



CITY OF DOVER

PLANNING TECHNICAL REVIEW COMMITTEE –AGENDA

Meeting Type: Regular Meeting
Meeting Location: Council Chambers, City Hall, 288 Central Ave, Dover NH 03820
Meeting Date: **Thursday, November 7, 2024**
Meeting Time: **10:30 AM**

1. 10:30 AM – 11:15 AM: Site Review for Dover Housing Authority, Assessor's Map 1, Lot 42, zoned CBD-G, located at 3 Green Street. (Proposal is to construct (22) twenty-two porous pavement parking spaces with 16' drive lane at rear of site location where 9-10' drive lane and (4) four parking spaces currently exist.) (SITE-2024-0014)



PLAN SNAPSHOT REPORT SITE-2024-0014 FOR CITY OF DOVER, N.H.

Plan Type: Site Plan - Major	Project:	App Date: 10/16/2024
Work Class: Alteration / Addition	District: None	Exp Date: 12/20/2024
Status: In Review	Square Feet: 0.00	Completed: NOT COMPLETED
Valuation: \$0.00	Assigned To: Blonigen, Rachel	Approval Expire Date:

Description: Construction of a 22 space porous pavement parking lot with 16' drive lane at rear of site in location where 9-10' drive lane and 4 parking spaces currently exist.

Parcel: 01042-000000	Main	Address: 3 Green St Dover, 03820	Zone: CBD-G(Central Business District - General)
		3 Green Street Dover, NH 03820	Main

Owner
Christopher Allen
62 WHITTIER ST
DOVER, 03820
Business: (603) 826-6424

Applicant
Berry Surveying & Engineering
335 Second Crown Point Road
Barrington, NH 03825
Business: (603) 332-2863
Mobile: (603) 781-3403

Landscape Architect
Terrain Planning & Design, LLC
Business: (603) 491-2322

Engineer
Kenneth Berry
Home: (603) 332-2863
Business: (603) 332-2863
Mobile: (603) 332-2863

Wetlands Scientist
John Hayes III
Home: (603) 205-4396
Business: (603) 205-4396
Mobile: (603) 205-4396

Project Manager
Berry Surveying & Engineering
335 Second Crown Point Road
Barrington, NH 03825
Business: (603) 332-2863
Mobile: (603) 781-3403

Surveyor
Kenneth Berry
Home: (603) 332-2863
Business: (603) 332-2863
Mobile: (603) 332-2863

Plan Custom Fields

Total	0	Total2	0	Total3	0
Total4	0	Total5	0	Total6	0
Total7	0	Total8	0	Total9	0
Street Classification Type	Municipal	Net Change in # Parking Spaces (+/-)	18	Water Service	Municipal
Recording Number	S.C.R.D. Plan #19-46	Sewer Service	Municipal	Total Acres (GIS)	1.4
Deed Book		Total SQFT	60984	Deed Page	
Deed Date	0	Proposed Property Use	Construction of a 22 space porous pavement parking lot with 16' drive lane at rear of site in location where 9-10' drive lane and 4 parking spaces currently exist. Construction is to support the under served parking demands for the 84 unit building known as Waldron Towers.	Area of Parcel to be Developed (SQFT)	14215
Number of Parking Spaces Existing	43	Number of Parking Spaces Proposed	61	Distance to City Water	0
Distance to City Sewer	0	Type of Building to be Built	No new building construction proposed.	Estimated Construction Value	60000.00
Refuse Removal	Private	Is there an existing Conservation Easement?	No	Existing Conservation Easement Details	
TotalImpactFeeSDTOD	0.00	TotalImpactFeeTHTOD	0.00	TotalImpactFee23FTOD	0.00
TotalImpactFeeA4TOD	0.00	TotalImpactFeeMHTOD	0.00	TotalImpactFeeADUTO D	0.00
TotalImpactFeeAONRT	0.00	OD		TotalImpactFeeAR55TOD	0.00

PLAN SNAPSHOT REPORT (SITE-2024-0014)

D	TotalImpactFeeAR62T0.00 D	Sub Total Residential 0.00
TotalImpactFeeRIRCT0.00 D	TotalImpactFeeOCSTO0.00 D	TotalImpactFeeITWCT0.00 D
TotalImpactFeeNHALT0.00 D	TotalImpactFeeOIUTOD0.00	TotalImpactFeeAFAOT 0.00 OD
Sub Total 0.00 Non-Residential	Total of Impact Fees to be Assessed 0.00	

Attachment File Name	Added On	Added By	Attachment Group	Notes
Signature_Chris_Berry_10/16/2024.jpg	10/16/2024 11:00	Berry, Chris		Uploaded via CSS

Invoice No.	Fee	Fee Amount	Amount Paid
INV-00009659	Planning General Application Fee	\$200.00	\$0.00
Total for Invoice INV-00009659		\$200.00	\$0.00
Grand Total for Plan		\$200.00	\$0.00

Workflow Step / Action Name	Action Type	Start Date	End Date
Review v.1		10/17/2024 16:03	
Confirm application complete v.1	Generic Action		10/17/2024 16:03
Technical Review Committee Meeting Agenda v.1	Task	10/17/2024 16:03	
Land Use Plan Technical Review v.1	Receive Submittal		
Technical Review Committee Meeting v.1	Hold Meeting		
Planning Board v.1			
Planning Board Agenda v.1	Task		
Invoice for Notices v.1	Task		
Send Notices v.1	Task		
Planner Creates Staff Recommendations v.1	Plan Activity		
Distribute Planning Board Materials v.1	Task		
Planning Board Hearing v.1	Hold Hearing		
Planning Board Decision v.1	Plan Activity		
NOD Sent to Applicant v.1	Create Report		
Final Plan v.1			
Land Use Plan Stamped and Signed v.1	Generic Action		
Recording v.1	Task		
Document Archival v.1	Generic Action		
Internal Notification of Plan Completion v.1	Generic Action		
Building Official Notifies Address v.1	Generic Action		
Pre-Con Meeting v.1	Hold Meeting		
Create/Link to Records v.1			
Create / Link to Permit - Building Major v.1	Create Sub Permit		
Create / Link to Permit - Site Work, Construction v.1	Create Sub Permit		



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: Dover Housing Authority, Christopher Allen Telephone # 603-822-6424

Address of Applicant: 62 Whittier Street, Dover, NH 03820

E-Mail Address: CAllen@DoverHousingAuthority.org

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

Address of Property Owner: _____

PROPERTY INFORMATION

Address of Property: 3 Green Street / Waldron Towers

Assessor's Map # 1 Lot(s) # 42

Zoning District(s) CBD General Subdistrict Overlay District(s) Conservation District, Wetlands Overlay District

Size of Parcel: 79,777 +/- sq. ft. 1.83 +/- ac. See Condemnation Plan on Record at the City of Dover
Property Deed: Book _____ Page: _____

Existing Use of Property: 84 1BR Residential Units

SITE PLAN INFORMATION

Describe Proposed Use: 22 prop. parking space expansion at rear of structure. No new units proposed.

Area of Parcel to be Developed: 14,215 Sq. Ft. sq. ft.

If Multi-family Residential: Number of Units 84 ex & Buildings Proposed 1 ex

If lodging: Number of Units _____ & number of Buildings _____

Number of Parking Spaces: Existing 43 Proposed 61 Total, 22 new, 4 ex removed

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

Number of Employees Total: _____ In Maximum Shift: _____

Disposition of Parcel:

Building Setbacks:

Building Footprint 12,588 SF sq. ft.

Front Yard 26.3' +/- 5' ft.

Total Building Area +/- 69, 478 SF per GIS sq. ft.

Rear Yard 10 ft.

Paved Area 31,431 total site sq. ft.

Side Yard: Right _____ ft. Left _____ ft.

0' - 24' Lt & Rt.

City Water? ☒ Yes ☐ No How far is city water from the property? _____

City Sewer? ☒ Yes ☐ No How far is city sewer from the property? _____

TRANSFER OF DEVELOPMENT RIGHTS INFORMATION

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

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

Relief sought (Check All That Apply):

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

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

N/A

BUILDING INFORMATION

Type of Building to be Built: N/A

Height of Building: N/A Finished Floor Elevation: N/A

Number of Seats (where applicable) N/A

Estimated value of construction: \$60,000 Refuse removal: Public/Private (circle one)

WAIVER REQUESTS

Site Review Regulations section(s) to be waived: _____

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

Please find attached narrative.

1) Site Specific Soils Map: 153-14(A)(3)(F)(2)(3)

2) Parking Calculations: 153-14(D)(3)(A) EV Requirements

3) Interior Landscaping: 153-14(G)(2)(A)

4) Perimeter Landscaping: 153-14(G)(3)(A)

SURVEYOR INFORMATION

Name of Surveyor and Company (Licensed in N.H.) Kenneth A. Berry - Berry Surveying & Engineering
Address 335 Second Crown Point Road, Barrington, NH 03825 Telephone #: 603-332-2863
Professional License #: LLS 805 E-mail address: K.berry@berrysurveying.com
Crberry@metrocast.net (PM)

ENGINEER INFORMATION

Name of Engineer and Company (Licensed in N.H.) Kenneth A. Berry - Berry Surveying & Engineering
Address 335 Second Crown Point Road, Barrington, NH 03825 Telephone #: 603-332-2863
Professional License #: PE 14243 E-mail address: K.berry@berrysurveying.com
Crberry@metrocast.net (PM)

ARCHITECT INFORMATION

Name of Architect and Company (Licensed in N.H.) _____
Address _____ Telephone #: _____
Professional License #: _____ E-mail address: _____

LANDSCAPE ARCHITECT INFORMATION

Name of Landscape Architect and Company (Licensed in N.H.) Terrain Planning & Design LLC, Eric Buck
Address 311 Kast Hill Road, Hopkinton, NH 03229 Telephone #: 603-491-2322
Professional License #: 78 E-mail address: _____

SOIL SCIENTIST INFORMATION

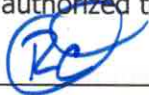
Name of Soil Scientist and Company (Licensed in N.H.) _____
Address _____ Telephone #: _____
Professional License #: _____ E-mail address: _____

CONSERVATION EASEMENT HOLDER

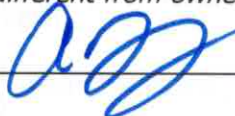
Name of Easement Holder: _____ Telephone # _____
Address Easement Holder: _____

SIGNATURES

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

Signature of Property Owner:  Date: 10-16-24

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

Signature of Agent:  Date: 10-16-24

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: 10-16-24

AUTHORIZATION TO COMPLETE THE PROJECT ON SUBJECT PROPERTY

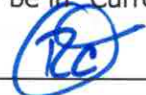
I, and my successors, hereby the City of Dover or its assigns to enter my property for the purpose of completing the site work as required by the approved plan should the letter or credit or other surety be called. It is understood that these individuals must use all reasonable care, courtesy, and diligence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

Signature of Property Owner:  Date: 10-16-24

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: 10-16-24

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

Applicant (if different from owner):

APPLICANT NAME	APPLICANT COMPANY	MAILING ADDRESS

Surveyor and/or Engineer/Professional Agent:

NAME	COMPANY	MAILING ADDRESS

Conservation Easement Holder:

TAX MAP	LOT #	NAME OF EASEMENT HOLDER	MAILING ADDRESS



City of Dover, New Hampshire **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: Dover Housing Authority File Number:

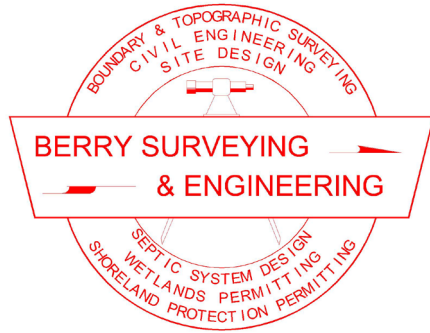
PROJECT TITLE: Parking Expansion for Dover Housing Authority

PROPERTY LOCATION: 3 Green Street Tax Map: 1 Lot: 42

	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)	N/A	
6. Waiver requests to the Site Plan Review Regulations, with written justification	X	
7. Conditional Use Permit applications	X	
8. A colored rendering of the streetscape that will be created along the existing public right-of-way	N/A	
9. A colored architectural plan showing all sides of buildings	N/A	
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	N/A	
Existing and proposed water lines and fire hydrants, including materials and capacity needed	N/A - Ex shown	
Location and materials of sanitary sewage facilities within project site and projected additional peak hour sewer load	N/A	
Existing and proposed stormwater lines and facilities	X	
Lighting plan depicting all existing and proposed exterior light fixtures and a lighting level analysis for parking lots	N/A Using Ex lights	
Location of Flood Hazard Zone	X	
Location of all bodies of water and watercourses	X	
Location of wetlands and buffers	X	
Neighborhood plan with aerial underlay showing how project relates to abutting uses 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	N/A	
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	N/A	
Erosion and Sedimentation Control Plan	X	
Landscape Operation and Maintenance Plan	X	
Proposed restrictive covenants or homeowners association documents	N/A	
Dates and permit numbers of all required state and federal permits	N/A	
If wetland buffer, indicate placards locations, as applicable	X	
Depict test boring locations, groundwater elevations and soil profiles and/or soils types call-outs	Waiver requested to SSSM	
Location of proposed drive-in facilities	N/A	
Provide additional exhibits/technical data determined appropriate by the Planning Board or its staff as required	Will provide upon request	

REVIEWED BY: _____ DATE _____ TRC DATE _____



BERRY SURVEYING & ENGINEERING

335 Second Crown Point Road

Barrington, NH 03825

Phone: (603) 332-2863

Fax: (603) 335-4623

www.BerrySurveying.Com

crberry@metrocast.net

October 14, 2024

City of Dover Planning Board

Attention: Donna Benton, AICP, Director of Planning and Community Development

288 Central Ave

Dover, NH 03820

Re: Project Narrative
Residential Site Plan – Parking Lot Expansion
Dover Housing Authority
3 Green Street / Waldron Towers
Tax Map 1, Lot 42

Dear Mrs. Benton,

On behalf of our client, the Dover Housing Authority, Berry Surveying & Engineering (BS&E) is submitting a proposed Site Plan for a 22-space parking lot expansion at 3 Green Street, Tax Map 1, Lot 42.

Background and General Narrative:

Dover Housing Authority owns the parcel known as 3 Green Street, containing 1.83 Ac. +/- along with Waldron Towers; housing 84 one-bedroom units built in 1975, according to Dover GIS. The current configuration of the subject parcel meets and bounds is derived from S.C.R.D. Plan #19-46, dated December, 1978 from the downtown Dover Urban Renewal Project. This plan, also on file with the City of Dover, was called a "Disposition Plan of Land", where excess land from the subject parcel and other abutting properties along the Cochecho River was taken and is believed to be owned by the City of Dover. It is of note that the applicant will be required to have a lease agreement with the City of Dover for disturbance over the rear property line. See Existing Conditions Plan, sheet #2, for further information.

Berry Surveying & Engineering has conducted an on-site survey of the parcel which includes a topographic analysis and wetlands analysis. Wetlands were delineated along the Cochecho River by John P. Hayes, III CWS, including location of the edge of Cochecho River. The site is subject to the 100' Conservation District and the Wetlands Protection District. This portion of the Cochecho River is subject to the NHDES Urban Exemption Zone, not requiring a NHDES Shoreland Permit for Activity. Waldron Towers is located in the center of the subject parcel, with Green Street providing front façade

access and to parking lots on the southwestern and eastern portion of the parcels. A 9-10' wide circulation lane loops the building, providing access to four additional spaces at the rear of the site. It is important to note the entire rear building circulation lane is entirely within the Conservation District and partially within the 50' Wetland Buffer.

Topographic conditions on site are variable across the site, generally sloping from Green Street to the Cochecho River. The site consists of Rumney Fine Sandy Loam and Buxton Silt Loam, according to NRCS Websoil Survey. The site is located within the Central Business District – General Subdistrict, subject to a parking standard of 1.4 spaces per unit + 0.5 guest spaces per unit. Utilizing this standard, the 84-unit building would require 160 parking spaces. Currently, a total of 43 parking spaces are on site, or a ratio of 0.51 parking spaces per unit.

The Proposal:

The proposal is for the Dover Housing Authority to construct a twenty-two (22), 60-degree space, porous pavement parking lot and 16' one-way conventional pavement drive lane at the rear of the site. In review of the Existing Conditions Plan, the location selected for the parking is the only remaining viable area on site, with the number of proposed spaces being what can physically fit in the available area. The proposed construction will result in the loss of the four parking spaces at the rear of the site, for a net gain of eighteen (18) parking spaces. This would then provide a ratio of 0.73 parking spaces per unit. While the lack of available space on the subject parcel to meet the full requirement of 160 spaces, this construction will improve parking opportunities for residents on site. The applicant is proposing two bike racks, but has requested a waiver to the EV requirement, as this would take parking spaces in a situation where existing parking is substantially underserved. See Waiver Request for full description and justification.

Drainage:

The increase in impervious surface will be mitigated by the installation of an underdrained porous pavement system. The porous pavement will provide treatment and nutrient removal for the spaces and the 16' conventional pavement drive lane. While there is a net increase in impervious surface from the drive lane expansion from 9-10' to 16', there will now be a level of treatment and nutrient removal provided before runoff reaches the Cochecho River that does not occur in the existing condition. An underdrain along the low side of the porous pavement is discharged at a point near the Cochecho River, which will require a lease agreement with the City of Dover.



Site Operation/Landscaping:

Snow storage is shown along the edge of porous pavement, with signage proposed indicating the deicing restrictions for the porous pavement. An alternating pattern of Red Maples and Douglas Firs are proposed at 35' on center along the outside edge of parking. Minimal tree/invasive species removal is proposed for the drainage discharge and to allow for planting of the proposed trees (see CUP application for pictures of existing vegetation). A Lease Agreement with Dover will be required for this activity. A waiver has been requested for interior landscaping standards and perimeter landscaping standards, see waiver requests for full justifications. The existing lighting along the building is proposed to remain with no additional proposed. Two benches with refuse barrels and two bike racks are proposed along the reconstructed drive lane. There are no changes to existing units or utilities with this proposal. Previously, two accessible spaces were demarcated in the eastern parking lot. Recently, the parking lots had been restriped and the two accessible spaces were not repainted. In this proposal, the two spaces would be redelineated, with a third accessible space added for compliance with ADA requirements.

Traffic:

There is no change to the number of units with this application, a traffic impact analysis has not been provided.

Waiver Requests:

Several Waiver Requests are included within the application. Waivers are numbered 1-4 to correspond with the numbering on the Site Plan table. Justification for each waiver request is included within the Site Plan package. Waiver Requests are as follows:

- (1) Site Specific Soils Map: 153-14(A)(3)(f)(2)(C)
- (2) Parking Calculations 153-14(D)(3)(A) EV Requirements
- (3) Interior Landscaping: 153-14(G)(2)(A)
- (4) Perimeter Landscaping: 153-14(G)(3)(A)

Overall, project requires the following approvals:

- Site Plan Approval
- Waiver Request Approvals
- Environmental CUP for disturbance within the Conservation District
- Environmental CUP for disturbance within the 50' Wetland Buffer



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

Project Narrative –Dover Housing Authority – Waldron Towers
3 Green Street, Dover, NH – Parking Lot Expansion

October 14, 2024
Page 4 of 4

We look forward to working with the City of Dover on this application.

Respectfully Submitted,
BERRY SURVEYING & ENGINEERING



Kevin R. Poulin, PE
Project Engineer

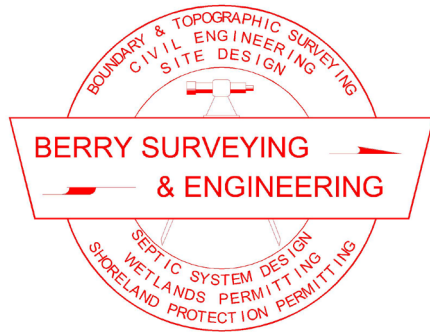


Christopher R. Berry, SIT
Principal, President



BERRY SURVEYING & ENGINEERING

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



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October 14, 2024

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

Re: Waiver Requests
Site Plan Parking Lot Expansion
Dover Housing Authority
3 Green Street / Waldron Towers
Tax Map 1, Lot 42

Chairperson & Members of the Dover Planning Board:

In accordance with Site Plan Review Regulations, the following five waivers, numbered corresponding with the Site Plan, are hereby requested:

1. Identification of Waiver Request: Submission of a Site-Specific Soils Map as part of a site plan application. Chapter 153-14(A)(3)(f)(2)(C)

- Site Plan application without a Site-Specific Soils Map (SSSM).

1a. Explanation:

The site is 1.8 +/- Acres, with disturbance area of 14,215 Sq. Ft., in size and currently is largely either developed or disturbed in some way. The use of the SSSM is for the purposes of analyzing peak rates of runoff from larger project sites. In this instance the Natural Resources Conservation Service (NRCS) soils were used. With the project size being small any potential variance would not appreciably change the results of the analysis.

1b. Waiver Justification:

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

The intent of this regulation is to ensure that proper data is collected in relation to soils so that the project drainage can be designed accordingly. Given the use of the NRCS Web Soil Survey, and the fact that the disturbance is small and urbanized, the variation from pre-development and post-development curve numbers is minor. This regulation

is more relevant to projects that will utilize septic systems or that contain existing natural areas larger in proportion to the project size.

1c. Strict conformity to the regulations would pose an unnecessary hardship to the applicant.

Strict conformity to this regulation will require the applicant to involve a NH certified soils scientist, who will have to go on site and delineate the soils type on a site with uniform soils. Additionally, the site is mostly disturbed, so any soil survey conducted would be similar to the NRCS Soils Map with no resulting change.

2. Identification of Waiver Request: Requirement of 5% parking spaces to be EVSE ready 153-14(D)(3)(A)

- Proposing no EVSE spaces along the proposed parking lot.

2a. Explanation:

The applicant is proposing a 22 new parking spaces without providing EVSE spaces. The current parking situation is substantially underserved, with the vast majority of tenants driving gas powered vehicles.

2b. Waiver Justification:

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

The intent of this regulation is to prepare sites for future vehicle uses/needs. Utilizing the Dover parking requirements of 1.4 spaces per unit + 0.5 guest spaces per unit, the 84-unit building would require 160 parking spaces. With the 43 existing parking spaces, this results in a ratio of 0.51 spaces per unit. In a situation where the existing parking is substantially underserved, the more immediate future need is for additional vehicle parking for residents. Granting this waiver would be in line with the future vehicle needs for the site, which is to provide as many additional unrestricted spaces as possible.

2c. Strict conformity to the regulations would pose an unnecessary hardship to the applicant.

Requiring the applicant to provide 5% EVSE spaces would pose an unnecessary hardship on the applicant. Where current parking is provided at a ratio of 0.51 spaces per unit, every additional parking space is important to be available for use. A calculation of 5% of the 22 new parking spaces would result in two required EVSE

spaces. It is more advantageous to the client and to residents that as many parking spaces as possible are available and not restricted to certain uses.

3. Identification of Waiver Request: Interior Landscaping of 5% for a parking lot of 22 spaces per 153-14(G)(2)(A)

- Having interior Landscaping percentage of 0% due to site constraints and to meet the maximum parking space value.

3a. Explanation:

The applicant is proposing 0% interior landscaping in order to provide the maximum allowable parking space value to support underserved parking for residences. Perimeter landscaping is proposed in the parking lot.

3b. Waiver Justification:

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

Granting the waiver will properly carry out the purpose and intent of the regulations. The proposed 22 space parking lot is only 2 parking spaces over the threshold to not require any interior landscaping (20 spaces or less). The intent of these regulations is to provide visually appealing parking lots with vehicle protection. All impervious surface proposed with the parking lot is necessary for either parking or vehicle circulation. Given the size of the subject parcel, viable locations for internal landscaping are non-existent. The parking lot will be subject to low vehicles speeds due to the geometry and will be supplemented by provided exterior landscaping.

3c. Strict conformity to the regulations would pose an unnecessary hardship to the applicant.

Requiring the applicant to provide 5% internal parking lot landscaping would pose an unnecessary hardship on the applicant. Including the drive lane of the parking lot, the proposed area is 9,747 Sq. Ft.. An internal landscaping of 5% would require 487 Sq. Ft.. With each parking space being 10 ft X 21 ft (210 Sq. Ft.), this would require a reduction of three parking spaces to satisfy the regulation. The parking lot would then become a 19-space parking lot, not requiring the 5% interior parking lot landscaping standard. In a situation where the existing parking is substantially underserved, each parking space added is especially important.

4. Identification of Waiver Request: Perimeter Landscaping with trees 35 feet on center with shrubs 5 feet on center between per 153-14(G)(3)(A).

- To provide perimeter parking lot landscaping as shown on the Landscaping Plan due to snow storage considerations.

4a. Explanation:

The applicant is proposing perimeter parking lot landscaping with a mix of Red Maples and Douglas Firs, 35' on center per regulation, but without the shrubs 5' on center due to snow storage considerations.

4b. Waiver Justification:

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

Granting the waiver will properly carry out the purpose and intent of the regulations. The applicant has attempted to balance the need for parking with snow storage and perimeter landscaping. Snow storage is not proposed on the building side of the drive lane due to proximity to the building and first level patios. With Dover Site Review regulations not allowing snow storage on living landscaping items, this limits the ability to provide snow storage and landscaping per the regulation. The area shown for snow storage represents slightly greater than a 6:1 ratio, which is commonly used for Site Plans in Dover.

4c. Strict conformity to the regulations would pose an unnecessary hardship to the applicant.

Requiring the applicant to provide shrubs 5' on center in between the proposed trees would pose an unnecessary hardship to the applicant. With limited snow storage capability within the parking area, locations that would support shrubs 5' on center are necessary to use for snow storage. If the waiver was not granted, it would greatly reduce the snow storage capability on site and require the applicant to remove snow to an offsite location, when the snow storage requirement can be met on the subject parcel. The proposed trees on site represents an upgrade of the current trees in the project vicinity.

Site Plan Waiver Requests – 3 Green Street / Waldron Towers
Dover Housing Authority

October 14, 2024

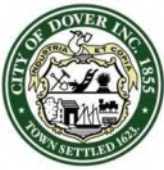
Respectfully Submitted,
BERRY SURVEYING & ENGINEERING



Kevin R. Poulin, PE
Project Engineer



Christopher R. Berry
Principal, President



City of Dover, New Hampshire CONDITIONAL USE PERMIT APPLICATION

[Revision Date: October 19, 2020]

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

APPLICANT AND OWNER INFORMATION

Name of Applicant: Dover Housing Authority, Christopher Allen Telephone # 603-822-6424

Address of Applicant: 62 Whittier Street, Dover, NH 03820

E-Mail Address: Callen@DoverHousingAuthority.org

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

Address of Property Owner: _____

PROPERTY INFORMATION

Assessor's Map # 1 Lot(s) # 42

Address of Property: 3 Green Street, Dover, NH 03820

Zoning District(s) CBD-General Sub District Overlay District(s) Wetlands Overlay
Conservation District

Existing Use of Property: Waldron Towers 84 Unit Residential Building

CONDITIONAL USE PERMIT INFORMATION

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

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

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

Disturbance within the 50' Wetland Buffer. Please find attached narrative.

List Any Associated State or Federal Permits That Have Been or Will Be Applied For and Indicate Their Status: _____

No State or Federal Permits required for the project. Project is within NHDES Shoreland Urban Exemption Zone.

Name of Professional That Prepared Plans: Kenneth A. Berry, PE, LLS

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

Professional License #: PE 14243, LLS 805 E-mail address: K.berry@berrysurveying.com
Crberry@metrocast.net (PM)

SIGNATURES

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

Signature of Property Owner:  Date: 10-16-24

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

Signature of Agent:  Date: 10-16-24

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: 10-16-24

CITY OF DOVER CONDITIONAL USE 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	<u>MAILING ADDRESS</u>

Applicant (if different from owner):

APPLICANT NAME	APPLICANT COMPANY	<u>MAILING ADDRESS</u>

Surveyor and/or Engineer/Professional Agent:

NAME	COMPANY	<u>MAILING ADDRESS</u>

Conservation Easement Holder:

TAX MAP	LOT #	NAME OF EASEMENT HOLDER	<u>MAILING ADDRESS</u>

PLANNING BOARD FEE SCHEDULE/INVOICE

(Revised July 24, 2023)

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

A. Plan Review Fees

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

- ☐ SUBDIVISION Application fee \$200.00 + \$150.00 x # _____ new lots created = \$ _____
- ☐ LOT LINE ADJUSTMENT Application fee \$200.00 + \$100.00 X # _____ of lots involved = \$ _____
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- ☐ SITE REVIEW – RESIDENTIAL Application fee \$200.00+ \$100.00 x # _____ per dwelling unit = \$ _____
- ☐ SITE REVIEW – NON-RESIDENTIAL Application fee \$200.00 + (not to exceed \$10,000)
 - ☐ New construction \$.15 sq. ft. x # _____ sq. ft. = \$ _____
 - ☐ Additions (new floor space) \$.10 per sq. ft. x # _____ sq. ft. = \$ _____
- ☐ MOTEL/HOTEL \$35.00 x # _____ per lodging unit = \$ _____
- ☐ CHANGE OF USE Application fee \$200.00 + (not to exceed \$5,000)
 - ☐ Existing floor spaces \$.10 per sq. ft. x # _____ sq. ft. = \$ _____
- ☐ CONDITIONAL USE PERMIT Application fee \$200.00 x # _____ per Application = \$ _____
- ☐ GRAVEL PIT/ EXCAVATIONS
 - ☐ Application fee \$50.00 = \$ _____
 - ☐ Permit fee \$75.00 = \$ _____
- ☐ EXTENSIONS/AMENDMENTS/WAIVERS FOR AN APPROVED PLAN Application fee \$200.00 = \$ _____
- ☐ REQUEST FOR REZONING Application fee \$200.00 = \$ _____
- ☐ DRIVEWAY WAIVER Application fee \$200.00 = \$ _____
- ☐ **TOTAL IMPERVIOUS PAVED AREA** (for new development, roadways or additions to existing parking lots, (not to exceed \$10,000)) Application fee of \$200.00 is N/A if it is part of a Site Review or Subdivision Plan. \$200.00 + \$.07 per sq. ft. x # _____ sq. ft. = \$ _____

SUBTOTAL PLAN REVIEW FEE = \$ _____

AND

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

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

C. Foster's newspaper public notice fee \$120.00 x # _____ applications = \$ _____

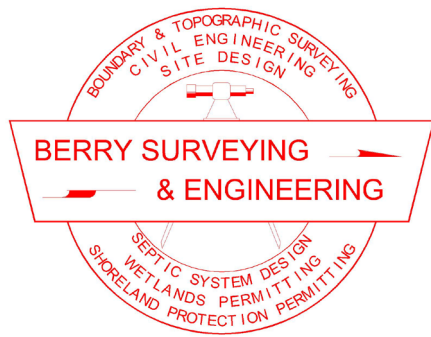
SUBTOTAL = \$ _____

TOTAL INVOICE AMOUNT = \$ _____

PLAN REVIEW FEE COLLECTED/PAID = \$ _____

BALANCE DUE = \$ _____

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



BERRY SURVEYING & ENGINEERING

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Phone: (603) 332-2863
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www.BerrySurveying.Com

City of Dover Planning Board
288 Central Ave
Dover, NH 03820

October 14, 2024

RE: Dover Housing Authority/Waldron Towers
3 Green Street
Parking Lot Expansion
Wetland Buffer Impact Conditional Use Permit Request
Tax Map 1, Lot 42

Mr. Hunt and the Dover Conservation Commission

Berry Surveying & Engineering (BS&E,) on behalf of Dover Housing Authority, respectfully requests the City of Dover Conservation Commission to accept the following Conditional Use Permits:

- CUP Request #1: Disturbance within the 50' wetland buffer

1. *Identification of Conditional Use Permits*

- Disturbance within the 50' wetland buffer (1 location, permanent & temporary).

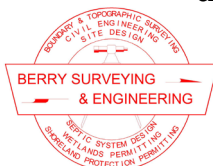
Regulations in the zoning ordinance do not allow for earth disturbance within the 50' wetland buffer. However, Section 170-27.1 (F) states that a conditional use permit may be granted by the planning board, given the following standards, as shown below, are met. Below we show the project's compliance with the standards required to grant a Conditional Use Permit, and we provide justification for its approval. Temporary wetland buffer disturbance occurs for the proposed setup of erosion & sediment control devices. Temporary impact is shown approximately six feet beyond the limit of the permanent impact for the installation of double perimeter control (three feet spacing) and an orange construction fence (three feet spacing) within 50 feet of a wetland.

2. *Compliance with the following standards*

- a) Practicable Alternative: There is no practicable alternative that would have a less adverse impact on the area.
 - **There are no alternative locations within the subject parcel to place the additional parking spaces. Waldron Towers is an 84-unit residential building with on 43 parking spaces provided in the Existing Condition. Two-way parking lots are located in the**

eastern and south western corners of the parcel, with a 9-10' drive lane and 4 parking spaces located at the rear of the site connecting the lots. There is no opportunity for parking at the front of the site due to the building proximity to Green Street. A majority of the disturbance area is currently grassed lawn that is frequently improperly used for parking by residents. Utilizing the parking standards in the Dover Site Review Regulations, the building would require a total of 160 parking spaces. The existing building is substantially under served for resident parking. With parking demand far outweighing the available spaces on the parcel, there is no alternative location on site for additional parking spaces.

- b) Avoidance: The potential impacts have been avoided to the maximum extent practicable. The APPLICANT will demonstrate by plan and example that the proposed construction represents the least impacting alternative.
- o **With respect to avoidance of disturbance, the applicant has selected the alternative with the least disturbance. The applicant has selected 60-degree parking, which requires a 16' wide one-way traveled lane. If the applicant had selected 75 degree or 90-degree parking, a larger traveled lane width of either 20 feet or 22 feet, respectively. The grading design intent is to tie the edge of porous pavement into the existing grade, where possible, to avoid fill slopes within the wetland buffer. The combination of these factors and the physical lack of room for additional parking spaces in other portions of the site, the applicant feels the impact has been avoided to the maximum extent practicable.**
- c) Minimization: Any unavoidable impacts have been minimized. No reasonable Alternative to the proposed construction exists which does not impact a wetland or which has less detrimental impact on a wetland. Design, construction and maintenance methods will be prepared by a registered engineer to minimize detrimental impacts to the wetlands and will include restoration of the site as nearly as possible to its original grade.
- o **There have been no unavoidable impacts proposed within the design. The outlet pipe disturbance further into the wetland**



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

buffer is necessary in order to daylight/discharge the porous pavement system. Tree clearing for the limit of disturbance is necessary to allow for the placement of proper erosion & sediment control measures, allowing for snow storage to provide adequate ratio, and allowing for the planting of an alternating Red Maple and Douglas Fir pattern along the parking array. The tree planting would represent an improvement in vegetation from the Existing Condition.

- d) Mitigation: If the APPLICANT is required by State rules to prepare a compensatory mitigation plan, the APPLICANT shall provide the Conservation Commission and PLANNING BOARD with one copy each of said plan for their review.
- o **Upon completion of the construction the disturbed areas will be stabilized with conservation seed mix. As a wetland permit will be not need to be filed with NHDES, no mitigation will be required through NHDES. Red Maples and Douglas Fir are proposed along the parking array.**
- e) Approval for the wetlands impact has been received from the NHDES Wetlands Bureau pursuant to Section G (3), below.
- o **This standard is not applicable for wetland buffer disturbance.**

3. *Justification for approval of Conditional Use Permits*

The total buffer disturbance for the project is 10,245 SF (7,982 SF permanent & 2,263 SF temporary). A portion of the disturbance is within currently construction areas. The applicant has selected a parking array with the least amount of drive lane impervious surface as would be required via Site Review Regulations to provide additional parking to a site that is substantially underserved for on-site parking. No additional disturbance is proposed other than what is required for viable parking operation. While there is a net increase in impervious surface within the 50' wetland buffer from the 16' conventional pavement drive lane, there is now a level of treatment and nutrient reduction from the paved surface before runoff enters the Cochecho River that does not occur in the existing condition.



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We look forward to working with the City of Dover on this application.

Respectfully Submitted,
BERRY SURVEYING & ENGINEERING



Kevin R. Poulin, PE
Project Engineer



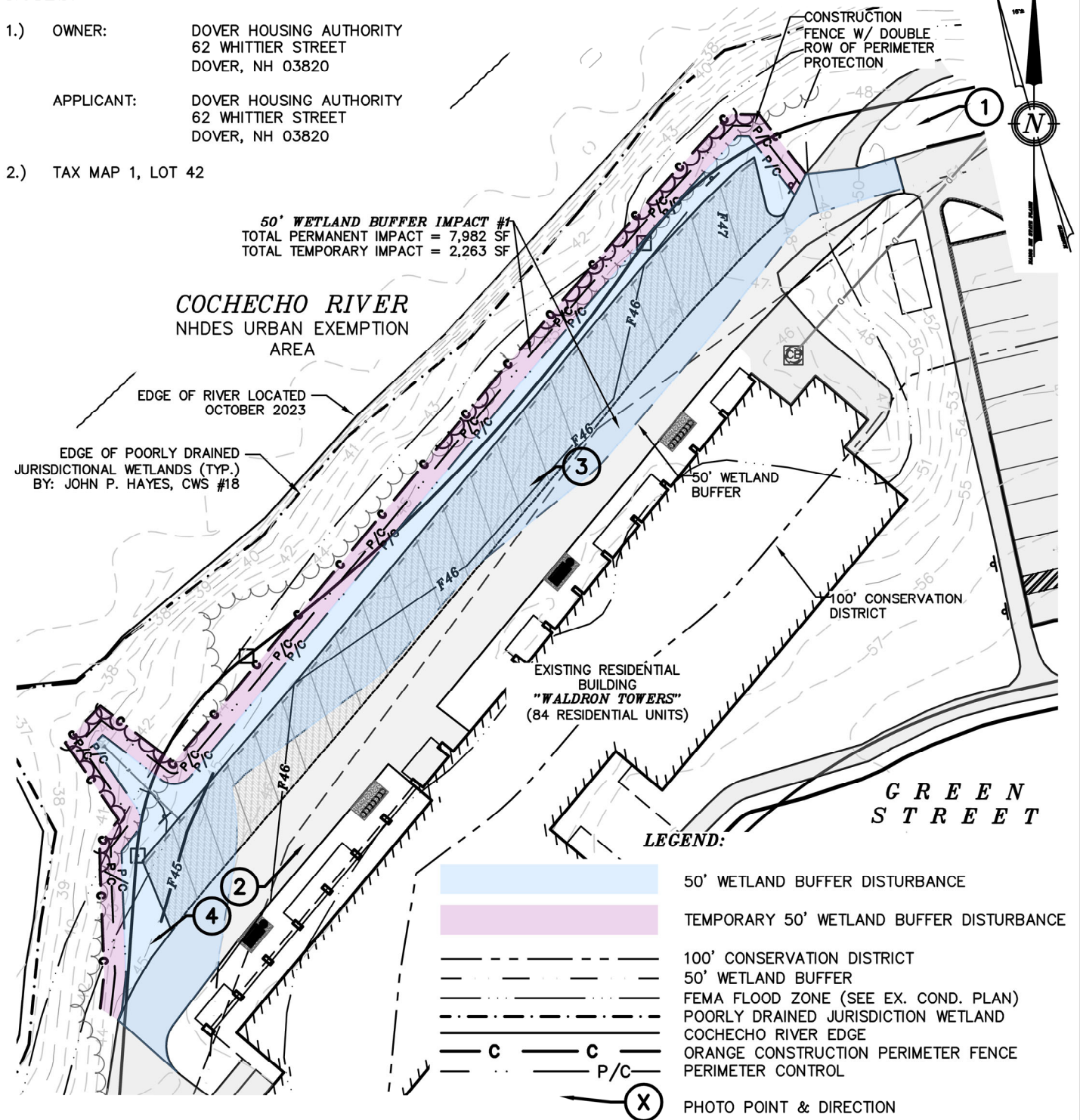
Christopher R. Berry, SIT
Principal, President



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NOTES:

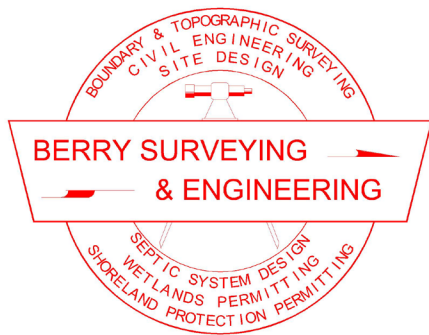
- 1.) OWNER: DOVER HOUSING AUTHORITY
62 WHITTIER STREET
DOVER, NH 03820
- APPLICANT: DOVER HOUSING AUTHORITY
62 WHITTIER STREET
DOVER, NH 03820
- 2.) TAX MAP 1, LOT 42



CONDITIONAL USE IMPACT AREA
50' WETLAND BUFFER
DOVER HOUSING AUTHORITY
3 GREEN STREET
/ WALDRON TOWERS
DOVER, N.H.
TAX MAP 1, LOT 42

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT RD.
BARRINGTON, N.H. 332-2863

SCALE : 1 IN. EQUALS 40 FT.
DATE : OCTOBER 15, 2024
FILE NO. : DB 2023-008



BERRY SURVEYING & ENGINEERING

335 Second Crown Point Road

Barrington, NH 03825

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3 Green St, Dover

Tax Map 1, Lot 42



1



2

*3 Green St, Dover
Tax Map 1, Lot 42*



3



4



BERRY SURVEYING & ENGINEERING

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City of Dover, New Hampshire CONDITIONAL USE PERMIT APPLICATION

[Revision Date: October 19, 2020]

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

APPLICANT AND OWNER INFORMATION

Name of Applicant: Dover Housing Authority, Christopher Allen Telephone # 603-822-6424

Address of Applicant: 62 Whittier Street, Dover, NH 03820

E-Mail Address: CAllen@DoverHousingAuthority.org

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

Address of Property Owner: _____

PROPERTY INFORMATION

Assessor's Map # 1 Lot(s) # 42

Address of Property: 3 Green Street, Dover, NH 03820

Zoning District(s) CBD-General Sub District Overlay District(s) Wetlands Overlay
Conservation District

Existing Use of Property: Waldron Towers 84 Unit Residential Building

CONDITIONAL USE PERMIT INFORMATION

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

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

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

Disturbance within the 100' Conservation District of the Cochecho River. Please find attached narrative.

List Any Associated State or Federal Permits That Have Been or Will Be Applied For and Indicate Their Status: _____

No State or Federal Permits required for the project. Project is within NHDES Shoreland Urban Exemption Zone.

Name of Professional That Prepared Plans: Kenneth A. Berry, PE, LLS

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

Professional License #: PE 14243, LLS 805 E-mail address: K.berry@berrysurveying.com
Crberry@metrocast.net (PM)

SIGNATURES

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

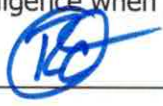
Signature of Property Owner:  Date: 10-16-24

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

Signature of Agent:  Date: 10-16-24

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.

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CITY OF DOVER CONDITIONAL USE LIST OF ABUTTERS

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Owner:

TAX MAP	LOT #	PROPERTY OWNER	MAILING ADDRESS

Applicant (if different from owner):

APPLICANT NAME	APPLICANT COMPANY	MAILING ADDRESS

Surveyor and/or Engineer/Professional Agent:

NAME	COMPANY	MAILING ADDRESS

Conservation Easement Holder:

TAX MAP	LOT #	NAME OF EASEMENT HOLDER	MAILING ADDRESS

PLANNING BOARD FEE SCHEDULE/INVOICE

(Revised July 24, 2023)

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

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- ☐ SITE REVIEW – RESIDENTIAL Application fee \$200.00+ \$100.00 x # _____ per dwelling unit = \$ _____
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SUBTOTAL PLAN REVIEW FEE = \$ _____

AND

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

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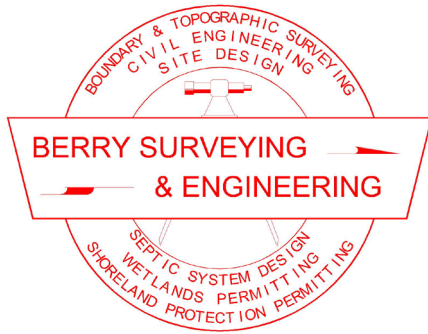
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City of Dover Planning Board
288 Central Ave
Dover, NH 03820

October 14, 2024

RE: Dover Housing Authority/Waldron Towers
3 Green Street
Parking Lot Expansion
100' Conservation District Conditional Use Permit Request
Tax Map 1, Lot 42

Mr. Hunt and the Dover Conservation Commission

Berry Surveying & Engineering (BS&E,) on behalf of Dover Housing Authority, respectfully requests the City of Dover Conservation Commission to accept the following Conditional Use Permits:

- CUP Request #1: Disturbance within the 100' Conservation District.

1. *Identification of Conditional Use Permits*

- Disturbance within the 100' Conservation District of the Cochecho River (1 location, permanent & temporary).

Regulations in the zoning ordinance do not allow for earth disturbance within the Conservation District. However, Section 170-27.C.2 states that a conditional use permit may be granted by the planning board, given the following standards, as shown below, are met. Below we show the project's compliance with the standards required to grant a Conditional Use Permit, and we provide justification for its approval. Temporary wetland buffer disturbance occurs for the proposed setup of erosion & sediment control devices. Temporary impact is shown approximately six feet beyond the limit of the permanent impact for the installation of double perimeter control (three feet spacing) and an orange construction fence (three feet spacing).

2. *Compliance with the following standards*

- a) The applicant shall demonstrate that the proposed use is essential to the productive use of land not in the district; is located and constructed to minimize any detrimental impact of such use upon surface waters or other environmentally sensitive areas, where it is physically impossible to located such use on land not in the district; and economic advantage alone shall not be deemed a sufficient reason for such proposed use.

- **This construction is providing improvements for productive use of the residential building located outside of the district. There are no alternative locations within the subject parcel to place the additional parking spaces. Waldron Towers is an 84-unit residential building with on 43 parking spaces provided in the Existing Condition. Two-way parking lots are located in the eastern and south western corners of the parcel, with a 9-10' drive lane and 4 parking spaces located at the rear of the site connecting the lots. There is no opportunity for parking at the front of the site due to the building proximity to Green Street. A majority of the disturbance area is currently grassed lawn that is frequently improperly used for parking by residents. Utilizing the parking standards in the Dover Site Review Regulations, the building would require a total of 160 parking spaces. The existing building is substantially under served for resident parking. With parking demand far outweighing the available spaces on the parcel, there is no alternative location on site for additional parking spaces. The implementation of porous pavement provides a level of treatment and nutrient removal that does not exist for the existing drive lane runoff directly entering the Cochecho River.**
- b) A soil erosion & sedimentation control plan is submitted and followed to verify the plan avoidance of sediment pollutant runoff to bodies of water. This plan will address the following (if applicable), but should not be limited to:
 - (i) Stabilization of exposed soils and soil stockpiles;
 - (ii) Protection of steep SLOPES from erosion;
 - (iii) Construction site waste management;
 - (iv) Inspection and maintenance of runoff control measures (BMPs);
 - (v) Minimization or land clearing;
 - (vi) Stabilization of drainage ways;
 - (vii) Installation of perimeter controls;
 - (viii) Installation of sediment trapping devices; and
 - (ix) Storm drain inlet protection.
- **Please find the Erosion & Sediment Control Plan provided with the submission providing items and notes as applicable.**



- c) Necessary state and federal approvals have been applied for. Said permits shall be received prior to the issuance of the Conditional use Permit by the Planning and Community Development Department.
- o **There are no necessary state or federal approvals required, as this portion of the Cochecho River is within the NHDES Urban Exemption Zone.**
- d) A written review by the Conservation Commission of the environmental effects of the proposed use upon the area in question has been submitted. The Commission's review shall address the following, but is not limited to:
 - (i) Attempted avoidance of the impact;
 - (ii) Minimization of the impact;
 - (iii) Planned mitigation of the effects of the impact; and
 - (iv) Efficacy of the soil erosion and sedimentation plan.
- o **Upon completion of the construction the disturbed areas will be stabilized with conservation seed mix. The applicant has selected the angle parking option with the narrowest required drive lane of 16', opposed to either 20' or 22' for 75-degree or 90-degree parking, respectively. The installation of a porous pavement system will provide treatment for all proposed paved surfaces. The Erosion & Sediment Control Plan provides double perimeter control at the limit of disturbance, inlet protection for catch basins, and construction entrance/exit for sediment tracking.**

3. *Justification for approval of Conditional Use Permits*

The total Conservation District Disturbance for the project is 14,216 SF (11,953 SF permanent & 2,263 SF temporary). A portion of the disturbance is within currently construction areas. The applicant has selected a parking array with the least amount of drive lane impervious surface as would be required via Site Review Regulations to provide additional parking to a site that is substantially underserved for on-site parking. No additional disturbance is proposed other than what is required for viable parking operation. While there is a net increase in impervious surface within the Conservation District from the 16' conventional pavement drive lane, there is now a level of treatment and nutrient reduction from the paved surface before runoff enters the Cochecho River that does not occur in the existing condition.



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

We look forward to working with the City of Dover on this application.

Respectfully Submitted,
BERRY SURVEYING & ENGINEERING



Kevin R. Poulin, PE
Project Engineer



Christopher R. Berry, SIT
Principal, President

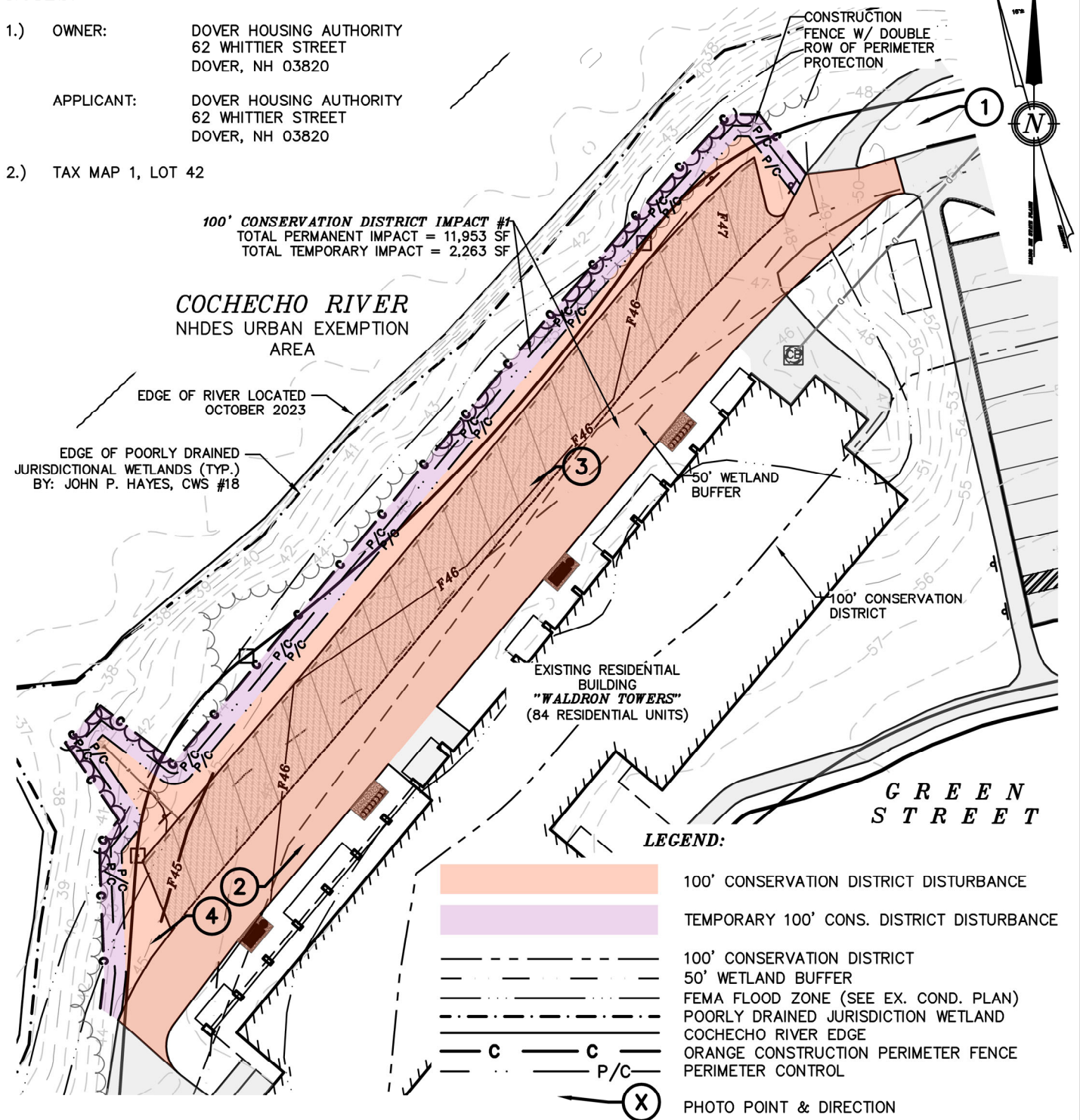


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NOTES:

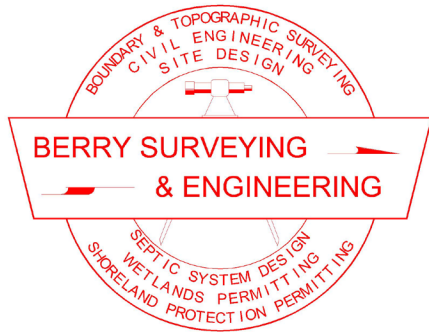
- 1.) OWNER: DOVER HOUSING AUTHORITY
62 WHITTIER STREET
DOVER, NH 03820
- APPLICANT: DOVER HOUSING AUTHORITY
62 WHITTIER STREET
DOVER, NH 03820
- 2.) TAX MAP 1, LOT 42



CONDITIONAL USE IMPACT AREA
100' CONSERVATION DISTRICT
DOVER HOUSING AUTHORITY
3 GREEN STREET
/ WALDRON TOWERS
DOVER, N.H.
TAX MAP 1, LOT 42

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT RD.
BARRINGTON, N.H. 332-2863

SCALE : 1 IN. EQUALS 40 FT.
DATE : OCTOBER 14, 2024
FILE NO. : DB 2023-008



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335 Second Crown Point Road

Barrington, NH 03825

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3 Green St, Dover

Tax Map 1, Lot 42



1



2

*3 Green St, Dover
Tax Map 1, Lot 42*



3



4

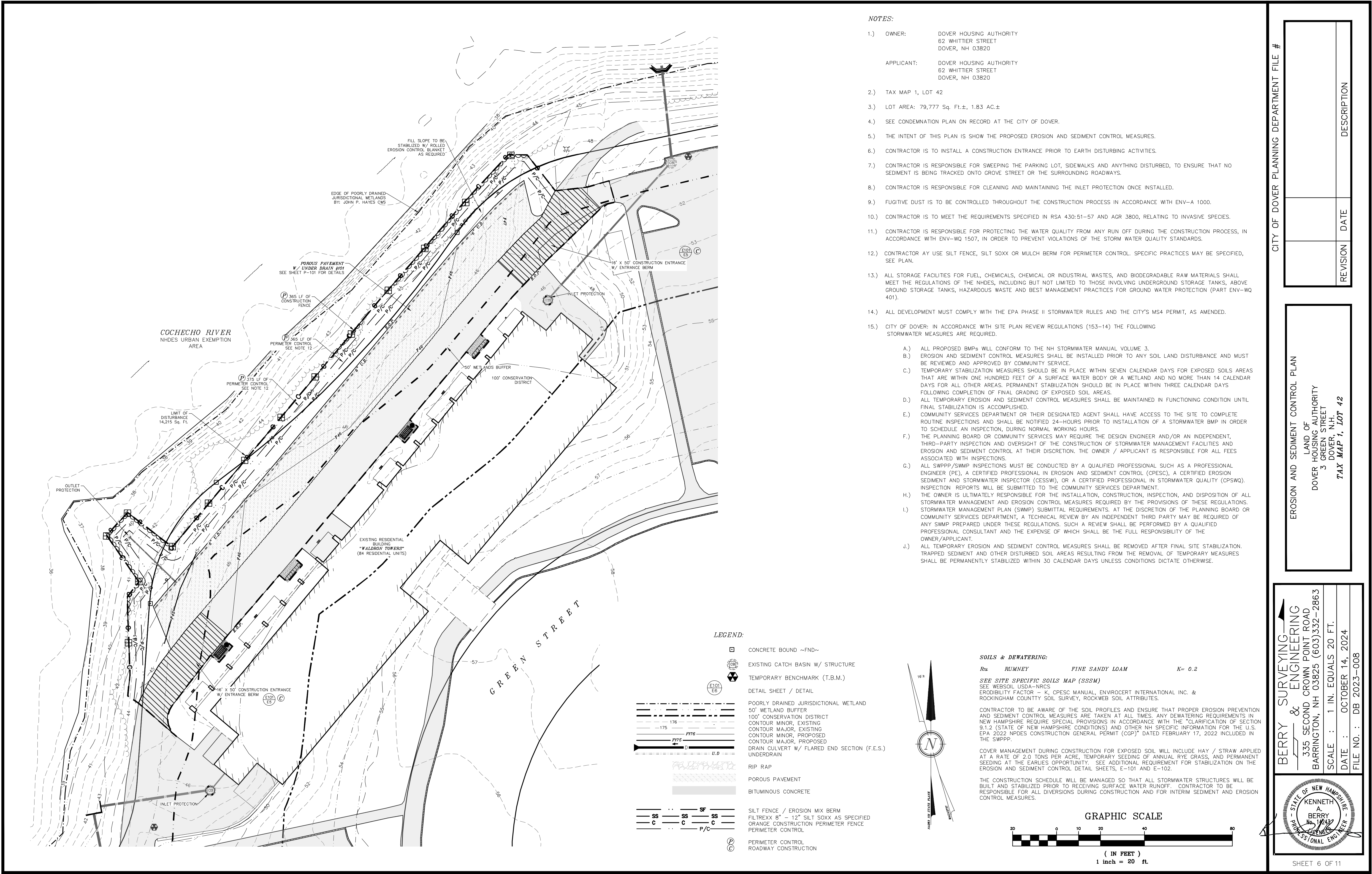


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**DRAINAGE ANALYSIS
&
EROSION AND SEDIMENT
CONTROL PLAN**

Prepared for:

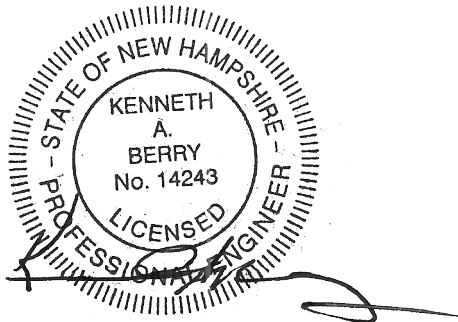
Dover Housing Authority
62 Whittier Street
DOVER, NH 03820

Land of

Dover Housing Authority
3 Green Street
DOVER, NH 03820
TAX MAP 1, LOT 42

Prepared by:

Berry Surveying & Engineering
335 Second Crown Point Road
Barrington, NH 03825



Project Number:
DB 2023-008

October 14, 2024

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USGS Quadrangle Location Map	
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2.0 Proposed Subdivision Analysis	Page 3
3.0a Stormwater Treatment	Page 4
3.0b Stormwater Infiltration	Page 4
3.1 Full Comparative Analysis	Page 4
4.0 Erosion & Sediment Control, BMP's	Page 5
5.0 Demonstration of Compliance with Dover Chapter 153-14	Page 12
6.0 Conclusion	Page 26

Appendix I - Existing Conditions Analysis

25 Yr-24 Hr. Full Summary
2 Yr- 24 Hr Node Listing
10 Yr -24 Hr. Node Listing
50 Yr-24 Hr. Node Listing
100 Yr-24 Hr. Node Listing

Appendix II - Proposed Conditions Analysis

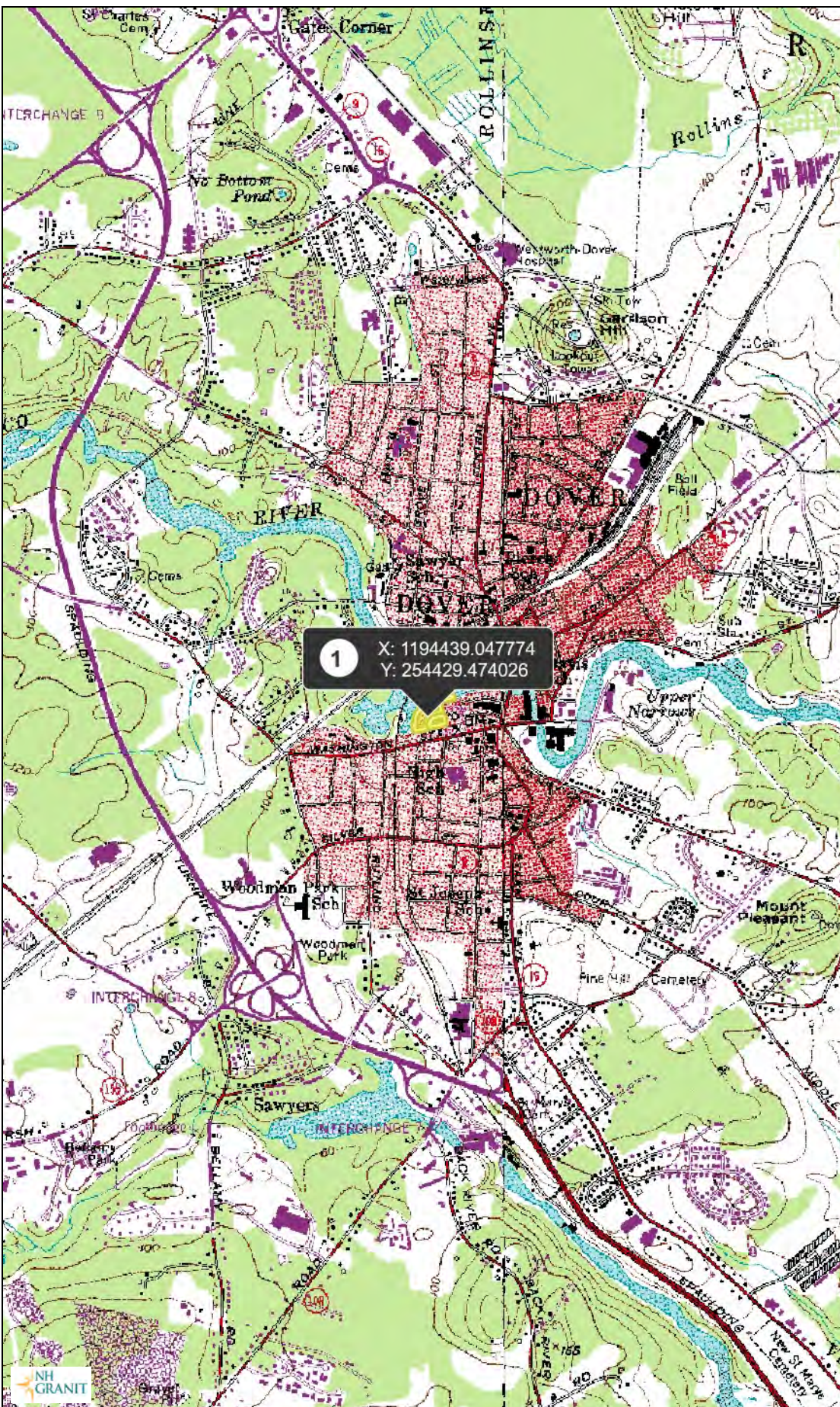
25 Yr-24 Hr. Full Summary
2 Yr-24 Hr. Node Listing
10 Yr-24 Hr. Node Listing
50 Yr-24 Hr. Node Listing
100 Yr-24 Hr. Node Listing

Appendix III - Calculations, Charts, & Graphs

Extreme Precipitation Tables
Rip-Rap Calculations
NCRS USDA Web-soil Map
Pond #101 Treatment Sheet
Stormwater System Management: Inspection & Maintenance Manual & Plan
Watershed Report Card, 303(d) List, & ORW List
Filtrexx Construction Specifications

Enclosed:	W-1 Sheet	Existing Conditions Watershed Plan	Sheet 1
	W-2 Sheet	Post Construction Watershed Plan	Sheet 2
		Erosion and Sediment Control Plan	

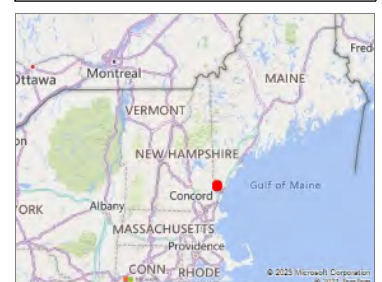
Map by NH GRANIT



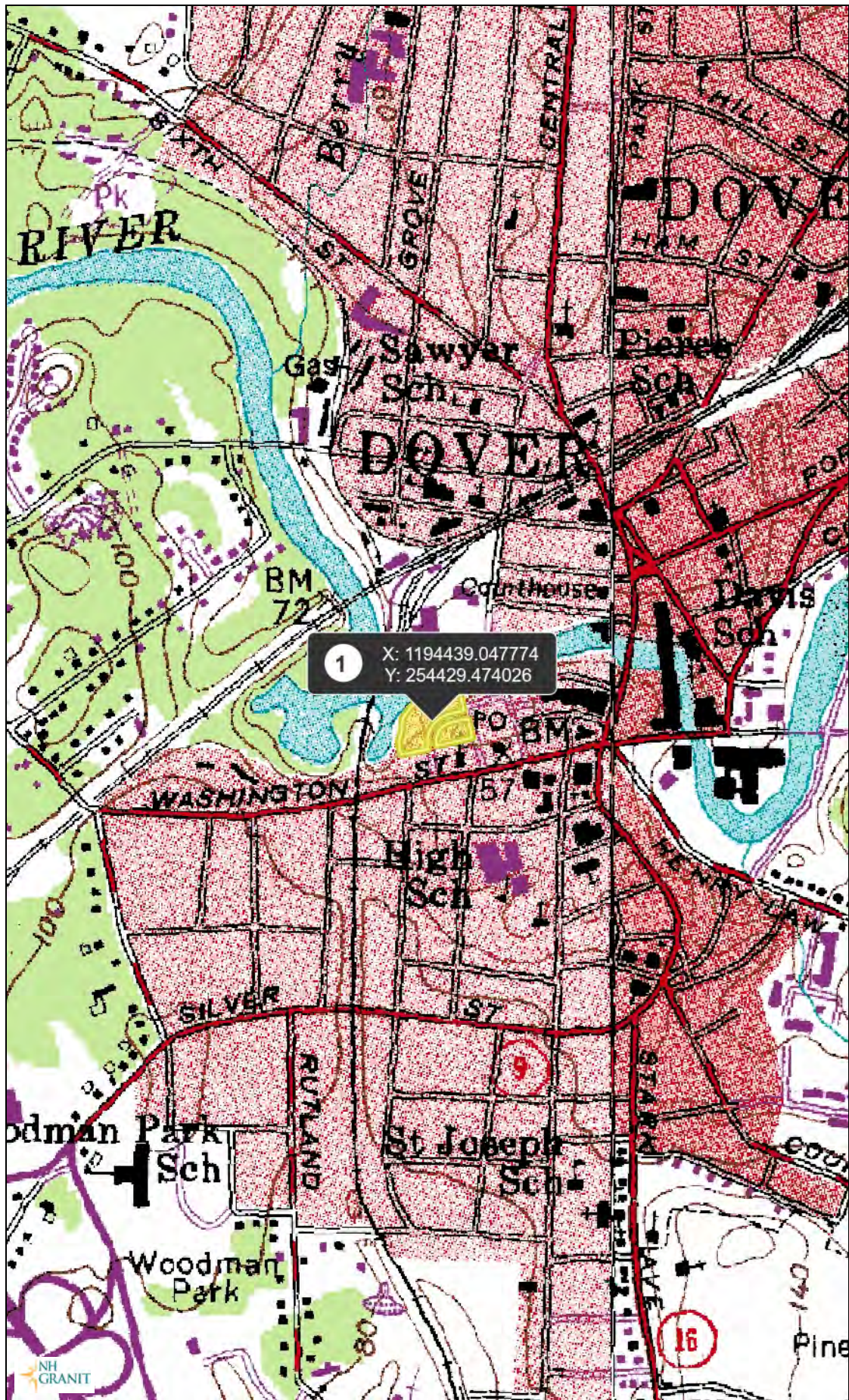
Legend

- ☐ State
☐ County
☐ City/Town

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Map by NH GRANIT



Legend

- State
- County
- City/Town

Map Scale

1: 10,000

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Map Generated: 1/27/2023



Notes



DESIGN METHOD OBJECTIVES

The Dover Housing Authority is proposing the construction of 22 new porous pavement parking spaces with conventional pavement drive aisle widening and reconstruction to serve the existing 84-unit residential building located at 3 Green Street, known as Waldron Towers. The parking spaces are proposed at the rear of the existing building, along the Cochecho River where a drive aisle currently exists, providing building circulation and access to four existing spaces to be removed.

An Existing and Proposed Conditions analysis was conducted for the purpose of estimating the peak rate of stormwater run-off from the property and subsequently designing adequate mitigation of drainage. There is a single existing drainage discharge point which is identified in the existing analysis and duplicated in the proposed conditions analysis. Designing two watershed models we have compared the differences in these rates of peak run-off and surface water volume. Sheet W1, Existing Conditions Watershed Plan, outlines the characteristics of the site in its existing or pre-construction conditions for Tax Map 1, Lot 42. While Sheet W2, Existing Conditions and outlines the characteristics of post-construction conditions for Tax Map 1, Lot 42. The analysis was conducted using data for; 2 Yr-24 Hr (3.61"), 10 Yr-24 Hr (5.44"), 25 Yr-24 Hr (6.87"), 50 Yr-24 Hr (8.20"), and 100 Yr-24 Hr (9.79") storm events. Storm event analysis was accomplished using the USDA SCS TR-20 method within the HydroCAD Stormwater Modeling System environment and rainfall quantities are based on the Extreme Precipitation Table for this location from the Northeast Regional Climate Center / Cornell University (<http://precip.eas.cornell.edu>). As Dover is considered a Seacoast Community by NHDES, the Extreme Precipitation quantities have been adjusted to be 115% of the documented rainfalls for the 24-hour events.

1.0 Existing Conditions Analysis:

Reference: Sheet W1 - Existing Conditions Watershed Plan (Enclosed)
Existing Conditions Plan

The existing property is +/- 1.4 Ac. consists of Waldron Towers and associated parking facilities and drive aisles. There is one subcatchment flowing to an off-site nonpoint final reach. Given that the proposed development is located at the rear of the building, only 0.33 Ac. of onsite area is analyzed, with a total analysis area of 0.539 Ac.. The edge of the Cochecho River has been delineated as the limit of the analysis. The current use is supported by municipal water and sewer.

On-site soils consist of Ru – Rumney Fine Sandy Loam, which is classified as Hydrologic Soil Group C, based on the USDA, NRCS Websoil. Off-site soils consist of Ru – Rumney Fine Sandy Loam, which is classified as Hydrologic Soil Group C, based on the USDA, NRCS Websoil. Land covers include pavement, grass, roofs, and woods.

Water drains from the porous pavement outlet pipe and flows to the Cochecho River Central Ave Dam (NHIMP600030608-04). The impairment of the watershed are as follows:

Cochecho River Central Ave Dam (NHIMP600030608-04)
Mercury, NE Regional Mercury TMDL, December 20, 2008, TMDL #33883
Aquatic Life Integrity
Fish Consumption

Final Reach #100:

Subcatchment #1 consists of land directly to the rear of Waldron Towers, consisting of paved area, grass, building, and woods. This subcatchment encompasses the area of development in the pre-construction condition. Runoff flows to the north west to a non-point discharge reach analyzed as **Final Reach #100 (Cochecho River)**.

2.0 Proposed Conditions Analysis:

Reference: Sheet W2 - Proposed Conditions Watershed Plan (Enclosed)
 Proposed Site Plan
 Proposed Grading & Drainage Plan

The proposed conditions analysis consists of two subcatchments. The implementation of the porous pavement treatment system treats the porous pavement area and constructed drive lane. The final analysis point from the existing analysis is preserved. Land covers include pavement, grass, roof, and woods.

Final Reach #100:

Subcatchment #1 has been reduced nearly by half in area due to the construction of the 22 porous pavement parking spaces. The subcatchment is primarily grassed and wooded area between the parking and the river.

Subcatchment #101 is the contributing area to **Porous Pavement #101 (Pond 101P)**. Runoff filters through the porous pavement and is discharged via 6" outlet pipe and through **reach #1 (1R)** to the receiving waters of the Cochecho River (**Final Reach #100**).

Summary

Porous Pavement #101 captures all of the new development area, including the drive aisle which did previously not receive treatment. The peak rate of runoff from the proposal is reduced in the five storm events, at both final reaches, analyzed comparing pre-conditions to post-conditions.

3.0a Stormwater Treatment:

Surface water runoff from the development area is being treated by Porous Pavement #101 (101P). Time of Concentration for porous pavement practices is a standard 800 minutes direct entry when using a 41 inch base course according to UNH Stormwater Center. In our practice we are using a 24 inch base course, resulting in a scaling of the Tc. in proportion to the course thickness of 468 minutes, then apply a factor of safety of two (2). We have determined a 234 minute time of concentration is proportionately appropriate. Water Quality Volume calculations based on the Alteration of Terrain model along with Pond Storage Tables are included in Appendix 3 for the modeled practice. Additionally, this construction provides a level of treatment that did not previously occur for the drive lane at the rear of the structure.

3.0b Stormwater Infiltration:

No infiltration is proposed for the parking lot expansion. The porous pavement will be under drained and lined. According to KSat Values for New Hampshire Soils (Including Hydrologic and DES Soil Lot Sizing Groups, sponsored by the Society of Soil Scientists of Norther New England, Publication #5 dated September 2009, Rumney Fine Sandy Loam has a restricting "B" horizon of 0.6-6in/hr. Utilizing the methodology put forth in Env-Wq 1500, a factor of safety of two placed on the most restrictive horizon would be 0.3in/hr. Env-Wq 1500 does not allow infiltration practices to have a low KSat of 0.5in/hr, making infiltration porous pavement not feasible in this location. See section 3.2 for stormwater volumetric discussion.

3.1 FULL COMPARATIVE ANALYSIS

ANALYSIS COMPONENT: PEAK RATE DISCHARGE (Cubic Feet / Second)

		2 Yr	10 Yr	25 Yr	50 Yr	100 Yr
Final Reach #100	Existing	0.86	1.69	2.38	3.02	3.80
	Proposed	0.40	0.86	1.25	1.62	2.08

ANALYSIS COMPONENT: VOLUME (Acre Feet) (24 Hours)

		2 Yr	10 Yr	25 Yr	50 Yr	100 Yr
Final Reach #100	Existing	0.071	0.139	0.195	0.250	0.317
	Proposed	0.090	0.159	0.216	0.270	0.336

3.2 STORMWATER VOLUME (Dover Chapter 153-14.B(4))

Per Dover Site Review Regulations, measures shall be taken to control the post development volume surface water volume so that it does not exceed predevelopment runoff for the two-, ten-, twenty-five-, and fifty year, 24-hour storm events. In the

event where infiltration/recharge is limited or not practical, the owner/applicant must demonstrate that the project will not contribute the flood or functional impairments to streets, adjacent properties, and downstream properties.

As demonstrated in the Comparative Analysis at Final Reach #100, there is a minor volumetric increase at the required storm events. Based on several factors of the property, this increase will not contribute the flood or functional impairments to streets, adjacent properties, and downstream properties. The site as shown by the websoil survey consists of Rumney Fine Sandy Loam, HSG C. Determining an Infiltration Rate in accordance with Env-Wq 1508.02, the Ksat NH manual shows an Infiltration Rate in the b horizon of 0.6 in/hour, prior to factor of safety. Utilizing Alteration of Terrain Standards, ground water recharge is not practical on the project site.

The project is compliant with the Channel Protection Requirements of Env-Wq 1507.05(b)(1)(a-c). The 2-year, 24 hour post-development peak flow rate generated from the proposed disturbance is equal or less than the 2-year, 24-hour pre-development peak flow rate and: a.) The 2 year, 24-hour post-development storm volume, directed to a channel, downstream receiving water, or wetland has not increased over the pre-development volume by more than 0.1 acre-feet; b.) The 2-year, 24-hour post-development peak flow rate directed to a channel, downstream receiving water, or wetland is less than 2 cfs; and C. The area directly discharges into a fourth order or greater river, a pond or lake greater than 10 acres, or tidal water; (Cochecho River). Stormwater routed to Final Reach #100 is discharged across a wooded area and is received by the Cochecho River. Based upon these factors, the applicant feels this demonstration is compliant to satisfy the requirements of Dover Chapter 153-14.B(4).

4.0 EROSION & SEDIMENT CONTROL PLANS BEST MANAGEMENT PRACTICES (BMP's)

Reference: Proposed Site Plan and Grading Plan
Erosion & Sediment Control Plan
Erosion & Sediment Control Details

The proposed site development is protected from erosion and the abutting properties are protected from sediment by the use of Best Management Practices as outlined in the New Hampshire Stormwater Manual, Volume 2, Post-Construction Best Management Practices Selection & Design (December 2008, NHDES & US EPA); and City of Dover Chapter 153-14 A, Stormwater Management, Erosion Control, and Flood Hazards. **Temporary stabilization measures should be in place within seven calendar days for exposed soils areas that are within one hundred feet of a surface water body or a wetland and no more than 14 calendar days for all other areas. Permanent stabilization should be in place within three calendar days following completion of final grading of exposed soil areas. Erosion and sediment control measures shall be installed prior to any soil land disturbance and must be reviewed and approved by the City of Dover**

Community Services Department. All swales and drainage structures will be constructed and stabilized prior to having run-off directed to them. Abutting properties will not be adversely affected by this development. Reference is also made to the Inspection, Operation & Maintenance Manual which has been written specifically for this project and available to the owner.

As this proposal disturbs less than one acre of land, a Notice of Intent is not required to be submitted to the US EPA. This project will be covered by the Construction General Permit. As this project proposes less than 100,000 square feet of impact it does not require an issued permit by NHDES AoT, however construction is governed by a General Permit by Rule under NH RSA 485-A:17. A Stormwater Management Plan (SWMP) as required by the City of Dover will be required. The requirements of Chapter 153-14 A will be included in the plan.

Perimeter Control (Silt Fence / Silt Soxx / Erosion Control Mix Berm)

The plan set demonstrates the location of perimeter sediment control. The Erosion and Sediment Control Details, Sheet E-101, has the specifications for installation and maintenance of the silt fence, Filtrexx mulch filled Silt Soxx (or approved equal), and Erosion Control Mix Berm. It is noted that the City of Dover prefers the mulch berms as well as the Filtrexx product.

Porous Asphalt Pavement (Lined & Underdrained)

Description: The Permeable Pavement system consists of a porous pavement surface and permeable sub-base materials that will be collected via underdrain in the stone reservoir layer before discharging to daylight. In this application where native soils are not conducive to infiltration, the system will be lined with a low permeability material, with an underdrain running the length of the system. Cleanouts are provided at the ends of the underdrain lines.

Maintenance Considerations: No winter sand will be used on permeable pavement and will minimize application of salt for ice control. **Pavement Vacuuming** - Due to the nature of porous pavement, sand must be removed by vacuuming on a regular basis when the pores become clogged two to four times per year. This process varies due to the amount of sand and sweeping efforts but should be investigated two to four times every year. The life expectancy of the porous asphalt pavement system is about 20 years following the prescribed regular maintenance schedule. Jetting of the underdrain via cleanouts provided on the line is an essential maintenance consideration to ensure free discharge from the system. The 6" underdrain outlet pipe shall be marked with a painted metal fence post or approved equal. The rip-rap outlet protection at the end of the underdrain shall be maintained in accordance with the following section.

Rip Rap Outlet Protection

Description: Outlet Protection consists of a riprap apron or preformed scour hole that is designed to provide velocity reduction of the surface water run-off that is leaving a culvert. The design is dependent on the culvert size, soil conditions, velocity, and quantity of the run-off. There are to be no bend or curves at the intersection of the conduit and apron. Ref.: NHDES SWM Volume 2, Section 4-6 Conveyance Practices, 6. Outlet Protection and 1. Detention Ponds, Note 3, Page 158.

Maintenance Considerations: The riprap outlet protection will be inspected annually for damage, which must be corrected immediately. Any sediment buildup will be removed and disposed of correctly. This material will be cleaned out along with any gross solids and disposed of properly. (See invasive species below) Any rip rap that has been displaced from the original construction will be repaired, especially recreating the level lip.

Vegetated Stabilization – Original Planting

All areas that are disturbed during construction will be stabilized with vegetated material within 30 days of breaking ground. Construction will be managed in such a manner that erosion is prevented and that no abutter's property will be subjected to any siltation, unless otherwise permitted. All areas to be planted with grass for long-term cover will follow the specification and on Sheet E-102 using seeding mixture C, as follows:

Mixture	Pounds per Acre	Pounds per 1,000 Sq. Ft.
Tall Fescue	24	0.55
Creeping Red Fescue	24	0.55
Total	48	1.10

Conservation Mix

Mixture	Pounds per Acre	Pounds per 1,000 Sq. Ft.
Virginia Wild Rye	Native	FACW-
Little Bluestem	Native	FACU
Big Bluestem	Native	FAC
Red Fescue	Native	FACU
Switch Grass	Native	FAC
Partridge Pea	Native	FACU
Showy Tick Trefoil	Native	FAC
Butterfly Milkweed	Native	NI
Beggar Ticks	Native	FACW
Purple Joe Pye Weed	Native	FAC
Black Eyed Susan	Native	FACU-

Total	25	0.57
--------------	-----------	-------------

Conservation Mix to be provided by New England Wetland Plants, Inc., Amherst, MA as outline in their New England Conservation / Wildlife Mix or approved equal. Mix to be applied at a rate of 25 lbs. per acre or one-lb. per 1750 square feet. Ratio of seed is proprietary and substitutions are not allowed.

Conservation Mix will used to stabilize all 2:1 slopes and all land area disturbed within the wetland buffer.

Environmental Dust Control

Dust will be controlled on the site by the use of multiple Best Management Practices. Mulching and temporary seeding will be the first line of protection to be utilized where problems occur. If dust problems are not solved by these applications, the use of water and calcium chloride can be applied. Calcium chloride will be applied at a rate that will keep the surface moist but not cause pollution.

Inlet Protection / Storm Drain Inlets

Storm drain inlet protection will be installed per the Erosion & Sediment Control Details as a sediment barrier installed around a storm drain inlet, catch basin, or curb inlet to reduce sediment intrusion into a system after it has been constructed and existing catch basins. These are to be constructed in accordance with the Erosion & Sediment Control Details, Sheet E-101 and maintained after every rain event.

At a minimum, you must comply with following (EPA CGP Part 2.1.2.9.b) "Clean, or remove and replace, the protection measures as sediment accumulates, the filter becomes clogged, and/or performance is compromised. Where there is evidence of sediment accumulation adjacent to the inlet protection measure, you must remove the deposited sediment by the end of the same work day in which it is found or by the end of the following work day if removal by the same work day is not feasible."

It is vital in the construction of this site that the existing MS4 drainage system not be impacted by sediment. See also sediment track out below.

Sediment Track-Out / Stabilized Construction Entrance / Exit

A temporary gravel construction entrance provides an area where mud can be dislodged from tires before the vehicle leaves the construction site to reduce the amount of mud and sediment transported onto paved municipal and state roads. The stone size for the pad should be between 1 and 2-inch coarse aggregate, and the pad itself constructed to a minimum length of 50' for the full width of the access road. The aggregate should be placed at least six inches thick. A plan view and profile are shown on Construction Details Plan. The Construction Exit will be maintained in a condition that will prevent tracking of sediment onto the public highway. When the control pad becomes

ineffective, the stone should be removed along with the collected soil material, regraded on site, and stabilized. A plan view and profile are shown on the Construction Details Plan in E-101 Erosion & Sediment Control Details.

Off-site Vehicle Tracking: A stabilized construction entrance has been provided to help reduce vehicle tracking of sediments. The paved street adjacent to the site entrance will be swept every other week or as necessary to remove any excess mud, dirt or rock tracked from the site. After the binder pavement has been placed, any construction activity that causes the tracking of sediments will also result in street sweeping. Pavement should be swept prior to surface pavement and periodically to remove materials. Dump trucks hauling material from the construction site will be covered with a tarpaulin.

At a minimum, you must provide for maintenance that meets the following (EPA CGP Part 2.1.2.3.d) "Where sediment has been tracked-out from your site onto the surface of off-site streets, other paved areas, and sidewalks, you must remove the deposited sediment by the end of the same work day in which the track-out occurs or by the end of the next work day if track-out occurs on a non-work day. You must remove the track-out by sweeping, shoveling, or vacuuming these surfaces, or by using other similarly effective means of sediment removal. You are prohibited from hosing or sweeping tracked-out sediment into any stormwater conveyance (unless it is connected to a sediment basin, sediment trap, or similarly effective control), storm drain inlet, or surface water."

Stockpiled Sediment or Soil

Stockpiled materials including topsoil, excavated materials, borrow materials imported onto the site, construction aggregates, and sediment removed from temporary sediment traps will be located in designated areas at least 50 feet away from concentrated flows. All stockpiles will have erosion protection in the form of silt fence and diversion swales will be applied to protect the material and surrounding areas. Inactive stockpiles will be seeded for temporary stabilization. Erosion control measures will be inspected in accordance with the schedule for all other activities on site.

At a minimum, you must comply with following (EPA CGP Part 2.1.2.4d) "Do no hose down or sweep soil or sediment accumulated on pavement or other impervious surfaces into any stormwater conveyance (unless connected to a sediment basin, sediment trap, or similar effective control,) storm drain inlet, or surface water."

Dewatering Practices

Dewatering practices are not known to be required on this site. If during construction this becomes required, an addendum will be published specific for the requirements. As a general rule, ground water that needs to be removed from an excavation will be pumped to a sediment basin or a storm drain inlet prior to discharge from the site.

At a minimum, you must comply with following (EPA CGP Part 2.1.3.4) "With backwash water, either haul it away for disposal or return it to the beginning of the treatment process; and replace and clean the filter media used in dewatering devices when the pressure differential equals or exceeds the manufacturer's specifications."

Regarding dewatering practices in the State of New Hampshire, specifically see Construction General Permit Section 9.1.2 NHR12000 State of New Hampshire and "Clarification of Section 9.1.2 ... and other New Hampshire specific information for the U.S. EPA 2012 NPDES Construction General Permit (CGP), May 3, 2012"

Please be advised that should dewatering become required, the EPA CGP 2022 requires daily inspections, monitoring, and reporting quarterly to the agency.

Construction Sequence

1. Cut and remove trees in construction area only as required.
2. Construct and/or install temporary and permanent sediment erosion and detention control facilities as required.
3. Erosion, sediment and detention control facility shall be installed & stabilized prior to any earth moving operation & or directing runoff to them.
4. Clear, cut and dispose of debris in approved facility.
5. Construct temporary culverts as required, or directed.
6. Install pipe and construction associated appurtenances as required or directed. Install porous pavement base. All disturbed areas shall be stabilized immediately after grading.
7. Begin permanent and temporary seeding and mulching. All cut and fill slopes and disturbed areas shall be seeded or mulched as required, or directed. No area is allowed to be disturbed for a length of time that exceeds 60 days before being stabilized. Daily, or as required. All roadways and parking areas shall be stabilized within 72 hours of achieving finished grades. All cut and fill slopes shall be stabilized within 72 hours of achieving finished grades.
8. Construct temporary berms, drains, ditches, silt fences, sediment traps, etc. mulch and seed as required.
9. Inspect and maintain all erosion and sediment control measures during construction.

10. Complete permanent seeding and landscaping.
11. Remove temporary erosion control measures after seeding areas have established themselves and site improvements are complete.
12. Smooth and revegetate all disturbed areas.
13. Finish paving all roadways.

Temporary Erosion Control Measures

1. The smallest practical area of land shall be exposed at any one time.
2. Erosion, sediment and detention measures shall be installed as shown on the plans and at locations as required, directed by the engineer.
3. All disturbed areas shall be returned to original grades and elevations. Disturbed areas shall be loamed with a minimum of 4" of loam and seeded with not less than one pound of seed per 50 square yards of area. Apply hay or straw mulch or straw mulch with rye grass seed to temporarily stabilize the area until final grade is achieved.
4. All disturbed areas will be restabilized within 45 days. At any one time, no more than 5 acres, (217,800 sq. Ft.) Will be disturbed.
5. Silt fences and perimeter barriers shall be inspected periodically and after every rain during the life of the project. All damaged areas shall be repaired, sediment deposits shall periodically be removed and disposed of.
6. After all disturbed areas have been stabilized, the temporary erosion and sediment control measures are to be removed and the area disturbed by the removal smoothed and re-vegetated.
7. Per the EPA CGP requirements there will be reports of the erosion control inspections IAW SWPPP prepared by BS&E. All erosion controls shall be inspected weekly and within 24 hours after 0.25" or greater rain event.
8. Ditches, swales, and basins shall be stabilized prior to directing runoff to them.
9. Do not traffic exposed soil surfaces with construction equipment. If feasible, perform excavations with equipment positioned outside the limits of the infiltration system.
10. Roadways, driveways and cut and fill slopes must be stabilized within 72 hours of achieving final grade.

11. Stabilization means:
 - 11.1. A minimum of 85% of vegetative cover has been established.
 - 11.2. A minimum of 3 inches of non-erosive material such as stone or rip rap has been installed, or
 - 11.3. Erosion control blankets have been installed.
12. This project is to be managed in a manner that meets the requirements and intent of RSA 430:53 and chapter AGR 3800 relative to invasive species.
13. The NHDES stormwater manual, in three volumes, dated December 2008, is a part of this plan set and the more restrictive will govern. (NH SWM)

Inspection and Maintenance Schedule

Sediment control measures will be inspected during and after storm events to ensure that the practice still has integrity and is not allowing sediment to pass. Depending on SWPPP criteria, all controls will be inspected either once every 7 days and after storm events. Inspection reports must be submitted to City of Dover Engineering Department. See also Stormwater System Operation: Inspection & Maintenance Manual published separately also by Berry Surveying & Engineering. See Stormwater Management Plan (SWMP) developed in accordance with EPA NPDES or City of Dover requirements.

Corrective Action measures will be made in accordance with Stormwater Management Plan (SWMP) requirements and records maintained on site by the Contractor.

5.0 Demonstration of Compliance with Dover Chapter 153-14

The following list of standards from chapter 153-14 are shown to demonstrate compliance with Dover stormwater regulations, starting with section 3: Design Standards. Our demonstration of compliance is *italicized* after each standard:

(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.

Acknowledgement of project compliance with the EPA Phase II stormwater rules is shown on the Erosion & Sediment Control Plan, sheet #6, note #14.

[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 applicant is applying for a Conditional Use Permit for activity within the 100' Conservation district and 50' wetland buffer.

[3] Low-impact development (LID) site planning and design strategies shall be used to the most extent practicable (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.

Please find Porous Pavement #101, sheet #5. This LID has been proposed due to lack of room for other treatment/infiltration practices. See comparative analysis in section 3.2 for discussion regarding runoff volume.

[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.

Please find Inspection & Maintenance Manual included in the drainage binder. See E-101 & E-102 with references to the New Hampshire Stormwater Manual (NH SWM).

[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).

Please find note #13 on the Erosion & Sediment Control Plan, sheet #6.

[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.

Please find the topic Snow Storage Areas & Winter Maintenance within the Inspection & Maintenance Manual included in the drainage binder.

[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.

Please find the topic Snow Storage Areas & Winter Maintenance within the Inspection & Maintenance Manual included in the drainage binder.

[8] Impervious surfaces for parking areas and roads shall be minimized to the extent possible.

The proposed parking spaces are to be porous, while the replacement drive aisle is to be conventional pavement. These surfaces are minimized to the extent possible.

[9] Stormwater runoff from new impervious surfaces shall be directed to a best management practice for flow mitigation, treatment and/or infiltration.

Stormwater runoff is conveyed to the porous pavement system for treatment before discharge to the receiving waters.

(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.

Utilizing the May 2024 UNH Stormwater Center (UNHSC) BMP Performance Curves, the following performance can be expected:
Permeable Pavement

- *Total Suspended Solids (TSS) reduction of 92%*
- *Total Nitrogen (TN) reduction of 76%*
- *Total Phosphorous (TP) reduction of 62%*

[2] Rainfall amount shall be based on current extreme precipitation estimates obtained from the Northeast Regional Climate Center.

Extreme Precipitation Tables are included in the drainage binder and have been used for analysis with a 15% escalation as Dover is a coastal community.

[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.

Please find comparative analysis in Section 3.1 for the demonstration of a reduction in peak rate at the final reach.

[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.

Please find Section 3.0b and 3.2 for infiltration and volumetric discussion.

[5] Infiltration rates for designing groundwater recharge practices shall be determined in accordance with Section Env-Wq 1504.14.

Utilizing the methods of Env-Wq 1504.14, as previously discussed, infiltration was determined to not be feasible on this site. Please find Section 3.0b and 3.2 for infiltration and volumetric discussion.

[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.

The BMP has been sized within this parameter, providing 2.04' of freeboard at the 10YR-24HR event.

[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.

This standard is not applicable for this project.

[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.

Off-site stormwater flow has been accounted for in the project design. Please find watershed sheets within the drainage binder.

[9] Seasonal high-water table elevations must be accounted for in all BMP design criteria.

The proposed porous pavement is to be lined due to onsite soil conditions.

[10] Access for maintenance of stormwater facilities must be included as part of the design, where necessary. Access easements may be required.

The practice has been designed to be maintained and located within the open site.

[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.

This standard is not applicable for this project.

(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 proposes treatment of all proposed impervious surfaces and provides treatment for the rear drive lane that does not receive treatment in the existing condition. The following standards are not applicable.

[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.

[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:

[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:

[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 impervious 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:

[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.

See Inspection & Maintenance Manual and Erosion & Sediment Control Plans, sheet #6, note #15A.

[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.

The project disturbs less than 1 acre, thus a SWPPP is not required.

[3] Stripping of vegetation shall be done in a manner that minimizes soil erosion. Whenever practical, natural vegetation shall be retained, protected, or supplemented.

There is to be no disturbance outside of the limit of construction. Erosion & sediment control measures are to be in place prior to the start of land grubbing. See Erosion & Sediment Control Plans, sheet #6, note #15b.

[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 limit of disturbance is to be staked prior to the beginning of construction. The project is proposed as one phase due to the less than one acre of disturbance for this portion of the project.

[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. Integrity of downstream drainage systems shall be maintained.

Please find Erosion & Sediment Control Plan, sheet #6.

[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.

Please find Erosion & Sediment Control Plan, sheet #6, note 15b.

[7] Perimeter site controls shall not be placed within wetland areas, stream channels or wetland buffers.

Perimeter site controls are proposed outside of wetland areas. The applicant is applying for a Conditional Use Permit for disturbance within the wetland buffer and 100' conservation district.

[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.

Please find Erosion & Sediment Control Plan (sheet #6, note #15C), Inspection & Maintenance Manual, and Construction Detail Sheets E-101 & E-102.

[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.

Please find Erosion & Sediment Control Plan sheet #6, note 15D.

[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.

Please find winter stabilization note E13, sheet E-102.

[11] Special stabilization details shall be provided with the submission for any land disturbance on slopes equal to or steeper than 3:1.

Not applicable for this project.

[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.

Please find Erosion & Sediment Control Plan sheet #6, note 15J.

[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 basin can be sized to provide 3,600 cubic feet 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.

This standard is not applicable for this project.

[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.

The limit of construction is not to be expanded beyond the staked limit of construction.

(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.

The applicant acknowledges this standard. This is shown as note #15E on the Erosion & Sediment Control Plan.

[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 applicant acknowledges this standard. This is shown as note #15E on the Erosion & Sediment Control Plan.

[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.

The applicant acknowledges this standard. This is shown as note #15F on the Erosion & Sediment Control Plan.

[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 applicant acknowledges this standard. This is shown as note #15G on the Erosion & Sediment Control Plan.

[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 applicant acknowledges this standard. This is shown as note #15H on the Erosion & Sediment Control Plan.

(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 applicant acknowledges this standard. This is shown as note #15I on the Erosion & Sediment Control Plan.

[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.

Please find Erosion & Sediment Control Plans, sheet #6.

[b] Proposed changes in impervious cover areas and any changes in pre- and post-development drainage patterns.

Please find W1 Existing watershed and W2 Proposed watershed plans within the drainage binder.

[c] Description of LID proposed measures.

Please see section 4.0 of this drainage narrative. Low impact development measures include the implementation of an underdrained porous pavement system.

[2] For projects requiring new development or redevelopment standards, a drainage report that contains the following items shall be submitted:

[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.

Please find section 4.0 in this drainage narrative containing the construction sequence.

[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.

Please find Existing Conditions Plans, sheet #2. A description of receiving water impairments is listed in section 1.0.

[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.

A waiver from this standard has been requested to use NRCS soils for the subject parcel due to the small development area and heavily urbanized parcel.

[d] Description of existing drainage patterns, receiving water bodies or drainage infrastructure and soil types for recharge potential.

Please find W-1 Existing Watershed Plan & W-2 Proposed Watershed Plan within the drainage binder.

[e] Watershed area limits, including any off-site and upstream areas contributing flow to shared drainage channels and/or infrastructure.

Please find W-1 Existing Watershed Plan & W-2 Proposed Watershed Plan within the drainage binder.

[f] Description of proposed changes in impervious cover areas and any changes in pre- and post-development drainage patterns.

Please find sections 1.0 and 2.0 of this narrative as well as W-1 Existing Watershed Plan, Existing Drainage Analysis, W-2 Proposed Watershed Plan & Proposed Drainage Analysis.

[g] Methods and assumptions used to calculate pre- and post-development runoff volume, peak discharge, and discharge velocity for the specified design storm events.

Please find Section 1.0 & 2.0 of this drainage narrative discussing the existing and proposed development conditions.

[h] Methods and assumptions used to calculate the pollutant load removal.

Utilizing the May 2024 UNH Stormwater Center (UNHSC) BMP Performance Curves, the following performance can be expected:
Permeable Pavement

- *Total Suspended Solids (TSS) reduction of 92%*
- *Total Nitrogen (TN) reduction of 76%*
- *Total Phosphorous (TP) reduction of 62%*

[i] Description of LID measures that are proposed to limit the development footprint, preserve existing vegetation and mimic existing hydrology to the extent feasible.

Please see section 4.0 of this drainage narrative. Low impact development measures include the implementation of one under drained porous pavement system.

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

Porous Pavement is proposed on site and qualifies as low impact development.

[k] Describe measures and calculations for proposed practices used to achieve no net increase in runoff volumes leaving the site.

Please find comparative analysis demonstrating the 2-100YR 24Hr storm events. See sections 3.0b and 3.2 for infiltration and volumetric discussion.

[l] Provide calculations for the infiltration or exfiltration system.

Not applicable for this project.

[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.

Please find sections 3.0b and 3.2 for infiltration and volumetric discussion.

[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.

Please find section 4.0 of this narrative, the Inspection & Maintenance Manual and Plan, as well as the Erosion & Sediment Control Plan. Type and rate of lime and fertilizer will be determined on site by testing the topsoil for requirements.

[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.

There is approximately 24 Sq. Ft. of disturbance within a mapped limit of an area with a 1% chance of being inundated with water on the southwestern corner of the proposed porous pavement, where the proposed grade is matching the existing grade.

[p] Proposed schedule for the inspection and maintenance of all erosion control measures on site prior to achieving final site stabilization.

This is noted in Section 4.0.

[q] Describe procedures for removing temporary erosion control measures and removal of accumulated sediment captured by such measures.

Please find Inspection & Maintenance Manual.

[r] Any other specific study, calculation, or investigation as requested by the City.

No additional studies or investigations have been requested at this time.

[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.

Please find Inspection & Maintenance Manual.

[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.

Please find Inspection & Maintenance Manual and plans.

[u] Provide copies of pertinent state and federal permits.

No state or federal permits are required for this project.

(g) Long-term operation and maintenance. The owner shall be responsible for continued inspection and maintenance requirements.

[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.

Please find Inspection & Maintenance 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.

Please find Inspection & Maintenance 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.

Please find Inspection & Maintenance Manual.

[d] Deicing log to track amount and type of deicing material applied.

Please find Inspection & Maintenance Manual.

[e] A site plan clearly identifying the locations of all stormwater practices to be inspected and maintained.

Please find Inspection & Maintenance Plans within the drainage binder.

[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.

Please find statement below.

[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.

Please find note #28 of the Site Plan, sheet #3.

6.0 CONCLUSION

The peak rate of runoff has been reduced at the analysis point for the five storm events. Channel protection volume has been satisfied at Final Reach #100. Runoff is treated by a porous pavement system.

A Site Specific, Terrain Alteration Permit (RSA 485: A-17) is not required for this site plan due to the area of disturbance being less than 100,000 SF. The impact for this site will not require an EPA Notice of Intent as the impact is less than one acre.

A stormwater management plan may be required by the city of Dover, Community Services, Engineering Department. 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.

Respectfully Submitted,
BERRY SURVEYING & ENGINEERING



Kevin R. Poulin, PE
Project Engineer



Kenneth A. Berry PE, LLS,
CPSWQ, CPESC, CESSWI
Principal, VP - Technical Operations
Engineer of Record

Appendix I - Existing Conditions Analysis

25 Yr - 24 Hr. Full Summary

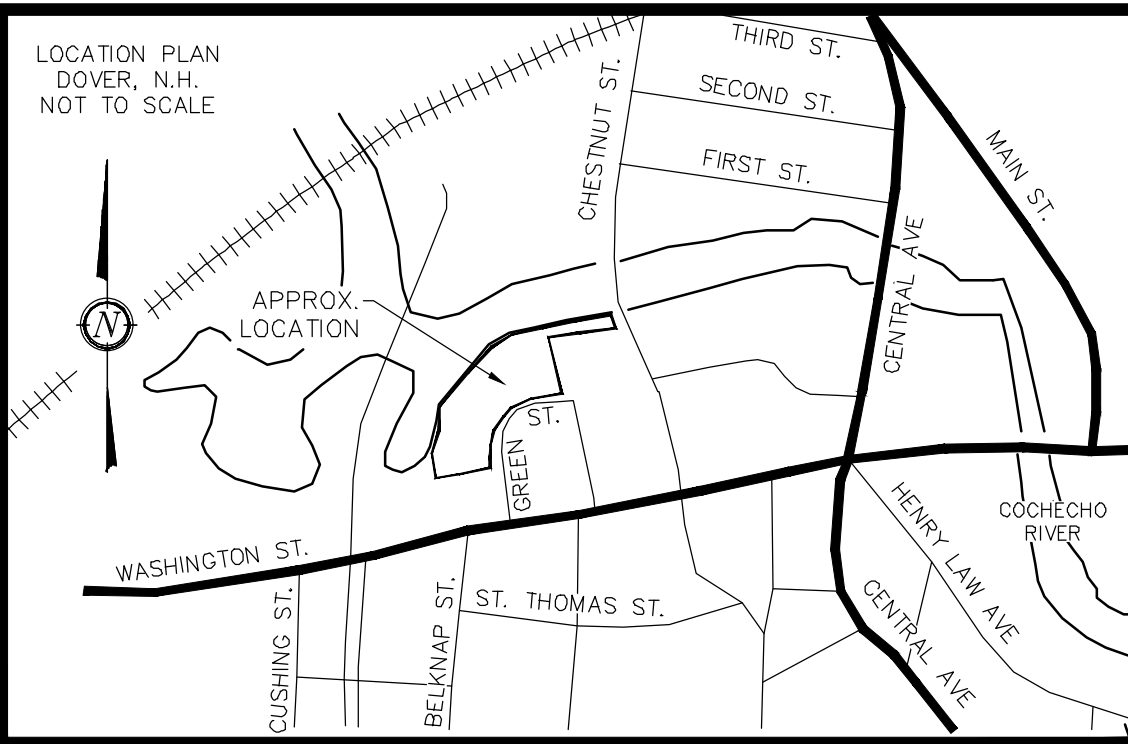
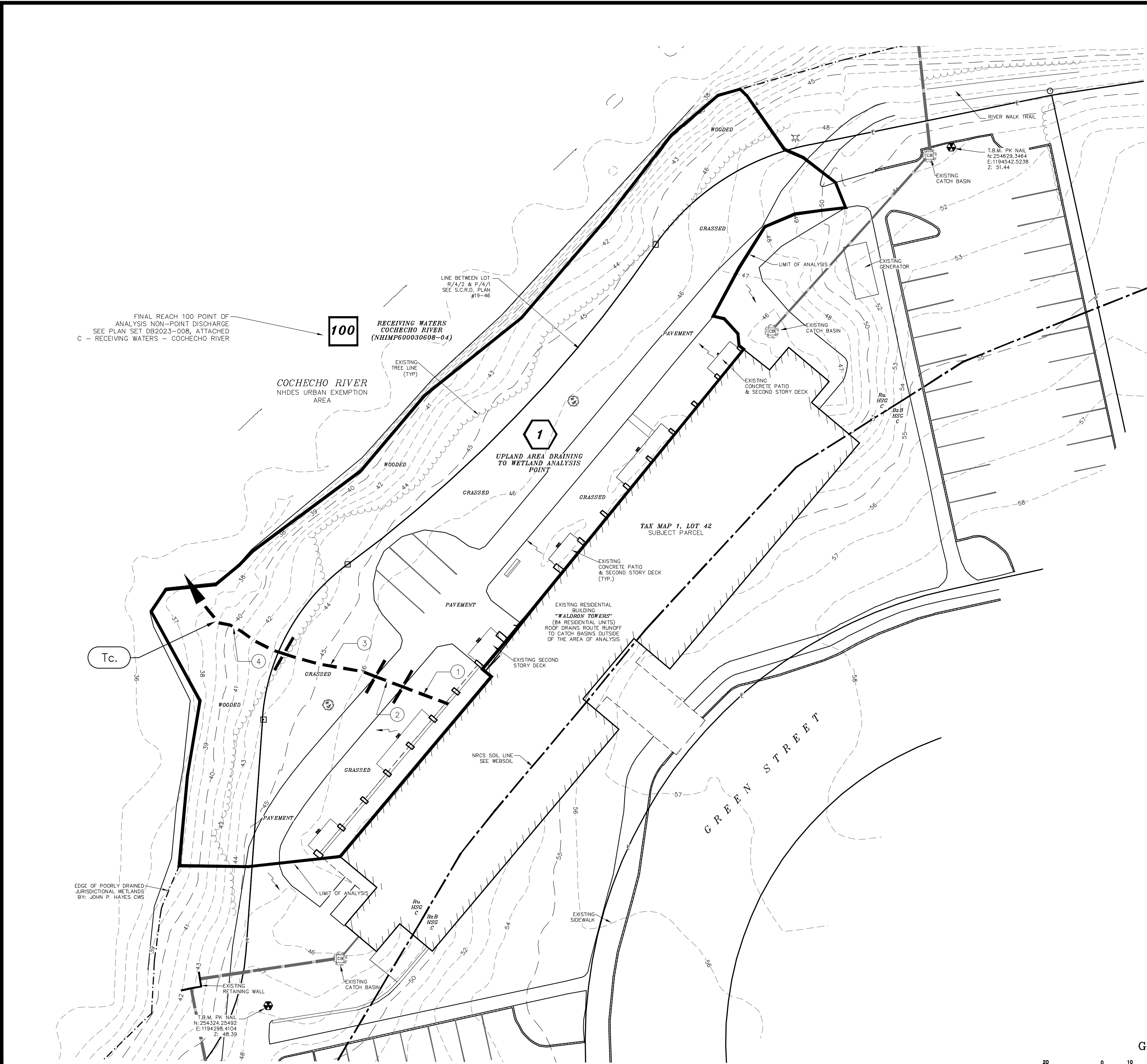
2 Yr - 24 Hr. Node Listing

10 Yr -24 Hr. Node Listing

25 Yr - 24 Hr. Node Listing

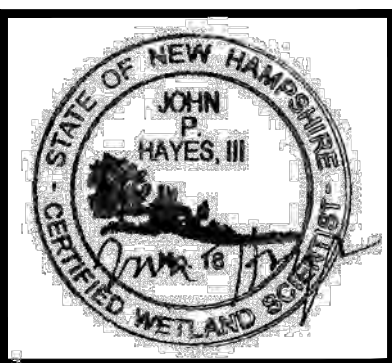
50 Yr - 24 Hr. Node Listing

100 Yr - 24 Hr. Node Listing



- NOTES:**
- 1.) OWNER: DOVER HOUSING AUTHORITY
62 WHITTIER STREET
DOVER, NH 03820
 - 2.) TAX MAP 1, LOT 42
 - 3.) LOT AREA: 1.4 AC.±
 - 4.) SEE CONDEMNATION PLAN ON RECORD AT THE CITY OF DOVER.
 - 5.) VERTICAL DATUM BASED ON NAVD88 ELEVATIONS. HORIZONTAL COORDINATES BASED ON NAD83. COORDINATES GATHERED USING CARLSON BRX7 SURVEY GRADE GPS RECEIVERS.
 - 6.) THE INTENT OF THIS PLAN IS TO SHOW THE EXISTING WATERSHED CONDITIONS OF TAX MAP 1, LOT 42 AS OF THE DATE OF SURVEY.
 - 7.) HYDROCAD USES A SERIES OF NODE SUFFIXES FOR NUMBERING PURPOSES (S=SUBCATCHMENT, P=POND DEVICE, R=REACH). TO SIMPLIFY ANNOTATION THESE SUFFIXES ARE LEFT OFF THE WATERSHED PLANS AND NODE TYPE IS DENOTED BY THE SYMBOL SHAPE ACCORDING TO THE DISPLAYED LEGEND WHICH COINCIDES WITH HYDROCAD GRAPHICS.

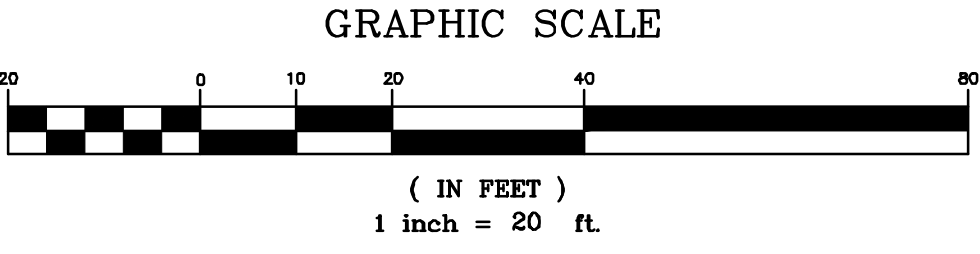
NRCS SOILS LEGEND		
SYMBOL	SOIL TAXONOMIC NAME	HYDROLOGIC SOIL GROUP
Ru	RUMNEY FINE SANDY LOAM	C
SLOPE: A = 0-3% B = 3-8% C = 8-15% D = 15-25% E = 25-50% F = 50%+		
DENOMINATOR: /Rk = ROCKY /VPD = VERY POORLY DRAINED /PD = POORLY DRAINED /SWPD = SOMEWHAT POORLY DRAINED /MWD = MODERATELY WELL DRAINED		



- WETLAND NOTES:**
1. WETLANDS WERE DELINEATED BY JOHN P. HAYES, JANUARY, 2024
 2. REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION, (VERSION 2.0) JANUARY 2012, U.S. ARMY CORPS OF ENGINEERS
 3. FIELD INDICATORS OF HYDRIC SOILS IN THE UNITED STATES, A GUIDE FOR IDENTIFYING AND DELINEATING HYDRIC SOILS, VERSION 8.0. UNITED STATES DEPARTMENT OF AGRICULTURE (2016).
 3. NATIONAL WETLAND PLANT LIST (CURRENT VERSION).

- LEGEND:**
- EXISTING CONTOUR MINOR
 - EXISTING CONTOUR MAJOR
 - WETLAND LINE
 - NRCS SOIL LINE
 - NRCS SOIL LABEL
 - LIMIT OF WATERSHED
 - TIME OF CONCENTRATION PATH
 - FLOW REACH
 - STRAFFORD COUNTY REGISTRY OF DEEDS
 - TYP. FND

- SYMBOLS LEGEND:**
- SUBCATCHMENT AREA SYMBOL
 - FLOW REACH SYMBOL
 - POND DEVICE SYMBOL
 - TIME OF CONCENTRATION SEGMENT



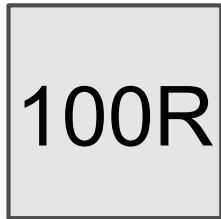
CITY OF DOVER PLANNING DEPARTMENT FILE #

REVISION	DATE	DESCRIPTION
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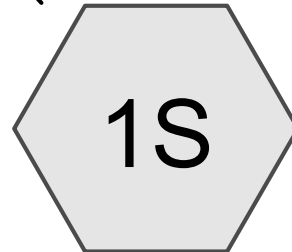
W-1 EXISTING WATERSHED PLAN
LAND OF
DOVER HOUSING AUTHORITY
3 GREEN STREET
DOVER, N.H.
TAX MAP 1, LOT 42

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863
SCALE : 1 IN. EQUALS 20 FT.
DATE : OCTOBER 14, 2024
FILE NO. : DB 2023-008

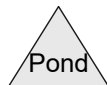
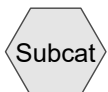
SHEET 1 OF 2



Final Reach #100



Subcatchment #1



Routing Diagram for 23-008 W1

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23-008 W1

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Page 2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.267	74	>75% Grass cover, Good, HSG C (1S)
0.098	98	Paved parking, HSG C (1S)
0.021	98	Roofs, HSG C (1S)
0.153	70	Woods, Good, HSG C (1S)
0.539	78	TOTAL AREA

23-008 W1

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Soil Listing (all nodes)

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

23-008 W1

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Page 4

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.267	0.000	0.000	0.267	>75% Grass cover, Good	1S
0.000	0.000	0.098	0.000	0.000	0.098	Paved parking	1S
0.000	0.000	0.021	0.000	0.000	0.021	Roofs	1S
0.000	0.000	0.153	0.000	0.000	0.153	Woods, Good	1S
0.000	0.000	0.539	0.000	0.000	0.539	TOTAL AREA	

23-008 W1*Type III 24-hr 25 YR - 24 HR Rainfall=6.87"*

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Page 5

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: Subcatchment#1

Runoff Area=23,476 sf 22.04% Impervious Runoff Depth>4.35"

Flow Length=101' Tc=9.8 min CN=78 Runoff=2.38 cfs 0.195 af

Reach 100R: Final Reach #100

Inflow=2.38 cfs 0.195 af

Outflow=2.38 cfs 0.195 af

Total Runoff Area = 0.539 ac Runoff Volume = 0.195 af Average Runoff Depth = 4.35"
77.96% Pervious = 0.420 ac 22.04% Impervious = 0.119 ac

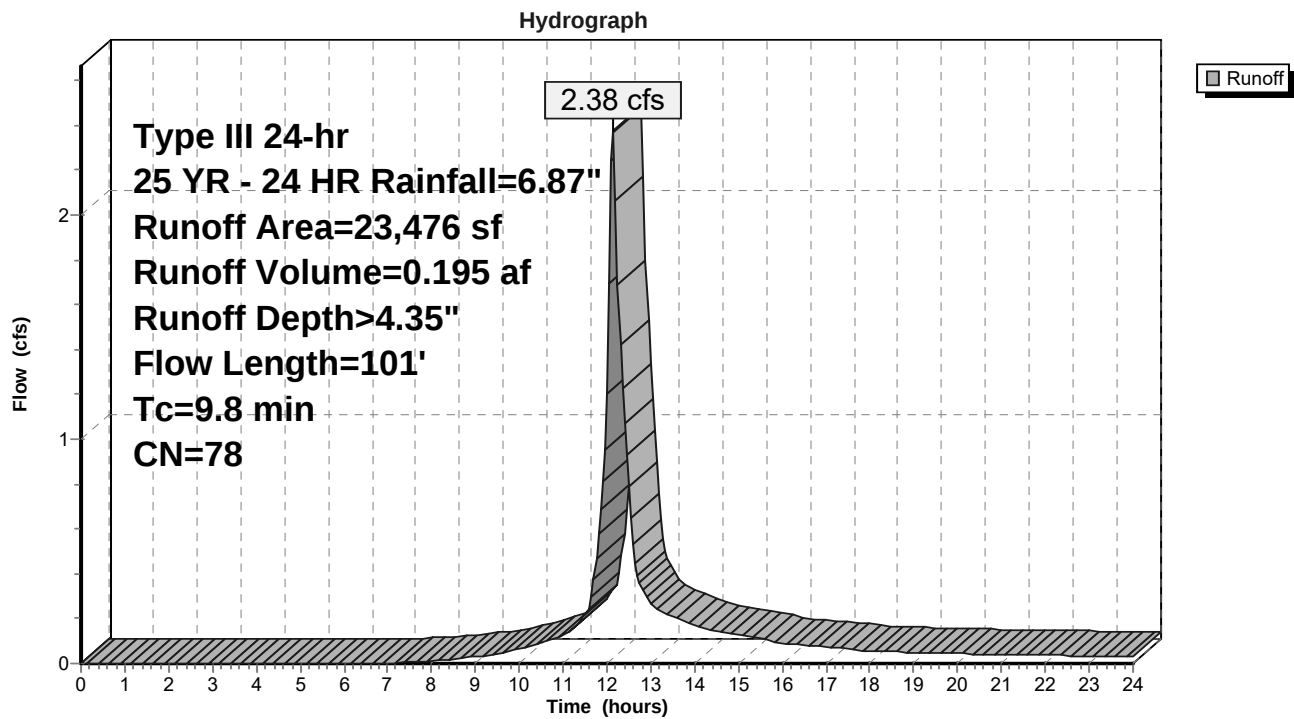
Summary for Subcatchment 1S: Subcatchment #1

Runoff = 2.38 cfs @ 12.14 hrs, Volume= 0.195 af, Depth> 4.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YR - 24 HR Rainfall=6.87"

Area (sf)	CN	Description
11,643	74	>75% Grass cover, Good, HSG C
4,262	98	Paved parking, HSG C
912	98	Roofs, HSG C
6,659	70	Woods, Good, HSG C
23,476	78	Weighted Average
18,302		77.96% Pervious Area
5,174		22.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	17	0.0147	0.10		Sheet Flow, Segment #1 Grass: Short n= 0.150 P2= 3.15"
0.2	10	0.0200	0.86		Sheet Flow, Segment #1 Smooth surfaces n= 0.011 P2= 3.15"
2.4	34	0.0821	0.24		Sheet Flow, Segment #3 Grass: Short n= 0.150 P2= 3.15"
4.5	40	0.1582	0.15		Sheet Flow, Segment #4 Woods: Light underbrush n= 0.400 P2= 3.15"
9.8	101	Total			

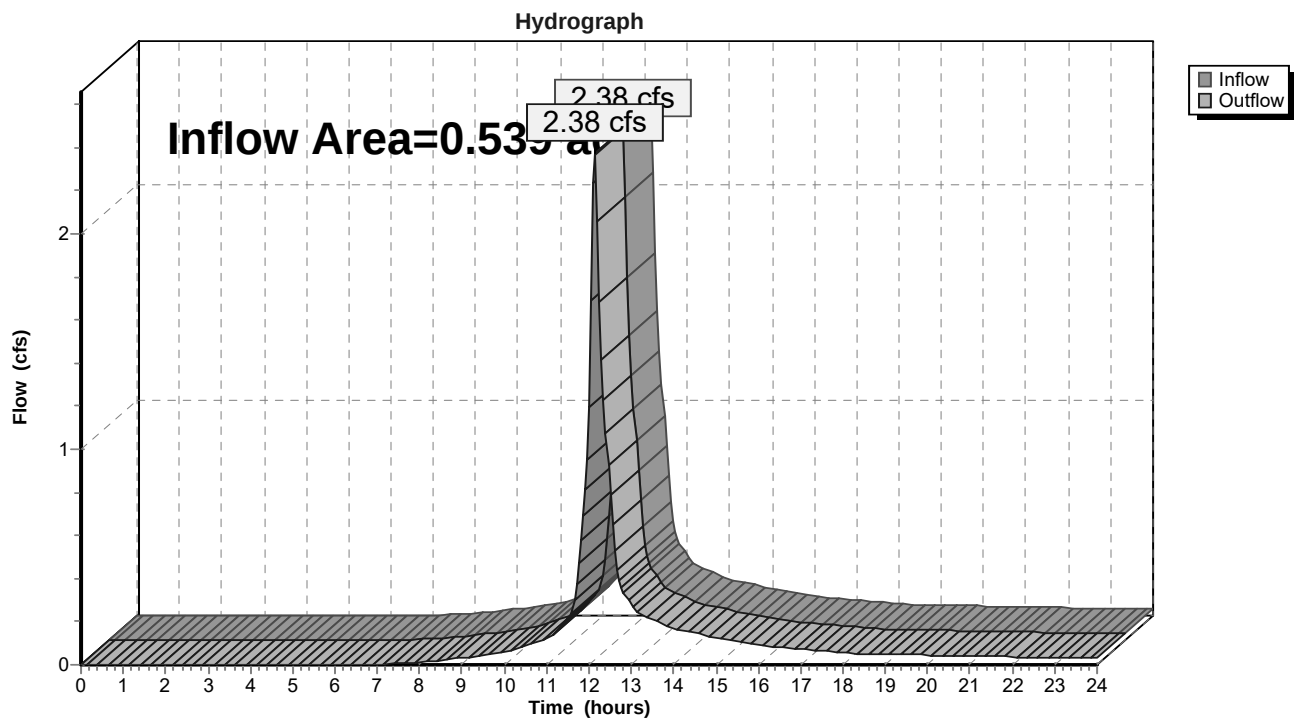
Subcatchment 1S: Subcatchment #1

Summary for Reach 100R: Final Reach #100

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.539 ac, 22.04% Impervious, Inflow Depth > 4.35" for 25 YR - 24 HR event
Inflow = 2.38 cfs @ 12.14 hrs, Volume= 0.195 af
Outflow = 2.38 cfs @ 12.14 hrs, Volume= 0.195 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Reach 100R: Final Reach #100

23-008 W1*Type III 24-hr 2 YR - 24 HR Rainfall=3.61"*

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Page 1

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: Subcatchment#1

Runoff Area=23,476 sf 22.04% Impervious Runoff Depth>1.58"

Flow Length=101' Tc=9.8 min CN=78 Runoff=0.86 cfs 0.071 af

Reach 100R: Final Reach #100

Inflow=0.86 cfs 0.071 af

Outflow=0.86 cfs 0.071 af

Total Runoff Area = 0.539 ac Runoff Volume = 0.071 af Average Runoff Depth = 1.58"
77.96% Pervious = 0.420 ac 22.04% Impervious = 0.119 ac

23-008 W1*Type III 24-hr 10 YR - 24 HR Rainfall=5.44"*

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Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: Subcatchment#1

Runoff Area=23,476 sf 22.04% Impervious Runoff Depth>3.08"

Flow Length=101' Tc=9.8 min CN=78 Runoff=1.69 cfs 0.139 af

Reach 100R: Final Reach #100

Inflow=1.69 cfs 0.139 af

Outflow=1.69 cfs 0.139 af

Total Runoff Area = 0.539 ac Runoff Volume = 0.139 af Average Runoff Depth = 3.08"
77.96% Pervious = 0.420 ac 22.04% Impervious = 0.119 ac

23-008 W1*Type III 24-hr 25 YR - 24 HR Rainfall=6.87"*

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Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: Subcatchment#1

Runoff Area=23,476 sf 22.04% Impervious Runoff Depth>4.35"

Flow Length=101' Tc=9.8 min CN=78 Runoff=2.38 cfs 0.195 af

Reach 100R: Final Reach #100

Inflow=2.38 cfs 0.195 af

Outflow=2.38 cfs 0.195 af

Total Runoff Area = 0.539 ac Runoff Volume = 0.195 af Average Runoff Depth = 4.35"
77.96% Pervious = 0.420 ac 22.04% Impervious = 0.119 ac

23-008 W1*Type III 24-hr 50 YR - 24 HR Rainfall=8.20"*

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Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: Subcatchment#1

Runoff Area=23,476 sf 22.04% Impervious Runoff Depth>5.57"

Flow Length=101' Tc=9.8 min CN=78 Runoff=3.02 cfs 0.250 af

Reach 100R: Final Reach #100

Inflow=3.02 cfs 0.250 af

Outflow=3.02 cfs 0.250 af

Total Runoff Area = 0.539 ac Runoff Volume = 0.250 af Average Runoff Depth = 5.57"
77.96% Pervious = 0.420 ac 22.04% Impervious = 0.119 ac

23-008 W1*Type III 24-hr 100 YR - 24 HR Rainfall=9.79"*

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Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: Subcatchment#1

Runoff Area=23,476 sf 22.04% Impervious Runoff Depth>7.06"

Flow Length=101' Tc=9.8 min CN=78 Runoff=3.80 cfs 0.317 af

Reach 100R: Final Reach #100

Inflow=3.80 cfs 0.317 af

Outflow=3.80 cfs 0.317 af

Total Runoff Area = 0.539 ac Runoff Volume = 0.317 af Average Runoff Depth = 7.06"
77.96% Pervious = 0.420 ac 22.04% Impervious = 0.119 ac

Appendix II - Proposed Conditions Analysis

25 Yr - 24 Hr. Full Summary

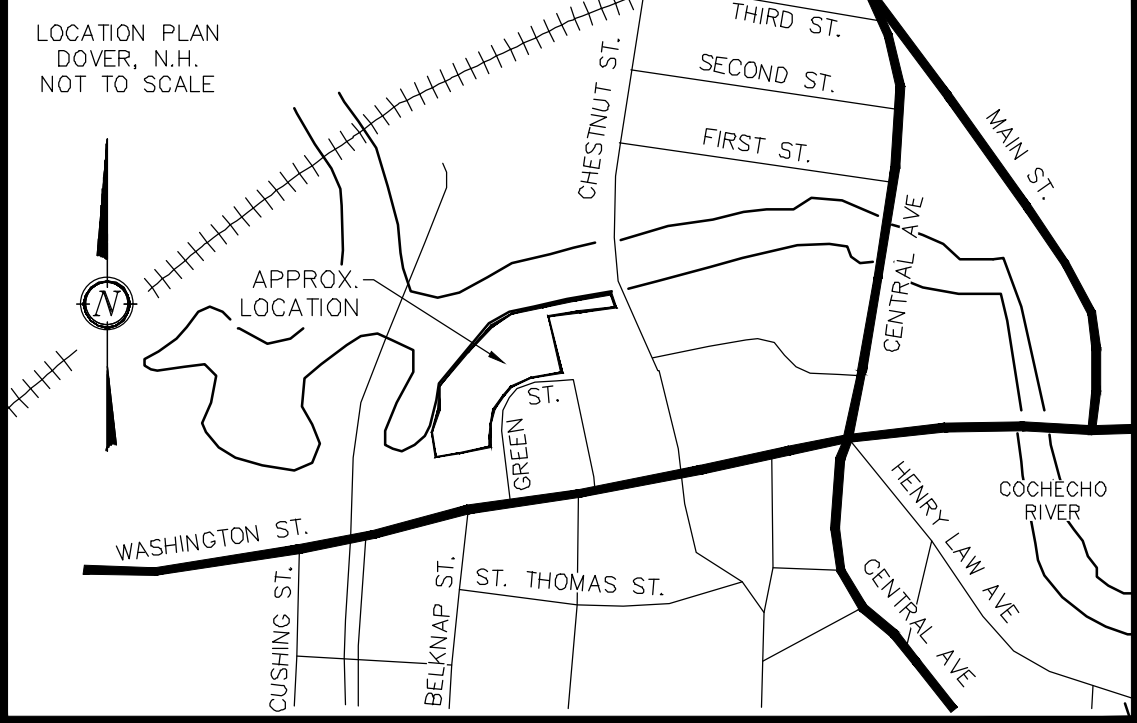
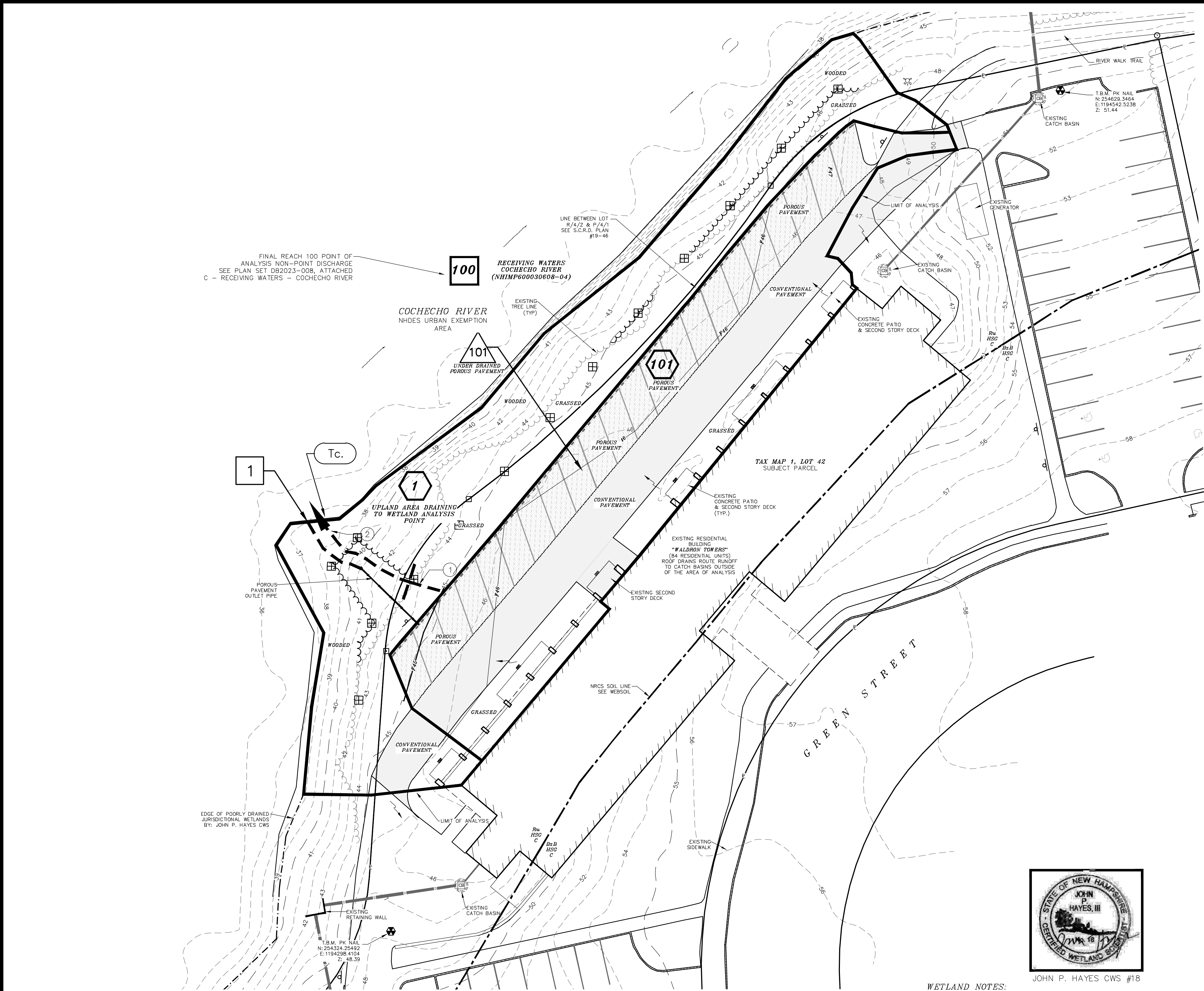
2 Yr - 24 Hr. Node Listing

10 Yr - 24 Hr. Node Listing

25 Yr – 24 Hr. Node Listing

50 Yr - 24 Hr. Node Listing

100 Yr - 24 Hr. Node Listing

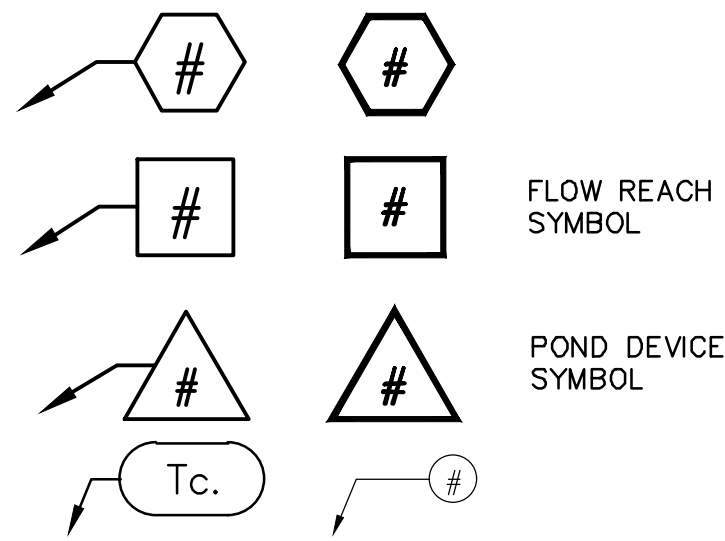


- NOTES:**
- 1.) OWNER: DOVER HOUSING AUTHORITY
62 WHITTIER STREET
DOVER, NH 03820
 - 2.) TAX MAP 1, LOT 42
 - 3.) LOT AREA: 1.4 AC.±
 - 4.) SEE CONDEMNATION PLAN ON RECORD AT THE CITY OF DOVER.
 - 5.) VERTICAL DATUM BASED ON NAVD88 ELEVATIONS. HORIZONTAL COORDINATES BASED ON NAD83. COORDINATES GATHERED USING CARLSON BRX7 SURVEY GRADE GPS RECEIVERS.
 - 6.) THE INTENT OF THIS PLAN IS TO SHOW THE POST CONSTRUCTION DRAINAGE CONDITIONS OF TAX MAP 1, LOT 42.
 - 7.) SEE PROPOSED GRADING & DRAINAGE PLAN FOR SLOPES & EROSION & SEDIMENT CONTROL PLAN FOR STOCKPILE AREA AND CONSTRUCTION ENTRANCE.
 - 8.) HYDROCAD USES A SERIES OF NODE SUFFIXES FOR NUMBERING PURPOSES (S=SUBCATCHMENT, P=POND DEVICE, R=REACH), TO SIMPLIFY ANNOTATION THESE SUFFIXES ARE LEFT OFF THE WATERSHED PLANS AND NODE TYPE IS DENOTED BY THE SYMBOL SHAPE ACCORDING TO THE DISPLAYED LEGEND WHICH COINCIDES WITH HYDROCAD GRAPHICS.

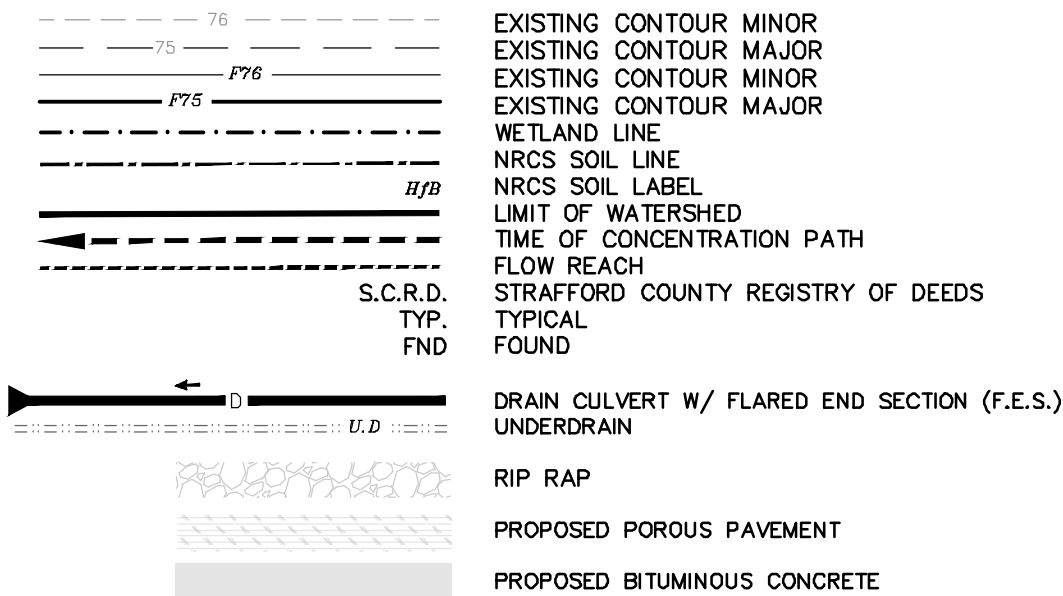
NRCS SOILS LEGEND		
SYMBOL	SOIL TAXONOMIC NAME	HYDROLOGIC SOIL GROUP
Ru	RUMNEY FINE SANDY LOAM	C
SLOPE: A = 0-3% B = 3-8% C = 8-15% D = 15-25% E = 25-50% F = 50%+		
DENOMINATOR: /Rk = ROCKY /VPD = VERY POORLY DRAINED /PD = POORLY DRAINED /SWPD = SOMEWHAT POORLY DRAINED /MWD = MODERATELY WELL DRAINED		

SEE WEBSOIL USDA-NRCS

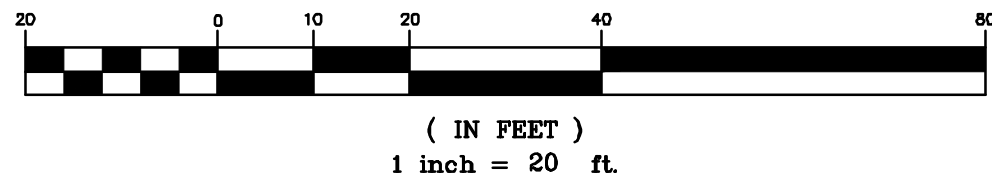
SYMBOLS LEGEND:



LEGEND:



GRAPHIC SCALE



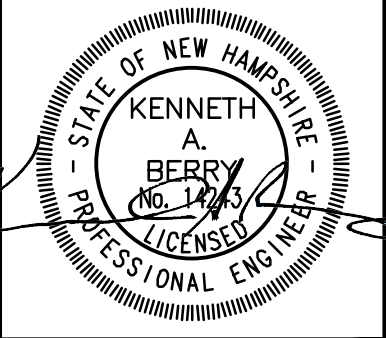
WETLAND NOTES:

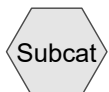
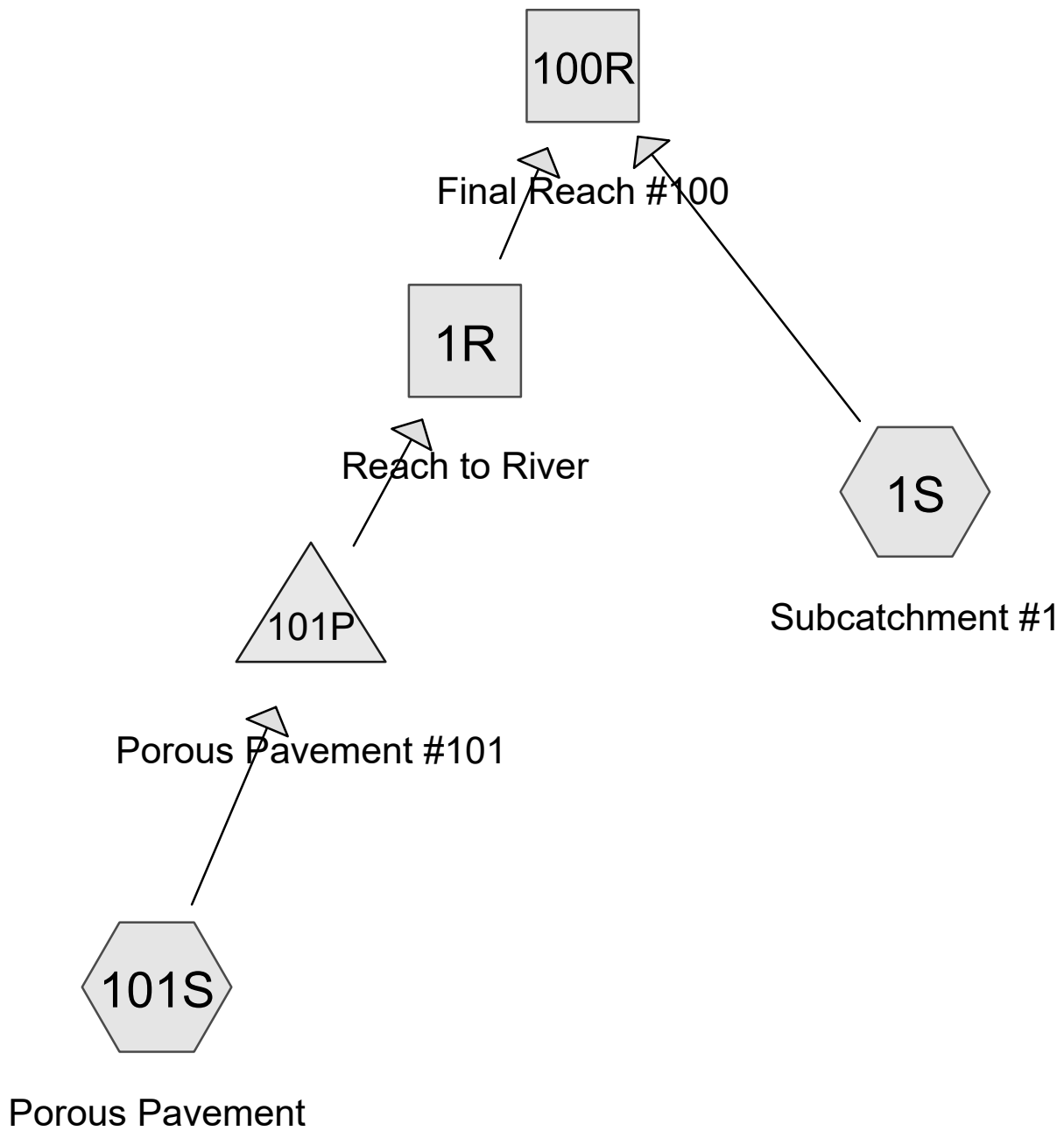
1. WETLANDS WERE DELINEATED BY JOHN P. HAYES, JANUARY, 2024.
2. REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION, (VERSION 2.0) JANUARY 2012, U.S. ARMY CORPS OF ENGINEERS.
3. FIELD INDICATORS OF HYDRIC SOILS IN THE UNITED STATES, A GUIDE FOR IDENTIFYING AND DELINEATING HYDRIC SOILS, VERSION 8.0. UNITED STATES DEPARTMENT OF AGRICULTURE (2016).
4. NATIONAL WETLAND PLANT LIST (CURRENT VERSION).

CITY OF DOVER PLANNING DEPARTMENT FILE #

W-2 PROPOSED WATERSHED PLAN
LAND OF
DOVER HOUSING AUTHORITY
3 GREEN STREET
DOVER, N.H.
TAX MAP 1, LOT 42

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863
SCALE : 1 IN. EQUALS 20 FT.
DATE : OCTOBER 14, 2024
FILE NO. : DB 2023-008

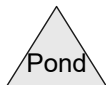




Subcat



Reach



Pond



Link

Routing Diagram for 23-008 W2

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23-008 W2

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Page 2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.168	74	>75% Grass cover, Good, HSG C (1S, 101S)
0.213	98	Paved parking, HSG C (1S, 101S)
0.021	98	Roofs, HSG C (1S, 101S)
0.137	70	Woods, Good, HSG C (1S)
0.539	83	TOTAL AREA

23-008 W2

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Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.539	HSG C	1S, 101S
0.000	HSG D	
0.000	Other	
0.539		TOTAL AREA

23-008 W2

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Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.168	0.000	0.000	0.168	>75% Grass cover, Good	1S, 101S
0.000	0.000	0.213	0.000	0.000	0.213	Paved parking	1S, 101S
0.000	0.000	0.021	0.000	0.000	0.021	Roofs	1S, 101S
0.000	0.000	0.137	0.000	0.000	0.137	Woods, Good	1S
0.000	0.000	0.539	0.000	0.000	0.539	TOTAL AREA	

23-008 W2

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Page 5

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	101P	41.75	41.00	29.0	0.0259	0.012	6.0	0.0	0.0

23-008 W2

Type III 24-hr 25 YR - 24 HR Rainfall=6.87"

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Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: Subcatchment#1Runoff Area=11,961 sf 4.44% Impervious Runoff Depth>3.82"
Flow Length=52' Tc=6.0 min CN=73 Runoff=1.21 cfs 0.087 af**Subcatchment101S: Porous Pavement**Runoff Area=11,515 sf 84.03% Impervious Runoff Depth>5.88"
Tc=234.0 min CN=94 Runoff=0.29 cfs 0.130 af**Reach 1R: Reach to River**Avg. Flow Depth=0.05' Max Vel=1.70 fps Inflow=0.28 cfs 0.129 af
n=0.035 L=27.5' S=0.1455 '/' Capacity=38.85 cfs Outflow=0.28 cfs 0.129 af**Reach 100R: Final Reach #100**Inflow=1.25 cfs 0.216 af
Outflow=1.25 cfs 0.216 af**Pond 101P: Porous Pavement #101**Peak Elev=42.09' Storage=482 cf Inflow=0.29 cfs 0.130 af
6.0" Round Culvert n=0.012 L=29.0' S=0.0259 '/' Outflow=0.28 cfs 0.129 af**Total Runoff Area = 0.539 ac Runoff Volume = 0.217 af Average Runoff Depth = 4.83"**
56.52% Pervious = 0.305 ac 43.48% Impervious = 0.234 ac

23-008 W2

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Type III 24-hr 25 YR - 24 HR Rainfall=6.87"

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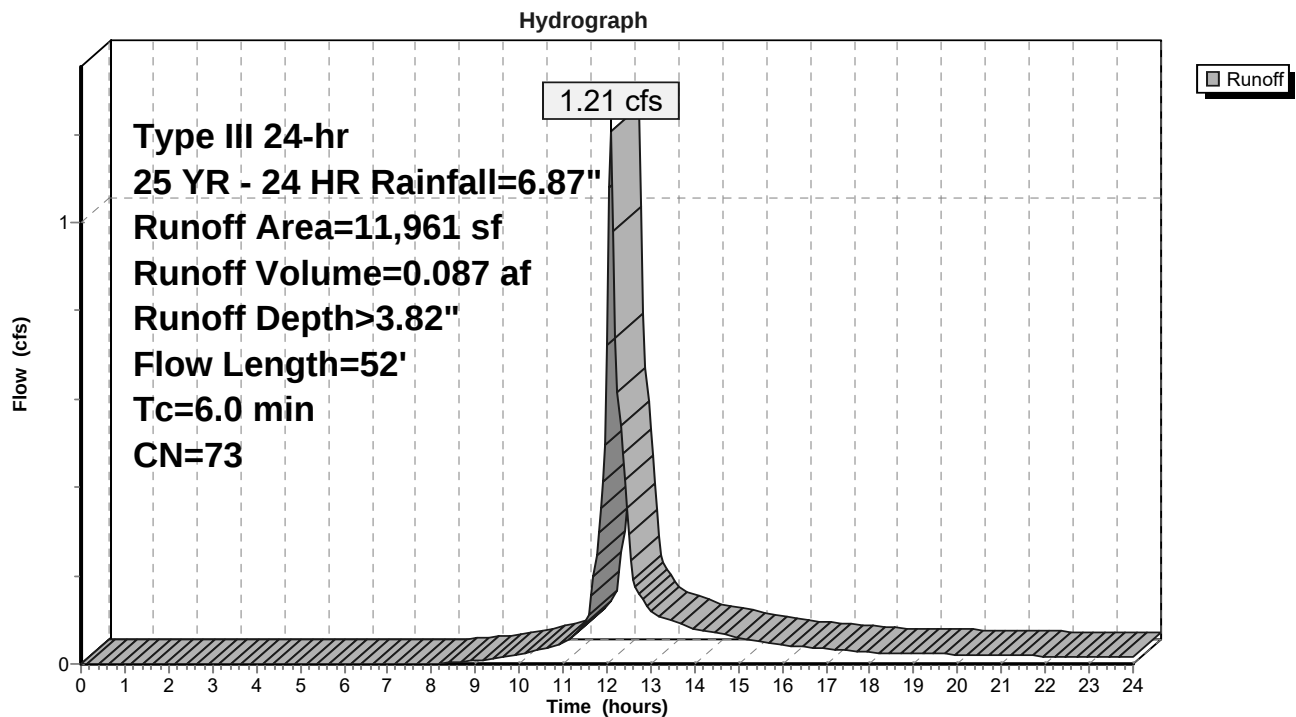
Summary for Subcatchment 1S: Subcatchment #1

Runoff = 1.21 cfs @ 12.09 hrs, Volume= 0.087 af, Depth> 3.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YR - 24 HR Rainfall=6.87"

Area (sf)	CN	Description
5,482	74	>75% Grass cover, Good, HSG C
433	98	Paved parking, HSG C
98	98	Roofs, HSG C
5,948	70	Woods, Good, HSG C
11,961	73	Weighted Average
11,430		95.56% Pervious Area
531		4.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	12	0.1250	0.23		Sheet Flow, Segment #1 Grass: Short n= 0.150 P2= 3.15"
4.5	40	0.1582	0.15		Sheet Flow, Segment #2 Woods: Light underbrush n= 0.400 P2= 3.15"
5.4	52	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 1S: Subcatchment #1

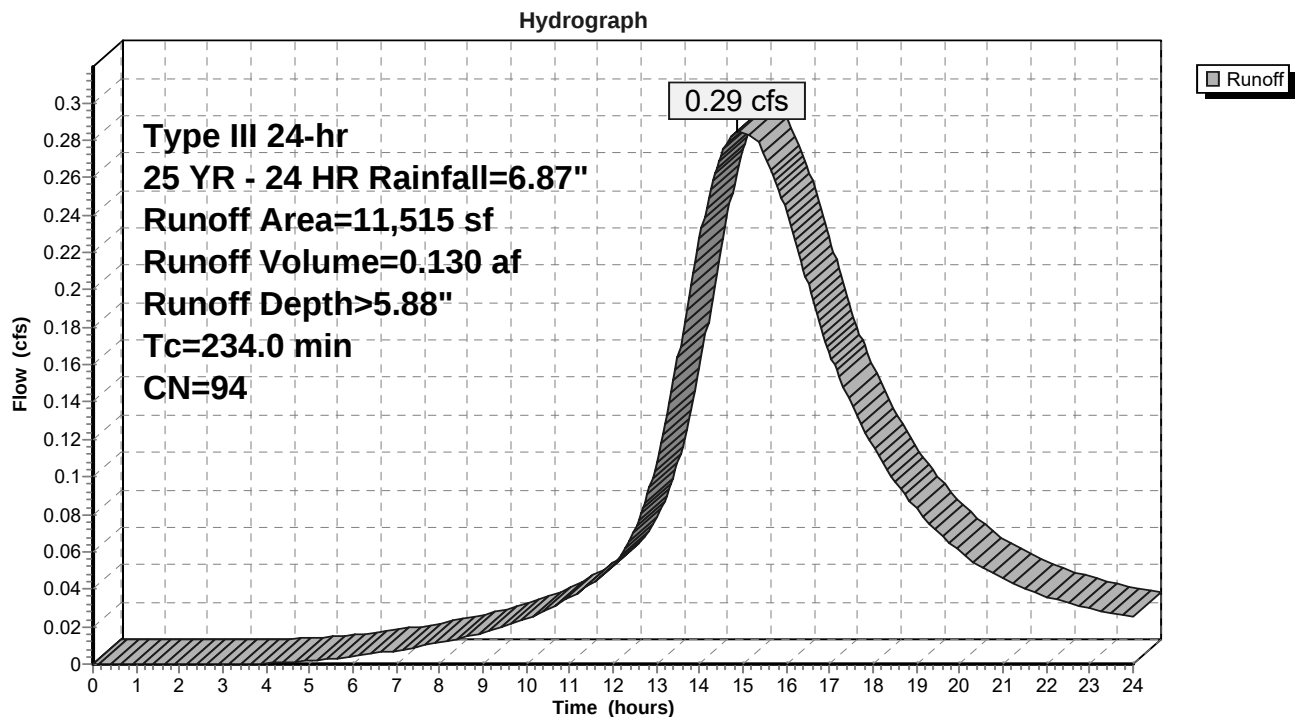
Summary for Subcatchment 101S: Porous Pavement

Runoff = 0.29 cfs @ 14.87 hrs, Volume= 0.130 af, Depth> 5.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YR - 24 HR Rainfall=6.87"

Area (sf)	CN	Description
1,839	74	>75% Grass cover, Good, HSG C
8,862	98	Paved parking, HSG C
814	98	Roofs, HSG C
11,515	94	Weighted Average
1,839		15.97% Pervious Area
9,676		84.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
234.0					Direct Entry, Segment #1 Porous Pavement

Subcatchment 101S: Porous Pavement

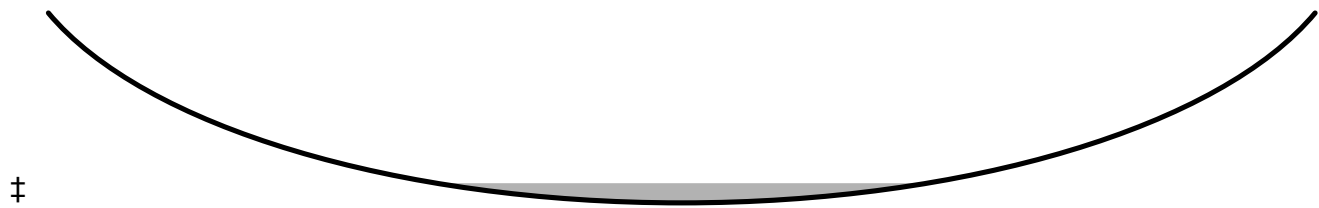
Summary for Reach 1R: Reach to River

Inflow Area = 0.264 ac, 84.03% Impervious, Inflow Depth > 5.84" for 25 YR - 24 HR event
 Inflow = 0.28 cfs @ 15.41 hrs, Volume= 0.129 af
 Outflow = 0.28 cfs @ 15.42 hrs, Volume= 0.129 af, Atten= 0%, Lag= 0.2 min

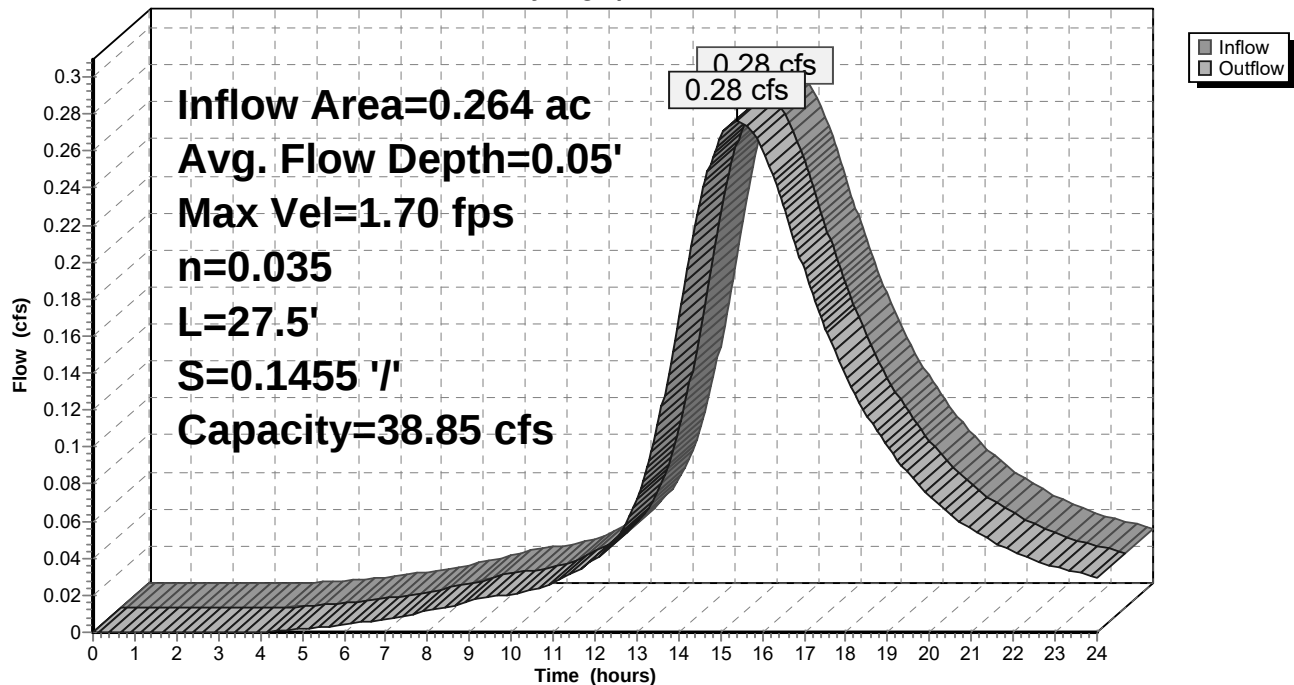
Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
 Max. Velocity= 1.70 fps, Min. Travel Time= 0.3 min
 Avg. Velocity = 0.98 fps, Avg. Travel Time= 0.5 min

Peak Storage= 4 cf @ 15.42 hrs
 Average Depth at Peak Storage= 0.05'
 Bank-Full Depth= 0.50' Flow Area= 5.0 sf, Capacity= 38.85 cfs

15.00' x 0.50' deep Parabolic Channel, n= 0.035 Earth, dense weeds
 Length= 27.5' Slope= 0.1455 '/
 Inlet Invert= 41.00', Outlet Invert= 37.00'

**Reach 1R: Reach to River**

Hydrograph

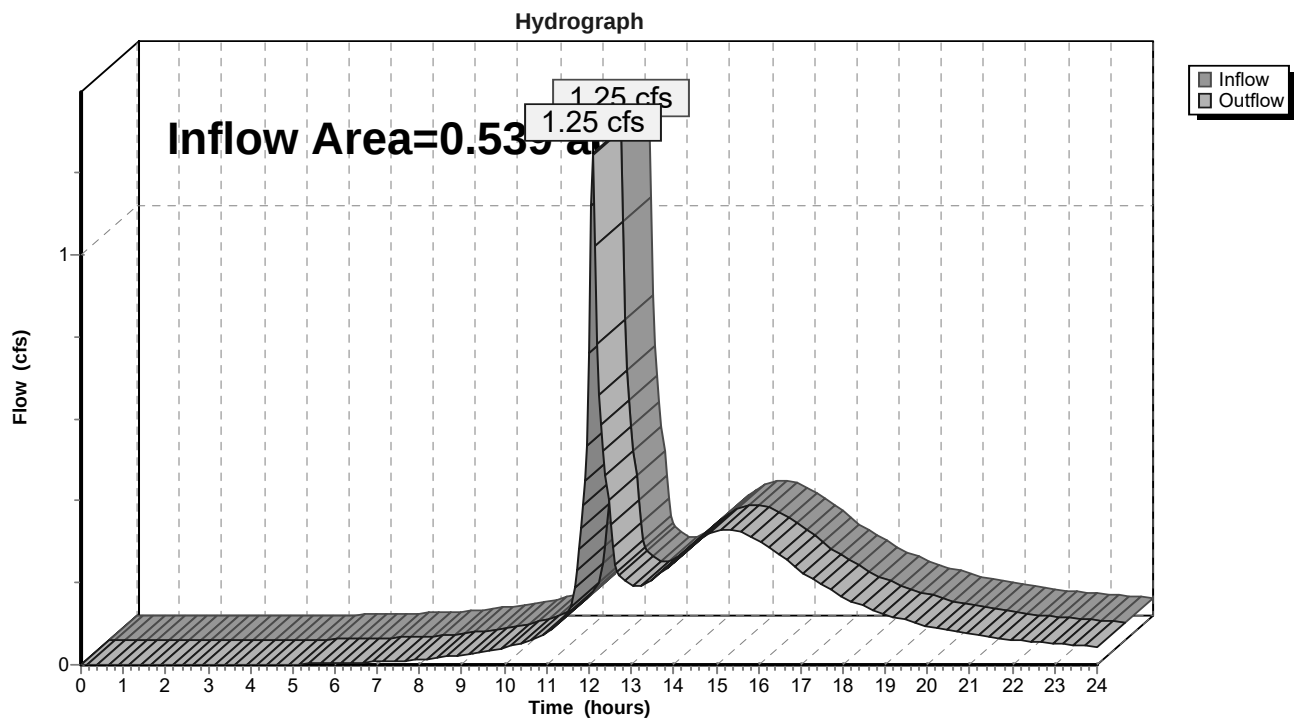


Summary for Reach 100R: Final Reach #100

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.539 ac, 43.48% Impervious, Inflow Depth > 4.81" for 25 YR - 24 HR event
Inflow = 1.25 cfs @ 12.09 hrs, Volume= 0.216 af
Outflow = 1.25 cfs @ 12.09 hrs, Volume= 0.216 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Reach 100R: Final Reach #100

Summary for Pond 101P: Porous Pavement #101

Inflow Area = 0.264 ac, 84.03% Impervious, Inflow Depth > 5.88" for 25 YR - 24 HR event
 Inflow = 0.29 cfs @ 14.87 hrs, Volume= 0.130 af
 Outflow = 0.28 cfs @ 15.41 hrs, Volume= 0.129 af, Atten= 3%, Lag= 32.8 min
 Primary = 0.28 cfs @ 15.41 hrs, Volume= 0.129 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
 Peak Elev= 42.09' @ 15.41 hrs Surf.Area= 4,705 sf Storage= 482 cf
 Flood Elev= 44.16' Surf.Area= 14,031 sf Storage= 3,474 cf

Plug-Flow detention time= 29.4 min calculated for 0.128 af (99% of inflow)
 Center-of-Mass det. time= 26.3 min (975.3 - 949.0)

Volume	Invert	Avail.Storage	Storage Description
#1	43.83'	617 cf	Choker Course (Irregular) Listed below (Recalc) 1,543 cf Overall x 40.0% Voids
#2	42.83'	935 cf	Filter Media (Irregular) Listed below (Recalc) 4,677 cf Overall x 20.0% Voids
#3	41.83'	1,871 cf	Stone Reservoir (Irregular) Listed below (Recalc) 4,677 cf Overall x 40.0% Voids
#4	41.75'	50 cf	6.0" Round 6" U.D. L= 255.5' S= 0.0050 '/'
		3,474 cf	Total Available Storage

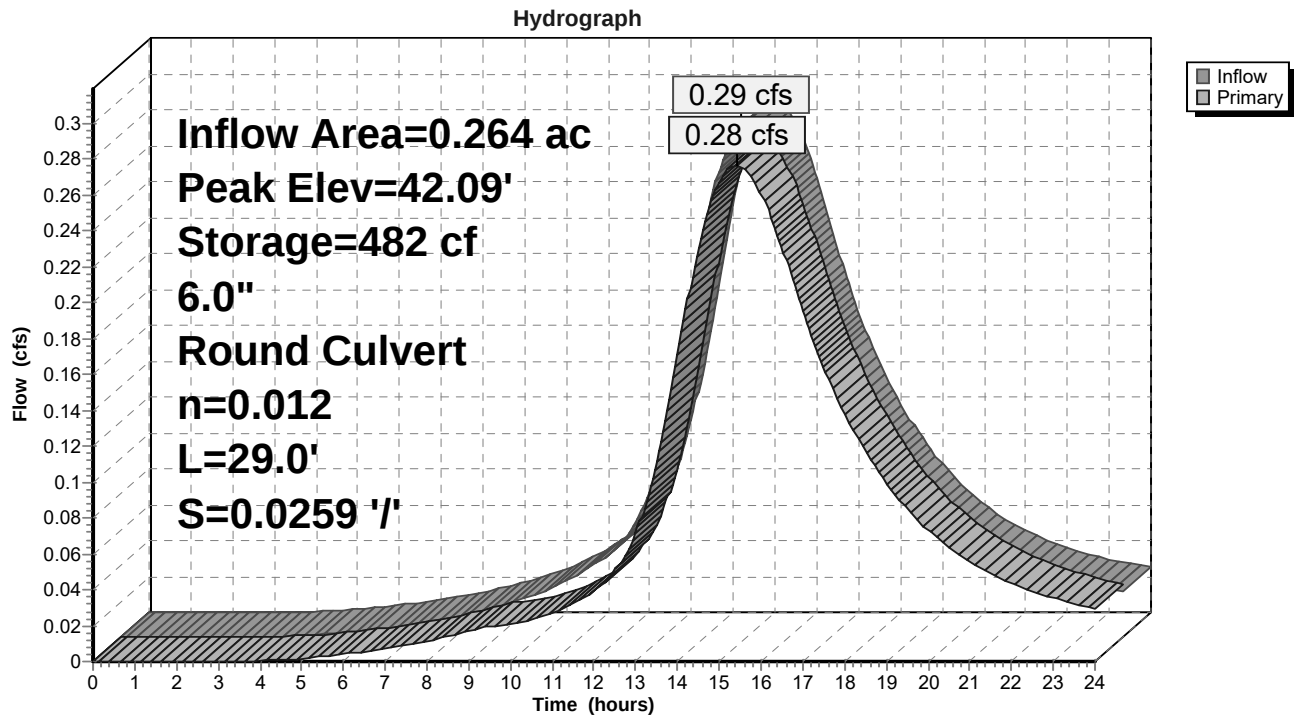
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
43.83	4,677	561.2	0	0	4,677
44.16	4,677	561.2	1,543	1,543	4,862

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
42.83	4,677	561.2	0	0	4,677
43.83	4,677	561.2	4,677	4,677	5,238

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
41.83	4,677	516.2	0	0	4,677
42.83	4,677	516.2	4,677	4,677	5,193

Device	Routing	Invert	Outlet Devices
#1	Primary	41.75'	6.0" Round 6" HDPE N-12 L= 29.0' Ke= 0.500 Inlet / Outlet Invert= 41.75' / 41.00' S= 0.0259 '/ Cc= 0.900 n= 0.012, Flow Area= 0.20 sf

Primary OutFlow Max=0.28 cfs @ 15.41 hrs HW=42.09' TW=41.05' (Dynamic Tailwater)
 ↗ **1=6" HDPE N-12** (Inlet Controls 0.28 cfs @ 1.97 fps)

Pond 101P: Porous Pavement #101

23-008 W2*Type III 24-hr 2 YR - 24 HR Rainfall=3.61"*

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Page 1

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: Subcatchment#1Runoff Area=11,961 sf 4.44% Impervious Runoff Depth>1.25"
Flow Length=52' Tc=6.0 min CN=73 Runoff=0.38 cfs 0.029 af**Subcatchment101S: Porous Pavement**Runoff Area=11,515 sf 84.03% Impervious Runoff Depth>2.80"
Tc=234.0 min CN=94 Runoff=0.14 cfs 0.062 af**Reach 1R: Reach to River**Avg. Flow Depth=0.04' Max Vel=1.36 fps Inflow=0.13 cfs 0.062 af
n=0.035 L=27.5' S=0.1455 '/' Capacity=38.85 cfs Outflow=0.13 cfs 0.062 af**Reach 100R: Final Reach #100**Inflow=0.40 cfs 0.090 af
Outflow=0.40 cfs 0.090 af**Pond 101P: Porous Pavement #101**Peak Elev=41.97' Storage=263 cf Inflow=0.14 cfs 0.062 af
6.0" Round Culvert n=0.012 L=29.0' S=0.0259 '/' Outflow=0.13 cfs 0.062 af**Total Runoff Area = 0.539 ac Runoff Volume = 0.090 af Average Runoff Depth = 2.01"**
56.52% Pervious = 0.305 ac 43.48% Impervious = 0.234 ac

23-008 W2

Type III 24-hr 10 YR - 24 HR Rainfall=5.44"

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Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: Subcatchment#1Runoff Area=11,961 sf 4.44% Impervious Runoff Depth>2.63"
Flow Length=52' Tc=6.0 min CN=73 Runoff=0.83 cfs 0.060 af**Subcatchment101S: Porous Pavement**Runoff Area=11,515 sf 84.03% Impervious Runoff Depth>4.52"
Tc=234.0 min CN=94 Runoff=0.22 cfs 0.100 af**Reach 1R: Reach to River**Avg. Flow Depth=0.05' Max Vel=1.57 fps Inflow=0.21 cfs 0.099 af
n=0.035 L=27.5' S=0.1455 '/' Capacity=38.85 cfs Outflow=0.21 cfs 0.099 af**Reach 100R: Final Reach #100**Inflow=0.86 cfs 0.159 af
Outflow=0.86 cfs 0.159 af**Pond 101P: Porous Pavement #101**Peak Elev=42.04' Storage=392 cf Inflow=0.22 cfs 0.100 af
6.0" Round Culvert n=0.012 L=29.0' S=0.0259 '/' Outflow=0.21 cfs 0.099 af**Total Runoff Area = 0.539 ac Runoff Volume = 0.160 af Average Runoff Depth = 3.56"**
56.52% Pervious = 0.305 ac 43.48% Impervious = 0.234 ac

23-008 W2

Type III 24-hr 25 YR - 24 HR Rainfall=6.87"

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Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: Subcatchment#1Runoff Area=11,961 sf 4.44% Impervious Runoff Depth>3.82"
Flow Length=52' Tc=6.0 min CN=73 Runoff=1.21 cfs 0.087 af**Subcatchment101S: Porous Pavement**Runoff Area=11,515 sf 84.03% Impervious Runoff Depth>5.88"
Tc=234.0 min CN=94 Runoff=0.29 cfs 0.130 af**Reach 1R: Reach to River**Avg. Flow Depth=0.05' Max Vel=1.70 fps Inflow=0.28 cfs 0.129 af
n=0.035 L=27.5' S=0.1455 '/' Capacity=38.85 cfs Outflow=0.28 cfs 0.129 af**Reach 100R: Final Reach #100**Inflow=1.25 cfs 0.216 af
Outflow=1.25 cfs 0.216 af**Pond 101P: Porous Pavement #101**Peak Elev=42.09' Storage=482 cf Inflow=0.29 cfs 0.130 af
6.0" Round Culvert n=0.012 L=29.0' S=0.0259 '/' Outflow=0.28 cfs 0.129 af**Total Runoff Area = 0.539 ac Runoff Volume = 0.217 af Average Runoff Depth = 4.83"**
56.52% Pervious = 0.305 ac 43.48% Impervious = 0.234 ac

23-008 W2

Type III 24-hr 50 YR - 24 HR Rainfall=8.20"

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Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: Subcatchment#1Runoff Area=11,961 sf 4.44% Impervious Runoff Depth>4.98"
Flow Length=52' Tc=6.0 min CN=73 Runoff=1.57 cfs 0.114 af**Subcatchment101S: Porous Pavement**Runoff Area=11,515 sf 84.03% Impervious Runoff Depth>7.15"
Tc=234.0 min CN=94 Runoff=0.34 cfs 0.157 af**Reach 1R: Reach to River**Avg. Flow Depth=0.06' Max Vel=1.80 fps Inflow=0.33 cfs 0.156 af
n=0.035 L=27.5' S=0.1455 ' Capacity=38.85 cfs Outflow=0.33 cfs 0.156 af**Reach 100R: Final Reach #100**Inflow=1.62 cfs 0.270 af
Outflow=1.62 cfs 0.270 af**Pond 101P: Porous Pavement #101**Peak Elev=42.13' Storage=564 cf Inflow=0.34 cfs 0.157 af
6.0" Round Culvert n=0.012 L=29.0' S=0.0259 ' Outflow=0.33 cfs 0.156 af**Total Runoff Area = 0.539 ac Runoff Volume = 0.271 af Average Runoff Depth = 6.04"**
56.52% Pervious = 0.305 ac 43.48% Impervious = 0.234 ac

23-008 W2

Type III 24-hr 100 YR - 24 HR Rainfall=9.79"

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Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: Subcatchment#1Runoff Area=11,961 sf 4.44% Impervious Runoff Depth>6.42"
Flow Length=52' Tc=6.0 min CN=73 Runoff=2.01 cfs 0.147 af**Subcatchment101S: Porous Pavement**Runoff Area=11,515 sf 84.03% Impervious Runoff Depth>8.66"
Tc=234.0 min CN=94 Runoff=0.41 cfs 0.191 af**Reach 1R: Reach to River**Avg. Flow Depth=0.06' Max Vel=1.91 fps Inflow=0.40 cfs 0.189 af
n=0.035 L=27.5' S=0.1455 '/' Capacity=38.85 cfs Outflow=0.40 cfs 0.189 af**Reach 100R: Final Reach #100**Inflow=2.08 cfs 0.336 af
Outflow=2.08 cfs 0.336 af**Pond 101P: Porous Pavement #101**Peak Elev=42.18' Storage=662 cf Inflow=0.41 cfs 0.191 af
6.0" Round Culvert n=0.012 L=29.0' S=0.0259 '/' Outflow=0.40 cfs 0.189 af**Total Runoff Area = 0.539 ac Runoff Volume = 0.338 af Average Runoff Depth = 7.52"**
56.52% Pervious = 0.305 ac 43.48% Impervious = 0.234 ac

Appendix III - Calculations, Charts, & Graphs

Extreme Precipitation Tables

Rip Rap Calculations

NHDES AoT Spreadsheets

USDA / NRCS Websoil

NRCS Soil Survey Report

Stormwater System Operation & Maintenance

Plan & Inspection and Maintenance Manual

Watershed Report Card, 303 (d) List, ORW List

Filtrexx Construction Specifications

Extreme Precipitation Tables

Northeast Regional Climate Center

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

Smoothing	Yes
State	New Hampshire
Location	
Longitude	70.892 degrees West
Latitude	43.225 degrees North
Elevation	0 feet
Date/Time	Tue, 23 Nov 2021 13:01:50 -0500

Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.26	0.40	0.50	0.65	0.81	1.03	1yr	0.70	0.98	1.20	1.54	1.99	2.59	2.87	1yr	2.30	2.76	3.16	3.89	4.45	1yr
2yr	0.32	0.49	0.61	0.81	1.01	1.28	2yr	0.87	1.17	1.50	1.91	2.44	3.14	3.51	2yr	2.78	3.37	3.87	4.60	5.24	2yr
5yr	0.37	0.57	0.72	0.96	1.23	1.58	5yr	1.06	1.44	1.85	2.38	3.07	3.97	4.49	5yr	3.51	4.32	4.94	5.80	6.56	5yr
10yr	0.40	0.63	0.80	1.09	1.42	1.85	10yr	1.23	1.69	2.18	2.82	3.65	4.73	5.42	10yr	4.18	5.21	5.96	6.92	7.78	10yr
25yr	0.47	0.74	0.94	1.30	1.73	2.27	25yr	1.49	2.09	2.70	3.52	4.59	5.97	6.94	25yr	5.28	6.67	7.63	8.74	9.75	25yr
50yr	0.52	0.83	1.07	1.49	2.01	2.67	50yr	1.73	2.46	3.19	4.18	5.47	7.13	8.38	50yr	6.31	8.06	9.20	10.43	11.57	50yr
100yr	0.58	0.94	1.21	1.72	2.33	3.13	100yr	2.01	2.89	3.75	4.95	6.50	8.51	10.12	100yr	7.53	9.73	11.10	12.45	13.74	100yr
200yr	0.65	1.06	1.37	1.96	2.72	3.69	200yr	2.34	3.40	4.44	5.89	7.75	10.16	12.22	200yr	8.99	11.75	13.39	14.87	16.32	200yr
500yr	0.76	1.25	1.63	2.37	3.33	4.56	500yr	2.87	4.22	5.52	7.37	9.76	12.86	15.70	500yr	11.38	15.09	17.18	18.82	20.51	500yr

Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.24	0.37	0.45	0.60	0.74	0.90	1yr	0.64	0.88	0.92	1.25	1.54	2.10	2.45	1yr	1.85	2.35	2.92	3.43	4.10	1yr
2yr	0.31	0.49	0.60	0.81	1.00	1.18	2yr	0.86	1.15	1.36	1.82	2.35	3.05	3.40	2yr	2.70	3.27	3.75	4.47	5.08	2yr
5yr	0.35	0.54	0.67	0.91	1.16	1.40	5yr	1.00	1.37	1.61	2.14	2.77	3.70	4.12	5yr	3.27	3.96	4.61	5.40	6.10	5yr
10yr	0.38	0.59	0.73	1.02	1.31	1.60	10yr	1.13	1.56	1.81	2.43	3.12	4.25	4.77	10yr	3.76	4.59	5.31	6.21	6.97	10yr
25yr	0.44	0.67	0.83	1.18	1.55	1.91	25yr	1.34	1.87	2.11	2.83	3.63	5.05	5.76	25yr	4.47	5.54	6.48	7.49	8.34	25yr
50yr	0.48	0.73	0.91	1.31	1.77	2.19	50yr	1.52	2.14	2.36	3.19	4.07	5.78	6.64	50yr	5.11	6.38	7.52	8.62	9.54	50yr
100yr	0.54	0.81	1.02	1.47	2.02	2.51	100yr	1.74	2.45	2.64	3.57	4.53	6.61	7.63	100yr	5.85	7.34	8.72	9.92	10.89	100yr
200yr	0.60	0.90	1.14	1.65	2.30	2.88	200yr	1.98	2.81	2.95	4.00	5.05	7.55	8.78	200yr	6.68	8.44	10.11	11.41	12.44	200yr
500yr	0.70	1.04	1.33	1.94	2.75	3.47	500yr	2.38	3.39	3.43	4.64	5.84	8.98	10.55	500yr	7.95	10.14	12.28	13.76	14.79	500yr

Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.28	0.43	0.53	0.71	0.87	1.08	1yr	0.75	1.05	1.23	1.73	2.20	2.84	3.09	1yr	2.51	2.97	3.40	4.19	4.76	1yr
2yr	0.33	0.51	0.62	0.84	1.04	1.24	2yr	0.90	1.22	1.47	1.95	2.51	3.26	3.63	2yr	2.88	3.49	4.00	4.75	5.42	2yr
5yr	0.39	0.60	0.75	1.03	1.31	1.58	5yr	1.13	1.54	1.85	2.49	3.19	4.23	4.86	5yr	3.74	4.67	5.30	6.23	7.00	5yr
10yr	0.46	0.70	0.87	1.22	1.57	1.91	10yr	1.36	1.87	2.23	3.03	3.85	5.19	6.07	10yr	4.60	5.84	6.69	7.65	8.52	10yr
25yr	0.56	0.85	1.05	1.50	1.98	2.47	25yr	1.71	2.41	2.87	3.95	4.95	6.87	8.16	25yr	6.08	7.84	8.97	10.07	11.09	25yr
50yr	0.64	0.98	1.22	1.75	2.36	2.98	50yr	2.04	2.91	3.48	4.81	6.01	8.45	10.22	50yr	7.48	9.83	11.23	12.38	13.55	50yr
100yr	0.75	1.13	1.42	2.05	2.81	3.59	100yr	2.43	3.51	4.23	5.88	7.31	10.41	12.82	100yr	9.21	12.33	14.04	15.25	16.57	100yr
200yr	0.87	1.31	1.66	2.40	3.35	4.35	200yr	2.89	4.26	5.14	7.19	8.88	12.84	16.09	200yr	11.36	15.47	17.58	18.77	20.30	200yr
500yr	1.07	1.59	2.04	2.97	4.22	5.59	500yr	3.64	5.46	6.64	9.40	11.51	16.98	21.73	500yr	15.03	20.90	23.68	24.75	26.55	500yr

RIP RAP CALCULATIONS

23-008 Dover Housing Authority

3 Green Street

Dover, NH

Berry Surveying & Engineering

335 Second Crown Point Road

Barrington, NH

14-Oct-24

Rip Rap equations were obtained from the *Stormwater Management and Erosion*

Control Handbook for Urban and Developing Areas in New

Hampshire. Rip Rap was sized for the 25 year storm event. (Some d50 sizes and T values have been modified)

TAILWATER < HALF THE Do

$La = (1.8 \times Q) / Do^{3/2} + (7 \times Do)$ Q = Peak Flow & Do is Pipe Diameter

$W = La + 3 \times Do$ or defined channel width

$d50 = (0.02 \times Q^{4/3}) / (Tw \times Do)$

Tw = Tailwater Depth

T = Largest Stone Size x 1.5

Culvert or

Catch Basin

Tailwater

(Feet)

Tw

Discharge

(C.F.S.)

Q

Diameter

of Pipe

Do

Length of

Rip Rap

La (feet)

Width of

Rip Rap

W (feet)

d50-Stone

Rip Rap

d50(ft.)

Actual

Size

Thickness

6" HDPE N-12 (Pond #101P)	0.10	0.28	0.50	4.9	6.4	0.07	0.50	1.20
---------------------------	------	------	------	-----	-----	------	------	------

Please note that the designer chose to use the 100 Year Event for the dimensional calculations.

Table 7-24 -- Recommended Rip Rap Gradation Ranges			
d50 Size =	0.5	Feet	6 Inches
% of Weight Smaller	Size of Stone (Inches)		
Than the Given d50 Size	From To		
100%	9	12	
85%	8	11	
50%	6	9	
15%	2	3	



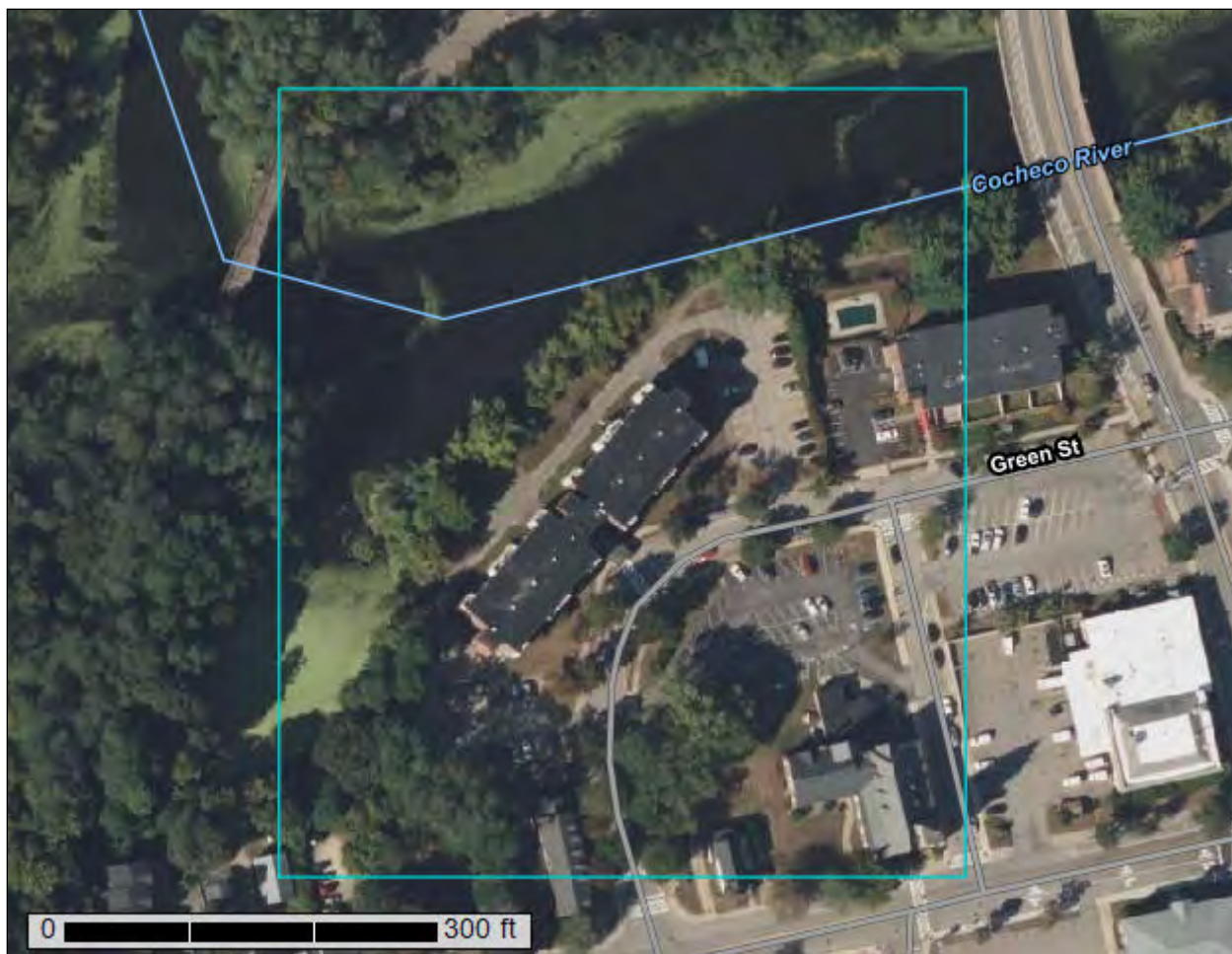
United States
Department of
Agriculture

NRCS

Natural
Resources
Conservation
Service

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

Custom Soil Resource Report for Strafford County, New Hampshire



Preface

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

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

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

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

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

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

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How Soil Surveys Are Made

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

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

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

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

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

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

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

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

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

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

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

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

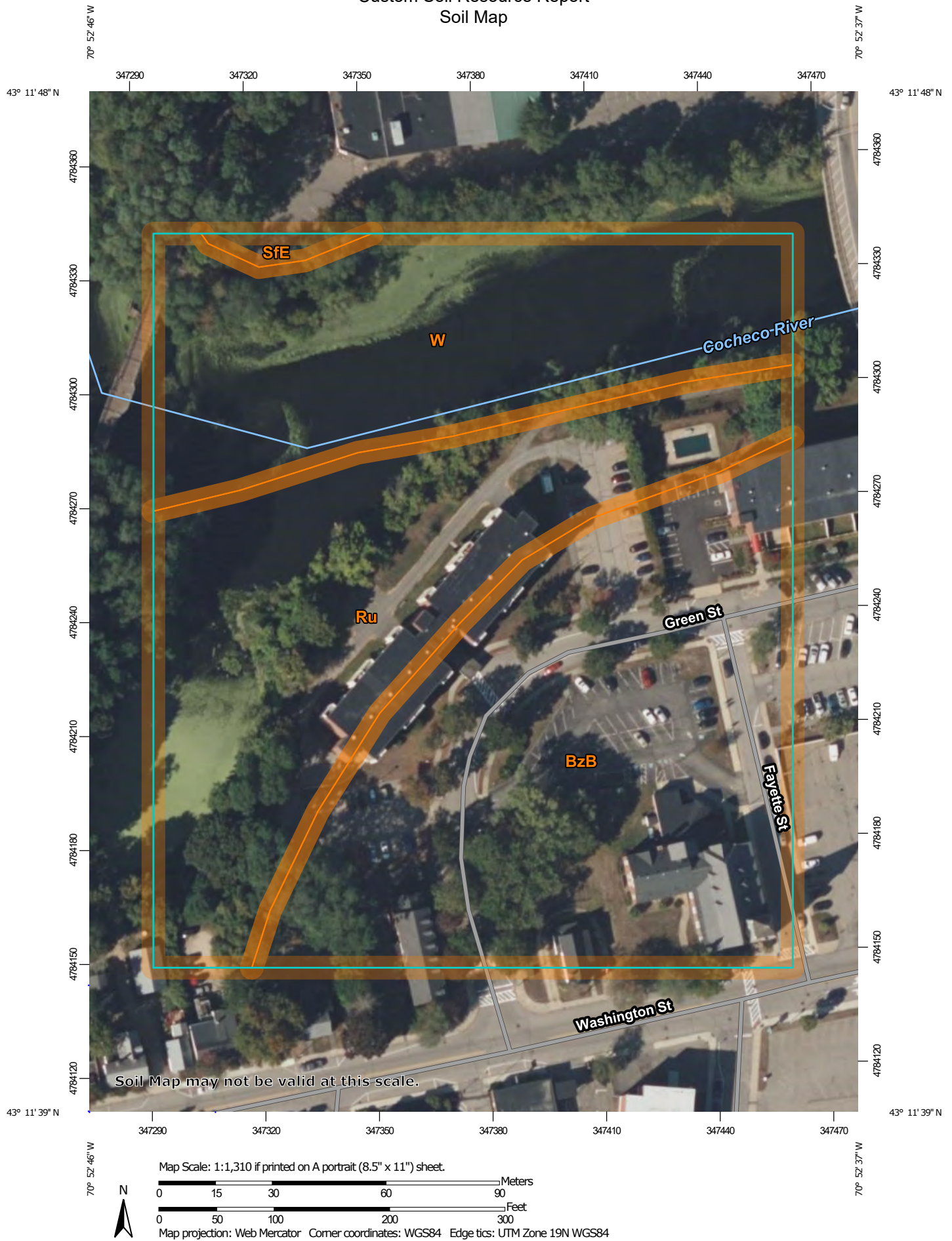
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identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

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

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MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features

 Blowout

 Borrow Pit

 Clay Spot

 Closed Depression

 Gravel Pit

 Gravelly Spot

 Landfill

 Lava Flow

 Marsh or swamp

 Mine or Quarry

 Miscellaneous Water

 Perennial Water

 Rock Outcrop

 Saline Spot

 Sandy Spot

 Severely Eroded Spot

 Sinkhole

 Slide or Slip

 Sodic Spot

 Spoil Area

 Stony Spot

 Very Stony Spot

 Wet Spot

 Other

 Special Line Features

Water Features

 Streams and Canals

Transportation

 Rails

 Interstate Highways

 US Routes

 Major Roads

 Local Roads

Background

 Aerial Photography

MAP INFORMATION

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

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

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

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

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

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

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

Soil Survey Area: Strafford County, New Hampshire
Survey Area Data: Version 24, Aug 22, 2023

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

Date(s) aerial images were photographed: Jun 19, 2020—Sep 20, 2020

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BzB	Buxton silt loam, 3 to 8 percent slopes	3.3	41.2%
Ru	Rumney fine sandy loam	2.6	31.7%
SfE	Suffield silt loam, 15 to 35 percent slopes	0.1	0.7%
W	Water	2.1	26.3%
Totals for Area of Interest		8.1	100.0%

Map Unit Descriptions

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

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

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

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or

landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

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

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

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

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

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

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

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

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

Strafford County, New Hampshire

BzB—Buxton silt loam, 3 to 8 percent slopes

Map Unit Setting

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

Map Unit Composition

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

Description of Buxton

Setting

Parent material: Glaciomarine

Typical profile

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

Properties and qualities

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

Interpretive groups

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

Minor Components

Elmwood

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

Not named

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

Ru—Rumney fine sandy loam

Map Unit Setting

National map unit symbol: 9d8q
Elevation: 20 to 560 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Farmland of local importance

Map Unit Composition

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

Description of Rumney

Setting

Landform: Flood plains
Parent material: Sandy and/or coarse-loamy alluvium derived from granite, gneiss or schist

Typical profile

H1 - 0 to 34 inches: fine sandy loam
H2 - 34 to 41 inches: stratified loamy fine sand to very gravelly coarse sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 6.00 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: Frequent
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: A/D
Ecological site: F144AY014CT - Wet Sandy Low Floodplain
Hydric soil rating: Yes

Minor Components

Not named wet

Percent of map unit: 10 percent
Landform: Flood plains

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Hydric soil rating: Yes

Podunk

Percent of map unit: 5 percent

Hydric soil rating: No

SfE—Suffield silt loam, 15 to 35 percent slopes

Map Unit Setting

National map unit symbol: 9d8w

Elevation: 0 to 210 feet

Mean annual precipitation: 36 to 71 inches

Mean annual air temperature: 39 to 55 degrees F

Frost-free period: 140 to 240 days

Farmland classification: Not prime farmland

Map Unit Composition

Suffield and similar soils: 85 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Suffield

Typical profile

H1 - 0 to 19 inches: silt loam

H2 - 19 to 28 inches: silt loam

H3 - 28 to 41 inches: silty clay

Properties and qualities

Slope: 15 to 35 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Runoff class: High

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Moderate (about 7.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6e

Hydrologic Soil Group: C

Ecological site: F144AY017NH - Well Drained Lake Plain

Hydric soil rating: No

Minor Components

Not named

Percent of map unit: 14 percent

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Hydric soil rating: No

Rock outcrop

Percent of map unit: 1 percent

Hydric soil rating: No

W—Water

Map Unit Composition

Water (less than 40 acres): 100 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

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FILTRATION PRACTICE DESIGN CRITERIA (Env-Wq 1508.07)

Type/Node Name:

Porous Pavement #101

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

Yes		Check if you reviewed the restrictions on unlined systems outlined in Env-Wq 1508.07(a).	
0.26	ac	A = Area draining to the practice	
0.22	ac	A _I = Impervious area draining to the practice	
0.84	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.81	unitless	R _v = Runoff coefficient = 0.05 + (0.9 x I)	
0.21	ac-in	WQV = 1" x R _v x A	
773	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
193	cf	25% x WQV (check calc for sediment forebay volume)	
579	cf	75% x WQV (check calc for surface sand filter volume)	
N/A		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:			
	sf	A _{SA} = Surface area of the practice	
	iph	K _{sat} _{DESIGN} = Design infiltration rate ¹	
		If K _{sat} (prior to factor of safety) is < 0.50 iph, has an underdrain been provided?	
	Yes/No	(Use the calculations below)	
-	hours	T _{DRAIN} = Drain time = V / (A _{SA} * I _{DESIGN})	≤ 72-hrs
Calculate time to drain if system IS underdrained:			
42.24	ft	E _{WQV} = Elevation of WQV (attach stage-storage table)	
0.38	cfs	Q _{WQV} = Discharge at the E _{WQV} (attach stage-discharge table)	
1.13	hours	T _{DRAIN} = Drain time = 2WQV/Q _{WQV}	≤ 72-hrs
42.83	feet	E _{FC} = Elevation of the bottom of the filter course material ²	
41.83	feet	E _{UD} = Invert elevation of the underdrain (UD), if applicable	
	feet	E _{SHWT} = Elevation of SHWT (if none found, enter the lowest elevation of the test pit)	
	feet	E _{ROCK} = Elevation of bedrock (if none found, enter the lowest elevation of the test pit)	
1.00	feet	D _{FC to UD} = Depth to UD from the bottom of the filter course	≥ 1'
42.83	feet	D _{FC to ROCK} = Depth to bedrock from the bottom of the filter course	≥ 1'
42.83	feet	D _{FC to SHWT} = Depth to SHWT from the bottom of the filter course	≥ 1'
42.21	ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
44.16	ft	Elevation of the top of the practice	
YES		50 peak elevation ≤ Elevation of the top of the practice	← yes
If a surface sand filter or underground sand filter is proposed:			
YES	ac	Drainage Area check.	< 10 ac
	cf	V = Volume of storage ³ (attach a stage-storage table)	≥ 75%WQV
	inches	D _{FC} = Filter course thickness	18", or 24" if within GPA
Sheet		Note what sheet in the plan set contains the filter course specification.	
	Yes/No	Access grate provided?	← yes

YES	ac	Drainage Area no larger than 5 ac?	← yes
	cf	V = Volume of storage ³ (attach a stage-storage table)	≥ 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	
	: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:			
	Asphalt	Type of pavement proposed (Concrete? Asphalt? Pavers? Etc.)	
	0.1 acres	A _{SA} = Surface area of the pervious pavement	
2.5	:1	Ratio of the contributing area to the pervious surface area	≤ 5:1
	12.0 inches	D _{FC} = Filter course thickness	12", or 18" if within GPA
Sheet		Note what sheet in the plan set contains the filter course spec.	mod. 304.1 (see spec)

1. Rate of the limiting layer (either the filter course or the underlying soil). K_{sat_design} includes factor of safety. 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 structure, 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.

[illegible]

23-008 W2

Type III 24-hr 50 YR - 24 HR Rainfall=8.20"

Prepared by Berry Surveying & Engineering

Printed 10/16/2024

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Summary for Pond 101P: Porous Pavement #101

Inflow Area = 0.264 ac, 84.03% Impervious, Inflow Depth > 7.15" for 50 YR - 24 HR event
 Inflow = 0.34 cfs @ 14.86 hrs, Volume= 0.157 af
 Outflow = 0.33 cfs @ 15.40 hrs, Volume= 0.156 af, Atten= 3%, Lag= 32.1 min
 Primary = 0.33 cfs @ 15.40 hrs, Volume= 0.156 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
 Peak Elev= 42.13' @ 15.40 hrs Surf.Area= 4,709 sf Storage= 564 cf
 Flood Elev= 44.16' Surf.Area= 14,031 sf Storage= 3,474 cf

Plug-Flow detention time= 29.1 min calculated for 0.156 af (99% of inflow)
 Center-of-Mass det. time= 25.4 min (970.4 - 945.0)

Volume	Invert	Avail.Storage	Storage Description
#1	43.83'	617 cf	Choker Course (Irregular) Listed below (Recalc) 1,543 cf Overall x 40.0% Voids
#2	42.83'	935 cf	Filter Media (Irregular) Listed below (Recalc) 4,677 cf Overall x 20.0% Voids
#3	41.83'	1,871 cf	Stone Reservoir (Irregular) Listed below (Recalc) 4,677 cf Overall x 40.0% Voids
#4	41.75'	50 cf	6.0" Round 6" U.D. L= 255.5' S= 0.0050 '/'
		3,474 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
43.83	4,677	561.2	0	0	4,677
44.16	4,677	561.2	1,543	1,543	4,862

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
42.83	4,677	561.2	0	0	4,677
43.83	4,677	561.2	4,677	4,677	5,238

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
41.83	4,677	516.2	0	0	4,677
42.83	4,677	516.2	4,677	4,677	5,193

Device	Routing	Invert	Outlet Devices
#1	Primary	41.75'	6.0" Round 6" HDPE N-12 L= 29.0' Ke= 0.500 Inlet / Outlet Invert= 41.75' / 41.00' S= 0.0259 '/ Cc= 0.900 n= 0.012, Flow Area= 0.20 sf

Primary OutFlow Max=0.33 cfs @ 15.40 hrs HW=42.13' TW=41.06' (Dynamic Tailwater)

↑ **1=6" HDPE N-12** (Inlet Controls 0.33 cfs @ 2.09 fps)

23-008 W2

Type III 24-hr 50 YR - 24 HR Rainfall=8.20"

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Stage-Area-Storage for Pond 101P: Porous Pavement #101

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
41.83	0	42.89	1,927	43.95	3,031
41.85	37	42.91	1,946	43.97	3,068
41.87	75	42.93	1,964	43.99	3,106
41.89	112	42.95	1,983	44.01	3,143
41.91	150	42.97	2,002	44.03	3,180
41.93	187	42.99	2,020	44.05	3,218
41.95	224	43.01	2,039	44.07	3,255
41.97	262	43.03	2,058	44.09	3,293
41.99	299	43.05	2,077	44.11	3,330
42.01	337	43.07	2,095	44.13	3,367
42.03	374	43.09	2,114	44.15	3,405
42.05	412	43.11	2,133		
42.07	449	43.13	2,151		
42.09	486	43.15	2,170		
42.11	524	43.17	2,189		
42.13	561	43.19	2,208		
42.15	599	43.21	2,226		
42.17	636	43.23	2,245		
42.19	673	43.25	2,264		
42.21	711	43.27	2,282		
42.23	748	43.29	2,301		
42.25	786	43.31	2,320		
42.27	823	43.33	2,339		
42.29	861	43.35	2,357		
42.31	898	43.37	2,376		
42.33	935	43.39	2,395		
42.35	973	43.41	2,413		
42.37	1,010	43.43	2,432		
42.39	1,048	43.45	2,451		
42.41	1,085	43.47	2,469		
42.43	1,122	43.49	2,488		
42.45	1,160	43.51	2,507		
42.47	1,197	43.53	2,526		
42.49	1,235	43.55	2,544		
42.51	1,272	43.57	2,563		
42.53	1,310	43.59	2,582		
42.55	1,347	43.61	2,600		
42.57	1,384	43.63	2,619		
42.59	1,422	43.65	2,638		
42.61	1,459	43.67	2,657		
42.63	1,497	43.69	2,675		
42.65	1,534	43.71	2,694		
42.67	1,571	43.73	2,713		
42.69	1,609	43.75	2,731		
42.71	1,646	43.77	2,750		
42.73	1,684	43.79	2,769		
42.75	1,721	43.81	2,787		
42.77	1,759	43.83	2,806		
42.79	1,796	43.85	2,844		
42.81	1,833	43.87	2,881		
42.83	1,871	43.89	2,918		
42.85	1,890	43.91	2,956		
42.87	1,908	43.93	2,993		

WQV = 773 CF

WQV Elev: 42.24'

23-008 W2

Prepared by Berry Surveying & Engineering

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Type III 24-hr 50 YR - 24 HR Rainfall=8.20"

Printed 10/11/2024

Stage-Discharge for Pond 101P: Porous Pavement #101

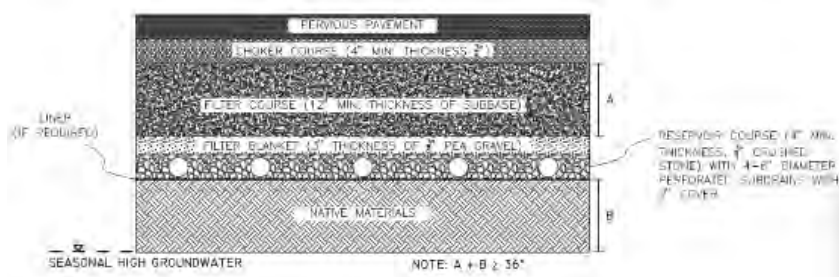
Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
41.83	0.00	42.89	0.85	43.95	1.29
41.85	0.00	42.91	0.86	43.97	1.30
41.87	0.01	42.93	0.87	43.99	1.31
41.89	0.01	42.95	0.88	44.01	1.31
41.91	0.02	42.97	0.89	44.03	1.32
41.93	0.03	42.99	0.90	44.05	1.33
41.95	0.04	43.01	0.91	44.07	1.33
41.97	0.06	43.03	0.92	44.09	1.34
41.99	0.07	43.05	0.93	44.11	1.35
42.01	0.09	43.07	0.94	44.13	1.35
42.03	0.11	43.09	0.95	44.15	1.36
42.05	0.13	43.11	0.96		
42.07	0.16	43.13	0.97		
42.09	0.18	43.15	0.98		
42.11	0.20	43.17	0.99	WQV Elev: 42.24'	
42.13	0.23	43.19	1.00	WQV Discharge: 0.38 CFS	
42.15	0.26	43.21	1.00		
42.17	0.28	43.23	1.01		
42.19	0.31	43.25	1.02		
42.21	0.34	43.27	1.03		
42.23	0.36	43.29	1.04		
42.25	0.39	43.31	1.05		
42.27	0.41	43.33	1.06		
42.29	0.44	43.35	1.07		
42.31	0.46	43.37	1.07		
42.33	0.47	43.39	1.08		
42.35	0.49	43.41	1.09		
42.37	0.51	43.43	1.10		
42.39	0.53	43.45	1.11		
42.41	0.54	43.47	1.11		
42.43	0.56	43.49	1.12		
42.45	0.58	43.51	1.13		
42.47	0.59	43.53	1.14		
42.49	0.61	43.55	1.15		
42.51	0.62	43.57	1.15		
42.53	0.63	43.59	1.16		
42.55	0.65	43.61	1.17		
42.57	0.66	43.63	1.18		
42.59	0.68	43.65	1.18		
42.61	0.69	43.67	1.19		
42.63	0.70	43.69	1.20		
42.65	0.71	43.71	1.21		
42.67	0.73	43.73	1.21		
42.69	0.74	43.75	1.22		
42.71	0.75	43.77	1.23		
42.73	0.76	43.79	1.24		
42.75	0.77	43.81	1.24		
42.77	0.79	43.83	1.25		
42.79	0.80	43.85	1.26		
42.81	0.81	43.87	1.26		
42.83	0.82	43.89	1.27		
42.85	0.83	43.91	1.28		
42.87	0.84	43.93	1.29		

Porous Pavement Factsheet

Porous Pavement consists of a porous surface, base, and sub-base materials which allow penetration of runoff through the surface into underlying soils. The surface materials for porous pavements can consist of paving blocks or grids, pervious asphalt, or pervious concrete. These materials are installed on a base which serves as a filter course between the pavement surface and the underlying sub-base material. The sub-base material typically comprises a layer of crushed stone that not only supports the overlying pavement structure, but also serves as a reservoir to store runoff that penetrates the pavement surface until it can percolate into the ground. General design specifications for porous pavement systems are provided in the most recent version of *The New Hampshire Stormwater Manual, Volume 2: Post-Construction Best Management Practices Selection and Design*.

Sample Design

Profile View



Examples images from the *New Hampshire Stormwater Manual, Volume 2*, p. 120

Pollutant Export Rate by Land Use¹

Source Category by Land Use	Land Surface Cover	P Load Export Rate ¹ (lbs./acre/year)	N Load Export Rate ² (lbs./acre/year)
Commercial (COM) and Industrial (IND)	Directly connected impervious	1.78	15
Multi-Family (MFR) and High-Density Residential (HDR)	Directly connected impervious	2.32	14.1
Medium-Density Residential (MDR)	Directly connected impervious	1.96	14.1
Low-Density Residential (LDR) - "Rural"	Directly connected impervious	1.52	14.1

General Equations

¹ From NH Small MS4 General Permit, Appendix F

Physical Storage Capacity: Depth of Runoff * Drainage Area
Cost: Physical Storage Capacity * Cost Index * Adjustment Factor ¹
Yearly Pollutant Removal: Pollutant Load Export Rate * Drainage Area * Efficiency

Cost (2024)^{1,2}

	Materials and Installation Cost (\$/ft ³)		Design Cost (\$/ft ³)		Total Cost (\$/ft ³)	
	Porous Asphalt	Porous Concrete	Porous Asphalt	Porous Concrete	Porous Asphalt	Porous Concrete
Rural	4.33	14.73	2.33	7.93	6.67	22.65
Mixed	8.67	29.45	4.67	15.86	13.33	45.31
Urban	13.00	44.18	7.00	23.79	20.00	67.96

¹ EPA Memorandum "Methodology for developing cost estimates for Opti-Tool." February 20, 2016

² Converted from 2010 to 2024 dollars using U.S. Department of Labor (USDOL). (2012). Bureau of Labor Statistics consumer price index inflation calculator. http://www.bls.gov/data/inflation_calculator.htm

Prepared By:
University of New Hampshire
Stormwater Center
Durham, NH
www.unh.edu/unhsc
May 2024



BMP Performance Curve for Porous Pavement



Porous Pavement BMP Performance Table				
BMP Capacity: Depth of Filter Course Area (inches)	12	18	24	32
Cumulative TSS Phosphorus Load Reduction	92%	94%	96%	97%
Cumulative Phosphorus Load Reduction	62%	70%	75%	78%
Cumulative Nitrogen Load Reduction	76%	77%	77%	79%
Cumulative Zinc Phosphorus Load Reduction	85%	97%	97%	98%



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Stormwater System Management:

Inspection and Maintenance Manual

Waldon Towers Parking Expansion Dover, NH 03820

Prepared for:

Dover Housing Authority
62 Whittier Street
Dover, NH 03820

Land of

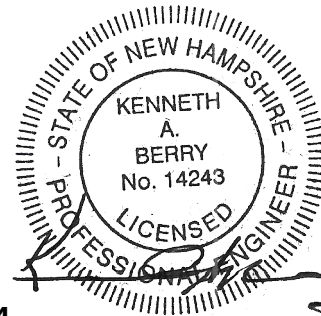
Dover Housing Authority
3 Green Street
Dover, NH 03820

Prepared By

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Project Number:
DB2023-008

October 14, 2024



Stormwater System Management: Inspection and Maintenance Manual

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Introduction

The Best Management Practices (BMP) described in this manual are specified in more detail within the plan set giving design details and specifications. The New Hampshire Stormwater Manual, Volume 2, Post-Construction Best Management Practices Selection & Design (December 2008, NHDES & US EPA) is included by reference to this manual. Additional details, construction specifications, and example drawings are provided within this reference. (<http://des.nh.gov/organization/divisions/water/stormwater/>)

The BMP's are covered below in the general order in which the storm water flows. Each BMP has a description and maintenance consideration listed. A Check List table is proved after the narrative to summarize the maintenance responsibilities and schedule. A Log Form is also provided for the owners use.

For details regarding the design of the Storm Water System see also Drainage Analysis & Sediment and Erosion Control Plan also published by Berry Surveying & Engineering dated October 14, 2024. See also plan set completed for Dover Housing Authority dated October 14, 2024, as revised.

Dover Housing Authority is responsible for the Stormwater System Operation and Maintenance that will be constructed on this property. A significant step in this responsibility is the Inspection and Maintenance of each component of the system. Ongoing, semi-annual, and annual inspection and maintenance requirement are documented below and must be taken seriously. Failure of any component of the system can result in surface water run-off ponding and/or freezing in the driveway and parking lots, leaving the developed site untreated, and/or causing violations to issued permits. The owner must maintain, and have available, plans of the Stormwater System in order properly inspect and maintain the system. (Reduced copies attached.) Dover Housing Authority is responsible to ensure that any subsequent owner, owners association, or subcontractor has copies of the Log Form and Annual Report records and fully understands the responsibilities of this plan. The grantor owner will ensure this document is provided to the grantee owner by duplicating the Ownership Responsibility Sheet which is found toward the back of this document, which will be maintained with the Inspection & Maintenance Logs, provided to the City of Dover Engineering Department, DPW, Dover Community Services with the Annual Report.

The Dover Housing Authority is proposing to develop 22 new under drained porous pavement parking spaces with reconstructed conventional pavement access aisle. It is important to note that other drainage maintenance items across the Waldon Towers site outside of the limit of construction are not included in this manual.

The following drainage features will all require periodic inspections and maintenance based on this manual:

Porous Pavement w/ Underdrain #101

Outlet Protection

Stabilization for Long Term Cover

Porous Asphalt Pavement (Lined & Underdrained)

Description: The Permeable Pavement system consists of a porous pavement surface and permeable sub-base materials that will be collected via underdrain in the stone reservoir layer before discharging to daylight. In this application where native soils are not conducive to infiltration, the system will be lined with a low permeability material, with an underdrain running the length of the system. Cleanouts are provided at the ends of the underdrain lines.

Maintenance Considerations: No winter sand will be used on permeable pavement and will minimize application of salt for ice control. **Pavement Vacuuming** - Due to the nature of porous pavement, sand must be removed by vacuuming on a regular basis when the pores become clogged two to four times per year. This process varies due to the amount of sand and sweeping efforts but should be investigated two to four times every year. The life expectancy of the porous asphalt pavement system is about 20 years following the prescribed regular maintenance schedule. Jetting of the underdrain via cleanouts provided on the line is an essential maintenance consideration to ensure free discharge from the system. The 6" underdrain outlet pipe shall be marked with a painted metal fence post or approved equal. The rip-rap outlet protection at the end of the underdrain shall be maintained in accordance with the following section.

Rip Rap Outlet Protection

Description: Outlet Protection consists of a riprap apron or preformed scour hole that is designed to provide velocity reduction of the surface water run-off that is leaving a culvert. The design is dependent on the culvert size, soil conditions, velocity, and quantity of the run-off. There are to be no bend or curves at the intersection of the conduit and apron. Ref.: NHDES SWM Volume 2, Section 4-6 Conveyance Practices, 6. Outlet Protection and 1. Detention Ponds, Note 3, Page 158.

Maintenance Considerations: The riprap outlet protection will be inspected annually for damage, which must be corrected immediately. Any sediment buildup will be removed and disposed of correctly. This material will be cleaned out along with any gross solids and disposed of properly. (See invasive species below) Any rip rap that has been displaced from the original construction will be repaired, especially recreating the level lip.

Vegetated Stabilization – Original Planting

All areas that are disturbed during construction will be stabilized with vegetated material within 30 days of breaking ground. Construction will be managed in such a manner that erosion is prevented and that no abutter's property will be subjected to any siltation, unless otherwise permitted. All areas to be planted with grass for long-term cover will follow the specification and on Sheet E-102 using seeding mixture C, as follows:

Mixture	Pounds	Pounds per
	per Acre	1,000 Sq. Ft.
Tall Fescue	24	0.55
Creeping Red Fescue	24	0.55
Total	48	1.10
Conservation Mix		
Mixture	Pounds	Pounds per
	per Acre	1,000 Sq. Ft.
Virginia Wild Rye	Native	FACW-
Little Bluestem	Native	FACU
Big Bluestem	Native	FAC
Red Fescue	Native	FACU
Switch Grass	Native	FAC
Partridge Pea	Native	FACU
Showy Tick Trefoil	Native	FAC
Butterfly Milkweed	Native	NI
Beggar Ticks	Native	FACW
Purple Joe Pye Weed	Native	FAC
Black Eyed Susan	Native	FACU-
Total	25	0.57

Conservation Mix to be provided by New England Wetland Plants, Inc., Amherst, MA as outline in their New England Conservation / Wildlife Mix or approved equal. Mix to be applied at a rate of 25 lbs. per acre or one-lb. per 1750 square feet. Ratio of seed is proprietary and substitutions are not allowed.

Conservation Mix will used to stabilize all 2:1 slopes and all land area disturbed within the wetland buffer.

Snow Storage Areas & Winter Maintenance

Description: The effective use of salt and sand for winter maintenance is both a cost and an environmental consideration. In accordance with City of Dover Chapter 153-14

A, Snow and ice removal shall be performed by a contractor certified by the "Green SnoPro" program, or approved equivalent, following the Best Management Practices for the application of deicing materials. The use of salt for deicing will be not occur with the porous pavement. Sand is allowed for the porous pavement. De-icing logs will be maintained for the development.

Maintenance Considerations: Snow will be stockpiled in designated area during the course of the winter and any excess snow will be taken off-site and disposed of in an appropriate area. As the snow is melting in the spring, sand will be swept and removed from the site. The catch basin sumps will be scheduled for one of the two annual cleanings in the early spring.

Reference is made to the NHDES Green SnoPro program and Minnesota Pollution Control Agency document "Winter Parking Lot and Sidewalk Maintenance Manual".

CONTROL OF INVASIVE PLANTS

During maintenance activities, check for the presence of invasive plants and remove in a safe manner as described on the following pages. They should be controlled as described on the following pages.

Invasive plants are introduced, alien, or non-native plants, which have been moved by people from their native habitat to a new area. Some exotic plants are imported for human use such as landscaping, erosion control, or food crops. They also can arrive as "hitchhikers" among shipments of other plants, seeds, packing materials, or fresh produce. Some exotic plants become invasive and cause harm by:

- becoming weedy and overgrown;
- killing established shade trees;
- obstructing pipes and drainage systems;
- forming dense beds in water;
- lowering water levels in lakes, streams, and wetlands;
- destroying natural communities;
- promoting erosion on stream banks and hillsides; and
- resisting control except by hazardous chemical.

See the attached pages prepared by the New Hampshire Department of Agriculture.

Annual Report

Description: The owner is responsible to keep an **I & M Activity Log** that documents inspection, maintenance and repairs to the storm water management system, and a **Deicing Log** to track the amount and type of deicing material applied to the site. The original owner is responsible to ensure that any subsequent owner (s) have copies of the Stormwater System Management: Inspection and Maintenance Manual, copies of past logs and check lists. The Annual Report will be prepared and submitted to the City of Dover Engineering Department with copies of both logs and check lists no later than December 15th of each year. Upon an ownership change, the Annual Report will include the Transfer of Ownership Responsibility Forms duplicated from the form found below.

The plan set that accompanies this project includes a grading and drainage plan, construction details, and a sediment & erosion control plan. The Inspection and Maintenance Plan is attached.

Respectfully
BERRY SURVEYING & ENGINEERING



Kevin R. Poulin, PE
Design Engineer



Kenneth A. Berry, PE, LLS
CPSWQ, CPESC, CESSWI
Principal, VP – Technical Operations

STORMWATER SYSTEM OPERATION AND MAINTENANCE PLAN

Inspection & Maintenance Manual Checklist

Residential Development
Dover Housing Authority
Waldron Towers Parking Expansion
(3 Green Street)
Dover, NH

☒	Date	BMP / System	Minimum Inspection Frequency	Minimum Inspection Requirements	Maintenance / Cleanout Threshold
		Pavement Sweeping	Three Times Per Year	N/A	N/A
		Litter/Trash Removal	Routinely	Inspect dumpsters, outdoor waste receptacles area, and yard areas.	Parcel will be free of litter/trash.
		Deicing Agents	N/A	N/A	Use salt as the primary agent for roadway safety during winter.
		Closed Drainage System:			
		Porous Pavement	2-4 times per year	Check for sediment and debris accumulation buildup.	Vacuum pavement to remove debris. Jet underdrains via provided cleanouts.

☒	Date	BMP / System	Minimum Inspection Frequency	Minimum Inspection Requirements	Maintenance / Cleanout Threshold
		Drainage Pipes	1 time per 2 years	Check for sediment accumulation & clogging.	Less than 2" sediment depth
		Riprap Outlet Protection	Annually	Check for sediment buildup and structure damage.	Remove excess sediment and repair damage.
		Winter Maintenance	Ongoing	Remove snow as directed.	Ongoing
		Post Winter Maintenance	Annually	Remove excess sand, gross solids, and repair vegetation and plantings	Parcel will be free of excess sand, litter/trash. Vegetation per approved plans.
		Annual Report	1 time per year	Submit Annual Report to Dover Community Services Department and kept on file by the owner.	Report to be submitted on or before December 15th each year.

Inspection Checklist: Page 3

Porous Pavement w/ Underdrain #101

Outlet Protection

Stabilization for Long Term Cover

Inspection Notes:

Residential Development
Dover Housing Authority
Waldron Towers Parking Expansion
(3 Green Street)
Dover, NH

[illegible]

Residential Development
Dover Housing Authority
Waldron Towers Parking Expansion
(3 Green Street)
Dover, NH

[illegible]

STORMWATER SYSTEM OPERATION & MAINTENANCE PLAN CERTIFICATION

Owner	Responsibility
Name: Dover Housing Authority Christopher Allen, Capital Improvements & Maintenance Supervisor Address: 62 Whittier Street Dover, NH 03820 Telephone: 603-822-6424 Email: CAllen@doverhousingauthority.com	The owner is responsible for the conduct of all construction activities, and ultimate compliance with all the provisions of the Stormwater System Operation & Maintenance Plan and the implementation of the Inspection and Maintenance Manual.

OWNER CERTIFICATION

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

Signed: _____ Date: _____

Printed Name:

Representing:

Control of Invasive Plants

**New Hampshire
Department of Agriculture,
Markets & Food
Douglas Cygan
603-271-3488
doug.cygan@agr.nh.gov**

This guide lists garden plants and weeds which are already causing significant changes to natural areas in the Mid-Atlantic. **Measures for controlling each species are indicated by number, e.g., (3), in the text with a full explanation at the end of this article.** Click on the word [Control](#): to jump to that section. Then click your "back" button to return to the text. Following each section suggested alternative plants are given. These alternatives are native plants, well adapted and needing little care, attractive to birds and butterflies, and an important part of the food web for our indigenous species.

INVASIVE TREES

NORWAY MAPLE (*Acer platanoides*) has large leaves similar to sugar maple. To easily confirm that the plant is Norway maple, break off a leaf and if it's truly Norway maple it will exude milky white sap. Fall foliage is yellow. (Exception: cultivars such as 'Crimson King,' which have red leaves in spring or summer, may have red autumn leaves.) The leaves turn color late, usually in late October after native trees have dropped their foliage. This tree suppresses growth of grass, garden plants, and forest understory beneath it, at least as far as the drip-line. Its wind-borne seeds can germinate and grow in deep shade. The presence of young Norway maples in our woodlands is increasing.

[Control](#): (1); (7), (8), (9), or (10); (11) in mid-October to early November, before the leaves turn color.

TREE OF HEAVEN (*Ailanthus altissima*), is incredibly tough and can grow in the poorest conditions. It produces huge quantities of wind-borne seeds, grows rapidly, and secretes a toxin that kills other plants. Its long compound leaves, with 11-25 lance-shaped leaflets, smell like peanut butter or burnt coffee when crushed. Once established, this tree cannot be removed by mechanical means alone.

[Control](#): (1) - seedlings only. Herbicide - use Garlon 3a (9) with no more than a 1" gap between cuts, or (10); plus (11) on re-growth. Or paint bottom 12" of bark with Garlon 4 Ultra (in February or March to protect surrounding plants). USE MAXIMUM STRENGTH SPECIFIED ON LABEL for all herbicide applications on Ailanthus. Glyphosate is not effective against Ailanthus.

INVASIVE SHRUBS

AUTUMN OLIVE (*Eleagnus umbellata*): Formerly recommended for erosion control and wildlife value, these have proved highly invasive and diminish the overall quality of wildlife habitat.

[Control](#): (1) - up to 4" diameter trunks; (7) or (10) or bury stump. Do not mow.

MULTIFLORA ROSE (*Rosa multiflora*), formerly recommended for erosion control, hedges, and wildlife habitat, becomes a huge shrub that chokes out all other vegetation and is too dense for many species of birds to nest in, though a few favor it. In shade, it grows up trees like a vine. It is covered with white flowers in June. (Our native roses have fewer flowers, mostly pink.) Distinguish multiflora by its size, and by the presence of very hard, curved thorns, and a fringed edge to the leaf stalk.

[Control](#): (1) - pull seedlings, dig out larger plants at least 6" from the crown and 6" down; (4) on extensive infestations; (10) or (11). It may remain green in winter, so herbicide may *applied when other plants are dormant. For foliar application, mix Rodeo with extra sticker-spreader, or use Roundup Sure Shot Foam on small plants.*

BUSH HONEYSUCKLES (*Lonicera spp.*), including Belle, Amur, Morrow's, and Tatarian honeysuckle. (In our region, assume that any honeysuckle is exotic unless it is a scarlet-flowered vine). Bush honeysuckles create denser shade than native shrubs, reducing plant diversity and eliminating nest sites for many forest interior species.

Control: (2) on ornamentals; (1); on shady sites only, brush cut in early spring and again in early fall (3); (4) during the growing season; (7); or (10) late in the growing season.

BLUNT-LEAVED PRIVET (*Ligustrum obtusifolium*). Control: (1); (7) or (10); or trim off all flowers. Do not cut back or mow.

BURNING BUSH, WINGED EUONYMUS (*Euonymus alatus*), identified by wide, corky wings on the branches.

Control: (1); (7) or (10); or trim off all flowers.

JAPANESE BARBERRY (*Berberis thunbergii*), and all cultivars and varieties.

Control: (1); (7) or (10); or trim off all flowers.

INVASIVE WOODY VINES

All of these vines shade out the shrubs and young trees of the forest understory, eventually killing them, and changing the open structure of the forest into a dense tangle. DO NOT PLANT NEXT TO OPEN SPACE.

JAPANESE HONEYSUCKLE (*Lonicera japonica*), including Hall's honeysuckle, has gold-and-white flowers with a heavenly scent and sweet nectar in June. This is probably the familiar honeysuckle of your childhood. It is a rampant grower that spirals around trees, often strangling them.

Control: (1); (3); (10); (11) in fall or early spring when native vegetation is dormant. Plan to re-treat repeatedly.

ORIENTAL BITTERSWEET (*Celastrus orbiculatus*) has almost completely displaced American bittersweet (*C. scandens*). The Asian plant has its flowers and bright orange seed capsules in clusters all along the stem, while the native species bears them only at the branch tips.

Control: (1); keep ornamental plants cut back, remove all fruits as soon as they open, and bag or burn fruits; to eradicate use Garlon 3a (10).

JAPANESE KNOTWEED, MEXICAN BAMBOO (*Polygonum cuspidatum*) can grow in shade. The stems have knotty joints, reminiscent of bamboo. It grows 6-10' tall and has large pointed oval or triangular leaves.

Control: Cut at least 3 times each growing season and/or treat with Rodeo (10) or (11). In gardens, heavy mulch or dense shade may kill it.

INVASIVE HERBACEOUS PLANTS

GARLIC MUSTARD (*Alliaria petiolata*, *A. officinalis*), a white-flowered biennial with rough, scalloped leaves (kidney-, heart- or arrow-shaped), recognizable by the smell of garlic and taste of mustard when its leaves are crushed. (The odor fades by fall.)

Control: Pull before it flowers in spring (1), removing crown and roots. Tamp down soil afterwards. Once it has flowered, cut (2), being careful not to scatter seed, then bag and burn or send to the landfill. (11) may be appropriate in some settings.

JAPANESE STILT GRASS (*Microstegium vimineum*) can be identified by its lime-green color and a line of silvery hairs down the middle of the 2-3" long blade. It tolerates sun or dense shade and quickly invades areas left bare or disturbed by tilling or flooding. An annual grass, it builds up a large seed bank in the soil.

Control: Easily pulled in early to mid-summer (1) - be sure to pull before it goes to seed. If seeds have formed, bag and burn or send to landfill. Mowing weekly or when it has just begun to flower may prevent it from setting seed (3). Use glyphosate (11) or herbicidal soap (less effective) on large infestations. Follow up with (5) in spring.

MILE-A-MINUTE VINE, DEVIL'S TAIL TEARTHUMB (*Polygonum perfoliatum*), a rapidly growing annual vine with triangular leaves, barbed stems, and turquoise berries in August which are spread by birds. It quickly covers and shades out herbaceous plants.

Control: same as for stilt grass.

SPOTTED KNAPWEED (*Centaurea maculosa*), a biennial with thistle-like flowers.

Control: Do NOT pull (1) unless the plant is young and the ground is very soft - the tap root will break off and produce several new plants. Wear sturdy gloves. (2); (6); (10) or (11).

CONTROL MEASURES

- (1) PULL seedlings and small or shallow-rooted plants when soil is moist. Dig out larger plants, including the root systems. Use a forked spade or weed wrench for trees or shrubs.
- (2) DEADHEAD to prevent spread of seeds of invasive plants. Cut off seeds or fruits before they ripen. Bag, and burn or send to a landfill.
- (3) MOW or CUTTING at least 4 times a season to deplete plants' store of nutrients and carbohydrates, reduce seed formation, and kill or minimize spread of plants. If necessary, repeat each year.
- (4) CONTROLLED BURNING during the spring, repeated over several years, allows native vegetation to compete more effectively with the invasive species. This requires a permit. Spot treatment with glyphosate in late fall can be used to make this method more effective.
- (5) Use a CORN-BASED PRE-EMERGENCE HERBICIDE on annual weeds. This product is also an organic fertilizer, i.e., it can stimulate growth of existing plants, including weeds, so it is appropriate for lawns and gardens but may not be appropriate in woodlands.
- (6) In lawns, SPOT TREAT with BROAD-LEAF WEEDKILLER. Good lawn-care practices (test soil; use lime and fertilizer only when soil test shows a need; mow high and frequently; leave clippings on lawn) reduce weed infestations.
- (7) CUT DOWN the tree. Grind out the stump, or clip off re-growth.
- (8) GIRDLE tree: cut through the bark and growing layer (cambium) all around the trunk, about 6" above the ground. Girdling is most effective in spring when the sap is rising, and from middle to late summer when the tree is sending down food to the roots. Clip off sucker sprouts.
- (9) FRILL: Using a machete, hatchet or similar device, hack scars (several holes in larger trees) downward into the cambium layer, and squirt in glyphosate (or triclopyr if recommended in text above). Follow label directions for Injection and Frill Applications. This is most effective from middle to late summer. Clip off any sucker sprouts or treat with glyphosate.
- (10) CUT STEM / CUT STUMP WITH GLYPHOSATE (or triclopyr if specified above). Follow label directions for Cut Stump Application. Clip off sucker sprouts or paint with glyphosate. See Note on Herbicides.
- (11) FOLIAR SPRAY WITH GLYPHOSATE herbicide (see Note on Herbicides). Use a backpack or garden sprayer or mist blower, following label directions. Avoid overspray and/or dripping onto non-target plants, because glyphosate kills most plants except moss. If it rolls off waxy or grass-like foliage, use additional sticker-spreader. Deciduous trees, shrubs, and perennials move nutrients down to the roots in late summer. Glyphosate is particularly effective at this time and when plants have just gone out of flowering. Several invasive species retain their foliage after native plants have lost theirs, and resume growth earlier in spring than most natives. This allows you to treat them without harming the natives. However, the plant must be actively growing for the herbicide to work. Retreatments may be necessary the following year if suckering occurs or the plant hasn't been entirely killed.

NOTE ON HERBICIDES: It is highly recommended that small populations try to be controlled using non-chemical methods wherever feasible. However, for large infestations, and for a few plants specified above, herbicide use is essential. Apply herbicides carefully to avoid non-target plants, glyphosate is the least environmentally damaging herbicide in most cases. Add food coloring for visibility, and a soap-based sticker such as Cide-Kick. Glyphosate is ineffective on some

plants; for these, triclopyr (Garlon) may be indicated. When using herbicides, read the entire label and observe all precautions listed, including proper disposal. If in doubt, call your local Cooperative Extension Service.

Pavement Temp. (°F) and Trend (↑ ↓)	Weather Condition	Maintenance Actions	Application Rate (lbs/per 1000 sq.ft.)			
			Salt Prewetted/Pretreated with salt brine	Salt Prewetted/Pretreated with other blends	Dry salt	Winter sand
>30 ↑	Snow	Plow, treat intersections only				Not recommended
	Frz. Rain	Apply chemical				Not recommended
30 ↓	Snow	Plow and apply chemical				Not recommended
	Frz. Rain	Apply chemical				Not recommended
25 - 30 ↑	Snow	Plow and apply chemical				Not recommended
	Frz. Rain	Apply chemical				Not recommended
25 - 30 ↓	Snow	Plow and apply chemical				Not recommended
	Frz. Rain	Apply chemical				3.25
20 - 25 ↑	Snow or frz. Rain	Plow and Apply chemical				3.25 for frz. Rain
20 - 25 ↓	Snow	Plow and apply chemical				Not recommended
	Frz. Rain	Apply chemical				3.25
15 - 20 ↑	Snow	Plow and apply chemical				Not recommended
	Frz. Rain	Apply chemical				3.25
15 - 20 ↓	Snow or Frz. Rain	Plow and apply chemical				3.25 for frz. Rain
0 to 15 ↑↓	Snow	Plow, treat with blends, sand hazardous areas	Not recommended		Not recommended	5.0 and spot-treat as needed
< 0	Snow	Plow, treat with blends, sand hazardous areas	Not recommended		Not recommended	5.0 and spot-treat as needed

Table 19. Application Rates for Deicing

These rates & table format are based on road application guidelines (Mn Snow & Ice Control Field Handbook, Manual 2005-1). Develop your own application rates by adjusting your current rates incrementally downward toward these guidelines. Where temperature categories overlap, select the rate most applicable to your situation.

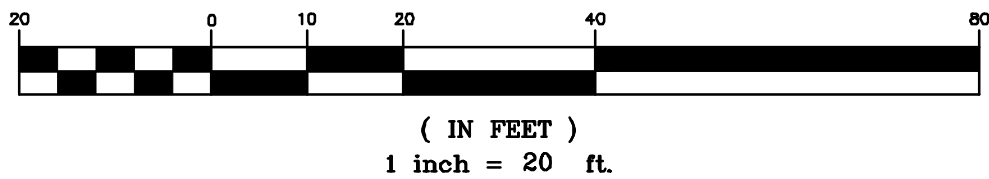
DESIGN NOTES:

- 1.) POROUS ASPHALT PAVEMENT WILL CONFORM TO UNHSC (2007b) SPECIFICATIONS AS UPDATED BY UNHSC DESIGN SPECIFICATIONS FOR POROUS ASPHALT PAVEMENT AND INFILTRATION BEDS (DATED: SEPTEMBER 2016).
- 2.) THE FILTER COURSE WILL BE INSTALLED AT A MINIMUM DEPTH OF 12 INCHES AND CONSIST OF NHDOT (2016) SAND, ITEM 304.1 PER THE NH STORMWATER MANUAL.
- 3.) SEE CROSS SECTIONS FOR DETAILS.
- 4.) SEE STORMWATER SYSTEM OPERATIONS AND MAINTENANCE PLAN, DATED OCTOBER 14, 2024 FOR MAINTENANCE REQUIREMENTS.
- 5.) SYSTEM IS TO LINED W/ 4" LOW PERM MATERIAL WITH DESIGN ENGINEER CONSULTATION, THE EXISTING ON-SITE MATERIAL MAY BE USED AS LOW PERM LINER

REFERENCE:

- 1.) NH STORMWATER MANUAL: VOLUME 2, SECTION 4E PERMEABLE PAVEMENT.
- 2.) UNHSC DESIGN SPECIFICATIONS FOR POROUS ASPHALT PAVEMENT AND INFILTRATION BEDS, FEBRUARY 2014, REVISED SEPTEMBER 2016, UNIVERSITY OF NEW HAMPSHIRE STORMWATER CENTER, DURHAM, NH 03824-3534.
- 3.) POROUS ASPHALT PAVEMENT FOR STORMWATER MANAGEMENT, THE UNH STORMWATER CENTER.

GRAPHIC SCALE



CHOKER COURSE *	
SIEVE SIZE	% PASSING BY WEIGHT
1 1/2"	100
1"	95 - 100
1/2"	25 - 60
# 4	0 - 10
# 8	0 - 5

* EQUIVALENT TO STANDARD STONE SIZE #57 - AASHTO

FILTER BLANKET COURSE *	
SIEVE SIZE	% PASSING BY WEIGHT
1 1/2"	100
3/8"	95 - 100
# 4	22 - 55
# 8	0 - 10

* EQUIVALENT TO STANDARD WASHED STONE - SECTION 702 OF NHDOT NHDOT STANDARD SPECIFICATIONS

FILTER COURSE *	
SIEVE SIZE	% PASSING BY WEIGHT
6"	100
# 4	70 - 100
# 200	0 - 6**

* EQUIVALENT TO MODIFIED NHDOT 304.1 - SECTION 304 OF NHDOT NHDOT STANDARD SPECIFICATIONS

** LESS THAN 4% FINES

RESERVOIR COURSE *	
SIEVE SIZE	% PASSING BY WEIGHT
2 1/2"	100
2"	90 - 100
1 1/2"	35 - 70
1"	0 - 15
1/2"	0 - 5

* EQUIVALENT TO STANDARD STONE SIZE #3 - AASHTO

POROUS ASPHALT MIX DESIGN CRITERIA	
SIEVE SIZE	% PASSING BY WEIGHT
3/4"	100
1/2"	85 - 100
3/8"	55 - 75
# 4	10 - 25
# 8	5 - 12
# 200	2 - 4

BINDER CONTENT (AASHTO T164) 5.8 - 6.5%

AIR VOID CONTENT 16 - 22% (AASHTO D6752)

DRAINDOWN (AASHTO D6390) ≤ 0.3%

RETAINED TENSILE STRENGTH (AASHTO D6390) ≥ 80%

CANTABRO ABRASION ≤ 20% TEST (UNAGED)

CANTABRO ABRASION ≤ 30% TEST (7 DAYS)

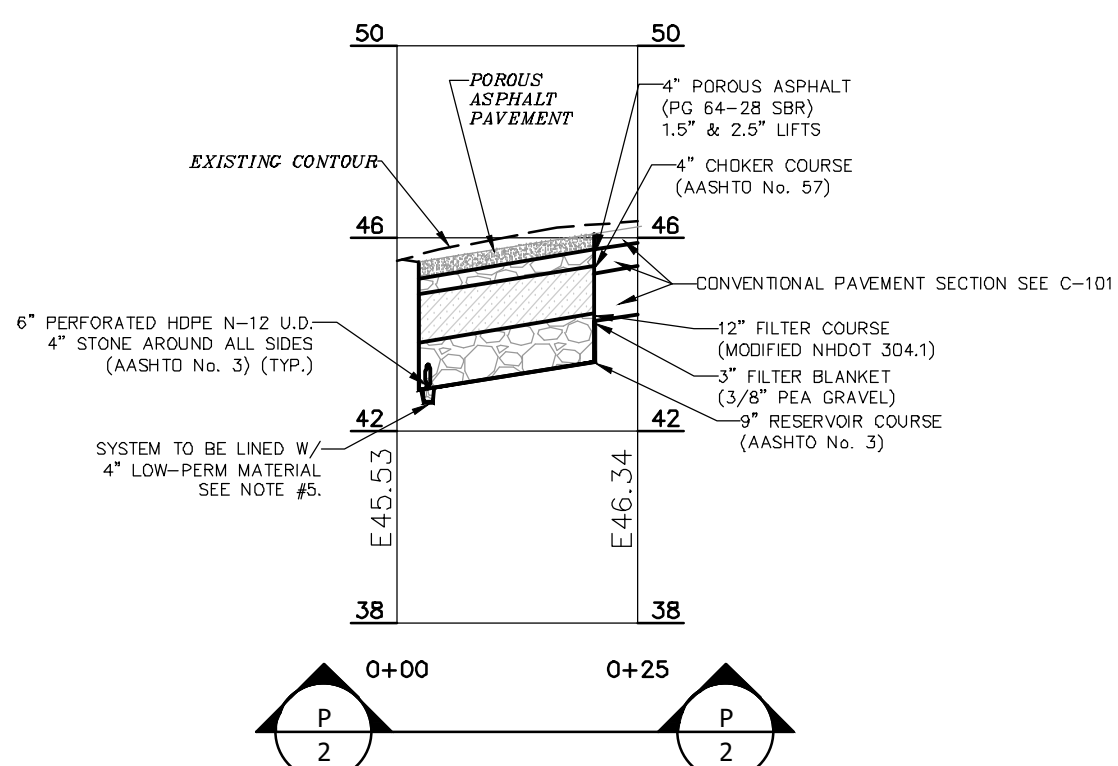
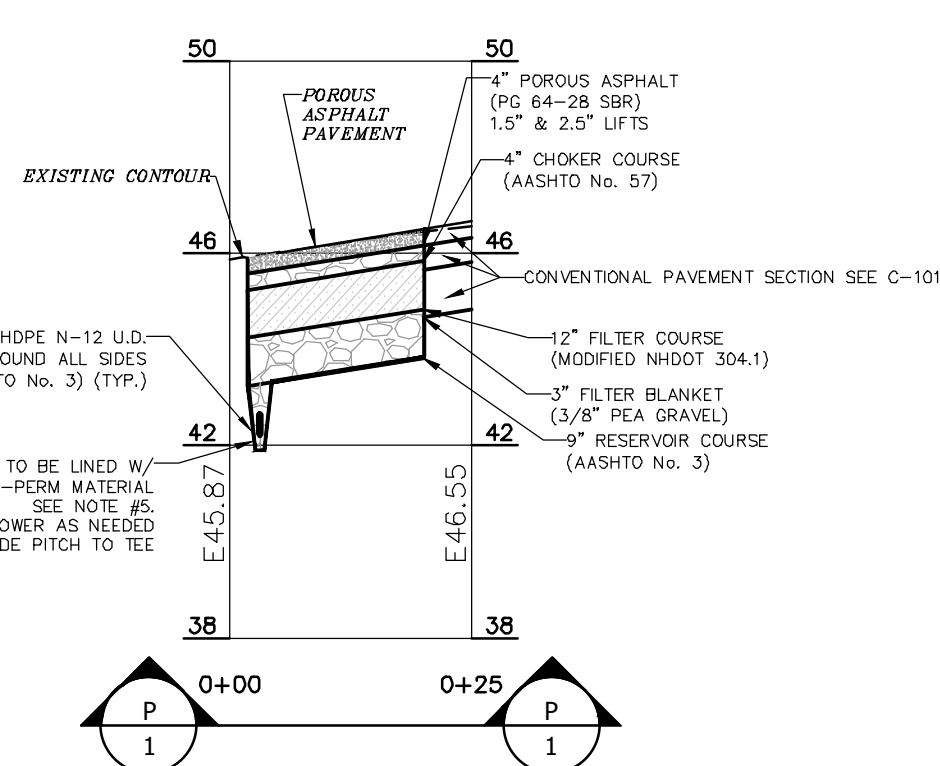
POROUS ASPHALT PAVEMENT

NOT TO SCALE

LOW PERMEABILITY MATERIAL GRADATION

SIEVE SIZE	% PASSING BY WEIGHT
#4	95 - 100
#40	60 - 95
#100	40 - 60
#200	25 - 45

TOTAL SECTION DEPTH = 32"
TOTAL SECTION REQUIRED = 31.2"
(65% OF FROST DEPTH)
FROST DEPTH = 48" (UNHSC)



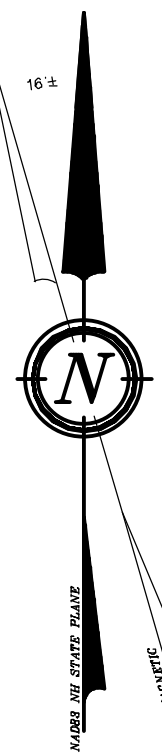
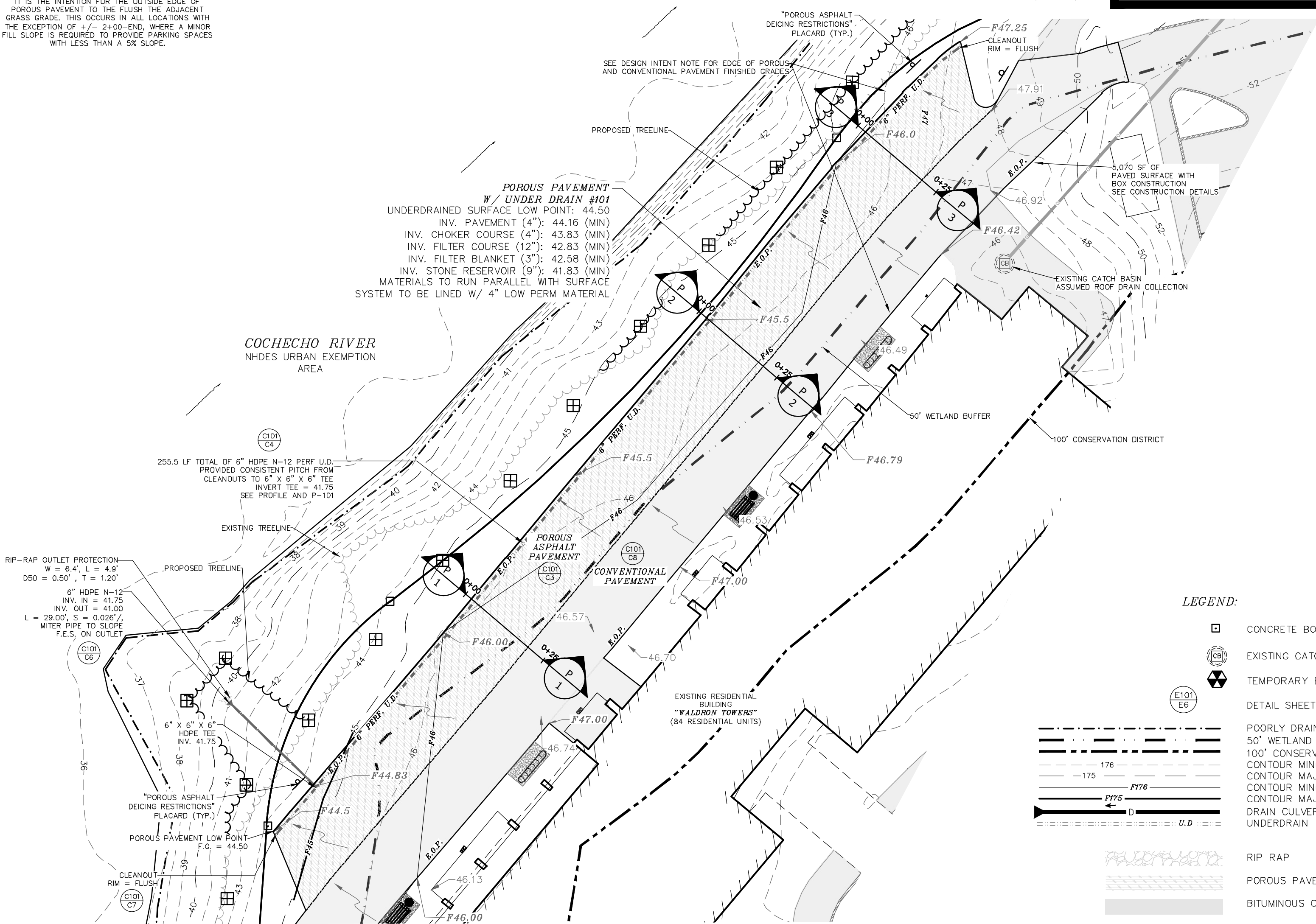
SECTION OF POROUS PAVEMENT #101

SECTION OF POROUS PAVEMENT #101

DESIGN INTENT NOTE

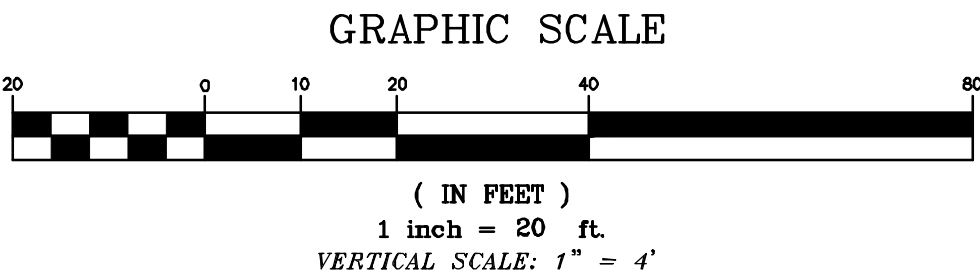
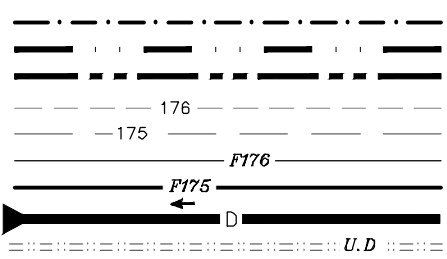
IT IS THE INTENTION FOR THE EDGE OF CONVENTIONAL PAVEMENT ADJACENT TO THE BUILDING TO BE FLUSH WITH THE EXISTING ADJACENT GRASS GRADE. POSITIVE DRAINAGE MUST BE PROVIDED FROM THE GRASS ADJACENT TO THE BUILDING, ACROSS TO THE POROUS PAVEMENT AREA.

IT IS THE INTENTION FOR THE OUTSIDE EDGE OF POROUS PAVEMENT TO BE FLUSH THE ADJACENT GRASS GRADE. THIS OCCURS IN ALL LOCATIONS WITH THE EXCEPTION OF 4'-24'-00'-END, WHERE A MINOR FILL SLOPE IS REQUIRED TO PROVIDE PARKING SPACES WITH LESS THAN A 5% SLOPE.



LEGEND:

- CONCRETE BOUND ~END~
- EXISTING CATCH BASIN W/ STRUCTURE
- TEMPORARY BENCHMARK (T.B.M.)
- DETAIL SHEET / DETAIL
- POORLY DRAINED JURISDICTIONAL WETLAND
- 50' WETLAND BUFFER
- 100' CONSERVATION DISTRICT
- CONTOUR MINOR, EXISTING
- CONTOUR MAJOR, EXISTING
- CONTOUR MINOR, PROPOSED
- CONTOUR MAJOR, PROPOSED
- DRAIN CULVERT W/ FLARED END SECTION (F.E.S.)
- UNDERDRAIN



P-101

CITY OF DOVER PLANNING DEPARTMENT FILE #

POROUS PAVEMENT #101 PLAN
LAND OF
DOVER HOUSING AUTHORITY
3 GREEN STREET
DOVER, N.H.
TAX MAP 1, LOT 42

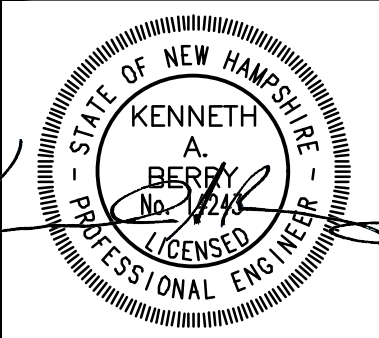
BERRY SURVEYING & ENGINEERING

335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 20 FT.

DATE : OCTOBER 14, 2024

FILE NO. : DB 2023-008



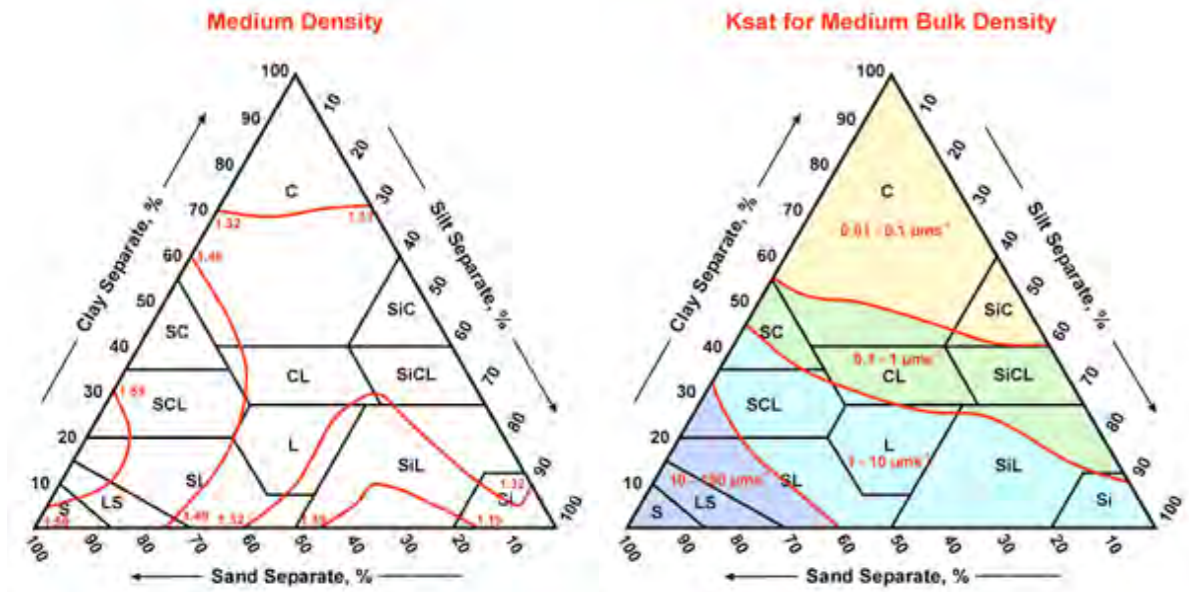
SHEET 5 OF 11

K_{sat} VALUES

FOR

NEW HAMPSHIRE SOILS

(Including Hydrologic and DES Soil Lot Sizing Groups)



From: Guide for Estimating K_{sat} from Soil Properties (Exhibit 618-9). (<http://soils.usda.gov/technical/handbook/contents/part618ex.html>)

Sponsored by the Society of Soil Scientists of Northern New England
 SSSNNE Special Publication No. 5
 September, 2009

K_{sat} VALUES FOR NEW HAMPSHIRE SOILS

ABOUT THE SOCIETY OF SOIL SCIENTISTS OF NORTHERN NEW ENGLAND

The Society of Soil Scientists of Northern New England (SSSNNE) is a non-profit professional organization of soil scientists, both in the private and public sectors, which is dedicated to the advancement of soil science. The Society fosters the profession of soil classification, mapping and interpretation, and encourages the dissemination of information concerning soil science. With the intent of contributing to the general human welfare, the Society seeks to educate the public on the wise use of soils and the associated natural resources.

INTRODUCTION

The publication “K_{sat} Values for New Hampshire Soils” is designed to assist soil scientists, engineers, and other professionals by assembling tables of existing data for all soil series currently on the state soil legend with regard to K_{sat} values and hydrologic groupings (Hyd.Grp.). The need for this information has become more important since the adoption by the New Hampshire Department of Environmental Services of the revised Alteration of Terrain rules for stormwater management. Additional information has been provided for each soil series with regard to landform, temperature regime (Temp.), soil textures, NHDES Soil Lot Size Groupings (Group), whether the soil is a Spodosol (Spodosol?) and other information which will be valuable to a variety of soil information users.

The data for each soil series has been sorted 3 ways for ease of searching:

Table A-Sorted by Numerical Legend

Table B-Sorted by Soil Series Name

Table C-Sorted by NHDES Soil Group for Establishing Lot Size

The report represents cumulative efforts by private soil scientists and NHDES staff with assistance from the USDA Natural Resource Conservation Service.

Comments or inquiries on the information in this publication may be directed to the Board of Directors at the following address:

**Society of Soil Scientists
of Northern New England
PO Box 76
Durham, NH 03824**

SATURATED HYDRAULIC CONDUCTIVITY (K_{SAT})

K_{sat} refers to the ease with which pores in a saturated soil transmit water. The estimates presented here are expressed in terms of inches per hour (NRCS official data presents K_{sat} in both micrometers per second and inches per hour). K_{sat} values are based on soil characteristics observed in the field, particularly structure, consistence, porosity, and texture. (USDA NRCS, Web Soil Survey)

Saturated flow occurs when the soil water pressure is positive; that is, when the soil matric potential is zero (saturated wet condition). In most soils this situation takes place when about 95 percent of the total pore space is filled with water. The remaining 5 percent is filled with entrapped air. Saturated hydraulic conductivity cannot be used to describe water movement under unsaturated conditions. (Soil Survey Manual, 1993)

It is commonly known that soil features (and thus data) for a certain soil series name may be slightly different from one county soil survey to the next and the range in characteristics (via the Typical Pedon) may be slightly different. For example – a Marlow soil (series) in Carroll County may have a higher sand content in its B horizon as opposed to a Marlow soil (series) in Coos County; resulting in a slightly different K_{sat} range for the B horizon.

The K_{sat} data for this publication was obtained from the USDA-NRCS Soil Data Mart using the Typical Pedon from the county that best reflected the soil and/or had the most acres of that soil. This data is presented in B and C horizons only as it is assumed that the topsoil (A or A_p horizon) will be removed in typical construction practices.

References:

Web Soil Survey. *Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Web Soil Survey. Available online at <http://websoilsurvey.nrcs.usda.gov/>.*

Soil Data Mart. <http://soildatamart.nrcs.usda.gov/>.

Soil Survey Manual. *Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18.*

HYDROLOGIC SOIL GROUPS

Hydrologic group is a group of soils having the same runoff potential under similar storm and cover conditions.

Hydrologic groups are used in equations that estimate runoff from rainfall. These estimates are needed for solving hydrologic problems that arise in planning stormwater management, watershed protection, and flood-prevention projects and for planning or designing structures for the use, control, and disposal of water.

Classifications assigned to soils were based on the use of rainfall-runoff data from small watersheds and infiltrometer plots. From these data, relationships between soil properties and hydrologic groups were established. Assignment of soils to hydrologic groups is based on the relationship between soil properties and hydrologic groups. Wetness characteristics, permeability after prolonged wetting, and depth to very slowly permeable layers are properties that assist in estimating hydrologic groups. Minimum annual steady ponded infiltration rate for a bare ground surface determines the hydrologic soil groups.

Soil properties that influence runoff potential are those that influence the minimum rate of infiltration for a bare soil after prolonged wetting and when not frozen. These properties are depth to a seasonally high water table, intake rate and permeability after prolonged wetting, and depth to a very slowly permeable layer. (The influence of ground cover is treated independently, not in hydrologic soil groups.).

The soils in the United States are placed into four groups, A, B, C, and D, and three dual classes, *A/D*, *B/D*, and *C/D*. In the definitions of the classes, infiltration rate is the rate at which water enters the soil at the surface and is controlled by the surface conditions. Transmission rate is the rate at which water moves in the soil and is controlled by soil properties. Definitions of the classes are as follows:

Group A- Saturated hydraulic conductivity is very high or in the upper half of high and internal free water occurrence is very deep. Soils in this group have low runoff potential when thoroughly wet. Water is transmitted freely through the soil. Group A soils typically have less than 10 percent clay and more than 90 percent sand or gravel and have gravel or sand textures. Some soils having loamy sand, sandy loam, loam or silt loam textures may be placed in this group if they are well aggregated, of low bulk density, or contain greater than 35 percent rock fragments. The limits on the diagnostic physical characteristics of group A are as follows. The saturated hydraulic conductivity of all soil layers exceeds 40.0 micrometers per second (5.67 inches per hour). The depth to any water impermeable layer is greater than 50 centimeters [20 inches]. The depth to the water table is greater than 60 centimeters [24 inches]. Soils that are deeper than 100 centimeters [40 inches] to a water impermeable layer are in group A if the saturated hydraulic conductivity of all soil layers within 100 centimeters [40 inches] of the surface exceeds 10 micrometers per second (1.42 inches per hour).

Group B- Saturated hydraulic conductivity is in the lower half of high or in the upper half of moderately high and free water occurrence is deep or very deep. Soils in this group have moderately low runoff potential when thoroughly wet. Water transmission through the soil is unimpeded. Group B soils typically have between 10 percent and 20 percent clay and 50 percent to 90 percent sand and have loamy sand or sandy loam textures. Some soils having loam, silt loam, silt, or sandy clay loam textures may be placed in this group if they are well aggregated, of low bulk density, or contain greater than 35 percent rock fragments. The limits on the diagnostic physical characteristics of group B are as follows. The saturated hydraulic conductivity in the least transmissive layer between the surface and 50 centimeters [20 inches] ranges from 10.0 micrometers per second (1.42 inches per hour) to 40.0 micrometers per second (5.67 inches per hour). The depth to any water impermeable layer is greater than 50 centimeters [20 inches]. The depth to the water table is greater than 60 centimeters [24 inches]. Soils that are deeper than 100 centimeters [40 inches] to a water impermeable layer or water table are in group B if the saturated hydraulic conductivity of all soil layers within 100 centimeters [40 inches] of the surface exceeds 4.0 micrometers per second (0.57 inches per hour) but is less than 10.0 micrometers per second (1.42 inches per hour).

Group C- Saturated hydraulic conductivity is in the lower half of moderately high or in the upper half of moderately low and internal free water occurrence is deeper than shallow. Soils in this group have moderately high runoff potential when thoroughly wet. Water transmission through the soil is somewhat restricted. Group C soils typically have between 20 percent and 40 percent clay and less than 50 percent sand and have loam, silt loam, sandy clay loam, clay loam, and silty clay loam textures. Some soils having clay, silty clay, or sandy clay textures may be placed in this group if they are well aggregated, of low bulk density, or contain greater than 35 percent rock fragments. The limits on the diagnostic physical characteristics of group C are as follows. The saturated hydraulic conductivity in the least transmissive layer between the surface and 50 centimeters [20 inches] is between 1.0 micrometers per second (0.14 inches per hour) and 10.0 micrometers per second (1.42 inches per hour). The depth to any water impermeable layer is greater than 50 centimeters [20 inches]. The depth to the water table is greater than 60 centimeters [24 inches]. Soils that are deeper than 100 centimeters [40 inches] to a restriction or water table are in group C if the saturated hydraulic conductivity of all soil layers within 100 centimeters [40 inches] of the surface exceeds 0.40 micrometers per second (0.06 inches per hour) but is less than 4.0 micrometers per second (0.57 inches per hour).

Group D- Saturated hydraulic conductivity is below the upper half of moderately low, and/or internal free water occurrence is shallow or very shallow and transitory through permanent. Soils in this group have high runoff potential when thoroughly wet. Water movement through the soil is restricted or very restricted. Group D soils typically have greater than 40 percent clay, less than 50 percent sand, and have clayey textures. In some areas, they also have high shrink-swell potential. All soils with a depth to a water impermeable layer less than 50 centimeters [20 inches] and all soils with a water table within 60 centimeters [24 inches] of the surface are in this group, although some may have a dual classification, as described in the next section, if they can be adequately drained. The limits on the physical diagnostic characteristics of group D are as follows. For soils with a water impermeable layer at a depth between 50 centimeters and 100 centimeters [20 and 40 inches], the saturated hydraulic conductivity in the least transmissive soil layer is less than or equal to 1.0 micrometers per second (0.14 inches per hour). For soils that are deeper than 100 centimeters [40 inches] to a restriction or water table, the saturated hydraulic

conductivity of all soil layers within 100 centimeters [40 inches] of the surface is less than or equal to 0.40 micrometers per second (0.06 inches per hour).

Dual hydrologic soil groups-Certain wet soils are placed in group D based solely on the presence of a water table within 60 centimeters [24 inches] of the surface even though the saturated hydraulic conductivity may be favorable for water transmission. If these soils can be adequately drained, then they are assigned to dual hydrologic soil groups (*A/D*, *B/D*, and *C/D*) based on their saturated hydraulic conductivity and the water table depth when drained. The first letter applies to the drained condition and the second to the undrained condition. For the purpose of hydrologic soil group, adequately drained means that the seasonal high water table is kept at least 60 centimeters [24 inches] below the surface in a soil where it would be higher in a natural state.

References:

National Engineering Handbook, Natural Resource Conservation Service, U.S. Department of Agriculture.

Soil Data Mart. <http://soildatamart.nrcs.usda.gov/>.

Soil Survey Manual. *Soil Survey Division Staff. 1993. Soil survey manual. Natural Resources Conservation Service. U.S. Department of Agriculture Handbook 18.*

TABLE A

NUMERICAL LEGEND

Soil Series	legend number	Ksat low - B in/hr	Ksat high - B in/hr	Ksat low - C in/hr	Ksat high - C in/hr	Hyd. Grp.	Group	Land Form	Temp.	Soil Textures	Spodosol ?	Other
Occum	1	0.6	2.0	6.00	20.0	B	2	Flood Plain (Bottom Land)	mesic	loamy	no	loamy over loamy sand
Suncook	2	6.0	20.0	6.00	20.0	A	1	Flood Plain (Bottomland)	mesic	sandy	no	occasionally flooded
Lim	3	0.6	2.0	6.00	20.0	C	5	Flood Plain (Bottom Land)	mesic	loamy	no	
Pootatuck	4	0.6	6.0	6.00	20.0	B	3	Flood Plain (Bottom Land)	mesic	loamy	no	single grain in C
Rippowam	5	0.6	6.0	6.00	20.0	C	5	Flood Plain (Bottom Land)	mesic	loamy	no	
Saco	6	0.6	2.0	6.00	20.0	D	6	Flood Plain (Bottom Land)	mesic	silty	no	strata
Hadley	8	0.6	2.0	0.60	6.0	B	2	Flood Plain (Bottom Land)	mesic	silty	no	strata of fine sand
Winooski	9	0.6	6.0	0.60	6.0	B		Flood Plain (Bottom Land)	mesic	silty over loamy	no	
Merrimac	10	2.0	20.0	6.00	20.0	A	1	Outwash and Stream Terraces	mesic	gravelly sand	no	loamy cap
Gloucester	11	6.0	20.0	6.00	20.0	A	1	Sandy Till	mesic	sandy-skeletal	no	loamy cap
Hinckley	12	6.0	20.0	20.00	100.0	A	1	Outwash and Stream Terraces	mesic	sandy-skeletal	no	
Sheepscot	14	6.0	20.0	6.00	20.0	B	3	Outwash and Stream Terraces	frigid	sandy-skeletal	yes	gravelly coarse sand
Searsport	15	6.0	20.0	6.00	20.0	D	6	Outwash and Stream Terraces	frigid	sandy	no	organic over sand
Saugatuck	16	0.06	0.2	6.00	20.0	C	5	Outwash and Stream Terraces	mesic	sandy	yes	ortstein
Colton, gravelly	21	6.0	20.0	20.00	100.0	A	1	Outwash and Stream Terraces	frigid	sandy-skeletal	yes	gravelly surface
Colton	22	6.0	20.0	20.00	100.0	A	1	Outwash and Stream Terraces	frigid	sandy-skeletal	yes	
Masardis	23	6.0	20.0	6.00	20.0	A	1	Outwash and Stream Terraces	frigid	sandy-skeletal	yes	slate, loamy cap
Agawam	24	6.0	20.0	20.00	100.0	B	2	Outwash and Stream Terraces	mesic	loamy over sandy	no	loamy over sand/gravel
Windsor	26	6.0	20.0	6.00	20.0	A	1	Outwash and Stream Terraces	mesic	sandy	no	
Groveton	27	0.6	2.0	0.60	6.0	B	2	Outwash and Stream Terraces	frigid	loamy	yes	loamy over sandy
Madawaska	28	0.6	2.0	6.00	20.0	B	3	Outwash and Stream Terraces	frigid	loamy over sandy	yes	sandy or sandy-skeletal
Woodbridge	29	0.6	2.0	0.00	0.6	C	3	Firm, platy, loamy till	mesic	loamy	no	sandy loam in Cd
Unadilla	30	0.6	2.0	2.00	20.0	B	2	Terraces and glacial lake plains	mesic	silty	no	silty over gravelly
Hartland	31	0.6	2.0	0.20	2.0	B	2	Terraces and glacial lake plains	mesic	silty	no	very fine sandy loam
Boxford	32	0.1	0.2	0.00	0.2	C	3	Silt and Clay Deposits	mesic	fine	no	silty clay loam
Scitico	33	0.0	0.2	0.00	0.2	C	5	Silt and Clay Deposits	mesic	fine	no	
Wareham	34	6.0	20.0	6.00	20.0	C	5	Outwash and Stream Terraces	mesic	sandy	no	
Champlain	35	6.0	20.0	20.00	100.0	A	1	Outwash and Stream Terraces	frigid	gravelly sand	no	
Adams	36	6.0	20.0	20.00	99.0	A	1	Outwash and Stream Terraces	frigid	sandy	yes	
Melrose	37	2.0	6.0	0.00	0.2	C	3	Sandy/loamy over silt/clay	frigid	loamy over clayey	no	silty clay loam in C
Eldridge	38	6.0	20.0	0.06	0.6	C	3	Sandy/loamy over silt/clay	mesic	sandy over loamy	no	
Millis	39					C	3	Firm, platy, sandy till	frigid	loamy	yes	loamy sand in Cd
Canton	42	2.0	6.0	6.00	20.0	B	2	Loose till, sandy textures	mesic	loamy over sandy	no	loamy over loamy sand
Montauk	44	0.6	6.0	0.06	0.6	C	3	Firm, platy, sandy till	mesic	loamy	no	loamy sand in Cd
Henniker	46	0.6	2.0	0.06	0.6	C	3	Firm, platy, sandy till	frigid	loamy	no	loamy sand in Cd
Madawaska, aquatic	48	0.6	2.0	6.00	20.0	B	3	Outwash and Stream Terraces	frigid	loamy over sandy	yes	sandy or sandy-skeletal
Whitman	49	0.0	0.2	0.00	0.2	D	6	Firm, platy, loamy till	mesic	loamy	no	mucky loam
Hermon	55	2.0	20.0	6.00	20.0	A	1	Sandy Till	frigid	sandy-skeletal	yes	loamy cap
Becket	56	0.6	2.0	0.06	0.6	C	3	Firm, platy, sandy till	frigid	loamy	yes	gravelly sandy loam in Cd
Waumbeck	58	2.0	20.0	6.00	20.0	B	3	Loose till, sandy textures	frigid	sandy-skeletal	yes	very cobbly loamy sand
Charlton	62	0.6	6.0	0.60	6.0	B	2	Loose till, loamy textures	mesic	loamy	no	fine sandy loam
Paxton	66	0.6	2.0	0.00	0.2	C	3	Firm, platy, loamy till	mesic	loamy	no	
Sutton	68	0.6	6.0	0.60	6.0	B	3	Loose till, loamy textures	mesic	loamy	no	
Berkshire	72	0.6	6.0	0.60	6.0	B	2	Loose till, loamy textures	frigid	loamy	yes	fine sandy loam
Marlow	76	0.6	2.0	0.06	0.6	C	3	Firm, platy, loamy till	frigid	loamy	yes	fine sandy loam in Cd
Peru	78	0.6	2.0	0.06	0.6	C	3	Firm, platy, loamy till	frigid	loamy	yes	
Thorndike	84	0.6	2.0	0.60	2.0	C/D	4	Friable till, silty, schist & phyllite	frigid	loamy-skeletal	yes	less than 20 in. deep
Hollis	86	0.6	6.0	0.60	6.0	C/D	4	Loose till, bedrock	mesic	loamy	no	less than 20 in. deep
Winnecook	88	0.6	2.0	0.60	2.0	C	4	Friable till, silty, schist & phyllite	frigid	loamy-skeletal	yes	20 to 40 in. deep
Chatfield	89	0.6	6.0	0.60	6.0	B	4	Loose till, bedrock	mesic	loamy	no	20 to 40 in. deep
Hogback	91	2.0	6.0	2.00	6.0	C	4	Loose till, bedrock	frigid	loamy	yes	less than 20 in. deep
Lyman	92	2.0	6.0	2.00	6.0	A/D	4	Loose till, bedrock	frigid	loamy	yes	less than 20 in. deep
Woodstock	93	2.0	6.0	2.00	6.0	C/D	4	Loose till, bedrock	frigid	loamy	no	less than 20 in. deep
Rawsonville	98	0.6	6.0	0.60	6.0	C	4	Loose till, bedrock	frigid	loamy	yes	20 to 40 in. deep
Tunbridge	99	0.6	6.0	0.60	6.0	C	4	Loose till, bedrock	frigid	loamy	yes	20 to 40 in. deep

Soil Series	legend number	Ksat low - B in/hr	Ksat high - B in/hr	Ksat low - C in/hr	Ksat high - C in/hr	Hyd. Grp.	Group	Land Form	Temp.	Soil Textures	Spodosol ?	Other
Ondawa	101	0.6	6.0	6.00	20.0	B	2	Flood Plain (Bottom Land)	frigid	loamy	no	loamy over loamy sand
Sunday	102	6.0	20.0	6.00	20.0	A	1	Flood Plain (Bottomland)	frigid	sandy	no	occasionally flooded
Winooski	103	0.6	6.0	0.60	6.0	B	3	Flood Plain (Bottom Land)	mesic	silty	no	very fine sandy loam
Podunk	104	0.6	6.0	6.00	20.0	B	3	Flood Plain (Bottom Land)	frigid	loamy	no	loamy to coarse sand in C
Rumney	105	0.6	6.0	6.00	20.0	C	5	Flood Plain (Bottom Land)	frigid	loamy	no	
Hadley	108	0.6	2.0	0.60	6.0	B	2	Flood Plain (Bottom Land)	mesic	silty	no	strata of fine sand, occ flooded
Limerick	109	0.6	2.0	0.60	2.0	C	5	Flood Plain (Bottom Land)	mesic	silty	no	
Scarboro	115	6.0	20.0	6.00	20.0	D	6	Outwash and Stream Terraces	mesic	sandy	no	organic over sand, non stony
Finch	116					C	3	Outwash and Stream Terraces	frigid	sandy	yes	cemented (ortstein)
Sudbury	118	2.0	6.0	2.00	20.0	B	3	Outwash and Stream Terraces	mesic	sandy	no	loam over gravelly sand
Telos	123	0.6	2.0	0.02	0.2	C	3	Firm, platy, silty till, schist & phyllite	frigid	loamy	yes	channery silt loam in Cd
Chesuncook	126	0.6	2.0	0.02	0.2	C	3	Firm, platy, silty till, schist & phyllite	frigid	loamy	yes	channery silt loam in Cd
Allagash	127	0.6	2.0	6.00	20.0	B	2	Outwash and Stream Terraces	frigid	loamy over sandy	yes	loamy over sandy
Elliottsville	128	0.6	2.0	0.60	2.0	B	4	Friable till, silty, schist & phyllite	frigid	loamy	yes	20 to 40 in. deep
Hitchcock	130	0.6	2.0	0.06	0.6	B	3	Terraces and glacial lake plains	mesic	silty	no	silt loam to silt in C
Burnham	131	0.2	6.0	0.02	0.2	D	6	Firm, platy, silty till, schist & phyllite	frigid	loamy	no	organic over silt
Dartmouth	132	0.6	2.0	0.06	0.6	B	3	Terraces and glacial lake plains	mesic	silty	no	thin strata silty clay loam
Monson	133	0.6	2.0	0.60	2.0	D	4	Friable till, silty, schist & phyllite	frigid	loamy	yes	less than 20 in. deep
Maybid	134	0.0	0.2	0.00	0.2	D	6	Silt and Clay Deposits	mesic	fine	no	silt over clay
Shapleigh	136					C/D	4	Sandy Till	mesic	sandy	yes	less than 20 in. deep
Monadnock	142	0.6	2.0	2.00	6.0	B	2	Loose till, sandy textures	frigid	loamy over sandy, sandy-skeletal	yes	gravely loamy sand in C
Acton	146	2.0	20.0	2.00	20.0	B	3	Loose till, sandy textures	mesic	sandy-skeletal	no	cobbly loamy sand
Vassalboro	150					D	6	Organic Materials - Freshwater	frigid	peat	no	deep organic
Success	154	2.0	6.0	6.00	20.0	A	1	Sandy Till	frigid	sandy-skeletal	yes	cemented
Canterbury	166	0.6	2.0	0.06	0.6	C	3	Firm, platy, loamy till	frigid	loamy	no	loam in Cd
Sunapee	168	0.6	2.0	0.60	6.0	B	3	Loose till, loamy textures	frigid	loamy	yes	
Waskish	195					D	6	Organic Materials - Freshwater	frigid	peat	no	deep organic
Ondawa	201	0.6	6.0	6.00	20.0	B	2	Flood Plain (Bottom Land)	frigid	loamy	no	occ flood, loamy over l. sand
Sunday	202	6.0	20.0	6.00	20.0	A	1	Flood Plain (Bottomland)	frigid	sandy	no	frequently flooded
Fryeburg	208	0.6	2.0	2.00	6.0	B	2	Flood Plain (Bottom Land)	frigid	silty	no	very fine sandy loam
Charles	209	0.6	100.0	0.60	100.0	C	5	Flood Plain (Bottom Land)	frigid	silty	no	
Warwick	210	2.0	6.0	20.00	100.0	A	1	Outwash and Stream Terraces	mesic	loamy-skeletal	no	loamy over slate gravel
Naumburg	214	6.0	20.0	6.00	20.0	C	5	Outwash and Stream Terraces	frigid	sandy	yes	
Boscawen	220	6.0	20.0	20.00	100.0	A	1	Outwash and Stream Terraces	frigid	sandy-skeletal	no	loamy cap
Bemis	224	0.6	0.2	0.00	0.2	C	5	Firm, platy, loamy till	crylic	loamy	no	
Bice	226	0.6	6.0	0.60	6.0	B	2	Loose till, loamy textures	frigid	loamy	no	sandy loam
Lanesboro	228	0.6	2.0	0.06	0.2	C	3	Firm, platy, silty till, schist & phyllite	frigid	loamy	no	channery silt loam in Cd
Poocham	230	0.6	2.0	0.20	2.0	B	3	Terraces and glacial lake plains	mesic	silty	no	silt loam in C
Buxton	232	0.1	0.6	0.00	0.2	C	3	Silt and Clay Deposits	frigid	fine	no	silty clay
Scantic	233	0.0	0.2	0.00	0.2	D	5	Silt and Clay Deposits	frigid	fine	no	
Biddeford	234	0.0	0.2	0.00	0.2	D	6	Silt and Clay Deposits	frigid	fine	no	organic over clay
Buckland	237	0.6	2.0	0.06	0.2	C	3	Firm, platy, loamy till	frigid	loamy	no	loam in Cd
Elmridge	238	2.0	6.0	0.00	0.2	C	3	Sandy/loamy over silt/clay	mesic	loamy over clayey	no	
Brayton	240	0.6	2.0	0.06	0.6	C	5	Firm, platy, silty till, schist & phyllite	frigid	loamy	no	
Lyme	246	0.6	6.0	0.60	6.0	C	5	Loose till, sandy textures	frigid	loamy	no	
Millsite	251	0.6	6.0	0.60	6.0	C	4	Loose till, bedrock	frigid	loamy	no	20 to 40 in. deep
Macomber	252	0.6	2.0	0.60	2.0	C	4	Friable till, silty, schist & phyllite	frigid	loamy-skeletal	yes	20 to 40 in. deep
Lombard	259	0.6	6.0	2.00	20.0	C/D	2	Weathered bedrock, phyllite	frigid	loamy	no	very channery
Sunapee var	269	0.6	2.0	0.60	6.0	B	3	Loose till, loamy textures	frigid	loamy	yes	frigid dystrodept
Chatfield Var.	289	0.6	6.0	0.60	6.0	B	3	Loose till, bedrock	mesic	loamy	no	mwd to swpd
Greenwood	295					A/D	6	Organic Materials - Freshwater	frigid	hemic	no	deep organic
Catden	296					A/D	6	Organic Materials - Freshwater	mesic	sapric	no	deep organic
Lovewell	307	0.6	2.0	0.60	2.0	B	3	Flood Plain (Bottom Land)	frigid	silty	no	very fine sandy loam
Quonset	310	2.0	20.0	20.00	100.0	A	1	Outwash and Stream Terraces	mesic	sandy-skeletal	no	shale
Deerfield	313	6.0	20.0	20.00	100.0	B	3	Outwash and Stream Terraces	mesic	sandy	no	single grain in C

Soil Series	legend number	Ksat low - B in/hr	Ksat high - B in/hr	Ksat low - C in/hr	Ksat high - C in/hr	Hyd. Grp.	Group	Land Form	Temp.	Soil Textures	Spodosol ?	Other
Pipestone	314					B	5	Outwash and Stream Terraces	mesic	sandy	yes	
Mashpee	315	6.0	20.0	6.00	20.0	B	5	Outwash and Stream Terraces	mesic	sandy	yes	
Bernardston	330	0.6	2.0	0.06	0.2	C	3	Firm, platy, silty till, schist & phyllite	mesic	loamy	no	channery silt loam in Cd
Roundabout	333	0.2	2.0	0.06	0.6	C	5	Terraces and glacial lake plains	frigid	silty	no	silt loam in the C
Pittstown	334	0.6	2.0	0.06	0.2	C	3	Firm, platy, silty till, schist & phyllite	mesic	loamy	no	channery silt loam in Cd
Elmwood	338	2.0	6.0	0.00	0.2	C	3	Sandy/loamy over silt/clay	frigid	loamy over clayey	no	
Stissing	340	0.6	2.0	0.06	0.2	C	5	Firm, platy, silty till, schist & phyllite	mesic	loamy	no	
Cardigan	357	0.6	2.0	0.60	2.0	B	4	Friable till, silty, schist & phyllite	mesic	loamy	no	20 to 40 in. deep
Kearsarge	359	0.6	2.0	0.60	2.0	B	4	Friable till, silty, schist & phyllite	mesic	loamy	no	less than 20 in. deep
Dutchess	366	0.6	2.0	0.60	2.0	B	2	Friable till, silty, schist & phyllite	mesic	loamy	no	very channery
Dixfield	378	0.6	2.0	0.06	0.6	C	3	Firm, platy, loamy till	frigid	loamy	yes	fine sandy loam in Cd
Timakwa	393			6.00	100.0	D	6	Organic Materials - Freshwater	mesic	sandy or sandy-skeletal	no	organic over sand
Chocorua	395			6.00	20.0	D	6	Organic Materials - Freshwater	frigid	sandy or sandy-skeletal	no	organic over sand
Ipswich	397					D	6	Tidal Flat	mesic	hemic/sapric	no	deep organic
Suncook	402	6.0	20.0	6.00	20.0	A	1	Flood Plain (Bottomland)	mesic	sandy	no	frequent flooding
Metallak	404	6.0	100.0	6.00	100.0	B	3	Flood Plain (Bottom Land)	frigid	loamy over sandy	no	sandy or sandy-skeletal
Medomak	406	0.6	2.0	0.60	2.0	D	6	Flood Plain (Bottom Land)	frigid	silty	no	organic over silt
Haven	410	0.6	2.0	20.00	100.0	B	2	Outwash and Stream Terraces	mesic	loamy over sandy	no	loamy over sand/gravel
Duane	413	6.0	20.0	6.00	20.0	B	3	Outwash and Stream Terraces	frigid	sandy-skeletal	yes	cemented (ortstein)
Moosilauke	414	6.0	20.0	6.00	20.0	C	5	Loose till, sandy textures	frigid	sandy	no	
Grange	433	0.6	2.0	0.60	2.0	C	5	Outwash and Stream Terraces	frigid	co. loamy over sandy (skeletal)	no	
Swanton	438	2.0	6.0	0.00	0.2	C	5	Sandy/loamy over silt/clay	frigid	co. loamy over clayey	no	
Shaker	439	2.0	6.0	0.00	0.2	C	5	Sandy/loamy over silt/clay	mesic	co. loamy over clayey	no	
Chichester	442	0.6	2.0	2.00	6.0	B		Loose till, sandy textures	frigid	loamy over sandy	no	loamy over loamy sand
Newfields	444	0.6	2.0	0.60	2.0	B	3	Loose till, sandy textures	mesic	loamy over sandy	no	sandy or sandy-skeletal
Scituate	448	0.6	2.0	0.06	0.2	C	3	Firm, platy, sandy till	mesic	loamy	no	loamy sand in Cd
Metacomet	458	0.6	2.0	0.06	0.6	C	3	Firm, platy, sandy till	frigid	loamy	no	loamy sand in Cd
Pennichuck	460	0.6	2.0	0.60	2.0	B	4	Friable till, silty, schist & phyllite	mesic	loamy-skeletal	no	20 to 40 in. deep
Gilmanton	478	0.6	2.0	0.06	0.6	C	3	Firm, platy, loamy till	frigid	loamy	no	fine sandy loam in Cd
Ossipee	495			0.20	2.0	D	6	Organic Materials - Freshwater	frigid	loamy	no	organic over loam
Natchaug	496			0.20	2.0	D	6	Organic Materials - Freshwater	mesic	loamy	no	organic over loam
Pawcatuck	497			20.00	100.0	D	6	Tidal Flat	mesic	sandy or sandy-skeletal	no	organic over sand
Abenaki	501	0.6	2.0	6.00	99.0	B	2	Outwash and Stream Terraces	frigid	loamy over sandy-skeletal	no	loamy over gravelly
Cohas	505	0.6	2.0	0.60	100.0	C	5	Flood Plain (Bottom Land)	frigid	co. loamy over sandy (skeletal)	no	
Hoosic	510	2.0	20.0	20.00	100.0	A	1	Outwash and Stream Terraces	mesic	sandy-skeletal	no	slate, loamy cap
Ninigret	513	0.6	6.0	6.00	20.0	B	3	Outwash and Stream Terraces	mesic	loamy over sandy	no	sandy or sandy-skeletal
Leicester	514	0.6	6.0	0.60	20.0	C	5	Loose till, loamy textures	mesic	loamy	no	
Au Gres	516					B	5	Outwash and Stream Terraces	frigid	sandy	yes	single grain, loose
Machias	520	2.0	6.0	6.00	20.0	B	3	Outwash and Stream Terraces	frigid	sandy or sandy-skeletal	yes	strata sand/gravel in C
Stetson	523	0.6	6.0	6.00	20.0	B	2	Outwash and Stream Terraces	frigid	sandy-skeletal	yes	loamy over gravelly
Caesar	526	20.0	100.0	20.00	100.0	A	1	Outwash and Stream Terraces	mesic	coarse sand	no	
Scio	531	0.6	2.0	0.60	2.0	B	3	Terraces and glacial lake plains	mesic	silty	no	gravelly sand in 2C
Belgrade	532	0.6	2.0	0.06	2.0	B	3	Terraces and glacial lake plains	mesic	silty	no	strata of fine sand
Raynham	533	0.2	2.0	0.06	0.2	C	5	Terraces and glacial lake plains	mesic	silty	no	
Binghamville	534	0.2	2.0	0.06	0.2	D	5	Terraces and glacial lake plains	mesic	silty	no	
Suffield	536	0.6	2.0	0.00	0.2	C	3	Sandy/loamy over silt/clay	mesic	silty over clayey	no	deep to clay C
Squamscott	538	6.0	20.0	0.06	0.6	C	5	Sandy/loamy over silt/clay	mesic	sandy over loamy	yes	
Raypol	540	0.6	2.0	6.00	100.0	D	5	Outwash and Stream Terraces	mesic	co. loamy over sandy (skeletal)	no	
Walpole	546	2.0	6.0	6.00	20.0	C	5	Outwash and Stream Terraces	mesic	sandy	no	
Peacham	549	0.6	2.0	0.00	0.2	D	6	Firm, platy, silty till, schist & phyllite	frigid	loamy	no	organic over loam
Skerry	558	0.6	2.0	0.06	0.6	C	3	Firm, platy, sandy till	frigid	loamy	yes	loamy sand in Cd
Plaisted	563	0.6	2.0	0.06	0.6	C	3	Firm, platy, silty till, schist & phyllite	frigid	loamy	yes	channery silt loam in Cd
Howland	566	0.6	2.0	0.06	0.2	C	3	Firm, platy, silty till, schist & phyllite	frigid	loamy	yes	silt loam, platy in Cd
Monarda	569	0.2	2.0	0.02	0.2	D	5	Firm, platy, silty till, schist & phyllite	frigid	loamy	no	
Bangor	572	0.6	2.0	0.60	2.0	B	2	Friable till, silty, schist & phyllite	frigid	loamy	yes	silt loam

Soil Series	legend number	Ksat low - B in/hr	Ksat high - B in/hr	Ksat low - C in/hr	Ksat high - C in/hr	Hyd. Grp.	Group	Land Form	Temp.	Soil Textures	Spodosol ?	Other
Dixmont	578	0.6	2.0	0.60	2.0	C	3	Friable till, silty, schist & phyllite	frigid	loamy	yes	silt loam, platy in C
Cabot	589	0.6	2.0	0.06	0.2	D	5	Firm, platy, silty till, schist & phyllite	frigid	loamy	no	
Westbrook	597			0.00	2.0	D	6	Tidal Flat	mesic	loamy	no	organic over loam
Mundal	610	0.6	2.0	0.06	0.6	C	3	Firm, platy, loamy till	frigid	loamy	yes	gravely sandy loam in Cd
Croghan	613	20.0	100.0	20.00	100.0	B	3	Outwash and Stream Terraces	frigid	sandy	yes	single grain in C
Kinsman	614	6.0	20.0	6.00	20.0	C	5	Outwash and Stream Terraces	frigid	sandy	yes	
Salmon	630	0.6	2.0	0.60	2.0	B	2	Terraces and glacial lake plains	frigid	silty	yes	very fine sandy loam
Nicholville	632	0.6	2.0	0.60	2.0	C	3	Terraces and glacial lake plains	frigid	silty	yes	very fine sandy loam
Pemi	633	0.6	2.0	0.06	0.6	C	5	Terraces and glacial lake plains	frigid	silty	no	
Pillsbury	646	0.6	2.0	0.06	0.2	C	5	Firm, platy, loamy till	frigid	silty	no	
Ridgebury	656	0.6	6.0	0.00	0.2	C	5	Firm, platy, loamy till	mesic	loamy	no	
Canaan	663	2.0	20.0	2.00	20.0	C	4	Weathered Bedrock Till	frigid	loamy-skeletal	yes	less than 20 in. deep
Redstone	665	2.0	6.0	6.00	20.0	A	1	Weathered Bedrock Till	frigid	fragmental	yes	loamy cap
Sisk	667	0.6	2.0	0.00	0.6	C	3	Firm, platy, loamy till	cryic	loamy	yes	sandy loam in Cd
Surplus	669	0.6	2.0	0.00	0.6	C	3	Firm, platy, loamy till	cryic	loamy	yes	mwd, sandy loam in Cd
Glebe	671	2.0	6.0	2.00	6.0	C	4	Loose till, bedrock	cryic	loamy	yes	20 to 40 in. deep
Saddleback	673	0.6	2.0	0.60	2.0	C/D	4	Loose till, bedrock	cryic	loamy	yes	less than 20 in. deep
Ricker	674	2.0	6.0	2.00	6.0	A	4	Organic over bedrock (up to 4" of mineral)	cryic	fibric to hemic	no	well drained, less than 20 in. deep
Houghtonville	795	0.6	6.0	0.60	6.0	B	2	Loose till, loamy textures	frigid	loamy	yes	cobbly fine sandy loam
Matunuck	797			20.00	100.0	D	6	Tidal Flat	mesic	sandy	no	organic over sand
Meadowsedge	894					D	6	Organic Materials - Freshwater	frigid	peat	no	deep organic
Bucksport	895					D	6	Organic Materials - Freshwater	frigid	sapric	no	deep organic
Colonel	927	0.6	2.0	0.06	0.6	C	3	Firm, platy, loamy till	frigid	loamy	yes	loam in Cd
Pondicherry	992			6.00	20.0	D	6	Organic Materials - Freshwater	frigid	sandy or sandy-skeletal	no	organic over sand
Wonsqueak	995			0.20	2.0	D	6	Organic Materials - Freshwater	frigid	loamy	no	organic over loam
Glover	NA	0.6	2.0	0.60	2	D	4	Friable till, silty, schist & phyllite	frigid	loamy	no	less than 20 in. deep



no longer recognized
organic materials

TABLE B

SOIL SERIES

Soil Series	legend number	Ksat low - B in/hr	Ksat high - B in/hr	Ksat low - C in/hr	Ksat high - C in/hr	Hyd. Grp.	Group	Land Form	Temp.	Soil Textures	Spodosol ?	Other
Abenaki	501	0.6	2.0	6.00	99.0	B	2	Outwash and Stream Terraces	frigid	loamy over sandy-skeletal	no	loamy over gravelly
Acton	146	2.0	20.0	2.00	20.0	B	3	Loose till, sandy textures	mesic	sandy-skeletal	no	cobbly loamy sand
Adams	36	6.0	20.0	20.00	99.0	A	1	Outwash and Stream Terraces	frigid	sandy	yes	
Agawam	24	6.0	20.0	20.00	100.0	B	2	Outwash and Stream Terraces	mesic	loamy over sandy	no	loamy over sand/gravel
Allagash	127	0.6	2.0	6.00	20.0	B	2	Outwash and Stream Terraces	frigid	loamy over sandy	yes	loamy over sandy
Au Gres	516					B	5	Outwash and Stream Terraces	frigid	sandy	yes	single grain, loose
Bangor	572	0.6	2.0	0.60	2.0	B	2	Friable till, silty, schist & phyllite	frigid	loamy	yes	silt loam
Becket	56	0.6	2.0	0.06	0.6	C	3	Firm, platy, sandy till	frigid	loamy	yes	gravelly sandy loam in Cd
Belgrade	532	0.6	2.0	0.06	2.0	B	3	Terraces and glacial lake plains	mesic	silty	no	strata of fine sand
Bemis	224	0.6	0.2	0.00	0.2	C	5	Firm, platy, loamy till	cryic	loamy	no	
Berkshire	72	0.6	6.0	0.60	6.0	B	2	Loose till, loamy textures	frigid	loamy	yes	fine sandy loam
Bernardston	330	0.6	2.0	0.06	0.2	C	3	Firm, platy, silty till, schist & phyllite	mesic	loamy	no	channery silt loam in Cd
Bice	226	0.6	6.0	0.60	6.0	B	2	Loose till, loamy textures	frigid	loamy	no	sandy loam
Biddeford	234	0.0	0.2	0.00	0.2	D	6	Silt and Clay Deposits	frigid	fine	no	organic over clay
Binghamville	534	0.2	2.0	0.06	0.2	D	5	Terraces and glacial lake plains	mesic	silty	no	
Boscawen	220	6.0	20.0	20.00	100.0	A	1	Outwash and Stream Terraces	frigid	sandy-skeletal	no	loamy cap
Boxford	32	0.1	0.2	0.00	0.2	C	3	Silt and Clay Deposits	mesic	fine	no	silty clay loam
Brayton	240	0.6	2.0	0.06	0.6	C	5	Firm, platy, silty till, schist & phyllite	frigid	loamy	no	
Buckland	237	0.6	2.0	0.06	0.2	C	3	Firm, platy, loamy till	frigid	loamy	no	loam in Cd
Bucksport	895					D	6	Organic Materials - Freshwater	frigid	sapric	no	deep organic
Burnham	131	0.2	6.0	0.02	0.2	D	6	Firm, platy, silty till, schist & phyllite	frigid	loamy	no	organic over silt
Buxton	232	0.1	0.6	0.00	0.2	C	3	Silt and Clay Deposits	frigid	fine	no	silty clay
Cabot	589	0.6	2.0	0.06	0.2	D	5	Firm, platy, silty till, schist & phyllite	frigid	loamy	no	
Caesar	526	20.0	100.0	20.00	100.0	A	1	Outwash and Stream Terraces	mesic	coarse sand	no	
Canaan	663	2.0	20.0	2.00	20.0	C	4	Weathered Bedrock Till	frigid	loamy-skeletal	yes	less than 20 in. deep
Canterbury	166	0.6	2.0	0.06	0.6	C	3	Firm, platy, loamy till	frigid	loamy	no	loam in Cd
Canton	42	2.0	6.0	6.00	20.0	B	2	Loose till, sandy textures	mesic	loamy over sandy	no	loamy over loamy sand
Cardigan	357	0.6	2.0	0.60	2.0	B	4	Friable till, silty, schist & phyllite	mesic	loamy	no	20 to 40 in. deep
Catden	296					A/D	6	Organic Materials - Freshwater	mesic	sapric	no	deep organic
Champlain	35	6.0	20.0	20.00	100.0	A	1	Outwash and Stream Terraces	frigid	gravelly sand	no	
Charles	209	0.6	100.0	0.60	100.0	C	5	Flood Plain (Bottom Land)	frigid	silty	no	
Charlton	62	0.6	6.0	0.60	6.0	B	2	Loose till, loamy textures	mesic	loamy	no	fine sandy loam
Chatfield	89	0.6	6.0	0.60	6.0	B	4	Loose till, bedrock	mesic	loamy	no	20 to 40 in. deep
Chatfield Var.	289	0.6	6.0	0.60	6.0	B	3	Loose till, bedrock	mesic	loamy	no	mwd to swpd
Chesuncook	126	0.6	2.0	0.02	0.2	C	3	Firm, platy, silty till, schist & phyllite	frigid	loamy	yes	channery silt loam in Cd
Chichester	442	0.6	2.0	2.00	6.0	B		Loose till, sandy textures	frigid	loamy over sandy	no	loamy over loamy sand
Chocorua	395			6.00	20.0	D	6	Organic Materials - Freshwater	frigid	sandy or sandy-skeletal	no	organic over sand
Cohas	505	0.6	2.0	0.60	100.0	C	5	Flood Plain (Bottom Land)	frigid	co. loamy over sandy (skeletal)	no	
Colonel	927	0.6	2.0	0.06	0.6	C	3	Firm, platy, loamy till	frigid	loamy	yes	loam in Cd
Colton	22	6.0	20.0	20.00	100.0	A	1	Outwash and Stream Terraces	frigid	sandy-skeletal	yes	
Colton, gravelly	21	6.0	20.0	20.00	100.0	A	1	Outwash and Stream Terraces	frigid	sandy-skeletal	yes	gravelly surface
Croghan	613	20.0	100.0	20.00	100.0	B	3	Outwash and Stream Terraces	frigid	sandy	yes	single grain in C
Dartmouth	132	0.6	2.0	0.06	0.6	B	3	Terraces and glacial lake plains	mesic	silty	no	thin strata silty clay loam
Deerfield	313	6.0	20.0	20.00	100.0	B	3	Outwash and Stream Terraces	mesic	sandy	no	single grain in C
Dixfield	378	0.6	2.0	0.06	0.6	C	3	Firm, platy, loamy till	frigid	loamy	yes	fine sandy loam in Cd
Dixmont	578	0.6	2.0	0.60	2.0	C	3	Friable till, silty, schist & phyllite	frigid	loamy	yes	silt loam, platy in C
Duane	413	6.0	20.0	6.00	20.0	B	3	Outwash and Stream Terraces	frigid	sandy-skeletal	yes	cemented (ortstein)
Dutchess	366	0.6	2.0	0.60	2.0	B	2	Friable till, silty, schist & phyllite	mesic	loamy	no	very channery
Eldridge	38	6.0	20.0	0.06	0.6	C	3	Sandy/loamy over silt/clay	mesic	sandy over loamy	no	
Elliottsville	128	0.6	2.0	0.60	2.0	B	4	Friable till, silty, schist & phyllite	frigid	loamy	yes	20 to 40 in. deep
Elmridge	238	2.0	6.0	0.00	0.2	C	3	Sandy/loamy over silt/clay	mesic	loamy over clayey	no	
Elmwood	338	2.0	6.0	0.00	0.2	C	3	Sandy/loamy over silt/clay	frigid	loamy over clayey	no	
Finch	116					C	3	Outwash and Stream Terraces	frigid	sandy	yes	cemented (ortstein)

Soil Series	legend number	Ksat low - B in/hr	Ksat high - B in/hr	Ksat low - C in/hr	Ksat high - C in/hr	Hyd. Grp.	Group	Land Form	Temp.	Soil Textures	Spodosol ?	Other
Fryeburg	208	0.6	2.0	2.00	6.0	B	2	Flood Plain (Bottom Land)	frigid	silty	no	very fine sandy loam
Gilmanton	478	0.6	2.0	0.06	0.6	C	3	Firm, platy, loamy till	frigid	loamy	no	fine sandy loam in Cd
Glebe	671	2.0	6.0	2.00	6.0	C	4	Loose till, bedrock	cryic	loamy	yes	20 to 40 in. deep
Gloucester	11	6.0	20.0	6.00	20.0	A	1	Sandy Till	mesic	sandy-skeletal	no	loamy cap
Glover	NA	0.6	2.0	0.60	2	D	4	Friable till, silty, schist & phyllite	frigid	loamy	no	less than 20 in. deep
Grange	433	0.6	2.0	0.60	2.0	C	5	Outwash and Stream Terraces	frigid	co. loamy over sandy (skeletal)	no	
Greenwood	295					A/D	6	Organic Materials - Freshwater	frigid	hemic	no	deep organic
Groveton	27	0.6	2.0	0.60	6.0	B	2	Outwash and Stream Terraces	frigid	loamy	yes	loamy over sandy
Hadley	8	0.6	2.0	0.60	6.0	B	2	Flood Plain (Bottom Land)	mesic	silty	no	strata of fine sand
Hadley	108	0.6	2.0	0.60	6.0	B	2	Flood Plain (Bottom Land)	mesic	silty	no	strata of fine sand, occ flooded
Hartland	31	0.6	2.0	0.20	2.0	B	2	Terraces and glacial lake plains	mesic	silty	no	very fine sandy loam
Haven	410	0.6	2.0	20.00	100.0	B	2	Outwash and Stream Terraces	mesic	loamy over sandy	no	loamy over sand/gravel
Henniker	46	0.6	2.0	0.06	0.6	C	3	Firm, platy, sandy till	frigid	loamy	no	loamy sand in Cd
Hermon	55	2.0	20.0	6.00	20.0	A	1	Sandy Till	frigid	sandy-skeletal	yes	loamy cap
Hinckley	12	6.0	20.0	20.00	100.0	A	1	Outwash and Stream Terraces	mesic	sandy-skeletal	no	
Hitchcock	130	0.6	2.0	0.06	0.6	B	3	Terraces and glacial lake plains	mesic	silty	no	silt loam to silt in C
Hogback	91	2.0	6.0	2.00	6.0	C	4	Loose till, bedrock	frigid	loamy	yes	less than 20 in. deep
Hollis	86	0.6	6.0	0.60	6.0	C/D	4	Loose till, bedrock	mesic	loamy	no	less than 20 in. deep
Hoosic	510	2.0	20.0	20.00	100.0	A	1	Outwash and Stream Terraces	mesic	sandy-skeletal	no	slate, loamy cap
Houghtonville	795	0.6	6.0	0.60	6.0	B	2	Loose till, loamy textures	frigid	loamy	yes	cobbly fine sandy loam
Howland	566	0.6	2.0	0.06	0.2	C	3	Firm, platy, silty till, schist & phyllite	frigid	loamy	yes	silt loam, platy in Cd
Ipswich	397					D	6	Tidal Flat	mesic	hemic/sapric	no	deep organic
Kearsarge	359	0.6	2.0	0.60	2.0	B	4	Friable till, silty, schist & phyllite	mesic	loamy	no	less than 20 in. deep
Kinsman	614	6.0	20.0	6.00	20.0	C	5	Outwash and Stream Terraces	frigid	sandy	yes	
Lanesboro	228	0.6	2.0	0.06	0.2	C	3	Firm, platy, silty till, schist & phyllite	frigid	loamy	no	channery silt loam in Cd
Leicester	514	0.6	6.0	0.60	20.0	C	5	Loose till, loamy textures	mesic	loamy	no	
Lim	3	0.6	2.0	6.00	20.0	C	5	Flood Plain (Bottom Land)	mesic	loamy	no	
Limerick	109	0.6	2.0	0.60	2.0	C	5	Flood Plain (Bottom Land)	mesic	silty	no	
Lombard	259	0.6	6.0	2.00	20.0	C/D	2	Weathered bedrock, phyllite	frigid	loamy	no	very channery
Lovewell	307	0.6	2.0	0.60	2.0	B	3	Flood Plain (Bottom Land)	frigid	silty	no	very fine sandy loam
Lyman	92	2.0	6.0	2.00	6.0	A/D	4	Loose till, bedrock	frigid	loamy	yes	less than 20 in. deep
Lyme	246	0.6	6.0	0.60	6.0	C	5	Loose till, sandy textures	frigid	loamy	no	
Machias	520	2.0	6.0	6.00	20.0	B	3	Outwash and Stream Terraces	frigid	sandy or sandy-skeletal	yes	strata sand/gravel in C
Macomber	252	0.6	2.0	0.60	2.0	C	4	Friable till, silty, schist & phyllite	frigid	loamy-skeletal	yes	20 to 40 in. deep
Madawaska	28	0.6	2.0	6.00	20.0	B	3	Outwash and Stream Terraces	frigid	loamy over sandy	yes	sandy or sandy-skeletal
Madawaska, aquifer	48	0.6	2.0	6.00	20.0	B	3	Outwash and Stream Terraces	frigid	loamy over sandy	yes	sandy or sandy-skeletal
Marlow	76	0.6	2.0	0.06	0.6	C	3	Firm, platy, loamy till	frigid	loamy	yes	fine sandy loam in Cd
Masardis	23	6.0	20.0	6.00	20.0	A	1	Outwash and Stream Terraces	frigid	sandy-skeletal	yes	slate, loamy cap
Mashpee	315	6.0	20.0	6.00	20.0	B	5	Outwash and Stream Terraces	mesic	sandy	yes	
Matunuck	797			20.00	100.0	D	6	Tidal Flat	mesic	sandy	no	organic over sand
Maybid	134	0.0	0.2	0.00	0.2	D	6	Silt and Clay Deposits	mesic	fine	no	silt over clay
Meadowsedge	894					D	6	Organic Materials - Freshwater	frigid	peat	no	deep organic
Medomak	406	0.6	2.0	0.60	2.0	D	6	Flood Plain (Bottom Land)	frigid	silty	no	organic over silt
Melrose	37	2.0	6.0	0.00	0.2	C	3	Sandy/loamy over silt/clay	frigid	loamy over clayey	no	silty clay loam in C
Merrimac	10	2.0	20.0	6.00	20.0	A	1	Outwash and Stream Terraces	mesic	gravelly sand	no	loamy cap
Metacomet	458	0.6	2.0	0.06	0.6	C	3	Firm, platy, sandy till	frigid	loamy	no	loamy sand in Cd
Metallak	404	6.0	100.0	6.00	100.0	B	3	Flood Plain (Bottom Land)	frigid	loamy over sandy	no	sandy or sandy-skeletal
Millis	39					C	3	Firm, platy, sandy till	frigid	loamy	yes	loamy sand in Cd
Millsite	251	0.6	6.0	0.60	6.0	C	4	Loose till, bedrock	frigid	loamy	no	20 to 40 in. deep
Monadnock	142	0.6	2.0	2.00	6.0	B	2	Loose till, sandy textures	frigid	loamy over sandy, sandy-skeletal	yes	gravelly loamy sand in C
Monarda	569	0.2	2.0	0.02	0.2	D	5	Firm, platy, silty till, schist & phyllite	frigid	loamy	no	
Monson	133	0.6	2.0	0.60	2.0	D	4	Friable till, silty, schist & phyllite	frigid	loamy	yes	less than 20 in. deep
Montauk	44	0.6	6.0	0.06	0.6	C	3	Firm, platy, sandy till	mesic	loamy	no	loamy sand in Cd
Moosilauke	414	6.0	20.0	6.00	20.0	C	5	Loose till, sandy textures	frigid	sandy	no	

Soil Series	legend number	Ksat low - B in/hr	Ksat high - B in/hr	Ksat low - C in/hr	Ksat high - C in/hr	Hyd. Grp.	Group	Land Form	Temp.	Soil Textures	Spodosol ?	Other
Mundal	610	0.6	2.0	0.06	0.6	C	3	Firm, platy, loamy till	frigid	loamy	yes	gravely sandy loam in Cd
Natchaug	496			0.20	2.0	D	6	Organic Materials - Freshwater	mesic	loamy	no	organic over loam
Naumburg	214	6.0	20.0	6.00	20.0	C	5	Outwash and Stream Terraces	frigid	sandy	yes	
Newfields	444	0.6	2.0	0.60	2.0	B	3	Loose till, sandy textures	mesic	loamy over sandy	no	sandy or sandy-skeletal
Nicholville	632	0.6	2.0	0.60	2.0	C	3	Terraces and glacial lake plains	frigid	silty	yes	very fine sandy loam
Ninigret	513	0.6	6.0	6.00	20.0	B	3	Outwash and Stream Terraces	mesic	loamy over sandy	no	sandy or sandy-skeletal
Occum	1	0.6	2.0	6.00	20.0	B	2	Flood Plain (Bottom Land)	mesic	loamy	no	loamy over loamy sand
Ondawa	101	0.6	6.0	6.00	20.0	B	2	Flood Plain (Bottom Land)	frigid	loamy	no	loamy over loamy sand
Ondawa	201	0.6	6.0	6.00	20.0	B	2	Flood Plain (Bottom Land)	frigid	loamy	no	occ flood, loamy over l. sand
Ossipee	495			0.20	2.0	D	6	Organic Materials - Freshwater	frigid	loamy	no	organic over loam
Pawcatuck	497			20.00	100.0	D	6	Tidal Flat	mesic	sandy or sandy-skeletal	no	organic over sand
Paxton	66	0.6	2.0	0.00	0.2	C	3	Firm, platy, loamy till	mesic	loamy	no	
Peacham	549	0.6	2.0	0.00	0.2	D	6	Firm, platy, silty till, schist & phyllite	frigid	loamy	no	organic over loam
Pemi	633	0.6	2.0	0.06	0.6	C	5	Terraces and glacial lake plains	frigid	silty	no	
Pennichuck	460	0.6	2.0	0.60	2.0	B	4	Friable till, silty, schist & phyllite	mesic	loamy-skeletal	no	20 to 40 in. deep
Peru	78	0.6	2.0	0.06	0.6	C	3	Firm, platy, loamy till	frigid	loamy	yes	
Pillsbury	646	0.6	2.0	0.06	0.2	C	5	Firm, platy, loamy till	frigid	silty	no	
Pipestone	314					B	5	Outwash and Stream Terraces	mesic	sandy	yes	
Pittstown	334	0.6	2.0	0.06	0.2	C	3	Firm, platy, silty till, schist & phyllite	mesic	loamy	no	channery silt loam in Cd
Plaisted	563	0.6	2.0	0.06	0.6	C	3	Firm, platy, silty till, schist & phyllite	frigid	loamy	yes	channery silt loam in Cd
Podunk	104	0.6	6.0	6.00	20.0	B	3	Flood Plain (Bottom Land)	frigid	loamy	no	loamy to coarse sand in C
Pondicherry	992			6.00	20.0	D	6	Organic Materials - Freshwater	frigid	sandy or sandy-skeletal	no	organic over sand
Poocham	230	0.6	2.0	0.20	2.0	B	3	Terraces and glacial lake plains	mesic	silty	no	silt loam in C
Pootatuck	4	0.6	6.0	6.00	20.0	B	3	Flood Plain (Bottom Land)	mesic	loamy	no	single grain in C
Quonset	310	2.0	20.0	20.00	100.0	A	1	Outwash and Stream Terraces	mesic	sandy-skeletal	no	shale
Rawsonville	98	0.6	6.0	0.60	6.0	C	4	Loose till, bedrock	frigid	loamy	yes	20 to 40 in. deep
Raynham	533	0.2	2.0	0.06	0.2	C	5	Terraces and glacial lake plains	mesic	silty	no	
Raypol	540	0.6	2.0	6.00	100.0	D	5	Outwash and Stream Terraces	mesic	co. loamy over sandy (skeletal)	no	
Redstone	665	2.0	6.0	6.00	20.0	A	1	Weathered Bedrock Till	frigid	fragmental	yes	loamy cap
Ricker	674	2.0	6.0	2.00	6.0	A	4	Organic over bedrock (up to 4" of mineral)	crylic	fibric to hemic	no	well drained, less than 20 in. deep
Ridgebury	656	0.6	6.0	0.00	0.2	C	5	Firm, platy, loamy till	mesic	loamy	no	
Rippowam	5	0.6	6.0	6.00	20.0	C	5	Flood Plain (Bottom Land)	mesic	loamy	no	
Roundabout	333	0.2	2.0	0.06	0.6	C	5	Terraces and glacial lake plains	frigid	silty	no	silt loam in the C
Rumney	105	0.6	6.0	6.00	20.0	C	5	Flood Plain (Bottom Land)	frigid	loamy	no	
Saco	6	0.6	2.0	6.00	20.0	D	6	Flood Plain (Bottom Land)	mesic	silty	no	strata
Saddleback	673	0.6	2.0	0.60	2.0	C/D	4	Loose till, bedrock	crylic	loamy	yes	less than 20 in. deep
Salmon	630	0.6	2.0	0.60	2.0	B	2	Terraces and glacial lake plains	frigid	silty	yes	very fine sandy loam
Saugatuck	16	0.06	0.2	6.00	20.0	C	5	Outwash and Stream Terraces	mesic	sandy	yes	ortstein
Scantic	233	0.0	0.2	0.00	0.2	D	5	Silt and Clay Deposits	frigid	fine	no	
Scarboro	115	6.0	20.0	6.00	20.0	D	6	Outwash and Stream Terraces	mesic	sandy	no	organic over sand, non stony
Scio	531	0.6	2.0	0.60	2.0	B	3	Terraces and glacial lake plains	mesic	silty	no	gravely sand in 2C
Scitico	33	0.0	0.2	0.00	0.2	C	5	Silt and Clay Deposits	mesic	fine	no	
Scituate	448	0.6	2.0	0.06	0.2	C	3	Firm, platy, sandy till	mesic	loamy	no	loamy sand in Cd
Searsport	15	6.0	20.0	6.00	20.0	D	6	Outwash and Stream Terraces	frigid	sandy	no	organic over sand
Shaker	439	2.0	6.0	0.00	0.2	C	5	Sandy/loamy over silt/clay	mesic	co. loamy over clayey	no	
Shapleigh	136					C/D	4	Sandy Till	mesic	sandy	yes	less than 20 in. deep
Sheepscot	14	6.0	20.0	6.00	20.0	B	3	Outwash and Stream Terraces	frigid	sandy-skeletal	yes	gravely coarse sand
Sisk	667	0.6	2.0	0.00	0.6	C	3	Firm, platy, loamy till	crylic	loamy	yes	sandy loam in Cd
Skerry	558	0.6	2.0	0.06	0.6	C	3	Firm, platy, sandy till	frigid	loamy	yes	loamy sand in Cd
Squamscott	538	6.0	20.0	0.06	0.6	C	5	Sandy/loamy over silt/clay	mesic	sandy over loamy	yes	
Stetson	523	0.6	6.0	6.00	20.0	B	2	Outwash and Stream Terraces	frigid	sandy-skeletal	yes	loamy over gravelly
Stissing	340	0.6	2.0	0.06	0.2	C	5	Firm, platy, silty till, schist & phyllite	mesic	loamy	no	
Success	154	2.0	6.0	6.00	20.0	A	1	Sandy Till	frigid	sandy-skeletal	yes	cemented
Sudbury	118	2.0	6.0	2.00	20.0	B	3	Outwash and Stream Terraces	mesic	sandy	no	loam over gravelly sand

Soil Series	legend number	Ksat low - B in/hr	Ksat high - B in/hr	Ksat low - C in/hr	Ksat high - C in/hr	Hyd. Grp.	Group	Land Form	Temp.	Soil Textures	Spodosol ?	Other
Suffield	536	0.6	2.0	0.00	0.2	C	3	Sandy/loamy over silt/clay	mesic	silty over clayey	no	deep to clay C
Sunapee	168	0.6	2.0	0.60	6.0	B	3	Loose till, loamy textures	frigid	loamy	yes	
Sunapee var	269	0.6	2.0	0.60	6.0	B	3	Loose till, loamy textures	frigid	loamy	yes	frigid dystrodept
Suncook	2	6.0	20.0	6.00	20.0	A	1	Flood Plain (Bottomland)	mesic	sandy	no	occasionally flooded
Suncook	402	6.0	20.0	6.00	20.0	A	1	Flood Plain (Bottomland)	mesic	sandy	no	frequent flooding
Sunday	102	6.0	20.0	6.00	20.0	A	1	Flood Plain (Bottomland)	frigid	sandy	no	occasionally flooded
Sunday	202	6.0	20.0	6.00	20.0	A	1	Flood Plain (Bottomland)	frigid	sandy	no	frequently flooded
Surplus	669	0.6	2.0	0.00	0.6	C	3	Firm, platy, loamy till	crylic	loamy	yes	mwd, sandy loam in Cd
Sutton	68	0.6	6.0	0.60	6.0	B	3	Loose till, loamy textures	mesic	loamy	no	
Swanton	438	2.0	6.0	0.00	0.2	C	5	Sandy/loamy over silt/clay	frigid	co. loamy over clayey	no	
Telos	123	0.6	2.0	0.02	0.2	C	3	Firm, platy, silty till, schist & phyllite	frigid	loamy	yes	channery silt loam in Cd
Thorndike	84	0.6	2.0	0.60	2.0	C/D	4	Friable till, silty, schist & phyllite	frigid	loamy-skeletal	yes	less than 20 in. deep
Timakwa	393			6.00	100.0	D	6	Organic Materials - Freshwater	mesic	sandy or sandy-skeletal	no	organic over sand
Tunbridge	99	0.6	6.0	0.60	6.0	C	4	Loose till, bedrock	frigid	loamy	yes	20 to 40 in. deep
Unadilla	30	0.6	2.0	2.00	20.0	B	2	Terraces and glacial lake plains	mesic	silty	no	silty over gravelly
Vassalboro	150					D	6	Organic Materials - Freshwater	frigid	peat	no	deep organic
Walpole	546	2.0	6.0	6.00	20.0	C	5	Outwash and Stream Terraces	mesic	sandy	no	
Wareham	34	6.0	20.0	6.00	20.0	C	5	Outwash and Stream Terraces	mesic	sandy	no	
Warwick	210	2.0	6.0	20.00	100.0	A	1	Outwash and Stream Terraces	mesic	loamy-skeletal	no	loamy over slate gravel
Waskish	195					D	6	Organic Materials - Freshwater	frigid	peat	no	deep organic
Waumbeck	58	2.0	20.0	6.00	20.0	B	3	Loose till, sandy textures	frigid	sandy-skeletal	yes	very cobbly loamy sand
Westbrook	597			0.00	2.0	D	6	Tidal Flat	mesic	loamy	no	organic over loam
Whitman	49	0.0	0.2	0.00	0.2	D	6	Firm, platy, loamy till	mesic	loamy	no	mucky loam
Windsor	26	6.0	20.0	6.00	20.0	A	1	Outwash and Stream Terraces	mesic	sandy	no	
Winnecook	88	0.6	2.0	0.60	2.0	C	4	Friable till, silty, schist & phyllite	frigid	loamy-skeletal	yes	20 to 40 in. deep
Winooski	9	0.6	6.0	0.60	6.0	B		Flood Plain (Bottom Land)	mesic	silty over loamy	no	
Winooski	103	0.6	6.0	0.60	6.0	B	3	Flood Plain (Bottom Land)	mesic	silty	no	very fine sandy loam
Wonsqueak	995			0.20	2.0	D	6	Organic Materials - Freshwater	frigid	loamy	no	organic over loam
Woodbridge	29	0.6	2.0	0.00	0.6	C	3	Firm, platy, loamy till	mesic	loamy	no	sandy loam in Cd
Woodstock	93	2.0	6.0	2.00	6.0	C/D	4	Loose till, bedrock	frigid	loamy	no	less than 20 in. deep

 no longer recognized
 organic materials

TABLE C

NHDES SOIL GROUPINGS

Soil Series	number	NHDES Soil Group	Ksat low - B in/hr	Ksat high - B in/hr	Ksat low - C in/hr	Ksat high - C in/hr	Hyd. Grp.	Land Form	Temp.	Soil Textures	Spodosol ?	Other
Adams	36	1	6.0	20.0	20.00	99.0	A	Outwash and Stream Terraces	frigid	sandy	yes	
Boscawen	220	1	6.0	20.0	20.00	100.0	A	Outwash and Stream Terraces	frigid	sandy-skeletal	no	loamy cap
Caesar	526	1	20.0	100.0	20.00	100.0	A	Outwash and Stream Terraces	mesic	coarse sand	no	
Champlain	35	1	6.0	20.0	20.00	100.0	A	Outwash and Stream Terraces	frigid	gravelly sand	no	
Colton	22	1	6.0	20.0	20.00	100.0	A	Outwash and Stream Terraces	frigid	sandy-skeletal	yes	
Colton, gravelly	21	1	6.0	20.0	20.00	100.0	A	Outwash and Stream Terraces	frigid	sandy-skeletal	yes	gravelly surface
Gloucester	11	1	6.0	20.0	6.00	20.0	A	Sandy Till	mesic	sandy-skeletal	no	loamy cap
Hermon	55	1	2.0	20.0	6.00	20.0	A	Sandy Till	frigid	sandy-skeletal	yes	loamy cap
Hinckley	12	1	6.0	20.0	20.00	100.0	A	Outwash and Stream Terraces	mesic	sandy-skeletal	no	
Hoosic	510	1	2.0	20.0	20.00	100.0	A	Outwash and Stream Terraces	mesic	sandy-skeletal	no	slate, loamy cap
Masardis	23	1	6.0	20.0	6.00	20.0	A	Outwash and Stream Terraces	frigid	sandy-skeletal	yes	slate, loamy cap
Merrimac	10	1	2.0	20.0	6.00	20.0	A	Outwash and Stream Terraces	mesic	gravelly sand	no	loamy cap
Quonset	310	1	2.0	20.0	20.00	100.0	A	Outwash and Stream Terraces	mesic	sandy-skeletal	no	shale
Redstone	665	1	2.0	6.0	6.00	20.0	A	Weathered Bedrock Till	frigid	fragmental	yes	loamy cap
Success	154	1	2.0	6.0	6.00	20.0	A	Sandy Till	frigid	sandy-skeletal	yes	cemented
Suncook	2	1	6.0	20.0	6.00	20.0	A	Flood Plain (Bottomland)	mesic	sandy	no	occasionally flooded
Suncook	402	1	6.0	20.0	6.00	20.0	A	Flood Plain (Bottomland)	mesic	sandy	no	frequent flooding
Sunday	102	1	6.0	20.0	6.00	20.0	A	Flood Plain (Bottomland)	frigid	sandy	no	occasionally flooded
Sunday	202	1	6.0	20.0	6.00	20.0	A	Flood Plain (Bottomland)	frigid	sandy	no	frequently flooded
Warwick	210	1	2.0	6.0	20.00	100.0	A	Outwash and Stream Terraces	mesic	loamy-skeletal	no	loamy over slate gravel
Windsor	26	1	6.0	20.0	6.00	20.0	A	Outwash and Stream Terraces	mesic	sandy	no	
Abenaki	501	2	0.6	2.0	6.00	99.0	B	Outwash and Stream Terraces	frigid	loamy over sandy-skeletal	no	loamy over gravelly
Agawam	24	2	6.0	20.0	20.00	100.0	B	Outwash and Stream Terraces	mesic	loamy over sandy	no	loamy over sand/gravel
Allagash	127	2	0.6	2.0	6.00	20.0	B	Outwash and Stream Terraces	frigid	loamy over sandy	yes	loamy over sandy
Bangor	572	2	0.6	2.0	0.60	2.0	B	Friable till, silty, schist & phyllite	frigid	loamy	yes	silt loam
Berkshire	72	2	0.6	6.0	0.60	6.0	B	Loose till, loamy textures	frigid	loamy	yes	fine sandy loam
Bice	226	2	0.6	6.0	0.60	6.0	B	Loose till, loamy textures	frigid	loamy	no	sandy loam
Canton	42	2	2.0	6.0	6.00	20.0	B	Loose till, sandy textures	mesic	loamy over sandy	no	loamy over loamy sand
Charlton	62	2	0.6	6.0	0.60	6.0	B	Loose till, loamy textures	mesic	loamy	no	fine sandy loam
Dutchess	366	2	0.6	2.0	0.60	2.0	B	Friable till, silty, schist & phyllite	mesic	loamy	no	very channery
Fryeburg	208	2	0.6	2.0	2.00	6.0	B	Flood Plain (Bottom Land)	frigid	silty	no	very fine sandy loam
Groveton	27	2	0.6	2.0	0.60	6.0	B	Outwash and Stream Terraces	frigid	loamy	yes	loamy over sandy
Hadley	8	2	0.6	2.0	0.60	6.0	B	Flood Plain (Bottom Land)	mesic	silty	no	strata of fine sand
Hadley	108	2	0.6	2.0	0.60	6.0	B	Flood Plain (Bottom Land)	mesic	silty	no	strata of fine sand, occ flooded
Hartland	31	2	0.6	2.0	0.20	2.0	B	Terraces and glacial lake plains	mesic	silty	no	very fine sandy loam
Haven	410	2	0.6	2.0	20.00	100.0	B	Outwash and Stream Terraces	mesic	loamy over sandy	no	loamy over sand/gravel
Houghtonville	795	2	0.6	6.0	0.60	6.0	B	Loose till, loamy textures	frigid	loamy	yes	cobbly fine sandy loam
Lombard	259	2	0.6	6.0	2.00	20.0	C/D	Weathered bedrock, phyllite	frigid	loamy	no	very channery
Monadnock	142	2	0.6	2.0	2.00	6.0	B	Loose till, sandy textures	frigid	loamy over sandy, sandy-skeletal	yes	gravelly loamy sand in C
Occum	1	2	0.6	2.0	6.00	20.0	B	Flood Plain (Bottom Land)	mesic	loamy	no	loamy over loamy sand
Ondawa	101	2	0.6	6.0	6.00	20.0	B	Flood Plain (Bottom Land)	frigid	loamy	no	loamy over loamy sand
Ondawa	201	2	0.6	6.0	6.00	20.0	B	Flood Plain (Bottom Land)	frigid	loamy	no	occ flood, loamy over l. sand
Salmon	630	2	0.6	2.0	0.60	2.0	B	Terraces and glacial lake plains	frigid	silty	yes	very fine sandy loam
Stetson	523	2	0.6	6.0	6.00	20.0	B	Outwash and Stream Terraces	frigid	sandy-skeletal	yes	loamy over gravelly
Unadilla	30	2	0.6	2.0	2.00	20.0	B	Terraces and glacial lake plains	mesic	silty	no	silty over gravelly
Chichester	442	2	0.6	2.0	2.00	6.0	B	Loose till, sandy textures	frigid	loamy over sandy	no	loamy over loamy sand
Acton	146	3	2.0	20.0	2.00	20.0	B	Loose till, sandy textures	mesic	sandy-skeletal	no	cobbly loamy sand
Becket	56	3	0.6	2.0	0.06	0.6	C	Firm, platy, sandy till	frigid	loamy	yes	gravelly sandy loam in Cd
Belgrade	532	3	0.6	2.0	0.06	2.0	B	Terraces and glacial lake plains	mesic	silty	no	strata of fine sand
Bernardston	330	3	0.6	2.0	0.06	0.2	C	Firm, platy, silty till, schist & phyllite	mesic	loamy	no	channery silt loam in Cd
Boxford	32	3	0.1	0.2	0.00	0.2	C	Silt and Clay Deposits	mesic	fine	no	silty clay loam

Soil Series	number	NHDES Soil Group	Ksat low - B in/hr	Ksat high - B in/hr	Ksat low - C in/hr	Ksat high - C in/hr	Hyd. Grp.	Land Form	Temp.	Soil Textures	Spodosol ?	Other
Buckland	237	3	0.6	2.0	0.06	0.2	C	Firm, platy, loamy till	frigid	loamy	no	loam in Cd
Buxton	232	3	0.1	0.6	0.00	0.2	C	Silt and Clay Deposits	frigid	fine	no	silty clay
Canterbury	166	3	0.6	2.0	0.06	0.6	C	Firm, platy, loamy till	frigid	loamy	no	loam in Cd
Chatfield Var.	289	3	0.6	6.0	0.60	6.0	B	Loose till, bedrock	mesic	loamy	no	mwd to swpd
Chesuncook	126	3	0.6	2.0	0.02	0.2	C	Firm, platy, silty till, schist & phyllite	frigid	loamy	yes	channery silt loam in Cd
Colonel	927	3	0.6	2.0	0.06	0.6	C	Firm, platy, loamy till	frigid	loamy	yes	loam in Cd
Croghan	613	3	20.0	100.0	20.00	100.0	B	Outwash and Stream Terraces	frigid	sandy	yes	single grain in C
Dartmouth	132	3	0.6	2.0	0.06	0.6	B	Terraces and glacial lake plains	mesic	silty	no	thin strata silty clay loam
Deerfield	313	3	6.0	20.0	20.00	100.0	B	Outwash and Stream Terraces	mesic	sandy	no	single grain in C
Dixfield	378	3	0.6	2.0	0.06	0.6	C	Firm, platy, loamy till	frigid	loamy	yes	fine sandy loam in Cd
Dixmont	578	3	0.6	2.0	0.60	2.0	C	Friable till, silty, schist & phyllite	frigid	loamy	yes	silt loam, platy in C
Duane	413	3	6.0	20.0	6.00	20.0	B	Outwash and Stream Terraces	frigid	sandy-skeletal	yes	cemented (ortstein)
Eldridge	38	3	6.0	20.0	0.06	0.6	C	Sandy/loamy over silt/clay	mesic	sandy over loamy	no	
Elmridge	238	3	2.0	6.0	0.00	0.2	C	Sandy/loamy over silt/clay	mesic	loamy over clayey	no	
Elmwood	338	3	2.0	6.0	0.00	0.2	C	Sandy/loamy over silt/clay	frigid	loamy over clayey	no	
Finch	116	3					C	Outwash and Stream Terraces	frigid	sandy	yes	cemented (ortstein)
Gilmanton	478	3	0.6	2.0	0.06	0.6	C	Firm, platy, loamy till	frigid	loamy	no	fine sandy loam in Cd
Henniker	46	3	0.6	2.0	0.06	0.6	C	Firm, platy, sandy till	frigid	loamy	no	loamy sand in Cd
Hitchcock	130	3	0.6	2.0	0.06	0.6	B	Terraces and glacial lake plains	mesic	silty	no	silt loam to silt in C
Howland	566	3	0.6	2.0	0.06	0.2	C	Firm, platy, silty till, schist & phyllite	frigid	loamy	yes	silt loam, platy in Cd
Lanesboro	228	3	0.6	2.0	0.06	0.2	C	Firm, platy, silty till, schist & phyllite	frigid	loamy	no	channery silt loam in Cd
Lovewell	307	3	0.6	2.0	0.60	2.0	B	Flood Plain (Bottom Land)	frigid	silty	no	very fine sandy loam
Machias	520	3	2.0	6.0	6.00	20.0	B	Outwash and Stream Terraces	frigid	sandy or sandy-skeletal	yes	strata sand/gravel in C
Madawaska	28	3	0.6	2.0	6.00	20.0	B	Outwash and Stream Terraces	frigid	loamy over sandy	yes	sandy or sandy-skeletal
Madawaska, aquic	48	3	0.6	2.0	6.00	20.0	B	Outwash and Stream Terraces	frigid	loamy over sandy	yes	sandy or sandy-skeletal
Marlow	76	3	0.6	2.0	0.06	0.6	C	Firm, platy, loamy till	frigid	loamy	yes	fine sandy loam in Cd
Melrose	37	3	2.0	6.0	0.00	0.2	C	Sandy/loamy over silt/clay	frigid	loamy over clayey	no	silty clay loam in C
Metacomet	458	3	0.6	2.0	0.06	0.6	C	Firm, platy, sandy till	frigid	loamy	no	loamy sand in Cd
Metallak	404	3	6.0	100.0	6.00	100.0	B	Flood Plain (Bottom Land)	frigid	loamy over sandy	no	sandy or sandy-skeletal
Millis	39	3					C	Firm, platy, sandy till	frigid	loamy	yes	loamy sand in Cd
Montauk	44	3	0.6	6.0	0.06	0.6	C	Firm, platy, sandy till	mesic	loamy	no	loamy sand in Cd
Mundal	610	3	0.6	2.0	0.06	0.6	C	Firm, platy, loamy till	frigid	loamy	yes	gravely sandy loam in Cd
Newfields	444	3	0.6	2.0	0.60	2.0	B	Loose till, sandy textures	mesic	loamy over sandy	no	sandy or sandy-skeletal
Nicholville	632	3	0.6	2.0	0.60	2.0	C	Terraces and glacial lake plains	frigid	silty	yes	very fine sandy loam
Ninigret	513	3	0.6	6.0	6.00	20.0	B	Outwash and Stream Terraces	mesic	loamy over sandy	no	sandy or sandy-skeletal
Paxton	66	3	0.6	2.0	0.00	0.2	C	Firm, platy, loamy till	mesic	loamy	no	
Peru	78	3	0.6	2.0	0.06	0.6	C	Firm, platy, loamy till	frigid	loamy	yes	
Pittstown	334	3	0.6	2.0	0.06	0.2	C	Firm, platy, silty till, schist & phyllite	mesic	loamy	no	channery silt loam in Cd
Plaisted	563	3	0.6	2.0	0.06	0.6	C	Firm, platy, silty till, schist & phyllite	frigid	loamy	yes	channery silt loam in Cd
Podunk	104	3	0.6	6.0	6.00	20.0	B	Flood Plain (Bottom Land)	frigid	loamy	no	loamy to coarse sand in C
Poocham	230	3	0.6	2.0	0.20	2.0	B	Terraces and glacial lake plains	mesic	silty	no	silt loam in C
Pootatuck	4	3	0.6	6.0	6.00	20.0	B	Flood Plain (Bottom Land)	mesic	loamy	no	single grain in C
Scio	531	3	0.6	2.0	0.60	2.0	B	Terraces and glacial lake plains	mesic	silty	no	gravely sand in C
Scituate	448	3	0.6	2.0	0.06	0.2	C	Firm, platy, sandy till	mesic	loamy	no	loamy sand in Cd
Sheepscot	14	3	6.0	20.0	6.00	20.0	B	Outwash and Stream Terraces	frigid	sandy-skeletal	yes	gravely coarse sand
Sisk	667	3	0.6	2.0	0.00	0.6	C	Firm, platy, loamy till	cryic	loamy	yes	sandy loam in Cd
Skerry	558	3	0.6	2.0	0.06	0.6	C	Firm, platy, sandy till	frigid	loamy	yes	loamy sand in Cd
Sudbury	118	3	2.0	6.0	2.00	20.0	B	Outwash and Stream Terraces	mesic	sandy	no	loam over gravely sand
Suffield	536	3	0.6	2.0	0.00	0.2	C	Sandy/loamy over silt/clay	mesic	silty over clayey	no	deep to clay C
Sunapee	168	3	0.6	2.0	0.60	6.0	B	Loose till, loamy textures	frigid	loamy	yes	
Sunapee var	269	3	0.6	2.0	0.60	6.0	B	Loose till, loamy textures	frigid	loamy	yes	frigid dystrodept
Surplus	669	3	0.6	2.0	0.00	0.6	C	Firm, platy, loamy till	cryic	loamy	yes	mwd, sandy loam in Cd
Sutton	68	3	0.6	6.0	0.60	6.0	B	Loose till, loamy textures	mesic	loamy	no	
Telos	123	3	0.6	2.0	0.02	0.2	C	Firm, platy, silty till, schist & phyllite	frigid	loamy	yes	channery silt loam in Cd

Sorted by DES Soil Group for Establishing Lot Size
K_{sat} B and C horizons
SSSNNE pub no. 5

Soil Series	number	NHDES Soil Group	Ksat low - B in/hr	Ksat high - B in/hr	Ksat low - C in/hr	Ksat high - C in/hr	Hyd. Grp.	Land Form	Temp.	Soil Textures	Spodosol ?	Other
Waumbeck	58	3	2.0	20.0	6.00	20.0	B	Loose till, sandy textures	frigid	sandy-skeletal	yes	very cobbly loamy sand
Winooski	103	3	0.6	6.0	0.60	6.0	B	Flood Plain (Bottom Land)	mesic	silty	no	very fine sandy loam
Woodbridge	29	3	0.6	2.0	0.00	0.6	C	Firm, platy, loamy till	mesic	loamy	no	sandy loam in Cd
Winooski	9	3	0.6	6.0	0.60	6.0	B	Flood Plain (Bottom Land)	mesic	silty over loamy	no	
Canaan	663	4	2.0	20.0	2.00	20.0	C	Weathered Bedrock Till	frigid	loamy-skeletal	yes	less than 20 in. deep
Cardigan	357	4	0.6	2.0	0.60	2.0	B	Friable till, silty, schist & phyllite	mesic	loamy	no	20 to 40 in. deep
Chatfield	89	4	0.6	6.0	0.60	6.0	B	Loose till, bedrock	mesic	loamy	no	20 to 40 in. deep
Elliottsville	128	4	0.6	2.0	0.60	2.0	B	Friable till, silty, schist & phyllite	frigid	loamy	yes	20 to 40 in. deep
Glebe	671	4	2.0	6.0	2.00	6.0	C	Loose till, bedrock	cryic	loamy	yes	20 to 40 in. deep
Glover	NA	4	0.6	2.0	0.60	2	D	Friable till, silty, schist & phyllite	frigid	loamy	no	less than 20 in. deep
Hogback	91	4	2.0	6.0	2.00	6.0	C	Loose till, bedrock	frigid	loamy	yes	less than 20 in. deep
Hollis	86	4	0.6	6.0	0.60	6.0	C/D	Loose till, bedrock	mesic	loamy	no	less than 20 in. deep
Kearsarge	359	4	0.6	2.0	0.60	2.0	B	Friable till, silty, schist & phyllite	mesic	loamy	no	less than 20 in. deep
Lyman	92	4	2.0	6.0	2.00	6.0	A/D	Loose till, bedrock	frigid	loamy	yes	less than 20 in. deep
Macomber	252	4	0.6	2.0	0.60	2.0	C	Friable till, silty, schist & phyllite	frigid	loamy-skeletal	yes	20 to 40 in. deep
Millsite	251	4	0.6	6.0	0.60	6.0	C	Loose till, bedrock	frigid	loamy	no	20 to 40 in. deep
Monson	133	4	0.6	2.0	0.60	2.0	D	Friable till, silty, schist & phyllite	frigid	loamy	yes	less than 20 in. deep
Pennichuck	460	4	0.6	2.0	0.60	2.0	B	Friable till, silty, schist & phyllite	mesic	loamy-skeletal	no	20 to 40 in. deep
Rawsonville	98	4	0.6	6.0	0.60	6.0	C	Loose till, bedrock	frigid	loamy	yes	20 to 40 in. deep
Ricker	674	4	2.0	6.0	2.00	6.0	A	rganic over bedrock (up to 4" of miner)	cryic	fibric to hemic	no	well drained, less than 20 in. deep
Saddleback	673	4	0.6	2.0	0.60	2.0	C/D	Loose till, bedrock	cryic	loamy	yes	
Shapleigh	136	4					C/D	Sandy Till	mesic	sandy	yes	less than 20 in. deep
Thorndike	84	4	0.6	2.0	0.60	2.0	C/D	Friable till, silty, schist & phyllite	frigid	loamy-skeletal	yes	less than 20 in. deep
Tunbridge	99	4	0.6	6.0	0.60	6.0	C	Loose till, bedrock	frigid	loamy	yes	20 to 40 in. deep
Winnecook	88	4	0.6	2.0	0.60	2.0	C	Friable till, silty, schist & phyllite	frigid	loamy-skeletal	yes	20 to 40 in. deep
Woodstock	93	4	2.0	6.0	2.00	6.0	C/D	Loose till, bedrock	frigid	loamy	no	less than 20 in. deep
Au Gres	516	5					B	Outwash and Stream Terraces	frigid	sandy	yes	single grain, loose
Bemis	224	5	0.6	0.2	0.00	0.2	C	Firm, platy, loamy till	cryic	loamy	no	
Binghamville	534	5	0.2	2.0	0.06	0.2	D	Terraces and glacial lake plains	mesic	silty	no	
Brayton	240	5	0.6	2.0	0.06	0.6	C	Firm, platy, silty till, schist & phyllite	frigid	loamy	no	
Cabot	589	5	0.6	2.0	0.06	0.2	D	Firm, platy, silty till, schist & phyllite	frigid	loamy	no	
Charles	209	5	0.6	100.0	0.60	100.0	C	Flood Plain (Bottom Land)	frigid	silty	no	
Cohas	505	5	0.6	2.0	0.60	100.0	C	Flood Plain (Bottom Land)	frigid	co. loamy over sandy (skeletal)	no	
Grange	433	5	0.6	2.0	0.60	2.0	C	Outwash and Stream Terraces	frigid	co. loamy over sandy (skeletal)	no	
Kinsman	614	5	6.0	20.0	6.00	20.0	C	Outwash and Stream Terraces	frigid	sandy	yes	
Leicester	514	5	0.6	6.0	0.60	20.0	C	Loose till, loamy textures	mesic	loamy	no	
Lim	3	5	0.6	2.0	6.00	20.0	C	Flood Plain (Bottom Land)	mesic	loamy	no	
Limerick	109	5	0.6	2.0	0.60	2.0	C	Flood Plain (Bottom Land)	mesic	silty	no	
Lyme	246	5	0.6	6.0	0.60	6.0	C	Loose till, sandy textures	frigid	loamy	no	
Mashpee	315	5	6.0	20.0	6.00	20.0	B	Outwash and Stream Terraces	mesic	sandy	yes	
Monarda	569	5	0.2	2.0	0.02	0.2	D	Firm, platy, silty till, schist & phyllite	frigid	loamy	no	
Moosilauke	414	5	6.0	20.0	6.00	20.0	C	Loose till, sandy textures	frigid	sandy	no	
Naumburg	214	5	6.0	20.0	6.00	20.0	C	Outwash and Stream Terraces	frigid	sandy	yes	
Pemi	633	5	0.6	2.0	0.06	0.6	C	Terraces and glacial lake plains	frigid	silty	no	
Pillsbury	646	5	0.6	2.0	0.06	0.2	C	Firm, platy, loamy till	frigid	silty	no	
Pipestone	314	5					B	Outwash and Stream Terraces	mesic	sandy	yes	
Raynham	533	5	0.2	2.0	0.06	0.2	C	Terraces and glacial lake plains	mesic	silty	no	
Raypol	540	5	0.6	2.0	6.00	100.0	D	Outwash and Stream Terraces	mesic	co. loamy over sandy (skeletal)	no	
Ridgebury	656	5	0.6	6.0	0.00	0.2	C	Firm, platy, loamy till	mesic	loamy	no	
Rippowam	5	5	0.6	6.0	6.00	20.0	C	Flood Plain (Bottom Land)	mesic	loamy	no	
Roundabout	333	5	0.2	2.0	0.06	0.6	C	Terraces and glacial lake plains	frigid	silty	no	silt loam in the C
Rumney	105	5	0.6	6.0	6.00	20.0	C	Flood Plain (Bottom Land)	frigid	loamy	no	

Soil Series	number	NHDES Soil Group	Ksat low - B in/hr	Ksat high - B in/hr	Ksat low - C in/hr	Ksat high - C in/hr	Hyd. Grp.	Land Form	Temp.	Soil Textures	Spodosol ?	Other
Saugatuck	16	5	0.06	0.2	6.00	20.0	C	Outwash and Stream Terraces	mesic	sandy	yes	ortstein
Scantic	233	5	0.0	0.2	0.00	0.2	D	Silt and Clay Deposits	frigid	fine	no	
Scitico	33	5	0.0	0.2	0.00	0.2	C	Silt and Clay Deposits	mesic	fine	no	
Shaker	439	5	2.0	6.0	0.00	0.2	C	Sandy/loamy over silt/clay	mesic	co. loamy over clayey	no	
Squamscott	538	5	6.0	20.0	0.06	0.6	C	Sandy/loamy over silt/clay	mesic	sandy over loamy	yes	
Stissing	340	5	0.6	2.0	0.06	0.2	C	Firm, platy, silty till, schist & phyllite	mesic	loamy	no	
Swanton	438	5	2.0	6.0	0.00	0.2	C	Sandy/loamy over silt/clay	frigid	co. loamy over clayey	no	
Walpole	546	5	2.0	6.0	6.00	20.0	C	Outwash and Stream Terraces	mesic	sandy	no	
Wareham	34	5	6.0	20.0	6.00	20.0	C	Outwash and Stream Terraces	mesic	sandy	no	
Biddeford	234	6	0.0	0.2	0.00	0.2	D	Silt and Clay Deposits	frigid	fine	no	organic over clay
Bucksport	895	6					D	Organic Materials - Freshwater	frigid	sapric	no	deep organic
Burnham	131	6	0.2	6.0	0.02	0.2	D	Firm, platy, silty till, schist & phyllite	frigid	loamy	no	organic over silt
Catden	296	6					A/D	Organic Materials - Freshwater	mesic	sapric	no	deep organic
Chocorua	395	6			6.00	20.0	D	Organic Materials - Freshwater	frigid	sandy or sandy-skeletal	no	organic over sand
Greenwood	295	6					A/D	Organic Materials - Freshwater	frigid	hemic	no	deep organic
Ipswich	397	6					D	Tidal Flat	mesic	hemic/sapric	no	deep organic
Matunuck	797	6			20.00	100.0	D	Tidal Flat	mesic	sandy	no	organic over sand
Maybid	134	6	0.0	0.2	0.00	0.2	D	Silt and Clay Deposits	mesic	fine	no	silt over clay
Meadowsedge	894	6					D	Organic Materials - Freshwater	frigid	peat	no	deep organic
Medomak	406	6	0.6	2.0	0.60	2.0	D	Flood Plain (Bottom Land)	frigid	silty	no	organic over silt
Natchaug	496	6			0.20	2.0	D	Organic Materials - Freshwater	mesic	loamy	no	organic over loam
Ossipee	495	6			0.20	2.0	D	Organic Materials - Freshwater	frigid	loamy	no	organic over loam
Pawcatuck	497	6			20.00	100.0	D	Tidal Flat	mesic	sandy or sandy-skeletal	no	organic over sand
Peacham	549	6	0.6	2.0	0.00	0.2	D	Firm, platy, silty till, schist & phyllite	frigid	loamy	no	organic over loam
Pondicherry	992	6			6.00	20.0	D	Organic Materials - Freshwater	frigid	sandy or sandy-skeletal	no	organic over sand
Saco	6	6	0.6	2.0	6.00	20.0	D	Flood Plain (Bottom Land)	mesic	silty	no	strata
Scarboro	115	6	6.0	20.0	6.00	20.0	D	Outwash and Stream Terraces	mesic	sandy	no	organic over sand, non stony
Searsport	15	6	6.0	20.0	6.00	20.0	D	Outwash and Stream Terraces	frigid	sandy	no	organic over sand
Timakwa	393	6			6.00	100.0	D	Organic Materials - Freshwater	mesic	sandy or sandy-skeletal	no	organic over sand
Vassalboro	150	6					D	Organic Materials - Freshwater	frigid	peat	no	deep organic
Waskish	195	6					D	Organic Materials - Freshwater	frigid	peat	no	deep organic
Westbrook	597	6			0.00	2.0	D	Tidal Flat	mesic	loamy	no	organic over loam
Whitman	49	6	0.0	0.2	0.00	0.2	D	Firm, platy, loamy till	mesic	loamy	no	mucky loam
Wonsqueak	995	6			0.20	2.0	D	Organic Materials - Freshwater	frigid	loamy	no	organic over loam

no longer recognized organic materials denotes break between Soil Group

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2018	NHMP400010606-02	ANDROSCOGGIN RIVER - CROSS POWER DI BERLIN	22 ACRES	Primary Contact Recreator Escherichia coli	4B-M	Non-ORW
2018	NHMP400010606-03	ANDROSCOGGIN RIVER - CASCADE DAM BERLIN, GORHAM	50 ACRES	Fish Consumption Dioxin (including 2,3,7,8-TCDD)	4B-M	Non-ORW
2018	NHMP400010606-03	ANDROSCOGGIN RIVER - CASCADE DAM BERLIN, GORHAM	50 ACRES	Primary Contact Recreator Escherichia coli	4B-M	Non-ORW
2018	NHMP400010606-04	ANDROSCOGGIN RIVER - GORHAM DAM GORHAM	64,541 ACRES	Fish Consumption Dioxin (including 2,3,7,8-TCDD)	4B-M	ORW
2018	NHMP400020101-01-01	MOOSE RIVER RANDOLPH	0,568 ACRES			
2018	NHMP400020101-01-02	MOOSE BROOK - TOWN POOL-RAVINE BEA RANDOLPH	1,38 ACRES	Primary Contact Recreator Escherichia coli	4A-M	39276 ORW
2018	NHMP400020101-02-02	MOOSE BROOK - MOOSE BROOK STATE PA GORHAM	1,38 ACRES	Primary Contact Recreator Escherichia coli	4A-P	39275 Non-ORW
2018	NHMP400020102-01	PEABODY RIVER - WILDCAT MOUNTAIN DI PINKHAMS GRANT	1.5 ACRES			ORW
2018	NHMP400020102-02	ANDROSCOGGIN RIVER DAM GORHAM	3 ACRES	Fish Consumption Dioxin (including 2,3,7,8-TCDD)	4B-M	Non-ORW
2018	NHMP400020102-03	UNNAMED BROOK - NINETEENMILE BROO GREENS GRANT	0.092 ACRES			ORW
2018	NHMP400020103-01	ANDROSCOGGIN RIVER - REFLECTION PON SHELBURNE	56,219 ACRES	Aquatic Life Integrity pH	5-M	Non-ORW
2018	NHMP400020103-01	ANDROSCOGGIN RIVER - REFLECTION PON SHELBURNE	56,219 ACRES	Fish Consumption Dioxin (including 2,3,7,8-TCDD)	4B-M	Non-ORW
2018	NHMP400020103-02	RATTLE RIVER - RATTLE BROOK DAM SHELBURNE	0.01 ACRES			ORW
2018	NHMP600020101-01	SACO RIVER - WILLEY HOUSE DAM HART'S LOCATION	2 ACRES			ORW
2018	NHMP600020105-01	CUTLER RIVER PINKHAMS GRANT	0.15 ACRES			ORW
2018	NHMP600020105-02	MESERVE BROOK JACKSON	0.25 ACRES			ORW
2018	NHMP600020105-04	GOODRICH FALLS DAM-ELLIS RIVER BARTLETT	3 ACRES	Aquatic Life Integrity pH	5-M	Non-ORW
2018	NHMP600020106-01	ALBANY BROOK - FIRE PROTECTION POND BARTLETT	0.2 ACRES			Review OneStop GIS
2018	NHMP600020203-01	TRIB TO LOWER SWIFT RIVER ALBANY	0.5 ACRES			ORW
2018	NHMP600020203-02	DAN HOLE RIVER - MILL POND TOWN BEAL OSSIPPE	0.093 ACRES			ORW
2018	NHMP600020702-01-02	COLD BROOK - MILL BROOK FREEDOM	1.38 ACRES	Primary Contact Recreator Escherichia coli	4A-P	39276 Non-ORW
2018	NHMP600020901-03	COLD BROOK - MILL BROOK FREEDOM	2 ACRES	Aquatic Life Integrity pH	5-M	Non-ORW
2018	NHMP600030405-03	SALMON FALLS RIVER - GREAT FALLS UPPE SOMERSWORTH	2 ACRES	Aquatic Life Integrity pH	5-M	Non-ORW
2018	NHMP600030405-03	SALMON FALLS RIVER - GREAT FALLS UPPE SOMERSWORTH	50 ACRES	Aquatic Life Integrity pH	4C-P	Non-ORW
2018	NHMP600030405-03	SALMON FALLS RIVER - BAXTER MILL DAM ROCHESTER	50 ACRES	Aquatic Life Integrity pH	5-M	Non-ORW
2018	NHMP600030405-04	SALMON FALLS RIVER - BAXTER MILL DAM ROCHESTER	157 ACRES	Aquatic Life Integrity pH	4C-P	Non-ORW
2018	NHMP600030405-04	SALMON FALLS RIVER - BAXTER MILL DAM ROCHESTER	157 ACRES	Aquatic Life Integrity pH	5-M	Non-ORW
2018	NHMP600030405-04	SALMON FALLS RIVER - BAXTER MILL DAM ROCHESTER	157 ACRES	Primary Contact Recreator Escherichia coli	4A-M	39272 Non-ORW
2018	NHMP600030406-02	SALMON FALLS RIVER - LOWER GREAT FAL SOMERSWORTH	33 ACRES	Aquatic Life Integrity Non-Native Aquatic Plants	4C-P	Non-ORW
2018	NHMP600030406-02	SALMON FALLS RIVER - LOWER GREAT FAL SOMERSWORTH	33 ACRES	Primary Contact Recreator Escherichia coli	4A-M	39272 Non-ORW
2018	NHMP600030406-03	SALMON FALLS RIVER - ROLLINSFORD DAM ROLLINSFORD, SOMERSWORTH	57 ACRES	Aquatic Life Integrity Non-Native Aquatic Plants	4C-P	Non-ORW
2018	NHMP600030406-03	SALMON FALLS RIVER - ROLLINSFORD DAM ROLLINSFORD, SOMERSWORTH	57 ACRES	Aquatic Life Integrity Oxygen, Dissolved	2-G	11114 Non-ORW
2018	NHMP600030406-03	SALMON FALLS RIVER - ROLLINSFORD DAM ROLLINSFORD, SOMERSWORTH	57 ACRES	Aquatic Life Integrity pH	5-M	Non-ORW
2018	NHMP600030406-04	SALMON FALLS RIVER - SOUTH BERWICK D ROLLINSFORD	58 ACRES	Aquatic Life Integrity Non-Native Aquatic Plants	4C-P	Non-ORW
2018	NHMP600030406-04	SALMON FALLS RIVER - SOUTH BERWICK D ROLLINSFORD	58 ACRES	Aquatic Life Integrity pH	5-M	Non-ORW
2018	NHMP600030406-04	SALMON FALLS RIVER - SOUTH BERWICK D ROLLINSFORD	58 ACRES	Primary Contact Recreator Chlorophyll-a	5-M	Non-ORW
2018	NHMP600030406-04	SALMON FALLS RIVER - SOUTH BERWICK D ROLLINSFORD	58 ACRES	Primary Contact Recreator Escherichia coli	4A-M	39272 Non-ORW
2018	NHMP600030601-02	COCHECO RIVER - COCHECO DAM 1 FARMINGTON	4 ACRES			ORW
2018	NHMP600030601-04	MAYER POND DAM NEW DURHAM	0.87 ACRES			ORW
2018	NHMP600030601-05	UNNAMED BROOK - MEYER WILDLIFE PON NEW DURHAM	2,087 ACRES			ORW
2018	NHMP600030603-01	COCHECO RIVER - CITY DAM 1 ROCHESTER	50 ACRES	Aquatic Life Integrity Dissolved oxygen saturation	5-M	Non-ORW
2018	NHMP600030603-01	COCHECO RIVER - CITY DAM 1 ROCHESTER	50 ACRES	Aquatic Life Integrity Non-Native Aquatic Plants	4C-M	Non-ORW
2018	NHMP600030603-01	COCHECO RIVER - CITY DAM 1 ROCHESTER	50 ACRES	Aquatic Life Integrity Oxygen, Dissolved	5-M	Non-ORW
2018	NHMP600030603-01	COCHECO RIVER - CITY DAM 1 ROCHESTER	50 ACRES	Aquatic Life Integrity pH	5-M	Non-ORW
2018	NHMP600030603-01	COCHECO RIVER - CITY DAM 1 ROCHESTER	1 ACRES	Aquatic Life Integrity pH	5-M	Non-ORW
2018	NHMP600030603-02	COCHECO RIVER - HATFIELD DAM ROCHESTER	1 ACRES	Primary Contact Recreator Escherichia coli	4A-M	55220 Non-ORW
2018	NHMP600030603-02	COCHECO RIVER - HATFIELD DAM ROCHESTER	1 ACRES			ORW
2018	NHMP600030604-01	UNNAMED BROOK - SHERBURNE BROOK C NORTHWOOD	4,558 ACRES			ORW
2018	NHMP600030604-02	UNNAMED BROOK - GARBOSKI BEAVER PC STRAFFORD	0.453 ACRES			ORW
2018	NHMP600030605-01	WILDLIFE POND DAM STRAFFORD	5,885 ACRES			ORW
2018	NHMP600030605-02	KENNETH HILL POND BARRINGTON	28,331 ACRES			ORW
2018	NHMP600030605-05	UNNAMED BROOK - FARM POND ROCHESTER	0.523 ACRES			ORW
2018	NHMP600030607-02	COCHECO RIVER - GONIC DAM POND ROCHESTER	18 ACRES	Aquatic Life Integrity pH	5-M	Non-ORW
2018	NHMP600030607-02	COCHECO RIVER - GONIC DAM POND ROCHESTER	18 ACRES	Primary Contact Recreator Escherichia coli	4A-P	39272 Non-ORW
2018	NHMP600030608-02	COCHECO RIVER - WATSON WALDRON DA DOVER	54 ACRES	Aquatic Life Integrity pH	5-M	Non-ORW
2018	NHMP600030608-04	COCHECO RIVER - CENTRAL AVE DAM DOVER	20 ACRES	Aquatic Life Integrity pH	5-M	Non-ORW
2018	NHMP600030608-04	COCHECO RIVER - CENTRAL AVE DAM DOVER	20 ACRES	Primary Contact Recreator Escherichia coli	2-G	39272 Non-ORW
2018	NHMP600030701-01	LAMPREY RIVER - CENTRAL AVE DAM DOVER	40 ACRES	Aquatic Life Integrity pH	5-M	Non-ORW
2018	NHMP600030702-01	BEAVER POND DAM - NORTH BRANCH-RIV DEERFIELD	62.24 ACRES			ORW
2018	NHMP600030702-01-02	BEAVER POND - BEAVER POND BEACH DEERFIELD	1.38 ACRES			ORW
2018	NHMP600030708-01	BROWN BROOK - PISCASSIC RIVER FREMONT	0.3 ACRES			ORW
2018	NHMP600030708-03	PISCASSIC RIVER NEWMARKET	4 ACRES	Aquatic Life Integrity Dissolved oxygen saturation	5-M	Non-ORW
2018	NHMP600030708-03	PISCASSIC RIVER NEWMARKET	4 ACRES	Aquatic Life Integrity pH	5-P	Non-ORW
2018	NHMP600030708-03	PISCASSIC RIVER NEWMARKET	4 ACRES	Aquatic Life Integrity pH	5-M	Non-ORW
2018	NHMP600030708-03	PISCASSIC RIVER NEWMARKET	30 ACRES	Aquatic Life Integrity pH	5-M	Non-ORW
2018	NHMP600030709-02	LAMPREY RIVER - WISWALL DAM DURHAM, LEE	120 ACRES	Aquatic Life Integrity pH	5-P	Non-ORW
2018	NHMP600030709-03	LAMPREY RIVER - MACALLEN DAM NEWMARKET	24 ACRES	Aquatic Life Integrity pH	5-M	Non-ORW
2018	NHMP600030803-08	EXETER RIVER EXETER	5,668 ACRES	Primary Contact Recreator Escherichia coli	4B-M	Non-ORW
2018	NHMP600030901-02	WINNICUT RIVER DAM POND GREENLAND	1 ACRES	Aquatic Life Integrity Oxygen, Dissolved	5-P	Non-ORW
2018	NHMP600030901-02	WINNICUT RIVER DAM POND GREENLAND	1 ACRES	Aquatic Life Integrity pH	5-M	Non-ORW
2018	NHMP600030901-02	WINNICUT RIVER DAM POND GREENLAND	1 ACRES	Primary Contact Recreator Escherichia coli	4A-P	39272 Non-ORW
2018	NHMP600030902-04	OYSTER RIVER - MILL POND DAM DURHAM	24 ACRES	Aquatic Life Integrity Dissolved oxygen saturation	5-M	Non-ORW
2018	NHMP600030902-04	OYSTER RIVER - MILL POND DAM DURHAM	24 ACRES	Aquatic Life Integrity pH	5-P	Non-ORW
2018	NHMP600030902-04	OYSTER RIVER - MILL POND DAM DURHAM	24 ACRES	Primary Contact Recreator Chlorophyll-a	5-M	Non-ORW
2018	NHMP600030902-04	OYSTER RIVER - MILL POND DAM DURHAM	24 ACRES			Non-ORW

Each Watershed Report Card covers a single 12-digit Hydrologic Unit Code (HUC12), on average a 34 square mile area. Each Watershed Report Card has three components;

1. REPORT CARD - A one page card that summarizes the overall use support for Aquatic Life Integrity, Primary Contact (i.e. Swimming), and Secondary Contact (i.e. Boating) Designated Uses on every Assessment Unit ID (AUID) within the HUC12.
2. HUC 12 MAP - A map of the watershed with abbreviated labels for each AUID within the HUC12.
3. ASSESSMENT DETAILS - Anywhere from one to forty pages with the detailed assessment information for each and every AUID in the Report Card and Map.

How are the Surface Water Quality Assessment determinations made?

All readily available data with reliable Quality Assurance/Quality Control is used in the biennial surface water quality assessments. For a full understanding of how the Surface Water Quality Standards (Env-Wq 1700) are translated into surface water quality assessments we urge the reader to review the 2020 [Consolidated Assessment and Listing Methodology](#) (CALM).

Where can I find more advanced mapping resources?

GIS files are available by assessment cycle at the NHDES [FTP site](#).

I'd like to see the more raw water quality data?

The [web mapping tool](#) allows you to download the data used in the assessment of the primary contact and aquatic life designated uses by clicking on the “[Data Access Waterbody Data \(Aquatic Life and Swimming Uses\)](#)” link for any assessment unit.

How are assessments coded in the report card?

Assessment outcomes are displayed on a color scale as well as an alpha numeric scale that provides additional distinctions for the designated use and parameter level assessments as outlined in the table below.

		Severe	Poor	Likely Bad	No Data	Likely Good	Marginal	Good
		Not Supporting, Severe	Not Supporting, Marginal	Insufficient Information – Potentially Not Supporting	No Data	Insufficient Information – Potentially Full Supporting	Full Support, Marginal	Full Support, Good
CATEGORY	Description							
Category 2	Meets standards						2-M or 2-OBS	2-G
Category 3	Insufficient Information			3-PNS	3-ND	3-PAS		
Category 4	Does not Meet Standards;							
4A	TMDL* Completed	4A-P	4A-M or 4A-T					
4B	Other enforceable measure will correct the issue.	4B-P	4B-M or 4B-T					
4C	Non-pollutant (i.e. exotic weeds)	4C-P	4C-M					
Category 5	TMDL* Needed	5-P	5-M or 5-T					

* [TMDL](#) stands for Total Maximum Daily Load studies

Watershed 305(b) Assessment Summary Report:

Assessment Cycle: Draft 2020

HUC 12: 010600030608

HUC 12 Name: Lower Cochemo River

(Locator map on next page only applies to this HUC12)

Good	Meets water quality standards/thresholds by a relatively large margin.
Marginal	Meets water quality standards/thresholds but only marginally.
Likely Good	Limited data available, however, the data that is available suggests that the parameter is Potentially Attaining Standards (PAS).
No Current Data	Insufficient information to make an assessment decision.
Likely Bad	Limited data available, however, the data that is available suggests that the parameter is Potentially Not Supporting (PNS) water quality standards.
Poor	Not meeting water quality standards/thresholds. The impairment is marginal.
Severe	Not meeting water quality standards/thresholds. The impairment is more severe and causes poor water quality.



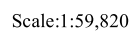
Assessment Unit ID	Map Label	Assessment Unit Name	Aquatic Life	Fish Consump.	Swimming	Boating
NHEST600030608-01	E*01	Cochemo River		5-M	5-P	4A-M
NHIMP600030607-02	I*0607-02	Cochemo River - Gonic Dam Pond	5-M	4A-M	4A-P	2-G
NHIMP600030607-03	I*0607-03	Cochemo River - Mill Pond Dam	3-PNS	4A-M	3-ND	3-ND
NHIMP600030608-02	I*02	Cochemo River - Watson Waldron Dam	5-M	4A-M	3-PAS	3-ND
NHIMP600030608-04	I*04	Cochemo River - Central Ave Dam	5-M	4A-M	3-PAS	3-ND
NHIMP600030608-05	I*05	Conservation Pond Dam	3-ND	4A-M	3-ND	3-ND
NHIMP600030608-06	I*06	Fresh Creek - Farm Pond	3-ND	4A-M	3-ND	3-ND
NHLAK600030608-01	L*01	Fresh Creek Pond	5-M	4A-M	4A-P	3-ND
NHLAK600030608-02	L*02	Unnamed Pond	3-ND	4A-M	3-PAS	3-PAS
NHRIV600030607-12	R*0607-12	Unnamed Tributary - To Cochemo River	3-ND	4A-M	3-ND	3-ND
NHRIV600030607-13	R*0607-13	Unnamed Brook - To Cochemo River	3-ND	4A-M	3-ND	3-ND

NHRIV600030607-14	R*0607-14	Cocheco River	3-ND	4A-M	3-ND	3-ND
NHRIV600030607-15	R*0607-15	Cocheco River	5-M	4A-M	2-G	2-G
NHRIV600030608-02	R*02	Blackwater Brook-Clark Brook	3-ND	4A-M	4A-P	3-ND
NHRIV600030608-03	R*03	Cocheco River - Unnamed Brook	5-M	4A-M	4A-M	3-ND
NHRIV600030608-04	R*04	Reyners Brook	3-ND	4A-M	4A-P	3-ND
NHRIV600030608-05	R*05	Cocheco River	5-M	4A-M	4A-M	3-ND
NHRIV600030608-06	R*06	Indian Brook	5-P	4A-M	4A-P	3-ND
NHRIV600030608-07	R*07	Emerson Brook	3-ND	4A-M	3-ND	3-ND
NHRIV600030608-08	R*08	Fresh Creek - Twombly Brook	5-P	4A-M	4A-M	3-ND
NHRIV600030608-09	R*09	Unnamed Brook - Rollins Brook	3-ND	4A-M	3-ND	3-ND
NHRIV600030608-10	R*10	Rollins Brook	5-P	4A-M	4A-P	3-ND
NHRIV600030608-11	R*11	Fresh Creek	3-PNS	4A-M	4A-P	4A-M
NHRIV600030608-12	R*12	Unnamed Tributary - To Cocheco River (Dover (Downstream Of Portland Ave))	3-ND	4A-M	3-ND	3-ND
NHRIV600030608-13	R*13	Unnamed Tributary - To Cocheco River - (Dover (Upstream Of Atlantic Ave))	3-ND	4A-M	3-ND	3-ND
NHRIV600030608-14	R*14	Unnamed Trib. To Cocheco River, Dover (From Landfill)	5-M	4A-M	3-ND	3-ND
NHRIV600030608-15	R*15	Berry Brook	5-M	4A-M	4A-P	2-G
NHRIV600030608-16	R*16	Jackson Brook	3-ND	4A-M	4A-P	3-ND
NHRIV600030608-18	R*18	Unnamed Brook	3-ND	4A-M	3-ND	3-ND
NHRIV600030608-19	R*19	Unnamed Brook	3-ND	4A-M	3-ND	3-ND
NHRIV600030608-20	R*20	Unnamed Brook	3-ND	4A-M	3-ND	3-ND
NHRIV600030608-21	R*21	Unnamed Brook - To Rollins Brook	3-ND	4A-M	3-ND	3-ND
NHRIV600030608-22	R*22	Horn Brook	3-ND	4A-M	3-ND	3-ND
NHRIV600030608-23	R*23	Unnamed Brook	3-ND	4A-M	3-ND	3-ND
NHRIV600030608-24	R*24	Unnamed Brook	3-ND	4A-M	3-ND	3-ND
NHRIV600030608-25	R*25	Unnamed Brook	3-ND	4A-M	3-ND	3-ND
NHRIV600030608-26	R*26	Unnamed Brook	3-ND	4A-M	3-ND	3-ND
NHRIV600030608-27	R*27	Unnamed Brook	3-ND	4A-M	3-ND	3-ND
NHRIV600030608-28	R*28	Unnamed Brook	3-ND	4A-M	3-ND	3-ND

This map displays the Dover, New Hampshire area, including the following towns: Rochester, Somersworth, Rollinsford, Dover, Madbury, Lee, and Durham. The map is overlaid with a grid of alphanumeric codes, such as R*01, L*01, and E*01, which likely represent specific geographic or administrative divisions. The map also shows various colored lines (red, blue, green, yellow, orange, purple) and a network of roads, including major highways like I-95 and I-295.



Assessment Unit IDs are derived from the HUC12 they reside within. The labels have been shortened on this map for presentation purposes.
Example: The label "L*03" in HUC12 = 010700060201 represents AUID = "NHLAK700060201-03"
In rare cases where an AUID extends beyond the boundary of a single HUC12, additional portions of the end of the HUC 12 number have also been replaced.



Town(s) Primary Town is Listed First: Dover

Designated Use Description	Desig. Use Category	Parameter Name	Parameter Threatened (Y/N)	Last Sample	Last Exceed	Parameter Category	TMDL Priority
Aquatic Life Integrity	5-M	ALKALINITY, CARBONATE AS CaCO3	N	1999	1999	3-ND	
		ALUMINUM	N	2007	1999	3-ND	
		AMMONIA (TOTAL)	N	2018	N/A	2-G	
		ARSENIC	N	2004	N/A	3-ND	
		CADMIUM	N	1999	1999	3-ND	
		CHLORIDE	N	2018	N/A	3-PAS	
		COPPER	N	1999	1998	3-ND	
		Chlorophyll-a	N	2019	NLV	No Std	
		DISSOLVED OXYGEN SATURATION	N	2018	2016	3-PNS	
		IRON	N	2004	N/A	3-ND	
		LEAD	N	1999	1999	3-ND	
		OXYGEN, DISSOLVED	N	2018	2016	3-PNS	
Fish Consumption	4A-M	PH	N	2018	2016	5-M	LOW
		TURBIDITY	N	2014	2004	3-ND	
		ZINC	N	1999	N/A	3-ND	
		ARSENIC	N	2004	2004	3-ND	

Good	Marginal	Likely Good	No Current Data	Likely Bad	Poor	Severe
Meets water quality standards/thresholds by a relatively large margin.	Meets water quality standards/thresholds but only marginally.	Limited data available. The data that is available suggests that the parameter is Potentially Attaining Standards (PAS)	Insufficient information to make an assessment decision.	Limited data available. The data that is available suggests that the parameter is Potentially Not Supporting (PNS) water quality standards.	Not meeting water quality standards/thresholds. The impairment is marginal.	Not meeting water quality standards/thresholds. The impairment is more severe and causes poor water quality.

Fish Consumption	4A-M	COPPER	N	1999	N/A	3-ND	
		MERCURY - FISH CONSUMPTION ADVISORY	N			4A-M	
		ZINC	N	1999	N/A	3-ND	
Potential Drinking Water Supply	2-G	ARSENIC	N	2004	2004	3-ND	
		COPPER	N	1999	N/A	3-ND	
		ESCHERICHIA COLI	N	2013	2013	3-ND	
		FECAL COLIFORM	N	1993	1993	3-ND	
		IRON	N	2004	2004	3-ND	
		ZINC	N	1999	N/A	3-ND	
Primary Contact Recreation	3-PAS	CHLOROPHYLL-A	N	2019	2002	3-PAS	
Secondary Contact Recreation	3-ND	ESCHERICHIA COLI	N	2013	2011	3-ND	
Wildlife	3-ND	ESCHERICHIA COLI	N	2013	N/A	3-ND	

Good Meets water quality standards/thresholds by a relatively large margin.	Marginal Meets water quality standards/thresholds but only marginally.	Likely Good Limited data available. The data that is available suggests that the parameter is Potentially Attaining Standards (PAS)	No Current Data Insufficient information to make an assessment decision.	Likely Bad Limited data available The data that is available suggests that the parameter is Potentially Not Supporting (PNS) water quality standards.	Poor Not meeting water quality standards/thresholds. The impairment is marginal.	Severe Not meeting water quality standards/thresholds The impairment is more severe and causes poor water quality.
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SWPPP Cut Sheet:

Filtrex[®] Sediment Control

Sediment & Perimeter Control Technology

PURPOSE & DESCRIPTION

Filtrex[®] Sediment control is a three-dimensional tubular sediment control and storm water runoff filtration device typically used for **perimeter control** of sediment and other soluble pollutants (such as phosphorus and petroleum hydrocarbons), on and around construction activities.

APPLICATION

Filtrex[®] Sediment control is to be installed down slope of any disturbed area requiring erosion and sediment control and filtration of soluble pollutants from runoff. Sediment control is effective when installed perpendicular to sheet or low concentrated flow. Acceptable applications include:

- Site perimeters
- Above and below disturbed areas subject to sheet runoff, interrill and rill erosion
- Above and below exposed and erodable slopes
- Around area drains or inlets located in a 'sump'
- On compacted soils where trenching of silt fence is difficult or impossible
- Around sensitive trees where trenching of silt fence is not beneficial for tree survival or may unnecessarily disturb established vegetation.
- On frozen ground where trenching of silt fence is impossible.
- On paved surfaces where trenching of silt fence is impossible.

INSTALLATION

1. Sediment control used for perimeter control of sediment and soluble pollutants in storm runoff shall meet Filtrex[®] Soxx[™] Material Specifications and use Certified Filtrex[®] FilterMedia[™].
2. Contractor is required to be Filtrex[®] Certified[™], or use pre-filled Filtrex[®] Sediment control

products manufactured by a Filtrex[®] Certified Manufacturer[™] as determined by Filtrex[®] International, LLC (440-926-2607 or visit www.filtrex.com). Certification shall be considered current if appropriate identification is shown during time of bid or at time of application. Look for the Filtrex[®] Certified[™] Seal.

3. Sediment control will be placed at locations indicated on plans as directed by the Engineer.
4. Sediment control should be installed parallel to the base of the slope or other disturbed area. In extreme conditions (i.e., 2:1 slopes), a second Sediment control shall be constructed at the top of the slope.
5. Effective Soxx[™] height in the field should be as follows: 8" Diameter Sediment control = 6.5" high, 12" Diameter Sediment control = 9.5" high, 18" Diameter SiltSoxx[™] = 14.5" high, 24" Diameter Sediment control = 19" high.
6. Stakes shall be installed through the middle of the Sediment control on 10 ft (3m) centers, using 2 in (50mm) by 2 in (50mm) by 3 ft (1m) hard wood stakes. In the event staking is not possible, i.e., when Sediment control is used on pavement, heavy concrete blocks shall be used behind the Sediment control to help stabilize during rainfall/runoff events.
7. Staking depth for sand and silt loam soils shall be 12 in (300mm), and 8 in (200mm) for clay soils.
8. Loose compost may be backfilled along the upslope side of the Sediment control, filling the seam between the soil surface and the device, improving filtration and sediment retention.
9. If the Sediment control is to be left as a permanent filter or part of the natural landscape, it may be seeded at time of installation for



establishment of permanent vegetation. The Engineer will specify seed requirements.

10. Filtrex[®] Sediment control is not to be used in perennial, ephemeral, or intermittent streams.

See design drawing schematic for correct Filtrex[®] Sediment control installation (Figure 1.1).

INSPECTION AND MAINTENANCE

Routine inspection should be conducted within 24 hrs of a runoff event or as designated by the regulating authority. Sediment control should be regularly inspected to make sure they maintain their shape and are producing adequate hydraulic flow-through. If ponding becomes excessive, additional Sediment control may be required to reduce effective slope length or sediment removal may be necessary. Sediment control shall be inspected until area above has been permanently stabilized and construction activity has ceased

1. The Contractor shall maintain the Sediment control in a functional condition at all times and it shall be routinely inspected.
2. If the Sediment control has been damaged, it shall be repaired, or replaced if beyond repair.

3. The Contractor shall remove sediment at the base of the upslope side of the Sediment control when accumulation has reached 1/2 of the effective height of the Sediment control, or as directed by the Engineer. Alternatively, a new Sediment control can be placed on top of and slightly behind the original one creating more sediment storage capacity without soil disturbance.
4. Sediment control shall be maintained until disturbed area above the device has been permanently stabilized and construction activity has ceased.
5. The FilterMedia[™] will be dispersed on site once disturbed area has been permanently stabilized, construction activity has ceased, or as determined by the Engineer.
6. For long-term sediment and pollution control applications, Sediment control can be seeded at the time of installation to create a vegetative filtering system for prolonged and increased filtration of sediment and soluble pollutants (contained vegetative filter strip). The appropriate seed mix shall be determined by the Engineer.

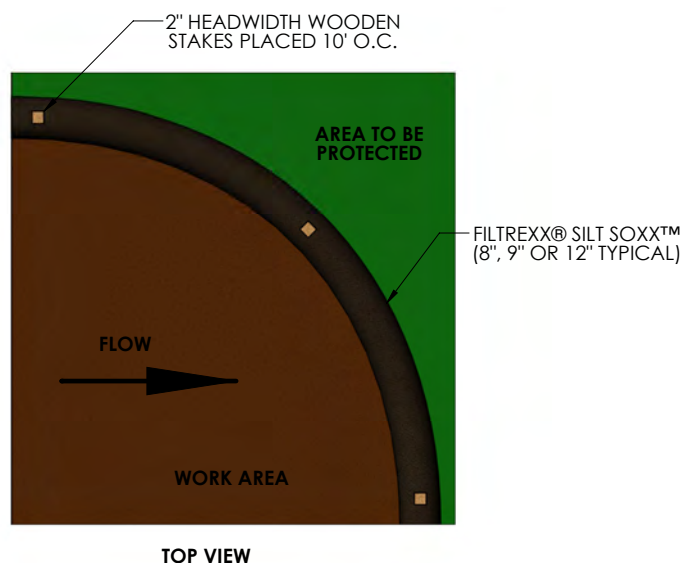
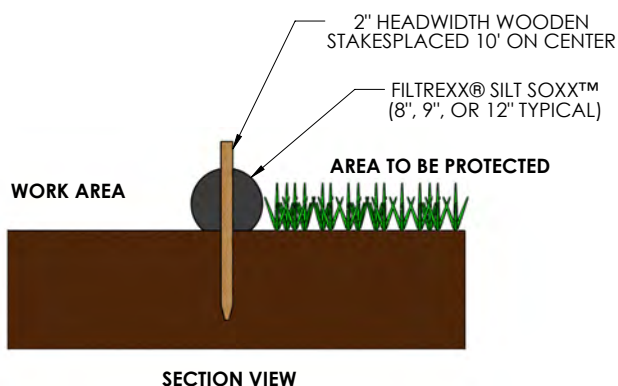
Slope Percent	Maximum Slope Length Above Sediment Control in Feet (meters)*				
	8 in (200 mm) Sediment control	12 in (300 mm) Sediment control	18 in (450 mm) Sediment control	24 in (600mm) Sediment control	32 in (800mm) Sediment control
	6.5 in (160 mm)**	9.5 in (240 mm) **	14.5 in (360 mm) **	19 in (480 mm) **	26 in (650 mm) **
2 (or less)	600 (180)	750 (225)	1000 (300)	1300 (400)	1650 (500)
5	400 (120)	500 (150)	550 (165)	650 (200)	750 (225)
10	200 (60)	250 (75)	300 (90)	400 (120)	500 (150)
15	140 (40)	170 (50)	200 (60)	325 (100)	450 (140)
20	100 (30)	125 (38)	140 (42)	260 (80)	400 (120)
25	80 (24)	100 (30)	110 (33)	200 (60)	275 (85)
30	60 (18)	75 (23)	90 (27)	130 (40)	200 (60)
35	60 (18)	75 (23)	80 (24)	115 (35)	150 (45)
40	60 (18)	75 (23)	80 (24)	100 (30)	125 (38)
45	40 (12)	50 (15)	60 (18)	80 (24)	100 (30)
50	40 (12)	50 (15)	55 (17)	65 (20)	75 (23)

* Based on a failure point of 36 in (0.9 m) super silt fence (wire reinforced) at 1000 ft (303 m) of slope, watershed width equivalent to receiving length of sediment control device, 1 in/ 24 hr (25 mm/24 hr) rain event.

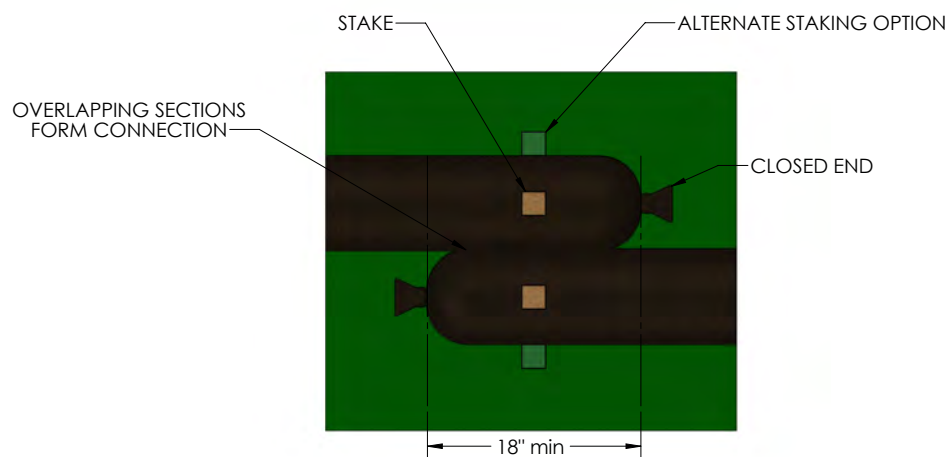
** Effective height of Sediment control after installation and with constant head from runoff as determined by Ohio State University.



FILTREXX® SILT SOXX™



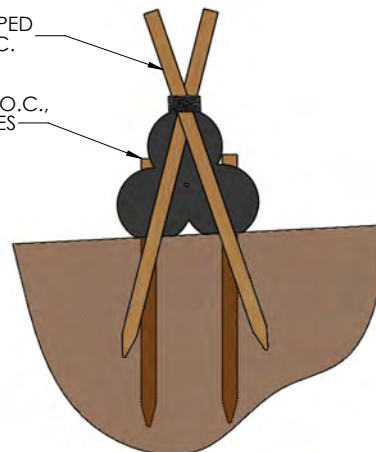
COMPOST SOCK CONNECTION/ATTACHMENT DETAIL



FILTREXX® PYRAMID STAKING DETAIL

(2) 2"x2"x48+" HARDWOOD STAKES, WRAPPED TOGETHER WITH 16 GAUGE WIRE, 10' O.C.

2"x2"x36" HARDWOOD STAKE, 10' O.C., STARTING 5' FROM ANGLED STAKES



NOTES:
1. ALL MATERIAL TO MEET FILTREXX® SPECIFICATIONS.
2. SILT SOXX™ FILL TO MEET APPLICATION REQUIREMENTS.
3. COMPOST MATERIAL TO BE DISPERSED ON SITE, AS DETERMINED BY ENGINEER.

SWPPP Cut Sheet:

Filtrex[®] Inlet Protection *Sediment & Perimeter Control Technology*

PURPOSE & DESCRIPTION

Filtrex[®] Inlet protection is a three-dimensional tubular sediment control and storm water runoff filtration device typically used for storm drain **inlet protection** of sediment and soluble pollutants (such as phosphorus and petroleum hydrocarbons) on and around construction activities.

APPLICATION

Drain inlets are located in areas that receive runoff from surrounding lands, often exposed and disturbed soils, and are located at a low point, or in a sump. Inlet protection used around drain inlets (or *Drain Inlet protection*) should completely enclose the circumference of the drain and where possible should not be placed on a grade or slope. Inlet protection used around drain inlets should never be the only form of site sediment control and should be accompanied by erosion control/slope stabilization practices, such as Slope protection or rolled erosion control blankets (RECB). Inlet protection should never be placed where they divert runoff flow from the drain inlet, or on top of the inlet, which can cause flooding. Under high runoff and sediment loading conditions placement of 1-2 in (25-50 mm) diameter rock (AASHTO #2) may be placed around the outer circumference of the Inlet protection up to ½ the height of the Inlet protection. This will slow runoff velocity as it contacts the Inlet protection and will reduce sediment build-up and clogging of the Inlet protection.

Curb inlets are generally located on paved surfaces and are designed to rapidly drain storm runoff from roadways to prevent flooding that poses a hazard to vehicular traffic. Inlet protection devices should be placed in a manner which intercepts runoff prior to entering the inlet, but does not block or divert runoff from the inlet. To prevent diversion of runoff, Inlet protection used around curbs (or *Curb*

Inlet protection) should be used in low points, or sumps, and minor slopes or grades. Inlet protection should never be placed in or on the curb inlet drain, or placed in a manner than obstructs vehicular traffic. Inlet protection height should be at least 1 in (25 mm) lower than top of curb inlet to allow for overflow into the drain and not over the curb. Maximum sediment removal efficiency occurs when minor ponding exists behind Inlet protection but should never lead to flooding.

Curb sediment containment systems are used to reduce the sediment and pollutant load flowing to a curb inlet. They are generally placed on paved surfaces perpendicular to runoff flow and should be lower than the height of the curb. Curb sediment containment systems should never cause flooding or placed where they are a hazard to vehicular traffic. Inlet protection used for curb sediment containment (or *Curb Sediment Containment Inlet protection*) can be placed on a grade but should never be placed directly upslope from curb inlet where it may inadvertently divert runoff from entering curb inlet.

INSTALLATION

1. Inlet protection used for inlet protection to reduce sediment and soluble pollutants entering storm drains shall meet Filtrex[®] FilterSoxx[™] Material Specifications and use Certified Filtrex[®] FilterMedia[™].
2. Contractor is required to be a Filtrex[®] Certified[™] Installer as determined by Filtrex[®] International, LLC (440-926-2607 or visit web site at [Filtrex.com](http://www.filtrex.com)). Certification shall be considered current if appropriate identification is shown during time of bid or at time of application (current list of installers can be found at www.filtrex.com). Look for the Filtrex[®] Certified[™] Installer Seal.



3. Filtrexx® Inlet protection shall be placed at locations indicated on plans as directed by the Engineer. Inlet protection should be installed in a pattern that allows complete protection of the inlet area.
4. Installation of curb Inlet protection will ensure a minimal overlap of at least 1 ft (300mm) on either side of the opening being protected. The Inlet protection will be anchored to the soil behind the curb using staples, stakes or other devices capable of holding the Inlet protection in place.
5. Standard Inlet protection for curb inlet protection and curb sediment containment will use 8 in (200mm) diameter Inlet protection, and drain inlets on soil will use 12 in (300mm) or 18 in (450mm) diameter Inlet protection. In severe flow situations, larger Inlet protection may be specified by the Engineer. During curb installation, Inlet protection shall be compacted to be slightly shorter than curb height.
6. If Inlet protection becomes clogged with debris and sediment, they shall be maintained so as to assure proper drainage and water flow into the storm drain. In severe storm events, overflow of the Inlet protection may be acceptable in order to keep the area from flooding.
7. Curb and drain Inlet protection shall be positioned so as to provide a permeable physical barrier to the drain itself, allowing sediment to collect on the outside of the Inlet protection.
8. For drains and inlets that have only curb cuts, without street grates, a spacer is required in order to keep the Inlet protection away from the drain opening. This spacer should be a hog wire screen bent to overlap the grate opening and keep the sock from falling into the opening. Use at least one spacer for every 4 ft (1.2m) of curb drain opening. The wire grid also prevents other floatable waste from passing over the Inlet protection.
9. Stakes shall be installed through the middle of the drain Inlet protection on 5 ft (1.5m) centers, using 2 in (50mm) x 2 in (50mm) x 3 ft (1m) wood stakes.
10. Staking depth for sand and silt loam soils shall be 12 in (300mm), and 8 in (200mm) for clay soils.

INSPECTION AND MAINTENANCE

Routine inspection should be conducted within 24 hrs of a runoff event or as designated by the regulating authority. Inlet protection should be regularly inspected to make sure they maintain their

shape and are producing adequate hydraulic flow-through. If ponding becomes excessive, additional Inlet protection may be required or sediment removal may be necessary. Inlet protection shall be inspected until contributing drainage area has been permanently stabilized and construction activity has ceased

1. The Contractor shall maintain the Inlet protection in a functional condition at all times and it shall be routinely inspected.
2. If the Inlet protection has been damaged, it shall be repaired, or replaced if beyond repair.
3. The Contractor shall remove sediment at the base of the upslope side of the Inlet protection when accumulation has reached 1/2 of the effective height of the Inlet protection, or as directed by the Engineer. Alternatively, for drain Inlet protection a new Soxx™ may be placed on top of the original increasing the sediment storage capacity without soil disturbance.
4. Inlet protection shall be maintained until disturbed area above or around the device has been permanently stabilized and construction activity has ceased.
5. Regular maintenance includes lifting the Inlet protection and cleaning around and under them as sediment collects.
6. The FilterMedia™ will be removed from paved areas or dispersed on site soil or behind curb once disturbed area has been permanently stabilized, construction activity has ceased, or as determined by the Engineer.

Table 2.4 Spacing for Curb Sediment Containment Systems.

Grade (%)	Spacing (ft)	Spacing (mm)
0.5	100	30
1.0	50	15
2.0	25	8
3.0	16	5
4.0	13	4
5.0	10	3

Source: Fifield, 2001.



Figure 2.1. Engineering Design Drawing for Curb and Drain Inlet Protection

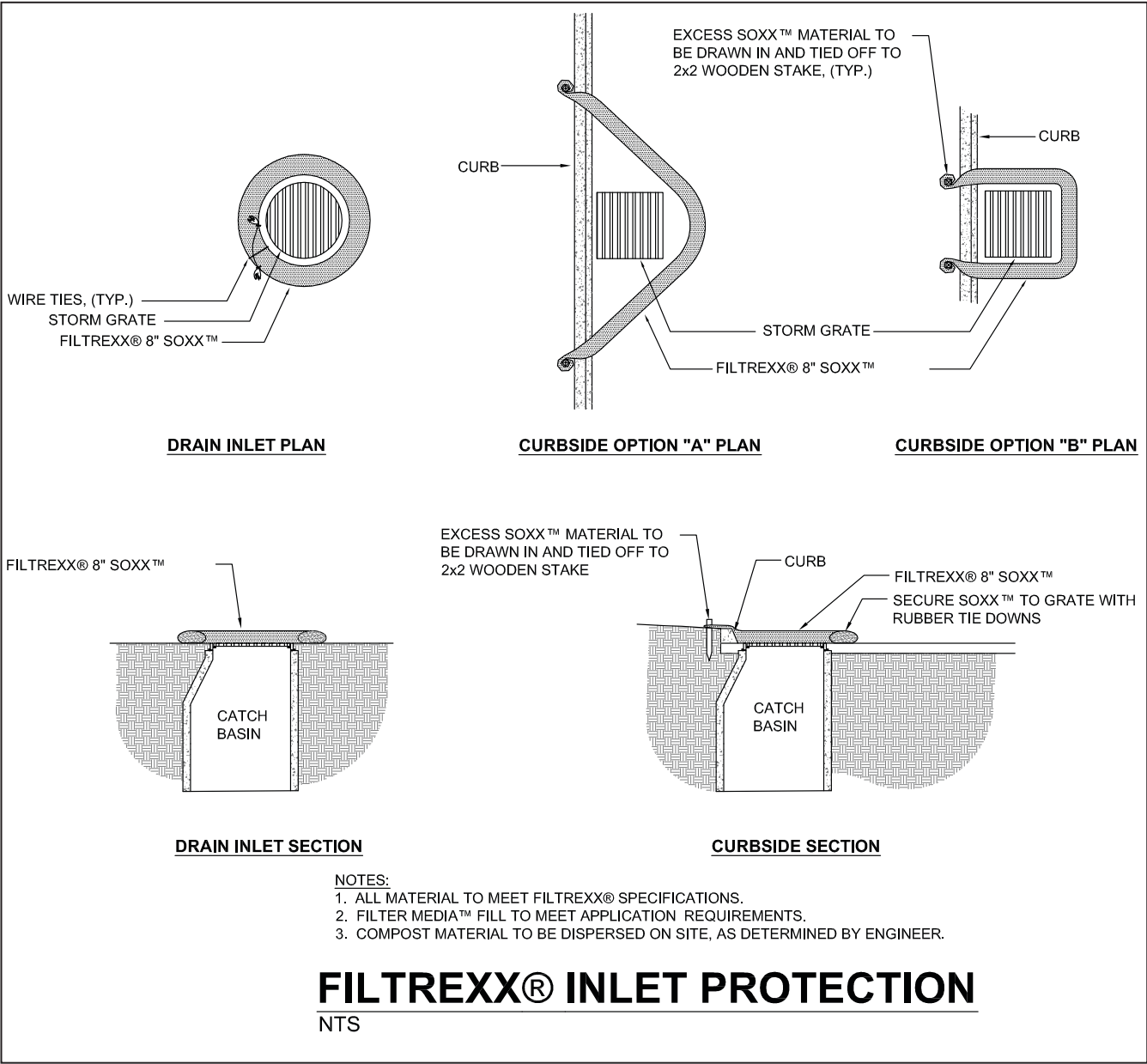
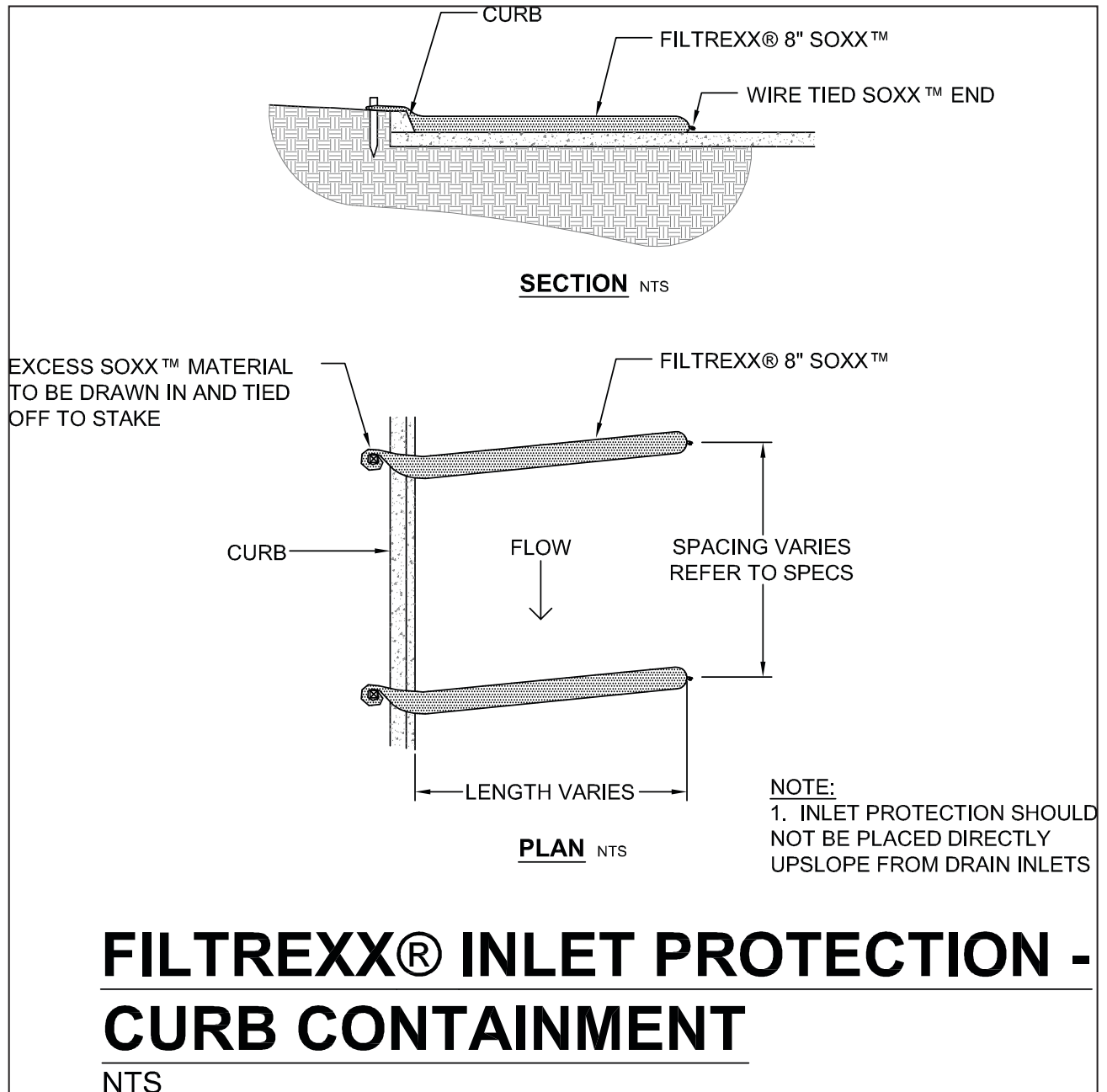
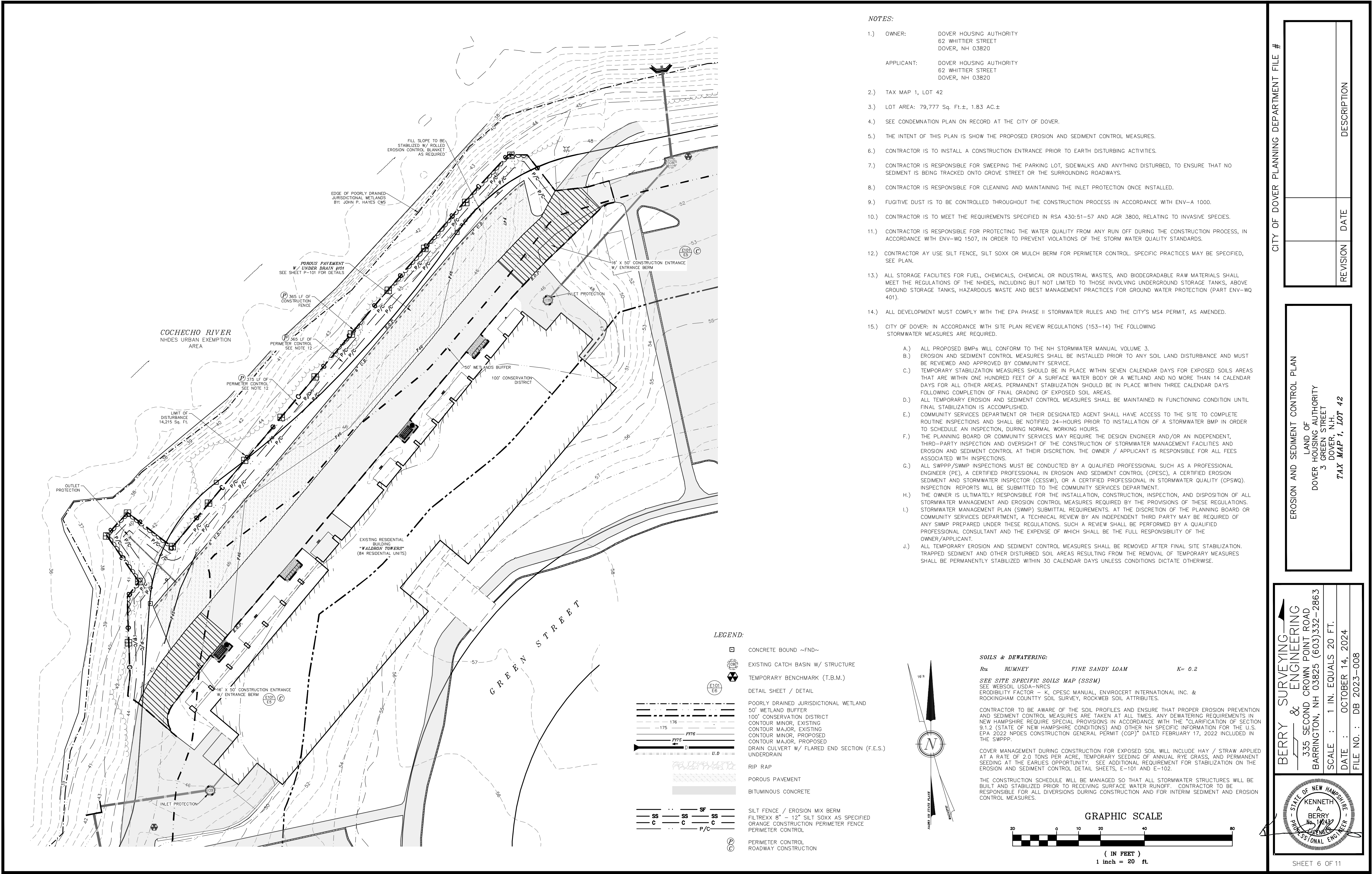


Figure 2.2. Engineering Design Drawing for Curb Sediment Containment Inlet Protection





CITY OF DOVER PLANNING DEPARTMENT FILE #		
		DESCRIPTION
	DATE	
REVISION		

EROSION AND SEDIMENT CONTROL PLAN
LAND OF
DOVER HOUSING AUTHORITY
3 GREEN STREET
DOVER, N.H.
TAX MAP 1, LOT 42

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863
SCALE : 1 IN. EQUALS 20 FT.
DATE : OCTOBER 14, 2024
FILE NO. : DB 2023-008

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
REGISTERED PROFESSIONAL ENGINEER
NO. 12345
EXPIRATION DATE 12/31/2027

SHEET 1	NEIGHBORHOOD PLAN
SHEET 2	EXISTING CONDITIONS PLAN
SHEET 3	SITE PLAN
SHEET 4	GRADING & DRAINAGE PLAN
SHEET 5	P-101 POROUS PAVEMENT PLAN
SHEET 6	E101-EROSION & SEDIMENT CONTROL PLAN
SHEET 7	LANDSCAPING PLAN
SHEET 8	E101-EROSION & SEDIMENT CONTROL DETAILS
SHEET 9	E102-EROSION & SEDIMENT CONTROL DETAILS
SHEET 10	C101-CONSTRUCTION DETAILS
SHEET 11	L101-LANDSCAPING DETAILS

NOTE:

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

REVISION

NOT FOR CONSTRUCTION

ABBREVIATION LEGEND:

E.O.P.	EDGE OF PAVEMENT
V.G.C.	VERTICAL GRANITE CURB
BITUM.	BITUMINOUS
TYP.	TYPICAL
U.D.	UNDER DRAIN
C.O.	CLEAN OUT
INV.	INVERT
ELEV.	ELEVATION
HDPE	HIGH DENSITY POLYETHYLENE
RCP	REINFORCED CONCRETE PIPE
RECB	ROLLED EROSION CONTROL BLANKET
F.G.	FINISHED GRADE
E.G.	EXISTING GRADE
E.T.W.	EDGE OF TRAVELED WAY
T.B.R.	TO BE REMOVED
PL	PROPERTY LINE
EL	EASEMENT LINE
CL	CENTER LINE
CF	CUBIC FEET
P.C.	POINT OF CURVATURE
P.T.	POINT OF TANGENCY
P.V.C.	POINT OF VERTICAL CURVE
P.V.I.	POINT OF VERTICAL INTERSECTION
P.V.T.	POINT OF VERTICAL TANGENCY
EX.	EXISTING
PROP.	PROPOSED
STA.	STATION
BMP	BEST MANAGEMENT PRACTICE
'/.	FEET / FEET

SSL () ~ {SIZE}	SINGLE SOLID LINE (COLOR W=WHITE, Y=YELLOW)
DSL () ~ {SIZE}	DOUBLE SOLID LINE (COLOR W=WHITE, Y=YELLOW)
SSB () ~ {SIZE}	SINGLE SOLID W/ BROKEN LINE (COLOR W=WHITE, Y=YELLOW)
SBL () ~ {SIZE}	SINGLE BROKEN LINE (COLOR W=WHITE, Y=YELLOW)
DBL () ~ {SIZE}	DOUBLE BROKEN LINE (COLOR W=WHITE, Y=YELLOW)

EXISTING LEGEND:

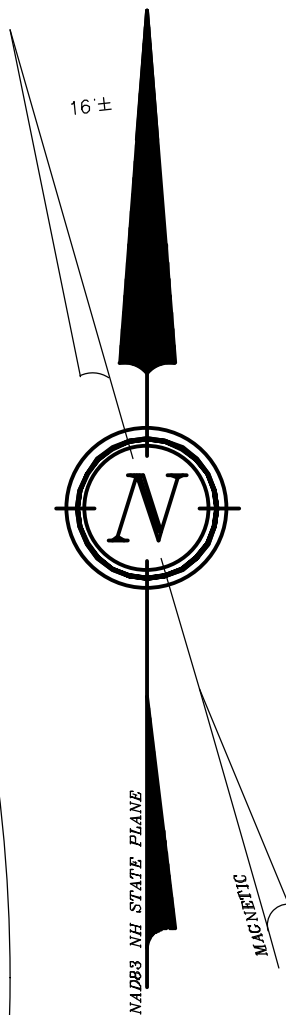
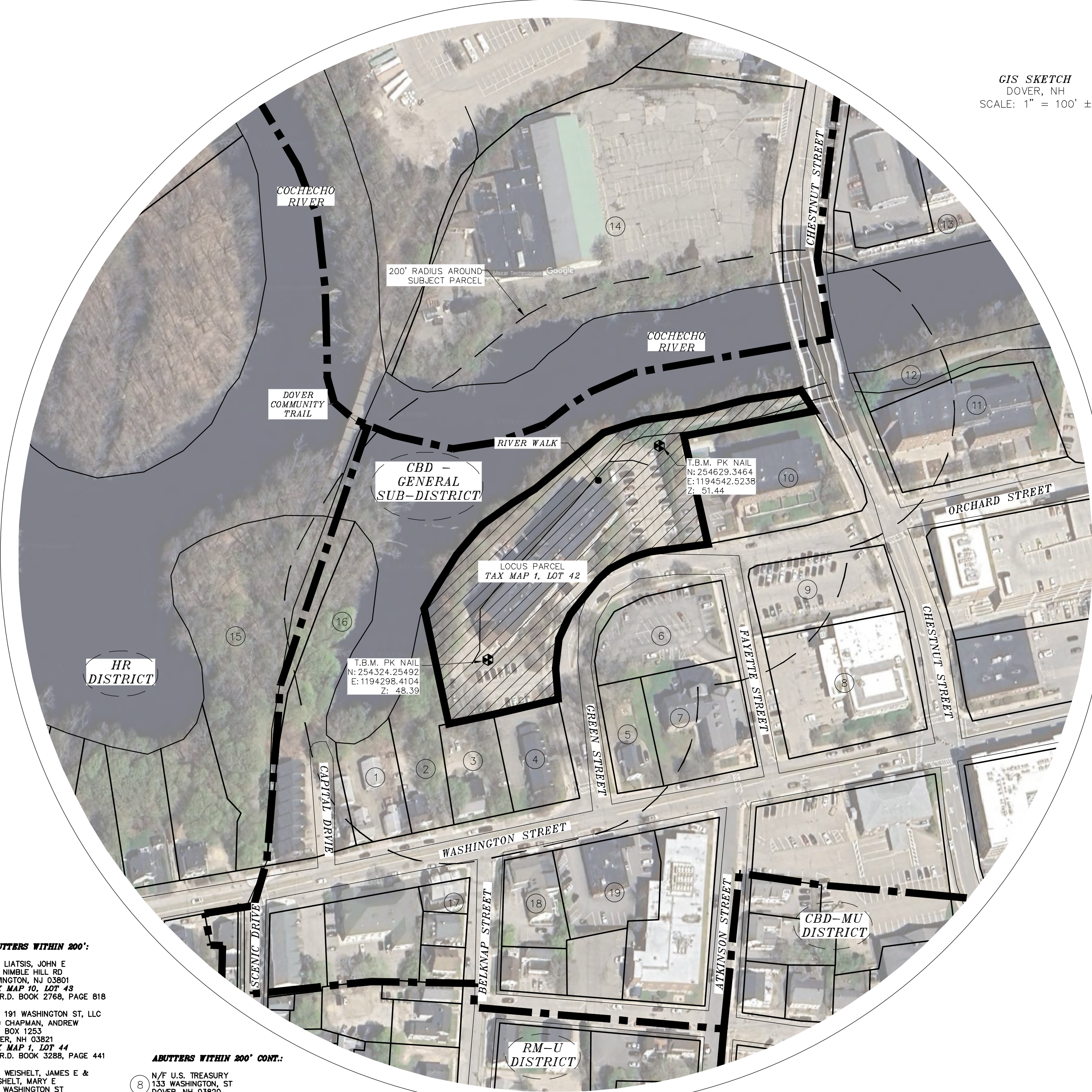
	CONCRETE BOUND (FND)
	FIRE HYDRANT
	CATCH BASIN W/ STRUCTURE
	BENCHMARK
	POORLY DRAINED WETLANDS
	50' WETLAND BUFFER
	100' CONSERVATION DISTRICT
	NRCS SOIL LINE AND LABEL
	FLOOD ZONE (AS NOTED)
	EXISTING MINOR CONTOUR
	EXISTING MAJOR CONTOUR
	FOUND
	TYPICAL
	STRAFFORD COUNTY REGISTRY OF DEEDS

PROPOSED LEGEND:

	CONCRETE BOUND ~FND~
	DETAIL SHEET / DETAIL
	CONTOUR MINOR, PROPOSED
	CONTOUR MAJOR, PROPOSED
	DRAIN CULVERT W/ FLARED END SECTION (F.E.S.)
	SHOULDER
	UNDERDRAIN
	SNOW STORAGE
	EXISTING SPOT GRADE
	PROPOSED SPOT GRADE
	FLOW ARROW
	SILT FENCE / EROSION MIX BERM
	FILTREXX 8" - 12" SILT SOXX AS SPECIFIED
	ORANGE CONSTRUCTION PERIMETER FENCE
	PERIMETER CONTROL - MULCH BERM & SILT SOXX
	PERIMETER CONTROL ROADWAY CONSTRUCTION
	NRCS SOIL DELINEATION
	SOIL TYPE
	LIMIT OF PROJECT DISTURBANCE

PROPOSED SURFACE LEGEND:

	POROUS PAVEMENT
	BITUMINOUS CONCRETE



SIGN ID NUMBER	SIGN SIZE (WIDTH x HEIGHT)	SIGN	TEXT DIMENSIONS	NO. OF SIGNS	BACKGROUND	LEGEND	BORDER	POST SIZE & QUANTITY
R7-8	12"x18"		SEE STANDARD HIGHWAY SIGNS 2004 EDITION PUBLISHED BY USDOT - FHWA	3	WHITE	GREEN W/ WHITE SYMBOL ON BLUE	RED	SQUARE (2)
R7-8a	12"x6"		SEE STANDARD HIGHWAY SIGNS 2004 EDITION PUBLISHED BY USDOT - FHWA	2	WHITE	GREEN	GREEN	SQUARE (0)
R5-1	30"x30"		SEE STANDARD HIGHWAY SIGNS 2004 EDITION PUBLISHED BY USDOT - FHWA	1	WHITE W/ RED SYMBOL	WHITE	WHITE	SQUARE (1)
R6-1R	36"x12"		SEE STANDARD HIGHWAY SIGNS 2004 EDITION PUBLISHED BY USDOT - FHWA	1	BLACK W/ WHITE ARROW	BLACK	WHITE	SQUARE (1)
	4"x4"			TBD IN FIELD	GREEN	WHITE	WHITE	U-CHANNEL OR TREE

ABUTTERS WITHIN 200':

- N/F LIATIS, JOHN E
271 NIMBLE HILL RD
NEWINGTON, NJ 03801
TAX MAP 10, LOT 43
S.C.R.D. BOOK 2768, PAGE 818
- N/F 191 WASHINGTON ST, LLC
C/O CHAPMAN, ANDREW
P.O. BOX 1253
DOVER, NH 03821
TAX MAP 1, LOT 44
S.C.R.D. BOOK 3288, PAGE 441
- N/F WEISHELT, JAMES E &
WEISHELT, MARY E
183 WASHINGTON ST
DOVER, NH 03820
TAX MAP 10, LOT 45
S.C.R.D. BOOK 3256, PAGE 916
- N/F 145 CAPCO PROPERTIES, LLC
284 MAIN STREET
SANDOWN, NH 03873-2617
TAX MAP 1, LOT 43
S.C.R.D. BOOK 4343, PAGE 381
- N/F DOVER BAPTIST CHURCH
151 WASHINGTON, ST
DOVER, NH 03820
TAX MAP 1, LOT 37
S.C.R.D. BOOK 1070, PAGE 792
- N/F DOVER BAPTIST CHURCH
151 WASHINGTON, ST
DOVER, NH 03820
TAX MAP 1, LOT 44
- N/F DOVER BAPTIST CHURCH
151 WASHINGTON, ST
DOVER, NH 03820
TAX MAP 1, LOT 38
S.C.R.D. BOOK 0, PAGE 0

ABUTTERS WITHIN 200' CONT.:

- N/F U.S. TREASURY
133 WASHINGTON, ST
DOVER, NH 03820
TAX MAP 1, LOT 25
- N/F U.S. POSTAL SERVICE
133 WASHINGTON ST
DOVER, NH 03820
TAX MAP 1, LOT 40
- N/F RIVERVIEW BUILDING CONDOMINIUM
40 COURT ST, SUITE 650
BOSTON, MA 02108
TAX MAP 1, LOT 41
S.C.R.D. BOOK 3653, PAGE 960
- N/F HARLECH LLC
273 CORPORATE DR SUITE 150
PORTSMOUTH, NH 03801
TAX MAP 8, LOT 3-1
S.C.R.D. BOOK 2036, PAGE 5
- N/F CITY OF DOVER
288 CENTRAL AVE
DOVER, NH 03820
TAX MAP 10, LOT 40
S.C.R.D. BOOK 3082, PAGE 223
- N/F 192 WASHINGTON SQUARE, LLC
242 CENTRAL AVE
DOVER, NH 03820
TAX MAP 2, LOT 83
S.C.R.D. BOOK, 1028, PAGE 36

ABUTTERS WITHIN 200' CONT.:

- N/F FIRST STREET AT GARRISON, LLC
466 CENTRAL AVE SUITE 12
DOVER, NH 03820
TAX MAP 8, LOT 3-1
S.C.R.D. BOOK 4228, PAGE 707
- N/F PNF TRUST OF 2013
FLOKOS, PETER N, TRUSTEE
282 MIDDLE ST
PORTSMOUTH, NH 03801
TAX MAP 10, LOT 61
S.C.R.D. BOOK 4223, PAGE 439
- N/F HENDERSON FAMILY TRUST
HENDERSON, RONALD J & CYNTHIA, TRUSTEES
WILLIAMSBURG, VA 23185-8256
TAX MAP 1, LOT 10
S.C.R.D. BOOK 4455, PAGE 624
- N/F DEAN A FOURNIER REVOCABLE LIVING TRUST
FOURNIER, DEAN A TRUSTEE
42 ELM ST
DOVER, NH 03820-3941
TAX MAP 1, LOT 8-9
S.C.R.D. BOOK 2310, PAGE 222

ABUTTERS WITHIN 200' CONT.:

- N/F PNF TRUST OF 2013
FLOKOS, PETER N, TRUSTEE
282 MIDDLE ST
PORTSMOUTH, NH 03801
TAX MAP 10, LOT 61
S.C.R.D. BOOK 4223, PAGE 439
- N/F HENDERSON FAMILY TRUST
HENDERSON, RONALD J & CYNTHIA, TRUSTEES
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- N/F DEAN A FOURNIER REVOCABLE LIVING TRUST
FOURNIER, DEAN A TRUSTEE
42 ELM ST
DOVER, NH 03820-3941
TAX MAP 1, LOT 8-9
S.C.R.D. BOOK 2310, PAGE 222

CITY OF DOVER PLANNING DEPARTMENT FILE #

REVISION	DATE	DESCRIPTION

NEIGHBORHOOD PLAN LAND OF DOVER HOUSING AUTHORITY 3 GREEN STREET DOVER, N.H. TAX MAP 1, LOT 42

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863
SCALE : AS SHOWN
DATE : OCTOBER 14, 2024
FILE NO. : DB 2023-008

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
Professional Engineer
No. 805

3. "HOUSING FOR THE ELDERLY; H.U.D. PROJECT DOVER N.H. 3.6"
DATED: JUNE 1, 1973
BY: DONALD T. DENNIS, ARCHITECT
S.C.R.D. POCKET #15, FOLDER #1, PLAN #28
2. "DISPOSITION PLAN OF LAND; PARCEL R/4/1"
DATED: JANUARY 21, 1974
BY: M&E ENGINEERS
S.C.R.D. PLAN #18-49
3. "DISPOSITION PLAN OF LAND; PARCEL R/4/3"
DATED: JANUARY 21, 1974
BY: M&E ENGINEERS
S.C.R.D. PLAN #18-51
4. "DOWNTOWN DOVER NO. 1 PROJECT; PROJECT NO. N.H. R-20; LAND USE PLAN"
DATED: MAY, 1977
BY: M&E ENGINEERS
S.C.R.D. PLAN #18-55
5. "DOWNTOWN DOVER NO. 1 PROJECT; PROJECT NO. N.H. R-20; STREET VACATION PLAN"
DATED: 1978
BY: M&E ENGINEERS
S.C.R.D. PLAN #19-7
6. "DOWNTOWN DOVER NO. 1 PROJECT; PROJECT NO. N.H. R-20; STREET DEDICATION PLAN"
DATED: 1978
BY: M&E ENGINEERS
S.C.R.D. PLAN #19-9
7. "DISPOSITION PLAN OF LAND; PARCEL P/4/1"
DATED: DECEMBER 4, 1978
BY: M&E ENGINEERS
S.C.R.D. PLAN #19-46
8. "DISPOSITION PLAN OF LAND; PARCEL R/4/1"
DATED: JANUARY, 1978
BY: M&E ENGINEERS
S.C.R.D. PLAN #19-72
9. "CONDOMINIUM SITE PLAN; PREPARED FOR: 191 WASHINGTON STREET, LLC; TAX MAP 10, LOT 44; 191 WASHINGTON STREET; CITY OF DOVER; COUNTY OF STRAFFORD; STATE OF NEW HAMPSHIRE"
DATED: NOVEMBER 24, 2003
BY: MCENEANEY SURVEY ASSOC., INC.
S.C.R.D. PLAN #73-93
10. "ALTA SURVEY: 40 CHESTNUT STREET; AND UNIT B OF 5 GREEN STREET; DOVER, NEW HAMPSHIRE; PREPARED FOR: PRESERVATION OF AFFORDABLE HOUSING"
DATED: APRIL 1, 2008
BY: CHAS. H. SELLS, INC.
S.C.R.D. PLAN #94-67
11. "CONDO SITE PLAN; TAX MAP 1-6 AND UNIT 1-41; 5 GREEN STREET; DOVER, NEW HAMPSHIRE; PREPARED FOR: PRESERVATION OF AFFORDABLE HOUSING"
DATED: FEBRUARY 26, 2008
BY: CHAS. H. SELLS, INC.
S.C.R.D. PLAN #94-69

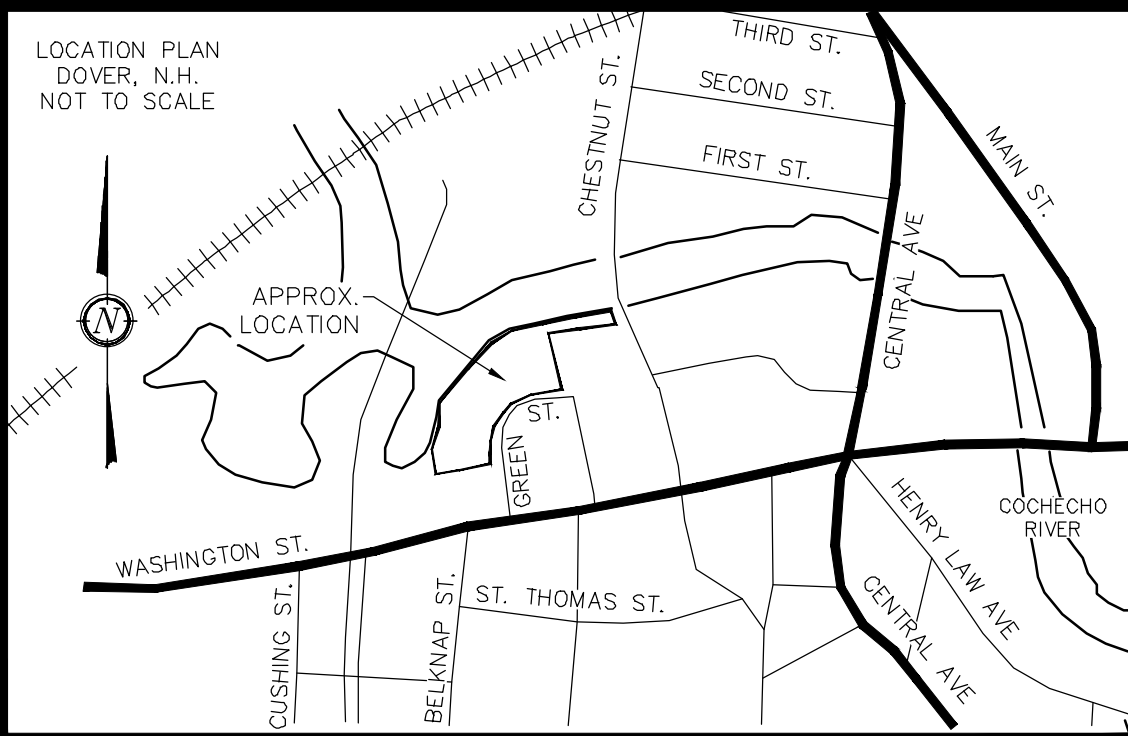
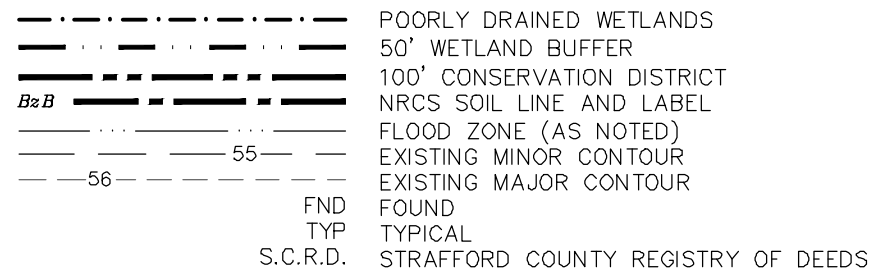
Ru - RUMNEY FINE SANDY LOAM
BzB - BUXTON SILT LOAM, 3 TO 8% SLOPES
 SEE WEBSOIL USDA-NRCS

43 SPACES EXISTING
0 ADA DESIGNATED SPACES

1. WETLANDS WERE DELINEATED BY JOHN P. HAYES, JANUARY, 2024
2. REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION, (VERSION 2.0) JANUARY 2012, U.S. ARMY CORPS OF ENGINEERS.
3. FIELD INDICATORS OF HYDRIC SOILS IN THE UNITED STATES, A GUIDE FOR IDENTIFYING AND DELINEATING HYDRIC SOILS, VERSION 8.0. UNITED STATES DEPARTMENT OF AGRICULTURE (2016).
4. NATIONAL WETLAND PLANT LIST (CURRENT VERSION).



- CONCRETE BOUND (FND)
- FIRE HYDRANT
- CATCH BASIN W/ STRUCTURE
- BENCHMARK



1.) OWNER: DOVER HOUSING AUTHORITY
62 WHITTIER STREET
DOVER, NH 03820

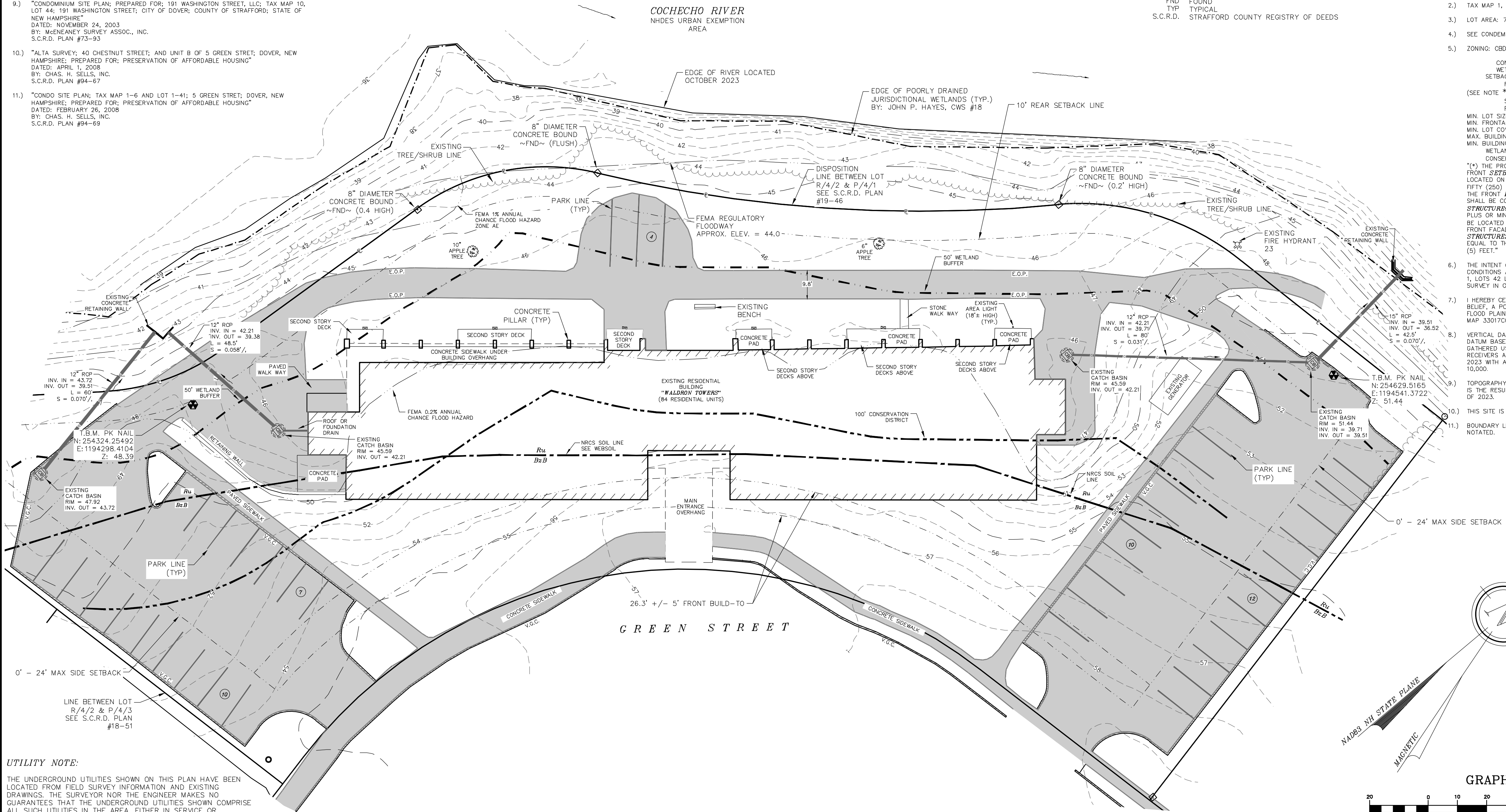
APPLICANT: DOVER HOUSING AUTHORITY
62 WHITTIER STREET
DOVER, NH 03820

2.) TAX MAP 1, LOT 42

3.) LOT AREA: 79,777 Sq. Ft.±, 1.83 AC.±

4.) SEE CONDEMNATION PLAN ON RECORD AT THE CITY OF DOVER

5.) ZONING: CBD – CENTRAL BUSINESS DISTRICT
(GENERAL SUB-DISTRICT)
CONSERVATION DISTRICT
WETLAND PROTECTION DISTRICT
SETBACKS
FRONT BOUND TO (GREEN ST) ~ 26.3' +/- - 5'



THE UNDERGROUND UTILITIES SHOWN ON THIS PLAN HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND EXISTING DRAWINGS. THE SURVEYOR NOR THE ENGINEER MAKES NO GUARANTEES THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH HE DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM THE INFORMATION AVAILABLE.

CITY OF DOVER PLANNING DEPARTMENT FILE

REVISION	DATE	DESCRIPTION

EXISTING CONDITIONS PLAN
LAND OF
DOVER HOUSING AUTHORITY
3 GREEN STREET
DOVER, N.H.
TAX MAP 1, LOT 42

TAX MAP 1, LOT 42

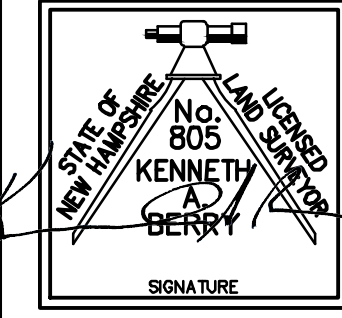
BERRY SURVEYING & ENGINEERING

335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 20 FT.

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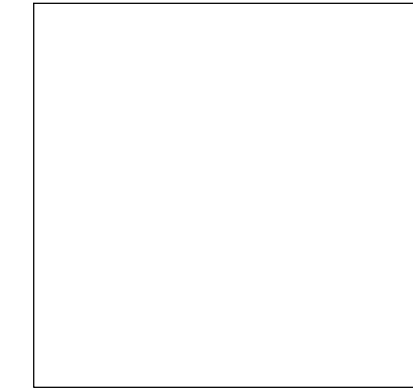


SHEET 2 OF 11

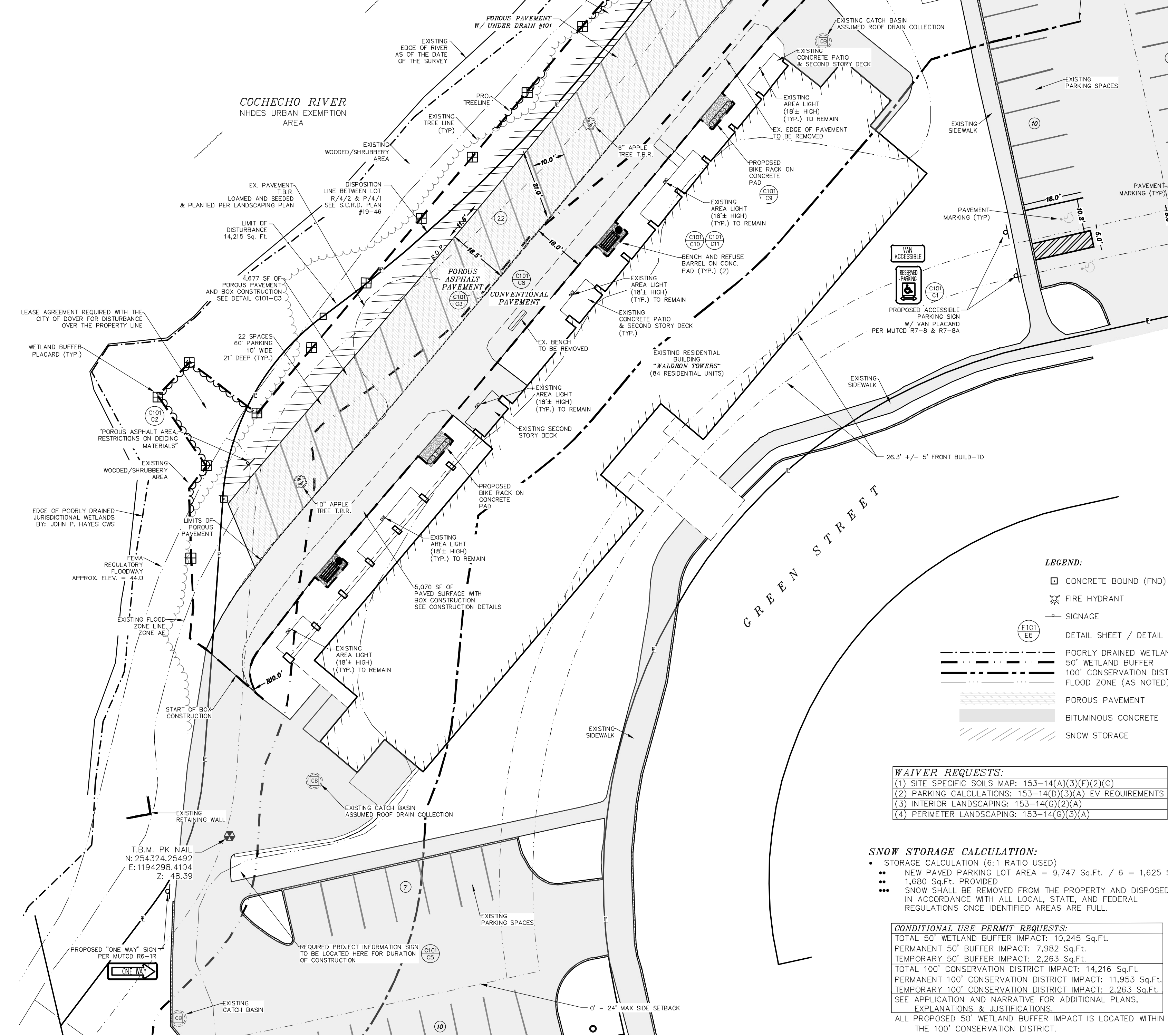
PARKING REQUIREMENTS:

CHAPTER 153-14D PARKING TABLE
• RESIDENTIAL (NON CBD-G)
• 1.4 SPACES PER UNIT + 0.5 VISITOR SPACE PER UNIT
• MAX. CALCULATION: 84 UNITS x 1.9 SPACES = 160 SPACES

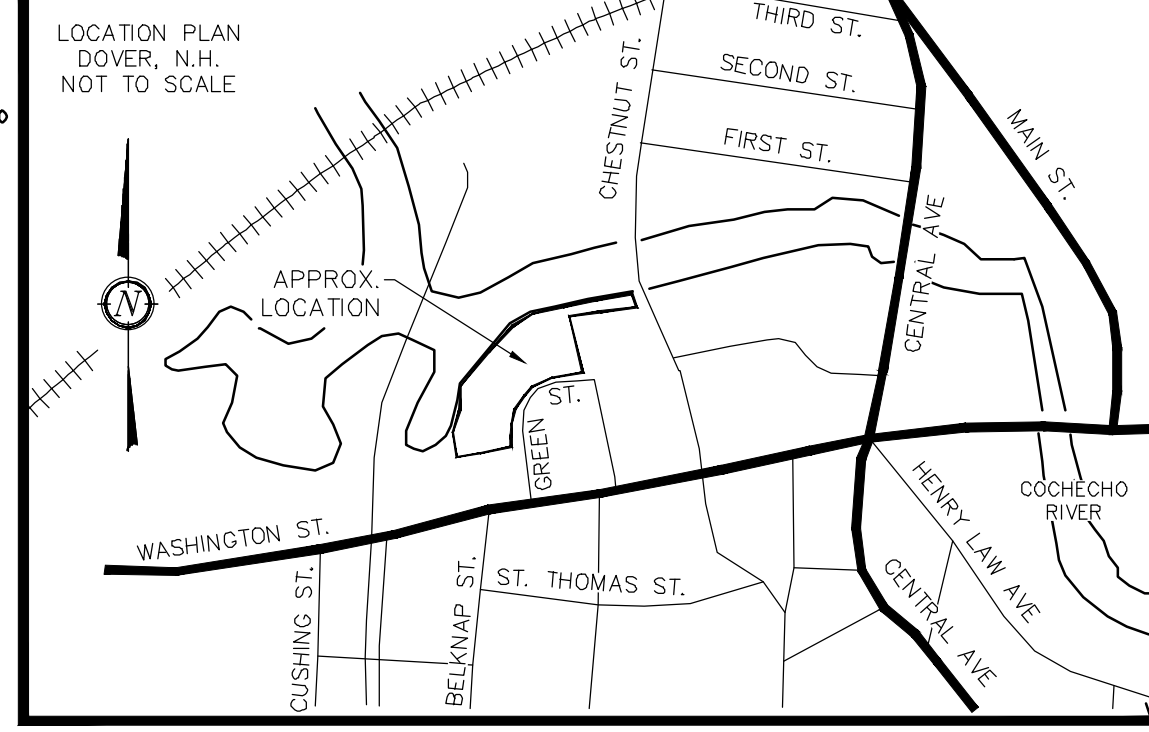
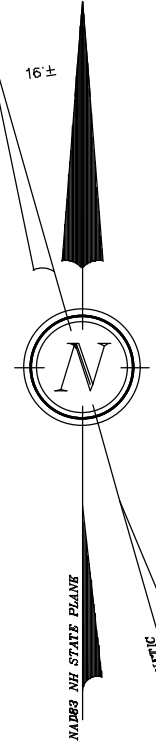
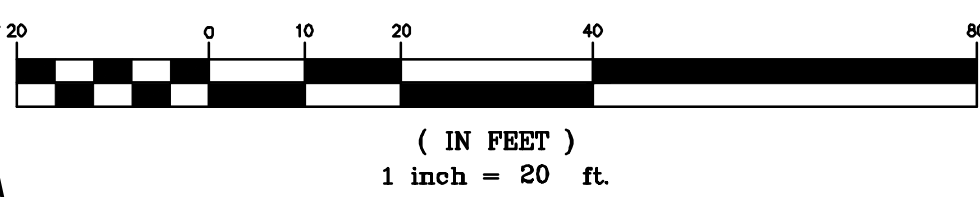
43 EXISTING PARKING SPACES ON SITE
4 EXISTING TO BE REMOVED AT REAR OF SITE
22 NEW PROPOSED PARKING SPACES
PROPOSED PARKING SPACES: 61 SPACES.



APPROVED DOVER



GRAPHIC SCALE



NOTES:

- OWNER: DOVER HOUSING AUTHORITY
62 WHITTIER STREET
DOVER, NH 03820
- TAX MAP 1, LOT 42
- LOT AREA: 79,777 Sq. Ft., 1.83 AC.±
- SEE CONDEMNATION PLAN ON RECORD AT THE CITY OF DOVER
- ZONING: CBD - CENTRAL BUSINESS DISTRICT
(GENERAL SUB-DISTRICT)
CONSERVATION DISTRICT
WETLAND PROTECTION DISTRICT
SETBACKS:
FRONT BUILD TO (GREEN ST) ~ 26.3' +/- 5' (SEE NOTE *)
SIDE ~ 0' MIN. - 24' MAX
REAR ~ 10' MIN
MIN. LOT SIZE: N/A
MIN. FRONTAGE BUILD-OUT: 70%
MIN. LOT COVERAGE: 75%
MAX. BUILDING HEIGHT: 3 STORIES
MIN. BUILDING HEIGHT: 2 STORIES
WETLAND BUFFER: 50'
CONSERVATION AREA: 100' FROM RIVER
(*) THE PROPERTY OWNER SHALL CALCULATE THE AVERAGE FRONT SETBACKS OF ALL LOTS WITHIN THE SAME ZONE LOCATED ON THE SAME SIDE OF THE STREET. TWO HUNDRED FIFTY (250) FEET IN EACH DIRECTION FROM THE CENTER OF THE FRONT LOT LINE. THIS FRONT SETBACK DIMENSION SHALL BE CONSIDERED TO BE A BUILD TO LINE. STRUCTURES MAY BE CONSTRUCTED WITHIN FIVE (5) FEET PLUS OR MINUS OF THE AVERAGE. PORCHES OR STEPS MAY BE LOCATED AN ADDITIONAL FIVE (5) FEET BEYOND THE FRONT FACADE OF THE STRUCTURE. EXPANSIONS TO EXISTING STRUCTURES SHALL BE SUBJECT TO A MINIMUM SETBACK EQUAL TO THE CALCULATED AVERAGE SETBACK MINUS FIVE (5) FEET.
- THE INTENT OF THIS PLAN IS TO SHOW PROPOSED CONDITIONS OF A PORTION OF TAX MAP 1, LOT 42 LOCATED IN DOVER, N.H.
- I HEREBY CERTIFY THAT, TO THE BEST OF MY KNOWLEDGE AND BELIEF, A PORTION OF THIS PROPERTY DOES FALL WITHIN THE FLOOD PLAIN FLOOD HAZARD REF: FEMA COMMUNITY #330145, MAP 33017C0310E, DATED: SEPTEMBER 30, 2015.
- VERTICAL DATUM BASED ON NAVD88 ELEVATIONS. HORIZONTAL DATUM BASED ON NAD83 STATE PLANE. COORDINATES GATHERED USING CARLSON BRX7 SURVEY GRADE GPS RECEIVERS AND A CLOSED TRAVERSE PERFORMED IN FALL OF 2023 WITH AN ERROR OF CLOSURE BETTER THAN 1 PART IN 10,000.
- BOUNDARY LINES SHOWN BASED ON RECORD PLANS AS NOTATED ON SHEET 2.
- IF 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. CONDITIONAL USE PERMIT REQUIRED FOR IMPACT TO WETLAND BUFFER & CONSERVATION DISTRICT.
- WETLANDS WERE DELINEATED BY JOHN P. HAYES III, CERTIFIED WETLANDS SCIENTIST, IN ACCORDANCE WITH CHAPTER 170-27.1 OF THE ZONING ORDINANCE, IN JANUARY OF 2024.
- AS-BUILT PLANS OF THE SITE PLAN SHALL BE SUBMITTED ON PAPER AND IN DIGITAL FORMAT AUTOCAD DWG, AUTOCAD DXF OR ESRI FORMAT TO THE CITY OF DOVER ENGINEER'S OFFICE UPON COMPLETION OF PROJECT. AS-BUILTS ARE REQUIRED REGARDLESS OF OWNERSHIP OF ROAD. AS-BUILT PLANS SHALL BE PREPARED AND CERTIFIED CORRECT BY A L.L.S. OR P.E. DIGITAL FILES SHALL BE GEO-REFERENCED TO NEW HAMPSHIRE STATE PLANE COORDINATES NAD83 AND SHALL BE EXPRESSED IN FEET.
- THE INSTALLATION OF ELECTRIC POWER, CABLE TELEVISION AND TELEPHONE LINES SHALL BE UNDERGROUND THROUGHOUT THE SITE FOR WHICH DEVELOPMENT IS PROPOSED. (NOT APPLICABLE)
- THE SUBJECT PARCEL IS SERVICED BY MUNICIPAL WATER AND SEWER.
- ALL CONSTRUCTION SHALL CONFORM WITH THE STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION (MDOT) "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION" DATED 2016, AND WITH THE CITY OF DOVER COMMUNITY SERVICES REGULATIONS AND STANDARD SPECIFICATION FOR CONSTRUCTION. THE MORE STRINGENT SPECIFICATION SHALL APPLY.
- ALL EROSION CONTROL NOTES SHALL INCLUDE PROVISIONS FOR CONSTRUCTION SEQUENCING, TEMPORARY EROSION CONTROL MEASURES, AND PERMANENT STANDARDS SUCH AS LOAM SPREAD RATE FOR DISTURBED AREAS, RATES OF LIME, TYPE AND RATES FOR FERTILIZER, AND SEED AND MULCH MIXTURE WITH RATES OF APPLICATION.
- ALL TREATMENT SWALES TO BE CONSTRUCTED SHALL HAVE SOD BOTTOMS.
- A LETTER OF CREDIT FOR THE COST OF RE-VEGETATING ALL DISTURBED AREAS ON THE SITE SHALL BE SUBMITTED, AND THE APPROVED CONSTRUCTION SIGN INSTALLED PRIOR TO ANY EARTH DISTURBING ACTIVITY OCCURS. THE PROPOSED PROJECT WILL CONSIST OF ONE PHASE AND WILL DISTURB 14,215 Sq.Ft. 0.33 AC.
- 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.
- SITE CONSTRUCTION HOURS SHALL BE LIMITED TO MONDAY-FRIDAY 7 AM-6 PM, SATURDAY 7 AM-6 PM, NO SUNDAY HOURS OR FEDERAL HOLIDAYS. HOURS OF CONSTRUCTION MUST BE DOCUMENTED ON A SITE CONSTRUCTION SIGN ALONG WITH THE CONTACT INFORMATION FOR THE GENERAL CONTRACTOR. S&D SIGNAGE MUST BE LOCATED AND APPROVED BY THE CITY ENGINEER OR ASSISTANT CITY MANAGER.
- BUILDING ADDRESSES SHALL BE ASSIGNED BY THE BUILDING OFFICIAL AT THE TIME OF ISSUANCE OF A BUILDING PERMIT. (NOT APPLICABLE)
- THE PROPOSAL IS TO EXPAND THE PARKING AREA WITH POROUS PAVEMENT.
- THE FOLLOWING FEDERAL AND STATE PERMITS OR UTILITY ORDERS HAVE BEEN ISSUED FOR THE SUBJECT PROPERTY:
NONE REQUIRED
- ANY RETAINING WALL TALLER THAN FOUR FEET (4') REQUIRES ISSUANCE OF A BUILDING PERMIT FROM INSPECTION SERVICES. (NONE PROPOSED)

NOTES CONTINUED:

- ANY FENCE TALLER THAN SEVEN FEET (7') REQUIRES THE ISSUANCE OF A BUILDING PERMIT FROM INSPECTION SERVICES. (NONE PROPOSED)
- THERE IS A NET INCREASE OF 468 Sq. Ft. IN IMPERVIOUS SURFACE. THE PROPOSED POROUS PAVEMENT IS NOT COUNTED AS IMPERVIOUS SURFACE.
- APPLICANT SHALL COMPLETE LAND USE DEVELOPMENT TRACKING FORM, MOST RECENTLY REVISED VERSION, UTILIZING THE ONLINE POLLUTION TRACKING AND ACCOUNTING PILOT PROJECT (PTAPP) PORTAL.
[HTTPS://WWW.UNH.EDU/UNHSC/PTAPP](https://www.unh.edu/unhsc/ptapp)
- 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. (NOT APPLICABLE).
- FIRE DEPARTMENT ACCESS SHALL BE INSTALLED AND MAINTAINED TO SUPPORT THE IMPOSED LOADS OF FIRE APPARATUS IN ALL WEATHER CONDITIONS AT ALL TIMES.
- EXTERIOR LIGHTING SHALL BE CUT-OFF TYPE FIXTURES PER CHAPTER 153-14-E AND SHALL PROVIDE LIGHTING DIRECTED ON-SITE ONLY. (NOT APPLICABLE, EXISTING LIGHTING UTILIZED)
- A SECURITY SYSTEM SHALL BE INSTALLED AS REQUIRED BY CHAPTER 45, ARTICLE I, SECTION 45-2 OF THE CODE OF THE CITY OF DOVER. (NOT APPLICABLE)
- APPROVED BACKFLOW PREVENTERS SHALL BE PROVIDED FOR BOTH FIRE AND DOMESTIC WATER LINES. (NOT APPLICABLE)
- THE PROPOSED STRUCTURE SHALL BE SERVED BY A SPRINKLER SYSTEM AS REQUIRED BY CHAPTER 81- 30 OF THE CODE OF THE CITY OF DOVER AND THE ADOPTED STATE OF NH BUILDING AND FIRE CODES. (NOT APPLICABLE)
- 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 INSPECTION SERVICES PRIOR TO CONNECTION OF THE BACKFLOW DEVICE. (NOT APPLICABLE)
- FIRE DEPARTMENT CONNECTION(S) SHALL BE LOCATED ON THE STREET SIDE OF THE BUILDING PER NFPA 13. ACCESS TO THE FDC SHALL MAINTAIN A CLEAR AND UNOBSTRUCTED PATH AT ALL TIMES. (NOT APPLICABLE)
- THE SITE LAYOUT IS DESIGNED IN COMPLIANCE WITH APPLICABLE ACCESSIBILITY REGULATIONS. THE PROPOSED STRUCTURE WILL BE ALSO BE DESIGNED IN ACCORDANCE WITH APPLICABLE ACCESSIBILITY REGULATIONS. (I.E. IBC, ANSI-117.1) AND NH RSA 155-A:5. (NOT APPLICABLE WITH REGARD TO STRUCTURE)
- PRIVATE TRASH PICKUP WILL BE USED THROUGH THE USE OF TOTERS COLLECTED AND STORED AT THE PARKING LEVEL WITHIN A STORAGE ROOM. (NOT APPLICABLE - TRASH PICKUP WILL NOT BE CHANGED FROM EXISTING)
- THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO LOCATE EXACTLY AND TO PRESERVE ANY AND ALL UNDERGROUND UTILITIES CALL "DIG-SAFE" 1-888-DIGSAFE (344-7233) AT LEAST 72 HOURS BEFORE COMMENCING CONSTRUCTION.
- LEASE AGREEMENT REQUIRED WITH THE CITY OF DOVER FOR DISTURBANCE OVER THE PROPERTY LINE.

WAIVER REQUESTS:
(1) SITE SPECIFIC SOILS MAP: 153-14(A)(3)(F)(2)(C)
(2) PARKING CALCULATIONS: 153-14(D)(3)(A) EV REQUIREMENTS
(3) INTERIOR LANDSCAPING: 153-14(G)(2)(A)
(4) PERIMETER LANDSCAPING: 153-14(G)(3)(A)

SNOW STORAGE CALCULATION:
• STORAGE CALCULATION (6:1 RATIO USED)
• NEW PAVED PARKING LOT AREA = 9,747 Sq.Ft. / 6 = 1,625 Sq.Ft.
• 1,680 Sq.Ft. PROVIDED
• SNOW SHALL BE REMOVED FROM THE PROPERTY AND DISPOSED OF IN ACCORDANCE WITH ALL LOCAL, STATE, AND FEDERAL REGULATIONS ONCE IDENTIFIED AREAS ARE FULL.

CONDITIONAL USE PERMIT REQUESTS:
TOTAL 50' WETLAND BUFFER IMPACT: 10,245 Sq.Ft.
PERMANENT 50' BUFFER IMPACT: 7,982 Sq.Ft.
TEMPORARY 50' BUFFER IMPACT: 2,263 Sq.Ft.
TOTAL 100' CONSERVATION DISTRICT IMPACT: 14,216 Sq.Ft.
PERMANENT 100' CONSERVATION DISTRICT IMPACT: 11,953 Sq.Ft.
TEMPORARY 100' CONSERVATION DISTRICT IMPACT: 2,263 Sq.Ft.
SEE APPLICATION AND NARRATIVE FOR ADDITIONAL PLANS, EXPLANATIONS & JUSTIFICATIONS.
ALL PROPOSED 50' WETLAND BUFFER IMPACT IS LOCATED WITHIN THE 100' CONSERVATION DISTRICT.

CITY OF DOVER PLANNING DEPARTMENT FILE #

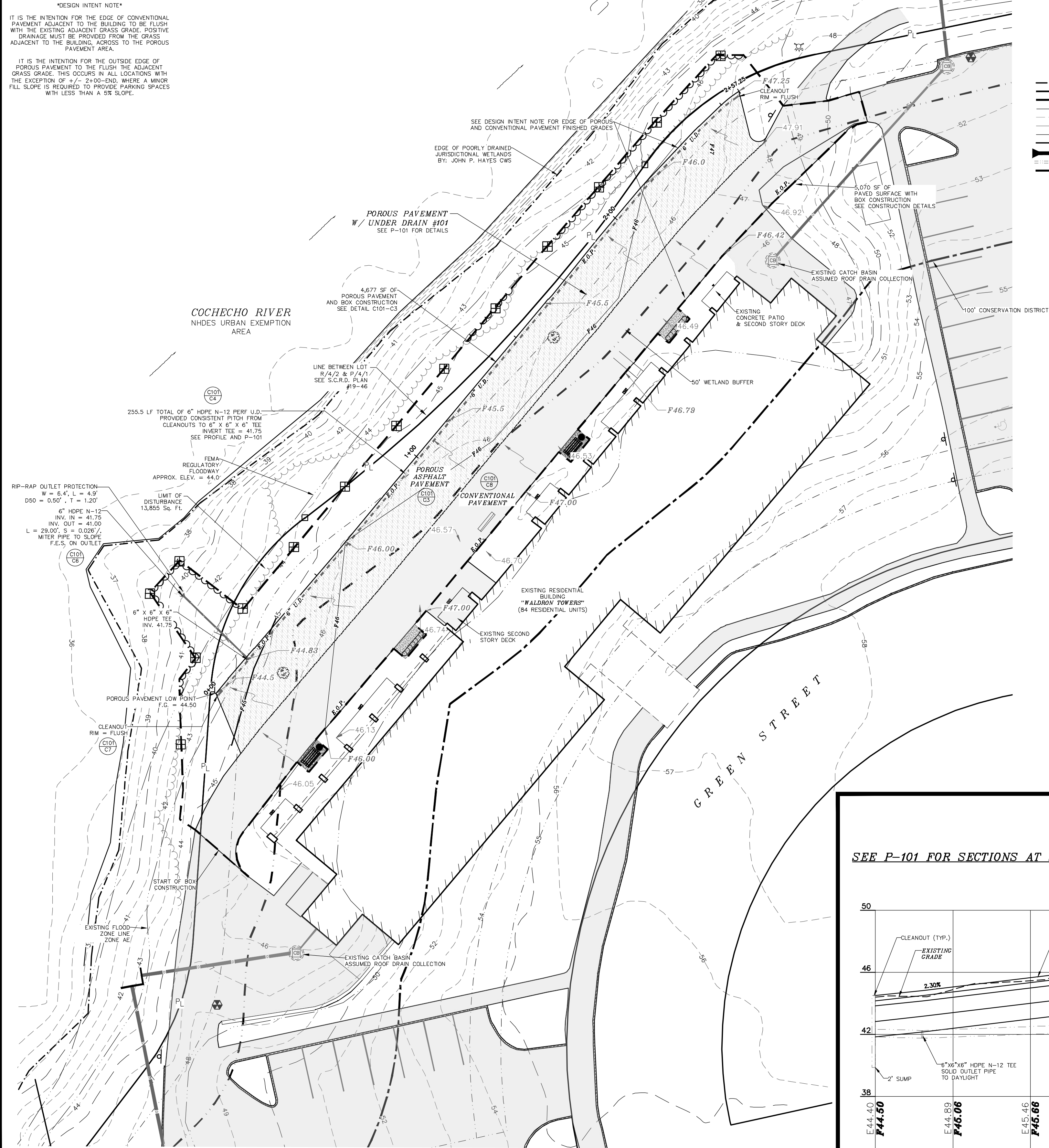
REVISION	DATE	DESCRIPTION

SITE PLAN
LAND OF
DOVER HOUSING AUTHORITY
3 GREEN STREET
DOVER, N.H.
TAX MAP 1, LOT 42

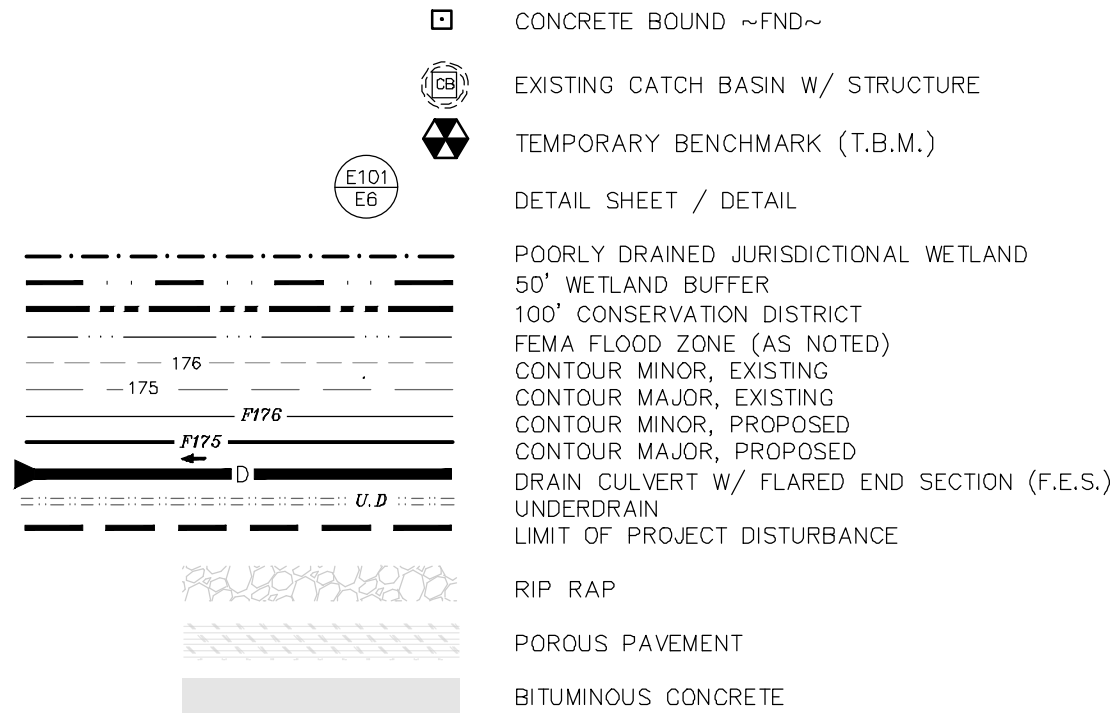
BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863
SCALE : 1 IN. EQUALS 20 FT.
DATE : OCTOBER 14, 2024
FILE NO. : DB 2023-008

KENNETH A. BERRY
REGISTERED PROFESSIONAL ENGINEER

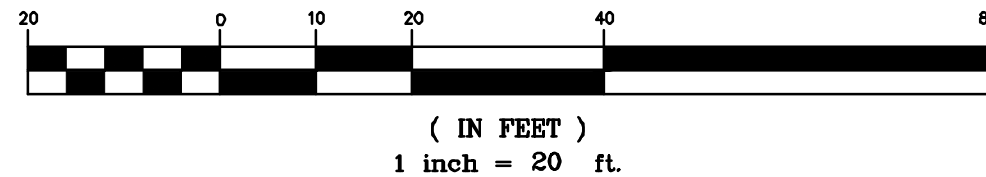
PLAN VIEW PROPOSED PARKING SPACE CONSTRUCTION



LEGEND:



GRAPHIC SCALE



NOTES:

- THE INTENT OF THIS PLAN SET IS TO DEMONSTRATE THE GRADING DESIGN FOR 22 POROUS PAVEMENT PARKING SPACES WITH RECONSTRUCTION DRIVE LANE.
- OWNER & APPLICANT: DOVER HOUSING AUTHORITY
62 WHITTIER STREET
DOVER, NH 03820
- THE PROJECT PARCEL IS TAX MAP 1, LOT 42 OF THE CITY OF DOVER TAX ASSESSOR'S MAPS.
- LOT AREA: 79,777 Sq. Ft.±, 1.83 AC.±
- SEE CONDEMNATION PLAN ON RECORD AT THE CITY OF DOVER.
- UNDERGROUND UTILITY LOCATIONS ARE BASED UPON BEST AVAILABLE EVIDENCE AND ARE NOT FIELD VERIFIED. LOCATING AND PROTECTING ANY ABOVE AND BELOW GROUND UTILITIES IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR. ANY UTILITY CONFLICTS SHOULD BE REPORTED IMMEDIATELY TO THE DESIGN ENGINEER.
- THE CONTRACTOR SHALL CALL AND COORDINATE WITH DIGSAFE 1-888-344-7233 AT LEAST 72 HOURS PRIOR TO COMMENCING ANY EXCAVATION ON PUBLIC OR PRIVATE PROPERTY.
- SEE EROSION & SEDIMENT CONTROL PLAN FOR INLET PROTECTION AND CONTROLS FOR THE ENTIRE SITE.
- ALL DRAINAGE PIPE IS TO BE HDPE N-12 ASTM F2648. (GREEN PIPE) INDIVIDUAL PIPE SIZES ARE SPECIFIED.
- ALL ELEVATIONS TO BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. THE DESIGN ENGINEER IS TO BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCY. TEMPORARY BENCHMARKS (T.B.M.) ARE TO BE PROVIDED BY THE DESIGN ENGINEER.
- NOTE THAT THE PROJECT NOT SUBJECT TO THE EPA NPDES PHASE II. OPERATION OF THE SITE WILL CONFORM TO THE STORM WATER MANAGEMENT PLAN PER CITY OF DOVER CHAPTER 153-14. WEEKLY INSPECTIONS WILL BE CONDUCTED BY THE DESIGN ENGINEER, OR THIRD PARTY INSPECTOR, SEE E101.
- UPON FINAL COMPLETION AND 85% STABILIZATION THE DRAINAGE SYSTEM IS TO BE CLEANED OF ALL DEBRIS TO INCLUDE THE JETTING OF THE UNDERDRAIN SYSTEM.
- ALL UNPAVED AREAS ARE TO RECEIVE 4" QUALITY LOAM AND SEED.
- ALL PROPOSED CLEAN OUTS ARE TO BE VERTICAL 12" N-12 PIPE WITH CAST IRON COVERS SCREWED WITH STAINLESS SCREWS. THE COVER IS TO BE DEMARCATED WITH A "D".

CITY OF DOVER PLANNING DEPARTMENT FILE #

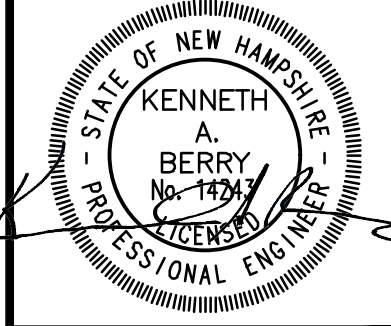
GRADING & DRAINAGE PLAN
LAND OF
DOVER HOUSING AUTHORITY
3 GREEN STREET
DOVER, N.H.
TAX MAP 1, LOT 42

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

SCALE : 1 IN. EQUALS 20 FT.

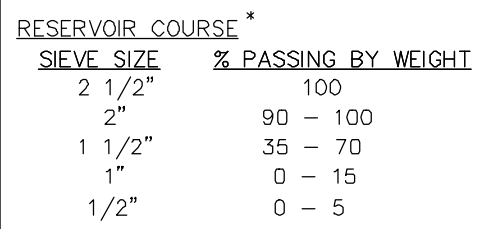
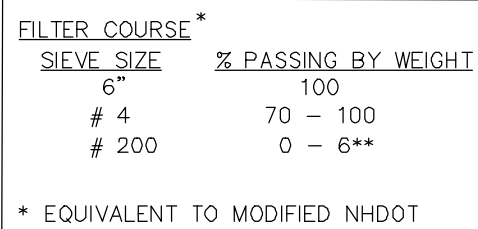
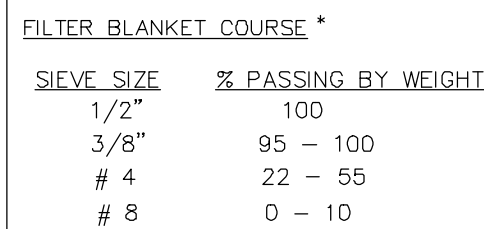
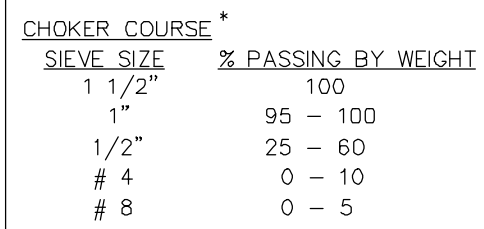
DATE : OCTOBER 14, 2024

FILE NO. : DB 2023-008



- 1.) POROUS ASPHALT PAVEMENT WILL CONFORM TO UNHSC (2007b) SPECIFICATIONS AS UPDATED BY UNHSC DESIGN SPECIFICATIONS FOR POROUS ASPHALT PAVEMENT AND INFILTRATION BEDS (DATED: SEPTEMBER 2016).
- 2.) THE FILTER COURSE WILL BE INSTALLED AT A MINIMUM DEPTH OF 12 INCHES AND CONSIST OF NHDOT (2016) SAND, ITEM 304.1 PER THE NH STORMWATER MANUAL.
- 3.) SEE CROSS SECTIONS FOR DETAILS.
- 4.) SEE STORMWATER SYSTEM OPERATIONS AND MAINTENANCE PLAN, DATED OCTOBER 14, 2024 FOR MAINTENANCE REQUIREMENTS.
- 5.) SYSTEM IS TO LINED W/ 4" LOW PERM MATERIAL. WITH DESIGN ENGINEER CONSULTATION, THE EXISTING ON-SITE MATERIAL MAY BE USED AS LOW PERM LINER

- 1.) NH STORMWATER MANUAL: VOLUME 2, SECTION 4E PERMEABLE PAVEMENT.
- 2.) UNHCS DESIGN SPECIFICATIONS FOR POROUS ASPHALT PAVEMENT AND INFILTRATION BEDS, FEBRUARY 2014, REVISED SEPTEMBER 2016, UNIVERSITY OF NEW HAMPSHIRE STORMWATER CENTER, DURHAM, NH 03824-3534.
- 3.) POROUS ASPHALT PAVEMENT FOR STORMWATER MANAGEMENT, THE UNH STORMWATER CENTER.



BINDER CONTENT 5.8 - 6.5%
(AASHTO T164)

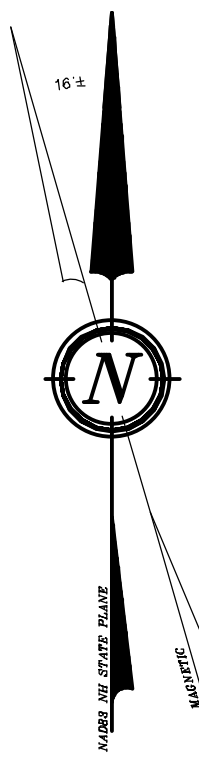
AIR VOID CONTENT 16 - 22%
(AASHTO D6752)

DRAINDOWN $\leq 0.3\%$
(AASHTO D6390)

RETAINED TENSILE STRENGTH $\geq 80\%$

CANTABRO ABRASION $\leq 20\%$

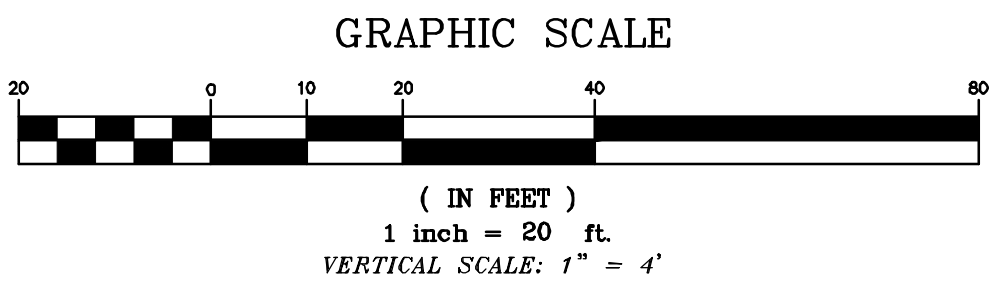
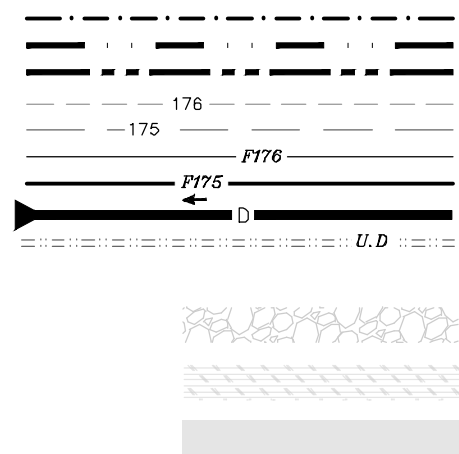
CANTABRO ABRASION $\leq 30\%$

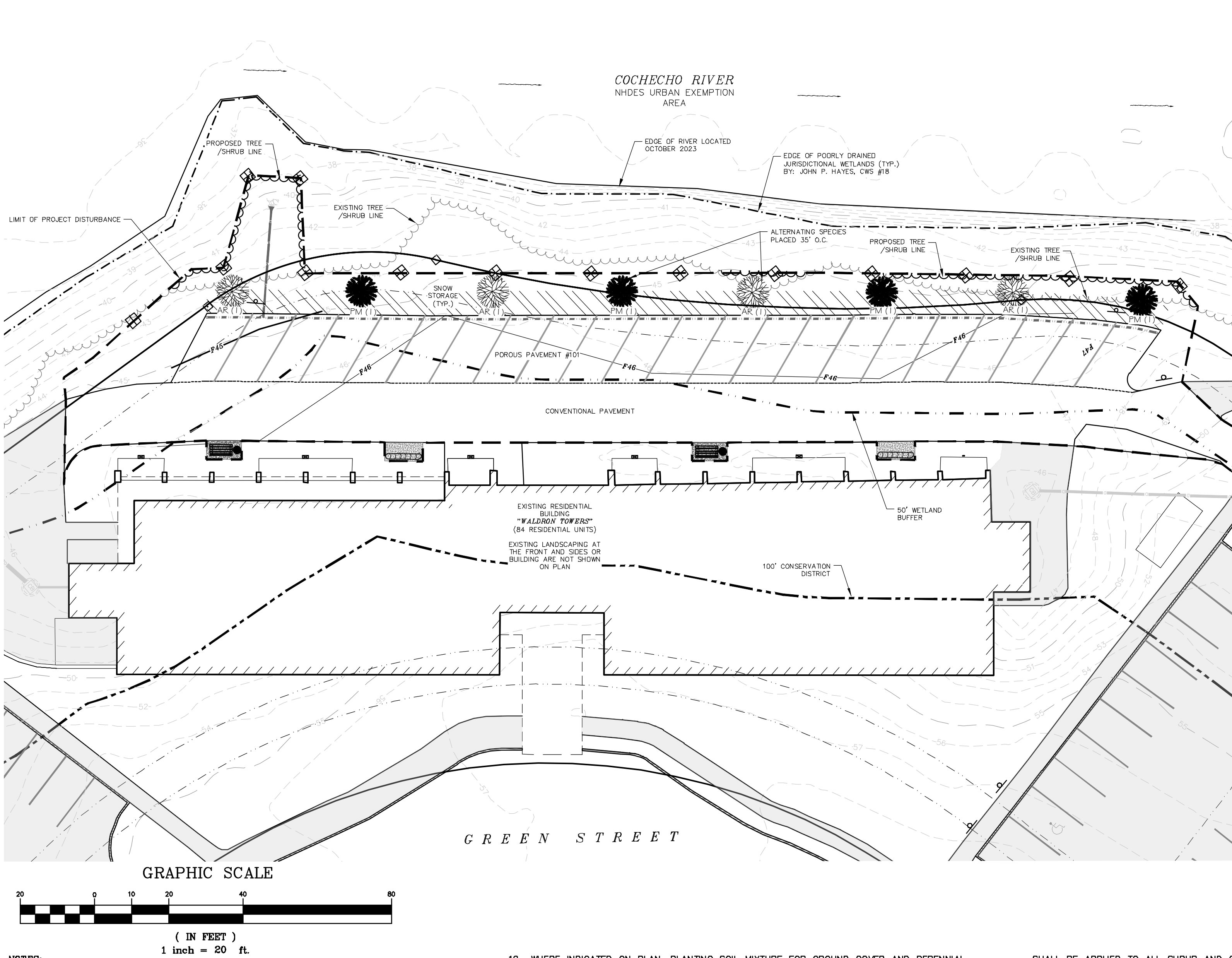


LOW PERMEABILITY MATERIAL GRADATION	
SIEVE SIZE	% PASSING BY WEIGHT
#4	95 - 100
#40	60 - 95
#100	40 - 60
#200	25 - 45

TOTAL SECTION DEPTH = 32"
TOTAL SECTION REQUIRED = 31.2'
(65% OF FROST DEPTH)
FROST DEPTH = 48" (UNHSC)

	CONCRETE BOUND ~FND~
	EXISTING CATCH BASIN W/ STRUCTURE
	TEMPORARY BENCHMARK (T.B.M.)
	DETAIL SHEET / DETAIL
	POORLY DRAINED JURISDICTIONAL WETLAND
	50' WETLAND BUFFER
	100' CONSERVATION DISTRICT
	CONTOUR MINOR, EXISTING
	CONTOUR MAJOR, EXISTING
	CONTOUR MINOR, PROPOSED
	CONTOUR MAJOR, PROPOSED
	DRAIN CULVERT W/ FLARED END SECTION
	UNDERDRAIN

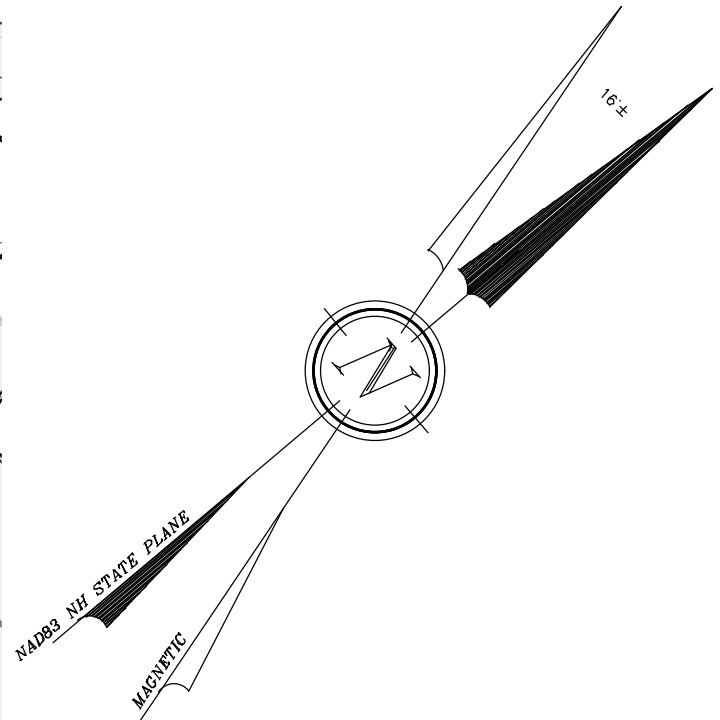




NOTES:

- CALL DIG SAFE PRIOR TO BEGINNING WORK. (1-888-344-7233). THE LANDSCAPE CONTRACTOR IS ADVISED OF THE PRESENCE OF UNDERGROUND UTILITIES AND SHALL VERIFY THE EXISTENCE AND LOCATION OF THE SAME BEFORE COMMENCING AND DIGGING OPERATIONS. THE LANDSCAPE CONTRACTOR SHALL REPLACE OR REPAIR UTILITIES, PAVING, WALKS, CURBING, ETC DAMAGED IN PERFORMANCE OF THIS JOB AT NO ADDITIONAL COST TO THE OWNER OR GENERAL CONTRACTOR.
- CONTRACTOR SHALL THOROUGHLY FAMILIARIZE THEMSELVES WITH ALL SITE CONDITIONS PRIOR TO CONSTRUCTION BIDDING.
- THE CONTRACTOR SHALL SUPPLY ALL PLANT MATERIALS IN QUANTITIES SUFFICIENT TO COMPLETE THE PLANTINGS SHOWN ON THE DRAWINGS. VARIATIONS IN QUANTITIES ARE TO BE APPROVED BY THE DESIGN ENGINEER.
- PROVIDED SMOOTH TRANSITION WHERE NEW WORK MEETS EXISTING CONDITIONS.
- ALL PLANT MATERIAL INSTALLED SHALL MEET THE SPECIFICATIONS OF "AMERICAN STANDARD FOR NURSERY STOCK" BY THE AMERICAN ASSOCIATION OF NURSERYMEN
- ALL PLANT MATERIALS SHALL BE FREE FROM INSECTS AND DISEASE.
- ALL PLANTINGS SHALL BE DONE IN ACCORDANCE WITH ACCEPTABLE HORTICULTURAL PRACTICES. THIS IS TO INCLUDE PROPER PLANTING MIX, PLANT BED AND TREE PIT PREPARATION, PRUNING STAKING OR GUYING, WRAPPING, SPRAYING, FERTILIZATION, PLANTING AND ADEQUATE MAINTENANCE UNTIL ACCEPTANCE FROM OWNER.
- ALL GRASS, OTHER VEGETATION AND DEBRIS SHALL BE REMOVED FROM ALL PLANTING AREAS PRIOR TO PLANTING.
- THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF EXISTING AND NEWLY PLANTED TREES AND SHRUBS DURING THE CONSTRUCTION PROCESS. WHERE REQUIRED, THE CONTRACTOR SHALL INSTALL TEMPORARY FENCING (SNOW OR EQUAL) AROUND EXISTING TREES AND SHRUBS THAT COULD BE IMPACTED BY THE CONSTRUCTION PROCESS. STORAGE OF CONSTRUCTION EQUIPMENT, CONSTRUCTION MATERIALS, SNOW STORAGE AND OR VEHICLE PARKING SHALL NOT BE PERMITTED WITHIN THE DRIP LINE OF TREES OR TWENTY FEET WHICH EVER IS GREATER.
- NEW PLANTINGS SHALL BE INSTALLED PER PROJECT DRAWINGS AND SPECIFICATION THAT INCLUDE FERTILIZATION AND MULCHING AS REQUIRED.
- ALL SHRUB BEDS AND TREE PITS SHALL BE MULCHED WITH 3" CLEAN SHREDDED BLACK MULCH
- WHERE INDICATED ON PLAN, PLANTING SOIL MIXTURE FOR GROUND COVER AND PERENNIAL BED AREAS SHALL CONSIST OF FOUR PARTS TOPSOIL, TWO PARTS SPHAGNUM PEAT MOSS, AND ONE PART HORTICULTURAL PERLITE BY VOLUME. PEAT MOSS MAY BE SUBSTITUTED WITH WELL-ROTTED OR DEHYDRATED MANURE OR COMPOST. ROTOTILL BEDS TO A DEPTH OF 8 INCHES.
- MAINTENANCE OF NEW PLANTINGS AND LAWNS SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR AND OR LANDSCAPE SUBCONTRACTOR UNTIL ACCEPTANCE BY THE OWNER. RESPONSIBILITIES SHALL INCLUDE WATERING WEEDING AND MOWING AS NECESSARY. ALL PLANT MATERIAL SHALL BE GUARANTEED FOR A PERIOD OF ONE YEAR FROM THE DATE OF ACCEPTANCE, REPLACEMENT MATERIAL SHALL BE GUARANTEED FOR AND ADDITIONAL YEAR FROM TIME OF INSTALLATION.
- THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL TEMPORARY EROSION CONTROL MEASURES DURING THE CONSTRUCTION PHASE AND UNTIL ALL AREAS HAVE BEEN STABILIZED AND ACCEPTED BY THE OWNER. THE GENERAL CONTRACTOR SHALL PROVIDE WEEKLY INSPECTIONS OF EROSION MEASURE AND IMMEDIATELY AFTER STORM EVENTS AND REPAIR AS NECESSARY.
- THE GENERAL CONTRACTOR AND OR THE LANDSCAPE SUBCONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL OF ALL THREE GUYING MATERIAL ONCE PLANT MATERIAL HAS BEEN ESTABLISHED. (MINIMUM OF ONE GROWING SEASON). ALL TEMPORARY EROSION CONTROL MEASURE SHALL BE REMOVED ONCE STABILIZATION OF DISTURBANCE HAS BEEN ACCEPTED BY OWNER.
- THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR A MINIMUM OF TWO MOWINGS FOR ALL TURF AREAS OR UNTIL ACCEPTANCE BY THE OWNER. A MINIMUM UNIFORM 75% CATCH OF TURF IS REQUIRED FOR ACCEPTANCE.
- ALL PLANTINGS SHALL BE WATERED REGULARLY DURING THEIR FIRST YEAR AND MAINTAINED PERMANENTLY IN GOOD GROWING CONDITION AS AN EFFECTIVE VISUAL SCREEN.
- SHRUBS OR TREES WHICH DIE SHALL BE REPLACED WITHIN ONE GROWING SEASON WITH NEW SHRUBS OR TREES TO ENSURE CONTINUED COMPLIANCE WITH APPLICABLE LANDSCAPING REQUIREMENTS.
- ALL REQUIRED LANDSCAPING SHALL BE INSTALLED BEFORE OCCUPANCY, OR WITHIN SIX MONTHS IF OCCUPANCY OCCURS DURING WINTER CONDITIONS.
- TREES ARE TO BE 6' TALL AT PLANTING.
- ALL PLANT STOCK SHALL CONFORM TO ANSI Z260.1 - NURSERY STOCK, LATEST EDITIONS (AMERICAN ASSOCIATION OF NURSERYMEN, INC.)
- 4" AGED PINEBARK MULCH AND A WEED BARRIER (TY-PAR FABRIC OR APPROVED EQUAL)

WAIVER HAS BEEN REQUESTED
FOR PERIMETER & INTERNAL
LANDSCAPING REQUIREMENTS



LEGEND:

- TREES:
- AR - RED MAPLE TREE
- WS - WHITE SPRUCE

PLANTING NOTES

- CONTRACTOR SHALL OBTAIN APPROVAL FROM L.A. PRIOR TO PURCHASING &/OR INSTALLING SUBSTITUTE PLANT MATERIAL PRIOR TO PURCHASE OF ANY SUBSTITUTE MATERIALS.
- CONSTRUCTION ACCESS WILL BE AS DIRECTED BY L.A. CONTRACTOR IS RESPONSIBLE FOR RESTORATION OF ACCESS ROUTE AND ALL AREAS DISTURBED BY PLANTING OPERATIONS UPON COMPLETION OF CONSTRUCTION OPERATIONS, AT NO ADDITIONAL COST TO THE OWNER.
- LAYOUT OF ALL PLANTING BEDS AND LOCATION OF PLANTS TO BE APPROVED BY L.A. ON SITE PRIOR TO CONSTRUCTION AND INSTALLATION.
- CONTRACTOR TO REMOVE ALL DEBRIS GENERATED BY PLANT INSTALLATION. DEBRIS TO BE DISPOSED OF IN A LEGAL MANNER.
- ALL PLANT MATERIAL SHALL BE GUARANTEED TO BE IN GOOD, HEALTHY & FLOURISHING CONDITION FOR ONE YEAR FROM THE DATE OF FINAL INSTALLATION APPROVAL BY L.A. CONTRACTOR SHALL REPLACE, WITHOUT COST TO OWNER, AND AS SOON AS WEATHER CONDITIONS PERMIT, ALL DEAD AND NON-FLOURISHING PLANTS AS DETERMINED BY THE L.A. REPLACEMENT PLANTS SHALL BE GUARANTEED IDENTICALLY TO ORIGINAL PLANTS, TIME PERIOD COMMENCING FROM DATE OF REPLACEMENT PLANTING APPROVAL BY L.A.
- ALL BEDS TO BE MULCHED WITH 3" DEPTH SHREDDED BARK MULCH UNLESS NOTED OTHERWISE.
- CONTRACTOR TO PROVIDE NECESSARY TEMPORARY IRRIGATION IF NEEDED BASED ON TIME OF YEAR THE PROJECT IS IMPLEMENTED.
- ALL PLANT MATERIAL TO COMPLY WITH THE CITY OF DOVER'S SITE REVIEW REGULATIONS, 149-14(G), SUCH THAT THERE SHALL BE DECIDUOUS SHADE TREES PLANTED 40 FEET O.C. ALONG THE PERIMETER OF THE PARKING LOTS AND SHRUBS PLANTED 5 FEET O.C. WITHIN THE PERIMETER BUFFER. SEE PLANT LIST FOR SPECIES AND SIZE OF PLANTS.

TEMPORARY WATERING NOTES

- CONTRACTOR IS RESPONSIBLE FOR MAKING SURE ALL PLANT MATERIAL HAS ADEQUATE WATER DURING THE ESTABLISHMENT PERIOD.
- THE USE OF GATOR BAGS, SOAKER HOSE, HAND WATERING AND OTHER TECHNIQUES SHOULD BE USED TO ASSURE PROPER HYDRATION OF THE PLANTINGS IS MAINTAINED.
- TEMPORARY IRRIGATION SYSTEMS CAN BE SET UP TO ASSIST IN WATERING ACTIVITIES.

PLANTING SCHEDULE
3 Green Street/Waldron Towers Parking Expansion
Botanical Name/ Common Name

Trees

- Acer rubrum / Red Maple
- Pseudotsuga menziesii / Douglas Fir

Size

- 4" Cal.
- 4" Cal.

Qty

- 4
- 4

Label

- AR
- PM



General Plant Maintenance Guide

General Plant Bed Maintenance:

- All plant maintenance should be performed by a qualified horticulturalist or licensed arborist. Cleaning the dead material out of the planting bed in the fall helps keep litter from building up around the plants and in some cases killing the plants. Watering the first year during dry periods will help get the plants established. Mulching every year is not necessary. Raking the old mulch and turning it over is all that is needed. When necessary only install one inch of mulch and do not place the mulch closer than 3" to the trunks or stems of woody plants.

Trees

- The first year watering during dry periods will be necessary.
- 3" inches of mulch maybe used. The mulch should be kept 3 inches from the trunk.
- Fertilizing is not necessary for the first year. Fertilizing in subsequent years only when and if the foliage is looking weak.
- Fertilization should occur prior to Mat 31st or after trees have dropped their leaves for the year.
- Prune dead wood once a year.
- Depending on the amount of compaction the bed area receives, deep root aeration may be needed over time

Woody Shrubs

- The first year watering during dry periods will be necessary.
- 3" inches of mulch maybe used. The mulch should be kept 3 inches from the stems.
- Fertilizing is not necessary for the first year. Fertilizing in subsequent years only when and if the foliage is looking weak.
- Fertilization should occur prior to Mat 31st or after shrubs have dropped their leaves or gone dormant for the year.
- Prune dead wood once a year.

Grasses

- Grasses only need to be clipped back at the end of the growing season and all the clippings removed from the area.
- Do not over mulch. Too much mulch will prohibit the grass from developing into a strong clump.

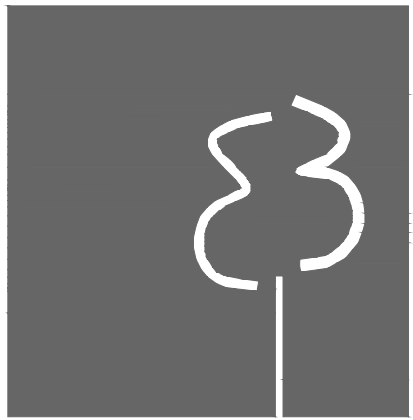
Perennials

- All perennials need to be pruned back after the first or second hard frost. A two-step method; first dead head all the flower heads and let drop to the ground for re-seeding. Second cut the stems back to 3" above the ground and remove the stem and leaf litter and place in compost. Do not over mulch. Too much mulch will prohibit the growth and development
- Fertilizing perennials once in the spring with a low phosphate fertilizer will help the plants to get started in the spring.

www.terrainplanning.com

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T:603-491-2322



terrain
planning & design llc

311 kast hill road
hopkinton, nh 03229
603. 491. 2322
terrainplanning.com

3 GREEN STREET
WALDRON TOWERS

Site Location:
3 Green Street
Dover, NH
Tax Map 1, Lot 42

Prepared For:
Berry Surveying & Engineering
335 Second Crown Point Rd
Barrington, NH 03825

LANDSCAPING
PLAN

DATE:

SCALE: 1" = 20'

PROJECT #: 2298

Drawn By: JB

Checked By: ERB

REVISIONS: DATE:
Issued for Client Review

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L - 01

SHEET 7 OF 11



E1

SILT FENCE CONSTRUCTION SPECIFICATIONS

- WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES AND FILTER CLOTH SHALL BE FASTENED TO WOVEN WIRE EVERY 24" AT TOP MID AND BOTTOM SECTIONS AND BE EMBEDDED INTO GROUND A MINIMUM OF 8" THE FENCE POSTS SHALL BE A MINIMUM 48" LONG, SPACED A MAXIMUM 6' APART, AND DRIVEN A MINIMUM OF 16" INTO THE GROUND.
- WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER, THE ENDS OF THE FABRIC SHALL BE OVERLAPPED BY SIX INCHES, FOLDED AND STAPLED TO PREVENT SEDIMENT FROM BY-PASSING.
- MAINTENANCE SHALL BE PERFORMED AS NEEDED AND SEDIMENT REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE AND PROPERLY DISPOSED OF. SEE MAINTENANCE NOTE BELOW, REMOVAL OF SEDIMENT REQUIRED AT A DEPTH OF 6-INCHES.
- PLACE THE ENDS OF THE SILT FENCE UP CONTOUR TO PROVIDE FOR SEDIMENT STORAGE.
- SILT FENCES SHALL BE REMOVED WHEN NO LONGER NEEDED AND THE SEDIMENT COLLECTED SHALL BE DISPOSED AS DIRECTED BY THE ENGINEER.
- THE AREA DISTURBED BY THE REMOVAL SHALL BE SMOOTHED AND RE-VEGETATED.
- TO BE CONSTRUCTED IAW NH SWM #3 4-2 SEDIMENT CONTROL PRACTICES, SILT FENCE, PAGE 90.

SILT FENCE MAINTENANCE

- SILT FENCES SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. ANY REPAIRS THAT ARE REQUIRED SHALL BE MADE IMMEDIATELY.
- IF THE FABRIC ON A SILT FENCE SHOULD DECOMPOSE OR BECOME INEFFECTIVE DURING THE EXPECTED LIFE OF THE FENCE, THE FABRIC SHALL BE REPLACED PROMPTLY.
- SEDIMENT DEPOSITS SHOULD BE REMOVED WHEN THEY REACH SIX-INCHES IN DEPTH.
- SEDIMENT DEPOSITS THAT ARE REMOVED OR LEFT IN PLACE AFTER THE FABRIC HAS BEEN REMOVED SHALL BE GRADED TO CONFORM WITH THE EXISTING TOPOGRAPHY AND VEGETATED.

SILT FENCE DETAIL
NOT TO SCALE

E5

STABILIZED CONSTRUCTION ENTRANCE

NOT TO SCALE

- STONE FOR A STABILIZED CONSTRUCTION ENTRANCE SHALL BE 3 INCH ANGULAR STONE, RECLAIMED STONE, OR RECYCLED CONCRETE EQUIVALENT.
- THE LENGTH OF THE STABILIZED ENTRANCE SHALL NOT BE LESS THAN 75 FEET, EXCEPT THAT THE MINIMUM LENGTH MAY BE REDUCED TO 50 FEET IF A 3-INCH TO 6-INCH BERM IS INSTALLED AT THE ENTRANCE OF THE PROJECT SITE.
- THE THICKNESS OF THE STONE FOR THE STABILIZED ENTRANCE SHALL NOT BE LESS THAN 6 INCHES.
- THE WIDTH OF THE ENTRANCE SHALL NOT BE LESS THAN THE FULL WIDTH OF THE ENTRANCE WHERE INGRESS OR EGRESS OCCURS OR 10 FEET, WHICHEVER IS GREATER.
- GEOTEXTILE FILTER CLOTH SHALL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING.
- ALL SURFACE WATER THAT IS FLOWING TO OR DIVERTED TOWARD THE CONSTRUCTION ENTRANCE SHALL BE PIPED BENEATH THE ENTRANCE. IF PIPING IS IMPRACTICAL A BERM WITH 5:1 SLOPES THAT CAN BE CROSSED BY VEHICLES MAY BE SUBSTITUTED FOR THE PIPE.
- THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEAN OUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, WASHED, OR TRACKED ONTO PUBLIC RIGHT-OF-WAY MUST BE REMOVED PROMPTLY.
- TO BE CONSTRUCTED IAW NH SWM #3 4-2 SEDIMENT CONTROL PRACTICES, TEMPORARY CONSTRUCTION EXIT, PAGE 124.

E6

EROSION CONTROL MIX BERM

NOT TO SCALE

EROSION CONTROL MIX BERMS SHALL BE USED ONLY AS FOLLOWS:

- BERMS SHALL BE USED IN AREAS WHERE EROSION WILL OCCUR ONLY IN THE FORM OF SHEET EROSION AND THERE IS NO CONCENTRATION OF WATER IN A CHANNEL OR DRAINAGE WAY ABOVE THE BERM.
- THE BERMS SHALL BE INSTALLED FOLLOWING THE CONTOUR OF THE LAND AS CLOSELY AS POSSIBLE.
- THE BERMS SHALL BE INSTALLED ON SLOPES LESS THAN 5%.
- SUBJECT TO (E), BELOW, THE MIX SHALL HAVE AN ORGANIC PORTION BETWEEN 80 AND 100% DRY WEIGHT BASIS, AND BE FIBROUS AND ELONGATED SUCH AS FROM SHREDDED BARK, STUMP GRINDINGS, COMPOSED BARK, OR EQUIVALENT MANUFACTURED PRODUCTS. WOOD AND BARK CHIPS, GROUND CONSTRUCTION DEBRIS, OR REPROCESSED WOOD PRODUCTS SHALL NOT BE USED AS ORGANIC MATERIAL.
- THE MIX SHALL NOT CONTAIN SILTS, CLAY, OR FINE SANDS.
- THE MIX SHALL HAVE A PARTICLE SIZE BY WEIGHT OF 70 TO 85% PASSING A 6-INCH SCREEN AND A MAXIMUM OF 85% PASSING THE 0.75-INCH SCREEN.
- THE MIX PH SHALL BE BETWEEN 5.0 AND 8.0.
- THE BERM SHALL BE AT LEAST 12 INCHES HIGH AND AT LEAST 2 FEET WIDE.
- TO BE CONSTRUCTED IAW NH SWM #3 4-2 SEDIMENT CONTROL PRACTICES, EROSION CONTROL MIX BERMS, PAGE 106.

E2

RECOMMENDED MAINTENANCE SCHEDULE

- EACH SILTSACK SHOULD BE INSPECTED AFTER EVERY MAJOR RAIN EVENT, AND MUST BE MAINTAINED.
- IF THERE HAVE BEEN NO MAJOR EVENTS, SILTSACK SHOULD BE INSPECTED EVERY 2-3 WEEKS.
- THE RESTRAINT CORD SHOULD BE VISIBLE AT ALL TIMES. IF CORD IS COVERED WITH SEDIMENT, THE SILTSACK SHOULD BE EMPTIED.
- TO BE USED IN ALL AREAS WHERE THERE WILL BE TRAFFIC.
- ARE SUBJECT TO DAMAGE BY SNOW PLOWS, AND MUST BE INSPECTED AFTER ANY SNOW EVENT AND REPLACED AS REQUIRED.

TO BE CONSTRUCTED IAW NH SWM #3 4-2 SEDIMENT CONTROL PRACTICES, TEMPORARY STORM DRAIN INLET PROTECTION, PAGE 118.

SILTSACK DETAIL
NOT TO SCALE

E7

NOTES:

- ALL MATERIAL TO MEET FILTREXX SPECIFICATIONS.
- CHECK DAM SHOULD BE USED IN AREAS THAT DRAIN 1 ACRE OR LESS.
- SEDIMENT SHOULD BE REMOVED FROM BEHIND CHECK DAM ONCE THE ACCUMULATED HEIGHT HAS REACHED 1/2 THE HEIGHT OF THE CHECK DAM.
- CHECK DAM CAN BE DIRECT SEEDED AT THE TIME OF INSTALLATION.
- CONTRACTOR IS REQUIRED TO BE A FILTREXX CERTIFIED INSTALLER.

FILTREXX CHECK DAM
NOT TO SCALE

E10

NOTES:

- ALL MATERIAL TO MEET FILTREXX SPECIFICATIONS.
- FILTER MEDIA FILL TO MEET APPLICATION REQUIREMENTS.
- COMPOST MATERIAL TO BE DISPERSED ON SITE, AS DETERMINED BY ENGINEER.
- SILT SOCK MAY BE USED IN PLACE OF SILT FENCE OR OTHER SEDIMENT BARRIERS.
- SILT SOCK COMPOST/SOIL/ROCK/SEED FILL MATERIAL SHALL BE ADJUSTED AS NECESSARY TO MEET THE REQUIREMENTS OF THE SPECIFIC APPLICATION.
- FILTREXX SOCK IS A REGISTERED TRADEMARK OF FILTREXX INTERNATIONAL, LLC.
- SILT FENCE IS NOT A SUBSTITUTION FOR SILT SOCK AND ANY EQUAL SUBSTITUTION TO BE APPROVED.
- TO BE CONSTRUCTED IAW FILTREXX, SECTION 1: EROSION & SEDIMENT CONTROL (PAGE 323) - CONSTRUCTION ACTIVITIES, SWPPP CUT SHEET: FILTREXX SEDIMENT CONTROL.

FILTREXX SEDIMENT CONTROL
NOT TO SCALE

E3

TO BE CONSTRUCTED IAW NH SWM #3 4-1 EROSION CONTROL PRACTICES, SOIL STOCKPILE PRACTICES, PAGE 46.

TOPSOIL STOCKPILE MOUND
NOT TO SCALE

E8

NOTES:

- ALL MATERIAL TO MEET FILTREXX SPECIFICATIONS.
- FILTER MEDIA FILL TO MEET APPLICATION REQUIREMENTS.
- COMPOST MATERIAL TO BE DISPERSED ON SITE, AS DETERMINED BY ENGINEER.

FILTREXX INLET PROTECTION
NOT TO SCALE

E4

CONSTRUCTION SAFETY FENCE

NOT TO SCALE

LEGEND

SAF12	48" ORANGE FENCE, 12 FEET O.C.
SAF11	48" ORANGE FENCE, 11 FEET O.C.
SAF10	48" ORANGE FENCE, 10 FEET O.C.
SAF9	48" ORANGE FENCE, 9 FEET O.C.
SAF8	48" ORANGE FENCE, 8 FEET O.C.
SAF7	48" ORANGE FENCE, 7 FEET O.C.
SAF6	48" ORANGE FENCE, 6 FEET O.C.

48" Safety Fence, 72" T-Posts

1. ALL SENSITIVE AREAS SHALL BE PROTECTED AS PER PLAN.
2. ALL TREES IN THE CONSTRUCTION AREA NOT SPECIFICALLY DESIGNATED FOR REMOVAL SHALL BE PRESERVED AND PROTECTED WITH HIGH VISIBILITY FENCE AS PER PLAN.
3. WHEN PRACTICABLE, INSTALL HIGH VISIBILITY 3 FEET OUTSIDE OF THE DRIP LINE OF THE TREE.
4. SAFETY FENCE SHOULD BE FASTENED SECURELY TO THE T-POSTS.
5. THE FENCING MUST REMAIN IN PLACE DURING ALL PHASES OF CONSTRUCTION; ANY CHANGE OF THE PROTECTIVE FENCING MUST BE APPROVED.

E9

NOTES:

- HAY BALES BARRIERS MAY ONLY BE USED FOR A MAXIMUM OF 60 DAYS AND ARE NOT RECOMMENDED FOR PERIMETER CONTROL.
- TO BE INSTALLED IAW NH SWM #3, 4-2 SEDIMENT CONTROL, STRAW OR HAY BALE BARRIER.
- REQUIRED TO SHOW DETAIL, BUT DO NOT RECOMMEND USE OF HAY BALES FOR EROSION CONTROL.

STAKED HAYBALE DETAIL
NOT TO SCALE

E10

NOTES:

- ALL MATERIAL TO MEET FILTREXX SPECIFICATIONS.
- FILTER MEDIA FILL TO MEET APPLICATION REQUIREMENTS.
- COMPOST MATERIAL TO BE DISPERSED ON SITE, AS DETERMINED BY ENGINEER.

FILTREXX SEDIMENT CONTROL
NOT TO SCALE

CITY OF DOVER PLANNING DEPARTMENT FILE #

EROSION & SEDIMENT CONTROL DETAILS

LAND OF DOVER HOUSING AUTHORITY

3 GREEN STREET DOVER, N.H.

TAX MAP 1, LOT 42

BERRY SURVEYING & ENGINEERING

335 SECOND CROWN POINT ROAD BARRINGTON, NH 03825 (603)332-2863

SCALE : AS SHOWN

DATE : OCTOBER 14, 2024

FILE NO. : DB 2023-008

STATE OF NEW HAMPSHIRE

KENNETH A. BERRY

PROFESSIONAL ENGINEER

SHEET 8 OF 11

E 1 1

TEMPORARY EROSION CONTROL MEASURES

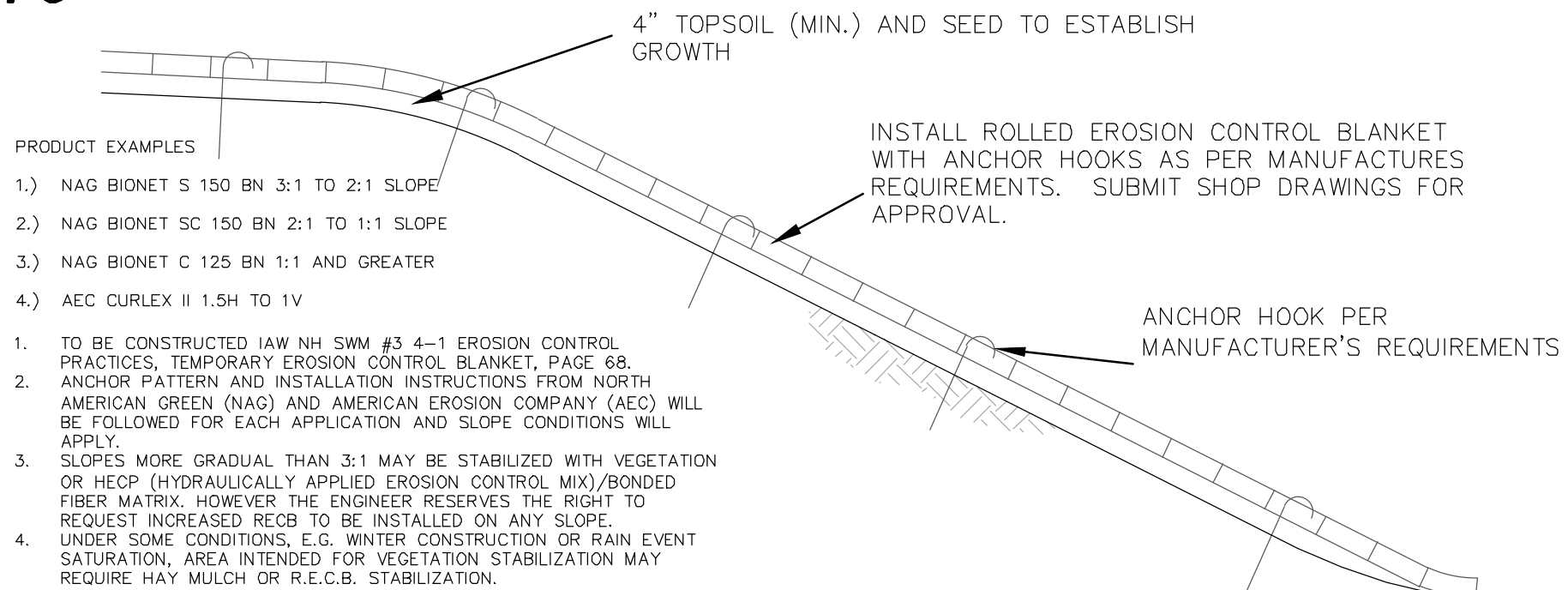
1. THE SMALLEST PRACTICAL AREA OF LAND SHALL BE EXPOSED AT ANY ONE TIME.
2. EROSION, SEDIMENT AND DETENTION MEASURES SHALL BE INSTALLED AS SHOWN ON THE PLANS AND AT LOCATIONS AS REQUIRED, DIRECTED BY THE ENGINEER.
3. ALL DISTURBED AREAS SHALL BE RETURNED TO ORIGINAL GRADES AND ELEVATIONS. DISTURBED AREAS SHALL BE LOAMED WITH A MINIMUM OF 4" OF LOAM AND SEEDED WITH NOT LESS THAN ONE POUND OF SEED PER 50 SQUARE YARDS OF AREA. (SEE SEED SPECIFICATIONS THIS SHEET)
4. ALL DISTURBED AREAS WILL BE REESTABLISHED WITHIN 45 DAYS. AT ANY ONE TIME, NO MORE THAN 5 ACRES, (217,800 Sq. Ft.) WILL BE DISTURBED.
5. SILT FENCES AND PERIMETER BARRIERS SHALL BE INSPECTED PERIODICALLY AND AFTER EVERY RAIN DURING THE LIFE OF THE PROJECT. ALL DAMAGED AREAS SHALL BE REPAIRED, SEDIMENT DEPOSITS SHALL PERIODICALLY BE REMOVED AND DISPOSED OF.
6. AFTER ALL DISTURBED AREAS HAVE BEEN STABILIZED, THE TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE REMOVED AND THE AREA DATED BY THE REMOVAL SMOOTHED AND RE-VEGETATED.
7. PER THE EPA CDP REQUIREMENTS THERE WILL BE REPORTS OF THE EROSION CONTROL INSPECTIONS IAW SWPPP PREPARED BY BS&E. ALL EROSION CONTROLS SHALL BE INSPECTED WEEKLY AND WITHIN 24 HOURS AFTER 0.25" OR GREATER RAIN EVENT.
8. DITCHES, SWALES, AND BASINS SHALL BE STABILIZED PRIOR TO DIRECTING RUNOFF TO THEM.
9. NO-TRAFFIC EXPOSED SOIL SURFACES WITH CONSTRUCTION EQUIPMENT, IF FEASIBLE, PERFORM EXCAVATIONS WITH EQUIPMENT POSITIONED OUTSIDE THE LIMITS OF THE INFILTRATION SYSTEM.
10. DRIVEWAYS AND CUT AND FILL SLOPES MUST BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINAL GRADE.
11. STABILIZATION MEANS:
 - 11.1. A MINIMUM OF 85% OF VEGETATIVE COVER HAS BEEN ESTABLISHED.
 - 11.2. A MINIMUM OF 3 INCHES OF NON-EROSIVE MATERIAL SUCH AS STONE OR RIP RAP HAS BEEN INSTALLED, OR
 - 11.3. EROSION CONTROL BLANKETS HAVE BEEN INSTALLED.
12. THIS PROJECT IS TO BE MANAGED IN A MANNER THAT MEETS THE REQUIREMENTS AND INTENT OF RSA 430:53 AND CHAPTER AGR 3800 RELATIVE TO INVASIVE SPECIES.
13. THE NHDES STORMWATER MANUAL, IN THREE VOLUMES, DATED DECEMBER 2008, IS A PART OF THIS PLAN SET AND THE MORE RESTRICTIVE WILL GOVERN. (NH SWM)

E12

CONSTRUCTION SEQUENCE:

- 1) CUT AND REMOVE TREES IN CONSTRUCTION AREA ONLY AS REQUIRED, RELOCATE ANY PROJECT T.B.M.
- 2) CONSTRUCT AND/OR INSTALL TEMPORARY AND PERMANENT SEDIMENT EROSION AND DETENTION CONTROL FACILITIES AS SPECIFIED. EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED PRIOR TO ANY SOIL LAND DISTURBANCE AND MUST BE REVIEWED AND APPROVED BY THE COMMUNITY SERVICES DEPARTMENT.
- 3) EROSION, SEDIMENT AND DETENTION CONTROL FACILITY SHALL BE INSTALLED & STABILIZED PRIOR TO DIRECTING RUNOFF TO THEM. TEMPORARY DIVERSIONS MAY BE REQUIRED. POST CONSTRUCTION STORM WATER MANAGEMENT PRACTICES MUST BE INITIATED AND STABILIZED EARLY IN THE PROCESS.
- 4) CLEAR, CUT AND DISPOSE OF DEBRIS IN APPROVED FACILITY
- 5) CONSTRUCT TEMPORARY CULVERTS AS REQUIRED, OR DIRECTED
- 6) CONSTRUCT ROADWAYS FOR ACCESS TO DESIRED CONSTRUCTION AREAS. ALL ROADS SHALL BE STABILIZED IMMEDIATELY
- 7) START BUILDING CONSTRUCTION AND INSTALL VINYL FENCE AROUND PERIMETER OF PROJECT.
- 8) INSTALL PIPE AND CONSTRUCTION ASSOCIATED APPURTENANCES AS REQUIRED OR DIRECTED. INSTALL RAIN GARDENS. ALL DISTURBED AREAS SHALL BE STABILIZED IMMEDIATELY AFTER GRADING.
- 9) BEGIN PERMANENT AND TEMPORARY SEEDING AND MULCHING. ALL CUT AND FILL SLOPES AND DISTURBED AREAS SHALL BE SEEDED OR MULCHED AS REQUIRED, OR DIRECTED. NO AREA IS ALLOWED TO BE DISTURBED FOR A LENGTH OF TIME THAT EXCEEDS 60 DAYS BEFORE BEING STABILIZED. DAILY, OR AS REQUIRED. ALL ROADWAYS AND PARKING AREAS SHALL BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADES. ALL CUT AND FILL SLOPES SHALL BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADES.
- 10) CONSTRUCT TEMPORARY BERMS, DRAINS, DITCHES, SILT FENCES, SEDIMENT TRAPS, ETC. MULCH AND SEED AS REQUIRED.
- 11) INSPECT AND MAINTAIN ALL EROSION AND SEDIMENT CONTROL MEASURES DURING CONSTRUCTION. ALL SWPPP INSPECTIONS MUST BE CONDUCTED BY A QUALIFIED PROFESSIONAL SUCH AS A PROFESSIONAL ENGINEER (PE), A CERTIFIED PROFESSIONAL IN EROSION AND SEDIMENT CONTROL (CPECC), A CERTIFIED EROSION SEDIMENT AND STORM WATER INSPECTOR (CESSWI), OR A CERTIFIED PROFESSIONAL IN STORM WATER QUALITY (CPSWQ). INSPECTION REPORTS SHALL BE SUBMITTED TO THE COMMUNITY SERVICES DEPARTMENT.
- 12) COMPLETE PERMANENT SEEDING AND LANDSCAPING.
- 13) REMOVE TEMPORARY EROSION CONTROL MEASURES AFTER SEEDING AREAS HAVE ESTABLISHED THEMSELVES AND SITE IMPROVEMENTS ARE COMPLETE.
- 14) SMOOTH AND REVEGETATE ALL DISTURBED AREAS.
- 15) FINISH PAVING ALL ROADWAYS.

E16



ROLLED EROSION CONTROL BLANKET (RECB)
SLOPE STABILIZATION DETAIL
NOT TO SCALE

E13

WINTER STABILIZATION NOTES

1. ALL DISTURBED AREAS THAT DO NOT HAVE AT LEAST 85% VEGETATIVE COVERAGE PRIOR TO OCTOBER 15TH SHALL BE STABILIZED BY APPLYING MULCH AT A RATE OF 3-4 TONS PER ACRE. ALL SIDE SLOPES, STEEPER THAN 4:1, THAT ARE NOT DIRECTED TO SWALES OR DETENTION BASINS, SHALL BE LINED WITH BIODEGRADABLE/PHOTODEGRADABLE "JUTE MATTING" (EXCELSIOR'S CURLED OR EQUAL). ALL OTHER SLOPES SHALL BE MULCHED AND TACKED AT A RATE OF 3-4 TONS PER ACRE. THE APPLICATION OF MULCH AND/OR JUTE MATTING SHALL NOT OCCUR OVER EXISTING SNOW COVER. IF THE SITE IS ACTIVE AFTER OCTOBER 15TH, ANY SNOW THAT ACCUMULATES ON DISTURBED AREAS SHALL BE REMOVED, PRIOR TO SPRING. THAW ALL AREAS WILL BE STABILIZED, AS DIRECTED ABOVE.
2. ALL SWALES THAT DO NOT HAVE FULLY ESTABLISHED VEGETATION SHALL BE EITHER LINED WITH TEMPORARY JUTE MATTING OR TEMPORARY STONE CHECK DAMS (APPROPRIATELY SPACED). STONE CHECK DAMS WILL BE MAINTAINED THROUGHOUT THE WINTER MONTHS. IF THE SWALES ARE TO BE MATTED WITH PERMANENT LINERS OR RIPRAP WITH ENGINEERING FABRIC, THIS SHALL BE COMPLETED PRIOR TO WINTER SHUTDOWN OR AS SOON AS THEY ARE PROPERLY GRADED AND SHAPED.
3. PRIOR TO OCT. 15TH ALL ROADWAY AND PARKING AREAS SHALL BE BROUGHT UP TO AND THROUGH THE BANK RUN GRAVEL APPLICATION. IF THESE AREAS' ELEVATIONS ARE PROPOSED TO REMAIN BELOW THE PROPOSED SUBGRADE ELEVATION, THE SUBGRADE MATERIAL SHALL BE ROUGHLY CROWNED AND A 3" LAYER OF CRUSHED GRAVEL SHALL BE PLACED AND COMPACTED. THIS WILL ALLOW THE SUBGRADE TO SHED RUNOFF AND WILL REDUCE ROADWAY EROSION. THIS CRUSHED GRAVEL DOES NOT HAVE TO CONFORM TO NH DOT 304.3, BUT SHALL HAVE BETWEEN 15-25% PASSING THE #200 SIEVE AND 5-15% PASSING THE #40 SIEVE. IF THE SITE IS ACTIVE AFTER OCTOBER 15TH, ANY ACCUMULATED SNOW SHALL BE REMOVED FROM ALL ROADWAY AND PARKING AREAS.
4. AFTER OCTOBER 15TH, THE END OF NEW HAMPSHIRE'S AVERAGE GROWING SEASON, NO ADDITIONAL LOAM SHALL BE SPREAD ON SIDE SLOPES AND SWALES. THE STOCKPILES THAT WILL BE LEFT UNDISTURBED UNTIL SPRING SHALL BE SEEDERED WITH 100% PURE GRASS SEED. ALL STOCKPILES SHALL BE MULCHED AT A RATE OF 3-4 TONS PER ACRE. ALL STOCKPILES THAT WILL REMAIN THROUGHOUT THE WINTER SHALL BE SURROUNDED WITH SILT FENCING.

E15

DEFINITION OF STABLE:

PER ENV-WQ 1500 ALTERATION OF TERRAIN

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

ADDITION STABILIZATION NOTES:

5. HAY MULCH OR OTHER APPROVED METHODS SHALL BE USED TO CONTROL EROSION OF NEWLY GRADED AREAS. ALL CUT AND FILL SLOPES SHALL BE SEEDED AND MULCHED WITHIN 72 HOURS AFTER THEIR CONSTRUCTION.
6. DISTURBED SOIL AREAS SHALL BE EITHER TEMPORARILY OR PERMANENTLY STABILIZED. IN AREAS WHERE FINAL GRADING HAS NOT OCCURRED, TEMPORARY STABILIZATION MEASURES SHOULD BE IN PLACE WITHIN SEVEN (7) CALENDAR DAYS FOR EXPOSED AREAS THAT ARE WITHIN ONE HUNDRED (100) FEET OF A SURFACE WATER BODY OR A WETLAND AND NO MORE THAN 14 CALENDAR DAYS FOR ALL OTHER AREAS. PERMANENT STABILIZATION SHOULD BE IN PLACE WITHIN THREE (3) CALENDAR DAYS FOLLOWING COMPLETION OF FINAL GRADING OF EXPOSED SOIL AREAS.

NOTE: THIS PROJECT IS TO BE MANAGED IN A MANNER THAT MEETS THE REQUIREMENTS AND INTENT OF RSA 430:53 AND CHAPTER AGR 3800 RELATIVE TO INVASIVE SPECIES.

SEEDING RATES

MIXTURE	POUNDS PER ACRE	POUNDS PER 1,000 Sq. Ft.
A. TALL FESCUE	20	0.45
CREeping RED FESCUE	20	0.45
TOTAL	40	0.90
B. TALL FESCUE	15	0.35
CREeping RED FESCUE	10	0.25
OR PR FLR PEA	30	0.75
TOTAL	40 or 30	0.90 or 1.35
C. TALL FESCUE	24	0.55
CREeping RED FESCUE	24	0.55
BIRDS FOOT TREFOL	REMOVED	REMOVED
TOTAL	48	1.10
D. TALL FESCUE	20	0.45
TALL PEA	20	0.45
TOTAL	50	1.20
E. CREeping RED FESCUE 1/2	50	1.15
WINTER CLOVER 1/2	100	2.30
TOTAL	150	3.60
F. TALL FESCUE 1	150	3.60

CONSERVATION MIX TO BE PROVIDED BY
NEW ENGLAND WETLAND PLANTS, INC. OR
APPROVED EQUAL

NOTE: CONSERVATION MIX TO BE USED ON ALL 2:1 SLOPES LINED WITH RECB & DISTURBANCE WITHIN THE WETLAND BUFFER.

New England Conservation/Wildlife Mib

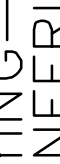
Botanical Name	Common Name	Indicator
<i>Rhynchos virginicus</i>	Virginia Wild Rye	FACW-
<i>Schizanthus scoparium</i>	Little Bluestem	FACU
<i>Andropogon gerardi</i>	Big Bluestem	FAC
<i>Festuca rubra</i>	Red Fescue	FACU
<i>Sorghastrum nutans</i>	Indian Grass	UPL
<i>Panicum virgatum</i>	Switch Grass	FACU
<i>Chamaecrista fasciculata</i>	Partridge Pea	FACU
<i>Desmodium canadense</i>	Snowy Tick Trefoil	FAC
<i>Asclepias tuberosa</i>	Butterfly Milkweed	NI
<i>Ridens frondosa</i>	Beggar Ticks	FACW
<i>Eupatorium purpureum (Eutrochium maculatum)</i>	Purple Joe Pye Weed	FAC
<i>Rudbeckia hirta</i>	Black Eyed Susan	FACU-
<i>Aster pilosus (Symphyotrichum pilosum)</i>	Heath (or Hairy) Aster	UPL
<i>Solidago juncea</i>	Early Goldenrod	

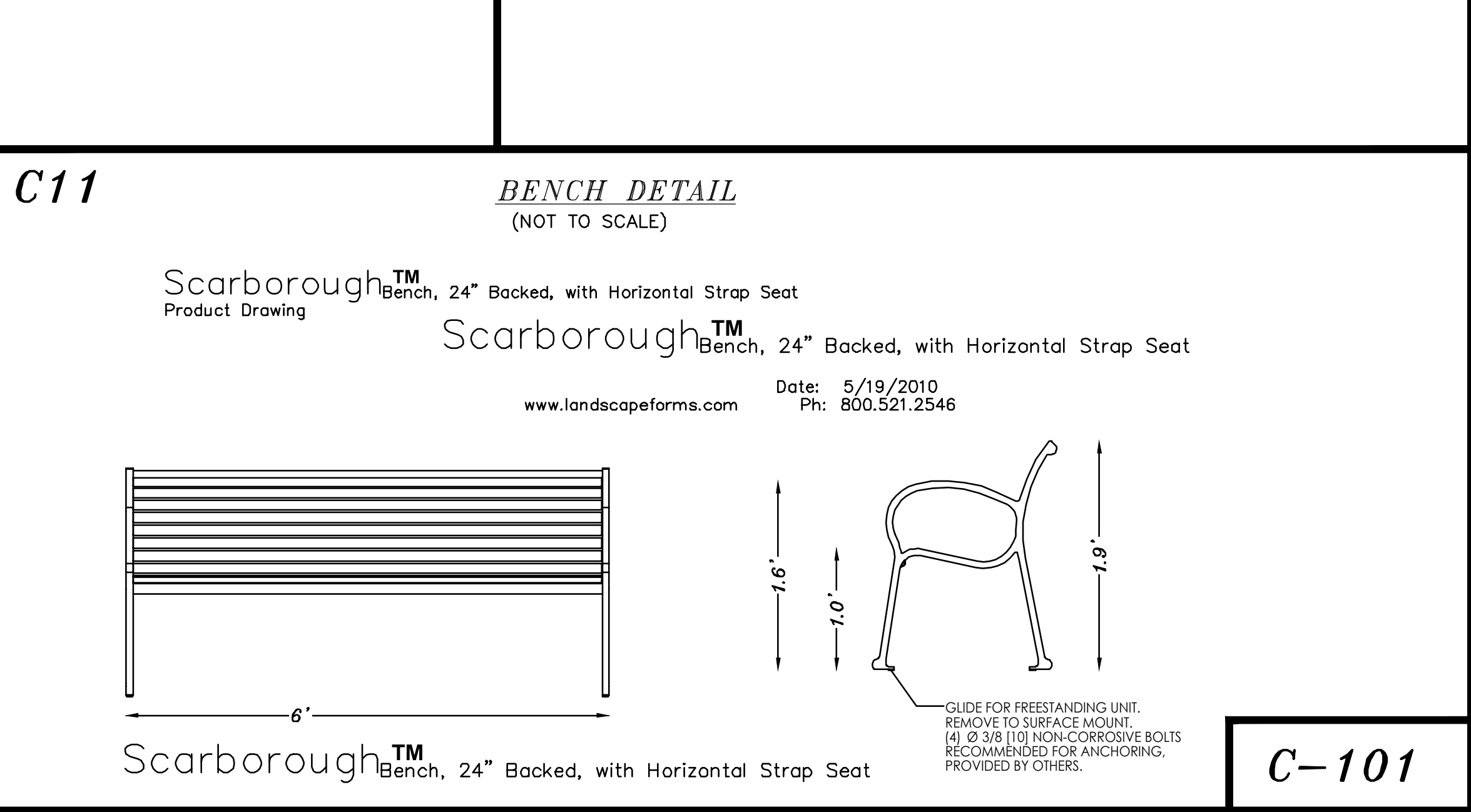
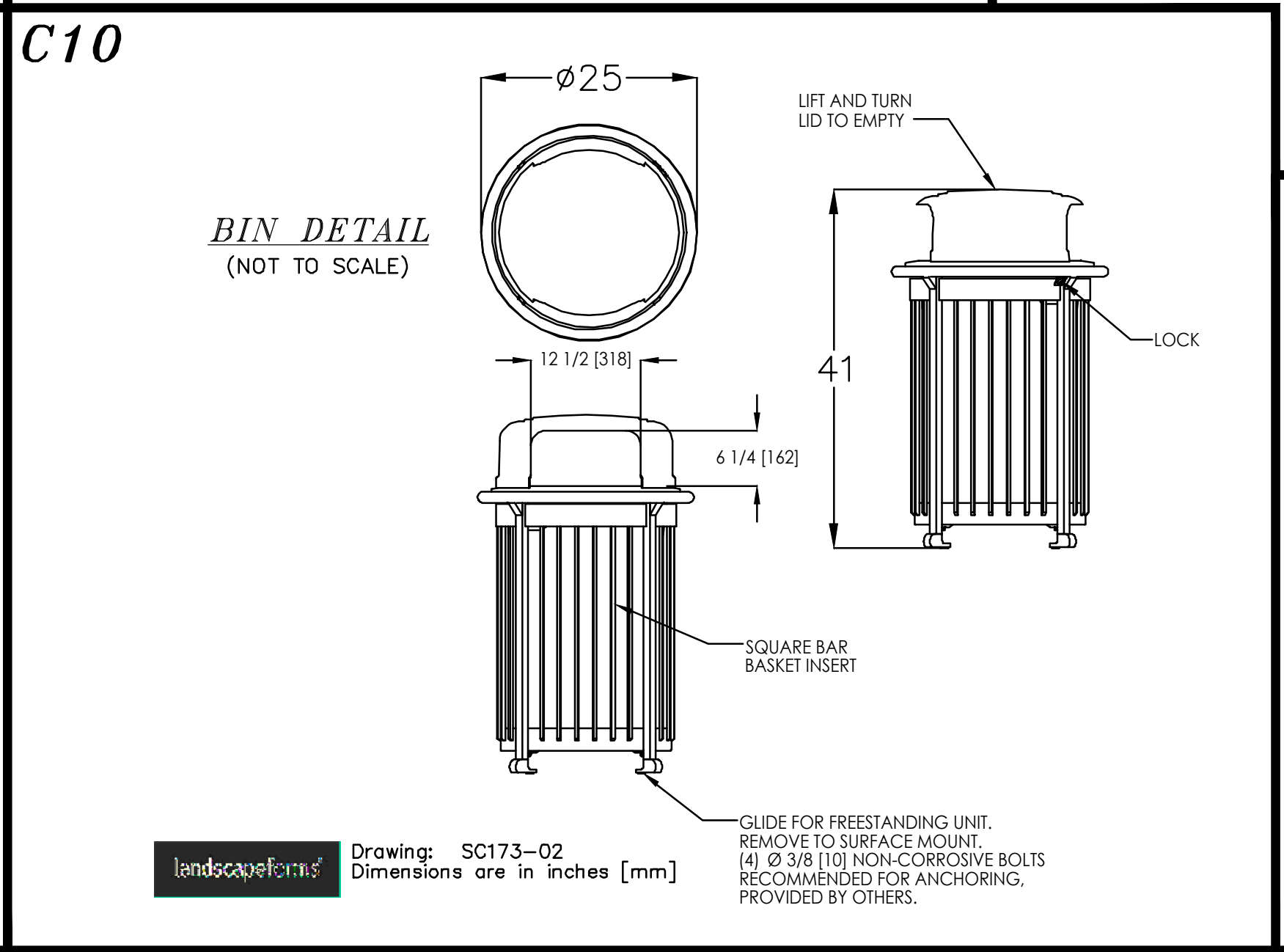
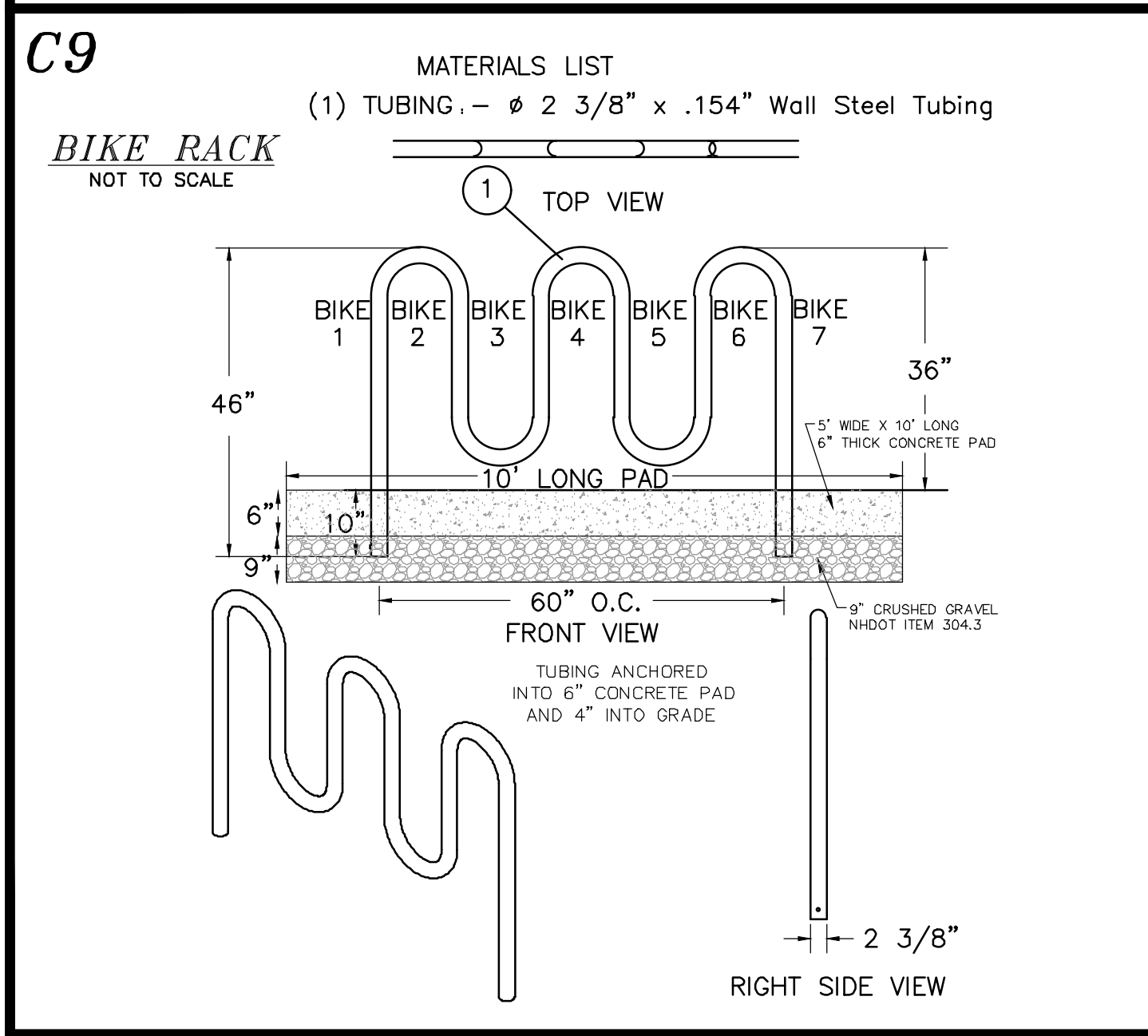
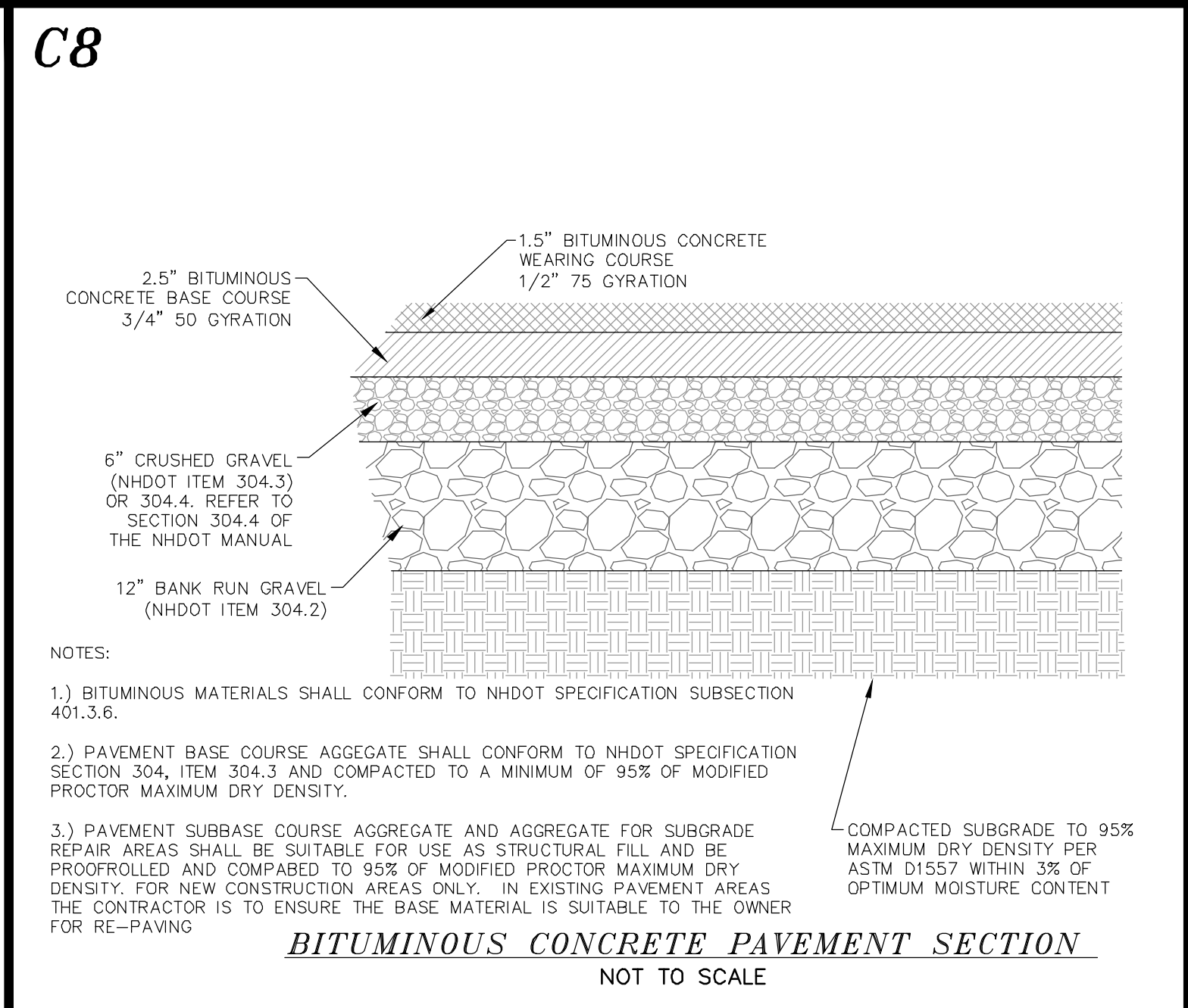
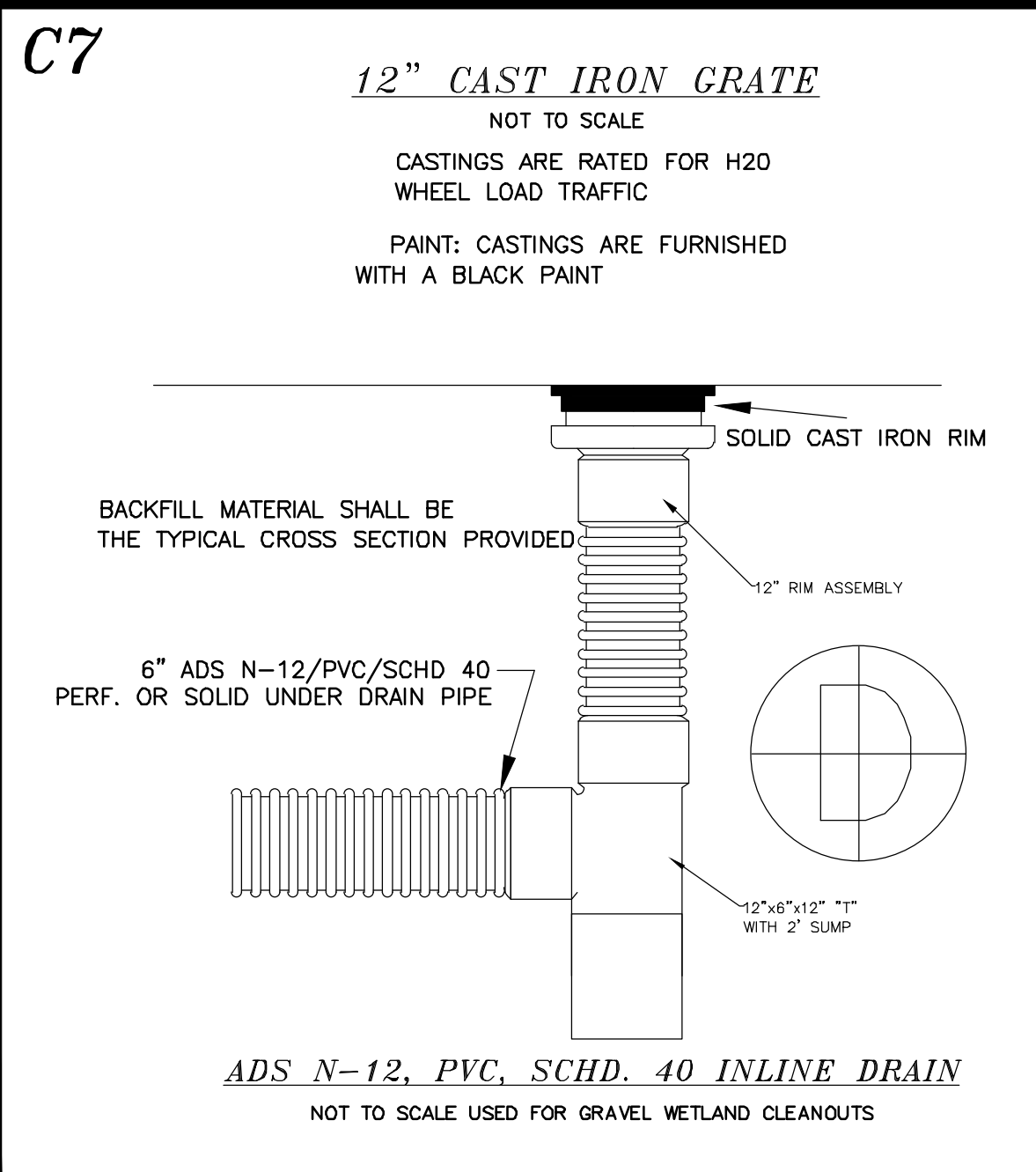
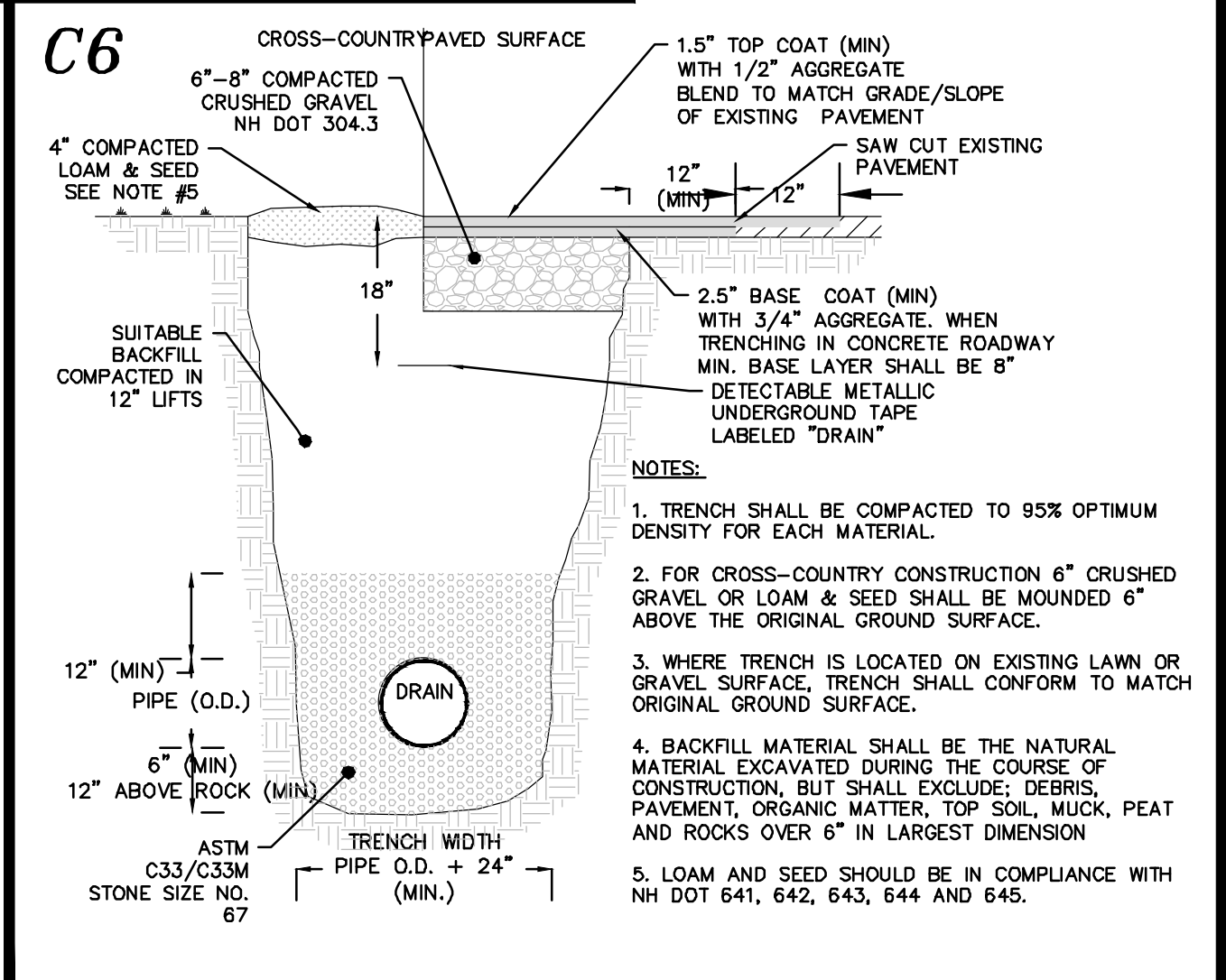
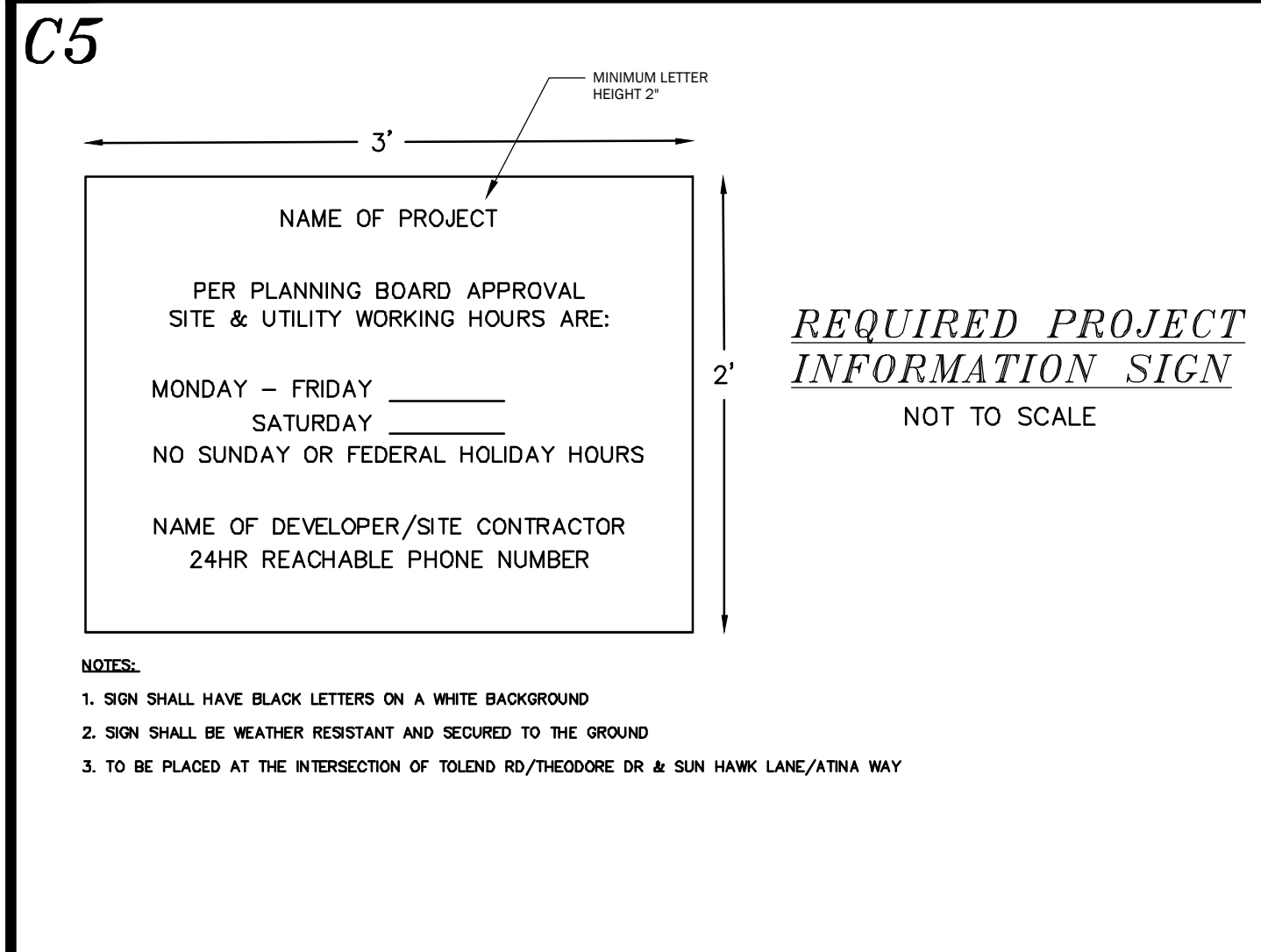
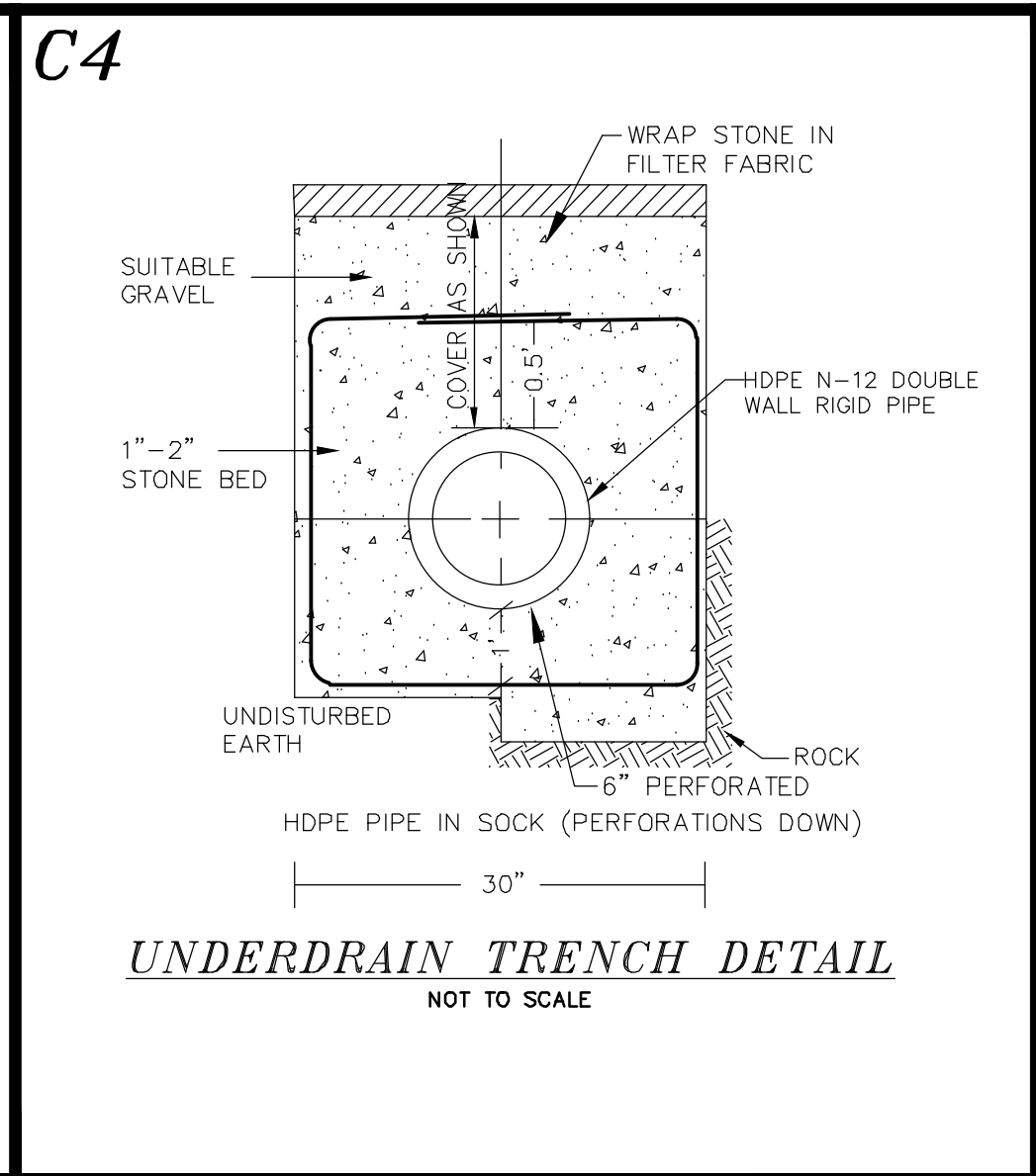
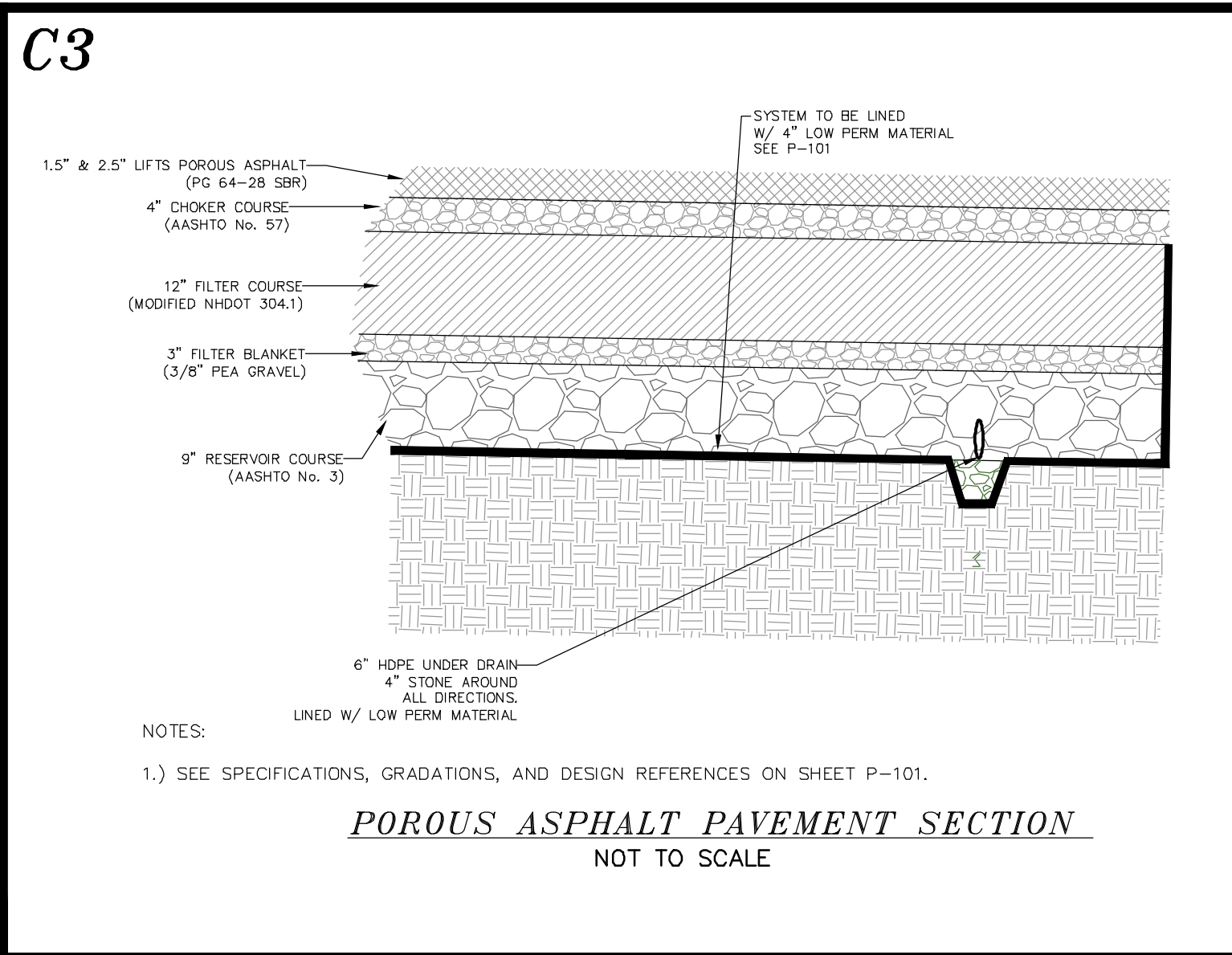
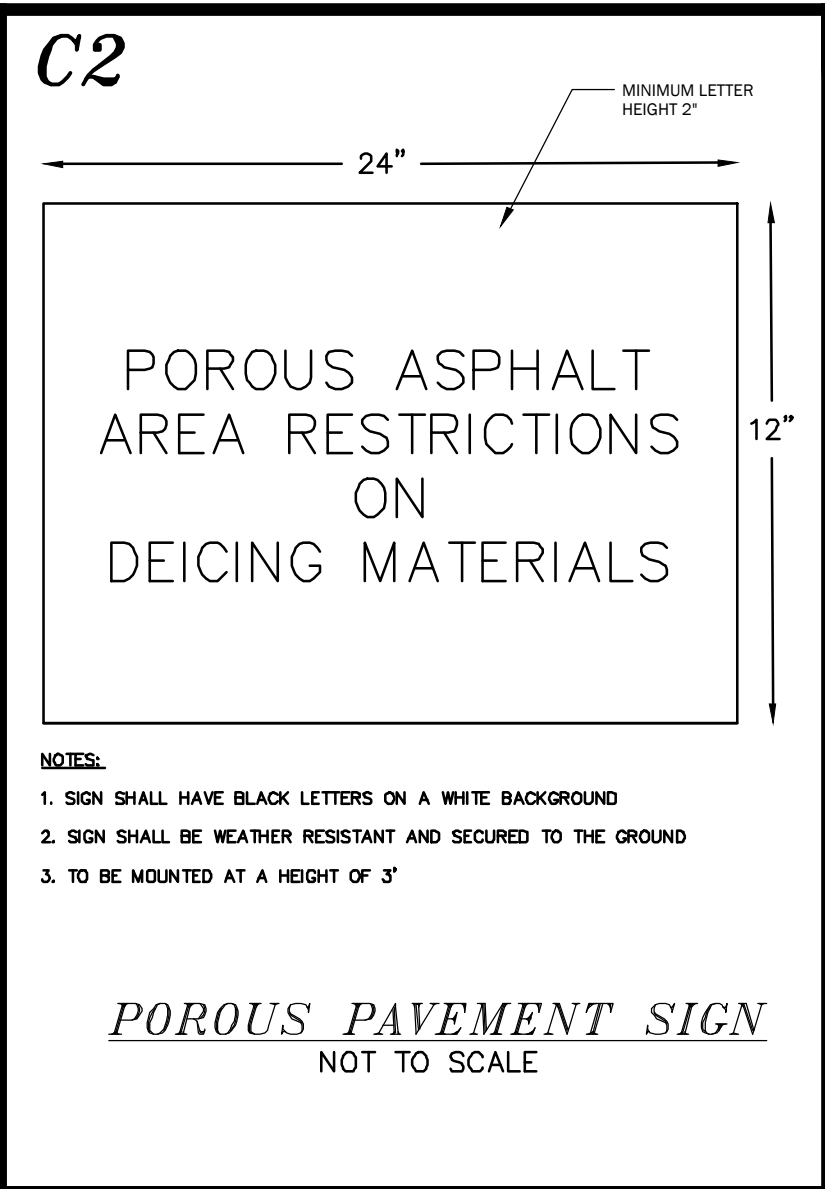
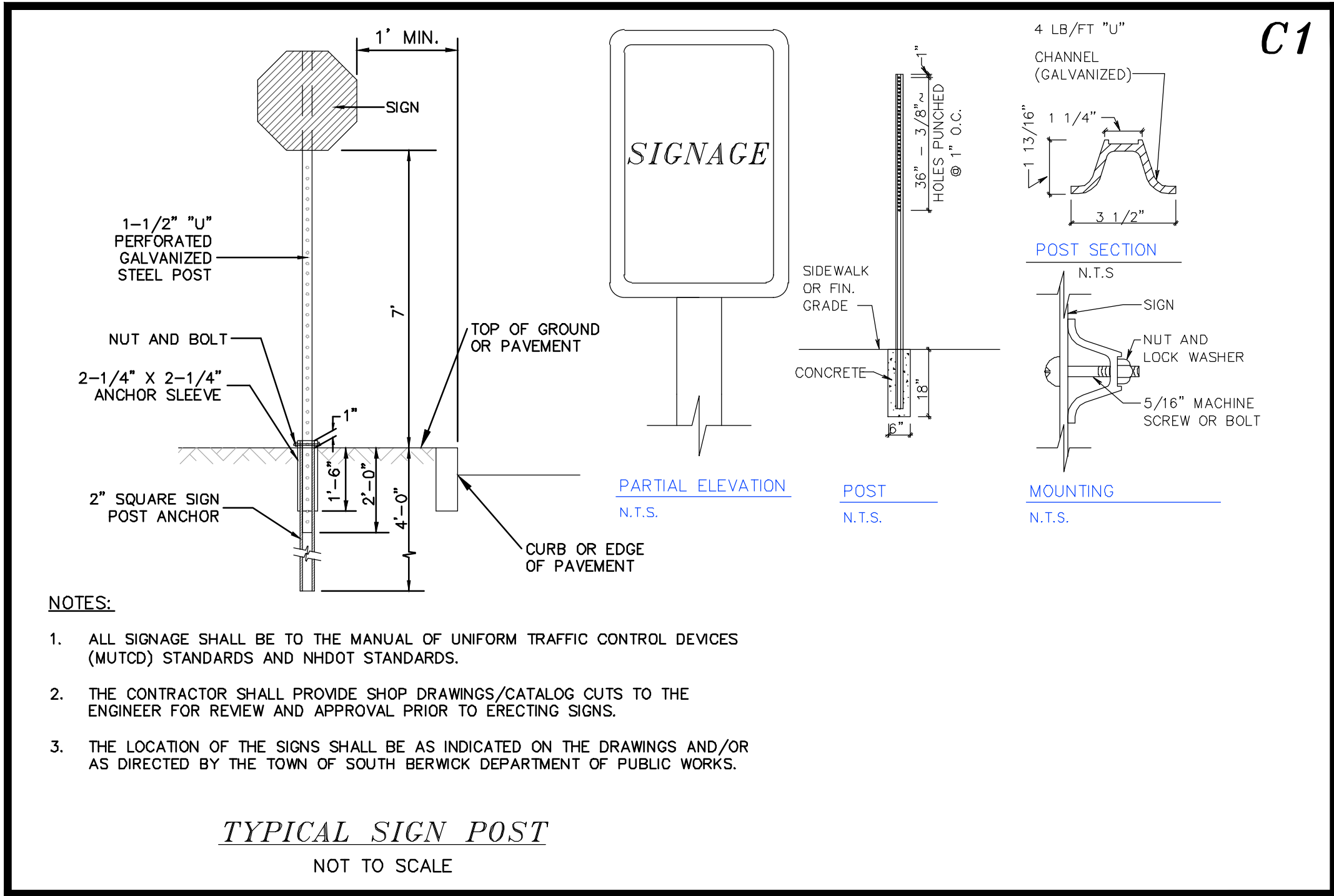
SEEDING SPECIFICATIONS

1. GRADING AND SHAPING
A. SLOPES SHALL NOT BE STEEPER THAN 2:1; 3:1 SLOPES OR FLATTER ARE PREFERRED.
WHERE MOWING WILL BE DONE, 3:1 SLOPES OR FLATTER ARE RECOMMENDED.
2. SEEDBED PREPARATION
A. SURFACE AND SEEPAGE WATER SHOULD BE DRAINED OR DIVERTED FROM THE SITE TO PREVENT DROWNING OR WINTER KILLING OF THE PLANTS.
B. STONES LARGER THAN 4 INCHES AND TRASH SHOULD BE REMOVED BECAUSE THEY INTERFERE WITH SEEDING AND FUTURE MAINTENANCE OF THE AREA. WHERE FEASIBLE, THE SOIL SHOULD BE TILLED TO A DEPTH OF ABOUT 4 INCHES TO PREPARE A SEED BED AND MIX FERTILIZER AND LIME INTO THE SOIL. THE SEEDBED SHOULD BE LEFT IN REASONABLY FIRM AND SMOOTH CONDITION. THE LAST TILLAGE OPERATION SHOULD BE PERFORMED ACROSS THE SLOPE WHEREVER PRACTICAL.
3. ESTABLISHING A STAND
A. LIME AND FERTILIZER SHOULD BE APPLIED PRIOR TO OR AT THE TIME OF SEEDING
AND INCORPORATED INTO THE SOIL KINDS AND AMOUNTS OF LIME AND FERTILIZER SHOULD BE BASED ON AN EVALUATION OF SOIL TESTS. WHEN A SOIL TEST IS NOT AVAILABLE, THE FOLLOWING MINIMUM AMOUNTS SHOULD BE APPLIED:
AGRICULTURAL LIMESTONE, 2 TONS PER ACRE OR 100LBS. PER 1,000 SQ.FT. NITROGEN(N), 50LBS. PER ACRE OR 1.1LBS. PER 1,000 SQ.FT.
PHOSPHATE(P2O5), 100LBS. PER ACRE OR 2.2LBS. PER 1,000 SQ.FT. POTASH(K2O), 100LBS. PER ACRE OR 2.2LBS. PER 1,000 SQ.FT.
(NOTE: THIS IS THE EQUIVALENT OF 50LBS. PER ACRE OF 10-20-20 FERTILIZER OR 1,000LBS. PER ACRE OF 5-10-10.)
4. B. SEED SHOULD BE SPREAD UNIFORMLY BY THE METHOD MOST APPROPRIATE FOR THE SITE. METHODS INCLUDE BROADCASTING, DRILLING AND HYDROSEEDING. WHERE BROADCASTING IS USED, COVER SEED WITH .25 INCH OF SOIL OR LESS, BY CULTIPACKING OR RAKING.
C. REFER TO TABLE(G-E1 THIS SHEET) FOR APPROPRIATE SEED MIXTURES AND TABLE(H-E1 THIS SHEET) FOR RATES OF SEEDING. ALL LEGUMES (CROWNWETCH, BIRDFOOT TREFOIL, AND ALFALFA) MUST BE INOCULATED WITH THEIR SPECIFIC INOCULANT.
D. WHEN SEEDED AREAS ARE MULCHED, PLANTINGS MAY BE MADE FROM EARLY SPRING TO EARLY OCTOBER. WHEN SEEDED AREAS ARE NOT MULCHED, PLANTINGS SHOULD BE MADE FROM EARLY SPRING TO MAY 20 OR FROM AUGUST 10 TO SEPTEMBER 1.
4. MULCH
A. HAY, STRAW, OR OTHER MULCH, WHEN NEEDED, SHOULD BE APPLIED IMMEDIATELY AFTER SEEDING.
B. MULCH WILL BE HELD IN PLACE USING APPROPRIATE TECHNIQUES FROM THE BEST MANAGEMENT PRACTICE FOR MULCHING. HAY OR STRAW MULCH SHALL BE LAYED AT A RATE OF 90LBS PER 1000 S.F.
5. MAINTENANCE TO ESTABLISH A STAND
A. PLANTED AREA SHOULD BE PROTECTED FROM DAMAGE BY FIRE, GRAZING, TRAFFIC, AND DENSE WEED GROWTH.
B. FERTILIZATION NEEDS SHOULD BE DETERMINED BY ONSITE INSPECTIONS. SUPPLEMENTAL FERTILIZER IS USUALLY THE KEY TO FULLY COMPLETE THE ESTABLISHMENT OF THE STAND BECAUSE MOST PERENNIAL STALL 2 TO 3 YEARS TO BECOME ESTABLISHED.
C. IN WATERWAYS, CHANNELS, OR SWALES WHERE UNIFORM FLOW CONDITIONS ARE ANTICIPATED, OCCASIONAL MOWING MAY BE NECESSARY TO CONTROL GROWTH OF WOODY VEGETATION. TO BE CONSTRUCTED IAW NH SWM #3 4-1 EROSION CONTROL PRACTICES, PERMANENT VEGETATION, PAGE 60.

EROSION & SEDIMENT CONTROL DETAILS
LAND OF
DOVER HOUSING AUTHORITY
3 GREEN STREET
DOVER, N.H.
TAX MAP 1, LOT 42

TAX MAP 1, LOT 42

	BERRY SURVEYING & ENGINEERING	
	335 SECOND CROWN POINT ROAD	
	BARRINGTON, NH 03825 (603) 332-2860	
	SCALE :	AS SHOWN
	DATE :	OCTOBER 14, 2024
	FILE NO. :	DB 2023-008



CITY OF DOVER PLANNING DEPARTMENT FILE #

REVISION	DATE	DESCRIPTION

CONSTRUCTION DETAILS

LAND OF DOVER HOUSING AUTHORITY

3 GREEN STREET

DOVER, N.H.

TAX MAP 1, LOT 42

BERRY SURVEYING & ENGINEERING

335 SECOND CROWN POINT ROAD

BARRINGTON, NH 03825 (603)332-2863

SCALE : AS SHOWN

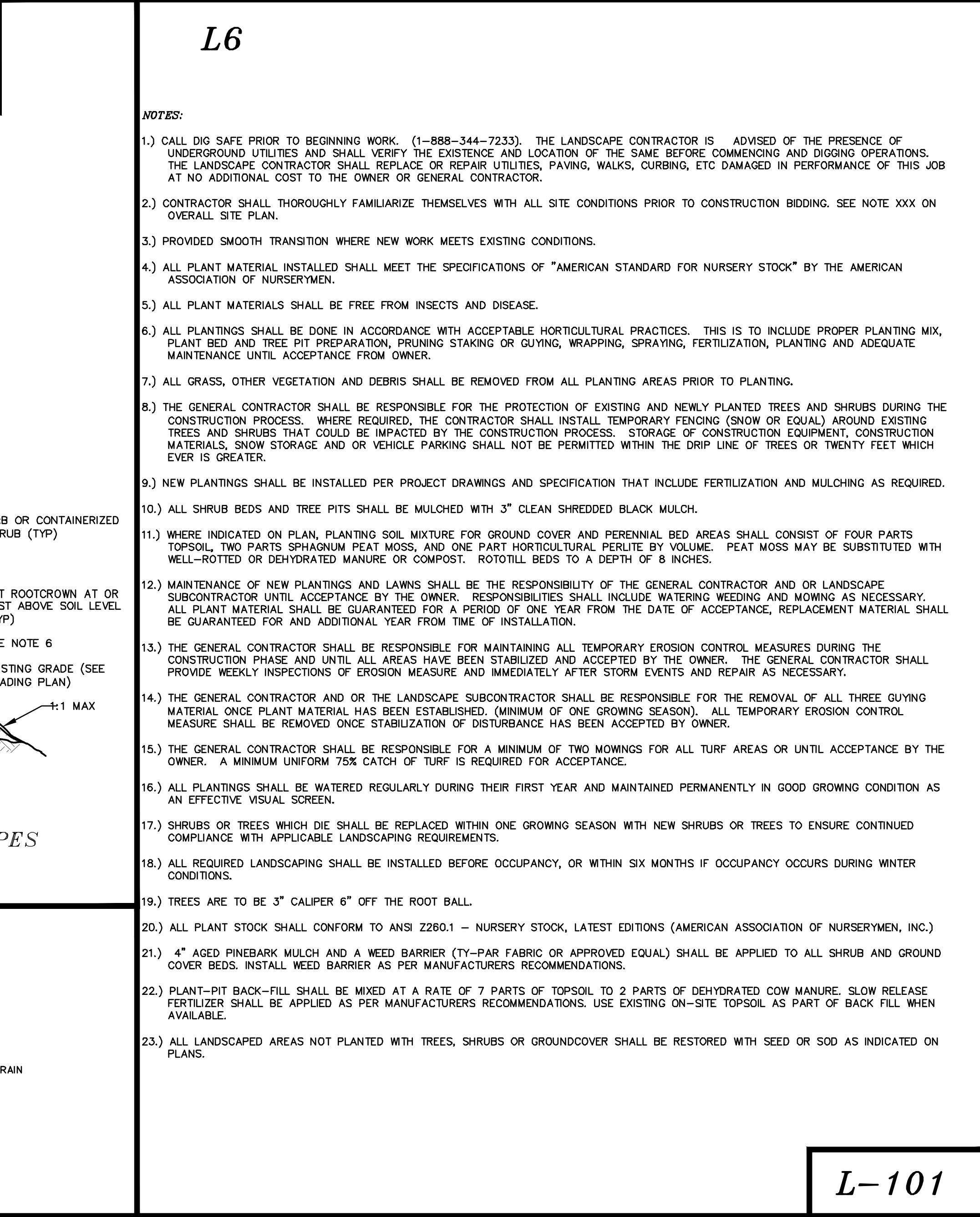
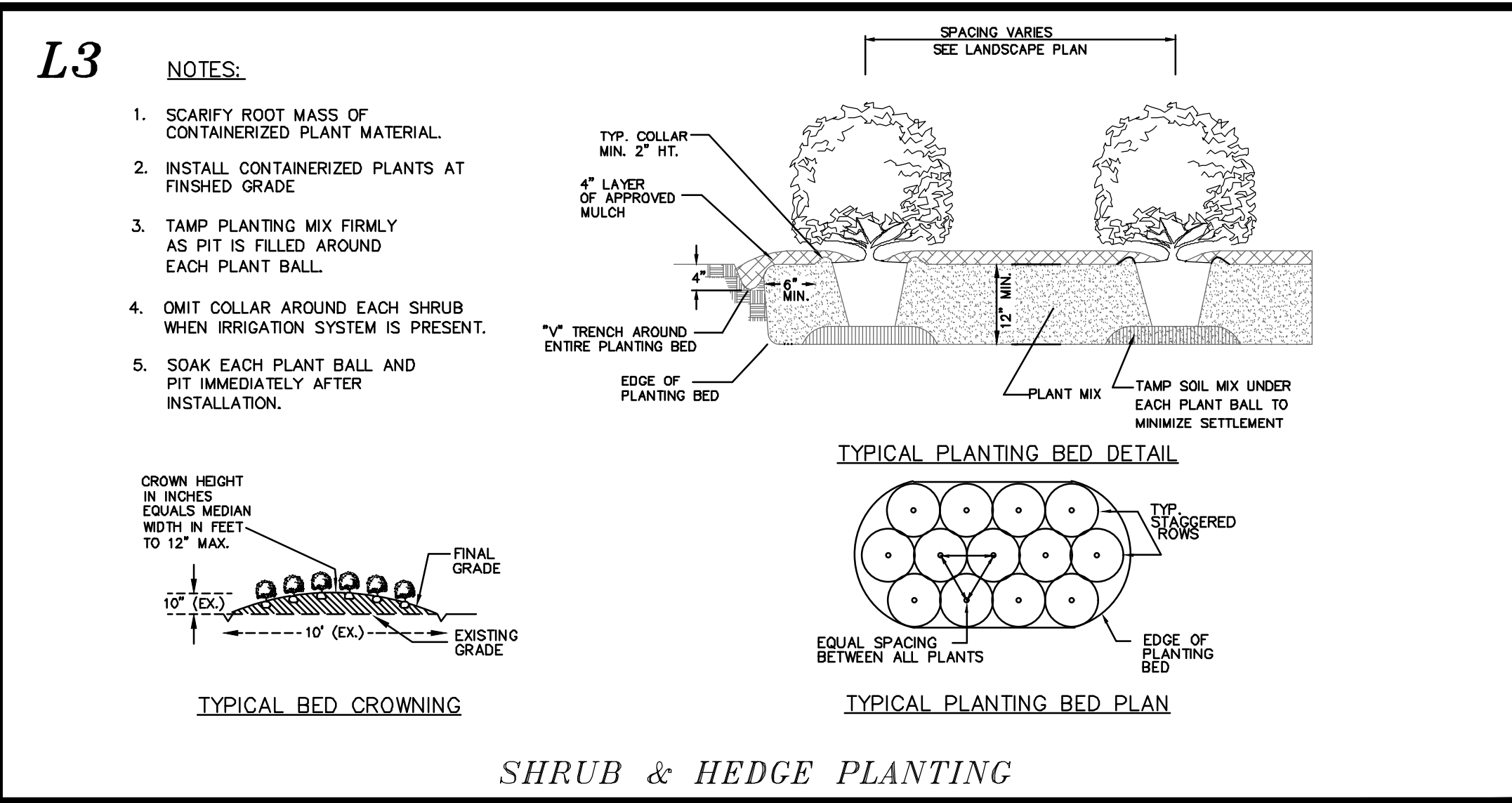
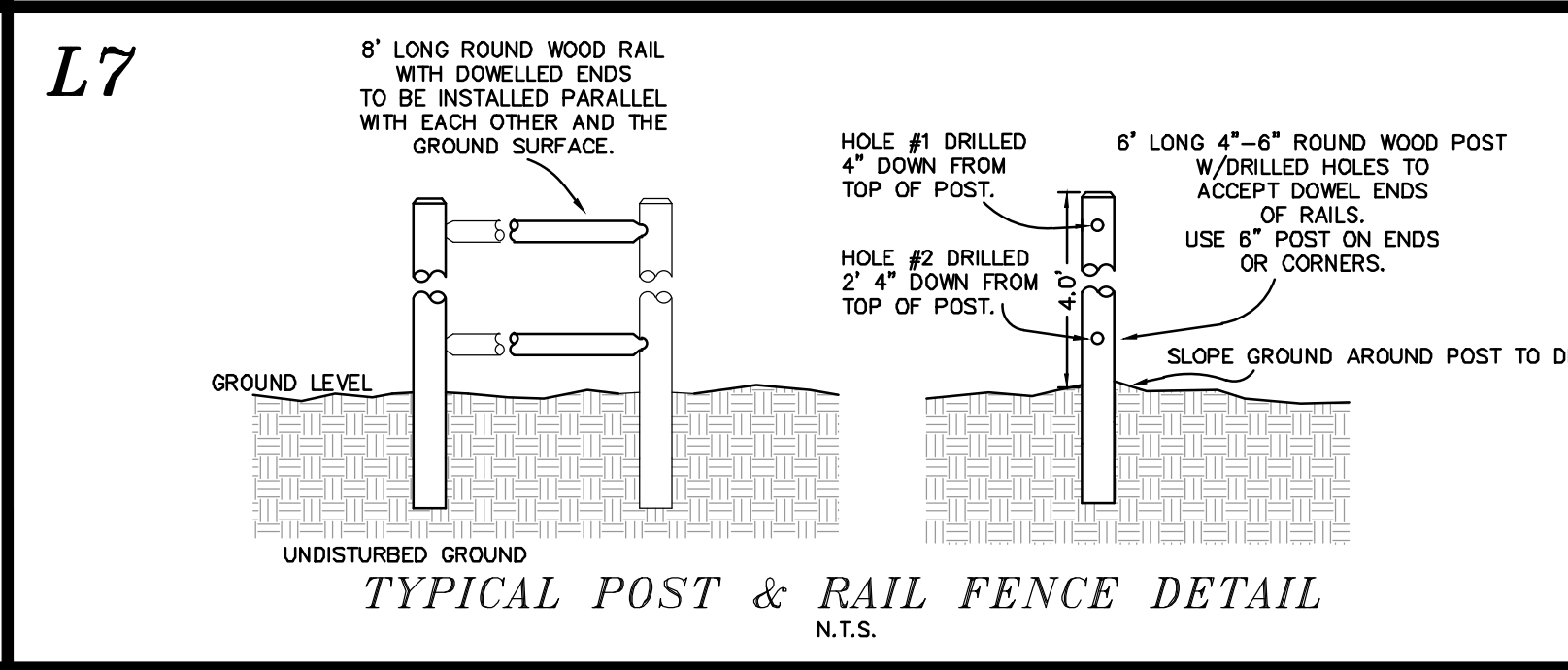
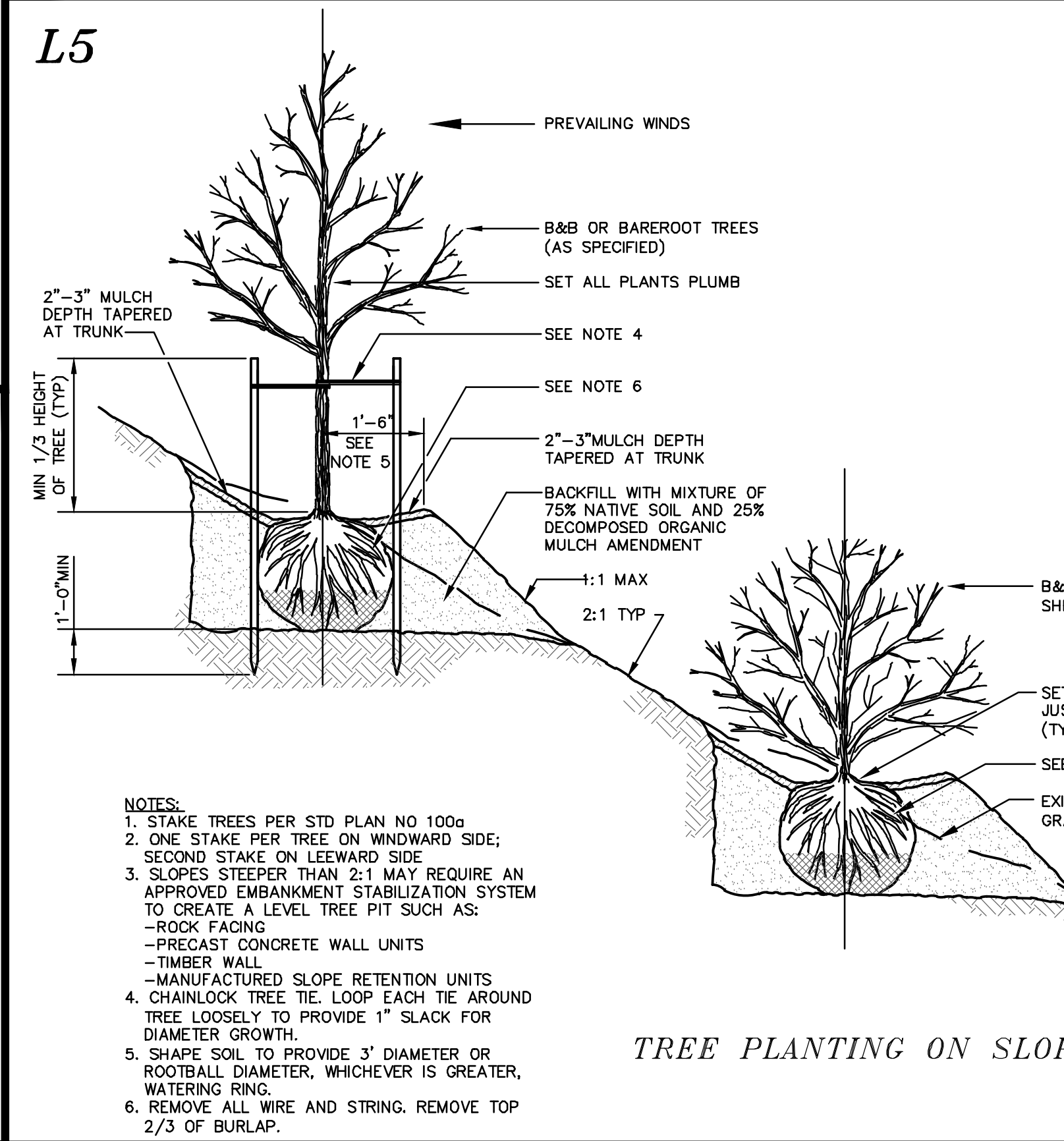
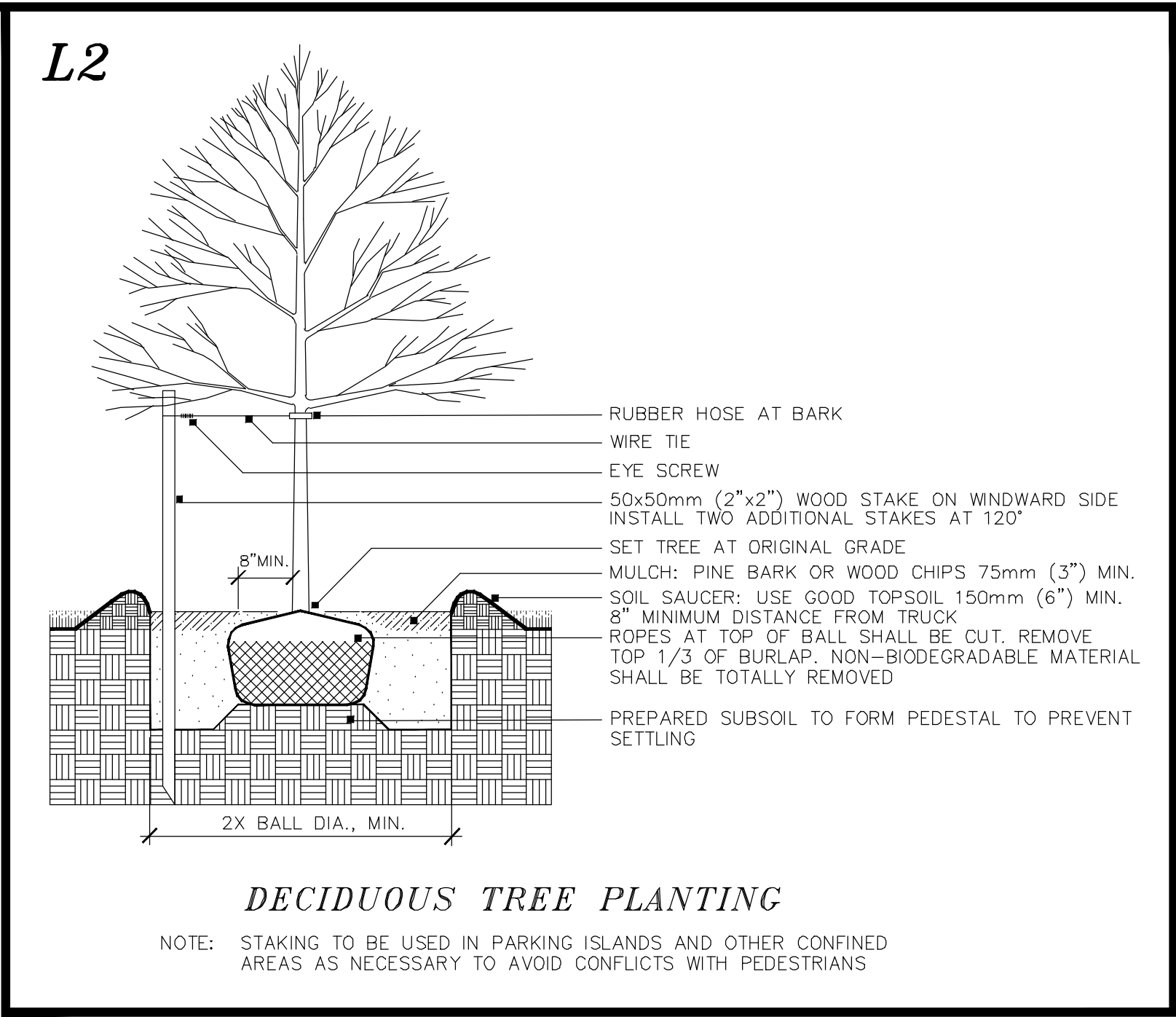
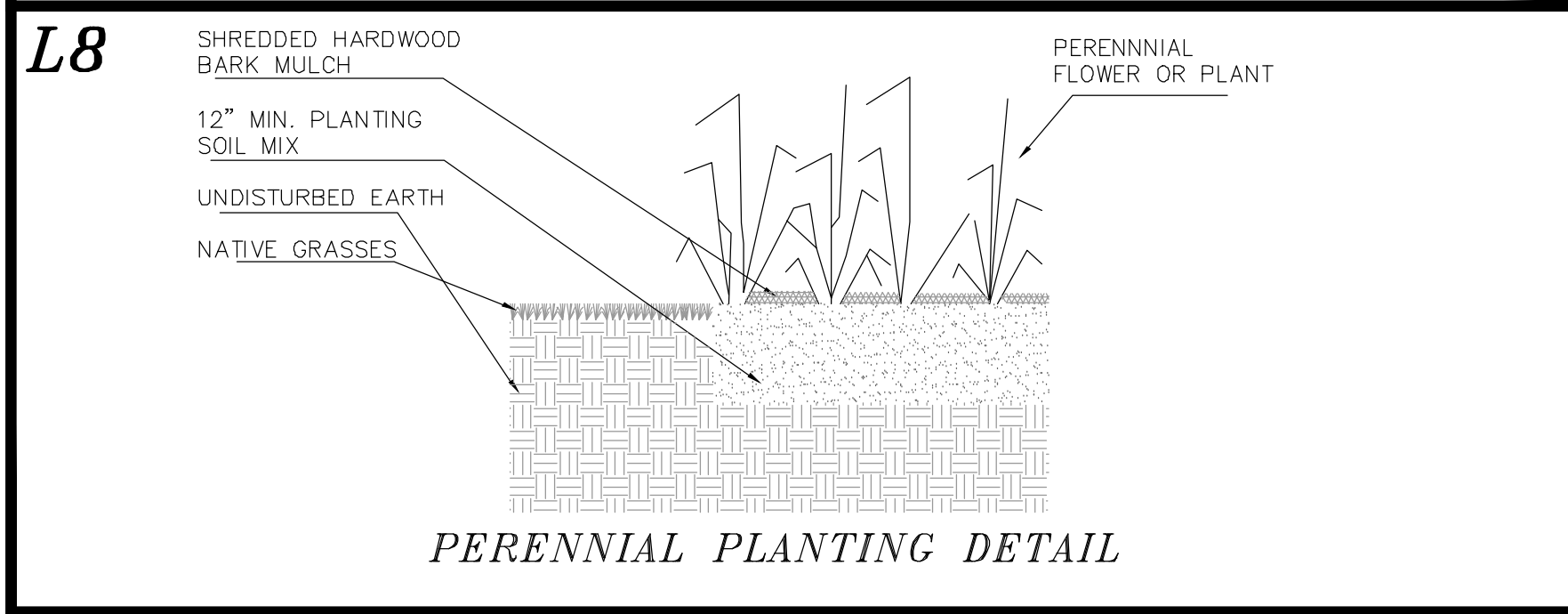
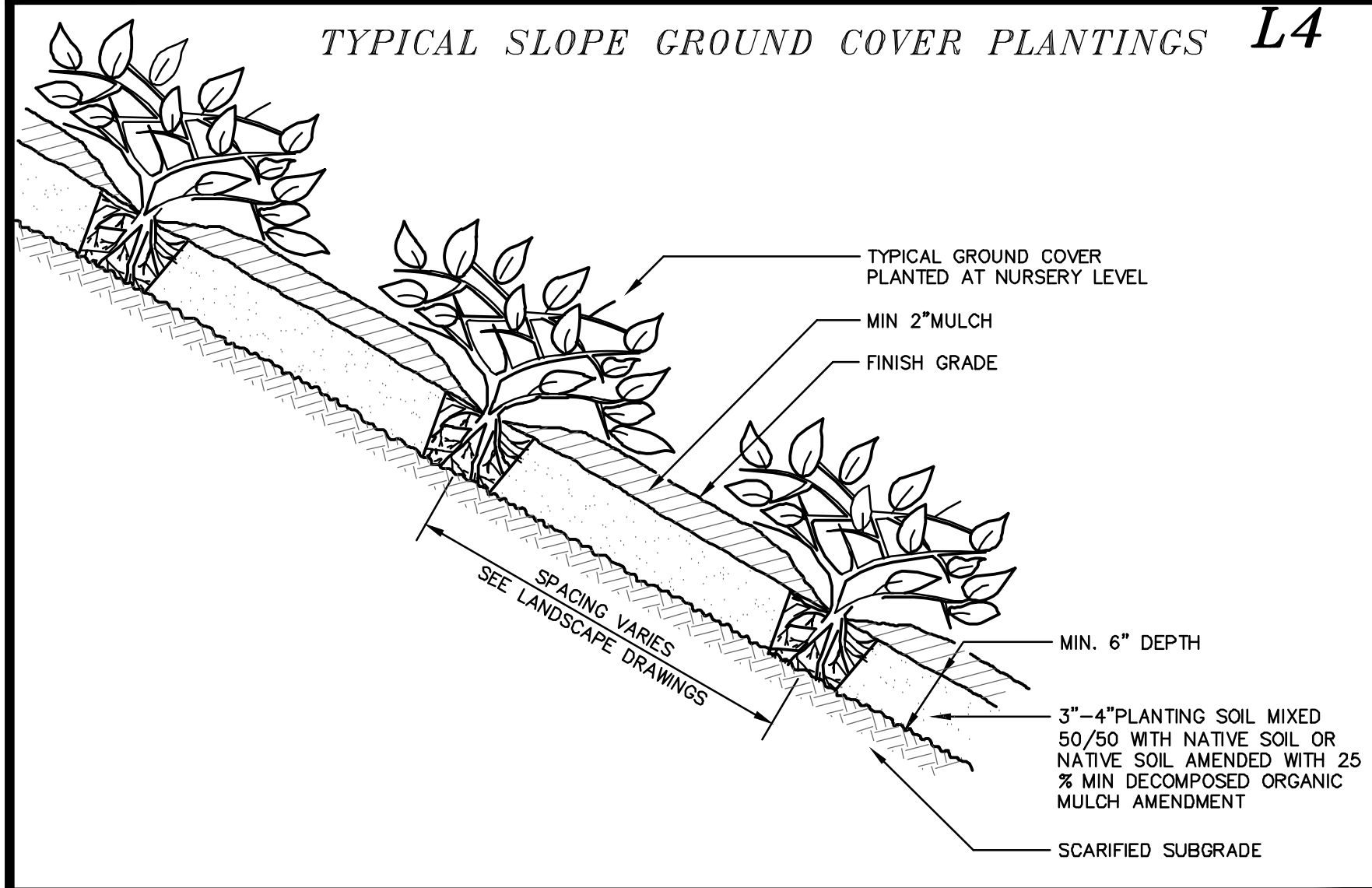
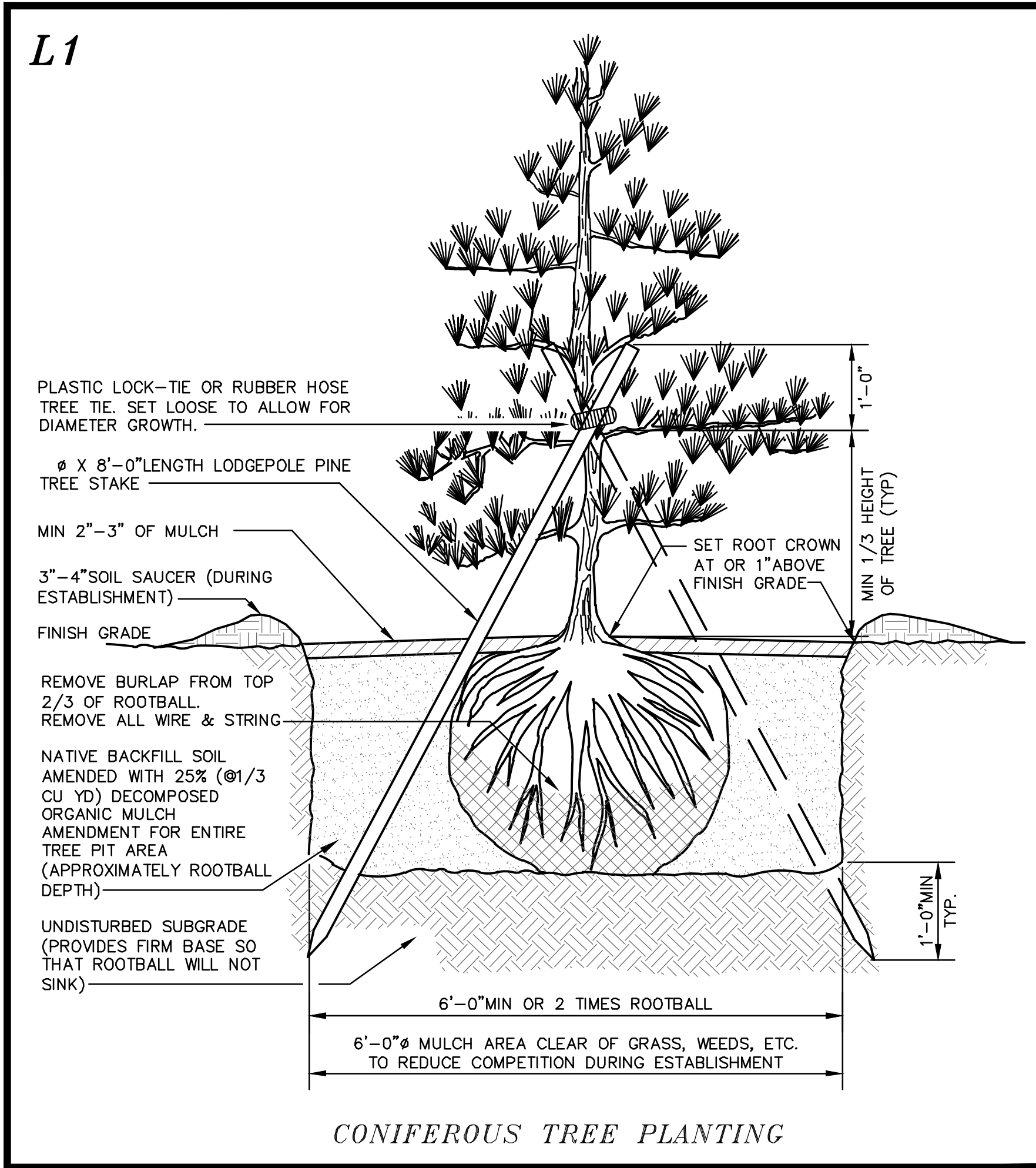
DATE : OCTOBER 14, 2024

FILE NO. : DB 2023-008

KENNETH A. BERRY

PROFESSIONAL ENGINEER

SHEET 10 OF 11



CITY OF DOVER PLANNING DEPARTMENT FILE #

REVISION	DATE	DESCRIPTION

LANDSCAPING CONSTRUCTION DETAILS

LAND OF DOVER HOUSING AUTHORITY

3 GREEN STREET DOVER, N.H.

TAX MAP 1, LOT 42

BERRY SURVEYING & ENGINEERING

335 SECOND CROWN POINT ROAD BARRINGTON, NH 03825 (603)332-2863

SCALE : AS SHOWN

DATE : OCTOBER 14, 2024

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KENNETH A. BERRY No. 1458 PROFESSIONAL ENGINEER

SHEET 11 OF 11