470 '/' Outflow=3.08 cfs 0.448 af

Total Runoff Area = 51.401 ac Runoff Volume = 27.342 af Average Runoff Depth = 6.38"
90.34% Pervious = 46.434 ac 9.66% Impervious = 4.967 ac



Routing Diagram for 20-107 Proposed Analysis

Prepared by Berry Surveying & Engineering, Printed 2/11/2022

HydroCAD® 10.00-25 s/n 10221 © 2019 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.163	61	>75% Grass cover, Good, HSG B (1S, 5S, 14S, 15S, 16S, 17S, 18S, 19S, 20S, 23S, 24S, 25S, 27S, 28S, 38S, 39S, 40S, 41S, 42S, 44S)
7.281	74	>75% Grass cover, Good, HSG C (1S, 2S, 3S, 4S, 5S, 6S, 7S, 11S, 12S, 14S, 15S, 16S, 17S, 18S, 19S, 20S, 25S, 26S, 27S, 29S, 30S, 31S, 32S, 33S, 34S, 36S, 37S, 39S, 42S, 43S, 44S, 45S, 47S, 49S, 51S, 52S, 53S, 54S, 55S, 61S, 62S, 63S, 64S, 65S, 66S)
0.565	80	>75% Grass cover, Good, HSG D (5S, 12S, 14S, 15S, 20S, 23S, 24S, 25S, 27S, 28S, 38S, 39S, 40S, 41S, 42S, 44S)
0.000	96	Gravel surface, HSG B (39S)
0.140	96	Gravel surface, HSG C (15S, 25S, 26S, 29S, 30S, 31S, 34S, 36S, 37S, 42S, 43S, 44S, 47S, 51S, 52S, 53S, 54S, 55S, 62S, 65S, 66S)
0.001	96	Gravel surface, HSG D (39S)
0.425	98	Paved parking, HSG B (1S, 15S, 16S, 17S, 18S, 19S, 21S, 22S, 23S, 24S, 25S, 27S, 28S, 38S, 39S, 40S, 41S, 42S, 44S, 49S)
2.728	98	Paved parking, HSG C (1S, 15S, 16S, 17S, 18S, 19S, 21S, 22S, 25S, 26S, 27S, 28S, 29S, 30S, 31S, 32S, 33S, 34S, 35S, 36S, 37S, 39S, 42S, 43S, 44S, 45S, 46S, 47S, 48S, 49S, 50S, 51S, 52S, 53S, 54S, 55S, 65S, 66S)
0.348	98	Paved parking, HSG D (21S, 22S, 23S, 24S, 25S, 27S, 28S, 38S, 39S, 40S, 41S, 42S, 44S, 48S, 49S)
0.151	98	Roofs, HSG B (1S, 15S, 23S, 25S, 27S, 28S, 38S, 39S, 40S, 42S, 44S)
1.183	98	Roofs, HSG C (1S, 3S, 4S, 5S, 6S, 7S, 11S, 12S, 14S, 15S, 25S, 26S, 27S, 29S, 30S, 31S, 34S, 36S, 37S, 39S, 42S, 43S, 45S, 47S, 51S, 52S, 53S, 54S, 55S, 61S, 62S, 63S, 66S)
0.133	98	Roofs, HSG D (15S, 23S, 25S, 27S, 28S, 38S, 39S, 40S, 42S, 44S)
0.579	30	Woods, Good, HSG A (7S, 8S, 9S)
2.913	55	Woods, Good, HSG B (1S, 5S, 14S, 15S, 20S, 44S)
26.892	70	Woods, Good, HSG C (1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 11S, 12S, 13S, 14S, 15S, 20S, 44S, 62S, 64S)
6.898	77	Woods, Good, HSG D (1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 12S, 13S, 14S, 15S, 20S)
51.401	**73**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.579	HSG A	7S, 8S, 9S
4.653	HSG B	1S, 5S, 14S, 15S, 16S, 17S, 18S, 19S, 20S, 21S, 22S, 23S, 24S, 25S, 27S, 28S, 38S, 39S, 40S, 41S, 42S, 44S, 49S
38.224	HSG C	1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 11S, 12S, 13S, 14S, 15S, 16S, 17S, 18S, 19S, 20S, 21S, 22S, 25S, 26S, 27S, 28S, 29S, 30S, 31S, 32S, 33S, 34S, 35S, 36S, 37S, 39S, 42S, 43S, 44S, 45S, 46S, 47S, 48S, 49S, 50S, 51S, 52S, 53S, 54S, 55S, 61S, 62S, 63S, 64S, 65S, 66S
7.945	HSG D	1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 12S, 13S, 14S, 15S, 20S, 21S, 22S, 23S, 24S, 25S, 27S, 28S, 38S, 39S, 40S, 41S, 42S, 44S, 48S, 49S
0.000	Other	
51.401		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	1.163	7.281	0.565	0.000	9.010	>75% Grass cover, Good	1S, 2S, 3S, 4S, 5S, 6S, 7S, 11S, 12S, 14S, 15S, 16S, 17S, 18S, 19S, 20S, 23S, 24S, 25S, 26S, 27S, 28S, 29S, 30S, 31S, 32S, 33S, 34S, 36S, 37S, 38S, 39S, 40S, 41S, 42S, 43S, 44S, 45S, 47S, 49S, 51S, 52S, 53S, 54S, 55S, 61S, 62S, 63S, 64S,

Ground Covers (all nodes) (continued)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.140	0.001	0.000	0.142	Gravel surface	15S, 25S, 26S, 29S, 30S, 31S, 34S, 36S, 37S, 39S, 42S, 43S, 44S, 47S, 51S, 52S, 53S, 54S, 55S, 62S, 65S, 66S
0.000	0.425	2.728	0.348	0.000	3.501	Paved parking	1S, 15S, 16S, 17S, 18S, 19S, 21S, 22S, 23S, 24S, 25S, 26S, 27S, 28S, 29S, 30S, 31S, 32S, 33S, 34S, 35S, 36S, 37S, 38S,

Ground Covers (all nodes) (continued)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.151	1.183	0.133	0.000	1.467	Roofs	1S, 3S, 4S, 5S, 6S, 7S, 11S, 12S, 14S, 15S, 23S, 25S, 26S, 27S, 28S, 29S, 30S, 31S, 34S, 36S, 37S, 38S, 39S, 40S, 42S, 43S, 44S, 45S, 47S, 51S, 52S, 53S, 54S, 55S, 61S, 62S, 63S, 66S
0.579	2.913	26.892	6.898	0.000	37.282	Woods, Good	1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 11S, 12S, 13S, 14S, 15S, 20S,

Ground Covers (all nodes) (continued)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.579	**4.653**	**38.224**	**7.945**	**0.000**	**51.401**	**TOTAL AREA**	

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	1EP	137.94	137.70	48.0	0.0050	0.012	12.0	0.0	0.0
2	2EP	137.74	137.70	8.3	0.0048	0.012	12.0	0.0	0.0
3	3EP	138.47	137.70	153.7	0.0050	0.012	12.0	0.0	0.0
4	4EP	136.70	136.39	61.5	0.0050	0.012	24.0	0.0	0.0
5	14P	76.50	75.95	52.0	0.0106	0.024	72.0	48.0	12.0
6	15P	92.91	90.32	84.3	0.0307	0.012	12.0	0.0	0.0
7	20P	110.50	110.00	52.0	0.0096	0.024	30.0	0.0	6.0
8	101P	104.25	103.75	70.0	0.0071	0.012	15.0	0.0	0.0
9	102P	73.25	73.00	42.0	0.0060	0.012	15.0	0.0	0.0
10	103P	90.25	90.00	50.0	0.0050	0.012	15.0	0.0	0.0
11	104P	79.75	79.50	34.5	0.0072	0.012	15.0	0.0	0.0
12	105P	83.50	81.50	143.5	0.0139	0.012	12.0	0.0	0.0
13	106P	95.50	94.00	105.0	0.0143	0.012	12.0	0.0	0.0
14	C01P	117.36	115.89	128.5	0.0114	0.012	12.0	0.0	0.0
15	C02P	117.61	117.46	18.0	0.0083	0.012	12.0	0.0	0.0
16	C03P	116.27	115.89	17.0	0.0224	0.012	12.0	0.0	0.0
17	C04P	116.11	115.89	5.0	0.0440	0.012	12.0	0.0	0.0
18	C05P	111.41	110.87	79.5	0.0068	0.012	12.0	0.0	0.0
19	C06P	109.46	109.08	75.2	0.0051	0.012	12.0	0.0	0.0
20	C07P	108.98	108.73	18.0	0.0139	0.012	12.0	0.0	0.0
21	C08P	108.23	108.00	20.0	0.0115	0.012	18.0	0.0	0.0
22	C09P	100.66	100.51	18.0	0.0083	0.012	12.0	0.0	0.0
23	C10P	100.41	94.82	72.0	0.0776	0.012	12.0	0.0	0.0
24	C11P	94.52	90.35	66.5	0.0627	0.012	15.0	0.0	0.0
25	C12P	88.73	88.48	18.0	0.0139	0.012	12.0	0.0	0.0
26	C13P	88.23	84.92	126.7	0.0261	0.012	15.0	0.0	0.0
27	C14P	85.42	85.17	17.5	0.0143	0.012	12.0	0.0	0.0
28	C15P	83.67	83.00	17.5	0.0383	0.012	18.0	0.0	0.0
29	C16P	84.44	84.10	32.5	0.0105	0.012	12.0	0.0	0.0
30	C17P	85.03	84.50	35.0	0.0151	0.012	12.0	0.0	0.0
31	C18P	113.27	112.66	77.0	0.0079	0.012	12.0	0.0	0.0
32	C19P	113.27	112.31	77.0	0.0125	0.012	12.0	0.0	0.0
33	C20P	112.56	112.31	18.0	0.0139	0.012	12.0	0.0	0.0
34	C21P	110.06	106.40	135.0	0.0271	0.012	15.0	0.0	0.0
35	C22P	106.30	99.62	81.0	0.0825	0.012	15.0	0.0	0.0
36	C23P	99.37	99.00	22.5	0.0164	0.012	18.0	0.0	0.0
37	C24P	95.62	95.00	45.0	0.0138	0.012	15.0	0.0	0.0
38	C25P	95.50	95.00	80.0	0.0063	0.012	12.0	0.0	0.0
39	C26P	82.71	82.50	17.5	0.0120	0.012	24.0	0.0	0.0
40	C27P	86.31	85.00	28.0	0.0468	0.012	15.0	0.0	0.0
41	C28P	83.27	82.81	72.0	0.0064	0.012	24.0	0.0	0.0

Pipe Listing (all nodes) (continued)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
42	C29P	84.12	84.02	17.5	0.0057	0.012	15.0	0.0	0.0
43	C30P	84.87	83.77	72.5	0.0152	0.012	18.0	0.0	0.0
44	C31P	85.37	85.12	18.0	0.0139	0.012	15.0	0.0	0.0
45	C32P	96.51	96.00	24.0	0.0213	0.012	12.0	0.0	0.0
46	C33P	96.56	96.25	35.0	0.0089	0.012	12.0	0.0	0.0
47	C54P	95.00	94.82	7.5	0.0240	0.012	12.0	0.0	0.0
48	C55P	93.00	88.83	31.2	0.1337	0.012	12.0	0.0	0.0
49	D01P	115.79	112.62	157.5	0.0201	0.012	12.0	0.0	0.0
50	D02P	110.62	109.98	62.7	0.0102	0.012	15.0	0.0	0.0
51	D03P	90.25	88.33	31.0	0.0619	0.012	15.0	0.0	0.0
52	D04P	93.75	85.12	183.5	0.0470	0.012	15.0	0.0	0.0

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Subcatchment #1 Runoff Area=611,661 sf 1.15% Impervious Runoff Depth>3.49"
Flow Length=2,050' Tc=25.3 min CN=70 Runoff=35.13 cfs 4.087 af

Subcatchment 2S: Subcatchment #2 Runoff Area=34,126 sf 0.00% Impervious Runoff Depth>3.61"
Flow Length=215' Tc=8.3 min CN=71 Runoff=3.02 cfs 0.236 af

Subcatchment 3S: Subcatchment #3 Runoff Area=19,748 sf 3.38% Impervious Runoff Depth>3.72"
Flow Length=243' Tc=6.0 min CN=72 Runoff=1.94 cfs 0.140 af

Subcatchment 4S: Subcatchment #4 Runoff Area=57,278 sf 0.79% Impervious Runoff Depth>3.61"
Flow Length=133' Tc=9.9 min CN=71 Runoff=4.82 cfs 0.395 af

Subcatchment 5S: Subcatchment #5 Runoff Area=52,634 sf 3.28% Impervious Runoff Depth>3.82"
Flow Length=321' Tc=11.9 min CN=73 Runoff=4.44 cfs 0.384 af

Subcatchment 6S: Subcatchment #6 Runoff Area=150,165 sf 0.97% Impervious Runoff Depth>3.70"
Flow Length=665' Tc=25.1 min CN=72 Runoff=9.18 cfs 1.063 af

Subcatchment 7S: Subcatchment #7 Runoff Area=120,943 sf 0.69% Impervious Runoff Depth>3.60"
Flow Length=376' Tc=13.9 min CN=71 Runoff=9.09 cfs 0.834 af

Subcatchment 8S: Subcatchment #8 Runoff Area=69,837 sf 0.00% Impervious Runoff Depth>2.60"
Flow Length=381' Tc=18.1 min CN=61 Runoff=3.33 cfs 0.347 af

Subcatchment 9S: Subcatchment #9 Runoff Area=30,235 sf 0.00% Impervious Runoff Depth>2.60"
Flow Length=273' Tc=13.9 min CN=61 Runoff=1.59 cfs 0.150 af

Subcatchment 11S: Subcatchment #11 Runoff Area=91,934 sf 0.75% Impervious Runoff Depth>3.61"
Flow Length=226' Tc=12.7 min CN=71 Runoff=7.11 cfs 0.634 af

Subcatchment 12S: Subcatchment #12 Runoff Area=141,116 sf 0.95% Impervious Runoff Depth>3.71"
Flow Length=238' Tc=15.6 min CN=72 Runoff=10.49 cfs 1.001 af

Subcatchment 13S: Subcatchment #13 Runoff Area=33,510 sf 0.00% Impervious Runoff Depth>3.60"
Flow Length=329' Tc=18.6 min CN=71 Runoff=2.26 cfs 0.231 af

Subcatchment 14S: Subcatchment #14 Runoff Area=237,389 sf 0.12% Impervious Runoff Depth>3.59"
Flow Length=639' Tc=28.2 min CN=71 Runoff=13.39 cfs 1.632 af

Subcatchment 15S: Subcatchment #15 Runoff Area=241,596 sf 5.85% Impervious Runoff Depth>3.49"
Flow Length=553' Tc=23.7 min CN=70 Runoff=14.25 cfs 1.615 af

Subcatchment 16S: Catch Basin Runoff Area=459 sf 45.75% Impervious Runoff Depth>4.68"
Tc=6.0 min CN=81 Runoff=0.06 cfs 0.004 af

Subcatchment 17S: Catch Basin Runoff Area=2,300 sf 9.70% Impervious Runoff Depth>3.51"
Tc=6.0 min CN=70 Runoff=0.21 cfs 0.015 af

Subcatchment 18S: Catch Basin Runoff Area=5,195 sf 84.79% Impervious Runoff Depth>6.04"
Tc=6.0 min CN=93 Runoff=0.76 cfs 0.060 af

Subcatchment 19S: Catch Basin Runoff Area=880 sf 88.86% Impervious Runoff Depth>6.27"
Tc=6.0 min CN=95 Runoff=0.13 cfs 0.011 af

Subcatchment 20S: 30" RCP Wet Crossing Runoff Area=13,867 sf 0.00% Impervious Runoff Depth>2.80"
Flow Length=138' Tc=8.8 min CN=63 Runoff=0.91 cfs 0.074 af

Subcatchment 21S: Catch Basin #1 Runoff Area=5,478 sf 100.00% Impervious Runoff Depth>6.63"
Tc=6.0 min CN=98 Runoff=0.83 cfs 0.069 af

Subcatchment 22S: Catch Basin #2 Runoff Area=3,780 sf 100.00% Impervious Runoff Depth>6.63"
Tc=6.0 min CN=98 Runoff=0.57 cfs 0.048 af

Subcatchment 23S: Catch Basin #3 Runoff Area=4,071 sf 74.55% Impervious Runoff Depth>5.92"
Tc=6.0 min CN=92 Runoff=0.59 cfs 0.046 af

Subcatchment 24S: Catch Basin #4 Runoff Area=3,414 sf 46.43% Impervious Runoff Depth>5.12"
Flow Length=65' Slope=0.0250 '/' Tc=6.0 min CN=85 Runoff=0.45 cfs 0.033 af

Subcatchment 25S: Catch Basin #5 Runoff Area=6,366 sf 76.59% Impervious Runoff Depth>6.04"
Tc=6.0 min CN=93 Runoff=0.93 cfs 0.074 af

Subcatchment 26S: Catch Basin #6 Runoff Area=6,637 sf 73.62% Impervious Runoff Depth>5.92"
Tc=6.0 min CN=92 Runoff=0.96 cfs 0.075 af

Subcatchment 27S: Catch Basin #7 Runoff Area=6,215 sf 62.28% Impervious Runoff Depth>5.58"
Flow Length=160' Tc=6.4 min CN=89 Runoff=0.86 cfs 0.066 af

Subcatchment 28S: Catch Basin #8 Runoff Area=7,309 sf 51.17% Impervious Runoff Depth>5.24"
Flow Length=296' Tc=7.4 min CN=86 Runoff=0.94 cfs 0.073 af

Subcatchment 29S: Catch Basin #9 Runoff Area=12,199 sf 70.46% Impervious Runoff Depth>5.80"
Flow Length=212' Tc=9.8 min CN=91 Runoff=1.55 cfs 0.135 af

Subcatchment 30S: Catch Basin #10 Runoff Area=9,786 sf 62.42% Impervious Runoff Depth>5.57"
Flow Length=138' Tc=11.1 min CN=89 Runoff=1.18 cfs 0.104 af

Subcatchment 31S: Catch Basin #11 Runoff Area=5,704 sf 75.18% Impervious Runoff Depth>5.92"
Tc=6.0 min CN=92 Runoff=0.83 cfs 0.065 af

Subcatchment 32S: Catch Basin #12 Runoff Area=3,577 sf 76.10% Impervious Runoff Depth>5.92"
Tc=6.0 min CN=92 Runoff=0.52 cfs 0.041 af

Subcatchment 33S: Catch Basin #13 Runoff Area=1,754 sf 73.95% Impervious Runoff Depth>5.92"
Tc=6.0 min CN=92 Runoff=0.25 cfs 0.020 af

Subcatchment 34S: Catch Basin #14 Runoff Area=19,871 sf 54.57% Impervious Runoff Depth>5.35"
Tc=6.0 min CN=87 Runoff=2.70 cfs 0.203 af

Subcatchment 35S: Catch Basin #15 Runoff Area=2,771 sf 100.00% Impervious Runoff Depth>6.63"
Tc=6.0 min CN=98 Runoff=0.42 cfs 0.035 af

Subcatchment 36S: Catch Basin #16 Runoff Area=16,606 sf 68.54% Impervious Runoff Depth>5.81"
Tc=6.0 min CN=91 Runoff=2.38 cfs 0.184 af

Subcatchment 37S: Catch Basin #17 Runoff Area=9,277 sf 73.40% Impervious Runoff Depth>5.92"
Tc=6.0 min CN=92 Runoff=1.34 cfs 0.105 af

Subcatchment 38S: Catch Basin #18 Runoff Area=7,434 sf 68.46% Impervious Runoff Depth>5.46"
Tc=6.0 min CN=88 Runoff=1.02 cfs 0.078 af

Subcatchment 39S: Catch Basin #19 Runoff Area=8,476 sf 64.19% Impervious Runoff Depth>5.69"
Tc=6.0 min CN=90 Runoff=1.20 cfs 0.092 af

Subcatchment 40S: Catch Basin #20 Runoff Area=3,024 sf 71.96% Impervious Runoff Depth>5.81"
Tc=6.0 min CN=91 Runoff=0.43 cfs 0.034 af

Subcatchment 41S: Catch Basin #21 Runoff Area=2,937 sf 88.32% Impervious Runoff Depth>6.27"
Tc=6.0 min CN=95 Runoff=0.44 cfs 0.035 af

Subcatchment 42S: Catch Basin #22 Runoff Area=12,582 sf 61.56% Impervious Runoff Depth>5.57"
Flow Length=173' Tc=10.5 min CN=89 Runoff=1.54 cfs 0.134 af

Subcatchment 43S: Catch Basin #23 Runoff Area=6,076 sf 73.49% Impervious Runoff Depth>5.92"
Tc=6.0 min CN=92 Runoff=0.88 cfs 0.069 af

Subcatchment 44S: Catch Basin #24 Runoff Area=19,261 sf 40.57% Impervious Runoff Depth>4.57"
Flow Length=289' Tc=11.8 min CN=80 Runoff=1.93 cfs 0.168 af

Subcatchment 45S: Catch Basin #25 Runoff Area=6,238 sf 70.95% Impervious Runoff Depth>5.81"
Tc=6.0 min CN=91 Runoff=0.89 cfs 0.069 af

Subcatchment 46S: Catch Basin #26 Runoff Area=2,200 sf 100.00% Impervious Runoff Depth>6.63"
Tc=6.0 min CN=98 Runoff=0.33 cfs 0.028 af

Subcatchment 47S: Catch Basin #27 Runoff Area=8,986 sf 52.60% Impervious Runoff Depth>5.35"
Tc=6.0 min CN=87 Runoff=1.22 cfs 0.092 af

Subcatchment 48S: Catch Basin #28 Runoff Area=2,148 sf 100.00% Impervious Runoff Depth>6.63"
Tc=6.0 min CN=98 Runoff=0.32 cfs 0.027 af

Subcatchment 49S: Catch Basin #29 Runoff Area=3,931 sf 91.10% Impervious Runoff Depth>6.39"
Tc=6.0 min CN=96 Runoff=0.59 cfs 0.048 af

Subcatchment 50S: Catch Basin #30 Runoff Area=2,894 sf 100.00% Impervious Runoff Depth>6.63"
Tc=6.0 min CN=98 Runoff=0.44 cfs 0.037 af

Subcatchment 51S: Catch Basin #31 Runoff Area=15,610 sf 68.28% Impervious Runoff Depth>5.69"
Tc=6.0 min CN=90 Runoff=2.21 cfs 0.170 af

Subcatchment 52S: Catch Basin #32 Runoff Area=5,691 sf 81.04% Impervious Runoff Depth>6.16"
Tc=6.0 min CN=94 Runoff=0.84 cfs 0.067 af

Subcatchment 53S: Catch Basin #33 Runoff Area=6,775 sf 83.23% Impervious Runoff Depth>6.16"
Tc=6.0 min CN=94 Runoff=1.00 cfs 0.080 af

Subcatchment 54S: Drop Inlet #54 Runoff Area=6,825 sf 58.42% Impervious Runoff Depth>6.16"
Tc=6.0 min CN=94 Runoff=1.01 cfs 0.080 af

Subcatchment 55S: Drop Inlet #55 Runoff Area=7,390 sf 46.96% Impervious Runoff Depth>5.24"
Tc=6.0 min CN=86 Runoff=0.99 cfs 0.074 af

Subcatchment 61S: Rain Garden #101 Runoff Area=10,199 sf 16.95% Impervious Runoff Depth>4.35"
Tc=6.0 min CN=78 Runoff=1.17 cfs 0.085 af

Subcatchment 62S: Rain Garden #102 Runoff Area=22,519 sf 2.14% Impervious Runoff Depth>4.03"
Flow Length=154' Tc=6.1 min CN=75 Runoff=2.39 cfs 0.174 af

Subcatchment 63S: Rain Garden #103 Runoff Area=8,959 sf 0.69% Impervious Runoff Depth>3.93"
Tc=6.0 min CN=74 Runoff=0.93 cfs 0.067 af

Subcatchment 64S: Rain Garden #104 Runoff Area=9,576 sf 0.00% Impervious Runoff Depth>3.93"
Tc=6.0 min CN=74 Runoff=0.99 cfs 0.072 af

Subcatchment 65S: Detention Pond #105 Runoff Area=4,593 sf 58.79% Impervious Runoff Depth>5.69"
Tc=6.0 min CN=90 Runoff=0.65 cfs 0.050 af

Subcatchment 66S: Detention Pond #106 Runoff Area=15,019 sf 49.21% Impervious Runoff Depth>5.24"
Tc=6.0 min CN=86 Runoff=2.01 cfs 0.150 af

Reach 1aR: Flow from Culvert to Stream Avg. Flow Depth=0.12' Max Vel=1.73 fps Inflow=1.16 cfs 0.090 af
n=0.035 L=655.5' S=0.0506 '/' Capacity=22.92 cfs Outflow=0.96 cfs 0.090 af

Reach 1bR: Stream Avg. Flow Depth=0.13' Max Vel=1.91 fps Inflow=0.96 cfs 0.090 af
n=0.035 L=1,438.0' S=0.0351 '/' Capacity=6.96 cfs Outflow=0.74 cfs 0.089 af

Reach 14aR: Wetland Crossing #2 Flow Avg. Flow Depth=0.71' Max Vel=4.59 fps Inflow=18.43 cfs 2.379 af
n=0.035 L=184.0' S=0.0323 '/' Capacity=38.18 cfs Outflow=18.42 cfs 2.377 af

Reach 14bR: Wetland Crossing #2 Flow Avg. Flow Depth=0.45' Max Vel=9.22 fps Inflow=18.42 cfs 2.377 af
n=0.035 L=93.6' S=0.2404 '/' Capacity=104.10 cfs Outflow=18.42 cfs 2.377 af

Reach 15R: Reach #15 Avg. Flow Depth=0.34' Max Vel=2.92 fps Inflow=8.19 cfs 2.053 af
n=0.035 L=198.0' S=0.0344 '/' Capacity=18.90 cfs Outflow=8.19 cfs 2.051 af

Reach 20aR: Wetland Crossing #1 Flow Avg. Flow Depth=0.14' Max Vel=0.63 fps Inflow=0.90 cfs 0.074 af
n=0.035 L=274.0' S=0.0055 '/' Capacity=12.58 cfs Outflow=0.74 cfs 0.074 af

Reach 20bR: Wetland Crossing #1 Flow Avg. Flow Depth=0.11' Max Vel=1.44 fps Inflow=0.74 cfs 0.074 af
n=0.035 L=81.0' S=0.0370 '/' Capacity=19.60 cfs Outflow=0.75 cfs 0.074 af

Reach 20cR: Wetland Crossing #1 Flow Avg. Flow Depth=0.07' Max Vel=2.65 fps Inflow=0.75 cfs 0.074 af
n=0.035 L=78.0' S=0.2179 '/' Capacity=47.55 cfs Outflow=0.75 cfs 0.074 af

Reach 20dR: Wetland Crossing #1 Flow Avg. Flow Depth=0.09' Max Vel=1.82 fps Inflow=0.75 cfs 0.074 af
n=0.035 L=109.0' S=0.0734 '/' Capacity=27.59 cfs Outflow=0.75 cfs 0.073 af

Reach 61R: Rain Garden #101 Reach Avg. Flow Depth=0.16' Max Vel=1.65 fps Inflow=1.43 cfs 0.439 af
n=0.035 L=162.0' S=0.0309 '/' Capacity=17.89 cfs Outflow=1.43 cfs 0.438 af

Reach 62R: Rain Garden #102 Avg. Flow Depth=0.32' Max Vel=4.02 fps Inflow=4.92 cfs 0.918 af
n=0.035 L=32.0' S=0.0703 '/' Capacity=56.30 cfs Outflow=4.93 cfs 0.918 af

Reach 63R: Reach RG #103 Avg. Flow Depth=0.26' Max Vel=4.41 fps Inflow=3.90 cfs 0.664 af
n=0.035 L=367.0' S=0.1131 '/' Capacity=71.40 cfs Outflow=3.90 cfs 0.663 af

Reach 100R: Final Reach 100 Inflow=35.81 cfs 4.175 af
Outflow=35.81 cfs 4.175 af

Reach 200R: Final Reach 200 Inflow=37.24 cfs 4.411 af
Outflow=37.24 cfs 4.411 af

Reach 300R: Final Reach 300 Inflow=38.01 cfs 4.551 af
Outflow=38.01 cfs 4.551 af

Reach 400R: Final Reach 400 Inflow=40.68 cfs 4.947 af
Outflow=40.68 cfs 4.947 af

Reach 500R: Final Reach 500 Inflow=61.34 cfs 7.708 af
Outflow=61.34 cfs 7.708 af

Reach 600R: Final Reach 600 Inflow=74.40 cfs 9.434 af
Outflow=74.40 cfs 9.434 af

Reach 700R: Final Reach 700 Inflow=81.07 cfs 10.268 af
Outflow=81.07 cfs 10.268 af

Reach 800R: Final Reach 800 Inflow=84.20 cfs 10.615 af
Outflow=84.20 cfs 10.615 af

Reach 900R: Final Reach 900 Inflow=85.51 cfs 10.765 af
Outflow=85.51 cfs 10.765 af

Reach 1100R: Final Reach #1100 Inflow=13.20 cfs 2.685 af
Outflow=13.20 cfs 2.685 af

Reach 1200R: Final Reach #1200 Inflow=14.60 cfs 1.919 af
Outflow=14.60 cfs 1.919 af

Reach 1300R: Final Reach #1300 Inflow=2.26 cfs 0.231 af
Outflow=2.26 cfs 0.231 af

Pond 1EP: Catch Basin Peak Elev=138.07' Storage=2 cf Inflow=0.06 cfs 0.004 af
12.0" Round Culvert n=0.012 L=48.0' S=0.0050 '/' Outflow=0.06 cfs 0.004 af

Pond 2EP: Catch Basin Peak Elev=138.01' Storage=3 cf Inflow=0.21 cfs 0.015 af
12.0" Round Culvert n=0.012 L=8.3' S=0.0048 '/' Outflow=0.21 cfs 0.015 af

Pond 3EP: Catch Basin Peak Elev=138.96' Storage=6 cf Inflow=0.76 cfs 0.060 af
12.0" Round Culvert n=0.012 L=153.7' S=0.0050 '/' Outflow=0.76 cfs 0.060 af

Pond 4EP: Catch Basin Peak Elev=137.20' Storage=6 cf Inflow=1.16 cfs 0.090 af
24.0" Round Culvert n=0.012 L=61.5' S=0.0050 '/' Outflow=1.16 cfs 0.090 af

Pond 14P: 4' (T) x 6' (W) Box Culvert Peak Elev=78.52' Storage=958 cf Inflow=18.49 cfs 2.379 af
72.0" x 48.0" Box Culvert w/ 12.0" inside fill n=0.024 L=52.0' S=0.0106 '/' Outflow=18.43 cfs 2.379 af

Pond 15P: 12" RCP Inlet Sump/Pond Peak Elev=98.10' Storage=12,496 cf Inflow=15.61 cfs 2.053 af
Primary=8.19 cfs 2.053 af Secondary=0.00 cfs 0.000 af Outflow=8.19 cfs 2.053 af

Pond 20P: 30" RCP Wetland Crossing #1 Peak Elev=111.29' Storage=99 cf Inflow=0.91 cfs 0.074 af
30.0" Round Culvert w/ 6.0" inside fill n=0.024 L=52.0' S=0.0096 '/' Outflow=0.90 cfs 0.074 af

Pond 101P: Rain Garden #101 Peak Elev=111.38' Storage=12,012 cf Inflow=7.20 cfs 0.569 af
Primary=1.43 cfs 0.439 af Secondary=0.00 cfs 0.000 af Outflow=1.43 cfs 0.439 af

Pond 102P: Rain Garden #102 Peak Elev=82.46' Storage=25,132 cf Inflow=14.62 cfs 1.270 af
Primary=4.92 cfs 0.918 af Secondary=0.00 cfs 0.000 af Outflow=4.92 cfs 0.918 af

Pond 103P: Rain Garden #103 Peak Elev=97.24' Storage=10,940 cf Inflow=8.85 cfs 0.746 af
Primary=3.90 cfs 0.664 af Secondary=0.00 cfs 0.000 af Outflow=3.90 cfs 0.664 af

Pond 104P: Rain Garden #104 Peak Elev=86.83' Storage=9,618 cf Inflow=8.10 cfs 0.768 af
Primary=4.68 cfs 0.674 af Secondary=0.00 cfs 0.000 af Outflow=4.68 cfs 0.674 af

Pond 105P: Detention Pond #105 Peak Elev=86.23' Storage=1,188 cf Inflow=4.30 cfs 0.340 af
Outflow=3.30 cfs 0.339 af

Pond 106P: Detention Pond #106 Peak Elev=98.04' Storage=1,458 cf Inflow=2.99 cfs 0.230 af
Outflow=1.43 cfs 0.230 af

Pond C01P: Catch Basin #1 Peak Elev=117.99' Storage=0.000 af Inflow=1.39 cfs 0.117 af
12.0" Round Culvert n=0.012 L=128.5' S=0.0114 '/' Outflow=1.40 cfs 0.117 af

Pond C02P: Catch Basin #2 Peak Elev=118.11' Storage=0.000 af Inflow=0.57 cfs 0.048 af
12.0" Round Culvert n=0.012 L=18.0' S=0.0083 '/' Outflow=0.57 cfs 0.048 af

Pond C03P: Catch Basin #3 Peak Elev=116.79' Storage=0.000 af Inflow=0.59 cfs 0.046 af
12.0" Round Culvert n=0.012 L=17.0' S=0.0224 '/' Outflow=0.58 cfs 0.046 af

Pond C04P: Catch Basin #4 Peak Elev=116.72' Storage=0.000 af Inflow=0.45 cfs 0.033 af
12.0" Round Culvert n=0.012 L=5.0' S=0.0440 '/' Outflow=0.44 cfs 0.033 af

Pond C05P: Catch Basin #5 Peak Elev=111.99' Storage=7 cf Inflow=0.93 cfs 0.074 af
12.0" Round Culvert n=0.012 L=79.5' S=0.0068 '/' Outflow=0.93 cfs 0.074 af

Pond C06P: Catch Basin #6 Peak Elev=111.40' Storage=24 cf Inflow=0.96 cfs 0.075 af
12.0" Round Culvert n=0.012 L=75.2' S=0.0051 '/' Outflow=0.95 cfs 0.075 af

Pond C07P: Catch Basin #7 Peak Elev=111.40' Storage=0.001 af Inflow=1.81 cfs 0.141 af
12.0" Round Culvert n=0.012 L=18.0' S=0.0139 '/' Outflow=1.77 cfs 0.141 af

Pond C08P: Catch Basin #8 Peak Elev=111.39' Storage=0.001 af Inflow=6.05 cfs 0.485 af
18.0" Round Culvert n=0.012 L=20.0' S=0.0115 '/' Outflow=6.03 cfs 0.485 af

Pond C09P: Catch Basin #9 Peak Elev=101.59' Storage=0.000 af Inflow=1.55 cfs 0.135 af
12.0" Round Culvert n=0.012 L=18.0' S=0.0083 '/' Outflow=1.55 cfs 0.135 af

Pond C10P: Catch Basin #10 Peak Elev=101.43' Storage=0.000 af Inflow=2.72 cfs 0.240 af
12.0" Round Culvert n=0.012 L=72.0' S=0.0776 '/' Outflow=2.72 cfs 0.240 af

Pond C11P: Catch Basin #11 Peak Elev=95.68' Storage=0.000 af Inflow=4.38 cfs 0.385 af
15.0" Round Culvert n=0.012 L=66.5' S=0.0627 '/' Outflow=4.38 cfs 0.385 af

Pond C12P: Catch Basin #12 Peak Elev=90.00' Storage=0.000 af Inflow=1.51 cfs 0.115 af
12.0" Round Culvert n=0.012 L=18.0' S=0.0139 '/' Outflow=1.48 cfs 0.115 af

Pond C13P: Catch Basin #13 Peak Elev=89.91' Storage=0.000 af Inflow=6.07 cfs 0.519 af
15.0" Round Culvert n=0.012 L=126.7' S=0.0261 '/' Outflow=6.07 cfs 0.519 af

Pond C14P: Catch Basin #14 Peak Elev=86.44' Storage=0.000 af Inflow=2.70 cfs 0.203 af
12.0" Round Culvert n=0.012 L=17.5' S=0.0143 '/' Outflow=2.70 cfs 0.203 af

Pond C15P: Catch Basin #15 Peak Elev=85.58' Storage=0.001 af Inflow=9.15 cfs 0.758 af
18.0" Round Culvert n=0.012 L=17.5' S=0.0383 '/' Outflow=9.15 cfs 0.757 af

Pond C16P: Catch Basin #16 Peak Elev=86.36' Storage=38 cf Inflow=2.38 cfs 0.184 af
12.0" Round Culvert n=0.012 L=32.5' S=0.0105 '/' Outflow=2.32 cfs 0.184 af

Pond C17P: Catch Basin #17 Peak Elev=86.27' Storage=0.000 af Inflow=1.34 cfs 0.105 af
12.0" Round Culvert n=0.012 L=35.0' S=0.0151 '/' Outflow=1.33 cfs 0.105 af

Pond C18P: Catch Basin #18 Peak Elev=113.83' Storage=0.000 af Inflow=1.02 cfs 0.078 af
12.0" Round Culvert n=0.012 L=77.0' S=0.0079 '/' Outflow=1.02 cfs 0.078 af

Pond C19P: Catch Basin #19 Peak Elev=113.84' Storage=0.000 af Inflow=1.20 cfs 0.092 af
12.0" Round Culvert n=0.012 L=77.0' S=0.0125 '/' Outflow=1.20 cfs 0.092 af

Pond C20P: Catch Basin #20 Peak Elev=113.23' Storage=0.000 af Inflow=1.46 cfs 0.111 af
12.0" Round Culvert n=0.012 L=18.0' S=0.0139 '/' Outflow=1.46 cfs 0.111 af

Pond C21P: Catch Basin #21 Peak Elev=110.97' Storage=11 cf Inflow=3.09 cfs 0.239 af
15.0" Round Culvert n=0.012 L=135.0' S=0.0271 '/' Outflow=3.10 cfs 0.239 af

Pond C22P: Catch Basin #22 Peak Elev=107.50' Storage=0.000 af Inflow=4.50 cfs 0.373 af
15.0" Round Culvert n=0.012 L=81.0' S=0.0825 '/' Outflow=4.50 cfs 0.373 af

Pond C23P: Catch Basin #23 Peak Elev=100.56' Storage=0.000 af Inflow=5.37 cfs 0.442 af
18.0" Round Culvert n=0.012 L=22.5' S=0.0164 '/' Outflow=5.38 cfs 0.442 af

Pond C24P: Catch Basin #24 Peak Elev=97.27' Storage=0.000 af Inflow=1.93 cfs 0.168 af
15.0" Round Culvert n=0.012 L=45.0' S=0.0138 '/' Outflow=1.92 cfs 0.168 af

Pond C25P: Catch Basin #25 Peak Elev=97.25' Storage=0.001 af Inflow=0.89 cfs 0.069 af
12.0" Round Culvert n=0.012 L=80.0' S=0.0063 '/' Outflow=0.88 cfs 0.069 af

Pond C26P: Catch Basin #26 Peak Elev=86.89' Storage=0.002 af Inflow=7.13 cfs 0.697 af
24.0" Round Culvert n=0.012 L=17.5' S=0.0120 '/' Outflow=7.10 cfs 0.696 af

Pond C27P: Catch Basin #27 Peak Elev=86.94' Storage=0.000 af Inflow=1.22 cfs 0.092 af
15.0" Round Culvert n=0.012 L=28.0' S=0.0468 '/' Outflow=1.22 cfs 0.092 af

Pond C28P: Catch Basin #28 Peak Elev=86.93' Storage=72 cf Inflow=5.62 cfs 0.578 af
24.0" Round Culvert n=0.012 L=72.0' S=0.0064 '/' Outflow=5.58 cfs 0.577 af

Pond C29P: Catch Basin #29 Peak Elev=86.93' Storage=35 cf Inflow=0.59 cfs 0.048 af
15.0" Round Culvert n=0.012 L=17.5' S=0.0057 '/' Outflow=0.57 cfs 0.048 af

Pond C30P: Catch Basin #30 Peak Elev=87.03' Storage=0.001 af Inflow=4.74 cfs 0.503 af
18.0" Round Culvert n=0.012 L=72.5' S=0.0152 '/' Outflow=4.73 cfs 0.503 af

Pond C31P: Catch Basin #31 Peak Elev=87.04' Storage=0.000 af Inflow=2.21 cfs 0.170 af
15.0" Round Culvert n=0.012 L=18.0' S=0.0139 '/' Outflow=2.20 cfs 0.170 af

Pond C32P: Catch Basin #32 Peak Elev=96.98' Storage=0.000 af Inflow=0.84 cfs 0.067 af
12.0" Round Culvert n=0.012 L=24.0' S=0.0213 '/' Outflow=0.84 cfs 0.067 af

Pond C33P: Catch Basin #33 Peak Elev=98.05' Storage=0.000 af Inflow=1.00 cfs 0.080 af
12.0" Round Culvert n=0.012 L=35.0' S=0.0089 '/' Outflow=0.99 cfs 0.080 af

Pond C54P: Drop Inlet #54 Peak Elev=95.75' Storage=2 cf Inflow=1.01 cfs 0.080 af
12.0" Round Culvert n=0.012 L=7.5' S=0.0240 '/' Outflow=1.00 cfs 0.080 af

Pond C55P: Drop Inlet #55 Peak Elev=93.51' Storage=2 cf Inflow=0.99 cfs 0.074 af
12.0" Round Culvert n=0.012 L=31.2' S=0.1337 '/' Outflow=0.99 cfs 0.074 af

Pond D01P: Drain Manhole #1 Peak Elev=116.69' Storage=0.000 af Inflow=2.42 cfs 0.197 af
12.0" Round Culvert n=0.012 L=157.5' S=0.0201 '/' Outflow=2.42 cfs 0.197 af

Pond D02P: Drain Manhole #2 Peak Elev=111.57' Storage=0.000 af Inflow=3.35 cfs 0.270 af
15.0" Round Culvert n=0.012 L=62.7' S=0.0102 '/' Outflow=3.35 cfs 0.270 af

Pond D03P: Drain Manhole #3 Peak Elev=91.41' Storage=0.000 af Inflow=4.38 cfs 0.385 af
15.0" Round Culvert n=0.012 L=31.0' S=0.0619 '/' Outflow=4.38 cfs 0.385 af

Pond D04P: Drain Manhole #4 Peak Elev=94.47' Storage=0.000 af Inflow=2.13 cfs 0.297 af
15.0" Round Culvert n=0.012 L=183.5' S=0.0470 '/' Outflow=2.13 cfs 0.297 af

Total Runoff Area = 51.401 ac Runoff Volume = 16.272 af Average Runoff Depth = 3.80"
90.34% Pervious = 46.434 ac 9.66% Impervious = 4.967 ac

Summary for Subcatchment 1S: Subcatchment #1

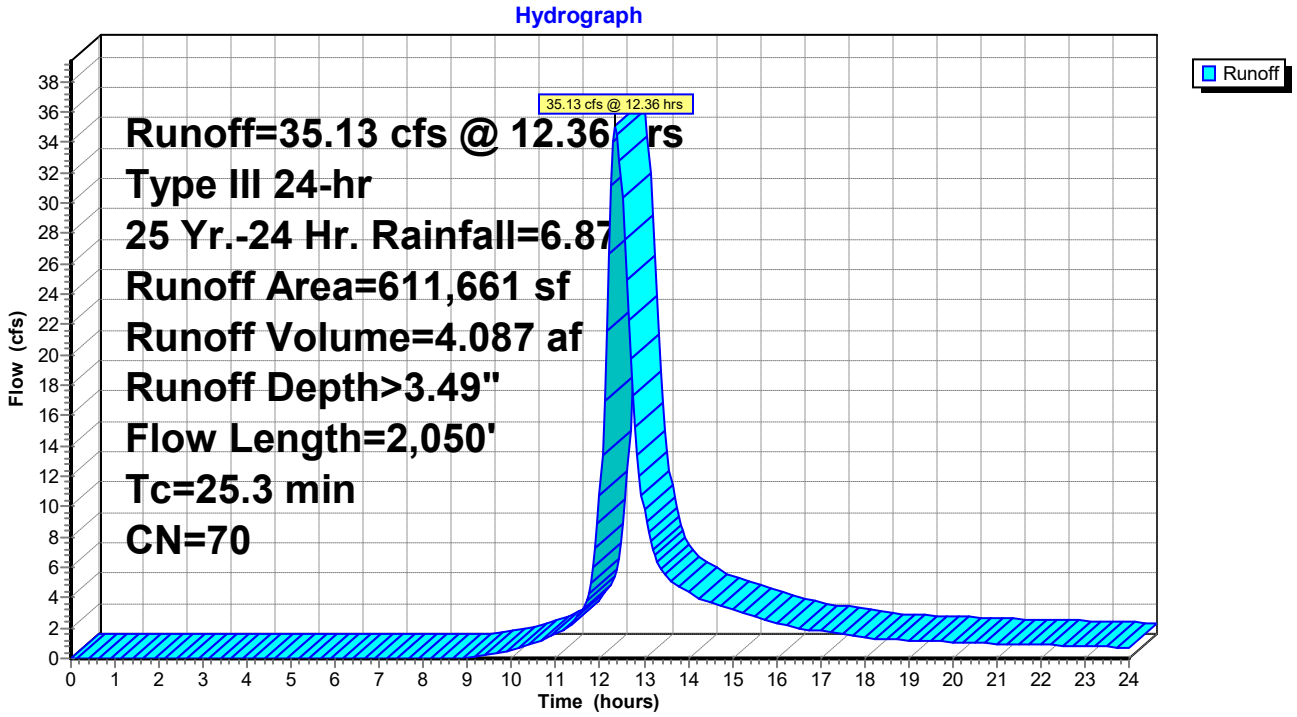
Runoff = 35.13 cfs @ 12.36 hrs, Volume= 4.087 af, Depth> 3.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Yr.-24 Hr. Rainfall=6.87"

Area (sf)	CN	Description
13,426	61	>75% Grass cover, Good, HSG B
17,628	74	>75% Grass cover, Good, HSG C
2,013	98	Paved parking, HSG C
2,013	98	Paved parking, HSG B
2,086	98	Roofs, HSG C
936	98	Roofs, HSG B
60,190	55	Woods, Good, HSG B
382,012	70	Woods, Good, HSG C
131,357	77	Woods, Good, HSG D
611,661	70	Weighted Average
604,613		98.85% Pervious Area
7,048		1.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	60	0.1500	0.17		**Sheet Flow, Segment #1** Woods: Light underbrush n= 0.400 P2= 3.61"
5.7	40	0.0750	0.12		**Sheet Flow, Segment #2** Woods: Light underbrush n= 0.400 P2= 3.61"
0.1	20	0.2500	2.50		**Shallow Concentrated Flow, Segment #3** Woodland Kv= 5.0 fps
7.9	492	0.0427	1.03		**Shallow Concentrated Flow, Segment #4** Woodland Kv= 5.0 fps
5.6	1,438	0.0351	4.28	6.95	**Trap/Vee/Rect Channel Flow, Segment #5** Bot.W=3.00' D=0.50' Z= 0.5 '/' Top.W=3.50' n= 0.035 Earth, dense weeds
25.3	2,050	Total			

Subcatchment 1S: Subcatchment #1



Summary for Subcatchment 2S: Subcatchment #2

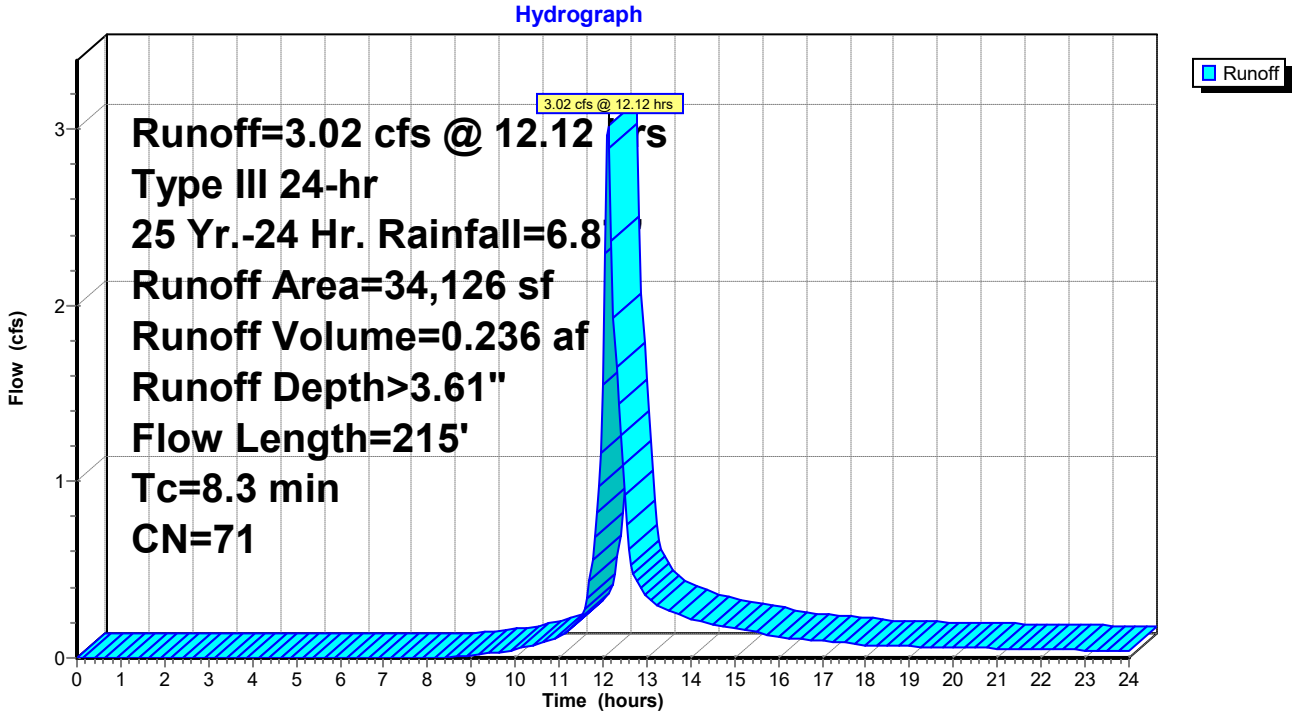
Runoff = 3.02 cfs @ 12.12 hrs, Volume= 0.236 af, Depth> 3.61"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Yr.-24 Hr. Rainfall=6.87"

Area (sf)	CN	Description
29,608	70	Woods, Good, HSG C
4,100	77	Woods, Good, HSG D
418	74	>75% Grass cover, Good, HSG C
34,126	71	Weighted Average
34,126		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	69	0.1159	0.15		**Sheet Flow, Segment #1** Woods: Light underbrush n= 0.400 P2= 3.61"
0.7	109	0.2477	2.49		**Shallow Concentrated Flow, Segment #2** Woodland Kv= 5.0 fps
0.2	37	0.4852	3.48		**Shallow Concentrated Flow, Segment #3** Woodland Kv= 5.0 fps
8.3	215	Total			

Subcatchment 2S: Subcatchment #2



Summary for Subcatchment 3S: Subcatchment #3

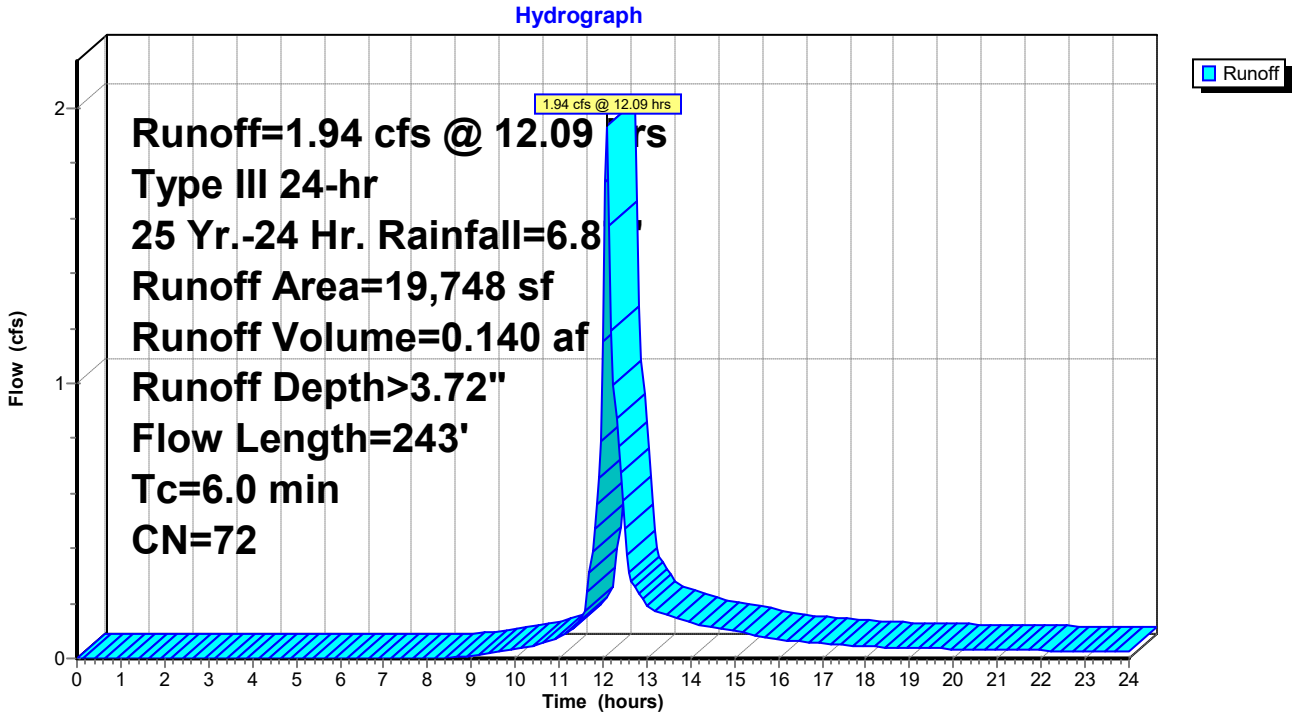
Runoff = 1.94 cfs @ 12.09 hrs, Volume= 0.140 af, Depth> 3.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Yr.-24 Hr. Rainfall=6.87"

Area (sf)	CN	Description
12,360	70	Woods, Good, HSG C
604	77	Woods, Good, HSG D
6,117	74	>75% Grass cover, Good, HSG C
667	98	Roofs, HSG C
19,748	72	Weighted Average
19,081		96.62% Pervious Area
667		3.38% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	75	0.1410	0.37		**Sheet Flow, Segment #1** Grass: Short n= 0.150 P2= 3.61"
0.5	69	0.2609	2.55		**Shallow Concentrated Flow, Segment #2** Woodland Kv= 5.0 fps
0.0	13	0.7692	4.39		**Shallow Concentrated Flow, Segment #3** Woodland Kv= 5.0 fps
0.2	27	0.2963	2.72		**Shallow Concentrated Flow, Segment #4** Woodland Kv= 5.0 fps
0.4	59	0.2648	2.57		**Shallow Concentrated Flow, Segment #4** Woodland Kv= 5.0 fps
4.5	243	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 3S: Subcatchment #3



Summary for Subcatchment 4S: Subcatchment #4

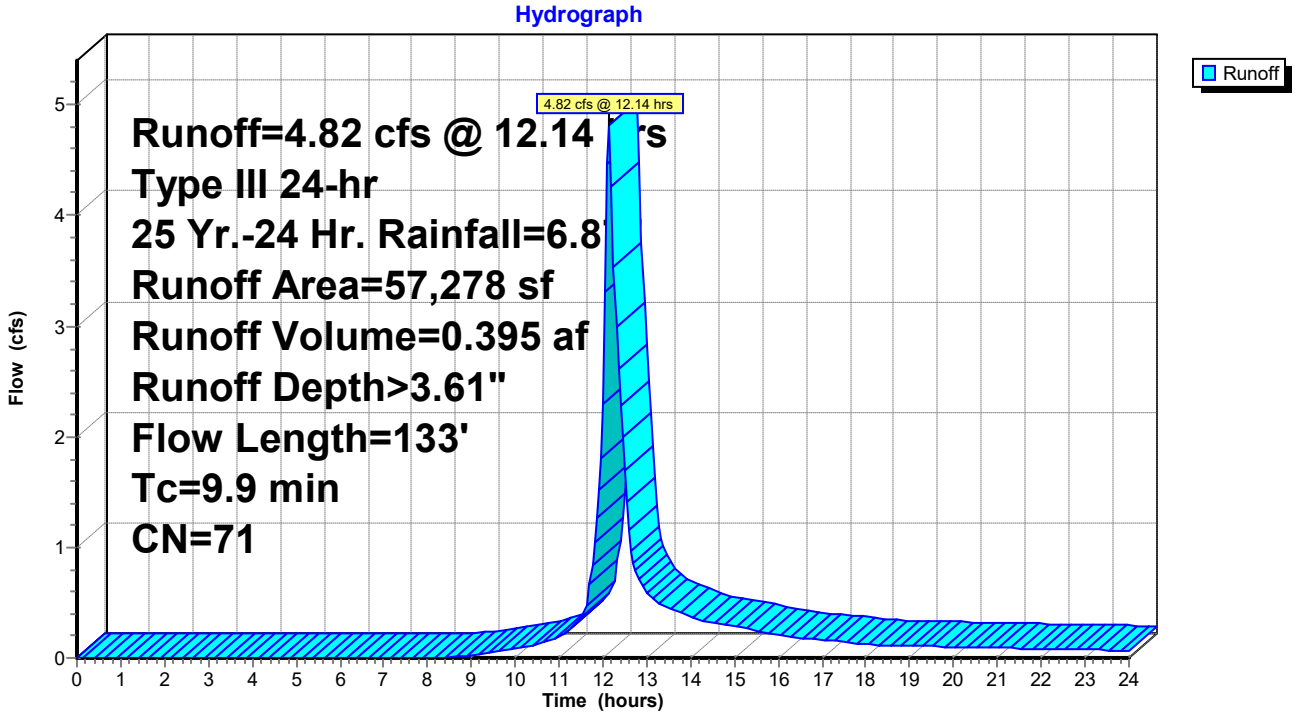
Runoff = 4.82 cfs @ 12.14 hrs, Volume= 0.395 af, Depth> 3.61"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Yr.-24 Hr. Rainfall=6.87"

Area (sf)	CN	Description
49,923	70	Woods, Good, HSG C
3,285	77	Woods, Good, HSG D
3,615	74	>75% Grass cover, Good, HSG C
455	98	Roofs, HSG C
57,278	71	Weighted Average
56,823		99.21% Pervious Area
455		0.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	86	0.0933	0.15		**Sheet Flow, Segment #1** Woods: Light underbrush n= 0.400 P2= 3.61"
0.2	47	0.5745	3.79		**Shallow Concentrated Flow, Segment #2** Woodland Kv= 5.0 fps
9.9	133	Total			

Subcatchment 4S: Subcatchment #4



Summary for Subcatchment 5S: Subcatchment #5

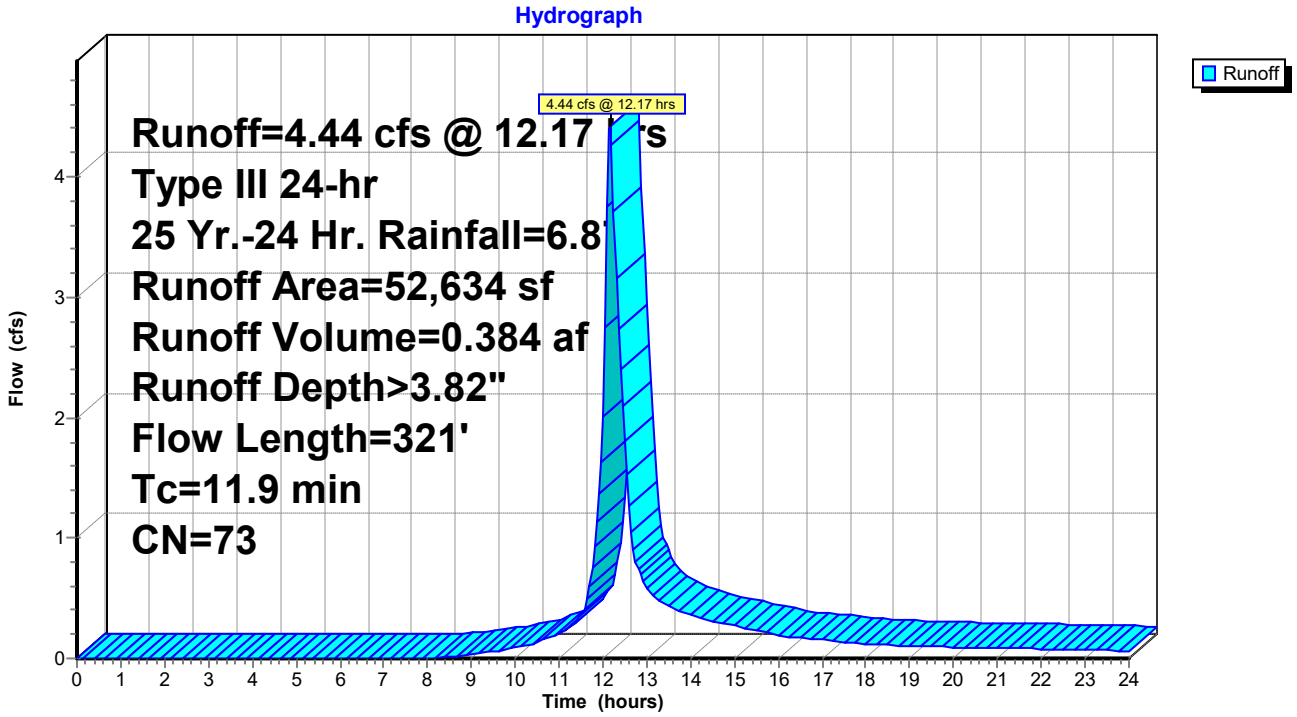
Runoff = 4.44 cfs @ 12.17 hrs, Volume= 0.384 af, Depth> 3.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Yr.-24 Hr. Rainfall=6.87"

Area (sf)	CN	Description
164	61	>75% Grass cover, Good, HSG B
7,321	74	>75% Grass cover, Good, HSG C
1,053	80	>75% Grass cover, Good, HSG D
1,728	98	Roofs, HSG C
2,829	55	Woods, Good, HSG B
26,859	70	Woods, Good, HSG C
12,680	77	Woods, Good, HSG D
52,634	73	Weighted Average
50,906		96.72% Pervious Area
1,728		3.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	77	0.1039	0.15		**Sheet Flow, Segment #1** Woods: Light underbrush n= 0.400 P2= 3.61"
2.8	150	0.0323	0.90		**Shallow Concentrated Flow, Segment #2** Woodland Kv= 5.0 fps
0.6	94	0.2404	2.45		**Shallow Concentrated Flow, Segment #3** Woodland Kv= 5.0 fps
11.9	321	Total			

Subcatchment 5S: Subcatchment #5



Summary for Subcatchment 6S: Subcatchment #6

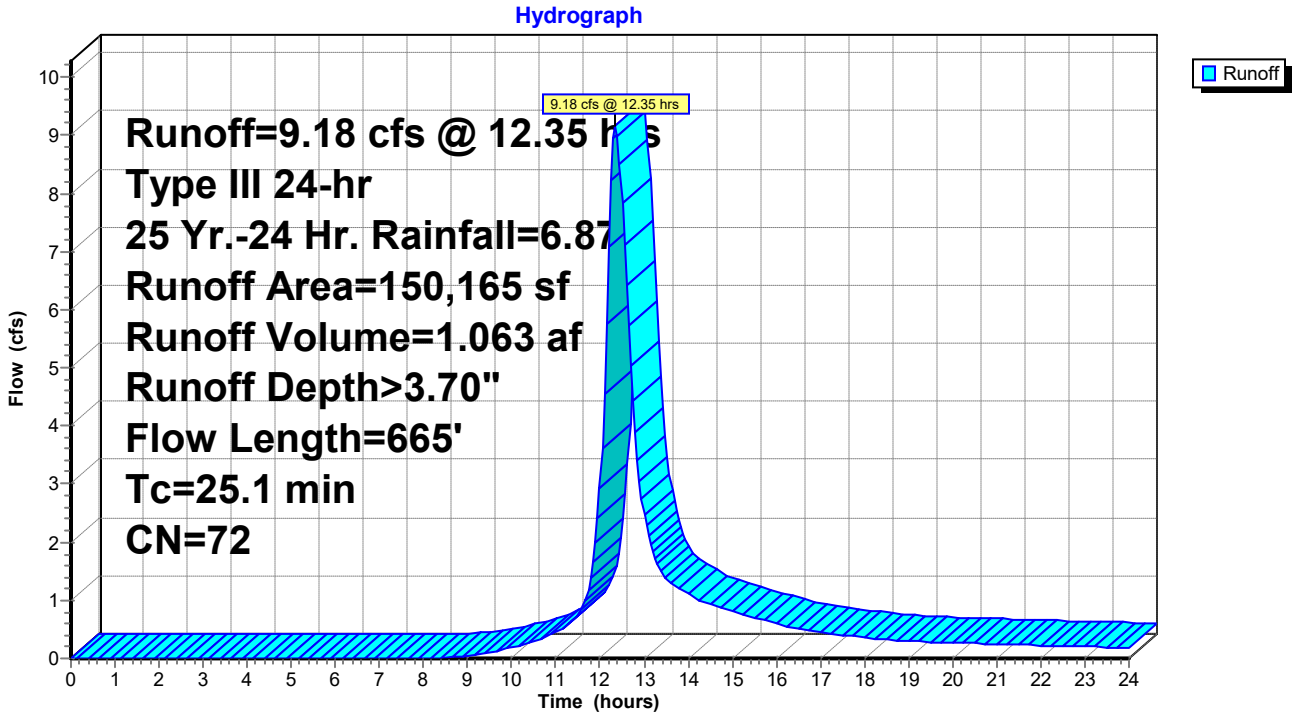
Runoff = 9.18 cfs @ 12.35 hrs, Volume= 1.063 af, Depth> 3.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Yr.-24 Hr. Rainfall=6.87"

Area (sf)	CN	Description
30,016	74	>75% Grass cover, Good, HSG C
1,463	98	Roofs, HSG C
96,071	70	Woods, Good, HSG C
22,615	77	Woods, Good, HSG D
150,165	72	Weighted Average
148,702		99.03% Pervious Area
1,463		0.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.5	100	0.0250	0.09		**Sheet Flow, Segment #1** Woods: Light underbrush n= 0.400 P2= 3.61"
1.1	78	0.0513	1.13		**Shallow Concentrated Flow, Segment #2** Woodland Kv= 5.0 fps
2.6	200	0.0650	1.27		**Shallow Concentrated Flow, Segment #3** Woodland Kv= 5.0 fps
2.9	287	0.1125	1.68		**Shallow Concentrated Flow, Segment #4** Woodland Kv= 5.0 fps
25.1	665	Total			

Subcatchment 6S: Subcatchment #6



Summary for Subcatchment 7S: Subcatchment #7

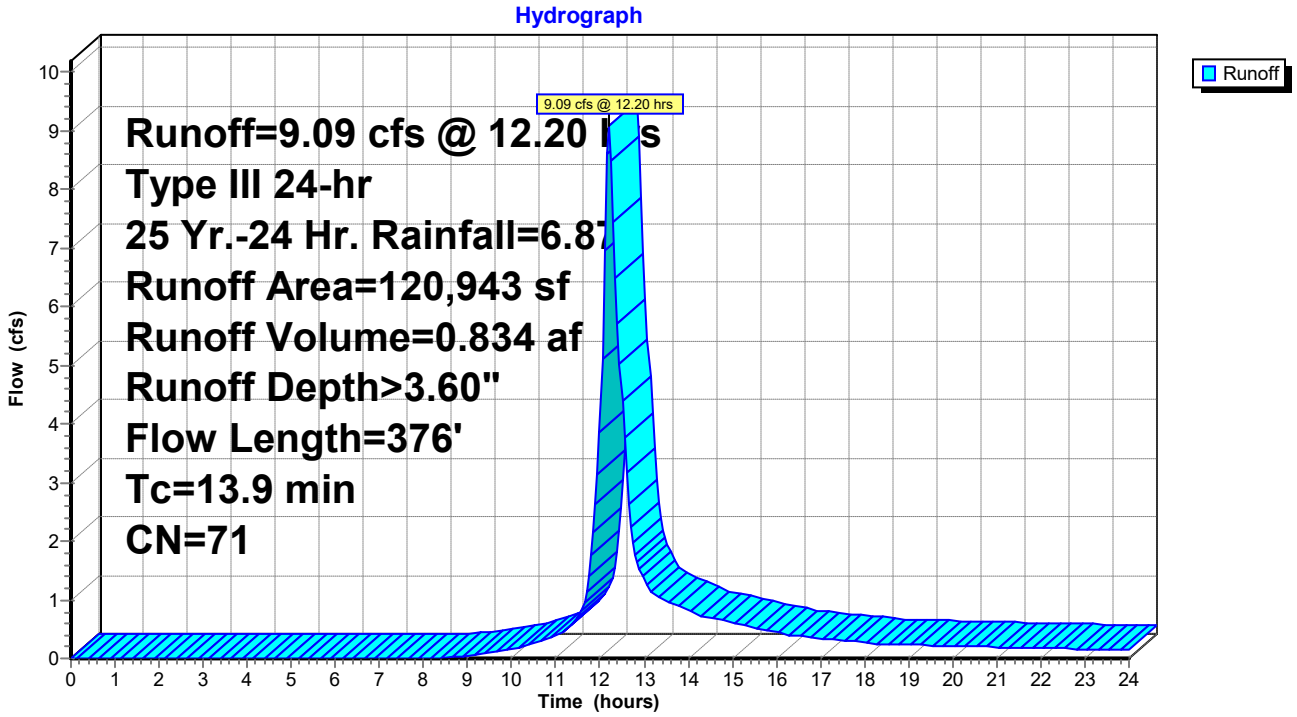
Runoff = 9.09 cfs @ 12.20 hrs, Volume= 0.834 af, Depth> 3.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Yr.-24 Hr. Rainfall=6.87"

Area (sf)	CN	Description
1,591	30	Woods, Good, HSG A
80,292	70	Woods, Good, HSG C
8,068	77	Woods, Good, HSG D
30,152	74	>75% Grass cover, Good, HSG C
840	98	Roofs, HSG C
120,943	71	Weighted Average
120,103		99.31% Pervious Area
840		0.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	100	0.1000	0.16		**Sheet Flow, Segment #1** Woods: Light underbrush n= 0.400 P2= 3.61"
0.4	36	0.1110	1.67		**Shallow Concentrated Flow, Segment #2** Woodland Kv= 5.0 fps
1.1	70	0.0429	1.04		**Shallow Concentrated Flow, Segment #3** Woodland Kv= 5.0 fps
1.8	170	0.0941	1.53		**Shallow Concentrated Flow, Segment #4** Woodland Kv= 5.0 fps
13.9	376	Total			

Subcatchment 7S: Subcatchment #7



Summary for Subcatchment 8S: Subcatchment #8

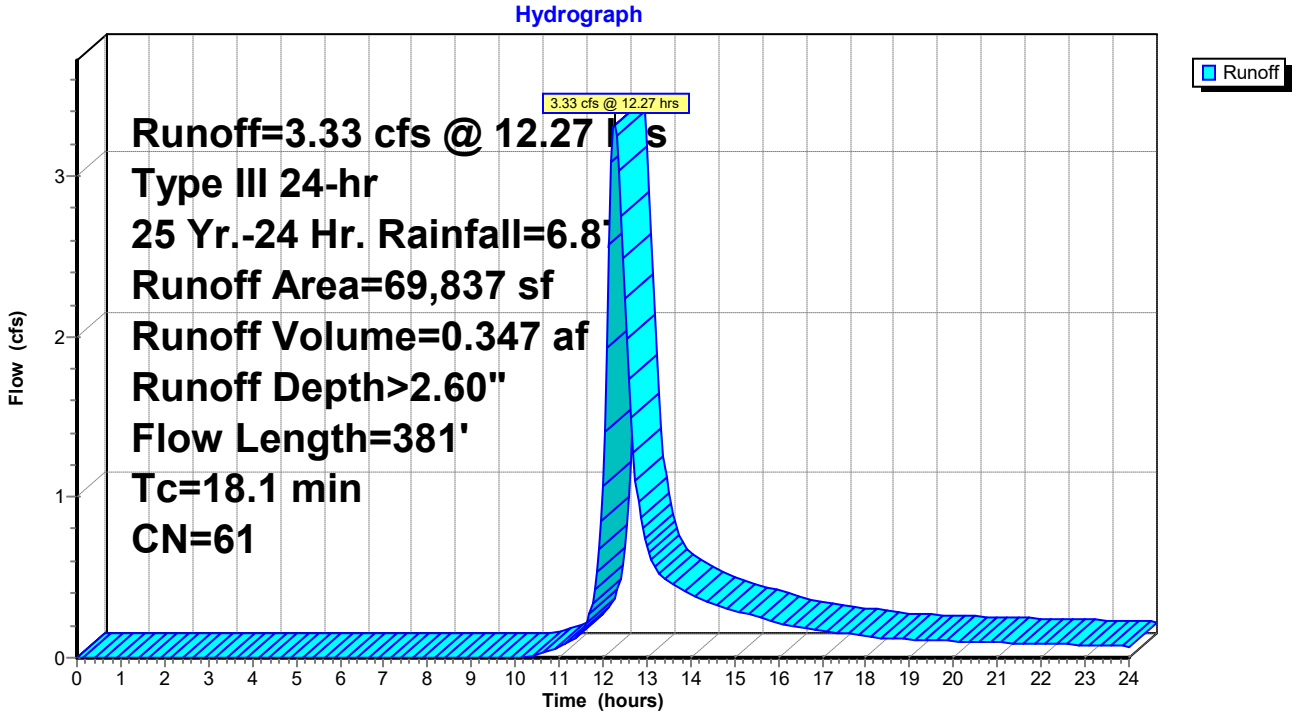
Runoff = 3.33 cfs @ 12.27 hrs, Volume= 0.347 af, Depth> 2.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Yr.-24 Hr. Rainfall=6.87"

Area (sf)	CN	Description
16,548	30	Woods, Good, HSG A
47,189	70	Woods, Good, HSG C
6,100	77	Woods, Good, HSG D
69,837	61	Weighted Average
69,837		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.3	100	0.0475	0.12		**Sheet Flow, Segment #1** Woods: Light underbrush n= 0.400 P2= 3.61"
1.1	70	0.0429	1.04		**Shallow Concentrated Flow, Segment #2** Woodland Kv= 5.0 fps
1.9	139	0.0612	1.24		**Shallow Concentrated Flow, Segment #3** Woodland Kv= 5.0 fps
0.8	72	0.0900	1.50		**Shallow Concentrated Flow, Segment #4** Woodland Kv= 5.0 fps
18.1	381	Total			

Subcatchment 8S: Subcatchment #8



Summary for Subcatchment 9S: Subcatchment #9

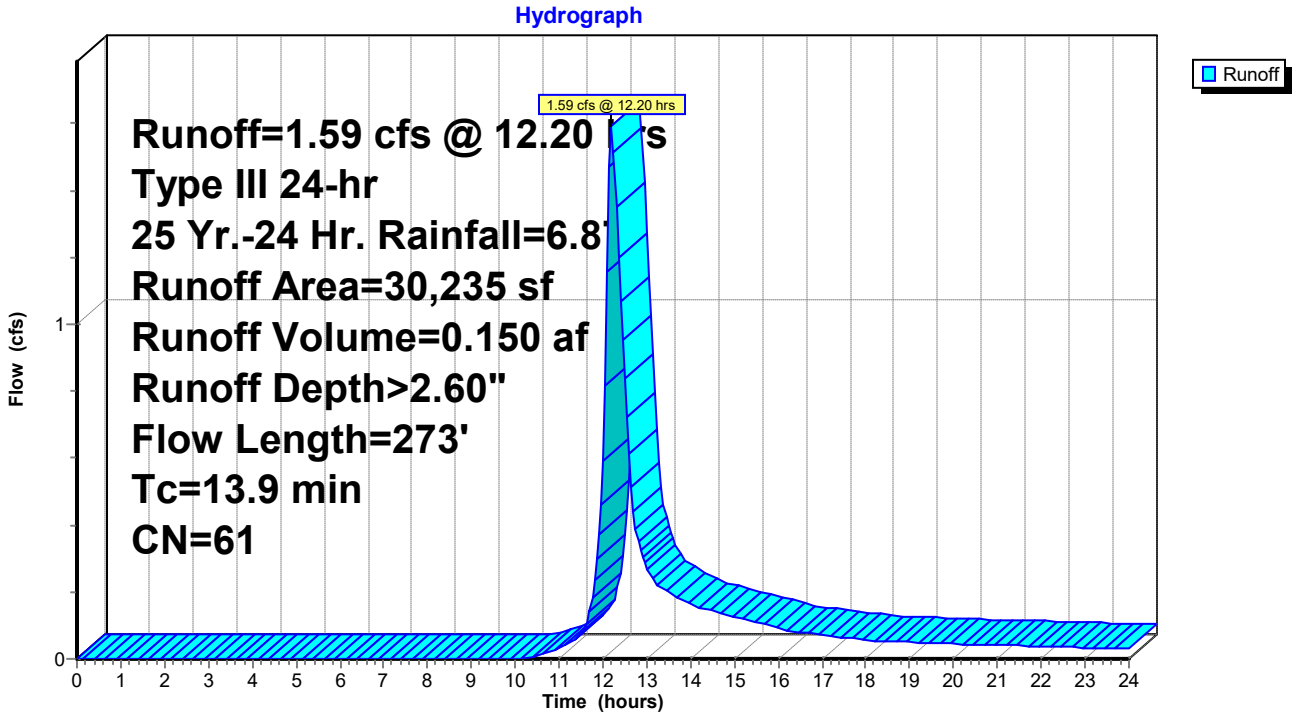
Runoff = 1.59 cfs @ 12.20 hrs, Volume= 0.150 af, Depth> 2.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Yr.-24 Hr. Rainfall=6.87"

Area (sf)	CN	Description
7,072	30	Woods, Good, HSG A
20,587	70	Woods, Good, HSG C
2,576	77	Woods, Good, HSG D
30,235	61	Weighted Average
30,235		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.0	100	0.0925	0.15		**Sheet Flow, Segment #1** Woods: Light underbrush n= 0.400 P2= 3.61"
2.9	173	0.0404	1.00		**Shallow Concentrated Flow, Segment #2** Woodland Kv= 5.0 fps
13.9	273	Total			

Subcatchment 9S: Subcatchment #9



Summary for Subcatchment 11S: Subcatchment #11

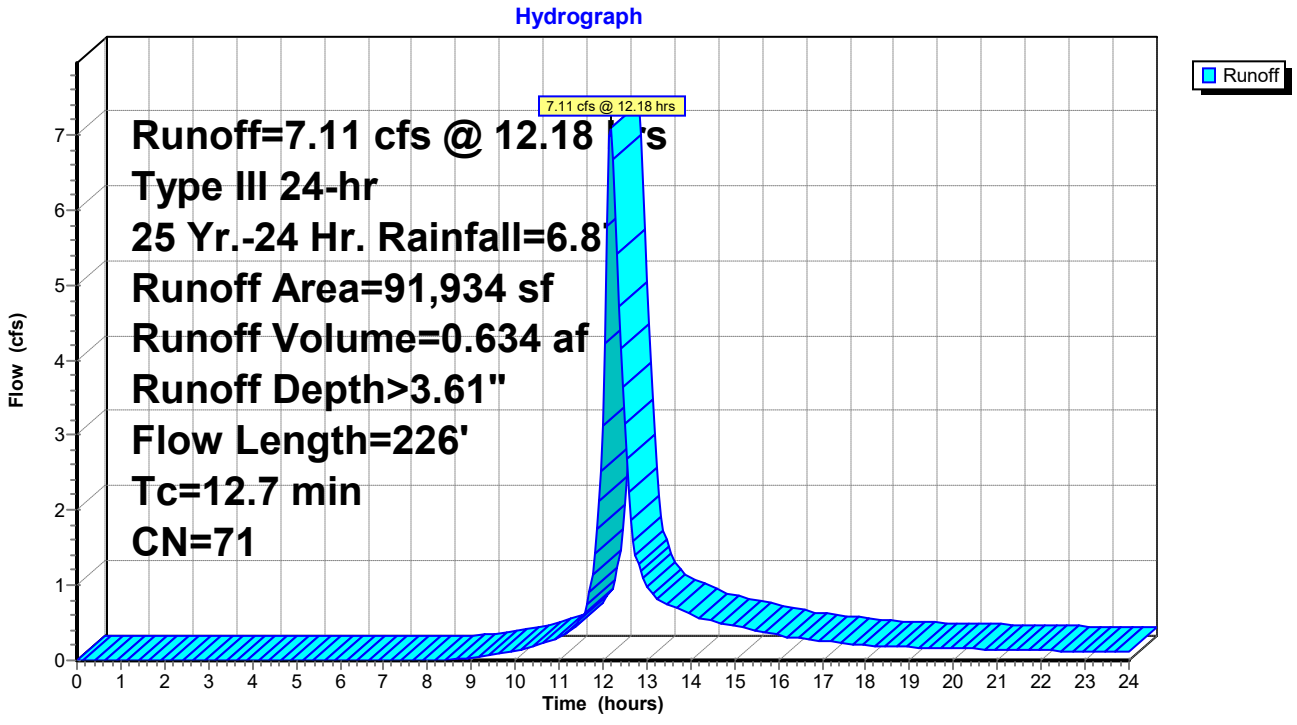
Runoff = 7.11 cfs @ 12.18 hrs, Volume= 0.634 af, Depth> 3.61"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Yr.-24 Hr. Rainfall=6.87"

Area (sf)	CN	Description
9,414	74	>75% Grass cover, Good, HSG C
81,832	70	Woods, Good, HSG C
688	98	Roofs, HSG C
91,934	71	Weighted Average
91,246		99.25% Pervious Area
688		0.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	100	0.1100	0.16		**Sheet Flow, Segment #1** Woods: Light underbrush n= 0.400 P2= 3.61"
2.5	126	0.0277	0.83		**Shallow Concentrated Flow, Segment #2** Woodland Kv= 5.0 fps
12.7	226	Total			

Subcatchment 11S: Subcatchment #11



Summary for Subcatchment 12S: Subcatchment #12

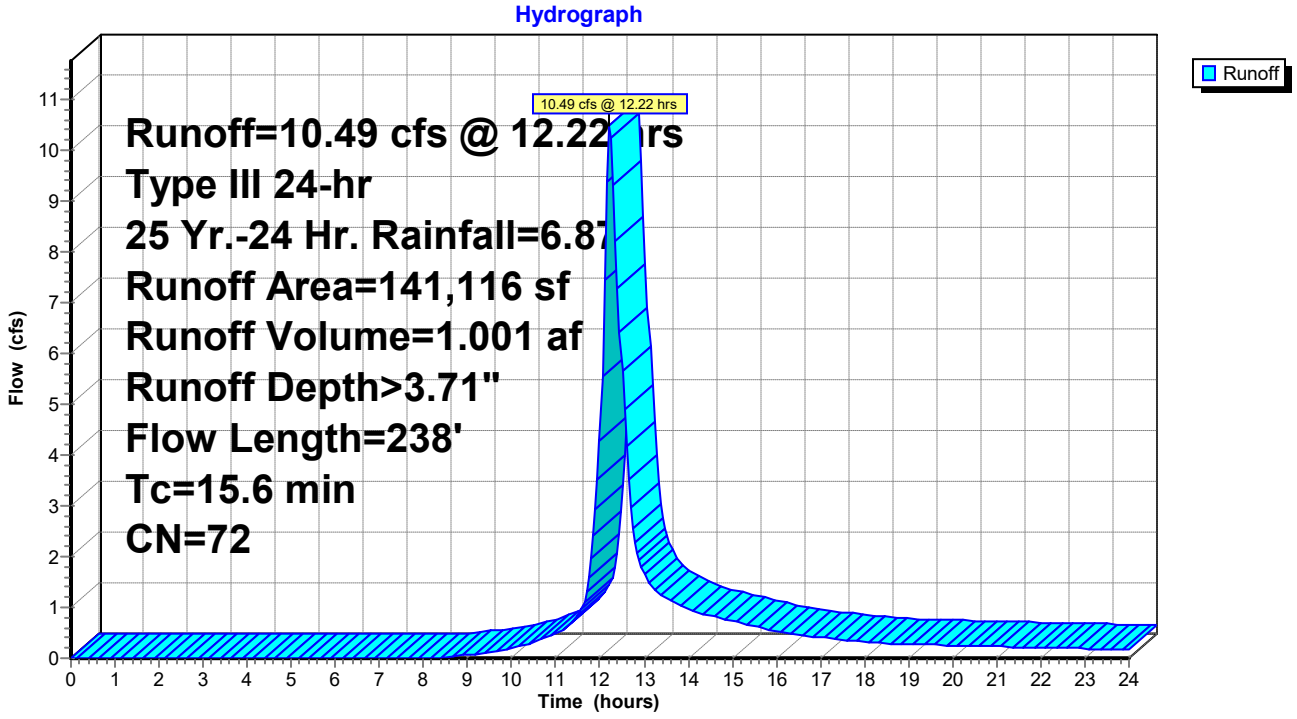
Runoff = 10.49 cfs @ 12.22 hrs, Volume= 1.001 af, Depth> 3.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Yr.-24 Hr. Rainfall=6.87"

Area (sf)	CN	Description
1,342	98	Roofs, HSG C
27,358	74	>75% Grass cover, Good, HSG C
104,924	70	Woods, Good, HSG C
5,915	80	>75% Grass cover, Good, HSG D
1,577	77	Woods, Good, HSG D
141,116	72	Weighted Average
139,774		99.05% Pervious Area
1,342		0.95% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.6	100	0.0450	0.11		**Sheet Flow, Segment #1** Woods: Light underbrush n= 0.400 P2= 3.61"
1.0	138	0.1123	2.35		**Shallow Concentrated Flow, Segment #2** Short Grass Pasture Kv= 7.0 fps
15.6	238	Total			

Subcatchment 12S: Subcatchment #12



Summary for Subcatchment 13S: Subcatchment #13

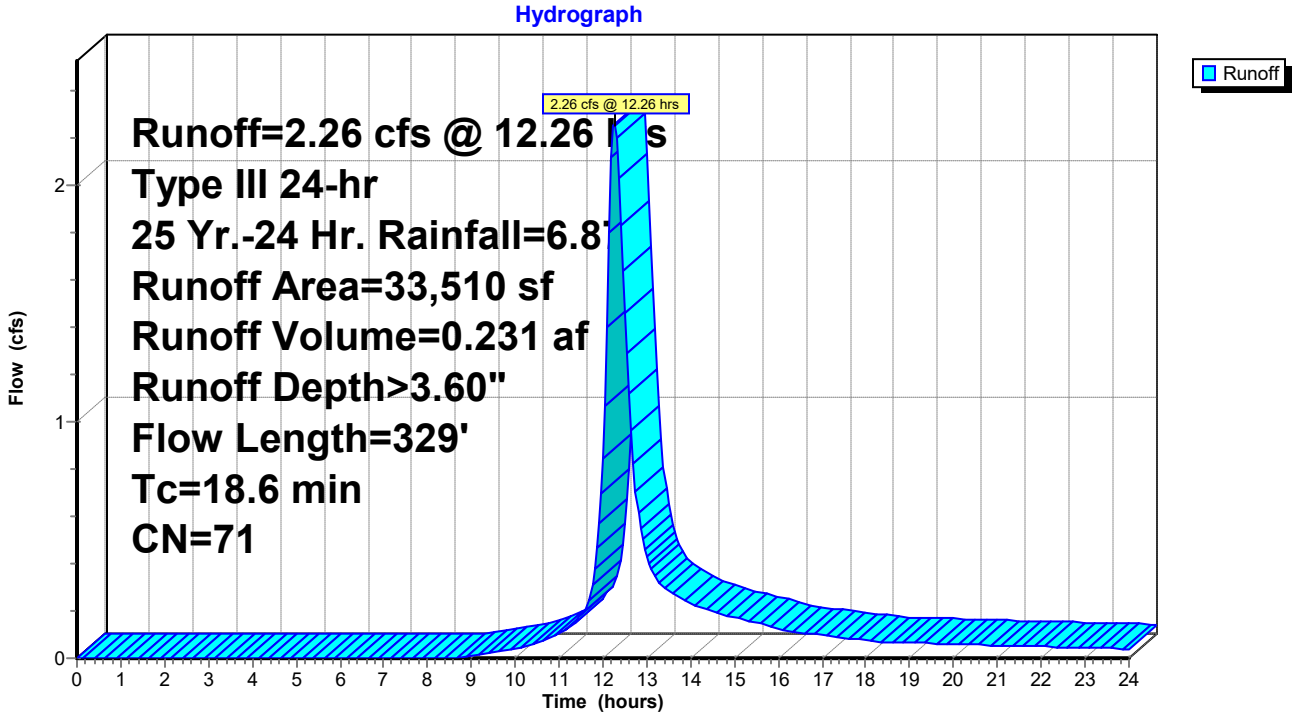
Runoff = 2.26 cfs @ 12.26 hrs, Volume= 0.231 af, Depth> 3.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Yr.-24 Hr. Rainfall=6.87"

Area (sf)	CN	Description
26,508	70	Woods, Good, HSG C
7,002	77	Woods, Good, HSG D
33,510	71	Weighted Average
33,510		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5	67	0.1084	0.15		**Sheet Flow, Segment #1** Woods: Light underbrush n= 0.400 P2= 3.61"
6.0	33	0.0453	0.09		**Sheet Flow, Segment #2** Woods: Light underbrush n= 0.400 P2= 3.61"
5.0	215	0.0209	0.72		**Shallow Concentrated Flow, Segment #3** Woodland Kv= 5.0 fps
0.1	14	0.1817	2.13		**Shallow Concentrated Flow, Segment #4** Woodland Kv= 5.0 fps
18.6	329	Total			

Subcatchment 13S: Subcatchment #13



Summary for Subcatchment 14S: Subcatchment #14

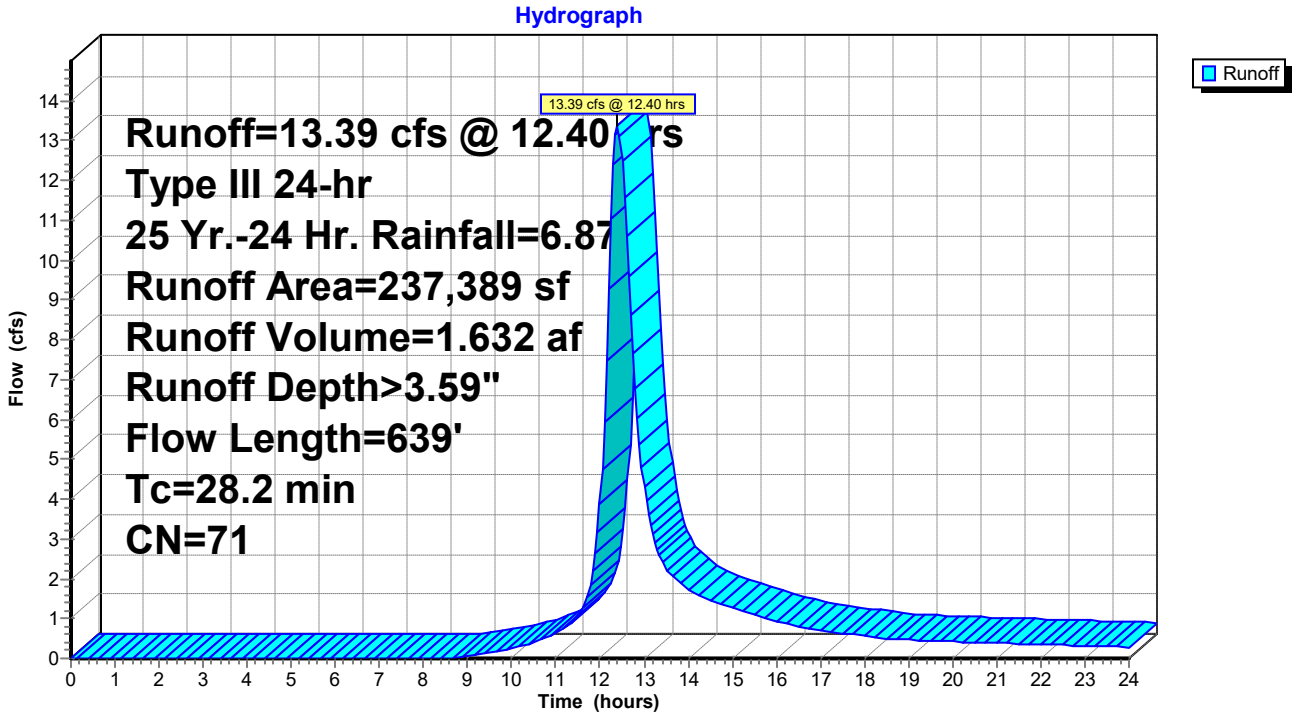
Runoff = 13.39 cfs @ 12.40 hrs, Volume= 1.632 af, Depth> 3.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Yr.-24 Hr. Rainfall=6.87"

Area (sf)	CN	Description
292	98	Roofs, HSG C
6,215	61	>75% Grass cover, Good, HSG B
27,218	74	>75% Grass cover, Good, HSG C
3,539	80	>75% Grass cover, Good, HSG D
16,717	55	Woods, Good, HSG B
112,663	70	Woods, Good, HSG C
70,745	77	Woods, Good, HSG D
237,389	71	Weighted Average
237,097		99.88% Pervious Area
292		0.12% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.3	100	0.0475	0.12		**Sheet Flow, Segment #1** Woods: Light underbrush n= 0.400 P2= 3.61"
10.5	271	0.0074	0.43		**Shallow Concentrated Flow, Segment #2** Woodland Kv= 5.0 fps
1.4	81	0.0370	0.96		**Shallow Concentrated Flow, Segment #3** Woodland Kv= 5.0 fps
1.4	109	0.0713	1.34		**Shallow Concentrated Flow, Segment #4** Woodland Kv= 5.0 fps
0.6	78	0.2175	2.33		**Shallow Concentrated Flow, Segment #5** Woodland Kv= 5.0 fps
28.2	639	Total			

Subcatchment 14S: Subcatchment #14



Summary for Subcatchment 15S: Subcatchment #15

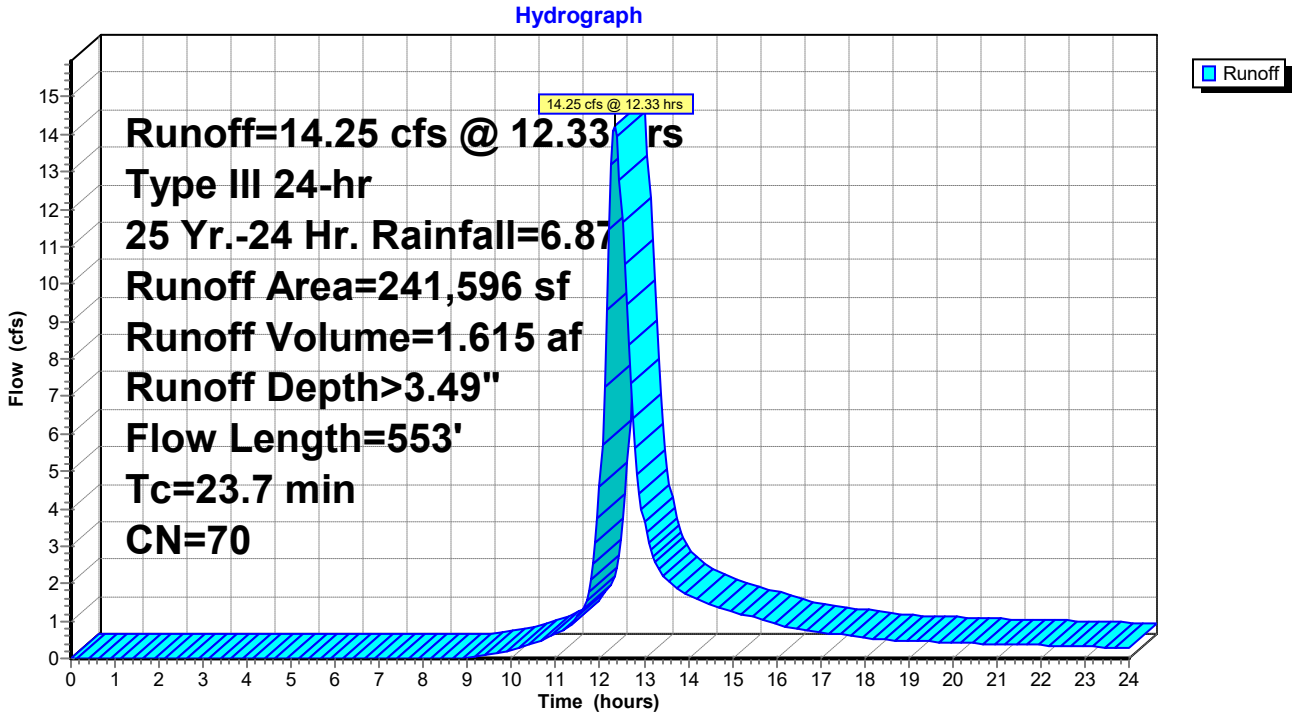
Runoff = 14.25 cfs @ 12.33 hrs, Volume= 1.615 af, Depth> 3.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Yr.-24 Hr. Rainfall=6.87"

Area (sf)	CN	Description
14,097	61	>75% Grass cover, Good, HSG B
43,023	74	>75% Grass cover, Good, HSG C
2,573	80	>75% Grass cover, Good, HSG D
963	98	Paved parking, HSG B
7,496	98	Paved parking, HSG C
1,581	98	Roofs, HSG B
3,900	98	Roofs, HSG C
195	98	Roofs, HSG D
41,337	55	Woods, Good, HSG B
95,680	70	Woods, Good, HSG C
29,022	77	Woods, Good, HSG D
1,729	96	Gravel surface, HSG C
241,596	70	Weighted Average
227,461		94.15% Pervious Area
14,135		5.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.2	100	0.0300	0.10		**Sheet Flow, Segment #1** Woods: Light underbrush n= 0.400 P2= 3.61"
1.1	119	0.1426	1.89		**Shallow Concentrated Flow, Segment #2** Woodland Kv= 5.0 fps
5.4	334	0.0420	1.02		**Shallow Concentrated Flow, Segment #3** Woodland Kv= 5.0 fps
23.7	553	Total			

Subcatchment 15S: Subcatchment #15



Summary for Subcatchment 16S: Catch Basin

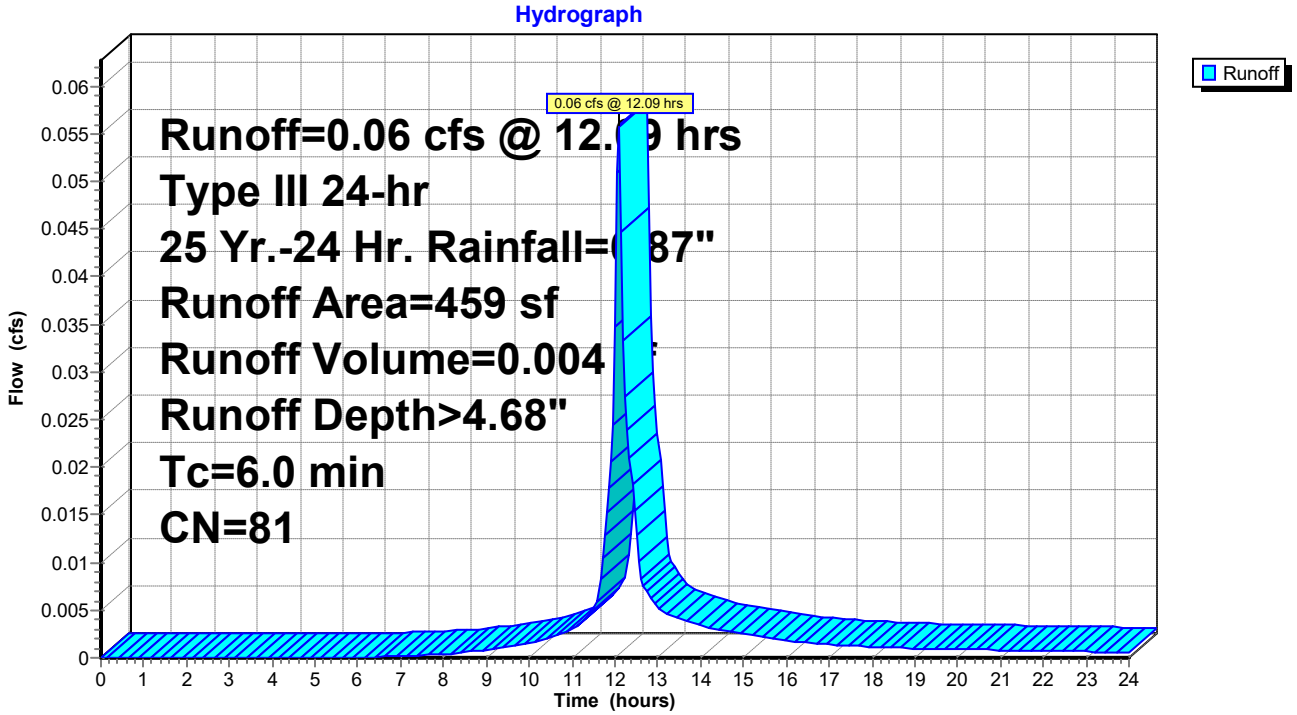
Runoff = 0.06 cfs @ 12.09 hrs, Volume= 0.004 af, Depth> 4.68"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Yr.-24 Hr. Rainfall=6.87"

Area (sf)	CN	Description
124	61	>75% Grass cover, Good, HSG B
125	74	>75% Grass cover, Good, HSG C
105	98	Paved parking, HSG B
105	98	Paved parking, HSG C
459	81	Weighted Average
249		54.25% Pervious Area
210		45.75% Impervious Area

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

Subcatchment 16S: Catch Basin



Summary for Subcatchment 17S: Catch Basin

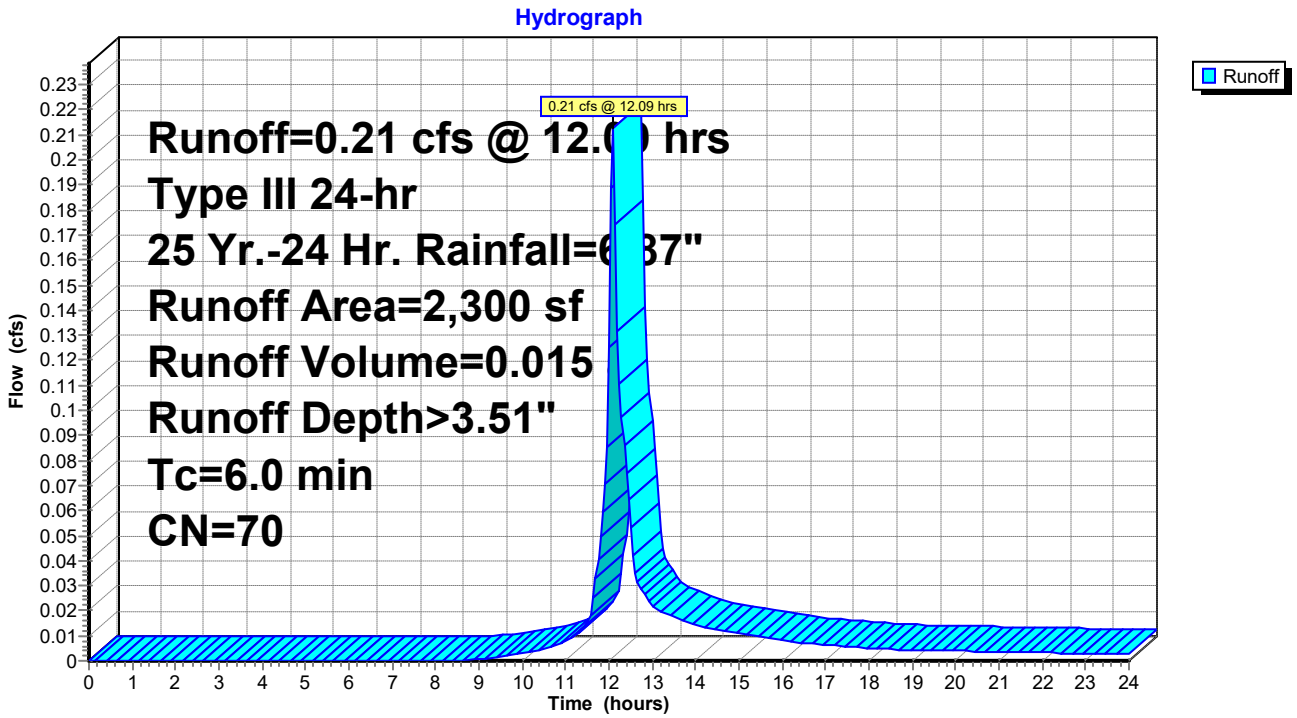
Runoff = 0.21 cfs @ 12.09 hrs, Volume= 0.015 af, Depth> 3.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Yr.-24 Hr. Rainfall=6.87"

Area (sf)	CN	Description
1,038	74	>75% Grass cover, Good, HSG C
1,039	61	>75% Grass cover, Good, HSG B
112	98	Paved parking, HSG C
111	98	Paved parking, HSG B
2,300	70	Weighted Average
2,077		90.30% Pervious Area
223		9.70% Impervious Area

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

Subcatchment 17S: Catch Basin



Summary for Subcatchment 18S: Catch Basin

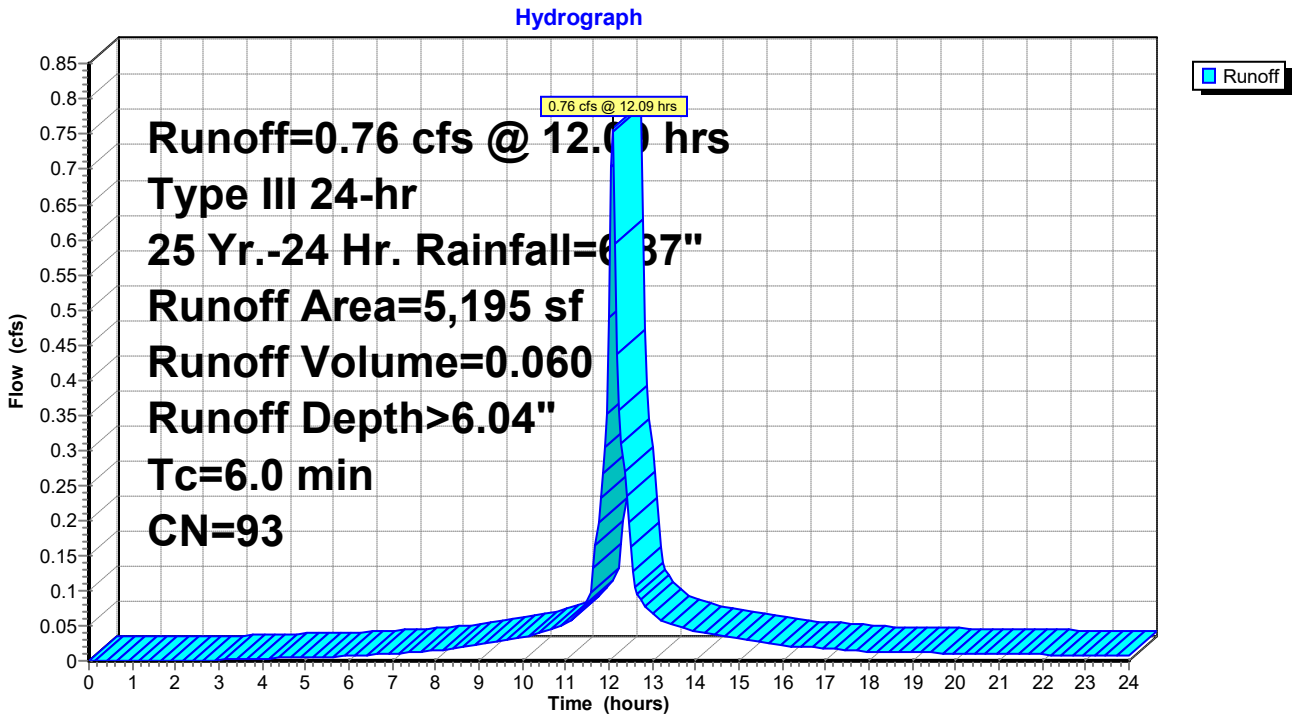
Runoff = 0.76 cfs @ 12.09 hrs, Volume= 0.060 af, Depth> 6.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Yr.-24 Hr. Rainfall=6.87"

Area (sf)	CN	Description
395	61	>75% Grass cover, Good, HSG B
395	74	>75% Grass cover, Good, HSG C
2,203	98	Paved parking, HSG B
2,202	98	Paved parking, HSG C
5,195	93	Weighted Average
790		15.21% Pervious Area
4,405		84.79% Impervious Area

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

Subcatchment 18S: Catch Basin



Summary for Subcatchment 19S: Catch Basin

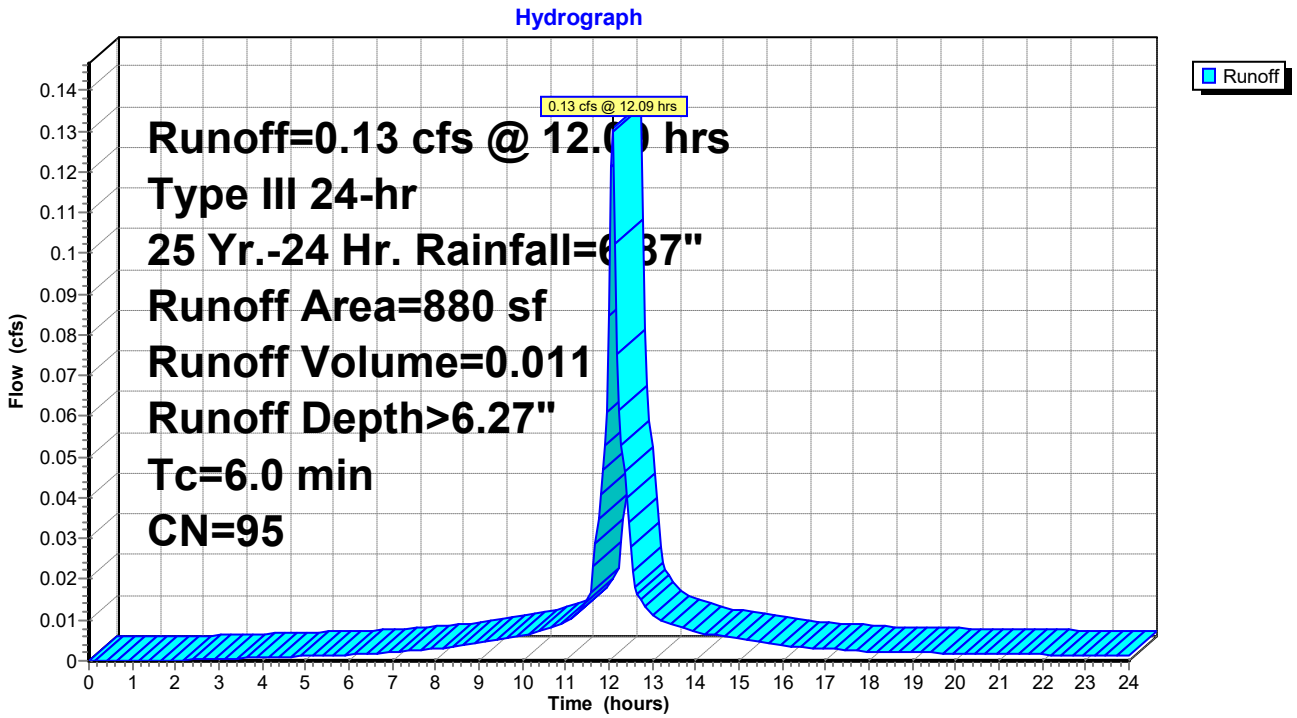
Runoff = 0.13 cfs @ 12.09 hrs, Volume= 0.011 af, Depth> 6.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Yr.-24 Hr. Rainfall=6.87"

Area (sf)	CN	Description
49	61	>75% Grass cover, Good, HSG B
49	74	>75% Grass cover, Good, HSG C
391	98	Paved parking, HSG B
391	98	Paved parking, HSG C
880	95	Weighted Average
98		11.14% Pervious Area
782		88.86% Impervious Area

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

Subcatchment 19S: Catch Basin



Summary for Subcatchment 20S: 30" RCP Wet Crossing #1

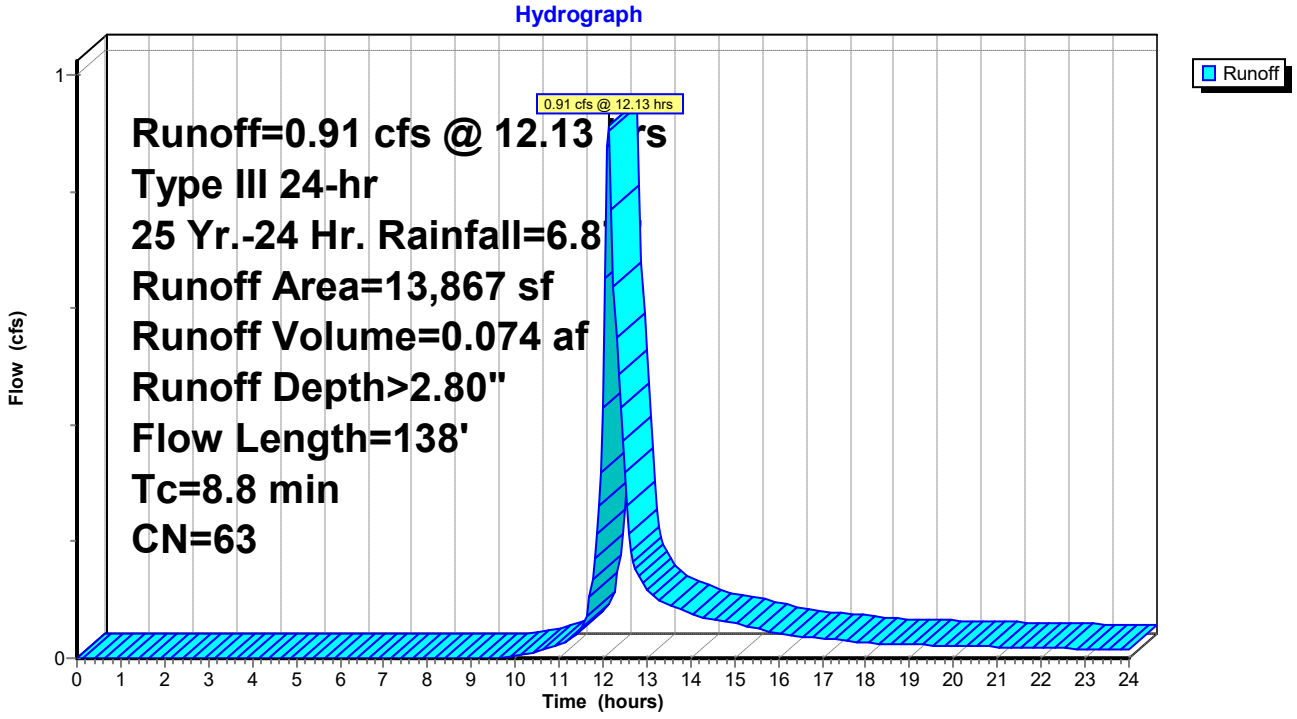
Runoff = 0.91 cfs @ 12.13 hrs, Volume= 0.074 af, Depth> 2.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Yr.-24 Hr. Rainfall=6.87"

Area (sf)	CN	Description
3,055	61	>75% Grass cover, Good, HSG B
1,694	74	>75% Grass cover, Good, HSG C
857	80	>75% Grass cover, Good, HSG D
5,751	55	Woods, Good, HSG B
1,760	70	Woods, Good, HSG C
750	77	Woods, Good, HSG D
13,867	63	Weighted Average
13,867		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	69	0.0870	0.14		**Sheet Flow, Segment #1** Woods: Light underbrush n= 0.400 P2= 3.61"
0.5	69	0.2029	2.25		**Shallow Concentrated Flow, Segment #2** Woodland Kv= 5.0 fps
8.8	138	Total			

Subcatchment 20S: 30" RCP Wet Crossing #1



Summary for Subcatchment 21S: Catch Basin #1

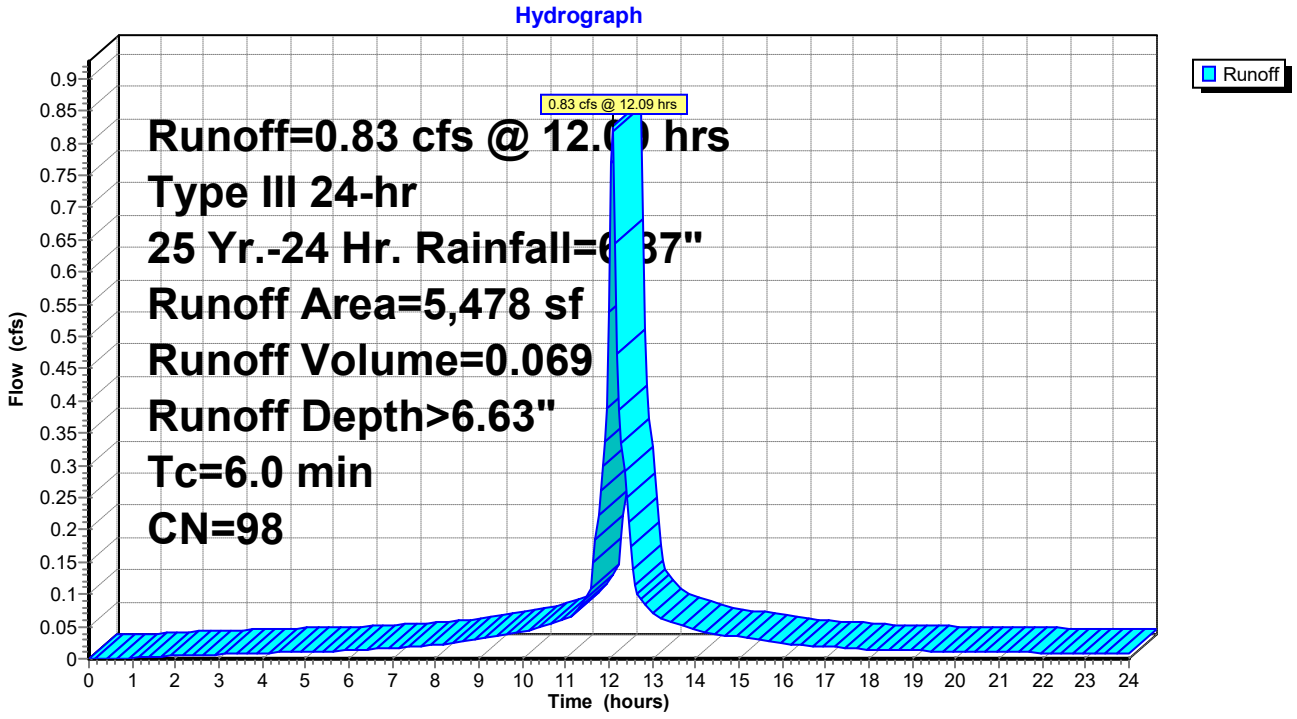
Runoff = 0.83 cfs @ 12.09 hrs, Volume= 0.069 af, Depth> 6.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Yr.-24 Hr. Rainfall=6.87"

Area (sf)	CN	Description
2,459	98	Paved parking, HSG B
2,513	98	Paved parking, HSG C
506	98	Paved parking, HSG D
5,478	98	Weighted Average
5,478		100.00% Impervious Area

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

Subcatchment 21S: Catch Basin #1



Summary for Subcatchment 22S: Catch Basin #2

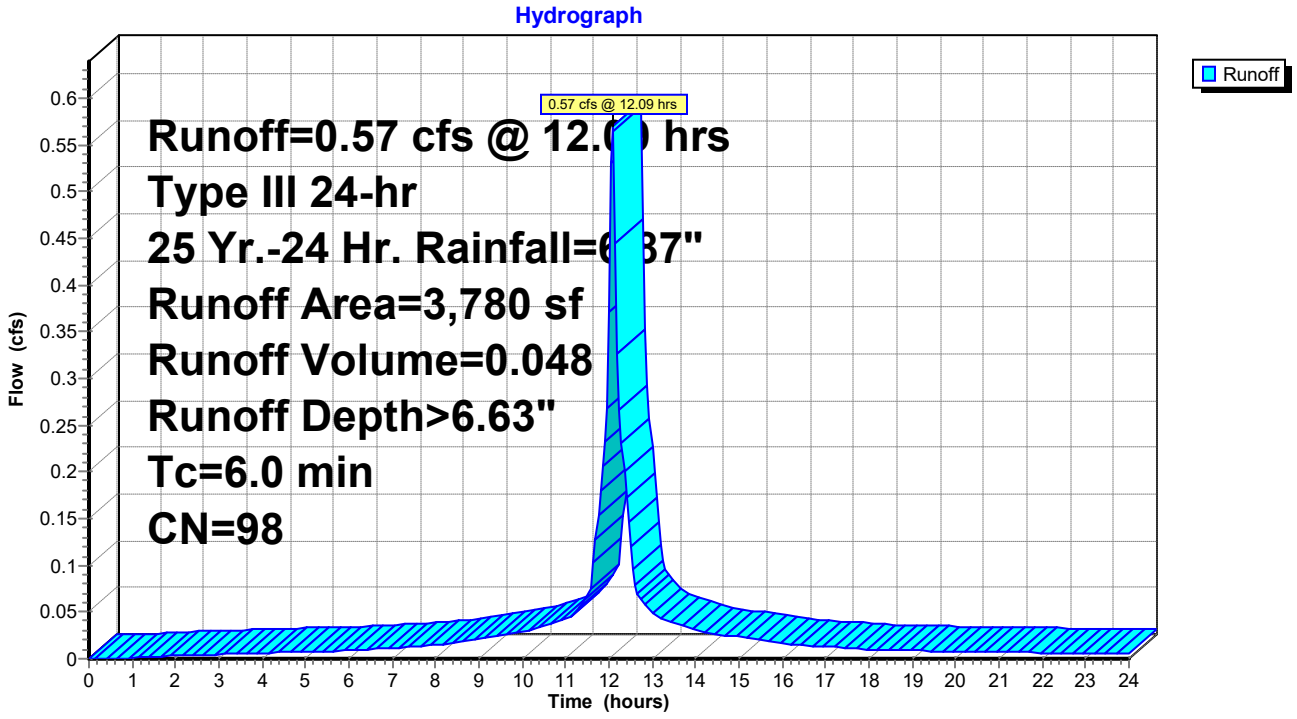
Runoff = 0.57 cfs @ 12.09 hrs, Volume= 0.048 af, Depth> 6.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Yr.-24 Hr. Rainfall=6.87"

Area (sf)	CN	Description
2,021	98	Paved parking, HSG B
1,531	98	Paved parking, HSG C
228	98	Paved parking, HSG D
3,780	98	Weighted Average
3,780		100.00% Impervious Area

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

Subcatchment 22S: Catch Basin #2



Summary for Subcatchment 23S: Catch Basin #3

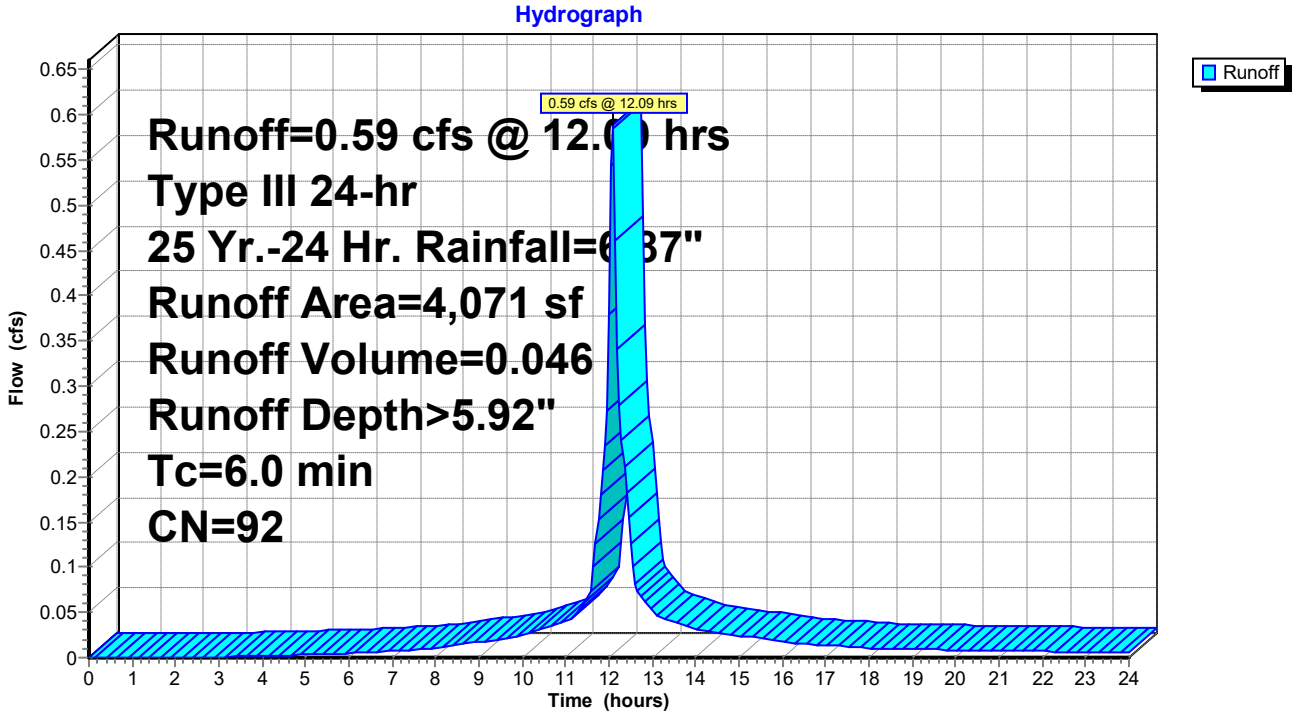
Runoff = 0.59 cfs @ 12.09 hrs, Volume= 0.046 af, Depth> 5.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Yr.-24 Hr. Rainfall=6.87"

Area (sf)	CN	Description
311	61	>75% Grass cover, Good, HSG B
193	98	Roofs, HSG B
1,279	98	Paved parking, HSG B
449	98	Roofs, HSG D
725	80	>75% Grass cover, Good, HSG D
1,114	98	Paved parking, HSG D
4,071	92	Weighted Average
1,036		25.45% Pervious Area
3,035		74.55% Impervious Area

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

Subcatchment 23S: Catch Basin #3



Summary for Subcatchment 24S: Catch Basin #4

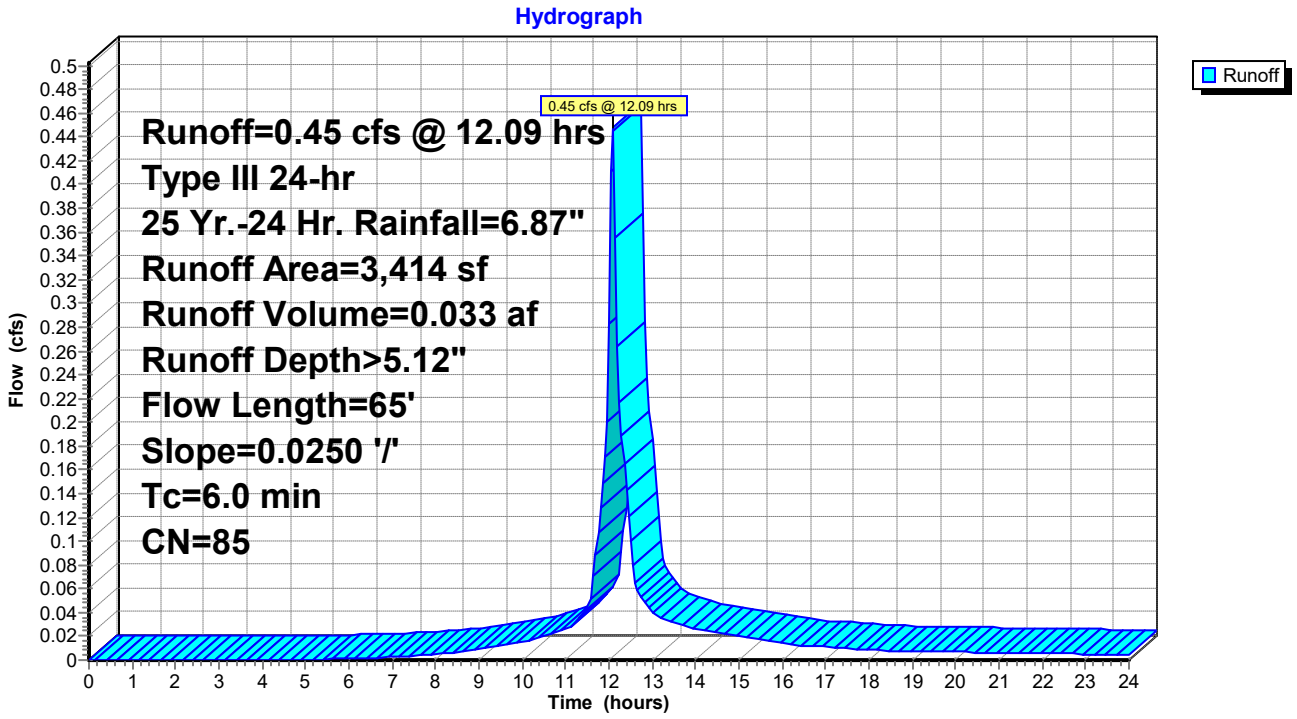
Runoff = 0.45 cfs @ 12.09 hrs, Volume= 0.033 af, Depth> 5.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Yr.-24 Hr. Rainfall=6.87"

Area (sf)	CN	Description
549	61	>75% Grass cover, Good, HSG B
847	98	Paved parking, HSG B
1,280	80	>75% Grass cover, Good, HSG D
738	98	Paved parking, HSG D
3,414	85	Weighted Average
1,829		53.57% Pervious Area
1,585		46.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	65	0.0250	0.18		**Sheet Flow, Segement #1** Grass: Short n= 0.150 P2= 3.61"

Subcatchment 24S: Catch Basin #4



Summary for Subcatchment 25S: Catch Basin #5

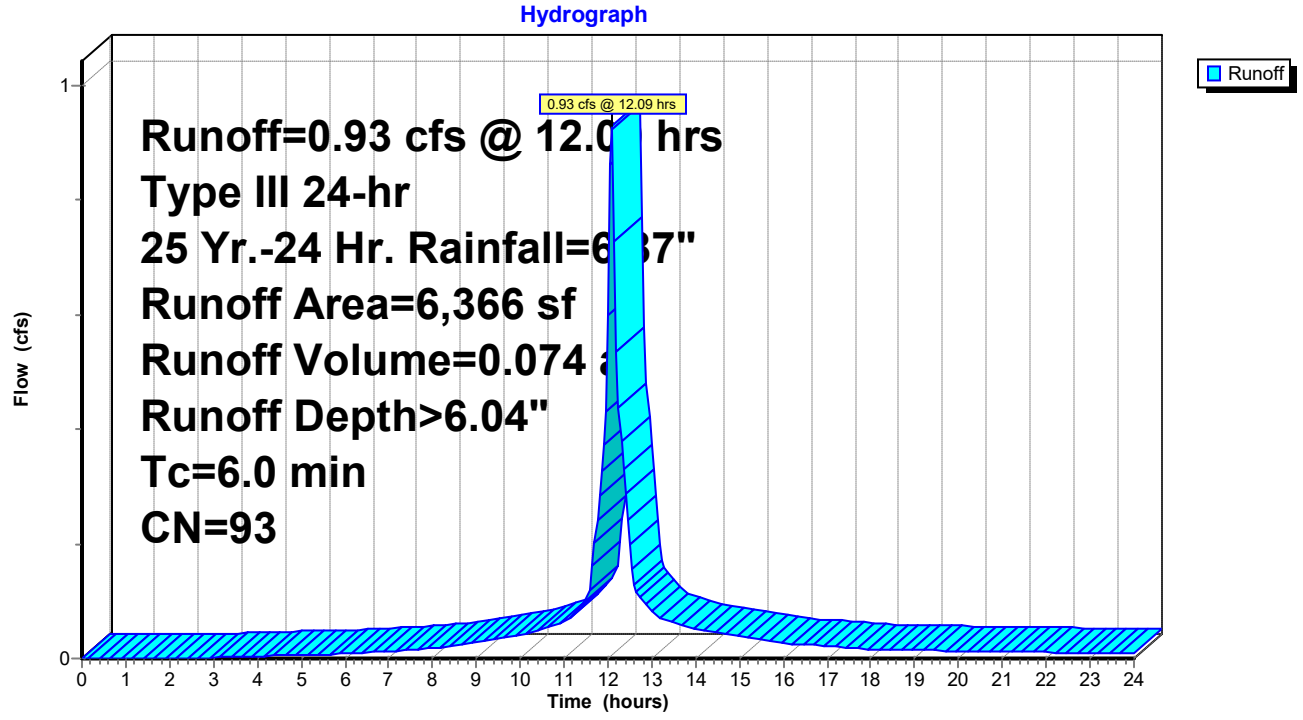
Runoff = 0.93 cfs @ 12.09 hrs, Volume= 0.074 af, Depth> 6.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Yr.-24 Hr. Rainfall=6.87"

Area (sf)	CN	Description
147	61	>75% Grass cover, Good, HSG B
926	74	>75% Grass cover, Good, HSG C
343	80	>75% Grass cover, Good, HSG D
275	98	Roofs, HSG B
870	98	Roofs, HSG C
642	98	Roofs, HSG D
170	98	Paved parking, HSG B
2,521	98	Paved parking, HSG C
398	98	Paved parking, HSG D
74	96	Gravel surface, HSG C
6,366	93	Weighted Average
1,490		23.41% Pervious Area
4,876		76.59% Impervious Area

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

Subcatchment 25S: Catch Basin #5



Summary for Subcatchment 26S: Catch Basin #6

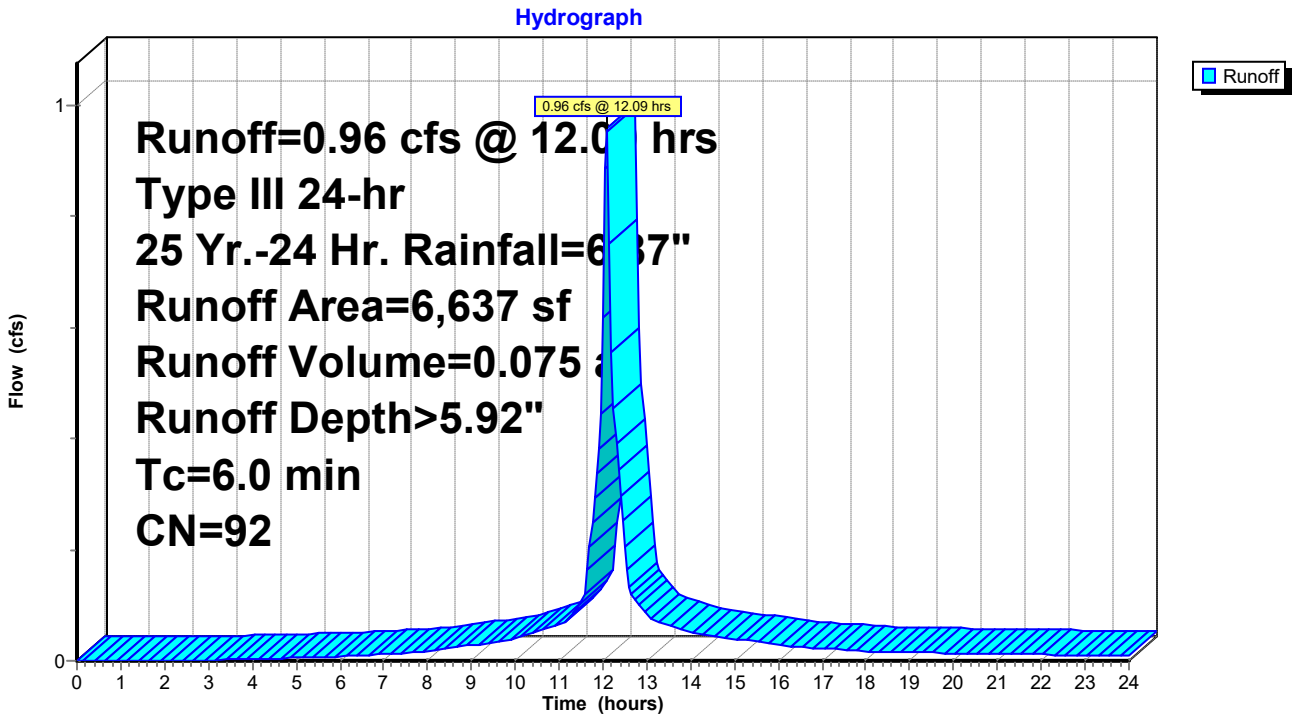
Runoff = 0.96 cfs @ 12.09 hrs, Volume= 0.075 af, Depth> 5.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Yr.-24 Hr. Rainfall=6.87"

Area (sf)	CN	Description
1,690	74	>75% Grass cover, Good, HSG C
1,836	98	Roofs, HSG C
3,050	98	Paved parking, HSG C
61	96	Gravel surface, HSG C
6,637	92	Weighted Average
1,751		26.38% Pervious Area
4,886		73.62% Impervious Area

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

Subcatchment 26S: Catch Basin #6



Summary for Subcatchment 27S: Catch Basin #7

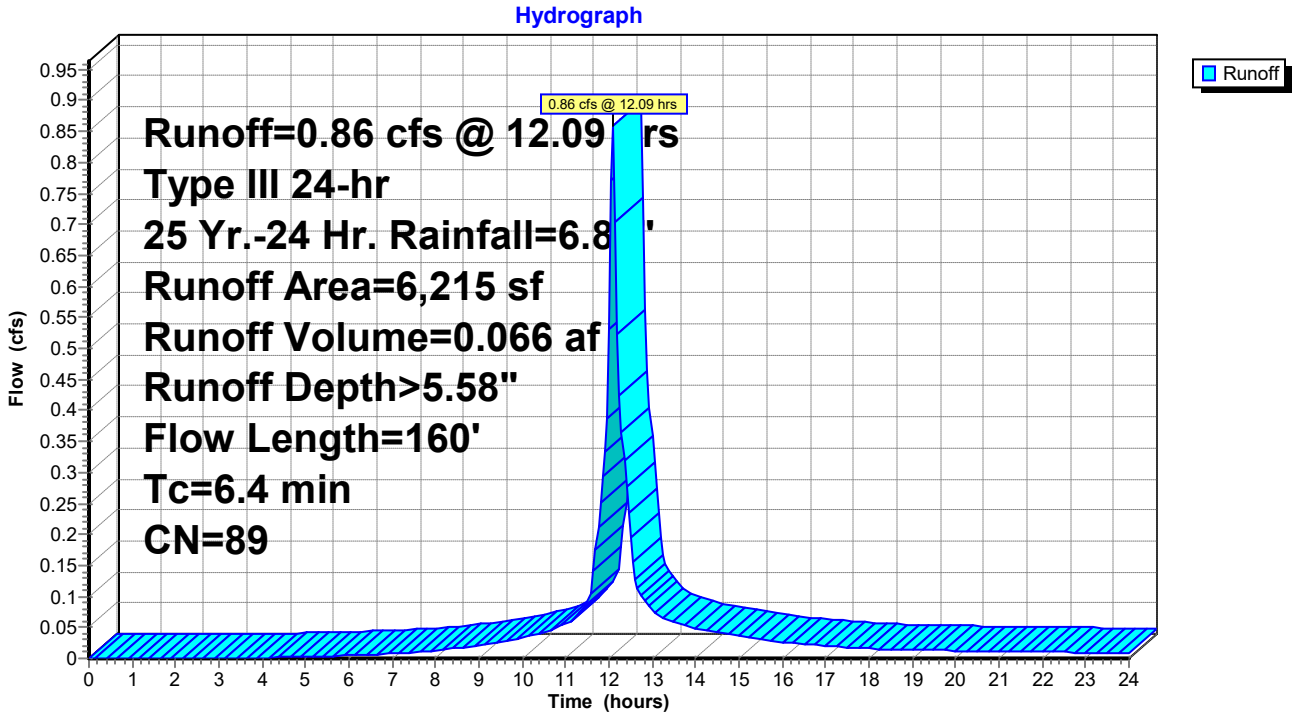
Runoff = 0.86 cfs @ 12.09 hrs, Volume= 0.066 af, Depth> 5.58"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Yr.-24 Hr. Rainfall=6.87"

Area (sf)	CN	Description
226	61	>75% Grass cover, Good, HSG B
1,592	74	>75% Grass cover, Good, HSG C
526	80	>75% Grass cover, Good, HSG D
193	98	Paved parking, HSG B
2,070	98	Paved parking, HSG C
449	98	Paved parking, HSG D
159	98	Roofs, HSG B
630	98	Roofs, HSG C
370	98	Roofs, HSG D
6,215	89	Weighted Average
2,344		37.72% Pervious Area
3,871		62.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	75	0.0333	0.21		**Sheet Flow, Segment #1** Grass: Short n= 0.150 P2= 3.61"
0.4	85	0.0382	3.97		**Shallow Concentrated Flow, Segment #2** Paved Kv= 20.3 fps
6.4	160	Total			

Subcatchment 27S: Catch Basin #7



Summary for Subcatchment 28S: Catch Basin #8

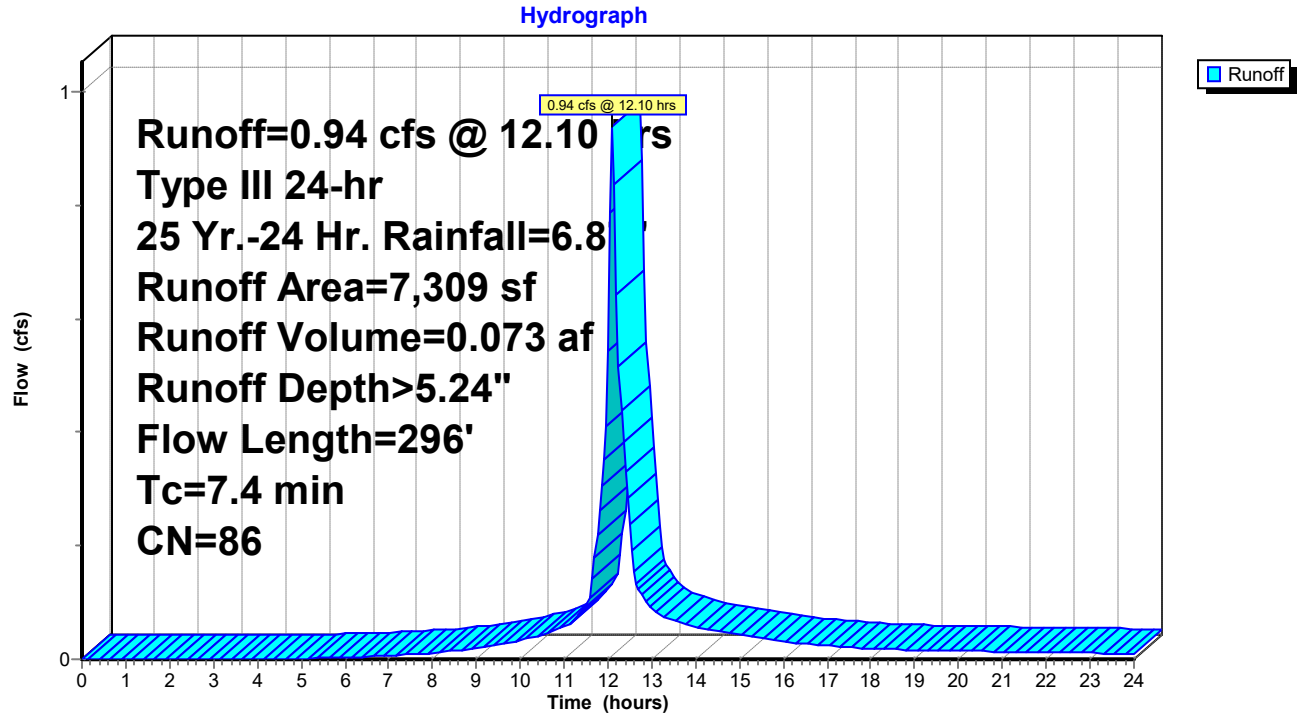
Runoff = 0.94 cfs @ 12.10 hrs, Volume= 0.073 af, Depth> 5.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Yr.-24 Hr. Rainfall=6.87"

Area (sf)	CN	Description
1,071	61	>75% Grass cover, Good, HSG B
2,498	80	>75% Grass cover, Good, HSG D
495	98	Paved parking, HSG B
1,425	98	Paved parking, HSG C
1,156	98	Paved parking, HSG D
199	98	Roofs, HSG B
465	98	Roofs, HSG D
7,309	86	Weighted Average
3,569		48.83% Pervious Area
3,740		51.17% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	68	0.0250	0.18		**Sheet Flow, Segment #1** Grass: Short n= 0.150 P2= 3.61"
1.2	228	0.0264	3.30		**Shallow Concentrated Flow, Segement #2** Paved Kv= 20.3 fps
7.4	296	Total			

Subcatchment 28S: Catch Basin #8



Summary for Subcatchment 29S: Catch Basin #9

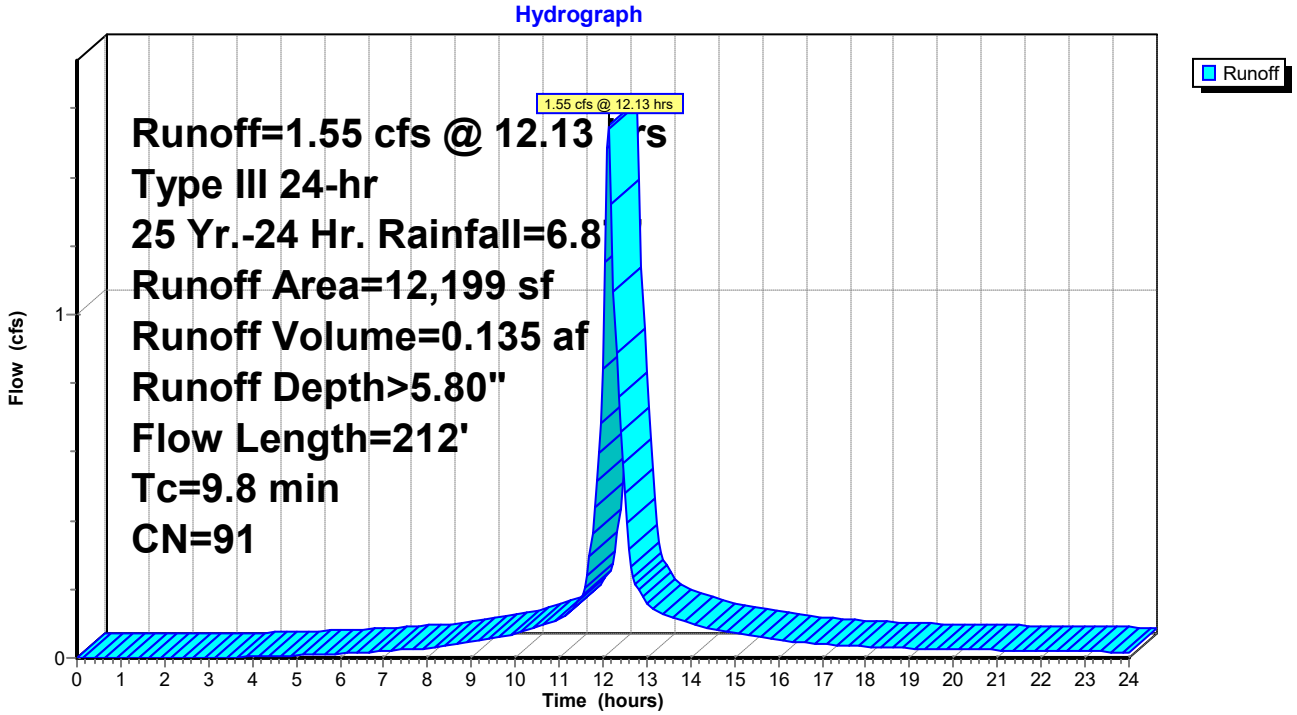
Runoff = 1.55 cfs @ 12.13 hrs, Volume= 0.135 af, Depth> 5.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Yr.-24 Hr. Rainfall=6.87"

Area (sf)	CN	Description
3,573	74	>75% Grass cover, Good, HSG C
5,056	98	Paved parking, HSG C
3,540	98	Roofs, HSG C
30	96	Gravel surface, HSG C
12,199	91	Weighted Average
3,603		29.54% Pervious Area
8,596		70.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.4	72	0.0100	0.13		**Sheet Flow, Segment #1** Grass: Short n= 0.150 P2= 3.61"
0.4	140	0.0662	5.22		**Shallow Concentrated Flow, Segment #2** Paved Kv= 20.3 fps
9.8	212	Total			

Subcatchment 29S: Catch Basin #9



Summary for Subcatchment 30S: Catch Basin #10

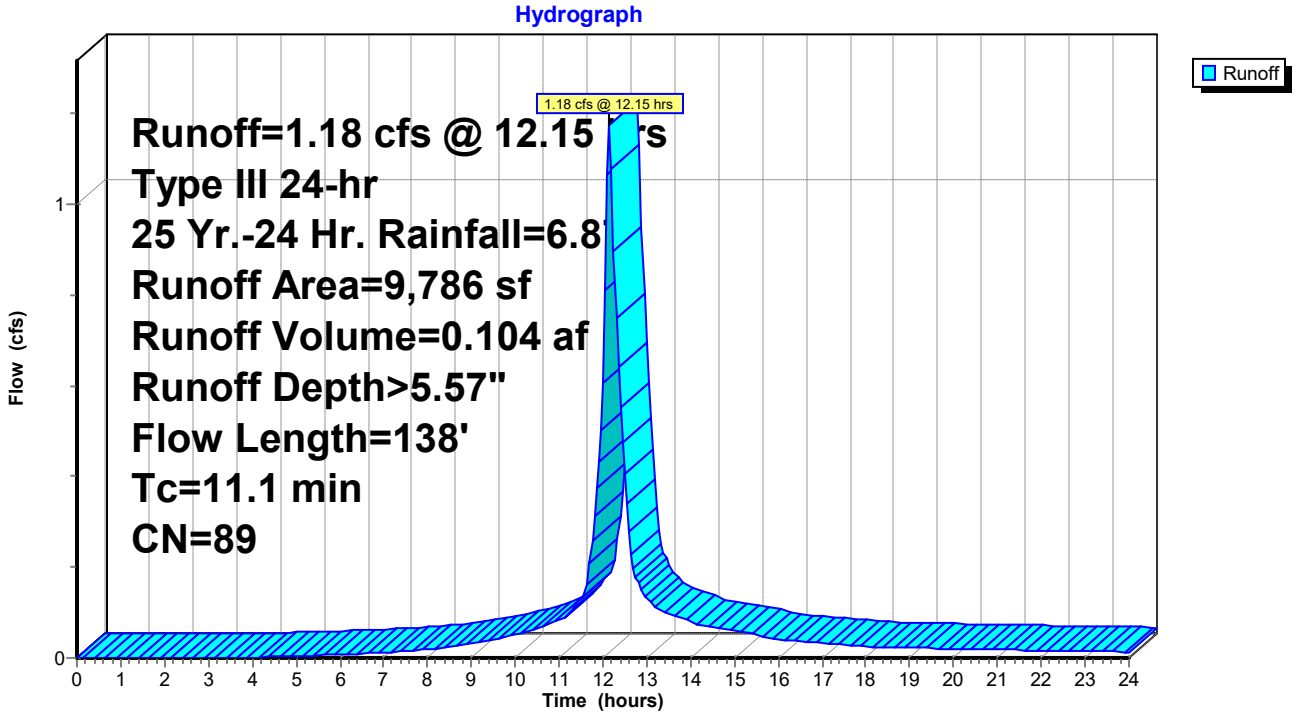
Runoff = 1.18 cfs @ 12.15 hrs, Volume= 0.104 af, Depth> 5.57"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Yr.-24 Hr. Rainfall=6.87"

Area (sf)	CN	Description
3,642	74	>75% Grass cover, Good, HSG C
4,300	98	Paved parking, HSG C
1,808	98	Roofs, HSG C
36	96	Gravel surface, HSG C
9,786	89	Weighted Average
3,678		37.58% Pervious Area
6,108		62.42% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.9	87	0.0100	0.13		**Sheet Flow, Segment #1** Grass: Short n= 0.150 P2= 3.61"
0.2	51	0.0625	5.08		**Shallow Concentrated Flow, Segment #2** Paved Kv= 20.3 fps
11.1	138	Total			

Subcatchment 30S: Catch Basin #10



Summary for Subcatchment 31S: Catch Basin #11

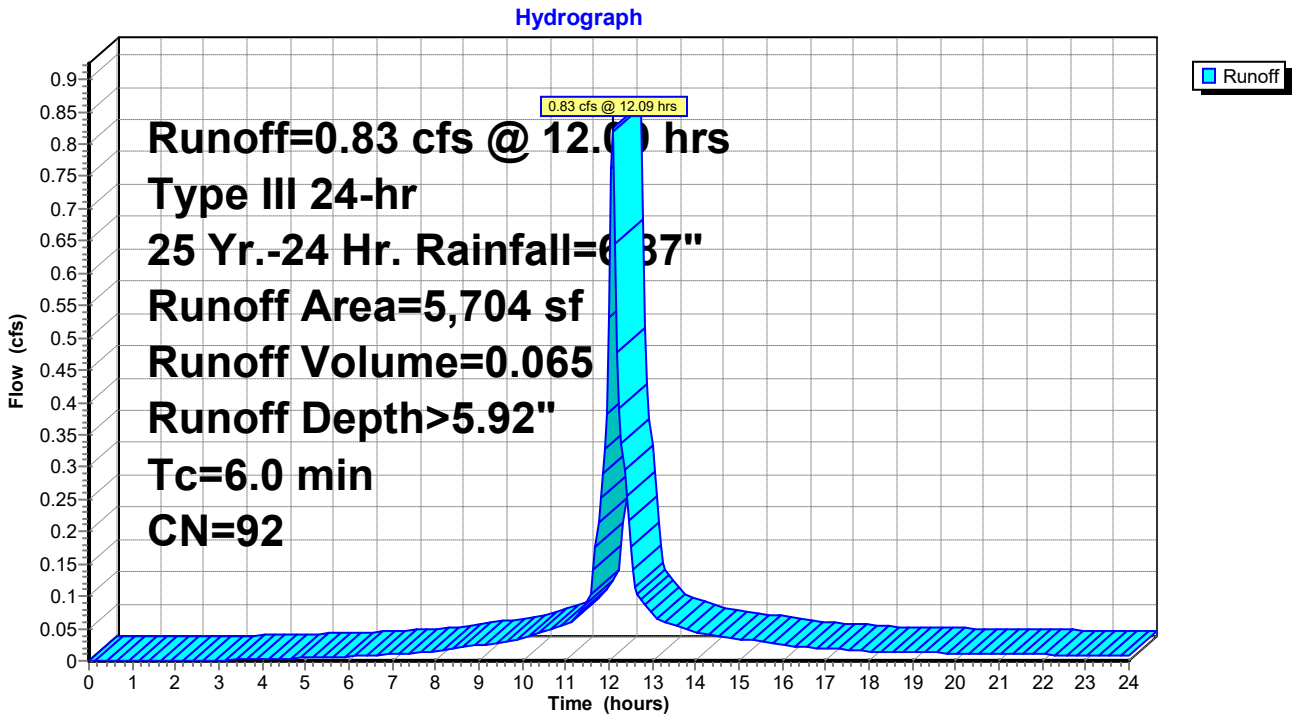
Runoff = 0.83 cfs @ 12.09 hrs, Volume= 0.065 af, Depth> 5.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Yr.-24 Hr. Rainfall=6.87"

Area (sf)	CN	Description
1,375	74	>75% Grass cover, Good, HSG C
3,268	98	Paved parking, HSG C
1,020	98	Roofs, HSG C
41	96	Gravel surface, HSG C
5,704	92	Weighted Average
1,416		24.82% Pervious Area
4,288		75.18% Impervious Area

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

Subcatchment 31S: Catch Basin #11



Summary for Subcatchment 32S: Catch Basin #12

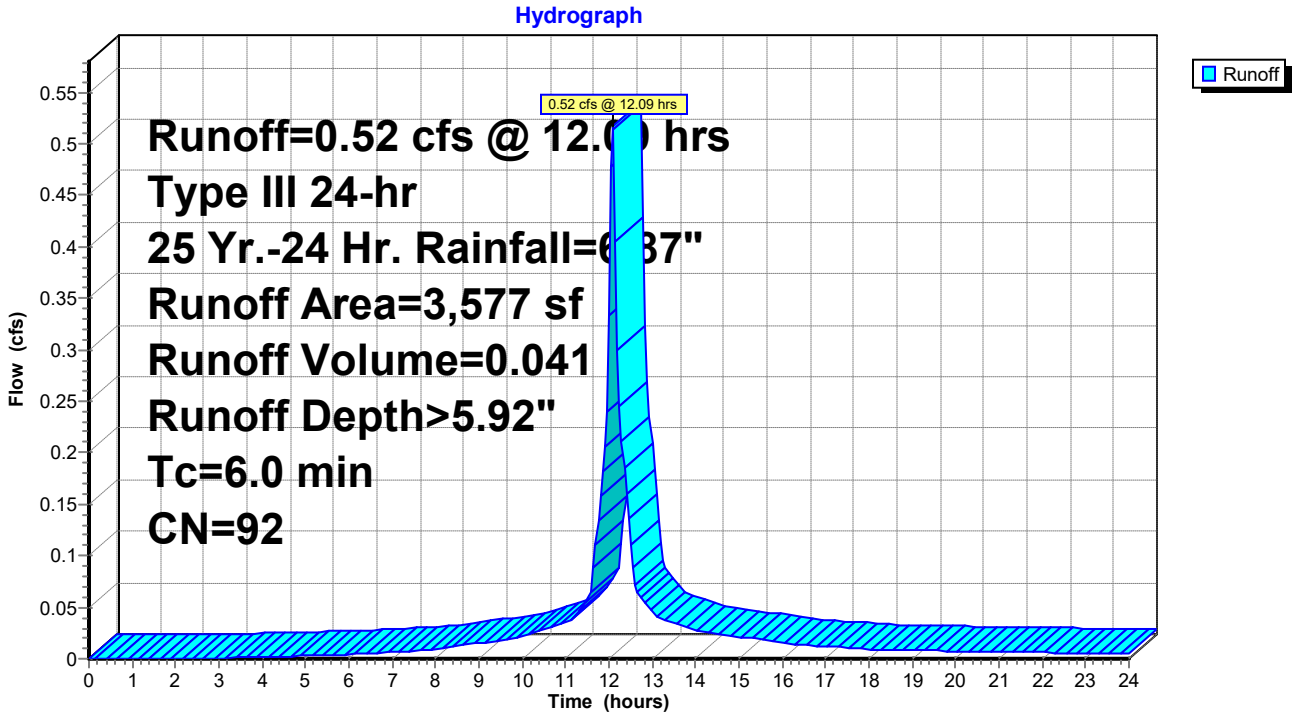
Runoff = 0.52 cfs @ 12.09 hrs, Volume= 0.041 af, Depth> 5.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Yr.-24 Hr. Rainfall=6.87"

Area (sf)	CN	Description
855	74	>75% Grass cover, Good, HSG C
2,722	98	Paved parking, HSG C
3,577	92	Weighted Average
855		23.90% Pervious Area
2,722		76.10% Impervious Area

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

Subcatchment 32S: Catch Basin #12



Summary for Subcatchment 33S: Catch Basin #13

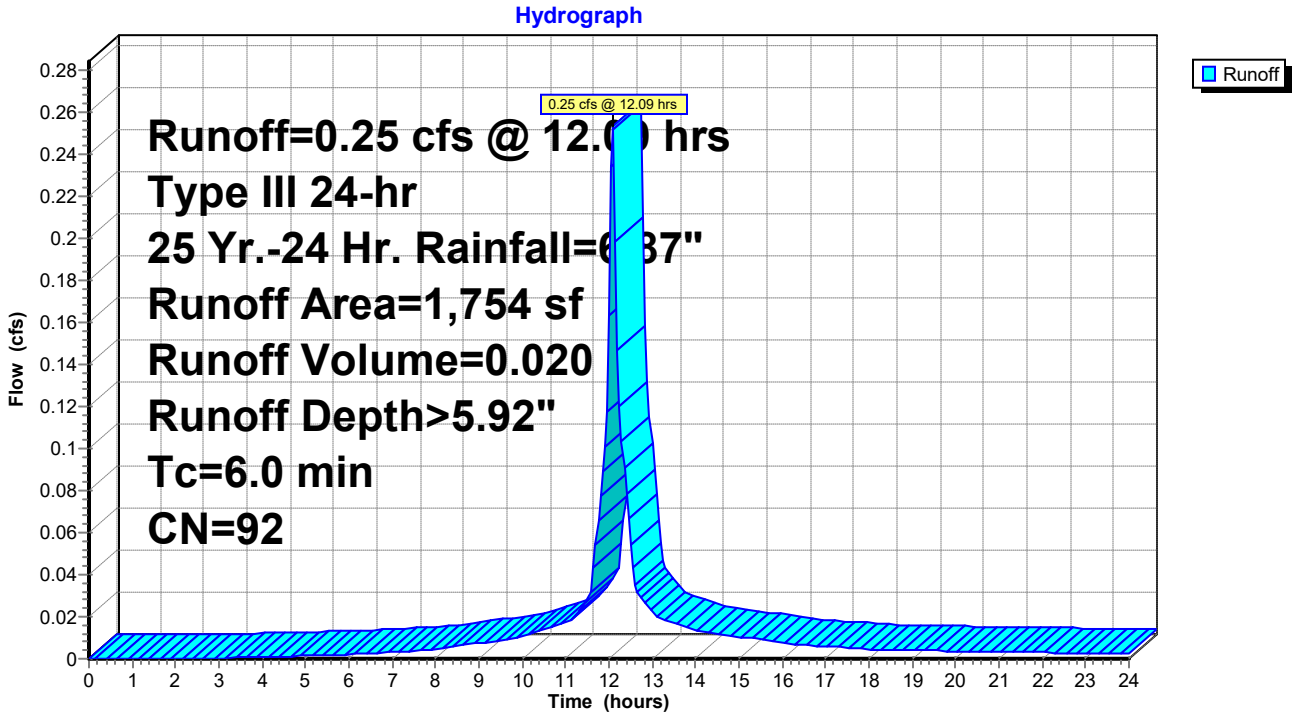
Runoff = 0.25 cfs @ 12.09 hrs, Volume= 0.020 af, Depth> 5.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Yr.-24 Hr. Rainfall=6.87"

Area (sf)	CN	Description
457	74	>75% Grass cover, Good, HSG C
1,297	98	Paved parking, HSG C
1,754	92	Weighted Average
457		26.05% Pervious Area
1,297		73.95% Impervious Area

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

Subcatchment 33S: Catch Basin #13



Summary for Subcatchment 34S: Catch Basin #14

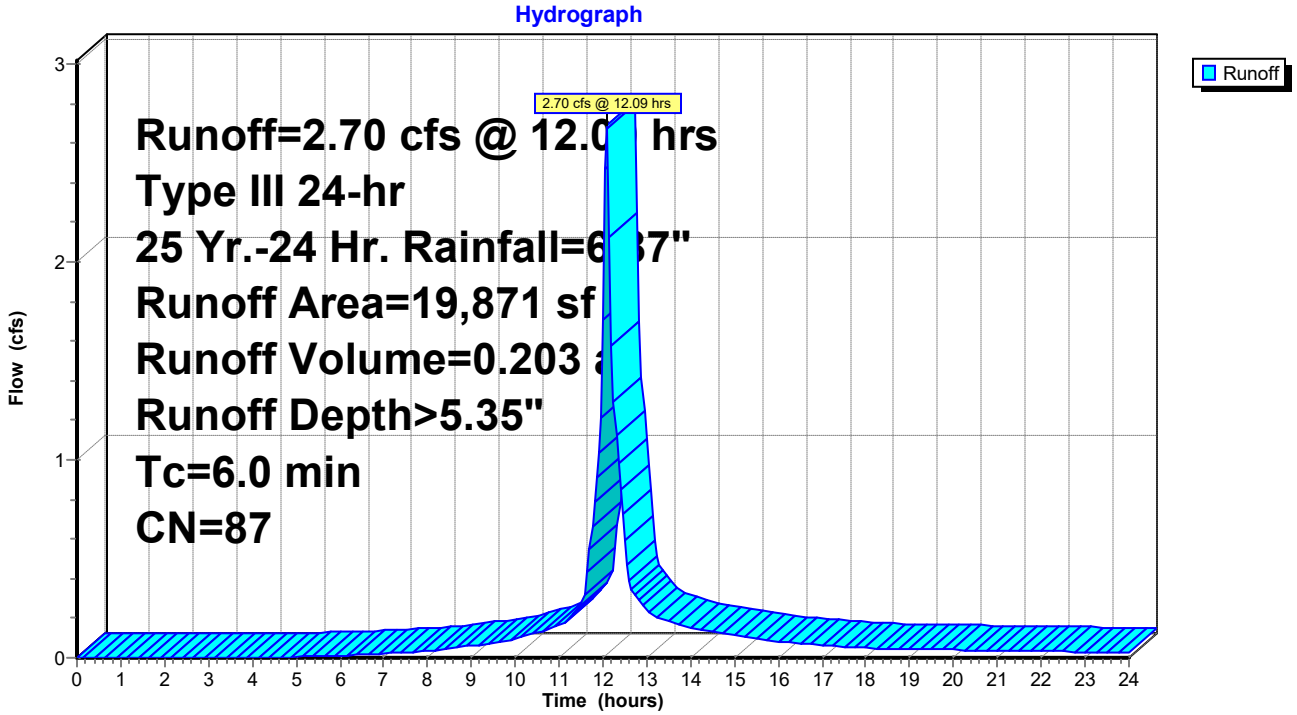
Runoff = 2.70 cfs @ 12.09 hrs, Volume= 0.203 af, Depth> 5.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Yr.-24 Hr. Rainfall=6.87"

Area (sf)	CN	Description
8,967	74	>75% Grass cover, Good, HSG C
6,774	98	Paved parking, HSG C
4,070	98	Roofs, HSG C
60	96	Gravel surface, HSG C
19,871	87	Weighted Average
9,027		45.43% Pervious Area
10,844		54.57% Impervious Area

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

Subcatchment 34S: Catch Basin #14



Summary for Subcatchment 35S: Catch Basin #15

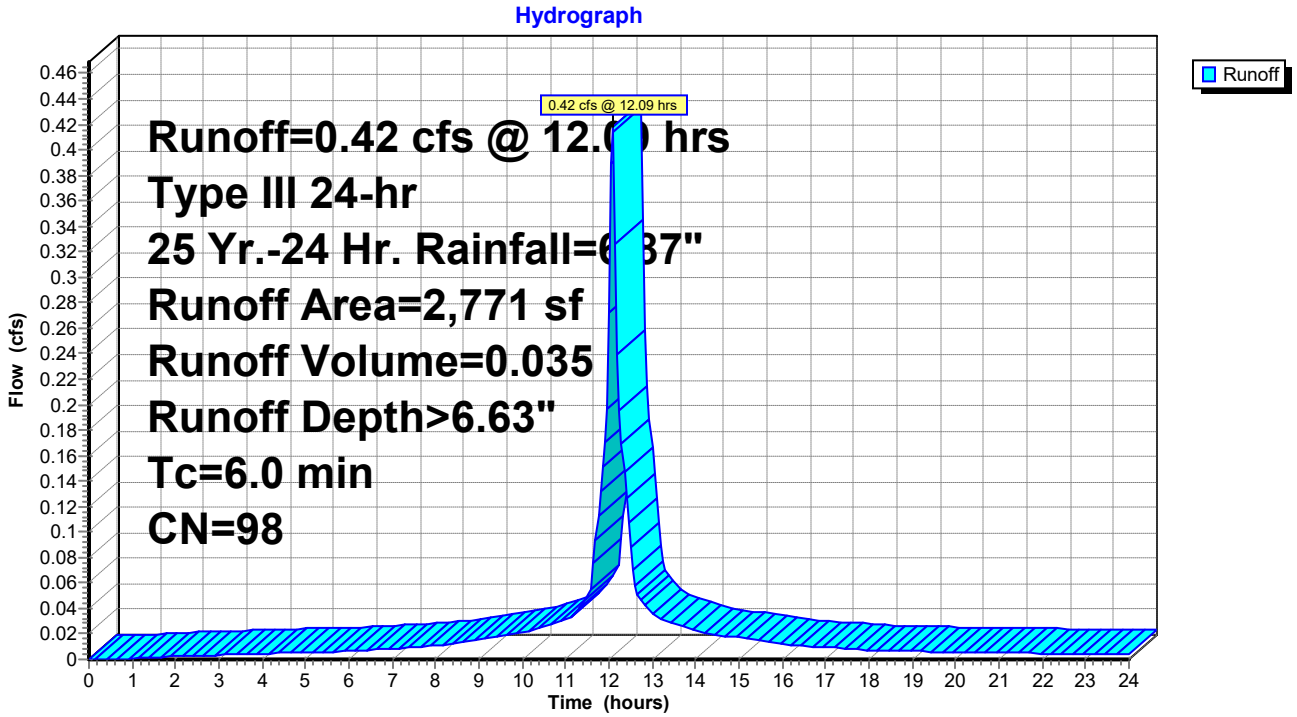
Runoff = 0.42 cfs @ 12.09 hrs, Volume= 0.035 af, Depth> 6.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Yr.-24 Hr. Rainfall=6.87"

Area (sf)	CN	Description
2,771	98	Paved parking, HSG C
2,771		100.00% Impervious Area

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

Subcatchment 35S: Catch Basin #15



Summary for Subcatchment 36S: Catch Basin #16

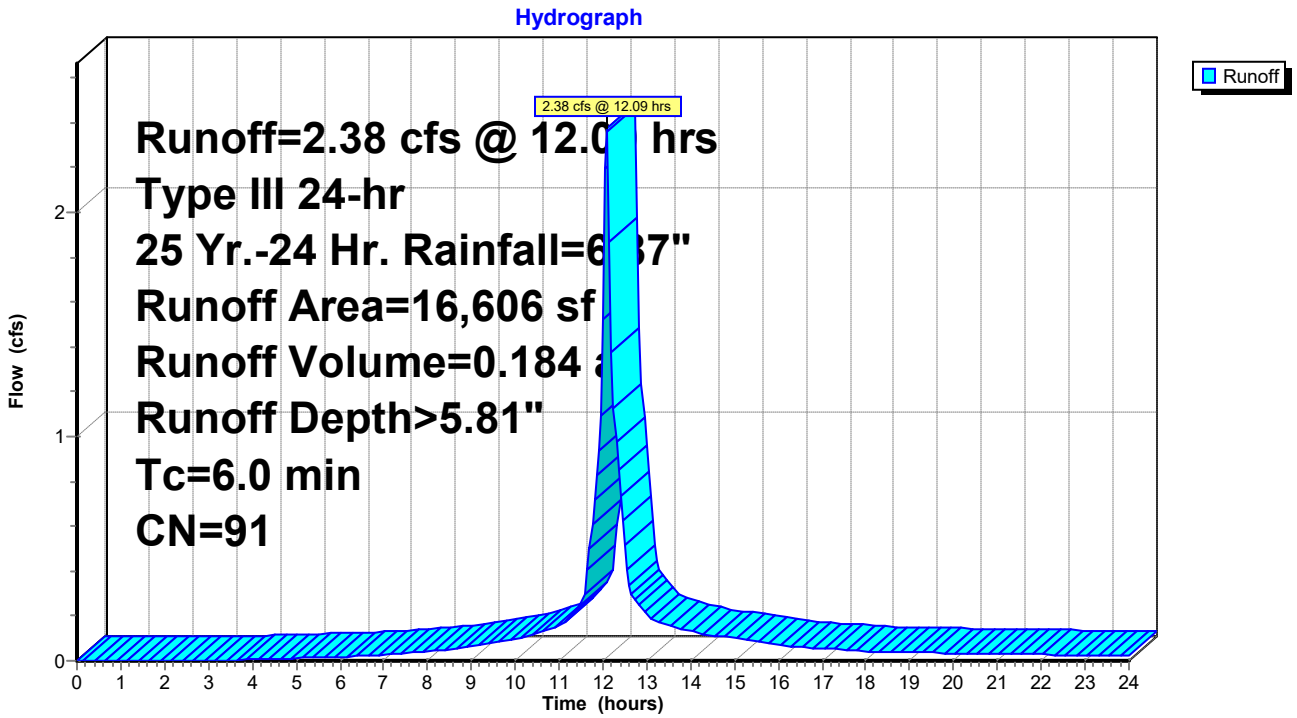
Runoff = 2.38 cfs @ 12.09 hrs, Volume= 0.184 af, Depth> 5.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Yr.-24 Hr. Rainfall=6.87"

Area (sf)	CN	Description
5,181	74	>75% Grass cover, Good, HSG C
8,018	98	Paved parking, HSG C
3,363	98	Roofs, HSG C
44	96	Gravel surface, HSG C
16,606	91	Weighted Average
5,225		31.46% Pervious Area
11,381		68.54% Impervious Area

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

Subcatchment 36S: Catch Basin #16



Summary for Subcatchment 37S: Catch Basin #17

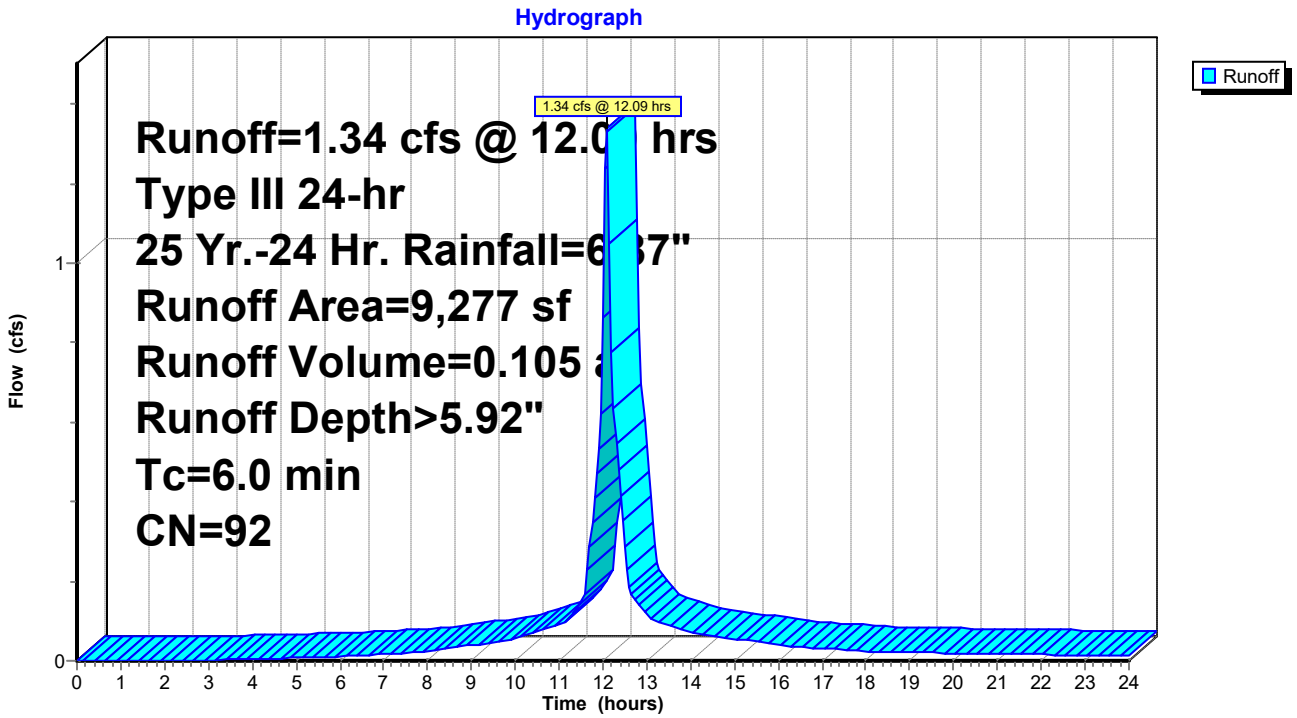
Runoff = 1.34 cfs @ 12.09 hrs, Volume= 0.105 af, Depth> 5.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Yr.-24 Hr. Rainfall=6.87"

Area (sf)	CN	Description
2,411	74	>75% Grass cover, Good, HSG C
4,918	98	Paved parking, HSG C
1,891	98	Roofs, HSG C
57	96	Gravel surface, HSG C
9,277	92	Weighted Average
2,468		26.60% Pervious Area
6,809		73.40% Impervious Area

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

Subcatchment 37S: Catch Basin #17



Summary for Subcatchment 38S: Catch Basin #18

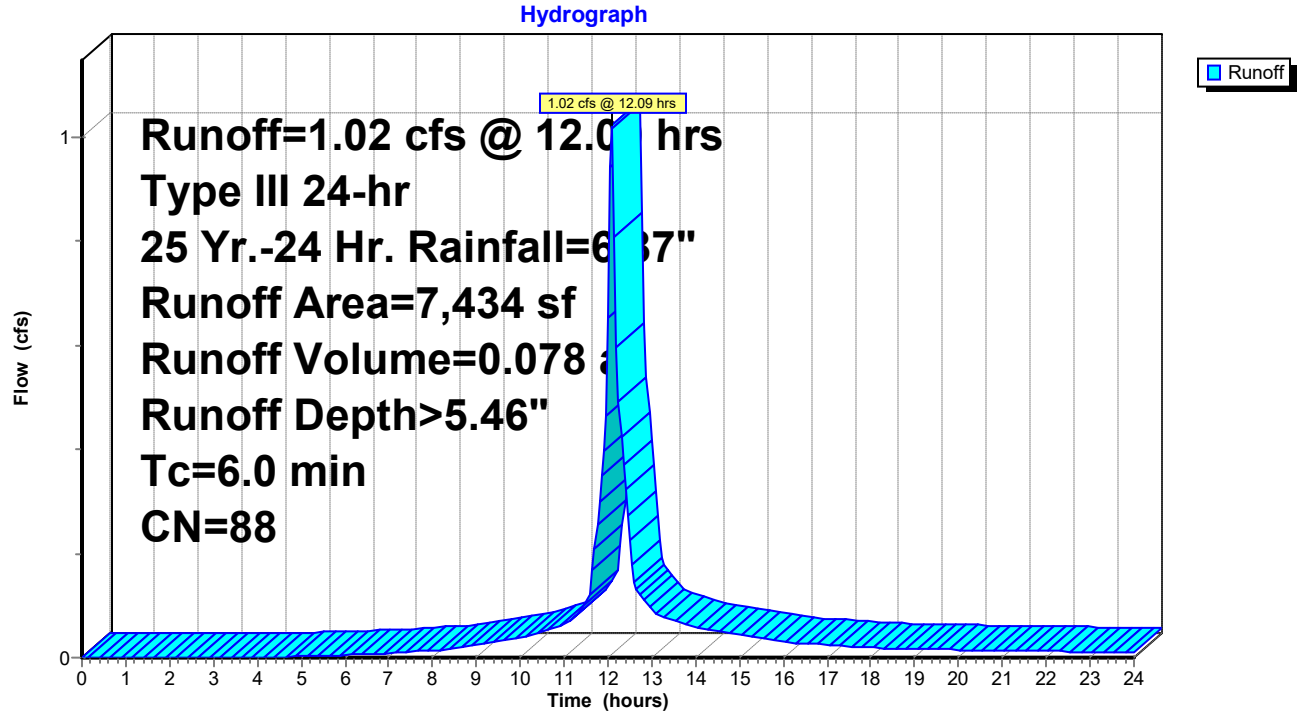
Runoff = 1.02 cfs @ 12.09 hrs, Volume= 0.078 af, Depth> 5.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Yr.-24 Hr. Rainfall=6.87"

Area (sf)	CN	Description
1,841	61	>75% Grass cover, Good, HSG B
504	80	>75% Grass cover, Good, HSG D
944	98	Paved parking, HSG B
2,202	98	Paved parking, HSG D
583	98	Roofs, HSG B
1,360	98	Roofs, HSG D
7,434	88	Weighted Average
2,345		31.54% Pervious Area
5,089		68.46% Impervious Area

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

Subcatchment 38S: Catch Basin #18



Summary for Subcatchment 39S: Catch Basin #19

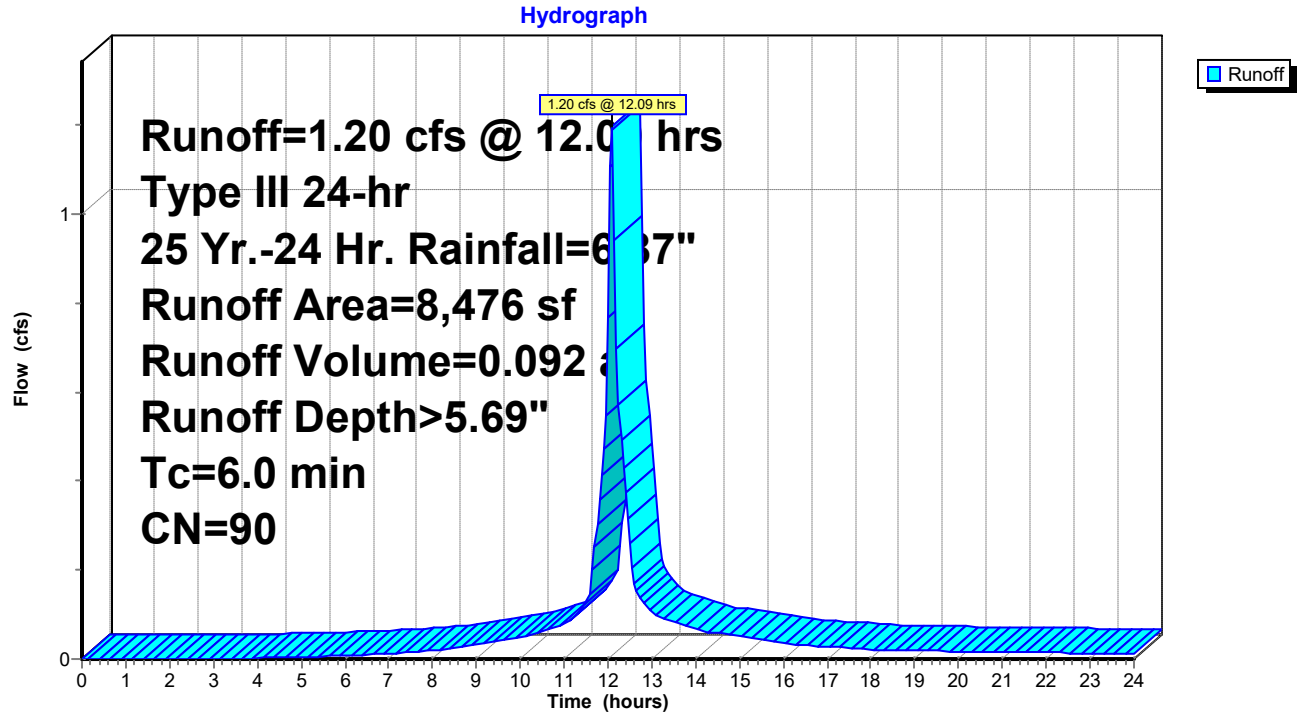
Runoff = 1.20 cfs @ 12.09 hrs, Volume= 0.092 af, Depth> 5.69"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Yr.-24 Hr. Rainfall=6.87"

Area (sf)	CN	Description
251	61	>75% Grass cover, Good, HSG B
1,770	74	>75% Grass cover, Good, HSG C
954	80	>75% Grass cover, Good, HSG D
766	98	Paved parking, HSG B
453	98	Paved parking, HSG C
1,787	98	Paved parking, HSG D
459	98	Roofs, HSG B
904	98	Roofs, HSG C
1,072	98	Roofs, HSG D
18	96	Gravel surface, HSG B
42	96	Gravel surface, HSG D
8,476	90	Weighted Average
3,035		35.81% Pervious Area
5,441		64.19% Impervious Area

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

Subcatchment 39S: Catch Basin #19



Summary for Subcatchment 40S: Catch Basin #20

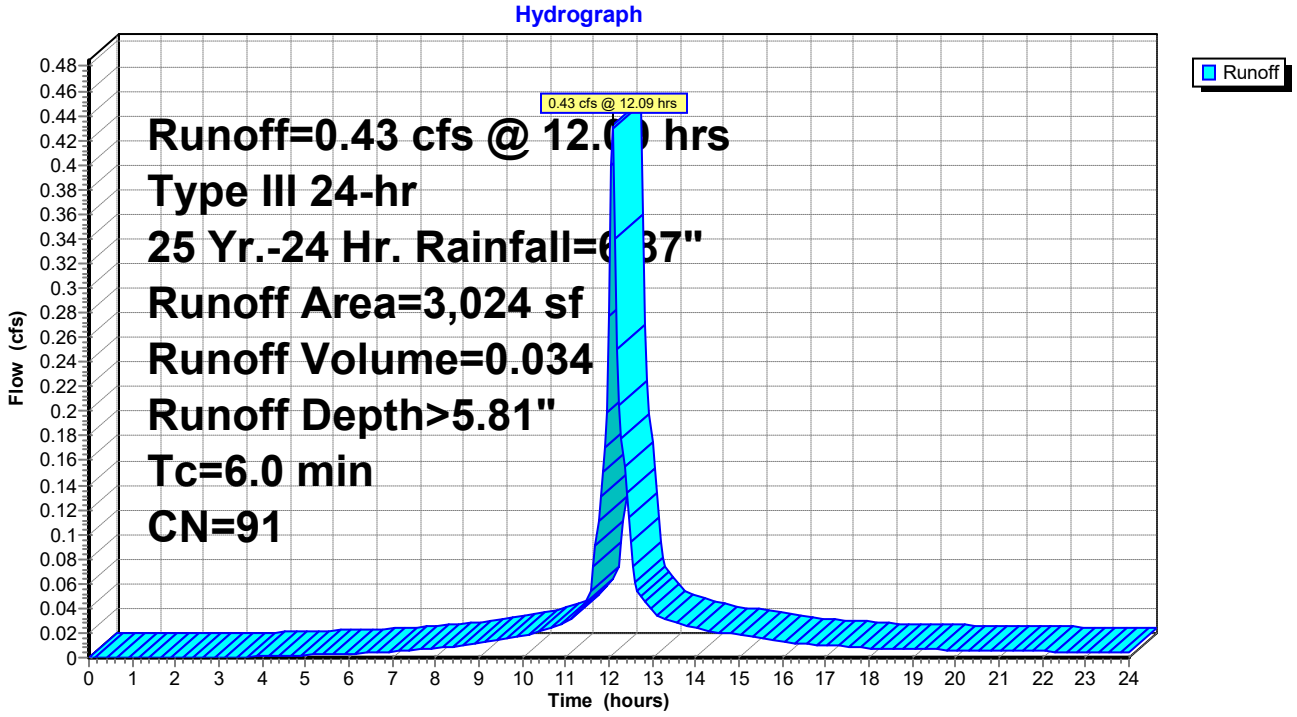
Runoff = 0.43 cfs @ 12.09 hrs, Volume= 0.034 af, Depth> 5.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Yr.-24 Hr. Rainfall=6.87"

Area (sf)	CN	Description
255	61	>75% Grass cover, Good, HSG B
593	80	>75% Grass cover, Good, HSG D
593	98	Paved parking, HSG B
1,385	98	Paved parking, HSG D
59	98	Roofs, HSG B
139	98	Roofs, HSG D
3,024	91	Weighted Average
848		28.04% Pervious Area
2,176		71.96% Impervious Area

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

Subcatchment 40S: Catch Basin #20



Summary for Subcatchment 41S: Catch Basin #21

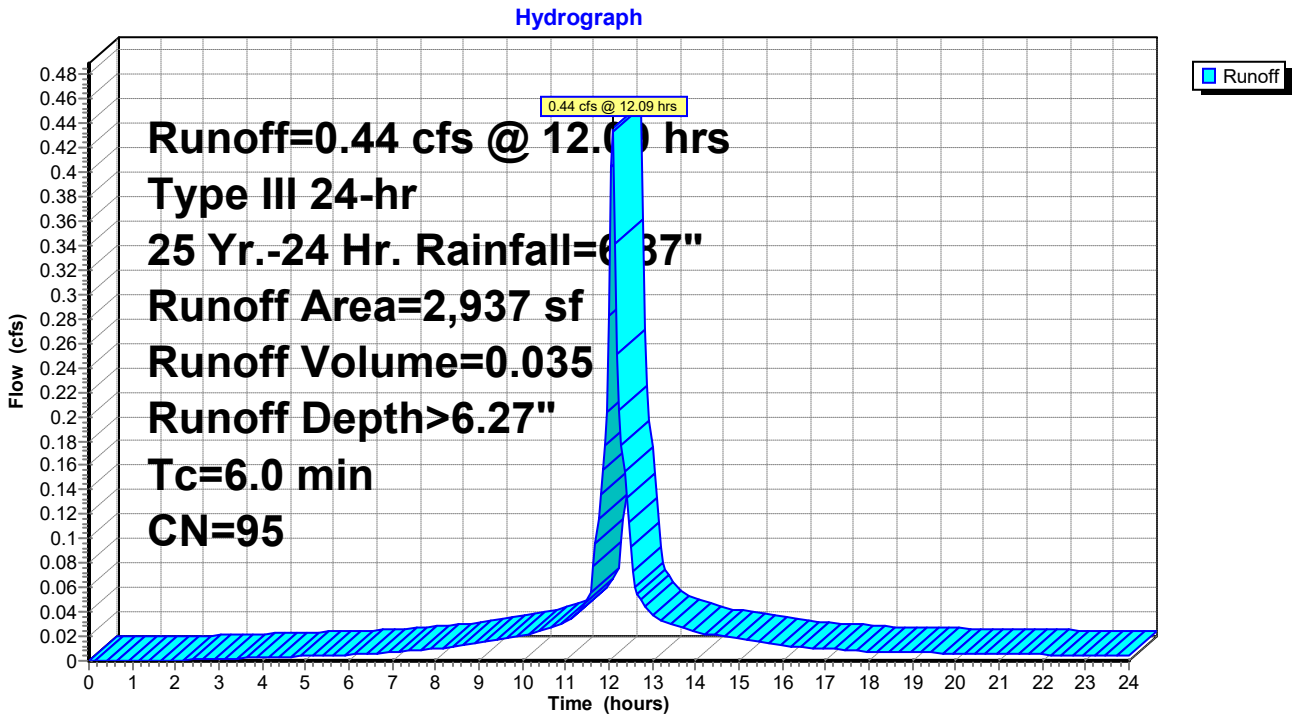
Runoff = 0.44 cfs @ 12.09 hrs, Volume= 0.035 af, Depth> 6.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Yr.-24 Hr. Rainfall=6.87"

Area (sf)	CN	Description
103	61	>75% Grass cover, Good, HSG B
240	80	>75% Grass cover, Good, HSG D
778	98	Paved parking, HSG B
1,816	98	Paved parking, HSG D
2,937	95	Weighted Average
343		11.68% Pervious Area
2,594		88.32% Impervious Area

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

Subcatchment 41S: Catch Basin #21



Summary for Subcatchment 42S: Catch Basin #22

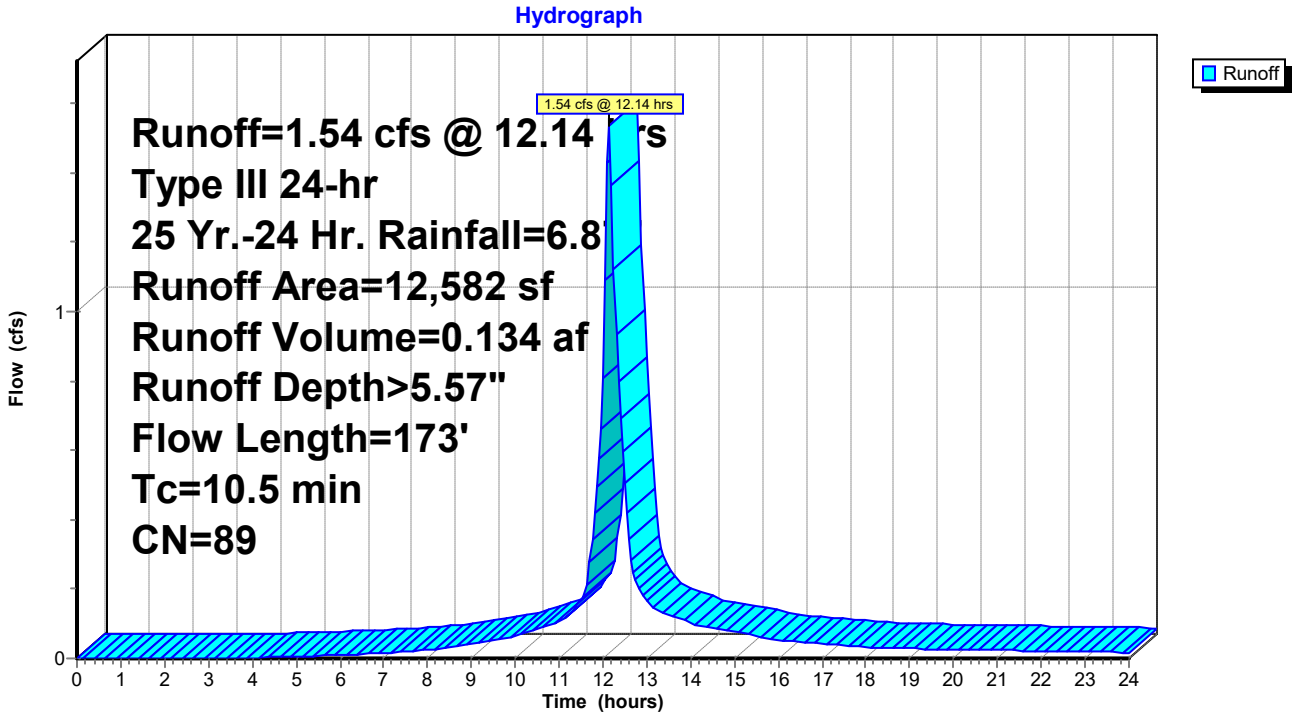
Runoff = 1.54 cfs @ 12.14 hrs, Volume= 0.134 af, Depth> 5.57"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Yr.-24 Hr. Rainfall=6.87"

Area (sf)	CN	Description
493	61	>75% Grass cover, Good, HSG B
3,164	74	>75% Grass cover, Good, HSG C
1,150	80	>75% Grass cover, Good, HSG D
470	98	Paved parking, HSG B
2,616	98	Paved parking, HSG C
1,098	98	Paved parking, HSG D
217	98	Roofs, HSG B
2,839	98	Roofs, HSG C
505	98	Roofs, HSG D
30	96	Gravel surface, HSG C
12,582	89	Weighted Average
4,837		38.44% Pervious Area
7,745		61.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.3	100	0.0150	0.16		**Sheet Flow, Segment #1** Grass: Short n= 0.150 P2= 3.61"
0.2	73	0.0793	5.72		**Shallow Concentrated Flow, Segment #2** Paved Kv= 20.3 fps
10.5	173	Total			

Subcatchment 42S: Catch Basin #22



Summary for Subcatchment 43S: Catch Basin #23

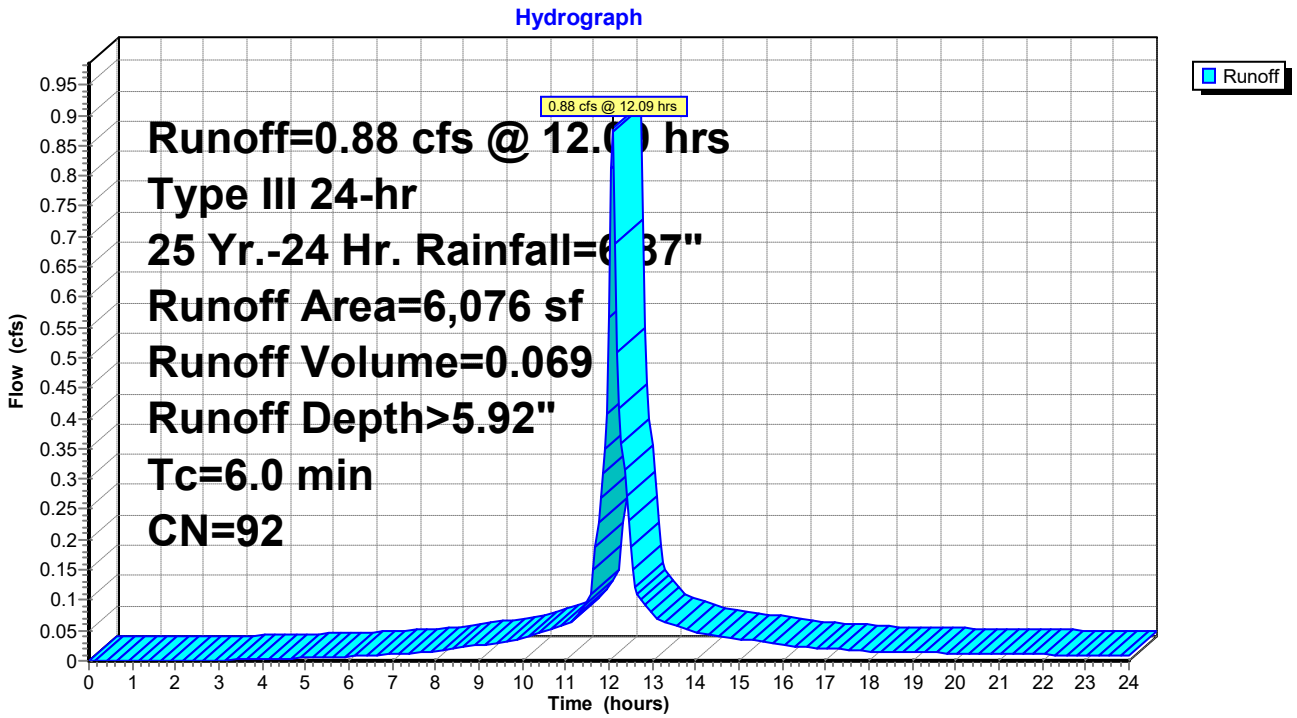
Runoff = 0.88 cfs @ 12.09 hrs, Volume= 0.069 af, Depth> 5.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Yr.-24 Hr. Rainfall=6.87"

Area (sf)	CN	Description
1,561	74	>75% Grass cover, Good, HSG C
3,547	98	Paved parking, HSG C
918	98	Roofs, HSG C
50	96	Gravel surface, HSG C
6,076	92	Weighted Average
1,611		26.51% Pervious Area
4,465		73.49% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Segment #1**

Subcatchment 43S: Catch Basin #23



Summary for Subcatchment 44S: Catch Basin #24

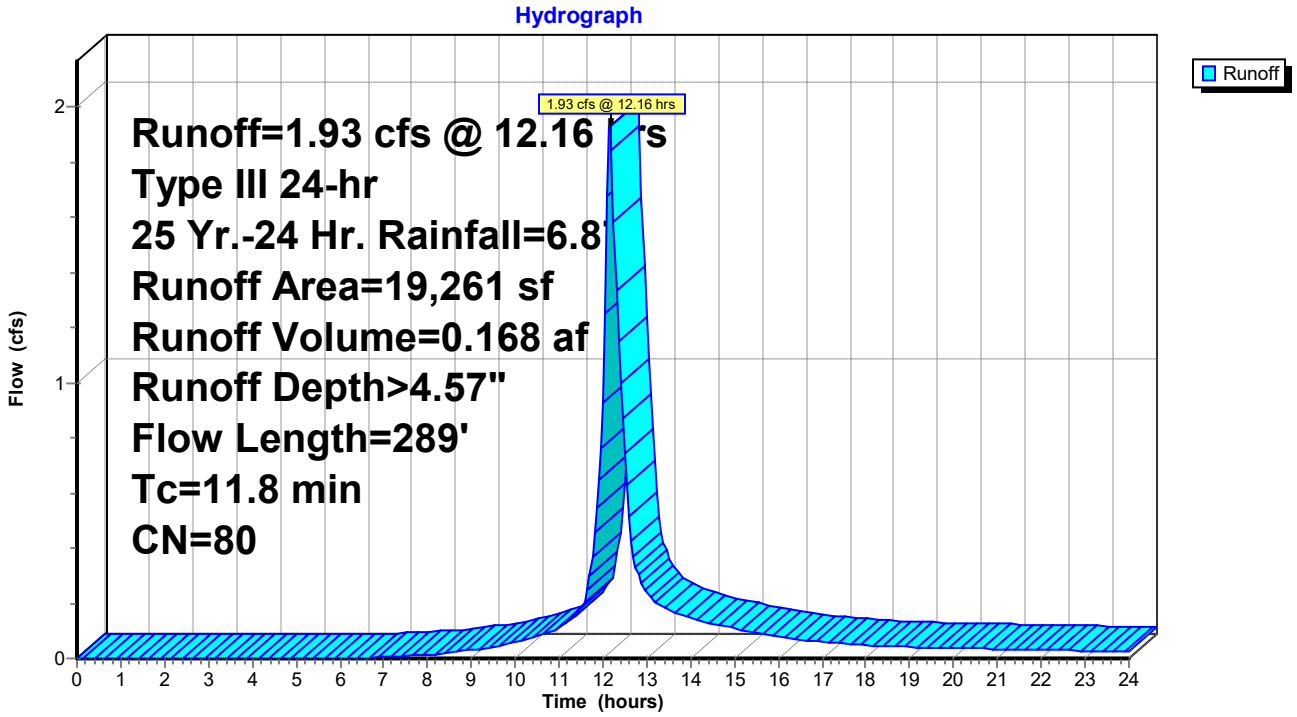
Runoff = 1.93 cfs @ 12.16 hrs, Volume= 0.168 af, Depth> 4.57"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Yr.-24 Hr. Rainfall=6.87"

Area (sf)	CN	Description
6,867	61	>75% Grass cover, Good, HSG B
2,052	74	>75% Grass cover, Good, HSG C
1,871	80	>75% Grass cover, Good, HSG D
1,668	98	Paved parking, HSG B
2,688	98	Paved parking, HSG C
978	98	Paved parking, HSG D
1,897	98	Roofs, HSG B
583	98	Roofs, HSG D
88	55	Woods, Good, HSG B
513	70	Woods, Good, HSG C
56	96	Gravel surface, HSG C
19,261	80	Weighted Average
11,447		59.43% Pervious Area
7,814		40.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.3	100	0.0150	0.16		**Sheet Flow, Segment #1** Grass: Short n= 0.150 P2= 3.61"
1.0	43	0.0100	0.70		**Shallow Concentrated Flow, Segment #2** Short Grass Pasture Kv= 7.0 fps
0.1	30	0.3300	4.02		**Shallow Concentrated Flow, Segment #3** Short Grass Pasture Kv= 7.0 fps
0.1	17	0.0882	2.08		**Shallow Concentrated Flow, Segment #4** Short Grass Pasture Kv= 7.0 fps
0.3	99	0.0810	5.78		**Shallow Concentrated Flow, Segment #5** Paved Kv= 20.3 fps
11.8	289	Total			

Subcatchment 44S: Catch Basin #24



Summary for Subcatchment 45S: Catch Basin #25

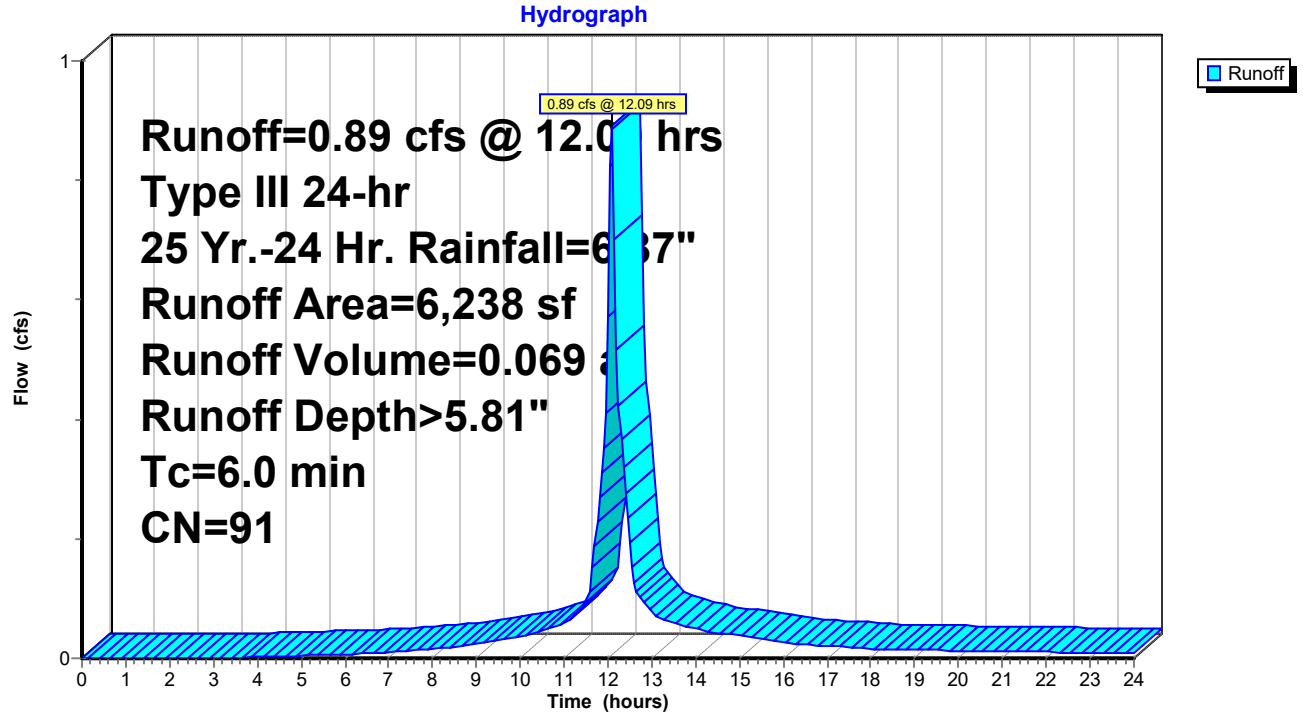
Runoff = 0.89 cfs @ 12.09 hrs, Volume= 0.069 af, Depth> 5.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Yr.-24 Hr. Rainfall=6.87"

Area (sf)	CN	Description
1,812	74	>75% Grass cover, Good, HSG C
2,726	98	Paved parking, HSG C
1,700	98	Roofs, HSG C
6,238	91	Weighted Average
1,812		29.05% Pervious Area
4,426		70.95% Impervious Area

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

Subcatchment 45S: Catch Basin #25



Summary for Subcatchment 46S: Catch Basin #26

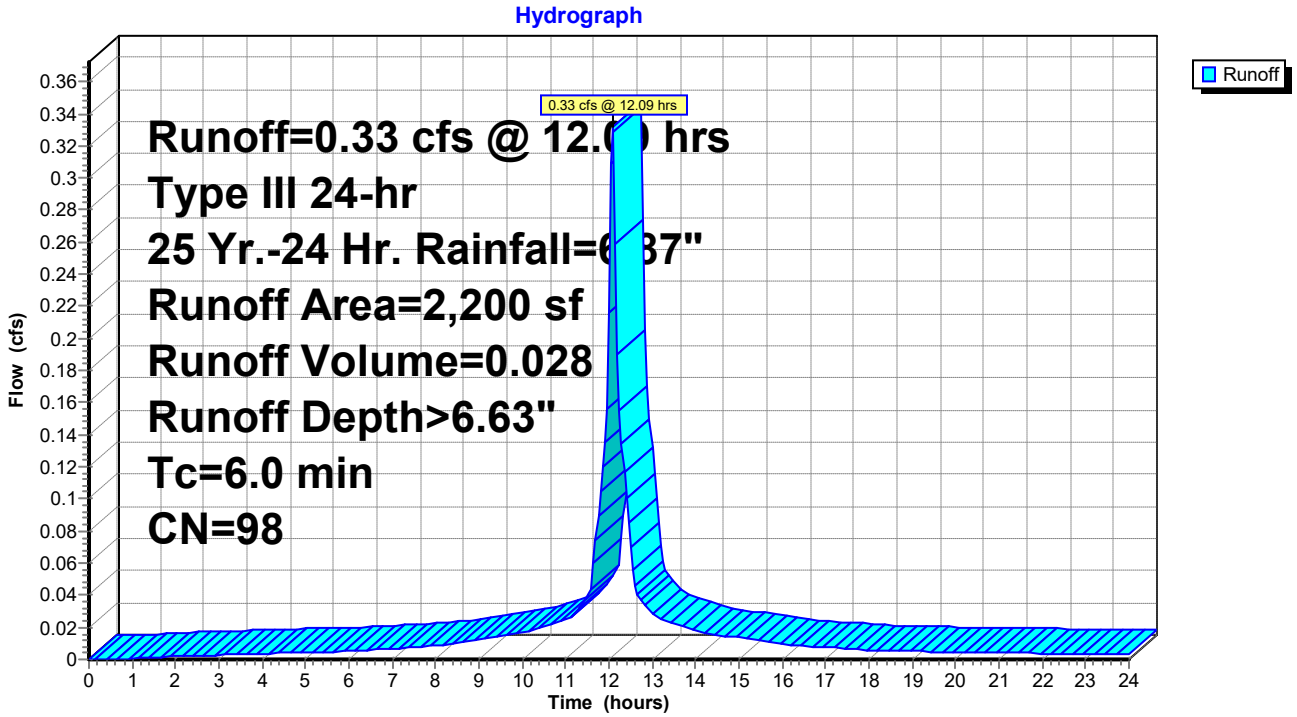
Runoff = 0.33 cfs @ 12.09 hrs, Volume= 0.028 af, Depth> 6.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Yr.-24 Hr. Rainfall=6.87"

Area (sf)	CN	Description
2,200	98	Paved parking, HSG C
2,200		100.00% Impervious Area

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

Subcatchment 46S: Catch Basin #26



Summary for Subcatchment 47S: Catch Basin #27

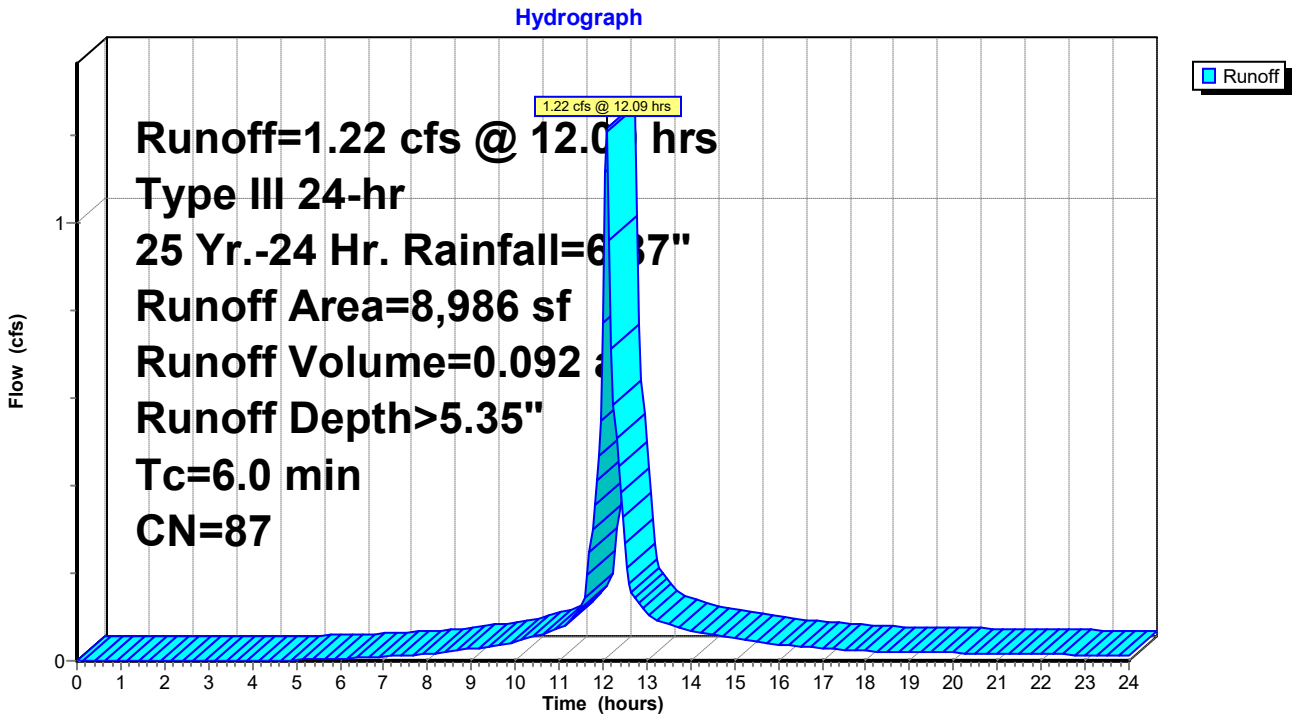
Runoff = 1.22 cfs @ 12.09 hrs, Volume= 0.092 af, Depth> 5.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Yr.-24 Hr. Rainfall=6.87"

Area (sf)	CN	Description
4,123	74	>75% Grass cover, Good, HSG C
4,555	98	Paved parking, HSG C
172	98	Roofs, HSG C
136	96	Gravel surface, HSG C
8,986	87	Weighted Average
4,259		47.40% Pervious Area
4,727		52.60% Impervious Area

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

Subcatchment 47S: Catch Basin #27



Summary for Subcatchment 48S: Catch Basin #28

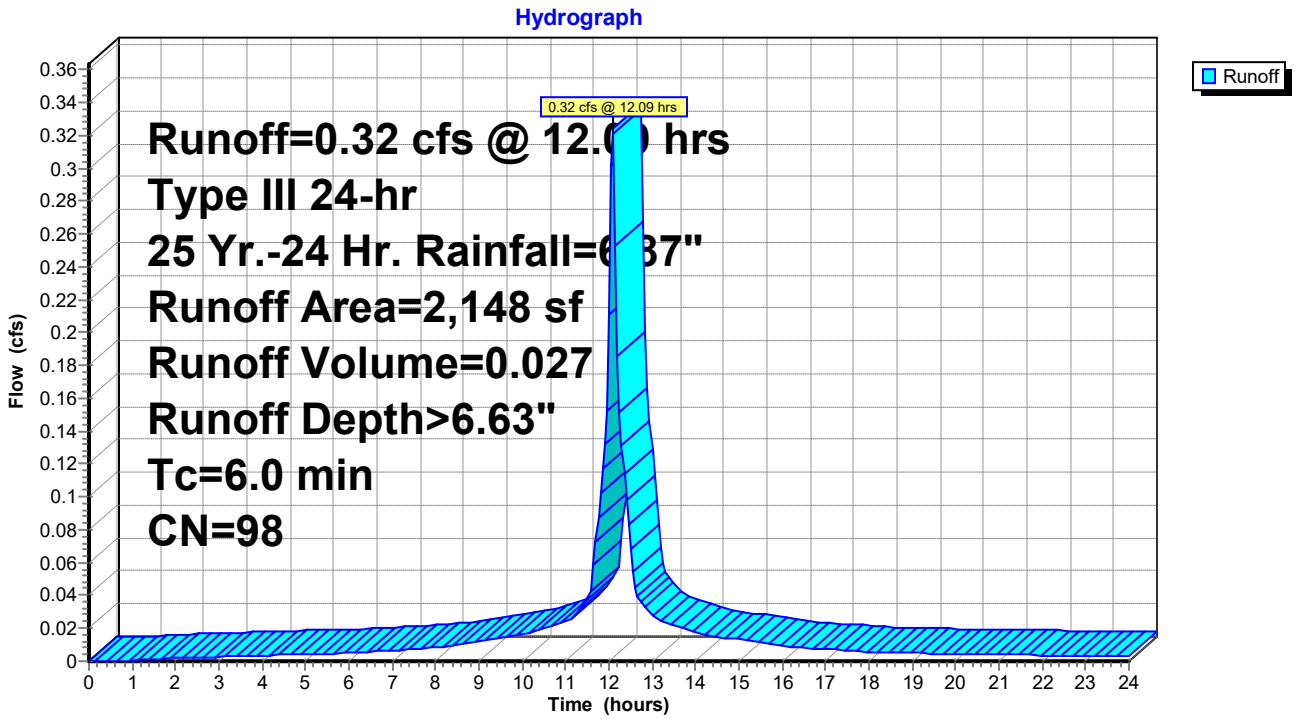
Runoff = 0.32 cfs @ 12.09 hrs, Volume= 0.027 af, Depth> 6.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Yr.-24 Hr. Rainfall=6.87"

Area (sf)	CN	Description
1,615	98	Paved parking, HSG C
533	98	Paved parking, HSG D
2,148	98	Weighted Average
2,148		100.00% Impervious Area

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

Subcatchment 48S: Catch Basin #28



Summary for Subcatchment 49S: Catch Basin #29

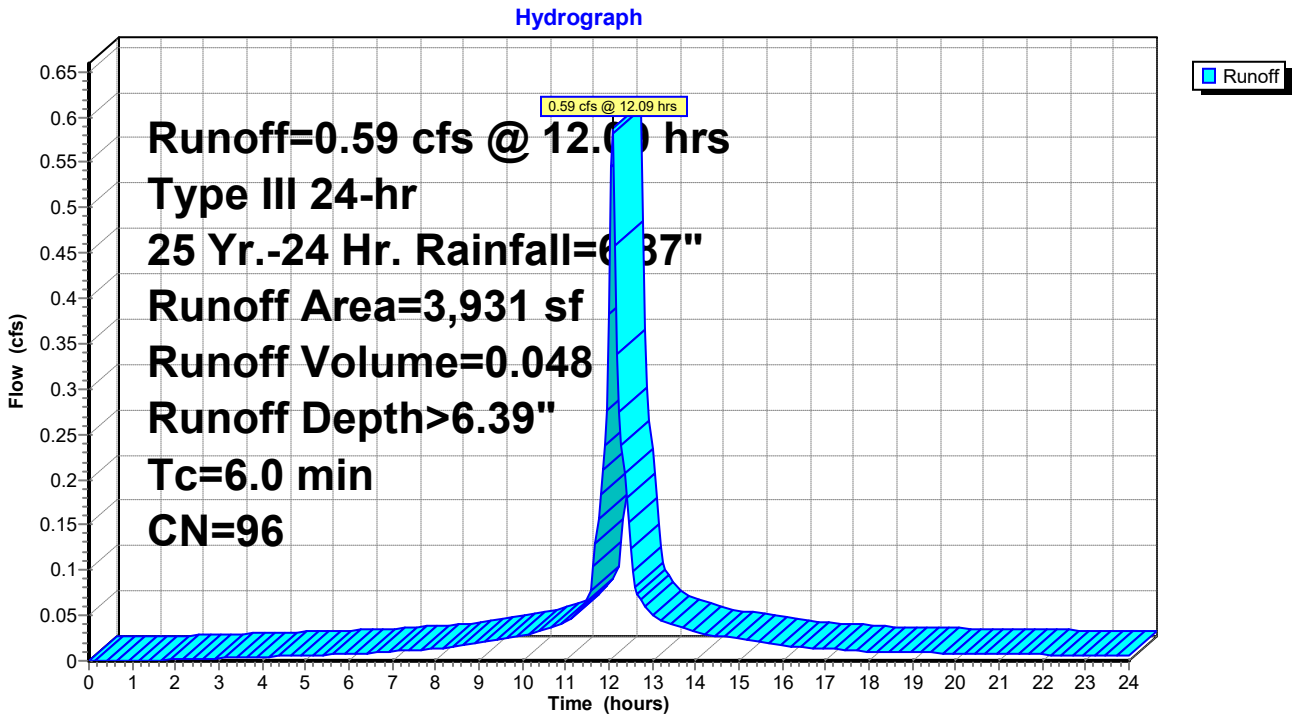
Runoff = 0.59 cfs @ 12.09 hrs, Volume= 0.048 af, Depth> 6.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Yr.-24 Hr. Rainfall=6.87"

Area (sf)	CN	Description
58	98	Paved parking, HSG B
2,767	98	Paved parking, HSG C
756	98	Paved parking, HSG D
350	74	>75% Grass cover, Good, HSG C
3,931	96	Weighted Average
350		8.90% Pervious Area
3,581		91.10% Impervious Area

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

Subcatchment 49S: Catch Basin #29



Summary for Subcatchment 50S: Catch Basin #30

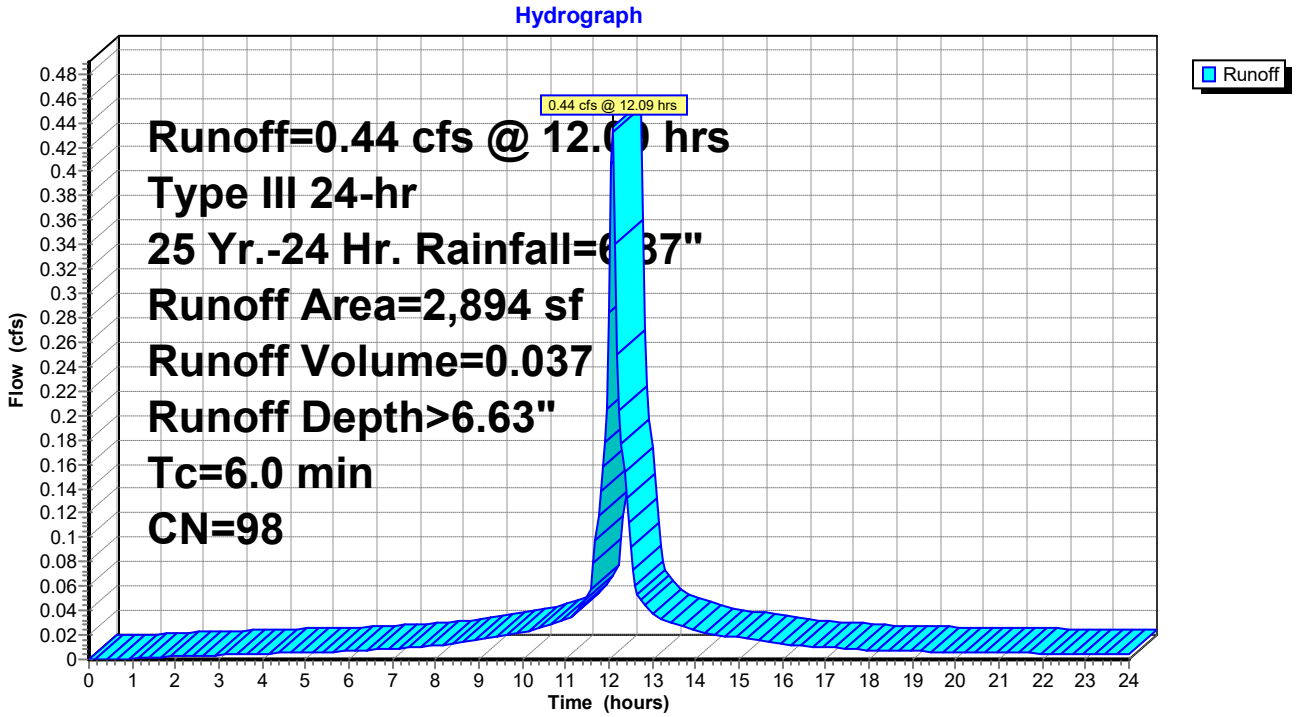
Runoff = 0.44 cfs @ 12.09 hrs, Volume= 0.037 af, Depth> 6.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Yr.-24 Hr. Rainfall=6.87"

Area (sf)	CN	Description
2,894	98	Paved parking, HSG C
2,894		100.00% Impervious Area

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

Subcatchment 50S: Catch Basin #30



Summary for Subcatchment 51S: Catch Basin #31

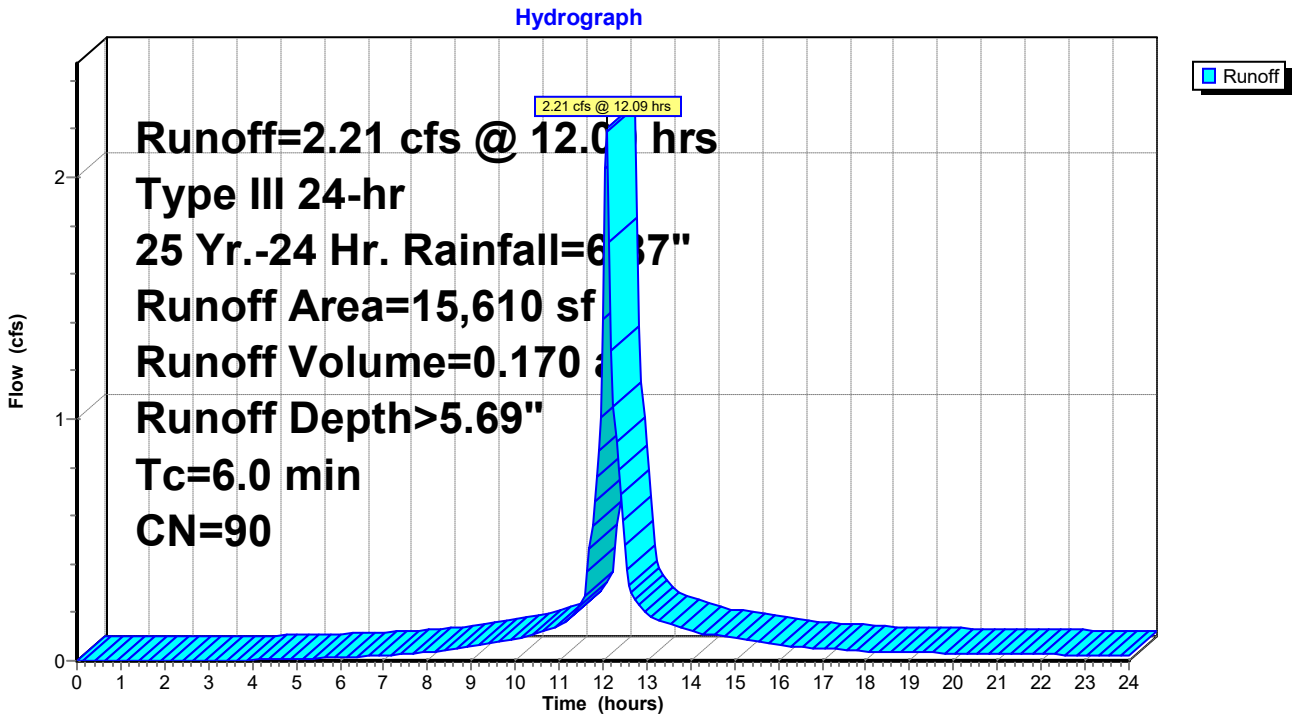
Runoff = 2.21 cfs @ 12.09 hrs, Volume= 0.170 af, Depth> 5.69"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Yr.-24 Hr. Rainfall=6.87"

Area (sf)	CN	Description
4,872	74	>75% Grass cover, Good, HSG C
7,182	98	Paved parking, HSG C
3,477	98	Roofs, HSG C
79	96	Gravel surface, HSG C
15,610	90	Weighted Average
4,951		31.72% Pervious Area
10,659		68.28% Impervious Area

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

Subcatchment 51S: Catch Basin #31



Summary for Subcatchment 52S: Catch Basin #32

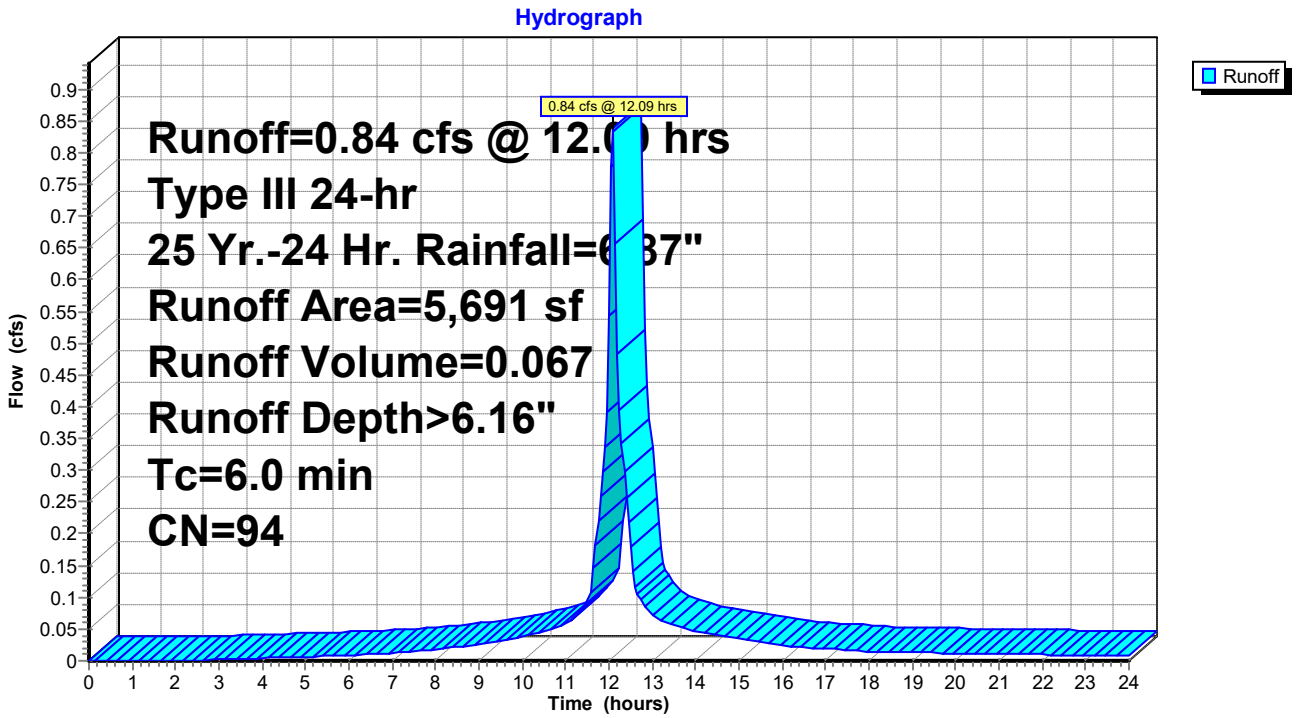
Runoff = 0.84 cfs @ 12.09 hrs, Volume= 0.067 af, Depth> 6.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Yr.-24 Hr. Rainfall=6.87"

Area (sf)	CN	Description
1,051	74	>75% Grass cover, Good, HSG C
2,942	98	Paved parking, HSG C
1,670	98	Roofs, HSG C
28	96	Gravel surface, HSG C
5,691	94	Weighted Average
1,079		18.96% Pervious Area
4,612		81.04% Impervious Area

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

Subcatchment 52S: Catch Basin #32



Summary for Subcatchment 53S: Catch Basin #33

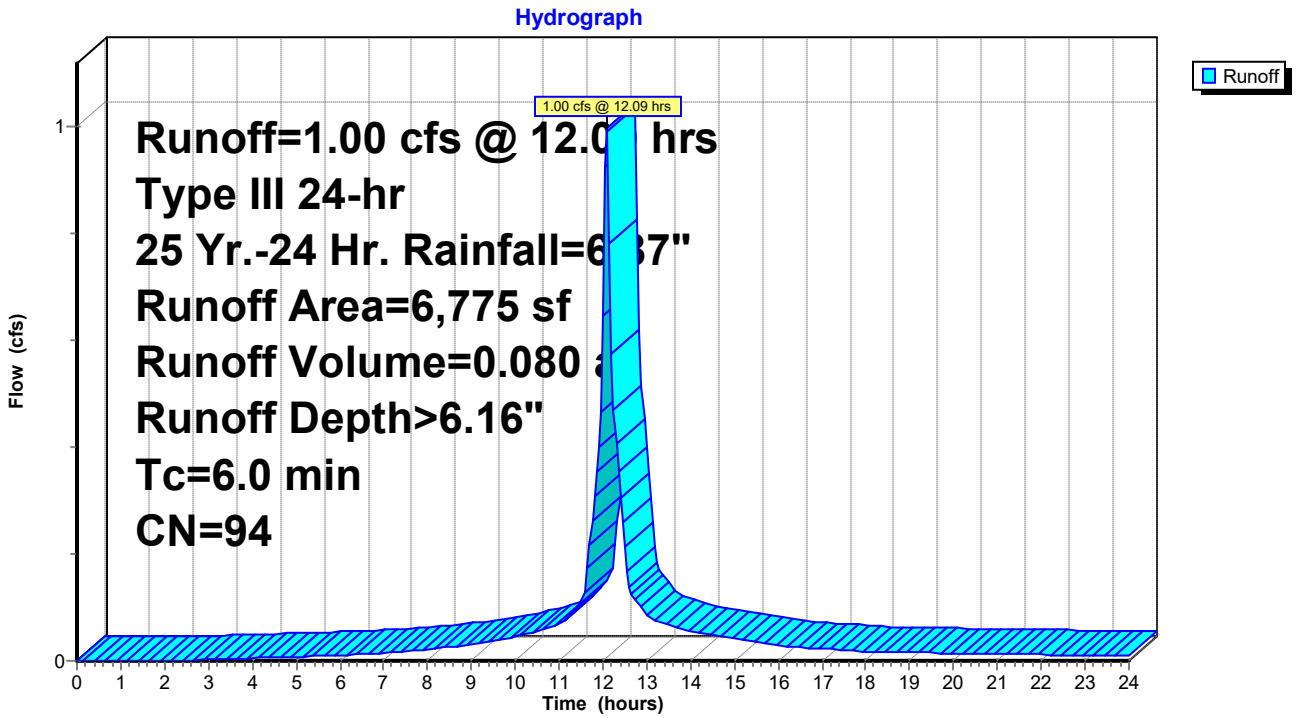
Runoff = 1.00 cfs @ 12.09 hrs, Volume= 0.080 af, Depth> 6.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Yr.-24 Hr. Rainfall=6.87"

Area (sf)	CN	Description
1,118	74	>75% Grass cover, Good, HSG C
4,009	98	Paved parking, HSG C
1,630	98	Roofs, HSG C
18	96	Gravel surface, HSG C
6,775	94	Weighted Average
1,136		16.77% Pervious Area
5,639		83.23% Impervious Area

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

Subcatchment 53S: Catch Basin #33



Summary for Subcatchment 54S: Drop Inlet #54

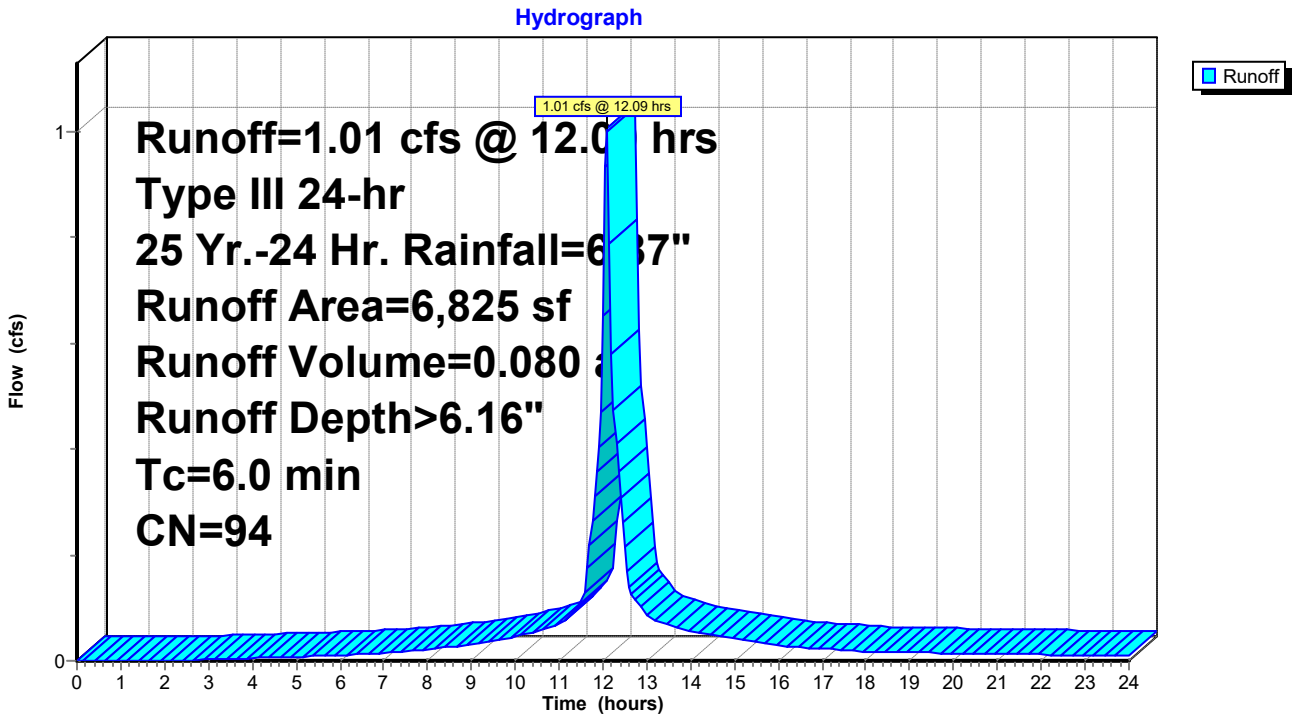
Runoff = 1.01 cfs @ 12.09 hrs, Volume= 0.080 af, Depth> 6.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Yr.-24 Hr. Rainfall=6.87"

Area (sf)	CN	Description
1,058	74	>75% Grass cover, Good, HSG C
3,026	98	Paved parking, HSG C
961	98	Roofs, HSG C
1,780	96	Gravel surface, HSG C
6,825	94	Weighted Average
2,838		41.58% Pervious Area
3,987		58.42% Impervious Area

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

Subcatchment 54S: Drop Inlet #54



Summary for Subcatchment 55S: Drop Inlet #55

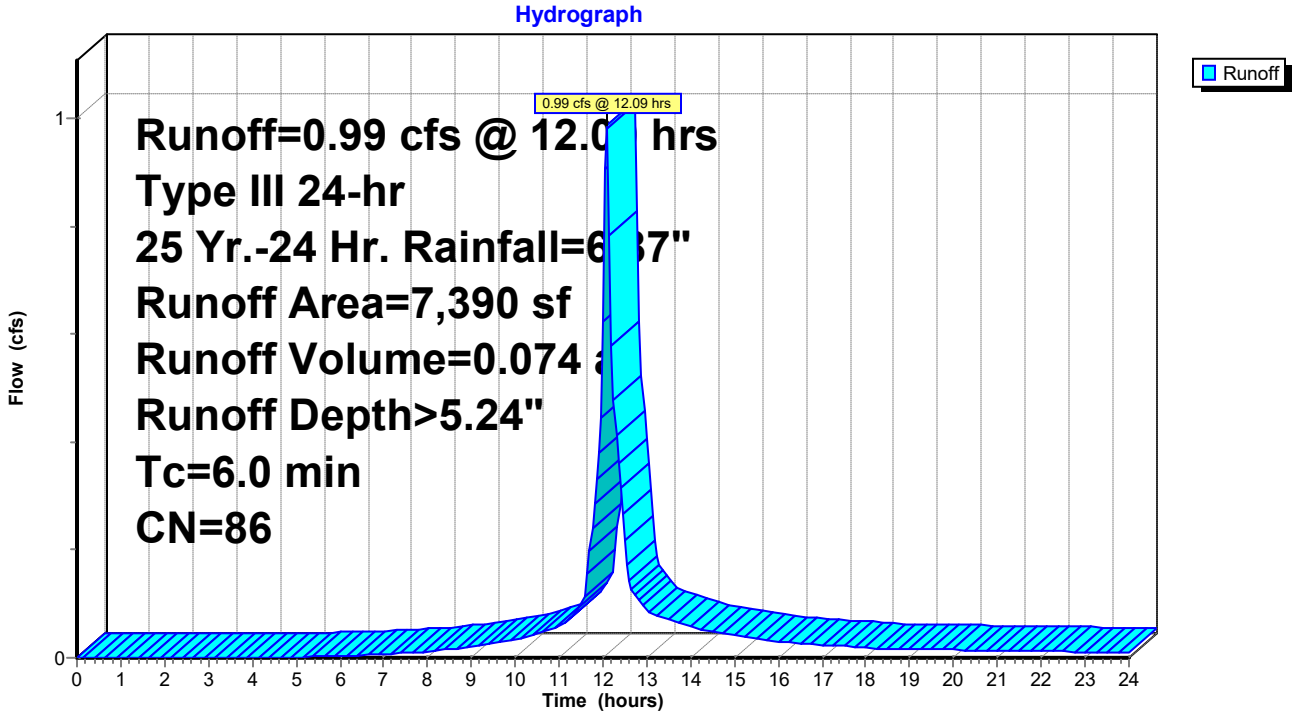
Runoff = 0.99 cfs @ 12.09 hrs, Volume= 0.074 af, Depth> 5.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Yr.-24 Hr. Rainfall=6.87"

Area (sf)	CN	Description
3,763	74	>75% Grass cover, Good, HSG C
1,857	98	Paved parking, HSG C
1,613	98	Roofs, HSG C
157	96	Gravel surface, HSG C
7,390	86	Weighted Average
3,920		53.04% Pervious Area
3,470		46.96% Impervious Area

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

Subcatchment 55S: Drop Inlet #55



Summary for Subcatchment 61S: Rain Garden #101

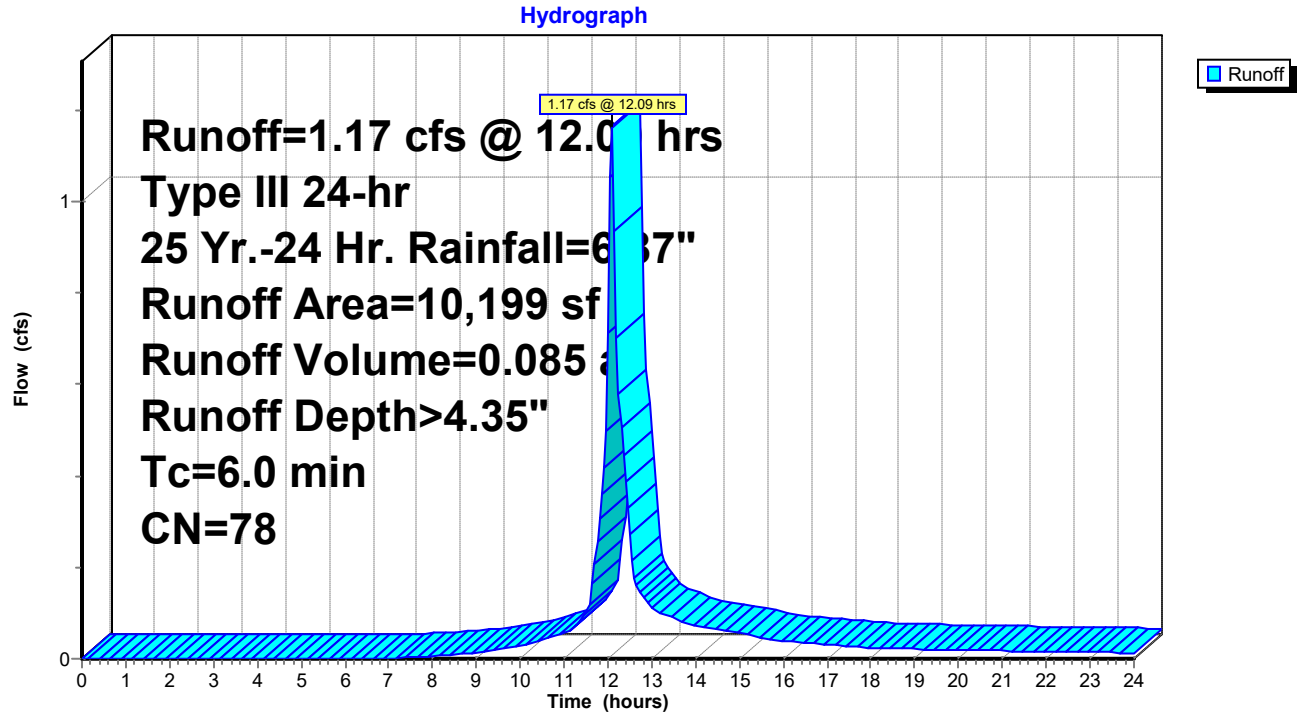
Runoff = 1.17 cfs @ 12.09 hrs, Volume= 0.085 af, Depth> 4.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Yr.-24 Hr. Rainfall=6.87"

Area (sf)	CN	Description
8,470	74	>75% Grass cover, Good, HSG C
1,729	98	Roofs, HSG C
10,199	78	Weighted Average
8,470		83.05% Pervious Area
1,729		16.95% Impervious Area

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

Subcatchment 61S: Rain Garden #101



Summary for Subcatchment 62S: Rain Garden #102

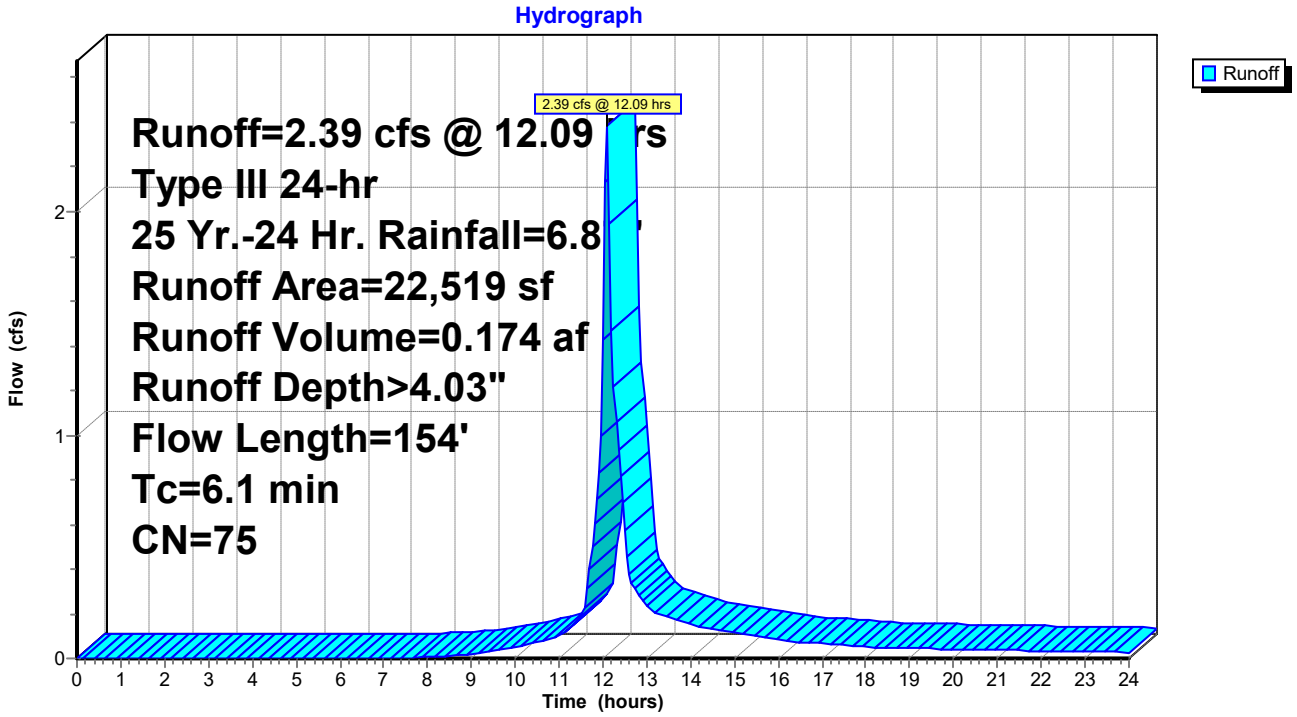
Runoff = 2.39 cfs @ 12.09 hrs, Volume= 0.174 af, Depth> 4.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Yr.-24 Hr. Rainfall=6.87"

Area (sf)	CN	Description
19,373	74	>75% Grass cover, Good, HSG C
1,725	70	Woods, Good, HSG C
483	98	Roofs, HSG C
938	96	Gravel surface, HSG C
22,519	75	Weighted Average
22,036		97.86% Pervious Area
483		2.14% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	68	0.0662	0.27		**Sheet Flow, Segment #1** Grass: Short n= 0.150 P2= 3.61"
1.6	32	0.1563	0.33		**Sheet Flow, Segment #2** Grass: Short n= 0.150 P2= 3.61"
0.2	27	0.1481	2.69		**Shallow Concentrated Flow, Segment #3** Short Grass Pasture Kv= 7.0 fps
0.1	27	0.3300	4.02		**Shallow Concentrated Flow, Segment #4** Short Grass Pasture Kv= 7.0 fps
6.1	154	Total			

Subcatchment 62S: Rain Garden #102



Summary for Subcatchment 63S: Rain Garden #103

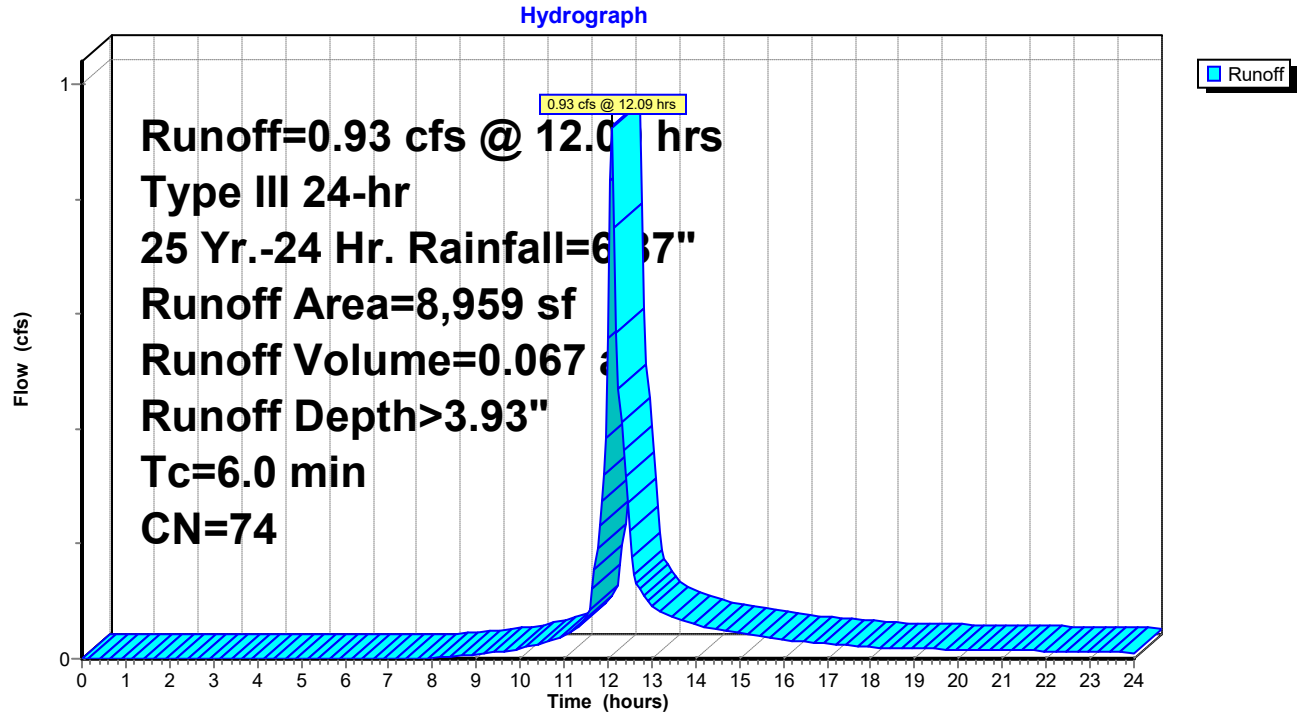
Runoff = 0.93 cfs @ 12.09 hrs, Volume= 0.067 af, Depth> 3.93"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Yr.-24 Hr. Rainfall=6.87"

Area (sf)	CN	Description
8,897	74	>75% Grass cover, Good, HSG C
62	98	Roofs, HSG C
8,959	74	Weighted Average
8,897		99.31% Pervious Area
62		0.69% Impervious Area

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

Subcatchment 63S: Rain Garden #103



Summary for Subcatchment 64S: Rain Garden #104

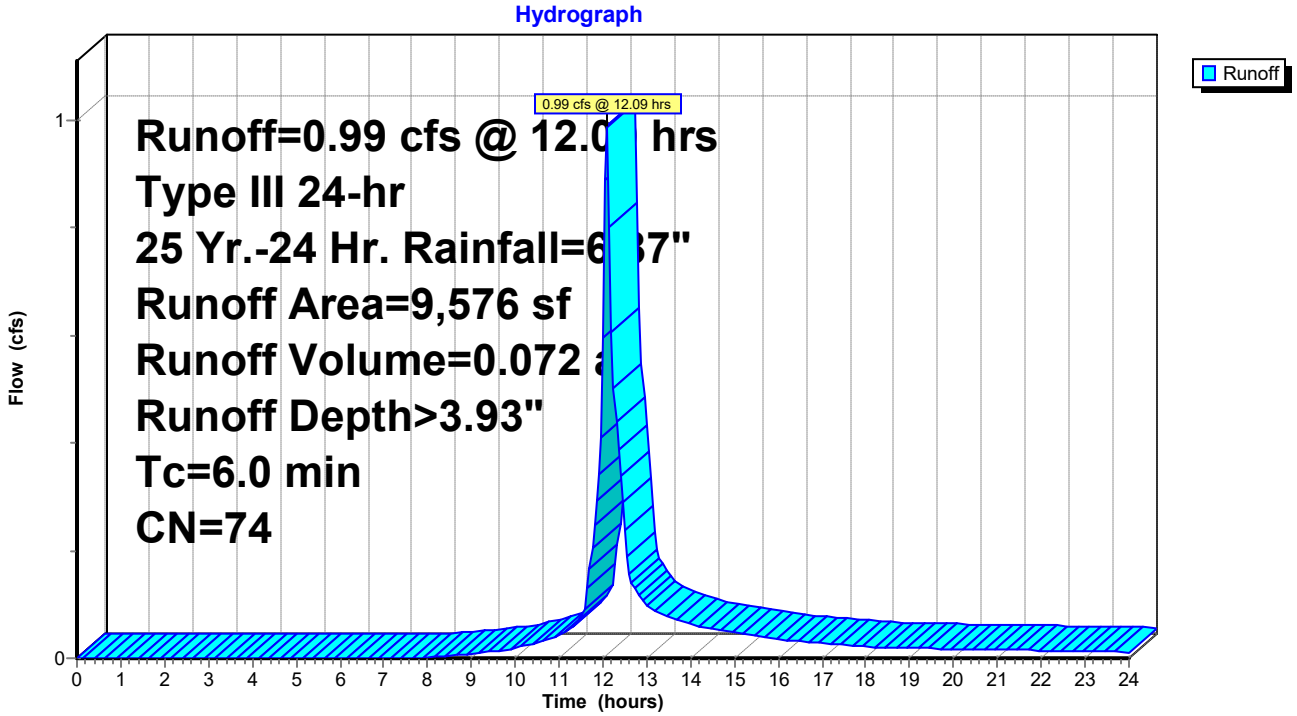
Runoff = 0.99 cfs @ 12.09 hrs, Volume= 0.072 af, Depth> 3.93"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Yr.-24 Hr. Rainfall=6.87"

Area (sf)	CN	Description
8,665	74	>75% Grass cover, Good, HSG C
911	70	Woods, Good, HSG C
9,576	74	Weighted Average
9,576		100.00% Pervious Area

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

Subcatchment 64S: Rain Garden #104



Summary for Subcatchment 65S: Detention Pond #105

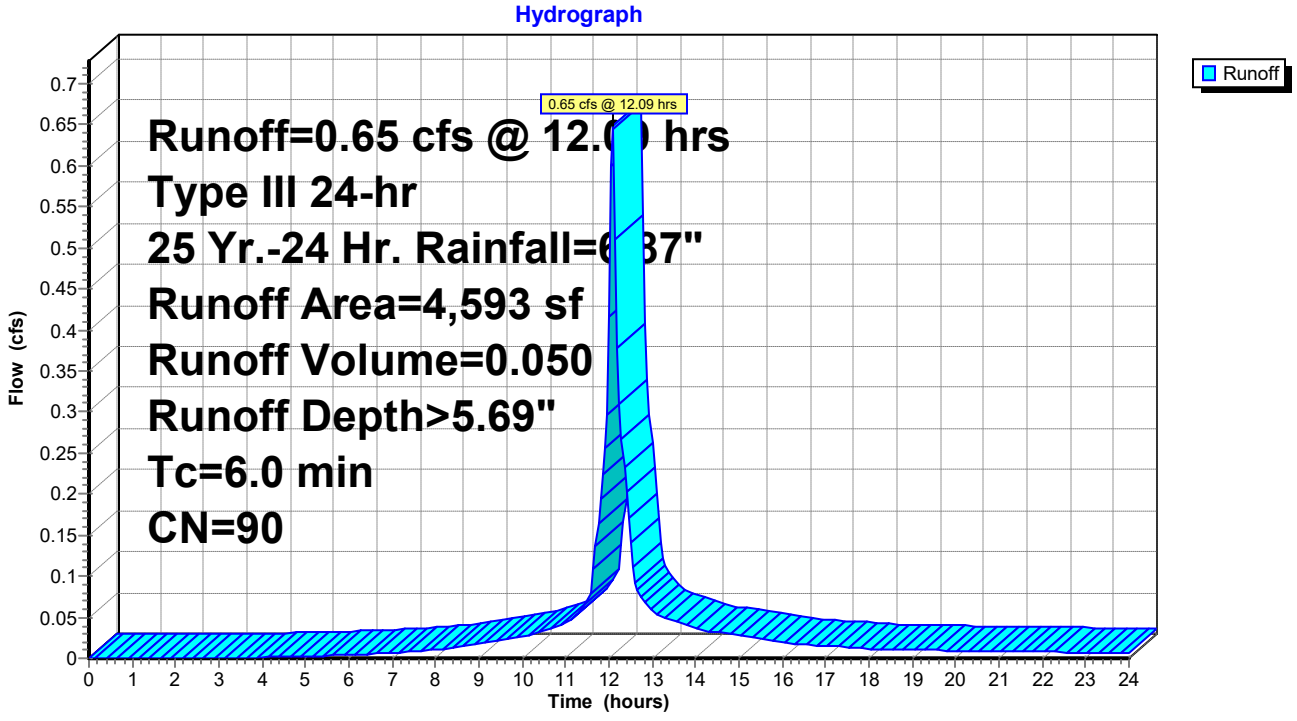
Runoff = 0.65 cfs @ 12.09 hrs, Volume= 0.050 af, Depth> 5.69"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Yr.-24 Hr. Rainfall=6.87"

Area (sf)	CN	Description
1,572	74	>75% Grass cover, Good, HSG C
2,700	98	Paved parking, HSG C
321	96	Gravel surface, HSG C
4,593	90	Weighted Average
1,893		41.21% Pervious Area
2,700		58.79% Impervious Area

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

Subcatchment 65S: Detention Pond #105



Summary for Subcatchment 66S: Detention Pond #106

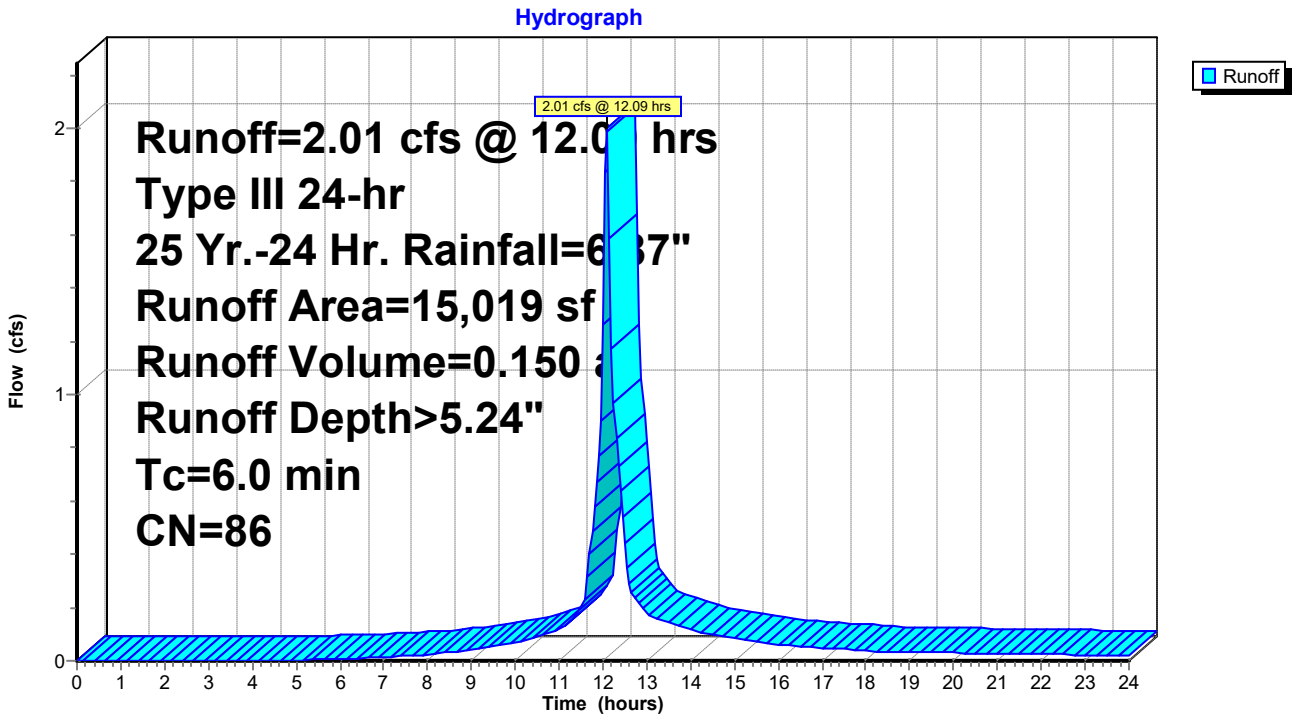
Runoff = 2.01 cfs @ 12.09 hrs, Volume= 0.150 af, Depth> 5.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Yr.-24 Hr. Rainfall=6.87"

Area (sf)	CN	Description
7,237	74	>75% Grass cover, Good, HSG C
6,485	98	Paved parking, HSG C
906	98	Roofs, HSG C
391	96	Gravel surface, HSG C
15,019	86	Weighted Average
7,628		50.79% Pervious Area
7,391		49.21% Impervious Area

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

Subcatchment 66S: Detention Pond #106



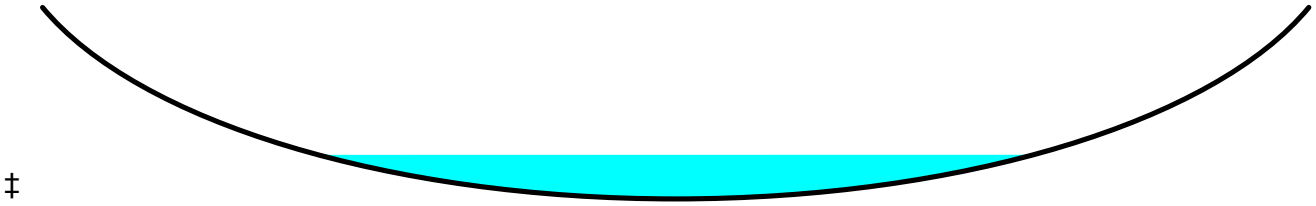
Summary for Reach 1aR: Flow from Culvert to Stream

Inflow Area = 0.203 ac, 63.62% Impervious, Inflow Depth > 5.33" for 25 Yr.-24 Hr. event
Inflow = 1.16 cfs @ 12.09 hrs, Volume= 0.090 af
Outflow = 0.96 cfs @ 12.15 hrs, Volume= 0.090 af, Atten= 17%, Lag= 3.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.73 fps, Min. Travel Time= 6.3 min
Avg. Velocity = 0.57 fps, Avg. Travel Time= 19.1 min

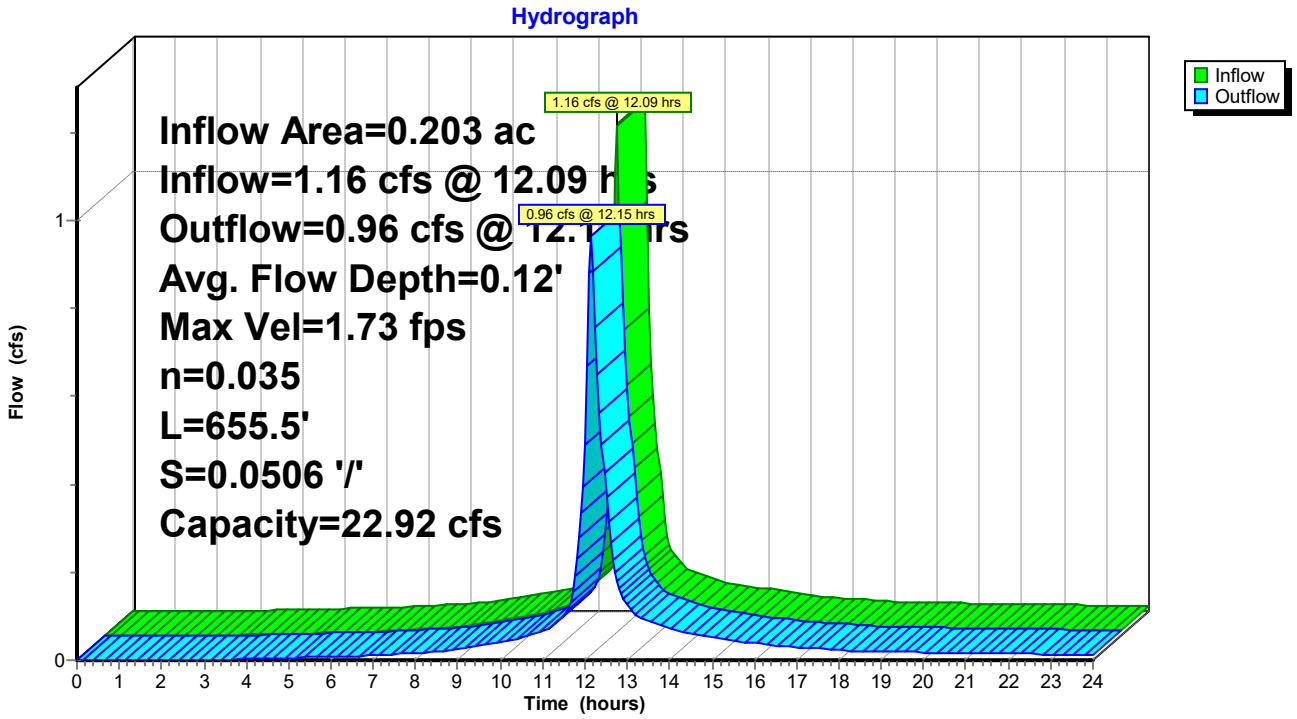
Peak Storage= 364 cf @ 12.15 hrs
Average Depth at Peak Storage= 0.12'
Bank-Full Depth= 0.50' Flow Area= 5.0 sf, Capacity= 22.92 cfs

15.00' x 0.50' deep Parabolic Channel, n= 0.035
Length= 655.5' Slope= 0.0506 '/'
Inlet Invert= 136.39', Outlet Invert= 103.20'



‡

Reach 1aR: Flow from Culvert to Stream



Summary for Reach 1bR: Stream

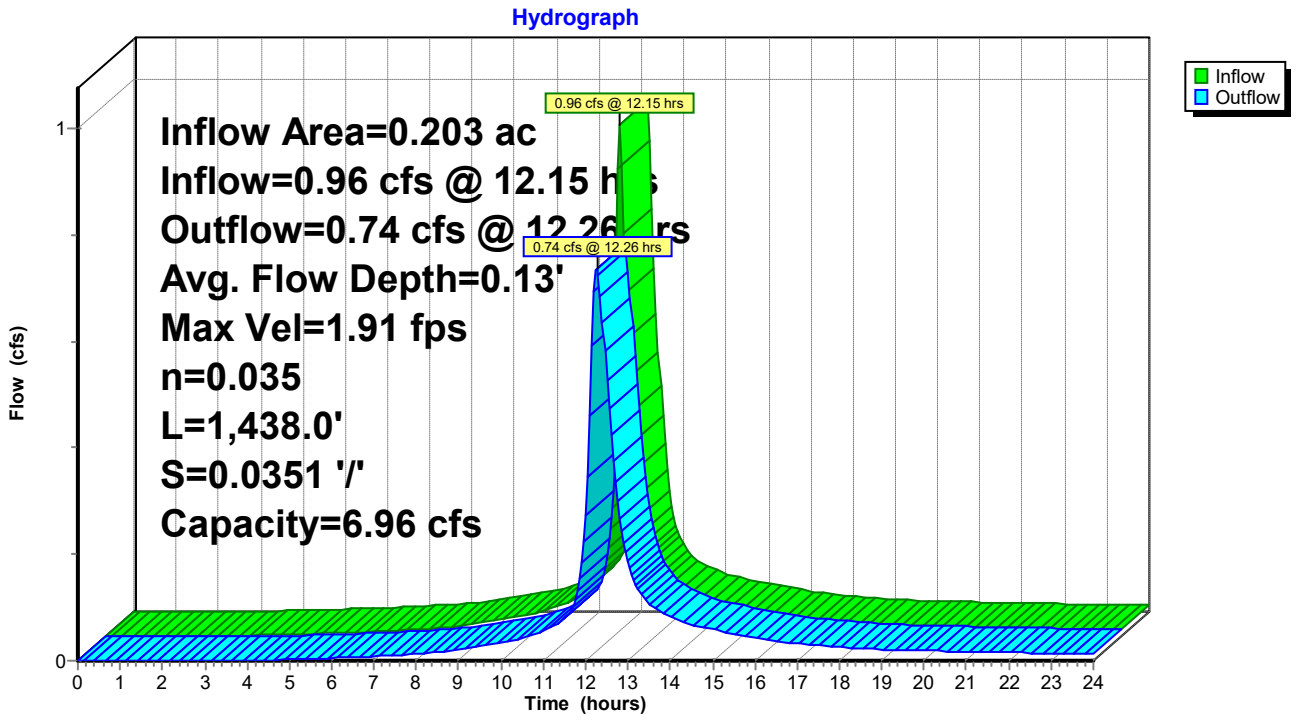
[62] Hint: Exceeded Reach 1aR OUTLET depth by 0.03' @ 12.40 hrs

Inflow Area = 0.203 ac, 63.62% Impervious, Inflow Depth > 5.31" for 25 Yr.-24 Hr. event
Inflow = 0.96 cfs @ 12.15 hrs, Volume= 0.090 af
Outflow = 0.74 cfs @ 12.26 hrs, Volume= 0.089 af, Atten= 23%, Lag= 6.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.91 fps, Min. Travel Time= 12.6 min
Avg. Velocity = 0.55 fps, Avg. Travel Time= 43.9 min

Peak Storage= 555 cf @ 12.26 hrs
Average Depth at Peak Storage= 0.13'
Bank-Full Depth= 0.50' Flow Area= 1.6 sf, Capacity= 6.96 cfs

3.00' x 0.50' deep channel, n= 0.035
Side Slope Z-value= 0.5 '/' Top Width= 3.50'
Length= 1,438.0' Slope= 0.0351 '/'
Inlet Invert= 103.20', Outlet Invert= 52.70'



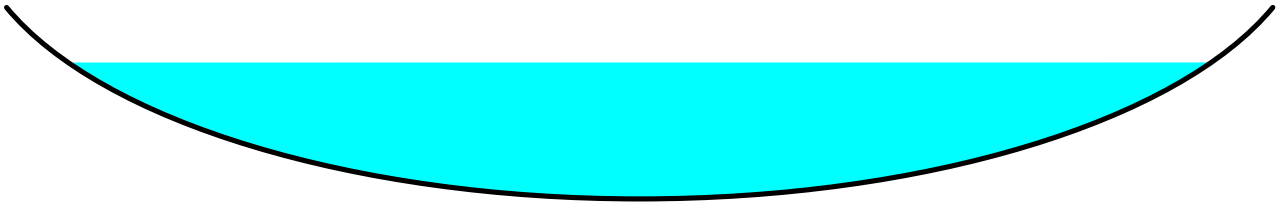
Summary for Reach 14aR: Wetland Crossing #2 Flow

Inflow Area = 7.440 ac, 13.62% Impervious, Inflow Depth > 3.84" for 25 Yr.-24 Hr. event
Inflow = 18.43 cfs @ 12.40 hrs, Volume= 2.379 af
Outflow = 18.42 cfs @ 12.41 hrs, Volume= 2.377 af, Atten= 0%, Lag= 0.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.59 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 1.76 fps, Avg. Travel Time= 1.7 min

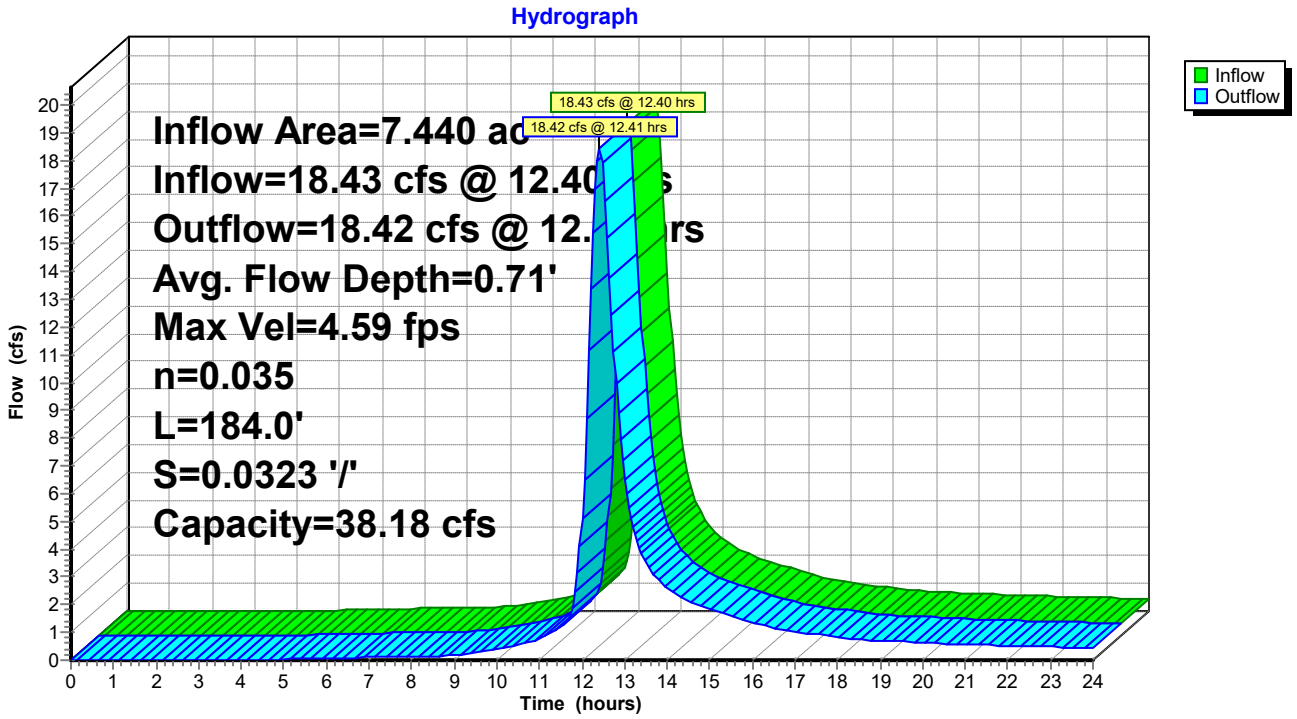
Peak Storage= 738 cf @ 12.41 hrs
Average Depth at Peak Storage= 0.71'
Bank-Full Depth= 1.00' Flow Area= 6.7 sf, Capacity= 38.18 cfs

10.00' x 1.00' deep Parabolic Channel, n= 0.035 Earth, dense weeds
Length= 184.0' Slope= 0.0323 '/'
Inlet Invert= 76.95', Outlet Invert= 71.00'



‡

Reach 14aR: Wetland Crossing #2 Flow



Summary for Reach 14bR: Wetland Crossing #2 Flow

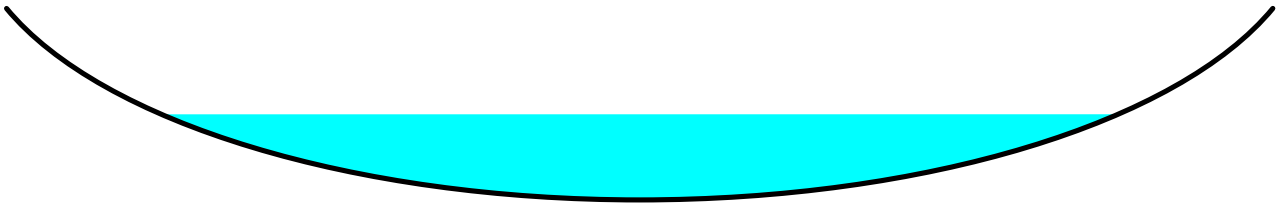
[61] Hint: Exceeded Reach 14aR outlet invert by 0.45' @ 12.40 hrs

Inflow Area = 7.440 ac, 13.62% Impervious, Inflow Depth > 3.83" for 25 Yr.-24 Hr. event
Inflow = 18.42 cfs @ 12.41 hrs, Volume= 2.377 af
Outflow = 18.42 cfs @ 12.41 hrs, Volume= 2.377 af, Atten= 0%, Lag= 0.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 9.22 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 3.52 fps, Avg. Travel Time= 0.4 min

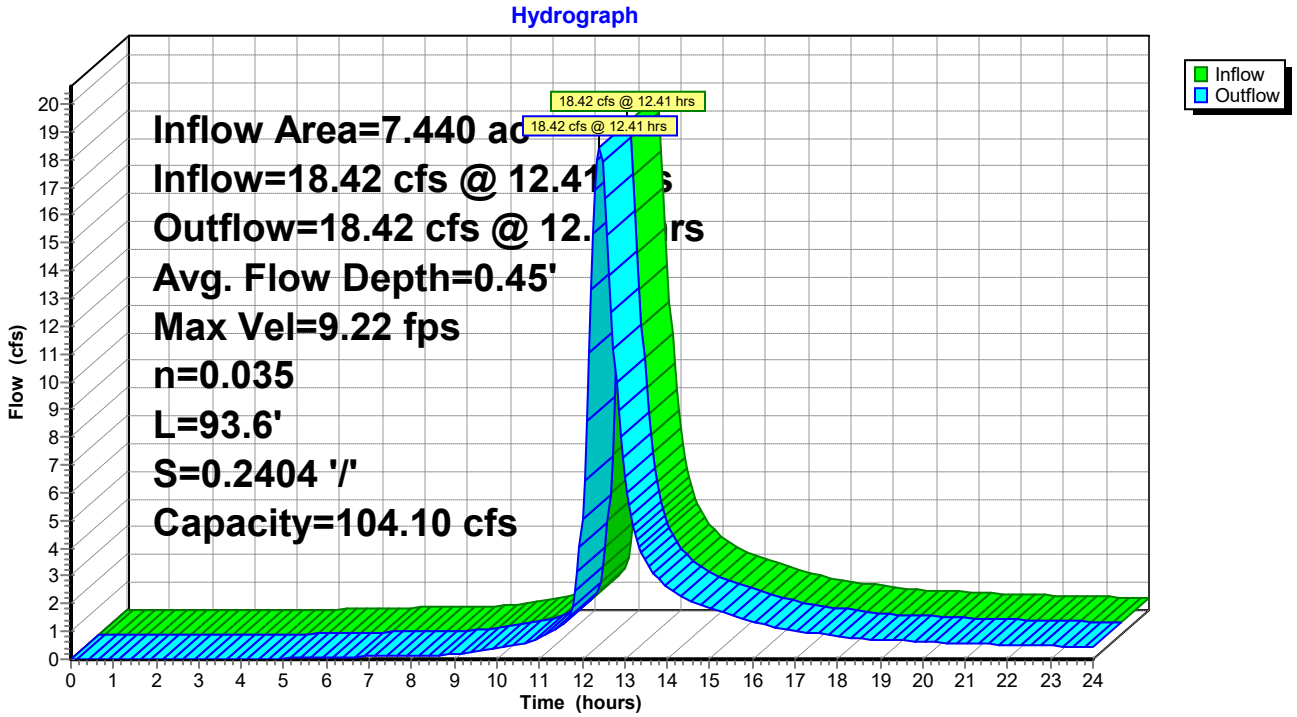
Peak Storage= 187 cf @ 12.41 hrs
Average Depth at Peak Storage= 0.45'
Bank-Full Depth= 1.00' Flow Area= 6.7 sf, Capacity= 104.10 cfs

10.00' x 1.00' deep Parabolic Channel, n= 0.035 Earth, dense weeds
Length= 93.6' Slope= 0.2404 '/'
Inlet Invert= 71.00', Outlet Invert= 48.50'



‡

Reach 14bR: Wetland Crossing #2 Flow



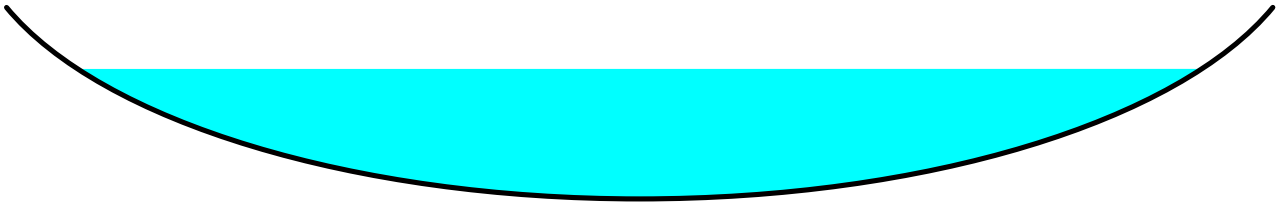
Summary for Reach 15R: Reach #15

Inflow Area = 6.774 ac, 15.97% Impervious, Inflow Depth > 3.64" for 25 Yr.-24 Hr. event
Inflow = 8.19 cfs @ 12.73 hrs, Volume= 2.053 af
Outflow = 8.19 cfs @ 12.74 hrs, Volume= 2.051 af, Atten= 0%, Lag= 0.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.92 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 1.40 fps, Avg. Travel Time= 2.4 min

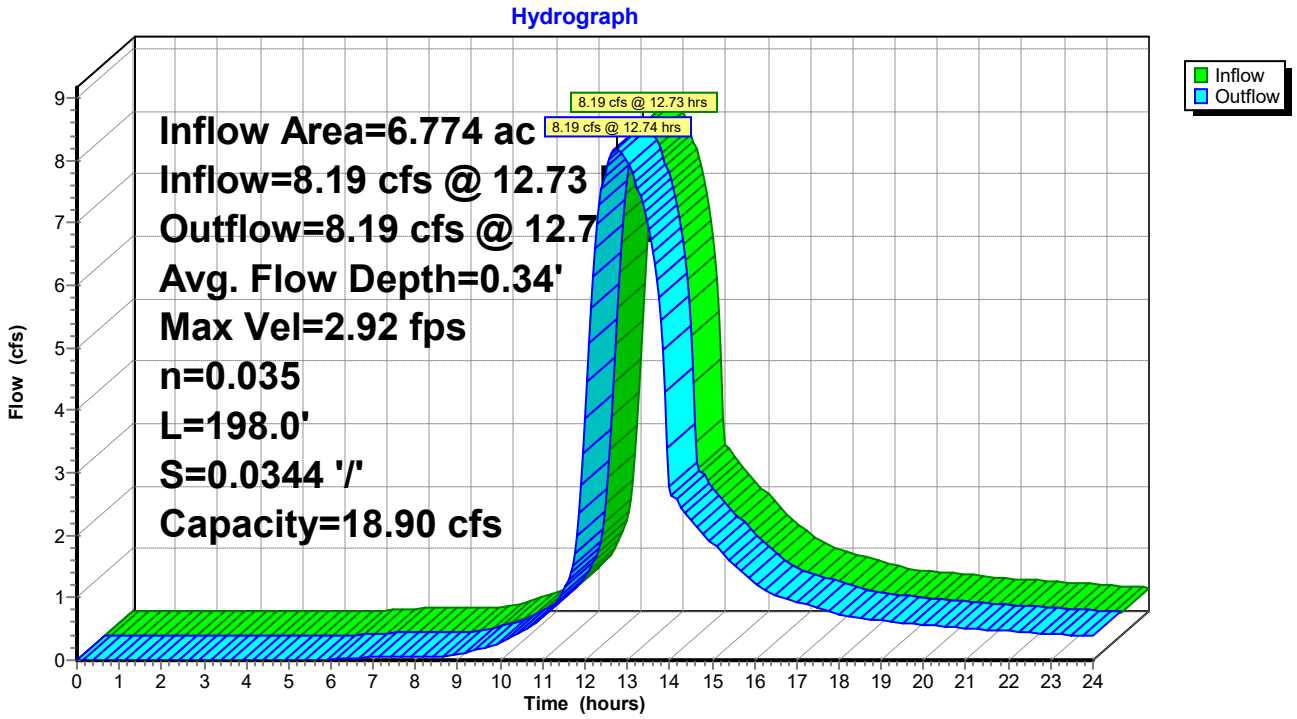
Peak Storage= 555 cf @ 12.74 hrs
Average Depth at Peak Storage= 0.34'
Bank-Full Depth= 0.50' Flow Area= 5.0 sf, Capacity= 18.90 cfs

15.00' x 0.50' deep Parabolic Channel, n= 0.035 Earth, dense weeds
Length= 198.0' Slope= 0.0344 '/'
Inlet Invert= 90.32', Outlet Invert= 83.50'



‡

Reach 15R: Reach #15



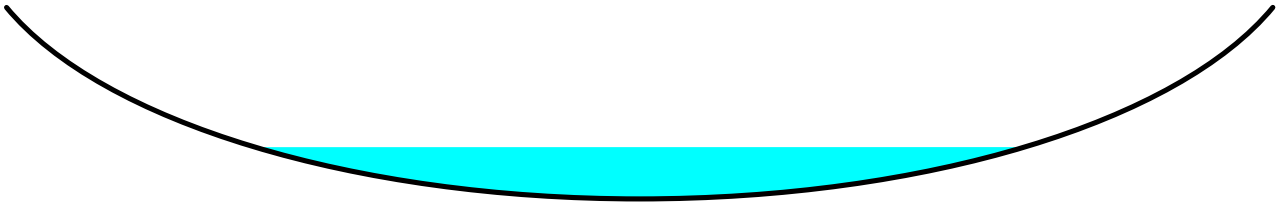
Summary for Reach 20aR: Wetland Crossing #1 Flow

Inflow Area = 0.318 ac, 0.00% Impervious, Inflow Depth > 2.79" for 25 Yr.-24 Hr. event
Inflow = 0.90 cfs @ 12.16 hrs, Volume= 0.074 af
Outflow = 0.74 cfs @ 12.24 hrs, Volume= 0.074 af, Atten= 18%, Lag= 4.9 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.63 fps, Min. Travel Time= 7.2 min
Avg. Velocity = 0.25 fps, Avg. Travel Time= 17.9 min

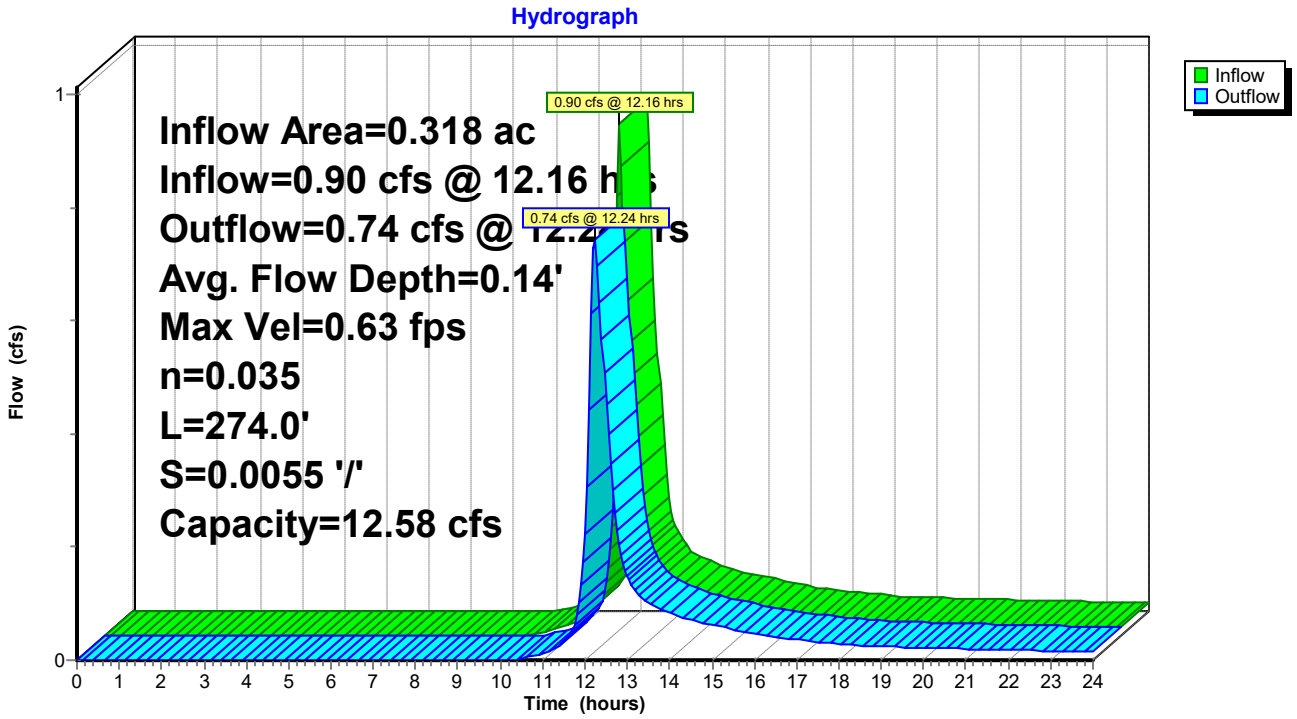
Peak Storage= 322 cf @ 12.24 hrs
Average Depth at Peak Storage= 0.14'
Bank-Full Depth= 0.50' Flow Area= 8.3 sf, Capacity= 12.58 cfs

25.00' x 0.50' deep Parabolic Channel, n= 0.035 Earth, dense weeds
Length= 274.0' Slope= 0.0055 '/'
Inlet Invert= 110.50', Outlet Invert= 109.00'



‡

Reach 20aR: Wetland Crossing #1 Flow



Summary for Reach 20bR: Wetland Crossing #1 Flow

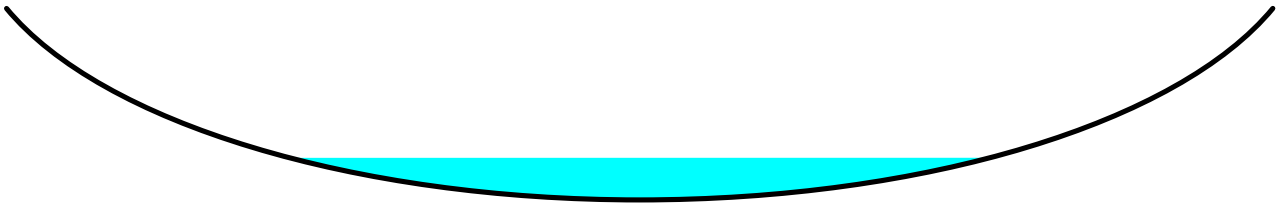
[61] Hint: Exceeded Reach 20aR outlet invert by 0.11' @ 12.25 hrs

Inflow Area = 0.318 ac, 0.00% Impervious, Inflow Depth > 2.77" for 25 Yr.-24 Hr. event
Inflow = 0.74 cfs @ 12.24 hrs, Volume= 0.074 af
Outflow = 0.75 cfs @ 12.25 hrs, Volume= 0.074 af, Atten= 0%, Lag= 0.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.44 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 0.58 fps, Avg. Travel Time= 2.3 min

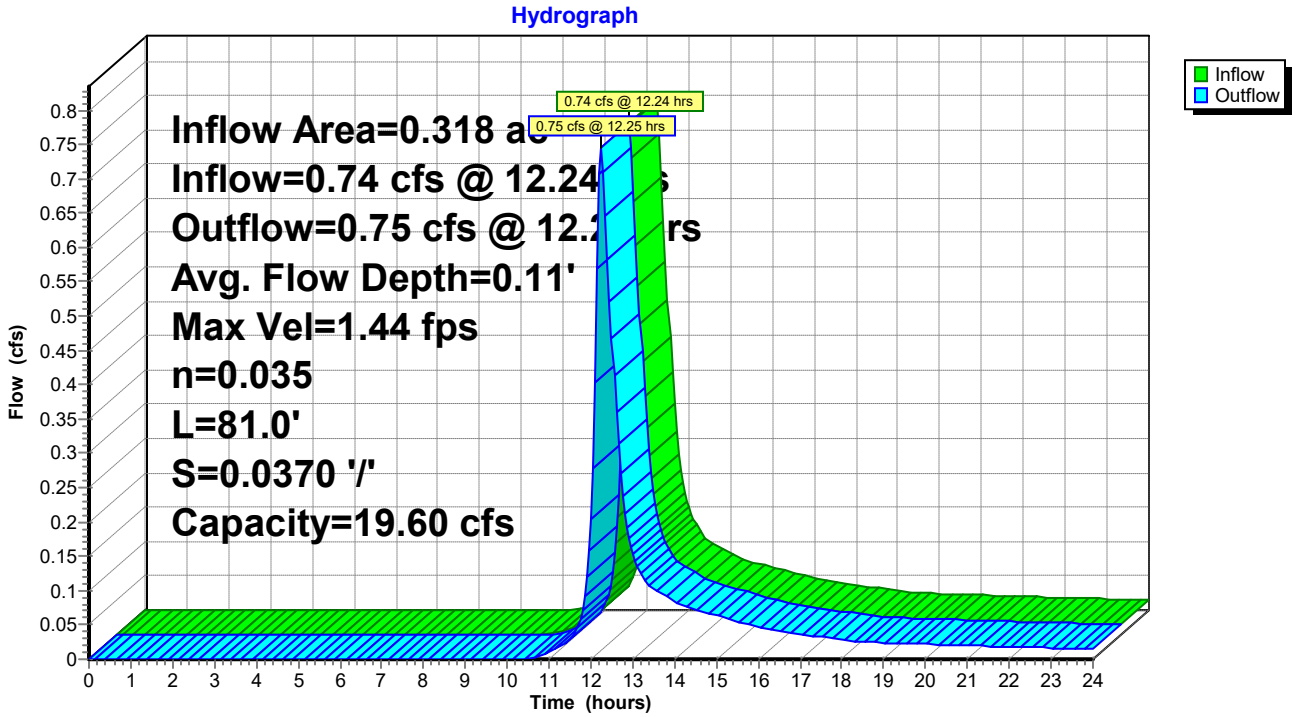
Peak Storage= 42 cf @ 12.25 hrs
Average Depth at Peak Storage= 0.11'
Bank-Full Depth= 0.50' Flow Area= 5.0 sf, Capacity= 19.60 cfs

15.00' x 0.50' deep Parabolic Channel, n= 0.035 Earth, dense weeds
Length= 81.0' Slope= 0.0370 '/'
Inlet Invert= 109.00', Outlet Invert= 106.00'



‡

Reach 20bR: Wetland Crossing #1 Flow



Summary for Reach 20cR: Wetland Crossing #1 Flow

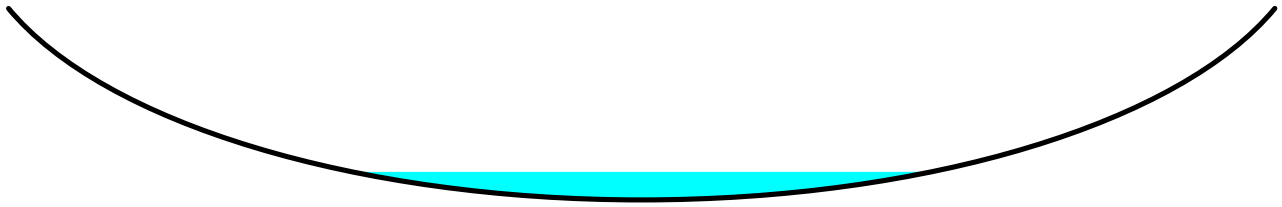
[61] Hint: Exceeded Reach 20bR outlet invert by 0.07' @ 12.25 hrs

Inflow Area = 0.318 ac, 0.00% Impervious, Inflow Depth > 2.77" for 25 Yr.-24 Hr. event
Inflow = 0.75 cfs @ 12.25 hrs, Volume= 0.074 af
Outflow = 0.75 cfs @ 12.26 hrs, Volume= 0.074 af, Atten= 0%, Lag= 0.3 min

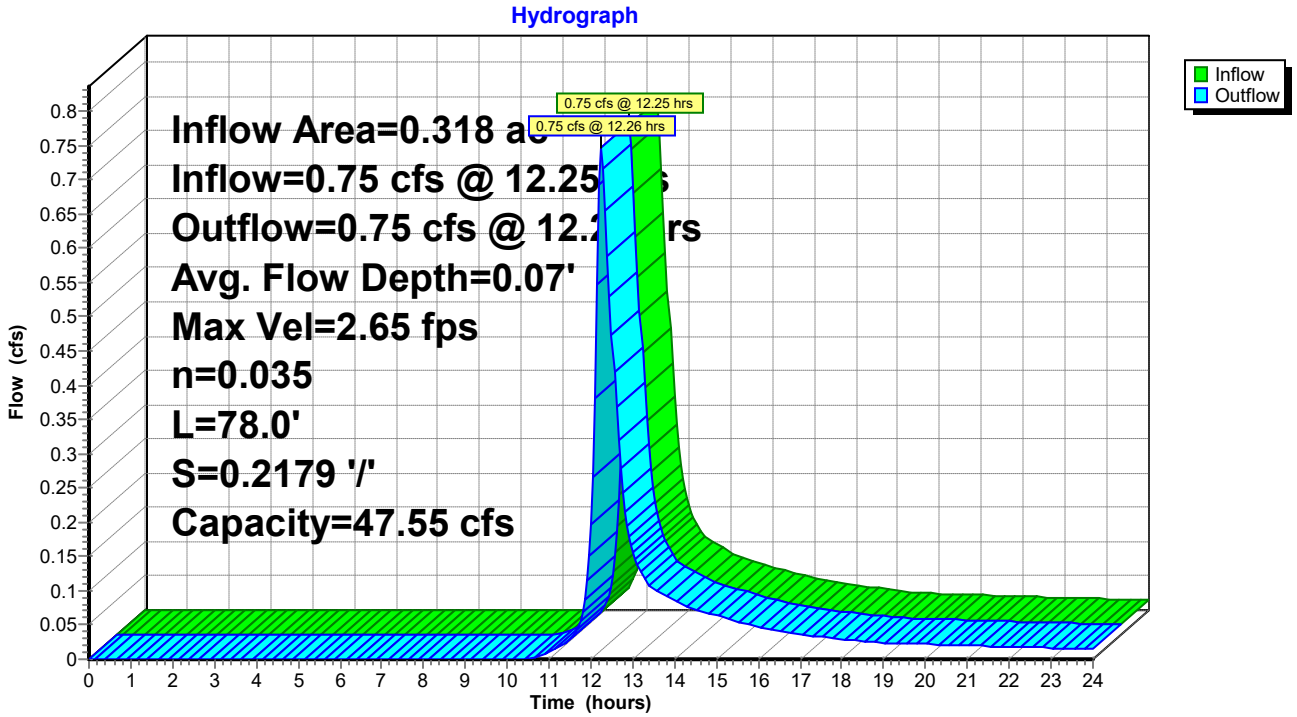
Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.65 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 1.08 fps, Avg. Travel Time= 1.2 min

Peak Storage= 22 cf @ 12.26 hrs
Average Depth at Peak Storage= 0.07'
Bank-Full Depth= 0.50' Flow Area= 5.0 sf, Capacity= 47.55 cfs

15.00' x 0.50' deep Parabolic Channel, n= 0.035 Earth, dense weeds
Length= 78.0' Slope= 0.2179 '/'
Inlet Invert= 106.00', Outlet Invert= 89.00'



‡



Summary for Reach 20dR: Wetland Crossing #1 Flow

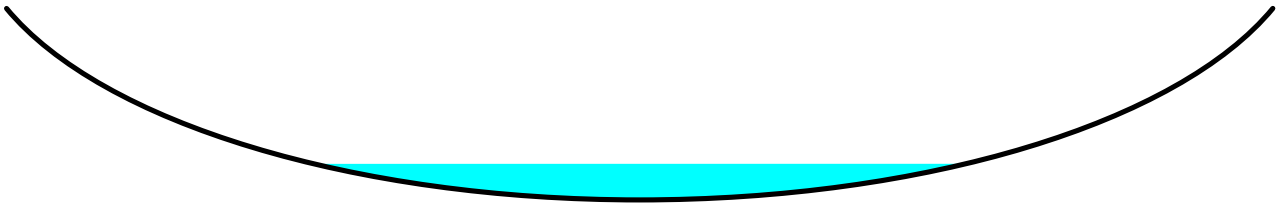
[62] Hint: Exceeded Reach 20cR OUTLET depth by 0.02' @ 12.30 hrs

Inflow Area = 0.318 ac, 0.00% Impervious, Inflow Depth > 2.77" for 25 Yr.-24 Hr. event
Inflow = 0.75 cfs @ 12.26 hrs, Volume= 0.074 af
Outflow = 0.75 cfs @ 12.27 hrs, Volume= 0.073 af, Atten= 0%, Lag= 0.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.82 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 0.74 fps, Avg. Travel Time= 2.5 min

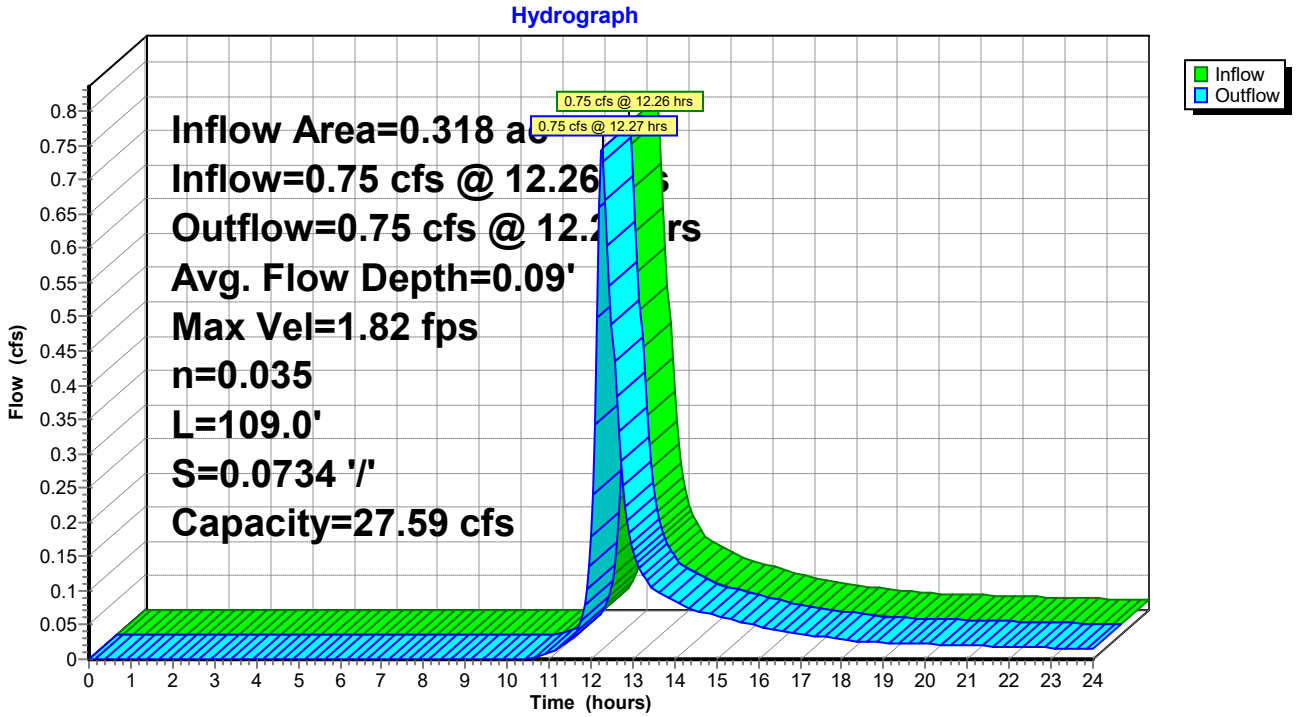
Peak Storage= 45 cf @ 12.27 hrs
Average Depth at Peak Storage= 0.09'
Bank-Full Depth= 0.50' Flow Area= 5.0 sf, Capacity= 27.59 cfs

15.00' x 0.50' deep Parabolic Channel, n= 0.035 Earth, dense weeds
Length= 109.0' Slope= 0.0734 '/'
Inlet Invert= 89.00', Outlet Invert= 81.00'



‡

Reach 20dR: Wetland Crossing #1 Flow



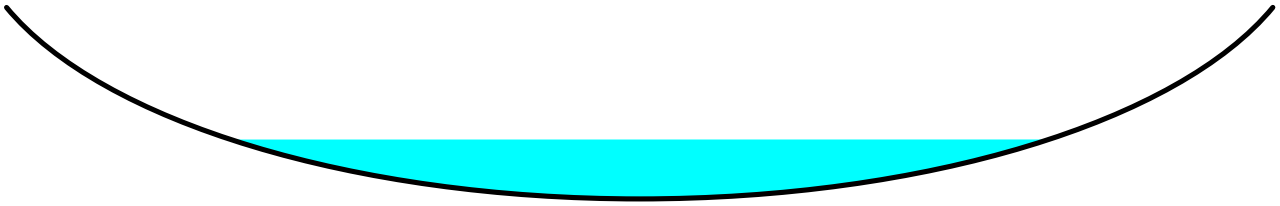
Summary for Reach 61R: Rain Garden #101 Reach

Inflow Area = 1.227 ac, 61.68% Impervious, Inflow Depth > 4.29" for 25 Yr.-24 Hr. event
Inflow = 1.43 cfs @ 12.53 hrs, Volume= 0.439 af
Outflow = 1.43 cfs @ 12.55 hrs, Volume= 0.438 af, Atten= 0%, Lag= 1.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.65 fps, Min. Travel Time= 1.6 min
Avg. Velocity = 0.88 fps, Avg. Travel Time= 3.1 min

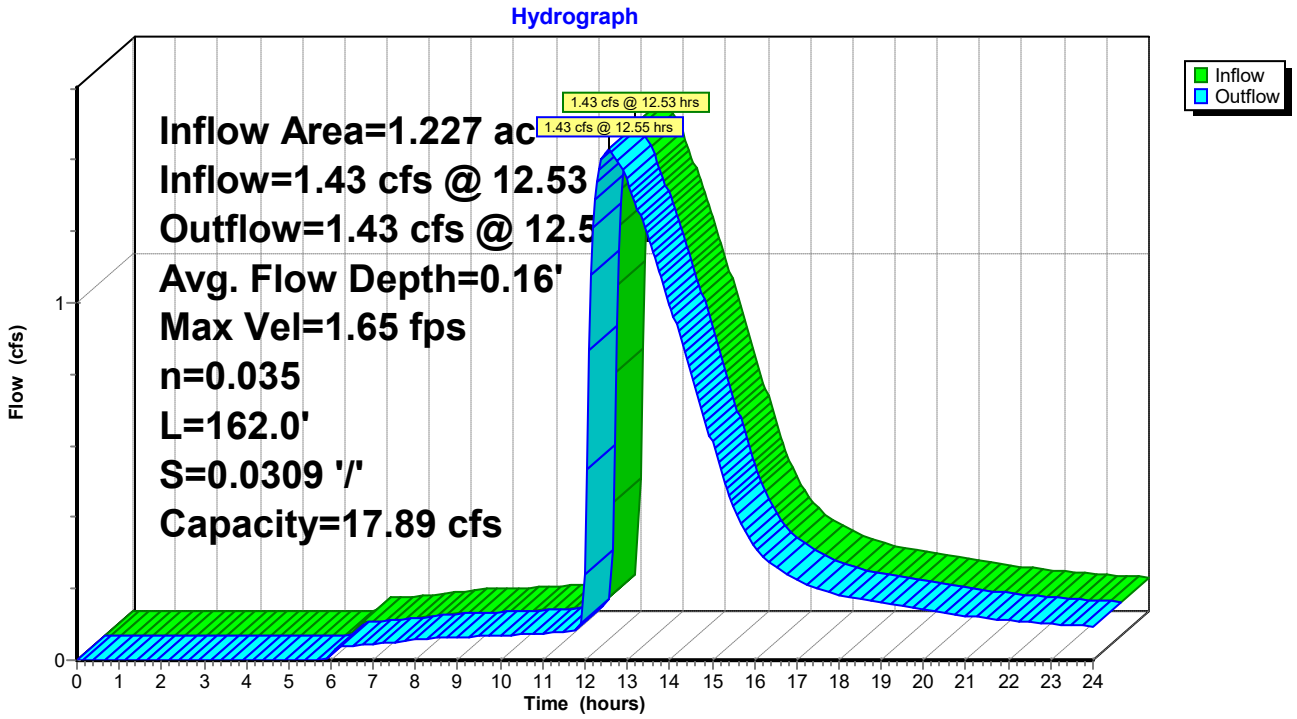
Peak Storage= 141 cf @ 12.55 hrs
Average Depth at Peak Storage= 0.16'
Bank-Full Depth= 0.50' Flow Area= 5.0 sf, Capacity= 17.89 cfs

15.00' x 0.50' deep Parabolic Channel, n= 0.035 Earth, dense weeds
Length= 162.0' Slope= 0.0309 '/'
Inlet Invert= 104.00', Outlet Invert= 99.00'



‡

Reach 61R: Rain Garden #101 Reach



Summary for Reach 62R: Rain Garden #102

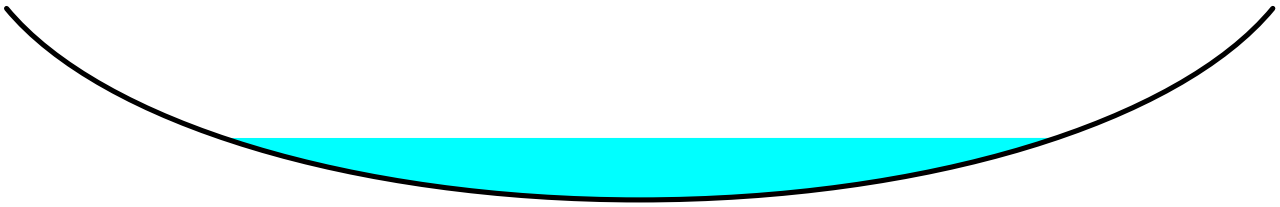
[90] Warning: Qout>Qin may require smaller dt or Finer Routing

Inflow Area = 2.821 ac, 53.27% Impervious, Inflow Depth > 3.91" for 25 Yr.-24 Hr. event
Inflow = 4.92 cfs @ 12.47 hrs, Volume= 0.918 af
Outflow = 4.93 cfs @ 12.46 hrs, Volume= 0.918 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.02 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.82 fps, Avg. Travel Time= 0.3 min

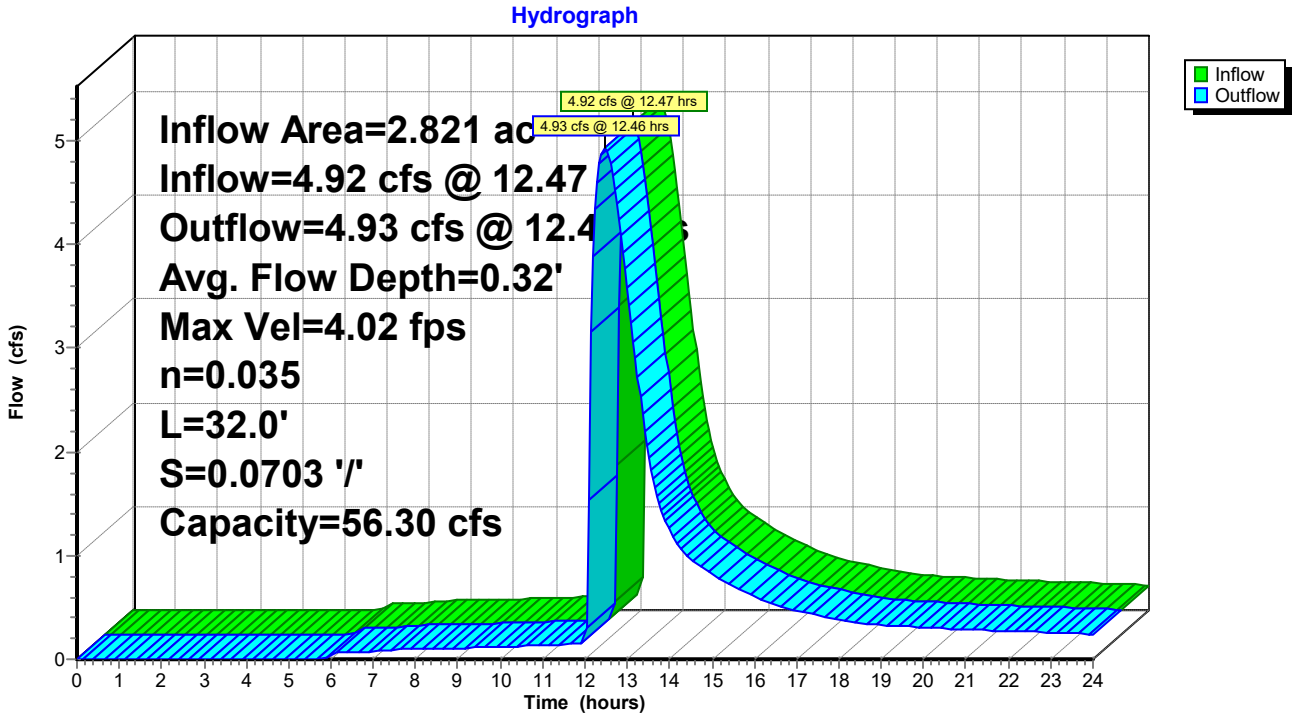
Peak Storage= 39 cf @ 12.46 hrs
Average Depth at Peak Storage= 0.32'
Bank-Full Depth= 1.00' Flow Area= 6.7 sf, Capacity= 56.30 cfs

10.00' x 1.00' deep Parabolic Channel, n= 0.035 Earth, dense weeds
Length= 32.0' Slope= 0.0703 '/'
Inlet Invert= 73.00', Outlet Invert= 70.75'



‡

Reach 62R: Rain Garden #102



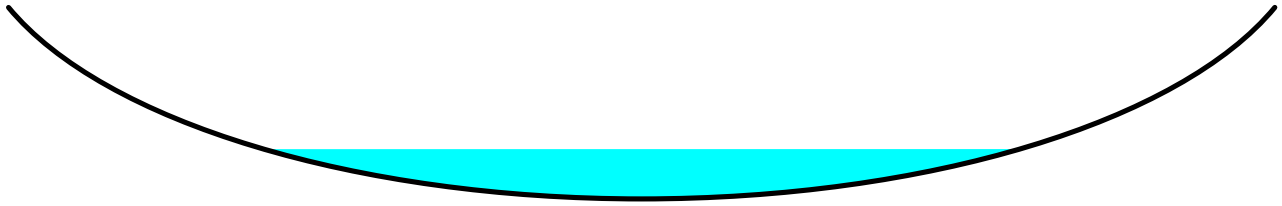
Summary for Reach 63R: Reach RG #103

Inflow Area = 1.721 ac, 53.09% Impervious, Inflow Depth > 4.63" for 25 Yr.-24 Hr. event
Inflow = 3.90 cfs @ 12.37 hrs, Volume= 0.664 af
Outflow = 3.90 cfs @ 12.38 hrs, Volume= 0.663 af, Atten= 0%, Lag= 1.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.41 fps, Min. Travel Time= 1.4 min
Avg. Velocity = 2.05 fps, Avg. Travel Time= 3.0 min

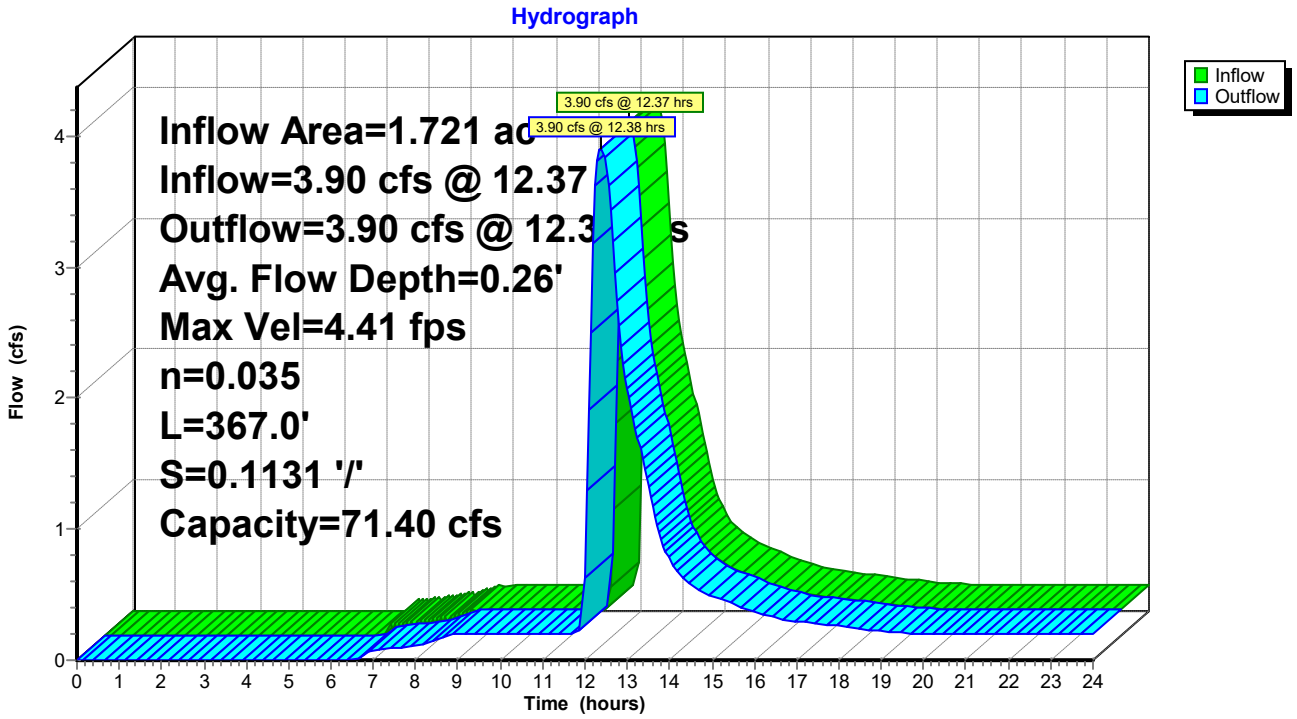
Peak Storage= 324 cf @ 12.38 hrs
Average Depth at Peak Storage= 0.26'
Bank-Full Depth= 1.00' Flow Area= 6.7 sf, Capacity= 71.40 cfs

10.00' x 1.00' deep Parabolic Channel, n= 0.035 Earth, dense weeds
Length= 367.0' Slope= 0.1131 '/'
Inlet Invert= 88.00', Outlet Invert= 46.50'



‡

Reach 63R: Reach RG #103



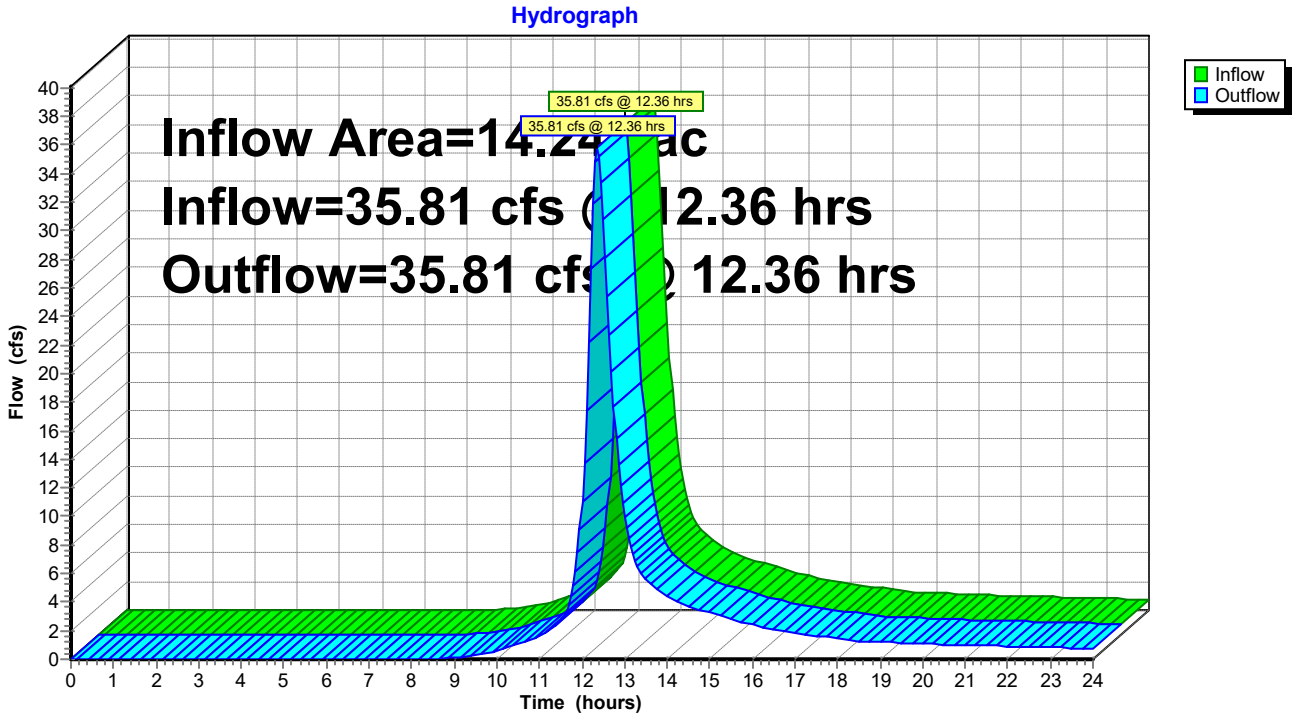
Summary for Reach 100R: Final Reach 100

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 14.245 ac, 2.04% Impervious, Inflow Depth > 3.52" for 25 Yr.-24 Hr. event
Inflow = 35.81 cfs @ 12.36 hrs, Volume= 4.175 af
Outflow = 35.81 cfs @ 12.36 hrs, Volume= 4.175 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Reach 100R: Final Reach 100



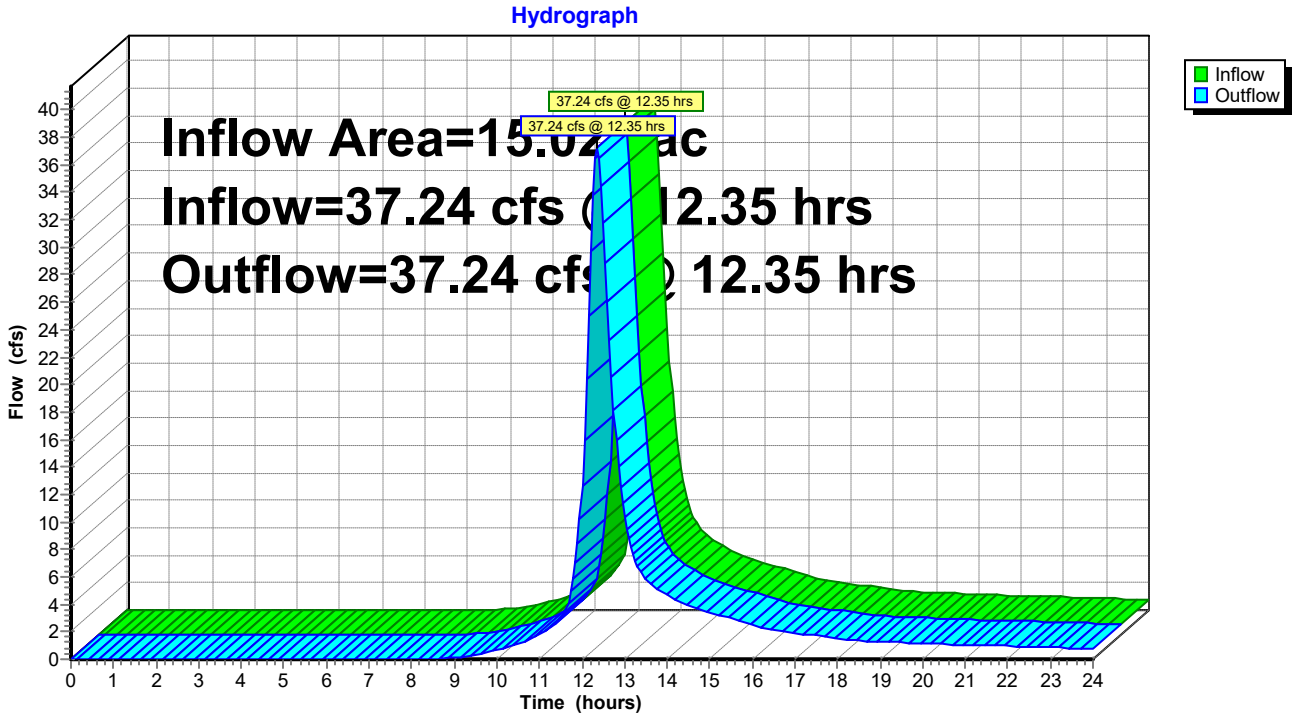
Summary for Reach 200R: Final Reach 200

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 15.028 ac, 1.94% Impervious, Inflow Depth > 3.52" for 25 Yr.-24 Hr. event
Inflow = 37.24 cfs @ 12.35 hrs, Volume= 4.411 af
Outflow = 37.24 cfs @ 12.35 hrs, Volume= 4.411 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Reach 200R: Final Reach 200



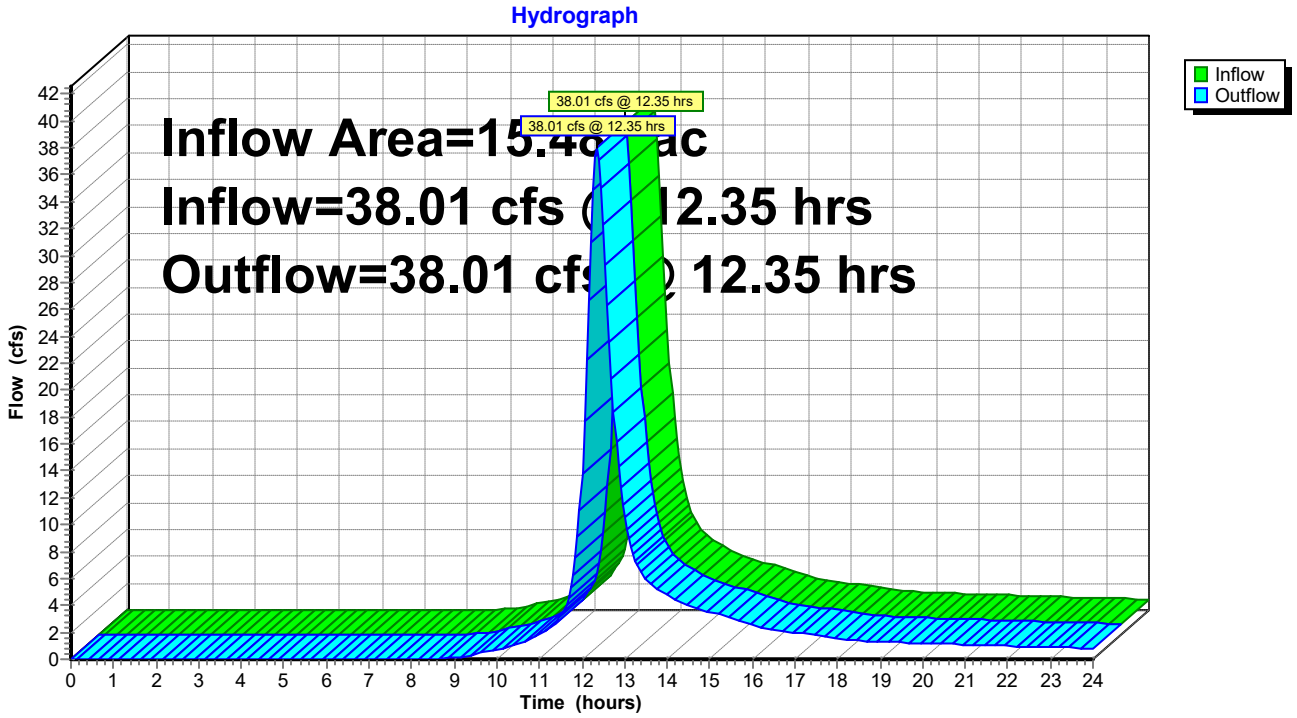
Summary for Reach 300R: Final Reach 300

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 15.481 ac, 1.98% Impervious, Inflow Depth > 3.53" for 25 Yr.-24 Hr. event
Inflow = 38.01 cfs @ 12.35 hrs, Volume= 4.551 af
Outflow = 38.01 cfs @ 12.35 hrs, Volume= 4.551 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Reach 300R: Final Reach 300



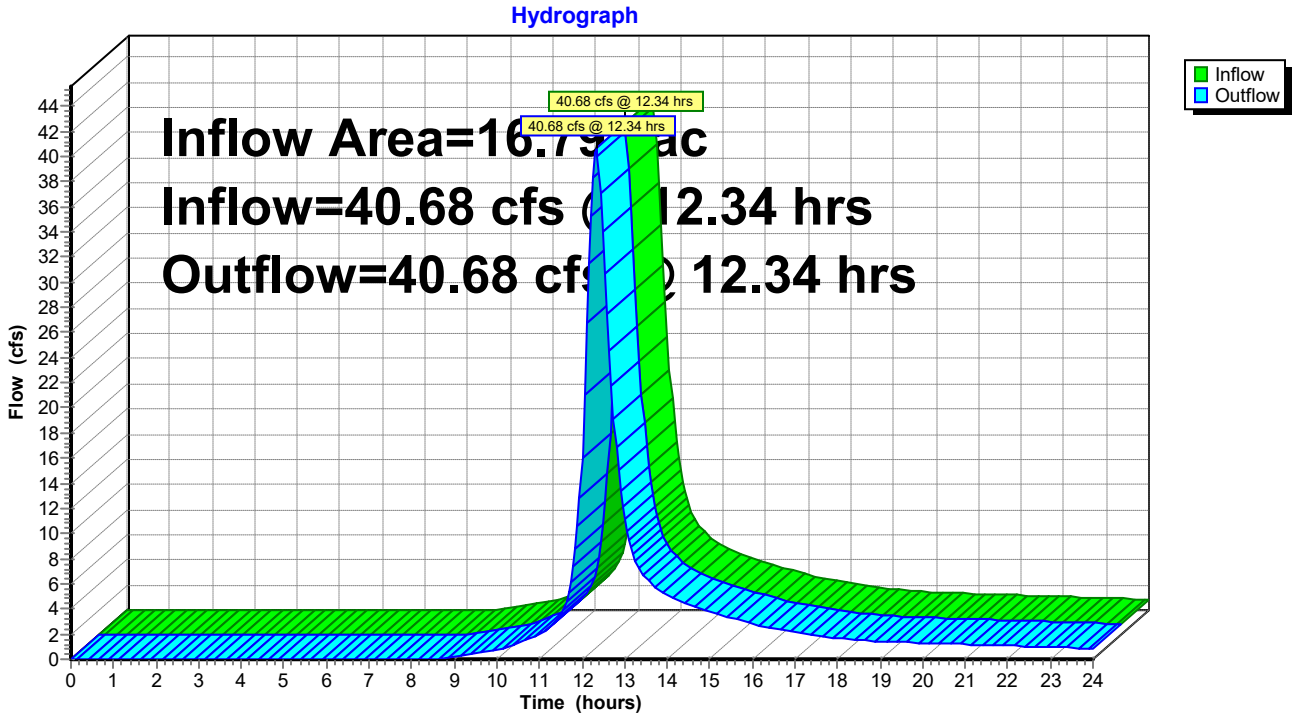
Summary for Reach 400R: Final Reach 400

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 16.796 ac, 1.88% Impervious, Inflow Depth > 3.53" for 25 Yr.-24 Hr. event
Inflow = 40.68 cfs @ 12.34 hrs, Volume= 4.947 af
Outflow = 40.68 cfs @ 12.34 hrs, Volume= 4.947 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Reach 400R: Final Reach 400



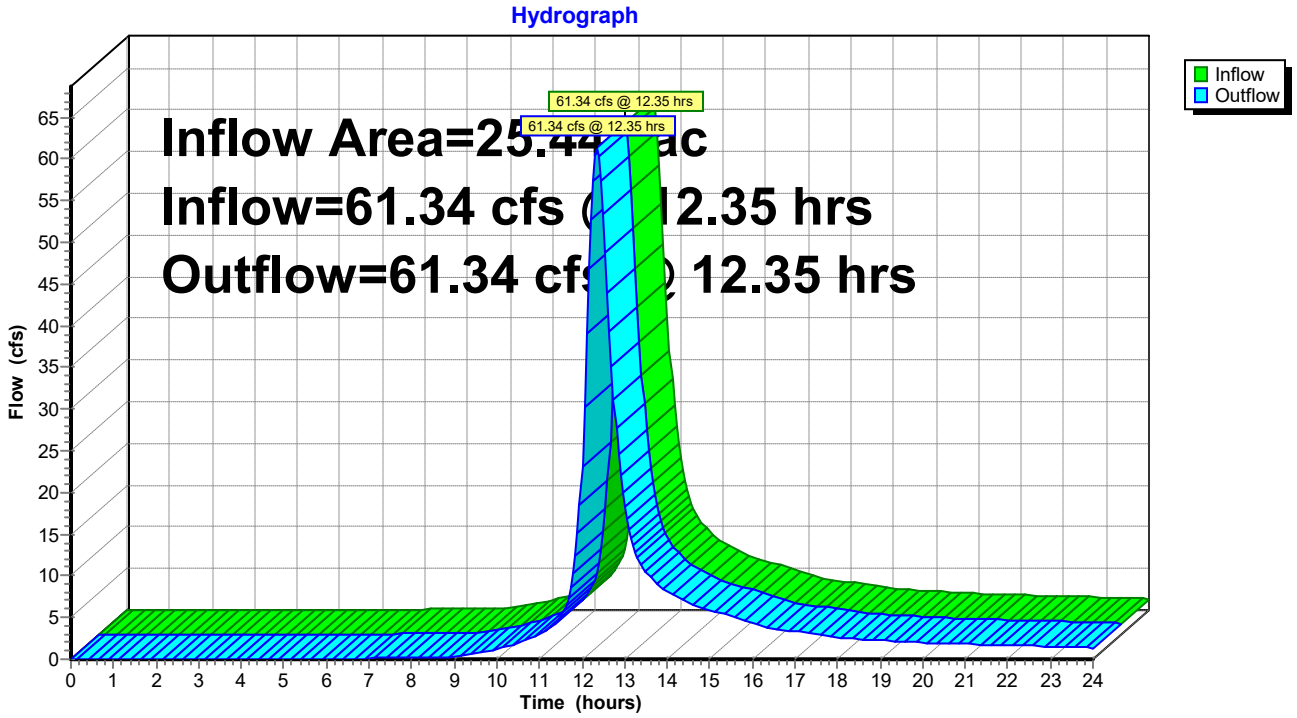
Summary for Reach 500R: Final Reach 500

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 25.445 ac, 5.38% Impervious, Inflow Depth > 3.64" for 25 Yr.-24 Hr. event
Inflow = 61.34 cfs @ 12.35 hrs, Volume= 7.708 af
Outflow = 61.34 cfs @ 12.35 hrs, Volume= 7.708 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Reach 500R: Final Reach 500



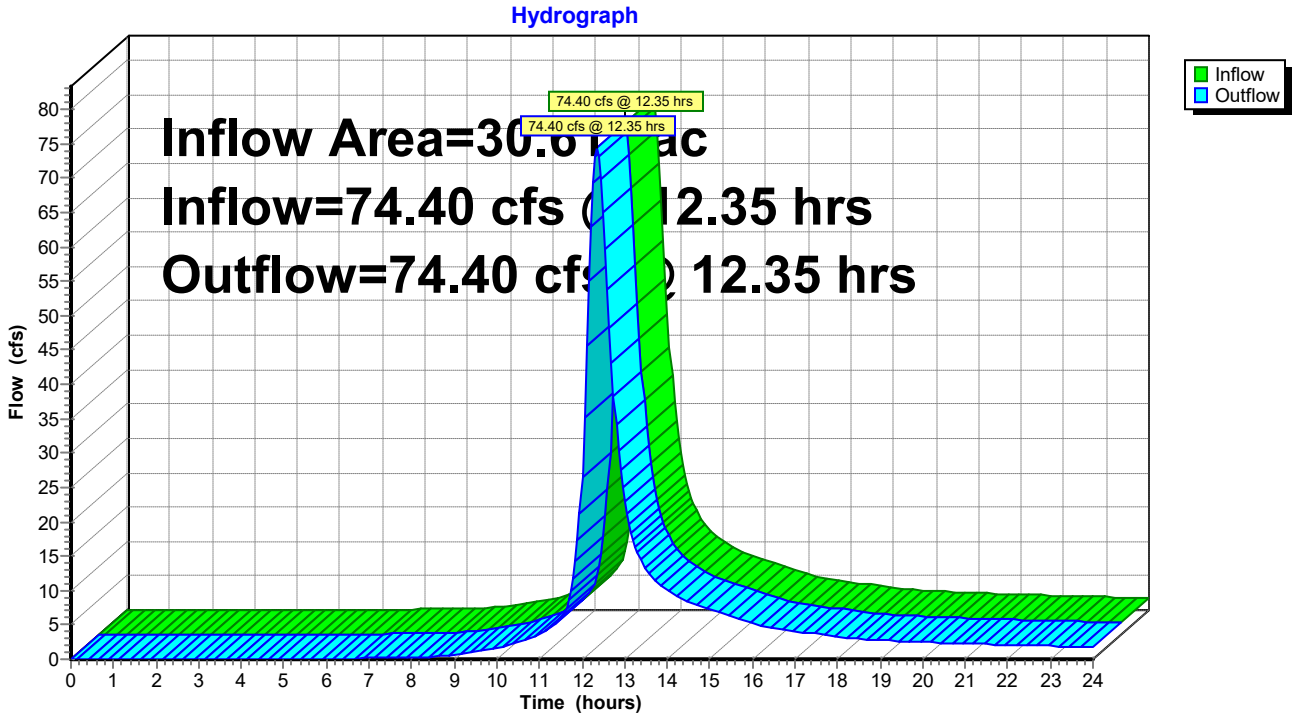
Summary for Reach 600R: Final Reach 600

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 30.613 ac, 7.57% Impervious, Inflow Depth > 3.70" for 25 Yr.-24 Hr. event
Inflow = 74.40 cfs @ 12.35 hrs, Volume= 9.434 af
Outflow = 74.40 cfs @ 12.35 hrs, Volume= 9.434 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Reach 600R: Final Reach 600



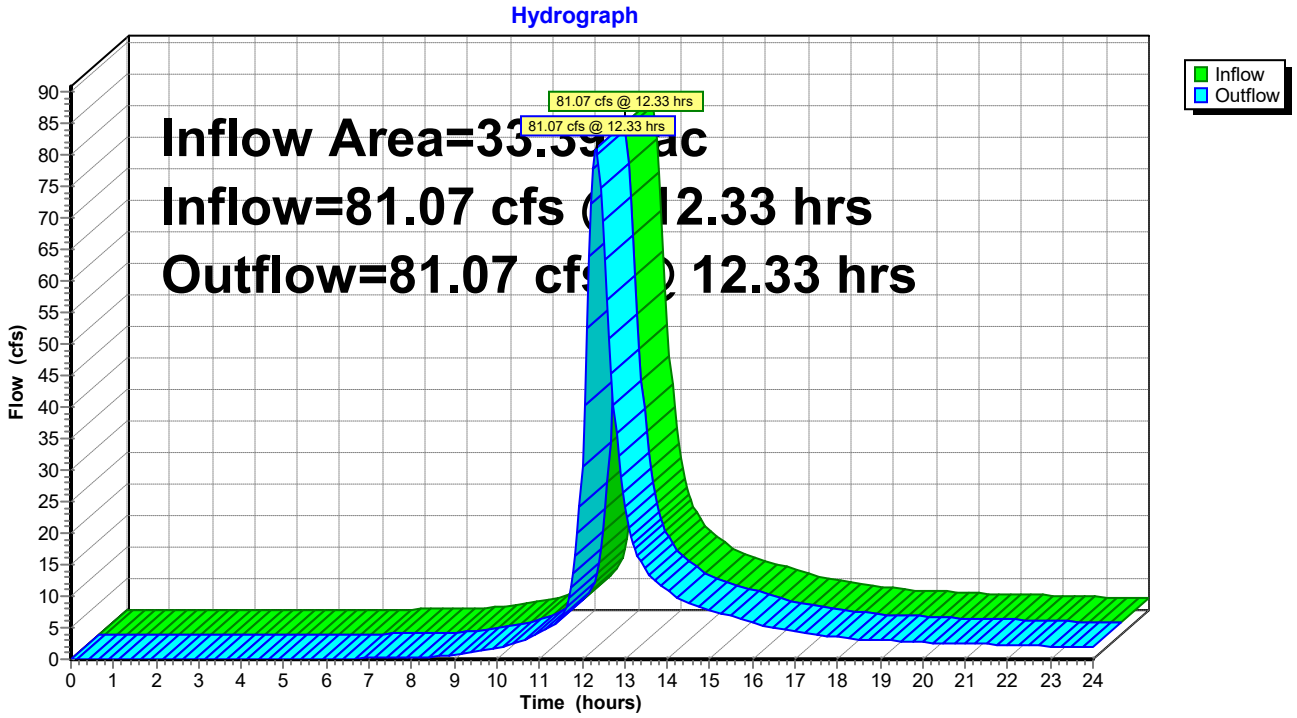
Summary for Reach 700R: Final Reach 700

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 33.390 ac, 7.00% Impervious, Inflow Depth > 3.69" for 25 Yr.-24 Hr. event
Inflow = 81.07 cfs @ 12.33 hrs, Volume= 10.268 af
Outflow = 81.07 cfs @ 12.33 hrs, Volume= 10.268 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Reach 700R: Final Reach 700



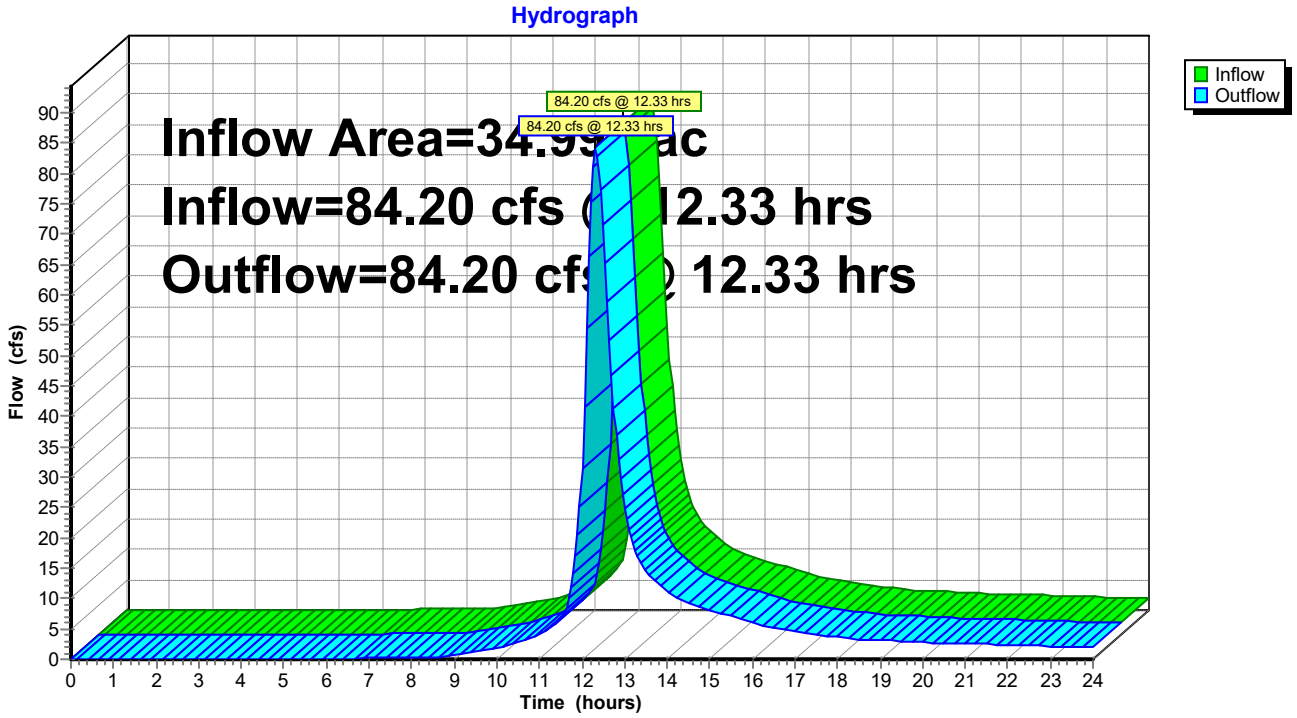
Summary for Reach 800R: Final Reach 800

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 34.993 ac, 6.68% Impervious, Inflow Depth > 3.64" for 25 Yr.-24 Hr. event
Inflow = 84.20 cfs @ 12.33 hrs, Volume= 10.615 af
Outflow = 84.20 cfs @ 12.33 hrs, Volume= 10.615 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Reach 800R: Final Reach 800



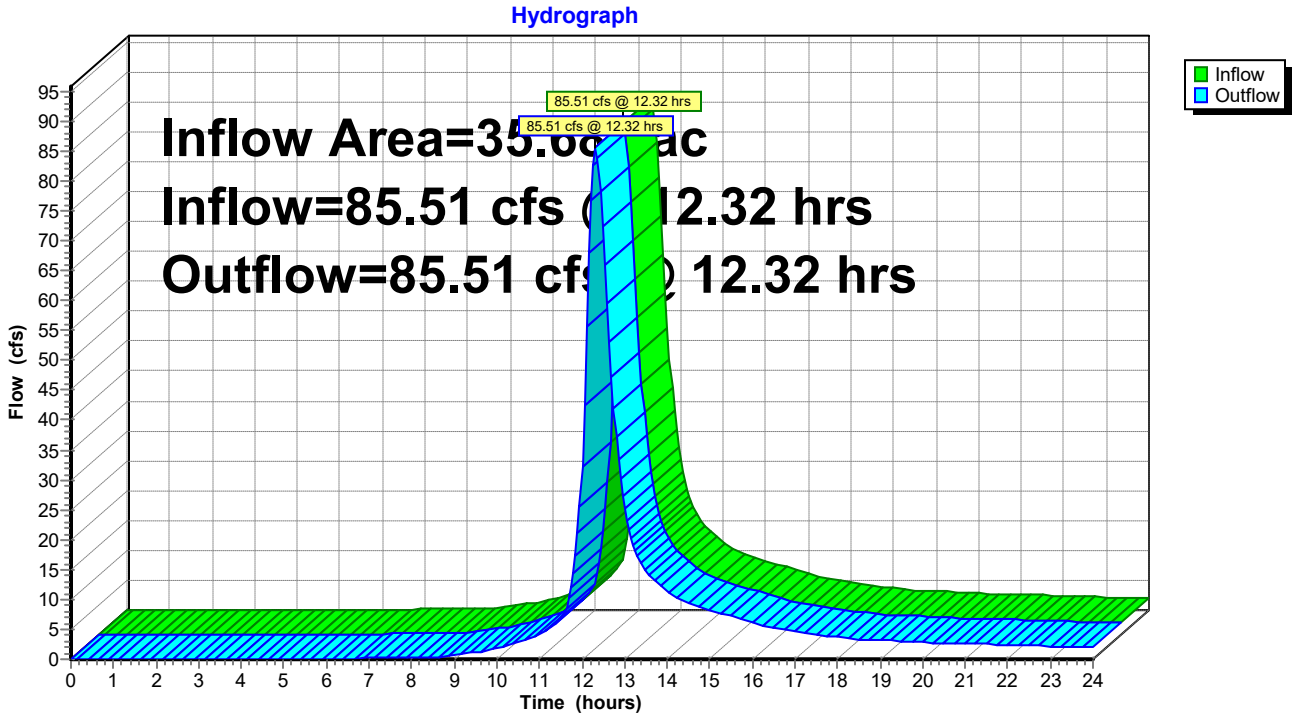
Summary for Reach 900R: Final Reach 900

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 35.687 ac, 6.55% Impervious, Inflow Depth > 3.62" for 25 Yr.-24 Hr. event
Inflow = 85.51 cfs @ 12.32 hrs, Volume= 10.765 af
Outflow = 85.51 cfs @ 12.32 hrs, Volume= 10.765 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Reach 900R: Final Reach 900



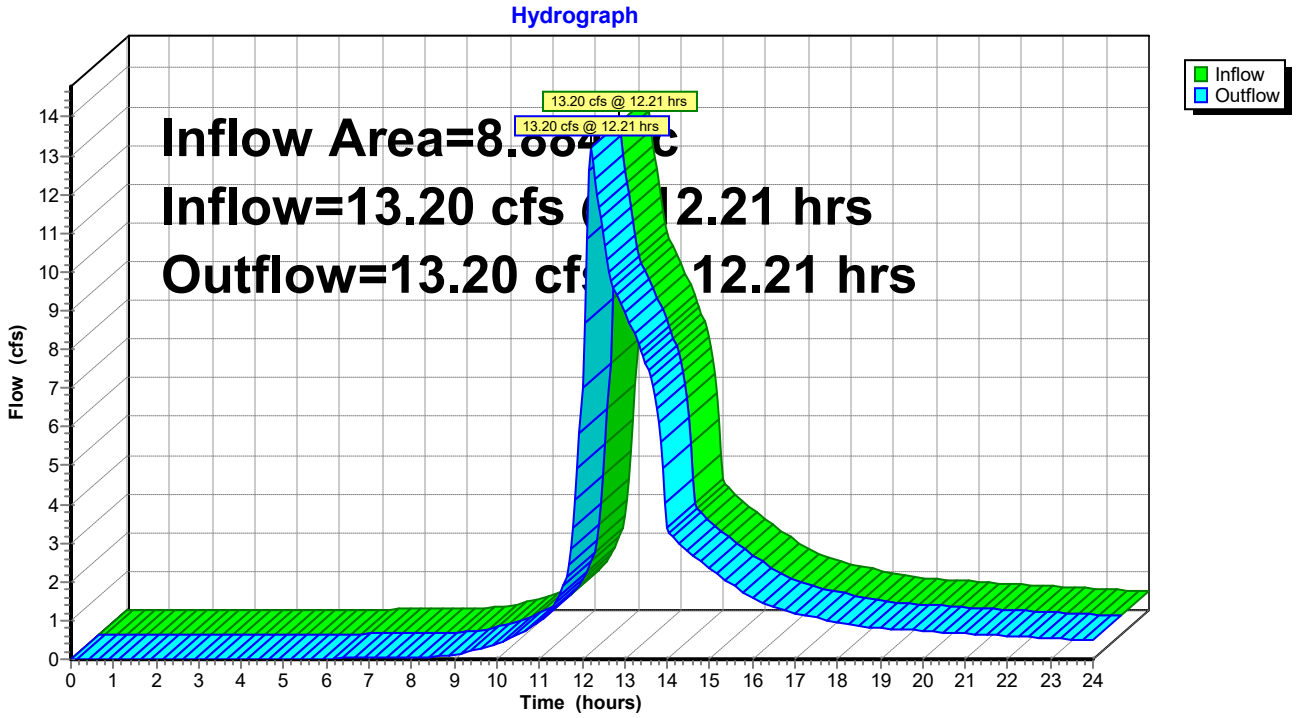
Summary for Reach 1100R: Final Reach #1100

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 8.884 ac, 12.35% Impervious, Inflow Depth > 3.63" for 25 Yr.-24 Hr. event
Inflow = 13.20 cfs @ 12.21 hrs, Volume= 2.685 af
Outflow = 13.20 cfs @ 12.21 hrs, Volume= 2.685 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Reach 1100R: Final Reach #1100



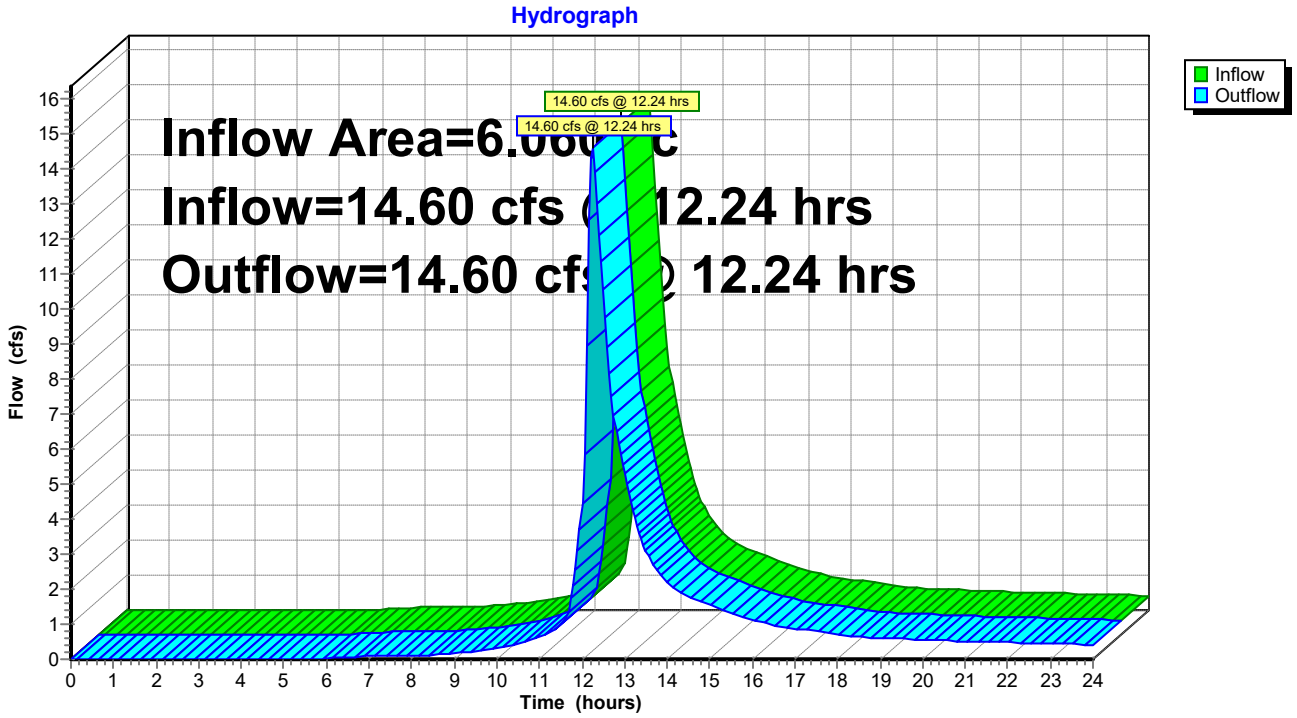
Summary for Reach 1200R: Final Reach #1200

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 6.060 ac, 25.30% Impervious, Inflow Depth > 3.80" for 25 Yr.-24 Hr. event
Inflow = 14.60 cfs @ 12.24 hrs, Volume= 1.919 af
Outflow = 14.60 cfs @ 12.24 hrs, Volume= 1.919 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Reach 1200R: Final Reach #1200



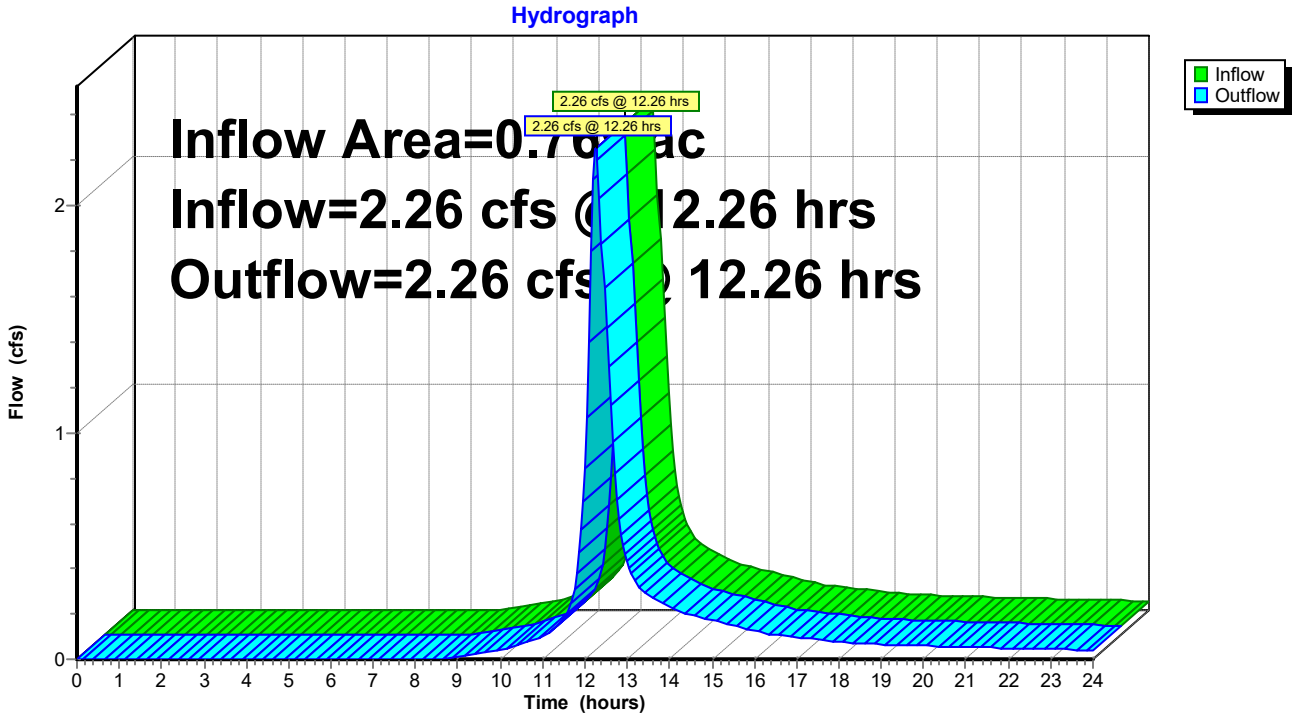
Summary for Reach 1300R: Final Reach #1300

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.769 ac, 0.00% Impervious, Inflow Depth > 3.60" for 25 Yr.-24 Hr. event
Inflow = 2.26 cfs @ 12.26 hrs, Volume= 0.231 af
Outflow = 2.26 cfs @ 12.26 hrs, Volume= 0.231 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Reach 1300R: Final Reach #1300



Summary for Pond 1EP: Catch Basin

Inflow Area = 0.011 ac, 45.75% Impervious, Inflow Depth > 4.68" for 25 Yr.-24 Hr. event
Inflow = 0.06 cfs @ 12.09 hrs, Volume= 0.004 af
Outflow = 0.06 cfs @ 12.09 hrs, Volume= 0.004 af, Atten= 0%, Lag= 0.3 min
Primary = 0.06 cfs @ 12.09 hrs, Volume= 0.004 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 138.07' @ 12.09 hrs Surf.Area= 13 sf Storage= 2 cf

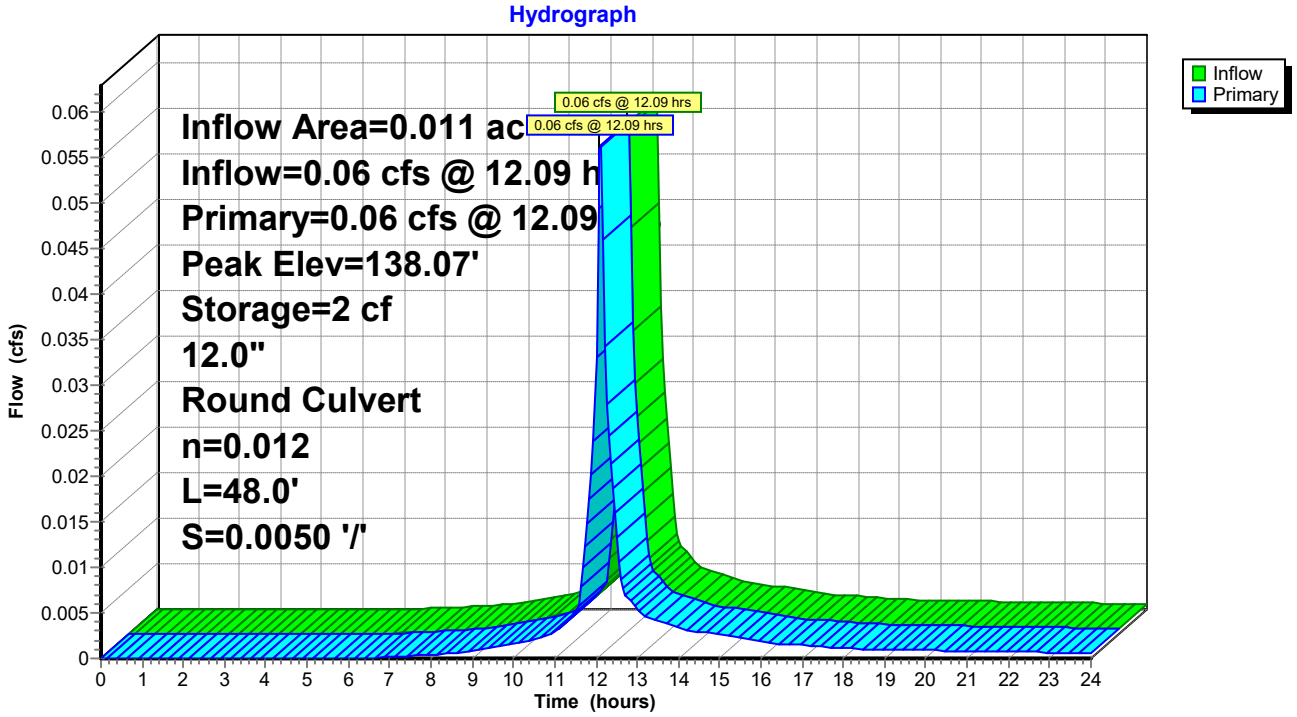
Plug-Flow detention time= 1.9 min calculated for 0.004 af (100% of inflow)
Center-of-Mass det. time= 1.3 min (807.0 - 805.7)

Volume	Invert	Avail.Storage	Storage Description
#1	137.94'	57 cf	**4.00'D x 4.50'H 4' Structure**

Device	Routing	Invert	Outlet Devices
#1	Primary	137.94'	**12.0" Round 12" HDPE** L= 48.0' Ke= 0.500 Inlet / Outlet Invert= 137.94' / 137.70' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.06 cfs @ 12.09 hrs HW=138.07' TW=137.19' (Dynamic Tailwater)
↑—**1=12" HDPE** (Barrel Controls 0.06 cfs @ 1.36 fps)

Pond 1EP: Catch Basin



Summary for Pond 2EP: Catch Basin

Inflow Area = 0.053 ac, 9.70% Impervious, Inflow Depth > 3.51" for 25 Yr.-24 Hr. event
Inflow = 0.21 cfs @ 12.09 hrs, Volume= 0.015 af
Outflow = 0.21 cfs @ 12.10 hrs, Volume= 0.015 af, Atten= 0%, Lag= 0.2 min
Primary = 0.21 cfs @ 12.10 hrs, Volume= 0.015 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 138.01' @ 12.10 hrs Surf.Area= 13 sf Storage= 3 cf

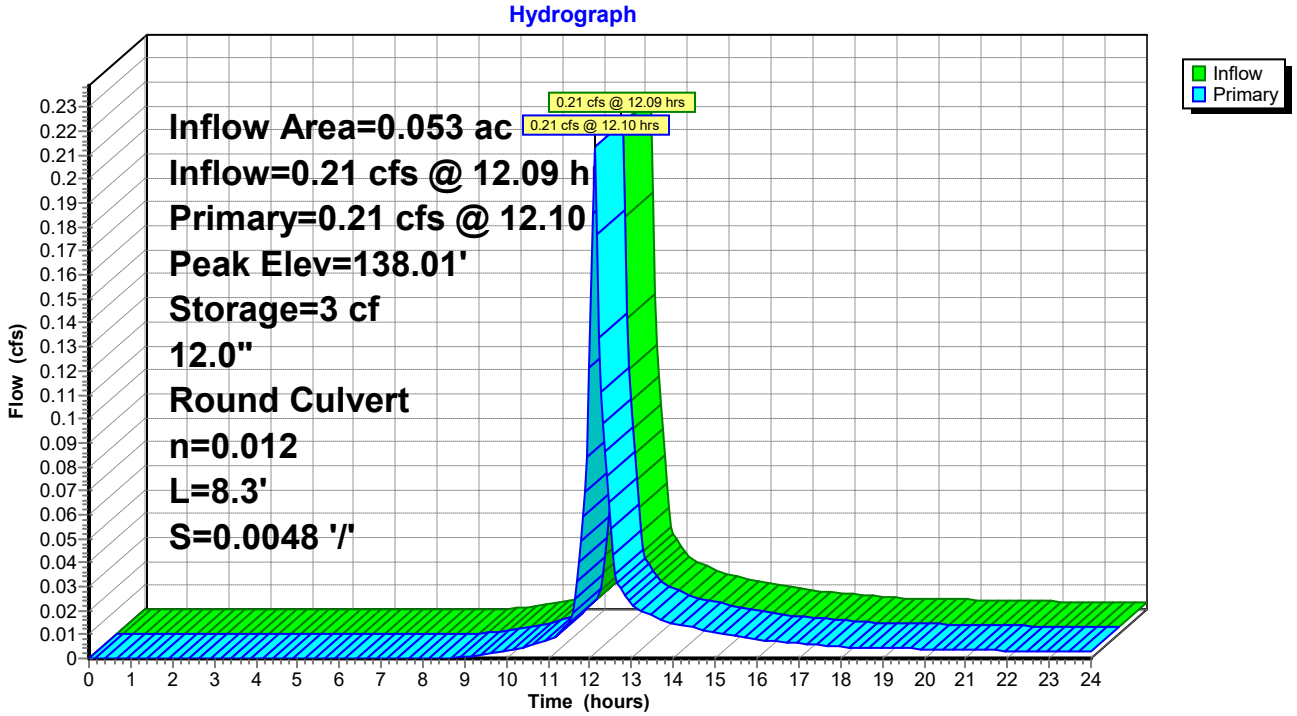
Plug-Flow detention time= 0.9 min calculated for 0.015 af (100% of inflow)
Center-of-Mass det. time= 0.6 min (831.7 - 831.2)

Volume	Invert	Avail.Storage	Storage Description
#1	137.74'	43 cf	**4.00'D x 3.40'H 4' Structure**

Device	Routing	Invert	Outlet Devices
#1	Primary	137.74'	**12.0" Round 12" HDPE** L= 8.3' Ke= 0.500 Inlet / Outlet Invert= 137.74' / 137.70' S= 0.0048 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.21 cfs @ 12.10 hrs HW=138.01' TW=137.19' (Dynamic Tailwater)
↑—**1=12" HDPE** (Barrel Controls 0.21 cfs @ 1.83 fps)

Pond 2EP: Catch Basin



Summary for Pond 3EP: Catch Basin

Inflow Area = 0.119 ac, 84.79% Impervious, Inflow Depth > 6.04" for 25 Yr.-24 Hr. event
Inflow = 0.76 cfs @ 12.09 hrs, Volume= 0.060 af
Outflow = 0.76 cfs @ 12.09 hrs, Volume= 0.060 af, Atten= 0%, Lag= 0.1 min
Primary = 0.76 cfs @ 12.09 hrs, Volume= 0.060 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 138.96' @ 12.09 hrs Surf.Area= 13 sf Storage= 6 cf

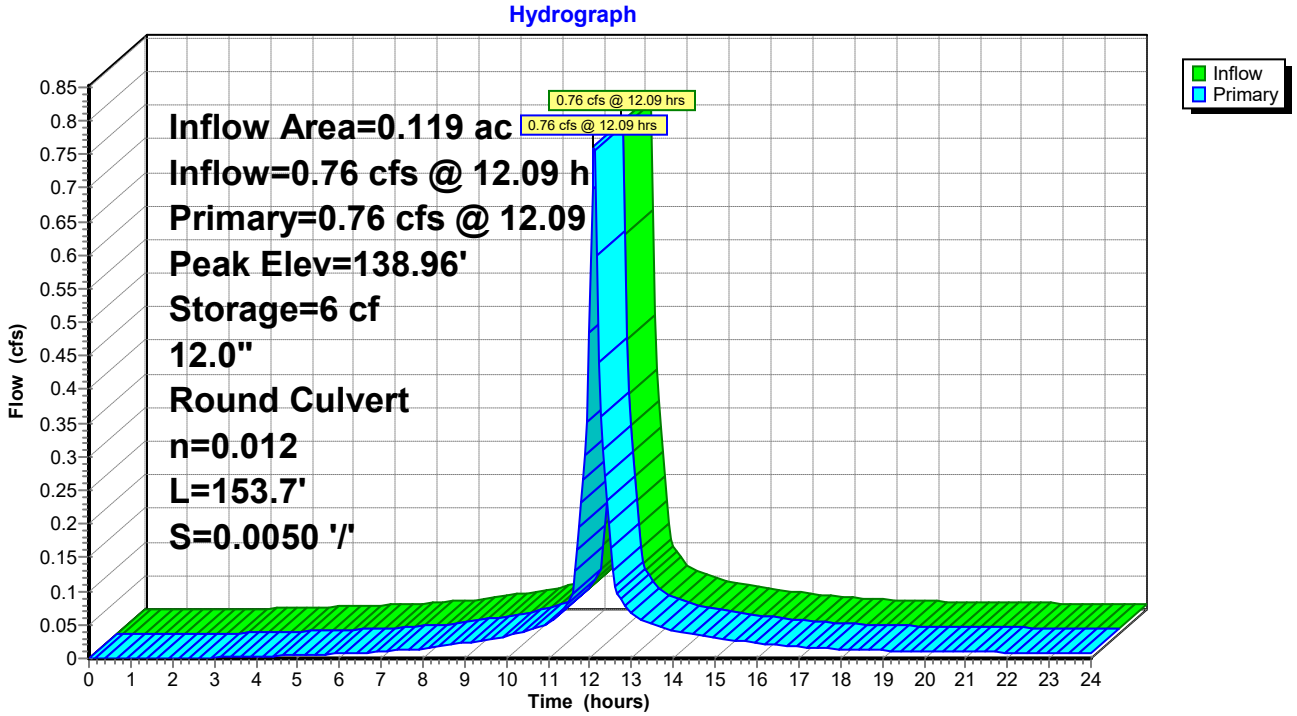
Plug-Flow detention time= 0.5 min calculated for 0.060 af (100% of inflow)
Center-of-Mass det. time= 0.4 min (769.2 - 768.9)

Volume	Invert	Avail.Storage	Storage Description
#1	138.47'	41 cf	**4.00'D x 3.23'H 4' Structure**

Device	Routing	Invert	Outlet Devices
#1	Primary	138.47'	**12.0" Round 12" HDPE** L= 153.7' Ke= 0.500 Inlet / Outlet Invert= 138.47' / 137.70' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.74 cfs @ 12.09 hrs HW=138.96' TW=137.19' (Dynamic Tailwater)
↑—**1=12" HDPE** (Barrel Controls 0.74 cfs @ 2.86 fps)

Pond 3EP: Catch Basin



Summary for Pond 4EP: Catch Basin

Inflow Area = 0.203 ac, 63.62% Impervious, Inflow Depth > 5.33" for 25 Yr.-24 Hr. event
Inflow = 1.16 cfs @ 12.09 hrs, Volume= 0.090 af
Outflow = 1.16 cfs @ 12.09 hrs, Volume= 0.090 af, Atten= 0%, Lag= 0.1 min
Primary = 1.16 cfs @ 12.09 hrs, Volume= 0.090 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 137.20' @ 12.09 hrs Surf.Area= 13 sf Storage= 6 cf

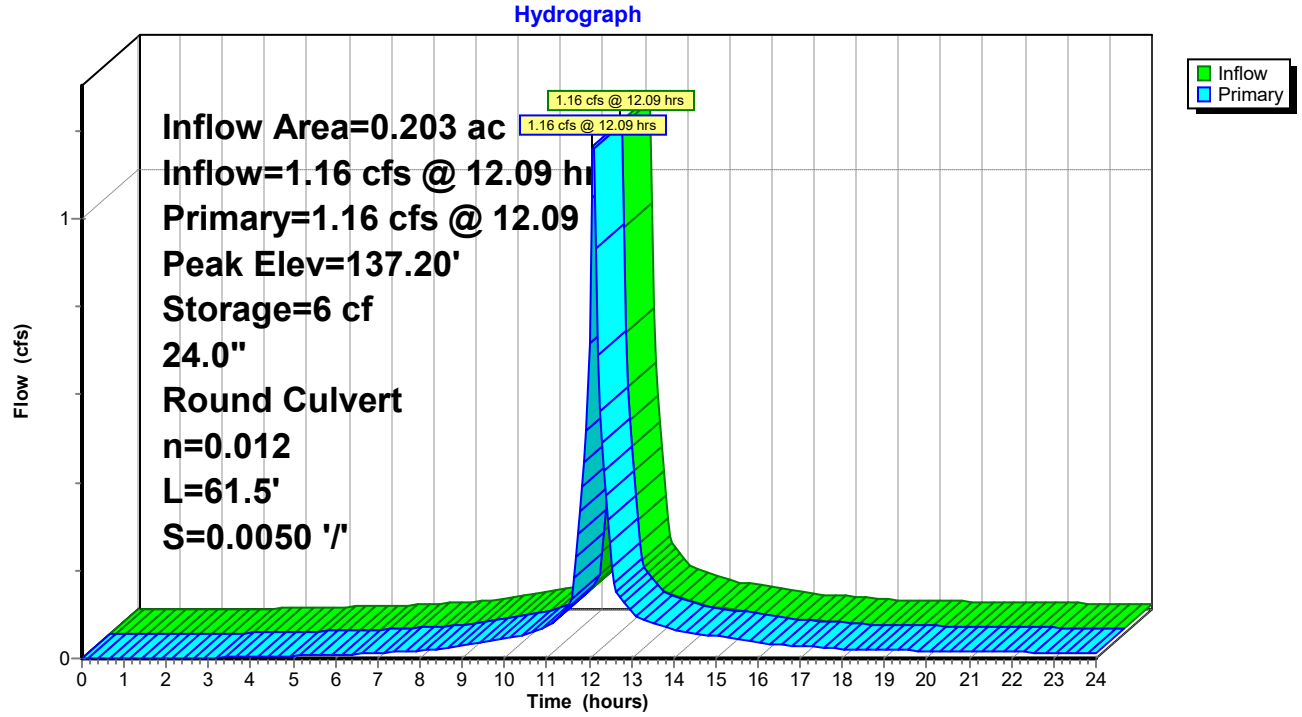
Plug-Flow detention time= 0.3 min calculated for 0.090 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (780.8 - 780.6)

Volume	Invert	Avail.Storage	Storage Description
#1	136.70'	69 cf	**4.00'D x 5.48'H 4' Structure**

Device	Routing	Invert	Outlet Devices
#1	Primary	136.70'	**24.0" Round 24 " HDPE** L= 61.5' Ke= 0.500 Inlet / Outlet Invert= 136.70' / 136.39' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

Primary OutFlow Max=1.14 cfs @ 12.09 hrs HW=137.19' TW=136.50' (Dynamic Tailwater)
↳**1=24 " HDPE** (Barrel Controls 1.14 cfs @ 2.86 fps)

Pond 4EP: Catch Basin



Summary for Pond 14P: 4' (T) x 6' (W) Box Culvert

Inflow Area = 7.440 ac, 13.62% Impervious, Inflow Depth > 3.84" for 25 Yr.-24 Hr. event
Inflow = 18.49 cfs @ 12.38 hrs, Volume= 2.379 af
Outflow = 18.43 cfs @ 12.40 hrs, Volume= 2.379 af, Atten= 0%, Lag= 1.5 min
Primary = 18.43 cfs @ 12.40 hrs, Volume= 2.379 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 78.52' @ 12.40 hrs Surf.Area= 2,280 sf Storage= 958 cf
Flood Elev= 81.00' Surf.Area= 14,805 sf Storage= 21,297 cf

Plug-Flow detention time= 0.7 min calculated for 2.374 af (100% of inflow)
Center-of-Mass det. time= 0.6 min (844.2 - 843.6)

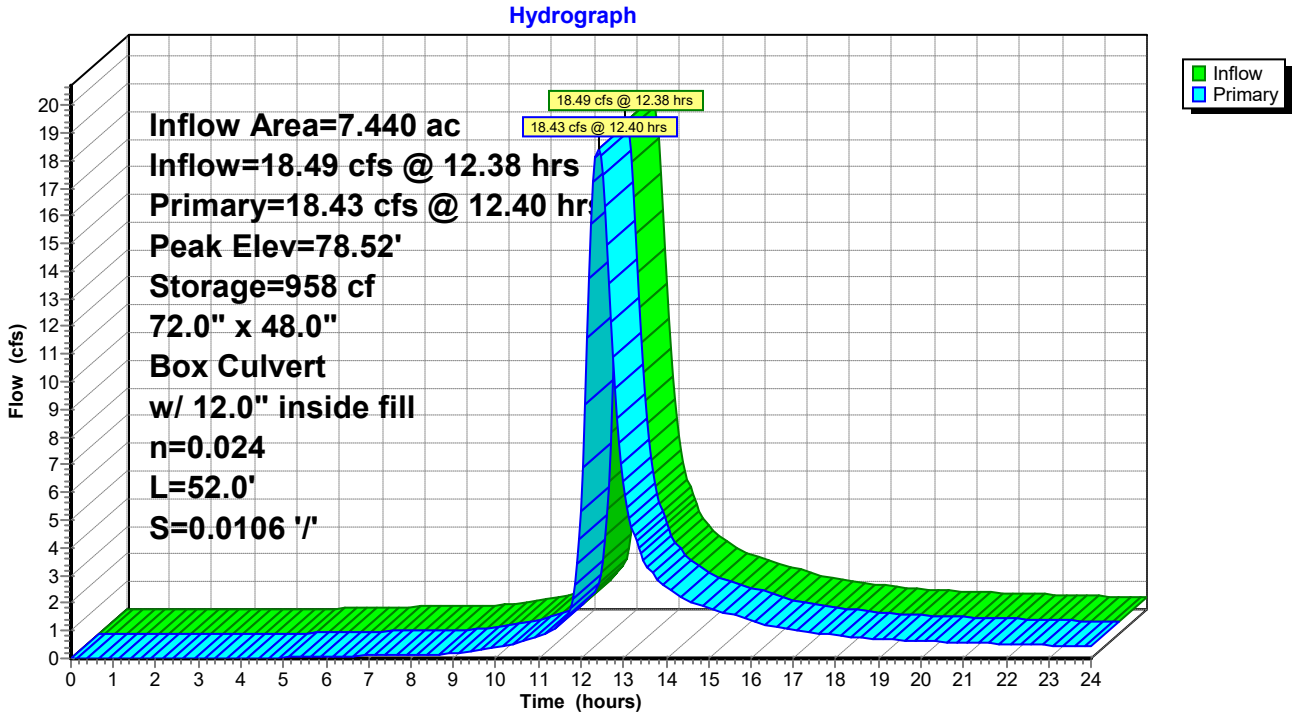
Volume	Invert	Avail.Storage	Storage Description
#1	77.50'	21,297 cf	**Ponding Area (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
77.50	160	67.5	0	0	160
78.00	750	130.1	209	209	1,146
79.00	4,451	292.7	2,343	2,552	6,620
80.00	9,371	453.0	6,760	9,312	16,140
81.00	14,805	580.0	11,985	21,297	26,593

Device	Routing	Invert	Outlet Devices
#1	Primary	77.50'	**72.0" W x 48.0" H Box 4'x6' Box Culvert 1' Bury w/ 12.0" inside fill** L= 52.0' Ke= 0.500 Inlet / Outlet Invert= 76.50' / 75.95' S= 0.0106 '/' Cc= 0.900 n= 0.024, Flow Area= 18.00 sf

Primary OutFlow Max=18.41 cfs @ 12.40 hrs HW=78.52' TW=77.66' (Dynamic Tailwater)
↑—**1=4'x6' Box Culvert 1' Bury** (Barrel Controls 18.41 cfs @ 4.02 fps)

Pond 14P: 4' (T) x 6' (W) Box Culvert



Summary for Pond 15P: 12" RCP Inlet Sump/Pond

Inflow Area = 6.774 ac, 15.97% Impervious, Inflow Depth > 3.64" for 25 Yr.-24 Hr. event
Inflow = 15.61 cfs @ 12.34 hrs, Volume= 2.053 af
Outflow = 8.19 cfs @ 12.73 hrs, Volume= 2.053 af, Atten= 48%, Lag= 23.6 min
Primary = 8.19 cfs @ 12.73 hrs, Volume= 2.053 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 98.10' @ 12.73 hrs Surf.Area= 7,436 sf Storage= 12,496 cf
Flood Elev= 100.50' Surf.Area= 20,281 sf Storage= 43,715 cf

Plug-Flow detention time= 8.9 min calculated for 2.053 af (100% of inflow)
Center-of-Mass det. time= 8.8 min (861.0 - 852.3)

Volume	Invert	Avail.Storage	Storage Description
#1	92.91'	43,715 cf	**Open Water Storage (Irregular)** Listed below (Recalc)

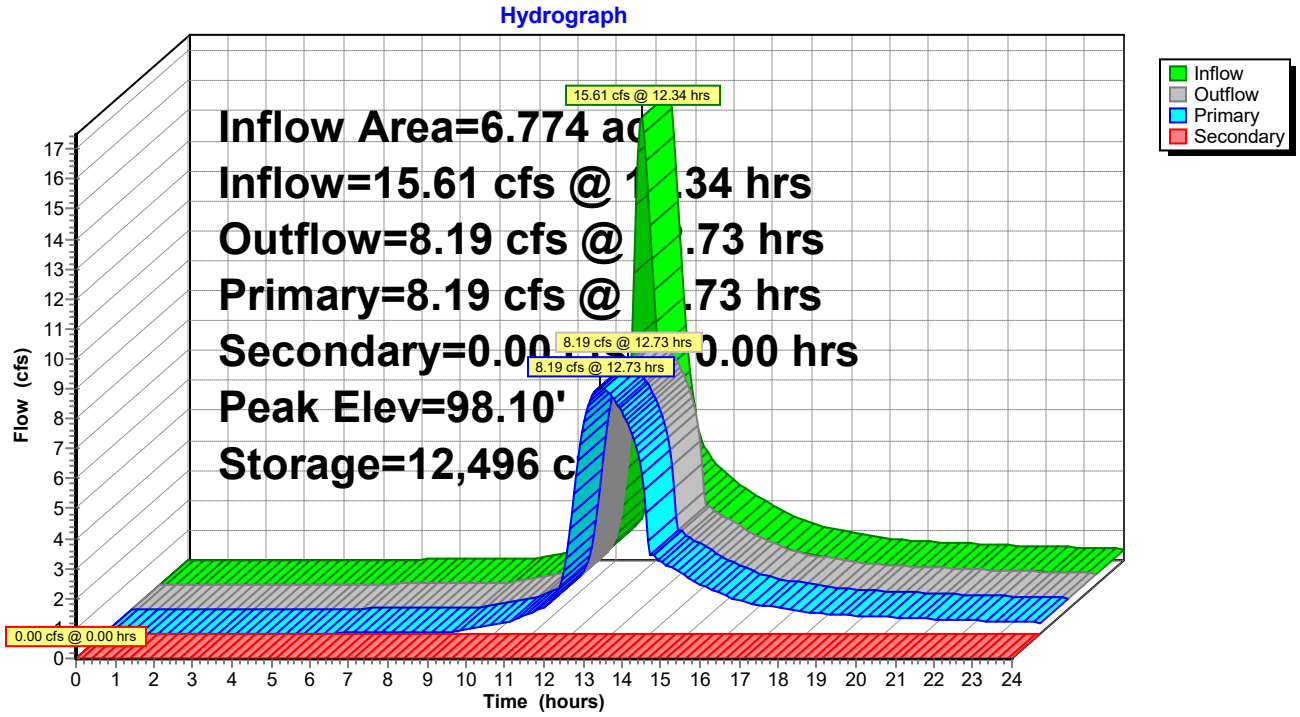
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
92.91	4	8.0	0	0	4
93.00	76	32.8	3	3	85
94.00	145	50.2	109	112	207
95.00	785	142.0	422	534	1,614
96.00	2,440	333.7	1,536	2,070	8,875
97.00	5,015	384.4	3,651	5,721	11,794
98.00	7,121	421.5	6,037	11,759	14,207
99.00	10,534	551.3	8,772	20,531	24,267
100.00	17,329	664.7	13,791	34,322	35,257
100.50	20,281	657.0	9,393	43,715	36,132

Device	Routing	Invert	Outlet Devices
#1	Primary	92.91'	**12.0" Round 12" RCP** L= 84.3' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 92.91' / 90.32' S= 0.0307 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Secondary	100.25'	**50.0' long x 15.0' breadth Flow Over Road** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=8.19 cfs @ 12.73 hrs HW=98.10' TW=90.66' (Dynamic Tailwater)
1=12" RCP (Inlet Controls 8.19 cfs @ 10.43 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=92.91' TW=90.32' (Dynamic Tailwater)
2=Flow Over Road (Controls 0.00 cfs)

Pond 15P: 12" RCP Inlet Sump/Pond



Summary for Pond 20P: 30" RCP Wetland Crossing #1

Inflow Area = 0.318 ac, 0.00% Impervious, Inflow Depth > 2.80" for 25 Yr.-24 Hr. event
Inflow = 0.91 cfs @ 12.13 hrs, Volume= 0.074 af
Outflow = 0.90 cfs @ 12.16 hrs, Volume= 0.074 af, Atten= 1%, Lag= 1.4 min
Primary = 0.90 cfs @ 12.16 hrs, Volume= 0.074 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 111.29' @ 12.16 hrs Surf.Area= 365 sf Storage= 99 cf
Flood Elev= 115.00' Surf.Area= 500 sf Storage= 904 cf

Plug-Flow detention time= 4.1 min calculated for 0.074 af (100% of inflow)
Center-of-Mass det. time= 2.7 min (851.8 - 849.1)

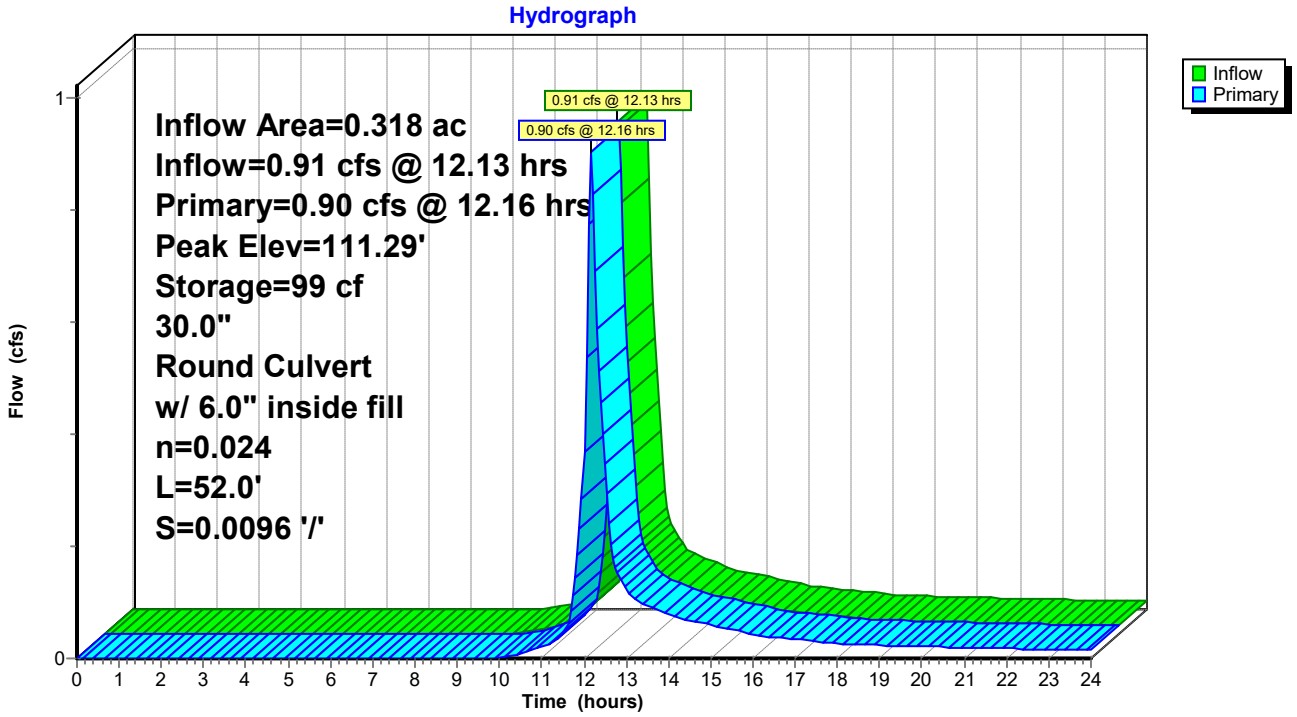
Volume	Invert	Avail.Storage	Storage Description
#1	111.00'	904 cf	**Ponding Area (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
111.00	316	76.3	0	0	316
112.00	500	100.0	404	404	660
113.00	500	100.0	500	904	760

Device	Routing	Invert	Outlet Devices
#1	Primary	111.00'	**30.0" Round 30" RCP w/ 6" Bury w/ 6.0" inside fill** L= 52.0' Ke= 0.500 Inlet / Outlet Invert= 110.50' / 110.00' S= 0.0096 '/' Cc= 0.900 n= 0.024, Flow Area= 4.21 sf

Primary OutFlow Max=0.89 cfs @ 12.16 hrs HW=111.29' TW=110.63' (Dynamic Tailwater)
↑—**1=30" RCP w/ 6" Bury** (Barrel Controls 0.89 cfs @ 1.93 fps)

Pond 20P: 30" RCP Wetland Crossing #1



Summary for Pond 101P: Rain Garden #101

[80] Warning: Exceeded Pond C08P by 0.07' @ 11.95 hrs (2.18 cfs 0.031 af)

Inflow Area = 1.227 ac, 61.68% Impervious, Inflow Depth > 5.57" for 25 Yr.-24 Hr. event
Inflow = 7.20 cfs @ 12.09 hrs, Volume= 0.569 af
Outflow = 1.43 cfs @ 12.53 hrs, Volume= 0.439 af, Atten= 80%, Lag= 26.4 min
Primary = 1.43 cfs @ 12.53 hrs, Volume= 0.439 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 111.38' @ 12.53 hrs Surf.Area= 933 sf Storage= 12,012 cf
Flood Elev= 112.50' Surf.Area= 933 sf Storage= 17,079 cf

Plug-Flow detention time= 180.2 min calculated for 0.439 af (77% of inflow)
Center-of-Mass det. time= 98.4 min (876.7 - 778.3)

Volume	Invert	Avail.Storage	Storage Description
#1	104.25'	373 cf	**Stone (Irregular)** Listed below (Recalc) -Impervious 933 cf Overall x 40.0% Voids
#2	105.25'	280 cf	**Bio-Media (Irregular)** Listed below (Recalc) 1,400 cf Overall x 20.0% Voids
#3	106.75'	47 cf	**Loam (Irregular)** Listed below (Recalc) -Impervious 233 cf Overall x 20.0% Voids
#4	109.00'	12,892 cf	**Open Water Storage (Irregular)** Listed below (Recalc) -Impervious
#5	107.00'	885 cf	**Sediment Forebay (Irregular)** Listed below (Recalc) -Impervious
#6	107.00'	2,602 cf	**Cell (Irregular)** Listed below (Recalc) -Impervious
		17,079 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
104.25	933	120.4	0	0	933
105.25	933	120.4	933	933	1,053

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
105.25	933	120.4	0	0	933
106.75	933	120.4	1,400	1,400	1,114

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
106.75	933	120.4	0	0	933
107.00	933	120.4	233	233	963

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
109.00	2,537	196.5	0	0	2,537
110.00	3,155	215.3	2,840	2,840	3,187
111.00	3,829	234.2	3,487	6,327	3,899
112.00	4,560	258.0	4,189	10,516	4,863
112.50	4,947	262.5	2,376	12,892	5,090

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
107.00	202	77.6	0	0	202
108.00	437	98.5	312	312	508
109.00	720	116.3	573	885	830

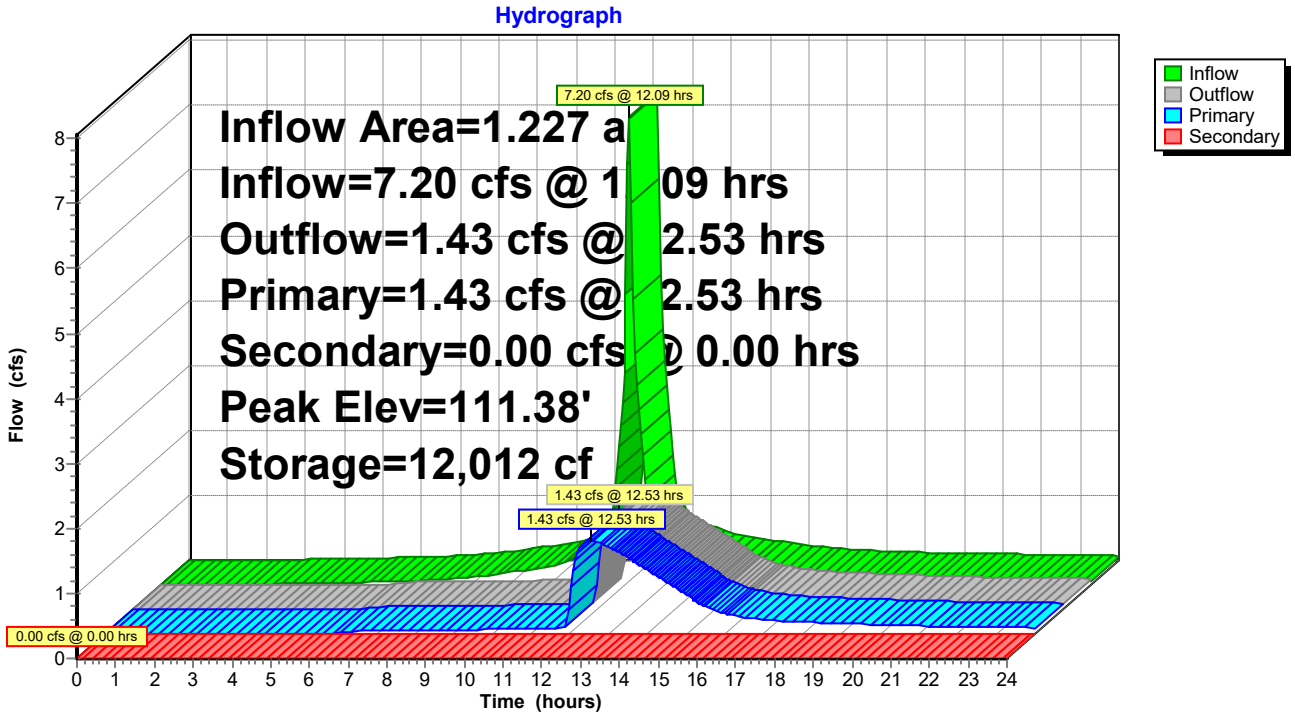
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
107.00	933	120.4	0	0	933
108.00	1,294	140.2	1,109	1,109	1,364
109.00	1,703	157.9	1,494	2,602	1,809

Device	Routing	Invert	Outlet Devices
#1	Primary	104.25'	**15.0" Round 15" HDPE N-12** L= 70.0' Ke= 0.500 Inlet / Outlet Invert= 104.25' / 103.75' S= 0.0071 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	104.25'	**1.2" Vert. 1.25" Orifice** C= 0.600
#3	Device 2	105.25'	**10.000 in/hr 10In/Hr thru Media over Surface area**
#4	Device 1	109.50'	**3.0" Vert. 3" Orifice** C= 0.600
#5	Device 1	109.75'	**4.0" Vert. 4" Orifice (2) X 2.00** C= 0.600
#6	Device 1	111.90'	**48.0" Horiz. 48" Structure** C= 0.600 Limited to weir flow at low heads
#7	Secondary	112.00'	**10.0' long x 11.0' breadth 10' E Spillway** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.53 2.59 2.70 2.68 2.67 2.68 2.66 2.64

Primary OutFlow Max=1.43 cfs @ 12.53 hrs HW=111.38' TW=104.16' (Dynamic Tailwater)
└─**1=15" HDPE N-12** (Passes 1.43 cfs of 14.63 cfs potential flow)
  ├─**2=1.25" Orifice** (Orifice Controls 0.10 cfs @ 12.81 fps)
  │ └─**3=10In/Hr thru Media** (Passes 0.10 cfs of 0.22 cfs potential flow)
  ├─**4=3" Orifice** (Orifice Controls 0.31 cfs @ 6.37 fps)
  ├─**5=4" Orifice (2)** (Orifice Controls 1.02 cfs @ 5.82 fps)
  └─**6=48" Structure** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=104.25' TW=104.00' (Dynamic Tailwater)
└─**7=10' E Spillway** (Controls 0.00 cfs)

Pond 101P: Rain Garden #101



Summary for Pond 102P: Rain Garden #102

Inflow Area = 2.821 ac, 53.27% Impervious, Inflow Depth > 5.40" for 25 Yr.-24 Hr. event
Inflow = 14.62 cfs @ 12.11 hrs, Volume= 1.270 af
Outflow = 4.92 cfs @ 12.47 hrs, Volume= 0.918 af, Atten= 66%, Lag= 22.0 min
Primary = 4.92 cfs @ 12.47 hrs, Volume= 0.918 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 82.46' @ 12.47 hrs Surf.Area= 1,198 sf Storage= 25,132 cf
Flood Elev= 84.00' Surf.Area= 1,198 sf Storage= 37,713 cf

Plug-Flow detention time= 176.3 min calculated for 0.916 af (72% of inflow)
Center-of-Mass det. time= 88.3 min (874.3 - 786.0)

Volume	Invert	Avail.Storage	Storage Description
#1	73.25'	479 cf	**Stone (Irregular)** Listed below (Recalc) -Impervious 1,198 cf Overall x 40.0% Voids
#2	74.25'	359 cf	**Bio-Media (Irregular)** Listed below (Recalc) 1,797 cf Overall x 20.0% Voids
#3	75.75'	60 cf	**Loam (Irregular)** Listed below (Recalc) -Impervious 300 cf Overall x 20.0% Voids
#4	80.00'	26,659 cf	**Open Water Storage (Irregular)** Listed below (Recalc) -Impervious
#5	77.00'	1,351 cf	**Sediment Forebay (Irregular)** Listed below (Recalc) -Impervious
#6	76.00'	8,805 cf	**Cell (Irregular)** Listed below (Recalc) -Impervious
		37,713 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
73.25	1,198	145.6	0	0	1,198
74.25	1,198	145.6	1,198	1,198	1,344

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
74.25	1,198	145.6	0	0	1,198
75.75	1,198	145.6	1,797	1,797	1,416

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
75.75	1,198	145.6	0	0	1,198
76.00	1,198	145.6	300	300	1,234

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
80.00	4,403	320.0	0	0	4,403
81.00	5,434	362.0	4,909	4,909	6,708
82.00	6,626	402.5	6,020	10,930	9,201
83.00	7,858	421.7	7,233	18,163	10,526
84.00	9,151	440.2	8,496	26,659	11,866

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
77.00	101	45.0	0	0	101
78.00	290	78.1	187	187	431
79.00	567	109.3	421	608	906
80.00	933	140.0	742	1,351	1,527

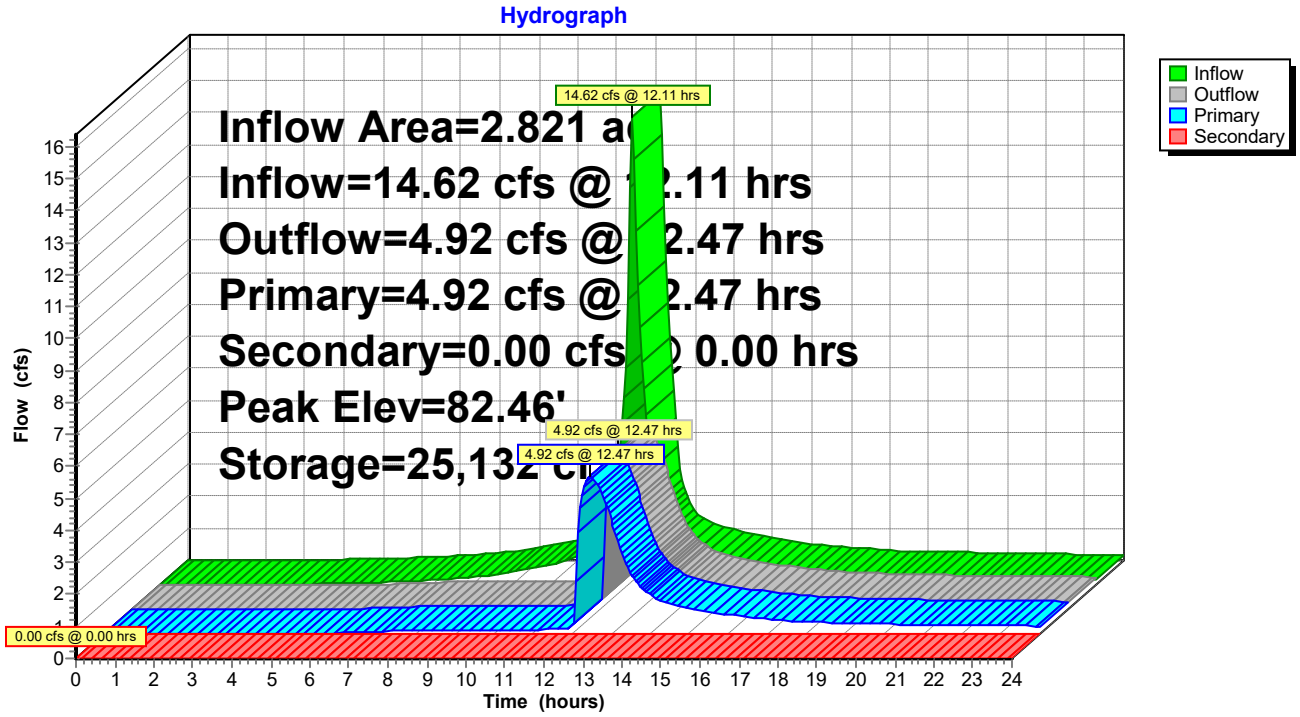
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
76.00	1,198	145.6	0	0	1,198
77.00	1,657	167.9	1,421	1,421	1,776
78.00	2,170	185.6	1,908	3,329	2,304
79.00	2,731	203.5	2,445	5,774	2,892
80.00	3,340	221.3	3,030	8,805	3,530

Device	Routing	Invert	Outlet Devices
#1	Primary	73.25'	**15.0" Round 15" HDPE N-12** L= 42.0' Ke= 0.500 Inlet / Outlet Invert= 73.25' / 73.00' S= 0.0060 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	73.25'	**1.5" Vert. 1.5" Orifice** C= 0.600
#3	Device 2	74.25'	**10.000 in/hr 10In/Hr thru Media over Surface area**
#4	Device 1	80.65'	**3.0" Vert. 3" Orifice** C= 0.600
#5	Device 1	81.00'	**6.0" Vert. 6" Orifice** C= 0.600
#6	Device 1	81.10'	**8.0" Vert. 8" Orifice (2) X 2.00** C= 0.600
#7	Device 1	83.45'	**12.0" Horiz. 12" Horizontal Orifice** C= 0.600 Limited to weir flow at low heads
#8	Secondary	83.50'	**15.0' long x 11.0' breadth 15' E Spillway** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.53 2.59 2.70 2.68 2.67 2.68 2.66 2.64

Primary OutFlow Max=4.92 cfs @ 12.47 hrs HW=82.45' TW=73.32' (Dynamic Tailwater)
- **1=15" HDPE N-12** (Passes 4.92 cfs of 17.31 cfs potential flow)
  - **2=1.5" Orifice** (Orifice Controls 0.18 cfs @ 14.55 fps)
    - **3=10In/Hr thru Media** (Passes 0.18 cfs of 0.28 cfs potential flow)
  - **4=3" Orifice** (Orifice Controls 0.31 cfs @ 6.24 fps)
  - **5=6" Orifice** (Orifice Controls 1.04 cfs @ 5.28 fps)
  - **6=8" Orifice (2)** (Orifice Controls 3.40 cfs @ 4.86 fps)
  - **7=12" Horizontal Orifice** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=73.25' TW=73.00' (Dynamic Tailwater)
- **8=15' E Spillway** (Controls 0.00 cfs)

Pond 102P: Rain Garden #102



Summary for Pond 103P: Rain Garden #103

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=18)
[80] Warning: Exceeded Pond C24P by 0.13' @ 12.15 hrs (1.86 cfs 0.027 af)
[80] Warning: Exceeded Pond C25P by 0.26' @ 12.15 hrs (1.73 cfs 0.028 af)

Inflow Area = 1.721 ac, 53.09% Impervious, Inflow Depth > 5.20" for 25 Yr.-24 Hr. event
Inflow = 8.85 cfs @ 12.11 hrs, Volume= 0.746 af
Outflow = 3.90 cfs @ 12.37 hrs, Volume= 0.664 af, Atten= 56%, Lag= 15.7 min
Primary = 3.90 cfs @ 12.37 hrs, Volume= 0.664 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 97.24' @ 12.37 hrs Surf.Area= 854 sf Storage= 10,940 cf
Flood Elev= 99.00' Surf.Area= 854 sf Storage= 18,839 cf

Plug-Flow detention time= 116.9 min calculated for 0.662 af (89% of inflow)
Center-of-Mass det. time= 65.5 min (857.0 - 791.5)

Volume	Invert	Avail.Storage	Storage Description
#1	90.25'	342 cf	**Stone (Irregular)** Listed below (Recalc) -Impervious 854 cf Overall x 40.0% Voids
#2	91.25'	256 cf	**Bio-Media (Irregular)** Listed below (Recalc) 1,281 cf Overall x 20.0% Voids
#3	92.75'	43 cf	**Loam (Irregular)** Listed below (Recalc) -Impervious 214 cf Overall x 20.0% Voids
#4	95.00'	14,881 cf	**Open Water Storage (Irregular)** Listed below (Recalc) -Impervious
#5	93.00'	901 cf	**Sediment Forebay (Irregular)** Listed below (Recalc) -Impervious
#6	93.00'	2,415 cf	**Cell (Irregular)** Listed below (Recalc) -Impervious
		18,839 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
90.25	854	118.0	0	0	854
91.25	854	118.0	854	854	972

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
91.25	854	118.0	0	0	854
92.75	854	118.0	1,281	1,281	1,031

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
92.75	854	118.0	0	0	854
93.00	854	118.0	214	214	884

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
95.00	2,433	189.5	0	0	2,433
96.00	3,030	208.4	2,726	2,726	3,064
97.00	3,683	227.3	3,351	6,077	3,754
98.00	4,393	246.1	4,033	10,110	4,501
99.00	5,160	265.0	4,771	14,881	5,311

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
93.00	230	71.2	0	0	230
94.00	442	89.5	330	330	477
95.00	711	108.7	571	901	796

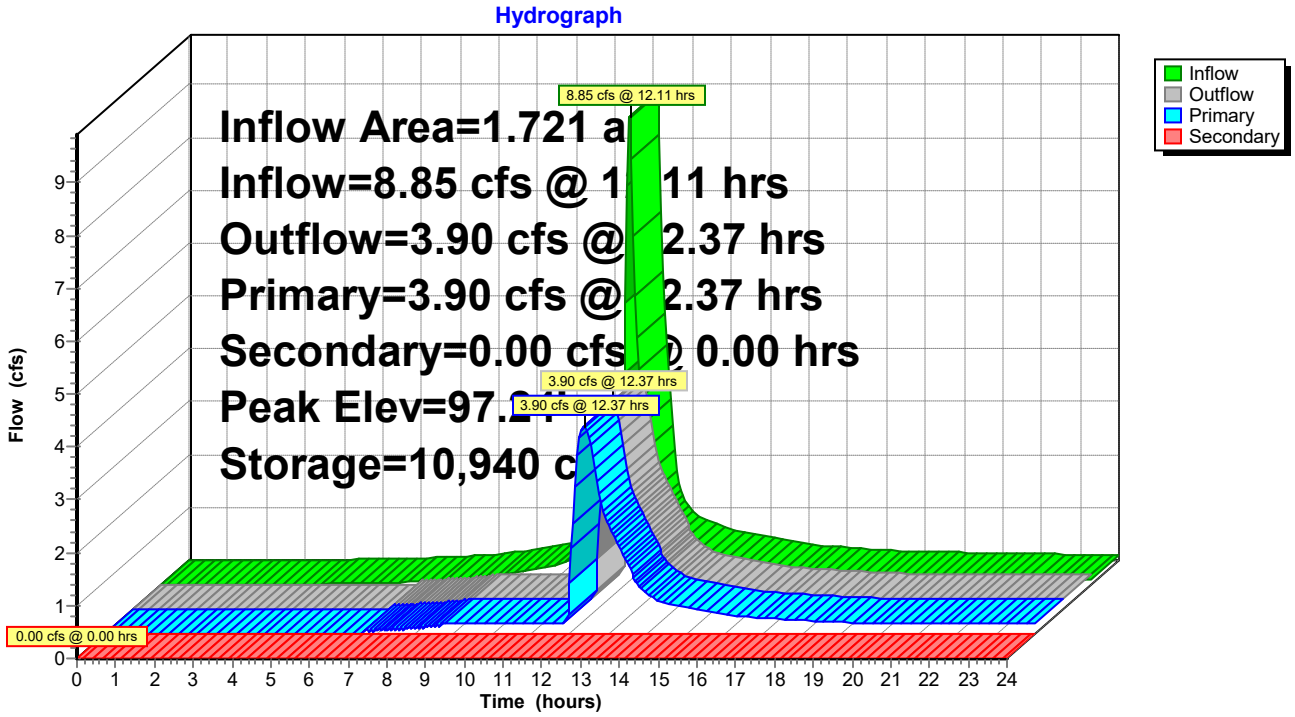
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
93.00	854	118.0	0	0	854
94.00	1,200	136.0	1,022	1,022	1,239
95.00	1,596	153.6	1,393	2,415	1,670

Device	Routing	Invert	Outlet Devices
#1	Primary	90.25'	**15.0" Round 15" HDPE N-12** L= 50.0' Ke= 0.500 Inlet / Outlet Invert= 90.25' / 90.00' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	91.25'	**10.000 in/hr 10In/Hr thru Media over Surface area**
#3	Device 1	95.25'	**3.0" Vert. 3" Orifice** C= 0.600
#4	Device 1	95.50'	**6.0" Vert. 6" Orifice (2) X 2.00** C= 0.600
#5	Device 1	96.50'	**8.0" Vert. 8" Orifice** C= 0.600
#6	Device 1	97.50'	**8.0" Vert. 8" Orifice** C= 0.600
#7	Device 1	98.40'	**48.0" Horiz. 48" Structure** C= 0.600 Limited to weir flow at low heads
#8	Secondary	98.50'	**10.0' long x 11.0' breadth 10' E Spillway** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.53 2.59 2.70 2.68 2.67 2.68 2.66 2.64

Primary OutFlow Max=3.89 cfs @ 12.37 hrs HW=97.24' TW=88.26' (Dynamic Tailwater)
└─**1=15" HDPE N-12** (Passes 3.89 cfs of 14.90 cfs potential flow)
  ├─**2=10In/Hr thru Media** (Exfiltration Controls 0.20 cfs)
  ├─**3=3" Orifice** (Orifice Controls 0.32 cfs @ 6.57 fps)
  ├─**4=6" Orifice (2)** (Orifice Controls 2.31 cfs @ 5.87 fps)
  ├─**5=8" Orifice** (Orifice Controls 1.07 cfs @ 3.06 fps)
  ├─**6=8" Orifice** (Controls 0.00 cfs)
  └─**7=48" Structure** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=90.25' TW=88.00' (Dynamic Tailwater)
└─**8=10' E Spillway** (Controls 0.00 cfs)

Pond 103P: Rain Garden #103



Summary for Pond 104P: Rain Garden #104

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=24)
[80] Warning: Exceeded Pond C26P by 0.14' @ 11.85 hrs (5.59 cfs 0.454 af)

Inflow Area = 1.672 ac, 60.21% Impervious, Inflow Depth > 5.51" for 25 Yr.-24 Hr. event
Inflow = 8.10 cfs @ 12.09 hrs, Volume= 0.768 af
Outflow = 4.68 cfs @ 12.26 hrs, Volume= 0.674 af, Atten= 42%, Lag= 10.1 min
Primary = 4.68 cfs @ 12.26 hrs, Volume= 0.674 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 86.83' @ 12.26 hrs Surf.Area= 612 sf Storage= 9,618 cf
Flood Elev= 88.00' Surf.Area= 612 sf Storage= 14,406 cf

Plug-Flow detention time= 107.9 min calculated for 0.674 af (88% of inflow)
Center-of-Mass det. time= 51.8 min (834.3 - 782.5)

Volume	Invert	Avail.Storage	Storage Description
#1	79.75'	245 cf	**Stone (Irregular)** Listed below (Recalc) -Impervious 612 cf Overall x 40.0% Voids
#2	80.75'	184 cf	**Bio-Media (Irregular)** Listed below (Recalc) 918 cf Overall x 20.0% Voids
#3	82.25'	31 cf	**Loam (Irregular)** Listed below (Recalc) -Impervious 153 cf Overall x 20.0% Voids
#4	85.00'	10,196 cf	**Open Water Storage (Irregular)** Listed below (Recalc) -Impervious
#5	82.50'	1,043 cf	**Sediment Forebay (Irregular)** Listed below (Recalc) -Impervious
#6	82.50'	2,708 cf	**Cell (Irregular)** Listed below (Recalc) -Impervious
		14,406 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
79.75	612	113.3	0	0	612
80.75	612	113.3	612	612	725

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
80.75	612	113.3	0	0	612
82.25	612	113.3	918	918	782

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
82.25	612	113.3	0	0	612
82.50	612	113.3	153	153	640

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
85.00	2,343	215.3	0	0	2,343
86.00	3,017	234.2	2,673	2,673	3,055
87.00	3,748	253.0	3,376	6,049	3,824
88.00	4,560	274.0	4,147	10,196	4,743

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
82.50	170	69.5	0	0	170
83.00	282	77.0	112	112	265
84.00	463	88.9	369	481	442
85.00	669	99.3	563	1,043	624

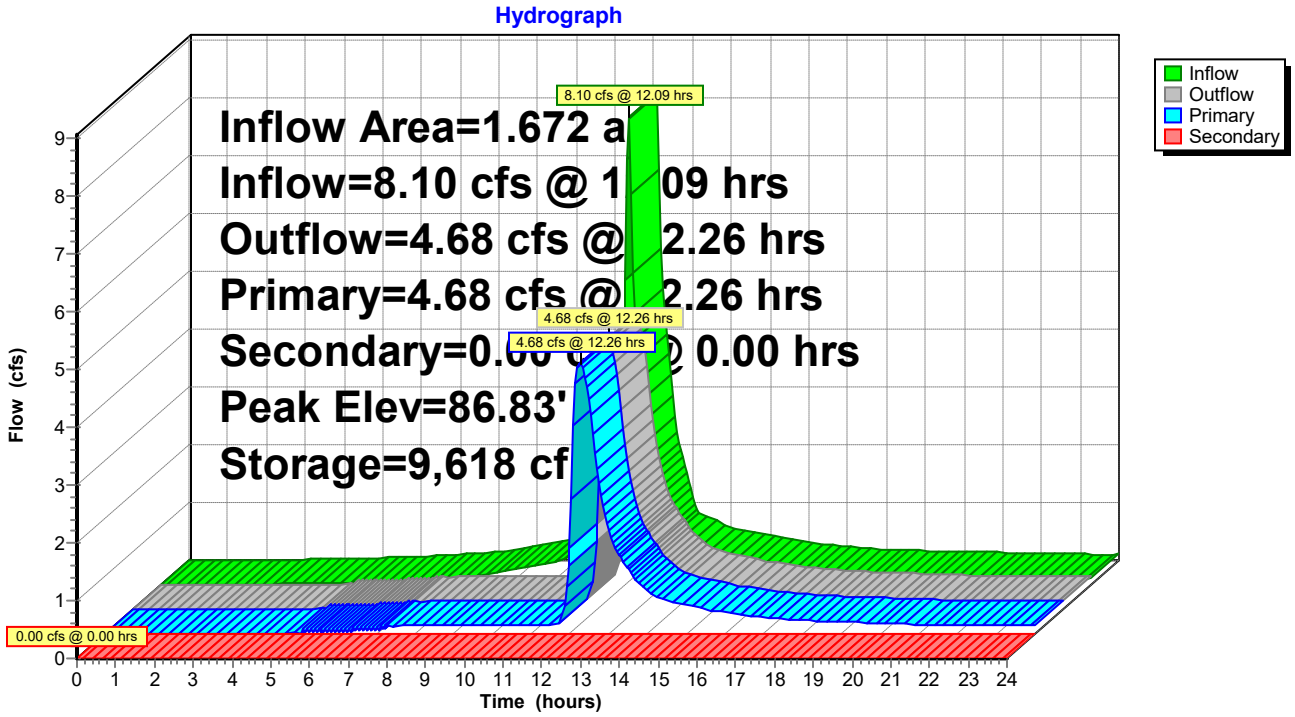
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
82.50	612	113.3	0	0	612
83.00	787	124.0	349	349	823
84.00	1,175	143.1	975	1,323	1,250
85.00	1,605	160.0	1,384	2,708	1,685

Device	Routing	Invert	Outlet Devices
#1	Primary	79.75'	**15.0" Round 15" HDPE N-12** L= 34.5' Ke= 0.500 Inlet / Outlet Invert= 79.75' / 79.50' S= 0.0072 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	80.75'	**10.000 in/hr 10In/Hr thru Media over Surface area**
#3	Device 1	85.00'	**3.0" Vert. 3" Orifice** C= 0.600
#4	Device 1	85.25'	**8.0" Vert. 8" Orifice** C= 0.600
#5	Device 1	86.00'	**8.0" Vert. 8" Orifice (2) X 2.00** C= 0.600
#6	Device 1	87.00'	**48.0" Horiz. 48" Structure** C= 0.600 Limited to weir flow at low heads
#7	Secondary	87.50'	**10.0' long x 11.0' breadth 10' E Spillway** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.53 2.59 2.70 2.68 2.67 2.68 2.66 2.64

Primary OutFlow Max=4.67 cfs @ 12.26 hrs HW=86.82' TW=78.42' (Dynamic Tailwater)
└─**1=15" HDPE N-12** (Passes 4.67 cfs of 15.00 cfs potential flow)
  ├─**2=10In/Hr thru Media** (Exfiltration Controls 0.14 cfs)
  ├─**3=3" Orifice** (Orifice Controls 0.31 cfs @ 6.28 fps)
  ├─**4=8" Orifice** (Orifice Controls 1.87 cfs @ 5.36 fps)
  ├─**5=8" Orifice (2)** (Orifice Controls 2.35 cfs @ 3.37 fps)
  └─**6=48" Structure** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=79.75' TW=77.50' (Dynamic Tailwater)
└─**7=10' E Spillway** (Controls 0.00 cfs)

Pond 104P: Rain Garden #104



Summary for Pond 105P: Detention Pond #105

[80] Warning: Exceeded Pond C16P by 0.07' @ 12.05 hrs (1.03 cfs 0.005 af)
[80] Warning: Exceeded Pond C17P by 0.17' @ 12.10 hrs (1.45 cfs 0.011 af)

Inflow Area = 0.700 ac, 68.55% Impervious, Inflow Depth > 5.82" for 25 Yr.-24 Hr. event
Inflow = 4.30 cfs @ 12.09 hrs, Volume= 0.340 af
Outflow = 3.30 cfs @ 12.16 hrs, Volume= 0.339 af, Atten= 23%, Lag= 4.4 min
Primary = 3.30 cfs @ 12.16 hrs, Volume= 0.339 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 86.23' @ 12.16 hrs Surf.Area= 783 sf Storage= 1,188 cf
Flood Elev= 87.75' Surf.Area= 2,683 sf Storage= 3,230 cf

Plug-Flow detention time= 5.1 min calculated for 0.339 af (100% of inflow)
Center-of-Mass det. time= 4.3 min (780.4 - 776.1)

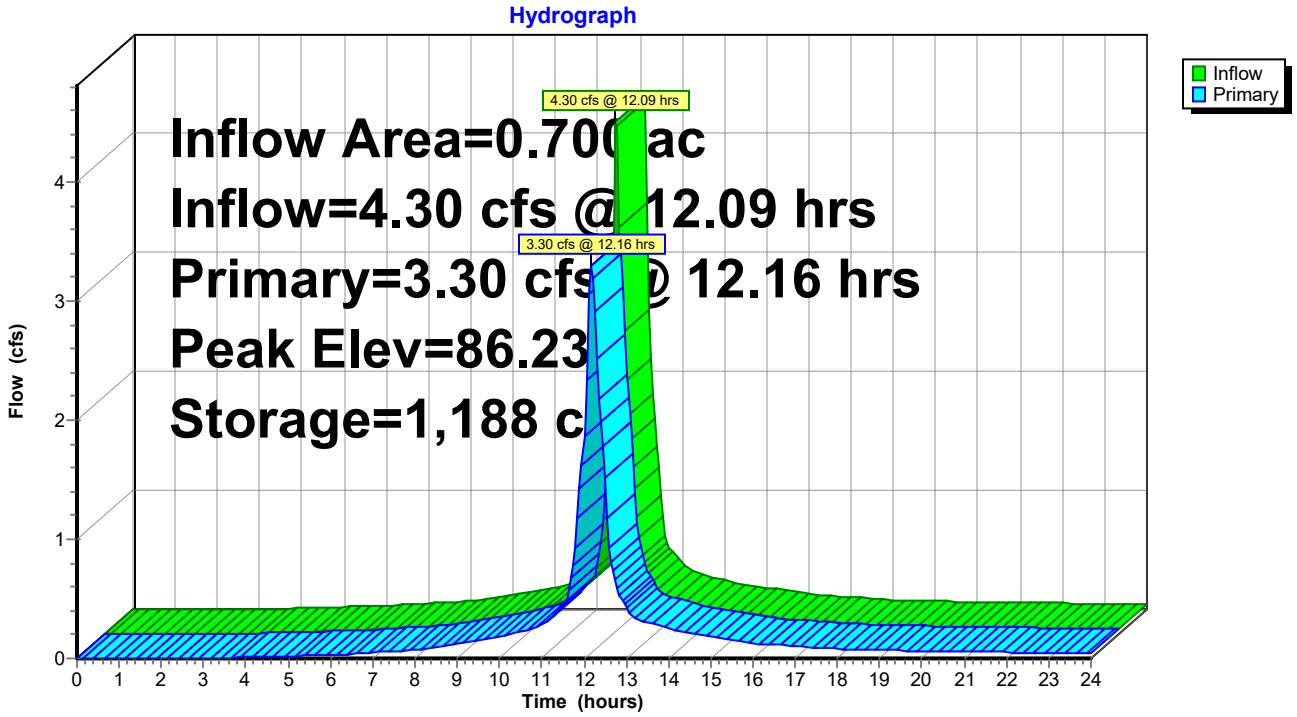
Volume	Invert	Avail.Storage	Storage Description
#1	83.50'	3,230 cf	**Open Water Storage (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
83.50	162	48.1	0	0	162
84.00	241	57.0	100	100	241
85.00	447	78.0	339	439	476
86.00	714	97.7	575	1,014	766
87.00	1,035	116.6	870	1,884	1,105
87.75	2,683	190.4	1,346	3,230	2,912

Device	Routing	Invert	Outlet Devices
#1	Primary	83.50'	**12.0" Round 12" HDPE N-12** L= 143.5' Ke= 0.500 Inlet / Outlet Invert= 83.50' / 81.50' S= 0.0139 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	83.50'	**6.0" Vert. 6" Orifice** C= 0.600
#3	Device 1	84.50'	**6.0" Vert. 6" Orifice** C= 0.600
#4	Device 1	85.50'	**6.0" Vert. 6" Orifice** C= 0.600
#5	Device 1	86.75'	**48.0" Horiz. 48" Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=3.27 cfs @ 12.16 hrs HW=86.21' TW=81.86' (Dynamic Tailwater)
└**1=12" HDPE N-12** (Passes 3.27 cfs of 5.26 cfs potential flow)
  ├**2=6" Orifice** (Orifice Controls 1.48 cfs @ 7.56 fps)
  ├**3=6" Orifice** (Orifice Controls 1.14 cfs @ 5.82 fps)
  ├**4=6" Orifice** (Orifice Controls 0.64 cfs @ 3.28 fps)
  └**5=48" Grate** (Controls 0.00 cfs)

Pond 105P: Detention Pond #105



Summary for Pond 106P: Detention Pond #106

[80] Warning: Exceeded Pond C33P by 0.25' @ 12.10 hrs (1.77 cfs 0.024 af)

Inflow Area = 0.500 ac, 59.79% Impervious, Inflow Depth > 5.52" for 25 Yr.-24 Hr. event
Inflow = 2.99 cfs @ 12.09 hrs, Volume= 0.230 af
Outflow = 1.43 cfs @ 12.26 hrs, Volume= 0.230 af, Atten= 52%, Lag= 10.2 min
Primary = 1.43 cfs @ 12.26 hrs, Volume= 0.230 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 98.04' @ 12.26 hrs Surf.Area= 944 sf Storage= 1,458 cf
Flood Elev= 100.00' Surf.Area= 5,146 sf Storage= 5,537 cf

Plug-Flow detention time= 10.7 min calculated for 0.230 af (100% of inflow)
Center-of-Mass det. time= 9.0 min (791.9 - 782.9)

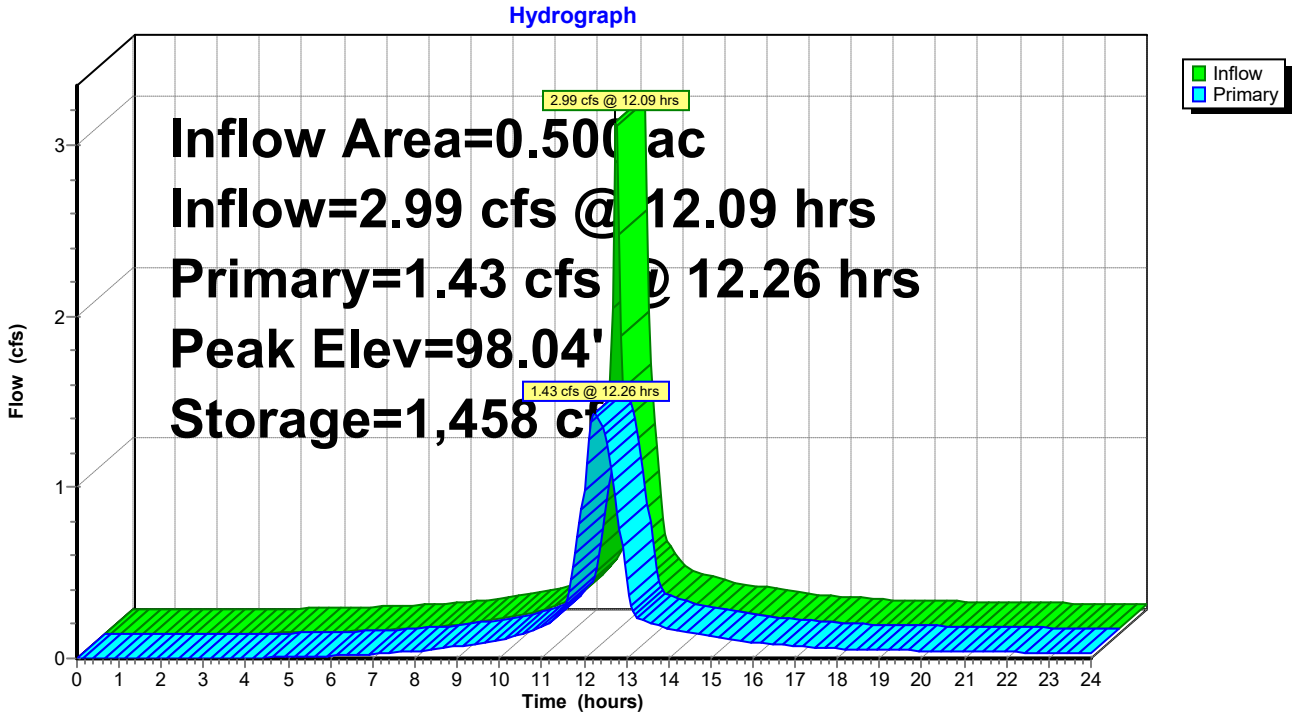
Volume	Invert	Avail.Storage	Storage Description
#1	95.50'	5,537 cf	**Open Water Storage (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
95.50	263	85.5	0	0	263
96.00	373	70.2	158	158	457
97.00	624	91.1	493	651	737
98.00	932	110.8	773	1,424	1,069
99.00	1,292	129.6	1,107	2,531	1,448
100.00	5,146	264.8	3,005	5,537	5,696

Device	Routing	Invert	Outlet Devices
#1	Primary	95.50'	**12.0" Round 12" HDPE N-12** L= 105.0' Ke= 0.500 Inlet / Outlet Invert= 95.50' / 94.00' S= 0.0143 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	95.50'	**6.0" Vert. 6" Orifice** C= 0.600
#3	Device 1	98.25'	**6.0" Vert. 6" Orifice** C= 0.600
#4	Device 1	99.00'	**48.0" Horiz. 48" Structure** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.43 cfs @ 12.26 hrs HW=98.03' TW=94.41' (Dynamic Tailwater)
↑**1=12" HDPE N-12** (Passes 1.43 cfs of 5.29 cfs potential flow)
- **2=6" Orifice** (Orifice Controls 1.43 cfs @ 7.28 fps)
- **3=6" Orifice** (Controls 0.00 cfs)
- **4=48" Structure** (Controls 0.00 cfs)

Pond 106P: Detention Pond #106



Summary for Pond C01P: Catch Basin #1

Inflow Area = 0.213 ac,100.00% Impervious, Inflow Depth > 6.63" for 25 Yr.-24 Hr. event
Inflow = 1.39 cfs @ 12.09 hrs, Volume= 0.117 af
Outflow = 1.40 cfs @ 12.09 hrs, Volume= 0.117 af, Atten= 0%, Lag= 0.1 min
Primary = 1.40 cfs @ 12.09 hrs, Volume= 0.117 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 117.99' @ 12.09 hrs Surf.Area= 0.000 ac Storage= 0.000 af
Flood Elev= 120.86' Surf.Area= 0.000 ac Storage= 0.001 af

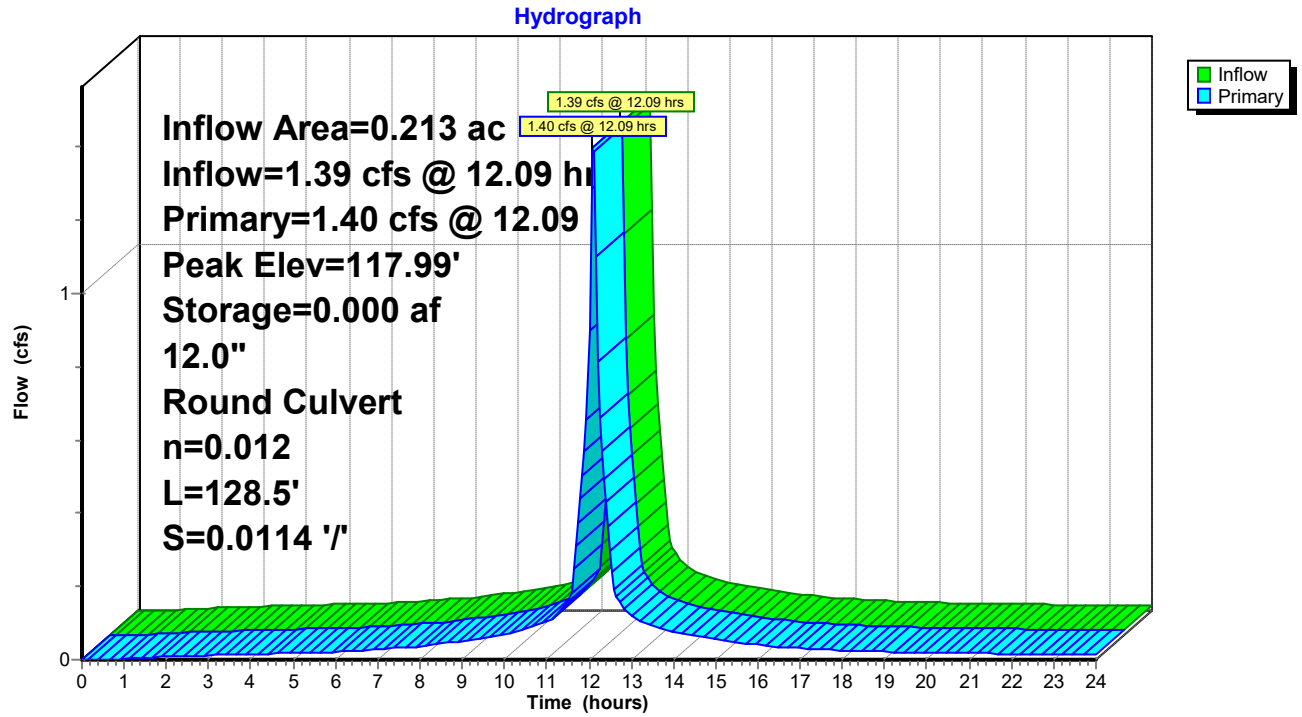
Plug-Flow detention time= 0.3 min calculated for 0.117 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (743.2 - 743.0)

Volume	Invert	Avail.Storage	Storage Description
#1	117.36'	0.001 af	**4.00'D x 3.50'H 4' Structure**

Device	Routing	Invert	Outlet Devices
#1	Primary	117.36'	**12.0" Round 12" HDPE N-12** L= 128.5' Ke= 0.500 Inlet / Outlet Invert= 117.36' / 115.89' S= 0.0114 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=1.36 cfs @ 12.09 hrs HW=117.98' TW=116.68' (Dynamic Tailwater)
1=12" HDPE N-12 (Inlet Controls 1.36 cfs @ 2.67 fps)

Pond C01P: Catch Basin #1



Summary for Pond C02P: Catch Basin #2

Inflow Area = 0.087 ac,100.00% Impervious, Inflow Depth > 6.63" for 25 Yr.-24 Hr. event
Inflow = 0.57 cfs @ 12.09 hrs, Volume= 0.048 af
Outflow = 0.57 cfs @ 12.09 hrs, Volume= 0.048 af, Atten= 1%, Lag= 0.1 min
Primary = 0.57 cfs @ 12.09 hrs, Volume= 0.048 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 118.11' @ 12.11 hrs Surf.Area= 0.000 ac Storage= 0.000 af
Flood Elev= 120.86' Surf.Area= 0.000 ac Storage= 0.001 af

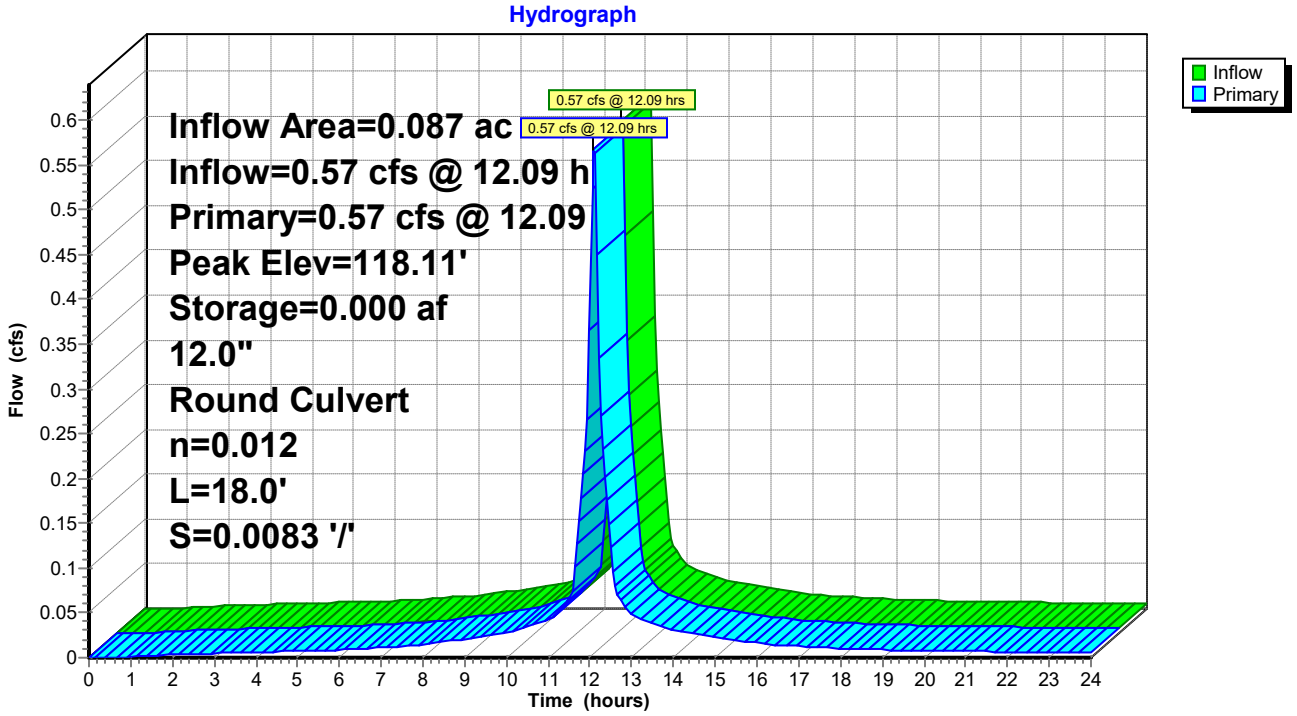
Plug-Flow detention time= 0.6 min calculated for 0.048 af (100% of inflow)
Center-of-Mass det. time= 0.4 min (743.2 - 742.8)

Volume	Invert	Avail.Storage	Storage Description
#1	117.61'	0.001 af	**4.00'D x 3.25'H 4' Structure**

Device	Routing	Invert	Outlet Devices
#1	Primary	117.61'	**12.0" Round 12" HDPE N-12** L= 18.0' Ke= 0.500 Inlet / Outlet Invert= 117.61' / 117.46' S= 0.0083 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.47 cfs @ 12.09 hrs HW=118.09' TW=117.98' (Dynamic Tailwater)
↑—**1=12" HDPE N-12** (Outlet Controls 0.47 cfs @ 1.83 fps)

Pond C02P: Catch Basin #2



Summary for Pond C03P: Catch Basin #3

Inflow Area = 0.093 ac, 74.55% Impervious, Inflow Depth > 5.92" for 25 Yr.-24 Hr. event
Inflow = 0.59 cfs @ 12.09 hrs, Volume= 0.046 af
Outflow = 0.58 cfs @ 12.09 hrs, Volume= 0.046 af, Atten= 1%, Lag= 0.1 min
Primary = 0.58 cfs @ 12.09 hrs, Volume= 0.046 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 116.79' @ 12.13 hrs Surf.Area= 0.000 ac Storage= 0.000 af
Flood Elev= 119.52' Surf.Area= 0.000 ac Storage= 0.001 af

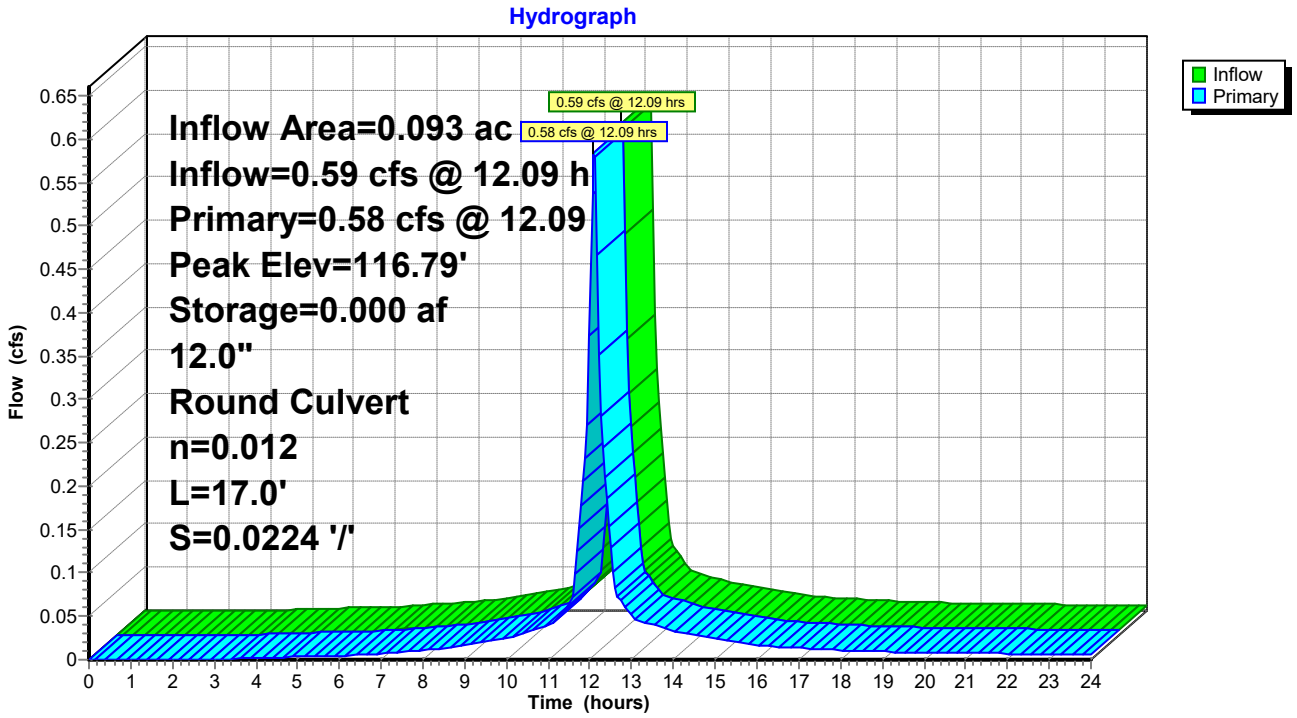
Plug-Flow detention time= 0.5 min calculated for 0.046 af (100% of inflow)
Center-of-Mass det. time= 0.4 min (773.2 - 772.8)

Volume	Invert	Avail.Storage	Storage Description
#1	116.27'	0.001 af	**4.00'D x 3.25'H 4' Structure**

Device	Routing	Invert	Outlet Devices
#1	Primary	116.27'	**12.0" Round 12" HDPE N-12** L= 17.0' Ke= 0.500 Inlet / Outlet Invert= 116.27' / 115.89' S= 0.0224 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.40 cfs @ 12.09 hrs HW=116.76' TW=116.68' (Dynamic Tailwater)
↑—**1=12" HDPE N-12** (Outlet Controls 0.40 cfs @ 1.55 fps)

Pond C03P: Catch Basin #3



Summary for Pond C04P: Catch Basin #4

Inflow Area = 0.078 ac, 46.43% Impervious, Inflow Depth > 5.12" for 25 Yr.-24 Hr. event
Inflow = 0.45 cfs @ 12.09 hrs, Volume= 0.033 af
Outflow = 0.44 cfs @ 12.09 hrs, Volume= 0.033 af, Atten= 2%, Lag= 0.1 min
Primary = 0.44 cfs @ 12.09 hrs, Volume= 0.033 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 116.72' @ 12.14 hrs Surf.Area= 0.000 ac Storage= 0.000 af
Flood Elev= 119.36' Surf.Area= 0.000 ac Storage= 0.001 af

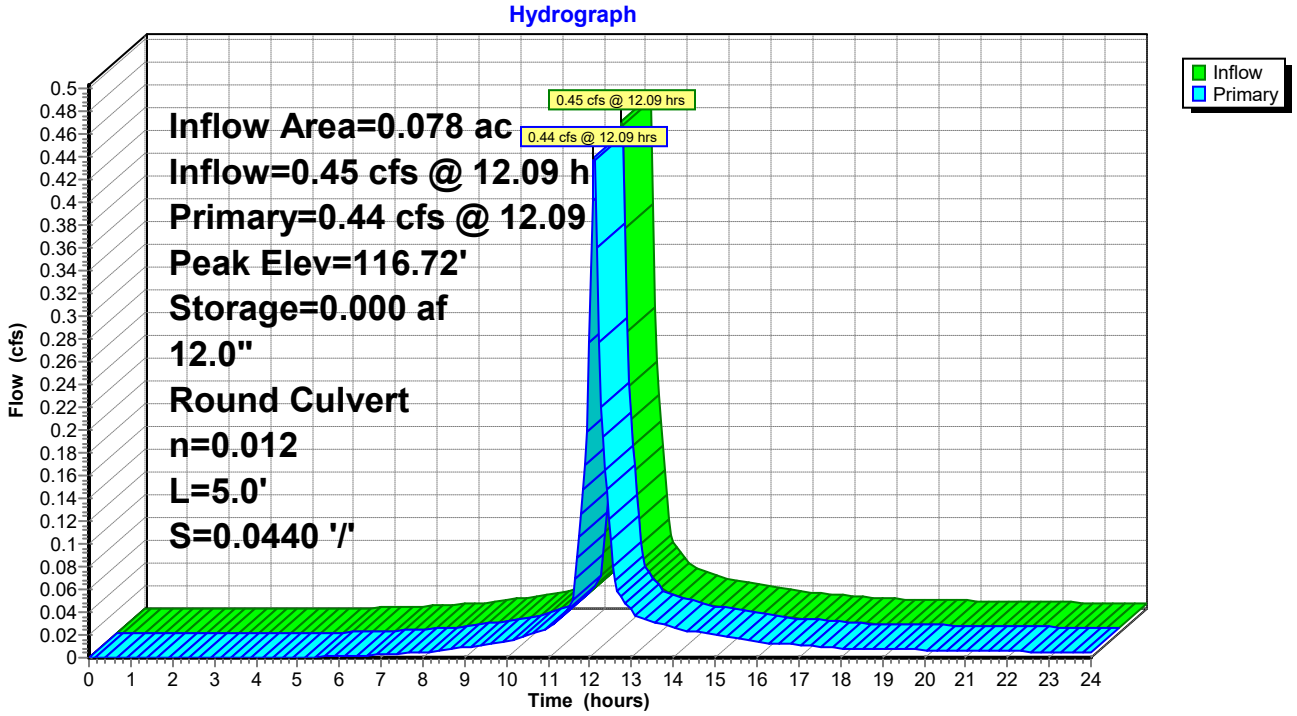
Plug-Flow detention time= 0.6 min calculated for 0.033 af (100% of inflow)
Center-of-Mass det. time= 0.4 min (795.7 - 795.3)

Volume	Invert	Avail.Storage	Storage Description
#1	116.11'	0.001 af	**4.00'D x 3.25'H 4' Structure**

Device	Routing	Invert	Outlet Devices
#1	Primary	116.11'	**12.0" Round 12" HDPE N-12** L= 5.0' Ke= 0.500 Inlet / Outlet Invert= 116.11' / 115.89' S= 0.0440 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 12.09 hrs HW=116.65' TW=116.68' (Dynamic Tailwater)
↑—**1=12" HDPE N-12** (Controls 0.00 cfs)

Pond C04P: Catch Basin #4



Summary for Pond C05P: Catch Basin #5

Inflow Area = 0.146 ac, 76.59% Impervious, Inflow Depth > 6.04" for 25 Yr.-24 Hr. event
Inflow = 0.93 cfs @ 12.09 hrs, Volume= 0.074 af
Outflow = 0.93 cfs @ 12.09 hrs, Volume= 0.074 af, Atten= 0%, Lag= 0.1 min
Primary = 0.93 cfs @ 12.09 hrs, Volume= 0.074 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 111.99' @ 12.11 hrs Surf.Area= 13 sf Storage= 7 cf
Flood Elev= 114.66' Surf.Area= 13 sf Storage= 41 cf

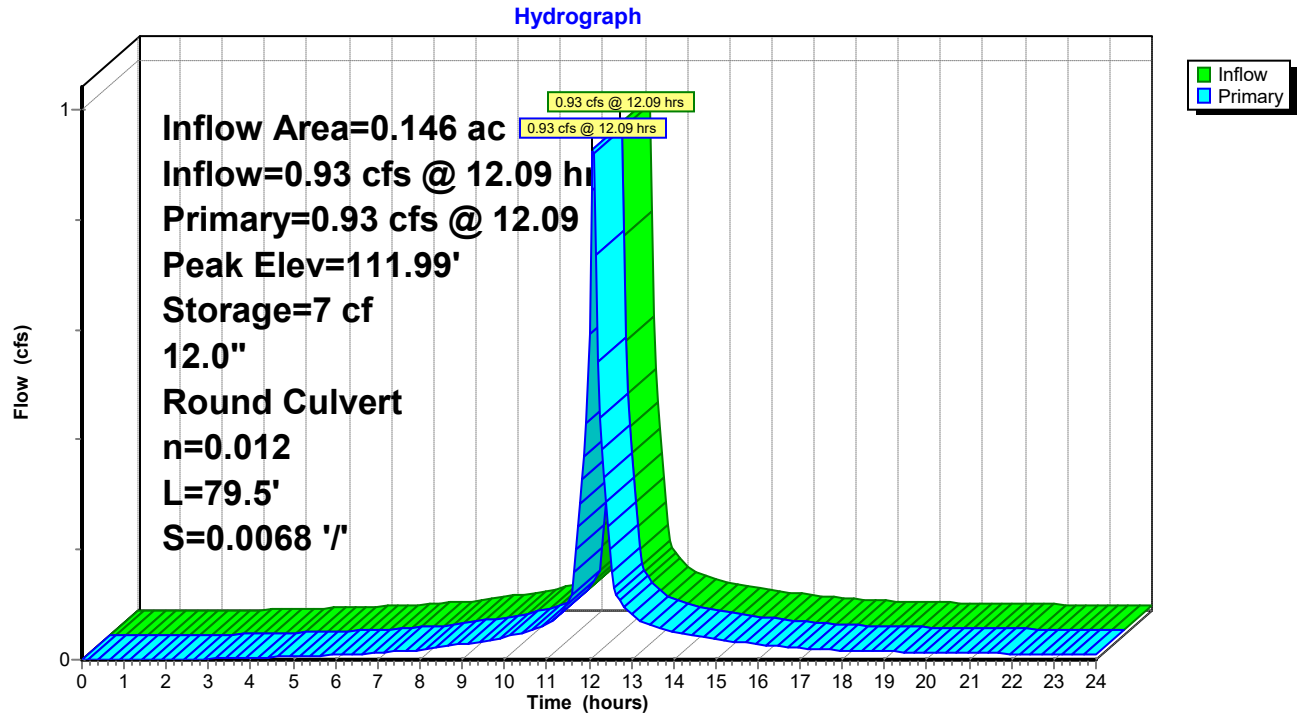
Plug-Flow detention time= 0.5 min calculated for 0.074 af (100% of inflow)
Center-of-Mass det. time= 0.3 min (769.2 - 768.9)

Volume	Invert	Avail.Storage	Storage Description
#1	111.41'	41 cf	**4.00'D x 3.25'H 4' Structure**

Device	Routing	Invert	Outlet Devices
#1	Primary	111.41'	**12.0" Round 12" HDPE N-12** L= 79.5' Ke= 0.500 Inlet / Outlet Invert= 111.41' / 110.87' S= 0.0068 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.83 cfs @ 12.09 hrs HW=111.98' TW=111.56' (Dynamic Tailwater)
↑—**1=12" HDPE N-12** (Outlet Controls 0.83 cfs @ 2.61 fps)

Pond C05P: Catch Basin #5



Summary for Pond C06P: Catch Basin #6

Inflow Area = 0.152 ac, 73.62% Impervious, Inflow Depth > 5.92" for 25 Yr.-24 Hr. event
Inflow = 0.96 cfs @ 12.09 hrs, Volume= 0.075 af
Outflow = 0.95 cfs @ 12.09 hrs, Volume= 0.075 af, Atten= 1%, Lag= 0.0 min
Primary = 0.95 cfs @ 12.09 hrs, Volume= 0.075 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 111.40' @ 12.65 hrs Surf.Area= 13 sf Storage= 24 cf
Flood Elev= 112.71' Surf.Area= 17 sf Storage= 41 cf

Plug-Flow detention time= 1.7 min calculated for 0.075 af (100% of inflow)
Center-of-Mass det. time= 1.4 min (774.2 - 772.8)

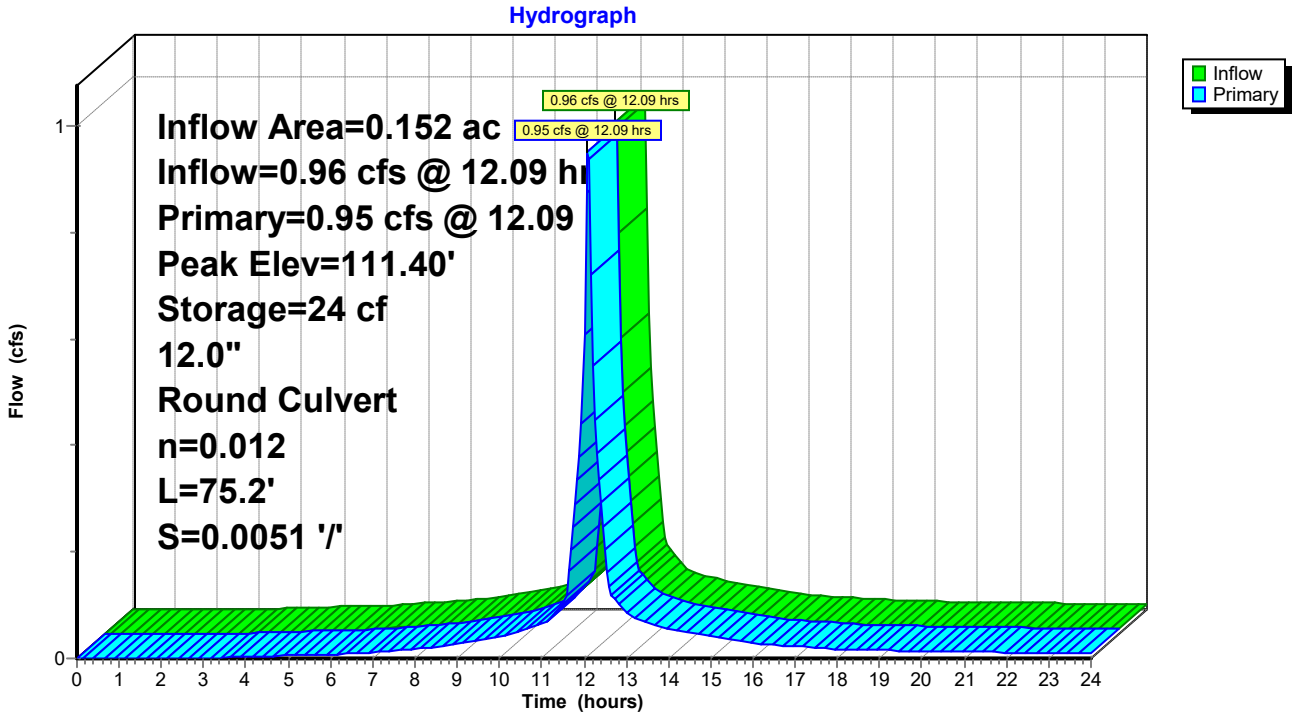
Volume	Invert	Avail.Storage	Storage Description
#1	109.46'	41 cf	**4.00'D x 3.25'H 4' Structure**
#2	112.71'	22 cf	**Ponding Area (Irregular)** Listed below (Recalc)
		63 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
112.71	4	4.0	0	0	4
113.00	198	59.3	22	22	283

Device	Routing	Invert	Outlet Devices
#1	Primary	109.46'	**12.0" Round 12" HDPE N-12** L= 75.2' Ke= 0.500 Inlet / Outlet Invert= 109.46' / 109.08' S= 0.0051 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 12.09 hrs HW=110.23' TW=110.43' (Dynamic Tailwater)
↑—**1=12" HDPE N-12** (Controls 0.00 cfs)

Pond C06P: Catch Basin #6



Summary for Pond C07P: Catch Basin #7

[80] Warning: Exceeded Pond C06P by 0.28' @ 12.10 hrs (1.70 cfs 0.040 af)

Inflow Area = 0.295 ac, 68.14% Impervious, Inflow Depth > 5.75" for 25 Yr.-24 Hr. event
Inflow = 1.81 cfs @ 12.09 hrs, Volume= 0.141 af
Outflow = 1.77 cfs @ 12.09 hrs, Volume= 0.141 af, Atten= 2%, Lag= 0.0 min
Primary = 1.77 cfs @ 12.09 hrs, Volume= 0.141 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 111.40' @ 12.60 hrs Surf.Area= 0.000 ac Storage= 0.001 af
Flood Elev= 113.48' Surf.Area= 0.000 ac Storage= 0.001 af

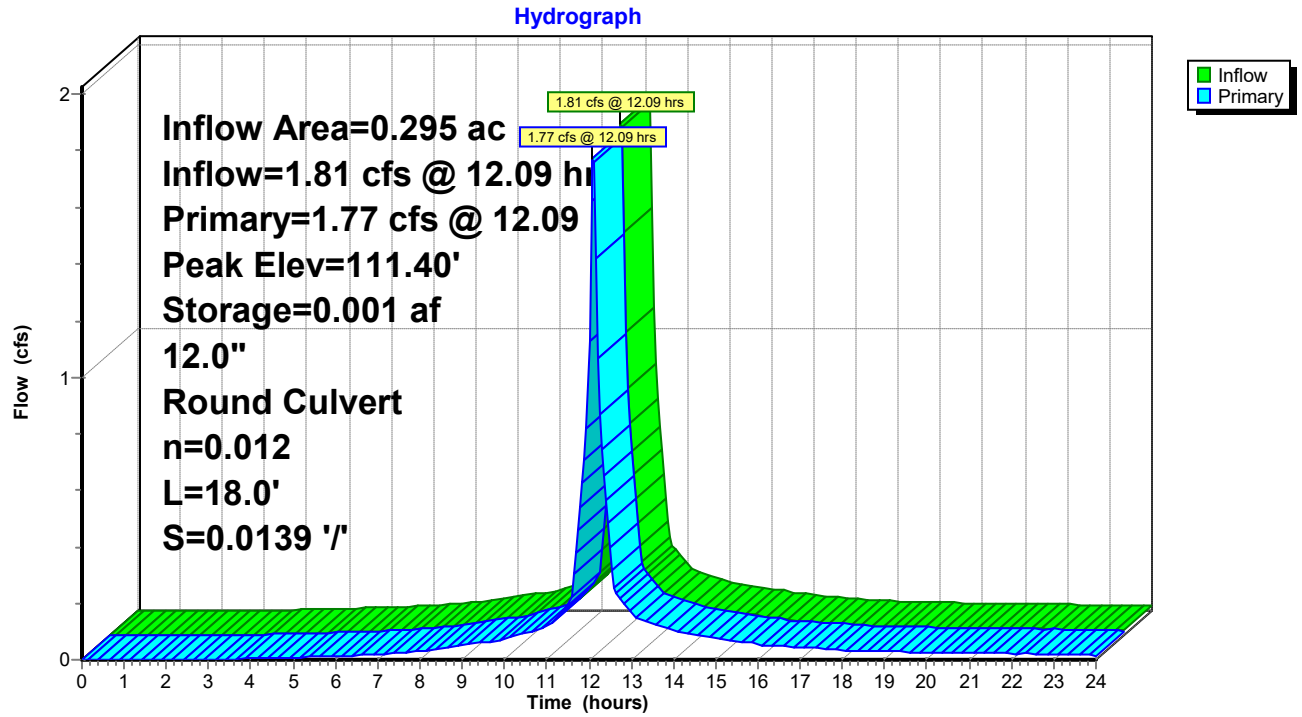
Plug-Flow detention time= 1.6 min calculated for 0.141 af (100% of inflow)
Center-of-Mass det. time= 0.8 min (779.4 - 778.6)

Volume	Invert	Avail.Storage	Storage Description
#1	108.98'	0.001 af	**4.00'D x 4.50'H 4' Structure**

Device	Routing	Invert	Outlet Devices
#1	Primary	108.98'	**12.0" Round 12" HDPE N-12** L= 18.0' Ke= 0.500 Inlet / Outlet Invert= 108.98' / 108.73' S= 0.0139 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 12.09 hrs HW=110.47' TW=110.64' (Dynamic Tailwater)
1=12" HDPE N-12 (Controls 0.00 cfs)

Pond C07P: Catch Basin #7



Summary for Pond C08P: Catch Basin #8

[80] Warning: Exceeded Pond C07P by 0.24' @ 12.05 hrs (1.85 cfs 0.043 af)

Inflow Area = 0.993 ac, 72.22% Impervious, Inflow Depth > 5.86" for 25 Yr.-24 Hr. event
Inflow = 6.05 cfs @ 12.09 hrs, Volume= 0.485 af
Outflow = 6.03 cfs @ 12.09 hrs, Volume= 0.485 af, Atten= 0%, Lag= 0.0 min
Primary = 6.03 cfs @ 12.09 hrs, Volume= 0.485 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 111.39' @ 12.56 hrs Surf.Area= 0.000 ac Storage= 0.001 af
Flood Elev= 113.48' Surf.Area= 0.000 ac Storage= 0.002 af

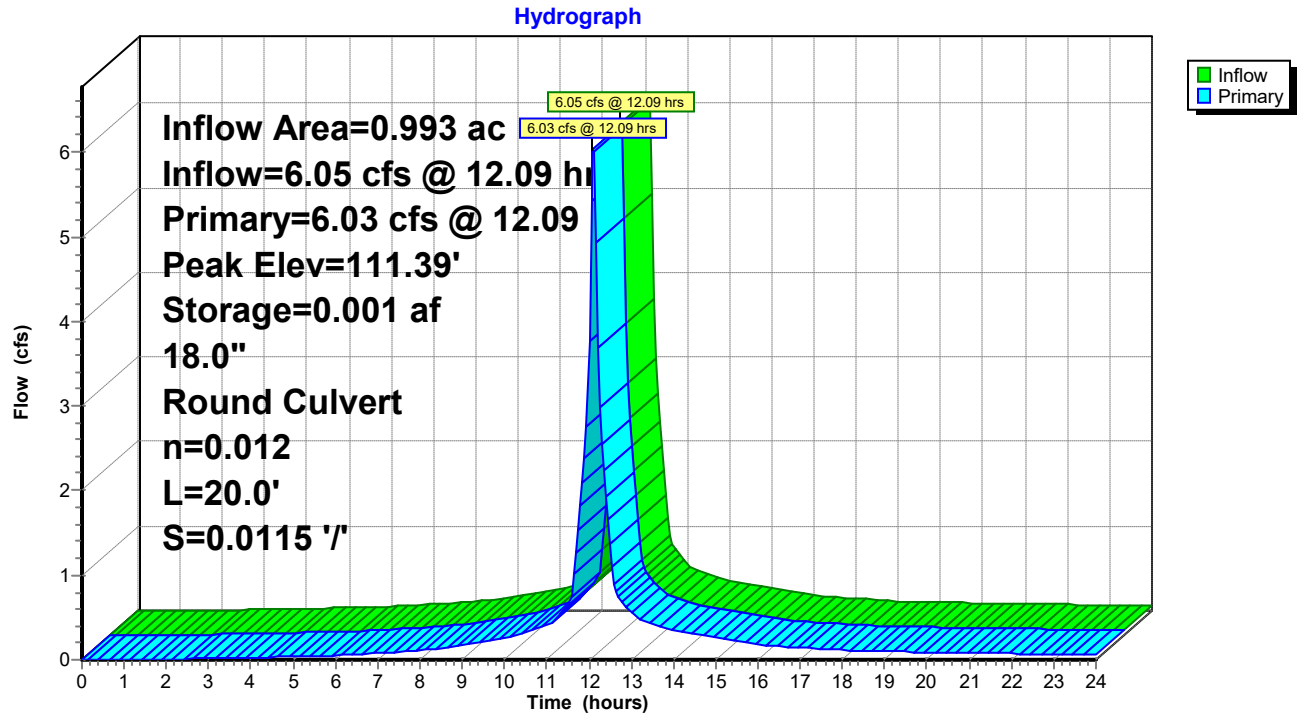
Plug-Flow detention time= 0.8 min calculated for 0.484 af (100% of inflow)
Center-of-Mass det. time= 0.3 min (772.2 - 771.9)

Volume	Invert	Avail.Storage	Storage Description
#1	108.23'	0.002 af	**4.00'D x 5.25'H 4' Structure**

Device	Routing	Invert	Outlet Devices
#1	Primary	108.23'	**18.0" Round 18" HDPE N-12** L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 108.23' / 108.00' S= 0.0115 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=3.56 cfs @ 12.09 hrs HW=110.66' TW=110.49' (Dynamic Tailwater)
1=18" HDPE N-12 (Inlet Controls 3.56 cfs @ 2.02 fps)

Pond C08P: Catch Basin #8



Summary for Pond C09P: Catch Basin #9

Inflow Area = 0.280 ac, 70.46% Impervious, Inflow Depth > 5.80" for 25 Yr.-24 Hr. event
Inflow = 1.55 cfs @ 12.13 hrs, Volume= 0.135 af
Outflow = 1.55 cfs @ 12.14 hrs, Volume= 0.135 af, Atten= 0%, Lag= 0.1 min
Primary = 1.55 cfs @ 12.14 hrs, Volume= 0.135 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 101.59' @ 12.18 hrs Surf.Area= 0.000 ac Storage= 0.000 af
Flood Elev= 103.91' Surf.Area= 0.000 ac Storage= 0.001 af

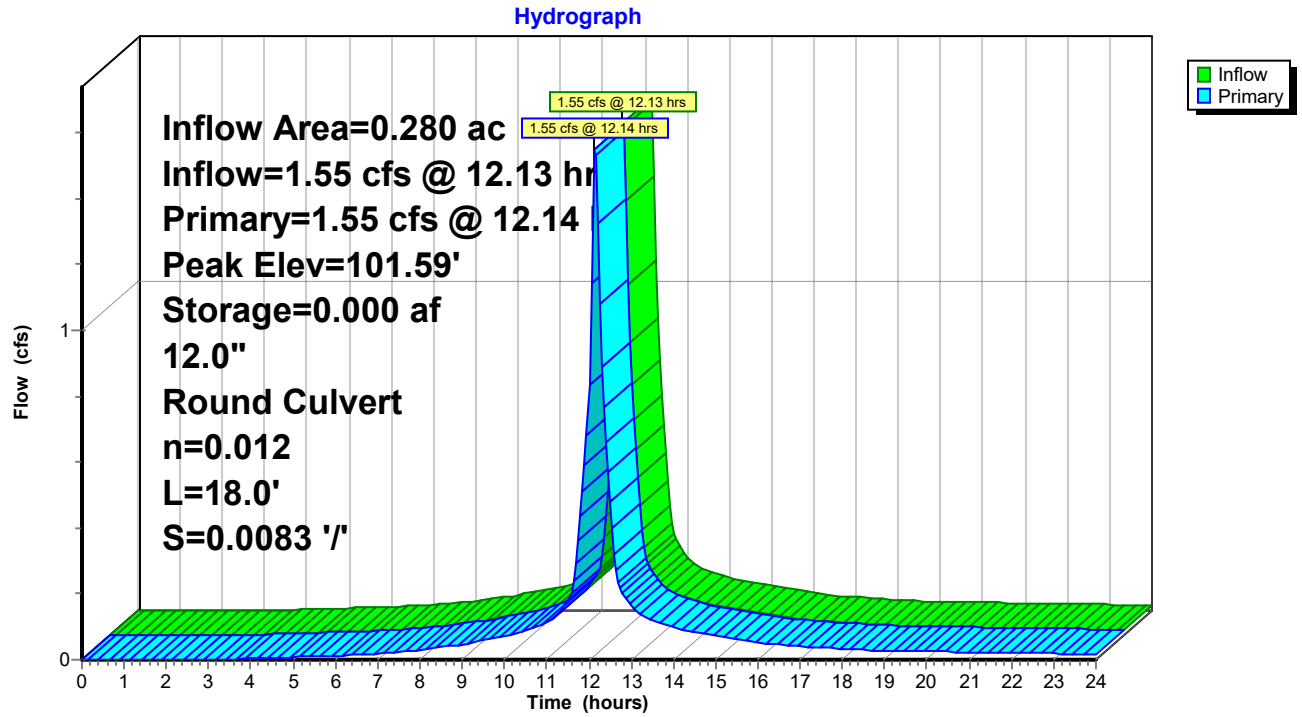
Plug-Flow detention time= 0.3 min calculated for 0.135 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (779.9 - 779.6)

Volume	Invert	Avail.Storage	Storage Description
#1	100.66'	0.001 af	**4.00'D x 3.25'H 4' Structure**

Device	Routing	Invert	Outlet Devices
#1	Primary	100.66'	**12.0" Round 12" HDPE N-12** L= 18.0' Ke= 0.500 Inlet / Outlet Invert= 100.66' / 100.51' S= 0.0083 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=1.15 cfs @ 12.14 hrs HW=101.53' TW=101.40' (Dynamic Tailwater)
↑**1=12" HDPE N-12** (Outlet Controls 1.15 cfs @ 2.10 fps)

Pond C09P: Catch Basin #9



Summary for Pond C10P: Catch Basin #10

Inflow Area = 0.505 ac, 66.88% Impervious, Inflow Depth > 5.70" for 25 Yr.-24 Hr. event
Inflow = 2.72 cfs @ 12.14 hrs, Volume= 0.240 af
Outflow = 2.72 cfs @ 12.14 hrs, Volume= 0.240 af, Atten= 0%, Lag= 0.1 min
Primary = 2.72 cfs @ 12.14 hrs, Volume= 0.240 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 101.43' @ 12.14 hrs Surf.Area= 0.000 ac Storage= 0.000 af
Flood Elev= 103.91' Surf.Area= 0.000 ac Storage= 0.001 af

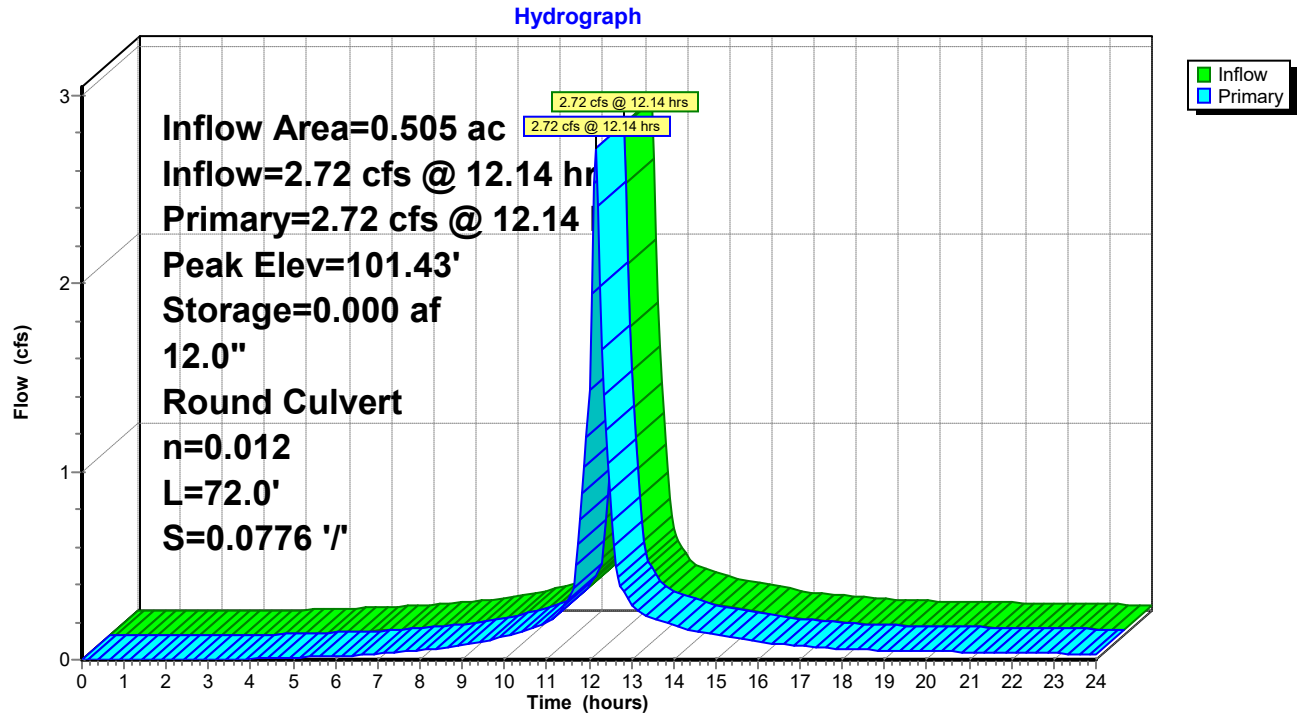
Plug-Flow detention time= 0.2 min calculated for 0.240 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (783.3 - 783.2)

Volume	Invert	Avail.Storage	Storage Description
#1	100.41'	0.001 af	**4.00'D x 3.50'H 4' Structure**

Device	Routing	Invert	Outlet Devices
#1	Primary	100.41'	**12.0" Round 12" HDPE N-12** L= 72.0' Ke= 0.500 Inlet / Outlet Invert= 100.41' / 94.82' S= 0.0776 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=2.69 cfs @ 12.14 hrs HW=101.42' TW=95.64' (Dynamic Tailwater)
↑—**1=12" HDPE N-12** (Inlet Controls 2.69 cfs @ 3.42 fps)

Pond C10P: Catch Basin #10



Summary for Pond C11P: Catch Basin #11

Inflow Area = 0.792 ac, 66.58% Impervious, Inflow Depth > 5.83" for 25 Yr.-24 Hr. event
Inflow = 4.38 cfs @ 12.11 hrs, Volume= 0.385 af
Outflow = 4.38 cfs @ 12.11 hrs, Volume= 0.385 af, Atten= 0%, Lag= 0.1 min
Primary = 4.38 cfs @ 12.11 hrs, Volume= 0.385 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 95.68' @ 12.11 hrs Surf.Area= 0.000 ac Storage= 0.000 af
Flood Elev= 99.45' Surf.Area= 0.000 ac Storage= 0.001 af

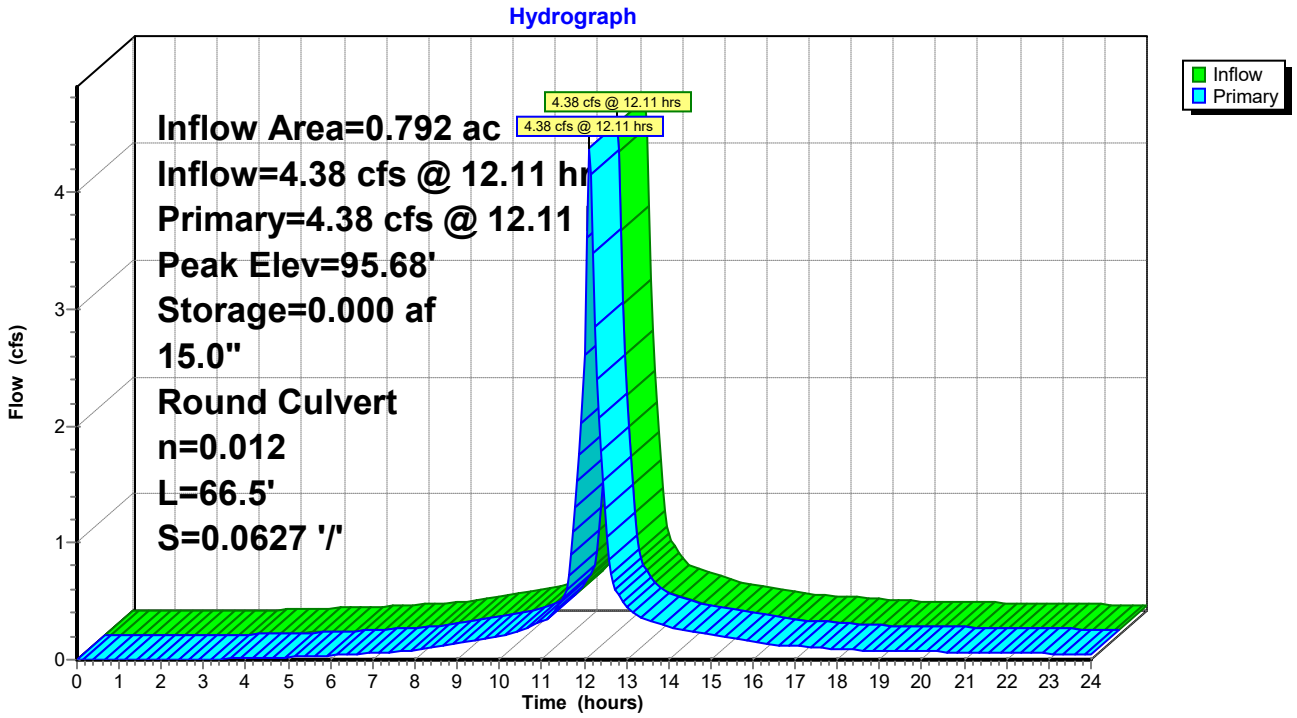
Plug-Flow detention time= 0.2 min calculated for 0.385 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (777.8 - 777.7)

Volume	Invert	Avail.Storage	Storage Description
#1	94.52'	0.001 af	**4.00'D x 3.75'H 4' Structure**

Device	Routing	Invert	Outlet Devices
#1	Primary	94.52'	**15.0" Round 15" HDPE N-12** L= 66.5' Ke= 0.500 Inlet / Outlet Invert= 94.52' / 90.35' S= 0.0627 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=4.29 cfs @ 12.11 hrs HW=95.66' TW=91.39' (Dynamic Tailwater)
└**1=15" HDPE N-12** (Inlet Controls 4.29 cfs @ 3.64 fps)

Pond C11P: Catch Basin #11



Summary for Pond C12P: Catch Basin #12

Inflow Area = 0.252 ac, 56.46% Impervious, Inflow Depth > 5.46" for 25 Yr.-24 Hr. event
Inflow = 1.51 cfs @ 12.09 hrs, Volume= 0.115 af
Outflow = 1.48 cfs @ 12.09 hrs, Volume= 0.115 af, Atten= 2%, Lag= 0.0 min
Primary = 1.48 cfs @ 12.09 hrs, Volume= 0.115 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 90.00' @ 12.15 hrs Surf.Area= 0.000 ac Storage= 0.000 af
Flood Elev= 91.98' Surf.Area= 0.000 ac Storage= 0.001 af

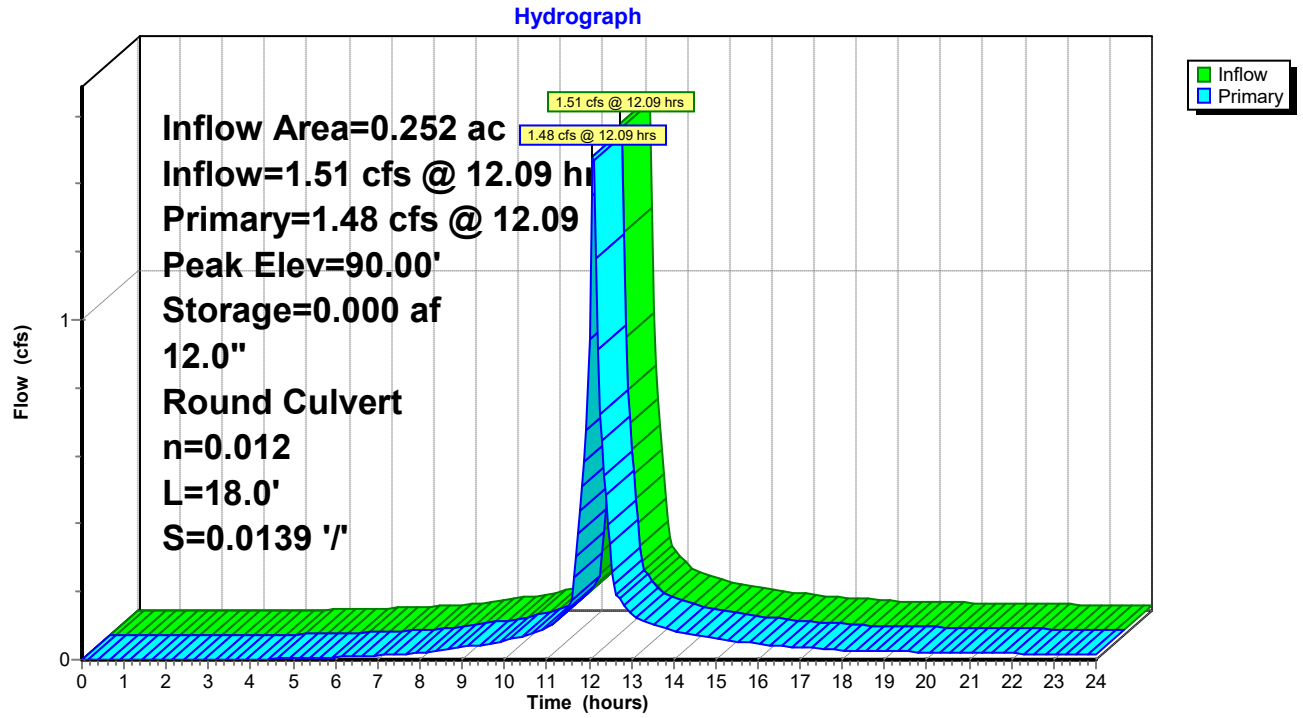
Plug-Flow detention time= 0.3 min calculated for 0.114 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (785.8 - 785.5)

Volume	Invert	Avail.Storage	Storage Description
#1	88.73'	0.001 af	**4.00'D x 3.25'H 4' Structure**

Device	Routing	Invert	Outlet Devices
#1	Primary	88.73'	**12.0" Round 12" HDPE N-12** L= 18.0' Ke= 0.500 Inlet / Outlet Invert= 88.73' / 88.48' S= 0.0139 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 12.09 hrs HW=89.71' TW=89.84' (Dynamic Tailwater)
↳**1=12" HDPE N-12** (Controls 0.00 cfs)

Pond C12P: Catch Basin #12



Summary for Pond C13P: Catch Basin #13

[80] Warning: Exceeded Pond C12P by 0.13' @ 12.10 hrs (1.37 cfs 0.010 af)

Inflow Area = 1.084 ac, 64.50% Impervious, Inflow Depth > 5.74" for 25 Yr.-24 Hr. event
Inflow = 6.07 cfs @ 12.11 hrs, Volume= 0.519 af
Outflow = 6.07 cfs @ 12.11 hrs, Volume= 0.519 af, Atten= 0%, Lag= 0.1 min
Primary = 6.07 cfs @ 12.11 hrs, Volume= 0.519 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 89.91' @ 12.11 hrs Surf.Area= 0.000 ac Storage= 0.000 af
Flood Elev= 91.98' Surf.Area= 0.000 ac Storage= 0.001 af

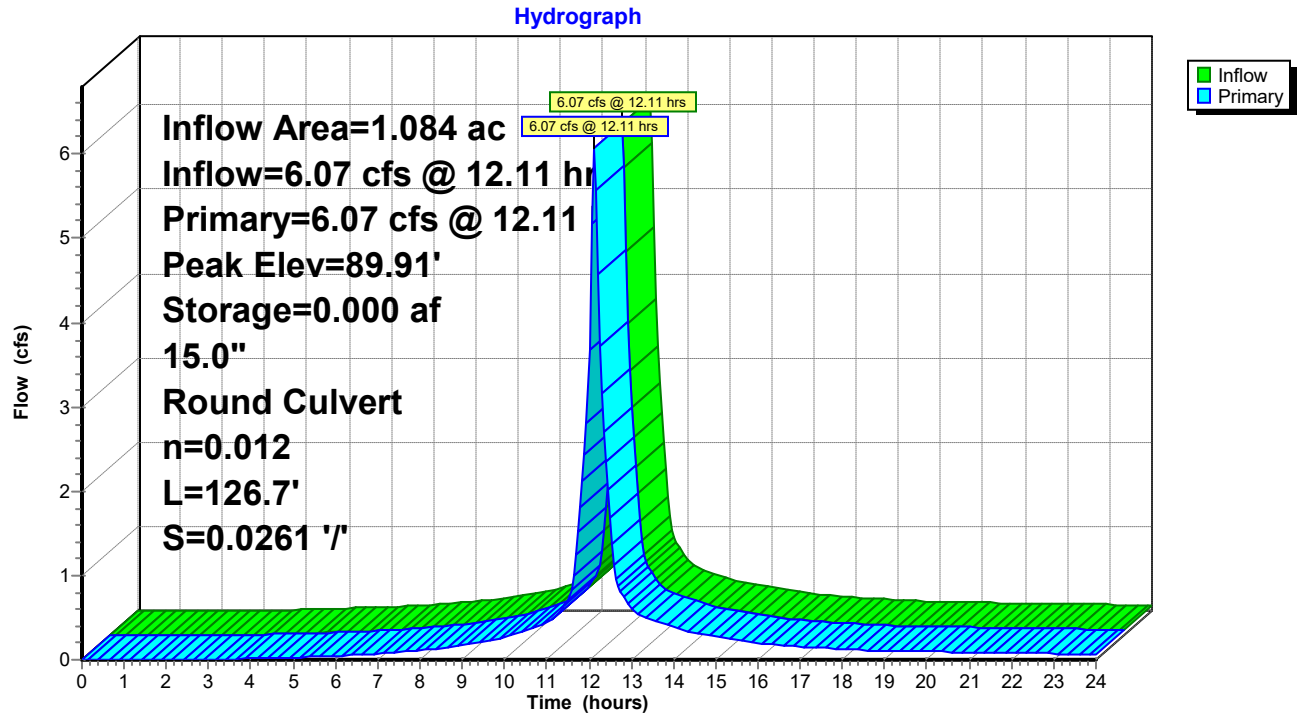
Plug-Flow detention time= 0.1 min calculated for 0.519 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (779.6 - 779.5)

Volume	Invert	Avail.Storage	Storage Description
#1	88.23'	0.001 af	**4.00'D x 3.75'H 4' Structure**

Device	Routing	Invert	Outlet Devices
#1	Primary	88.23'	**15.0" Round 15" HDPE N-12** L= 126.7' Ke= 0.500 Inlet / Outlet Invert= 88.23' / 84.92' S= 0.0261 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=5.98 cfs @ 12.11 hrs HW=89.88' TW=85.54' (Dynamic Tailwater)
↑**1=15" HDPE N-12** (Inlet Controls 5.98 cfs @ 4.88 fps)

Pond C13P: Catch Basin #13



Summary for Pond C14P: Catch Basin #14

[90] Warning: Qout>Qin may require smaller dt or Finer Routing

Inflow Area = 0.456 ac, 54.57% Impervious, Inflow Depth > 5.35" for 25 Yr.-24 Hr. event
Inflow = 2.70 cfs @ 12.09 hrs, Volume= 0.203 af
Outflow = 2.70 cfs @ 12.09 hrs, Volume= 0.203 af, Atten= 0%, Lag= 0.1 min
Primary = 2.70 cfs @ 12.09 hrs, Volume= 0.203 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 86.44' @ 12.09 hrs Surf.Area= 0.000 ac Storage= 0.000 af
Flood Elev= 88.67' Surf.Area= 0.000 ac Storage= 0.001 af

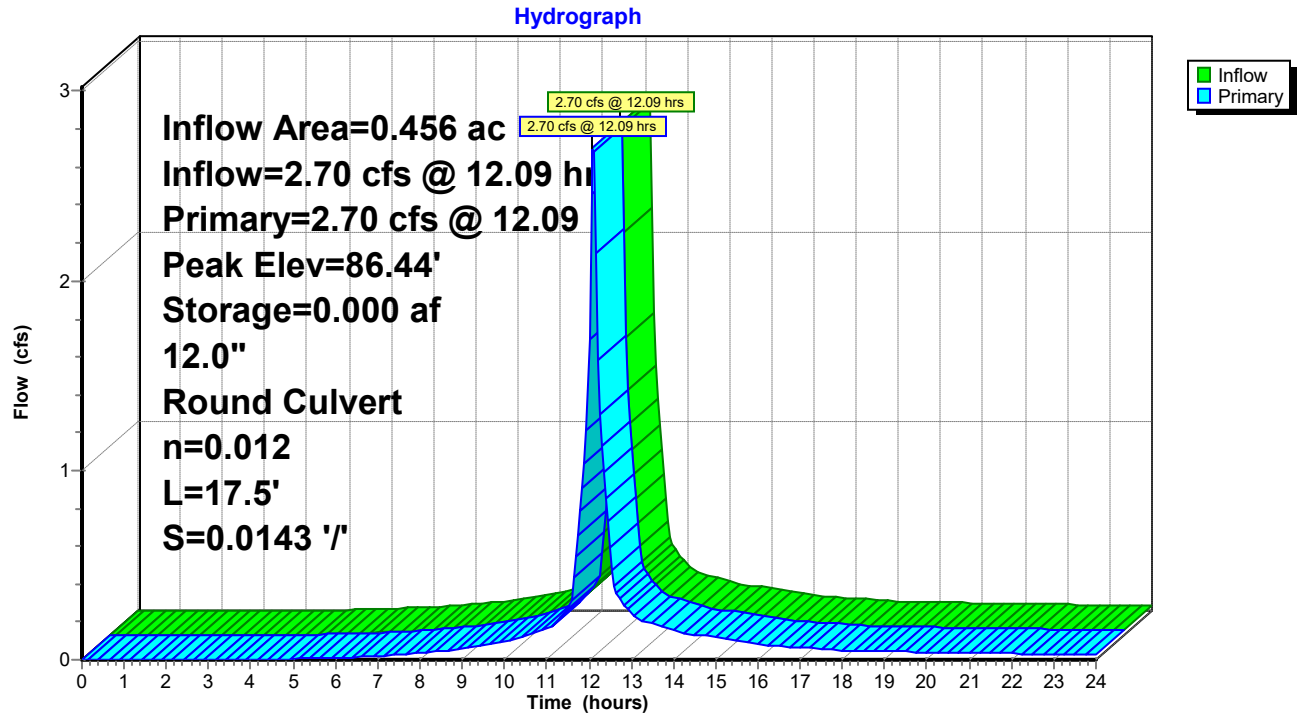
Plug-Flow detention time= 0.2 min calculated for 0.203 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (789.7 - 789.5)

Volume	Invert	Avail.Storage	Storage Description
#1	85.42'	0.001 af	**4.00'D x 3.25'H 4' Structure**

Device	Routing	Invert	Outlet Devices
#1	Primary	85.42'	**12.0" Round 12" HDPE N-12** L= 17.5' Ke= 0.500 Inlet / Outlet Invert= 85.42' / 85.17' S= 0.0143 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=2.64 cfs @ 12.09 hrs HW=86.42' TW=85.52' (Dynamic Tailwater)
↑—**1=12" HDPE N-12** (Barrel Controls 2.64 cfs @ 4.16 fps)

Pond C14P: Catch Basin #14



Summary for Pond C15P: Catch Basin #15

Inflow Area = 1.604 ac, 63.09% Impervious, Inflow Depth > 5.67" for 25 Yr.-24 Hr. event
Inflow = 9.15 cfs @ 12.10 hrs, Volume= 0.758 af
Outflow = 9.15 cfs @ 12.10 hrs, Volume= 0.757 af, Atten= 0%, Lag= 0.1 min
Primary = 9.15 cfs @ 12.10 hrs, Volume= 0.757 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 85.58' @ 12.10 hrs Surf.Area= 0.000 ac Storage= 0.001 af
Flood Elev= 88.67' Surf.Area= 0.000 ac Storage= 0.002 af

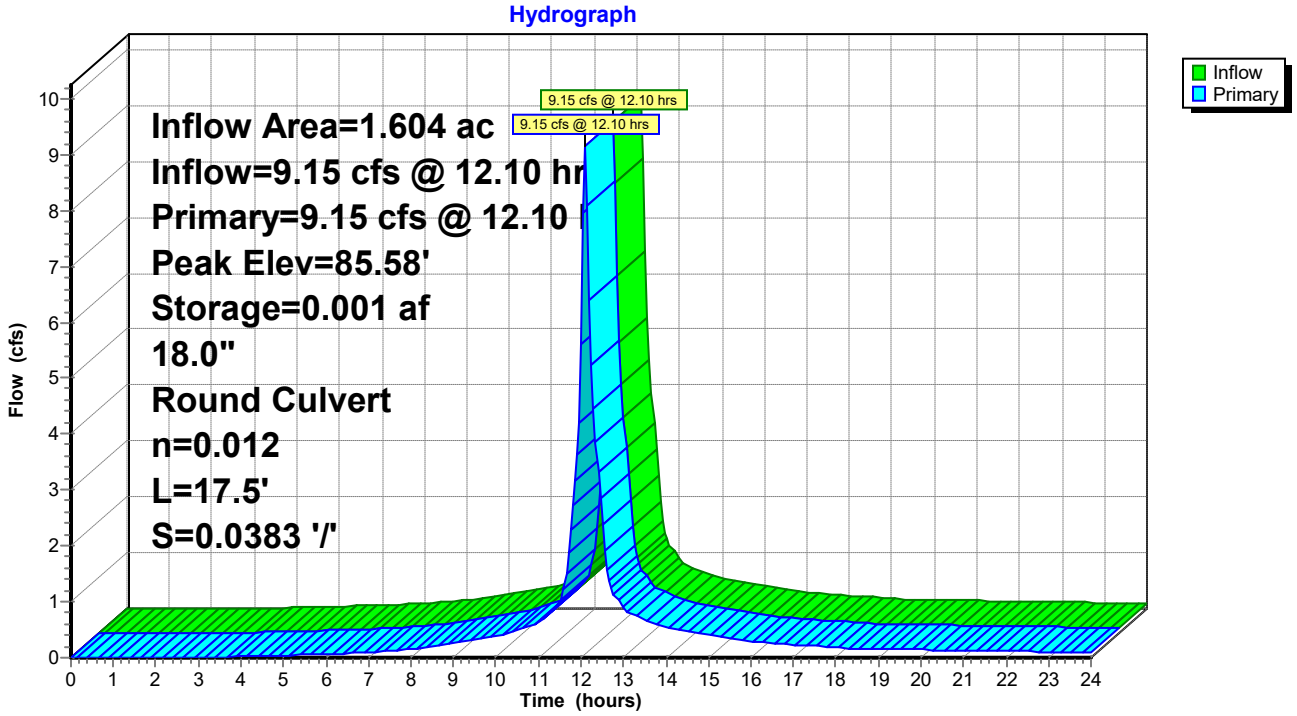
Plug-Flow detention time= 0.2 min calculated for 0.756 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (780.7 - 780.6)

Volume	Invert	Avail.Storage	Storage Description
#1	83.67'	0.002 af	**5.00'D x 5.00'H 5' Structure**

Device	Routing	Invert	Outlet Devices
#1	Primary	83.67'	**18.0" Round 18" HDPE N-12** L= 17.5' Ke= 0.500 Inlet / Outlet Invert= 83.67' / 83.00' S= 0.0383 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=9.12 cfs @ 12.10 hrs HW=85.57' TW=81.48' (Dynamic Tailwater)
↑—**1=18" HDPE N-12** (Inlet Controls 9.12 cfs @ 5.16 fps)

Pond C15P: Catch Basin #15



Summary for Pond C16P: Catch Basin #16

Inflow Area = 0.381 ac, 68.54% Impervious, Inflow Depth > 5.81" for 25 Yr.-24 Hr. event
Inflow = 2.38 cfs @ 12.09 hrs, Volume= 0.184 af
Outflow = 2.32 cfs @ 12.09 hrs, Volume= 0.184 af, Atten= 2%, Lag= 0.0 min
Primary = 2.32 cfs @ 12.09 hrs, Volume= 0.184 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 86.36' @ 12.19 hrs Surf.Area= 20 sf Storage= 38 cf
Flood Elev= 87.31' Surf.Area= 24 sf Storage= 56 cf

Plug-Flow detention time= 0.5 min calculated for 0.184 af (100% of inflow)
Center-of-Mass det. time= 0.3 min (776.9 - 776.5)

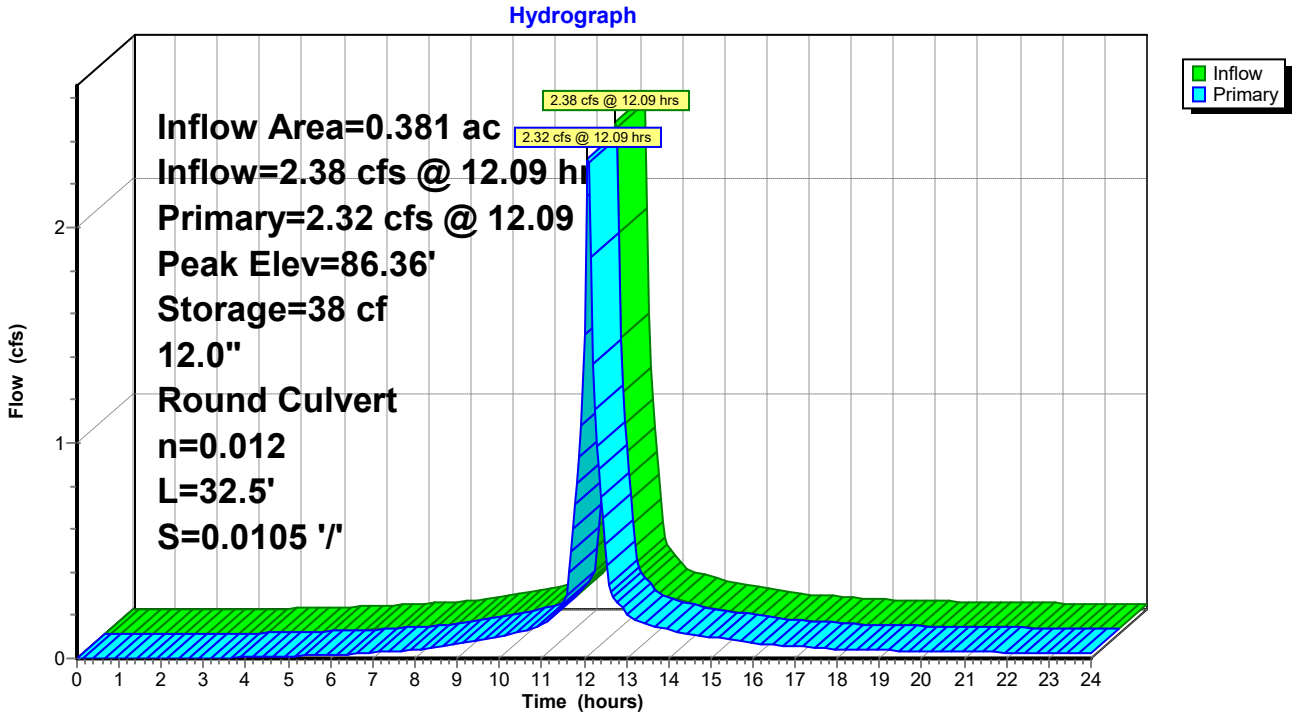
Volume	Invert	Avail.Storage	Storage Description
#1	84.44'	56 cf	**5.00'D x 2.87'H 4' Structure**
#2	87.31'	63 cf	**Ponding Area (Irregular)** Listed below (Recalc)
		119 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
87.31	4	4.0	0	0	4
87.55	725	152.0	63	63	1,841

Device	Routing	Invert	Outlet Devices
#1	Primary	84.44'	**12.0" Round 12" RCP** L= 32.5' Ke= 0.500 Inlet / Outlet Invert= 84.44' / 84.10' S= 0.0105 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 12.09 hrs HW=85.96' TW=85.98' (Dynamic Tailwater)
↑—**1=12" RCP** (Controls 0.00 cfs)

Pond C16P: Catch Basin #16



Summary for Pond C17P: Catch Basin #17

Inflow Area = 0.213 ac, 73.40% Impervious, Inflow Depth > 5.92" for 25 Yr.-24 Hr. event
Inflow = 1.34 cfs @ 12.09 hrs, Volume= 0.105 af
Outflow = 1.33 cfs @ 12.09 hrs, Volume= 0.105 af, Atten= 1%, Lag= 0.0 min
Primary = 1.33 cfs @ 12.09 hrs, Volume= 0.105 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 86.27' @ 12.21 hrs Surf.Area= 0.000 ac Storage= 0.000 af
Flood Elev= 88.28' Surf.Area= 0.000 ac Storage= 0.001 af

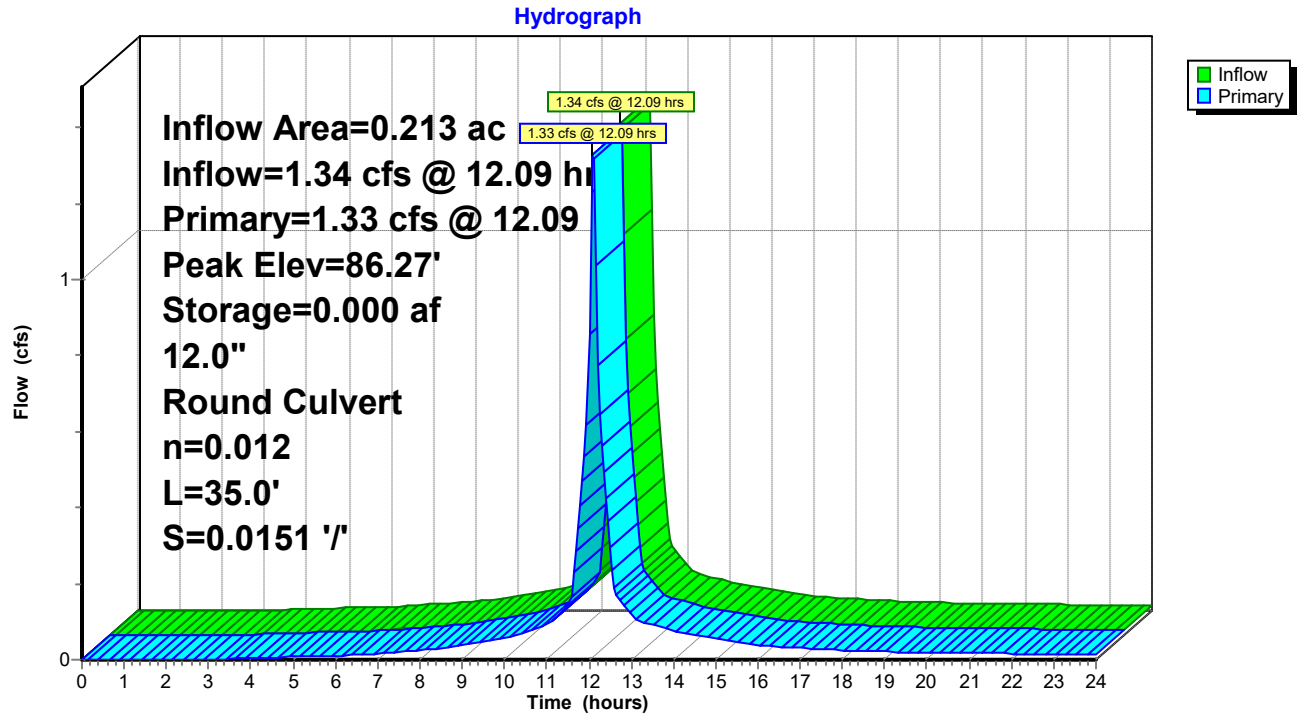
Plug-Flow detention time= 0.4 min calculated for 0.105 af (100% of inflow)
Center-of-Mass det. time= 0.3 min (773.1 - 772.8)

Volume	Invert	Avail.Storage	Storage Description
#1	85.03'	0.001 af	**4.00'D x 3.25'H 4' Structure**

Device	Routing	Invert	Outlet Devices
#1	Primary	85.03'	**12.0" Round 12" HDPE N-12** L= 35.0' Ke= 0.500 Inlet / Outlet Invert= 85.03' / 84.50' S= 0.0151 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 12.09 hrs HW=85.84' TW=85.97' (Dynamic Tailwater)
1=12" HDPE N-12 (Controls 0.00 cfs)

Pond C17P: Catch Basin #17



Summary for Pond C18P: Catch Basin #18

Inflow Area = 0.171 ac, 68.46% Impervious, Inflow Depth > 5.46" for 25 Yr.-24 Hr. event
Inflow = 1.02 cfs @ 12.09 hrs, Volume= 0.078 af
Outflow = 1.02 cfs @ 12.09 hrs, Volume= 0.078 af, Atten= 0%, Lag= 0.1 min
Primary = 1.02 cfs @ 12.09 hrs, Volume= 0.078 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 113.83' @ 12.10 hrs Surf.Area= 0.000 ac Storage= 0.000 af
Flood Elev= 116.52' Surf.Area= 0.000 ac Storage= 0.001 af

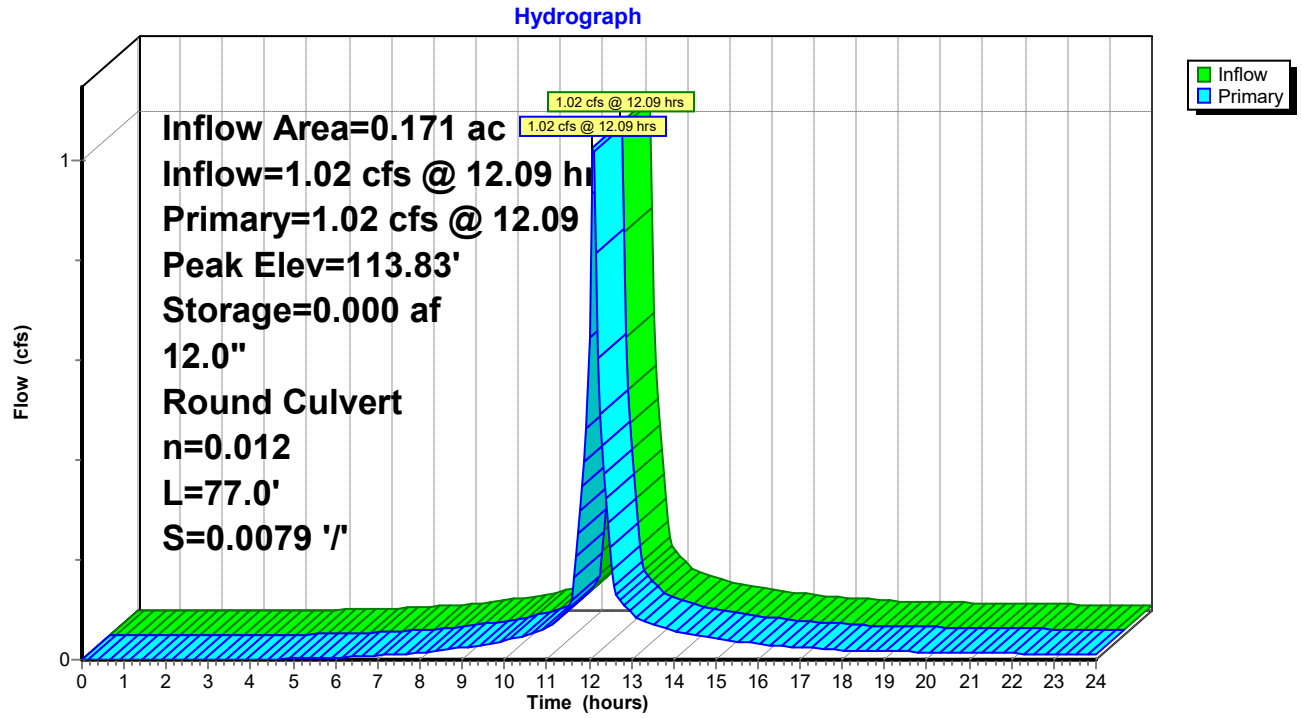
Plug-Flow detention time= 0.4 min calculated for 0.078 af (100% of inflow)
Center-of-Mass det. time= 0.3 min (786.8 - 786.5)

Volume	Invert	Avail.Storage	Storage Description
#1	113.27'	0.001 af	**4.00'D x 3.25'H 4' Structure**

Device	Routing	Invert	Outlet Devices
#1	Primary	113.27'	**12.0" Round 12" HDPE N-12** L= 77.0' Ke= 0.500 Inlet / Outlet Invert= 113.27' / 112.66' S= 0.0079 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.96 cfs @ 12.09 hrs HW=113.82' TW=113.22' (Dynamic Tailwater)
1=12" HDPE N-12 (Outlet Controls 0.96 cfs @ 3.13 fps)

Pond C18P: Catch Basin #18



Summary for Pond C19P: Catch Basin #19

Inflow Area = 0.195 ac, 64.19% Impervious, Inflow Depth > 5.69" for 25 Yr.-24 Hr. event
Inflow = 1.20 cfs @ 12.09 hrs, Volume= 0.092 af
Outflow = 1.20 cfs @ 12.09 hrs, Volume= 0.092 af, Atten= 0%, Lag= 0.1 min
Primary = 1.20 cfs @ 12.09 hrs, Volume= 0.092 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 113.84' @ 12.09 hrs Surf.Area= 0.000 ac Storage= 0.000 af
Flood Elev= 116.52' Surf.Area= 0.000 ac Storage= 0.001 af

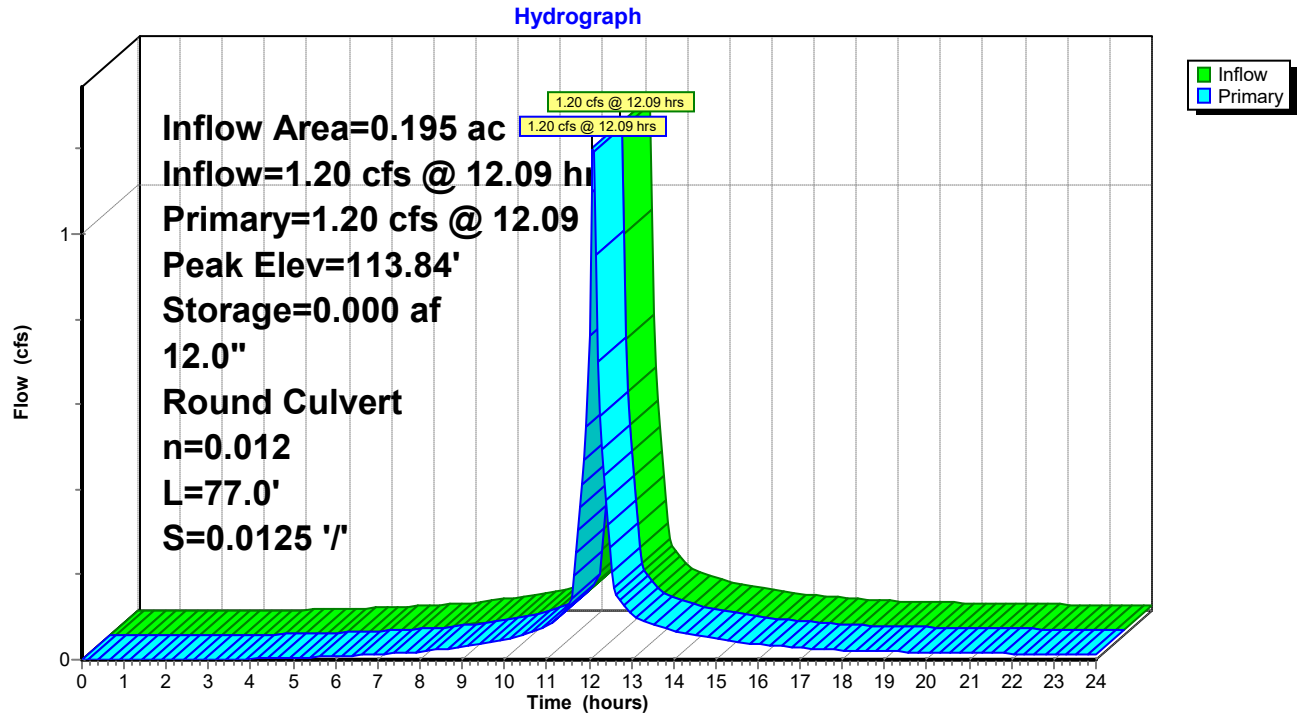
Plug-Flow detention time= 0.3 min calculated for 0.092 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (780.2 - 780.0)

Volume	Invert	Avail.Storage	Storage Description
#1	113.27'	0.001 af	**4.00'D x 3.25'H 4' Structure**

Device	Routing	Invert	Outlet Devices
#1	Primary	113.27'	**12.0" Round 12" HDPE N-12** L= 77.0' Ke= 0.500 Inlet / Outlet Invert= 113.27' / 112.31' S= 0.0125 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=1.17 cfs @ 12.09 hrs HW=113.84' TW=110.95' (Dynamic Tailwater)
1=12" HDPE N-12 (Inlet Controls 1.17 cfs @ 2.56 fps)

Pond C19P: Catch Basin #19



Summary for Pond C20P: Catch Basin #20

Inflow Area = 0.240 ac, 69.47% Impervious, Inflow Depth > 5.56" for 25 Yr.-24 Hr. event
Inflow = 1.46 cfs @ 12.09 hrs, Volume= 0.111 af
Outflow = 1.46 cfs @ 12.09 hrs, Volume= 0.111 af, Atten= 0%, Lag= 0.1 min
Primary = 1.46 cfs @ 12.09 hrs, Volume= 0.111 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 113.23' @ 12.09 hrs Surf.Area= 0.000 ac Storage= 0.000 af
Flood Elev= 117.56' Surf.Area= 0.000 ac Storage= 0.001 af

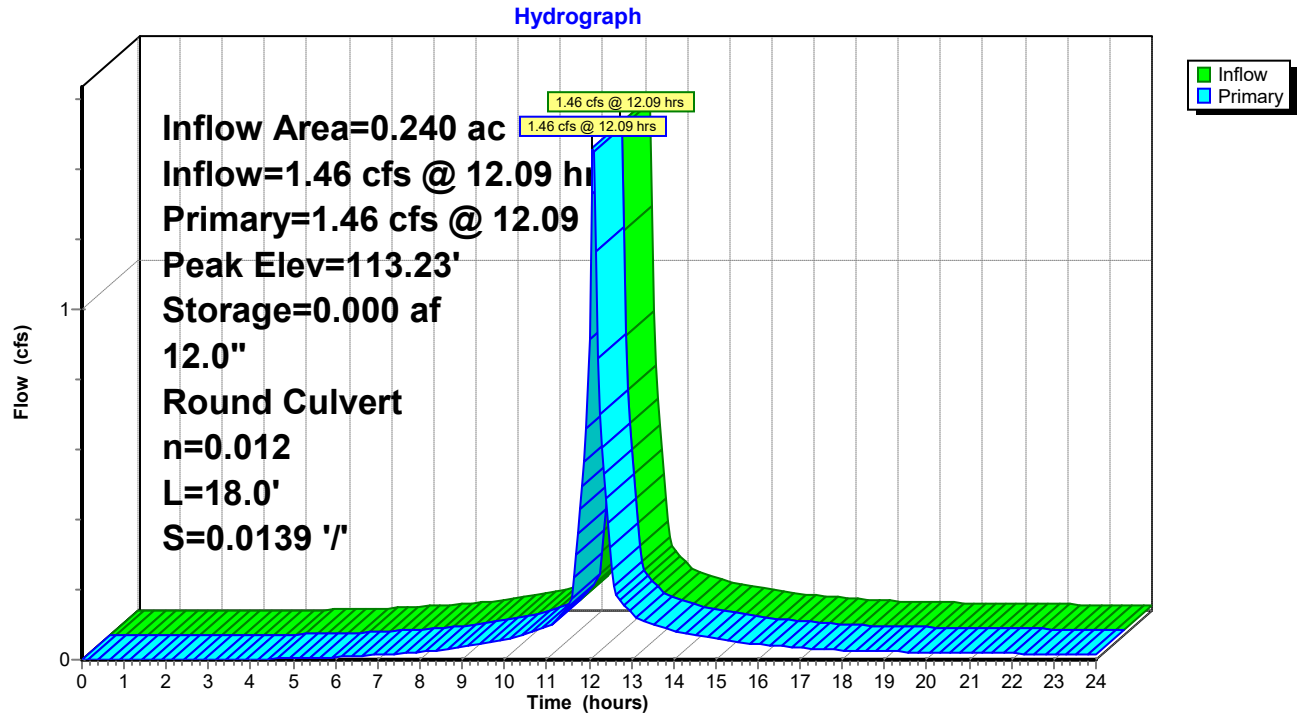
Plug-Flow detention time= 0.3 min calculated for 0.111 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (783.9 - 783.7)

Volume	Invert	Avail.Storage	Storage Description
#1	112.56'	0.001 af	**4.00'D x 5.00'H 4' Structure**

Device	Routing	Invert	Outlet Devices
#1	Primary	112.56'	**12.0" Round 12" HDPE N-12** L= 18.0' Ke= 0.500 Inlet / Outlet Invert= 112.56' / 112.31' S= 0.0139 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=1.42 cfs @ 12.09 hrs HW=113.22' TW=110.95' (Dynamic Tailwater)
↑—**1=12" HDPE N-12** (Barrel Controls 1.42 cfs @ 3.67 fps)

Pond C20P: Catch Basin #20



Summary for Pond C21P: Catch Basin #21

[90] Warning: Qout>Qin may require smaller dt or Finer Routing

Inflow Area = 0.502 ac, 69.96% Impervious, Inflow Depth > 5.71" for 25 Yr.-24 Hr. event
Inflow = 3.09 cfs @ 12.09 hrs, Volume= 0.239 af
Outflow = 3.10 cfs @ 12.09 hrs, Volume= 0.239 af, Atten= 0%, Lag= 0.0 min
Primary = 3.10 cfs @ 12.09 hrs, Volume= 0.239 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 110.97' @ 12.09 hrs Surf.Area= 13 sf Storage= 11 cf
Flood Elev= 117.56' Surf.Area= 13 sf Storage= 94 cf

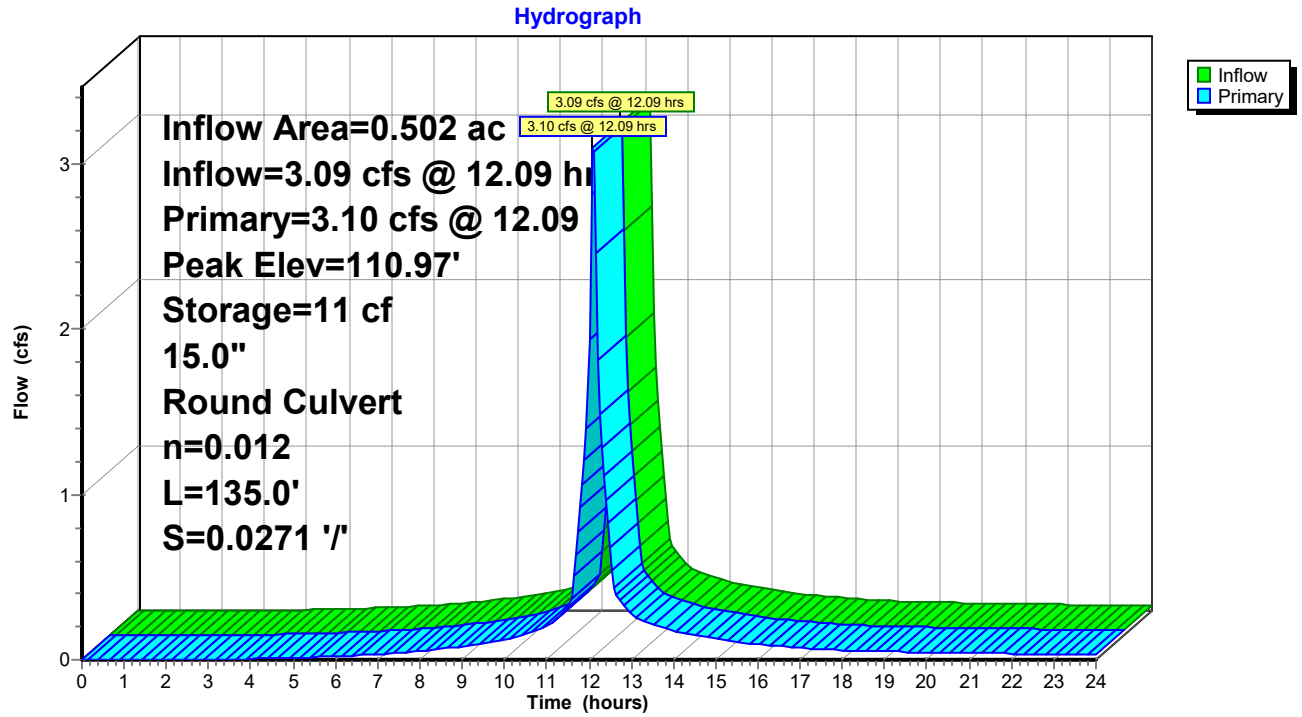
Plug-Flow detention time= 0.2 min calculated for 0.238 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (779.1 - 779.0)

Volume	Invert	Avail.Storage	Storage Description
#1	110.06'	94 cf	**4.00'D x 7.50'H 4' Structure**

Device	Routing	Invert	Outlet Devices
#1	Primary	110.06'	**15.0" Round 15" HDPE N-12** L= 135.0' Ke= 0.500 Inlet / Outlet Invert= 110.06' / 106.40' S= 0.0271 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=3.03 cfs @ 12.09 hrs HW=110.95' TW=107.47' (Dynamic Tailwater)
↑**1=15" HDPE N-12** (Inlet Controls 3.03 cfs @ 3.22 fps)

Pond C21P: Catch Basin #21



Summary for Pond C22P: Catch Basin #22

Inflow Area = 0.791 ac, 66.89% Impervious, Inflow Depth > 5.66" for 25 Yr.-24 Hr. event
Inflow = 4.50 cfs @ 12.10 hrs, Volume= 0.373 af
Outflow = 4.50 cfs @ 12.10 hrs, Volume= 0.373 af, Atten= 0%, Lag= 0.0 min
Primary = 4.50 cfs @ 12.10 hrs, Volume= 0.373 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 107.50' @ 12.10 hrs Surf.Area= 0.000 ac Storage= 0.000 af
Flood Elev= 109.80' Surf.Area= 0.000 ac Storage= 0.001 af

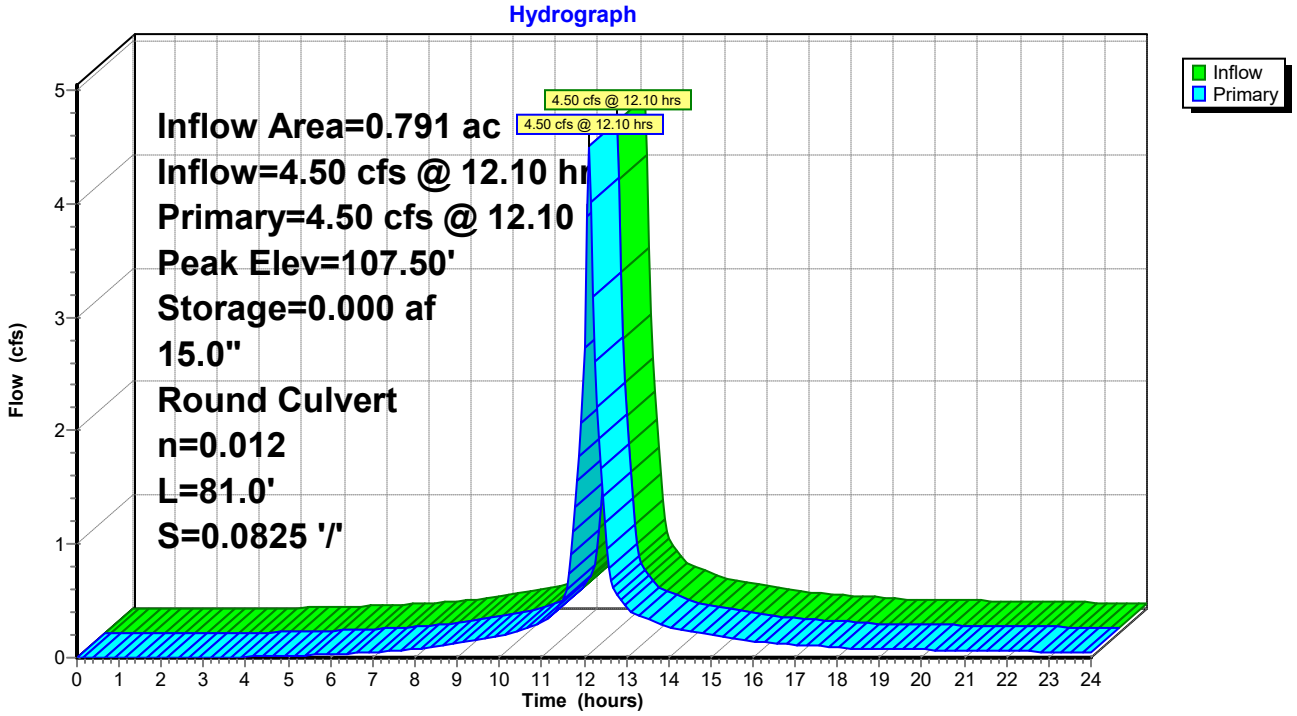
Plug-Flow detention time= 0.2 min calculated for 0.372 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (782.1 - 781.9)

Volume	Invert	Avail.Storage	Storage Description
#1	106.30'	0.001 af	**4.00'D x 3.50'H 4' Structure**

Device	Routing	Invert	Outlet Devices
#1	Primary	106.30'	**15.0" Round 15" HDPE N-12** L= 81.0' Ke= 0.500 Inlet / Outlet Invert= 106.30' / 99.62' S= 0.0825 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=4.48 cfs @ 12.10 hrs HW=107.49' TW=100.56' (Dynamic Tailwater)
1=15" HDPE N-12 (Inlet Controls 4.48 cfs @ 3.71 fps)

Pond C22P: Catch Basin #22



Summary for Pond C23P: Catch Basin #23

Inflow Area = 0.930 ac, 67.88% Impervious, Inflow Depth > 5.70" for 25 Yr.-24 Hr. event
Inflow = 5.37 cfs @ 12.10 hrs, Volume= 0.442 af
Outflow = 5.38 cfs @ 12.10 hrs, Volume= 0.442 af, Atten= 0%, Lag= 0.0 min
Primary = 5.38 cfs @ 12.10 hrs, Volume= 0.442 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 100.56' @ 12.10 hrs Surf.Area= 0.000 ac Storage= 0.000 af
Flood Elev= 103.12' Surf.Area= 0.000 ac Storage= 0.001 af

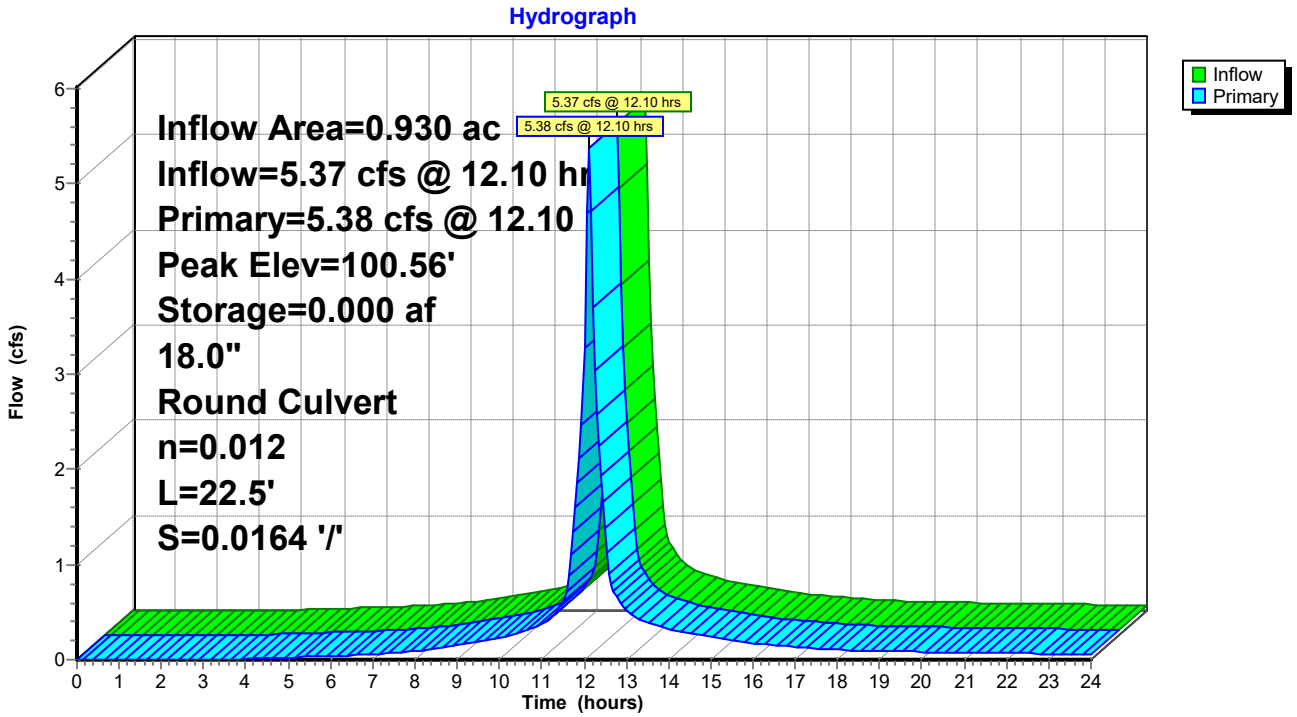
Plug-Flow detention time= 0.1 min calculated for 0.441 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (780.7 - 780.6)

Volume	Invert	Avail.Storage	Storage Description
#1	99.37'	0.001 af	**4.00'D x 3.75'H 4' Structure**

Device	Routing	Invert	Outlet Devices
#1	Primary	99.37'	**18.0" Round 18" HDPE N-12** L= 22.5' Ke= 0.500 Inlet / Outlet Invert= 99.37' / 99.00' S= 0.0164 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=5.37 cfs @ 12.10 hrs HW=100.56' TW=96.52' (Dynamic Tailwater)
↑**1=18" HDPE N-12** (Barrel Controls 5.37 cfs @ 4.88 fps)

Pond C23P: Catch Basin #23



Summary for Pond C24P: Catch Basin #24

Inflow Area = 0.442 ac, 40.57% Impervious, Inflow Depth > 4.57" for 25 Yr.-24 Hr. event
Inflow = 1.93 cfs @ 12.16 hrs, Volume= 0.168 af
Outflow = 1.92 cfs @ 12.16 hrs, Volume= 0.168 af, Atten= 1%, Lag= 0.0 min
Primary = 1.92 cfs @ 12.16 hrs, Volume= 0.168 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 97.27' @ 12.40 hrs Surf.Area= 0.000 ac Storage= 0.000 af
Flood Elev= 99.12' Surf.Area= 0.000 ac Storage= 0.001 af

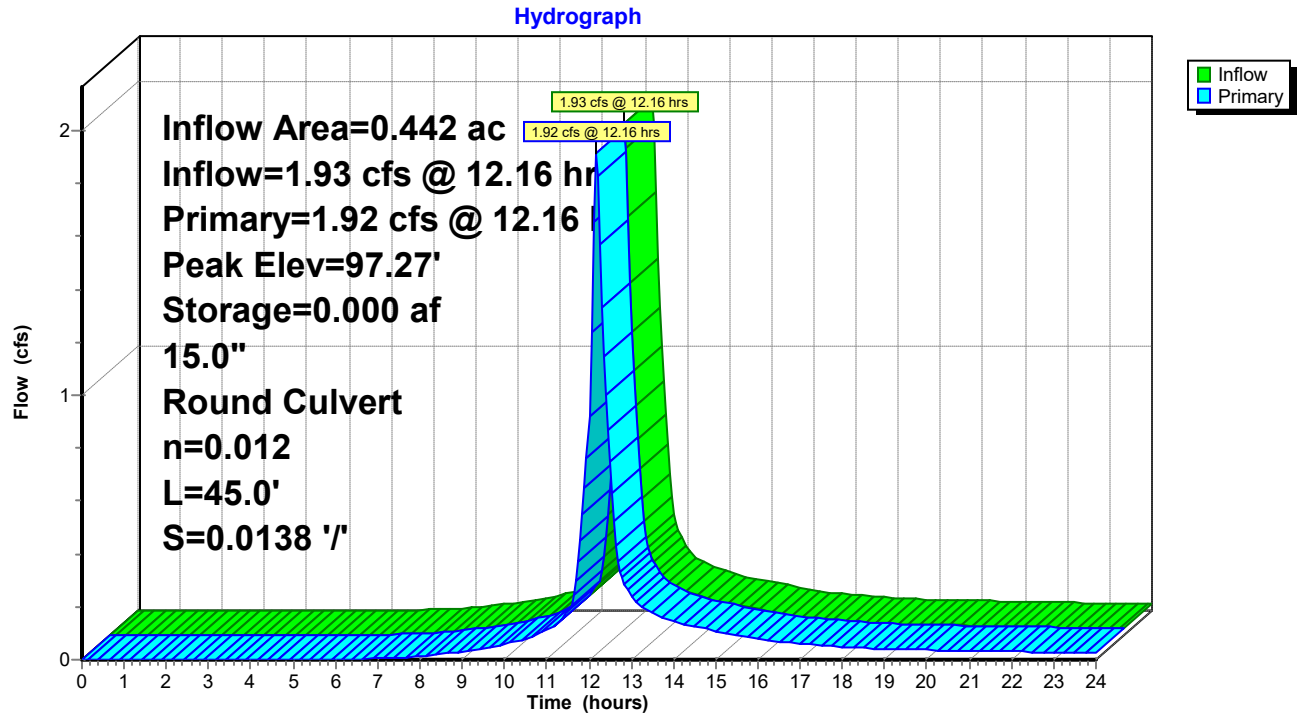
Plug-Flow detention time= 0.4 min calculated for 0.168 af (100% of inflow)
Center-of-Mass det. time= 0.3 min (813.2 - 812.9)

Volume	Invert	Avail.Storage	Storage Description
#1	95.62'	0.001 af	**4.00'D x 3.50'H 4' Structure**

Device	Routing	Invert	Outlet Devices
#1	Primary	95.62'	**15.0" Round 15" HDPE N-12** L= 45.0' Ke= 0.500 Inlet / Outlet Invert= 95.62' / 95.00' S= 0.0138 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=0.00 cfs @ 12.16 hrs HW=96.75' TW=96.88' (Dynamic Tailwater)
1=15" HDPE N-12 (Controls 0.00 cfs)

Pond C24P: Catch Basin #24



Summary for Pond C25P: Catch Basin #25

Inflow Area = 0.143 ac, 70.95% Impervious, Inflow Depth > 5.81" for 25 Yr.-24 Hr. event
Inflow = 0.89 cfs @ 12.09 hrs, Volume= 0.069 af
Outflow = 0.88 cfs @ 12.09 hrs, Volume= 0.069 af, Atten= 1%, Lag= 0.0 min
Primary = 0.88 cfs @ 12.09 hrs, Volume= 0.069 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 97.25' @ 12.41 hrs Surf.Area= 0.000 ac Storage= 0.001 af
Flood Elev= 98.75' Surf.Area= 0.000 ac Storage= 0.001 af

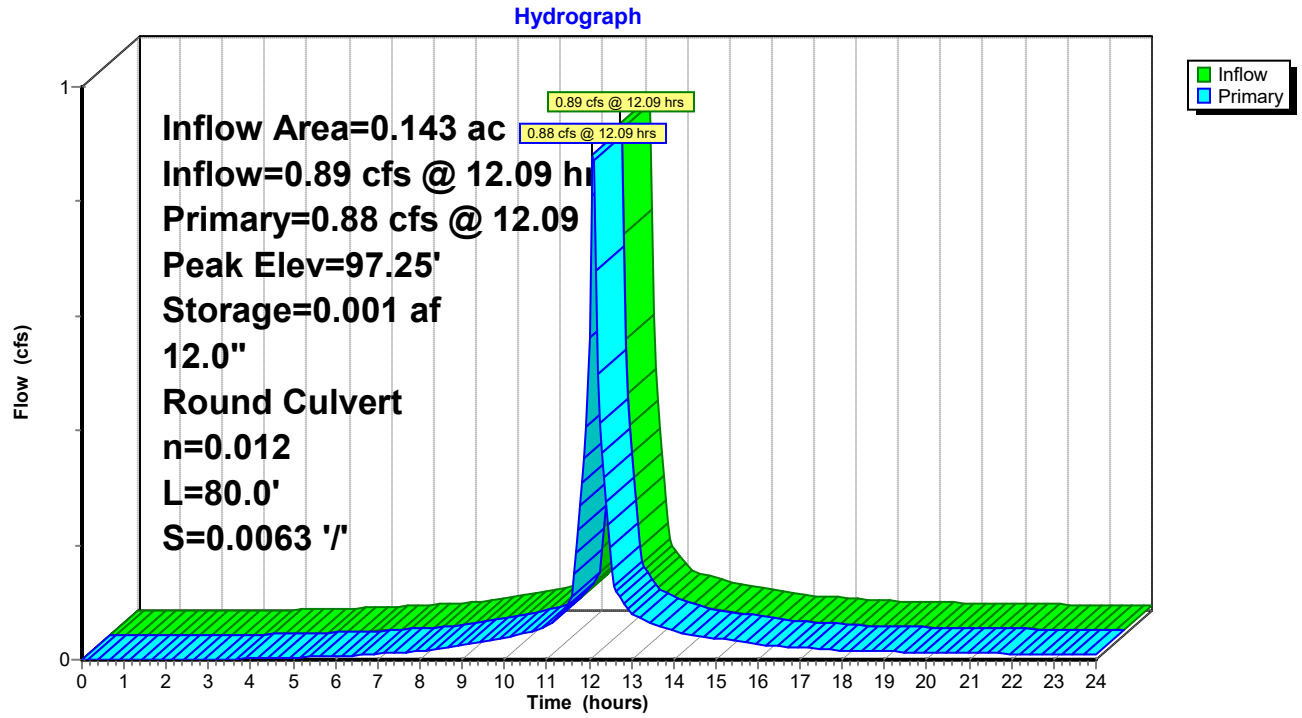
Plug-Flow detention time= 0.9 min calculated for 0.069 af (100% of inflow)
Center-of-Mass det. time= 0.8 min (777.3 - 776.5)

Volume	Invert	Avail.Storage	Storage Description
#1	95.50'	0.001 af	**4.00'D x 3.25'H 4' Structure**

Device	Routing	Invert	Outlet Devices
#1	Primary	95.50'	**12.0" Round 12" HDPE N-12** L= 80.0' Ke= 0.500 Inlet / Outlet Invert= 95.50' / 95.00' S= 0.0063 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 12.09 hrs HW=96.27' TW=96.42' (Dynamic Tailwater)
↑—**1=12" HDPE N-12** (Controls 0.00 cfs)

Pond C25P: Catch Basin #25



Summary for Pond C26P: Catch Basin #26

[80] Warning: Exceeded Pond C28P by 0.17' @ 12.05 hrs (6.29 cfs 0.319 af)

Inflow Area = 1.452 ac, 69.33% Impervious, Inflow Depth > 5.76" for 25 Yr.-24 Hr. event
Inflow = 7.13 cfs @ 12.09 hrs, Volume= 0.697 af
Outflow = 7.10 cfs @ 12.09 hrs, Volume= 0.696 af, Atten= 0%, Lag= 0.0 min
Primary = 7.10 cfs @ 12.09 hrs, Volume= 0.696 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 86.89' @ 12.29 hrs Surf.Area= 0.000 ac Storage= 0.002 af
Flood Elev= 88.71' Surf.Area= 0.000 ac Storage= 0.003 af

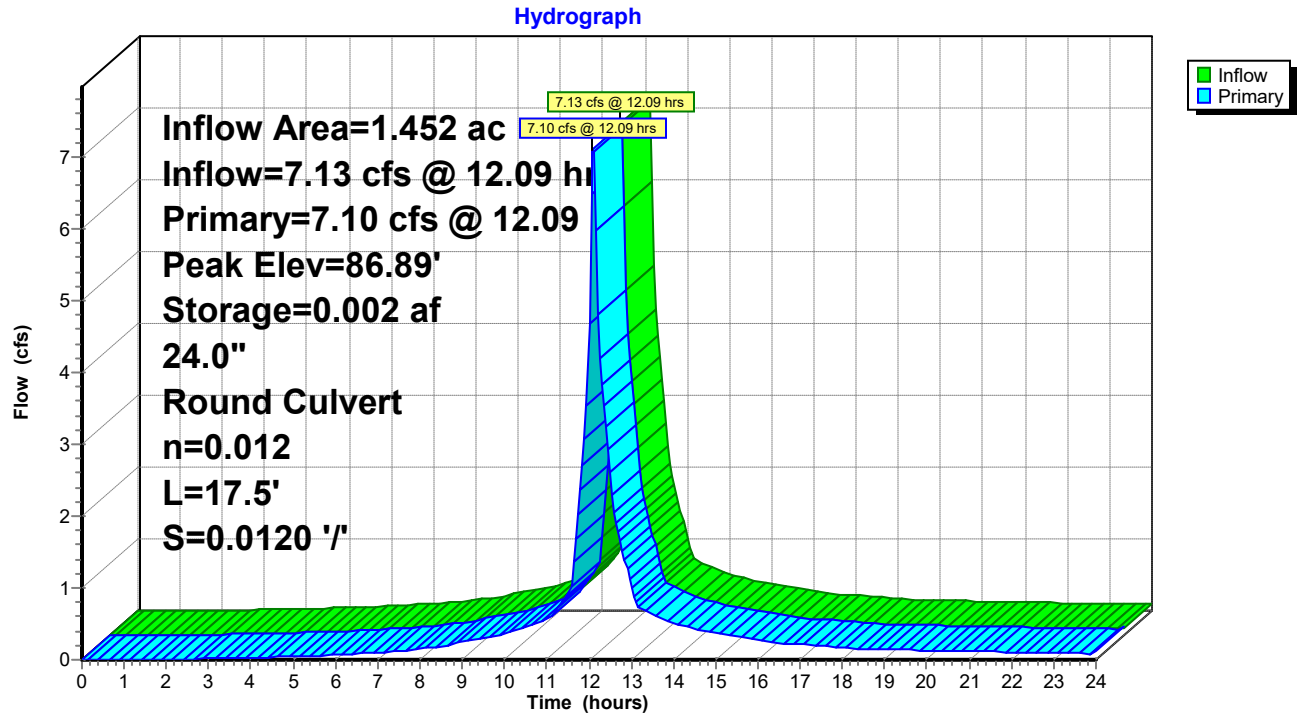
Plug-Flow detention time= 1.4 min calculated for 0.695 af (100% of inflow)
Center-of-Mass det. time= 0.4 min (778.4 - 778.0)

Volume	Invert	Avail.Storage	Storage Description
#1	82.71'	0.003 af	**5.00'D x 6.00'H 5' Structure**

Device	Routing	Invert	Outlet Devices
#1	Primary	82.71'	**24.0" Round 24" HDPE N-12** L= 17.5' Ke= 0.500 Inlet / Outlet Invert= 82.71' / 82.50' S= 0.0120 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

Primary OutFlow Max=0.00 cfs @ 12.09 hrs HW=86.46' TW=86.50' (Dynamic Tailwater)
1=24" HDPE N-12 (Controls 0.00 cfs)

Pond C26P: Catch Basin #26



Summary for Pond C27P: Catch Basin #27

Inflow Area = 0.206 ac, 52.60% Impervious, Inflow Depth > 5.35" for 25 Yr.-24 Hr. event
Inflow = 1.22 cfs @ 12.09 hrs, Volume= 0.092 af
Outflow = 1.22 cfs @ 12.09 hrs, Volume= 0.092 af, Atten= 0%, Lag= 0.0 min
Primary = 1.22 cfs @ 12.09 hrs, Volume= 0.092 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 86.94' @ 12.32 hrs Surf.Area= 0.000 ac Storage= 0.000 af
Flood Elev= 89.56' Surf.Area= 0.000 ac Storage= 0.001 af

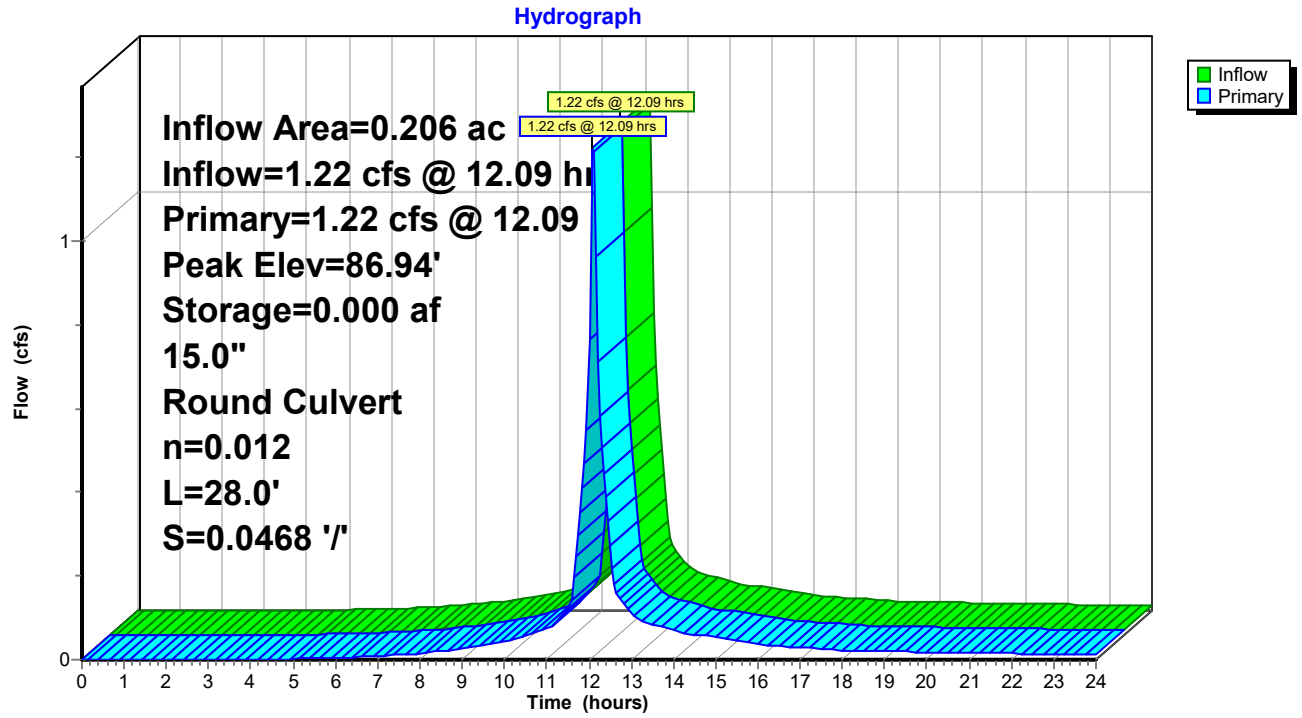
Plug-Flow detention time= 0.3 min calculated for 0.092 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (789.8 - 789.5)

Volume	Invert	Avail.Storage	Storage Description
#1	86.31'	0.001 af	**4.00'D x 3.50'H 4' Structure**

Device	Routing	Invert	Outlet Devices
#1	Primary	86.31'	**15.0" Round 15" HDPE N-12** L= 28.0' Ke= 0.500 Inlet / Outlet Invert= 86.31' / 85.00' S= 0.0468 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=1.06 cfs @ 12.09 hrs HW=86.83' TW=86.44' (Dynamic Tailwater)
↑—**1=15" HDPE N-12** (Outlet Controls 1.06 cfs @ 3.25 fps)

Pond C27P: Catch Basin #27



Summary for Pond C28P: Catch Basin #28

[80] Warning: Exceeded Pond C29P by 0.30' @ 12.10 hrs (3.23 cfs 0.253 af)
[80] Warning: Exceeded Pond C30P by 0.02' @ 12.15 hrs (1.07 cfs 0.006 af)

Inflow Area = 1.195 ac, 70.91% Impervious, Inflow Depth > 5.80" for 25 Yr.-24 Hr. event
Inflow = 5.62 cfs @ 12.09 hrs, Volume= 0.578 af
Outflow = 5.58 cfs @ 12.09 hrs, Volume= 0.577 af, Atten= 1%, Lag= 0.0 min
Primary = 5.58 cfs @ 12.09 hrs, Volume= 0.577 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 86.93' @ 12.33 hrs Surf.Area= 20 sf Storage= 72 cf
Flood Elev= 87.52' Surf.Area= 24 sf Storage= 83 cf

Plug-Flow detention time= 1.3 min calculated for 0.577 af (100% of inflow)
Center-of-Mass det. time= 0.5 min (777.8 - 777.3)

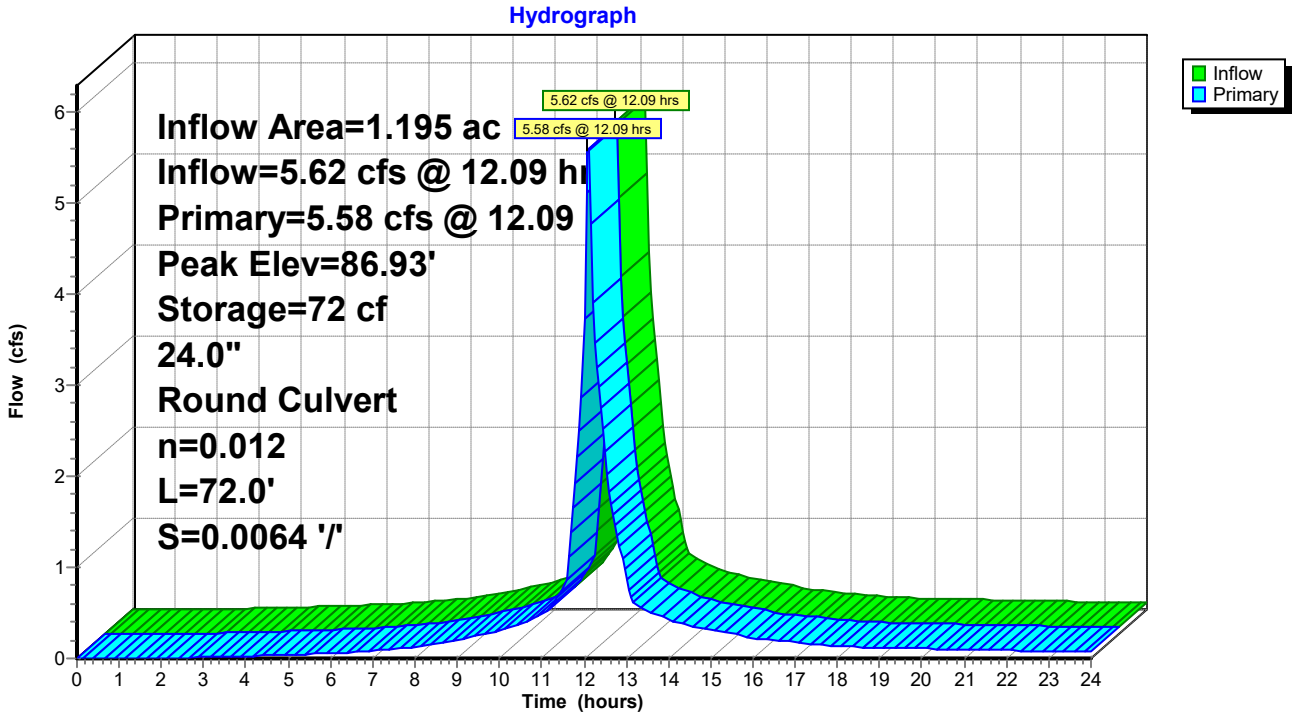
Volume	Invert	Avail.Storage	Storage Description
#1	83.27'	83 cf	**5.00'D x 4.25'H 4' Structure**
#2	87.52'	349 cf	**Ponding Area (Irregular)** Listed below (Recalc)
		432 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
87.52	4	4.0	0	0	4
88.00	2,085	273.5	349	349	5,956

Device	Routing	Invert	Outlet Devices
#1	Primary	83.27'	**24.0" Round 24" HDPE N-12** L= 72.0' Ke= 0.500 Inlet / Outlet Invert= 83.27' / 82.81' S= 0.0064 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

Primary OutFlow Max=0.00 cfs @ 12.09 hrs HW=86.31' TW=86.47' (Dynamic Tailwater)
↑—**1=24" HDPE N-12** (Controls 0.00 cfs)

Pond C28P: Catch Basin #28



Summary for Pond C29P: Catch Basin #29

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=24)

Inflow Area = 0.090 ac, 91.10% Impervious, Inflow Depth > 6.39" for 25 Yr.-24 Hr. event
Inflow = 0.59 cfs @ 12.09 hrs, Volume= 0.048 af
Outflow = 0.57 cfs @ 12.09 hrs, Volume= 0.048 af, Atten= 3%, Lag= 0.0 min
Primary = 0.57 cfs @ 12.09 hrs, Volume= 0.048 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 86.93' @ 12.38 hrs Surf.Area= 13 sf Storage= 35 cf
Flood Elev= 87.52' Surf.Area= 17 sf Storage= 43 cf

Plug-Flow detention time= 6.9 min calculated for 0.048 af (99% of inflow)
Center-of-Mass det. time= 2.1 min (757.1 - 754.9)

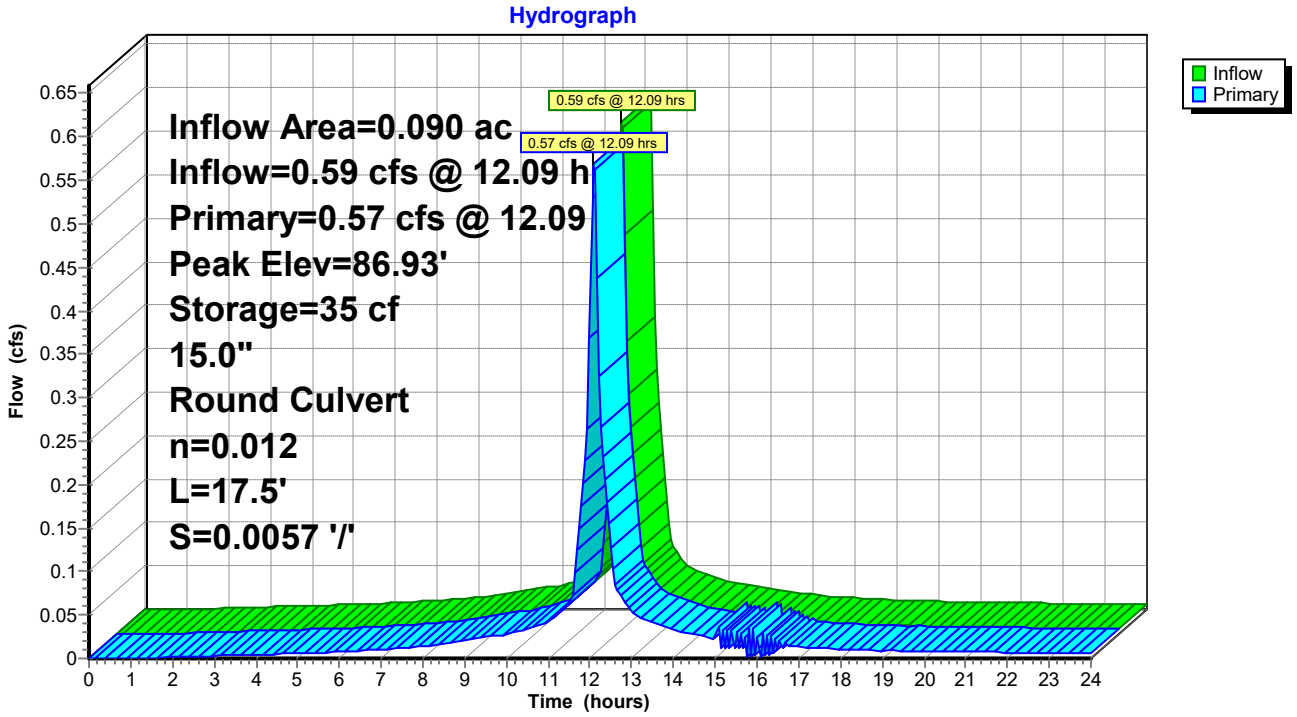
Volume	Invert	Avail.Storage	Storage Description
#1	84.12'	43 cf	**4.00'D x 3.40'H 4' Structure**
#2	87.52'	349 cf	**Ponding Area (Irregular)** Listed below (Recalc)
		392 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
87.52	4	4.0	0	0	4
88.00	2,085	273.5	349	349	5,956

Device	Routing	Invert	Outlet Devices
#1	Primary	84.12'	**15.0" Round 15" HDPE N-12** L= 17.5' Ke= 0.500 Inlet / Outlet Invert= 84.12' / 84.02' S= 0.0057 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=0.00 cfs @ 12.09 hrs HW=85.97' TW=86.26' (Dynamic Tailwater)
1=15" HDPE N-12 (Controls 0.00 cfs)

Pond C29P: Catch Basin #29



Summary for Pond C30P: Catch Basin #30

[80] Warning: Exceeded Pond C31P by 0.13' @ 12.20 hrs (2.14 cfs 0.034 af)

Inflow Area = 1.056 ac, 67.83% Impervious, Inflow Depth > 5.72" for 25 Yr.-24 Hr. event
Inflow = 4.74 cfs @ 12.09 hrs, Volume= 0.503 af
Outflow = 4.73 cfs @ 12.09 hrs, Volume= 0.503 af, Atten= 0%, Lag= 0.0 min
Primary = 4.73 cfs @ 12.09 hrs, Volume= 0.503 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 87.03' @ 12.36 hrs Surf.Area= 0.000 ac Storage= 0.001 af
Flood Elev= 88.87' Surf.Area= 0.000 ac Storage= 0.001 af

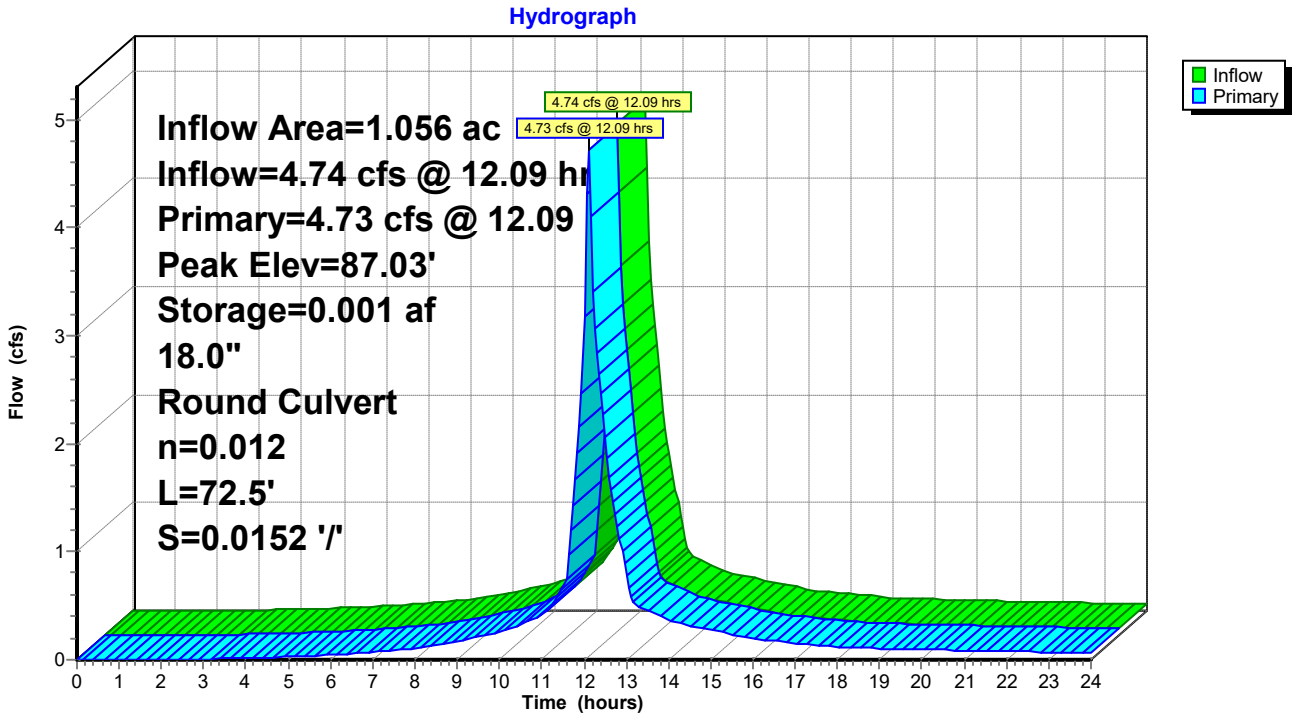
Plug-Flow detention time= 0.3 min calculated for 0.503 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (781.1 - 780.9)

Volume	Invert	Avail.Storage	Storage Description
#1	84.87'	0.001 af	**4.00'D x 3.75'H 4' Structure**

Device	Routing	Invert	Outlet Devices
#1	Primary	84.87'	**18.0" Round 18" HDPE N-12** L= 72.5' Ke= 0.500 Inlet / Outlet Invert= 84.87' / 83.77' S= 0.0152 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=2.16 cfs @ 12.09 hrs HW=86.40' TW=86.32' (Dynamic Tailwater)
↑**1=18" HDPE N-12** (Outlet Controls 2.16 cfs @ 1.49 fps)

Pond C30P: Catch Basin #30



Summary for Pond C31P: Catch Basin #31

Inflow Area = 0.358 ac, 68.28% Impervious, Inflow Depth > 5.69" for 25 Yr.-24 Hr. event
Inflow = 2.21 cfs @ 12.09 hrs, Volume= 0.170 af
Outflow = 2.20 cfs @ 12.09 hrs, Volume= 0.170 af, Atten= 0%, Lag= 0.0 min
Primary = 2.20 cfs @ 12.09 hrs, Volume= 0.170 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 87.04' @ 12.41 hrs Surf.Area= 0.000 ac Storage= 0.000 af
Flood Elev= 88.87' Surf.Area= 0.000 ac Storage= 0.001 af

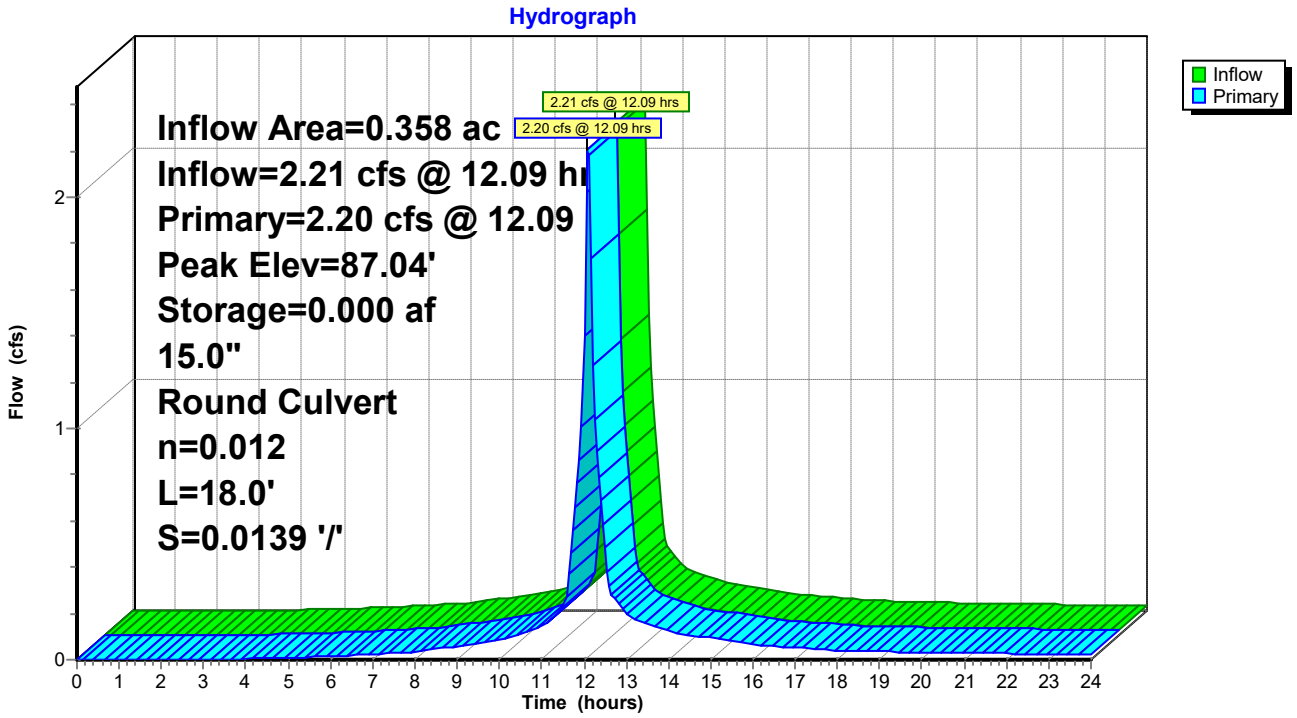
Plug-Flow detention time= 0.4 min calculated for 0.170 af (100% of inflow)
Center-of-Mass det. time= 0.3 min (780.3 - 780.0)

Volume	Invert	Avail.Storage	Storage Description
#1	85.37'	0.001 af	**4.00'D x 3.50'H 4' Structure**

Device	Routing	Invert	Outlet Devices
#1	Primary	85.37'	**15.0" Round 15" HDPE N-12** L= 18.0' Ke= 0.500 Inlet / Outlet Invert= 85.37' / 85.12' S= 0.0139 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=0.28 cfs @ 12.09 hrs HW=86.38' TW=86.37' (Dynamic Tailwater)
↑**1=15" HDPE N-12** (Outlet Controls 0.28 cfs @ 0.36 fps)

Pond C31P: Catch Basin #31



Summary for Pond C32P: Catch Basin #32

Inflow Area = 0.131 ac, 81.04% Impervious, Inflow Depth > 6.16" for 25 Yr.-24 Hr. event
Inflow = 0.84 cfs @ 12.09 hrs, Volume= 0.067 af
Outflow = 0.84 cfs @ 12.09 hrs, Volume= 0.067 af, Atten= 0%, Lag= 0.1 min
Primary = 0.84 cfs @ 12.09 hrs, Volume= 0.067 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 96.98' @ 12.09 hrs Surf.Area= 0.000 ac Storage= 0.000 af
Flood Elev= 99.76' Surf.Area= 0.000 ac Storage= 0.001 af

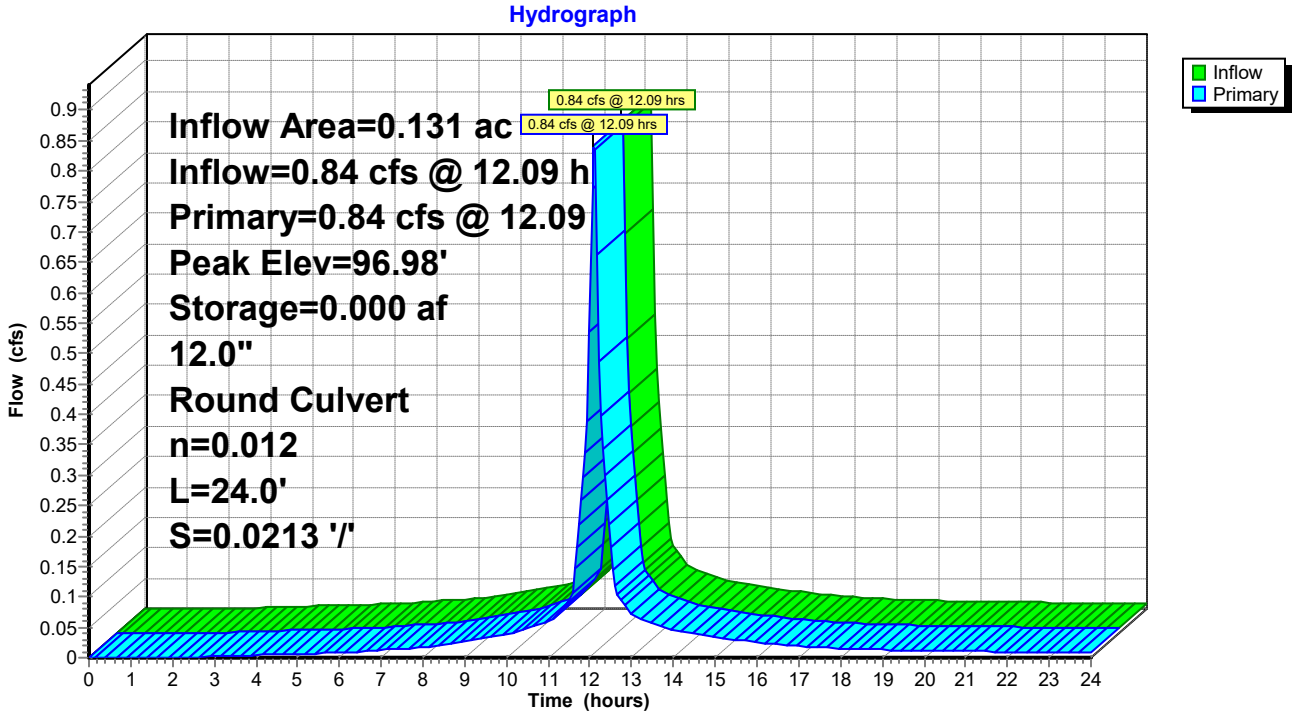
Plug-Flow detention time= 0.4 min calculated for 0.067 af (100% of inflow)
Center-of-Mass det. time= 0.3 min (764.9 - 764.6)

Volume	Invert	Avail.Storage	Storage Description
#1	96.51'	0.001 af	**4.00'D x 3.25'H 4' Structure**

Device	Routing	Invert	Outlet Devices
#1	Primary	96.51'	**12.0" Round 12" HDPE N-12** L= 24.0' Ke= 0.500 Inlet / Outlet Invert= 96.51' / 96.00' S= 0.0213 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.82 cfs @ 12.09 hrs HW=96.97' TW=94.46' (Dynamic Tailwater)
↑—**1=12" HDPE N-12** (Inlet Controls 0.82 cfs @ 2.31 fps)

Pond C32P: Catch Basin #32



Summary for Pond C33P: Catch Basin #33

Inflow Area = 0.156 ac, 83.23% Impervious, Inflow Depth > 6.16" for 25 Yr.-24 Hr. event
Inflow = 1.00 cfs @ 12.09 hrs, Volume= 0.080 af
Outflow = 0.99 cfs @ 12.09 hrs, Volume= 0.080 af, Atten= 1%, Lag= 0.0 min
Primary = 0.99 cfs @ 12.09 hrs, Volume= 0.080 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 98.05' @ 12.30 hrs Surf.Area= 0.000 ac Storage= 0.000 af
Flood Elev= 99.81' Surf.Area= 0.000 ac Storage= 0.001 af

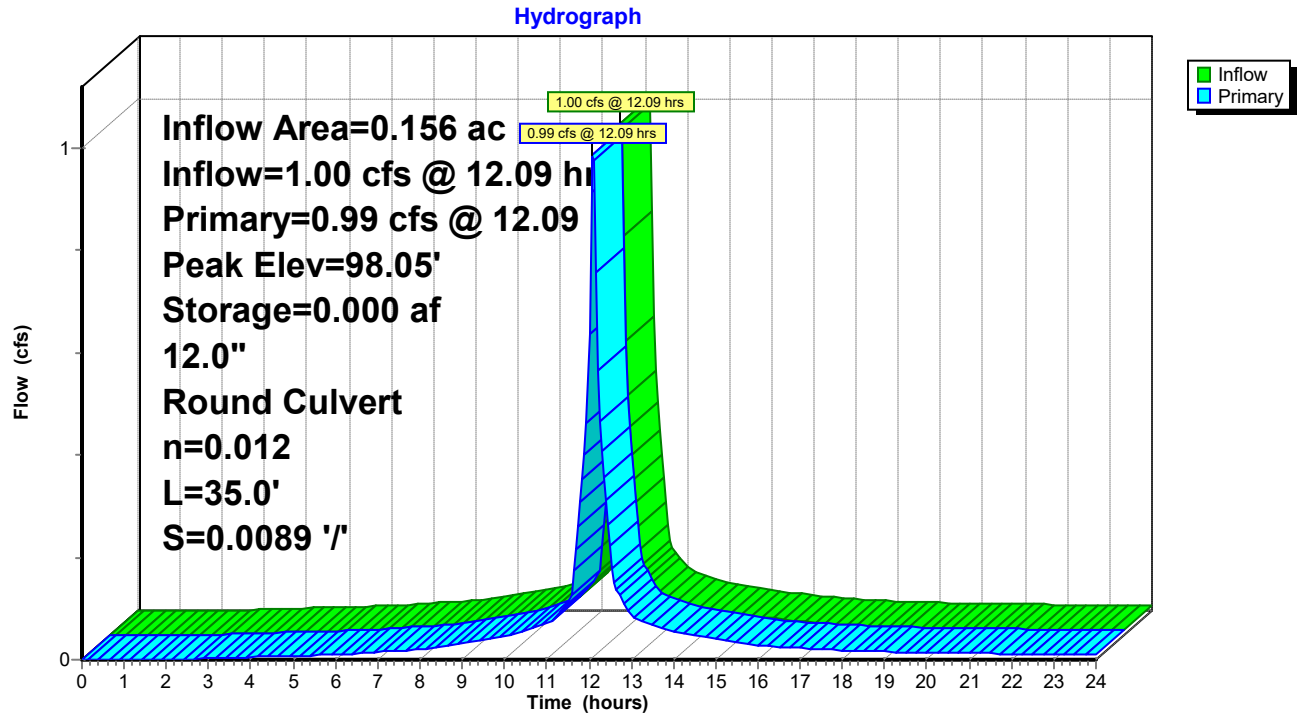
Plug-Flow detention time= 0.5 min calculated for 0.080 af (100% of inflow)
Center-of-Mass det. time= 0.4 min (765.0 - 764.6)

Volume	Invert	Avail.Storage	Storage Description
#1	96.56'	0.001 af	**4.00'D x 3.25'H 4' Structure**

Device	Routing	Invert	Outlet Devices
#1	Primary	96.56'	**12.0" Round 12" HDPE N-12** L= 35.0' Ke= 0.500 Inlet / Outlet Invert= 96.56' / 96.25' S= 0.0089 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 12.09 hrs HW=97.29' TW=97.48' (Dynamic Tailwater)
1=12" HDPE N-12 (Controls 0.00 cfs)

Pond C33P: Catch Basin #33



Summary for Pond C54P: Drop Inlet #54

Inflow Area = 0.157 ac, 58.42% Impervious, Inflow Depth > 6.16" for 25 Yr.-24 Hr. event
Inflow = 1.01 cfs @ 12.09 hrs, Volume= 0.080 af
Outflow = 1.00 cfs @ 12.09 hrs, Volume= 0.080 af, Atten= 0%, Lag= 0.0 min
Primary = 1.00 cfs @ 12.09 hrs, Volume= 0.080 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 95.75' @ 12.15 hrs Surf.Area= 3 sf Storage= 2 cf
Flood Elev= 98.50' Surf.Area= 86 sf Storage= 40 cf

Plug-Flow detention time= 0.1 min calculated for 0.080 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (764.7 - 764.6)

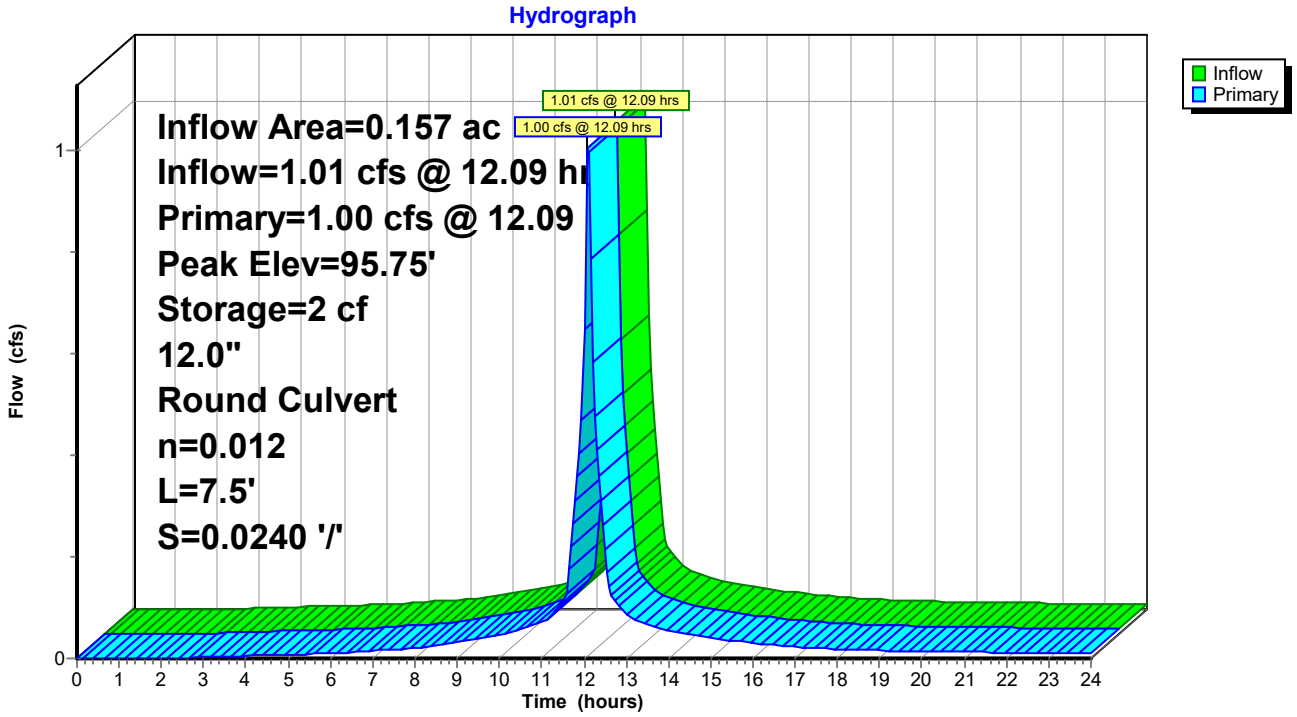
Volume	Invert	Avail.Storage	Storage Description
#1	95.00'	9 cf	**2.00'D x 3.00'H 2' Structure**
#2	98.00'	30 cf	**Ponding Area (Irregular)** Listed below (Recalc)
		40 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
98.00	40	23.6	0	0	40
98.50	83	33.0	30	30	85

Device	Routing	Invert	Outlet Devices
#1	Primary	95.00'	**12.0" Round 12" HDPE N-12** L= 7.5' Ke= 0.500 Inlet / Outlet Invert= 95.00' / 94.82' S= 0.0240 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.30 cfs @ 12.09 hrs HW=95.65' TW=95.64' (Dynamic Tailwater)
↑—**1=12" HDPE N-12** (Outlet Controls 0.30 cfs @ 0.79 fps)

Pond C54P: Drop Inlet #54



Summary for Pond C55P: Drop Inlet #55

Inflow Area = 0.170 ac, 46.96% Impervious, Inflow Depth > 5.24" for 25 Yr.-24 Hr. event
Inflow = 0.99 cfs @ 12.09 hrs, Volume= 0.074 af
Outflow = 0.99 cfs @ 12.09 hrs, Volume= 0.074 af, Atten= 0%, Lag= 0.0 min
Primary = 0.99 cfs @ 12.09 hrs, Volume= 0.074 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 93.51' @ 12.09 hrs Surf.Area= 3 sf Storage= 2 cf
Flood Elev= 99.00' Surf.Area= 155 sf Storage= 76 cf

Plug-Flow detention time= 0.1 min calculated for 0.074 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (792.5 - 792.4)

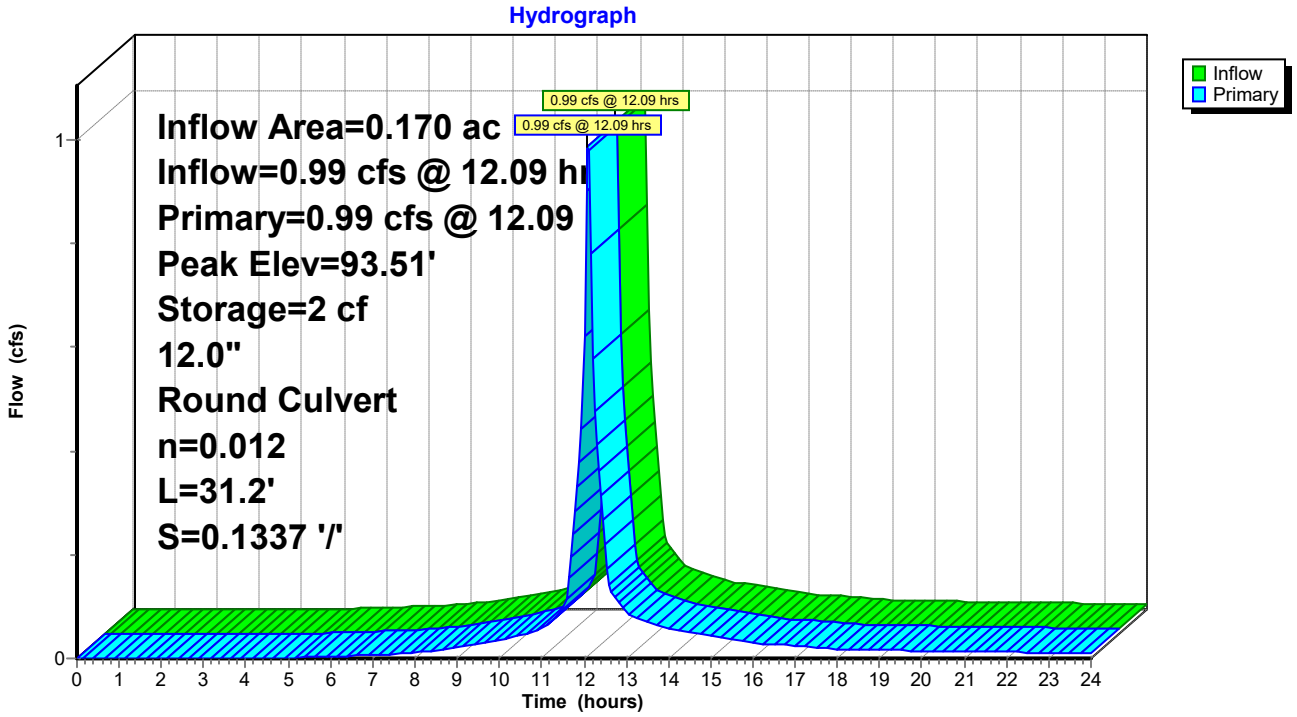
Volume	Invert	Avail.Storage	Storage Description
#1	93.00'	16 cf	**2.00'D x 5.00'H 2' Structure**
#2	98.00'	60 cf	**Ponding Area (Irregular)** Listed below (Recalc)
		76 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
98.00	4	4.0	0	0	4
99.00	152	47.0	60	60	180

Device	Routing	Invert	Outlet Devices
#1	Primary	93.00'	**12.0" Round 12" HDPE N-12** L= 31.2' Ke= 0.500 Inlet / Outlet Invert= 93.00' / 88.83' S= 0.1337 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.96 cfs @ 12.09 hrs HW=93.51' TW=89.71' (Dynamic Tailwater)
↑—**1=12" HDPE N-12** (Inlet Controls 0.96 cfs @ 2.42 fps)

Pond C55P: Drop Inlet #55



Summary for Pond D01P: Drain Manhole #1

[80] Warning: Exceeded Pond C04P by 0.09' @ 12.05 hrs (0.54 cfs 0.004 af)

Inflow Area = 0.384 ac, 82.89% Impervious, Inflow Depth > 6.15" for 25 Yr.-24 Hr. event
Inflow = 2.42 cfs @ 12.09 hrs, Volume= 0.197 af
Outflow = 2.42 cfs @ 12.09 hrs, Volume= 0.197 af, Atten= 0%, Lag= 0.1 min
Primary = 2.42 cfs @ 12.09 hrs, Volume= 0.197 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 116.69' @ 12.09 hrs Surf.Area= 0.000 ac Storage= 0.000 af
Flood Elev= 119.54' Surf.Area= 0.000 ac Storage= 0.001 af

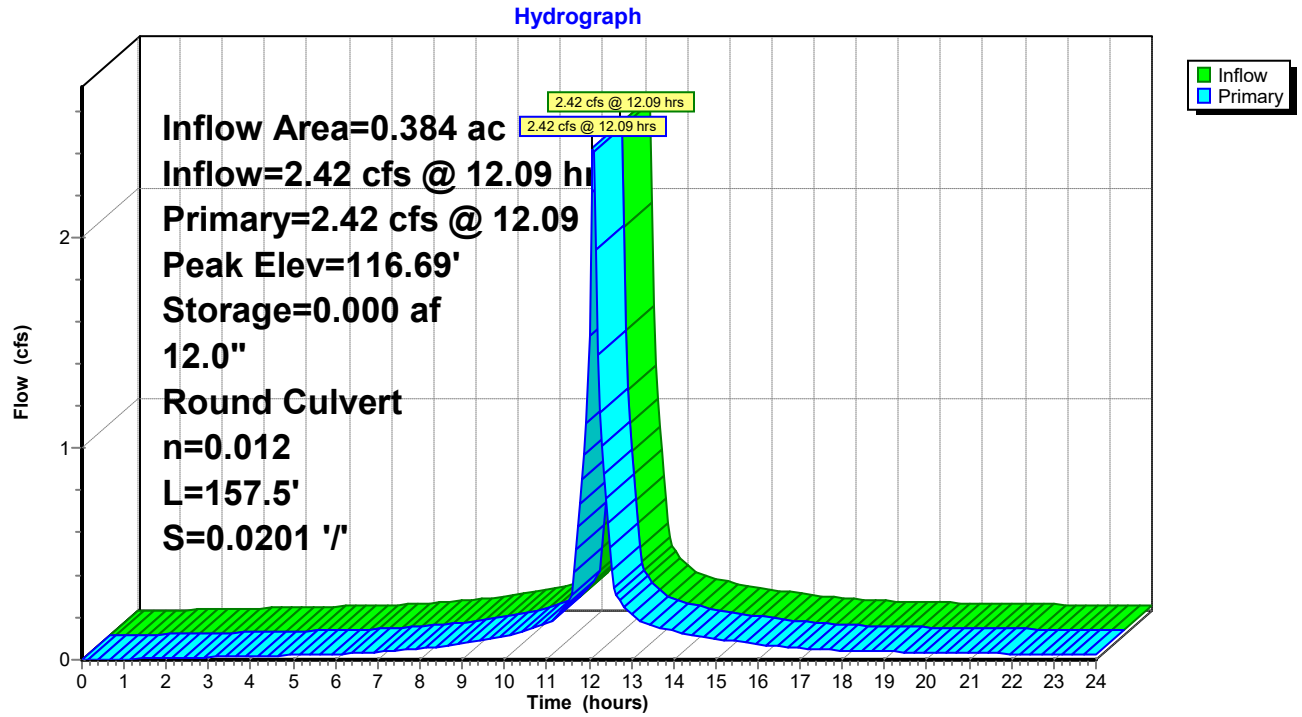
Plug-Flow detention time= 0.3 min calculated for 0.196 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (759.3 - 759.1)

Volume	Invert	Avail.Storage	Storage Description
#1	115.79'	0.001 af	**4.00'D x 3.75'H 4' Structure**

Device	Routing	Invert	Outlet Devices
#1	Primary	115.79'	**12.0" Round 12" HDPE N-12** L= 157.5' Ke= 0.500 Inlet / Outlet Invert= 115.79' / 112.62' S= 0.0201 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=2.37 cfs @ 12.09 hrs HW=116.68' TW=111.56' (Dynamic Tailwater)
↑**1=12" HDPE N-12** (Inlet Controls 2.37 cfs @ 3.21 fps)

Pond D01P: Drain Manhole #1



Summary for Pond D02P: Drain Manhole #2

[90] Warning: Qout>Qin may require smaller dt or Finer Routing

Inflow Area = 0.531 ac, 81.15% Impervious, Inflow Depth > 6.12" for 25 Yr.-24 Hr. event
Inflow = 3.35 cfs @ 12.09 hrs, Volume= 0.270 af
Outflow = 3.35 cfs @ 12.09 hrs, Volume= 0.270 af, Atten= 0%, Lag= 0.0 min
Primary = 3.35 cfs @ 12.09 hrs, Volume= 0.270 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 111.57' @ 12.09 hrs Surf.Area= 0.000 ac Storage= 0.000 af
Flood Elev= 115.87' Surf.Area= 0.000 ac Storage= 0.002 af

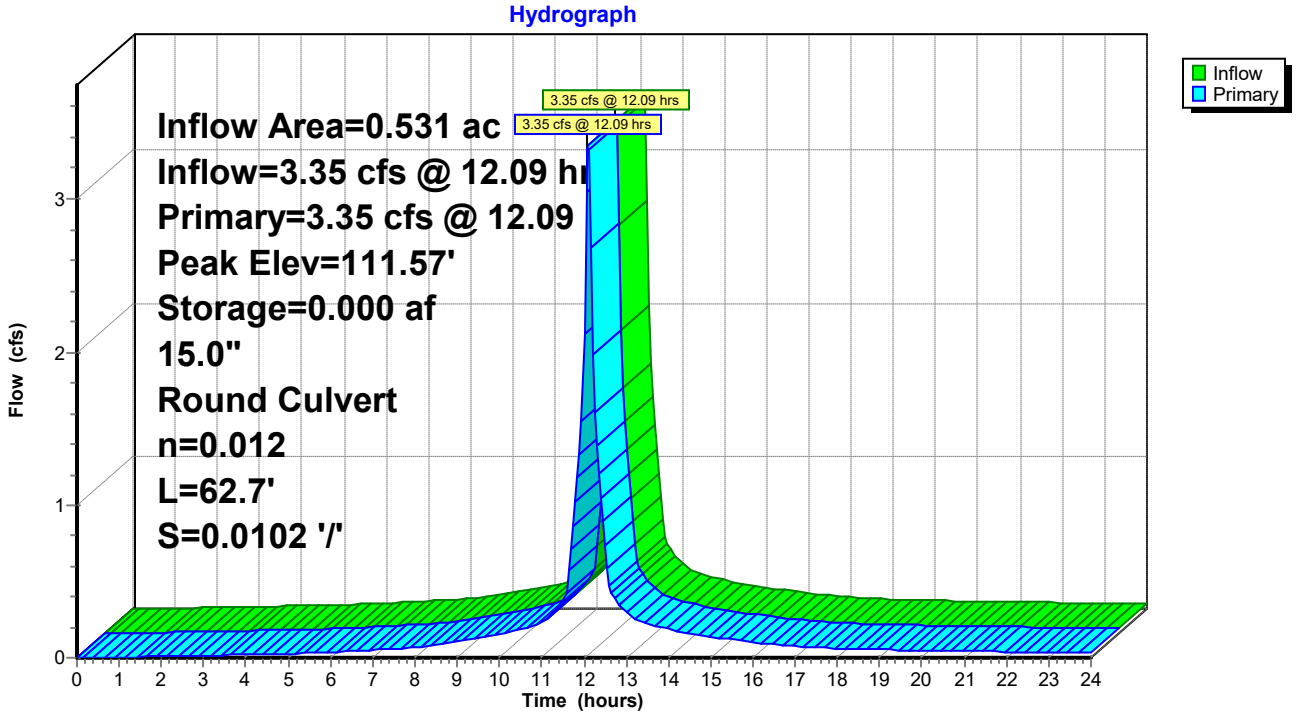
Plug-Flow detention time= 0.2 min calculated for 0.270 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (762.2 - 762.0)

Volume	Invert	Avail.Storage	Storage Description
#1	110.62'	0.002 af	**4.00'D x 5.25'H 4' Structure**

Device	Routing	Invert	Outlet Devices
#1	Primary	110.62'	**15.0" Round 15" HDPE N-12** L= 62.7' Ke= 0.500 Inlet / Outlet Invert= 110.62' / 109.98' S= 0.0102 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=3.28 cfs @ 12.09 hrs HW=111.56' TW=110.64' (Dynamic Tailwater)
↑**1=15" HDPE N-12** (Inlet Controls 3.28 cfs @ 3.30 fps)

Pond D02P: Drain Manhole #2



Summary for Pond D03P: Drain Manhole #3

Inflow Area = 0.792 ac, 66.58% Impervious, Inflow Depth > 5.83" for 25 Yr.-24 Hr. event
Inflow = 4.38 cfs @ 12.11 hrs, Volume= 0.385 af
Outflow = 4.38 cfs @ 12.12 hrs, Volume= 0.385 af, Atten= 0%, Lag= 0.1 min
Primary = 4.38 cfs @ 12.12 hrs, Volume= 0.385 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 91.41' @ 12.12 hrs Surf.Area= 0.000 ac Storage= 0.000 af
Flood Elev= 93.75' Surf.Area= 0.000 ac Storage= 0.001 af

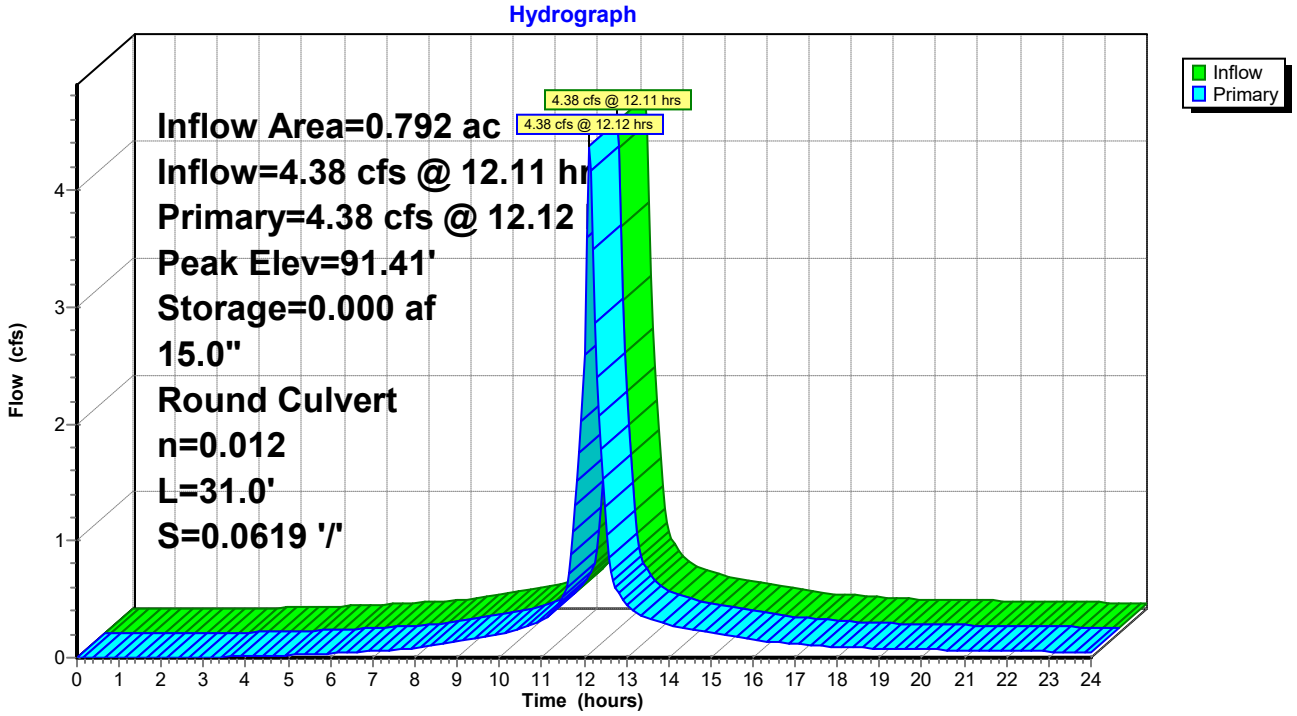
Plug-Flow detention time= 0.2 min calculated for 0.384 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (777.9 - 777.8)

Volume	Invert	Avail.Storage	Storage Description
#1	90.25'	0.001 af	**4.00'D x 3.50'H 4' Structure**

Device	Routing	Invert	Outlet Devices
#1	Primary	90.25'	**15.0" Round 15" HDPE N-12** L= 31.0' Ke= 0.500 Inlet / Outlet Invert= 90.25' / 88.33' S= 0.0619 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=4.28 cfs @ 12.12 hrs HW=91.39' TW=89.85' (Dynamic Tailwater)
↑**1=15" HDPE N-12** (Inlet Controls 4.28 cfs @ 3.64 fps)

Pond D03P: Drain Manhole #3



Summary for Pond D04P: Drain Manhole #4

Inflow Area = 0.631 ac, 64.19% Impervious, Inflow Depth > 5.64" for 25 Yr.-24 Hr. event
Inflow = 2.13 cfs @ 12.11 hrs, Volume= 0.297 af
Outflow = 2.13 cfs @ 12.11 hrs, Volume= 0.297 af, Atten= 0%, Lag= 0.0 min
Primary = 2.13 cfs @ 12.11 hrs, Volume= 0.297 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 94.47' @ 12.11 hrs Surf.Area= 0.000 ac Storage= 0.000 af
Flood Elev= 99.58' Surf.Area= 0.000 ac Storage= 0.002 af

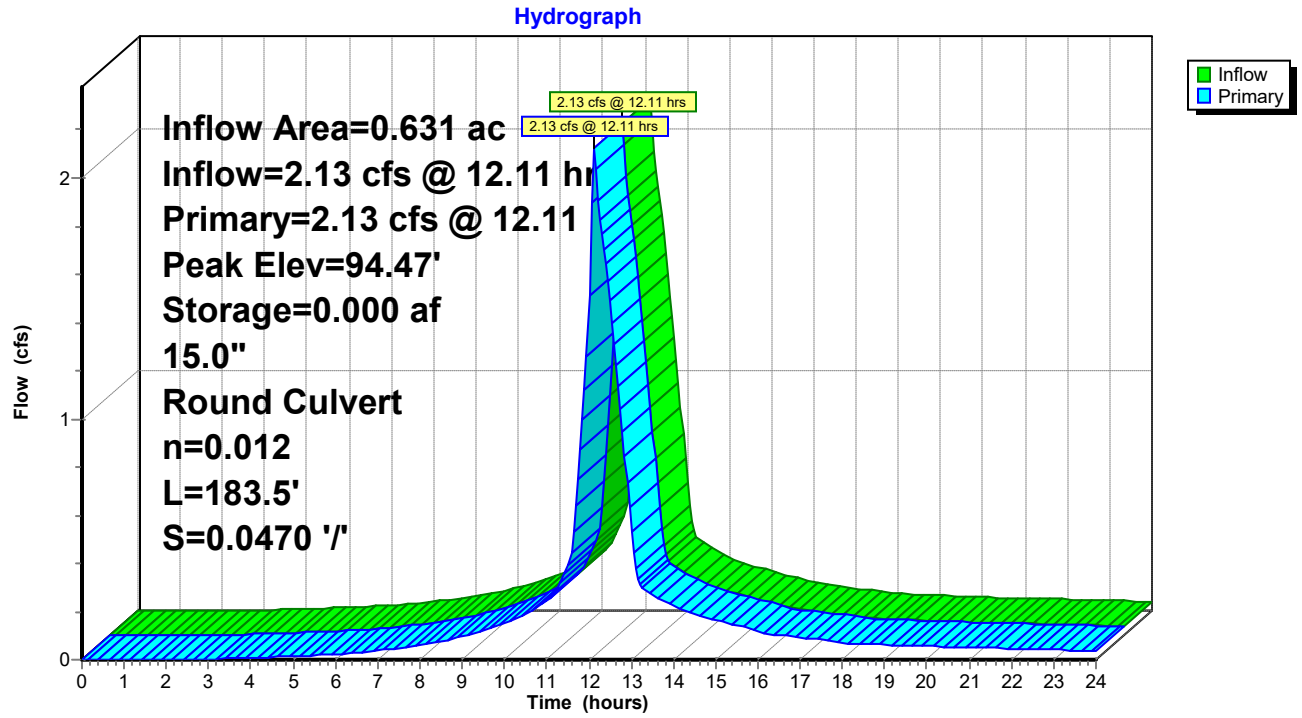
Plug-Flow detention time= 0.2 min calculated for 0.297 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (785.9 - 785.8)

Volume	Invert	Avail.Storage	Storage Description
#1	93.75'	0.002 af	**4.00'D x 6.00'H 4' Structure**

Device	Routing	Invert	Outlet Devices
#1	Primary	93.75'	**15.0" Round 15" HDPE N-12** L= 183.5' Ke= 0.500 Inlet / Outlet Invert= 93.75' / 85.12' S= 0.0470 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=2.10 cfs @ 12.11 hrs HW=94.47' TW=86.46' (Dynamic Tailwater)
↑**1=15" HDPE N-12** (Inlet Controls 2.10 cfs @ 2.88 fps)

Pond D04P: Drain Manhole #4



Extreme Precipitation Tables

Northeast Regional Climate Center

Data represents point estimates calculated from partial duration series. All precipitation amounts are displayed in inches.

Smoothing	Yes
State	New Hampshire
Location	
Longitude	70.902 degrees West
Latitude	43.203 degrees North
Elevation	0 feet
Date/Time	Mon, 08 Mar 2021 10:00:02 -0500

Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.26	0.40	0.50	0.65	0.81	1.03	**1yr**	0.70	0.98	1.20	1.54	1.99	2.59	2.86	**1yr**	2.30	2.75	3.15	3.88	4.44	**1yr**
2yr	0.32	0.49	0.61	0.81	1.01	1.28	**2yr**	0.87	1.17	1.50	1.91	2.44	3.14	3.49	**2yr**	2.78	3.36	3.85	4.59	5.22	**2yr**
5yr	0.37	0.57	0.72	0.96	1.23	1.58	**5yr**	1.06	1.44	1.85	2.38	3.06	3.96	4.47	**5yr**	3.51	4.30	4.92	5.79	6.54	**5yr**
10yr	0.40	0.63	0.80	1.09	1.42	1.84	**10yr**	1.22	1.69	2.18	2.82	3.65	4.73	5.40	**10yr**	4.18	5.19	5.93	6.91	7.77	**10yr**
25yr	0.46	0.74	0.94	1.29	1.72	2.27	**25yr**	1.48	2.09	2.69	3.52	4.59	5.97	6.92	**25yr**	5.29	6.65	7.58	8.73	9.75	**25yr**
50yr	0.52	0.83	1.06	1.48	2.00	2.66	**50yr**	1.72	2.45	3.18	4.17	5.47	7.14	8.35	**50yr**	6.32	8.03	9.14	10.42	11.58	**50yr**
100yr	0.58	0.94	1.21	1.71	2.32	3.12	**100yr**	2.00	2.88	3.74	4.94	6.50	8.53	10.09	**100yr**	7.55	9.70	11.01	12.45	13.77	**100yr**
200yr	0.64	1.05	1.36	1.95	2.70	3.67	**200yr**	2.33	3.39	4.42	5.87	7.75	10.19	12.19	**200yr**	9.02	11.72	13.28	14.89	16.37	**200yr**
500yr	0.75	1.24	1.62	2.35	3.30	4.53	**500yr**	2.85	4.21	5.48	7.35	9.77	12.91	15.66	**500yr**	11.43	15.06	17.02	18.86	20.60	**500yr**

Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.24	0.37	0.45	0.60	0.74	0.90	**1yr**	0.64	0.88	0.91	1.25	1.55	2.07	2.46	**1yr**	1.83	2.37	2.92	3.39	4.07	**1yr**
2yr	0.31	0.49	0.60	0.81	1.00	1.18	**2yr**	0.86	1.15	1.36	1.83	2.35	3.05	3.39	**2yr**	2.70	3.26	3.74	4.46	5.07	**2yr**
5yr	0.35	0.54	0.67	0.91	1.16	1.40	**5yr**	1.00	1.37	1.61	2.15	2.78	3.70	4.12	**5yr**	3.27	3.96	4.59	5.40	6.10	**5yr**
10yr	0.38	0.59	0.73	1.02	1.31	1.60	**10yr**	1.13	1.56	1.81	2.44	3.13	4.25	4.77	**10yr**	3.76	4.59	5.31	6.22	6.99	**10yr**
25yr	0.44	0.66	0.83	1.18	1.55	1.91	**25yr**	1.34	1.87	2.11	2.84	3.65	5.04	5.78	**25yr**	4.46	5.55	6.47	7.52	8.38	**25yr**
50yr	0.48	0.73	0.91	1.31	1.76	2.19	**50yr**	1.52	2.14	2.36	3.20	4.10	5.77	6.66	**50yr**	5.11	6.40	7.52	8.67	9.60	**50yr**
100yr	0.54	0.81	1.02	1.47	2.02	2.51	**100yr**	1.74	2.45	2.64	3.59	4.57	6.60	7.67	**100yr**	5.85	7.38	8.74	10.00	10.98	**100yr**
200yr	0.60	0.90	1.14	1.65	2.30	2.87	**200yr**	1.98	2.81	2.94	4.02	5.11	7.55	8.84	**200yr**	6.69	8.50	10.14	11.53	12.57	**200yr**
500yr	0.70	1.04	1.33	1.94	2.75	3.46	**500yr**	2.38	3.39	3.42	4.66	5.93	8.99	10.65	**500yr**	7.95	10.24	12.35	13.94	14.98	**500yr**

Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.28	0.43	0.53	0.71	0.87	1.08	**1yr**	0.75	1.05	1.23	1.74	2.21	2.83	3.07	**1yr**	2.51	2.95	3.39	4.18	4.76	**1yr**
2yr	0.33	0.51	0.62	0.84	1.04	1.24	**2yr**	0.90	1.22	1.47	1.95	2.51	3.25	3.61	**2yr**	2.88	3.47	3.98	4.73	5.40	**2yr**
5yr	0.39	0.60	0.75	1.03	1.31	1.58	**5yr**	1.13	1.54	1.85	2.49	3.19	4.22	4.83	**5yr**	3.74	4.64	5.26	6.20	6.97	**5yr**
10yr	0.46	0.70	0.87	1.21	1.57	1.91	**10yr**	1.35	1.87	2.23	3.04	3.84	5.19	6.02	**10yr**	4.59	5.79	6.62	7.61	8.48	**10yr**
25yr	0.55	0.84	1.05	1.50	1.97	2.47	**25yr**	1.70	2.41	2.87	3.95	4.94	6.90	8.08	**25yr**	6.11	7.77	8.85	10.01	11.05	**25yr**
50yr	0.64	0.97	1.21	1.74	2.35	2.98	**50yr**	2.02	2.91	3.48	4.81	5.99	8.50	10.12	**50yr**	7.52	9.73	11.04	12.31	13.50	**50yr**
100yr	0.74	1.13	1.41	2.04	2.79	3.59	**100yr**	2.41	3.51	4.22	5.88	7.28	10.47	12.68	**100yr**	9.27	12.19	13.77	15.16	16.52	**100yr**
200yr	0.86	1.30	1.65	2.38	3.32	4.35	**200yr**	2.87	4.26	5.13	7.19	8.83	12.95	15.89	**200yr**	11.46	15.28	17.19	18.65	20.23	**200yr**
500yr	1.05	1.57	2.02	2.93	4.17	5.58	**500yr**	3.60	5.46	6.62	9.40	11.43	17.16	21.44	**500yr**	15.19	20.62	23.07	24.58	26.47	**500yr**

Powered by
ACIS
Northeast Regional
Climate Center

RIP RAP CALCULATIONS

20-107 Tolend Road

Dover, NH

Berry Surveying & Engineering

335 Second Crown Point Road

Barrington, NH

10-Jan-22

Rip Rap equations were obtained from the *Stormwater Management and Erosion Control Handbook for Urban and Developing Areas in New Hampshire.* Rip Rap was sized for the 25 year storm event. (Some d50 sizes and T values have been modified)

TAILWATER < HALF THE Do

La = (1.8 x Q) / Do 3/2 + (7 x Do) Q = Peak Flow & Do is Pipe Diameter

W = La + 3*Do or defined channel width

d50 = (0.02 x Q4/3) / (Tw x Do) Tw = Tailwater Depth

T = Largest Stone Size x 1.5

Culvert or Catch Basin	Tailwater (Feet) Tw	Discharge (C.F.S.) Q	Diameter of Pipe Do	Length of Rip Rap La (feet)	Width of Rip Rap W (feet)	d50-Stone Rip Rap d50(ft.)	Actual Size	Thickness
18" HDPE (Pond #C08P)	0.30	6.03	1.50	16.4	20.9	0.49	0.50	1.20
18" HDPE (Pond #C15P)	0.30	9.15	1.50	19.5	24.0	0.85	1.00	2.25
12" HDPE (Pond #C16P)	0.20	2.32	1.00	11.2	14.2	0.31	0.50	1.20
12" HDPE (Pond #C17P)	0.20	1.33	1.00	9.4	12.4	0.15	0.50	1.20
18" HDPE (Pond #C23P)	0.30	5.38	1.50	15.8	20.3	0.42	0.50	1.20
15" HDPE (Pond #C24P)	0.25	1.92	1.25	11.2	15.0	0.15	0.50	1.20
12" HDPE (Pond #C25P)	0.20	0.88	1.00	8.6	11.6	0.08	0.50	1.20
24" HDPE (Pond #C26P)	0.40	7.10	2.00	18.5	24.5	0.34	0.50	1.20
12" HDPE (Pond #C33P)	0.20	0.99	1.00	8.8	11.8	0.10	0.50	1.20
15" HDPE (Pond #101P)	0.25	1.43	1.25	10.6	14.3	0.10	0.50	1.20
15" HDPE (Pond #102P)	0.25	4.92	1.25	15.1	18.8	0.54	1.00	2.25
15" HDPE (Pond #103P)	0.25	3.90	1.25	13.8	17.5	0.39	0.50	1.20
15" HDPE (Pond #104P)	0.25	4.68	1.25	14.8	18.5	0.50	0.50	1.20
12" HDPE (Pond #105P)	0.20	3.30	1.00	12.9	15.9	0.49	0.50	1.20

Please note that the designer chose to use the 25 Year Event for the dimensional calculations.

Table 7-24 -- Recommended Rip Rap Gradation Ranges				
d50 Size =	0.5	Feet	6	Inches
% of Weight Smaller	Size of Stone (Inches)			
Than the Given d50 Size	From		To	
100%	9		12	
85%	8		11	
50%	6		9	
50%	6		9	
15%	2		3	

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

FILTRATION PRACTICE DESIGN CRITERIA (Env-Wq 1508.07)

Type/Node Name: **Rain Garden #101 (Pond 101P)**

Enter the type of filtration practice (e.g., bioretention system) and the node name in the drainage analysis, if applicable.

Yes		Check if you reviewed the restrictions on unlined systems outlined in Env-Wq 1508.07(a).	
1.23	ac	A = Area draining to the practice	
0.75	ac	A_I = Impervious area draining to the practice	
0.61	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.60	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
0.74	ac-in	WQV= 1" x Rv x A	
2,677	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
669	cf	25% x WQV (check calc for sediment forebay volume)	
2,008	cf	75% x WQV (check calc for surface sand filter volume)	
Sediment Forebay		Method of Pretreatment? (not required for clean or roof runoff)	
885	cf	V_{SED} = Sediment forebay volume, if used for pretreatment	**≥ 25%WQV**
Calculate time to drain if system IS NOT underdrained:			
	sf	A_{SA} = Surface area of the practice	
	iph	$Ksat_{DESIGN}$ = Design infiltration rate[1]	
		If Ksat (prior to factor of safety) is < 0.50 iph, has an underdrain been provided?	
	Yes/No	(Use the calculations below)	
-	hours	T_{DRAIN} = Drain time = V / (A_{SA} * I_{DESIGN})	**≤ 72-hrs**
Calculate time to drain if system IS underdrained:			
108.50	ft	E_{WQV} = Elevation of WQV (attach stage-storage table)	
0.07	cfs	Q_{WQV} = Discharge at the E_{WQV} (attach stage-discharge table)	
21.25	hours	T_{DRAIN} = Drain time = 2WQV/Q_{WQV}	**≤ 72-hrs**
105.25	feet	E_{FC} = Elevation of the bottom of the filter course material[2]	
104.25	feet	E_{UD} = Invert elevation of the underdrain (UD), if applicable	
107.00	feet	E_{SHWT} = Elevation of SHWT (if none found, enter the lowest elevation of the test pit)	
104.00	feet	E_{ROCK} = Elevation of bedrock (if none found, enter the lowest elevation of the test pit)	
1.00	feet	$D_{FC\ to\ UD}$ = Depth to UD from the bottom of the filter course	**≥ 1'**
1.25	feet	$D_{FC\ to\ ROCK}$ = Depth to bedrock from the bottom of the filter course	**≥ 1'**
(1.75)	feet	$D_{FC\ to\ SHWT}$ = Depth to SHWT from the bottom of the filter course	**≥ 1'**
111.96	ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
112.50	ft	Elevation of the top of the practice	
YES		50 peak elevation ≤ Elevation of the top of the practice	**← yes**
If a surface sand filter or underground sand filter is proposed:			
YES	ac	Drainage Area check.	**< 10 ac**
	cf	V = Volume of storage[3] (attach a stage-storage table)	**≥ 75%WQV**
	inches	D_{FC} = Filter course thickness	**18", or 24" if within GPA**
Sheet		Note what sheet in the plan set contains the filter course specification.	
	Yes/No	Access grate provided?	**← yes**

If a bioretention area is proposed:			
YES	ac	Drainage Area no larger than 5 ac?	**← yes**
5,157	cf	V = Volume of storage[3] (attach a stage-storage table)	**≥ WQV**
18.0	inches	D_{FC} = Filter course thickness	**18", or 24" if within GPA**
Sheet	P-101	Note what sheet in the plan set contains the filter course specification	
3.0	:1	Pond side slopes	**≥ 3:1**
Sheet	P-101	Note what sheet in the plan set contains the planting plans and surface cover	
If porous pavement is proposed:			
		Type of pavement proposed (Concrete? Asphalt? Pavers? Etc.)	
	acres	A_{SA} = Surface area of the pervious pavement	
	:1	Ratio of the contributing area to the pervious surface area	**≤ 5:1**
	inches	D_{FC} = Filter course thickness	**12", or 18" if within GPA mod. 304.1 (see spec)**
Sheet		Note what sheet in the plan set contains the filter course spec.	

1. Rate of the limiting layer (either the filter course or the underlying soil). $Ksat_{design}$ includes factor of safey. See Env-Wq 1504.14 for guidance on determining the infiltration rate.

2. See lines 34, 40 and 48 for required depths of filter media.

3. Volume without depending on infiltration. The volume includes the storage above the filter (but below the invert of the outlet stucture, if any), the filter media voids, and the pretreatment area. The storage above the filter media shall not include the volume above the outlet structure, if any.

Designer's Notes:

Summary for Pond 101P: Rain Garden #101

[80] Warning: Exceeded Pond C08P by 0.07' @ 11.80 hrs (2.24 cfs 0.074 af)

Inflow Area = 1.227 ac, 61.68% Impervious, Inflow Depth > 6.87" for 50 Yr.-24 Hr. event
Inflow = 8.77 cfs @ 12.09 hrs, Volume= 0.702 af
Outflow = 2.35 cfs @ 12.46 hrs, Volume= 0.569 af, Atten= 73%, Lag= 22.3 min
Primary = 2.35 cfs @ 12.46 hrs, Volume= 0.569 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 111.96' @ 12.46 hrs Surf.Area= 933 sf Storage= 14,543 cf
Flood Elev= 112.50' Surf.Area= 933 sf Storage= 17,079 cf

Plug-Flow detention time= 171.5 min calculated for 0.569 af (81% of inflow)
Center-of-Mass det. time= 97.8 min (871.6 - 773.9)

Volume	Invert	Avail.Storage	Storage Description
#1	104.25'	373 cf	**Stone (Irregular)** Listed below (Recalc) -Impervious 933 cf Overall x 40.0% Voids
#2	105.25'	280 cf	**Bio-Media (Irregular)** Listed below (Recalc) 1,400 cf Overall x 20.0% Voids
#3	106.75'	47 cf	**Loam (Irregular)** Listed below (Recalc) -Impervious 233 cf Overall x 20.0% Voids
#4	109.00'	12,892 cf	**Open Water Storage (Irregular)** Listed below (Recalc) -Impervious
#5	107.00'	885 cf	**Sediment Forebay (Irregular)** Listed below (Recalc) -Impervious
#6	107.00'	2,602 cf	**Cell (Irregular)** Listed below (Recalc) -Impervious
		17,079 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
104.25	933	120.4	0	0	933
105.25	933	120.4	933	933	1,053

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
105.25	933	120.4	0	0	933
106.75	933	120.4	1,400	1,400	1,114

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
106.75	933	120.4	0	0	933
107.00	933	120.4	233	233	963

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
109.00	2,537	196.5	0	0	2,537
110.00	3,155	215.3	2,840	2,840	3,187
111.00	3,829	234.2	3,487	6,327	3,899
112.00	4,560	258.0	4,189	10,516	4,863
112.50	4,947	262.5	2,376	12,892	5,090

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
107.00	202	77.6	0	0	202
108.00	437	98.5	312	312	508
109.00	720	116.3	573	885	830

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
107.00	933	120.4	0	0	933
108.00	1,294	140.2	1,109	1,109	1,364
109.00	1,703	157.9	1,494	2,602	1,809

Device	Routing	Invert	Outlet Devices
#1	Primary	104.25'	**15.0" Round 15" HDPE N-12** L= 70.0' Ke= 0.500 Inlet / Outlet Invert= 104.25' / 103.75' S= 0.0071 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	104.25'	**1.2" Vert. 1.25" Orifice** C= 0.600
#3	Device 2	105.25'	**10.000 in/hr 10In/Hr thru Media over Surface area**
#4	Device 1	109.50'	**3.0" Vert. 3" Orifice** C= 0.600
#5	Device 1	109.75'	**4.0" Vert. 4" Orifice (2) X 2.00** C= 0.600
#6	Device 1	111.90'	**48.0" Horiz. 48" Structure** C= 0.600 Limited to weir flow at low heads
#7	Secondary	112.00'	**10.0' long x 11.0' breadth 10' E Spillway** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.53 2.59 2.70 2.68 2.67 2.68 2.66 2.64

Primary OutFlow Max=2.31 cfs @ 12.46 hrs HW=111.96' TW=104.19' (Dynamic Tailwater)
- **1=15" HDPE N-12** (Passes 2.31 cfs of 15.28 cfs potential flow)
  - **2=1.25" Orifice** (Orifice Controls 0.10 cfs @ 13.33 fps)
    - **3=10In/Hr thru Media** (Passes 0.10 cfs of 0.22 cfs potential flow)
  - **4=3" Orifice** (Orifice Controls 0.36 cfs @ 7.36 fps)
  - **5=4" Orifice (2)** (Orifice Controls 1.20 cfs @ 6.89 fps)
  - **6=48" Structure** (Weir Controls 0.65 cfs @ 0.82 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=104.25' TW=104.00' (Dynamic Tailwater)
- **7=10' E Spillway** (Controls 0.00 cfs)

Stage-Area-Storage for Pond 101P: Rain Garden #101

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
104.25	0	0
104.35	0	37
104.45	0	75
104.55	0	112
104.65	0	149
104.75	0	187
104.85	0	224
104.95	0	261
105.05	0	299
105.15	0	336
105.25	933	373
105.35	933	392
105.45	933	411
105.55	933	429
105.65	933	448
105.75	933	467
105.85	933	485
105.95	933	504
106.05	933	522
106.15	933	541
106.25	933	560
106.35	933	578
106.45	933	597
106.55	933	616
106.65	933	634
106.75	**933**	653
106.85	933	672
106.95	933	690
107.05	933	757
107.15	933	876
107.25	933	1,000
107.35	933	1,130
107.45	933	1,266
107.55	933	1,407
107.65	933	1,555
107.75	933	1,708
107.85	933	1,868
107.95	933	2,035
108.05	933	2,208
108.15	933	2,387
108.25	933	2,573
108.35	933	2,766
108.45	933	2,965
108.55	933	3,171
108.65	933	3,384
108.75	933	3,604
108.85	933	3,832
108.95	933	4,067
109.05	933	4,314
109.15	933	4,574
109.25	933	4,840
109.35	933	5,111
109.45	933	5,389
109.55	933	5,672
109.65	933	5,962
109.75	933	6,259
109.85	933	6,561
109.95	933	6,870
110.05	933	7,186
110.15	933	7,508
110.25	933	7,836
110.35	933	8,171
110.45	933	8,513
110.55	933	8,861
110.65	933	9,216
110.75	933	9,578
110.85	933	9,947
110.95	933	10,323
111.05	933	10,706
111.15	933	11,096
111.25	933	11,493
111.35	933	11,897
111.45	933	12,309
111.55	933	12,727
111.65	933	13,153
111.75	933	13,587
111.85	933	14,028
111.95	933	14,476
112.05	933	14,932
112.15	933	15,396
112.25	933	15,867
112.35	933	16,346
112.45	933	**16,833**

5,530 - 373 = 5,157 Cu Ft

2,677 Cu-Ft Required
5,157 Cu-Ft Provided

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

FILTRATION PRACTICE DESIGN CRITERIA (Env-Wq 1508.07)

Type/Node Name: **Rain Garden #102 (Pond 102P)**

Enter the type of filtration practice (e.g., bioretention system) and the node name in the drainage analysis, if applicable.

Yes		Check if you reviewed the restrictions on unlined systems outlined in Env-Wq 1508.07(a).	
2.79	ac	A = Area draining to the practice	
1.49	ac	A_I = Impervious area draining to the practice	
0.53	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.53	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
1.48	ac-in	WQV= 1" x Rv x A	
5,373	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
1,343	cf	25% x WQV (check calc for sediment forebay volume)	
4,030	cf	75% x WQV (check calc for surface sand filter volume)	
Sediement Forebay		Method of Pretreatment? (not required for clean or roof runoff)	
1,351	cf	V_{SED} = Sediment forebay volume, if used for pretreatment	**≥ 25%WQV**
Calculate time to drain if system IS NOT underdrained:			
	sf	A_{SA} = Surface area of the practice	
	iph	$Ksat_{DESIGN}$ = Design infiltration rate[1]	
		If Ksat (prior to factor of safety) is < 0.50 iph, has an underdrain been provided?	
	Yes/No	(Use the calculations below)	
-	hours	T_{DRAIN} = Drain time = V / (A_{SA} * I_{DESIGN})	**≤ 72-hrs**
Calculate time to drain if system IS underdrained:			
78.36	ft	E_{WQV} = Elevation of WQV (attach stage-storage table)	
0.13	cfs	Q_{WQV} = Discharge at the E_{WQV} (attach stage-discharge table)	
22.96	hours	T_{DRAIN} = Drain time = 2WQV/Q_{WQV}	**≤ 72-hrs**
74.25	feet	E_{FC} = Elevation of the bottom of the filter course material[2]	
73.25	feet	E_{UD} = Invert elevation of the underdrain (UD), if applicable	
77.25	feet	E_{SHWT} = Elevation of SHWT (if none found, enter the lowest elevation of the test pit)	
74.25	feet	E_{ROCK} = Elevation of bedrock (if none found, enter the lowest elevation of the test pit)	
1.00	feet	$D_{FC\ to\ UD}$ = Depth to UD from the bottom of the filter course	**≥ 1'**
-	feet	$D_{FC\ to\ ROCK}$ = Depth to bedrock from the bottom of the filter course	**≥ 1'**
(3.00)	feet	$D_{FC\ to\ SHWT}$ = Depth to SHWT from the bottom of the filter course	**≥ 1'**
82.97	ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
84.00	ft	Elevation of the top of the practice	
YES		50 peak elevation ≤ Elevation of the top of the practice	**← yes**
If a surface sand filter or underground sand filter is proposed:			
YES	ac	Drainage Area check.	**< 10 ac**
	cf	V = Volume of storage[3] (attach a stage-storage table)	**≥ 75%WQV**
	inches	D_{FC} = Filter course thickness	**18", or 24" if within GPA**
Sheet		Note what sheet in the plan set contains the filter course specification.	
	Yes/No	Access grate provided?	**← yes**

If a bioretention area is proposed:			
YES	ac	Drainage Area no larger than 5 ac?	**← yes**
13,384	cf	V = Volume of storage[3] (attach a stage-storage table)	**≥ WQV**
18.0	inches	D_{FC} = Filter course thickness	**18", or 24" if within GPA**
Sheet	P-102	Note what sheet in the plan set contains the filter course specification	
3.0	:1	Pond side slopes	**≥ 3:1**
Sheet	P-102	Note what sheet in the plan set contains the planting plans and surface cover	
If porous pavement is proposed:			
		Type of pavement proposed (Concrete? Asphalt? Pavers? Etc.)	
	acres	A_{SA} = Surface area of the pervious pavement	
	:1	Ratio of the contributing area to the pervious surface area	**≤ 5:1**
	inches	D_{FC} = Filter course thickness	**12", or 18" if within GPA mod. 304.1 (see spec)**
Sheet		Note what sheet in the plan set contains the filter course spec.	

1. Rate of the limiting layer (either the filter course or the underlying soil). $Ksat_{design}$ includes factor of safey. See Env-Wq 1504.14 for guidance on determining the infiltration rate.

2. See lines 34, 40 and 48 for required depths of filter media.

3. Volume without depending on infiltration. The volume includes the storage above the filter (but below the invert of the outlet stucture, if any), the filter media voids, and the pretreatment area. The storage above the filter media shall not include the volume above the outlet structure, if any.

Designer's Notes:

Summary for Pond 102P: Rain Garden #102

Inflow Area = 2.821 ac, 53.27% Impervious, Inflow Depth > 6.70" for 50 Yr.-24 Hr. event
Inflow = 17.72 cfs @ 12.10 hrs, Volume= 1.574 af
Outflow = 6.20 cfs @ 12.46 hrs, Volume= 1.211 af, Atten= 65%, Lag= 21.5 min
Primary = 6.20 cfs @ 12.46 hrs, Volume= 1.211 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 83.12' @ 12.46 hrs Surf.Area= 1,198 sf Storage= 30,140 cf
Flood Elev= 84.00' Surf.Area= 1,198 sf Storage= 37,713 cf

Plug-Flow detention time= 159.5 min calculated for 1.211 af (77% of inflow)
Center-of-Mass det. time= 78.4 min (859.2 - 780.9)

Volume	Invert	Avail.Storage	Storage Description
#1	73.25'	479 cf	**Stone (Irregular)** Listed below (Recalc) -Impervious 1,198 cf Overall x 40.0% Voids
#2	74.25'	359 cf	**Bio-Media (Irregular)** Listed below (Recalc) 1,797 cf Overall x 20.0% Voids
#3	75.75'	60 cf	**Loam (Irregular)** Listed below (Recalc) -Impervious 300 cf Overall x 20.0% Voids
#4	80.00'	26,659 cf	**Open Water Storage (Irregular)** Listed below (Recalc) -Impervious
#5	77.00'	1,351 cf	**Sediment Forebay (Irregular)** Listed below (Recalc) -Impervious
#6	76.00'	8,805 cf	**Cell (Irregular)** Listed below (Recalc) -Impervious
		37,713 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
73.25	1,198	145.6	0	0	1,198
74.25	1,198	145.6	1,198	1,198	1,344

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
74.25	1,198	145.6	0	0	1,198
75.75	1,198	145.6	1,797	1,797	1,416

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
75.75	1,198	145.6	0	0	1,198
76.00	1,198	145.6	300	300	1,234

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
80.00	4,403	320.0	0	0	4,403
81.00	5,434	362.0	4,909	4,909	6,708
82.00	6,626	402.5	6,020	10,930	9,201
83.00	7,858	421.7	7,233	18,163	10,526
84.00	9,151	440.2	8,496	26,659	11,866

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
77.00	101	45.0	0	0	101
78.00	290	78.1	187	187	431
79.00	567	109.3	421	608	906
80.00	933	140.0	742	1,351	1,527

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
76.00	1,198	145.6	0	0	1,198
77.00	1,657	167.9	1,421	1,421	1,776
78.00	2,170	185.6	1,908	3,329	2,304
79.00	2,731	203.5	2,445	5,774	2,892
80.00	3,340	221.3	3,030	8,805	3,530

Device	Routing	Invert	Outlet Devices
#1	Primary	73.25'	**15.0" Round 15" HDPE N-12** L= 42.0' Ke= 0.500 Inlet / Outlet Invert= 73.25' / 73.00' S= 0.0060 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	73.25'	**1.5" Vert. 1.5" Orifice** C= 0.600
#3	Device 2	74.25'	**10.000 in/hr 10In/Hr thru Media over Surface area**
#4	Device 1	80.65'	**3.0" Vert. 3" Orifice** C= 0.600
#5	Device 1	81.00'	**6.0" Vert. 6" Orifice** C= 0.600
#6	Device 1	81.10'	**8.0" Vert. 8" Orifice (2) X 2.00** C= 0.600
#7	Device 1	83.45'	**12.0" Horiz. 12" Horizontal Orifice** C= 0.600 Limited to weir flow at low heads
#8	Secondary	83.50'	**15.0' long x 11.0' breadth 15' E Spillway** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.53 2.59 2.70 2.68 2.67 2.68 2.66 2.64

Primary OutFlow Max=6.20 cfs @ 12.46 hrs HW=83.11' TW=73.36' (Dynamic Tailwater)
- **1=15" HDPE N-12** (Passes 6.20 cfs of 17.96 cfs potential flow)
  - **2=1.5" Orifice** (Orifice Controls 0.18 cfs @ 15.04 fps)
    - **3=10In/Hr thru Media** (Passes 0.18 cfs of 0.28 cfs potential flow)
  - **4=3" Orifice** (Orifice Controls 0.36 cfs @ 7.36 fps)
  - **5=6" Orifice** (Orifice Controls 1.29 cfs @ 6.57 fps)
  - **6=8" Orifice (2)** (Orifice Controls 4.36 cfs @ 6.24 fps)
  - **7=12" Horizontal Orifice** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=73.25' TW=73.00' (Dynamic Tailwater)
- **8=15' E Spillway** (Controls 0.00 cfs)

Stage-Area-Storage for Pond 102P: Rain Garden #102

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
73.25	0	0
73.40	0	72
73.55	0	144
73.70	0	216
73.85	0	288
74.00	0	359
74.15	**0**	431
74.30	**1,198**	491
74.45	1,198	527
74.60	1,198	563
74.75	1,198	599
74.90	1,198	635
75.05	1,198	671
75.20	1,198	707
75.35	1,198	743
75.50	1,198	779
75.65	1,198	815
75.80	1,198	851
75.95	1,198	887
76.10	1,198	1,020
76.25	1,198	1,211
76.40	1,198	1,412
76.55	1,198	1,623
76.70	1,198	1,845
76.85	1,198	2,077
77.00	1,198	2,320
77.15	1,198	2,591
77.30	1,198	2,876
77.45	1,198	3,176
77.60	1,198	3,492
77.75	1,198	3,824
77.90	1,198	4,173
78.05	1,198	4,539
78.20	1,198	4,922
78.35	1,198	5,324
78.50	1,198	5,743
78.65	1,198	6,182
78.80	1,198	6,639
78.95	1,198	7,117
79.10	1,198	7,615
79.25	1,198	8,134
79.40	1,198	8,674
79.55	1,198	9,235
79.70	1,198	9,818
79.85	1,198	10,425
80.00	1,198	11,054
80.15	1,198	11,725
80.30	1,198	12,419
80.45	1,198	13,136
80.60	1,198	13,875
80.75	1,198	14,638
80.90	1,198	15,425
81.05	1,198	16,236
81.20	1,198	17,073
81.35	1,198	17,935
81.50	1,198	18,824
81.65	1,198	19,740
81.80	1,198	20,683
81.95	1,198	21,654
82.10	1,198	22,652
82.25	1,198	23,677
82.40	1,198	24,729
82.55	1,198	25,809
82.70	1,198	26,917
82.85	1,198	28,052
83.00	1,198	29,217
83.15	1,198	30,409
83.30	1,198	31,630
83.45	1,198	32,880
83.60	1,198	34,159
83.75	1,198	35,467
83.90	1,198	**36,805**

13,875 CF - 491 CR = 13,384 CF

5,373 CF Required
13,384 CF Provided

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

FILTRATION PRACTICE DESIGN CRITERIA (Env-Wq 1508.07)

Type/Node Name: **Rain Garden #103 (Pond 103P)**

Enter the type of filtration practice (e.g., bioretention system) and the node name in the drainage analysis, if applicable.

Yes		Check if you reviewed the restrictions on unlined systems outlined in Env-Wq 1508.07(a).	
1.76	ac	A = Area draining to the practice	
0.94	ac	A_I = Impervious area draining to the practice	
0.54	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.53	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
0.94	ac-in	WQV= 1" x Rv x A	
3,404	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
851	cf	25% x WQV (check calc for sediment forebay volume)	
2,553	cf	75% x WQV (check calc for surface sand filter volume)	
Sediment Forebay		Method of Pretreatment? (not required for clean or roof runoff)	
901	cf	V_{SED} = Sediment forebay volume, if used for pretreatment	**≥ 25%WQV**
Calculate time to drain if system IS NOT underdrained:			
	sf	A_{SA} = Surface area of the practice	
	iph	$Ksat_{DESIGN}$ = Design infiltration rate[1]	
		If Ksat (prior to factor of safety) is < 0.50 iph, has an underdrain been provided?	
	Yes/No	(Use the calculations below)	
-	hours	T_{DRAIN} = Drain time = V / (A_{SA} * I_{DESIGN})	**≤ 72-hrs**
Calculate time to drain if system IS underdrained:			
94.91	ft	E_{WQV} = Elevation of WQV (attach stage-storage table)	
0.20	cfs	Q_{WQV} = Discharge at the E_{WQV} (attach stage-discharge table)	
9.46	hours	T_{DRAIN} = Drain time = 2WQV/Q_{WQV}	**≤ 72-hrs**
91.25	feet	E_{FC} = Elevation of the bottom of the filter course material[2]	
90.25	feet	E_{UD} = Invert elevation of the underdrain (UD), if applicable	
96.50	feet	E_{SHWT} = Elevation of SHWT (if none found, enter the lowest elevation of the test pit)	
90.33	feet	E_{ROCK} = Elevation of bedrock (if none found, enter the lowest elevation of the test pit)	
1.00	feet	$D_{FC\ to\ UD}$ = Depth to UD from the bottom of the filter course	**≥ 1'**
0.92	feet	$D_{FC\ to\ ROCK}$ = Depth to bedrock from the bottom of the filter course	**≥ 1'**
(5.25)	feet	$D_{FC\ to\ SHWT}$ = Depth to SHWT from the bottom of the filter course	**≥ 1'**
97.81	ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
99.00	ft	Elevation of the top of the practice	
YES		50 peak elevation ≤ Elevation of the top of the practice	**← yes**
If a surface sand filter or underground sand filter is proposed:			
YES	ac	Drainage Area check.	**< 10 ac**
	cf	V = Volume of storage[3] (attach a stage-storage table)	**≥ 75%WQV**
	inches	D_{FC} = Filter course thickness	**18", or 24" if within GPA**
Sheet		Note what sheet in the plan set contains the filter course specification.	
	Yes/No	Access grate provided?	**← yes**

If a bioretention area is proposed:			
YES	ac	Drainage Area no larger than 5 ac?	**← yes**
4,241	cf	V = Volume of storage[3] (attach a stage-storage table)	**≥ WQV**
18.0	inches	D_{FC} = Filter course thickness	**18", or 24" if within GPA**
Sheet	P-103	Note what sheet in the plan set contains the filter course specification	
3.0	:1	Pond side slopes	**≥ 3:1**
Sheet	P-103	Note what sheet in the plan set contains the planting plans and surface cover	
If porous pavement is proposed:			
		Type of pavement proposed (Concrete? Asphalt? Pavers? Etc.)	
	acres	A_{SA} = Surface area of the pervious pavement	
	:1	Ratio of the contributing area to the pervious surface area	**≤ 5:1**
	inches	D_{FC} = Filter course thickness	**12", or 18" if within GPA mod. 304.1 (see spec)**
Sheet		Note what sheet in the plan set contains the filter course spec.	

1. Rate of the limiting layer (either the filter course or the underlying soil). $Ksat_{design}$ includes factor of safey. See Env-Wq 1504.14 for guidance on determining the infiltration rate.

2. See lines 34, 40 and 48 for required depths of filter media.

3. Volume without depending on infiltration. The volume includes the storage above the filter (but below the invert of the outlet stucture, if any), the filter media voids, and the pretreatment area. The storage above the filter media shall not include the volume above the outlet structure, if any.

Designer's Notes:

Summary for Pond 103P: Rain Garden #103

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=20)
[80] Warning: Exceeded Pond C24P by 0.20' @ 12.10 hrs (2.65 cfs 0.037 af)
[80] Warning: Exceeded Pond C25P by 0.26' @ 12.10 hrs (1.69 cfs 0.038 af)

Inflow Area = 1.721 ac, 53.09% Impervious, Inflow Depth > 6.49" for 50 Yr.-24 Hr. event
Inflow = 10.91 cfs @ 12.11 hrs, Volume= 0.930 af
Outflow = 5.10 cfs @ 12.35 hrs, Volume= 0.836 af, Atten= 53%, Lag= 14.4 min
Primary = 5.10 cfs @ 12.35 hrs, Volume= 0.836 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 97.77' @ 12.35 hrs Surf.Area= 854 sf Storage= 13,058 cf
Flood Elev= 99.00' Surf.Area= 854 sf Storage= 18,839 cf

Plug-Flow detention time= 102.9 min calculated for 0.836 af (90% of inflow)
Center-of-Mass det. time= 53.9 min (840.0 - 786.0)

Volume	Invert	Avail.Storage	Storage Description
#1	90.25'	342 cf	**Stone (Irregular)** Listed below (Recalc) -Impervious 854 cf Overall x 40.0% Voids
#2	91.25'	256 cf	**Bio-Media (Irregular)** Listed below (Recalc) 1,281 cf Overall x 20.0% Voids
#3	92.75'	43 cf	**Loam (Irregular)** Listed below (Recalc) -Impervious 214 cf Overall x 20.0% Voids
#4	95.00'	14,881 cf	**Open Water Storage (Irregular)** Listed below (Recalc) -Impervious
#5	93.00'	901 cf	**Sediment Forebay (Irregular)** Listed below (Recalc) -Impervious
#6	93.00'	2,415 cf	**Cell (Irregular)** Listed below (Recalc) -Impervious
		18,839 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
90.25	854	118.0	0	0	854
91.25	854	118.0	854	854	972

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
91.25	854	118.0	0	0	854
92.75	854	118.0	1,281	1,281	1,031

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
92.75	854	118.0	0	0	854
93.00	854	118.0	214	214	884

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
95.00	2,433	189.5	0	0	2,433
96.00	3,030	208.4	2,726	2,726	3,064
97.00	3,683	227.3	3,351	6,077	3,754
98.00	4,393	246.1	4,033	10,110	4,501
99.00	5,160	265.0	4,771	14,881	5,311

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
93.00	230	71.2	0	0	230
94.00	442	89.5	330	330	477
95.00	711	108.7	571	901	796

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
93.00	854	118.0	0	0	854
94.00	1,200	136.0	1,022	1,022	1,239
95.00	1,596	153.6	1,393	2,415	1,670

Device	Routing	Invert	Outlet Devices
#1	Primary	90.25'	**15.0" Round 15" HDPE N-12** L= 50.0' Ke= 0.500 Inlet / Outlet Invert= 90.25' / 90.00' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	91.25'	**10.000 in/hr 10In/Hr thru Media over Surface area**
#3	Device 1	95.25'	**3.0" Vert. 3" Orifice** C= 0.600
#4	Device 1	95.50'	**6.0" Vert. 6" Orifice (2) X 2.00** C= 0.600
#5	Device 1	96.50'	**8.0" Vert. 8" Orifice** C= 0.600
#6	Device 1	97.50'	**8.0" Vert. 8" Orifice** C= 0.600
#7	Device 1	98.40'	**48.0" Horiz. 48" Structure** C= 0.600 Limited to weir flow at low heads
#8	Secondary	98.50'	**10.0' long x 11.0' breadth 10' E Spillway** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.53 2.59 2.70 2.68 2.67 2.68 2.66 2.64

Primary OutFlow Max=5.09 cfs @ 12.35 hrs HW=97.76' TW=88.29' (Dynamic Tailwater)
- **1=15" HDPE N-12** (Passes 5.09 cfs of 15.51 cfs potential flow)
  - **2=10In/Hr thru Media** (Exfiltration Controls 0.20 cfs)
  - **3=3" Orifice** (Orifice Controls 0.37 cfs @ 7.44 fps)
  - **4=6" Orifice (2)** (Orifice Controls 2.68 cfs @ 6.83 fps)
  - **5=8" Orifice** (Orifice Controls 1.62 cfs @ 4.65 fps)
  - **6=8" Orifice** (Orifice Controls 0.23 cfs @ 1.75 fps)
  - **7=48" Structure** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=90.25' TW=88.00' (Dynamic Tailwater)
- **8=10' E Spillway** (Controls 0.00 cfs)

Stage-Area-Storage for Pond 103P: Rain Garden #103

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
90.25	0	0
90.35	0	34
90.45	0	68
90.55	0	102
90.65	0	137
90.75	0	171
90.85	0	205
90.95	0	239
91.05	0	273
91.15	0	307
91.25	**854**	342
91.35	854	359
91.45	854	376
91.55	854	393
91.65	854	410
91.75	854	427
91.85	854	444
91.95	854	461
92.05	854	478
92.15	854	495
92.25	854	512
92.35	854	529
92.45	854	547
92.55	854	564
92.65	854	581
92.75	854	598
92.85	854	615
92.95	854	632
93.05	854	695
93.15	854	809
93.25	854	927
93.35	854	1,051
93.45	854	1,180
93.55	854	1,315
93.65	854	1,455
93.75	854	1,601
93.85	854	1,754
93.95	854	1,912
94.05	854	2,076
94.15	854	2,246
94.25	854	2,423
94.35	854	2,606
94.45	854	2,795
94.55	854	2,991
94.65	854	3,193
94.75	854	3,403
94.85	854	3,619
94.95	854	3,843
95.05	854	4,080
95.15	854	4,329
95.25	854	4,583
95.35	854	4,844
95.45	854	5,110
95.55	854	5,383
95.65	854	5,661
95.75	854	5,945
95.85	854	6,236
95.95	854	6,533
96.05	854	6,836
96.15	854	7,145
96.25	854	7,461
96.35	854	7,782
96.45	854	8,111
96.55	854	8,446
96.65	854	8,787
96.75	854	9,135
96.85	854	9,490
96.95	854	9,851
97.05	854	10,220
97.15	854	10,595
97.25	854	10,977
97.35	854	11,366
97.45	854	11,762
97.55	854	12,165
97.65	854	12,575
97.75	854	12,992
97.85	854	13,417
97.95	854	13,849
98.05	854	14,288
98.15	854	14,735
98.25	854	15,189
98.35	854	15,650
98.45	854	16,120
98.55	854	16,597
98.65	854	17,081
98.75	854	17,574
98.85	854	18,074
98.95	854	**18,582**

4,583 CF - 342 CF = 4,241 CF

3,404 CF Required
4,241 CF Provided

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

FILTRATION PRACTICE DESIGN CRITERIA (Env-Wq 1508.07)

Type/Node Name: **Rain Garden #104 (Pond 104P)**

Enter the type of filtration practice (e.g., bioretention system) and the node name in the drainage analysis, if applicable.

Yes		Check if you reviewed the restrictions on unlined systems outlined in Env-Wq 1508.07(a).	
1.67	ac	A = Area draining to the practice	
1.01	ac	A_I = Impervious area draining to the practice	
0.60	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.59	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
0.99	ac-in	WQV= 1" x Rv x A	
3,603	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
901	cf	25% x WQV (check calc for sediment forebay volume)	
2,702	cf	75% x WQV (check calc for surface sand filter volume)	
Sediment Forebay		Method of Pretreatment? (not required for clean or roof runoff)	
1,043	cf	V_{SED} = Sediment forebay volume, if used for pretreatment	**≥ 25%WQV**
Calculate time to drain if system IS NOT underdrained:			
	sf	A_{SA} = Surface area of the practice	
	iph	$Ksat_{DESIGN}$ = Design infiltration rate[1]	
		If Ksat (prior to factor of safety) is < 0.50 iph, has an underdrain been provided?	
	Yes/No	(Use the calculations below)	
-	hours	T_{DRAIN} = Drain time = V / (A_{SA} * I_{DESIGN})	**≤ 72-hrs**
Calculate time to drain if system IS underdrained:			
84.80	ft	E_{WQV} = Elevation of WQV (attach stage-storage table)	
0.14	cfs	Q_{WQV} = Discharge at the E_{WQV} (attach stage-discharge table)	
14.30	hours	T_{DRAIN} = Drain time = 2WQV/Q_{WQV}	**≤ 72-hrs**
80.75	feet	E_{FC} = Elevation of the bottom of the filter course material[2]	
79.75	feet	E_{UD} = Invert elevation of the underdrain (UD), if applicable	
87.50	feet	E_{SHWT} = Elevation of SHWT (if none found, enter the lowest elevation of the test pit)	
81.83	feet	E_{ROCK} = Elevation of bedrock (if none found, enter the lowest elevation of the test pit)	
1.00	feet	$D_{FC\ to\ UD}$ = Depth to UD from the bottom of the filter course	**≥ 1'**
(1.08)	feet	$D_{FC\ to\ ROCK}$ = Depth to bedrock from the bottom of the filter course	**≥ 1'**
(6.75)	feet	$D_{FC\ to\ SHWT}$ = Depth to SHWT from the bottom of the filter course	**≥ 1'**
87.10	ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
88.00	ft	Elevation of the top of the practice	
YES		50 peak elevation ≤ Elevation of the top of the practice	**← yes**
If a surface sand filter or underground sand filter is proposed:			
YES	ac	Drainage Area check.	**< 10 ac**
	cf	V = Volume of storage[3] (attach a stage-storage table)	**≥ 75%WQV**
	inches	D_{FC} = Filter course thickness	**18", or 24" if within GPA**
Sheet		Note what sheet in the plan set contains the filter course specification.	
	Yes/No	Access grate provided?	**← yes**

If a bioretention area is proposed:			
YES	ac	Drainage Area no larger than 5 ac?	**← yes**
3,845	cf	V = Volume of storage[3] (attach a stage-storage table)	**≥ WQV**
18.0	inches	D_{FC} = Filter course thickness	**18", or 24" if within GPA**
Sheet	P-104	Note what sheet in the plan set contains the filter course specification	
3.0	:1	Pond side slopes	**≥ 3:1**
Sheet	P-104	Note what sheet in the plan set contains the planting plans and surface cover	
If porous pavement is proposed:			
		Type of pavement proposed (Concrete? Asphalt? Pavers? Etc.)	
	acres	A_{SA} = Surface area of the pervious pavement	
	:1	Ratio of the contributing area to the pervious surface area	**≤ 5:1**
	inches	D_{FC} = Filter course thickness	**12", or 18" if within GPA mod. 304.1 (see spec)**
Sheet		Note what sheet in the plan set contains the filter course spec.	

1. Rate of the limiting layer (either the filter course or the underlying soil). $Ksat_{design}$ includes factor of safey. See Env-Wq 1504.14 for guidance on determining the infiltration rate.

2. See lines 34, 40 and 48 for required depths of filter media.

3. Volume without depending on infiltration. The volume includes the storage above the filter (but below the invert of the outlet stucture, if any), the filter media voids, and the pretreatment area. The storage above the filter media shall not include the volume above the outlet structure, if any.

Designer's Notes:

Summary for Pond 104P: Rain Garden #104

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=22)
[80] Warning: Exceeded Pond C26P by 0.08' @ 11.80 hrs (4.40 cfs 0.543 af)

Inflow Area = 1.672 ac, 60.21% Impervious, Inflow Depth > 6.81" for 50 Yr.-24 Hr. event
Inflow = 9.75 cfs @ 12.09 hrs, Volume= 0.949 af
Outflow = 6.88 cfs @ 12.21 hrs, Volume= 0.849 af, Atten= 29%, Lag= 7.0 min
Primary = 6.88 cfs @ 12.21 hrs, Volume= 0.849 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 87.10' @ 12.21 hrs Surf.Area= 612 sf Storage= 10,655 cf
Flood Elev= 88.00' Surf.Area= 612 sf Storage= 14,406 cf

Plug-Flow detention time= 96.3 min calculated for 0.849 af (90% of inflow)
Center-of-Mass det. time= 46.0 min (824.0 - 778.0)

Volume	Invert	Avail.Storage	Storage Description
#1	79.75'	245 cf	**Stone (Irregular)** Listed below (Recalc) -Impervious 612 cf Overall x 40.0% Voids
#2	80.75'	184 cf	**Bio-Media (Irregular)** Listed below (Recalc) 918 cf Overall x 20.0% Voids
#3	82.25'	31 cf	**Loam (Irregular)** Listed below (Recalc) -Impervious 153 cf Overall x 20.0% Voids
#4	85.00'	10,196 cf	**Open Water Storage (Irregular)** Listed below (Recalc) -Impervious
#5	82.50'	1,043 cf	**Sediment Forebay (Irregular)** Listed below (Recalc) -Impervious
#6	82.50'	2,708 cf	**Cell (Irregular)** Listed below (Recalc) -Impervious
		14,406 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
79.75	612	113.3	0	0	612
80.75	612	113.3	612	612	725

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
80.75	612	113.3	0	0	612
82.25	612	113.3	918	918	782

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
82.25	612	113.3	0	0	612
82.50	612	113.3	153	153	640

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
85.00	2,343	215.3	0	0	2,343
86.00	3,017	234.2	2,673	2,673	3,055
87.00	3,748	253.0	3,376	6,049	3,824
88.00	4,560	274.0	4,147	10,196	4,743

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
82.50	170	69.5	0	0	170
83.00	282	77.0	112	112	265
84.00	463	88.9	369	481	442
85.00	669	99.3	563	1,043	624

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
82.50	612	113.3	0	0	612
83.00	787	124.0	349	349	823
84.00	1,175	143.1	975	1,323	1,250
85.00	1,605	160.0	1,384	2,708	1,685

Device	Routing	Invert	Outlet Devices
#1	Primary	79.75'	**15.0" Round 15" HDPE N-12** L= 34.5' Ke= 0.500 Inlet / Outlet Invert= 79.75' / 79.50' S= 0.0072 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	80.75'	**10.000 in/hr 10In/Hr thru Media over Surface area**
#3	Device 1	85.00'	**3.0" Vert. 3" Orifice** C= 0.600
#4	Device 1	85.25'	**8.0" Vert. 8" Orifice** C= 0.600
#5	Device 1	86.00'	**8.0" Vert. 8" Orifice (2) X 2.00** C= 0.600
#6	Device 1	87.00'	**48.0" Horiz. 48" Structure** C= 0.600 Limited to weir flow at low heads
#7	Secondary	87.50'	**10.0' long x 11.0' breadth 10' E Spillway** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.53 2.59 2.70 2.68 2.67 2.68 2.66 2.64

Primary OutFlow Max=6.79 cfs @ 12.21 hrs HW=87.10' TW=78.55' (Dynamic Tailwater)
- **1=15" HDPE N-12** (Passes 6.79 cfs of 15.32 cfs potential flow)
  - **2=10In/Hr thru Media** (Exfiltration Controls 0.14 cfs)
  - **3=3" Orifice** (Orifice Controls 0.33 cfs @ 6.77 fps)
  - **4=8" Orifice** (Orifice Controls 2.07 cfs @ 5.93 fps)
  - **5=8" Orifice (2)** (Orifice Controls 2.94 cfs @ 4.22 fps)
  - **6=48" Structure** (Weir Controls 1.30 cfs @ 1.03 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=79.75' TW=77.50' (Dynamic Tailwater)
- **7=10' E Spillway** (Controls 0.00 cfs)

Stage-Area-Storage for Pond 104P: Rain Garden #104

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
79.75	0	0
79.85	0	24
79.95	0	49
80.05	0	73
80.15	0	98
80.25	0	122
80.35	0	147
80.45	0	171
80.55	0	196
80.65	0	220
80.75	**612**	245
80.85	612	257
80.95	612	269
81.05	612	282
81.15	612	294
81.25	612	306
81.35	612	318
81.45	612	330
81.55	612	343
81.65	612	355
81.75	612	367
81.85	612	379
81.95	612	392
82.05	612	404
82.15	612	416
82.25	612	428
82.35	612	441
82.45	612	453
82.55	612	499
82.65	612	582
82.75	612	671
82.85	612	766
82.95	612	867
83.05	612	974
83.15	612	1,086
83.25	612	1,203
83.35	612	1,326
83.45	612	1,454
83.55	612	1,588
83.65	612	1,727
83.75	612	1,873
83.85	612	2,024
83.95	612	2,182
84.05	612	2,346
84.15	612	2,515
84.25	612	2,691
84.35	612	2,873
84.45	612	3,061
84.55	612	3,255
84.65	612	3,456
84.75	612	3,663
84.85	612	3,877
84.95	612	4,097

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
85.05	612	4,328
85.15	612	4,569
85.25	612	4,816
85.35	612	5,070
85.45	612	5,330
85.55	612	5,597
85.65	612	5,870
85.75	612	6,151
85.85	612	6,439
85.95	612	6,733
86.05	612	7,035
86.15	612	7,344
86.25	612	7,659
86.35	612	7,982
86.45	612	8,312
86.55	612	8,649
86.65	612	8,994
86.75	612	9,346
86.85	612	9,705
86.95	612	10,073
87.05	612	10,447
87.15	612	10,830
87.25	612	11,220
87.35	612	11,619
87.45	612	12,025
87.55	612	12,439
87.65	612	12,862
87.75	612	13,293
87.85	612	13,732
87.95	612	**14,179**

4,212 CF - 367 CF = 3,845 CF

3,603 CF Required
3,845 CF Provided

Map Scale: 1:8,730 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 100 200 400 600

Feet: 0 400 800 1600 2400

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Strafford County, New Hampshire
Survey Area Data: Version 20, May 29, 2020

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

Date(s) aerial images were photographed: Dec 31, 2009—Sep 9, 2017

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
AdC	Acton very stony fine sandy loam, 8 to 15 percent slopes	6.4	2.0%
Be	Biddeford silty clay loam	1.2	0.4%
BzB	Buxton silt loam, 3 to 8 percent slopes	111.5	34.3%
CfB	Charlton fine sandy loam, 3 to 8 percent slopes	23.7	7.3%
HcB	Hollis-Charlton fine sandy loams, 3 to 8 percent slopes	65.7	20.2%
HcC	Hollis-Charlton fine sandy loams, 8 to 15 percent slopes	3.9	1.2%
HdC	Hollis-Charlton very rocky fine sandy loams, 8 to 15 percent slopes	1.2	0.4%
Ml	Mixed alluvial land, wet	6.6	2.0%
Sb	Saugatuck loamy sand	3.6	1.1%
ScA	Scantic silt loam, 0 to 3 percent slopes	12.0	3.7%
ScB	Scantic silt loam, 3 to 8 percent slopes	7.4	2.3%
SfC	Suffield silt loam, 8 to 15 percent slopes	33.1	10.2%
SfE	Suffield silt loam, 15 to 35 percent slopes	18.3	5.6%
SnB	Sutton fine sandy loam, 3 to 8 percent slopes	0.3	0.1%
W	Water	23.3	7.2%
WdB	Windsor loamy sand, 3 to 8 percent slopes	4.8	1.5%
WfB	Windsor loamy fine sand, clay subsoil variant, 0 to 8 percent slopes	1.8	0.5%
Totals for Area of Interest		**324.6**	**100.0%**

John P. Hayes III CSS, CWS,
7 Limestone Way
North Hampton, NH 03862
603-205-4396
johnphayes@comcast.net

4/4/21

Christopher Berry
Berry Surveying and Engineering
335 Second Crown Point Road
Barrington NH 03825

Job # 20-029

3/30/21 - 4/1/21
Site Specific Soil Survey
Map E Lot 65-1 & 65-A
Tolend Road Dover NH

Dear Chris,

This letter report presents the findings of a Site Specific Soil Survey conducted on the referenced properties by John P. Hayes III on March 30 to April 3, 2021. The soil survey was conducted in accordance with the New Hampshire Supplement of the Site-Specific Soil Mapping Standard For New Hampshire and Vermont, Version 5.0, December 2017, Special Publication # 3, published by the Society of Soil Scientist of Northern New England.

The properties that are subject of the soil survey is located north of Tolend road, and East of Route 16, in Dover NH. The mapped area of the pacels is approximately 31.7 and 12.7 acres in size. The plans used for these soil maps are a 50 scale plan, where 1 inch equals 50 feet, with one foot contours.

The purpose of the soil survey is to provide the client with soils information for urban and suburban or rural land planning. Soil characteristics on the property were evaluated through observation of numerous test pits, and hand auger probes conducted throughout the property. Slope phases were determined with the use of the topography provided on the plan. The Site-specific Soil Map Units identified are taken from the New Hampshire State-Wide Numerical Soils Legend, Issue #10 January 2011, and are briefly described below. Official Series Descriptions (OSD) for each of these soil series are enclosed with this report. The soil map units comply with the Range In Characteristics described in the OSD. Any limiting enclusions on the site, do not exceed 15 percent of any of the soil map units. Dissimilar inclusions, if any, are noted above. Limits of the Site Specific mapping units are highlighted on the plan. The Hydrological Soil Groups for each of the soil series was determined using SSSNNE Publication No. 5 Ksat Values for New Hampshire Soils September 2009. Limits of the Site Specific mapping units are highlighted on the plan.

Portions of the soil map with the map unit denominator P and VP, contain poorly, and very poorly drained soils respectively. Portions of the soil map with the map unit and denominator Hd/Rk, identify the Hollis-Charlton soil complex. They are soils that have the potential to have areas of a bedrock substratum within 40 inches of the soil surface. Portions of the soil map with the map unit 500, contain disturbed soils that have been excavated and/or regraded, that are loamy in texture, underlain with a layer gravelly, loamy sand. A Disturbed Soil Mapping Unit Supplement for New Hampshire DES AoT Site Specific Soil Maps, is also included. This supplement explains the additional information given about each of the disturbed soil map units that are present on the site.

MAP UNIT #	SOIL TAXANOMIC NAME	SLOPES	HYDROLOGIC SOIL GROUP	DESCRIPTION
Be VP (State No. 234)	**Biddeford**	**B**	**D**	The Biddeford series consists of very deep, very poorly drained soils formed in glaciolacustrine or glaciomarine deposits. These soils were found in a wetland area on the southwest portion of the mapped area of the parcel. These soils are deep to bedrock. The saturated hydralic conductivity is high to moderately high in the organic layer and moderately low to low in the substratum. Estimated seasonal high water tables is at the surface of the soilBZ
Bz (State No. 32)	**Buxton**	**A B C D E**	**C**	The Buxton series consists of very deep, moderately well to somewhat poorly drained soils formed in clayey marine sediments. These soils are found throught the site in the low areas as well as on the slopes and tops of the hills. These soils are deep to bedrock. The saturated hydralic conductivity is moderately high in the upper portion of the soil profile, and moderately low in the firm substratum. Some inclusions of well drained Suffield soil may be present, but are less than 10 percent of the mapped areas. Estimated seasonal high water tables in these soils range from 15 to 30 inches.
Cs (State No. 63)	**Charlton (very stony)**	**B C D E**	**B**	The Charlton series consists of very deep, well drained soils formed in loamy melt-out till. These soils are found on the southern portion of the parcel. These soils are deep to bedrock. Saturated hydraulic conductivity is moderately high or high. Some inclusions of Hollis and Buxton soils may be present but are less than 10 percent of the mapped areas. Estimated seasonal high water tables in these soils range from 36 to 50 inches.

MAP UNIT #	SOIL TAXANOMIC NAME	SLOPES	HYDROLOGIC SOIL GROUP	DESCRIPTION
Hd (State No. 175)	**Hollis-Charlton Complex (very rocky)**	**A B C D E**	**C/D**	The Hollis Charlton Soil Complex consists of Charlton soils which are very deep, well drained soils formed in loamy melt-out till, And Hollis soils which are well drained and somewhat excessively drained soils formed in a thin mantle of till, and have bedrock within 20 inches of the soil surface. This soil comples is fount in the center portion of the parcel on both the north and south ends of the lot. Saturated hydraulic conductivity is moderately high or high. The approximate percentages of each soil series in this complex are Hollis 70% and Charlton 30%. Estimated seasonal high water tables range from none in the Hollis component of the complex, to 35 to 50 inches in the Charlton component.
Ml	**Mixed Alluvial Land (loamy sandy, moderately well drained)**	**B C D E**	**A**	Mixed Alluvial Land Wet coinsists of varioius kinds of soil materials on the bottom land of streams and rivers. The soil textures are loamy or sandy.These soils are located on the northeast portion of the property ot the slopes near the river. This land type is moderately well drained and it is frequently flooded. Estimated seasonal high water tables in these soils range from 15 to 35 inches.
MI P	**Mixed Alluvial Land (poorly drained)**	**B C**	**C/D**	Mixed Alluvial Land Wet coinsists of varioius kinds of soil materials on the bottom land of streams and rivers. The soil textures are loamy or sandy. The soil textures are loamy or sandy. These soils are located on the northeast portion of the property, at the toe of the slopes, near the river.These soils are poorly drained and frequently flooded. Estimated seasonal high water tables in these soils is less than 10 inches.
Sc P (State No. 233)	**Scantic**	**A B C D E**	**D**	The Scantic series consists of very deep, poorly drained soils formed in glaciomarine or glaciolacustrine deposits. These soils are found in the wetland areas throughout the parcel. They are are deep to bedrock. Saturated hydraulic conductivity is moderately high or high in the upper portion of the profile, and low or moderately slow in the substratum. Estimated seasonal high water tables in these soils is less than 10 inches.

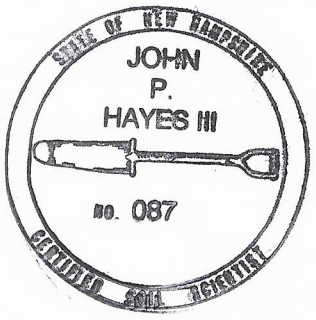
MAP UNIT #	SOIL TAXANOMIC NAME	SLOPES	HYDROLOGIC SOIL GROUP	DESCRIPTION
Sf (State No. 536)	**Suffield**	**A B C D E**	**C**	The Suffield series consists of very deep, well drained soils formed in lacustrine or marine sediments. These soils are located throughout the parcel mostly on the areas with steep slopes. They are are deep to bedrock. Permeability is moderate in the upper portions of the profile, and and slow to very slow in the substratum. Some inclusions of Buxton soils may be present, but are less than 10 percent of the mapped areas. These soils are firm in consistency, with estimated seasonal high water tables ranging from 30 to 50 inches.
500 (dccdb/c)	**Udorthents loamy**	**B/C**	**B/C**	Udorthents are disturbed soils that have been excavated and/or regraded and are loamy in texture. These disturbed soils are located on the southeast portion of the mapped area. These disturbed soils are mostly derrived from the Buxton soil series, and are moderately well drained to somewhat poorly drained. The soils are deep to bedrock. The saturated hydralic conductivity is moderately high in the upper portion of the soil profile, and moderately low in the firm substratum. Estimated seasonal high water tables in these soils range from 15 to 30 inches.

Slope Phases

Alpha Slope Symbol	Range
A	0 – 3%
B	3 – 8%
C	8 – 15%
D	15 – 25%
E	25 – 50%
F	> 50%

I trust that this Soil Survey and report meet your current planning needs. Please do not hesitate to contact me if you have any questions.

Sincerely:



John P. Hayes III CSS, CWS

SITE SPECIFIC SOILS LEGEND

SYMBOL	SOIL TAXONOMIC NAME	HYDROLOGIC SOIL GROUP
BeB	BIDDEFORD	D
BzA	BUXTON	C
BzB	BUXTON	C
BzC	BUXTON	C
BzD	BUXTON	C
BzE	BUXTON	C
CsB	CHARLTON (VERY STONY)	B
CsC	CHARLTON (VERY STONY)	B
CsD	CHARLTON (VERY STONY)	B
CsE	CHARLTON (VERY STONY)	B
HdA/Rk	HOLLIS–CHARLTON COMPLEX (VERY ROCKY)	B/D
HdB/Rk	HOLLIS–CHARLTON COMPLEX (VERY ROCKY)	B/D
HdC/Rk	HOLLIS–CHARLTON COMPLEX (VERY ROCKY)	B/D
HdD/Rk	HOLLIS–CHARLTON COMPLEX (VERY ROCKY)	B/D
HdE/Rk	HOLLIS–CHARLTON COMPLEX (VERY ROCKY)	B/D
MlB/P	MIXED ALLUVIAL LAND (POORLY DRAINED)	C/D
MlC/P	MIXED ALLUVIAL LAND (POORLY DRAINED)	C/D

SLOPE: A = 0–3% B = 3–8% C = 8–15% D = 15–25% E = 25–50% F = 50%+

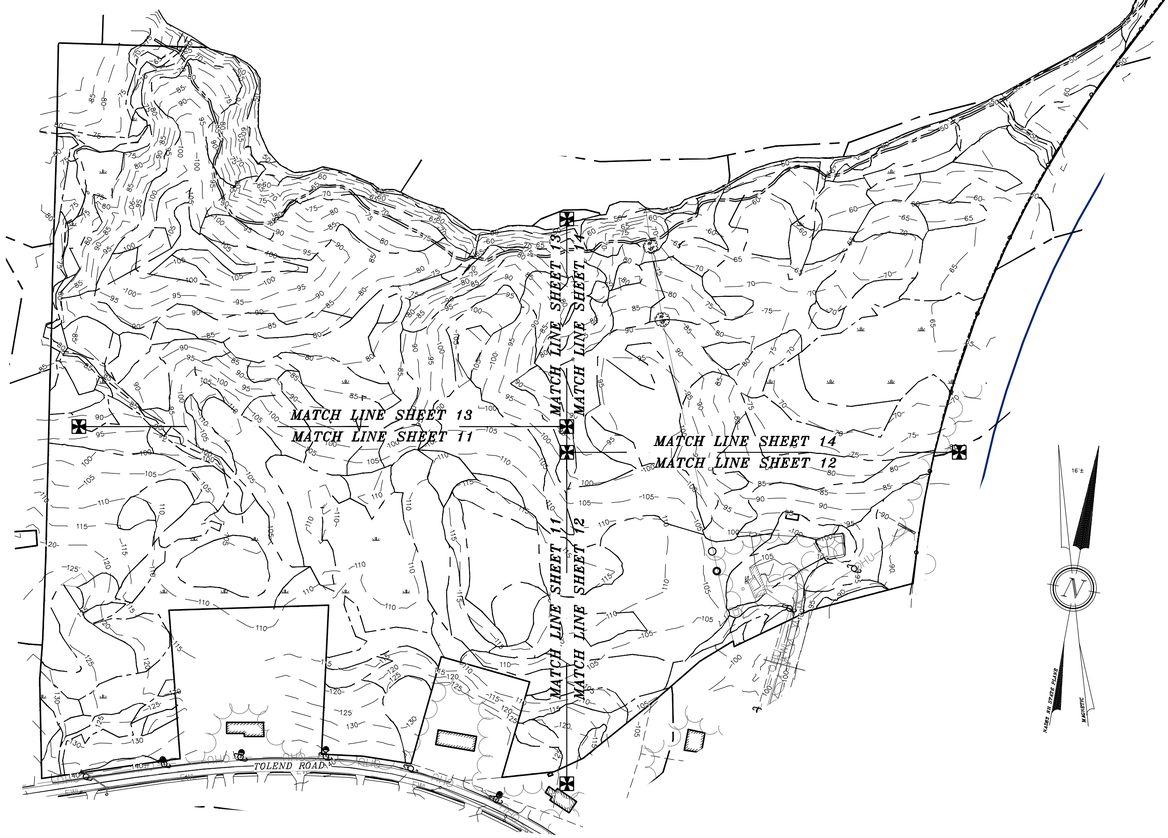
DENOMINATOR: /Rk = ROCKY /VPD = VERY POORLY DRAINED /PD = POORLY DRAINED /SWPD = SOMEWHAT POORLY DRAINED /MWD = MODERATELY WELL DRAINED

SITE SPECIFIC SOILS LEGEND (CONT'D)

SYMBOL	SOIL TAXONOMIC NAME	HYDROLOGIC SOIL GROUP
MlB	MIXED ALLUVIAL LAND	A
MlC	MIXED ALLUVIAL LAND	A
MlD	MIXED ALLUVIAL LAND	A
MlE	MIXED ALLUVIAL LAND	A
ScA/P	SCANTIC	D
ScB/P	SCANTIC	D
ScC/P	SCANTIC	D
ScD/P	SCANTIC	D
ScE/P	SCANTIC	D
SfA	SUFFIELD	C
SfB	SUFFIELD	C
SfC	SUFFIELD	C
SfD	SUFFIELD	C
SfE	SUFFIELD	C
500B	UDORTHENTS	C
500C	UDORTHENTS	C
500D	UDORTHENTS	C
500E	UDORTHENTS	C

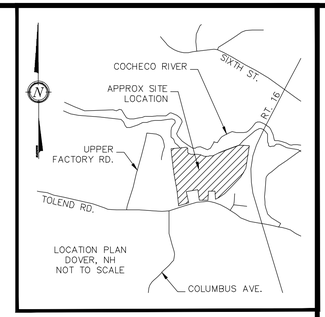
SLOPE: A = 0–3% B = 3–8% C = 8–15% D = 15–25% E = 25–50% F = 50%+

DENOMINATOR: /Rk = ROCKY /VPD = VERY POORLY DRAINED /PD = POORLY DRAINED /SWPD = SOMEWHAT POORLY DRAINED /MWD = MODERATELY WELL DRAINED



LEGEND:

- IRON BOUND (TBS)
- IRON BOUND (FND)
- DRILL HOLE (FND)
- GRANITE BOUND (TBS)
- UTILITY POLE/GUY WIRE
- TEST HOLE
- BENCHMARK
- STONE WALL
- WETLAND LINE
- 50' WETLAND BUFFER
- OHU — OVERHEAD UTILITIES LINE
- 276 — EXISTING CONTOUR MINOR
- 275 — EXISTING CONTOUR MAJOR
- SOIL LINE
- LIMIT OF SOIL SURVEY
- 448A — SOIL SERIES
- S.C.R.D. — STRAFFORD COUNTY REGISTRY OF DEEDS
- TYP. — TYPICAL
- FND — FOUND
- TBA — TO BE ABANDONED



NOTES:

1.) OWNER LOT 65–1: D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY
245 N BEND DRIVE
MANCHESTER, NH 03104

OWNER LOT 65–A: EUGENE A. & DONNA L. SGRIGNUOLI
22 SUN HAWK LANE
DOVER, NH 03820

1A.) APPLICANT: STONEARCH DEVELOPMENT CORP.
42J DOVER POINT ROAD
DOVER, NH 03820

2.) LOT OF RECORD: TAX MAP E, LOT 65–1
TAX MAP E, LOT 65–A

3.) LOT AREA LOT 65–1: 1,388,409 Sq. Ft., 31.87 Ac. +/–
LOT AREA LOT 65–A: 544,070 Sq. Ft., 12.49 Ac. +/–

4.) S.C.R.D. BOOK 4918, PAGE 158
S.C.R.D. BOOK 1571, PAGE 86

5.) I HEREBY CERTIFY THAT, TO THE BEST OF MY KNOWLEDGE & BELIEF, A PORTION OF THIS PARCEL DOES FALL WITHIN THE FLOOD PLAIN FLOOD HAZARD. REF.: FEMA COMMUNITY #330145, MAP #33017C0310E, DATED: SEPTEMBER 30, 2015.

6.) VERTICAL DATUM BASED ON NAVD88 ELEVATIONS. HORIZONTAL COORDINATES BASED ON NAD83. COORDINATES GATHERED USING TOPCON HIPER SR SURVEY GRADE GPS RECEIVERS.

7.) THE BOUNDARY LINES SHOWN ON THIS PLAN ARE THE RESULT OF A CLOSED TRAVERSE PERFORMED BY THIS OFFICE IN WINTER OF 2021, WITH A BETTER ERROR OF CLOSURE OF 1 PART IN 10,000.

8.) THE INTENT OF THIS PLAN IS TO SHOW THE SITE SPECIFIC SOIL SURVEY OF TAX MAP E, LOT 65–1 AND LOT 65–A AS OF THE DATE OF THE SURVEY (WINTER 2020)..

STATE OF NEW HAMPSHIRE — JOHN P. HAYES, III — CERTIFIED WETLAND SCIENTIST — MAR 18

JOHN P. HAYES III, CWS #18

STATE OF NEW HAMPSHIRE — JOHN P. HAYES III — LICENSED LAND SURVEYOR — 867

JOHN P. HAYES III, CSS #87

GRAPHIC SCALE

150 0 75 150 300 600

(IN FEET)
1 inch = 150 ft.

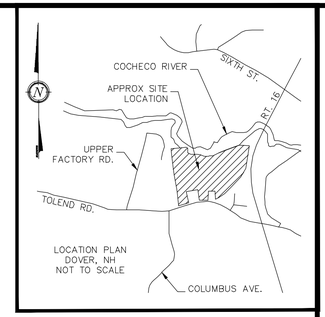
REVISION	DATE	DESCRIPTION

OVERVIEW SITE SPECIFIC SOILS MAP
LAND OF
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY &
EUGENE A. & DONNA L. SGRIGNUOLI
TOLEND ROAD
DOVER, N.H.
TAX MAP E, LOT 65–1 & 65–A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332–2863

SCALE : 1 IN. EQUALS 150 FT.
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 – 107

STATE OF NEW HAMPSHIRE — KENNETH A. BERRY No. 19641 LICENSED PROFESSIONAL ENGINEER



NOTES:

1.) OWNER LOT 65–1: D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY
245 N BEND DRIVE
MANCHESTER, NH 03104

OWNER LOT 65–A: EUGENE A. & DONNA L. SGRIGNUOLI
22 SUN HAWK LANE
DOVER, NH 03820

1A.) APPLICANT: STONEARCH DEVELOPMENT CORP.
42J DOVER POINT ROAD
DOVER, NH 03820

2.) LOT OF RECORD: TAX MAP E, LOT 65–1
TAX MAP E, LOT 65–A

3.) LOT AREA LOT 65–1: 1,388,409 Sq. Ft., 31.87 Ac. +/–
LOT AREA LOT 65–A: 544,070 Sq. Ft., 12.49 Ac. +/–

4.) S.C.R.D. BOOK 4918, PAGE 158
S.C.R.D. BOOK 1571, PAGE 86

5.) I HEREBY CERTIFY THAT, TO THE BEST OF MY KNOWLEDGE & BELIEF, A PORTION OF THIS PARCEL DOES FALL WITHIN THE FLOOD PLAIN FLOOD HAZARD. REF.: FEMA COMMUNITY #330145, MAP #33017C0310E, DATED: SEPTEMBER 30, 2015.

6.) VERTICAL DATUM BASED ON NAVD88 ELEVATIONS. HORIZONTAL COORDINATES BASED ON NAD83. COORDINATES GATHERED USING TOPCON HIPER SR SURVEY GRADE GPS RECEIVERS.

7.) THE BOUNDARY LINES SHOWN ON THIS PLAN ARE THE RESULT OF A CLOSED TRAVERSE PERFORMED BY THIS OFFICE IN WINTER OF 2021, WITH A BETTER ERROR OF CLOSURE OF 1 PART IN 10,000.

8.) THE INTENT OF THIS PLAN IS TO SHOW THE SITE SPECIFIC SOIL SURVEY OF TAX MAP E, LOT 65–1 AND LOT 65–A AS OF THE DATE OF THE SURVEY (WINTER 2020)..

LEGEND:

- IRON BOUND (TBS)
- IRON BOUND (FND)
- DRILL HOLE (FND)
- GRANITE BOUND (TBS)
- UTILITY POLE/GUY WIRE
- TEST HOLE
- BENCHMARK

- STONE WALL
- WETLAND LINE
- 50' WETLAND BUFFER
- OVERHEAD UTILITIES LINE
- EXISTING CONTOUR MINOR
- EXISTING CONTOUR MAJOR
- SOIL LINE
- LIMIT OF SOIL SURVEY

448A SOIL SERIES
S.C.R.D. STRAFFORD COUNTY REGISTRY OF DEEDS
TYP. TYPICAL
FND FOUND
TBA TO BE ABANDONED

JOHN P. HAYES III, CWS #18

JOHN P. HAYES III, CSS #87

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

REVISION	DATE	DESCRIPTION

SITE SPECIFIC SOILS MAP – SOUTHWEST
LAND OF
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY &
EUGENE A. & DONNA L. SGRIGNUOLI
TOLEND ROAD
DOVER, N.H.
TAX MAP E, LOT 65–1 & 65–A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332–2863

SCALE : 1 IN. EQUALS 50 FT.
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 – 107

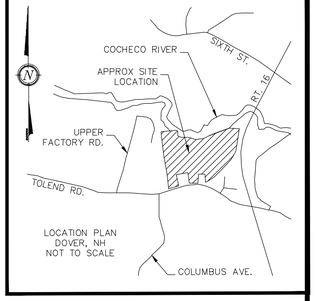
KENNETH A. BERRY No. 14242 LICENSED PROFESSIONAL ENGINEER – STATE OF NEW HAMPSHIRE

LEGEND:

- IRON BOUND (TBS)
- IRON BOUND (FND)
- DRILL HOLE (FND)
- GRANITE BOUND (TBS)
- UTILITY POLE/GUY WIRE
- TEST HOLE
- BENCHMARK

- STONE WALL
- WETLAND LINE
- 50' WETLAND BUFFER
- OVERHEAD UTILITIES LINE
- EXISTING CONTOUR MINOR
- EXISTING CONTOUR MAJOR
- SOIL LINE
- LIMIT OF SOIL SURVEY

448A SOIL SERIES
S.C.R.D. STRAFFORD COUNTY REGISTRY OF DEEDS
TYP. TYPICAL
FND FOUND
TBA TO BE ABANDONED



NOTES:

1.) OWNER LOT 65–1: D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY
245 N BEND DRIVE
MANCHESTER, NH 03104

OWNER LOT 65–A: EUGENE A. & DONNA L. SGRIGNUOLI
22 SUN HAWK LANE
DOVER, NH 03820

1A.) APPLICANT: STONEARCH DEVELOPMENT CORP.
42J DOVER POINT ROAD
DOVER, NH 03820

2.) LOT OF RECORD: TAX MAP E, LOT 65–1
TAX MAP E, LOT 65–A

3.) LOT AREA LOT 65–1: 1,388,409 Sq. Ft., 31.87 Ac. +/–
LOT AREA LOT 65–A: 544,070 Sq. Ft., 12.49 Ac. +/–

4.) S.C.R.D. BOOK 4918, PAGE 158
S.C.R.D. BOOK 1571, PAGE 86

5.) I HEREBY CERTIFY THAT, TO THE BEST OF MY KNOWLEDGE & BELIEF, A PORTION OF THIS PARCEL DOES FALL WITHIN THE FLOOD PLAIN FLOOD HAZARD. REF.: FEMA COMMUNITY #330145, MAP #33017C0310E, DATED: SEPTEMBER 30, 2015.

6.) VERTICAL DATUM BASED ON NAVD88 ELEVATIONS. HORIZONTAL COORDINATES BASED ON NAD83. COORDINATES GATHERED USING TOPCON HIPER SR SURVEY GRADE GPS RECEIVERS.

7.) THE BOUNDARY LINES SHOWN ON THIS PLAN ARE THE RESULT OF A CLOSED TRAVERSE PERFORMED BY THIS OFFICE IN WINTER OF 2021, WITH A BETTER ERROR OF CLOSURE OF 1 PART IN 10,000.

8.) THE INTENT OF THIS PLAN IS TO SHOW THE SITE SPECIFIC SOIL SURVEY OF TAX MAP E, LOT 65–1 AND LOT 65–A AS OF THE DATE OF THE SURVEY (WINTER 2020)..

STATE OF NEW HAMPSHIRE · JOHN P. HAYES, III · CERTIFIED WETLAND SCIENTIST · NO. 18
JOHN P. HAYES III, CWS #18

STATE OF NEW HAMPSHIRE · JOHN P. HAYES III · NO. 087 · LICENSED LAND SURVEYOR
JOHN P. HAYES III, CSS #87

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

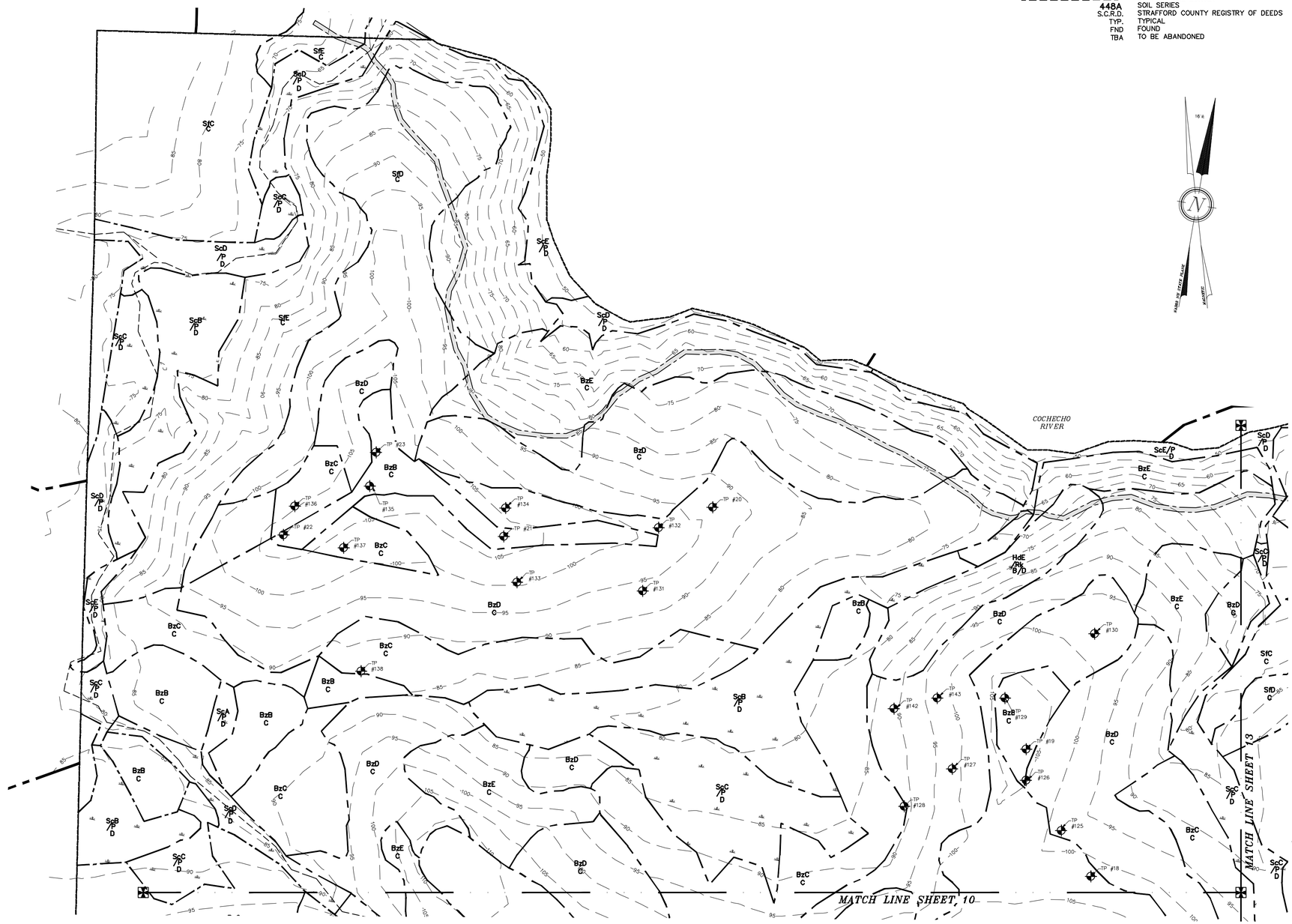
REVISION	DATE	DESCRIPTION

SITE SPECIFIC SOILS MAP – SOUTHEAST
LAND OF
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY &
EUGENE A. & DONNA L. SGRIGNUOLI
TOLEND ROAD
DOVER, N.H.
TAX MAP E, LOT 65–1 & 65–A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332–2863

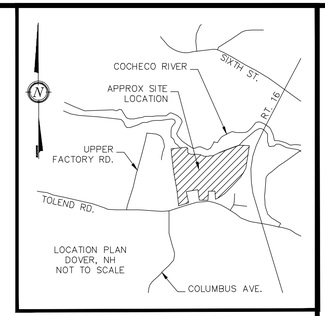
SCALE : 1 IN. EQUALS 50 FT.
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 – 107

STATE OF NEW HAMPSHIRE · KENNETH A. BERRY · NO. 9447 · LICENSED PROFESSIONAL ENGINEER



LEGEND:

- IRON BOUND (TBS)
- IRON BOUND (FND)
- DRILL HOLE (FND)
- GRANITE BOUND (TBS)
- UTILITY POLE/GUY WIRE
- TEST HOLE
- BENCHMARK
- STONE WALL
- WETLAND LINE
- 50' WETLAND BUFFER
- OHU — OVERHEAD UTILITIES LINE
- 276 — EXISTING CONTOUR MINOR
- 275 — EXISTING CONTOUR MAJOR
- SOIL LINE
- LIMIT OF SOIL SURVEY
- 44BA — SOIL SERIES
- S.C.R.D. — STRAFFORD COUNTY REGISTRY OF DEEDS
- TYP. — TYPICAL
- FND — FOUND
- TBA — TO BE ABANDONED



LOCATION PLAN
DOVER, NH
NOT TO SCALE

NOTES:

1.) OWNER LOT 65–1: D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY
245 N BEND DRIVE
MANCHESTER, NH 03104

OWNER LOT 65–A: EUGENE A. & DONNA L. SGRIGNUOLI
22 SUN HAWK LANE
DOVER, NH 03820

1A.) APPLICANT: STONEARCH DEVELOPMENT CORP.
42J DOVER POINT ROAD
DOVER, NH 03820

2.) LOT OF RECORD: TAX MAP E, LOT 65–1
TAX MAP E, LOT 65–A

3.) LOT AREA LOT 65–1: 1,388,409 Sq. Ft., 31.87 Ac. +/–
LOT AREA LOT 65–A: 544,070 Sq. Ft., 12.49 Ac. +/–

4.) S.C.R.D. BOOK 4918, PAGE 158
S.C.R.D. BOOK 1571, PAGE 86

5.) I HEREBY CERTIFY THAT, TO THE BEST OF MY KNOWLEDGE & BELIEF, A PORTION OF THIS PARCEL DOES FALL WITHIN THE FLOOD PLAIN FLOOD HAZARD, REF.: FEMA COMMUNITY #330145, MAP #33017C0310E, DATED: SEPTEMBER 30, 2015.

6.) VERTICAL DATUM BASED ON NAVD88 ELEVATIONS. HORIZONTAL COORDINATES BASED ON NAD83. COORDINATES GATHERED USING TOPCON HIPER SR SURVEY GRADE GPS RECEIVERS.

7.) THE BOUNDARY LINES SHOWN ON THIS PLAN ARE THE RESULT OF A CLOSED TRAVERSE PERFORMED BY THIS OFFICE IN WINTER OF 2021, WITH A BETTER ERROR OF CLOSURE OF 1 PART IN 10,000.

8.) THE INTENT OF THIS PLAN IS TO SHOW THE SITE SPECIFIC SOIL SURVEY OF TAX MAP E, LOT 65–1 AND LOT 65–A AS OF THE DATE OF THE SURVEY (WINTER 2020)..

JOHN P. HAYES III, CWS #18

JOHN P. HAYES III, CSS #87

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

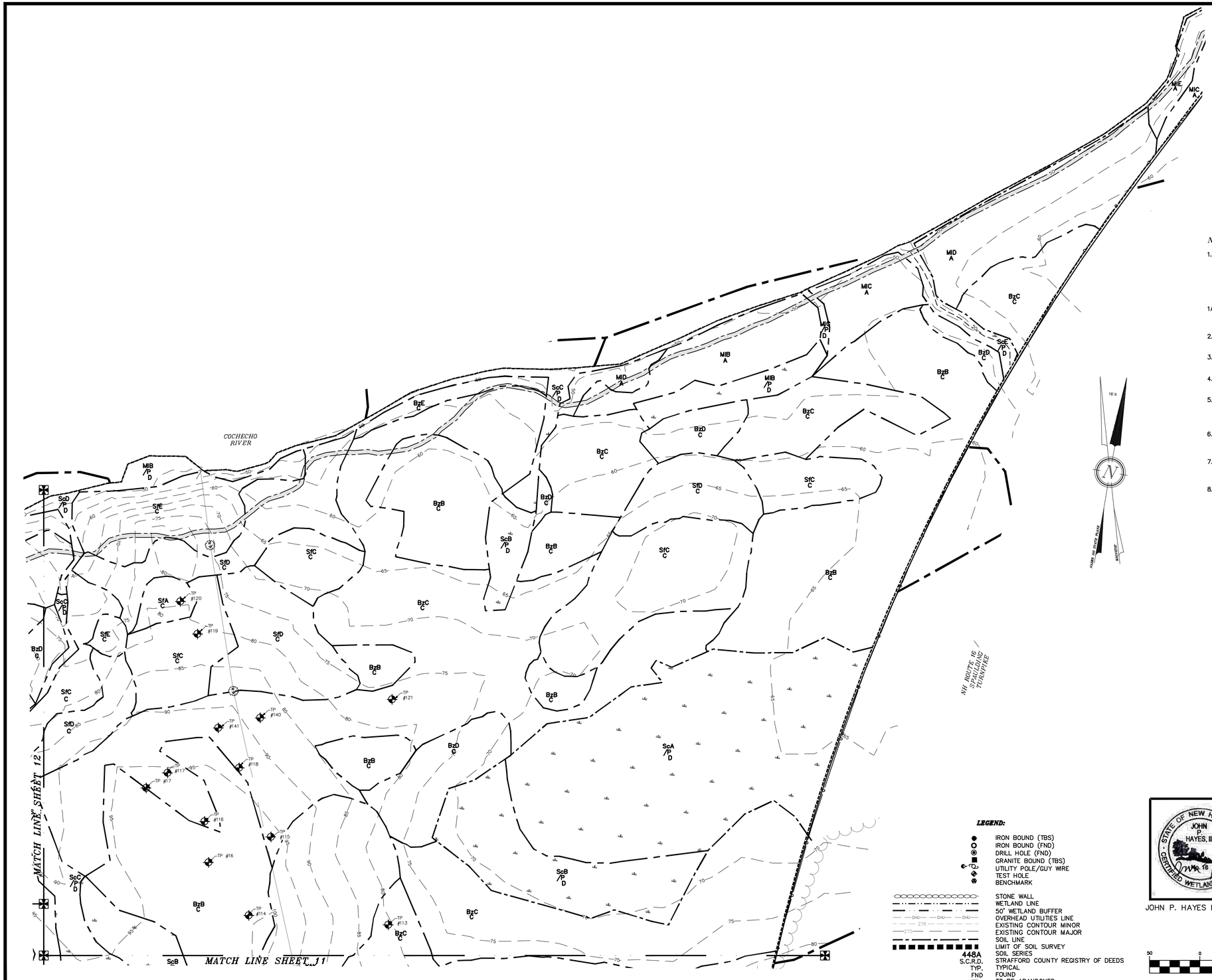
REVISION	DATE	DESCRIPTION

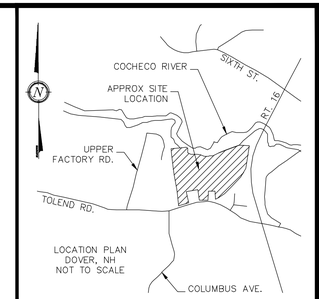
SITE SPECIFIC SOILS MAP – NORTHWEST
LAND OF
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY &
EUGENE A. & DONNA L. SGRIGNUOLI
TOLEND ROAD
DOVER, N.H.
TAX MAP E, LOT 65–1 & 65–A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332–2863

SCALE : 1 IN. EQUALS 50 FT.
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 – 107

KENNETH A. BERRY No. 10676 LICENSED PROFESSIONAL ENGINEER – STATE OF NEW HAMPSHIRE





NOTES:

1.) OWNER LOT 65–1: D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY
245 N BEND DRIVE
MANCHESTER, NH 03104

OWNER LOT 65–A: EUGENE A. & DONNA L. SGRIGNUOLI
22 SUN HAWK LANE
DOVER, NH 03820

1A.) APPLICANT: STONEARCH DEVELOPMENT CORP.
42J DOVER POINT ROAD
DOVER, NH 03820

2.) LOT OF RECORD: TAX MAP E, LOT 65–1
TAX MAP E, LOT 65–A

3.) LOT AREA LOT 65–1: 1,388,409 Sq. Ft., 31.87 Ac. +/–
LOT AREA LOT 65–A: 544,070 Sq. Ft., 12.49 Ac. +/–

4.) S.C.R.D. BOOK 4918, PAGE 158
S.C.R.D. BOOK 1571, PAGE 86

5.) I HEREBY CERTIFY THAT, TO THE BEST OF MY KNOWLEDGE & BELIEF, A PORTION OF THIS PARCEL DOES FALL WITHIN THE FLOOD PLAIN FLOOD HAZARD. REF.: FEMA COMMUNITY #330145, MAP #33017C0310E, DATED: SEPTEMBER 30, 2015.

6.) VERTICAL DATUM BASED ON NAVD88 ELEVATIONS. HORIZONTAL COORDINATES BASED ON NAD83. COORDINATES GATHERED USING TOPCON HIPER SR SURVEY GRADE GPS RECEIVERS.

7.) THE BOUNDARY LINES SHOWN ON THIS PLAN ARE THE RESULT OF A CLOSED TRAVERSE PERFORMED BY THIS OFFICE IN WINTER OF 2021, WITH A BETTER ERROR OF CLOSURE OF 1 PART IN 10,000.

8.) THE INTENT OF THIS PLAN IS TO SHOW THE SITE SPECIFIC SOIL SURVEY OF TAX MAP E, LOT 65–1 AND LOT 65–A AS OF THE DATE OF THE SURVEY (WINTER 2020)..

LEGEND:

- IRON BOUND (TBS)
- IRON BOUND (FND)
- DRILL HOLE (FND)
- GRANITE BOUND (TBS)
- UTILITY POLE/GUY WIRE
- TEST HOLE
- BENCHMARK
- STONE WALL
- WETLAND LINE
- 50' WETLAND BUFFER
- OVERHEAD UTILITIES LINE
- EXISTING CONTOUR MINOR
- EXISTING CONTOUR MAJOR
- SOIL LINE
- LIMIT OF SOIL SURVEY
- 448A SOIL SERIES
- S.C.R.D. STRAFFORD COUNTY REGISTRY OF DEEDS
- TYP. TYPICAL
- FND FOUND
- TBA TO BE ABANDONED

JOHN P. HAYES III, CWS #18

JOHN P. HAYES III, CSS #87

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

REVISION	DATE	DESCRIPTION

SITE SPECIFIC SOILS MAP – NORTHEAST
LAND OF
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY &
EUGENE A. & DONNA L. SGRIGNUOLI
TOLEND ROAD
DOVER, N.H.
TAX MAP E, LOT 65–1 & 65–A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332–2863

SCALE : 1 IN. EQUALS 50 FT.
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 – 107

KENNETH A. BERRY No. 14245 LICENSED PROFESSIONAL ENGINEER

TEST PIT DATA:

TEST PIT #1
0–7 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
7–14 10YR 4/6 DARK YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
14–20 2.5Y 5/4 LIGHT OLIVE BROWN, GRAVELLY FINE SANDY LOAM, GRANULAR, FRIABLE
20–42 2.5Y 5/2 GRAYISH BROWN, GRAVELLY FINE SANDY LOAM WITH REDOX. FEAT. PRESENT, MASSIVE, FRIABLE
E.S.H.W.T. @ 20"
RESTRICTIVE LAYER @ N/A
GROUND WATER @ N/A
TERMINATED @ 42"
REFUSAL @ 42"

TEST PIT #2
0–7 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
7–18 10YR 4/4 DARK YELLOWISH BROWN, GRAVELLY FINE SANDY LOAM, GRANULAR, FRIABLE
18–24 10YR 4/6 DARK YELLOWISH BROWN, GRAVELLY FINE SANDY LOAM, MASSIVE, FRIABLE
E.S.H.W.T. @ N/A
RESTRICTIVE LAYER @ N/A
GROUND WATER @ N/A
TERMINATED @ 24"
REFUSAL @ 24"

TEST PIT #3
0–7 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
7–18 10YR 4/4 DARK YELLOWISH BROWN, GRAVELLY FINE SANDY LOAM, GRANULAR, FRIABLE
18–24 10YR 4/6 DARK YELLOWISH BROWN, GRAVELLY FINE SANDY LOAM, MASSIVE, FRIABLE
E.S.H.W.T. @ N/A
RESTRICTIVE LAYER @ N/A
GROUND WATER @ N/A
TERMINATED @ 24"
REFUSAL @ 24"

TEST PIT #4
0–4 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
4–14 10YR 5/6 YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
14–30 2.5Y 5/4 LIGHT OLIVE BROWN, GRAVELLY FINE SANDY LOAM, GRANULAR, FRIABLE
30–62 2.5Y 5/2 GRAYISH BROWN, GRAVELLY FINE SANDY LOAM WITH REDOX. FEAT. PRESENT, MASSIVE, FRIABLE
E.S.H.W.T. @ 30"
RESTRICTIVE LAYER @ N/A
GROUND WATER @ N/A
TERMINATED @ 62"
REFUSAL @ N/A

TEST PIT #5
E.S.H.W.T. @ N/A
RESTRICTIVE LAYER @ N/A
GROUND WATER @ N/A
TERMINATED < 20"
REFUSAL < 20"

TEST PIT #6
E.S.H.W.T. @ N/A
RESTRICTIVE LAYER @ N/A
GROUND WATER @ N/A
TERMINATED < 20"
REFUSAL < 20"

TEST PIT #7
0–9 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
9–18 10YR 5/6 YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
18–28 2.5Y 5/4 LIGHT OLIVE BROWN, GRAVELLY FINE SANDY LOAM, GRANULAR, FRIABLE
28–38 2.5Y 5/2 GRAYISH BROWN, GRAVELLY FINE SANDY LOAM WITH REDOX. FEAT. PRESENT, MASSIVE, FRIABLE
38–64 2.5Y 5/2 GRAYISH BROWN, LOAMY SAND WITH REDOX. FEAT. PRESENT, MASSIVE, FRIABLE
E.S.H.W.T. @ 28"
RESTRICTIVE LAYER @ N/A
GROUND WATER @ N/A
TERMINATED @ 64"
REFUSAL @ N/A

TEST PIT #8
0–4 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
4–18 10YR 4/6 DARK YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
18–26 2.5Y 5/4 LIGHT OLIVE BROWN, GRAVELLY FINE SANDY LOAM, GRANULAR, FRIABLE
26–60 2.5Y 5/2 GRAYISH BROWN, GRAVELLY FINE SANDY LOAM WITH REDOX. FEAT. PRESENT, MASSIVE, FRIABLE
E.S.H.W.T. @ 26"
RESTRICTIVE LAYER @ N/A
GROUND WATER @ N/A
TERMINATED @ 60"
REFUSAL @ N/A

TEST PIT #9
0–8 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
8–22 10YR 4/4 DARK YELLOWISH BROWN, SILT LOAM, GRANULAR, FRIABLE
22–38 5Y 5/3 OLIVE, SILTY CLAY LOAM WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
38–60 5Y 4/2 OLIVE GRAY, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 22"
RESTRICTIVE LAYER @ 22"
GROUND WATER @ N/A
TERMINATED @ 60"
REFUSAL @ N/A

TEST PIT #10
0–8 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
8–20 10YR 5/6 YELLOWISH BROWN, GRAVELLY FINE SANDY LOAM, GRANULAR, FRIABLE
20–34 10YR 4/6 DARK YELLOWISH BROWN, GRAVELLY FINE SANDY LOAM, MASSIVE, FRIABLE
34–65 2.5Y 5/2 GRAYISH BROWN, GRAVELLY FINE SANDY LOAM WITH REDOX. FEAT. PRESENT, MASSIVE, FRIABLE
E.S.H.W.T. @ 34"
RESTRICTIVE LAYER @ N/A
GROUND WATER @ N/A
TERMINATED @ 65"
REFUSAL @ N/A

TEST PIT #11
0–8 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
8–16 10YR 4/4 DARK YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
16–24 10YR 4/4 DARK YELLOWISH BROWN, SILT LOAM, GRANULAR, FRIABLE
24–60 5Y 5/3 OLIVE, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 24"
RESTRICTIVE LAYER @ 24"
GROUND WATER @ N/A
TERMINATED @ 60"
REFUSAL @ N/A

TEST PIT #12
0–8 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
8–14 10YR 4/4 DARK YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
14–18 10YR 4/4 DARK YELLOWISH BROWN, SILT LOAM, GRANULAR, FRIABLE
18–60 5Y 5/3 OLIVE, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 18"
RESTRICTIVE LAYER @ 18"
GROUND WATER @ N/A
TERMINATED @ 60"
REFUSAL @ N/A

TEST PIT DATA:

TEST PIT #13
0–8 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
8–14 10YR 4/4 DARK YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
14–24 10YR 4/4 DARK YELLOWISH BROWN, SILT LOAM, GRANULAR, FRIABLE
24–38 5Y 5/3 OLIVE, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
38–60 5Y 4/2 OLIVE GRAY, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 24"
RESTRICTIVE LAYER @ 24"
GROUND WATER @ N/A
TERMINATED @ 60"
REFUSAL @ N/A

TEST PIT #14
0–8 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
8–16 10YR 4/4 DARK YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
16–24 10YR 4/4 DARK YELLOWISH BROWN, SILT LOAM, GRANULAR, FRIABLE
24–36 5Y 5/3 OLIVE, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
36–64 5Y 4/2 OLIVE GRAY, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 24"
RESTRICTIVE LAYER @ 24"
GROUND WATER @ N/A
TERMINATED @ 64"
REFUSAL @ N/A

TEST PIT #15
0–8 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
8–16 2.5Y 5/4 LIGHT OLIVE BROWN, SILT LOAM, GRANULAR, FRIABLE
16–28 5Y 5/3 OLIVE, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
28–60 5Y 4/2 OLIVE GRAY, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 16"
RESTRICTIVE LAYER @ 16"
GROUND WATER @ N/A
TERMINATED @ 60"
REFUSAL @ N/A

TEST PIT #16
0–8 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
8–16 10YR 4/4 DARK YELLOWISH BROWN, SILT LOAM, GRANULAR, FRIABLE
16–24 5Y 5/3 OLIVE, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
24–64 5Y 4/2 OLIVE GRAY, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 16"
RESTRICTIVE LAYER @ 16"
GROUND WATER @ N/A
TERMINATED @ 64"
REFUSAL @ N/A

TEST PIT #17
0–8 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
8–16 2.5Y 5/4 LIGHT OLIVE BROWN, SILT LOAM, GRANULAR, FRIABLE
16–26 5Y 5/3 OLIVE, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
26–60 5Y 4/2 OLIVE GRAY, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 16"
RESTRICTIVE LAYER @ 16"
GROUND WATER @ N/A
TERMINATED @ 60"
REFUSAL @ N/A

TEST PIT #18
0–8 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
8–16 10YR 4/4 DARK YELLOWISH BROWN, SILT LOAM, GRANULAR, FRIABLE
16–24 5Y 5/3 OLIVE, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
24–64 5Y 4/2 OLIVE GRAY, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 16"
RESTRICTIVE LAYER @ 16"
GROUND WATER @ N/A
TERMINATED @ 64"
REFUSAL @ N/A

TEST PIT #19
0–6 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
6–12 10YR 4/6 DARK YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
12–18 2.5Y 5/4 LIGHT OLIVE BROWN, SILT LOAM, GRANULAR, FRIABLE
18–30 5Y 5/3 OLIVE, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
30–62 5Y 4/2 OLIVE GRAY, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 18"
RESTRICTIVE LAYER @ 18"
GROUND WATER @ N/A
TERMINATED @ 62"
REFUSAL @ N/A

TEST PIT #20
0–8 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
8–20 2.5Y 5/4 LIGHT OLIVE BROWN, SILT LOAM, GRANULAR, FRIABLE
20–28 5Y 5/3 OLIVE, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
28–60 5Y 4/2 OLIVE GRAY, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 20"
RESTRICTIVE LAYER @ 16"
GROUND WATER @ N/A
TERMINATED @ 60"
REFUSAL @ N/A

TEST PIT #21
0–8 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
8–18 2.5Y 5/4 LIGHT OLIVE BROWN, SILT LOAM, GRANULAR, FRIABLE
18–28 2.5Y 5/3 LIGHT OLIVE BROWN, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
28–62 5Y 5/3 LIGHT OLIVE BROWN, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 18"
RESTRICTIVE LAYER @ 18"
GROUND WATER @ N/A
TERMINATED @ 62"
REFUSAL @ N/A

TEST PIT #22
0–8 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
8–18 2.5Y 5/4 LIGHT OLIVE BROWN, SILT LOAM, GRANULAR, FRIABLE
18–28 2.5Y 5/3 LIGHT OLIVE BROWN, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
28–60 5Y 4/2 OLIVE GRAY, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 18"
RESTRICTIVE LAYER @ 18"
GROUND WATER @ N/A
TERMINATED @ 60"
REFUSAL @ N/A

TEST PIT #23
0–8 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
8–18 2.5Y 5/4 LIGHT OLIVE BROWN, SILT LOAM, GRANULAR, FRIABLE
18–28 2.5Y 5/3 LIGHT OLIVE BROWN, SILTY CLAY LOAM WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
28–62 5Y 4/2 OLIVE GRAY, SILTY CLAY LOAM WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 18"
RESTRICTIVE LAYER @ 18"
GROUND WATER @ N/A
TERMINATED @ 62"
REFUSAL @ N/A

TEST PIT DATA:

TEST PIT #24
0–8 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
8–14 10YR 4/4 DARK YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
14–18 10YR 4/4 DARK YELLOWISH BROWN, SILT LOAM, GRANULAR, FRIABLE
18–60 5Y 5/3 OLIVE, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 18"
RESTRICTIVE LAYER @ 18"
GROUND WATER @ N/A
TERMINATED @ 60"
REFUSAL @ N/A

TEST PIT #25
0–8 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
8–18 2.5Y 5/4 LIGHT OLIVE BROWN, SILT LOAM, GRANULAR, FRIABLE
18–28 2.5Y 5/3 LIGHT OLIVE BROWN, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
28–64 5Y 5/3 LIGHT OLIVE BROWN, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 18"
RESTRICTIVE LAYER @ 18"
GROUND WATER @ N/A
TERMINATED @ 64"
REFUSAL @ N/A

TEST PIT #26
0–6 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
6–18 10YR 4/6 DARK YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
18–24 2.5Y 5/4 LIGHT OLIVE BROWN, GRAVELLY FINE SANDY LOAM, GRANULAR, FRIABLE
24–64 2.5Y 5/2 GRAYISH BROWN, LOAMY FINE SAND WITH REDOX. FEAT. PRESENT, MASSIVE, FRIABLE
E.S.H.W.T. @ 24"
RESTRICTIVE LAYER @ N/A
GROUND WATER @ N/A
TERMINATED @ 64"
REFUSAL @ N/A

TEST PIT #27
0–8 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
8–24 10YR 4/6 LIGHT OLIVE BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
24–32 2.5Y 5/4 LIGHT OLIVE BROWN, GRAVELLY FINE SANDY LOAM, GRANULAR, FRIABLE
32–64 5Y 5/3 OLIVE, SILTY CLAY LOAM WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 32"
RESTRICTIVE LAYER @ 32"
GROUND WATER @ N/A
TERMINATED @ 64"
REFUSAL @ N/A

REVISION	DATE	DESCRIPTION

TEST PITS
LAND OF
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY &
EUGENE A. & DONNA L. SGTIGNOULI
TOLEND ROAD
DOVER, N.H.
TAX MAP E, LOT 65-1 & 65-4

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332–2863

DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 – 107

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 7045
LICENSED
PROFESSIONAL ENGINEER

TEST PIT DATA:

TEST PIT #100
0–8 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
8–14 10YR 4/6 DARK YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
14–34 2.5Y 5/4 LIGHT OLIVE BROWN, GRAVELLY FINE SANDY LOAM, GRANULAR, FRIABLE
E.S.H.W.T. @ N/A
RESTRICTIVE LAYER @ N/A
GROUND WATER @ N/A
TERMINATED @ 34"
REFUSAL @ 34"

TEST PIT #101
0–3 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
3–14 10YR 4/4 DARK YELLOWISH BROWN, GRAVELLY FINE SANDY LOAM, GRANULAR, FRIABLE
14–30 2.5Y 5/4 LIGHT OLIVE BROWN, SILT LOAM, BLOCKY, FRIABLE
30–60 2.5Y 5/2 GRAYISH BROWN, GRAVELLY FINE SANDY LOAM WITH REDOX. FEAT. PRESENT, GRANULAR, FRIABLE
E.S.H.W.T. @ 30"
RESTRICTIVE LAYER @ N/A
GROUND WATER @ N/A
TERMINATED @ 60"
REFUSAL @ 60"

TEST PIT #102
0–6 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
6–18 10YR 4/4 DARK YELLOWISH BROWN, GRAVELLY FINE SANDY LOAM, GRANULAR, FRIABLE
18–30 2.5Y 5/4 LIGHT OLIVE BROWN, GRAVELLY FINE SANDY LOAM, MASSIVE, FRIABLE
30–48 2.5Y 5/2 GRAYISH BROWN, GRAVELLY FINE SANDY LOAM WITH REDOX. FEAT. PRESENT, MASSIVE, FRIABLE
E.S.H.W.T. @ N/A
RESTRICTIVE LAYER @ N/A
GROUND WATER @ N/A
TERMINATED @ 48"
REFUSAL @ 48"

TEST PIT #103
0–3 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
3–16 10YR 4/6 DARK YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
16–30 2.5Y 5/4 LIGHT OLIVE BROWN, VERY FINE SANDY LOAM, MASSIVE, FRIABLE
30–58 2.5Y 5/2 GRAYISH BROWN, GRAVELLY FINE SANDY LOAM WITH REDOX. FEAT. PRESENT, MASSIVE, FRIABLE
E.S.H.W.T. @ 30"
RESTRICTIVE LAYER @ N/A
GROUND WATER @ N/A
TERMINATED @ 58"
REFUSAL @ N/A

TEST PIT #104
0–7 10YR 3/2 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
7–18 10YR 4/4 DARK YELLOWISH BROWN, SILT LOAM, GRANULAR, FRIABLE
18–58 2.5Y 5/3 LIGHT OLIVE BROWN, SILTY CLAY LOAM WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 18"
RESTRICTIVE LAYER @ 18"
GROUND WATER @ 50"
TERMINATED 58"
REFUSAL @ N/A

TEST PIT #105
0–7 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
7–16 10YR 4/4 DARK YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
16–32 10YR 4/4 DARK YELLOWISH BROWN, SILT LOAM, BLOCKY, FRIABLE
32–72 2.5Y 5/3 LIGHT OLIVE BROWN, SILTY CLAY LOAM WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 32"
RESTRICTIVE LAYER @ 32"
GROUND WATER @ N/A
TERMINATED @ 72"
REFUSAL @ 72"

TEST PIT #106
0–7 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
7–18 10YR 4/4 DARK YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
18–50 2.5Y 5/3 LIGHT OLIVE BROWN, SILTY CLAY LOAM WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
50–96 5Y 5/3 LIGHT OLIVE BROWN, SILTY CLAY LOAM WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 18"
RESTRICTIVE LAYER @ 18"
GROUND WATER @ N/A
TERMINATED @ 96"
REFUSAL @ N/A

TEST PIT #108
0–6 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
6–18 10 YR 4/4 DARK YELLOWISH BROWN, SILT LOAM, BLOCKY, FRIABLE
18–48 2.5Y 5/3 LIGHT OLIVE BROWN, SILTY CLAY LOAM WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
48–60 5Y 5/3 LIGHT OLIVE BROWN, SILTY CLAY LOAM WITH REDOX. FEAT PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 18"
RESTRICTIVE LAYER @ 18"
GROUND WATER @ 32"
TERMINATED @ 60"
REFUSAL @ N/A

TEST PIT #109
0–5 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
5–24 10YR 4/4 DARK YELLOWISH BROWN, SILT LOAM, BLOCKY, FRIABLE
24–45 5Y 5/3 OLIVE, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
45–60 5Y 4/2 OLIVE GRAY, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 24"
RESTRICTIVE LAYER @ 24"
GROUND WATER @ N/A
TERMINATED @ 60"
REFUSAL @ N/A

TEST PIT #110
0–8 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
8–22 10YR 4/4 DARK YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
22–44 5Y 5/3 OLIVE, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
44–60 5Y 4/2 OLIVE GRAY, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 22"
RESTRICTIVE LAYER @ 22"
GROUND WATER @ N/A
TERMINATED @ 60"
REFUSAL @ N/A

TEST PIT #111
0–12 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
12–18 10YR 4/4 DARK YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
18–24 2.5Y 5/4 LIGHT OLIVE BROWN, SILT LOAM, BLOCKY, FRIABLE
24–60 2.5Y 5/3 LIGHT OLIVE BROWN, SILTY CLAY LOAM WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 24"
RESTRICTIVE LAYER @ 24"
GROUND WATER @ N/A
TERMINATED @ 60"
REFUSAL @ N/A

TEST PIT DATA:

TEST PIT #112
0–9 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
9–16 10YR 4/4 DARK YELLOWISH BROWN, SILT LOAM, BLOCKY, FRIABLE
16–45 2.5Y 5/3 LIGHT OLIVE BROWN, SILTY CLAY LOAM WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
44–60 5Y 5/3 LIGHT OLIVE BROWN, SILTY CLAY LOAM WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 16"
RESTRICTIVE LAYER @ 16"
GROUND WATER @ N/A
TERMINATED @ 60"
REFUSAL @ N/A

TEST PIT #113
0–8 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
8–18 10YR 4/4 DARK YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
18–24 10YR 4/4 DARK YELLOWISH BROWN, SILT LOAM, BLOCKY, FRIABLE
24–45 5Y 5/3 OLIVE, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
45–62 5Y 4/2 OLIVE GRAY, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 24"
RESTRICTIVE LAYER @ 24"
GROUND WATER @ N/A
TERMINATED @ 62"
REFUSAL @ N/A

TEST PIT #114
0–8 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
8–18 10YR 4/4 DARK YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
18–24 10YR 4/4 DARK YELLOWISH BROWN, SILT LOAM, BLOCKY, FRIABLE
24–48 5Y 5/3 OLIVE, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
48–85 5Y 4/2 OLIVE GRAY, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 24"
RESTRICTIVE LAYER @ 24"
GROUND WATER @ N/A
TERMINATED @ 85"
REFUSAL @ N/A

TEST PIT #115
0–10 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
10–22 10YR 4/4 DARK YELLOWISH BROWN, FINE SANDY LOAM, BLOCKY, FRIABLE
22–52 5Y 5/3 OLIVE, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
52–84 5Y 4/2 OLIVE GRAY, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 22"
RESTRICTIVE LAYER @ 22"
GROUND WATER @ N/A
TERMINATED @ 84"
REFUSAL @ N/A

TEST PIT #116
0–8 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
8–18 10YR 4/4 DARK YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
18–50 2.5Y 5/3 LIGHT OLIVE BROWN, SILTY CLAY LOAM WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
50–64 5Y 4/2 OLIVE GRAY, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
64–96 2.5Y 6/3 LIGHT YELLOWISH BROWN, SAND WITH REDOX. FEAT. PRESENT, MASSIVE, FRIABLE
E.S.H.W.T. @ 18"
RESTRICTIVE LAYER @ 18"
GROUND WATER @ N/A
TERMINATED @ 96"
REFUSAL @ N/A

TEST PIT #117
0–6 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
6–24 10YR 4/4 DARK YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
24–52 2.5Y 5/3 LIGHT OLIVE BROWN, SILTY CLAY LOAM WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
52–72 5Y 4/2 OLIVE GRAY, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
72–90 2.5Y 6/3 LIGHT YELLOWISH BROWN, SAND WITH REDOX. FEAT. PRESENT, MASSIVE, FRIABLE
E.S.H.W.T. @ 24"
RESTRICTIVE LAYER @ 24"
GROUND WATER @ N/A
TERMINATED @ 90"
REFUSAL @ N/A

TEST PIT #118
0–8 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
8–18 10YR 4/4 DARK YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
18–46 2.5Y 5/3 LIGHT OLIVE BROWN, SILTY CLAY LOAM WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
46–68 5Y 4/2 OLIVE GRAY, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
68–85 2.5Y 6/3 LIGHT YELLOWISH BROWN, SAND WITH REDOX. FEAT. PRESENT, MASSIVE, FRIABLE
E.S.H.W.T. @ 18"
RESTRICTIVE LAYER @ 18"
GROUND WATER @ N/A
TERMINATED @ 85"
REFUSAL @ N/A

TEST PIT #119
0–9 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
9–18 10YR 4/4 DARK YELLOWISH BROWN, SILT LOAM, BLOCKY, FRIABLE
18–45 2.5Y 5/3 LIGHT OLIVE BROWN, SILTY CLAY LOAM WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
44–62 5Y 5/3 LIGHT OLIVE BROWN, SILTY CLAY LOAM WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 18"
RESTRICTIVE LAYER @ 18"
GROUND WATER @ N/A
TERMINATED @ 62"
REFUSAL @ N/A

TEST PIT #120
0–9 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
9–24 10YR 4/4 DARK YELLOWISH BROWN, SILT LOAM, BLOCKY, FRIABLE
24–42 2.5Y 5/3 LIGHT OLIVE BROWN, SILTY CLAY LOAM WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
42–64 5Y 5/3 LIGHT OLIVE BROWN, SILTY CLAY LOAM WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 24"
RESTRICTIVE LAYER @ 24"
GROUND WATER @ N/A
TERMINATED @ 64"
REFUSAL @ N/A

TEST PIT #121
0–6 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
6–18 10YR 4/6 DARK YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
18–44 5Y 5/3 OLIVE, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
44–64 5Y 4/2 OLIVE GRAY, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 18"
RESTRICTIVE LAYER @ 18"
GROUND WATER @ N/A
TERMINATED @ 64"
REFUSAL @ N/A

TEST PIT DATA:

TEST PIT #122
0–6 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
6–16 10YR 4/6 DARK YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
16–22 2.5Y 5/4 LIGHT OLIVE BROWN, SILT LOAM, BLOCKY, FRIABLE
22–32 5Y 5/3 OLIVE, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
32–64 5Y 4/2 OLIVE GRAY, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 22"
RESTRICTIVE LAYER @ 22"
GROUND WATER @ N/A
TERMINATED @ 64"
REFUSAL @ N/A

TEST PIT #123
0–6 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
6–18 10YR 4/6 DARK YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
18–30 2.5Y 5/4 LIGHT OLIVE BROWN, GRAVELLY FINE SANDY LOAM, MASSIVE, FRIABLE
30–40 5Y 5/3 OLIVE, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
40–68 5Y 4/2 OLIVE GRAY, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 30"
RESTRICTIVE LAYER @ 30"
GROUND WATER @ N/A
TERMINATED @ 68"
REFUSAL @ N/A

TEST PIT #124
E.S.H.W.T. @ N/A
RESTRICTIVE LAYER @ N/A
GROUND WATER @ N/A
TERMINATED @ 24"
REFUSAL @ 24"

TEST PIT #124A
0–6 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
6–18 10YR 4/6 DARK YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
18–28 2.5Y 5/4 LIGHT OLIVE BROWN, GRAVELLY FINE SANDY LOAM, MASSIVE, FRIABLE
28–68 2.5Y 5/2 GRAYISH BROWN, GRAVELLY FINE SANDY LOAM WITH REDOX. FEAT. PRESENT, MASSIVE, FRIABLE
E.S.H.W.T. @ 28"
RESTRICTIVE LAYER @ N/A
GROUND WATER @ N/A
TERMINATED @ 68"
REFUSAL @ N/A

TEST PIT #125
0–6 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
6–16 10YR 4/6 DARK YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
16–22 2.5Y 5/4 LIGHT OLIVE BROWN, GRAVELLY FINE SANDY LOAM, MASSIVE, FRIABLE
22–38 5Y 5/3 OLIVE, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
38–90 5Y 4/2 OLIVE GRAY, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 22"
RESTRICTIVE LAYER @ 22"
GROUND WATER @ N/A
TERMINATED @ 90"
REFUSAL @ N/A

TEST PIT #126
0–6 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
6–18 10YR 4/6 DARK YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
18–22 2.5Y 5/4 LIGHT OLIVE BROWN, GRAVELLY FINE SANDY LOAM, MASSIVE, FRIABLE
22–30 5Y 5/3 OLIVE, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
30–90 5Y 4/2 OLIVE GRAY, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 22"
RESTRICTIVE LAYER @ 22"
GROUND WATER @ N/A
TERMINATED @ 90"
REFUSAL @ N/A

TEST PIT #127
0–6 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
6–14 10YR 4/6 DARK YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
14–18 2.5Y 5/4 LIGHT OLIVE BROWN, GRAVELLY FINE SANDY LOAM, GRANULAR, FRIABLE
18–34 5Y 5/3 OLIVE, SILT LOAM WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
34–50 5Y 4/2 OLIVE GRAY, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
50–82 2.5Y 5/3 LIGHT OLIVE BROWN, GRAVELLY FINE SANDY LOAM WITH REDOX. FEAT. PRESENT, GRANULAR, FRIABLE
E.S.H.W.T. @ 18"
RESTRICTIVE LAYER @ 18"
GROUND WATER @ N/A
TERMINATED @ 82"
REFUSAL @ 82"

TEST PIT #128
0–6 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
6–16 10YR 4/6 DARK YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
16–24 2.5Y 5/4 LIGHT OLIVE BROWN, SILT LOAM, BLOCKY, FRIABLE
24–40 5Y 5/3 OLIVE, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
40–82 5Y 4/2 OLIVE GRAY, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 24"
RESTRICTIVE LAYER @ 24"
GROUND WATER @ 40"
TERMINATED @ 82"
REFUSAL @ N/A

TEST PIT #129
0–6 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
6–12 10YR 4/6 DARK YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
12–18 2.5 Y 5/4 LIGHT OLIVE BROWN, SILT LOAM, BLOCKY, FRIABLE
18–30 5Y 5/3 OLIVE, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
30–92 5Y 4/2 OLIVE GRAY, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 18"
RESTRICTIVE LAYER @ 18"
GROUND WATER @ N/A
TERMINATED @ 92"
REFUSAL @ N/A

TEST PIT #130
0–6 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
6–24 10YR 4/6 DARK YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
24–30 5Y 5/3 OLIVE, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
30–60 5Y 4/2 OLIVE GRAY, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 24"
RESTRICTIVE LAYER @ 24"
GROUND WATER @ N/A
TERMINATED @ 60"
REFUSAL @ N/A

TEST PIT #131
0–6 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
6–20 10YR 4/4 DARK YELLOWISH BROWN, SILT LOAM, GRANULAR, FRIABLE
20–48 2.5Y 5/3 LIGHT OLIVE BROWN, SILTY CLAY LOAM WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
48–84 5Y 5/3 LIGHT OLIVE BROWN, SILTY CLAY LOAM WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 20"
RESTRICTIVE LAYER @ 20"
GROUND WATER @ N/A
TERMINATED @ 84"
REFUSAL @ N/A

TEST PIT DATA:

TEST PIT #132
0–6 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
6– 18 10YR 4/4 DARK YELLOWISH BROWN, SILT LOAM, GRANULAR, FRIABLE
18–30 2.5Y 5/3 LIGHT OLIVE BROWN, SILTY CLAY LOAM WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
30–84 5Y 5/3 LIGHT OLIVE BROWN, SILTY CLAY LOAM WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 18"
RESTRICTIVE LAYER @ 18"
GROUND WATER @ N/A
TERMINATED @ 84"
REFUSAL @ N/A

TEST PIT #133
0–6 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
6–18 10YR 4/4 DARK YELLOWISH BROWN, SILT LOAM, GRANULAR, FRIABLE
18–36 2.5Y 5/3 LIGHT OLIVE BROWN, SILTY CLAY LOAM WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
36–90 5Y 5/3 LIGHT OLIVE BROWN, SILTY CLAY LOAM WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 18"
RESTRICTIVE LAYER @ 18"
GROUND WATER @ N/A
TERMINATED @ 90"
REFUSAL @ N/A

TEST PIT #134
0–6 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
6– 18 10YR 4/4 DARK YELLOWISH BROWN, SILT LOAM, GRANULAR, FRIABLE
18–48 2.5Y 5/3 LIGHT OLIVE BROWN, SILTY CLAY LOAM WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
48–96 2.5Y 5/3 LIGHT OLIVE BROWN, STRATIFIED GRAVELLY LOAMY SAND AND SILT LOAM WITH REDOX. FEAT. PRESENT, MASSIVE, FIRM
E.S.H.W.T. @ 18"
RESTRICTIVE LAYER @ 18"
GROUND WATER @ N/A
TERMINATED @ 96"
REFUSAL @ N/A

TEST PIT #135
0–6 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
6–18 10YR 4/6 DARK YELLOWISH BROWN, SILT LOAM, GRANULAR, FRIABLE
18–53 2.5Y 5/3 LIGHT OLIVE BROWN, SILTY CLAY LOAM WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
53–84 2.5Y 5/3 LIGHT OLIVE BROWN, STRATIFIED GRAVELLY LOAMY SAND AND SILT LOAM WITH REDOX. FEAT. PRESENT, MASSIVE, FIRM
E.S.H.W.T. @ 18"
RESTRICTIVE LAYER @ 18"
GROUND WATER @ N/A
TERMINATED @ 84"
REFUSAL @ N/A

TEST PIT #136
0–6 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
6– 20 10YR 4/4 DARK YELLOWISH BROWN, SILT LOAM, GRANULAR, FRIABLE
20–50 2.5Y 5/3 LIGHT OLIVE BROWN, SILTY CLAY LOAM WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
50–85 2.5Y 5/3 LIGHT OLIVE BROWN, STRATIFIED GRAVELLY LOAMY SAND AND SILT LOAM WITH REDOX. FEAT. PRESENT, MASSIVE, FIRM
E.S.H.W.T. @ 20"
RESTRICTIVE LAYER @ 20"
GROUND WATER @ N/A
TERMINATED @ 85"
REFUSAL @ N/A

TEST PIT #137
0–6 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
6–18 10YR 4/6 DARK YELLOWISH BROWN, SILT LOAM, GRANULAR, FRIABLE
18–53 2.5Y 5/3 LIGHT OLIVE BROWN, SILTY CLAY LOAM WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
53–85 2.5Y 5/3 LIGHT OLIVE BROWN, STRATIFIED GRAVELLY LOAMY SAND AND SILT LOAM WITH REDOX. FEAT. PRESENT, MASSIVE, FIRM
E.S.H.W.T. @ 18"
RESTRICTIVE LAYER @ 18"
GROUND WATER @ N/A
TERMINATED @ 85"
REFUSAL @ N/A

TEST PIT #138
0–8 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
8–16 10YR 4/6 DARK YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
16–22 5Y 5/3 OLIVE, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
22–70 5Y 4/2 OLIVE GRAY, SILTY CLAY WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 22"
RESTRICTIVE LAYER @ 22"
GROUND WATER @ N/A
TERMINATED @ 70"
REFUSAL @ N/A

TEST PIT #139
0–8 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
8–18 10YR 4/6 DARK YELLOWISH BROWN, SILT LOAM, GRANULAR, FRIABLE
18–58 2.5Y 5/3 LIGHT OLIVE BROWN, SILTY CLAY LOAM WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
58–80 2.5Y 5/3 LIGHT OLIVE BROWN, STRATIFIED GRAVELLY LOAMY SAND AND SILT LOAM WITH REDOX. FEAT. PRESENT, MASSIVE, FIRM
E.S.H.W.T. @ 18"
RESTRICTIVE LAYER @ 18"
GROUND WATER @ N/A
TERMINATED @ 80"
REFUSAL @ N/A

TEST PIT #140
0–8 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
8–20 10YR 4/6 DARK YELLOWISH BROWN, SILT LOAM, GRANULAR, FRIABLE
20–70 2.5Y 5/3 LIGHT OLIVE BROWN, SILTY CLAY LOAM WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
70–84 2.5Y 5/3 LIGHT OLIVE BROWN, STRATIFIED GRAVELLY LOAMY SAND AND SILT LOAM WITH REDOX. FEAT. PRESENT, MASSIVE, FIRM
E.S.H.W.T. @ 20"
RESTRICTIVE LAYER @ 20"
GROUND WATER @ N/A
TERMINATED @ 84"
REFUSAL @ N/A

TEST PIT #141
0–8 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
8–22 10YR 4/6 DARK YELLOWISH BROWN, SILT LOAM, GRANULAR, FRIABLE
22–62 2.5Y 5/3 LIGHT OLIVE BROWN, SILTY CLAY LOAM WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
62–82 2.5Y 5/3 LIGHT OLIVE BROWN, STRATIFIED GRAVELLY LOAMY SAND AND SILT LOAM WITH REDOX. FEAT. PRESENT, MASSIVE, FIRM
E.S.H.W.T. @ 22"
RESTRICTIVE LAYER @ 22"
GROUND WATER @ N/A
TERMINATED @ 82"
REFUSAL @ N/A

REVISION	DATE	DESCRIPTION

TEST PITS
LAND OF
D. LUTSK, D. BARNES, T. GEORGE & L. MULCAHY &
EUGENE A. & DONNA L. SGTIGNOULI
TOLEND ROAD
DOVER, N.H.
TAX MAP 8, LOT 65-1 & 65-4

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 – 107

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14247
LICENSED PROFESSIONAL ENGINEER

BERRY SURVEYING & ENGINEERING
335 Second Crown Point Road
Barrington, NH 03825
Phone: (603) 332-2863
Fax: (603) 335-4623
www.BerrySurveying.Com

Inspection and Maintenance Manual

Stormwater System Management

Prepared for:

Stonearch Development Corp.
42 Dover Point Road, Suite J
Dover, NH 03820

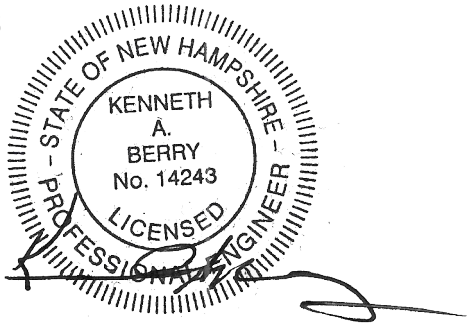
Land of

Tax Map E, Lot 65-1
D. Lutsk, D. Barnes, T. George, & L. Mulcahy

Tax Map E, Lot 65A
Eugene A. & Donna L. Sgrignuoli

Prepared By

Berry Surveying & Engineering
335 Second Crown Point Road
Barrington, NH 03825
603-332-2863



File Number
DB2020-107

February 10, 2021

Inspection and Maintenance Manual

Stormwater System Management

Table of Contents

Introduction w/ Practice Inventory .....Page 2

Catch Basins & Drain Manholes .....Page 4

Treatment and Conveyance Swales .....Page 4

Culvert Pipes, Flared End Section / Headwalls.....Page 5

Sediment Forebays.....Page 5

Detention Ponds .....Page 6

Rain Gardens & Bio-Swales .....Page 6

Outlet Protection & Emergency Spill Way .....Page 7

Stabilization for Long Term Cover.....Page 8

Control of Invasive Species .....Page 9

Annual Report.....Page 10

Inspection & Maintenance Manual Checklist.....Page 11

Inspection & Maintenance Log Sheet ..... Page 14

Deicing Log Sheet .....Page 15

Owner Certification .....Page 17
Operation & Maintenance Plans Attached – 1 Page
Control of Invasive Plants, NH Department of Agriculture Attached – 4 Pages
NHDES Green SnoPro Utilization Chart Attached – 1 Page

Introduction

The Best Management Practices (BMP) described in this manual are specified in more detail within the plan set giving design details and specifications. The New Hampshire Stormwater Manual, Volume 2, Post-Construction Best Management Practices Selection & Design (December 2008, NHDES & US EPA) is included by reference to this manual. Additional details, construction specifications, and example drawings are provided within this reference. (http://des.nh.gov/organization/divisions/water/stormwater/)

The BMP's are covered below in the general order in which the storm water flows. Each BMP has a description and maintenance consideration listed. A Check List table is proved after the narrative to summarize the maintenance responsibilities and schedule. A Log Form is also provided for the owners use.

For details regarding the design of the Storm Water System see also Drainage Analysis & Sediment and Erosion, **February 10, 2022**, as revised. See also plan set completed for **Stonearch Development Corp.**, originally dated **February 10, 2022**, as revised.

Scott O'Neill, Managing Member of Stonearch Development Corp. is responsible for the Operation, Inspection, and Maintenance of the Stormwater Management System. A significant step in this responsibility is the Inspection and Maintenance of each component of the system. Ongoing, semi-annual, and annual inspection and maintenance requirements are documented below and must be followed diligently. Failure of any component of the system can result in surface water run-off ponding and/or freezing in the roadway and parking lots, leaving the developed site untreated, and/or causing violations to issued permits. The owner / developer must initiate or expand the Homeowners Association (HOA) and will be responsible as the majority owner of the association. The HOA will then be responsible for the drainage infrastructure. The owners, as the Majority Member of the HOA, will be responsible for the initial Inspection and Maintenance Plan and will ensure that when the HOA membership assumes control, that copies of the Manual and Plans become available to the HOA management team. (Reduced copies attached.) The responsible party will conduct the inspections, complete the required maintenance, and will maintain the Inspection & Maintenance Check Lists and Logs, and will provide copies with the Annual Report to the Town of Dover, Land Use Department and provided a copy to NHDES AoT by December 15th of each year.

The owners of Tax Map E, Lot 65-1, Stonearch Development Corp., are proposing a residential development consisting of 30 duplex buildings with 60 units total, and 3,130 linear feet of roadway divided between Theodore Drive, Liam Drive, and an emergency access roadway.

The following practices and drainage features will all require periodic inspections and maintenance based on this manual and drainage layout:

Proposed Construction

Culvert Inlet Sumps

Catch Basins & Drainage Pipes

Drain Manholes

Sediment Forebays for all Treatment Practices

Rain Garden #101 with Outlet Structure and Spillway

Rain Garden #102 with Outlet Structure and Spillway

Rain Garden #103 with Outlet Structure and Spillway

Rain Garden #104 with Outlet Structure and Spillway

Rip Rap Outlet Protection & Level Spreaders

Detention Pond #105 with Outlet Structure

Detention Pond #106 with Outlet Structure

Catch Basin, and Drain Manholes

Description: Catch Basins are used throughout the site to capture and, along with culvert pipes and manhole, route surface water runoff to stormwater treatment and detention infrastructure. During construction the catch basins will be protected by inlet protection per the approved construction plans. The practice of street sweeping on a bi-annual basis will help reduce maintenance of these catch basins and culvert pipes.

Note: Deep sump catch basins are not allowed to be used on this proposed development due to wildlife concerns and any manufacturer sump resulting in a catch basin must be filled with washed crushed stone. Sediment should be trapped in the sediment forebays but is also a concern in earlier structures.

Maintenance Considerations: Sediment must be removed from Catch Basins and Manholes on a regular basis, at least twice a year and more often if post-winter maintenance and street sweeping is not conducted. Inspections should be conducted periodically. At a minimum they should be cleaned after snow-melt and after leaf-drop. Disposal of all material, sediment, and debris must be done in accordance with state and federal regulations. Culvert pipes will be inspected to ensure that surface water runoff is capable of leaving the structures.

Treatment & Conveyance Swales

Description: "Swales are stabilized channels designed to convey runoff at non-erosive velocities." (NHDES SWM) They will be trapezoidal or parabolic in section view. A conveyance swale is intended to move surface water runoff from one point to another where as a treatment swale will slow the velocity to a point where sediment will settle out of the stormwater flow. A treatment swale will be constructed to a width of between four and eight feet and have a minimum length of 100 feet. The flow characteristics will also meet design criteria. See SWM Volume 2, 4.3 Treatment Practices, 5. Treatment Swales, page 123.

Project Intent: The swales are individually designed in the drainage analysis and specified on the design plans. The designed swales must have greater than 85% vegetated growth prior to receiving runoff. The bottom of a treatment swale must be above the seasonal high water table.

Maintenance Considerations: Grassed swales will be inspected twice annually, removing accumulated sediment and gross solids. Grass will be mowed periodically but to a depth of not less than 4 inches. Any damage to the vegetation will be repaired and woody vegetation and invasive vegetation will be removed.

Culvert Pipes, Flared End Sections / Headwalls

Description: Culvert pipes are placed to route surface water runoff from catch basins to drain manholes, and drain manholes to a discharge point conveying the runoff in such a manner that erosion does not take place. Culvert pipes are often terminated with flared end sections or headwalls.

Maintenance Considerations: The entrance and exit of the culvert pipe should be cleaned of any trash and sediment build-up. The culvert should be clear to let runoff pass through the culvert unobstructed. Flared end sections and headwalls should be inspected for erosion and destabilization, with repairs made as required.

Sediment Forebay

Description: A sediment forebay is designed to reduce the velocity of incoming surface water runoff allowing sediment to fall out of suspension initially pre-treating the runoff before it is sent to a treatment structure. This earthen basin will have vegetated side-slopes and a check dam to further reduce and pretreat the runoff. At the point of incoming runoff, the basin will be protected by rip rap outlet protection construction and the outgoing edge will be protected with rip rap. The check dam will be constructed from one side of the basin to the other and cause runoff to either go through or over. The volume of the forebay is generally 10% the volume of the Water Quality Volume (WQV) for gravel wetlands, and 25% for rain gardens. A dewatering drain is designed into the two-foot berm of the forebay. Construction specifications are included in the plan set and New Hampshire Stormwater Manual, Volume 2, 4-4 Pretreatment Practices 1, Sediment Forebays.

If it determined that too much sediment is by-passing the sediment forebay into the stormwater practice, semi-permanent sediment barriers may be warranted in the form of check dams by using a filtering media such as Filtrexx Silt Soxx.

Maintenance Considerations: The basin and slopes will be periodically mowed, at least twice per year ensuring that woody material does not get an opportunity to grow. Sediment accumulated in the basin will be removed and properly disposed of when it reaches half the height of the check dam. Erosion or other damage to the basin will be

repaired and revegetated. (See Outlet Protection) Inspect and clean the dewatering drain to ensure runoff is not trapped for more than 72 hours in the forebay.

Detention Ponds

Description: Detention Ponds are also constructed ponds with the purpose of detaining runoff but not necessarily for infiltration purposes. During construction it is important that the ground surface not be exposed to traffic or construction equipment to preserve the infiltration capabilities of the existing soil. Construction specifications are included in the plan set and New Hampshire Stormwater Manual, Volume 2, 4-3 Treatment Practices, 3B, In-ground Infiltration Basin and Section 4-6, Conveyance Pracitces, 2. Detention Basins.

Maintenance Considerations:
Infiltration Basins and Detention Ponds should be inspected at least twice annually and following any rainfall event exceeding 0.25 inches in a twenty-four-hour period. Maintenance rehabilitation will be conducted as warranted by each inspection. Trash and debris will be removed at each inspection.

On an annual basis the infiltration capabilities need to be confirmed by evaluation the drawdown time. If the infiltration system does not drain within 72-hours following a rainfall event, a qualified professional will assess the condition of the basin to determine measures required to restore the infiltration function. This is normally the direct result of sediment accumulation which will be removed to restore the filter media ratio.

Also on an annual basis the vegetation should be inspected to ensure healthy condition. Invasive species need to be removed along with dead or diseased vegetation.

Bio-Filtration System (Rain Gardens) & Bio-Swales

Description: Rain Gardens, or bio-filtration areas are located close to the source of runoff. They are intended to integrate with the site landscaping an become an aesthetically attractive opportunity to provide highly effective stormwater treatment. The rain gardens associated with this proposed development contribute toward recharge of surface water run-off into the ground. It is important that sediment be removed from run-off prior to discharge into the bio-filtration area to preserve the mulch and soil mix ratio. During construction it is important that the ground surface not be exposed to traffic or construction equipment to preserve the infiltration

capabilities of the existing soil. Construction specifications are included in the plan set and New Hampshire Stormwater Manual, Volume 2, 4-3 Treatment Practices, 4c Bioretention System. (Bio-media and bio-filtration mean bioretention filter media.)

Maintenance Considerations:
Rain Gardens should be inspected at least twice annually and following any rainfall event exceeding 0.25 inches in a twenty-four hour period. Maintenance rehabilitation will be conducted as warranted by each inspection. Trash and debris will be removed at each inspection.

The design of the rain garden under-drain system includes an orifice in an end-cap. This feature is designed to be disassembled to allow cleaning. This outlet orifice is located within a concrete outlet structure that may contains a control stack or manifold used to control and detain runoff in the system. Although this is designed to be "clean water" after the filtering process, the outlet structure in general is going to require periodic maintenance to ensure that it is discharging runoff properly. If the Rain Garden retains runoff on the surface for more than 72 hours the performance is not correct and maintenance is required.

On an annual basis the infiltration capabilities need to be confirmed by evaluation the drawdown time. If the bio-filtration system does not drain within 72-hours following a rainfall event, a qualified professional will assess the condition of the rain garden to determine measures required to restore the infiltration function. This is normally the direct result of sediment accumulation which will be removed to restore the filter media ratio or as stated above, an issue with the discharge orifice.

Also on an annual basis the vegetation should be inspected to ensure healthy condition. Invasive species need to be removed along with dead or diseased vegetation.

Rip Rap Outlet Protection, Level Spreaders, & Emergency Spillways

Description: Outlet Protection consists of a riprap apron or preformed scour hole that is designed to provide velocity reduction of the surface water run-off that is leaving a culvert. The design is dependent on the culvert size, soil conditions, velocity, and quantity of the run-off. There are to be no bend or curves at the intersection of the conduit and apron. Level spreaders are intended to provide a level lip where surface water runoff is allowed to continue downhill closer to sheet flow. The level lip is to be constructed as level as possible for the entire length. Emergency Spillways are rip rap reinforced outlets near the top of the berm that allow runoff to leave a practice during periods of very high flow. Ref.: NHDES SWM Volume 2, Section 4-6 Conveyance Practices, 6. Outlet Protection and 1. Detention Ponds, Note 3, Page 158.

Maintenance Considerations: The riprap outlet protection will be inspected annually for damage, which must be corrected immediately. Any sediment buildup will be removed and disposed of correctly. Sediment and subsequent vegetation will build up in the Level Spreader. This material will be cleaned out along with any gross solids and disposed of properly. (See invasive species below) Any rip rap that has been displaced from the original construction will be repaired, especially recreating the level lip.

Stabilization for Long Term Cover

Vegetated Stabilization – Original Planting

All areas that are disturbed during construction will be stabilized with vegetated material within 30 days of breaking ground. Construction will be managed in such a manner that erosion is prevented and that no abutter's property will be subjected to any siltation, unless otherwise permitted. All areas to be planted with grass for long-term cover will follow the specification and on Sheet E-102 using seeding mixture C, as follows:

Mixture	Pounds per Acre	Pounds per 1,000 Sq. Ft.
Tall Fescue	24	0.55
Creeping Red Fescue	24	0.55
Total	48	1.10

Conservation Mix

Mixture	Pounds per Acre	Pounds per 1,000 Sq. Ft.
Tall Fescue	15	0.35
Creeping Red Fescue	15	0.35
Annual Ryegrass	5	0.12
Perennial Ryegrass	5	0.12
Kentucky Bluegrass	15	0.35
White Clover	7	0.16
Total	**62**	**1.45**

Conservation Mix will used to stabilize all 2:1 slopes and all land area disturbed within the wetland buffer. As the site is to be stabilized with erosion control mix as a mulch, the vegetation should be established with a high percentage of white clover for growth to be established.

Rain Garden Mix

The grass that is planted within a rain garden bio-filtration system within the bio-media must consist of a combination of warm season grass seed and cold season grass seed in order for the grass to start growing for stabilization and continue growing in the sandy well-drained environment. Planting specification will meet the requirements as outlined in 'Vegetation New Hampshire Sand and Gravel Pits' mix 1 (warm season grasses) (15 lbs/ac) and include annual and perennial rye grass seed (15 lbs/ac); the New England native warm season grass mix (23 lbs/ac) by New England Wetland Plants, Inc.; rain garden mix 180 (15 lbs/ac & 15 lbs/ac of rye) / rain garden grass mix 180-1 (20 lbs/ac & 10 lbs/ac of rye) by Ernst Conservation Seeds; or approved equal.

Detention Pond Mix:

The grass that is planted within a Detention Pond will be a mix designed for both inundation and dry conditions such as Ernst Seeds, Retention Basin Floor Mix ERNMX-126.

Maintenance Considerations: Permanent seeded areas for long-term cover will be inspected on a periodic basis looking for signs of growth loss or erosion. Any areas found to be damaged will be repaired and replanted to reestablish the growth. The grass should be mowed at least twice per year and any dead material removed. Any woody growth that becomes established will need to be cut and removed.

Long-term maintenance of the land cover is critical and must be maintained at least 85% grass / vegetation coverage, must be inspected for concentrated flow, rills, and channels; and must be repaired as necessary to prevent erosion.

CONTROL OF INVASIVE PLANTS

During maintenance activities, check for the presence of invasive plants and remove in a safe manner as described on the following pages. They should be controlled as described on the following pages.

Invasive plants are introduced, alien, or non-native plants, which have been moved by people from their native habitat to a new area. Some exotic plants are imported for human use such as landscaping, erosion control, or food crops. They also can arrive as "hitchhikers" among shipments of other plants, seeds, packing materials, or fresh produce. Some exotic plants become invasive and cause harm by:

- becoming weedy and overgrown;
- killing established shade trees;
- obstructing pipes and drainage systems;
- forming dense beds in water;
- lowering water levels in lakes, streams, and wetlands;
- destroying natural communities;
- promoting erosion on stream banks and hillsides; and
- resisting control except by hazardous chemical.

Annual Report

Description: The owner is responsible to keep an **I & M Activity Log** that documents inspection, maintenance and repairs to the storm water management system, and a **Deicing Log** to track the amount and type of deicing material applied to the site. The original owner is responsible to ensure that any subsequent owner (s) have copies of the Inspection & Maintenance Manual, Stormwater System Management, copies of past logs and check lists. This includes any owner association that might become involved with the property. The Annual Report will be prepared and submitted to the City of Dover, Community Services, Engineering Department with copies of both logs and check lists no later than December 15th of each year and provided to NHDES Alteration of Terrain on that same date. Upon an ownership change, the Annual Report will include the Transfer of Ownership Responsibility Forms duplicated from the form found below.

The plans that accompany this manual includes two sheets, "Drainage Operation, Inspection, & Maintenance Plan". The owners and municipality will also maintain a complete set of the approved original design plans.

Respectfully
BERRY SURVEYING & ENGINEERING

Kevin R. Poulin, EIT
Project Engineer / Manager

Kenneth A. Berry, PE, LLS
CPSWQ, CPESC, CESSWI
Principal, VP – Technical Operations

STORMWATER SYSTEM: INSPECTION AND MAINTENANCE MANUAL

Inspection & Maintenance Manual Checklist

Riverside Estates

Tax Map E, Lot 65-1
Stonearch Development Corp.
42 Dover Point Road, Suite J,
Dover, NH 03820

☑	Date	BMP / System	Minimum Inspection Frequency	Minimum Inspection Requirements	Maintenance / Cleanout Threshold
		Pavement Sweeping	Three Times Per Year	N/A	N/A
		Litter/Trash Removal	Routinely	Inspect dumpsters, outdoor waste receptacles area, and yard areas.	Parcel will be free of litter/trash.
		Deicing Agents	N/A	N/A	Use salt as the primary agent for roadway safety during winter.
		Invasive Species	Two times per year.	Inspect for Invasive Species	Remove and dispose invasive species.
		Closed Drainage System:			
		Drainage Pipes & Inlet Sumps	2 years per year	Check for sediment accumulation & clogging.	Less than 2" sediment depth
		Catch Basins	2 times per year	Check for sediment accumulation & clogging.	Sediment accumulated to a depth of 2 feet.

☑	Date	BMP / System	Minimum Inspection Frequency	Minimum Inspection Requirements	Maintenance / Cleanout Threshold
		Detention Ponds & Rain Gardens	2 times per year	Check for sediment and debris accumulation buildup.	Remove sediment & debris when required. Remove Invasive Species
		Riprap Outlet Protection	Annually	Check for sediment buildup and structure damage.	Remove excess sediment and repair damage.
		Winter Maintenance	Ongoing	Remove snow as directed.	Ongoing
		Post Winter Maintenance	Annually	Remove excess sand, gross solids, and repair vegetation and plantings	Parcel will be free of excess sand, litter/trash. Vegetation per approved plans.
		Annual Report	1 time per year	Submit Annual Report to Dover Community Services, Engineering Department and provided to NHDES AoT	Report to be submitted on or before December 15th each year. Copies submitted to NHDES by that date.

Inspection Check List:

The following practices and drainage features will all require periodic inspections and maintenance based on this manual and drainage layout:

Culvert Inlet Sumps.

Catch Basins & Drainage Pipes

Drain Manholes

Sediment Forebays for all Treatment Practices

Rain Garden #101 with Outlet Structure and Spillway

Rain Garden #102 with Outlet Structure and Spillway

Rain Garden #103 with Outlet Structure and Spillway

Rain Garden #104 with Outlet Structure and Spillway

Rip Rap Outlet Protection & Level Spreaders

Detention Pond #106 with Outlet Structure

Detention Pond #106 with Outlet Structure

STORMWATER SYSTEM INSPECTION AND MAINTENANCE PLAN

Inspection & Maintenance Manual Log Form

Riverside Estates

Tax Map E, Lot 65-1
Stonearch Development Corp.
42 Dover Point Road, Suite J,
Dover, NH 03820

BMP / System	Date Inspected	Inspector	Cleaning/Repair (List Items & Comments)	Repair Date	Performed By:

STORMWATER SYSTEM INSPECTION AND MAINTENANCE PLAN

Deicing Log Form

Riverside Estates

Tax Map E, Lot 65-1
Stonearch Development Corp.
42 Dover Point Road, Suite J,
Dover, NH 03820

Date	Amount Applied	Performed By:	Date	Amount Applied	Performed By:

STORMWATER SYSTEM OPERATION & MAINTENANCE PLAN CERTIFICATION

Owner	Responsibility
Name: Scott O'Neill, Managing Member Stonearch Development Corp. Address: 42 Dover Point Road, Suite J, Dover, NH 03820 Telephone: (978)-375-3390 (Mobile)	The owner is responsible for the conduct of all construction activities, and ultimate compliance with all the provisions of the Stormwater System Operation & Maintenance Plan and the implementation of the Inspection and Maintenance Manual.

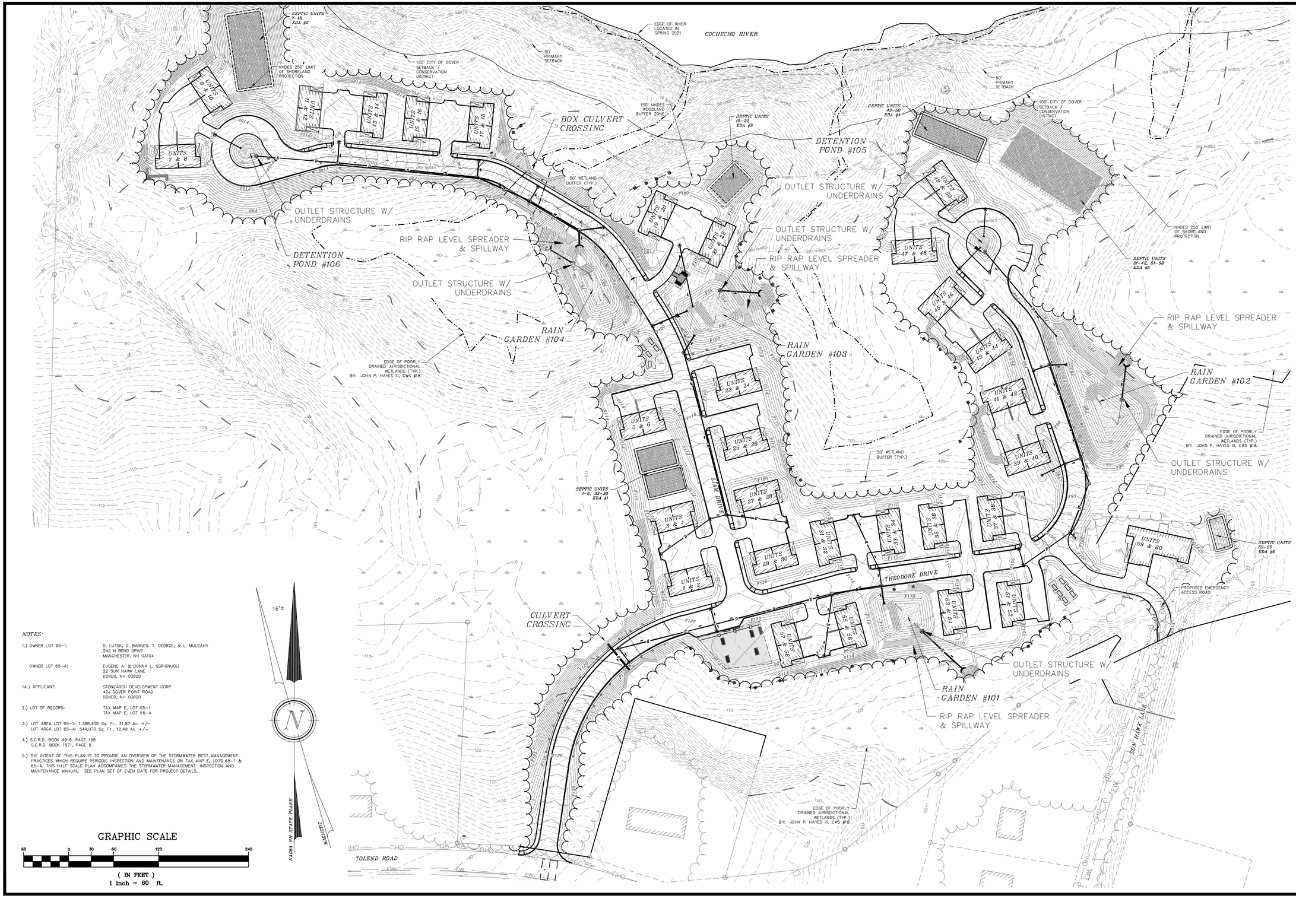
OWNER CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction and 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 for knowing violations.

Signed: _____ Date: _____

Printed Name:

Representing:
Tax Map E, Lot 65-1
Stonearch Development Corp.
42 Dover Point Road, Suite J
Dover, NH 03820



NOTES:

1.) OWNER LOT 65-1: D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY
245 N BEND DRIVE
MANCHESTER, NH 03104

OWNER LOT 65-A: EUGENE A. & DONNA L. SGRIGNUOLI
22 SUN HAWK LANE
DOVER, NH 03820

1A.) APPLICANT: STONEARCH DEVELOPMENT CORP.
421 DOVER POINT ROAD
DOVER, NH 03820

2.) LOT OF RECORD: TAX MAP E, LOT 65-1
TAX MAP E, LOT 65-A

3.) LOT AREA LOT 65-1: 1,388,409 Sq. Ft., 31.87 Ac. +/-
LOT AREA LOT 65-A: 544,070 Sq. Ft., 12.49 Ac. +/-

4.) S.C.R.D. BOOK 4918, PAGE 158
S.C.R.D. BOOK 1571, PAGE 8

5.) THE INTENT OF THIS PLAN IS TO PROVIDE AN OVERVIEW OF THE STORMWATER BEST MANAGEMENT PRACTICES WHICH REQUIRE PERIODIC INSPECTION AND MAINTENANCE ON TAX MAP E, LOTS 65-1 & 65-A. THIS HALF SCALE PLAN ACCOMPANIES THE STORMWATER MANAGEMENT, INSPECTION AND MAINTENANCE MANUAL. SEE PLAN SET OF EVEN DATE FOR PROJECT DETAILS.

GRAPHIC SCALE

60 0 30 60 120 240

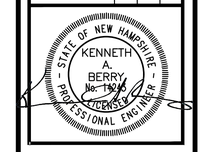
(IN FEET)
1 inch = 60 ft.

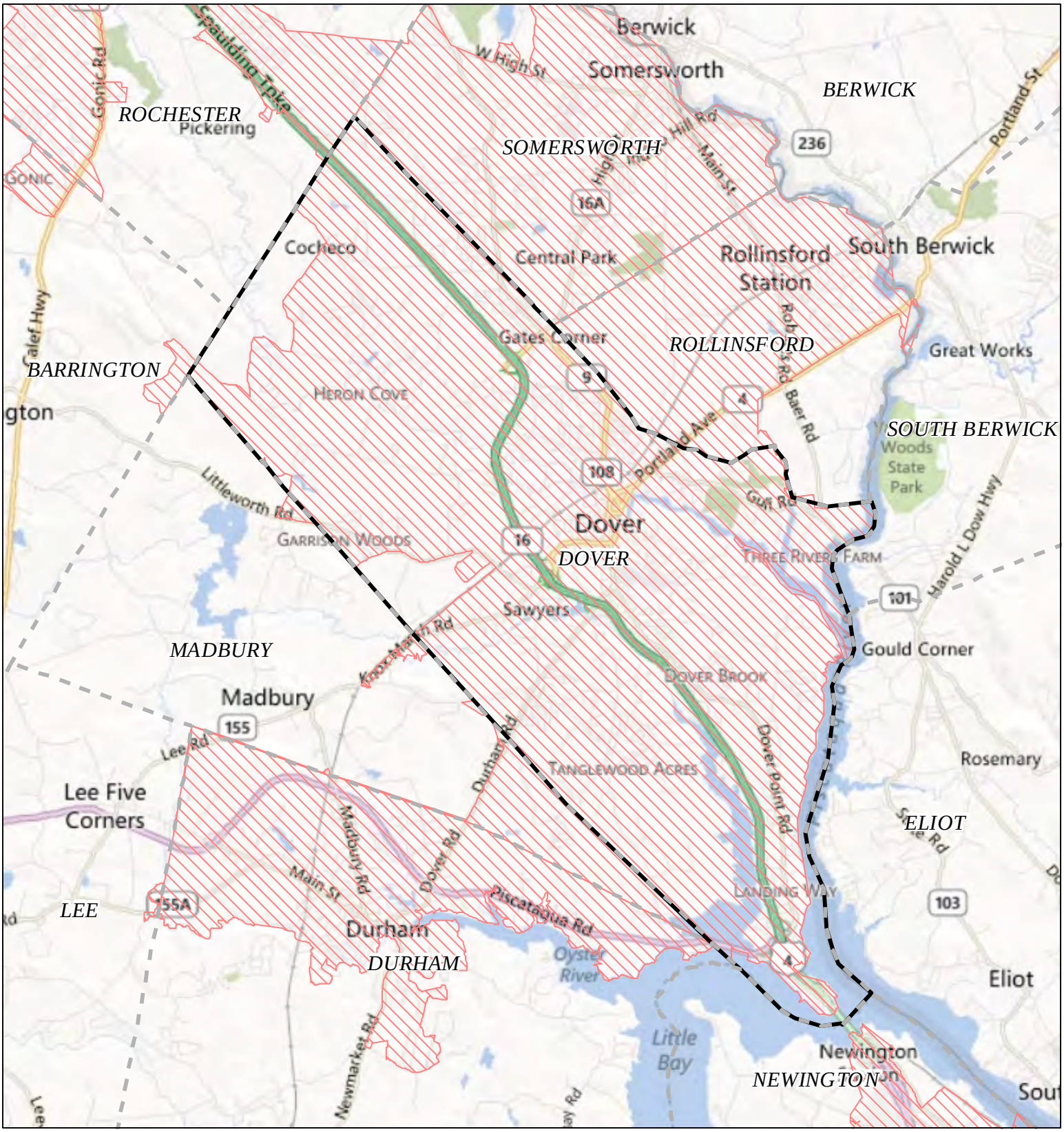
REVISION	DATE	DESCRIPTION

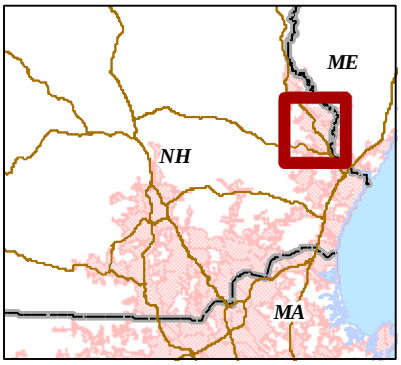
OVERVIEW GRADING PLAN
LAND OF
D. LUTSK, D. BARNES, T. GEORGE, & L. MULCAHY &
EUGENE A. & DONNA L. SGRIGNUOLI
TOLEND ROAD
DOVER, N.H.
TAX MAP E, LOT 65-1 & 65-A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 60 FT.
DATE : FEBRUARY 10, 2022
FILE NO. : DB 2020 - 107







NPDES Phase II Stormwater Program
Automatically Designated MS4 Areas

Dover NH

Regulated Area (2000 + 2010 Urbanized Area)

0 1 2 3 4 5 6 Kilometers

0 1 2 3 4 5 Miles

Town Population: 29987

Regulated Population: 29869

(Populations estimated from 2010 Census)

Urbanized Areas, Town Boundaries:
US Census (2000, 2010)
Base map © 2010 Microsoft Corporation
and its data suppliers

US EPA Region 1 GIS Center Map #8824, 11/19/2012

Welcome to New Hampshire's Watershed Report Cards built from the 2018, 305(b)/303(d)

Each Watershed Report Card covers a single 12 digit Hydrologic Unit Code (HUC12), on average a 34 square mile area. Each Watershed Report Card has three components;

1. REPORT CARD - A one page card that summarizes the overall use support for Aquatic Life Integrity, Primary Contact (i.e. Swimming), and Secondary Contact (i.e. Boating) Designated Uses on every Assessment Unit ID (AUID) within the HUC12.
2. HUC 12 MAP - A map of the watershed with abbreviated labels for each AUID within the HUC12.
3. ASSESSMENT DETAILS - Anywhere from one to forty pages with the detailed assessment information for each and every AUID in the Report Card and Map.

How are the Surface Water Quality Assessment determinations made?

All readily available data with reliable Quality Assurance/Quality Control is used in the biennial surface water quality assessments. For a full understanding of how the Surface Water Quality Standards (Env-Wq 1700) are translated into surface water quality assessments we urge the reader to review the 2018 Consolidated Assessment and Listing Methodology (CALM) at https://www.des.nh.gov/organization/divisions/water/wmb/swqa/2018/documents/r-wd-19-04.pdf.

Where can I find more advanced mapping resources?

GIS files are available by assessment cycle at ftp://pubftp.nh.gov/DES/wmb/WaterQuality/SWQA/2018/GIS

I'd like to see the more raw water quality data?

The web mapping tool allows you to download the data used in the assessment of the primary contact and aquatic life designated uses by clicking on the "Data Access Waterbody Data (Aquatic Life and Swimming Uses)" link for any assessment unit. (https://www.des.nh.gov/organization/divisions/water/wmb/swqa/assessment-viewers.htm)

How are assessments coded in the report card?

Assessment outcomes are displayed on a color scale as well as an alpha numeric scale that provides additional distinctions for the designated use and parameter level assessments as outlined in the table below.

		Severe Not Supporting, Severe	**Poor** Not Supporting, Marginal	**Likely Bad** Insufficient Information – Potentially Not Supporting	**No Data** No Data	**Likely Good** Insufficient Information – Potentially Full Supporting	**Marginal** Full Support, Marginal	**Good** Full Support, Good
CATEGORY	**Description**							
Category 2	Meets standards						2-M or 2-OBS	2-G
Category 3	Insufficient Information			3-PNS	3-ND	3-PAS		
Category 4	Does not Meet Standards;							
4A	TMDL* Completed	4A-P	4A-M or 4A-T					
4B	Other enforceable measure will correct the issue.	4B-P	4B-M or 4B-T					
4C	Non-pollutant (i.e. exotic weeds)	4C-P	4C-M					
Category 5	TMDL^ Needed	5-P	5-M or 5-T					

* TMDL stands for Total Maximum Daily Load studies (http://des.nh.gov/organization/divisions/water/wmb/tmdl/index.htm)

WATERSHED 305(b) ASSESSMENT SUMMARY REPORT:

HUC 12 010600030608

HUC 12 NAME LOWER COCHECO RIVER

(Locator map on next page only applies to this HUC12)

Assessment Cycle 2018

Good		Full Support Good
Marginal		Full Support Marginal
Likely Good		Insufficient Information – Potentially Full Support
No Data		No Data
Likely Bad		Insufficient Information – Potentially Not Support
Poor		Not Support Marginal
Severe		Not Support Severe

ASSESSMENT UNIT ID	MAP LABEL	ASSESSMENT UNIT NAME	AQUATIC LIFE	SWIMMING	BOATING	FISH CONSUMP.
NHEST600030608-01	E*01	COCHECO RIVER	5-P	5-P	4A-M	5-M
NHIMP600030607-02	I*0607-02	COCHECO RIVER - GONIC DAM POND	5-M	4A-P	2-G	4A-M
NHIMP600030607-03	I*0607-03	COCHECO RIVER - MILL POND DAM	3-PAS	3-ND	3-ND	4A-M
NHIMP600030608-02	I*02	COCHECO RIVER - WATSON WALDRON DAM	5-M	2-G	2-G	4A-M
NHIMP600030608-04	I*04	COCHECO RIVER - CENTRAL AVE DAM	5-M	2-G	2-G	4A-M
NHIMP600030608-05	I*05	CONSERVATION POND DAM	3-ND	3-ND	3-ND	4A-M
NHIMP600030608-06	I*06	FRESH CREEK - FARM POND	3-ND	3-ND	3-ND	4A-M
NHLAK600030608-01	L*01	FRESH CREEK POND	5-M	4A-P	2-G	4A-M
NHLAK600030608-02	L*02	UNNAMED POND	3-ND	3-PAS	3-PAS	4A-M
NHRIV600030607-12	R*0607-12	UNNAMED TRIBUTARY - TO COCHECO RIVER	3-ND	3-ND	3-ND	4A-M
NHRIV600030607-13	R*0607-13	UNNAMED BROOK - TO COCHECO RIVER	3-ND	3-ND	3-ND	4A-M
NHRIV600030607-14	R*0607-14	COCHECO RIVER	3-ND	3-ND	3-ND	4A-M
NHRIV600030607-15	R*0607-15	COCHECO RIVER	5-M	2-G	2-G	4A-M
NHRIV600030608-02	R*02	BLACKWATER BROOK-CLARK BROOK	3-ND	4A-P	3-ND	4A-M
NHRIV600030608-03	R*03	COCHECO RIVER - UNNAMED BROOK	5-M	4A-M	2-G	4A-M
NHRIV600030608-04	R*04	REYNERS BROOK	3-ND	4A-P	3-ND	4A-M
NHRIV600030608-05	R*05	COCHECO RIVER	5-M	4A-M	2-G	4A-M
NHRIV600030608-06	R*06	INDIAN BROOK	5-P	4A-P	3-ND	4A-M
NHRIV600030608-07	R*07	EMERSON BROOK	3-ND	3-ND	3-ND	4A-M
NHRIV600030608-08	R*08	FRESH CREEK - TWOMBLY BROOK	5-P	4A-M	3-ND	4A-M
NHRIV600030608-09	R*09	UNNAMED BROOK - ROLLINS BROOK	3-ND	3-ND	3-ND	4A-M
NHRIV600030608-10	R*10	ROLLINS BROOK	5-P	4A-P	3-ND	4A-M
NHRIV600030608-11	R*11	FRESH CREEK	3-PNS	4A-P	4A-M	4A-M
NHRIV600030608-12	R*12	UNNAMED TRIBUTARY - TO COCHECO RIVER (DOVER (DOWNSTREAM OF PORTLAND AVE))	3-ND	3-ND	3-ND	4A-M
NHRIV600030608-13	R*13	UNNAMED TRIBUTARY - TO COCHECO RIVER - (DOVER (UPSTREAM OF ATLANTIC AVE))	3-ND	3-ND	3-ND	4A-M
NHRIV600030608-14	R*14	UNNAMED TRIB. TO COCHECO RIVER, DOVER (FROM LANDFILL)	5-M	3-ND	3-ND	4A-M
NHRIV600030608-15	R*15	BERRY BROOK	5-M	4A-P	2-G	4A-M

WATERSHED 305(b) ASSESSMENT SUMMARY REPORT:

HUC 12 010600030608

HUC 12 NAME LOWER COCHECO RIVER

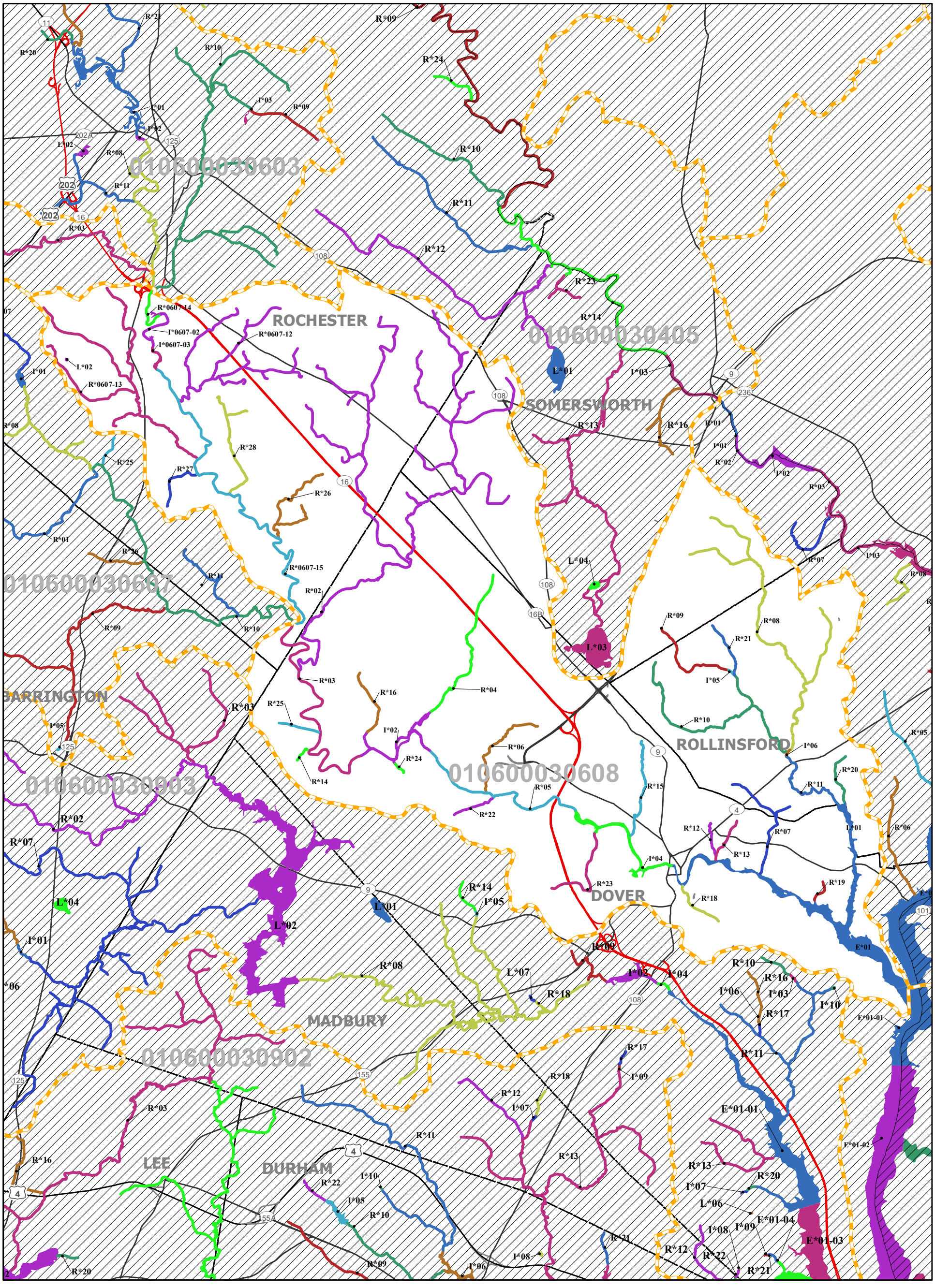
(Locator map on next page only applies to this HUC12)

Assessment Cycle 2018

Good		Full Support Good
Marginal		Full Support Marginal
Likely Good		Insufficient Information – Potentially Full Support
No Data		No Data
Likely Bad		Insufficient Information – Potentially Not Support
Poor		Not Support Marginal
Severe		Not Support Severe

ASSESSMENT UNIT ID	MAP LABEL	ASSESSMENT UNIT NAME	AQUATIC LIFE	SWIMMING	BOATING	FISH CONSUMP.
NHRIV600030608-16	R*16	JACKSON BROOK	3-ND	4A-P	3-ND	4A-M
NHRIV600030608-18	R*18	UNNAMED BROOK	3-ND	3-ND	3-ND	4A-M
NHRIV600030608-19	R*19	UNNAMED BROOK	3-ND	3-ND	3-ND	4A-M
NHRIV600030608-20	R*20	UNNAMED BROOK	3-ND	3-ND	3-ND	4A-M
NHRIV600030608-21	R*21	UNNAMED BROOK - TO ROLLINS BROOK	3-ND	3-ND	3-ND	4A-M
NHRIV600030608-22	R*22	HORN BROOK	3-ND	3-ND	3-ND	4A-M
NHRIV600030608-23	R*23	UNNAMED BROOK	3-ND	3-ND	3-ND	4A-M
NHRIV600030608-24	R*24	UNNAMED BROOK	3-ND	3-ND	3-ND	4A-M
NHRIV600030608-25	R*25	UNNAMED BROOK	3-ND	3-ND	3-ND	4A-M
NHRIV600030608-26	R*26	UNNAMED BROOK	3-ND	3-ND	3-ND	4A-M
NHRIV600030608-27	R*27	UNNAMED BROOK	3-ND	3-ND	3-ND	4A-M
NHRIV600030608-28	R*28	UNNAMED BROOK	3-ND	3-ND	3-ND	4A-M

AUIDs For HUC12: 010600030608 - Lower Cocheco River



HUC12 Boundaries
Town Boundaries
Major Roads
Interstate Highway
US Highway
State Highway

Assessment Unit Coloring
AUs Ending with:
0 =
1 =
2 =
3 =
4 =
5 =
6 =
7 =
8 =
9 =

N
W E
S

Abbrv. Label	HUC 12
L* 03	010 700060201

AUID = NH L AK 700060201 - 03

Assessment Unit IDs are derived from the HUC12 they reside within. The labels have been shortened on this map for presentation purposes.
Example: the Label "L*03" in HUC12 = 010700060201 represents AUID = "NHLAK700060201-03"
In rare cases where an AUID extends beyond the boundary of a single HUC12, additional portions of the end of the HUC 12 number have also been replaced.

0 0.6 1.2 1.8 2.4 Miles

Scale:1:59,820

S:\WD-Watershed\WQ_Planning\305b_303d\2018\AUIDs\HUC12Maps

Assessment Unit ID NHRIV600030608-05 | Size 2.0600 MILES

Assessment Unit Name COCHECO RIVER | Beach N

Primary Town DOVER | Assessment Unit Category*~ 5-M

2018, 305(b)/303(d) - All Reviewed Parameters by Assessment Unit

Designated Use Description	*Desig. Use Category	Parameter Name	Parameter Threatened (Y/N)	Last Sample	Last Exceed	Parameter Category*	TMDL Priority
Aquatic Life Integrity	5-M	ALUMINUM	N	1999	1999	3-ND	
		AMMONIA (TOTAL)	N	2005	N/A	3-ND	
		ARSENIC	N	2004	N/A	3-ND	
		CADMIUM	N	1999	1999	3-ND	
		CHLORIDE	N	2013	N/A	3-PAS	
		COPPER	N	1999	N/A	3-ND	
		DISSOLVED OXYGEN SATURATION	N	2013	N/A	3-PAS	
		IRON	N	2004	N/A	3-ND	
		LEAD	N	1999	1999	3-ND	
		OXYGEN, DISSOLVED	N	2013	N/A	3-PAS	
		PHOSPHORUS (TOTAL)	N	2013	NLV	3-PNS	
		TURBIDITY	N	2013	N/A	3-PAS	
		ZINC	N	1999	N/A	3-ND	
		pH	N	2013	2009	5-M	LOW
Fish Consumption	4A-M	ARSENIC	N	2004	2004	3-ND	
		COPPER	N	1999	N/A	3-ND	
		Mercury	N			4A-M	
		ZINC	N	1999	N/A	3-ND	
Potential Drinking Water Supply	2-G	ARSENIC	N	2004	2004	3-ND	
		COPPER	N	1999	N/A	3-ND	
		ESCHERICHIA COLI	N	2013	2013	3-PNS	
		IRON	N	2004	2004	3-ND	
		ZINC	N	1999	N/A	3-ND	
Primary Contact Recreation	4A-M	Escherichia coli	N	2013	2013	4A-M	
Secondary Contact Recreation	2-G	ESCHERICHIA COLI	N	2013	N/A	2-G	
Wildlife	3-ND						

Severe	Poor	Likely Bad	No Data	Likely Good	Marginal	Good
Not Supporting, Severe	Not Supporting, Marginal	Insufficient Information – Potentially Full Supporting	No Data	Insufficient Information – Potentially Full Supporting	Full Support, Marginal	Full Support, Good

*DES Categories; 2-G = Supports Parameter well above criteria, 2-M = Supports Parameter marginally above criteria, 2-OBS = Exceeds WQ criteria but natural therefore not a WQ exceedence, 3-ND = Insufficient Information/No data, 3-PAS= Insufficient Information/Potentially Attaining Standard, 3-PNS= Insufficient Information/Potentially Not Attaining Standard, (4A=Impaired/TMDL Completed, 4B=Impaired/Other Measure will rectify Impairment, 4C=Impaired/Non-Pollutant, 5=Impaired/TMDL needed) M=Marginal Impairment, P=Severe Impairment, T=Threatened (http://des.nh.gov/organization/divisions/water/wmb/swqa/index.htm)

Cycle	Assessment Unit ID (AUID)	Assessment Unit Name	Town(s) Primary Town is Listed First	Water Size	Size Unit	Designated Use Description	Parameter Name	NHDES Category	Threatened	TMDL Priority
2018	NHRIV600030607-01	ISINGLASS RIVER	BARRINGTON, ROCHESTER	7.336	MILES	Aquatic Life Integrity	pH	5-P	N	LOW
2018	NHRIV600030607-03	AYERS POND BROOK	BARRINGTON	0.128	MILES	Aquatic Life Integrity	Oxygen, Dissolved	5-M	N	LOW
2018	NHRIV600030607-03	AYERS POND BROOK	BARRINGTON	0.128	MILES	Aquatic Life Integrity	pH	5-M	N	LOW
2018	NHRIV600030607-04	AYERS POND BROOK	BARRINGTON	1.691	MILES	Aquatic Life Integrity	Oxygen, Dissolved	5-M	N	LOW
2018	NHRIV600030607-04	AYERS POND BROOK	BARRINGTON	1.691	MILES	Aquatic Life Integrity	pH	5-M	N	LOW
2018	NHRIV600030607-08	HANSON BROOK	ROCHESTER, BARRINGTON	2.411	MILES	Aquatic Life Integrity	pH	5-M		LOW
2018	NHRIV600030607-09	GREEN HILL BROOK	BARRINGTON	3.224	MILES	Aquatic Life Integrity	pH	5-M	N	LOW
2018	NHRIV600030607-10	ISINGLASS RIVER	ROCHESTER, BARRINGTON	3.796	MILES	Aquatic Life Integrity	pH	5-M	N	LOW
2018	NHRIV600030607-15	COCHECO RIVER	ROCHESTER	4.414	MILES	Aquatic Life Integrity	Iron	5-M	N	LOW
2018	NHRIV600030607-15	COCHECO RIVER	ROCHESTER	4.414	MILES	Aquatic Life Integrity	pH	5-M	N	LOW
2018	NHRIV600030607-16	SCRUTON POND OUTLET BROOK	BARRINGTON	0.071	MILES	Aquatic Life Integrity	Oxygen, Dissolved	5-P	N	LOW
2018	NHRIV600030607-16	SCRUTON POND OUTLET BROOK	BARRINGTON	0.071	MILES	Aquatic Life Integrity	pH	5-P	N	LOW
2018	NHRIV600030608-03	COCHECO RIVER - UNNAMED BROOK	DOVER, ROCHESTER	3.267	MILES	Aquatic Life Integrity	pH	5-M	N	LOW
2018	NHRIV600030608-05	COCHECO RIVER	DOVER	2.060	MILES	Aquatic Life Integrity	pH	5-M	N	LOW
2018	NHRIV600030608-06	INDIAN BROOK	DOVER	1.106	MILES	Aquatic Life Integrity	Chloride	5-P	N	LOW
2018	NHRIV600030608-08	FRESH CREEK - TWOMBLY BROOK	ROLLINSFORD, SOMERSWORTH	4.983	MILES	Aquatic Life Integrity	Oxygen, Dissolved	5-P	N	LOW
2018	NHRIV600030608-08	FRESH CREEK - TWOMBLY BROOK	ROLLINSFORD, SOMERSWORTH	4.983	MILES	Aquatic Life Integrity	pH	5-M	N	LOW
2018	NHRIV600030608-10	ROLLINS BROOK	ROLLINSFORD	2.856	MILES	Aquatic Life Integrity	Oxygen, Dissolved	5-P	N	LOW
2018	NHRIV600030608-10	ROLLINS BROOK	ROLLINSFORD	2.856	MILES	Aquatic Life Integrity	pH	5-M	N	LOW
2018	NHRIV600030608-14	UNNAMED TRIB. TO COCHECO RIVER,	DOVER	0.169	MILES	Aquatic Life Integrity	Iron	5-M	N	LOW
2018	NHRIV600030608-15	BERRY BROOK	DOVER	1.106	MILES	Aquatic Life Integrity	Benthic-Macroinvertebrate Bioassessments	5-M	N	LOW
2018	NHRIV600030608-15	BERRY BROOK	DOVER	1.106	MILES	Aquatic Life Integrity	Chloride	5-M	N	LOW
2018	NHRIV600030701-01	LAMPREY RIVER - AND HEADWATER	NORTHWOOD, DEERFIELD	13.652	MILES	Aquatic Life Integrity	Oxygen, Dissolved	5-P	N	LOW
2018	NHRIV600030701-01	LAMPREY RIVER - AND HEADWATER	NORTHWOOD, DEERFIELD	13.652	MILES	Aquatic Life Integrity	pH	5-P	N	LOW
2018	NHRIV600030701-08	HARTFORD BROOK	DEERFIELD	10.734	MILES	Aquatic Life Integrity	Aluminum	5-M	N	LOW
2018	NHRIV600030701-08	HARTFORD BROOK	DEERFIELD	10.734	MILES	Aquatic Life Integrity	Benthic-Macroinvertebrate Bioassessments	5-P	N	LOW
2018	NHRIV600030701-08	HARTFORD BROOK	DEERFIELD	10.734	MILES	Aquatic Life Integrity	pH	5-M	N	LOW
2018	NHRIV600030701-09	LAMPREY RIVER	DEERFIELD	7.767	MILES	Aquatic Life Integrity	Oxygen, Dissolved	5-P	N	LOW
2018	NHRIV600030701-09	LAMPREY RIVER	DEERFIELD	7.767	MILES	Aquatic Life Integrity	pH	5-P	N	LOW
2018	NHRIV600030701-13	LAMPREY RIVER	DEERFIELD	0.041	MILES	Aquatic Life Integrity	pH	5-M	N	LOW
2018	NHRIV600030702-06	NORTH BRANCH RIVER - UNNAMED	DEERFIELD, CANDIA	5.185	MILES	Aquatic Life Integrity	Oxygen, Dissolved	5-P	N	LOW
2018	NHRIV600030702-06	NORTH BRANCH RIVER - UNNAMED	DEERFIELD, CANDIA	5.185	MILES	Aquatic Life Integrity	pH	5-P	N	LOW
2018	NHRIV600030702-07	NORTH BRANCH RIVER - UNNAMED	CANDIA, DEERFIELD	10.013	MILES	Aquatic Life Integrity	Oxygen, Dissolved	5-P	N	LOW
2018	NHRIV600030702-07	NORTH BRANCH RIVER - UNNAMED	CANDIA, DEERFIELD	10.013	MILES	Aquatic Life Integrity	pH	5-M	N	LOW
2018	NHRIV600030703-01	UNNAMED BROOK - TO ONWAY LAKE	RAYMOND, CANDIA	5.450	MILES	Aquatic Life Integrity	Benthic-Macroinvertebrate Bioassessments	5-P	N	LOW
2018	NHRIV600030703-01	UNNAMED BROOK - TO ONWAY LAKE	RAYMOND, CANDIA	5.450	MILES	Aquatic Life Integrity	pH	5-M	N	LOW
2018	NHRIV600030703-04	DUDLEY BROOK - UNNAMED BROOK	RAYMOND, DEERFIELD,	4.340	MILES	Aquatic Life Integrity	Lead	5-M	N	LOW
2018	NHRIV600030703-04	DUDLEY BROOK - UNNAMED BROOK	RAYMOND, DEERFIELD,	4.340	MILES	Aquatic Life Integrity	Oxygen, Dissolved	5-P	N	LOW
2018	NHRIV600030703-04	DUDLEY BROOK - UNNAMED BROOK	RAYMOND, DEERFIELD,	4.340	MILES	Aquatic Life Integrity	pH	5-M	N	LOW
2018	NHRIV600030703-05	LAMPREY RIVER	RAYMOND	2.647	MILES	Aquatic Life Integrity	pH	5-M	N	LOW
2018	NHRIV600030703-09	LAMPREY RIVER	RAYMOND	2.295	MILES	Aquatic Life Integrity	pH	5-M	N	LOW
2018	NHRIV600030703-10	LAMPREY RIVER	RAYMOND	0.558	MILES	Aquatic Life Integrity	pH	5-M	N	LOW
2018	NHRIV600030703-11	LAMPREY RIVER	EPPING, RAYMOND	3.270	MILES	Aquatic Life Integrity	Aluminum	5-M	N	LOW
2018	NHRIV600030703-11	LAMPREY RIVER	EPPING, RAYMOND	3.270	MILES	Aquatic Life Integrity	pH	5-M	N	LOW
2018	NHRIV600030703-14	PAWTUCKAWAY RIVER - UNNAMED	NOTTINGHAM, EPPING,	6.751	MILES	Aquatic Life Integrity	Oxygen, Dissolved	5-P	N	LOW
2018	NHRIV600030703-14	PAWTUCKAWAY RIVER - UNNAMED	NOTTINGHAM, EPPING,	6.751	MILES	Aquatic Life Integrity	pH	5-M	N	LOW
2018	NHRIV600030703-15	LAMPREY RIVER	EPPING	4.692	MILES	Aquatic Life Integrity	Oxygen, Dissolved	5-M	N	LOW
2018	NHRIV600030703-15	LAMPREY RIVER	EPPING	4.692	MILES	Aquatic Life Integrity	pH	5-M	N	LOW
2018	NHRIV600030703-17	UNNAMED BROOK - TO LAMPREY RIVER	EPPING	3.280	MILES	Aquatic Life Integrity	pH	5-M	N	LOW
2018	NHRIV600030703-18	LAMPREY RIVER	EPPING	3.247	MILES	Aquatic Life Integrity	pH	5-M	N	LOW
2018	NHRIV600030703-20	RUM BROOK	EPPING	4.791	MILES	Aquatic Life Integrity	pH	5-M	N	LOW

2018	NHRIV600030607-16	SCRUTON POND OUTLET B	BARRINGTON	0.071	MILES	Aquatic Life Integrity	Oxygen, Dissolved	5-P				Non-ORW
2018	NHRIV600030607-16	SCRUTON POND OUTLET B	BARRINGTON	0.071	MILES	Aquatic Life Integrity	pH	5-P				Non-ORW
2018	NHRIV600030608-02	BLACKWATER BROOK-CLAI	ROCHESTER, D	15.228	MILES	Primary Contact Recreation	Escherichia coli	4A-P	9/21/2010	NEW HAMPSHIRE STATEWIDE BACTERIA	39272	Non-ORW
2018	NHRIV600030608-03	COCHECO RIVER - UNNAM	DOVER, ROCHE	3.267	MILES	Aquatic Life Integrity	Dissolved oxygen saturation	5-M				Non-ORW
2018	NHRIV600030608-03	COCHECO RIVER - UNNAM	DOVER, ROCHE	3.267	MILES	Aquatic Life Integrity	pH	5-M				Non-ORW
2018	NHRIV600030608-03	COCHECO RIVER - UNNAM	DOVER, ROCHE	3.267	MILES	Primary Contact Recreation	Escherichia coli	4A-M	9/21/2010	NEW HAMPSHIRE STATEWIDE BACTERIA	39272	Non-ORW
2018	NHRIV600030608-04	REYNERS BROOK	DOVER	1.77	MILES	Primary Contact Recreation	Escherichia coli	4A-P	9/21/2010	NEW HAMPSHIRE STATEWIDE BACTERIA	39272	Non-ORW
2018	NHRIV600030608-05	COCHECO RIVER	DOVER	2.06	MILES	Aquatic Life Integrity	pH	5-M				Non-ORW
2018	NHRIV600030608-05	COCHECO RIVER	DOVER	2.06	MILES	Primary Contact Recreation	Escherichia coli	4A-M	9/21/2010	NEW HAMPSHIRE STATEWIDE BACTERIA	39272	Non-ORW
2018	NHRIV600030608-06	INDIAN BROOK	DOVER	1.106	MILES	Aquatic Life Integrity	Chloride	5-P				Non-ORW
2018	NHRIV600030608-06	INDIAN BROOK	DOVER	1.106	MILES	Primary Contact Recreation	Escherichia coli	4A-P	9/21/2010	NEW HAMPSHIRE STATEWIDE BACTERIA	39272	Non-ORW
2018	NHRIV600030608-08	FRESH CREEK - TWOMBLY	ROLLINSFORD,	4.983	MILES	Aquatic Life Integrity	Dissolved oxygen saturation	5-M				Non-ORW
2018	NHRIV600030608-08	FRESH CREEK - TWOMBLY	ROLLINSFORD,	4.983	MILES	Aquatic Life Integrity	Oxygen, Dissolved	5-P				Non-ORW
2018	NHRIV600030608-08	FRESH CREEK - TWOMBLY	ROLLINSFORD,	4.983	MILES	Aquatic Life Integrity	pH	5-M				Non-ORW
2018	NHRIV600030608-08	FRESH CREEK - TWOMBLY	ROLLINSFORD,	4.983	MILES	Primary Contact Recreation	Escherichia coli	4A-M	9/21/2010	NEW HAMPSHIRE STATEWIDE BACTERIA	39272	Non-ORW
2018	NHRIV600030608-10	ROLLINS BROOK	ROLLINSFORD	2.856	MILES	Aquatic Life Integrity	Dissolved oxygen saturation	5-M				Non-ORW
2018	NHRIV600030608-10	ROLLINS BROOK	ROLLINSFORD	2.856	MILES	Aquatic Life Integrity	Oxygen, Dissolved	5-P				Non-ORW
2018	NHRIV600030608-10	ROLLINS BROOK	ROLLINSFORD	2.856	MILES	Aquatic Life Integrity	pH	5-M				Non-ORW
2018	NHRIV600030608-10	ROLLINS BROOK	ROLLINSFORD	2.856	MILES	Primary Contact Recreation	Escherichia coli	4A-P	9/21/2010	NEW HAMPSHIRE STATEWIDE BACTERIA	39272	Non-ORW
2018	NHRIV600030608-11	FRESH CREEK	ROLLINSFORD,	1.126	MILES	Primary Contact Recreation	Escherichia coli	4A-P	9/21/2010	NEW HAMPSHIRE STATEWIDE BACTERIA	39272	Non-ORW
2018	NHRIV600030608-14	UNNAMED TRIB. TO COCH	DOVER	0.169	MILES	Aquatic Life Integrity	Iron	5-M				Non-ORW
2018	NHRIV600030608-15	BERRY BROOK	DOVER	1.106	MILES	Aquatic Life Integrity	Benthic-Macroinvertebrate Bioassessmer	5-M				Non-ORW
2018	NHRIV600030608-15	BERRY BROOK	DOVER	1.106	MILES	Aquatic Life Integrity	Chloride	5-M				Non-ORW
2018	NHRIV600030608-15	BERRY BROOK	DOVER	1.106	MILES	Primary Contact Recreation	Escherichia coli	4A-P	9/21/2010	NEW HAMPSHIRE STATEWIDE BACTERIA	39272	Non-ORW
2018	NHRIV600030608-16	JACKSON BROOK	DOVER	0.724	MILES	Primary Contact Recreation	Escherichia coli	4A-P	9/21/2010	NEW HAMPSHIRE STATEWIDE BACTERIA	39272	Non-ORW
2018	NHRIV600030701-01	LAMPREY RIVER - AND HE/	NORTHWOOD,	13.652	MILES	Aquatic Life Integrity	Dissolved oxygen saturation	5-M				Non-ORW
2018	NHRIV600030701-01	LAMPREY RIVER - AND HE/	NORTHWOOD,	13.652	MILES	Aquatic Life Integrity	Oxygen, Dissolved	5-P				Non-ORW
2018	NHRIV600030701-01	LAMPREY RIVER - AND HE/	NORTHWOOD,	13.652	MILES	Aquatic Life Integrity	pH	5-P				Non-ORW
2018	NHRIV600030701-08	HARTFORD BROOK	DEERFIELD	10.734	MILES	Aquatic Life Integrity	Aluminum	5-M				Non-ORW
2018	NHRIV600030701-08	HARTFORD BROOK	DEERFIELD	10.734	MILES	Aquatic Life Integrity	Benthic-Macroinvertebrate Bioassessmer	5-P				Non-ORW
2018	NHRIV600030701-08	HARTFORD BROOK	DEERFIELD	10.734	MILES	Aquatic Life Integrity	pH	5-M				Non-ORW
2018	NHRIV600030701-09	LAMPREY RIVER	DEERFIELD	7.767	MILES	Aquatic Life Integrity	Dissolved oxygen saturation	5-M				Non-ORW
2018	NHRIV600030701-09	LAMPREY RIVER	DEERFIELD	7.767	MILES	Aquatic Life Integrity	Oxygen, Dissolved	5-P				Non-ORW
2018	NHRIV600030701-09	LAMPREY RIVER	DEERFIELD	7.767	MILES	Aquatic Life Integrity	pH	5-P				Non-ORW
2018	NHRIV600030701-13	LAMPREY RIVER	DEERFIELD	0.041	MILES	Aquatic Life Integrity	Dissolved oxygen saturation	5-M				Non-ORW
2018	NHRIV600030701-13	LAMPREY RIVER	DEERFIELD	0.041	MILES	Aquatic Life Integrity	pH	5-M				Non-ORW
2018	NHRIV600030701-14	LAMPREY RIVER	RAYMOND, DE	6.776	MILES							Review OneStop GIS
2018	NHRIV600030702-01	TR NORTH BRANCH RIVER	CANDIA	8.629	MILES							ORW
2018	NHRIV600030702-02	UNNAMED BROOKS - TO N	CANDIA	3.68	MILES							ORW
2018	NHRIV600030702-03	UNNAMED BROOK - FROM	DEERFIELD	0.131	MILES							ORW
2018	NHRIV600030702-05	NORTH BRANCH RIVER - U	DEERFIELD, CA	3.563	MILES							ORW
2018	NHRIV600030702-06	NORTH BRANCH RIVER - U	DEERFIELD, CA	5.185	MILES							ORW
2018	NHRIV600030702-07	NORTH BRANCH RIVER - U	CANDIA, DEERI	10.013	MILES							ORW
2018	NHRIV600030702-08	UNNAMED BROOK - TO NO	CANDIA, RAYM	1.171	MILES							ORW
2018	NHRIV600030702-09	NORTH BRANCH RIVER	RAYMOND, CA	0.974	MILES							Review OneStop GIS
2018	NHRIV600030702-10	UNNAMED BROOK	CANDIA	1.071	MILES							ORW
2018	NHRIV600030702-11	UNNAMED BROOK	CANDIA	0.839	MILES							ORW
2018	NHRIV600030702-12	UNNAMED BROOK	DEERFIELD	0.59	MILES							ORW
2018	NHRIV600030703-01	UNNAMED BROOK - TO OI	RAYMOND, CA	5.45	MILES	Aquatic Life Integrity	Benthic-Macroinvertebrate Bioassessmer	5-P				Non-ORW
2018	NHRIV600030703-01	UNNAMED BROOK - TO OI	RAYMOND, CA	5.45	MILES	Aquatic Life Integrity	Habitat Assessment (Streams)	4C-M				Non-ORW
2018	NHRIV600030703-01	UNNAMED BROOK - TO OI	RAYMOND, CA	5.45	MILES	Aquatic Life Integrity	pH	5-M				Non-ORW
2018	NHRIV600030703-04	DUDLEY BROOK - UNNAMI	RAYMOND, DE	4.34	MILES	Aquatic Life Integrity	Dissolved oxygen saturation	5-M				Non-ORW
2018	NHRIV600030703-04	DUDLEY BROOK - UNNAMI	RAYMOND, DE	4.34	MILES	Aquatic Life Integrity	Lead	5-M				Non-ORW
2018	NHRIV600030703-04	DUDLEY BROOK - UNNAMI	RAYMOND, DE	4.34	MILES	Aquatic Life Integrity	Oxygen, Dissolved	5-P				Non-ORW
2018	NHRIV600030703-04	DUDLEY BROOK - UNNAMI	RAYMOND, DE	4.34	MILES	Aquatic Life Integrity	pH	5-M				Non-ORW
2018	NHRIV600030703-05	LAMPREY RIVER	RAYMOND	2.647	MILES	Aquatic Life Integrity	pH	5-M				Non-ORW
2018	NHRIV600030703-07-02	LAMPREY RIVER - CARROLI	RAYMOND	0.02	MILES	Primary Contact Recreation	Escherichia coli	4A-P	9/21/2010	NEW HAMPSHIRE STATEWIDE BACTERIA	39276	Non-ORW
2018	NHRIV600030703-09	LAMPREY RIVER	RAYMOND	2.295	MILES	Aquatic Life Integrity	pH	5-M				Non-ORW
2018	NHRIV600030703-10	LAMPREY RIVER	RAYMOND	0.558	MILES	Aquatic Life Integrity	pH	5-M				Non-ORW
2018	NHRIV600030703-11	LAMPREY RIVER	EPPING, RAYM	3.27	MILES	Aquatic Life Integrity	Aluminum	5-M				Non-ORW
2018	NHRIV600030703-11	LAMPREY RIVER	EPPING, RAYM	3.27	MILES	Aquatic Life Integrity	pH	5-M				Non-ORW
2018	NHRIV600030703-14	PAWTUCKAWAY RIVER - U	NOTTINGHAM,	6.751	MILES	Aquatic Life Integrity	Dissolved oxygen saturation	5-M				Non-ORW
2018	NHRIV600030703-14	PAWTUCKAWAY RIVER - U	NOTTINGHAM,	6.751	MILES	Aquatic Life Integrity	Oxygen, Dissolved	5-P				Non-ORW
2018	NHRIV600030703-14	PAWTUCKAWAY RIVER - U	NOTTINGHAM,	6.751	MILES	Aquatic Life Integrity	pH	5-M				Non-ORW
2018	NHRIV600030703-15	LAMPREY RIVER	EPPING	4.692	MILES	Aquatic Life Integrity	Dissolved oxygen saturation	5-M				Non-ORW

EVERSOURCE ENERGY

1700 Lafayette Road
Portsmouth, NH 03801

Trevor S Emmons
603-332-7515
Trevor.emmons@eversource.com

February 8, 2022

John, Scott and Brian O'Neill
Stonearch Development Corp.
42J Dover Point Road
Dover, NH 03820

Dear John, Scott and Brian:

I am responding to your request to confirm the availability of electric service for the proposed between 53 & 65 Tolend Road project being constructed for/by Stonearch Development Corp.

The proposed project consists of 30 duplex buildings with a total of 60 residential units. The proposed development will be constructed along internal roads known as Theodore Drive, Liam Drive and Sun Hawk Extension.

The developer will be responsible for the installation of all underground facilities and infrastructure required to service the new building. The service will be as shown on attached marked up Utility Plan Overview Grading Plan and Subsequent Detail Sheets Land of D. Lutsk, D. Barnes, T. George, L. Mulcahy & Eugene A. & Donna L. Sgtignouli, Tolend Road, Dover, NH Tax Map E, Lot 65-1 & 65-A. The proposed building service will be fed from PSNH 4/91 & PSNH 4/88B as depicted on utility plan. The developer will work with Eversource to obtain all necessary easements and licenses for the proposed underground facilities listed above.

This letter serves as confirmation that Eversource has sufficient capacity in the area to provide service to this proposed development. The cost of extending service to the aforementioned location and any associated infrastructure improvements necessary to provide service will be borne by the developer unless otherwise agreed upon.

The attached drawing titled "Utility Plan Overview Grading Plan and Subsequent Detail Sheets Land of D. Lutsk, D. Barnes, T. George, L. Mulcahy & Eugene A. & Donna L. Sgtignouli, Tolend Road, Dover, NH Tax Map E, Lot 65-1 & 65-A." dated February 10, 2022, shows transformer locations to service your proposed project.

Eversource approves the locations shown; assuming the final installed locations meet all clearances, physical protection, and access requirements as outlined in Eversource's "Information & Requirements For Electric Supply" (https://www.eversource.com/content/docs/default-source/pdfs/requirements-for-electric-service-connections.pdf?sfvrsn=2).

If you require additional information or I can be of further assistance please do not hesitate to contact me at our Rochester Office, 603-332-7515

Respectfully.

Trevor Emmons
Eastern Regional Engineer, Eversource

cc: Michael J. Busby, PE, Eastern Regional Engineering and Design Manager, Eversource
Thomas Boulter, Eastern Region Operations Manager, Eversource
Nickolai Kosko, Field Supervisor, Electric Design, Eversource