

CITY OF DOVER

PLANNING TECHNICAL REVIEW COMMITTEE –AGENDA

Meeting Type: Regular Meeting
Meeting Location: Council Conference Room, City Hall, 288 Central Ave, Dover NH 03820
Meeting Date: **Thursday, August 1, 2024**
Meeting Time: **10:30 AM**

1. 10:30 AM – 11:15 AM: TDR Site Review for Brian Slovenski, Assessor's Map L, Lot 111, zoned R-20, located at 306 Dover Point Road. (Proposal is to construct 2 duplexes and a single family dwelling). SITE-2024-0008



PLAN SNAPSHOT REPORT SITE-2024-0008 FOR CITY OF DOVER, N.H.

Plan Type: Site Plan - Major
Work Class: New Construction
Status: Fees Due
Valuation: \$0.00
Description: TDR Residential Development

Project:
District: None
Square Feet: 0.00
Assigned To: Blonigen, Rachel

App Date: 07/11/2024
Exp Date: 09/14/2024
Completed: NOT COMPLETED
Approval Expire Date:

Parcel: L0111-000000	Main	Address: 306 Dover Point Rd Dover, NH	Main	Zone:
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Engineer
Civilworks New England/
Haight Engineering, PLLC
Stephen J. Haight, P.E.
Business: (603) 749-0443

Owner
Brian Slovenski
Mobile: (603) 969-0080

Applicant
Civilworks New England
Steve Haight
181 Watson Road PO Box
1166
Dover, NH 03820
Business: (603) 749-0443
Mobile: (603) 817-6651

Plan Custom Fields

Total	0	Total2	0	Total3	15115
Total4	0	Total5	0	Total6	5
Total7	0	Total8	0	Total9	0
Street Classification Type	Municipal	Net Change in # Parking Spaces (+/-)	7	Water Service	Municipal
Recording Number		Sewer Service	Municipal	Total Acres (GIS)	1.64
Deed Book	4753	Total SQFT	71438.4	Deed Page	261
Deed Date	4/22/20	Proposed Property Use Residential		Area of Parcel to be Developed (SQFT)	43067
Number of Parking Spaces Existing	0	Number of Parking Spaces Proposed	7	Number of Employees Total	0
Number of Employees in Max Shift	0	Distance to City Water	100	Distance to City Sewer	200
Type of Building to be Built	2 Duplexes, 1 Single Family	Estimated Construction Value	200000000.00	Refuse Removal	Public
Is there an existing Conservation Easement?	No	Existing Conservation Easement Details		TotalImpactFeeSDTOD	0.00
TotalImpactFeeTHTOD	0.00	TotalImpactFee23FTOD	0.00	TotalImpactFeeA4TOD	0.00
TotalImpactFeeMHTOD	0.00	TotalImpactFeeADUTO	0.00	TotalImpactFeeAONRT	0.00
TotalImpactFeeAR55TC	0.00	TotalImpactFeeAR62TC	0.00	Sub Total Residential	0.00
TotalImpactFeeRIRCT	0.00	TotalImpactFeeOCSTO	0.00	TotalImpactFeeITWCT	0.00
TotalImpactFeeNHALT	0.00	TotalImpactFeeOIUTOD	0.00	TotalImpactFeeAFAOT	0.00
Sub Total	0.00	Total of Impact Fees to be Assessed	0.00		
Non-Residential					

Attachment File Name	Added On	Added By	Attachment Group	Notes
Signature_Steve_Haight_7/11/2024.jpg	07/11/2024 15:50	Haight, Steve		Uploaded via CSS

Invoice No.	Fee	Fee Amount	Amount Paid
INV-00008618	Planning General Application Fee	\$200.00	\$0.00
Total for Invoice INV-00008618		\$200.00	\$0.00
NOT INVOICED	Planning Residential Fee	\$500.00	\$0.00

PLAN SNAPSHOT REPORT (SITE-2024-0008)

Planning Impervious Paved Area Fee

\$1,058.05

\$0.00

Total for Invoice NOT INVOICED

\$1,558.05

\$0.00

Grand Total for Plan

\$1,758.05

\$0.00

Workflow Step / Action Name

Action Type

Start Date

End Date

Review v.1

Confirm application complete v.1

Generic Action

Technical Review Committee Meeting Agenda v.1

Task

Land Use Plan Technical Review v.1

Receive Submittal

Technical Review Committee Meeting v.1

Hold Meeting

Planning Board v.1

Planning Board Agenda v.1

Task

Invoice for Notices v.1

Task

Send Notices v.1

Task

Planner Creates Staff Recommendations v.1

Plan Activity

Distribute Planning Board Materials v.1

Task

Planning Board Hearing v.1

Hold Hearing

Planning Board Decision v.1

Plan Activity

NOD Sent to Applicant v.1

Create Report

Final Plan v.1

Land Use Plan Stamped and Signed v.1

Generic Action

Recording v.1

Task

Document Archival v.1

Generic Action

Internal Notification of Plan Completion v.1

Generic Action

Building Official Notifies Address v.1

Generic Action

Pre-Con Meeting v.1

Hold Meeting

Create/Link to Records v.1

Create / Link to Permit - Building Major v.1

Create Sub Permit

Create / Link to Permit - Site Work, Construction v.1

Create Sub Permit

CIVILWORKS NEW ENGLAND

181 WATSON ROAD
P.O. BOX 1166
DOVER, NH 03821-1166
PHONE: 603.749.0443 FAX: 603.749.7348

July 11, 2024

City of Dover
288 Central Ave
Dover, NH 03820

Attn: Donna Benton, Director of Planning & Community Development

Subject: TDR Site Review Permit Application
306 Dover Point Road - Tax Map L, Lot 111
Civilworks New England Reference No. 23140

Dear Ms. Benton:

On behalf of our client, Brian Slovenski, we are pleased to submit the following application(s) and associated materials for review by the Technical Review Committee (TRC). Attached are four (4) copies of associated material items 1-10 listed below, and two (2) copies of the Drainage Report. All materials will be provided electronically (PDF) to the Planning Department:

- 1) Site Plan Review Application (includes notification list, fee schedule & checklist)
- 2) Owner /Applicant Letter of Authorization
- 3) Notice of Decision (TDR) TRAN-2023-0005
- 4) Project Narrative
- 5) Stormwater Management Narrative
- 6) Letters to Serve (emails from City, Eversource)
- 7) Traffic Assessment Memorandum
- 8) Landscape Operation & Maintenance Plan
- 9) Stormwater Inspection and Maintenance Plan
- 10) Site Plan Set, including Landscape Plan, Architect Plans, & Elevations
- 11) Drainage Report w/Supporting Documents & Plans

We look forward to representing these applications at the TRC meeting on August 1, 2024. Please do not hesitate to contact our office should you have any questions.

Sincerely,



Stephen J Haight, PE
CIVILWORKS NEW ENGLAND



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: Brian Slovenski Telephone # 603-969-0080

Address of Applicant: 124 Turtle Pond Road Lee, NH 03861

E-Mail Address: bslov2@gmail.com

Name of Property Owner (if different from applicant): same Telephone # _____

Address of Property Owner: same

PROPERTY INFORMATION

Address of Property: 306 Dover Point Road

Assessor's Map # L Lot(s) # 111

Zoning District(s) R-20 Overlay District(s) Riverfront Residential

Size of Parcel: 71,299 sq. ft. 1.64 ac. Property Deed: Book 4753 Page: 261 (4/22/20)

Existing Use of Property: Single Family Residential

SITE PLAN INFORMATION

Describe Proposed Use: TDR Development: 2 Duplexes, 1 Single Family

Area of Parcel to be Developed: 43,067± sq. ft.

If Multi-family Residential: 2 - 2 unit
Number of Units 1 - 1 unit & Buildings Proposed 3

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

Number of Parking Spaces: Existing 0 Proposed 7 spaces

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

Number of Employees Total: N/A In Maximum Shift: N/A

Disposition of Parcel:

Building 1 2082

Building 2 2072

Building 3 3053 sq. ft.

Total Building Area Building 1 2580
Building 2 2713 sq. ft.
Building 3 4128

Paved Area 15,115 sq. ft.

Building Setbacks:

Front Yard 20 - 35 ft.

Rear Yard 30 ft.

Side Yard: Right 20 ft. Left 20 ft.

City Water? ☒ Yes ☐ No How far is city water from the property? at Dover Point Road

City Sewer? ☒ Yes ☐ No How far is city sewer from the property? at Dover Point Road

TRANSFER OF DEVELOPMENT RIGHTS INFORMATION

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

☒ Residential ☐ Residential (reduced size) ☐ Industrial | ☒ Purchase ☐ Land Preservation

Relief sought (Check All That Apply):

☒ Lot Size ☒ Frontage ☐ Setback ☐ 30' Buffer ☒ Increase by 4 units

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

To allow 4 additional units where only 1 unit was allowed by rights for this zoning district.

(TDR approval granted by Planning Board on January 23,2024)

BUILDING INFORMATION

Type of Building to be Built: Traditional Residential Homes - 2 Duplexes, 1 Single Family

Height of Building: < 35' Finished Floor Elevation: Building 1 (duplex) - 45.0'
Building 2 (duplex) - 40.5'
Number of Seats (where applicable) N/A Building 3 (single) - 39.0'

Estimated value of construction: 2,000,000± Refuse removal ☒ Public ☐ Private (circle one)

WAIVER REQUESTS

Site Review Regulations section(s) to be waived: None

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

SURVEYOR INFORMATION

Name of Surveyor and Company (Licensed in N.H.) Kevin McEneaney, LLS - McEneaney Survey Associates

Address P.O. Box 1166 Dover, NH 03821 Telephone #: 603-742-0911

Professional License #: NH LLS #661 E-mail address: kevin@surveynh.com

ENGINEER INFORMATION

Name of Engineer and Company (Licensed in N.H.) Stephen J. Haight, PE - Civilworks New England

Address P.O. Box 1166 Dover, NH 03821 Telephone #: 603-749-0443

Professional License #: NH PE # 7978 E-mail address: shaight@civilworksne.com

ARCHITECT INFORMATION

Name of Architect and Company (Licensed in N.H.) Michael J. Keane, Architects PLLC

Address 101 Kent Place Newmarket, NH 03857 Telephone #: 603-292-1400

Professional License #: _____ E-mail address: michael@mjkarchitects.com

LANDSCAPE ARCHITECT INFORMATION

Name of Landscape Architect and Company (Licensed in N.H.) Romy N. Maurer, PLA, ASLA - Terrain Planning & Design, LLC

Address 311 Kast Hill Road Hopkinton, NH 03229 Telephone #: 603-746-3512

Professional License #: _____ E-mail address: romy@terrainplanning.com

SOIL SCIENTIST INFORMATION N/A

Name of Soil Scientist and Company (Licensed in N.H.) _____

Address _____ Telephone #: _____

Professional License #: _____ E-mail address: _____

CONSERVATION EASEMENT HOLDER N/A

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.

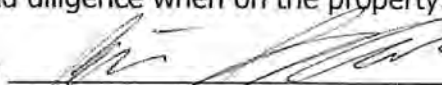
Signature of Property Owner:  Date: 6/18/24

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

Signature of Agent: _____ Date: _____

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: 6/18/24

AUTHORIZATION TO COMPLETE THE PROJECT ON SUBJECT PROPERTY

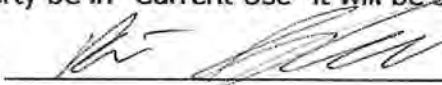
I, and my successors, hereby the City of Dover or its assigns to enter my property for the purpose of completing the site work as required by the approved plan should the letter or credit or other surety be called. It is understood that these individuals must use all reasonable care, courtesy, and diligence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

Signature of Property Owner:  Date: 6/18/24

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

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: 6/18/24

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

***CITY OF DOVER SITE REVIEW
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
L	111	Brian Slovenski	124 Turtle Pond Road Lee, NH 03861

Applicant (if different from owner):

APPLICANT NAME	APPLICANT COMPANY	MAILING ADDRESS

Surveyor and/or Engineer/Professional Agent:

NAME	COMPANY	MAILING ADDRESS
Kevin McEneaney, LLS	McEneaney Survey Associates	P.O. Box 1166 Dover, NH 03821
Stephen J. Haight, PE	Civilworks New England	P.O. Box 1166 Dover, NH 03821

Conservation Easement Holder:

TAX MAP	LOT #	NAME OF EASEMENT HOLDER	MAILING ADDRESS



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: Brian Slovenski File Number: _____

PROJECT TITLE: TDR Site Plan for 5 Residential Units

PROPERTY LOCATION: 306 Dover Point Road Tax Map: L Lot: 111

	Where/How Provided	Reviewed
1. Completed and signed Application form	X	
2. Plan Review Fees are provided	X	
3. Electronic copy of the engineered/surveyed plan 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 Site Plan Review Regulations, with written justification		
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	X	
9. A colored architectural plan showing all sides of buildings	X	
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:	X	
Location map at appropriate scale	X	
Proposed Project 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 width of existing and proposed access/egress ways	X	

	Explain How Provided	Reviewed
Depict pedestrian walkways and accessible access	X	
Existing and proposed property lines with dimensions and bearings tied into Dover's Geographic Information System coordinate system	X	
Existing and proposed topographic information at two foot intervals	X	
Existing and proposed buildings and structure locations	X	
Minimum building setbacks or build to lines on all lots	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 stormwater lines and facilities	X	
Lighting plan depicting all existing and proposed exterior light fixtures and a lighting level analysis for parking lots	X	
Location of Flood Hazard Zone	X	
Location of all bodies of water and watercourses	X	
Location of wetlands and buffers	N/A	
Neighborhood plan with aerial underlay showing how project relates to abutting uses within the plan set	X	
Existing natural features and/or significant vegetation on property	X	
Depict existing contours up to 100 ft. beyond project limits	X	
Landscape plan depicting existing and proposed landscaping, prepared by a licensed Professional Landscape Architect	X	
Location of parking layout delineating spaces and arrangement; note addressing maximum required spaces	X	
Location, material and size of existing and proposed pavement area	X	
Location of proposed fire lanes	N/A	
Specify finished floor elevations of buildings	X	
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	X	
11. Additional Information if appropriate		
Stormwater Management Plan depicting the existing & 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	
Erosion and Sedimentation Control Plan	X	
Landscape Operation and Maintenance Plan	X	
Proposed restrictive covenants or homeowners association documents	X	
Dates and permit numbers of all required state and federal permits	NHDES Shoreland (pending)	
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	X	
Location of proposed drive-in facilities	N/A	
Provide additional exhibits/technical data determined appropriate by the Planning Board or its staff as required	X	

REVIEWED BY: _____ DATE _____ TRC DATE _____

Brian Slovenski
124 Turtle Pond Road
Lee, NH 03861

May 24, 2024

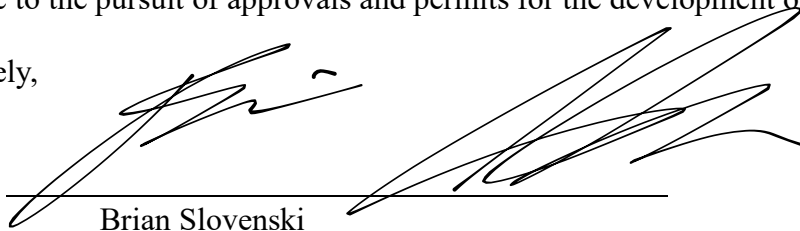
City of Dover
288 Central Avenue
Dover, NH 03820

Attn: Planning Board

Re: LETTER OF OWNER AUTHORIZATION
306 Dover Point Road – Tax Map L, Lot 111

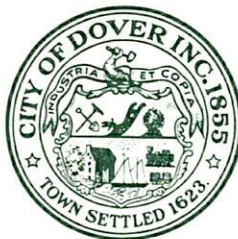
I, Brian Slovenski, authorize Civilworks New England and McEneaney Survey Associates to represent all applications made on behalf of me (OWNER) to the City of Dover Planning Board and any other Dover Board or Committee, as well as any State of NH departments, as necessary, relative to the pursuit of approvals and permits for the development of the subject parcel.

Sincerely,



Brian Slovenski

DONNA P. BENTON, AICP
Director of Planning and
Community Development
d.benton@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

NOTICE OF DECISION

January 24, 2024

Brian Slovenski
124 Turtle Pond Road
Lee, NH 03861

Re: Transfer of Development Rights for Brian Slovenski, Assessor's Map L, Lot 111, zoned R-20, located at 306 Dover Point Road. (Proposal is to purchase four (4) additional living units, within three (3) buildings). (TRAN-2023-0005)

Dear Mr. Slovenski;

Please be advised that on Tuesday, January 23, 2024 the Dover Planning Board voted 5-2 to conditionally approve the request to purchase four (4) Transfer of Development Rights (TDR) units and found the criteria of 170-27.2-G(8) have been met. However, upon receiving a fully engineered plan the Planning Board may reduce this allowance. **The specific subsequent conditions are included with this letter.**

In addition to the subsequent conditions of approval, please provide the following to the Planning Office:

- ☐ Two (2) full size plans and One (1) 11" x 17" plan (plus any additional plans for the applicant or owner)
- ☐ One (1) PDF digital version of the plat

If you have any questions, please do not hesitate to contact my office.

Sincerely,

Donna Benton, AICP
Director of Planning & Community Development

EC: Inspection Services Office
Engineering Office
Assessing Office
Bruton & Berube, PLLC
McEneaney Survey Associates

TDR: Conditions to Be Met Prior to Granting of TDR:

1. Approval of future Site Plan.
2. Add TDR calculation and any restrictions in a note on the plan.
3. Add note to the plan that no additional dwelling units may be added to the property without Planning Board approval and note number of TDR units approved; and
4. Payment of TDR fees for each TDR unit approved

Submitted Received

☐☐☐☐☐☐☐☐

PROJECT NARRATIVE

for

Brian Slovenski

TDR Site Plan Review

5 Unit Residential Development

Tax Map L, Lot 111

PROJECT OVERVIEW & SITE CHARACTERISTICS

The proposed project is for a 5-unit residential development on a 1.64-acre parcel located at 306 Dover Point Road in the Low Density Residential (R-20) District and the Riverfront Residential Overlay District. The parcel abuts the Piscataqua River and is subject to the 100' Conservation District. The parcel is currently developed as residential with an existing single-family home, detached garage, landscape and lawn areas. The proposed site design includes the removal of the existing single-family structure and associated accessory structures, and the construction of three (3) detached residential buildings, two (2) duplexes, and one (1) single-family home for a total of five (5) units, along with a shared access, walkways, grading and drainage, and public utilities improvements. The proposed development will utilize the existing shared driveway with the abutting parcel, Tax Map L, Lot 111-B, along the southerly property line.

This development is designed per a Transfer of Development Rights approval granted on January 23, 2024. Zoning for this parcel allows for one residential unit by rights and the TDR approval granted approval for an increase of four additional residential units.

The project site consists of the following general improvements:

- Clear the site, as necessary, for construction.
- Demolition of existing structures.
- Construction of three (3) residential buildings associated parking, and landscaping.
- Construction of on-site stormwater detention and treatment system, grading, and other drainage requirements.
- Site utility construction & installation.
- Stabilize remaining areas with loam and seed.

DRIVEWAY AND PARKING LOT

The proposed development will utilize the existing shared driveway with the abutting parcel, Tax Map L, Lot 111-B, along the southerly property line. The proposed access for the development from the shared driveway varies in width from 16' to 24' wide and will provide the necessary parking for the proposed 5-unit residential development. The project provides seven (7) additional shared parking spaces, not including the parking spaces in front of or in each garage.

CONSERVATION AND WETLAND SETBACK IMPACT TYPE

The parcel is subject to the City of Dover's Conservation District, 100' setback from the Piscataqua River and Steep Slopes. The proposed site has been designed to avoid impacts to the Conservation District. There are no wetlands on site.

DRAINAGE

The project proposes the construction of a 5-unit residential development and consists of the demolition of the two (2) existing structures, site improvements associated with the construction of 3 residential structures, site access, driveways, walkways, grading and drainage, and utilities. The proposed drainage system incorporates three (3) Rain Guardian structures for pre-treatment, two (2) bio-retention basins and a stone drip edge around one of the buildings to treat and mitigate stormwater. The proposed stormwater system captures, treats, and stores the stormwater runoff from the site and redirects it to the existing discharge points. The proposed stormwater drainage structures will be maintained by the project proponent as outlined within the Stormwater Management document.

TRAFFIC

A traffic assessment was completed for the project and is attached as a report to this submittal. Overall, and as expected, there is a minimal increase in traffic as a result of the proposed development.

UTILITIES

The proposed project will connect to the existing City of Dover water and sewer lines located in Dover Point Road. Existing electric and communication services are also located on Dover Point Road. Building and utility connections will be made per the City's Community Services Utility Division and Fire Department requirements and standards.

SITE DEVELOPMENT DESIGN CRITERIA NARRATIVE

§153-14

STORMWATER MANAGEMENT

for
306 Dover Point Road
Tax Map L, Lot 111

A. Stormwater management, erosion control and flood hazards.

(1) Purpose and objective. These regulations establish standards to manage the discharge of runoff to the City of Dover's municipal storm sewer system and water bodies, in a manner compliant with the requirements of state and federal law, including provisions of the federal stormwater management legislation for municipal separate storm sewer systems (MS4), as amended. These provisions and standards are implemented for the purpose of:

(a) Managing stormwater runoff to protect water quality and quantity. **The proposed development has been designed in accordance with City of Dover's Stormwater management regulations to include the treatment of stormwater runoff utilizing bioretention basins and stone drip edges.**

(b) Minimizing the contribution of a pollutant for which a water body is impaired to the maximum extent practicable (MEP). **The proposed development has been designed in accordance with City of Dover's Stormwater management regulations to include the treatment of stormwater runoff utilizing, bio-retention basins and stone drip edges.**

(c) Causing no discharge of runoff to an adjacent property in excess of runoff discharge in the existing developed or undeveloped condition. **The proposed development proposes a minimal increase in runoff to the Piscataqua River for the 50-year storm event.**

(d) Encouraging the use of low-impact development (LID) strategies. **The project proposes the use of a two (2) bioretention basins and a stone drip edge around one of the proposed buildings for stormwater treatment.**

(2) Applicability of the stormwater standards.

(a) All projects requiring site plan or major subdivision approval shall be subject to the following set of stormwater standards according to the amount and type of disturbance. Applicability is as follows: **The project does not qualify for the redevelopment standards and will create greater than 4,000 square feet of impervious, as such, the stormwater standards apply.**

[1] The minimum protections and management standards shall apply to all projects. **The design incorporates these standards.**

[2] The stormwater management for new development standards shall apply to any project that results in a contiguous land disturbance of more than 20,000 square feet or creates more than 4,000 square feet of new impervious area. **The design incorporates these standards.**

[3] The stormwater management for redevelopment standards shall apply to any project that results in a contiguous land disturbance of more than 20,000 square feet or creates more than 4,000 square feet of new impervious area where the existing land use has

been previously developed as commercial, industrial, institutional, governmental, recreational, or multifamily. **The redevelopment standards are not applicable to this project.**

(b) All projects of such magnitude as to require a permit from the National Pollutant Discharge Elimination System (NPDES) Program or the New Hampshire Department of Environmental Services (NHDES) Alteration of Terrain (AoT) Program shall also comply with the standards of the Environmental Protection Agency (EPA) and/or NHDES permits and this section, whereas the stricter standards shall apply. **The project does not require NH DES AoT permitting or a NPDES CGP through the EPA.**

(3) Design standards.

(a) Minimum protections and management standards.

[1] Where applicable, all development must comply with the EPA Phase II Stormwater Rules and the City's MS4 permit, as amended. **The project complies with the City's design and stormwater requirements.**

[2] Existing surface waters, including ponds, rivers, perennial and intermittent streams (natural or channelized), and wetlands (including vernal pools), shall be protected by the minimum buffer setback as specified in Chapter 170, Zoning, § 170-27.1. Stormwater and erosion and sediment control best management practices (BMPs) shall be located outside the specified buffer zone unless otherwise approved by the Planning Board. **The project does not propose any work in a wetland or wetland buffer zone.**

[3] Low-impact development (LID) site planning and design strategies shall be used to the MEP in order to reduce the generation of the stormwater runoff Volume for both new and redevelopment projects. An owner/applicant must document why LID strategies are not appropriate if not used to manage stormwater. **LID strategies were implemented to the maximum extent practicable.**

[4] All proposed stormwater practices and measures shall be installed and maintained in accordance with manufacturers' specifications and performance specifications outlined in the New Hampshire Stormwater Management Manual Volume 2 (December 2008 or current revision) a copy of which can be found on The NHDES website. **The project incorporates stormwater BMPs designed in accordance with NH DES requirements. A stormwater I&M is also provided.**

[5] All storage facilities for fuel, chemicals, chemical or industrial wastes, and biodegradable raw materials shall meet the regulations of the NHDES, including but not limited to those involving underground storage tanks, aboveground storage tanks, hazardous waste, and best management practices for groundwater protection (Part Env Wq 401). **The project is residential and does not propose the storage of the referenced materials onsite.**

[6] Salt and other deicing materials shall be stored under cover or located such that no direct discharges to receiving waters are possible. Snow storage areas shall be located such that no direct discharges to receiving waters are possible. See the NHDES guidance fact sheet on road salt and snow disposal. **The project does not propose the storage of deicing materials onsite.**

[7] The use of sodium-chloride-based materials for winter maintenance shall be the minimum necessary for safety. The use of sodium-chloride-based materials is

discouraged within the groundwater protection districts. **The project I&M manual directs the owner/operator to produce a salt minimization plan as part of the winter maintenance of the site.**

[8] Impervious surfaces for parking areas and roads shall be minimized to the extent possible. **The project design incorporated the minimization of impervious areas to the maximum extent possible. All aspects of the design including the required number of parking spaces, drive aisle width, and turning areas were evaluated.**

[9] Stormwater runoff from new impervious surfaces shall be directed to a best management practice for flow mitigation, treatment and/or infiltration. **The proposed development has been designed in accordance with City of Dover's Stormwater management regulations to include the treatment of stormwater runoff utilizing bioretention basins and stone drip edges.**

(b) Stormwater management for new development.

[1] Runoff of impervious surfaces shall be treated to provide 80% removal of total suspended solids (TSS) and 50% removal of both total nitrogen and phosphorus. Removal rates shall be determined using approved manufacturer's pollutant removal efficiency analysis or the pollutant removal efficiencies outlined in the New Hampshire Stormwater Management Manual Volume 1, Appendix E (December 2008 or current revision), a copy of which is available from the NHDES website. **The project utilizes two (2) bioretention basins and a stone drip edge for treatment of impervious areas on site. The proposed stormwater management system provides 80% removal of TSS and 50% removal of both total nitrogen and phosphorous per the NH Stormwater Manual and the City of Dover's stormwater regulations.**

[2] Rainfall amount shall be based on current extreme precipitation estimates obtained from the Northeast Regional Climate Center. **The design incorporates NRCC precipitation amounts and the associated storm distribution data.**

[3] Measures shall be taken to control the post-development peak rate runoff so that it does not exceed predevelopment runoff for the two-, ten-, twenty-five- and fifty-year, twenty-four-hour storm events. **The proposed design mitigates post-development peak rate runoff of the 2, 10 and 24-year storm events. The project proposes a minimal increase of 0.4 cfs to the Piscataqua River during the 50-year storm event.**

[4] Measures shall be taken to control the post-development surface water runoff volume so that it does not exceed predevelopment runoff for the two-, ten-, twenty-five- and fifty-year, twenty-four-hour storm events. For sites where infiltration/recharge is limited or not practicable, the owner/applicant must demonstrate that the project will not cause or contribute to flooding or functional impairments to streets, adjacent properties, and downstream properties. **The proposed stormwater measures are designed to infiltrate stormwater runoff. The drainage analysis indicates that stormwater runoff does not exceed the predevelopment runoff volume.**

[5] Infiltration rates for designing groundwater recharge practices shall be determined in accordance with Section Env-Wq 1504.14. **Infiltration test logs are provided, see drainage report.**

[6] Stormwater conveyance practices shall be sized appropriately to convey the ten-year, twenty-four-hour storm event without overtopping or causing flooding on the property.

Stormwater conveyance practices are designed to ensure they pass the 50-yr, 24-hour storm events without overtopping.

[7] For large projects adding greater than or equal to 10 acres of impervious cover, or projects located in known areas of flooding concern, or specifically within areas with a 1% chance of being inundated by water in any given year, the owner/applicant shall submit a supplementary report that describes how the project will not increase the future flooding potential and complies with the AoT requirements pertaining to floodplain impacts as described in Section Env-Wq 1503.09, regardless of whether an AoT permit is required. **The project is located outside of the 0.2 percent annual chance floodplain. The project does not propose permanent or temporary disturbance or alteration of terrain within the flood plain.**

[8] The design of the stormwater management systems shall take into account upstream and upgradient runoff that flows onto, over, or through the site to be developed or redeveloped and provide for this contribution of runoff. **The project has incorporated offsite and upgradient stormwater runoff in support of the design for the stormwater management system.**

[9] Seasonal high-water table elevations must be accounted for in all BMP design criteria. **Test pit information logs are provided, see drainage report.**

[10] Access for maintenance of stormwater facilities must be included as part of the design, where necessary. Access easements may be required. **Stormwater facilities are included on site and the site will be solely owned by the applicant. Stormwater access easements are not required for this project.**

[11] Plantings in treatment areas shall be native grasses, shrubs and/or other native plants in sufficient numbers and density to prevent soil erosion and to achieve water-quality treatment. **A licensed Landscape Architect has produced a site-specific planting plan and O&M document in support of site revegetation including the stormwater BMP(s).**

(c) Stormwater management for redevelopment. In order to determine the stormwater requirements for redevelopment projects, the percentage of the site covered by existing impervious areas must be calculated. Stormwater requirements for redevelopment will vary based upon the amount of site surface area that is covered by existing impervious surfaces. **The project does not meet redevelopment requirements and this section is Not Applicable (N/A).**

[1] For sites meeting the definition of a redevelopment project and having less than 40% existing impervious surface coverage, the stormwater management requirements will be the same as new development projects, with the important distinction that the applicant can meet those requirements either on site or at an approved off-site location (i.e., off-site mitigation). The applicant must satisfactorily demonstrate that impervious area reduction, LID strategies and BMPs have been implemented on site to the MEP. **N/A**

[2] For sites meeting the definition of a redevelopment project and having more than 40% existing impervious surface coverage, stormwater shall be managed in accordance with one or more of the following techniques, listed in order of preference: **N/A**

[a] Implement measures on site that result in mitigation and treatment of at least 30% of the existing impervious cover as well as 50% of the additional proposed impervious surfaces and pavement areas through the application of LID; or

[b] Implement other LID techniques on site to the MEP to provide mitigation and treatment for at least 50% of the entire site area.

[3] The owner/applicant may utilize off-site mitigation to meet the redevelopment requirements when the following standards have been met. **N/A**

[a] The owner/applicant shall demonstrate, to the satisfaction of the Planning Board, that on-site treatment has been implemented to the MEP.

[b] The owner/applicant shall find an approved, off-site location within the same watershed as the project site or within the drainage area of the same receiving water body.

[c] Off-site mitigation shall be equivalent to no less than the total area of pervious cover not treated on site.

[d] The owner/applicant shall submit a full design of the proposed off-site measures for review and approval.

[e] The owner/applicant must also demonstrate that there is no downstream drainage or flooding impact as a result of not providing on-site management.

(d) Erosion control standards during construction. The following standards shall be applied in project planning and shall be implemented prior to and during construction activity: **The plan set includes temporary and permanent sediment and erosion control practice notes and details in support of meeting the erosion control standards.**

[1] All proposed measures shall meet, at a minimum, the design standards for best management practices set forth in the New Hampshire Stormwater Management Manual Volume 3 (December 2008 or current revision), a copy of which is available from the NHDES website. **The sediment and erosion control details provided in the plan set are all designed in accordance with the NH Stormwater Manual.**

[2] When a project requires a stormwater permit from the EPA Construction General Permit (CGP) Program, copies of the stormwater pollution prevention plan (SWPPP) inspections shall be provided to the Community Services Department. **A SWPPP will not be required as the project will not meet the area of disturbance criteria.**

[3] Stripping of vegetation shall be done in a manner that minimizes soil erosion. Whenever practical, natural vegetation shall be retained, protected, or supplemented. **The Erosion Control Notes in the provided plan set indicate that the smallest practical area shall be disturbed during construction.**

[4] The area of land disturbance shall be kept to a minimum and be limited to an area only large enough to accommodate construction activities for a particular construction phase. **The Erosion Control Notes in the provided plan set indicate that the smallest practical area shall be disturbed during construction.**

[5] Off-site surface water and runoff from undisturbed areas shall be diverted away from disturbed areas where feasible, or measures to convey stormwater through the project area without causing erosion of sediment must be included. The integrity of downstream drainage systems shall be maintained. **Direction to ensure that stormwater**

conveyance practices shall be stabilized prior to receiving stormwater runoff is included on the Erosion Control Notes sheet provided as part of this submittal.

[6] Appropriate 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. **Construction scheduling and inspections will be discussed with Community Services at the required pre-construction meeting.**

[7] Perimeter site controls shall not be placed within wetland areas, stream channels or wetland buffers. **This project does not propose any work in a wetland or a wetland buffer.**

[8] 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 calendar days for exposed soil areas that are within 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 calendar days following completion of final grading of exposed soil areas. **The definitions of, and direction for, stabilization of the site is provided on the Erosion Control Notes sheet provided as part of this submittal.**

[9] All temporary erosion and sediment control measures shall be maintained in functioning condition until final site stabilization is accomplished. A proposed BMP inspection schedule shall be included in the submittal. **The erosion control inspection scheduling requirements are identified on the Erosion Control Notes sheet provided as part of this submittal.**

[10] Additional temporary stabilization for the winter season consistent with NHDES guidelines shall be in place for disturbed areas that are not permanently stabilized by October 1, or at the discretion of the Community Services Department. **The NH DES AoT winter construction notes are identified on the Erosion Control Notes sheet provided as part of this submittal.**

[11] Special stabilization details shall be provided with the submission for any land disturbance on slopes equal to or steeper than 3:1. **Slopes greater than 3:1 require erosion control matting and/or armoring and those details are provided in the plan set.**

[12] All temporary erosion and sediment control measures shall be removed after final site stabilization. Trapped sediment and other disturbed soil areas resulting from the removal of temporary measures shall be permanently stabilized within 30 calendar days unless conditions dictate otherwise. **Temporary practice details identify the need to remove sediment and/or stabilize the area once the practices have been removed.**

[13] For projects proposing to disturb and expose soils in areas of 10 acres or more at one time, a temporary (or permanent) sediment basin must be provided with storage for a calculated volume of runoff from a drainage area from a two-year, twenty-four-hour storm, or equivalent control measures, where attainable, until final stabilization of the site. Alternatively, the sediment of storage per acre of drainage area until final stabilization of the site. In determining appropriate locations and number of sediment basins needed, the operators may consider such factors as erodibility of site soils, slope lengths, available area on site, construction period and other unique site considerations. **The project does not propose the disturbance of greater than 10 acres of area. A**

temporary sediment trap detail, designed with a maximum contributing area of 5 acres, has been provided in accordance with NH DES AoT design requirements.

[14] Use of temporary sediment basins should avoid any additional vegetation clearing or site land disturbance not otherwise needed for post-construction. Sediment basin locations must be reviewed by the Community Services Department prior to construction and must consider the potential for off-site impacts, including public safety, especially as it relates to sediment movement and/or sediment basin failure, and alternative sediment controls must be used where site limitations preclude a safe design. **Temporary sediment basin locations, if constructed, will be discussed with Community Services prior to the construction of the practices.**

(e) Installation and construction inspections. The owner/applicant shall be responsible for inspection requirements as follow:

[1] The Community Services Department or its designated agent shall have access to the site to complete routine inspections. **Community Services access and inspection requirements will be discussed at the pre-construction meeting.**

[2] The Community Services Department shall be notified 24 hours prior to installation of a stormwater BMP in order to schedule an inspection. These inspections shall be completed during normal working hours. **The project notes provide direction for the contractor to notify the design engineer and the Community Services Department as required.**

[3] The Planning Board or Community Services Department may require the design engineer and/or an independent third party to provide inspection and oversight of the construction of the stormwater management facilities and erosion and sediment control measures at its discretion. Such oversight may be especially important for implementing techniques such as porous pavement or subsurface stormwater infiltration systems. The owner/applicant shall be responsible for all fees associated with third-party inspections. **A letter can be provided if requested. This letter, if required, will be discussed at the pre-construction meeting.**

[4] 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 stormwater inspector (CESSWI), or a certified professional in stormwater quality (CPSWQ). Inspection reports shall be submitted to the Community Services Department. **The project notes provide direction for the inspector to be qualified and for all reports to be submitted to the Community Services Department.**

[5] The owner is ultimately responsible for the installation, construction, inspection, and disposition of all stormwater management and erosion control measures required by the provisions of these regulations. **The project notes identify the owner as having the responsibility for ensuring the stormwater management and erosion control measures are installed as approved.**

(f) Stormwater management plan (SWMP) submittal requirements. At the discretion of the Planning Board or Community Services Department, a technical review by an independent third party may be required of any SWMP prepared under these regulations. Such a review shall be performed by a qualified professional consultant and the expense of which shall be the full responsibility of the owner/applicant. **The SWMP is a comprehensive set of documents that include, at a minimum, a drainage report, plan set, and Stormwater I&M Manual. These**

documents each serve a role in presenting the necessary information to the appropriate audience. The information required in this section is provided within the SWMP documents.

[1] For projects requiring minimum protection standards, a plan including the following information shall be submitted:

[a] Description of erosion and sediment control measures as well as sequence for final stabilization of the project site. **This information is provided within the Erosion Control Notes within the plan set.**

[b] Proposed changes in impervious cover areas and any changes in pre- and post-development drainage patterns. **This information is provided within the drainage report and the Pre/Post Development Watershed Plans.**

[c] Description of LID proposed measures. **This information is provided in the drainage report and throughout the plan set and details.**

[2] For projects requiring new development or redevelopment standards, a drainage report that contains the following items shall be submitted: **The SWMP documents include the proposed information when applicable.**

[a] Description of construction period and earth movement schedule, including anticipated project start and completion dates, sequence and duration of grading and construction activities, sequence, and timing of installation and/or application of soil erosion and sediment control measures as well as sequence for final stabilization of the project site. **The SWMP documents include the proposed information when applicable.**

[b] Description of the on-site and adjacent wetlands, streams and other water resources, including methods used to identify these resources, and a description of any buffer setbacks that may apply, steep slopes, critical habitat, existing vegetation, areas with a 1% chance of being inundated by water in any given year, and whether any downstream water bodies are listed as impaired according to NHDES's most recent 303(d) list. **The SWMP documents include the proposed information when applicable.**

[c] Soils information for proposed disturbed areas shall be delineated by a certified soil scientist. For all other areas that contribute runoff to the project site, soil types may be identified in accordance with Natural Resources Conservation Service (NRCS) countywide soil survey. **The SWMP documents include the proposed information when applicable.**

[d] Description of existing drainage patterns, receiving water bodies or drainage infrastructure and soil types for recharge potential. **The SWMP documents include the proposed information when applicable.**

[e] Watershed area limits, including any off-site and upstream areas contributing flow to shared drainage channels and/or infrastructure. **The SWMP documents include the proposed information when applicable.**

[f] Description of proposed changes in impervious cover areas and any changes in pre- and post-development drainage patterns. **The SWMP documents include the proposed information when applicable.**

[g] Methods and assumptions used to calculate pre- and post-development runoff volume, peak discharge, and discharge velocity for the specified design storm events. **The SWMP documents include the proposed information when applicable.**

[h] Methods and assumptions used to calculate the pollutant load removal. **The SWMP documents include the proposed information when applicable.**

[i] Description of LID measures that are proposed to limit the development footprint, preserve existing vegetation and mimic existing hydrology to the extent feasible. **The SWMP documents include the proposed information when applicable.**

[j] If not used, provide rationale why LID measures are not practical for the site. **The SWMP documents include the proposed information when applicable.**

[k] Describe measures and calculations for proposed practices used to achieve no net increase in runoff volumes leaving the site. **The SWMP documents include the proposed information when applicable.**

[l] Provide calculations for the infiltration or exfiltration system. **The SWMP documents include the proposed information when applicable.**

[m] If an increase in post-development runoff volume is anticipated due to limited applicability for LID measures and site constraints, provide an assessment and supporting calculations to demonstrate no adverse impacts to downstream infrastructure, adjacent properties, or aquatic habitat. **The SWMP documents include the proposed information when applicable.**

[n] Descriptions, details, and design criteria and calculations for all structural, nonstructural, permanent, and temporary erosion and sedimentation control measures and BMPs. This information should include seeding mixtures and rates, types of sod, methods of seedbed preparation, expected seeding dates (or limitations on seeding time frames), type and rate of lime and fertilizer application, and type and quantity of mulching for temporary and permanent control facilities. **The SWMP documents include the proposed information when applicable.**

[o] Where proposed changes are anticipated within mapped limits of the areas with a 1% chance of being inundated by water in any given year, provide hydrologic and hydraulic analysis to show no net increase in flood elevations. **The SWMP documents include the proposed information when applicable.**

[p] Proposed schedule for the inspection and maintenance of all erosion control measures on site prior to achieving final site stabilization. **The SWMP documents include the proposed information when applicable.**

[q] Describe procedures for removing temporary erosion control measures and removal of accumulated sediment captured by such measures. **The SWMP documents include the proposed information when applicable.**

[r] Any other specific study, calculation, or investigation as requested by the City. **Additional information is provided as requested and may include traffic**

studies, structural designs, septic/sewer designs, geotechnical reports, etc. These documents are provided on a case-by-case basis and as requested by the City.

[s] Describe procedures to limit and/or optimize the use of deicing materials and minimize off-site increases in chloride levels in adjacent surface water and groundwater. **The Stormwater I&M Manual includes the implementation of a salt minimization plan.**

[t] Provide a maintenance and inspection plan for post-construction monitoring of stormwater BMPs to ensure long-term performance and functionality, including details of who will be responsible for inspections and maintenance, proposed schedule, documentation, submittal procedures and contingency plans if future maintenance is required. **A Stormwater I&M Manual is provided as part of the submission.**

[u] Provide copies of pertinent state and federal permits. **Copies of permits will be provided to the City, as applicable.**

(g) Long-term operation and maintenance. The owner shall be responsible for continued inspection and maintenance requirements. **An I&M Manual that identifies the owner's responsibilities has been provided as a part of the submission.**

[1] An operation and maintenance manual shall be created with the following information:

[a] The names of the responsible qualified professionals who will implement the required reporting, inspections, and maintenance activities. **The Owner, Responsible Party, and the Management Company are identified in the I&M Manual.**

[b] An inspection checklist, identifying item or BMP, inspection frequency, and components to be inspected. The list shall clearly outline performance thresholds and triggers for maintenance. **Inspection requirements and maintenance thresholds are identified in the I&M Manual.**

[c] Snow and ice removal shall be performed by a contractor certified by the "Green SnoPro" Program, or approved equivalent, following best management practices for the application of deicing materials. **The I&M Manual requires the use of a Green SnowPro contractor.**

[d] Deicing log to track amount and type of deicing material applied. **The I&M Manual requires the implementation of a salt minimization plan that also requires the owner or operator to track salt usage onsite through a quantity usage log.**

[e] A site plan clearly identifying the locations of all stormwater practices to be inspected and maintained. **The approved Grading and Drainage Plan accompanies the I&M Manual.**

[f] Inspection and maintenance log to be submitted to the City of Dover Community Services Department on an annual basis. Documents shall be submitted no later than December 15 of each year. **The I&M Manual identifies this requirement.**

[2] The owner of record shall record at the Registry of Deeds documentation sufficient to provide notice to all persons 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 of the requirements for maintenance and reporting. **Not Applicable.**

Jase Gregoire

From: Jase Gregoire
Sent: Thursday, June 6, 2024 1:16 PM
To: Mavrogeorge, Kenneth
Cc: Steve Haight; Kevin McEneaney
Subject: CNE#23140-Slovenski- 306 Dover point Road - Water and Sewer Availability
Attachments: CNE23140-Slovenski- Draft Utility Plan (6-6-24).pdf; NHDOT PROJ 11238Q-SHEET No 278.pdf

Good afternoon Ken,

Our client is proposing a 5-unit residential TDR development located at 306 Dover Point Road. The project consists of demolition of the existing residential structure and the construction of three (3) detached residential structures, building 1 and 2 are each 2-units, building 3 a 1-unit. Attached is the draft utility plan for reference.

The project total design flow is estimated below:

Building 1:

2 Apartment Units x 2 Bedrooms/unit = 4 Bedrooms

4 Bedrooms x 150 GPD/bedroom = 600 GPD

Building 2:

2 Apartment Units x 2 Bedrooms/unit = 4 Bedrooms

4 Bedrooms x 150 GPD/bedroom = 600 GPD

Building 3:

1 unit x 4 Bedrooms/unit = 4 Bedrooms

4 Bedrooms x 150 GPD/bedroom = 600 GPD

Total estimated design flow = 1,800 GPD

**This design flow rate is based on NHDES Env-Wq 1008.03 Table 1008-1 Unit Design Flow Figures.*

We are finalizing the design plans and preparing the first TRC site plan application, as required by the City, could you please provide us with a letter acknowledging that the city can provide water and sewer to this proposed development.

A couple things to note about the water and sewer:

Water:

The existing water line, as shown on the attached draft utility plan, is approximate and was taken from the NHDOT plans dated 2016 (I've attached a copy for reference). Do you know of any location discrepancy with this plan and the actual location of the waterline in Dover Point Road?

Sewer:

There are two (2) existing sewer mains located on the subject parcel, 1 located down closer to the river, and the other located on the property line that abuts Dover Point Road. We are proposing to tie into the one located near Dover Point Road, however we noticed the sewer run was "dry" when we popped the manhole covers for inverts. Could you please verify that this sewer main is live and this project has the ability to tie into it?

If you have any questions or require more information, please do not hesitate to get back to us.

Thank you for your assistance on this project

Jase

Jase R. Gregoire, EIT
Project Engineer
Civilworks New England/Haight Engineering, PLLC
181 Watson Road
P.O. Box 1166
Dover, New Hampshire 03821
O: 603.749.0443
jgregoire@civilworksne.com
www.civilworksne.com

July 09, 2024

Brian Slovenski
124 Turtle Pond Road
Lee, NH 03861

1700 Lafayette Road
Portsmouth, NH 03801

Trevor S Emmons
603-332-7515
Trevor.emmons@eversource.com

Dear Brian Slovenski:

I am responding to your request to confirm the availability of electric service for the proposed 306 Dover Point Road, Dover NH 03820 project being constructed for/by Brian Slovenski.

The proposed project consists of (3) residential buildings, (2) 2-story duplexes, (1) 2-story single family home for a total of 5 residential units; Unit 1 Living Area = 1,186 sf, Unit 2 Living Area = 1,394 sf, Unit 3 Living Area = 1,292 sf, Unit 4 Living Area = 1,421 sf, and Unit 5 Living Area = 4,128 sf. The proposed development will be constructed along Dover Point Road.

The developer will be responsible for the installation of all underground/overhead facilities and infrastructure required to service the new buildings. The service will be as shown on attached marked up Utility Plan. The proposed building service will be fed from to be determined by Eversource Engineering and will need to be updated on utility plan. The developer will work with Eversource to obtain all necessary easements and licenses for the proposed underground/overhead 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" dated 06/24/2024, 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: Thomas Boulter, Eastern Region Operations Manager, Eversource
Nickolai Kosko, Field Supervisor, Electric Design, Eversource



CIVILWORKS NEW ENGLAND

181 WATSON ROAD
P.O. BOX 1166
DOVER, NH 03821-1166
PHONE: 603.749.0443

TRAFFIC ASSESSMENT MEMORANDUM

May 31, 2024

INTRODUCTION

Civilworks New England has prepared this traffic-assessment memorandum (TAM) regarding the residential development project proposed at Tax Map L, Lot No. 11, otherwise known as 306 Dover Point Road, in Dover, NH.

This TAM includes:

- existing site description
- proposed project description
- road description
- public transit
- sight distances at the proposed driveway
- trip generation
- trip distribution/assignment
- potential traffic impacts

This TAM concludes that:

- relevant sight distances at the Dover Point Road/proposed driveway intersection will be adequate.
- The proposed project is not anticipated to add significant new traffic to the area.

EXISTING SITE DESCRIPTION

The project site:

- is along the easterly side of east side of Dover Point Road.
- Is located approximately 1,500 feet northeast of the Spaulding Turnpike exit 6
- has a lot area of 71,299 square feet (1.64 acres).
- contains an existing residential home and detached garage.
- is adjacent to the Coastal Furniture commercial use (located immediately to the north) and a residential home behind that building, and adjacent to residential home to the southeast.
- has an existing driveway (northern driveway) serving the existing residential home on the property, the furniture store and the house behind such.
- has an existing driveway (southern driveway) serving the residential home to the southeast rear of the property (separate parcel).

PROPOSED PROJECT DESCRIPTION

The project will provide a total of six new single family housing units contained within three two-story buildings. However, one single family detached home already exists on the property so the net increase will be only five units. The existing southern driveway, which will remain unsignalized, will be within a right-of-way along the southern property line enabling it to provide access to the three new buildings. This driveway will also continue to serve the existing house to the southeast. The existing northern driveway will continue to serve the furniture store and the house behind it but will not provide access to any of the new units.

ROAD DESCRIPTION

Dover Point Road:

- is under the jurisdiction of the NHDOT in the project area.
- is oriented north – south with a straight/linear horizontal alignment.

CIVILWORKS NEW ENGLAND

181 WATSON ROAD
P.O. BOX 1166
DOVER, NH 03821-1166
PHONE: 603.749.0443

- becomes NHDOT Route 4 just southwest of the property.
- has very limited vertical grade change.
- has bituminous concrete pavement in overall good condition.
- For travel lanes:
 - has one travel lane in the north-bound direction (project site side), with a pavement width of approximately 18 feet.
 - has two travel lanes in the south-bound direction including a through-lane to Route 4 and a left-turn lane for continuance onto Dover Point Road; with the pavement width being approximately 12 feet for each.
- has no sidewalks on either side, but does contain relatively wide paved shoulders (approx. 5 feet in width).
- streetside parking is not allowed.
- has marked pavement (centerline striping, lane “fog” side lines and left turn arrows).
- has a posted speed limit of 35 MPH in the vicinity of the property which changes to 40 MPH to the north.
- has a total average daily traffic (ADT) volume of 11,195 vehicles (5,992 northbound and 5,203 southbound) as reported by the NHDOT for 2023.
- includes existing utility services.

PUBLIC TRANSIT

Collaborative Alliance for Seacoast Transportation (COAST) Route 13 provides bus service in the area. Service is on Mondays through Saturdays, except holidays. A bus stop for southbound trips to the Portsmouth area is just to the north near Homestead Lane. A bus stop for northbound trips to downtown Dover and the Amtrak station is on the project side of the street at Coastal Furniture. Route 13 connects with:

- downtown Dover
- St. Thomas Aquinas high school
- Dover Transportation Center = COAST Transit Center and Amtrak “Downeaster” train station

SIGHT DISTANCES

The project site is on the outside of a gradual curving alignment of Dover Point Road that has limited elevation change so sight distance in both directions is optimized. Several residential driveways exist along this stretch of roadway; including those to the south and several to the north.

The American Association of State Highway and Transportation Officials (AASHTO) has established authoritative policy for appropriate sight distances in terms of stopping sight distance (SSD) for vehicles on the main road reacting to existing traffic, and intersection sight distance (ISD) for left turn movements from a stop. For a 35 mile per hour roadway, AASHTO has established the SSD to be 250 feet and ISD to be 390 feet. For a 40 mile per hour speed, SSD is established to be 305 feet and ISD to be 445 feet. The available sight distance to the north and south at the proposed project driveway are on the order of 500 feet or more which is suitable for ISD at 45 miles per hour.

Therefore, ample stopping and intersection sight distances are provided and are adequate to provide a safe means of egress. Sight distance from the access drive will not be impeded by streetside parking and the unobstructed nature of the streetside, and wide paved shoulders, provide the opportunity to maintain these sightlines unhindered throughout the year.

CIVILWORKS NEW ENGLAND

181 WATSON ROAD
P.O. BOX 1166
DOVER, NH 03821-1166
PHONE: 603.749.0443

CALCULATED TRIP GENERATION

The Institute of Transportation Engineers (ITE) compiles and publishes trip-generation information for a variety of land uses in *Trip Generation Manual*.¹ This authoritative guide for calculating site traffic includes vehicle trip information for a single-family residential development for both attached and detached dwelling units in a general urban/suburban area; which is known in the ITE *Trip Generation Manual* as Land Use Code 215 (LUC) and LUC 210, respectively. In both LUCs, trip data is based on the number of dwelling units.

The project will provide five attached units (distributed over two buildings) and one detached unit in the third building, for a total of six new single family housing units contained within the three two-story buildings. However, as mentioned in the Project Description section above, one single-family detached home already exists on the property so the *net increase will be only five single-family attached units*.

Table 1 and Table 2 show calculated vehicle trip ends associated with the proposed development project. Table 2 data applies to both the proposed single-family detached home and the existing single-family detached house on the property.

Table 1: Trip Generation - Single-Family Attached Housing (5 Units)					
Weekday Period	Avg. Trips	Vehicle Trips*			
		Proposed Units	Total	In	Out
Daily	Eq.= Neg. #, Use Ave.	5	36	18	18
AM Peak Hour of Adjacent Street Traffic	Eq.= Neg. #, Use Ave.	5	2.4	0.7	1.7
PM Peak Hour of Adjacent Street Traffic	Eq.= Neg. #, Use Ave.	5	2.9	1.6	1.3
* ITE, <i>Trip Generation Manual</i> , Single-Family Attached Housing - Land Use Code 215					

Weekday Trips = 7.62(Units) - 50.48 (50% entering, 50% exiting) with Average Rate = 7.20 Trips per Unit

AM Trips = 0.52(Units) - 5.70 (31% entering, 69% exiting) with Average Rate = 0.48 Trips per Unit

PM Trips = 0.60(Units) - 3.93 (57% entering, 43% exiting) with Average Rate = 0.57 per Unit

Table 2: Trip Generation - Single-Family Detached Housing (1 Unit)					
Weekday Period	Avg. Trips	Vehicle Trips*			
		Proposed Units	Total	In	Out
Daily	See Equation	1	14.6	7.3	7.3
AM Peak Hour of Adjacent Street Traffic	See Equation	1	1.1	0.3	0.8
PM Peak Hour of Adjacent Street Traffic	See Equation	1	1.3	0.8	0.5
* ITE, <i>Trip Generation Manual</i> , Single-Family Detached Housing - Land Use Code 210					

Weekday Trips = $\ln(T) = 0.92 \ln(\text{Units}) + 2.68$ (50% entering, 50% exiting)

AM Trips = $\ln(T) = 0.91 \ln(\text{Units}) + 0.12$ (26% entering, 74% exiting)

PM Trips = $\ln(T) = 0.94 \ln(\text{Units}) + 0.27$ (63% entering, 37% exiting)

¹ ITE, *Trip Generation Manual*, 11th edition (Washington DC, September 2021)

CIVILWORKS NEW ENGLAND

181 WATSON ROAD
P.O. BOX 1166
DOVER, NH 03821-1166
PHONE: 603.749.0443

TRIP DISTRIBUTION/ASSIGNMENT

All project-related trips will access the site from Dover Point Road. The calculated vehicle trip generation for the development project is so low, especially at peak hours, that area traffic operations are not sensitive to trip distribution/assignment of project vehicle trips.

POTENTIAL TRAFFIC IMPACTS

The calculations show total increase in vehicle trips to be generated by the project as:

- Daily (weekday) = 50.6 total trips (25.3 in and 25.3 out) [6 unit project]
Less 14.6 existing trips (7.3 in and 7.3 out) [existing house on property]
Net Increase = 36 trips (18 in and 18 out)
- AM peak hour (weekday) = 3.5 total trips (1.0 in and 2.5 out)
Less 1.1 existing trips (0.3 in and 0.8 out)
Net Increase = 2.4 trips (0.7 in and 1.7 out)
- PM peak hour (weekday) = 4.2 total trips (2.4 in and 1.8 out)
Less 2.9 existing trips (1.6 in and 1.3 out)
Net Increase = 1.3 trips (0.8 in and 0.5 out)

The increase in weekday trips represents only 0.32 percent of the current ADT on Dover Point Road. Therefore, the proposed project is not anticipated to add significant new traffic to the surrounding area, nor impact such.

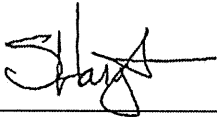
CONCLUSION

In conclusion:

- Sight distances at the Dover Point Road/proposed driveway intersection will be adequate.
- The proposed project is not anticipated to add significant new traffic to the area.

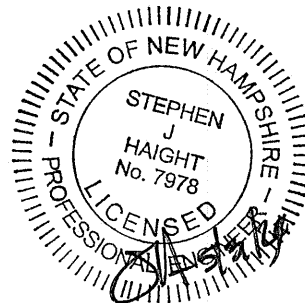
CIVILWORKS NEW ENGLAND

Sincerely,



Stephen J. Haight, PE

Cc: Brian Slovenski



Landscape Best Management Practices Operations and Maintenance Plan

Residential Site

306 Dover Point Road
Dover, New Hampshire 03820

Prepared for:

Jase R. Gregoire
Civilworks New England
181 Watson Road
PO Box 1166
Dover, NH 03821

Prepared by:

Terrain Planning & Design, LLC
311 Kast Hill Road
Hopkinton, NH 03229



Landscape Maintenance

Introduction:

The landscape enhancements proposed for the proposed commercial development will require modest maintenance at various times throughout the year. For the site plantings, maintenance is most important during the first 1-2 years following installation when plants are becoming established. Anyone involved in the upkeep of the facility should become familiar with the landscape and its features. Identified below are basic, at minimum, maintenance tasks:

Weekly Tasks:

1. Prune back any shrubs overhanging curbs or sidewalks.
2. Remove litter from plants bed.
3. Remove broken or fallen branches from trees.
4. Prune sucker growth from tree trunks.
5. Remove weeds larger than 2 inches high or wide from plant beds. Weeds 2 inches and larger must be removed, not just killed. **The application of herbicides such as Roundup is discouraged.**
6. Any invasive species seedlings observed should be removed and disposed of properly.
7. Replace bark mulch that may have been washed out of planting beds. Smooth mulch layer if it has been disturbed.
8. Check plants for signs of stress, pests, or disease and notify Owner for authorization to replace.
9. If a significant decline in plant health is attributed to an insect pest, **apply an organic product and/or process** to control the pest.
10. Water plants that are dry and stressed.
11. Notify Owner for authorization to replace dead plants at the appropriate time (see annual tasks, September).
12. Identify other tasks listed on the Annual and Monthly checklist of tasks.

Annual Tasks

Early Spring:

1. Prune winter damage such as broken tree branches that interfere with public safety.
2. Trim dead perennial foliage left in the fall for winter interest to within six inches of the ground.
3. Add new mulch to plant beds where the mulch depth has been reduced to less than 2 inches. Mulch depth shall not exceed two inches (top dressed). Mulch is not required where shrubs or groundcover completely hide the soil surface from view.
4. Gently prune shrubs at appropriate time of year based on species, for shape and form. **Do not shear.**
5. Energize the irrigation system, repair damaged components, test the system, adjust heads, and update programming.
6. Conduct a soil test to measure at a minimum, pH, phosphorus, potassium, calcium, and magnesium. Follow the recommendations provided with the soil test results.
7. Apply fertilizer only when required. A single application of fertilizer per year before Memorial Day is encouraged.

Monthly Tasks

June:

No additional items

July:

No additional items

August:

No additional items

September:

1. Inventory all plant materials, including an exact count of all shrubs and trees.
2. Replace any dead or missing plants.
3. Aerate lawn areas.
4. Apply pelletized lime at a rate of 80 lbs/1,000 square feet or as soil test dictates.

October:

1. Winterize irrigation system.

November:

1. Remove leaves from lawn areas and planting beds.
2. Remove perennial vegetation that has died back for the season.
3. Apply "WILT-PRUF" to broadleaf evergreens, according to label instructions, to protect shrubs from winter die back.

December:

1. Prune any tree branches that interfere with public safety.
2. Prune street and parking lot trees yearly to encourage strong growth the following growing season. Trees adjacent to pedestrian sidewalks shall have branches pruned to 6-foot height.

Management Task or Activity	Time or Frequency						
	Weekly	Monthly	Spring	Summer	Fall	Winter	After Major Rain Events
Replace dead or dying plants			X				
Remove weeds	X		X	X	X		
Cut down grasses			X				
Remove accumulated leaves, litter, and plant debris		X					X

Stormwater Detention Facilities

Introduction:

The stormwater facilities are used to attenuate flow and treat stormwater. The stormwater treatment areas consist of a large bioretention pond and linear swales seeded with a variety of native, adaptable, and rugged perennial grasses, and sometimes additional flowering plants. There are maintenance tasks associated with stormwater facilities.

Erosion:

The soil in the facility and in areas draining to the facility shall be inspected for erosion. Eroded areas shall be filled with soil or mulch and seeded with the approved seed mix for the location.

Sediment Accumulation & Clogging:

The accumulation of sediment within the facility may reduce its infiltration capacity and impair performance. The facility shall be inspected for accumulation of sediment and excessive sediment shall be removed with the area re-mulched and replanted as appropriate and necessary.

Outlet Structure Maintenance:

The facility outlet structure requires monitoring. Periodically, the orifice on the outlet pipe may clog with debris. Any found debris should be removed and appropriately disposed of off-site.

Debris & Litter:

Debris and litter should be removed monthly to maintain aesthetic appearance and public acceptance.

Plant Maintenance:

Healthy vegetation contributes to the optimal operation of the stormwater facility. Planting area maintenance tasks include the removal of accumulated leaves, litter, and plant debris as needed. During the first 1-2 years after planting, the facility should be monitored for invasive species and weeded as needed and appropriate. Well-established facility vegetation should be mowed annually in the fall.

Snow Storage:

Snow shall not be dumped directly onto the facility.

Chlorides:

The stormwater facility is not suitable for treating chlorides. Chloride use on source surface areas tributary to the facility should be avoided if possible. In these locations, it would be prudent to eliminate or reduce application of chloride-containing deicing compounds, use alternative deicers, or apply clean sand as needed. Aggressive sweeping in these areas, along with pretreatment sumps and filter strips, will minimize the negative impact of the sand on the facility.

Management Task or Activity	Time or Frequency						
	Weekly	Monthly	Spring	Summer	Fall	Winter	After Major Rain Events
Inspect for erosion. Rake and redistribute/replenish any soil, rap, or mulch that has eroded		X					X
Inspect for standing water							X
Remove accumulated leaves, litter, and plant debris		X					X
Weed plant material		X					
Mow plant material					X		

Stormwater Management System Inspection & Maintenance Plan

Prepared for:

**SLOVENSKI RESIDENTIAL TDR DEVELOPMENT
Map L, Lot 111**

**Dover Point Road
Dover, New Hampshire
Strafford County**

June 2024

Owner of Record:

BRIAN SLOVENSKI
124 Turtle Pond Road
Lee, New Hampshire 03861

Prepared By:

CIVILWORKS NEW ENGLAND
P.O. Box 1166
181 Watson Road
Dover, New Hampshire 03821

Introduction

Civilworks New England, has prepared the following Stormwater Management System Inspection & Maintenance Plan for **Brian Slovenski**. The intent of this plan is to provide a list of procedures that document the inspection and maintenance requirements of the Stormwater Management System for this site.

The inspection and maintenance requirements outlined in this document are required to be performed in perpetuity. In the event the property is sold, future owners will be responsible for implementing the responsibilities outlined in this document.

The following inspection and maintenance program is necessary in order to keep the Stormwater Management System functioning properly. These measures will also help to minimize potential environmental impacts to the areas surrounding the developed site. By following the enclosed procedures, the property owners, and maintenance personnel will be able to maintain the functional design of the Stormwater Management System and maximize its ability to remove sediment and other contaminants from site generated stormwater runoff.

This plan also requires the Owner/Operator to prepare and implement a salt minimization plan to reduce salt usage on-site and ultimately within the watershed. This plan will allow the owner/operator to monitor and modify how much salt is needed, when it should be applied, and where it needs to be applied, with the ultimate goal of reducing salt-use without compromising safety. It is expected that salt-use reduction will lead to long-term cost-savings as a result of purchasing less salt and reduced impacts on vegetation (e.g., landscaping) and corrosion of infrastructure.

The salt minimization plan should include the retention of a contractor who has completed the Green SnowPro Training course and obtained NHDES Salt Application Certification.

It is anticipated that this be a living document that will be updated at regular intervals (recommend updating annually in advance of the winter season in order to facilitate adjustments).

Owner:

**Brian Slovenski
124 Turtle Pond Road
Lee NH 03861**

In the event of a change in ownership, this Inspection and Maintenance Plan shall be transferred to the new party.

Contact / Responsible Party:

**Brian Slovenski
124 Turtle Pond Road
Lee NH 03861**

**Brian Slovenski
Phone: (603) 969-0080
Email: bslov2@gmail.com**

The contact information for the Contact / Responsible Party shall be kept current.

Management Company:

**Brian Slovenski
124 Turtle Pond Road
Lee NH 03861**

The contact information for the Management Party shall be kept current.

Inspection Schedule / Record Retention

Inspection frequency should, at a minimum, be in accordance with New Hampshire Stormwater Manual, Volume 2, latest edition, as updated by NHDES. See the Inspection and Maintenance Plan for frequency requirements. A copy of the completed Stormwater Management System's Inspection & Maintenance Log and Deicing Salt Quantity Use Log shall be maintained, kept on-site, and be made available to local, state, or federal regulators as applicable by law. All Inspection and Maintenance records must be provided to the City of Dover Community Services Department annually before Dec 15th.

Stormwater Management System Components

The Stormwater Management System associated with the project is designed to mitigate both the quantity and quality of site-generated stormwater runoff. As a result, its design includes the following elements:

- Bioretention Basins
- Stone Drip Edges
- Pavement
- Litter / Trash Removal

Design elements are identified in the design plans, a copy of which shall be maintained with this Inspection and Maintenance Plan.

Control of Invasive Species

During maintenance activities, check for the presence of invasive plants and remove in a safe manner. Invasive plants shall be controlled to prevent them from reproducing, spreading, or re-growing. See the University of New Hampshire – Cooperative Extension's "Method for Disposing Non-Native Invasive Plants", included at the end of this manual, for guidance on the removal and disposal of invasive species.

Inspection and Maintenance Plan

By implementing the following procedures, the owners will be able to maintain the functional design of the Stormwater Management System and maximize the system's ability to remove sediment and other contaminants from site generated stormwater runoff.

BIORETENTION BASINS:

- Inspection, by a **qualified professional**, of the Bioretention Basin at least twice annually, and following any rainfall event exceeding 2.5 inches in a 24-hour period, with maintenance or rehabilitation conducted as warranted by such inspection. If the Bioretention Basin systems do not drain within 72-hours following a rainfall event, a qualified professional should assess the condition and determine measures required to restore filtration practice (as applicable).
- Embankments and spillways should be inspected by a **qualified professional** for settlement, erosion, seepage, animal burrows, woody vegetation, and other conditions that could degrade the embankment and reduce its stability for impounding water. Immediate corrective action should be implemented if any such conditions are found.
- Inlet and outlet pipes, inlet and outlet structures, energy dissipation structures or practices, and other structural appurtenances should be inspected by a **qualified professional**, and corrective action implemented (e.g., maintenance, repairs, or replacement) as indicated by such inspection.
- The bottoms, interior and exterior side slopes, and crest of earthen detention basins should be mowed, and the vegetation maintained in healthy condition, as appropriate to the function of the facility and type of vegetation.
- Vegetated embankments that serve as "berms" or "dams" that impound water should be mowed at least once annually to prevent the establishment of woody vegetation.
- Trash and debris should be removed from the pond and any inlet or outlet structures whenever observed.
- Accumulated sediment should be removed when it significantly affects pond capacity.

STONE DRIP EDGES:

- Inspect twice annually and following any rainfall event exceeding 2.5 inches in a 24 hour period.
- If system does not drain within 72-hours following a rainfall event, a qualified engineer should inspect the system and determine measures required to restore the condition of the facility.
- Follow the University of New Hampshire's "Methods for Disposing Non-Native Invasive Plants" for disposing of invasive species (Attached).
- There shall be no use of chemical herbicides or pesticides, except for wildlife habitat management and then only in coordination with the New Hampshire Fish and Game Nongame and Endangered Wildlife Program. Herbicides or pesticides are absolutely prohibited within wetlands or wetland buffer setbacks.

PAVEMENT:

- Minimize sanding.
- Minimize application of salt for ice control.
- Clean periodically (1-2 times per year) using a sweeper or vacuum sweeper. Vacuum sweeping is the preferred method.

LITTER / TRASH REMOVAL:

- Routinely patrol site for litter pick-up.

DE-ICING AGENTS:

- To address the concerns associated with the application of chlorides and other deicing materials, NHDES recommends that the Owner/Operator develop a Road Salt and Deicing Minimization Plan for the parking lots and roadways. The plan should develop the policies that the development will keep in place to minimize salt and other deicer use after the project has been completed. The plan should include tracking the use of salt and other deicers for each storm event and compiling salt use data annually. (See Deicing Salt Quantity Use Log).
- Use sand as primary agent for driveway and access way safety during ice and snow conditions.
- Minimize the use of salt during the winter.
- Use de-icing or anti-caking agents, added to enhance performance and application characteristics of sand mixtures, only as necessary and at minimum application rates.
- Recommend using a certified Winter Operator (Green SnowPro Trained) for applying de-icing agents.
- Monitor weather and apply de-icing agents based on weather conditions and temperatures.

ANTI-ICING AND SALT MINIMIZATION:

- Owner to develop a Road Salt and Deicing Minimization Plan.
- Provide a written policy that the "Development" will keep in place to minimize salt and other deicer use after the project has been completed.
- Use the attached form to track the use of salt and other deicers for each storm event and compiling salt use data annually.

Inspection & Maintenance Table

System Component / BMP	Minimum Inspection Frequency	Minimum Inspection Requirements	Maintenance / Cleanout Threshold
Bioretention Basins • Inlet/Outlet Piping • Embankments • Pond Sediment • Trash/Debris • Vegetation (Veg.)	Bi-Annually “ “ Periodically “ “ “ “	• Check for erosion, settlement, seepage, etc. • Check for sediment accumulation in pond • Check for trash (in pond and structures) • Maintain 95% veg. (pond & slopes) • Maintain healthy stand of veg.	Repair immediately ≥ 2 in. sediment Remove all trash/debris Restore veg. in-kind Mow when ≥ 6 in
Stone Drip Edges	Bi-Annually	• Check for sediment accumulation • Check for woody vegetation growth • Check for debris	Remove/Dispose of accordingly Mow twice per year Remove/Dispose of accordingly
Pavement: • Sanding • Salt Applications • Sweep/Vacuum • Trash/Debris	Limit use As required 1 - 2 x's Year Periodically	• Minimize use to prevent tracking issues • RECORD APPLICATION RATES • Sweep or vacuum to prevent tracking issues • Check for trash/debris	Sweep to prevent issues Minimize (as required) Sweep/Vac as needed Remove when noticed
Litter / Trash Removal	Periodically	• Check for litter and trash	Remove when noticed

Inspection & Maintenance Checklist/Log

The following pages contain a blank copy of the Stormwater Management System's Inspection & Maintenance Log and a Deicing Salt Quantity Use Log. These forms are provided to assist the owners with the inspection and maintenance of the aforementioned Stormwater Management System.

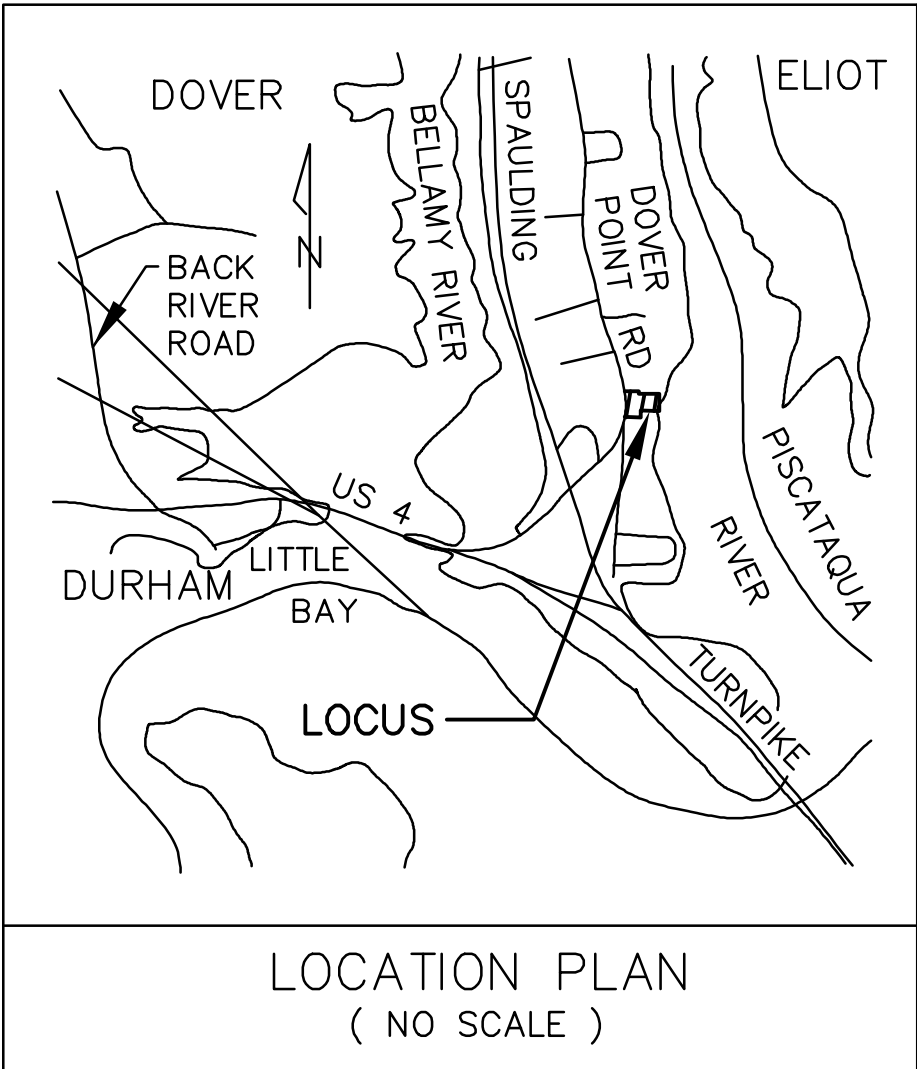
Stormwater Management System's Inspection & Maintenance Log

Date of Inspection/Maintenance _____ Inspector: _____

[illegible]

Deicing Salt Quantity Use Log

[illegible]

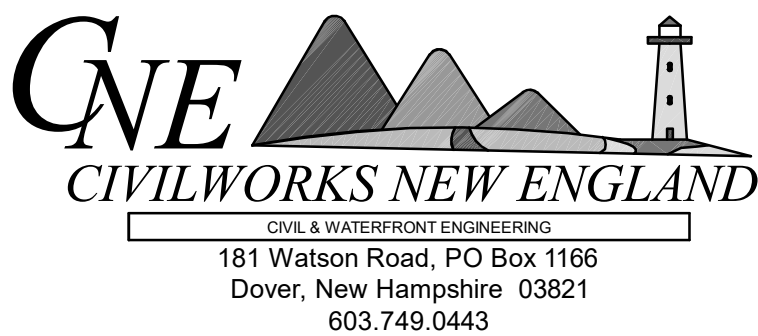


TDR SITE PLAN
FOR
5 RESIDENTIAL UNITS
TAX MAP L, LOT 111
306 DOVER POINT ROAD
DOVER, NH
JULY 9, 2024

OWNER/APPLICANT BRIAN SLOVENSKI
124 TURTLE POND ROAD
LEE, NH 03861

DATE

SITE CIVIL ENGINEER



LAND SURVEYOR

MCENEANEY SURVEY ASSOCIATES OF NEW ENGLAND
P.O. BOX 1166
181 WATSON ROAD
DOVER, NH 03821
(603) 742-0911

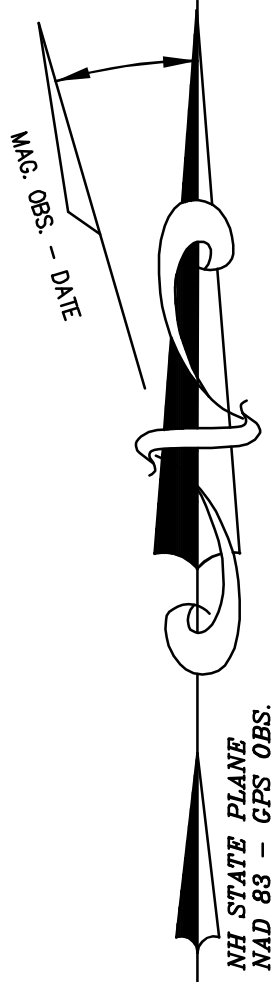
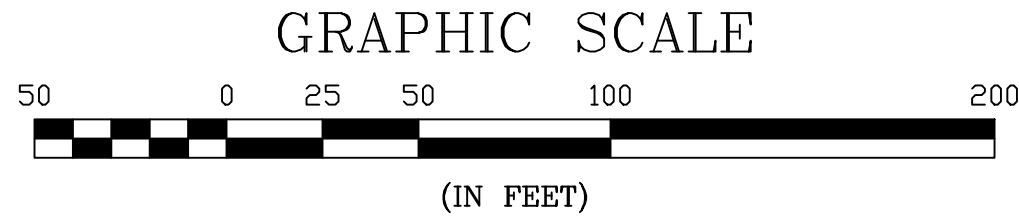
ARCHITECT

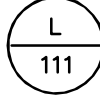
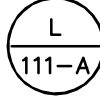
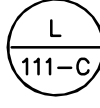
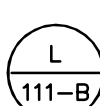
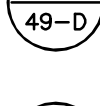
MICHAEL J. KEANE ARCHITECTS, PLLC
101 KENT PLACE
NEWMARKET, NH 03857
(603) 292-1400

LANDSCAPE ARCHITECT

ROMY N. MAURER, PLA, ASLA
TERRAIN PLANNING & DESIGN LLC
311 KAST HILL ROAD
HOPKINTON, NH 03229
(603) 746-3512

<u>SHEET INDEX</u>	<u>SHEET</u>
COVER SHEET	1
NEIGHBORHOOD PLAN	2
EXISTING CONDITIONS PLAN (BY MCENEANEY SURVEY)	3
TDR SITE PLAN (BY MCENEANEY SURVEY)	4
NOTE SHEET	5
DEMOLITION PLAN	6
SITE PLAN	7
GRADING, DRAINAGE & EROSION CONTROL PLAN	8
UTILITY PLAN	9
EXISTING DRIVEWAY SIGHT DISTANCE PLAN & PROFILE	10
EROSION CONTROL NOTES	11
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DETAIL SHEETS	14-16
 <u>ARCHITECTURAL PLANS</u>	
BUILDING 1 PLANS	
BUILDING 2 PLANS	
BUILDING 3 PLANS	
 <u>LANDSCAPE PLANS</u>	
LANDSCAPE PLAN	L1.0
3D CONCEPTUAL STREETSCAPE VISUALIZATIONS	



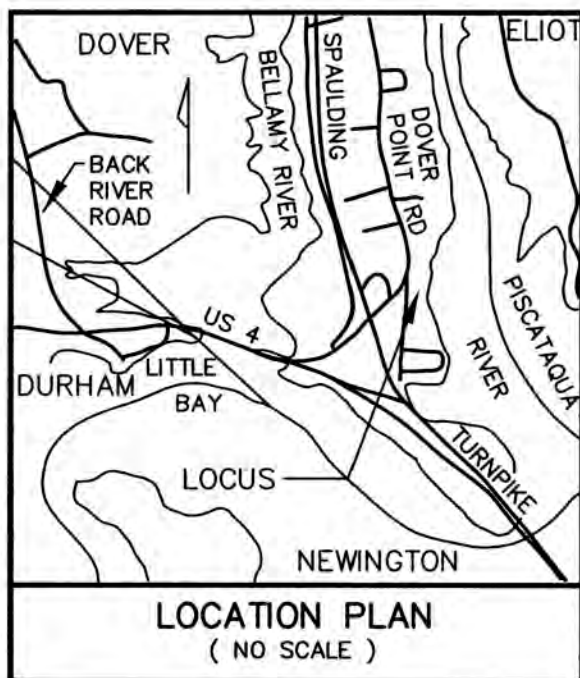
ABUTTERS LIST (WITHIN 200 FT.)		
TAX MAP	LOT NO.	NAME & ADDRESS
	L 111	BRIAN SLOVENSKI 124 TURTLE POND ROAD LEE, NH 03861
	L 111-A	UNDERWOOD DOVER LLC PO BOX 99 GREENLAND, NH 03840
	L 111-C	GIFFORD ROBERT L GIFFORD JOANNE A 306 A DOVER POINT ROAD DOVER NH 03820
	L 111-B	GAGNON REALITY TRUST LLC 306 C DOVER POINT ROAD DOVER NH 03820
	L 112	KUZIOMKO HENRY C TTS KUZIOMKO 2023 FAMILY TRUST 310 DOVER POINT ROAD DOVER NH 03820
	L 112A	CROTHERS EDGAR R CROTHERS ANNE S 312 DOVER POINT ROAD DOVER NH 03820
	L 49-D	WELT ANDREW WELT KIMBERLY 302 DOVER POINT ROAD DOVER NH 03820
	L 63	CONSTANCE CHARLES G FOSCO SYLVIA C 301 DOVER POINT ROAD DOVER NH 03820

PLANNING FILE NO.: SITE-2024-

NEIGHBORHOOD PLAN		NOT FOR CONSTRUCTION FOR PERMIT USE ONLY				
2	TDR SITE PLAN 5 RESIDENTIAL UNITS 306 DOVER POINT ROAD DOVER, NH 03820	BRIAN SLOVENSKI 124 TURTLE POND ROAD LEE, NH 03861 TAX MAP L, LOT 111				
	DATE: 7-9-24					
	SCALE: 1"=20'					
	DRAWN BY: JRG					
	DESIGN BY: JRG					
	APPROVED BY: JH					
	PROJECT NO: 23140					
	FILE: SITE					
NO.						
REVISION						
APP'D						
DATE						



CIVILWORKS NEW ENGLAND
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443



No.	Bearing	Distance
L1	N05°08'52"E	23.85'
L2	N07°25'21"E	16.09'
L3	S76°34'39"E	25.00'
L4	S14°52'21"W	16.09'
L5	N69°02'39"W	73.10'
L6	N44°30'39"W	77.92'
L7	N76°34'39"W	18.72'

SANITARY SEWER STRUCTURE SCHEDULE

SMH 1312	= 46.24'
RIM	= 38.1'
INV. IN 8"	= 38.1'
INV. OUT 8"	= 39.1'
BRICK SHELF	= 39.1'
NEXT	= SMH 1053

SMH 1053	= 39.77'
RIM	= 30.8'
INV. IN 8"	= 30.8'
INV. OUT 8"	= 31.5'
BRICK SHELF	= 31.5'
NEXT	= SMH 1410

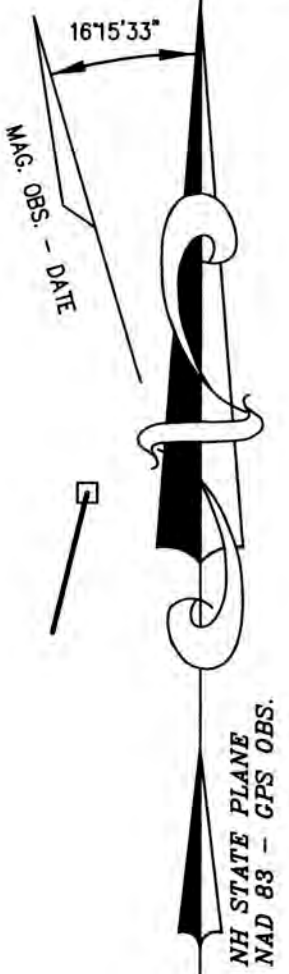
SMH 1410	= 30.15'
RIM	= 21.5'
INV. IN 8"	= 21.5'
INV. OUT 8"	= 22.0'
BRICK SHELF	= 22.0'
NEXT	= SMH SOUTH

LEGEND

S.S.(fnd)	STEEL STAKE FOUND
I.R.(fnd)	IRON ROD FOUND
NHHD	NEW HAMPSHIRE HIGHWAY BOUND
⊗	FIRE HYDRANT
⊕	WATER GATE VALVE
⊙	CATCH BASIN
⊙	SEWER MANHOLE
(TYP.)	TYPICAL
S.C.R.D.	STRAFFORD COUNTY
REGISTRY OF DEEDS	
-o- UP	UTILITY POLE
- - -	EDGE OF PAVEMENT
- - -	SIGN
- - -	RIGHT OF WAY
ELEV.	ELEVATION
OHU	OVERHEAD UTILITY LINES
UGU	UNDERGROUND UTILITY LINES

NO.	DATE	DESCRIPTION	BY	CHK
3	7/9/24	TRC SUBMITTAL	KJF	JRG
2	5/22/24	ADD DRIVEWAY PROFILES	KJF	KMM
1	3/1/24	ADD UGU TO GARAGE PER DIGSAFE MARKINGS	RJM	KMM
REVISIONS				
PROJECT NO	BOUNDARY	22-05	15-20	
TYPE	FIELDBOOK	& PAGES		

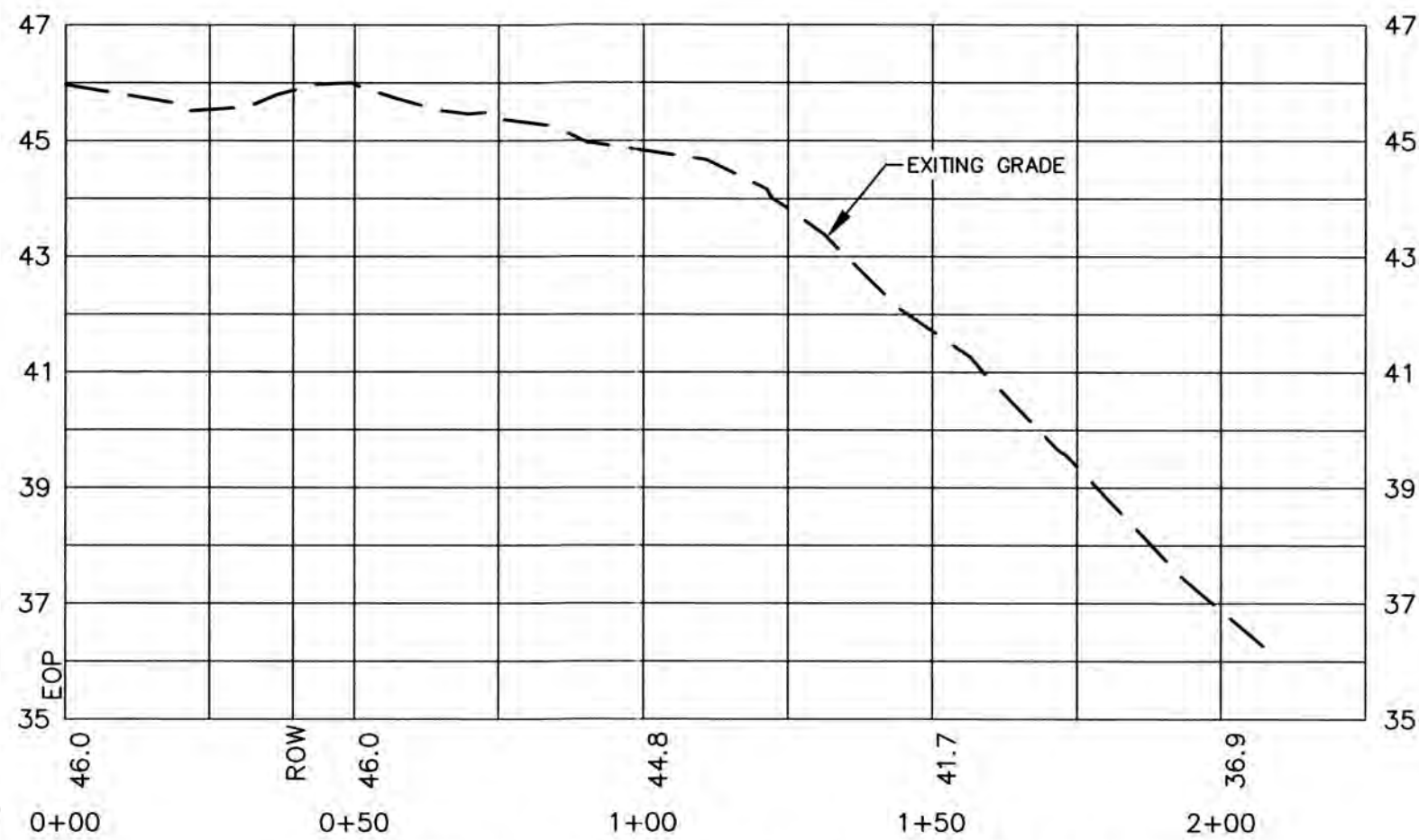
CHARLES G. CONSTANCE
SYLVIA C. FOSCO
301 DOVER POINT ROAD
DOVER, NH 03820
3360 / 943



DOVER POINT ROAD
{PUBLIC; VARIABLE WIDTH R.O.W.}

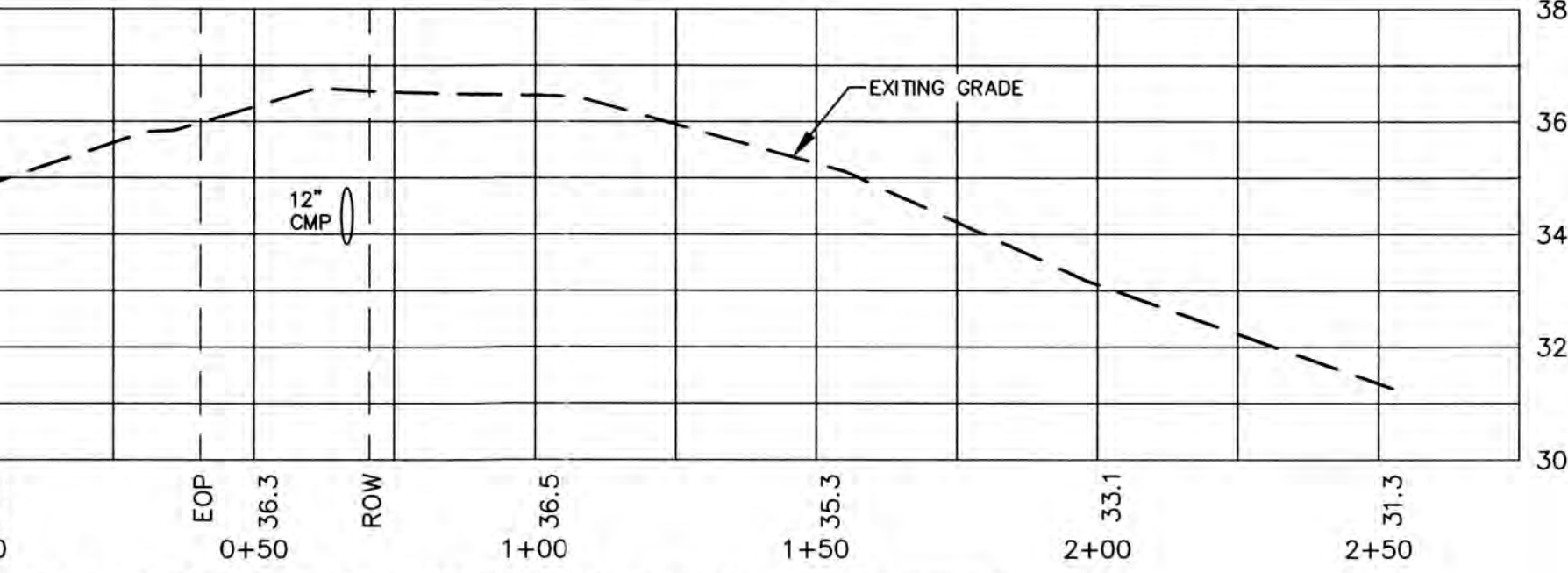
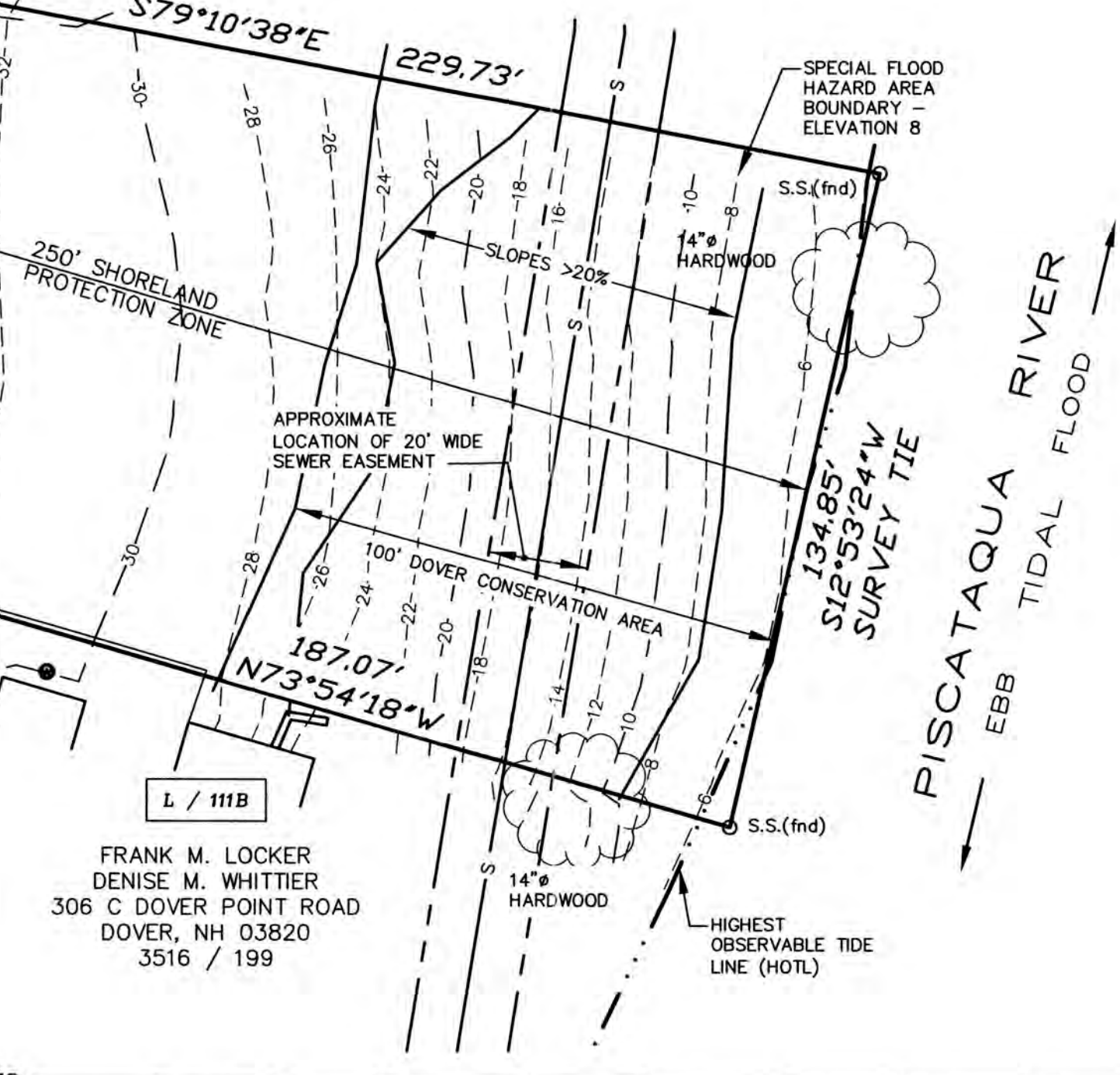
REFERENCE PLANS:

- PROPOSED DEVELOPMENT - LESTER BATES - DOVER, NEW HAMPSHIRE, PROPERTY LINES - TOPOGRAPHY. SCALE: 1" = 20'; DATED: SEPTEMBER 1965, BY: G.L. DAVIS & ASSOCIATES. RECORDED S.C.R.D. POCKET 11, FOLDER 2, PLAN 17A.
- LOT LINE REVISION - DOVER POINT ROAD, DOVER, N.H. FOR MAISE PEARSON 1989 TRUST & FREDERICK III AND PAMELA PEARSON AND FREDERICK PEARSON III AND EDGAR R. & ANNE S. CROTHERS. SCALE: 1" = 20'; DATED: DECEMBER 1999, REVISED THROUGH 2/12/90; BY: NORWAY PLAINS ASSOCIATES, INC. RECORDED S.C.R.D. PLAN 58-21.
- STATE OF NEW HAMPSHIRE - STATE HIGHWAY DEPARTMENT - PLAN AND PROFILE OF PROPOSED U.S. PUBLIC WORKS PROJECT NRM 262 EAST SIDE ROAD - FISCAL YEAR 1933. PLANS ON FILE WITH NH D.O.T. FILE: 50966.ROW.MARKUPS AND FILE: P1852.POP.
- PLAN OF EASEMENT - BATES - WEED - CITY OF DOVER ENGINEERING DIV. SCALE: 1" = 100'; DATED: NOVEMBER 1976; BY: DOVER ENGINEERING DEPARTMENT. RECORDED S.C.R.D. VOLUME 1011, PAGE 252.
- PLAN OF LAND - ESTATE OF MARGARET M. COLEMAN, DOVER, NEW HAMPSHIRE. SCALE: 1" = 20'; DATED: OCTOBER 15, 1958; BY: G.L. DAVIS & ASSOCIATES. RECORDED S.C.R.D. POCKET 8, FOLDER 2, PLAN 27.



SCALE: HORIZONTAL 1" = 30'
VERTICAL 1" = 3'

ROBERT L. GIFFORD
JOANNE A. GIFFORD
306A DOVER POINT ROAD
DOVER, NH 03820
3074 / 430



SCALE: HORIZONTAL 1" = 30'
VERTICAL 1" = 3'

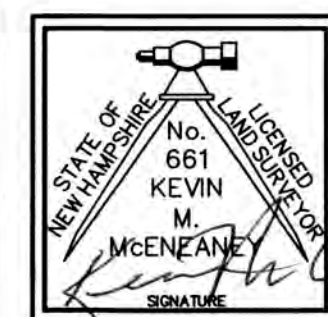
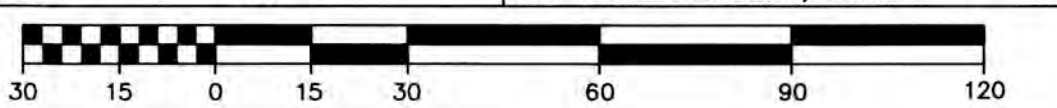
"I HEREBY CERTIFY THAT THIS PLAN IS BASED ON AN ACTUAL GROUND SURVEY PERFORMED WITH A TOTAL STATION, BY ME OR THOSE UNDER MY DIRECT SUPERVISION AND THAT, TO THE BEST OF MY KNOWLEDGE AND BELIEF, SAID SURVEY MEETS OR EXCEEDS THE MINIMUM PRECISION REQUIREMENTS FOR SURVEY CLASSIFICATION "U" AS SET FORTH IN TABLE 500.1 OF THE NEW HAMPSHIRE CODE OF ADMINISTRATIVE RULES OF THE BOARD OF LICENSURE FOR LAND SURVEYORS."

NOTES:

- OWNER OF RECORD:
BRIAN SLOVENSKI
124 TURTLE POND ROAD
LEE, NEW HAMPSHIRE 03861
S.C.R.D. VOLUME 4753, PAGE 261
- L / 111** - DENOTES TAX MAP AND PARCEL NUMBER.
- PARCEL AREA:
= 71,299 S.F. / 1.64 Ac.
- THE INTENT OF THIS PLAN IS TO DEPICT THE PARCELS BOUNDARIES AND EXISTING SITE CONDITIONS AS OF .
- ZONING DISTRICT IS LOW DENSITY RESIDENTIAL (R-20) DISTRICT
DIMENSIONAL REQUIREMENTS:
MINIMUM LOT SIZE = 20,000 S.F.
MINIMUM LOT COVERAGE = 30 PERCENT
MINIMUM FRONTAGE = 125 FEET
BUILDING SETBACK REQUIREMENTS:
FRONT BUILD TO LINE = 20 FEET MINIMUM
= 35 FEET MAXIMUM
SIDE SETBACK = 20 FEET
REAR SETBACK = 30 FEET
MAXIMUM BUILDING HEIGHT = 35 FEET MAXIMUM
RIVERFRONT RESIDENTIAL OVERLAY DISTRICT:
FOR AREAS WITHIN 250 FEET OF THE REFERENCE LINE OF ANY TIDAL WATER.
MINIMUM LOT SIZE = 3 TIMES STANDARD LOT SIZE
WATER FRONTAGE = 100 FEET
- A PORTION OF THE SUBJECT PARCEL IS LOCATED WITHIN THE SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1 PERCENT ANNUAL CHANCE FLOOD, ZONE AE (BASE FLOOD ELEVATIONS DETERMINED, ELEVATION 8); AND AREAS DETERMINED TO BE INSIDE THE 0.2 PERCENT ANNUAL CHANCE FLOODPLAIN, AS SHOWN ON FLOOD INSURANCE RATE MAP, COMMUNITY NUMBER 330145; PANEL 0340; SUFFIX E; MAP NUMBER 33017C0340E; EFFECTIVE DATE SEPTEMBER 30, 2015.
- BASIS OF BEARING IS NH STATE PLANE (NAD83) BASED ON GPS OBSERVATION DATED MARCH 28, 2022.
VERTICAL DATUM IS NAVD88 BASED ON GPS OBSERVATION DATED MARCH 28, 2022.
CONTOUR INTERVAL IS TWO (2) FEET.
- PROPERTY LINE INFORMATION HAS BEEN OBTAINED FROM A SURVEY PERFORMED BY MCNEANEY SURVEY ASSOCIATES OF NEW ENGLAND ON DURING WITH AN ERROR NOT GREATER THAN 1 IN 10,000.
- THIS PLAN SHOWS ONLY THOSE FEATURES THAT WERE VISUALLY APPARENT ON THE DATE OF THE SURVEY. THE ABSENCE OF SUBSURFACE STRUCTURES, UTILITIES, ETC. FROM THIS PLAN, BUT IN EXISTENCE, IS NOT INTENDED OR IMPLIED.
- THE SOIL TYPES ON THE SITE ARE:
BzB - BUXTON SILT LOAM, 3 TO 8 PERCENT SLOPES
WdC - WINDSOR LOAMY SAND, 8 TO 15 PERCENT SLOPES
THE SOURCE FOR THE SOIL TYPE DATA IS USDA NRCS WEB SOIL SURVEY
<http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>
- PORTIONS OF THE PARCEL ARE SUBJECT TO THE STATE OF NEW HAMPSHIRE SHORELINE WATER QUALITY PROTECTION ACT (SWQPA). THOSE AREAS WITHIN 250 FEET OF THE PISCATAQUA RIVER REFERENCE LINE.
- THE PARCEL IS SUBJECT TO A TWENTY (20) FOOT WIDE EASEMENT GRANTED TO THE CITY OF DOVER FOR SEWER PURPOSES AS DESCRIBED IN S.C.R.D. VOLUME 1011, PAGE 250.

EXISTING CONDITIONS PLAN
PREPARED FOR
BRIAN SLOVENSKI
TAX MAP L, LOT No. 111
306 DOVER POINT ROAD
CITY of DOVER
COUNTY of STRAFFORD
STATE of NEW HAMPSHIRE

DRAWN BY: KJF FILE: 2410\DWGS\22-2410.dwg
SCALE: 1" = 30' DATE: APRIL 20, 2022



McNeaney
Survey
Associates
of NEW ENGLAND

P.O. Box 681 - 24 CHESTNUT STREET
DOVER, NH 03820 (603) 742-0911

SURVEYING - PLANNING - CONSULTING



No.	Bearing	Distance
L1	N05°08'52"E	23.85'
L2	N07°25'21"E	16.09'
L3	S76°34'39"E	25.00'
L4	S14°52'21"W	16.09'
L5	N69°02'39"W	73.10'
L6	N44°30'39"W	77.92'
L7	N76°34'39"W	18.72'

CHARLES G. CONSTANCE
SYLVIA C. FOSCO
301 DOVER POINT ROAD
DOVER, NH 03820
3360 / 943



LEGEND

S.S.(fnd) — STEEL STAKE FOUND
I.R.(fnd) — IRON ROD FOUND
NHHD — NEW HAMPSHIRE HIGHWAY BOUND
HYD — FIRE HYDRANT
WV — WATER GATE VALVE
CB — CATCH BASIN
SMH — SEWER MANHOLE
WV — WATER SHUTOFF
(TYP.) — TYPICAL
S.C.R.D. — STRAFFORD COUNTY
REGISTRY OF DEEDS
-O- UP — UTILITY POLE
— — — — — EDGE OF PAVEMENT
— — — — — SIGN
R.O.W. — RIGHT OF WAY
ELEV. — ELEVATION
-S — SEWER LINE
-OHU — OVERHEAD UTILITY LINES
-UGU — UNDERGROUND UTILITY LINES

2	6/19/24	ADD TDR CALCULATIONS		KJF	KMM	
	2/23/24	ADD NOTE 13 PER 1/24/24 NOTICE OF DECISION		CA	KMM	
NO.	DATE	DESCRIPTION		BY	CHK	
REVISIONS						
22-2410		BOUNDARY		22-05	15-20	
PROJECT NO		TYPE		FIELDBOOK & PAGES		

TRANSFER OF DEVELOPMENT RIGHTS CALCULATIONS
TOTAL LOT AREA = 71,299 S.F.

AREA WITHIN RIVERFRONT OVERLAY DISTRICT
AREA SIZE 39,506 SF (GR

CONTOURS ARE LESS THAN 20% TO BE CONSERVATIVE. WE INCLUDED ALL OF THE SLOPES WITHIN THAT AREA IN THIS CALCULATION.

(X .85 .ROADS, ETC.)	X .85	22,354 SF
(WETLAND <10% X .85)	X .85	
(3X MIN LOT SIZE)	19,001 SF	(NET DEVELOPABLE AREA)
	+ 30,000 SF	
	0.32 UNITS	

AREA OUTSIDE RIVERFRONT OVERLAY DISTRICT
AREA SIZE 31,793 SF

(X .85 ROADS, ETC.)	<u>X .85</u>	(GROSS LAND AREA)
	27,024 SF	
(WETLAND <10% X .85)	<u>X .85</u>	
	22,970 SF	(NET DEVELOPABLE AREA)
(+ MIN LOT SIZE)	<u>÷ 20,000 SF</u>	
	1.15 UNITS	
TOTAL BASE (0.32 + 1.15 = 1.47 UNITS)		1 UNIT

ROBERT L. GIFFORD
JOANNE A. GIFFORD
6A DOVER POINT ROAD
DOVER, NH 03820
3074 / 430

FRANK M. LOCKER
DENISE M. WHITTIER
306 C DOVER POINT ROAD
DOVER, NH 03820
3516 / 199

REFERENCE PLANS:

- 1.) PROPOSED DEVELOPMENT - LESTER BATES - DOVER, NEW HAMPSHIRE, PROPERTY LINES TOPOGRAPHY. SCALE: 1" = 20'; DATED: SEPTEMBER 1965, BY: G.L. DAVIS & ASSOCIATES. RECORDED S.C.R.D. POCKET 11, FOLDER 2, PLAN 17A.
- 2.) LOT LINE REVISION - DOVER POINT ROAD, DOVER, N.H. FOR MAISE PEARSON 1989 TRUST & FREDERICK III AND PAMELA PEARSON AND FREDERICK PEARSON III AND EDGAR R. & ANNE S. CROTHERS. SCALE: 1" = 20'; DATED: DECEMBER 1999, REVISED THROUGH 2/12/90; BY: NORWAY PLAINS ASSOCIATES, INC. RECORDED S.C.R.D. PLAN 58-21.
- 3.) STATE OF NEW HAMPSHIRE - STATE HIGHWAY DEPARTMENT - PLAN AND PROFILE OF PROPOSED U.S. PUBLIC WORKS PROJECT NRM 262 EAST SIDE ROAD - FISCAL YEAR 1933. PLANS ON FILE WITH NH D.O.T. FILE: 50966.ROW.MARKUPS AND FILE: P1852.POP.
- 4.) PLAN OF EASEMENT - BATES - WEED - CITY OF DOVER ENGINEERING DIV. SCALE: 1" = 100'; DATED: NOVEMBER 1976; BY: DOVER ENGINEERING DEPARTMENT. RECORDED S.C.R.D. VOLUME 1011, PAGE 252.
- 5.) PLAN OF LAND - ESTATE OF MARGARET M. COLEMAN, DOVER, NEW HAMPSHIRE. SCALE: 1" = 20'; DATED: OCTOBER 15, 1958; BY: G.L. DAVIS & ASSOCIATES. RECORDED S.C.R.D. POCKET 8, FOLDER 2, PLAN 27.

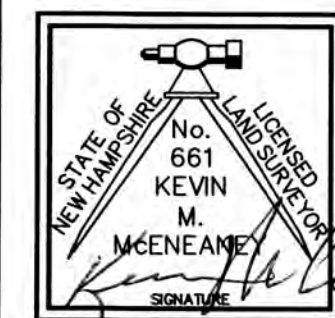
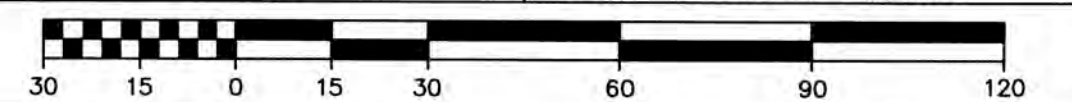
NOTES:

- 1.) OWNER OF RECORD:
- BRIAN SLOVENSKI
124 TURTLE POND ROAD
LEE, NEW HAMPSHIRE 03861
S.C.R.D. VOLUME 4753, PAGE 261
- 2.) L / III - DENOTES TAX MAP AND PARCEL NUMBER.
- 3.) PARCEL AREA = 71,299 S.F. / 1.64 Ac.
- 4.) THE INTENT OF THIS PLAN IS TO DEPICT A 3 BUILDING, 5 UNIT TDR PLAN.
- 5.) ZONING DISTRICT IS LOW DENSITY RESIDENTIAL (R-20) DISTRICT
- DIMENSIONAL REQUIREMENTS:
- | | |
|----------------------|---------------|
| MINIMUM LOT SIZE | = 20,000 S.F. |
| MINIMUM LOT COVERAGE | = 30 PERCENT |
| MINIMUM FRONTAGE | = 125 FEET |
- BUILDING SETBACK REQUIREMENTS:
- | | |
|-------------------------|-------------------|
| FRONT BUILD TO LINE | = 20 FEET MINIMUM |
| | = 35 FEET MAXIMUM |
| SIDE SETBACK | = 20 FEET |
| REAR SETBACK | = 30 FEET |
| MAXIMUM BUILDING HEIGHT | = 35 FEET MAXIMUM |
- RIVERFRONT RESIDENTIAL OVERLAY DISTRICT:
FOR AREAS WITHIN 250 FEET OF THE REFERENCE LINE OF ANY TIDAL WATER.
- | | |
|------------------|-----------------------------|
| MINIMUM LOT SIZE | = 3 TIMES STANDARD LOT SIZE |
| WATER FRONTAGE | = 100 FEET |
- 6.) A PORTION OF THE SUBJECT PARCEL IS LOCATED WITHIN THE SPECIAL FLOOD HAZARD AREAS (SFHAS) SUBJECT TO INUNDATION BY THE 1 PERCENT ANNUAL CHANCE FLOOD, ZONE AE (BASE FLOOD ELEVATIONS DETERMINED, ELEVATION 8); AND AREAS DETERMINED TO BE INSIDE THE 0.2 PERCENT ANNUAL CHANCE FLOODPLAIN, AS SHOWN ON FLOOD INSURANCE RATE MAP, COMMUNITY NUMBER 330145; PANEL 0340; SUFFIX E; MAP NUMBER 33017C0340E; EFFECTIVE DATE SEPTEMBER 30, 2015.
- 7.) BASIS OF BEARING IS NH STATE PLANE (NAD83) BASED ON GPS OBSERVATION DATED MARCH 28, 2022.
VERTICAL DATUM IS NAVD88 BASED ON GPS OBSERVATION DATED MARCH 28, 2022.
CONTOUR INTERVAL IS TWO (2) FEET.
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- 9.) THIS PLAN SHOWS ONLY THOSE FEATURES THAT WERE VISUALLY APPARENT ON THE DATE OF THE SURVEY. THE ABSENCE OF SUBSURFACE STRUCTURES, UTILITIES, ETC. FROM THIS PLAN, BUT IN EXISTENCE, IS NOT INTENDED OR IMPLIED.
- 10.) THE SOIL TYPES ON THE SITE ARE:
BzB - BUXTON SILT LOAM, 3 TO 8 PERCENT SLOPES
WdC - WINDSOR LOAMY SAND, 8 TO 15 PERCENT SLOPES
THE SOURCE FOR THE SOIL TYPE DATA IS USDA NRCS WEB SOIL SURVEY
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- 11.) PORTIONS OF THE PARCEL ARE SUBJECT TO THE STATE OF NEW HAMPSHIRE SHORELINE WATER QUALITY PROTECTION ACT (SWQPA). THOSE AREAS WITHIN 250 FEET OF THE PISCATAQUA RIVER REFERENCE LINE.
- 12.) THE PARCEL IS SUBJECT TO A TWENTY (20) FOOT WIDE EASEMENT GRANTED TO THE CITY OF DOVER FOR SEWER PURPOSES AS DESCRIBED IN S.C.R.D. VOLUME 1011, PAGE 250.
- 13.) PER THE CITY OF DOVER NOTICE OF DECISION, TRANSFER OF DEVELOPMENT RIGHTS FOR THE PURCHASE OF FOUR (4) ADDITIONAL LIVING UNITS WITHIN THREE (3) BUILDINGS WAS GRANTED BY THE PLANNING BOARD ON JANUARY 23, 2024. NO ADDITIONAL DWELLING UNITS MAY BE ADDED TO THE PROPERTY WITHOUT PLANNING BOARD APPROVAL.

TDR PLAN
PREPARED FOR
BRIAN SLOVENSKI
TAX MAP L, LOT No. 111
306 DOVER POINT ROAD
CITY of DOVER
COUNTY of STRAFFORD
STATE of NEW HAMPSHIRE

DOVER PLANNING FILE No. TRAN-2023-0005

DRAWN BY: KJF	FILE: 2410\DWGS\22-2410C4
SCALE: 1" = 30'	DATE: JANUARY 16, 2024



**McEneaney
Survey
Associates**
of NEW ENGLAND

P.O. Box 681 — 24 CHESTNUT STREET
DOVER, NH 03820 (603) 742-0911

SURVEYING – PLANNING – CONSULTING

"I HEREBY CERTIFY THAT THIS PLAN IS BASED ON AN ACTUAL GROUND SURVEY PERFORMED WITH A TOTAL STATION, BY ME OR THOSE UNDER MY DIRECT SUPERVISION AND THAT, TO THE BEST OF MY KNOWLEDGE AND BELIEF, SAID SURVEY MEETS OR EXCEEDS THE MINIMUM PRECISION REQUIREMENTS FOR SURVEY CLASSIFICATION "U" AS SET FORTH IN TABLE 500.1 OF THE NEW HAMPSHIRE CODE OF ADMINISTRATIVE RULES OF THE BOARD OF LICENSURE FOR LAND SURVEYORS."

THE PURPOSE OF THIS PLAN IS TO DEPICT SITE IMPROVEMENTS ASSOCIATED WITH THE CONSTRUCTION OF A 5 UNIT RESIDENTIAL DEVELOPMENT, TWO DUPLEXES AND 1 SINGLE FAMILY HOME, SITE ACCESS, DRIVEWAYS, WALKWAYS, GRADING AND DRAINAGE, AND UTILITIES.

2. OWNER OF RECORD:
BRIAN SLOVENSKI
124 TURTLE POND ROAD
LEE, NH 03861

3. THE PARCEL IS SHOWN ON CITY OF DOVER ASSESSOR'S MAP L, LOT 111.

4. THE SUBJECT PARCEL CONTAINS 1.64 ACRES (71,299 SQ. FT.) OF LAND. THERE IS NO LAND AREA CURRENTLY IN CURRENT USE.

5. TITLE REFERENCE FOR THE PROJECT PARCEL(S) IS THE STRAFFORD COUNTY REGISTRY OF DEEDS, BOOK NO. 4753, PAGE NO. 261.

6. REFERENCE PLANS:
EXISTING CONDITIONS PLAN PREPARED FOR BRIAN SLOVENSKI, TAX MAP L, LOT 111, 306 DOVER POINT ROAD, CITY OF DOVER, COUNTY OF STRAFFORD, STATE OF NEW HAMPSHIRE, PREPARED BY: MCNEANEY SURVEY ASSOCIATES OF NEW ENGLAND, DATE: 7/9/24, SCALE: 1"=30'

7. ALL APPLICABLE RIGHT-OF-WAY, CONSERVATION, SLOPE, CONSTRUCTION, POWER LINE, CROSS TRAVEL, OR OTHER EASEMENTS SHALL BE REFERENCED IN A NOTE AND SHOWN ON THE PLAN.

8. CURRENT ZONING DIMENSIONAL AND DENSITY REQUIREMENTS:
ZONING DISTRICT: LOW DENSITY RESIDENTIAL (R-20) DISTRICT
ZONING OVERLAY DISTRICTS: RIVER FRONT RESIDENTIAL AND CONSERVATION DISTRICT
DIMENSIONAL REQUIREMENTS:

	REQUIRED	PROVIDED
MINIMUM LOT SIZE	20,000 SF	71,299 SF
MINIMUM LOT COVERAGE	30 PERCENT	11.6%
MINIMUM LOT FRONTAGE	125 FT.	274.13 FT

MINIMUM YARD SETBACKS/BUILD-TO-LINES:
FRONT BUILD TO LINE - MINIMUM 20 FT. 22.4 FT
FRONT BUILD TO LINE - MAXIMUM 35 FT. 35.0 FT
SIDE 20 FT. 29.0 FT
REAR 30 FT. N/A
ABUT-A-STREET 20 FT. N/A

RIVERFRONT RESIDENTIAL OVERLAY DISTRICT:
MINIMUM LOT SIZE 3X(20,000 SF) 71,299 SF
WATER FRONTAGE 100 FT 134.84 FT.

CONSERVATION DISTRICT:
100' SETBACK FROM REFERENCE LINE OF THE PISCATAQUA RIVER

9. OFF STREET PARKING REQUIREMENTS:

	MAXIMUM	PROVIDED
PARKING DIMENSIONS	9 X 18	9 X 18
AISLE DIMENSIONS	24 FT.	24 FT.

SEE SITE PLAN FOR PARKING CALCULATION TABLE.

10. THE PROJECT DOES NOT REQUIRE A WAIVER REQUEST FROM THE BOARD.

11. THE PROJECT DOES NOT REQUIRE VARIANCES OR SPECIAL EXCEPTIONS TO BE GRANTED BY THE ZONING BOARD. SEE "PROJECT VARIANCE / PERMIT SUMMARY" SECTION IF APPLICABLE.

12. THE PROJECT DOES NOT REQUIRE A CONDITIONAL USE PERMIT.

13. PROPERTY LINE INFORMATION HAS BEEN OBTAINED FROM REFERENCE PLAN 1.

14. AS-BUILT PLANS OF THE PROJECT SHALL BE SUBMITTED ON PAPER AND IN DIGITAL FORMAT AUTOCAD DWG, AUTOCAD DXF OR ESRI PROJECT TO THE CITY OF DOVER CITY ENGINEER'S OFFICE UPON COMPLETION OF PROJECT. 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.

15. A PORTION OF THE SUBJECT PARCEL IS LOCATED WITHIN THE SPECIAL FLOOD HAZARD AREAS (SFHAS) SUBJECT TO INUNDATION BY THE 1 PERCENT ANNUAL CHANCE FLOOD, ZONE AE (BASE FLOOD ELEVATIONS DETERMINED, ELEVATION 8); AND AREAS DETERMINED TO BE INSIDE THE 0.2 PERCENT ANNUAL CHANCE FLOODPLAIN, AS SHOWN ON FLOOD INSURANCE RATE MAP, COMMUNITY PANEL NUMBER 330145; PANEL 0340; SUFFIX E; MAP NUMBER 3301703040E EFFECTIVE DATE, SEPTEMBER 30, 2015.

16. TOPOGRAPHIC SURVEY PERFORMED BY MCNEANEY SURVEY ASSOCIATES OF NEW ENGLAND ON MARCH 28, 2022

17. ELEVATIONS ARE BASED ON U.S.G.S. NAVD 1988 DATUM BASED ON GPS OBSERVATION DATED MARCH 28, 2022

18. THERE ARE NO WETLANDS ON THE SUBJECT PARCEL.

19. THE INSTALLATION OF ELECTRIC POWER, CABLE TELEVISION AND TELEPHONE LINES SHALL BE UNDERGROUND THROUGHOUT THE SITE FOR WHICH DEVELOPMENT IS PROPOSED.

20. THE SUBJECT PARCEL IS SERVED BY MUNICIPAL WATER AND SEWER.

21. 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.

22. CONTRACTOR SHALL FOLLOW THE CONSTRUCTION SEQUENCING IDENTIFIED WITHIN THE PLANNING BOARD APPROVED PLAN SET. ANY DEVIATION FROM THAT SEQUENCING SHALL BE APPROVED BY THE CITY ENGINEER.

23. EROSION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO ANY EARTH DISTURBANCE AND BE PROVIDED FOR CONSTRUCTION SEQUENCING INCLUDING TEMPORARY MEASURES.

24. CONTRACTOR SHALL FOLLOW THE PERMANENT STABILIZATION MEASURES 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 AS NOTED WITHIN THE PLANNING BOARD APPROVED PLANS. ANY DEVIATION FROM THAT SEQUENCING SHALL BE APPROVED BY THE CITY ENGINEER.

25. 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, AS APPLICABLE.

26. ANY PERMANENT TREATMENT SWALES TO BE CONSTRUCTED SHALL HAVE SO BOTTOMS.

27. A LETTER OF CREDIT FOR THE COST OF REVEGETATING ALL DISTURBED AREAS ON THE SITE SHALL BE SUBMITTED PRIOR TO COMMENCING EARTH DISTURBANCE.

28. A CITY ENGINEER APPROVED CONSTRUCTION SIGN SHALL BE INSTALLED PRIOR TO COMMENCING EARTH DISTURBANCE. SAID SIGNAGE MUST BE LOCATED AND APPROVED BY THE CITY ENGINEER OR PLANNING DIRECTOR.

29. 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.

30. HOURS OF SITE WORK MUST BE DOCUMENTED ON A SITE CONSTRUCTION SIGN ALONG WITH THE CONTACT INFORMATION FOR THE GENERAL CONTRACTOR. SITE CONSTRUCTION HOURS SHALL BE LIMITED TO MONDAY-FRIDAY 7 AM-6 PM, SATURDAY 9 AM- 4 PM. NO SITE WORK SHALL BE DONE ON FEDERAL HOLIDAYS.

31. BUILDING ADDRESSES, INCLUDING APT AND UNIT NUMBERS (IF APPLICABLE), SHALL BE ASSIGNED BY THE BUILDING OFFICIAL AT THE TIME OF ISSUANCE OF A BUILDING PERMIT.

32. THE PROPOSED USE FOR THE SITE (STRUCTURE) IS MULTI-FAMILY.

33. THE PROJECT REQUIRES A NHDES SHORELAND PERMIT (PENDING).

34. COMMERCIAL VEHICLE ROUTE DURING CONSTRUCTION SHALL CONFORM TO THE DOVER CITY CODE OR BE COORDINATED WITH THE COMMUNITY SERVICES DIRECTOR OR THEIR DESIGNEE.

35. ANY RETAINING WALL TALLER THAN FOUR FEET (4') REQUIRES ISSUANCE OF A BUILDING PERMIT FROM THE CITY OF DOVER INSPECTION SERVICES.

- ANY FENCE TALLER THAN SEVEN FEET (7') REQUIRES THE ISSUANCE OF A BUILDING PERMIT FROM THE CITY OF DOVER INSPECTION SERVICES.
37. APPLICANT SHALL COMPLETE LAND USE DEVELOPMENT TRACKING FORM, MOST RECENTLY REVISED VERSION, UTILIZING THE ONLINE POLLUTION TRACKING AND ACCOUNTING PROJECT (PTAP) PORTAL PRIOR TO THE ISSUANCE OF A CERTIFICATE OF OCCUPANCY. [HTTPS://EXTENSION.UNH.EDU/STORMWATER-CENTER/PTAP](https://extension.unh.edu/stormwater-center/PTAP)
38. 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.
39. FIRE DEPARTMENT ACCESS ROAD(S) SHALL BE INSTALLED AND MAINTAINED, IN ACCORDANCE WITH ALL APPLICABLE CODES, TO SUPPORT THE IMPOSED LOADS OF FIRE APPARATUS IN ALL WEATHER CONDITIONS AT ALL TIMES.
40. EXTERIOR LIGHTING SHALL BE CUT-OFF TYPE FIXTURES PER CHAPTER 153-14-E AND SHALL PROVIDE LIGHTING DIRECTED ON-SITE ONLY.
41. IF A BUSINESS ESTABLISHMENT OR MULTI-FAMILY DWELLING CONTAINED IN A NEW, ALTERED OR REPAIRED STRUCTURE, A SECURITY SYSTEM SHALL BE INSTALLED AS REQUIRED BY CHAPTER 45, ARTICLE 1, SECTION 45-2 OF THE CODE OF THE CITY OF DOVER.
42. APPROVED BACKFLOW PREVENTERS SHALL BE PROVIDED FOR BOTH FIRE AND DOMESTIC WATER LINES.
43. THE (EXISTING OR 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.
44. SPRINKLER CONNECTIONS MUST BE FLUSHED IN ACCORDANCE WITH NFPA 24 AND A CONTRACTOR'S MATERIAL AND TEST CERTIFICATE FOR UNDERGROUND PIPING FORM MUST BE COMPLETED AND APPROVED BY THE CITY OF DOVER INSPECTION SERVICES PRIOR TO CONNECTION OF THE BACKFLOW DEVICE.
45. 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.
46. THE SITE LAYOUT IS DESIGNED IN COMPLIANCE WITH APPLICABLE ACCESSIBILITY REGULATIONS. THE PROPOSED STRUCTURE WILL ALSO BE DESIGNED IN ACCORDANCE WITH APPLICABLE ACCESSIBILITY REGULATIONS. (I.E. IBC, ANSI-117.1) AND NH RSA 155-A: 5.
47. APPLICANT SHALL SUBMIT A LETTER CERTIFYING THE TIE IN LOCATIONS OR DISCHARGE POINTS FOR ALL SUMP PUMPS AND ROOF LEADERS FOR EXISTING STRUCTURES ON THE PROPERTY PRIOR TO ISSUANCE OF A CERTIFICATE OF OCCUPANCY.
48. DESIGN ENGINEER OF RECORD SHALL PROVIDE SIGNED LETTER TO CITY ENGINEER CERTIFYING THAT THE STORMWATER MANAGEMENT SYSTEM HAS BEEN INSTALLED IN ACCORDANCE WITH APPROVED PLANS.
49. THE APPLICANT SHALL PROVIDE THE CITY OF DOVER AN EASEMENT TO ACCESS WATERLINE AND HYDRANTS TO MAINTAIN WATER QUALITY PRIOR TO ISSUANCE OF A CERTIFICATE OF OCCUPANCY.

1. COORDINATE REMOVAL, RELOCATION, DISPOSAL OR SALVAGE OF UTILITIES WITH THE OWNER AND APPROPRIATE UTILITY COMPANY.
2. ANY EXISTING WORK OR PROPERTY DAMAGED OR DISRUPTED BY CONSTRUCTION/DEMOLITION ACTIVITIES SHALL BE REPLACED OR REPAIRED TO MATCH ORIGINAL EXISTING CONDITIONS BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
3. THE CONTRACTOR SHALL NOTIFY "DIG SAFE" PRIOR TO ANY DEMOLITION/CONSTRUCTION ACTIVITIES. (811).
4. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL EXISTING STRUCTURES, UTILITIES AND PAVEMENT ON THE SITE TO THE LIMITS SHOWN UNLESS SPECIFICALLY IDENTIFIED TO REMAIN.
5. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FAMILIARIZE HIMSELF WITH THE CONDITIONS OF ALL OF THE PERMIT APPROVALS.
6. THE CONTRACTOR SHALL OBTAIN AND PAY FOR ALL PERMITS NOT ALREADY OBTAINED BY THE OWNER AND ARRANGE AND PAY FOR NECESSARY INSPECTIONS AND APPROVALS FROM THE AUTHORITIES HAVING JURISDICTION.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DEMOLITION AND OFF-SITE DISPOSAL OF MATERIALS REQUIRED TO COMPLETE THE WORK, EXCEPT FOR WORK NOTED TO BE COMPLETED BY OTHERS.
8. STONES FROM EXISTING SIDEWALK SHALL REMAIN ON-SITE. STONES SHALL BE REPOSED ON-SITE AND SHALL NOT BE USED AS FILL.
9. THE LOCATION OF UNDERGROUND UTILITIES ARE APPROXIMATE AND THE LOCATION IS NOT GUARANTEED BY THE OWNER OR THE ENGINEER. IT IS THE CONTRACTOR'S RESPONSIBILITY TO LOCATE ALL UTILITIES, ANTICIPATE CONFLICTS, REPAIR EXISTING UTILITIES AND RELOCATE EXISTING UTILITIES REQUIRED TO COMPLETE THE WORK.
10. ALL MATERIALS SCHEDULED TO BE REMOVED SHALL BECOME THE PROPERTY OF THE CONTRACTOR UNLESS OTHERWISE SPECIFIED. THE CONTRACTOR SHALL DISPOSE OF ALL MATERIALS OFF-SITE IN ACCORDANCE WITH ALL FEDERAL, STATE AND LOCAL REGULATIONS, ORDINANCES, AND CODES.

1. REVIEW DOWER NOTES FOR ALL APPLICABLE NOTES.
2. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO APPLICABLE CITY AND STATE CODES.
3. ALL CONSTRUCTION LAYOUT SHALL BE DONE BY A LICENSED SURVEYOR UNDER CONTRACT WITH THE CONTRACTOR.
4. SEE DETAILS FOR SIGN LEGENDS.
5. ALL PAVEMENT MARKINGS AND SIGNS SHALL CONFORM TO THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES", THE "STANDARD ALPHABETS FOR HIGHWAY SIGNS AND PAVEMENT MARKINGS", AND THE AMERICAN WITH DISABILITIES ACT, LATEST EDITIONS.
6. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO DETERMINE CONSTRUCTION PROCEDURES AND SEQUENCE TO ENSURE THE SAFETY OF THE FACILITIES AND THEIR COMPONENTS DURING DEMOLITION AND CONSTRUCTION UNLESS OTHERWISE DIRECTED BY THE OWNERS REPRESENTATIVE. THIS INCLUDES THE ADDITION OF NECESSARY SHORING, SHEETING, TEMPORARY BRACING, GUYS OR TIE-DOWNS. SUCH MATERIALS SHALL REMAIN THE PROPERTY OF THE CONTRACTOR AT THE COMPLETION OF THE PROJECT.
7. METHODS OF DEMOLITION, CONSTRUCTION AND ERECTION ARE THE CONTRACTOR'S RESPONSIBILITY UNLESS OTHERWISE SPECIFIED. IT IS THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE AND MAINTAIN ENVIRONMENTAL CONTROLS AS REQUIRED BY FEDERAL, STATE AND MUNICIPAL REGULATIONS AND PERMITS. ENVIRONMENTAL CONTROLS SHALL INCLUDE BUT SHALL NOT BE LIMITED TO DUST CONTROL AND SILT BARRIERS.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE DONE TO STRUCTURES OR UTILITIES OR INJURIES TO THE PUBLIC DURING THE CONSTRUCTION PHASE CAUSED BY HIMSELF, HIS EMPLOYEES, HIS SUBCONTRACTORS OR EMPLOYEES OF SAME. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL TEMPORARY FACILITIES FOR THE PROTECTION OF THE WORK, WORKERS AND PUBLIC SAFETY.
9. THE SITE SHALL BE MAINTAINED TO PROVIDE ACCESSIBILITY IN ALL WEATHER CONDITIONS.
10. SNOW STORAGE WILL BE ACCORDING TO THE OPERATION AND MAINTENANCE PLAN AND WITHIN AREAS AS INDICATED. ON-SITE SNOW STORAGE SHALL OCCUR ALONG THE EDGES OF PROPOSED PAVEMENT.
11. ALL EXTERIOR DOORS ARE MANUAL AND OPENED FROM THE INTERIOR BY PANIC HARDWARE. ALL EXTERIOR DOORS SHALL COMPLY WITH ADA AND ALL LOCAL BUILDING CODE REQUIREMENTS.

1. REVIEW COVER NOTES FOR ALL APPLICABLE NOTES.
2. CONTRACTOR SHALL RETAIN A GEOTECHNICAL ENGINEERING CONSULTANT APPROVED BY THE OWNER, TO CONDUCT COMPACTION TESTING AND FILL GRADATION MONITORING.
3. SEE EROSION CONTROL NOTES & DETAIL SHEET FOR TEMPORARY AND PERMANENT EROSION CONTROL MEASURES.
4. ALL DRAINAGE PIPES SHALL BE HDPE OR APPROVED EQUAL UNLESS OTHERWISE NOTED.
5. ALL DISTURBED AREAS SHALL NOT OTHERWISE CALLED FOR SURFACE TREATMENT SHALL RECEIVE 6" OF HIGH QUALITY LOAM AND SHALL BE SEEDDED WITH GRASS.
6. ALL SITEWORK CONSTRUCTION SHALL BE ADVANCED USING "BEST MANAGEMENT PRACTICES" SANCTIONED BY THE USDA, SCS AND NHDES.
7. TEMPORARY CONSTRUCTION ENTRANCE SHALL BE INSTALLED, UTILIZED AND MAINTAINED UNTIL BASE MATERIALS ARE CONSTRUCTED.
8. CONTRACTOR SHALL PROVIDE A FINISH GRADED SURFACE FREE OF LOW SPOTS AND PONDING AREAS. CRITICAL AREAS INCLUDE BUILDING ENTRANCE AND UNDER RAISED STRUCTURES.
9. PROVIDE INLET PROTECTION BARRIERS AROUND ALL EXISTING AND PROPOSED STORM DRAINAGE INLETS WITHIN THE WORK LIMITS AND AS SHOWN ON PLAN. MAINTAIN FOR THE DURATION OF THE PROJECT UNTIL PAVEMENT HAS BEEN INSTALLED AND UPSTREAM AREAS HAVE BEEN STABILIZED.
10. INSPECT SILT BARRIERS AFTER EACH RAIN STORM OF 1/4 INCH OR GREATER. REPAIR/MODIFY PROTECTION AS NECESSARY TO MAXIMIZE EFFICIENCY OF THE FILTER. REPLACE ALL FILTERS WHEN SEDIMENT IS 1/3 THE STRUCTURE HEIGHT.
11. LIMIT TREE CLEARING TO ONLY THE EXTENT NECESSARY FOR CONSTRUCTION.
12. CONTRACTOR SHALL NOTIFY THE CITY OF DOVER AND THE DESIGN ENGINEER 48 HOURS PRIOR TO THE INSTALLATION OF PERMANENT STORMWATER BMP'S TO PROVIDE THE CITY AND THE ENGINEER THE OPPORTUNITY TO WITNESS THE CONSTRUCTION AND MATERIALS.
13. DENSITY REQUIREMENTS:

<u>LOCATION</u>	<u>MINIMUM DENSITY</u>
BELOW PAVED OR CONCRETE AREAS	95%
TRENCH BEDDING MATERIAL AND SAND BLANKET BACKFILL	95%
BELOW LOAM AND SEED AREA	90%

* ALL PERCENTAGES SHALL BE OF THE MAXIMUM DRY DENSITY AT THE OPTIMUM MOISTURE CONTENT AS DETERMINED AND CONTROLLED IN ACCORDANCE WITH AASHTO STANDARD 180, METHOD C. FIELD DENSITY TESTS SHALL BE MADE IN ACCORDANCE WITH AASHTO STANDARD T-191, T-204, OR T-238 AND T-239.

1. FEDERAL AND STATE PERMITS:
NHDES SHORELAND PERMIT – PENDING
2. 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.

SITE PLAN: SITE-2024-_____ - PENDING

S.F.	SQUARE FEET	①	EXISTING DRAINAGE MANHOLE
Ac.	ACRE	⋄	EXISTING CATCHBASIN
±	MORE OR LESS	5'R	PAVEMENT RADIUS
(TYP.)	TYPICAL	SBC	SLOPED BITUMINOUS CURB
S.C.R.D.	STRAFFORD REGISTRY OF DEEDS	x 74.00	EXISTING SPOT GRADE
NHHD	NEW HAMPSHIRE HIGHWAY DEPT.		
TBR	TO BE REMOVED	— 94 —	EXISTING GRADE
ELEV.	ELEVATION	— OHW —	OVERHEAD UTILITIES
INV.	INVERT	— E —	EXISTING ELECTRIC
R.O.W.	RIGHT-OF-WAY	— W —	EXISTING WATER LINE
⌒	EXISTING UTILITY POLE	— S —	EXISTING SEWER LINE
⌒	EXISTING SIGN	— D —	EXISTING DRAINAGE LINE
⌒	EXISTING WATER SHUT-OFF	— UGT —	EXISTING UNDERGROUND TELEPHONE
⌒	EXISTING WATER VALVE		
⌒	EXISTING GAS VALVE	74	PROPOSED FINISH GRADE
⌒	EXISTING HYDRANT	x 74.00	PROPOSED SPOT GRADE
⌒	EXISTING LIGHT/SIGNAL POLE		PAVEMENT WITH CURB
⊗	EXISTING SEWER MANHOLE	— — —	SILT BARRIER

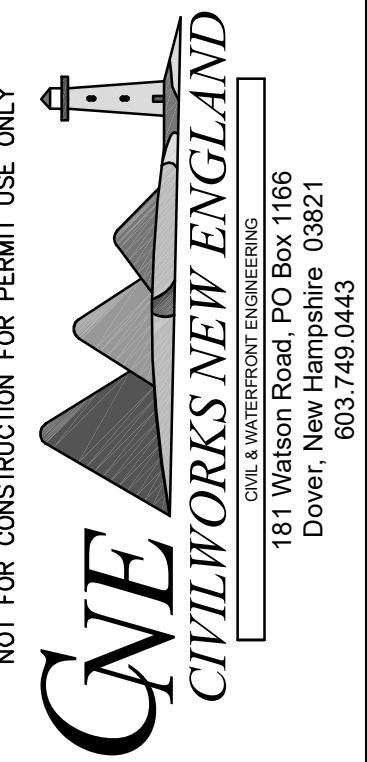
2. REVIEW DOWER NOTES FOR ALL APPLICABLE NOTES.
3. THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE APPROXIMATE AND THE LOCATIONS ARE NOT GUARANTEED BY THE OWNER OR ENGINEER. IT IS THE CONTRACTOR'S RESPONSIBILITY TO LOCATE ALL UTILITIES, ANTICIPATE CONFLICTS, REPAIR EXISTING UTILITIES, AND RELOCATE EXISTING UTILITIES REQUIRED TO COMPLETE THE WORK AT NO ADDITIONAL COST TO THE OWNER.
4. SEE EXISTING CONDITIONS PLAN FOR BENCHMARK INFORMATION.
5. ALL UNDERGROUND CONDUITS SHALL HAVE NYLON PULL ROPES TO FACILITATE PULLING CABLES.
6. SEE GRADING, DRAINAGE & EROSION CONTROL PLAN FOR PROPOSED GRADING AND EROSION CONTROL MEASURES.
7. ALL WATER MAIN INSTALLATIONS SHALL BE CLASS 52, DOUBLE CEMENT LINED DUCTILE IRON PIPE OR TYPE "K" COPPER OR CITY APPROVED MATERIAL.
8. ALL WATER MAIN INSTALLATIONS SHALL BE PRESSURE TESTED AND CHLORINATED AFTER CONSTRUCTION PRIOR TO ACTIVATING THE SYSTEM.
9. CONTRACTOR SHALL COORDINATE CHLORINATION AND TESTING WITH THE CITY OF DOVER WATER DEPARTMENT.
10. ALL GRAVITY SEWER PIPE SHALL BE PVC SDR 35 UNLESS OTHERWISE NOTED AND CONFORM TO THE REQUIREMENTS OF THE CITY OF DOVER SEWER DEPARTMENT STANDARDS.
11. EXISTING UTILITIES TO BE REMOVED SHALL BE CAPPED AT THE MAIN AND MEET THE CITY OF DOVER COMMUNITY SERVICES DEPARTMENT STANDARDS FOR CAPPING OF WATER AND SEWER SERVICES.
12. ALL ELECTRICAL MATERIAL WORKMANSHIP SHALL CONFORM TO THE NATIONAL ELECTRIC CODE, LATEST EDITION, AND ALL APPLICABLE STATE AND LOCAL CODES.
13. THE EXACT LOCATION OF NEW UTILITY SERVICES AND CONNECTIONS SHALL BE COORDINATED WITH THE BUILDING DRAWINGS AND THE UTILITY COMPANIES.
14. ADJUST ALL MANHOLES, CATCH BASINS, CURB BOXES, ETC. WITHIN LIMITS OF WORK TO FINISH GRADE.
15. THE CONTRACTOR SHALL OBTAIN, PAY FOR, AND COMPLY WITH ALL REQUIRED PERMITS, ARRANGE FOR ALL INSPECTIONS, AND SUBMIT COPIES OF ACCEPTANCE CERTIFICATES TO THE OWNER PRIOR TO THE COMPLETION OF THIS PROJECT.
16. THE CONTRACTOR SHALL PROVIDE AND INSTALL ALL MANHOLES, BOXES, FITTINGS, CONNECTORS, COVER PLATES, AND OTHER MISCELLANEOUS ITEMS NOT NECESSARILY DETAILED ON THESE DRAWINGS TO RENDER INSTALLATION OF UTILITIES COMPLETE AND OPERATIONAL.
17. CONTRACTOR SHALL PROVIDE EXCAVATION, BEDDING, BACKFILL AND COMPACTION FOR NATURAL GAS SERVICES, COORDINATE WITH GAS COMPANY.
18. A 10-FOOT MINIMUM EDGE TO EDGE HORIZONTAL SEPARATION SHALL BE PROVIDED BETWEEN ALL WATER AND SANITARY SEWER LINES. AN 18-INCH MINIMUM OUTSIDE TO OUTSIDE VERTICAL SEPARATION SHALL BE PROVIDED AT ALL WATER/SANITARY SEWER CROSSINGS.
19. THE CONTRACTOR SHALL CONTACT "DIG-SAFE" 72 HOURS PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL HAVE THE "DIG-SAFE" NUMBER ON SITE AT ALL TIMES.
20. SAWCUT AND REMOVE PAVEMENT AND CONSTRUCT PAVEMENT TRENCH PATCH FOR ALL PROPOSED UTILITIES LOCATED IN EXISTING PAVEMENT AREAS TO REMAIN.
21. GATE VALVES, FITTINGS, ETC. SHALL MEET THE REQUIREMENTS OF THE CITY OF DOVER.
22. COORDINATE TESTING OF SEWER CONSTRUCTION WITH THE CITY OF DOVER.
23. CONTRACTOR SHALL COORDINATE ALL ELECTRIC WORK INCLUDING BUT NOT LIMITED TO: CONDUIT CONSTRUCTION, MANHOLE CONSTRUCTION, UTILITY POLE CONSTRUCTION, OVERHEAD WIRE RELOCATION, AND TRANSFORMER CONSTRUCTION WITH POWER COMPANY.
24. CONTRACTOR SHALL PHASE UTILITY CONSTRUCTION, PARTICULARLY WATER MAIN AND GAS MAIN CONSTRUCTION AS TO MAINTAIN CONTINUOUS SERVICE TO ABUTTING PROPERTIES. CONTRACTOR SHALL COORDINATE TEMPORARY SERVICES TO ABUTTERS WITH THE UTILITY COMPANY AND AFFECTED ABUTTER. SITE LIGHTING SPECIFICATIONS, CONDUIT LAYOUT AND CIRCUITRY FOR PROPOSED SITE LIGHTING AND SIGN ILLUMINATION SHALL BE PREPARED BY THE PROJECT ELECTRICAL ENGINEER.
25. THE PROPOSED STRUCTURE SHALL COMPLY WITH CHAPTER 81, ARTICLE IV, SECTION 81-27 AND THE STATE BUILDING CODES OF THE CODE OF THE CITY OF DOVER.
26. FIRE SUPPRESSION PLANS SHALL BE PROVIDED TO THE FIRE/INSPECTION DEPARTMENT PRIOR TO INSTALLATION.
27. COORDINATE ALL UTILITY WORK WITH APPROPRIATE UTILITY COMPANY.
28. SEWAGE LOADING (PER NHDES ENV-WQ 1008.03)

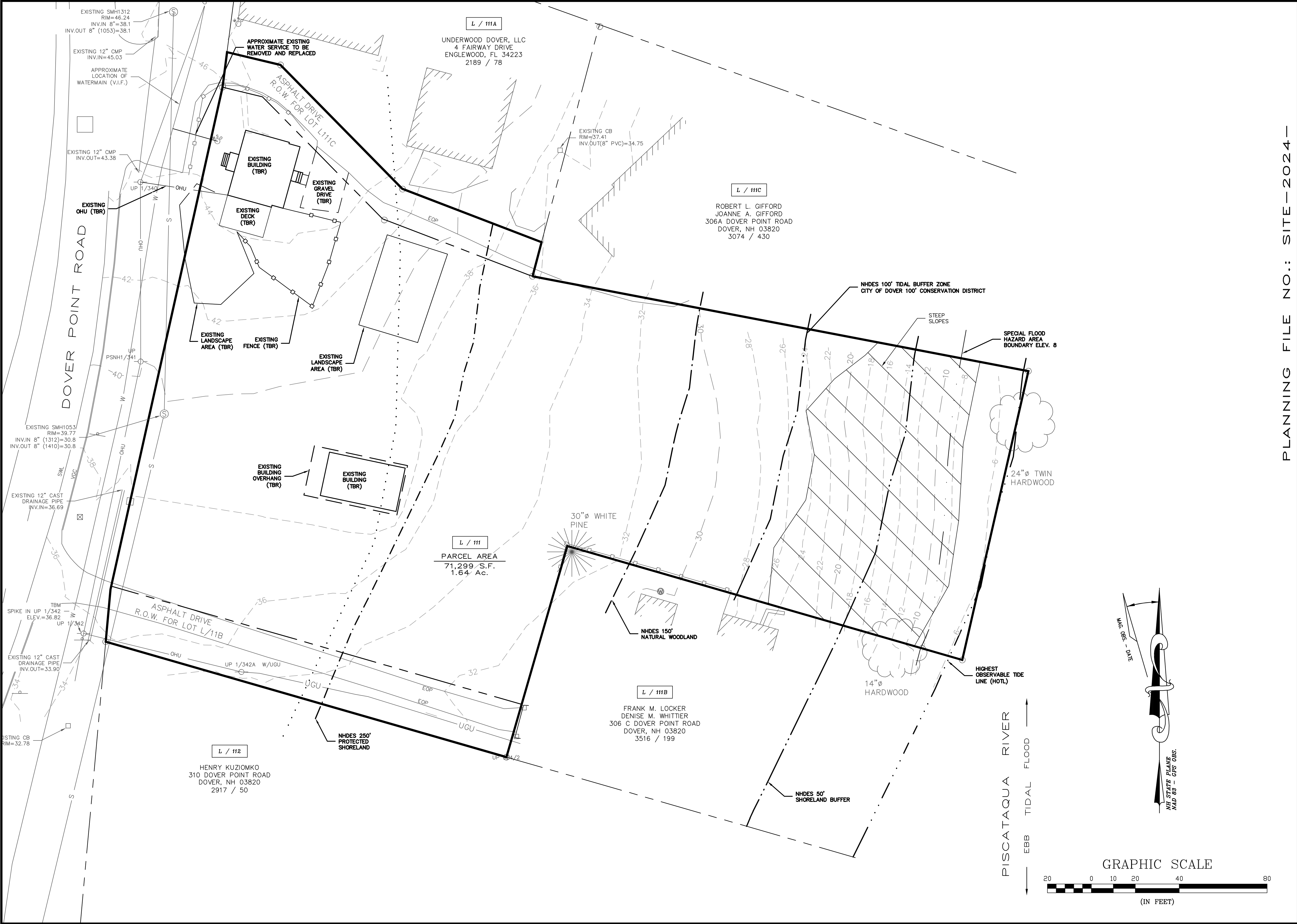
2 RESIDENCE DUPLEX x 2 BEDROOM/RESIDENCE x 150 GPD/BEDROOM	= 1,200 GPD.
1 RESIDENCE x 4 BEDROOMS X 150 GPD/BEDROOM	= 600 GPD
TOTAL	= 1,800 GPD

WATER & SEWER: — CITY OF DOVER COMMUNITY SERVICES DEPARTMENT
PUBLIC WORKS & UTILITIES
CONTACT: KEN MAVROGEORGE, PE
271 MAST ROAD
DOVER, NH 03820
TEL: (603)–516–6450
EMAIL: K.MAVROGEORGE@DOVER.NH.GOV

ELECTRIC: — EVERSOURCE
CONTACT: TREVOR EMMONS
4 OLD DOVER ROAD
ROCHESTER, NH 03867
TEL: (603)–332–7515
EMAIL: TREVOR.EMMONS@EVERSOURCE.COM

5
TDR SITE PLAN
5 RESIDENTIAL UNITS
306 DOVER POINT ROAD
DOVER, NH 03820





DEMOLITION PLAN

TDR SITE PLAN
5 RESIDENTIAL UNITS
306 DOVER POINT ROAD
DOVER, NH 03820

BRIAN SLOVENSKI
124 TURTLE POND ROAD
LEE, NH 03861
TAX MAP L, LOT 111

PLANNING FILE NO.: SITE-2024-

DATE	SCALE	DRAWN BY	DESIGN BY	APPROVED BY	PROJECT NO.	FILE SITE	NO.	REVISION	APP'D	DATE
7-9-24	1"=20'	JRG	JRG	BY:JH	23140					

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CIVILWORKS NEW ENGLAND

181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

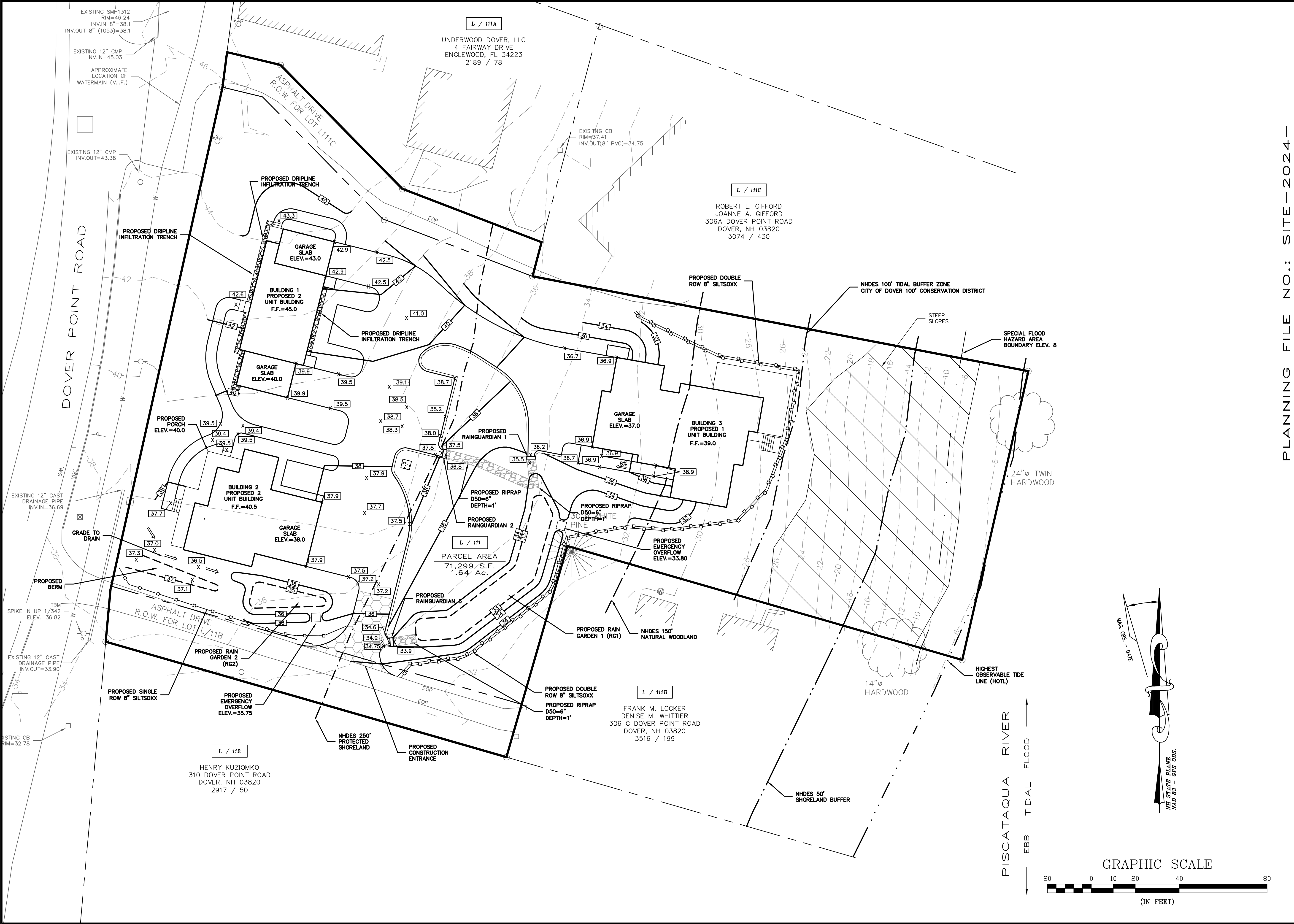
GRAPHIC SCALE

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(IN FEET)

MBG OBS - DATE

MBG OBS - DATE



PLANNING FILE NO.: SITE-2024-

GRADING, DRAINAGE & EROSION CONTROL PLAN

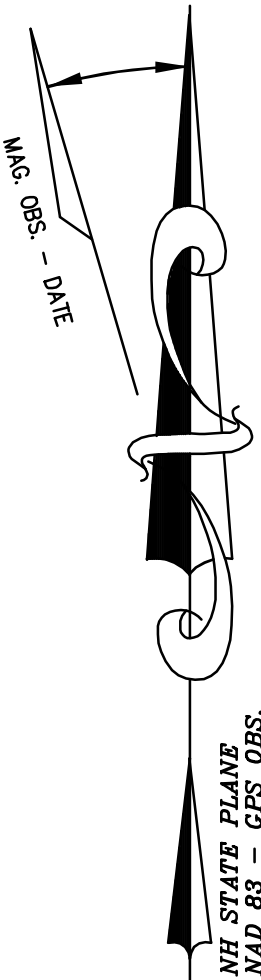
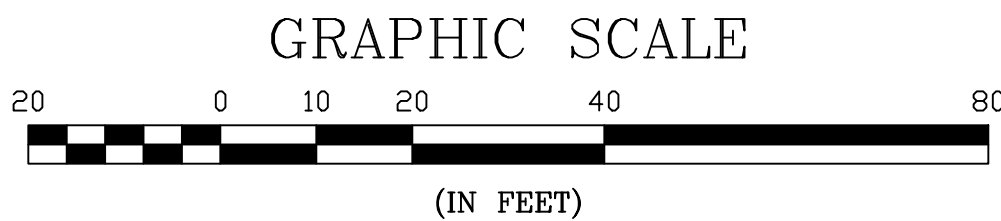
TDR SITE PLAN
5 RESIDENTIAL UNITS
306 DOVER POINT ROAD
DOVER, NH 03820

BRIAN SLOVENSKI
124 TURTLE POND ROAD
LEE, NH 03661
TAX MAP L, LOT 111

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CNE
CIVILWORKS NEW ENGLAND
CIVIL & WATERCRAFT ENGINEERING
181 Watson Road, PO Box 1166
Dover, NH 03820
603.749.0443

DATE	SCALE	DRAWN BY	DESIGN BY	APPROVED BY	PROJECT NO.	FILE SITE	NO.	REVISION	APP'D	DATE
7-9-24	1"=20'	JRG	JRG	BY: JRG	23140					



PISCATAQUA RIVER

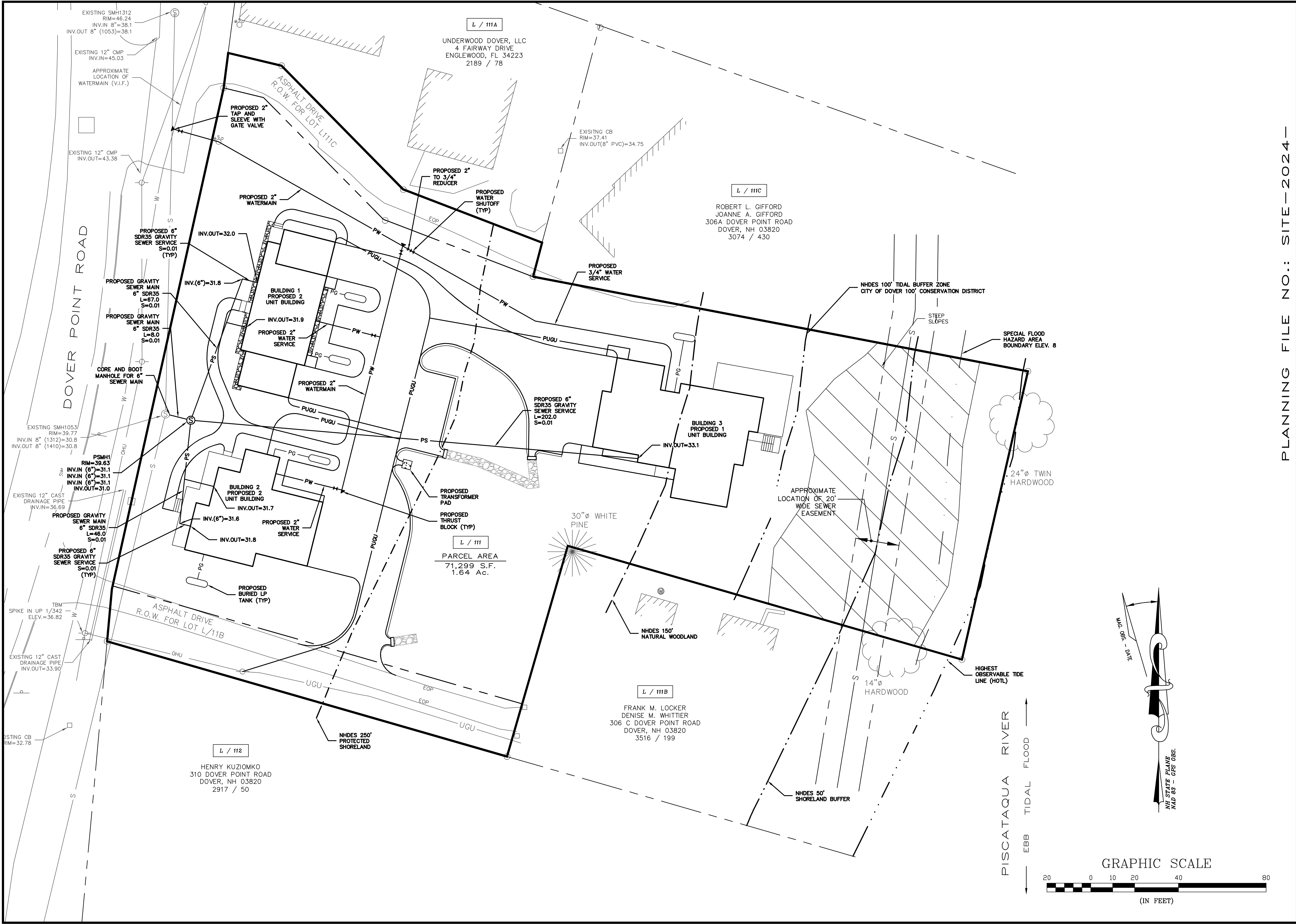
EBB TIDAL FLOOD

GRADING, DRAINAGE & EROSION CONTROL PLAN

TDR SITE PLAN
5 RESIDENTIAL UNITS
306 DOVER POINT ROAD
DOVER, NH 03820

BRIAN SLOVENSKI
124 TURTLE POND ROAD
LEE, NH 03661
TAX MAP L, LOT 111

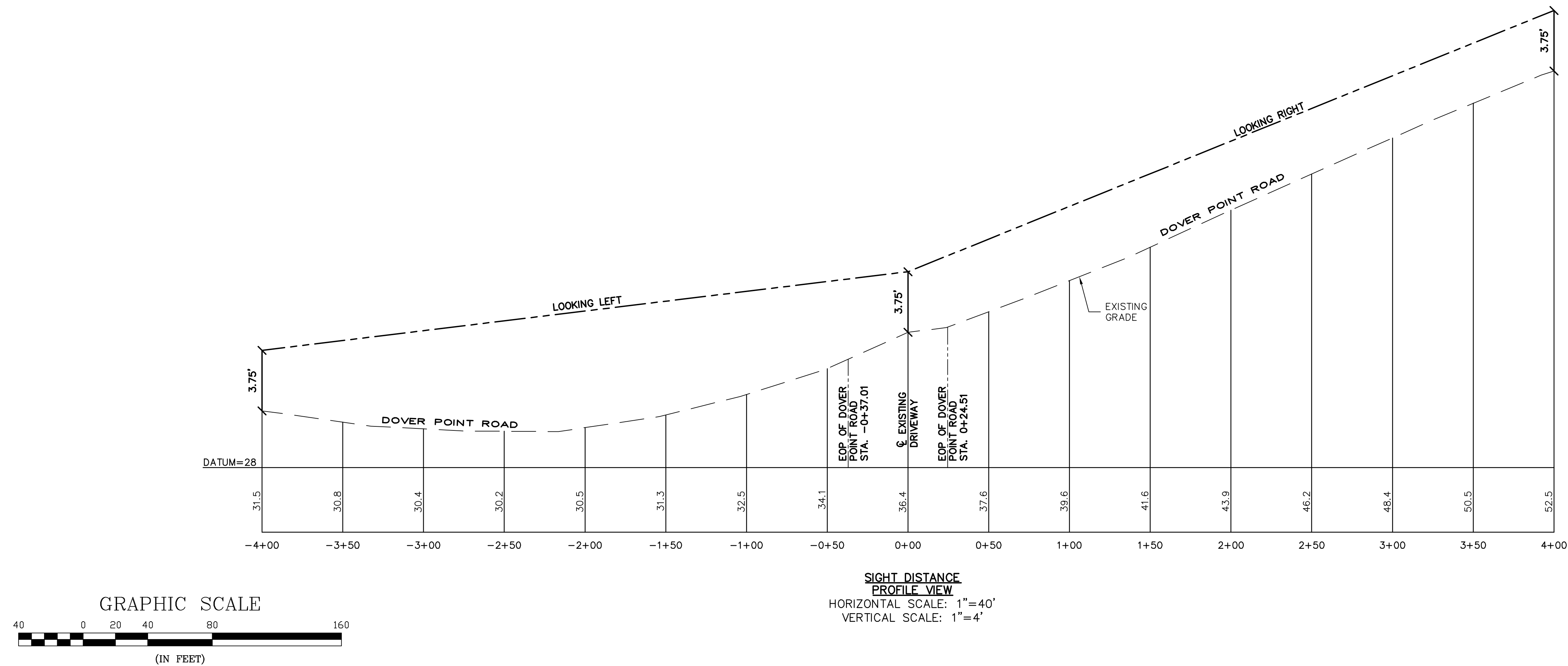
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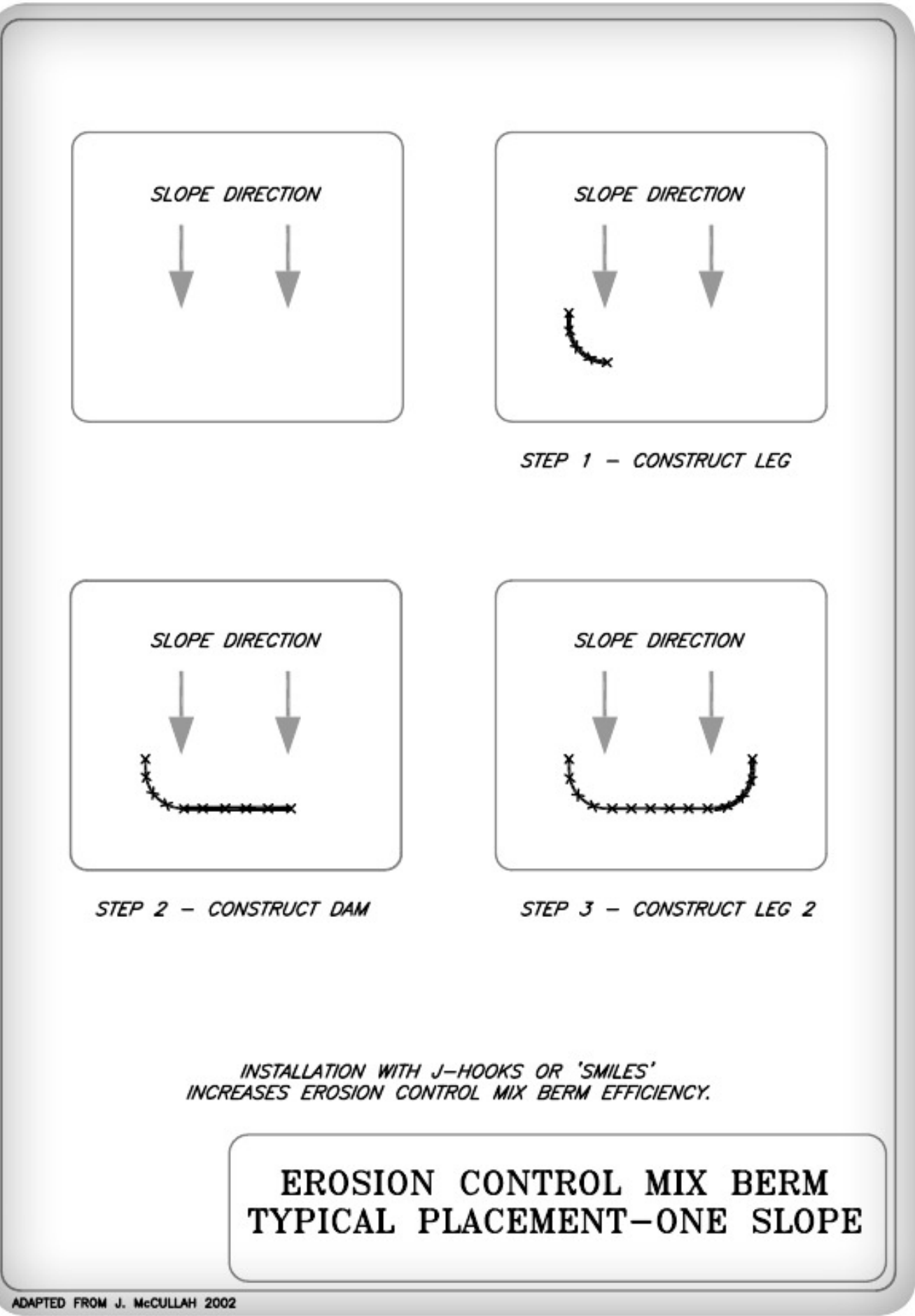


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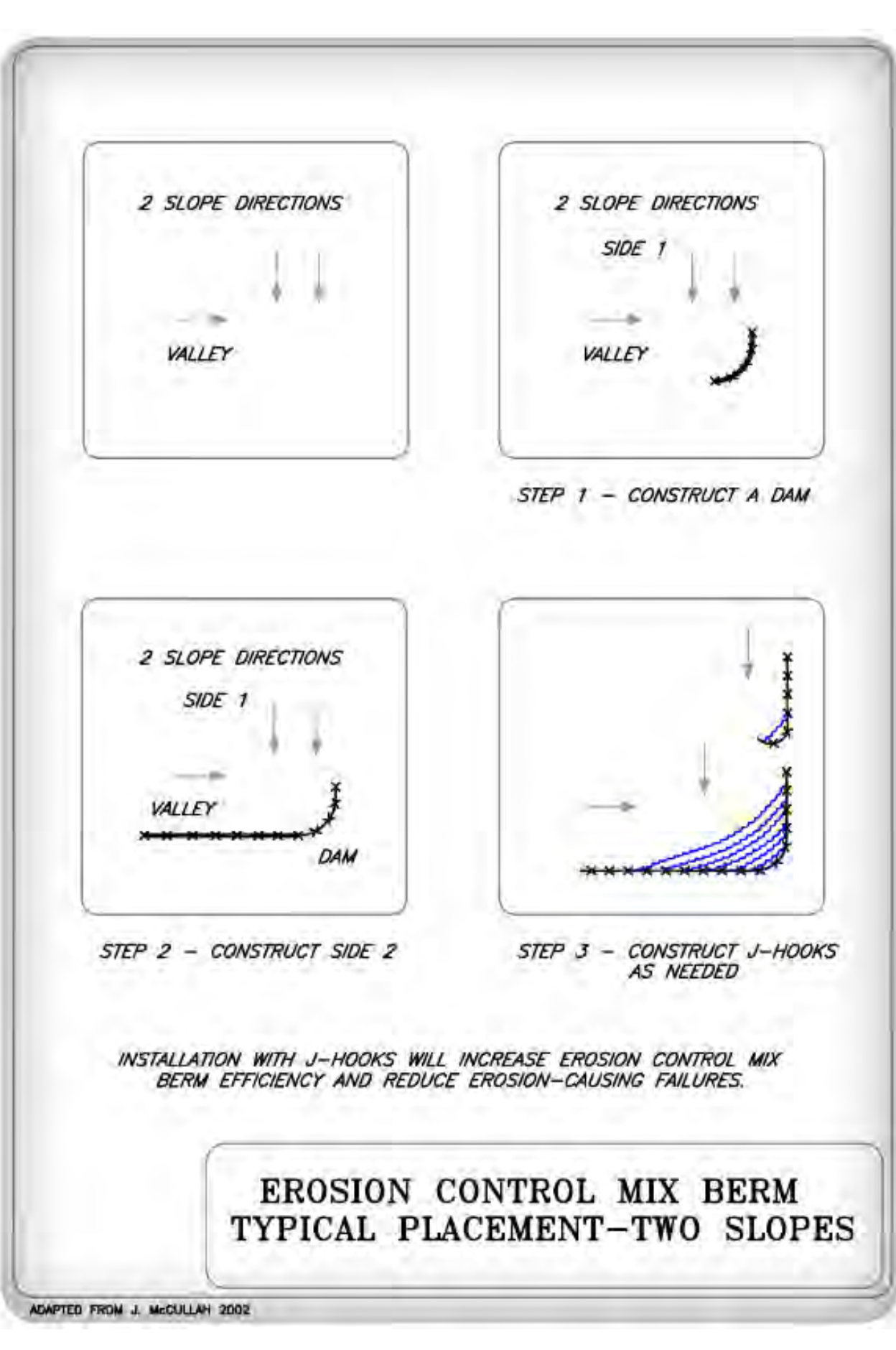
UTILITY PLAN		TDR SITE PLAN		BRIAN SLOVENSKI		NOT FOR CONSTRUCTION FOR PERMIT USE ONLY	
5 RESIDENTIAL UNITS		124 TURTLE POND ROAD		CIVILWORKS NEW ENGLAND		DATE: 7-9-24	
306 DOVER POINT ROAD		LEE, NH 03861		DRAWN BY: JRG		SCALE: 1"=20'	
DOVER, NH 03820		TAX MAP L, LOT 111		DESIGN BY: JRG		PROJECT NO: 23140	
				APPROVED BY: JRG		FILE SITE	
				NO.		REVISION	
				APP'D		DATE	

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181 Watson Road, PO Box 1166
Dover, NH 03820
603.749.0443

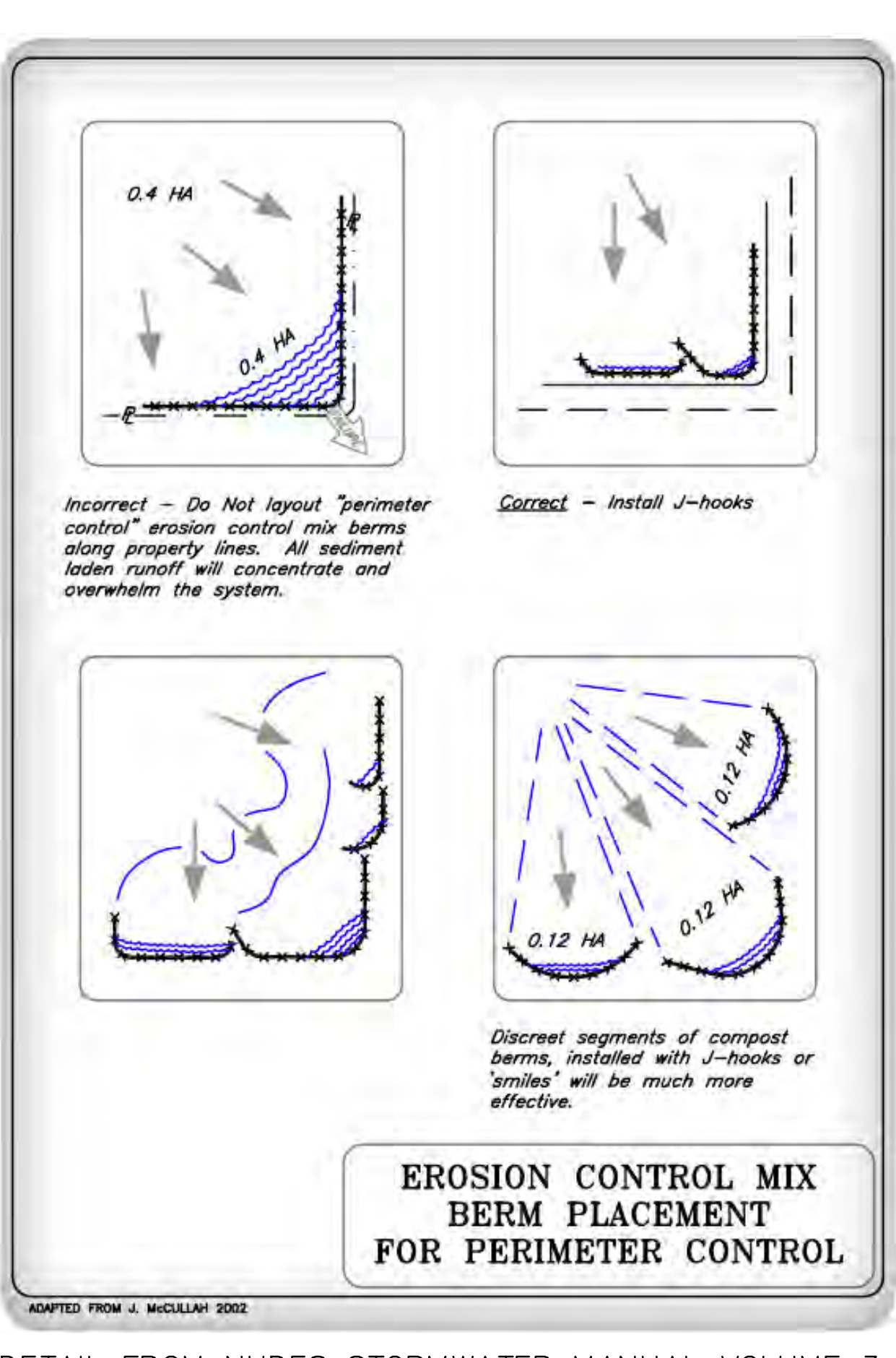




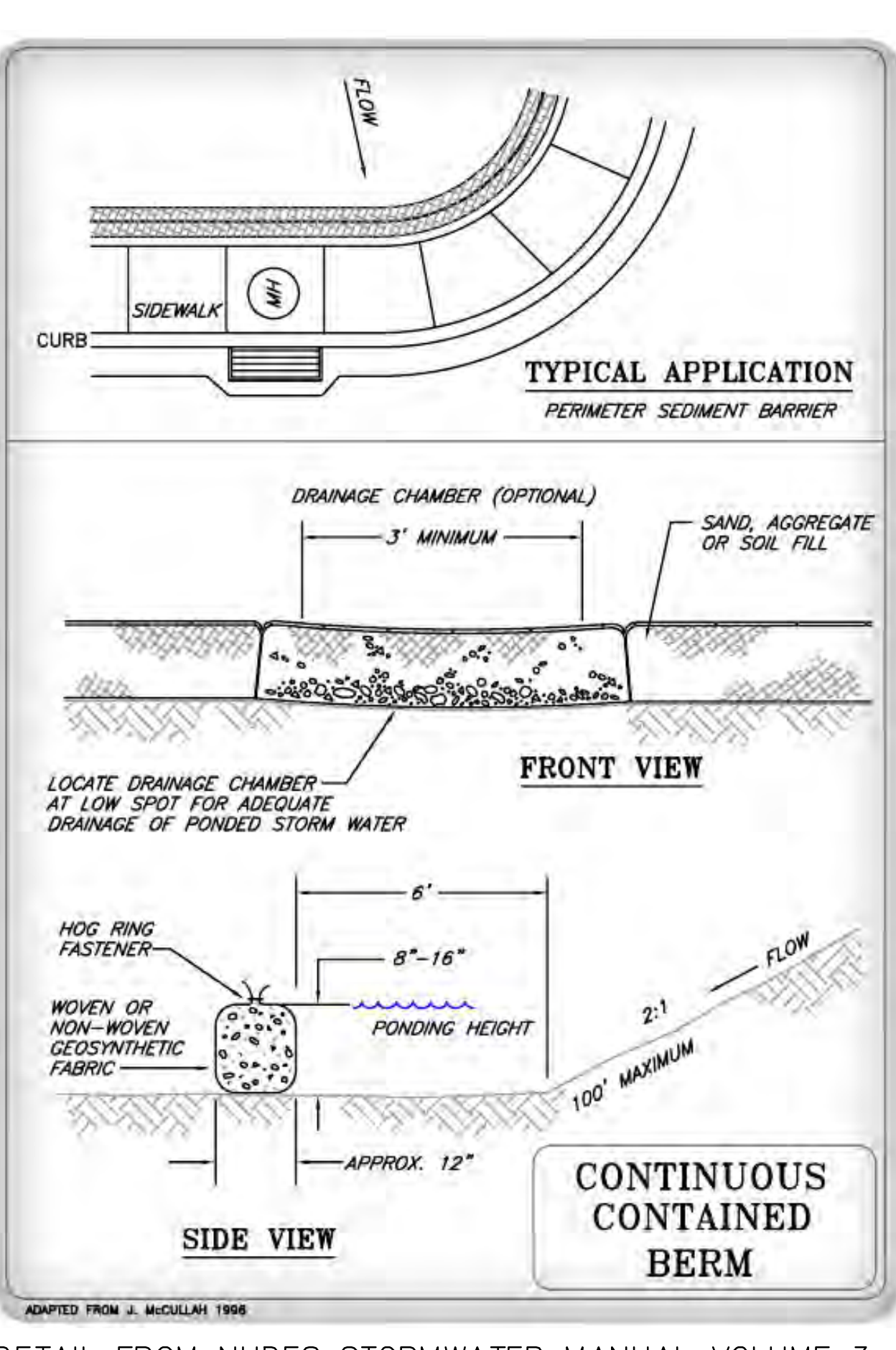
DETAIL FROM NHDES STORMWATER MANUAL VOLUME 3



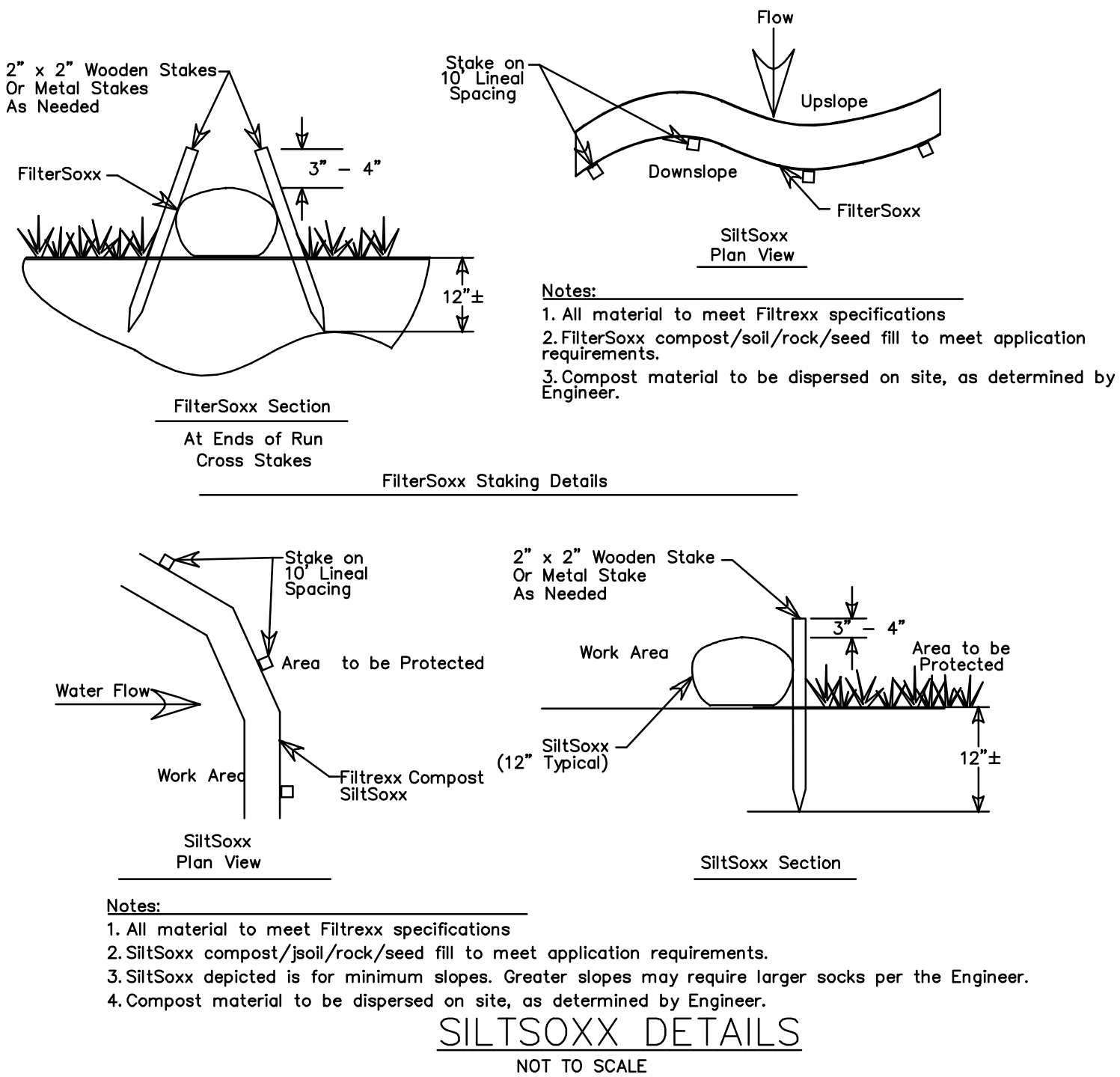
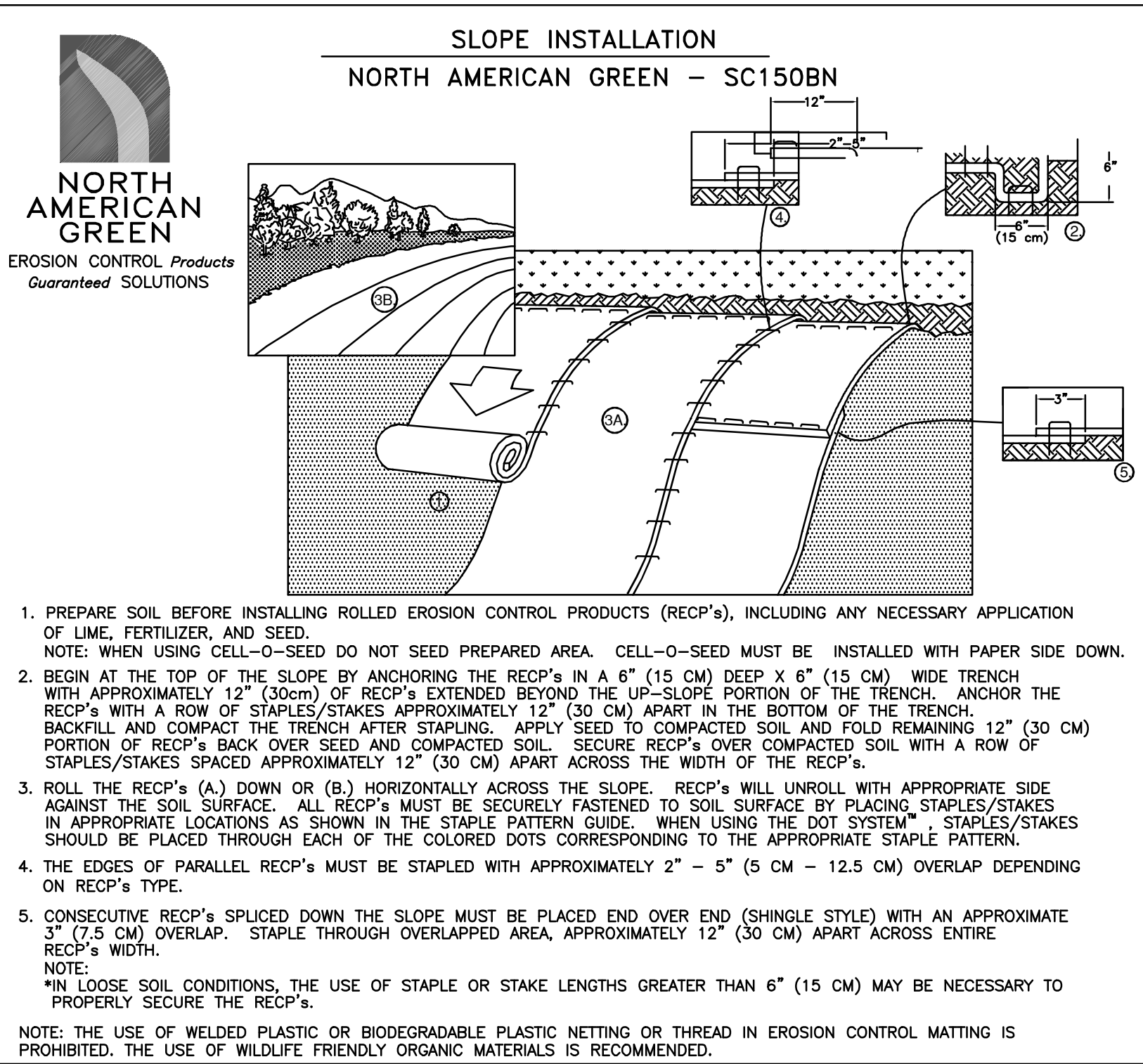
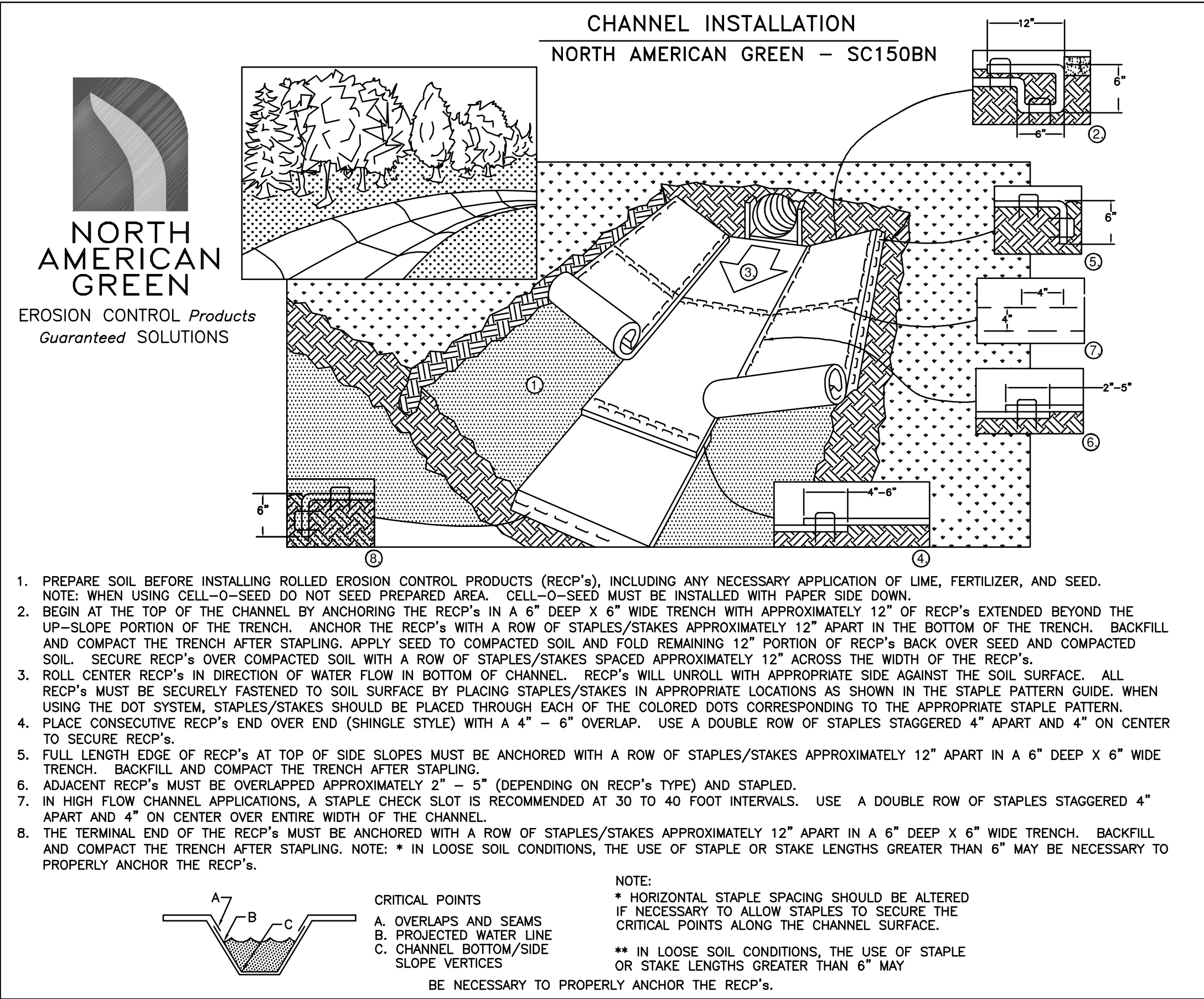
DETAIL FROM NHDES STORMWATER MANUAL VOLUME 3



DETAIL FROM NHDES STORMWATER MANUAL VOLUME 3



DETAIL FROM NHDES STORMWATER MANUAL VOLUME 3



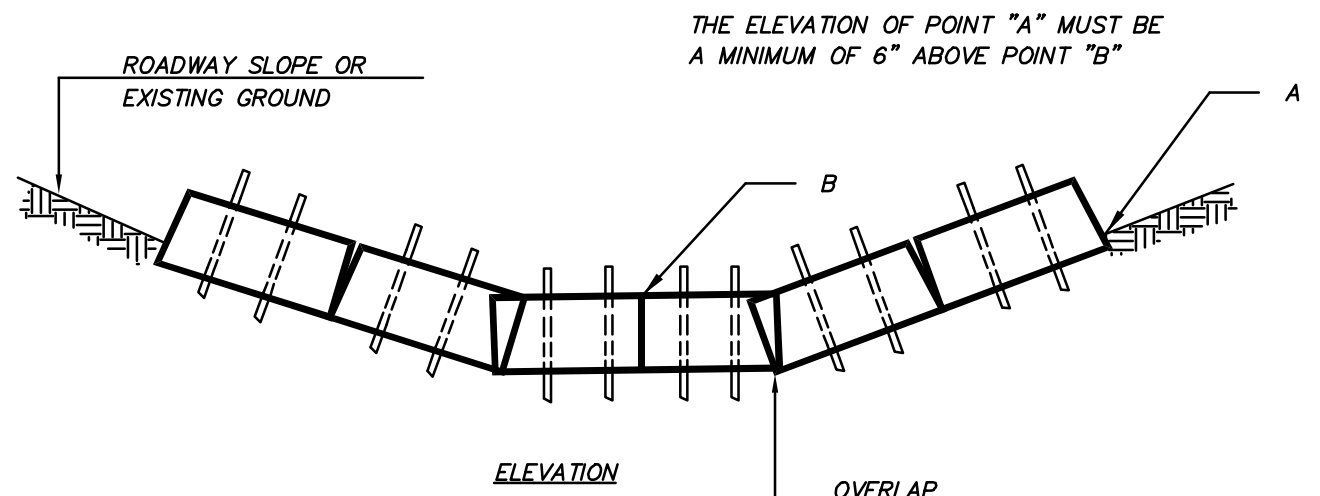
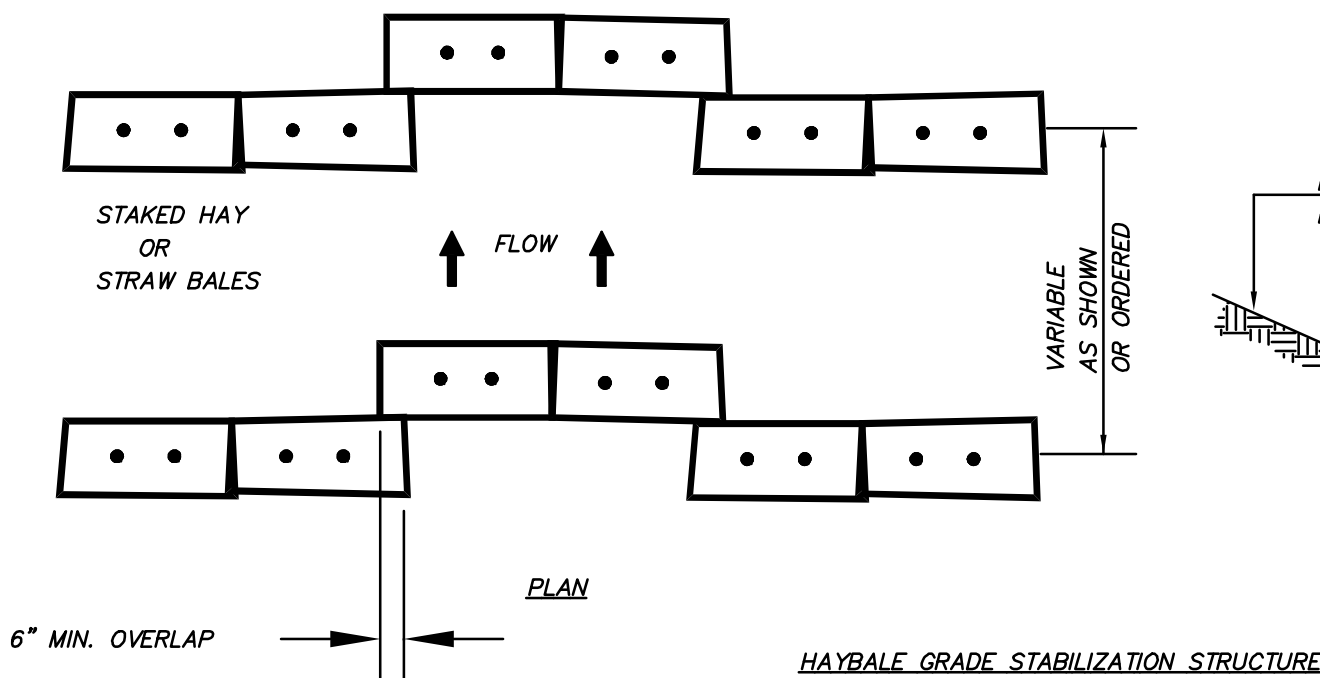
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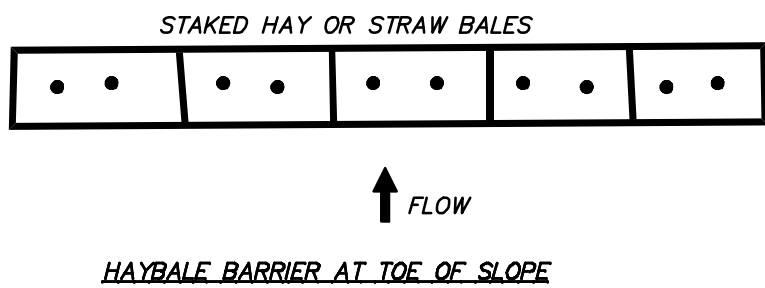
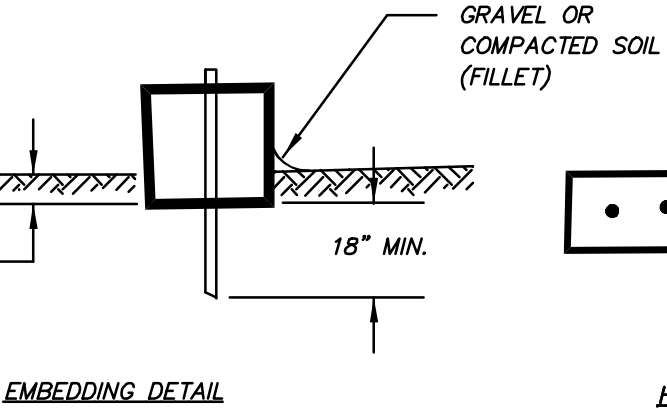
EROSION CONTROL DETAILS

BRIAN SLOVENSKI
124 TURTLE POND ROAD
LEE, NH 03661
TAX MAP L, LOT 111

TDR SITE PLAN
5 RESIDENTIAL UNITS
306 DOVER POINT ROAD
DOVER, NH 03820

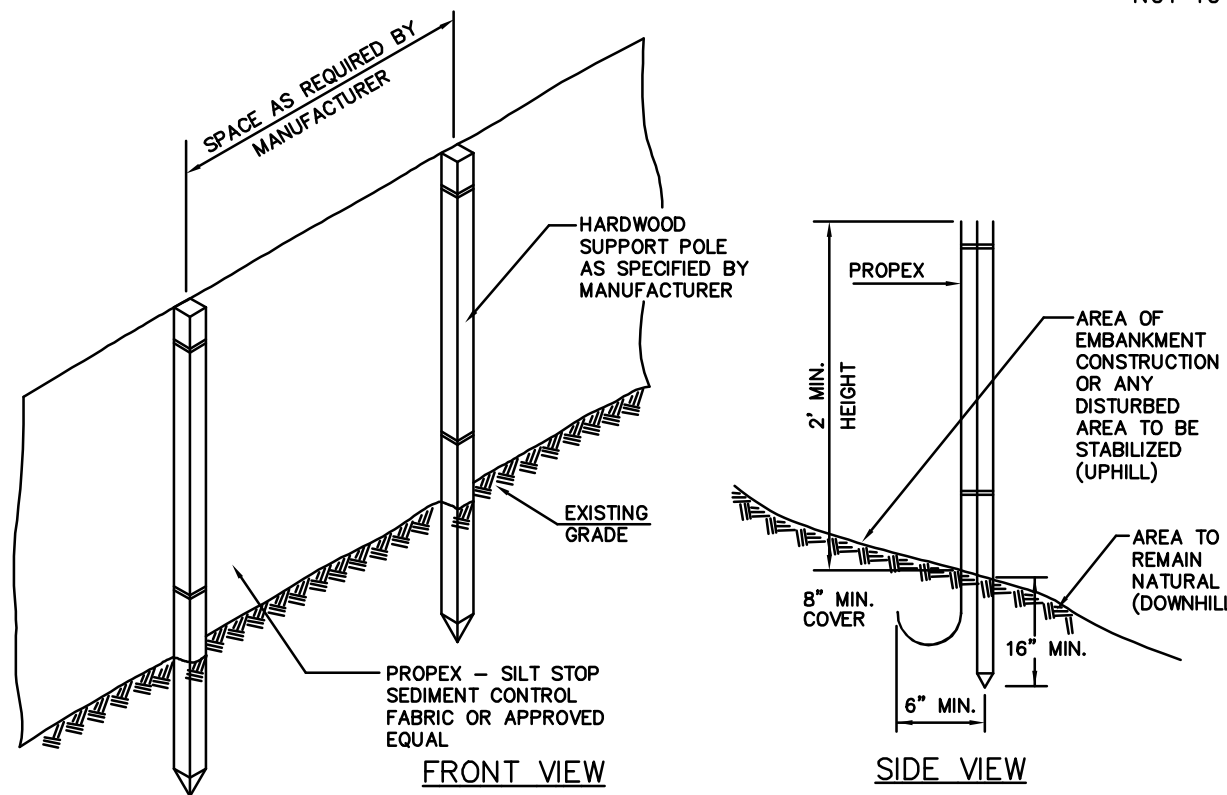


- CONSTRUCTION SPECIFICATIONS
- BALES SHALL BE PLACED IN A ROW WITH ENDS TIGHTLY ABUTTING THE ADJACENT BALES.
 - EACH BALE SHALL BE EMBEDDED IN THE SOIL A MINIMUM OF 4".
 - BALES SHALL BE SECURELY ANCHORED IN PLACE BY 2" x 2" STAKES OR RE-BARS DRIVEN THROUGH THE BALES. THE FIRST STAKE IN EACH BALE SHALL BE ANGLED TOWARD PREVIOUSLY LAID BALE TO FORCE BALES TOGETHER.
 - INSPECTION SHALL BE FREQUENT AND REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED.
 - BALES SHALL BE REMOVED WHEN THEY HAVE SERVED THEIR USEFULNESS SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.
 - REMOVE AND PROPERLY DISPOSE OF ALL SEDIMENT PRIOR TO REMOVING HAYBALES.



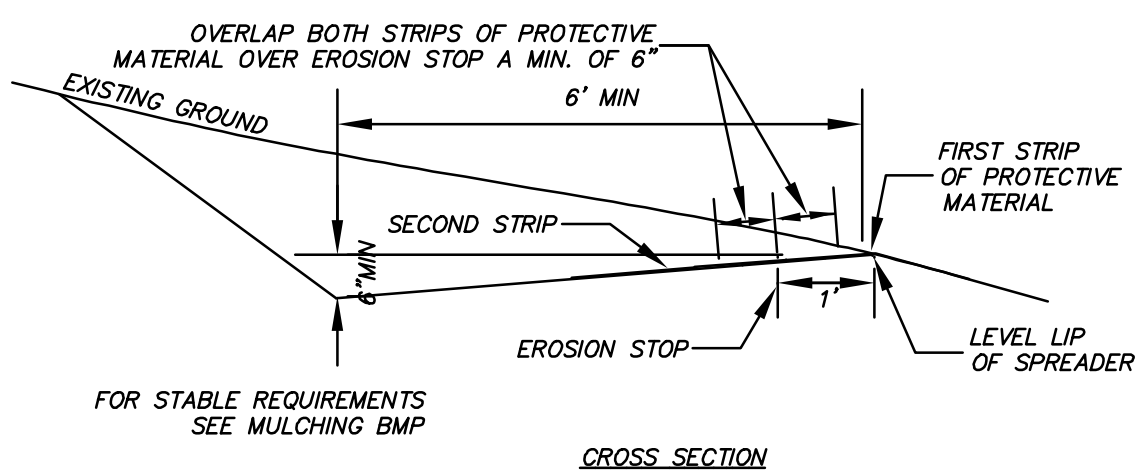
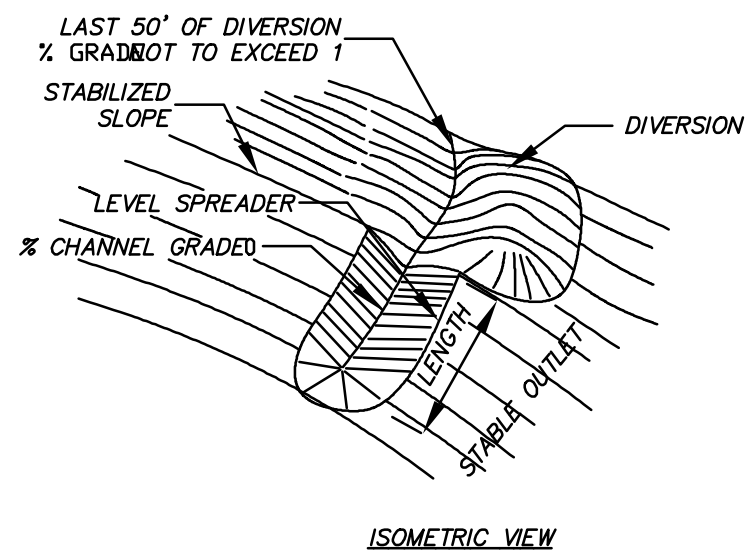
HAYBALE NOTES AND DETAILS

NOT TO SCALE



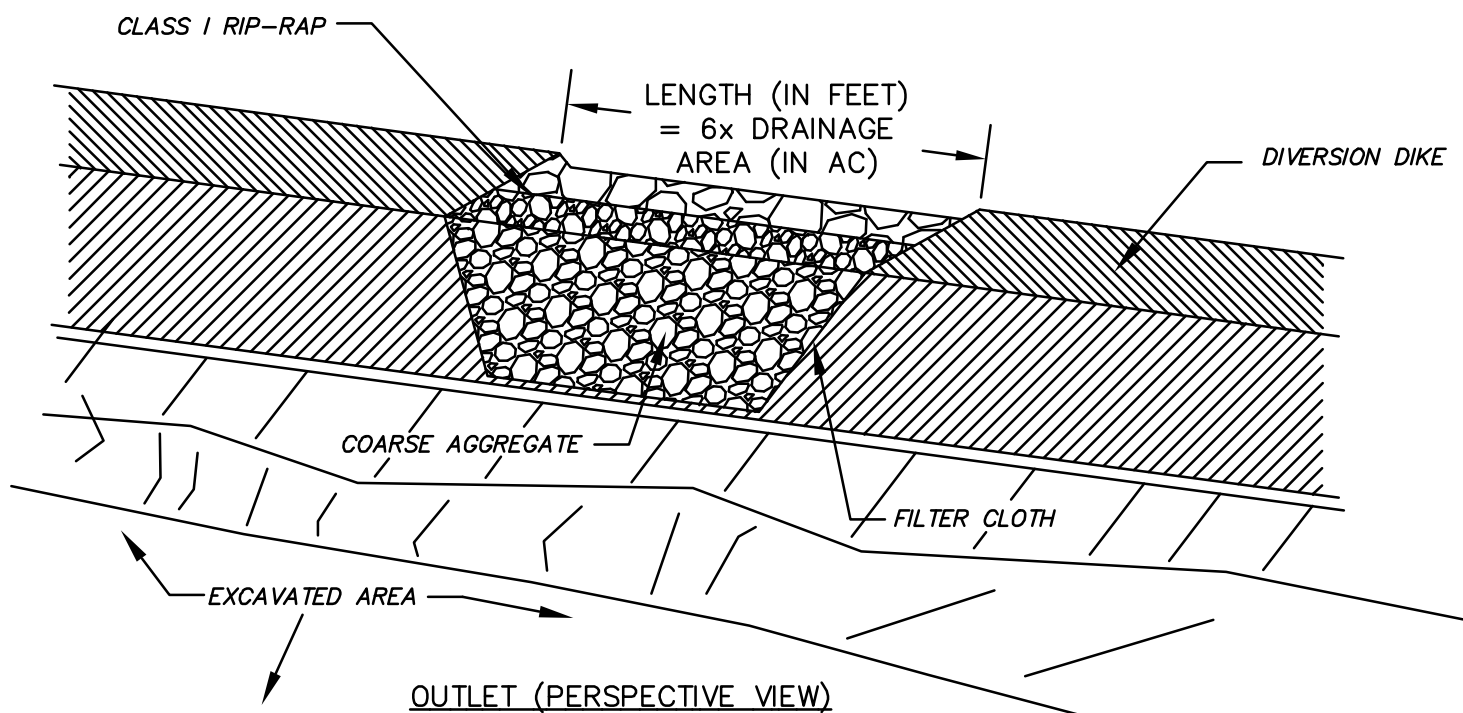
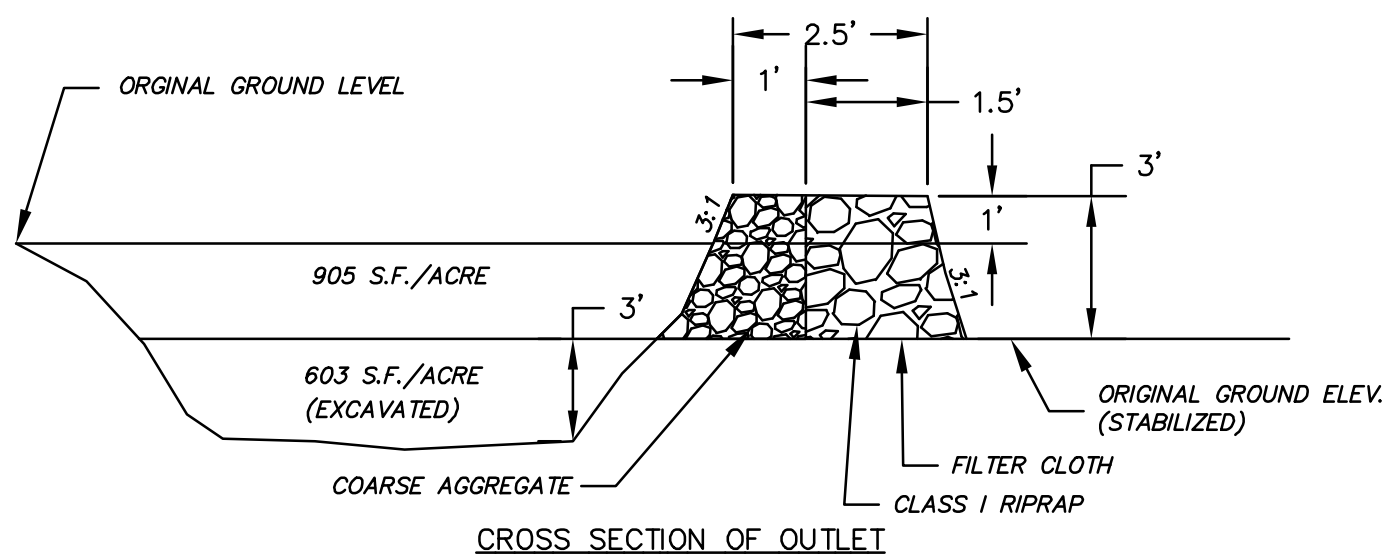
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NOT TO SCALE



LEVEL SPREADER DETAIL

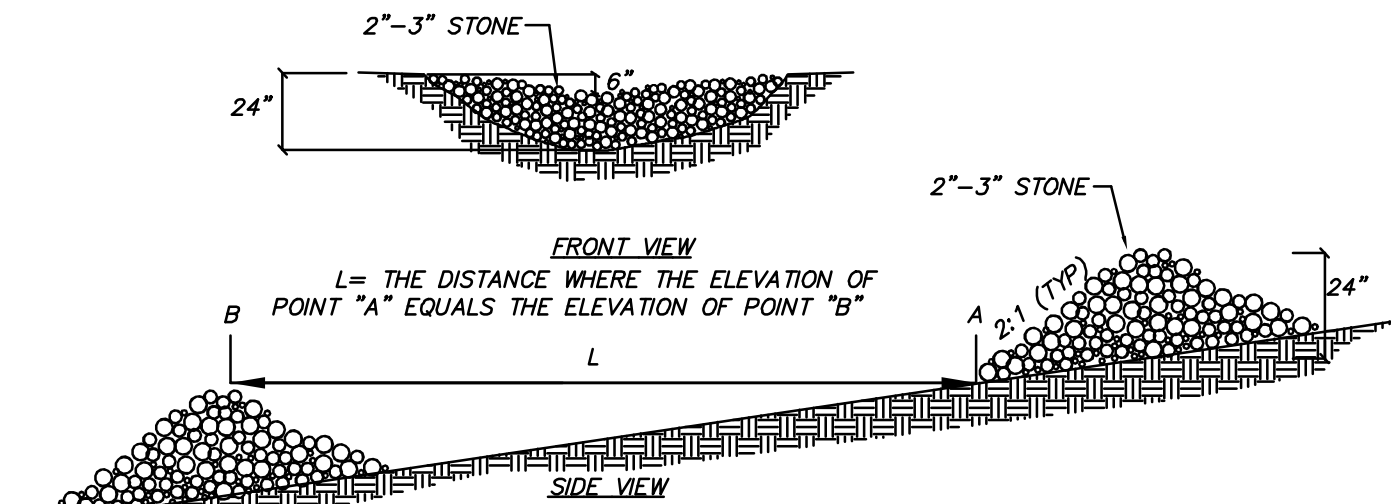
NOT TO SCALE



- NOTES:
- COARSE AGGREGATE SHALL MEET NHDOT 304.5 SPECIFICATIONS AND SHALL NOT CONTAIN MORE THAN 5% FINES PASSING THE #200 SIEVE.
 - FILTER CLOTH SHALL BE MIRAFI 700X OR APPROVED EQUAL.
 - CLASS I RIPRAP SHALL MEET NHDOT 583 SS SPECIFICATIONS.
 - THE MAXIMUM CONTRIBUTING AREA TO THE TRAP SHALL BE LESS THAN 5 AC.
 - THE TRAP SHALL BE CLEANED WHEN 50% OF THE ORIGINAL VOLUME IS FILLED.
 - MATERIALS REMOVED FROM THE TRAP SHALL BE PROPERLY DISPOSED OF AND STABILIZED.

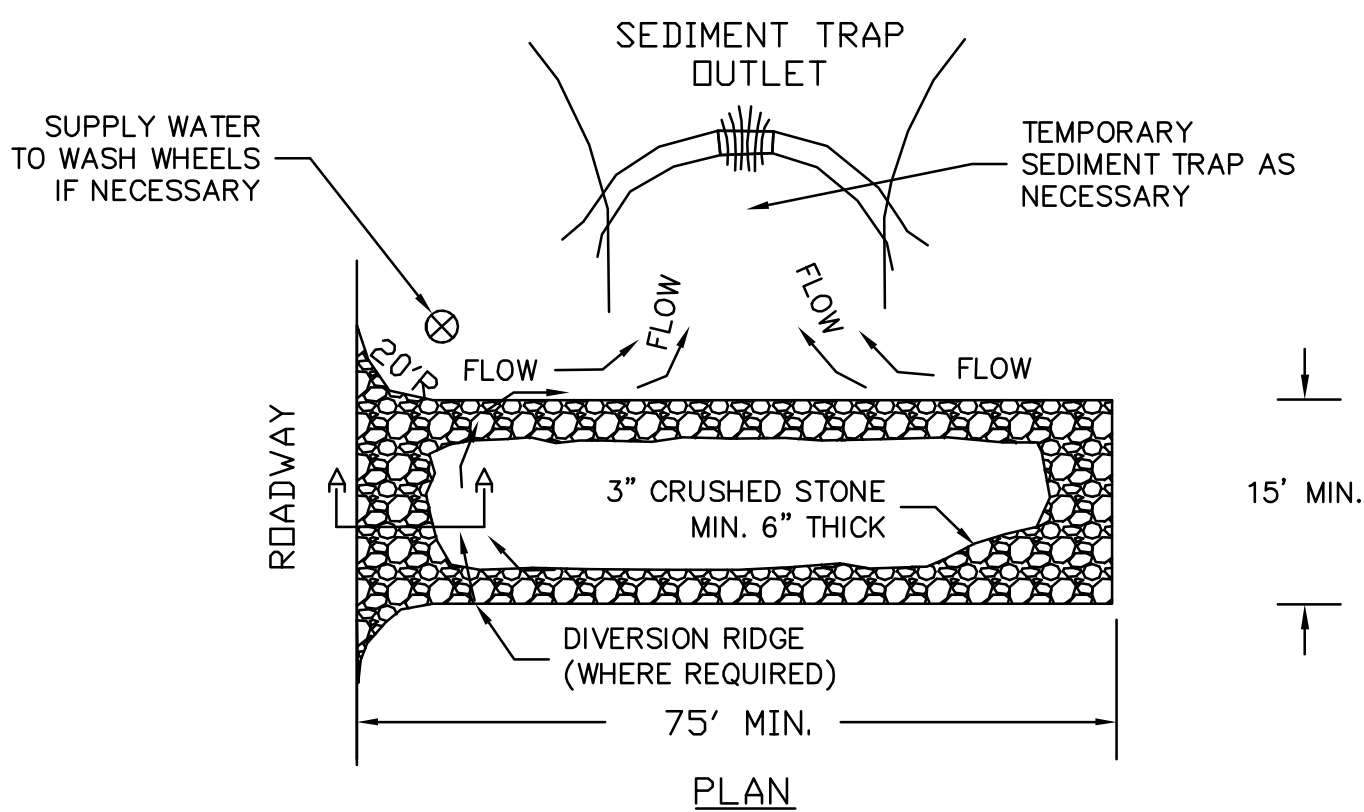
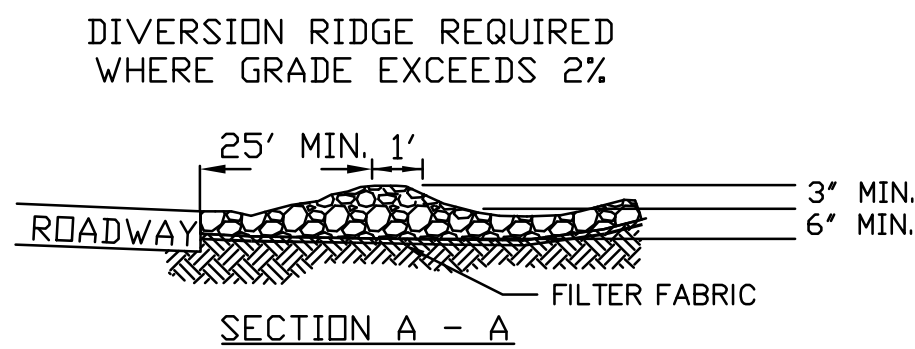
TEMPORARY SEDIMENT TRAP

NOT TO SCALE



STONE CHECK DAM

NOT TO SCALE



A. GENERAL NOTES:

- A STABILIZED CONSTRUCTION ENTRANCE/EXIT CONSISTS OF A PAD OF STONE AGGREGATE PLACED ON A GEOTEXTILE FILTER FABRIC, LOCATED AT ANY POINT WHERE TRAFFIC WILL BE LEAVING A CONSTRUCTION SITE TO AN EXISTING ACCESS ROAD WAY OR OTHER PAVED SURFACE. ITS PURPOSE IS TO REDUCE OR ELIMINATE THE TRACKING OF SEDIMENT ONTO PUBLIC ROADS BY CONSTRUCTION VEHICLES. THIS HELPS PROTECT RECEIVING WATERS FROM SEDIMENT CARRIED BY STORM WATER RUNOFF FROM ROADS.
- ONLY CONSTRUCTION TRAFFIC LEAVING THE SITE IS REQUIRED TO USE THE TEMPORARY STABILIZED EXIT. CONSIDER PROVIDING A SEPARATE, UNPROTECTED ENTRANCE FOR TRAFFIC ENTERING THE SITE. THIS WILL INCREASE THE LONGEVITY OF THE STABILIZED EXIT BY ELIMINATING HEAVY LOADS ENTERING THE SITE AND REDUCING THE TOTAL TRAFFIC OVER THE DEVICE.
- LOCATE THE CONSTRUCTION ENTRANCES AND EXITS, A MINIMUM OF 100 FEET FROM INTERSECTIONS, TO LIMIT SEDIMENT LEAVING THE SITE AND TO PROVIDE FOR MAXIMUM UTILITY BY ALL CONSTRUCTION VEHICLES. AVOID ENTRANCES THAT HAVE STEEP GRADES AND ENTRANCES AT CURVES IN ROADS.
- THE ENTRANCE SHOULD 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 MAINTENANCE OF ANY MEASURES USED TO TRAP SEDIMENT.

B. SPECIFICATIONS (TEMPORARY CONSTRUCTION ENTRANCE/EXITS SHOULD MEET THE FOLLOWING REQUIREMENTS).

- STONE SIZE MINIMUM: USE SHOULD BE 3" CRUSHED STONE.
- THE MINIMUM LENGTH OF THE PAD SHOULD BE 75 FEET.
- THE MINIMUM WIDTH OF THE PAD SHOULD BE 15 FEET OR THE WIDTH OF THE ENTRANCE, WHICHEVER IS GREATER.
- THE PAD SHOULD SLOPE AWAY FROM THE EXISTING ROADWAY.
- THE PAD SHOULD BE AT LEAST 6" THICK.
- A GEOTEXTILE FILTER FABRIC SHOULD BE PLACED BETWEEN THE STONE PAD AND THE EARTH SURFACE BELOW THE PAD.
- THE PAD SHOULD BE MAINTAINED OR REPLACED WHEN MUD AND SOIL PARTICLES CLOG THE VOIDS IN THE STONE SUCH THAT MUD AND SOIL PARTICLES ARE TRACKED OFF-SITE.
- NATURAL DRAINAGE THAT CROSSES THE LOCATION OF THE STONE PAD SHOULD BE INTERCEPTED AND PIPED BENEATH THE PAD, AS NECESSARY, WITH SUITABLE OUTLET PROTECTION.

- C. MAINTENANCE REQUIREMENTS (THE ENTRANCE/EXIT SHOULD BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY, THIS MAY REQUIRE TOP DRESSING, REPAIR AND/OR CLEAN OUT OF ANY MEASURES USED TO TRAP SEDIMENT).
- WHEN THE CONTROL PAD BECOMES INEFFECTIVE, THE STONE SHOULD BE REMOVED ALONG WITH THE COLLECTED SOIL MATERIAL, REGRADED ON SITE, AND STABILIZED. THE ENTRANCE SHOULD THEN BE RECONSTRUCTED.
 - THE CONTRACTOR SHOULD SWEEP THE PAVEMENT AT EXITS WHENEVER SOIL MATERIALS ARE TRACKED ONTO THE ADJACENT PAVEMENT OR TRAVELED WAY.
 - WHEN NECESSARY, WHEELS SHALL BE CLEANED PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF-WAY. WHEN WHEEL WASHING IS REQUIRED, IT SHOULD BE CONDUCTED ON AN AREA STABILIZED WITH AGGREGATE, WHICH DRAINS INTO AN APPROVED SEDIMENT-TRAPPING DEVICE. ALL SEDIMENT SHOULD BE PREVENTED FROM ENTERING STORM DRAINS, DITCHES OR WATERWAYS.

TEMPORARY CONSTRUCTION ENTRANCE/EXIT

NOT TO SCALE

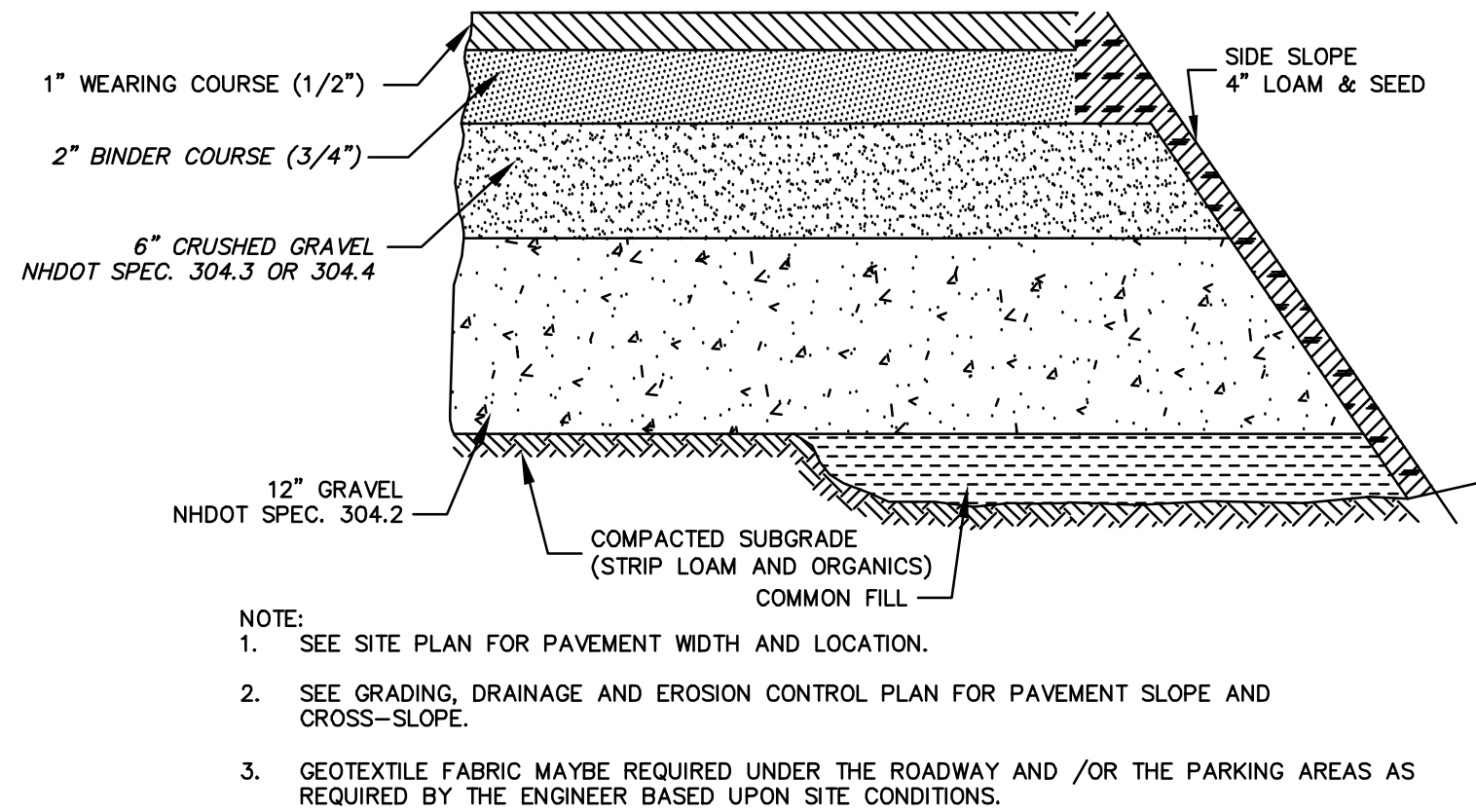
PLANNING FILE NO.: SITE-2024-

EROSION CONTROL DETAILS

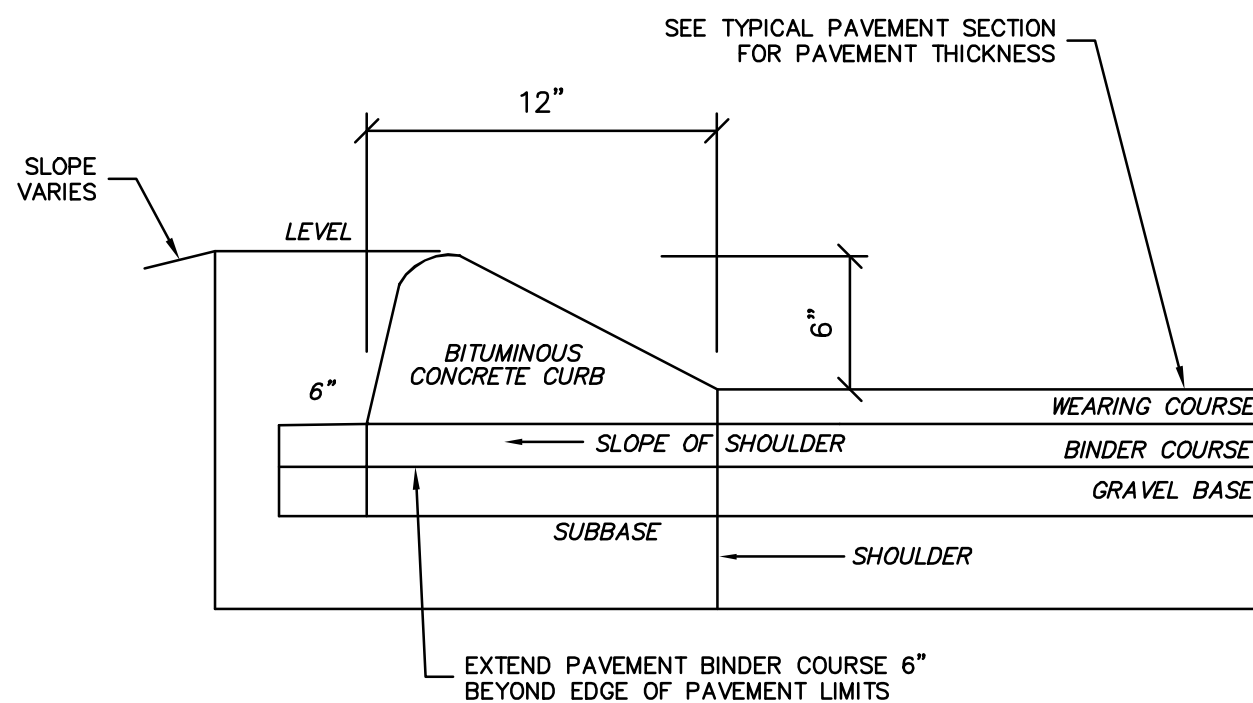
TDR SITE PLAN
5 RESIDENTIAL UNITS
306 DOVER POINT ROAD
DOVER, NH 03820

BRIAN SLOVENSKI
124 TURTLE POND ROAD
LEE, NH 03861
TAX MAP L, LOT 111

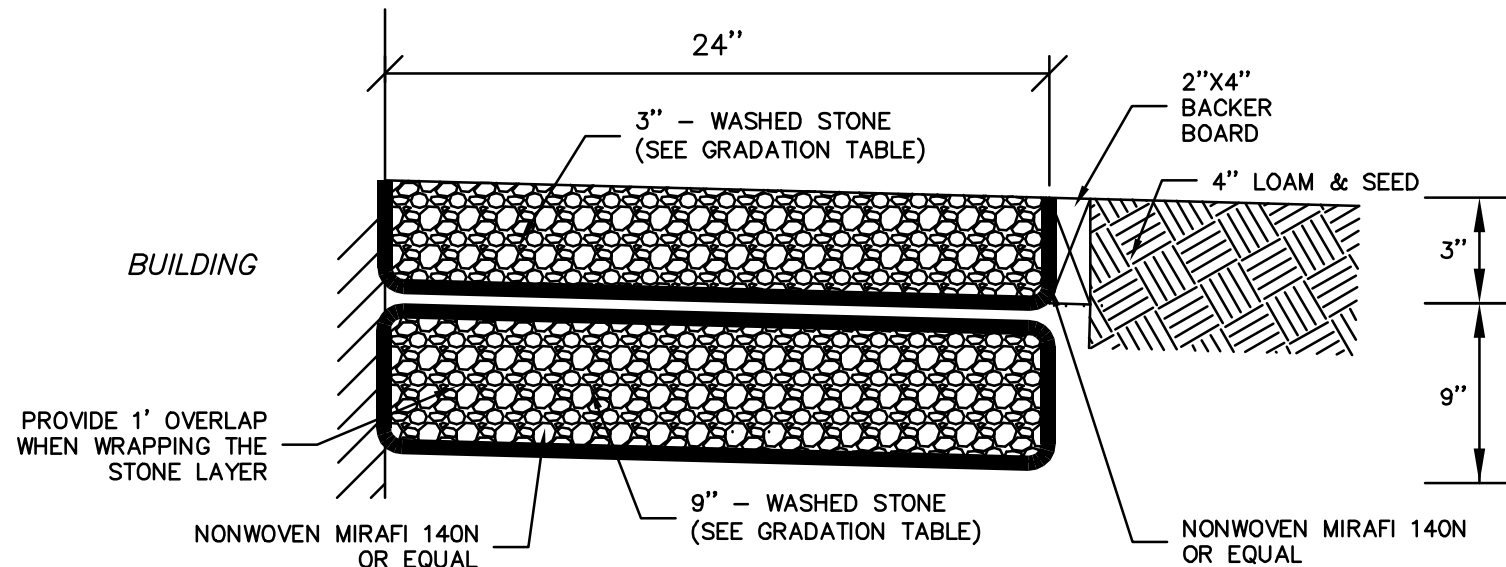
13



TYPICAL PAVEMENT SECTION
NOT TO SCALE



SLOPED BITUMINOUS CURB
NOT TO SCALE



NOTES: SEE SITE AND GRADING PLANS FOR LIMITS OF STONE DRIPEDGE

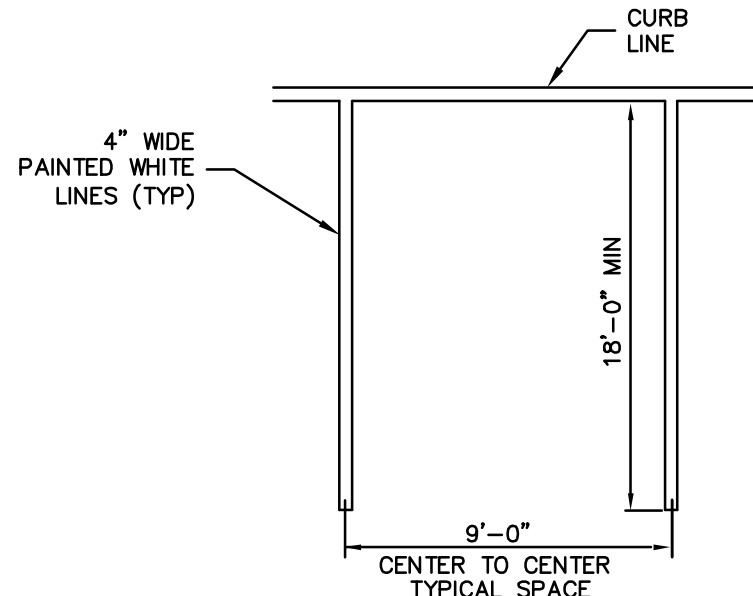
INSTALLATION NOTES:

1. THE FILTER FABRIC SHALL BE ENTIRELY WRAPPED AROUND THE 15" LAYER OF STONE.
2. A SECOND FILTER FABRIC SHALL BE LAID ON TOP AND ATTACHED TO THE BACKER BOARD TO CREATE A "U". THIS ALLOWS FOR EASY REMOVAL OF TOP 3" OF STONE AND "U" SHAPED FABRIC, FOR MAINTENANCE.

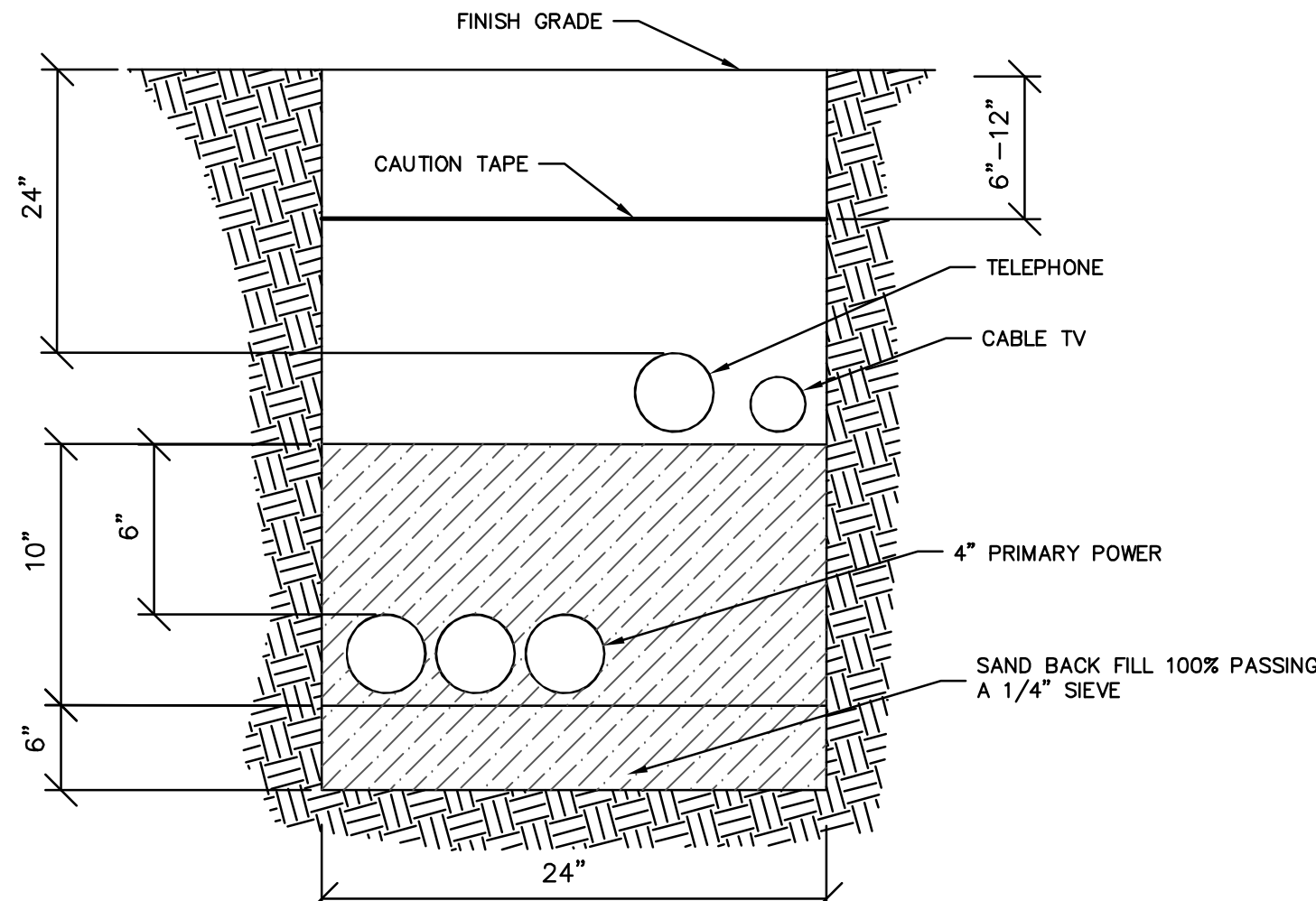
MAINTENANCE NOTES:

- IF PONDING OR SAND/DEBRIS BUILD UP IS NOTICED FOLLOW HE BELOW STEPS
1. REMOVE TOP 3" OF STONE AND THE "U" SHAPED FILTER FABRIC.
 2. CLEAN THE TOP OF THE FILTER FABRIC THAT IS WRAPPED AROUND 9" LAYER OF STONE.
 3. INSPECT ANY RIPS OR TEARS IN FABRIC, IF ANY. LAY ADDITIONAL FILTER FABRIC OVER THE RIPS OR THE TEARS.
 4. CLEAN AND INSPECT THE "U" SHAPED FILTER FABRIC THAT WAS REMOVED. IF THERE IS NO TEARS OR RIPS THE FILTER FABRIC MAY BE REUSED.
 5. INSPECT AND REMOVE ANY SAND OR DEBRIS FROM THE TOP 3" LAYER OF STONE.
 6. RE-INSTALL FILTER FABRIC AND 3" STONE LAYER

DRILINE INFILTRATION TRENCH DETAIL
NOT TO SCALE

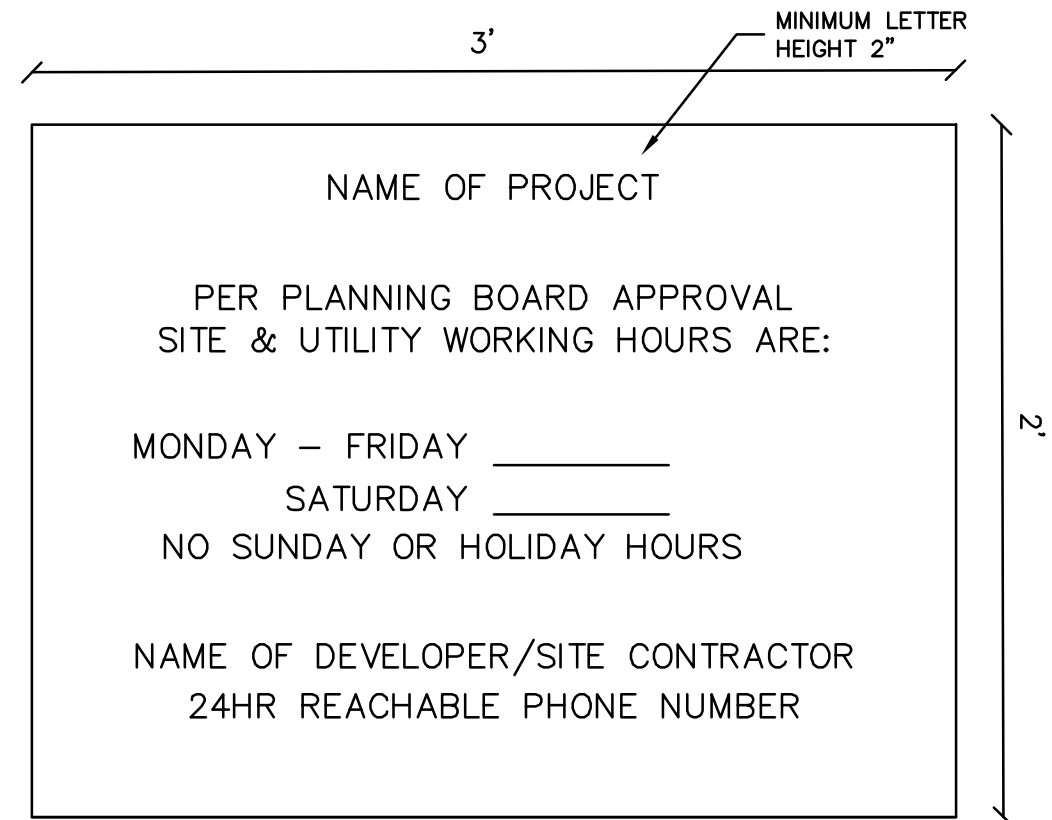


STANDARD
PARKING STALL
NOT TO SCALE



1. TELEPHONE CONDUIT SHALL BE 3" SCHEDULE 40 PVC, WITH STEEL SWEEPS AT RISER POLE, 90° BENDS AND AT BUILDING.
2. LEAVE PULL ROPE IN ALL CONDUITS FOR CABLE INSTALLATION.
3. FOR COMPLETE SPECIFICATIONS SEE "PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE CONSTRUCTION SPECIFICATIONS FOR UNDERGROUND CONDUIT SYSTEMS".
4. CONTRACTOR SHOULD VERIFY THE NUMBER & SIZE OF CONDUIT WITH THE APPROPRIATE UTILITIES.

UTILITY TRENCH
NOT TO SCALE



- NOTES:
1. SIGN SHALL HAVE BLACK LETTERS ON A WHITE BACKGROUND
 2. SIGN SHALL BE WEATHER RESISTANT AND SECURED TO THE GROUND
 3. HOURS ON THE SIGN SHALL COMPLY WITH ALL PLANNING BOARD CONDITIONS OF APPROVAL

CITY OF DOVER D-2
CONSTRUCTION SIGN
NOT TO SCALE

PLANNING FILE NO.: SITE-2024-

DETAILS

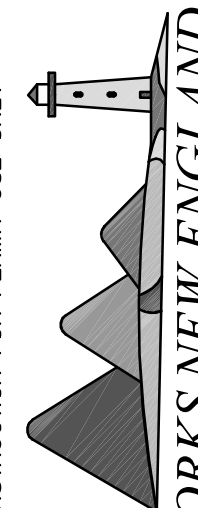
TDR SITE PLAN
5 RESIDENTIAL UNITS
306 DOVER POINT ROAD
DOVER, NH 03820

BRIAN SLOVENSKI
124 TURTLE POND ROAD
LEE, NH 03861
TAX MAP L, LOT 111

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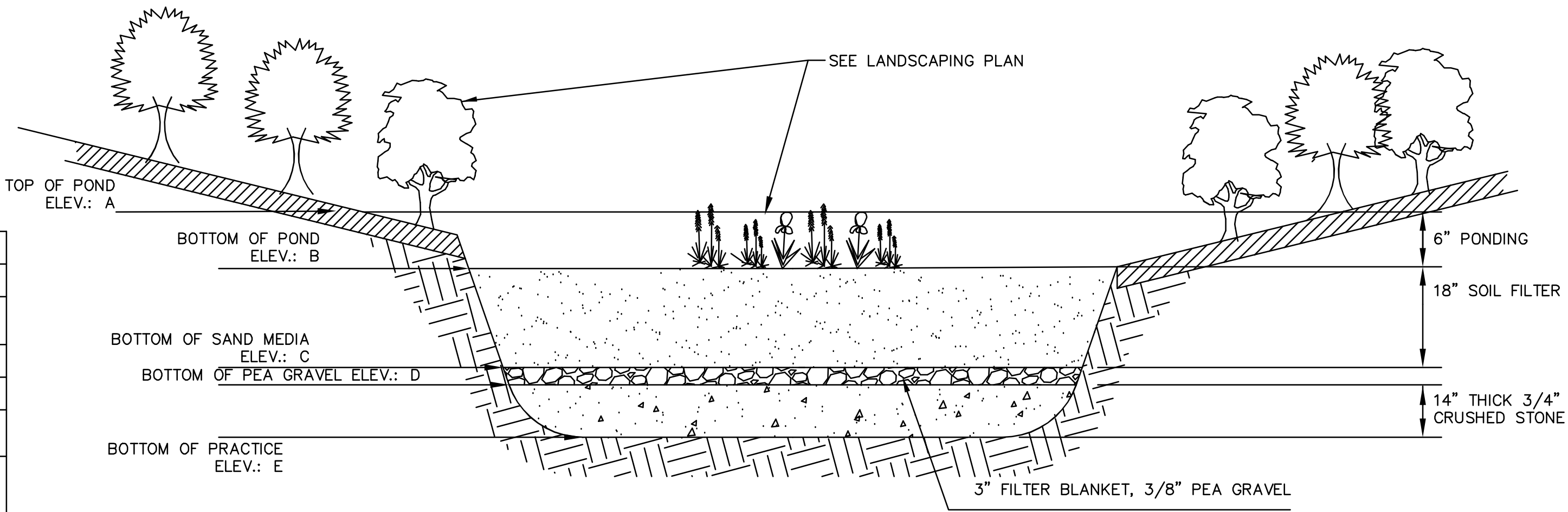
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7-9-24	AS SHOWN	JRG	JRG	BYSJH	23140					

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY



CIVILWORKS NEW ENGLAND
CIVIL WATERCRAFT ENGINEERING
181 Watson Road, PO Box 1166
Dover, NH 03820
603.749.0443

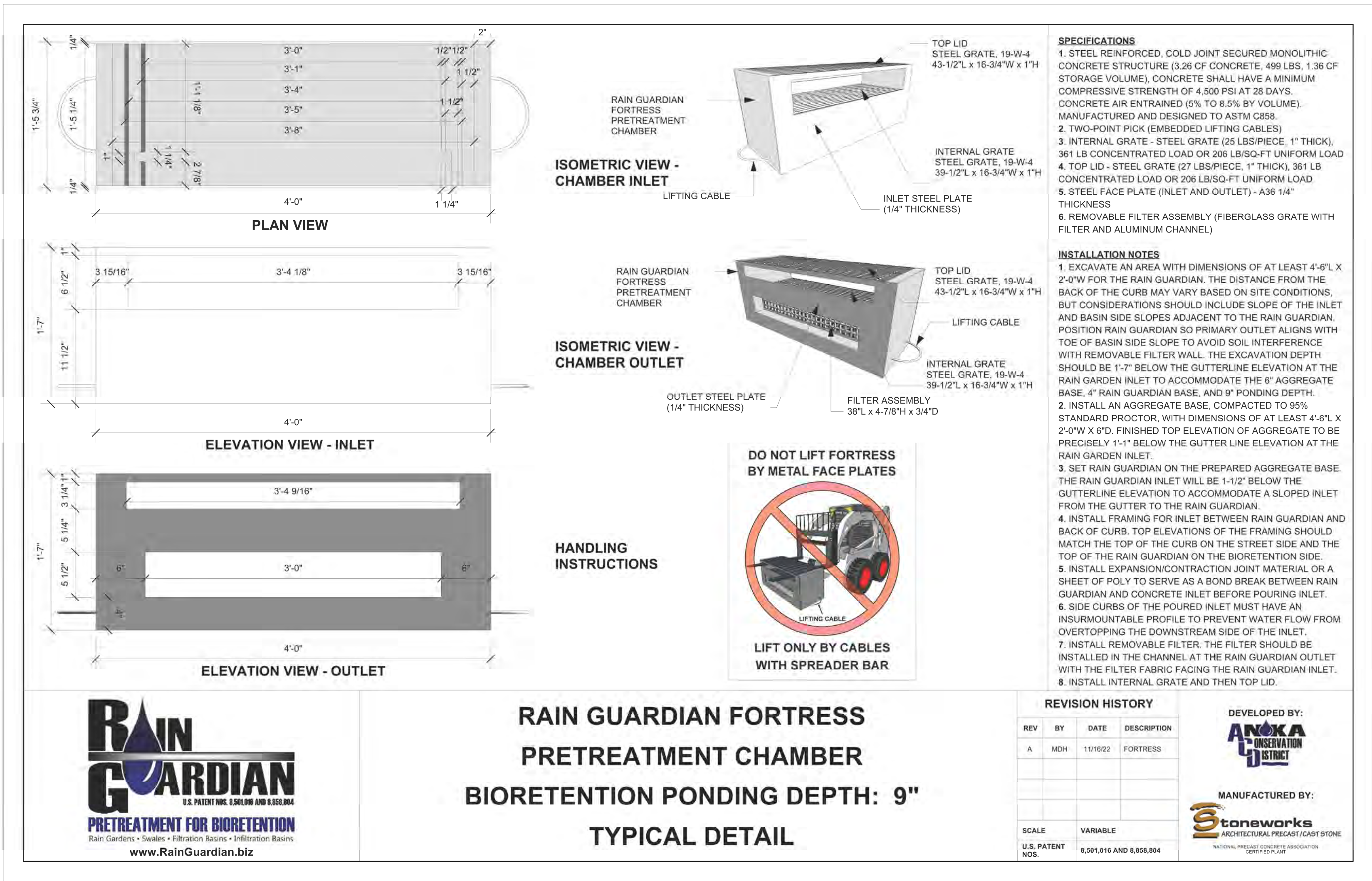
RAIN GARDEN FILTER MEDIA SPECIFICATIONS			
COMPONENT MATERIAL	PERCENT OF MIXTURE BY VOLUME	GRADATION OF MATERIAL	
		SIEVE NO.	PERCENT BY WEIGHT PASSING STANDARD SIEVE
FILTER MEDIA OPTION A			
ASTM C-33 CONCRETE SAND	50 TO 55		
LOAMY SAND TOPSOIL, WITH FINES AS INDICATED	20 TO 30	200	15 TO 25
MODERATELY FINE SHREDDED BARK OR WOOD FIBER MULCH, WITH FINES AS INDICATED	20 TO 30	200	< 5
FILTER MEDIA OPTION B			
MODERATELY FINE SHREDDED BARK OR WOOD FIBER MULCH, WITH FINES AS INDICATED	20 TO 30	200	< 5
LOAMY COARSE SAND	70 TO 80	10	85 TO 100
		20	70 TO 100
		60	15 TO 40
		200	8 TO 15



POND	POND ELEVATION				
	A	B	C	D	E
RG1	34.25	33.00	31.50	31.25	30.08
RG2	36.25	35.00	33.50	33.25	32.08

- NOTES:
- DO NOT BEGIN CONSTRUCTION OF THE RAIN GARDEN AREAS UNTIL LAWN AREA ON THE ENTIRE SITE IS ESTABLISHED WITH AT LEAST 80 PERCENT TURF. PREVENT SILTATION INTO THE BIORETENTION AREA. THE BIORETENTION SUBGRADE SHALL BE EXCAVATED TO THE DESIGN DEPTH PLUS TWO (2) INCHES. AT THAT DEPTH FOUR (4) INCHES OF COMPOST SHALL BE TILLED INTO THE EXISTING SOILS SUCH THAT THE SOILS ARE WELL MIXED.
 - DO NOT DRIVE CONSTRUCTION EQUIPMENT ON FILTER SUBGRADE NOR ON THE FILTER MATERIAL. INSTALL FILTER MATERIAL BY MEANS OF AN EXCAVATOR LOCATED ADJACENT TO THE FILTER AREA.
 - MATERIALS: CRUSHED STONE LAYER SHALL MEET NHDOT 304.4. PEA STONE SHALL CONTAIN NO MORE THAN 5% FINES PASSING THE #200 SIEVE. TOPSOIL SHALL CONTAIN 15 TO 25% FINES PASSING THE #200 SIEVE. MULCH SHALL BE SHREDDED HARDWOOD, AGED IN A STOCKPILE OR STORED FOR AT LEAST 12 MONTHS.
 - REFER TO LANDSCAPE DRAWINGS FOR GRASS SEED MIXES AND PLANTINGS. FERTILIZATION OF THE FILTER AREA SHALL BE AVOIDED UNLESS ABSOLUTELY NECESSARY TO ESTABLISH VEGETATION.
 - INITIAL ESTABLISHMENT: DURING THE FIRST 2-3 MONTHS OF ESTABLISHMENT WATER THE GRASS ON A WEEKLY BASIS (TO SUPPLEMENT RAINFALL FOR TOTAL OF 1 INCH PER WEEK).
 - ANNUAL MAINTENANCE: IN THE SPRING OF EACH YEAR, ANY DEAD VEGETATION SHALL BE REMOVED TO ALLOW FOR NEW GROWTH, AND ANY ACCUMULATED SEDIMENT (NORMALLY AT THE ENTRANCE TO THE GARDEN) SHALL ALSO BE REMOVED. DURING THE GROWING SEASON THE RAIN GARDEN SHALL BE WEEDED TWO (2) TIMES. TURF AT FILTER SHALL BE MOWED NO MORE THAN 3 TIMES PER GROWING SEASON. IF WATER PONDS ON THE SURFACE FOR MORE THAN 24 HOURS DURING THE FIRST YEAR OR 72 HOURS THEREAFTER, THE FILTER SURFACE SHALL BE AERATED WITH DEEP TINES OR THE SURFACE REPLACED.
 - GRASS SEED SHALL BE NATIVE NON-INVASIVE SPECIES, SEE LANDSCAPE ARCHITECT DRAWINGS. ALL MATERIALS SHALL BE SUBMITTED TO, AND APPROVED BY, THE DESIGN ENGINEER PRIOR TO CONSTRUCTION.

TYPICAL RAIN GARDEN DETAIL
NOT TO SCALE



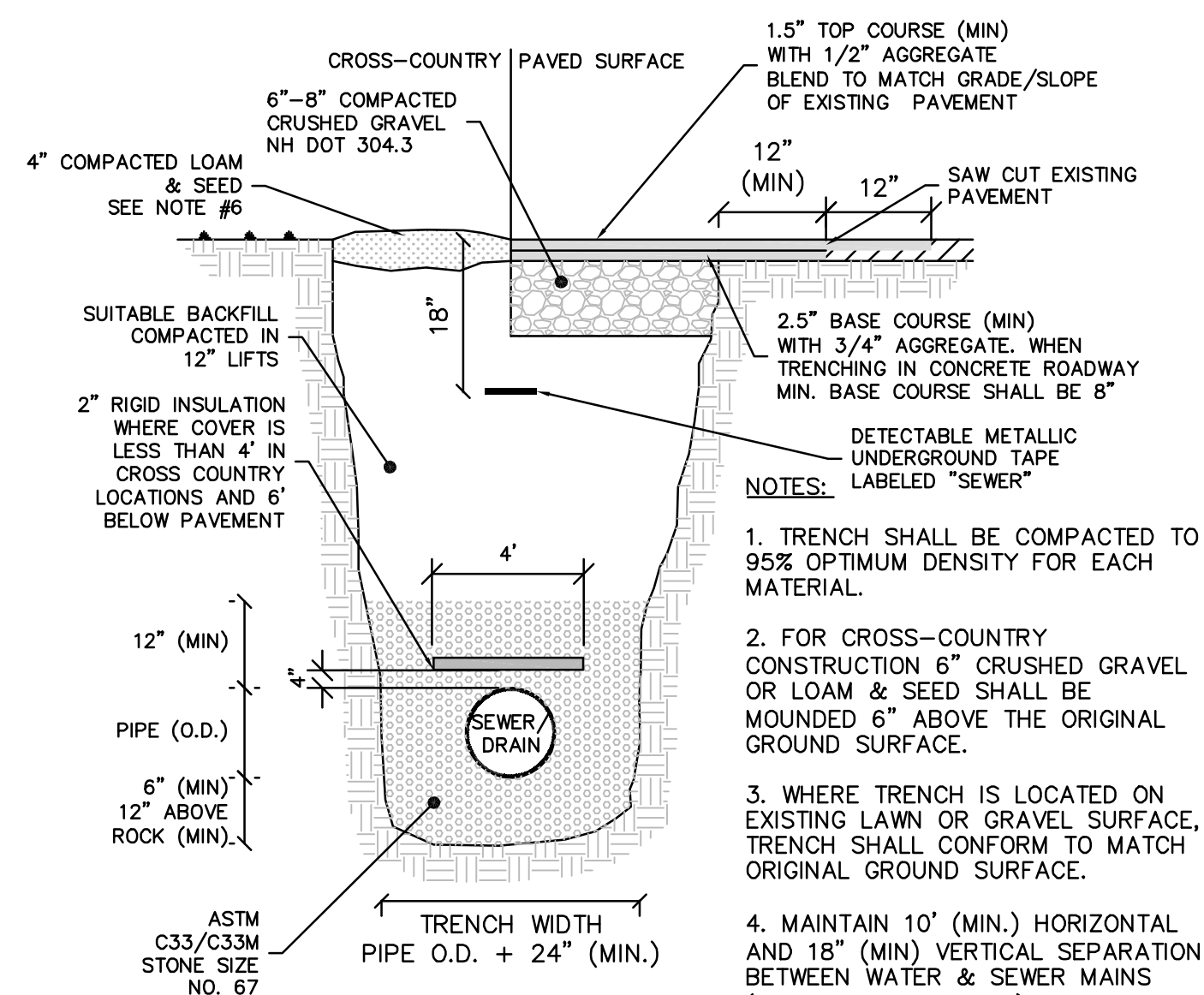
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DATE: 7-9-24	SCALE: AS SHOWN	DRAWN BY: JRG	DESIGN BY: JRG	APPROVED BY: JRG	PROJECT NO: 23140	FILE SITE
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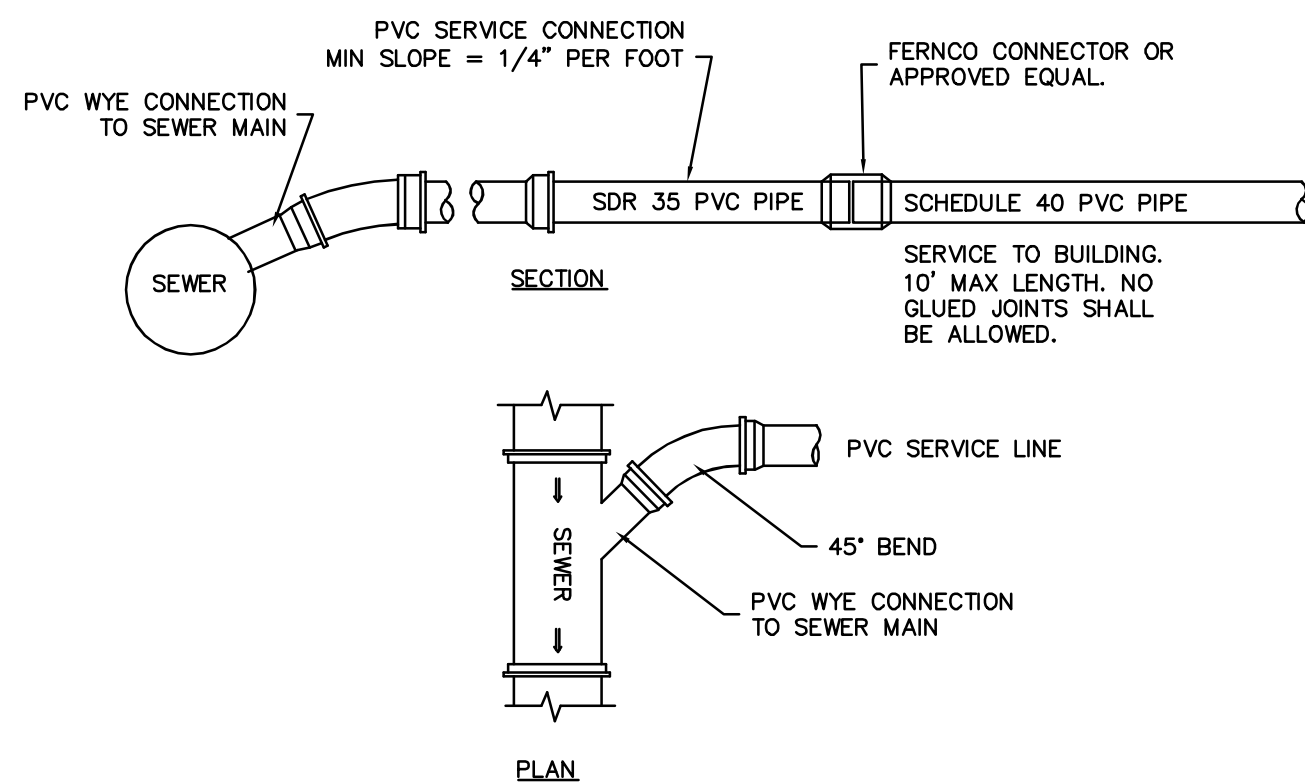
DETAILS

TDR SITE PLAN
5 RESIDENTIAL UNITS
306 DOVER POINT ROAD
DOVER, NH 03820

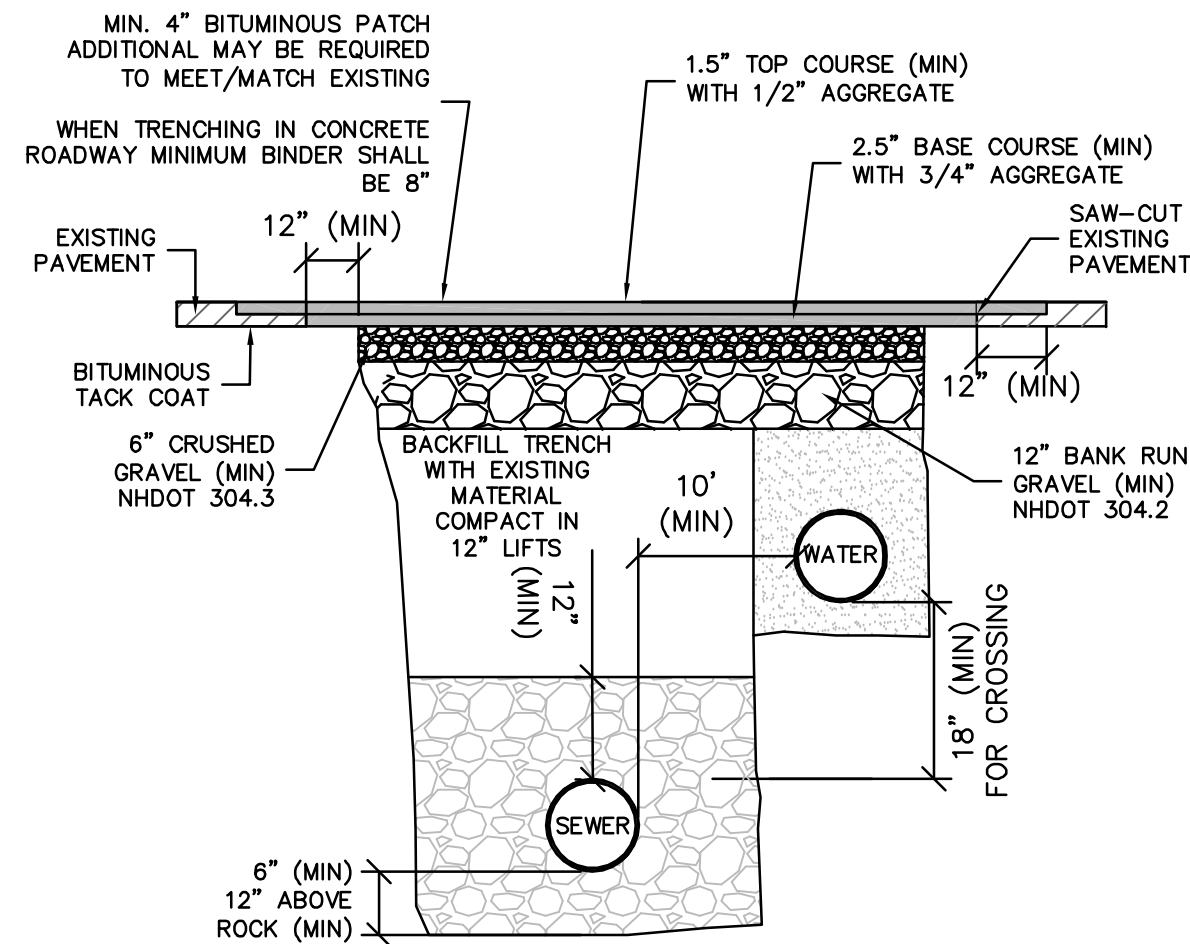
BRIAN SLOVENSKI
124 TURTLE POND ROAD
LEE, NH 03861
TAX MAP L, LOT 111



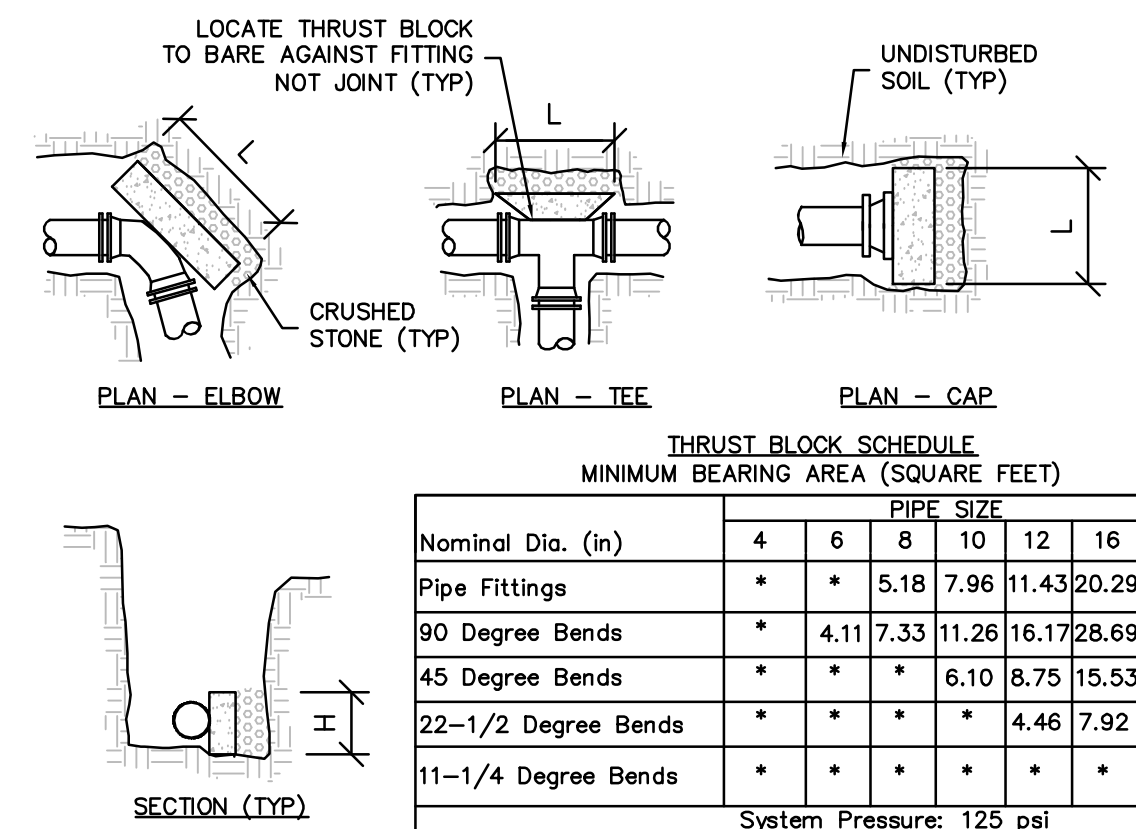
CITY OF DOVER D-3
SEWER TRENCH DETAIL
NOT TO SCALE



CITY OF DOVER D-17
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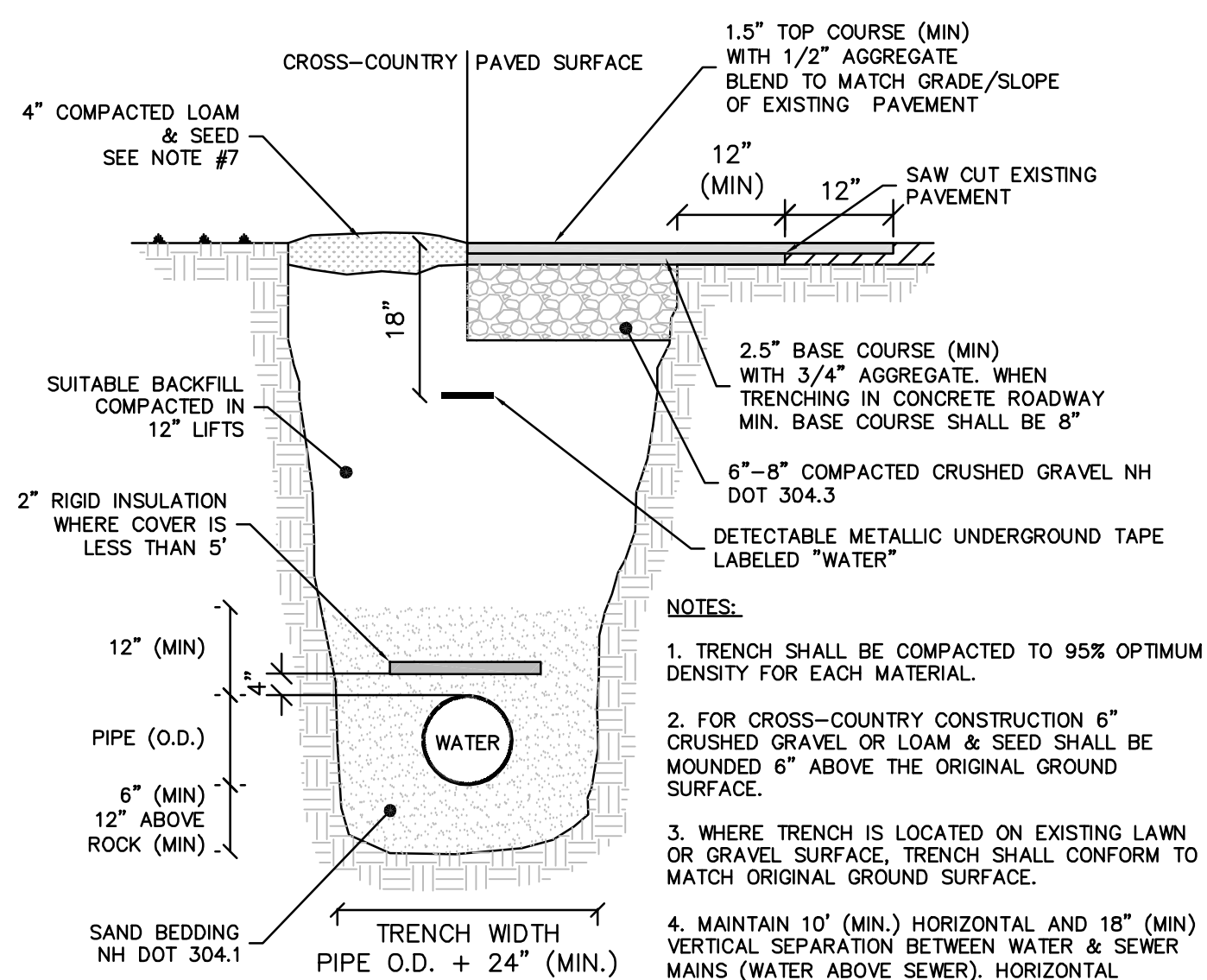
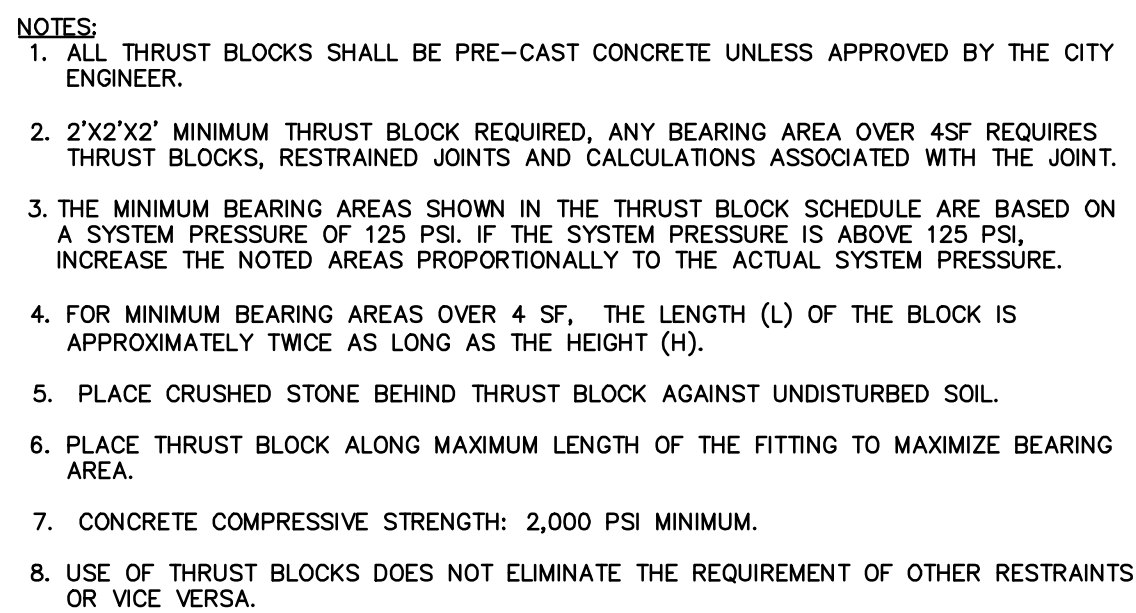


CITY OF DOVER
TYPICAL TRENCH DETAIL
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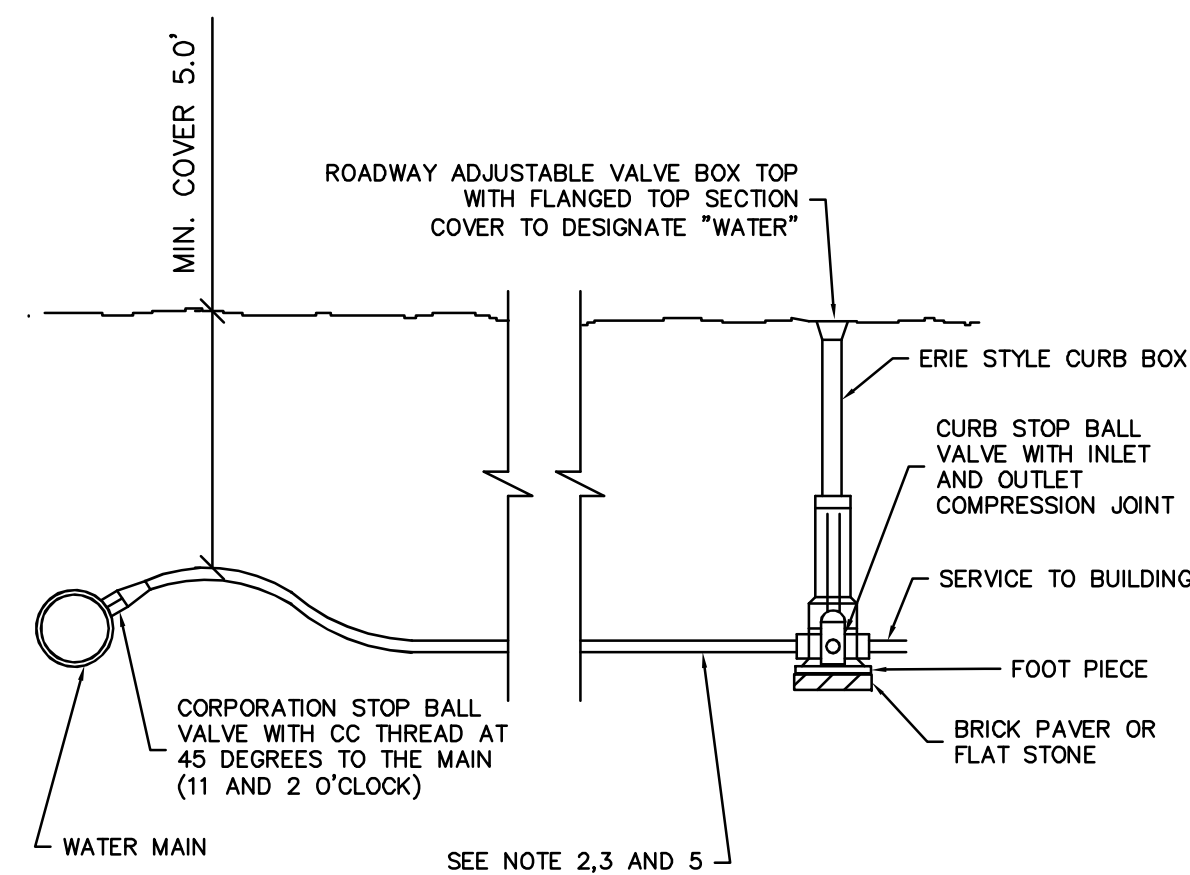


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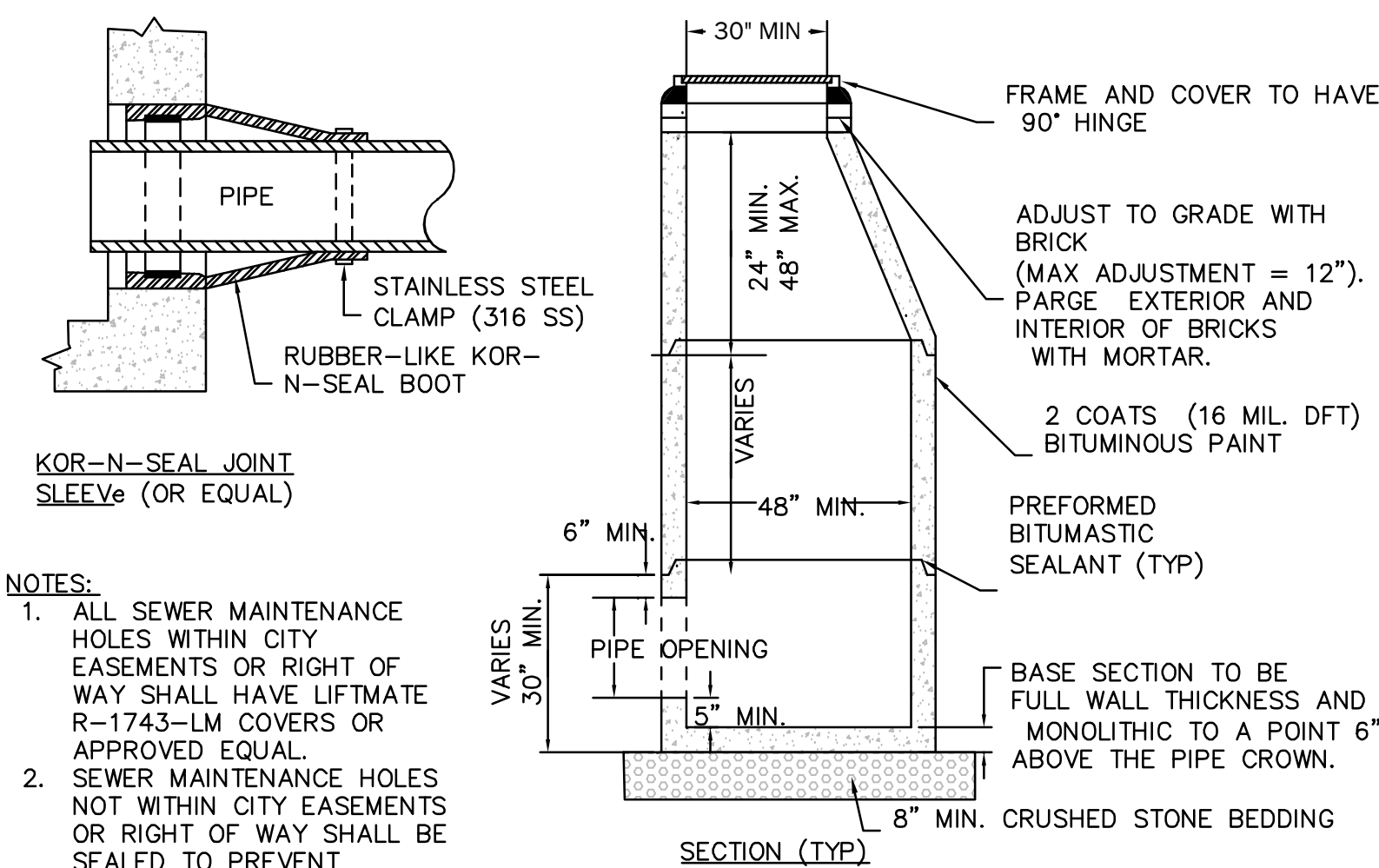
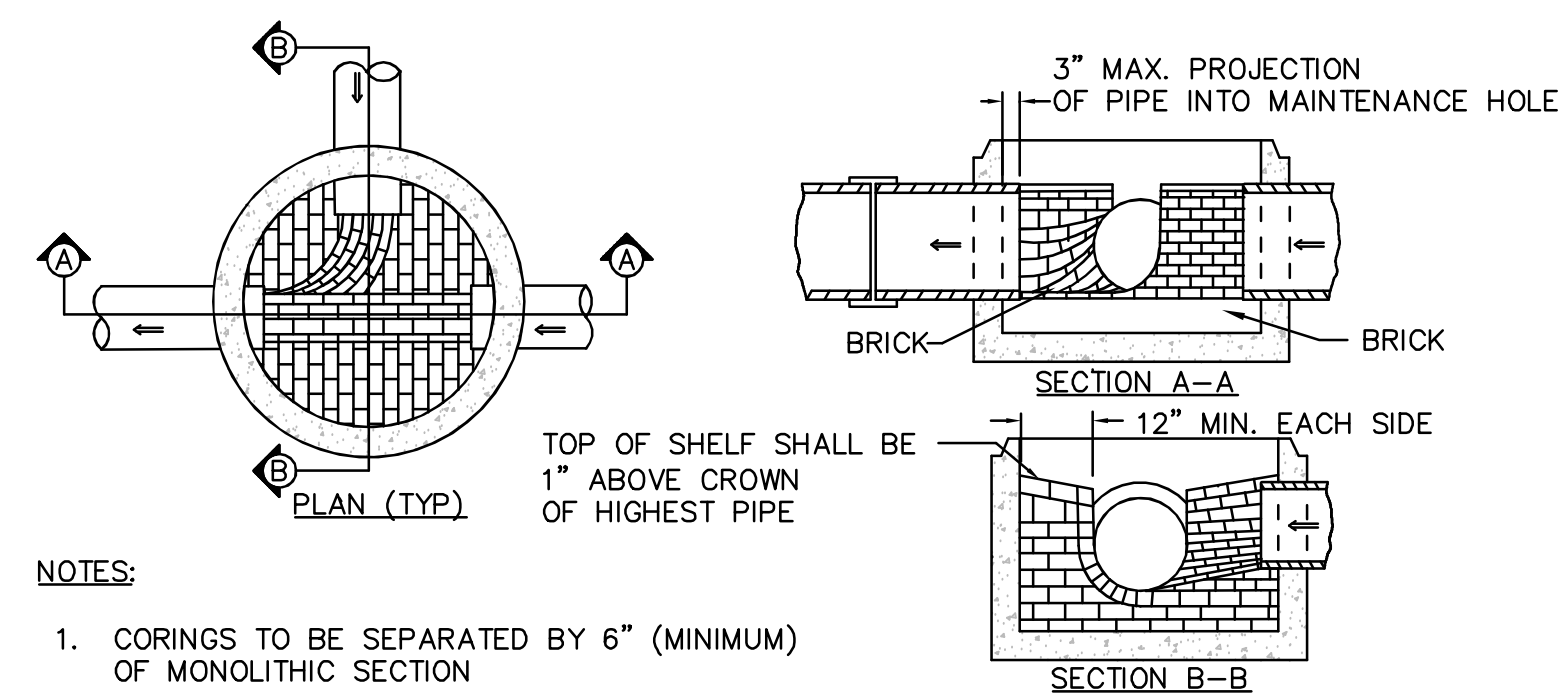
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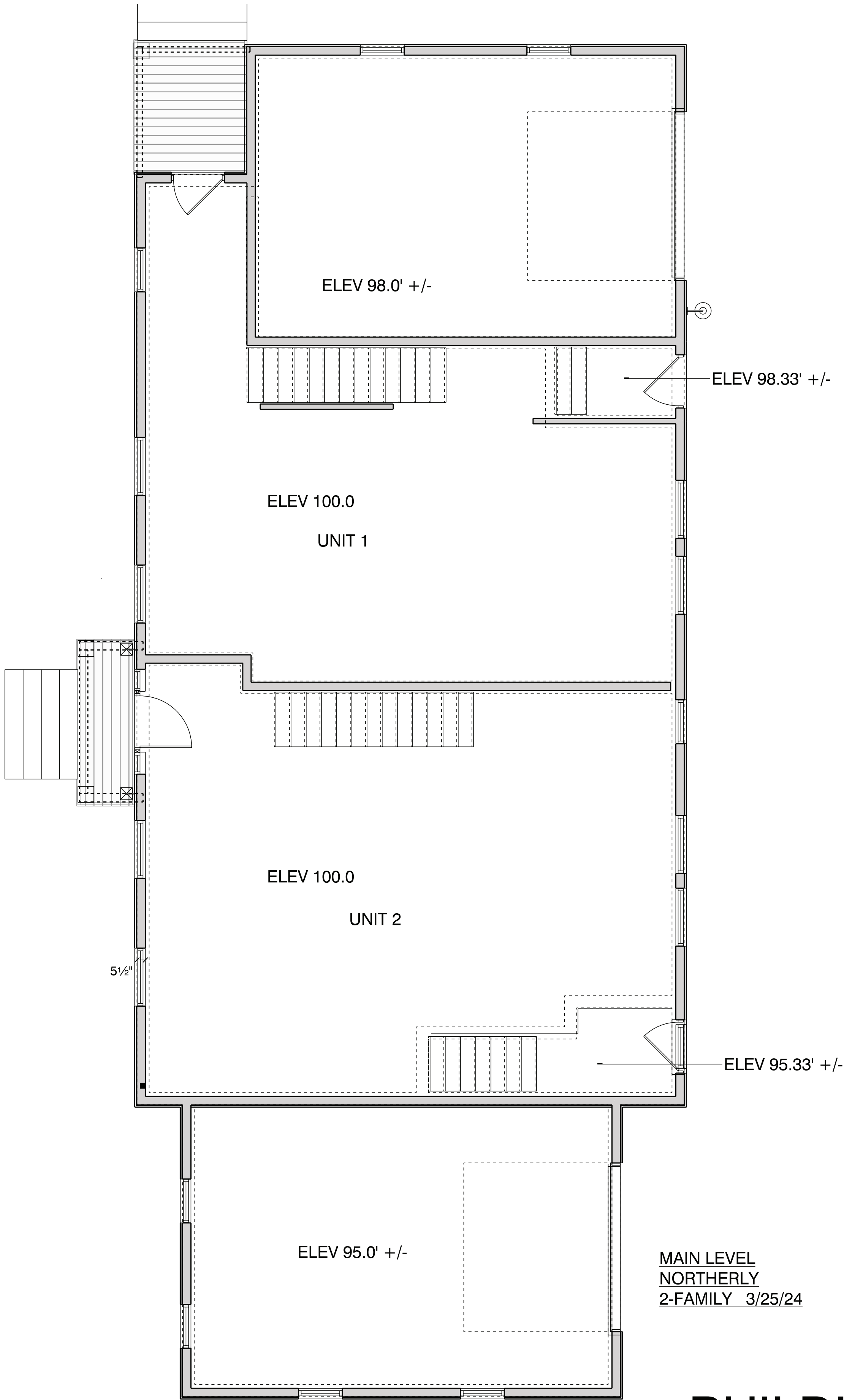
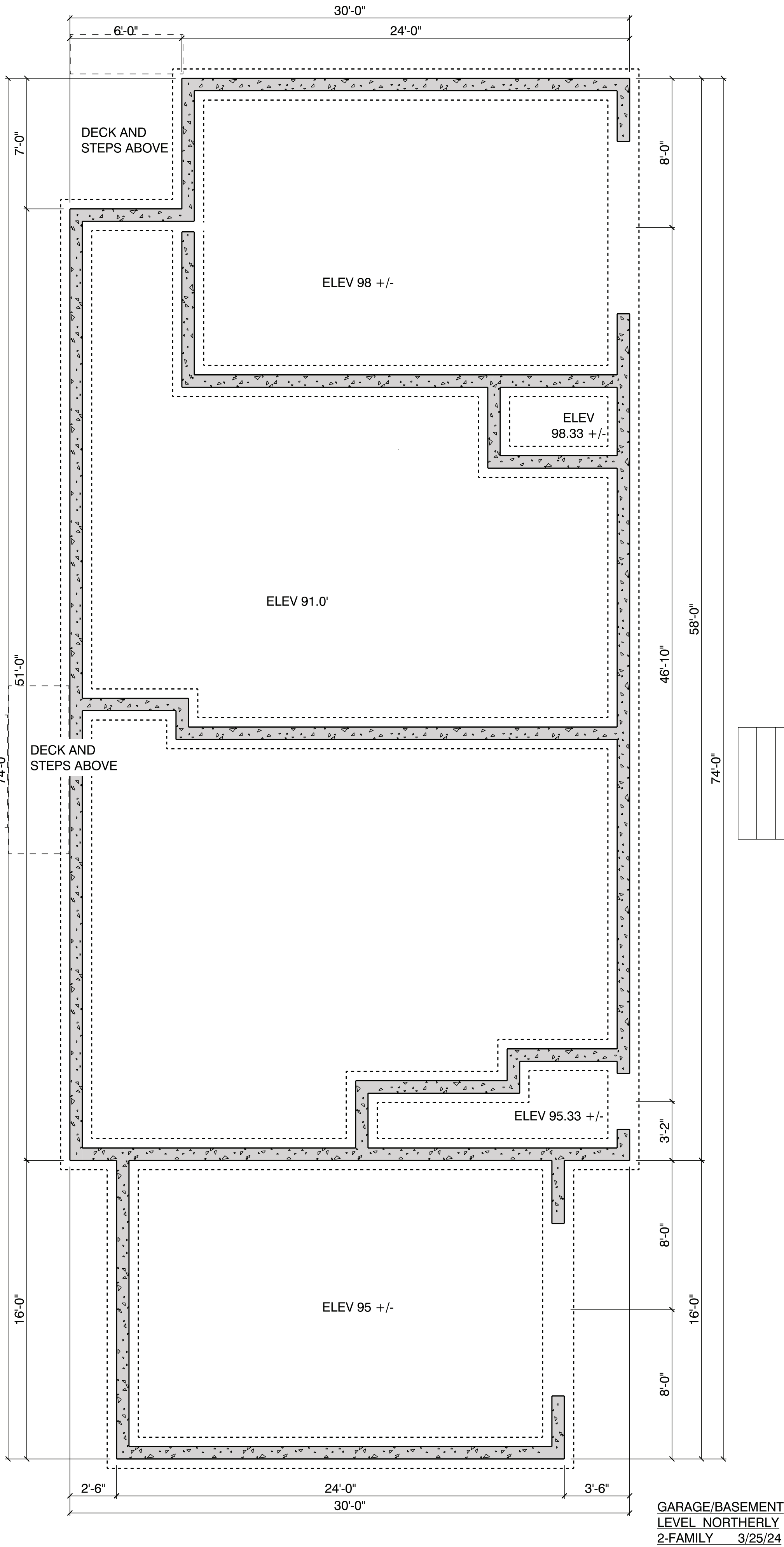
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WATER TRENCH DETAIL
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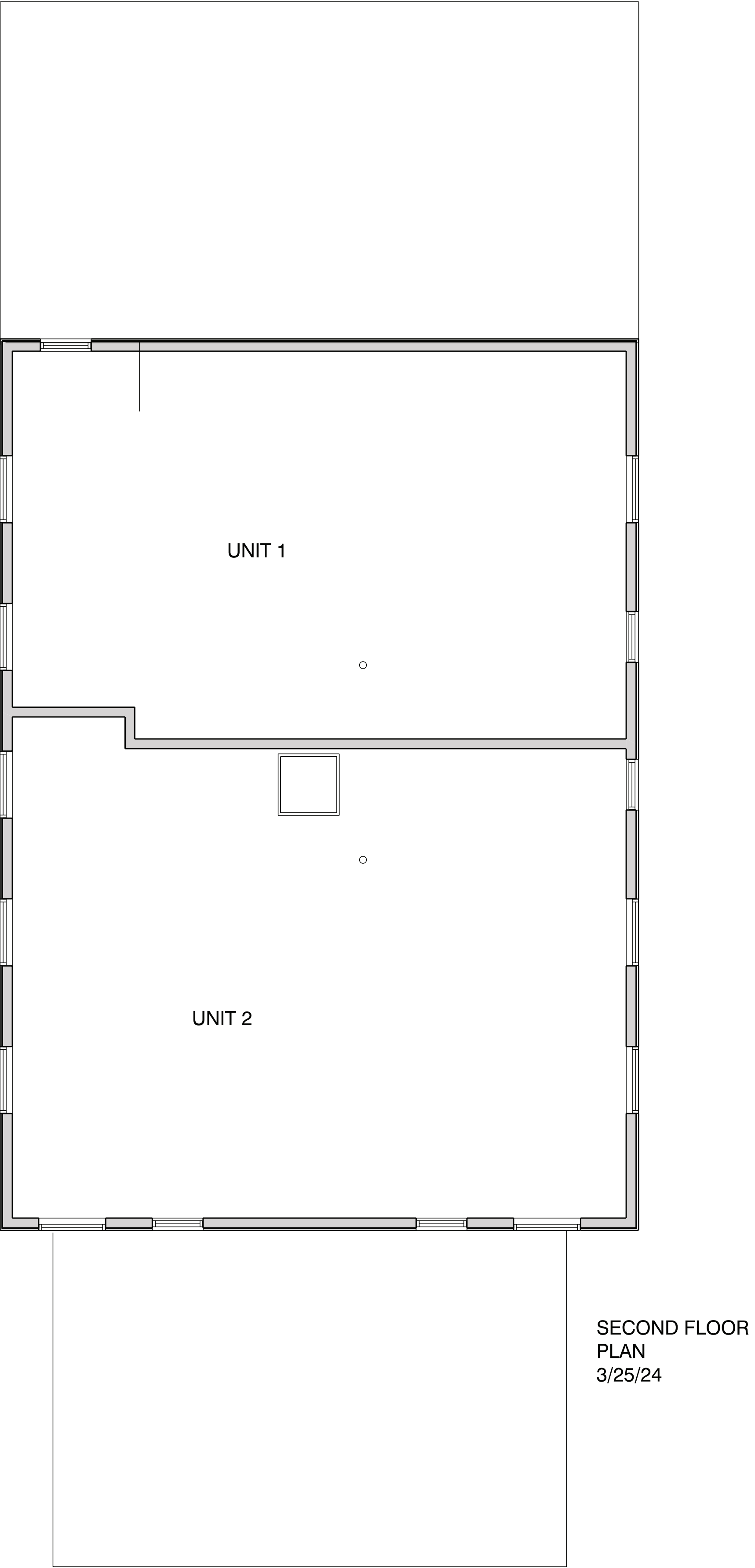
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WATER SERVICE CONNECTION DETAIL
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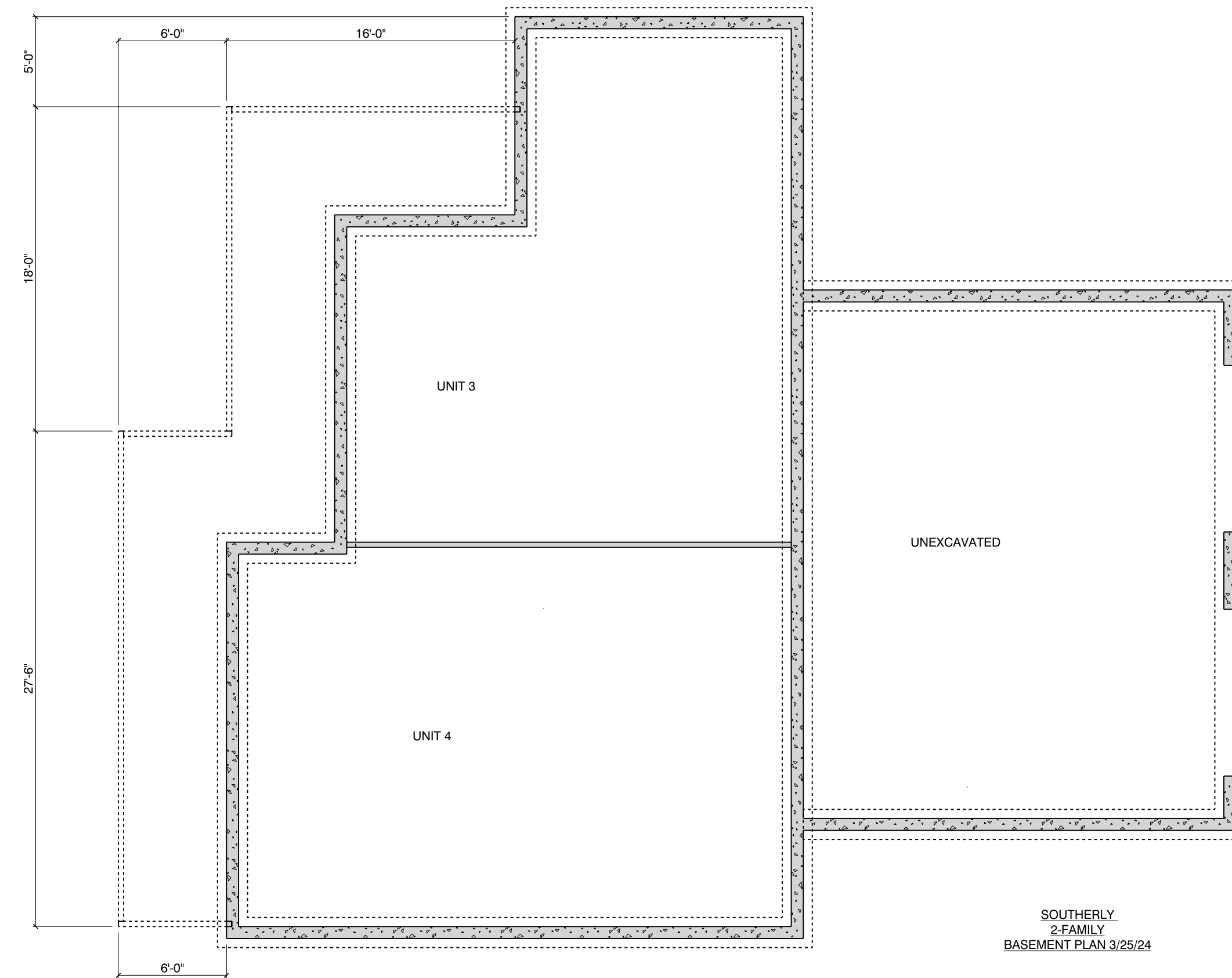
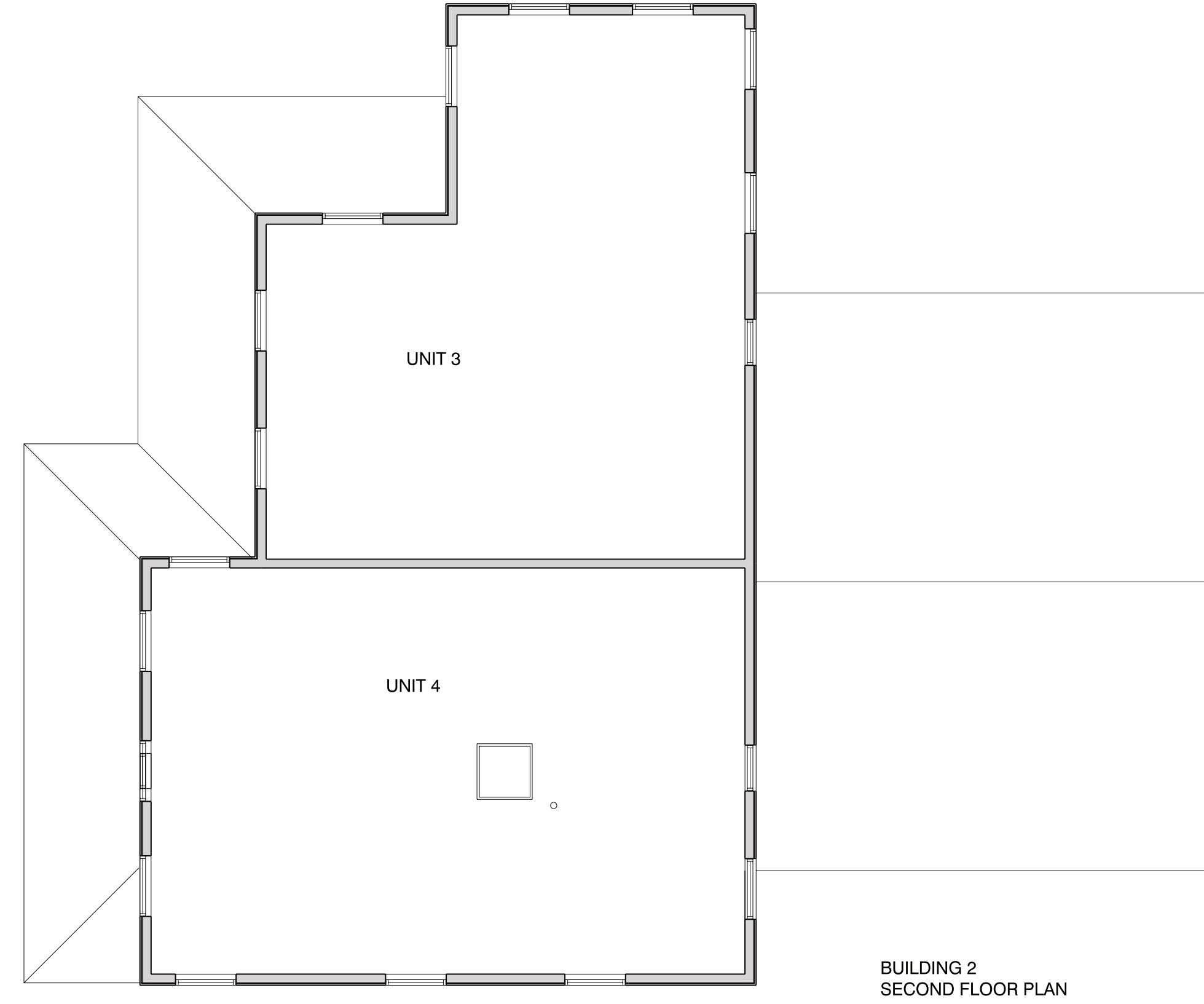
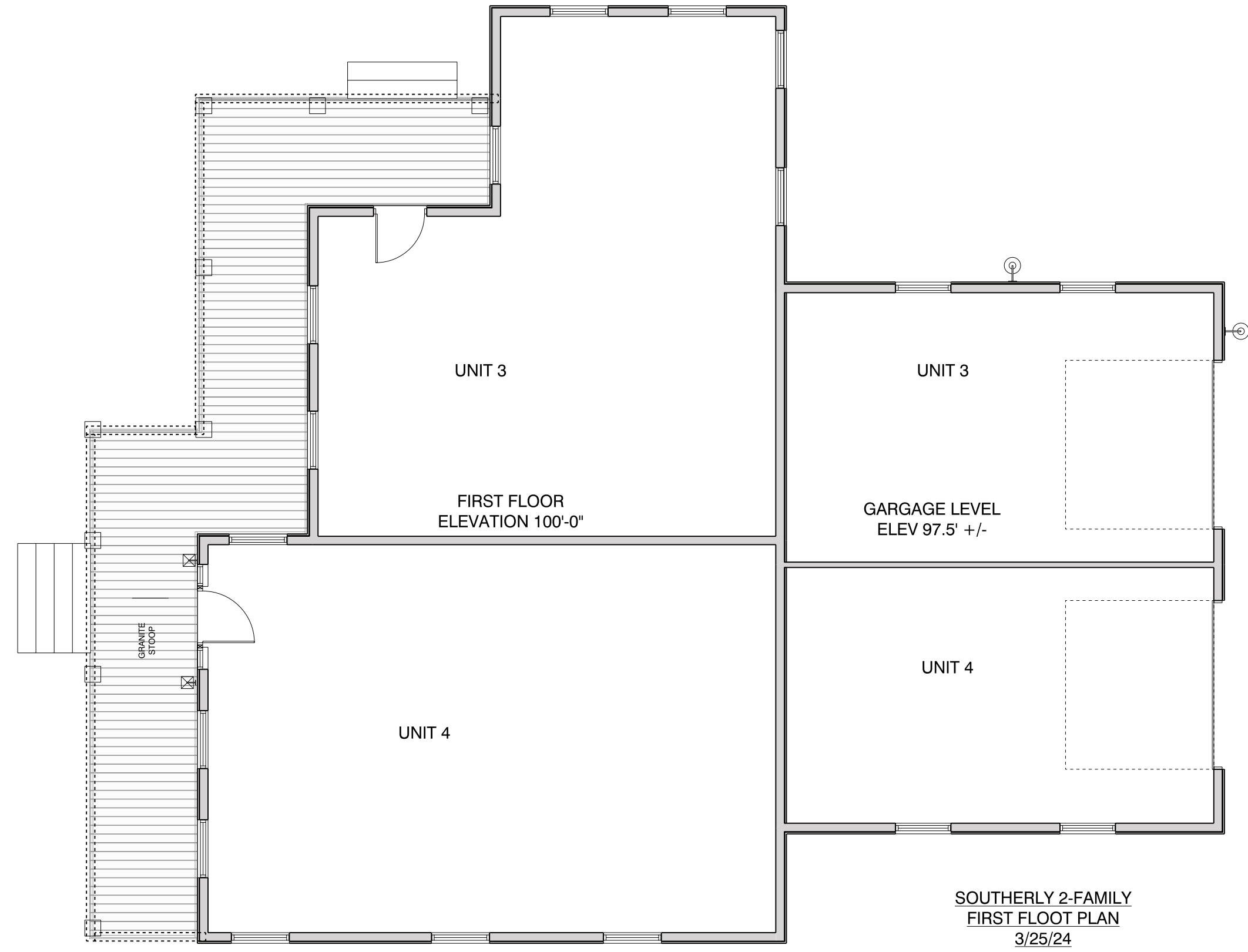


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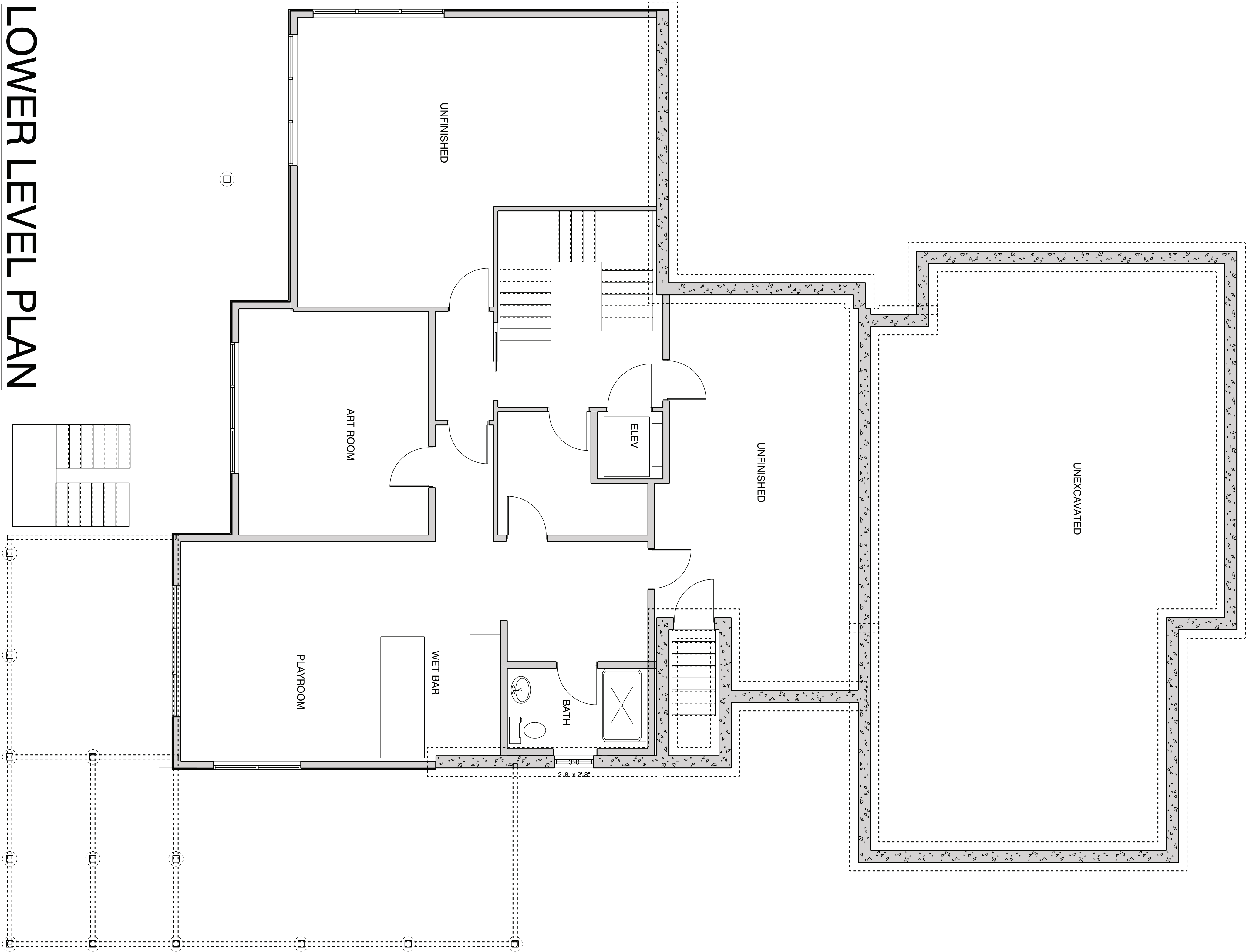
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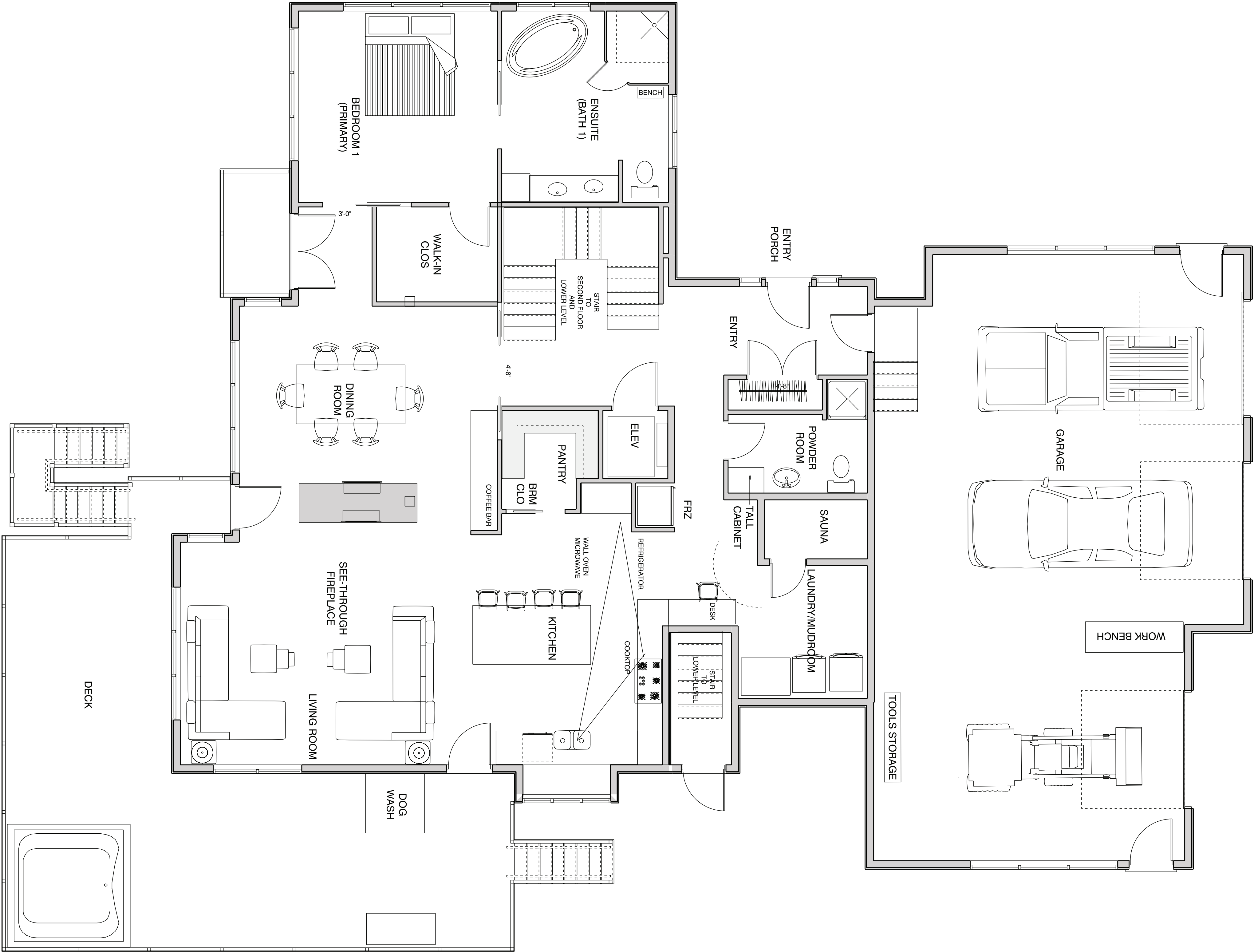


BUILDING 2 PLANS

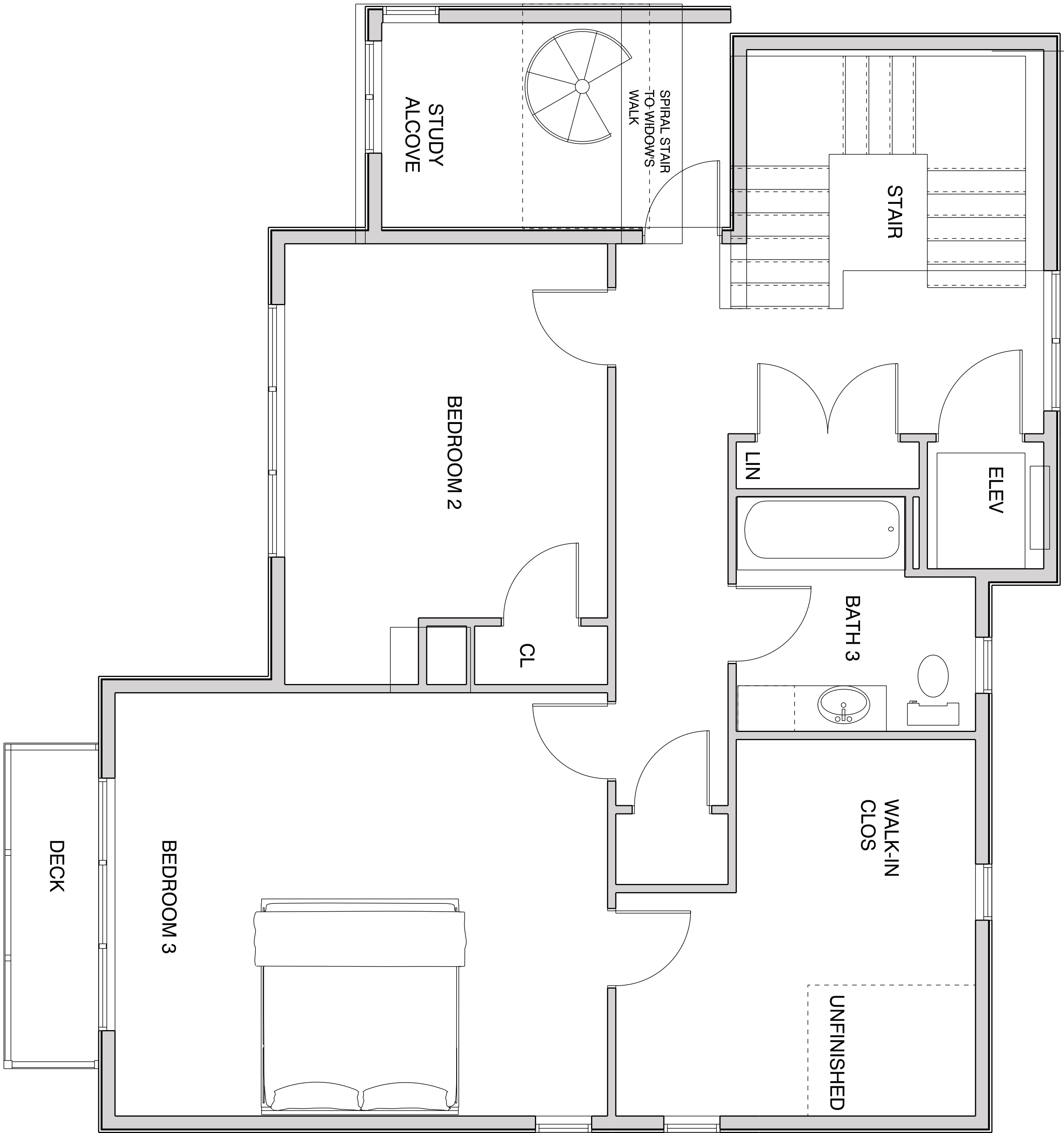
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LOWER LEVEL PLAN
SCALE: 1/8" = 1'-0"



FIRST FLOOR PLAN
SCALE: 1/8" = 1'-0"



SECOND FLOOR PLAN
SCALE: 3/16" = 1'-0"



TDR CONCEPT
306 DOVER POINT ROAD
DOVER, NEW HAMPSHIRE

5 UNIT CONCEPT

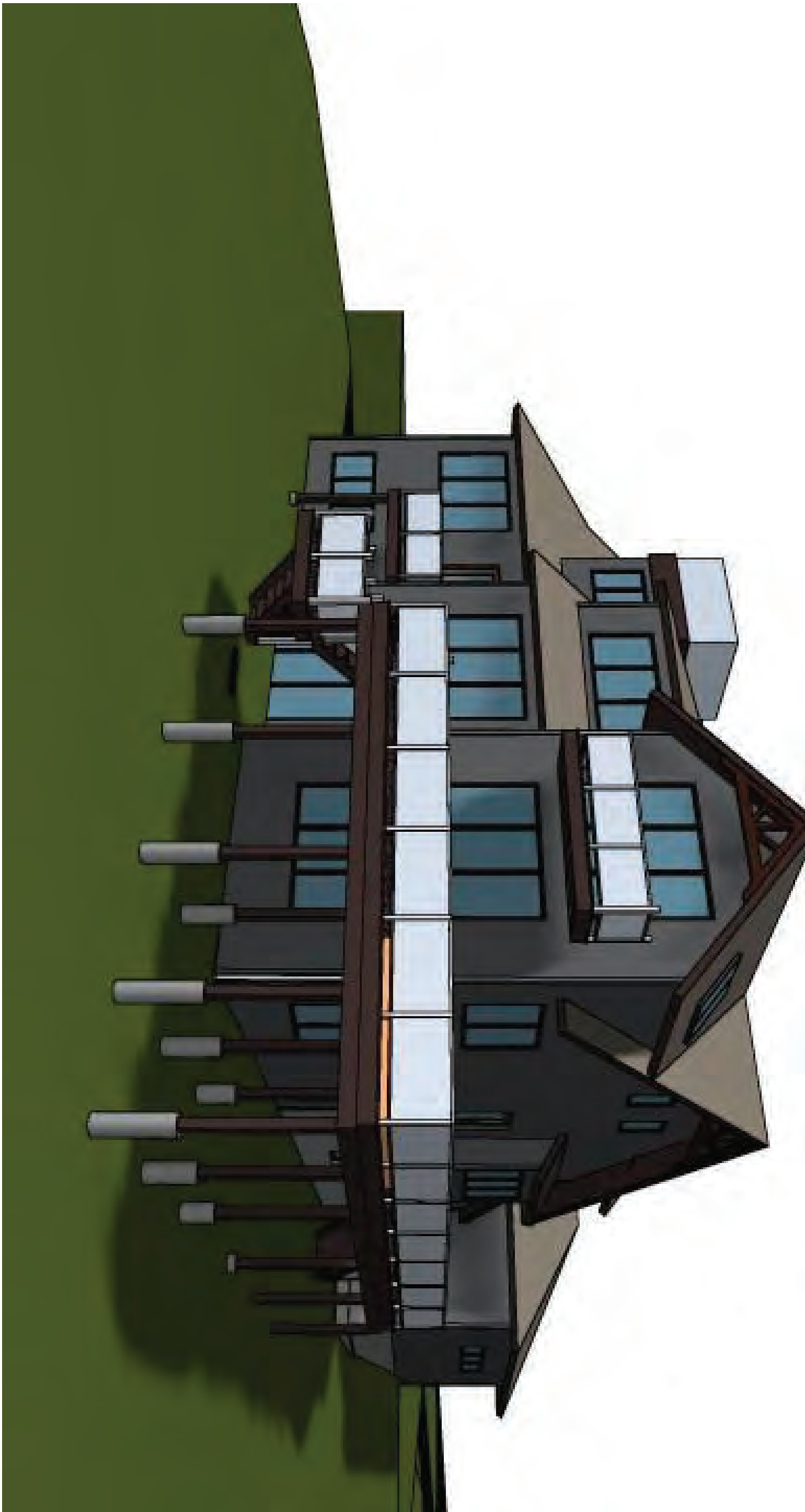
mjk
MICHAEL J. KEANE
ARCHITECTS, PLLC

101 KENT PLACE NEWMARKET, NH 03857 603.292.1400

6/18/2024

ALL RIGHTS RESERVED

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PLANTING NOTES

1. CONTRACTOR SHALL OBTAIN APPROVAL FROM LANDSCAPE ARCHITECT PRIOR TO PURCHASING AND/OR INSTALLING SUBSTITUTE PLANT MATERIAL PRIOR TO PURCHASE OF ANY SUBSTITUTE MATERIALS.
2. CONSTRUCTION ACCESS WILL BE AS DIRECTED BY LANDSCAPE ARCHITECT. 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 LANDSCAPE ARCHITECT 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 AND FLOURISHING CONDITION FOR TWO (2) YEARS FROM THE DATE OF FINAL INSTALLATION APPROVAL BY LANDSCAPE ARCHITECT. CONTRACTOR SHALL REPLACE, WITHOUT COST TO OWNER, AND AS SOON AS WEATHER CONDITIONS PERMIT, ALL DEAD AND NON-FLOURISHING PLANTS AS DETERMINED BY THE LANDSCAPE ARCHITECT. REPLACEMENT PLANTS SHALL BE GUARANTEED IDENTICALLY TO ORIGINAL PLANTS, TIME PERIOD COMMENCING FROM DATE OF REPLACEMENT PLANTING APPROVAL BY LANDSCAPE ARCHITECT.
6. ALL BEDS TO BE MULCHED WITH 4" 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 LANDSCAPED AREAS SHALL RECEIVE REGULAR MAINTENANCE AND UPKEEP. SEVERELY INJURED, DISEASED, OR DEAD PLANT MATERIAL SHALL BE REPLACED IN KIND IN PERPETUITY (AVOID REPLACING LANDSCAPE MATERIALS IN THE PERIOD FROM NOVEMBER TO MARCH.)
9. BEST PRACTICES TO MINIMIZE ENVIRONMENTAL IMPACTS SUCH AS THE USE OF LOW PHOSPHOROUS FERTILIZER AND SLOW RELEASE NITROGEN, SHALL BE IMPLEMENTED.
10. IF OWNERSHIP OF A SITE IS CONVEYED TO A NEW PROPERTY OWNER, THE NEW OWNER SHALL BE RESPONSIBLE FOR MAINTAINING ALL LANDSCAPING IN ACCORDANCE WITH THE APPROVED FINAL LANDSCAPING PLAN.



Site Location:
106 Dover Point Rd
Dover, NH 03820

DATE: 06 - 18 - 24

Drawn By: ID

Checked By: RM

06-20-
revised





terrain

planning & design llc

306 DOVER POINT RD - DOVER, NH
3D CONCEPTUAL STREETSCAPE VISUALIZATIONS











DRAINAGE ANALYSIS

**BRIAN SLOVENSKI
306 DOVER POINT ROAD
TAX MAP L, LOT 111
DOVER, NH**

July 2024

Prepared For:

**Brian Slovenski
124 Turtle Pond Road
Lee, NH 03820**

Prepared By:

**Civilworks NE
PO Box 1166
181 Watson Road
Dover, NH 03820**

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 - Node Listing – 2-yr
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 - A-2 Developed Watersheds
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- 4.0 APPENDIX B – DESIGN
 - B-1 Stormwater Best Management Practices
 - B-2 Pollutant Removal
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- 5.0 APPENDIX C – INSPECTION AND MAINTENANCE
 - C-1 Stormwater Management System Inspection & Maintenance Plan
- 6.0 APPENDIX D – WATERSHED PLANS
 - D-1 Pre-Development Conditions
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1.0 INTRODUCTION

This is a hydrologic analysis of the subject parcel located at 306 Dover Point Road, Dover, NH. The 1.64± acre lot is identified as Tax Map L, Lot 111. The site is currently developed as residential with a single-family home and a detached garage. The ground cover primarily consists of lawn and landscaped areas with detached pavement and gravel for driveways. The site is bounded by residential lots to the north and south, Dover Point Road to the west and the Piscataqua River to the east.

The project proposes the construction of a 5-unit residential development and consists of the demolition of the two (2) existing structures, site improvements associated with the construction of 3 residential structures, site access, driveways, walkways, grading and drainage, and utilities. The proposed drainage system incorporates three (3) Rain Guardian structures for pre-treatment, two (2) bio-retention basins and a stone drip edge around one of the buildings to treat and mitigate stormwater. The proposed stormwater system captures, treats, and stores the stormwater runoff from the site and redirects it to the existing discharge points. The proposed stormwater drainage structures will be maintained by the project proponent as outlined within the Stormwater Management System Inspection & Maintenance Manual (Stormwater I&M Manual) in Appendix C.

To effectively analyze the pre-development subject parcel, the site was divided into three watersheds, A, B, C. Watershed A drains to the roadside ditch along Dover Point Road, Watershed B, drains to the abutting property along the southern and southeasterly property line, and Watershed C, drains to the Piscataqua River. Soil characteristics and topography information was obtained utilizing Web Soil Survey, test pits, borehole infiltration tests, and on-site survey.

The post development is further divided into eight (8) subcatchments that are routed to the same discharge points (A, B, C) as defined in the pre-development model. This provides a direct comparison to the pre-development model. This analysis indicates that the proposed stormwater measures and stormwater management plan will treat and mitigate stormwater runoff in general accordance with The City of Dover's stormwater regulations. The proposed development of the site in conjunction with the implementation of the Stormwater I&M Manual will have minimal impact on the watersheds.

2.0 DRAINAGE ANALYSIS

A comprehensive hydrologic study of this site has been performed utilizing nationally recognized runoff estimating techniques developed by the USDA, Soil Conservation Services (SCS). The technique and runoff models are described in various SCS publications and references as follows:

“Stormwater Management and Erosion Sediment Control Handbook for Urban and Developing Areas in New Hampshire”

“New Hampshire Stormwater Manual Volume 2 - Post-Construction Best Management Practices Selection & Design”

“Civil Engineering Reference Manual, Fifth Edition”

“Open-Channel Hydraulics” Chow.

“Stormwater Modeling System” HydroCAD Ver. 10.10

2.1 DRAINAGE DESIGN PARAMETERS

A brief review of the procedures and parameters used in the drainage study follows:

2.1.1 Watersheds

The watershed was delineated using on site topographic and as built survey data field located by McEneaney Survey Associates of New England.

2.1.2 Soils

Soil types were determined utilizing the NRCS Web Soil Survey (WSS) mapping tool at <http://websoilsurvey.nrcs.usda.gov>. The soil survey area is Strafford County, NH, the soil survey data is Version 24, dated Aug 22nd, 2023 and the aerial images are dated June 19th to September 20th, 2020.

Hydrologic Drainage Class A:

Map Unit Symbol	Slopes	Map Unit Name
WdC	8 to 15 %	Windsor Loamy Sand

Hydrologic Drainage Class D:

Map Unit Symbol	Slopes	Map Unit Name
BzB	3 to 8 %	Buxton Silt Loam

2.1.3 Rainfall Data

Extreme precipitation estimate values from the Northeast Regional Climate Center were utilized in this analysis. The analysis has been performed for the 2-year, 10-year, 25-year, and 50-year storm events with 3.17", 4.79", 6.07", and 7.27" rainfall depths respectively.

2.1.4 Runoff Curve Numbers

The SCS runoff curve numbers were used and are summarized within each sub-catchment drainage summary in Appendix A.

2.2 EXISTING CONDITIONS

For the purposes of this analysis, the subject parcel was analyzed as a single watershed that discharges to an abutting property in the predevelopment condition.

2.2.1 Table A – Existing Conditions (2, 10, 25, and 50-year storm events)

Watershed	Pre-Development Volume (af)	Pre Development Peak Flows (cfs)			
Discharge Point	<u>2-yr</u>	<u>2-yr</u>	<u>10-yr</u>	<u>25-yr</u>	<u>50-yr</u>
A	0.01	0.2	0.2	0.3	0.4
B	0.03	0.3	0.8	1.2	1.6
C	0.01	0.0	0.2	0.7	1.2

2.3 DEVELOPED CONDITIONS

The post development model analyzes runoff to the post development discharge point, which is the closed drainage system in Locust Street.

2.3.1 Table B – Developed Conditions (2, 10, 25, and 50-year storm events)

Watershed	Post-Development Volume (af)	Post Development Peak Flows (cfs)			
Discharge Point	<u>2-yr</u>	<u>2-yr</u>	<u>10-yr</u>	<u>25-yr</u>	<u>50-yr</u>
A	0.01	0.1	0.2	0.2	0.3
B	0.01	0.1	0.3	0.5	0.7
C	0.01	0.0	0.2	0.6	1.6

2.4 HYDROLOGIC COMPARISON

The analysis indicates that the proposed project will have negligible impact on the watershed.

2.4.1 Table C – Pre/Post Development Comparison (2, 10, 25, and 50-year storm events)

Watershed	Pre/Post-Development Volume (af)	Pre/Post Development Peak Flows (cfs)			
Discharge Point	<u>2-yr</u>	<u>2-yr</u>	<u>10-yr</u>	<u>25-yr</u>	<u>50-yr</u>
A	0.01/ 0.01	0.2/ 0.1	0.2/ 0.2	0.3/ 0.2	0.4/ 0.3
B	0.03/ 0.01	0.3/ 0.1	0.8/ 0.3	1.2/ 0.5	1.6/ 0.7
C	0.01/ 0.01	0.0/ 0.0	0.2/ 0.2	0.7/ 0.6	1.2/ 1.6

2.5 STORMWATER DESIGN

The project incorporates best management practices to mitigate runoff as well as treat and convey stormwater.

2.5.1 Stormwater Best Management Practices

This project incorporates two bio-retention basins and a stone drip edge around one of the proposed buildings to mitigate flow and water quality from the proposed development. Pre-treatment for the proposed development will utilize three rain guardian fortress pretreatment chambers. See Appendix B-1 for Best Management Practice Design forms.

2.5.2 Pollutant Removal

This project effectively treats 0.373+/- acres of newly developed impervious area. The project incorporates the following practices and associated pollutant removal efficacies as identified in the New Hampshire Stormwater Management Manual Volume 2, Appendix B:

	TSS	TN	TP
Bio-Retention Basins:	90%	65%	65%
Stone Drip Edge:	90%	55%	65%

The pollutant removal meets or exceeds The City of Dover's, Site Review Regulations. See Appendix B-2 for the removal efficiency data as provided in Volume 1.

2.5.3 Groundwater Recharge

Test pits (6) dug on February 25th, 2024 and borehole infiltration testing (3 locations) were performed on April 30th, 2024. The results from the infiltration tests indicated the soils have high KSAT values, ranging from 9 in/hr to 120 in/hr. A factor of safety of 2 was applied to the lowest trial, 9 in/hr, within these tests. A design infiltration rate of 4.5 in/hr was used. Seasonal high water tables varied between 19 and 66 inches. See Appendix B-3 for test pit and borehole test information.

APPENDIX A

HYDROLOGIC CALCULATIONS

Extreme Precipitation Tables

Northeast Regional Climate Center

Data represents point estimates calculated from partial duration series. All precipitation amounts are displayed in inches.

Metadata for Point	
Smoothing State	Yes
Location	
Latitude	43.134 degrees North
Longitude	70.835 degrees West
Elevation	-10 feet
Date/Time	Tue Nov 28 2023 15:49:27 GMT-0500 (Eastern Standard Time)

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	1.21	1.55	2.01	2.62	2.88	1yr	2.32	2.77	3.17	3.89	4.47	1yr
2yr	0.32	0.49	0.61	0.81	1.02	1.29	2yr	0.88	1.17	1.50	1.92	2.46	3.17	3.52	2yr	2.81	3.38	3.88	4.62	5.25	2yr
5yr	0.37	0.57	0.72	0.96	1.23	1.59	5yr	1.06	1.45	1.86	2.40	3.10	4.01	4.51	5yr	3.55	4.34	4.96	5.84	6.61	5yr
10yr	0.40	0.64	0.80	1.10	1.42	1.86	10yr	1.23	1.70	2.19	2.85	3.69	4.79	5.45	10yr	4.24	5.24	5.98	6.99	7.86	10yr
25yr	0.47	0.74	0.94	1.30	1.73	2.28	25yr	1.49	2.10	2.71	3.56	4.65	6.07	6.99	25yr	5.38	6.72	7.65	8.85	9.90	25yr
50yr	0.52	0.83	1.07	1.49	2.01	2.69	50yr	1.74	2.48	3.21	4.23	5.55	7.27	8.45	50yr	6.43	8.13	9.22	10.59	11.79	50yr
100yr	0.58	0.95	1.22	1.72	2.34	3.15	100yr	2.02	2.91	3.78	5.01	6.61	8.70	10.22	100yr	7.70	9.83	11.11	12.68	14.04	100yr
200yr	0.65	1.06	1.37	1.97	2.72	3.71	200yr	2.35	3.43	4.47	5.96	7.90	10.42	12.36	200yr	9.22	11.88	13.41	15.19	16.73	200yr
500yr	0.76	1.26	1.64	2.38	3.33	4.58	500yr	2.88	4.25	5.56	7.47	9.96	13.23	15.89	500yr	11.70	15.28	17.18	19.29	21.12	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	0.36	0.44	0.60	0.73	0.89	1yr	0.63	0.87	0.92	1.29	1.63	2.21	2.47	1yr	1.96	2.37	2.82	3.25	3.93	1yr
2yr	0.31	0.49	0.60	0.81	1.00	1.18	2yr	0.86	1.16	1.36	1.83	2.35	3.03	3.41	2yr	2.69	3.28	3.77	4.49	5.02	2yr
5yr	0.35	0.54	0.67	0.91	1.16	1.40	5yr	1.00	1.37	1.61	2.14	2.76	3.74	4.14	5yr	3.31	3.98	4.64	5.45	6.15	5yr
10yr	0.38	0.59	0.73	1.02	1.31	1.60	10yr	1.13	1.56	1.81	2.43	3.11	4.31	4.80	10yr	3.82	4.62	5.35	6.30	7.08	10yr
25yr	0.43	0.66	0.82	1.18	1.55	1.90	25yr	1.33	1.86	2.11	2.82	3.61	4.76	5.82	25yr	4.21	5.60	6.52	7.64	8.53	25yr
50yr	0.48	0.73	0.90	1.30	1.75	2.17	50yr	1.51	2.12	2.35	3.16	4.04	5.39	6.72	50yr	4.77	6.46	7.57	8.84	9.82	50yr
100yr	0.53	0.80	1.01	1.45	1.99	2.48	100yr	1.72	2.42	2.63	3.53	4.49	6.09	7.76	100yr	5.39	7.46	8.79	10.24	11.30	100yr
200yr	0.59	0.88	1.12	1.62	2.26	2.83	200yr	1.95	2.77	2.93	3.94	4.99	6.86	8.95	200yr	6.07	8.61	10.19	11.86	13.02	200yr
500yr	0.68	1.01	1.31	1.90	2.70	3.39	500yr	2.33	3.32	3.40	4.54	5.75	8.03	10.81	500yr	7.10	10.39	12.39	14.44	15.66	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	0.88	1.08	1yr	0.76	1.06	1.24	1.75	2.22	2.95	3.10	1yr	2.61	2.98	3.50	4.30	4.92	1yr
2yr	0.33	0.51	0.63	0.85	1.05	1.25	2yr	0.91	1.23	1.48	1.96	2.51	3.36	3.64	2yr	2.97	3.50	4.02	4.77	5.53	2yr
5yr	0.39	0.61	0.75	1.04	1.32	1.60	5yr	1.14	1.56	1.87	2.52	3.22	4.28	4.88	5yr	3.78	4.69	5.30	6.27	7.04	5yr
10yr	0.46	0.71	0.88	1.22	1.58	1.94	10yr	1.36	1.90	2.25	3.08	3.90	5.26	6.09	10yr	4.66	5.86	6.68	7.70	8.60	10yr
25yr	0.56	0.85	1.06	1.51	1.99	2.51	25yr	1.72	2.45	2.91	4.02	5.04	7.44	8.19	25yr	6.58	7.88	8.94	10.15	11.22	25yr
50yr	0.65	0.99	1.23	1.77	2.38	3.04	50yr	2.06	2.97	3.53	4.91	6.15	9.25	10.26	50yr	8.19	9.87	11.16	12.48	13.73	50yr
100yr	0.76	1.15	1.44	2.07	2.85	3.68	100yr	2.46	3.60	4.29	6.03	7.50	11.51	12.86	100yr	10.18	12.37	13.93	15.39	16.81	100yr
200yr	0.88	1.33	1.68	2.43	3.40	4.47	200yr	2.93	4.37	5.23	7.40	9.15	14.35	16.13	200yr	12.70	15.51	17.41	18.95	20.60	200yr
500yr	1.08	1.61	2.08	3.02	4.29	5.77	500yr	3.70	5.64	6.76	9.72	11.93	19.22	21.77	500yr	17.01	20.94	23.38	24.99	26.96	500yr

An Interactive Web Tool for Extreme Precipitation Analysis

Documentation

Northeast Regi

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Northeast Regional
Climate Center

This project is a joint collaboration between:

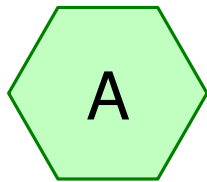
Natural Resources Conservation Service (NRCS)



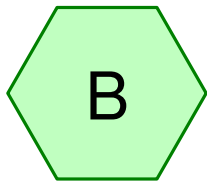
Contact: precip@cornell.edu

A – 1

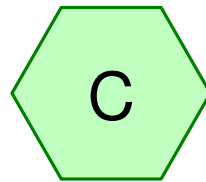
EXISTING WATERSHEDS



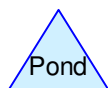
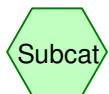
A



B



C



Routing Diagram for 23140-Pre Report

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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.982	39	>75% Grass cover, Good, HSG A (B, C)
0.505	80	>75% Grass cover, Good, HSG D (A, B, C)
0.009	96	Gravel surface, HSG D (C)
0.039	98	Paved parking, HSG A (B, C)
0.053	98	Paved parking, HSG D (A, B, C)
0.004	98	Roofs, HSG A (B, C)
0.045	98	Roofs, HSG D (A, B, C)

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Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
1.025	HSG A	B, C
0.000	HSG B	
0.000	HSG C	
0.612	HSG D	A, B, C
0.000	Other	

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Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.982	0.000	0.000	0.505	0.000	1.487	>75% Grass cover, Good	A, B, C
0.000	0.000	0.000	0.009	0.000	0.009	Gravel surface	C
0.039	0.000	0.000	0.053	0.000	0.091	Paved parking	A, B, C
0.004	0.000	0.000	0.045	0.000	0.049	Roofs	A, B, C

A – 1

NODE LISTING – 2-YR

23140-Pre Report

23140 24-hr S1 2-yr Rainfall=3.17"

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Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 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 A: A

Runoff Area=3,293 sf 19.80% Impervious Runoff Depth=1.66"
Flow Length=49' Slope=0.0650 '/' Tc=4.7 min CN=84 Runoff=0.2 cfs 0.01 af

Subcatchment B: B

Runoff Area=24,600 sf 10.37% Impervious Runoff Depth=0.72"
Flow Length=297' Slope=0.0490 '/' Tc=8.1 min CN=68 Runoff=0.3 cfs 0.03 af

Subcatchment C: C

Runoff Area=43,406 sf 6.72% Impervious Runoff Depth=0.10"
Flow Length=365' Tc=7.0 min CN=49 Runoff=0.0 cfs 0.01 af

A – 1

NODE LISTING – 10-YR

23140-Pre Report

23140 24-hr S1 10-yr Rainfall=4.79"

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Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 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 A: A

Runoff Area=3,293 sf 19.80% Impervious Runoff Depth=3.08"
Flow Length=49' Slope=0.0650 '/ Tc=4.7 min CN=84 Runoff=0.2 cfs 0.02 af

Subcatchment B: B

Runoff Area=24,600 sf 10.37% Impervious Runoff Depth=1.73"
Flow Length=297' Slope=0.0490 '/ Tc=8.1 min CN=68 Runoff=0.8 cfs 0.08 af

Subcatchment C: C

Runoff Area=43,406 sf 6.72% Impervious Runoff Depth=0.56"
Flow Length=365' Tc=7.0 min CN=49 Runoff=0.2 cfs 0.05 af

A – 1

10-YR STORM SUMMARY

23140-Pre Report

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23140 24-hr S1 10-yr Rainfall=4.79"

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Summary for Subcatchment A: A

Runoff = 0.2 cfs @ 12.02 hrs, Volume= 0.02 af, Depth= 3.08"

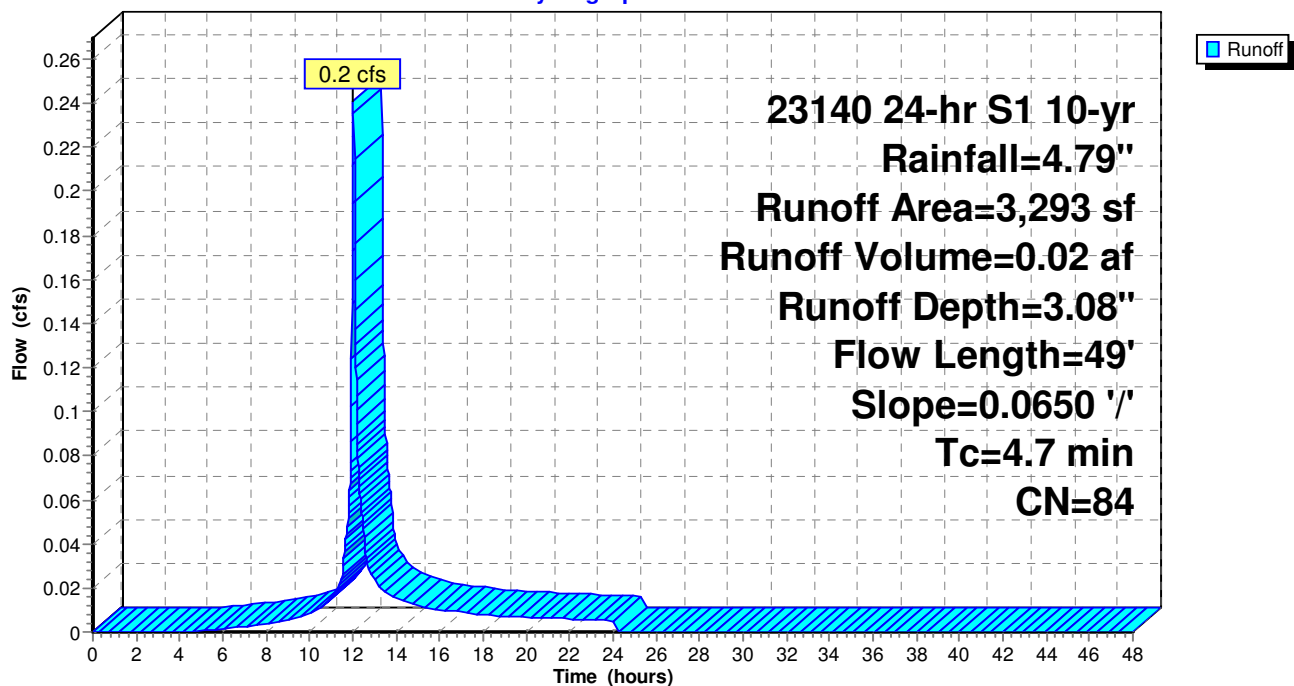
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
23140 24-hr S1 10-yr Rainfall=4.79"

Area (sf)	CN	Description
2,641	80	>75% Grass cover, Good, HSG D
137	98	Paved parking, HSG D
515	98	Roofs, HSG D
3,293	84	Weighted Average
2,641		80.20% Pervious Area
652		19.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.7	49	0.0650	0.17		Sheet Flow, Grass: Dense n= 0.240 P2= 3.60"

Subcatchment A: A

Hydrograph



23140-Pre Report

23140 24-hr S1 10-yr Rainfall=4.79"

Prepared by Civilworks New England

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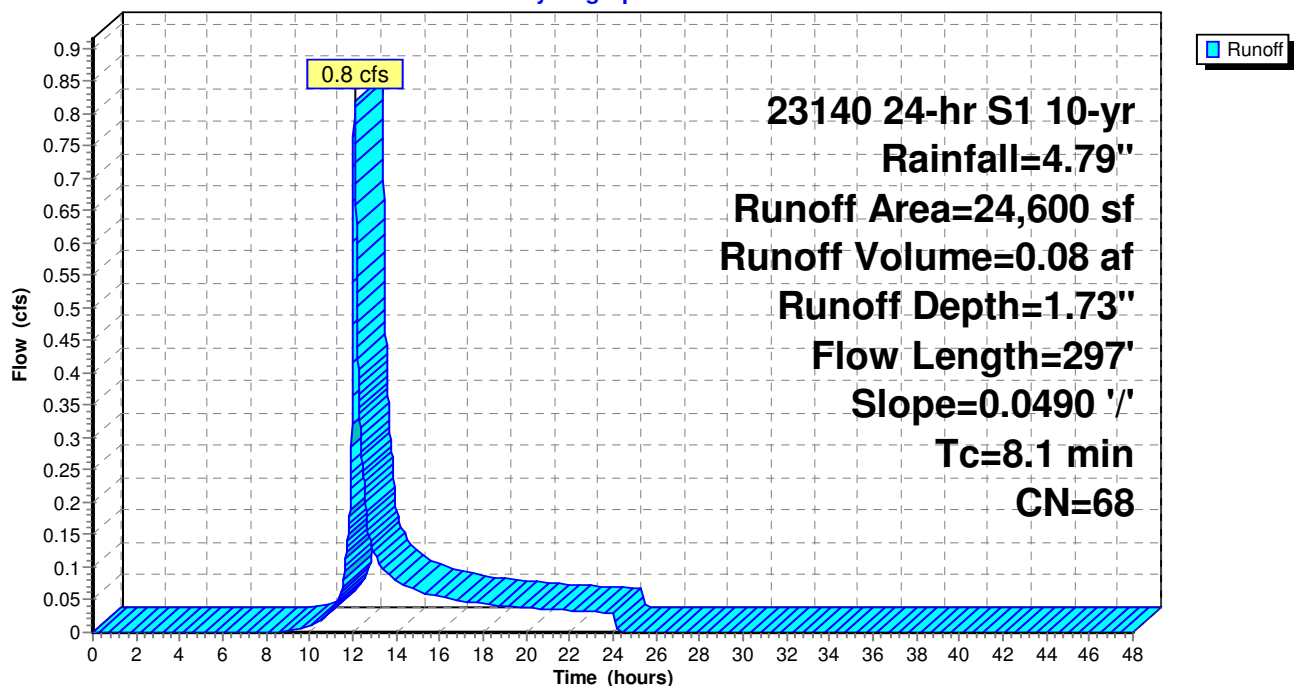
Summary for Subcatchment B: B

Runoff = 0.8 cfs @ 12.07 hrs, Volume= 0.08 af, Depth= 1.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
23140 24-hr S1 10-yr Rainfall=4.79"

Area (sf)	CN	Description
8,444	39	>75% Grass cover, Good, HSG A
860	98	Paved parking, HSG A
110	98	Roofs, HSG A
13,606	80	>75% Grass cover, Good, HSG D
957	98	Paved parking, HSG D
623	98	Roofs, HSG D
24,600	68	Weighted Average
22,050		89.63% Pervious Area
2,550		10.37% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.4	50	0.0490	0.15		Sheet Flow, Grass: Dense n= 0.240 P2= 3.60"
2.7	247	0.0490	1.55		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
8.1	297	Total			

Subcatchment B: B**Hydrograph**

23140-Pre Report

23140 24-hr S1 10-yr Rainfall=4.79"

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Summary for Subcatchment C: C

Runoff = 0.2 cfs @ 12.09 hrs, Volume= 0.05 af, Depth= 0.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
23140 24-hr S1 10-yr Rainfall=4.79"

Area (sf)	CN	Description
34,336	39	>75% Grass cover, Good, HSG A
819	98	Paved parking, HSG A
78	98	Roofs, HSG A
5,744	80	>75% Grass cover, Good, HSG D
411	96	Gravel surface, HSG D
1,201	98	Paved parking, HSG D
817	98	Roofs, HSG D
43,406	49	Weighted Average
40,491		93.28% Pervious Area
2,915		6.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.7	50	0.0700	0.18		Sheet Flow, Grass: Dense n= 0.240 P2= 3.60"
1.7	193	0.0700	1.85		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.6	122	0.2100	3.21		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
7.0	365	Total			

23140-Pre Report

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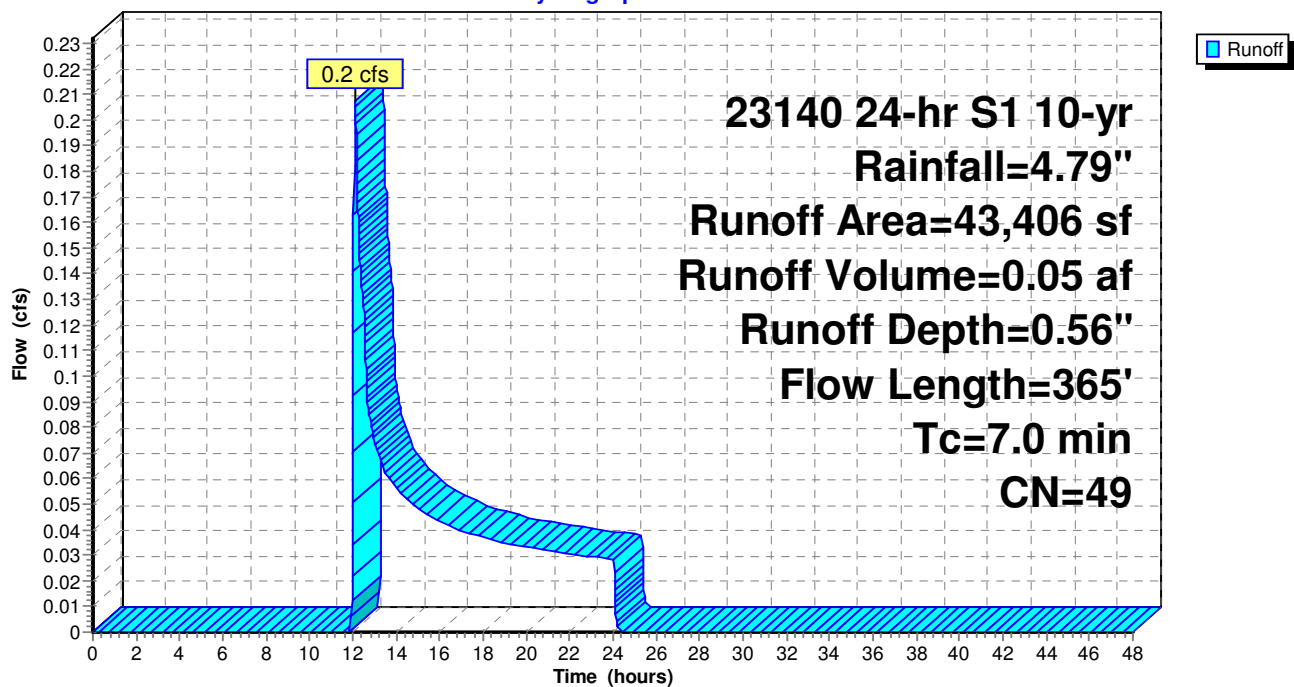
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23140 24-hr S1 10-yr Rainfall=4.79"

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Subcatchment C: C

Hydrograph



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NODE LISTING – 25-YR

23140-Pre Report

23140 24-hr S1 25-yr Rainfall=6.07"

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Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 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 A: A

Runoff Area=3,293 sf 19.80% Impervious Runoff Depth=4.26"
Flow Length=49' Slope=0.0650 '/ Tc=4.7 min CN=84 Runoff=0.3 cfs 0.03 af

Subcatchment B: B

Runoff Area=24,600 sf 10.37% Impervious Runoff Depth=2.67"
Flow Length=297' Slope=0.0490 '/ Tc=8.1 min CN=68 Runoff=1.2 cfs 0.13 af

Subcatchment C: C

Runoff Area=43,406 sf 6.72% Impervious Runoff Depth=1.10"
Flow Length=365' Tc=7.0 min CN=49 Runoff=0.7 cfs 0.09 af

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NODE LISTING – 50-YR

23140-Pre Report

23140 24-hr S1 50-yr Rainfall=7.27"

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Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 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 A: A

Runoff Area=3,293 sf 19.80% Impervious Runoff Depth=5.40"
Flow Length=49' Slope=0.0650 '/ Tc=4.7 min CN=84 Runoff=0.4 cfs 0.03 af

Subcatchment B: B

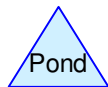
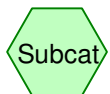
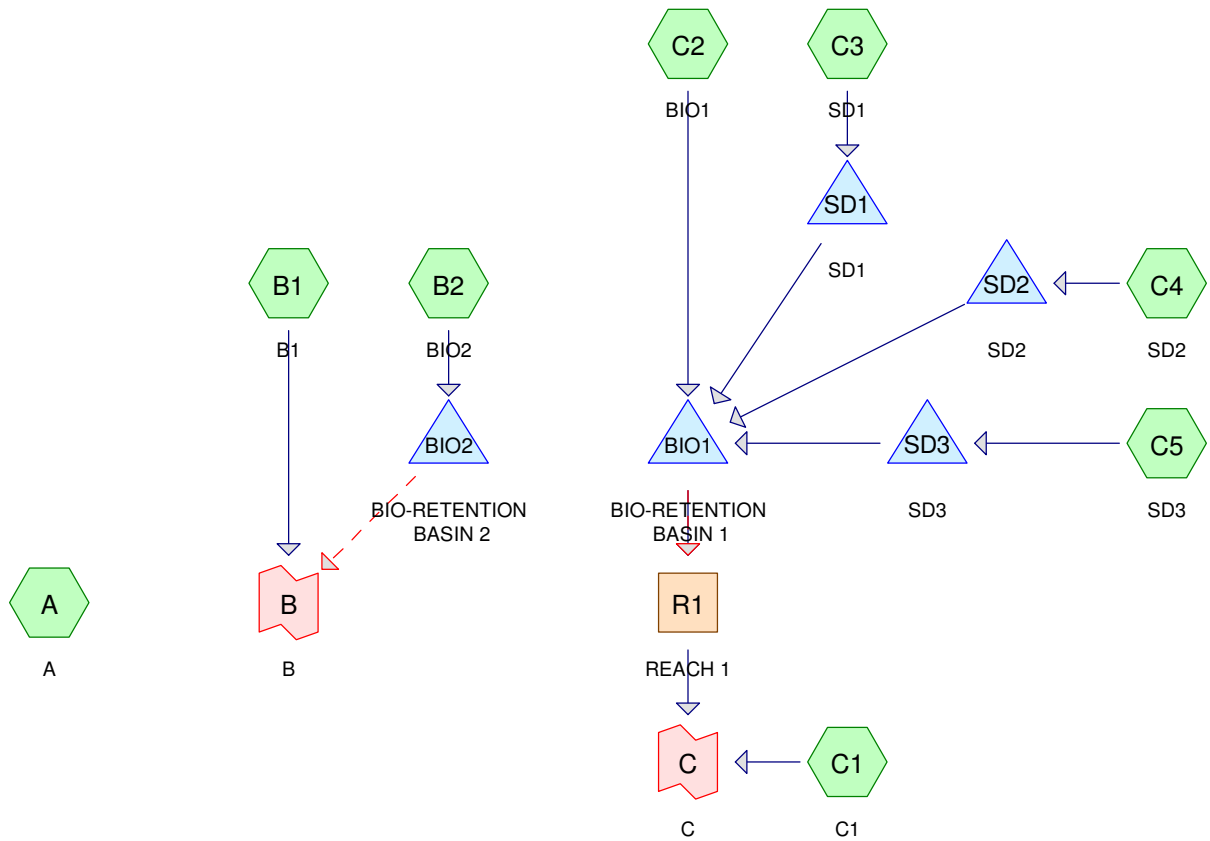
Runoff Area=24,600 sf 10.37% Impervious Runoff Depth=3.63"
Flow Length=297' Slope=0.0490 '/ Tc=8.1 min CN=68 Runoff=1.6 cfs 0.17 af

Subcatchment C: C

Runoff Area=43,406 sf 6.72% Impervious Runoff Depth=1.73"
Flow Length=365' Tc=7.0 min CN=49 Runoff=1.2 cfs 0.14 af

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DEVELOPED WATERSHEDS



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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.768	39	>75% Grass cover, Good, HSG A (B1, B2, C1, C2)
0.325	80	>75% Grass cover, Good, HSG D (A, B1, B2, C1, C2)
0.171	98	Paved parking, HSG A (B1, C1, C2)
0.176	98	Paved parking, HSG D (A, B1, B2, C1, C2)
0.086	98	Roofs, HSG A (C1, C2)
0.106	98	Roofs, HSG D (B2, C2, C3, C4, C5)
0.005	98	Water Surface, 0% imp, HSG D (C3, C4, C5)

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Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
1.025	HSG A	B1, B2, C1, C2
0.000	HSG B	
0.000	HSG C	
0.612	HSG D	A, B1, B2, C1, C2, C3, C4, C5
0.000	Other	

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Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.768	0.000	0.000	0.325	0.000	1.093	>75% Grass cover, Good	A, B1, B2, C1, C2
0.171	0.000	0.000	0.176	0.000	0.347	Paved parking	A, B1, B2, C1, C2
0.086	0.000	0.000	0.106	0.000	0.192	Roofs	B2, C1, C2, C3, C4, C5
0.000	0.000	0.000	0.005	0.000	0.005	Water Surface, 0% imp	C3, C4, C5

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NODE LISTING – 2-YR

23140-Post Report*23140 24-hr S1 2-yr Rainfall=3.17"*

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Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 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 A: A	Runoff Area=3,293 sf 4.16% Impervious Runoff Depth=1.45" Flow Length=95' Slope=0.0650 '/' Tc=8.1 min CN=81 Runoff=0.1 cfs 0.01 af
Subcatchment B1: B1	Runoff Area=8,183 sf 29.93% Impervious Runoff Depth=0.76" Flow Length=113' Tc=6.0 min CN=69 Runoff=0.1 cfs 0.01 af
Subcatchment B2: BIO2	Runoff Area=5,449 sf 37.49% Impervious Runoff Depth=1.89" Flow Length=104' Tc=7.9 min CN=87 Runoff=0.2 cfs 0.02 af
Subcatchment C1: C1	Runoff Area=28,389 sf 16.34% Impervious Runoff Depth=0.14" Flow Length=372' Tc=10.4 min CN=51 Runoff=0.0 cfs 0.01 af
Subcatchment C2: BIO1	Runoff Area=24,288 sf 52.42% Impervious Runoff Depth=1.13" Flow Length=82' Slope=0.0790 '/' Tc=6.0 min CN=76 Runoff=0.7 cfs 0.05 af
Subcatchment C3: SD1	Runoff Area=619 sf 87.40% Impervious Runoff Depth=2.94" Flow Length=15' Tc=6.0 min CN=98 Runoff=0.0 cfs 0.00 af
Subcatchment C4: SD2	Runoff Area=533 sf 85.18% Impervious Runoff Depth=2.94" Flow Length=15' Tc=6.0 min CN=98 Runoff=0.0 cfs 0.00 af
Subcatchment C5: SD3	Runoff Area=544 sf 88.24% Impervious Runoff Depth=2.94" Flow Length=15' Tc=6.0 min CN=98 Runoff=0.0 cfs 0.00 af
Reach R1: REACH 1	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.0 cfs 0.00 af n=0.022 L=190.0' S=0.1463 '/' Capacity=82.7 cfs Outflow=0.0 cfs 0.00 af
Pond BIO1: BIO-RETENTION BASIN 1	Peak Elev=32.39' Storage=503 cf Inflow=0.7 cfs 0.05 af Discarded=0.1 cfs 0.05 af Secondary=0.0 cfs 0.00 af Outflow=0.1 cfs 0.05 af
Pond BIO2: BIO-RETENTION BASIN 2	Peak Elev=35.17' Storage=218 cf Inflow=0.2 cfs 0.02 af Discarded=0.0 cfs 0.02 af Secondary=0.0 cfs 0.00 af Outflow=0.0 cfs 0.02 af
Pond SD1: SD1	Peak Elev=41.91' Storage=24 cf Inflow=0.0 cfs 0.00 af Discarded=0.0 cfs 0.00 af Primary=0.0 cfs 0.00 af Outflow=0.0 cfs 0.00 af
Pond SD2: SD2	Peak Elev=39.23' Storage=18 cf Inflow=0.0 cfs 0.00 af Discarded=0.0 cfs 0.00 af Primary=0.0 cfs 0.00 af Outflow=0.0 cfs 0.00 af
Pond SD3: SD3	Peak Elev=39.15' Storage=22 cf Inflow=0.0 cfs 0.00 af Discarded=0.0 cfs 0.00 af Primary=0.0 cfs 0.00 af Outflow=0.0 cfs 0.00 af
Link B: B	Inflow=0.1 cfs 0.01 af Primary=0.1 cfs 0.01 af
Link C: C	Inflow=0.0 cfs 0.01 af Primary=0.0 cfs 0.01 af

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NODE LISTING – 10-YR

23140-Post Report

23140 24-hr S1 10-yr Rainfall=4.79"

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Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 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 A: A	Runoff Area=3,293 sf 4.16% Impervious Runoff Depth=2.80" Flow Length=95' Slope=0.0650 '/' Tc=8.1 min CN=81 Runoff=0.2 cfs 0.02 af
Subcatchment B1: B1	Runoff Area=8,183 sf 29.93% Impervious Runoff Depth=1.81" Flow Length=113' Tc=6.0 min CN=69 Runoff=0.3 cfs 0.03 af
Subcatchment B2: BIO2	Runoff Area=5,449 sf 37.49% Impervious Runoff Depth=3.37" Flow Length=104' Tc=7.9 min CN=87 Runoff=0.4 cfs 0.04 af
Subcatchment C1: C1	Runoff Area=28,389 sf 16.34% Impervious Runoff Depth=0.66" Flow Length=372' Tc=10.4 min CN=51 Runoff=0.2 cfs 0.04 af
Subcatchment C2: BIO1	Runoff Area=24,288 sf 52.42% Impervious Runoff Depth=2.36" Flow Length=82' Slope=0.0790 '/' Tc=6.0 min CN=76 Runoff=1.3 cfs 0.11 af
Subcatchment C3: SD1	Runoff Area=619 sf 87.40% Impervious Runoff Depth=4.55" Flow Length=15' Tc=6.0 min CN=98 Runoff=0.1 cfs 0.01 af
Subcatchment C4: SD2	Runoff Area=533 sf 85.18% Impervious Runoff Depth=4.55" Flow Length=15' Tc=6.0 min CN=98 Runoff=0.0 cfs 0.00 af
Subcatchment C5: SD3	Runoff Area=544 sf 88.24% Impervious Runoff Depth=4.55" Flow Length=15' Tc=6.0 min CN=98 Runoff=0.0 cfs 0.00 af
Reach R1: REACH 1	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.0 cfs 0.00 af n=0.022 L=190.0' S=0.1463 '/' Capacity=82.7 cfs Outflow=0.0 cfs 0.00 af
Pond BIO1: BIO-RETENTION BASIN 1	Peak Elev=33.67' Storage=1,323 cf Inflow=1.3 cfs 0.11 af Discarded=0.1 cfs 0.11 af Secondary=0.0 cfs 0.00 af Outflow=0.1 cfs 0.11 af
Pond BIO2: BIO-RETENTION BASIN 2	Peak Elev=35.68' Storage=418 cf Inflow=0.4 cfs 0.04 af Discarded=0.0 cfs 0.04 af Secondary=0.0 cfs 0.00 af Outflow=0.0 cfs 0.04 af
Pond SD1: SD1	Peak Elev=42.16' Storage=44 cf Inflow=0.1 cfs 0.01 af Discarded=0.0 cfs 0.01 af Primary=0.0 cfs 0.00 af Outflow=0.0 cfs 0.01 af
Pond SD2: SD2	Peak Elev=39.42' Storage=33 cf Inflow=0.0 cfs 0.00 af Discarded=0.0 cfs 0.00 af Primary=0.0 cfs 0.00 af Outflow=0.0 cfs 0.00 af
Pond SD3: SD3	Peak Elev=39.43' Storage=40 cf Inflow=0.0 cfs 0.00 af Discarded=0.0 cfs 0.00 af Primary=0.0 cfs 0.00 af Outflow=0.0 cfs 0.00 af
Link B: B	Inflow=0.3 cfs 0.03 af Primary=0.3 cfs 0.03 af
Link C: C	Inflow=0.2 cfs 0.04 af Primary=0.2 cfs 0.04 af

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10-YR STORM SUMMARY

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23140 24-hr S1 10-yr Rainfall=4.79"

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Summary for Subcatchment A: A

Runoff = 0.2 cfs @ 12.06 hrs, Volume= 0.02 af, Depth= 2.80"

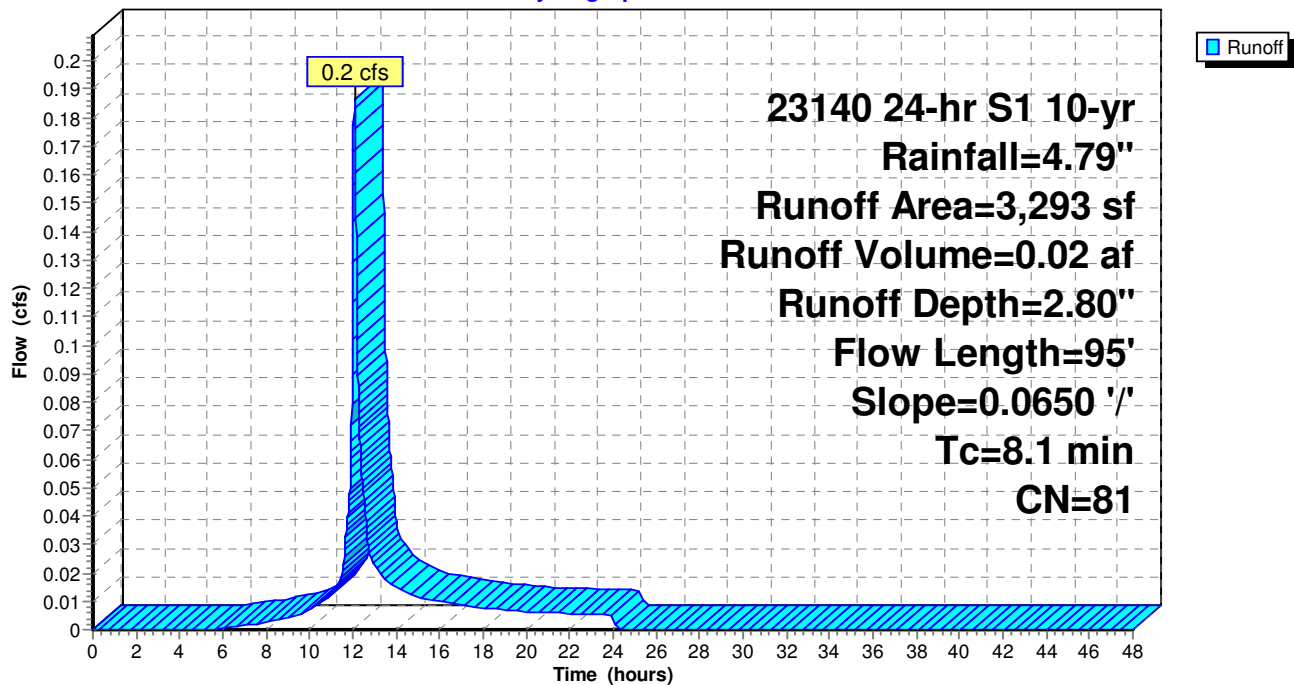
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
23140 24-hr S1 10-yr Rainfall=4.79"

Area (sf)	CN	Description
3,156	80	>75% Grass cover, Good, HSG D
137	98	Paved parking, HSG D
3,293	81	Weighted Average
3,156		95.84% Pervious Area
137		4.16% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.1	95	0.0650	0.20		Sheet Flow, Grass: Dense n= 0.240 P2= 3.60"

Subcatchment A: A

Hydrograph



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23140 24-hr S1 10-yr Rainfall=4.79"

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Summary for Subcatchment B1: B1

Runoff = 0.3 cfs @ 12.04 hrs, Volume= 0.03 af, Depth= 1.81"

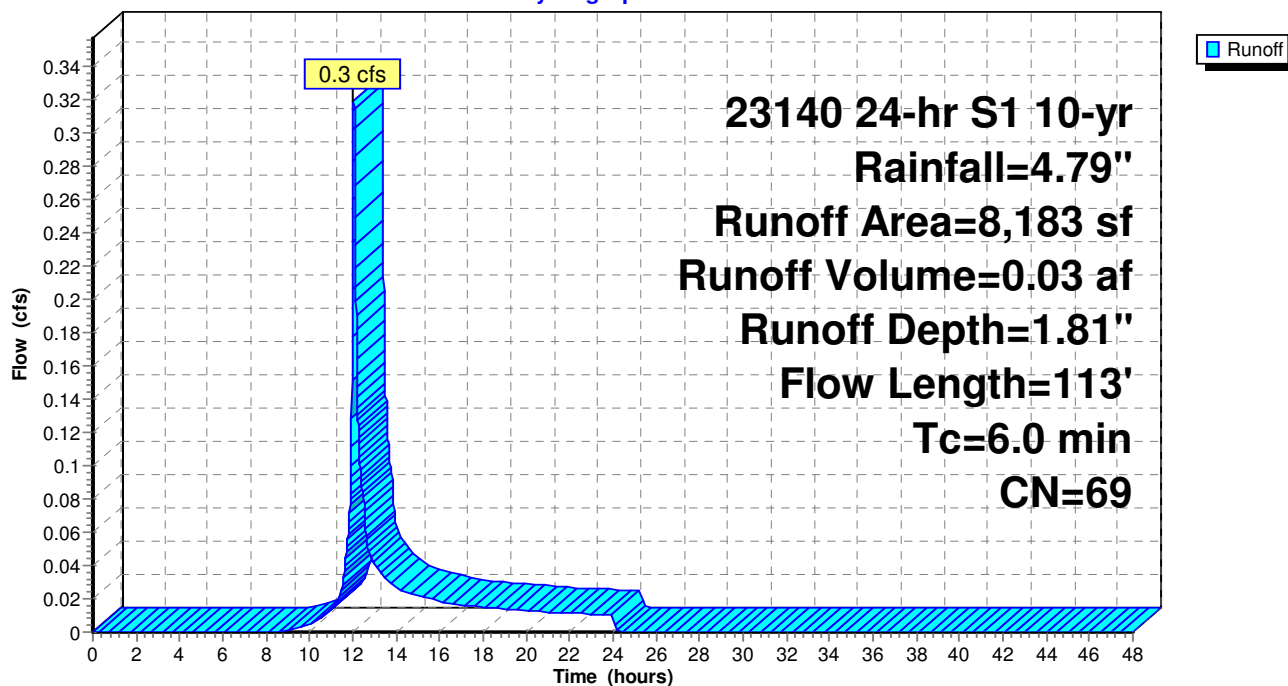
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
23140 24-hr S1 10-yr Rainfall=4.79"

Area (sf)	CN	Description
3,300	39	>75% Grass cover, Good, HSG A
1,475	98	Paved parking, HSG A
2,434	80	>75% Grass cover, Good, HSG D
974	98	Paved parking, HSG D
8,183	69	Weighted Average
5,734		70.07% Pervious Area
2,449		29.93% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	11	0.3300	0.24		Sheet Flow, Grass: Dense n= 0.240 P2= 3.60"
0.4	102	0.0440	4.26		Shallow Concentrated Flow, Paved Kv= 20.3 fps
1.1	113	Total, Increased to minimum Tc = 6.0 min			

Subcatchment B1: B1

Hydrograph



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23140 24-hr S1 10-yr Rainfall=4.79"

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Summary for Subcatchment B2: BIO2

Runoff = 0.4 cfs @ 12.06 hrs, Volume= 0.04 af, Depth= 3.37"

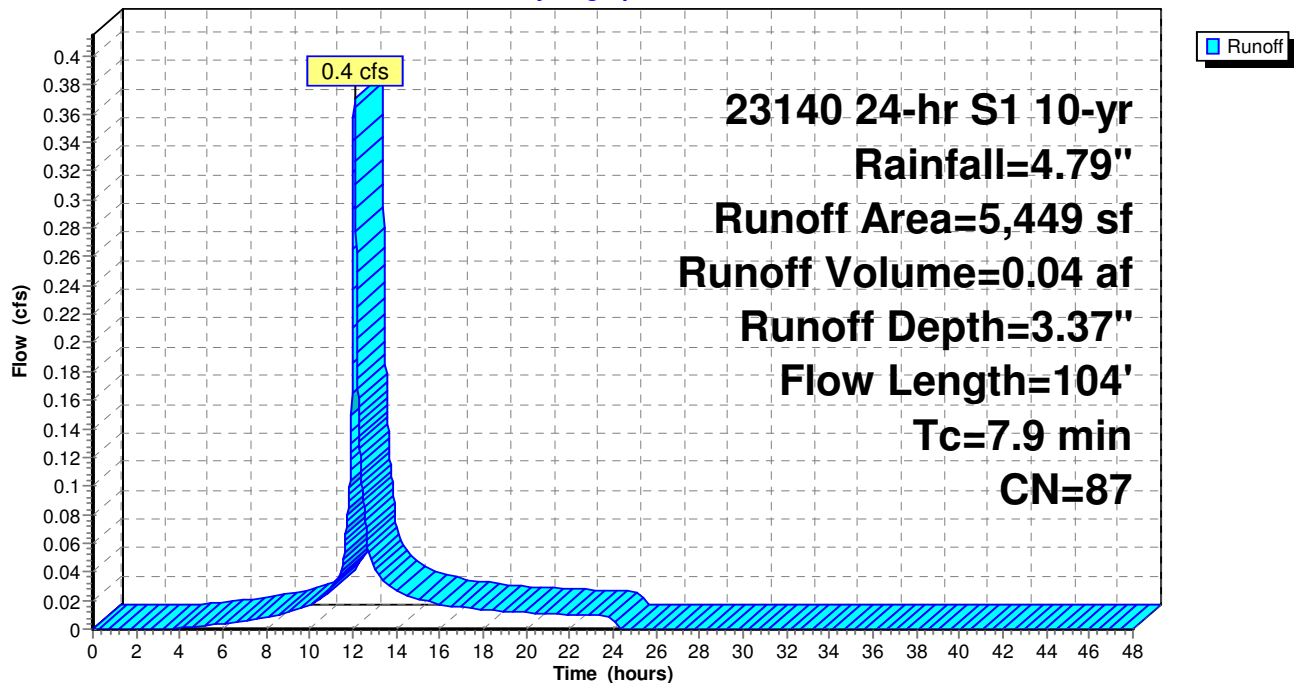
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
23140 24-hr S1 10-yr Rainfall=4.79"

Area (sf)	CN	Description
17	39	>75% Grass cover, Good, HSG A
3,389	80	>75% Grass cover, Good, HSG D
293	98	Paved parking, HSG D
1,750	98	Roofs, HSG D
5,449	87	Weighted Average
3,406		62.51% Pervious Area
2,043		37.49% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	69	0.0430	0.16		Sheet Flow, Grass: Dense n= 0.240 P2= 3.60"
0.5	35	0.0290	1.19		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
7.9	104	Total			

Subcatchment B2: BIO2

Hydrograph



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23140 24-hr S1 10-yr Rainfall=4.79"

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Summary for Subcatchment C1: C1

Runoff = 0.2 cfs @ 12.14 hrs, Volume= 0.04 af, Depth= 0.66"

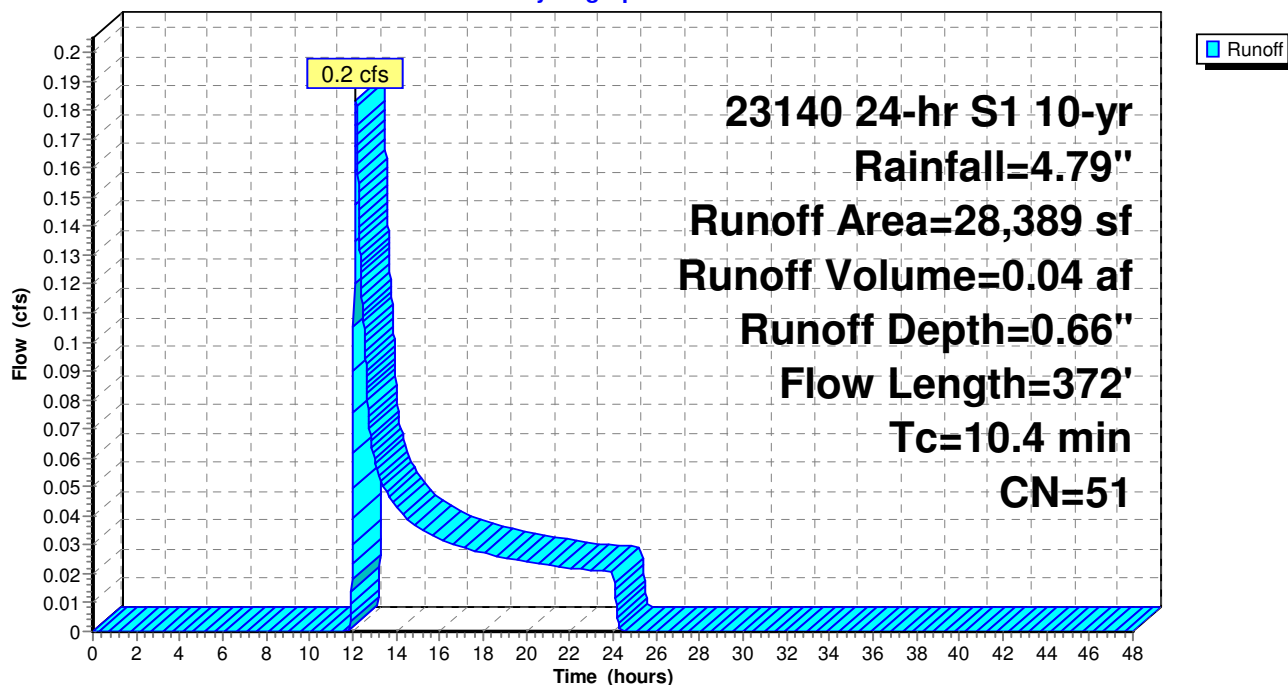
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
23140 24-hr S1 10-yr Rainfall=4.79"

Area (sf)	CN	Description
22,453	39	>75% Grass cover, Good, HSG A
869	98	Paved parking, HSG A
2,581	98	Roofs, HSG A
1,298	80	>75% Grass cover, Good, HSG D
1,188	98	Paved parking, HSG D
28,389	51	Weighted Average
23,751		83.66% Pervious Area
4,638		16.34% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	72	0.0347	0.14		Sheet Flow, Grass: Dense n= 0.240 P2= 3.60"
2.1	300	0.1200	2.42		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
10.4	372	Total			

Subcatchment C1: C1

Hydrograph



23140-Post Report

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23140 24-hr S1 10-yr Rainfall=4.79"

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Summary for Subcatchment C2: BIO1

Runoff = 1.3 cfs @ 12.04 hrs, Volume= 0.11 af, Depth= 2.36"

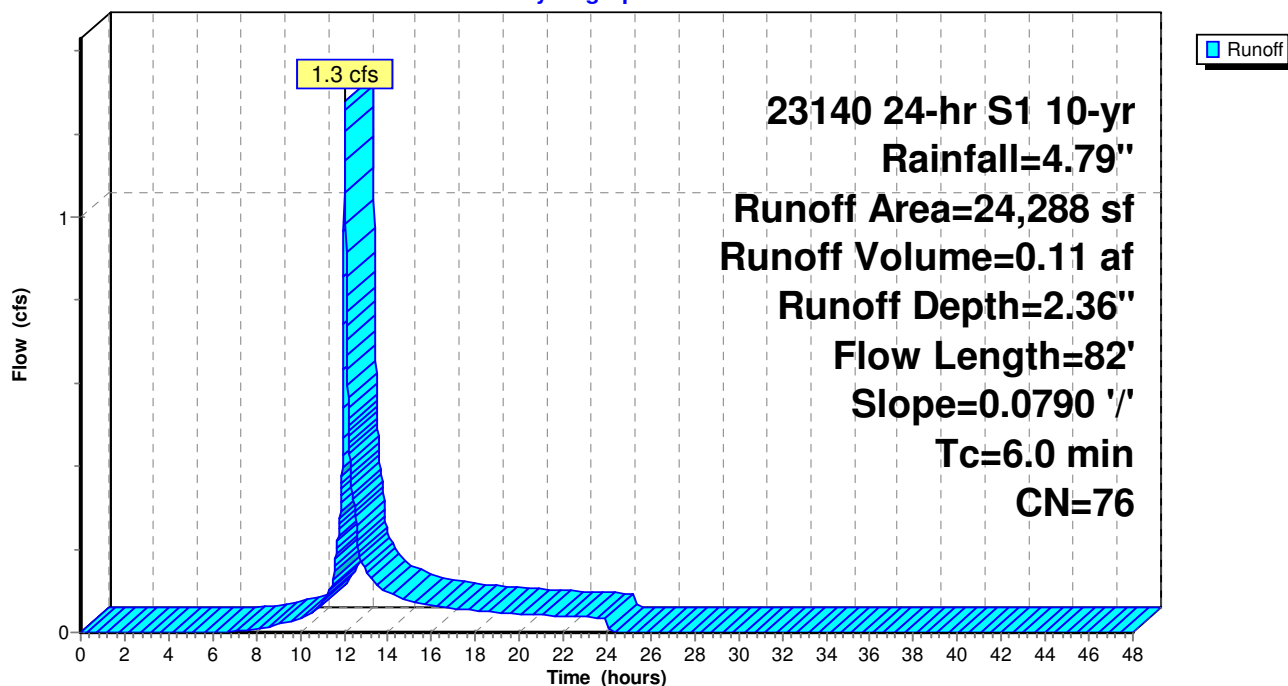
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
23140 24-hr S1 10-yr Rainfall=4.79"

Area (sf)	CN	Description
7,691	39	>75% Grass cover, Good, HSG A
5,090	98	Paved parking, HSG A
1,170	98	Roofs, HSG A
3,865	80	>75% Grass cover, Good, HSG D
5,070	98	Paved parking, HSG D
1,402	98	Roofs, HSG D
24,288	76	Weighted Average
11,556		47.58% Pervious Area
12,732		52.42% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.3	62	0.0790	0.20		Sheet Flow, Grass: Dense n= 0.240 P2= 3.60"
0.2	20	0.0790	1.97		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
5.5	82	Total, Increased to minimum Tc = 6.0 min			

Subcatchment C2: BIO1

Hydrograph



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23140 24-hr S1 10-yr Rainfall=4.79"

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Summary for Subcatchment C3: SD1

Runoff = 0.1 cfs @ 12.04 hrs, Volume= 0.01 af, Depth= 4.55"

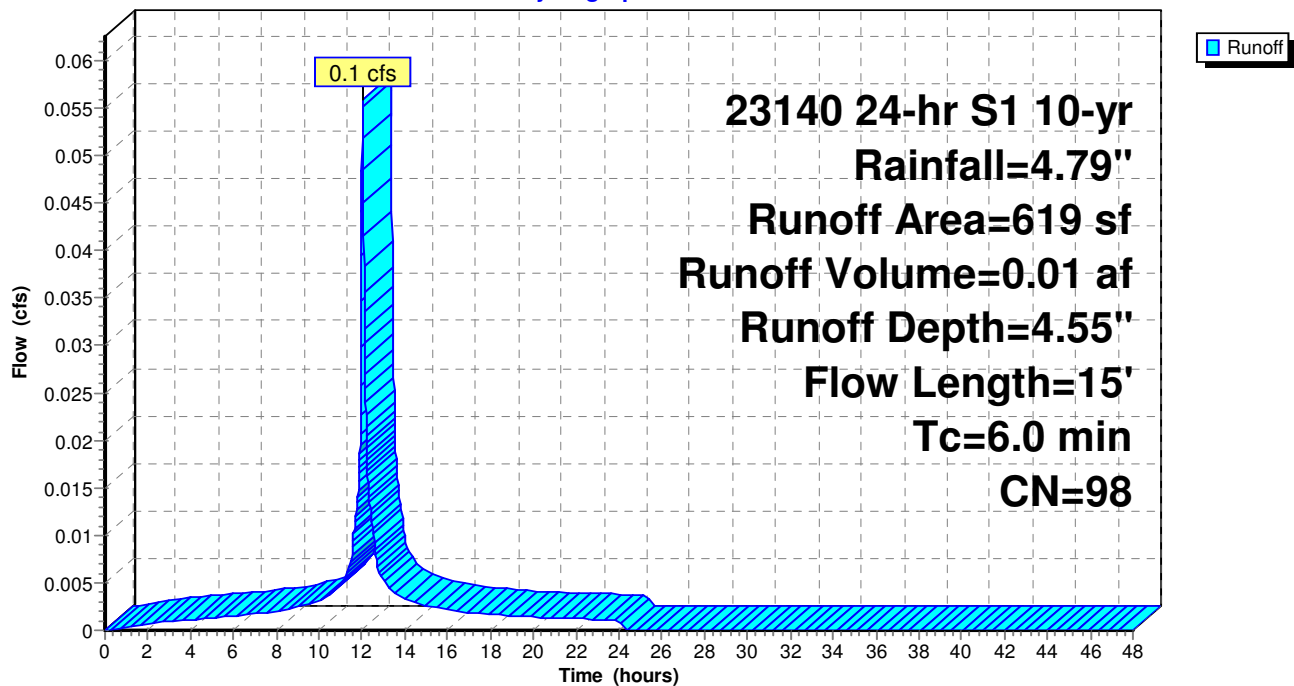
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
23140 24-hr S1 10-yr Rainfall=4.79"

Area (sf)	CN	Description
78	98	Water Surface, 0% imp, HSG D
541	98	Roofs, HSG D
619	98	Weighted Average
78		12.60% Pervious Area
541		87.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	15		0.04		Direct Entry,

Subcatchment C3: SD1

Hydrograph



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23140 24-hr S1 10-yr Rainfall=4.79"

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Summary for Subcatchment C4: SD2

Runoff = 0.0 cfs @ 12.04 hrs, Volume= 0.00 af, Depth= 4.55"

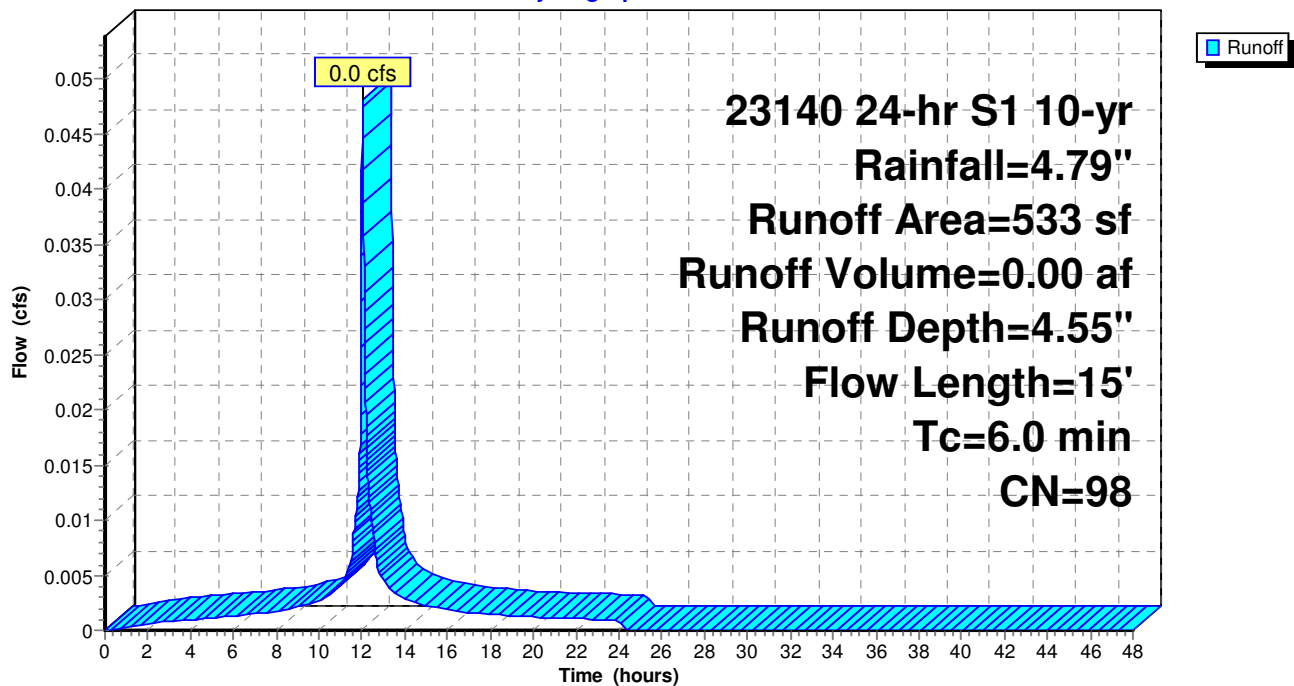
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
23140 24-hr S1 10-yr Rainfall=4.79"

Area (sf)	CN	Description
79	98	Water Surface, 0% imp, HSG D
454	98	Roofs, HSG D
533	98	Weighted Average
79		14.82% Pervious Area
454		85.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	15		0.04		Direct Entry,

Subcatchment C4: SD2

Hydrograph



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23140 24-hr S1 10-yr Rainfall=4.79"

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Summary for Subcatchment C5: SD3

Runoff = 0.0 cfs @ 12.04 hrs, Volume= 0.00 af, Depth= 4.55"

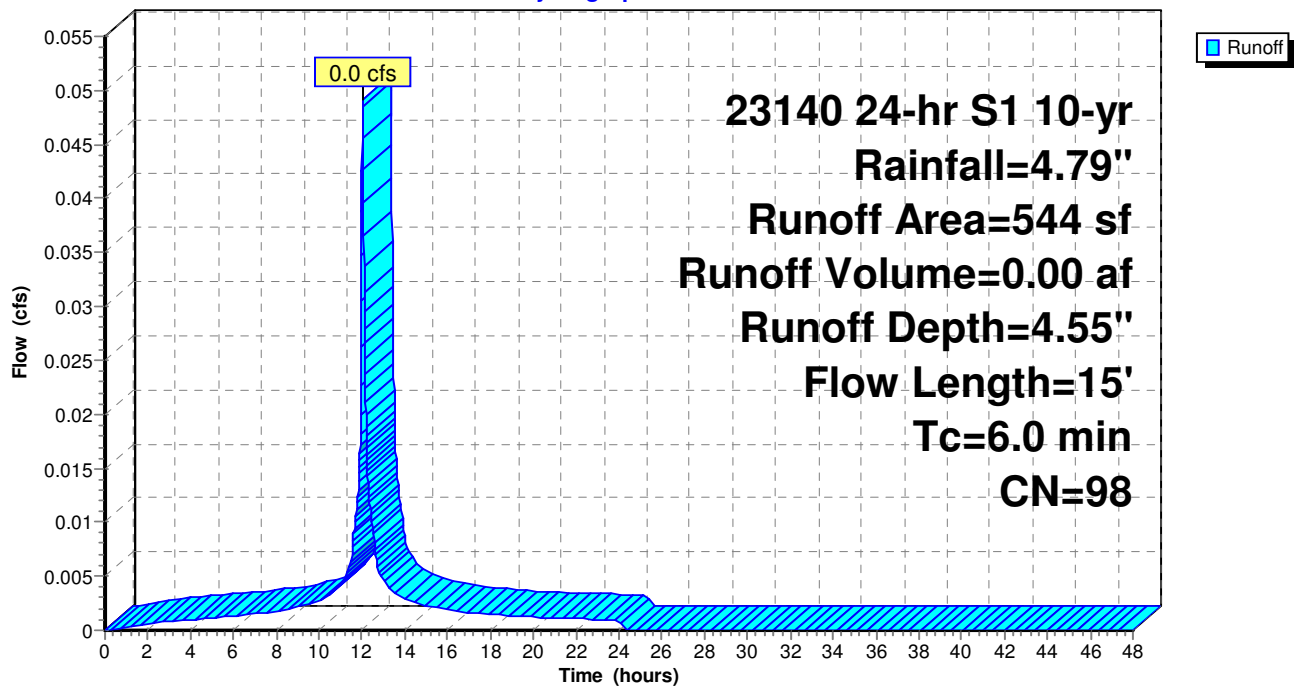
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
23140 24-hr S1 10-yr Rainfall=4.79"

Area (sf)	CN	Description
64	98	Water Surface, 0% imp, HSG D
480	98	Roofs, HSG D
544	98	Weighted Average
64		11.76% Pervious Area
480		88.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	15		0.04		Direct Entry,

Subcatchment C5: SD3

Hydrograph



23140-Post Report

23140 24-hr S1 10-yr Rainfall=4.79"

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Summary for Reach R1: REACH 1

Inflow Area = 0.597 ac, 54.68% Impervious, Inflow Depth = 0.00" for 10-yr event
Inflow = 0.0 cfs @ 0.00 hrs, Volume= 0.00 af
Outflow = 0.0 cfs @ 0.00 hrs, Volume= 0.00 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min

Avg. Velocity= 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs

Average Depth at Peak Storage= 0.00'

Bank-Full Depth= 0.50' Flow Area= 6.7 sf, Capacity= 82.7 cfs

20.00' x 0.50' deep Parabolic Channel, n= 0.022 Earth, clean & straight

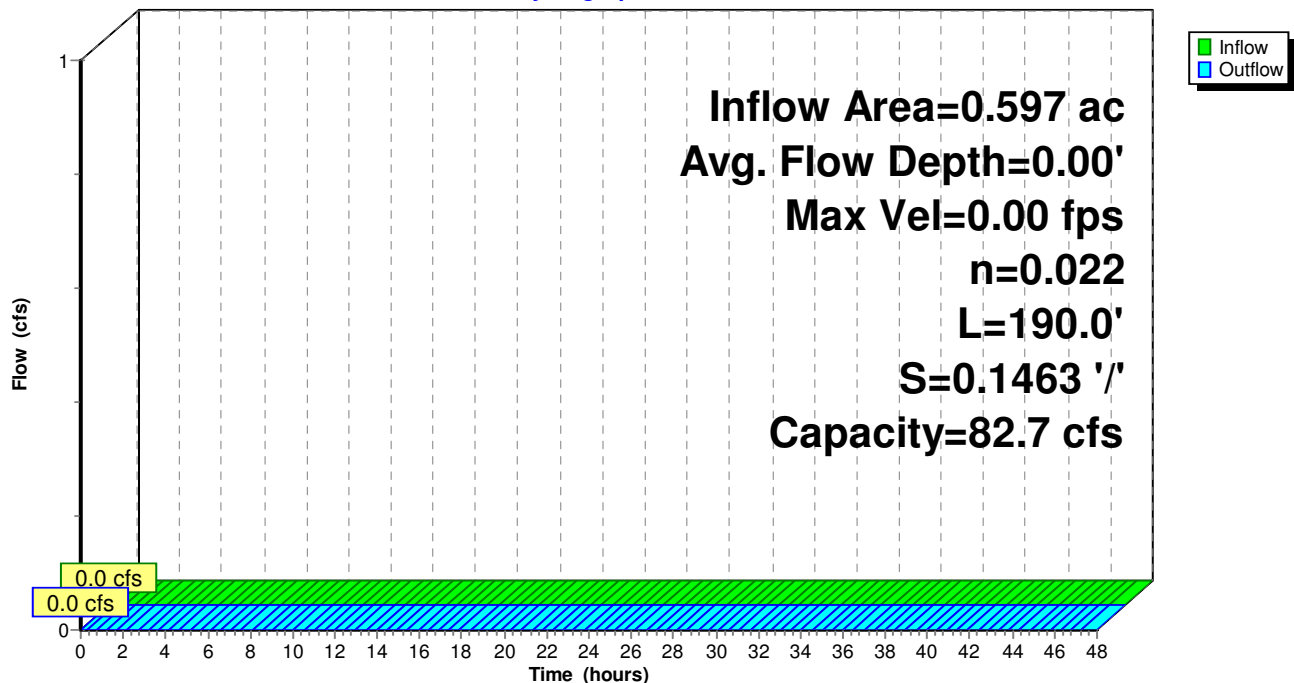
Length= 190.0' Slope= 0.1463 '/'

Inlet Invert= 33.70', Outlet Invert= 5.90'



Reach R1: REACH 1

Hydrograph



23140-Post Report

23140 24-hr S1 10-yr Rainfall=4.79"

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Summary for Pond BIO1: BIO-RETENTION BASIN 1

Inflow Area = 0.597 ac, 54.68% Impervious, Inflow Depth = 2.21" for 10-yr event
 Inflow = 1.3 cfs @ 12.04 hrs, Volume= 0.11 af
 Outflow = 0.1 cfs @ 13.02 hrs, Volume= 0.11 af, Atten= 89%, Lag= 59.1 min
 Discarded = 0.1 cfs @ 13.02 hrs, Volume= 0.11 af
 Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0.00 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Peak Elev= 33.67' @ 13.02 hrs Surf.Area= 1,391 sf Storage= 1,323 cf

Flood Elev= 34.25' Surf.Area= 2,165 sf Storage= 2,308 cf

Plug-Flow detention time= 85.3 min calculated for 0.11 af (100% of inflow)

Center-of-Mass det. time= 85.2 min (955.1 - 869.9)

Volume	Invert	Avail.Storage	Storage Description			
#1	30.08'	2,308 cf	Rain Garden (Irregular) Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
30.08	916	200.4	0.0	0	0	916
31.25	916	200.4	35.0	375	375	1,150
31.50	916	200.4	20.0	46	421	1,201
33.00	916	200.4	10.0	137	558	1,501
34.00	1,665	243.1	100.0	1,272	1,830	3,024
34.25	2,165	256.5	100.0	477	2,308	3,561

Device	Routing	Invert	Outlet Devices											
#1	Discarded	30.08'	4.500 in/hr Exfiltration over Surface area Phase-In= 0.01'											
#2	Secondary	33.80'	4.0' long x 4.0' breadth Broad-Crested Rectangular Weir											
			Head (feet)	0.20	0.40	0.60	0.80	1.00	1.20	1.40	1.60	1.80	2.00	
				2.50	3.00	3.50	4.00	4.50	5.00	5.50				
			Coef. (English)	2.38	2.54	2.69	2.68	2.67	2.67	2.65	2.66	2.66	2.68	
				2.72	2.73	2.76	2.79	2.88	3.07	3.32				

Discarded OutFlow Max=0.1 cfs @ 13.02 hrs HW=33.67' (Free Discharge)

↑1=Exfiltration (Exfiltration Controls 0.1 cfs)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=30.08' TW=33.70' (Dynamic Tailwater)

↑2=Broad-Crested Rectangular Weir (Controls 0.0 cfs)

23140-Post Report

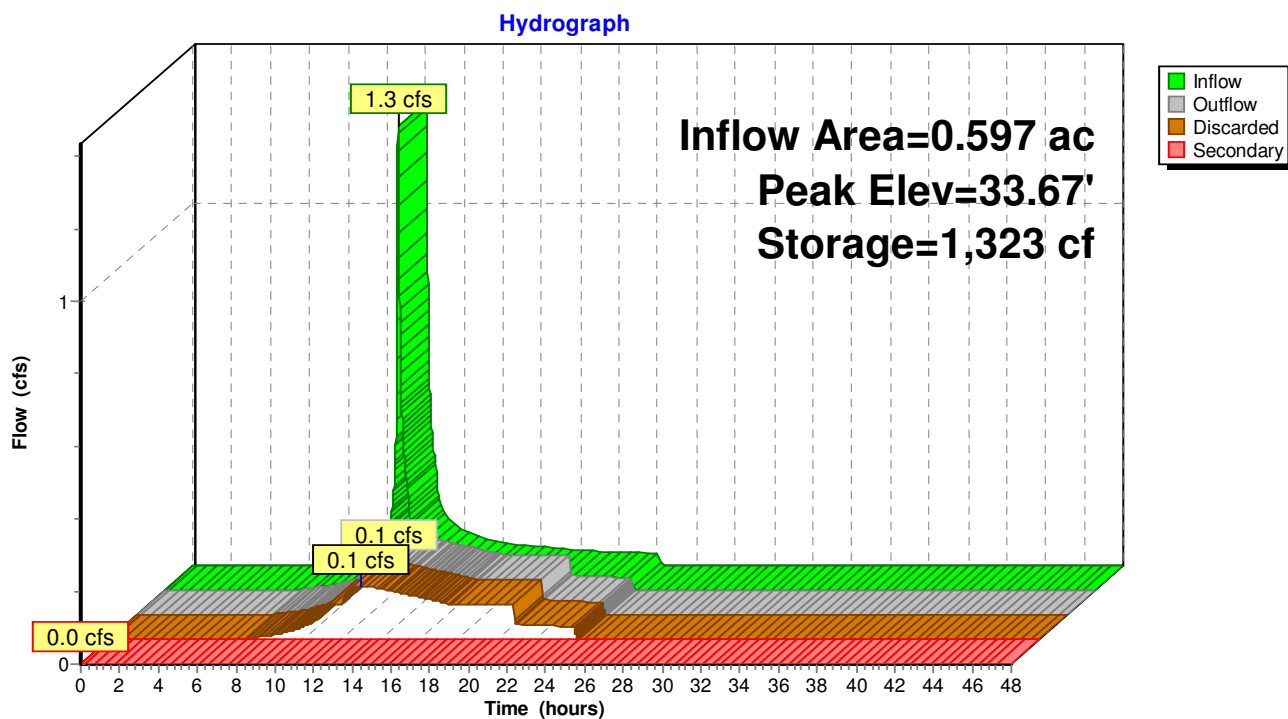
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23140 24-hr S1 10-yr Rainfall=4.79"

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Pond BIO1: BIO-RETENTION BASIN 1



23140-Post Report

23140 24-hr S1 10-yr Rainfall=4.79"

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Summary for Pond BIO2: BIO-RETENTION BASIN 2

Inflow Area = 0.125 ac, 37.49% Impervious, Inflow Depth = 3.37" for 10-yr event
 Inflow = 0.4 cfs @ 12.06 hrs, Volume= 0.04 af
 Outflow = 0.0 cfs @ 12.81 hrs, Volume= 0.04 af, Atten= 87%, Lag= 44.8 min
 Discarded = 0.0 cfs @ 12.81 hrs, Volume= 0.04 af
 Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0.00 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Peak Elev= 35.68' @ 12.81 hrs Surf.Area= 474 sf Storage= 418 cf

Flood Elev= 36.25' Surf.Area= 825 sf Storage= 763 cf

Plug-Flow detention time= 73.6 min calculated for 0.04 af (100% of inflow)

Center-of-Mass det. time= 73.6 min (899.5 - 825.9)

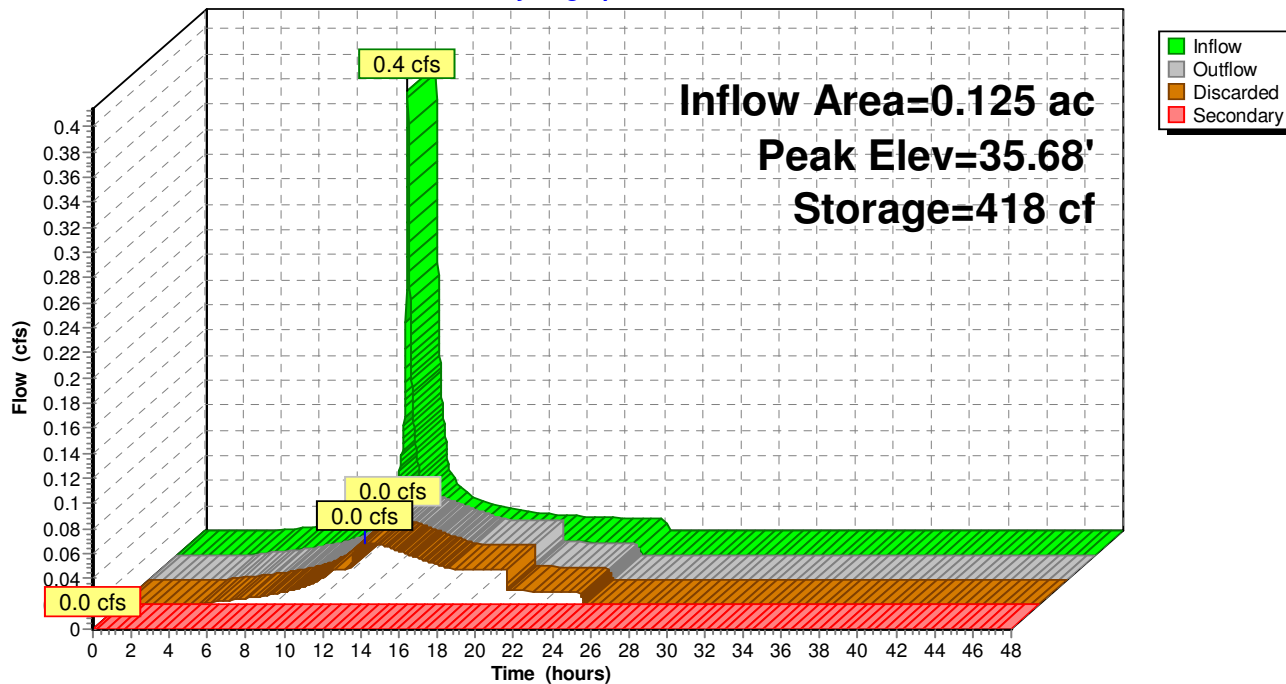
Volume	Invert	Avail.Storage	Storage Description			
#1	32.08'	763 cf	Rain Garden (Irregular) Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
32.08	274	80.8	0.0	0	0	274
33.25	274	80.8	35.0	112	112	369
33.50	274	80.8	20.0	14	126	389
35.00	274	80.8	10.0	41	167	510
36.00	586	113.2	100.0	420	587	1,019
36.25	825	125.8	100.0	176	763	1,261

Device	Routing	Invert	Outlet Devices											
#1	Discarded	32.08'	4.500 in/hr Exfiltration over Surface area Phase-In= 0.01'											
#2	Secondary	35.75'	4.0' long x 4.0' breadth Broad-Crested Rectangular Weir											
			Head (feet)	0.20	0.40	0.60	0.80	1.00	1.20	1.40	1.60	1.80	2.00	
				2.50	3.00	3.50	4.00	4.50	5.00	5.50				
			Coef. (English)	2.38	2.54	2.69	2.68	2.67	2.67	2.65	2.66	2.66	2.68	
				2.72	2.73	2.76	2.79	2.88	3.07	3.32				

Discarded OutFlow Max=0.0 cfs @ 12.81 hrs HW=35.68' (Free Discharge)↑**1=Exfiltration** (Exfiltration Controls 0.0 cfs)**Secondary OutFlow** Max=0.0 cfs @ 0.00 hrs HW=32.08' TW=0.00' (Dynamic Tailwater)↑**2=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Pond BIO2: BIO-RETENTION BASIN 2

Hydrograph



23140-Post Report

23140 24-hr S1 10-yr Rainfall=4.79"

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Summary for Pond SD1: SD1

Inflow Area = 0.014 ac, 87.40% Impervious, Inflow Depth = 4.55" for 10-yr event
 Inflow = 0.1 cfs @ 12.04 hrs, Volume= 0.01 af
 Outflow = 0.0 cfs @ 11.60 hrs, Volume= 0.01 af, Atten= 85%, Lag= 0.0 min
 Discarded = 0.0 cfs @ 11.60 hrs, Volume= 0.01 af
 Primary = 0.0 cfs @ 0.00 hrs, Volume= 0.00 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Peak Elev= 42.16' @ 12.61 hrs Surf.Area= 78 sf Storage= 44 cf

Flood Elev= 42.70' Surf.Area= 78 sf Storage= 86 cf

Plug-Flow detention time= 25.2 min calculated for 0.01 af (100% of inflow)

Center-of-Mass det. time= 25.2 min (776.2 - 751.0)

Volume	Invert	Avail.Storage	Storage Description			
#1	41.60'	86 cf	Rain Garden (Irregular) Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
41.60	78	82.0	0.0	0	0	78
42.60	78	82.0	100.0	78	78	160
42.70	78	82.0	100.0	8	86	168

Device	Routing	Invert	Outlet Devices	
#1	Discarded	41.60'	4.500 in/hr Exfiltration over Surface area Phase-In= 0.01'	
#2	Primary	42.60'	179.0 deg x 38.0' long Sharp-Crested Vee/Trap Weir	
			Cv= 2.46 (C= 3.08)	

Discarded OutFlow Max=0.0 cfs @ 11.60 hrs HW=41.61' (Free Discharge)↑**1=Exfiltration** (Exfiltration Controls 0.0 cfs)**Primary OutFlow** Max=0.0 cfs @ 0.00 hrs HW=41.60' TW=30.08' (Dynamic Tailwater)↑**2=Sharp-Crested Vee/Trap Weir** (Controls 0.0 cfs)

23140-Post Report

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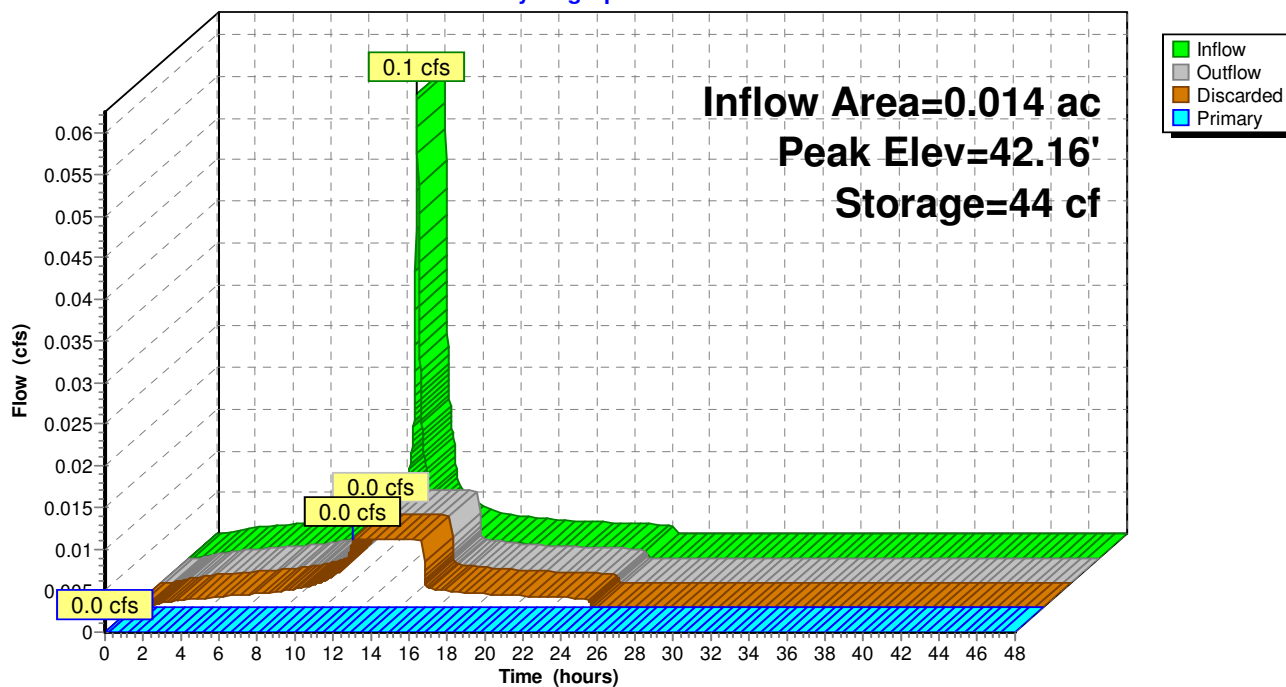
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23140 24-hr S1 10-yr Rainfall=4.79"

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Pond SD1: SD1

Hydrograph



23140-Post Report

23140 24-hr S1 10-yr Rainfall=4.79"

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Summary for Pond SD2: SD2

Inflow Area = 0.012 ac, 85.18% Impervious, Inflow Depth = 4.55" for 10-yr event
 Inflow = 0.0 cfs @ 12.04 hrs, Volume= 0.00 af
 Outflow = 0.0 cfs @ 11.66 hrs, Volume= 0.00 af, Atten= 83%, Lag= 0.0 min
 Discarded = 0.0 cfs @ 11.66 hrs, Volume= 0.00 af
 Primary = 0.0 cfs @ 0.00 hrs, Volume= 0.00 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Peak Elev= 39.42' @ 12.57 hrs Surf.Area= 79 sf Storage= 33 cf

Flood Elev= 40.10' Surf.Area= 79 sf Storage= 87 cf

Plug-Flow detention time= 17.6 min calculated for 0.00 af (100% of inflow)

Center-of-Mass det. time= 17.6 min (768.6 - 751.0)

Volume	Invert	Avail.Storage	Storage Description			
#1	39.00'	87 cf	Rain Garden (Irregular) Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
39.00	79	83.0	0.0	0	0	79
40.00	79	83.0	100.0	79	79	162
40.10	79	83.0	100.0	8	87	170
Device	Routing	Invert	Outlet Devices			
#1	Discarded	39.00'	4.500 in/hr Exfiltration over Surface area Phase-In= 0.01'			
#2	Primary	40.00'	179.0 deg x 37.0' long Sharp-Crested Vee/Trap Weir			
			Cv= 2.46 (C= 3.08)			

Discarded OutFlow Max=0.0 cfs @ 11.66 hrs HW=39.01' (Free Discharge)↑**1=Exfiltration** (Exfiltration Controls 0.0 cfs)**Primary OutFlow** Max=0.0 cfs @ 0.00 hrs HW=39.00' TW=30.08' (Dynamic Tailwater)↑**2=Sharp-Crested Vee/Trap Weir** (Controls 0.0 cfs)

23140-Post Report

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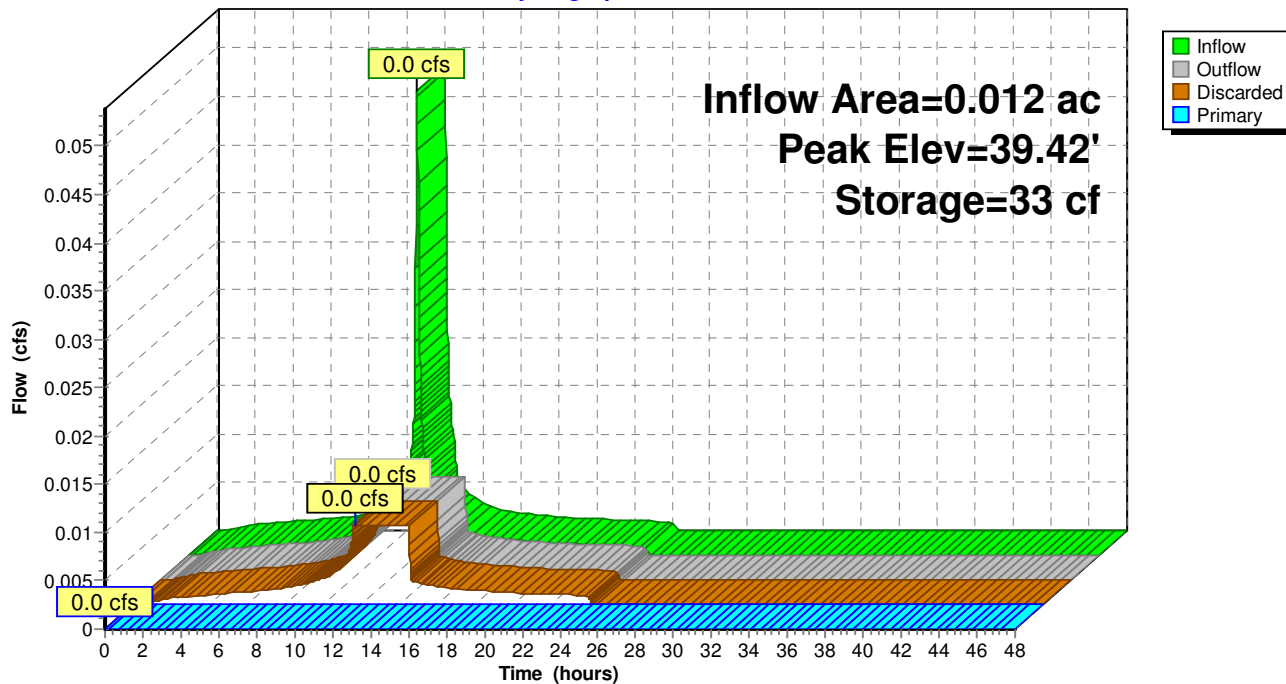
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23140 24-hr S1 10-yr Rainfall=4.79"

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Pond SD2: SD2

Hydrograph



23140-Post Report

23140 24-hr S1 10-yr Rainfall=4.79"

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Summary for Pond SD3: SD3

Inflow Area = 0.012 ac, 88.24% Impervious, Inflow Depth = 4.55" for 10-yr event
 Inflow = 0.0 cfs @ 12.04 hrs, Volume= 0.00 af
 Outflow = 0.0 cfs @ 11.58 hrs, Volume= 0.00 af, Atten= 86%, Lag= 0.0 min
 Discarded = 0.0 cfs @ 11.58 hrs, Volume= 0.00 af
 Primary = 0.0 cfs @ 0.00 hrs, Volume= 0.00 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Peak Elev= 39.43' @ 12.64 hrs Surf.Area= 64 sf Storage= 40 cf

Flood Elev= 39.90' Surf.Area= 64 sf Storage= 70 cf

Plug-Flow detention time= 29.2 min calculated for 0.00 af (100% of inflow)

Center-of-Mass det. time= 29.2 min (780.2 - 751.0)

Volume	Invert	Avail.Storage	Storage Description
#1	38.80'	70 cf	Rain Garden (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
38.80	64	68.0	0.0	0	0	64
39.80	64	68.0	100.0	64	64	132
39.90	64	68.0	100.0	6	70	139

Device	Routing	Invert	Outlet Devices
#1	Discarded	38.80'	4.500 in/hr Exfiltration over Surface area Phase-In= 0.01'
#2	Primary	39.80'	179.0 deg x 32.0' long Sharp-Crested Vee/Trap Weir Cv= 2.46 (C= 3.08)

Discarded OutFlow Max=0.0 cfs @ 11.58 hrs HW=38.81' (Free Discharge)↑**1=Exfiltration** (Exfiltration Controls 0.0 cfs)**Primary OutFlow** Max=0.0 cfs @ 0.00 hrs HW=38.80' TW=30.08' (Dynamic Tailwater)↑**2=Sharp-Crested Vee/Trap Weir** (Controls 0.0 cfs)

23140-Post Report

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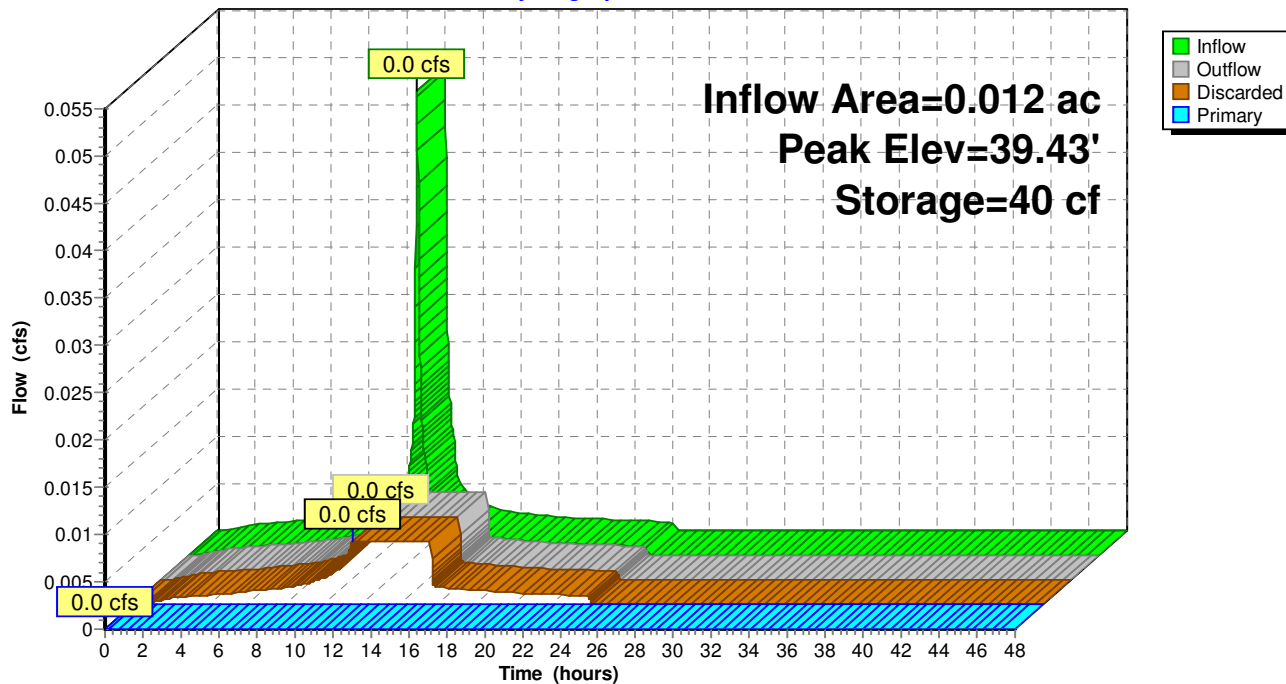
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23140 24-hr S1 10-yr Rainfall=4.79"

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Pond SD3: SD3

Hydrograph



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23140 24-hr S1 10-yr Rainfall=4.79"

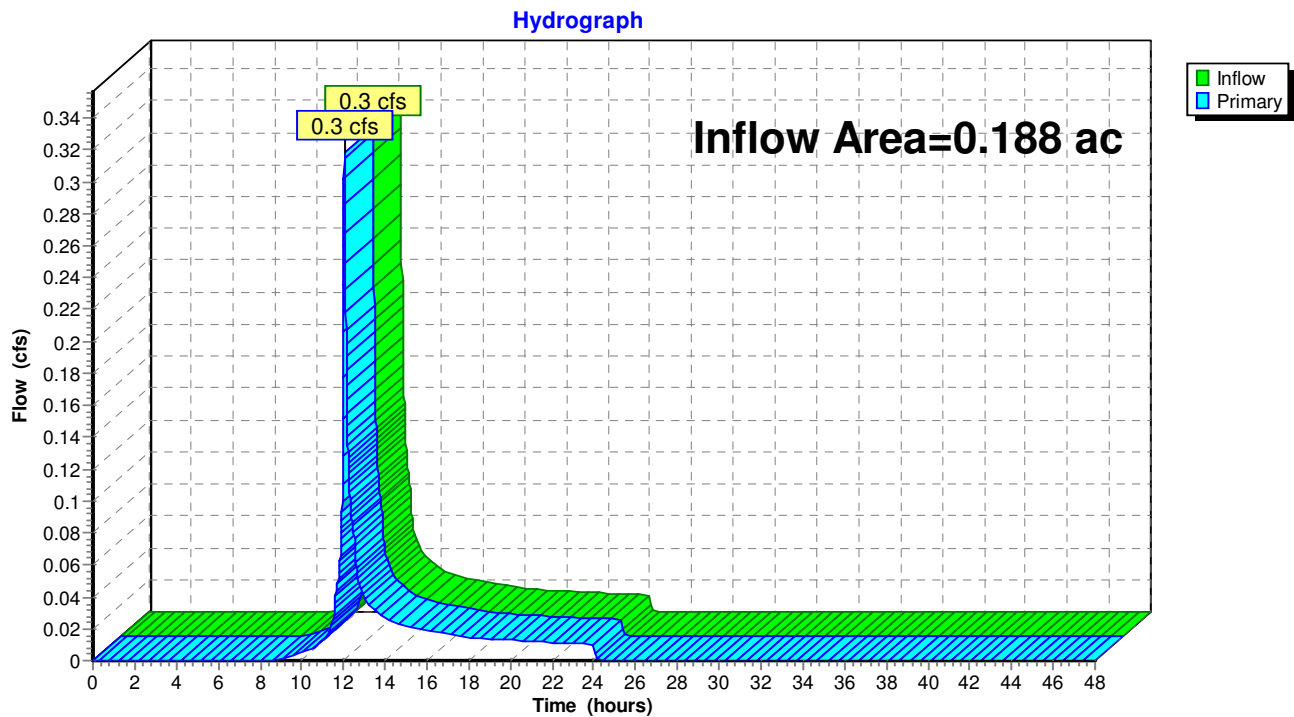
Page 48

Summary for Link B: B

Inflow Area = 0.188 ac, 29.93% Impervious, Inflow Depth = 1.81" for 10-yr event
Inflow = 0.3 cfs @ 12.04 hrs, Volume= 0.03 af
Primary = 0.3 cfs @ 12.04 hrs, Volume= 0.03 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link B: B



23140-Post Report

23140 24-hr S1 10-yr Rainfall=4.79"

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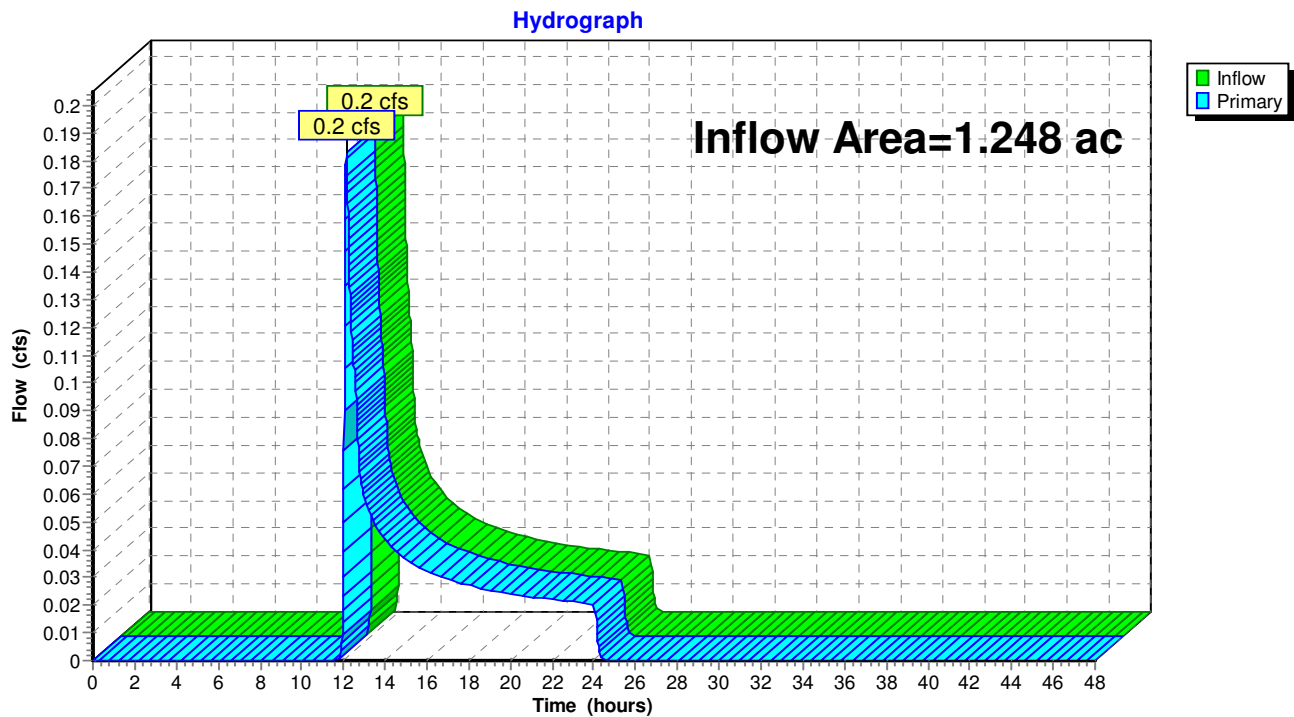
Page 49

Summary for Link C: C

Inflow Area = 1.248 ac, 34.66% Impervious, Inflow Depth = 0.34" for 10-yr event
Inflow = 0.2 cfs @ 12.14 hrs, Volume= 0.04 af
Primary = 0.2 cfs @ 12.14 hrs, Volume= 0.04 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link C: C



A – 2

NODE LISTING – 25-YR

23140-Post Report

23140 24-hr S1 25-yr Rainfall=6.07"

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Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 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 A: A	Runoff Area=3,293 sf 4.16% Impervious Runoff Depth=3.95" Flow Length=95' Slope=0.0650 '/' Tc=8.1 min CN=81 Runoff=0.2 cfs 0.02 af
Subcatchment B1: B1	Runoff Area=8,183 sf 29.93% Impervious Runoff Depth=2.77" Flow Length=113' Tc=6.0 min CN=69 Runoff=0.5 cfs 0.04 af
Subcatchment B2: BIO2	Runoff Area=5,449 sf 37.49% Impervious Runoff Depth=4.58" Flow Length=104' Tc=7.9 min CN=87 Runoff=0.5 cfs 0.05 af
Subcatchment C1: C1	Runoff Area=28,389 sf 16.34% Impervious Runoff Depth=1.25" Flow Length=372' Tc=10.4 min CN=51 Runoff=0.5 cfs 0.07 af
Subcatchment C2: BIO1	Runoff Area=24,288 sf 52.42% Impervious Runoff Depth=3.44" Flow Length=82' Slope=0.0790 '/' Tc=6.0 min CN=76 Runoff=1.8 cfs 0.16 af
Subcatchment C3: SD1	Runoff Area=619 sf 87.40% Impervious Runoff Depth=5.83" Flow Length=15' Tc=6.0 min CN=98 Runoff=0.1 cfs 0.01 af
Subcatchment C4: SD2	Runoff Area=533 sf 85.18% Impervious Runoff Depth=5.83" Flow Length=15' Tc=6.0 min CN=98 Runoff=0.1 cfs 0.01 af
Subcatchment C5: SD3	Runoff Area=544 sf 88.24% Impervious Runoff Depth=5.83" Flow Length=15' Tc=6.0 min CN=98 Runoff=0.1 cfs 0.01 af
Reach R1: REACH 1	Avg. Flow Depth=0.04' Max Vel=2.24 fps Inflow=0.3 cfs 0.01 af n=0.022 L=190.0' S=0.1463 '/' Capacity=82.7 cfs Outflow=0.3 cfs 0.01 af
Pond BIO1: BIO-RETENTION BASIN 1	Peak Elev=33.90' Storage=1,672 cf Inflow=1.8 cfs 0.16 af Discarded=0.2 cfs 0.14 af Secondary=0.3 cfs 0.01 af Outflow=0.5 cfs 0.16 af
Pond BIO2: BIO-RETENTION BASIN 2	Peak Elev=35.81' Storage=480 cf Inflow=0.5 cfs 0.05 af Discarded=0.1 cfs 0.04 af Secondary=0.1 cfs 0.00 af Outflow=0.2 cfs 0.05 af
Pond SD1: SD1	Peak Elev=42.38' Storage=61 cf Inflow=0.1 cfs 0.01 af Discarded=0.0 cfs 0.01 af Primary=0.0 cfs 0.00 af Outflow=0.0 cfs 0.01 af
Pond SD2: SD2	Peak Elev=39.60' Storage=47 cf Inflow=0.1 cfs 0.01 af Discarded=0.0 cfs 0.01 af Primary=0.0 cfs 0.00 af Outflow=0.0 cfs 0.01 af
Pond SD3: SD3	Peak Elev=39.68' Storage=56 cf Inflow=0.1 cfs 0.01 af Discarded=0.0 cfs 0.01 af Primary=0.0 cfs 0.00 af Outflow=0.0 cfs 0.01 af
Link B: B	Inflow=0.5 cfs 0.05 af Primary=0.5 cfs 0.05 af
Link C: C	Inflow=0.6 cfs 0.08 af Primary=0.6 cfs 0.08 af

A – 2

NODE LISTING – 50-YR

23140-Post Report

23140 24-hr S1 50-yr Rainfall=7.27"

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Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 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 A: A	Runoff Area=3,293 sf 4.16% Impervious Runoff Depth=5.06" Flow Length=95' Slope=0.0650 '/' Tc=8.1 min CN=81 Runoff=0.3 cfs 0.03 af
Subcatchment B1: B1	Runoff Area=8,183 sf 29.93% Impervious Runoff Depth=3.74" Flow Length=113' Tc=6.0 min CN=69 Runoff=0.6 cfs 0.06 af
Subcatchment B2: BIO2	Runoff Area=5,449 sf 37.49% Impervious Runoff Depth=5.74" Flow Length=104' Tc=7.9 min CN=87 Runoff=0.6 cfs 0.06 af
Subcatchment C1: C1	Runoff Area=28,389 sf 16.34% Impervious Runoff Depth=1.91" Flow Length=372' Tc=10.4 min CN=51 Runoff=0.8 cfs 0.10 af
Subcatchment C2: BIO1	Runoff Area=24,288 sf 52.42% Impervious Runoff Depth=4.50" Flow Length=82' Slope=0.0790 '/' Tc=6.0 min CN=76 Runoff=2.2 cfs 0.21 af
Subcatchment C3: SD1	Runoff Area=619 sf 87.40% Impervious Runoff Depth=7.03" Flow Length=15' Tc=6.0 min CN=98 Runoff=0.1 cfs 0.01 af
Subcatchment C4: SD2	Runoff Area=533 sf 85.18% Impervious Runoff Depth=7.03" Flow Length=15' Tc=6.0 min CN=98 Runoff=0.1 cfs 0.01 af
Subcatchment C5: SD3	Runoff Area=544 sf 88.24% Impervious Runoff Depth=7.03" Flow Length=15' Tc=6.0 min CN=98 Runoff=0.1 cfs 0.01 af
Reach R1: REACH 1	Avg. Flow Depth=0.06' Max Vel=3.10 fps Inflow=0.9 cfs 0.04 af n=0.022 L=190.0' S=0.1463 '/' Capacity=82.7 cfs Outflow=0.9 cfs 0.04 af
Pond BIO1: BIO-RETENTION BASIN 1	Peak Elev=34.01' Storage=1,845 cf Inflow=2.2 cfs 0.21 af Discarded=0.2 cfs 0.17 af Secondary=0.9 cfs 0.04 af Outflow=1.1 cfs 0.21 af
Pond BIO2: BIO-RETENTION BASIN 2	Peak Elev=35.85' Storage=506 cf Inflow=0.6 cfs 0.06 af Discarded=0.1 cfs 0.05 af Secondary=0.3 cfs 0.01 af Outflow=0.4 cfs 0.06 af
Pond SD1: SD1	Peak Elev=42.60' Storage=78 cf Inflow=0.1 cfs 0.01 af Discarded=0.0 cfs 0.01 af Primary=0.0 cfs 0.00 af Outflow=0.0 cfs 0.01 af
Pond SD2: SD2	Peak Elev=39.77' Storage=61 cf Inflow=0.1 cfs 0.01 af Discarded=0.0 cfs 0.01 af Primary=0.0 cfs 0.00 af Outflow=0.0 cfs 0.01 af
Pond SD3: SD3	Peak Elev=39.80' Storage=64 cf Inflow=0.1 cfs 0.01 af Discarded=0.0 cfs 0.01 af Primary=0.0 cfs 0.00 af Outflow=0.0 cfs 0.01 af
Link B: B	Inflow=0.7 cfs 0.07 af Primary=0.7 cfs 0.07 af
Link C: C	Inflow=1.6 cfs 0.14 af Primary=1.6 cfs 0.14 af

APPENDIX B

DESIGN

B – 1

**STORMWATER BEST MANAGEMENT
PRACTICES**



INFILTRATION PRACTICE CRITERIA (Env-Wq 1508.06)

Type/Node Name: **STONE DRIPEDGE 1**

Enter the type of infiltration practice (e.g., basin, trench) and the node name in the drainage analysis, if applicable.

	Have you reviewed Env-Wq 1508.06(a) to ensure that infiltration is allowed?		← yes
0.01	ac	A = Area draining to the practice	
0.01	ac	A _I = Impervious area draining to the practice	
0.87	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.84	unitless	R _v = Runoff coefficient = 0.05 + (0.9 x I)	
0.01	ac-in	WQV = 1" x R _v x A	
43	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
11	cf	25% x WQV (check calc for sediment forebay volume)	
Roof Runoff		Method of pretreatment? (not required for clean or roof runoff)	
N/A	cf	V _{SED} = Sediment forebay volume, if used for pretreatment	≥ 25%WQV
78	cf	V = Volume ¹ (attach a stage-storage table)	≥ WQV
78	sf	A _{SA} = Surface area of the bottom of the pond	
4.50	iph	K _{sat} _{DESIGN} = Design infiltration rate ²	
1.5	hours	I _{DRAIN} = Drain time = V / (A _{SA} * I _{DESIGN})	≤ 72-hrs
41.60	feet	E _{BTM} = Elevation of the bottom of the basin	
36.83	feet	E _{SHWT} = Elevation of SHWT (if none found, enter the lowest elevation of the test pit)	
36.83	feet	E _{ROCK} = Elevation of bedrock (if none found, enter the lowest elevation of the test pit)	
4.77	feet	D _{SHWT} = Separation from SHWT	≥ * ³
4.8	feet	D _{ROCK} = Separation from bedrock	≥ * ³
	ft	D _{amend} = Depth of amended soil, if applicable due high infiltration rate	≥ 24"
	ft	D _T = Depth of trench, if trench proposed	4 - 10 ft
	Yes/No	If a trench or underground system is proposed, has observation well been provided?	← yes
		If a trench is proposed, does material meet Env-Wq 1508.06(k)(2) requirements. ⁴	← yes
	Yes/No	If a basin is proposed, Is the perimeter curvilinear, and basin floor flat?	← yes
	:1	If a basin is proposed, pond side slopes.	≥ 3:1
42.16	ft	Peak elevation of the 10-year storm event (infiltration can be used in analysis)	
42.60	ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
42.70	ft	Elevation of the top of the practice (if a basin, this is the elevation of the berm)	
YES		10 peak elevation ≤ Elevation of the top of the trench? ⁵	← yes
YES		If a basin is proposed, 50-year peak elevation ≤ Elevation of berm?	← yes

1. Volume below the lowest invert of the outlet structure and excludes forebay volume
2. K_{sat}_{DESIGN} includes a factor of safety. See Env-Wq 1504.14 for requirements for determining the infiltr. rate
3. 1' separation if treatment not required; 4' for treatment in GPAs & WSIPAs; & 3' in all other areas.
4. Clean, washed well graded diameter of 1.5 to 3 inches above the in-situ soil.
5. If 50-year peak elevation exceeds top of trench, the overflow must be routed in HydroCAD as secondary discharge.

Designer's Notes:

23140-Post Report23140 24-hr S1 **10-yr** Rainfall=4.79"

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Summary for Pond SD1: SD1

Inflow Area = 0.014 ac, 87.40% Impervious, Inflow Depth = 4.55" for 10-yr event
 Inflow = 0.1 cfs @ 12.04 hrs, Volume= 0.01 af
 Outflow = 0.0 cfs @ 11.60 hrs, Volume= 0.01 af, Atten= 85%, Lag= 0.0 min
 Discarded = 0.0 cfs @ 11.60 hrs, Volume= 0.01 af
 Primary = 0.0 cfs @ 0.00 hrs, Volume= 0.00 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Peak Elev= 42.16' @ 12.61 hrs Surf.Area= 78 sf Storage= 44 cf

Flood Elev= 42.70' Surf.Area= 78 sf Storage= 86 cf

Plug-Flow detention time= 25.2 min calculated for 0.01 af (100% of inflow)

Center-of-Mass det. time= 25.2 min (776.2 - 751.0)

Volume	Invert	Avail.Storage	Storage Description
#1	41.60'	86 cf	Rain Garden (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
41.60	78	82.0	0.0	0	0	78
42.60	78	82.0	100.0	78	78	160
42.70	78	82.0	100.0	8	86	168

Device	Routing	Invert	Outlet Devices
#1	Discarded	41.60'	4.500 in/hr Exfiltration over Surface area Phase-In= 0.01'
#2	Primary	42.60'	179.0 deg x 38.0' long Sharp-Crested Vee/Trap Weir Cv= 2.46 (C= 3.08)

Discarded OutFlow Max=0.0 cfs @ 11.60 hrs HW=41.61' (Free Discharge)↑**1=Exfiltration** (Exfiltration Controls 0.0 cfs)**Primary OutFlow** Max=0.0 cfs @ 0.00 hrs HW=41.60' TW=30.08' (Dynamic Tailwater)↑**2=Sharp-Crested Vee/Trap Weir** (Controls 0.0 cfs)

23140-Post Report23140 24-hr S1 **50-yr** Rainfall=7.27"

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Summary for Pond SD1: SD1

Inflow Area = 0.014 ac, 87.40% Impervious, Inflow Depth = 7.03" for 50-yr event
 Inflow = 0.1 cfs @ 12.04 hrs, Volume= 0.01 af
 Outflow = 0.0 cfs @ 12.69 hrs, Volume= 0.01 af, Atten= 86%, Lag= 39.5 min
 Discarded = 0.0 cfs @ 11.26 hrs, Volume= 0.01 af
 Primary = 0.0 cfs @ 12.69 hrs, Volume= 0.00 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Peak Elev= 42.60' @ 12.69 hrs Surf.Area= 78 sf Storage= 78 cf

Flood Elev= 42.70' Surf.Area= 78 sf Storage= 86 cf

Plug-Flow detention time= 53.2 min calculated for 0.01 af (100% of inflow)

Center-of-Mass det. time= 53.1 min (796.8 - 743.6)

Volume	Invert	Avail.Storage	Storage Description
#1	41.60'	86 cf	Rain Garden (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
41.60	78	82.0	0.0	0	0	78
42.60	78	82.0	100.0	78	78	160
42.70	78	82.0	100.0	8	86	168

Device	Routing	Invert	Outlet Devices
#1	Discarded	41.60'	4.500 in/hr Exfiltration over Surface area Phase-In= 0.01'
#2	Primary	42.60'	179.0 deg x 38.0' long Sharp-Crested Vee/Trap Weir Cv= 2.46 (C= 3.08)

Discarded OutFlow Max=0.0 cfs @ 11.26 hrs HW=41.61' (Free Discharge)↑**1=Exfiltration** (Exfiltration Controls 0.0 cfs)**Primary OutFlow** Max=0.0 cfs @ 12.69 hrs HW=42.60' TW=33.89' (Dynamic Tailwater)↑**2=Sharp-Crested Vee/Trap Weir** (Weir Controls 0.0 cfs @ 0.08 fps)



INFILTRATION PRACTICE CRITERIA (Env-Wq 1508.06)

Type/Node Name: **STONE DRIPEDGE 2**

Enter the type of infiltration practice (e.g., basin, trench) and the node name in the drainage analysis, if applicable.

	Have you reviewed Env-Wq 1508.06(a) to ensure that infiltration is allowed?		← yes
0.01	ac	A = Area draining to the practice	
0.01	ac	A _I = Impervious area draining to the practice	
0.85	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.82	unitless	R _v = Runoff coefficient = 0.05 + (0.9 x I)	
0.01	ac-in	WQV = 1" x R _v x A	
36	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
9	cf	25% x WQV (check calc for sediment forebay volume)	
Roof Runoff		Method of pretreatment? (not required for clean or roof runoff)	
N/A	cf	V _{SED} = Sediment forebay volume, if used for pretreatment	≥ 25%WQV
79	cf	V = Volume ¹ (attach a stage-storage table)	≥ WQV
79	sf	A _{SA} = Surface area of the bottom of the pond	
4.50	iph	K _{sat} _{DESIGN} = Design infiltration rate ²	
1.2	hours	I _{DRAIN} = Drain time = V / (A _{SA} * I _{DESIGN})	≤ 72-hrs
39.00	feet	E _{BTM} = Elevation of the bottom of the basin	
34.93	feet	E _{SHWT} = Elevation of SHWT (if none found, enter the lowest elevation of the test pit)	
34.93	feet	E _{ROCK} = Elevation of bedrock (if none found, enter the lowest elevation of the test pit)	
4.07	feet	D _{SHWT} = Separation from SHWT	≥ * ³
4.1	feet	D _{ROCK} = Separation from bedrock	≥ * ³
	ft	D _{amend} = Depth of amended soil, if applicable due high infiltration rate	≥ 24"
	ft	D _T = Depth of trench, if trench proposed	4 - 10 ft
	Yes/No	If a trench or underground system is proposed, has observation well been provided?	← yes
		If a trench is proposed, does material meet Env-Wq 1508.06(k)(2) requirements. ⁴	← yes
	Yes/No	If a basin is proposed, Is the perimeter curvilinear, and basin floor flat?	← yes
	:1	If a basin is proposed, pond side slopes.	≥ 3:1
39.42	ft	Peak elevation of the 10-year storm event (infiltration can be used in analysis)	
39.77	ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
40.10	ft	Elevation of the top of the practice (if a basin, this is the elevation of the berm)	
YES		10 peak elevation ≤ Elevation of the top of the trench? ⁵	← yes
YES		If a basin is proposed, 50-year peak elevation ≤ Elevation of berm?	← yes

1. Volume below the lowest invert of the outlet structure and excludes forebay volume
2. K_{sat}_{DESIGN} includes a factor of safety. See Env-Wq 1504.14 for requirements for determining the infiltr. rate
3. 1' separation if treatment not required; 4' for treatment in GPAs & WSIPAs; & 3' in all other areas.
4. Clean, washed well graded diameter of 1.5 to 3 inches above the in-situ soil.
5. If 50-year peak elevation exceeds top of trench, the overflow must be routed in HydroCAD as secondary discharge.

Designer's Notes:

23140-Post Report23140 24-hr S1 **10-yr** Rainfall=4.79"

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Summary for Pond SD2: SD2

Inflow Area = 0.012 ac, 85.18% Impervious, Inflow Depth = 4.55" for 10-yr event
 Inflow = 0.0 cfs @ 12.04 hrs, Volume= 0.00 af
 Outflow = 0.0 cfs @ 11.66 hrs, Volume= 0.00 af, Atten= 83%, Lag= 0.0 min
 Discarded = 0.0 cfs @ 11.66 hrs, Volume= 0.00 af
 Primary = 0.0 cfs @ 0.00 hrs, Volume= 0.00 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Peak Elev= 39.42' @ 12.57 hrs Surf.Area= 79 sf Storage= 33 cf

Flood Elev= 40.10' Surf.Area= 79 sf Storage= 87 cf

Plug-Flow detention time= 17.6 min calculated for 0.00 af (100% of inflow)

Center-of-Mass det. time= 17.6 min (768.6 - 751.0)

Volume	Invert	Avail.Storage	Storage Description			
#1	39.00'	87 cf	Rain Garden (Irregular) Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
39.00	79	83.0	0.0	0	0	79
40.00	79	83.0	100.0	79	79	162
40.10	79	83.0	100.0	8	87	170

Device	Routing	Invert	Outlet Devices	
#1	Discarded	39.00'	4.500 in/hr Exfiltration over Surface area Phase-In= 0.01'	
#2	Primary	40.00'	179.0 deg x 37.0' long Sharp-Crested Vee/Trap Weir	
			Cv= 2.46 (C= 3.08)	

Discarded OutFlow Max=0.0 cfs @ 11.66 hrs HW=39.01' (Free Discharge)↑**1=Exfiltration** (Exfiltration Controls 0.0 cfs)**Primary OutFlow** Max=0.0 cfs @ 0.00 hrs HW=39.00' TW=30.08' (Dynamic Tailwater)↑**2=Sharp-Crested Vee/Trap Weir** (Controls 0.0 cfs)

23140-Post Report23140 24-hr S1 **50-yr** Rainfall=7.27"

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Summary for Pond SD2: SD2

Inflow Area = 0.012 ac, 85.18% Impervious, Inflow Depth = 7.03" for 50-yr event
 Inflow = 0.1 cfs @ 12.04 hrs, Volume= 0.01 af
 Outflow = 0.0 cfs @ 11.46 hrs, Volume= 0.01 af, Atten= 87%, Lag= 0.0 min
 Discarded = 0.0 cfs @ 11.46 hrs, Volume= 0.01 af
 Primary = 0.0 cfs @ 0.00 hrs, Volume= 0.00 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Peak Elev= 39.77' @ 12.77 hrs Surf.Area= 79 sf Storage= 61 cf

Flood Elev= 40.10' Surf.Area= 79 sf Storage= 87 cf

Plug-Flow detention time= 37.5 min calculated for 0.01 af (100% of inflow)

Center-of-Mass det. time= 37.5 min (781.1 - 743.6)

Volume	Invert	Avail.Storage	Storage Description			
#1	39.00'	87 cf	Rain Garden (Irregular) Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
39.00	79	83.0	0.0	0	0	79
40.00	79	83.0	100.0	79	79	162
40.10	79	83.0	100.0	8	87	170

Device	Routing	Invert	Outlet Devices	
#1	Discarded	39.00'	4.500 in/hr Exfiltration over Surface area Phase-In= 0.01'	
#2	Primary	40.00'	179.0 deg x 37.0' long Sharp-Crested Vee/Trap Weir	
			Cv= 2.46 (C= 3.08)	

Discarded OutFlow Max=0.0 cfs @ 11.46 hrs HW=39.01' (Free Discharge)↑**1=Exfiltration** (Exfiltration Controls 0.0 cfs)**Primary OutFlow** Max=0.0 cfs @ 0.00 hrs HW=39.00' TW=30.08' (Dynamic Tailwater)↑**2=Sharp-Crested Vee/Trap Weir** (Controls 0.0 cfs)



INFILTRATION PRACTICE CRITERIA (Env-Wq 1508.06)

Type/Node Name: **STONE DRIPEDGE 3**

Enter the type of infiltration practice (e.g., basin, trench) and the node name in the drainage analysis, if applicable.

	Have you reviewed Env-Wq 1508.06(a) to ensure that infiltration is allowed?		← yes
0.01	ac	A = Area draining to the practice	
0.01	ac	A _I = Impervious area draining to the practice	
0.88	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.84	unitless	R _v = Runoff coefficient = 0.05 + (0.9 x I)	
0.01	ac-in	WQV = 1" x R _v x A	
37	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
9	cf	25% x WQV (check calc for sediment forebay volume)	
Roof Runoff		Method of pretreatment? (not required for clean or roof runoff)	
N/A	cf	V _{SED} = Sediment forebay volume, if used for pretreatment	≥ 25%WQV
64	cf	V = Volume ¹ (attach a stage-storage table)	≥ WQV
64	sf	A _{SA} = Surface area of the bottom of the pond	
4.50	iph	K _{sat} _{DESIGN} = Design infiltration rate ²	
1.5	hours	I _{DRAIN} = Drain time = V / (A _{SA} * I _{DESIGN})	≤ 72-hrs
38.80	feet	E _{BTM} = Elevation of the bottom of the basin	
32.83	feet	E _{SHWT} = Elevation of SHWT (if none found, enter the lowest elevation of the test pit)	
32.83	feet	E _{ROCK} = Elevation of bedrock (if none found, enter the lowest elevation of the test pit)	
5.97	feet	D _{SHWT} = Separation from SHWT	≥ * ³
6.0	feet	D _{ROCK} = Separation from bedrock	≥ * ³
	ft	D _{amend} = Depth of amended soil, if applicable due high infiltration rate	≥ 24"
	ft	D _T = Depth of trench, if trench proposed	4 - 10 ft
	Yes/No	If a trench or underground system is proposed, has observation well been provided?	← yes
		If a trench is proposed, does material meet Env-Wq 1508.06(k)(2) requirements. ⁴	← yes
	Yes/No	If a basin is proposed, Is the perimeter curvilinear, and basin floor flat?	← yes
	:1	If a basin is proposed, pond side slopes.	≥ 3:1
39.43	ft	Peak elevation of the 10-year storm event (infiltration can be used in analysis)	
39.80	ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
39.90	ft	Elevation of the top of the practice (if a basin, this is the elevation of the berm)	
YES		10 peak elevation ≤ Elevation of the top of the trench? ⁵	← yes
YES		If a basin is proposed, 50-year peak elevation ≤ Elevation of berm?	← yes

1. Volume below the lowest invert of the outlet structure and excludes forebay volume
2. K_{sat}_{DESIGN} includes a factor of safety. See Env-Wq 1504.14 for requirements for determining the infiltr. rate
3. 1' separation if treatment not required; 4' for treatment in GPAs & WSIPAs; & 3' in all other areas.
4. Clean, washed well graded diameter of 1.5 to 3 inches above the in-situ soil.
5. If 50-year peak elevation exceeds top of trench, the overflow must be routed in HydroCAD as secondary discharge.

Designer's Notes: _____

23140-Post Report23140 24-hr S1 **10-yr** Rainfall=4.79"

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Summary for Pond SD3: SD3

Inflow Area = 0.012 ac, 88.24% Impervious, Inflow Depth = 4.55" for 10-yr event
 Inflow = 0.0 cfs @ 12.04 hrs, Volume= 0.00 af
 Outflow = 0.0 cfs @ 11.58 hrs, Volume= 0.00 af, Atten= 86%, Lag= 0.0 min
 Discarded = 0.0 cfs @ 11.58 hrs, Volume= 0.00 af
 Primary = 0.0 cfs @ 0.00 hrs, Volume= 0.00 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Peak Elev= 39.43' @ 12.64 hrs Surf.Area= 64 sf Storage= 40 cf

Flood Elev= 39.90' Surf.Area= 64 sf Storage= 70 cf

Plug-Flow detention time= 29.2 min calculated for 0.00 af (100% of inflow)

Center-of-Mass det. time= 29.2 min (780.2 - 751.0)

Volume	Invert	Avail.Storage	Storage Description			
#1	38.80'	70 cf	Rain Garden (Irregular) Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
38.80	64	68.0	0.0	0	0	64
39.80	64	68.0	100.0	64	64	132
39.90	64	68.0	100.0	6	70	139

Device	Routing	Invert	Outlet Devices	
#1	Discarded	38.80'	4.500 in/hr Exfiltration over Surface area Phase-In= 0.01'	
#2	Primary	39.80'	179.0 deg x 32.0' long Sharp-Crested Vee/Trap Weir	
			Cv= 2.46 (C= 3.08)	

Discarded OutFlow Max=0.0 cfs @ 11.58 hrs HW=38.81' (Free Discharge)↑ **1=Exfiltration** (Exfiltration Controls 0.0 cfs)**Primary OutFlow** Max=0.0 cfs @ 0.00 hrs HW=38.80' TW=30.08' (Dynamic Tailwater)↑ **2=Sharp-Crested Vee/Trap Weir** (Controls 0.0 cfs)

23140-Post Report23140 24-hr S1 **50-yr** Rainfall=7.27"

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Summary for Pond SD3: SD3

Inflow Area = 0.012 ac, 88.24% Impervious, Inflow Depth = 7.03" for 50-yr event
 Inflow = 0.1 cfs @ 12.04 hrs, Volume= 0.01 af
 Outflow = 0.0 cfs @ 12.39 hrs, Volume= 0.01 af, Atten= 75%, Lag= 21.3 min
 Discarded = 0.0 cfs @ 11.15 hrs, Volume= 0.01 af
 Primary = 0.0 cfs @ 12.39 hrs, Volume= 0.00 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Peak Elev= 39.80' @ 12.39 hrs Surf.Area= 64 sf Storage= 64 cf

Flood Elev= 39.90' Surf.Area= 64 sf Storage= 70 cf

Plug-Flow detention time= 53.0 min calculated for 0.01 af (100% of inflow)

Center-of-Mass det. time= 53.0 min (796.6 - 743.6)

Volume	Invert	Avail.Storage	Storage Description			
#1	38.80'	70 cf	Rain Garden (Irregular) Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
38.80	64	68.0	0.0	0	0	64
39.80	64	68.0	100.0	64	64	132
39.90	64	68.0	100.0	6	70	139

Device	Routing	Invert	Outlet Devices	
#1	Discarded	38.80'	4.500 in/hr Exfiltration over Surface area Phase-In= 0.01'	
#2	Primary	39.80'	179.0 deg x 32.0' long Sharp-Crested Vee/Trap Weir	
			Cv= 2.46 (C= 3.08)	

Discarded OutFlow Max=0.0 cfs @ 11.15 hrs HW=38.81' (Free Discharge)↑**1=Exfiltration** (Exfiltration Controls 0.0 cfs)**Primary OutFlow** Max=0.0 cfs @ 12.39 hrs HW=39.80' TW=33.94' (Dynamic Tailwater)↑**2=Sharp-Crested Vee/Trap Weir** (Weir Controls 0.0 cfs @ 0.14 fps)



FILTRATION PRACTICE DESIGN CRITERIA (Env-Wq 1508.07)

Type/Node Name:

BIO-RETENTION BASIN 1

Enter the type of filtration practice (e.g., bioretention system) and the node name in the drainage analysis, if applicable.

		Check if you reviewed the restrictions on unlined systems outlined in Env-Wq 1508.07(a).	
0.56	ac	A = Area draining to the practice	
0.29	ac	A _I = Impervious area draining to the practice	
0.52	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.52	unitless	R _v = Runoff coefficient = 0.05 + (0.9 x I)	
0.29	ac-in	WQV = 1" x R _v x A	
1,057	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
264	cf	25% x WQV (check calc for sediment forebay volume)	
793	cf	75% x WQV (check calc for surface sand filter volume)	
Rainguardian		Method of Pretreatment? (not required for clean or roof runoff)	
N/A	cf	V _{SED} = Sediment forebay volume, if used for pretreatment	≥ 25%WQV
Calculate time to drain if system IS NOT underdrained:			
916	sf	A _{SA} = Surface area of the practice	
4.50	iph	K _{sat} _{DESIGN} = Design infiltration rate ¹	
		If K _{sat} (prior to factor of safety) is < 0.50 iph, has an underdrain been provided?	
NO	Yes/No	(Use the calculations below)	
3.1	hours	T _{DRAIN} = Drain time = V / (A _{SA} * I _{DESIGN})	≤ 72-hrs
Calculate time to drain if system IS underdrained:			
	ft	E _{WQV} = Elevation of WQV (attach stage-storage table)	
	cfs	Q _{WQV} = Discharge at the E _{WQV} (attach stage-discharge table)	
-	hours	T _{DRAIN} = Drain time = 2WQV/Q _{WQV}	≤ 72-hrs
31.50	feet	E _{FC} = Elevation of the bottom of the filter course material ²	
	feet	E _{UD} = Invert elevation of the underdrain (UD), if applicable	
29.80	feet	E _{SHWT} = Elevation of SHWT (if none found, enter the lowest elevation of the test pit)	
26.13	feet	E _{ROCK} = Elevation of bedrock (if none found, enter the lowest elevation of the test pit)	
31.50	feet	D _{FC to UD} = Depth to UD from the bottom of the filter course	≥ 1'
5.37	feet	D _{FC to ROCK} = Depth to bedrock from the bottom of the filter course	≥ 1'
1.70	feet	D _{FC to SHWT} = Depth to SHWT from the bottom of the filter course	≥ 1'
34.01	ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
34.25	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

YES	ac	Drainage Area no larger than 5 ac?	← yes
1,093	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		Note what sheet in the plan set contains the filter course specification	
3.0	:1	Pond side slopes	≥ 3:1
Sheet		Note what sheet in the plan set contains the planting plans and surface cover	
If porous pavement is proposed:			
	acres	Type of pavement proposed (Concrete? Asphalt? Pavers? Etc.) 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
Sheet		Note what sheet in the plan set contains the filter course spec.	mod. 304.1 (see spec)

- Designer's Notes:

23140-Post Report23140 24-hr S1 **50-yr** Rainfall=7.27"

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Summary for Pond BIO1: BIO-RETENTION BASIN 1

Inflow Area = 0.597 ac, 54.68% Impervious, Inflow Depth = 4.21" for 50-yr event
 Inflow = 2.2 cfs @ 12.04 hrs, Volume= 0.21 af
 Outflow = 1.1 cfs @ 12.17 hrs, Volume= 0.21 af, Atten= 50%, Lag= 8.0 min
 Discarded = 0.2 cfs @ 12.17 hrs, Volume= 0.17 af
 Secondary = 0.9 cfs @ 12.17 hrs, Volume= 0.04 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Peak Elev= 34.01' @ 12.17 hrs Surf.Area= 1,682 sf Storage= 1,845 cf**Flood Elev= 34.25'** Surf.Area= 2,165 sf Storage= 2,308 cf

Plug-Flow detention time= 90.6 min calculated for 0.21 af (100% of inflow)

Center-of-Mass det. time= 90.6 min (937.1 - 846.5)

Volume	Invert	Avail.Storage	Storage Description			
#1	30.08'	2,308 cf	Rain Garden (Irregular) Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
30.08	916	200.4	0.0	0	0	916
31.25	916	200.4	35.0	375	375	1,150
31.50	916	200.4	20.0	46	421	1,201
33.00	916	200.4	10.0	137	558	1,501
34.00	1,665	243.1	100.0	1,272	1,830	3,024
34.25	2,165	256.5	100.0	477	2,308	3,561

Device	Routing	Invert	Outlet Devices													
#1	Discarded	30.08'	4.500 in/hr Exfiltration over Surface area Phase-In= 0.01'													
#2	Secondary	33.80'	4.0' long x 4.0' breadth Broad-Crested Rectangular Weir													
			Head (feet)	0.20	0.40	0.60	0.80	1.00	1.20	1.40	1.60	1.80	2.00			
				2.50	3.00	3.50	4.00	4.50	5.00	5.50						
			Coef. (English)	2.38	2.54	2.69	2.68	2.67	2.67	2.65	2.66	2.66	2.68			
				2.72	2.73	2.76	2.79	2.88	3.07	3.32						

Discarded OutFlow Max=0.2 cfs @ 12.17 hrs HW=34.01' (Free Discharge)↑ **1=Exfiltration** (Exfiltration Controls 0.2 cfs)**Secondary OutFlow** Max=0.9 cfs @ 12.17 hrs HW=34.01' TW=33.76' (Dynamic Tailwater)↑ **2=Broad-Crested Rectangular Weir** (Weir Controls 0.9 cfs @ 1.09 fps)

23140-Post Report

23140 24-hr S1 50-yr Rainfall=7.27"

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Stage-Area-Storage for Pond BIO1: BIO-RETENTION BASIN 1 (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
33.32	1,132	885	33.86	1,547	1,606
33.33	1,139	897	33.87	1,555	1,621
33.34	1,146	908	33.88	1,563	1,637
33.35	1,153	920	33.89	1,572	1,652
33.36	1,160	931	33.90	1,580	1,668
33.37	1,167	943	33.91	1,588	1,684
33.38	1,174	954	33.92	1,597	1,700
33.39	1,182	966	33.93	1,605	1,716
33.40	1,189	978	33.94	1,614	1,732
33.41	1,196	990	33.95	1,622	1,748
33.42	1,204	1,002	33.96	1,631	1,764
33.43	1,211	1,014	33.97	1,639	1,781
33.44	1,218	1,026	33.98	1,648	1,797
33.45	1,226	1,038	33.99	1,656	1,814
33.46	1,233	1,051	34.00	1,665	1,830
33.47	1,240	1,063	34.01	1,684	1,847
33.48	1,248	1,076	34.02	1,703	1,864
33.49	1,255	1,088	34.03	1,722	1,881
33.50	1,263	1,101	34.04	1,741	1,898
33.51	1,270	1,113	34.05	1,760	1,916
33.52	1,278	1,126	34.06	1,779	1,934
33.53	1,285	1,139	34.07	1,798	1,951
33.54	1,293	1,152	34.08	1,818	1,970
33.55	1,300	1,165	34.09	1,837	1,988
33.56	1,308	1,178	34.10	1,857	2,006
33.57	1,316	1,191	34.11	1,877	2,025
33.58	1,323	1,204	34.12	1,897	2,044
33.59	1,331	1,217	34.13	1,917	2,063
33.60	1,339	1,231	34.14	1,937	2,082
33.61	1,346	1,244	34.15	1,957	2,102
33.62	1,354	1,258	34.16	1,977	2,121
33.63	1,362	1,271	34.17	1,998	2,141
33.64	1,370	1,285	34.18	2,018	2,161
33.65	1,378	1,299	34.19	2,039	2,182
33.66	1,385	1,312	34.20	2,060	2,202
33.67	1,393	1,326	34.21	2,081	2,223
33.68	1,401	1,340	34.22	2,102	2,244
33.69	1,409	1,354	34.23	2,123	2,265
33.70	1,417	1,368	34.24	2,144	2,286
33.71	1,425	1,383	34.25	2,165	2,308
33.72	1,433	1,397			
33.73	1,441	1,411			
33.74	1,449	1,426			
33.75	1,457	1,440			
33.76	1,465	1,455			
33.77	1,473	1,470			
33.78	1,481	1,484			
33.79	1,489	1,499			
33.80	1,497	1,514			
33.81	1,506	1,529			
33.82	1,514	1,544			
33.83	1,522	1,559			
33.84	1,530	1,575			
33.85	1,538	1,590			

WQV Calculations:

1,514 cf

-375 cf

-46 cf

WQV = 1,093 cf



FILTRATION PRACTICE DESIGN CRITERIA (Env-Wq 1508.07)

Type/Node Name:

BIO-RETENTION BASIN 2

Enter the type of filtration practice (e.g., bioretention system) and the node name in the drainage analysis, if applicable.

	Check if you reviewed the restrictions on unlined systems outlined in Env-Wq 1508.07(a).	
0.13 ac	A = Area draining to the practice	
0.05 ac	A_i = Impervious area draining to the practice	
0.37 decimal	I = Percent impervious area draining to the practice, in decimal form	
0.39 unitless	R_v = Runoff coefficient = $0.05 + (0.9 \times I)$	
0.05 ac-in	WQV = 1" x R_v x A	
176 cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
44 cf	25% x WQV (check calc for sediment forebay volume)	
132 cf	75% x WQV (check calc for surface sand filter volume)	
Not Applicable	Method of Pretreatment? (not required for clean or roof runoff)	
N/A cf	V_{SED} = Sediment forebay volume, if used for pretreatment	≥ 25%WQV
Calculate time to drain if system IS NOT underdrained:		
274 sf	A_{SA} = Surface area of the practice	
4.50 iph	K_{sat_DESIGN} = Design infiltration rate ¹	
	If K_{sat} (prior to factor of safety) is < 0.50 iph, has an underdrain been provided?	
NO Yes/No	(Use the calculations below)	
1.7 hours	T_{DRAIN} = Drain time = $V / (A_{SA} * I_{DESIGN})$	≤ 72-hrs
Calculate time to drain if system IS underdrained:		
ft	E_{WQV} = Elevation of WQV (attach stage-storage table)	
cfs	Q_{WQV} = Discharge at the E_{WQV} (attach stage-discharge table)	
- hours	T_{DRAIN} = Drain time = $2WQV/Q_{WQV}$	≤ 72-hrs
33.50 feet	E_{FC} = Elevation of the bottom of the filter course material ²	
feet	E_{UD} = Invert elevation of the underdrain (UD), if applicable	
31.40 feet	E_{SHWT} = Elevation of SHWT (if none found, enter the lowest elevation of the test pit)	
30.57 feet	E_{ROCK} = Elevation of bedrock (if none found, enter the lowest elevation of the test pit)	
33.50 feet	$D_{FC\ to\ UD}$ = Depth to UD from the bottom of the filter course	≥ 1'
2.93 feet	$D_{FC\ to\ ROCK}$ = Depth to bedrock from the bottom of the filter course	≥ 1'
2.10 feet	$D_{FC\ to\ SHWT}$ = Depth to SHWT from the bottom of the filter course	≥ 1'
35.85 ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
36.25 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

YES	ac	Drainage Area no larger than 5 ac?	← yes
326	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		Note what sheet in the plan set contains the filter course specification	
3.0	:1	Pond side slopes	≥ 3:1
Sheet		Note what sheet in the plan set contains the planting plans and surface cover	
If porous pavement is proposed:			
	acres	Type of pavement proposed (Concrete? Asphalt? Pavers? Etc.) 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
Sheet		Note what sheet in the plan set contains the filter course spec.	mod. 304.1 (see spec)

- Designer's Notes:

23140-Post Report23140 24-hr S1 **50-yr** Rainfall=7.27"

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Summary for Pond BIO2: BIO-RETENTION BASIN 2

Inflow Area = 0.125 ac, 37.49% Impervious, Inflow Depth = 5.74" for 50-yr event
 Inflow = 0.6 cfs @ 12.06 hrs, Volume= 0.06 af
 Outflow = 0.4 cfs @ 12.15 hrs, Volume= 0.06 af, Atten= 32%, Lag= 5.6 min
 Discarded = 0.1 cfs @ 12.15 hrs, Volume= 0.05 af
 Secondary = 0.3 cfs @ 12.15 hrs, Volume= 0.01 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Peak Elev= 35.85' @ 12.15 hrs Surf.Area= 533 sf Storage= 506 cf**Flood Elev= 36.25'** Surf.Area= 825 sf Storage= 763 cf

Plug-Flow detention time= 74.5 min calculated for 0.06 af (100% of inflow)

Center-of-Mass det. time= 74.5 min (881.4 - 806.9)

Volume	Invert	Avail.Storage	Storage Description			
#1	32.08'	763 cf	Rain Garden (Irregular) Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
32.08	274	80.8	0.0	0	0	274
33.25	274	80.8	35.0	112	112	369
33.50	274	80.8	20.0	14	126	389
35.00	274	80.8	10.0	41	167	510
36.00	586	113.2	100.0	420	587	1,019
36.25	825	125.8	100.0	176	763	1,261

Device	Routing	Invert	Outlet Devices													
#1	Discarded	32.08'	4.500 in/hr Exfiltration over Surface area Phase-In= 0.01'													
#2	Secondary	35.75'	4.0' long x 4.0' breadth Broad-Crested Rectangular Weir													
			Head (feet)	0.20	0.40	0.60	0.80	1.00	1.20	1.40	1.60	1.80	2.00			
				2.50	3.00	3.50	4.00	4.50	5.00	5.50						
			Coef. (English)	2.38	2.54	2.69	2.68	2.67	2.67	2.65	2.66	2.66	2.68			
				2.72	2.73	2.76	2.79	2.88	3.07	3.32						

Discarded OutFlow Max=0.1 cfs @ 12.15 hrs HW=35.85' (Free Discharge)↑**1=Exfiltration** (Exfiltration Controls 0.1 cfs)**Secondary OutFlow** Max=0.3 cfs @ 12.15 hrs HW=35.85' TW=0.00' (Dynamic Tailwater)↑**2=Broad-Crested Rectangular Weir** (Weir Controls 0.3 cfs @ 0.77 fps)

23140-Post Report

23140 24-hr S1 50-yr Rainfall=7.27"

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Stage-Area-Storage for Pond BIO2: BIO-RETENTION BASIN 2 (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
35.32	361	268	35.86	535	509
35.33	364	272	35.87	539	514
35.34	367	276	35.88	542	520
35.35	370	279	35.89	546	525
35.36	373	283	35.90	550	530
35.37	376	287	35.91	553	536
35.38	379	290	35.92	557	542
35.39	382	294	35.93	560	547
35.40	385	298	35.94	564	553
35.41	388	302	35.95	568	558
35.42	391	306	35.96	571	564
35.43	394	310	35.97	575	570
35.44	397	314	35.98	579	576
35.45	400	318	35.99	582	581
35.46	403	322	36.00	586	587
35.47	406	326	36.01	595	593
35.48	409	330	36.02	604	599
35.49	412	334	36.03	613	605
35.50	415	338	36.04	621	611
35.51	418	342	36.05	631	618
35.52	422	346	36.06	640	624
35.53	425	351	36.07	649	630
35.54	428	355	36.08	658	637
35.55	431	359	36.09	667	644
35.56	434	364	36.10	677	650
35.57	437	368	36.11	686	657
35.58	441	372	36.12	696	664
35.59	444	377	36.13	705	671
35.60	447	381	36.14	715	678
35.61	450	386	36.15	725	685
35.62	454	390	36.16	734	693
35.63	457	395	36.17	744	700
35.64	460	399	36.18	754	708
35.65	463	404	36.19	764	715
35.66	467	409	36.20	774	723
35.67	470	413	36.21	784	731
35.68	473	418	36.22	794	738
35.69	477	423	36.23	804	746
35.70	480	428	36.24	815	755
35.71	483	432	36.25	825	763
35.72	487	437			
35.73	490	442			
35.74	494	447			
35.75	497	452			
35.76	500	457			
35.77	504	462			
35.78	507	467			
35.79	511	472			
35.80	514	477			
35.81	518	482			
35.82	521	488			
35.83	525	493			
35.84	528	498			
35.85	532	503			

WQV Calculations:

452 cf

-112 cf

-14 cf

WQV = 326 cf

B – 2

POLLUTANT REMOVAL

CIVILWORKS NEW ENGLAND

181 WATSON ROAD
P.O. BOX 1166
DOVER, NH 03821-1166
PHONE: 603.749.0443

Objective: In accordance with Chapter 153-14.A.3.b.1 runoff from impervious surfaces shall be treated to provide 80% removal of total suspended solids (TSS) and 50% removal of both total nitrogen and phosphorus using appropriate treatment measures as specified in the NH Stormwater Manual, Volumes 1 and 2, December 2008, as amended.

Narrative: The proposed project is located at 306 Dover Point Road in Dover, NH. The existing site is currently developed as residential with a single-family home, a detached garage, and two paved driveways. The proposed project consists of the demolition of the two (2) existing structures, site improvements associated with the construction of 3 residential structures, site access, driveways, walkways, grading and drainage, and utilities. The development includes 0.448 acres of new impervious area, of which 0.373 acres (Driveway=0.240 acres, Roofs=0.133 acres) is being treated through two (2) Bio-Retention basins, and a stone drip edge around one of the proposed buildings.

Pollutant Loads: Pollutant loads were calculated in accordance with NH Stormwater Manual, Volume 1, December 2008 utilizing the Simple Method.

Polutant Load Equations		
Annual Load - Simple Method Equation:	$L = 0.226 * R * C * A$	
	L	Annual Load (lbs/yr)
	0.226	Unit Conversion Constant
	R	Annual Runoff (in)
	C	Pollutant Concentration (mg/l)
	A	Area (ac)
Annual Runoff (R) Equation:	$R = P * P_j * R_v$	
	R	Annual Runoff (in)
	P	Annual Rainfall (in)
	P _j	Rainfall Runoff Fraction (0.9)
	R _v	Runoff Coefficient
Runoff Coefficient (R _v) Equation:	$R_v = 0.05 + 0.9I_a$	
	R _v	Runoff Coefficient
	I _a	% Impervious Area (decimal form)

Runoff Coefficient (R_v): Dover requires the treatment of impervious surfaces therefore the % Impervious Area (I_a) in decimal form is 1.

$$R_v = 0.05 + 0.9(1) = 0.95$$

Annual Runoff (R): U.S. Climate Data (<https://www.usclimatedata.com/climate/madbury/new-hampshire/united-states/usnh0285>) provides an average annual precipitation for Madbury, NH of 47.31 inches.

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DOVER, NH 03821-1166
PHONE: 603.749.0443

$$R = 47.31 \text{ in} * 0.9 * 0.95 = 40.45 \text{ in}$$

Annual Load (L): Utilizing the sites impervious area of 0.448 ac and the Event Mean Concentrations identified in Appendix D of the NH Stormwater Manual, Volume 1, December 2008 for Residential Roof (19 mg/L TSS, 1.50 mg/L TN, and 0.11 mg/L TP) and Driveway (173 mg/L TSS, 2.10 mg/L TN, and 0.56 mg/L TP) provides the following pollutant loads for the impervious development of the parcel.

Residential Roof:

$$L_{TSS} = 0.226 * 40.45 \text{ in} * 19 \text{ mg/L} * 0.192 \text{ ac} = 33.35 \text{ lb/yr}$$

$$L_{TN} = 0.226 * 40.45 \text{ in} * 1.50 \text{ mg/L} * 0.192 \text{ ac} = 2.63 \text{ lb/yr}$$

$$L_{TP} = 0.226 * 40.45 \text{ in} * 0.11 \text{ mg/L} * 0.192 \text{ ac} = 0.19 \text{ lb/yr}$$

Driveway:

$$L_{TSS} = 0.226 * 40.45 \text{ in} * 173 \text{ mg/L} * 0.256 \text{ ac} = 404.87 \text{ lb/yr}$$

$$L_{TN} = 0.226 * 40.45 \text{ in} * 2.10 \text{ mg/L} * 0.256 \text{ ac} = 4.91 \text{ lb/yr}$$

$$L_{TP} = 0.226 * 40.45 \text{ in} * 0.56 \text{ mg/L} * 0.256 \text{ ac} = 1.31 \text{ lb/yr}$$

Pollutant Removal Required: In accordance with City of Dover's Site Plan regulations, at a minimum, the following pollutant removal is required.

Pollutant Removal Required					
Pollutant	Annual Load Roofs (lbs/yr)	Annual Load Driveway (lbs/yr)	Total Annual Load (lbs/yr)	% Removal	Removal Required (lbs/yr)
TSS	33.35	404.87	438.22	80	350.57
TN	2.63	4.91	7.55	50	3.77
TP	0.19	1.31	1.50	50	0.75

Pollutant Removal Provided: The project proposes the treatment of 0.373 acres of impervious area through two (2) Bio-Retention basins, and a stone drip edge around one of the proposed buildings. BMP Pollutant Removal Efficiency rates are provided in Appendix B of the NH Stormwater Manual, Volume 2, December 2008. Bio-Retention Basin of 90% TSS, 65% TN, and 65% TP and Stone Drip Edges of 90% TSS, 55% TN, 65% TP.

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DOVER, NH 03821-1166
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Bio-Retention Basins

Pollutant Removal Provided (Bio-Retention Basins)						
Pollutant	Annual Load Roofs (lbs/yr)	Annual Load Driveway (lbs/yr)	Total Annual Load (lbs/yr)	Impervious Treated 0.331ac	% Removal Provided	Removal Provided (lbs/yr)
TSS	17.20	379.56	396.76	0.339	90	357.08
TN	1.36	4.61	5.96	0.339	65	3.88
TP	0.10	1.23	1.33	0.339	65	0.86

Stone Drip Edge

Pollutant Removal Provided (Stone Drip Edge)					
Pollutant	Annual Load Roofs (lbs/yr)	Total Annual Load (lbs/yr)	Impervious Treated 0.034ac	% Removal Provided	Removal Provided (lbs/yr)
TSS	5.91	5.91	0.034	90	5.31
TN	0.47	0.47	0.034	55	0.26
TP	0.03	0.03	0.034	65	0.02

Total Pollutant Removal Provided

Pollutant Removal Provided			
Pollutant	Annual Load (lbs/yr)	Removal Required (lbs/yr)	Removal Provided (lbs/yr)
TSS	438.22	350.57	362.40
TN	7.55	3.77	4.13
TP	1.50	0.75	0.89

Conclusion: The proposed mitigation measures implemented on site exceed the minimum treatment rates for TSS, TN, and TP required by the City's regulations.

B – 3

GROUNDWATER RECHARGE



GROUNDWATER RECHARGE VOLULME (GRV) CALCULATION (Env-Wq 1507.04)

0.18	ac	Area of HSG A soil that was replaced by impervious cover	0.40"
-	ac	Area of HSG B soil that was replaced by impervious cover	0.25"
-	ac	Area of HSG C soil that was replaced by impervious cover	0.10"
0.21	ac	Area of HSG D soil or impervious cover that was replaced by impervious cover	0.0"
0.18 inches		Rd = Weighted groundwater recharge depth	
0.07 ac-in		GRV = AI * Rd	
254 cf		GRV conversion (ac-in x 43,560 sf/ac x 1ft/12")	

Provide calculations below showing that the project meets the groundwater recharge requirements (Env-Wq 1507.04):

BR1: 0.05 af

BR2: 0.02 af

SD1: 0.00 af

SD2: 0.00 af

SD3: 0.00 af

Sum: 0.07 af

Convert to cubic feet: 3049.5 cf

Stormwater Infiltration Testing Log

Project Name:

CNE#23140 - Slovenski - Dover

Date:

4/30/2024

Project Address:

306 Dover Point Road

Weather:

Testing Company:

Civilworks NE

Tester's Name:

CIVILWORKS NEW ENGLAND

Phone Number:

(603) 749-0443

Email Address:

jgregoire@civilworksne.com

Test Number:

1

Test Pit/Boring Hole Number:

BH1

Test Method:

Borehole Infiltration Test

Test Depth (feet):

2

Surface Elevation (feet):

36

Instrument Diameter (inches):

4

Soil Characterization (See Test Pit Logs)

Depth (inches):	Soil Texture:	Limiting Layers Type and Depth (feet):

Presoak

Time:(Min)	Time Interval (HRS):	Measurement, (inches):	Drop in water level, (inches):
8:00		24	
8:00	24	0	24

Infiltration Testing

Time 1:	Time 2:	Measurement, (inches):	Drop in water level, (inches):	Infiltration rate (inches per hour):	Remarks:
8:10		24			Start
	8:15	0	24	288.00	Finish
8:16		24			Start
	8:27	0	24	130.91	Finish
8:28		24			Start
	8:36	0	24	180.00	Finish
8:37		24			Start
	8:49	0	24	120.00	Finish
Stabilized Infiltration Testing Rate (inches per hour):				120.00	

Notes:

Stormwater Infiltration Testing Log

Project Name:

CNE#23140 - Slovenski - Dover

Date:

4/30/2024

Project Address:

306 Dover Point Road

Weather:

Testing Company:

Civilworks NE

Tester's Name:

CIVILWORKS NEW ENGLAND

Phone Number:

(603) 749-0443

Email Address:

jgregoire@civilworksne.com

Test Number:

2

Test Pit/Boring Hole Number:

BH2

Test Method:

Borehole Infiltration Test

Test Depth (feet):

2

Surface Elevation (feet):

39.5

Instrument Diameter (inches):

4

Soil Characterization (See Test Pit Logs)

Depth (inches):	Soil Texture:	Limiting Layers Type and Depth (feet):

Presoak

Time:(Min)	Time Interval (HRS):	Measurement, (inches):	Drop in water level, (inches):
8:00		24	
8:00	24	0	24

Infiltration Testing

Time 1:	Time 2:	Measurement, (inches):	Drop in water level, (inches):	Infiltration rate (inches per hour):	Remarks:
9:00		23			Start
	10:00	8	15	15.00	Finish
10:00		23			Start
	11:00	11	12	12.00	Finish
11:00		23			Start
	12:00	11	12	12.00	Finish
12:00		23			Start
	1:00	11	12	12.00	Finish
Stabilized Infiltration Testing Rate (inches per hour):				12.00	

Notes:

Stormwater Infiltration Testing Log

Project Name:	CNE#23140 - Slovenski - Dover	Date:	4/30/2024
Project Address:	306 Dover Point Road	Weather:	
Testing Company:	Civilworks NE	Tester's Name:	CIVILWORKS NEW ENGLAND
Phone Number:	(603) 749-0443	Email Address:	jgregoire@civilworksne.com

Test Number:	<u>3</u>	Test Pit/Boring Hole Number:	<u>BH3</u>	Test Method:	<u>Borehole Infiltration Test</u>
Test Depth (feet):	<u>2</u>	Surface Elevation (feet):	<u>33.5</u>	Instrument Diameter (inches):	<u>4</u>

Soil Characterization (See Test Pit Logs)

[illegible]

Presoak

Time:(Min)	Time Interval (HRS):	Measurement, (inches):	Drop in water level, (inches):
8:00		24	
8:00	24	0	24

Infiltration Testing

[illegible]

Stabilized Infiltration Testing Rate (inches per hour):

9.00

Notes:

Test Pit: 1

Date: 2/26/2024

Depth (in)	Color	Texture	Structure	Consistence	Redox Features	Notes
0-64	10YR 6/6	Loamy Sand	Massive	Friable		No Topsoil
64-74	10YR 6/8	Loamy Sand	Platy	Firm	2.5YR 7/8	

Seasonal High Water (in): 64"

Observed Water (in): None

Restrictive Layer (in): None

Bedrock/Refusal (in): None

Soil Series:

NHDES Soil Group:

Hydrologic Soil Group:

Percolation Test

Depth Perc Test Minutes Per Inch

Notes: N/A

N/A

N/A

Test Pit: 2

Date: 2/26/2024

Depth (in)	Color	Texture	Structure	Consistence	Redox Features	Notes
0-8	10YR 3/3	Fine Sandy Loam	Massive	Friable		
8-66	10YR 6/8	Loamy Sand	Massive	Friable		
66-82	10YR 5/4	Loamy Sand	Massive	Friable		2.5YR 7/8

Seasonal High Water (in): 66"

Observed Water (in): None

Restrictive Layer (in): None

Bedrock/Refusal (in): None

Soil Series:

NHDES Soil Group:

Hydrologic Soil Group:

Percolation Test

Depth Perc Test Minutes Per Inch

Notes: N/A

N/A

N/A

Test Pit: 3

Date: 2/26/2024

Depth (in)	Color	Texture	Structure	Consistence	Redox Features	Notes
0-7	10YR 4/3	Fine Sandy Loam	Massive	Friable		
7-48	10YR 4/4	Loamy Sand	Massive	Friable		
48-92	10YR 5/4	Loamy Sand	Massive	Friable		2.5YR 7/8

Seasonal High Water (in): 48
Observed Water (in): None
Restrictive Layer (in): None
Bedrock/Refusal (in): None

Soil Series:
NHDES Soil Group:
Hydrologic Soil Group:

Percolation Test
Depth Perc Test Inches Per Hour
N/A N/A

Notes: N/A

Test Pit: 4

Date: 2/26/2024

Depth (in)	Color	Texture	Structure	Consistence	Redox Features	Notes
0-6	10YR 3/4	Fine Sandy Loam	Massive	Friable		
6-19	10YR 5/6	Loamy Sand	Massive	Friable		
19-48	10YR 3/6	Sandy Loam	Blocky	Firm		

Seasonal High Water (in): 19"
Observed Water (in): None
Restrictive Layer (in): None
Bedrock/Refusal (in): None

Soil Series:
NHDES Soil Group:
Hydrologic Soil Group:

Percolation Test
Depth Perc Test Inches Per Hour
N/A N/A

Notes: N/A

Test Pit: 5

Date: 2/26/2024

Depth (in)	Color	Texture	Structure	Consistence	Redox Features	Notes
0-10	10YR 3/3	Fine Sandy Loam	Massive	Friable		
10-59	10YR 6/8	Loamy Sand	Massive	Friable		
59-72	10YR 6/3	Loamy Sand	Massive	Firm		

Seasonal High Water (in): 59"
Observed Water (in): None
Restrictive Layer (in): None
Bedrock/Refusal (in): None

Soil Series:
NHDES Soil Group:
Hydrologic Soil Group:

Percolation Test
Depth Perc Test Inches Per Hour
N/A N/A

Notes: N/A

Test Pit: 6

Date: 2/26/2024

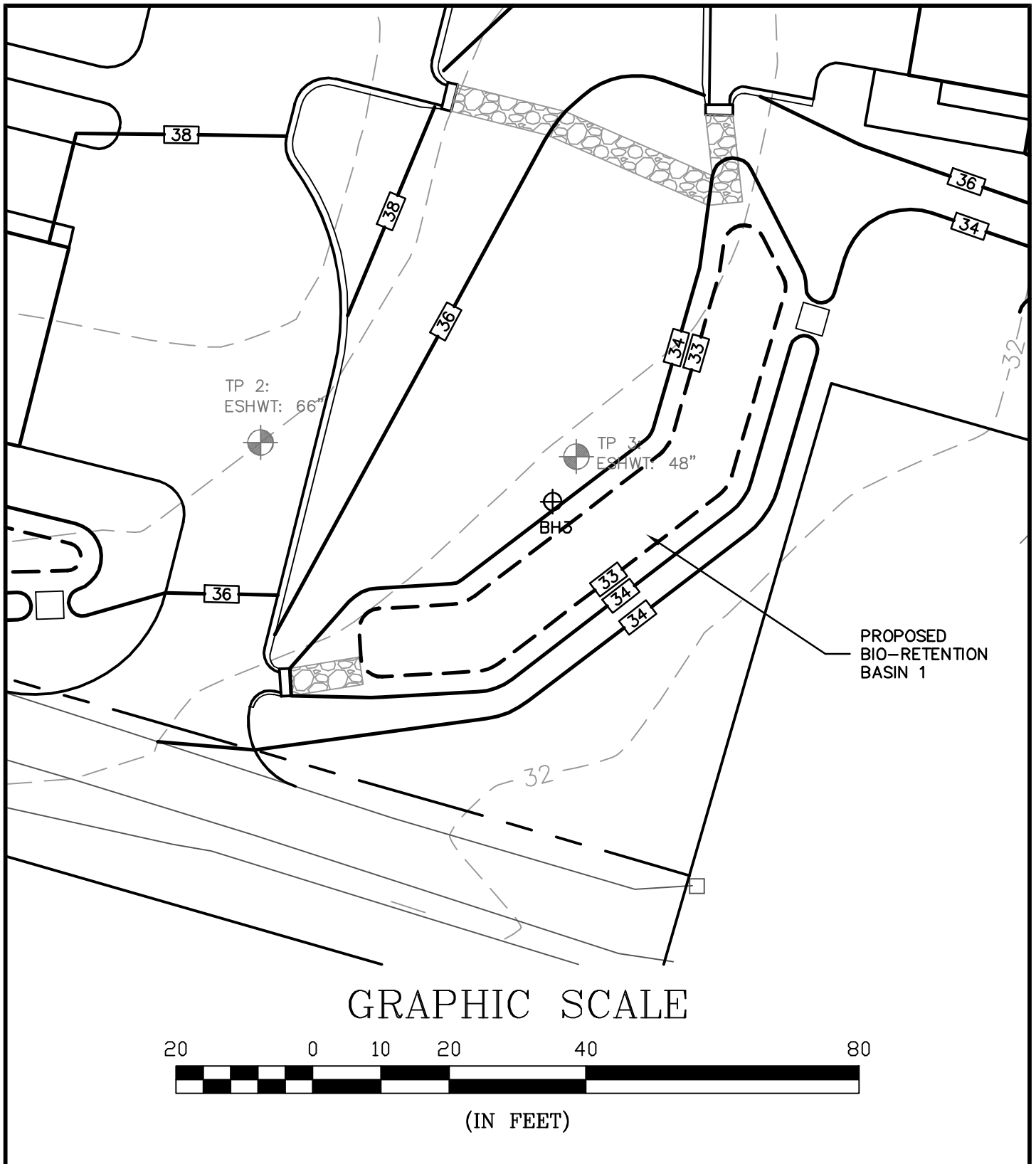
Depth (in)	Color	Texture	Structure	Consistence	Redox Features	Notes
0-2	10YR 3/3	Loamy Sand	Massive	Friable		
2-48	10YR 5/3	Loamy Sand	Massive	Friable		
48-92	10YR 6/6	Loamy Sand	Massive	Friable		

Seasonal High Water (in): None
Observed Water (in): None
Restrictive Layer (in): None
Bedrock/Refusal (in): None

Soil Series:
NHDES Soil Group:
Hydrologic Soil Group:

Percolation Test
Depth Perc Test Inches Per Hour
N/A N/A

Notes: N/A

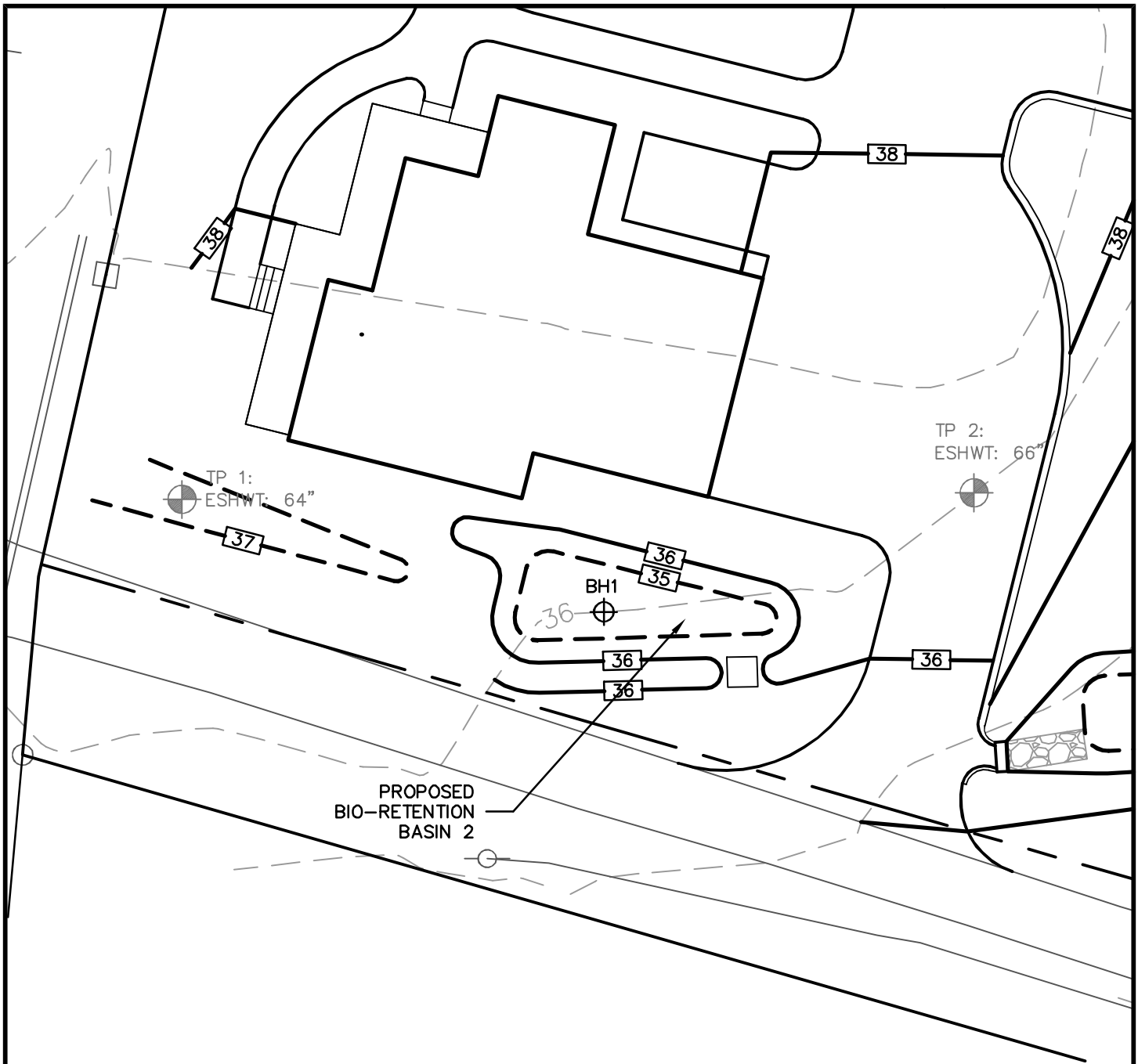


**INFILTRATION
FEASIBILITY SKETCH
BIO-RETENTION BASIN 1**
1"=20'

**TDR SITE PLAN
5 RESIDENTIAL UNITS
306 DOVER POINT
ROAD
DOVER, NH 03820**



DATE: 6-28-24
PROJECT No. 23140
FILE: IFR



GRAPHIC SCALE



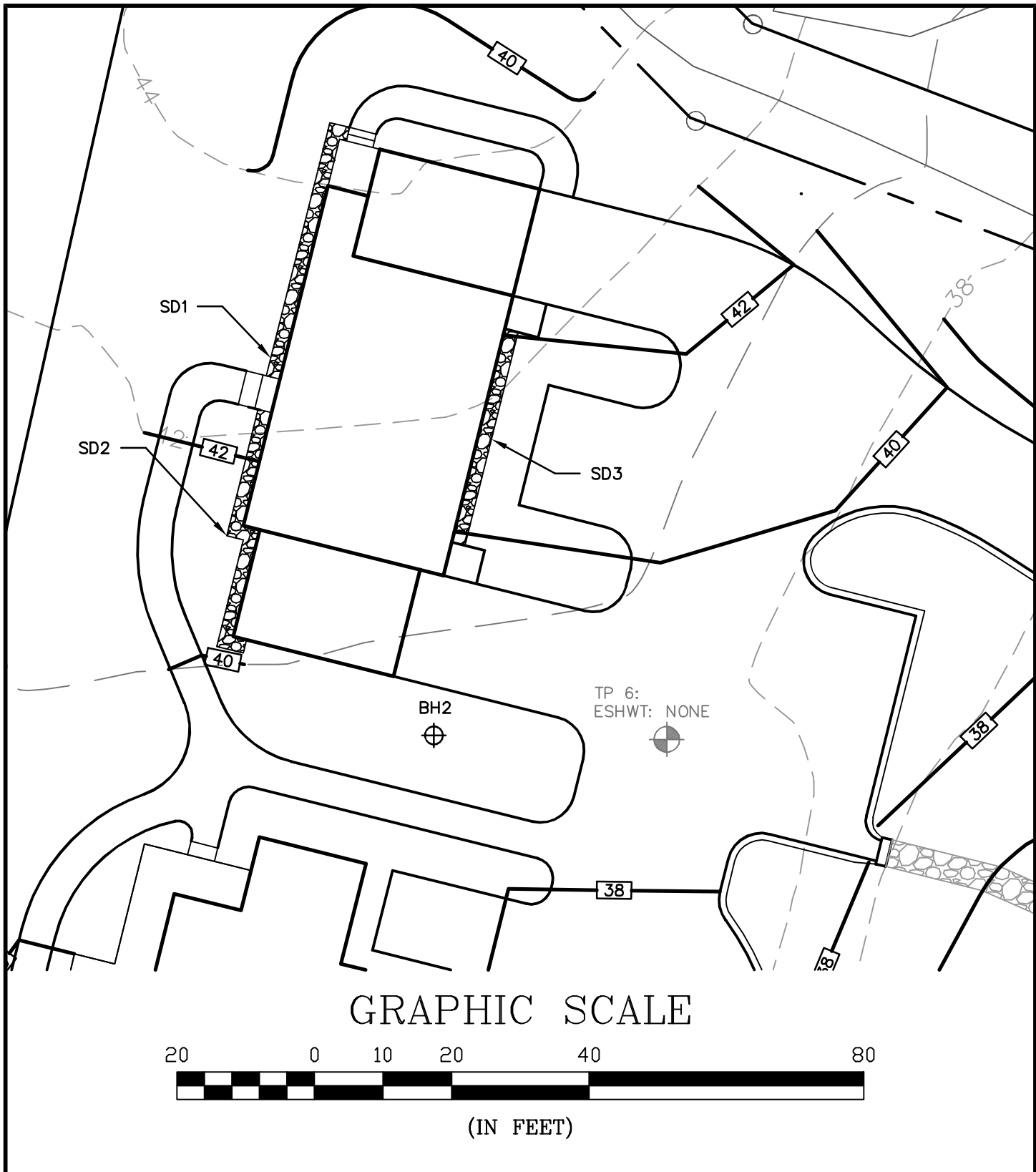
(IN FEET)

**INFILTRATION
FEASIBILITY SKETCH
BIO-RETENTION BASIN 2
1"=20'**

**TDR SITE PLAN
5 RESIDENTIAL UNITS
306 DOVER POINT ROAD
DOVER, NH 03820**

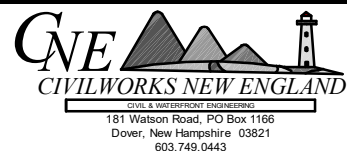
CNE
CIVILWORKS NEW ENGLAND
CIVIL & WATERFRONT ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

DATE: 6-28-24
PROJECT No. 23140
FILE: IFR



**INFILTRATION
FEASIBILITY SKETCH
STONE DRIP EDGES**
1"=20'

**TDR SITE PLAN
5 RESIDENTIAL UNITS
306 DOVER POINT
ROAD
DOVER, NH 03820**



DATE: 6-28-24
PROJECT No. 23140
FILE: IFR

APPENDIX C

INSPECTION AND MAINTENANCE

C – 1

**STORMWATER MANAGEMENT SYSTEM
INSPECTION & MAINTENANCE PLAN**

Stormwater Management System Inspection & Maintenance Plan

Prepared for:

**SLOVENSKI RESIDENTIAL TDR DEVELOPMENT
Map L, Lot 111**

**Dover Point Road
Dover, New Hampshire
Strafford County**

June 2024

Owner of Record:

BRIAN SLOVENSKI
124 Turtle Pond Road
Lee, New Hampshire 03861

Prepared By:

CIVILWORKS NEW ENGLAND
P.O. Box 1166
181 Watson Road
Dover, New Hampshire 03821

Introduction

Civilworks New England, has prepared the following Stormwater Management System Inspection & Maintenance Plan for **Brian Slovenski**. The intent of this plan is to provide a list of procedures that document the inspection and maintenance requirements of the Stormwater Management System for this site.

The inspection and maintenance requirements outlined in this document are required to be performed in perpetuity. In the event the property is sold, future owners will be responsible for implementing the responsibilities outlined in this document.

The following inspection and maintenance program is necessary in order to keep the Stormwater Management System functioning properly. These measures will also help to minimize potential environmental impacts to the areas surrounding the developed site. By following the enclosed procedures, the property owners, and maintenance personnel will be able to maintain the functional design of the Stormwater Management System and maximize its ability to remove sediment and other contaminants from site generated stormwater runoff.

This plan also requires the Owner/Operator to prepare and implement a salt minimization plan to reduce salt usage on-site and ultimately within the watershed. This plan will allow the owner/operator to monitor and modify how much salt is needed, when it should be applied, and where it needs to be applied, with the ultimate goal of reducing salt-use without compromising safety. It is expected that salt-use reduction will lead to long-term cost-savings as a result of purchasing less salt and reduced impacts on vegetation (e.g., landscaping) and corrosion of infrastructure.

The salt minimization plan should include the retention of a contractor who has completed the Green SnowPro Training course and obtained NHDES Salt Application Certification.

It is anticipated that this be a living document that will be updated at regular intervals (recommend updating annually in advance of the winter season in order to facilitate adjustments).

Owner:

**Brian Slovenski
124 Turtle Pond Road
Lee NH 03861**

In the event of a change in ownership, this Inspection and Maintenance Plan shall be transferred to the new party.

Contact / Responsible Party:

**Brian Slovenski
124 Turtle Pond Road
Lee NH 03861**

**Brian Slovenski
Phone: (603) 969-0080
Email: bslov2@gmail.com**

The contact information for the Contact / Responsible Party shall be kept current.

Management Company:

**Brian Slovenski
124 Turtle Pond Road
Lee NH 03861**

The contact information for the Management Party shall be kept current.

Inspection Schedule / Record Retention

Inspection frequency should, at a minimum, be in accordance with New Hampshire Stormwater Manual, Volume 2, latest edition, as updated by NHDES. See the Inspection and Maintenance Plan for frequency requirements. A copy of the completed Stormwater Management System's Inspection & Maintenance Log and Deicing Salt Quantity Use Log shall be maintained, kept on-site, and be made available to local, state, or federal regulators as applicable by law. All Inspection and Maintenance records must be provided to the City of Dover Community Services Department annually before Dec 15th.

Stormwater Management System Components

The Stormwater Management System associated with the project is designed to mitigate both the quantity and quality of site-generated stormwater runoff. As a result, its design includes the following elements:

- Bioretention Basins
- Stone Drip Edges
- Pavement
- Litter / Trash Removal

Design elements are identified in the design plans, a copy of which shall be maintained with this Inspection and Maintenance Plan.

Control of Invasive Species

During maintenance activities, check for the presence of invasive plants and remove in a safe manner. Invasive plants shall be controlled to prevent them from reproducing, spreading, or re-growing. See the University of New Hampshire – Cooperative Extension's "Method for Disposing Non-Native Invasive Plants", included at the end of this manual, for guidance on the removal and disposal of invasive species.

Inspection and Maintenance Plan

By implementing the following procedures, the owners will be able to maintain the functional design of the Stormwater Management System and maximize the system's ability to remove sediment and other contaminants from site generated stormwater runoff.

BIORETENTION BASINS:

- Inspection, by a **qualified professional**, of the Bioretention Basin at least twice annually, and following any rainfall event exceeding 2.5 inches in a 24-hour period, with maintenance or rehabilitation conducted as warranted by such inspection. If the Bioretention Basin systems do not drain within 72-hours following a rainfall event, a qualified professional should assess the condition and determine measures required to restore filtration practice (as applicable).
- Embankments and spillways should be inspected by a **qualified professional** for settlement, erosion, seepage, animal burrows, woody vegetation, and other conditions that could degrade the embankment and reduce its stability for impounding water. Immediate corrective action should be implemented if any such conditions are found.
- Inlet and outlet pipes, inlet and outlet structures, energy dissipation structures or practices, and other structural appurtenances should be inspected by a **qualified professional**, and corrective action implemented (e.g., maintenance, repairs, or replacement) as indicated by such inspection.
- The bottoms, interior and exterior side slopes, and crest of earthen detention basins should be mowed, and the vegetation maintained in healthy condition, as appropriate to the function of the facility and type of vegetation.
- Vegetated embankments that serve as "berms" or "dams" that impound water should be mowed at least once annually to prevent the establishment of woody vegetation.
- Trash and debris should be removed from the pond and any inlet or outlet structures whenever observed.
- Accumulated sediment should be removed when it significantly affects pond capacity.

STONE DRIP EDGES:

- Inspect twice annually and following any rainfall event exceeding 2.5 inches in a 24 hour period.
- If system does not drain within 72-hours following a rainfall event, a qualified engineer should inspect the system and determine measures required to restore the condition of the facility.
- Follow the University of New Hampshire's "Methods for Disposing Non-Native Invasive Plants" for disposing of invasive species (Attached).
- There shall be no use of chemical herbicides or pesticides, except for wildlife habitat management and then only in coordination with the New Hampshire Fish and Game Nongame and Endangered Wildlife Program. Herbicides or pesticides are absolutely prohibited within wetlands or wetland buffer setbacks.

PAVEMENT:

- Minimize sanding.
- Minimize application of salt for ice control.
- Clean periodically (1-2 times per year) using a sweeper or vacuum sweeper. Vacuum sweeping is the preferred method.

LITTER / TRASH REMOVAL:

- Routinely patrol site for litter pick-up.

DE-ICING AGENTS:

- To address the concerns associated with the application of chlorides and other deicing materials, NHDES recommends that the Owner/Operator develop a Road Salt and Deicing Minimization Plan for the parking lots and roadways. The plan should develop the policies that the development will keep in place to minimize salt and other deicer use after the project has been completed. The plan should include tracking the use of salt and other deicers for each storm event and compiling salt use data annually. (See Deicing Salt Quantity Use Log).
- Use sand as primary agent for driveway and access way safety during ice and snow conditions.
- Minimize the use of salt during the winter.
- Use de-icing or anti-caking agents, added to enhance performance and application characteristics of sand mixtures, only as necessary and at minimum application rates.
- Recommend using a certified Winter Operator (Green SnowPro Trained) for applying de-icing agents.
- Monitor weather and apply de-icing agents based on weather conditions and temperatures.

ANTI-ICING AND SALT MINIMIZATION:

- Owner to develop a Road Salt and Deicing Minimization Plan.
- Provide a written policy that the "Development" will keep in place to minimize salt and other deicer use after the project has been completed.
- Use the attached form to track the use of salt and other deicers for each storm event and compiling salt use data annually.

Inspection & Maintenance Table

System Component / BMP	Minimum Inspection Frequency	Minimum Inspection Requirements	Maintenance / Cleanout Threshold
Bioretention Basins • Inlet/Outlet Piping • Embankments • Pond Sediment • Trash/Debris • Vegetation (Veg.)	Bi-Annually “ “ Periodically “ “ “ “	• Check for erosion, settlement, seepage, etc. • Check for sediment accumulation in pond • Check for trash (in pond and structures) • Maintain 95% veg. (pond & slopes) • Maintain healthy stand of veg.	Repair immediately ≥ 2 in. sediment Remove all trash/debris Restore veg. in-kind Mow when ≥ 6 in
Stone Drip Edges	Bi-Annually	• Check for sediment accumulation • Check for woody vegetation growth • Check for debris	Remove/Dispose of accordingly Mow twice per year Remove/Dispose of accordingly
Pavement: • Sanding • Salt Applications • Sweep/Vacuum • Trash/Debris	Limit use As required 1 - 2 x's Year Periodically	• Minimize use to prevent tracking issues • RECORD APPLICATION RATES • Sweep or vacuum to prevent tracking issues • Check for trash/debris	Sweep to prevent issues Minimize (as required) Sweep/Vac as needed Remove when noticed
Litter / Trash Removal	Periodically	• Check for litter and trash	Remove when noticed

Inspection & Maintenance Checklist/Log

The following pages contain a blank copy of the Stormwater Management System's Inspection & Maintenance Log and a Deicing Salt Quantity Use Log. These forms are provided to assist the owners with the inspection and maintenance of the aforementioned Stormwater Management System.

Stormwater Management System's Inspection & Maintenance Log

Date of Inspection/Maintenance _____ Inspector: _____

[illegible]

Deicing Salt Quantity Use Log

[illegible]

APPENDIX D

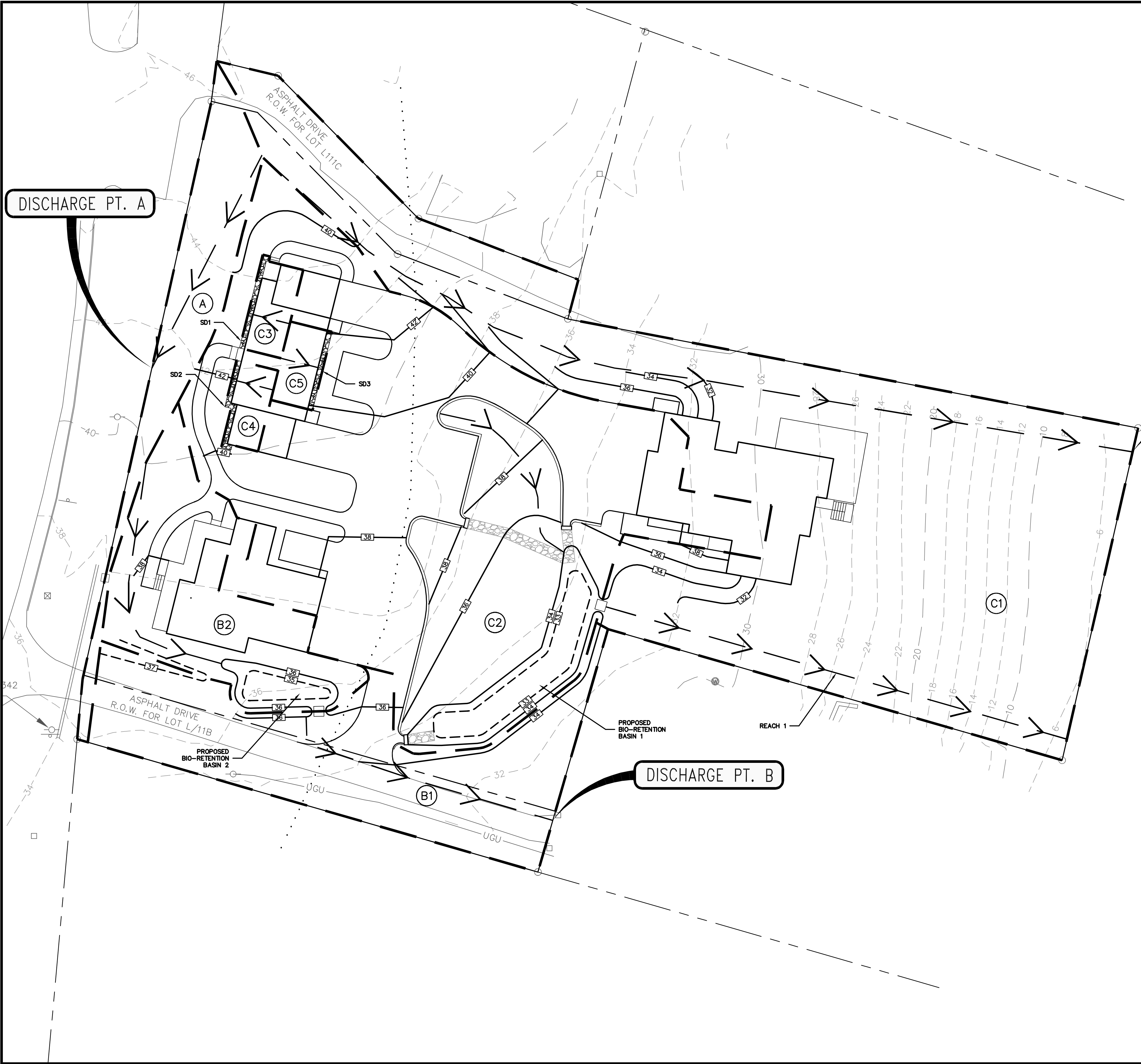
WATERSHED PLANS

D – 1

PRE-DEVELOPMENT CONDITIONS

D – 2

POST-DEVELOPMENT CONDITIONS



POST-DEVELOPMENT WATERSHED CHARACTERISTICS

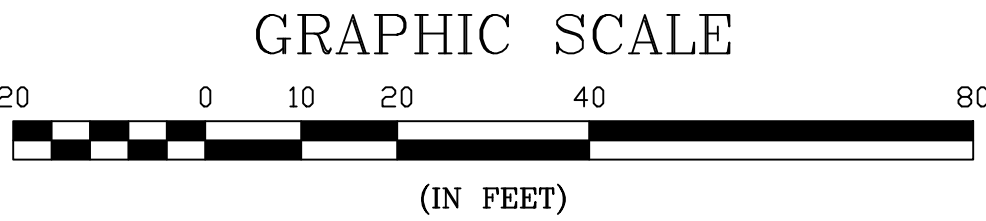
SUBCATCHMENT DESIGNATION	AREA (ACRES)	LONGEST FLOW PATH (FEET)	Tc (MIN)
A	0.08	95	8.1
B1	0.19	113	6.0
B2	0.13	104	7.9
C1	0.65	372	10.4
C2	0.56	82	6.0
C3	0.01	15	6.0
C4	0.01	15	6.0
C5	0.01	15	6.0

SOILS DATA

- Hydrologic Drainage Class A:
- WdC — Windsor Loamy Sand, 8 – 15 Percent Slopes
- Hydrologic Drainage Class D
- BzB — Buxton Silt Loam, 3 – 8 Percent Slopes

LEGEND:

- EX 2' CONTOUR
- EX 10' CONTOUR
- PROPERTY LINE
- EXISTING EDGE OF PAVEMENT
- EXISTING BUILDING
- PROPOSED EDGE OF PAVEMENT
- PROPOSED BUILDING
- SUBCATCHMENT BOUNDARY
- LONGEST FLOW PATH WITH DIRECTION OF FLOW
- SUBCATCHMENT DESIGNATION



POST-DEVELOPMENT WATERSHED PLAN

TDR SITE PLAN
5 RESIDENTIAL UNITS
306 DOVER POINT ROAD
DOVER, NH 03820

BRIAN SLOVENSKI
124 TURTLE POND ROAD
LEE, NH 03661
TAX MAP L, LOT 111

WS-2

DATE	SCALE	DRAWN BY	DESIGN BY	APPROVED BY	PROJECT NO.	FILE:DRN	NO.	REVISION	APP'D	DATE
7-8-24	1"=20'	JRG	JRG	BYSJH	23140					

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

CNE CIVILWORKS NEW ENGLAND

181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443