CITY OF DOVER

PLANNING TECHNICAL REVIEW COMMITTEE –AGENDA

Meeting Type: Regular Meeting
Meeting Location: Council Conference Room – City Hall, Dover NH
Meeting Date: **Thursday, June 03, 2021**
Meeting Time: **10:30 AM**

1. 10:30 AM – 11:00 AM: Site Review for Dover Housing Authority, Assessor's Map 33, Lot 1-A, zoned RM-U, located at 48 Whittier Street. (Proposal is to construct a six-unit multi-family style temporary housing shelter within the RM-U zone). (P21-37)

City of Dover, New Hampshire
SITE REVIEW APPLICATION

[Revised 10/1/2018]

RECEIVED
Planning Office
MAY 13 2021
Dover, New Hampshire

Office Use Only Project #: P21-37 Date Received:
Amount Paid: CK#017774 $1,096.22 Time Received:

APPLICANT AND OWNER INFORMATION

Name of Applicant: Dover Housing Authority Telephone # 603-742-5804

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

E-Mail Address: Esanderson@doverhousingauthority.org

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

Address of Property Owner:

PROPERTY INFORMATION

Address of Property: 48 Whittier Street

Assessor's Map # 33 Lot(s) # 1-A

Zoning District(s) RM-U Overlay District(s) None

Size of Parcel: 15,394 sq. ft. 0.35 ac. Property Deed: Book 4716 Page: 900

Existing Use of Property: Single family home (formerly)

SITE PLAN INFORMATION

Describe Proposed Use: 6 unit TDR apartment building

Area of Parcel to be Developed: 15,000 sq. ft.

If Multi-family Residential, Specify Number of Units & Buildings Proposed: 6

Number of Parking Spaces: Existing 2 (driveway) Proposed 12

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

Number of Employees Total: ____ In Maximum Shift: 0

Disposition of Parcel:

Building Footprint 1,768 sq. ft.

Total Building Area 5,304 sq. ft.

Paved Area ____ sq. ft.

Building Setbacks:

Front Yard 18 ft.

Rear Yard 30 ft.

Side Yard: Right 15 ft. Left 15 ft.

City Water? X Yes ___ No How far is city water from the property? In front of parcel

City Sewer? X Yes ___ No How far is city sewer from the property? In front of parcel

BUILDING INFORMATION

Type of Building to be Built: Three story apartment building w/ 6 units

Height of Building: 26.8' top of 3rd Finished Floor Elevation: 64.60

Number of Seats (where applicable) _____

Estimated value of construction: +/- $1,100,00 Refuse removal: Public / Private (circle one)

WAIVER REQUESTS

Site Review Regulations section(s) to be waived: 149-15-C Parking Isle Width

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

SURVEYOR INFORMATION

Name of Surveyor and Company (Licensed in N.H.) Kenneth A Berry, PE, LLS
Christopher R. Berry
Berry Surveying & Engineering

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

Professional License #: 805 E-mail address: K.Berry@BerrySurveying.com
crberry@metrocast.net

ENGINEER INFORMATION

Name of Engineer and Company (Licensed in N.H.) Kenneth A Berry, PE, LLS
Christopher R. Berry
Berry Surveying & Engineering

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

Professional License #: 14243 E-mail address: K.Berry@BerrySurveying.com
crberry@metrocast.net

SIGNATURES

I/We hereby submit this application to the City of Dover Planning Board and attest that to the best of my knowledge all of the information on this application form and in the accompanying application materials and documentation is true and accurate. 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: 5-6-21

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

Signature of Agent: _____ Date: _____

AUTHORIZATION TO ENTER SUBJECT PROPERTY

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

Signature of Property Owner: _____ Date: 5-6-21

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: 5-6-21

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: 5-6-21

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

City of Dover, New Hampshire
SITE PLAN REVIEW SUBMISSION CHECKLIST

[Revision Date: June 25, 2018]

This site plan review checklist, as required by Chapter 149-6-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.

Fees will be invoiced and are due along with fifteen (15), folded, copies of the plan set and materials, including response to TRC comments, will be due 3 weeks 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: _____

PROPERTY LOCATION: 48 Whittier Street Tax Map: 33 Lot: 1-A

	Explain How Provided	Reviewed
1. **Completed and signed Application form**	X	
2. **Electronic copy of the engineered/surveyed plan layout**	X	
3. **Electronic copy of supplementary materials and application**	X	
4. **Traffic Impact Assessment and Analysis (Standard or Advanced)**	X	
5. **Waiver requests to the Site Plan Review Regulations, with written justification**	X	
6. **Conditional Use Permit applications**	X	
7. **A colored rendering of the streetscape that will be created along the existing public right-of-way**	X	
8. **A colored architectural plan showing all sides of buildings**	X	
9. **List of all professional agents to be notified for Planning Board**	X	
10. **Letter to Serve from Public and Private Utilities**	X	
11. **Eight 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	
Depict pedestrian walkways and accessible access	X	
Location and width of existing and proposed access/egress ways	X	
Existing and proposed property lines with dimensions and bearings tied into Dover's Geographic Information System coordinate system	X	
	Explain How Provided	**Reviewed**

Existing and proposed topographic information at two foot intervals	X	
Existing and proposed buildings and structure locations	X	
Minimum building setbacks or build to lines on all lots	X	
Location and size of existing and proposed electric, telephone, gas cable and other underground utilities	X	
Existing and proposed water lines and fire hydrants, including materials and capacity needed	X	
Location and materials of sanitary sewage facilities within project site and projected additional peak hour sewer load	X	
Existing and proposed stormwater lines and facilities	X	
Lighting plan depicting all existing and proposed exterior light fixtures and a lighting level analysis for parking lots	X	
Location of Flood Hazard Zone	X	
Location of all bodies of water and watercourses	N/A	
Location of wetlands and buffers	N/A	
Neighborhood plan with aerial underlay showing how project relates to abutting uses within the plan set	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	X	
Specify finished floor elevations of buildings	X	
Location of solid waste disposal facilities (dumpster, pad and screening, etc.), including required screening	X	
Depict all service, storage, loading bays and utility areas	X	
All applicable Dover Common Site Plan notes	X	
12. 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	
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	X	
If wetland buffer, indicate placards locations, as applicable	N/A	
Depict test boring locations, groundwater elevations and soil profiles and/or soils types call-outs	X	
Location of proposed drive-in facilities	N/A	
Provide additional exhibits/technical data determined appropriate by the Planning Board or its staff as required	X	

REVIEWED BY: _____ DATE_____ TRC DATE_____

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

City of Dover Planning Office
Attention: Donna Benton, City Planner
288 Central Avenue
Dover, NH 03820

May 6, 2021

RECEIVED
Planning Office
MAY 13 2021
Dover, New Hampshire

RE: Project Narrative
Dover Housing Authority
48 Whittier Street
Dover, NH 03868
Tax Map 33, Lot 1-A

Ms. Benton,

On behalf of our client, Dover Housing Authority (DHA), Berry Surveying & Engineering (BS&E) is submitting for TRC review a proposed six-unit milti-family style temporary housing shelter for woman and children within the RM-U zone located at 48 Whittier Street.

Background and General Narrative:

The DHA has purchased Tax Map 33, Lot 1-A, which is adjacent to the DHA primary office and location. BS&E has completed a full topographic survey and Deidra Benjamin, CWS, has reviewed the site for wetland, finding none nor are there any within 50' of the boundary. Located on the subject parcel until 2020 was a single-family detached home that has since been demolished. The 15,394 Sq. Ft. (0.35 Ac.) lot is primarily open with treeline and vegetation around the perimeter of the parcel. The subject parcel consists of 3-4' of fill material above original grade that had been placed for the construction of the prior residence. The rear and northern side line consist of slopes greater than 20% due to fill previously placed on the parcel but is less than 2,000 Sq. Ft. in size. The rear and portion of the northern side line also reside within the outer limits of the NHDES 250' shoreland zone (Cochecho River). Public utilities are available for the parcel, including public water, gravity sewer, and natural gas.

The Proposal:

The proposal is to utilize the Transfer of Development Rights (TDR) ordinance to construct a 1,754 SF building footprint containing a three story, six unit condominium style temporary housing shelter for woman and children. Two units will exist on the ground level and the remaining units will each occupy a portion of the second and third levels. Building

mechanicals will be housed in a partial basement which is accessed from a bulkhead on the southern side of the building. The site will contain 12 parking spaces per Dover parking requirements and stormwater treatment will occur utilizing a rain garden design and additional Stormtech chambers for storage. A child's play area is proposed along the southern side of the building and a sidewalk around the perimeter of the building provides access from the parking lot. An evergreen vegetative buffer along the northern sideline is provided for the abutting single family residence and screening and vegetation along Whittier Street are provided. A false façade is proposed along Whittier Street to provide the appearance of a two unit building from the front.

Utilizing the TDR ordinance, relief is being requested to three RM-U zoning requirements. These request include reduction in front building setback from 20' to 18', reduction in the 30' perimeter TDR buffer, and an increase from 2 units allowed by right to 6 units. These proposed units will conform to HUD fair market rent prices and will continue to be managed by the DHA. In addition to the TDR requests, a waiver request to reduce parking isle width from 22' to 20'. No further state of federal permitting will be required with the exception of the minor Shoreland permit. An NOI is not required for this project.

Respectfully submitted,
BERRY SURVEYING & ENGINEERING

Kevin R. Poulin, EIT
Project Engineer

Christopher R. Berry, SIT
Principal, President

BERRY SURVEYING & ENGINEERING

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335 Second Crown Pt. Rd., Barrington, NH 03825
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May 6, 2021

City of Dover Planning Office
Attention: Donna Benton, City Planner
288 Central Avenue
Dover, NH 03820

RECEIVED
Planning Office
MAY 13 2021
Dover, New Hampshire

RE: Dover Housing Authority
48 Whittier Street
Dover, NH 03868
Tax Map 33, Lot 1-A

Ms. Benton,

Enclosed please find the following material in support of the proposed site plan submitted for TRC review.

- 9 full scale (22" x 34") copies of the plan set including Architectural Plans
- 9 copies of the site plan application/checklist
- 9 copies of the project narrative
- 9 copies of the waiver request
- 9 copies of the Traffic Impact Narrative
- An emailed PDF containing the drainage analysis

Respectfully Submitted,

BERRY SURVEYING & ENGINEERING

Christopher R. Berry
Principal, President

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May 6, 2021

City of Dover Planning Board
Attention: City Planner Donna Benton
288 Central Ave
Dover, NH 03820

RECEIVED
Planning Office
MAY 13 2021
Dover, New Hampshire

RE: Dover Housing Authority
48 Whittier Street
Map 33, Lot 1-A

Chairperson & Members of the Dover Planning Board:

In accordance with to the Site Plan Standards, the following waiver is hereby requested:

1. Identification of Waiver Request: Minimum parking aisle width of 22' per Dover Site Plan Regulation 149-15-C.

- Proposed parking aisle width of 20' for a 6 unit building.

2. Explanation:

The applicant is proposing to construct a six unit affordable housing building at 48 Whittier Street. A proposed parking aisle will be constructed off Whittier Street to provide access to the building and adjacent parking. A 20' parking aisle was deemed sufficient given the low volume of anticipated traffic.

3. Waiver Justification:

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

The intent of requiring a 22' parking aisle for two way traffic is to allow for ample room to back out on both sides of the aisle. In this case however, there will be parking on one side only, making it easier and safer for vehicles to back out into the traveled way even though it will be 2' narrower. Additionally, the 22' aisle width is more appropriate for parking lots with heavy traffic. Given the proposed number of units and the use of the building, the traffic will be limited.

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

Requiring the applicant meet the parking aisle requirements will pose an unnecessary hardship on the applicant by adding additional, unneeded pavement. The goal was to keep the

project towards the center of the lot and away from the adjacent boundary lines. This will increase the buffer and add more green space.

Respectfully Submitted,
BERRY SURVEYING & ENGINEERING

James F. Hayden
Engineering Technician

Christopher R. Berry
Principal, President

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May 6, 2021

City of Dover Planning Office
Attention: Donna Benton, City Planner
288 Central Avenue
Dover, NH 03820

RECEIVED
Planning Office
MAY 13 2021
Dover, New Hampshire

RE: Trip Generation Summary
Dover Housing Authority
48 Whittier Street
Dover, NH 03868
Tax Map 33, Lot 1-A

Ms. Benton,

Pursuant to the City of Dover Land Site Plan Regulations, Berry Surveying & Engineering (BS&E), on behalf of the Dover Housing Authority, has prepared a Trip Generation Summary for the construction of a 6 unit TDR building for housing of woman and children. The proposed site is accessed via a driveway off of Whittier Street.

The following trip generations are calculated from the 10th Edition Trip Generation Manual using Code 220, Multifamily Housing (Low-Rise):

Time Method	Weekday Total (Page 31) Dwelling Units			Time Method	AM Peak Adj. Street (Page 32) Dwelling Units			Time Method	PM Peak Adj. Street (Page 33) Dwelling Units		
# Units	6			# Units	6			# Units	6		
Avg. Rate	7.32			Avg. Rate	0.46			Avg. Rate	0.56		
Total Trips	43.9			Total Trips	2.8			Total Trips	3.4		
% Enter	50.0	Total Enter	22.0	% Enter	23.0	Total Enter	0.6	% Enter	63.0	Total Enter	2.1
% Exit	50.0	Total Exit	22.0	% Exit	77.0	Total Exit	2.1	% Exit	37.0	Total Exit	1.2

Using Traffic Counts provided from the Dover Police Department, dated July 20th – 24th, 2011, the following peak values were used to determine the directional distribution of the trips entering and the proposed driveway from Whitter Street. This traffic count was done approximately 0.5 miles to the north on Whittier Street between Sixth Street and Glenwood Avenue. There are no available counts around the 46 Whitter Street area from either the Dover Police or NHDOT Transportation Data Management system.

Traffic Distribution Whittier Street						
Date	Northbound		Southbound		Two-Way	
Wednesday 7/20/11	AM Peak	60	AM Peak	88	AM Peak	127
	PM Peak	115	PM Peak	157	PM Peak	282
Thursday 7/21/11	AM Peak	61	AM Peak	95	AM Peak	156
	PM Peak	136	PM Peak	151	PM Peak	287
Friday 7/22/11	AM Peak	72	AM Peak	108	AM Peak	171
	PM Peak	129	PM Peak	146	PM Peak	205
Average Peak Hour Traffic	AM Peak	64.3	AM Peak	97.0	AM Peak	141.5
	PM Peak	126.7	PM Peak	151.3	PM Peak	284.5
% Distribution	AM Peak	39.9	AM Peak	60.1		
	PM Peak	45.6	PM Peak	54.4		

The AM and PM peak hour directional distribution indicates primarily commuter traffic during the AM and PM peak hour. In the AM peak hour, 60.1% of vehicle trips are southbound towards Sixth Street or Tolend Road. This is opposed to 39.9% of AM vehicle trips northbound towards Glenwood Avenue and Central Avenue. In the PM peak hour 54.4% of vehicle trips are southbound as opposed to 45.6% northbound. These three-day average peak hour traffic volumes from 2011 have been extrapolated to 2021 and 2031 using a 1% growth factor compounded annually. This directional distribution results in the following existing turn movements for the proposed site: The 2021 northbound AM and PM peak hour traffic volumes are 71 and 140, respectively. The 2031 northbound AM and PM peak hour traffic volumes are 78 and 155, respectively. The 2021 southbound AM and PM peak hour traffic volumes are 107 and 167, respectively. The 2031 southbound AM and PM peak hour traffic volumes are 118 and 185, respectively. Vehicle speed data was also provided by the Dover Police Department for Whitter Street. It was shown over the same data collection period that the mean vehicle speed on Whitter Street was 34 MPH and the 85th percentile speed was 39 MPH in a posted 30 MPH zone.

Time	AM Peak Hour	# Trips	Turn Type	% Distribution	Time	PM Peak Hour	# Trips	Turn Type	% Distribution
Total Trips	2.5				Total Trips	3.4			
Trips Enter from Whittier Street Northbound	0.3	Right	9.2	Trips Enter from Whittier Street Northbound		1.0	Right	28.7
[illegible]	0.4	Left	13.8	[illegible]		1.2	Left	34.3
Trips Exit to Whittier Street Northbound	0.8	Right	33.7	Trips Exit to Whittier Street Northbound		0.6	Right	16.9
Trips Exit to Whittier Street Southbound	1.3	Left	49.1	Trips Exit to Whittier Street Southbound		0.7	Left	20.1

It can be seen from the change in vehicle trips that the most drastic impact is an increase of two vehicle trips entering the site during the PM peak hour. Other turn movements increase in the number of trips by 1 or less.

The proposed build out presents an excellent opportunity for the utilization of public transportation. Approximately 300 feet to the south is a Coast bus stop at the Dover Housing

Authority (50 Whittier Street). There are sidewalks and crosswalks that allow for safe bus stop access from the site as well.

- It is recommended that the existing and surrounding infrastructure will be sufficient to handle the minimal projected increase in vehicle trips and peak hour and all other hours for the proposed driveway and Whittier Street.

- Additional walks are to be proposed to increase the walkability of the site as it relates to public transit.

Respectfully Submitted,

BERRY SURVEYING & ENGINEERING

Christopher R. Berry, SIT
Principal, President

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

BERRY SURVEYING & ENGINEERING

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SHEET 6 ~ P101–RAIN GARDEN PLAN
SHEET 7 ~ P102–STORMTECH CHAMBER DETAILS
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RESIDENTIAL TDR SITE PLAN FOR DOVER HOUSING AUTHORITY 48 WHITTIER STREET DOVER, N.H. TAX MAP 33, LOT 1–A

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.

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

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

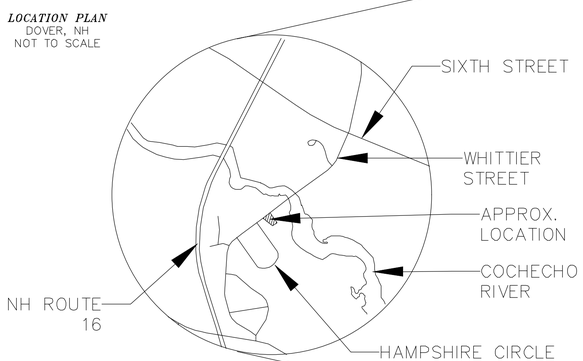
SURVEYOR OF RECORD: KENNETH A. BERRY, PE, LLS
CPSWQ, CPESC, CESSWI
BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825
(603) 332–2863

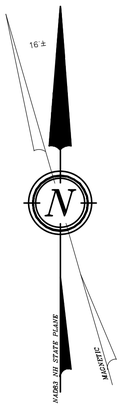
ENGINEER OF RECORD: KENNETH A. BERRY, PE, LLS
CPSWQ, CPESC, CESSWI
BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825
(603) 332–2863

WETLAND SCIENTIST: DEIDRA BENJAMIN, CWS
100 LEAVITT ROAD
PITTSFIELD, NH 03263
(603)–496–3307

SOIL SCIENTIST: JOHN P. HAYES, III CWS, CSS
7 LIMESTONE WAY
NORTH HAMPTON, NH 03862
(603)–205–4396

LOCATION PLAN
DOVER, NH
NOT TO SCALE





VICINITY SKETCH
DOVER, NH
SCALE: 1" = 200' ±

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

REQUIRED PERMITS:

1.) NHDES SHORELAND PERMIT

GENERAL PLAN SET NOTES:

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

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

APPROVED DOVER

STATE OF NEW HAMPSHIRE – LICENSED LAND SURVEYOR – NO. 805 – KENNETH A. BERRY – SIGNATURE

STATE OF NEW HAMPSHIRE – KENNETH A. BERRY No. 7436 LICENSED PROFESSIONAL ENGINEER

DOVER PLANNING FILE #

REVISION	DATE	DESCRIPTION

RESIDENTIAL TDR SITE PLAN
LAND OF
DOVER HOUSING AUTHORITY
48 WHITTIER STREET
DOVER, N.H.
TAX MAP 33, LOT 1–A

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

SCALE : AS SHOWN
DATE : MAY 6, 2021
FILE NO. : DB 2020 – 136

ABBREVIATION LEGEND:

BITUM.	BITUMINOUS
E.O.P.	EDGE OF PAVEMENT
V.G.C.	VERTICAL GRANITE CURB
E.S.H.W.T	ESTIMATED SEASONAL HIGH WATER TABLE
TYP.	TYPICAL
U.G.E.	UNDER GROUND ELECTRIC / UTILITY
U.D.	UNDER DRAIN
C.O.	CLEAN OUT
INV.	INVERT
ELEV.	ELEVATION
F.E.S.	FLARED END SECTION
HDPE	HIGH DENSITY POLYETHYLENE
RCP	REINFORCED CONCRETE PIPE
CMP	CORRUGATED METAL PIPE
C.L.D.I.	CONCRETE LINED DUCTILE IRON
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
R.O.W.	RIGHT OF WAY
CL	CENTER LINE
CF	CUBIC FEET
P.C.	POINT OF CURVATURE
P.T.	POINT OF TANGENCY
P.V.C.	POINT OF VERTICAL CURVATURE
P.V.I.	POINT OF VERTICAL INTERSECTION
P.V.T.	POINT OF VERTICAL TANGENCY
EX.	EXISTING
PROP.	PROPOSED
R&R	REMOVE AND REPLACE
STA.	STATION
'/,	FOOT / FOOT

{ } 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:

- IRON BOUND ~FND~
- IRON PIPE ~FND~
- DRILL HOLE ~FND~
- STEEL STAKE ~FND~
- UTILITY POLE / GUY WIRE
- SINGLE POST SIGN
- CURB STOP
- GATE VALVE
- FIRE HYDRANT
- CATCH BASIN
- SEWER MANHOLE
- DRAIN MANHOLE
- EXISTING SPOT ELEVATION
- 250' NHDES SHORELAND ZONE
- ZONE LINE
- BUILDING SETBACK LINE
- PERIMETER BOUNDARY
- EXISTING WATER LINE
- EXISTING SEWER LINE
- EXISTING DRAIN LINE
- EXISTING GAS LINE
- OVERHEAD UTILITIES
- EXISTING CONTOUR MINOR
- EXISTING CONTOUR MAJOR
- NRCS SOIL DELINEATION
- SOIL TYPE
- TEST PIT

PROPOSED LEGEND:

- UTILITY POLE
- LIGHT TYPE "A" MOUNTED ON BUILDING
- DRAIN MANHOLE W/STRUCTURE
- SEWER MANHOLE W/STRUCTURE
- CATCH BASIN W/STRUCTURE
- SIGNAGE
- CHECK DAM-MATERIAL AS SPECIFIED
- FLOW ARROW
- TEMPORARY BENCHMARK (T.B.M.)
- DETAIL SHEET / DETAIL
- MATCH POINT
- MATCH LINE
- CONTOUR MINOR, PROPOSED
- CONTOUR MAJOR, PROPOSED
- DRAIN CULVERT W/ FLARED END SECTION (F.E.S.)
- SHOULDER
- CENTER LINE
- BUILDING SETBACK LINE
- TRANSFORMER / J.BOX
- UNDERGROUND UTILITY
- UNDER DRAIN
- SILT FENCE / EROSION MIX BERM
- FILTREXX 8" - 12" SILT SOXX AS SPECIFIED ORANGE CONSTRUCTION PERIMETER FENCE
- RIP RAP
- STORMWATER BEST MANAGEMENT PRACTICE
- BERM
- GATE VALVE
- GAS VALVE
- CURB STOP
- HYDRANT
- THRUST BLOCKS
- PROPOSED SPOT ELEVATION
- PROPOSED GAS LINE
- PROPOSED WATER LINE
- PROPOSED SEWER LINE

GIS SKETCH
DOVER, NH
SCALE: 1" = 200' ±

16' ±
N
NAD83 NH STATE PLANE
MAGNETIC

SIGN ID NUMBER	SIGN SIZE (WIDTH x HEIGHT)	SIGN	TEXT DIMENSIONS	NO. OF SIGNS	BACKGROUND	LEGEND	BORDER	POST SIZE & QUANTITY
R1-1	30"x30"	STOP	SEE STANDARD HIGHWAY SIGNS 2004 EDITION PUBLISHED BY USDOT - FHWA	1	RED	WHITE	WHITE	SQUARE (1)
R7-8	12"x18"	RESERVED PARKING	SEE STANDARD HIGHWAY SIGNS 2004 EDITION PUBLISHED BY USDOT - FHWA	1	WHITE	GREEN W/ WHITE SYMBOL ON BLUE	RED	SQUARE (1)
R7-8a	12"x6"	VAN ACCESSIBLE	SEE STANDARD HIGHWAY SIGNS 2004 EDITION PUBLISHED BY USDOT - FHWA	1	WHITE	GREEN	GREEN	SQUARE (0)
R8-31	12"x18"	NO PARKING FIRE LANE	SEE STANDARD HIGHWAY SIGNS 2004 EDITION PUBLISHED BY USDOT - FHWA	2	WHITE	RED	RED	SQUARE (2)

ABUTTERS WITHIN 200':

N/F 1623 SETTLEMENT DOVER
LIMITED PARTNERSHIP
62 WHITTIER STREET
DOVER, NH 03820
TAX MAP 33, LOT 2
S.C.R.D. BOOK 4536, PAGE 715

N/F GAGNON, JEANNINE & ROBERT
46 WHITTER STREET
DOVER, NH 03820
TAX MAP 33, LOT 1
S.C.R.D. BOOK 3237, PAGE 971

N/F CEDAR RIVER DEVELOPMENT, LLC
35 THIRD STREET
DOVER, NH 03820-3316
TAX MAP E, LOT 66
S.C.R.D. BOOK 3648, PAGE 730

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

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

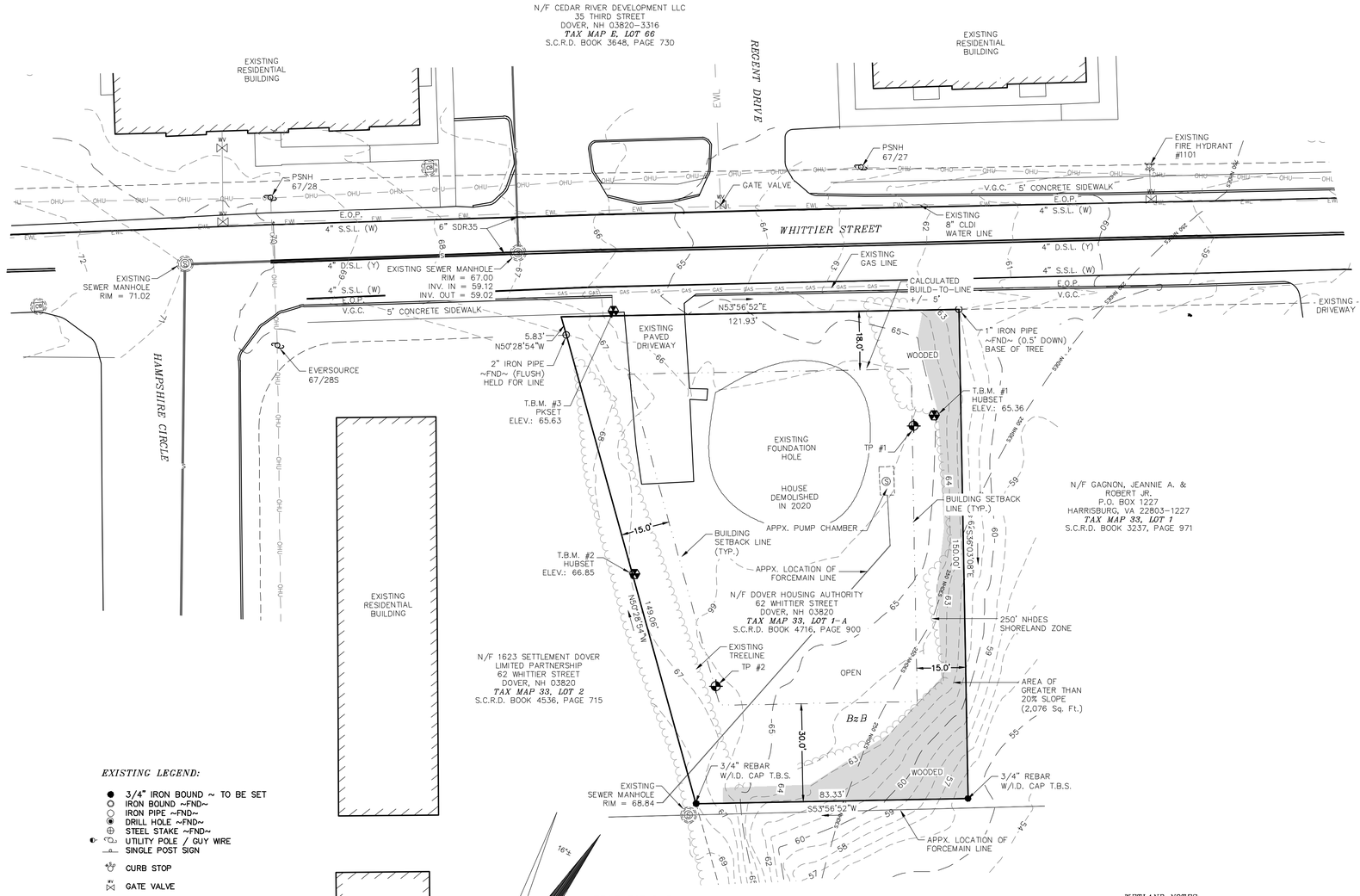
DOVER PLANNING FILE #

REVISION	DATE	DESCRIPTION

NEIGHBORHOOD PLAN
LAND OF
DOVER HOUSING AUTHORITY
48 WHITTIER STREET
DOVER, N.H.
TAX MAP 33, LOT 1-A

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

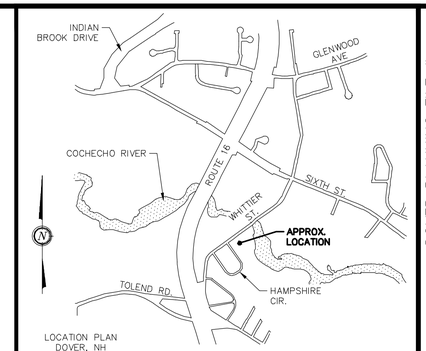
SCALE : AS SHOWN
DATE : MAY 6, 2021
FILE NO. : DB 2020 - 136



SOIL DATA:

BzB ~ BUXTON SILT LOAM, 3 TO 8% SLOPES

NRCS, SEE WEBSOIL



LOCATION PLAN
DOVER, NH
NOT TO SCALE

NOTES:

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

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

1. TAX MAP 33, LOT 1-A
2. PROJECT ADDRESS: 48 WHITTIER STREET
3. LOT AREA: 15,394 Sq. Ft., 0.35 Ac.
4. S.C.R.D. BOOK 4716, PAGE 900
5. ZONING: RM-U
   PRINCIPAL BUILDING:
   LOT SIZE: 10,000 Sq. Ft.
   MAX. LOT COVERAGE: 40%
   MINIMUM FRONTAGE: 80 Ft.
   FRONT BUILD-TO ~ +/- 5' (AVG. OF NEIGHBORHOOD)
   SIDE SETBACK: 15 Ft.
   REAR SETBACK: 15 Ft.
   PRINCIPAL BUILDING: 40 Ft. MAX

   ZONING: TRANSFER OF DEVELOPMENT RIGHTS (TDR)
   LOT SIZE: N/A Sq. Ft.
   MAX. LOT COVERAGE: N/A
   MINIMUM FRONTAGE: 40'
   FRONT SETBACK: 20'
   ABUT A STREET SETBACK: 20'
   SIDE SETBACK: 10'
   REAR SETBACK: 30'
   PERIMETER BUFFER: 30'
6. THE INTENT OF THIS PLAN IS TO SHOW THE EXISTING BOUNDARIES AND CONDITIONS OF TAX MAP 33, LOT 1-A, LOCATED IN DOVER, N.H., AS OF THE TIME OF SURVEY, DATE: NOVEMBER 2020
7. I HEREBY CERTIFY THAT, TO THE BEST OF MY KNOWLEDGE & BELIEF, THIS PARCEL DOES NOT FALL WITHIN THE FLOOD PLAIN FLOOD HAZARD REF.: FEMA COMMUNITY #330150, MAP #33017C0310E, DATED: SEPTEMBER 30, 2015.
8. VERTICAL DATUM BASED ON NAVD88 ELEVATIONS. HORIZONTAL COORDINATES BASED ON NAD83. COORDINATES GATHERED USING TOPCON HIPER SR SURVEY GRADE GPS RECEIVERS.
9. THE BOUNDARY LINES SHOWN ON THIS PLAN ARE THE RESULT OF A CLOSED TRAVERSE PERFORMED BY THIS OFFICE IN NOVEMBER OF 2020, WITH AN ERROR OF CLOSURE BETTER THAN 1 PART IN 77,000.
10. A TOPOGRAPHICAL SURVEY WAS PERFORMED BY THIS OFFICE NOVEMBER OF 2020. TOPOGRAPHY SHOWN IN 1' INTERVALS.
11. EXISTING PAVED IMPERVIOUS: 924.9 SF (6.0%), PRE-EXISTING BUILDING IMPERVIOUS: 1,237.6 SF (8.0%), TOTAL EXISTING IMPERVIOUS: 2162.5 SF (14.0%),
12. NO CEMETERIES OR WETLANDS WERE FOUND ON SITE
13. THIS SITE IS SERVICED BY MUNICIPAL SEWER AND WATER

PLAN REFERENCES:

1. "PLAN OF LOT, PAUL N. VERRETTE. DOVER. NEW HAMPSHIRE"
   BY: G.L. DAVIS & ASSOCIATES
   DATED: DECEMBER 1970
   NOT RECORDED
2. "LOT LINE ADJUSTMENT PLAN, DOVER HOUSING AUTHORITY, TOLEND ROAD AND WHITTIER STREET, DOVER, NEW HAMPSHIRE, STRAFFORD COUNTY"
   BY: TRITECH ENGINEERING CORPORATION
   DATED: JUNE 19, 2017
   S.C.R.D. PLAN #114-017 THROUGH 114-21
3. "LAND OF DOVER HOUSING AUTHORITY, WHITTIER STREET, DOVER, N.H."
   BY: BERRY SURVEYING & ENGINEERING
   DATED: JUNE 13, 1988 (REV. 5-21-90)
   NOT RECORDED
   FILE NO. DB 1988-71

EXISTING LEGEND:

- 3/4" IRON BOUND ~ TO BE SET
- IRON BOUND ~FND~
- IRON PIPE ~FND~
- DRILL HOLE ~FND~
- STEEL STAKE ~FND~
- UTILITY POLE / GUY WIRE
- SINGLE POST SIGN
- CURB STOP
- GATE VALVE
- FIRE HYDRANT
- CATCH BASIN W/ STRUCTURE
- SEWER MANHOLE W/ STRUCTURE
- E248.60 EXISTING SPOT ELEVATION
- BUILDING SETBACK LINE
- PERIMETER BOUNDARY
- APPROXIMATE ABUTTING PROPERTY LINE
- EXISTING WATER LINE
- EXISTING SEWER LINE
- EXISTING DRAIN LINE
- EXISTING GAS LINE
- OVERHEAD UTILITIES
- EXISTING CONTOUR MINOR
- EXISTING CONTOUR MAJOR
- 250' NHDES SHORELAND ZONE
- NRCS SOIL DELINEATION
- HgB SOIL TYPE
- TEST PIT
- TEMPORARY BENCHMARK
- AREA OF GREATER THAN 20% SLOPE

TEST PIT DATA:

TEST PIT #1
0-32 10YR 4/4 DARK YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
32-36 10YR 2/2 VERY DARK BROWN, FINE SANDY LOAM, MASSIVE, FRIABLE
36-40 10YR 4/4 DARK YELLOWISH BROWN, SILT LOAM, MASSIVE, FRIABLE
40-45 2.5Y 5/4 LIGHT OLIVE BROWN, SILT LOAM, BLOCKY, FIRM
45-68 2.5Y 5/2 GRAYISH BROWN, SILTY CLAY LOAM WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 40"
RESTRICTIVE LAYER @ 45"
GROUND WATER @ N/A
TERMINATED @ 68"
REFUSAL @ N/A
NOTE: 0-32" IS FILL MATERIAL

TEST PIT #2
0-36 10YR 4/4 DARK YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
36-72 2.5Y 5/2 GRAYISH BROWN, SILTY CLAY LOAM WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 36"
RESTRICTIVE LAYER @ 36"
GROUND WATER @ NONE
TERMINATED @ 72"
REFUSAL @ N/A

WETLAND NOTES:

THE SITE WAS EVALUATED FOR WETLANDS BY DEIDRA BENJAMIN IN OCTOBER 2020 UTILIZING THE FOLLOWING STANDARDS: NO WETLANDS WERE FOUND

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

DEIDRA BENJAMIN, CWS #295

STATE OF NEW HAMPSHIRE DEIDRA L. BENJAMIN No. 295 CERTIFIED WETLAND SCIENTIST

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

I CERTIFY THAT THIS PLAT EXCEEDS THE MINIMUM REQUIREMENT FOR ACCURACY AND COMPLETENESS OF THE STATE OF N.H. AND OF THE CITY OF DOVER, N.H. – 1:10,000 –

KENNETH A. BERRY LLS 805 DATE

DOVER PLANNING FILE #

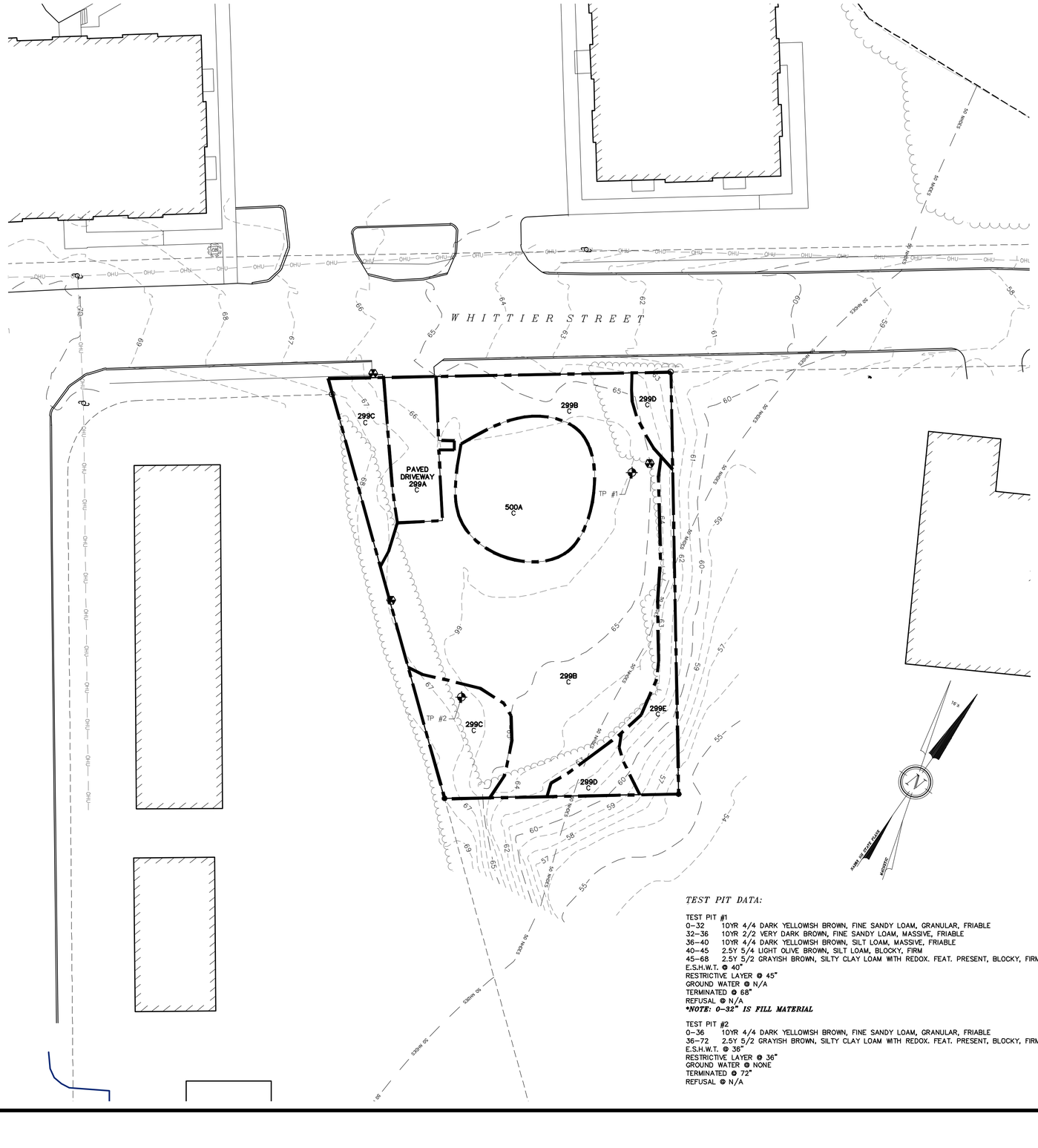
REVISION	DATE	DESCRIPTION

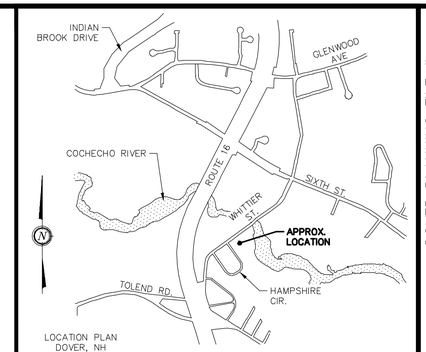
EXISTING CONDITIONS PLAN
LAND OF
DOVER HOUSING AUTHORITY
48 WHITTIER STREET
DOVER, N.H.
TAX MAP 33, LOT 1-A

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

SCALE : 1 IN. EQUALS 20 FT.
DATE : MAY 6, 2021
FILE NO. : DB 2020 – 136

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





LOCATION PLAN
DOVER, NH
NOT TO SCALE

NOTES:

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

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

1. TAX MAP 33, LOT 1–A
2. PROJECT ADDRESS: 48 WHITTIER STREET
3. LOT AREA: 15,394 Sq. Ft., 0.35 Ac.
4. S.C.R.D. BOOK 4716, PAGE 900
5. THE INTENT OF THIS PLAN IS TO SHOW THE EXISTING SOILS CONDITIONS OF TAX MAP 33, LOT 1–A, LOCATED IN DOVER, N.H., AS OF THE SOIL SURVEY. SEE REPORT DATED MARCH 2021.
6. I HEREBY CERTIFY THAT, TO THE BEST OF MY KNOWLEDGE AND BELIEF, THIS PROPERTY DOES NOT FALL WITHIN THE FLOOD PLAIN FLOOD HAZARD REF: FEMA COMMUNITY #330150, MAP 33017C0310D, DATED: MAY 17, 2005.
7. VERTICAL DATUM BASED ON NAVD88 ELEVATIONS. HORIZONTAL DATUM BASED ON NAD83 STATE PLANE. COORDINATES GATHERED USING TOPCON HIPER SR SURVEY GRADE GPS.
8. TOPOGRAPHY PROVIDED IS DEMARCATED AT 1' INTERVALS, AND IS THE RESULT OF A FIELD SURVEY PERFORMED JULY 2020.

SITE SPECIFIC SOILS LEGEND

SYMBOL	SOIL TAXONOMIC NAME	HYDROLOGIC SOIL GROUP
#299B	UDORTHENTS (SMOOTHED)	C
#299C	UDORTHENTS (SMOOTHED)	C
#299D	UDORTHENTS (SMOOTHED)	C
#299E	UDORTHENTS (SMOOTHED)	C
#500A	UDORTHENTS (LOAMY)	C

SLOPE: A = 0–3% B = 3–8% C = 8–15% D = 15–25% E = 25–50% F = 50%+

DENOMINATOR: /VPD = VERY POORLY DRAINED /PD = POORLY DRAINED /SWPD = SOMEWHAT POORLY DRAINED /MWD = MODERATELY WELL DRAINED

SOIL DATA:

BzB ~ BUXTON SILT LOAM, 3 TO 8% SLOPES

NRCS, SEE WEBSOIL

TEST PIT DATA:

TEST PIT #1
0–32 10YR 4/4 DARK YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
32–36 10YR 2/2 VERY DARK BROWN, FINE SANDY LOAM, MASSIVE, FRIABLE
36–40 10YR 4/4 DARK YELLOWISH BROWN, SILT LOAM, MASSIVE, FRIABLE
40–45 2.5Y 5/4 LIGHT OLIVE BROWN, SILT LOAM, BLOCKY, FIRM
45–68 2.5Y 5/2 GRAYISH BROWN, SILTY CLAY LOAM WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 40"
RESTRICTIVE LAYER @ 45"
GROUND WATER @ N/A
TERMINATED @ 68"
REFUSAL @ N/A
NOTE: 0–32" IS FILL MATERIAL

TEST PIT #2
0–36 10YR 4/4 DARK YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
36–72 2.5Y 5/2 GRAYISH BROWN, SILTY CLAY LOAM WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 36"
RESTRICTIVE LAYER @ 36"
GROUND WATER @ NONE
TERMINATED @ 72"
REFUSAL @ N/A

DEIDRA BENJAMIN, CWS #295

STATE OF NEW HAMPSHIRE — DEIDRA L. BENJAMIN — No. 295 — CERTIFIED WETLAND SCIENTIST

JOHN P. HAYES, CSS #87

STATE OF NEW HAMPSHIRE — JOHN P. HAYES III — No. 087 — CERTIFIED SOIL SCIENTIST

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

DOVER PLANNING FILE #

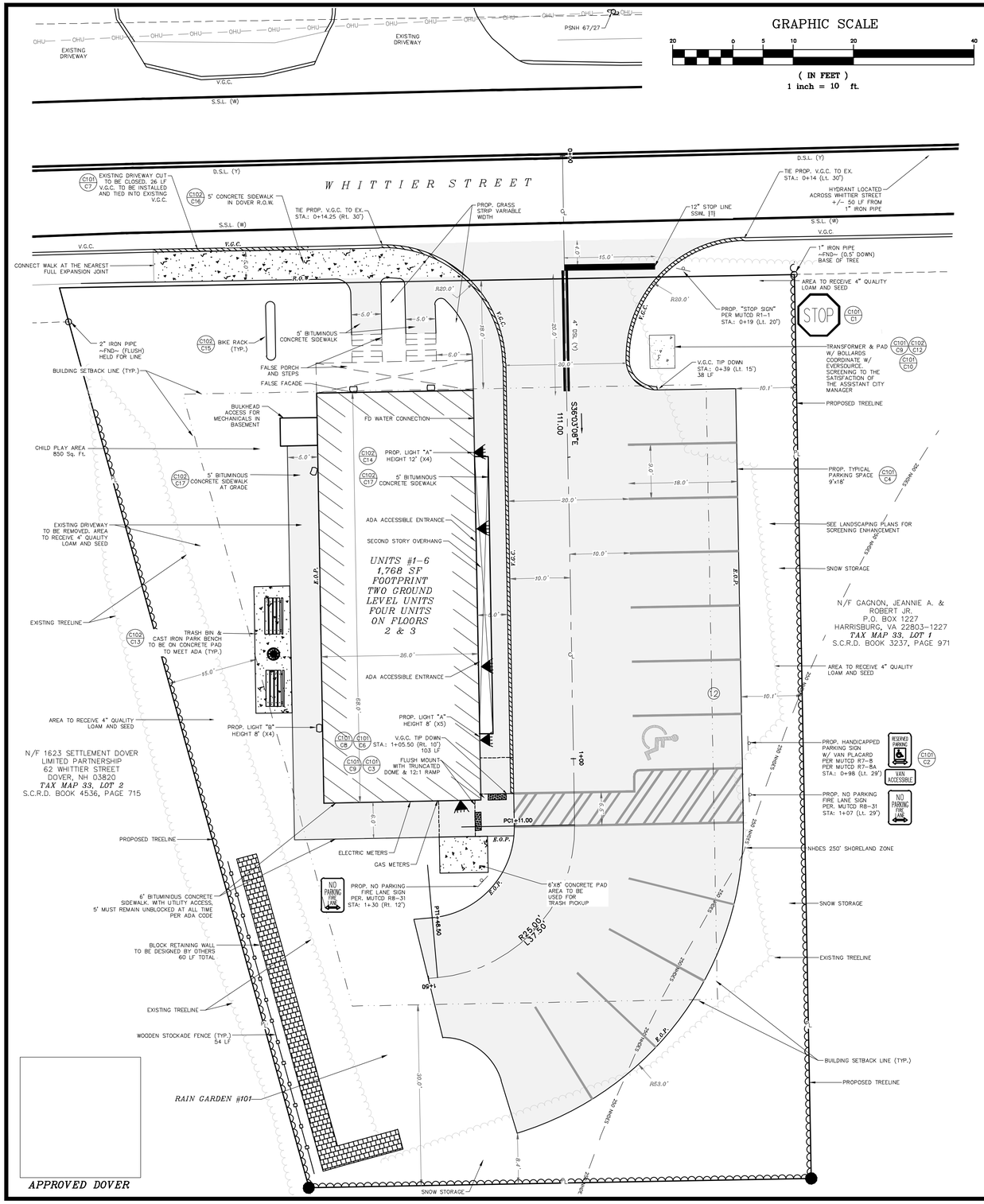
REVISION	DATE	DESCRIPTION

SITE SPECIFIC SOILS MAP
LAND OF
DOVER HOUSING AUTHORITY
48 WHITTIER STREET
DOVER, N.H.
TAX MAP 33, LOT 1–A

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

SCALE : 1 IN. EQUALS 20 FT.
DATE : MAY 6, 2021
FILE NO. : DB 2020 – 136

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



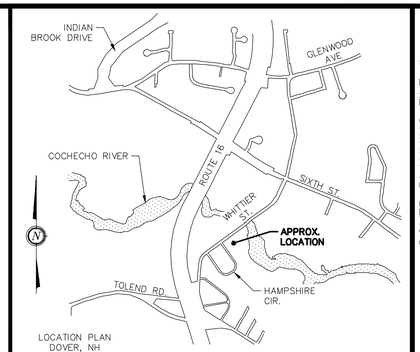
NOTES:

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

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

1. TAX MAP 33, LOT 1-A
2. PROJECT ADDRESS: 48 WHITTIER STREET
3. LOT AREA: 15,394 Sq. Ft., 0.35 Ac.
4. S.C.R.D. BOOK 4716, PAGE 900
5. ZONING: RM-U
   PRINCIPAL BUILDING:
   LOT SIZE: 10,000 Sq. Ft.
   MAX LOT COVERAGE: 40%
   MINIMUM FRONTAGE: 80 Ft.
   FRONT BUILD-TO =- +/- 5' (AVG. OF NEIGHBORHOOD)
   SIDE SETBACK: 15 Ft.
   REAR SETBACK: 15 Ft.
   PRINCIPAL BUILDING: 40 Ft. MAX

   TRANSFER OF DEVELOPMENT RIGHTS (TDR)
   LOT SIZE: N/A Sq. Ft.
   MAX. LOT COVERAGE: N/A
   MINIMUM FRONTAGE: 40'
   FRONT SETBACK: 20'
   ABUT A STREET SETBACK: 20'
   SIDE SETBACK: 10'
   REAR SETBACK: 30'
   PERIMETER BUFFER: 30'
6. I HEREBY CERTIFY THAT, TO THE BEST OF MY KNOWLEDGE & BELIEF, THIS PARCEL DOES NOT FALL WITHIN THE FLOOD PLAIN FLOOD HAZARD REF.: FEMA COMMUNITY #330145, MAP #33017C0310E, DATED: SEPTEMBER 30, 2015.
7. VERTICAL DATUM BASED ON NAVD88 ELEVATIONS. HORIZONTAL COORDINATES BASED ON NAD83. COORDINATES GATHERED USING TOPCON HIPER SR SURVEY GRADE GPS RECEIVERS.
8. THE BOUNDARY LINES SHOWN ON THIS PLAN ARE THE RESULT OF A CLOSED TRAVERSE PERFORMED BY THIS OFFICE IN NOVEMBER OF 2020, WITH AN ERROR OF CLOSURE OF 1 PART IN 77,000.
9. THE INTENT OF THIS PLAN IS TO SHOW THE SITE PLAN ELEMENTS ON TAX MAP 33, LOT 1-A FOR A 6-UNIT RESIDENTIAL BUILDING
10. THE PRE-EXISTING LOT COVERAGE IS 1,238 SQ. FT. (8.0%)
11. AS-BUILT PLANS OF THE SITE SHALL BE SUBMITTED ON A REPRODUCIBLE MYLAR MEDIUM AND IN A DIGITAL DXF FORMAT ON DISK TO THE CITY OF DOVER ENGINEER'S OFFICE UPON COMPLETION OF PROJECT. AS-BUILT PLANS SHALL BE PREPARED AND CERTIFIED CORRECT BY A L.L.S. OR P.E.
12. THE PROPOSED STRUCTURES SHALL BE SERVED BY A SPRINKLER SYSTEMS AS REQUIRED UNDER CHAPTER 109-30 OF THE CODE OF THE CITY OF DOVER AND THE 2009 STATE BUILDING CODES.
13. SPRINKLER CONNECTIONS MUST BE FLUSHED IN ACCORDANCE WITH NFPA 24 AND A CONTRACTOR'S MATERIALS AND TEST CERTIFICATE FOR UNDERGROUND PIPING FORM MUST BE COMPLETED.
14. FIRE DEPARTMENT CONNECTIONS SHALL BE LOCATED ON THE STREET SIDE OF THE BUILDING PER NFPA 13.
15. A SECURITY SYSTEM SHALL BE INSTALLED AS REQUIRED BY CHAPTER 45, ARTICLE I, SECTION 45-2 OF THE CODE OF THE CITY OF DOVER.
16. THE SUBJECT PARCEL IS SERVED BY MUNICIPAL WATER AND SEWER.
17. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO APPLICABLE CITY AND STATE CODES.
18. APPROVED BACKFLOW PREVENTORS SHALL BE PROVIDED FOR BOTH FIRE AND DOMESTIC WATER LINES.
19. 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.
20. THE LIMITS OF CONSTRUCTION DISTURBANCE SHALL BE STAKED, FLAGGED AND CLEARLY IDENTIFIED PRIOR TO THE COMMENCEMENT OF SITE WORK.
21. ALL TREATMENT SWALES TO BE CONSTRUCTED SHALL HAVE SOD BOTTOMS.
22. A LETTER OF CREDIT FOR THE COST OF RE-VEGETATING ALL DISTURBED AREAS ON THE SITE SHALL BE SUBMITTED PRIOR TO ANY EARTH DISTURBING ACTIVITY OCCURS. COORDINATE WITH CITY OF DOVER, COMMUNITY SERVICES AND ENGINEERING DEPARTMENT.
23. 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.
24. BUILDING ADDRESSES SHALL BE ASSIGNED BY THE BUILDING INSPECTOR AT THE TIME OF ISSUANCE OF A BUILDING PERMIT ALONG WITH UNIT NUMBERS.
25. THE FOLLOWING FEDERAL AND STATE PERMITS HAVE BEEN ISSUED FOR THE SUBJECT PROPERTY:
    NHDES SHORELAND PERMIT
26. THIS PLAN PROPOSES 15,000 SQ. FT. OF DISTURBANCE.
27. CALL DIG SAFE PRIOR TO BEGINNING WORK (1-888-344-7233)
28. ALL CONSTRUCTION SHALL CONFORM TO THE STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION. CONSTRUCTION SHALL ALSO CONFORM TO THE CITY OF DOVER POLICIES AND PRACTICES.
29. SEE UTILITY PLAN FOR EXTENTS OF PAVEMENT CONSTRUCTION. CUT AND CAP EXISTING WATER AND SEWER LINE.
30. WRITTEN DIMENSION ON THIS PLAN TAKE PRECEDENCE OVER SCALED DIMENSIONS. THE CONTRACTOR SHALL USE CAUTION WHEN SCALING REPRODUCED PLANS. IN THE EVENT OF A CONFLICT BETWEEN THIS PLAN SET AND ANY OTHER DRAWINGS AND/OR SPECIFICATIONS, THE ENGINEER SHALL BE NOTIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. CONTRACTOR IS TO CONFIRM ALL ELEVATIONS. CONFLICTS WILL BE REPORTED TO THE DESIGN ENGINEER PRIOR TO CONSTRUCTION.
31. THE SITE LAYOUT IS DESIGNED IN COMPLIANCE WITH APPLICABLE ACCESSIBILITY REGULATIONS. THE PROPOSED STRUCTURE WILL ALSO BE DESIGNED IN ACCORDANCE WITH APPLICABLE ACCESSIBILITY REGULATIONS. THE SITE LAYOUT IS COMPLIANT WITH NH RSA 155-A:5.
32. THE PROPOSED USE FOR THE SITE IS A 6 UNIT MULTI-FAMILY STRUCTURE, WITH TWO UNITS ON THE FIRST FLOOR AND 4 TOWNHOUSE STYLE UNITS ABOVE.
33. LIST ANY VARIANCES OR SPECIAL EXCEPTIONS GRANTED BY THE ZONING BOARD IF
    ADJUSTMENT: NONE
    CONDITIONAL USE PERMITS REQUIRED BY THE PLANNING BOARD: NONE
    WAIVER REQUESTS REQUIRED BY THE PLANNING BOARD: PARKING AISLE WIDTH (22' REQ., 20' PROP.)
34. THE CONSTRUCTION HOURS SHALL BE LIMITED TO MONDAY-FRIDAY 7AM-6PM, SATURDAY 9 AM-4PM WITH NO SUNDAY HOURS. HOURS OF CONSTRUCTION SHALL BE DOCUMENTED ON A SITE CONSTRUCTION SIGN ALONG WITH THE CONTACT INFORMATION FOR THE GENERAL CONTRACTOR.
35. VEHICLE ROUTE DURING CONSTRUCTION SHALL CONFORM WITH DOVER CITY CODE OR BE COORDINATED WITH THE COMMUNITY SERVICES DIRECTOR.
36. THE INSTALLATION OF ELECTRIC POWER, CABLE TELEVISION AND TELEPHONE LINES SHALL BE UNDERGROUND THROUGHOUT THE SITE FOR WHICH DEVELOPMENT IS PROPOSED. SITE PLANS SHALL SHOW ANY EASEMENTS FOR THESE SERVICES.
37. FROM GROUND BREAKING THE SITE SHALL REMAIN ACCESSIBLE YEAR ROUND IN ALL WEATHER CONDITIONS.



LOCATION PLAN
DOVER, NH
NOT TO SCALE

NOTES CONTINUED:

38. WETLANDS WERE SEARCHED FOR BY DEIDRA BENJAMIN, CERTIFIED WETLANDS SCIENTIST, CERTIFICATION NUMBER 295, IN ACCORDANCE WITH CHAPTER 170-27.1 OF THE ZONING ORDINANCE, IN WINTER OF 2021. NO WETLANDS FOUND ON SITE.
39. ANY RETAINING WALL TALLER THAN FOUR FEET (4') REQUIRES ISSUANCE OF A BUILDING PERMIT FROM INSPECTION SERVICES.
40. ANY FENCE TALLER THAN SEVEN FEET (7') REQUIRES THE ISSUANCE OF A BUILDING PERMIT FROM INSPECTION SERVICES.
41. APPLICANT SHALL COMPLETE LAND USE DEVELOPMENT TRACKING FORM, MOST RECENTLY REVISED VERSION, UTILIZING THE ONLINE POLLUTION TRACKING AND ACCOUNTING PILOT PROJECT (PTAPP) PORTAL.
42. 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.
43. FIRE DEPARTMENT ACCESS ROAD SHALL BE INSTALLED AND MAINTAINED TO SUPPORT THE IMPOSED LOADS OF FIRE APPARATUS IN ALL WEATHER CONDITIONS AT ALL TIMES.
44. EXTERIOR LIGHTING SHALL BE CUT-OFF TYPE FIXTURES PER CHAPTER 149-24-A AND SHALL PROVIDE LIGHTING DIRECTED ON-SITE ONLY.
45. 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.
46. SNOW STORAGE CALCULATION
    PROPOSED PAVED IMPERVIOUS COVERAGE: 6,420 Sq. Ft.
    PROVIDED SNOW STORAGE AREA: 1,850 Sq. Ft.
    GREATER THAN 6:1 RATIO PROVIDED
47. IMPERVIOUS COVERAGE
    PRE-EXISTING PAVED IMPERVIOUS COVERAGE: 928 Sq. Ft. (6.0%)
    PRE-EXISTING BUILDING IMPERVIOUS COVERAGE: 1,240 Sq. Ft. (8.1%)
    TOTAL PRE-EXISTING IMPERVIOUS COVERAGE: 2,168 Sq. Ft. (14.1%)
    PROPOSED PAVED IMPERVIOUS COVERAGE: 6,084 Sq. Ft. (39.5%)
    PROPOSED BUILDING IMPERVIOUS COVERAGE: 2,030 Sq. Ft. (13.2%)
    TOTAL PROPOSED IMPERVIOUS COVERAGE: 8,114 Sq. Ft. (52.7%)

TDR REQUESTS:
2 UNITS WERE CALCULATED BY RIGHT, 4 UNITS TO BE OBTAINED VIA TDR:
FRONT SETBACK REDUCTION FROM 20' TO 18':
REDUCTION IN 30' PERIMETER BUFFER:

WAIVERS:
PARKING AISLE WIDTH FROM 22' TO 20' (149-15-C):

PARKING REQUIREMENTS:

CHAPTER 149 PARKING TABLE
- RESIDENTIAL
  - RESIDENTIAL (NON-CBD-G) 1.4 SPACES PER UNIT:
  - VISITOR 0.5 SPACES PER UNIT:
  - 6 UNITS x 1.4 SPACES + 6 UNITS x 0.5 SPACES = 11.4 SPACES
    12 SPACES

TOTAL PROPOSED = 12 SPACES

RECREATION SPACE REQUIREMENTS
PROPOSED NUMBER OF BEDROOMS: 12
OPEN SPACE REQUIREMENT (100 SF PER BEDROOM): 1,200 SF
½ RECREATION SPACE FOR PASSIVE USE: 600 SF (SATISFIED ON SITE)
½ RECREATION SPACE FOR ACTIVE USE: 600 SF (SATISFIED ON SITE)
RECREATION FEE NOT REQUIRED

TRANSFER OF DEVELOPMENT RIGHTS (TDR) CALCULATION

USING FOUR FAMILY OR MORE METHOD

LOT SIZE: 15,394 Sq. Ft.

2 UNITS ALLOWED BY RIGHT USING RM-U ZONING

4 ADDITIONAL UNITS REQUESTED VIA TRANSFER OF DEVELOPMENT RIGHTS

6 TOTAL UNITS PROPOSED, ALL CONFORMING TO HUD FAIR MARKET RENT

DOVER PLANNING FILE #

REVISION	DATE	DESCRIPTION

SITE PLAN
LAND OF
DOVER HOUSING AUTHORITY
48 WHITTIER STREET
DOVER, N.H.
TAX MAP 33, LOT 1-A

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

SCALE : 1 IN. EQUALS 10 FT.
DATE : MAY 6, 2021
FILE NO. : DB 2020 - 136

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
LICENSED PROFESSIONAL ENGINEER

NOTES:

1.) THE INTENT OF THIS PLAN SET IS TO DEMONSTRATE THE GRADING DESIGN FOR SIX RESIDENTIAL UNITS IN ONE BUILDING AT 48 WHITTIER STREET.

2.) OWNER & APPLICANT: DOVER HOUSING AUTHORITY
62 WHITTIER STREET
DOVER, NH 03820

3.) THE PROJECT PARCEL IS TAX MAP 33, LOT 1–A OF THE CITY OF DOVER TAX ASSESSOR'S MAPS.

4.) THE PROJECT PARCEL CONTAINS 0.35 ACRES OR 15,394 SQUARE FEET AREA OF LAND.

5.) TITLE REFERENCE FOR THE PROJECT PARCEL IS THE STRAFFORD COUNTY REGISTRY OF DEEDS, (S.C.R.D.) BOOK NO. 4716, PAGE NO. 900.

6.) 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.

7.) 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.

8.) SEE DETAILS CONCERNING SITE LAYOUT, DRAINAGE, UTILITY AND SEDIMENT AND EROSION CONTROLS.

9.) SEE EROSION & SEDIMENT CONTROL PLAN FOR INLET PROTECTION AND CONTROLS FOR THE ENTIRE SITE.

10.) ALL DRAINAGE PIPE IS TO BE HDPE N–12 ASTM F2648. (GREEN PIPE) INDIVIDUAL PIPE SIZES ARE SPECIFIED.

11.) 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.

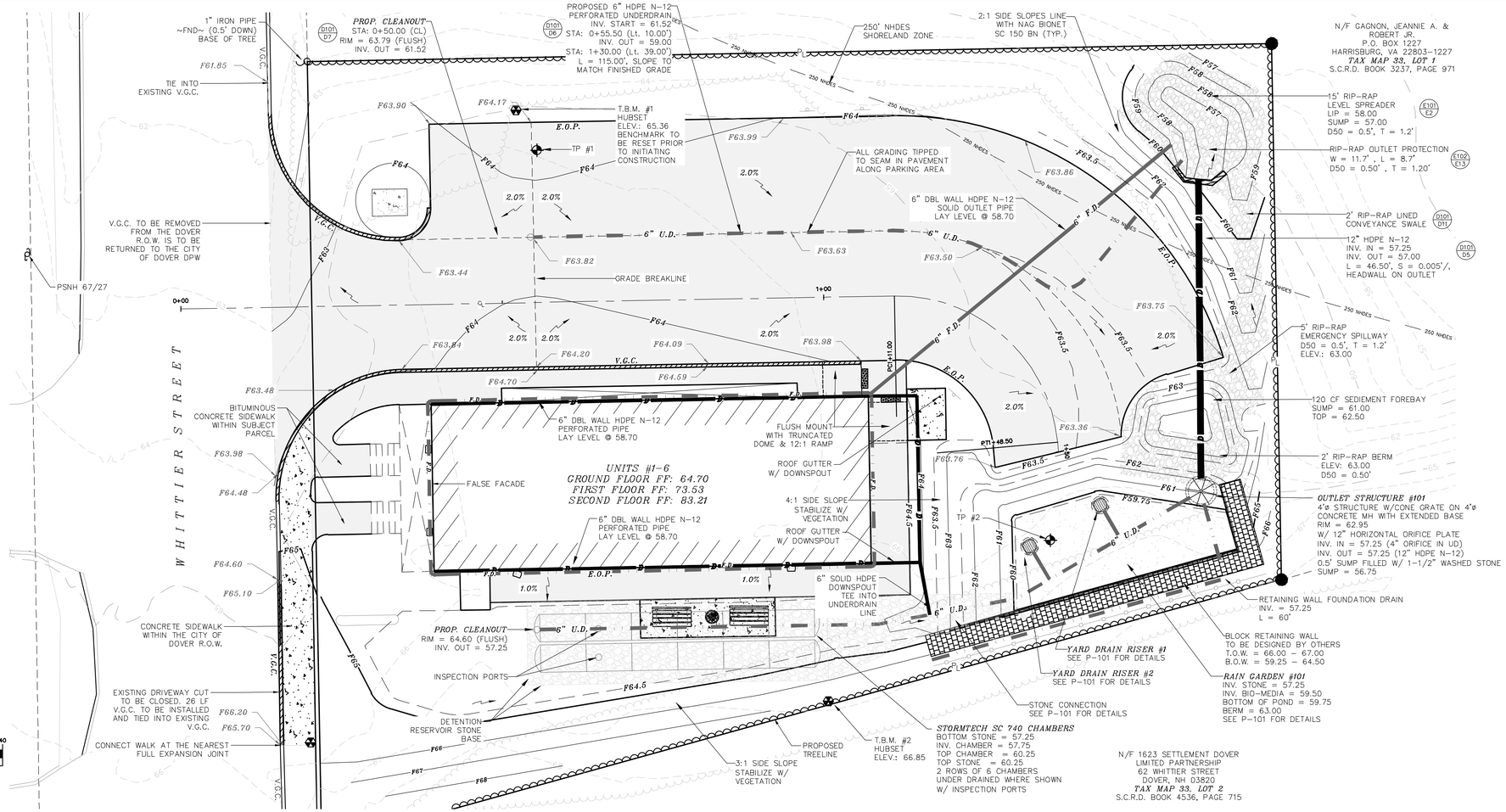
12.) NOTE THAT THE PROJECT NOT SUBJECT TO THE EPA NPDES PHASE II. OPERATION OF THE SITE WILL CONFORM TO THE STORM WATER MANAGEMENT PLAN PER CITY OF DOVER CHAPTER 149–14. WEEKLY INSPECTIONS WILL BE CONDUCTED BY THE DESIGN ENGINEER, OR THIRD PARTY INSPECTOR, SEE E101.

13.) UPON FINAL COMPLETION AND 85% STABALIZATION THE DRAINAGE SYSTEM IS TO BE CLEANED OF ALL DEBRIS TO INCLUDE THE PUMPING OF THE BASIN SUMPS.

14.) ALL UNPAVED AREAS ARE TO RECEIVE 4" QUALITY LOAM AND SEED.

15.) ALL BASINS AND DRAINS ARE TO HAVE BOOTS INSTALLED ON ALL INLETS AND OUTLETS.

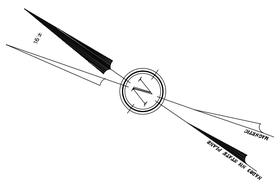
16.) ALL PROPOSED CLEAN OUTS ARE TO BE VERTICAL 12" N–12 PIPE WITH CAST IRON COVERS SCREWED WITH STAINLESS SCREWS. THE COVER IS TO BE DEMARCATED WITH A "D".

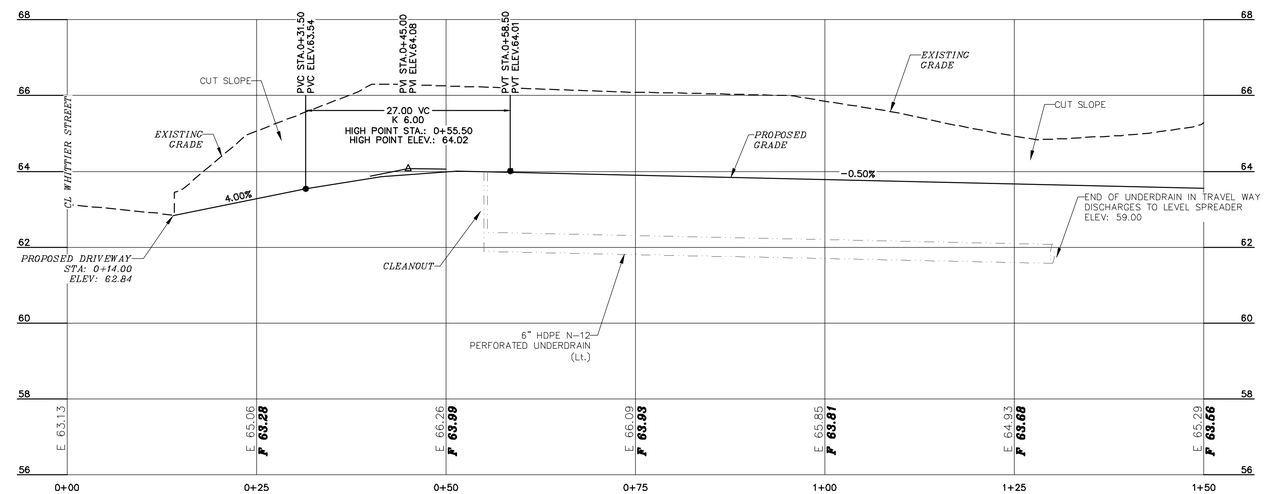


GRAPHIC SCALE

20 0 5 10 20 40

(IN FEET)
1 inch = 10 ft.





GRAPHIC SCALE

20 0 5 10 20 40

(IN FEET)
1 inch = 10 ft.
VERTICAL SCALE: 1" = 2'

DOVER PLANNING FILE #

REVISION	DATE	DESCRIPTION

GRADING PLAN & PROFILE
LAND OF
DOVER HOUSING AUTHORITY
48 WHITTIER STREET
DOVER, N.H.
TAX MAP 33, LOT 1–A

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

SCALE : 1 IN. EQUALS 10 FT.
DATE : MAY 6, 2021
FILE NO. : DB 2020 – 136

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14141
LICENSED PROFESSIONAL ENGINEER

BIORETENTION FILTER MEDIA MIXTURES			
Component Material	Percent of Mixture by Volume	Gradation of material	
		Sieve No.	Percent by Weight Passing Standard Sieve
Bioretention Filter Media Option A			
ASTM C-33 concrete sand	50 to 55		
Loamy sand topsoil, with fines as indicated	20 to 30	200	15 to 25
Moderately fine shredded bark or wood fiber mulch, with fines as indicated	20 to 30	200	< 5

3/8" WASHED CRUSHED STONE*

SIEVE SIZE	% PASSING BY WEIGHT
1/2"	100
3/8"	95 – 100
# 4	22 – 55
# 8	0 – 10

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

1-1/2" WASHED CRUSHED STONE*

SIEVE SIZE	% PASSING BY WEIGHT
2"	100
1-1/2"	90 – 100
1"	20 – 55
1/2"	0 –15
3/8"	0 –5

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

NOTES

1. WHEN CONTRACTOR EXCAVATES RAIN GARDEN AREA TO SUBGRADE, DESIGN ENGINEER SHALL PERFORM SUBSURFACE EVALUATION PRIOR TO THE PLACEMENT OF ANY SELECT MATERIAL OR OTHER BACKFILL.
2. SOIL BIORETENTION FILTER MEDIA SHALL BE AS SHOWN ABOVE. "BIO MEDIA" MEANS BIORETENTION FILTER MADIA.
3. COMPACTION IS NOT TO OCCUR IN THE RAIN GARDEN AREAS PRIOR TO CONSTRUCTION. SCARIFICATION REQUIRED IN THE EVENT COMPACTION TAKES PLACE.
4. DO NOT PLACE THE BIORETENTION SYSTEM INTO SERVICE UNTIL THE BMP HAS BEEN PLANTED AND ITS CONTRIBUTING AREAS HAVE BEEN FULLY STABILIZED.
5. DO NOT DISCHARGE SEDIMENT-LADEN WATERS FROM CONSTRUCTION ACTIVITIES (RUNOFF WATER FROM EXCAVATIONS) TO THE BIORETENTION AREA DURING ANY STAGE OF CONSTRUCTION.
6. DO NOT TRAFFIC EXPOSED SOIL SURFACE WITH CONSTRUCTION EQUIPMENT. IF FEASIBLE PERFORM EXCAVATIONS WITH EQUIPMENT POSITIONED OUTSIDE THE LIMITS OF THE INFILTRATION COMPONENTS OF THE SYSTEM.

MAINTENANCE REQUIREMENTS

1 SYSTEMS SHOULD BE INSPECTED AT LEAST TWICE ANNUALLY, AND FOLLOWING ANY RAINFALL EXCEEDING 2.5 INCHES IN A 24-HOUR PERIOD, WITH MAINTENANCE OR REHABILITATION CONDUCTED AS A WARRANTED BY SUCH INSPECTION.

2 PRETREATMENT MEASURES SHOULD BE INSPECTED AT LEAST TWICE ANNUALLY, AND CLEANED OF ACCUMULATED SEDIMENT AS WARRANTED BY INSPECTION, BUT NO LESS THAN ONCE ANNUALLY.

3 AT LEAST ONCE ANNUALLY, SYSTEM SHOULD BE INSPECTED FOR DRAWDOWN TIME. IF BIORETENTION SYSTEM DOES NOT DRAIN WITHIN 72-HOURS FOLLOWING A RAINFALL EVENT, THEN A QUALIFIED PROFESSIONAL SHOULD ASSESS THE CONDITION OF THE FACILITY TO DETERMINE MEASURES REQUIRED TO RESTORE FILTRATION FUNCTION OR INFILTRATION FUNCTION (AS APPLICABLE), INCLUDING BUT NOT LIMITED TO REMOVAL OF ACCUMULATED SEDIMENTS OR RECONSTRUCTION OF THE FILTER MEDIA.

4 VEGETATION SHOULD BE INSPECTED AT LEAST ANNUALLY, AND MAINTAINED IN HEALTHY CONDITION, INCLUDING, PRUNING, REMOVAL, AND REPLACEMENT OF DEAD OR DISEASED VEGETATION, AND REMOVAL OF INVASIVE SPECIES.

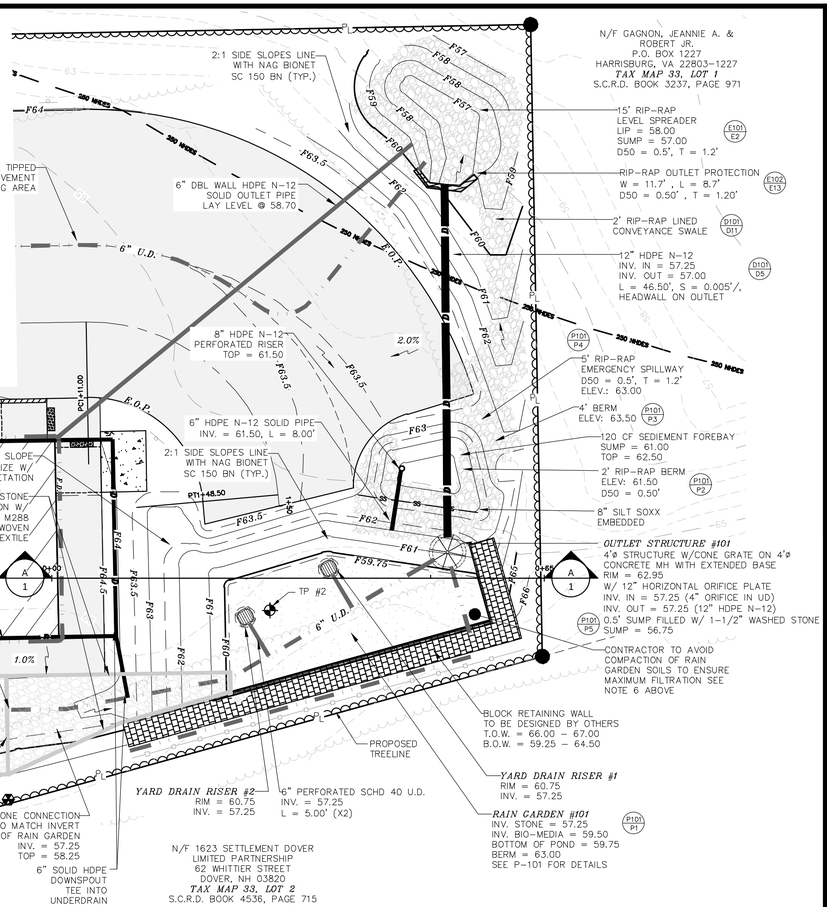
DESIGN REFERENCES

1 UNH STORMWATER CENTER
2 NEW HAMPSHIRE STORMWATER MANAGEMENT MANUAL, VOLUME 2, DECEMBER 2008 AS AMENDED.

P1

RAIN GARDEN MIX

THE GRASS THAT IS PLANTED WITHIN A RAIN GARDEN BIO-FILTRATION SYSTEM WITHIN THE BIO-MEDIA MUST CONSIST OF A COMBINATION OF WARM SEASON GRASS SEED AND COLD SEASON GRASS SEED IN ORDER FOR THE GRASS TO START GROWING FOR STABILIZATION AND CONTINUE GROWING IN THE SANDY WELL-DRAINED ENVIRONMENT. PLANTING SPECIFICATION WILL MEET THE REQUIREMENTS AS OUTLINED IN "VEGETATION NEW HAMPSHIRE SAND AND GRAVEL PITS' MIX 1 (WARM SEASON GRASSES) (15 LBS/AC) AND INCLUDE ANNUAL AND PERENNIAL RYE GRASS SEED (15 LBS/AC); THE NEW ENGLAND NATIVE WARM SEASON GRASS MIX (23 LBS/AC) BY NEW ENGLAND WETLAND PLANTS, INC.; RAIN GARDEN MIX 180 (15 LBS/AC & 15 LBS/AC OF RYE) / RAIN GARDEN GRASS MIX 180-1 (20 LBS/AC & 10 LBS/AC OF RYE) BY ERNST CONSERVATION SEEDS; OR APPROVED EQUAL.



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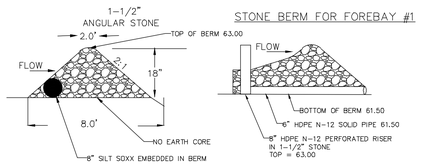

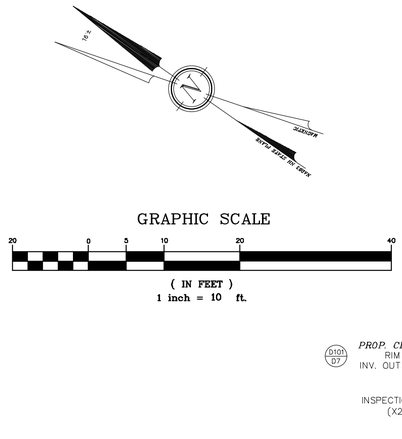

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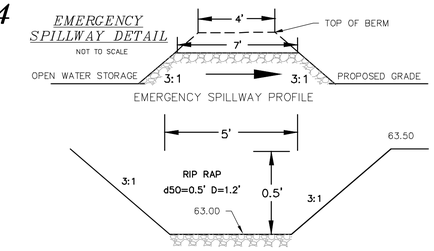
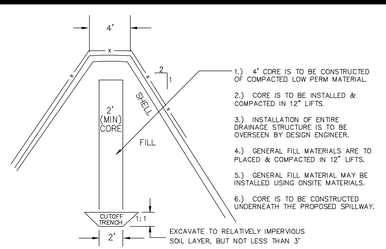
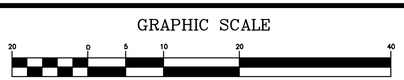


P3

LOW PERMEABILITY MATERIAL GRADATION

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





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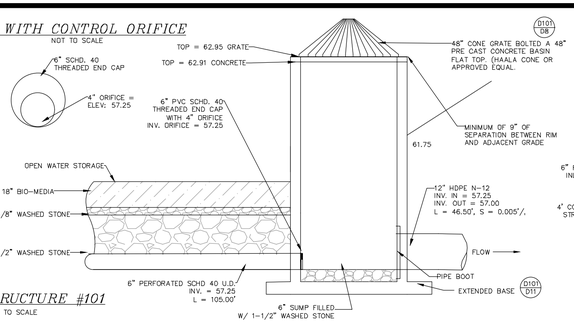
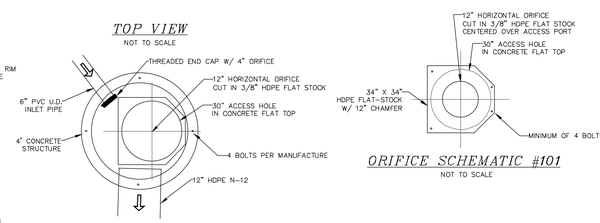
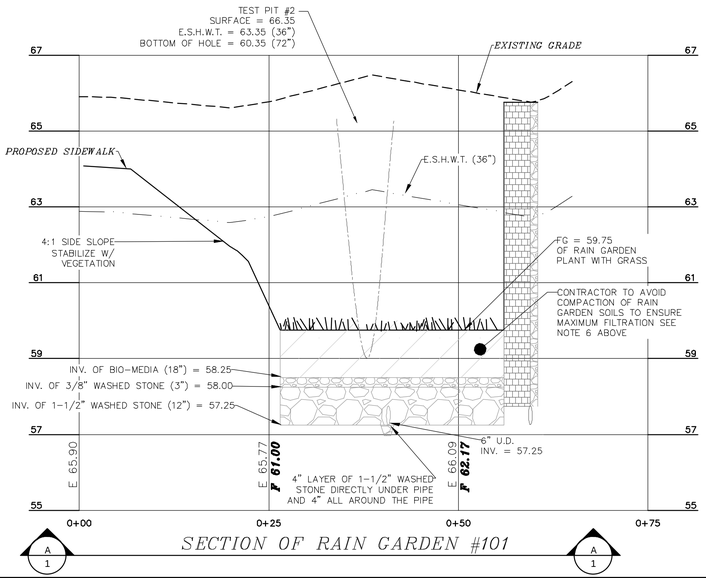






REVISION	DATE	DESCRIPTION

DOVER PLANNING FILE #

RAIN GARDEN #101 PLAN
LAND OF
DOVER HOUSING AUTHORITY
48 WHITTIER STREET
DOVER, N.H.
TAX MAP 33, LOT 1-A

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

SCALE : 1 IN. EQUALS 10 FT.
DATE : MAY 6, 2021
FILE NO. : DB 2020 – 136

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14142
LICENSED PROFESSIONAL ENGINEER

P-101

1. ALL DESIGN SPECIFICATIONS FOR STORMTECH SC-740 CHAMBERS SHALL BE IN ACCORDANCE WITH THE STORMTECH DESIGN MANUAL, ADVANCED DRAINAGE SYSTEM, INC (ADS STORMTECH)
2. THE INSTALLATION OF STORMTECH SC-740 CHAMBERS SHALL BE IN ACCORDANCE WITH THE LATEST STORMTECH INSTALLATION INSTRUCTIONS
3. THE CONTRACTOR IS ADVISED TO REVIEW AND UNDERSTAND THE INSTALLATION INSTRUCTIONS PRIOR TO BEGINNING SYSTEM INSTALLTION. CALL **1-888-892-2694** OR VISIT **WWW.STORMTECH.COM** TO RECIEVE A COPY OF THE LATEST STORMTECH INSTALLTION INSTRUCTIONS
4. CHAMBERS SHALL MEET THE DESIGN REQUIREMENTS AND LOAD FACTORS SPECIFIED IN SECTION 12.12 OF THE LATEST EDITION OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS

SC-740 NOTES

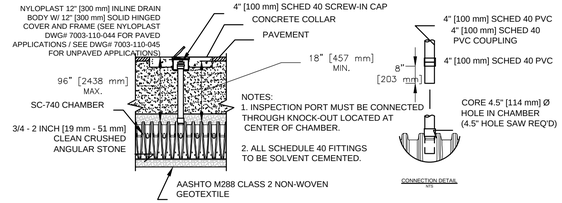
ACCEPTABLE FILL MATERIALS: STORMTECH SC-740 CHAMBER SYSTEMS

MATERIAL LOCATION	DESCRIPTION	AASHTO M43 DESIGNATION[1]	COMPACTION/DENSITY REQUIREMENT
(D) FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISH GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THIS LAYER.	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PREPARE PER ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
(C) FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE (B' LAYER) TO 18" (457 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THIS LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, < 35% FINES. MOST PAVEMENT SUB-BASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTION AFTER 12" [305 mm] OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 6" [152 mm] LIFTS TO A MIN. 95% STANDARD PROCTOR DENSITY. ROLLER GROSS VEHICLE WEIGHT NOT TO EXCEED 12,000 lbs [53 kN]. DYNAMIC FORCE NOT TO EXCEED 20,000 lbs [89 kN].
(B) EMBEDMENT STONE SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE (A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE, NOMINAL SIZE DISTRIBUTION BETWEEN 3/4 - 2 INCH [19 - 51 mm]	3, 357, 4, 467, 5, 56, 57	NO COMPACTION REQUIRED.
(A) FOUNDATION STONE BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE, NOMINAL SIZE DISTRIBUTION BETWEEN 3/4 - 2 INCH [19 - 51 mm]	3, 35, 4, 467, 5, 56, 57	PLATE COMPACT OR ROLL TO ACHIEVE A 95% STANDARD PROCTOR DENSITY[2].

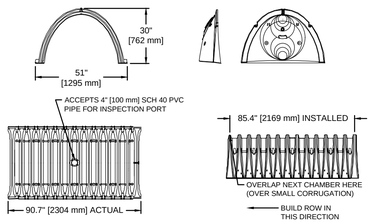
PLEASE NOTE:
1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".

2. AS AN ALTERNATE TO PROCTOR TESTING AND FIELD DENSITY MEASUREMENTS ON OPEN GRADED STONE, STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 9" [229 mm] (MAX) LIFTS USING TWO FULL COVERAGES WITH AN APPROPRIATE COMPACTOR.

STORMTECH ACCEPTABLE FILL MATERIALS



SC-740 INSPECTION PORT DETAIL



NOMINAL CHAMBER SPECIFICATIONS

SIZE (W x H x INSTALLED LENGTH)	51.0" x 30.0" x 85.4" [1295 mm x 762 mm x 2169 mm]
CHAMBER STORAGE	45.9 CUBIC FEET [1.30 m³]
MINIMUM INSTALLED STORAGE	74.9 CUBIC FEET [2.12 m³]
WEIGHT	75 lbs. [33.6 kg]

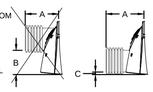
STUBS AT BOTTOM OF END CAP FOR PART NUMBERS ENDING WITH "B"
STUBS AT TOP OF END CAP FOR PART NUMBERS ENDING WITH "T"

PART#	STUB	A	B	C
SC740EPE06T	6" [150 mm]	10.90" [277 mm]	18.50" [470 mm]	N/A
SC740EPE06B	6" [150 mm]	10.90" [277 mm]	N/A	0.50" [13 mm]
SC740EPE08T	8" [200 mm]	12.20" [310 mm]	16.50" [419 mm]	N/A
SC740EPE08B	8" [200 mm]	12.20" [310 mm]	N/A	0.60" [15 mm]
SC740EPE10T	10" [250 mm]	13.40" [340 mm]	14.50" [368 mm]	N/A
SC740EPE10B	10" [250 mm]	13.40" [340 mm]	N/A	0.70" [18 mm]
SC740EPE12T	12" [300 mm]	14.70" [373 mm]	12.50" [318 mm]	N/A
SC740EPE12B	12" [300 mm]	14.70" [373 mm]	N/A	1.20" [30 mm]
SC740EPE15T	15" [375 mm]	18.40" [467 mm]	9.00" [229 mm]	N/A
SC740EPE15B	15" [375 mm]	18.40" [467 mm]	N/A	1.30" [33 mm]
SC740EPE18T	18" [450 mm]	19.70" [500 mm]	5.00" [127 mm]	N/A
SC740EPE18B	18" [450 mm]	19.70" [500 mm]	N/A	1.60" [41 mm]
*SC740EPE24B	24" [600 mm]	18.50" [470 mm]	N/A	0.10" [3 mm]

NOTE: ALL DIMENSIONS ARE NOMINAL

ALL STUBS, EXCEPT FOR THE SC740EPE24B ARE PLACED AT BOTTOM OF END CAP SUCH THAT THE OUTSIDE DIAMETER OF THE STUB IS FLUSH WITH THE BOTTOM OF THE END CAP. FOR ADDITIONAL INFORMATION CONTACT STORMTECH AT 1-888-892-2694.

*FOR THE SC740EPE24B THE 24" [600 mm] STUB LIES BELOW THE BOTTOM OF THE END CAP APPROXIMATELY 1.75" [44 mm]. BACKFILL MATERIAL SHOULD BE REMOVED FROM BELOW THE N-12 STUB SO THAT THE FITTING SITS LEVEL.



SC-740 TECHNICAL SPEC.

SC-740 CHAMBER
CHAMBERS SHALL MEET ASTM F 2418-09 "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
3/4" - 2" (19 mm - 51 mm) CLEAN, CRUSHED, ANGULAR STONE
AASHTO M288 CLASS 2 NON-WOVEN GEOTEXTILE
THE INSTALLED CHAMBER SYSTEM SHALL PROVIDE THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS SECTION 12.12 FOR EARTH AND LIVE LOADS, WITH CONSIDERATION FOR IMPACT AND MULTIPLE VEHICLE PRESENCE.
GRANULAR WELL GRADED SOIL/AGGREGATE MIXTURES, <35% FINES. COMPACT IN 6" LIFTS TO 95% PROCTOR DENSITY. SEE THE TABLE OF ACCEPTABLE FILL MATERIALS
2.25' MAX. MAXED AT HIGH POINT
6" STONE DEPTH ABOVE UNIT
END INSTALLED WITH FLOW DIVERTER. NUYYOSZ KWSH-HSWEE2-01 MAY OCCUR. INCREASED FLOW RATE OF 1812 l/m/m. 10/2020 JA
30"
18" MIN COVER REQ.
6"
SC-740 ENDCAP
2.0'
6"
51"
2.0'
DESIGN ENGINEER RESPONSIBLE FOR ENSURING THE REQUIRED BEARING CAPACITY OF SUBGRADE SOILS

SC-740 STANDARD CROSS SECTION

DOVER PLANNING FILE #

REVISION	DATE	DESCRIPTION

STORMTECH CHAMBER DETAILS
LAND OF
DOVER HOUSING AUTHORITY
48 WHITTIER STREET
DOVER, N.H.
TAX MAP 33, LOT 1-A

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

SCALE : N/A
DATE : MAY 6, 2021
FILE NO. : DB 2020 - 136

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

P-102

SOILS & DEWATERING:

BxB BUXTON SILT LOAM K= 0.49

SEE SITE SPECIFIC SOILS MAP (SSSM)
SEE WEBSOIL USDA–NRCS
ERODIBILITY FACTOR – K, CPESC MANUAL, ENVIROCERT INTERNATIONAL INC. &
ROCKINGHAM COUNTTY SOIL SURVEY, ROCKWEB SOIL ATTRIBUTES.

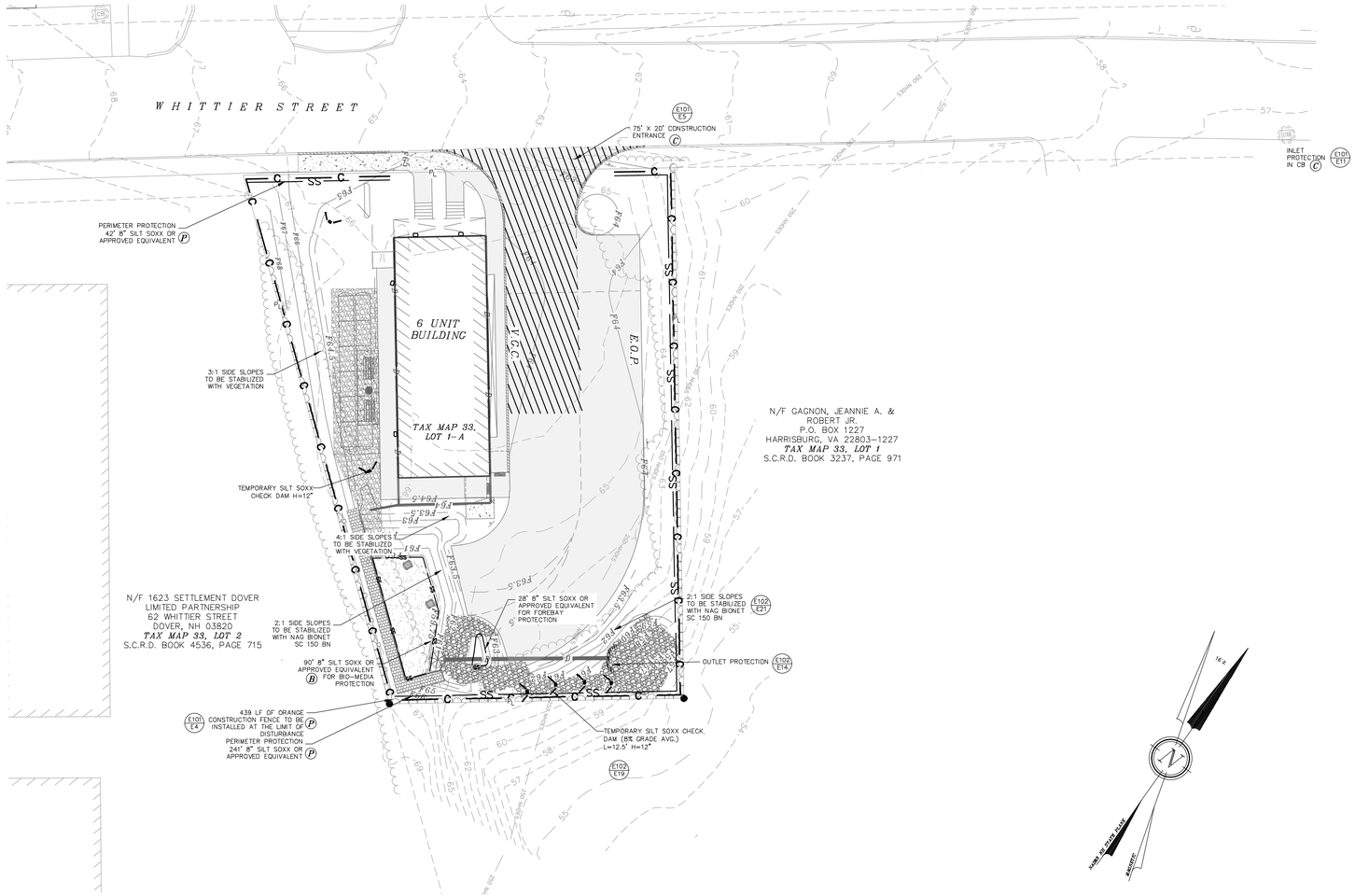
CONTRACTOR TO BE AWARE OF THE SOIL PROFILES AND ENSURE THAT PROPER EROSION PREVENTION AND SEDIMENT CONTROL MEASURES ARE TAKEN AT ALL TIMES. ANY DEWATERING REQUIREMENTS IN NEW HAMPSHIRE REQUIRE SPECIAL PROVISIONS IN ACCORDANCE WITH THE "CLARIFICATION OF SECTION 9.1.2 (STATE OF NEW HAMPSHIRE CONDITIONS) AND OTHER NH SPECIFIC INFORMATION FOR THE U.S. EPA 2012 NPDES CONSTRUCTION GENERAL PERMIT (CGP)" DATED MAY 3, 2012 INCLUDED IN THE SWPPP.

COVER MANAGEMENT DURING CONSTRUCTION FOR EXPOSED SOIL WILL INCLUDE HAY / STRAW APPLIED AT A RATE OF 2.0 TONS PER ACRE, TEMPORARY SEEDING OF ANNUAL RYE GRASS, AND PERMANENT SEEDING AT THE EARLIES OPPORTUNITY. SEE ADDITIONAL REQUIREMENT FOR STABILIZATION ON THE EROSION AND SEDIMENT CONTROL DETAIL SHEETS, E–101 AND E–102.

THE CONSTRUCTION SCHEDULE WILL BE MANAGED SO THAT ALL STORMWATER STRUCTURES WILL BE BUILT AND STABILIZED PRIOR TO RECEIVING SURFACE WATER RUNOFF. CONTRACTOR TO BE RESPONSIBLE FOR ALL DIVERSIONS DURING CONSTRUCTION AND FOR INTERIM SEDIMENT AND EROSION CONTROL MEASURES.

LEGEND:

- (B) BMP / SUBSURFACE GRAVEL WETLAND
- (P) PROTECTION PERIMETER CONTROL
- (C) RESIDENTIAL/ROADWAY CONSTRUCTION
- IRON BOUND (FND)
- UTILITY POLE
- GUY WIRE
- BENCH MARK
- RIP RAP
- RAIN GARDEN
- BERM
- SILT FENCE
- FILTREXX SILTSOXX
- TREE LINE
- CONSTRUCTION FENCE



NOTES:

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

2.) APPLICANT: DOVER HOUSING AUTHORITY
62 WHITTIER STREET
DOVER, NH 03820

3.) THE PROJECT PARCEL IS TAX MAP 33, LOT 1–A

4.) LOT AREA: 15,394 Sq. Ft., 0.35 Ac.

5.) 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.

6.) THE CONTRACTOR SHALL CALL AND COORDINATE WITH DIGSAFE AT 1–888–344–7233 AT LEAST 72 HOURS PRIOR TO COMMENCING ANY EXCAVATION ON PUBLIC OR PRIVATE PROPERTY.

7.) ALL DRAINAGE PIPE IS TO BE HDPE N–12. INDIVIDUAL PIPE SIZES ARE SPECIFIED ON GRADING AND DETAIL PLAN SHEETS, GREEN PIPE.

8.) 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.

9.) UPON FINAL COMPLETION AND 85% STABILIZATION, THE DRAINAGE SYSTEM IS TO BE CLEANED OF ALL DEBRIS. SEDIMENT CONTROL PRACTICES REMOVED AND DISPOSED OF PROPERLY, AND ANNUAL MAINTENANCE PREFORMED ON ALL DRAINAGE PRACTICES.

10.) EROSION AND SEDIMENT CONTROL INSPECTIONS TO BE CONDUCTED ONCE PER EVERY SEVEN DAYS AND AT AN INCREASED FREQUENCY INCLUDING WITHIN 24–HOURS OF A 0.25 INCH RAIN EVENT. INSPECTIONS TO BE CONDUCTED BY A "QUALIFIED PERSON" AS DEFINED BY EPA CGP 4.1.1 AND INSPECTION REPORTS SUBMITTED TO THE CITY OF DOVER, NH, ENGINEERING DEPARTMENT WITHIN 24 HOURS IN ACCORDANCE WITH CGP 4.1.7 AND MAINTAINED BY THE OWNER FOR A PERIOD OF THREE YEARS AFTER THE PROJECT IS COMPLETED. SEE ALSO CITY OF DOVER ADDITIONAL INSPECTION REQUIREMENTS BELOW.

11.) SILT FENCE MAY BE SUBSTITUTED WITH FILTREXX SILT SOXX OR EROSION CONTROL MIX BERM. SILT FENCE IS NOT A SUBSTITUTE FOR FILTREXX SILT SOXX OR APPROVED EQUAL.

12.) PER EPA CGP 2.1.2.2 (INSTALL PERIMETER CONTROL), "YOU MUST INSTALL SEDIMENT CONTROLS ALONG THOSE PERIMETER AREAS OF YOUR SITE THAT WILL RECEIVE STORMWATER FROM EARTH DISTURBING ACTIVITIES." AS A RESULT OF SWPPP INSPECTIONS, THE CONTRACTOR MAY HAVE TO EXPAND PERIMETER CONTROLS TO MEET THIS REQUIREMENT. THE E&SC PLAN IS INITIAL GUIDANCE AS TO THE ANTICIPATED REQUIREMENTS AND IT THE CONTRACTORS RESPONSIBILITY TO ENSURE THAT STORMWATER VIOLATION DO NOT OCCUR.

13.) CITY OF DOVER: IN ACCORDANCE WITH SITE PLAN REVIEW REGULATIONS (149–14) THE FOLLOWING STORMWATER MEASURES ARE REQUIRED. THE EXISTING IMPERVIOUS AREA IS 14.0% AND PROPOSED IMPERVIOUS AREA IS 53.6%. THE CONTIGUOUS LAND DISTURBANCE IS 15,200 SQUARE FEET.

A.) ALL PROPOSED BMPs WILL CONFORM TO THE NH STORMWATER MANUAL VOLUME 3.
B.) EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED PRIOR TO ANY SOIL LAND DISTURBANCE AND MUST BE REVIEWED AND APPROVED BY COMMUNITY SERVICE.
C.) TEMPORARY STABILIZATION MEASURES SHOULD BE IN PLACE WITHIN SEVEN CALENDAR DAYS FOR EXPOSED SOILS AREAS THAT ARE WITHIN ONE HUNDRED FEET OF A SURFACE WATER BODY OR A WETLAND AND NO MORE THAN 14 CALENDAR DAYS FOR ALL OTHER AREAS. PERMANENT STABILIZATION SHOULD BE IN PLACE WITHIN THREE CALENDAR DAYS FOLLOWING COMPLETION OF FINAL GRADING OF EXPOSED SOKL AREAS.
D.) ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE MAINTAINED IN FUNCTIONING CONDITION UNTIL FINAL STABILIZATION IS ACCOMPLISHED.
E.) COMMUNITY SERVICES DEPARTMENT OR THEIR DESIGNATED AGENT SHALL HAVE ACCESS TO THE SITE TO COMPLETE ROUTINE INSPECTIONS AND SHALL BE NOTIFIED 24–HOURS PRIOR TO INSTALLATION OF A STORMWATER BMP IN ORDER TO SCHEDULE AN INSPECTION, DURING NORMAL WORKING HOURS.
F.) THE PLANNING BOARD OR COMMUNITY SERVICES MAY REQUIRE THE DESIGN ENGINEER AND/OR AN INDEPENDENT, THIRD–PARTY INSPECTION AND OVERSIGHT OF THE CONSTRUCTION OF STORMWATER MANAGEMENT FACILITIES AND EROSION AND SEDIMENT CONTROL AT THEIR DISCRETION. THE OWNER / APPLICANT IS RESPONSIBLE FOR ALL FEES ASSOCIATED WITH INSPECTIONS.
G.) ALL SWPPP INSPECTIONS MUST BE CONDUCTED BY A QUALIFIED PROFESSIONAL SUCH AS A PROFESSIONAL ENGINEER (PE), A CERTIFIED PROFESSIONAL IN EROSION AND SEDIMENT CONTROL (CPESC), A CERTIFIED EROSION SEDIMENT AND STORMWATER INSPECTOR (CESSW), OR A CERTIFIED PROFESSIONAL IN STORMWATER QUALITY (CPSWQ). INSPECTION REPORTS WILL BE SUBMITTED TO THE COMMUNITY SERVICES DEPARTMENT.

14.) CONTRACTOR MAY BE REQUIRED TO HAVE A CONSTRUCTION ENTRANCE DEPENDING ON SITE MANAGEMENT.

15.) CONTRACTOR IS RESPONSIBLE FOR SWEEPING THE PARKING LOT, SIDEWALKS AND ANYTHING DISTURBED, TO ENSURE THAT NO SEDIMENT IS BEING TRACKED ONTO WHITTIER STREET.

16.) CONTRACTOR IS RESPONSIBLE FOR CLEANING AND MAINTAINING THE INLET PROTECTION ONCE INSTALLED.

17.) FUGITIVE DUST IS TO BE CONTROLLED THROUGHOUT THE CONSTRUCTION PROCESS IN ACCORDANCE WITH ENV–A 1000.

18.) CONTRACTOR IT TO MEET THE REQUIREMENTS SPECIFIED IN RSA 430:51–57 AND AGR 3800, RELATING TO INVASIVE SPECIES.

19.) CONTRACTOR IS RESPONSIBLE FOR PROTECTING THE WATER QUALITY FROM ANY RUN OFF DURING THE CONSTRUCTION PROCESS, IN ACCORDANCE WITH ENV–WQ 1507, IN ORDER TO PREVENT VIOLATIONS OF THE STORM WATER QUALITY STANDARDS.

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

DOVER PLANNING FILE #

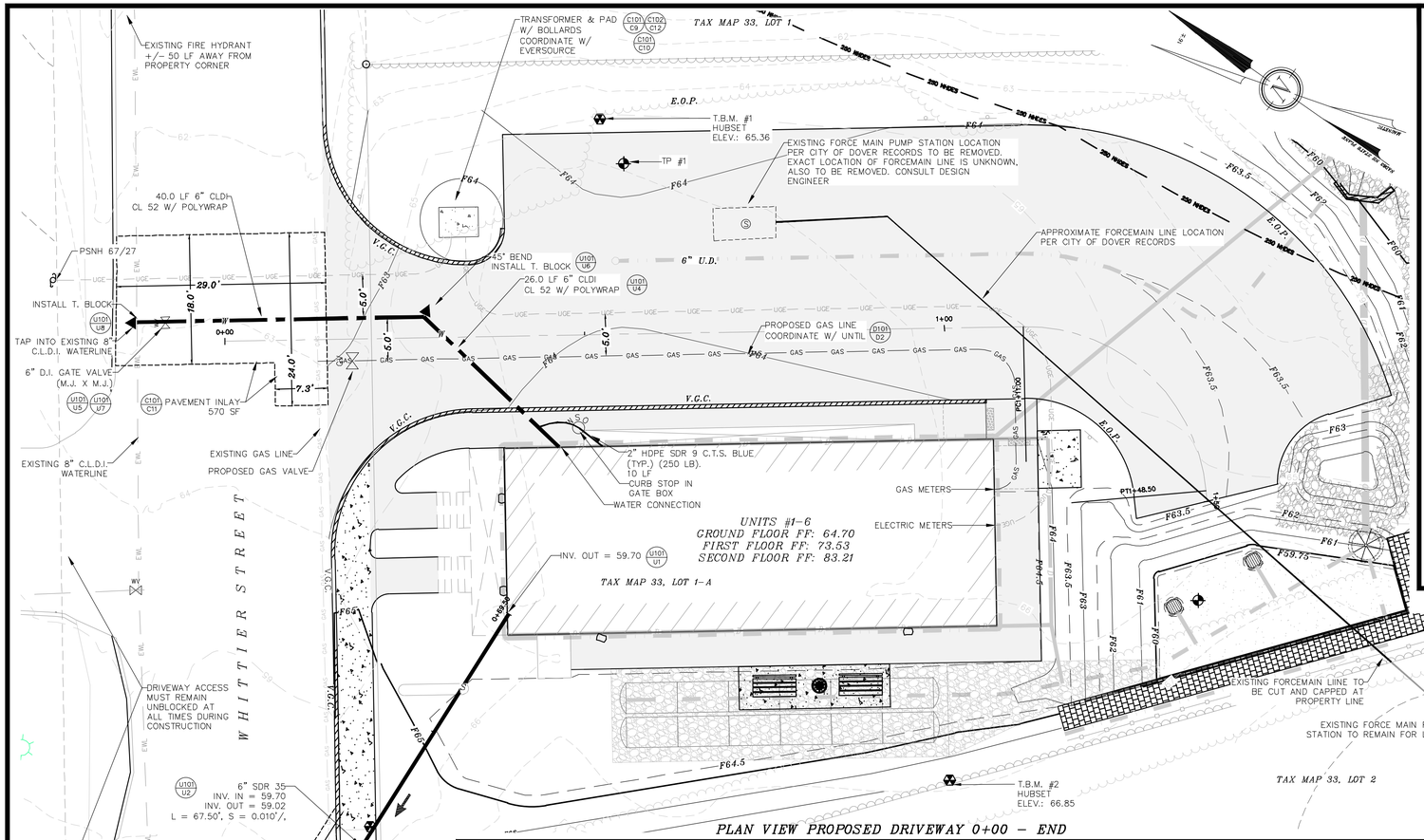
REVISION	DATE	DESCRIPTION

EROSION AND SEDIMENT CONTROL PLAN
LAND OF
DOVER HOUSING AUTHORITY
48 WHITTIER STREET
DOVER, N.H.
TAX MAP 33, LOT 1–A

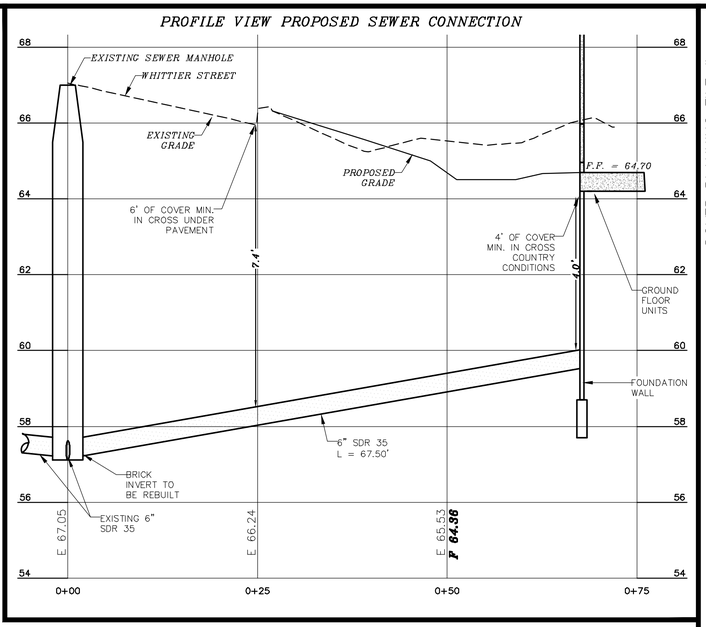
BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332–2863

SCALE : 1 IN. EQUALS 20 FT.
DATE : MAY 6, 2021
FILE NO. : DB 2020 – 136

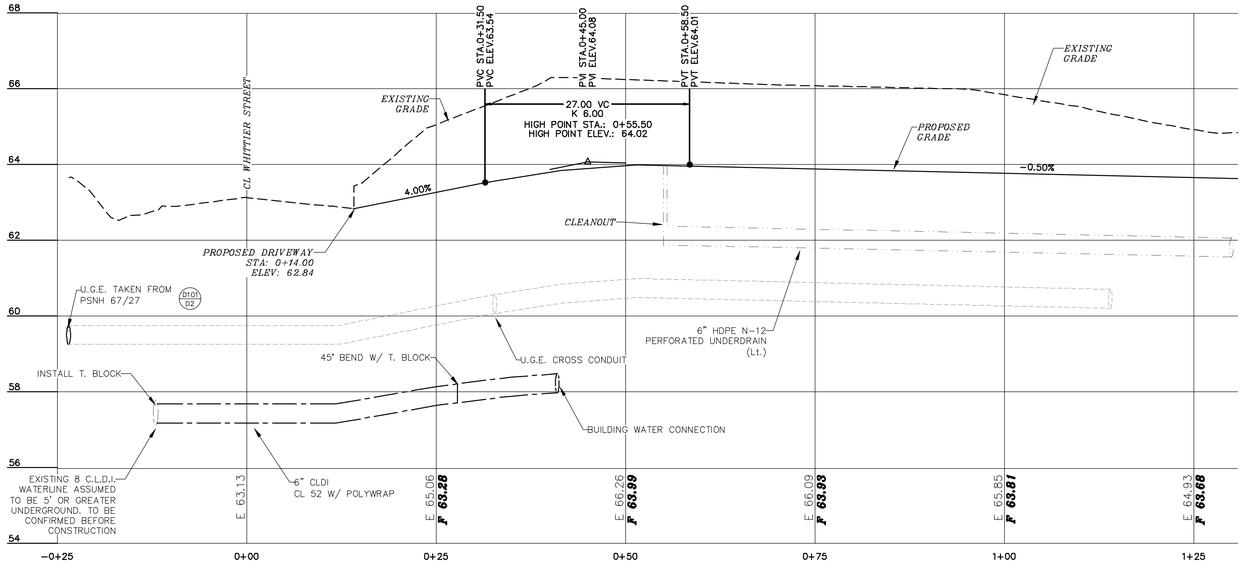
STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14043
LICENSED PROFESSIONAL ENGINEER



PLAN VIEW PROPOSED DRIVEWAY 0+00 – END



PROFILE VIEW PROPOSED DRIVEWAY 0+00 – END



GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)

1 inch = 20 ft.

STANDARD UTILITY NOTES:

1. 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.
2. 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.
3. PROTECTION OF SUBGRADE: THE CONTRACTOR SHALL BE REQUIRED TO MAINTAIN STABLE, DEWATERED SUBGRADES, TRENCHES, AND OTHER AREAS DURING CONSTRUCTION. SUBGRADE DISTURBANCE MAY BE INFLUENCED BY EXCAVATION METHODS, MOISTURE, PRECIPITATION, GROUNDWATER CONTROL, AND CONSTRUCTION ACTIVITIES. THE CONTRACTOR SHALL TAKE PRECAUTIONS TO PREVENT SUBGRADE DISTURBANCE. SUCH PRECAUTIONS MAY INCLUDE DIVERTING STORMWATER RUNOFF AWAY FROM CONSTRUCTION AREAS, REDUCING TRAFFIC IN SENSITIVE AREAS, AND MAINTAINING AN EFFECTIVE DEWATERING PROGRAM. SOILS EXHIBITING HEAVING OR INSTABILITY SHALL BE OVER EXCAVATED TO MORE COMPETENT BEARING SOIL AND REPLACED WITH FREE DRAINING STRUCTURAL FILL MEETING THE ENGINEERS SPECIFIC RECOMMENDED CRITERIA.
4. IF THE EARTHWORK IS PERFORMED DURING FREEZING WEATHER (NOT ALLOWED IN CITY R.O.W.), EXPOSED SUBGRADES ARE SUSCEPTIBLE TO FROST. NO FILL OR UTILITIES SHALL BE PLACED ON FROZEN GROUND. THIS WILL LIKELY REQUIRE REMOVAL OF A FROZEN SOIL CRUST AT THE COMMENCEMENT OF EACH DAY'S OPERATION. THE FINAL SUBGRADE ELEVATION WOULD ALSO REQUIRE AN APPROPRIATE DEGREE OF INSULATION AGAINST FREEZING.
6. FINAL UTILITY LOCATIONS TO BE COORDINATED BETWEEN THE CONTRACTOR, ALL APPROPRIATE UTILITY COMPANIES AND THE DOVER DPW.
7. CONTRACTOR TO CONTACT DOVER DPW A MINIMUM OF TWO WEEKS PRIOR TO ANY CONSTRUCTION TO COORDINATE ALL WORK CONCERNING INSTALLATION OF ANY PROPOSED WATER LINE IMPROVEMENTS.
8. WATER MAIN INSTALLATION SHALL CONFORM TO CITY OF DOVER STANDARDS. ALL HIGHWAY CONSTRUCTION WILL MEET THE CITY OF DOVER STANDARDS.
9. CONTRACTOR SHALL COORDINATE ALL ELECTRICAL INSTALLATIONS WITH EVERSOURCE AT (800) 662-7764. ALL ELECTRIC CONDUIT INSTALLATION SHALL BE INSPECTED BY EVERSOURCE PRIOR TO BACKFILL. A 48-HOUR MINIMUM NOTICE IS REQUIRED.
10. ALL SEWER INSTALLATIONS SHALL CONFORM TO THE REQUIREMENTS OF NHDES & ROCHESTER DPW SEWER DIVISION STANDARDS. ALL PVC SEWER PIPE IS TO CONFORM WITH ENV-WQ 704.05 (c)-(e) AND CONFORM WITH ASTM D3034. PVC JOINT SEALS SHALL CONFORM WITH ASTM D3121.
11. WATER SERVICE TO BE WITNESSED WITH A 2"X4" PAINTED BLUE. SEWER SERVICE ARE TO BE WITNESSED WITH A 2"X4" PAINTED YELLOW, IS STUBBED PRIOR TO BUILDING CONSTRUCTION.
12. CURB BOXES SHOULD BE PLACED IN THE LAWN AREA, OR IF PLACED IN PAVEMENT, A ROAD BOX IS REQUIRED.
13. SEE EXISTING CONDTIONS PLAN FOR DATUM. VERTICAL DATUM BASED ON NAVD88 ELEVATIONS. HORIZONTAL DATUM BASED ON NAD83 STATE PLANE COORDINATES GATHERED USING TOPCON HIPER SR SURVEY GRADE GPS.
14. CONTRACTOR TO TRANSFER TEMPORARY BENCHMARK TO A SUITABLE BENCHMARK TO CONTROL CONSTRUCTION. ANY ELEVATION DISCREPANCIES ARE TO BE REPORTED TO THE THE DESIGN ENGINEER IMMEDIATELY.
15. THE EXISTING RESIDENTIAL WATER SERVICE LOCATION IS UNKNOWN. IF FOUND, THE SERVICE SHALL BE CUT AND CAPPED.

DOVER PLANNING FILE #

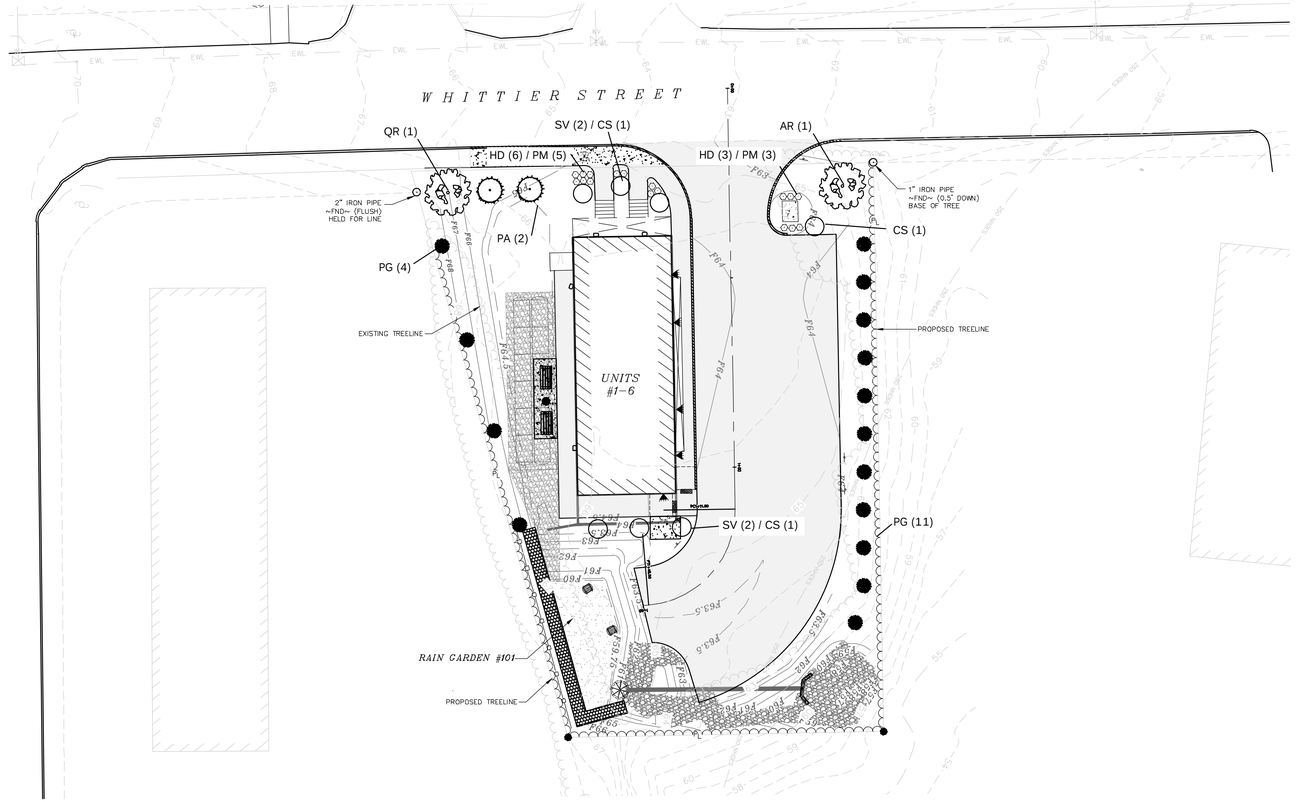
REVISION	DATE	DESCRIPTION

UTILITY PLAN & PROFILE
LAND OF
DOVER HOUSING AUTHORITY
48 WHITTIER STREET
DOVER, N.H.
TAX MAP 33, LOT 1-A

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

SCALE : 1 IN. EQUALS 10 FT.
DATE : MAY 6, 2021
FILE NO. : DB 2020 – 136

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



GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

NOTES:

1. CALL DIG SAFE PRIOR TO BEGINNING WORK. (1-888-344-7233). THE LANDSCAPE CONTRACTOR IS ADVISED OF THE PRESENCE OF UNDERGROUND UTILITIES AND SHALL VERIFY THE EXISTENCE AND LOCATION OF THE SAME BEFORE COMMENCING AND DIGGING OPERATIONS. THE LANDSCAPE CONTRACTOR SHALL REPLACE OR REPAIR UTILITIES, PAVING, WALKS, CURBING, ETC DAMAGED IN PERFORMANCE OF THIS JOB AT NO ADDITIONAL COST TO THE OWNER OR GENERAL CONTRACTOR.
2. CONTRACTOR SHALL THOROUGHLY FAMILIARIZE THEMSELVES WITH ALL SITE CONDITIONS PRIOR TO CONSTRUCTION BIDDING.
3. THE CONTRACTOR SHALL SUPPLY ALL PLANT MATERIALS IN QUANTITIES SUFFICIENT TO COMPLETE THE PLANTINGS SHOWN ON THE DRAWINGS. VARIATIONS IN QUANTITIES ARE TO BE APPROVED BY THE DESIGN ENGINEER.
4. PROVIDED SMOOTH TRANSITION WHERE NEW WORK MEETS EXISTING CONDITIONS.
5. ALL PLANT MATERIAL INSTALLED SHALL MEET THE SPECIFICATIONS OF "AMERICAN STANDARD FOR NURSERY STOCK" BY THE AMERICAN ASSOCIATION OF NURSERYMEN
6. ALL PLANT MATERIALS SHALL BE FREE FROM INSECTS AND DISEASE.
7. ALL PLANTINGS SHALL BE DONE IN ACCORDANCE WITH ACCEPTABLE HORTICULTURAL PRACTICES. THIS IS TO INCLUDE PROPER PLANTING MIX, PLANT BED AND TREE PIT PREPARATION, PRUNING STAKING OR GUYING, WRAPPING, SPRAYING, FERTILIZATION, PLANTING AND ADEQUATE MAINTENANCE UNTIL ACCEPTANCE FROM OWNER.
8. ALL GRASS, OTHER VEGETATION AND DEBRIS SHALL BE REMOVED FROM ALL PLANTING AREAS PRIOR TO PLANTING.
9. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF EXISTING AND NEWLY PLANTED TREES AND SHRUBS DURING THE CONSTRUCTION PROCESS. WHERE REQUIRED, THE CONTRACTOR SHALL INSTALL TEMPORARY FENCING (SNOW OR EQUAL) AROUND EXISTING TREES AND SHRUBS THAT COULD BE IMPACTED BY THE CONSTRUCTION PROCESS. STORAGE OF CONSTRUCTION EQUIPMENT, CONSTRUCTION MATERIALS, SNOW STORAGE AND OR VEHICLE PARKING SHALL NOT BE PERMITTED WITHIN THE DRIP LINE OF TREES OR TWENTY FEET WHICH EVER IS GREATER.
10. NEW PLANTINGS SHALL BE INSTALLED PER PROJECT DRAWINGS AND SPECIFICATION THAT INCLUDE FERTILIZATION AND MULCHING AS REQUIRED.
11. ALL SHRUB BEDS AND TREE PITS SHALL BE MULCHED WITH 3" CLEAN SHREDDED BLACK MULCH
12. WHERE INDICATED ON PLAN, PLANTING SOIL MIXTURE FOR GROUND COVER AND PERENNIAL BED AREAS SHALL CONSIST OF FOUR PARTS TOPSOIL, TWO PARTS SPHAGNUM PEAT MOSS, AND ONE PART HORTICULTURAL PERLITE BY VOLUME. PEAT MOSS MAY BE SUBSTITUTED WITH WELL-ROTTED OR DEHYDRATED MANURE OR COMPOST. ROTOTILL BEDS TO A DEPTH OF 8 INCHES.
13. MAINTENANCE OF NEW PLANTINGS AND LAWNS SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR AND OR LANDSCAPE SUBCONTRACTOR UNTIL ACCEPTANCE BY THE OWNER. RESPONSIBILITIES SHALL INCLUDE WATERING WEEDING AND MOWING AS NECESSARY. ALL PLANT MATERIAL SHALL BE GUARANTEED FOR A PERIOD OF ONE YEAR FROM THE DATE OF ACCEPTANCE, REPLACEMENT MATERIAL SHALL BE GUARANTEED FOR AND ADDITIONAL YEAR FROM TIME OF INSTALLATION.
14. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL TEMPORARY EROSION CONTROL MEASURES DURING THE CONSTRUCTION PHASE AND UNTIL ALL AREAS HAVE BEEN STABILIZED AND ACCEPTED BY THE OWNER. THE GENERAL CONTRACTOR SHALL PROVIDE WEEKLY INSPECTIONS OF EROSION MEASURE AND IMMEDIATELY AFTER STORM EVENTS AND REPAIR AS NECESSARY.
15. THE GENERAL CONTRACTOR AND OR THE LANDSCAPE SUBCONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL OF ALL THREE GUYING MATERIAL ONCE PLANT MATERIAL HAS BEEN ESTABLISHED. (MINIMUM OF ONE GROWING SEASON). ALL TEMPORARY EROSION CONTROL MEASURE SHALL BE REMOVED ONCE STABILIZATION OF DISTURBANCE HAS BEEN ACCEPTED BY OWNER.
16. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR A MINIMUM OF TWO MOWINGS FOR ALL TURF AREAS OR UNTIL ACCEPTANCE BY THE OWNER. A MINIMUM UNIFORM 75% CATCH OF TURF IS REQUIRED FOR ACCEPTANCE.
17. ALL PLANTINGS SHALL BE WATERED REGULARLY DURING THEIR FIRST YEAR AND MAINTAINED PERMANENTLY IN GOOD GROWING CONDITION AS AN EFFECTIVE VISUAL SCREEN.
18. SHRUBS OR TREES WHICH DIE SHALL BE REPLACED WITHIN ONE GROWING SEASON WITH NEW SHRUBS OR TREES TO ENSURE CONTINUED COMPLIANCE WITH APPLICABLE LANDSCAPING REQUIREMENTS.
19. ALL REQUIRED LANDSCAPING SHALL BE INSTALLED BEFORE OCCUPANCY, OR WITHIN SIX MONTHS IF OCCUPANCY OCCURS DURING WINTER CONDITIONS.
20. TREES ARE TO BE 6' TALL AT PLANTING.
21. ALL PLANT STOCK SHALL CONFORM TO ANSI Z260.1 – NURSERY STOCK, LATEST EDITIONS (AMERICAN ASSOCIATION OF NURSERYMEN, INC.)
22. 4" AGED PINEBARK MULCH AND A WEED BARRIER (TY-PAR FABRIC OR APPROVED EQUAL) SHALL BE APPLIED TO ALL SHRUB AND GROUND COVER BEDS. INSTALL WEED BARRIER AS PER MANUFACTURERS RECOMMENDATIONS.
23. PLANT-PIT BACK-FILL SHALL BE MIXED AT A RATE OF 7 PARTS OF TOPSOIL TO 2 PARTS OF DEHYDRATED COW MANURE. SLOW RELEASE FERTILIZER SHALL BE APPLIED AS PER MANUFACTURERS RECOMMENDATIONS. USE EXISTING ON-SITE TOPSOIL AS PART OF BACK FILL WHEN AVAILABLE.
24. ALL LANDSCAPED AREAS NOT PLANTED WITH TREES, SHRUBS OR GROUNDCOVER SHALL BE RESTORED WITH SEED OR SOD AS INDICATED ON PLANS.
25. TOPSOIL WILL BE TESTED FOR FERTILIZATION REQUIREMENTS, AND SLOW RELEASE ENVIRONMENTALLY FRIENDLY FERTILIZER WILL BE APPLIED AT THE RECOMMENDED RATES.
26. ALL DISTURBED WETLAND BUFFER AREAS, EXCEPT FOR AREAS THAT ARE PART OF THE DRAINAGE SYSTEM, ARE TO BE RESEEDED WITH A CONSERVATION SEED MIX AND ONLY MOWED TWICE PER YEAR.
27. ALL PLANT SUBSTITUTIONS MUST BE APPROVED BY THE ENGINEER.
28. PLANTS SHALL BE SUBJECT TO INSPECTION AND APPROVAL AT THE PLACE OF GROWTH, UPON DELIVERY OR AT THE JOB SITE WHILE WORK IS ONGOING TO CONFORMITY TO SPECIFIED QUALITY, SIZE AND VARIETY.
29. PLANTS FURNISHED IN CONTAINERS SHALL HAVE THE ROOTS WELL ESTABLISHED IN THE SOIL MASS AND SHALL HAVE AT LEAST ONE (1) GROWNG SEASON. ROOT-BOUND PLANTS OR INADEQUATELY SIZED CONTAINERS TO SUPPORT THE PLANT MAY BE DEEMED UNACCEPTABLE.
30. ALL PLANTS SHALL BE GUARANTEED BY THE CONTRACTOR FOR NO LESS THAN ONE FULL YEAR FROM THE TIME OF INSTALLATION. DURING THIS TIME, THE OWNER SHALL MAINTAIN ALL PLANT MATERIALS IN THE ABOVE MANNER. IT IS THE CONTRACTOR'S RESPONSIBILITY TO INSPECT THE PLANTS TO ENSURE PROPER CARE. IF THE CONTRACTOR IS DISSATISFIED WITH THE CARE GIVEN, HE SHALL IMMEDIATELY, AND IN SUFFICIENT TIME TO PERMIT THE CONDITION TO BE RECTIFIED, NOTIFY THE OWNER IN WRITING OR OTHERWISE FORFEIT HIS CLAIM.
31. BY THE END OF THE GUARANTEE PERIOD, THE CONTRACTOR SHALL HAVE REPLACED ANY PLANT MATERIAL THAT IS MISSING, NOT TRUE TO SIZE AS SPECIFIED, THAT HAS DIED, THAT HAS LOST NATURAL SHAPE DUE TO DEAD BRANCHES, EXCESS PRUNING OR INADEQUATE OR IMPROPER CARE, OR IS, IN THE OPINION OF THE OWNER, IN UNHEALTHY OR UNSIGHTLY CONDITION.
32. THE CONTRACTOR IS TO USE TEMPORARY MEASURES FOR WATERING PLANTS DURING THE ESTABLISHMENT PERIOD. INCLUDING CONNECTING TEMPORARY HOSES TO THE STRUCTURE WATER SUPPLY LINE AND UTILIZING SPRINKLERS UNTIL 85% GROWTH OCCURS.

PLANTING NOTES

1. CONTRACTOR SHALL OBTAIN APPROVAL FROM L.A. PRIOR TO PURCHASING &/OR INSTALLING SUBSTITUTE PLANT MATERIAL PRIOR TO PURCHASE OF ANY SUBSTITUTE MATERIALS.
2. CONSTRUCTION ACCESS WILL BE AS DIRECTED BY L.A. CONTRACTOR IS RESPONSIBLE FOR RESTORATION OF ACCESS ROUTE AND ALL AREAS DISTURBED BY PLANTING OPERATIONS UPON COMPLETION OF CONSTRUCTION OPERATIONS, AT NO ADDITIONAL COST TO THE OWNER.
3. LAYOUT OF ALL PLANTING BEDS AND LOCATION OF PLANTS TO BE APPROVED BY L.A. ON SITE PRIOR TO CONSTRUCTION AND INSTALLATION.
4. CONTRACTOR TO REMOVE ALL DEBRIS GENERATED BY PLANT INSTALLATION. DEBRIS TO BE DISPOSED OF IN A LEGAL MANNER.
5. ALL PLANT MATERIAL SHALL BE GUARANTEED TO BE IN GOOD, HEALTHY & FLOURISHING CONDITION FOR ONE YEAR FROM THE DATE OF FINAL INSTALLATION APPROVAL BY L.A. CONTRACTOR SHALL REPLACE, WITHOUT COST TO OWNER, AND AS SOON AS WEATHER CONDITIONS PERMIT, ALL DEAD AND NON-FLOURISHING PLANTS AS DETERMINED BY THE L.A. REPLACEMENT PLANTS SHALL BE BE GUARANTEED IDENTICALLY TO ORIGINAL PLANTS, TIME PERIOD COMMENCING FROM DATE OF REPLACEMENT PLANTING APPROVAL BY L.A.
6. ALL BEDS TO BE MULCHED WITH 3" DEPTH SHREDDED BARK MULCH UNLESS NOTED OTHERWISE.
7. CONTRACTOR TO PROVIDE NECESSARY TEMPORARY IRRIGATION IF NEEDED BASED ON TIME OF YEAR THE PROJECT IS IMPLEMENTED.

TEMPORARY WATERING NOTES

1. CONTRACTOR IS RESPONSIBLE FOR MAKING SURE ALL PLANT MATERIAL HAS ADEQUATE WATER DURING THE ESTABLISHMENT PERIOD.
2. THE USE OF GATOR BAGS, SOAKER HOSE, HAND WATERING AND OTHER TECHNIQUES SHOULD BE USED TO ASSURE PROPER HYDRATION OF THE PLANTINGS IS MAINTAINED.
3. TEMPORARY IRRIGATION SYSTEMS CAN BE SET UP TO ASSIST IN WATERING ACTIVITIES.

PLANTING SCHEDULE
Whittier Street
Botanical Name/ Common Name

	Size	Qty	Label
Trees			
Plantanus acerifolia/London Planetree	3.5" Cal.	2	PA
Acer Rubrum / Red maple	3.5" Cal.	1	AR
Quercus rubra / Red Oak	3.5" Cal.	1	QR
Picea glauca / White Spruce	3.5" Cal.	15	PG
Shrubs			
Syringa Vulgaris / Lilac	#3 3-4'	4	SV
Cornus sanguina 'Winter Flame' / Winter Flame Dogwood	2-3' B&B	3	CS
Perennials			
Hemerocallis 'Big Time Happy' / Big Time Happy Daylily	#1	9	HD
Hemerocallis 'Pardon Me' / Pardon Me Daylily	#1	8	PM

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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.

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311 kast hill road
hopkinton, nh 03229
603. 491. 2322
terrainplanning.com

HAVEN HOUSING

Site Location:
48 Whittier Street
Dover, NH
Tax Map: 33, Lot 1-A

Prepared For:
Berry Surveying & Engineering
335 Second Crown Point Rd
Barrington, NH 03825

LANDSCAPE PLAN

DATE:

SCALE: 1" = 20'

PROJECT #: 1802

Drawn By: ID

Checked By: ERB

REVISIONS: DATE:
Issued for Client Review

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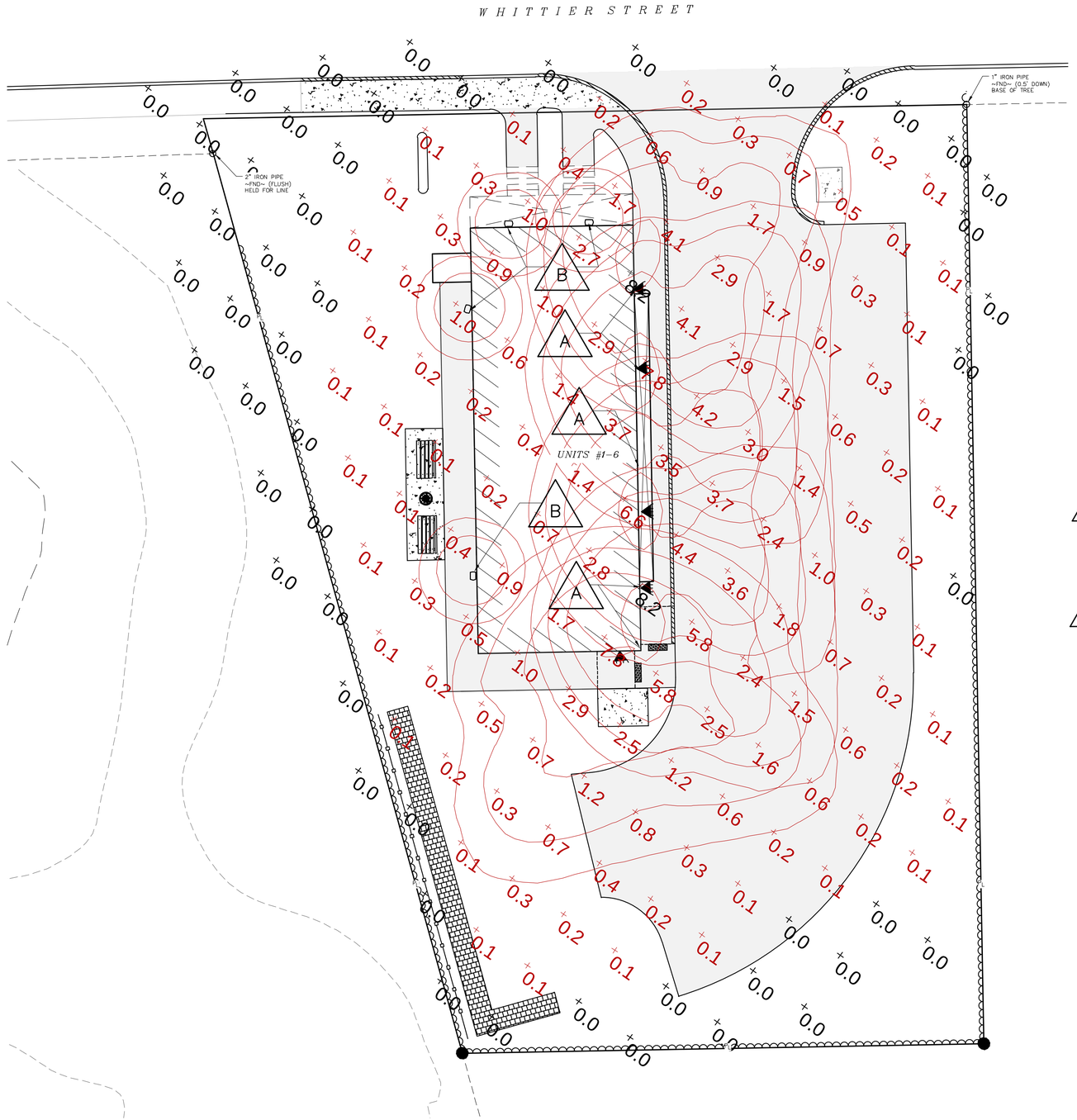
L - 01

LICENSED LANDSCAPE ARCHITECT
ERIC R BUCK
078
STATE OF NEW HAMPSHIRE



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 33, LOT 1-A

3.) PROJECT ADDRESS: 48 WHITTIER STREET

4.) LOT AREA: 15,394 Sq. Ft., 0.35 Ac.

5.) S.C.R.D. BOOK 4716, PAGE 900

6.) THE INTENT OF THIS PLAN IS TO PROVIDE THE LIGHTING SCHEME FOR THE PROPOSED PROJECT.

7.) LAMPS ARE SHOWN ON THE SITE PLAN WITH LOCATION, TYPE AND HEIGHT.

8.) SEE CONSTRUCTION DETAILS FOR PRODUCT CUT SHEET.

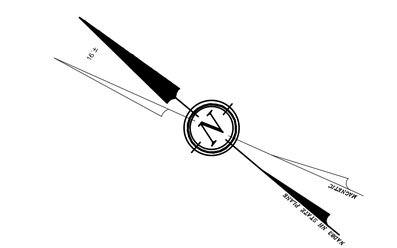
9.) LAMP "A" MOUNTED 8' ON BUILDING, LAMP "B" MOUNTED 8' ON BUILDING.

Schedule

Symbol	Label	Quantity	Manufacturer	Catalog Number	Description	Lamp	Number Lamps	Filename	Lumens Per Lamp	Light Loss Factor	Wattage
▶	A	5	Lithonia Lighting	WSQ LED P2 SR4 40K MVOLT	WSQ LED WITH P2-PERFORMANCE PACKAGE, 4000K, AND SR4 OPTIC TYPE	LED	1	WSQ_LED_P2_SR4_40K_MVOLT.ies	3053	1	29.17
▢	B	4	Lithonia Lighting	ODSL10 SRC	CRAFTSTON WALL MOUNTED SMALL DECORATIVE LANTERN, ONE LAMP 13W SPIRAL COMPACT FLUORESCENT, WHITE GLASS DIFFUSER 4.25" DIA. X 6.65" HIGH, ELECTRONIC BALLAST	ONE 13-WATT T4 SPIRAL COMPACT FLUORESCENT, VERTICAL BASE UP POSITION.	1	ODSL10_SRC.ies	900	1	12.6

Statistics

Description	Avg	Max	Min	Max/Min	Avg/Min
Stat Zone # 1	0.8 fc	1.3 fc	0.2 fc	13.0:1	4.0:1



GRAPHIC SCALE

10 0 5 10 20 40

(IN FEET)
1 inch = 10 ft.

DOVER PLANNING FILE #

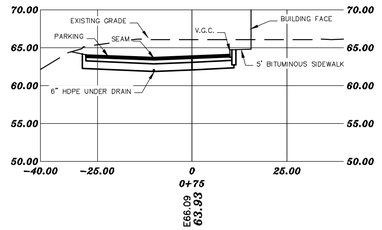
REVISION	DATE	DESCRIPTION

LIGHTING PLAN
LAND OF
DOVER HOUSING AUTHORITY
48 WHITTIER STREET
DOVER, N.H.
TAX MAP 33, LOT 1-A

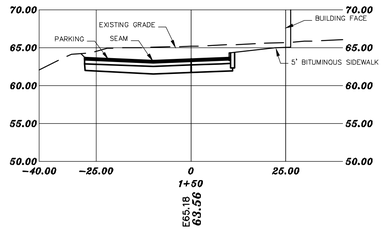
BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 10 FT.
DATE : MAY 6, 2021
FILE NO. : DB 2020 - 136

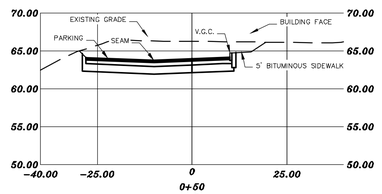
STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 9404
LICENSED PROFESSIONAL ENGINEER



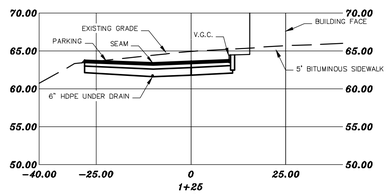
0+75
E66.09
63.93



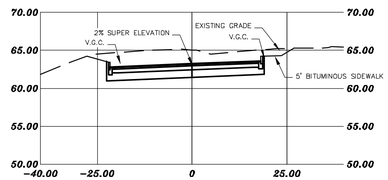
1+50
E65.18
63.56



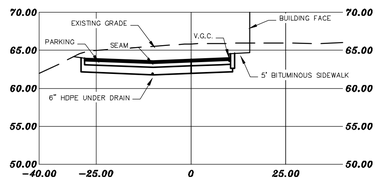
0+50
E66.26
63.99



1+25
E64.93
63.68

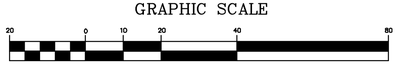


0+25
E65.06
63.28



1+00
E65.85
63.81

GRAPHIC SCALE



(IN FEET)
1 inch = 20 ft.
Vertical Scale 10

DOVER PLANNING FILE #

REVISION	DATE	DESCRIPTION

CROSS SECTIONS 0+00 – END
LAND OF
DOVER HOUSING AUTHORITY
48 WHITTIER STREET
DOVER, N.H.
TAX MAP 33, LOT 1-A

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

SCALE : 1 IN. EQUALS 20 FT.
DATE : MAY 6, 2021
FILE NO. : DB 2020 – 136

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

LEGEND:

- IRON PIPE ~FND~
- SIGNAGE
- UTILITY POLE
- GUY WIRE
- OHU — OHU — OHU — OVERHEAD UTILITIES LINE
- BUILDING SETBACK LINE
- CENTER LINE

S.C.R.D. STRAFFORD COUNTY REGISTRY OF DEEDS
TYP. TYPICAL
FND FOUND
PL PROPERTY LINE
R.O.W. RIGHT OF WAY
E.O.P. EDGE OF PAVEMENT
V.G.C. VERTICAL GRANITE CURB
SSL (W) SINGLE SOLD LINE (WHITE)
DSL (Y) DOUBLE SOLID LINE (YELLOW)

NOTES:

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

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

2.) TAX MAP 33, LOT 1-A

3.) LOT AREA: 15,394 Sq. Ft., 0.35 Ac.

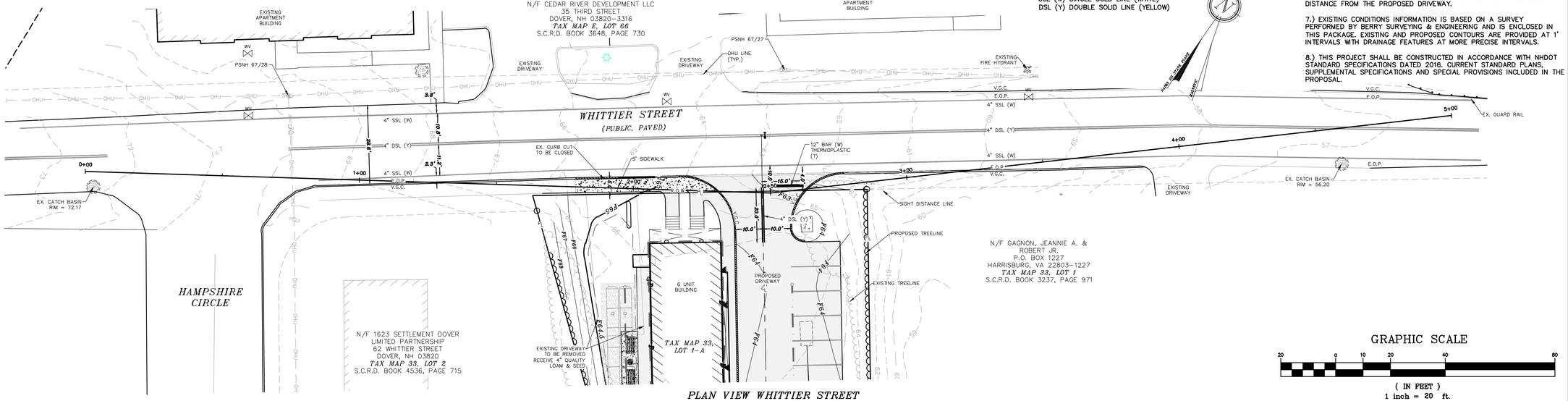
4.) S.C.R.D. BOOK 4716, PAGE 900

5.) THIS IS A RESIDENTIAL SITE PLAN.

6.) THE INTENT OF THIS PLAN IS TO DEMONSTRATE THE AVAILABLE SIGHT DISTANCE FROM THE PROPOSED DRIVEWAY.

7.) EXISTING CONDITIONS INFORMATION IS BASED ON A SURVEY PERFORMED BY BERRY SURVEYING & ENGINEERING AND IS ENCLOSED IN THIS PACKAGE. EXISTING AND PROPOSED CONTOURS ARE PROVIDED AT 1' INTERVALS WITH DRAINAGE FEATURES AT MORE PRECISE INTERVALS.

8.) THIS PROJECT SHALL BE CONSTRUCTED IN ACCORDANCE WITH NHDOT STANDARD SPECIFICATIONS DATED 2016, CURRENT STANDARD PLANS, SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS INCLUDED IN THE PROPOSAL.



PLAN VIEW WHITTIER STREET

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

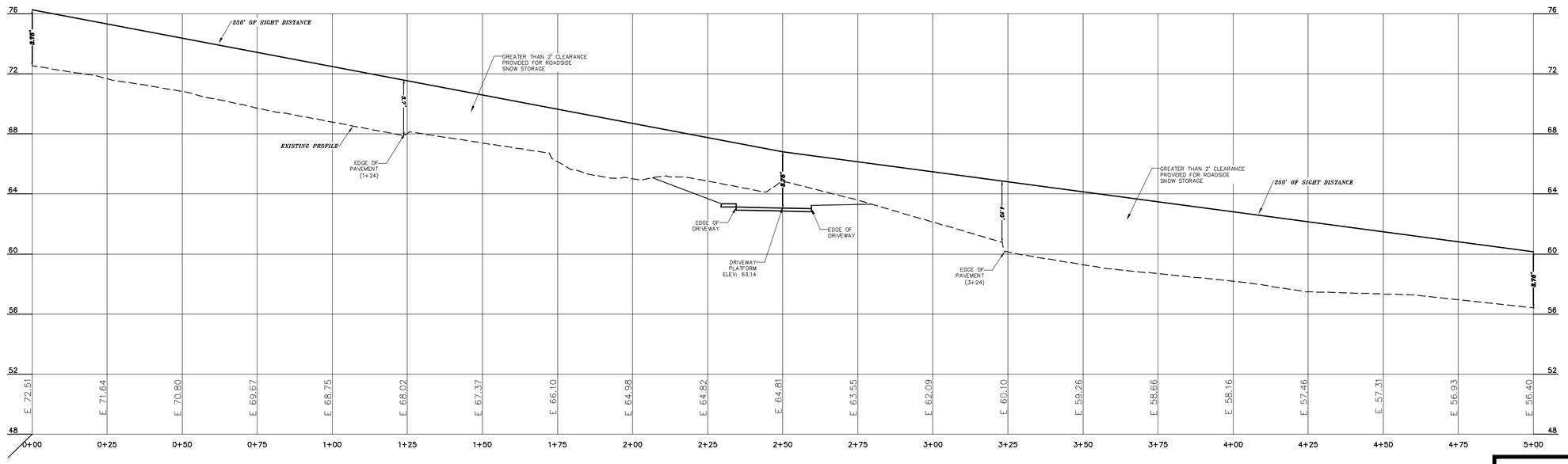
PROFILE VIEW SIGHT LINE

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

VERTICAL SCALE: 1" = 4'



SD-1

DOVER PLANNING FILE #

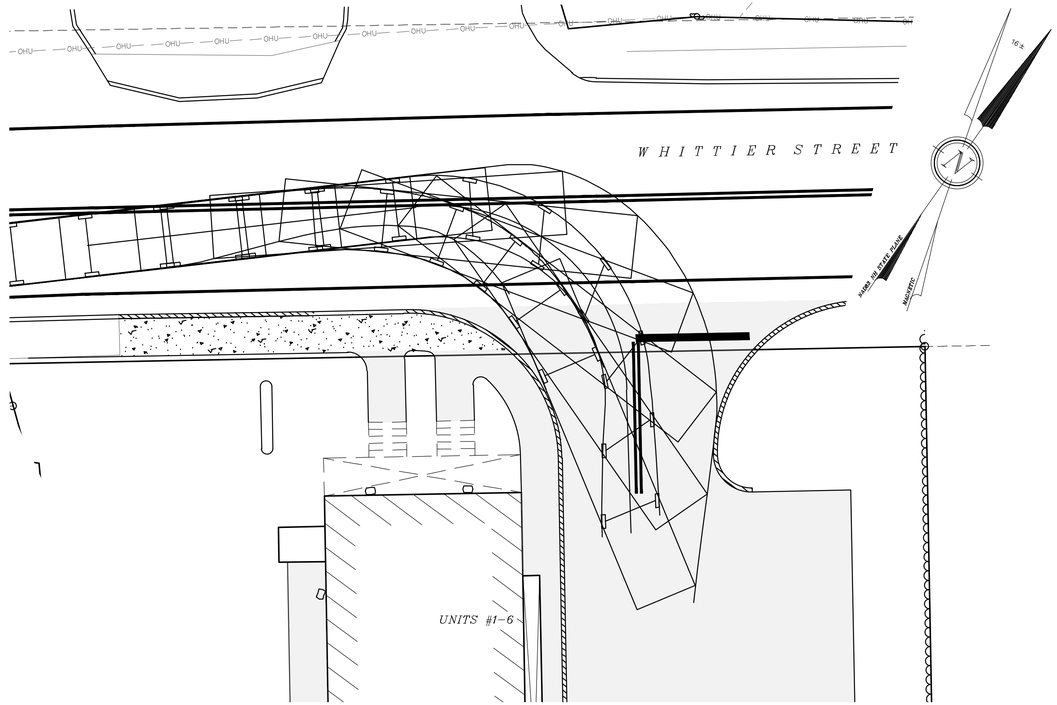
DESCRIPTION	DATE	REVISION

SIGHT DISTANCE PLAN
LAND OF
DOVER HOUSING AUTHORITY
48 WHITTIER STREET
DOVER, N.H.
TAX MAP 33, LOT 1-A

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

SCALE : 1 IN. EQUALS 20 FT.
DATE : MAY 6, 2021
FILE NO. : DB 2020 - 136

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

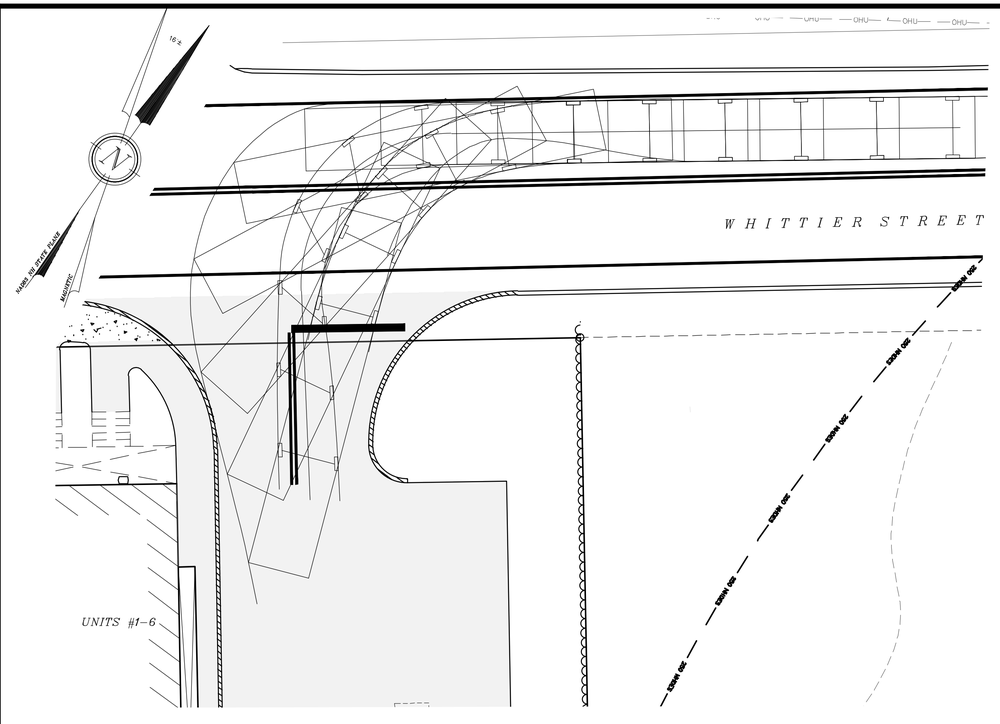


GRAPHIC SCALE

10 0 5 10 20 40

(IN FEET)
1 inch = 10 ft.

TRUCK TURNING RIGHT INTO THE SITE FROM WEST

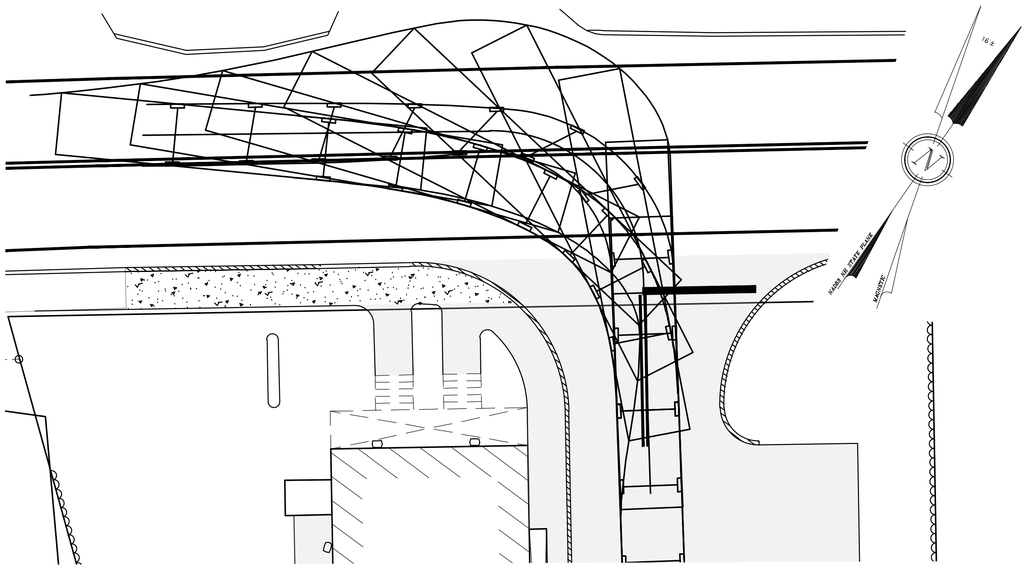


GRAPHIC SCALE

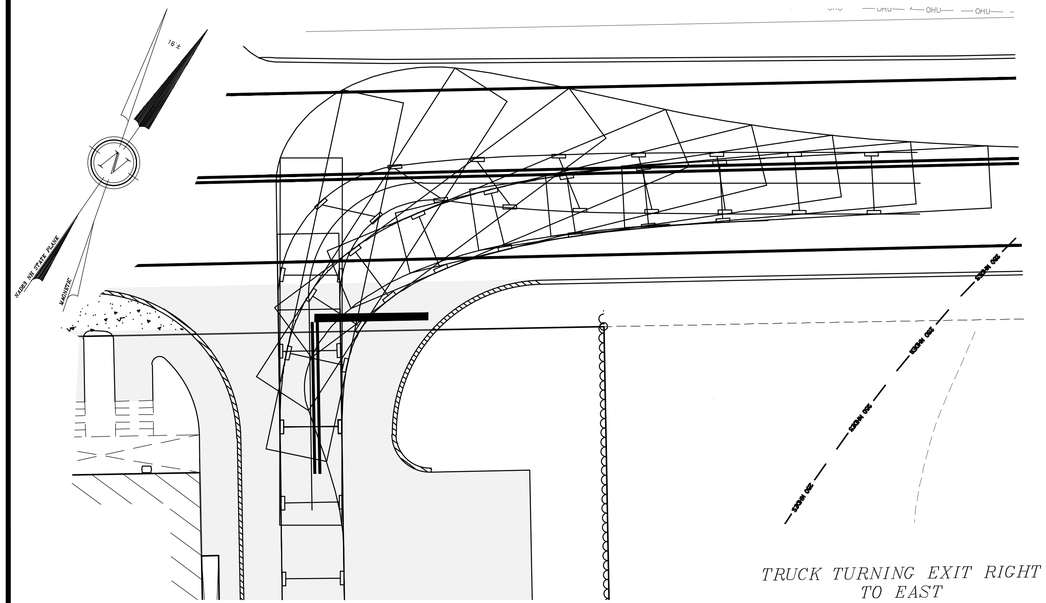
10 0 5 10 20 40

(IN FEET)
1 inch = 10 ft.

TRUCK TURNING LEFT INTO THE SITE FROM EAST



TRUCK TURNING EXIT LEFT TO WEST



TRUCK TURNING EXIT RIGHT TO EAST

DOVER PLANNING FILE #

REVISION	DATE	DESCRIPTION

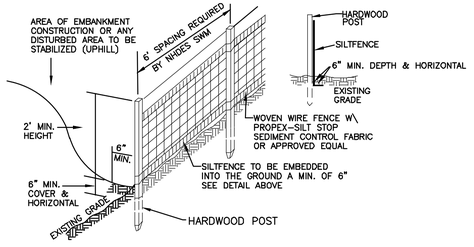
TRUCK TURNING ENTRANCE DOVER, NH FIRE T1 TEMPLATE
LAND OF
DOVER HOUSING AUTHORITY
48 WHITTIER STREET
DOVER, N.H.
TAX MAP 33, LOT 1-A

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

SCALE : 1 IN. EQUALS 10 FT.
DATE : MAY 6, 2021
FILE NO. : DB 2020 – 136

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14045
LICENSED PROFESSIONAL ENGINEER

E1



SILT FENCE CONSTRUCTION SPECIFICATIONS

1. WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES AND FILTER CLOTH SHALL BE FASTENED TO WOVEN WIRE EVERY 24" AT TOP MID AND BOTTOM SECTIONS AND BE EMBEDDED INTO GROUND A MINIMUM OF 8" THE FENCE POSTS SHALL BE A MINIMUM 48" LONG, SPACED A MAXIMUM 6' APART, AND DRIVEN A MINIMUM OF 16" INTO THE GROUND.
2. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER, THE ENDS OF THE FABRIC SHALL BE OVERLAPPED BY SIX INCHES, FOLDED AND STAPLED TO PREVENT SEDIMENT FROM BY-PASSING.
3. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND SEDIMENT REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE AND PROPERLY DISPOSED OF. SEE MAINTENANCE NOTE BELOW.
4. REMOVAL OF SEDIMENT REQUIRED AT A DEPTH OF 6-INCHES.
5. PLACE THE ENDS OF THE SILT FENCE UP CONTOUR TO PROVIDE FOR SEDIMENT STORAGE.
6. SILT FENCES SHALL BE REMOVED WHEN NO LONGER NEEDED AND THE SEDIMENT COLLECTED SHALL BE DISPOSED AS DIRECTED BY THE ENGINEER.
7. THE AREA DISTURBED BY THE REMOVAL SHALL BE SMOOTHED AND RE-VEGETATED.
8. TO BE CONSTRUCTED IAW NH SWM #3 4-2 SEDIMENT CONTROL PRACTICES, SILT FENCE, PAGE 90.

SILT FENCE MAINTENANCE

1. SILT FENCES SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. ANY REPAIRS THAT ARE REQUIRED SHALL BE MADE IMMEDIATELY.
2. IF THE FABRIC ON A SILT FENCE SHOULD DECOMPOSE OR BECOME INEFFECTIVE DURING THE EXPECTED LIFE OF THE FENCE, THE FABRIC SHALL BE REPLACED PROMPTLY.
3. SEDIMENT DEPOSITS SHOULD BE REMOVED WHEN THEY REACH SIX-INCHES IN DEPTH.
4. SEDIMENT DEPOSITS THAT ARE REMOVED OR LEFT IN PLACE AFTER THE FABRIC HAS BEEN REMOVED SHALL BE GRADED TO CONFORM WITH THE EXISTING TOPOGRAPHY AND VEGETATED.

SILT FENCE DETAIL
NOT TO SCALE

E2

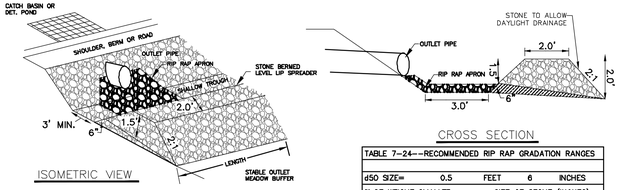
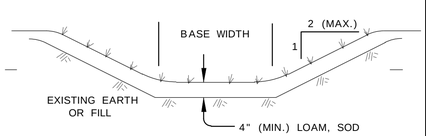


TABLE 7-24--RECOMMENDED RIP RAP GRADATION RANGES			
d50 SIZE=	0.5	FEET	6 INCHES
% OF WEIGHT SMALLER THAN THE GIVEN d50 SIZE	SIZE OF STONE (INCHES) FROM		TO
100%	9		12
85%	8		11
50%	6		9
15%	2		3

1. CONSTRUCT THE LEVEL SPREADER LIP ON A 0% GRADE TO INSURE UNIFORM SPREADING OF RUNOFF.
2. LEVEL SPREADER SHALL BE CONSTRUCTED ON UNDISTURBED SOIL AND NOT ON FILL.
3. THE ENTIRE LEVEL LIP AREA SHALL BE PROTECTED BY PLACING EXCELSIOR ENFORCER MATTING BENEATH THE STONE. EACH STRIP SHALL OVERLAP BY AT LEAST SIX INCHES.
4. THE FLOW FROM THE LEVEL SPREADER SHALL OUTLET ONTO STABILIZED AREAS. WATER SHOULD NOT RE-CONCENTRATE IMMEDIATELY BELOW THE SPREADER.
5. MAINTENANCE: THE LEVEL SPREADER SHOULD BE CHECKED PERIODICALLY AND AFTER EVERY MAJOR STORM TO DETERMINE IF THE LIP HAS BEEN DAMAGED AND THE DESIGN CONDITIONS HAVE NOT CHANGED. ANY DETRIMENTAL SEDIMENT ACCUMULATION SHOULD BE REMOVED. IF STONE REMOVAL HAS TAKEN PLACE ON THE LIP, THEN THE DAMAGE SHOULD BE REPAIRED.
6. REFERENCE IS MADE TO NHDES SWM VOL. 2, 4-6, STONE BERM LEVEL SPREADERS, PAGE 162

STONE BERM LEVEL SPREADER
NOT TO SCALE

E3



GRASS TREATMENT SWALE
NOT TO SCALE

INSPECT ANNUALLY FOR EROSION, SEDIMENT ACCUMULATIONS, VEGETATION LOSS, & INVASIVE SPECIES. REPAIR AS NECESSARY.

MOW GRASS ANNUALLY TO A DEPTH OF 4".

INSTALL STABILIZATION MATTING DURING CONSTRUCATION

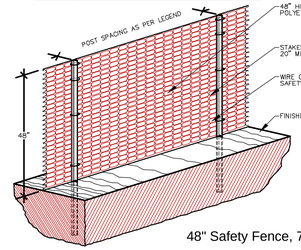
TO BE CONSTRUCTED IAW NH SWM #2 CHAPTER 4, #5 TREATMENT SWALES, PAGE 123.

E4

CONSTRUCTION SAFETY FENCE
NOT TO SCALE

LEGEND

SAF12	48" ORANGE FENCE, 12 FEET O.C.
SAF11	48" ORANGE FENCE, 11 FEET O.C..
SAF10	48" ORANGE FENCE, 10 FEET O.C.
SAF9	48" ORANGE FENCE, 9 FEET O.C.
SAF8	48" ORANGE FENCE, 8 FEET O.C..
SAF7	48" ORANGE FENCE, 7 FEET O.C.
SAF6	48" ORANGE FENCE, 6 FEET O.C.



48" Safety Fence, 72" T-Posts

1. ALL SENSITIVE AREAS SHALL BE PROTECTED AS PER PLAN.
2. ALL TREES IN THE CONSTRUCTION AREA NOT SPECIFICALLY DESIGNATED FOR REMOVAL SHALL BE PRESERVED AND PROTECTED WITH HIGH VISIBILITY FENCE AS PER PLAN.
3. WHEN PRACTICABLE, INSTALL HIGH VISIBILITY 3 FEET OUTSIDE OF THE DRIP LINE OF THE TREE.
4. SAFETY FENCE SHOULD BE FASTENED SECURELY TO THE T-POSTS.
5. THE FENCING MUST REMAIN IN PLACE DURING ALL PHASES OF CONSTRUCTION; ANY CHANGE OF THE PROTECTIVE FENCING MUST BE APPROVED.

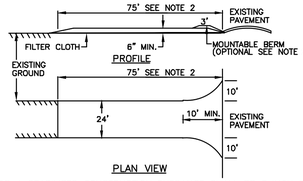
DOVER PLANNING FILE #

REVISION	DATE	DESCRIPTION

EROSION & SEDIMENT CONTROL DETAILS
LAND OF
DOVER HOUSING AUTHORITY
48 WHITTIER STREET
DOVER, N.H.
TAX MAP 33, LOT 1-A

E5

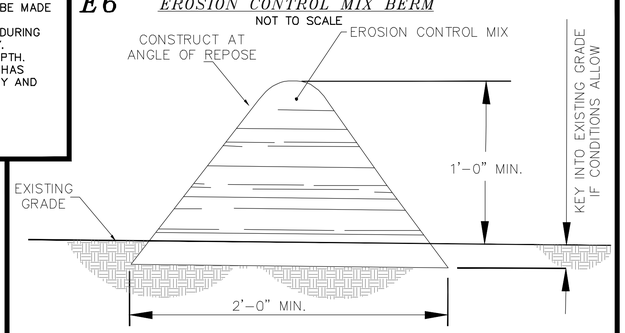
STABILIZED CONSTRUCTION ENTRANCE
NOT TO SCALE



1. STONE FOR A STABILIZED CONSTRUCTION ENTRANCE SHALL BE 3 INCH STONE, RECLAIMED STONE, OR RECYCLED CONCRETE EQUIVALENT.
2. THE LENGTH OF THE STABILIZED ENTRANCE SHALL NOT BE LESS THAN 75 FEET, EXCEPT THAT THE MINIMUM LENGTH MAY BE REDUCED TO 50 FEET IF A 3-INCH TO 6-INCH BERM IS INSTALLED AT THE ENTRANCE OF THE PROJECT SITE.
3. THE THICKNESS OF THE STONE FOR THE STABILIZED ENTRANCE SHALL NOT BE LESS THAN 6 INCHES.
4. THE WIDTH OF THE ENTRANCE SHALL NOT BE LESS THAN THE FULL WIDTH OF THE ENTRANCE WHERE INGRESS OR EGRESS OCCURS OR 10 FEET, WHICH EVER IS GREATER.
5. GEOTEXTILE FILTER CLOTH SHALL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING
6. ALL SURFACE WATER THAT IS FLOWING TO OR DIVERTED TOWARD THE CONSTRUCTION ENTRANCE SHALL BE PIPED BENEATH THE ENTRANCE. IF PIPING IS IMPRACTICAL, A BERM WITH 5:1 SLOPES THAT CAN BE CROSSED BY VEHICLES MAY BE SUBSTITUTED FOR THE PIPE.
7. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEAN OUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, WASHED, OR TRACKED ONTO PUBLIC RIGHT-OF-WAY MUST BE REMOVED PROMPTLY.
8. TO BE CONSTRUCTED IAW NH SWM #3 4-2 SEDIMENT CONTROL PRACTICES, TEMPORARY CONSTRUCTION EXIT, PAGE 124.

E6

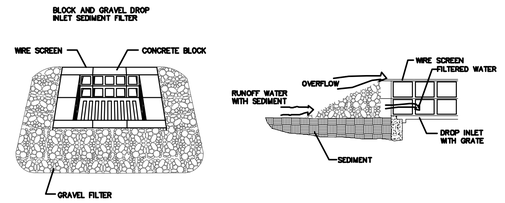
EROSION CONTROL MIX BERM
NOT TO SCALE



EROSION CONTROL MIX BERMS SHALL BE USED ONLY AS FOLLOWS:

1. BERMS SHALL BE USED IN AREAS WHERE EROSION WILL OCCUR ONLY IN THE FORM OF SHEET EROSION AND THERE IS NO CONCENTRATION OF WATER IN A CHANNEL OR DRAINAGE WAY ABOVE THE BERM.
2. THE BERMS SHALL BE INSTALLED FOLLOWING THE CONTOUR OF THE LAND AS CLOSLY AS POSSIBLE.
3. THE BERMS SHALL BE INSTALLED ON SLOPES LESS THAN 5%.
4. SUBJECT TO (E), BELOW, THE MIX SHALL HAVE AN ORGANIC PORTION BETWEEN 80 AND 100% DRY WEIGHT BASIS, AND BE FIBROUS AND ELONGATED SUCH AS FROM SHREDDED BARK, STUMP GRINDINGS, COMPOSED BARK, OR EQUIVALENT MANUFACTURED PRODUCTS.
5. WOOD AND BARK CHIPS, GROUND CONSTRUCTION DEBRIS, OR REPROCESSED WOOD PRODUCTS SHALL NOT BE USED AS ORGANIC MATERIAL.
6. THE MIX SHALL NOT CONTAIN SILTS, CLAY, OR FINE SANDS.
7. THE MIX SHALL HAVE A PARTICLE SIZE BY WEIGHT OF 70 TO 85% PASSING A 6-INCH SCREEN AND A MAXIMUM OF 85% PASSING THE 0.75-INCH SCREEN.
8. THE MIX PH SHALL BE BETWEEN 5.0 AND 8.0.
9. THE BERM SHALL BE AT LEAST 12 INCHES HIGH AND AT LEAST 2 FEET WIDE.
10. TO BE CONSTRUCTED IAW NH SWM #3 4-2 SEDIMENT CONTROL PRACTICES, EROSION CONTROL MIX BERMS, PAGE 106.

E7



MAINTENANCE

ALL STRUCTURES SHOULD BE INSPECTED AFTER EVERY RAIN STORM AND REPAIRS MADE AS NECESSARY. SEDIMENT SHOULD BE REMOVED FROM TRAPPING DEVICES AFTER THE SEDIMENT HAS REACHED A MAXIMUM OF ONE HALF THE DEPTH OF THE TRAP. THE SEDIMENT SHOULD BE DISPOSED OF IN A SUITABLE AREA AND PROTECTED FROM EROSION BY EITHER STRUCTURE OR VEGETATIVE MEANS. THE TEMPORARY TRAPS SHOULD BE REMOVED AND THE AREA REPAIRED AS SOON AS THE CONTRIBUTING DRAINAGE AREA TO THE INLET HAS BEEN COMPLETELY STABILIZED.

BLOCK & GRAVEL DROP INLET SEDIMENT FILTER
NOT TO SCALE

TO BE USED IN ALL AREAS WHERE THERE WILL BE NO TRAFFIC.

TO BE CONSTRUCTED IAW NH SWM #3 4-2 SEDIMENT CONTROL PRACTICES, TEMPORARY STORM DRAIN INLET PROTECTION, PAGE 118.

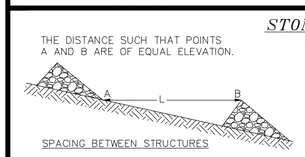
E8

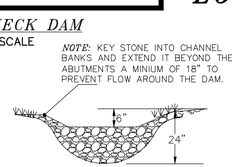
TEMPORARY EROSION CONTROL MEASURES

1. THE SMALLEST PRACTICAL AREA OF LAND SHALL BE EXPOSED AT ANY ONE TIME.
2. EROSION, SEDIMENT AND DETENTION MEASURES SHALL BE INSTALLED AS SHOWN ON THE PLANS AND AT LOCATIONS AS REQUIRED, DIRECTED BY THE ENGINEER.
3. ALL DISTURBED AREAS SHALL BE RETURNED TO ORIGINAL GRADES AND ELEVATIONS. DISTURBED AREAS SHALL BE LOAMED WITH A MINIMUM OF 4" OF LOAM AND SEEDED WITH NOT LESS THAN ONE POUND OF SEED PER 50 SQUARE YARDS OF AREA. (SEE SEED SPECIFICATIONS THIS SHEET)
4. ALL DISTURBED AREAS WILL BE RESTABILIZED WITHIN 45 DAYS. AT ANY ONE TIME, NO MORE THAN 5 ACRES, (217,800 Sq. Ft.) WILL BE DISTURBED.
5. SILT FENCES AND PERIMETER BARRIERS SHALL BE INSPECTED PERIODICALLY AND AFTER EVERY RAIN DURING THE LIFE OF THE PROJECT. ALL DAMAGED AREAS SHALL BE REPAIRED, SEDIMENT DEPOSITS SHALL PERIODICALLY BE REMOVED AND DISPOSED OF.
6. AFTER ALL DISTURBED AREAS HAVE BEEN STABILIZED, THE TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE REMOVED AND THE AREA DISTURBED BY THE REMOVAL SMOOTHED AND RE-VEGETATED.
7. PER THE EPA CGP REQUIREMENTS THERE WILL BE REPORTS OF THE EROSION CONTROL INSPECTIONS IAW SWPPP PREPARED BY BS&E. ALL EROSION CONTROLS SHALL BE INSPECTED WEEKLY AND WITHIN 24 HOURS AFTER 0.25" OR GREATER RAIN EVENT.
8. DITCHES, SWALES, AND BASINS SHALL BE STABILIZED PRIOR TO DIRECTING RUNOFF TO THEM.
9. DO NOT TRAFFIC EXPOSED SOIL SURFACES WITH CONSTRUCTION EQUIPMENT. IF FEASIBLE, PERFORM EXCAVATIONS WITH EQUIPMENT POSITIONED OUTSIDE THE LIMITS OF THE INFILTRATION SYSTEM.
10. DRIVEWAYS AND CUT AND FILL SPLOPES MUST BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINAL GRADE.
11. STABILIZATION MEANS:
    - 11.1. A MINIMUM OF 85% OF VEGETATIVE COVER HAS BEEN ESTABLISHED.
    - 11.2. A MINIMUM OF 3 INCHES OF NON-EROSIVE MATERIAL SUCH AS STONE OR RIP RAP HAS BEEN INSTALLED, OR
    - 11.3. EROSION CONTROL BLANKETS HAVE BEEN INSTALLED.
12. THIS PROJECT IS TO BE MANAGED IN A MANNER THAT MEETS THE REQUIREMENTS AND INTENT OF RSA 430:53 AND CHAPTER AGR 3800 RELATIVE TO INVASIVE SPECIES.
13. THE NHDES STORMWATER MANUAL, IN THREE VOLUMES, DATED DECEMBER 2008, IS A PART OF THIS PLAN SET AND THE MORE RESTRICTIVE WILL GOVERN. (NH SWM)

E9

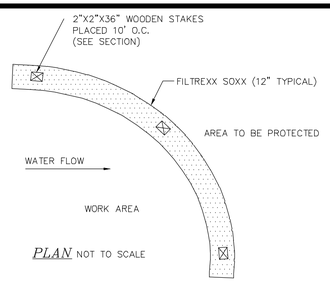
STONE CHECK DAM
NOT TO SCALE



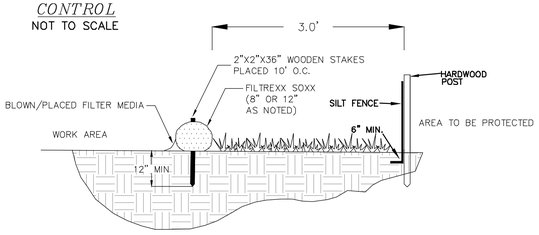


1.) CHECK DAMS SHOULD BE INSTALLED BEFORE RUNOFF IS DIRECTED TO THE SWALE OR DRAINAGE DITCH.
2.) THE MAXIMUM CONTRIBUTING DRAINAGE AREA TO THE DAM SHOULD BE LESS THEN ONE ACRE.
3.) THE MAXIMUM HEIGHT OF THE DAM SHOULD BE TWO FEET.
4.) THE CENTER OF THE DAM SHOULD BE AT LEAST SIX INCHES LOWER THAN THE OUTER EDGES.
5.) THE MAXIMUM SPACING IS AS SHOWN ON THE PROJECT SITE PLANS.
6.) CHECK DAMS WILL NOT BE USED IN A FLOWING STREAM.
7.) TEMPORARY CHECK DAMS WILL BE REMOVED ONCE THE SWALE OR DITCH IS DETERMINED STABLE.
8.) TO BE CONSTRUCTED IAW NH SWM #3 4-2 SEDIMENT CONTROL PRACTICES, TEMPORARY CHECK DAMS, PAGE 114.

E10



FILTREXX SEDIMENT CONTROL
NOT TO SCALE



NOTES

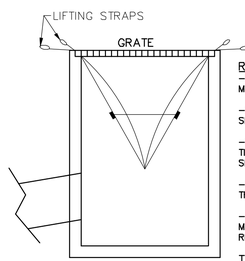
1. ALL MATERIAL TO MEET FILTREXX SPECIFICATIONS.
2. FILTER MEDIA FILL TO MEET APPLICATION REQUIRMENTS.
3. COMPOST MATERIAL TO BE DISPERSED ON SITE, AS DETERMINED BY ENGINEER.
4. SILTSOXX MAY BE USED IN PLACE OF SILT FENCE OR OTHER SEDIMENT BARRIERS.
5. SILTSOXX COMPOST/SOIL/ROCK/SEED FILL MATERIAL SHALL BE ADJUSTED AS NECESSARY TO MEET THE REQUIRMENTS OF THE SPECIFIC APPLICATION.
6. FILTREXX SOXX IS A REGISTERED TRADEMARK OF FILTREXXIN TERNATIONAL, LLC.
7. SILT FENCE IS NOT A SUBSTITUTION FOR SILT SOXX AND ANY EQUAL SUBSTITUTION TO BE APPROVED.
8. TO BE CONSTRUCTED IAW FILTREXX, SECTION 1:EROSION & SEDIMENT CONTROL (PAGE 323) - CONSTRUCTION ACTIVITIES, SWPPP CUT SHEET: FILTREXX SEDIMENT CONTROL

Filtrexx International, LLC
35481 Grafton Eastern Rd | Grafton, Oh 44044
440-926-2607 | fax: 440-926-4021
WWW.FILTREXX.COM
OR APPROVED EQUAL

NOTE: FOR AREAS REQUIRING DOUBLE PERIMETER CONTROL WITHIN 50' OF JURISDICTIONAL WETLANDS AND NOT FOR ALL SILT SOXX APPLICATIONS. THIS DUPLICATION MAY BE SPECIFIED AS 12" SILT SOXX OR ORANGE CONSTRUCTION FENCE AS NOTED.

SECTION NOT TO SCALE

E11



RECOMMENDED MAINTENANCE SCHEDULE

-EACH SILTSACK SHOULD BE INSPECTED AFTER EVERY MAJOR RAIN EVENT, AND MUST BE MAINTAINED.

-IF THERE HAVE BEEN NO MAJOR EVENTS, SILTSACK SHOULD BE INSPECTED EVERY 2-3 WEEKS.

-THE RESTRAINT CORD SHOULD BE VISIBLE AT ALL TIMES. IF CORD IS COVERED WITH SEDIMENT, THE SILTSACK SHOULD BE EMPTIED.

-TO BE USED IN ALL AREAS WHERE THERE WILL BE TRAFFIC.

- ARE SUBJECT TO DAMAGE BY SNOW PLOWS, AND MUST BE INSPECTED AFTER ANY SNOW EVENT AND REPLACED AS REQUIRED.

TO BE CONSTRUCTED IAW NH SWM #3 4-2 SEDIMENT CONTROL PRACTICES, TEMPORARY STORM DRAIN INLET PROTECTION, PAGE 118.

SILTSACK DETAIL
NOT TO SCALE

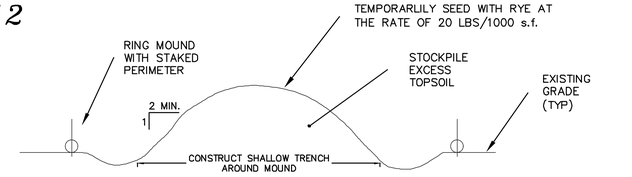
E-101

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

SCALE : AS NOTED
DATE : MAY 6, 2021
FILE NO. : DB 2020 - 136

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY No. 14242
LICENSED PROFESSIONAL ENGINEER

E12



TOPSOIL STOCKPILE MOUND

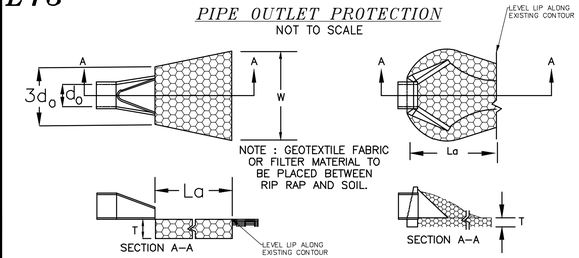
NOT TO SCALE

TO BE CONSTRUCTED IAW NH SWM #3 4–1 EROSION CONTROL PRACTICES, SOIL STOCKPILE PRACTICES, PAGE 46.

E13

PIPE OUTLET PROTECTION

NOT TO SCALE



PIPE OUTLET TO FLAT AREA WITH NO DEFINED CHANNEL

PIPE OUTLET TO WELL–DEFINED CHANNEL

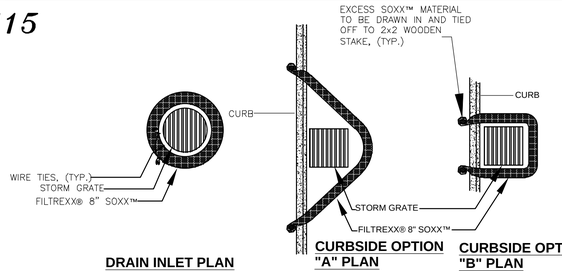
PIPE OUTLET PROTECTION CONSTRUCTION SPECIFICATIONS

1. THE SUB GRADE FOR THE FILTER MATERIAL, GEOTEXTILE FABRIC, AND RIP RAP SHALL BE PREPARED TO THE LINES AND GRADES SHOWN ON THE PLANS. SPECIFIED GRADATION.
2. THE ROCK OR GRAVEL USED FOR FILTER OF RIP RAP SHALL CONFORM TO NHDOT SECTION 583.
3. GEOTEXTILE FABRICS SHALL BE PROTECTED FROM PUNCTURE OR TEARING DURING THE PLACEMENT OF THE ROCK RIP RAP DAMAGED AREAS IN THE FABRIC SHALL BE REPAIRED BY PLACING A PIECE OF FABRIC OVER THE DAMAGED AREA OR BY COMPLETE REPLACEMENT OF THE FABRIC. ALL OVERLAPS REQUIRED FOR REPAIRS OR JOINING TWO PIECES OF FABRIC SHALL BE A MINIMUM OF 12 INCHES.
4. STONE FOR THE RIP RAP MAY BE PLACED BY EQUIPMENT AND SHALL BE CONSTRUCTED TO THE FULL LAYER THICKNESS IN ONE OPERATION AND IN SUCH A MANNER AS TO PREVENT SEGREGATION OF THE STONE SIZES.
5. TO BE CONSTRUCTED IAW NH SWM #2 4–6 CONVEYANCE PRACTICES, 6. OUTLET PROTECTION, PAGE 172.

E14

TABLE 7–24––RECOMMENDED RIP RAP GRADATION RANGES			
d50 SIZE=	0.5	FEET	6 INCHES
% OF WEIGHT SMALLER THAN THE GIVEN d50 SIZE	SIZE OF STONE (INCHES) FROM		TO
100%	9		12
85%	8		11
50%	6		9
15%	2		3

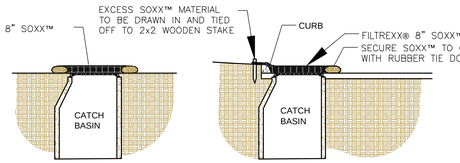
E15



DRAIN INLET PLAN

CURBSIDE OPTION "A" PLAN

CURBSIDE OPTION "B" PLAN



DRAIN INLET SECTION

CURBSIDE SECTION

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

FILTREXX INLET PROTECTION

NOT TO SCALE

E16

NOTE: THIS PROJECT IS TO BE MANAGED IN A MANNER THAT MEETS THE REQUIREMENTS AND INTENT OF RSA 430:53 AND CHAPTER AGR 3800 RELATIVE TO INVASIVE SPECIES.

NOTE: Temporary seed mix for stabilization of turf shall be winter rye or oats at a rate of 2.5 lbs. per 1000 s.f. and shall be placed prior to OCT. 15, if permanent seeding not yet complete.

SEEDING GUIDE

USE	SEEDING MIXTURE 1/	DROUGHTY	WELL DRAINED	MODERATELY WELL DRAINED	POORLY DRAINED
STEEP CUTS AND FILLS, BORROW AND DISPOSAL AREAS	A	FAIR	GOOD	GOOD	FAIR
	B	POOR	GOOD	FAIR	FAIR
	C	POOR	GOOD	EXCELLENT	GOOD
	D	FAIR	FAIR	GOOD	EXCELLENT
	E	FAIR	EXCELLENT	EXCELLENT	POOR
WATERWAYS, EMERGENCY SPILLWAYS, AND OTHER CHANNELS WITH FLOWING WATER.	A	GOOD	GOOD	GOOD	FAIR
	C	GOOD	EXCELLENT	EXCELLENT	FAIR
	D	GOOD	EXCELLENT	EXCELLENT	FAIR
LIGHTLY USED PARKING LOTS, ODD AREAS, UNUSED LANDS, AND LOW INTENSITY USE RECREATION SITES.	A	GOOD	GOOD	GOOD	FAIR
	B	GOOD	GOOD	FAIR	POOR
	C	GOOD	EXCELLENT	EXCELLENT	FAIR
	D	FAIR	GOOD	GOOD	EXCELLENT
PLAY AREAS AND ATHLETIC FIELDS. (TOPSOIL IS ESSENTIAL FOR GOOD TURF.)	F	FAIR	EXCELLENT	EXCELLENT	2/
	G	FAIR	EXCELLENT	EXCELLENT	2/

GRAVEL PIT, SEE NH–PM–24 IN APPENDIX FOR RECOMMENDATION REGARDING RECLAMATION OF SAND AND GRAVEL PITS.

1/ REFER TO SEEDING MIXTURES AND RATES IN TABLE 7–36.
2/ POORLY DRAINED SOILS ARE NOT DESIRABLE FOR USE AS PLAYING AREA AND ATHLETIC FIELDS.

RECOMMENDED *

SEEDING RATES

MIXTURE	POUNDS PER ACRE	POUNDS PER 1,000 Sq. Ft.
A. TALL FESCUE	20	0.45
CREEPING RED FESCUE	20	0.45
RED TOP	2	0.05
TOTAL	42	0.95
B. TALL FESCUE	15	0.35
CREEPING RED FESCUE	10	0.25
CROWN VETCH	15	0.35
OR		
FLAT PEA	30	0.75
TOTAL	40 OR 55	0.95 OR 1.35
C. TALL FESCUE	24	0.55
CREEPING RED FESCUE	24	0.55
BIRDS FOOT TREFOIL	REMOVED	REMOVED
TOTAL	48	1.10
D. TALL FESCUE	30	0.45
FLAT PEA	20	0.75
TOTAL	50	1.20
E. CREEPING RED FESCUE 1/	50	1.15
KENTUCKY BLUEGRASS 1/	50	1.15
TOTAL	100	2.30
F. TALL FESCUE 1	150	3.60

CONSERVATION MIX	POUNDS PER ACRE	POUNDS PER 1,000 S.F.
TALL FESCUE (35%)	15	0.35
CREEPING RED FESCUE (25%)	15	0.35
ANNUAL RYEGRASS (12%)	5	0.12
PERENNIAL RYEGRASS (10%)	5	0.12
KENTUCKY BLUEGRASS (10%)	15	0.35
WHITE CLOVER (3%)	7	0.16

SEEDING SPECIFICATIONS

1. GRADING AND SHAPING
   A. SLOPES SHALL NOT BE STEEPER THAN 2:1;3:1 SLOPES OR FLATTER ARE PREFERRED.
   WHERE MOWING WILL BE DONE, 3:1 SLOPES OR FLATTER ARE RECOMMENDED.
2. SEEDBED PREPARATION
   A. SURFACE AND SEEPAGE WATER SHOULD BE DRAINED OR DIVERTED FROM THE SITE TO PREVENT DROWNING OR WINTER KILLING OF THE PLANTS.
   B. STONES LARGER THAN 4 INCHES AND TRASH SHOULD BE REMOVED BECAUSE THEY INTERFERE WITH SEEDING AND FUTURE MAINTENANCE OF THE AREA. WHERE FEASIBLE, THE SOIL SHOULD BE TILLED TO A DEPTH OF ABOUT 4 INCHES TO PREPARE A SEED BED AND MIX FERTILIZER AND LIME INTO THE SOIL. THE SEEDBED SHOULD BE LEFT IN REASONABLY FIRM AND SMOOTH CONDITION. THE LAST TILLAGE OPERATION SHOULD BE PERFORMED ACROSS THE SLOPE WHEREVER PRACTICAL.
3. ESTABLISHING A STAND
   A. LIME AND FERTILIZER SHOULD BE APPLIED PRIOR TO OR AT THE TIME OF SEEDING
   AND INCORPORATED INTO THE SOIL KINDS AND AMOUNTS OF LIME AND FERTILIZER SHOULD BE BASED ON AN EVALUATION OF SOIL TESTS. WHEN A SOIL TEST IS NOT AVAILABLE,
   THE FOLLOWING MINIMUM AMOUNTS SHOULD BE APPLIED:
   AGRICULTURAL LIMESTONE, 2 TONS PER ACRE OR 100LBS. PER 1,000 SQ.FT.
   NITROGEN(N), 50LBS. PER ACRE OR 1.1LBS. PER 1,000 SQ.FT.
   PHOSPHATE(P2O5), 100LBS. PER ACRE OR 2.2LBS. PER 1,000 SQ.FT.
   POTASH(K2O), 100LBS. PER ACRE OR 2.2LBS. PER 1,000 SQ.FT.
   (NOTE: THIS IS THE EQUIVALENT OF 500LBS. PER ACRE OF 10–20–20 FERTILIZER OR 1,000LBS. PER ACRE OF 5–10–10.)
   B. SEED SHOULD BE SPREAD UNIFORMLY BY THE METHOD MOST APPROPRIATE FOR THE SITE. METHODS INCLUDE BROADCASTING, DRILLING AND HYDROSEEDING. WHERE BROADCASTING IS USED, COVER SEED WITH .25 INCH OF SOIL OR LESS, BY CULTIPACKING OR RAKING.
   C. REFER TO TABLE(G–E1 THIS SHEET) FOR APPROPRIATE SEED MIXTURES AND TABLE(H–E1 THIS SHEET) FOR RATES OF SEEDING. ALL LEGUMES (CROWNVETCH, BIRDSFOOT TREFOIL, AND FLATPEA) MUST BE INOCULATED WITH THEIR SPECIFIC INOCULANT.
   D. WHEN SEEDED AREAS ARE MULCHED, PLANTINGS MAY BE MADE FROM EARLY SPRING TO EARLY OCTOBER. WHEN SEEDED AREAS ARE NOT MULCHED, PLANTINGS SHOULD BE MADE FROM EARLY SPRING TO MAY 20 OR FROM AUGUST 10 TO SEPTEMBER 1.
4. MULCH
   A. HAY, STRAW, OR OTHER MULCH, WHEN NEEDED, SHOULD BE APPLIED IMMEDIATELY AFTER SEEDING.
   B. MULCH WILL BE HELD IN PLACE USING APPROPRIATE TECHNIQUES FROM THE BEST MANAGEMENT PRACTICE FOR MULCHING. HAY OR STRAW MULCH SHALL BE PLACED AT A RATE OF 90LBS PER 1000 S.F.
5. MAINTENANCE TO ESTABLISH A STAND
   A. PLANTED AREA SHOULD BE PROTECTED FROM DAMAGE BY FIRE, GRAZING, TRAFFIC, AND DENSE WEED GROWTH.
   B. FERTILIZATION NEEDS SHOULD BE DETERMINED BY ONSITE INSPECTIONS. SUPPLEMENTAL FERTILIZER IS USUALLY THE KEY TO FULLY COMPLETE THE ESTABLISHMENT OF THE STAND BECAUSE MOST PERENNIAL STAKE 2 TO 3 YEARS TO BECOME ESTABLISHED.
   C. IN WATERWAYS, CHANNELS, OR SWALES WHERE UNIFORM FLOW CONDITIONS ARE ANTICIPATED, OCCASIONAL MOWING MAY BE NECESSARY TO CONTROL GROWTH OF WOODY VEGETATION.
6. TO BE CONSTRUCTED IAW NH SWM #3 4–1 EROSION CONTROL PRACTICES, PERMANENT VEGETATION, PAGE 60.

E17

CONSTRUCTION SEQUENCE:

1.) CUT AND REMOVE TREES IN CONSTRUCTION AREA ONLY AS REQUIRED, RELOCATE ANY PROJECT T.B.M.

2.) CONSTRUCT AND/OR INSTALL TEMPORARY AND PERMANENT SEDIMENT EROSION AND DETENTION CONTROL FACILITIES AS SPECIFIED. EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED PRIOR TO ANY SOIL LAND DISTURBANCE AND MUST BE REVIEWED AND APPROVED BY THE COMMUNITY SERVICES DEPARTMENT.

3.) EROSION, SEDIMENT AND DETENTION CONTROL FACILITY SHALL BE INSTALLED & STABILIZED PRIOR TO DIRECTING RUNOFF TO THEM.TEMPORARY DIVERSIONS MAY BE REQUIRED. POST CONSTRUCTION STORM WATER MANAGEMENT PRACTICES MUST BE INITIATED AND STABILIZED EARLY IN THE PROCESS.

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

8.) INSTALL PIPE AND CONSTRUCTION ASSOCIATED APPURTENANCES AS REQUIRED OR DIRECTED. INSTALL RAIN GARDENS. ALL DISTURBED AREAS SHALL STABILIZED IMMEDIATELY AFTER GRADING.

9.) BEGIN PERMANENT AND TEMPORARY SEEDING AND MULCHING. ALL CUT AND FILL SLOPES AND DISTURBED AREAS SHALL BE SEEDED OR MULCHED AS REQUIRED, OR DIRECTED. NO AREA IS ALLOWED TO BE DISTURBED FOR A LENGTH OF TIME THAT EXCEEDS 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 (CPESC), A CERTIFIED EROSION SEDIMENT AND STORM WATER INSPECTOR (CESSW), OR A CERTIFIED PROFESSIONAL IN STORM WATER QUALITY (CPSWQ). INSPECTION REPORTS SHALL BE SUBMITTED TO THE COMMUNITY SERVICES DEPARTMENT.

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.

E18

DEFINITION OF STABLE:

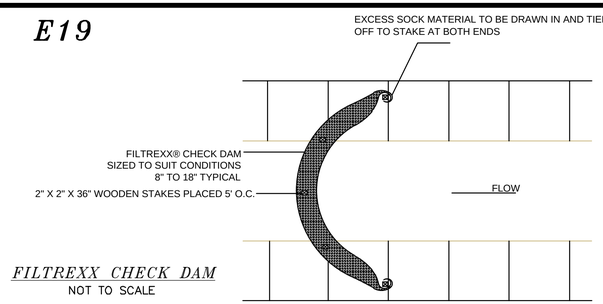
PER ENV–WQ 1500 ALTERATION OF TERRAIN

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

ADDITION STABILIZATION NOTES:

5. HAY MULCH OR OTHER APPROVED METHODS SHALL BE USED TO CONTROL EROSION OF NEWLY GRADED AREAS. ALL CUT AND FILL SLOPES SHALL BE SEEDED AND MULCHED WITHIN 72 HOURS AFTER THEIR CONSTRUCTION.
6. DISTURBED SOIL AREAS SHALL BE EITHER TEMPORARILY OR PERMANENTLY STABILIZED. IN AREAS WHERE FINAL GRADING HAS NOT OCCURRED, TEMPORARY STABILIZATION MEASURES SHOULD BE IN PLACE WITHIN SEVEN (7) CALENDAR DAYS FOR EXPOSED SOIL AREAS THAT ARE WITHIN ONE HUNDRED (100) FEET OF A SURFACE WATER BODY OR A WETLAND AND NO MORE THAN 14 CALENDAR DAYS FOR ALL OTHER AREAS. PERMANENT STABILIZATION SHOULD BE IN PLACE WITHIN THREE (3) CALENDAR DAYS FOLLOWING COMPLETION OF FINAL GRADING OF EXPOSED SOIL AREAS.

E19

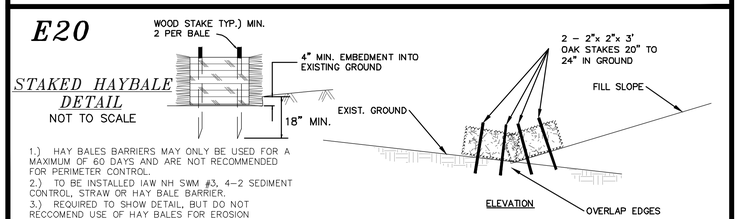


FILTREXX CHECK DAM

NOT TO SCALE

NOTES:
1. ALL MATERIAL TO MEET FILTREXX® SPECIFICATIONS.
2. CHECK DAM SHOULD BE USED IN AREAS THAT DRAIN 1 ACRE OR LESS.
3. SEDIMENT SHOULD BE REMOVED FROM BEHIND CHECK DAM ONCE THE ACCUMULATED HEIGHT HAS REACHED ½ THE HEIGHT OF THE CHECK DAM.
4. CHECK DAM CAN BE DIRECT SEEDED AT THE TIME OF INSTALLATION.
5. CONTRACTOR IS REQUIRED TO BE A FILTREXX CERTIFIED™ INSTALLER.

E20

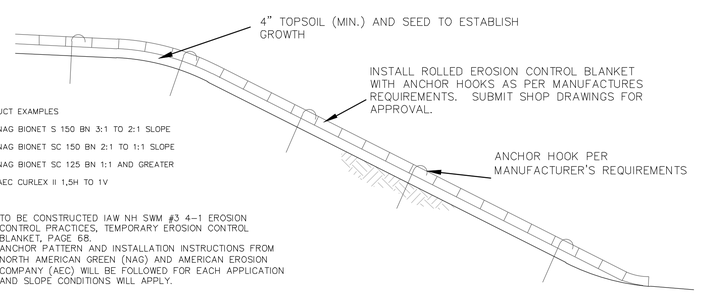


STAKED HAYBALE DETAIL

NOT TO SCALE

1.) HAY BALES BARRIERS MAY ONLY BE USED FOR A MAXIMUM OF 60 DAYS AND ARE NOT RECOMMENDED FOR PERIMETER CONTROL.
2.) TO BE INSTALLED IAW NH SWM #3, 4–2 SEDIMENT CONTROL, STRAW OR HAY BALE BARRIER.
3.) REQUIRED TO SHOW DETAIL, BUT DO NOT RECCOMEND USE OF HAY BALES FOR EROSION CONTROL.

E21



PRODUCT EXAMPLES

1.) NAG BIONET S 150 BN 3:1 TO 2:1 SLOPE
2.) NAG BIONET SC 150 BN 2:1 TO 1:1 SLOPE
3.) NAG BIONET SC 125 BN 1:1 AND GREATER
4.) AEC CURLEX II 1,5H TO 1V

1. TO BE CONSTRUCTED IAW NH SWM #3 4–1 EROSION CONTROL PRACTICES, TEMPORARY EROSION CONTROL BLANKET, PAGE 68.
2. ANCHOR PATTERN AND INSTALLATION INSTRUCTIONS FROM NORTH AMERICAN GREEN (NAG) AND AMERICAN EROSION COMPANY (AEC) WILL BE FOLLOWED FOR EACH APPLICATION AND SLOPE CONDITIONS WILL APPLY.

ROLLED EROSION CONTROL BLANKET (RECB) SLOPE STABILIZATION DETAIL

NOT TO SCALE

E22

WINTER STABILIZATION NOTES

1. ALL DISTURBED AREAS THAT DO NOT HAVE AT LEAST 85% VEGETATIVE COVERAGE PRIOR TO OCTOBER 15TH SHALL BE STABILIZED BY APPLYING MULCH AT A RATE OF 3–4 TONS PER ACRE. ALL SIDE SLOPES, STEEPER THAN 4:1, THAT ARE NOT DIRECTED TO SWALES OR DETENTION BASINS, SHALL BE LINED WITH BIODEGRADABLE/PHOTODEGRADABLE "JUTE MATTING" (EXCELSIOR'S CURLEX II OR EQUAL). ALL OTHER SLOPES SHALL BE MULCHED AND TACKED AT A RATE OF 3–4 TONS PER ACRE. THE APPLICATION OF MULCH AND/OR JUTE MATTING SHALL NOT OCCUR OVER EXISTING SNOW COVER. IF THE SITE IS ACTIVE AFTER OCTOBER 15TH, ANY SNOW THAT ACCUMULATES ON DISTURBED AREAS SHALL BE REMOVED. PRIOR TO SPRING THAW ALL AREAS WILL BE STABILIZED, AS DIRECTED ABOVE.

2. ALL SWALES THAT DO NOT HAVE FULLY ESTABLISHED VEGETATION SHALL BE EITHER LINED WITH TEMPORARY JUTE MATTING OR TEMPORARY STONE CHECK DAMS (APPROPRIATELY SPACED). STONE CHECK DAMS WILL BE MAINTAINED THROUGHOUT THE WINTER MONTHS. IF THE SWALES ARE TO BE MATTED WITH PERMANENT LINERS OR RIPRAP WITH ENGINEERING FABRIC, THIS SHALL BE COMPLETED PRIOR TO WINTER SHUTDOWN OR AS SOON AS THEY ARE PROPERLY GRADED AND SHAPED.

3. PRIOR TO OCT. 15TH ALL ROADWAY AND PARKING AREAS SHALL BE BROUGHT UP TO AND THROUGH THE BANK RUN GRAVEL APPLICATION. IF THESE AREAS' ELEVATIONS ARE PROPOSED TO REMAIN BELOW THE PROPOSED SUBGRADE ELEVATION, THE SUBGRADE MATERIAL SHALL BE ROUGHLY CROWNED AND A 3" LAYER OF CRUSHED GRAVEL SHALL BE PLACED AND COMPACTED. THIS WILL ALLOW THE SUBGRADE TO SHED RUNOFF AND WILL REDUCE ROADWAY EROSION. THIS CRUSHED GRAVEL DOES NOT HAVE TO CONFORM TO NH DOT 304.3, BUT SHALL HAVE BETWEEN 15–25% PASSING THE #200 SIEVE AND THE LARGEST STONE SIZE SHALL BE 2". IF THE SITE IS ACTIVE AFTER OCTOBER 15TH, ANY ACCUMULATED SNOW SHALL BE REMOVED FROM ALL ROADWAY AND PARKING AREAS.

4. AFTER OCTOBER 15TH, THE END OF NEW HAMPSHIRE'S AVERAGE GROWING SEASON, NO ADDITIONAL LOAM SHALL BE SPREAD ON SIDE SLOPES AND SWALES. THE STOCKPILES THAT WILL BE LEFT UNDISTURBED UNTIL SPRING SHALL BE SEEDED BY THIS DATE. AFTER OCTOBER 15TH, ANY NEW OR DISTURBED PILES SHALL BE MULCHED AT A RATE OF 3–4 TONS PER ACRE. ALL STOCKPILES THAT WILL REMAIN THROUGHOUT THE WINTER SHALL BE SURROUNDED WITH SILT FENCING.

E–102

DOVER PLANNING FILE #

REVISION	DATE	DESCRIPTION

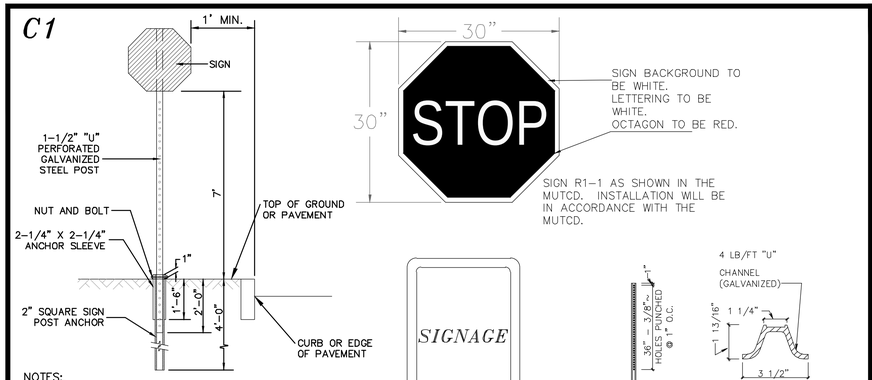
EROSION & SEDIMENT CONTROL PLAN
LAND OF
DOVER HOUSING AUTHORITY
48 WHITTIER STREET
DOVER, N.H.
TAX MAP 33, LOT 1–A

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

SCALE : AS NOTED
DATE : MAY 6, 2021
FILE NO. : DB 2020 – 136

STATE OF NEW HAMPSHIRE — KENNETH A. BERRY No. 10466 LICENSED PROFESSIONAL ENGINEER

C1



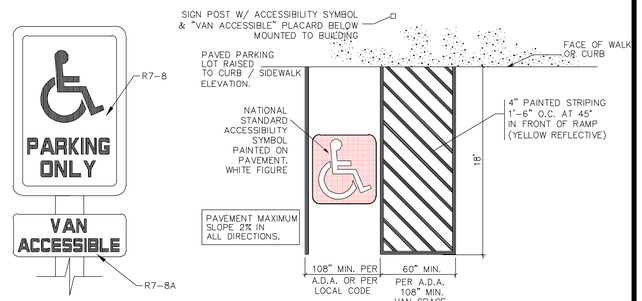
NOTES:

1. ALL SIGNAGE SHALL BE TO THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) STANDARDS AND NHDOT STANDARDS.
2. THE CONTRACTOR SHALL PROVIDE SHOP DRAWINGS/CATALOG CUTS TO THE ENGINEER FOR
3. REVIEW AND APPROVAL PRIOR TO ERECTING SIGNS.

THE LOCATION OF THE SIGNS SHALL BE AS INDICATED ON THE DRAWINGS AND/OR AS DIRECTED BY THE CITY OF DOVER DEPARTMENT OF PUBLIC WORKS.

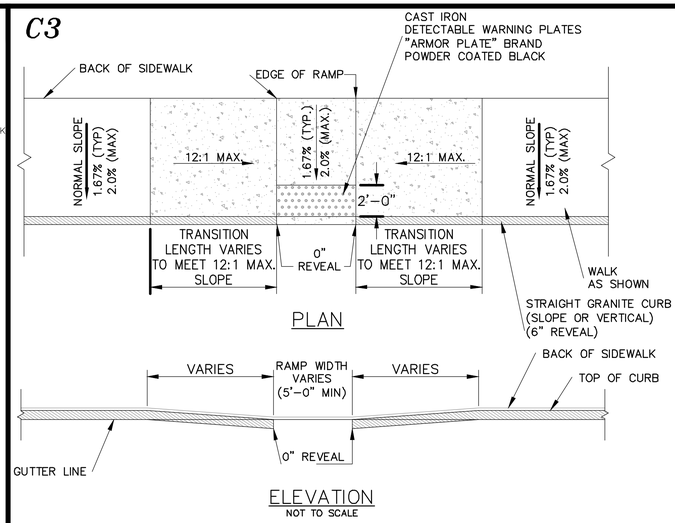
TYPICAL SIGN POST
NOT TO SCALE

C2



PARKING STALL SIGNAGE FOR THE PHYSICALLY CHALLENGED
NOT TO SCALE

C3



TYPICAL DETAIL FOR WHEELCHAIR RAMP
NOT TO SCALE

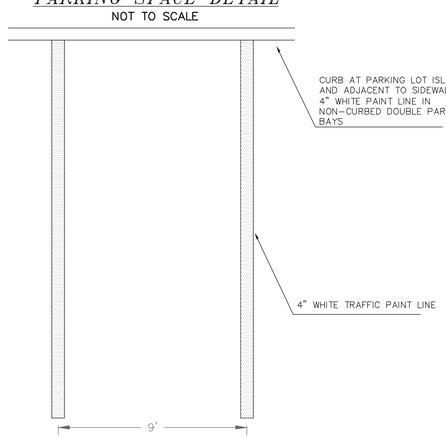
DOVER PLANNING FILE #

REVISION	DATE	DESCRIPTION

CONSTRUCTION DETAILS
LAND OF
DOVER HOUSING AUTHORITY
48 WHITTIER STREET
DOVER, N.H.
TAX MAP 33, LOT 1-A

C4

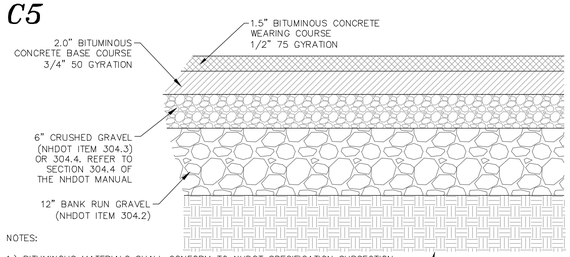
PARKING SPACE DETAIL
NOT TO SCALE



NOTES:

1.) PROVIDE TWO COATS OF PAINT ON ALL PARKING LINES.
2.) SEE PROPOSED SITE PLANS FOR LOCATION OF PARKING SPACES.
3.) PAINTED SPACES ONLY WHERE MARKED ON SITE PLAN

C5



NOTES:

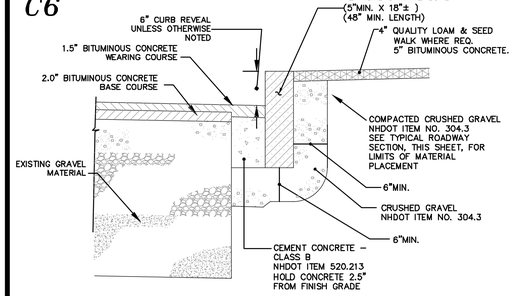
1.) BITUMINOUS MATERIALS SHALL CONFORM TO NHDOT SPECIFICATION SUBSECTION 401.3.6.

2.) PAVEMENT BASE COURSE AGGEGATE SHALL CONFORM TO NHDOT SPECIFICATION SECTION 304, ITEM 304.3 AND COMPACTED TO A MINIMUM OF 95% OF MODIFIED PROCTOR MAXIMUM DRY DENSITY.

3.) PAVEMENT SUBBASE COURSE AGGREGATE AND AGGREGATE FOR SUBGRADE REPAIR AREAS SHALL BE SUITABLE FOR USE AS STRUCTURAL FILL AND BE PROOFROLLED AND COMPABED TO 95% OF MODIFIED PROCTOR MAXIMUM DRY DENSITY. FOR NEW CONSTRUCTION AREAS ONLY. IN EXISTING PAVEMENT AREAS THE CONTRACTOR IS TO ENSURE THE BASE MATERIAL IS SUITABLE TO THE OWNER FOR RE-PAVING

BITUMINOUS CONCRETE PAVEMENT SECTION
NOT TO SCALE

C6

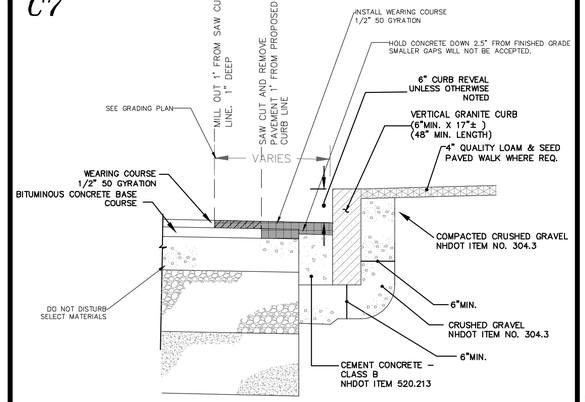


GENERAL NOTE:

1.) TO BE USED IN PLACE OF THE CONCRETE WALK AND INTEGRATED CURB AT THE OWNERS DISCRETION

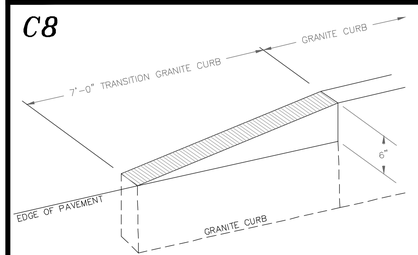
VERTICAL GRANITE CURB DETAIL ON SITE
NOT TO SCALE

C7



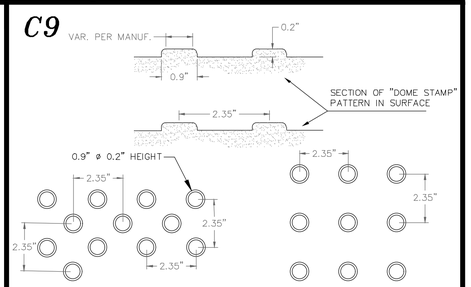
VERTICAL GRANITE CURB DETAIL
NOT TO SCALE

C8



CURB TRANSITION DETAIL
NOT TO SCALE
TO BE USED FOR TRANSITION FROM GRANITE CURB TO EDGE OF PAVEMENT

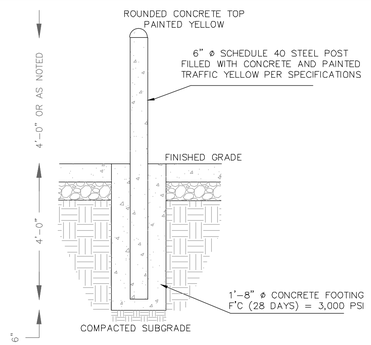
C9



EITHER PATTERN IS ACCEPTABLE

DETECTABLE WARNING SURFACE
NOT TO SCALE

C10

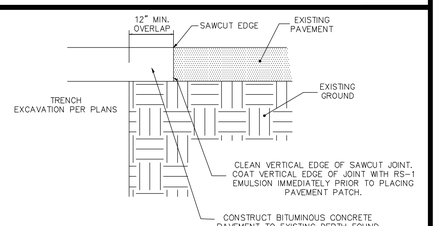


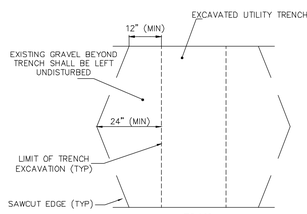
BOLLARD DETAIL
NOT TO SCALE
DETAIL ONLY REQUIRED IF EVERSOURCE REQUIRES BOLLARDS AROUND TRANSFORMERS

C11

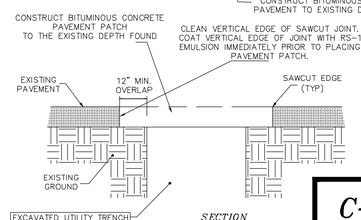
TYPICAL TRENCH PATCH
NOT TO SCALE

NOTES
1. MACHINE CUT EXISTING PAVEMENT.
2. ALL TEMPORARY, DAMAGED, OR DEFECTIVE PAVEMENT SHALL BE REMOVED PRIOR TO PLACEMENT OF PERMANENT TRENCH REPAIRS.
3. DIAMOND PATCHES, SHALL BE REQUIRED FOR ALL TRENCHES CROSSING ROADWAY. DIAMOND PATCHES SHALL MEET NHDOT REQUIREMENTS.





PLAN



SECTION

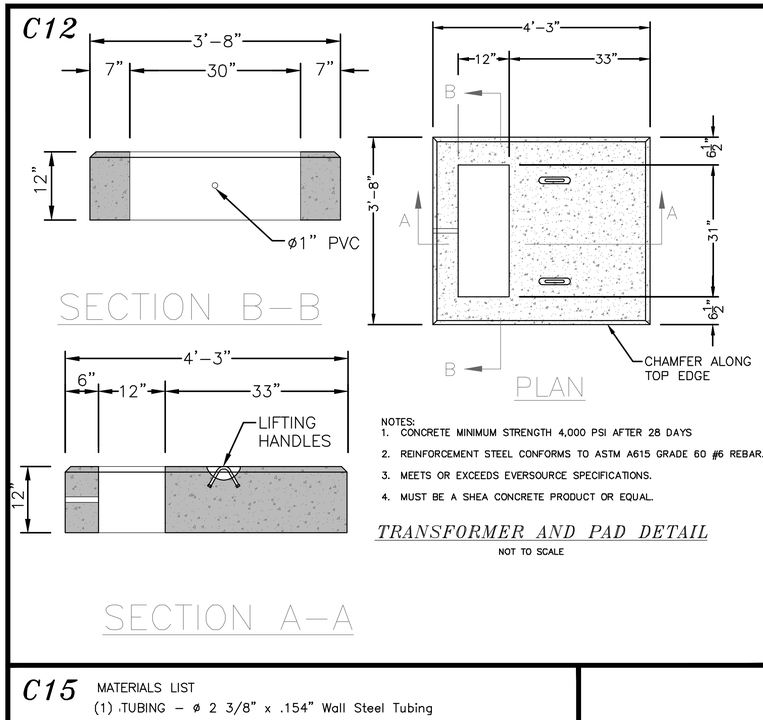
C-101

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

SCALE : AS NOTED
DATE : MAY 6, 2021
FILE NO. : DB 2020 - 136

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14242
LICENSED PROFESSIONAL ENGINEER

C12

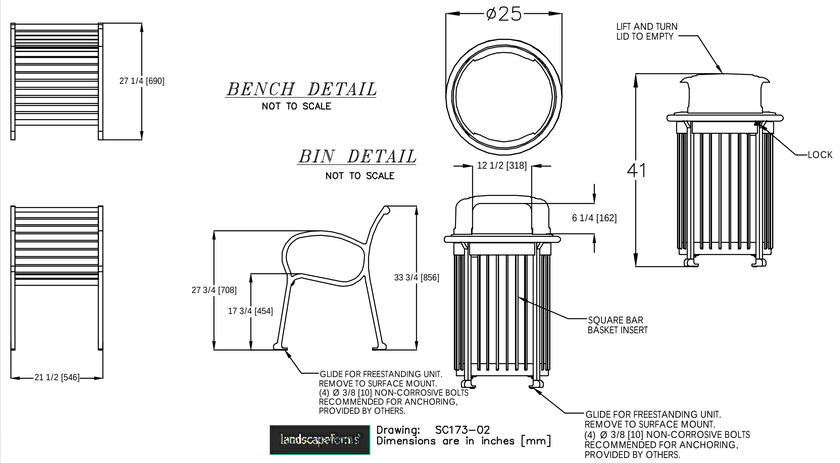


NOTES:
1. CONCRETE MINIMUM STRENGTH 4,000 PSI AFTER 28 DAYS
2. REINFORCEMENT STEEL CONFORMS TO ASTM A615 GRADE 60 #6 REBAR.
3. MEETS OR EXCEEDS EVERSOURCE SPECIFICATIONS.
4. MUST BE A SHEA CONCRETE PRODUCT OR EQUAL.

TRANSFORMER AND PAD DETAIL
NOT TO SCALE

C13

Scarborough™ Bench, 24" Backed, with Horizontal Strap Seat
Product Drawing
www.landscapeforms.com
Date: 5/19/2010
Ph: 800.521.2546



BENCH DETAIL
NOT TO SCALE

BIN DETAIL
NOT TO SCALE

landscapeforms Drawing: SC173-02
Dimensions are in inches [mm]

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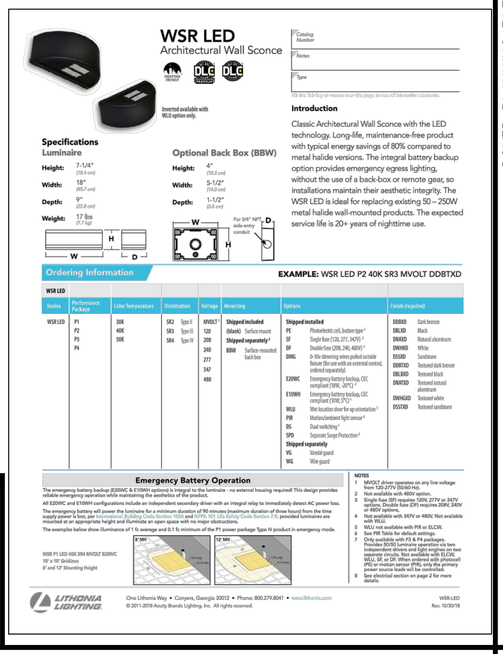
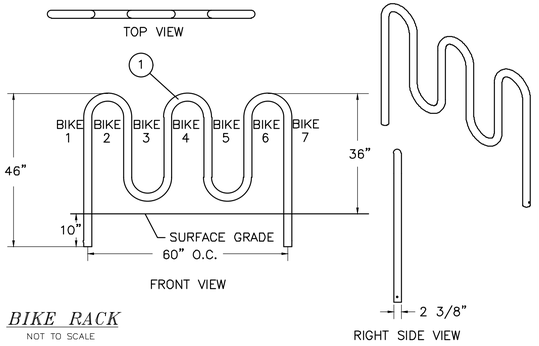
C14

LAMP "A" MOUNTED 8' ON BUILDING



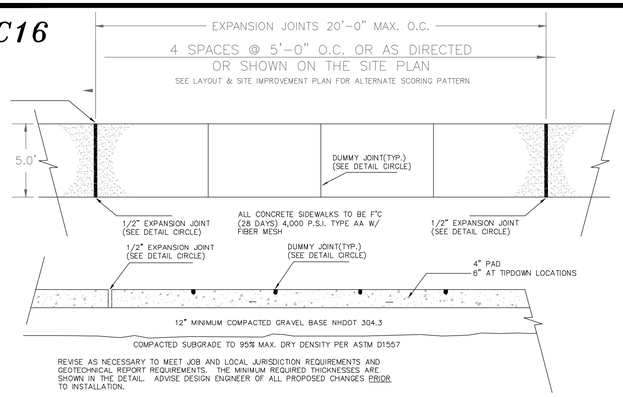
C15

MATERIALS LIST
(1) .TUBING – ø 2 3/8" x .154" Wall Steel Tubing



BIKE RACK
NOT TO SCALE

C16



REVISE AS NECESSARY TO MEET JOB AND LOCAL JURISDICTION REQUIREMENTS AND GEOTECHNICAL REPORT REQUIREMENTS. THE MINIMUM REQUIRED THICKNESSES ARE SHOWN IN THE DETAIL. ADVISE DESIGN ENGINEER OF ALL PROPOSED CHANGES PRIOR TO INSTALLATION.

NOTES:
1.) PROVIDE EXPANSION JOINT MATERIAL WHERE CURB RAMP ADJOINS ANY RIGID PAVEMENT, SIDEWALK OR STRUCTURE WITH THE TOP OF JOINT FILLER PLUS SEALANT FLUSH WITH ADJACENT CONCRETE SURFACE.

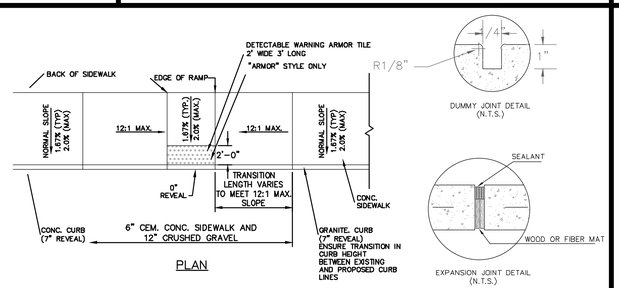
2.) SEAL JOINTS WITH AN APPROVED SEALING MATERIAL.

3.) PROVIDE SLIP RESISTANT TEXTURE ON CURB RAMP BY COARSE BROOMING TRANSVERSE TO THE SLOPE OF THE RAMP. EXTEND TEXTURE THE FULL WIDTH AND LENGTH OF THE CURB RAMP INCLUDING FLARED SIDE RAMPS.

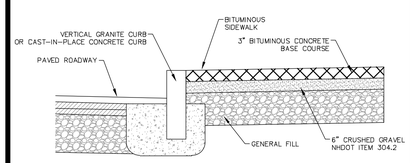
4.) CURB RAMP AND SIDE FLARE LENGTHS ARE VARIABLE AND BASED ON CURB HEIGHT AND THE SIDEWALK PITCH.

5.) WHENEVER POSSIBLE, CONSTRUCT THE TRANSITION SLOPE FROM THE CURB RAMP AND FLARE SIDES TO ADJOINING SURFACES WITH A GRADUAL CURVE RATHER THAN AN ABRUPT ANGLE.

CONCRETE SIDEWALK
NOT TO SCALE

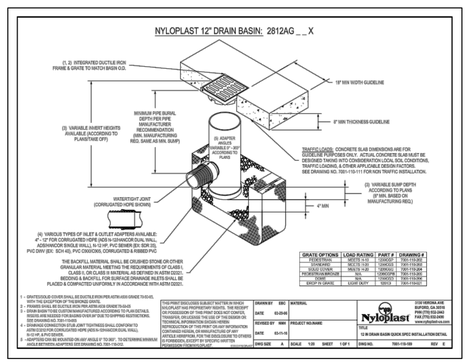


C17

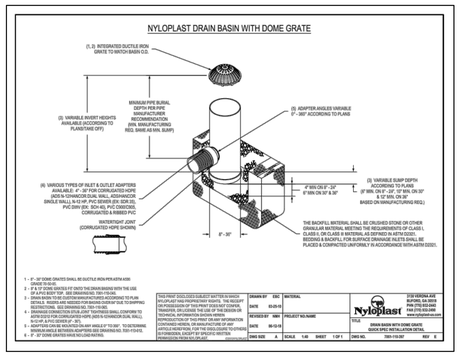


BITUMINOUS SIDEWALK
NOT TO SCALE

C18



12" NYLOPLAST DRAIN BASIN
NOT TO SCALE



NYLOPLAST DOME GRATE
NOT TO SCALE

C19

C-102

DOVER PLANNING FILE #

REVISION	DATE	DESCRIPTION

CONSTRUCTION DETAILS
LAND OF
DOVER HOUSING AUTHORITY
48 WHITTIER STREET
DOVER, N.H.
TAX MAP 33, LOT 1-A

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

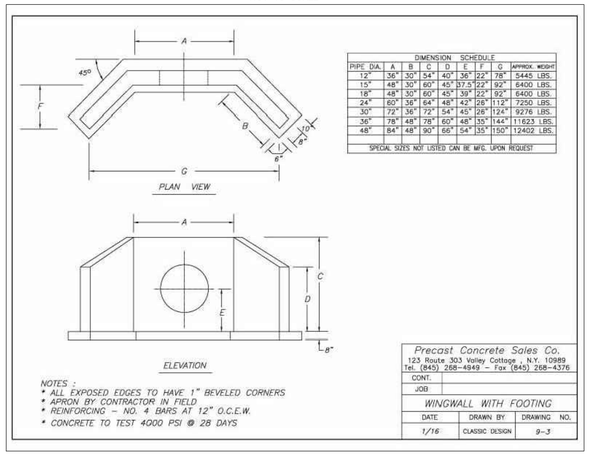
SCALE : AS NOTED
DATE : MAY 6, 2021
FILE NO. : DB 2020 – 136

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

D1

HEADWALL (CONCRETE)

NOT TO SCALE



DIMENSION SCHEDULE								
PIPE DIA.	A	B	G	D	E	F	G	APPROX. WEIGHT
12"	36"	30"	54"	40"	36"	22"	78"	5445 LBS.
15"	48"	30"	60"	45°	37.5"	22"	92"	6400 LBS.
18"	48"	30"	60"	45°	39"	22"	92"	6400 LBS.
24"	60"	36"	64"	48"	42"	28"	112"	7250 LBS.
30"	72"	36"	72"	54"	45"	26"	124"	9276 LBS.
36"	78"	48"	78"	60"	48"	35"	144"	11623 LBS.
48"	84"	48"	90"	66"	54"	35"	150"	12402 LBS.

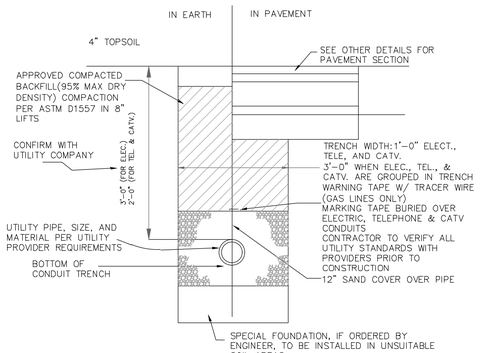
SPECIAL SIZES NOT LISTED CAN BE MFG. UPON REQUEST

Precast Concrete Sales Co.
123 Route 303 Valley Cottage, N.Y. 10989
Tel. (845) 268-4949 – Fax (845) 268-4376

CONT.		
JOB		
WINGWALL WITH FOOTING		
DATE	DRAWN BY:	DRAWING NO.
1/16	CLASSIC DESIGN	9-3

NOTES :
* ALL EXPOSED EDGES TO HAVE 1" BEVELED CORNERS
* APRON BY CONTRACTOR IN FIELD
* REINFORCING – NO. 4 BARS AT 12" O.C.E.W.
* CONCRETE TO TEST 4000 PSI @ 28 DAYS

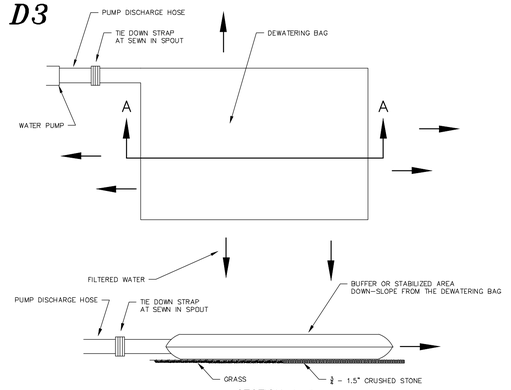
D2



ELECTRICAL, TELEPHONE, CABLE TRENCH

NOT TO SCALE

D3

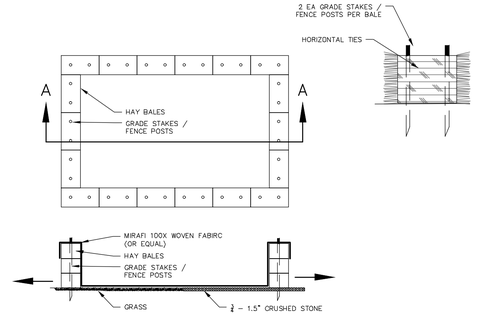


1. TO BE CONSTRUCTED IAW NH SWM #3 4–2 SEDIMENT CONTROL PRACTICES, CONSTRUCTION DEWATERING, PAGE 144.
2. TO BE INSTALLED UPSLOPE OF BUFFER OR STABILIZED AREA.

DEWATERING (DANDY) BAG

NOT TO SCALE

D4



SECTION A–A

1. TO BE CONSTRUCTED IAW NH SWM #3 4–2 SEDIMENT CONTROL PRACTICES, CONSTRUCTION DEWATERING, PAGE 144.
2. STRUCTURE MAY BE MADE WITH LAYERS OF FILTREXX SILT SOXX, OR EQUAL, IN A PYRAMID FORMATION.
3. TO BE INSTALLED UPSLOPE OF BUFFER OR STABILIZED AREA.

TEMPORARY SEDIMENT BASIN (DWATERING)

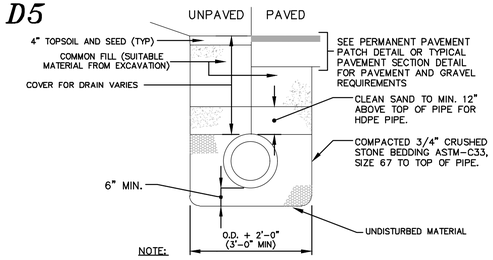
NOT TO SCALE

1. TO BE CONSTRUCTED IAW NH SWM #3 4–2 SEDIMENT CONTROL PRACTICES, CONSTRUCTION DEWATERING, PAGE 144.
2. STRUCTURE MAY BE MADE WITH LAYERS OF FILTREXX SILT SOXX, OR EQUAL, IN A PYRAMID FORMATION.

DOVER PLANNING FILE #

REVISION	DATE	DESCRIPTION

D5



NOTE:

PLASTIC DRAIN PIPE (HDPE) SHALL BE ADS N–12 (CORRUGATED EXTERIOR/SMOOTH INTERIOR) OR EQUAL MEETING AASHTO M–252 AND H–20 LOADING.

DI DRAIN PIPE SHALL BE CL. 50.

RC DRAIN PIPE SHALL BE CLASS III UNLESS OTHERWISE NOTED.

TYPICAL DRAIN PIPE TRENCH

NOT TO SCALE

D6

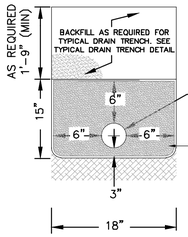
TYPICAL CROSS SECTION

NOTES:

CROWN OF 6" SUBDRAIN PIPES TO MATCH CROWN OF DRAIN PIPES IN CATCH BASINS

SUBDRAIN TO BE INSTALLED AS INDICATED ON THE DRAWINGS AND AS DIRECTED BY THE ENGINEER.

SHORING AND STABILIZING OF TRENCH SIDEWALLS DURING EXCAVATION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. NO ADDITIONAL COMPENSATION WILL BE ALLOWED FOR ANY TRENCH EXCAVATION BEYOND THE LIMITS OF PAY EXCAVATION INDICATED.



SUBDRAIN PIPE TO BE ADS N–12 PERFORATED (CORRUGATED EXTERIOR / SMOOTH INTERIOR) MEETING AASHTO M–252 WITH FILTER SOCK

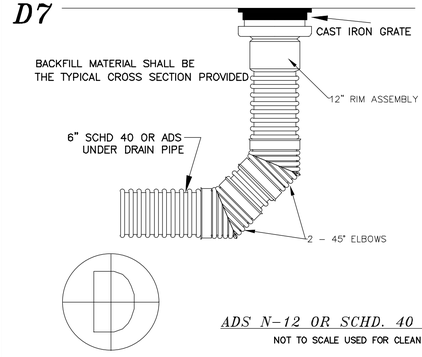
PIPE SIZE PER SITE PLANS (PLACE HOLES DOWN)

NOTE: SUBDRAIN TO BE LAID WITH SLOPE OF FINISHED GROUND

SUBDRAIN DETAIL TYPICAL

NOT TO SCALE

D7



ADS N–12 OR SCHD. 40 INLINE DRAIN

NOT TO SCALE USED FOR CLEANOUTS

12" CAST IRON GRATE

NOT TO SCALE

CASTINGS ARE RATED FOR H20 WHEEL LOAD TRAFFIC

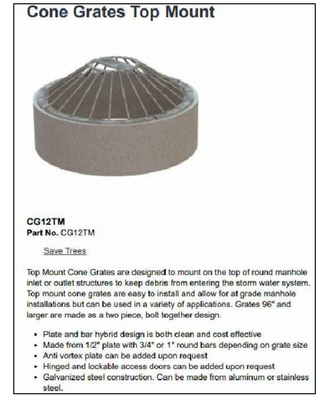
PAINT: CASTINGS ARE FURNISHED WITH A BLACK PAINT

D8

CONE GRATE

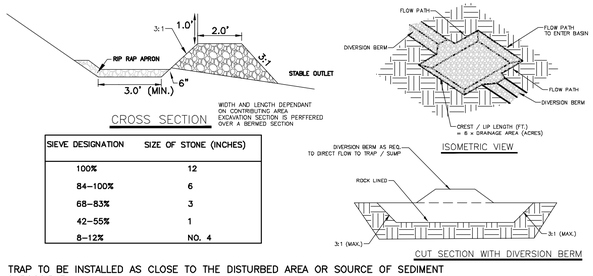
NOT TO SCALE

MUST BE HAALA INDUSTRIES INC. OR EQUAL.



DRAINAGE CONSTRUCTION DETAILS
LAND OF
DOVER HOUSING AUTHORITY
48 WHITTIER STREET
DOVER, N.H.
TAX MAP 33, LOT 1-A

D9



SIEVE DESIGNATION	SIZE OF STONE (INCHES)
100%	12
84–100%	6
68–83%	3
42–55%	1
8–12%	NO. 4

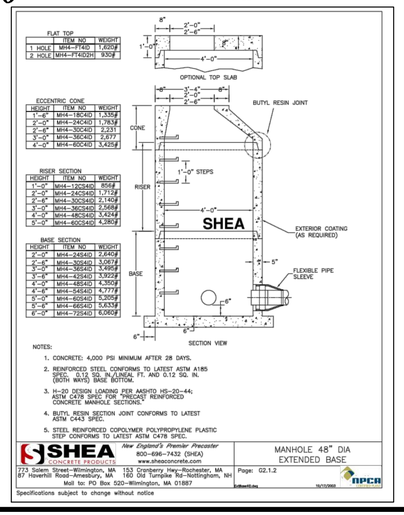
1. TRAP TO BE INSTALLED AS CLOSE TO THE DISTURBED AREA OR SOURCE OF SEDIMENT AS POSSIBLE.
2. THE MAXIMUM CONTRIBUTING DRAINAGE AREA TO THE TRAP SHALL BE LESS THAN 5 ACRES.
3. THE MINIMUM VOLUME OF THE TRAP SHALL BE 3,600 CUBIC FEET OF STORAGE FOR EACH ACRE OF DRAINAGE AREA.
4. THE SIDE SLOPES OF THE TRAP SHALL BE 3:1 OR FLATTER AND SHALL BE STABILIZED IMMEDIATELY AFTER THEIR CONSTRUCTION.
5. THE OUTLET OF THE TRAP SHALL BE A MINIMUM OF ONE FOOT BELOW THE CREST OF THE TRAP AND SHALL DISCHARGE TO A STABILIZED AREA.
6. THE TRAP SHALL BE CLEANED WHEN 50 PERCENT OF THE ORIGINAL VOLUME IS FILLED.
7. THE MATERIALS REMOVED FROM THE TRAP SHALL BE PROPERLY DISPOSED OF AND STABILIZED.

STONE LINED SEDIMENT TRAP

D10

48" MANHOLE ROUND EXTENDED BASE

NOT TO SCALE



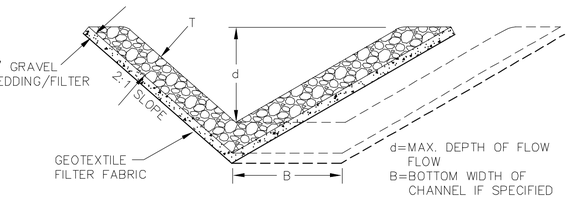
NOTES:
1. CONCRETE: 4,000 PSI MINIMUM AFTER 28 DAYS.
2. REINFORCED STEEL CONFORMS TO LATEST ASTM A185 SPEC. 0.12 SQ. IN./LINEAL FT. AND 0.12 SQ. IN. (BOTH WAYS) BASE BOTTOM.
3. H–20 DESIGN LOADING PER AASHTO HS–20–44; ASTM C478 SPEC FOR "PRECAST REINFORCED CONCRETE MANHOLE SECTIONS."
4. BUTYL RESIN SECTION JOINT CONFORMS TO LATEST ASTM C443 SPEC.
5. STEEL REINFORCED COPOLYMER POLYPROPYLENE PLASTIC STEP CONFORMS TO LATEST ASTM C478 SPEC.

SHEA CONCRETE PRODUCTS — New England's Premier Precaster
800–696–7432 (SHEA)
www.sheaconcrete.com
773 Salem Street–Wilmington, MA 153 Cranberry Hwy–Rochester, MA
87 Haverhill Road–Amesbury, MA 160 Old Turnpike Rd–Nottingham, NH
Mail to: PO Box 520–Wilmington, MA 01887

MANHOLE 48" DIA EXTENDED BASE
Page: G2.1.2

Specifications subject to change without notice

D11



TYPICAL SECTION FOR A RIPRAP LINED CHANNEL

NOT TO SCALE

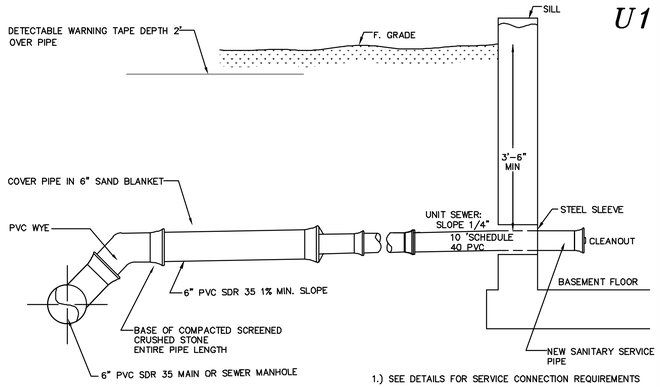
D–101

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

SCALE : AS NOTED
DATE : MAY 6, 2021
FILE NO. : DB 2020 – 136

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

U1



DETAIL OF UNIT SEWER SERVICE
NOT TO SCALE

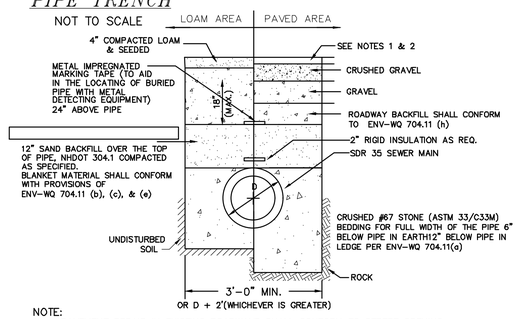
1.) SEE DETAILS FOR SERVICE CONNECTION REQUIREMENTS

2.) SERVICE CONNECTION SHALL BE INSTALLED BELOW WATER MAIN WHERE POSSIBLE.

3.) CLEANOUTS SHALL BE INSTALLED INSIDE EACH BUILDING EXIT POINT

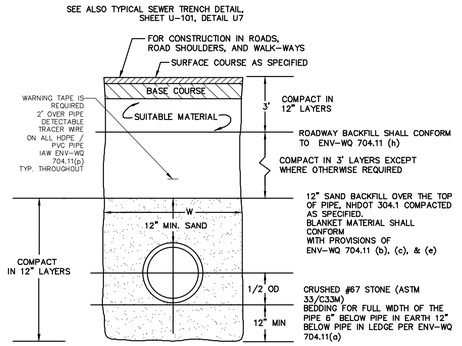
U2

TYPICAL SEWER PIPE TRENCH
NOT TO SCALE

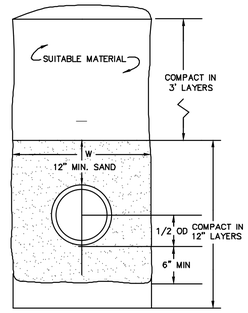


NOTE:
1. PAVEMENT REPAIR IN EXISTING ROADWAYS SHALL CONFORM TO STREET OPENING REGULATIONS.
2. NEW ROADWAY CONSTRUCTION SHALL CONFORM TO SUBDIVISION SPEC'S.
3. ANTI-SEEP COLLARS OR CLAY CHECK DAMS ON STEEP RUNS IN WET CONDITIONS.
4. ALL SEWER INSTALLATIONS SHALL CONFORM TO THE REQUIREMENTS OF NHDES & MUNICIPAL DPW SEWER DIVISION STANDARDS. ALL PVC SEWER PIPE IS TO CONFORM WITH ENV-WQ 704.05 (c)-(e) AND CONFORM WITH ASTM D3034. PVC JOINT SEALS SHALL CONFORM WITH ASTM D3121. SDR-21 PVC FORCE MAIN PIPE MATERIAL IS REQUIRED IN LOCATIONS AS SHOWN. SDR-21 PVC FORCEMAIN PIPE WILL CONFORM TO ENV-WQ 704.08.

U3

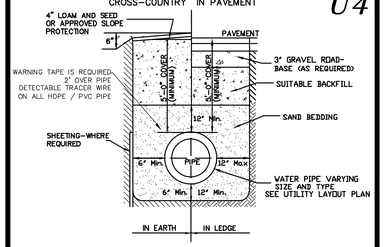


LEDGE CONSTRUCTION
NOT TO SCALE



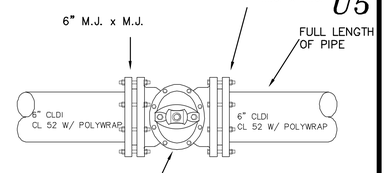
EARTH CONSTRUCTION
NOT TO SCALE

U4



TYPICAL TRENCH DETAIL FOR WATER SYSTEM
NOT TO SCALE

U5



SHUTOFF VALVE DETAIL
NOT TO SCALE

1.) ALL VALVES ARE TO OPEN RIGHT
2.) SEE CITY OF DOVER STANDARDS OF INFRASTRUCTURE DESIGN FOR POTABLE WATER DETAILS

U6

TYPICAL THRUST BLOCKS
NOT TO SCALE

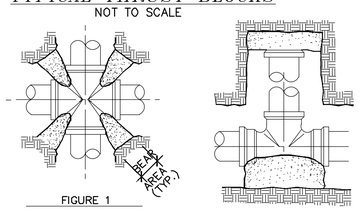


FIGURE 1
CROSS
(ONLY REQ'D IF ANY LEG IS LESS THAN 60 FT. LONG)

FIGURE 2
TEE, PLUG OR CAP

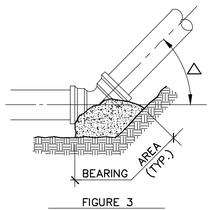


FIGURE 3
HORIZONTAL OR UPWARD VERTICAL BEND

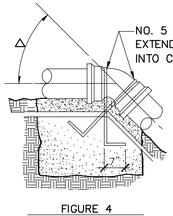
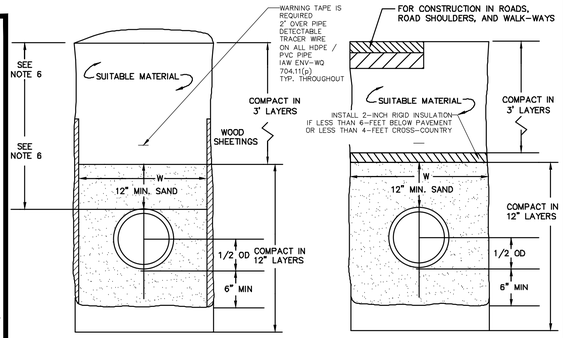


FIGURE 4
DOWNWARD VERTICAL BEND

PIPE I.D.	BEARING AREA, SQUARE FEET						VOLUME OF CONC. CU.YD		
	FIGURE 1	FIGURE 2	FIGURE 3, Δ				FIGURE 4, Δ		
			90°	45°	22-1/2°	11-1/4°	45°	22-1/2°	11-1/4°
4"	2	2	2	1	1	1	1.0	.5	.5
6"	2	3	3	2	1	1	1.5	1.0	.5
8"	2	5	6	3	2	1	2.0	1.0	.5
10"	3	7	10	5	3	1	4.0	2.0	1.0
12"	3	10	14	8	4	2			
14"	4	14	20	10	5	3			
16"	4	20	24	12	7	4			
18"	5	24	30	16	10	5			
20"	5	28	40	20	12	6			

GENERAL NOTES:
1. ALL FITTINGS & EXPOSED REBAR TO BE RAPPED W/ TWO LAYERS OF 6 MIL. POLYETHYLENE WHERE COVERED WITH CONCRETE.
2. ALL CONCRETE SHALL BE CLASS C 3000 P.S.I. MINIMUM 28 DAYS COMPRESSIVE STRENGTH.
3. PLACE CONCRETE AGAINST UNDISTURBED EARTH.
4. TABLE DENOTES MINIMUM BEARING AREA OR VOLUME OF THRUST BLOCK. SPECIAL DESIGN FOR EACH INSTALLATION IS REQUIRED IF ALLOWABLE SOIL BEARING CAPACITY IS LESS THAN 3000 P.S.F.
5. VERTICAL SURFACES NOT BEARING AGAINST UNDISTURBED EARTH SHALL BE FORMED.
6. KEEP CONCRETE AWAY FROM FLANGE BOLTS AND FITTINGS.
7. MECHANICAL JOINTS AT ALL FITTINGS IE: BENDS, TEES, CROSSES, AND VALVES SHALL BE THRUST RESTRAINT. (MEGA-LUG OR APPROVED EQUAL.



EARTH CONSTRUCTION WITH SHEETING
NOT TO SCALE

TRENCH INSULATION
NOT TO SCALE

U7

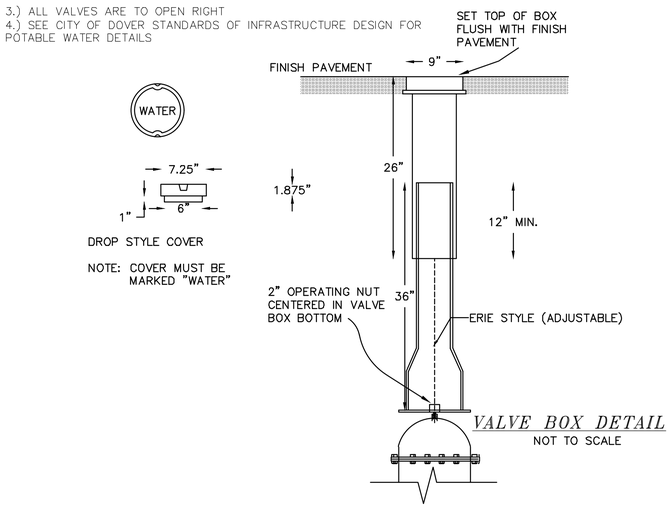
NOTES:

1.) ALL MATERIALS AND INSTALLATION PROCEDURES WILL CONFORM TO LOCAL WATER WORKS TECHNICAL SPECIFICATIONS.

2.) ALL PIPE SHOULD HAVE A MINIMUM DEPTH OF 6' FROM TOP OF PIPE TO FINISH GRADE.

3.) ALL VALVES ARE TO OPEN RIGHT

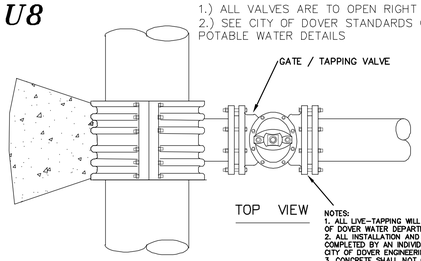
4.) SEE CITY OF DOVER STANDARDS OF INFRASTRUCTURE DESIGN FOR POTABLE WATER DETAILS



VALVE BOX DETAIL
NOT TO SCALE

U8

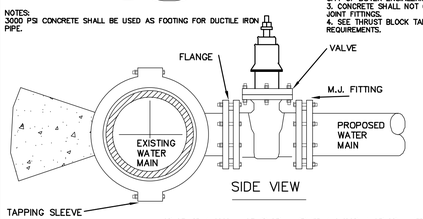
1.) ALL VALVES ARE TO OPEN RIGHT
2.) SEE CITY OF DOVER STANDARDS OF INFRASTRUCTURE DESIGN FOR POTABLE WATER DETAILS



TOP VIEW

NOTES:
1. ALL LIVE-TAPPING WILL BE COMPLETED IN ACCORDANCE WITH CITY OF DOVER WATER DEPARTMENT REGULATIONS.
2. ALL INSTALLATION AND TAPPING OF EXISTING WATER MAINS WILL BE COMPLETED BY AN INDIVIDUAL OR FIRM THAT IS APPROVED BY THE CITY OF DOVER ENGINEERING.
3. CONCRETE SHALL NOT CONTACT BOLTS OR END OF MECHANICAL JOINT FITTINGS.
4. SEE THRUST BLOCK TABLES FOR AREA OF CONCRETE REQUIREMENTS.

NOTES:
3000 PSI CONCRETE SHALL BE USED AS FOOTING FOR DUCTILE IRON PIPE.



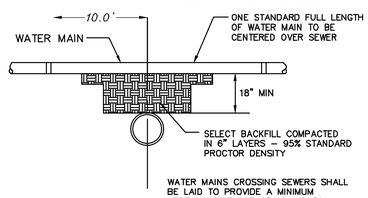
SIDE VIEW

DETAIL FOR STANDARD TAPPING SLEEVE AND VALVE ASSEMBLY
NOT TO SCALE

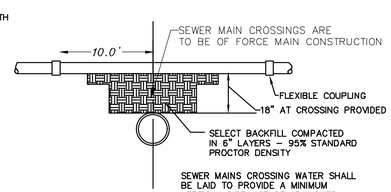
U9

SEPERATION NOTES:

1. WATER MAIN SHALL BE IN ACCORDANCE WITH THE "RECOMMENDED STANDARDS FOR WATER WORKS" SO-CALLED TEN STATE STANDARDS AND NEW HAMPSHIRE WATER SUPPLY AND POLLUTION CONTROL DESIGN STANDARDS, ENV-WQ 700 ADOPTED OCTOBER 14, 2014.
2. WATER MAINS SHALL BE LAID AT LEAST 10 FEET HORIZONTALLY FROM ANY EXISTING OR PROPOSED SEWERS. THE DISTANCE SHALL BE MEASURED EDGE TO EDGE. IF THIS DISTANCE CANNOT BE OBTAINED, THEN THE PIPES SHALL BE INSTALLED IN A SEPARATE TRENCH AT AN ELEVATION SO THE BOTTOM OF THE WATER MAIN IS AT LEAST 18 INCHES ABOVE THE TOP OF THE SEWER.
3. VERTICAL SEPARATION REQUIREMENTS APPLY TO WATER AND SEWER MAINS AND SERVICE LINES. WHERE SEWER CROSSES WATER MAIN AND WATER SERVICE CROSSES SEWER MAIN, 18 INCH VERTICAL CLEARANCE SHALL BE PROVIDED WITH WATER OVER SEWER.



WATER MAIN ABOVE SEWER



WATER MAIN BELOW SEWER

TYPICAL WATER/SEWER SEPERATION DETAILS
NOT TO SCALE

U-101

DOVER PLANNING FILE #

REVISION	DATE	DESCRIPTION

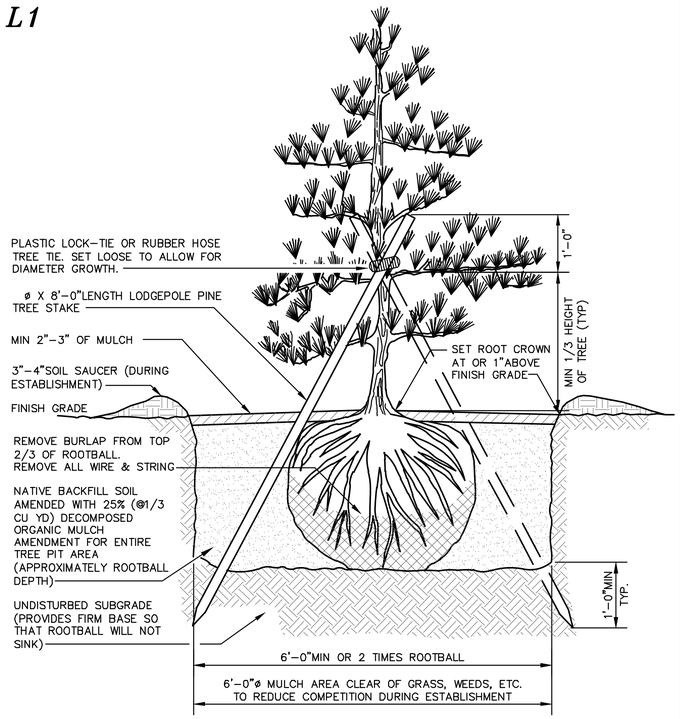
UTILITY CONSTRUCTION DETAILS
LAND OF
DOVER HOUSING AUTHORITY
48 WHITTIER STREET
DOVER, N.H.
TAX MAP 33, LOT 1-A

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

SCALE : AS NOTED
DATE : MAY 6, 2021
FILE NO. : DB 2020 - 136

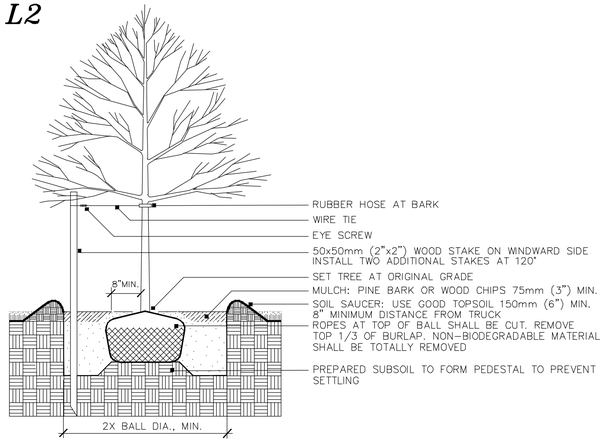
STATE OF NEW HAMPSHIRE - KENNETH A. BERRY No. 14043 LICENSED PROFESSIONAL ENGINEER

L1



CONIFEROUS TREE PLANTING

L2



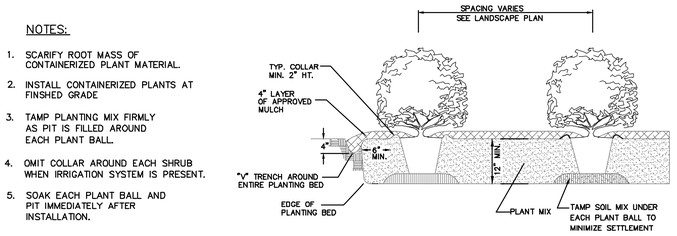
DECIDUOUS TREE PLANTING

NOTE: STAKING TO BE USED IN PARKING ISLANDS AND OTHER CONFINED AREAS AS NECESSARY TO AVOID CONFLICTS WITH PEDESTRIANS

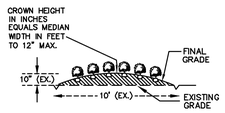
L3

NOTES:

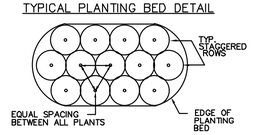
1. SCARIFY ROOT MASS OF CONTAINERIZED PLANT MATERIAL.
2. INSTALL CONTAINERIZED PLANTS AT FINSHED GRADE
3. TAMP PLANTING MIX FIRMLY AS PIT IS FILLED AROUND EACH PLANT BALL.
4. OMIT COLLAR AROUND EACH SHRUB WHEN IRRIGATION SYSTEM IS PRESENT.
5. SOAK EACH PLANT BALL AND PIT IMMEDIATELY AFTER INSTALLATION.



TYPICAL PLANTING BED DETAIL



TYPICAL BED CROWNING

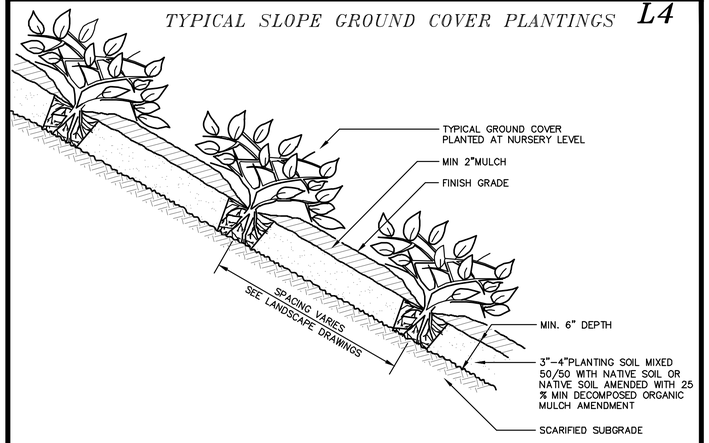


TYPICAL PLANTING BED PLAN

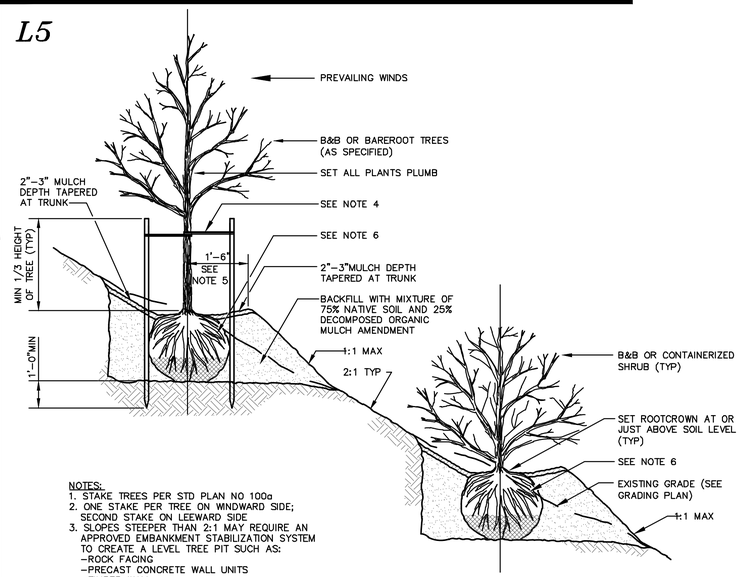
SHRUB & HEDGE PLANTING

L4

TYPICAL SLOPE GROUND COVER PLANTINGS



L5



NOTES:
1. STAKE TREES PER STD PLAN NO 100a
2. ONE STAKE PER TREE ON WINDWARD SIDE; SECOND STAKE ON LEEWARD SIDE
3. SLOPES STEEPER THAN 2:1 MAY REQUIRE AN APPROVED EMBANKMENT STABILIZATION SYSTEM TO CREATE A LEVEL TREE PIT SUCH AS:
   –ROCK FACING
   –PRECAST CONCRETE WALL UNITS
   –TIMBER WALL
   –MANUFACTURED SLOPE RETENTION UNITS
4. CHAINLOCK TREE TIE. LOOP EACH TIE AROUND TREE LOOSELY TO PROVIDE 1" SLACK FOR DIAMETER GROWTH.
5. SHAPE SOIL TO PROVIDE 3' DIAMETER OR ROOTBALL DIAMETER, WHICHEVER IS GREATER, WATERING RING.
6. REMOVE ALL WIRE AND STRING. REMOVE TOP 2/3 OF BURLAP.

TREE PLANTING ON SLOPES

L6

NOTES:

1.) CALL DIG SAFE PRIOR TO BEGINNING WORK. (1–888–344–7233). THE LANDSCAPE CONTRACTOR IS ADVISED OF THE PRESENCE OF UNDERGROUND UTILITIES AND SHALL VERIFY THE EXISTENCE AND LOCATION OF THE SAME BEFORE COMMENCING AND DIGGING OPERATIONS. THE LANDSCAPE CONTRACTOR SHALL REPLACE OR REPAIR UTILITIES, PAVING, WALKS, CURBING, ETC DAMAGED IN PERFORMANCE OF THIS JOB AT NO ADDITIONAL COST TO THE OWNER OR GENERAL CONTRACTOR.

2.) CONTRACTOR SHALL THOROUGHLY FAMILIARIZE THEMSELVES WITH ALL SITE CONDITIONS PRIOR TO CONSTRUCTION BIDDING. SEE NOTE XXX ON OVERALL SITE PLAN.

3.) PROVIDED SMOOTH TRANSITION WHERE NEW WORK MEETS EXISTING CONDITIONS.

4.) ALL PLANT MATERIAL INSTALLED SHALL MEET THE SPECIFICATIONS OF "AMERICAN STANDARD FOR NURSERY STOCK" BY THE AMERICAN ASSOCIATION OF NURSERYMEN.

5.) ALL PLANT MATERIALS SHALL BE FREE FROM INSECTS AND DISEASE.

6.) ALL PLANTINGS SHALL BE DONE IN ACCORDANCE WITH ACCEPTABLE HORTICULTURAL PRACTICES. THIS IS TO INCLUDE PROPER PLANTING MIX, PLANT BED AND TREE PIT PREPARATION, PRUNING STAKING OR GUYING, WRAPPING, SPRAYING, FERTILIZATION, PLANTING AND ADEQUATE MAINTENANCE UNTIL ACCEPTANCE FROM OWNER.

7.) ALL GRASS, OTHER VEGETATION AND DEBRIS SHALL BE REMOVED FROM ALL PLANTING AREAS PRIOR TO PLANTING.

8.) THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF EXISTING AND NEWLY PLANTED TREES AND SHRUBS DURING THE CONSTRUCTION PROCESS. WHERE REQUIRED, THE CONTRACTOR SHALL INSTALL TEMPORARY FENCING (SNOW OR EQUAL) AROUND EXISTING TREES AND SHRUBS THAT COULD BE IMPACTED BY THE CONSTRUCTION PROCESS. STORAGE OF CONSTRUCTION EQUIPMENT, CONSTRUCTION MATERIALS, SNOW STORAGE AND OR VEHICLE PARKING SHALL NOT BE PERMITTED WITHIN THE DRIP LINE OF TREES OR TWENTY FEET WHICH EVER IS GREATER.

9.) NEW PLANTINGS SHALL BE INSTALLED PER PROJECT DRAWINGS AND SPECIFICATION THAT INCLUDE FERTILIZATION AND MULCHING AS REQUIRED.

10.) ALL SHRUB BEDS AND TREE PITS SHALL BE MULCHED WITH 3" CLEAN SHREDDED BLACK MULCH.

11.) WHERE INDICATED ON PLAN, PLANTING SOIL MIXTURE FOR GROUND COVER AND PERENNIAL BED AREAS SHALL CONSIST OF FOUR PARTS TOPSOIL, TWO PARTS SPHAGNUM PEAT MOSS, AND ONE PART HORTICULTURAL PERLITE BY VOLUME. PEAT MOSS MAY BE SUBSTITUTED WITH WELL–ROTTED OR DEHYDRATED MANURE OR COMPOST. ROTOTILL BEDS TO A DEPTH OF 8 INCHES.

12.) MAINTENANCE OF NEW PLANTINGS AND LAWNS SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR AND OR LANDSCAPE SUBCONTRACTOR UNTIL ACCEPTANCE BY THE OWNER. RESPONSIBILITIES SHALL INCLUDE WATERING WEEDING AND MOWING AS NECESSARY. ALL PLANT MATERIAL SHALL BE GUARANTEED FOR A PERIOD OF ONE YEAR FROM THE DATE OF ACCEPTANCE, REPLACEMENT MATERIAL SHALL BE GUARANTEED FOR AND ADDITIONAL YEAR FROM TIME OF INSTALLATION.

13.) THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL TEMPORARY EROSION CONTROL MEASURES DURING THE CONSTRUCTION PHASE AND UNTIL ALL AREAS HAVE BEEN STABILIZED AND ACCEPTED BY THE OWNER. THE GENERAL CONTRACTOR SHALL PROVIDE WEEKLY INSPECTIONS OF EROSION MEASURE AND IMMEDIATELY AFTER STORM EVENTS AND REPAIR AS NECESSARY.

14.) THE GENERAL CONTRACTOR AND OR THE LANDSCAPE SUBCONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL OF ALL THREE GUYING MATERIAL ONCE PLANT MATERIAL HAS BEEN ESTABLISHED. (MINIMUM OF ONE GROWING SEASON). ALL TEMPORARY EROSION CONTROL MEASURE SHALL BE REMOVED ONCE STABILIZATION OF DISTURBANCE HAS BEEN ACCEPTED BY OWNER.

15.) THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR A MINIMUM OF TWO MOWINGS FOR ALL TURF AREAS OR UNTIL ACCEPTANCE BY THE OWNER. A MINIMUM UNIFORM 75% CATCH OF TURF IS REQUIRED FOR ACCEPTANCE.

16.) ALL PLANTINGS SHALL BE WATERED REGULARLY DURING THEIR FIRST YEAR AND MAINTAINED PERMANENTLY IN GOOD GROWING CONDITION AS AN EFFECTIVE VISUAL SCREEN.

17.) SHRUBS OR TREES WHICH DIE SHALL BE REPLACED WITHIN ONE GROWING SEASON WITH NEW SHRUBS OR TREES TO ENSURE CONTINUED COMPLIANCE WITH APPLICABLE LANDSCAPING REQUIREMENTS.

18.) ALL REQUIRED LANDSCAPING SHALL BE INSTALLED BEFORE OCCUPANCY, OR WITHIN SIX MONTHS IF OCCUPANCY OCCURS DURING WINTER CONDITIONS.

19.) TREES ARE TO BE 2–2.5" CALIPER 6" OFF THE ROOT BALL.

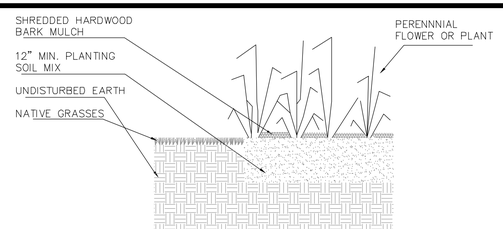
20.) ALL PLANT STOCK SHALL CONFORM TO ANSI Z260.1 – NURSERY STOCK, LATEST EDITIONS (AMERICAN ASSOCIATION OF NURSERYMEN, INC.)

21.) 4" AGED PINEBARK MULCH AND A WEED BARRIER (TY–PAR FABRIC OR APPROVED EQUAL) SHALL BE APPLIED TO ALL SHRUB AND GROUND COVER BEDS. INSTALL WEED BARRIER AS PER MANUFACTURERS RECOMMENDATIONS.

22.) PLANT–PIT BACK–FILL SHALL BE MIXED AT A RATE OF 7 PARTS OF TOPSOIL TO 2 PARTS OF DEHYDRATED COW MANURE. SLOW RELEASE FERTILIZER SHALL BE APPLIED AS PER MANUFACTURERS RECOMMENDATIONS. USE EXISTING ON–SITE TOPSOIL AS PART OF BACK FILL WHEN AVAILABLE.

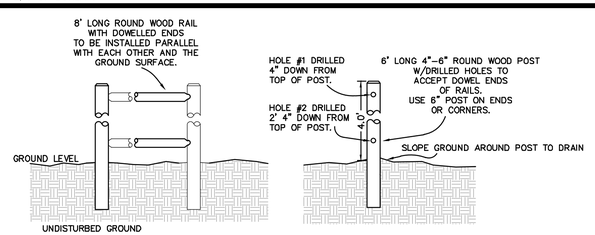
23.) ALL LANDSCAPED AREAS NOT PLANTED WITH TREES, SHRUBS OR GROUNDCOVER SHALL BE RESTORED WITH SEED OR SOD AS INDICATED ON PLANS.

L8



PERENNIAL PLANTING DETAIL

L7



TYPICAL POST & RAIL FENCE DETAIL

N.T.S.

L–101

DOVER PLANNING FILE #

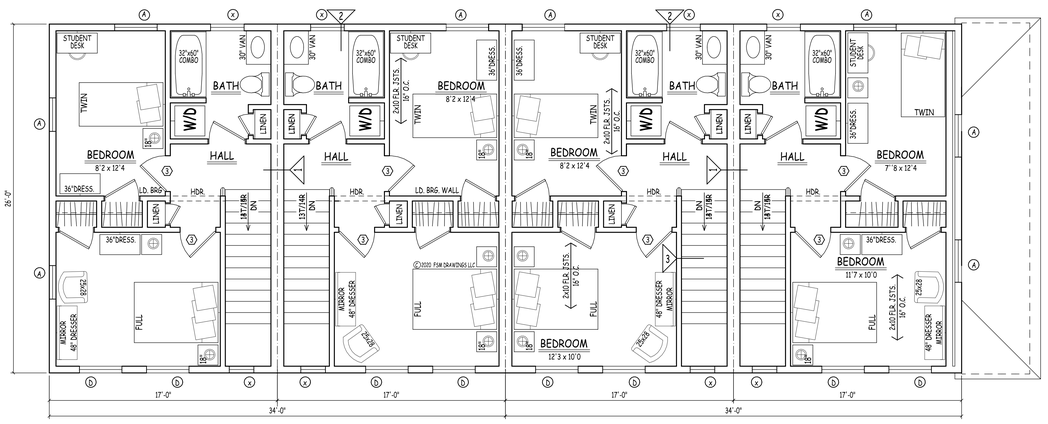
REVISION	DATE	DESCRIPTION

LANDSCAPING CONSTRUCTION DETAILS
LAND OF
DOVER HOUSING AUTHORITY
48 WHITTIER STREET
DOVER, N.H.
TAX MAP 33, LOT 1–A

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

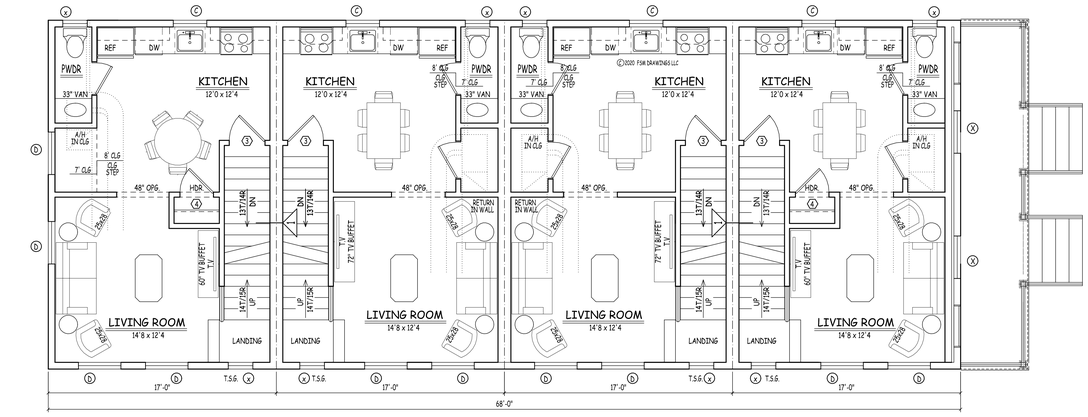
SCALE : AS NOTED
DATE : MAY 6, 2021
FILE NO. : DB 2020 – 136

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



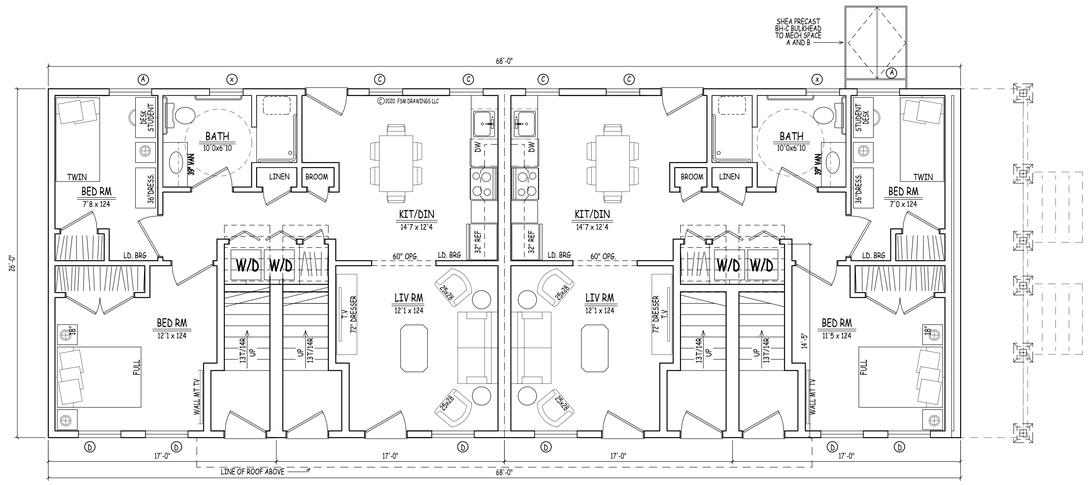
SECOND FLOOR PLAN

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



FIRST FLOOR PLAN

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



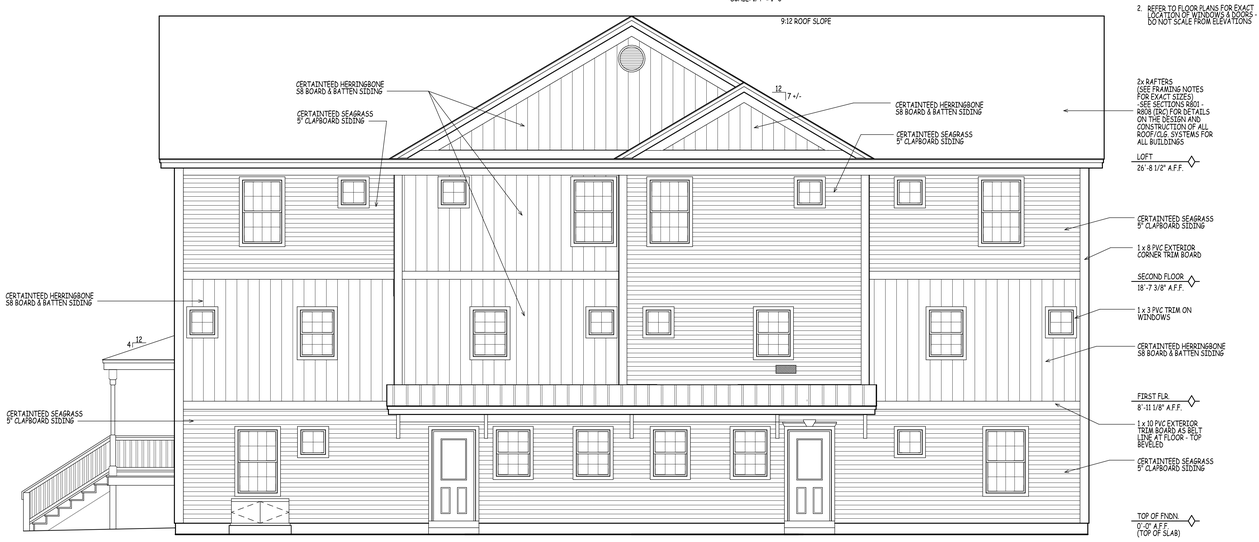
GROUND FLOOR UNITS

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

FRONT ELEVATION

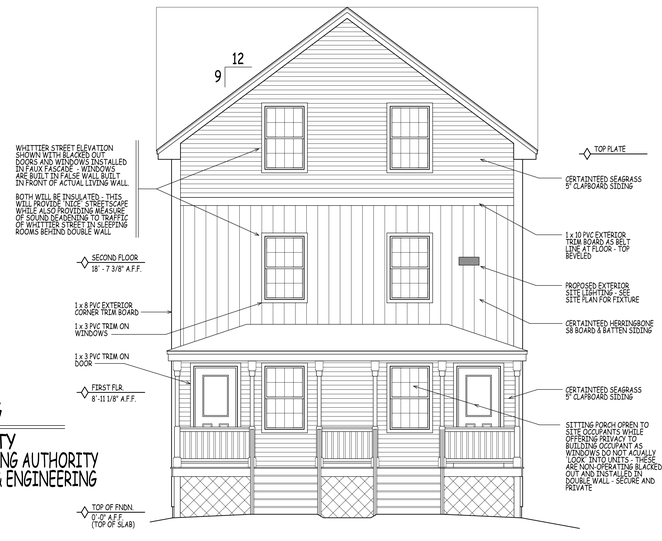
SCALE: 1/4" = 1'-0"

NOTES:
1. DECK(S) NOT SHOWN FOR CLARITY - CONSULT CONTRACTOR IN FIELD FOR EXACT SIZE & LOCATION
2. REFER TO FLOOR PLANS FOR EXACT LOCATIONS OF WINDOWS & DOORS - DO NOT SCALE FROM ELEVATIONS



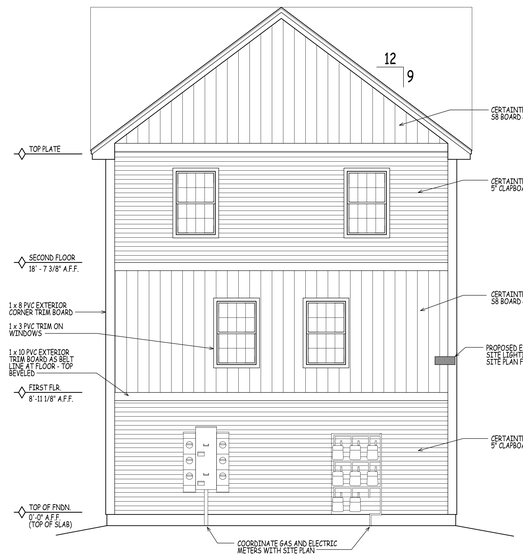
REAR ELEVATION

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



RIGHT SIDE (WHITTEIR ST) ELEV

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



LEFT SIDE ELEVATION

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

DRAWN BY:	PD
CHECKED BY:	AD
DATE DRAWN:	3/20/21
DATE ISSUED:	
SCALE:	AS NOTED
JOB NO.:	FSM21-007MF

REVISIONS

NO.	DATE	REVISION
1	3/21/21	CONCEPT FOR REVIEW
2	3/31/21	TRC REVIEW
3	4/1/21	TRC REVIEW
4	5/4/21	UTILITY CHANGES FOR TRC REVIEW

PROJECT LOCATION:

48 WHITTIER STREET

PREPARED FOR:

DOVER HOUSING AUTHORITY

SQUARE FOOTAGE TABLE

EA. UNIT	SQ. FTG.
GROUND FLR UNIT 1	800 SF
GROUND FLR UNIT 2	800 SF
TH UNITS 3 & 6	884 SF
TH UNITS 4 & 5	882 SF
TOTAL:	5,132 S.F.

HAVEN HOUSING

A SAFE COMMUNITY
DEVELOPED WITH THE DOVER HOUSING AUTHORITY
SITE ENGINEER: BERRY SURVEYING & ENGINEERING
DESIGNED BY

FSM DRAWINGS

DRAINAGE ANALYSIS
&
EROSION AND SEDIMENT
CONTROL PLAN

48 Whittier Street, Dover, NH

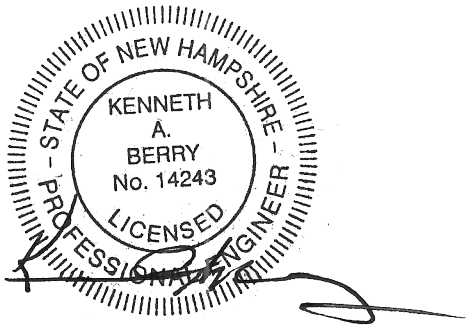
Prepared for:

Dover Housing Authority
62 Whittier Street
Dover, NH 03820

TAX MAP 33, LOT 1-A

Prepared by:

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



Project Number:
DB 2020-136

May 6, 2021

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3.1	Full Comparative Analysis	Page 4
4.0	Erosion & Sediment Control, BMP's	Page 5-11
5.0	Conclusion	Page 11

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

Appendix II - Proposed Conditions Analysis
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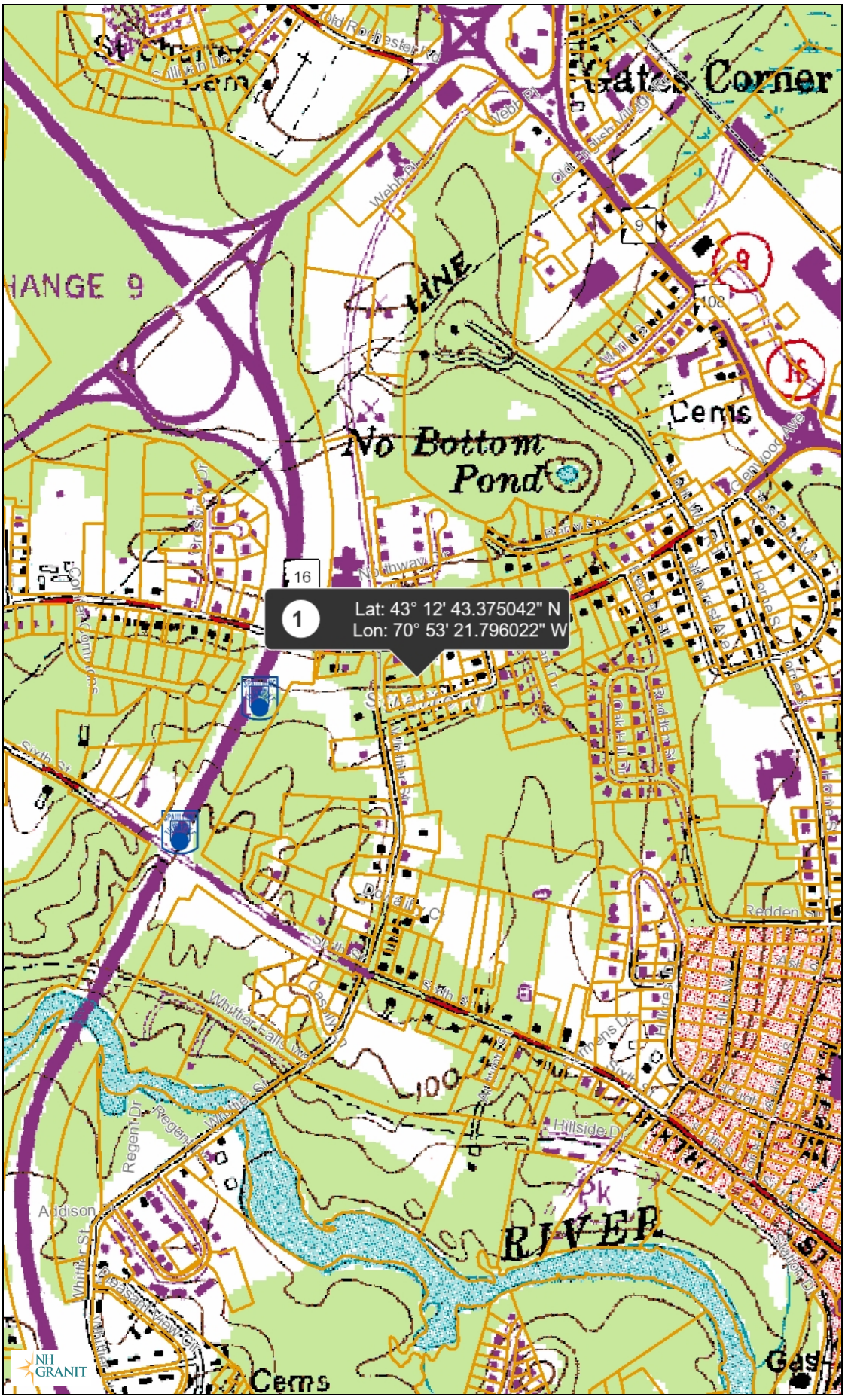
25 Yr.-24 Hr. Node Listing
50 Yr.-24 Hr. Node Listing
100 Yr.-24 Hr. Node Listing

Appendix III - Calculations, Charts, & Graphs
Extreme Precipitation Table
RipRap Calcs
NHDES AoT Spreadsheets
USDA / NRCS Websoil
Site Specific Soil Survey Report & Plan
Stormwater System Management: Inspection & Maintenance Manual
Watershed Report Card, 303(d) List, & ORW List

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

Map by NH GRANIT



Legend

Parcels
- Parcel Polygons
- Attributes for Additional Lines

State

County

City/Town

Map Scale

1: 10,000

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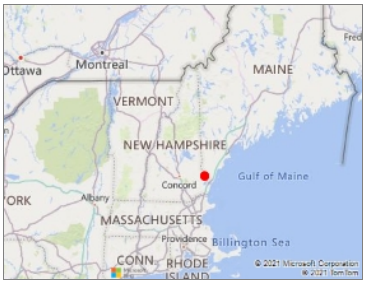
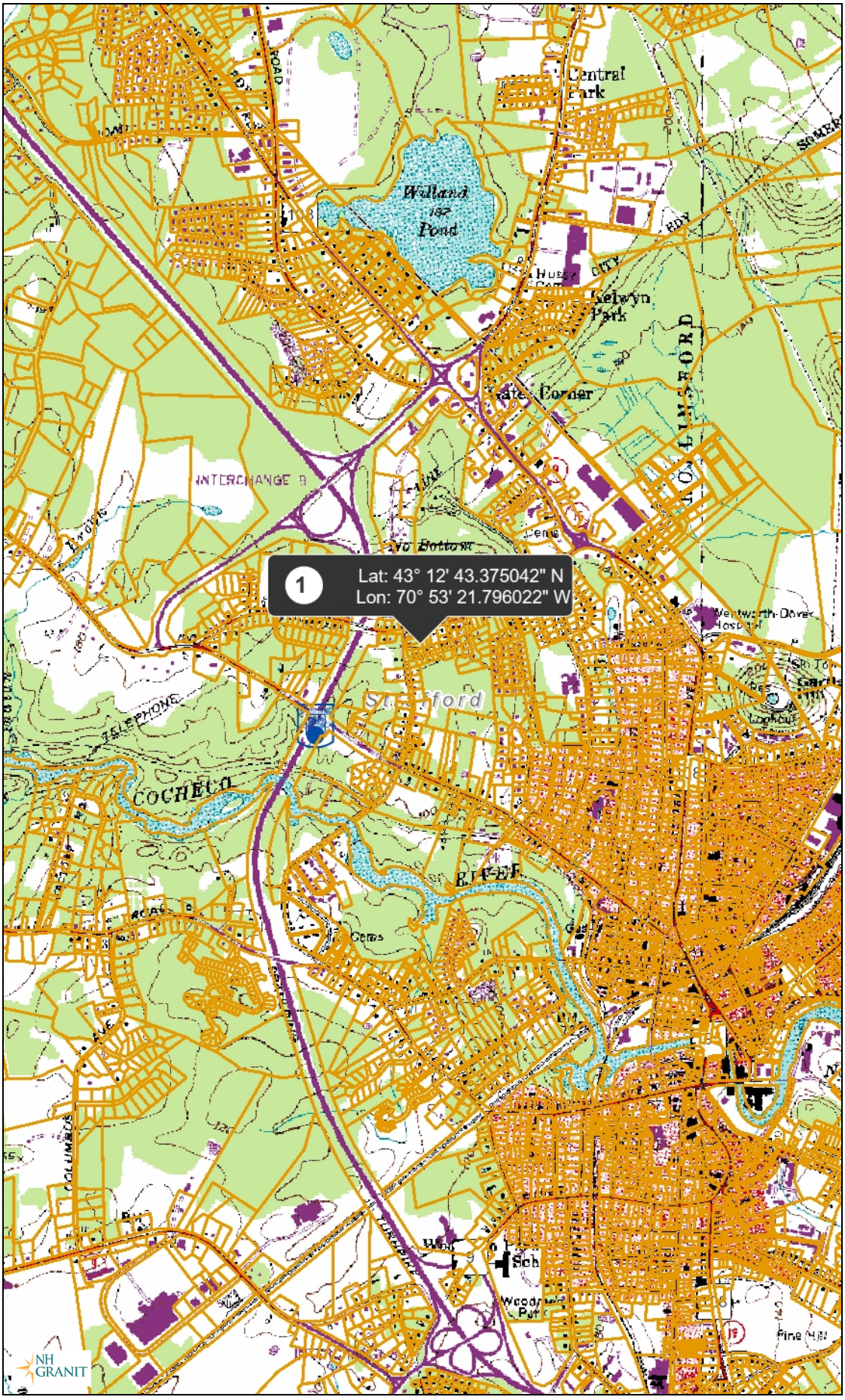
Map Generated: 5/5/2021

Notes



Map by NH GRANIT



Legend

Parcels
- Parcel Polygons
- Attributes for Additional Lines

State

County

City/Town

Map Scale

1: 24,000

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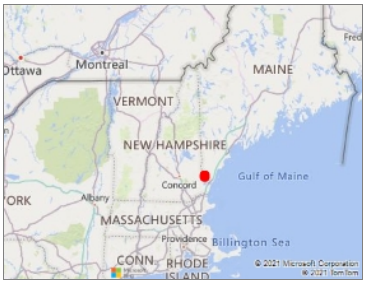


DESIGN METHOD OBJECTIVES

The owner of Tax Map 33, Lot 1-A, Dover Housing Authority, is proposing to develop the parcel and add a six unit residential structure with appropriate parking, municipal water and sewer. Surface water runoff from the impervious surfaces will be treated by a rain garden.

Existing Topography was derived from the Boundary Survey and Existing Conditions Survey conducted. The soils used in this analysis are based on a Site Specific Soil Survey conducted by John P. Hayes III, CSS #87. The receiving waters, and impairments, are based on the NHDES Watershed Report Cards and the 303(d) and ORW Lists.

An Existing and Proposed Conditions analysis was conducted for the purpose of estimating the peak rate of stormwater run-off and to subsequently design adequate mitigation of drainage. There is one existing drainage discharge point and one nonpoint final reach which were 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 W-1 outlines the characteristics of the site in its existing or pre-construction conditions. The second analysis displays the proposed (post-construction) conditions (See Sheet W-2). The analysis was conducted using data for; 2 Yr - 24 Hr (3.62”), 10 Yr - 24 Hr (5.46”), 25 Yr - 24 Hr (6.91”), 50 Yr - 24 Hr (8.26”), and 100 Yr - 24 Hr (9.87”) 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), in accordance with Alteration of Terrain Administrative Code, ENV-Wq (Attached in Appendix 3). With Dover being a coastal community, rainfall estimates have been increased by a factor of 15%, this is reflected in the totals listed above.

1.0 Existing Analysis:

Reference: W-1 Sheets - Existing Conditions Watershed Plan (Enclosed)
Sheet 2 Existing Conditions Plan

The existing property consists of 0.35 acres of land which is currently vacant. The drainage analysis encompasses solely the proposed developed area and the surrounding watershed (1.03 acres) The soil found on the parcel consists of both smoothed and loamy udorthents (299B, 299C, 299D, 299E, and 500A) classified as Hydrologic Soil Group C. The runoff from the existing site generally flows east across the property. The area of analysis has surface water that drains from the parcel to the wetlands that are adjacent to the Cocheco River. The river is impaired by pH, E-Coli, and Mercury with a New England Regional TMDL established for Mercury.

Final Reach #100:

Subcatchment #1 consists of the front portion of the parcel extending from the road as far back as the original roof line of the removed house. This also includes the front portion of the lot to the southwest. Runoff generally flows northeast to and along the curbside of Whittier Street and is being analyzed where it extends past the property line of the locus parcel (**Final Reach #100**).

Final Reach #200:

Subcatchment #2 consists of a majority of the parcel land area where runoff flows to the eastern corner of the property and is being analyzed as a non-point source runoff. (**Final Reach #200**).

2.0 Proposed Analysis:

Reference: W-2 Sheets - Proposed Conditions Watershed Plan (Enclosed)
Sheet 4, Proposed Site Plan
Sheet 5, Proposed Grading & Drainage Overview Plan

Final Reach #100:

Subcatchment #1 is decreased in size marginally due to the development of the locus parcel and the construction of the proposed parking area and residential building. The driveway is being moved and reconstructed. Runoff still flows toward **Final Reach #100**.

Final Reach #200:

Subcatchment #2 is decreased in size due to the construction of the proposed building, rain garden (**Pond #101**), and parking area. The remaining area of **Subcatchment #2** still contributes runoff directly to **Final Reach #200**

Subcatchment #3 consists solely of the rooftop of the proposed building. Runoff is collected in roof drains and directed into Rain Garden #101 (**Pond #101**) which outlets into a level spreader directed toward **Final Reach #200**.

Subcatchment #4 consists of the remainder of the parcel and offsite land which drains directly into Rain Garden #101 (**Pond #101**) (see below) which directs runoff to **Final Reach #200** which discharges a level spreader and a short overland reach **(Reach #4).**

Rain Garden #101 discharges runoff through underdrains and an outlet structure which discharges to the level spreader and eventually to Final Reach #200. StormTech chambers set in stone under the parking lot provide additional storage and detention of runoff. Runoff discharge is controlled by a round 3 - inch orifice drilled in a HDPE cover on the underdrain.

3.0a Stormwater Treatment:

Surface water runoff from the development area is being treated by a rain garden which outlets to a level spreader after treating runoff.

Any surface water runoff from this site would flow into the Lower Cocheco River watershed (010600030608). The tributary is impaired by Mercury which is currently covered by a TMDL being the NE Regional Mercury TMDL #33883. This tributary is also impaired by pH and E-Coli.

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	0.70	1.22	1.63	2.01	2.46
	Proposed	0.69	1.14	1.49	1.82	2.20
Final Reach #200	Existing	0.90	1.96	2.87	3.74	4.80
	Proposed	0.46	1.65	2.13	2.59	4.47

ANALYSIS	COMPONENT	VOLUME (Acre Feet)				
		2 Yr.	10 Yr.	25 Yr.	50 Yr.	100 Yr.
Final Reach #100	Existing	0.051	0.090	0.123	0.153	0.189
	Proposed	0.051	0.087	0.115	0.142	0.173
Final Reach #200	Existing	0.079	0.165	0.233	0.315	0.406
	Proposed	0.096	0.195	0.278	0.353	0.445

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, E-101 & E-102

The proposed site development is protected from erosion and the abutting properties are protected from sediment by the use of Best Management Practices as outlined in the New Hampshire Stormwater Manual, Volume 2, Post-Construction Best Management Practices Selection & Design (December 2008, NHDES & US EPA). Any area disturbed by construction will be re-stabilized within 30 days and abutting properties will not be adversely affected by this development. All swales and drainage structures will be constructed and stabilized prior to having run-off directed to them. Reference is also made to the Stormwater System Operation and Maintenance Plan / Inspection & Maintenance Manual which has been written specifically for this project and available to the owner. Reference is also made to City of Dover Construction / Erosion Control Fact Sheet and

Bioretention System (Rain Garden)

Description: Rain Gardens, or bioretention areas are located close to the source of runoff. They are intended to integrate with the site landscaping and become an aesthetically attractive opportunity to provide highly effective stormwater treatment. The rain gardens associated with this proposed development contribute toward recharge of surface water run-off into the ground. It is important that sediment be removed from run-off prior to discharge into the bioretention area to preserve the mulch and soil mix ratio. During construction it is important that the ground surface not be exposed to traffic or construction equipment to preserve the infiltration capabilities of the existing soil. Construction specifications are included in the plan set and New Hampshire Stormwater Manual, Volume 2, 4-3 Treatment Practices, 4c Bio-retention System.

Construction Considerations: After the stone and bio-media has been installed, Filtrexx Silt Soxx or approved equal, will be installed at the toe of slope intersection between the berm and bio-media and will remain until the slopes of the berm are stable.

Maintenance Considerations: Rain Gardens should be inspected at least twice annually and following any rainfall event exceeding 0.25 inches in a twenty-four hour period. Maintenance rehabilitation will be conducted as warranted by each inspection. Trash and debris will be removed at each inspection.

On an annual basis the infiltration capabilities need to be confirmed by evaluation of the drawdown time. If the bioretention system does not drain within 72-hours following a rainfall event, a qualified professional will assess the condition of the rain garden to determine measures required to restore the infiltration function. This is normally the

direct result of sediment accumulation which will be removed to restore the filter media ratio.

Also on an annual basis the vegetation should be inspected to ensure healthy condition. Invasive species need to be removed along with dead or diseased vegetation.

StormTech Chamber System

Description: The StormTech Chamber System is a trademark product of the Advance Drainage System (ADS) company. The purchase and installation of this system will conform to ADS proprietary rights. The design engineer has specifically used the StormTech Chamber specifications in the design of this installation. The design is based on the StormTech SC-740 Chambers. The system is designed to provide additional storage and retention of stormwater within the stone reservoir. The volume in the washed crushed stone and in the specified chambers will act as detention in connection with the Outlet Structure orifice. The system for this applicant and owner consists of **20 chambers in five rows of four chambers.** The orifice located in the outlet structure is located to direct all runoff to the level spreader. The top of the outlet structure is designed to pass larger storm events. Multiple inspection ports are located throughout the system.

Inspection & Maintenance Considerations: The StormTech chamber system is to be buried within washed crushed stone. Stormwater will only enter the stone reservoir after being treated through the Bio-Media of the rain garden. Inspection ports should be inspected semi-annually to be sure the stone reservoir completely drains through the underdrains. Clean-outs are provided to jet the underdrains. Likewise, the orifice cap can be removed for similar cleaning.

ADS / StormTech Contact: Aaron Cheever, PE, Advance Drainage Systems, Inc.
aaron.cheever@ads-pipe.com 1-978-302-0650

Silt Fence / Perimeter Control:

The plan set demonstrates the location of silt fence for sediment control. The Erosion and Sediment Control Details, Sheet E-101, has the specifications for installation and maintenance of the silt fence. Silt fence is rated to be effective for 100 linear feet of fence to capture runoff from one-quarter acre or basically 100 feet of land sloping toward the fence. Filtrexx silt soxx have a variable area and depth, see Filtrexx supporting documents. The NHDES Stormwater Manual requires that the maximum spacing for support stakes is six-feet.

Filtrexx Silt Soxx, or approve equal, has been specified in numerous locations within the plan set and silt fence is not a substitution for silt soxx. Multiple sizes of this product have been specified for use.

EPA CGP 2017: "You must install sediment control along those perimeter areas of your site that will receive stormwater from earth disturbing activity."

In accordance with EPA CGP 2.1.2.1, Provide Natural Buffers or Equivalent Sediment Controls, and CGP Appendix G, Table G-3, and Table G-7, slopes between 3% and 6% with soils that are Fine Sandy Loams, there is a High Risk Factor and it is required to Double Perimeter Control and 7-Day Site Stabilization.

Erosion Control Mix Berm:

As an alternative to the Silt Fence, an Erosion Control Mix Berm can be utilized as a perimeter control. The specifications can be found on Sheet E-101, Detail E6.

Rolled Erosion Control Blanket:

Description: Rolled Erosion Control Blankets, such as North American Green Bionet S150, SC150, SC125 (or equal) or turf reinforcement such as North American Green V-Max C-350 (or equal) consist of interlocking fiber mesh, bio-degradable or permanent, used to stabilize sloping earth while vegetation is being established. The product comes in rolls that are laid out over the earth, normally over-lapped, and secured to the soil by the use of anchors or staples. The RECB may be anchored in the earth at the top of the slope to prevent wash-out. Construction specifications are included in the plan set and New Hampshire Stormwater Manual, Volume 3, 4-1 Erosion Control Practices, Temporary Erosion Control Blanket

Construction Considerations: It is recommended that the blanket be installed in the same direction as the water flow or perpendicular to the slope. The manufacturer will recommend the amount of over-lap from one row to the next and on longer slopes between sections. Care must be taken that the RECB is laid directly on the earth / topsoil and that any existing vegetation not cause tenting as this will cause an issue with the blanket not staying in place. The staples or stakes are to be placed according to the manufacturer based on the slope of the receiving soil and forces that may be encountered. Care must be taken to utilize the correct product as specified. The choice of product are all different and in most cases are not interchangeable. NHDES or NH F&G may specify that some RECBs not be used in some applications.

Maintenance Considerations: RECBs will be inspected during the regular inspection schedule and any construction corrections made if the blanket is compromised.

Vegetated Stabilization:

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

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

Conservation Mix

Conservation Mix will be used to stabilize all 2:1 slopes and all land area disturbed within the wetland buffer. (Not applicable to this project)

Mixture	Pounds per Acre	Pounds per 1,000 Sq. Ft.
Tall Fescue	15	0.35
Creeping Red Fescue	15	0.35
Annual Ryegrass	5	0.12
Perennial Ryegrass	5	0.12
Kentucky Bluegrass	15	0.35
White Clover	7	0.16
Total	**62**	**1.45**

Stabilized Construction Entrance:

A temporary gravel construction entrance provides an area where mud can be dislodged from tires before the vehicle leaves the construction site to reduce the amount of mud and sediment transported onto paved municipal and state roads. The stone size for the pad should be 3-inch coarse aggregate, and the pad itself constructed to a minimum length of 75' for the full width of the access road. The aggregate should be placed at least six inches thick. A plan view and profile are shown on Sheet E-102- Erosion and Sediment Control Detail Plan. Alternatives to the length and berm are demonstrated on the detail.

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.

Drainage Swales / Stormwater Conveyance Channels:

Drainage swales will be stabilized with vegetation for long term cover as outlined below, and on Sheet E-102 using seed mixture C. As a general rule, velocities in the swale

should not exceed 3.0 feet per second for a vegetated swale although velocities as high as 4.5 FPS are allowed under certain soil conditions.

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 2012 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:

If during construction dewatering 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 2012 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 9.1.1 NHR12000 State of New Hampshire and "Clarification of Section 9.1.1 … and other New Hampshire specific information for the U.S. EPA 2012 NPDES Construction General Permit (CGP), January 20, 2017"

Construction Sequence:

1. Cut and remove trees in construction areas as directed or required.

2. Install Silt Fence and construct and/or install temporary and permanent sediment erosion and detention control facilities (Vegetated swales, level spreaders, and constructed filter strips), as required. Erosion, sediment and facilities shall be installed and stabilized prior to any earth moving operation, and prior to directing run-off to them.

3. Clear, grub, and dispose of debris in approved facilities.

4. Excavate and stockpile topsoil / loam. All disturbed areas shall be stabilized immediately after grading.

5. Construct the roadway and its associated drainage structures.

6. Begin permanent and temporary seeding and mulching. All cut and fill slopes and disturbed areas shall be seeded and mulched as required, or directed.

7. Daily, or as required, construct temporary berms, drainage ditches, sediment traps, etc. to prevent erosion on the site and prevent any siltation of abutting waters or property.

8. Inspect and maintain all erosion and sediment control measures during construction.

9. Complete permanent seeding and landscaping.

10. Remove temporary erosion control measures after seeding areas have established themselves and site improvements are complete. Smooth and re-vegetate all disturbed areas.

11. All swales and drainage structures will be constructed and stabilized prior to having run-off being directed to them.

12. Finish paving all roadways/parking.

Temporary Erosion Control Measures:

1. The smallest practical area of land shall be exposed at any one time.

2. Erosion, sediment control measures shall be installed as shown on the plans and at locations as required, or directed by the engineer.

3. All disturbed areas shall be returned to original grades and elevations. Disturbed areas shall be loamed with a minimum of 4" of loam and seeded with not less than 1.10 pound of seed per 1,000 square feet (48 pounds per acre) of area.

4. Silt fences and other barriers shall be inspected periodically and after every rainstorm during the life of the project. All damaged areas shall be repaired, sediment deposits shall periodically be removed and properly disposed of.

5. After all disturbed areas have been stabilized, the temporary erosion control measures are to be removed and the area disturbed by the removal smoothed and re-vegetated.
6. Areas must be seeded and mulched within 5 days of final grading, permanently stabilized within 15 days of final grading, or temporarily stabilized within 30 days of initial disturbance of soil.

Inspection and Maintenance Schedule:

Perimeter fencing will be inspected during and after storm events to ensure that the fence still has integrity and is not allowing sediment to pass. Depending on SWPPP criteria, all controls will be inspected once every 7 days and after storm events. Inspection reports must be submitted to City of Dover Engineering Department. See also Stormwater System Management: Inspection and Maintenance Manual published separately also by Berry Surveying & Engineering.

Corrective Action measures will be made in accordance with SWPPP requirements and records maintained on site by the Contractor.

5.0 CONCLUSION:

The peak rate of runoff has been reduced at both final analysis points for the five storm events. Volume has also been reduced at all storm events at Final Reach #100. Channel protection volume has been satisfied at Final Reach #200. Runoff is treated by forebays in the proposed rain garden.

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 greater than one acre.

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

Respectfully Submitted,
BERRY SURVEYING & ENGINEERING

Christopher R. Berry, SIT 567
Principal, President

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

DEIDRA BENJAMIN, CWS #295

STATE OF NEW HAMPSHIRE
DEIDRA L BENJAMIN
No. 295
CERTIFIED WETLAND SCIENTIST

JOHN P. HAYES, CSS #87

NRCS SOILS:

BxB – BUXTON SILT LOAM, 3 TO 8% SLOPES

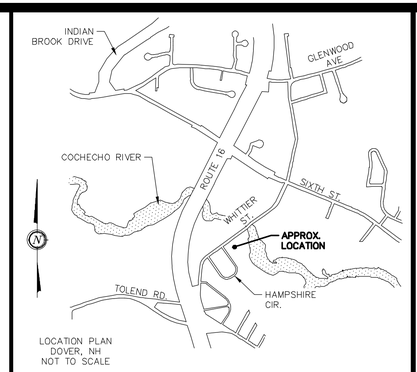
SEE WEBSOIL USDA–NRCS

SITE SPECIFIC SOILS LEGEND

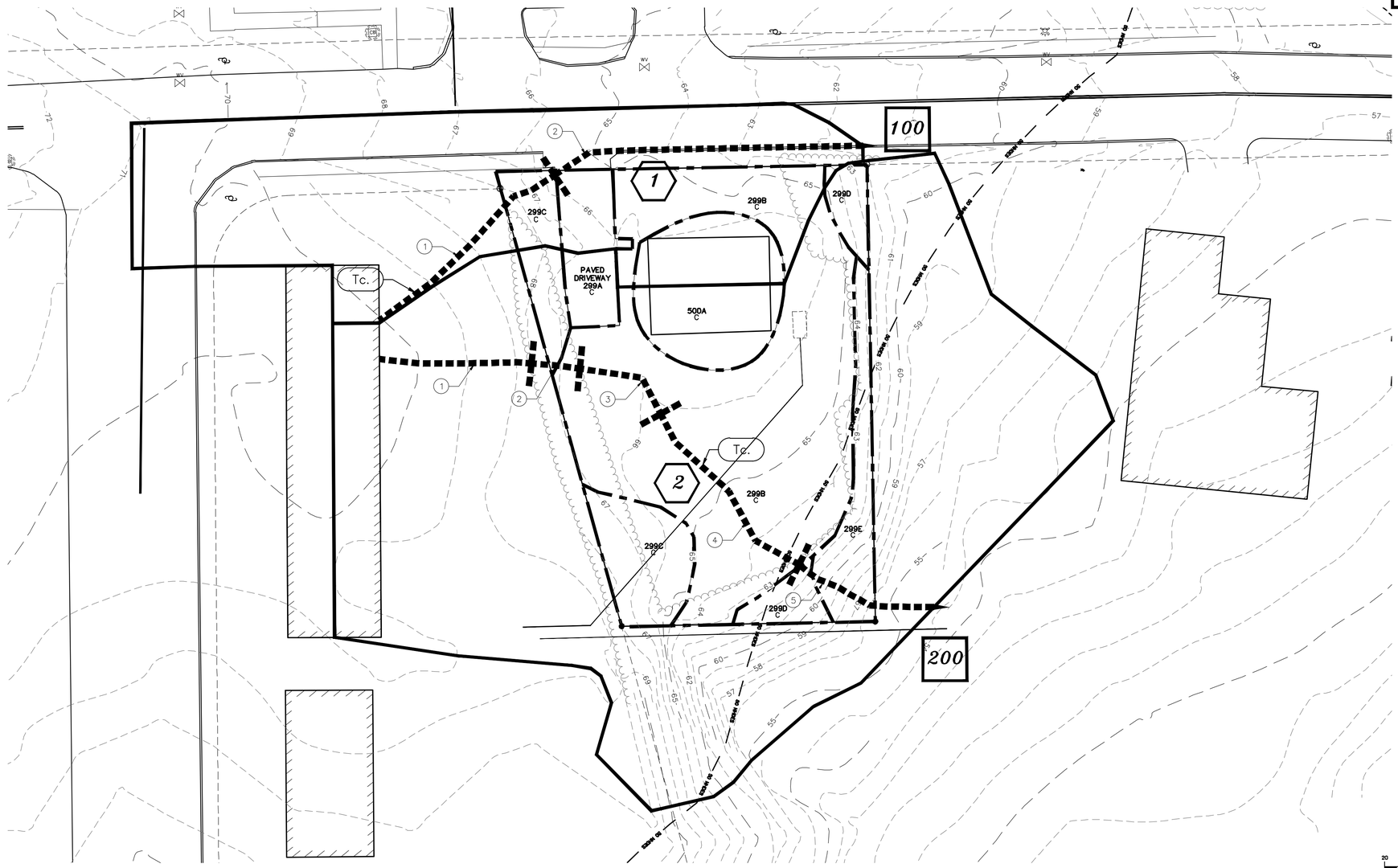
SYMBOL	SOIL TAXONOMIC NAME	HYDROLOGIC SOIL GROUP
#299B	UDORTHENTS (SMOOTHED)	C
#299C	UDORTHENTS (SMOOTHED)	C
#299D	UDORTHENTS (SMOOTHED)	C
#299E	UDORTHENTS (SMOOTHED)	C
#500A	UDORTHENTS (LOAMY)	C

SLOPE: A = 0–3% B = 3–8% C = 8–15% D = 15–25% E = 25–50% F = 50%+

DENOMINATOR: /VPD = VERY POORLY DRAINED /PD = POORLY DRAINED /SWPD = SOMEWHAT POORLY DRAINED /MWD = MODERATELY WELL DRAINED



LOCATION PLAN
DOVER, NH
NOT TO SCALE



NOTES:

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

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

1. TAX MAP 33, LOT 1–A
2. PROJECT ADDRESS: 48 WHITTIER STREET
3. LOT AREA: 15,394 Sq. Ft., 0.35 Ac.
4. S.C.R.D. BOOK 4716, PAGE 900
5. I HEREBY CERTIFY THAT, TO THE BEST OF MY KNOWLEDGE & BELIEF, THIS PARCEL DOES NOT FALL WITHIN THE FLOOD PLAIN FLOOD HAZARD REF.: FEMA COMMUNITY #330150, MAP #33017C0310E, DATED: SEPTEMBER 30, 2015.
6. VERTICAL DATUM BASED ON NAVD88 ELEVATIONS. HORIZONTAL COORDINATES BASED ON NAD83. COORDINATES GATHERED USING TOPCON HIPER SR SURVEY GRADE GPS RECEIVERS.
7. THE BOUNDARY LINES SHOWN ON THIS PLAN ARE THE RESULT OF A CLOSED TRAVERSE PERFORMED BY THIS OFFICE IN NOVEMBER OF 2020, WITH AN ERROR OF CLOSURE BETTER THAN 1 PART IN 77,000.
8. THE INTENT OF THIS PLAN IS TO SHOW THE EXISTING WATERSHED CONDITIONS ON TAX MAP 33, LOT 1–A AS OF THE DATE OF THIS SURVEY

SYMBOLS LEGEND:

- # — SUBCATCHMENT AREA SYMBOL
- # — FLOW REACH SYMBOL
- # — POND DEVICE SYMBOL
- Tc. — TIME OF CONCENTRATION SEGMENT

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

DOVER PLANNING FILE #

REVISION	DATE	DESCRIPTION

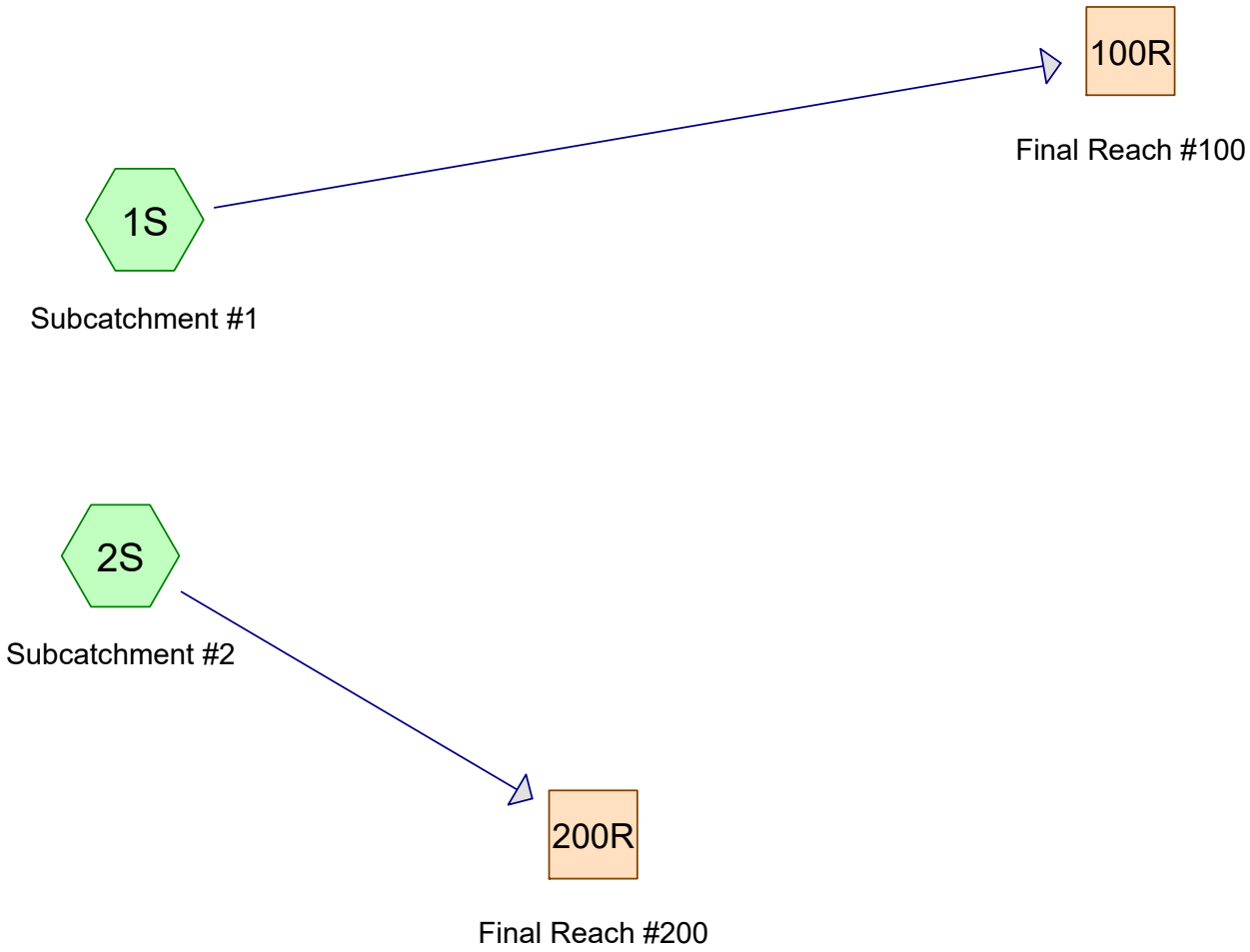
W-1 EXISTING CONDITIONS WATERSHED PLAN

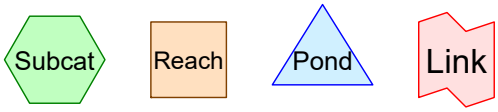
LAND OF
DOVER HOUSING AUTHORITY
48 WHITTIER STREET
DOVER, N.H.
TAX MAP 33, LOT 1–A

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

SCALE : 1 IN. EQUALS 20 FT.
DATE : MAY 6, 2021
FILE NO. : DB 2020 – 136

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 19248
LICENSED PROFESSIONAL ENGINEER





Routing Diagram for 20-136 W1 Existing Watershed
Prepared by Berry Surveying & Engineering, Printed 5/5/2021
HydroCAD® 10.00-25 s/n 07605 © 2019 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.484	74	>75% Grass cover, Good, HSG C (1S, 2S)
0.128	98	Paved parking, HSG C (1S, 2S)
0.071	98	Unconnected roofs, HSG C (1S, 2S)
0.347	70	Woods, Good, HSG C (1S, 2S)
1.030	**77**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
1.030	HSG C	1S, 2S
0.000	HSG D	
0.000	Other	
1.030		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.484	0.000	0.000	0.484	>75% Grass cover, Good	1S, 2S
0.000	0.000	0.128	0.000	0.000	0.128	Paved parking	1S, 2S
0.000	0.000	0.071	0.000	0.000	0.071	Unconnected roofs	1S, 2S
0.000	0.000	0.347	0.000	0.000	0.347	Woods, Good	1S, 2S
0.000	**0.000**	**1.030**	**0.000**	**0.000**	**1.030**	**TOTAL AREA**	

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Subcatchment #1 Runoff Area=12,139 sf 50.09% Impervious Runoff Depth>5.28"
Flow Length=180' Tc=6.0 min CN=86 Runoff=1.63 cfs 0.123 af

Subcatchment 2S: Subcatchment #2 Runoff Area=32,744 sf 7.98% Impervious Runoff Depth>3.85"
Flow Length=217' Tc=10.9 min UI Adjusted CN=73 Runoff=2.87 cfs 0.241 af

Reach 100R: Final Reach #100 Inflow=1.63 cfs 0.123 af
Outflow=1.63 cfs 0.123 af

Reach 200R: Final Reach #200 Inflow=2.87 cfs 0.241 af
Outflow=2.87 cfs 0.241 af

Total Runoff Area = 1.030 ac Runoff Volume = 0.364 af Average Runoff Depth = 4.24"
80.63% Pervious = 0.831 ac 19.37% Impervious = 0.200 ac

Summary for Subcatchment 1S: Subcatchment #1

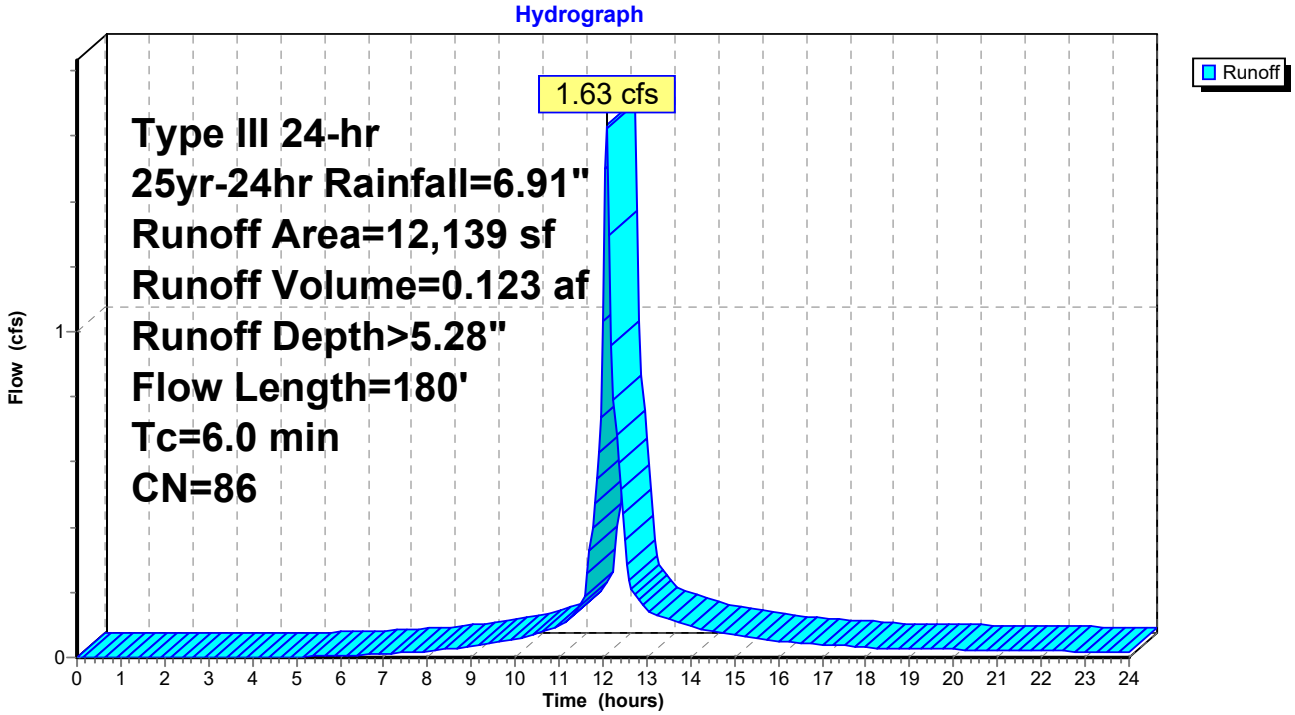
Runoff = 1.63 cfs @ 12.09 hrs, Volume= 0.123 af, Depth> 5.28"

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 25yr-24hr Rainfall=6.91"

Area (sf)	CN	Description
917	98	Unconnected roofs, HSG C
5,768	74	>75% Grass cover, Good, HSG C
5,164	98	Paved parking, HSG C
290	70	Woods, Good, HSG C
12,139	86	Weighted Average
6,058		49.91% Pervious Area
6,081		50.09% Impervious Area
917		15.08% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.7	76	0.0628	0.27		**Sheet Flow, Segment #1** Grass: Short n= 0.150 P2= 3.62"
0.5	104	0.0314	3.60		**Shallow Concentrated Flow, Segment #2** Paved Kv= 20.3 fps
5.2	180	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 1S: Subcatchment #1



Summary for Subcatchment 2S: Subcatchment #2

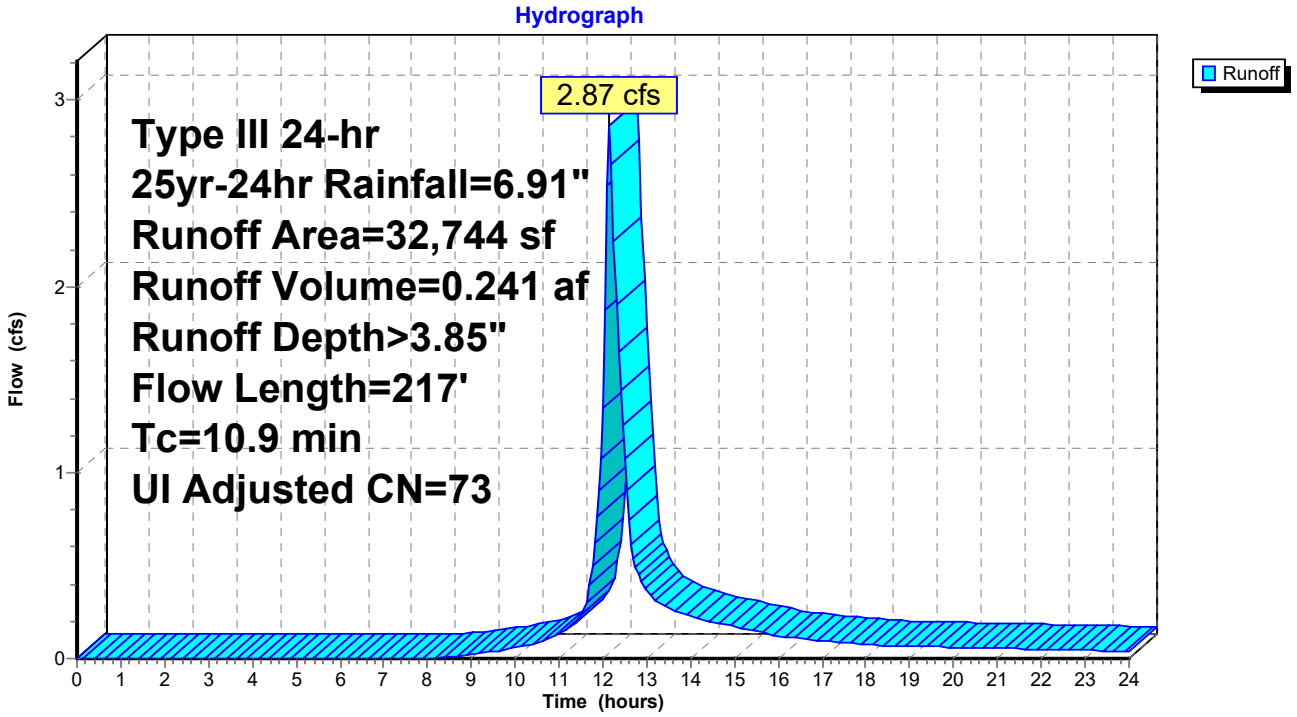
Runoff = 2.87 cfs @ 12.16 hrs, Volume= 0.241 af, Depth> 3.85"

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 25yr-24hr Rainfall=6.91"

Area (sf)	CN	Adj	Description
2,190	98		Unconnected roofs, HSG C
15,325	74		>75% Grass cover, Good, HSG C
424	98		Paved parking, HSG C
14,805	70		Woods, Good, HSG C
32,744	74	73	Weighted Average, UI Adjusted
30,130			92.02% Pervious Area
2,614			7.98% Impervious Area
2,190			83.78% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.7	50	0.0500	0.23		**Sheet Flow, Segment #1** Grass: Short n= 0.150 P2= 3.62"
2.7	16	0.0780	0.10		**Sheet Flow, Segment #2** Woods: Light underbrush n= 0.400 P2= 3.62"
3.3	34	0.0290	0.17		**Sheet Flow, Segment #3** Grass: Short n= 0.150 P2= 3.62"
0.8	69	0.0400	1.40		**Shallow Concentrated Flow, Segment #4** Short Grass Pasture Kv= 7.0 fps
0.4	48	0.1875	2.17		**Shallow Concentrated Flow, Segment #5** Woodland Kv= 5.0 fps
10.9	217	Total			

Subcatchment 2S: Subcatchment #2



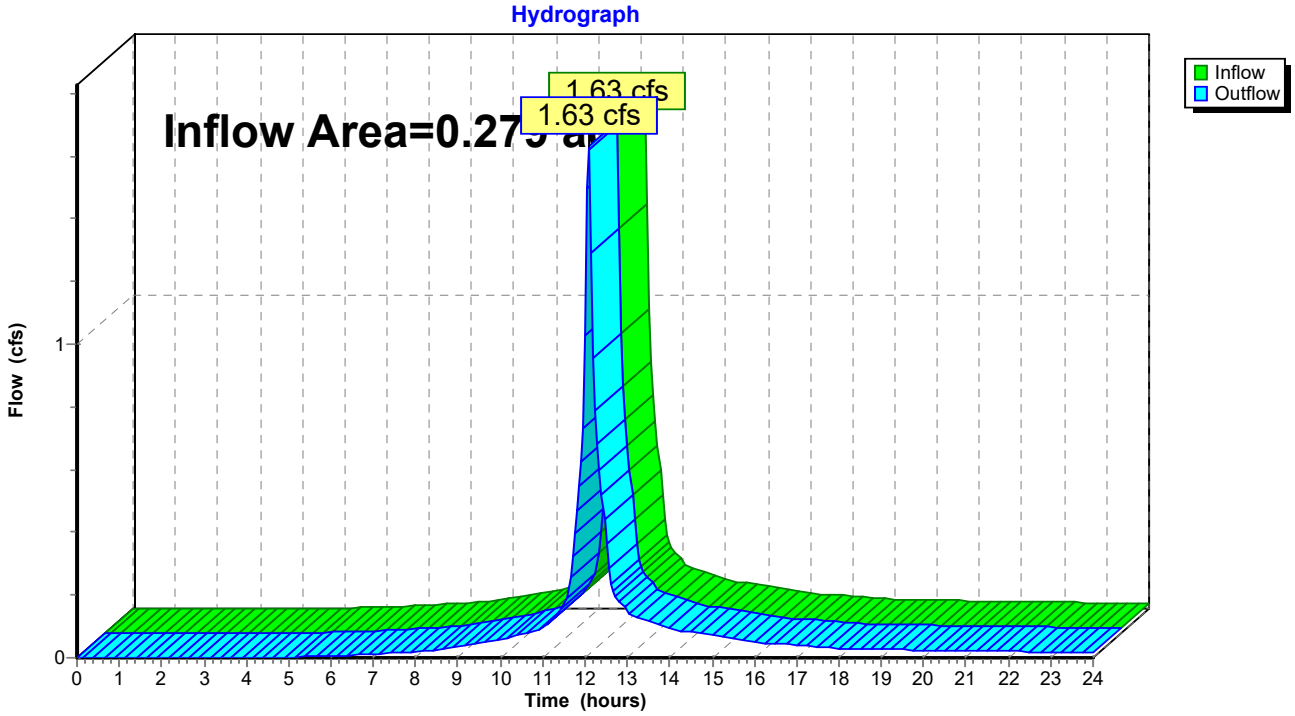
Summary for Reach 100R: Final Reach #100

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

Inflow Area = 0.279 ac, 50.09% Impervious, Inflow Depth > 5.28" for 25yr-24hr event
Inflow = 1.63 cfs @ 12.09 hrs, Volume= 0.123 af
Outflow = 1.63 cfs @ 12.09 hrs, Volume= 0.123 af, Atten= 0%, Lag= 0.0 min

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

Reach 100R: Final Reach #100



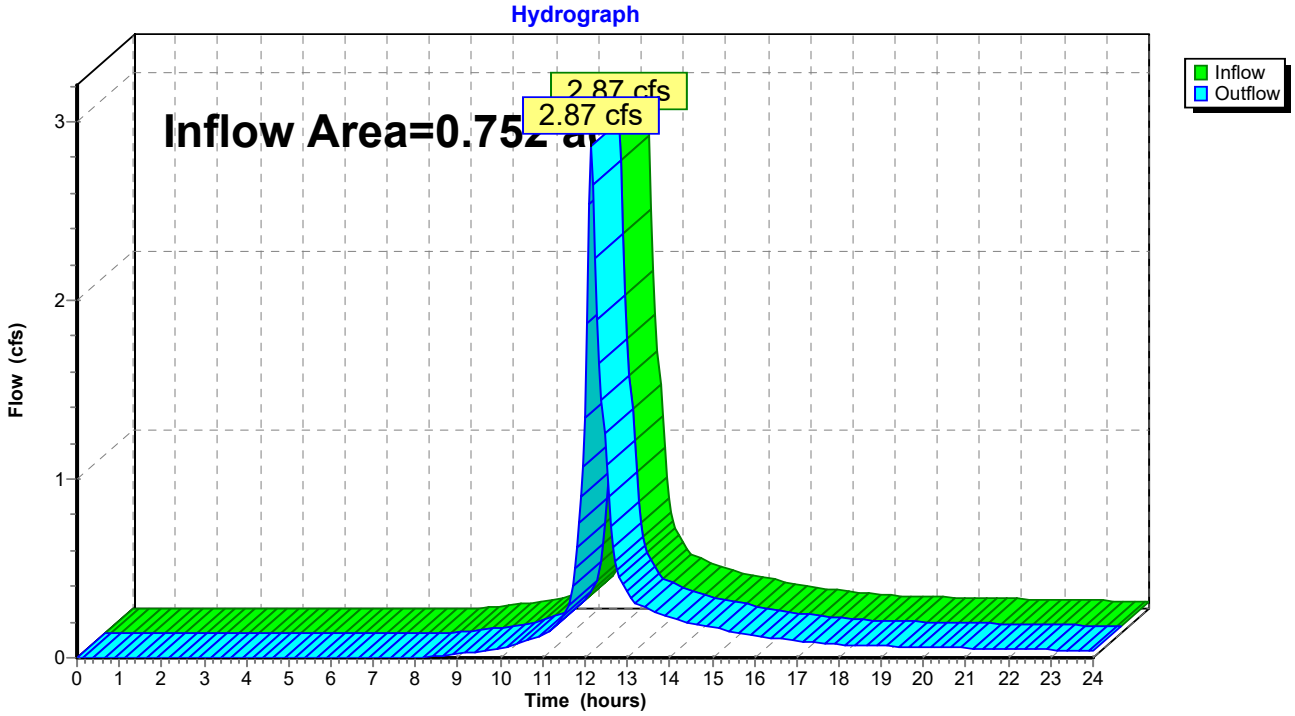
Summary for Reach 200R: Final Reach #200

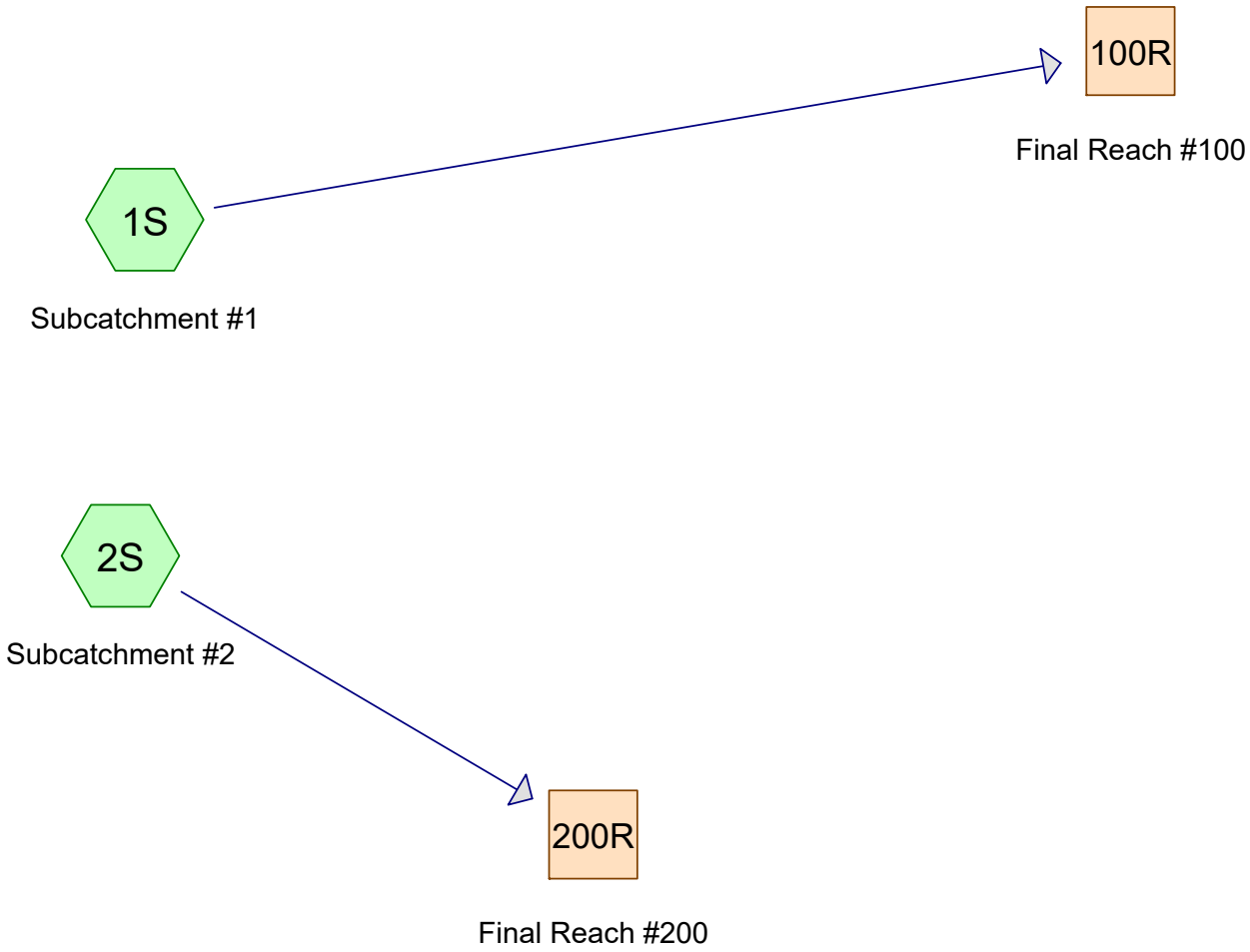
[40] Hint: Not Described (Outflow=Inflow)

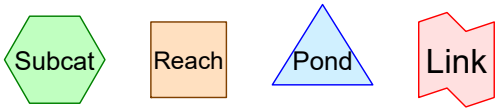
Inflow Area = 0.752 ac, 7.98% Impervious, Inflow Depth > 3.85" for 25yr-24hr event
Inflow = 2.87 cfs @ 12.16 hrs, Volume= 0.241 af
Outflow = 2.87 cfs @ 12.16 hrs, Volume= 0.241 af, Atten= 0%, Lag= 0.0 min

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

Reach 200R: Final Reach #200







Routing Diagram for 20-136 W1 Existing Watershed
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HydroCAD® 10.00-25 s/n 07605 © 2019 HydroCAD Software Solutions LLC

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Subcatchment #1 Runoff Area=12,139 sf 50.09% Impervious Runoff Depth>2.20"
Flow Length=180' Tc=6.0 min CN=86 Runoff=0.70 cfs 0.051 af

Subcatchment 2S: Subcatchment #2 Runoff Area=32,744 sf 7.98% Impervious Runoff Depth>1.26"
Flow Length=217' Tc=10.9 min UI Adjusted CN=73 Runoff=0.90 cfs 0.079 af

Reach 100R: Final Reach #100 Inflow=0.70 cfs 0.051 af
Outflow=0.70 cfs 0.051 af

Reach 200R: Final Reach #200 Inflow=0.90 cfs 0.079 af
Outflow=0.90 cfs 0.079 af

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Subcatchment #1 Runoff Area=12,139 sf 50.09% Impervious Runoff Depth>3.90"
Flow Length=180' Tc=6.0 min CN=86 Runoff=1.22 cfs 0.090 af

Subcatchment 2S: Subcatchment #2 Runoff Area=32,744 sf 7.98% Impervious Runoff Depth>2.64"
Flow Length=217' Tc=10.9 min UI Adjusted CN=73 Runoff=1.96 cfs 0.165 af

Reach 100R: Final Reach #100 Inflow=1.22 cfs 0.090 af
Outflow=1.22 cfs 0.090 af

Reach 200R: Final Reach #200 Inflow=1.96 cfs 0.165 af
Outflow=1.96 cfs 0.165 af

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Subcatchment #1 Runoff Area=12,139 sf 50.09% Impervious Runoff Depth>5.28"
Flow Length=180' Tc=6.0 min CN=86 Runoff=1.63 cfs 0.123 af

Subcatchment 2S: Subcatchment #2 Runoff Area=32,744 sf 7.98% Impervious Runoff Depth>3.85"
Flow Length=217' Tc=10.9 min UI Adjusted CN=73 Runoff=2.87 cfs 0.241 af

Reach 100R: Final Reach #100 Inflow=1.63 cfs 0.123 af
Outflow=1.63 cfs 0.123 af

Reach 200R: Final Reach #200 Inflow=2.87 cfs 0.241 af
Outflow=2.87 cfs 0.241 af

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Subcatchment #1 Runoff Area=12,139 sf 50.09% Impervious Runoff Depth>6.58"
Flow Length=180' Tc=6.0 min CN=86 Runoff=2.01 cfs 0.153 af

Subcatchment 2S: Subcatchment #2 Runoff Area=32,744 sf 7.98% Impervious Runoff Depth>5.03"
Flow Length=217' Tc=10.9 min UI Adjusted CN=73 Runoff=3.74 cfs 0.315 af

Reach 100R: Final Reach #100 Inflow=2.01 cfs 0.153 af
Outflow=2.01 cfs 0.153 af

Reach 200R: Final Reach #200 Inflow=3.74 cfs 0.315 af
Outflow=3.74 cfs 0.315 af

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Subcatchment #1 Runoff Area=12,139 sf 50.09% Impervious Runoff Depth>8.15"
Flow Length=180' Tc=6.0 min CN=86 Runoff=2.46 cfs 0.189 af

Subcatchment 2S: Subcatchment #2 Runoff Area=32,744 sf 7.98% Impervious Runoff Depth>6.49"
Flow Length=217' Tc=10.9 min UI Adjusted CN=73 Runoff=4.80 cfs 0.406 af

Reach 100R: Final Reach #100 Inflow=2.46 cfs 0.189 af
Outflow=2.46 cfs 0.189 af

Reach 200R: Final Reach #200 Inflow=4.80 cfs 0.406 af
Outflow=4.80 cfs 0.406 af

DEIDRA BENJAMIN, CWS #295

STATE OF NEW HAMPSHIRE
DEIDRA L. BENJAMIN
No. 295
CERTIFIED WETLAND SCIENTIST

JOHN P. HAYES, CSS #87

NRCS SOILS:

BxB – BUXTON SILT LOAM, 3 TO 8% SLOPES

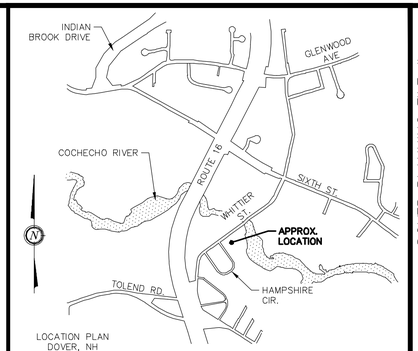
SEE WEBSOIL USDA–NRCS

SITE SPECIFIC SOILS LEGEND

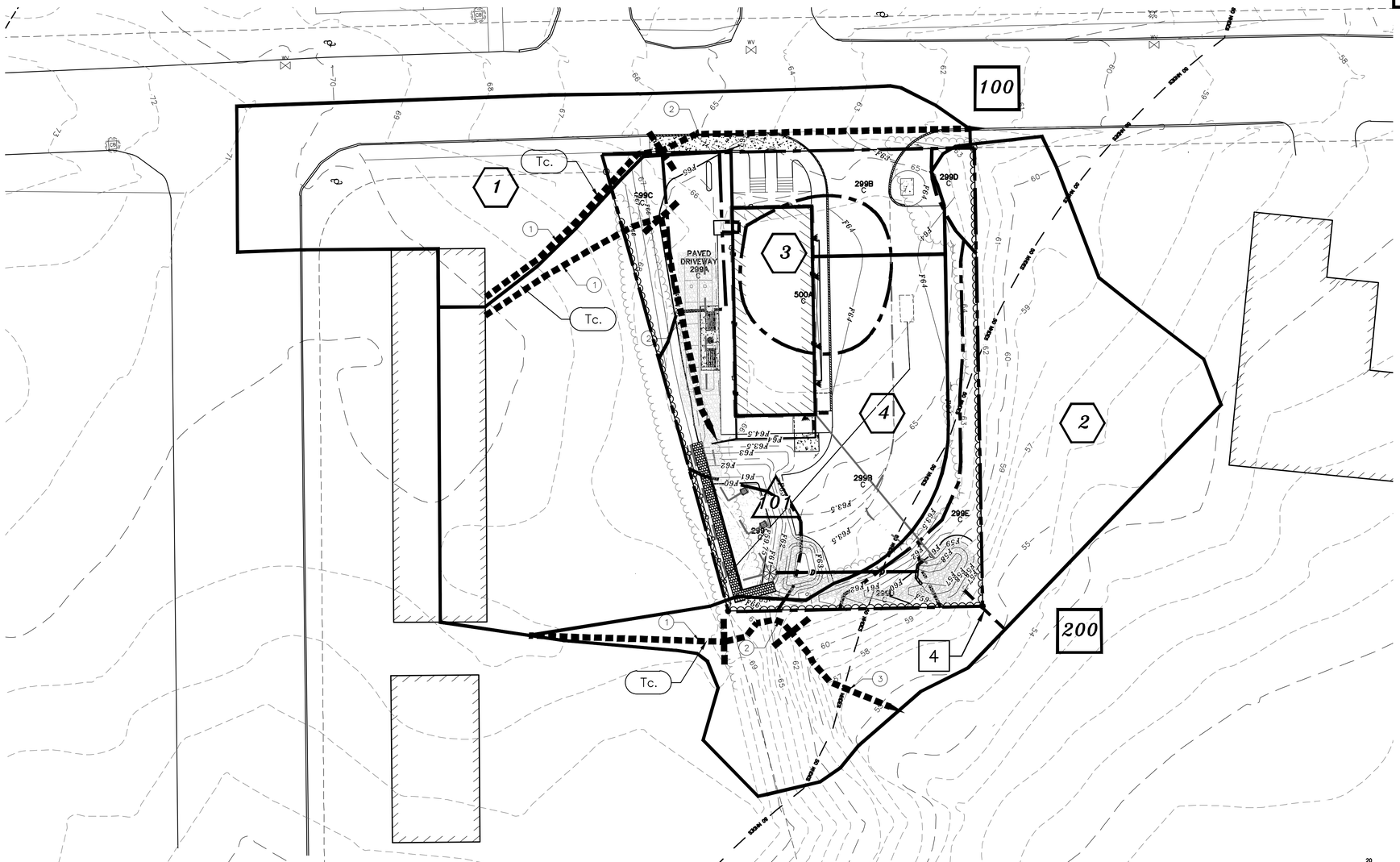
SYMBOL	SOIL TAXONOMIC NAME	HYDROLOGIC SOIL GROUP
#299B	UDORTHENTS (SMOOTHED)	C
#299C	UDORTHENTS (SMOOTHED)	C
#299D	UDORTHENTS (SMOOTHED)	C
#299E	UDORTHENTS (SMOOTHED)	C
#500A	UDORTHENTS (LOAMY)	C

SLOPE: A = 0–3% B = 3–8% C = 8–15% D = 15–25% E = 25–50% F = 50%+

DENOMINATOR: /VPD = VERY POORLY DRAINED /PD = POORLY DRAINED /SWPD = SOMEWHAT POORLY DRAINED /MWD = MODERATELY WELL DRAINED



LOCATION PLAN
DOVER, NH
NOT TO SCALE



NOTES:

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

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

1. TAX MAP 33, LOT 1–A
2. PROJECT ADDRESS: 48 WHITTIER STREET
3. LOT AREA: 15,394 Sq. Ft., 0.35 Ac.
4. S.C.R.D. BOOK 4716, PAGE 900
5. I HEREBY CERTIFY THAT, TO THE BEST OF MY KNOWLEDGE & BELIEF, THIS PARCEL DOES NOT FALL WITHIN THE FLOOD PLAIN FLOOD HAZARD REF.: FEMA COMMUNITY #330150, MAP #33017C0310E, DATED: SEPTEMBER 30, 2015.
6. VERTICAL DATUM BASED ON NAVD88 ELEVATIONS. HORIZONTAL COORDINATES BASED ON NAD83. COORDINATES GATHERED USING TOPCON HIPER SR SURVEY GRADE GPS RECEIVERS.
7. THE BOUNDARY LINES SHOWN ON THIS PLAN ARE THE RESULT OF A CLOSED TRAVERSE PERFORMED BY THIS OFFICE IN NOVEMBER OF 2020, WITH AN ERROR OF CLOSURE BETTER THAN 1 PART IN 77,000.
8. THE INTENT OF THIS PLAN IS TO SHOW THE PROPOSED WATERSHED CONDITIONS ON TAX MAP 33, LOT 1–A AS OF THE DATE OF THIS SURVEY

SYMBOLS LEGEND:

- SUBCATCHMENT AREA SYMBOL
- FLOW REACH SYMBOL
- POND DEVICE SYMBOL
- TIME OF CONCENTRATION SEGMENT

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

DOVER PLANNING FILE #

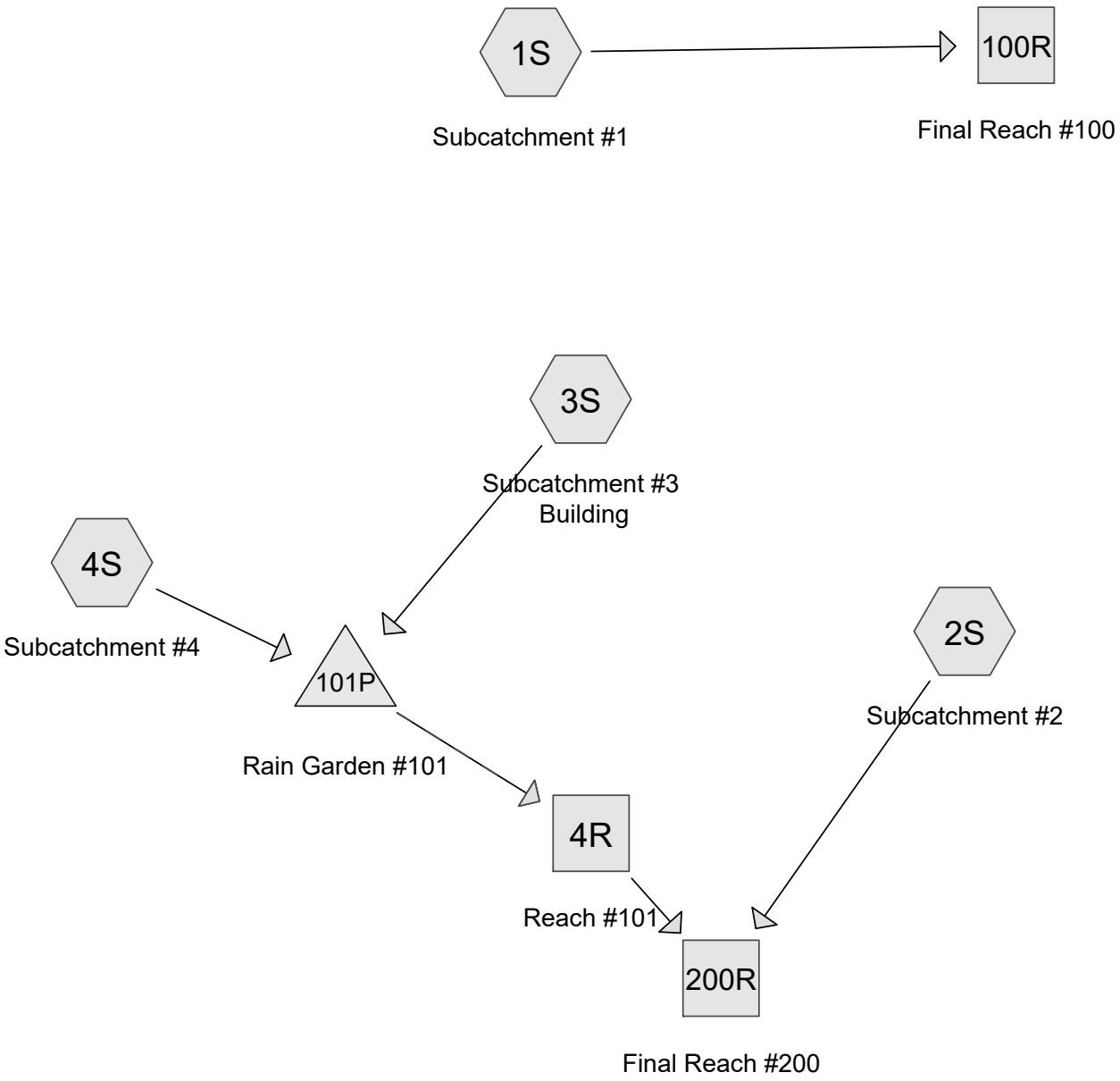
REVISION	DATE	DESCRIPTION

W–2 PROPOSED CONDITIONS WATERSHED PLAN
LAND OF
DOVER HOUSING AUTHORITY
48 WHITTIER STREET
DOVER, N.H.
TAX MAP 33, LOT 1–A

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

SCALE : 1 IN. EQUALS 20 FT.
DATE : MAY 6, 2021
FILE NO. : DB 2020 – 136

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



Subcat Reach Pond Link

Routing Diagram for 20-136 W2 Proposed Watershed
Prepared by Berry Surveying & Engineering, Printed 5/5/2021
HydroCAD® 10.00-25 s/n 10221 © 2019 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.427	74	>75% Grass cover, Good, HSG C (1S, 2S, 4S)
0.147	98	Paved parking, HSG C (1S)
0.110	98	Unconnected pavement, HSG C (4S)
0.088	98	Unconnected roofs, HSG C (1S, 3S, 4S)
0.257	70	Woods, Good, HSG C (2S, 4S)
1.030	**81**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
1.030	HSG C	1S, 2S, 3S, 4S
0.000	HSG D	
0.000	Other	
1.030		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.427	0.000	0.000	0.427	>75% Grass cover, Good	1S, 2S, 4S
0.000	0.000	0.147	0.000	0.000	0.147	Paved parking	1S
0.000	0.000	0.110	0.000	0.000	0.110	Unconnected pavement	4S
0.000	0.000	0.088	0.000	0.000	0.088	Unconnected roofs	1S, 3S, 4S
0.000	0.000	0.257	0.000	0.000	0.257	Woods, Good	2S, 4S
0.000	**0.000**	**1.030**	**0.000**	**0.000**	**1.030**	**TOTAL AREA**	

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	101P	57.25	57.00	46.5	0.0054	0.012	12.0	0.0	0.0

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Subcatchment #1 Runoff Area=10,482 sf 65.73% Impervious Runoff Depth>5.73"
Flow Length=180' Tc=6.0 min CN=90 Runoff=1.49 cfs 0.115 af

Subcatchment 2S: Subcatchment #2 Runoff Area=14,161 sf 0.00% Impervious Runoff Depth>3.64"
Flow Length=132' Tc=8.9 min CN=71 Runoff=1.23 cfs 0.099 af

Subcatchment 3S: Subcatchment #3 Runoff Area=1,768 sf 100.00% Impervious Runoff Depth>6.67"
Tc=6.0 min CN=98 Runoff=0.27 cfs 0.023 af

Subcatchment 4S: Subcatchment #4 Runoff Area=18,449 sf 34.72% Impervious Runoff Depth>4.83"
Flow Length=137' Tc=6.0 min CN=82 Runoff=2.31 cfs 0.170 af

Reach 4R: Reach #101 Avg. Flow Depth=0.09' Max Vel=2.50 fps Inflow=0.93 cfs 0.179 af
n=0.030 L=18.4' S=0.1087 '/' Capacity=39.18 cfs Outflow=0.95 cfs 0.179 af

Reach 100R: Final Reach #100 Inflow=1.49 cfs 0.115 af
Outflow=1.49 cfs 0.115 af

Reach 200R: Final Reach #200 Inflow=2.13 cfs 0.278 af
Outflow=2.13 cfs 0.278 af

Pond 101P: Rain Garden #101 Peak Elev=62.29' Storage=2,987 cf Inflow=2.58 cfs 0.193 af
Primary=0.93 cfs 0.179 af Secondary=0.00 cfs 0.000 af Outflow=0.93 cfs 0.179 af

Total Runoff Area = 1.030 ac Runoff Volume = 0.407 af Average Runoff Depth = 4.74"
66.42% Pervious = 0.684 ac 33.58% Impervious = 0.346 ac

Summary for Subcatchment 1S: Subcatchment #1

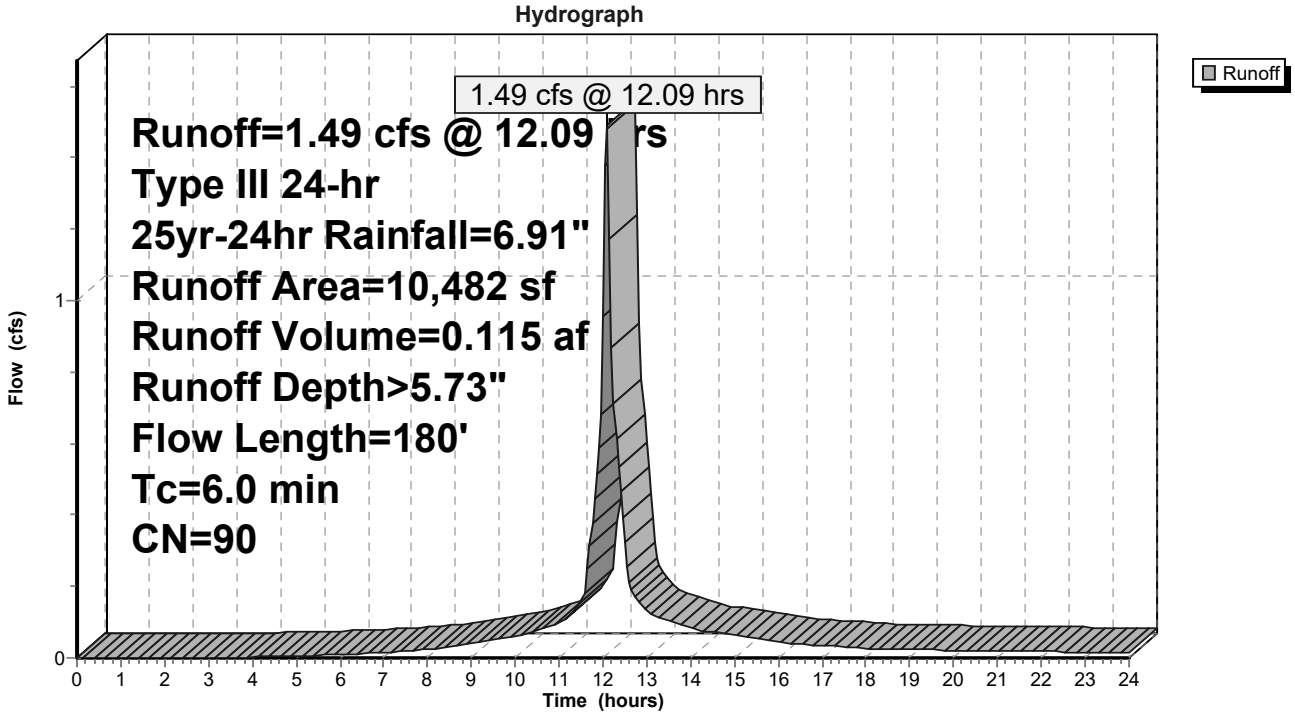
Runoff = 1.49 cfs @ 12.09 hrs, Volume= 0.115 af, Depth> 5.73"

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 25yr-24hr Rainfall=6.91"

Area (sf)	CN	Description
467	98	Unconnected roofs, HSG C
3,592	74	>75% Grass cover, Good, HSG C
6,423	98	Paved parking, HSG C
10,482	90	Weighted Average
3,592		34.27% Pervious Area
6,890		65.73% Impervious Area
467		6.78% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.7	76	0.0628	0.27		**Sheet Flow, Segment #1** Grass: Short n= 0.150 P2= 3.62"
0.5	104	0.0314	3.60		**Shallow Concentrated Flow, Segment #2** Paved Kv= 20.3 fps
5.2	180	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 1S: Subcatchment #1



Summary for Subcatchment 2S: Subcatchment #2

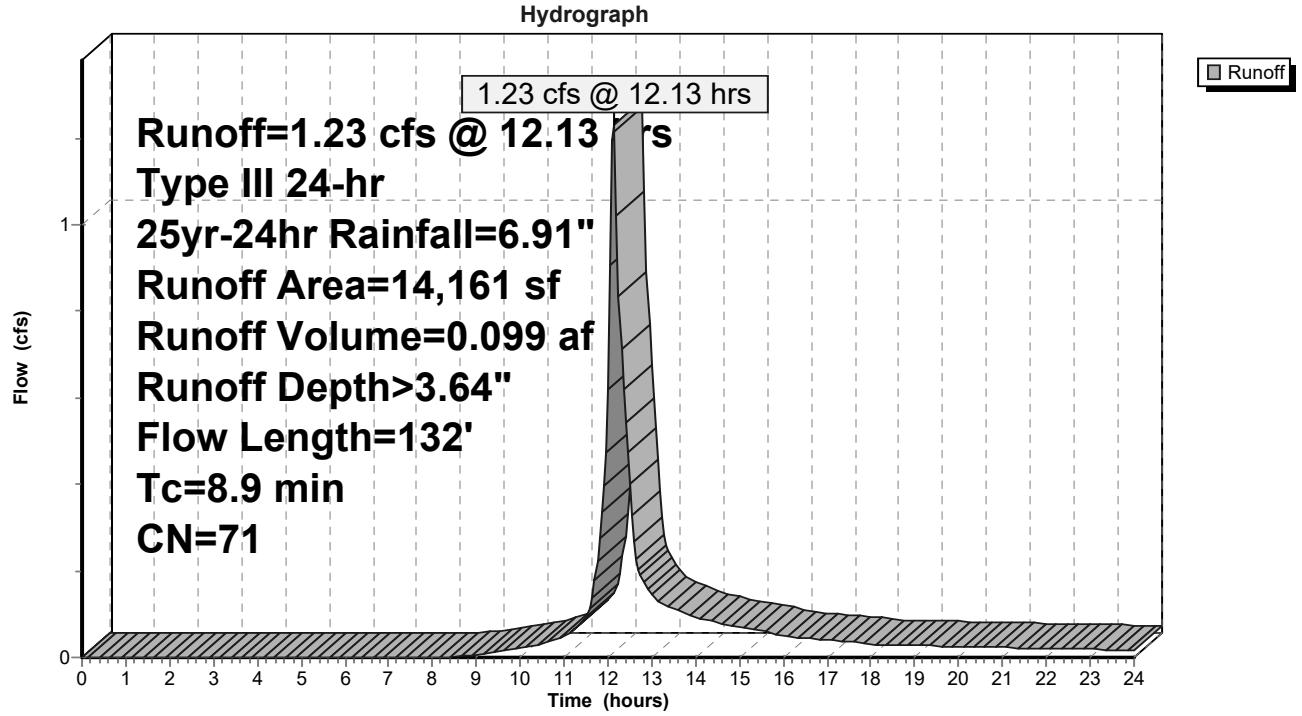
Runoff = 1.23 cfs @ 12.13 hrs, Volume= 0.099 af, Depth> 3.64"

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 25yr-24hr Rainfall=6.91"

Area (sf)	CN	Description
3,476	74	>75% Grass cover, Good, HSG C
10,685	70	Woods, Good, HSG C
14,161	71	Weighted Average
14,161		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	64	0.0234	0.18		**Sheet Flow, Segment #1** Grass: Short n= 0.150 P2= 3.62"
2.5	26	0.2593	0.18		**Sheet Flow, Segment #2** Woods: Light underbrush n= 0.400 P2= 3.62"
0.3	42	0.1727	2.08		**Shallow Concentrated Flow, Segment #3** Woodland Kv= 5.0 fps
8.9	132	Total			

Subcatchment 2S: Subcatchment #2



Summary for Subcatchment 3S: Subcatchment #3 Building

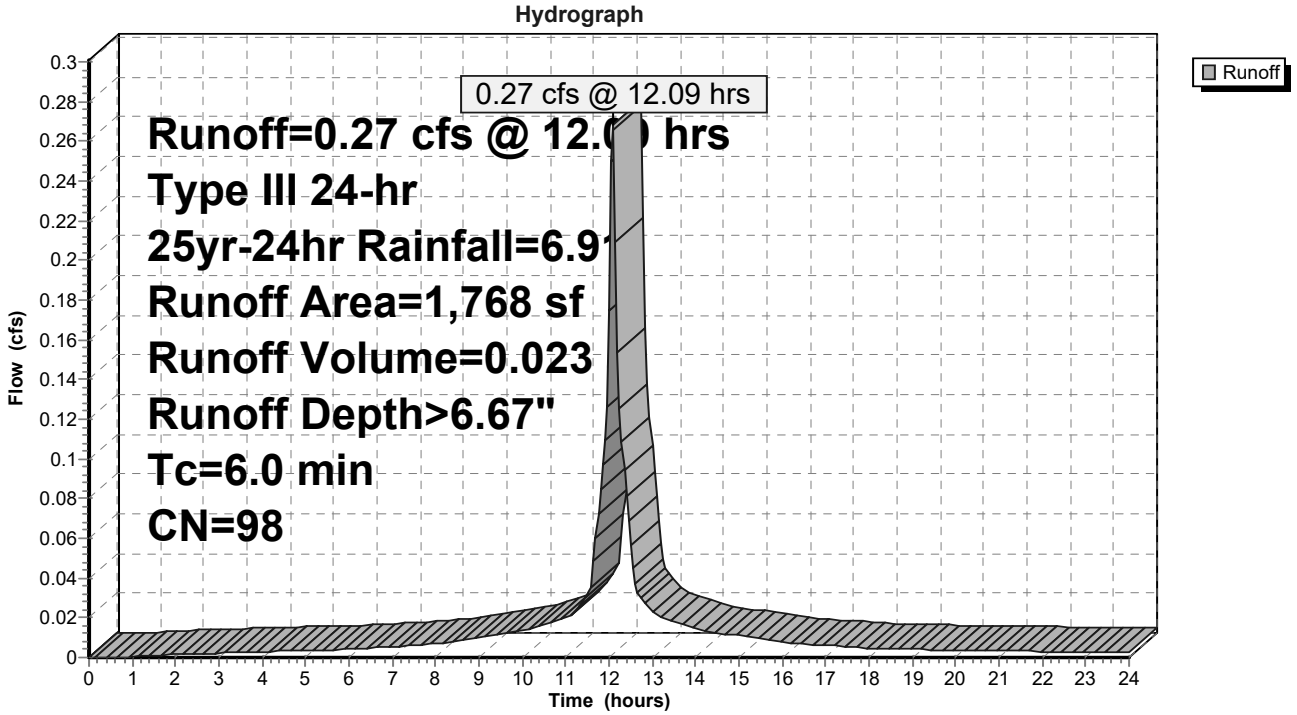
Runoff = 0.27 cfs @ 12.09 hrs, Volume= 0.023 af, Depth> 6.67"

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 25yr-24hr Rainfall=6.91"

Area (sf)	CN	Description
1,768	98	Unconnected roofs, HSG C
1,768		100.00% Impervious Area
1,768		100.00% Unconnected

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

Subcatchment 3S: Subcatchment #3 Building



Summary for Subcatchment 4S: Subcatchment #4

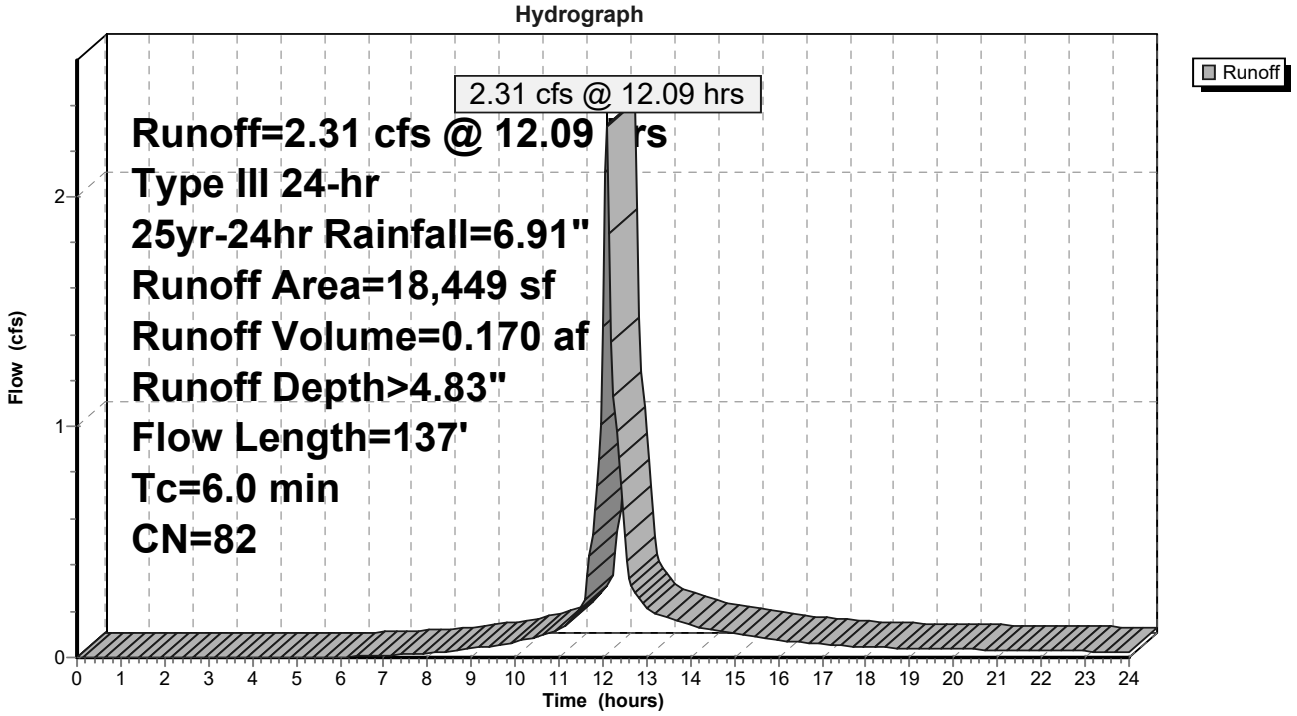
Runoff = 2.31 cfs @ 12.09 hrs, Volume= 0.170 af, Depth> 4.83"

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 25yr-24hr Rainfall=6.91"

Area (sf)	CN	Description
1,605	98	Unconnected roofs, HSG C
11,512	74	>75% Grass cover, Good, HSG C
4,801	98	Unconnected pavement, HSG C
531	70	Woods, Good, HSG C
18,449	82	Weighted Average
12,043		65.28% Pervious Area
6,406		34.72% Impervious Area
6,406		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.1	67	0.1346	0.36		**Sheet Flow, Segment #1** Grass: Short n= 0.150 P2= 3.62"
0.7	70	0.0143	1.79		**Shallow Concentrated Flow, Segment #2** Grassed Waterway Kv= 15.0 fps
3.8	137	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 4S: Subcatchment #4



Summary for Reach 4R: Reach #101

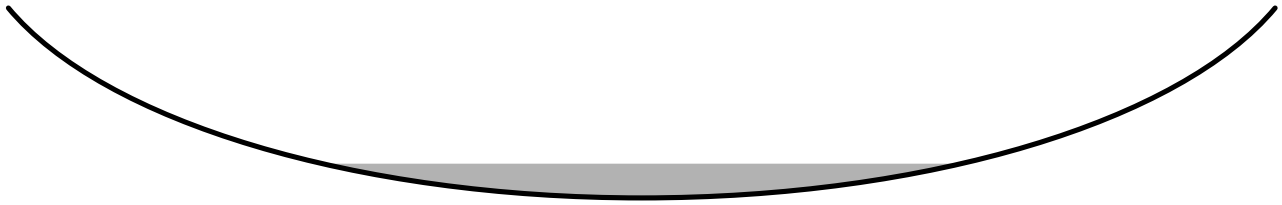
[90] Warning: Qout>Qin may require smaller dt or Finer Routing
[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=12)

Inflow Area = 0.464 ac, 40.43% Impervious, Inflow Depth > 4.64" for 25yr-24hr event
Inflow = 0.93 cfs @ 12.36 hrs, Volume= 0.179 af
Outflow = 0.95 cfs @ 12.30 hrs, Volume= 0.179 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.50 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.34 fps, Avg. Travel Time= 0.2 min

Peak Storage= 7 cf @ 12.30 hrs
Average Depth at Peak Storage= 0.09'
Bank-Full Depth= 0.50' Flow Area= 5.0 sf, Capacity= 39.18 cfs

15.00' x 0.50' deep Parabolic Channel, n= 0.030 Earth, grassed & winding
Length= 18.4' Slope= 0.1087 '/'
Inlet Invert= 57.00', Outlet Invert= 55.00'



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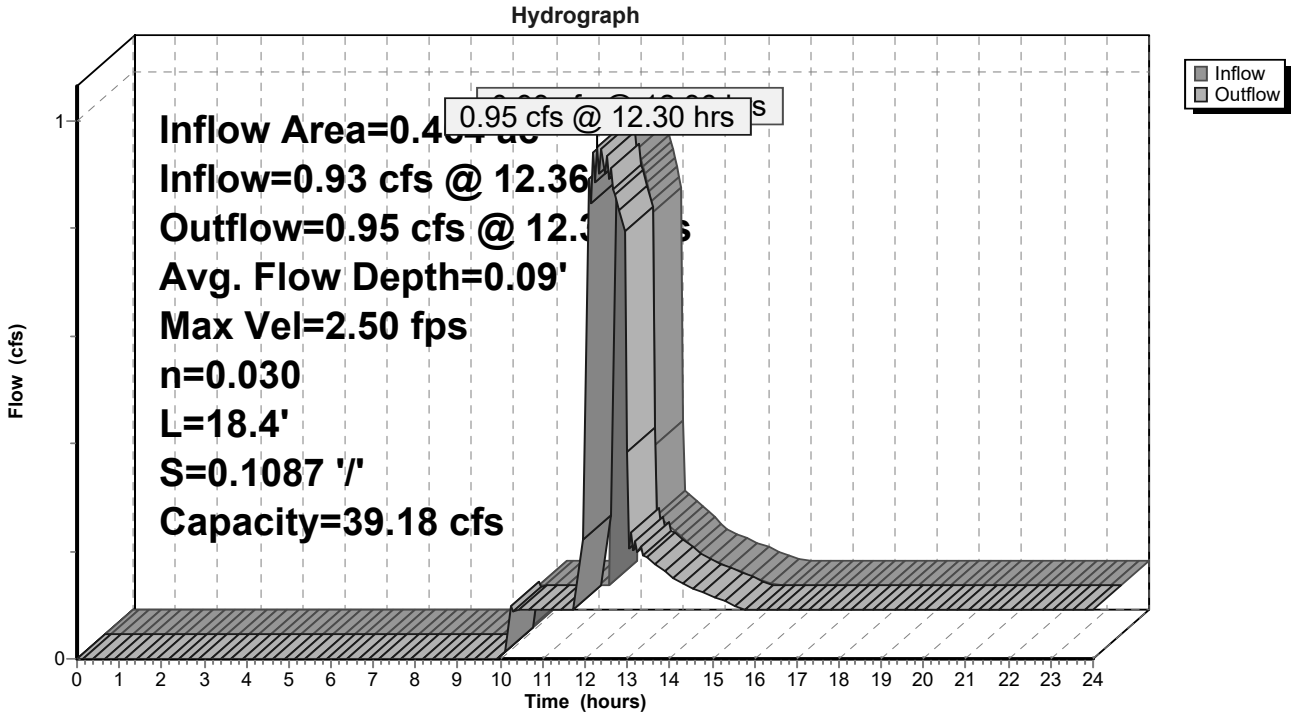
Reach 4R: Reach #101



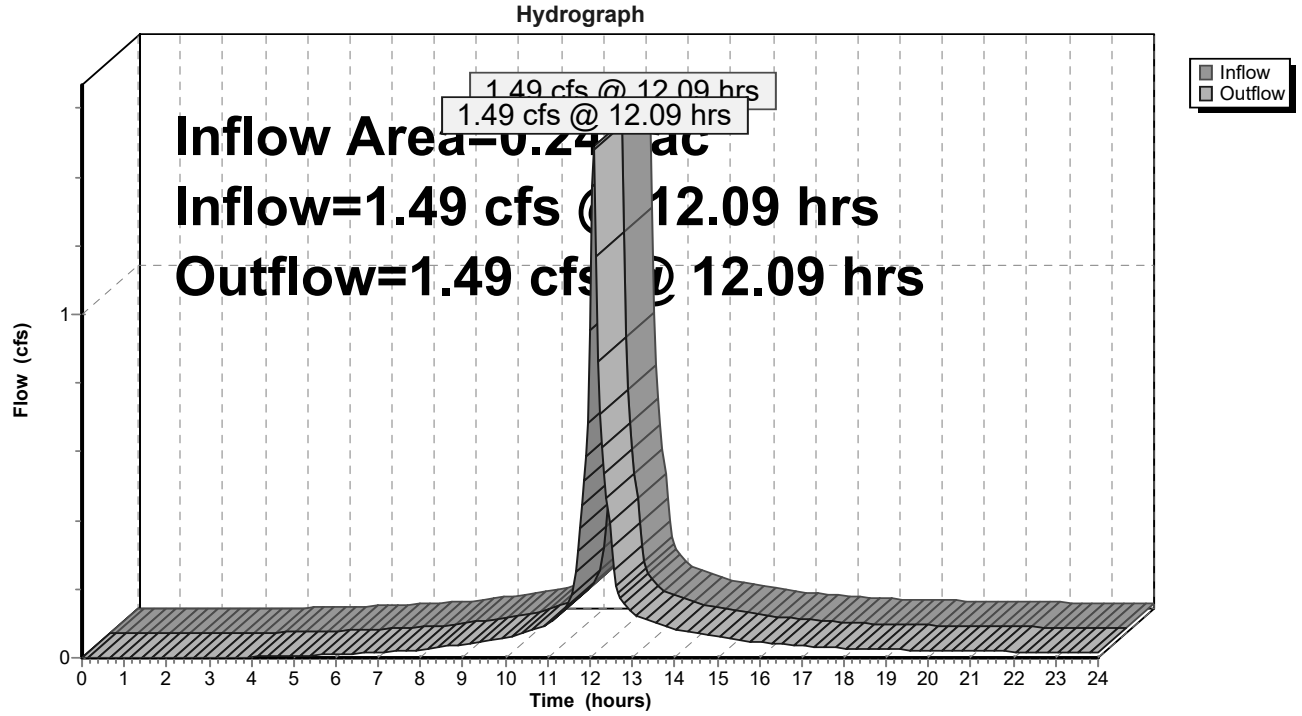
Summary for Reach 100R: Final Reach #100

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

Inflow Area = 0.241 ac, 65.73% Impervious, Inflow Depth > 5.73" for 25yr-24hr event
Inflow = 1.49 cfs @ 12.09 hrs, Volume= 0.115 af
Outflow = 1.49 cfs @ 12.09 hrs, Volume= 0.115 af, Atten= 0%, Lag= 0.0 min

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

Reach 100R: Final Reach #100



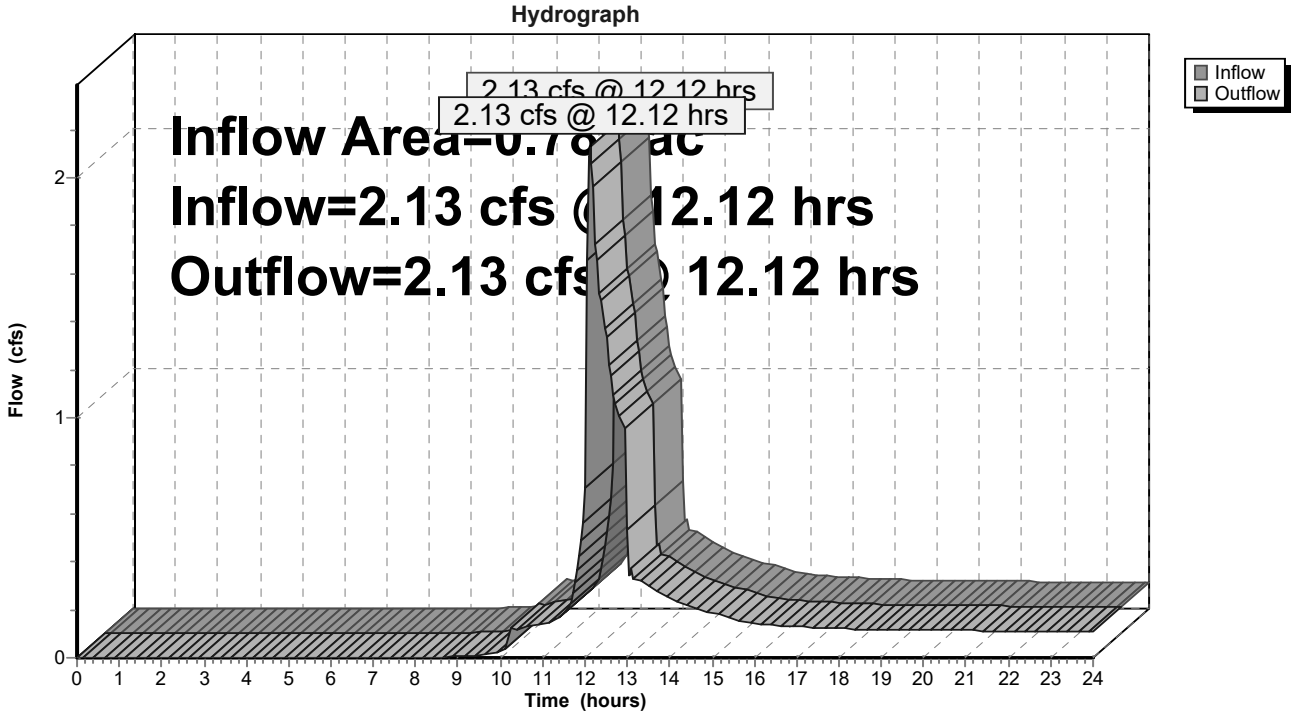
Summary for Reach 200R: Final Reach #200

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

Inflow Area = 0.789 ac, 23.78% Impervious, Inflow Depth > 4.23" for 25yr-24hr event
Inflow = 2.13 cfs @ 12.12 hrs, Volume= 0.278 af
Outflow = 2.13 cfs @ 12.12 hrs, Volume= 0.278 af, Atten= 0%, Lag= 0.0 min

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

Reach 200R: Final Reach #200



Summary for Pond 101P: Rain Garden #101

Inflow Area = 0.464 ac, 40.43% Impervious, Inflow Depth > 4.99" for 25yr-24hr event
Inflow = 2.58 cfs @ 12.09 hrs, Volume= 0.193 af
Outflow = 0.93 cfs @ 12.36 hrs, Volume= 0.179 af, Atten= 64%, Lag= 16.4 min
Primary = 0.93 cfs @ 12.36 hrs, Volume= 0.179 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 62.29' @ 12.36 hrs Surf.Area= 395 sf Storage= 2,987 cf
Flood Elev= 63.50' Surf.Area= 395 sf Storage= 4,265 cf

Plug-Flow detention time= 157.1 min calculated for 0.179 af (93% of inflow)
Center-of-Mass det. time= 120.6 min (916.6 - 796.0)

Volume	Invert	Avail.Storage	Storage Description
#1	57.25'	229 cf	**Stone Base (Irregular)**Listed below (Recalc) -Impervious 573 cf Overall x 40.0% Voids
#2	58.25'	119 cf	**Bio Media (Irregular)**Listed below (Recalc) 593 cf Overall x 20.0% Voids
#3	57.25'	631 cf	**StormTech Base (Irregular)**Listed below (Recalc) -Impervious 2,128 cf Overall - 551 cf Embedded = 1,577 cf x 40.0% Voids
#4	59.75'	2,616 cf	**Open Water Storage (Irregular)**Listed below (Recalc) -Impervious
#5	57.75'	551 cf	**ADS_StormTech SC-740 +Cap** x 12 Inside #3 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
#6	61.00'	120 cf	**Sediment Forebay (Irregular)**Listed below (Recalc) -Impervious
		4,265 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
57.25	573	153.0	0	0	573
58.25	573	153.0	573	573	726

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
58.25	395	89.4	0	0	395
59.75	395	89.4	593	593	529

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
57.25	608	119.4	0	0	608
60.75	608	119.4	2,128	2,128	1,026

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
59.75	395	89.4	0	0	395
60.00	419	90.9	102	102	426
61.00	521	98.9	469	571	580
62.00	674	112.5	596	1,167	832
62.50	759	119.3	358	1,525	970
63.00	1,080	154.1	457	1,982	1,730
63.50	1,464	216.9	634	2,616	3,587

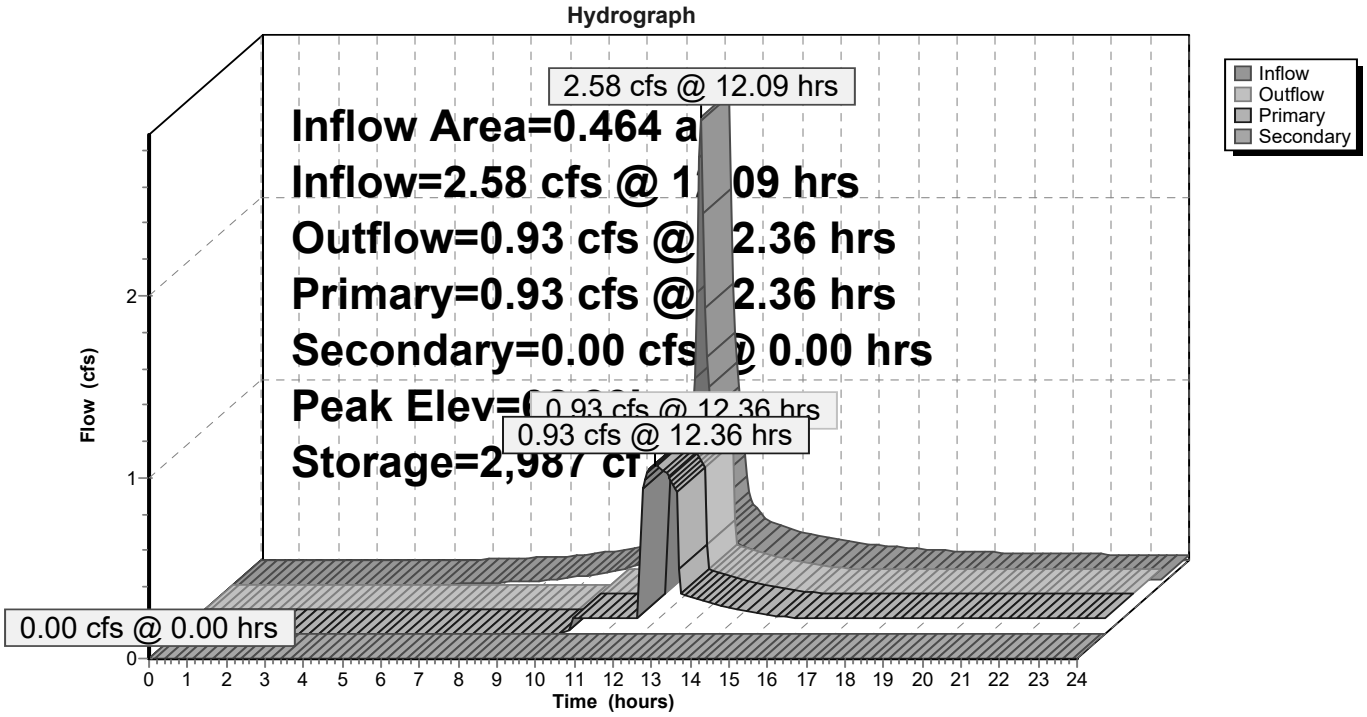
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
61.00	32	22.4	0	0	32
62.00	96	38.3	61	61	115
62.50	139	45.3	58	120	166

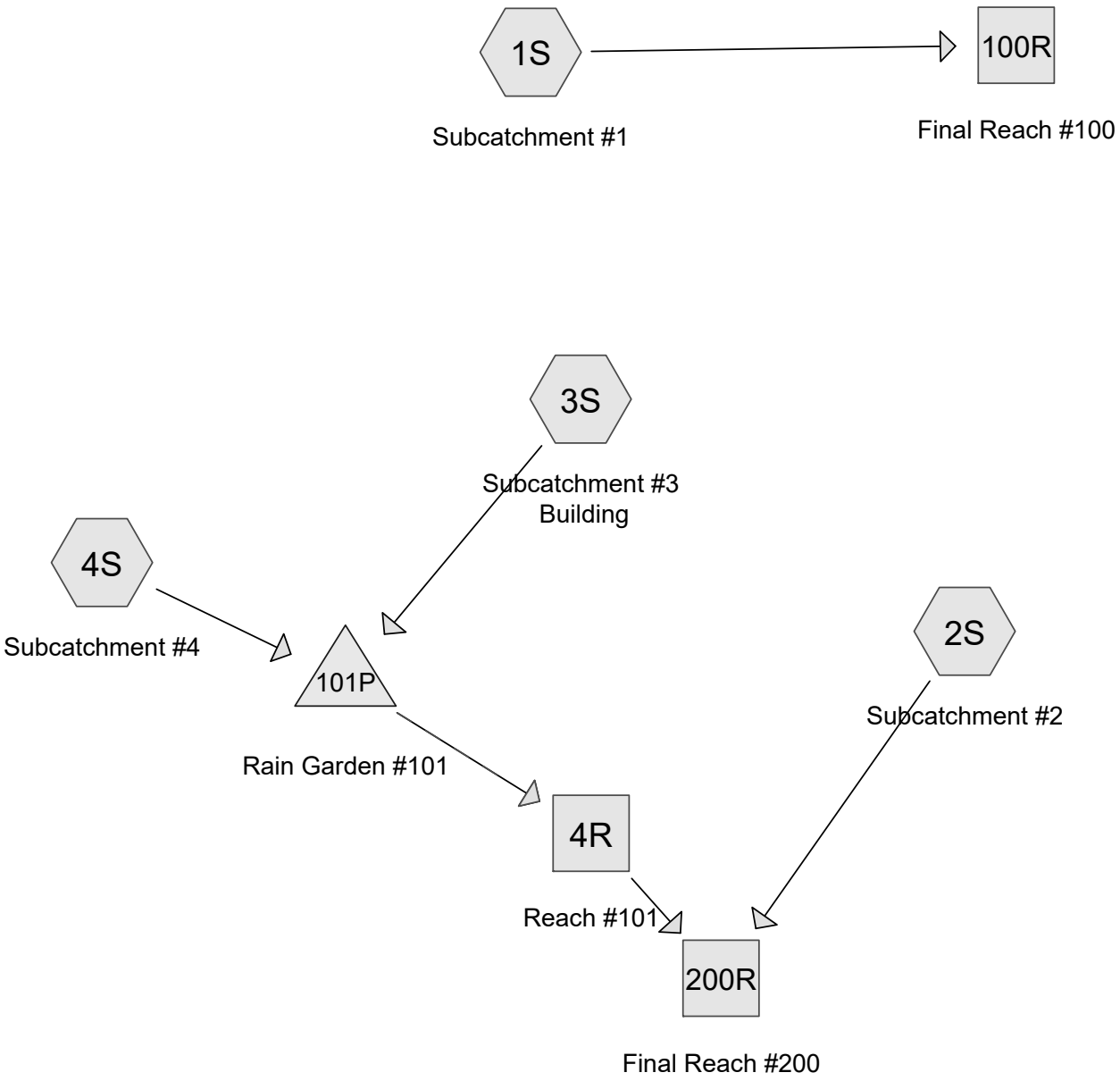
Device	Routing	Invert	Outlet Devices
#1	Primary	57.25'	**12.0" Round 12" HDPE N-12** L= 46.5' Ke= 0.900 Inlet / Outlet Invert= 57.25' / 57.00' S= 0.0054 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	57.25'	**4.0" Vert. 4" Orifice in Under Drain** C= 0.600
#3	Device 2	58.25'	**10.000 in/hr Exfiltration Through Media over Surface area**
#4	Device 1	62.95'	**12.0" Vert. 12" Top Structure** C= 0.600
#5	Secondary	63.00'	**5.0' long x 7.0' breadth 5" E Spillway** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78
#6	Device 2	60.75'	**12.0" Horiz. 12" Yard Drain** C= 0.600 Limited to weir flow at low heads
#7	Device 2	60.75'	**12.0" Horiz. 12" Yard Drain** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.93 cfs @ 12.36 hrs HW=62.28' TW=57.09' (Dynamic Tailwater)
- **1=12" HDPE N-12** (Passes 0.93 cfs of 6.36 cfs potential flow)
  - **2=4" Orifice in Under Drain** (Orifice Controls 0.93 cfs @ 10.62 fps)
    - **3=Exfiltration Through Media** (Passes < 0.09 cfs potential flow)
    - **6=12" Yard Drain** (Passes < 4.68 cfs potential flow)
    - **7=12" Yard Drain** (Passes < 4.68 cfs potential flow)
  - **4=12" Top Structure** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=57.25' TW=57.00' (Dynamic Tailwater)
- **5=5" E Spillway** (Controls 0.00 cfs)

Pond 101P: Rain Garden #101





Subcat Reach Pond Link

Routing Diagram for 20-136 W2 Proposed Watershed
Prepared by Berry Surveying & Engineering, Printed 5/5/2021
HydroCAD® 10.00-25 s/n 10221 © 2019 HydroCAD Software Solutions LLC

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	101P	57.25	57.00	46.5	0.0054	0.012	12.0	0.0	0.0

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Subcatchment #1 Runoff Area=10,482 sf 65.73% Impervious Runoff Depth>2.56"
Flow Length=180' Tc=6.0 min CN=90 Runoff=0.69 cfs 0.051 af

Subcatchment 2S: Subcatchment #2 Runoff Area=14,161 sf 0.00% Impervious Runoff Depth>1.14"
Flow Length=132' Tc=8.9 min CN=71 Runoff=0.36 cfs 0.031 af

Subcatchment 3S: Subcatchment #3 Runoff Area=1,768 sf 100.00% Impervious Runoff Depth>3.38"
Tc=6.0 min CN=98 Runoff=0.14 cfs 0.011 af

Subcatchment 4S: Subcatchment #4 Runoff Area=18,449 sf 34.72% Impervious Runoff Depth>1.88"
Flow Length=137' Tc=6.0 min CN=82 Runoff=0.92 cfs 0.066 af

Reach 4R: Reach #101 Avg. Flow Depth=0.03' Max Vel=1.26 fps Inflow=0.09 cfs 0.065 af
n=0.030 L=18.4' S=0.1087 '/' Capacity=39.18 cfs Outflow=0.10 cfs 0.065 af

Reach 100R: Final Reach #100 Inflow=0.69 cfs 0.051 af
Outflow=0.69 cfs 0.051 af

Reach 200R: Final Reach #200 Inflow=0.46 cfs 0.096 af
Outflow=0.46 cfs 0.096 af

Pond 101P: Rain Garden #101 Peak Elev=60.44' Storage=1,748 cf Inflow=1.06 cfs 0.078 af
Primary=0.09 cfs 0.065 af Secondary=0.00 cfs 0.000 af Outflow=0.09 cfs 0.065 af

Total Runoff Area = 1.030 ac Runoff Volume = 0.160 af Average Runoff Depth = 1.86"
66.42% Pervious = 0.684 ac 33.58% Impervious = 0.346 ac

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Subcatchment #1 Runoff Area=10,482 sf 65.73% Impervious Runoff Depth>4.32"
Flow Length=180' Tc=6.0 min CN=90 Runoff=1.14 cfs 0.087 af

Subcatchment 2S: Subcatchment #2 Runoff Area=14,161 sf 0.00% Impervious Runoff Depth>2.47"
Flow Length=132' Tc=8.9 min CN=71 Runoff=0.83 cfs 0.067 af

Subcatchment 3S: Subcatchment #3 Runoff Area=1,768 sf 100.00% Impervious Runoff Depth>5.22"
Tc=6.0 min CN=98 Runoff=0.21 cfs 0.018 af

Subcatchment 4S: Subcatchment #4 Runoff Area=18,449 sf 34.72% Impervious Runoff Depth>3.49"
Flow Length=137' Tc=6.0 min CN=82 Runoff=1.69 cfs 0.123 af

Reach 4R: Reach #101 Avg. Flow Depth=0.09' Max Vel=2.42 fps Inflow=0.82 cfs 0.128 af
n=0.030 L=18.4' S=0.1087 '/' Capacity=39.18 cfs Outflow=0.86 cfs 0.128 af

Reach 100R: Final Reach #100 Inflow=1.14 cfs 0.087 af
Outflow=1.14 cfs 0.087 af

Reach 200R: Final Reach #200 Inflow=1.65 cfs 0.195 af
Outflow=1.65 cfs 0.195 af

Pond 101P: Rain Garden #101 Peak Elev=61.26' Storage=2,249 cf Inflow=1.90 cfs 0.141 af
Primary=0.82 cfs 0.128 af Secondary=0.00 cfs 0.000 af Outflow=0.82 cfs 0.128 af

Total Runoff Area = 1.030 ac Runoff Volume = 0.294 af Average Runoff Depth = 3.43"
66.42% Pervious = 0.684 ac 33.58% Impervious = 0.346 ac

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Subcatchment #1 Runoff Area=10,482 sf 65.73% Impervious Runoff Depth>5.73"
Flow Length=180' Tc=6.0 min CN=90 Runoff=1.49 cfs 0.115 af

Subcatchment 2S: Subcatchment #2 Runoff Area=14,161 sf 0.00% Impervious Runoff Depth>3.64"
Flow Length=132' Tc=8.9 min CN=71 Runoff=1.23 cfs 0.099 af

Subcatchment 3S: Subcatchment #3 Runoff Area=1,768 sf 100.00% Impervious Runoff Depth>6.67"
Tc=6.0 min CN=98 Runoff=0.27 cfs 0.023 af

Subcatchment 4S: Subcatchment #4 Runoff Area=18,449 sf 34.72% Impervious Runoff Depth>4.83"
Flow Length=137' Tc=6.0 min CN=82 Runoff=2.31 cfs 0.170 af

Reach 4R: Reach #101 Avg. Flow Depth=0.09' Max Vel=2.50 fps Inflow=0.93 cfs 0.179 af
n=0.030 L=18.4' S=0.1087 '/' Capacity=39.18 cfs Outflow=0.95 cfs 0.179 af

Reach 100R: Final Reach #100 Inflow=1.49 cfs 0.115 af
Outflow=1.49 cfs 0.115 af

Reach 200R: Final Reach #200 Inflow=2.13 cfs 0.278 af
Outflow=2.13 cfs 0.278 af

Pond 101P: Rain Garden #101 Peak Elev=62.29' Storage=2,987 cf Inflow=2.58 cfs 0.193 af
Primary=0.93 cfs 0.179 af Secondary=0.00 cfs 0.000 af Outflow=0.93 cfs 0.179 af

Total Runoff Area = 1.030 ac Runoff Volume = 0.407 af Average Runoff Depth = 4.74"
66.42% Pervious = 0.684 ac 33.58% Impervious = 0.346 ac

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Subcatchment #1 Runoff Area=10,482 sf 65.73% Impervious Runoff Depth>7.06"
Flow Length=180' Tc=6.0 min CN=90 Runoff=1.82 cfs 0.142 af

Subcatchment 2S: Subcatchment #2 Runoff Area=14,161 sf 0.00% Impervious Runoff Depth>4.80"
Flow Length=132' Tc=8.9 min CN=71 Runoff=1.62 cfs 0.130 af

Subcatchment 3S: Subcatchment #3 Runoff Area=1,768 sf 100.00% Impervious Runoff Depth>8.02"
Tc=6.0 min CN=98 Runoff=0.32 cfs 0.027 af

Subcatchment 4S: Subcatchment #4 Runoff Area=18,449 sf 34.72% Impervious Runoff Depth>6.10"
Flow Length=137' Tc=6.0 min CN=82 Runoff=2.89 cfs 0.215 af

Reach 4R: Reach #101 Avg. Flow Depth=0.10' Max Vel=2.69 fps Inflow=1.23 cfs 0.223 af
n=0.030 L=18.4' S=0.1087 '/' Capacity=39.18 cfs Outflow=1.21 cfs 0.223 af

Reach 100R: Final Reach #100 Inflow=1.82 cfs 0.142 af
Outflow=1.82 cfs 0.142 af

Reach 200R: Final Reach #200 Inflow=2.59 cfs 0.353 af
Outflow=2.59 cfs 0.353 af

Pond 101P: Rain Garden #101 Peak Elev=63.06' Storage=3,697 cf Inflow=3.21 cfs 0.242 af
Primary=1.05 cfs 0.221 af Secondary=0.17 cfs 0.002 af Outflow=1.23 cfs 0.223 af

Total Runoff Area = 1.030 ac Runoff Volume = 0.514 af Average Runoff Depth = 5.99"
66.42% Pervious = 0.684 ac 33.58% Impervious = 0.346 ac

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Subcatchment #1 Runoff Area=10,482 sf 65.73% Impervious Runoff Depth>8.65"
Flow Length=180' Tc=6.0 min CN=90 Runoff=2.20 cfs 0.173 af

Subcatchment 2S: Subcatchment #2 Runoff Area=14,161 sf 0.00% Impervious Runoff Depth>6.23"
Flow Length=132' Tc=8.9 min CN=71 Runoff=2.10 cfs 0.169 af

Subcatchment 3S: Subcatchment #3 Runoff Area=1,768 sf 100.00% Impervious Runoff Depth>9.62"
Tc=6.0 min CN=98 Runoff=0.38 cfs 0.033 af

Subcatchment 4S: Subcatchment #4 Runoff Area=18,449 sf 34.72% Impervious Runoff Depth>7.64"
Flow Length=137' Tc=6.0 min CN=82 Runoff=3.58 cfs 0.270 af

Reach 4R: Reach #101 Avg. Flow Depth=0.15' Max Vel=3.44 fps Inflow=2.67 cfs 0.276 af
n=0.030 L=18.4' S=0.1087 '/' Capacity=39.18 cfs Outflow=2.69 cfs 0.276 af

Reach 100R: Final Reach #100 Inflow=2.20 cfs 0.173 af
Outflow=2.20 cfs 0.173 af

Reach 200R: Final Reach #200 Inflow=4.47 cfs 0.445 af
Outflow=4.47 cfs 0.445 af

Pond 101P: Rain Garden #101 Peak Elev=63.23' Storage=3,899 cf Inflow=3.97 cfs 0.302 af
Primary=1.34 cfs 0.255 af Secondary=1.33 cfs 0.021 af Outflow=2.67 cfs 0.276 af

Total Runoff Area = 1.030 ac Runoff Volume = 0.645 af Average Runoff Depth = 7.51"
66.42% Pervious = 0.684 ac 33.58% Impervious = 0.346 ac

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	70.874 degrees West
Latitude	43.198 degrees North
Elevation	0 feet
Date/Time	Tue, 09 Mar 2021 12:38:57 -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	2.00	2.60	2.87	**1yr**	2.31	2.76	3.16	3.89	4.45	**1yr**
2yr	0.32	0.49	0.61	0.81	1.01	1.29	**2yr**	0.88	1.17	1.50	1.91	2.45	3.15	3.51	**2yr**	2.79	3.38	3.87	4.61	5.24	**2yr**
5yr	0.37	0.57	0.72	0.96	1.23	1.58	**5yr**	1.06	1.44	1.85	2.39	3.08	3.98	4.50	**5yr**	3.53	4.33	4.95	5.82	6.57	**5yr**
10yr	0.40	0.63	0.80	1.09	1.42	1.85	**10yr**	1.23	1.69	2.18	2.83	3.66	4.75	5.43	**10yr**	4.21	5.22	5.96	6.94	7.81	**10yr**
25yr	0.46	0.74	0.94	1.30	1.72	2.27	**25yr**	1.49	2.09	2.70	3.53	4.61	6.01	6.96	**25yr**	5.32	6.70	7.63	8.78	9.80	**25yr**
50yr	0.52	0.83	1.06	1.49	2.00	2.67	**50yr**	1.73	2.46	3.18	4.19	5.49	7.18	8.41	**50yr**	6.35	8.09	9.21	10.49	11.65	**50yr**
100yr	0.58	0.94	1.21	1.71	2.33	3.13	**100yr**	2.01	2.89	3.75	4.96	6.53	8.58	10.16	**100yr**	7.59	9.77	11.11	12.54	13.86	**100yr**
200yr	0.64	1.05	1.36	1.96	2.71	3.68	**200yr**	2.34	3.40	4.44	5.90	7.80	10.26	12.28	**200yr**	9.08	11.81	13.40	14.99	16.48	**200yr**
500yr	0.76	1.25	1.63	2.36	3.31	4.55	**500yr**	2.86	4.22	5.51	7.38	9.82	12.99	15.78	**500yr**	11.50	15.18	17.19	19.00	20.75	**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	1.26	1.58	2.14	2.45	**1yr**	1.90	2.36	2.88	3.36	4.03	**1yr**
2yr	0.31	0.49	0.60	0.81	1.00	1.18	**2yr**	0.86	1.16	1.36	1.83	2.35	3.04	3.40	**2yr**	2.69	3.27	3.75	4.47	5.05	**2yr**
5yr	0.35	0.54	0.67	0.91	1.16	1.40	**5yr**	1.00	1.37	1.61	2.15	2.77	3.71	4.13	**5yr**	3.29	3.97	4.62	5.41	6.11	**5yr**
10yr	0.38	0.59	0.73	1.02	1.32	1.60	**10yr**	1.14	1.56	1.81	2.44	3.12	4.27	4.78	**10yr**	3.78	4.60	5.32	6.24	7.01	**10yr**
25yr	0.44	0.66	0.83	1.18	1.55	1.91	**25yr**	1.34	1.87	2.11	2.83	3.64	4.92	5.78	**25yr**	4.36	5.56	6.49	7.54	8.41	**25yr**
50yr	0.48	0.73	0.91	1.31	1.76	2.19	**50yr**	1.52	2.14	2.35	3.19	4.09	5.61	6.67	**50yr**	4.97	6.41	7.53	8.69	9.64	**50yr**
100yr	0.54	0.81	1.01	1.47	2.01	2.51	**100yr**	1.73	2.45	2.63	3.56	4.56	6.38	7.68	**100yr**	5.65	7.38	8.73	10.03	11.04	**100yr**
200yr	0.59	0.89	1.13	1.64	2.29	2.87	**200yr**	1.97	2.80	2.93	3.99	5.09	7.26	8.84	**200yr**	6.42	8.50	10.12	11.57	12.66	**200yr**
500yr	0.69	1.03	1.33	1.93	2.74	3.45	**500yr**	2.36	3.37	3.40	4.61	5.89	8.57	10.64	**500yr**	7.58	10.23	12.29	13.99	15.12	**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	1.24	1.74	2.21	2.88	3.10	**1yr**	2.55	2.98	3.44	4.23	4.82	**1yr**
2yr	0.33	0.51	0.62	0.85	1.04	1.25	**2yr**	0.90	1.22	1.47	1.95	2.51	3.30	3.64	**2yr**	2.92	3.50	4.01	4.76	5.46	**2yr**
5yr	0.39	0.61	0.75	1.03	1.31	1.58	**5yr**	1.13	1.55	1.86	2.50	3.20	4.25	4.87	**5yr**	3.76	4.68	5.29	6.25	7.01	**5yr**
10yr	0.46	0.70	0.87	1.22	1.57	1.92	**10yr**	1.36	1.88	2.24	3.05	3.86	5.22	6.08	**10yr**	4.62	5.85	6.69	7.67	8.55	**10yr**
25yr	0.56	0.85	1.05	1.50	1.98	2.48	**25yr**	1.71	2.43	2.88	3.97	4.97	7.09	8.18	**25yr**	6.28	7.86	8.97	10.10	11.15	**25yr**
50yr	0.64	0.98	1.22	1.75	2.36	3.00	**50yr**	2.04	2.93	3.50	4.83	6.03	8.76	10.25	**50yr**	7.75	9.86	11.22	12.42	13.63	**50yr**
100yr	0.75	1.13	1.42	2.05	2.81	3.63	**100yr**	2.43	3.54	4.24	5.92	7.34	10.83	12.86	**100yr**	9.58	12.36	14.02	15.31	16.68	**100yr**
200yr	0.87	1.31	1.66	2.40	3.35	4.40	**200yr**	2.89	4.30	5.16	7.24	8.92	13.42	16.14	**200yr**	11.88	15.52	17.55	18.85	20.43	**200yr**
500yr	1.07	1.58	2.04	2.96	4.21	5.65	**500yr**	3.64	5.52	6.67	9.47	11.57	17.84	21.80	**500yr**	15.79	20.96	23.63	24.86	26.74	**500yr**

Powered by ACIS Northeast Regional Climate Center

RIP RAP CALCULATIONS

20-136 Dover Housing Authority
48 Whittier Street, Dover, NH

Berry Surveying & Engineering
335 Second Crown Point Road
Barrington, NH
6-May-21

Rip Rap equations were obtained from the *Stormwater Management and Erosion Control Handbook for Urban and Developing Areas in New Hampshire.* Rip Rap was sized for the 25 year storm event. (Some d50 sizes and T values have been modified)

TAILWATER < HALF THE Do

La = (1.8 x Q) / Do 3/2 + (7 x Do) Q = Peak Flow & Do is Pipe Diameter
W = La + 3*Do or defined channel width
d50 = (0.02 x Q4/3) / (Tw x Do) Tw = Tailwater Depth
T = Largest Stone Size x 1.5

Culvert or Catch Basin	Tailwater (Feet) Tw	Discharge (C.F.S.) Q	Diameter of Pipe Do	Length of Rip Rap La (feet)	Width of Rip Rap W (feet)	d50-Stone Rip Rap d50(ft.)	Actual Size	Thickness
12" HDPE (Pond #101)	0.20	0.93	1.00	8.7	11.7	0.09	0.50	1.20

Please note that the designer chose to use the 25 Year Event for the dimensional calculations.

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

FILTRATION PRACTICE DESIGN CRITERIA
(Env-Wq 1508.07)

Type/Node Name: **Rain Garden #101**

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

Yes		Have you reviewed the restrictions on unlined systems outlined in Env-Wq 1508.07(a)?	
0.42	ac	A = Area draining to the practice	
0.15	ac	A_I = Impervious area draining to the practice	
0.35	decimal	I = percent impervious area draining to the practice, in decimal form	
0.36	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
0.15	ac-in	WQV= 1" x Rv x A	
557	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
139	cf	25% x WQV (check calc for sediment forebay volume)	
418	cf	75% x WQV (check calc for surface sand filter volume)	
Forebay		Method of Pretreatment? (not required for clean or roof runoff)	
120	cf	V_{SED} = sediment forebay volume, if used for pretreatment	← ≥ 25%WQV
395	sf	A_{SA} = surface area of the practice	
10.00	iph	$Ksat_{DESIGN}$ = design infiltration rate[1]	
Yes	Yes/No	If Ksat (prior to factor of safety) is < 0.50 iph, has an underdrain been provided?	
1.7	hours	T_{DRAIN} = drain time = V / (A_{SA} * I_{DESIGN})	← ≤ 72-hrs
58.25	feet	E_{FC} = elevation of the bottom of the filter course material[2]	
-	feet	E_{UD} = invert elevation of the underdrain (UD), if applicable	
63.30	feet	E_{SHWT} = elevation of SHWT (if none found, enter the lowest elevation of the test pit)	
60.30	feet	E_{ROCK} = elevation of bedrock (if none found, enter the lowest elevation of the test pit)	
58.25	feet	$D_{FC\ to\ UD}$ = depth to UD from the bottom of the filter course	← ≥ 1'
(2.05)	feet	$D_{FC\ to\ ROCK}$ = depth to bedrock from the bottom of the filter course	← ≥ 1'
(5.05)	feet	$D_{FC\ to\ SHWT}$ = depth to SHWT from the bottom of the filter course	← ≥ 1'
63.06	ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
63.50	ft	Elevation of the top of the practice	
YES		50 peak elevation ≤ Elevation of the top of the practice	← yes

If a surface sand filter or underground sand filter is proposed:

YES	ac	Drainage Area check.	← < 10 ac
-	cf	V = volume of storage[3] (attach a stage-storage table)	← ≥ 75%WQV
-	inches	D_{FC} = filter course thickness	← 18", or 24" if within GPA
Sheet		Note what sheet in the plan set contains the filter course specification	
N/A	Yes/No	Access grate provided?	← yes

If a bioretention area is proposed:

YES	ac	Drainage Area no larger than 5 ac?	← **yes**
1,408	cf	V = volume of storage[3] (attach a stage-storage table)	← **≥ WQV**
18.0	inches	D_{FC} = filter course thickness	← **18", or 24" if within GPA**
Sheet	R-101	Note what sheet in the plan set contains the filter course specification	
2.0	:1	Pond side slopes	← **≥3:1**
Sheet	R-101	Note what sheet in the plan set contains the planting plans and surface cover	

If porous pavement is proposed:

		Type of pavement proposed (concrete? Asphalt? Pavers? Etc)	
-	acres	A_{SA} = surface area of the pervious pavement	
#DIV/0!	:1	ratio of the contributing area to the pervious surface area	← **5:1**
-	inches	D_{FC} = filter course thickness	← **12", or 18" if within GPA**
Sheet		Note what sheet in the plan set contains the filter course spec.	← **304.1 sand**

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

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

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

Designer's Notes:

Sediment Forebay volume paved parking and traveled way only.

Summary for Pond 101P: Rain Garden #101

Inflow Area = 0.464 ac, 40.43% Impervious, Inflow Depth > 6.27" for 50yr-24hr event
Inflow = 3.21 cfs @ 12.09 hrs, Volume= 0.242 af
Outflow = 1.23 cfs @ 12.35 hrs, Volume= 0.223 af, Atten= 62%, Lag= 15.4 min
Primary = 1.05 cfs @ 12.35 hrs, Volume= 0.221 af
Secondary = 0.17 cfs @ 12.35 hrs, Volume= 0.002 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 63.06' @ 12.35 hrs Surf.Area= 395 sf Storage= 3,697 cf
Flood Elev= 63.50' Surf.Area= 395 sf Storage= 4,265 cf

Plug-Flow detention time= 136.9 min calculated for 0.222 af (92% of inflow)
Center-of-Mass det. time= 95.9 min (886.1 - 790.2)

Volume	Invert	Avail.Storage	Storage Description
#1	57.25'	229 cf	**Stone Base (Irregular)**Listed below (Recalc) -Impervious 573 cf Overall x 40.0% Voids
#2	58.25'	119 cf	**Bio Media (Irregular)**Listed below (Recalc) 593 cf Overall x 20.0% Voids
#3	57.25'	631 cf	**StormTech Base (Irregular)**Listed below (Recalc) -Impervious 2,128 cf Overall - 551 cf Embedded = 1,577 cf x 40.0% Voids
#4	59.75'	2,616 cf	**Open Water Storage (Irregular)**Listed below (Recalc) -Impervious
#5	57.75'	551 cf	**ADS_StormTech SC-740 +Cap** x 12 Inside #3 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
#6	61.00'	120 cf	**Sediment Forebay (Irregular)**Listed below (Recalc) -Impervious
		4,265 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
57.25	573	153.0	0	0	573
58.25	573	153.0	573	573	726

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
58.25	395	89.4	0	0	395
59.75	395	89.4	593	593	529

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
57.25	608	119.4	0	0	608
60.75	608	119.4	2,128	2,128	1,026

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
59.75	395	89.4	0	0	395
60.00	419	90.9	102	102	426
61.00	521	98.9	469	571	580
62.00	674	112.5	596	1,167	832
62.50	759	119.3	358	1,525	970
63.00	1,080	154.1	457	1,982	1,730
63.50	1,464	216.9	634	2,616	3,587

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
61.00	32	22.4	0	0	32
62.00	96	38.3	61	61	115
62.50	139	45.3	58	120	166

Device	Routing	Invert	Outlet Devices
#1	Primary	57.25'	**12.0" Round 12" HDPE N-12** L= 46.5' Ke= 0.900 Inlet / Outlet Invert= 57.25' / 57.00' S= 0.0054 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	57.25'	**4.0" Vert. 4" Orifice in Under Drain** C= 0.600
#3	Device 2	58.25'	**10.000 in/hr Exfiltration Through Media over Surface area**
#4	Device 1	62.95'	**12.0" Vert. 12" Top Structure** C= 0.600
#5	Secondary	63.00'	**5.0' long x 7.0' breadth 5" E Spillway** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78
#6	Device 2	60.75'	**12.0" Horiz. 12" Yard Drain** C= 0.600 Limited to weir flow at low heads
#7	Device 2	60.75'	**12.0" Horiz. 12" Yard Drain** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.05 cfs @ 12.35 hrs HW=63.06' TW=57.10' (Dynamic Tailwater)
- **1=12" HDPE N-12** (Passes 1.05 cfs of 6.88 cfs potential flow)
  - **2=4" Orifice in Under Drain** (Orifice Controls 1.00 cfs @ 11.44 fps)
    - **3=Exfiltration Through Media** (Passes < 0.09 cfs potential flow)
    - **6=12" Yard Drain** (Passes < 5.75 cfs potential flow)
    - **7=12" Yard Drain** (Passes < 5.75 cfs potential flow)
  - **4=12" Top Structure** (Orifice Controls 0.05 cfs @ 1.12 fps)

Secondary OutFlow Max=0.17 cfs @ 12.35 hrs HW=63.06' TW=57.10' (Dynamic Tailwater)
- **5=5" E Spillway** (Weir Controls 0.17 cfs @ 0.58 fps)

Stage-Area-Storage for Pond 101P: Rain Garden #101

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
57.25	0	0
57.35	0	47
57.45	0	94
57.55	0	142
57.65	0	189
57.75	0	236
57.85	0	302
57.95	0	369
58.05	0	435
58.15	0	500
58.25	**395**	566
58.35	395	616
58.45	395	666
58.55	395	715
58.65	395	764
58.75	395	813
58.85	395	861
58.95	395	909
59.05	395	956
59.15	395	1,002
59.25	395	1,048
59.35	395	1,094
59.45	395	1,138
59.55	395	1,182
59.65	395	1,224
59.75	395	1,266
59.85	395	1,338
59.95	395	1,410
60.05	395	1,480
60.15	395	1,549
60.25	395	1,618
60.35	395	1,687
60.45	395	1,757
60.55	395	1,828
60.65	395	1,900
60.75	395	1,974
60.85	395	2,024
60.95	395	2,075
61.05	395	2,128
61.15	395	2,186
61.25	395	2,245
61.35	395	2,306
61.45	395	2,369
61.55	395	2,435
61.65	395	2,503
61.75	395	2,572
61.85	395	2,645
61.95	395	2,719
62.05	395	2,796
62.15	395	2,876
62.25	395	2,958
62.35	395	3,042
62.45	395	3,129
62.55	395	3,213
62.65	395	3,295
62.75	395	3,383
62.85	395	3,477
62.95	395	3,578
63.05	395	3,686
63.15	395	3,801
63.25	395	3,924
63.35	395	4,054
63.45	395	**4,193**
63.55	395	**4,265**
63.65	395	4,265
63.75	395	4,265
63.85	395	4,265
63.95	395	4,265

1,974
-566
1408

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

March 30, 2021

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

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

Soil Map

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

Custom Soil Resource Report
Soil Map

Map Scale: 1:1,230 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 15 30 60 90

Feet
0 50 100 200 300

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

MAP LEGEND

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

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

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

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

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

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

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

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

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

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

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

Soil Survey Area: Strafford County, New Hampshire
Survey Area Data: Version 20, May 29, 2020

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

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

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BzB	Buxton silt loam, 3 to 8 percent slopes	6.0	99.8%
W	Water	0.0	0.2%
Totals for Area of Interest		**6.0**	**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 capacity: 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

W—Water

Map Unit Composition

Water (less than 40 acres): 100 percent

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

References

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John P. Hayes III CSS, CWS,
7 Limestone Way
North Hampton, NH 03862
603-205-4396
johnphayes@comcast.net

3/19/21

Job # 21-010

Christopher Berry
Berry Surveying and Engineering
335 Second Crown Point Road
Barrington NH 03825

3/11/21
Site Specific Soil Survey
Map 33 Lot 1-A
48 Whittier Street Dover, NH

Dear Chris,

This letter report presents the findings of a Site Specific Soil Survey conducted on the referenced property by John P. Hayes III on March 11, 2021. The soil survey was conducted in accordance with the New Hampshire Supplement of the Site-Specific Soil Mapping Standard For New Hampshire and Vermont, Version 5.0, December 2017, Special Publication # 3, published by the Society of Soil Scientist of Northern New England.

The property that is subject of the soil survey is located on the southwest side of Whittier Street, and southwest of the Cochecho River, in Dover NH. The area of the pacel is 0.35 acres in size. The plans used for these soil maps are a 20 scale plan, where 1 inch equals 20 feet, with one foot contours.

The purpose of the soil survey is to provide the client with soils information for urban and suburban or rural land planning. Soil characteristics on the property were evaluated through observation of numerous test holes and hand auger probes conducted throughout the property. Slope phases were determined with the use of the topography provided on the plan. The Site-specific Soil Map Units identified are taken from the New Hampshire State-Wide Numerical Soils Legend, Issue #10 January 2011, and are briefly described below. Official Series Descriptions (OSD) for each of these soil series are enclosed with this report. The soil map units comply with the Range In Characteristics described in the OSD. Dissimilar inclusions are noted above. Limits of the Site Specific mapping units are highlighted on the plan.

The portions of the soil map units 299 and 500, are disturbed soils filled, or that have been excavated and/or regraded, and are sandy in texture. A Disturbed Soil Mapping Unit Supplement for New Hampshire DES AoT Site Specific Soil Maps, is also included. This supplement explains the additional information given about each of the disturbed soil map units that are present on the site.

MAP UNIT #	SOIL TAXANOMIC NAME	DESCRIPTION
299B (decdc)	**Udorthents (smoothed)**	This map unit represents areas that have been cut and filled to create a large level or nearly level area. Soil material making up the map units typically came from the immediate area. School athletic fields are an example. The hydrologic soil group is C. Slopes range from 3% to 8 %.
299C (decdc)	**Udorthents (smoothed)**	This map unit represents areas that have been cut and filled to create a large level or nearly level area. Soil material making up the map units typically came from the immediate area. School athletic fields are an example. The hydrologic soil group is C. Slopes range from 8% to 15 %.
299D (decdc)	**Udorthents (smoothed)**	This map unit represents areas that have been cut and filled to create a large level or nearly level area. Soil material making up the map units typically came from the immediate area. School athletic fields are an example. The hydrologic soil group is C. Slopes range from 15% to 25%.
299E (decdc)	**Udorthents (smoothed)**	This map unit represents areas that have been cut and filled to create a large level or nearly level area. Soil material making up the map units typically came from the immediate area. School athletic fields are an example. The hydrologic soil group is C. Slopes range from 25% to 50 %.
500A (decdc)	**Udorthents (Loamy)**	This map unit is characterized typically by soil textures that are sandy loam, loam, or silt loam within the particle size control section (25 – 100cm or 10 – 40"). Saturated hydraulic conductivity (Ksat) is low through high. Drainage class ranges from well drained to somewhat poorly drained. These areas typically represent excavated glacial till or perhaps areas where sand and gravel was excavated down to the loamy underlying material. The hydrologic soil group is C. Slope ranges from 0% to 3%.

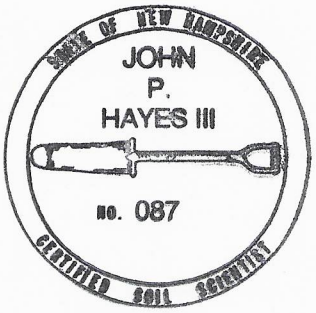
Slope Phases

Alpha Slope Symbol	Range
A	0 – 3%
B	3 – 8%
C	8 – 15%
D	15 – 25%
E	25 – 50%
F	> 50%

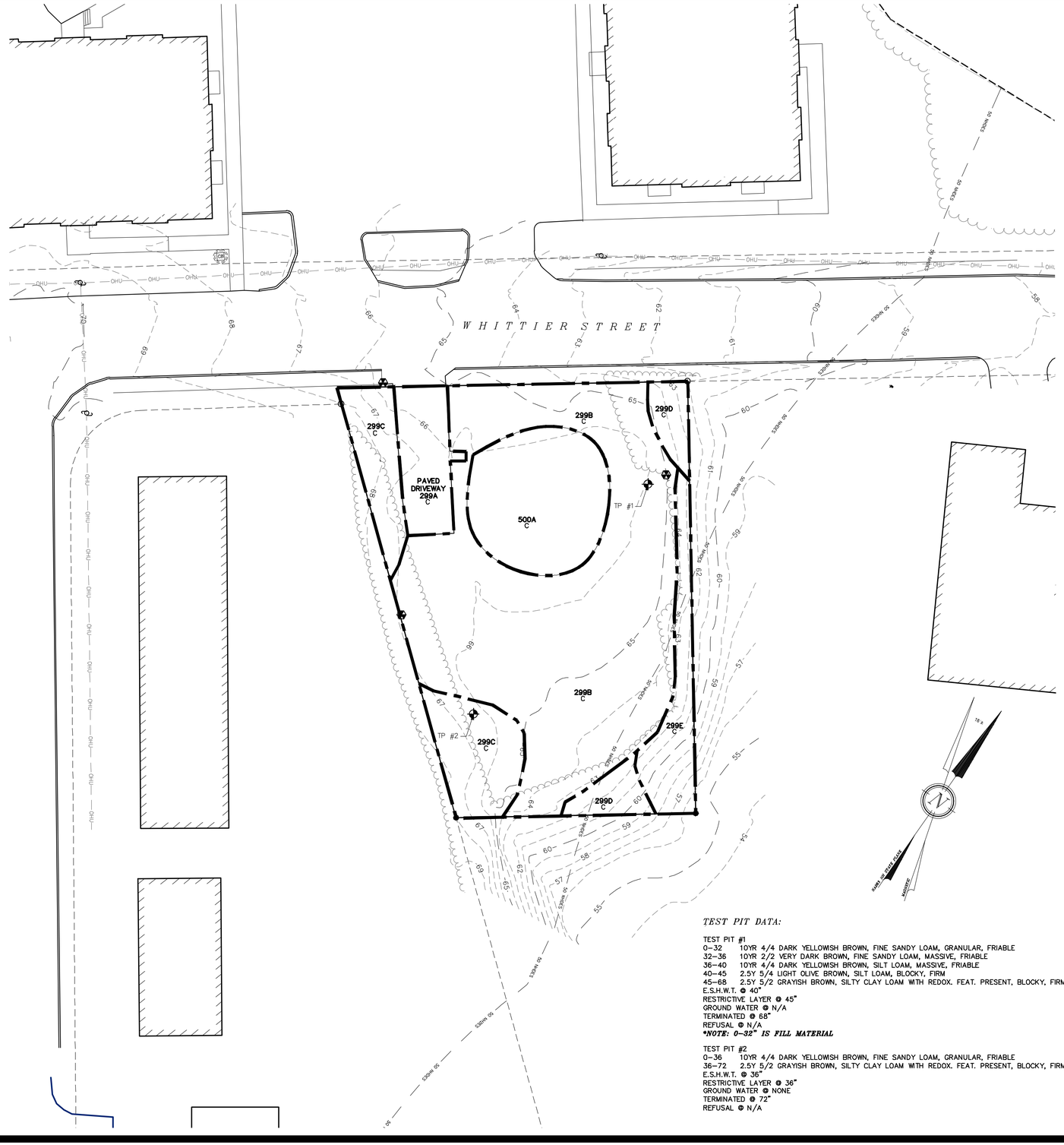
I trust that this Soil Survey and report meet your current planning needs. Please do not hesitate to contact me if you have any questions.

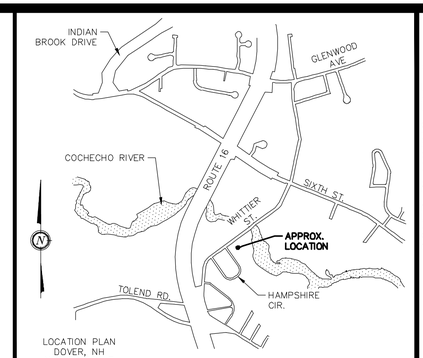
Sincerely:

John P. Hayes III



John P. Hayes III CSS, CWS





LOCATION PLAN
DOVER, NH
NOT TO SCALE

NOTES:

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

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

1. TAX MAP 33, LOT 1-A
2. PROJECT ADDRESS: 48 WHITTIER STREET
3. LOT AREA: 15,394 Sq. Ft., 0.35 Ac.
4. S.C.R.D. BOOK 4716, PAGE 900
5. THE INTENT OF THIS PLAN IS TO SHOW THE EXISTING SOILS CONDITIONS OF TAX MAP 33, LOT 1-A, LOCATED IN DOVER, N.H., AS OF THE SOIL SURVEY. SEE REPORT DATED MARCH 2021.
6. I HEREBY CERTIFY THAT, TO THE BEST OF MY KNOWLEDGE AND BELIEF, THIS PROPERTY DOES NOT FALL WITHIN THE FLOOD PLAIN FLOOD HAZARD REF: FEMA COMMUNITY #330150, MAP 33017C0310D, DATED: MAY 17, 2005.
7. VERTICAL DATUM BASED ON NAVD88 ELEVATIONS. HORIZONTAL DATUM BASED ON NAD83 STATE PLANE. COORDINATES GATHERED USING TOPCON HIPER SR SURVEY GRADE GPS.
8. TOPOGRAPHY PROVIDED IS DEMARCATED AT 1' INTERVALS, AND IS THE RESULT OF A FIELD SURVEY PERFORMED JULY 2020.

SITE SPECIFIC SOILS LEGEND

SYMBOL	SOIL TAXONOMIC NAME	HYDROLOGIC SOIL GROUP
#299B	UDORTHENTS (SMOOTHED)	C
#299C	UDORTHENTS (SMOOTHED)	C
#299D	UDORTHENTS (SMOOTHED)	C
#299E	UDORTHENTS (SMOOTHED)	C
#500A	UDORTHENTS (LOAMY)	C

SLOPE: A = 0-3% B = 3-8% C = 8-15% D = 15-25% E = 25-50% F = 50%+

DENOMINATOR: /VPD = VERY POORLY DRAINED /PD = POORLY DRAINED
/SWPD = SOMEWHAT POORLY DRAINED /MWD = MODERATELY WELL DRAINED

SOIL DATA:

BzB ~ BUXTON SILT LOAM, 3 TO 8% SLOPES

NRCS, SEE WEBSOIL

TEST PIT DATA:

TEST PIT #1
0-32 10YR 4/4 DARK YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
32-36 10YR 2/2 VERY DARK BROWN, FINE SANDY LOAM, MASSIVE, FRIABLE
36-40 10YR 4/4 DARK YELLOWISH BROWN, SILT LOAM, MASSIVE, FRIABLE
40-45 2.5Y 5/4 LIGHT OLIVE BROWN, SILT LOAM, BLOCKY, FIRM
45-68 2.5Y 5/2 GRAYISH BROWN, SILTY CLAY LOAM WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 40"
RESTRICTIVE LAYER @ 45"
GROUND WATER @ N/A
TERMINATED @ 68"
REFUSAL @ N/A
NOTE: 0-32" IS FILL MATERIAL

TEST PIT #2
0-36 10YR 4/4 DARK YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
36-72 2.5Y 5/2 GRAYISH BROWN, SILTY CLAY LOAM WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 36"
RESTRICTIVE LAYER @ 36"
GROUND WATER @ NONE
TERMINATED @ 72"
REFUSAL @ N/A

DEIDRA BENJAMIN, CWS #295

STATE OF NEW HAMPSHIRE
DEIDRA L. BENJAMIN
No. 295
CERTIFIED WETLAND SCIENTIST

JOHN P. HAYES, CSS #87

STATE OF NEW HAMPSHIRE
JOHN P. HAYES III
No. 087
CERTIFIED SOIL SCIENTIST

GRAPHIC SCALE

20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

DOVER PLANNING FILE #

REVISION	DATE	DESCRIPTION

SITE SPECIFIC SOILS MAP
LAND OF
DOVER HOUSING AUTHORITY
48 WHITTIER STREET
DOVER, N.H.
TAX MAP 33, LOT 1-A

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

SCALE : 1 IN. EQUALS 20 FT.
DATE : APRIL 19, 2021
FILE NO. : DB 2020 - 136

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 10676
LICENSED PROFESSIONAL ENGINEER

BERRY SURVEYING & ENGINEERING
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Phone: (603) 332-2863
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Stormwater System Management

Inspection and Maintenance Manual

48 Whittier Street

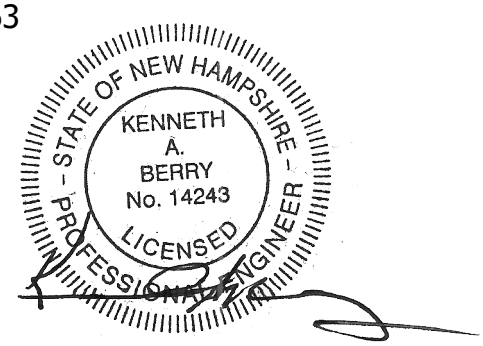
Prepared for

Dover Housing Authority
62 Whittier Street
DOVER, NH 03820

Prepared By

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

File Number
DB2020-136



May 6, 2021

Stormwater System Management

Inspection and Maintenance Manual

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Site Plan Attached – 1 Page

Control of Invasive Plants, NH Department of Agriculture Attached – 4 Pages

NHDES Green SnoPro Utilization Chart

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 March 29, 2021, as revised. See also plan set completed for Dover Housing Authority originally dated March 29, 2021, as revised.

Dover Housing Authority is responsible for the Stormwater System Operation and Maintenance. 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 roadway 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.) It is assumed in this document that the Dover Housing Authority will keep and maintain this property without future transfer.

Dover Housing Authority is proposing the construction of 6 unit building used for temporary housing. The existing driveway will be expanded to provide adequate access and parking for the proposed units.

The following drainage features will all require periodic inspections and maintenance based on this manual in addition to deep sump catch basins throughout:

Rain Garden #101

Conveyance, Diversion, & Treatment Swales

Description: "Swales are stabilized channels designed to convey runoff at non-erosive velocities." (NHDES SWM) A conveyance swale is intended to move surface water runoff from one point to another where as a treatment swale will slow the velocity to a point where sediment will settle out of the stormwater flow. A treatment swale will be constructed to a width of between four and eight feet and have a minimum length of 100 feet. The flow characteristics will also meet design criteria. A conveyance swale will be designed so that there is the capacity to convey the 10 year 24 hour storm event.

Maintenance Considerations: Grassed swales will be inspected twice annually, removing accumulated sediment and gross solids. Grass will be mowed periodically but to a depth of not less than 4 inches. Any damage to the vegetation will be repaired and woody vegetation and invasive vegetation will be removed.

Bioretention System (Rain Gardens)

Description: Rain Gardens, or bioretention areas are located close to the source of runoff. They are intended to integrate with the site landscaping a become an aesthetically attractive opportunity to provide highly effective stormwater treatment. The rain gardens associated with this proposed development contribute toward recharge of surface water run-off into the ground. It is important that sediment be removed from run-off prior to discharge into the bioretention area to preserve the mulch and soil mix ratio. During construction it is important that the ground surface not be exposed to traffic or construction equipment to preserve the infiltration capabilities of the existing soil. Construction specifications are included in the plan set and New Hampshire Stormwater Manual, Volume 2, 4-3 Treatment Practices, 4c Bioretention System.

Maintenance Considerations:
Rain Gardens should be inspected at least twice annually and following any rainfall event exceeding 0.25 inches in a twenty-four hour period. Maintenance rehabilitation will be conducted as warranted by each inspection. Trash and debris will be removed at each inspection.

On an annual basis the infiltration capabilities need to be confirmed by evaluation the drawdown time. If the bioretention system does not drain within 72-hours following a rainfall event, a qualified professional will assess the condition of the rain garden to

determine measures required to restore the infiltration function. This is normally the direct result of sediment accumulation which will be removed to restore the filter media ratio.

Also on an annual basis the vegetation should be inspected to ensure healthy condition. Invasive species need to be removed along with dead or diseased vegetation.

StormTech Chamber System

Description: The StormTech Chamber System is a trademark product of the Advance Drainage System (ADS) company. The purchase and installation of this system will conform to ADS proprietary rights. The design engineer has specifically used the StormTech Chamber specifications in the design of this installation. The design is based on the StormTech SC-740 Chambers. The system is designed to provide additional storage and retention of stormwater within the stone reservoir. The volume in the washed crushed stone and in the specified chambers will act as detention in connection with the Outlet Structure orifice. The system for this applicant and owner consists of **20 chambers in five rows of four chambers.** The orifice located in the outlet structure is located to direct all runoff to the level spreader. The top of the outlet structure is designed to pass larger storm events. Multiple inspection ports are located throughout the system.

Inspection & Maintenance Considerations: The StormTech chamber system is to be buried within washed crushed stone. Stormwater will only enter the stone reservoir after being treated through the Bio-Media of the rain garden. Inspection ports should be inspected semi-annually to be sure the stone reservoir completely drains through the underdrains. Clean-outs are provided to jet the underdrains. Likewise, the orifice cap can be removed for similar cleaning.

ADS / StormTech Contact: Aaron Cheever, PE, Advance Drainage Systems, Inc.
aaron.cheever@ads-pipe.com 1-978-302-0650

Rip Rap Outlet Protection, Level Spreaders, & Emergency Spillways

Description: Outlet Protection consists of a riprap apron or preformed scour hole that is designed to provide velocity reduction of the surface water run-off that is leaving a culvert. The design is dependent on the culvert size, soil conditions, velocity, and quantity of the run-off. There are to be no bend or curves at the intersection of the conduit and apron. Level spreaders are intended to provide a level lip where surface water runoff is allowed to continue downhill closer to sheet flow. The level lip is to be constructed as level as possible for the entire length. Emergency Spillways are rip rap reinforced outlets near the top of the berm that allow runoff to leave a practice during

periods of very high flow. Ref.: NHDES SWM Volume 2, Section 4-6 Conveyance Practices, 6. Outlet Protection and 1. Detention Ponds, Note 3, Page 158.

Inspection: Semi-annual inspection and after a major storm event.

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

CONTROL OF INVASIVE PLANTS

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

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

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

Annual Report

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

The plan that accompanies this manual includes a one sheet, "Drainage Operation & Maintenance Plan". The owner will also maintain a complete set of the approved original design plans.

Respectfully,
BERRY SURVEYING & ENGINEERING

Christopher R. Berry,
Principal President

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

STORMWATER SYSTEM OPERATION AND MAINTENANCE PLAN

Inspection & Maintenance Manual Checklist

48 Whittier Street – Dover, NH
Dover Housing Authority
62 Whittier Street
Dover, NH 03820

☑	Date	BMP / System	Minimum Inspection Frequency	Minimum Inspection Requirements	Maintenance / Cleanout Threshold
		Pavement Sweeping	Three Times Per Year	N/A	N/A
		Litter/Trash Removal	Routinely	Inspect dumpsters, outdoor waste receptacles area, and yard areas.	Parcel will be free of litter/trash.
		Deicing Agents	N/A	N/A	Use salt as the primary agent for roadway safety during winter.
		Invasive Species	Two times per year.	Inspect for Invasive Species	Remove and dispose invasive species.
		Closed Drainage System:			
		Drainage Pipes	1 time per 2 years	Check for sediment accumulation & clogging.	Less than 2" sediment depth
		Deep Sump Catch Basins / Outlet Structures	2 times per year	Check for sediment accumulation & clogging.	Sediment accumulated to a depth of 2 feet.

☑	Date	BMP / System	Minimum Inspection Frequency	Minimum Inspection Requirements	Maintenance / Cleanout Threshold
		Rain Gardens	2 times per year	Check for sediment and debris accumulation buildup.	Remove sediment & debris when required. Remove Invasive Species
		Riprap Outlet Protection	Annually	Check for sediment buildup and structure damage.	Remove excess sediment and repair damage.
		Winter Maintenance	Ongoing	Remove snow as directed.	Ongoing
		Post Winter Maintenance	Annually	Remove excess sand, gross solids, and repair vegetation and plantings	Parcel will be free of excess sand, litter/trash. Vegetation per approved plans.
		Annual Report	1 time per year	Submit Annual Report to Dover Engineering Dept. and kept on file by the owner.	Report to be submitted on or before December 15th each year. Make copies available to NHDES upon request.

Inspection Check List: Page 3

The following drainage features will all require periodic inspections and maintenance based on this manual in addition to deep sump catch basins throughout:

Rain Garden #101

Inspection Notes:

STORMWATER SYSTEM OPERATION AND MAINTENANCE PLAN

Inspection & Maintenance Manual Log Form

48 Whittier Street – Dover, NH
Dover Housing Authority
62 Whittier Street
Dover, NH 03820

BMP / System	Date Inspected	Inspector	Cleaning/Repair (List Items & Comments)	Repair Date	Performed By:

STORMWATER SYSTEM OPERATION AND MAINTENANCE PLAN

Deicing Log Form

48 Whittier Street – Dover, NH
Dover Housing Authority
62 Whittier Street
Dover, NH 03820

Date	Amount Applied	Performed By:	Date	Amount Applied	Performed By:

STORMWATER SYSTEM OPERATION & MAINTENANCE PLAN CERTIFICATION

Owner	Responsibility
Name: Dover Housing Authority Eric Sanderson, Capital Improvements Coordinator Address: 62 Whittier Street Dover, NH 03820 Telephone: 603-742-5804 ext 143	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:

48 Whittier Street – Dover, NH
Dover Housing Authority
62 Whittier Street
Dover, NH 03820

NOTES:

1.) THE INTENT OF THIS PLAN SET IS TO DEMONSTRATE THE DRAINAGE INFRASTRUCTURE WHICH WILL REQUIRE INSPECTION AND MAINTENANCE DURING CONSTRUCTION AND POST–CONSTRUCTION AT 48 WHITTIER STREET. THIS PLAN IS INTENDED TO ACCOMPANY THE STORMWATER SYSTEM MANAGEMENT: INSPECTION AND MAINTENANCE MANUAL.

2.) OWNER & APPLICANT: DOVER HOUSING AUTHORITY
62 WHITTIER STREET
DOVER, NH 03820

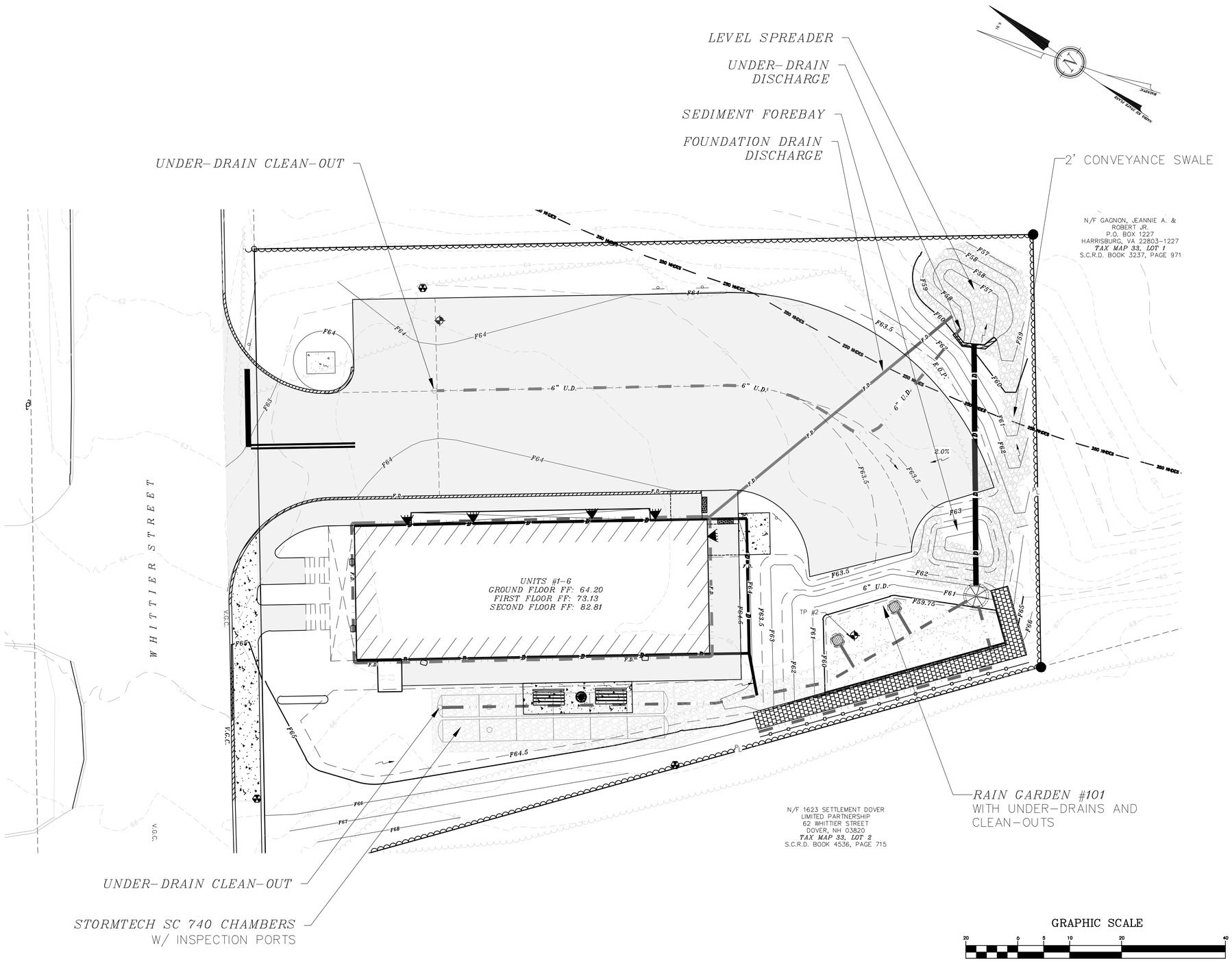
3.) THE PROJECT PARCEL IS TAX MAP 33, LOT 1–A OF THE CITY OF DOVER TAX ASSESSOR'S MAPS.

4.) THE PROJECT PARCEL CONTAINS 0.35 ACRES OR 15,394 SQUARE FEET AREA OF LAND.

5.) TITLE REFERENCE FOR THE PROJECT PARCEL IS THE STRAFFORD COUNTY REGISTRY OF DEEDS, (S.C.R.D.) BOOK NO. 4716, PAGE NO. 900.

6.) PLANS PUBLISHED AT HALF–SCALE OR 11 X 17, HAVE A SCALE TWICE THAT OF THE PUBLISHED SCALE.

7.) THE INTENT OF THIS PLAN IS TO DEMONSTRATE THE DRAINAGE INFRASTRUCTURE THAT WILL REQUIRE PERIODIC INSPECTION AND MAINTENANCE BOTH DURING CONSTRUCTION AND POST CONSTRUCTION. THIS PLAN WILL ACCOMPANY A DOCUMENT ENTITLED "STORMWATER SYSTEM MANAGEMENT: INSPECTION AND MAINTENANCE MANUAL, 48 WHITTIER STREET".



DOVER PLANNING FILE #

REVISION	DATE	DESCRIPTION

STORMWATER INSPECTION & MAINTENANCE PLAN
LAND OF
DOVER HOUSING AUTHORITY
48 WHITTIER STREET
DOVER, N.H.
TAX MAP 33, LOT 1–A

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

SCALE : 1 IN. EQUALS 10 FT.
DATE : MAY 6, 2021
FILE NO. : DB 2020 – 136

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

Control of Invasive Plants

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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.

Welcome to New Hampshire's Watershed Report Cards built from the 2018, 305(b)/303(d)

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

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

How are the Surface Water Quality Assessment determinations made?

All readily available data with reliable Quality Assurance/Quality Control is used in the biennial surface water quality assessments. For a full understanding of how the Surface Water Quality Standards (Env-Wq 1700) are translated into surface water quality assessments we urge the reader to review the 2018 Consolidated Assessment and Listing Methodology (CALM) at https://www.des.nh.gov/organization/divisions/water/wmb/swqa/2018/documents/r-wd-19-04.pdf.

Where can I find more advanced mapping resources?

GIS files are available by assessment cycle at ftp://pubftp.nh.gov/DES/wmb/WaterQuality/SWQA/2018/GIS

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

The web mapping tool allows you to download the data used in the assessment of the primary contact and aquatic life designated uses by clicking on the "Data Access Waterbody Data (Aquatic Life and Swimming Uses)" link for any assessment unit. (https://www.des.nh.gov/organization/divisions/water/wmb/swqa/assessment-viewers.htm)

How are assessments coded in the report card?

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

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

* TMDL stands for Total Maximum Daily Load studies (http://des.nh.gov/organization/divisions/water/wmb/tmdl/index.htm)

WATERSHED 305(b) ASSESSMENT SUMMARY REPORT:

HUC 12 010600030608

HUC 12 NAME LOWER COCHECO RIVER

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

Assessment Cycle 2018

Good		Full Support Good
Marginal		Full Support Marginal
Likely Good		Insufficient Information – Potentially Full Support
No Data		No Data
Likely Bad		Insufficient Information – Potentially Not Support
Poor		Not Support Marginal
Severe		Not Support Severe

ASSESSMENT UNIT ID	MAP LABEL	ASSESSMENT UNIT NAME	AQUATIC LIFE	SWIMMING	BOATING	FISH CONSUMP.
NHEST600030608-01	E*01	COCHECO RIVER	5-P	5-P	4A-M	5-M
NHIMP600030607-02	I*0607-02	COCHECO RIVER - GONIC DAM POND	5-M	4A-P	2-G	4A-M
NHIMP600030607-03	I*0607-03	COCHECO RIVER - MILL POND DAM	3-PAS	3-ND	3-ND	4A-M
NHIMP600030608-02	I*02	COCHECO RIVER - WATSON WALDRON DAM	5-M	2-G	2-G	4A-M
NHIMP600030608-04	I*04	COCHECO RIVER - CENTRAL AVE DAM	5-M	2-G	2-G	4A-M
NHIMP600030608-05	I*05	CONSERVATION POND DAM	3-ND	3-ND	3-ND	4A-M
NHIMP600030608-06	I*06	FRESH CREEK - FARM POND	3-ND	3-ND	3-ND	4A-M
NHLAK600030608-01	L*01	FRESH CREEK POND	5-M	4A-P	2-G	4A-M
NHLAK600030608-02	L*02	UNNAMED POND	3-ND	3-PAS	3-PAS	4A-M
NHRIV600030607-12	R*0607-12	UNNAMED TRIBUTARY - TO COCHECO RIVER	3-ND	3-ND	3-ND	4A-M
NHRIV600030607-13	R*0607-13	UNNAMED BROOK - TO COCHECO RIVER	3-ND	3-ND	3-ND	4A-M
NHRIV600030607-14	R*0607-14	COCHECO RIVER	3-ND	3-ND	3-ND	4A-M
NHRIV600030607-15	R*0607-15	COCHECO RIVER	5-M	2-G	2-G	4A-M
NHRIV600030608-02	R*02	BLACKWATER BROOK-CLARK BROOK	3-ND	4A-P	3-ND	4A-M
NHRIV600030608-03	R*03	COCHECO RIVER - UNNAMED BROOK	5-M	4A-M	2-G	4A-M
NHRIV600030608-04	R*04	REYNERS BROOK	3-ND	4A-P	3-ND	4A-M
NHRIV600030608-05	R*05	COCHECO RIVER	5-M	4A-M	2-G	4A-M
NHRIV600030608-06	R*06	INDIAN BROOK	5-P	4A-P	3-ND	4A-M
NHRIV600030608-07	R*07	EMERSON BROOK	3-ND	3-ND	3-ND	4A-M
NHRIV600030608-08	R*08	FRESH CREEK - TWOMBLY BROOK	5-P	4A-M	3-ND	4A-M
NHRIV600030608-09	R*09	UNNAMED BROOK - ROLLINS BROOK	3-ND	3-ND	3-ND	4A-M
NHRIV600030608-10	R*10	ROLLINS BROOK	5-P	4A-P	3-ND	4A-M
NHRIV600030608-11	R*11	FRESH CREEK	3-PNS	4A-P	4A-M	4A-M
NHRIV600030608-12	R*12	UNNAMED TRIBUTARY - TO COCHECO RIVER (DOVER (DOWNSTREAM OF PORTLAND AVE))	3-ND	3-ND	3-ND	4A-M
NHRIV600030608-13	R*13	UNNAMED TRIBUTARY - TO COCHECO RIVER - (DOVER (UPSTREAM OF ATLANTIC AVE))	3-ND	3-ND	3-ND	4A-M
NHRIV600030608-14	R*14	UNNAMED TRIB. TO COCHECO RIVER, DOVER (FROM LANDFILL)	5-M	3-ND	3-ND	4A-M
NHRIV600030608-15	R*15	BERRY BROOK	5-M	4A-P	2-G	4A-M

WATERSHED 305(b) ASSESSMENT SUMMARY REPORT:

HUC 12 010600030608

HUC 12 NAME LOWER COCHECO RIVER

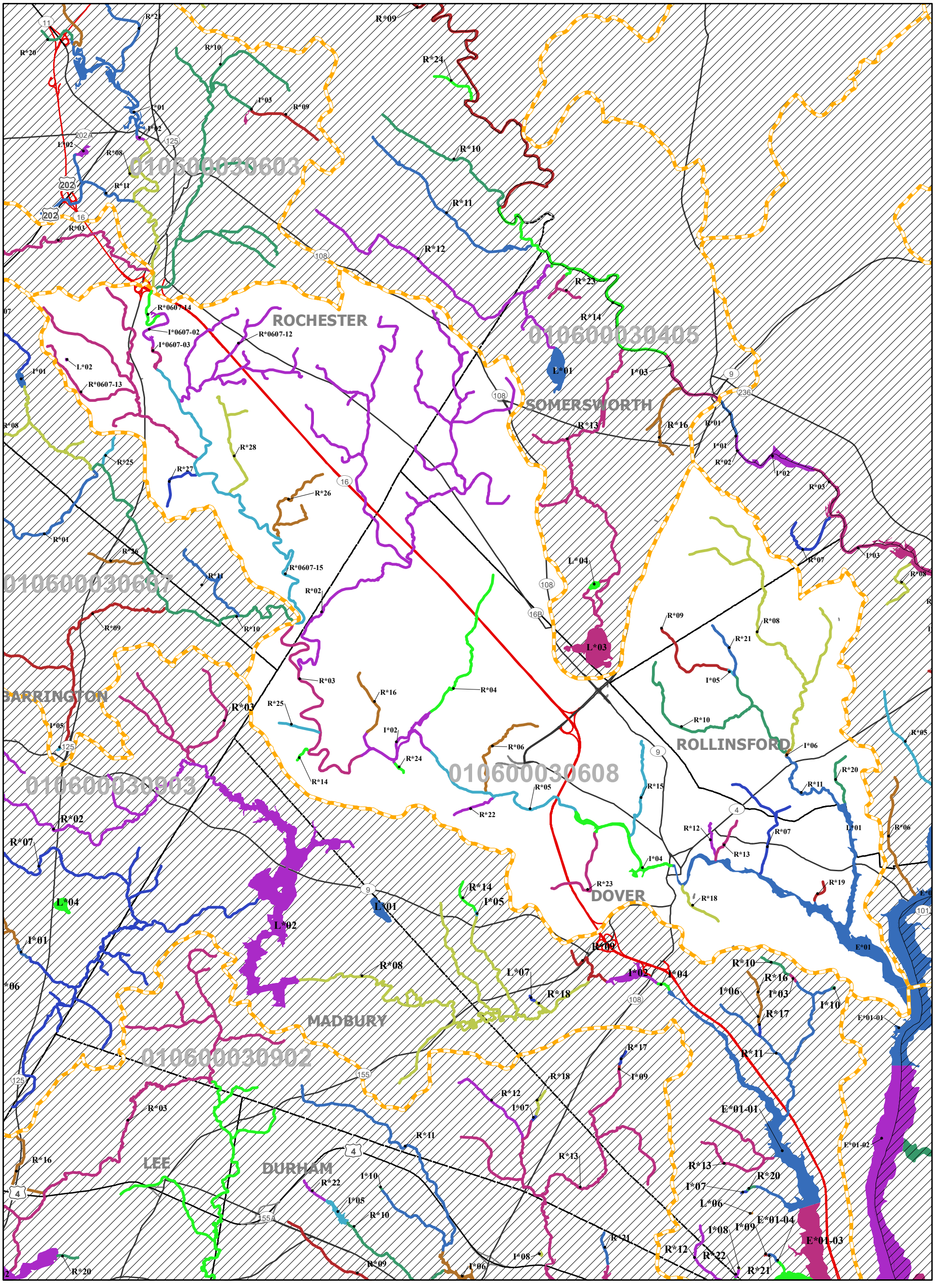
(Locator map on next page only applies to this HUC12)

Assessment Cycle 2018

Good		Full Support Good
Marginal		Full Support Marginal
Likely Good		Insufficient Information – Potentially Full Support
No Data		No Data
Likely Bad		Insufficient Information – Potentially Not Support
Poor		Not Support Marginal
Severe		Not Support Severe

ASSESSMENT UNIT ID	MAP LABEL	ASSESSMENT UNIT NAME	AQUATIC LIFE	SWIMMING	BOATING	FISH CONSUMP.
NHRIV600030608-16	R*16	JACKSON BROOK	3-ND	4A-P	3-ND	4A-M
NHRIV600030608-18	R*18	UNNAMED BROOK	3-ND	3-ND	3-ND	4A-M
NHRIV600030608-19	R*19	UNNAMED BROOK	3-ND	3-ND	3-ND	4A-M
NHRIV600030608-20	R*20	UNNAMED BROOK	3-ND	3-ND	3-ND	4A-M
NHRIV600030608-21	R*21	UNNAMED BROOK - TO ROLLINS BROOK	3-ND	3-ND	3-ND	4A-M
NHRIV600030608-22	R*22	HORN BROOK	3-ND	3-ND	3-ND	4A-M
NHRIV600030608-23	R*23	UNNAMED BROOK	3-ND	3-ND	3-ND	4A-M
NHRIV600030608-24	R*24	UNNAMED BROOK	3-ND	3-ND	3-ND	4A-M
NHRIV600030608-25	R*25	UNNAMED BROOK	3-ND	3-ND	3-ND	4A-M
NHRIV600030608-26	R*26	UNNAMED BROOK	3-ND	3-ND	3-ND	4A-M
NHRIV600030608-27	R*27	UNNAMED BROOK	3-ND	3-ND	3-ND	4A-M
NHRIV600030608-28	R*28	UNNAMED BROOK	3-ND	3-ND	3-ND	4A-M

AUIDs For HUC12: 010600030608 - Lower Cocheco River



HUC12 Boundaries
Town Boundaries
Major Roads
Interstate Highway
US Highway
State Highway

Assessment Unit Coloring
AUs Ending with:
0 =
1 =
2 =
3 =
4 =
5 =
6 =
7 =
8 =
9 =

N
W E
S

Abbrv. Label	HUC 12
L* 03	010 700060201

AUID = NH L AK 700060201 - 03

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

0 0.6 1.2 1.8 2.4 Miles

Scale:1:59,820

S:\WD-Watershed\WQ_Planning\305b_303d\2018\AUIDs\HUC12Maps

Assessment Unit ID NHRIV600030608-05 | Size 2.0600 MILES

Assessment Unit Name COCHECO RIVER | Beach N

Primary Town DOVER | Assessment Unit Category*~ 5-M

2018, 305(b)/303(d) - All Reviewed Parameters by Assessment Unit

Designated Use Description	*Desig. Use Category	Parameter Name	Parameter Threatened (Y/N)	Last Sample	Last Exceed	Parameter Category*	TMDL Priority
Aquatic Life Integrity	5-M	ALUMINUM	N	1999	1999	3-ND	
		AMMONIA (TOTAL)	N	2005	N/A	3-ND	
		ARSENIC	N	2004	N/A	3-ND	
		CADMIUM	N	1999	1999	3-ND	
		CHLORIDE	N	2013	N/A	3-PAS	
		COPPER	N	1999	N/A	3-ND	
		DISSOLVED OXYGEN SATURATION	N	2013	N/A	3-PAS	
		IRON	N	2004	N/A	3-ND	
		LEAD	N	1999	1999	3-ND	
		OXYGEN, DISSOLVED	N	2013	N/A	3-PAS	
		PHOSPHORUS (TOTAL)	N	2013	NLV	3-PNS	
		TURBIDITY	N	2013	N/A	3-PAS	
		ZINC	N	1999	N/A	3-ND	
		pH	N	2013	2009	5-M	LOW
Fish Consumption	4A-M	ARSENIC	N	2004	2004	3-ND	
		COPPER	N	1999	N/A	3-ND	
		Mercury	N			4A-M	
		ZINC	N	1999	N/A	3-ND	
Potential Drinking Water Supply	2-G	ARSENIC	N	2004	2004	3-ND	
		COPPER	N	1999	N/A	3-ND	
		ESCHERICHIA COLI	N	2013	2013	3-PNS	
		IRON	N	2004	2004	3-ND	
		ZINC	N	1999	N/A	3-ND	
Primary Contact Recreation	4A-M	Escherichia coli	N	2013	2013	4A-M	
Secondary Contact Recreation	2-G	ESCHERICHIA COLI	N	2013	N/A	2-G	
Wildlife	3-ND						

Severe	Poor	Likely Bad	No Data	Likely Good	Marginal	Good
Not Supporting, Severe	Not Supporting, Marginal	Insufficient Information – Potentially Full Supporting	No Data	Insufficient Information – Potentially Full Supporting	Full Support, Marginal	Full Support, Good

*DES Categories; 2-G = Supports Parameter well above criteria, 2-M = Supports Parameter marginally above criteria, 2-OBS = Exceeds WQ criteria but natural therefore not a WQ exceedence, 3-ND = Insufficient Information/No data, 3-PAS= Insufficient Information/Potentially Attaining Standard, 3-PNS= Insufficient Information/Potentially Not Attaining Standard, (4A=Impaired/TMDL Completed, 4B=Impaired/Other Measure will rectify Impairment, 4C=Impaired/Non-Pollutant, 5=Impaired/TMDL needed) M=Marginal Impairment, P=Severe Impairment, T=Threatened (http://des.nh.gov/organization/divisions/water/wmb/swqa/index.htm)

Cycle	Assessment Unit ID (AUID)	Assessment Unit Name	Town(s) Primary Town is Listed First	Water Size	Size Unit	Designated Use Description	Parameter Name	NHDES Category	Threatened	TMDL Priority
2018	NHRIV600030607-01	ISINGLASS RIVER	BARRINGTON, ROCHESTER	7.336	MILES	Aquatic Life Integrity	pH	5-P	N	LOW
2018	NHRIV600030607-03	AYERS POND BROOK	BARRINGTON	0.128	MILES	Aquatic Life Integrity	Oxygen, Dissolved	5-M	N	LOW
2018	NHRIV600030607-03	AYERS POND BROOK	BARRINGTON	0.128	MILES	Aquatic Life Integrity	pH	5-M	N	LOW
2018	NHRIV600030607-04	AYERS POND BROOK	BARRINGTON	1.691	MILES	Aquatic Life Integrity	Oxygen, Dissolved	5-M	N	LOW
2018	NHRIV600030607-04	AYERS POND BROOK	BARRINGTON	1.691	MILES	Aquatic Life Integrity	pH	5-M	N	LOW
2018	NHRIV600030607-08	HANSON BROOK	ROCHESTER, BARRINGTON	2.411	MILES	Aquatic Life Integrity	pH	5-M		LOW
2018	NHRIV600030607-09	GREEN HILL BROOK	BARRINGTON	3.224	MILES	Aquatic Life Integrity	pH	5-M	N	LOW
2018	NHRIV600030607-10	ISINGLASS RIVER	ROCHESTER, BARRINGTON	3.796	MILES	Aquatic Life Integrity	pH	5-M	N	LOW
2018	NHRIV600030607-15	COCHECO RIVER	ROCHESTER	4.414	MILES	Aquatic Life Integrity	Iron	5-M	N	LOW
2018	NHRIV600030607-15	COCHECO RIVER	ROCHESTER	4.414	MILES	Aquatic Life Integrity	pH	5-M	N	LOW
2018	NHRIV600030607-16	SCRUTON POND OUTLET BROOK	BARRINGTON	0.071	MILES	Aquatic Life Integrity	Oxygen, Dissolved	5-P	N	LOW
2018	NHRIV600030607-16	SCRUTON POND OUTLET BROOK	BARRINGTON	0.071	MILES	Aquatic Life Integrity	pH	5-P	N	LOW
2018	NHRIV600030608-03	COCHECO RIVER - UNNAMED BROOK	DOVER, ROCHESTER	3.267	MILES	Aquatic Life Integrity	pH	5-M	N	LOW
2018	NHRIV600030608-05	COCHECO RIVER	DOVER	2.060	MILES	Aquatic Life Integrity	pH	5-M	N	LOW
2018	NHRIV600030608-06	INDIAN BROOK	DOVER	1.106	MILES	Aquatic Life Integrity	Chloride	5-P	N	LOW
2018	NHRIV600030608-08	FRESH CREEK - TWOMBLY BROOK	ROLLINSFORD, SOMERSWORTH	4.983	MILES	Aquatic Life Integrity	Oxygen, Dissolved	5-P	N	LOW
2018	NHRIV600030608-08	FRESH CREEK - TWOMBLY BROOK	ROLLINSFORD, SOMERSWORTH	4.983	MILES	Aquatic Life Integrity	pH	5-M	N	LOW
2018	NHRIV600030608-10	ROLLINS BROOK	ROLLINSFORD	2.856	MILES	Aquatic Life Integrity	Oxygen, Dissolved	5-P	N	LOW
2018	NHRIV600030608-10	ROLLINS BROOK	ROLLINSFORD	2.856	MILES	Aquatic Life Integrity	pH	5-M	N	LOW
2018	NHRIV600030608-14	UNNAMED TRIB. TO COCHECO RIVER,	DOVER	0.169	MILES	Aquatic Life Integrity	Iron	5-M	N	LOW
2018	NHRIV600030608-15	BERRY BROOK	DOVER	1.106	MILES	Aquatic Life Integrity	Benthic-Macroinvertebrate Bioassessments	5-M	N	LOW
2018	NHRIV600030608-15	BERRY BROOK	DOVER	1.106	MILES	Aquatic Life Integrity	Chloride	5-M	N	LOW
2018	NHRIV600030701-01	LAMPREY RIVER - AND HEADWATER	NORTHWOOD, DEERFIELD	13.652	MILES	Aquatic Life Integrity	Oxygen, Dissolved	5-P	N	LOW
2018	NHRIV600030701-01	LAMPREY RIVER - AND HEADWATER	NORTHWOOD, DEERFIELD	13.652	MILES	Aquatic Life Integrity	pH	5-P	N	LOW
2018	NHRIV600030701-08	HARTFORD BROOK	DEERFIELD	10.734	MILES	Aquatic Life Integrity	Aluminum	5-M	N	LOW
2018	NHRIV600030701-08	HARTFORD BROOK	DEERFIELD	10.734	MILES	Aquatic Life Integrity	Benthic-Macroinvertebrate Bioassessments	5-P	N	LOW
2018	NHRIV600030701-08	HARTFORD BROOK	DEERFIELD	10.734	MILES	Aquatic Life Integrity	pH	5-M	N	LOW
2018	NHRIV600030701-09	LAMPREY RIVER	DEERFIELD	7.767	MILES	Aquatic Life Integrity	Oxygen, Dissolved	5-P	N	LOW
2018	NHRIV600030701-09	LAMPREY RIVER	DEERFIELD	7.767	MILES	Aquatic Life Integrity	pH	5-P	N	LOW
2018	NHRIV600030701-13	LAMPREY RIVER	DEERFIELD	0.041	MILES	Aquatic Life Integrity	pH	5-M	N	LOW
2018	NHRIV600030702-06	NORTH BRANCH RIVER - UNNAMED	DEERFIELD, CANDIA	5.185	MILES	Aquatic Life Integrity	Oxygen, Dissolved	5-P	N	LOW
2018	NHRIV600030702-06	NORTH BRANCH RIVER - UNNAMED	DEERFIELD, CANDIA	5.185	MILES	Aquatic Life Integrity	pH	5-P	N	LOW
2018	NHRIV600030702-07	NORTH BRANCH RIVER - UNNAMED	CANDIA, DEERFIELD	10.013	MILES	Aquatic Life Integrity	Oxygen, Dissolved	5-P	N	LOW
2018	NHRIV600030702-07	NORTH BRANCH RIVER - UNNAMED	CANDIA, DEERFIELD	10.013	MILES	Aquatic Life Integrity	pH	5-M	N	LOW
2018	NHRIV600030703-01	UNNAMED BROOK - TO ONWAY LAKE	RAYMOND, CANDIA	5.450	MILES	Aquatic Life Integrity	Benthic-Macroinvertebrate Bioassessments	5-P	N	LOW
2018	NHRIV600030703-01	UNNAMED BROOK - TO ONWAY LAKE	RAYMOND, CANDIA	5.450	MILES	Aquatic Life Integrity	pH	5-M	N	LOW
2018	NHRIV600030703-04	DUDLEY BROOK - UNNAMED BROOK	RAYMOND, DEERFIELD,	4.340	MILES	Aquatic Life Integrity	Lead	5-M	N	LOW
2018	NHRIV600030703-04	DUDLEY BROOK - UNNAMED BROOK	RAYMOND, DEERFIELD,	4.340	MILES	Aquatic Life Integrity	Oxygen, Dissolved	5-P	N	LOW
2018	NHRIV600030703-04	DUDLEY BROOK - UNNAMED BROOK	RAYMOND, DEERFIELD,	4.340	MILES	Aquatic Life Integrity	pH	5-M	N	LOW
2018	NHRIV600030703-05	LAMPREY RIVER	RAYMOND	2.647	MILES	Aquatic Life Integrity	pH	5-M	N	LOW
2018	NHRIV600030703-09	LAMPREY RIVER	RAYMOND	2.295	MILES	Aquatic Life Integrity	pH	5-M	N	LOW
2018	NHRIV600030703-10	LAMPREY RIVER	RAYMOND	0.558	MILES	Aquatic Life Integrity	pH	5-M	N	LOW
2018	NHRIV600030703-11	LAMPREY RIVER	EPPING, RAYMOND	3.270	MILES	Aquatic Life Integrity	Aluminum	5-M	N	LOW
2018	NHRIV600030703-11	LAMPREY RIVER	EPPING, RAYMOND	3.270	MILES	Aquatic Life Integrity	pH	5-M	N	LOW
2018	NHRIV600030703-14	PAWTUCKAWAY RIVER - UNNAMED	NOTTINGHAM, EPPING,	6.751	MILES	Aquatic Life Integrity	Oxygen, Dissolved	5-P	N	LOW
2018	NHRIV600030703-14	PAWTUCKAWAY RIVER - UNNAMED	NOTTINGHAM, EPPING,	6.751	MILES	Aquatic Life Integrity	pH	5-M	N	LOW
2018	NHRIV600030703-15	LAMPREY RIVER	EPPING	4.692	MILES	Aquatic Life Integrity	Oxygen, Dissolved	5-M	N	LOW
2018	NHRIV600030703-15	LAMPREY RIVER	EPPING	4.692	MILES	Aquatic Life Integrity	pH	5-M	N	LOW
2018	NHRIV600030703-17	UNNAMED BROOK - TO LAMPREY RIVER	EPPING	3.280	MILES	Aquatic Life Integrity	pH	5-M	N	LOW
2018	NHRIV600030703-18	LAMPREY RIVER	EPPING	3.247	MILES	Aquatic Life Integrity	pH	5-M	N	LOW
2018	NHRIV600030703-20	RUM BROOK	EPPING	4.791	MILES	Aquatic Life Integrity	pH	5-M	N	LOW

2018	NHRIV600030607-16	SCRUTON POND OUTLET B	BARRINGTON	0.071	MILES	Aquatic Life Integrity	Oxygen, Dissolved	5-P			Non-ORW
2018	NHRIV600030607-16	SCRUTON POND OUTLET B	BARRINGTON	0.071	MILES	Aquatic Life Integrity	pH	5-P			Non-ORW
2018	NHRIV600030608-02	BLACKWATER BROOK-CLAI	ROCHESTER, D	15.228	MILES	Primary Contact Recreation	Escherichia coli	4A-P	9/21/2010	NEW HAMPSHIRE STATEWIDE BACTERIA	39272 Non-ORW
2018	NHRIV600030608-03	COCHECO RIVER - UNNAM	DOVER, ROCHI	3.267	MILES	Aquatic Life Integrity	Dissolved oxygen saturation	5-M			Non-ORW
2018	NHRIV600030608-03	COCHECO RIVER - UNNAM	DOVER, ROCHI	3.267	MILES	Aquatic Life Integrity	pH	5-M			Non-ORW
2018	NHRIV600030608-03	COCHECO RIVER - UNNAM	DOVER, ROCHI	3.267	MILES	Primary Contact Recreation	Escherichia coli	4A-M	9/21/2010	NEW HAMPSHIRE STATEWIDE BACTERIA	39272 Non-ORW
2018	NHRIV600030608-04	REYNERS BROOK	DOVER	1.77	MILES	Primary Contact Recreation	Escherichia coli	4A-P	9/21/2010	NEW HAMPSHIRE STATEWIDE BACTERIA	39272 Non-ORW
2018	NHRIV600030608-05	COCHECO RIVER	DOVER	2.06	MILES	Aquatic Life Integrity	pH	5-M			Non-ORW
2018	NHRIV600030608-05	COCHECO RIVER	DOVER	2.06	MILES	Primary Contact Recreation	Escherichia coli	4A-M	9/21/2010	NEW HAMPSHIRE STATEWIDE BACTERIA	39272 Non-ORW
2018	NHRIV600030608-06	INDIAN BROOK	DOVER	1.106	MILES	Aquatic Life Integrity	Chloride	5-P			Non-ORW
2018	NHRIV600030608-06	INDIAN BROOK	DOVER	1.106	MILES	Primary Contact Recreation	Escherichia coli	4A-P	9/21/2010	NEW HAMPSHIRE STATEWIDE BACTERIA	39272 Non-ORW
2018	NHRIV600030608-08	FRESH CREEK - TWOMBLY	ROLLINSFORD,	4.983	MILES	Aquatic Life Integrity	Dissolved oxygen saturation	5-M			Non-ORW
2018	NHRIV600030608-08	FRESH CREEK - TWOMBLY	ROLLINSFORD,	4.983	MILES	Aquatic Life Integrity	Oxygen, Dissolved	5-P			Non-ORW
2018	NHRIV600030608-08	FRESH CREEK - TWOMBLY	ROLLINSFORD,	4.983	MILES	Aquatic Life Integrity	pH	5-M			Non-ORW
2018	NHRIV600030608-08	FRESH CREEK - TWOMBLY	ROLLINSFORD,	4.983	MILES	Primary Contact Recreation	Escherichia coli	4A-M	9/21/2010	NEW HAMPSHIRE STATEWIDE BACTERIA	39272 Non-ORW
2018	NHRIV600030608-10	ROLLINS BROOK	ROLLINSFORD	2.856	MILES	Aquatic Life Integrity	Dissolved oxygen saturation	5-M			Non-ORW
2018	NHRIV600030608-10	ROLLINS BROOK	ROLLINSFORD	2.856	MILES	Aquatic Life Integrity	Oxygen, Dissolved	5-P			Non-ORW
2018	NHRIV600030608-10	ROLLINS BROOK	ROLLINSFORD	2.856	MILES	Aquatic Life Integrity	pH	5-M			Non-ORW
2018	NHRIV600030608-10	ROLLINS BROOK	ROLLINSFORD	2.856	MILES	Primary Contact Recreation	Escherichia coli	4A-P	9/21/2010	NEW HAMPSHIRE STATEWIDE BACTERIA	39272 Non-ORW
2018	NHRIV600030608-11	FRESH CREEK	ROLLINSFORD,	1.126	MILES	Primary Contact Recreation	Escherichia coli	4A-P	9/21/2010	NEW HAMPSHIRE STATEWIDE BACTERIA	39272 Non-ORW
2018	NHRIV600030608-14	UNNAMED TRIB. TO COCH	DOVER	0.169	MILES	Aquatic Life Integrity	Iron	5-M			Non-ORW
2018	NHRIV600030608-15	BERRY BROOK	DOVER	1.106	MILES	Aquatic Life Integrity	Benthic-Macroinvertebrate Bioassessmer	5-M			Non-ORW
2018	NHRIV600030608-15	BERRY BROOK	DOVER	1.106	MILES	Aquatic Life Integrity	Chloride	5-M			Non-ORW
2018	NHRIV600030608-15	BERRY BROOK	DOVER	1.106	MILES	Primary Contact Recreation	Escherichia coli	4A-P	9/21/2010	NEW HAMPSHIRE STATEWIDE BACTERIA	39272 Non-ORW
2018	NHRIV600030608-16	JACKSON BROOK	DOVER	0.724	MILES	Primary Contact Recreation	Escherichia coli	4A-P	9/21/2010	NEW HAMPSHIRE STATEWIDE BACTERIA	39272 Non-ORW
2018	NHRIV600030701-01	LAMPREY RIVER - AND HE/	NORTHWOOD,	13.652	MILES	Aquatic Life Integrity	Dissolved oxygen saturation	5-M			Non-ORW
2018	NHRIV600030701-01	LAMPREY RIVER - AND HE/	NORTHWOOD,	13.652	MILES	Aquatic Life Integrity	Oxygen, Dissolved	5-P			Non-ORW
2018	NHRIV600030701-01	LAMPREY RIVER - AND HE/	NORTHWOOD,	13.652	MILES	Aquatic Life Integrity	pH	5-P			Non-ORW
2018	NHRIV600030701-08	HARTFORD BROOK	DEERFIELD	10.734	MILES	Aquatic Life Integrity	Aluminum	5-M			Non-ORW
2018	NHRIV600030701-08	HARTFORD BROOK	DEERFIELD	10.734	MILES	Aquatic Life Integrity	Benthic-Macroinvertebrate Bioassessmer	5-P			Non-ORW
2018	NHRIV600030701-08	HARTFORD BROOK	DEERFIELD	10.734	MILES	Aquatic Life Integrity	pH	5-M			Non-ORW
2018	NHRIV600030701-09	LAMPREY RIVER	DEERFIELD	7.767	MILES	Aquatic Life Integrity	Dissolved oxygen saturation	5-M			Non-ORW
2018	NHRIV600030701-09	LAMPREY RIVER	DEERFIELD	7.767	MILES	Aquatic Life Integrity	Oxygen, Dissolved	5-P			Non-ORW
2018	NHRIV600030701-09	LAMPREY RIVER	DEERFIELD	7.767	MILES	Aquatic Life Integrity	pH	5-P			Non-ORW
2018	NHRIV600030701-13	LAMPREY RIVER	DEERFIELD	0.041	MILES	Aquatic Life Integrity	Dissolved oxygen saturation	5-M			Non-ORW
2018	NHRIV600030701-13	LAMPREY RIVER	DEERFIELD	0.041	MILES	Aquatic Life Integrity	pH	5-M			Non-ORW
2018	NHRIV600030701-14	LAMPREY RIVER	RAYMOND, DE	6.776	MILES						Review OneStop GIS
2018	NHRIV600030702-01	TR NORTH BRANCH RIVER	CANDIA	8.629	MILES						ORW
2018	NHRIV600030702-02	UNNAMED BROOKS - TO N	CANDIA	3.68	MILES						ORW
2018	NHRIV600030702-03	UNNAMED BROOK - FROM	DEERFIELD	0.131	MILES						ORW
2018	NHRIV600030702-05	NORTH BRANCH RIVER - U	DEERFIELD, CA	3.563	MILES						ORW
2018	NHRIV600030702-06	NORTH BRANCH RIVER - U	DEERFIELD, CA	5.185	MILES						ORW
2018	NHRIV600030702-07	NORTH BRANCH RIVER - U	CANDIA, DEERI	10.013	MILES						ORW
2018	NHRIV600030702-08	UNNAMED BROOK - TO NC	CANDIA, RAYM	1.171	MILES						ORW
2018	NHRIV600030702-09	NORTH BRANCH RIVER	RAYMOND, CA	0.974	MILES						Review OneStop GIS
2018	NHRIV600030702-10	UNNAMED BROOK	CANDIA	1.071	MILES						ORW
2018	NHRIV600030702-11	UNNAMED BROOK	CANDIA	0.839	MILES						ORW
2018	NHRIV600030702-12	UNNAMED BROOK	DEERFIELD	0.59	MILES						ORW
2018	NHRIV600030703-01	UNNAMED BROOK - TO OI	RAYMOND, CA	5.45	MILES	Aquatic Life Integrity	Benthic-Macroinvertebrate Bioassessmer	5-P			Non-ORW
2018	NHRIV600030703-01	UNNAMED BROOK - TO OI	RAYMOND, CA	5.45	MILES	Aquatic Life Integrity	Habitat Assessment (Streams)	4C-M			Non-ORW
2018	NHRIV600030703-01	UNNAMED BROOK - TO OI	RAYMOND, CA	5.45	MILES	Aquatic Life Integrity	pH	5-M			Non-ORW
2018	NHRIV600030703-04	DUDLEY BROOK - UNNAMI	RAYMOND, DE	4.34	MILES	Aquatic Life Integrity	Dissolved oxygen saturation	5-M			Non-ORW
2018	NHRIV600030703-04	DUDLEY BROOK - UNNAMI	RAYMOND, DE	4.34	MILES	Aquatic Life Integrity	Lead	5-M			Non-ORW
2018	NHRIV600030703-04	DUDLEY BROOK - UNNAMI	RAYMOND, DE	4.34	MILES	Aquatic Life Integrity	Oxygen, Dissolved	5-P			Non-ORW
2018	NHRIV600030703-04	DUDLEY BROOK - UNNAMI	RAYMOND, DE	4.34	MILES	Aquatic Life Integrity	pH	5-M			Non-ORW
2018	NHRIV600030703-05	LAMPREY RIVER	RAYMOND	2.647	MILES	Aquatic Life Integrity	pH	5-M			Non-ORW
2018	NHRIV600030703-07-02	LAMPREY RIVER - CARROLI	RAYMOND	0.02	MILES	Primary Contact Recreation	Escherichia coli	4A-P	9/21/2010	NEW HAMPSHIRE STATEWIDE BACTERIA	39276 Non-ORW
2018	NHRIV600030703-09	LAMPREY RIVER	RAYMOND	2.295	MILES	Aquatic Life Integrity	pH	5-M			Non-ORW
2018	NHRIV600030703-10	LAMPREY RIVER	RAYMOND	0.558	MILES	Aquatic Life Integrity	pH	5-M			Non-ORW
2018	NHRIV600030703-11	LAMPREY RIVER	EPPING, RAYM	3.27	MILES	Aquatic Life Integrity	Aluminum	5-M			Non-ORW
2018	NHRIV600030703-11	LAMPREY RIVER	EPPING, RAYM	3.27	MILES	Aquatic Life Integrity	pH	5-M			Non-ORW
2018	NHRIV600030703-14	PAWTUCKAWAY RIVER - U	NOTTINGHAM,	6.751	MILES	Aquatic Life Integrity	Dissolved oxygen saturation	5-M			Non-ORW
2018	NHRIV600030703-14	PAWTUCKAWAY RIVER - U	NOTTINGHAM,	6.751	MILES	Aquatic Life Integrity	Oxygen, Dissolved	5-P			Non-ORW
2018	NHRIV600030703-14	PAWTUCKAWAY RIVER - U	NOTTINGHAM,	6.751	MILES	Aquatic Life Integrity	pH	5-M			Non-ORW
2018	NHRIV600030703-15	LAMPREY RIVER	EPPING	4.692	MILES	Aquatic Life Integrity	Dissolved oxygen saturation	5-M			Non-ORW