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, October 3, 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) [*This item was previously heard on Thursday, August 1, 2024]*

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

Plan Type:	Site Plan - Major	**Project:**		**App Date:**	07/11/2024
Work Class:	New Construction	**District:**	None	**Exp Date:**	09/14/2024
Status:	Review Expired	**Square Feet:**	0.00	**Completed:**	NOT COMPLETED
Valuation:	$0.00	**Assigned To:**	Blonigen, Rachel	**Approval Expire Date:**	
Description:	TDR Residential Development				

Parcel:	L0111-000000	Main	**Address:**	306 Dover Point Rd Dover, NH	Main	**Zone:**

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	TotalImpactFeeADUTOD	0.00	TotalImpactFeeAONRTOD	0.00
TotalImpactFeeAR55TOD	0.00	TotalImpactFeeAR62TOD	0.00	Sub Total Residential	0.00
TotalImpactFeeRIRCTOD	0.00	TotalImpactFeeOCSTOD	0.00	TotalImpactFeeITWCTOD	0.00
TotalImpactFeeNHALTOD	0.00	TotalImpactFeeOIUTOD	0.00	TotalImpactFeeAFAOTOD	0.00
Sub Total Non-Residential	0.00	Total of Impact Fees to be Assessed	0.00		

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
2024.08.01_PlanningTechnicalReviewCommittee.Agenda.pdf	07/22/2024 16:58	Blonigen, Rachel		TRC Agenda
2024.08.01_PlanningTechnicalReviewCommittee.306DoverPoint_SITE-2024-008.pdf	08/09/2024 10:46	Blonigen, Rachel		Approved TRC Minutes

PLAN SNAPSHOT REPORT (SITE-2024-0008)

DOT-DRI-000153-08222024 154707.pdf 08/23/2024 8:43 Blonigen, Rachel NHDOT Driveway Permit

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

Meeting Type	Location	Scheduled Date	Subject
Technical Review Committee Meeting v.1	City Hall, Second Floor Conference Room	08/01/2024	Technical Review Committee Meeting

Submittal Name	Status	Received Date	Due Date	Complete Date	Resubmit	Completed
Land Use Plan Technical Review v.1	Requires Re-submit	07/22/2024	07/30/2024	08/09/2024	Yes	Yes

Item Review Name	Department	Assigned User	Status	Assigned Date	Due Date	Completed Date
Business Development	Business Development	Burdin, James	Approved	07/22/2024	08/19/2024	07/31/2024

Comments: Streetscape renderings are attractive and present architecturally as single-unit dwellings. No further comments at this time.

Item Review Name	Department	Assigned User	Status	Assigned Date	Due Date	Completed Date
City Engineer	Community Services - Engineering	Mavrogeorge, Kenneth	Requires Re-submit	07/22/2024	07/30/2024	07/31/2024

Comments: Project: SITE-2024-0008
TRC Meeting: August 1, 2024
Reviewer: Jillian Semprini, PE
Checked by: Engineering Staff
Comments:
General Comments:
- Applicant and Contractor shall review the Dover Construction Guidelines prior to scheduling a Preconstruction meeting with City staff. The guidelines can be found on the City of Dover Website on the Engineering page. https://www.dover.nh.gov/Assets/government/city-operations/1form/community-services/engineering/engineering-documents/Construction%20Guidelines.pdf
- Show existing sewer force main on all plan sheets.
- Show existing sewer and OHW on all plan sheets; not shown on sheets 7 and 8.
- City requests utility easement for the sewer main located within the private property adjacent to Dover Point Rd.
- Recommend providing 1 sf of snow storage per 10 sf of pavement to be cleared. Verify snow storage meets or exceeds this recommendation or provide note to remove excess snow when storage areas are filled.
- Community Services requests to be copied on all correspondence with NHDOT regarding this project.
- Provide description of how trash will be picked-up; no dumpster pads are shown on the project site.
- Provide a lighting plan.
- Show location of common mailbox, and provide proof of coordination with postal service on location.
- Provide turning template for emergency vehicles within parking area.
- Comment on applicability of an AoT permit within the Shoreland Protection Zone.

Sheet 7 Site Plan
- Recommend improving existing asphalt drive for additional usage, and for emergency vehicles.
- Recommend connecting proposed parking area to existing 304 Dover Point Rd asphalt drive to the north; located on the subject parcel.
- Based on historical knowledge, recommend reviewing if erosion is evident within the steep slopes.

Sheet 8 Grading, Drainage & Erosion Control Plan:
- Define berm elevations; recommend showing dash line of top of berm with elevation.
- Northeastern berm of rain garden 1 is in close proximity to the property line; provide more separation or recommend obtaining an easement.
- Show where proposed emergency outflows are intended to go.
- Recommend squaring the proposed rainguardian 3 to proposed rain garden 1.
- Recommend replacing existing 12” driveway culvert with 15” pipe.
- Contour north of Building 1 incorrectly labeled as 40; should be 44.
- Extend proposed grading contours beyond limits of disturbance; specifically around Building 3.

Sheet 9 Utility Plan
- Since only one water main is proposed into the building, the City will provide only one billable water meter for the entire building. If each unit is intended to be sold, then individual water services are required.
- A tap and saddle can be used in lieu of the tapping sleeve for a 2” service.
- Recommend relocating 2” tap on the existing main away from the existing sewer main and force main.
- Recommend maintaining 2” water service to Building 3, or using a valve to reduce to 1”.
- Recommend adding a yard hydrant for the 2” service line.
- Recommend tapping individual sewer services from the existing sewer main.
- Sewer connection permit review will be required if PSMH1 is to be installed.
- Sewer shall be 8” between existing (SMH1053) and proposed structure (PSMH1).
- Move PSMH1 to the north; upstream of existing SMH1053.
- Rebuild invert of existing SMH1053.
- Clarify who owns the utility pole that the underground utilities will be pulled from.

Sheet 14 Details:
- Recommend a Geotech to review and approve the pavement section.
- Will the Typical Pavement Section be used at the proposed pave walkways?

Sheet 15 Details:
- Show detail for proposed emergency outflow.
- Show applicable elevations (rims, inverts, sumps, etc.) for the rain guardians.

Landscaping Plan:
- Ensure landscaping does not conflict with existing sewer main.

Stormwater Management Narrative:
- Per Dover Code Section 153-14.A(3)(f)[2][m], demonstrate that there are no adverse impacts to the aquatic habitat as a result of the increased post-development runoff volume.
- Some sections note that information will be included when applicable. Please note in each section if it is applicable and if the required information has been provided.

Item Review Name	Department	Assigned User	Status	Assigned Date	Due Date	Completed Date
Planning	Planning	Bassegio, Erin	Requires Re-submit	07/22/2024	08/19/2024	08/09/2024

Item Review Name	Department	Assigned User	Status	Assigned Date	Due Date	Completed Date
Zoning Administrator	Planning	Crouser, Paul	Requires Re-submit	07/22/2024	07/30/2024	08/09/2024

Item Review Name	Department	Assigned User	Status	Assigned Date	Due Date	Completed Date
IS Building Official	Planning / Inspection Services	Maxfield, Jim	Requires Re-submit	07/22/2024	07/30/2024	07/26/2024

Comments: 1) McEneaney Plan indicates ROW to L/11B- should this read L/111B.
2) Clarify the ROW indicating "for Lot L11B. Is the ROW for access to L/111?
3) Discuss creating a private access road name to address some of the 911 discrepancies. L/111B will also need to be readdressed.
4)Provide proposed names for the ROW.
5)Indicate the width of the ROW and if any improvements are proposed.
6) Driveway longer than 150' appears to require fire apparatus turnaround.
7)Clarify if one pad mount transformer is to serve all three structures.
8) Is there a garbage disposal facility or containers provided by owner (93-9)

Item Review Name	Department	Assigned User	Status	Assigned Date	Due Date	Completed Date
Traffic Bureau	Police	Speidel, Marn	Requires Re-submit	07/22/2024	07/30/2024	07/31/2024

Comments: • Traffic Assessment Memorandum dated 5/31/24 refers to a final product of 6 new single family housing units, whereas all other plans appear to show 5.
- Doesn't the shared driveway to the south need to be widened, at least to the point of access for the new units?
- Did you consider bringing the access for Building 3 from the northerly driveway?
- PD requests that Building Official assign street addresses that eliminates the use of 306A, 306B and 306C accessible from different driveways Consider a private street name for the southerly driveway, to be used for the new units and for the existing 306C property.

Submittal Name	Status	Received Date	Due Date	Complete Date	Resubmit	Completed
Land Use Plan Technical Review v.2	In Review	09/19/2024	10/02/2024		No	No

Item Review Name	Department	Assigned User	Status	Assigned Date	Due Date	Completed Date
Business Development	Business Development	Burdin, James	In Review	09/19/2024	10/17/2024	

Item Review Name	Department	Assigned User	Status	Assigned Date	Due Date	Completed Date
City Engineer	Community Services - Engineering	Mavrogeorge, Kenneth	In Review	09/19/2024	10/02/2024	

Item Review Name	Department	Assigned User	Status	Assigned Date	Due Date	Completed Date
Planning	Planning	Bassegio, Erin	In Review	09/19/2024	10/17/2024	

Item Review Name	Department	Assigned User	Status	Assigned Date	Due Date	Completed Date
Zoning Administrator	Planning	Crouser, Paul	In Review	09/19/2024	10/02/2024	

Item Review Name	Department	Assigned User	Status	Assigned Date	Due Date	Completed Date
IS Building Official	Planning / Inspection Services	Maxfield, Jim	In Review	09/19/2024	10/02/2024	

Item Review Name	Department	Assigned User	Status	Assigned Date	Due Date	Completed Date
Traffic Bureau	Police	Speidel, Marn	In Review	09/19/2024	10/02/2024	

Workflow Step / Action Name	Action Type	Start Date	End Date
Review v.1		07/15/2024 14:23	
Confirm application complete v.1	Generic Action		07/15/2024 14:24
Technical Review Committee Meeting Agenda v.1	Task	07/15/2024 14:23	07/22/2024 16:59
Land Use Plan Technical Review v.1	Receive Submittal	07/22/2024 0:00	08/09/2024 10:47
Land Use Plan Technical Review v.2	Receive Submittal	09/19/2024 0:00	
Technical Review Committee Meeting v.1	Hold Meeting	07/22/2024 16:58	08/09/2024 10:47

PLAN SNAPSHOT REPORT (SITE-2024-0008)

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

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: Number of Units 2 - 2 unit / 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 Footprint Building 1 2082 / Building 2 2072 / Building 3 3053 sq. ft.

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

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? X Yes ___ No How far is city water from the property? at Dover Point Road

City Sewer? X 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):

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

Relief sought (Check All That Apply):

X Lot Size X Frontage □ Setback □ 30' Buffer X 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'
Building 3 (single) - 39.0'

Number of Seats (where applicable) N/A

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
Stehpen 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

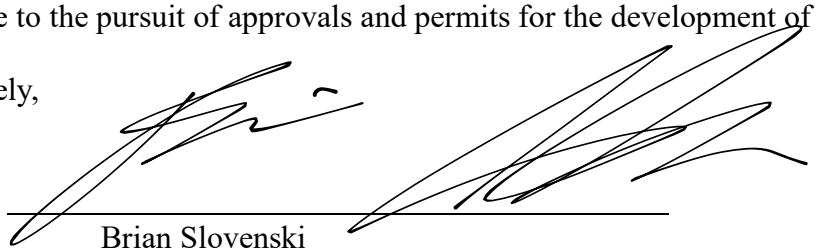
City of Dover
288 Central Avenue
Dover, NH 03820

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

CITY OF DOVER

TECHNICAL REVIEW COMMITTEE MINUTES – SITE-2024-0008

Application Type:	Site Plan Amendment
Applicant(s):	Brian Slovenski
Owner(s):	Brian Slovenski
Location:	306 Dover Point Rd. (Assessor's Map L, Lot 111)
Date:	August 1, 2024

INTENT: The applicant previously received Planning Board approval on January 23, 2024 for the purchase of four (4) additional TDR units. The applicant is now in their site plan review and proposes to demolish two (2) existing structures and construct two (2), two-family dwellings and one (1) single family dwelling.

UNITS PROPOSED: 5 units (including 4 TDR units)

AGENDA ITEM #: 1

ACREAGE: 1.64± acres

ZONING DISTRICT: R-20 (Riverfront Residential Overlay, Conservation District)

EXISTING LAND USE: Residential

PROPOSED LAND USE: Residential

SURROUNDING LAND USE:
Commercial/Residential

ZBA ACTION: None.

PERMITS REQUIRED: NHDES Shoreland Permit

WAIVERS REQUESTED: None.

ATTENDANCE:
Paul Crouser, Zoning
Erin Bassegio, Planning
Jim Maxfield, Inspection Services
Marn Speidel, Police Department
Ken Mavrogeorge, Engineering
Craig Chabot, Fire Department
Reid Bickley, Business Development
Tom Clark, Planning Board

Others:
Jase Gregoire, Civilworks NE

Approval of minutes from July 25, 2024:
R. Bickley moved to approve the July 25, 2024 minutes. Seconded by K. Mavrogeorge. Vote: U/A.

PLAN REVIEW:
Planning:

- Reminder: Impact fees, Water and sewer investment fees
- Letter to serve for city utilities
- Front setback not listed on plan – seems exactly 20'
- Lighting plan?
- Footings for rear deck appear to be very close to 100' Conservation District
- 5-24 units necessitates 24' internal road width
- ROW widening or improvements (5-24 units = 30')?
- Note the existing plantings along the property border on the landscape plan and include any correspondence with abutters opposed to new plantings along the property border.
- Providing any active or passive recreation for residents?
- Revise plans to include:
    - Planning file number (SITE-2024-0008)

Engineering:

- General Comments:
    - Applicant and Contractor shall review the Dover Construction Guidelines prior to scheduling a Preconstruction meeting with City staff. The guidelines can be found on the City of Dover Website on the Engineering page. https://www.dover.nh.gov/Assets/government/city-operations/1form/community-services/engineering/engineering-documents/Construction%20Guidelines.pdf
    - Show existing sewer force main on all plan sheets.
    - Show existing sewer and OHW on all plan sheets; not shown on sheets 7 and 8.
    - City requests utility easement for the sewer main located within the private property adjacent to Dover Point Rd.
    - Recommend providing 1 sf of snow storage per 10 sf of pavement to be cleared. Verify snow storage meets or exceeds this recommendation or provide note to remove excess snow when storage areas are filled.

- Community Services requests to be copied on all correspondence with NHDOT regarding this project.
- Provide description of how trash will be picked-up; no dumpster pads are shown on the project site.
- Provide a lighting plan.
- Show location of common mailbox, and provide proof of coordination with postal service on location.
- Provide turning template for emergency vehicles within parking area.
- Comment on applicability of an AoT permit within the Shoreland Protection Zone.

- Sheet 7 Site Plan
  - Recommend improving existing asphalt drive for additional usage, and for emergency vehicles.
  - Recommend connecting proposed parking area to existing 304 Dover Point Rd asphalt drive to the north; located on the subject parcel.
  - Based on historical knowledge, recommend reviewing if erosion is evident within the steep slopes.
- Sheet 8 Grading, Drainage & Erosion Control Plan:
  - Define berm elevations; recommend showing dash line of top of berm with elevation.
  - Northeastern berm of rain garden 1 is in close proximity to the property line; provide more separation or recommend obtaining an easement.
  - Show where proposed emergency outflows are intended to go.
  - Recommend squaring the proposed rainguardian 3 to proposed rain garden 1.
  - Recommend replacing existing 12" driveway culvert with 15" pipe.
  - Contour north of Building 1 incorrectly labeled as 40; should be 44.
  - Extend proposed grading contours beyond limits of disturbance; specifically around Building 3.
- Sheet 9 Utility Plan
  - Since only one water main is proposed into the building, the City will provide only one billable water meter for the entire building. If each unit is intended to be sold, then individual water services are required.
  - A tap and saddle can be used in lieu of the tapping sleeve for a 2" service.
  - Recommend relocating 2" tap on the existing main away from the existing sewer main and force main.
  - Recommend maintaining 2" water service to Building 3, or using a valve to reduce to 1".
  - Recommend adding a yard hydrant for the 2" service line.
  - Recommend tapping individual sewer services from the existing sewer main.
  - Sewer connection permit review will be required if PSMH1 is to be installed.
  - Sewer shall be 8" between existing (SMH1053) and proposed structure (PSMH1).
  - Move PSMH1 to the north; upstream of existing SMH1053.
  - Rebuild invert of existing SMH1053.
  - Clarify who owns the utility pole that the underground utilities will be pulled from.
- Sheet 14 Details:
  - Recommend a Geotech to review and approve the pavement section.
  - Will the Typical Pavement Section be used at the proposed pave walkways?
- Sheet 15 Details:
  - Show detail for proposed emergency outflow.
  - Show applicable elevations (rims, inverts, sumps, etc.) for the rain guardians.
- Landscaping Plan:
  - Ensure landscaping does not conflict with existing sewer main.
- Stormwater Management Narrative:
  - Per Dover Code Section 153-14.A(3)(f)[2][m], demonstrate that there are no adverse impacts to the

aquatic habitat as a result of the increased post-development runoff volume.
    - Some sections note that information will be included when applicable. Please note in each section if it is applicable and if the required information has been provided.

Police:

- Would these units be for sale or rent?
- Traffic Assessment Memorandum dated 5/31/24 refers to a final product of 6 new single family housing units, whereas all other plans appear to show 5.
- Doesn't the shared driveway to the south need to be widened, at least to the point of access for the new units?
- Did you consider bringing the access for Building 3 from the northerly driveway?
- PD requests that Building Official assign street addresses that eliminates the use of 306A, 306B and 306C accessible from different driveways Consider a private street name for the southerly driveway, to be used for the new units and for the existing 306C property.

Inspection Services:

- McEneaney Plan indicates ROW to L/11B- should this read L/111B?
- Clarify the ROW indicating "for Lot L11B. Is the ROW for access to L/111?
    - Provide deed and/or easement for access ROW.
- Discuss creating a private access road name to address some of the 911 discrepancies. L/111B will also need to be readdressed.
- Provide proposed names for the ROW.
- Indicate the width of the ROW and if any improvements are proposed.
- Driveway longer than 150' appears to require fire apparatus turnaround.
- Clarify if one pad mount transformer is to serve all three structures.
- Is there a garbage disposal facility or containers provided by owner? (93-9)

Fire Department:

- The numbering in this area of Dover Point Road is very confusing and creates issues for emergency response. A new street name should be incorporated due to the lack of available Dover Point Road addresses.
- The proposed plan is to utilize the existing gravel roadway for access to the added parking areas. Does this existing roadway meet the minimum width requirements and is the condition adequate enough to support fire apparatus?
- What is the proposed turnaround for fire apparatus if parking area is greater than 150' from the roadway?
- The turn onto the driveway for building 3 does not look feasible with a tower ladder (Truck 1).
- Potential emergency vehicle-only, all season access on northerly driveway?
    - Provide turning template for this option.
    - Updated easement would be needed for this access point.

Business Development:

- Streetscape renderings are attractive and present architecturally as single-unit dwellings. No further comments at this time.

Planning Board:

- Typo note: EnerGov application shows the estimated construction value for the project at $200 million.

Next Steps: Revise plans per comments above and resubmit for second TRC meeting.

Adjournment: P. Crouser moved to adjourn the meeting at 11:16 a.m. Seconded by J. Maxfield. Vote: U/A

CIVILWORKS NEW ENGLAND

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

September 19, 2024

Dover Planning Board
288 Central Avenue
Dover, NH 03820

Attn: Technical Review Committee

Ref: 306 Dover Point Rd.
Assessor's Map L, Lot 111

Re: Technical Review Committee minutes – SITE-2024-0008 dated August 2, 2024

Dear Planning Board:

In response to Technical Review Committee minutes – SITE-2024-0008, by TRC dated August 1, 2024 we submit the following responses in bold beneath the review comments in italic.

Planning

1. *Impact fees, water and sewer investment fees*
   Acknowledged.

2. *Letter to serve for city utilities*
   Coordination with the Engineering Department is ongoing.

3. *Front setback not listed on plan – seems exactly 20'*
   The plans have been updated accordingly.

4. *Lighting plan*
   A lighting plan has been included in the plan set.

5. *Footings for rear deck appear to be very close to 100' Conservation District*
   Acknowledged.

6. *5-24 units necessitates 24' internal road width*
   The plans have been updated accordingly.

7. *ROW widening or improvements (5-24 units = 3 0'?)*
   The plans have been updated to reflect a 30' wide ROW.

8. *Note the existing plantings along the property border on the landscape plan and include any correspondence with abutters opposed to new plantings along the property border.*
   The Landscape plan has been updated accordingly.

9. *Provide any active or passive recreation for residents.*
   The remaining green space will be available for passive recreation.

10. *Revise plans to include planning file number SITE-2024-0008.*
    The plans have been updated accordingly.

Engineering

General

11. *Applicant and Contractor shall review the Dover Construction Guidelines prior to scheduling a Preconstruction meeting with City staff. The guidelines can be found on the city of Dover website on the Engineering page. https://www.dover.nh.gov/Assets/government/city-operations/1form/community-services/engineering/engineering-documents/Construction%20Guidelines.pdf .*
    Acknowledged.

12. *Show existing sewer force main on all plan sheets.*
    Coordination with the Engineering Department is ongoing.

13. *Show existing sewer and OHW on all plan sheets; not shown on sheets 7 and 8.*
    The plans have been updated accordingly.

14. *City requests utility easement for the sewer main located within the private property adjacent to Dover Point Rd.*
    The plan set has been updated to include a sewer easement for the existing sewer located on the property. An easement plan will be created to include the sewer easement and 30' wide ROW.

15. *Recommend providing 1 sf of snow storage per 10 sf of pavement to be cleared. Verify snow storage meets or exceeds this recommendation or provide note to remove excess snow when storage areas are filled.*
    The plans have been updated accordingly.

16. *Community Services requests to be copied on all correspondence with NHDOT regarding this project.*
    Acknowledged, The NHDOT Permit was forwarded to Community Services.

17. *Provide description of how trash will be picked up; no dumpster pads are shown on the project site.*
    The residents will maintain curb side pickup on Dover Point Road. A note has been added to plans, see "Dover Notes" #50 on sheet 5.

18. *Provide a lighting plan.*
    A lighting plan has been included in the plan set.

19. *Show location of common mailbox, and provide proof of coordination with postal service on location.*
    A mailbox location has been coordinated with USPS. The plans have been updated accordingly.

20. *Provide turning template for emergency vehicles within parking area.*

The plan set has been updated accordingly.

21. *Comment on applicability of an AoT permit within the Shoreland Protection Zone*
The estimated proposed disturbance is 48,170 sf. AoT is not applicable.

Sheet 7 Site Plan

22. *Recommend improving existing asphalt drive for additional usage, and for emergency vehicles.*
The site plan has been updated to include a 20' wide paved drive.

23. *Recommend connecting proposed parking area to existing 304 Dover Point Rd asphalt drive to the north located on the subject parcel.*
The applicant does not want a connection to the existing paved drive to the existing single-family residence.

24. *Based on historical knowledge, recommend reviewing if erosion is evident within the steep slopes.*
CNE has visited the site before and after storm events and there is no evidence of erosion within the steep slopes.

Sheet 8 Grading, Drainage & Erosion Control Plan

25. *Define berm elevations; recommend showing dash line of top of berm with elevation.*
The plan has been updated accordingly.

26. *Northeastern berm of rain garden 1 is in close proximity to the property line; provide more separation or recommend obtaining and easement.*
The plan has been updated to provide more separation between the rain garden and property line.

27. *Show where proposed emergency outflows are intended to go.*
The post-watershed plan has been updated accordingly.

28. *Recommend squaring the proposed rain guardian 3 to proposed rain garden 1.*
The plan has been updated accordingly.

29. *Recommend replacing existing 12" driveway culvert with 15" pipe.*
The NHDOT indicated that the existing drainage along Dover Point Road shall be maintained. No comment was made regarding the replacement of the existing driveway culvert. The NHDOT permit is attached. As discussed, the culvert is within the NHDOT ROW. The NHDOT has issued a Driveway Permit for this project, no action necessary.

30. *Contour north of Building 1 incorrectly labeled as 40; it should be 44.*
The plan has been updated accordingly.

31. *Extend proposed grading contours beyond limits of disturbance; specifically around building 3.*
The plan has been updated accordingly.

CIVILWORKS NEW ENGLAND
181 WATSON ROAD
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Sheet 9 Utility Plan

32. *Since only one water main is proposed into the building, the City will provide only one billable water meter for the entire building. If each unit is intended to be sold, then individual water services are required.*
    The plan has been updated to include individual water services to each unit.

33. *A tap and saddle can be used in lieu of the tapping sleeve for a 2" service.*
    Acknowledged, the plan has been updated accordingly.

34. *Recommend relocating 2" tap on the existing main away from the existing sewer main and force main.*
    The plan has been updated accordingly.

35. *Recommend adding a yard hydrant for the 2" service line*
    The plan has been updated accordingly.

36. *Recommend maintaining a 2" water service to building 3, or using a valve to reduce to 1"*
    The plan has been updated accordingly.

37. *Recommend tapping individual sewer services from the existing sewer main.*
    The plan has been updated to include individual sewer services to the existing sewer main.

38. *Sewer connection permit review will be required if PSMH1 is to be installed.*
    Acknowledged, PSMH1 has been removed from the sewer design.

39. *Sewer shall be 8" between existing (SMH1053) and proposed structure (PSMH1).*
    Acknowledged, PSMH1 has been removed from the sewer design.

40. *Move PSMH1 to the north; upstream of existing SMH1053.*
    Acknowledged, PSMH1 has been removed from the sewer design.

41. *Rebuild invert of existing SMH1053.*
    Not applicable, Acknowledged, PSMH1 has been removed from the sewer design.

42. *Clarify who owns the utility pole that the underground utilities will be pulled from.*
    The utility pole is serviced by Eversource.

Sheet 14 Details

43. *Recommend a Geotech to review and approve the pavement section.*
    The pavement section has been updated to meet City standards.

44. *Will the Typical Pavement Section be used at the proposed pave walkways?*
    The paved walkways will be 2" of wearing coarse over 6" of compacted base material. A detail has been added to plan set.

Sheet 15 Details

45. *Show detail for proposed emergency outflow.*
    The plan set has been updated accordingly.

46. *Show applicable elevations (rims, inverts, stumps, etc.) for the rain guardians*
    The plan has been updated accordingly.

Landscaping Plan

47. *Ensure landscaping does not conflict with existing sewer main.*
    The Landscape Plan has been updated accordingly.

Stormwater Management Narrative

48. *Per Dover Code Section 153-14.a(3)(f)[2][m], demonstrate that there are no adverse impacts to the aquatic habitat as a result of the increased post development runoff volume.*
    The Stormwater Management Narrative has been updated accordingly.

49. *Some sections note that information will be included when applicable. Please not in each section if it is applicable and required information has been provided.*
    The Stormwater Management Narrative has been updated accordingly.

Police

50. *Would these unites be for sale or rent?*
    The applicant has been stated that the duplex units will be for rent.

51. *Traffic Assessment Memorandum dated 5/31/24 refers to a final product of 6 new family housing units, where as all other plans appear to show 5.*
    The Traffic Assessment Memo has been updated accordingly.

52. *Doesn't shared driveway to the south need to be widened. At least to the point of access for new units?*
    The plan has been updated accordingly.

53. *Did you consider bringing the access for building 3 from the northerly driveway.*
    The applicant does not want a connection to the existing paved drive to the existing single-family residence.

54. *PD requests that Building Official assign street addresses that eliminates the use of 306A and 306B and 306C accessible from different driveways. Consider a private street name for the southerly driveway, to be used for new units and for existing 306C property*
    Acknowledged, this will be coordinated when applying for building permit.

Inspection Services

55. *McEneaney Plan indicates ROW to L/11B- Should this read L/111B?*

The plan has been updated accordingly.

56. *Clarify the ROW indicating "for Lot L11B." Is the ROW for access to L/111B?*
    a. *Provide deed and/ or easement for access ROW*

    A deed has been provided.

57. *Discuss creating a private access road name to address some of the 911 discrepancies. L111B will also need to be readdressed.*

    The applicant is corresponding with the City to determine an appropriate road name for the proposed drive.

58. *Provide proposed names for the ROW.*

    The applicant is corresponding with the City to determine an appropriate road name for the proposed drive.

59. *Indicate the width of the ROW and if any improvements are proposed.*

    30', the plan has been updated accordingly.

60. *Driveway longer than 150' appears to require fire apparatus turnaround.*

    A firetruck movement plan has been included in the plan set.

61. *Clarify if one pad mount transformer is to serve all 3 structures.*

    A utility plan was provided to Eversource, they made no comment regarding additional transformers.

62. *Is there a garbage disposal facility or containers provided to the owner? (93-9)*

    The residents will maintain curb side pickup on Dover Point Road. A note has been added to plans, see "Dover Notes" #50 on sheet 5.

Fire Department

63. *The numbering in this area of Dover Point Road is very confusing and creates issues for emergency response. A new street name should be incorporated due to the lack of available Dover Point Road addresses.*

    Acknowledged, a private drive name will be proposed. New addresses will be coordinated during building permit review.

64. *The proposed plan is to utilize the existing gravel roadway for access to the added parking areas. Does this existing roadway meet the minimum width requirements and is the condition adequate enough to support fire apparatus?*

    The proposal includes a 20' shared driveway to access the development, and a 24' wide paved internal drive for access to the parking area. A fire truck movement plan has been included in the plan set.

65. *What is the proposed turnaround for fire apparatus If parking area is greater than 150' from roadway?*

A fire truck movement plan has been included in the plan set.

66. *The turn onto the driveway for building 3 does not look feasible with a tower ladder (Truck 1).*
A fire truck movement plan has been included in the plan set.

67. *Potential emergency vehicle-only, all season access on northerly driveway?*
    a. *Provide turning template for this option*
    b. *Updated easement would be needed for this access point.*

The applicant does not want a connection to the existing paved drive to the existing single-family residence.

Business Development:

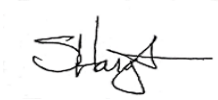
68. *Streetscape renderings are attractive and present architecturally as single-unit Dwellings. No further comments at this time.*
Acknowledged.

Planning Board:

69. *Typo note: EnerGov application shows the estimated construction value for the project at 200 million.*
Acknowledged.

CIVILWORKS NEW ENGLAND

Sincerely,



Stephen J Haight, PE

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

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Dover, New Hampshire 03820-4169
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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:	**Submitted**	**Received**
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	☐	☐

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 25-year storm events. The project proposes a minimal increase of 0.3 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: **This information is provided in the drainage report and throughout the plan set and details.**

[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. **This information is provided in the drainage report and throughout the plan set and details.**

[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. **This information is provided in the drainage report and throughout the plan set and details.**

[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. **This information is provided in the drainage report and throughout the plan set and details.**

[d] Description of existing drainage patterns, receiving water bodies or drainage infrastructure and soil types for recharge potential. **This information is provided in the drainage report and throughout the plan set and details.**

[e] Watershed area limits, including any off-site and upstream areas contributing flow to shared drainage channels and/or infrastructure. **This information is provided in the drainage report and throughout the plan set and details.**

[f] Description of proposed changes in impervious cover areas and any changes in pre- and post-development drainage patterns. **This information is provided in the drainage report and throughout the plan set and details..**

[g] Methods and assumptions used to calculate pre- and post-development runoff volume, peak discharge, and discharge velocity for the specified design storm events. **This information is provided in the drainage report and throughout the plan set and details.**

[h] Methods and assumptions used to calculate the pollutant load removal. **This information is provided in the drainage report and throughout the plan set and details.**

[i] Description of LID measures that are proposed to limit the development footprint, preserve existing vegetation and mimic existing hydrology to the extent feasible. **This information is provided in the drainage report and throughout the plan set and details.**

[j] If not used, provide rationale why LID measures are not practical for the site. **N/A**

[k] Describe measures and calculations for proposed practices used to achieve no net increase in runoff volumes leaving the site. **This information is provided in the drainage report and throughout the plan set and details.**

[l] Provide calculations for the infiltration or exfiltration system. **This information is provided in the drainage report and throughout the plan set and details.**

[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. **No increase in post-development runoff volume is anticipated. This information is provided in the drainage report and throughout the plan set and details.**

[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. **This information is provided in the drainage report and throughout the plan set and details.**

[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. **N/A**

[p] Proposed schedule for the inspection and maintenance of all erosion control measures on site prior to achieving final site stabilization. **This information is provided in the drainage report and throughout the plan set and details.**

[q] Describe procedures for removing temporary erosion control measures and removal of accumulated sediment captured by such measures. **This information is provided in the drainage report and throughout the plan set and details.**

[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.**

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Book 4753 Page 261 **Page 1 of 3**
Catherine A. Berube
Register of Deeds, Strafford County
LCHIP STA156710 25.00
TRANS TAX ST850787 7,950.00

WARRANTY DEED

KNOW ALL PERSONS BY THESE PRESENTS: That **Robert S. Weed and Charlene M. Weed**, husband and wife, of 306 Dover Point Road, Dover, NH 03820, for consideration paid grant to **Brian Slovenski**, single, of 124 Turtle Pond Road, Lee, NH 03861, with WARRANTY COVENANTS:

The following tract of land with the buildings thereon, situate on the Southeasterly side of Dover Point Road in Dover, Strafford County and State of New Hampshire, being the premises (except for Lot #2 and #4) shown on plan entitled "Proposed Development, Lester Bates, Dover, N.H., dated September 1965, revised April 9, 1970, G. L. Davis & Associates", a copy of which is recorded in Strafford County Registry of Deeds, Pocket #11, Folder #2, as Plan #17A, and further indicated as Lot #111 on Sheet 'L' of City of Dover Assessors Plans, and bounded and described as follows:

Beginning at a steel stake in the Southeasterly sideline of Dover Point Road, said stake also being at the junction of the Southwesterly corner of the herein described premises with the Northwesterly corner of land now or formerly of Avis Pearson; thence

1. N 32 ° 03' E by said Road a distance of two hundred fifty-seven and seventy-nine hundredths (257.79) feet to a point; thence
2. 2. N 27 ° 33' E by said Road a distance of sixteen and nine-hundredths (16.09) feet to a steel stake at the Southwesterly corner of land now or formerly of Henry D. and Lorraine L. Mayrand; thence
3. S 56 ° 27' E by land now or formerly of said Mayrand a distance of twenty-five and no-tenths (25.0) feet to a steel stake; thence
4. S 24 ° 23' E by land now or formerly of said Mayrand a distance of seventy-nine and four-hundredths (79.04) feet to a stake; thence
5. S 48 ° 55' E by land now or formerly of said Mayrand a distance of sixty-seven and ninety-two hundredths (67.92) feet to a steel stake at land now or formerly of George T. and Martha V. Elliott; thence
6. S 35 ° W by land now or formerly of said Elliott a distance of sixteen and nine-hundredths (16.09) feet to a stake; thence

7. S 59 ° E by land now or formerly of said Elliott a distance of two hundred thirty (230) feet, more or less, to mean high water mark of Piscataqua River; thence
8. In a general SOUTHERLY and SOUTHWESTERLY direction by mean high water mark of said River to the Northeasterly corner of land now or formerly of Herbert S. and Elizabeth S. Lourie; thence
9. N 53 ° 45' W by land now or formerly of said Lourie a distance of one hundred ninety (190) feet, more or less, to a steel stake; thence
10. S 36 ° 15' W by land now or formerly of said Lourie a distance of one hundred (100) feet to a steel stake at land now or formerly of said Pearson; thence
11. N 53 ° 45' W by land now or formerly of said Parsons a distance of three hundred thirteen and forty-six hundredths (313.46) feet to the point of beginning.

Together with the right and privilege to construct a road leading from Dover Point Road to Lot #2 either over the existing right of way having a width of Twenty-five (25) feet as shown on said Plan or any other property formerly of Hazel M. Bates, and the right to relocate the water line location, both as set forth in deed to Herbert S. and Elizabeth S. Lourie dated April 3, 1970, and recorded in Strafford County Records, Book 869, Page 382.

Subject, however, to the right of way having a width of twenty-five (25) feet and situate along the Southwesterly boundary of the above-described premises between the Southeasterly sideline of Dover Point Road and the Northwesterly boundary of land now or formerly of said Lourie, and the right in said Lourie to use, maintain, replace and repair a water line running from the water main on Dover Point Road to land now or formerly of said Lourie, including the ownership in said Lourie.

Subject, also, to the right of way having a width of sixteen and nine-hundredths (16.09) feet situate along the Northeasterly boundary of the above-described premises, between the Southeasterly sideline of Dover Point Road and the Northwesterly boundary of land now or formerly of George T. and Martha V. Elliott, and the further right to install a water line on a strip of land having a width of three (3) feet and situate along the Southwesterly boundary of said right of way, with the right to maintain, replace, use and repair the same in said location, both said rights contained in deed to George T. and Martha V. Elliott dated May 22, 1970, and recorded in said Records, Book 871, Page 229.

Meaning and intending to describe and convey the same premises conveyed to Robert S. Weed and Charlene M. Weed by virtue of a deed from Robert S. Weed dated 04/11/1991 recorded in Book 1548, Page 591, with the Strafford County Registry of Deeds.

We, the grantors hereby release all rights of homestead in the above described premises.

Executed this 20th day of April, 2020.

Robert S. Weed

Robert S. Weed

Charlene M Weed

Charlene M. Weed

State of New Hampshire
County of Strafford

On April 20th , 2020, before me, the undersigned notary public, personally appeared the above-named, **Robert S. Weed and Charlene M. Weed** and proved to me through satisfactory evidence of identification, which was a driver's license, to be the person whose name is signed on the preceding or attached document, and acknowledged to me that they signed it voluntarily for its stated purpose.



Notary Public: _____

My Commission Expires:

869

382

1970 APR -3 PM 4:50

DEED OF WARRANTY

We, Lester F. Bates and Hazel M. Bates, of Dover, in the County of Strafford and State of New Hampshire, for consideration paid, grant to Herbert S. Lourie and Elizabeth M. Lourie, as joint tenants with rights of survivorship, of Keene, in the County of Cheshire and State of New Hampshire, with WARRANTY covenants:

A parcel of land situate in said Dover on Dover Point, with the buildings thereon, bounded and described as follows:

Beginning at the southwest corner of the granted premises; thence running south 53° 45' east a distance of one hundred forty (140) feet, more or less, along land now or formerly of Fred and Avis Pearson to a steel stake on the river bank; thence continuing in the same direction a distance of twenty (20) feet, more or less, to the high water line of the Piscataqua River; thence running in a general northeasterly direction along the high water line of the Piscataqua River to the northeast corner of the within granted premises as shown on the plan hereinafter referred to; thence running north 53° 45' west a distance of one hundred ninety (190) feet, more or less, along other land of the grantors to the northwest corner of the granted premises; thence running in a southwesterly direction along other land of the grantors as shown on said plan a distance of one hundred (100) feet to the point of beginning.

Together with a right of way twenty-five (25) feet in width for purposes of travel on foot and by vehicle to be used together with the grantors, their heirs and assigns, leading from Dover Point Road to the granted premises, bounded and described as follows:

Beginning at a steel stake at the corner of land of the grantors and land now or formerly of Fred and Avis Pearson; thence running south 53° 45' east a distance of one hundred ninety (190) feet to the southwest corner of the granted premises; thence running in a northeasterly direction a distance of twenty-five (25) feet along the westerly sideline of the granted premises; thence running north 53° 45' west parallel to the afore-mentioned line a distance of one hundred ninety (190) feet to the easterly sideline of Dover Point Road; thence running south 32° 03' west a distance of twenty-five (25) feet along the easterly sideline of Dover Point Road to the point of beginning.

The above premises, including said right of way, are as shown on a map entitled "Proposed Development, Lester Bates, Dover, N. H., G. L. Davis & Associates, September 1965", as revised and approved by Dover Planning Board and recorded in Strafford County Registry of Deeds, Pocket No. 1 1 , Folder No. 2 , Plan No. 17.

Together, also, with a right to use, maintain, replace and repair

a water line in its present location running from a water main on Dover Point Road to the granted premises, including the ownership of said water line.

Subject, however, to the right and privilege of the grantors, their heirs and assigns, to construct a road leading from Dover Point Road to the granted premises either over the existing right of way described above or some other portion of the property now retained by the grantors as shown on the said plan, with the grantees to have a right of way for purposes of travel by foot and by vehicle, together with the grantors, their heirs and assigns, over said road, upon the construction of which road fit for use for purposes of travel the existing right of way previously granted shall expire and revert to the grantors, their heirs and assigns.

Subject further to the right of the grantors to relocate said water line described above in another location to run from the main on Dover Point Road to the granted premises, in the event of the construction of said road, with the grantees to have the right to use, maintain, repair, and replace the water line in its new location, including the ownership of said water line.

These are the same premises acquired by the grantors from the Estate of Margaret M. Coleman, Strafford County Probate Records No. A7449.

We, Lester F. Bates, husband, and Hazel M. Bates, wife of said grantor release to said grantees all rights of dower, curtesy and homestead and other interest therein.

WITNESS our hands and seals this 3rd day of ~~February,~~ April, 1970.

Witness:

Lester F. Bates

Hazel M. Bates

STATE OF NEW HAMPSHIRE)
COUNTY OF STRAFFORD) ss. ~~February~~ April 8, 1970

Lester F. Bates and Hazel M. Bates personally appeared and acknowledged the foregoing instrument to be their voluntary act and deed.

Before me,

Justice of the Peace
~~Notary Public~~

008777 STATE OF NEW HAMPSHIRE TAX ON TRANSFER OF REAL PROPERTY STATE TAX COMMISSION APR--'70 P.D. 10986 08.00

EXAMINED BY: Marjorie E. Holmes REGISTER

THE STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION

DRIVEWAY PERMIT

To Landowner:
Brian Slovenski
124 Turtle Pond Road
Lee,NH 03861

City/Town: Dover
Route/Road: Dover Point Rd (N1250035)
Patrol Section: 606
Tax Map: L
Lot: 11
Development: Residential (Greater than 3 units)

Permit#: DOT-DRI-000153
District: 06
Permit Date: 08/22/2024

Permission is hereby granted to construct (alter) a driveway, entrance, exit or approach adjoining Dover Point Rd (N1250035), pursuant to the location and specifications as described below. Failure to adhere to the standards and engineering drawings previously approved shall render this instrument null and void. Failure to start or complete construction of said facility within one calendar year of the date of this permit shall require application for permit extension or renewal in accordance with the Driveway Access Rules. Facilities constructed in violation of the permit specifications or the rules, shall be corrected immediately upon notification by a Department representative. Any cost by the State to correct deficiencies shall be fully borne by the landowner. The landowner shall defend, indemnify and hold harmless the Department and its duly appointed agents and employees against any action for personal injury and/or property damage sustained by reason of the exercise of this permit. All supporting documentation for this permit, on file in the State of New Hampshire Permit Portal for the respective application, is considered part of the final permit and all parties are responsible for complying with these documents.

Drive 1

Location: Approximately .05 miles North of Dover Point Rd on the East side of Dover Point Rd (N1250035).

GPS: 43.133347, -70.835719

Specifications: This permit authorizes a Paved access to be used as a 220 Multifamily Housing (Low-Rise)drive. Any change in use, increase in use or reconstruction of the driveway requires reapplication.

The right-of-way line is located Varies.

The driveway shall not exceed 20 feet in width. The entrance of the drive may be flared; typically the flare radius is one half the driveway width.

Other Conditions:

No structures, including buildings, permanent or portable signs, lights, displays, fences, walls, etc. shall be permitted on, over or under the Highway Right of Way.

No parking, catering or servicing shall be conducted within the Highway Right of Way.

The applicant shall comply with all applicable ordinances and regulations of the municipality or other State Agencies.

The Department has relied on the title and subdivision information provided by the landowner. The Department has not

performed additional title research and makes no warranty or representation concerning landowner's legal right to access. In the event of a dispute about the landowner's legal right to the access provided herein, the landowner will defend and indemnify the Department.

All excavated topsoil, or in the absence of topsoil the top 6 inches of soil, within the limits of state ROW shall be properly re-used within the limits of the state ROW. All temporary stockpiles of the re-use material shall be located within the state ROW, or as otherwise approved by the District Engineer.

The Contractor shall be solely responsible for the handling, transport and disposal of any surplus material generated by their project and shall comply with all federal, state and local laws, ordinances and rules in doing so.

I/We, the contractor/Owner, certify that the property will not have any illicit unauthorized drainage connections to the NHDOT storm water drainage system. An illicit discharge is any direct or Indirect discharge to the NHDOT drainage system that is not composed entirely of storm water. Illicit discharges include, without limitation, sewage, process wastewater, or wash water and any connections from floor drains, sinks, or toilets.

1. This permit is for access to 3 proposed residential buildings with 6 units and an existing single-family home.
2. The change in use of one existing driveway is permissible. This permit does not require or permit any change to the existing paved driveway. Reference plans on file in NH Permit Portal.
3. Other access to the highway from the premises is to be prevented. No part of the right-of-way may be used for any purpose other than travel.
4. The existing drainage along Dover Point Road shall be maintained. Re-development of the site shall not cause for any additional runoff to be directed to Dover Point Road.
5. All season safe sight distance shall be maintained by the landowner as per RSA 236:13.
6. This access includes a right of way to existing Lot L / 111B.
7. This permit references permit 06-125-101-D.
8. The applicant will be responsible for mitigation should the future use of this driveway unfavorably impact the highway.

Approved by

Roger Appleton

Assistant District Engineer

For Director of Administration

Copies:

Bureau, Owner, Patrolman

IA-0000000165

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 constriction 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

EVERSOURCE ENERGY

July 09, 2024

1700 Lafayette Road
Portsmouth, NH 03801

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

Brian Slovenski
124 Turtle Pond Road
Lee, NH 03861

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.

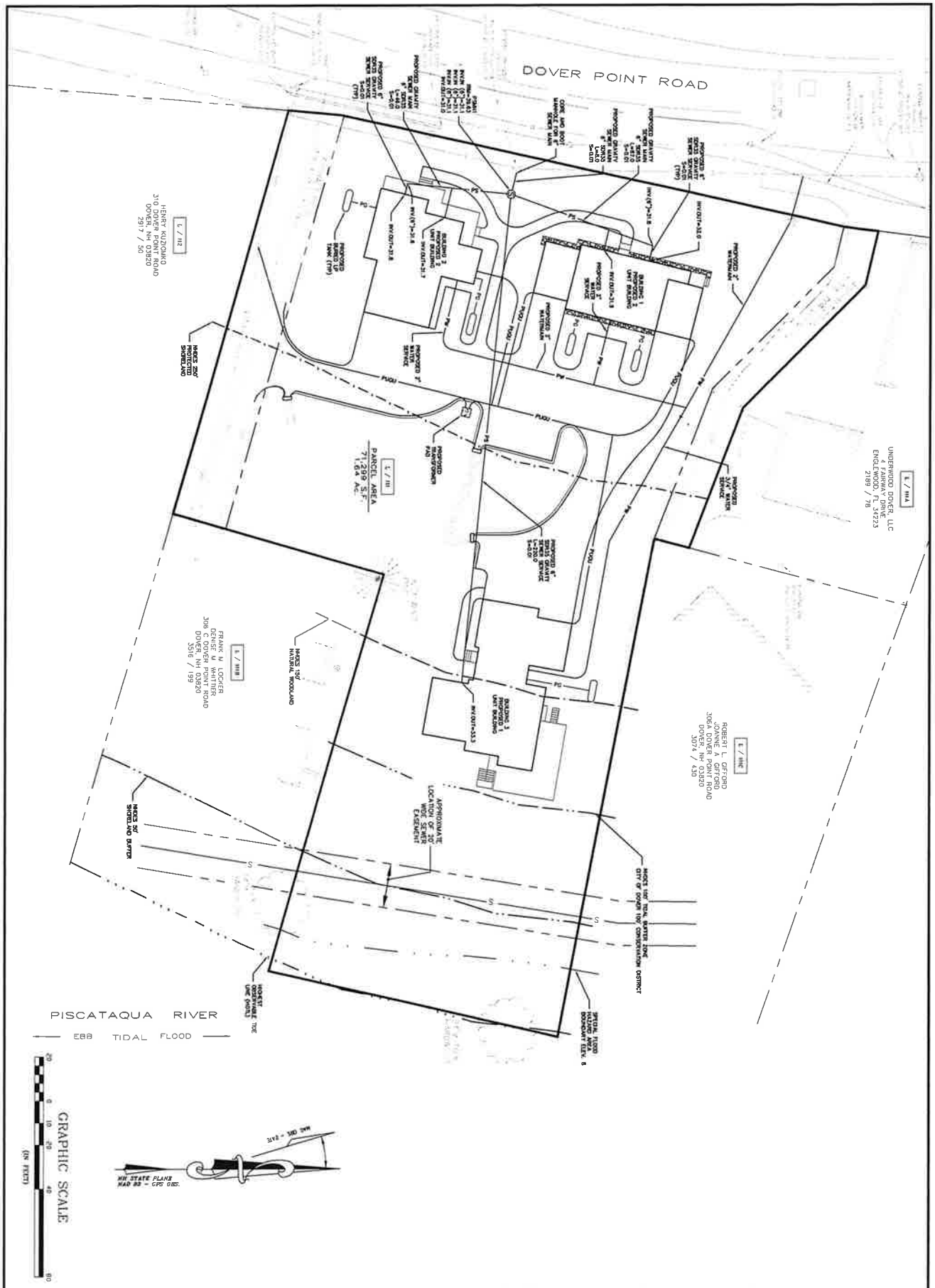
Eversource approves the locations shown; assuming the final installed locations meet all clearances, physical protection, and access requirements as outlined in Eversource's "Information & Requirements For Electric Supply" (https://www.eversource.com/content/docs/default-source/pdfs/requirements-for-electric-service-connections.pdf?sfvrsn=2).

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



PLANNING FILE NO.: SITE—2024—

UTILITY PLAN

8

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: 8-20-24				
SCALE: 1"=20'				
DRAWN BY: JRC				
DESIGN BY: JRC				
APPROVED BY:JN				
PROJECT NO: 2314E				
FILE: SITE	NO.	REVISION	APP'D	DATE

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

CNE
CIVILWORKS NEW ENGLAND
191 Watson Road, PO Box 1102
Dover, New Hampshire 03821
603.749.0443

Stormwater Management System Inspection & Maintenance Plan

Prepared for:

SLOVENSKI RESIDENTIAL TDR DEVELOPMENT
Map L, Lot 111

Dover Point Road
Dover, New Hampshire
Strafford County

September 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:

- Rain Guardian Fortress
- 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.

RAIN GUARDIANS FORTRESS:

- Common maintenance needs include periodic removal of accumulated leaves (and other organic debris) and garbage from the internal grate and sediment and fine debris from the concrete and metal dry filter box. Contributing watersheds with high sediment concentrations may require up to monthly or twice monthly visits to satisfy maintenance needs.
- If sediment accumulates beyond an acceptable level in the system, it will be necessary to remove. This can be done by manual removal with a shovel or vacuum device. The filter screen can be cleaned manually through brushing or with pressurized water.

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
• Rain Guardians Fortress	Periodically	• Check for trash, debris, and accumulated sediments in grate • Check sediment level	Remove debris and veg. periodically ≥ 3 in. sediment depth shovel sediment
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:_____

System Component / BMP	Cleaning / Repair Needed (List Items / Comments)	Date of Cleaning/Repair	Performed By

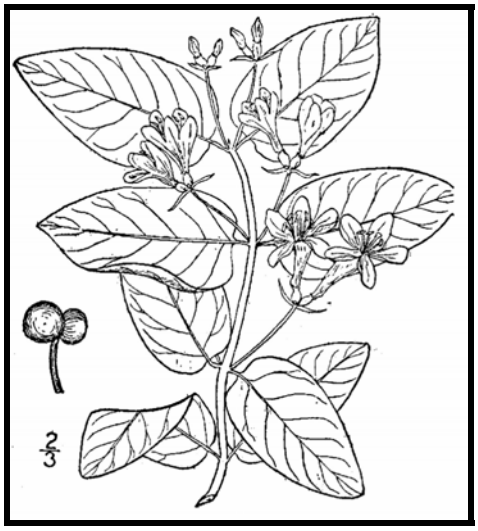
Deicing Salt Quantity Use Log

Date	Amount of Material Applied	Comments

University of New Hampshire Cooperative Extension

Methods for Disposing Non-Native Invasive Plants

Prepared by the Invasives Species Outreach Group, volunteers interested in helping people control invasive plants. Assistance provided by the Piscataquog Land Conservancy and the NH Invasives Species Committee. Edited by Karen Bennett, Extension Forestry Professor and Specialist.



Tatarian honeysuckle
Lonicera tatarica
USDA-NRCS PLANTS Database / Britton, N.L., and A. Brown. 1913. *An illustrated flora of the northern United States, Canada and the British Possessions*. Vol. 3: 282.

Non-native invasive plants crowd out natives in natural and managed landscapes. They cost taxpayers billions of dollars each year from lost agricultural and forest crops, decreased biodiversity, impacts to natural resources and the environment, and the cost to control and eradicate them.

Invasive plants grow well even in less than desirable conditions such as sandy soils along roadsides, shaded wooded areas, and in wetlands. In ideal conditions, they grow and spread even faster. There are many ways to remove these non-native invasives, but once removed, care is needed to dispose the removed plant material so the plants don't grow where disposed.

Knowing how a particular plant reproduces indicates its method of spread and helps determine the appropriate disposal method. Most are spread by seed and are dispersed by wind, water, animals, or people. Some reproduce by vegetative means from pieces of stems or roots forming new plants. Others spread through both seed and vegetative means.

Because movement and disposal of viable plant parts is restricted (see NH Regulations), viable invasive parts can't be brought to most transfer stations in the state. Check with your transfer station to see if there is an approved, designated area for invasives disposal. This fact sheet gives recommendations for rendering plant parts non-viable.

Control of invasives is beyond the scope of this fact sheet. For information about control visit www.nhinvasives.org or contact your UNH Cooperative Extension office.

New Hampshire Regulations

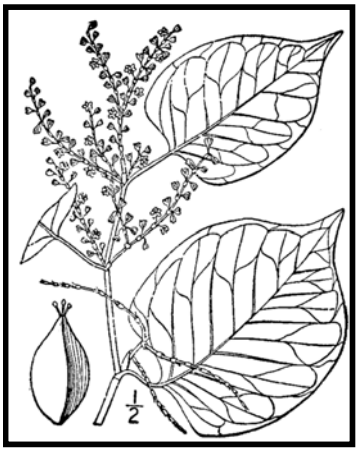
Prohibited invasive species shall only be disposed of in a manner that renders them nonliving and nonviable. (Agr. 3802.04)

No person shall collect, transport, import, export, move, buy, sell, distribute, propagate or transplant any living and viable portion of any plant species, which includes all of their cultivars and varieties, listed in Table 3800.1 of the New Hampshire prohibited invasive species list. (Agr 3802.01)

How and When to Dispose of Invasives?

To prevent seed from spreading remove invasive plants before seeds are set (produced). Some plants continue to grow, flower and set seed even after pulling or cutting. Seeds can remain viable in the ground for many years. If the plant has flowers or seeds, place the flowers and seeds in a heavy plastic bag "head first" at the weeding site and transport to the disposal site. The following are general descriptions of disposal methods. See the chart for recommendations by species.

Burning: Large woody branches and trunks can be used as firewood or burned in piles. For outside burning, a written fire permit from the local forest fire warden is required unless the ground is covered in snow. Brush larger than 5 inches in diameter can't be burned. Invasive plants with easily airborne seeds like black swallow-wort with mature seed pods (indicated by their brown color) shouldn't be burned as the seeds may disperse by the hot air created by the fire.



Japanese knotweed
Polygonum cuspidatum
USDA-NRCS PLANTS Database / Britton, N.L., and A. Brown. 1913. *An illustrated flora of the northern United States, Canada and the British Possessions*. Vol. 1: 676.

Bagging (solarization): Use this technique with softer-tissue plants. Use heavy black or clear plastic bags (contractor grade), making sure that no parts of the plants poke through. Allow the bags to sit in the sun for several weeks and on dark pavement for the best effect.

Tarping and Drying: Pile material on a sheet of plastic and cover with a tarp, fastening the tarp to the ground and monitoring it for escapes. Let the material dry for several weeks, or until it is clearly nonviable.

Chipping: Use this method for woody plants that don't reproduce vegetatively.

Burying: This is risky, but can be done with watchful diligence. Lay thick plastic in a deep pit before placing the cut up plant material in the hole. Place the material away from the edge of the plastic before covering it with more heavy plastic. Eliminate as much air as possible and toss in soil to weight down the material in the pit. Note that the top of the buried material should be at least three feet underground. Japanese knotweed should be at least 5 feet underground!

Drowning: Fill a large barrel with water and place soft-tissue plants in the water. Check after a few weeks and look for rotted plant material (roots, stems, leaves, flowers). Well-rotted plant material may be composted. A word of caution- seeds may still be viable after using this method. Do this before seeds are set. This method isn't used often. Be prepared for an awful stink!

Composting: Invasive plants can take root in compost. Don't compost any invasives unless you know there is no viable (living) plant material left. Use one of the above techniques (bagging, tarping, drying, chipping, or drowning) to render the plants nonviable before composting. Closely examine the plant before composting and avoid composting seeds.

Be diligent looking for seedlings for *years* in areas where removal and disposal took place.

Suggested Disposal Methods for Non-Native Invasive Plants

This table provides information concerning the disposal of removed invasive plant material. If the infestation is treated with herbicide and left in place, these guidelines don't apply. Don't bring invasives to a local transfer station, unless there is a designated area for their disposal, or they have been rendered non-viable. This listing includes wetland and upland plants from the New Hampshire Prohibited Invasive Species List. The disposal of aquatic plants isn't addressed.

<table>
<tr><th>Woody Plants</th><th>Method of Reproducing</th><th>Methods of Disposal</th></tr>
<tr><td rowspan="2">Norway maple
(Acer platanoides)
European barberry
(Berberis vulgaris)
Japanese barberry
(Berberis thunbergii)
autumn olive
(Elaeagnus umbellata)
burning bush
(Euonymus alatus)
Morrow's honeysuckle
(Lonicera morrowii)
Tatarian honeysuckle
(Lonicera tatarica)
showy bush honeysuckle
(Lonicera x bella)
common buckthorn
(Rhamnus cathartica)
glossy buckthorn
(Frangula alnus)</td><td rowspan="2">Fruit and Seeds
  </td><td>Prior to fruit/seed ripening
Seedlings and small plants
▪ Pull or cut and leave on site with roots exposed. No special care needed.
Larger plants
▪ Use as firewood.
▪ Make a brush pile.
▪ Chip.
▪ Burn.</td></tr>
<tr><td>After fruit/seed is ripe
Don't remove from site.
▪ Burn.
▪ Make a covered brush pile.
▪ Chip once all fruit has dropped from branches.
▪ Leave resulting chips on site and monitor.</td></tr>
<tr><td rowspan="2">oriental bittersweet
(Celastrus orbiculatus)
multiflora rose
(Rosa multiflora)</td><td rowspan="2">Fruits, Seeds, Plant Fragments
  </td><td>Prior to fruit/seed ripening
Seedlings and small plants
▪ Pull or cut and leave on site with roots exposed. No special care needed.
Larger plants
▪ Make a brush pile.
▪ Burn.</td></tr>
<tr><td>After fruit/seed is ripe
Don't remove from site.
▪ Burn.
▪ Make a covered brush pile.
▪ Chip – only after material has fully dried (1 year) and all fruit has dropped from branches. Leave resulting chips on site and monitor.</td></tr>
</table>

Non-Woody Plants	Method of Reproducing	Methods of Disposal
garlic mustard *(Alliaria petiolata)* spotted knapweed *(Centaurea maculosa)* ▪ Sap of related knapweed can cause skin irritation and tumors. Wear gloves when handling. black swallow-wort *(Cynanchum nigrum)* ▪ May cause skin rash. Wear gloves and long sleeves when handling. pale swallow-wort *(Cynanchum rossicum)* giant hogweed *(Heracleum mantegazzianum)* ▪ Can cause major skin rash. Wear gloves and long sleeves when handling. dame's rocket *(Hesperis matronalis)* perennial pepperweed *(Lepidium latifolium)* purple loosestrife *(Lythrum salicaria)* Japanese stilt grass *(Microstegium vimineum)* mile-a-minute weed *(Polygonum perfoliatum)*	**Fruits and Seeds** 	**Prior to flowering** Depends on scale of infestation Small infestation ▪ Pull or cut plant and leave on site with roots exposed. Large infestation ▪ Pull or cut plant and pile. (You can pile onto or cover with plastic sheeting). ▪ Monitor. Remove any re-sprouting material. **During and following flowering** Do nothing until the following year or remove flowering heads and bag and let rot. Small infestation ▪ Pull or cut plant and leave on site with roots exposed. Large infestation ▪ Pull or cut plant and pile remaining material. (You can pile onto plastic or cover with plastic sheeting). ▪ Monitor. Remove any re-sprouting material.
common reed (*Phragmites australis*) Japanese knotweed *(Polygonum cuspidatum)* Bohemian knotweed *(Polygonum x bohemicum)*	**Fruits, Seeds, Plant Fragments** Primary means of spread in these species is by plant parts. Although all care should be given to preventing the dispersal of seed during control activities, the presence of seed doesn't materially influence disposal activities.	**Small infestation** ▪ Bag all plant material and let rot. ▪ Never pile and use resulting material as compost. ▪ Burn. **Large infestation** ▪ Remove material to unsuitable habitat (dry, hot and sunny or dry and shaded location) and scatter or pile. ▪ Monitor and remove any sprouting material. ▪ Pile, let dry, and burn.

January 2010

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Landscape Best Management Practices
Operations and Maintenance Plan

Residential Site

306 Dover Point Road
Dover, New Hampshire 03820

Prepared for:

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Prepared by:

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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 programing.
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		

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Revision: September 15, 2024

TRAFFIC ASSESSMENT MEMORANDUM

INTRODUCTION

Civilworks New England has prepared this revised traffic-assessment memorandum (TAM) regarding the residential development project proposed at Tax Map L, Lot No. 111, 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 size 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 revised project will provide a total of five new single family housing units contained within three two-story buildings. However, one single family detached home already exists on the property which will be removed for the project. So, the net increase will be only four 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.

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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.
- 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 in 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.

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.

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

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Table 1: Trip Generation - Single-Family Attached Housing (4 Units)

			Vehicle Trips*		
Weekday Period	Avg. Trips	Proposed Units	Total	In	Out
Daily	Eq.= Neg.#, Use Ave.	4	28.8	14.4	14.4
AM Peak Hour of Adjacent Street Traffic	Eq.= Neg.#, Use Ave.	4	1.9	0.6	1.3
PM Peak Hour of Adjacent Street Traffic	Eq.= Neg.#, Use Ave.	4	2.3	1.3	1

* ITE, *Trip Generation Manual,* 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)

			Vehicle Trips*		
Weekday Period	Avg. 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, *Trip Generation Manual,* Single-Family Detached Housing - Land Use Code 210

Weekday Trips = Ln(T) = 0.92 Ln(Units) + 2.68 (50% entering, 50% exiting)
AM Trips = Ln(T) = 0.91 Ln(Units) + 0.12 (26% entering, 74% exiting)
PM Trips = Ln(T) = 0.94 Ln(Units) + 0.27 (63% entering, 37% exiting)

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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) = 43.4 total trips (21.7 in and 21.7 out) [5-unit project]
  Less 14.6 existing trips (7.3 in and 7.3 out) [existing house on property]
  Net Increase = 28.8 trips (14.4 in and 14.4 out)

- AM peak hour (weekday) = 3.0 total trips (0.9 in and 2.1 out)
  Less 1.1 existing trips (0.3 in and 0.8 out)
  Net Increase = 1.9 trips (0.6 in and 1.3 out)

- PM peak hour (weekday) = 3.6 total trips (2.1 in and 1.5 out)
  Less 1.3 existing trips (0.8 in and 0.5 out)
  Net Increase = 2.3 trips (1.3 in and 1.0 out)

The increase in weekday trips represents only 0.39 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

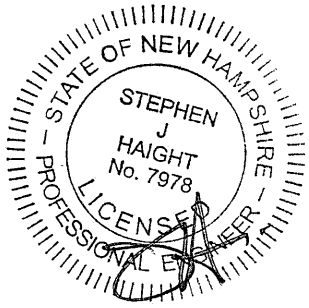
In conclusion:

- 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



DRAINAGE ANALYSIS

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

July 2024
Revised: September 13, 2024

Prepared For:

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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, and shared entrance drive 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 ten (10) 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 stormwarer 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	**2-yr**	**2-yr**	**10-yr**	**25-yr**	**50-yr**
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	**2-yr**	**2-yr**	**10-yr**	**25-yr**	**50-yr**
A	0.01	0.1	0.2	0.2	0.3
B	0.00	0.1	0.4	0.5	0.7
C	0.01	0.0	0.1	0.6	1.5

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	**2-yr**	**2-yr**	**10-yr**	**25-yr**	**50-yr**
A	0.01/**0.01**	0.2/**0.1**	0.2/**0.2**	0.3/**0.2**	0.4/**0.3**
B	0.03/**0.00**	0.3/**0.1**	0.8/**0.4**	1.2/**0.5**	1.6/**0.7**
C	0.01/**0.01**	0.0/**0.0**	0.2/**0.1**	0.7/**0.6**	1.2/**1.5**

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 in New York & New England

An Interactive Web Tool for Extreme Precipitation Analysis

About this Project | Data & Products | Daily Monitoring | Documentation

Select Product

- Extreme Precipitation Tables - HTML
- Extreme Precipitation Tables - Text/CSV
- Partial Duration Series - by Point
- Partial Duration Series - by Station
- Distribution Curves - Graphical
- Distribution Curves - Text/TBL
- Intensity Frequency Duration Graphs
- Precipitation Frequency Duration Graphs
- GIS Data Files
- Regional/State Maps

Select Location *Double-click map to place a marker, or enter address or latitude/longitude.*

Hybrid | Map | Satellite | Terrain

Locate by Address: 306 Dover Point Road, [→

Locate by Lat/Lon: 43.13[illegible]°N -70.83°W →

Locate by State/County:



Select Options

Smoothing	Delivery
Yes	Popup

Submit

Version 2.0 Copyright 2010-2022

This project is a joint collaboration between:

Northeast Regional Climate Center (NRCC) | Natural Resources Conservation Service (NRCS)

Cornell University | USDA NRCS

Contact: precip@cornell.edu

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	Yes
State	
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**

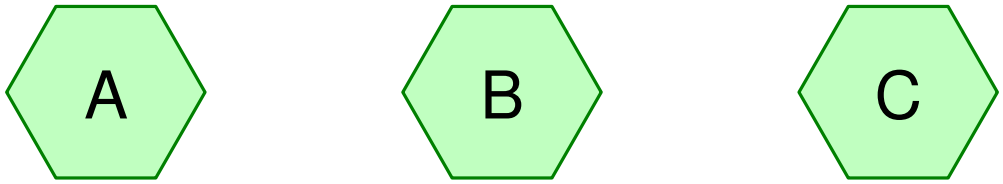
Upper Confidence Limits

	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**

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A – 1

EXISTING WATERSHEDS



A B C

Subcat Reach Pond Link

Routing Diagram for 23140-Pre
Prepared by CIVILWORKS NEW ENGLAND
HydroCAD® 10.10-5a s/n 03240 © 2020 HydroCAD Software Solutions LLC

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)
1.637	**57**	**TOTAL AREA**

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	
1.637		**TOTAL AREA**

A – 1

NODE LISTING – 2-YR

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

Total Runoff Area = 1.637 ac Runoff Volume = 0.05 af Average Runoff Depth = 0.39"
91.42% Pervious = 1.496 ac 8.58% Impervious = 0.140 ac

A – 1

NODE LISTING – 10-YR

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

Total Runoff Area = 1.637 ac Runoff Volume = 0.15 af Average Runoff Depth = 1.08"
91.42% Pervious = 1.496 ac 8.58% Impervious = 0.140 ac

A – 1

10-YR STORM SUMMARY

Summary for Subcatchment A: A

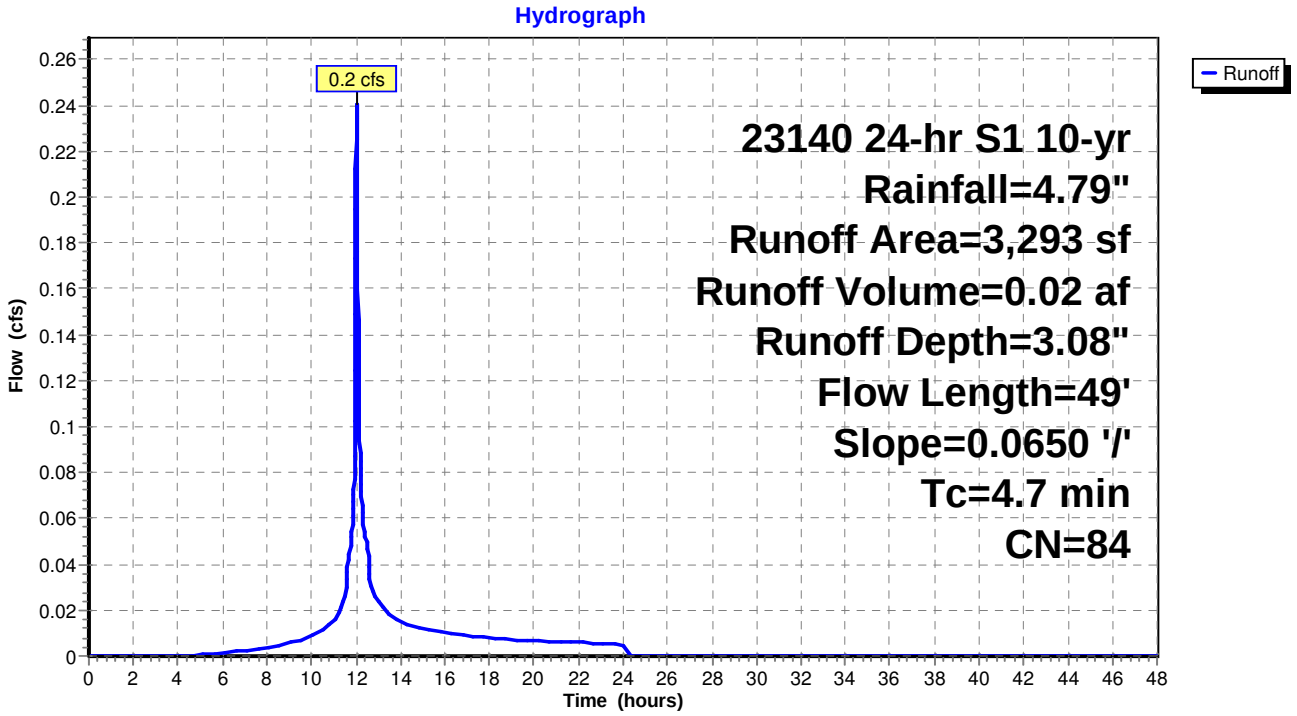
Runoff = 0.2 cfs @ 12.02 hrs, Volume= 0.02 af, Depth= 3.08"

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



Summary for Subcatchment B: B

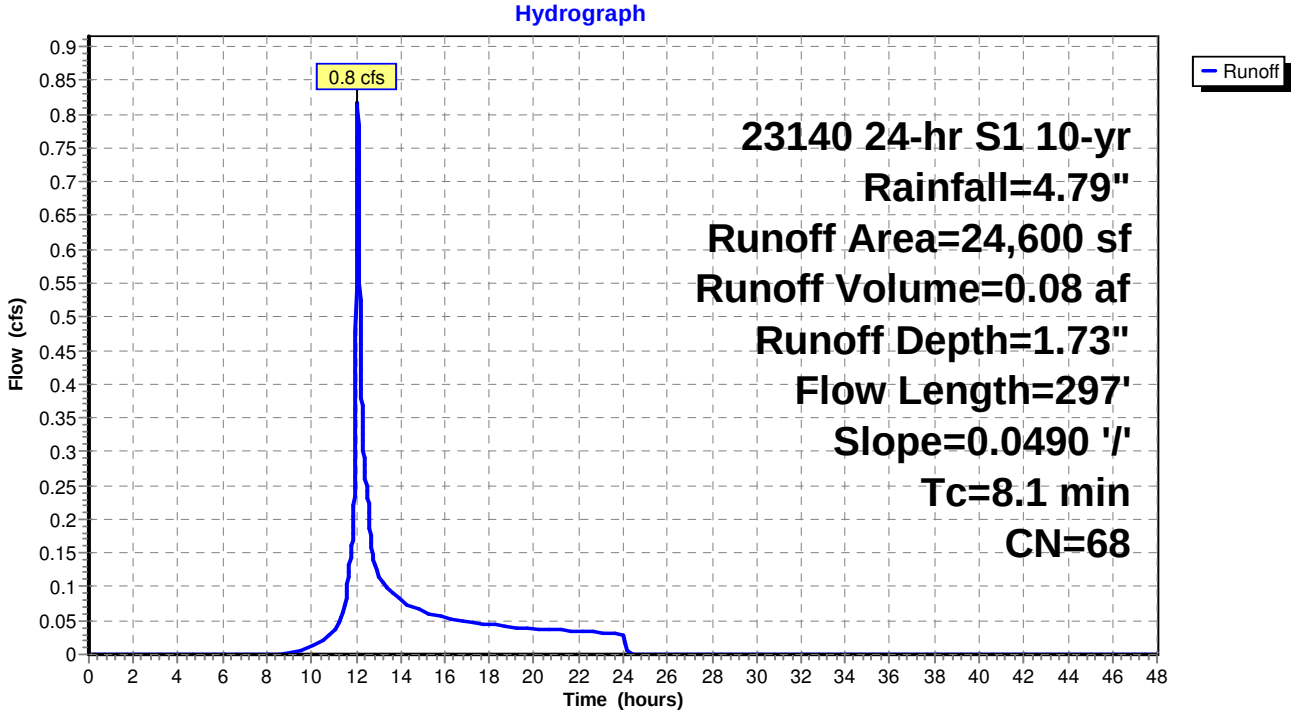
Runoff = 0.8 cfs @ 12.07 hrs, Volume= 0.08 af, Depth= 1.73"

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



Summary for Subcatchment C: C

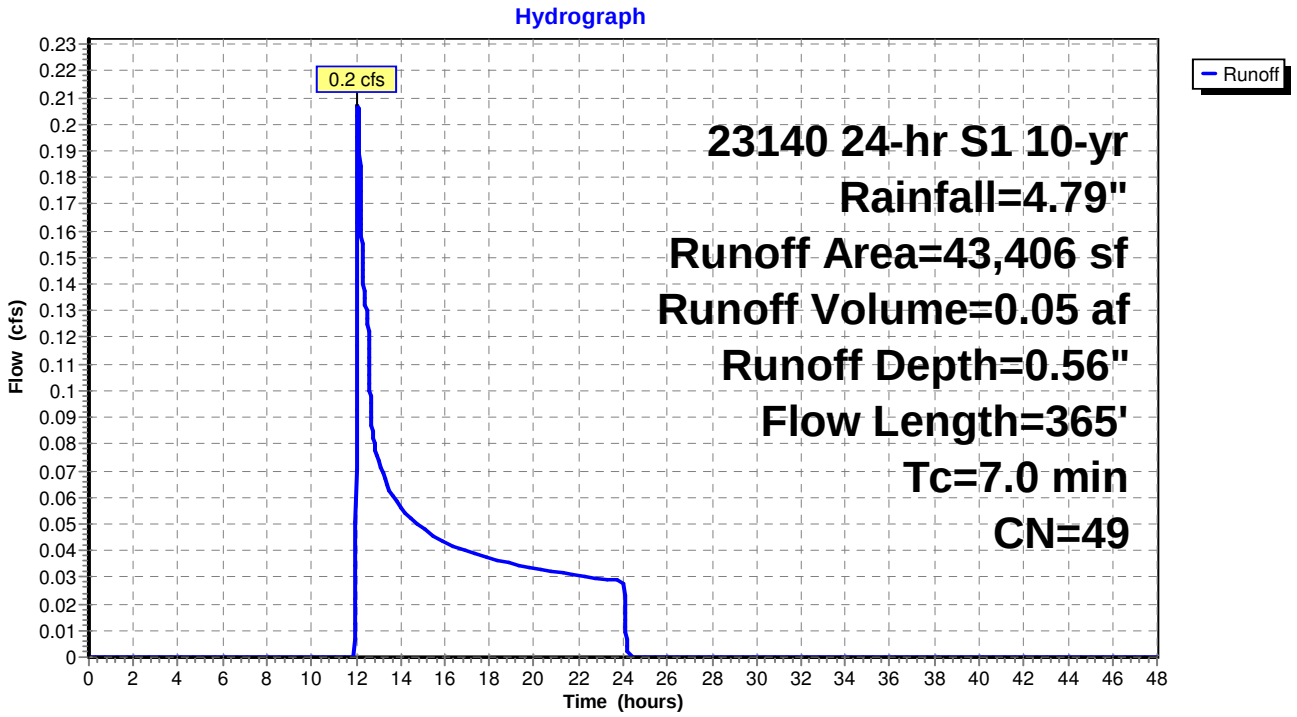
Runoff = 0.2 cfs @ 12.09 hrs, Volume= 0.05 af, Depth= 0.56"

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			

Subcatchment C: C



A – 1

NODE LISTING – 25-YR

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

Total Runoff Area = 1.637 ac Runoff Volume = 0.24 af Average Runoff Depth = 1.79"
91.42% Pervious = 1.496 ac 8.58% Impervious = 0.140 ac

A – 1

NODE LISTING – 50-YR

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

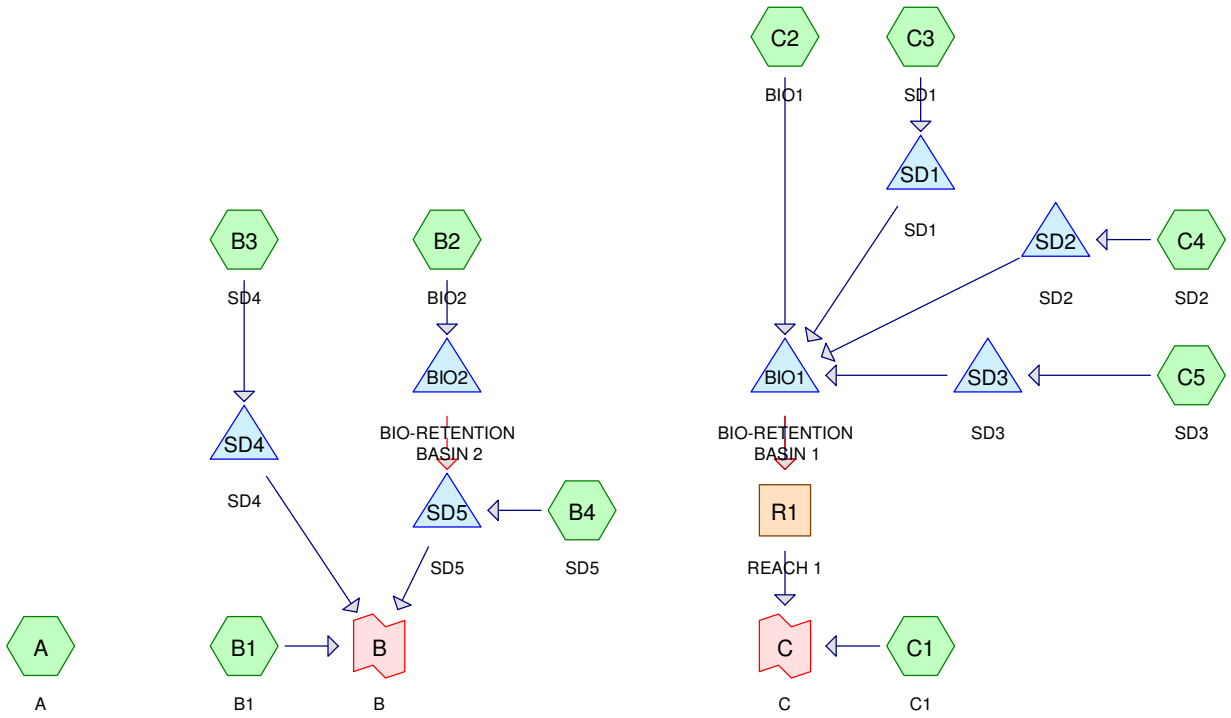
Subcatchment B: B Runoff Area=24,600 sf 10.37% Impervious Runoff Depth=3.63"
Flow Length=297' Slope=0.0490 '/' Tc=8.1 min CN=68 Runoff=1.6 cfs 0.17 af

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

Total Runoff Area = 1.637 ac Runoff Volume = 0.35 af Average Runoff Depth = 2.55"
91.42% Pervious = 1.496 ac 8.58% Impervious = 0.140 ac

A – 2

DEVELOPED WATERSHEDS



Subcat Reach Pond Link

Routing Diagram for 23140-Post
Prepared by CIVILWORKS NEW ENGLAND
HydroCAD® 10.10-5a s/n 03240 © 2020 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.744	39	>75% Grass cover, Good, HSG A (B1, B3, C1, C2)
0.306	80	>75% Grass cover, Good, HSG D (A, B1, B2, B4, C1, C2)
0.005	96	Gravel surface, HSG A (B3, B4)
0.009	96	Gravel surface, HSG D (B4, C3, C4, C5)
0.190	98	Paved parking, HSG A (B1, B4, C1, C2)
0.190	98	Paved parking, HSG D (A, B2, B4, C1, C2)
0.087	98	Roofs, HSG A (C1, C2)
0.106	98	Roofs, HSG D (B2, C2, C3, C4, C5)
1.637	**68**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
1.025	HSG A	B1, B3, B4, C1, C2
0.000	HSG B	
0.000	HSG C	
0.612	HSG D	A, B1, B2, B4, C1, C2, C3, C4, C5
0.000	Other	
1.637		**TOTAL AREA**

A – 2

NODE LISTING – 2-YR

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

Link B: B Inflow=0.1 cfs 0.00 af
Primary=0.1 cfs 0.00 af

Subcatchment B1: B1 Runoff Area=3,191 sf 17.17% Impervious Runoff Depth=0.30"
Flow Length=27' Slope=0.0555 '/' Tc=6.0 min CN=57 Runoff=0.0 cfs 0.00 af

Subcatchment B2: BIO2 Runoff Area=5,414 sf 37.74% Impervious Runoff Depth=1.89"
Flow Length=104' Tc=7.9 min CN=87 Runoff=0.2 cfs 0.02 af

Subcatchment B3: SD4 Runoff Area=828 sf 0.00% Impervious Runoff Depth=0.05"
Flow Length=27' Slope=0.0555 '/' Tc=6.0 min CN=46 Runoff=0.0 cfs 0.00 af

Subcatchment B4: SD5 Runoff Area=4,213 sf 68.38% Impervious Runoff Depth=2.42"
Flow Length=43' Tc=6.0 min CN=93 Runoff=0.3 cfs 0.02 af

Pond BIO1: BIO-RETENTION BASIN 1 Peak Elev=32.65' Storage=585 cf Inflow=0.8 cfs 0.06 af
Discarded=0.1 cfs 0.06 af Secondary=0.0 cfs 0.00 af Outflow=0.1 cfs 0.06 af

Pond BIO2: BIO-RETENTION BASIN 2 Peak Elev=35.17' Storage=216 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

Link C: C Inflow=0.0 cfs 0.01 af
Primary=0.0 cfs 0.01 af

Subcatchment C1: C1 Runoff Area=27,870 sf 16.64% Impervious Runoff Depth=0.12"
Flow Length=379' Tc=13.9 min CN=50 Runoff=0.0 cfs 0.01 af

Subcatchment C2: BIO1 Runoff Area=24,794 sf 53.44% Impervious Runoff Depth=1.25"
Flow Length=82' Slope=0.0790 '/' Tc=6.0 min CN=78 Runoff=0.8 cfs 0.06 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 SD1: SD1 Peak Elev=41.86' 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=39.06' 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=39.16' 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

Pond SD4: SD4 Peak Elev=30.00' Storage=0 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 SD5: SD5 Peak Elev=33.01' Storage=170 cf Inflow=0.3 cfs 0.02 af
Discarded=0.0 cfs 0.02 af Primary=0.1 cfs 0.00 af Outflow=0.1 cfs 0.02 af

Total Runoff Area = 1.637 ac Runoff Volume = 0.13 af Average Runoff Depth = 0.92"
64.97% Pervious = 1.063 ac 35.03% Impervious = 0.573 ac

A – 2

NODE LISTING – 10-YR

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

Link B: B Inflow=0.4 cfs 0.01 af
Primary=0.4 cfs 0.01 af

Subcatchment B1: B1 Runoff Area=3,191 sf 17.17% Impervious Runoff Depth=0.99"
Flow Length=27' Slope=0.0555 '/' Tc=6.0 min CN=57 Runoff=0.1 cfs 0.01 af

Subcatchment B2: BIO2 Runoff Area=5,414 sf 37.74% Impervious Runoff Depth=3.37"
Flow Length=104' Tc=7.9 min CN=87 Runoff=0.4 cfs 0.03 af

Subcatchment B3: SD4 Runoff Area=828 sf 0.00% Impervious Runoff Depth=0.42"
Flow Length=27' Slope=0.0555 '/' Tc=6.0 min CN=46 Runoff=0.0 cfs 0.00 af

Subcatchment B4: SD5 Runoff Area=4,213 sf 68.38% Impervious Runoff Depth=3.99"
Flow Length=43' Tc=6.0 min CN=93 Runoff=0.4 cfs 0.03 af

Pond BIO1: BIO-RETENTION BASIN 1 Peak Elev=33.65' Storage=1,447 cf Inflow=1.4 cfs 0.12 af
Discarded=0.2 cfs 0.12 af Secondary=0.0 cfs 0.00 af Outflow=0.2 cfs 0.12 af

Pond BIO2: BIO-RETENTION BASIN 2 Peak Elev=35.67' Storage=415 cf Inflow=0.4 cfs 0.03 af
Discarded=0.0 cfs 0.03 af Secondary=0.0 cfs 0.00 af Outflow=0.0 cfs 0.03 af

Link C: C Inflow=0.1 cfs 0.03 af
Primary=0.1 cfs 0.03 af

Subcatchment C1: C1 Runoff Area=27,870 sf 16.64% Impervious Runoff Depth=0.61"
Flow Length=379' Tc=13.9 min CN=50 Runoff=0.1 cfs 0.03 af

Subcatchment C2: BIO1 Runoff Area=24,794 sf 53.44% Impervious Runoff Depth=2.53"
Flow Length=82' Slope=0.0790 '/' Tc=6.0 min CN=78 Runoff=1.4 cfs 0.12 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 SD1: SD1 Peak Elev=42.49' Storage=43 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=39.54' 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=39.80' Storage=38 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 SD4: SD4 Peak Elev=30.00' Storage=0 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 SD5: SD5 Peak Elev=33.04' Storage=177 cf Inflow=0.4 cfs 0.03 af
Discarded=0.0 cfs 0.03 af Primary=0.3 cfs 0.01 af Outflow=0.3 cfs 0.03 af

Total Runoff Area = 1.637 ac Runoff Volume = 0.26 af Average Runoff Depth = 1.90"
64.97% Pervious = 1.063 ac 35.03% Impervious = 0.573 ac

A – 2

10-YR STORM SUMMARY

Summary for Subcatchment A: A

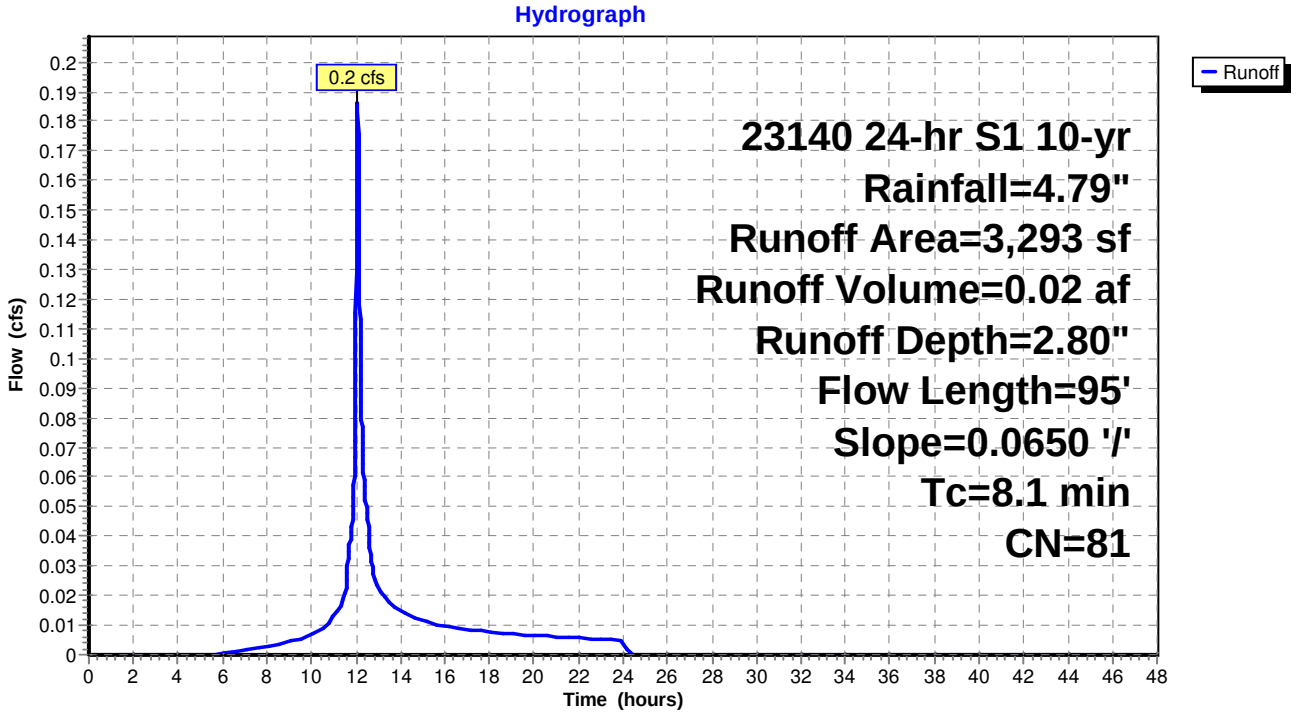
Runoff = 0.2 cfs @ 12.06 hrs, Volume= 0.02 af, Depth= 2.80"

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

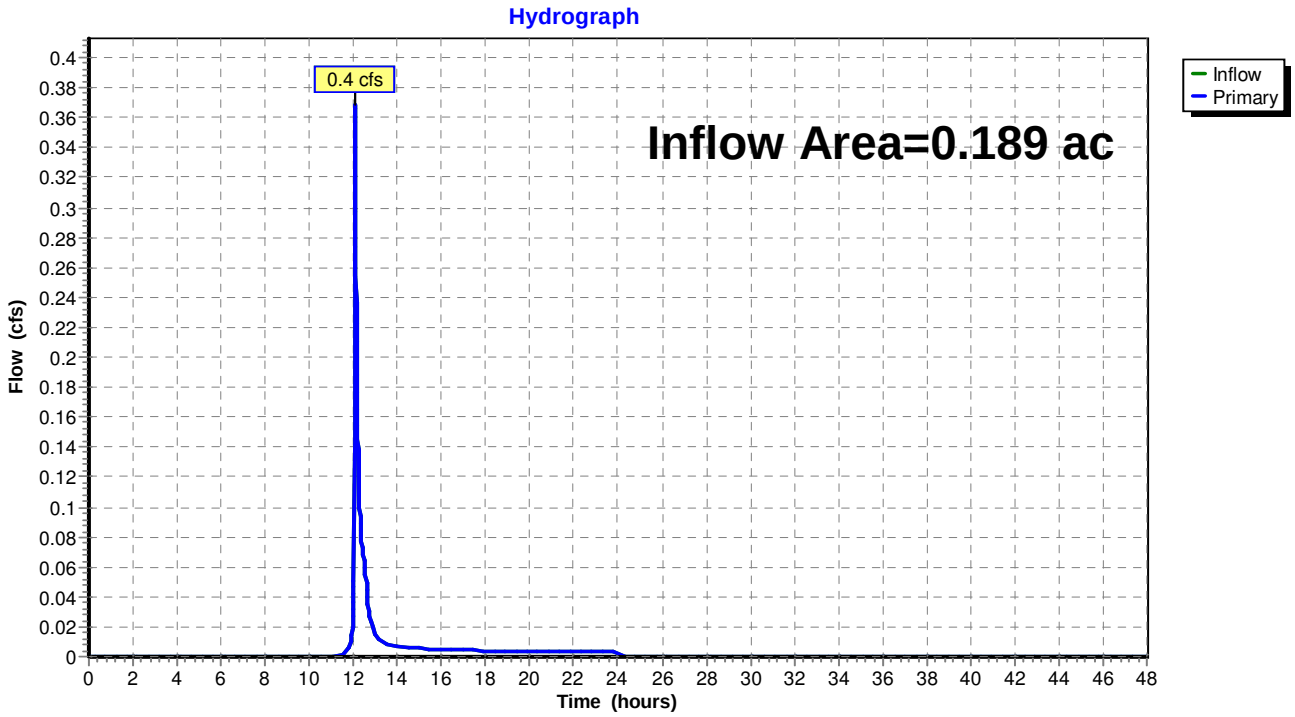


Summary for Link B: B

Inflow Area = 0.189 ac, 41.65% Impervious, Inflow Depth = 0.73" for 10-yr event
Inflow = 0.4 cfs @ 12.06 hrs, Volume= 0.01 af
Primary = 0.4 cfs @ 12.06 hrs, Volume= 0.01 af, Atten= 0%, Lag= 0.0 min

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

Link B: B



Summary for Subcatchment B1: B1

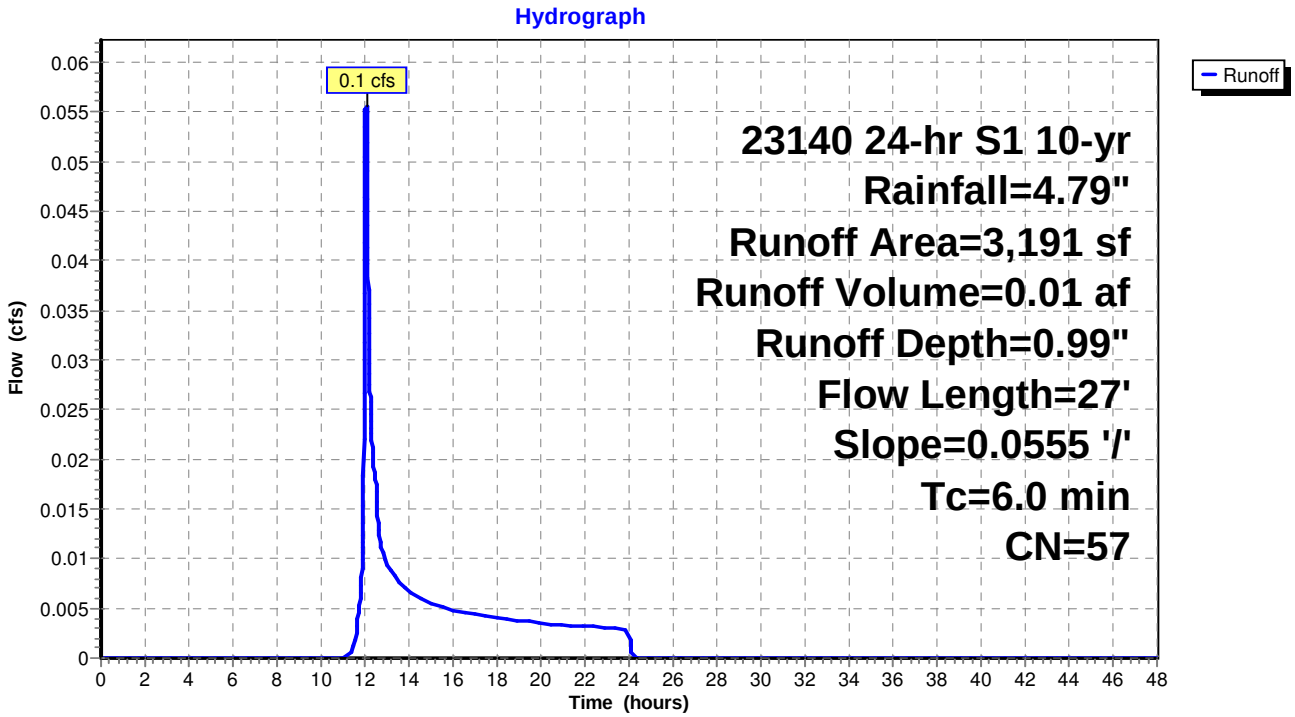
Runoff = 0.1 cfs @ 12.05 hrs, Volume= 0.01 af, Depth= 0.99"

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
2,058	39	>75% Grass cover, Good, HSG A
548	98	Paved parking, HSG A
585	80	>75% Grass cover, Good, HSG D
3,191	57	Weighted Average
2,643		82.83% Pervious Area
548		17.17% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.1	27	0.0555	0.14		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.60"
3.1	27	Total, Increased to minimum Tc = 6.0 min			

Subcatchment B1: B1



Summary for Subcatchment B2: BIO2

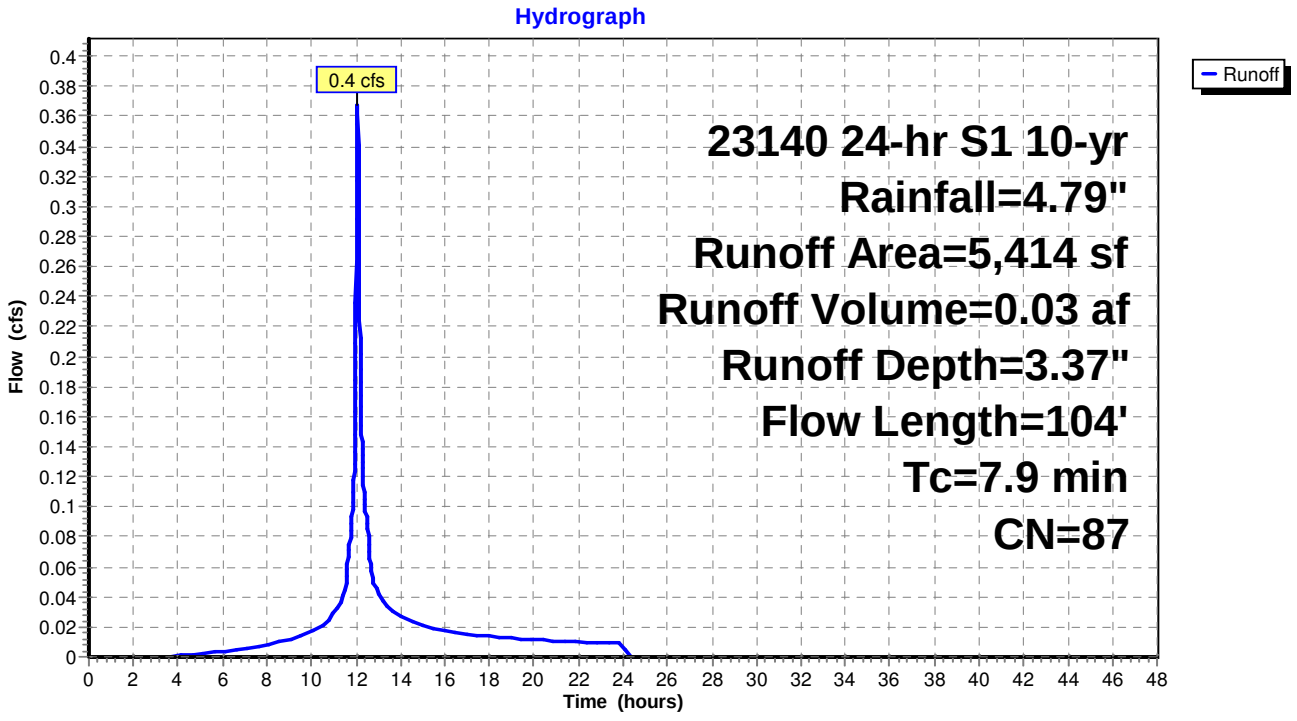
Runoff = 0.4 cfs @ 12.06 hrs, Volume= 0.03 af, Depth= 3.37"

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
3,371	80	>75% Grass cover, Good, HSG D
293	98	Paved parking, HSG D
1,750	98	Roofs, HSG D
5,414	87	Weighted Average
3,371		62.26% Pervious Area
2,043		37.74% 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



Summary for Subcatchment B3: SD4

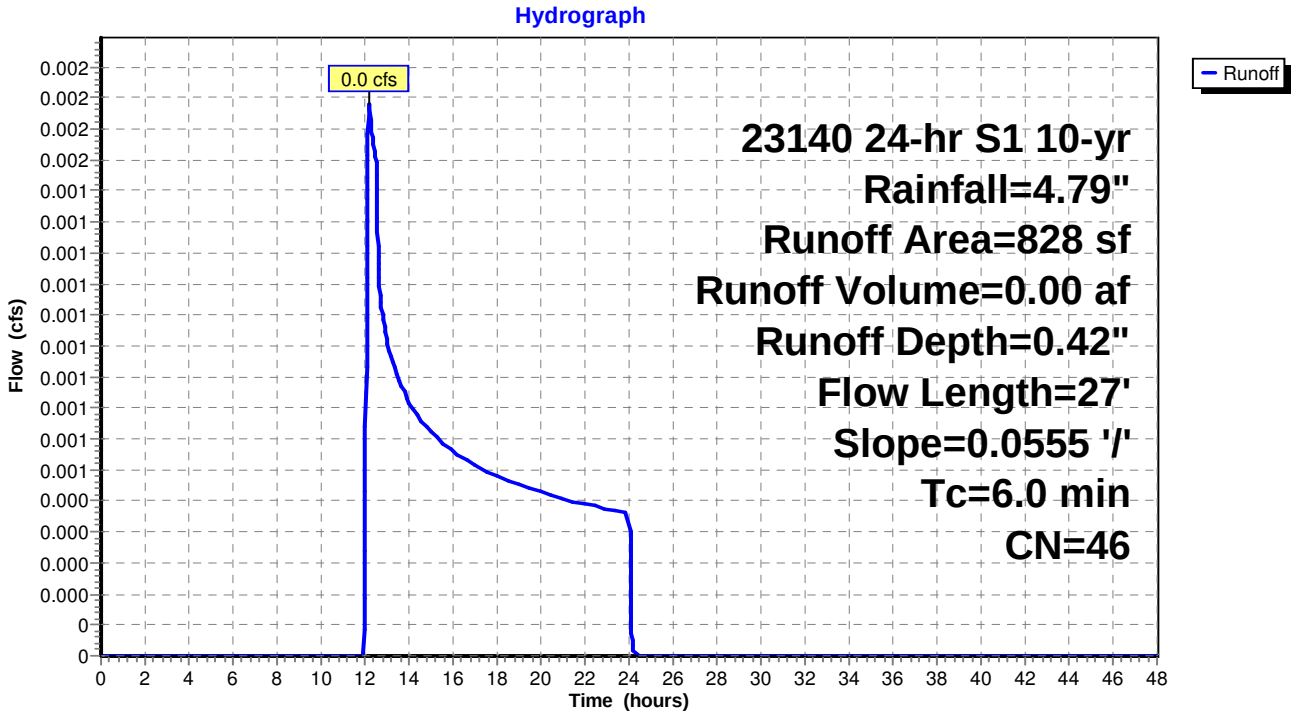
Runoff = 0.0 cfs @ 12.16 hrs, Volume= 0.00 af, Depth= 0.42"

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
720	39	>75% Grass cover, Good, HSG A
108	96	Gravel surface, HSG A
828	46	Weighted Average
828		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.1	27	0.0555	0.14		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.60"
3.1	27	Total, Increased to minimum Tc = 6.0 min			

Subcatchment B3: SD4



Summary for Subcatchment B4: SD5

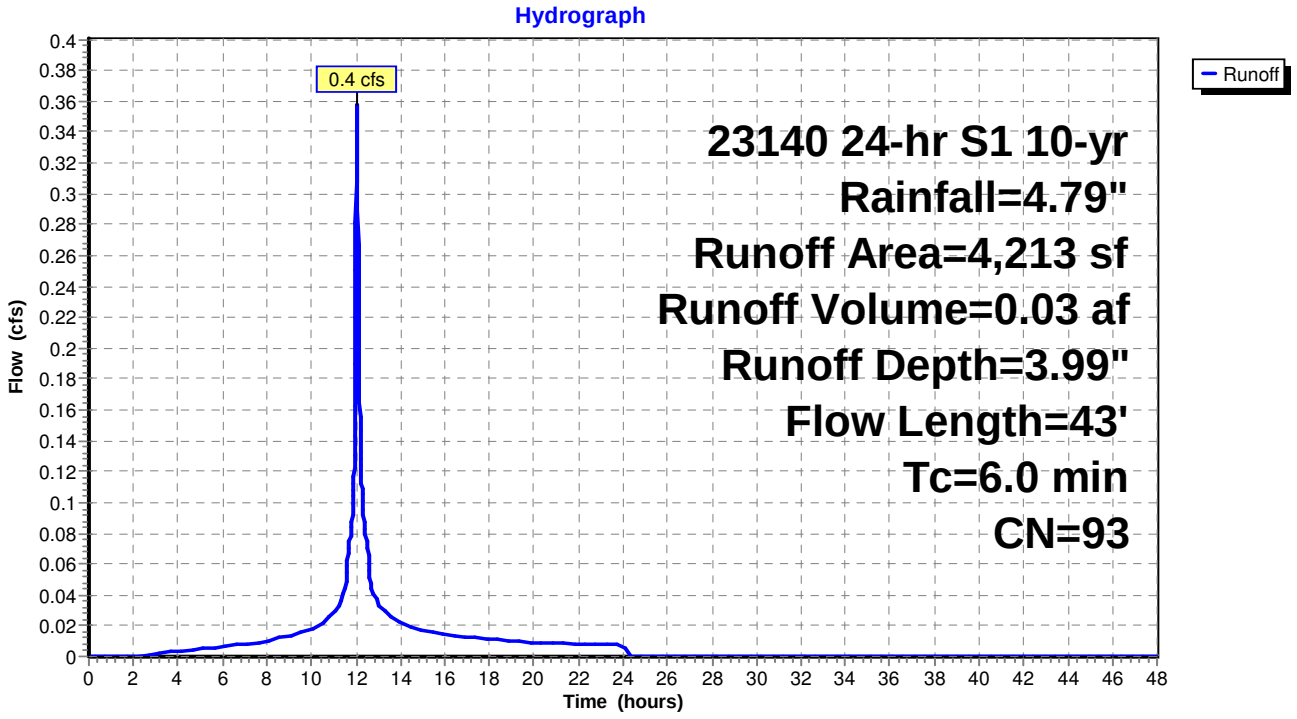
Runoff = 0.4 cfs @ 12.04 hrs, Volume= 0.03 af, Depth= 3.99"

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
96	96	Gravel surface, HSG A
1,276	98	Paved parking, HSG A
1,055	80	>75% Grass cover, Good, HSG D
181	96	Gravel surface, HSG D
1,605	98	Paved parking, HSG D
4,213	93	Weighted Average
1,332		31.62% Pervious Area
2,881		68.38% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	13	0.0570	0.13		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.60"
0.2	30	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.9	43	Total, Increased to minimum Tc = 6.0 min			

Subcatchment B4: SD5



Summary for Pond BIO1: BIO-RETENTION BASIN 1

Inflow Area = 0.608 ac, 55.59% Impervious, Inflow Depth = 2.37" for 10-yr event
Inflow = 1.4 cfs @ 12.04 hrs, Volume= 0.12 af
Outflow = 0.2 cfs @ 12.98 hrs, Volume= 0.12 af, Atten= 89%, Lag= 56.4 min
Discarded = 0.2 cfs @ 12.98 hrs, Volume= 0.12 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= 33.65' @ 12.98 hrs Surf.Area= 1,533 sf Storage= 1,447 cf
Flood Elev= 34.25' Surf.Area= 2,202 sf Storage= 2,539 cf

Plug-Flow detention time= 82.3 min calculated for 0.12 af (100% of inflow)
Center-of-Mass det. time= 82.3 min (944.5 - 862.2)

Volume	Invert	Avail.Storage	Storage Description
#1	30.08'	2,539 cf	**Rain Garden (Irregular)** Listed below (Recalc)

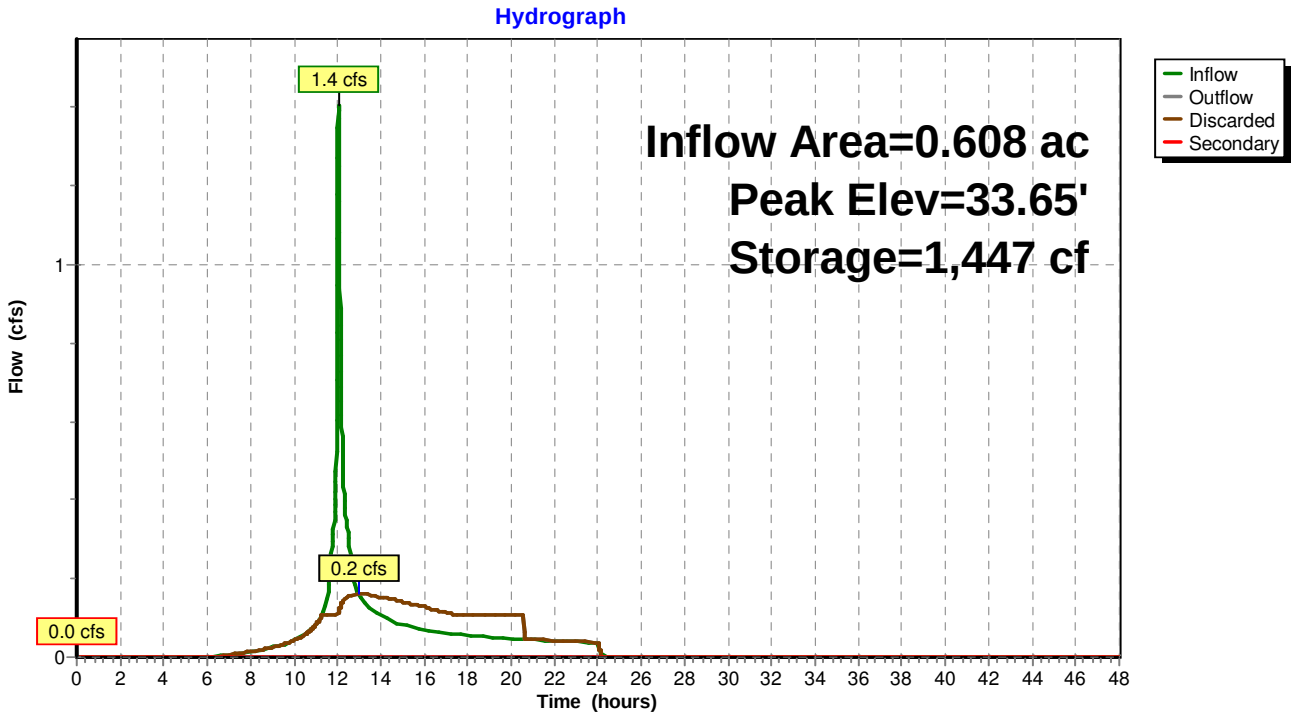
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
30.08	1,017	202.7	0.0	0	0	1,017
31.25	1,017	202.7	35.0	416	416	1,254
31.50	1,017	202.7	20.0	51	467	1,305
33.00	1,017	202.7	10.0	153	620	1,609
34.00	1,851	248.0	100.0	1,413	2,033	3,249
34.25	2,202	258.5	100.0	506	2,539	3,677

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 @ 12.98 hrs HW=33.65' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.2 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)

Pond BIO1: BIO-RETENTION BASIN 1



Summary for Pond BIO2: BIO-RETENTION BASIN 2

Inflow Area = 0.124 ac, 37.74% Impervious, Inflow Depth = 3.37" for 10-yr event
Inflow = 0.4 cfs @ 12.06 hrs, Volume= 0.03 af
Outflow = 0.0 cfs @ 12.80 hrs, Volume= 0.03 af, Atten= 87%, Lag= 44.7 min
Discarded = 0.0 cfs @ 12.80 hrs, Volume= 0.03 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= 35.67' @ 12.80 hrs Surf.Area= 471 sf Storage= 415 cf
Flood Elev= 36.25' Surf.Area= 825 sf Storage= 763 cf

Plug-Flow detention time= 73.1 min calculated for 0.03 af (100% of inflow)
Center-of-Mass det. time= 73.1 min (899.1 - 825.9)

Volume	Invert	Avail.Storage	Storage Description
#1	32.08'	763 cf	**Rain Garden (Irregular)** Listed below (Recalc)

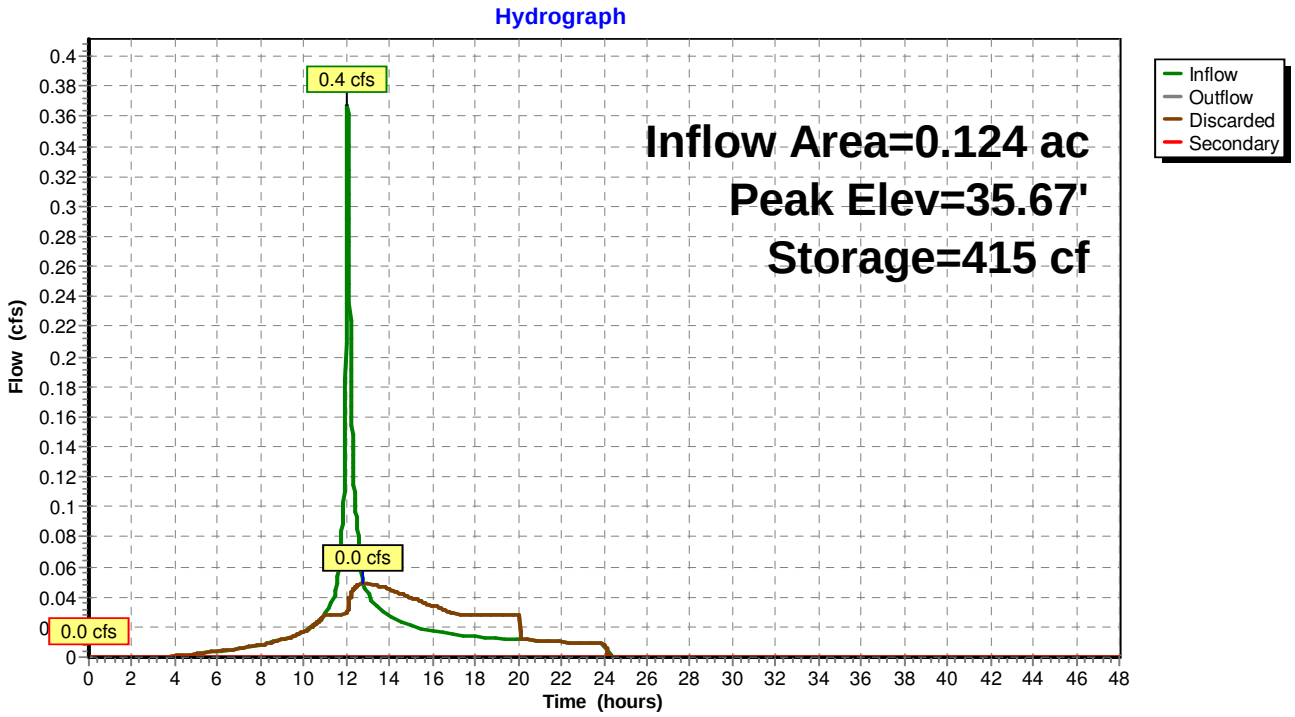
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
32.08	274	80.8	0.0	0	0	274
33.25	274	80.8	35.0	112	112	369
33.50	274	80.8	20.0	14	126	389
35.00	274	80.8	10.0	41	167	510
36.00	586	113.2	100.0	420	587	1,019
36.25	825	125.8	100.0	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 @ 12.80 hrs HW=35.67' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.0 cfs)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=32.08' TW=31.50' (Dynamic Tailwater)
2=Broad-Crested Rectangular Weir (Controls 0.0 cfs)

Pond BIO2: BIO-RETENTION BASIN 2

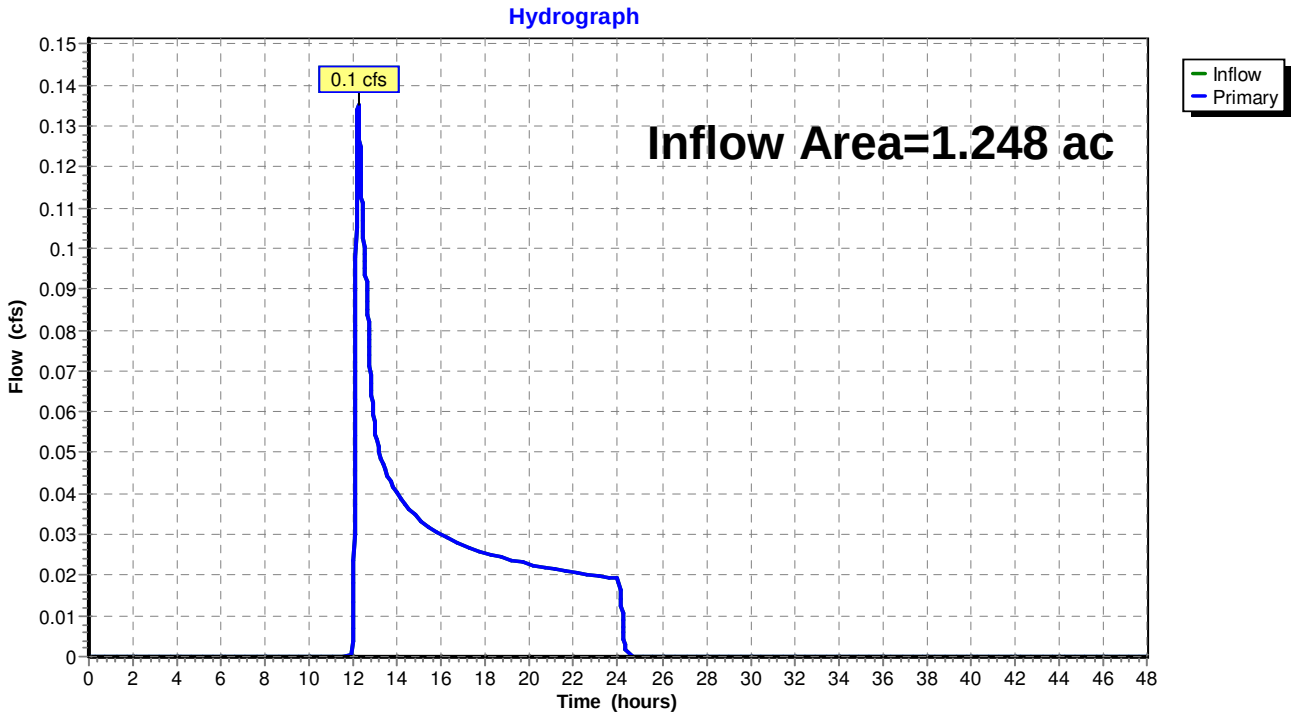


Summary for Link C: C

Inflow Area = 1.248 ac, 35.62% Impervious, Inflow Depth = 0.31" for 10-yr event
Inflow = 0.1 cfs @ 12.21 hrs, Volume= 0.03 af
Primary = 0.1 cfs @ 12.21 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 C: C



Summary for Subcatchment C1: C1

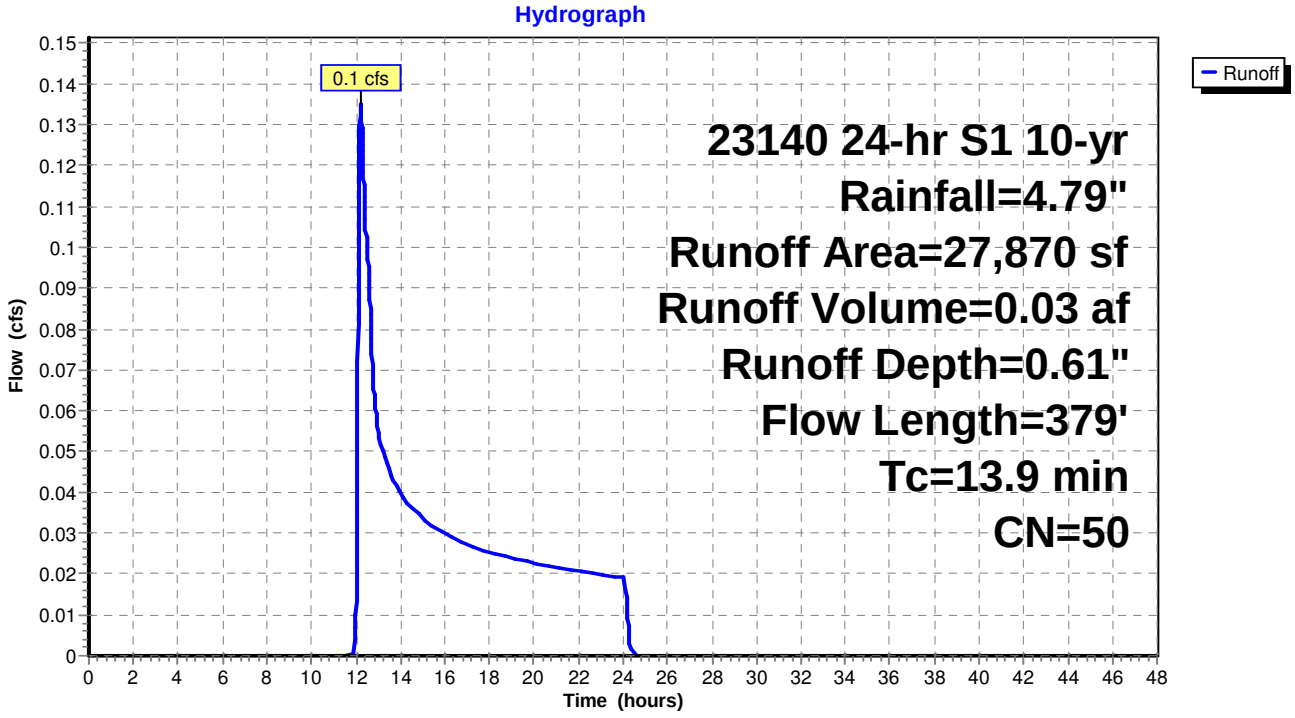
Runoff = 0.1 cfs @ 12.21 hrs, Volume= 0.03 af, Depth= 0.61"

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
22,351	39	>75% Grass cover, Good, HSG A
869	98	Paved parking, HSG A
2,581	98	Roofs, HSG A
881	80	>75% Grass cover, Good, HSG D
1,188	98	Paved parking, HSG D
27,870	50	Weighted Average
23,232		83.36% Pervious Area
4,638		16.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	62	0.0242	0.12		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.60"
3.5	38	0.0867	0.18		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.60"
1.9	279	0.1220	2.44		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
13.9	379	Total			

Subcatchment C1: C1



Summary for Subcatchment C2: BIO1

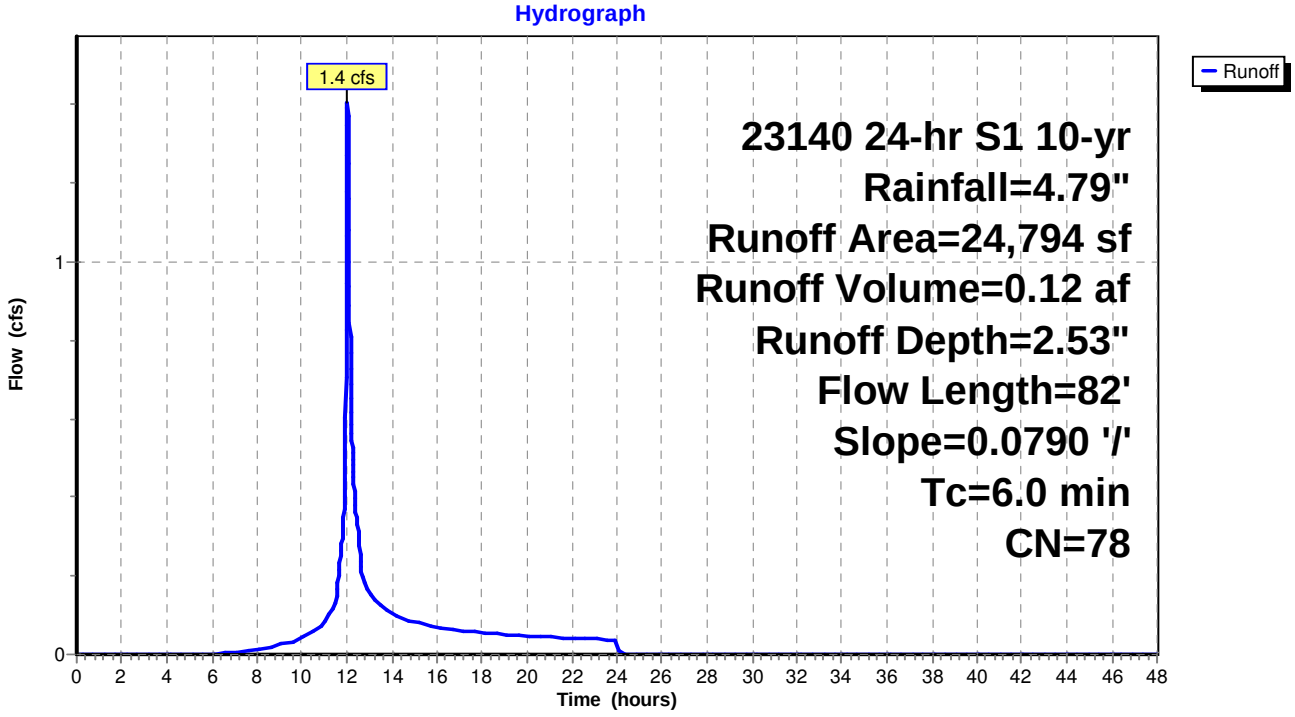
Runoff = 1.4 cfs @ 12.04 hrs, Volume= 0.12 af, Depth= 2.53"

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
7,262	39	>75% Grass cover, Good, HSG A
5,563	98	Paved parking, HSG A
1,215	98	Roofs, HSG A
4,281	80	>75% Grass cover, Good, HSG D
5,071	98	Paved parking, HSG D
1,402	98	Roofs, HSG D
24,794	78	Weighted Average
11,543		46.56% Pervious Area
13,251		53.44% 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



Summary for Subcatchment C3: SD1

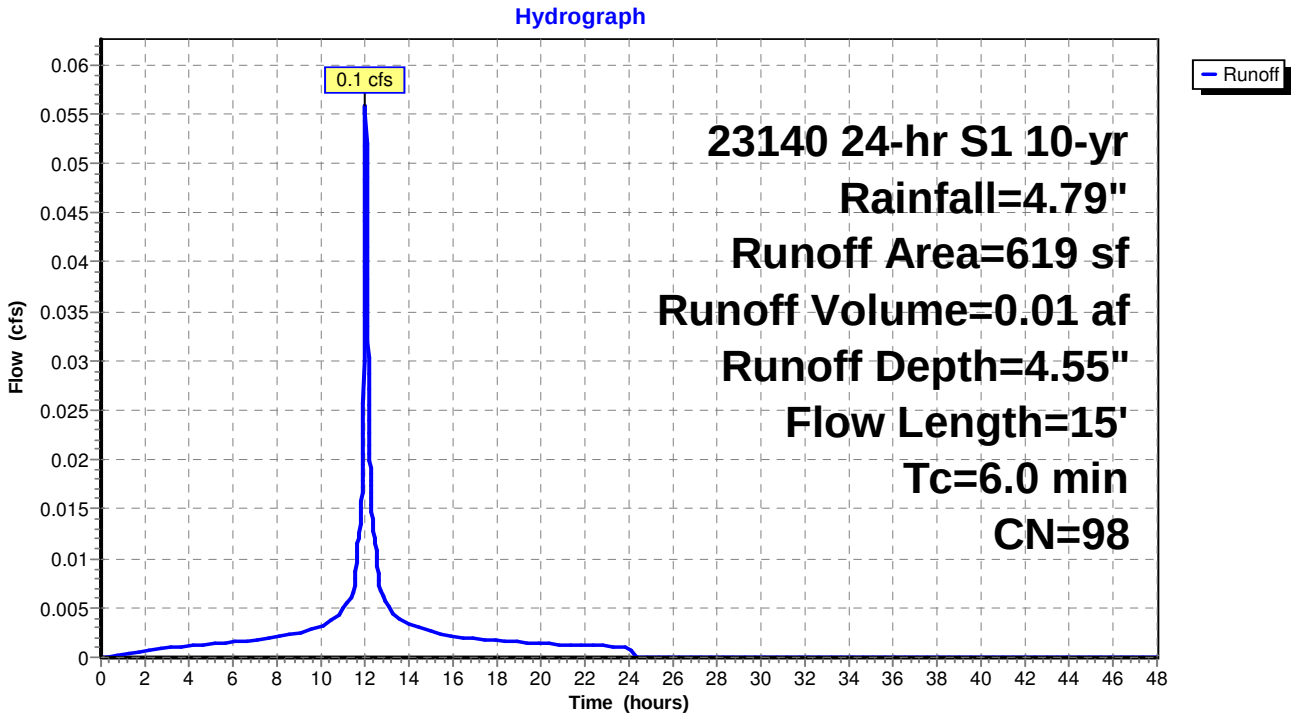
Runoff = 0.1 cfs @ 12.04 hrs, Volume= 0.01 af, Depth= 4.55"

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	96	Gravel surface, 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



Summary for Subcatchment C4: SD2

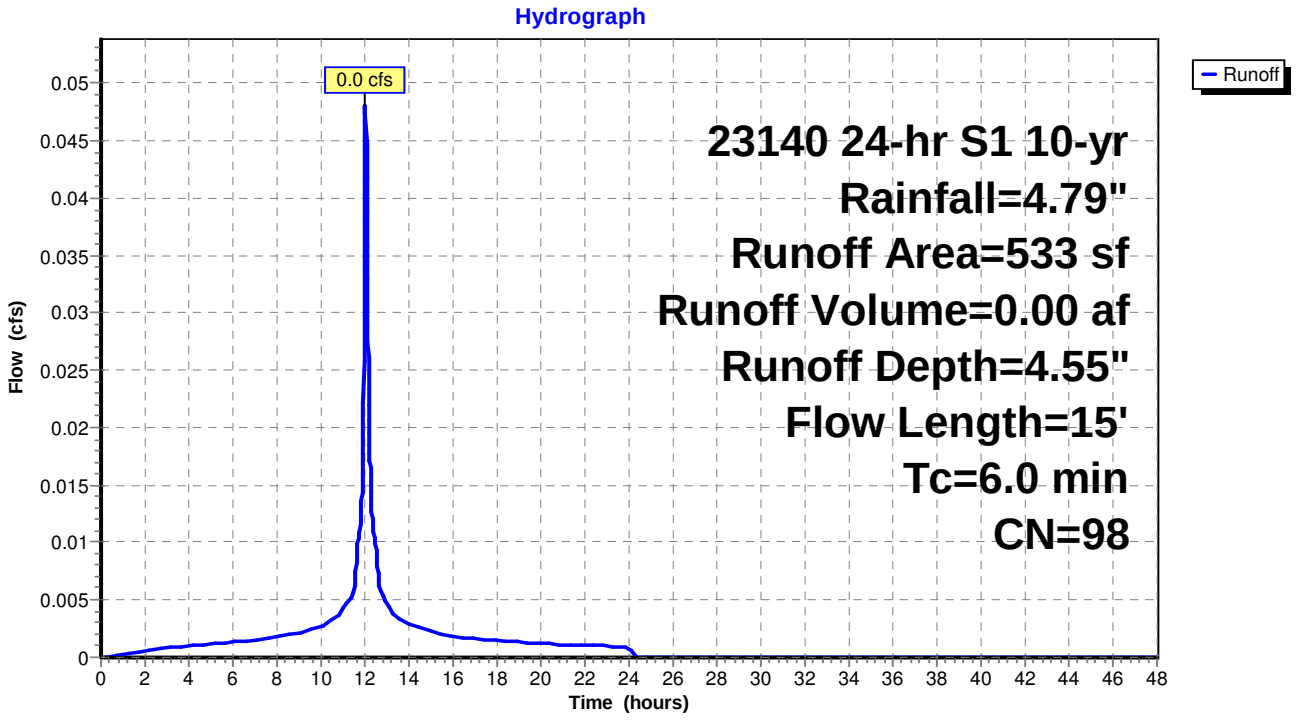
Runoff = 0.0 cfs @ 12.04 hrs, Volume= 0.00 af, Depth= 4.55"

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	96	Gravel surface, 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



Summary for Subcatchment C5: SD3

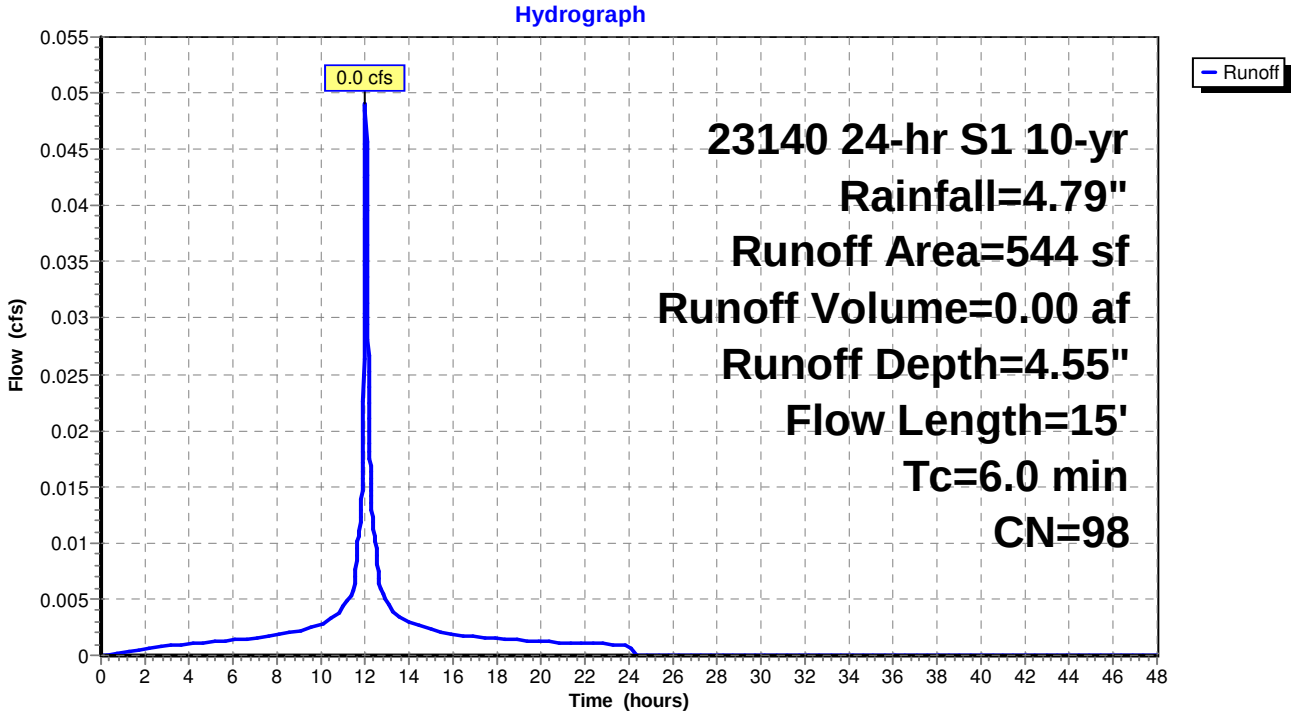
Runoff = 0.0 cfs @ 12.04 hrs, Volume= 0.00 af, Depth= 4.55"

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	96	Gravel surface, 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



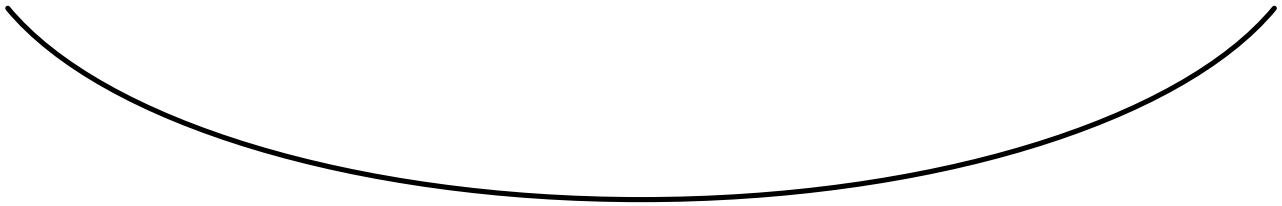
Summary for Reach R1: REACH 1

Inflow Area = 0.608 ac, 55.59% 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

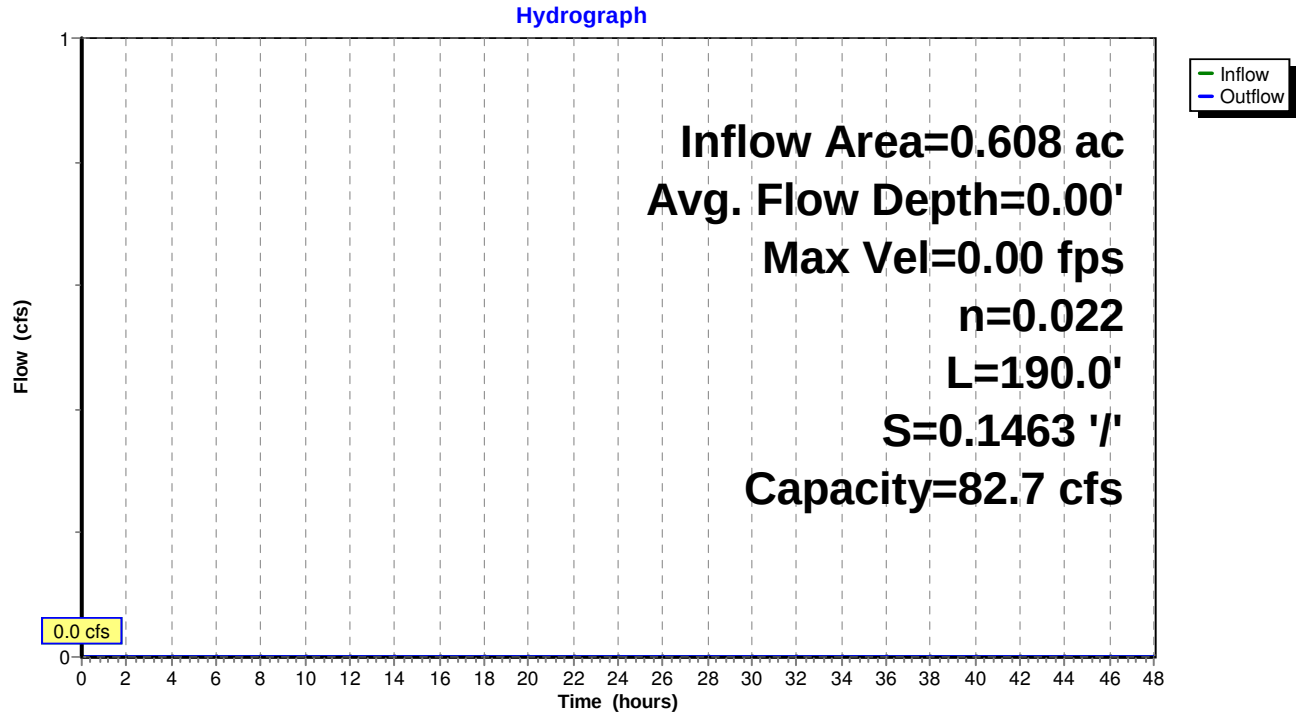
Peak Storage= 0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 0.50' Flow Area= 6.7 sf, Capacity= 82.7 cfs

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



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 @ 11.62 hrs, Volume= 0.01 af, Atten= 85%, Lag= 0.0 min
Discarded = 0.0 cfs @ 11.62 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= 42.49' @ 12.61 hrs Surf.Area= 78 sf Storage= 43 cf
Flood Elev= 42.70' Surf.Area= 78 sf Storage= 55 cf

Plug-Flow detention time= 24.3 min calculated for 0.01 af (100% of inflow)
Center-of-Mass det. time= 24.3 min (775.2 - 751.0)

Volume	Invert	Avail.Storage	Storage Description
#1	41.10'	55 cf	**Rain Garden (Irregular)** Listed below (Recalc)

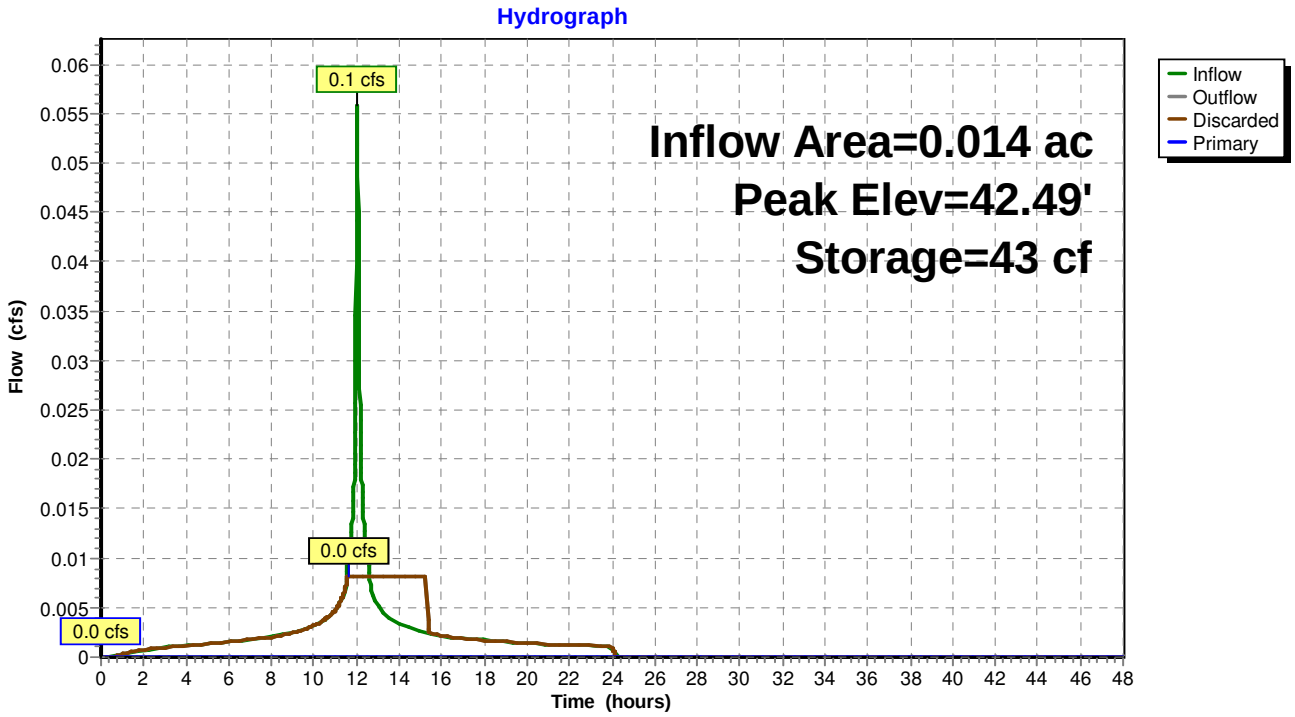
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
41.10	78	82.0	0.0	0	0	78
42.60	78	82.0	40.0	47	47	201
42.70	78	82.0	100.0	8	55	209

Device	Routing	Invert	Outlet Devices
#1	Discarded	41.10'	**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 @ 11.62 hrs HW=41.12' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.0 cfs)

Primary OutFlow Max=0.0 cfs @ 0.00 hrs HW=41.10' TW=30.08' (Dynamic Tailwater)
↑**2=Sharp-Crested Vee/Trap Weir** (Controls 0.0 cfs)

Pond SD1: SD1


Hydrograph
Inflow Area=0.014 ac
Peak Elev=42.49'
Storage=43 cf
0.1 cfs
0.0 cfs
0.0 cfs
Inflow
Outflow
Discarded
Primary
Flow (cfs)
Time (hours)
0
0.005
0.01
0.015
0.02
0.025
0.03
0.035
0.04
0.045
0.05
0.055
0.06
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48

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 @ 11.67 hrs, Volume= 0.00 af, Atten= 83%, Lag= 0.0 min
Discarded = 0.0 cfs @ 11.67 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= 39.54' @ 12.57 hrs Surf.Area= 79 sf Storage= 33 cf
Flood Elev= 40.10' Surf.Area= 79 sf Storage= 55 cf

Plug-Flow detention time= 16.7 min calculated for 0.00 af (100% of inflow)
Center-of-Mass det. time= 16.7 min (767.7 - 751.0)

Volume	Invert	Avail.Storage	Storage Description
#1	38.50'	55 cf	**Rain Garden (Irregular)** Listed below (Recalc)

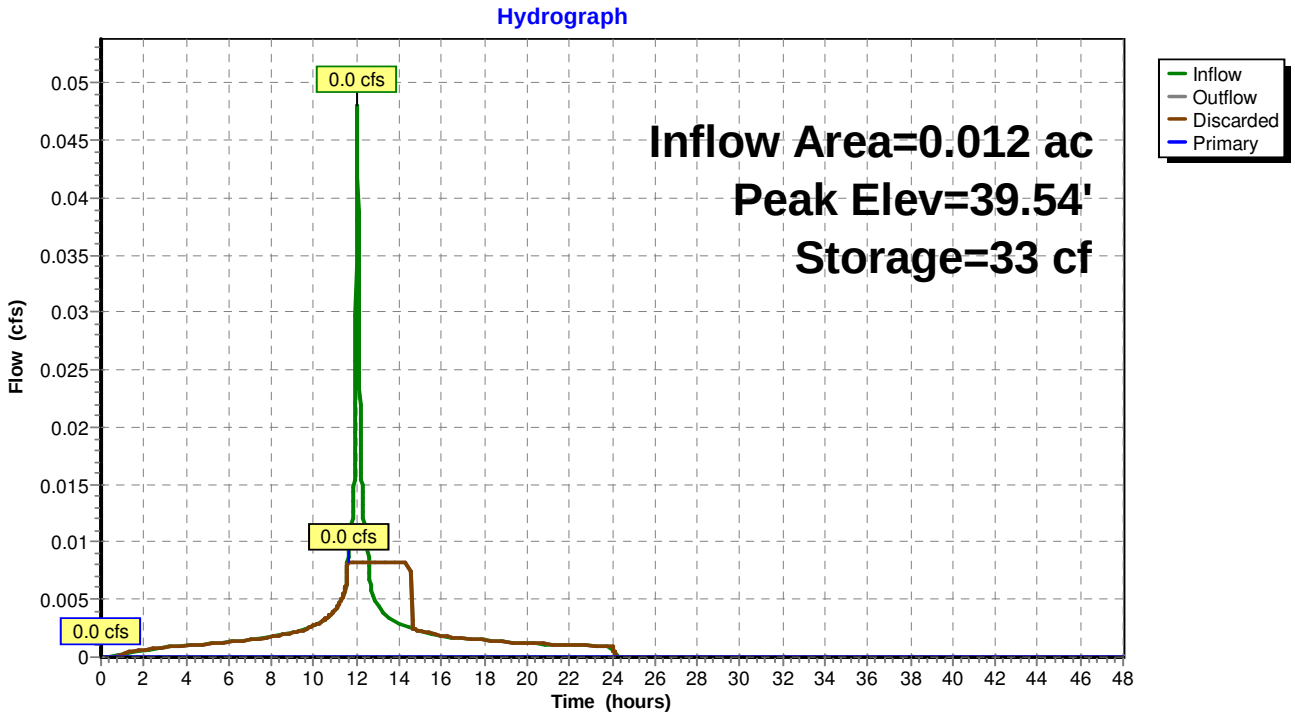
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
38.50	79	83.0	0.0	0	0	79
40.00	79	83.0	40.0	47	47	204
40.10	79	83.0	100.0	8	55	212

Device	Routing	Invert	Outlet Devices
#1	Discarded	38.50'	**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 @ 11.67 hrs HW=38.52' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.0 cfs)

Primary OutFlow Max=0.0 cfs @ 0.00 hrs HW=38.50' TW=30.08' (Dynamic Tailwater)
↑—**2=Sharp-Crested Vee/Trap Weir** (Controls 0.0 cfs)

Pond SD2: SD2


Hydrograph
Inflow Area=0.012 ac
Peak Elev=39.54'
Storage=33 cf
0.0 cfs
0.0 cfs
0.0 cfs
Inflow
Outflow
Discarded
Primary
Flow (cfs)
Time (hours)
0
0.005
0.01
0.015
0.02
0.025
0.03
0.035
0.04
0.045
0.05
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48

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 @ 12.45 hrs, Volume= 0.00 af, Atten= 79%, Lag= 24.9 min
Discarded = 0.0 cfs @ 11.60 hrs, Volume= 0.00 af
Primary = 0.0 cfs @ 12.45 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' @ 12.45 hrs Surf.Area= 64 sf Storage= 38 cf
Flood Elev= 39.90' Surf.Area= 64 sf Storage= 45 cf

Plug-Flow detention time= 26.7 min calculated for 0.00 af (100% of inflow)
Center-of-Mass det. time= 26.7 min (777.7 - 751.0)

Volume	Invert	Avail.Storage	Storage Description
#1	38.30'	45 cf	**Rain Garden (Irregular)** Listed below (Recalc)

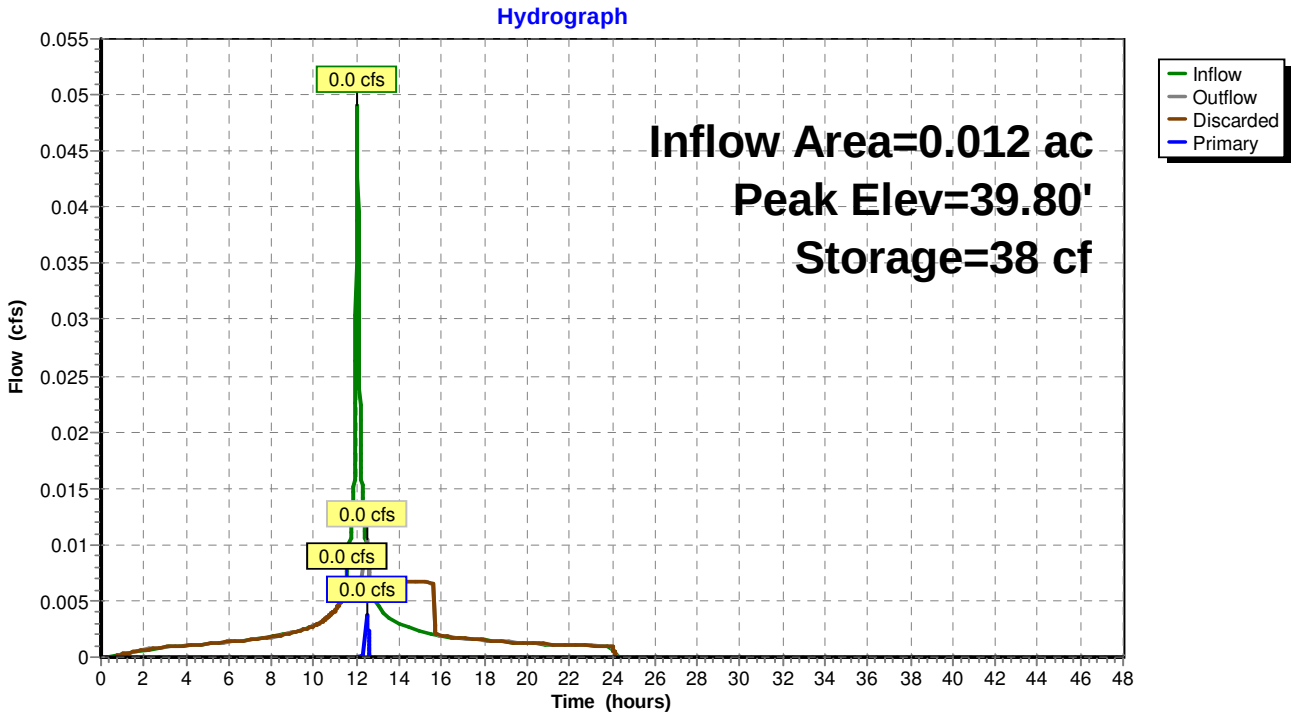
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
38.30	64	68.0	0.0	0	0	64
39.80	64	68.0	40.0	38	38	166
39.90	64	68.0	100.0	6	45	173

Device	Routing	Invert	Outlet Devices
#1	Discarded	38.30'	**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 @ 11.60 hrs HW=38.32' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.0 cfs)

Primary OutFlow Max=0.0 cfs @ 12.45 hrs HW=39.80' TW=33.57' (Dynamic Tailwater)
↑**2=Sharp-Crested Vee/Trap Weir** (Weir Controls 0.0 cfs @ 0.10 fps)

Pond SD3: SD3


Hydrograph
Inflow Area=0.012 ac
Peak Elev=39.80'
Storage=38 cf
0.0 cfs
0.0 cfs
0.0 cfs
0.0 cfs
Inflow
Outflow
Discarded
Primary
Flow (cfs)
Time (hours)
0
0.005
0.01
0.015
0.02
0.025
0.03
0.035
0.04
0.045
0.05
0.055
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48

Summary for Pond SD4: SD4

Inflow Area = 0.019 ac, 0.00% Impervious, Inflow Depth = 0.42" for 10-yr event
Inflow = 0.0 cfs @ 12.16 hrs, Volume= 0.00 af
Outflow = 0.0 cfs @ 12.17 hrs, Volume= 0.00 af, Atten= 1%, Lag= 0.8 min
Discarded = 0.0 cfs @ 12.17 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= 30.00' @ 12.17 hrs Surf.Area= 108 sf Storage= 0 cf
Flood Elev= 31.60' Surf.Area= 108 sf Storage= 76 cf

Plug-Flow detention time= 0.6 min calculated for 0.00 af (100% of inflow)
Center-of-Mass det. time= 0.6 min (1,020.2 - 1,019.6)

Volume	Invert	Avail.Storage	Storage Description
#1	30.00'	76 cf	**Rain Garden (Irregular)** Listed below (Recalc)

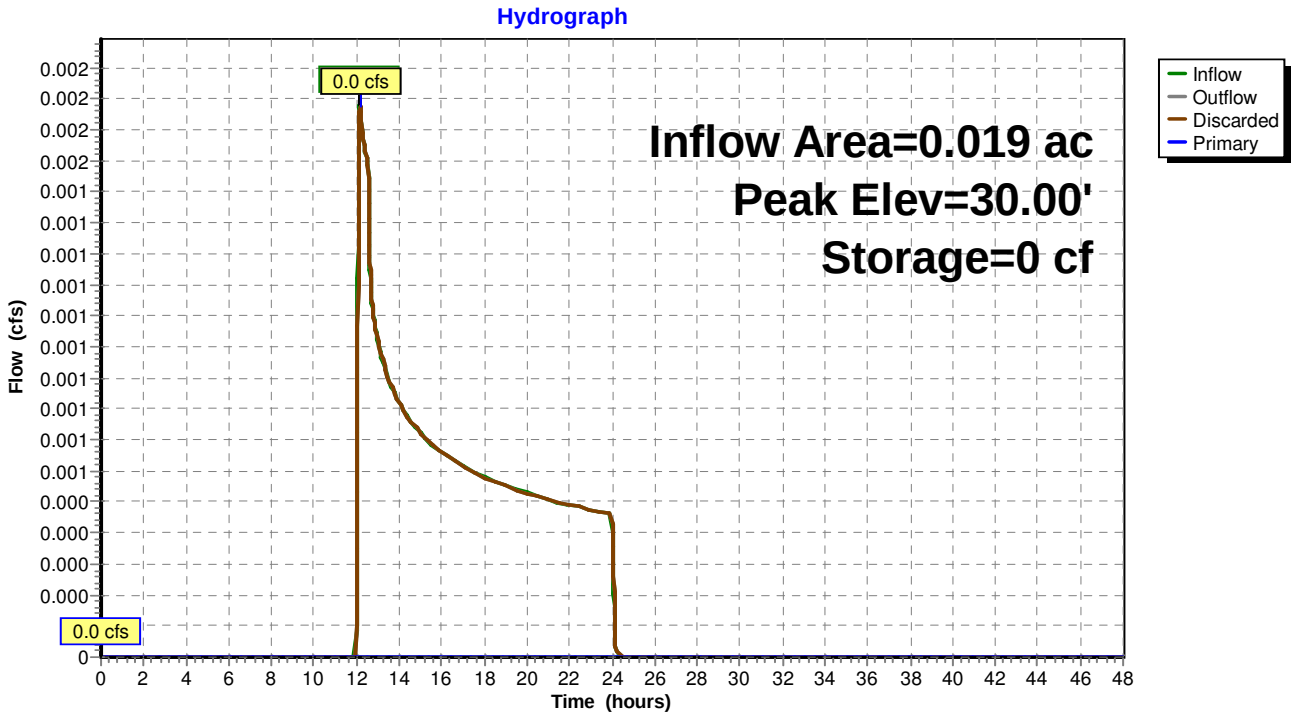
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
30.00	108	114.1	0.0	0	0	108
31.50	108	114.1	40.0	65	65	279
31.60	108	114.1	100.0	11	76	291

Device	Routing	Invert	Outlet Devices
#1	Discarded	30.00'	**4.500 in/hr Exfiltration over Surface area** Phase-In= 0.01'
#2	Primary	31.50'	**179.0 deg x 20.0' long Sharp-Crested Vee/Trap Weir** Cv= 2.46 (C= 3.08)

Discarded OutFlow Max=0.0 cfs @ 12.17 hrs HW=30.00' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.0 cfs)

Primary OutFlow Max=0.0 cfs @ 0.00 hrs HW=30.00' TW=0.00' (Dynamic Tailwater)
↑—**2=Sharp-Crested Vee/Trap Weir** (Controls 0.0 cfs)

Pond SD4: SD4


Hydrograph
Inflow Area=0.019 ac
Peak Elev=30.00'
Storage=0 cf
0.0 cfs
0.0 cfs
Inflow
Outflow
Discarded
Primary
Flow (cfs)
Time (hours)
0
0.000
0.000
0.000
0.000
0.001
0.001
0.001
0.001
0.001
0.001
0.001
0.001
0.001
0.001
0.002
0.002
0.002
0.002
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48

Summary for Pond SD5: SD5

Inflow Area = 0.097 ac, 68.38% Impervious, Inflow Depth = 3.99" for 10-yr event
Inflow = 0.4 cfs @ 12.04 hrs, Volume= 0.03 af
Outflow = 0.3 cfs @ 12.06 hrs, Volume= 0.03 af, Atten= 4%, Lag= 1.2 min
Discarded = 0.0 cfs @ 11.15 hrs, Volume= 0.03 af
Primary = 0.3 cfs @ 12.06 hrs, Volume= 0.01 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 33.04' @ 12.06 hrs Surf.Area= 277 sf Storage= 177 cf
Flood Elev= 33.10' Surf.Area= 277 sf Storage= 194 cf

Plug-Flow detention time= 28.3 min calculated for 0.03 af (100% of inflow)
Center-of-Mass det. time= 28.3 min (819.7 - 791.3)

Volume	Invert	Avail.Storage	Storage Description
#1	31.50'	194 cf	**Rain Garden (Irregular)** Listed below (Recalc)

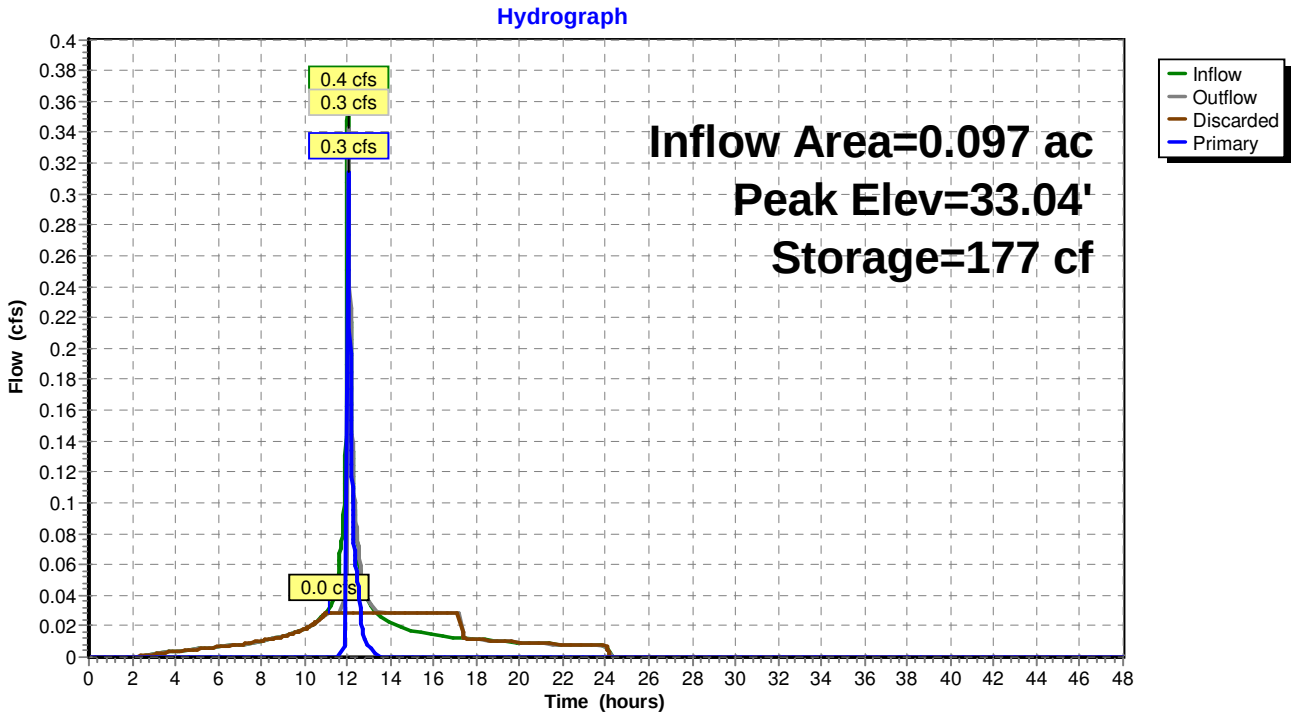
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
31.50	277	281.1	0.0	0	0	277
33.00	277	281.1	40.0	166	166	699
33.10	277	281.1	100.0	28	194	727

Device	Routing	Invert	Outlet Devices
#1	Discarded	31.50'	**4.500 in/hr Exfiltration over Surface area** Phase-In= 0.01'
#2	Primary	33.00'	**179.0 deg x 10.0' long Sharp-Crested Vee/Trap Weir** Cv= 2.46 (C= 3.08)

Discarded OutFlow Max=0.0 cfs @ 11.15 hrs HW=31.52' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.0 cfs)

Primary OutFlow Max=0.3 cfs @ 12.06 hrs HW=33.04' TW=0.00' (Dynamic Tailwater)
↑**2=Sharp-Crested Vee/Trap Weir** (Weir Controls 0.3 cfs @ 0.57 fps)

Pond SD5: SD5


Hydrograph
Inflow Area=0.097 ac
Peak Elev=33.04'
Storage=177 cf
0.4 cfs
0.3 cfs
0.3 cfs
0.0 cfs
Inflow
Outflow
Discarded
Primary
Flow (cfs)
Time (hours)
0 0.02 0.04 0.06 0.08 0.1 0.12 0.14 0.16 0.18 0.2 0.22 0.24 0.26 0.28 0.3 0.32 0.34 0.36 0.38 0.4
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48

A – 2

NODE LISTING – 25-YR

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

Link B: B Inflow=0.5 cfs 0.02 af
Primary=0.5 cfs 0.02 af

Subcatchment B1: B1 Runoff Area=3,191 sf 17.17% Impervious Runoff Depth=1.72"
Flow Length=27' Slope=0.0555 '/' Tc=6.0 min CN=57 Runoff=0.1 cfs 0.01 af

Subcatchment B2: BIO2 Runoff Area=5,414 sf 37.74% Impervious Runoff Depth=4.58"
Flow Length=104' Tc=7.9 min CN=87 Runoff=0.5 cfs 0.05 af

Subcatchment B3: SD4 Runoff Area=828 sf 0.00% Impervious Runoff Depth=0.90"
Flow Length=27' Slope=0.0555 '/' Tc=6.0 min CN=46 Runoff=0.0 cfs 0.00 af

Subcatchment B4: SD5 Runoff Area=4,213 sf 68.38% Impervious Runoff Depth=5.25"
Flow Length=43' Tc=6.0 min CN=93 Runoff=0.4 cfs 0.04 af

Pond BIO1: BIO-RETENTION BASIN 1 Peak Elev=33.90' Storage=1,860 cf Inflow=1.9 cfs 0.17 af
Discarded=0.2 cfs 0.16 af Secondary=0.3 cfs 0.01 af Outflow=0.5 cfs 0.17 af

Pond BIO2: BIO-RETENTION BASIN 2 Peak Elev=35.80' Storage=479 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

Link C: C Inflow=0.6 cfs 0.08 af
Primary=0.6 cfs 0.08 af

Subcatchment C1: C1 Runoff Area=27,870 sf 16.64% Impervious Runoff Depth=1.18"
Flow Length=379' Tc=13.9 min CN=50 Runoff=0.4 cfs 0.06 af

Subcatchment C2: BIO1 Runoff Area=24,794 sf 53.44% Impervious Runoff Depth=3.64"
Flow Length=82' Slope=0.0790 '/' Tc=6.0 min CN=78 Runoff=1.9 cfs 0.17 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=2.25 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 SD1: SD1 Peak Elev=42.60' 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 SD2: SD2 Peak Elev=39.99' 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=39.80' Storage=39 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 SD4: SD4 Peak Elev=30.01' Storage=0 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 SD5: SD5 Peak Elev=33.04' Storage=179 cf Inflow=0.4 cfs 0.05 af
Discarded=0.0 cfs 0.03 af Primary=0.4 cfs 0.01 af Outflow=0.4 cfs 0.05 af

Total Runoff Area = 1.637 ac Runoff Volume = 0.38 af Average Runoff Depth = 2.79"
64.97% Pervious = 1.063 ac 35.03% Impervious = 0.573 ac

A – 2

NODE LISTING – 50-YR

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

Link B: B Inflow=0.7 cfs 0.04 af
Primary=0.7 cfs 0.04 af

Subcatchment B1: B1 Runoff Area=3,191 sf 17.17% Impervious Runoff Depth=2.49"
Flow Length=27' Slope=0.0555 '/' Tc=6.0 min CN=57 Runoff=0.2 cfs 0.02 af

Subcatchment B2: BIO2 Runoff Area=5,414 sf 37.74% Impervious Runoff Depth=5.74"
Flow Length=104' Tc=7.9 min CN=87 Runoff=0.5 cfs 0.06 af

Subcatchment B3: SD4 Runoff Area=828 sf 0.00% Impervious Runoff Depth=1.45"
Flow Length=27' Slope=0.0555 '/' Tc=6.0 min CN=46 Runoff=0.0 cfs 0.00 af

Subcatchment B4: SD5 Runoff Area=4,213 sf 68.38% Impervious Runoff Depth=6.44"
Flow Length=43' Tc=6.0 min CN=93 Runoff=0.5 cfs 0.05 af

Pond BIO1: BIO-RETENTION BASIN 1 Peak Elev=34.01' Storage=2,054 cf Inflow=2.3 cfs 0.23 af
Discarded=0.2 cfs 0.19 af Secondary=0.9 cfs 0.04 af Outflow=1.1 cfs 0.23 af

Pond BIO2: BIO-RETENTION BASIN 2 Peak Elev=35.85' Storage=505 cf Inflow=0.5 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

Link C: C Inflow=1.5 cfs 0.14 af
Primary=1.5 cfs 0.14 af

Subcatchment C1: C1 Runoff Area=27,870 sf 16.64% Impervious Runoff Depth=1.82"
Flow Length=379' Tc=13.9 min CN=50 Runoff=0.6 cfs 0.10 af

Subcatchment C2: BIO1 Runoff Area=24,794 sf 53.44% Impervious Runoff Depth=4.72"
Flow Length=82' Slope=0.0790 '/' Tc=6.0 min CN=78 Runoff=2.3 cfs 0.22 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=3.11 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 SD1: SD1 Peak Elev=42.61' Storage=47 cf Inflow=0.1 cfs 0.01 af
Discarded=0.0 cfs 0.01 af Primary=0.1 cfs 0.00 af Outflow=0.1 cfs 0.01 af

Pond SD2: SD2 Peak Elev=40.00' Storage=48 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=39.81' Storage=39 cf Inflow=0.1 cfs 0.01 af
Discarded=0.0 cfs 0.01 af Primary=0.1 cfs 0.00 af Outflow=0.1 cfs 0.01 af

Pond SD4: SD4 Peak Elev=30.07' Storage=3 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 SD5: SD5 Peak Elev=33.05' Storage=181 cf Inflow=0.6 cfs 0.06 af
Discarded=0.0 cfs 0.04 af Primary=0.6 cfs 0.02 af Outflow=0.6 cfs 0.06 af

Total Runoff Area = 1.637 ac Runoff Volume = 0.50 af Average Runoff Depth = 3.70"
64.97% Pervious = 1.063 ac 35.03% Impervious = 0.573 ac

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	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
0.01	ac-in	WQV= 1" x Rv 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**
47	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	$Ksat_{DESIGN}$ = Design infiltration rate[2]	
1.5	hours	T_{DRAIN} = Drain time = V / (A_{SA} * I_{DESIGN})	**≤ 72-hrs**
41.10	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)	
4.27	feet	D_{SHWT} = Separation from SHWT	**≥ *** [3]
4.3	feet	D_{ROCK} = Separation from bedrock	**≥ *** [3]
	ft	D_{amend} = Depth of amended soil, if applicable due high infiltation 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 materialmeet 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**
42.49	ft	Peak elevation of the 10-year storm event (infiltration can be used in analysis)	
42.61	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. $Ksat_{DESIGN}$ 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: Revised per TRC Comments

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 @ 11.62 hrs, Volume= 0.01 af, Atten= 85%, Lag= 0.0 min
Discarded = 0.0 cfs @ 11.62 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= 42.49' @ 12.61 hrs Surf.Area= 78 sf Storage= 43 cf
Flood Elev= 42.70' Surf.Area= 78 sf Storage= 55 cf

Plug-Flow detention time= 24.3 min calculated for 0.01 af (100% of inflow)
Center-of-Mass det. time= 24.3 min (775.2 - 751.0)

Volume	Invert	Avail.Storage	Storage Description
#1	41.10'	55 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)
41.10	78	82.0	0.0	0	0	78
42.60	78	82.0	40.0	47	47	201
42.70	78	82.0	100.0	8	55	209

Device	Routing	Invert	Outlet Devices
#1	Discarded	41.10'	**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 @ 11.62 hrs HW=41.12' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.0 cfs)

Primary OutFlow Max=0.0 cfs @ 0.00 hrs HW=41.10' TW=30.08' (Dynamic Tailwater)
└**2=Sharp-Crested Vee/Trap Weir** (Controls 0.0 cfs)

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 = 0.1 cfs @ 12.10 hrs, Volume= 0.01 af, Atten= 1%, Lag= 3.9 min
Discarded = 0.0 cfs @ 11.30 hrs, Volume= 0.01 af
Primary = 0.1 cfs @ 12.10 hrs, Volume= 0.00 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 42.61' @ 12.10 hrs Surf.Area= 78 sf Storage= 47 cf
Flood Elev= 42.70' Surf.Area= 78 sf Storage= 55 cf

Plug-Flow detention time= 25.7 min calculated for 0.01 af (100% of inflow)
Center-of-Mass det. time= 25.7 min (769.3 - 743.6)

Volume	Invert	Avail.Storage	Storage Description
#1	41.10'	55 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)
41.10	78	82.0	0.0	0	0	78
42.60	78	82.0	40.0	47	47	201
42.70	78	82.0	100.0	8	55	209

Device	Routing	Invert	Outlet Devices
#1	Discarded	41.10'	**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 @ 11.30 hrs HW=41.12' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.0 cfs)

Primary OutFlow Max=0.1 cfs @ 12.10 hrs HW=42.61' TW=33.94' (Dynamic Tailwater)
↑—**2=Sharp-Crested Vee/Trap Weir** (Weir Controls 0.1 cfs @ 0.24 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	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
0.01	ac-in	WQV= 1" x Rv 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**
47	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	$Ksat_{DESIGN}$ = Design infiltration rate[2]	
1.2	hours	I_{DRAIN} = Drain time = V / (A_{SA} * I_{DESIGN})	≤ **72-hrs**
38.50	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)	
3.57	feet	D_{SHWT} = Separation from SHWT	≥ *[3]
3.6	feet	D_{ROCK} = Separation from bedrock	≥ *[3]
	ft	D_{amend} = Depth of amended soil, if applicable due high infiltation 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 materialmeet 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**
39.54	ft	Peak elevation of the 10-year storm event (infiltration can be used in analysis)	
40.00	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. $Ksat_{DESIGN}$ 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: Revised per TRC Comments

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 @ 11.67 hrs, Volume= 0.00 af, Atten= 83%, Lag= 0.0 min
Discarded = 0.0 cfs @ 11.67 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= 39.54' @ 12.57 hrs Surf.Area= 79 sf Storage= 33 cf
Flood Elev= 40.10' Surf.Area= 79 sf Storage= 55 cf

Plug-Flow detention time= 16.7 min calculated for 0.00 af (100% of inflow)
Center-of-Mass det. time= 16.7 min (767.7 - 751.0)

Volume	Invert	Avail.Storage	Storage Description
#1	38.50'	55 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)
38.50	79	83.0	0.0	0	0	79
40.00	79	83.0	40.0	47	47	204
40.10	79	83.0	100.0	8	55	212

Device	Routing	Invert	Outlet Devices
#1	Discarded	38.50'	**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 @ 11.67 hrs HW=38.52' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.0 cfs)

Primary OutFlow Max=0.0 cfs @ 0.00 hrs HW=38.50' TW=30.08' (Dynamic Tailwater)
↑—**2=Sharp-Crested Vee/Trap Weir** (Controls 0.0 cfs)

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 @ 12.21 hrs, Volume= 0.01 af, Atten= 59%, Lag= 10.5 min
Discarded = 0.0 cfs @ 11.49 hrs, Volume= 0.01 af
Primary = 0.0 cfs @ 12.21 hrs, Volume= 0.00 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 40.00' @ 12.21 hrs Surf.Area= 79 sf Storage= 48 cf
Flood Elev= 40.10' Surf.Area= 79 sf Storage= 55 cf

Plug-Flow detention time= 25.9 min calculated for 0.01 af (100% of inflow)
Center-of-Mass det. time= 25.9 min (769.5 - 743.6)

Volume	Invert	Avail.Storage	Storage Description
#1	38.50'	55 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)
38.50	79	83.0	0.0	0	0	79
40.00	79	83.0	40.0	47	47	204
40.10	79	83.0	100.0	8	55	212

Device	Routing	Invert	Outlet Devices
#1	Discarded	38.50'	**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 @ 11.49 hrs HW=38.52' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.0 cfs)

Primary OutFlow Max=0.0 cfs @ 12.21 hrs HW=40.00' TW=34.01' (Dynamic Tailwater)
↑—**2=Sharp-Crested Vee/Trap Weir** (Weir Controls 0.0 cfs @ 0.17 fps)

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	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
0.01	ac-in	WQV= 1" x Rv 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**
38	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	$Ksat_{DESIGN}$ = Design infiltration rate[2]	
1.5	hours	I_{DRAIN} = Drain time = V / (A_{SA} * I_{DESIGN})	≤ **72-hrs**
38.30	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)	
5.47	feet	D_{SHWT} = Separation from SHWT	≥ *[3]
5.5	feet	D_{ROCK} = Separation from bedrock	≥ *[3]
	ft	D_{amend} = Depth of amended soil, if applicable due high infiltation 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 materialmeet 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**
39.80	ft	Peak elevation of the 10-year storm event (infiltration can be used in analysis)	
39.81	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. $Ksat_{DESIGN}$ 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: Revised per TRC Comments

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 @ 12.45 hrs, Volume= 0.00 af, Atten= 79%, Lag= 24.9 min
Discarded = 0.0 cfs @ 11.60 hrs, Volume= 0.00 af
Primary = 0.0 cfs @ 12.45 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' @ 12.45 hrs Surf.Area= 64 sf Storage= 38 cf
Flood Elev= 39.90' Surf.Area= 64 sf Storage= 45 cf

Plug-Flow detention time= 26.7 min calculated for 0.00 af (100% of inflow)
Center-of-Mass det. time= 26.7 min (777.7 - 751.0)

Volume	Invert	Avail.Storage	Storage Description
#1	38.30'	45 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)
38.30	64	68.0	0.0	0	0	64
39.80	64	68.0	40.0	38	38	166
39.90	64	68.0	100.0	6	45	173

Device	Routing	Invert	Outlet Devices
#1	Discarded	38.30'	**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 @ 11.60 hrs HW=38.32' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.0 cfs)

Primary OutFlow Max=0.0 cfs @ 12.45 hrs HW=39.80' TW=33.57' (Dynamic Tailwater)
↑—**2=Sharp-Crested Vee/Trap Weir** (Weir Controls 0.0 cfs @ 0.10 fps)

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 = 0.1 cfs @ 12.08 hrs, Volume= 0.01 af, Atten= 7%, Lag= 2.7 min
Discarded = 0.0 cfs @ 11.20 hrs, Volume= 0.01 af
Primary = 0.1 cfs @ 12.08 hrs, Volume= 0.00 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 39.81' @ 12.08 hrs Surf.Area= 64 sf Storage= 39 cf
Flood Elev= 39.90' Surf.Area= 64 sf Storage= 45 cf

Plug-Flow detention time= 25.7 min calculated for 0.01 af (100% of inflow)
Center-of-Mass det. time= 25.7 min (769.3 - 743.6)

Volume	Invert	Avail.Storage	Storage Description
#1	38.30'	45 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)
38.30	64	68.0	0.0	0	0	64
39.80	64	68.0	40.0	38	38	166
39.90	64	68.0	100.0	6	45	173

Device	Routing	Invert	Outlet Devices
#1	Discarded	38.30'	**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 @ 11.20 hrs HW=38.32' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.0 cfs)

Primary OutFlow Max=0.1 cfs @ 12.08 hrs HW=39.81' TW=33.89' (Dynamic Tailwater)
↑—**2=Sharp-Crested Vee/Trap Weir** (Weir Controls 0.1 cfs @ 0.25 fps)

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

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).	
0.57	ac	A = Area draining to the practice	
0.30	ac	A_I = Impervious area draining to the practice	
0.53	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.53	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
0.30	ac-in	WQV= 1" x Rv x A	
1,097	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
274	cf	25% x WQV (check calc for sediment forebay volume)	
823	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:			
1,017	sf	A_{SA} = Surface area of the practice	
4.50	iph	$Ksat_{DESIGN}$ = Design infiltration rate[1]	
		If Ksat (prior to factor of safety) is < 0.50 iph, has an underdrain been provided?	
NO	Yes/No	(Use the calculations below)	
2.9	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

If a bioretention area is proposed:			
YES	ac	Drainage Area no larger than 5 ac?	**← yes**
1,215	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:			
		Type of pavement proposed (Concrete? Asphalt? Pavers? Etc.)	
	acres	A_{SA} = Surface area of the pervious pavement	
	:1	Ratio of the contributing area to the pervious surface area	**≤ 5:1**
	inches	D_{FC} = Filter course thickness	**12", or 18" if within GPA mod. 304.1 (see spec)**
Sheet		Note what sheet in the plan set contains the filter course spec.	

1. Rate of the limiting layer (either the filter course or the underlying soil). $Ksat_{design}$ includes factor of safey. See Env-Wq 1504.14 for guidance on determining the infiltration rate.

2. See lines 34, 40 and 48 for required depths of filter media.

3. Volume without depending on infiltration. The volume includes the storage above the filter (but below the invert of the outlet stucture, if any), the filter media voids, and the pretreatment area. The storage above the filter media shall not include the volume above the outlet structure, if any.

Designer's Notes: Revised per TRC Comments

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

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
33.32	1,257	983
33.33	1,265	996
33.34	1,273	1,008
33.35	1,281	1,021
33.36	1,289	1,034
33.37	1,297	1,047
33.38	1,305	1,060
33.39	1,313	1,073
33.40	1,321	1,086
33.41	1,329	1,099
33.42	1,337	1,113
33.43	1,345	1,126
33.44	1,353	1,140
33.45	1,362	1,153
33.46	1,370	1,167
33.47	1,378	1,181
33.48	1,386	1,194
33.49	1,395	1,208
33.50	1,403	1,222
33.51	1,411	1,236
33.52	1,420	1,251
33.53	1,428	1,265
33.54	1,437	1,279
33.55	1,445	1,293
33.56	1,454	1,308
33.57	1,462	1,323
33.58	1,471	1,337
33.59	1,479	1,352
33.60	1,488	1,367
33.61	1,496	1,382
33.62	1,505	1,397
33.63	1,514	1,412
33.64	1,522	1,427
33.65	1,531	1,442
33.66	1,540	1,458
33.67	1,548	1,473
33.68	1,557	1,489
33.69	1,566	1,504
33.70	1,575	1,520
33.71	1,584	1,536
33.72	1,592	1,552
33.73	1,601	1,568
33.74	1,610	1,584
33.75	1,619	1,600
33.76	1,628	1,616
33.77	1,637	1,632
33.78	1,646	1,649
33.79	1,655	1,665
33.80	1,664	1,682
33.81	1,673	1,699
33.82	1,683	1,715
33.83	1,692	1,732
33.84	1,701	1,749
33.85	1,710	1,766
33.86	1,719	1,783
33.87	1,729	1,801
33.88	1,738	1,818
33.89	1,747	1,835
33.90	1,756	1,853
33.91	1,766	1,870
33.92	1,775	1,888
33.93	1,785	1,906
33.94	1,794	1,924
33.95	1,803	1,942
33.96	1,813	1,960
33.97	1,822	1,978
33.98	1,832	1,996
33.99	1,841	2,015
34.00	1,851	2,033
34.01	1,864	2,052
34.02	1,878	2,070
34.03	1,892	2,089
34.04	1,905	2,108
34.05	1,919	2,127
34.06	1,932	2,147
34.07	1,946	2,166
34.08	1,960	2,186
34.09	1,974	2,205
34.10	1,988	2,225
34.11	2,002	2,245
34.12	2,016	2,265
34.13	2,030	2,285
34.14	2,044	2,306
34.15	2,058	2,326
34.16	2,072	2,347
34.17	2,086	2,368
34.18	2,101	2,389
34.19	2,115	2,410
34.20	2,129	2,431
34.21	2,144	2,452
34.22	2,158	2,474
34.23	2,173	2,495
34.24	2,187	2,517
34.25	**2,202**	**2,539**

WQV CALC
1,682 - 467 = 1,215 CF

Summary for Pond BIO1: BIO-RETENTION BASIN 1

Inflow Area = 0.608 ac, 55.59% Impervious, Inflow Depth = 4.45" for 50-yr event
Inflow = 2.3 cfs @ 12.04 hrs, Volume= 0.23 af
Outflow = 1.1 cfs @ 12.18 hrs, Volume= 0.23 af, Atten= 52%, Lag= 8.8 min
Discarded = 0.2 cfs @ 12.18 hrs, Volume= 0.19 af
Secondary = 0.9 cfs @ 12.18 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' @ 12.18 hrs Surf.Area= 1,866 sf Storage= 2,054 cf
Flood Elev= 34.25' Surf.Area= 2,202 sf Storage= 2,539 cf

WQV CALC
1,682 - 467 = 1,215 CF

Plug-Flow detention time= 88.6 min calculated for 0.23 af (100% of inflow)
Center-of-Mass det. time= 88.6 min (927.4 - 838.8)

Volume	Invert	Avail.Storage	Storage Description
#1	30.08'	2,539 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	1,017	202.7	0.0	0	0	1,017
31.25	1,017	202.7	35.0	416	416	1,254
31.50	1,017	202.7	20.0	51	467	1,305
33.00	1,017	202.7	10.0	153	620	1,609
34.00	1,851	248.0	100.0	1,413	2,033	3,249
34.25	2,202	258.5	100.0	506	2,539	3,677

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 @ 12.18 hrs HW=34.01' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.2 cfs)

Secondary OutFlow Max=0.9 cfs @ 12.18 hrs HW=34.01' TW=33.76' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 0.9 cfs @ 1.10 fps)

FILTRATION PRACTICE DESIGN CRITERIA
(Env-Wq 1508.07)

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

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	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
0.05	ac-in	WQV= 1" x Rv 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	$Ksat_{DESIGN}$ = Design infiltration rate[1]	
		If Ksat (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**

If a bioretention area is proposed:			
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:			
		Type of pavement proposed (Concrete? Asphalt? Pavers? Etc.)	
	acres	A_{SA} = Surface area of the pervious pavement	
	:1	Ratio of the contributing area to the pervious surface area	**≤ 5:1**
	inches	D_{FC} = Filter course thickness	**12", or 18" if within GPA mod. 304.1 (see spec)**
Sheet		Note what sheet in the plan set contains the filter course spec.	

1. Rate of the limiting layer (either the filter course or the underlying soil). $Ksat_{design}$ includes factor of safey. See Env-Wq 1504.14 for guidance on determining the infiltration rate.

2. See lines 34, 40 and 48 for required depths of filter media.

3. Volume without depending on infiltration. The volume includes the storage above the filter (but below the invert of the outlet stucture, if any), the filter media voids, and the pretreatment area. The storage above the filter media shall not include the volume above the outlet structure, if any.

Designer's Notes:

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

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

WQV CALC
452 - 126 = 326 CF

Summary for Pond BIO2: BIO-RETENTION BASIN 2

Inflow Area = 0.124 ac, 37.74% Impervious, Inflow Depth = 5.74" for 50-yr event
Inflow = 0.5 cfs @ 12.06 hrs, Volume= 0.06 af
Outflow = 0.4 cfs @ 12.15 hrs, Volume= 0.06 af, Atten= 33%, Lag= 5.8 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= 505 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 (881.3 - 806.9)

WQV CALC
452 - 126 = 326 CF

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=33.05' (Dynamic Tailwater)
↳**2=Broad-Crested Rectangular Weir** (Weir Controls 0.3 cfs @ 0.76 fps)

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 * Pj * Rv**	
	R	Annual Runoff (in)
	P	Annual Rainfall (in)
	Pj	Rainfall Runoff Fraction (0.9)
	Rv	Runoff Coefficient
Runoff Coefficient (Rv) Equation:	**Rv = 0.05 + 0.9Ia**	
	Rv	Runoff Coefficient
	Ia	% Impervious Area (decimal form)

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

Rv = 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.

R = 47.31 in * 0.9 * 0.95 = 40.45 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 in * 19 mg/L * 0.192 ac = 33.35 lb/yr

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

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

Driveway:

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

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

L_{TP} = 0.226 * 40.45 in * 0.56 mg/L * 0.256 ac = 1.31 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.

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)

0.24	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"
0.20	ac	Area of HSG D soil or impervious cover that was replaced by impervious cover	0.0"
0.22	inches	Rd = Weighted groundwater recharge depth	
0.0956	ac-in	GRV = AI * Rd	
347	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: 0.06 af

BR2: 0.02 af

SD1: 0.00 af

SD2: 0.00 af

SD3: 0.00 af

SD4: 0.00 af

SD5: 0.02 af

Sum: 0.10 af

Convert to cubic feet: 4,356 cf

Summary for Pond BIO1: BIO-RETENTION BASIN 1

Inflow Area = 0.608 ac, 55.59% Impervious, Inflow Depth = 1.17" for 2-yr event
Inflow = 0.8 cfs @ 12.04 hrs, Volume= 0.06 af
Outflow = 0.1 cfs @ 11.87 hrs, Volume= 0.06 af, Atten= 86%, Lag= 0.0 min
Discarded = 0.1 cfs @ 11.87 hrs, Volume= 0.06 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= 32.65' @ 12.71 hrs Surf.Area= 1,017 sf Storage= 585 cf
Flood Elev= 34.25' Surf.Area= 2,202 sf Storage= 2,539 cf

Plug-Flow detention time= 34.3 min calculated for 0.06 af (100% of inflow)
Center-of-Mass det. time= 34.3 min (918.9 - 884.6)

Volume	Invert	Avail.Storage	Storage Description
#1	30.08'	2,539 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	1,017	202.7	0.0	0	0	1,017
31.25	1,017	202.7	35.0	416	416	1,254
31.50	1,017	202.7	20.0	51	467	1,305
33.00	1,017	202.7	10.0	153	620	1,609
34.00	1,851	248.0	100.0	1,413	2,033	3,249
34.25	2,202	258.5	100.0	506	2,539	3,677

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 @ 11.87 hrs HW=30.13' (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)

Summary for Pond BIO2: BIO-RETENTION BASIN 2

Inflow Area = 0.124 ac, 37.74% Impervious, Inflow Depth = 1.89" for 2-yr event
Inflow = 0.2 cfs @ 12.06 hrs, Volume= 0.02 af
Outflow = 0.0 cfs @ 12.71 hrs, Volume= 0.02 af, Atten= 86%, Lag= 38.9 min
Discarded = 0.0 cfs @ 12.71 hrs, Volume= 0.02 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= 35.17' @ 12.71 hrs Surf.Area= 318 sf Storage= 216 cf
Flood Elev= 36.25' Surf.Area= 825 sf Storage= 763 cf

Plug-Flow detention time= 45.3 min calculated for 0.02 af (100% of inflow)
Center-of-Mass det. time= 45.3 min (890.4 - 845.1)

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 @ 12.71 hrs HW=35.17' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.0 cfs)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=32.08' TW=31.50' (Dynamic Tailwater)
2=Broad-Crested Rectangular Weir (Controls 0.0 cfs)

Summary for Pond SD1: SD1

Inflow Area = 0.014 ac, 87.40% Impervious, Inflow Depth = 2.94" for 2-yr event
Inflow = 0.0 cfs @ 12.04 hrs, Volume= 0.00 af
Outflow = 0.0 cfs @ 11.81 hrs, Volume= 0.00 af, Atten= 81%, Lag= 0.0 min
Discarded = 0.0 cfs @ 11.81 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= 41.86' @ 12.43 hrs Surf.Area= 78 sf Storage= 24 cf
Flood Elev= 42.70' Surf.Area= 78 sf Storage= 55 cf

Plug-Flow detention time= 11.8 min calculated for 0.00 af (100% of inflow)
Center-of-Mass det. time= 11.8 min (771.9 - 760.1)

Volume	Invert	Avail.Storage	Storage Description
#1	41.10'	55 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)
41.10	78	82.0	0.0	0	0	78
42.60	78	82.0	40.0	47	47	201
42.70	78	82.0	100.0	8	55	209

Device	Routing	Invert	Outlet Devices
#1	Discarded	41.10'	**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 @ 11.81 hrs HW=41.12' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.0 cfs)

Primary OutFlow Max=0.0 cfs @ 0.00 hrs HW=41.10' TW=30.08' (Dynamic Tailwater)
↑—**2=Sharp-Crested Vee/Trap Weir** (Controls 0.0 cfs)

Summary for Pond SD2: SD2

Inflow Area = 0.012 ac, 85.18% Impervious, Inflow Depth = 2.94" for 2-yr event
Inflow = 0.0 cfs @ 12.04 hrs, Volume= 0.00 af
Outflow = 0.0 cfs @ 11.88 hrs, Volume= 0.00 af, Atten= 78%, Lag= 0.0 min
Discarded = 0.0 cfs @ 11.88 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= 39.06' @ 12.34 hrs Surf.Area= 79 sf Storage= 18 cf
Flood Elev= 40.10' Surf.Area= 79 sf Storage= 55 cf

Plug-Flow detention time= 8.2 min calculated for 0.00 af (100% of inflow)
Center-of-Mass det. time= 8.2 min (768.2 - 760.1)

Volume	Invert	Avail.Storage	Storage Description
#1	38.50'	55 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)
38.50	79	83.0	0.0	0	0	79
40.00	79	83.0	40.0	47	47	204
40.10	79	83.0	100.0	8	55	212

Device	Routing	Invert	Outlet Devices
#1	Discarded	38.50'	**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 @ 11.88 hrs HW=38.52' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.0 cfs)

Primary OutFlow Max=0.0 cfs @ 0.00 hrs HW=38.50' TW=30.08' (Dynamic Tailwater)
↑—**2=Sharp-Crested Vee/Trap Weir** (Controls 0.0 cfs)

Summary for Pond SD3: SD3

Inflow Area = 0.012 ac, 88.24% Impervious, Inflow Depth = 2.94" for 2-yr event
Inflow = 0.0 cfs @ 12.04 hrs, Volume= 0.00 af
Outflow = 0.0 cfs @ 11.77 hrs, Volume= 0.00 af, Atten= 82%, Lag= 0.0 min
Discarded = 0.0 cfs @ 11.77 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= 39.16' @ 12.48 hrs Surf.Area= 64 sf Storage= 22 cf
Flood Elev= 39.90' Surf.Area= 64 sf Storage= 45 cf

Plug-Flow detention time= 13.8 min calculated for 0.00 af (100% of inflow)
Center-of-Mass det. time= 13.8 min (773.9 - 760.1)

Volume	Invert	Avail.Storage	Storage Description
#1	38.30'	45 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)
38.30	64	68.0	0.0	0	0	64
39.80	64	68.0	40.0	38	38	166
39.90	64	68.0	100.0	6	45	173

Device	Routing	Invert	Outlet Devices
#1	Discarded	38.30'	**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 @ 11.77 hrs HW=38.32' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.0 cfs)

Primary OutFlow Max=0.0 cfs @ 0.00 hrs HW=38.30' TW=30.08' (Dynamic Tailwater)
↑—**2=Sharp-Crested Vee/Trap Weir** (Controls 0.0 cfs)

Summary for Pond SD4: SD4

Inflow Area = 0.019 ac, 0.00% Impervious, Inflow Depth = 0.05" for 2-yr event
Inflow = 0.0 cfs @ 23.14 hrs, Volume= 0.00 af
Outflow = 0.0 cfs @ 23.15 hrs, Volume= 0.00 af, Atten= 0%, Lag= 0.6 min
Discarded = 0.0 cfs @ 23.15 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= 30.00' @ 23.15 hrs Surf.Area= 108 sf Storage= 0 cf
Flood Elev= 31.60' Surf.Area= 108 sf Storage= 76 cf

Plug-Flow detention time= 0.6 min calculated for 0.00 af (100% of inflow)
Center-of-Mass det. time= 0.6 min (1,167.6 - 1,167.0)

Volume	Invert	Avail.Storage	Storage Description
#1	30.00'	76 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)
30.00	108	114.1	0.0	0	0	108
31.50	108	114.1	40.0	65	65	279
31.60	108	114.1	100.0	11	76	291

Device	Routing	Invert	Outlet Devices
#1	Discarded	30.00'	**4.500 in/hr Exfiltration over Surface area** Phase-In= 0.01'
#2	Primary	31.50'	**179.0 deg x 20.0' long Sharp-Crested Vee/Trap Weir** Cv= 2.46 (C= 3.08)

Discarded OutFlow Max=0.0 cfs @ 23.15 hrs HW=30.00' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.0 cfs)

Primary OutFlow Max=0.0 cfs @ 0.00 hrs HW=30.00' TW=0.00' (Dynamic Tailwater)
2=Sharp-Crested Vee/Trap Weir (Controls 0.0 cfs)

Summary for Pond SD5: SD5

Inflow Area = 0.097 ac, 68.38% Impervious, Inflow Depth = 2.42" for 2-yr event
Inflow = 0.3 cfs @ 12.04 hrs, Volume= 0.02 af
Outflow = 0.1 cfs @ 12.23 hrs, Volume= 0.02 af, Atten= 68%, Lag= 11.7 min
Discarded = 0.0 cfs @ 11.61 hrs, Volume= 0.02 af
Primary = 0.1 cfs @ 12.23 hrs, Volume= 0.00 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 33.01' @ 12.23 hrs Surf.Area= 277 sf Storage= 170 cf
Flood Elev= 33.10' Surf.Area= 277 sf Storage= 194 cf

Plug-Flow detention time= 30.5 min calculated for 0.02 af (100% of inflow)
Center-of-Mass det. time= 30.5 min (837.9 - 807.4)

Volume	Invert	Avail.Storage	Storage Description
#1	31.50'	194 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)
31.50	277	281.1	0.0	0	0	277
33.00	277	281.1	40.0	166	166	699
33.10	277	281.1	100.0	28	194	727

Device	Routing	Invert	Outlet Devices
#1	Discarded	31.50'	**4.500 in/hr Exfiltration over Surface area** Phase-In= 0.01'
#2	Primary	33.00'	**179.0 deg x 10.0' long Sharp-Crested Vee/Trap Weir** Cv= 2.46 (C= 3.08)

Discarded OutFlow Max=0.0 cfs @ 11.61 hrs HW=31.52' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.0 cfs)

Primary OutFlow Max=0.1 cfs @ 12.23 hrs HW=33.01' TW=0.00' (Dynamic Tailwater)
↑—**2=Sharp-Crested Vee/Trap Weir** (Weir Controls 0.1 cfs @ 0.35 fps)

Summary for Pond SD5: SD5

Inflow Area = 0.097 ac, 68.38% Impervious, Inflow Depth = 2.42" for 2-yr event
Inflow = 0.3 cfs @ 12.04 hrs, Volume= 0.02 af
Outflow = 0.1 cfs @ 12.23 hrs, Volume= 0.02 af, Atten= 68%, Lag= 11.7 min
Discarded = 0.0 cfs @ 11.61 hrs, Volume= 0.02 af
Primary = 0.1 cfs @ 12.23 hrs, Volume= 0.00 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 33.01' @ 12.23 hrs Surf.Area= 277 sf Storage= 170 cf
Flood Elev= 33.10' Surf.Area= 277 sf Storage= 194 cf

Plug-Flow detention time= 30.5 min calculated for 0.02 af (100% of inflow)
Center-of-Mass det. time= 30.5 min (837.9 - 807.4)

Volume	Invert	Avail.Storage	Storage Description
#1	31.50'	194 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)
31.50	277	281.1	0.0	0	0	277
33.00	277	281.1	40.0	166	166	699
33.10	277	281.1	100.0	28	194	727

Device	Routing	Invert	Outlet Devices
#1	Discarded	31.50'	**4.500 in/hr Exfiltration over Surface area** Phase-In= 0.01'
#2	Primary	33.00'	**179.0 deg x 10.0' long Sharp-Crested Vee/Trap Weir** Cv= 2.46 (C= 3.08)

Discarded OutFlow Max=0.0 cfs @ 11.61 hrs HW=31.52' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.0 cfs)

Primary OutFlow Max=0.1 cfs @ 12.23 hrs HW=33.01' TW=0.00' (Dynamic Tailwater)
↑—**2=Sharp-Crested Vee/Trap Weir** (Weir Controls 0.1 cfs @ 0.35 fps)

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:	3	**Test Pit/Boring Hole Number:**	BH3	**Test Method:**	Borehole Infiltration Test
Test Depth (feet):	2	**Surface Elevation (feet):**	33.5	**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:
8:50		**23**			**Start**
	9:50	**9**	**14**	**14.00**	**Finish**
9:50		**23**			**Start**
	10:50	**12**	**11**	**11.00**	**Finish**
10:50		**23**			**Start**
	11:50	**14**	**9**	**9.00**	**Finish**
11:50		**23**			**Start**
	12:50	**14**	**9**	**9.00**	**Finish**
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
N/A	N/A

Notes: 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
N/A	N/A

Notes: 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		

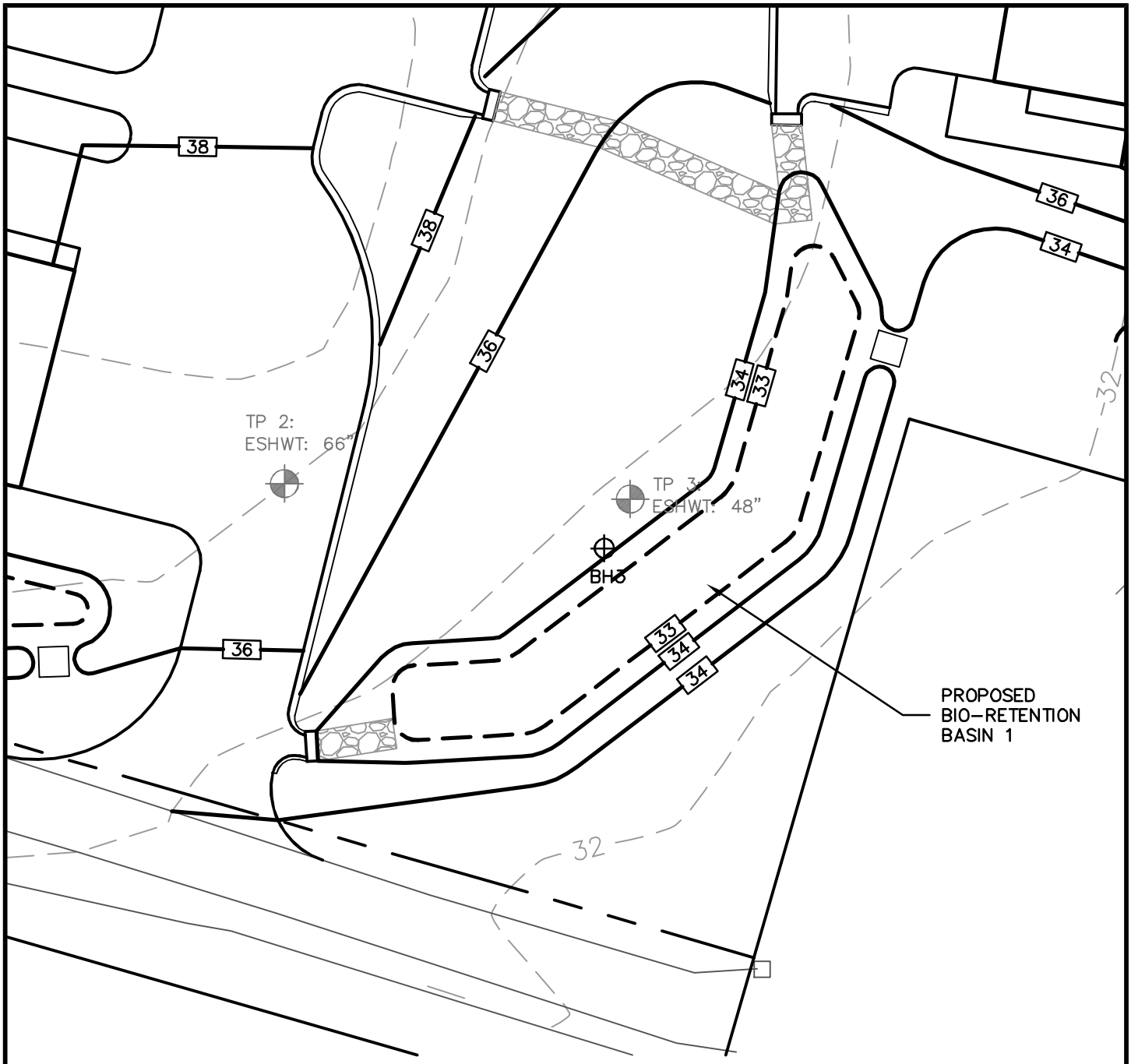
Seasonal High Water (in): None
Observed Water (in): None
Restrictive Layer (in): None
Bedrock/Refusal (in): None

Soil Series:
NHDES Soil Group:
Hydrologic Soil Group:

Percolation Test

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

Notes: N/A



GRAPHIC SCALE

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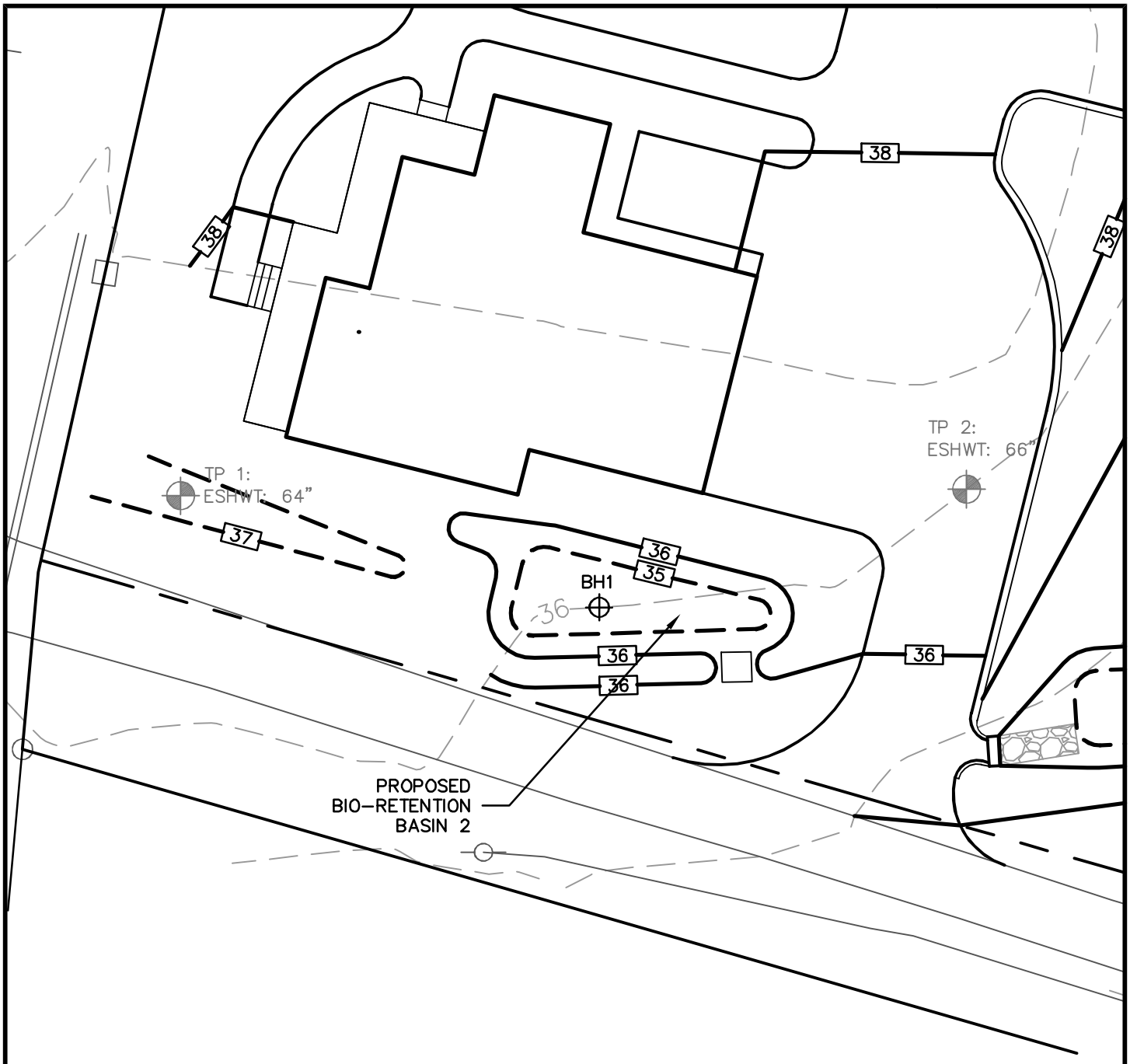
(IN FEET)

INFILTRATION FEASIBILITY SKETCH BIO-RETENTION BASIN 1
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



GRAPHIC SCALE

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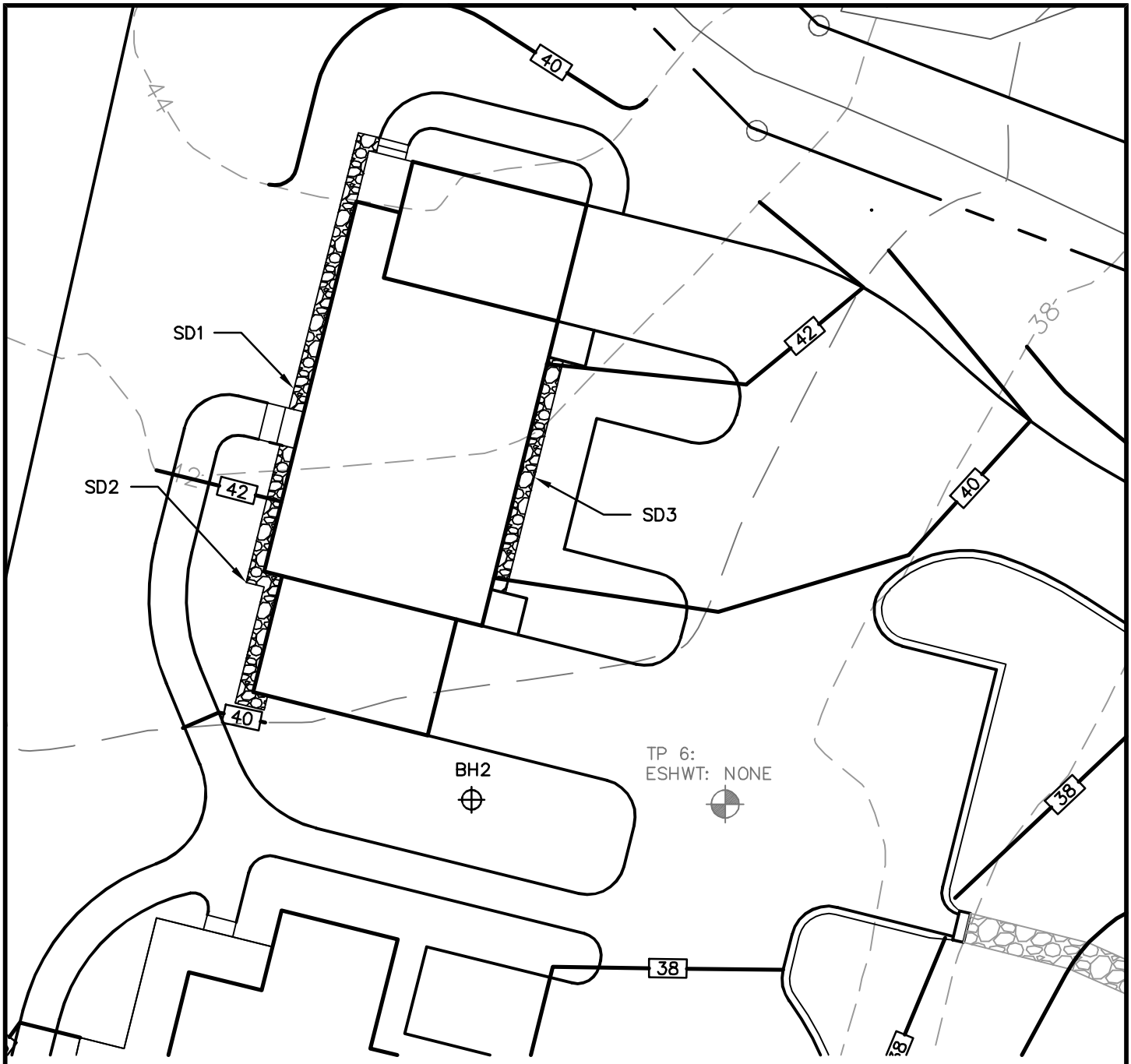
(IN FEET)

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

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

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



GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)

INFILTRATION FEASIBILITY SKETCH STONE DRIP EDGES
1"=20'

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

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181 Watson Road, PO Box 1166
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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

September 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:

- Rain Guardian Fortress
- 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.

RAIN GUARDIANS FORTRESS:

- Common maintenance needs include periodic removal of accumulated leaves (and other organic debris) and garbage from the internal grate and sediment and fine debris from the concrete and metal dry filter box. Contributing watersheds with high sediment concentrations may require up to monthly or twice monthly visits to satisfy maintenance needs.
- If sediment accumulates beyond an acceptable level in the system, it will be necessary to remove. This can be done by manual removal with a shovel or vacuum device. The filter screen can be cleaned manually through brushing or with pressurized water.

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
• Rain Guardians Fortress	Periodically	• Check for trash, debris, and accumulated sediments in grate • Check sediment level	Remove debris and veg. periodically ≥ 3 in. sediment depth shovel sediment
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:_____

System Component / BMP	Cleaning / Repair Needed (List Items / Comments)	Date of Cleaning/Repair	Performed By

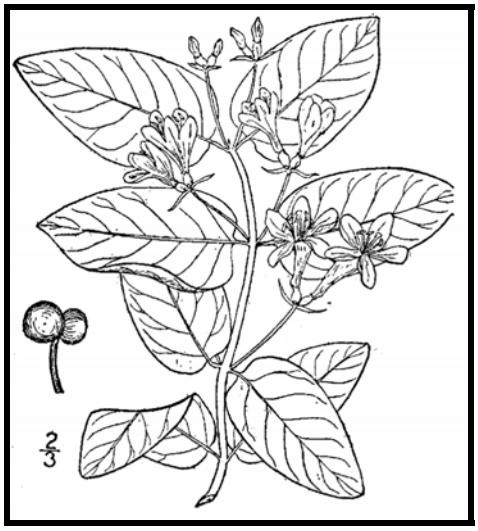
Deicing Salt Quantity Use Log

Date	Amount of Material Applied	Comments

University of New Hampshire Cooperative Extension

Methods for Disposing Non-Native Invasive Plants

Prepared by the Invasives Species Outreach Group, volunteers interested in helping people control invasive plants. Assistance provided by the Piscataquog Land Conservancy and the NH Invasives Species Committee. Edited by Karen Bennett, Extension Forestry Professor and Specialist.



Tatarian honeysuckle
Lonicera tatarica
USDA-NRCS PLANTS Database / Britton, N.L., and A. Brown. 1913. *An illustrated flora of the northern United States, Canada and the British Possessions*. Vol. 3: 282.

Non-native invasive plants crowd out natives in natural and managed landscapes. They cost taxpayers billions of dollars each year from lost agricultural and forest crops, decreased biodiversity, impacts to natural resources and the environment, and the cost to control and eradicate them.

Invasive plants grow well even in less than desirable conditions such as sandy soils along roadsides, shaded wooded areas, and in wetlands. In ideal conditions, they grow and spread even faster. There are many ways to remove these non-native invasives, but once removed, care is needed to dispose the removed plant material so the plants don't grow where disposed.

Knowing how a particular plant reproduces indicates its method of spread and helps determine the appropriate disposal method. Most are spread by seed and are dispersed by wind, water, animals, or people. Some reproduce by vegetative means from pieces of stems or roots forming new plants. Others spread through both seed and vegetative means.

Because movement and disposal of viable plant parts is restricted (see NH Regulations), viable invasive parts can't be brought to most transfer stations in the state. Check with your transfer station to see if there is an approved, designated area for invasives disposal. This fact sheet gives recommendations for rendering plant parts non-viable.

Control of invasives is beyond the scope of this fact sheet. For information about control visit www.nhinvasives.org or contact your UNH Cooperative Extension office.

New Hampshire Regulations

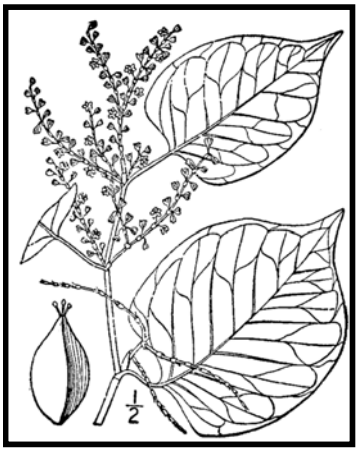
Prohibited invasive species shall only be disposed of in a manner that renders them nonliving and nonviable. (Agr. 3802.04)

No person shall collect, transport, import, export, move, buy, sell, distribute, propagate or transplant any living and viable portion of any plant species, which includes all of their cultivars and varieties, listed in Table 3800.1 of the New Hampshire prohibited invasive species list. (Agr 3802.01)

How and When to Dispose of Invasives?

To prevent seed from spreading remove invasive plants before seeds are set (produced). Some plants continue to grow, flower and set seed even after pulling or cutting. Seeds can remain viable in the ground for many years. If the plant has flowers or seeds, place the flowers and seeds in a heavy plastic bag "head first" at the weeding site and transport to the disposal site. The following are general descriptions of disposal methods. See the chart for recommendations by species.

Burning: Large woody branches and trunks can be used as firewood or burned in piles. For outside burning, a written fire permit from the local forest fire warden is required unless the ground is covered in snow. Brush larger than 5 inches in diameter can't be burned. Invasive plants with easily airborne seeds like black swallow-wort with mature seed pods (indicated by their brown color) shouldn't be burned as the seeds may disperse by the hot air created by the fire.



Japanese knotweed
Polygonum cuspidatum
USDA-NRCS PLANTS Database / Britton, N.L., and A. Brown. 1913. *An illustrated flora of the northern United States, Canada and the British Possessions*. Vol. 1: 676.

Bagging (solarization): Use this technique with softer-tissue plants. Use heavy black or clear plastic bags (contractor grade), making sure that no parts of the plants poke through. Allow the bags to sit in the sun for several weeks and on dark pavement for the best effect.

Tarping and Drying: Pile material on a sheet of plastic and cover with a tarp, fastening the tarp to the ground and monitoring it for escapes. Let the material dry for several weeks, or until it is clearly nonviable.

Chipping: Use this method for woody plants that don't reproduce vegetatively.

Burying: This is risky, but can be done with watchful diligence. Lay thick plastic in a deep pit before placing the cut up plant material in the hole. Place the material away from the edge of the plastic before covering it with more heavy plastic. Eliminate as much air as possible and toss in soil to weight down the material in the pit. Note that the top of the buried material should be at least three feet underground. Japanese knotweed should be at least 5 feet underground!

Drowning: Fill a large barrel with water and place soft-tissue plants in the water. Check after a few weeks and look for rotted plant material (roots, stems, leaves, flowers). Well-rotted plant material may be composted. A word of caution- seeds may still be viable after using this method. Do this before seeds are set. This method isn't used often. Be prepared for an awful stink!

Composting: Invasive plants can take root in compost. Don't compost any invasives unless you know there is no viable (living) plant material left. Use one of the above techniques (bagging, tarping, drying, chipping, or drowning) to render the plants nonviable before composting. Closely examine the plant before composting and avoid composting seeds.

Be diligent looking for seedlings for *years* in areas where removal and disposal took place.

Suggested Disposal Methods for Non-Native Invasive Plants

This table provides information concerning the disposal of removed invasive plant material. If the infestation is treated with herbicide and left in place, these guidelines don't apply. Don't bring invasives to a local transfer station, unless there is a designated area for their disposal, or they have been rendered non-viable. This listing includes wetland and upland plants from the New Hampshire Prohibited Invasive Species List. The disposal of aquatic plants isn't addressed.

<table>
<tr><th>Woody Plants</th><th>Method of Reproducing</th><th>Methods of Disposal</th></tr>
<tr><td rowspan="2">Norway maple
(Acer platanoides)
European barberry
(Berberis vulgaris)
Japanese barberry
(Berberis thunbergii)
autumn olive
(Elaeagnus umbellata)
burning bush
(Euonymus alatus)
Morrow's honeysuckle
(Lonicera morrowii)
Tatarian honeysuckle
(Lonicera tatarica)
showy bush honeysuckle
(Lonicera x bella)
common buckthorn
(Rhamnus cathartica)
glossy buckthorn
(Frangula alnus)</td><td rowspan="2">Fruit and Seeds
  </td><td>Prior to fruit/seed ripening
Seedlings and small plants
▪ Pull or cut and leave on site with roots exposed. No special care needed.
Larger plants
▪ Use as firewood.
▪ Make a brush pile.
▪ Chip.
▪ Burn.</td></tr>
<tr><td>After fruit/seed is ripe
Don't remove from site.
▪ Burn.
▪ Make a covered brush pile.
▪ Chip once all fruit has dropped from branches.
▪ Leave resulting chips on site and monitor.</td></tr>
<tr><td rowspan="2">oriental bittersweet
(Celastrus orbiculatus)
multiflora rose
(Rosa multiflora)</td><td rowspan="2">Fruits, Seeds, Plant Fragments
  </td><td>Prior to fruit/seed ripening
Seedlings and small plants
▪ Pull or cut and leave on site with roots exposed. No special care needed.
Larger plants
▪ Make a brush pile.
▪ Burn.</td></tr>
<tr><td>After fruit/seed is ripe
Don't remove from site.
▪ Burn.
▪ Make a covered brush pile.
▪ Chip – only after material has fully dried (1 year) and all fruit has dropped from branches. Leave resulting chips on site and monitor.</td></tr>
</table>

<table>
<tr><th>Non-Woody Plants</th><th>Method of Reproducing</th><th>Methods of Disposal</th></tr>
<tr><td rowspan="2">garlic mustard
(Alliaria petiolata)
spotted knapweed
(Centaurea maculosa)
▪ Sap of related knapweed can cause skin irritation and tumors. Wear gloves when handling.
black swallow-wort
(Cynanchum nigrum)
▪ May cause skin rash. Wear gloves and long sleeves when handling.
pale swallow-wort
(Cynanchum rossicum)
giant hogweed
(Heracleum mantegazzianum)
▪ Can cause major skin rash. Wear gloves and long sleeves when handling.
dame’s rocket
(Hesperis matronalis)
perennial pepperweed
(Lepidium latifolium)
purple loosestrife
(Lythrum salicaria)
Japanese stilt grass
(Microstegium vimineum)
mile-a-minute weed
(Polygonum perfoliatum)</td><td rowspan="2">Fruits and Seeds
  </td><td>Prior to flowering
Depends on scale of infestation
Small infestation
▪ Pull or cut plant and leave on site with roots exposed.

Large infestation
▪ Pull or cut plant and pile. (You can pile onto or cover with plastic sheeting).
▪ Monitor. Remove any re-sprouting material.</td></tr>
<tr><td>During and following flowering
Do nothing until the following year or remove flowering heads and bag and let rot.

Small infestation
▪ Pull or cut plant and leave on site with roots exposed.

Large infestation
▪ Pull or cut plant and pile remaining material. (You can pile onto plastic or cover with plastic sheeting).
▪ Monitor. Remove any re-sprouting material.</td></tr>
<tr><td>common reed
(Phragmites australis)
Japanese knotweed
(Polygonum cuspidatum)
Bohemian knotweed
(Polygonum x bohemicum)</td><td>Fruits, Seeds, Plant Fragments
Primary means of spread in these species is by plant parts. Although all care should be given to preventing the dispersal of seed during control activities, the presence of seed doesn’t materially influence disposal activities.</td><td>Small infestation
▪ Bag all plant material and let rot.
▪ Never pile and use resulting material as compost.
▪ Burn.

Large infestation
▪ Remove material to unsuitable habitat (dry, hot and sunny or dry and shaded location) and scatter or pile.
▪ Monitor and remove any sprouting material.
▪ Pile, let dry, and burn.</td></tr>
</table>

January 2010

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APPENDIX D

WATERSHED PLANS

D – 1

PRE-DEVELOPMENT CONDITIONS

PRE-DEVELOPMENT WATERSHED CHARACTERISTICS

SUBCATCHMENT DESIGNATION	AREA (ACRES)	LONGEST FLOW PATH (FEET)	Tc (MIN)
A	0.08	49	4.7
B	0.56	297	8.1
C	0.99	365	7.0

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

DISCHARGE PT. A

DISCHARGE PT. B

DISCHARGE PT. C

ASPHALT DRIVE R.O.W FOR LOT L111C

EXISTING BUILDING

GRAVEL DRIVE

DECK

ASPHALT DRIVE R.O.W. FOR LOT L/11B

OHU

UGU

WdC

BzB

30"ø WHITE PINE

24"ø TWI HARDWOC

14"ø HARDWOOD

MAG. OBS. - DATE

NH STATE PLANE NAD 83 - CPS' OBS.

LEGEND:

- EX 2' CONTOUR
- EX 10' CONTOUR
- PROPERTY LINE
- EXISTING EDGE OF PAVEMENT
- EXISTING FENCE
- EXISTING BUILDING
- SOIL BOUNDARY
- SUBCATCHMENT BOUNDARY
- LONGEST FLOW PATH WITH DIRECTION OF FLOW
- (A) SUBCATCHMENT DESIGNATION
- WdC SOIL DESIGNATION

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

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

NO.	REVISION	APP'D	DATE
1	PER TRC COMMENTS	SJH	9-13-24

DATE: 7-8-24
SCALE: 1"=20'
DRAWN BY: JRG
DESIGN BY: JRG
APPROVED BY:SJH
PROJECT NO: 23140
FILE: DRN

PRE-DEVELOPMENT WATERSHED PLAN

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

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

WS-1

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	0.07	27	6.0
B2	0.12	104	7.9
B3	0.02	27	6.0
B4	0.10	43	6.0
C1	0.64	379	13.9
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

DISCHARGE PT. A

DISCHARGE PT. C

DISCHARGE PT. B

ASPHALT DRIVE R.O.W FOR LOT L/11C

ASPHALT DRIVE R.O.W FOR LOT L/11B

PROPOSED BIO-RETENTION BASIN 2

PROPOSED BIO-RETENTION BASIN 1

REACH 1

WdC

BzB

SD1 SD2 SD3 SD4 SD5

A B1 B2 B3 B4 C1 C2 C3 C4 C5

WAS. OBS. – DATE

NH STATE PLANE NAD 83 – GPS OBS.

LEGEND:

- EX 2' CONTOUR
- EX 10' CONTOUR
- PROPERTY LINE
- EXISTING EDGE OF PAVEMENT
- EXISTING BUILDING
- PROPOSED EDGE OF PAVEMENT
- PROPOSED BUILDING
- SOIL BOUNDARY
- SUBCATCHMENT BOUNDARY
- LONGEST FLOW PATH WITH DIRECTION OF FLOW
- B1 SUBCATCHMENT DESIGNATION
- WdC SOIL DESIGNATION

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

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

NO.	REVISION	DATE	APP'D
1	PER TRC COMMENTS	9-13-24	SJH

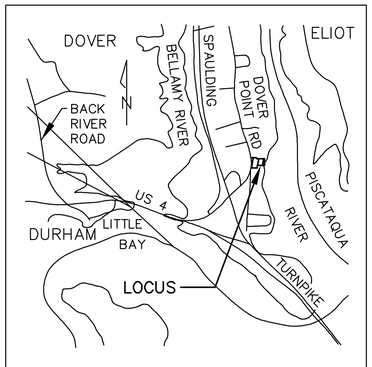
DATE: 7-8-24
SCALE: 1"=20'
DRAWN BY: JRG
DESIGN BY: JRG
APPROVED BY:SJH
PROJECT NO:2340
FILE: DRN

POST-DEVELOPMENT WATERSHED PLAN

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

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

WS-2



LOCATION PLAN
(NO SCALE)

TDR SITE PLAN
FOR
5 RESIDENTIAL UNITS
TAX MAP L, LOT 111
306 DOVER POINT ROAD
DOVER, NH
JULY 9, 2024
REVISED: SEPTEMBER 19, 2024

_____ DATE

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

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

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

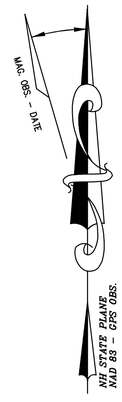
SHEET INDEX	SHEET
COVER SHEET	1
NEIGHBORHOOD PLAN	2
EXISTING CONDITIONS PLAN (BY MCENEANEY SURVEY)	3
TDR SITE PLAN (BY MCENEANEY SURVEY)	4
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SITE PLAN	7
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3D CONCEPTUAL STREETSCAPE VISUALIZATIONS	

PLANNING FILE NO.: SITE-2024-0008



ABUTTERS LIST
(WITHIN 200 FT)

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



GRAPHIC SCALE
50 0 25 50 100 200
(IN FEET)

PLANNING FILE NO.: SITE-2024-0008

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

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

NO.	REVISION	APP'D	DATE
1	PER TRC COMMENTS	SJH	9-19-24

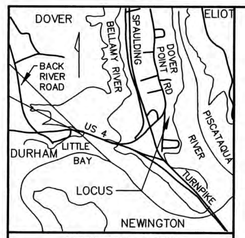
PROJECT NO: 2340
FILE: SITE
DATE: 7-9-24
SCALE: 1"=20'
DRAWN BY: JRG
DESIGN BY: JRG
APPROVED BY: SJH

NEIGHBORHOOD PLAN

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

BRIAN SLOVENSKI
124 TURTLE POND ROAD
LEE, NH 03861

2



LOCATION PLAN
(NO SCALE)

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

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

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

L / 63
CHARLES G. CONSTANCE
SYLVIA C. FOSCO
301 DOVER POINT ROAD
DOVER, NH 03820
3360 / 943

16°15'33" MAG. OBS. - DATE
NH STATE PLANE NAD 83 - GPS OBS.

L / 111A
UNDERWOOD DOVER, LLC
4 FAIRWAY DRIVE
ENGLEWOOD, FL 34223
2189 / 78.

L / 111C
ROBERT L. GIFFORD
JOANNE A. GIFFORD
306A DOVER POINT ROAD
DOVER, NH 03820
3074 / 430

L / 111
PARCEL AREA
71,299 S.F.
1.64 Ac.

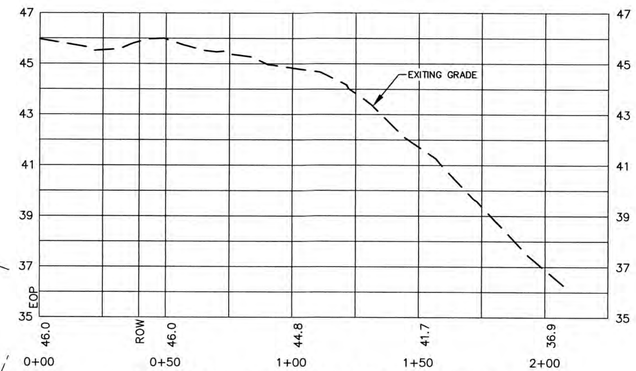
L / 111B
FRANK M. LOCKER
DENISE M. WHITTIER
306 C DOVER POINT ROAD
DOVER, NH 03820
3516 / 199

L / 112
HENRY KUZIOMKO
310 DOVER POINT ROAD
DOVER, NH 03820
2917 / 50

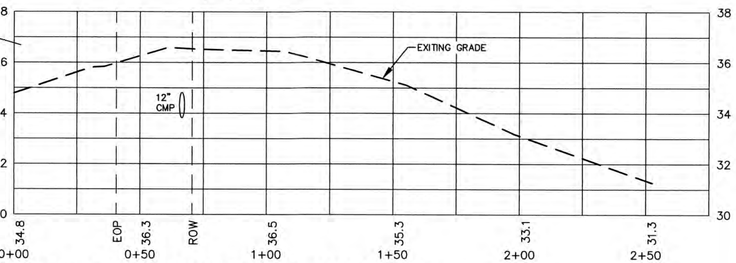
DOVER POINT ROAD
{PUBLIC; VARIABLE WIDTH R.O.W.}

S44°30'39"E 79.04'
S69°02'39"E 67.92'
S79°10'38"E 229.73'
N12°34'33"E 234.19'
193.14'
41.05' - R
N73°55'25"W 194.41'
N73°55'25"W 189.79'
S16°04'35"W 100.00'
187.07'
N73°54'18"W
134.85'
S12°52'24"W
SURVEY TIE

HOUSE #306
GRAVEL DRIVE
LANDSCAPE AREA
CHAINLINK FENCE
GARDEN
GARAGE
BUILDING OVERHANG
ASPHALT DRIVE
ROW FOR LOT L/111B
I.R.(fnd) OUT 0.96'
SMH 1312
SMH 1053
SMH 1410
UP 1/340
UP 1/341
SIGN 35 MPH
ELECTRICAL PULLBOX
12" CMP INVERT = 36.70'
NHHD
TBM SPIKE IN UP 1/342 ELEV = 36.82
12" CMP INVERT = 33.90'
CB RIM = 32.8'
SIGN MERGE LEFT
SOLID WHITE LINE
DASHED WHITE LINE
EOP
FOG LINE
RIGHT OF WAY FOR LOT L/111B SEE REFERENCE PLAN #1
EASEMENT TO PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE S.C.R.D. 4000 / 1
250' SHORELAND PROTECTION ZONE
APPROXIMATE LOCATION OF 20' WIDE SEWER EASEMENT
100' DOVER CONSERVATION AREA
30"ø WHITE PINE
14"ø HARDWOOD
SPECIAL FLOOD HAZARD AREA BOUNDARY - ELEVATION 8
SLOPES >20%
HIGHEST OBSERVABLE TIDE LINE (HOTL)
PISCATAQUA RIVER
EBB TIDAL FLOOD
BzB
WdC
OHU
UGU
S.S.(fnd)



EXISTING DRIVEWAY PROFILE (NORTH)
SCALE: HORIZONTAL 1" = 30'
VERTICAL 1" = 3'



EXISTING DRIVEWAY PROFILE (SOUTH)
SCALE: HORIZONTAL 1" = 30'
VERTICAL 1" = 3'

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 / 111 – 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 THE PARCELS BOUNDARIES AND EXISTING SITE CONDITIONS AS OF .

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.

8.) PROPERTY LINE INFORMATION HAS BEEN OBTAINED FROM A SURVEY PERFORMED BY MCENEANEY SURVEY ASSOCIATES OF NEW ENGLAND ON MARCH 30, 2022 WITH AN ERROR NOT GREATER THAN 1 IN 10,000.

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
http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx

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.

LEGEND

S.S.(fnd) – STEEL STAKE FOUND
I.R.(fnd) – IRON ROD FOUND
NHHD – NEW HAMPSHIRE HIGHWAY BOUND
– FIRE HYDRANT
– WATER GATE VALVE
CB – CATCH BASIN
SMH – SEWER MANHOLE
(TYP.) – TYPICAL
S.C.R.D. – STRAFFORD COUNTY REGISTRY OF DEEDS
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

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.

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

22–2410	BOUNDARY	22–05	15–20
PROJECT NO	TYPE	FIELDBOOK & PAGES	

"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."

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

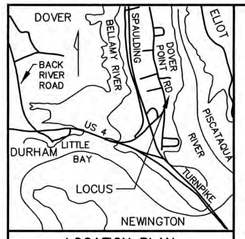
DRAWN BY: KJF | FILE: 2410\DWGS\22–2410.dwg
SCALE: 1" = 30' | DATE: APRIL 20, 2022

30 15 0 15 30 60 90 120

STATE OF NEW HAMPSHIRE No. 661 KEVIN M. McENEANEY SIGNATURE LICENSED LAND SURVEYOR

McENEANEY Survey Associates of NEW ENGLAND
P.O. Box 1166 – 181 WATSON ROAD
DOVER, NH 03820 (603) 742–0911

SURVEYING – PLANNING – CONSULTING



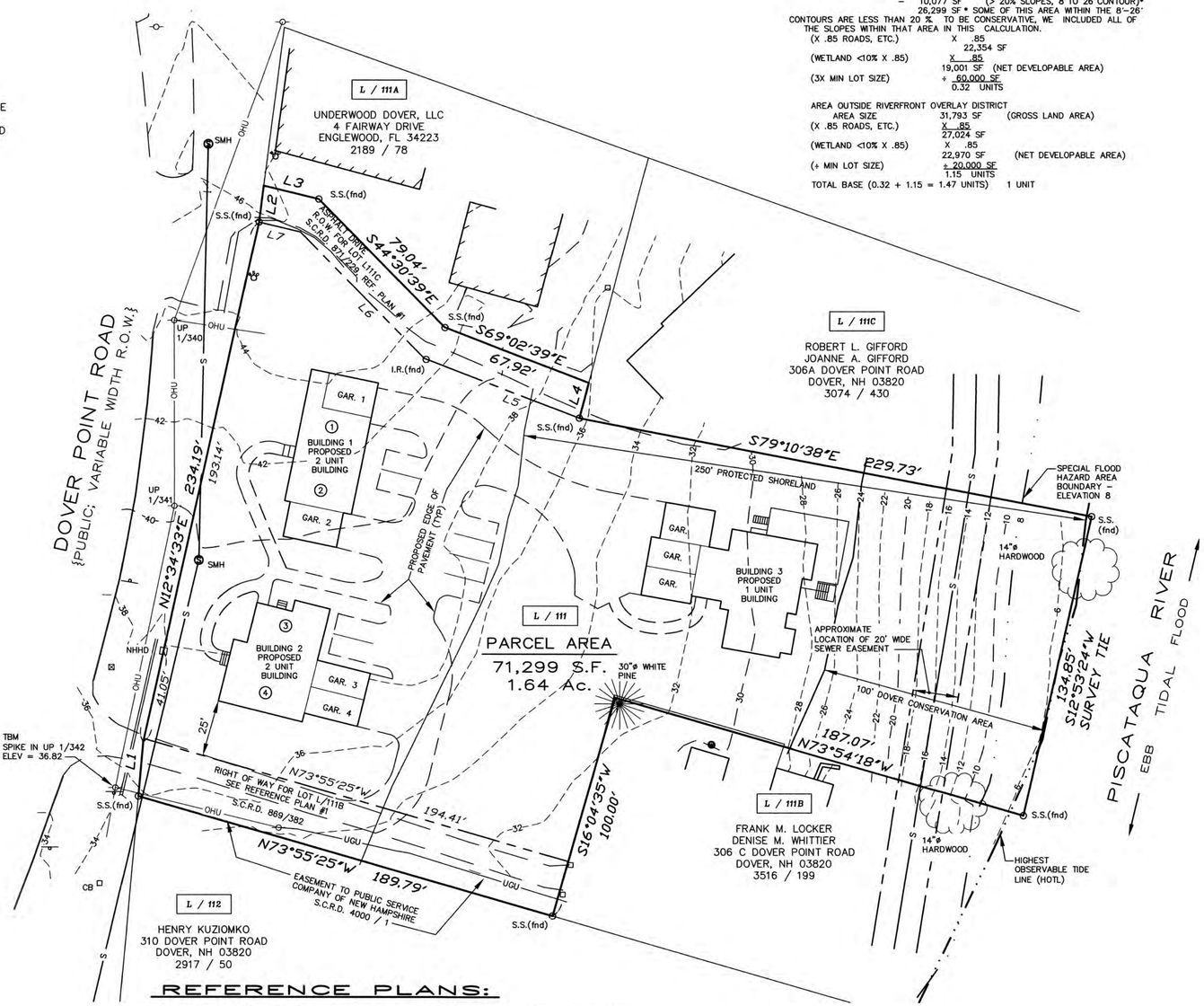
LOCATION PLAN
(NO SCALE)

L / 63

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

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'





LEGEND

S.S.(fnd) – STEEL STAKE FOUND
I.R.(fnd) – IRON ROD FOUND
NHHD – NEW HAMPSHIRE HIGHWAY BOUND
– FIRE HYDRANT
– WATER GATE VALVE
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(TYP.) – TYPICAL
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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

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

AREA WITHIN RIVERFRONT OVERLAY DISTRICT
AREA SIZE 39,506 SF (GROSS LAND AREA)
– 3,130 SF (FLOOD ZONE HOTL TO 8'CONTOUR)
– 10,077 SF (> 20% SLOPES, 8'TO 26'CONTOUR)*
26,299 SF * SOME OF THIS AREA WITHIN THE 8'-26' 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
19,001 SF (NET DEVELOPABLE AREA)
(3X MIN LOT SIZE) ÷ 60,000 SF
0.32 UNITS

AREA OUTSIDE RIVERFRONT OVERLAY DISTRICT
AREA SIZE 31,793 SF (GROSS LAND AREA)
(X .85 ROADS, ETC.) X .85
27,024 SF
(WETLAND <10% X .85) X .85
22,970 SF (NET DEVELOPABLE AREA)
(÷ MIN LOT SIZE) ÷ 20,000 SF
1.15 UNITS
TOTAL BASE (0.32 + 1.15 = 1.47 UNITS) 1 UNIT

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 / 111 – 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.

8.) PROPERTY LINE INFORMATION HAS BEEN OBTAINED FROM A SURVEY PERFORMED BY MCENEANEY SURVEY ASSOCIATES OF NEW ENGLAND ON MARCH 30, 2022 WITH AN ERROR NOT GREATER THAN 1 IN 10,000.

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
http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx

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.

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.

NO.	DATE	DESCRIPTION	BY	CHK
2	6/19/24	ADD TDR CALCULATIONS	KJF	KMM
1	2/23/24	ADD NOTE 13 PER 1/24/24 NOTICE OF DECISION	CA	KMM

REVISIONS

PROJECT NO	TYPE	FIELDBOOK & PAGES
22–2410	BOUNDARY	22–05 15–20

"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."

STATE OF NEW HAMPSHIRE LICENSED LAND SURVEYOR
No. 661
KEVIN M. McENEANEY
SIGNATURE

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

30 15 0 15 30 60 90 120

McEneaney Survey Associates of NEW ENGLAND
P.O. Box 1166 – 181 WATSON ROAD
DOVER, NH 03820 (603) 742–0911
SURVEYING – PLANNING – CONSULTING

DOVER SITE PLAN REVIEW NOTES:

1. 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: MCENEANEY 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 FORMAT 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 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 33017C0340E EFFECTIVE DATE, SEPTEMBER 30, 2015.
16. TOPOGRAPHIC SURVEY PERFORMED BY MCENEANEY 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 SOD 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.

DOVER NOTES CONTINUED:

36. 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
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 I, 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.
50. REFUSE REMOVAL SHALL BE BY CURB SIDE PICKUP ON DOVER POINT ROAD.

DEMOLITION NOTES:

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 CONTRACTORS 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 REMOVED STONEWALLS SHALL REMAIN ON-SITE. STONES SHALL BE REPURPOSED 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.

SITE NOTES

1. REVIEW DOVER 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.

GRADING NOTES:

1. REVIEW DOVER 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 NOT OTHERWISE CALLED FOR SURFACE TREATMENT SHALL RECEIVE 6" OF HIGH QUALITY LOAM AND SHALL BE SEEDED 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:

LOCATION	MINIMUM DENSITY
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.

PROJECT VARIANCE / PERMIT SUMMARY:

1. FEDERAL AND STATE PERMITS:
   NHDES SHORELAND PERMIT - PENDING
   NHDOT DRIVEWAY PERMIT - DOT-DRI-000153
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.

   TDR SUBDIVISION: APPROVED TRAN-2023-0005 JANUARY 24, 2024

   SITE PLAN: SITE-2024-0008 - PENDING

LEGEND

S.F.	SQUARE FEET	Ⓜ	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

——PS——	PROPOSED SEWER
——PW——	PROPOSED WATER
——PUGU——	PROPOSED UNDERGROUND UTILITIES
——PG——	PROPOSED GAS

UTILITY NOTES

1. REVIEW DOVER NOTES FOR ALL APPLICABLE NOTES.
2. 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.
3. SEE EXISTING CONDITIONS PLAN FOR BENCHMARK INFORMATION.
4. ALL UNDERGROUND CONDUITS SHALL HAVE NYLON PULL ROPES TO FACILITATE PULLING CABLES.
5. SEE GRADING, DRAINAGE & EROSION CONTROL PLAN FOR PROPOSED GRADING AND EROSION CONTROL MEASURES.
6. ALL WATER MAIN INSTALLATIONS SHALL BE CLASS 52, DOUBLE CEMENT LINED DUCTILE IRON PIPE OR TYPE "K" COPPER, OR CITY APPROVED MATERIAL.
7. ALL WATER MAIN INSTALLATIONS SHALL BE PRESSURE TESTED AND CHLORINATED AFTER CONSTRUCTION PRIOR TO ACTIVATING THE SYSTEM. CONTRACTOR SHALL COORDINATE CHLORINATION AND TESTING WITH THE CITY OF DOVER WATER DEPARTMENT.
8. 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.
9. 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.
10. ALL ELECTRICAL MATERIAL AND WORKMANSHIP SHALL CONFORM TO THE NATIONAL ELECTRIC CODE, LATEST EDITION, AND ALL APPLICABLE STATE AND LOCAL CODES.
11. THE EXACT LOCATION OF NEW UTILITY SERVICES AND CONNECTIONS SHALL BE COORDINATED WITH THE BUILDING DRAWINGS AND THE UTILITY COMPANIES.
12. ADJUST ALL MANHOLES, CATCH BASINS, CURB BOXES, ETC. WITHIN LIMITS OF WORK TO FINISH GRADE.
13. 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.
14. 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.
15. CONTRACTOR SHALL PROVIDE EXCAVATION, BEDDING, BACKFILL AND COMPACTION FOR NATURAL GAS SERVICES. COORDINATE WITH GAS COMPANY.
16. 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.
17. 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.
18. SAWCUT AND REMOVE PAVEMENT AND CONSTRUCT PAVEMENT TRENCH PATCH FOR ALL PROPOSED UTILITIES LOCATED IN EXISTING PAVEMENT AREAS TO REMAIN.
19. GATE VALVES, FITTINGS, ETC. SHALL MEET THE REQUIREMENTS OF THE CITY OF DOVER.
20. COORDINATE TESTING OF SEWER CONSTRUCTION WITH THE CITY OF DOVER.
21. 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.
22. 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.
23. SITE LIGHTING SPECIFICATIONS, CONDUIT LAYOUT AND CIRCUITRY FOR PROPOSED SITE LIGHTING AND SIGN ILLUMINATION SHALL BE PREPARED BY THE PROJECT ELECTRICAL ENGINEER.
24. 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.
25. FIRE SUPPRESSION PLANS SHALL BE PROVIDED TO THE FIRE/INSPECTION DEPARTMENT PRIOR TO INSTALLATION.
26. COORDINATE ALL UTILITY WORK WITH APPROPRIATE UTILITY COMPANY.
27. 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

UTILITY CONTACTS

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

PLANNING FILE NO.: SITE-2024-0008

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

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

NO.	REVISION	APP'D	DATE
1	PER TRC COMMENTS	SJH	9-19-24

DATE: 7-9-24
SCALE: AS SHOWN
DRAWN BY: JRG
DESIGN BY: JRG
APPROVED BY:SJH
PROJECT NO:2340
FILE: SITE

NOTE SHEET

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

BRIAN SLOVENSKI
124 TURTLE POND ROAD
LEE, NH 03861

5

EXISTING SMH1312
RIM=46.24
INV.IN 8"=38.1
INV.OUT 8" (1053)=38.1

EXISTING 12" CMP
INV.IN=45.03

APPROXIMATE LOCATION OF WATERMAIN (V.I.F.)

APPROXIMATE EXISTING WATER SERVICE TO BE REMOVED AND REPLACED

L / 111A

UNDERWOOD DOVER, LLC
4 FAIRWAY DRIVE
ENGLEWOOD, FL 34223
2189 / 78

ASPHALT DRIVE
R.O.W. FOR LOT L111C

EXISITNG CB
RIM=37.41
INV.OUT(8" PVC)=34.75

EXISTING 12" CMP
INV.OUT=43.38

UP 1/340

OHU

EXISTING OHU (TBR)

EXISTING BUILDING (TBR)

EXISTING GRAVEL DRIVE (TBR)

EXISTING DECK (TBR)

EOP

L / 111C

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

DOVER POINT ROAD

UP PSNH1/341

EXISTING LANDSCAPE AREA (TBR)

EXISTING FENCE (TBR)

EXISTING LANDSCAPE AREA (TBR)

NHDES 100' TIDAL BUFFER ZONE
CITY OF DOVER 100' CONSERVATION DISTRICT

STEEP SLOPES

SPECIAL FLOOD HAZARD AREA BOUNDARY ELEV. 8

EXISTING SMH1053
RIM=39.77
INV.IN 8" (1312)=30.8
INV.OUT 8" (1410)=30.8

SWL

VGC

EXISTING BUILDING OVERHANG (TBR)

EXISTING BUILDING (TBR)

24"ø TWIN HARDWOOD

EXISTING 12" CAST DRAINAGE PIPE
INV.IN=36.69

L / 111

PARCEL AREA
71,299 S.F.
1.64 Ac.

30"ø WHITE PINE

ASPHALT DRIVE
R.O.W. FOR LOT L/111B

UP 1/342

TBM
SPIKE IN UP 1/342
ELEV.=36.82

EXISTING 12" CAST DRAINAGE PIPE
INV.OUT=33.90

UP 1/342A W/UGU

UGU

EOP

NHDES 150' NATURAL WOODLAND

L / 111B

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

14"ø HARDWOOD

HIGHEST OBSERVABLE TIDE LINE (HOTL)

EXISTING CB
RIM=32.78

NHDES 250' PROTECTED SHORELAND

L / 112

HENRY KUZIOMKO
310 DOVER POINT ROAD
DOVER, NH 03820
2917 / 50

UP 1/342

NHDES 50' SHORELAND BUFFER

PISCATAQUA RIVER

EBB TIDAL FLOOD

MAG. OBS. - DATE

NH STATE PLANE NAD 83 - CFS OBS.

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)

PLANNING FILE NO.: SITE-2024-0008

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

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

NO.	REVISION	APP'D	DATE
1	PER TRC COMMENTS	SJH	9-19-24

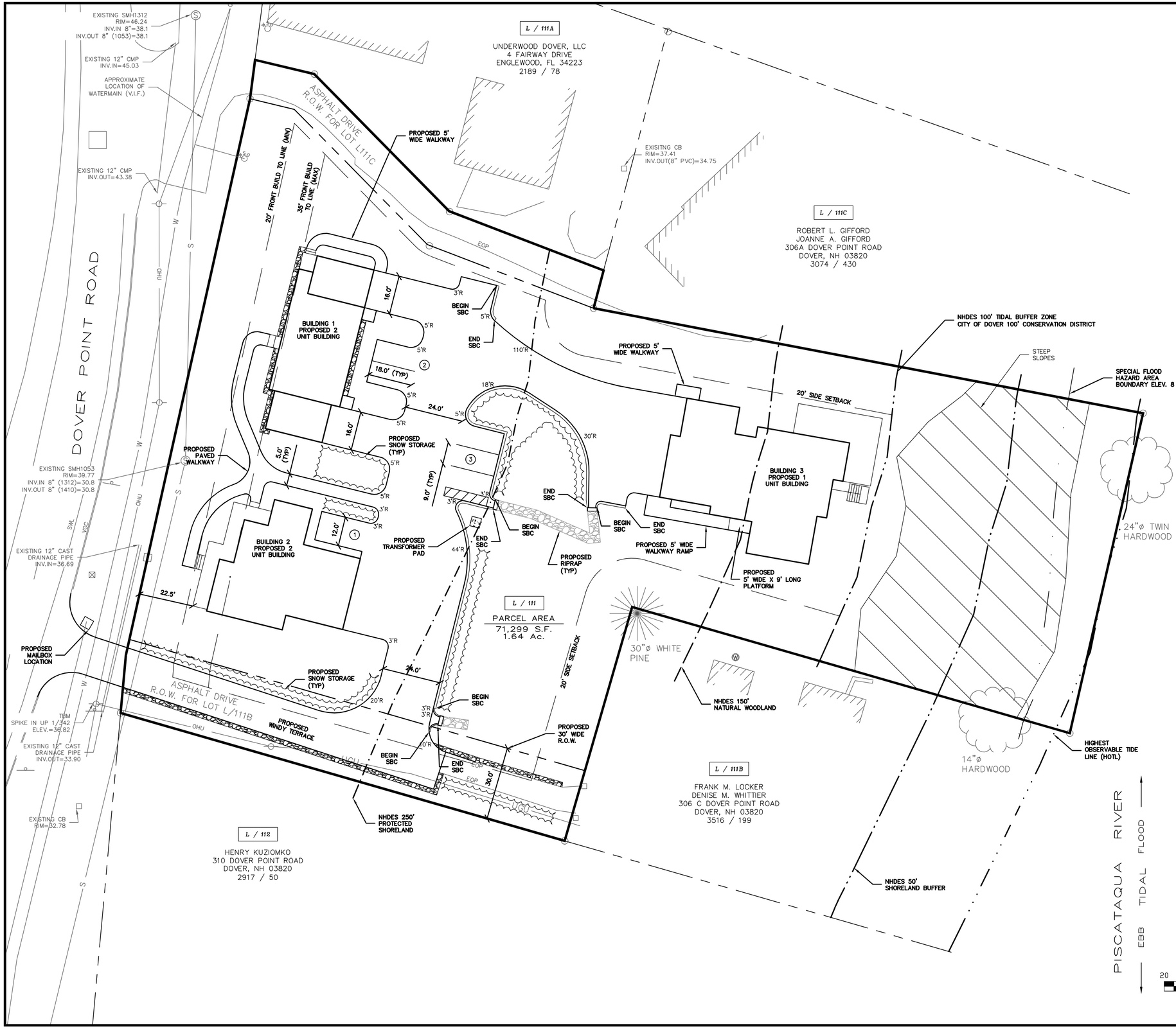
PROJECT NO: 23140
FILE: SITE
DESIGN BY: JRG
DRAWN BY: JRG
SCALE: 1"=20'
DATE: 7-9-24
APPROVED BY: SJH

DEMOLITION PLAN

BRIAN SLOVENSKI
124 TURTLE POND ROAD
LEE, NH 03861

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

6



SITE PARKING CALCULATIONS
LOW DENSITY RESIDENTIAL DISTRICT (R-20)

USES:	MAXIMUM	PROPOSED
PROPOSED TWO (2) 2-UNIT BUILDINGS	6	2
PROPOSED 1-UNIT BUILDING	2	1
0.5 VISITOR SPACE/UNIT	3	3
TOTAL	11	7

SNOW STORAGE CALCULATION:
NEW IMPERVIOUS PAVEMENT AREA = 14,575 SF
SNOW STORAGE REQUIRED = 14,575 / 10 = 1,457 SF
SNOW STORAGE PROVIDED = 1,526 SF

PLANNING FILE NO.: SITE-2024-0008

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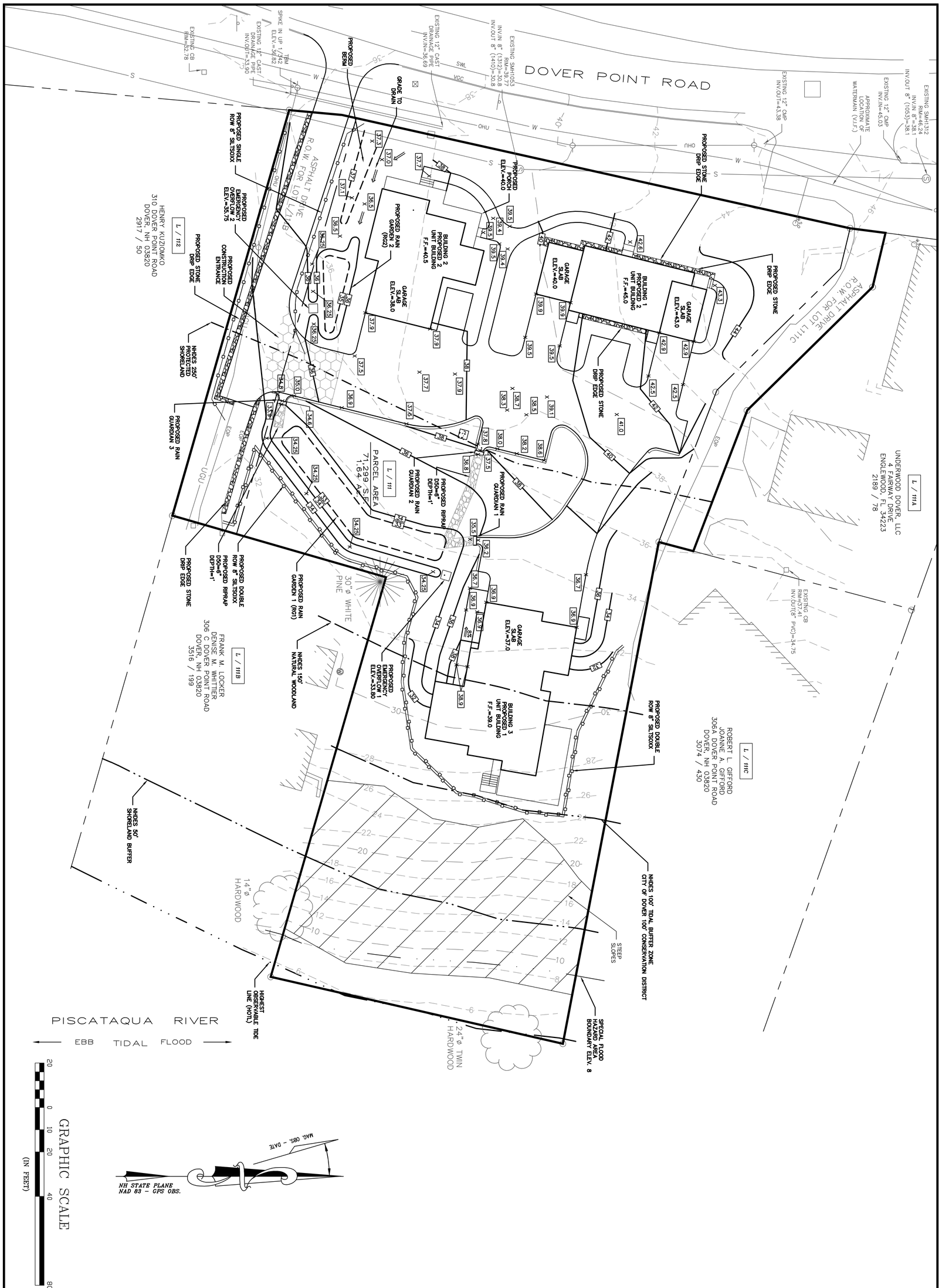
DATE: 7-9-24
SCALE: 1"=20'
DRAWN BY: JRG
DESIGN BY: JRG
APPROVED BY:SJH
PROJECT NO:23140
FILE: SITE

SITE PLAN

BRIAN SLOVENSKI
124 TURTLE POND ROAD
LEE, NH 03861

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

7



PLANNING FILE NO.: SITE-2024-0008

GRADING, DRAINAGE & EROSION CONTROL PLAN				
8	TDR SITE PLAN 5 RESIDENTIAL UNITS 306 DOVER POINT ROAD DOVER, NH 03820	BRIAN SLOVENSKI 124 TURTLE POND ROAD LEE, NH 03861		

DATE: 7-9-24				
SCALE: 1"=20'				
DRAWN BY: JRG				
DESIGN BY: JRG				
APPROVED BY:SJH				
PROJECT NO: 23140	1	PER TRC COMMENTS	SJH	9-19-24
FILE: SITE	NO.	REVISION	APP'D	DATE

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

EXISTING SMH1312
RIM=46.24
INV.IN 8"=38.1
INV.OUT 8" (1053)=38.1

EXISTING 12" CMP
INV.IN=45.03

APPROXIMATE
LOCATION OF
WATERMAIN (V.I.F.)

EXISTING 12" CMP
INV.OUT=43.38

DOVER POINT ROAD

L / 111A

UNDERWOOD DOVER, LLC
4 FAIRWAY DRIVE
ENGLEWOOD, FL 34223
2189 / 78

ASPHALT DRIVE
R.O.W. FOR LOT L/111C

EXISITNG CB
RIM=37.41
INV.OUT(8" PVC)=34.75

ABANDON AND
REMOVE EXISTING
WATER SERVICE

PROPOSED 2"
COPPER (IN ROW)
WATERMAIN

PROPOSED
WATER
SHUTOFF

PROPOSED 2"
POLY
WATERMAIN

PROPOSED 2"
TAP SADDLE
WITH GATE
VALVE

PROPOSED 4"
SDR35
S=0.01
L=42'

INV.IN=33.6

INV.OUT=34.0

INV.IN=32.7

BUILDING 1
PROPOSED 2
UNIT BUILDING

INV.OUT=33.1

PROPOSED 4"
SDR35
S=0.01
L=37'

PROPOSED
SEWER
EASEMENT

INV.IN=31.1

PROPOSED 2"
WATERMAIN

PROPOSED
WATER
SHUTOFF
(TYP)

PROPOSED
3/4" POLY
WATER
SERVICE

PROPOSED 1"
POLY GAS
LINE (TYP)

L / 111C

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

NHDES 100' TIDAL BUFFER ZONE
CITY OF DOVER 100' CONSERVATION DISTRICT

STEEP
SLOPES

SPECIAL FLOOD
HAZARD AREA
BOUNDARY ELEV. 8

EXISTING SMH1053
RIM=39.77
INV.IN 8" (1312)=30.8
INV.OUT 8" (1410)=30.8

7.5'

PROPOSED 4"
SDR35
S=0.04
L=29'

INV.IN=29.8
(V.I.F.)

PROPOSED 6"
SDR35 GRAVITY
SEWER SERVICE
L=217.0
S=0.01

BUILDING 3
PROPOSED 1
UNIT BUILDING

INV.OUT=33.3

24"ø TWIN
HARDWOOD

EXISTING 12" CAST
DRAINAGE PIPE
INV.IN=36.69

BUILDING 2
PROPOSED 2
UNIT BUILDING

INV.OUT=31.0

PROPOSED
TRANSFORMER
PAD

PROPOSED
YARD
HYDRANT

PROPOSED
3/4" WATER
SERVICE (TYP)

APPROXIMATE
LOCATION OF 20'
WIDE SEWER
EASEMENT

INV.IN=29.0
(V.I.F.)

INV.OUT=29.9

L / 111

PARCEL AREA
71,299 S.F.
1.64 Ac.

30"ø WHITE
PINE

PROPOSED 4"
SDR35
S=0.04
L=23'

PROPOSED
BURIED LP
TANK (TYP)

ASPHALT DRIVE
R.O.W. FOR LOT L/111B

TBM
SPIKE IN UP 1/342
ELEV.=36.82

EXISTING 12" CAST
DRAINAGE PIPE
INV.OUT=33.90

NHDES 150'
NATURAL WOODLAND

L / 111B

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

HIGHEST
OBSERVABLE TIDE
LINE (HOTL)

14"ø
HARDWOOD

EXISTING CB
RIM=52.78

NHDES 250'
PROTECTED
SHORELAND

L / 112

HENRY KUZIOMKO
310 DOVER POINT ROAD
DOVER, NH 03820
2917 / 50

NHDES 50'
SHORELAND BUFFER

PISCATAQUA RIVER
EBB TIDAL FLOOD

MAG. OBS. - DATE

NH STATE PLANE
NAD 83 - CPS OBS.

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)

PLANNING FILE NO.: SITE-2024-0008

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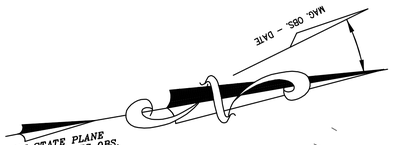
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DESIGN BY: JRG
DRAWN BY: JRG
SCALE: 1"=20'
DATE: 7-9-24
APPROVED BY:SJH

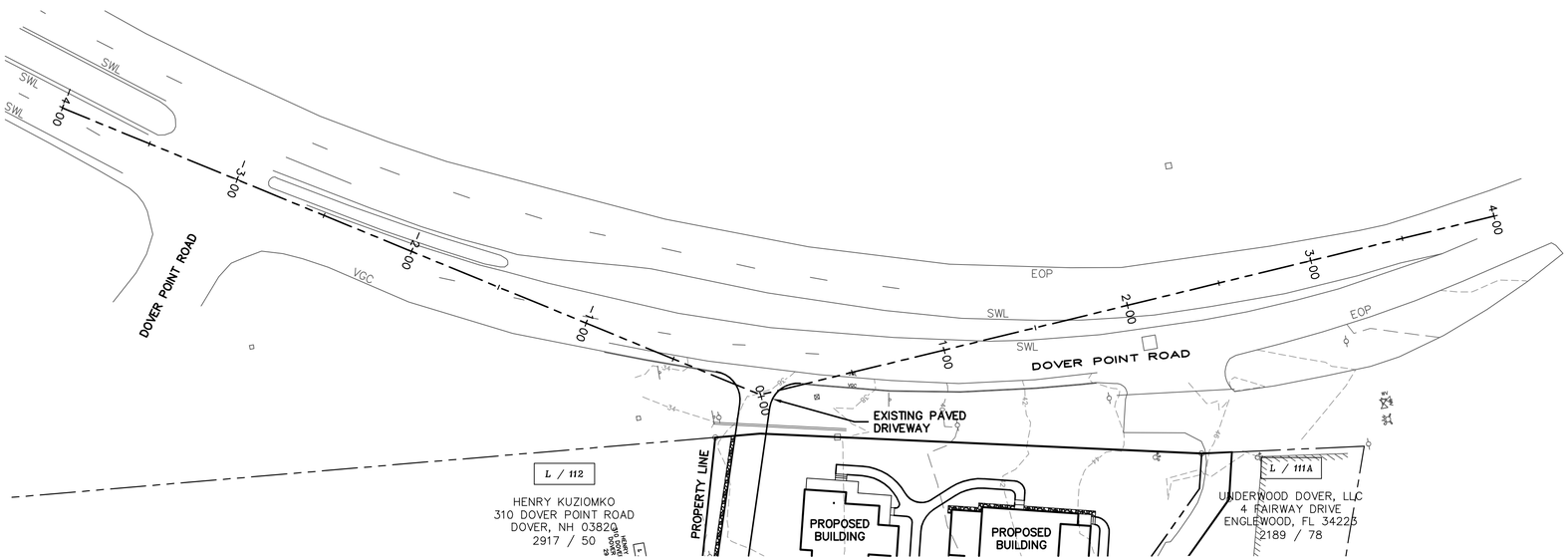
UTILITY PLAN

BRIAN SLOVENSKI
124 TURTLE POND ROAD
LEE, NH 03861

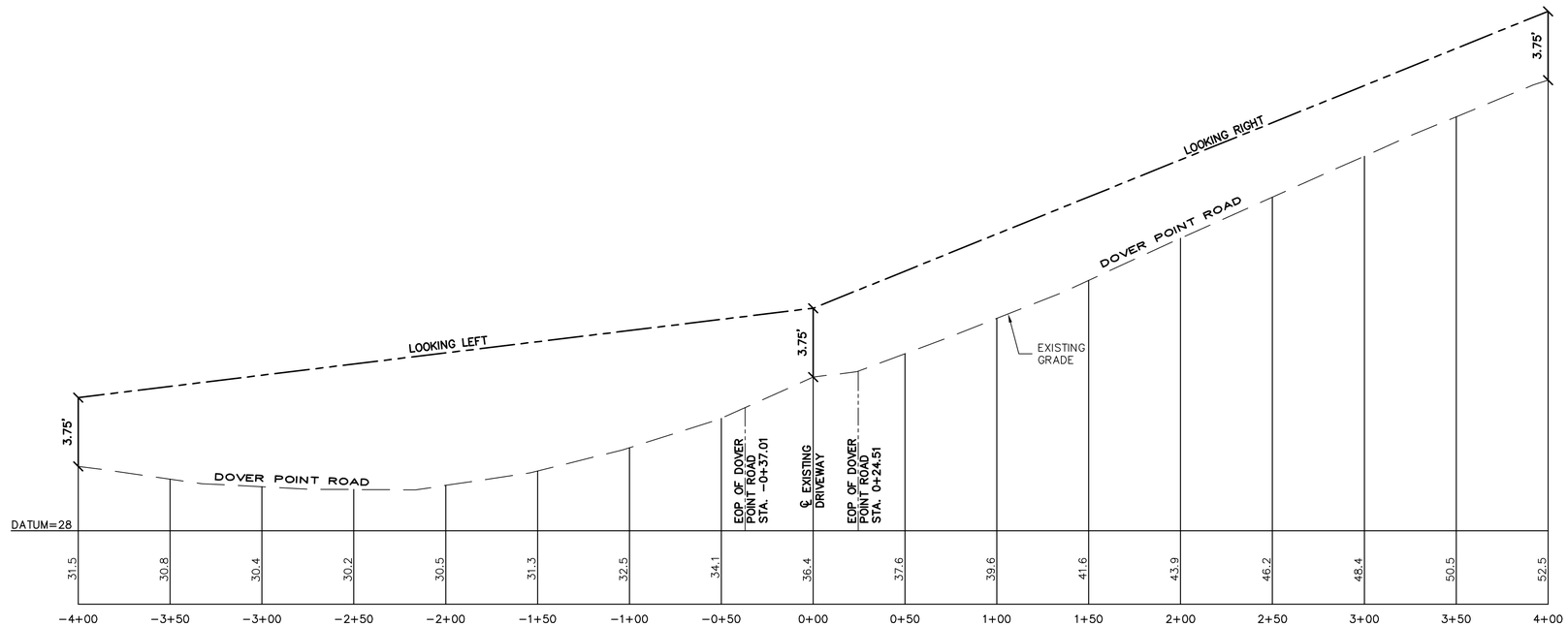
TDR SITE PLAN
5 RESIDENTIAL UNITS
306 DOVER POINT ROAD
DOVER, NH 03820

9





PLAN VIEW:
HORIZONTAL SCALE: 1"=40'



SIGHT DISTANCE
PROFILE VIEW
HORIZONTAL SCALE: 1"=40'
VERTICAL SCALE: 1"=4'

GRAPHIC SCALE
40 0 20 40 80 160
(IN FEET)

PLANNING FILE NO.: SITE-2024-0008

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

NO.	REVISION	APP'D	DATE
1	PER TRC COMMENTS	SJH	9-19-24

DATE: 7-9-24
SCALE: 1"=40'
DRAWN BY: JRG
DESIGN BY: JRG
APPROVED BY:SJH
PROJECT NO:23140
FILE: SITE

EXISTING DRIVEWAY

SIGHT DISTANCE PLAN & PROFILE

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

BRIAN SLOVENSKI
124 TURTLE POND ROAD
LEE, NH 03861

10

DESCRIPTION

1. 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.

PROJECT NAME AND LOCATION

SLOVENSKI RESIDENTIAL TDR DEVELOPMENT — *LATITUDE N43° 08' 01"*
306 DOVER POINT ROAD — *LONGITUDE W70° 50' 07"*
DOVER, NEW HAMPSHIRE 03820

DISTURBED AREA

±48,170 S.F.

NOTES:

1. THE SMALLEST PRACTICAL AREA SHALL BE DISTURBED DURING CONSTRUCTION, BUT IN NO CASE SHALL EXCEED 5 ACRES AT ANY TIME BEFORE DISTURBED AREAS ARE STABILIZED.
2. ALL AREAS SHALL BE STABILIZED WITHIN 45 DAYS OF INITIAL DISTURBANCE.

SEQUENCE OF MAJOR ACTIVITIES

1. PLACE TEMPORARY EROSION AND SEDIMENT CONTROL BMP'S PRIOR TO EARTH MOVING ACTIVITIES.
2. ALL EROSION CONTROL AND PERIMETER CONTROLS SHALL BE INSTALLED PRIOR TO COMMENCING EARTH MOVING OPERATIONS.
3. SELECTIVE DEMOLITION.
4. REGRADE SITE TO SUBGRADE.
5. TEMPORARY WATER DIVERSION (SWALES, BASINS) MUST BE USED AS NECCESSARY UNTIL AREAS ARE STABILIZED.
6. SWALES AND PONDS (AS APPLICABLE) SHALL BE CONSTRUCTED EARLY ON IN THE CONSTRUCTION SEQUENCE AND BEFORE ROUGH GRADING OF THE SITE AND ALL DITCHES AND SWALES SHALL BE STABILIZED PRIOR TO DIRECTING RUNOFF TO THEM.
7. INSTALL DRAINAGE STRUCTURES AND CONTROLS.
8. INSTALL FOUNDATION FOOTINGS AND WALLS.
9. INSTALL UTILITIES.
10. PLACE GRAVELS AND FINE GRADE.
11. STABILIZE ROADWAYS AND PARKING AREAS WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
12. ALL CUT AND FILL SLOPES SHALL BE LOAMED AND SEEDED (AS APPLICABLE) WITHIN 72 HOURS OF ACHIEVING FINISH GRADE.
13. ALL EROSION CONTROL MEASURES SHALL BE INSPECTED AT LEAST WEEKLY AND AFTER EVERY 1/2" OF RAINFALL.
14. IN ALL CASES THE SMALLEST PRACTICAL AREA SHALL BE DISTURBED DURING CONSTRUCTION AND IN NO CASE SHALL EXCEED 5 ACRES AT ANY ONE TIME BEFORE DISTURBED AREAS ARE STABILIZED. ALL DISTURBED AREAS SHALL BE STABILIZED WITHIN 45 DAYS OF INITIAL DISTURBANCE.

DEFINITIONS

AN AREA SHALL BE CONSIDERED STABLE IF ONE OF THE FOLLOMNG HAS OCCURRED.

1. BASE COURSE GRAVELS HAVE BEEN INSTALLED IN AREAS TO BE PAVED
2. A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED
3. A MINIMUM OF 3" OF NON-EROSIVE MATERIAL SUCH AS STONE OR RIP-RAP HAS BEEN INSTALLED; OR
4. EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED

INSTALLATION, MAINTENANCE, AND INSPECTION PROCEDURES OF EROSION AND SEDIMENT CONTROLS

A. SILT BARRIER

1. INSTALLATION
   a. USE SILT BARRIER AS PERIMETER CONTROLS, PARTICULARLY AT THE LOWER OR DOWN SLOPE EDGE OF A DISTURBED AREA.
   b. LEAVE SPACE FOR MAINTENANCE BETWEEN TOE AND SLOPE OF SILT BARRIER.
   c. TRENCH IN THE SILT BARRIER ON THE UPHILL SIDE (6 INCHES DEEP BY 6 INCHES WIDE).
   d. INSTALL STAKES ON THE DOWNHILL SIDE OF THE SILT BARRIER.
   e. CURVE THE END OF THE SILT BARRIER UP-GRADIENT TO HELP IT CONTAIN RUNOFF.
2. SEQUENCE OF INSTALLATION
   a. SEDIMENT BARRIERS SHALL BE INSTALLED PRIOR TO ANY SOIL DISTURBANCE OF THE CONTRIBUTING DRAINAGE AREA ABOVE THEM.
3. MAINTENANCE
   a. SILT BARRIERS SHOULD BE INSPECTED AND MAINTAINED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL.
   b. SILT BARRIERS HAVE A USEFUL LIFE OF ONE SEASON. ON LONGER CONSTRUCTION PROJECTS, SILT BARRIERS SHOULD BE REPLACED PERIODICALLY TO MAINTAIN EFFECTIVENESS.
   c. REMOVE SEDIMENT WHEN IT REACHES ONE-THIRD (1/3) THE HEIGHT OF THE SILT BARRIER.
   d. REPLACE THE SILT BARRIERS WHERE THEY ARE TORN, WORN, OR OTHERWISED DAMAGED AND MONITOR PERFORMANCE TO ENSURE EFFECTIVE PERFORMANCE.
   e. RETRENCH OR REPLACE ANY SILT BARRIER THAT IS NOT PROPERLY ANCHORED TO THE GROUND.
   f. IF THERE IS EVIDENCE OF END FLOW ON PROPERLY INSTALLED BARRIERS, EXTEND BARRIERS UPHILL OR CONSIDER REPLACING THEM WITH OTHER MEASURES, SUCH AS TEMPORARY DIVERSIONS AND SEDIMENT TRAPS.
   g. SILT BARRIERS SHOULD BE REPAIRED IMMEDIATELY IF THERE ARE ANY SIGNS OF EROSION OR SEDIMENTATION BELOW THEM. IF THERE ARE SIGNS OF UNDERCUTTING AT THE CENTER OR THE EDGES OF THE BARRIER, OR IMPOUNDING OF LARGE VOLUMES OF WATER BEHIND THEM, SILT BARRIERS SHOULD BE REPLACED WITH A TEMPORARY CHECK DAM.

B. MULCHING

1. TIMING
   a. APPLY MULCH PRIOR TO ANY STORM EVENT. IT WILL BE NECESSARY TO CLOSELY MONITOR WEATHER PREDICTIONS TO HAVE ADEQUATE WARNING OF SIGNIFICANT STORMS.
   b. IN OTHER AREAS, THE TIME PERIOD CAN RANGE FROM 14 TO 30 DAYS OF INACTIVITY ON A AREA. THE LENGTH OF TIME VARYING WITH SITE CONDITIONS. PROFESSIONAL JUDGEMENT SHALL BE USED TO EVALUATE THE INTERACTION OF SITE CONDITIONS (SOIL ERODIBILITY, SEASON OF YEAR, EXTENT OF DISTURBANCE, PROXIMITY TO SENSITIVE RESOURCES, ETC.) AND THE POTENTIAL IMPACT OF EROSION ON ADJACENT AREAS TO CHOOSE AN APPROPRIATE TIME RESTRICTION.
   c. WITHIN 100 FEET OF RIVERS, STREAMS, WETLANDS, AND IN LAKE AND POND WATERSHEDS, THE TIME PERIOD OF WHICH MULCHING SHOULD TAKE OCCUR SHOULD BE NO GREATER THAN SEVEN (7) DAYS. THIS SEVEN DAY LIMIT SHOULD BE REDUCED FURTHER DURING WET WEATHER PERIODS.
2. APPLICATION RATE
   a. MULCH SHALL BE APPLIED AT A RATE OF BETWEEN 1.5 TO 2 TONS PER ACRE, OR 70 TO 90 POUNDS PER 1000 SQUARE FEET.
   b. GUIDELINES FOR WINTER MULCH APPLICATION. WHEN MULCH IS APPLIED TO PROVIDE PROTECTION OVER WINTER (PAST THE GROWNG SEASON) IT SHALL BE AT A RATE OF 150-200 POUNDS OF HAY OR STRAW PER ACRE WITH ABOUT 4 INCHES IN DEPTH. A TACKIFIER MAY BE ADDED TO THE MULCH.
3. MAINTENANCE
   a. ALL MULCHES MUST BE INSPECTED PERIODICALLY, IN PARTICULAR AFTER RAINSTORMS. CHECK FOR SIGNS OF EROSION OR DISPLACEMENT OF THE MULCH. IF LESS THAN 90% OF THE SOIL SURFACE IS COVERED BY MULCH, ADDITIONAL MULCH SHALL BE IMMEDIATELY APPLIED.
   b. NETS MUST BE INSPECTED AFTER RAIN EVENTS FOR DISLOCATION OR FAILURE AND SHOULD BE REPAIRED AS NECCESSARY.
   c. INSPECTIONS SHOULD TAKE PLACE UNTIL THE SITE IS ESTABLISHED.
   d. EROSION CONTROL MIX MULCH USED FOR TEMPORARY STABILIZATION SHOULD BE LEFT IN PLACE. VEGETATION ADDS STABILITY AND SHOULD BE PROMOTED.

C. TEMPORARY SEEDING

1. SEEDBED PREPARATION
   a. STONES AND TRASH SHOULD BE REMOVED SO AS NOT TO INTERFERE WITH THE SEEDING AREA.
   b. WHERE THE SOIL HAS BEEN COMPACTED BY CONSTRUCTION OPERATIONS, LOOSEN SOIL TO A DEPTH OF 2 INCHES BEFORE APPLYING FERTILIZER, LIME AND SEED.
   c. APPLY LIMESTONE AND FERTILIZER ACCORDING TO SOIL TEST RECOMMENDATIONS.
      i) APPLY FERTILIZER AT A RATE OF 600 POUNDS PER ACRE OR 13.8 POUNDS PER 1,000 SQUARE FEET OF LOW PHOSPHATE FERTILIZER OR EQUIVALENT.
      ii) APPLY LIMESTONE AT A RATE OF 3 TONS PER ACRE OR 138 POUNDS PER 1,000 SQUARE FEET.
2. SEEDING
   a. APPLY SEED UNIFORMLY BY HAND, CYCLONE SEEDER, DRILL, CULTIPACKER TYPE SEEDER OR HYDROSEEDER (SUMMARY INCLUDING SEED AND FERTILIZER) WITH A SEEDING DEPTH FROM A QUARTER (1/4) TO A HALF (1/2) INCH.
   b. SEEDING RATES MUST BE INCREASED BY 10% WHEN HYDROSEEDING.
   c. TEMPORARY SEEDING BETWEEN MAY 15TH AND AUGUST 15TH SHOULD BE COVERED WITH HAY OR STRAW MULCH, ACCORDING TO THE "TEMPORARY AND PERMANENT MULCHING" PRACTICE.
   d. VEGETATED GROWTH COVERING 85% OF THE DISTURBED AREA SHOULD BE ACHIEVED PRIOR TO OCTOBER 15TH.
3. MAINTENANCE
   a. TEMPORARY SEEDING SHALL BE INSPECTED PERIODICALLY. AT A MINIMUM, 85% OF THE SOIL SURFACE SHOULD BE COVERED BY VEGETATION. IF ANY EVIDENCE OF EROSION OR SEDIMENTATION IS APPARENT, REPAIRS SHALL BE MADE AND OTHER TEMPORARY MEASURES USED IN THE INTERIM (MULCH, FILTER FABRICS, CHECK DAMS, ETC.).

D. PERMANENT SEEDING

1. BEDDING – STONES LARGER THAN 2 INCHES, TRASH, ROOTS, AND OTHER DEBRIS INTERFERRING WITH SEEDING AND FUTURE MAINTENANCE OF THE AREA SHOULD BE REMOVED. WHERE FEASIBLE, THE SOIL SHOULD BE TILLED TO A DEPTH OF 4" TO PREPARE A SEEDBED AND MIX FERTILIZER INTO THE SOIL.
2. FERTILIZER
   a. LIME AND FERTILIZER SHOULD BE WORKED INTO THE SOIL TO A DEPTH OF 4 INCHES USING A DISC, SPRING TOOTH HARROW, OR OTHER SUITABLE EQUIPMENT PRIOR TO OR AT THE SAME TIME OF SEEDING.
   b. FERTILIZER SHOULD BE RESTRICTED TO A LOW PHOSPHATE, SLOW RELEASE NITORGEN FERTILIZER WHEN APPLIED TO AREAS BETWEEN 25 FEET AND 250 FEET FROM A SURFACE WATER BODY. NO FERTILIZER EXCEPT LIMESTONE SHOULD BE APPLIED WITHIN 25 FEET OF THE SURFACE WATER.
   c. KINDS AND AMOUNTS OF LIME AND FERTILIZER SHOULD BE BASED ON AN EVALUATION OF SOIL TESTS. WHEN A SOIL TEST IS NOT AVAILABLE, THE FOLLOWING MINIMUM AMOUNTS SHOULD BE APPLIED:
      AGRICULTURAL LIMESTONE @ 138 LBS. PER 1,000 S.F.
      LOW PHOSPHATE (N-P205-K20) FERTILIZER @ 13.8 LBS. PER 1,000 S.F.
3. SEED MIXTURE (RECOMMENDED)
   RATE:

TYPE	LBS. PER ACRE	LBS. PER 1,000 S.F.
TALL FESCUE	20	0.45
CREEPING RED FESCUE	20	0.45
BIRDSFOOT TREFOIL	8	0.20
TOTAL	48	1.10

4. SEEDING
   a. SPRING SEEDING USUALLY GIVES THE BEST RESULTS FOR ALL SEED MIXES OR WITH LEGUMES. PERMANENT SEEDING SHOULD BE COMPLETED 45 DAYS PRIOR TO THE FIRST KILLING FROST.
   b. APPLY SEED UNIFORMLY BY HAND, CYCLONE SEEDER, DRILL, CULTIPACKER TYPE SEEDER OR HYDROSEEDER (SLURRY INCLUDING SEED AND FERTILIZER) WITH A SEEDING DEPTH FROM A QUARTER (1/4) TO A HALF (1/2) INCH.
   c. VEGETATED GROWTH COVERING AT LEAST 85% OF THE DISTURBED SHOULD BE ACHIEVED PRIOR TO OCTOBER 15TH. IF THIS CONDITION IS NOT ACHIEVED, IMPLEMENT TEMPORARY STABILIZATION MEASURES FOR OVERWINTER PROTECTION.
5. HYDROSEEDING
   a. LIME AND FERTILIZER MAY BE APPLIED SIMULTANEOUSLY WITH THE SEED. THE USE OF STRAW MULCH ON CRITICAL AREAS IS PREFERRED SINCE IT GRANTS BETTER SLOPE PROTECTION BY USING ADHESIVE MATERIALS.
   b. SLOPES MUST BE NO STEEPER THAN 2 TO 1 (2 FEET HORIZONTALLY TO 1 FOOT VERTICALLY).
   c. SEEDING RATES MUST BE INCREASED BY 10% WHEN HYDROSEEDING.
6. MAINTENANCE
   a. PERMANENT SEEDED AREAS SHOULD BE INSPECTED AT LEAST MONTHLY DURING THE COURSE OF CONSTRUCTION. INSPECTIONS, MAINTENANCE, AND CORRECTIVE ACTIONS SHOULD CONTINUE UNTIL THE OWNER ASSUMES PERMANENT OPERATION OF THE SITE.
   b. SEEDED AREAS SHOULD BE MOWED AS REQUIRED TO MAINTAIN A HEALTHY STAND OF VEGETATION, WITH MOWING HEIGHT AND FREQUENCY DEPENDENT ON TYPE OF GRASS COVER.
   c. BASED ON INSPECTION, AREAS SHOULD BE RESEEDED TO ACHIEVE FULL STABALIZATION OF EXPOSED SOILS.
   d. IF EVIDENCE OF EROSION OR SEDIMENTATION IS APPARENT, REPAIRS SHOULD BE MADE AND AREAS RESEEDED. WITH OTHER TEMPORARY MEASURES USED TO PROVIDE EROSION PROTECTION DURING THE PERIOD OF VEGETATION ESTABLISHMENT.
   e. AT A MINIMUM, 85% OF THE SOIL SURFACE SHOULD BE COVERED BY VEGETATION.

E. STORM DRAIN INLET PROTECTION

1. SPECIFICATIONS
   a. THE MAXIMUM CONTRIBUTING DRAINAGE AREA TO THE BARRIER SHOULD BE LESS THAN ONE ACRE.
   b. ANY RESULTANT PONDING OF STORMWATER MUST NOT CAUSE EXCESSIVE INCONVENIENCE OR DAMAGE TO ADJACENT AREAS OR STRUCTURES.
2. INSTALLATION
   a. INSTALL INLET PROTECTION AS SOON AS STORM DRAIN INLETS ARE INSTALLED AND BEFORE LAND-DISTURBANCE ACTIVITIES BEGIN IN AREAS WITH EXISTING STORM DRAIN SYSTEMS.
   b. PROTECT ALL INLETS THAT COULD RECEIVE STORMWATER FROM YOUR CONSTRUCTION PROJECT.
   c. USE IN CONJUNCTION WITH OTHER EROSION PREVENTION AND SEDIMENT CONTROL BMPS.
   d. DESIGN YOUR INLET PROTECTION TO HANDLE THE VOLUME OF WATER FROM THE AREA BEING DRAINED. ENSURE THAT THE DESIGN IS SIZED APPROPRIATELY.
3. MAINTENANCE
   a. INSPECT INLETS BARRIERS FREQUENTLY, BEFORE AND AFTER EACH RAINFALL EVENT AND REPAIR WHEN NECESSARY.
   b. SEDIMENT SHOULD BE REMOVED AND THE STORM DRAIN SEDIMENT BARRIER RESTORED TO ITS ORIGINAL DIMENSIONS WHEN THE SEDIMENT HAS ACCUMULATED TO 1/2 THE DESIGN DEPTH OF THE BARRIER.
   c. REMOVED SEDIMENT SHOULD BE DEPOSITED IN A SUITABLE AREA AND IN SUCH A MANNER THAT IT WILL NOT ERODE.
   d. SWEEP STREETS, SIDEWALKS, AND OTHER PAVED AREAS REGULARLY.
   e. ALL CATCH BASINS AND STORM DRAIN INLETS MUST BE CLEANED AT THE END OF CONSTRUCTION AND AFTER THE SITE HAS BEEN FULLY STABILIZED

TIMING OF CONTROLS/MEASURES

AS INDICATED IN THE SEQUENCE OF MAJOR ACTIVITIES THE SILT BARRIERS SHALL BE INSTALLED PRIOR TO COMMENCING ANY CLEARING OR GRADING OF THE SITE. STRUCTURAL CONTROLS SHALL BE INSTALLED CONCURRENTLY WITH THE APPLICABLE ACTIVITY. AREAS WHERE CONSTRUCTION ACTIVITY TEMPORARILY CEASES FOR MORE THAN TWENTY ONE (21) DAYS WILL BE STABILIZED WITH A TEMPORARY SEED AND MULCH WITHIN FOURTEEN (14) DAYS OF THE LAST DISTURBANCE. ONCE CONSTRUCTION ACTIVITY CEASES PERMANENTLY IN AN AREA, SILT FENCES AND ANY EARTH DIKES WILL BE REMOVED ONCE PERMANENT MEASURES ARE ESTABLISHED. ALL AREAS SHALL BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINISH GRADE.

WASTE DISPOSAL

a. WASTE MATERIALS
   ALL WASTE MATERIALS WILL BE COLLECTED AND STORED IN SECURELY LIDDED RECEPTACLES. ALL TRASH AND CONSTRUCTION DEBRIS FROM THE SITE WILL BE DEPOSITED IN A DUMPSTER. NO CONSTRUCTION WASTE MATERIALS WILL BE BURIED ON SITE. ALL PERSONEL WILL BE INSTRUCTED REGARDING THE CORRECT PROCEDURE FOR WASTE DISPOSAL BY THE SUPERINTENDENT.
b. HAZARDOUS WASTE
   ALL HAZARDOUS WASTE MATERIALS WILL BE DISPOSED OF IN THE MANNER SPECIFIED BY LOCAL OR STATE REGULATION OR BY THE MANUFACTURER. SITE PERSONNEL WILL BE INSTRUCTED IN THESE PRACTICES BY THE SUPERINTENDENT.
c. SANITARY WASTE
   ALL SANITARY WASTE WILL BE COLLECTED FROM THE PORTABLE UNITS A MINIMUM OF ONCE PER WEEK BY A LICENSED SANITARY WASTE MANAGEMENT CONTRACTOR.

MAINTENACE OF STORMWATER MANAGEMENT FACILITIES

THE PROJECT PROPONENT IS RESPONSIBLE FOR THE MAINTENANCE OF ALL STORMWATER FACILITIES DURING CONSTRUCTION AND THE PROPERTY OWNER IS RESPONSIBLE AFTER CONSTRUCTION IS COMPLETE.

CATCH BASINS & STORMWATER TREATMENT STRUCTURES

1. CATCH BASINS & STORMWATER TREATMENT STRUCTURES SHOULD BE INSPECTED ON A MONTHLY BASIS AND/OR AFTER A MAJOR RAINFALL EVENT TO ASSURE THAT DEBRIS OR SEDIMENTS DO NOT REDUCE THE EFFECTIVENESS OF THE SYSTEM.

SPILL PREVENTION

A. MATERIAL MANAGEMENT PRACTICES
   THE FOLLOMNG ARE THE MATERIAL MANAGEMENT PRACTICES THAT WILL BE USED TO REDUCE THE RISK OF SPILLS OR OTHER ACCIDENTAL SANITARY EXPOSURE OF MATERIALS AND SUBSTANCES DURING CONSTRUCTION TO STORMWATER RUNOFF:
   GOOD HOUSEKEEPING:
   THE FOLLOWING GOOD HOUSEKEEPING PRACTICES THAT WILL BE FOLLOWED ON SITE DURING
   1. THE CONSTRUCTION PROJECT:
      a. AN EFFORT WILL BE MADE TO STORE ONLY SUFFICIENT AMOUNTS OF PRODUCTS TO DO THE JOB.
      b. ALL MATERIALS STORED ON SITE WILL BE STORED IN A NEAT, ORDERLY MANNER IN THEIR PROPER (ORIGINAL IF POSSIBLE) CONTAINERS AND, IF POSSIBLE, UNDER A ROOF OR OTHER ENCLOSURE.
      c. MANUFACTURER'S RECOMMENDATIONS FOR PROPER USE AND DISPOSAL WILL BE FOLLOWED.
      d. THE SITE SUPERINTENDENT WILL INSPECT DAILY TO ENSURE PROPER USE AND DISPOSAL OF MATERIALS.
      e. SUBSTANCES WILL NOT BE MIXED WITH ONE ANOTHER UNLESS RECOMMENDED BY THE MANUFACTURER.
      f. WHENEVER POSSIBLE ALL OF A PRODUCT WILL BE USED UP BEFORE DISPOSING OF THE CONTAINER.
   2. HAZARDOUS PRODUCTS:
      a. THE FOLLOWING PRACTICES WILL BE USED TO REDUCE THE RISKS ASSOCIATED WITH HAZARDOUS MATERIALS:
      b. PRODUCTS WILL BE KEPT IN THEIR ORIGINAL CONTAINERS UNLESS THEY ARE NOT RESEALABLE.
      c. ORIGINAL LABELS AND MATERIAL SAFETY DATA WILL BE RETAINED FOR IMPORTANT PRODUCT INFORMATION.
      d. SURPLUS PRODUCT THAT MUST BE DISPOSED OF WILL BE DISCARDED ACCORDING TO THE MANUFACTURER'S RECOMMENDED METHODS OF DISPOSAL.

B. PRODUCT SPECIFICATION PRACTICES
   THE FOLLOWING PRODUCT SPECIFIC PRACTICES WILL BE FOLLOWED ON SITE:
   1. PETROLEUM PRODUCTS:
      a. ALL ON SITE VEHICLES WILL BE MONITORED FOR LEAKS AND RECEIVE REGULAR PREVENTATIVE MAINTENACE TO REDUCE LEAKAGE. PETROLEUM PRODUCTS WILL BE STORED IN TIGHTLY SEALED CONTAINERS WHICH ARE CLEARLY LABELED. ANY ASPHALT BASED SUBSTANCES USED ON SITE WILL BE APPLIED ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS.
   2. FERTILIZERS:
      a. FERTILIZERS USED WILL BE APPLIED ONLY IN THE MINIMUM AMOUNTS DIRECTED BY THE SPECIFICATIONS. ONCE APPLIED, FERTILIZER WILL BE WORKED INTO THE SOIL TO LIMIT EXPOSURE TO STORMWATER. STORAGE WILL BE IN A COVERED SHED OR ENCLOSED TRAILERS. THE CONTENTS OF ANY PARTIALLY USED BAGS OF FERTILZER WILL BE TRANSFERRED TO A SEALABLE PLASTIC BIN TO AVOID SPILLS.
   3. PAINTS:
      a. ALL CONTAINERS WILL BE TIGHTLY SEALED AND STORED WHEN NOT REQUIRED FOR USE. EXCESS PAINT WILL NOT BE DISCHARGED TO THE STORM SEWER SYSTEM BUT WILL BE DISPOSED OF PROPERLY ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS OR STATE AND LOCAL REGULATIONS.
   4. CONCRETE TRUCKS:
      a. CONCRETE TRUCKS WILL DISCHARGE AND WASH OUT SURPLUS CONCRETE OR DRUM WASH WATER IN A CONTAINED AREA ON SITE.

C. SPILL CONTROL PRACTICES
   IN ADDITION TO GOOD HOUSEKEEPING AND MATERIAL MANAGEMENT PRACTICES DISCUSSED IN THE PREVIOUS SECTION THE FOLLOWING PRACTICES WILL BE FOLLOWED FOR SPILL PREVENTION AND CLEANUP:
   a. MANUFACTURER'S RECOMMENDED METHODS FOR SPILL CLEANUP WILL BE CLEARLY POSTED AND SITE PERSONNEL WILL BE MADE AWARE OF THE PROCEDURES AND THE LOCATION OF THE INFORMATION AND CLEANUP SUPPLIES.
   b. MATERIALS AND EQUIPMENT NECESSARY FOR SPILL CLEANUP WILL BE KEPT IN THE MATERIAL STORAGE AREA ON SITE. EQUIPMENT AND MATERIALS WILL INCLUDE BUT NOT BE LIMITED TO BROOMS, DUSTPANS, MOPS, RAGS, GLOVES, GOGGLES, KITTY LITTER, SAND, SAWDUST, AND PLASTIC OR METAL TRASH CONTAINERS SPECIFICALLY FOR THIS PURPOSE.
   c. ALL SPILLS WILL BE CLEANED UP IMMEDIATELY AFTER DISCOVERY.
   d. THE SPILL AREA WILL BE KEPT WELL VENTILATED AND PERSONNEL WILL WEAR APPROPRIATE PROTECTIVE CLOTHING TO PREVENT INJURY FROM CONTACT WITH A HAZARDOUS SUBSTANCE.
   e. SPILLS OF TOXIC OR HAZARDOUS MATERIAL WILL BE REPORTED TO THE APPROPRIATE STATE OF LOCAL GOVERNMENT AGENCY, REGARDLESS OF THE SIZE.
   f. THE SPILL PREVENTION PLAN WILL BE ADJUSTED TO INCLUDE MEASURES TO PREVENT THIS TYPE OF SPILL FROM RECURRING AND HOW TO CLEANUP THE SPILL IF IT OCCURS. A DESCRIPTION OF THE SPILL, ITS CAUSE, AND THE CLEANUP MEASURES WILL BE INCLUDED.
   g. THE SITE SUPERINTENDENT RESPONSIBLE FOR DAY-TO-DAY SITE OPERATIONS WILL BE THE SPILL PREVENTION AND CLEANUP COORDINATOR.

THE PROJECT PROPONENT IS REQUIRED TO MANAGE CONSTRUCTION TO MEET THE REQUIREMENTS AND INTENT OF RSA 430:53 AND AGR 3800 RELATIVE TO CONTROLLING INVASIVE SPECIES AND CONTROLLING FUGITIVE DUST IN ACCORDANCE WITH ENV-A 1002.

AGR 3800 PROHIBITED INVASIVE PLANT SPECIES RULES

THE RULE, AGR 3800, STATES: "NO PERSON SHALL COLLECT, TRANSPORT, IMPORT, EXPORT, MOVE, BUY SELL, DISTRIBUTE, PROPAGATE OR TRANSPLANT ANY LIVING AND VIABLE PORTION OF ANY PLANT SPECIES, WHICH INCLUDED ALL OF THEIR CULTIVARS AND VARIETIES, LISTED IN TABLE 3800.1, NEW HAMPSHIRE PROHIBITED INVASIVE SPECIES LIST". A COMPLETE COPY OF THE RULES CAN BE ACCESSED ON THE INTERNET AT HTTP://AGRICULTURE.NH.GOV/TOPICS/PLANTS_INSECTS.HTM.

ENV-A 1002 FUGITIVE DUST: PRECAUTIONS TO PREVENT, ABATE, AND CONTROL FUGITIVE DUST.

a. ANY PERSON ENGAGED IN ANY ACTIVITY WITHIN THE STATE EMITS FUGITIVE DUST, OTHER THAT THOSE LISTED IN ENV-A 1002.02 (b), SHALL TAKE PRECAUTIONS THROUGHOUT THE DURATION OF THE ACTIVITY IN ORDER TO PREVENT, ABATE, AND CONTROL THE EMISSION OF FUGITIVE DUST.
b. PRECUATIONS REQUIRED BY (a) ABOVE, SHALL INCLUDE BUT NOT BE LIMITED TO THE FOLLOWING:
   i) THE USE OF WATER OR HYDROPHILIC MATERIAL ON OPERATIONS OR SURFACES, OR BOTH;
   ii) THE APPLICATION OF ASPHALT, WATER, OR HYDROPHILIC MATERIAL, OR TARPS OR OTHER SUCH COVERS TO MATERIAL STOCKPILES;
   iii) THE USE OF HOODS, FANS, FABRIC FILTERS, OR OTHER DEVICES TO ENCLOSE AND VENT AREAS WHERE MATERIALS PRONE TO PRODUCING FUGITIVE DUST ARE HANDLED;
   iv) THE USE OF CONTAINMENT METHODS FOR SANDBLASTING OR SIMILAR OPERATIONS; AND
   v) THE USE OF VACUUMS OR OTHER SUCTION DEVICES TO COLLECT AIRBORNE PARTICULATE MATTER.

WINTER CONSTRUCTION NOTES

1. ALL PROPOSED POST-DEVELOPMENT VEGETATED AREAS WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15TH, OR WHICH ARE DISTURBED AFTER OCTOBER 15TH, SHALL BE STABILIZED BY SEEDING AND INSTALLING EROSION CONTROL BLANKETS ON SLOPES GREATER THAN 3:1, AND SEEDING AND PLACING 3 TO 4 TONS OF MULCH PER ACRE, SECURED WITH ANCHORED NETTING, ELSEWHERE. THE PLACEMENT OF EROSION CONTROL BLANKETS OR MULCH AND NETTING SHALL NOT OCCUR OVER ACCUMULATED SNOW OR ON FROZEN GROUND AND SHALL BE COMPLETED IN ADVANCE OF THAW OR SPRING MELT.
2. ALL DITCHES & SWALES WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15TH, OR WHICH ARE DISTURBED AFTER OCTOBER 15TH SHALL BE STABILIZED WITH STONE OR EROSION CONTROL BLANKETS.
3. AFTER OCTOBER 15TH, INCOMPLETE ROAD AND PARKING SURFACES SHALL BE PROTECTED WITH A MINIMUM OF 3-INCHES OF CRUSHED GRAVEL PER NHDOT ITEM 304.3, OR IF CONSTRUCTION IS TO CONTINUE THROUGH THE WINTER SEASON BE CLEARED OF ANY ACCUMULATED SNOW AFTER EACH STORM EVENT.

PLANNING FILE NO.: SITE-2024-0008

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

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

NO.	REVISION	APP'D	DATE
1	PER TRC COMMENTS	SJH	9-19-24

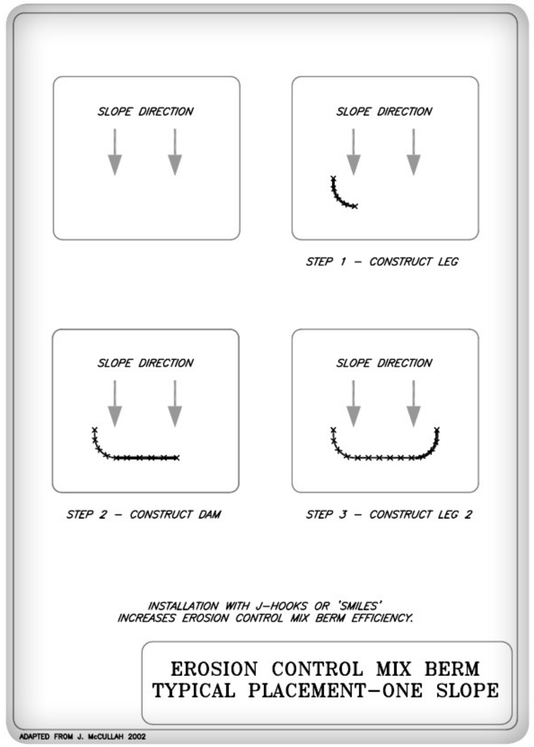
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DESIGN BY: JRG
APPROVED BY:SJH
PROJECT NO: 23140
FILE: SITE

EROSION CONTROL NOTES

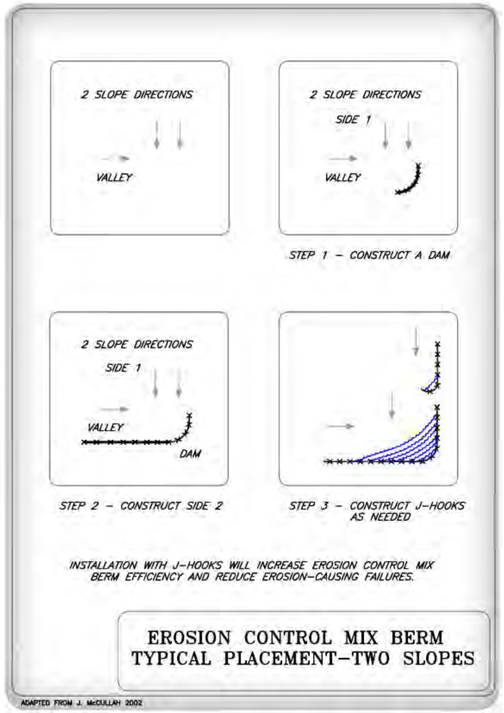
TDR SITE PLAN
5 RESIDENTIAL UNITS
306 DOVER POINT ROAD
DOVER, NH 03820

BRIAN SLOVENSKI
124 TURTLE POND ROAD
LEE, NH 03861

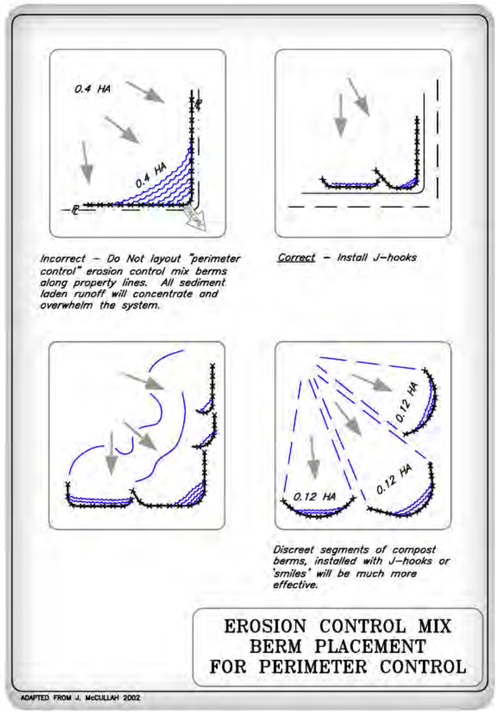
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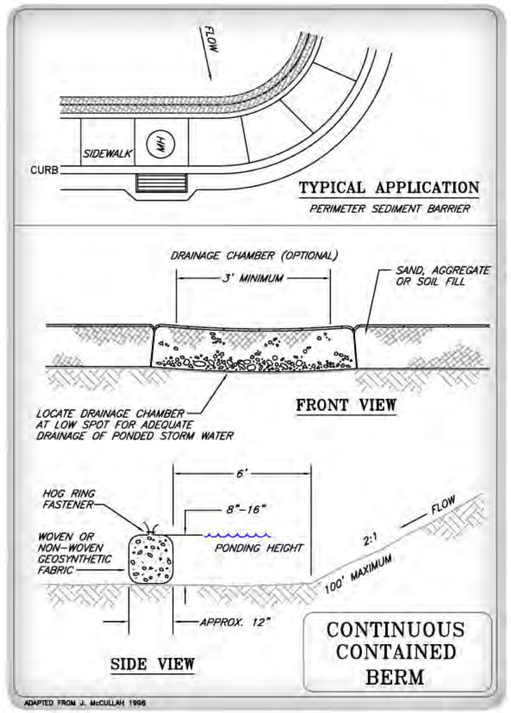
DETAIL FROM NHDES STORMWATER MANUAL VOLUME 3



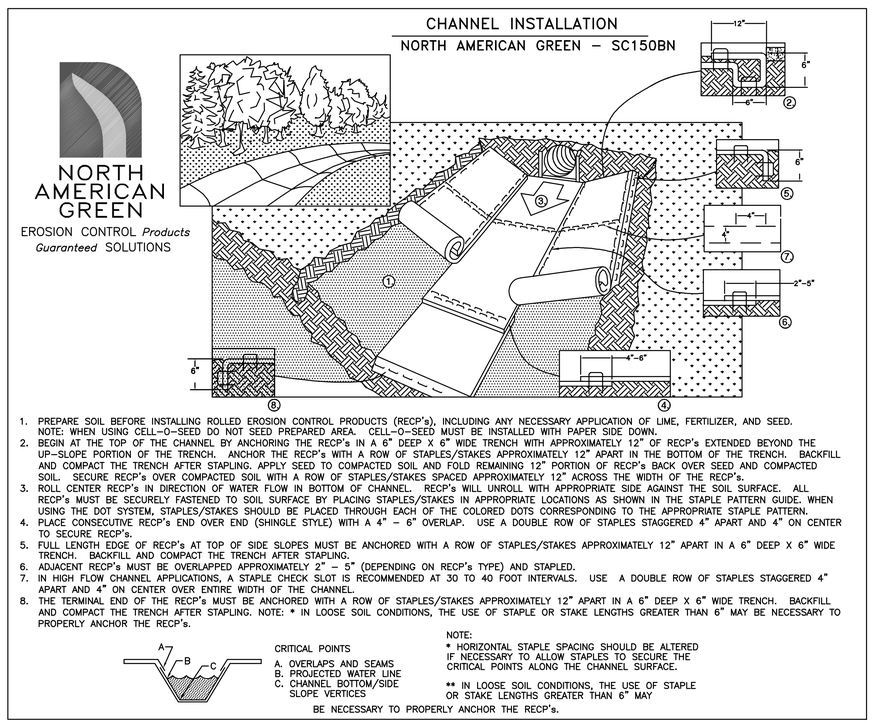
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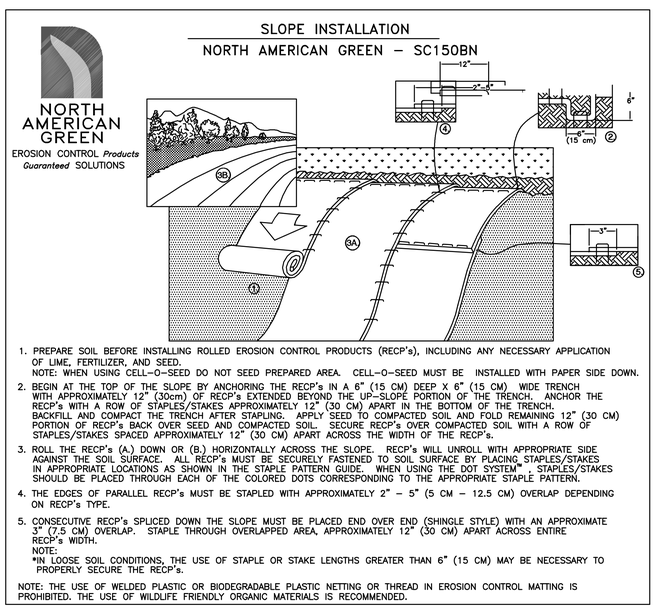


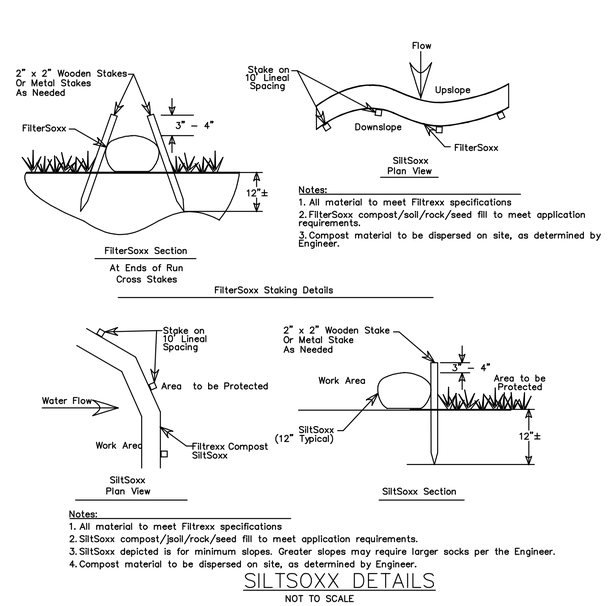
DETAIL FROM NHDES STORMWATER MANUAL VOLUME 3



DETAIL FROM NHDES STORMWATER MANUAL VOLUME 3







SILTSOXX DETAILS

NOT TO SCALE

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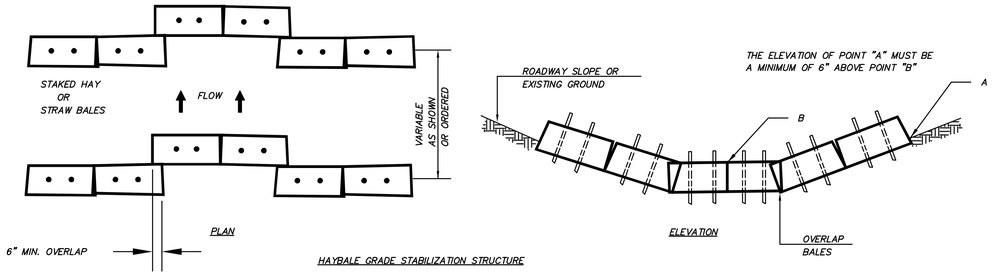
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DRAWN BY: JRG
DESIGN BY: JRG
APPROVED BY:SJH
PROJECT NO:23140
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EROSION CONTROL DETAILS

TDR SITE PLAN
5 RESIDENTIAL UNITS
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DOVER, NH 03820

BRIAN SLOVENSKI
124 TURTLE POND ROAD
LEE, NH 03861

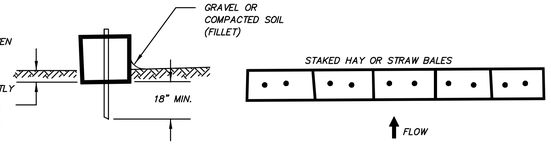
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HAYBALE GRADE STABILIZATION STRUCTURE

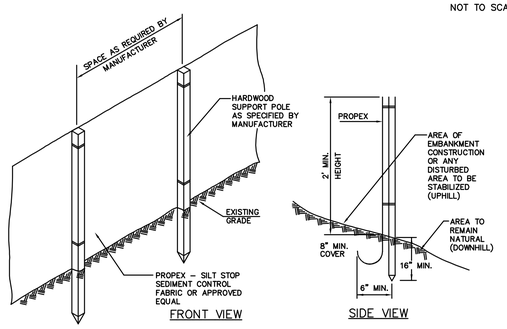
CONSTRUCTION SPECIFICATIONS

1. BALES SHALL BE PLACED IN A ROW WITH ENDS TIGHTLY ABUTTING THE ADJACENT BALES.
2. EACH BALE SHALL BE EMBEDDED IN THE SOIL A MINIMUM OF 4".
3. 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.
4. INSPECTION SHALL BE FREQUENT AND REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED.
5. BALES SHALL BE REMOVED WHEN THEY HAVE SERVED THEIR USEFULNESS SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.
6. REMOVE AND PROPERLY DISPOSE OF ALL SEDIMENT PRIOR TO REMOVING HAYBALES.



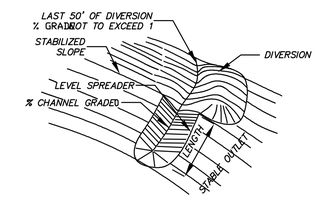
HAYBALE NOTES AND DETAILS

NOT TO SCALE

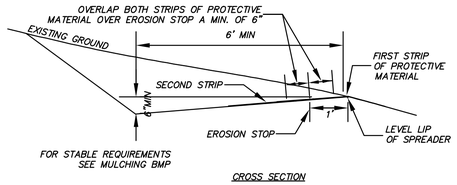


SILT FENCE DETAIL

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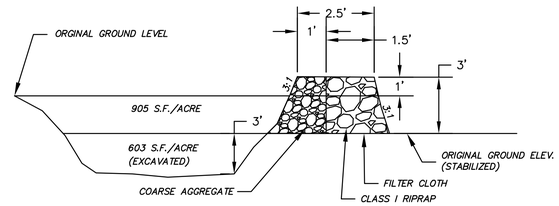
ISOMETRIC VIEW



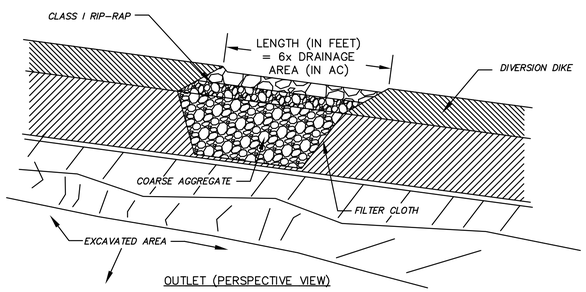
CROSS SECTION

LEVEL SPREADER DETAIL

NOT TO SCALE



CROSS SECTION OF OUTLET

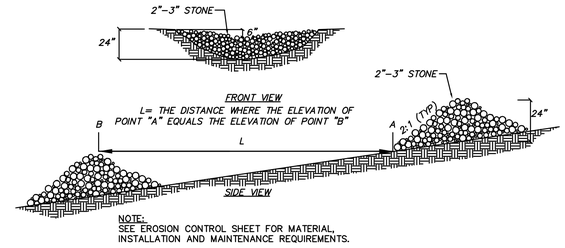


OUTLET (PERSPECTIVE VIEW)

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

TEMPORARY SEDIMENT TRAP

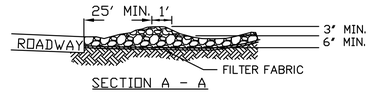
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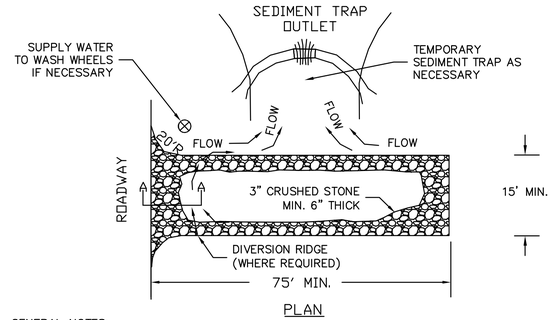
NOTE:
SEE EROSION CONTROL SHEET FOR MATERIAL, INSTALLATION AND MAINTENANCE REQUIREMENTS.

STONE CHECK DAM

NOT TO SCALE



SECTION A - A



PLAN

A. GENERAL NOTES:

1. 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
2. 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.
3. 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.
4. 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).

1. STONE SIZE MINIMUM: USE SHOULD BE 3" CRUSHED STONE.
2. THE MINIMUM LENGTH OF THE PAD SHOULD BE 75 FEET.
3. THE MINIMUM WIDTH OF THE PAD SHOULD BE 15 FEET OR THE WIDTH OF THE ENTRANCE, WHICHEVER IS GREATER
4. THE PAD SHOULD SLOPE AWAY FROM THE EXISTING ROADWAY.
5. THE PAD SHOULD BE AT LEAST 6" THICK.
6. A GEOTEXTILE FILTER FABRIC SHOULD BE PLACED BETWEEN THE STONE PAD AND THE EARTH SURFACE BELOW THE PAD.
7. 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.
8. 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).

1. 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.
2. THE CONTRACTOR SHOULD SWEEP THE PAVEMENT AT EXITS WHENEVER SOIL MATERIALS ARE TRACKED ONTO THE ADJACENT PAVEMENT OR TRAVELED WAY.
3. 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-2024-0008

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

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

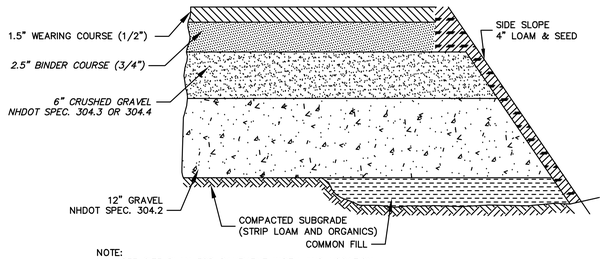
NO.	REVISION	APP'D	DATE
1	PER TRC COMMENTS	SJH	9-19-24

DATE: 7-9-24
SCALE: AS SHOWN
DRAWN BY: JRG
DESIGN BY: JRG
APPROVED BY:SJH
PROJECT NO:2340
FILE: SITE

EROSION CONTROL DETAILS

BRIAN SLOVENSKI
124 TURTLE POND ROAD
LEE, NH 03861

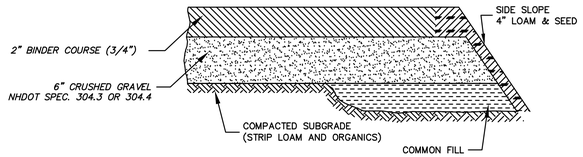
TDR SITE PLAN
5 RESIDENTIAL UNITS
306 DOVER POINT ROAD
DOVER, NH 03820



NOTE:
1. SEE SITE PLAN FOR PAVEMENT WIDTH AND LOCATION.
2. SEE GRADING, DRAINAGE AND EROSION CONTROL PLAN FOR PAVEMENT SLOPE AND CROSS-SLOPE.
3. GEOTEXTILE FABRIC MAYBE REQUIRED UNDER THE ROADWAY AND /OR THE PARKING AREAS AS REQUIRED BY THE ENGINEER BASED UPON SITE CONDITIONS.

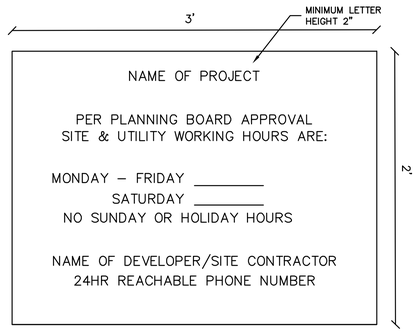
TYPICAL PAVEMENT SECTION

NOT TO SCALE



TYPICAL WALKWAY SECTION

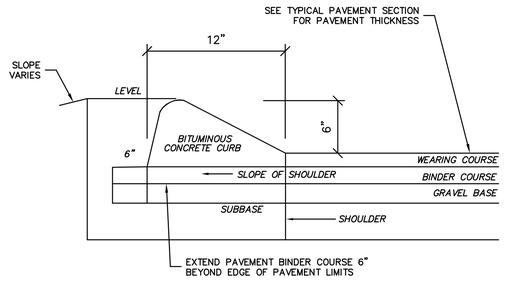
NOT TO SCALE



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.

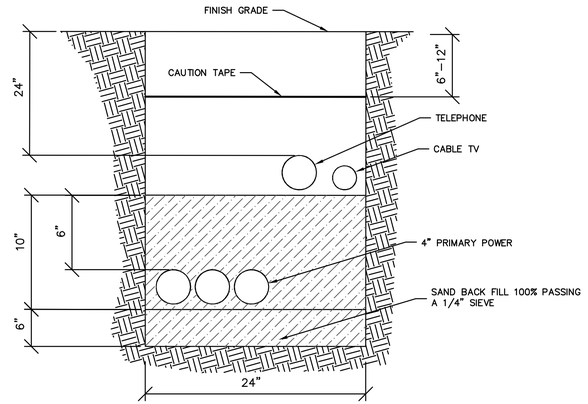
CITY OF DOVER D-2 CONSTRUCTION SIGN

NOT TO SCALE



SLOPED BITUMINOUS CURB

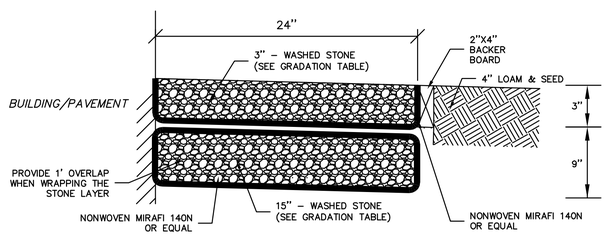
NOT TO SCALE



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: 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.

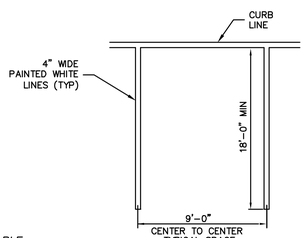
MAINTENANCE NOTES:
IF PONDING OR SAND/DEBRIS BUILD UP IS NOTICED FOLLOW HE BELOW STEPS
1. REMOVE TOP 3" OF STONE AND THE "U" SHAPED FILTER FABRIC.
2. CLEAN THE TOP OF THE FILTER FABRIC THAT IS WRAPPED AROUND 15" LAYER OF STONE.
3. INSPECT ANY RIPS OR TEARS IN FABRIC, IF ANY. LAY ADDITIONAL FILTER FABRIC 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

WASHED STONE GRADATION TABLE

SIEVE SIZE	*% FINER BY WEIGHT*
1"	*100*
3/4"	*90 – 100*
3/8"	*20 – 55*
# 4	*0*

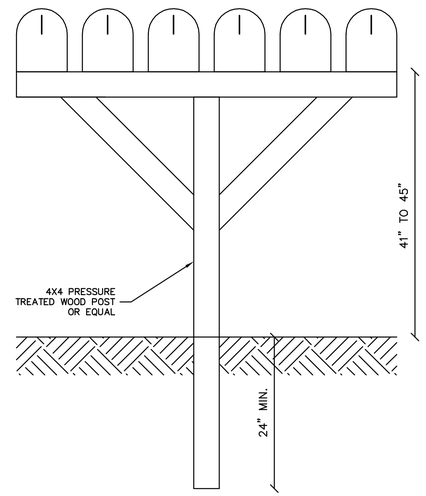
DRIPLINE INFILTRATION TRENCH DETAIL

NOT TO SCALE



STANDARD PARKING STALL

NOT TO SCALE



NOTES:
1. DETAIL PROVIDED AS COORDINATED WITH CITY OF DOVER USPS OFFICE.
2. THE MAILBOX LOCATION ON THE SITE PLAN IS APPROXIMATE AND WAS DETERMINED FROM AN ON-SITE MEETING WITH THE CITY OF DOVER'S USPS OFFICE, OWNER SHALL COORDINATE FINAL LOCATION WITH THE USPS OFFICE.

TYPICAL MAILBOX DETAIL

NOT TO SCALE

PLANNING FILE NO.: SITE-2024-0008

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

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

NO.	REVISION	APP'D	DATE
1	PER TRC COMMENTS	SJH	9-19-24

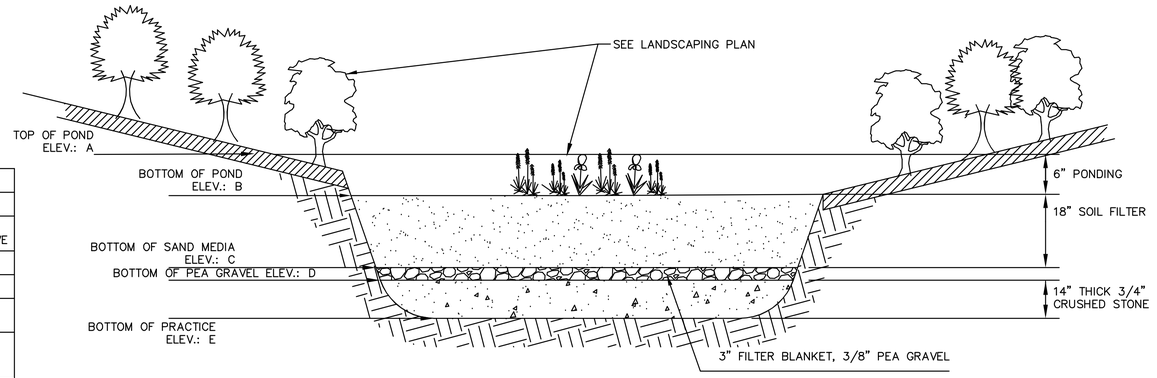
DATE: 7-9-24
SCALE: AS SHOWN
DRAWN BY: JRG
DESIGN BY: JRG
APPROVED BY:SJH
PROJECT NO:23140
FILE: SITE

DETAILS

BRIAN SLOVENSKI
124 TURTLE POND ROAD
LEE, NH 03861

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

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

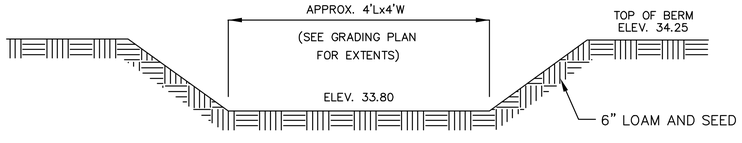


RAIN GARDEN POND SYSTEM CHART

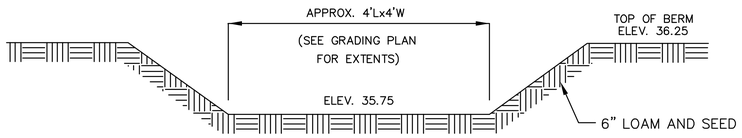
POND	POND ELEVATION				
	A	B	C	D	E
RG1	34.25	33.00	31.50	31.25	30.08
RG2	36.25	35.00	33.50	33.25	32.08

NOTES:
1. 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.
2. 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.
3. 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.
4. 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.
5. REFER TO LANDSCAPE DRAWINGS FOR GRASS SEED MIXES AND PLANTINGS. FERTILIZATION OF THE FILTER AREA SHALL BE AVOIDED UNLESS ABSOLUTELY NECESSARY TO ESTABLISH VEGETATION.
6. 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).
7. 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.
8. GRASS SEED SHALL BE NATIVE NON-INVASIVE SPECIES, SEE LANDSCAPE ARCHITECT DRAWINGS.
9. ALL MATERIALS SHALL BE SUBMITTED TO, AND APPROVED BY, THE DESIGN ENGINEER PRIOR TO CONSTRUCTION.

TYPICAL RAIN GARDEN DETAIL
NOT TO SCALE



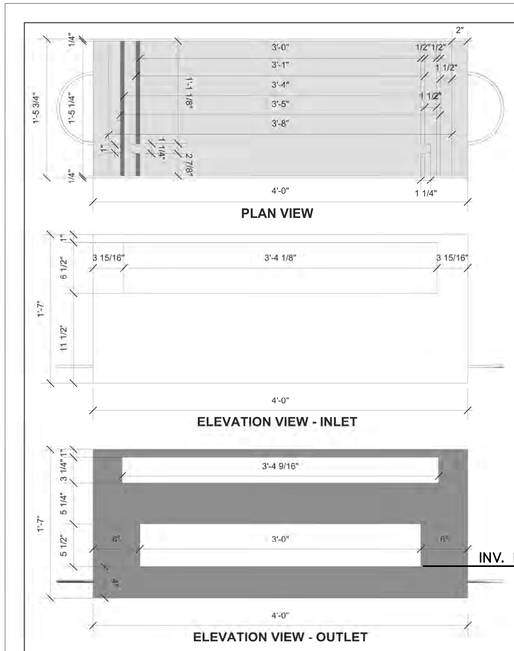
EMERGENCY OVERFLOW DETAIL 1
NOT TO SCALE

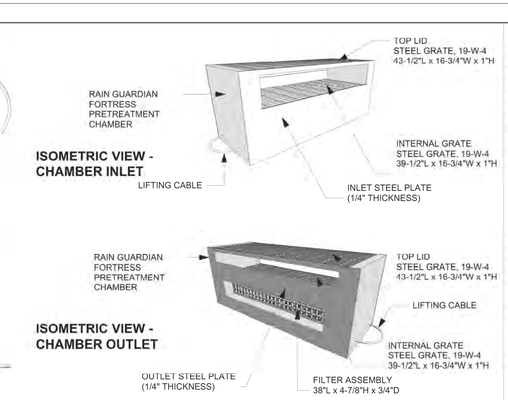


EMERGENCY OVERFLOW DETAIL 2
NOT TO SCALE

RAINGUARDIAN INVERT CHART

RAINGUARDIAN	INV. ELEV. "A"
1	35.5
2	36.8
3	33.9





HANDLING INSTRUCTIONS



SPECIFICATIONS
1. STEEL REINFORCED, COLD JOINT SECURED MONOLITHIC CONCRETE STRUCTURE (3.26 CF CONCRETE, 499 LBS, 1.36 CF STORAGE VOLUME), CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4,500 PSI AT 28 DAYS. CONCRETE AIR ENTRAINED (5% TO 8.5% BY VOLUME). MANUFACTURED AND DESIGNED TO ASTM C858.
2. TWO-POINT PICK (EMBEDDED LIFTING CABLES)
3. INTERNAL GRATE - STEEL GRATE (25 LBS/PIECE, 1" THICK), 361 LB CONCENTRATED LOAD OR 206 LB/SQ-FT UNIFORM LOAD
4. TOP LID - STEEL GRATE (27 LBS/PIECE, 1" THICK), 361 LB CONCENTRATED LOAD OR 206 LB/SQ-FT UNIFORM LOAD
5. STEEL FACE PLATE (INLET AND OUTLET) - A36 1/4" THICKNESS
6. REMOVABLE FILTER ASSEMBLY (FIBERGLASS GRATE WITH FILTER AND ALUMINUM CHANNEL)

INSTALLATION NOTES
1. EXCAVATE AN AREA WITH DIMENSIONS OF AT LEAST 4'-6"L X 2'-0"W FOR THE RAIN GUARDIAN. THE DISTANCE FROM THE BACK OF THE CURB MAY VARY BASED ON SITE CONDITIONS, BUT CONSIDERATIONS SHOULD INCLUDE SLOPE OF THE INLET AND BASIN SIDE SLOPES ADJACENT TO THE RAIN GUARDIAN. POSITION RAIN GUARDIAN SO PRIMARY OUTLET ALIGNS WITH TOE OF BASIN SIDE SLOPE TO AVOID SOIL INTERFERENCE WITH REMOVABLE FILTER WALL. THE EXCAVATION DEPTH SHOULD BE 1'-7" BELOW THE GUTTERLINE ELEVATION AT THE RAIN GARDEN INLET TO ACCOMMODATE THE 6" AGGREGATE BASE, 4" RAIN GUARDIAN BASE, AND 9" PONDING DEPTH.
2. INSTALL AN AGGREGATE BASE, COMPACTED TO 95% STANDARD PROCTOR, WITH DIMENSIONS OF AT LEAST 4'-6"L X 2'-0"W X 6"D. FINISHED TOP ELEVATION OF AGGREGATE TO BE PRECISELY 1'-1" BELOW THE GUTTER LINE ELEVATION AT THE RAIN GARDEN INLET.
3. SET RAIN GUARDIAN ON THE PREPARED AGGREGATE BASE. THE RAIN GUARDIAN INLET WILL BE 1-1/2" BELOW THE GUTTERLINE ELEVATION TO ACCOMMODATE A SLOPED INLET FROM THE GUTTER TO THE RAIN GUARDIAN.
4. INSTALL FRAMING FOR INLET BETWEEN RAIN GUARDIAN AND BACK OF CURB. TOP ELEVATIONS OF THE FRAMING SHOULD MATCH THE TOP OF THE CURB ON THE STREET SIDE AND THE TOP OF THE RAIN GUARDIAN ON THE BIORETENTION SIDE.
5. INSTALL EXPANSION/CONTRACTION JOINT MATERIAL OR A SHEET OF POLY TO SERVE AS A BOND BREAK BETWEEN RAIN GUARDIAN AND CONCRETE INLET BEFORE POURING INLET.
6. SIDE CURBS OF THE POURED INLET MUST HAVE AN INSURMOUNTABLE PROFILE TO PREVENT WATER FLOW FROM OVERTOPPING THE DOWNSTREAM SIDE OF THE INLET.
7. INSTALL REMOVABLE FILTER. THE FILTER SHOULD BE INSTALLED IN THE CHANNEL AT THE RAIN GUARDIAN OUTLET WITH THE FILTER FABRIC FACING THE RAIN GUARDIAN INLET.
8. INSTALL INTERNAL GRATE AND THEN TOP LID.

RAIN GUARDIAN
U.S. PATENT NOS. 8,501,016 AND 8,858,804
PRETREATMENT FOR BIORETENTION
Rain Gardens • Swales • Filtration Basins • Infiltration Basins
www.RainGuardian.biz

RAIN GUARDIAN FORTRESS
PRETREATMENT CHAMBER
BIORETENTION PONDING DEPTH: 9"
TYPICAL DETAIL

REVISION HISTORY

REV	BY	DATE	DESCRIPTION
A	MDH	11/16/22	FORTRESS
SCALE		VARIABLE	
U.S. PATENT NOS.		8,501,016 AND 8,858,804	

DEVELOPED BY: ANOKA CONSERVATION DISTRICT
MANUFACTURED BY: Stoneworks ARCHITECTURAL PRECAST/CAST STONE
NATIONAL PRECAST CONCRETE ASSOCIATION CERTIFIED PLANT

PLANNING FILE NO.: SITE-2024-0008
NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

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CIVIL & WATERSHED ENGINEERING
181 Watson Road, PO Box 1166
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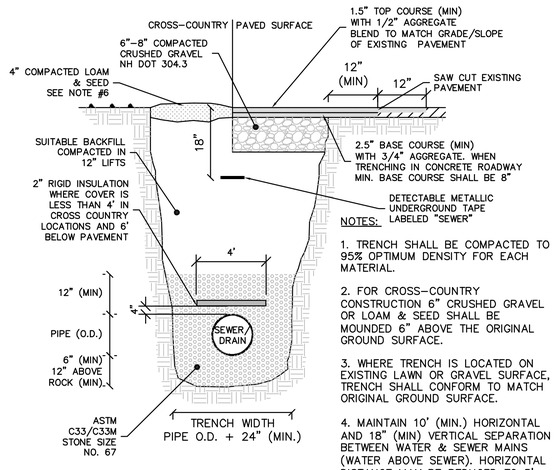
NO.	REVISION	DATE	APP'D
1	PER TRC COMMENTS	9-19-24	SJH

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

DETAILS

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

BRIAN SLOVENSKI
124 TURTLE POND ROAD
LEE, NH 03861



CITY OF DOVER D-3
SEWER TRENCH DETAIL

NOT TO SCALE

NOTES:

1. TRENCH SHALL BE COMPACTED TO 95% OPTIMUM DENSITY FOR EACH MATERIAL.

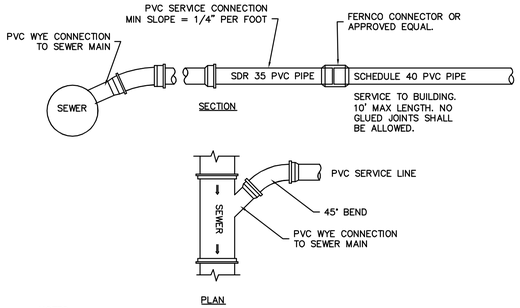
2. FOR CROSS-COUNTRY CONSTRUCTION 6" CRUSHED GRAVEL OR LOAM & SEED SHALL BE MOUNDED 6" ABOVE THE ORIGINAL GROUND SURFACE.

3. WHERE TRENCH IS LOCATED ON EXISTING LAWN OR GRAVEL SURFACE, TRENCH SHALL CONFORM TO MATCH ORIGINAL GROUND SURFACE.

4. MAINTAIN 10' (MIN.) HORIZONTAL AND 18" (MIN) VERTICAL SEPARATION BETWEEN WATER & SEWER MAINS (WATER ABOVE SEWER). HORIZONTAL DISTANCE MAY BE REDUCED TO 5' (MIN.) FOR SERVICES PROVIDED THE WATER SERVICE IS A CONTINUOUS PIPE WITHOUT JOINTS OR FITTINGS.

5. BACKFILL MATERIAL SHALL BE THE NATURAL MATERIAL EXCAVATED DURING THE COURSE OF CONSTRUCTION, BUT SHALL EXCLUDE; DEBRIS, PAVEMENT, ORGANIC MATTER, TOP SOIL, MUCK, PEAT AND ROCKS OVER 6" IN LARGEST DIMENSION

6. LOAM AND SEED SHOULD BE IN COMPLIANCE WITH NH DOT 641, 642, 643, 644 AND 645.

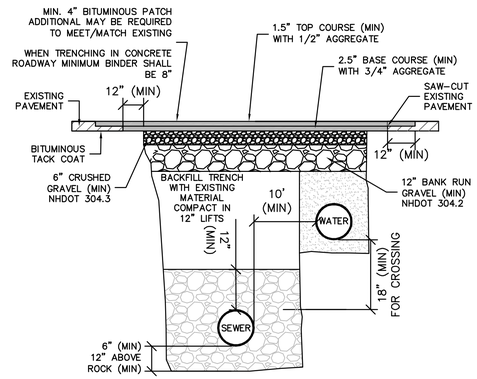


NOTES:

1. TRENCHING AND BEDDING REQUIREMENTS PER CITY SEWER TRENCH DETAIL (D-3).
2. SERVICE LATERAL DIAMETER VARIES PER APPLICATION. REVIEW SIZE WITH CITY ENGINEER PRIOR TO INSTALLATION.
3. SDR 35 SHALL NOT EXTEND INTO THE BUILDING

CITY OF DOVER D-17
SEWER SERVICE DETAIL

NOT TO SCALE

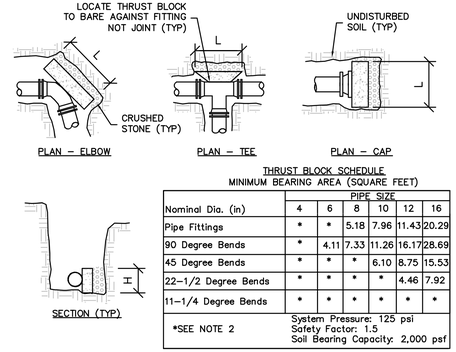


NOTES:

1. TRENCH SHALL BE COMPACTED TO 95% OPTIMUM DENSITY.
2. ALL WORK SHALL COMPLY WITH THE CITY OF DOVER CONSTRUCTION GUIDELINES AND PROCEDURES
3. MAINTAIN 10' (MIN.) HORIZONTAL AND 18" (MIN) VERTICAL SEPARATION BETWEEN WATER & SEWER MAINS (WATER ABOVE SEWER). HORIZONTAL DISTANCE MAY BE REDUCED TO 5' (MIN.) FOR SERVICES PROVIDED THE WATER SERVICE IS A CONTINUOUS PIPE WITHOUT JOINTS OR FITTINGS.

CITY OF DOVER
TYPICAL TRENCH DETAIL

NOT TO SCALE



THRUST BLOCK SCHEDULE
MINIMUM BEARING AREA (SQUARE FEET)

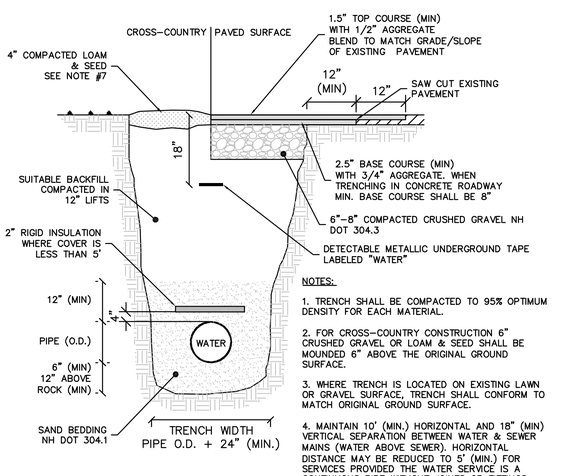
	PIPE SIZE					
Nominal Dia. (in)	4	6	8	10	12	16
Pipe Fittings	*	*	5.18	7.96	11.43	20.29
90 Degree Bends	*	4.11	7.33	11.26	16.17	28.69
45 Degree Bends	*	*	*	6.10	8.75	15.53
22-1/2 Degree Bends	*	*	*	*	4.46	7.92
11-1/4 Degree Bends	*	*	*	*	*	*
*SEE NOTE 2	System Pressure: 125 psi Safety Factor: 1.5 Soil Bearing Capacity: 2,000 psf					

NOTES:

1. ALL THRUST BLOCKS SHALL BE PRE-CAST CONCRETE UNLESS APPROVED BY THE CITY ENGINEER.
2. 2'X2'X2' MINIMUM THRUST BLOCK REQUIRED, ANY BEARING AREA OVER 4SF REQUIRES THRUST BLOCKS, RESTRAINED JOINTS AND CALCULATIONS ASSOCIATED WITH THE JOINT.
3. THE MINIMUM BEARING AREAS SHOWN IN THE THRUST BLOCK SCHEDULE ARE BASED ON A SYSTEM PRESSURE OF 125 PSI. IF THE SYSTEM PRESSURE IS ABOVE 125 PSI, INCREASE THE NOTED AREAS PROPORTIONALLY TO THE ACTUAL SYSTEM PRESSURE.
4. FOR MINIMUM BEARING AREAS OVER 4 SF, THE LENGTH (L) OF THE BLOCK IS APPROXIMATELY TWICE AS LONG AS THE HEIGHT (H).
5. PLACE CRUSHED STONE BEHIND THRUST BLOCK AGAINST UNDISTURBED SOIL.
6. PLACE THRUST BLOCK ALONG MAXIMUM LENGTH OF THE FITTING TO MAXIMIZE BEARING AREA.
7. CONCRETE COMPRESSIVE STRENGTH: 2,000 PSI MINIMUM.
8. USE OF THRUST BLOCKS DOES NOT ELIMINATE THE REQUIREMENT OF OTHER RESTRAINTS OR VICE VERSA.

CITY OF DOVER D-15
THRUST BLOCK DETAIL

NOT TO SCALE

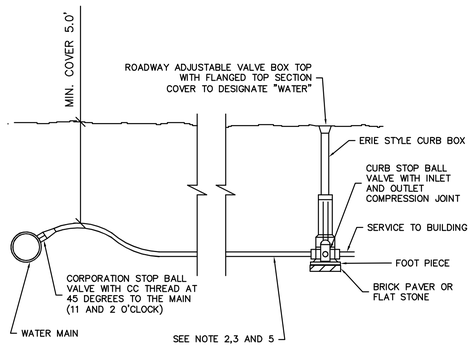


NOTES:

1. TRENCH SHALL BE COMPACTED TO 95% OPTIMUM DENSITY FOR EACH MATERIAL.
2. FOR CROSS-COUNTRY CONSTRUCTION 6" CRUSHED GRAVEL OR LOAM & SEED SHALL BE MOUNDED 6" ABOVE THE ORIGINAL GROUND SURFACE.
3. WHERE TRENCH IS LOCATED ON EXISTING LAWN OR GRAVEL SURFACE, TRENCH SHALL CONFORM TO MATCH ORIGINAL GROUND SURFACE.
4. MAINTAIN 10' (MIN.) HORIZONTAL AND 18" (MIN) VERTICAL SEPARATION BETWEEN WATER & SEWER MAINS (WATER ABOVE SEWER). HORIZONTAL DISTANCE MAY BE REDUCED TO 5' (MIN.) FOR SERVICES PROVIDED THE WATER SERVICE IS A CONTINUOUS PIPE WITHOUT JOINTS OR FITTINGS.
5. BACKFILL MATERIAL SHALL BE THE NATURAL MATERIAL EXCAVATED DURING THE COURSE OF CONSTRUCTION, BUT SHALL EXCLUDE; DEBRIS, PAVEMENT, ORGANIC MATTER, TOP SOIL, MUCK, PEAT, AND ROCKS OVER 6" IN LARGEST DIMENSION
6. PROVIDE MINIMUM 5' OF COVER. ENGINEERING APPROVAL REQUIRED FOR LESS THAN 5' OF COVER.
7. LOAM AND SEED SHOULD BE IN COMPLIANCE WITH NH DOT 641, 642, 643, 644 AND 645.

CITY OF DOVER D-4
WATER TRENCH DETAIL

NOT TO SCALE



NOTES:

1. ALL WATER LINES 4" OR GREATER SHALL BE DUCTILE IRON WITH AN 8 MIL POLYETHYLENE WRAP, INCLUDING TEE AND OTHER CONNECTIONS.
2. WATER SERVICE LINES SHALL BE COPPER TUBING (TYPE K) BETWEEN MAIN AND CURB STOP.
3. SERVICE BETWEEN CURB STOP AND BUILDING MAY BE (BLUE OR BLACK) CTS SDR 9 PLASTIC POLYETHYLENE RATED FOR 250 psi.
4. CAM-LOCK REQUIRED FOR CTS OR IPS, MJ ADAPTER REQUIRED FOR HDPE
5. 3/4"- COPPER, CTS
   1"- COPPER, CTS
   2"- CTS, HDPE, IPS

CITY OF DOVER D-13
WATER SERVICE CONNECTION DETAIL

NOT TO SCALE

PLANNING FILE NO.: SITE-2024-0008

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

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

NO.	REVISION	APP'D	DATE
1	PER TRC COMMENTS	SJH	9-19-24

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

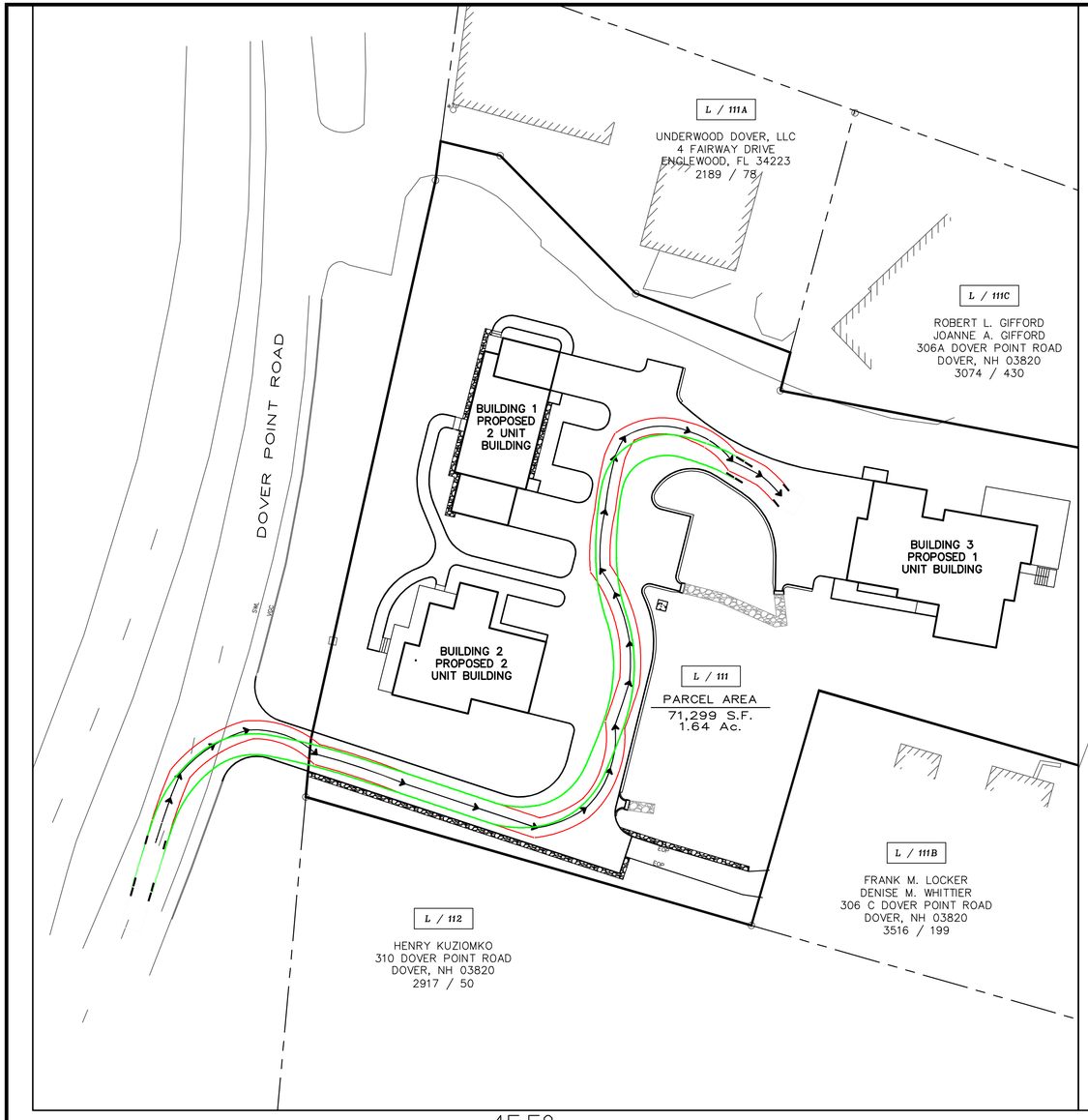
DETAILS

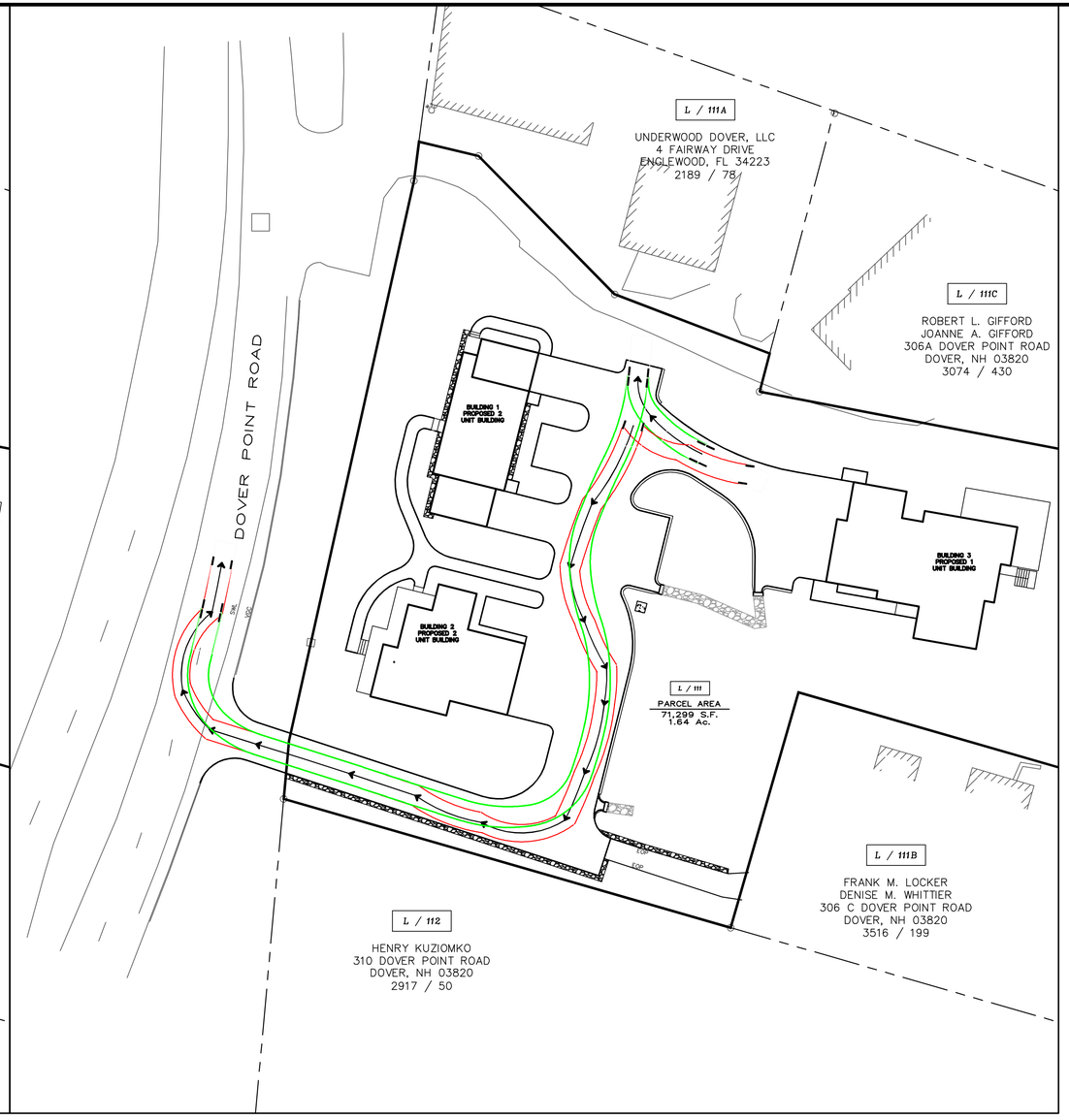
TDR SITE PLAN
5 RESIDENTIAL UNITS
306 DOVER POINT ROAD
DOVER, NH 03820

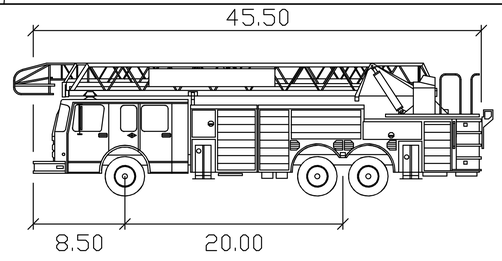
BRIAN SLOVENSKI
124 TURTLE POND ROAD
LEE, NH 03861

16


DOVER POINT ROAD
ASPHALT DRIVE
R.O.W. FOR LOT L111C
EOR
BUILDING 1
PROPOSED 2
UNIT BUILDING
BUILDING 2
PROPOSED 2
UNIT BUILDING
BUILDING 3
PROPOSED 1
UNIT BUILDING
SHED
ASPHALT DRIVE
R.O.W. FOR LOT L111B
EOP
EOP
SHED
SHED
SHED







Dover ladder feet

Width	: 8.50
Track	: 8.50
Lock to Lock Time	: 6.0
Steering Angle	: 44.0



GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)

PLANNING FILE NO.: SITE-2024-0008

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

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

NO.	REVISION	APP'D	DATE
1	PER TRC COMMENTS	SJH	9-19-24

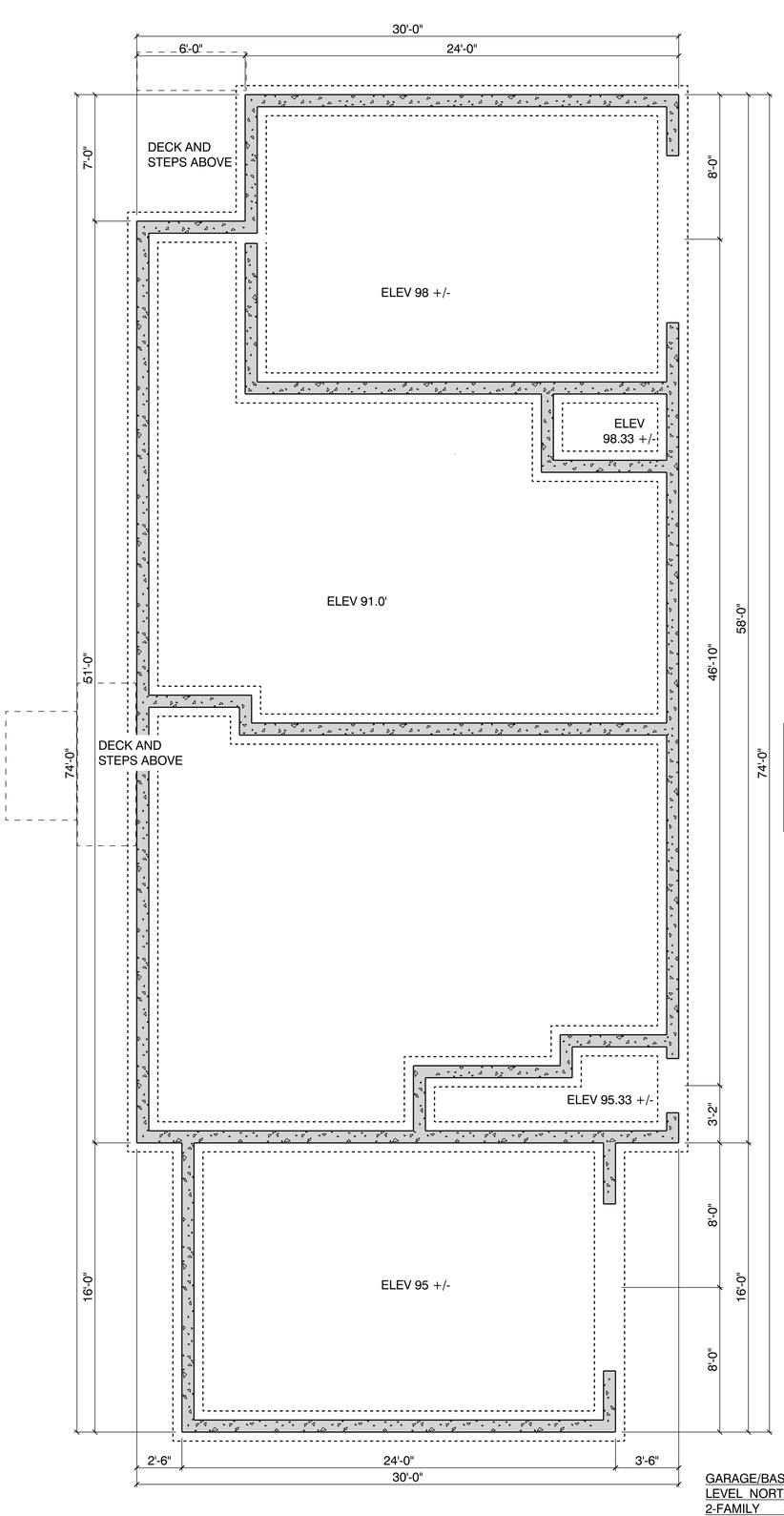
DATE: 7-9-24
SCALE: 1"=30'
DRAWN BY: JRG
DESIGN BY: JRG
APPROVED BY:SJH
PROJECT NO:23140
FILE: SITE

DOVER FIRE TRUCK MOVEMENT PLAN

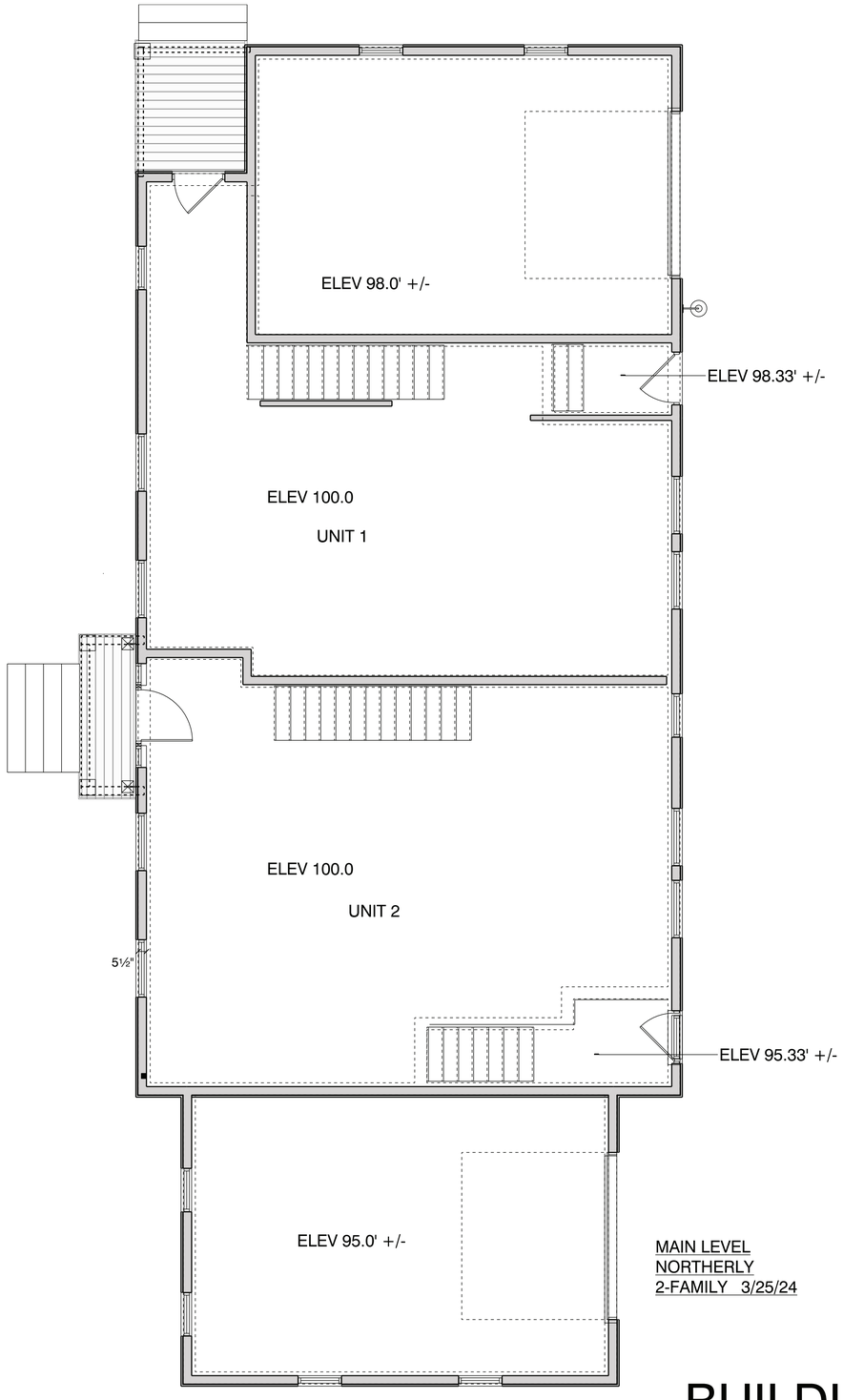
BRIAN SLOVENSKI
124 TURTLE POND ROAD
LEE, NH 03861

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

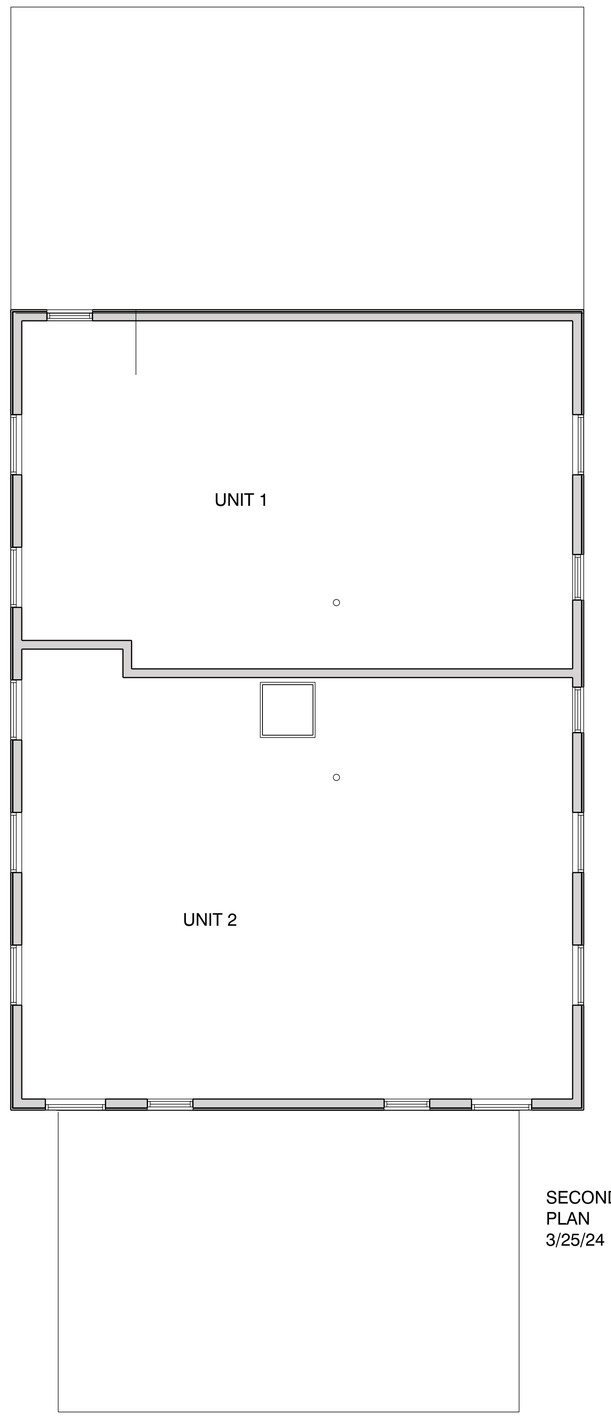
18



GARAGE/BASEMENT
LEVEL NORTHERLY
2-FAMILY 3/25/24



MAIN LEVEL
NORTHERLY
2-FAMILY 3/25/24



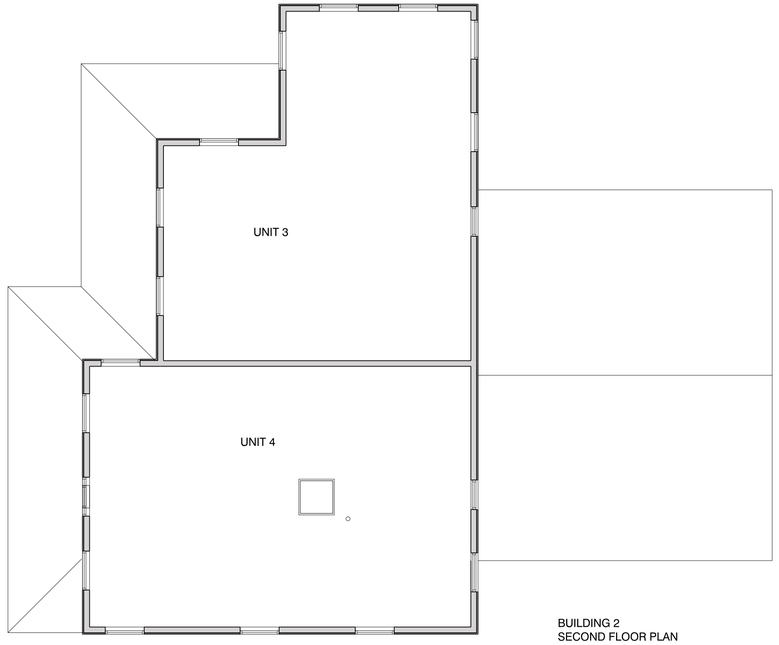
SECOND FLOOR
PLAN
3/25/24

BUILDING 1

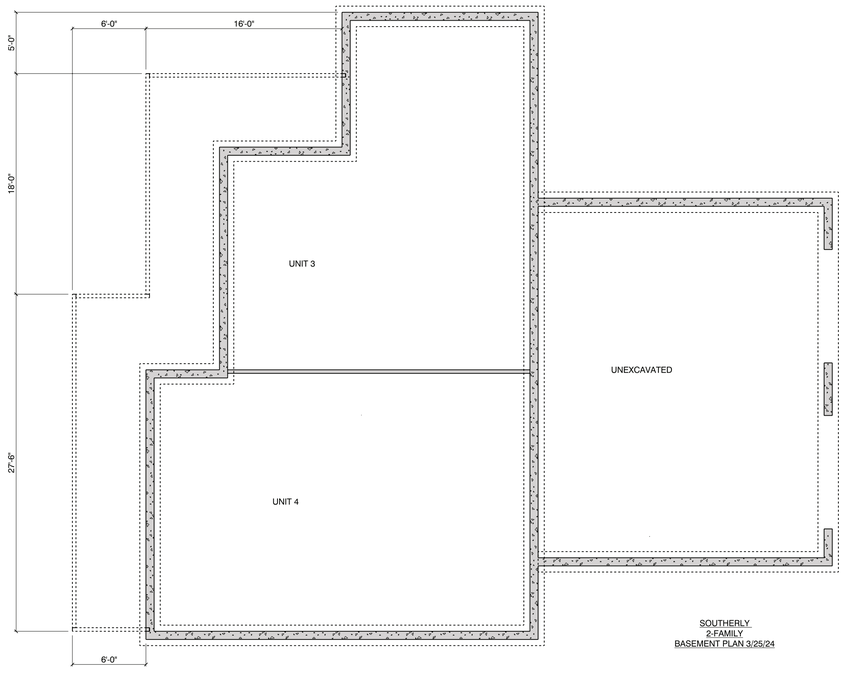
SCALE: 1/8" = 1'-0"



SOUTHERLY 2-FAMILY
FIRST FLOOT PLAN
3/25/24



BUILDING 2
SECOND FLOOR PLAN



SOUTHERLY
2-FAMILY
BASEMENT PLAN 3/25/24

BUILDING 2 PLANS

SCALE: 1/8" = 1'-0"

TDR CONCEPT
306 DOVER POINT ROAD
DOVER, NEW HAMPSHIRE

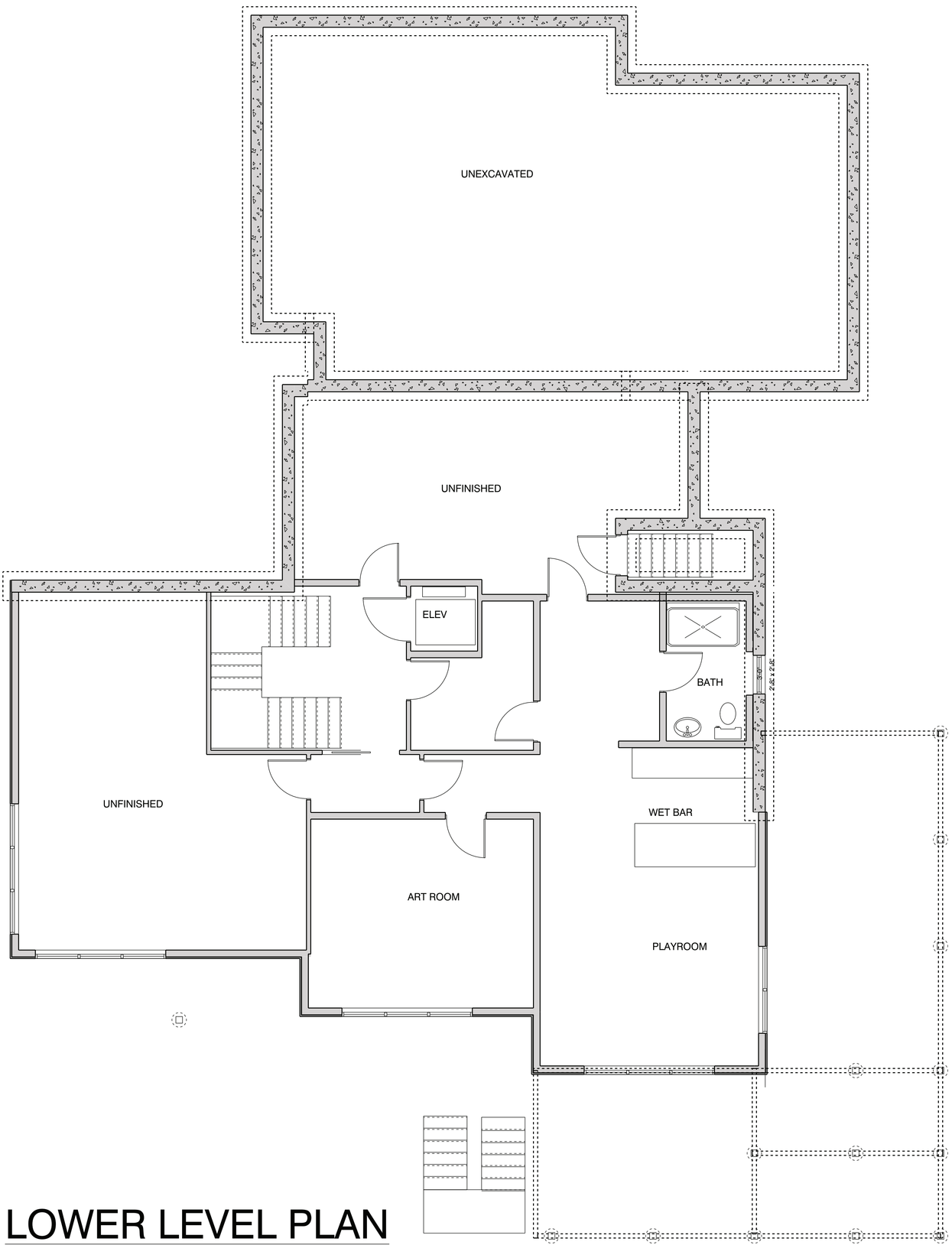
5 UNIT CONCEPT

6/18/2024

ALL RIGHTS RESERVED

1

MICHAEL J. KEANE ARCHITECTS, PLLC
101 KENT PLACE NEWMARKET, NH 03857 603.292.1400



LOWER LEVEL PLAN

SCALE: 1/8" = 1'-0"

TDR CONCEPT
306 DOVER POINT ROAD
DOVER, NEW HAMPSHIRE

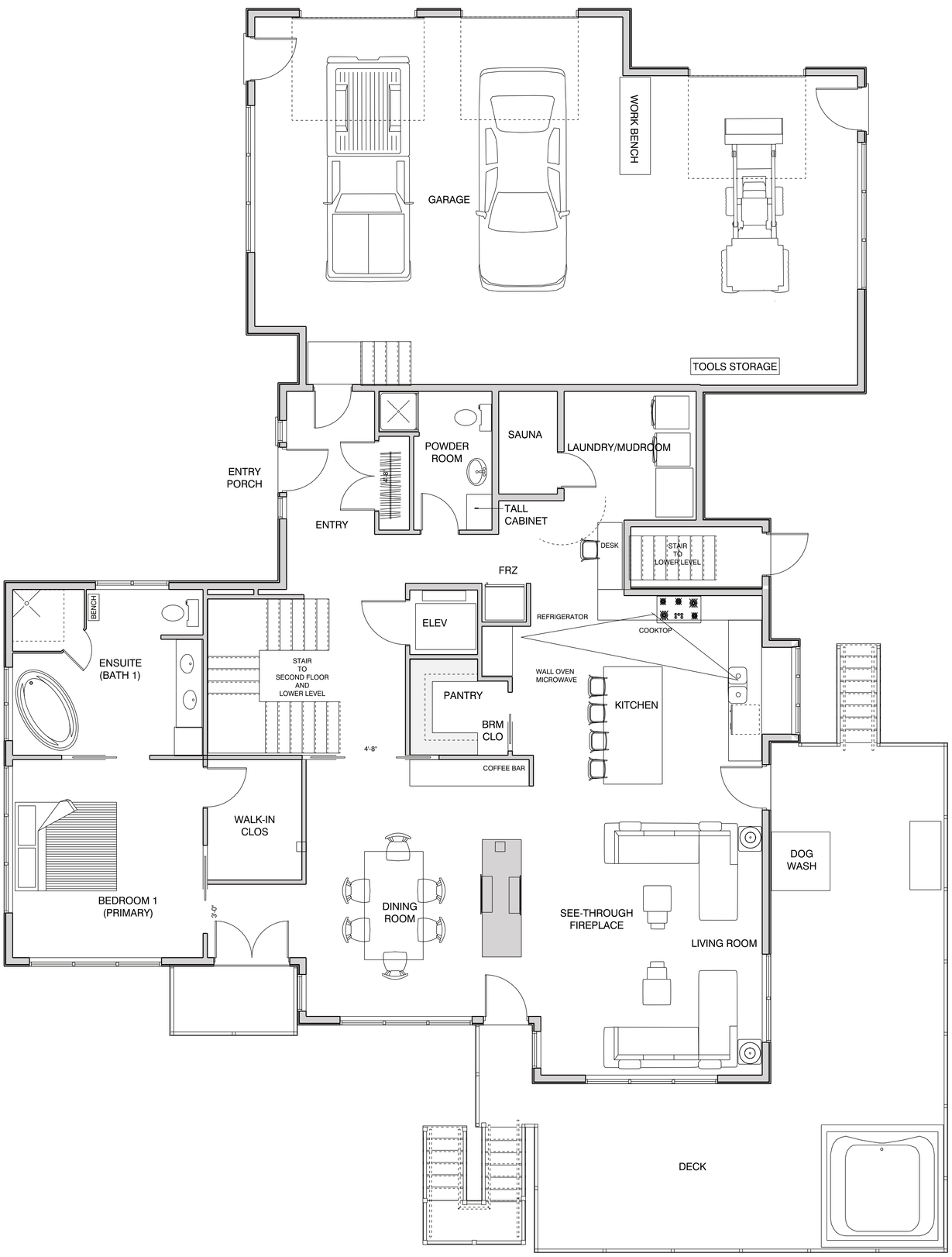
5 UNIT CONCEPT

6/18/2024

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101 KENT PLACE NEWMARKET, NH 03857 603.292.1400

2



FIRST FLOOR PLAN

SCALE: 1/8" = 1'-0"

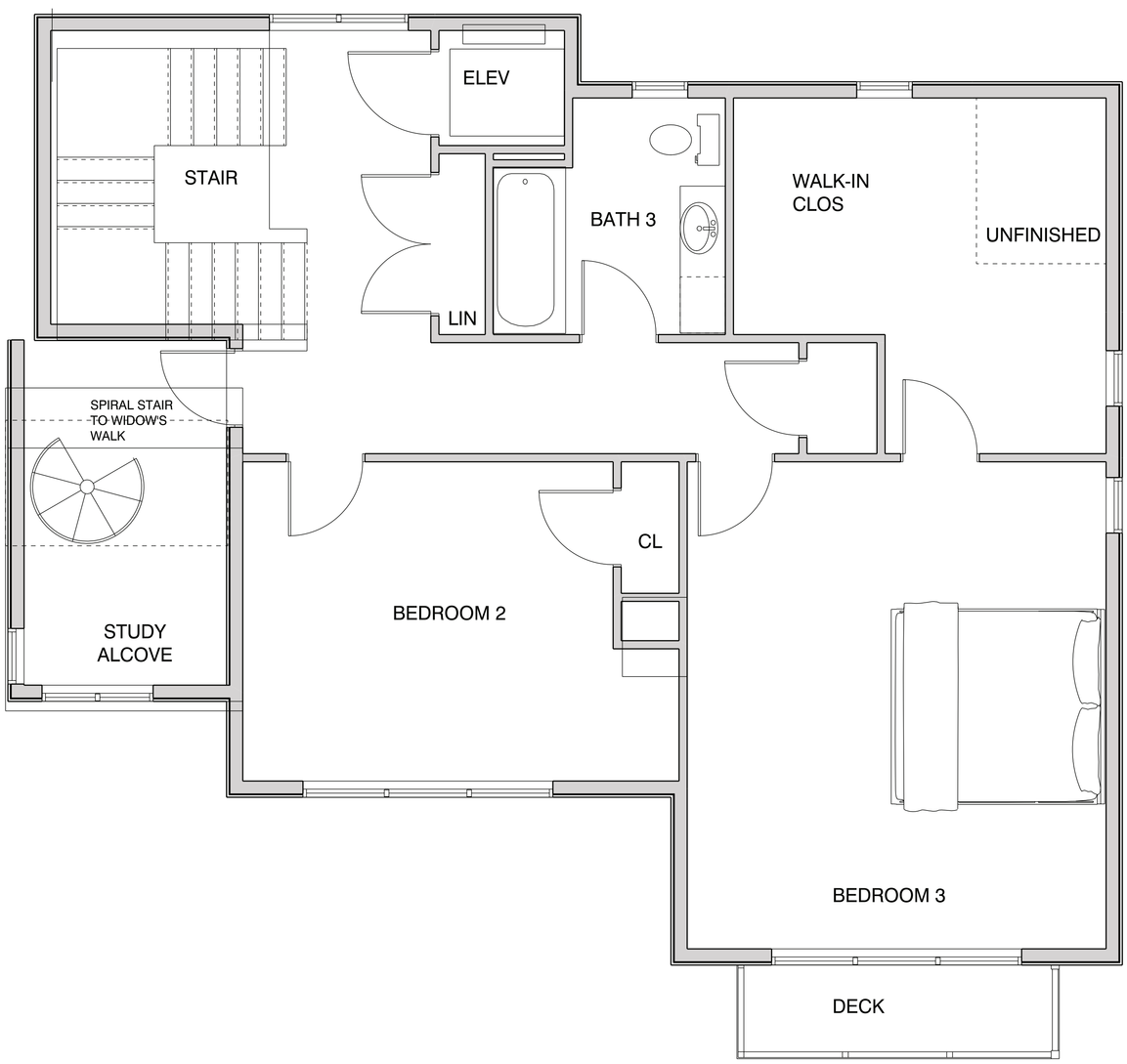
TDR CONCEPT
306 DOVER POINT ROAD
DOVER, NEW HAMPSHIRE

5 UNIT CONCEPT

6/18/2024

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SECOND FLOOR PLAN

SCALE: 3/16" = 1'-0"

TDR CONCEPT
306 DOVER POINT ROAD
DOVER, NEW HAMPSHIRE

5 UNIT CONCEPT

6/18/2024

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DOVER, NEW HAMPSHIRE

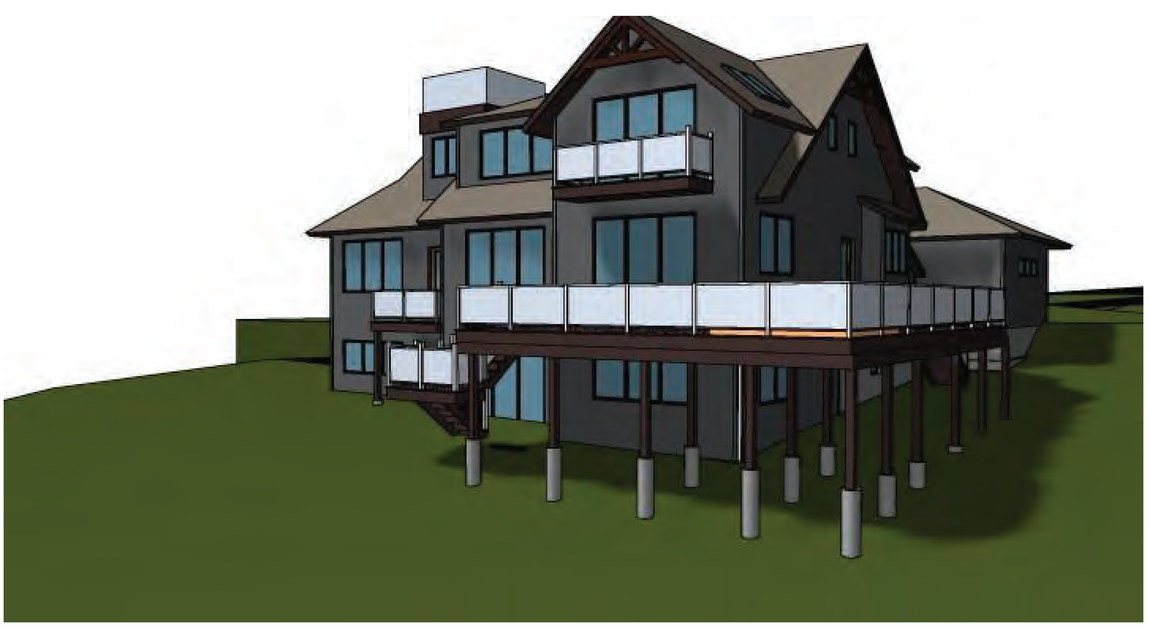
5 UNIT CONCEPT

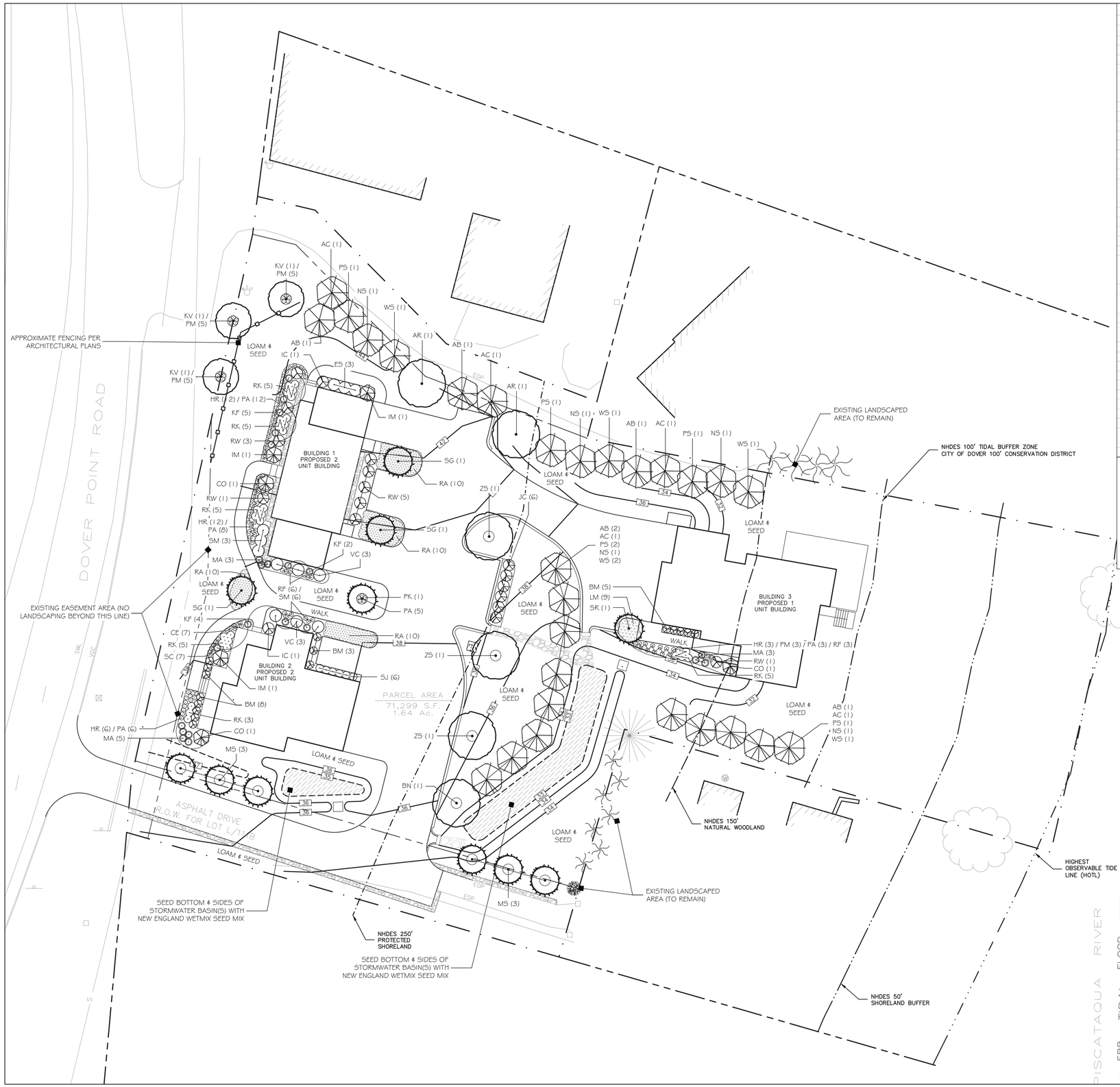
6/18/2024

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PLANTING SCHEDULE

TREES	SIZE	SYMBOL	QTY
Abies balsamea / Balsam Fir	8-10' B&B	AB	6
Abies concolor / White Fir	8-10' B&B	AC	5
Acer rubrum 'October Glory' / October Glory Red Maple	3-3.5" CAL.	AR	2
Betula nigra 'Herritage' / Herritage River Birch (Multi-Stemmed)	3-3.5" CAL.	BN	1
Malus 'Spring Snow' / Spring Snow Crabapple	3-3.5" CAL.	MS	6
Picea abies / Norway Spruce	8-10' B&B	NS	5
Picea glauca / White Spruce	8-10' B&B	WS	6
Pinus strobus / Eastern White Pine	8-10' B&B	PS	6
Prunus cerasifera 'Krauter Vesuvius' / Krauter Vesuvius Flowering Plum	3-3.5" CAL.	KV	3
Prunus serrulata 'Kwanzan / Kwanzan Flowering Cherry	3-3.5" CAL.	PK	1
Syringa reticulata 'Ivory Silk' / Ivory Silk Japanese Tree Lilac	3-3.5" CAL.	SR	1
Zelkova serrata 'Green Vase' / Green Vase Zelkova	3-3.5" CAL.	ZS	3
Prunus x 'Snow Goose' / Snow Goose Cherry	3-3.5" CAL.	SG	3

SHRUBS			
Buxus microphylla 'Winter Gem' / Winter Gem Boxwood	2-2.5' B&B	BM	16
Chamaecyparis obtusa 'Nana Gracilis' / Compact Hinoki Falsecypress	4-5' B&B	CO	3
Hydrangea macrophyla 'Endless Summer' / Endless Summer Bigleaf Hydrangea	24-36"	ES	3
Ilex crenata 'Hetzii' / Hetzi Japanese Holly	24-36"	IC	7
Ilex meservae 'Blue Maid' / Blue Maid Holly	2-2.5' B&B	IM	3
Rhododendron 'Wilsoni' / Wilson Rhododendron	2.5'-3' B&B	RW	10
Rosa 'Knockout Double' / Knockout Double Rose	24-36"	RK	28
Spiraea japonica 'Double Play Big Bang' / Double Play Big Bang Spirea	24-36"	SJ	6
Syringa meyeri 'Palibin' / Dwarf Korean Lilac	2-2.5' B&B	SM	3
Viburnum carlesii 'Compacta' / Compact Koreanspice Viburnum	2-2.5' B&B	VC	6

GRASSES			
Miscanthus sinensis 'Adagio' / Dwarf Maiden Grass	#3	MA	11
Calamagrostis 'Karl Foerster' / Karl Foerster's Feather Reed Grass	#3	KF	11

PERENNIALS			
Coreopsis 'Enchanted Eve' / Enchanted Eve Tickseed	#1	CE	7
Echinacea 'Butterfly Kisses' / Butterfly Kisses Coneflower	#1	BK	12
Hemerocallis 'Happy Returns'/ Happy Returns Daylily	#1	HR	33
Hemerocallis 'Pardon Me'/ Pardon Me Daylily	#1	PM	18
*Liriope muscar*i 'Big Blue' / Big Blue Lilyturf	#1	LM	9
Pervoskia atriplicifolia / Russian Sage	#1	PA	34
Rudbeckia flugida 'Goldstrum' / Goldstrum Black-Eyed Susan	#1	RF	9
Salvia 'Caradonna' / Caradonna Sage	#1	SC	7
Salvia 'Marcus' / Marcus Sage	#1	SM	9

GROUNDCOVERS			
Rhus aromatica 'Grow Low' / Grow Low Fragrant Sumac	#2	RA	38
Juniperus chinensis 'Sargentii' / Green Sargent Juniper	#3	JC	6

LANDSCAPE CALCULATIONS:

INTERIOR PARKING LOT LANDSCAPING:
NOT REQUIRED FOR PARKING LOTS WITH 0-20 SPACES

STREETSCAPE LANDSCAPING:
REQUIRED: 1 STREET TREE / 35' LINEAR FEET OF ADJACENT ROADWAY
80 L.F.OF ADJACENT ROADWAY (NOT INCLUDING EASEMENT AREA) / 35 = 2.28 = 3 TREES

REQUIRED
PROVIDED: 3 TREES PROPOSED (ALONG DOVER POINT RD)

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 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.

terrain
planning & design llc
311 kast hill road
hopkinton nh 03229
603. 491. 2322
terrainplanning.com

306 DOVER POINT ROAD

Site Location:
306 Dover Point Rd
Dover, NH 03820

Prepared For:
Civilworks New England
181 Watson Road
PO Box 1166
Dover, NH 03821

LANDSCAPE PLAN

DATE: 06 - 18 - 24

SCALE: 1"=20'

PROJECT #: 24039

Drawn By: ID

Checked By: RM

REVISIONS:	DATE:
Issued for Review	06-20-24
Revised	07-10-24
Revised	09-17-24

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ROBERT M. MUNKER 086 NEW HAMPSHIRE

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306 Dover Point RD - Dover, NH
3D Conceptual Streetscape Visualizations









