

CITY OF DOVER

DOVER PLANNING BOARD – AGENDA

Meeting Type: Regular Meeting
Meeting Location: Council Chambers, City Hall, 288 Central Avenue, Dover, NH 03820
Meeting Date: **Tuesday, April 9, 2024**
Meeting Time: **7:00 pm**

1. CITIZENS' FORUM

2. APPROVAL OF THE PRIOR MINUTES

- March 12, 2024 Regular Meeting Minutes

3. OLD BUSINESS

- Consideration and possible vote on the proposed Amendments regarding the make-up the Technical Review Committee, Chapter 153-6 (Site Plan Regulations). The full text of the amendments is available in the Planning Department & at [City of Dover, NH - Official Website](#) located under meeting materials and on the Planning Department page*.
- Consideration and possible vote on the proposed Amendments regarding the Technical Review Committee definition, Chapter 157-60 (Subdivision Regulations). The full text of the amendments is available in the Planning Department & at [City of Dover, NH - Official Website](#) located under meeting materials and on the Planning Department page*.

4. NEW BUSINESS

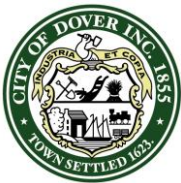
- Consideration and acceptance of an Amendment for Dover Housing Authority, Assessor's Map 33, Lot 1-A, zoned RM-U, located at 48 Whittier Street. (Proposal is to extend the building 8' towards Whittier Street and amend the architecture design). *(WAIV-2024-0003)
- A Public Hearing for the purpose of receiving public input regarding the City's CDBG program, the development of a new CDBG Consolidated Plan, and issues, needs and opportunities related to, but not limited to, efforts to Affirmatively Further Fair Housing, Economic Development, Public Improvements, Housing, Supportive Services and Transportation. Information received will be used to help develop Dover's FY26-30 Consolidated Plan. The Consolidated Plan serves as the guiding document for identifying priority issues to be addressed through annual CDBG funding. *

5. STAFF COMMENT

6. MEMBER COMMENTS

7. ADJOURNMENT

*Indicates that if the application is accepted for discussion, the public hearing will be held the same evening. Note that some hearings will be continued from one meeting to another and some may be postponed. Since this is only a partial description of the proposal and may change, persons with questions or wishing to see the plans are invited to visit the Planning Office, Monday through Thursday from 8:30 am to 5:30 pm and Friday 8:30 am to 4:00 pm or email Dover-Planning@dover.nh.gov. You may also view materials at www.dover.nh.gov. Follow us on Twitter [@DoverNHPlanning](https://twitter.com/DoverNHPlanning) and find us on Facebook at <https://www.facebook.com/DoverNHPlanning>. The public is encouraged to leave comments in advance by emailing Dover-Planning@dover.nh.gov, or mailing written comments to Planning Board, Dover City Hall, 288 Central Ave., Dover, NH 03820. Messages must be received no later than 4 p.m. the day of the meeting and should identify the name and Dover address of the person leaving the message or providing the comment.



CITY OF DOVER

DOVER PLANNING BOARD – MINUTES

Meeting Type: Regular Meeting
Meeting Location: Council Chambers, City Hall, 288 Central Ave, Dover, NH.
Meeting Date: **Tuesday, March 12, 2024**
Meeting Time: **7:00 pm**

Members Present: Gina Cruikshank (Chair), Mark Speidel (Vice Chair), George DeBoer, Fergus Cullen (Councilor), Ken Mavrogeorge, Melina Gambino (Alternate) Tom Clark, Jeff Sanborn (Alternate)

Members Not Present (excused): Kyle Pimental, Jon Elliard, Erinn Kaspari

Members Not Present (un-excused): None

Staff Present: Donna Benton, Director of Planning and Community Development

G. Cruikshank called the meeting to order at 7p.m and noted Jeff Sanborn would sit for E. Kaspari, and Melina Gambino would sit for J. Elliard. She explained the citizens' forum process.

1. CITIZENS' FORUM

Citizens Forum Open

No one spoke

Citizens Forum Closed

2. APPROVAL OF THE PRIOR MINUTES

- February 27, 2024 Regular Meeting Minutes

Motion F. Cullen moved to approve the regular meeting minutes of February 27, 2024 as submitted.

Seconded by: K. Mavrogeorge. Vote: U/A

3. OLD BUSINESS

A. Discussion of Impact Fees Policy Change.

Item not heard.

4. NEW BUSINESS

A. Consideration and acceptance of an Extension Request for a conditionally approved Subdivision for 59 Tolend Rd, LLC, Assessor's Map E, Lot 65-1, zoned R-20, located at Tolend Rd. (Proposal is for the Planning Board to extend the period of time for conditions to be met prior to plan signing). *(WAIV-2024-0002)

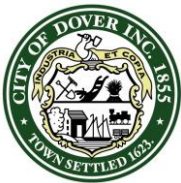
D. Benton explained that the Board previously approved the applicant's major subdivision proposal and two Conditional Use Permits for the creation of a 27-lot subdivision with two open space areas.

Chapter 153 allows the Planning Director to extend the 90 days that is typically required for the applicant to submit revised plans and meet the conditions of approval that the Board sets when conditionally approving requests. Any further extension request must be granted by the Planning Board.

The applicant is now seeking its first request for additional time to meet the conditions of approval as set forth in the Board's August 23, 2023 Notice of Decision. The applicant is actively working with NH State officials and the Engineering Dept. to finalize leach field approvals.

Kevin Poulin, Berry Survey and Engineering represented the application and noted they have received Alteration of Terrain and Shore Land permits. The Wetlands permit has been submitted.

Motion: T. Clark moved to accept the application and declared no regional impact. Seconded by: M. Speidel. Vote: U/A



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Public hearing opened

Jason Miller, 94 Tolend Rd asked questions about and expressed concerns about traffic, changing where Tolend and Columbus meet and possibly adding a traffic light, open space, and restrictions for recreation areas within the plan.

Public hearing closed.

D. Benton clarified that this project is already conditionally approved, and the applicant is working on completing the conditions. This is a request to extend the timeframe to complete the conditions, not a request to re-approve the plan. A traffic study was done at the original time of application. Recreation amenities are being included as part of the development.

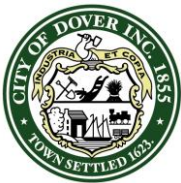
STAFF RECOMMENDATION:

Chapter 153-8.A of the Site Review Regulations of the City Code provides for the Planning Board to extend the time period to address conditions of approval after the Planning Director grants one 90-day extension. Since certain conditions of approval require acceptance from state entities, often which takes significant time for review and approval outside of the Applicant's control, staff therefore recommends the Board grant the extension to May 20, 2024 with the same conditions of approval as outlined in the original Notice of Decision.

Motion: T. Clark moved to grant the extension request to May 20, 2024 with staff recommended conditions. Seconded by: G. DeBoer. Vote: U/A

The Vice Chair announced Items 4 B, C, D, E, & F would be heard together.

- B. Consideration and acceptance of a Conditional Use Permit for Public Service of New Hampshire, Assessor's Map 24, Lot 133, Map N, Lots 23, 22C-8, and Map K, Lots 4-C and 2, zoned CWD, R-12, located at the Transmission line ROW - Cocheco St to Penny Ln (Proposal is a R169 utility transmission line structure replacement project creating 19,734 s.f. of temporary impact to the Conservation District). *(COND-2023-0063)
- C. Consideration and acceptance of a Conditional Use Permit for Public Service of New Hampshire, Assessor's Map K, Lots 1-A-0, 1-A-1, 1-B-0, Map N, Lots 18-1, 18-OP1, 18-6, and 19-5, zoned R-40, located at Transmission line ROW- McKone Ln to Eagan Dr (Proposal is a R169 utility transmission line structure replacement project creating 742 s.f. of temporary wetland impact and 1,515 s.f. of temporary impact to the Conservation District). *(COND-2023-0064)
- D. Consideration and acceptance of a Conditional Use Permit for Public Service of New Hampshire, Assessor's Map N, Lots 19-A, 19-B, 19-C, Map K, Lots 6-C, 6-E, Map M, Lots 3, 3-A, 3-B, zoned R-40, located at Transmission Line ROW- end of Falcon Dr to Back Rd. (Proposal is a R169 utility transmission line structure replacement project creating 23,279 s.f. of temporary wetland impact and 29,941 s.f. of permanent impact to the wetland buffer). *(COND-2023-0065)
- E. Consideration and acceptance of a Conditional Use Permit for Public Service of New Hampshire, Assessor's Map M, Lots 105, 105-1, 105-2, 100-A, 92-B, 93-B, zoned R-40, located at Transmission Line ROW-245 Back Rd to Cullen Bay Rd (Proposal is a R169 utility transmission line structure replacement project creating 3,188 s.f. of temporary wetland impact). *(COND-2023-0066)
- F. Consideration and acceptance of a Conditional Use Permit for Public Service of New Hampshire, Assessor's Map M, Lots 91-C, 92-A, 92-H, 104, zoned R-40, located at Transmission Line ROW- Cullen Bay Road to Cocheco River. (Proposal is a R169 utility transmission line structure replacement project creating 29,676 s.f. of temporary wetland impact). *(COND-2023-0067)



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D. Benton explained that Eversource is proposing to replace four structures (19, 20, 21, and 22) along their existing R169 transmission line ROW in Dover. This segment of the ROW traverses a low-density residential pasture and a large, forested area south of Back Road. The old wooden structures require replacement due to age, cracking, leaning, and/or other damage. The existing structures will be replaced with new weathering steel structures to provide a more reliable electrical infrastructure.

Matt Cardin, project manager with Eversource represented the application and explained the project overview and proposal to replace the poles requested with steel poles. He explained the replacement process, use of easements and temporary impacts. The timeline of work will be April through June for pole replacement and September for wire replacement done mostly by helicopter.

Jessica Hunt, Stantec is representing Eversource licensing and permitting and wetland components of the project. She explained the impacts and the status of the state permits.

M. Speidel asked for further explanation on the impacts mentioned in item D. It was explained that those are due to the work pads that are put in around each new pole. They are gravel and will be reduced from what is shown on the map as much as possible once they are working on site. These gravel areas support the work trucks, cranes, etc. needed to get the poles switched out. In some cases where matting and gravel are shown, the contractor will often just mat the whole pad in which case, the impact will be temporary. Discussion ensued with further details.

Motion: M. Speidel moved to accept the applications and declared no regional impact. Seconded by: T. Clark. Vote: U/A

Public hearing opened

Craig Williams, 154 Middle Rd, abutter noted last time they dropped all of the trees in the ROW but went beyond the ROW and left all of the trees around. He has met with public service, and they agreed to mark the ROW boundaries, but it hasn't been done yet. He described some arrangements he made with the applicant for accessing his property. He would prefer to get some of the birch trees that grow in the ROW transplanted, but they keep getting cut down.

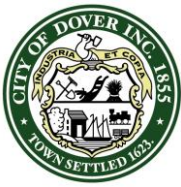
Bonny Pope, 9 Gerrys Lane gave background about her credentials and spoke about vegetation, the poles that were previously replaced were done with care and this time they have crossed at a point to avoid the wetlands. She is in favor of the progress this project will maintain. Her main concern is restoration and asks the board to have the applicant be clear on their restoration plans and what impacts will be temporary or permanent and to use the correct materials for proper restoration.

Jane Ducas, 18 Isaac Lucas Cir is confused about how she is an abutter to this project and what the wetlands impacts will be for her.

Emails were also received from Bonny Pope and Craig Williams which were given to the board members in advance.

The applicant addressed public comments:

- Access points are off of roadways unless agreements are made with land owners
- They discussed an access point with Mr. Williams, but that area had not been surveyed and there appear to be wetlands there. The request was to gravel the access path, but Eversource does not feel comfortable doing that with wetlands in the area.



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- Trees were cleared last week in the area of Ms. Pope's property and the large logs were left for now to prevent creating ruts. They will be removed when they come back with the work pads.
- Ruts haven't been dealt with yet because they are coming back to do the work, but they will be cleared up when the work is complete.
- He noted the property owners maintain these areas better than the company does and they understand and appreciate the work the property owners do. The ROWs will be restored, and they are open to input for what type of seed to use etc.
- Isaac Lucas Circle: there is an access road off Middle Rd and they will be using that access road to get to this project. That might be why they were notified as an abutter

Board comments:

Staff can go out and check the erosion control measures are being carried out and conditions of restoration are completed.

J. Hunt gave additional information about the procedures that will be followed.

M. Cardin addressed a question about the easement with birch trees on it and what the plans are this time.

Public hearing closed.

STAFF RECOMMENDATION- CUPS:

The Conservation District ordinance §170.27.C provides for Conditional Use Permits to allow impacts to the Conservation District if standards related to demonstration that the use is essential to the productive use of land, a soil erosion and sedimentation control plan is submitted, state and federal approvals have been applied for, and a written review by the Conservation Commission has been sought.

The Wetlands protection District ordinance §170.27.1-F provides for Conditional Use Permits to allow impacts to the Wetlands Protection District if standards related to demonstration that no practicable alternative is available, avoidance, minimization, mitigation has been sought and approval of the wetlands impact from NHDES Wetlands Bureau has been granted.

Planning Staff feels that the applicant considered the criteria and has made sufficient efforts to minimize the project's impact and the difficulty to avoid the wetlands and conservation district areas. In addition, the applicant has taken appropriate measures to mitigate any impacts and has plans in place to restore any areas of disturbance.

The Planning Department recommends the Planning Board make findings, and vote to approve the applications with the following subsequent conditions:

Subsequent Conditions to Be Met Prior to Issuance of Conditional Use Permits:

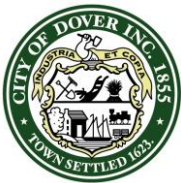
1. Provide copies of NHDES permits and USACE approvals.

Board members discussed whether additional conditions are necessary regarding restoration and revegetation fees but decided against it.

Motion: F. Cullen moved to approve the Conditional Use Permits with subsequent conditions set by staff.

Seconded by: T. Clark. Vote: U/A

The Vice Chair announced Items 4 G & H would be heard together.



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- G. Consideration and possible vote on posting the proposed Amendments regarding the making of the Technical Review Committee, Chapter 153-6 (Site Plan Regulations). The full text of the amendments is available in the Planning Department & at City of Dover, NH - Official Website located under meeting materials and on the Planning Department page*.
- H. Consideration and possible vote on posting the proposed Amendments regarding the Technical Review Committee definition, Chapter 157-60 (Subdivision Regulations). The full text of the amendments is available in the Planning Department & at City of Dover, NH - Official Website located under meeting materials and on the Planning Department page*.

D. Benton explained the reason for the proposed amendments, procedures and next steps, and itemized each proposed change for the board.

Motion: M. Speidel moved to accept the items and declared no regional impact. Seconded by: M. Gambino.
Vote: U/A

Public hearing opened.

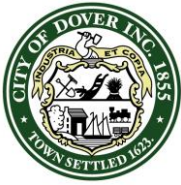
No one spoke

Public hearing closed.

Motion: M. Speidel moved to post the proposed Amendments as presented. Seconded by: M. Gambino.
Vote: U/A

5. STAFF COMMENTS

- D. Benton noted Recreation Director Gary Bannon announced his retirement. She thanked him for all his work and positive impact and passion to help Dover be the community it is.
- The Office of Planning and Development is holding their annual virtual conference in May. If anyone is interested in attending, let staff know.
- Next meeting is April 9 due to lack of applications for the March 26th meeting.
- TRCs since last meeting:
 - Site Review for Stonefield Engineering & Design (Owners: Dover Retail Management, LLC & R W Realty Inc.), Assessor's Map 38, Lots 15-A and 15-B zoned Commercial, located at 1-3 Webb Place and Webb Place. (Proposal is for demolition of current building and constructing a 3,300-sf bank with a drive through ATM, (20) twenty parking spaces. One (1) related Conditional Use Permit application would also appear before the Planning Board. (SITE-2023-0011 & COND-2023-0054) *[This item was previously heard by the Planning Technical Review Committee on August 31, 2023 and November 2, 2023]*
- TRCs coming up:
 - Site Plan Amendment for Dover Housing Authority, Assessor's Map 33, Lot 1-A, zoned RM-U, located at 48 Whittier Street. (Proposal is for the building to be extended 8' towards Whittier Street and two (2) Additional TDR units being requested along with other adjustments to the architecture). (WAIV-2024-0003)
 - Site Review for Future Automation. LLC (Owners: DIBIDA), Assessor's Map D, Lot 11-8, zoned IT, located at Quality Way. (Proposal is to construct a light manufacturing facility consisting of two buildings 24,000 s.f and 10,000 s.f, each with office space, and associated infrastructure.) (SITE-2024-0002) *[This item was previous heard by the Planning Board Technical Review Committee on February 15, 2024.]*



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DOVER PLANNING BOARD – MINUTES

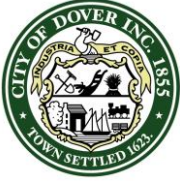
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6. MEMBER COMMENTS

- T. Clark
 - Asked for authorization for the Planning Director to get the room clock fixed. Everyone was in agreement
- J. Sanborn
 - New York Times article on housing
- G. DeBoer
 - Washington Post article on housing
- M. Gambino
 - Olive Meadow Ln project update given by D. Benton. Parcel seems to be transferring to different ownership, so no project proposal currently exists.

7. ADJOURNMENT

Motion: M. Spidel moved to adjourn at 8:17 pm Seconded by G. DeBoer. Vote: U/A



CITY OF DOVER

CITY OF DOVER - ORDINANCE

Posted: March XX, 2024

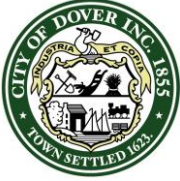
Ordinance Title: Site Review Regulations Amendments
Chapter: 153

1. Chapter 153 of the Code of the City of Dover, entitled Site Plan Review, is hereby amended by revising Section 6, “Application requirements: Technical Review Committee.”

“153-6. Application requirements; Technical Review Committee.

[Amended 8-26-2008; 3-23-2010; 1-24-2012]

- A. Prior to the formal submission of an application for site review by the Planning Board, the applicant shall meet with the Technical Review Committee. Said meeting(s) shall serve to assist the applicant in preparing a development proposal that is technically conforming to the regulations contained herein. The Technical Review Committee shall be comprised of the Planning Board Chair, the Conservation Commission Chair, City Engineer, Fire and Rescue Chief, Police Chief, Building Official, Zoning Administrator, Business Economic Development Director and Director of Planning and Community Development, who shall serve as Chair. All Committee members shall have a designated alternate available in their absence. For projects under the threshold described in Section 153-4.A but meeting the threshold of 153-4.B(1) through (5) may be approved by the majority vote of Technical Review Committee per RSA 676:43 provided no waivers or Conditional Use Permits are necessary to meet regulations.”



CITY OF DOVER

CITY OF DOVER - ORDINANCE

Posted: March XX, 2024

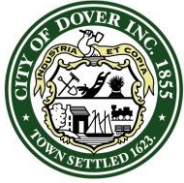
Ordinance Title: Land Subdivision Regulations Amendments
Chapter: 157

1. Chapter 157 of the Code of the City of Dover, entitled Site Plan Review, is hereby amended by revising Section 60, "Definitions."

"TECHNICAL REVIEW COMMITTEE

Shall be comprised of the Planning Board Chair, City Engineer, Fire and Rescue Chief, Police Chief, Building Official, Zoning Administrator, ~~Economic~~ Business Development Director and Director of Planning and Community Development, who shall serve as Chair. All Committee members shall have a designated alternate available in their absence."

[Amended 7-27-2021]



CITY OF DOVER

PLANNING BOARD - STAFF MEMO FILE # WAIV-2024-0003

Application Type: Site Plan Review
Applicant(s): Dover Housing Authority
Owner(s): Dover Housing Authority
Location: 48 Whittier Street (Tax Map 33, Lot 1-A)
Meeting Date: April 9, 2024

INTENT: The Board previously approved a six (6) unit multi-family housing structure that includes four (4) TDR units (P21-37). The applicant seeks to obtain an amendment to their approved site plan to extend the building 8' towards Whittier Street and amend the architectural design and other minor site changes.

UNITS PROPOSED: 6

AGENDA ITEM #: 4-A

ACREAGE: 0.35 ± ac. (15,394 sq. ft.)

ZONING DISTRICT: RM-U

EXISTING USE: Former Single Family Residential

PROPOSED USE: Multi-family Housing

SURROUNDING USES: Residential

ZBA ACTION: None

ATTACHMENTS: Application materials, previous site plan

APPLICATION IS COMPLETE:
Yes

REGIONAL IMPACT: No

NOTICES SENT: Abutter notices were sent by certified mail.

PERMITS REQUIRED:
-CUP for 30' buffer

WAIVERS REQUIRED:
-§170-27.2G(7) Reduction in 30' pedestrian buffer previously approved and front setback
-153-14.D(6)(b)- parking aisle waiver

Summary of Request and Background

On June 28, 2022, the Board approved a six (6) units that include four (4) TDR units. The applicant seeks to obtain an amendment to their approved site plan to reduce the front building setback to 10 feet, from the approved 18 feet, in order to extend the building 8 feet towards Whittier Street. This request is to support an increased footprint of the building from 1,768 square feet to 1,976 square feet.

To support the building footprint modification, the applicant also seeks to update the locations of an entrance location, accessible parking spaces, sidewalks, overhangs, and utility meters and update landscaping and lighting to reflect the proposed site changes.

This amendment request was reviewed by the TRC on March 14, 2024 (minutes attached).

The previous approval included a waiver granted for the 30' no-cut, no-disturb buffer still applies. The applicant is seeking a waiver for aisle width to be 20' instead of 24' as required in Section 153-14.D(6)(b) which staff supports.

STAFF RECOMMENDATION-Waivers:

§153-21 of the Site Plan Review Regulations states the "Planning Board may waive specific provisions of these regulations. The Planning Board may only grant a waiver if the Planning Board finds, by majority vote, that:

- (1) Strict conformity would pose an unnecessary hardship to the applicant and the waiver would not be contrary to the spirit and intent of the regulations; or
- (2) Specific circumstances relative to the subdivision, or conditions of the land in such site plan, indicate that the waiver will properly carry out the spirit and intent of the regulations."

Planning Staff finds the waiver requests for parking aisle width reasonable to reduce impervious surface and criterion 2 has been met.

The Planning Department recommends the Planning Board accept the application, open the public hearing, and vote to approve the waiver.

Consistency with Land Use Regulations- Site Plan

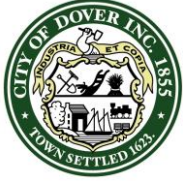
Chapter 153-4 of the Site Review Regulations of the City Code provides for site review by the Planning Board of new construction of various types. This plan is consistent with those regulations.

STAFF RECOMMENDATION Site Plan:

The Planning Department recommends the Planning Board make findings and vote to approve the Site Plan with the following subsequent conditions:

Subsequent Condition to Be Met Prior to Signing of Plans:

1. Revise plan to:
 - a. Combine architectural plan set with civil plan set.



CITY OF DOVER

PLANNING BOARD - STAFF MEMO FILE # WAIV-2024-0003

Application Type: Site Plan Review
Applicant(s): Dover Housing Authority
Owner(s): Dover Housing Authority
Location: 48 Whittier Street (Tax Map 33, Lot 1-A)
Meeting Date: April 9, 2024

- b. Add owner's signature
- c. Add architecture stamp and signature to Architectural Plan Set.
- d. Update streetscape to correct curbing and provide for accessibility, add crosswalk, trees, mail kiosk, etc. to match plan

Conditions to Be Met Prior to Building Permit:

- 2. Payment of the water/sewer fees at time or request of service.
- 3. Development agreement has been recorded.
- 4. Construction sign with hours of operation has been installed to the satisfaction of the City Engineer and Planning Director.

Conditions to Be Met Prior to Occupancy:

- 5. Issuance of Certificate of Occupancy.
- 6. Payment of Impact Fees as noted in the invoice attached to the Decision Letter, unless a decision is made to pause impact fees.
- 7. Surety or other form of security acceptable to the City is provide for any unfinished work.

WAIV-2024-0003 48 Whittier Street

**Property Information**

Location 48 WHITTIER ST
Owner DOVER HOUSING AUTHORITY
Land Use
Zoning Code RM-U
Property Id 33001-A00000



**MAP FOR REFERENCE ONLY
NOT A LEGAL DOCUMENT**

City of Dover, NH makes no claims and no warranties, expressed or implied, concerning the validity or accuracy of the GIS data presented on this map.

Geometry updated 10/30/2023
Data updated Daily

Print map scale is approximate. Critical layout or measurement activities should not be done using this resource.



PLAN SNAPSHOT REPORT WAIV-2024-0003 FOR CITY OF DOVER, N.H.

Plan Type: Waiver / Extension / Amendment	Project:	App Date: 02/29/2024
Work Class: Plan	District: None	Exp Date: 05/04/2024
Status: Fees Due	Square Feet: 0.00	Completed: NOT COMPLETED
Valuation: \$0.00	Assigned To: Blonigen, Rachel	Approval
Description: Building modifications and associated site revisions		Expire Date:

Parcel: 33001-A00000	Main	Address: 48 Whittier St Dover, NH	Main	Zone: RM-U(Residential - Urban Density)
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Engineer Kenneth Berry Home: (603) 332-2863 Business: (603) 332-2863 Mobile: (603) 332-2863	Soil Scientist Deidra Benjamin Home: (603) 332-2863	Architect Sarah Hourihane 135 Spur Road Dover, NH 03820 Mobile: (603) 553-6911	Applicant Berry Surveying & Engineering 335 Second Crown Point Road Barrington, NH 03825 Business: (603) 332-2863 Mobile: (603) 781-3403
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Owner
Dover Housing Authority
Zach Messier
62 Whittier street
Dover, NH 03820
Home: (603) 822-6424
Business: (603) 343-6591

Plan Custom Fields

Project Location	48 Whittier Street	Waiver Request Type	Amendment	Project Name	Residential TDR Site Plan Dover Housing Authority
Owner Phone	603-742-5804	Owner Name	Dover Housing Authority	Original Plan Approval Date	Jun 28 2022 12:00AM
Owner Address	62 Whittier Street, Dover, NH 03820	Owner EMail	Zmessier@doverhousing authority.org	Plan ID Number	P21-37
Plan Type	Site Plan	Extension Request Detail		Condition / Portion of Plan to be Amended	Building Amendments and associated SP Revisions
Amendment Request Detail	Building to be extended 8' towards Whittier Street. Two Additional TDR requests included in application. Please find attached Narrative.	Site / Subdivision Portion of Plan to be Waived		Waiver Request Detail	

Attachment File Name	Added On	Added By	Attachment Group	Notes
Signature_Chris_Berry_2/29/2024.jpg	02/29/2024 10:27	Berry, Chris		Uploaded via CSS
2024.03.14_PlanningTechnicalReviewC ommittee.Agenda.pdf	03/04/2024 17:01	Blonigen, Rachel		TRC Agenda

Invoice No.	Fee	Fee Amount	Amount Paid
INV-00006948	Planning Waiver / Extension /Amend Application Fee	\$200.00	\$0.00
	Total for Invoice INV-00006948	\$200.00	\$0.00
NOT INVOICED	Planning Certified Mailing to Abutters	\$30.00	\$0.00
	Planning Public Notice in Newspaper	\$120.00	\$0.00
	Planning Creation / Printing of Abutter Labels	\$10.00	\$0.00
	Planning Certified Mailing to Application Contacts	\$30.00	\$0.00
	Total for Invoice NOT INVOICED	\$190.00	\$0.00
	Grand Total for Plan	\$390.00	\$0.00

PLAN SNAPSHOT REPORT (WAIV-2024-0003)

Meeting Type	Location	Scheduled Date	Subject
Technical Review Committee Meeting v.1	City Hall, Second Floor Conference Room	03/14/2024	Technical Review Committee Meeting

Submittal Name	Status	Received Date	Due Date	Complete Date	Resubmit	Completed
Land Use Plan Technical Review v.1	Approved	03/04/2024	04/01/2024	03/18/2024	No	Yes

Item Review Name	Department	Assigned User	Status	Assigned Date	Due Date	Completed Date
Business Development	Business Development	Burdin, James	Approved	03/04/2024	04/01/2024	03/18/2024

Item Review Name	Department	Assigned User	Status	Assigned Date	Due Date	Completed Date
City Engineer	Community Services - Engineering	Mavrogeorge, Kenneth	Approved	03/04/2024	04/01/2024	03/18/2024

Item Review Name	Department	Assigned User	Status	Assigned Date	Due Date	Completed Date
IS Building Official	Fire / Inspection Services	Maxfield, Jim	Approved	03/04/2024	04/01/2024	03/18/2024

Comments: Sheet 8 utility plan indicates the gas line and 6 gas meters near water meter doghouse. Gas meter location appears to be within prohibited zone from building openings. See SD-06-clarify.
 Sheet 8 Electrical service and 7 meters do not appear to have enough wall space for mounting with window and gas meter locations See elevation SD-06 - clarify.
 Building elevation plans to include utility equipment.
 Sheet 8 utility plan indicates the gas line and 6 gas meters near water meter doghouse. Gas meter location appears to be within prohibited zone from building openings. See SD-06-clarify.
 Sheet 8 Electrical service and 7 meters do not appear to have enough wall space for mounting with window and gas meter locations See elevation SD-06 - clarify.
 Building elevation plans to include utility equipment.

Item Review Name	Department	Assigned User	Status	Assigned Date	Due Date	Completed Date
Planning	Planning	Benton, Donna	Approved	03/04/2024	04/01/2024	03/18/2024

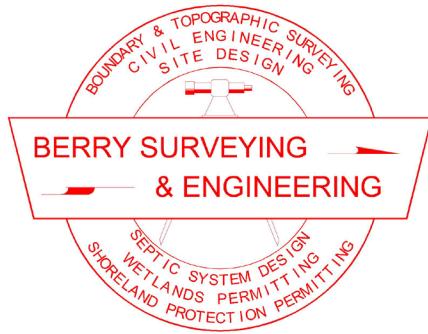
Item Review Name	Department	Assigned User	Status	Assigned Date	Due Date	Completed Date
Zoning Administrator	Planning	Crouser, Paul	Approved	03/04/2024	04/01/2024	03/18/2024

Item Review Name	Department	Assigned User	Status	Assigned Date	Due Date	Completed Date
Traffic Bureau	Police	Speidel, Marn	Approved	03/04/2024	04/01/2024	03/18/2024

Workflow Step / Action Name	Action Type	Start Date	End Date
Review v.1		02/29/2024 13:31	03/18/2024 10:20
Confirm application complete v.1	Generic Action		02/29/2024 13:31
Technical Review Committee Meeting Agenda v.1	Task	03/04/2024 17:00	03/04/2024 17:01
Land Use Plan Technical Review v.1	Receive Submittal	03/04/2024 0:00	03/18/2024 10:20
Technical Review Committee Meeting v.1	Hold Meeting	03/18/2024 10:19	03/18/2024 10:20
Planning Board v.1		03/18/2024 10:21	
Planning Board Agenda v.1	Task	03/18/2024 10:21	03/19/2024 12:32
Invoice for Notices v.1	Task	03/19/2024 12:32	
Send Notices v.1	Task		
Planner Creates Staff Recommendations v.1	Plan Activity		
Distribute Planning Board Materials v.1	Task		
Planning Board Hearing v.1	Hold Hearing		
Planning Board Decision v.1	Plan Activity		
NOD Sent to Applicant v.1	Create Report		
Final Plan v.1			
Land Use Plan Stamped and Signed v.1	Generic Action		

PLAN SNAPSHOT REPORT (WAIV-2024-0003)

Recording v.1	Task
Document Archival v.1	Generic Action
Internal Notification of Plan Completion v.1	Generic Action
Building Official Notifies Address v.1	Generic Action
Pre-Con Meeting v.1	Hold Meeting
Create/Link to Records v.1	
Create / Link to Permit - Building Major v.1	Create Sub Permit
Create / Link to Permit - Site Work, Construction v.1	Create Sub Permit



BERRY SURVEYING & ENGINEERING

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

LETTER OF TRANSMITTAL

To: City of Dover
Attn: Mrs. Donna Benton, AICP, Director of Planning and Community Dev.
288 Central Ave
Dover, NH 03820

From: Christopher R. Berry, SIT, Kevin R. Poulin, PE & Kenneth A. Berry, PE, LLS

Date: March 19, 2024

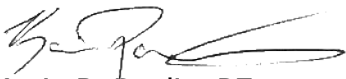
Subject: TDR Site Plan Amendment Application
Planning Board Application
Dover Housing Authority
48 Whittier St
Tax Map 33, Lot 1-A
Dover File #P21-37
WAIV-2024-0003

Mrs. Benton,

We are forwarding to you the following material in support of the TDR Site Plan Amendment and TDR Request application package for 48 Whittier Street:

- 6 Copies half size Site Plan w/ Archs/Color Rendering/Streetscape
- 1 Copy full size Site Plan w/ Archs/Color Rendering/Streetscape
- 7 Copies of the Site Plan Amendment Application & TDR Application
- 7 Copies of the Project Revision & TDR Request Narrative
- 7 Copies of the TRC Response Letter
- 7 Copies half scale of the Site Plan Revision Overlay Redline Drawing
- 1 Drainage binder
- Electronic submission of all to online portal

Respectfully submitted,
BERRY SURVEYING & ENGINEERING



Kevin R. Poulin, PE
Project Engineer



City of Dover, New Hampshire
APPLICATION FOR EXTENSION OF/ AMENDMENT TO
OR WAIVER FOR PLAN/ DRIVEWAY

[Revised August 20, 2020]

Office Use Only Amount Paid: _____ Date/Time Received: _____

APPLICANT INFORMATION

Name of Applicant: Dover Housing Authority Telephone # 603-742-5804
Address of Applicant: 62 Whittier Street, Dover NH 03820 E-Mail zmessier
@doverhousingauthority.org
Project Name: Residential TDR SP Project Location: 48 Whittier Street
Planning File Number: P21-37 Date of Original Approval June 28, 2022
File Type: Conditional Use X Site Plan Review X Subdivision _____

EXTENSION INFORMATION (*Note: notification of abutters required for first time extensions under Sec. 153-9.B and Sec. 157-23.B only*)

Extension type requested (*check one*): Sec. 153-8.A Sec. 153-9.B Sec. 157-13.A Sec. 157-23.B
Current deadline date: _____ Number of Extensions Previously granted by Board _____
Reason(s) for extension/comments (*attach additional sheets as needed*): _____

AMENDMENT INFORMATION

Condition(s) or portion of plan to be amended: Building modifications & associated revisions
Reason(s) for amendment/comments (*attach additional sheets as needed*): _____
Please find attached narrative

WAIVER INFORMATION

Site Review/Subdivision Regulations section(s) to be waived: _____
Justification for waiver request(s) (*attach additional sheets as needed*): _____

SIGNATURES

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

Signature of Property Owner: *Ryan M. Crosby* Date: 23 Feb 2024
Signature of Applicant (*if different from owner*): _____ Date: _____
Signature of Agent: _____ Date: 2-24-24

**APPLICATION FOR EXTENSION OF/ AMENDMENT TO OR
WAIVER FOR PLAN/ DRIVEWAY
LIST OF ABUTTERS**

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

Owner:

TAX MAP	LOT #	PROPERTY OWNER	MAILING ADDRESS

Applicant (if different from owner):

APPLICANT NAME	APPLICANT COMPANY	MAILING ADDRESS

Surveyor and/or Engineer/Professional Agent:

NAME	COMPANY	MAILING ADDRESS

Conservation Easement Holder:

TAX MAP	LOT #	NAME OF EASEMENT HOLDER	MAILING ADDRESS



City of Dover, New Hampshire

TRANSFER OF DEVELOPMENT RIGHTS APPLICATION

[Revision Date: October 1, 2020]

Office Use Only	Project #:	_____	Date Received:	_____
	Amount Paid:	_____	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: zmessier@doverhousingauthority.org

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

Address of Property Owner: _____

PROPERTY INFORMATION

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

Address of Property: 48 Whittier Street

Zoning District(s) RM-U Overlay District(s) Conservation (Steep Slopes not jurisdictional)

Existing Use of Property: Single Family (Formerly)

New impervious area (in s.f.): 1,306 SF (3,474 SF total proposed, 2,168SF Ex)

TRANSFER OF DEVELOPMENT RIGHTS INFORMATION

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

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

Relief sought (Check All That Apply):

☐ Lot Size ☐ Frontage ☒ Setback ☐ Increase by _____ units

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

Please find attached narrative.

List Any Associated State or Federal Permits That Have Been or Will Be Applied For and Indicate Their Status: NHDES Shoreland PBN 2021-02336

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

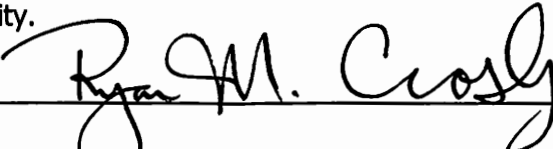
Address 335 Second Crown Point Rd, Barrington, NH 03825 Telephone #: 603-332-2863

Professional License #: PE 14243, LLS 805 E-mail address: K.Berry@berrysurveying.com

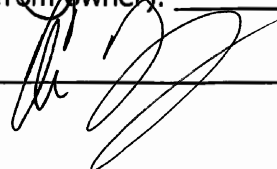
Crberry@metrocast.net

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. As applicant or as agent, I attest that I am duly authorized to act in this capacity.

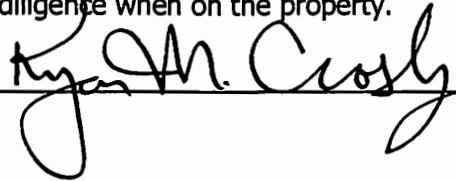
Signature of Property Owner:  Date: 23 Feb 2024

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

Signature of Agent:  Date: 2-24-24

AUTHORIZATION TO ENTER SUBJECT PROPERTY

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

Signature of Property Owner:  Date: 23 FEB 2024

**CITY OF DOVER TRANSFER OF DEVELOPMENT RIGHTS
LIST OF ABUTTERS**

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

Owner:

TAX MAP	LOT #	PROPERTY OWNER	<u>MAILING ADDRESS</u>

Applicant (if different from owner):

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

Surveyor and/or Engineer/Professional Agent:

NAME	COMPANY	<u>MAILING ADDRESS</u>

Conservation Easement Holder:

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



City of Dover, New Hampshire TDR REVIEW SUBMISSION CHECKLIST

[Revision Date: January 5, 2021]

This Transfer of Development Rights Review Submission Checklist is intended to assist the applicant in the planning process of preparing a TDR 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.

If staff indicates the scope of the project requires Technical Review Committee Review, to apply, eight (8) folded copies of the site plan with scale of not less than 1"=50' or 1"=100' for larger site plans, need to be provided, along with payment of plan review fees.

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

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

APPLICANT: Dover Housing Authority File Number: P21-37

PROJECT TITLE: Residential TDR Site Plan for Dover Housing Authority

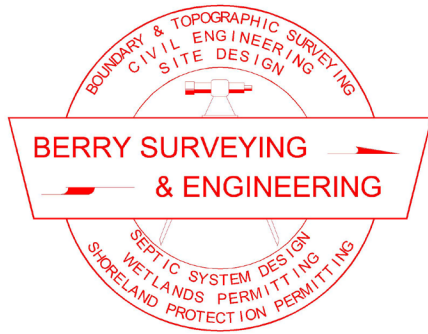
PROPERTY LOCATION: 48 Whittier Street Tax Map: 33 Lot: 1A

	Where/How Provided	Reviewed
1. Completed and signed Application form	X	
2. Plan Review Fees are provided	X	
3. Electronic copy of the engineered/surveyed plan layout	X	
4. Electronic copy of supplementary materials and application	X	
5. 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 and scale	X	
Name and address of owners and/or applicants	X	
Location and widths of existing & proposed easements & right of ways	X	
Location and width of existing and proposed access/egress ways	X	
Existing and proposed buildings and structure locations and access	X	
Minimum building setbacks or build to lines on all lots	X	
Existing and proposed stormwater infrastructure/direction	X	
Neighborhood plan with unit counts	X	
Proposed landscaping	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 solid waste disposal facilities (dumpster, pad and screening, etc.), including required screening	X	
All applicable Dover Common Site Plan/Subdivision notes	X	
Provide additional exhibits/technical data determined appropriate by the Planning Board or its staff as required		

REVIEWED BY: _____ DATE _____ TRC DATE _____

WAIV-2024-0003 48 WHITTIER STREET

Property ID	Location	Owner 1	Owner 2	Owner Address 1	City	State	Zip
33001-000000	46 WHITTIER ST	GAGNON ROBERT JR		46 WHITTIER ST	DOVER	NH	03820
33002-000000	1 80 HAMPSHIRE CR	1623 SETTLEMENT DOVER LIMITED PARTNERSHI		62 WHITTIER	DOVER	NH	03820
E0066-000000	111 408 REGENT DR	SAIJES PROPERTIES LLC		41 MARTSTON DR	BEDFORD	NH	03110
33001-A00000	48 WHITTIER ST	DOVER HOUSING AUTHORITY		62 WHITTIER STREET	DOVER	NH	03820
		HOURIHANE, SARAH	BERRY SURVEYING & ENGINEERING	335 SECOND CROWN POINT ROAD	BARRINGTON	NH	03825
			LASSEL ARCHITECTS	135 SPUR ROAD	DOVER	NH	03820



BERRY SURVEYING & ENGINEERING

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

City of Dover
Planning Office

March 15, 2024

Attn: Mrs. Donna Benton, Director of Planning and Community Development
288 Central Ave
Dover, NH 03820

Re: TDR Site Plan Amendment Narrative
Dover Housing Authority
48 Whittier St
Tax Map 33, Lot 1-A
Dover File #P21-37

Ms. Benton,

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

Background and General Narrative:

On June 28, 2022, DHA received approval to construct a six-unit multi family structure from the Planning Board at 48 Whittier Street. The approved 1,768 Sq. Ft. building proposed is supported by an eleven-space porous pavement parking lot and municipal utilities. The applicant is looking to revise the site and increase the size of the building to make the building more constructable to meet the current needs of the proposed occupants. To achieve this, the building is proposed to be extended by 8' to north, towards Whittier Street. Additional TDR Relief is required for this plan revision and is discussed further in the narrative.

The Site Plan approval included the following TDR Requests: To purchase 4 units via TDR, a reduced front building setback of 18' from the 20' calculated RM-U Zone requirement, and the reduction in the 30' perimeter buffer. Conditional Use Permits were received for the reduction in the 30' perimeter buffer and the reduction of 12 required spaces down to 11. A waiver was also approved to allow a 20' drive aisle width. The following image is the previously approved Site Plan for reference, and a red line drawing provided as part of the application package:

March 15, 2024
Page **2** of **3**



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

To support the increased footprint of the building from 1,768 Sq. Ft. to 1,976 Sq. Ft., the following additional TDR relief request is required:

- To allow for the reduction of the front building setback line down to 10 feet from the approved reduction to 18'. The false façade has been replaced with an accessible unit entrance with ramp and overhang. Landscaping has been adjusted at the front of the site accordingly.

In addition to the building footprint increasing by 8' towards Whittier Street, the following building revisions have been made:

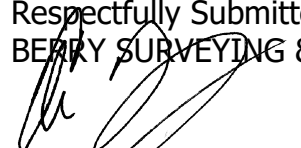
- Modifications to the entrance location of the two, ground level accessible units. Entry has been revised from the parking lot side of the building to either the front or rear face of the structure.
- The overhangs for entry ways around the building have been modified.
- The location of electric meters, gas meters, water services, water line tap, and gas line tap have been modified to reflect the new locations.

The following modifications have been made to the Site Plan to support the building modification:

- The accessible parking location has moved to the middle of the parking lot to allow for ramp and sidewalk grading.
- The sidewalk at the front of the building has been modified to create a ramp to the accessible unit.
- The sidewalk on the western side of the building has been revised around the new water closet location, condenser locations, and door locations.
- The trash pad note has been modified to include screening.
- Landscaping & Lighting have been updated to reflect the site modifications.

We hope that the board looks favorably upon this request and BS&E looks forward to working with the City of Dover on this proposal.

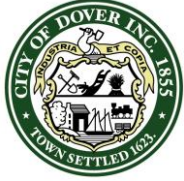
Respectfully Submitted,
BERRY SURVEYING & ENGINEERING


Christopher R. Berry
Principal, President


Kevin R. Poulin, PE
Project Engineer



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335 Second Crown Pt. Rd., Barrington, NH 03825
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CITY OF DOVER

TECHNICAL REVIEW COMMITTEE MINUTES – WAIV-2024-0003

Application Type: Site Plan Review
Applicant(s): Dover Housing Authority
Owner(s): Dover Housing Authority
Location: 48 Whittier Street (Tax Map 33, Lot 1-A)
Date: March 14, 2024

INTENT: To amend a previously approved site plan to change footprint and architecture.

UNITS PROPOSED: 6

AGENDA ITEM #: 1

ACREAGE: 0.35 acre (15,394 sq. ft.)

ZONING DISTRICT: RM-U

EXISTING LAND USE: Former Single Family Residential

PROPOSED LAND USE: Multi-family Housing

SURROUNDING LAND USE: Residential

ZBA ACTION: None

PERMITS REQUIRED: CUP for 30' buffer

WAIVERS:

-§153-15(C)- Parking Aisle Width previously approved
-Reduction in 30' pedestrian buffer previously approved

ATTENDANCE:

Members:

Donna Benton, Planning
Paul Crouser, Zoning
Marn Speidel, Police
Tom Abbott, Fire/Inspection Services
Ken Mavrogeorge, Engineering
James Burdin, Business Development

Others:

Kevin Poulin, Berry Surveying and Engineering
Ryan Crosby, DHA
Abigail Gilbert, Business Development
Zach Messier, DHA
Sarah Hourihane, Lassel Architects
Kyle Mullaney, Lassel Architects

Approval of 3/7/2024 Meeting Minutes

K. Mavrogeorge moved to approve the minutes of March 7, 2024.
J. Burdin seconded. Vote: U/A

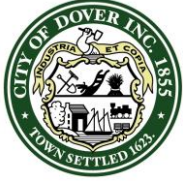
PLAN REVIEW:

Planning:

- Water and Sewer Investment Fees will be collected
- Impact Fees will be collected at CO
- Reminder: TDR fees waived if HUD rental rate; COA
- Reminder: Board acknowledgement in addition to application
- Space to do wrap around porch roof?
- Will bench and trash area be located there and used?
- Ensure final architectural set and final plan for PB match and are in one set
- All previous conditions will still apply.
- Provide application narrative noted on application. Narrative should explain changes since last approval.
- Revise plan set to:
 - Add owner's signatures
 - Update streetscape to correct curbing and provide for accessibility, add crosswalk, trees, mail kiosk, etc. to match plan
 - Address light spill over onto adjacent lots.
 - Add sidewalk on easterly side

Engineering:

- It would be helpful to see an overlay with the proposed changes highlighted in red.
- Engineering recommends tying into the water and gas closer to southern end of the building to avoid trenching through the porous pavement.
- Can the doghouse used for the water connection to the building be moved back to the original location to avoid water crossing the sewer and going underneath the sidewalk?
- The grading at the southern side of the building looks to have a low spot where ponding would be an issue. Please clarify how water is expected to move from this location to the stormwater management system.
- Narrative is mentioned in the transmittal but not uploaded to Energov. Please provide.
- Lighting levels are shown crossing the northern property line.



CITY OF DOVER

TECHNICAL REVIEW COMMITTEE MINUTES – WAIV-2024-0003

Application Type: Site Plan Review
Applicant(s): Dover Housing Authority
Owner(s): Dover Housing Authority
Location: 48 Whittier Street (Tax Map 33, Lot 1-A)
Date: March 14, 2024

- The drainage study indicates that an EPA NOI is not required but states that the disturbance exceeds an acre. Which is correct?

Police Department:

- Do you have any detail for the play area fence? Renderings show a post-and-rail type which may impede visibility of play area from the benches. Is it likely to be gated to keep toddlers secure?

Fire/Inspection Services:

- None

Business Development:

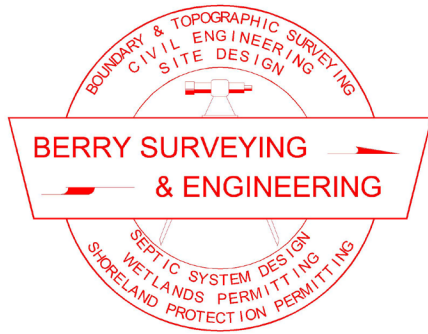
- None

Planning Board: N/A

Next Steps:

Revise plans and submit for Planning Board meeting in April.

Adjournment: M. Speidel moved to adjourn at 10:51 am. Seconded by: K. Mavrogeorge. Vote: U/A



BERRY SURVEYING & ENGINEERING

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

March 15, 2024

Planning Office

Attn: Mrs. Donna Benton, AICP, Director of Planning and Community Development
288 Central Ave
Dover, NH 03820

Re: Site Plan Review
Berry Surveying & Engineering
Dover Housing Authority
48 Whittier St
Tax Map 33, Lot 1-A
WAIV-2024-0003

Based on comments from the Technical Review Committee Minutes from March 14, 2024, we respectfully submit the following comments and revisions. Our comments are in **bold**.

PLANNING COMMENTS

- Water and Sewer Investment Fees will be collected
Applicant will pay fees when due.
- Impact Fees will be collect at CO
Applicant will pay fees when due.
- Reminder: TDR fees waived if HUD rental rate; COA
Comment acknowledged.
- Reminder: Board acknowledgement in addition to application
Applicant acknowledges comment.
- Space to do wrap around porch roof?
After review of the site, it has been determined that a wrap around porch was not feasible.
- Will bench and trash area be located there and used?
This area will be used for supervision of the child play area.
- Ensure final architectural set and final plan for PB match and are in one set
Please find revised architectural set.

- All previous conditions will still apply
Applicant acknowledges comment.
- Provide application narrative noted on application. Narrative should explain changes since last approval.
Project narrative was mistakenly omitted from Energov submission. Please find narrative uploaded to Energov.
- Revise plan set to:
 - Add owner's signatures
Owner's signatures will be added to the final plan set.
 - Update streetscape to correct curbing and provide for accessibility, add crosswalk, trees, mail kiosk, etc. to match plan
Please find updated streetscape.
 - Address light spill over onto adjacent lots.
Please find revised Lighting Plan, sheet #10.
 - Add sidewalk on easterly side.
A sidewalk is unable to be placed on the easterly side of the parking lot due to grading/drainage considerations. The uncurbed area between the bike rack and the curbing at station 1+00 is needed to allow for runoff to sheet into a conveyance swale and level spreader in a controlled manner if the porous pavement was to fail.

ENGINEERING COMMENTS

General Comment:

1. It would be helpful to see an overlay with the proposed changes highlighted in red.
Please find provided overlay plan as part of the submission.
2. Engineering recommends tying into the water and gas closer to southern end of the building to avoid trenching through the porous pavement.
Please find revised Utility Plan, sheet #8.



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3. Can the doghouse used for the water connection to the building be moved back to the original location to avoid water crossing the sewer and going underneath the sidewalk?

The doghouse location has been revised to the front of the building. Utilities have been revised accordingly. Please find sheets #4 & #8.

4. The grading at the southern side of the building looks to have a low spot where ponding would be an issue. Please clarify how water is expected to move from this location to the stormwater management system.

The spot grade was mistakenly typed out as a F63.45 when F64.45 was intended. This has been corrected on sheet #5.

5. Narrative is mentioned in the transmittal but not uploaded to Energov. Please provide.

Project narrative was mistakenly omitted from Energov submission. Please find narrative uploaded to Energov.

6. Lighting levels are shown crossing the northern property line.

Please find revised Lighting Plan, sheet #10.

7. The drainage study indicates that an EPA NOI is not required but states that the disturbance exceeds an acre. Which is correct?

Section 5.0 of the Drainage Narrative has been corrected, the disturbance is less than 1 acre, therefore an EPA NOI is not required.

POLICE DEPARTMENT COMMENTS

1. Do you have any detail for the play area fence? Renderings show a post-and-rail type which may impede visibility of play area from the benches. Is it likely to be gated to keep toddlers secure?

The rendering has been revised to provide a fence with more visibility. It was discussed during the TRC process that this area will need to be gated to keep toddlers secure. This has been added as a note to the site plan, sheet #4.

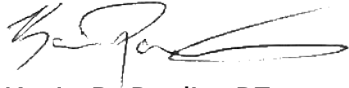


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20-136 Dover Housing Authority, Dover, NH
TRC Response, 48 Whittier St

Page **4** of **4**
March 15, 2024

Respectfully,
BERRY SURVEYING & ENGINEERING



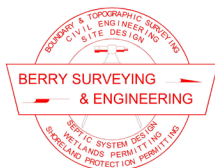
Kevin R. Poulin, PE
Design Engineer



Christopher R. Berry, SIT
Principal, President



Kenneth A. Berry, PE, LLS
VP – Technical Operations
Engineer of Record



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

48 Whittier Street, Dover, NH

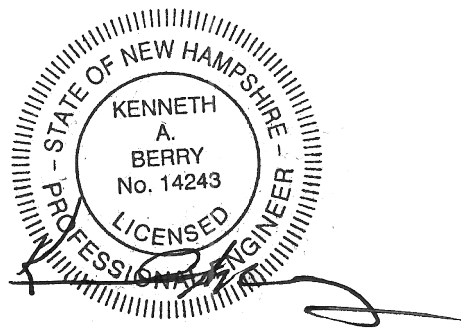
Prepared for:

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
Revised: July 21, 2021
Revised: June 7, 2022
Revised: February 21, 2024
Revised: March 15, 2024**

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4.0 Erosion & Sediment Control, BMP's	Page 6-11
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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

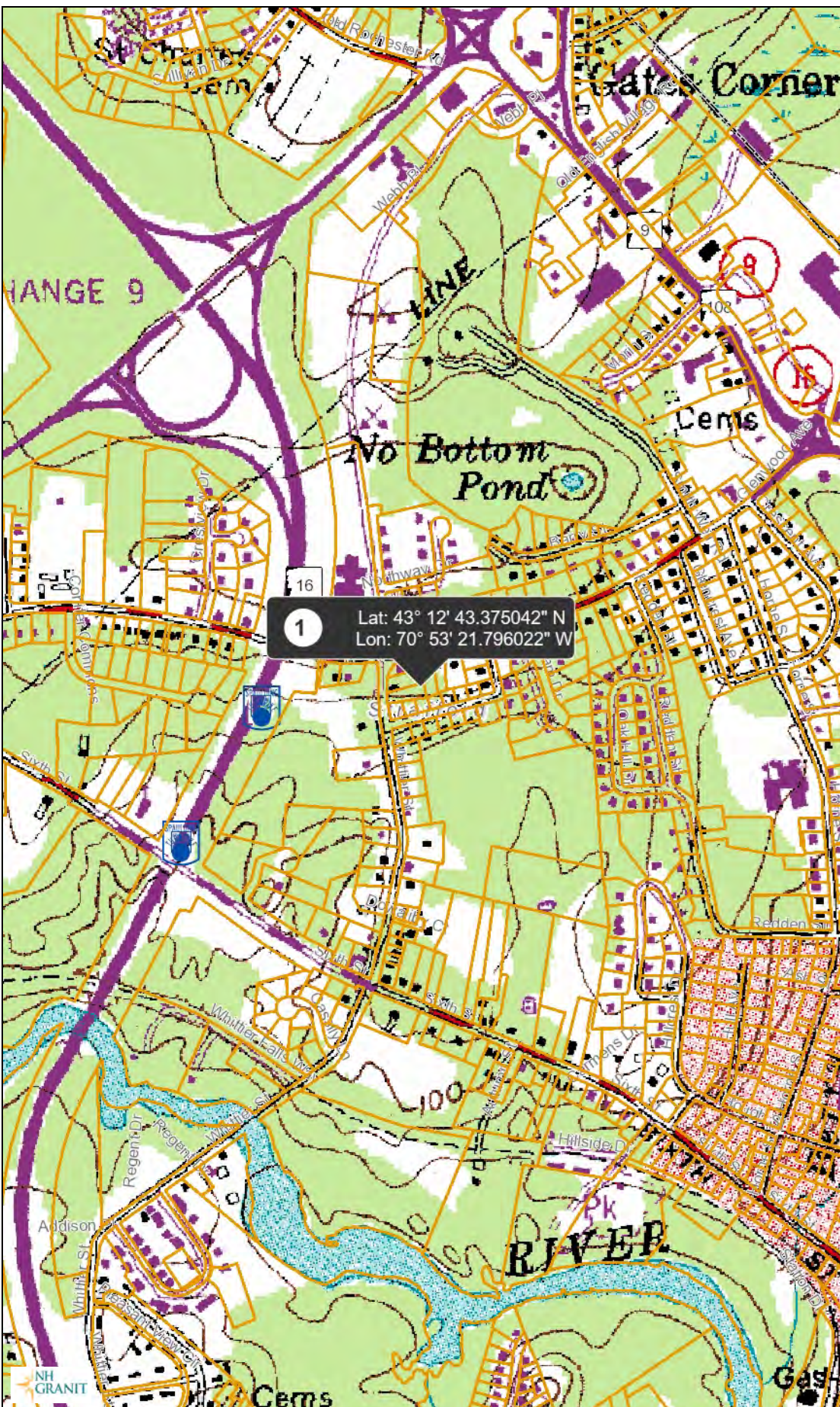
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100 Yr.-24 Hr. Node Listing

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

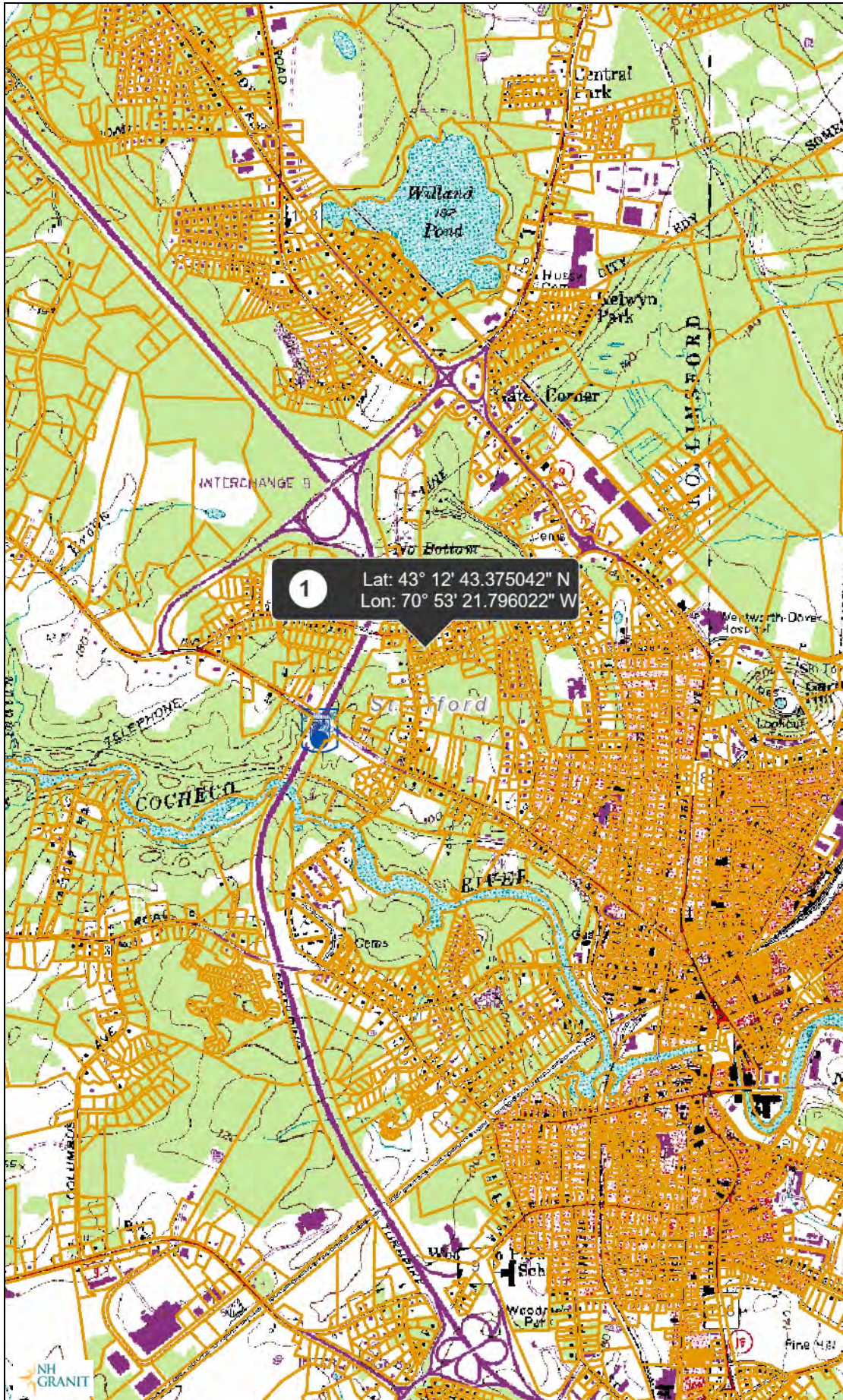
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Map Generated: 5/5/2021

Notes



Map by NH GRANIT



Legend

Parcels

Parcel Polygons

Attributes for Additional Lines

State

County

City/Town

Map Scale

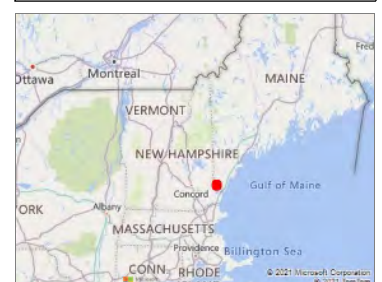
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Map Generated: 5/5/2021



Notes



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 porous pavement system with under drains.

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 parcel had a house demolished recently and this area is included in the analysis. 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 with a NH Statewide Bacteria TMDL 39277, 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, porous pavement (**Pond #101**), and swaled area to catch basin #1 (**Pond #3**). The

remaining area of **Subcatchment #2** still contributes runoff directly to **Final Reach #200**

Subcatchment #3 consists of the remainder of the parcel and offsite land which drains directly into catch basin #3 (**Pond #3**) which directs runoff to **Final Reach #200** which discharges a level spreader and a short overland reach (**Reach #3**).

Subcatchment #4 consists solely of the rooftop of the proposed building. Runoff is collected in roof drains and directed into Porous Pavement #101 (**Pond #101**) which outlets into a level spreader directed toward **Final Reach #200**.

Porous Pavement #101 discharges runoff through underdrains to the level spreader and eventually to Final Reach #200. The porous pavement is modeled at the invert the underdrain. Runoff discharge is controlled by a HDPE cover on the underdrain. A stone trench connects the invert of the stone reservoir with the underdrain. A conveyance swale is located at the low side of the porous pavement incase of future failure. Stormwater would be captured in the swale and routed through a stone check dam and level spreader.

3.0a Stormwater Treatment:

Surface water runoff from the development area is being treated by a porous pavement system which outlets to a level spreader after treating runoff. Surface water runoff from the development area is being treated by porous pavement. Time of Concentration for porous pavement practices is a standard 800 minutes direct entry when using a 41 inch base course according to HydroCad. This number has determined by the University of New Hampshire Stormwater Center (UNHSC). With instruction from UNHSC for a 24 inch base course, scaling the 800 minute Tc. in proportion to the course thickness, a 468 minute time of concentration is proportionately appropriate. A factor a safety of two is then applied, providing 234 minute Tc. used in the analysis. Water Quality Volume calculations based on the Alteration of Terrain model along with Pond Storage Tables are included in Appendix 3 for the modeled practice.

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 covered by the NH Statewide Bacteria TMDL.

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	0.53	0.88	1.16	1.41	1.71

Final Reach #200	Existing	0.85	1.82	2.65	3.44	4.39
	Proposed	0.81	1.69	2.42	3.12	3.95

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	0.039	0.066	0.088	0.109	0.134

Final Reach #200	Existing	0.083	0.171	0.248	0.322	0.414
	Proposed	0.119	0.222	0.310	0.394	0.497

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

Per Dover Site Review Regulations, measures shall be taken to control the post development volume surface water volume so that it does not exceed predevelopment runoff for the two-, ten-, twenty-five-, and fifty year, 24-hour storm events. In the event where infiltration/recharge is limited or not practical, the owner/applicant must demonstrate that the project will not contribute the flood or functional impairments to streets, adjacent properties, and downstream properties.

As demonstrated in the Comparative Analysis at Final Reach #200, there is a minor volumetric increase at the required storm events. Based on several factors of the property, this increase will not contribute the flood or functional impairments to streets, adjacent properties, and downstream properties. The site, as shown on the Site-Specific Soils Map by John P Hayes III, CSS, CWS, the site soils consist of disturbed soils that are derived from Buxton Silt Loam, HSG C. Determining an Infiltration Rate in accordance with Env-Wq 1508.02, the Ksat NH manual shows an Infiltration Rate in the C horizon of 0.0 in/hour. Utilizing Alteration of Terrain Standards, ground water recharge is not practical on the project site.

The project is compliant with the Channel Protection Requirements of Env-Wq 1507.05(b)(1)(a-c). The 2-year, 24 hour post-development peak flow rate generated from the proposed disturbance is equal or less than the 2-year, 24-hour pre-development peak flow rate and: a.) The 2 year, 24-hour post-development storm volume, directed to a channel, downstream receiving water, or wetland has not increased over the pre-development volume by more than 0.1 acre-feet; b.) The 2-

year, 24-hour post-development peak flow rate directed to a channel, downstream receiving water, or wetland is less than 2 cfs; and C. The area directly discharges into a fourth order or greater river, a pond or lake greater than 10 acres, or tidal water; (Cochecho River). Stormwater routed to Final Reach #200 is discharged across a wooded area and is received by the Cochecho River. Based upon these factors, the applicant feels this demonstration is compliant to satisfy the requirements of Dover Chapter 153-14.B(4).

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

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

Porous Asphalt Pavement

Description: The Permeable Pavement system consists of a porous pavement surface and permeable sub-base materials that is going to allow filtration of surface water runoff into an underdrain to be discharged. The layers of the sub-base materials serve as a filter for the runoff prior to infiltration. Care must be taken during the preparation of the sub-base materials to ensure operation of the infiltration bed and the sub-soil under the system must be scarified to a depth of two-feet below the system to ensure that the soil has not become compacted and does not contain topsoil remnants or boulders.

Maintenance Considerations: No winter sand will be used on permeable pavement and will minimize application of salt for ice control. Pavement Vacuuming - Due to the nature of porous pavement, sand must be removed by vacuuming on a regular basis when the pores become clogged two to four times per year. This process varies due to the amount of sand and sweeping efforts but should be investigated two to four times every year. The life expectancy of the porous asphalt pavement system is about 20 years following the prescribed regular maintenance schedule.

Sediment Perimeter Control

The plan set demonstrates the location of perimeter protection for sediment control, consisting of silt fence, erosion control mix berm, or Filtrexx brand Silt Soxx, (or approved equal). 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 area 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 approved 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 2012: "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.

Deep Sump Catch Basin

Deep Sump Catch Basins are used throughout the site as a pretreatment measure to remove sediment and debris from storm water runoff. Deep Sump Catch Basins will be designed with a sump that is four times the depth of the discharge culvert and a minimum of four feet. All pretreatment deep sump catch basins will have an outlet pipe hood which extends one-foot below the outlet invert and will include a hood vent. Sediment must be removed from Deep Sump Catch Basins on a regular basis, at least twice a year and more often if the sumps become half-full. Inspections should be conducted periodically. See Sheet D-101 for details.

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 a porous pavement system.

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

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

Respectfully Submitted,
BERRY SURVEYING & ENGINEERING



Kevin R. Poulin, PE
Project Engineer



Christopher R. Berry, SIT
Principal, President



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

Appendix I - Existing Conditions Analysis

25 Yr - 24 Hr. Full Summary

2 Yr - 24 Hr. Node Listing

10 Yr -24 Hr. Node Listing

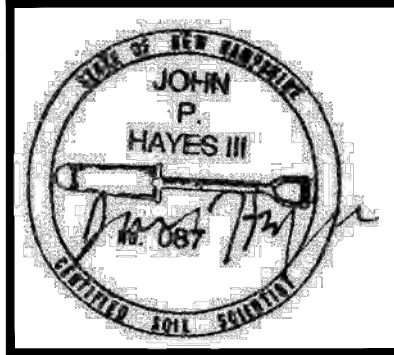
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50 Yr - 24 Hr. Node Listing

100 Yr - 24 Hr. Node Listing

DEIDRA BENJAMIN, CWS #295

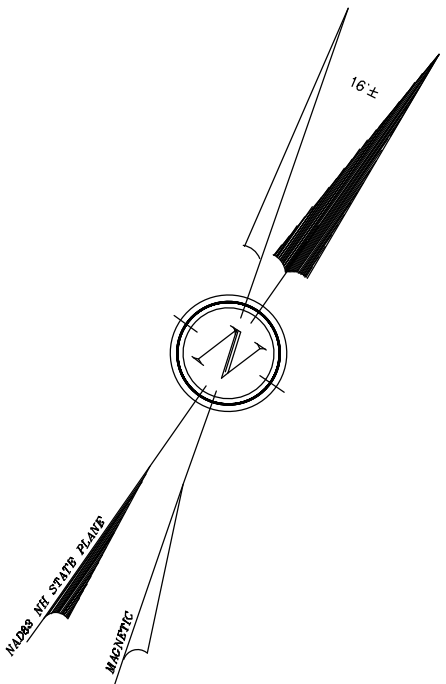
JOHN P. HAYES, CSS #87



NRCS SOILS:

BzB - BUXTON SILT LOAM, 3 TO 8% SLOPES

SEE WEBSOIL USDA-NRCS

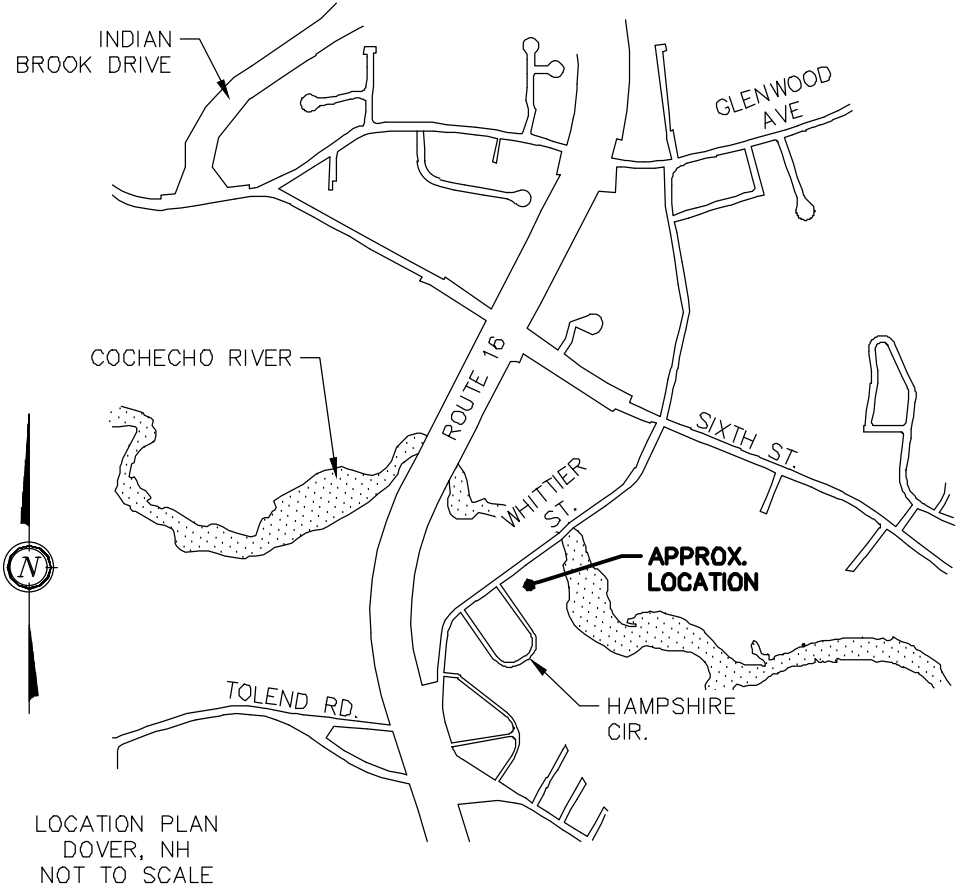


SITE SPECIFIC SOILS LEGEND

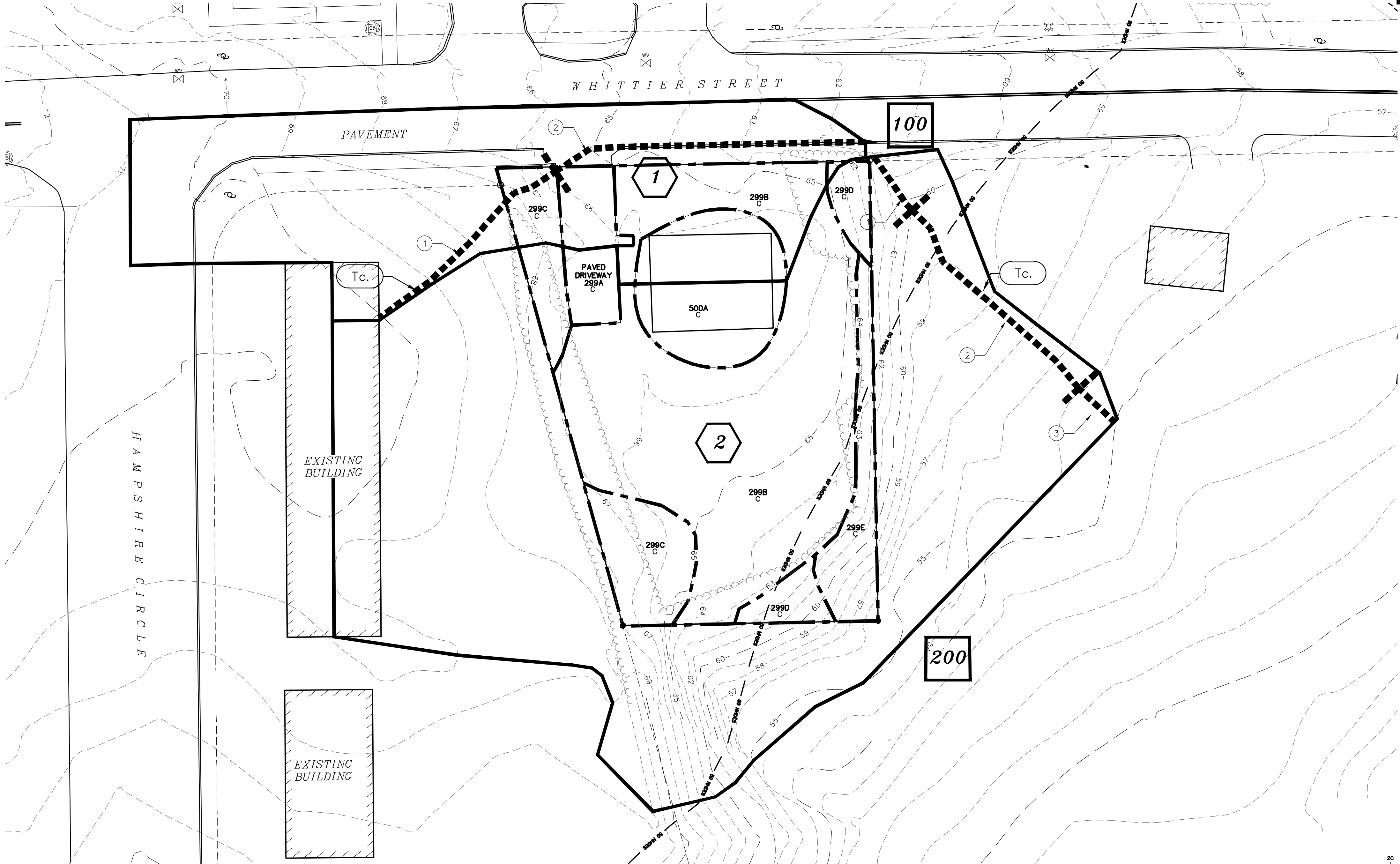
SYMBOL	SOIL TAXONOMIC NAME	HYDROLOGIC SOIL GROUP
#299B	UDORTHERTS (SMOOTHED)	C
#299C	UDORTHERTS (SMOOTHED)	C
#299D	UDORTHERTS (SMOOTHED)	C
#299E	UDORTHERTS (SMOOTHED)	C
#500A	UDORTHERTS (LOAMY)	C

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



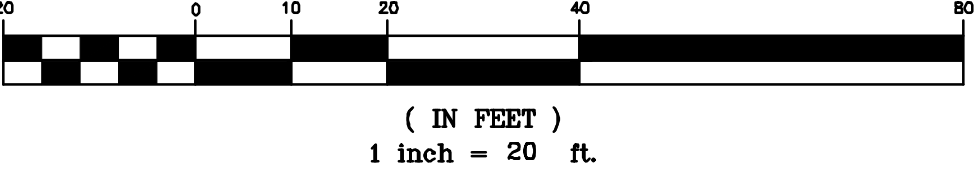
- NOTES:
- OWNER: DOVER HOUSING AUTHORITY
62 WHITTIER STREET
DOVER, NH 03820
- APPLICANT: DOVER HOUSING AUTHORITY
62 WHITTIER STREET
DOVER, NH 03820
- TAX MAP 33, LOT 1-A
 - PROJECT ADDRESS: 48 WHITTIER STREET
 - LOT AREA: 15,394 Sq. Ft., 0.35 Ac.
 - S.C.R.D. BOOK 4716, PAGE 900
 - I HEREBY CERTIFY THAT, TO THE BEST OF MY KNOWLEDGE & BELIEF, THIS PARCEL DOES NOT FALL WITHIN THE FLOOD PLAIN FLOOD HAZARD REF.: FEMA COMMUNITY #330150, MAP #3301700310E, DATED: SEPTEMBER 30, 2015.
 - VERTICAL DATUM BASED ON NAVD88 ELEVATIONS. HORIZONTAL COORDINATES BASED ON NAD83. COORDINATES GATHERED USING TOPCON HIPER SR SURVEY GRADE GPS RECEIVERS.
 - 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.
 - 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



DOVER PLANNING FILE #P21-37

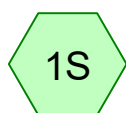
REVISION	DATE	DESCRIPTION
2-21-24		REVISED BUILDINGS, UTILITIES, TDR RELIEF
8-31-22		REVISED PER NOISE DEPARTMENT
7-20-21		REVISED PER DOVER TRC COMMENT
#4		
#3		
#2		

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

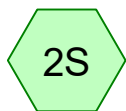
STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 142
PROFESSIONAL ENGINEER



Subcatchment #1



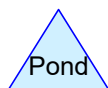
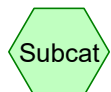
Final Reach #100



Subcatchment #2



Final Reach #200



Routing Diagram for 20-136 W1 Existing Watershed

Prepared by Berry Surveying & Engineering, Printed 6/6/2022
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20-136 W1 Existing Watershed

Prepared by Berry Surveying & Engineering

Printed 6/6/2022

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Page 2

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	Roofs, HSG C (1S, 2S)
0.347	70	Woods, Good, HSG C (1S, 2S)
1.030	77	TOTAL AREA

20-136 W1 Existing Watershed

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Page 3

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

20-136 W1 Existing Watershed

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Page 4

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.484	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	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	

20-136 W1 Existing Watershed

Type III 24-hr 25yr-24hr Rainfall=6.91"

Prepared by Berry Surveying & Engineering

Printed 6/6/2022

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Page 5

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

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>3.95"
Flow Length=116' Tc=14.8 min CN=74 Runoff=2.65 cfs 0.248 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=2.65 cfs 0.248 af
Outflow=2.65 cfs 0.248 af

Total Runoff Area = 1.030 ac Runoff Volume = 0.370 af Average Runoff Depth = 4.31"
80.63% Pervious = 0.831 ac 19.37% Impervious = 0.200 ac

20-136 W1 Existing Watershed

Prepared by Berry Surveying & Engineering

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Type III 24-hr 25yr-24hr Rainfall=6.91"

Printed 6/6/2022

Page 6

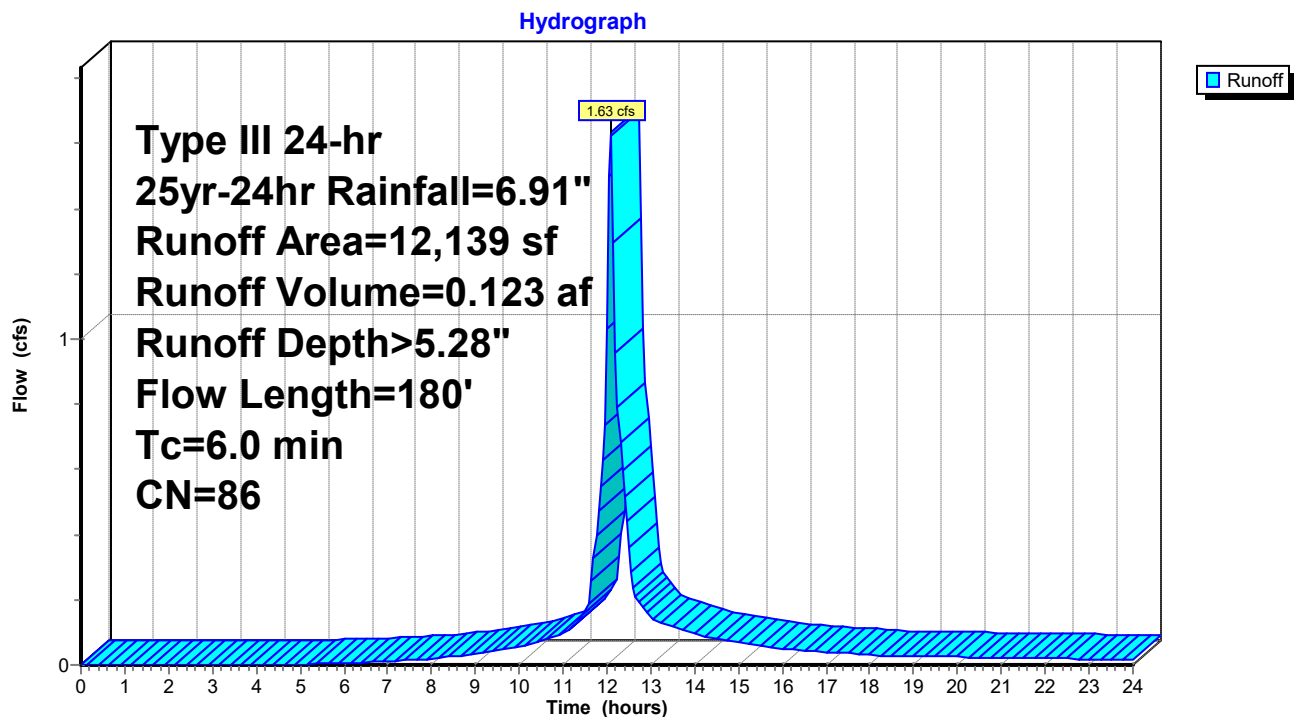
Summary for Subcatchment 1S: Subcatchment #1

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	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

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

20-136 W1 Existing Watershed

Prepared by Berry Surveying & Engineering

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Type III 24-hr 25yr-24hr Rainfall=6.91"

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Page 7

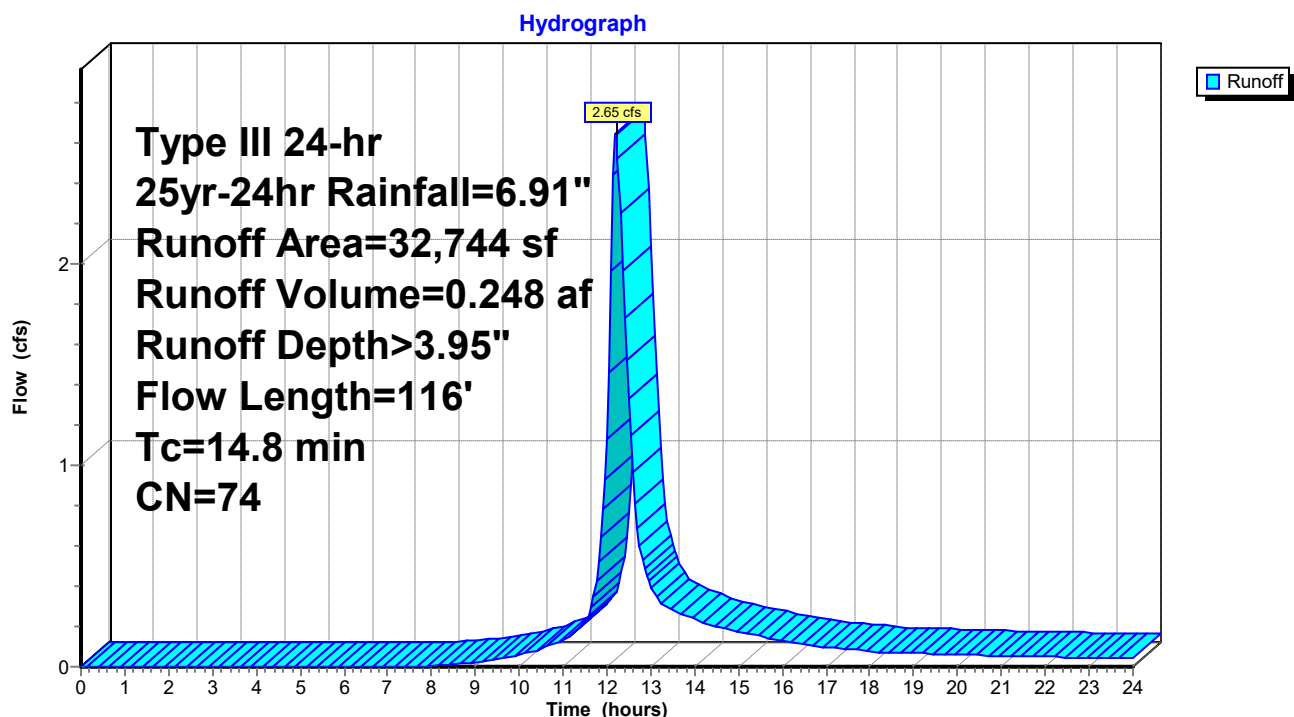
Summary for Subcatchment 2S: Subcatchment #2

Runoff = 2.65 cfs @ 12.21 hrs, Volume= 0.248 af, Depth> 3.95"

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
2,190	98	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	Weighted Average
30,130		92.02% Pervious Area
2,614		7.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.9	20	0.1000	0.11		Sheet Flow, Segment #1
					Woods: Light underbrush n= 0.400 P2= 3.62"
11.7	80	0.0500	0.11		Sheet Flow, Segment #2
					Woods: Light underbrush n= 0.400 P2= 3.62"
0.2	16	0.0625	1.25		Shallow Concentrated Flow, Segment #3
					Woodland Kv= 5.0 fps
14.8	116	Total			

Subcatchment 2S: Subcatchment #2

20-136 W1 Existing Watershed

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Type III 24-hr 25yr-24hr Rainfall=6.91"

Printed 6/6/2022

Page 8

Summary for Reach 100R: Final Reach #100

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

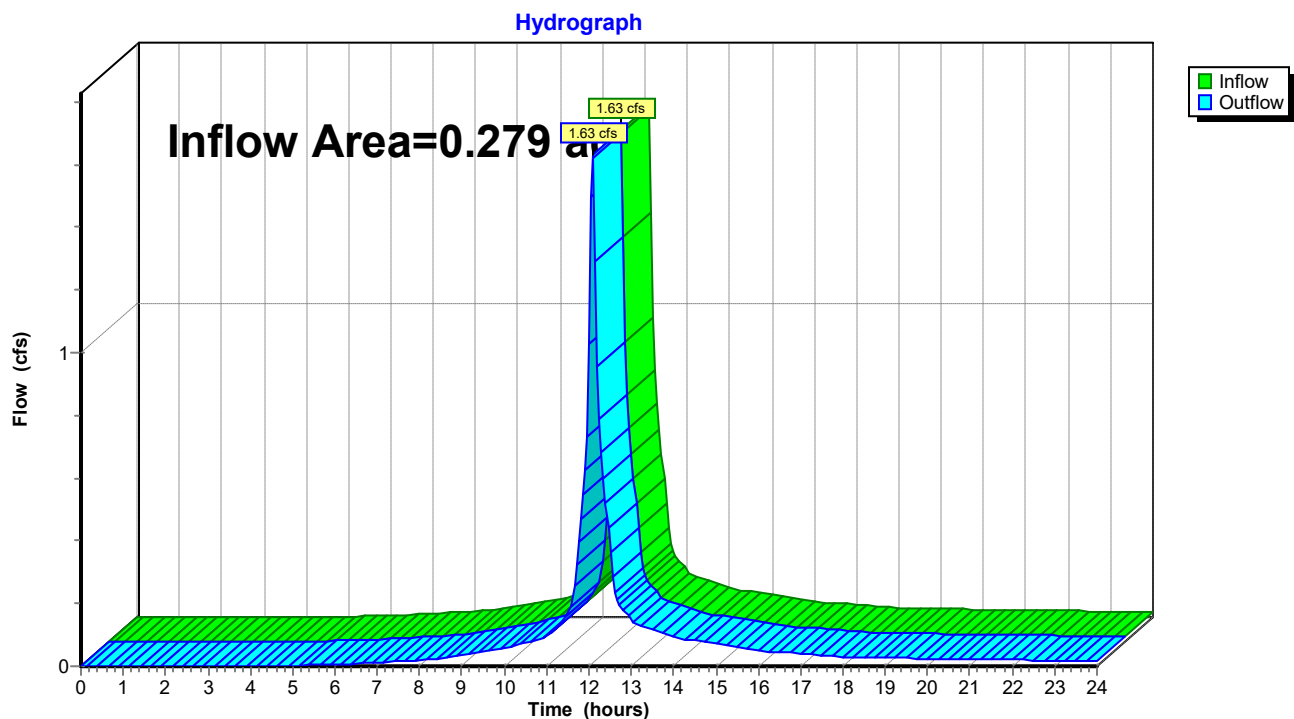
Inflow Area = 0.279 ac, 50.09% Impervious, Inflow Depth > 5.28" for 25yr-24hr event

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



20-136 W1 Existing Watershed

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Type III 24-hr 25yr-24hr Rainfall=6.91"

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Page 9

Summary for Reach 200R: Final Reach #200

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

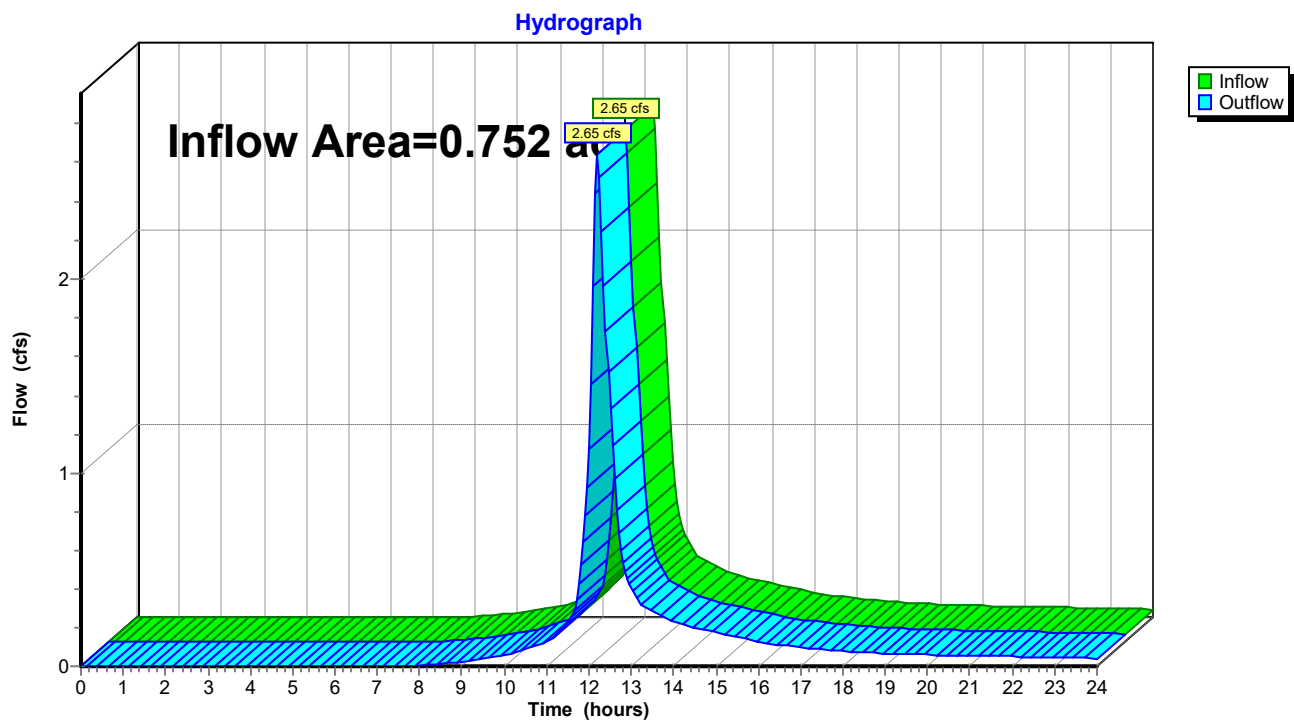
Inflow Area = 0.752 ac, 7.98% Impervious, Inflow Depth > 3.95" for 25yr-24hr event

Inflow = 2.65 cfs @ 12.21 hrs, Volume= 0.248 af

Outflow = 2.65 cfs @ 12.21 hrs, Volume= 0.248 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



20-136 W1 Existing Watershed

Type III 24-hr 2yr-24hr Rainfall=3.62"

Prepared by Berry Surveying & Engineering

Printed 6/6/2022

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Page 1

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

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>1.32"
Flow Length=116' Tc=14.8 min CN=74 Runoff=0.85 cfs 0.083 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=0.85 cfs 0.083 af
Outflow=0.85 cfs 0.083 af

Total Runoff Area = 1.030 ac Runoff Volume = 0.134 af Average Runoff Depth = 1.56"
80.63% Pervious = 0.831 ac 19.37% Impervious = 0.200 ac

20-136 W1 Existing Watershed*Type III 24-hr 10yr-24hr Rainfall=5.46"*

Prepared by Berry Surveying & Engineering

Printed 6/6/2022

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Page 2

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>2.73"
Flow Length=116' Tc=14.8 min CN=74 Runoff=1.82 cfs 0.171 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=1.82 cfs 0.171 af
Outflow=1.82 cfs 0.171 af

Total Runoff Area = 1.030 ac Runoff Volume = 0.261 af Average Runoff Depth = 3.04"
80.63% Pervious = 0.831 ac 19.37% Impervious = 0.200 ac

20-136 W1 Existing Watershed

Type III 24-hr 25yr-24hr Rainfall=6.91"

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Page 3

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>3.95"
Flow Length=116' Tc=14.8 min CN=74 Runoff=2.65 cfs 0.248 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=2.65 cfs 0.248 af
Outflow=2.65 cfs 0.248 af

Total Runoff Area = 1.030 ac Runoff Volume = 0.370 af Average Runoff Depth = 4.31"
80.63% Pervious = 0.831 ac 19.37% Impervious = 0.200 ac

20-136 W1 Existing Watershed*Type III 24-hr 50yr-24hr Rainfall=8.26"*

Prepared by Berry Surveying & Engineering

Printed 6/6/2022

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Page 4

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>5.15"
Flow Length=116' Tc=14.8 min CN=74 Runoff=3.44 cfs 0.322 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=3.44 cfs 0.322 af
Outflow=3.44 cfs 0.322 af

Total Runoff Area = 1.030 ac Runoff Volume = 0.475 af Average Runoff Depth = 5.53"
80.63% Pervious = 0.831 ac 19.37% Impervious = 0.200 ac

20-136 W1 Existing Watershed

Type III 24-hr 100yr-24hr Rainfall=9.87"

Prepared by Berry Surveying & Engineering

Printed 6/6/2022

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Page 5

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

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>6.61"
Flow Length=116' Tc=14.8 min CN=74 Runoff=4.39 cfs 0.414 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=4.39 cfs 0.414 af
Outflow=4.39 cfs 0.414 af

Total Runoff Area = 1.030 ac Runoff Volume = 0.603 af Average Runoff Depth = 7.03"
80.63% Pervious = 0.831 ac 19.37% Impervious = 0.200 ac

Appendix II - Proposed Conditions Analysis

25 Yr - 24 Hr. Full Summary

2 Yr - 24 Hr. Node Listing

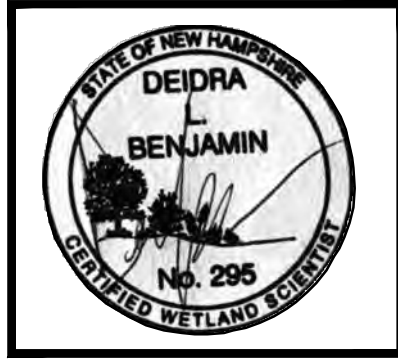
10 Yr - 24 Hr. Node Listing

25 Yr – 24 Hr. Node Listing

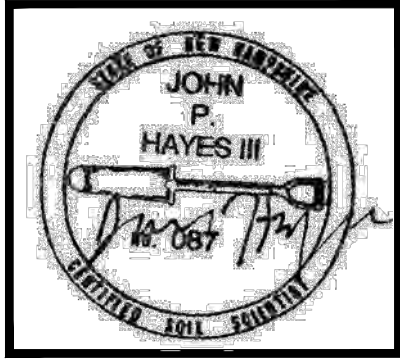
50 Yr - 24 Hr. Node Listing

100 Yr - 24 Hr. Ponds Only

DEIDRA BENJAMIN, CWS #295



JOHN P. HAYES, CSS #87



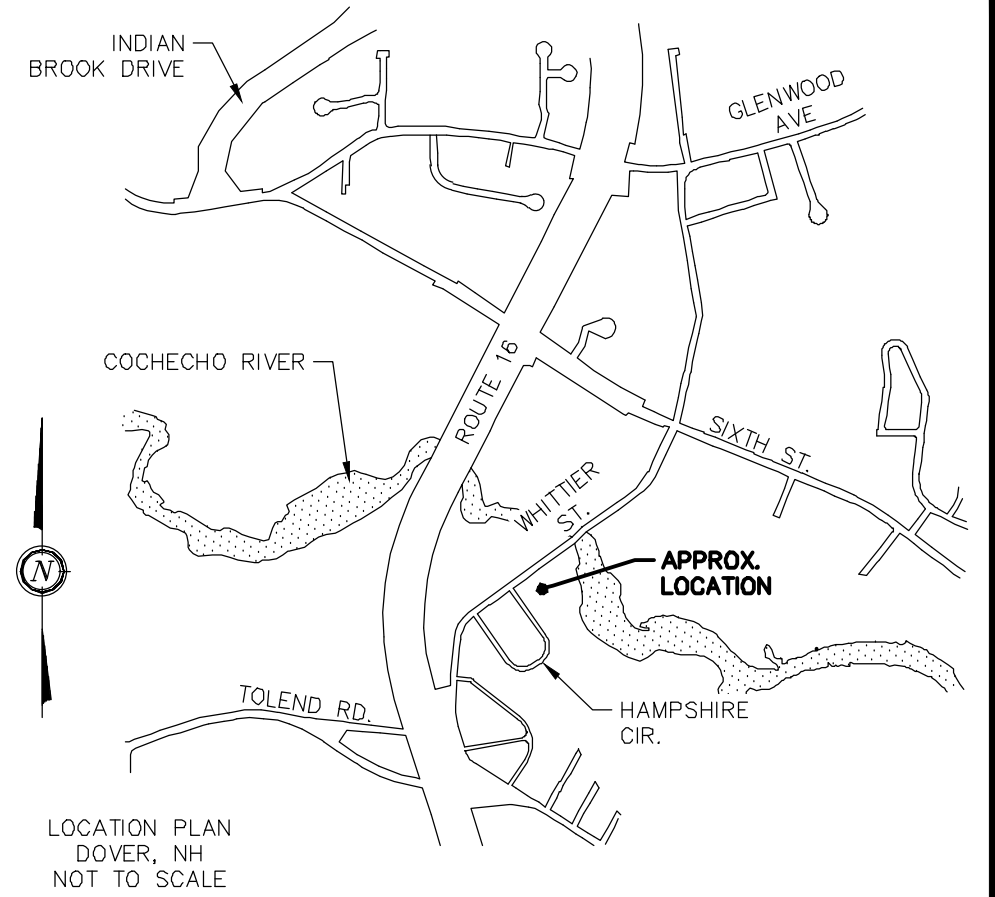
NRCS SOILS:

BzB - 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



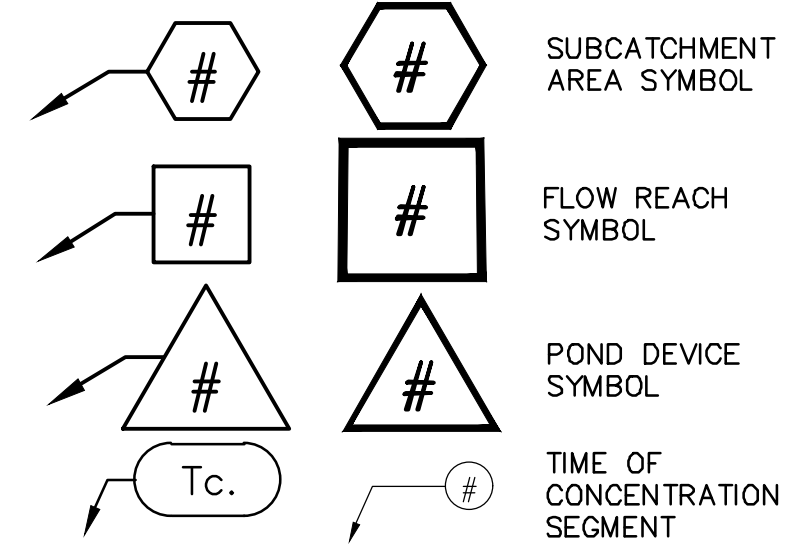
NOTES:

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

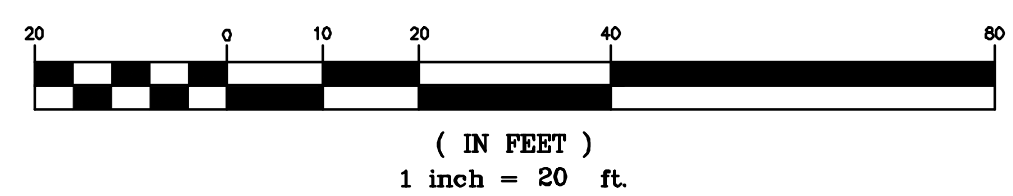
APPLICANT: DOVER HOUSING AUTHORITY
62 WHITTIER STREET
DOVER, NH 03820

- TAX MAP 33, LOT 1-A
- PROJECT ADDRESS: 48 WHITTIER STREET
- LOT AREA: 15,394 Sq. Ft., 0.35 Ac.
- S.C.R.D. BOOK 4716, PAGE 900
- 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.
- VERTICAL DATUM BASED ON NAVD88 ELEVATIONS. HORIZONTAL COORDINATES BASED ON NAD83. COORDINATES GATHERED USING TOPCON HIPER SR SURVEY GRADE GPS RECEIVERS.
- 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.
- THE INTENT OF THIS PLAN IS TO SHOW THE PROPOSED WATERSHED CONDITIONS ON TAX MAP 33, LOT 1-A.

SYMBOLS LEGEND:



GRAPHIC SCALE



DOVER PLANNING FILE #P21-37, WAIV-2024-003

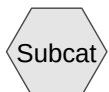
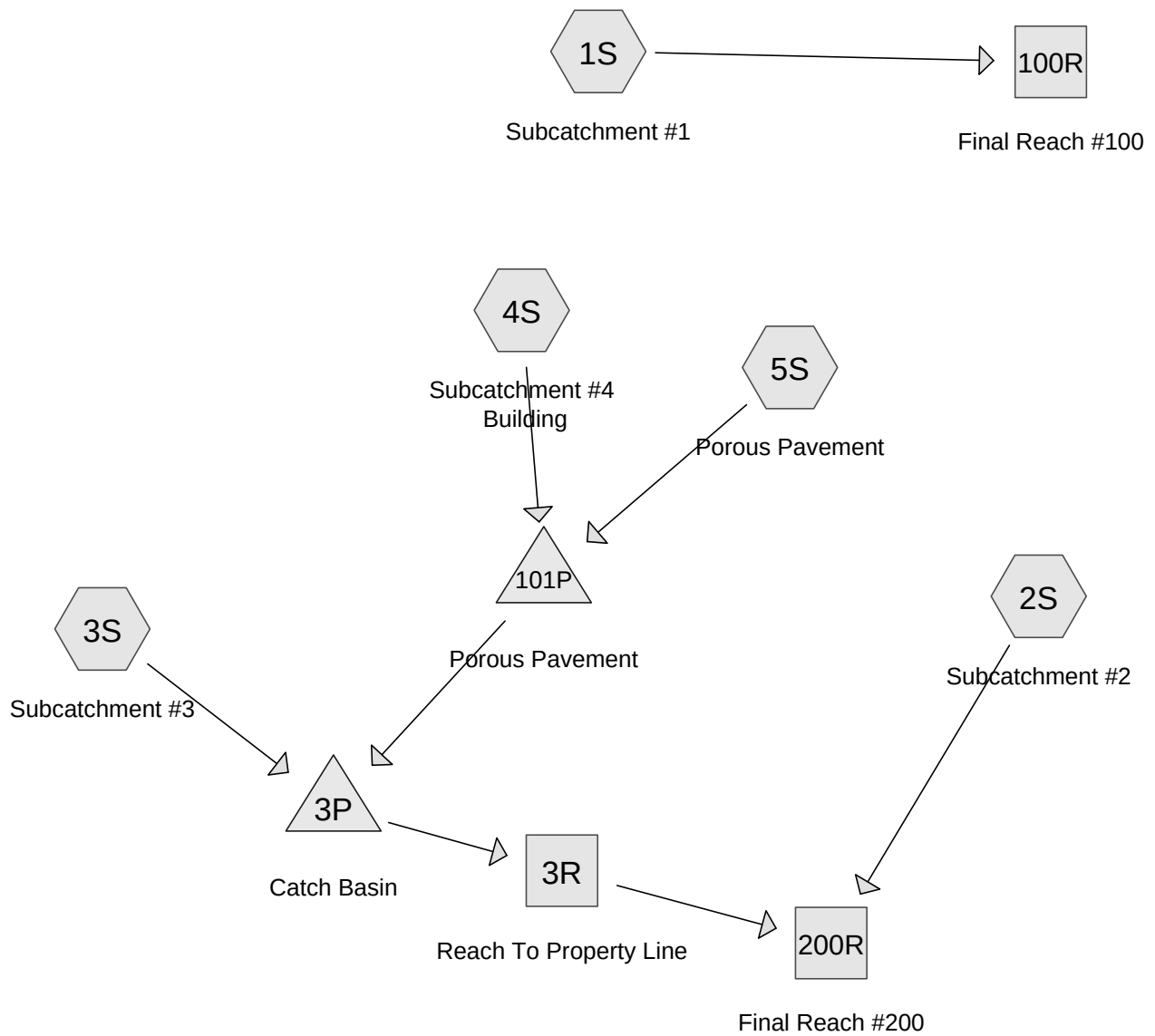
REVISION	DATE	DESCRIPTION
#5	3-15-24	REVISED PER TRC COMMENT
#4	2-21-24	REVISED BUILDINGS, UTILITIES, TDR RELIEF
#3	8-7-22	REVISED PER NOISE DEPARTMENT
#1	7-20-21	REVISED PER DOVER TRC COMMENT

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

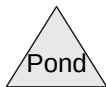
SHEET 2 OF 2



Subcat



Reach



Pond



Link

Routing Diagram for 20-136 W2 Proposed Watershed, Revised 3/19/24

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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.410	74	>75% Grass cover, Good, HSG C (1S, 2S, 3S, 5S)
0.009	96	Gravel surface, HSG C (2S, 3S, 5S)
0.258	98	Paved parking, HSG C (1S, 2S, 3S, 5S)
0.095	98	Roofs, HSG C (1S, 3S, 4S, 5S)
0.257	70	Woods, Good, HSG C (2S, 3S)
1.030	81	TOTAL AREA

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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, 5S
0.000	HSG D	
0.000	Other	
1.030		TOTAL AREA

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Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.410	0.000	0.000	0.410	>75% Grass cover, Good	1S, 2S, 3S, 5S
0.000	0.000	0.009	0.000	0.000	0.009	Gravel surface	2S, 3S, 5S
0.000	0.000	0.258	0.000	0.000	0.258	Paved parking	1S, 2S, 3S, 5S
0.000	0.000	0.095	0.000	0.000	0.095	Roofs	1S, 3S, 4S, 5S
0.000	0.000	0.257	0.000	0.000	0.257	Woods, Good	2S, 3S
0.000	0.000	1.030	0.000	0.000	1.030	TOTAL AREA	

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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	3P	59.50	58.00	45.0	0.0333	0.012	12.0	0.0	0.0
2	101P	60.25	60.00	20.0	0.0125	0.012	6.0	0.0	0.0

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Type III 24-hr 25yr-24hr Rainfall=6.91"

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

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

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

Subcatchment1S: Subcatchment#1 Runoff Area=8,234 sf 61.37% Impervious Runoff Depth>5.62"
Flow Length=180' Tc=6.0 min CN=89 Runoff=1.16 cfs 0.088 af

Subcatchment2S: Subcatchment#2 Runoff Area=13,775 sf 0.48% Impervious Runoff Depth>3.64"
Flow Length=116' Tc=14.8 min CN=71 Runoff=1.02 cfs 0.096 af

Subcatchment3S: Subcatchment#3 Runoff Area=14,210 sf 15.42% Impervious Runoff Depth>4.39"
Flow Length=137' Tc=6.0 min CN=78 Runoff=1.64 cfs 0.119 af

Subcatchment4S: Subcatchment#4 Runoff Area=1,976 sf 100.00% Impervious Runoff Depth>6.20"
Tc=312.0 min CN=98 Runoff=0.04 cfs 0.023 af

Subcatchment5S: Porous Pavement Runoff Area=6,678 sf 91.18% Impervious Runoff Depth>5.97"
Tc=312.0 min CN=96 Runoff=0.14 cfs 0.076 af

Reach 3R: Reach To Property Line Avg. Flow Depth=0.12' Max Vel=2.96 fps Inflow=1.66 cfs 0.214 af
n=0.030 L=18.4' S=0.1087 ' /' Capacity=39.18 cfs Outflow=1.66 cfs 0.214 af

Reach 100R: Final Reach #100 Inflow=1.16 cfs 0.088 af
Outflow=1.16 cfs 0.088 af

Reach 200R: Final Reach #200 Inflow=2.42 cfs 0.310 af
Outflow=2.42 cfs 0.310 af

Pond 3P: Catch Basin Peak Elev=60.20' Storage=0.000 af Inflow=1.66 cfs 0.214 af
12.0" Round Culvert n=0.012 L=45.0' S=0.0333 ' /' Outflow=1.66 cfs 0.214 af

Pond 101P: Porous Pavement Peak Elev=60.51' Storage=541 cf Inflow=0.18 cfs 0.100 af
6.0" Round Culvert n=0.012 L=20.0' S=0.0125 ' /' Outflow=0.18 cfs 0.095 af

Total Runoff Area = 1.030 ac Runoff Volume = 0.403 af Average Runoff Depth = 4.70"
65.74% Pervious = 0.677 ac 34.26% Impervious = 0.353 ac

20-136 W2 Proposed Watershed

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Type III 24-hr 25yr-24hr Rainfall=6.91"

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Summary for Subcatchment 1S: Subcatchment #1

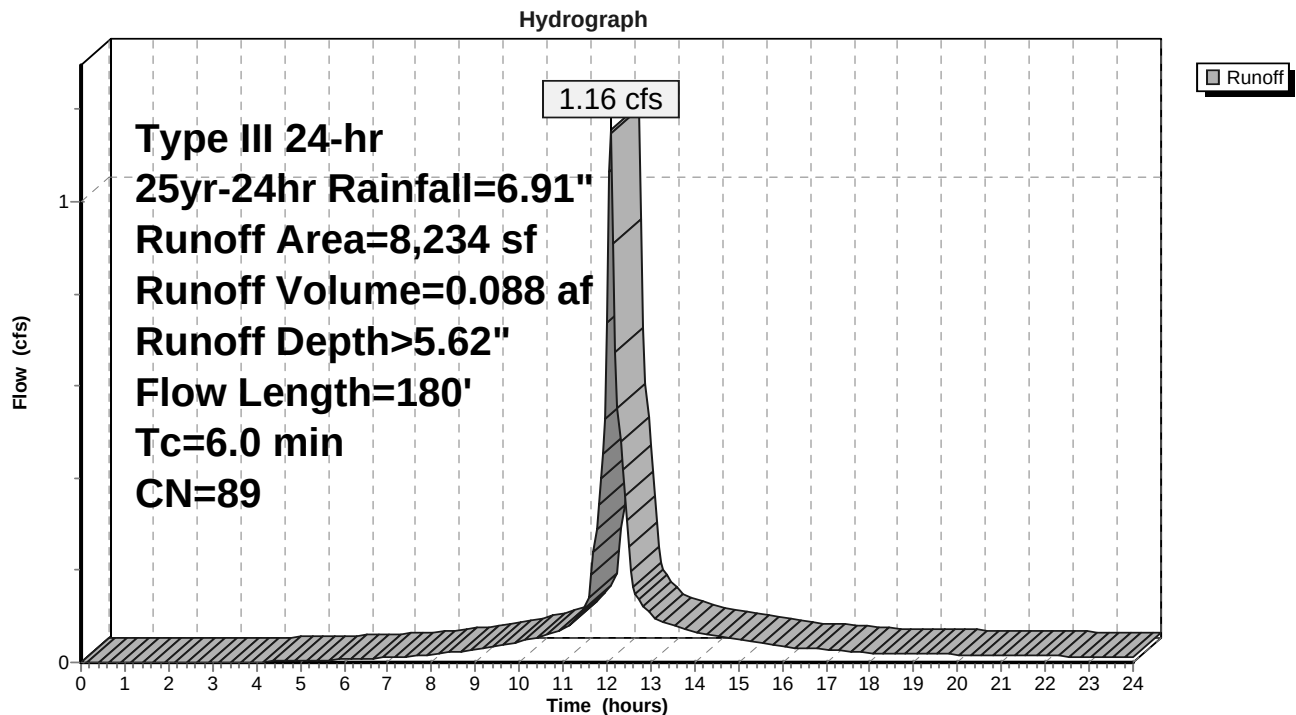
Runoff = 1.16 cfs @ 12.09 hrs, Volume= 0.088 af, Depth> 5.62"

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
291	98	Roofs, HSG C
3,181	74	>75% Grass cover, Good, HSG C
4,762	98	Paved parking, HSG C
8,234	89	Weighted Average
3,181		38.63% Pervious Area
5,053		61.37% Impervious Area

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



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Type III 24-hr 25yr-24hr Rainfall=6.91"

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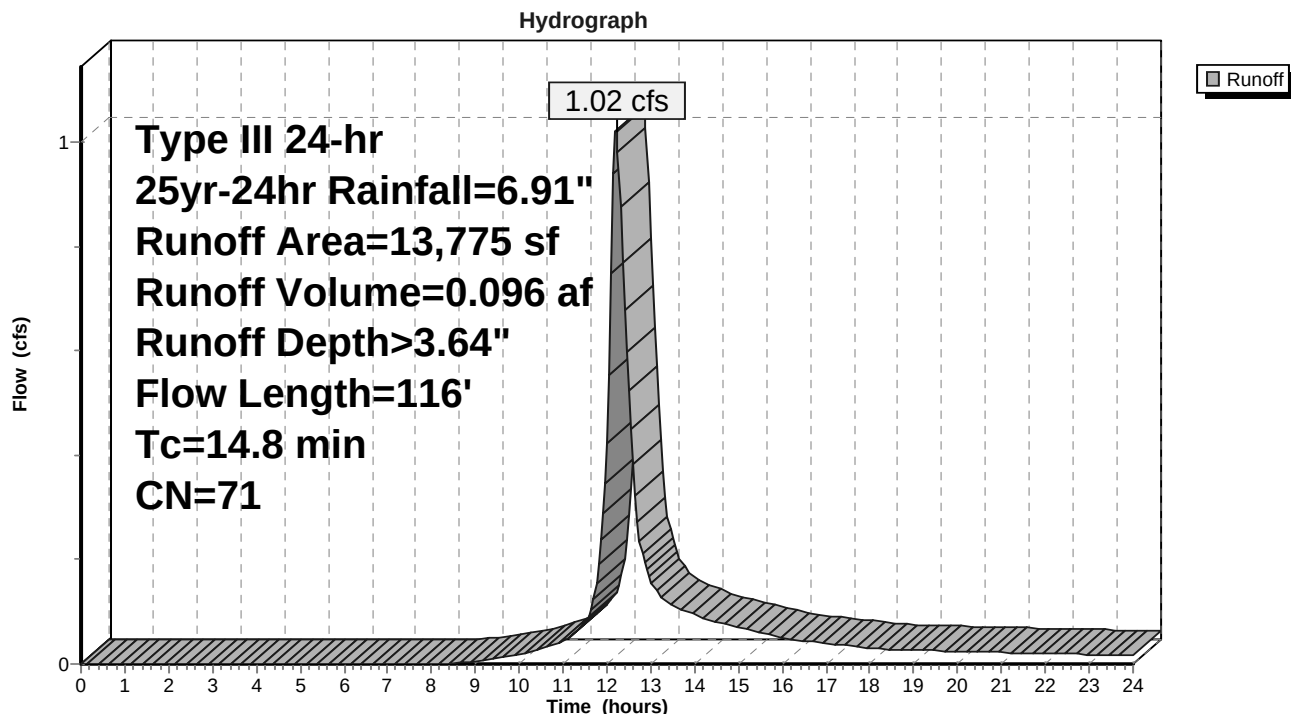
Summary for Subcatchment 2S: Subcatchment #2

Runoff = 1.02 cfs @ 12.21 hrs, Volume= 0.096 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
2,770	74	>75% Grass cover, Good, HSG C
10,670	70	Woods, Good, HSG C
66	98	Paved parking, HSG C
269	96	Gravel surface, HSG C
13,775	71	Weighted Average
13,709		99.52% Pervious Area
66		0.48% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.9	20	0.1000	0.11		Sheet Flow, Segment #1 Woods: Light underbrush n= 0.400 P2= 3.62"
11.7	80	0.0500	0.11		Sheet Flow, Segment #2 Woods: Light underbrush n= 0.400 P2= 3.62"
0.2	16	0.0625	1.25		Shallow Concentrated Flow, Segment #3 Woodland Kv= 5.0 fps
14.8	116	Total			

Subcatchment 2S: Subcatchment #2

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Type III 24-hr 25yr-24hr Rainfall=6.91"

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Summary for Subcatchment 3S: Subcatchment #3

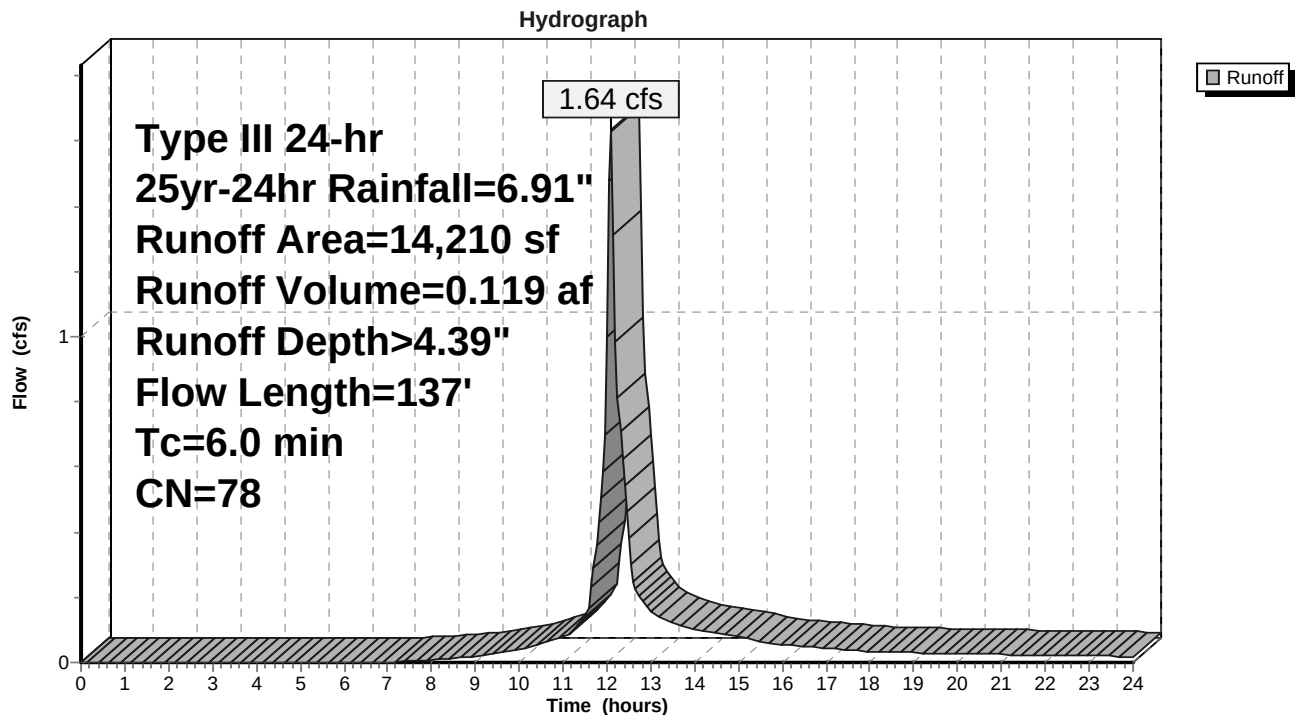
Runoff = 1.64 cfs @ 12.09 hrs, Volume= 0.119 af, Depth> 4.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25yr-24hr Rainfall=6.91"

Area (sf)	CN	Description
1,655	98	Roofs, HSG C
11,390	74	>75% Grass cover, Good, HSG C
536	98	Paved parking, HSG C
540	70	Woods, Good, HSG C
89	96	Gravel surface, HSG C
14,210	78	Weighted Average
12,019		84.58% Pervious Area
2,191		15.42% Impervious Area

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 3S: Subcatchment #3



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Type III 24-hr 25yr-24hr Rainfall=6.91"

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Summary for Subcatchment 4S: Subcatchment #4 Building

Runoff = 0.04 cfs @ 15.95 hrs, Volume= 0.023 af, Depth> 6.20"

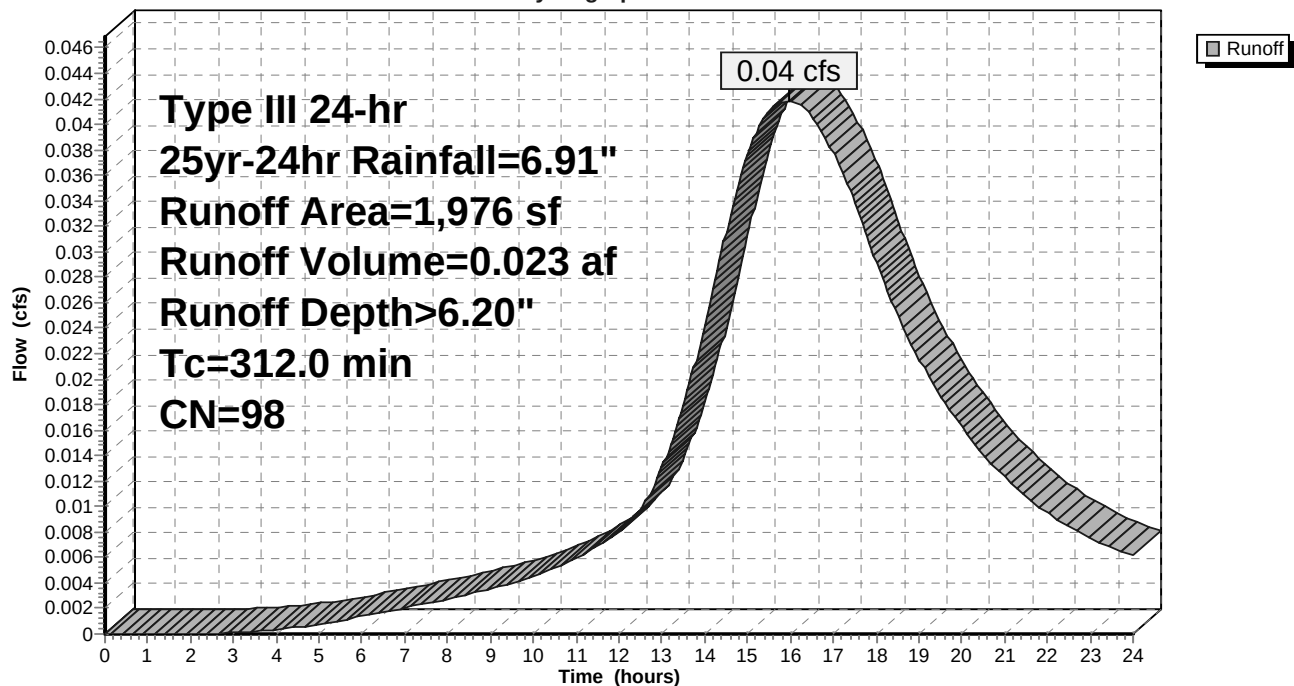
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25yr-24hr Rainfall=6.91"

Area (sf)	CN	Description
1,976	98	Roofs, HSG C
1,976		100.00% Impervious Area

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

Subcatchment 4S: Subcatchment #4 Building

Hydrograph



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Type III 24-hr 25yr-24hr Rainfall=6.91"

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Summary for Subcatchment 5S: Porous Pavement

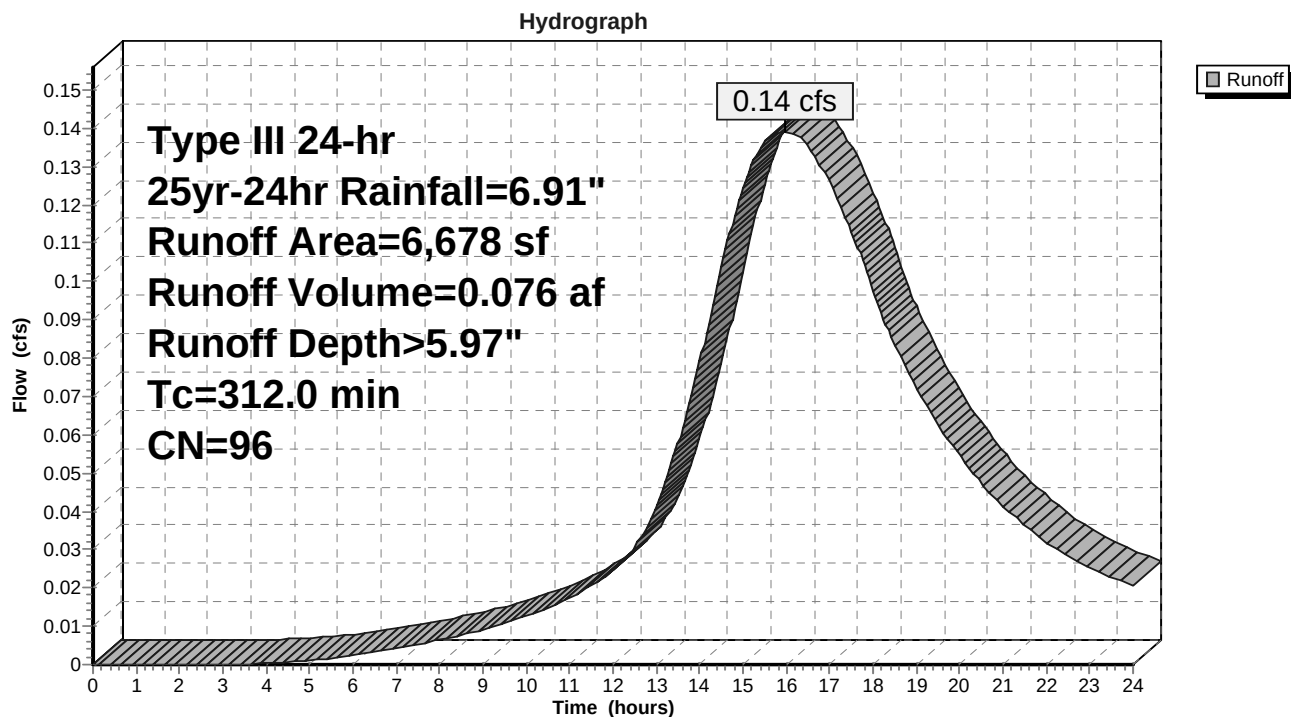
Runoff = 0.14 cfs @ 15.96 hrs, Volume= 0.076 af, Depth> 5.97"

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
535	74	>75% Grass cover, Good, HSG C
5,859	98	Paved parking, HSG C
54	96	Gravel surface, HSG C
230	98	Roofs, HSG C
6,678	96	Weighted Average
589		8.82% Pervious Area
6,089		91.18% Impervious Area

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

Subcatchment 5S: Porous Pavement



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Type III 24-hr 25yr-24hr Rainfall=6.91"

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Summary for Reach 3R: Reach To Property Line

[90] Warning: Qout>Qin may require smaller dt or Finer Routing

Inflow Area = 0.525 ac, 44.86% Impervious, Inflow Depth > 4.89" for 25yr-24hr event
Inflow = 1.66 cfs @ 12.09 hrs, Volume= 0.214 af
Outflow = 1.66 cfs @ 12.09 hrs, Volume= 0.214 af, Atten= 0%, Lag= 0.1 min

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

Max. Velocity= 2.96 fps, Min. Travel Time= 0.1 min

Avg. Velocity = 1.22 fps, Avg. Travel Time= 0.3 min

Peak Storage= 10 cf @ 12.09 hrs

Average Depth at Peak Storage= 0.12'

Bank-Full Depth= 0.50' Flow Area= 5.0 sf, Capacity= 39.18 cfs

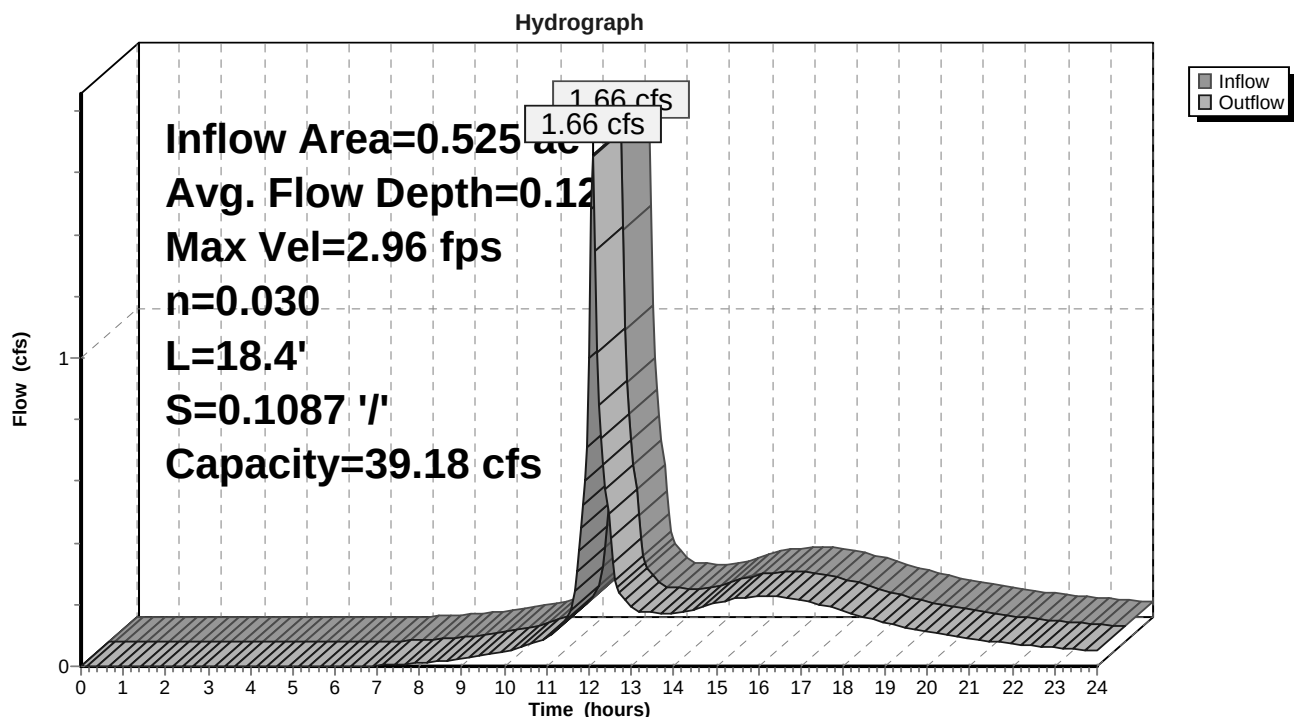
15.00' x 0.50' deep Parabolic Channel, n= 0.030 Earth, grassed & winding

Length= 18.4' Slope= 0.1087 '/'

Inlet Invert= 57.00', Outlet Invert= 55.00'



Reach 3R: Reach To Property Line



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Type III 24-hr 25yr-24hr Rainfall=6.91"

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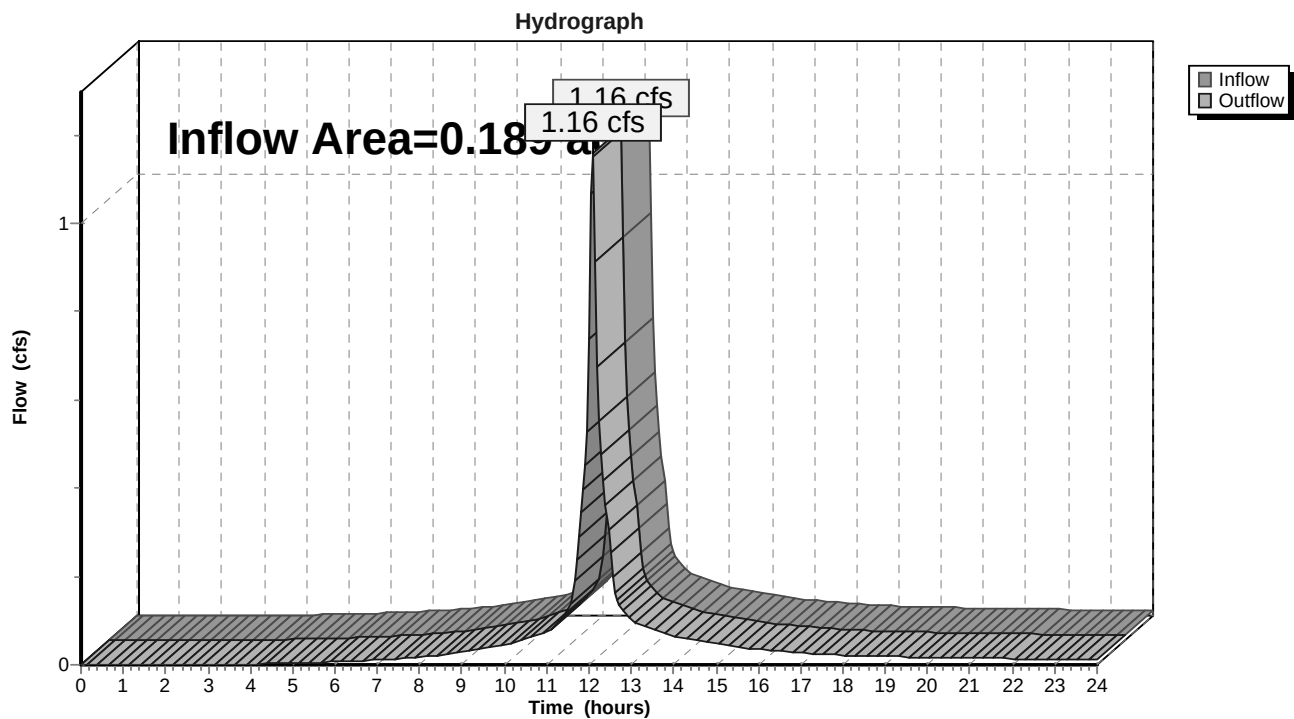
Summary for Reach 100R: Final Reach #100

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

Inflow Area = 0.189 ac, 61.37% Impervious, Inflow Depth > 5.62" for 25yr-24hr event
Inflow = 1.16 cfs @ 12.09 hrs, Volume= 0.088 af
Outflow = 1.16 cfs @ 12.09 hrs, Volume= 0.088 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



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Type III 24-hr 25yr-24hr Rainfall=6.91"

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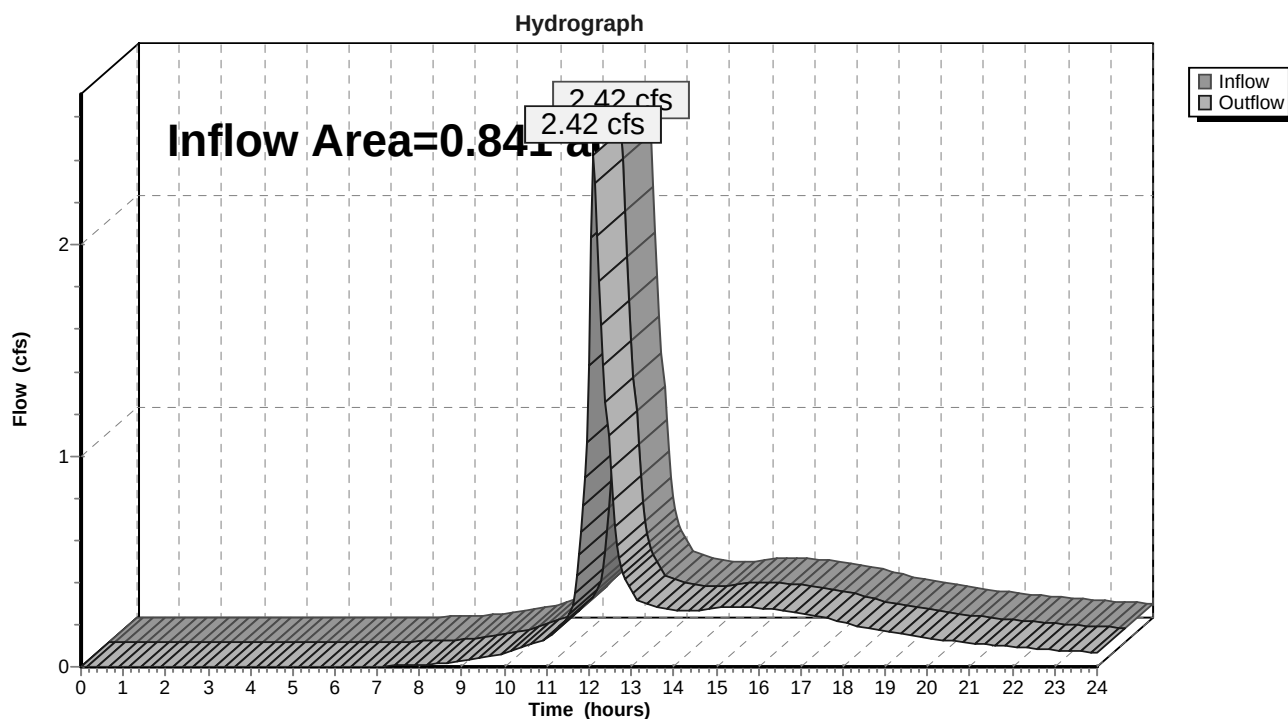
Summary for Reach 200R: Final Reach #200

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

Inflow Area = 0.841 ac, 28.17% Impervious, Inflow Depth > 4.42" for 25yr-24hr event
Inflow = 2.42 cfs @ 12.11 hrs, Volume= 0.310 af
Outflow = 2.42 cfs @ 12.11 hrs, Volume= 0.310 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



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Type III 24-hr 25yr-24hr Rainfall=6.91"

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Summary for Pond 3P: Catch Basin

Inflow Area = 0.525 ac, 44.86% Impervious, Inflow Depth > 4.89" for 25yr-24hr event
Inflow = 1.66 cfs @ 12.09 hrs, Volume= 0.214 af
Outflow = 1.66 cfs @ 12.09 hrs, Volume= 0.214 af, Atten= 0%, Lag= 0.1 min
Primary = 1.66 cfs @ 12.09 hrs, Volume= 0.214 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 60.20' @ 12.09 hrs Surf.Area= 0.000 ac Storage= 0.000 af
Flood Elev= 63.50' Surf.Area= 0.000 ac Storage= 0.001 af

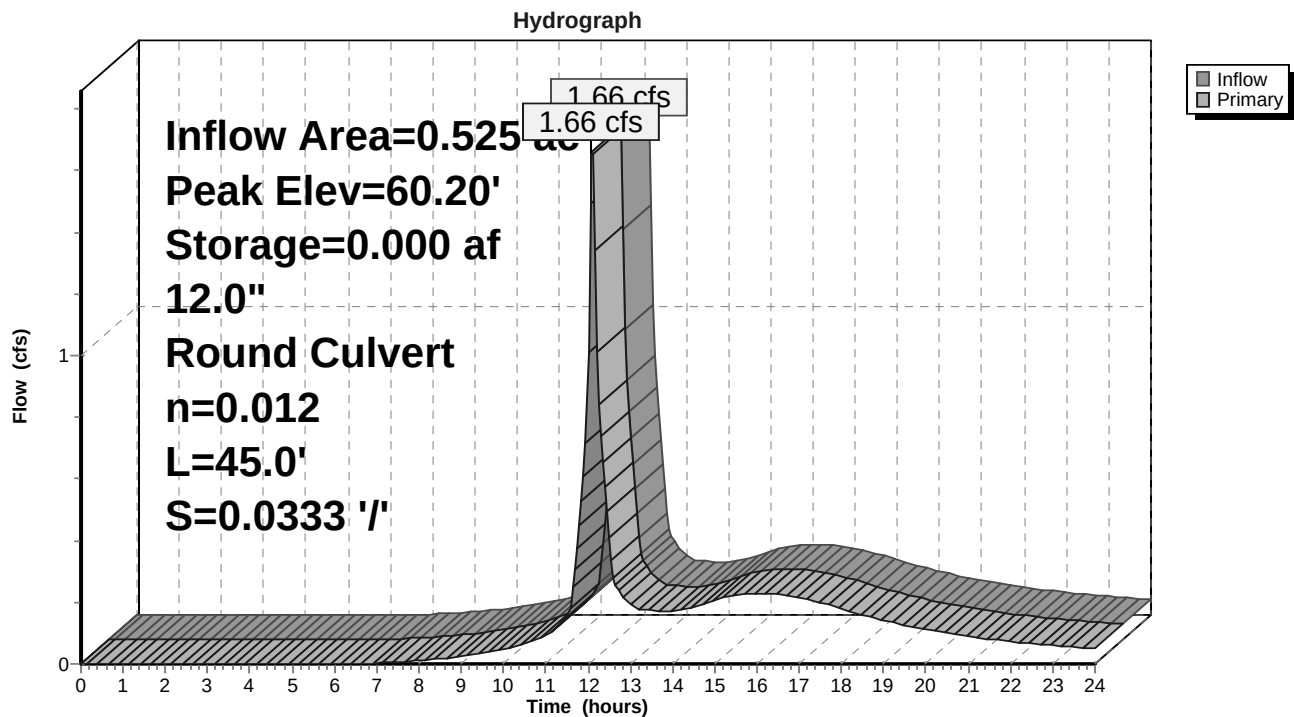
Plug-Flow detention time= 0.2 min calculated for 0.214 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (914.0 - 913.9)

Volume	Invert	Avail.Storage	Storage Description
#1	59.50'	0.001 af	4.00'D x 4.00'H Catch Basin

Device	Routing	Invert	Outlet Devices
#1	Primary	59.50'	12.0" Round 12" HDPE N-12 L= 45.0' Ke= 0.500 Inlet / Outlet Invert= 59.50' / 58.00' S= 0.0333 '/ Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=1.63 cfs @ 12.09 hrs HW=60.19' TW=57.12' (Dynamic Tailwater)
↑ **1=12" HDPE N-12** (Inlet Controls 1.63 cfs @ 2.82 fps)

Pond 3P: Catch Basin



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Type III 24-hr 25yr-24hr Rainfall=6.91"

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Summary for Pond 101P: Porous Pavement

Inflow Area = 0.199 ac, 93.19% Impervious, Inflow Depth > 6.02" for 25yr-24hr event
 Inflow = 0.18 cfs @ 15.95 hrs, Volume= 0.100 af
 Outflow = 0.18 cfs @ 16.49 hrs, Volume= 0.095 af, Atten= 3%, Lag= 32.2 min
 Primary = 0.18 cfs @ 16.49 hrs, Volume= 0.095 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
 Peak Elev= 60.51' @ 16.49 hrs Surf.Area= 5,242 sf Storage= 541 cf
 Flood Elev= 62.65' Surf.Area= 15,726 sf Storage= 3,837 cf

Plug-Flow detention time= 68.2 min calculated for 0.094 af (95% of inflow)
 Center-of-Mass det. time= 47.8 min (1,041.3 - 993.5)

Volume	Invert	Avail.Storage	Storage Description
#1	62.25'	692 cf	Choker Course (Irregular) Listed below (Recalc) 1,730 cf Overall x 40.0% Voids
#2	61.25'	1,048 cf	Filter Media (Irregular) Listed below (Recalc) 5,242 cf Overall x 20.0% Voids
#3	60.25'	2,097 cf	Stone Reservoir (Irregular) Listed below (Recalc) 5,242 cf Overall x 40.0% Voids
		3,837 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
62.25	5,242	431.9	0	0	5,242
62.58	5,242	431.9	1,730	1,730	5,385

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
61.25	5,242	431.9	0	0	5,242
62.25	5,242	431.9	5,242	5,242	5,674

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
60.25	5,242	431.9	0	0	5,242
61.25	5,242	431.9	5,242	5,242	5,674

Device	Routing	Invert	Outlet Devices
#1	Primary	60.25'	6.0" Round 6" HDPE N-12 L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 60.25' / 60.00' S= 0.0125 ' / ' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf

Primary OutFlow Max=0.18 cfs @ 16.49 hrs HW=60.51' TW=59.73' (Dynamic Tailwater)
 ↑**1=6" HDPE N-12** (Barrel Controls 0.18 cfs @ 2.51 fps)

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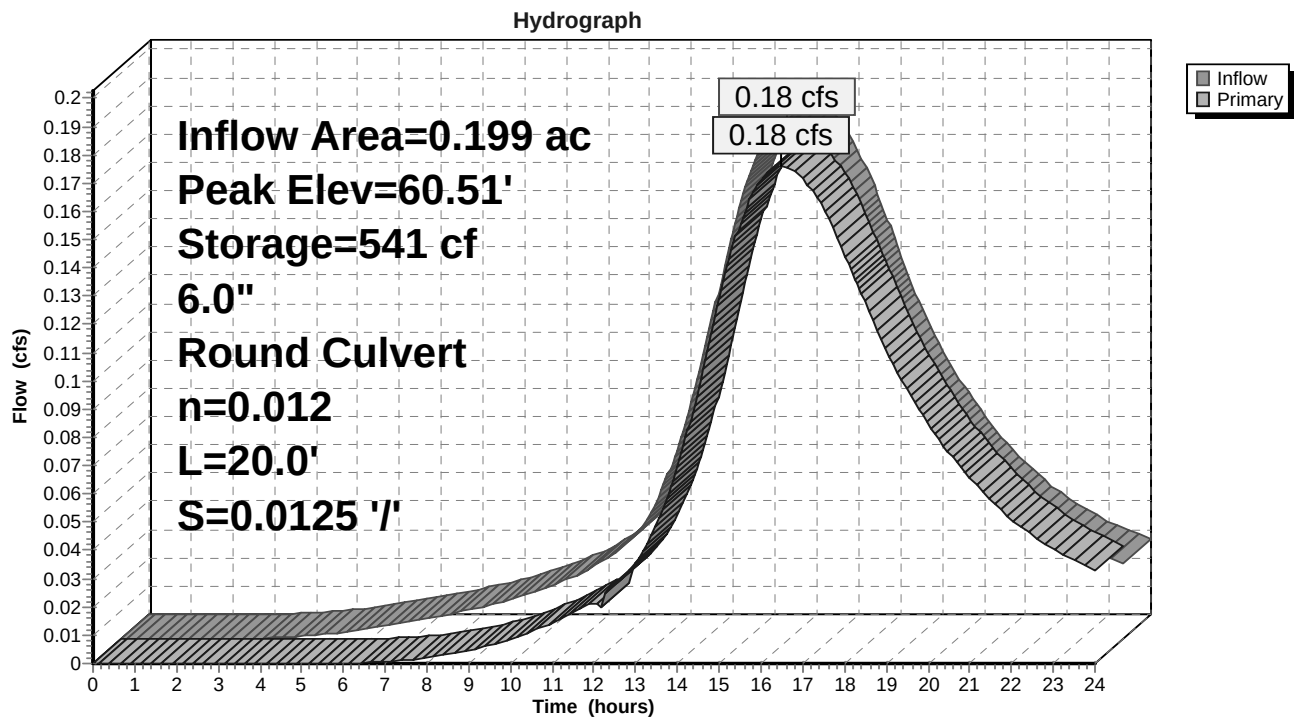
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Type III 24-hr 25yr-24hr Rainfall=6.91"

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Pond 101P: Porous Pavement



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Type III 24-hr 2yr-24hr Rainfall=3.62"

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

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

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

Subcatchment1S: Subcatchment#1 Runoff Area=8,234 sf 61.37% Impervious Runoff Depth>2.47"
Flow Length=180' Tc=6.0 min CN=89 Runoff=0.53 cfs 0.039 af

Subcatchment2S: Subcatchment#2 Runoff Area=13,775 sf 0.48% Impervious Runoff Depth>1.14"
Flow Length=116' Tc=14.8 min CN=71 Runoff=0.30 cfs 0.030 af

Subcatchment3S: Subcatchment#3 Runoff Area=14,210 sf 15.42% Impervious Runoff Depth>1.59"
Flow Length=137' Tc=6.0 min CN=78 Runoff=0.59 cfs 0.043 af

Subcatchment4S: Subcatchment#4 Runoff Area=1,976 sf 100.00% Impervious Runoff Depth>3.14"
Tc=312.0 min CN=98 Runoff=0.02 cfs 0.012 af

Subcatchment5S: Porous Pavement Runoff Area=6,678 sf 91.18% Impervious Runoff Depth>2.92"
Tc=312.0 min CN=96 Runoff=0.07 cfs 0.037 af

Reach 3R: Reach To Property Line Avg. Flow Depth=0.07' Max Vel=2.17 fps Inflow=0.60 cfs 0.089 af
n=0.030 L=18.4' S=0.1087 ' /' Capacity=39.18 cfs Outflow=0.60 cfs 0.089 af

Reach 100R: Final Reach #100 Inflow=0.53 cfs 0.039 af
Outflow=0.53 cfs 0.039 af

Reach 200R: Final Reach #200 Inflow=0.81 cfs 0.119 af
Outflow=0.81 cfs 0.119 af

Pond 3P: Catch Basin Peak Elev=59.89' Storage=0.000 af Inflow=0.60 cfs 0.089 af
12.0" Round Culvert n=0.012 L=45.0' S=0.0333 ' /' Outflow=0.60 cfs 0.089 af

Pond 101P: Porous Pavement Peak Elev=60.42' Storage=367 cf Inflow=0.09 cfs 0.049 af
6.0" Round Culvert n=0.012 L=20.0' S=0.0125 ' /' Outflow=0.09 cfs 0.045 af

Total Runoff Area = 1.030 ac Runoff Volume = 0.161 af Average Runoff Depth = 1.88"
65.74% Pervious = 0.677 ac 34.26% Impervious = 0.353 ac

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Type III 24-hr 10yr-24hr Rainfall=5.46"

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

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

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

Subcatchment1S: Subcatchment#1 Runoff Area=8,234 sf 61.37% Impervious Runoff Depth>4.21"
Flow Length=180' Tc=6.0 min CN=89 Runoff=0.88 cfs 0.066 af

Subcatchment2S: Subcatchment#2 Runoff Area=13,775 sf 0.48% Impervious Runoff Depth>2.46"
Flow Length=116' Tc=14.8 min CN=71 Runoff=0.69 cfs 0.065 af

Subcatchment3S: Subcatchment#3 Runoff Area=14,210 sf 15.42% Impervious Runoff Depth>3.10"
Flow Length=137' Tc=6.0 min CN=78 Runoff=1.16 cfs 0.084 af

Subcatchment4S: Subcatchment#4 Runoff Area=1,976 sf 100.00% Impervious Runoff Depth>4.85"
Tc=312.0 min CN=98 Runoff=0.03 cfs 0.018 af

Subcatchment5S: Porous Pavement Runoff Area=6,678 sf 91.18% Impervious Runoff Depth>4.62"
Tc=312.0 min CN=96 Runoff=0.11 cfs 0.059 af

Reach 3R: Reach To Property Line Avg. Flow Depth=0.10' Max Vel=2.67 fps Inflow=1.18 cfs 0.157 af
n=0.030 L=18.4' S=0.1087 ' Capacity=39.18 cfs Outflow=1.18 cfs 0.157 af

Reach 100R: Final Reach #100 Inflow=0.88 cfs 0.066 af
Outflow=0.88 cfs 0.066 af

Reach 200R: Final Reach #200 Inflow=1.69 cfs 0.222 af
Outflow=1.69 cfs 0.222 af

Pond 3P: Catch Basin Peak Elev=60.07' Storage=0.000 af Inflow=1.18 cfs 0.157 af
12.0" Round Culvert n=0.012 L=45.0' S=0.0333 ' Outflow=1.18 cfs 0.157 af

Pond 101P: Porous Pavement Peak Elev=60.47' Storage=469 cf Inflow=0.14 cfs 0.077 af
6.0" Round Culvert n=0.012 L=20.0' S=0.0125 ' Outflow=0.14 cfs 0.073 af

Total Runoff Area = 1.030 ac Runoff Volume = 0.293 af Average Runoff Depth = 3.41"
65.74% Pervious = 0.677 ac 34.26% Impervious = 0.353 ac

20-136 W2 Proposed Watershed

Prepared by Berry Surveying & Engineering

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Type III 24-hr 25yr-24hr Rainfall=6.91"

Revised 3/19/24 Printed 3/21/2024

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

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

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

Subcatchment1S: Subcatchment#1	Runoff Area=8,234 sf 61.37% Impervious Runoff Depth>5.62" Flow Length=180' Tc=6.0 min CN=89 Runoff=1.16 cfs 0.088 af
Subcatchment2S: Subcatchment#2	Runoff Area=13,775 sf 0.48% Impervious Runoff Depth>3.64" Flow Length=116' Tc=14.8 min CN=71 Runoff=1.02 cfs 0.096 af
Subcatchment3S: Subcatchment#3	Runoff Area=14,210 sf 15.42% Impervious Runoff Depth>4.39" Flow Length=137' Tc=6.0 min CN=78 Runoff=1.64 cfs 0.119 af
Subcatchment4S: Subcatchment#4	Runoff Area=1,976 sf 100.00% Impervious Runoff Depth>6.20" Tc=312.0 min CN=98 Runoff=0.04 cfs 0.023 af
Subcatchment5S: Porous Pavement	Runoff Area=6,678 sf 91.18% Impervious Runoff Depth>5.97" Tc=312.0 min CN=96 Runoff=0.14 cfs 0.076 af
Reach 3R: Reach To Property Line	Avg. Flow Depth=0.12' Max Vel=2.96 fps Inflow=1.66 cfs 0.214 af n=0.030 L=18.4' S=0.1087 ' /' Capacity=39.18 cfs Outflow=1.66 cfs 0.214 af
Reach 100R: Final Reach #100	Inflow=1.16 cfs 0.088 af Outflow=1.16 cfs 0.088 af
Reach 200R: Final Reach #200	Inflow=2.42 cfs 0.310 af Outflow=2.42 cfs 0.310 af
Pond 3P: Catch Basin	Peak Elev=60.20' Storage=0.000 af Inflow=1.66 cfs 0.214 af 12.0" Round Culvert n=0.012 L=45.0' S=0.0333 ' /' Outflow=1.66 cfs 0.214 af
Pond 101P: Porous Pavement	Peak Elev=60.51' Storage=541 cf Inflow=0.18 cfs 0.100 af 6.0" Round Culvert n=0.012 L=20.0' S=0.0125 ' /' Outflow=0.18 cfs 0.095 af
Total Runoff Area = 1.030 ac Runoff Volume = 0.403 af Average Runoff Depth = 4.70"	
65.74% Pervious = 0.677 ac 34.26% Impervious = 0.353 ac	

20-136 W2 Proposed Watershed

Prepared by Berry Surveying & Engineering

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Type III 24-hr 50yr-24hr Rainfall=8.26"

Revised 3/19/24 Printed 3/21/2024

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

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

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

Subcatchment1S: Subcatchment#1 Runoff Area=8,234 sf 61.37% Impervious Runoff Depth>6.94"
Flow Length=180' Tc=6.0 min CN=89 Runoff=1.41 cfs 0.109 af

Subcatchment2S: Subcatchment#2 Runoff Area=13,775 sf 0.48% Impervious Runoff Depth>4.79"
Flow Length=116' Tc=14.8 min CN=71 Runoff=1.35 cfs 0.126 af

Subcatchment3S: Subcatchment#3 Runoff Area=14,210 sf 15.42% Impervious Runoff Depth>5.63"
Flow Length=137' Tc=6.0 min CN=78 Runoff=2.08 cfs 0.153 af

Subcatchment4S: Subcatchment#4 Runoff Area=1,976 sf 100.00% Impervious Runoff Depth>7.46"
Tc=312.0 min CN=98 Runoff=0.05 cfs 0.028 af

Subcatchment5S: Porous Pavement Runoff Area=6,678 sf 91.18% Impervious Runoff Depth>7.22"
Tc=312.0 min CN=96 Runoff=0.17 cfs 0.092 af

Reach 3R: Reach To Property Line Avg. Flow Depth=0.13' Max Vel=3.19 fps Inflow=2.10 cfs 0.268 af
n=0.030 L=18.4' S=0.1087 ' Capacity=39.18 cfs Outflow=2.11 cfs 0.268 af

Reach 100R: Final Reach #100 Inflow=1.41 cfs 0.109 af
Outflow=1.41 cfs 0.109 af

Reach 200R: Final Reach #200 Inflow=3.12 cfs 0.394 af
Outflow=3.12 cfs 0.394 af

Pond 3P: Catch Basin Peak Elev=60.31' Storage=0.000 af Inflow=2.10 cfs 0.268 af
12.0" Round Culvert n=0.012 L=45.0' S=0.0333 ' Outflow=2.10 cfs 0.268 af

Pond 101P: Porous Pavement Peak Elev=60.54' Storage=604 cf Inflow=0.22 cfs 0.120 af
6.0" Round Culvert n=0.012 L=20.0' S=0.0125 ' Outflow=0.21 cfs 0.115 af

Total Runoff Area = 1.030 ac Runoff Volume = 0.509 af Average Runoff Depth = 5.93"
65.74% Pervious = 0.677 ac 34.26% Impervious = 0.353 ac

20-136 W2 Proposed Watershed

Type III 24-hr 100yr-24hr Rainfall=9.87"

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Page 5

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

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

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

Subcatchment1S: Subcatchment#1 Runoff Area=8,234 sf 61.37% Impervious Runoff Depth>8.52"
Flow Length=180' Tc=6.0 min CN=89 Runoff=1.71 cfs 0.134 af

Subcatchment2S: Subcatchment#2 Runoff Area=13,775 sf 0.48% Impervious Runoff Depth>6.22"
Flow Length=116' Tc=14.8 min CN=71 Runoff=1.75 cfs 0.164 af

Subcatchment3S: Subcatchment#3 Runoff Area=14,210 sf 15.42% Impervious Runoff Depth>7.14"
Flow Length=137' Tc=6.0 min CN=78 Runoff=2.62 cfs 0.194 af

Subcatchment4S: Subcatchment#4 Runoff Area=1,976 sf 100.00% Impervious Runoff Depth>8.96"
Tc=312.0 min CN=98 Runoff=0.06 cfs 0.034 af

Subcatchment5S: Porous Pavement Runoff Area=6,678 sf 91.18% Impervious Runoff Depth>8.72"
Tc=312.0 min CN=96 Runoff=0.20 cfs 0.111 af

Reach 3R: Reach To Property Line Avg. Flow Depth=0.14' Max Vel=3.41 fps Inflow=2.62 cfs 0.333 af
n=0.030 L=18.4' S=0.1087 ' Capacity=39.18 cfs Outflow=2.63 cfs 0.333 af

Reach 100R: Final Reach #100 Inflow=1.71 cfs 0.134 af
Outflow=1.71 cfs 0.134 af

Reach 200R: Final Reach #200 Inflow=3.95 cfs 0.497 af
Outflow=3.95 cfs 0.497 af

Pond 3P: Catch Basin Peak Elev=60.47' Storage=0.000 af Inflow=2.62 cfs 0.333 af
12.0" Round Culvert n=0.012 L=45.0' S=0.0333 ' Outflow=2.62 cfs 0.333 af

Pond 101P: Porous Pavement Peak Elev=60.57' Storage=675 cf Inflow=0.26 cfs 0.145 af
6.0" Round Culvert n=0.012 L=20.0' S=0.0125 ' Outflow=0.26 cfs 0.139 af

Total Runoff Area = 1.030 ac Runoff Volume = 0.638 af Average Runoff Depth = 7.43"
65.74% Pervious = 0.677 ac 34.26% Impervious = 0.353 ac

Appendix III - Calculations, Charts, & Graphs

Extreme Precipitation Tables

Rip Rap Calculations

NHDES AoT Spreadsheets

USDA / NRCS Websoil

Site Specific Soil Plan

Site Specific Soil Report

Stormwater System Management: Inspection & Maintenance Manual

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

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

RIP RAP CALCULATIONS

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

Berry Surveying & Engineering

335 Second Crown Point Road

Barrington, NH

5/6/2021; Rev 6/6/22

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

TAILWATER < HALF THE Do

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

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

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

Tw = Tailwater Depth

T = Largest Stone Size $\times 1.5$

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 #3)	0.20	1.66	1.00	10.0	13.0	0.20	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:

Porous Pavement #101 (Pond 101P)

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

Yes	Check if you reviewed the restrictions on unlined systems outlined in Env-Wq 1508.07(a).	
0.20 ac	A = Area draining to the practice	
0.19 ac	A_i = Impervious area draining to the practice	
0.93 decimal	I = Percent impervious area draining to the practice, in decimal form	
0.89 unitless	R_v = Runoff coefficient = $0.05 + (0.9 \times I)$	
0.18 ac-in	WQV = $1'' \times R_v \times A$	
642 cf	WQV conversion (ac-in $\times$ 43,560 sf/ac $\times$ 1ft/12")	
160 cf	25% $\times$ WQV (check calc for sediment forebay volume)	
481 cf	75% $\times$ WQV (check calc for surface sand filter volume)	
N/A	Method of Pretreatment? (not required for clean or roof runoff)	
cf	V_{SED} = Sediment forebay volume, if used for pretreatment	$\geq 25\%WQV$
Calculate time to drain if system IS NOT underdrained:		
sf	A_{SA} = Surface area of the practice	
iph	K_{sat_DESIGN} = Design infiltration rate ¹	
	If K_{sat} (prior to factor of safety) is < 0.50 iph, has an underdrain been provided?	
Yes/No	(Use the calculations below)	
- hours	T_{DRAIN} = Drain time = $V / (A_{SA} * I_{DESIGN})$	$\leq 72\text{-hrs}$
Calculate time to drain if system IS underdrained:		
61.86 ft	E_{WQV} = Elevation of WQV (attach stage-storage table)	
1.08 cfs	Q_{WQV} = Discharge at the E_{WQV} (attach stage-discharge table)	
0.33 hours	T_{DRAIN} = Drain time = $2WQV/Q_{WQV}$	$\leq 72\text{-hrs}$
61.25 feet	E_{FC} = Elevation of the bottom of the filter course material ²	
60.25 feet	E_{UD} = Invert elevation of the underdrain (UD), if applicable	
62.67 feet	E_{SHWT} = Elevation of SHWT (if none found, enter the lowest elevation of the test pit)	
60.33 feet	E_{ROCK} = Elevation of bedrock (if none found, enter the lowest elevation of the test pit)	
1.00 feet	$D_{FC \text{ to } UD}$ = Depth to UD from the bottom of the filter course	$\geq 1'$
0.92 feet	$D_{FC \text{ to } ROCK}$ = Depth to bedrock from the bottom of the filter course	$\geq 1'$
(1.42) feet	$D_{FC \text{ to } SHWT}$ = Depth to SHWT from the bottom of the filter course	$\geq 1'$
60.54 ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
62.65 ft	Elevation of the top of the practice	
YES	$50 \text{ peak elevation} \leq \text{Elevation of the top of the practice}$	$\leftarrow \text{yes}$
If a surface sand filter or underground sand filter is proposed:		
YES ac	Drainage Area check.	$< 10 \text{ ac}$
cf	V = Volume of storage ³ (attach a stage-storage table)	$\geq 75\%WQV$
inches	D_{FC} = Filter course thickness	18", or 24" if within GPA
Sheet	Note what sheet in the plan set contains the filter course specification.	
Yes/No	Access grate provided?	$\leftarrow \text{yes}$

YES	ac	Drainage Area no larger than 5 ac?	← yes
	cf	V = Volume of storage ³ (attach a stage-storage table)	≥ WQV
	inches	D _{FC} = Filter course thickness	18", or 24" if within GPA
Sheet		Note what sheet in the plan set contains the filter course specification	
	:1	Pond side slopes	≥ 3:1
Sheet		Note what sheet in the plan set contains the planting plans and surface cover	
If porous pavement is proposed:			
	Asphalt	Type of pavement proposed (Concrete? Asphalt? Pavers? Etc.)	
	0.1 acres	A _{SA} = Surface area of the pervious pavement	
1.7	:1	Ratio of the contributing area to the pervious surface area	≤ 5:1
	12.0 inches	D _{FC} = Filter course thickness	12", or 18" if within GPA
Sheet	P-101	Note what sheet in the plan set contains the filter course spec.	mod. 304.1 (see spec)

- Designer's Notes:

20-136 W2 Proposed Watershed

Type III 24-hr 50yr-24hr Rainfall=8.26"

Prepared by Berry Surveying & Engineering

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Summary for Pond 101P: Porous Pavement

Inflow Area = 0.199 ac, 93.19% Impervious, Inflow Depth > 7.28" for 50yr-24hr event
 Inflow = 0.22 cfs @ 15.95 hrs, Volume= 0.120 af
 Outflow = 0.21 cfs @ 16.46 hrs, Volume= 0.115 af, Atten= 2%, Lag= 30.5 min
 Primary = 0.21 cfs @ 16.46 hrs, Volume= 0.115 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
 Peak Elev= 60.54' @ 16.46 hrs Surf.Area= 5,242 sf Storage= 604 cf
 Flood Elev= 62.65' Surf.Area= 15,726 sf Storage= 3,837 cf

Plug-Flow detention time= 63.5 min calculated for 0.115 af (95% of inflow)
 Center-of-Mass det. time= 44.8 min (1,035.3 - 990.5)

Volume	Invert	Avail.Storage	Storage Description
#1	62.25'	692 cf	Choker Course (Irregular) Listed below (Recalc) 1,730 cf Overall x 40.0% Voids
#2	61.25'	1,048 cf	Filter Media (Irregular) Listed below (Recalc) 5,242 cf Overall x 20.0% Voids
#3	60.25'	2,097 cf	Stone Reservoir (Irregular) Listed below (Recalc) 5,242 cf Overall x 40.0% Voids
		3,837 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
62.25	5,242	431.9	0	0	5,242
62.58	5,242	431.9	1,730	1,730	5,385

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
61.25	5,242	431.9	0	0	5,242
62.25	5,242	431.9	5,242	5,242	5,674

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
60.25	5,242	431.9	0	0	5,242
61.25	5,242	431.9	5,242	5,242	5,674

Device	Routing	Invert	Outlet Devices
#1	Primary	60.25'	6.0" Round 6" HDPE N-12 L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 60.25' / 60.00' S= 0.0125 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf

Primary OutFlow Max=0.21 cfs @ 16.46 hrs HW=60.54' TW=59.76' (Dynamic Tailwater)
 ↑ **1=6" HDPE N-12** (Barrel Controls 0.21 cfs @ 2.61 fps)

20-136 W2 Proposed Watershed

Prepared by Berry Surveying & Engineering

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Type III 24-hr 50yr-24hr Rainfall=8.26"

Printed 2/22/2024

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

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
60.25	0	61.31	2,160	62.37	3,397
60.27	42	61.33	2,181	62.39	3,439
60.29	84	61.35	2,202	62.41	3,481
60.31	126	61.37	2,223	62.43	3,523
60.33	168	61.39	2,244	62.45	3,565
60.35	210	61.41	2,265	62.47	3,606
60.37	252	61.43	2,286	62.49	3,648
60.39	294	61.45	2,306	62.51	3,690
60.41	335	61.47	2,327	62.53	3,732
60.43	377	61.49	2,348	62.55	3,774
60.45	419	61.51	2,369	62.57	3,816
60.47	461	61.53	2,390	62.59	3,837
60.49	503	61.55	2,411	62.61	3,837
60.51	545	61.57	2,432	62.63	3,837
60.53	587	61.59	2,453	62.65	3,837
60.55	629	61.61	2,474		
60.57	671	61.63	2,495		
60.59	713	61.65	2,516		
60.61	755	61.67	2,537		
60.63	797	61.69	2,558		
60.65	839	61.71	2,579		
60.67	881	61.73	2,600		
60.69	923	61.75	2,621		
60.71	965	61.77	2,642		
60.73	1,006	61.79	2,663		
60.75	1,048	61.81	2,684		
60.77	1,090	61.83	2,705		
60.79	1,132	61.85	2,726		
60.81	1,174	61.87	2,747		
60.83	1,216	61.89	2,768		
60.85	1,258	61.91	2,789		
60.87	1,300	61.93	2,810		
60.89	1,342	61.95	2,831		
60.91	1,384	61.97	2,852		
60.93	1,426	61.99	2,873		
60.95	1,468	62.01	2,894		
60.97	1,510	62.03	2,915		
60.99	1,552	62.05	2,936		
61.01	1,594	62.07	2,956		
61.03	1,636	62.09	2,977		
61.05	1,677	62.11	2,998		
61.07	1,719	62.13	3,019		
61.09	1,761	62.15	3,040		
61.11	1,803	62.17	3,061		
61.13	1,845	62.19	3,082		
61.15	1,887	62.21	3,103		
61.17	1,929	62.23	3,124		
61.19	1,971	62.25	3,145		
61.21	2,013	62.27	3,187		
61.23	2,055	62.29	3,229		
61.25	2,097	62.31	3,271		
61.27	2,118	62.33	3,313		
61.29	2,139	62.35	3,355		

WQV = 642 CF

Excluding 1' of stone

2,097 CF + 642 CF = 2,739 CF

WQV Elev: 61.86

20-136 W2 Proposed Watershed

Type III 24-hr 50yr-24hr Rainfall=8.26"

Prepared by Berry Surveying & Engineering

Printed 2/22/2024

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Stage-Discharge for Pond 101P: Porous Pavement

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
60.25	0.00	61.31	0.84	62.37	1.28
60.27	0.00	61.33	0.85	62.39	1.28
60.29	0.00	61.35	0.86	62.41	1.29
60.31	0.01	61.37	0.87	62.43	1.30
60.33	0.02	61.39	0.88	62.45	1.30
60.35	0.03	61.41	0.89	62.47	1.31
60.37	0.04	61.43	0.90	62.49	1.32
60.39	0.06	61.45	0.91	62.51	1.32
60.41	0.07	61.47	0.92	62.53	1.33
60.43	0.09	61.49	0.93	62.55	1.34
60.45	0.11	61.51	0.94	62.57	1.34
60.47	0.13	61.53	0.95	62.59	1.35
60.49	0.16	61.55	0.96	62.61	1.36
60.51	0.18	61.57	0.97	62.63	1.36
60.53	0.20	61.59	0.97	62.65	1.37
60.55	0.23	61.61	0.98		
60.57	0.25	61.63	0.99		
60.59	0.28	61.65	1.00		
60.61	0.30	61.67	1.01		
60.63	0.33	61.69	1.02		
60.65	0.36	61.71	1.03		
60.67	0.38	61.73	1.04		
60.69	0.41	61.75	1.04		
60.71	0.44	61.77	1.05		
60.73	0.46	61.79	1.06		
60.75	0.47	61.81	1.07		
60.77	0.49	61.83	1.08		
60.79	0.51	61.85	1.08		
60.81	0.53	61.87	1.09		
60.83	0.54	61.89	1.10		
60.85	0.56	61.91	1.11		
60.87	0.58	61.93	1.12		
60.89	0.59	61.95	1.12		
60.91	0.61	61.97	1.13		
60.93	0.61	61.99	1.14		
60.95	0.63	62.01	1.15		
60.97	0.64	62.03	1.15		
60.99	0.65	62.05	1.16		
61.01	0.67	62.07	1.17		
61.03	0.68	62.09	1.18		
61.05	0.69	62.11	1.18		
61.07	0.70	62.13	1.19		
61.09	0.72	62.15	1.20		
61.11	0.73	62.17	1.21		
61.13	0.74	62.19	1.21		
61.15	0.75	62.21	1.22		
61.17	0.76	62.23	1.23		
61.19	0.78	62.25	1.24		
61.21	0.79	62.27	1.24		
61.23	0.80	62.29	1.25		
61.25	0.81	62.31	1.26		
61.27	0.82	62.33	1.26		
61.29	0.83	62.35	1.27		

WQV Elev: 61.86
WQV Discharge = 1.08 CFS



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

Custom Soil Resource Report

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 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

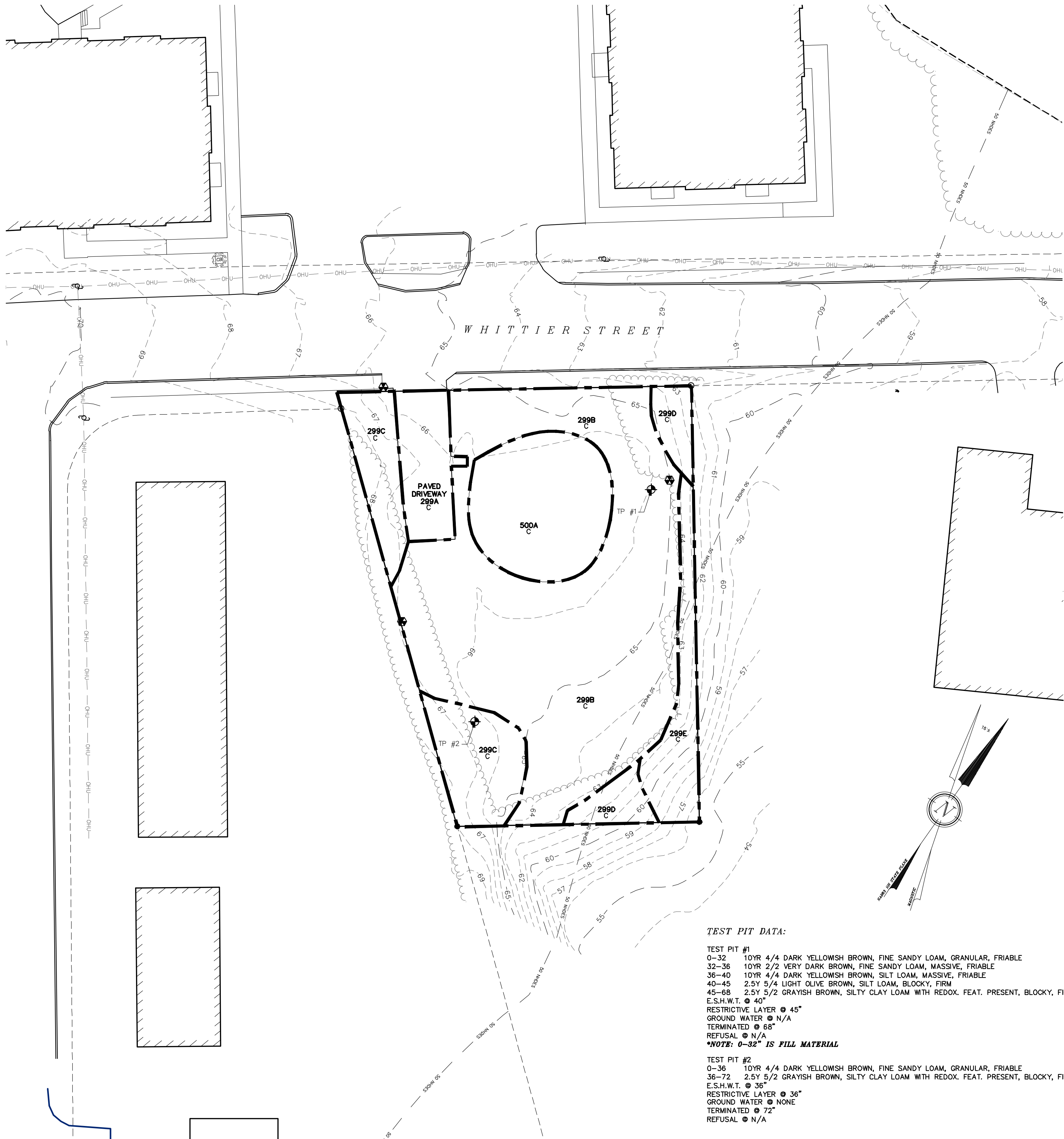
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- United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. <http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelpdb1043084>

Custom Soil Resource Report

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

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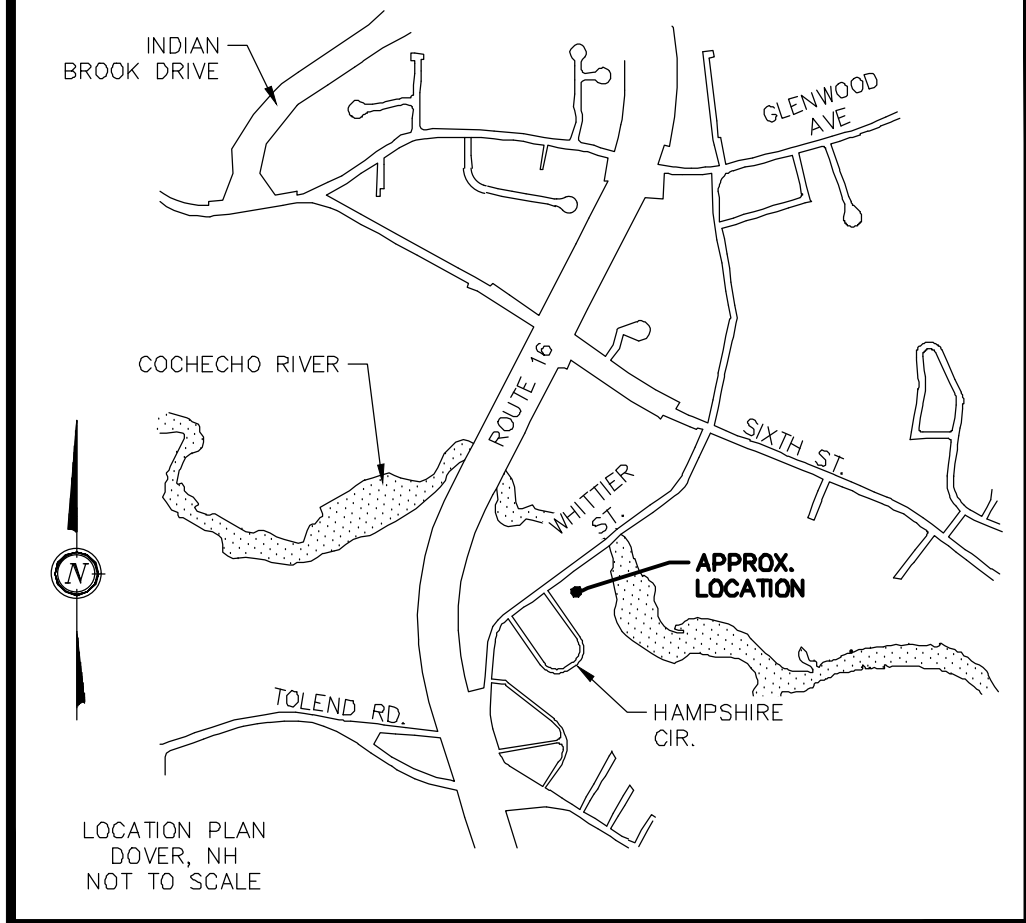
United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf



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



- NOTES:**
- OWNER: DOVER HOUSING AUTHORITY
62 WHITTIER STREET
DOVER, NH 03820
- APPLICANT: DOVER HOUSING AUTHORITY
62 WHITTIER STREET
DOVER, NH 03820
- TAX MAP 33, LOT 1-A
 - PROJECT ADDRESS: 48 WHITTIER STREET
 - LOT AREA: 15,394 Sq. Ft., 0.35 Ac.
 - S.C.R.D. BOOK 4716, PAGE 900
 - 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.
 - 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.
 - VERTICAL DATUM BASED ON NAVD88 ELEVATIONS. HORIZONTAL DATUM BASED ON NAD83 STATE PLANE. COORDINATES GATHERED USING TOPCON HIPER SR SURVEY GRADE GPS.
 - 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	UDORTHERENTS (SMOOTHED)	C
#299C	UDORTHERENTS (SMOOTHED)	C
#299D	UDORTHERENTS (SMOOTHED)	C
#299E	UDORTHERENTS (SMOOTHED)	C
#500A	UDORTHERENTS (LOAMY)	C

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

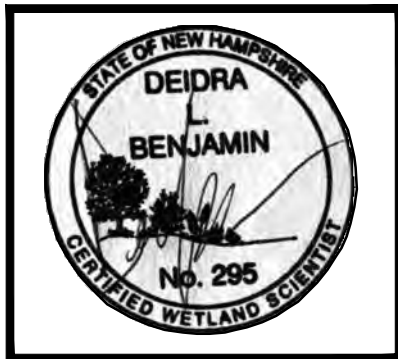
DENOMINATOR: /VPD = VERY POORLY DRAINED /PD = POORLY DRAINED
/SWPD = SOMEWHAT POORLY DRAINED /MWD = MODERATELY WELL DRAINED

SOIL DATA:

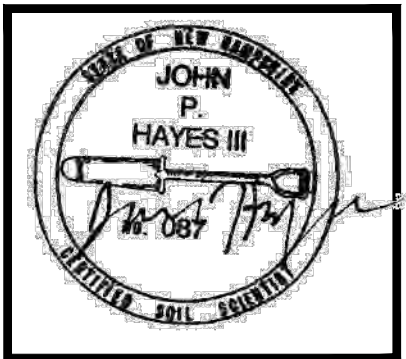
BzB ~ BUXTON SILT LOAM, 3 TO 8% SLOPES

NRCS, SEE WEBSOIL

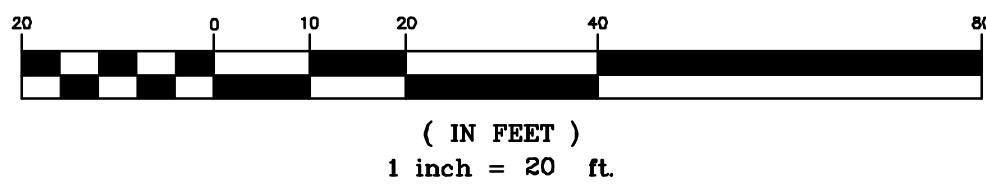
DEIDRA BENJAMIN, CWS #295



JOHN P. HAYES, CSS #87



GRAPHIC SCALE



DOVER PLANNING FILE #

REVISION	DATE	DESCRIPTION

SITE SPECIFIC SOILS MAP
LAND OF
DOVER HOUSING AUTHORITY
48 WHITTIER STREET
DOVER, NH
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

KENNETH A. BERRY
REGISTERED PROFESSIONAL ENGINEER
STATE OF NEW HAMPSHIRE

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

3/19/21

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

Job # 21-010

**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 parcel 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.

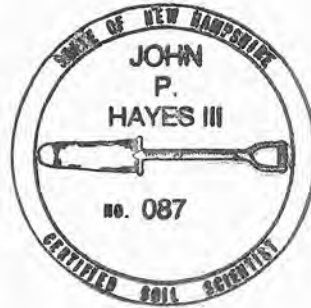
MAP UNIT #	SOIL TAXANOMIC NAME	DESCRIPTION
299B (decdec)	Udorthents (smoothed)	This map unit represents areas that have been cut and filled to create a large level or nearly level area. Soil material making up the map units typically came from the immediate area. School athletic fields are an example. The hydrologic soil group is C. Slopes range from 3% to 8 %.
299C (decdec)	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 (decdec)	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 (decdec)	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 (decdec)	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

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

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

Sincerely:



John P. Hayes III CSS, CWS



BERRY SURVEYING & ENGINEERING

335 Second Crown Point Road

Barrington, NH 03825

Phone: (603) 332-2863

Fax: (603) 335-4623

www.BerrySurveying.Com

Stormwater System Management Inspection and Maintenance Manual

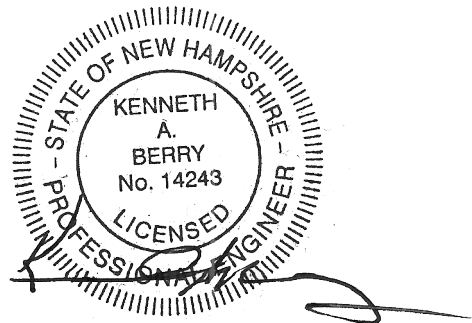
48 Whittier Street

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

Rev: June 6, 2022

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 provided 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:

Porous Pavement #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.

Porous Asphalt Pavement

Description: The Permeable Pavement system consists of a porous pavement surface and permeable sub-base materials that is going to allow filtration of surface water runoff into an underdrain to be discharged. The layers of the sub-base materials serve as a filter for the runoff prior to infiltration. Care must be taken during the preparation of the sub-base materials to ensure operation of the infiltration bed and the sub-soil under the system must be scarified to a depth of two-feet below the system to ensure that the soil has not become compacted and does not contain topsoil remnants or boulders.

Maintenance Considerations: No winter sand will be used on permeable pavement and will minimize application of salt for ice control. Pavement Vacuuming - Due to the nature of porous pavement, sand must be removed by vacuuming on a regular basis when the pores become clogged two to four times per year. This process varies due to the amount of sand and sweeping efforts but should be investigated two to four times every year. The life expectancy of the porous asphalt pavement system is about 20 years following the prescribed regular maintenance schedule.

Deep Sump Catch Basin

Deep Sump Catch Basins are used throughout the site as a pretreatment measure to remove sediment and debris from storm water runoff. Deep Sump Catch Basins will be designed with a sump that is four times the depth of the discharge culvert and a minimum of four feet. All pretreatment deep sump catch basins will have an outlet pipe hood which

extends one-foot below the outlet invert and will include a hood vent. Sediment must be removed from Deep Sump Catch Basins on a regular basis, at least twice a year and more often if the sumps become half-full. Inspections should be conducted periodically. See Sheet D-101 for details.

Rip Rap Outlet Protection, Level Spreader

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



Kevin R. Poulin, EIT
Principal President



Christopher R. Berry, SIT
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
		Porous Pavement	2-4 times per year	Check for sediment and debris accumulation buildup.	Vacuum pavement to remove debris
		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:

Porous Pavement #101

Inspection Notes:

Inspection & Maintenance Manual Log Form

[illegible]

Deicing Log Form

[illegible]

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: _____

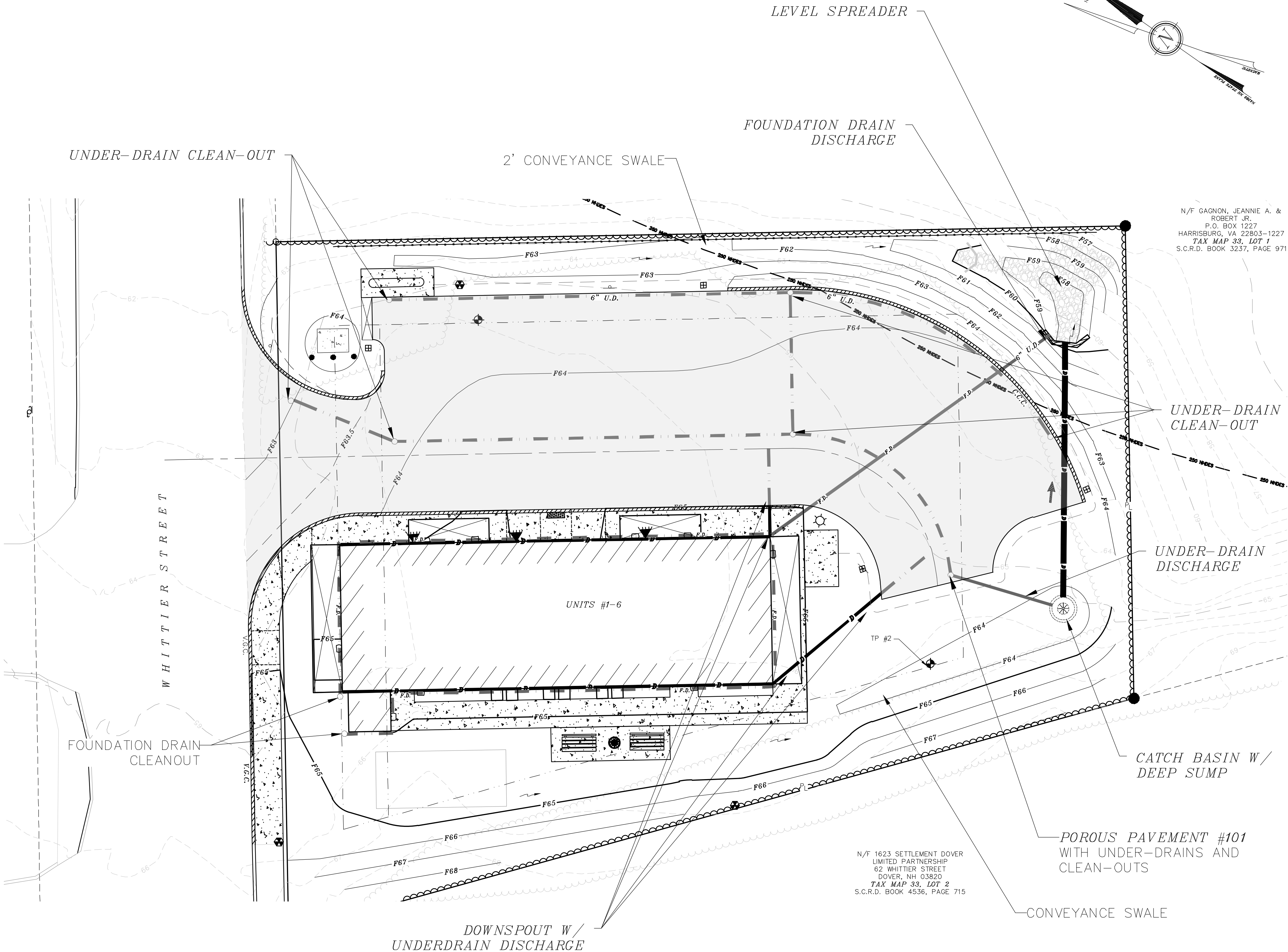
Printed Name:

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 #P21-37, WAIV-2024-003

REVISION	DATE	DESCRIPTION
#5	3-15-24	REVISED PER TRC COMMENT
#4	2-21-24	REVISED BUILDINGS, UTILITIES, TDR RELIEF
#3	8-7-22	REVISED PER DOVER TRC COMMENT
#1	7-20-21	REVISED PER DOVER TRC COMMENT

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. 14240
PROFESSIONAL ENGINEER

Control of Invasive Plants

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

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

INVASIVE TREES

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

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

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

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

INVASIVE SHRUBS

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

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

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

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

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

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

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

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

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

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

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

INVASIVE WOODY VINES

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

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

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

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

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

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

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

INVASIVE HERBACEOUS PLANTS

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

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

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

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

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

Control: same as for stilt grass.

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

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

CONTROL MEASURES

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

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

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

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

Table 19. Application Rates for Deicing

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

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

* TMDL stands for Total Maximum Daily Load studies (<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)

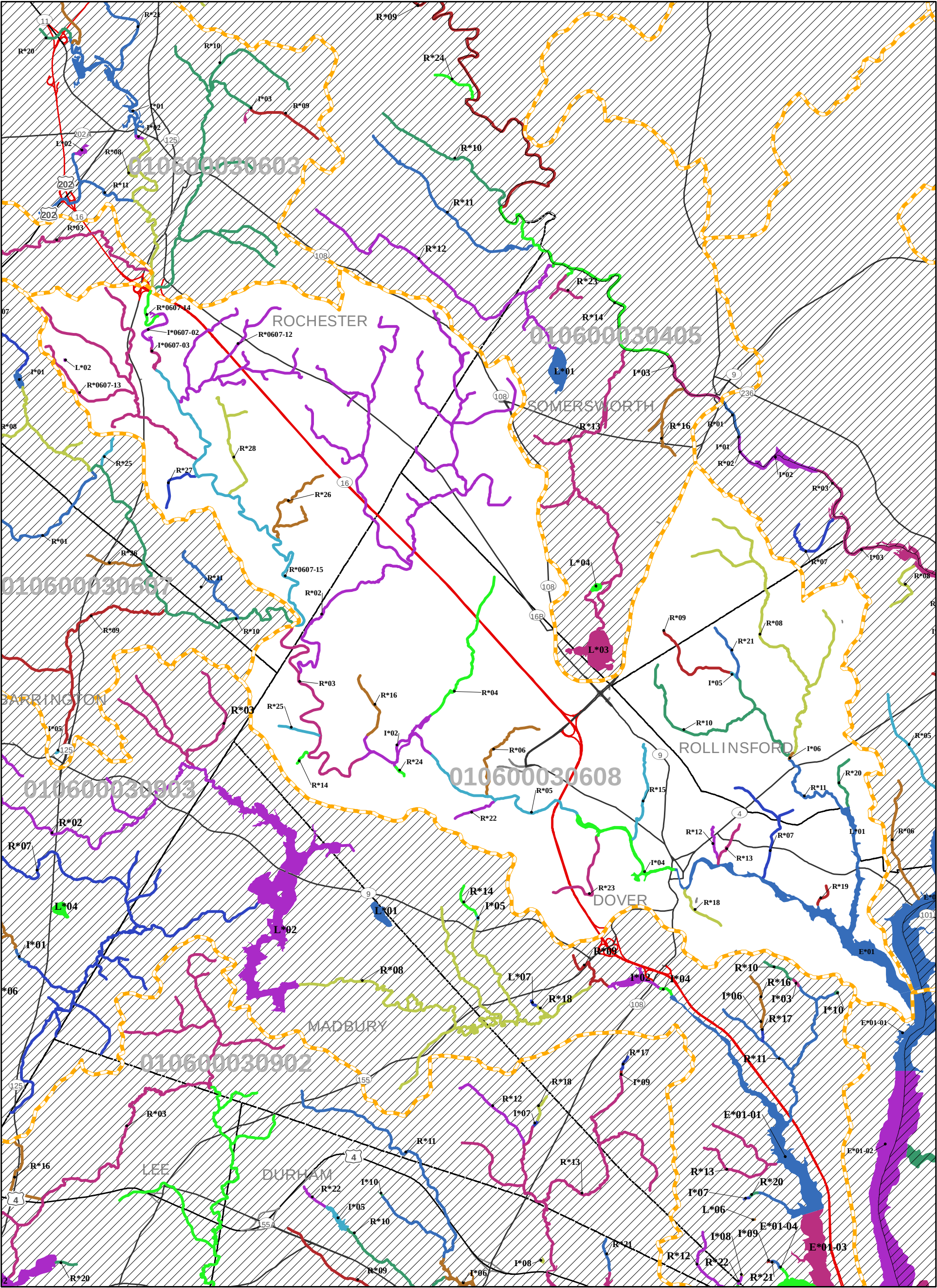
Assessment Cycle 2018

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-P
NHRIV600030608-18	R*18	UNNAMED BROOK	3-ND	3-ND	3-ND	4A-P
NHRIV600030608-19	R*19	UNNAMED BROOK	3-ND	3-ND	3-ND	4A-P
NHRIV600030608-20	R*20	UNNAMED BROOK	3-ND	3-ND	3-ND	4A-P
NHRIV600030608-21	R*21	UNNAMED BROOK - TO ROLLINS BROOK	3-ND	3-ND	3-ND	4A-P
NHRIV600030608-22	R*22	HORN BROOK	3-ND	3-ND	3-ND	4A-P
NHRIV600030608-23	R*23	UNNAMED BROOK	3-ND	3-ND	3-ND	4A-P
NHRIV600030608-24	R*24	UNNAMED BROOK	3-ND	3-ND	3-ND	4A-P
NHRIV600030608-25	R*25	UNNAMED BROOK	3-ND	3-ND	3-ND	4A-P
NHRIV600030608-26	R*26	UNNAMED BROOK	3-ND	3-ND	3-ND	4A-P
NHRIV600030608-27	R*27	UNNAMED BROOK	3-ND	3-ND	3-ND	4A-P
NHRIV600030608-28	R*28	UNNAMED BROOK	3-ND	3-ND	3-ND	4A-P

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 =

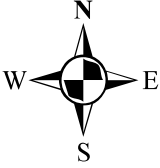
5 =

6 =

7 =

8 =

9 =



Abbrev. Label

L*03

HUC 12

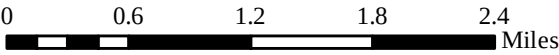
010700060201

AUID = NH

LAK

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.



Scale:1:59,820

Assessment Unit ID NHRIV600030608-05
 Assessment Unit Name COCHECO RIVER
 Primary Town DOVER

Size 2.0600 MILES
 Beach N
 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 Not Supporting, Severe	Poor Not Supporting, Marginal	Likely Bad Insufficient Information - Potentially Full Supporting	No Data No Data	Likely Good Insufficient Information - Potentially Full Supporting	Marginal Full Support, Marginal	Good Full Support, Good
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*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	N	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	NHRV60033607-16	SCRUTON POND OUTLET @ BARRINGTON	0.071 MILES	Aquatic Life Integrity	Oxygen, Dissolved	5-P	Non-ORW
2018	NHRV60033607-16	SCRUTON POND OUTLET @ BARRINGTON	0.071 MILES	Aquatic Life Integrity	pH	5-P	Non-ORW
2018	NHRV60033608-02	BLACKWATER BROOK-CLAI ROCHESTER, D	15.228 MILES	Primary Contact Recreation	Escherichia coli	4A-P	39272 Non-ORW
2018	NHRV60033608-03	COCHECO RIVER - UNNAM DOVER, ROCHI	3.267 MILES	Aquatic Life Integrity	Dissolved oxygen saturation	5-M	Non-ORW
2018	NHRV60033608-03	COCHECO RIVER - UNNAM DOVER, ROCHI	3.267 MILES	Aquatic Life Integrity	pH	5-M	Non-ORW
2018	NHRV60033608-03	COCHECO RIVER - UNNAM DOVER, ROCHI	3.267 MILES	Primary Contact Recreation	Escherichia coli	4A-M	39272 Non-ORW
2018	NHRV60033608-04	REYNERS BROOK DOVER	1.77 MILES	Primary Contact Recreation	Escherichia coli	4A-P	39272 Non-ORW
2018	NHRV60033608-05	COCHECO RIVER DOVER	2.06 MILES	Aquatic Life Integrity	pH	5-M	Non-ORW
2018	NHRV60033608-05	COCHECO RIVER DOVER	2.06 MILES	Primary Contact Recreation	Escherichia coli	4A-M	39272 Non-ORW
2018	NHRV60033608-06	INDIAN BROOK DOVER	1.106 MILES	Aquatic Life Integrity	Chloride	5-P	Non-ORW
2018	NHRV60033608-06	INDIAN BROOK DOVER	1.106 MILES	Primary Contact Recreation	Escherichia coli	4A-P	39272 Non-ORW
2018	NHRV60033608-08	FRESH CREEK - TWOMBLY ROLLINSFORD,	4.983 MILES	Aquatic Life Integrity	Dissolved oxygen saturation	5-M	Non-ORW
2018	NHRV60033608-08	FRESH CREEK - TWOMBLY ROLLINSFORD,	4.983 MILES	Aquatic Life Integrity	Oxygen, Dissolved	5-P	Non-ORW
2018	NHRV60033608-08	FRESH CREEK - TWOMBLY ROLLINSFORD,	4.983 MILES	Aquatic Life Integrity	pH	5-M	Non-ORW
2018	NHRV60033608-10	FRESH CREEK - TWOMBLY ROLLINSFORD,	4.983 MILES	Primary Contact Recreation	Escherichia coli	4A-M	39272 Non-ORW
2018	NHRV60033608-10	ROLLINS BROOK ROLLINSFORD	2.856 MILES	Aquatic Life Integrity	Dissolved oxygen saturation	5-M	Non-ORW
2018	NHRV60033608-10	ROLLINS BROOK ROLLINSFORD	2.856 MILES	Aquatic Life Integrity	Oxygen, Dissolved	5-P	Non-ORW
2018	NHRV60033608-10	ROLLINS BROOK ROLLINSFORD	2.856 MILES	Aquatic Life Integrity	pH	5-M	Non-ORW
2018	NHRV60033608-10	ROLLINS BROOK ROLLINSFORD	2.856 MILES	Primary Contact Recreation	Escherichia coli	4A-P	39272 Non-ORW
2018	NHRV60033608-11	FRESH CREEK ROLLINSFORD,	1.126 MILES	Primary Contact Recreation	Escherichia coli	4A-P	39272 Non-ORW
2018	NHRV60033608-14	UNNAMED TRIB. TO COCH DOVER	0.169 MILES	Aquatic Life Integrity	Iron	5-M	Non-ORW
2018	NHRV60033608-15	BERRY BROOK DOVER	1.106 MILES	Aquatic Life Integrity	Benthic-Macroinvertebrate Bioassessmer	5-M	Non-ORW
2018	NHRV60033608-15	BERRY BROOK DOVER	1.106 MILES	Aquatic Life Integrity	Chloride	5-M	Non-ORW
2018	NHRV60033608-15	BERRY BROOK DOVER	1.106 MILES	Primary Contact Recreation	Escherichia coli	4A-P	39272 Non-ORW
2018	NHRV60033608-16	JACKSON BROOK DOVER	0.724 MILES	Primary Contact Recreation	Escherichia coli	4A-P	39272 Non-ORW
2018	NHRV60033701-01	LAMPREY RIVER - AND HE/NORTHWOOD,	13.652 MILES	Aquatic Life Integrity	Dissolved oxygen saturation	5-M	Non-ORW
2018	NHRV60033701-01	LAMPREY RIVER - AND HE/NORTHWOOD,	13.652 MILES	Aquatic Life Integrity	Oxygen, Dissolved	5-P	Non-ORW
2018	NHRV60033701-01	LAMPREY RIVER - AND HE/NORTHWOOD,	13.652 MILES	Aquatic Life Integrity	pH	5-P	Non-ORW
2018	NHRV60033701-08	HARTFORD BROOK DEERFIELD	10.734 MILES	Aquatic Life Integrity	Aluminum	5-M	Non-ORW
2018	NHRV60033701-08	HARTFORD BROOK DEERFIELD	10.734 MILES	Aquatic Life Integrity	Benthic-Macroinvertebrate Bioassessmer	5-P	Non-ORW
2018	NHRV60033701-08	HARTFORD BROOK DEERFIELD	10.734 MILES	Aquatic Life Integrity	pH	5-M	Non-ORW
2018	NHRV60033701-09	LAMPREY RIVER DEERFIELD	7.767 MILES	Aquatic Life Integrity	Dissolved oxygen saturation	5-M	Non-ORW
2018	NHRV60033701-09	LAMPREY RIVER DEERFIELD	7.767 MILES	Aquatic Life Integrity	Oxygen, Dissolved	5-P	Non-ORW
2018	NHRV60033701-13	LAMPREY RIVER DEERFIELD	0.041 MILES	Aquatic Life Integrity	pH	5-P	Non-ORW
2018	NHRV60033701-13	LAMPREY RIVER DEERFIELD	0.041 MILES	Aquatic Life Integrity	Dissolved oxygen saturation	5-M	Non-ORW
2018	NHRV60033701-14	LAMPREY RIVER RAYMOND, DE	6.776 MILES	Aquatic Life Integrity	pH	5-M	Non-ORW
2018	NHRV60033702-01	TR NORTH BRANCH RIVER CANDIA	8.629 MILES	Aquatic Life Integrity	Benthic-Macroinvertebrate Bioassessmer	5-P	Review OneStop GIS
2018	NHRV60033702-02	UNNAMED BROOKS - TO N CANDIA	3.68 MILES	Aquatic Life Integrity	Oxygen, Dissolved	5-P	ORW
2018	NHRV60033702-03	UNNAMED BROOK - FROM DEERFIELD	0.131 MILES	Aquatic Life Integrity	pH	5-M	ORW
2018	NHRV60033702-05	NORTH BRANCH RIVER - U DEERFIELD, CA	3.563 MILES	Aquatic Life Integrity	Dissolved oxygen saturation	5-M	ORW
2018	NHRV60033702-06	NORTH BRANCH RIVER - U DEERFIELD, CA	5.185 MILES	Aquatic Life Integrity	Lead	5-M	ORW
2018	NHRV60033702-07	NORTH BRANCH RIVER - U CANDIA, DEER	10.013 MILES	Aquatic Life Integrity	Oxygen, Dissolved	5-P	ORW
2018	NHRV60033702-08	UNNAMED BROOK - TO NC CANDIA, RAYV	1.171 MILES	Aquatic Life Integrity	pH	5-M	ORW
2018	NHRV60033702-09	NORTH BRANCH RIVER RAYMOND, CA	0.974 MILES	Aquatic Life Integrity	pH	5-P	Review OneStop GIS
2018	NHRV60033702-10	UNNAMED BROOK CANDIA	1.071 MILES	Aquatic Life Integrity	Dissolved oxygen saturation	5-M	ORW
2018	NHRV60033702-11	UNNAMED BROOK CANDIA	0.839 MILES	Aquatic Life Integrity	pH	5-M	ORW
2018	NHRV60033702-12	UNNAMED BROOK DEERFIELD	0.59 MILES	Aquatic Life Integrity	Benthic-Macroinvertebrate Bioassessmer	5-P	ORW
2018	NHRV60033703-01	UNNAMED BROOK - TO OF RAYMOND, CA	5.45 MILES	Aquatic Life Integrity	Habitat Assessment (Streams)	4C-M	Non-ORW
2018	NHRV60033703-01	UNNAMED BROOK - TO OF RAYMOND, CA	5.45 MILES	Aquatic Life Integrity	pH	5-M	Non-ORW
2018	NHRV60033703-01	UNNAMED BROOK - TO OF RAYMOND, CA	5.45 MILES	Aquatic Life Integrity	Dissolved oxygen saturation	5-M	Non-ORW
2018	NHRV60033703-04	DUDLEY BROOK - UNNAM RAYMOND, DE	4.34 MILES	Aquatic Life Integrity	Lead	5-M	Non-ORW
2018	NHRV60033703-04	DUDLEY BROOK - UNNAM RAYMOND, DE	4.34 MILES	Aquatic Life Integrity	Oxygen, Dissolved	5-P	Non-ORW
2018	NHRV60033703-04	DUDLEY BROOK - UNNAM RAYMOND, DE	4.34 MILES	Aquatic Life Integrity	pH	5-M	Non-ORW
2018	NHRV60033703-05	LAMPREY RIVER RAYMOND	2.647 MILES	Aquatic Life Integrity	pH	5-M	Non-ORW
2018	NHRV60033703-07-02	LAMPREY RIVER - CARROLI RAYMOND	0.02 MILES	Primary Contact Recreation	Escherichia coli	4A-P	39276 Non-ORW
2018	NHRV60033703-09	LAMPREY RIVER RAYMOND	2.295 MILES	Aquatic Life Integrity	pH	5-M	Non-ORW
2018	NHRV60033703-10	LAMPREY RIVER RAYMOND	0.558 MILES	Aquatic Life Integrity	pH	5-M	Non-ORW
2018	NHRV60033703-11	LAMPREY RIVER EPPING, RAYM	3.27 MILES	Aquatic Life Integrity	Aluminum	5-M	Non-ORW
2018	NHRV60033703-14	PAWTUCKAWAY RIVER - U NOTTINGHAM	6.751 MILES	Aquatic Life Integrity	Dissolved oxygen saturation	5-M	Non-ORW
2018	NHRV60033703-14	PAWTUCKAWAY RIVER - U NOTTINGHAM	6.751 MILES	Aquatic Life Integrity	Oxygen, Dissolved	5-P	Non-ORW
2018	NHRV60033703-14	PAWTUCKAWAY RIVER - U NOTTINGHAM	6.751 MILES	Aquatic Life Integrity	pH	5-M	Non-ORW
2018	NHRV60033703-15	LAMPREY RIVER EPPING	4.692 MILES	Aquatic Life Integrity	Dissolved oxygen saturation	5-M	Non-ORW

SOILS & DEWATERING:

BuB 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 COUNTY 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.

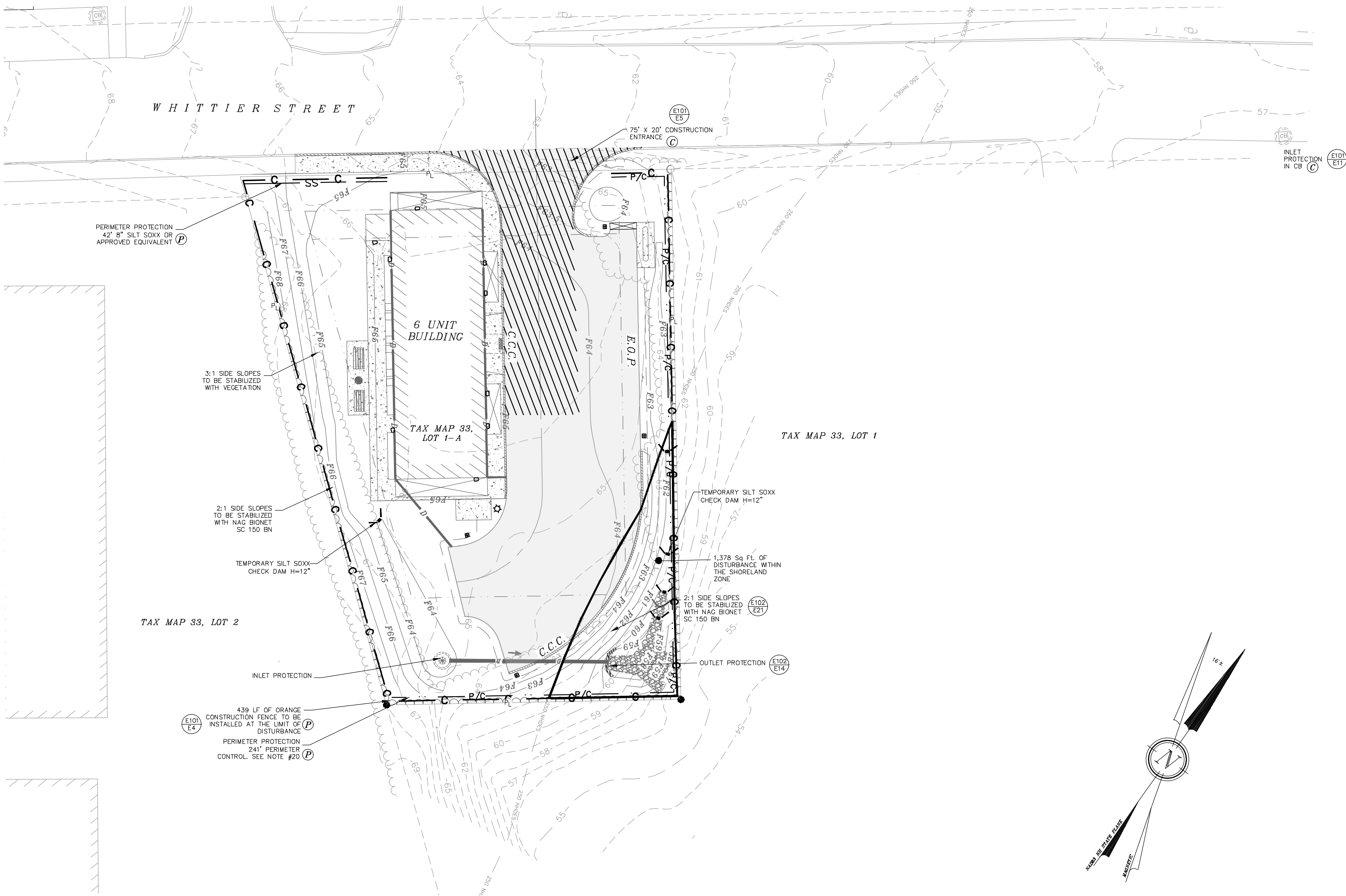
COVER MANAGEMENT DURING CONSTRUCTION FOR EXPOSED SOIL WILL INCLUDE HAY /
STRAW APPLIED AT A RATE OF 2.0 TONS PER ACRE, TEMPORARY SEEDING OF ANNUAL
RYE GRASS, AND PERMANENT SEEDING AT THE EARLIES OPPORTUNITY. SEE ADDITIONAL
REQUIREMENT FOR STABILIZATION ON THE EROSION AND SEDIMENT CONTROL DETAIL
SHEETS, 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
PROTECTION
(P) PERIMETER CONTROL
(C) RESIDENTIAL/ROADWAY CONSTRUCTION
IRON BOUND (FND)
UTILITY POLE
GUY WIRE
(B) BENCH MARK
(P) RIP RAP
(C) SILT FENCE
(C) PERIMETER CONTROL
(C) TREE LINE
(C) CONSTRUCTION FENCE

.. SF ..
.. P/C ..
C C



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 PERFORMED 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 Z.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 SOIL AREAS.
 - D.) ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE MAINTAINED IN FUNCTIONING CONDITION UNTIL FINAL STABILIZATION IS ACCOMPLISHED.
 - E.) COMMUNITY SERVICES DEPARTMENT OR THEIR DESIGNATED AGENT SHALL HAVE ACCESS TO THE SITE TO COMPLETE ROUTINE INSPECTIONS AND SHALL BE NOTIFIED 24-HOURS PRIOR TO INSTALLATION OF A STORMWATER BMP IN ORDER TO SCHEDULE AN INSPECTION, DURING NORMAL WORKING HOURS.
 - F.) THE PLANNING BOARD OR COMMUNITY SERVICES MAY REQUIRE THE DESIGN ENGINEER AND/OR AN INDEPENDENT, THIRD-PARTY INSPECTION AND OVERSIGHT OF THE CONSTRUCTION OF STORMWATER MANAGEMENT FACILITIES AND EROSION AND SEDIMENT CONTROL AT THEIR DISCRETION. THE OWNER / APPLICANT IS RESPONSIBLE FOR ALL FEES ASSOCIATED WITH INSPECTIONS.
 - G.) ALL SWPPP INSPECTIONS MUST BE CONDUCTED BY A QUALIFIED PROFESSIONAL SUCH AS A PROFESSIONAL ENGINEER (PE), A CERTIFIED PROFESSIONAL IN EROSION AND SEDIMENT CONTROL (CPESC), A CERTIFIED EROSION SEDIMENT AND STORMWATER INSPECTOR (CESSWI), OR A CERTIFIED PROFESSIONAL IN STORMWATER QUALITY (CPSWQ). INSPECTION REPORTS WILL BE SUBMITTED TO THE COMMUNITY SERVICES DEPARTMENT.
- 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.
- 20.) CONTRACTOR CAN USE SILT FENCE, SILT SOXX OR MULCH BERM FOR PERIMETER CONTROL.

DOVER PLANNING FILE #P21-37, WAIV-2024-003

#	REVISION	DATE	DESCRIPTION
#5		3-15-24	REVISED PER TRC COMMENT
#4		2-21-24	REVISED BUILDINGS, UTILITIES, TDR RELIEF
#3		8-7-22	REVISED PER NOISE DEGREE
#2		7-20-21	REVISED PER DOVER TRC COMMENT

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. 74243
LICENSED PROFESSIONAL ENGINEER

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

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

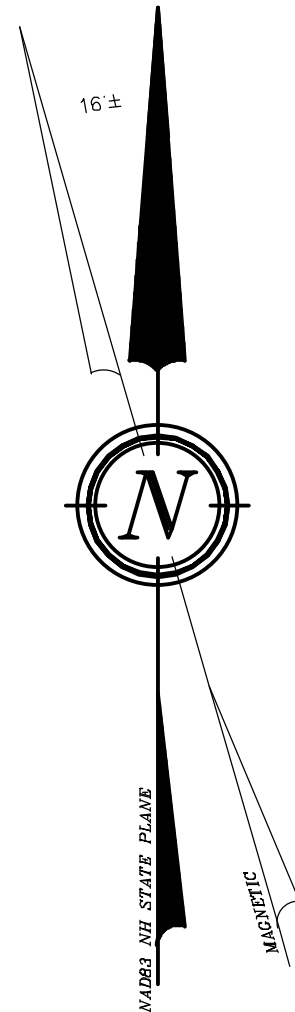
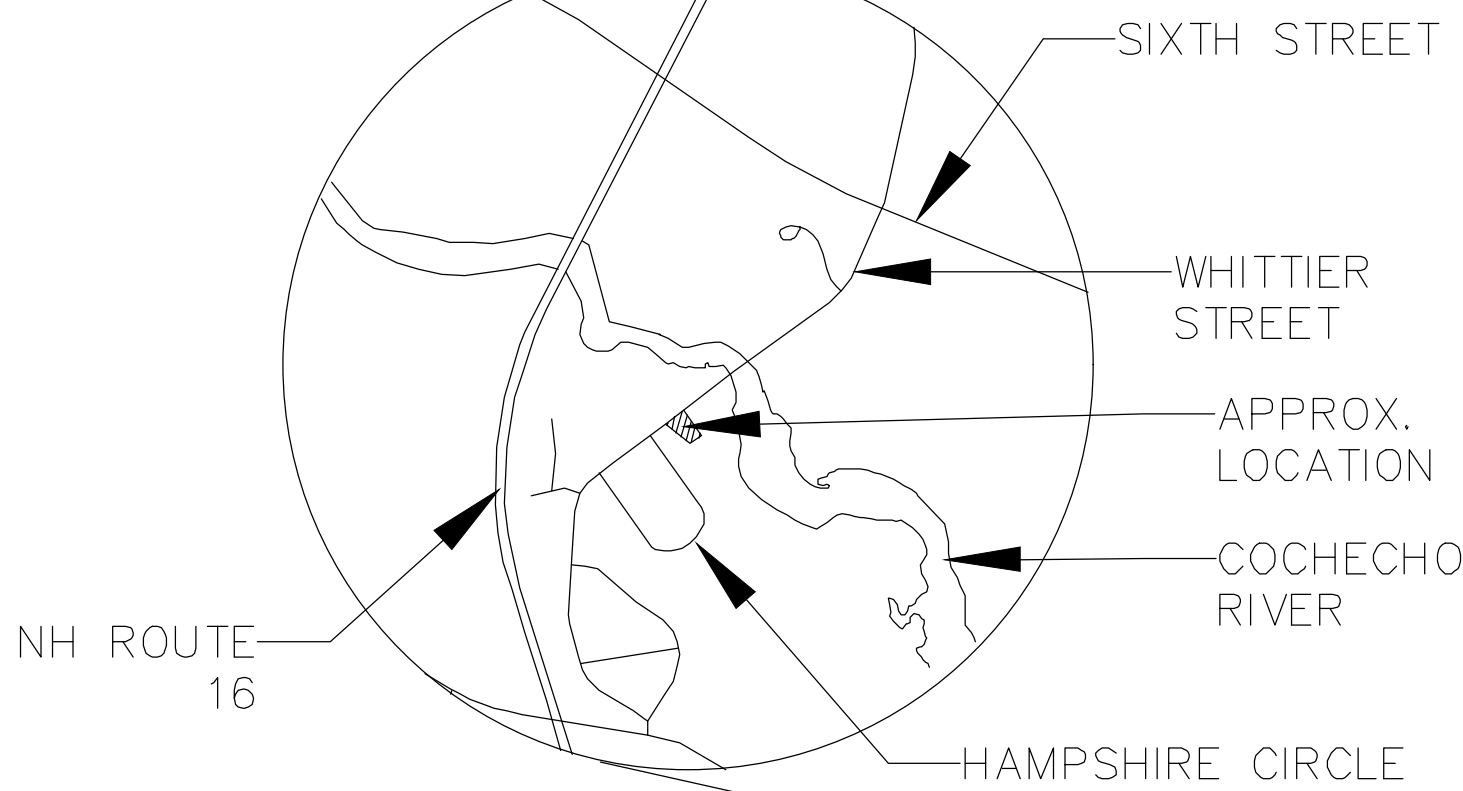
SURVEYOR OF RECORD: KENNETH A. BERRY, PE, LLS
CPSWQ, CPESC, CESSWI
BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825
(603) 332-2863

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



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.

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.

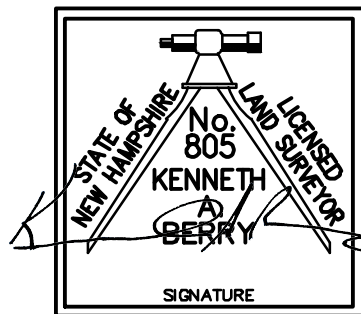
GENERAL PLAN SET NOTES:

- 1.) 11x17" PLANS ARE TWICE THE PUBLISHED SCALE.
- 2.) ALL PLANS ARE CONSIDERED TO BE NOT FOR CONSTRUCTION UNLESS THEY CONTAIN THE APPROVAL STAMP OF THE CITY OF DOVER.

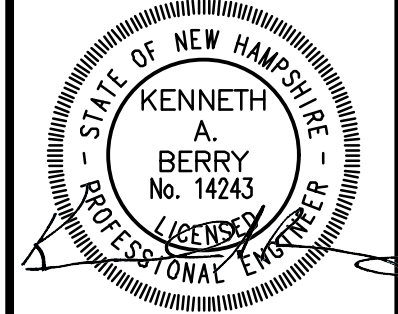
OWNER'S SIGNATURE

DATE

APPROVED DOVER



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



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

REVISION	DATE	DESCRIPTION
#5	3-15-24	REVISED PER TRC COMMENT
#4	2-21-24	REVISED BUILDINGS, UTILITIES, TDR RELIEF
#3	8-7-22	REVISED PER DOVER TRC COMMENT
#2	7-20-21	REVISED PER DOVER TRC COMMENT

DOVER PLANNING FILE #P21-37, WAIV-2024-003

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
	NROS SOIL DELINEATION
	SOIL TYPE
	TEST PIT

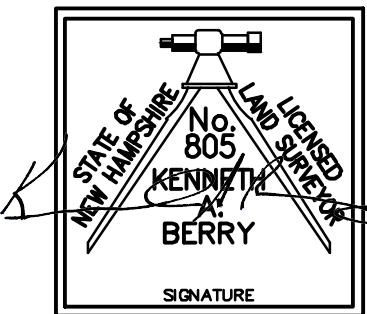
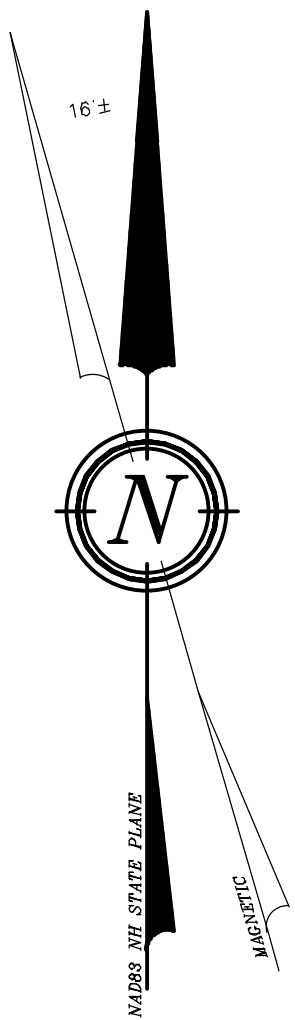
PROPOSED LEGEND:

	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
	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' ±



SIGN ID NUMBER	SIGN SIZE (WIDTH x HEIGHT)	SIGN	TEXT DIMENSIONS	NO. OF SIGNS	BACKGROUND	LEGEND	BORDER	POST SIZE & QUANTITY
R1-1	30"x30"		SEE STANDARD HIGHWAY SIGNS 2004 EDITION PUBLISHED BY USDOT - FHWA	1	RED	WHITE	WHITE	SQUARE (1)
R7-8	12"x18"		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"		SEE STANDARD HIGHWAY SIGNS 2004 EDITION PUBLISHED BY USDOT - FHWA	1	WHITE	GREEN	GREEN	SQUARE (0)
R8-31	12"x18"		SEE STANDARD HIGHWAY SIGNS 2004 EDITION PUBLISHED BY USDOT - FHWA	1	WHITE	RED	RED	SQUARE (1)

ABUTTERS WITHIN 300':
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 WHITTIER 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

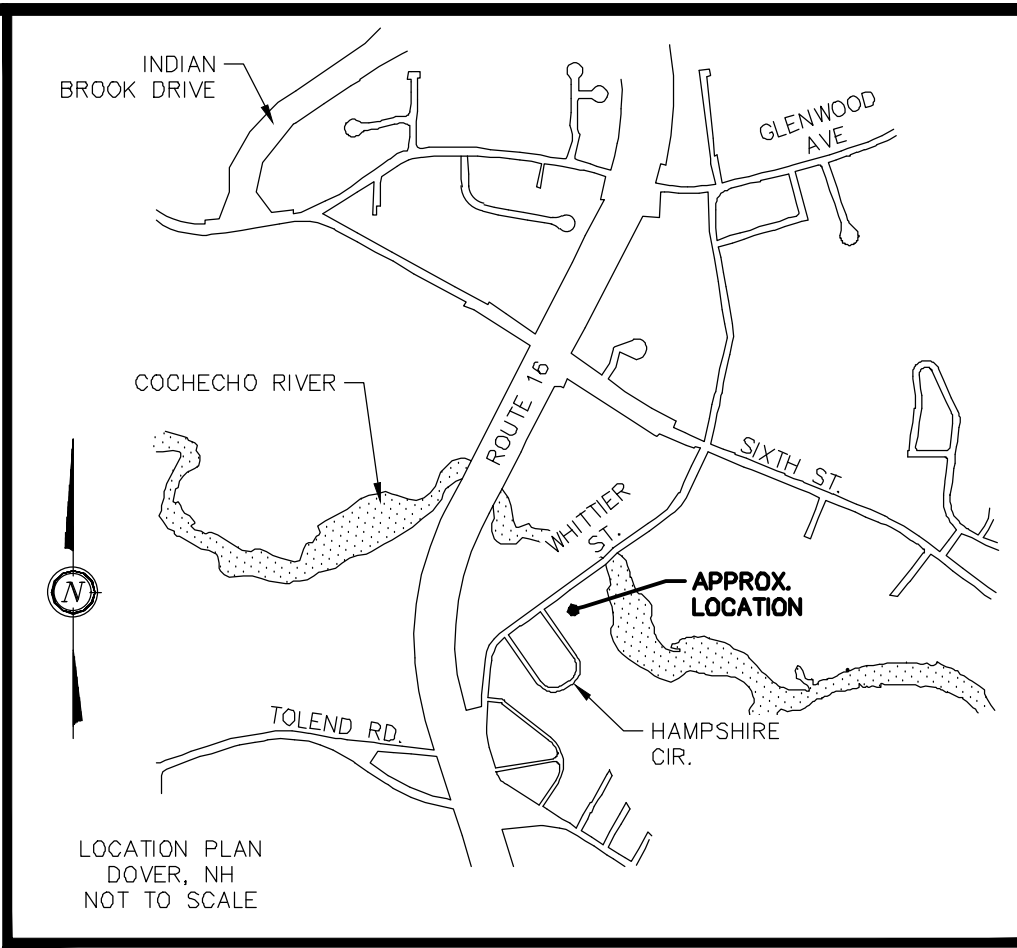
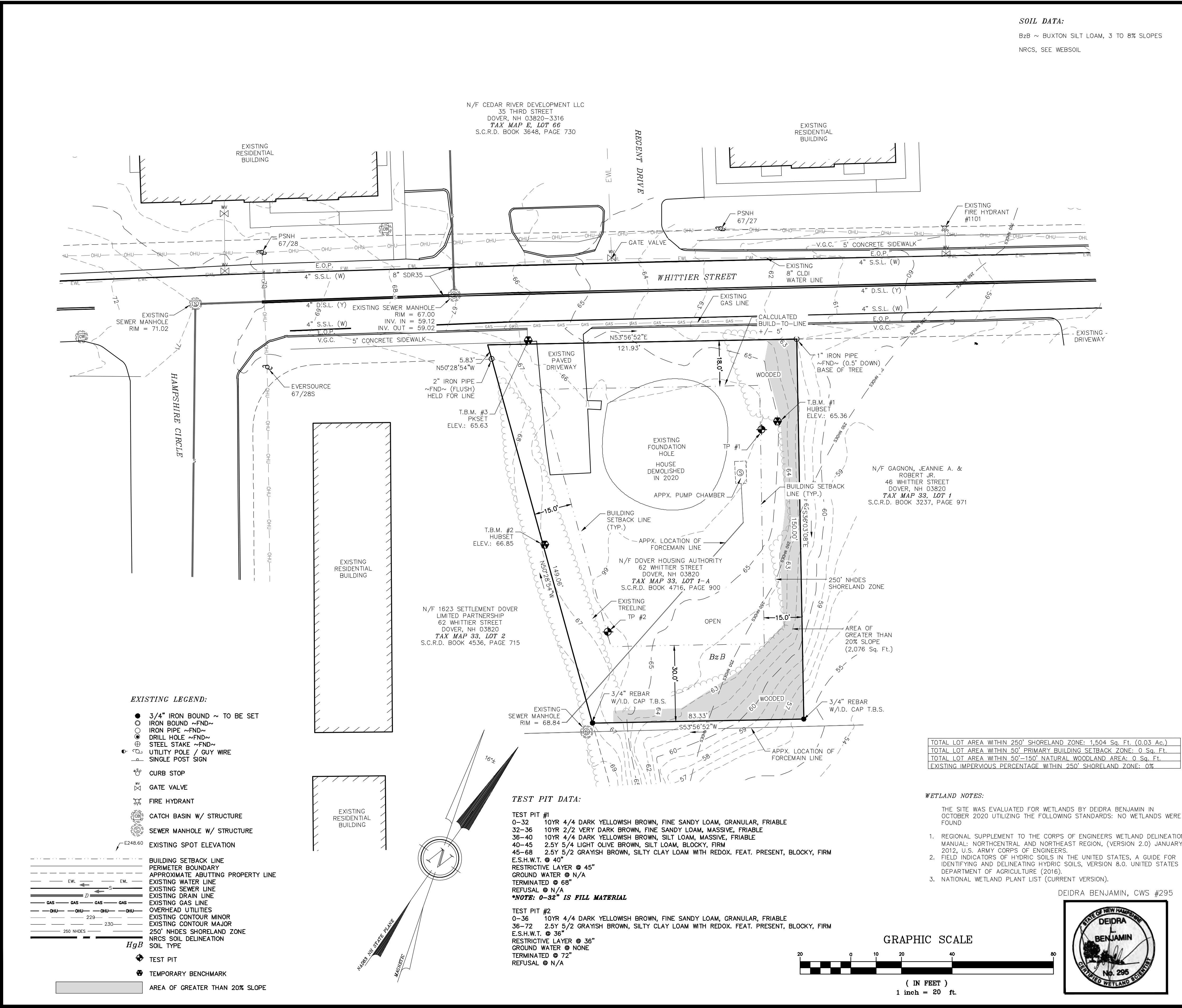
DOVER PLANNING FILE #P21-37, WAIV-2024-003

#	REVISION	DATE	DESCRIPTION
#5		3-15-24	REVISED PER TRC COMMENT
#4		2-21-24	REVISED BUILDINGS, UTILITIES, TDR RELIEF
#3		8-7-22	REVISED PER DOVER TRC COMMENT
#2		7-20-21	REVISED PER DOVER TRC COMMENT

NEIGHBORHOOD PLAN
LAND OF
DOVER HOUSING AUTHORITY
48 WHITTIER STREET
DOVER, N.H.
TAX MAP 33, LOT 1-4

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

KENNETH A. BERRY
No. 14243
PROFESSIONAL ENGINEER



- NOTES:**
OWNER: DOVER HOUSING AUTHORITY
62 WHITTIER STREET
DOVER, NH 03820
- APPLICANT: DOVER HOUSING AUTHORITY
62 WHITTIER STREET
DOVER, NH 03820
- TAX MAP 33, LOT 1-A
 - PROJECT ADDRESS: 48 WHITTIER STREET
 - LOT AREA: 15,394 Sq. Ft., 0.35 Ac.
 - S.C.R.D. BOOK 4716, PAGE 900
 - 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'
 - 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
 - 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 #3301700310E, DATED: SEPTEMBER 30, 2015.
 - VERTICAL DATUM BASED ON NAVD88 ELEVATIONS. HORIZONTAL COORDINATES BASED ON NAD83. COORDINATES GATHERED USING TOPCON HIPER SR SURVEY GRADE GPS RECEIVERS.
 - 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.
 - A TOPOGRAPHICAL SURVEY WAS PERFORMED BY THIS OFFICE NOVEMBER OF 2020. TOPOGRAPHY SHOWN IN 1' INTERVALS.
 - 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%).
 - NO CEMETERIES OR WETLANDS WERE FOUND ON SITE
 - THIS SITE IS SERVICED BY MUNICIPAL SEWER AND WATER

- PLAN REFERENCES:**
- "PLAN OF LOT, PAUL N. VERRETTE. DOVER. NEW HAMPSHIRE"
BY: G.L. DAVIS & ASSOCIATES
DATED: DECEMBER 1970
NOT RECORDED
 - "LOT LINE ADJUSTMENT PLAN, DOVER HOUSING AUTHORITY, TOLAND 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
 - "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

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 #P21-37, WAIV-2024-003

REVISION	DATE	DESCRIPTION
3-15-24		REVISED PER TRC COMMENT
2-21-24		REVISED BUILDINGS, UTILITIES, TDR RELIEF
8-7-22		REVISED PER DOVER TRC COMMENT
7-20-21		REVISED PER DOVER TRC COMMENT

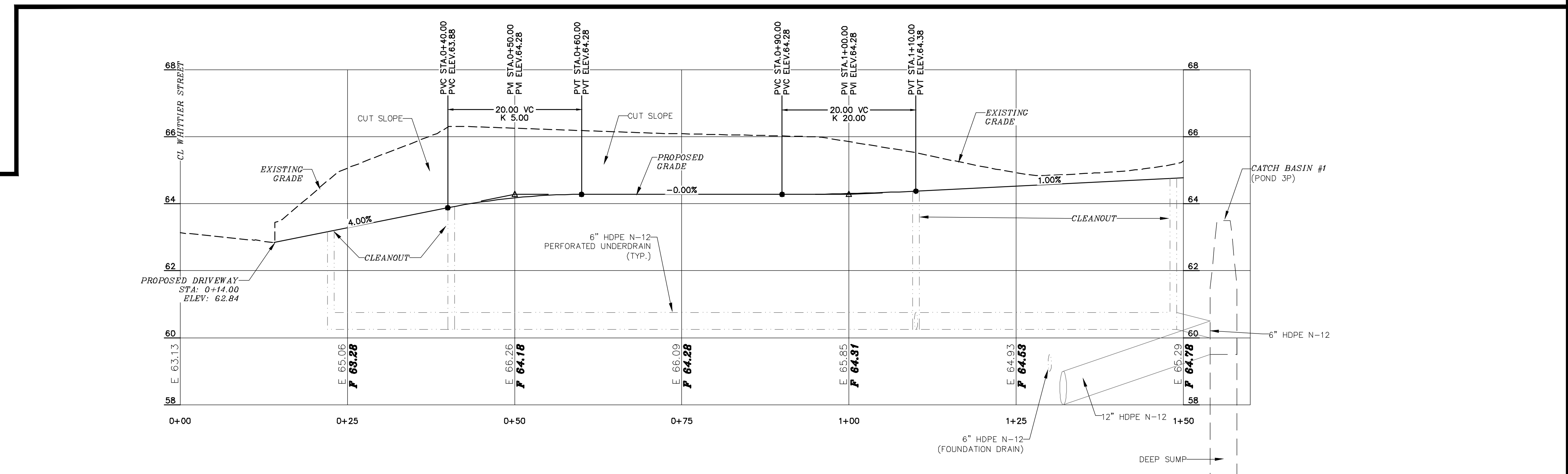
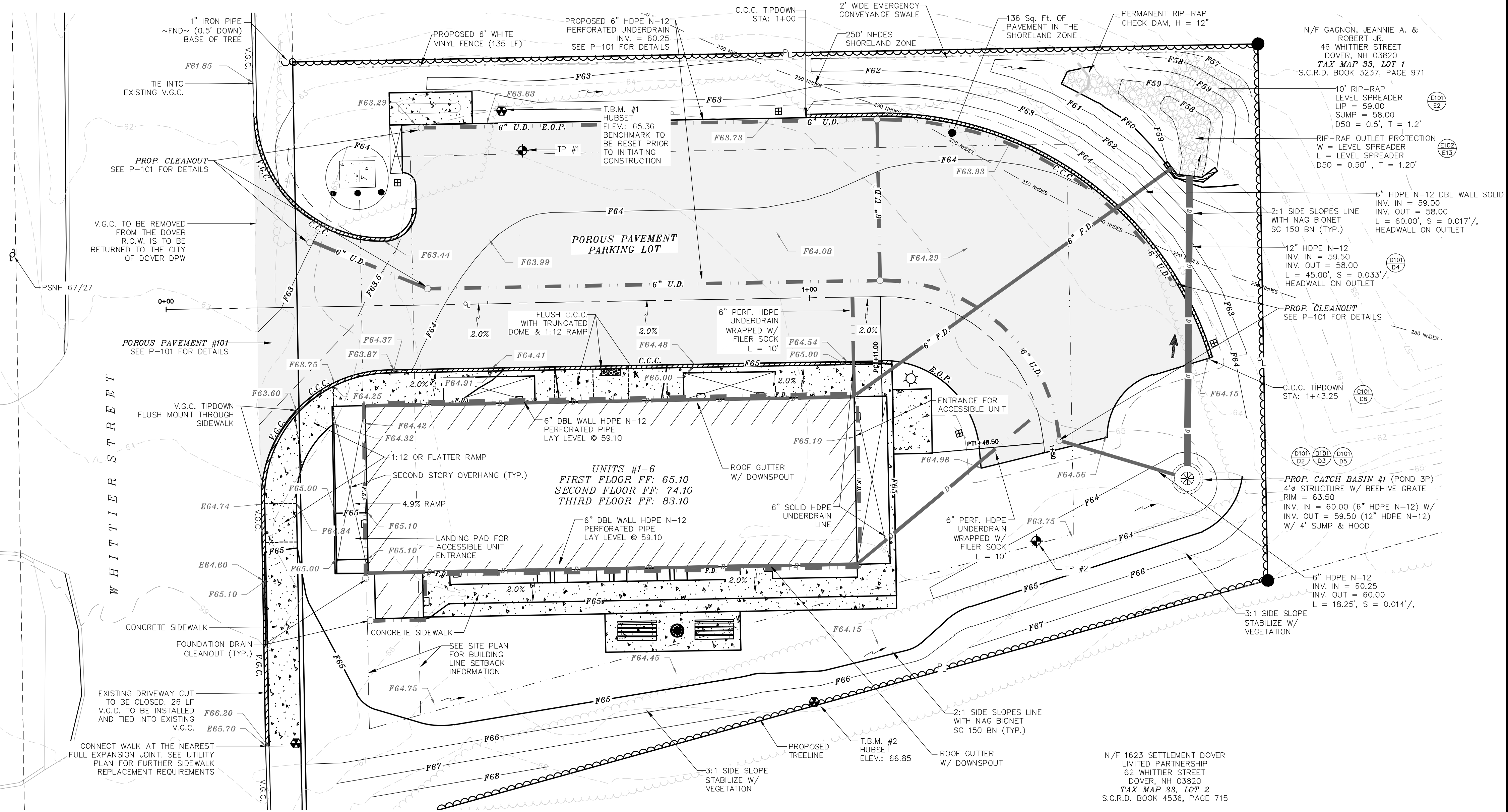
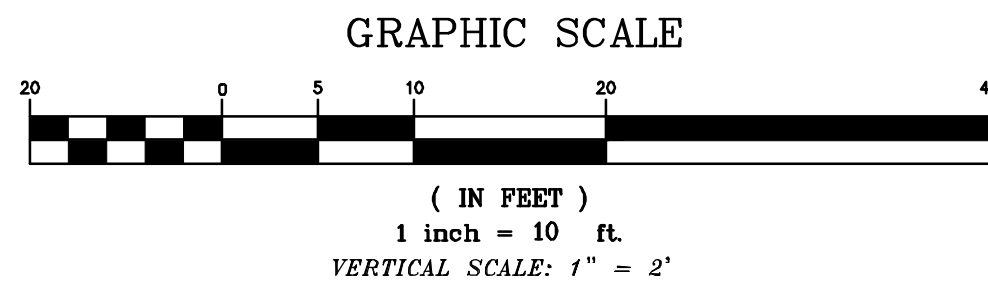
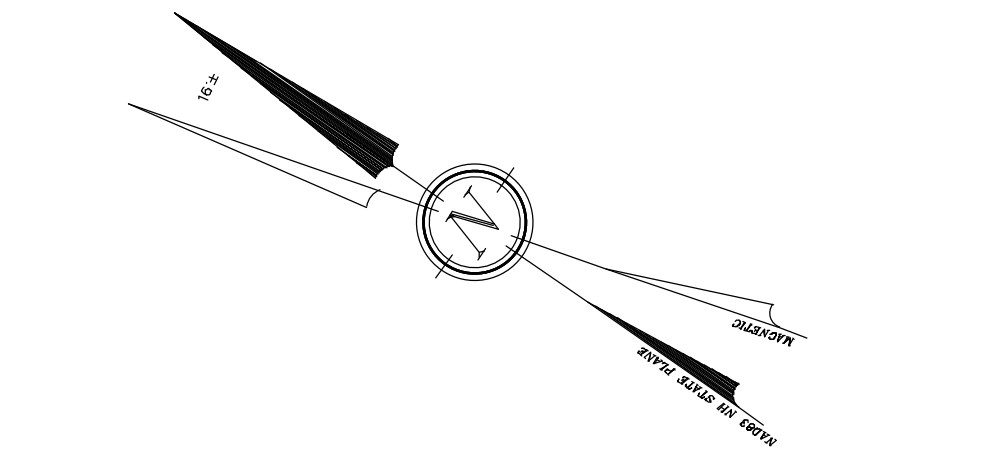
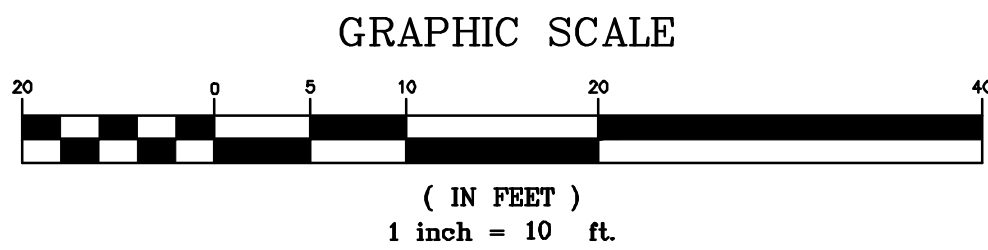
EXISTING CONDITIONS PLAN
LAND OF
DOVER HOUSING AUTHORITY
48 WHITTIER STREET
DOVER, N.H.
TAX MAP 33, LOT 1-A

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
NOTAR PUBLIC
No. 805
KENNETH A. BERRY
SIGNATURE

SHEET 2 OF 21

-
-
-
-
- THE INTENT OF THIS PLAN SET IS TO DEMONSTRATE THE GRADING DESIGN FOR SIX RESIDENTIAL UNITS IN ONE BUILDING AT 48 WHITTIER STREET.
- OWNER & APPLICANT: DOVER HOUSING AUTHORITY
62 WHITTIER STREET
DOVER, NH 03820
- THE PROJECT PARCEL IS TAX MAP 33, LOT 1-A OF THE CITY OF DOVER TAX ASSESSOR'S MAPS.
- THE PROJECT PARCEL CONTAINS 0.35 ACRES OR 15,394 SQUARE FEET AREA OF LAND.
- TITLE REFERENCE FOR THE PROJECT PARCEL IS THE STAFFORD COUNTY REGISTRY OF DEEDS,
(S.C.R.D.) BOOK NO. 4716, PAGE NO. 900.
- SUBSURFACE UTILITY LOCATIONS ARE BASED UPON BEST AVAILABLE EVIDENCE AND ARE NOT FIELD VERIFIED. LOCATING AND PROTECTING ANY ABOVE AND BELOW GROUND UTILITIES IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR. ANY UTILITY CONFLICTS SHOULD BE REPORTED IMMEDIATELY TO THE DESIGN ENGINEER.
- THE CONTRACTOR SHALL CALL AND COORDINATE WITH DISGAS 1-888-344-7233 AT LEAST 72 HOURS PRIOR TO COMMENCING ANY EXCAVATION ON PUBLIC OR PRIVATE PROPERTY.
- SEE DETAILS CONCERNING SITE LAYOUT, DRAINAGE, UTILITY AND SEDIMENT AND EROSION CONTROLS.
- SEE EROSION & SEDIMENT CONTROL PLAN FOR INLET PROTECTION AND CONTROLS FOR THE ENTIRE SITE.
- ALL DRAINAGE PIPE IS TO BE HDPE N-12 ASTM F2648. (GREEN PIPE) INDIVIDUAL PIPE SIZES ARE SPECIFIED.
- ALL ELEVATIONS TO BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. THE DESIGN ENGINEER IS TO BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCY - TEMPORARY BENCHMARKS (T.B.M.) ARE TO BE PROVIDED BY THE DESIGN ENGINEER.
- NOTE THAT THE PROJECT NOT SUBJECT TO THE EPA NPDES PHASE II. OPERATION OF THE SITE WILL conform TO THE STORM WATER MANAGEMENT PLAN PER CHPT. OF DOVER CHAPTER 149-14. WEEKLY INSPECTIONS WILL BE CONDUCTED BY THE DESIGN ENGINEER, OR THIRD PARTY INSPECTOR, SEE E101.
- UPON FINAL COMPLETION AND 85% STABILIZATION THE DRAINAGE SYSTEM IS TO BE CLEARED OF ALL DEBRIS TO INCLUDE THE PUMPING OF THE BASIN SUMPS.
- UNPAVED AREAS ARE TO RECEIVE 4" QUALITY LOAM AND SEED.
- BASINS AND DRAINS ARE TO HAVE BOOTS INSTALLED ON ALL INLETS AND OUTLETS.
- PROPOSED CLEAN OUTFITS ARE TO BE VERTICAL 12" N-12 PIPE WITH CAST IRON COVERS SCREWED WITH STAINLESS STEEL SCREWS. THE COVER IS TO BE DEMARQUED WITH A "D".



REVISION	DATE	DESCRIPTION
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#3	8-5-23	REVISED PER NOTICE OF DECISION
#2	8-5-22	REVISED PER TRC COMMENT
#1	7-20-21	REVISED PER DOWER TRC COMMENT

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

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

- 1.) POROUS ASPHALT PAVEMENT WILL CONFORM TO UNHSC (2007b) SPECIFICATIONS AS UPDATED BY UNHSC DESIGN SPECIFICATIONS FOR POROUS ASPHALT PAVEMENT AND INFILTRATION BEDS (DATED: SEPTEMBER 2016).
- 2.) THE FILTER COURSE WILL BE INSTALLED AT A MINIMUM DEPTH OF 12 INCHES AND CONSIST OF NHDOT (2016) SAND, ITEM 304.1 PER THE NH STORMWATER MANUAL.
- 3.) SEE CROSS SECTIONS FOR DETAILS.
- 4.) SEE STORMWATER SYSTEM OPERATIONS AND MAINTENANCE PLAN, DATED JUNE 7, 2022 FOR MAINTENANCE REQUIREMENTS.
- 5.) SYSTEM IS TO LINED W/ 4" LOW PERM MATERIAL, WITH DESIGN ENGINEER CONSULTATION. THE EXISTING ON-SITE MATERIAL MAY BE USED AS LOW PERM LINER

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

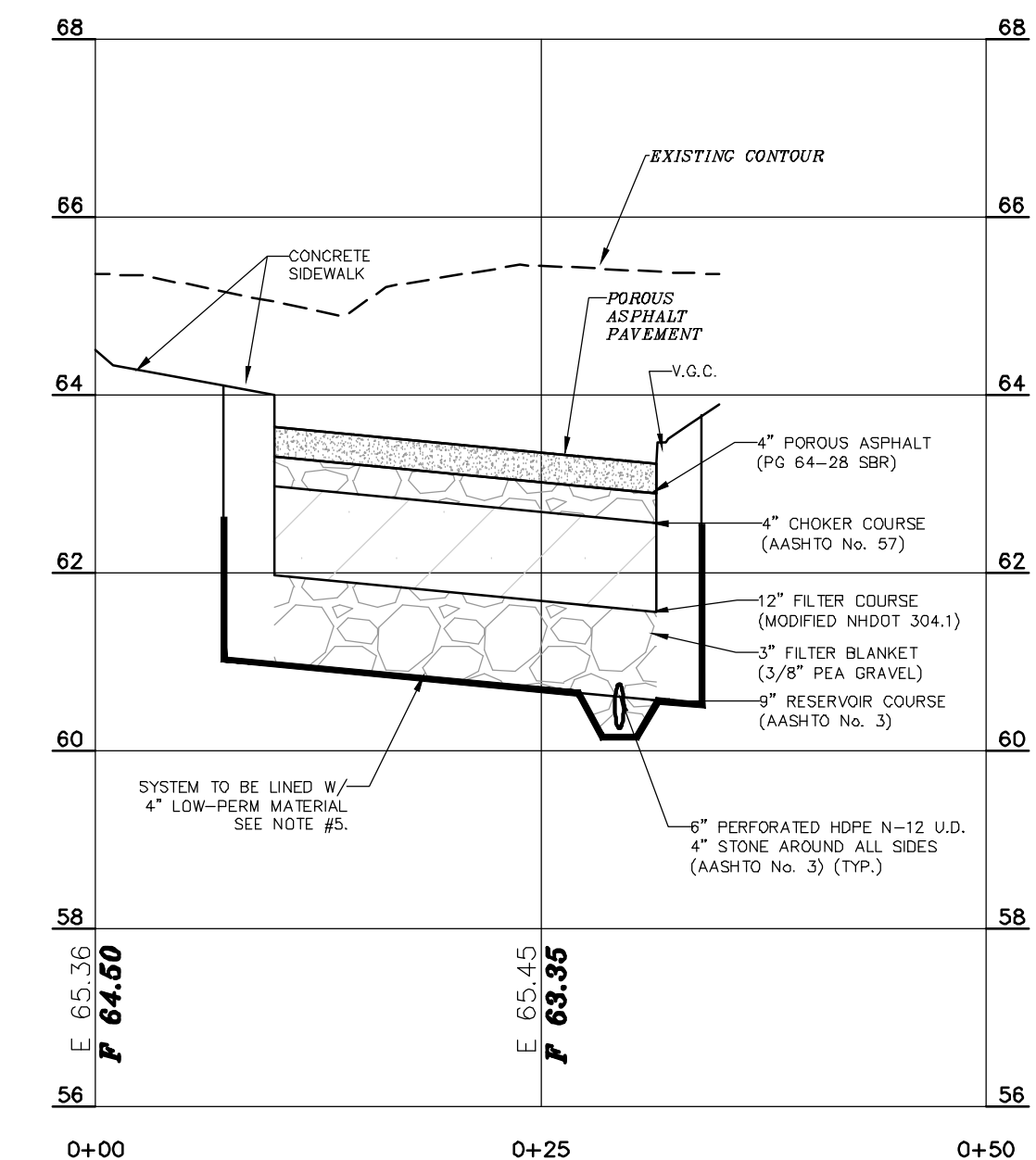
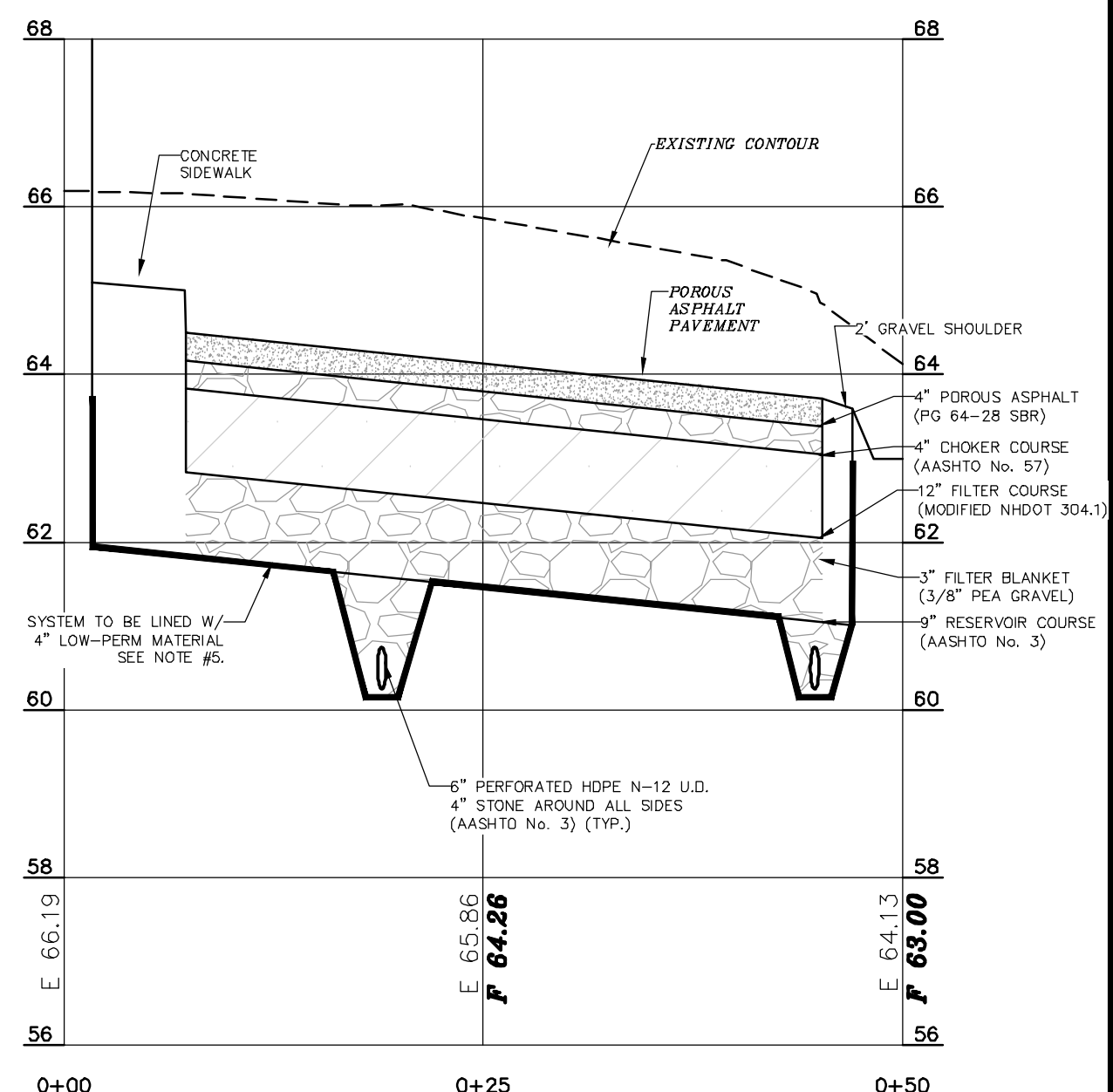
* EQUIVALENT TO STANDARD WASHED
STONE - SECTION 702 OF NHDOT
NHDOT STANDARD SPECIFICATIONS

* EQUIVALENT TO STANDARD STONE
SIZE #3 - AASHTO

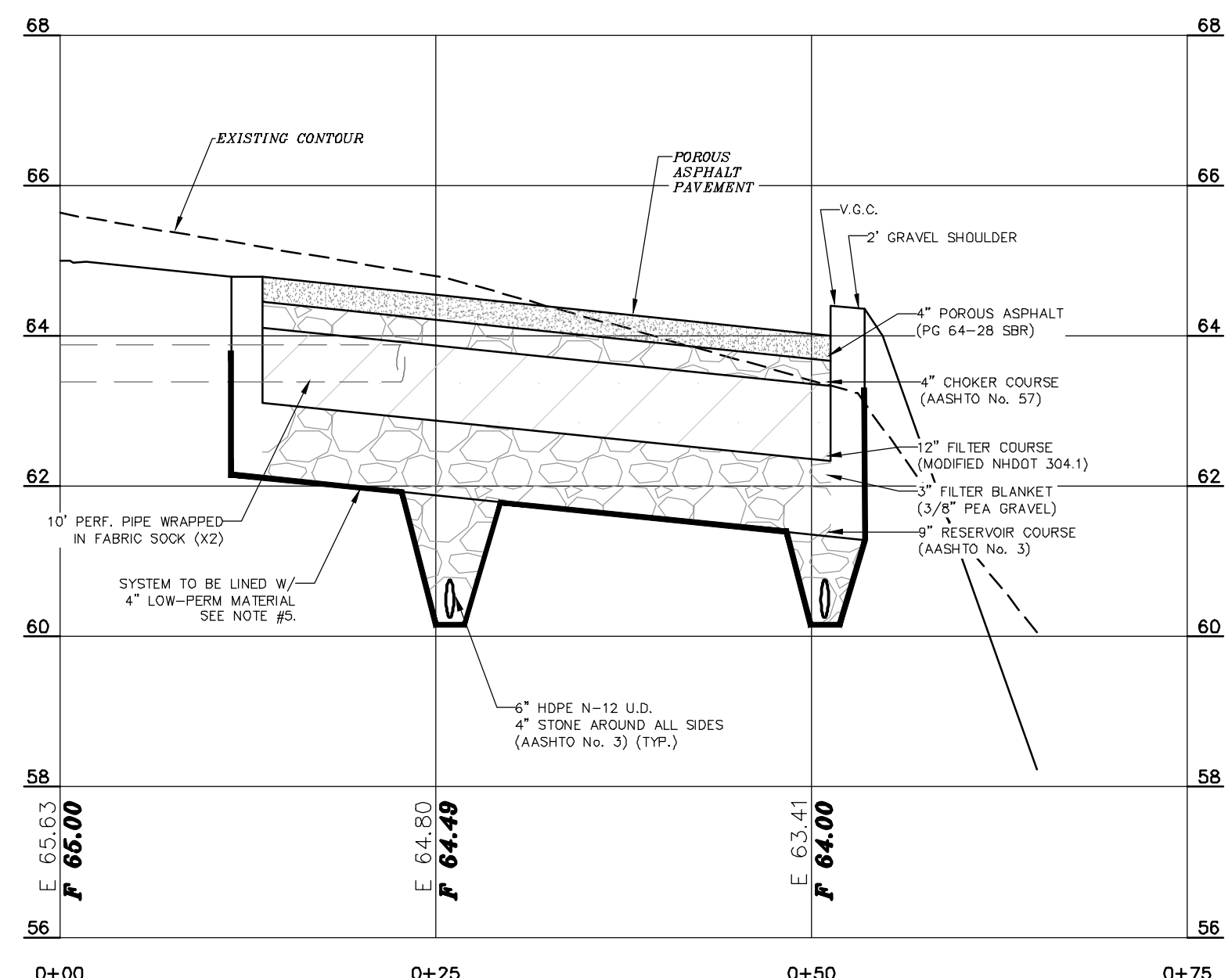
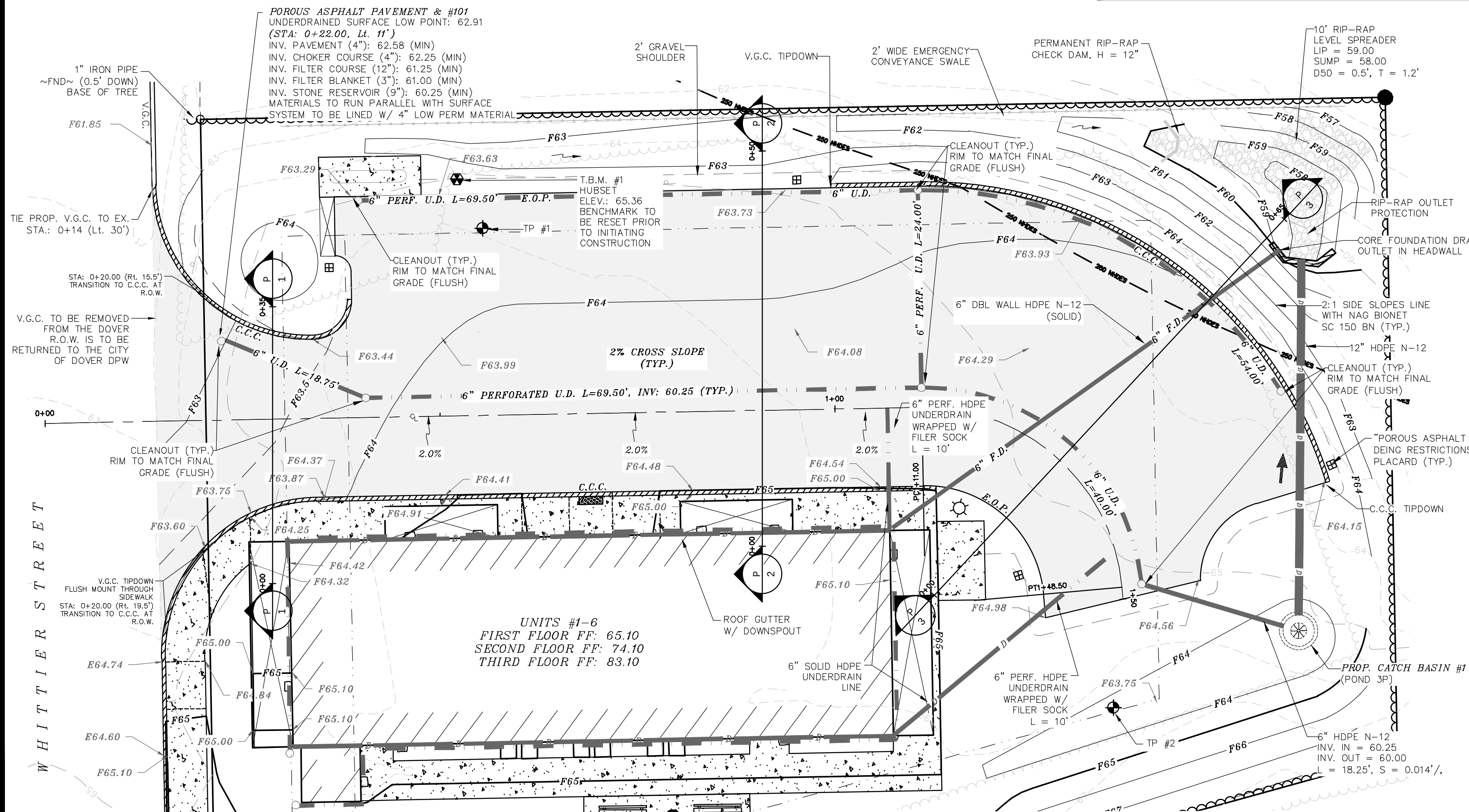
CANTABRO ABRASION $\leq 30\%$
TEST (7 DAYS)

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

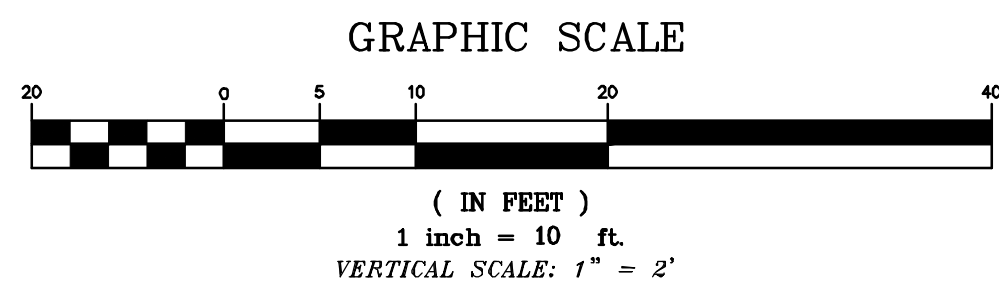
TOTAL SECTION DEPTH = 32"
TOTAL SECTION REQUIRED = 31.2"
(65% OF FROST DEPTH)
FROST DEPTH = 48" (UNHSC)

SECTION OF POROUS
PAVEMENT #101

SECTION OF POROUS
PAVEMENT #101



SECTION OF POROUS
PAVEMENT #101

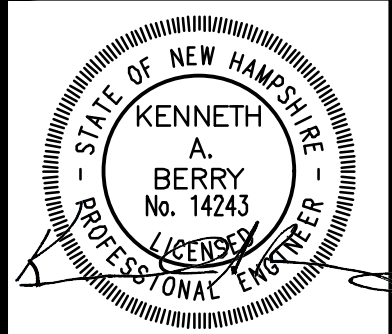


P-101

REVISION	DATE	DESCRIPTION
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POROUS PAVEMENT #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)332-2888
SCALE : 1 IN. EQUALS 10 FT.
DATE : MAY 6, 2021
FILE NO. : DB 2020 - 136



SHEET 6 OF 21

SOILS & DEWATERING:

BuB 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 COUNTY 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.

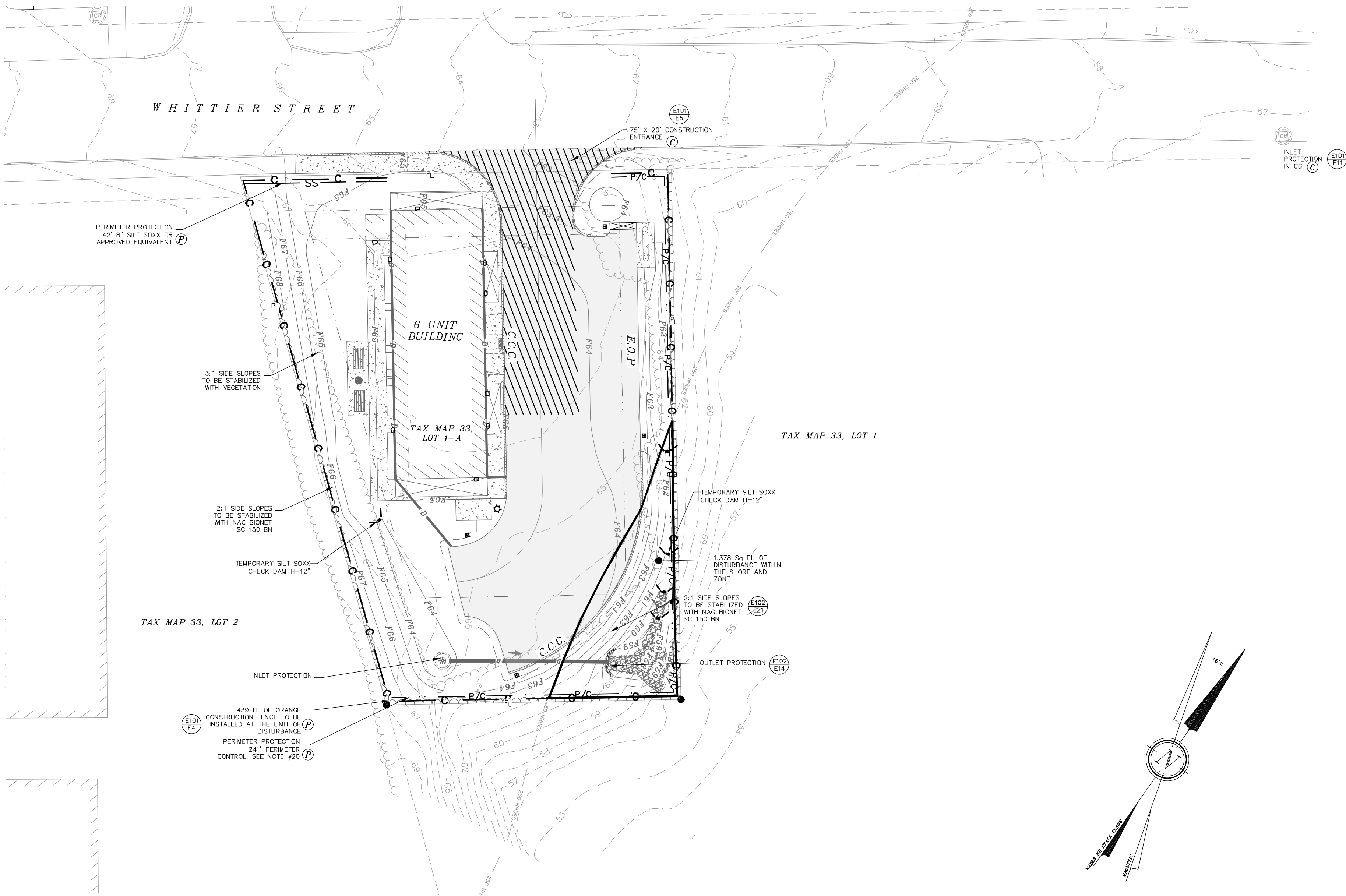
COVER MANAGEMENT DURING CONSTRUCTION FOR EXPOSED SOIL WILL INCLUDE HAY /
STRAW APPLIED AT A RATE OF 2.0 TONS PER ACRE, TEMPORARY SEEDING OF ANNUAL
RYE GRASS, AND PERMANENT SEEDING AT THE EARLIES OPPORTUNITY. SEE ADDITIONAL
REQUIREMENT FOR STABILIZATION ON THE EROSION AND SEDIMENT CONTROL DETAIL
SHEETS,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

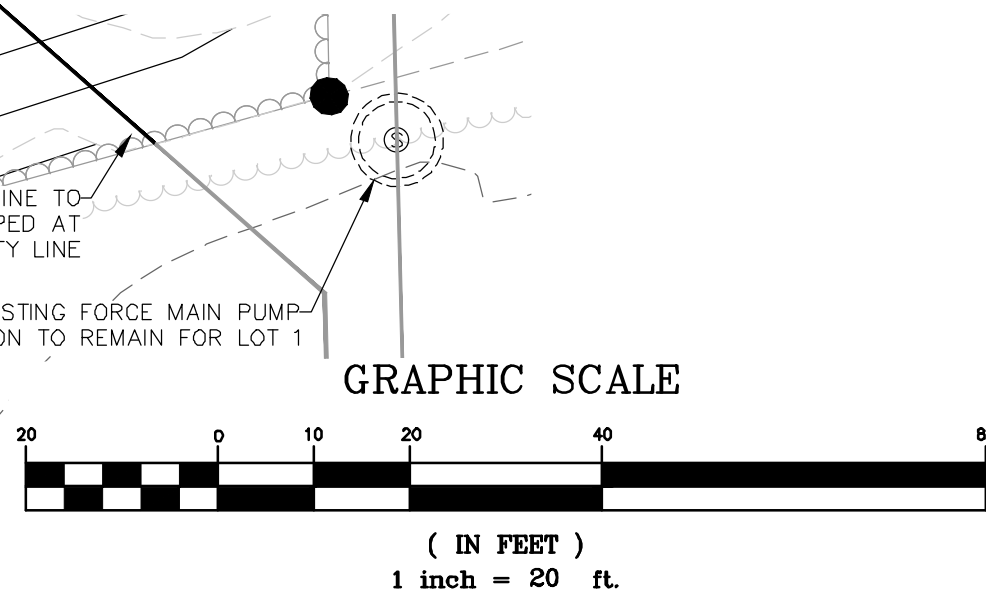
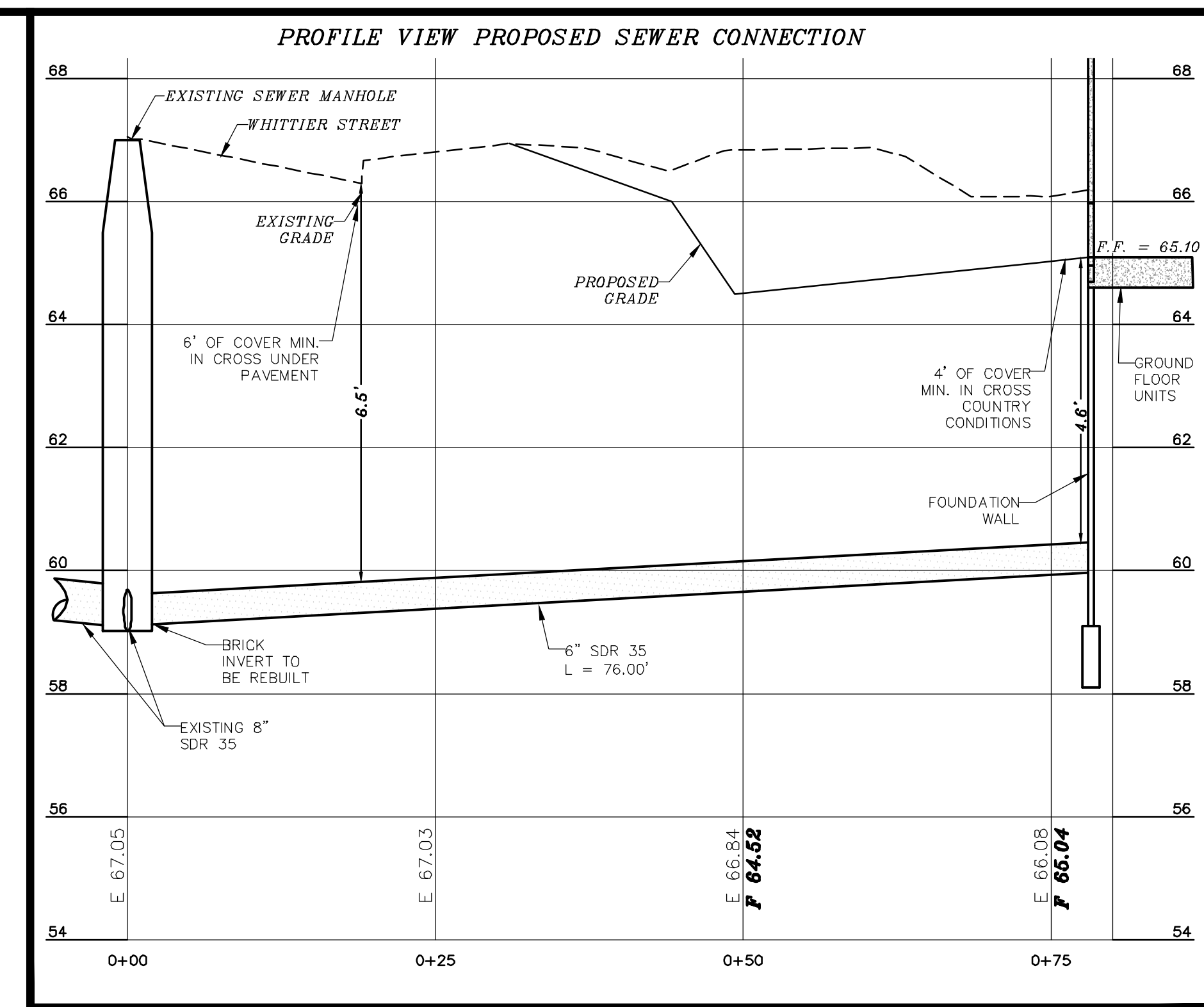
THE CONSTRUCTION SCHEDULE WILL BE MANAGED SO THAT ALL STORMWATER
STRUCTURES WILL BE BUILT AND STABILIZED PRIOR TO RECEIVING SURFACE WATER
RUNOFF. CONTRACTOR TO BE RESPONSIBLE FOR ALL DIVERSIONS DURING
CONSTRUCTION AND FOR INTERIM SEDIMENT AND EROSION CONTROL MEASURES.

LEGEND:

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

.. SF ..
.. P/C ..
C C





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 AND ALL CONFLICTS SHOULD BE REPORTED IMMEDIATELY TO THE DESIGN ENGINEER.
2. THE CONTRACTOR SHALL CALL AND COORDINATE WITH DIGSAFE 1-888-344-7231 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, DETAILED 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 DETAIRING PROGRAM. SOILS EXPOSED TO 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 P.O.W.), EXPOSED SUBGRADES ARE SUSCEPTIBLE TO FROST. NO FILL OR FROST SHALL BE PERMITTED TO REMAIN IN PLACE. 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 DOWER DPW.
7. CONTRACTOR TO CONTACT DOWER 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 DOWER STANDARDS, ALL HIGHWAY CONSTRUCTION WILL MEET THE CITY OF DOWER STANDARDS.
9. CONTRACTOR SHALL COORDINATE ALL ELECTRICAL INSTALLATIONS WITH EVERSOURCE AT (800) 662-7764. ALL ELECTRIC CONDUIT INSTALLATION SHALL BE DETERMINED 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-NQ 704.05 (c)-(e) and CONFORM WITH ASTM D3034. PVC JOINT SEALS SHALL CONFORM WITH ASTM D3217.
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 STRIPPED PRIOR TO EXCAVATION.
12. CURB BOXES SHOULD BE PLACED IN THE LAWN AREA, OR IF PLACED IN PAVEMENT, A ROAD BOX IS REQUIRED.
13. SEE EXISTING CONDITIONS PLAN FOR DATUM, VERTICAL DATUM BASED ON NAVD83 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 DESIGN ENGINEER IMMEDIATELY.
15. THE EXISTING RESIDENTIAL WATER SERVICE LOCATION IS UNKNOWN, WHEN EXISTING SERVICE IS NOT LOCATED, IT SHALL BE CONTINUED (OUT AND CAPPED) AT THE MAIN IN THE STREET.
16. THE RECONSTRUCTION OF THE SEWER MANHOLE INVERT IS TO BE INSPECTED BY THE CITY OF DOWER.

#5	3-15-24	REVISED PER TRC COMMENT
#4	2-21-24	REVISED BUILDINGS, UTILITIES, TDR RELIEF
#3	8-7-23	REVISED PER NOTICE OF DECISION
#2	7-13-23	REVISED PER TRC COMMENT
#1	7-20-21	REVISED PER DOVER TRC COMMENT
REVISION	DATE	DESCRIPTION

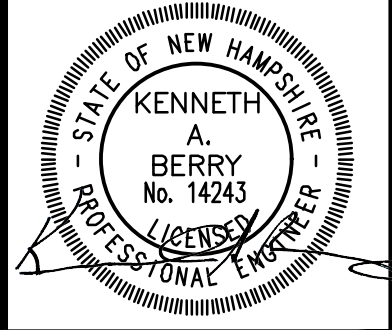
UTILITY PLAN & PROFILE
LAND OF
OVER HOUSING AUTHORITY
48 WHITTIER STREET
DOVER, N.H.
TAX MAP 33, LOT 1-A

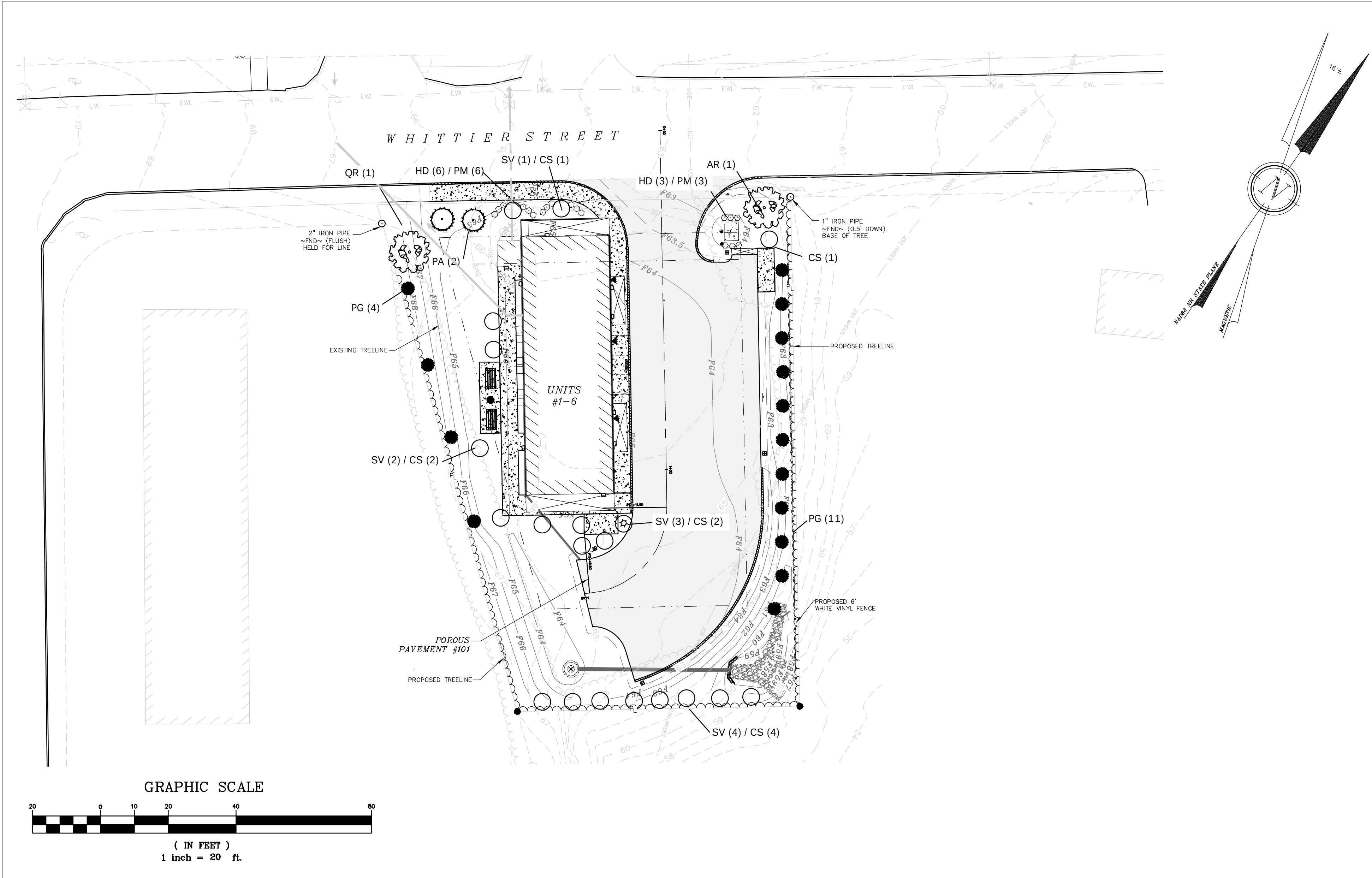
BERRY SURVEYING & ENGINEERING
 335 SECOND CROWN POINT ROAD
 BARRINGTON, NH 03825 (603) 332-2863

SCALE : 1 IN. EQUALS 10 FT.

DATE : MAY 6, 2021

FILE NO. : DB 2020 - 136





- NOTES:**
- CALL DIG SAFE PRIOR TO BEGINNING WORK. (1-888-344-7233). THE LANDSCAPE CONTRACTOR IS ADVISED OF THE PRESENCE OF UNDERGROUND UTILITIES AND SHALL VERIFY THE EXISTENCE AND LOCATION OF THE SAME BEFORE COMMENCING AND DIGGING OPERATIONS. THE LANDSCAPE CONTRACTOR SHALL REPLACE OR REPAIR UTILITIES, PAVING, WALKS, CURBING, ETC DAMAGED IN PERFORMANCE OF THIS JOB AT NO ADDITIONAL COST TO THE OWNER OR GENERAL CONTRACTOR.
 - CONTRACTOR SHALL THOROUGHLY FAMILIARIZE THEMSELVES WITH ALL SITE CONDITIONS PRIOR TO CONSTRUCTION BIDDING.
 - THE CONTRACTOR SHALL SUPPLY ALL PLANT MATERIALS IN QUANTITIES SUFFICIENT TO COMPLETE THE PLANTINGS SHOWN ON THE DRAWINGS. VARIATIONS IN QUANTITIES ARE TO BE APPROVED BY THE DESIGN ENGINEER.
 - PROVIDED SMOOTH TRANSITION WHERE NEW WORK MEETS EXISTING CONDITIONS.
 - ALL PLANT MATERIAL INSTALLED SHALL MEET THE SPECIFICATIONS OF "AMERICAN STANDARD FOR NURSERY STOCK" BY THE AMERICAN ASSOCIATION OF NURSERYMEN
 - ALL PLANT MATERIALS SHALL BE FREE FROM INSECTS AND DISEASE.
 - ALL PLANTINGS SHALL BE DONE IN ACCORDANCE WITH ACCEPTABLE HORTICULTURAL PRACTICES. THIS IS TO INCLUDE PROPER PLANTING MIX, PLANT BED AND TREE PIT PREPARATION, PRUNING STAKING OR GUYING, WRAPPING, SPRAYING, FERTILIZATION, PLANTING AND ADEQUATE MAINTENANCE UNTIL ACCEPTANCE FROM OWNER.
 - ALL GRASS, OTHER VEGETATION AND DEBRIS SHALL BE REMOVED FROM ALL PLANTING AREAS PRIOR TO PLANTING.
 - THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF EXISTING AND NEWLY PLANTED TREES AND SHRUBS DURING THE CONSTRUCTION PROCESS. WHERE REQUIRED, THE CONTRACTOR SHALL INSTALL TEMPORARY FENCING (SNOW OR EQUAL) AROUND EXISTING TREES AND SHRUBS THAT COULD BE IMPACTED BY THE CONSTRUCTION PROCESS. STORAGE OF CONSTRUCTION EQUIPMENT, CONSTRUCTION MATERIALS, SNOW STORAGE AND OR VEHICLE PARKING SHALL NOT BE PERMITTED WITHIN THE DRIP LINE OF TREES OR TWENTY FEET WHICH EVER IS GREATER.
 - NEW PLANTINGS SHALL BE INSTALLED PER PROJECT DRAWINGS AND SPECIFICATION THAT INCLUDE FERTILIZATION AND MULCHING AS REQUIRED.
 - ALL SHRUB BEDS AND TREE PITS SHALL BE MULCHED WITH 3" CLEAN SHREDDED BLACK MULCH
 - WHERE INDICATED ON PLAN, PLANTING SOIL MIXTURE FOR GROUND COVER AND PERENNIAL BED AREAS SHALL CONSIST OF FOUR PARTS TOPSOIL, TWO PARTS SPHAGNUM PEAT MOSS, AND ONE PART HORTICULTURAL PERLITE BY VOLUME. PEAT MOSS MAY BE SUBSTITUTED WITH WELL-ROTTED OR DEHYDRATED MANURE OR COMPOST. ROTOTILL BEDS TO A DEPTH OF 8 INCHES.
 - MAINTENANCE OF NEW PLANTINGS AND LAWNS SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR AND OR LANDSCAPE SUBCONTRACTOR UNTIL ACCEPTANCE BY THE OWNER. RESPONSIBILITIES SHALL INCLUDE WATERING WEEDING AND MOWING AS NECESSARY. ALL PLANT MATERIAL SHALL BE GUARANTEED FOR A PERIOD OF ONE YEAR FROM THE DATE OF ACCEPTANCE, REPLACEMENT MATERIAL SHALL BE GUARANTEED FOR AND ADDITIONAL YEAR FROM TIME OF INSTALLATION.
 - THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL TEMPORARY EROSION CONTROL MEASURES DURING THE CONSTRUCTION PHASE AND UNTIL ALL AREAS HAVE BEEN STABILIZED AND ACCEPTED BY THE OWNER. THE GENERAL CONTRACTOR SHALL PROVIDE WEEKLY INSPECTIONS OF EROSION MEASURE AND IMMEDIATELY AFTER STORM EVENTS AND REPAIR AS NECESSARY.
 - THE GENERAL CONTRACTOR AND OR THE LANDSCAPE SUBCONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL OF ALL THREE GUYING MATERIAL ONCE PLANT MATERIAL HAS BEEN ESTABLISHED. (MINIMUM OF ONE GROWING SEASON). ALL TEMPORARY EROSION CONTROL MEASURE SHALL BE REMOVED ONCE STABILIZATION OF DISTURBANCE HAS BEEN ACCEPTED BY OWNER.
 - THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR A MINIMUM OF TWO MOWINGS FOR ALL TURF AREAS OR UNTIL ACCEPTANCE BY THE OWNER. A MINIMUM UNIFORM 75% CATCH OF TURF IS REQUIRED FOR ACCEPTANCE.
 - ALL PLANTINGS SHALL BE WATERED REGULARLY DURING THEIR FIRST YEAR AND MAINTAINED PERMANENTLY IN GOOD GROWING CONDITION AS AN EFFECTIVE VISUAL SCREEN.
 - SHRUBS OR TREES WHICH DIE SHALL BE REPLACED WITHIN ONE GROWING SEASON WITH NEW SHRUBS OR TREES TO ENSURE CONTINUED COMPLIANCE WITH APPLICABLE LANDSCAPING REQUIREMENTS.
 - ALL REQUIRED LANDSCAPING SHALL BE INSTALLED BEFORE OCCUPANCY, OR WITHIN SIX MONTHS IF OCCUPANCY OCCURS DURING WINTER CONDITIONS.
 - TREES ARE TO BE 6' TALL AT PLANTING.
 - ALL PLANT STOCK SHALL CONFORM TO ANSI Z260.1 – NURSERY STOCK, LATEST EDITIONS (AMERICAN ASSOCIATION OF NURSERYMEN, INC.)
 - 4" AGED PINEBARK MULCH AND A WEED BARRIER (TY-PAR FABRIC OR APPROVED EQUAL)

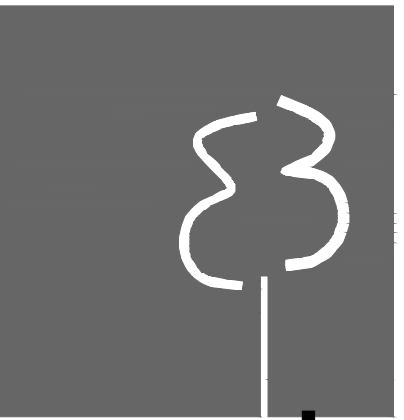
- PLANTING NOTES**
- CONTRACTOR SHALL OBTAIN APPROVAL FROM L.A. PRIOR TO PURCHASING &/OR INSTALLING SUBSTITUTE PLANT MATERIAL PRIOR TO PURCHASE OF ANY SUBSTITUTE MATERIALS.
 - CONSTRUCTION ACCESS WILL BE AS DIRECTED BY L.A. CONTRACTOR IS RESPONSIBLE FOR RESTORATION OF ACCESS ROUTE AND ALL AREAS DISTURBED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

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

PLANTING SCHEDULE Whittier Street Botanical Name/ Common Name			
Trees	Size	Qty	Label
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'	10	SV
Cornus sanguina 'Winter Flame' / Winter Flame Dogwood	2-3' B&B	10	CS
Perennials			
Hemerocallis 'Big Time Happy' / Big Time Happy Daylily	#1	9	HD
Hemerocallis 'Pardon Me' / Pardon Me Daylily	#1	9	PM



- General Plant Maintenance Guide**
- General Plant Bed Maintenance:**
- All plant maintenance should be performed by a qualified horticulturalist or licensed arborist. Cleaning the dead material out of the planting bed in the fall helps keep litter from building up around the plants and in some cases killing the plants. Watering the first year during dry periods will help get the plants established. Mulching every year is not necessary. Raking the old mulch and turning it over is all that is needed. When necessary only install one inch of mulch and do not place the mulch closer than 3" to the trunks or stems of woody plants.
- Trees**
- The first year watering during dry periods will be necessary.
 - 3" inches of mulch maybe used. The mulch should be kept 3 inches from the trunk.
 - Fertilizing is not necessary for the first year. Fertilizing in subsequent years only when and if the foliage is looking weak.
 - Fertilization should occur prior to Mat 31" 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 31" or after shrubs have dropped their leaves or gone dormant for the year.
 - Prune dead wood once a year.
- Grasses**
- Grasses only need to be clipped back at the end of the growing season and all the clippings removed from the area.
 - Do not over mulch, Too much mulch will prohibit the grass from developing into a strong clump.
- Perennials**
- All perennials need to be pruned back after the first or second hard frost. A two-step method; **first** dead head all the flower heads and let drop to the ground for re-seeding. **Second** cut the stems back to 3" above the ground and remove the stem and leaf litter and place in compost. Do not over mulch. Too much mulch will prohibit the growth and development
 - Fertilizing perennials once in the spring with a low phosphate fertilizer will help the plants to get started in the spring.
- www.terrainplanning.com 311 kast hill road hopkinton nh 03229 T:603-491-2322



terrain
planning & design llc

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

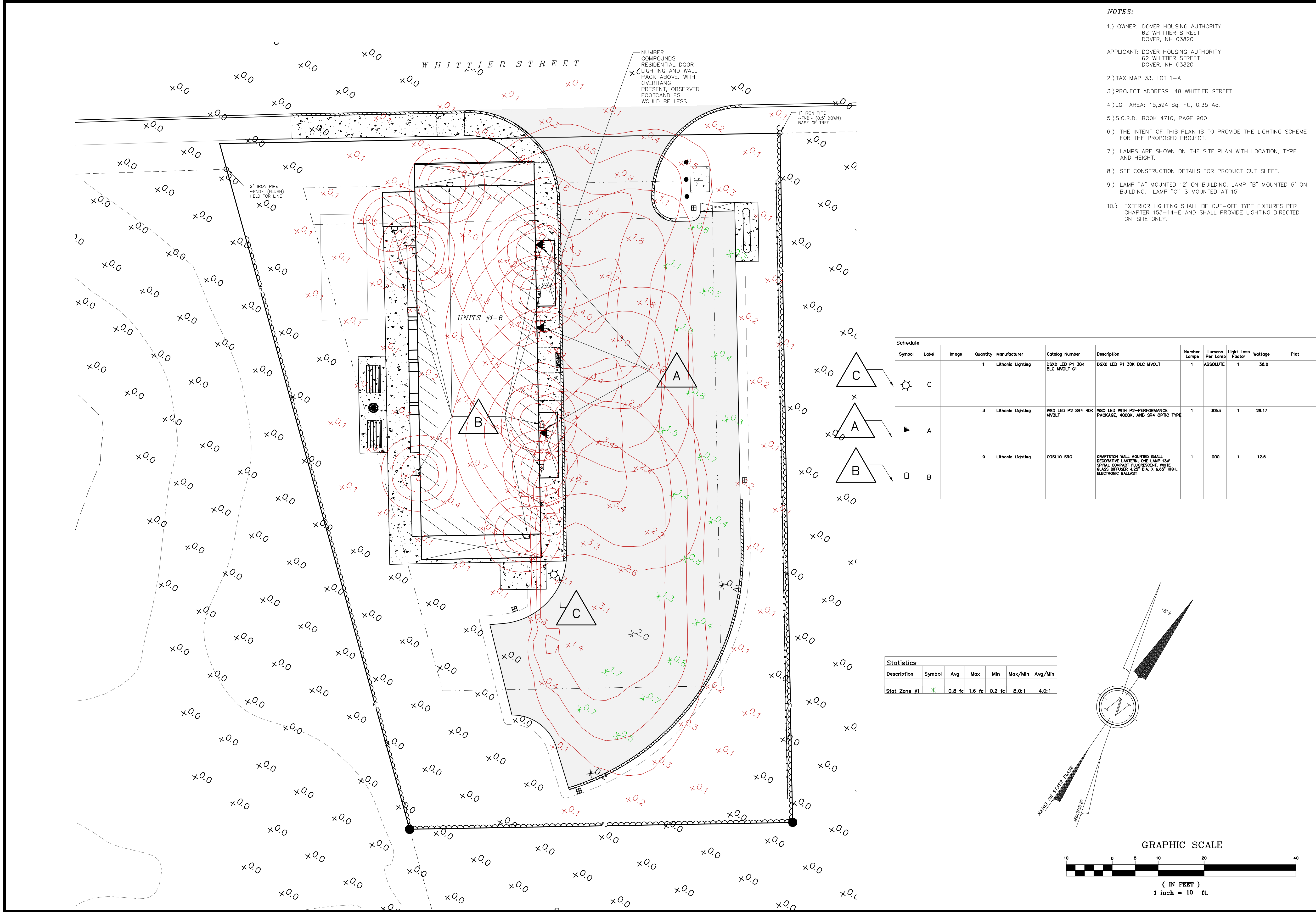
REVISIONS: DATE:
Issued for Client Review

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L - 01

SHEET 9 OF 21





DOVER PLANNING FILE #P21-37, WAIV-2024-003

REVISION	DATE	DESCRIPTION
#5	3-15-24	REVISED PER TRC COMMENT
#4	2-21-24	REVISED BUILDINGS, UTILITIES, TDR RELIEF
#3	8-7-22	REVISED PER DOVER TRC COMMENT
#1	7-20-21	REVISED PER DOVER TRC COMMENT

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

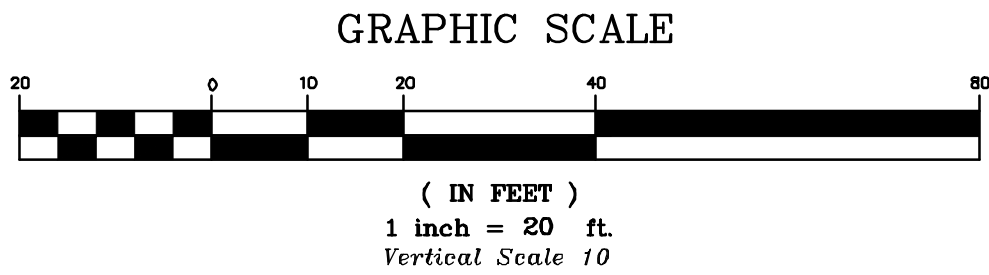
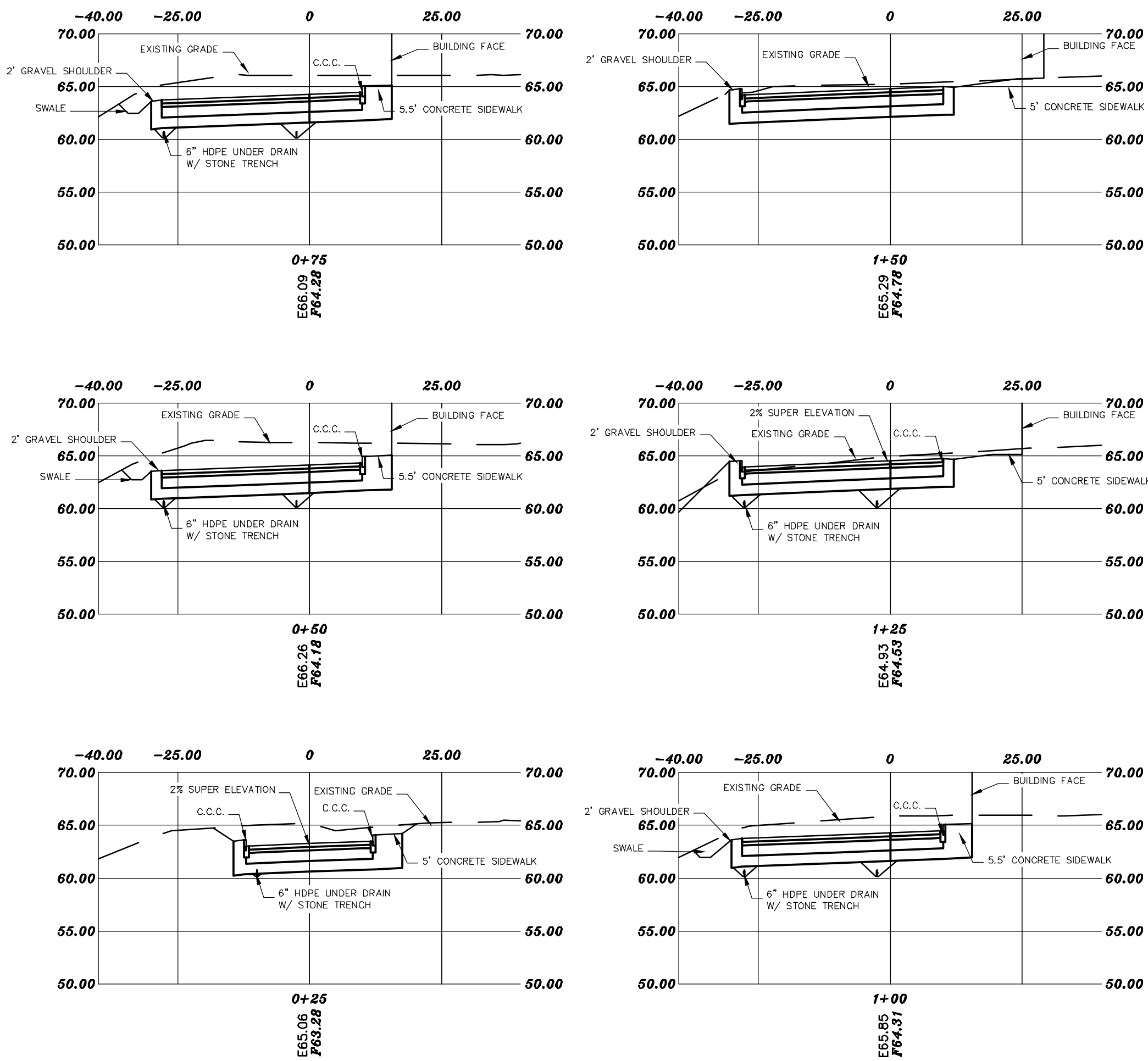
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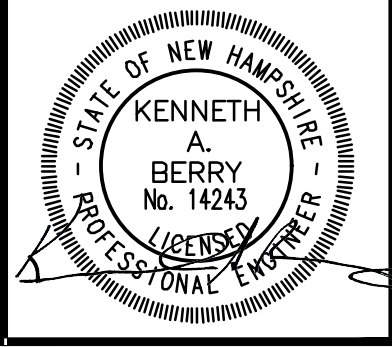
DATE : MAY 6, 2021

FILE NO. : DB 2020 - 136

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

SHEET 10 OF 21





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

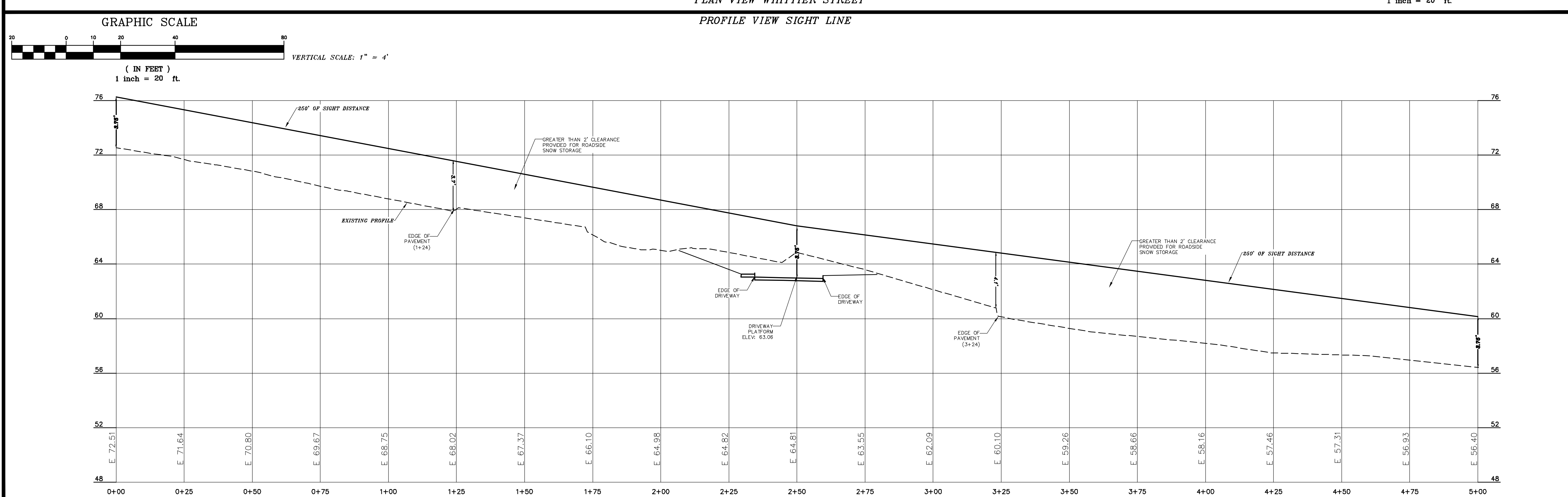
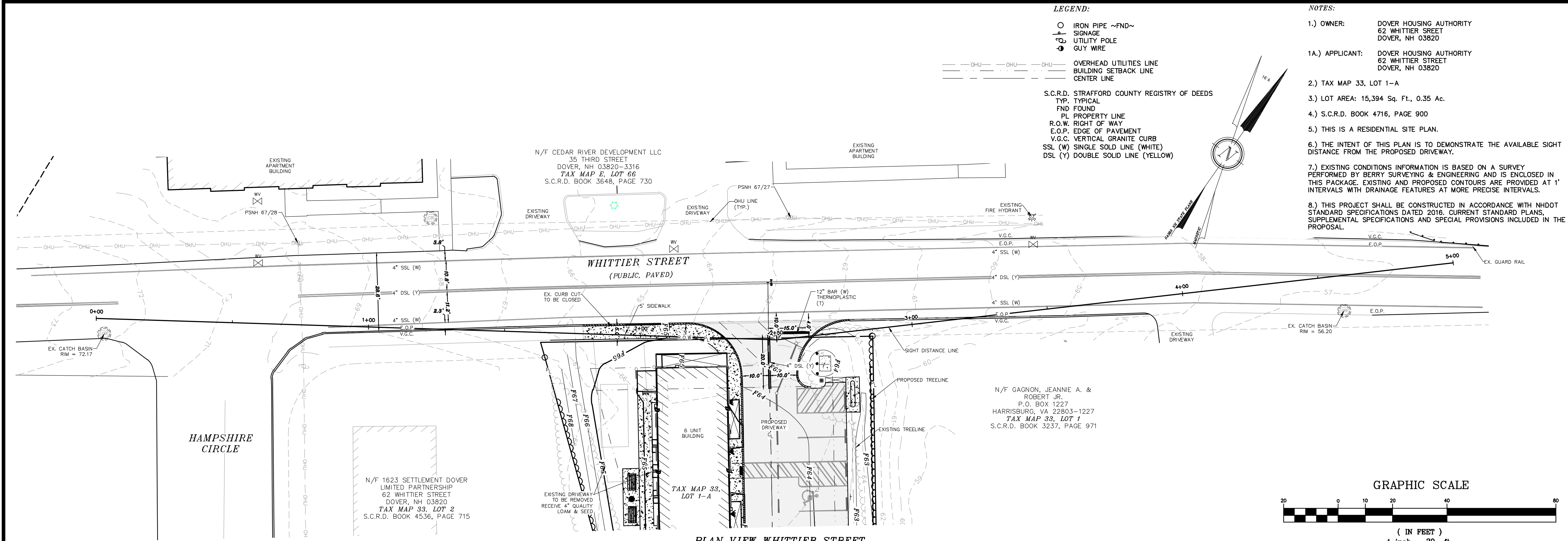
CROSS SECTIONS 0+00 - END
LAND OF
DOVER HOUSING AUTHORITY
48 WHITTIER STREET
DOVER, N.H.
TAX MAP 33, LOT 1-A

REVISION	DATE	DESCRIPTION
#5	3-15-24	REVISED PER TRC COMMENT
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#2	7-20-21	REVISED PER DOVER TRC COMMENT

DOVER PLANNING FILE #P21-37, WAIV-2024-003

SHEET 11 OF 21

NOT FOR CONSTRUCTION



DOVER PLANNING FILE #P21-37, WAIV-2024-003

REVISION	DATE	DESCRIPTION
#5	3-15-24	REVISED PER TRC COMMENT
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#1	7-20-21	REVISED PER DOVER TRC COMMENT

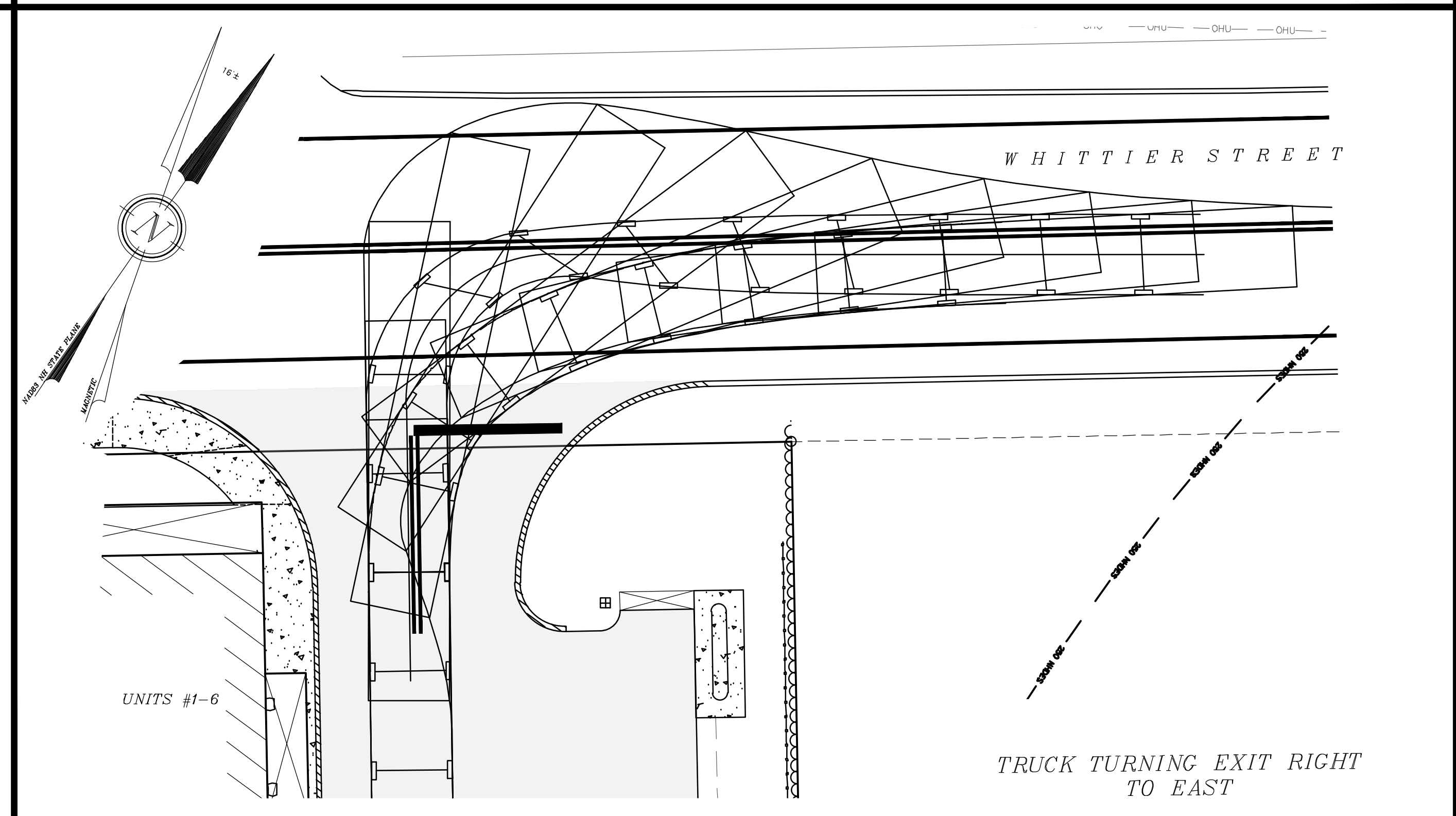
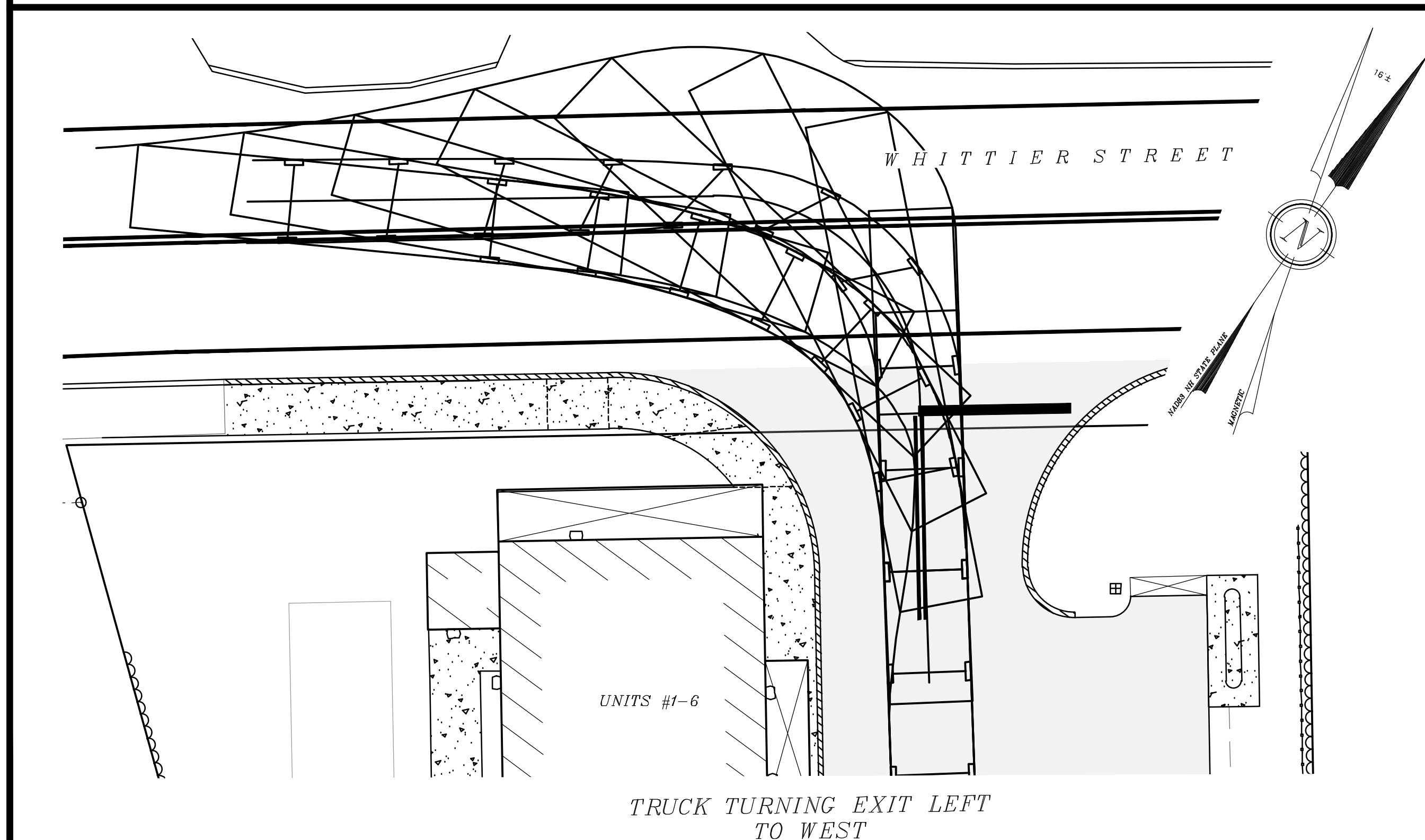
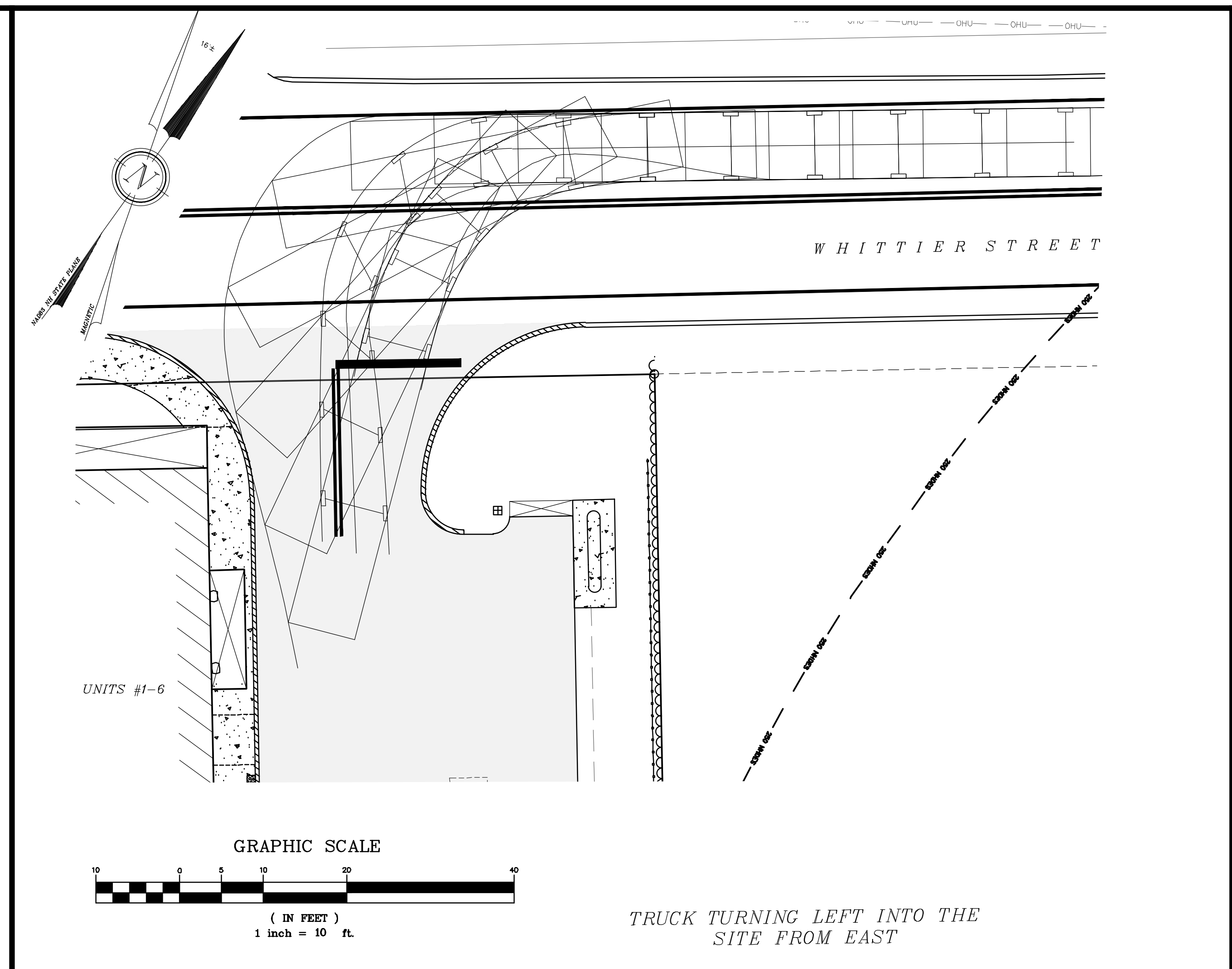
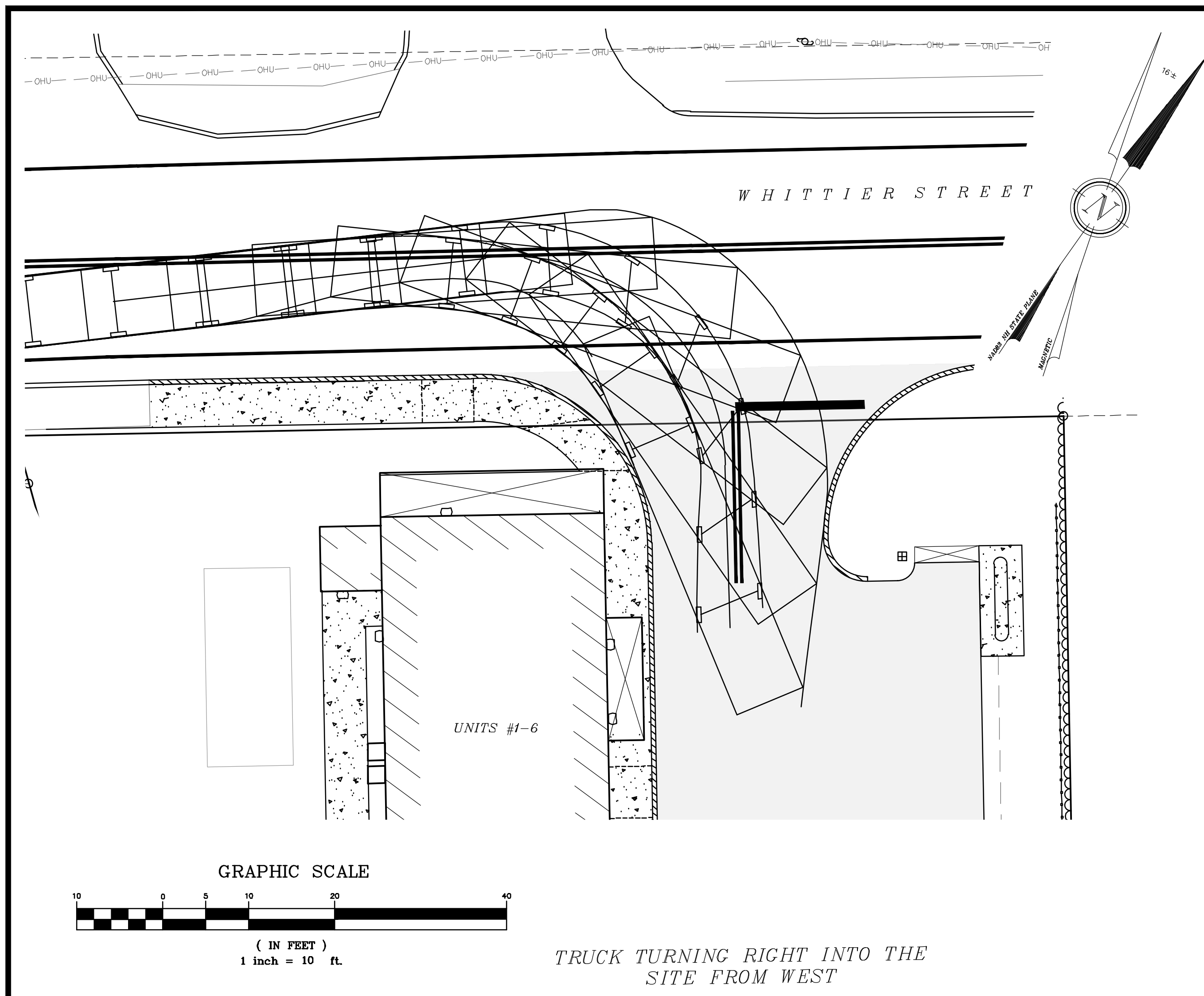
SIGHT DISTANCE PLAN
LAND OF
DOVER HOUSING AUTHORITY
48 WHITTIER STREET
DOVER, N.H.
TAX MAP 33, LOT 1-A

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
Professional Engineer

SD-1

SHEET 12 OF 21



REVISION	DATE	DESCRIPTION
#5	3-15-24	REVISED PER TRC COMMENT
#4	2-21-24	REVISED BUILDINGS, UTILITIES, TDR RELIEF
#3	8-5-22	REVISED PER NOTICE OF DECISION
#2	7-20-22	REVISED PER TRC COMMENT
#1	7-20-21	REVISED PER DOWNEY TRC COMMENT

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

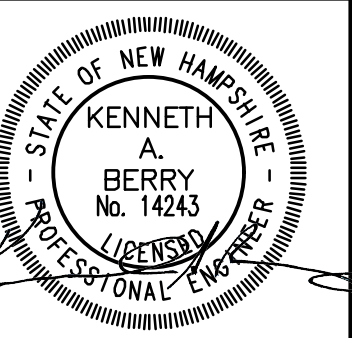
BEKRI SURVEILING & ENGINEERING

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

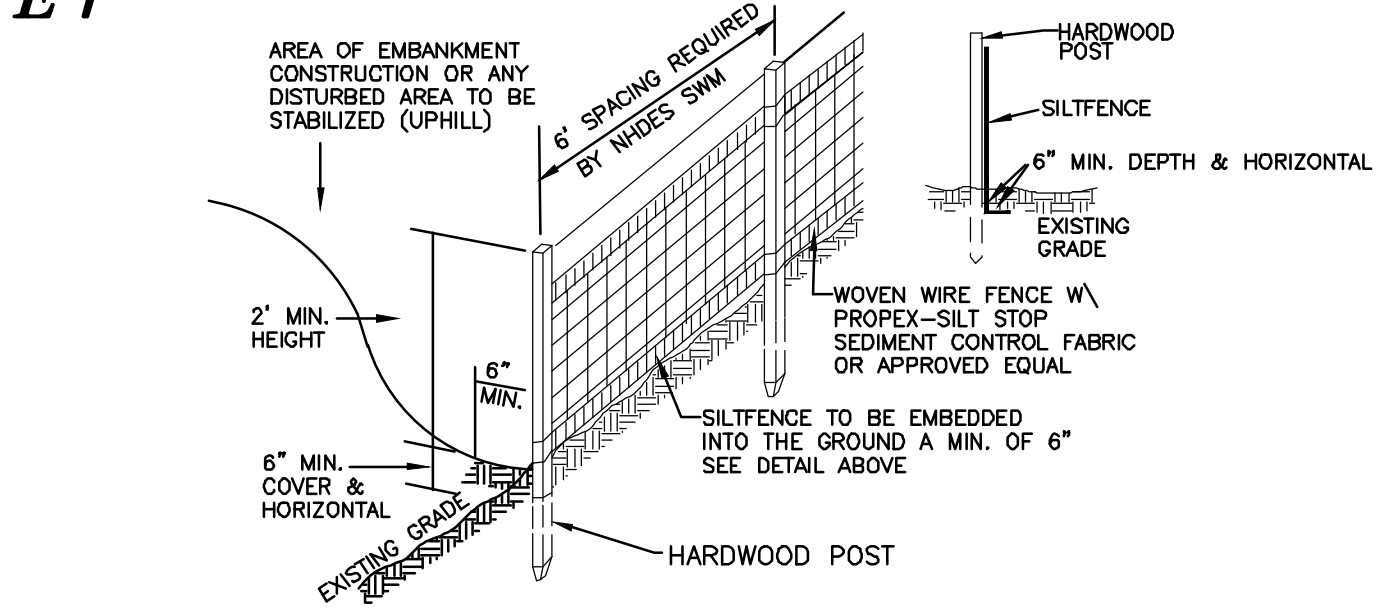
SCALE : 1 IN. EQUALS 10 FT.

DATE : MAY 6, 2021

FILE NO. : DB 2020 - 136



E1



SILT FENCE CONSTRUCTION SPECIFICATIONS

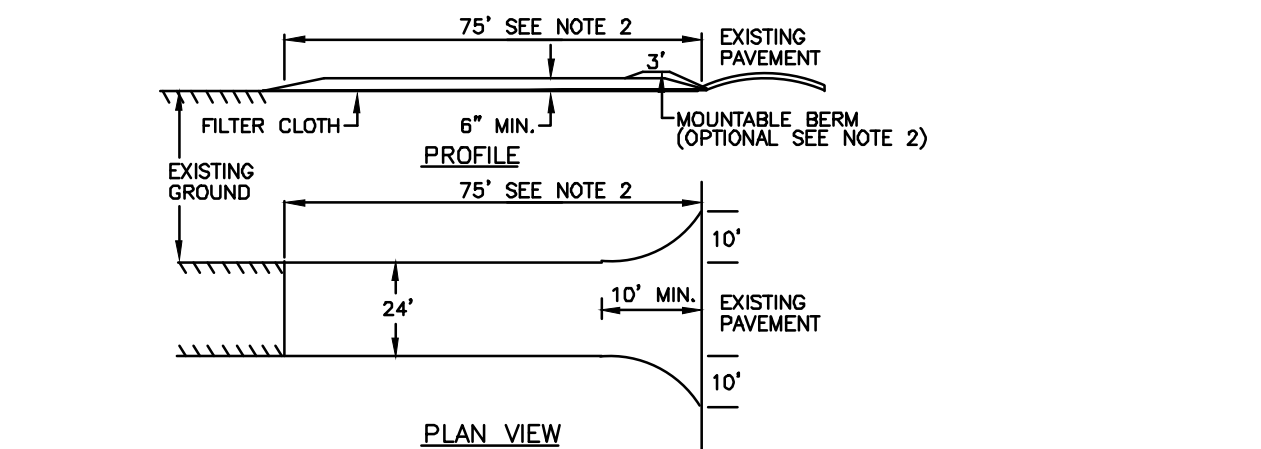
- WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES AND FILTER CLOTH SHALL BE FASTENED TO WOVEN WIRE EVERY 24" AT TOP MID AND BOTTOM SECTIONS AND BE EMBEDDED INTO GROUND A MINIMUM OF 8" THE FENCE POSTS SHALL BE A MINIMUM 48" LONG, SPACED A MAXIMUM 6' APART, AND DRIVEN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

SILT FENCE MAINTENANCE

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

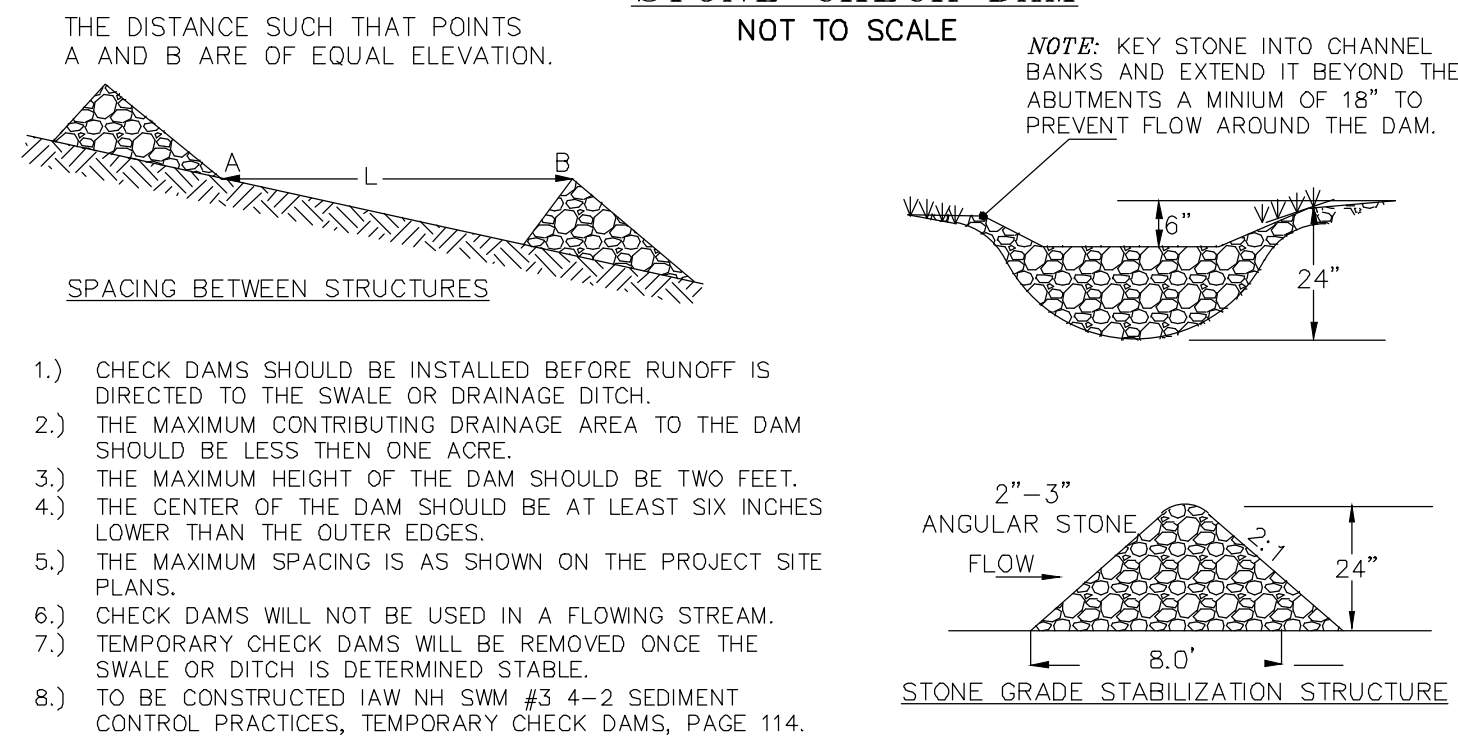
SILT FENCE DETAIL
NOT TO SCALE

E5 STABILIZED CONSTRUCTION ENTRANCE
NOT TO SCALE

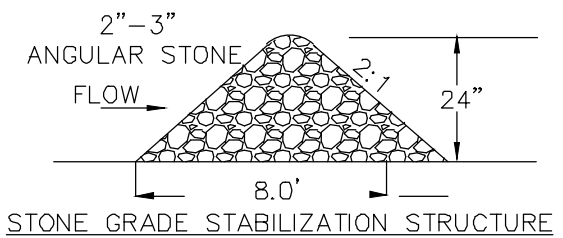


- STONE FOR A STABILIZED CONSTRUCTION ENTRANCE SHALL BE 3 INCH ANGULAR STONE, RECLAIMED STONE, OR RECYCLED CONCRETE EQUIVALENT.
- THE LENGTH OF THE STABILIZED ENTRANCE SHALL NOT BE LESS THAN 75 FEET, EXCEPT THAT THE MINIMUM LENGTH MAY BE REDUCED TO 50 FEET IF A 3-INCH TO 6-INCH BERM IS INSTALLED AT THE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

STONE CHECK DAM
NOT TO SCALE



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



E2

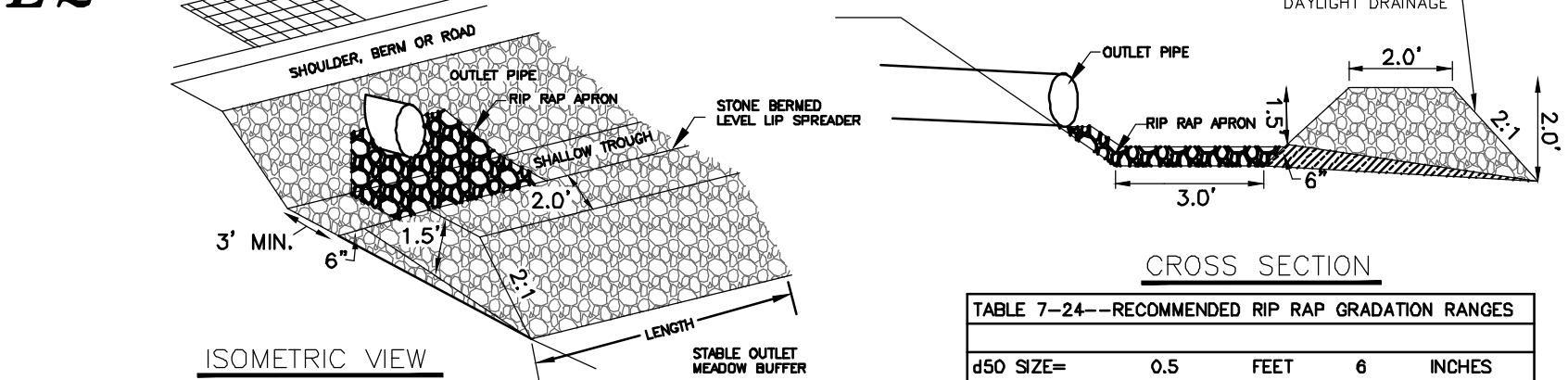
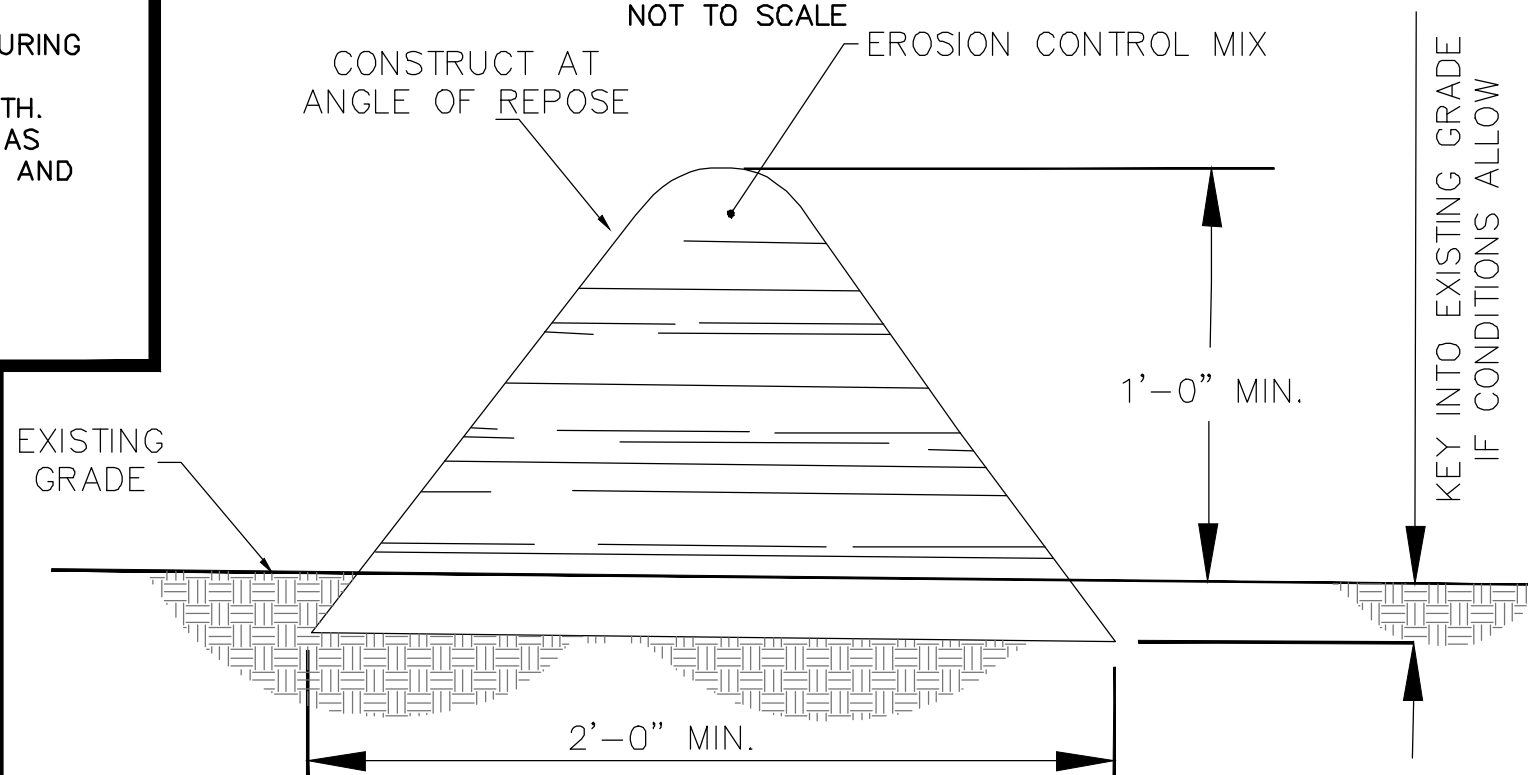


TABLE 7-24--RECOMMENDED RIP RAP GRADATION RANGES			
d50 SIZE=	0.5 FEET	6 INCHES	
% OF WEIGHT SMALLER THAN THE GIVEN d50 SIZE	SIZE OF STONE (INCHES) FROM	SIZE OF STONE (INCHES) TO	
100%	9	12	
85%	8	11	
50%	6	9	
15%	2	3	

- CONSTRUCT THE LEVEL SPREADER LIP ON A 0% GRADE TO INSURE UNIFORM SPREADING OF RUNOFF.
- LEVEL SPREADER SHALL BE CONSTRUCTED ON UNDISTURBED SOIL AND NOT ON FILL.
- 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.
- THE FLOW FROM THE LEVEL SPREADER SHALL OUTLET ONTO STABILIZED AREAS. WATER SHOULD NOT RE-CONCENTRATE IMMEDIATELY BELOW THE SPREADER.
- 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.
- REFERENCE IS MADE TO NHDES SWM VOL. 2, 4-6, STONE BERM LEVEL SPREADERS, PAGE 162

STONE BERM LEVEL SPREADER
NOT TO SCALE

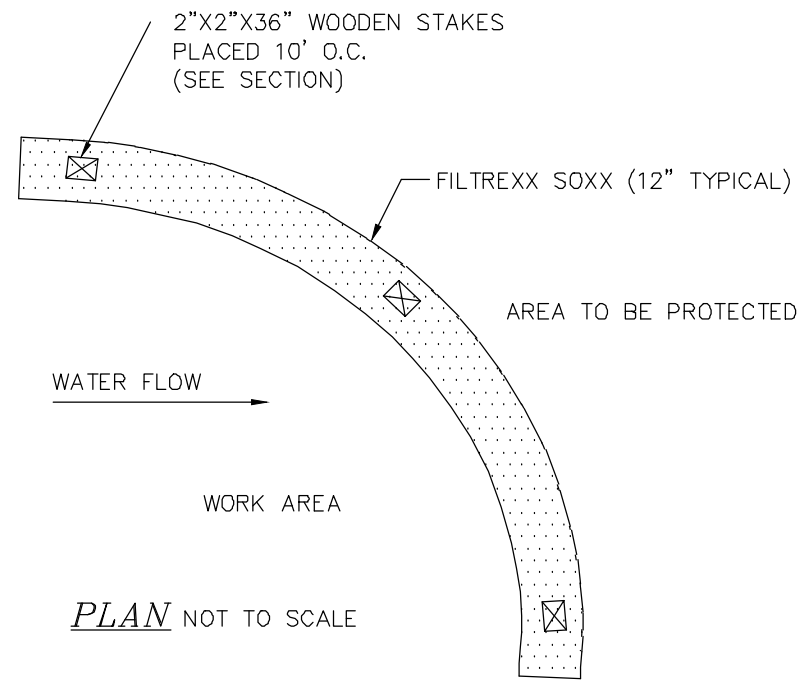
E6 EROSION CONTROL MIX BERM
NOT TO SCALE



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

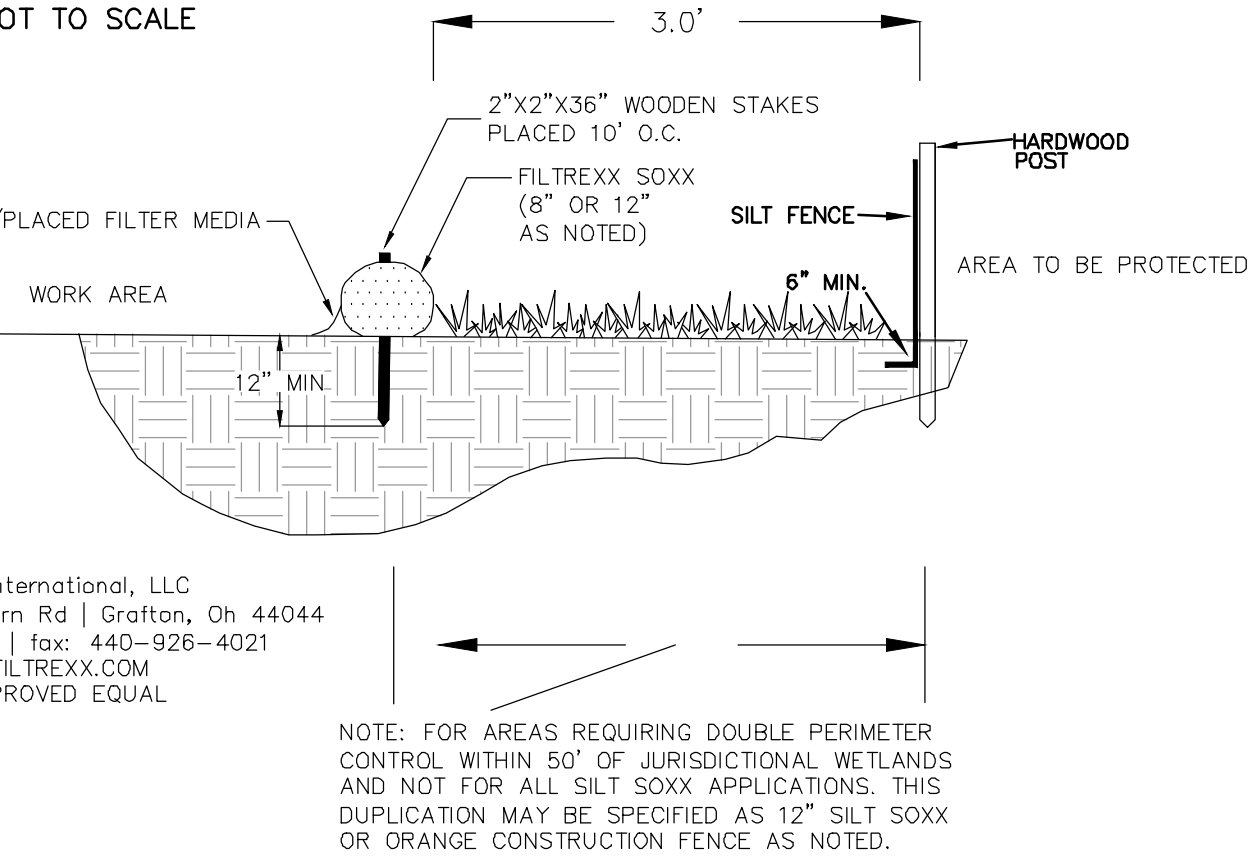
E9

E10



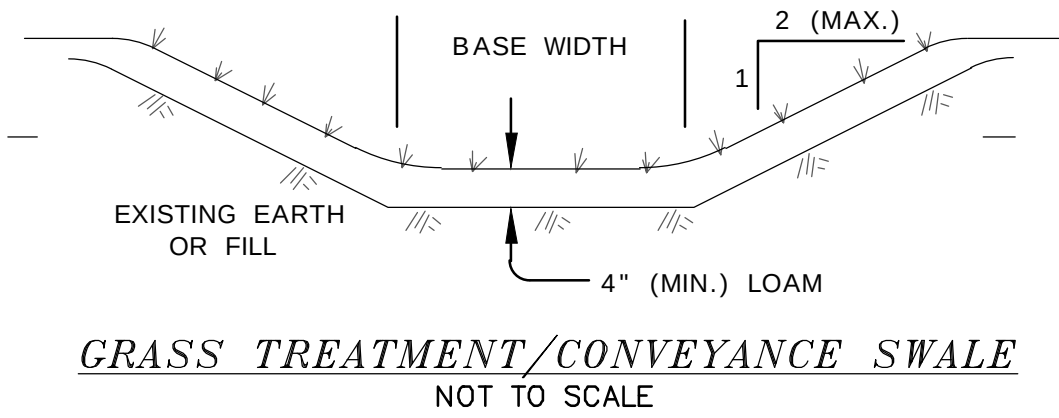
- NOTES
- ALL MATERIAL TO MEET FILTREXX SPECIFICATIONS.
 - FILTER MEDIA FILL TO MEET APPLICATION REQUIREMENTS.
 - COMPOST MATERIAL TO BE DISPERSED ON SITE, AS DETERMINED BY ENGINEER.
 - SILT/STOCK MAY BE USED IN PLACE OF SILT FENCE OR OTHER SEDIMENT BARRIERS.
 - SILT/STOCK COMPOST/SOIL/ROCK/SEED FILL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

FILTREXX SEDIMENT CONTROL
NOT TO SCALE



SECTION NOT TO SCALE

E3



GRASS TREATMENT/CONVEYANCE SWALE
NOT TO SCALE

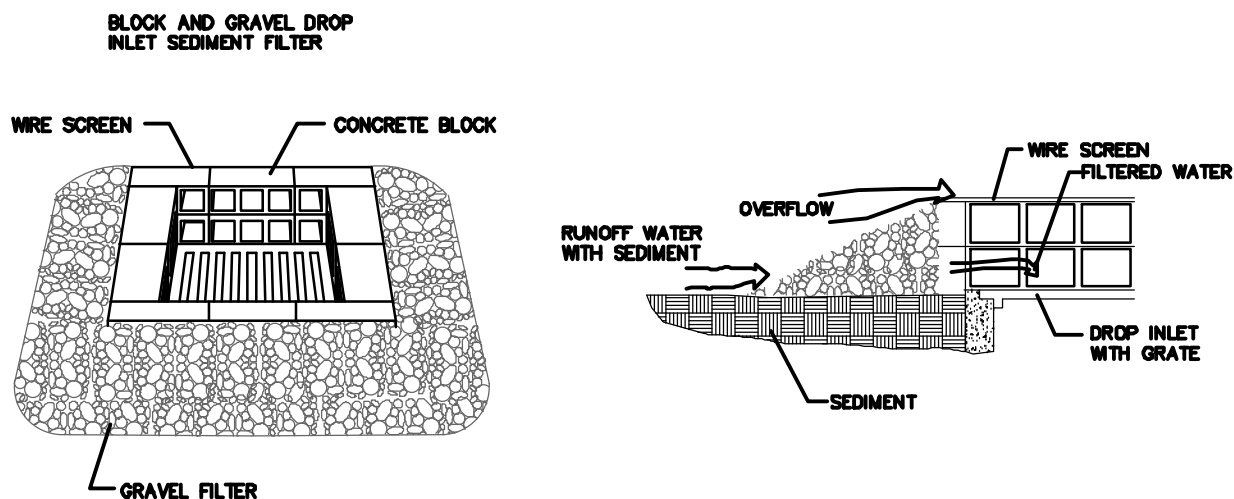
INSPECT ANNUALLY FOR EROSION, SEDIMENT ACCUMULATIONS, VEGETATION LOSS, & INVASIVE SPECIES. REPAIR AS NECESSARY.

MOW GRASS ANNUALLY TO A DEPTH OF 4".

INSTALL STABILIZATION MATTING DURING CONSTRUCTION

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

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

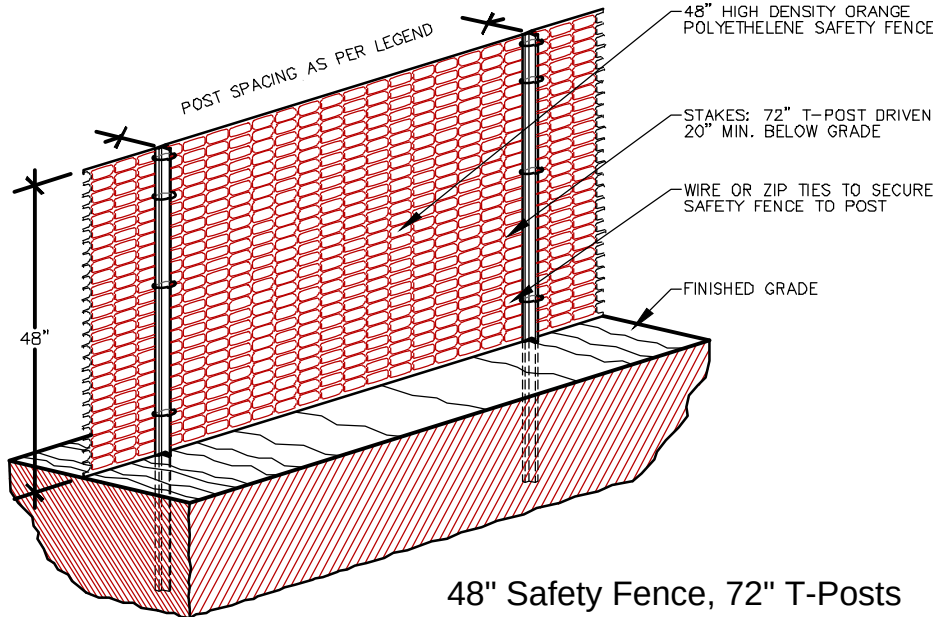
TO BE CONSTRUCTED IAW NH SWM #3 4-2 SEDIMENT CONTROL PRACTICES, TEMPORARY STORM DRAIN INLET PROTECTION, PAGE 118.

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

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.



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

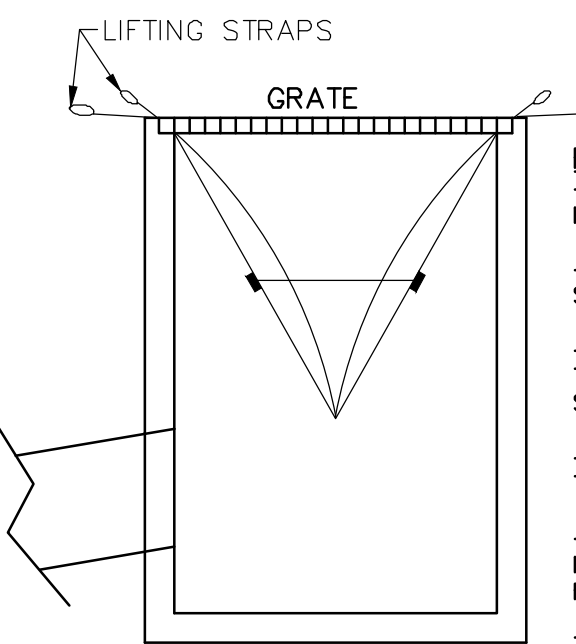
48" Safety Fence, 72" T-Posts

E8

TEMPORARY EROSION CONTROL MEASURES

- THE SMALLEST PRACTICAL AREA OF LAND SHALL BE EXPOSED AT ANY ONE TIME.
- EROSION, SEDIMENT AND DETENTION MEASURES SHALL BE INSTALLED AS SHOWN ON THE PLANS AND AT LOCATIONS AS REQUIRED, DIRECTED BY THE ENGINEER.
- ALL DISTURBED AREAS SHALL BE RETURNED TO ORIGINAL GRADES AND ELEVATIONS. DISTURBED AREAS SHALL BE LOAMED WITH A MINIMUM OF 4" OF LOAM AND SEEDING WITH NOT LESS THAN ONE POUND OF SEED PER 50 SQUARE YARDS OF AREA. (SEE SEED SPECIFICATIONS THIS SHEET)
- 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.
- 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.
- 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.
- 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.
- DITCHES, SWALES, AND BASINS SHALL BE STABILIZED PRIOR TO DIRECTING RUNOFF TO THEM.
- DO NOT TRAFFIC EXPOSED SOIL SURFACES WITH CONSTRUCTION EQUIPMENT. IF FEASIBLE, PERFORM EXCAVATIONS WITH EQUIPMENT POSITIONED OUTSIDE THE LIMITS OF THE INFILTRATION SYSTEM.
- DRIVEWAYS AND CUT AND FILL SLOPES MUST BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINAL GRADE.
- STABILIZATION MEANS:
 - A MINIMUM OF 85% OF VEGETATIVE COVER HAS BEEN ESTABLISHED.
 - A MINIMUM OF 3 INCHES OF NON-EROSIVE MATERIAL SUCH AS STONE OR RIP RAP HAS BEEN INSTALLED, OR
 - EROSION CONTROL BLANKETS HAVE BEEN INSTALLED.
- THIS PROJECT IS TO BE MANAGED IN A MANNER THAT MEETS THE REQUIREMENTS AND INTENT OF RSA 430:53 AND CHAPTER AGR 5800 RELATIVE TO INVASIVE SPECIES.
- 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)

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

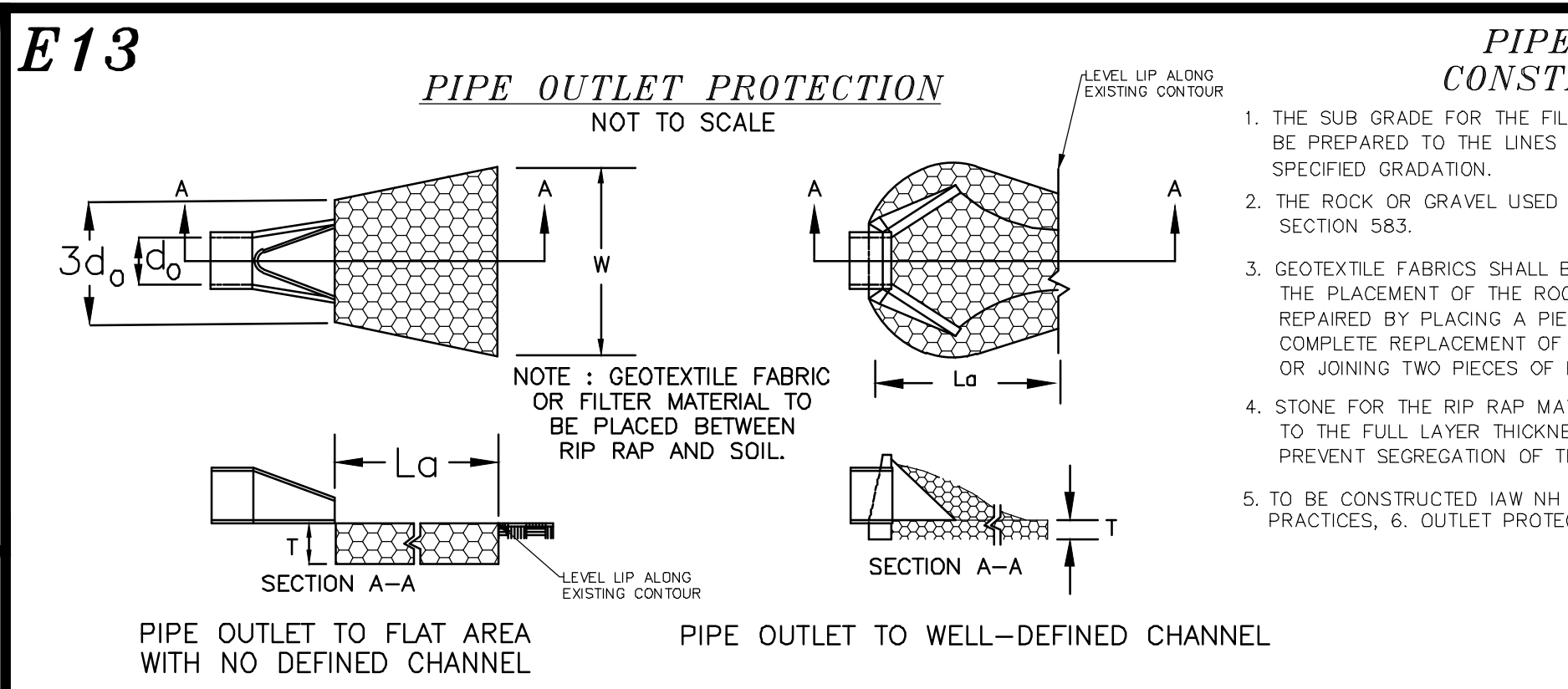
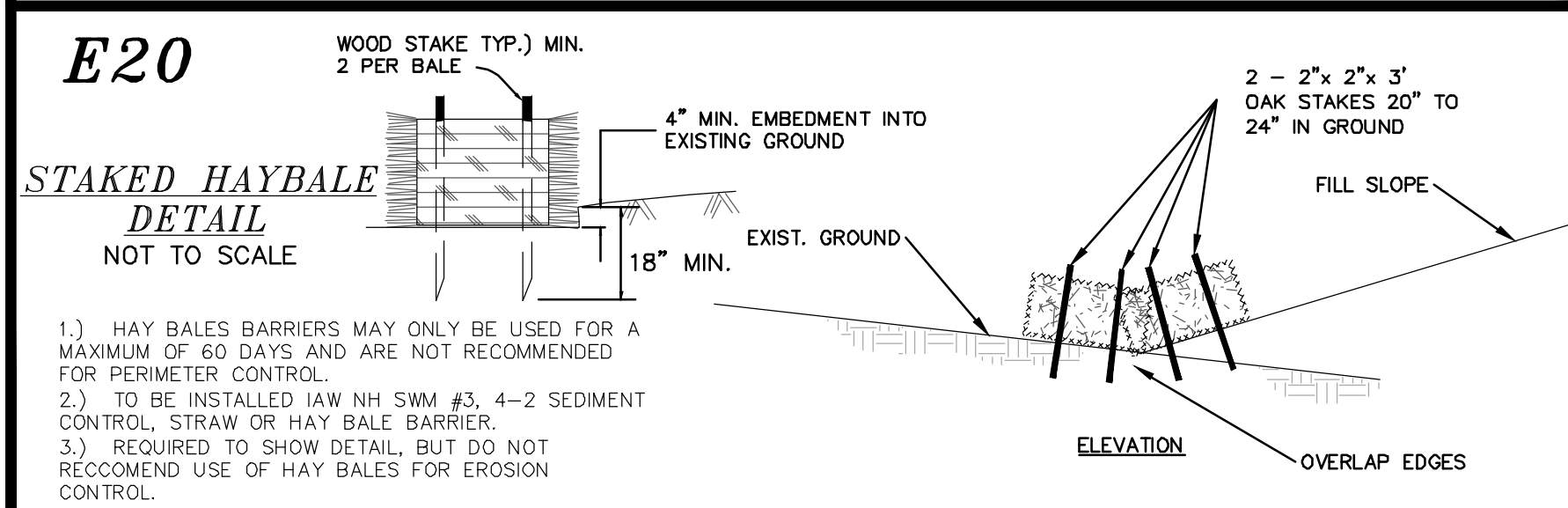
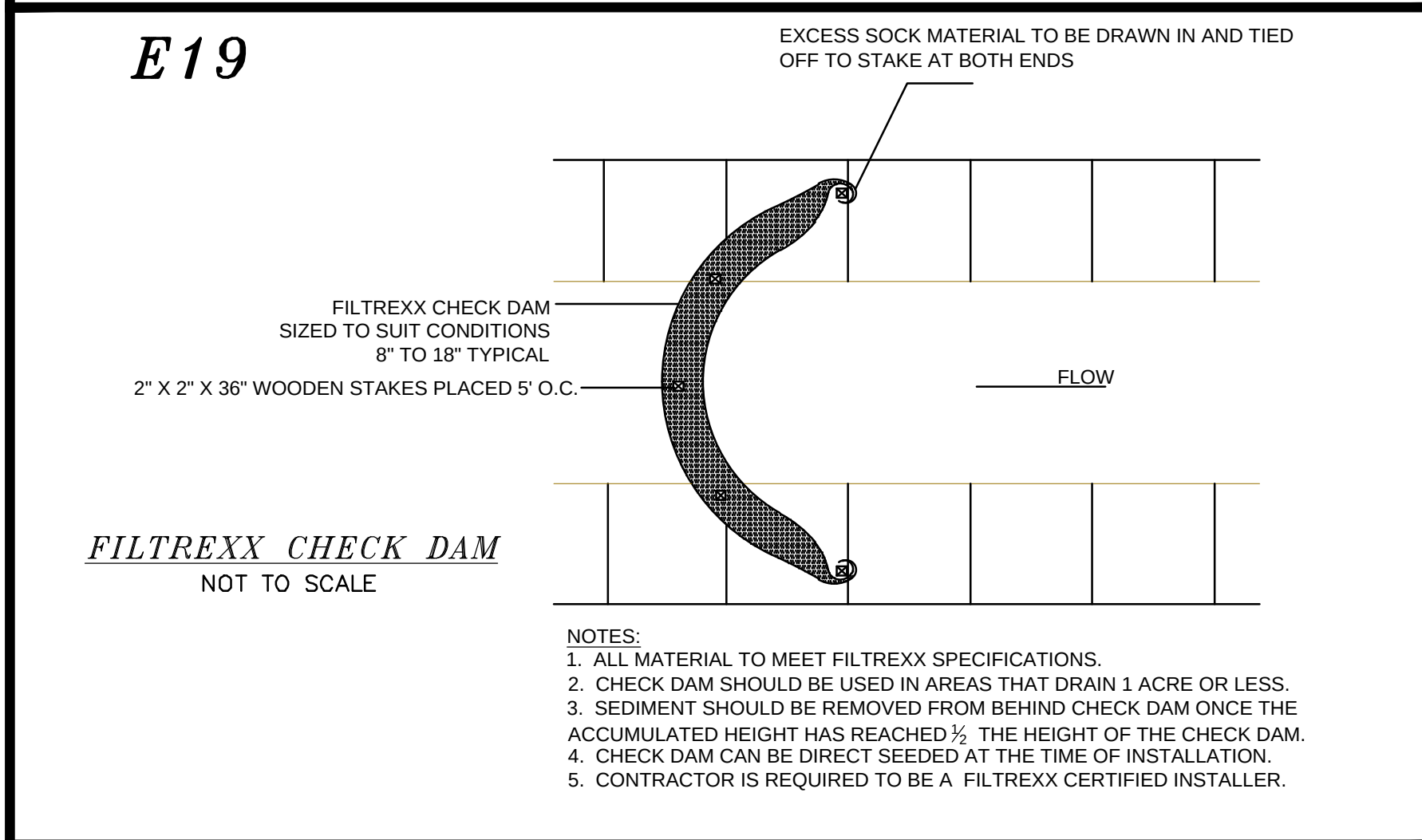
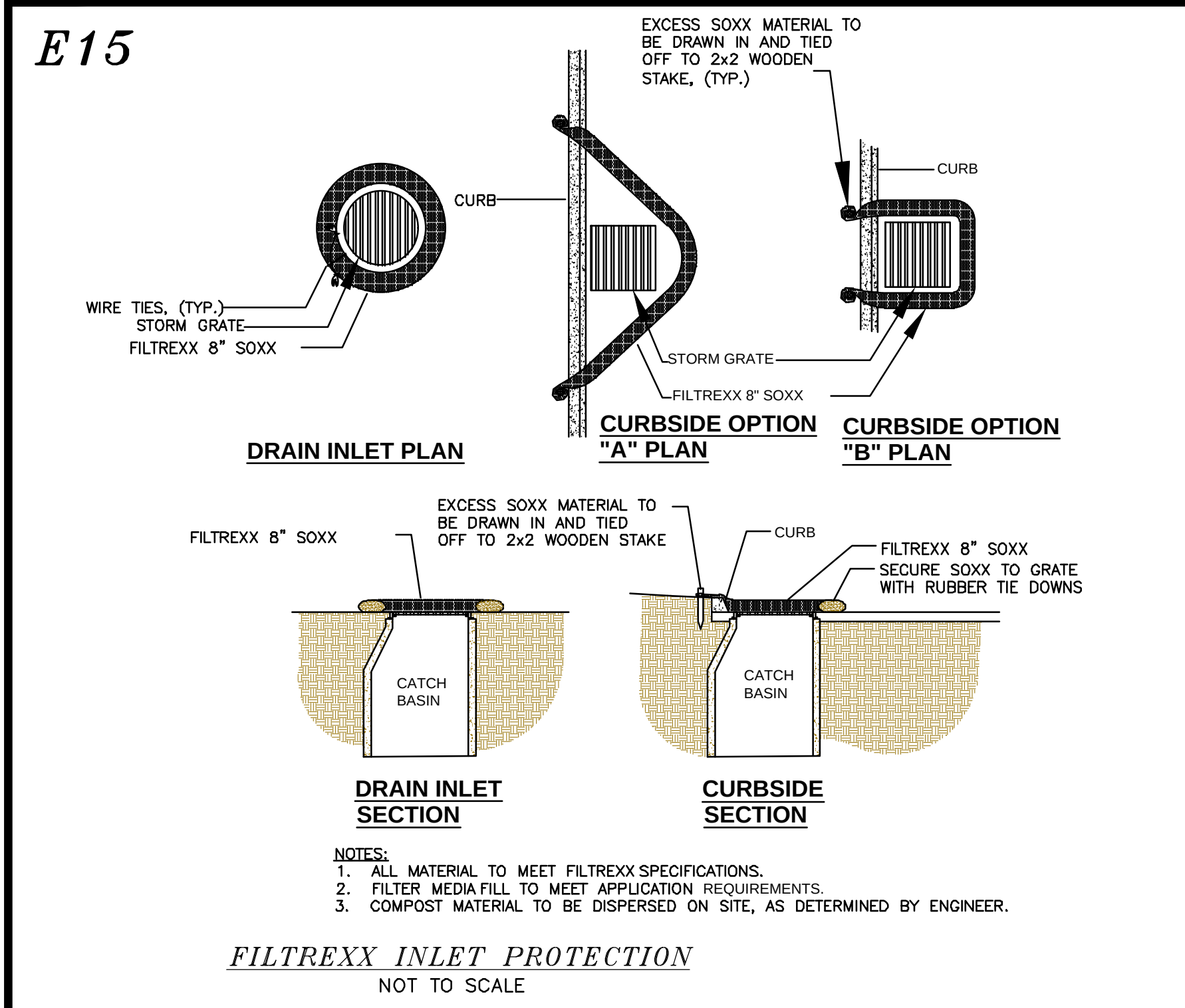
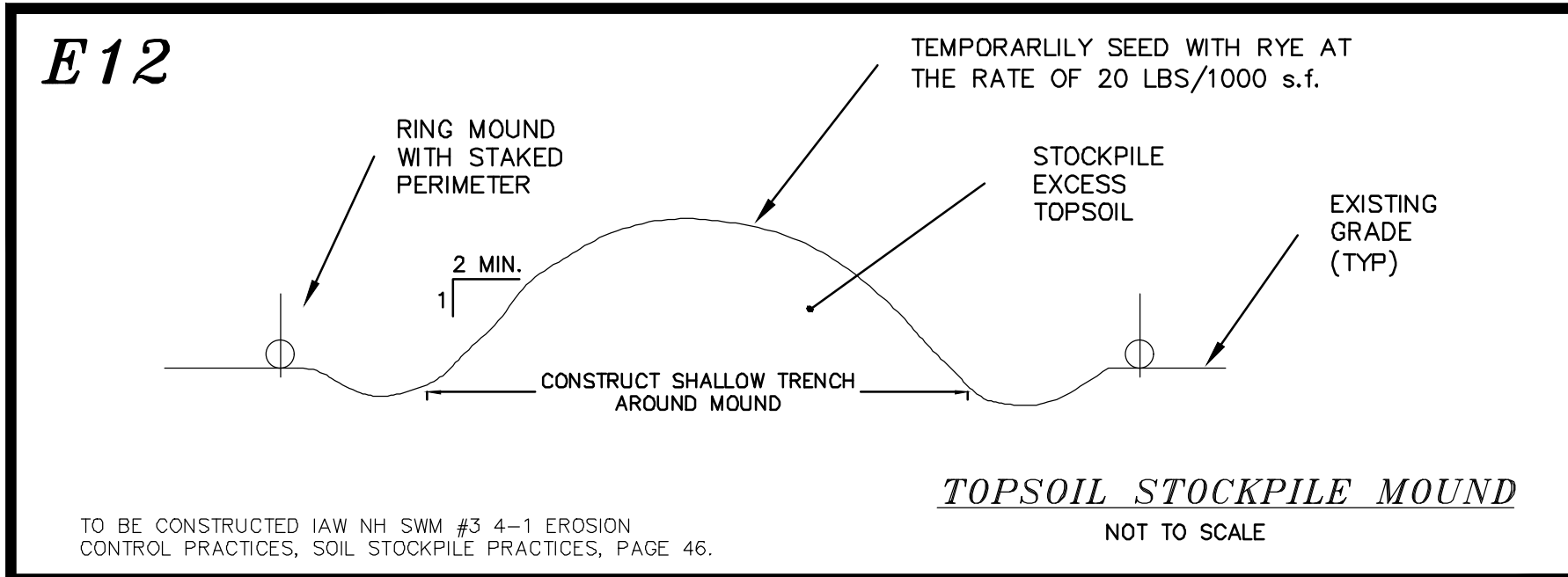
DOVER PLANNING FILE #P21-37, WAIV-2024-003

REVISION		DATE	DESCRIPTION
#5	3-15-24		REVISED PER TRC COMMENT
#4	2-21-24		REVISED BUILDINGS, UTILITIES, TDR RELIEF
#3	8-7-22		REVISED PER NOISE DECEMBER 2022
#2	7-20-21		REVISED PER NOISE DECEMBER 2021
#1			REVISED PER DOVER TRC COMMENT

EROSION & SEDIMENT CONTROL DETAILS	LAND OF DOVER HOUSING AUTHORITY 48 WHITTIER STREET DOVER, NH TAX MAP 33, LOT 1-4
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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
REGISTERED PROFESSIONAL ENGINEER



E16

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

SEEDING RATES

MIXTURE	POUNDS PER ACRE	POUNDS PER 1,000 S.F.
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	15	0.35
CROWN VETCH	10	0.25
FLAT PEA	15	0.35
TOTAL	40 OR 55	0.95 OR 1.35
C. TALL FESCUE	24	0.55
CREeping RED FESCUE	24	0.55
BIRD'S FOOT TREFOIL	24	0.55
TOTAL	72	1.65
D. TALL FESCUE	20	0.45
FLAT PEA	20	0.45
TOTAL	40	0.90
E. CREeping RED FESCUE 1/2	50	1.15
KENTUCKY BLUEGRASS 1/2	50	1.15
TOTAL	100	2.30
F. TALL FESCUE 1	150	3.60

SEEDING GUIDE

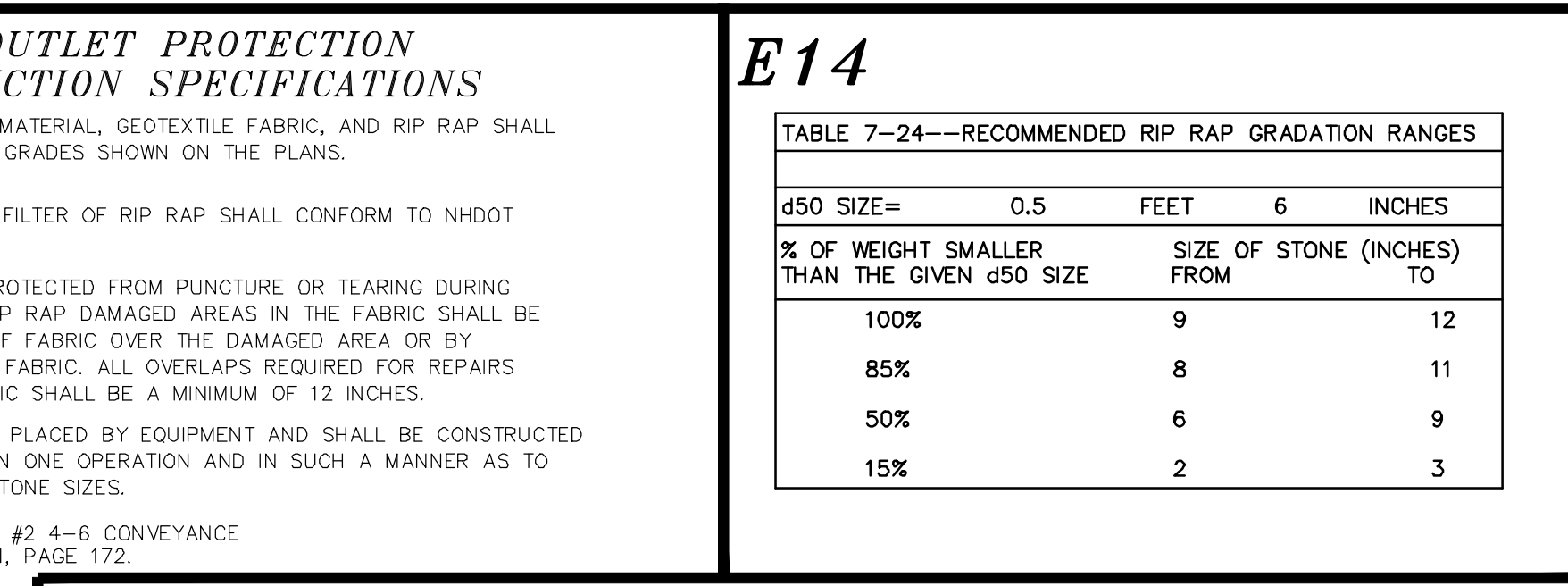
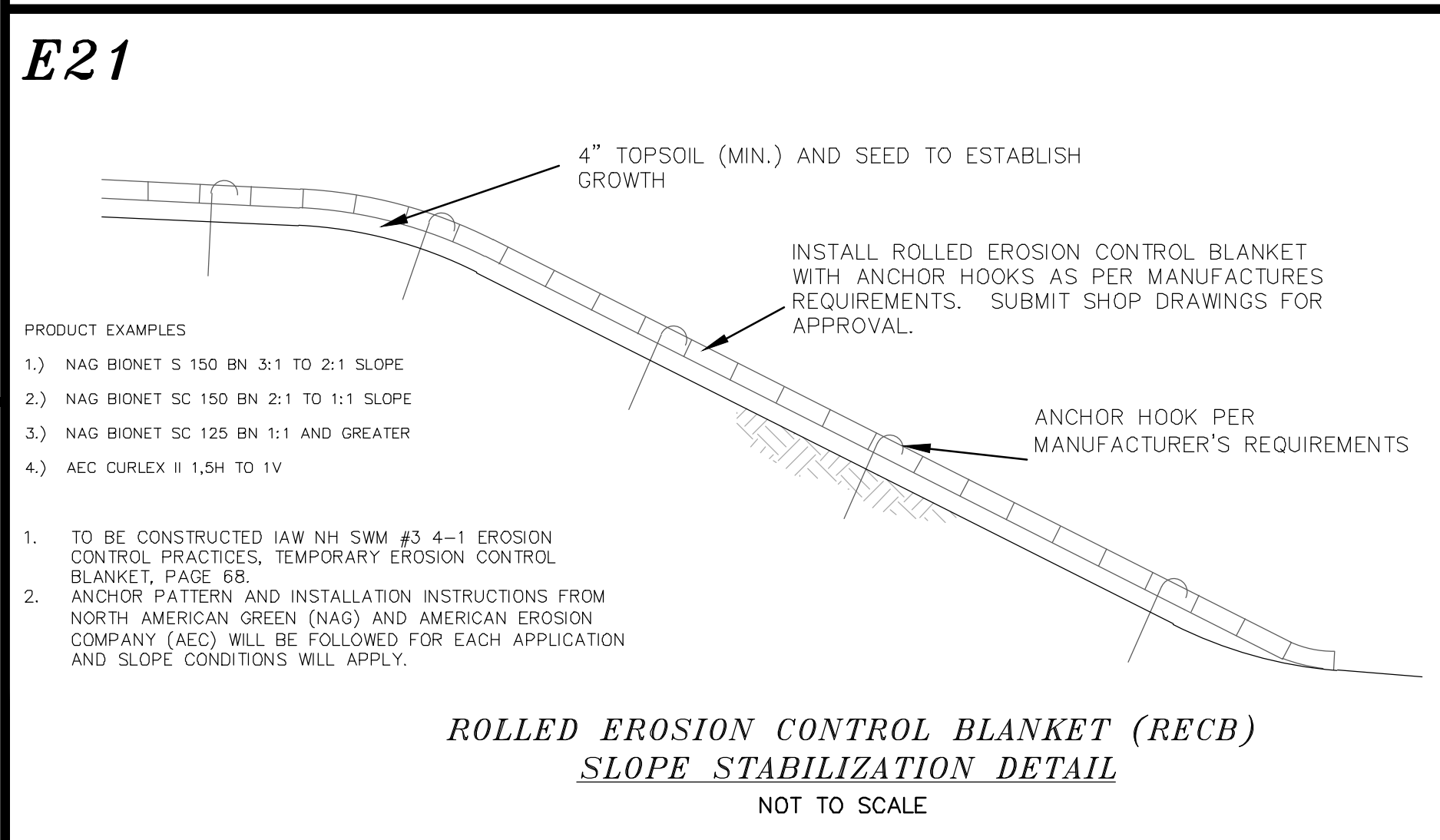
USE	SEEDING MIXTURE 1/	DROUGHTY	WELL DRAINED	MODERATELY WELL DRAINED	POORLY DRAINED
STEEP CUTS AND FILLS, BORROW AND DISPOSAL AREAS	A	FAIR	GOOD	GOOD	FAIR
	B	POOR	GOOD	GOOD	FAIR
	C	FAIR	GOOD	EXCELLENT	GOOD
	D	FAIR	FAIR	GOOD	EXCELLENT
WATERWAYS, EMERGENCY SPILLWAYS, AND OTHER CHANNELS WITH FLOWING WATER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

* RECOMMENDED

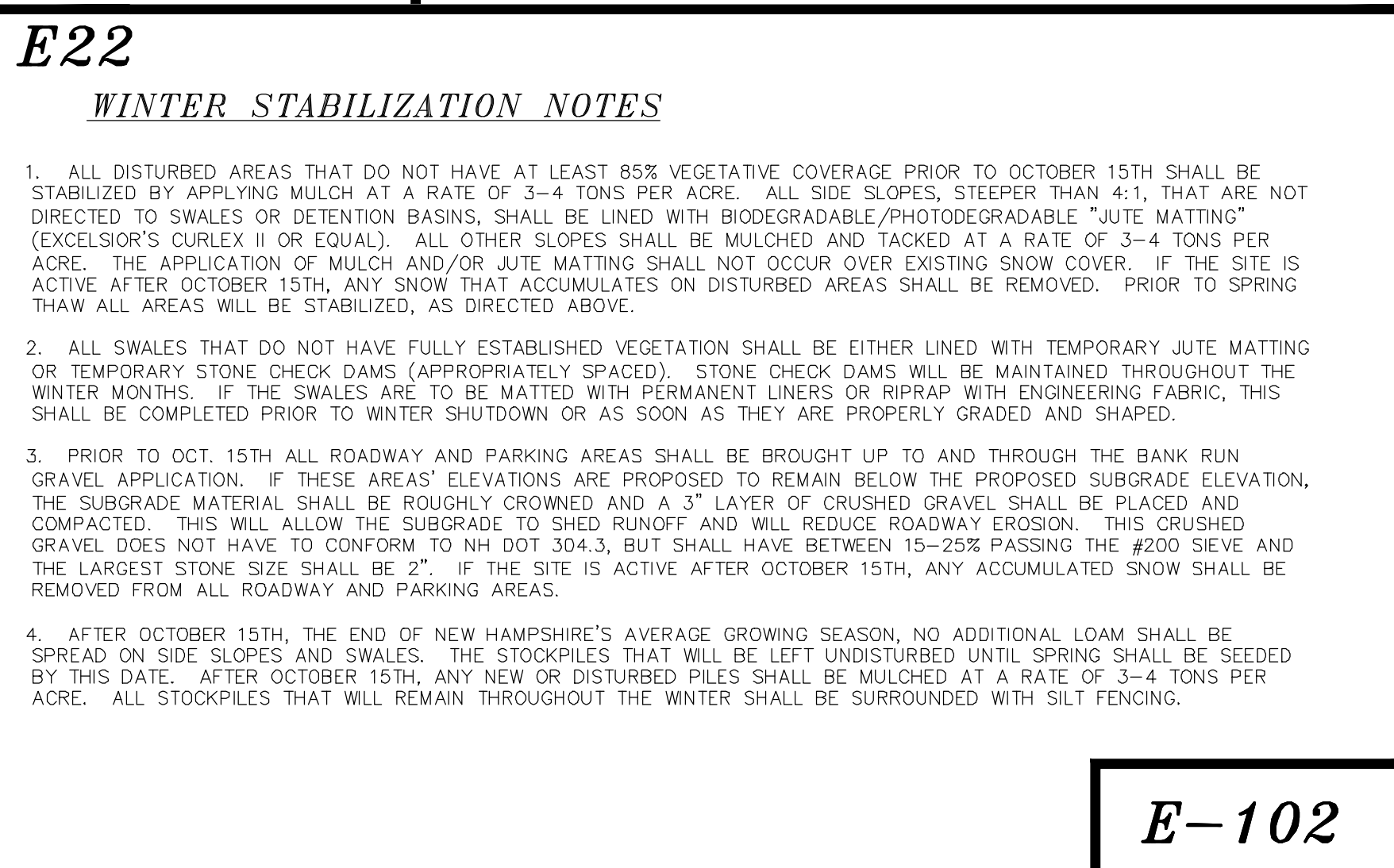
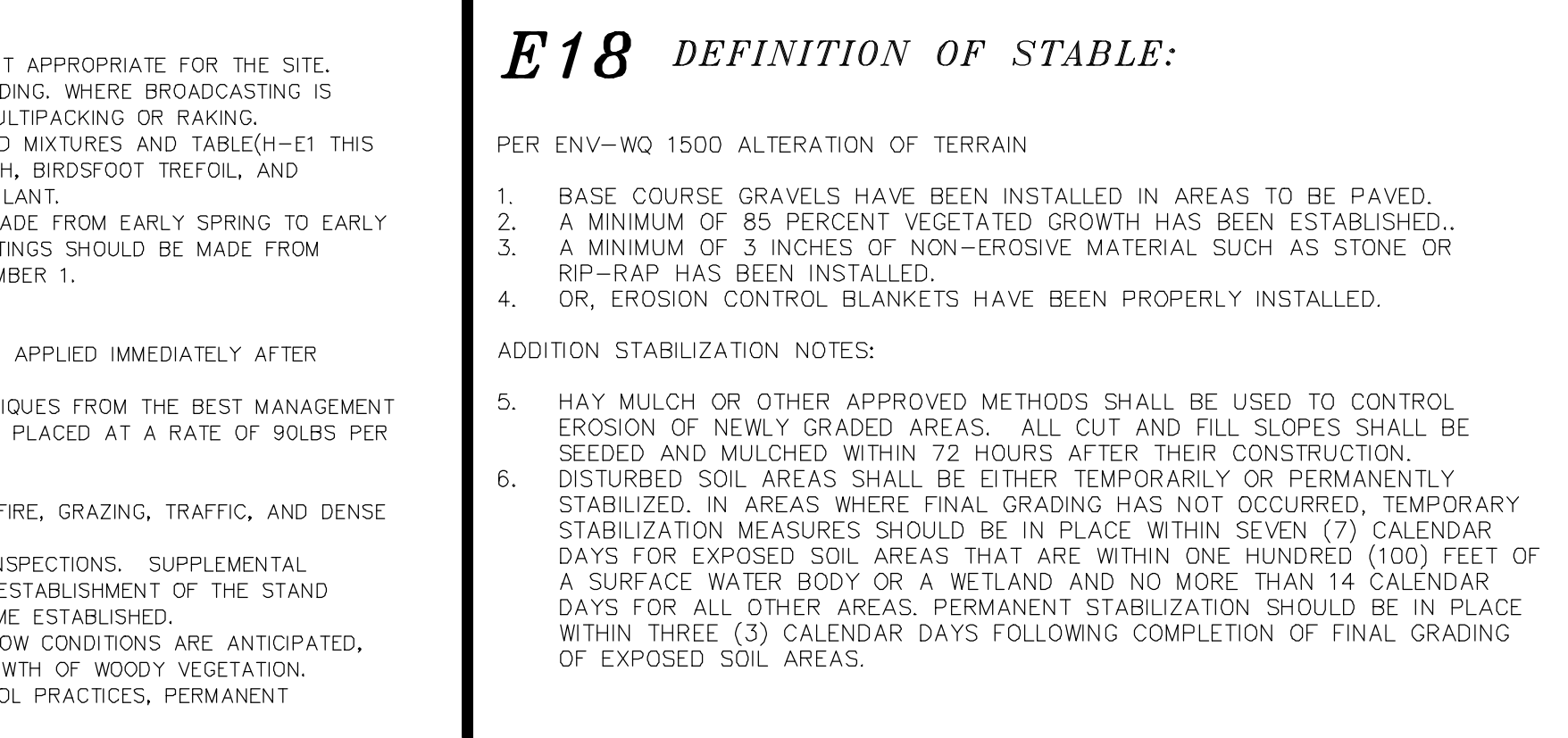
CONSERVATION MIX

	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 1/2 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 (CROWN VETCH, BIRD'S FOOT TREFOIL, AND FLAT PEA) ARE TO BE INOCULATED WITH THEIR SPECIFIC INOCULANT.
 - D. WHEN SEEDS ARE MULCHED, PLANTINGS MAY BE MADE FROM EARLY SPRING TO EARLY OCTOBER. WHEN SEEDS 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 SEED 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 (CESSWI), OR A CERTIFIED PROFESSIONAL IN STORM WATER QUALITY (CPSWQ). INSPECTION REPORTS SHALL BE SUBMITTED TO THE COMMUNITY SERVICES DEPARTMENT.
 - 12.) COMPLETE PERMANENT SEEDING AND LANDSCAPING.
 - 13.) REMOVE TEMPORARY EROSION CONTROL MEASURES AFTER SEEDING AREAS HAVE ESTABLISHED THEMSELVES AND SITE IMPROVEMENTS ARE COMPLETE.
 - 14.) SMOOTH AND REVEGETATE ALL DISTURBED AREAS.
 - 15.) FINISH PAVING ALL ROADWAYS.



DOVER PLANNING FILE #P21-37, WAIV-2024-003

REVISION	DATE	DESCRIPTION
#5	3-15-24	REVISED PER TRC COMMENT
#4	2-21-24	REVISED BUILDINGS, UTILITIES, TDR RELIEF
#3	8-7-22	REVISED PER TRC COMMENT
#2	7-20-21	REVISED PER TRC COMMENT

EROSION & SEDIMENT
LAND OF
DOVER HOUSING AUTHORITY
48 WHITTIER STREET
DOVER, N.H.
TAX MAP 83, LOT 1-4

BERRY SURVEYING & ENGINEERING

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

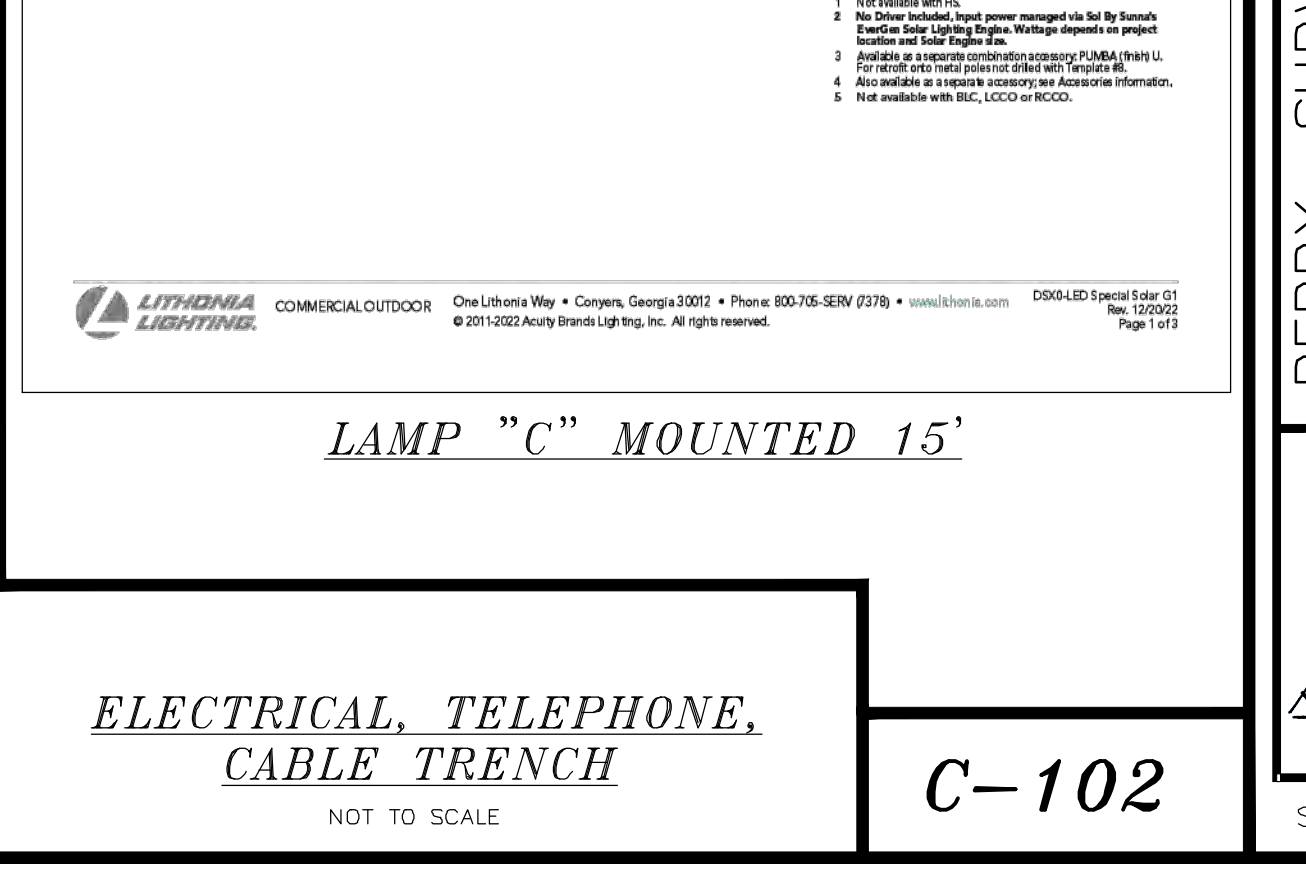
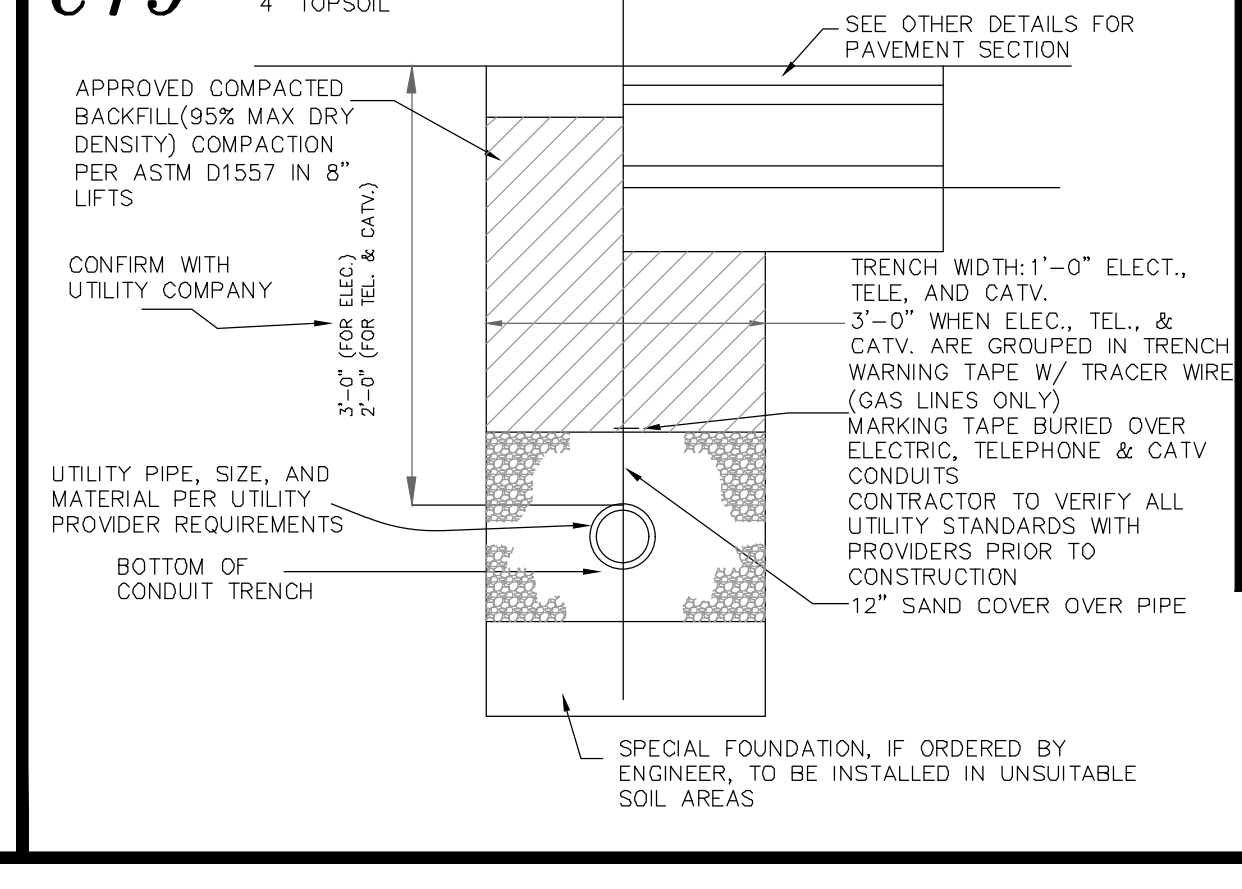
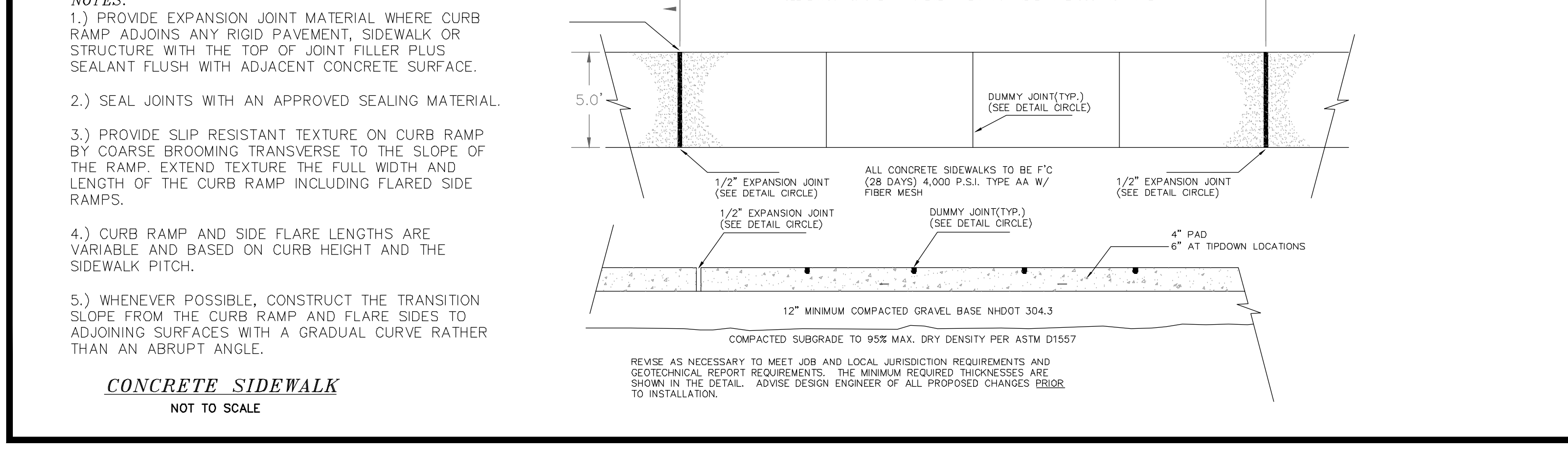
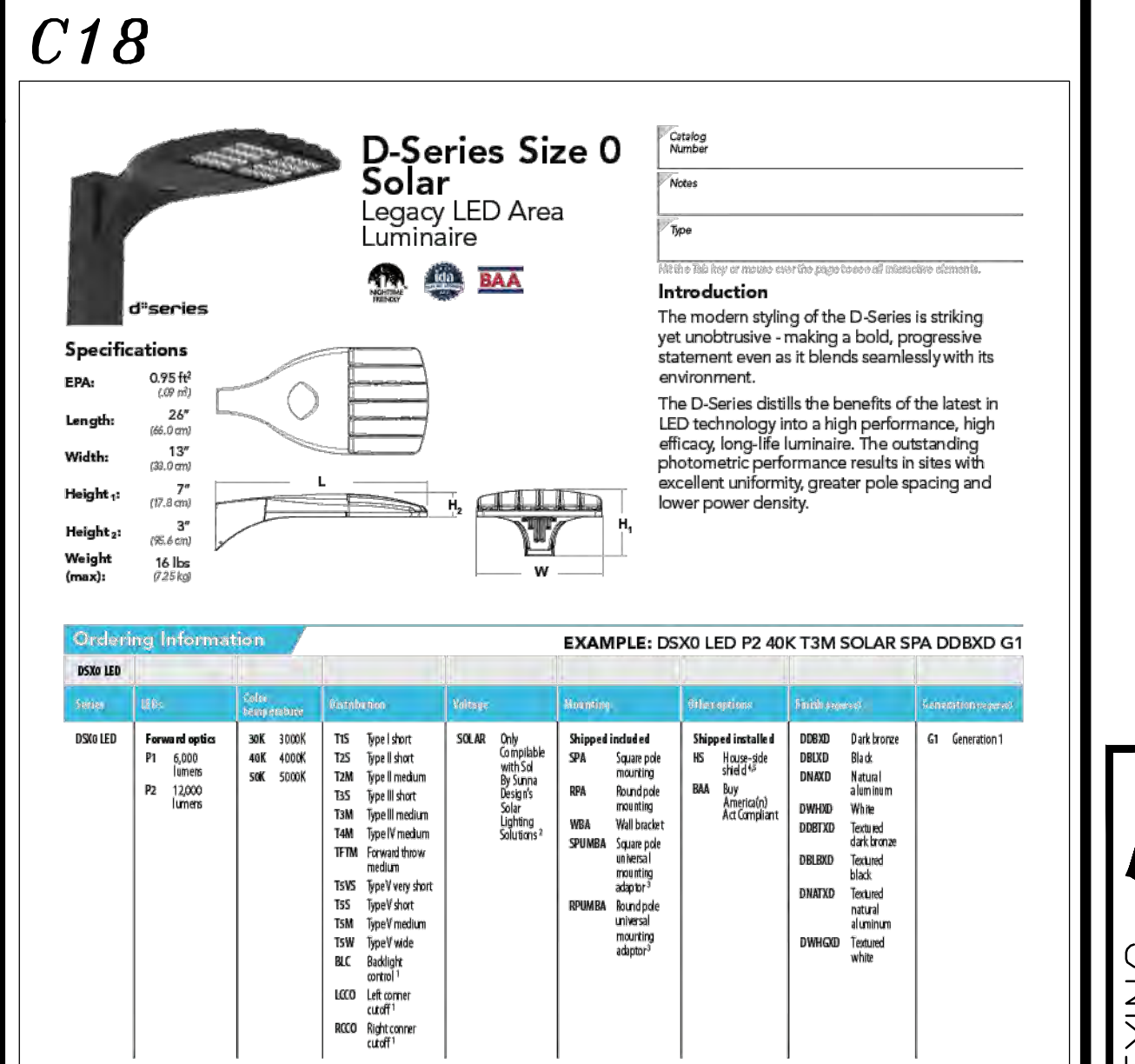
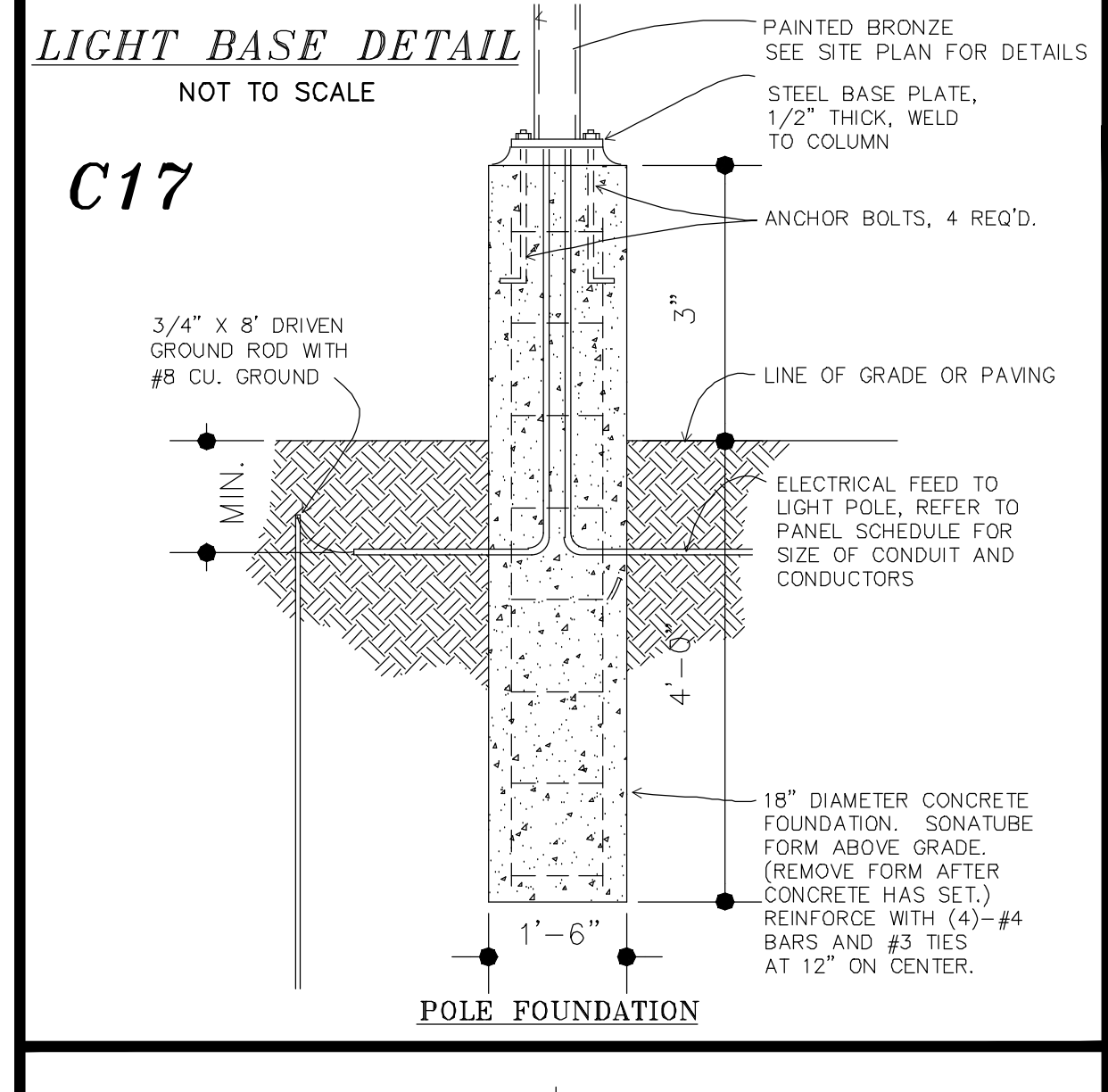
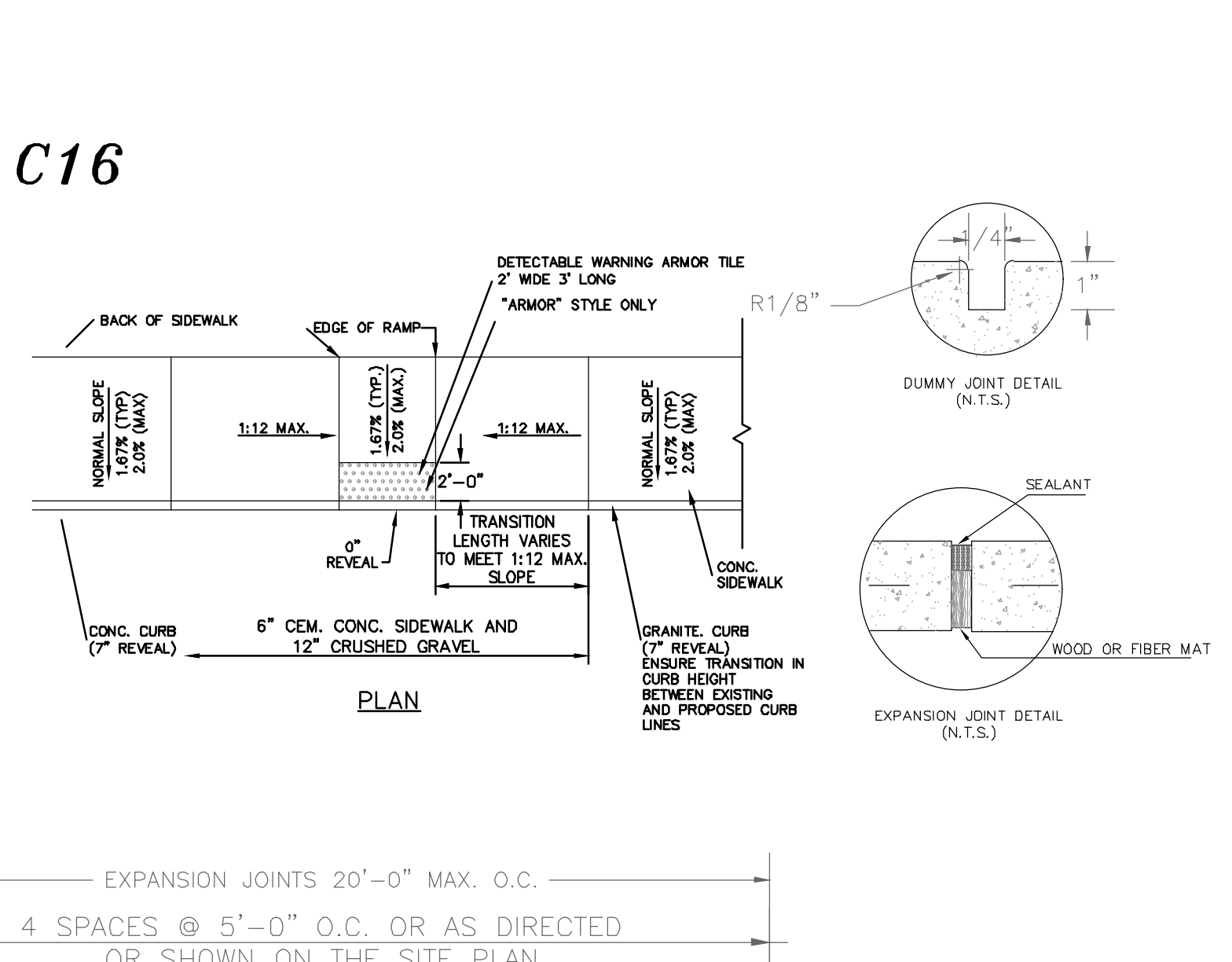
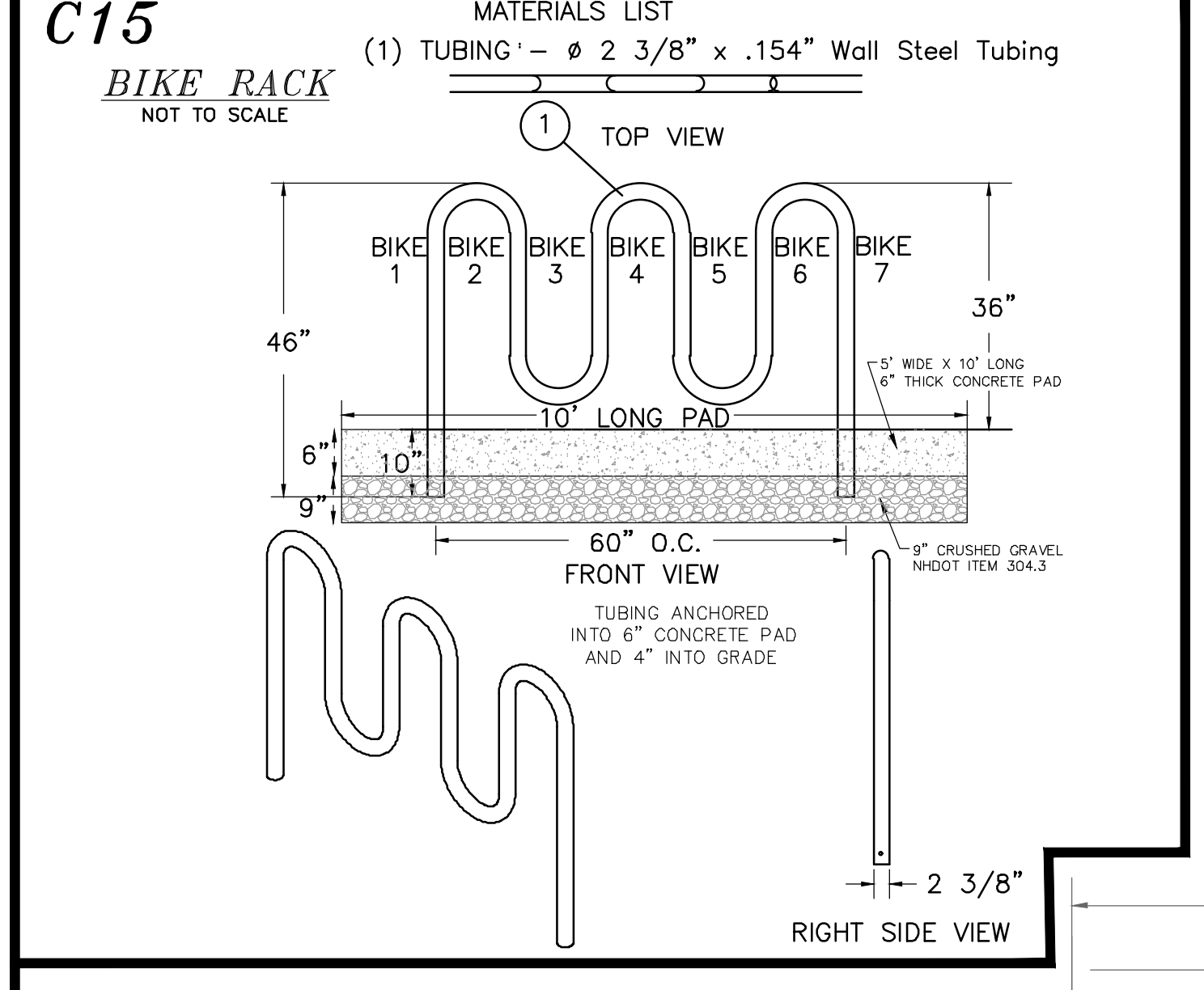
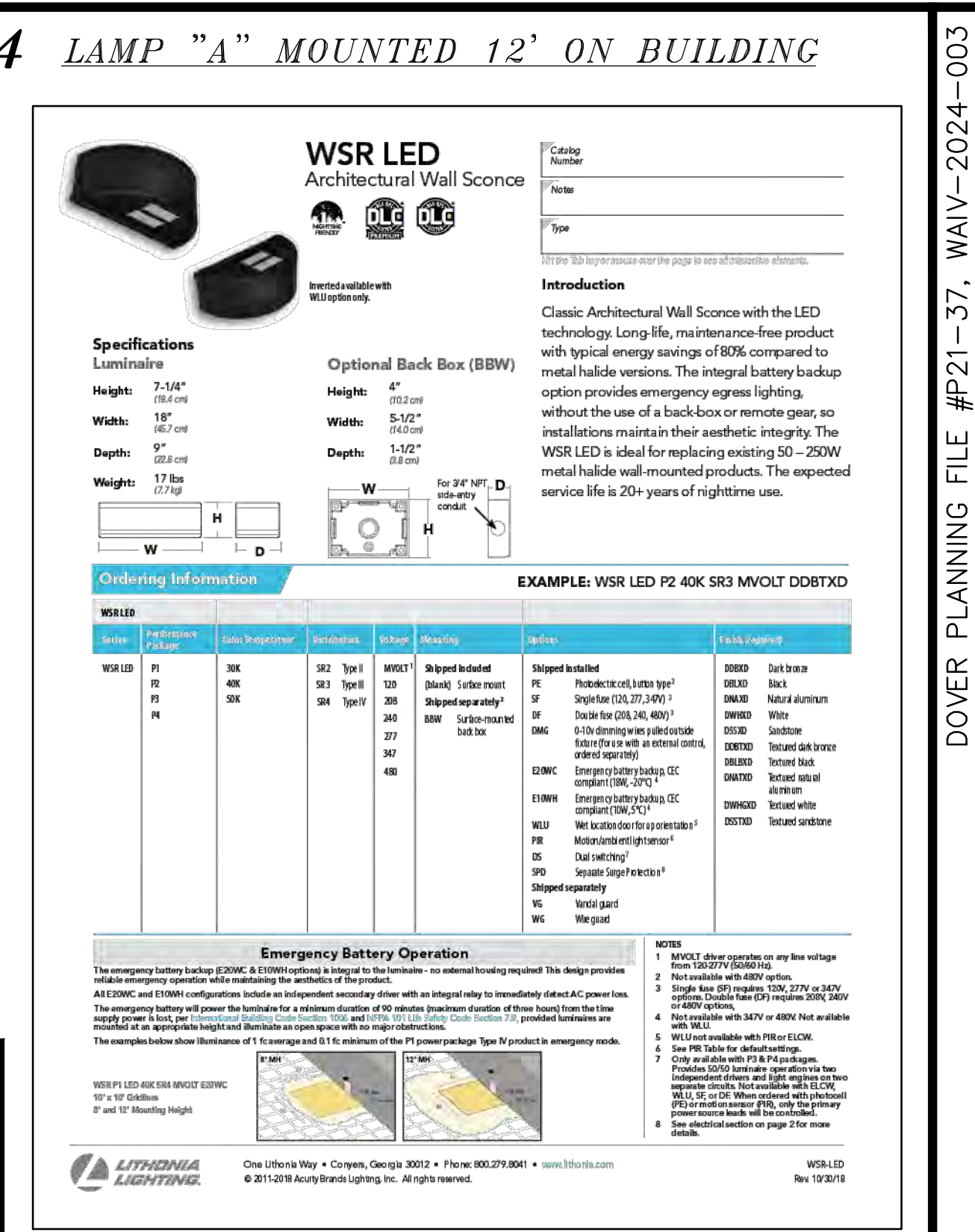
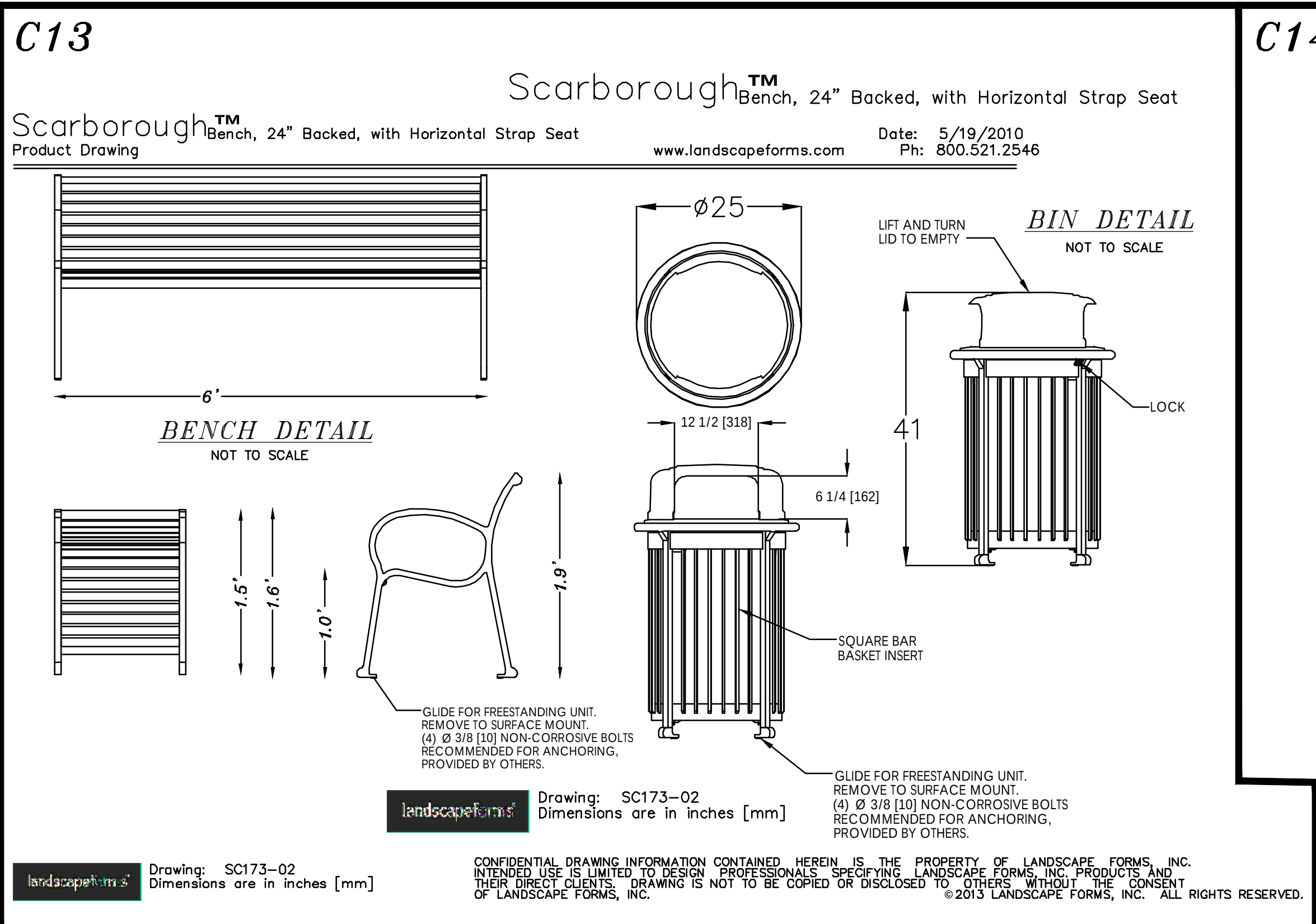
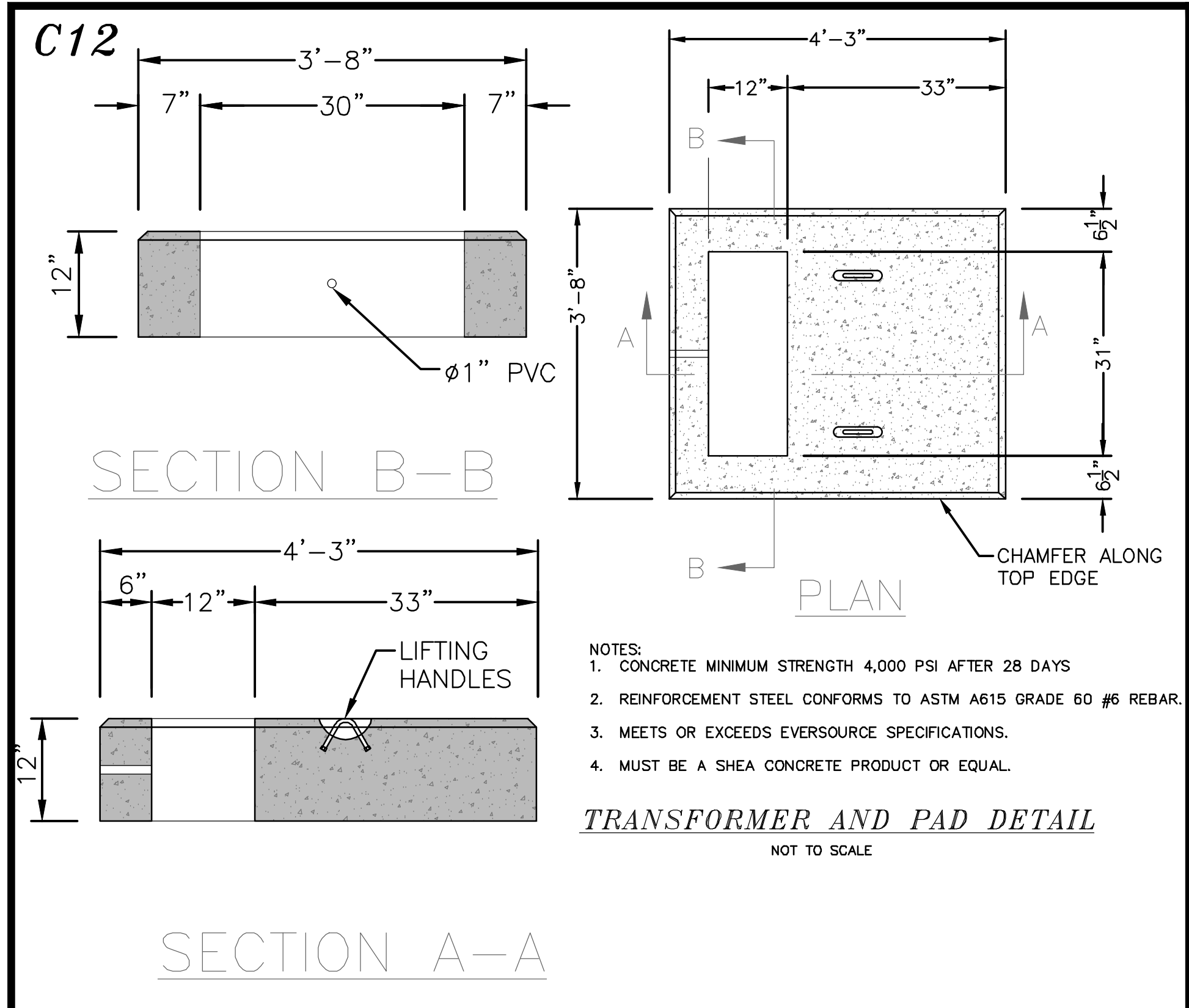
SCALE : AS NOTED

DATE : MAY 6, 2021

FILE NO. : DB 2020 - 136

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

SHEET 15 OF 21



DOVER PLANNING FILE #P21-37, WAIV-2024-003

REVISED PER TRC COMMENT
REVISED BUILDINGS, UTILITIES, TDR RELIEF
REVISED PER TRC COMMENT
REVISED PER TRC COMMENT
REVISED PER TRC COMMENT

3-15-24
2-21-24
8-7-22
7-20-21

#5
#4
#3
#2
#1

REVISION

DATE

DESCRIPTION

CONSTRUCTION DETAILS
LAND OF
DOVER HOUSING AUTHORITY
48 WHITTIER STREET
DOVER, N.H.
TAX MAP 33, LOT 1-4

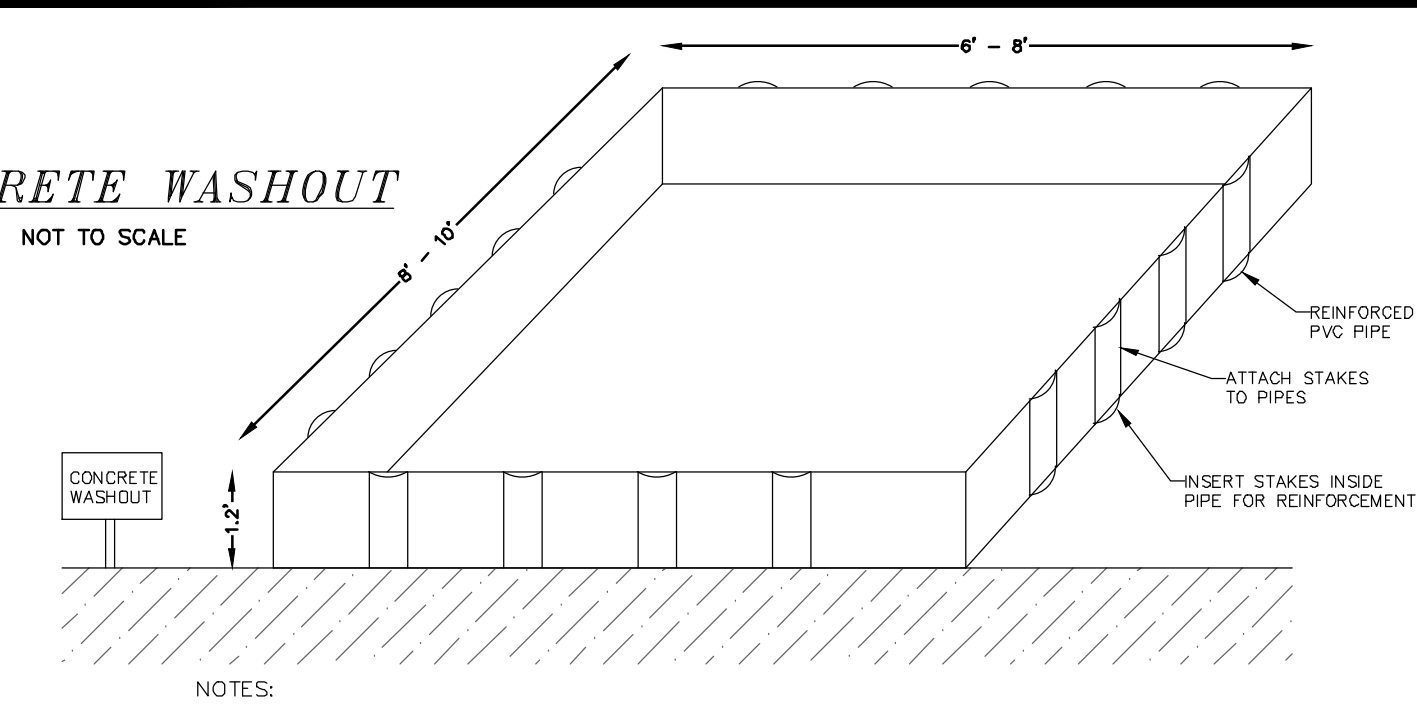
BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863
SCALE: AS NOTED
DATE: MAY 6, 2021
FILE NO.: DB 2020 - 136

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

SHEET 17 OF 21

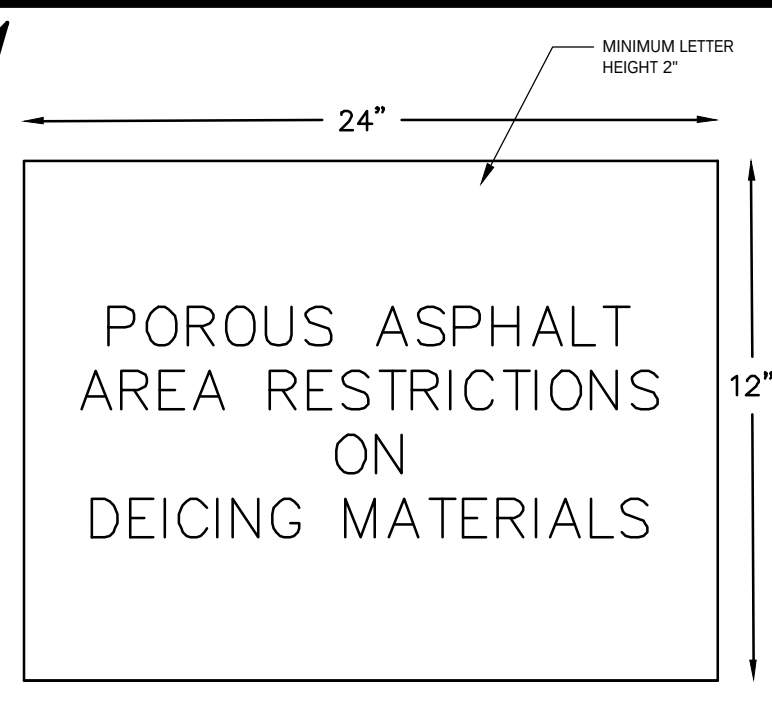
C20

CONCRETE WASHOUT



- NOTES:
- 1.) CONCRETE WASHOUT SHALL BE INSTALLED PRIOR TO ANY CONCRETE POURS.
 - 2.) SIGNS SHALL BE INSTILLED TO CLEARLY INDICATE WHERE THE LOCATION OF THE WASHOUT AREA IS.
 - 3.) CONTRACTOR IS RESPONSIBLE TO MAINTAIN AND REPLACE WASHOUT AREA AS NEEDED.
 - 4.) RESIDUE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF PROPERLY.
 - 5.) DO NOT WASH CONCRETE TRUCKS OUT INTO DRAINAGE AREAS, SWALES, STREETS OR UNDISTURBED AREAS.
 - 6.) WASHOUT AREA SHALL BE PLACED AWAY FROM DRAINAGE FEATURES AND OUTSIDE AND WETLAND BUFFERS.

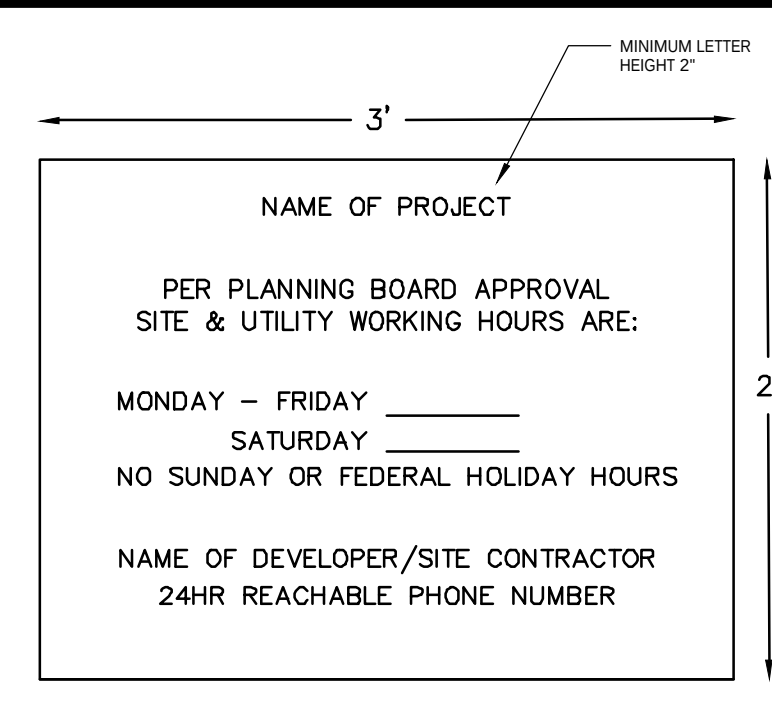
C21



- NOTES:
1. SIGN SHALL HAVE BLACK LETTERS ON A WHITE BACKGROUND
 2. SIGN SHALL BE WEATHER RESISTANT AND SECURED TO THE GROUND
 3. TO BE MOUNTED AT A HEIGHT OF 3'

POROUS PAVEMENT SIGN

NOT TO SCALE



- NOTES:
1. SIGN SHALL HAVE BLACK LETTERS ON A WHITE BACKGROUND
 2. SIGN SHALL BE WEATHER RESISTANT AND SECURED TO THE GROUND
 3. TO BE PLACED AT THE INTERSECTION OF THE DRIVEWAY AND WHITTIER STREET

REQUIRED PROJECT INFORMATION SIGN

NOT TO SCALE

C22

DOVER PLANNING FILE #P21-37, WAIV-2024-003

#5
#4
#3
#2
#1

3-15-24
2-21-24
8-7-22
7-20-21

REVISION

DATE

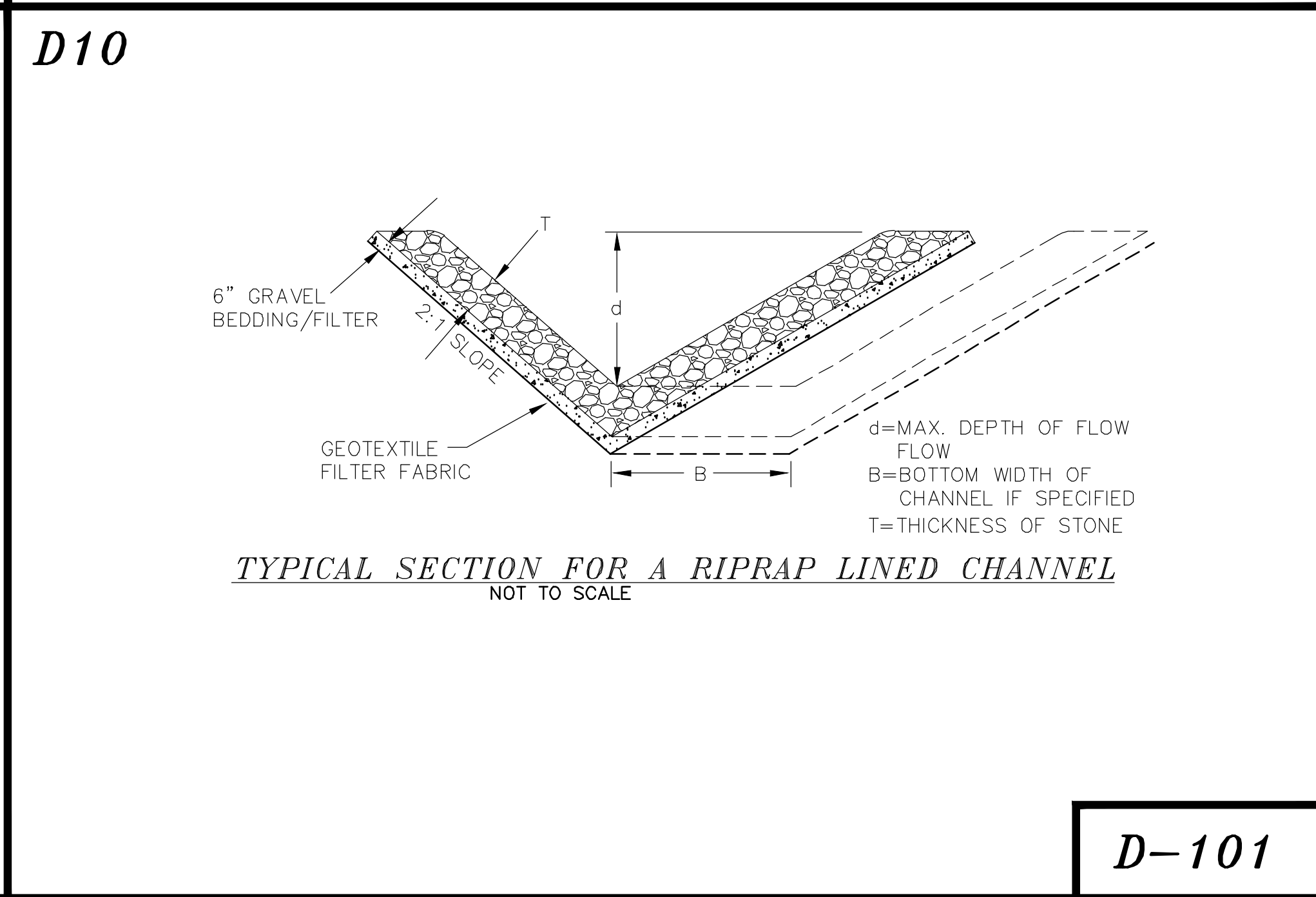
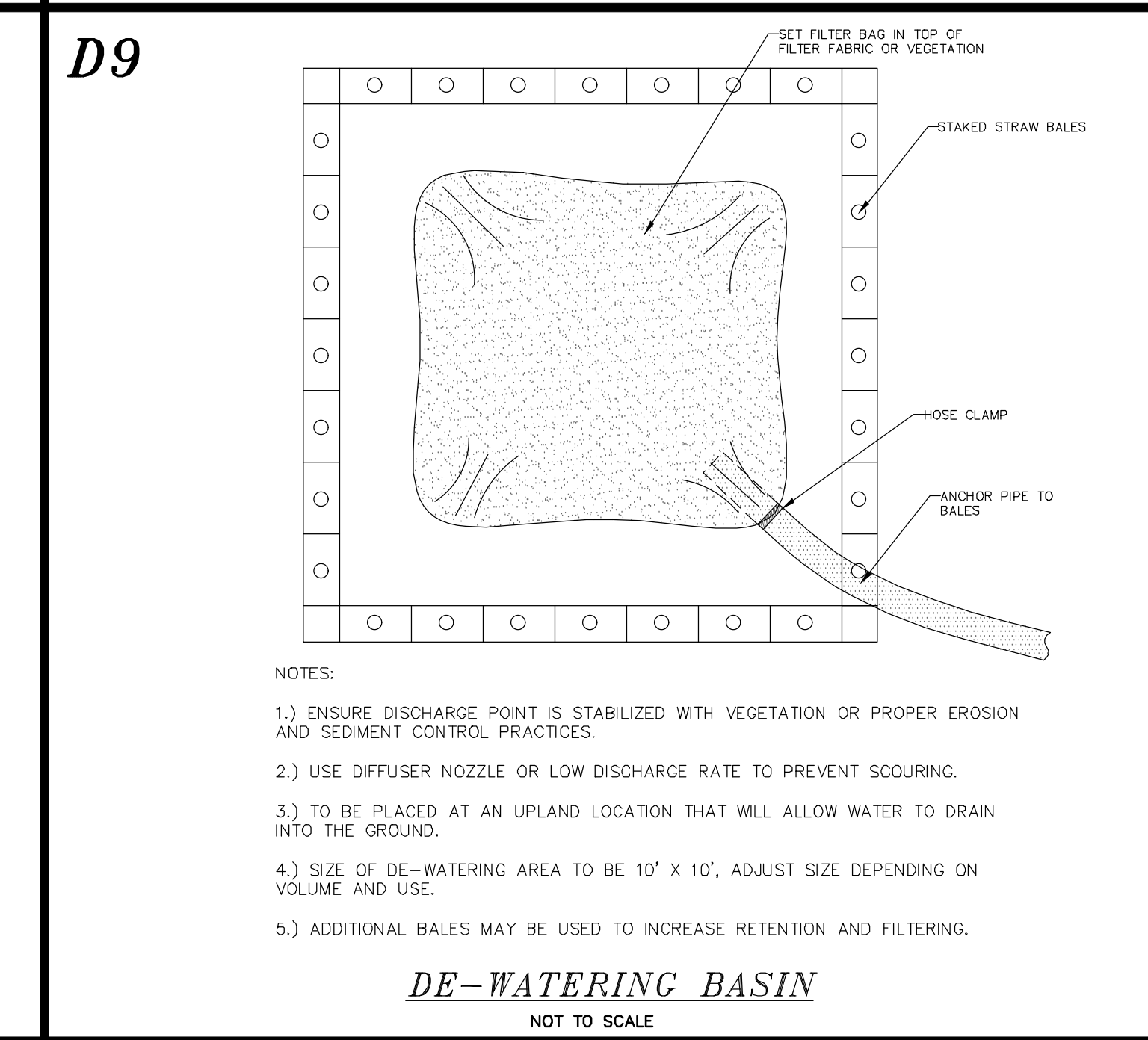
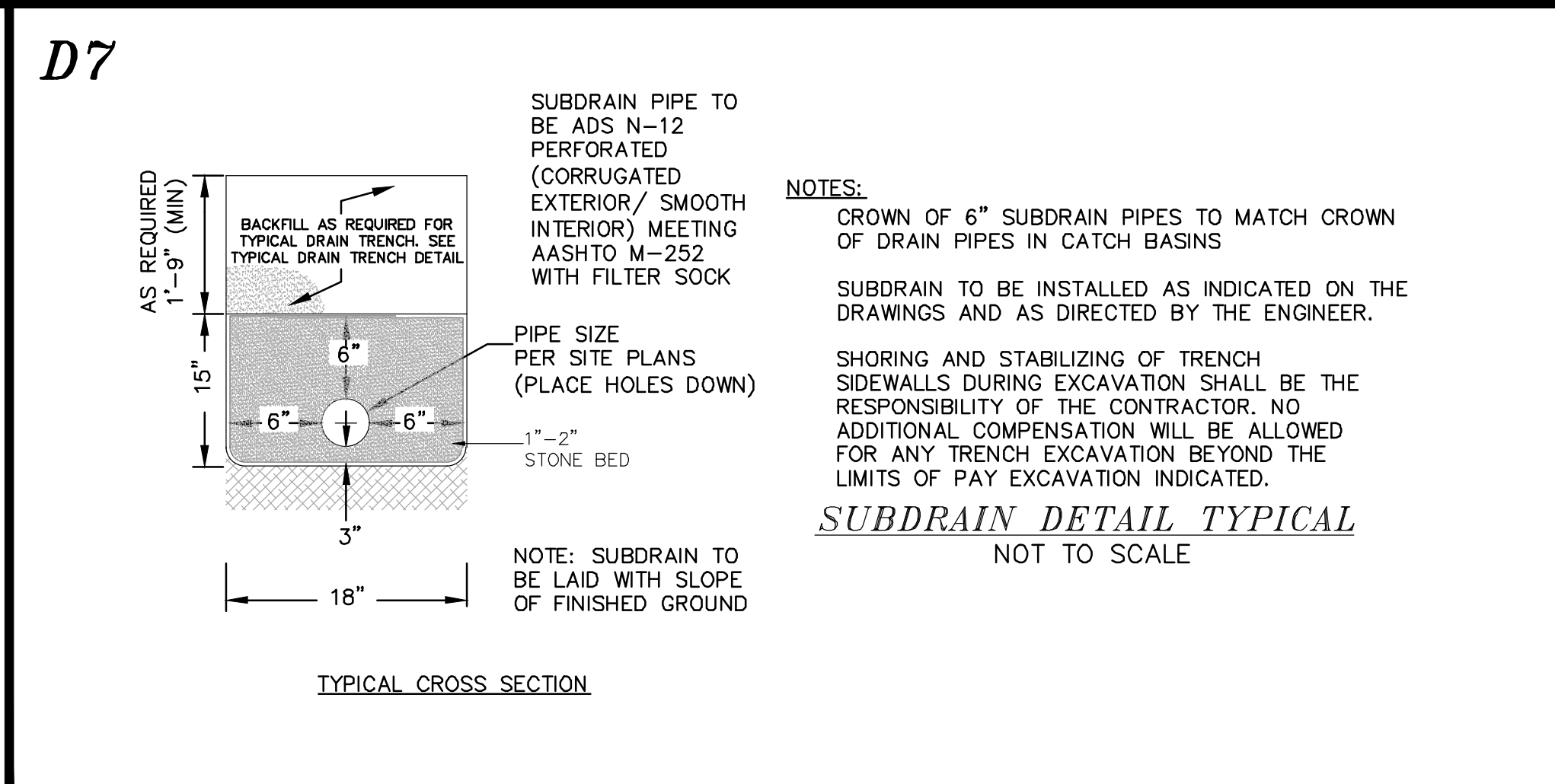
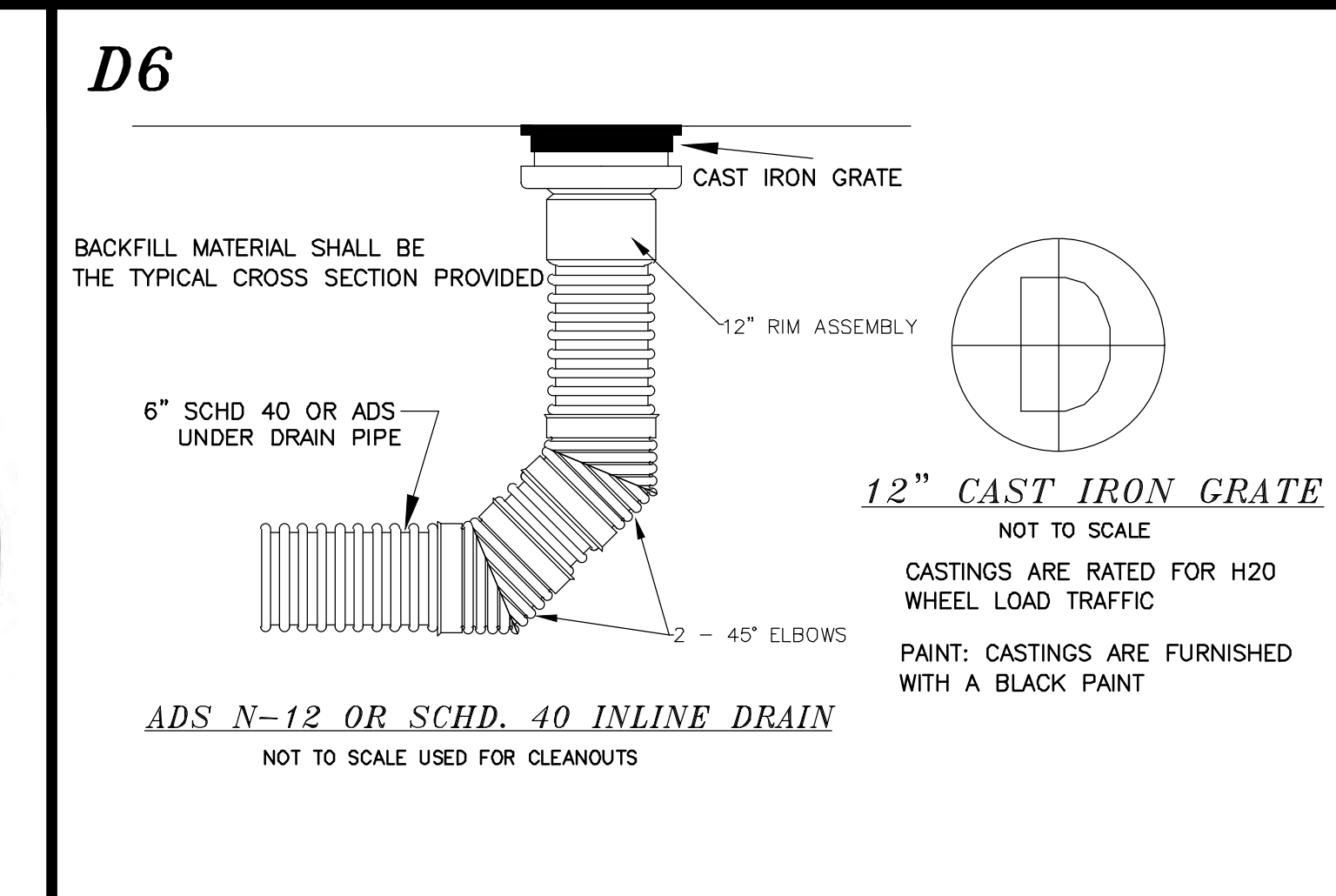
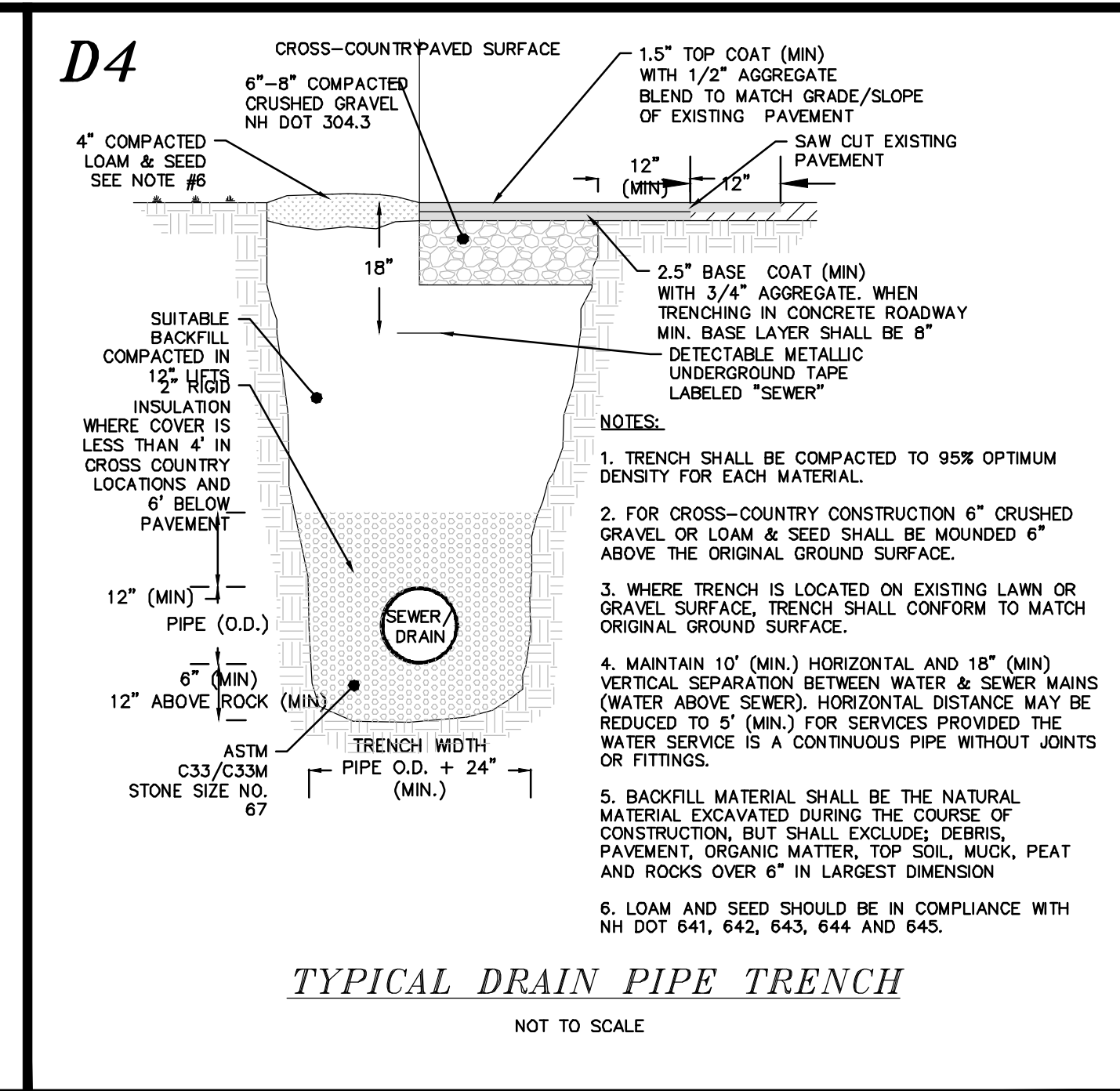
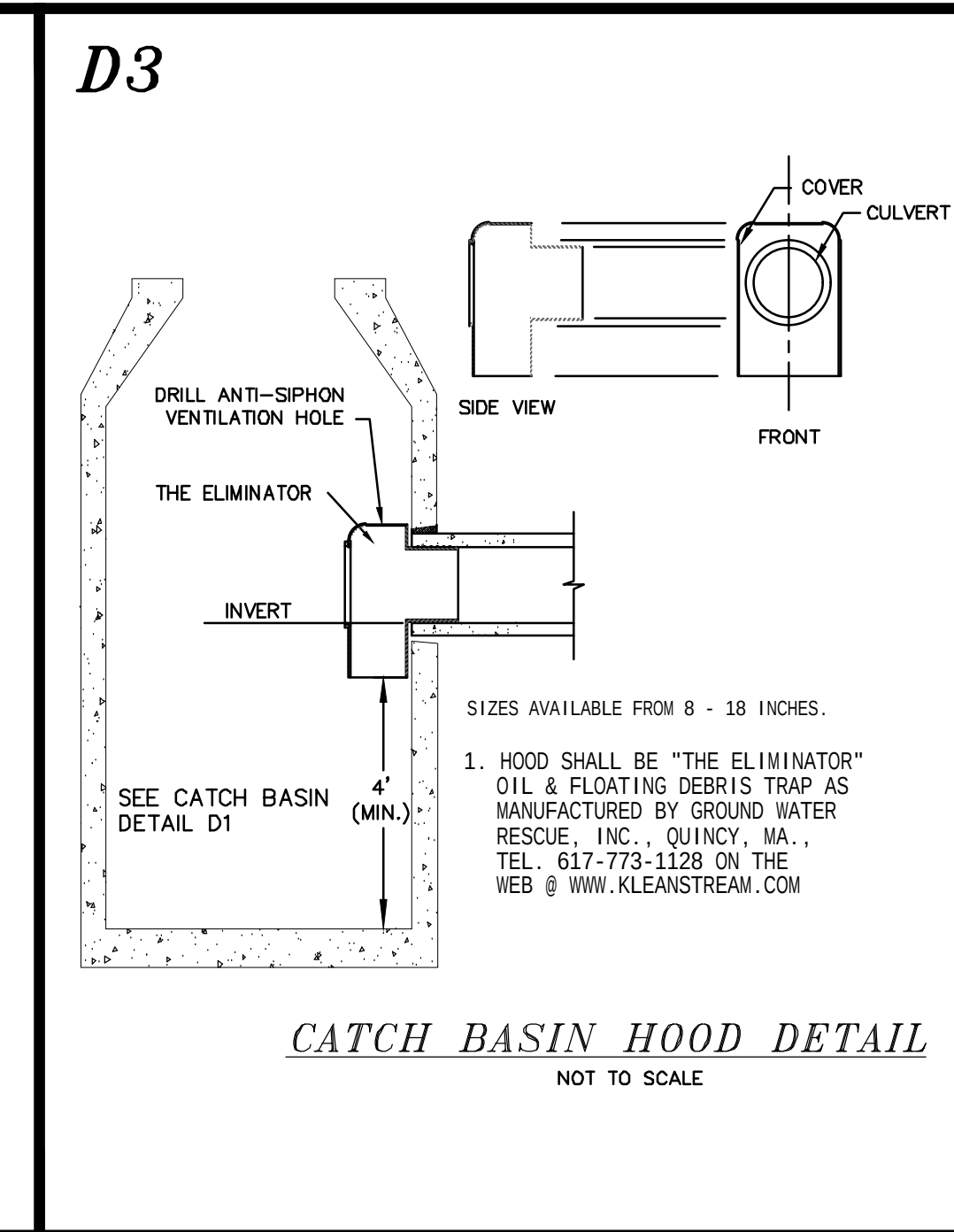
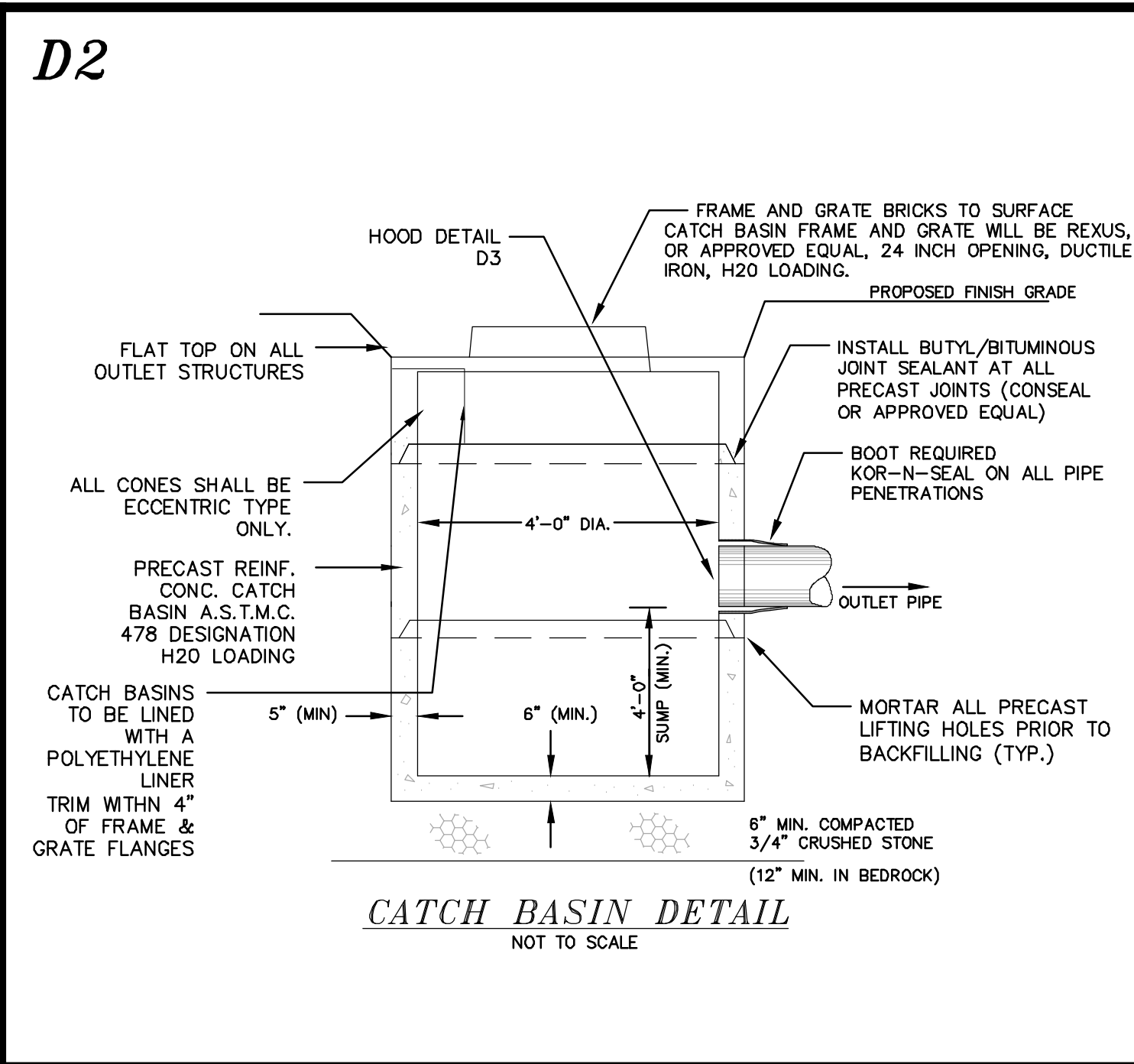
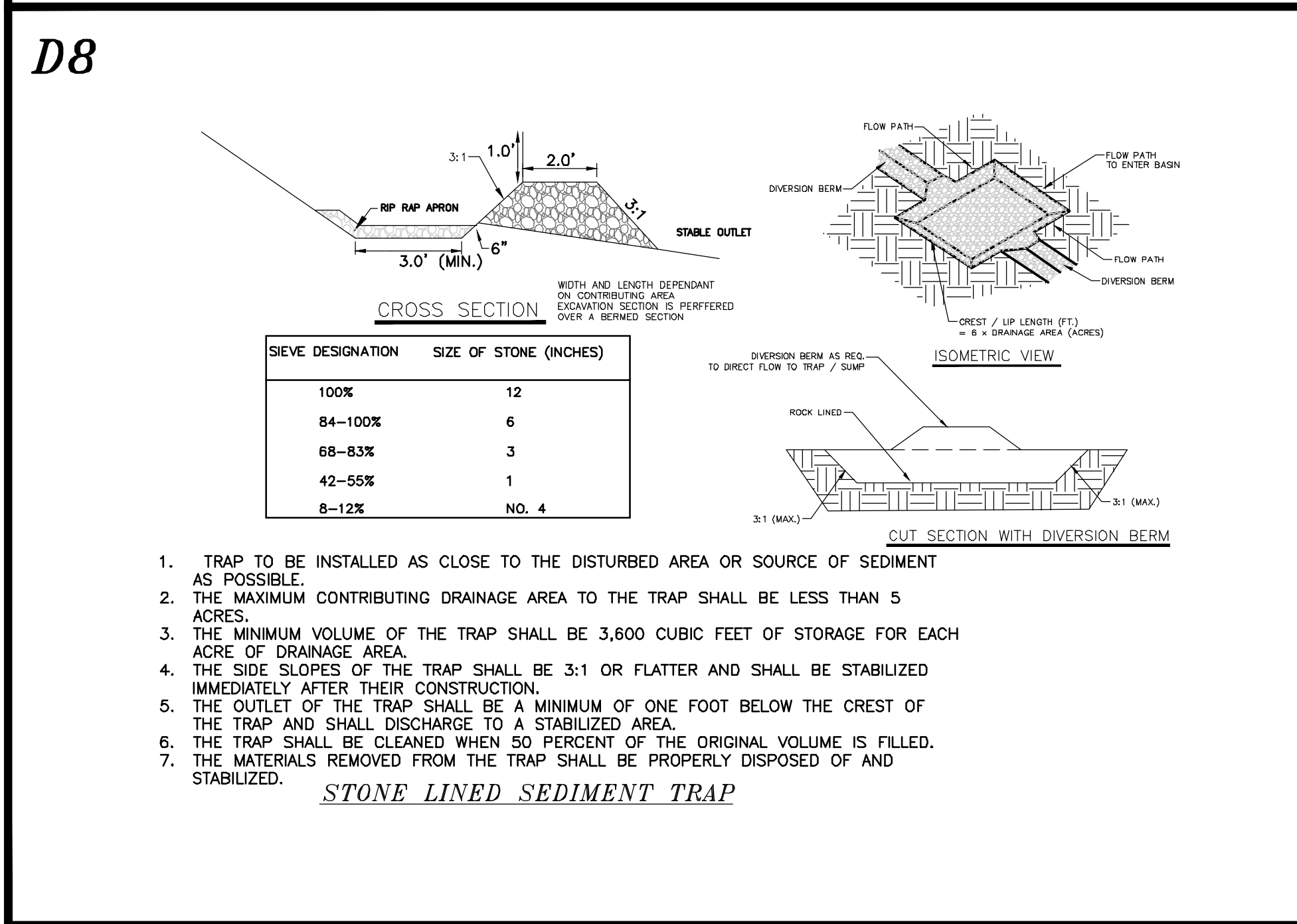
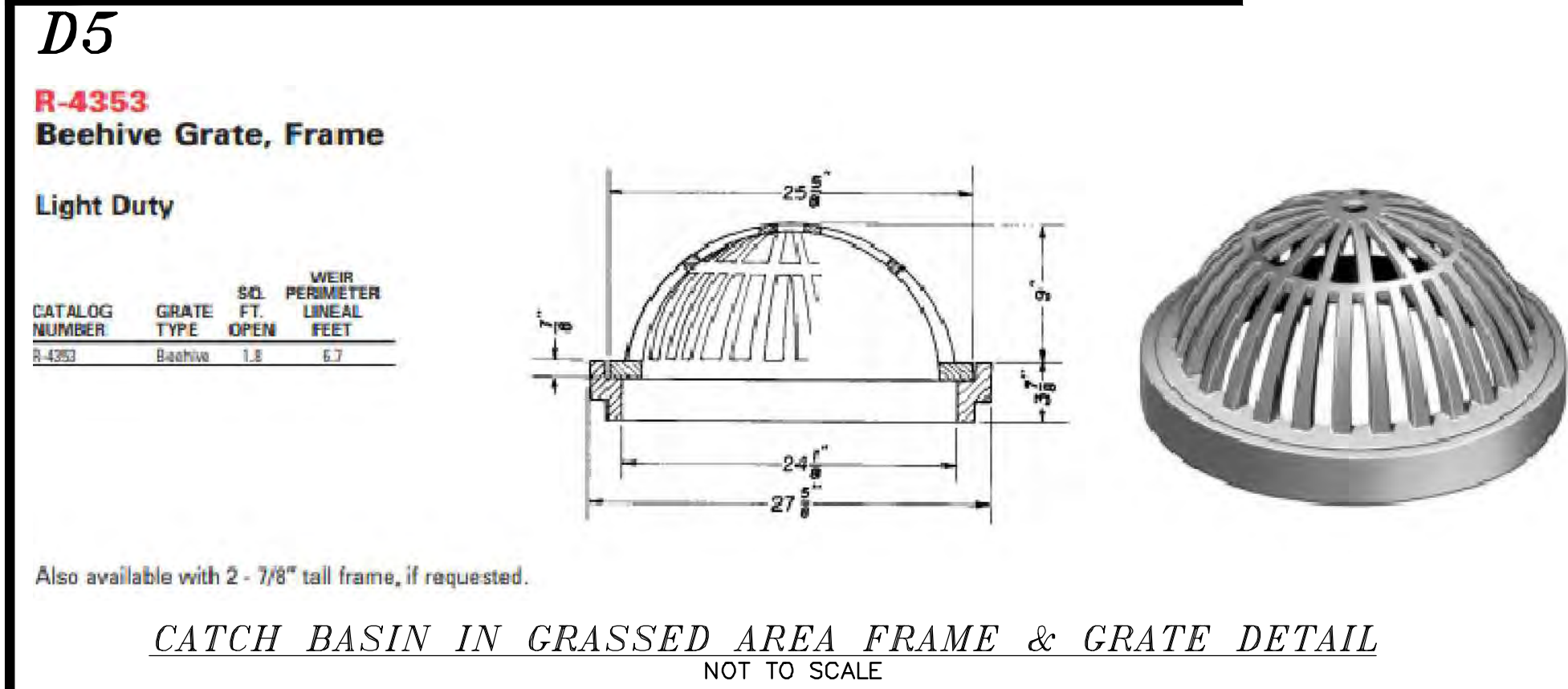
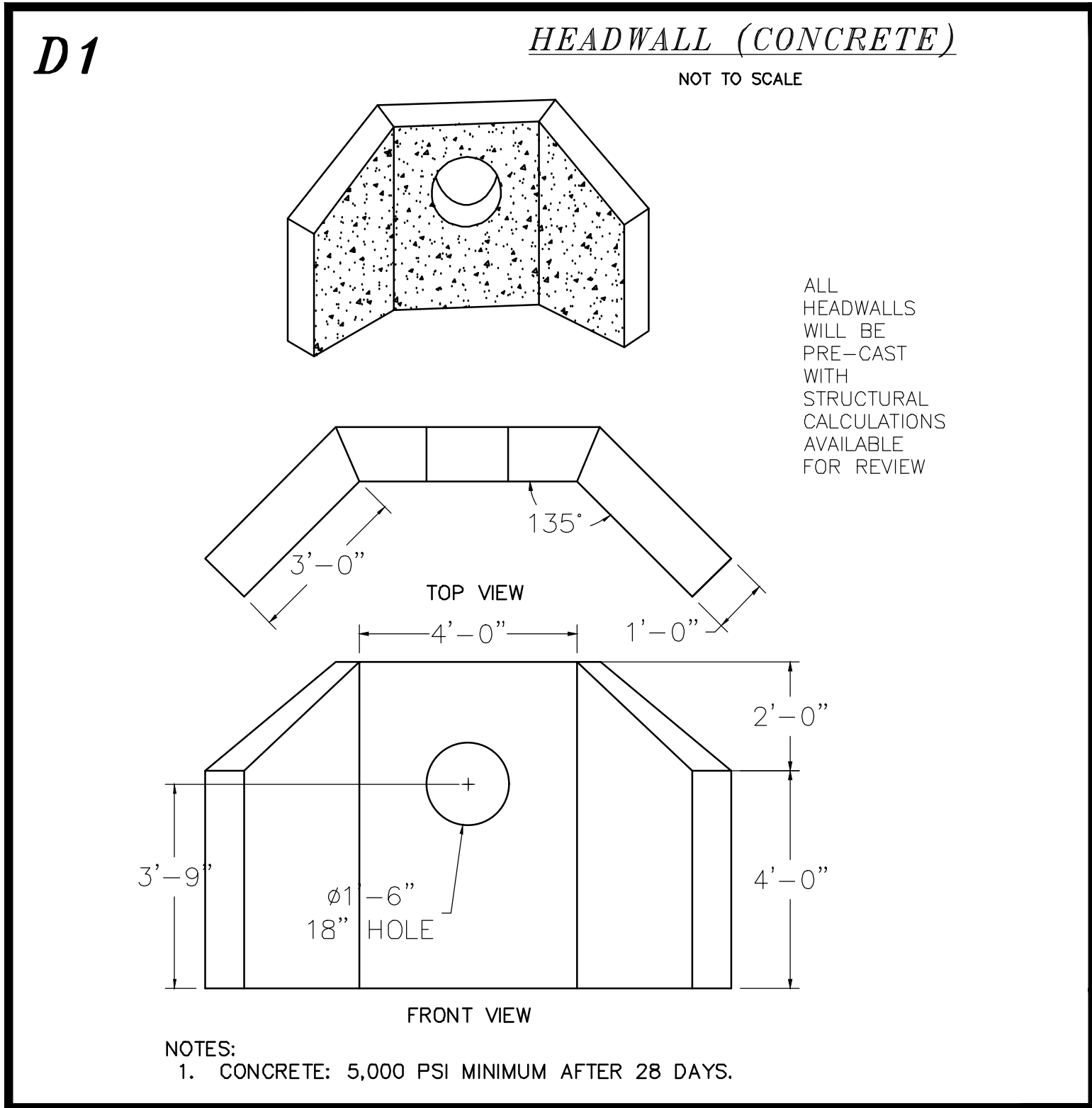
DESCRIPTION

CONSTRUCTION DETAILS
LAND OF
DOVER HOUSING AUTHORITY
48 WHITTIER STREET
DOVER, N.H.
TAX MAP 33, LOT 1-4

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

C-103



DOVER PLANNING FILE #P21-37, WAIV-2024-003

REVISION	DATE	DESCRIPTION
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LAND OF
DOVER HOUSING AUTHORITY
48 WHITTIER STREET
DOVER, N.H.
TAX MAP 33, LOT 1-4

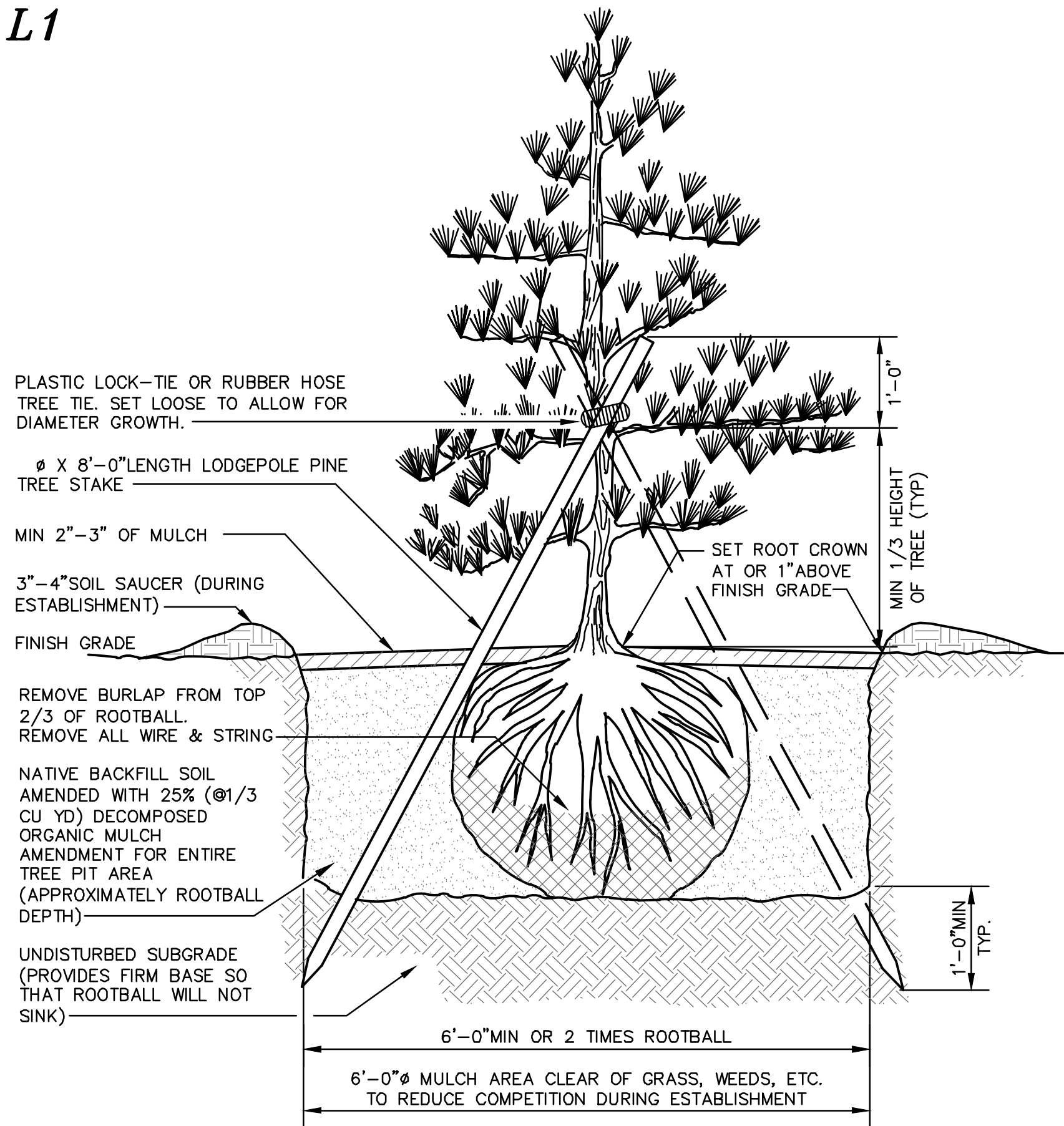
BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863
SCALE: AS NOTED
DATE: MAY 6, 2021
FILE NO.: DB 2020 - 136

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

D-101

SHEET 19 OF 21

L1

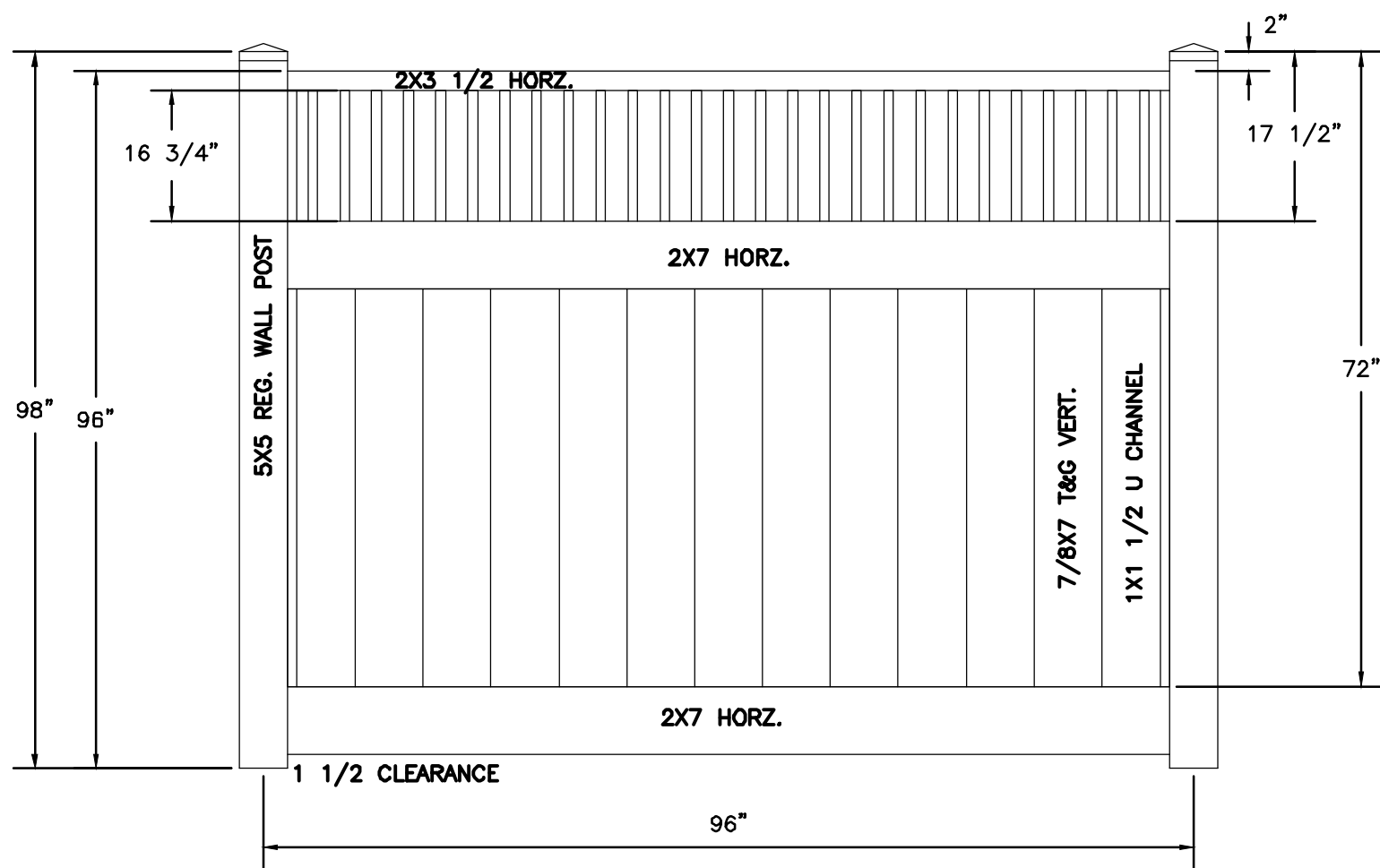


CONIFEROUS TREE PLANTING

L6

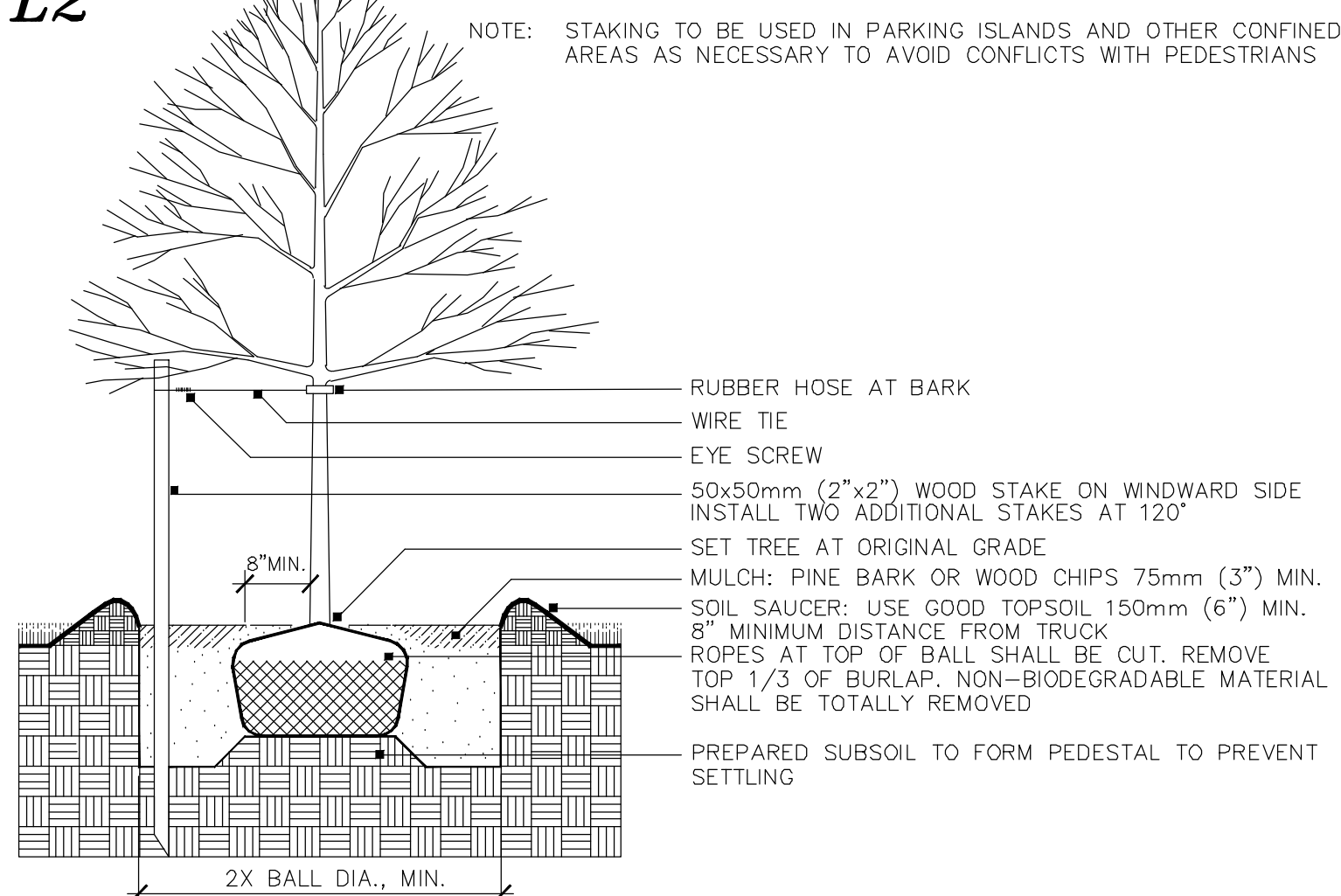
WHITE VINYL FENCE DETAIL

NOT TO SCALE
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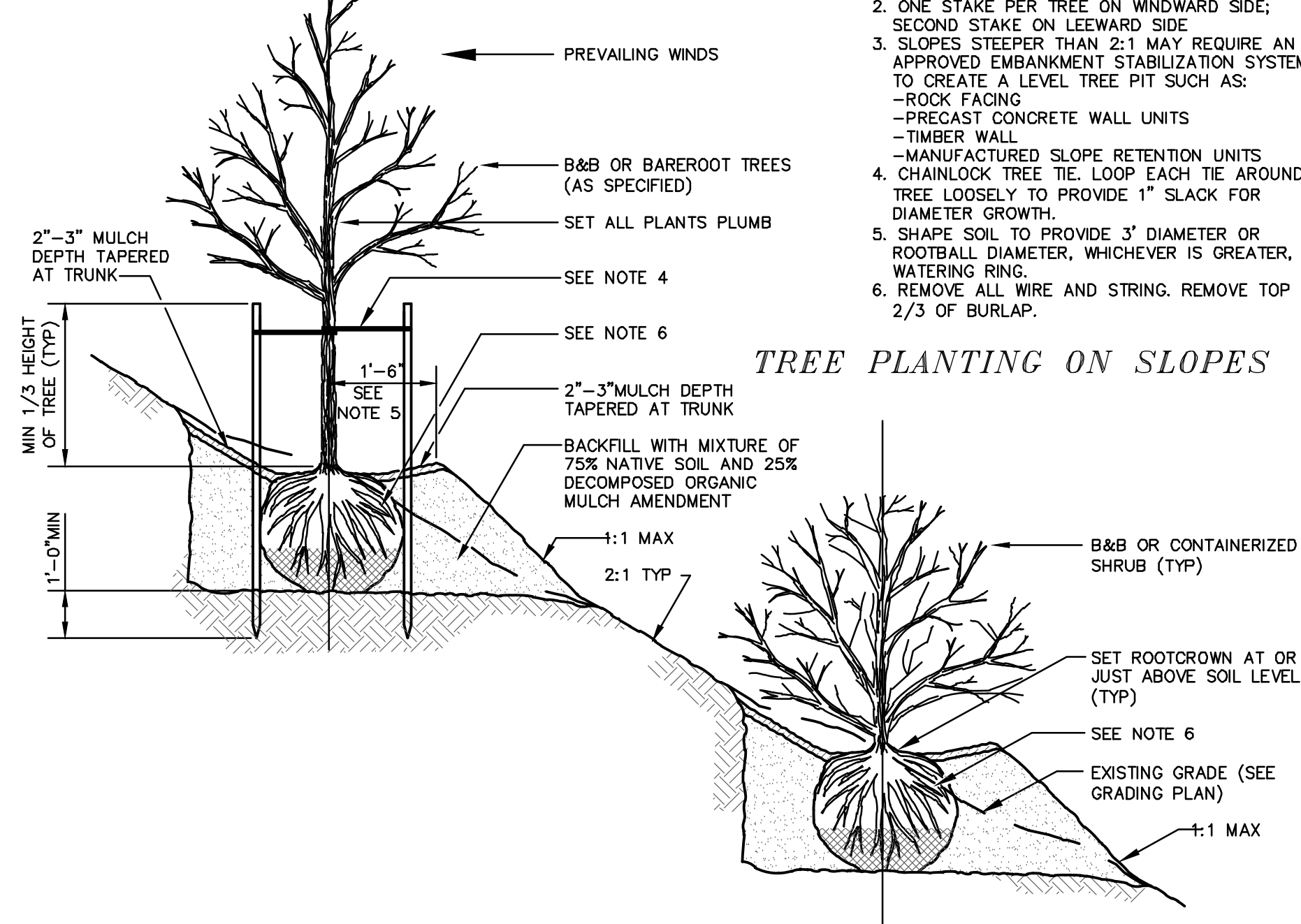


L2

DECIDUOUS TREE PLANTING

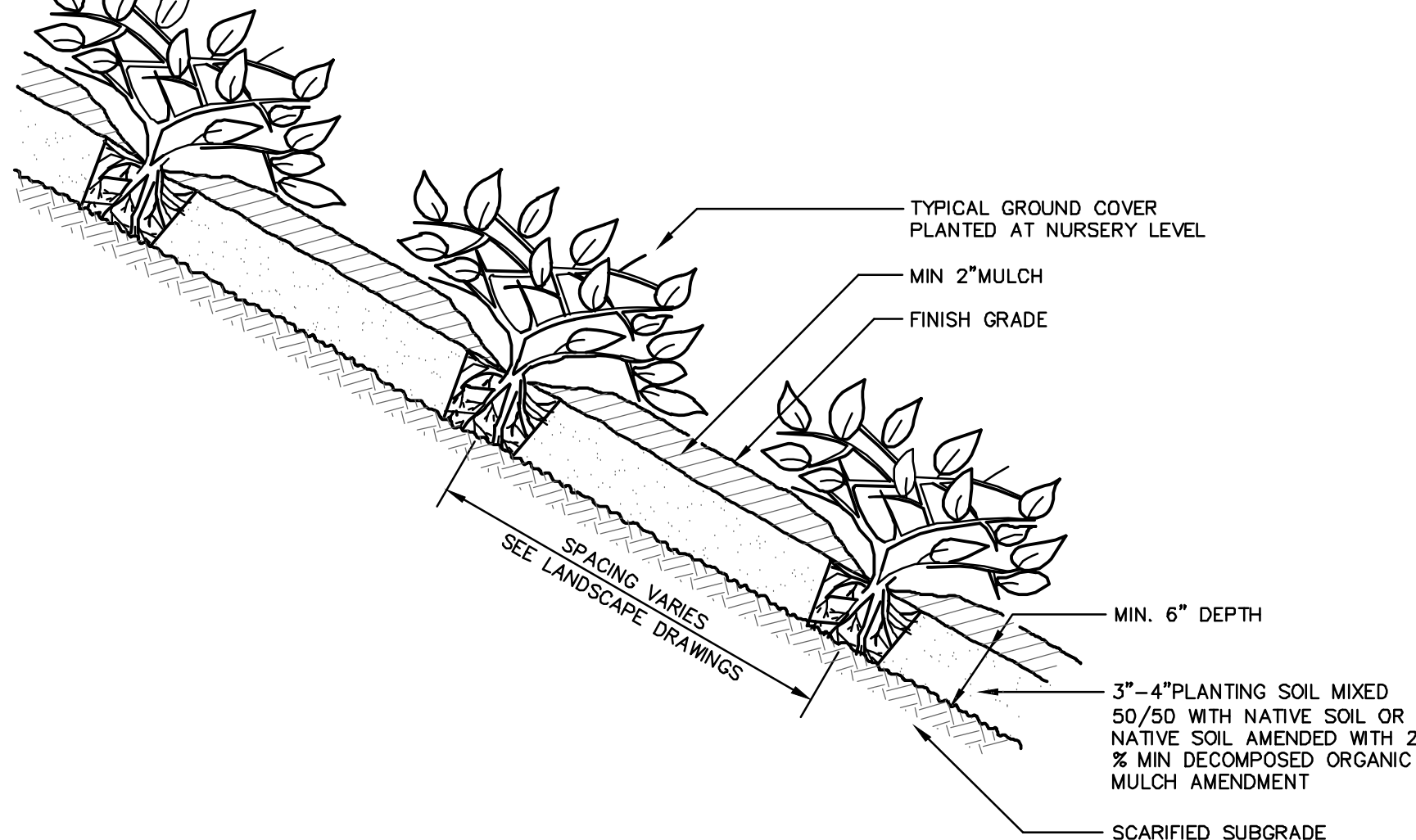


L4



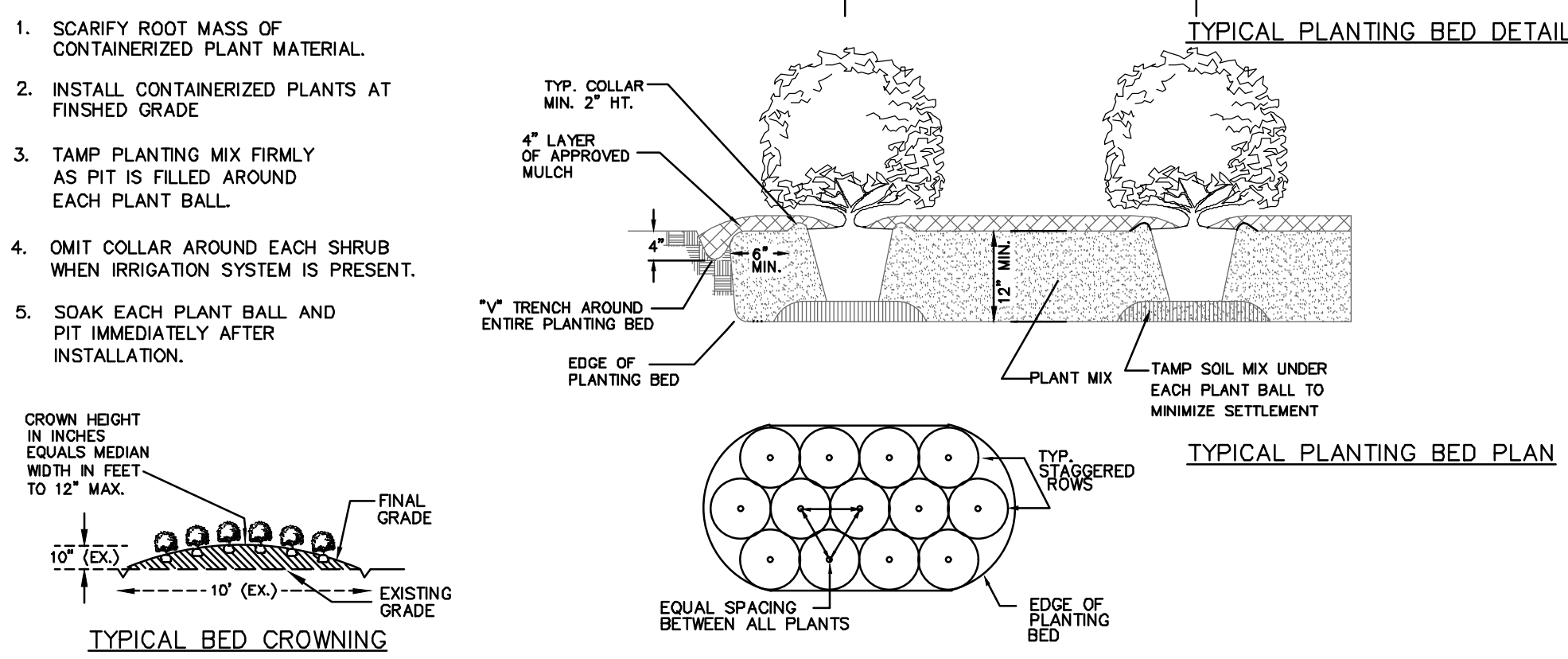
L7

TYPICAL SLOPE GROUND COVER PLANTINGS



L3

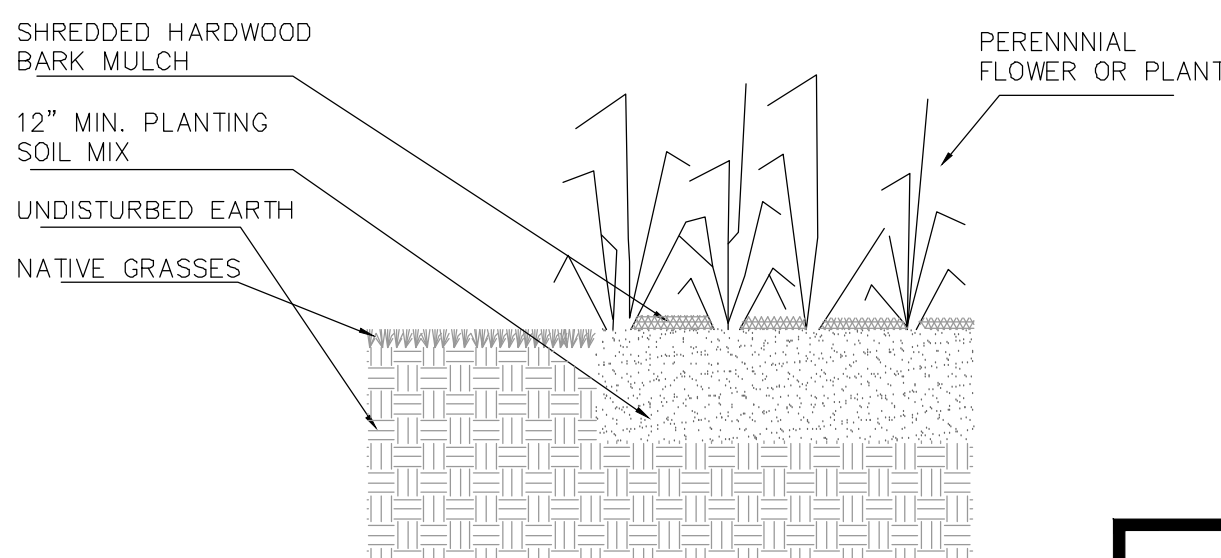
SHRUB & HEDGE PLANTING



L5

- NOTES:
- CALL DIG SAFE PRIOR TO BEGINNING WORK. (1-888-344-7233). THE LANDSCAPE CONTRACTOR IS ADVISED OF THE PRESENCE OF UNDERGROUND UTILITIES AND SHALL VERIFY THE EXISTENCE AND LOCATION OF THE SAME BEFORE COMMENCING AND DIGGING OPERATIONS. THE LANDSCAPE CONTRACTOR SHALL REPLACE OR REPAIR UTILITIES, PAVING, WALKS, CURBING, ETC DAMAGED IN PERFORMANCE OF THIS JOB AT NO ADDITIONAL COST TO THE OWNER OR GENERAL CONTRACTOR.
 - CONTRACTOR SHALL THOROUGHLY FAMILIARIZE THEMSELVES WITH ALL SITE CONDITIONS PRIOR TO CONSTRUCTION BIDDING. SEE NOTE XXX ON OVERALL SITE PLAN.
 - PROVIDED SMOOTH TRANSITION WHERE NEW WORK MEETS EXISTING CONDITIONS.
 - ALL PLANT MATERIAL INSTALLED SHALL MEET THE SPECIFICATIONS OF "AMERICAN STANDARD FOR NURSERY STOCK" BY THE AMERICAN ASSOCIATION OF NURSERYMEN.
 - ALL PLANT MATERIALS SHALL BE FREE FROM INSECTS AND DISEASE.
 - ALL PLANTINGS SHALL BE DONE IN ACCORDANCE WITH ACCEPTABLE HORTICULTURAL PRACTICES. THIS IS TO INCLUDE PROPER PLANTING MIX, PLANT BED AND TREE PIT PREPARATION, PRUNING STAKING OR GUYING, WRAPPING, SPRAYING, FERTILIZATION, PLANTING AND ADEQUATE MAINTENANCE UNTIL ACCEPTANCE FROM OWNER.
 - ALL GRASS, OTHER VEGETATION AND DEBRIS SHALL BE REMOVED FROM ALL PLANTING AREAS PRIOR TO PLANTING.
 - THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF EXISTING AND NEWLY PLANTED TREES AND SHRUBS DURING THE CONSTRUCTION PROCESS. WHERE REQUIRED, THE CONTRACTOR SHALL INSTALL TEMPORARY FENCING (SNOW OR EQUAL) AROUND EXISTING TREES AND SHRUBS THAT COULD BE IMPACTED BY THE CONSTRUCTION PROCESS. STORAGE OF CONSTRUCTION EQUIPMENT, CONSTRUCTION MATERIALS, SNOW STORAGE AND OR VEHICLE PARKING SHALL NOT BE PERMITTED WITHIN THE DRIP LINE OF TREES OR TWENTY FEET WHICH EVER IS GREATER.
 - NEW PLANTINGS SHALL BE INSTALLED PER PROJECT DRAWINGS AND SPECIFICATION THAT INCLUDE FERTILIZATION AND MULCHING AS REQUIRED.
 - ALL SHRUB BEDS AND TREE PITS SHALL BE MULCHED WITH 3" CLEAN SHREDDED BLACK MULCH.
 - WHERE INDICATED ON PLAN, PLANTING SOIL MIXTURE FOR GROUND COVER AND PERENNIAL BED AREAS SHALL CONSIST OF FOUR PARTS TOPSOIL, TWO PARTS SPHAGNUM PEAT MOSS, AND ONE PART HORTICULTURAL PERLITE BY VOLUME. PEAT MOSS MAY BE SUBSTITUTED WITH WELL-ROTTED OR DEHYDRATED MANURE OR COMPOST. ROTOTILL BEDS TO A DEPTH OF 8 INCHES.
 - MAINTENANCE OF NEW PLANTINGS AND LAWNS SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR AND OR LANDSCAPE SUBCONTRACTOR UNTIL ACCEPTANCE BY THE OWNER. RESPONSIBILITIES SHALL INCLUDE WATERING WEEDING AND MOWING AS NECESSARY. ALL PLANT MATERIAL SHALL BE GUARANTEED FOR A PERIOD OF ONE YEAR FROM THE DATE OF ACCEPTANCE, REPLACEMENT MATERIAL SHALL BE GUARANTEED FOR AND ADDITIONAL YEAR FROM TIME OF INSTALLATION.
 - THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL TEMPORARY EROSION CONTROL MEASURES DURING THE CONSTRUCTION PHASE AND UNTIL ALL AREAS HAVE BEEN STABILIZED AND ACCEPTED BY THE OWNER. THE GENERAL CONTRACTOR SHALL PROVIDE WEEKLY INSPECTIONS OF EROSION MEASURE AND IMMEDIATELY AFTER STORM EVENTS AND REPAIR AS NECESSARY.
 - THE GENERAL CONTRACTOR AND OR THE LANDSCAPE SUBCONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL OF ALL THREE GUYING MATERIAL ONCE PLANT MATERIAL HAS BEEN ESTABLISHED. (MINIMUM OF ONE GROWING SEASON). ALL TEMPORARY EROSION CONTROL MEASURE SHALL BE REMOVED ONCE STABILIZATION OF DISTURBANCE HAS BEEN ACCEPTED BY OWNER.
 - THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR A MINIMUM OF TWO MOWINGS FOR ALL TURF AREAS OR UNTIL ACCEPTANCE BY THE OWNER. A MINIMUM UNIFORM 75% CATCH OF TURF IS REQUIRED FOR ACCEPTANCE.
 - ALL PLANTINGS SHALL BE WATERED REGULARLY DURING THEIR FIRST YEAR AND MAINTAINED PERMANENTLY IN GOOD GROWING CONDITION AS AN EFFECTIVE VISUAL SCREEN.
 - SHRUBS OR TREES WHICH DIE SHALL BE REPLACED WITHIN ONE GROWING SEASON WITH NEW SHRUBS OR TREES TO ENSURE CONTINUED COMPLIANCE WITH APPLICABLE LANDSCAPING REQUIREMENTS.
 - ALL REQUIRED LANDSCAPING SHALL BE INSTALLED BEFORE OCCUPANCY, OR WITHIN SIX MONTHS IF OCCUPANCY OCCURS DURING WINTER CONDITIONS.
 - TREES ARE TO BE 3-3.5" CALIPER 6" OFF THE ROOT BALL.
 - ALL PLANT STOCK SHALL CONFORM TO ANSI Z260.1 - NURSERY STOCK, LATEST EDITIONS (AMERICAN ASSOCIATION OF NURSERYMEN, INC.)
 - 4" AGED PINEBARK MULCH AND A WEED BARRIER (TY-PAR FABRIC OR APPROVED EQUAL) SHALL BE APPLIED TO ALL SHRUB AND GROUND COVER BEDS. INSTALL WEED BARRIER AS PER MANUFACTURERS RECOMMENDATIONS.
 - 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.
 - ALL LANDSCAPED AREAS NOT PLANTED WITH TREES, SHRUBS OR GROUND COVER SHALL BE RESTORED WITH SEED OR SOD AS INDICATED ON PLANS.

L8



PERENNIAL PLANTING DETAIL

L-101

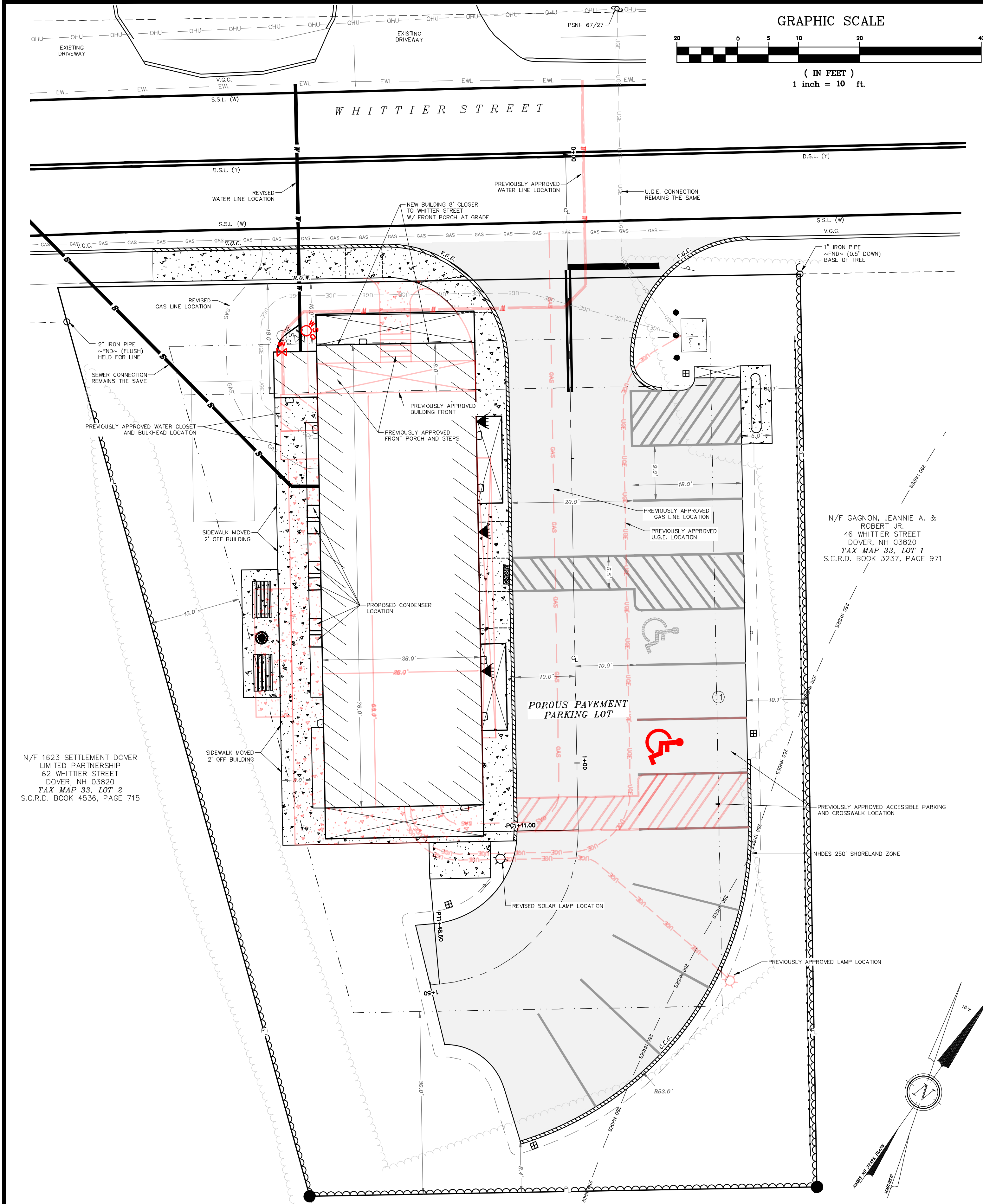
DOVER PLANNING FILE #P21-37, WAIV-2024-003

REVISION		DATE	DESCRIPTION
#5	3-15-24		REVISED PER TRC COMMENT
#4	2-21-24		REVISED BUILDINGS, UTILITIES, TDR RELIEF
#3	8-7-22		REVISED PER TRC COMMENT
#2	7-20-21		REVISED PER TRC COMMENT

LANDSCAPING CONSTRUCTION DETAILS	
LAND OF DOVER HOUSING AUTHORITY 48 WHITTIER STREET DOVER, N.H. TAX MAP 33, LOT 1-4	

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



NOTES:

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

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

- TAX MAP 33, LOT 1-A
- PROJECT ADDRESS: 48 WHITTIER STREET
- LOT AREA: 15,394 Sq. Ft., 0.35 Ac.
- S.C.R.D. BOOK 4716, PAGE 900
- 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

PROVIDED ZONING

PRINCIPAL BUILDING:
LOT SIZE: 15,394 Sq. Ft.
LOT COVERAGE: 14.3%
FRONTAGE: 121.93 Ft.
FRONT BUILD-TO: 10 Ft. (TDR REQUEST)
SIDE SETBACK: 15 Ft.
REAR SETBACK: 15 Ft.
PRINCIPAL BUILDING: 36.6 Ft.

TRANSFER OF DEVELOPMENT RIGHTS (TDR)

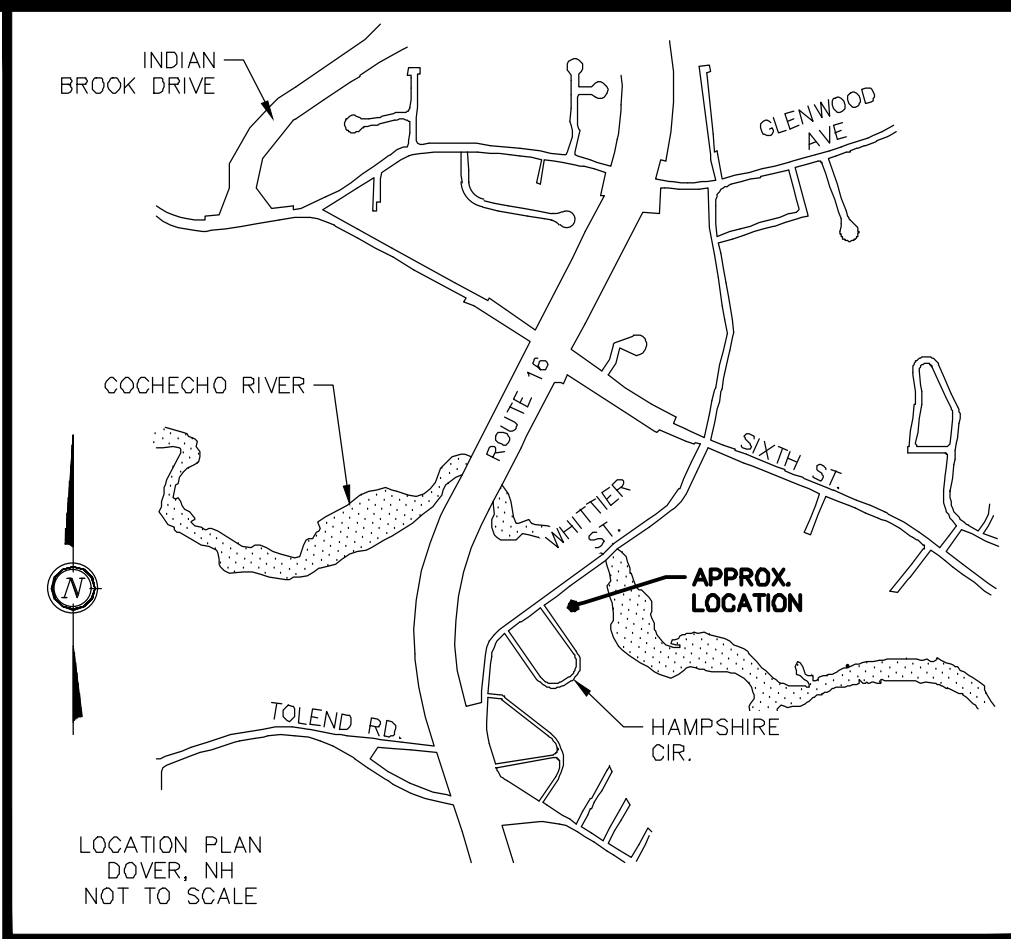
LOT SIZE: N/A Sq. Ft.
MAX LOT COVERAGE: N/A
MINIMUM FRONTAGE: 40'
FRONT SETBACK: 20'
ABUT A STREET SETBACK: 20'
SIDE SETBACK: 10'
REAR SETBACK: 30'
PERIMETER BUFFER: 30'

- THE INTENT OF THIS PLAN IS TO SHOW AN OVERLAY OF THE PREVIOUSLY APPROVED SITE PLAN DIFFERENCES (RED) WITH THE PROPOSED SITE PLAN (GRAYSCALE).

LEGEND:

PREVIOUSLY APPROVED LOCATIONS,
MODIFIED SITE ELEMENTS

OWNER'S SIGNATURE _____ DATE _____



DOVER PLANNING FILE #P21-37

#	REVISION	DATE	DESCRIPTION
3-15-24			REVISED PER TRC COMMENT
2-21-24			REVISED BUILDINGS, UTILITIES, TDR RELIEF
8-7-22			REVISED PER DOVER HOUSING AUTHORITY
6-7-22			REVISED PER DOVER HOUSING AUTHORITY
7-20-21			REVISED PER DOVER TRC COMMENT

SITE PLAN REVISION OVERLAY LAND OF DOVER HOUSING AUTHORITY 48 WHITTIER STREET DOVER, NH 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

KENNETH A. BERRY
REGISTERED PROFESSIONAL ENGINEER
STATE OF NEW HAMPSHIRE

PROJECT:

WHITTIER STREET APARTMENTS

ADDRESS:

48 WHITTIER STREET
DOVER, NH 03820

CLIENT:

DOVER HOUSING AUTHORITY



LASSEL
ARCHITECTS

370 MAIN STREET
SOUTH BERWICK, ME 03908
207 384 2049
lasselarchitects.com

DRAWING LIST:

DRAWING No.	DRAWING NAME.
SD - 00	COVER SHEET
SD - 01	FIRST FLOOR PLAN
SD - 02	SECOND FLOOR PLAN
SD - 03	THIRD FLOOR PLAN
SD - 04	ROOF PLAN
SD - 05	EXTERIOR ELEVATIONS
SD - 06	EXTERIOR ELEVATIONS
SD - 07	PERSPECTIVE VIEWS
SD - 08	RENDERED VIEW 1
SD - 09	RENDERED VIEW 2

3/15/2024 11:08:02 PM L:\FILES CURRENT\24.02 Dover Housing- 48 Whittier St\8. DRAWINGS\8.2 REVIT\48 Whittier St_CD_REV04.rvt

PROJECT NUMBER:

24.02

DATE:

MAR 2024

DRAWING NAME:

COVER SHEET

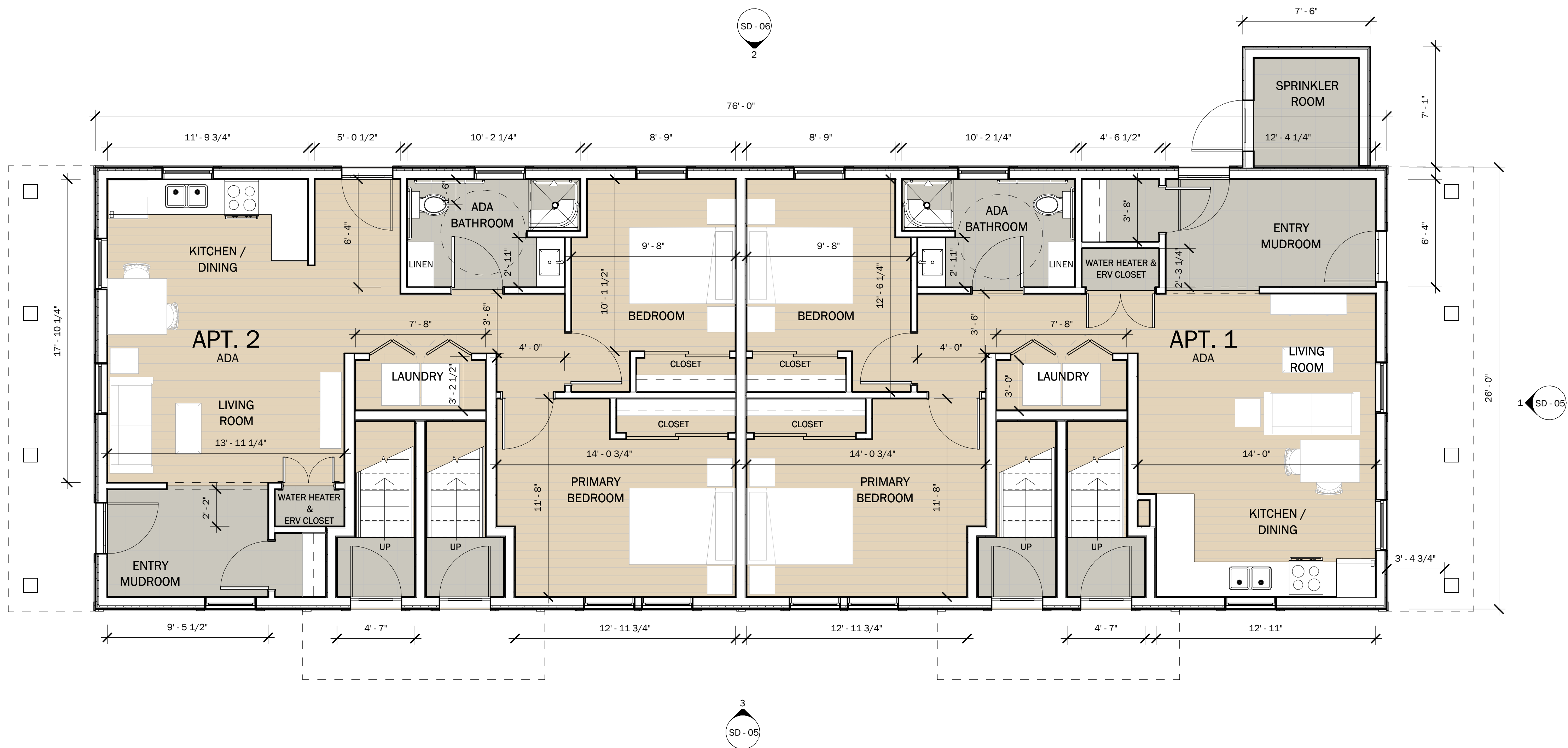
DRAWING NUMBER:

SD - 00



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ARCHITECTS

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207 384 2049
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① FIRST FLOOR PLAN
1/4" = 1'-0"

CLIENT:
DOVER HOUSING
AUTHORITY

PROJECT:
WHITTIER STREET APARTMENTS

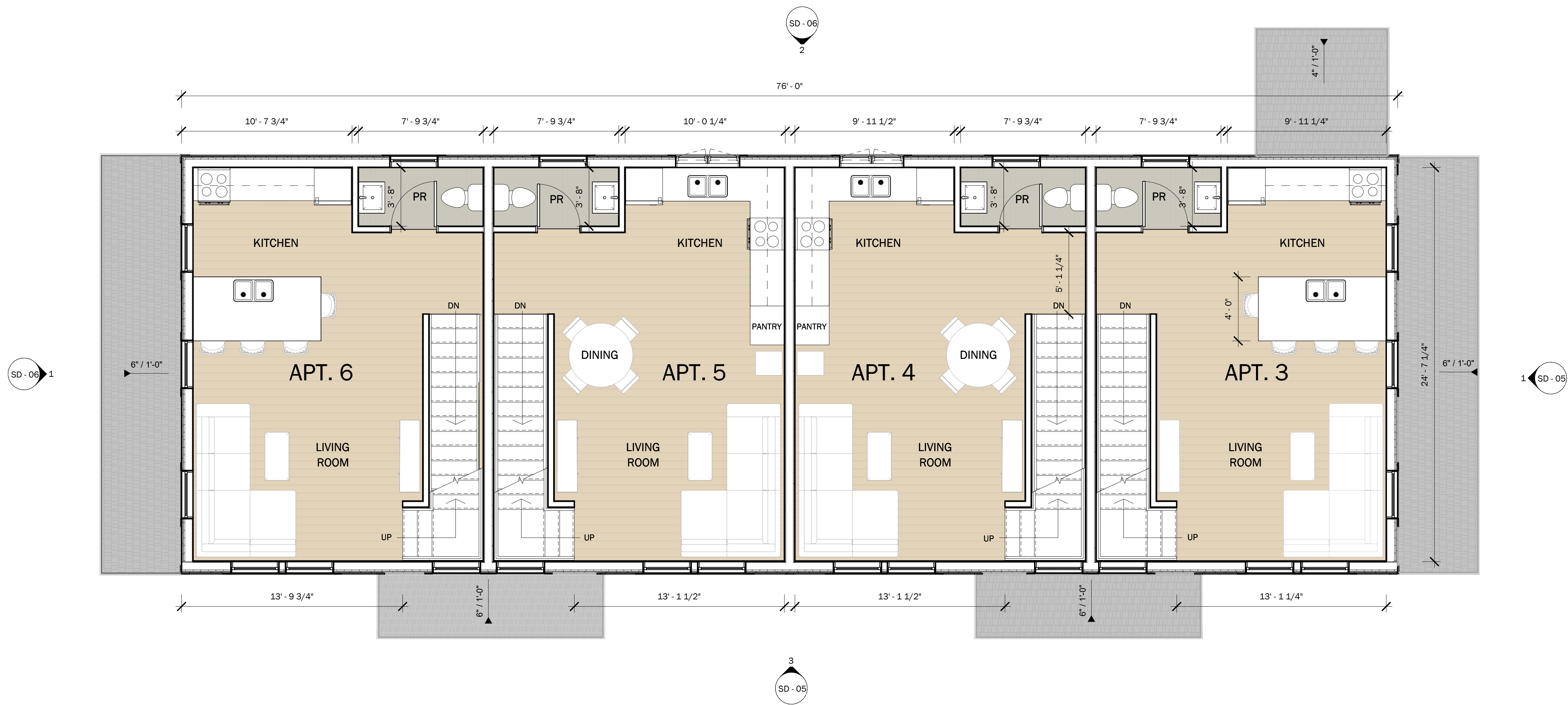
PROJECT NUMBER:	24.02	NORTH:		DRAWING NAME:	FIRST FLOOR PLAN
DATE:	MAR 2024			DRAWING NUMBER:	
SCALE:	AS NOTED				
REVISION:					

SD - 01



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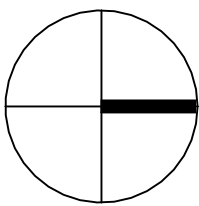


① SECOND FLOOR PLAN
1/4" = 1'-0"

CLIENT:
DOVER HOUSING
AUTHORITY

PROJECT:
WHITTIER STREET APARTMENTS

PROJECT NUMBER: 24.02
DATE: MAR 2024
SCALE: AS NOTED
REVISION:



DRAWING NAME:
SECOND FLOOR PLAN

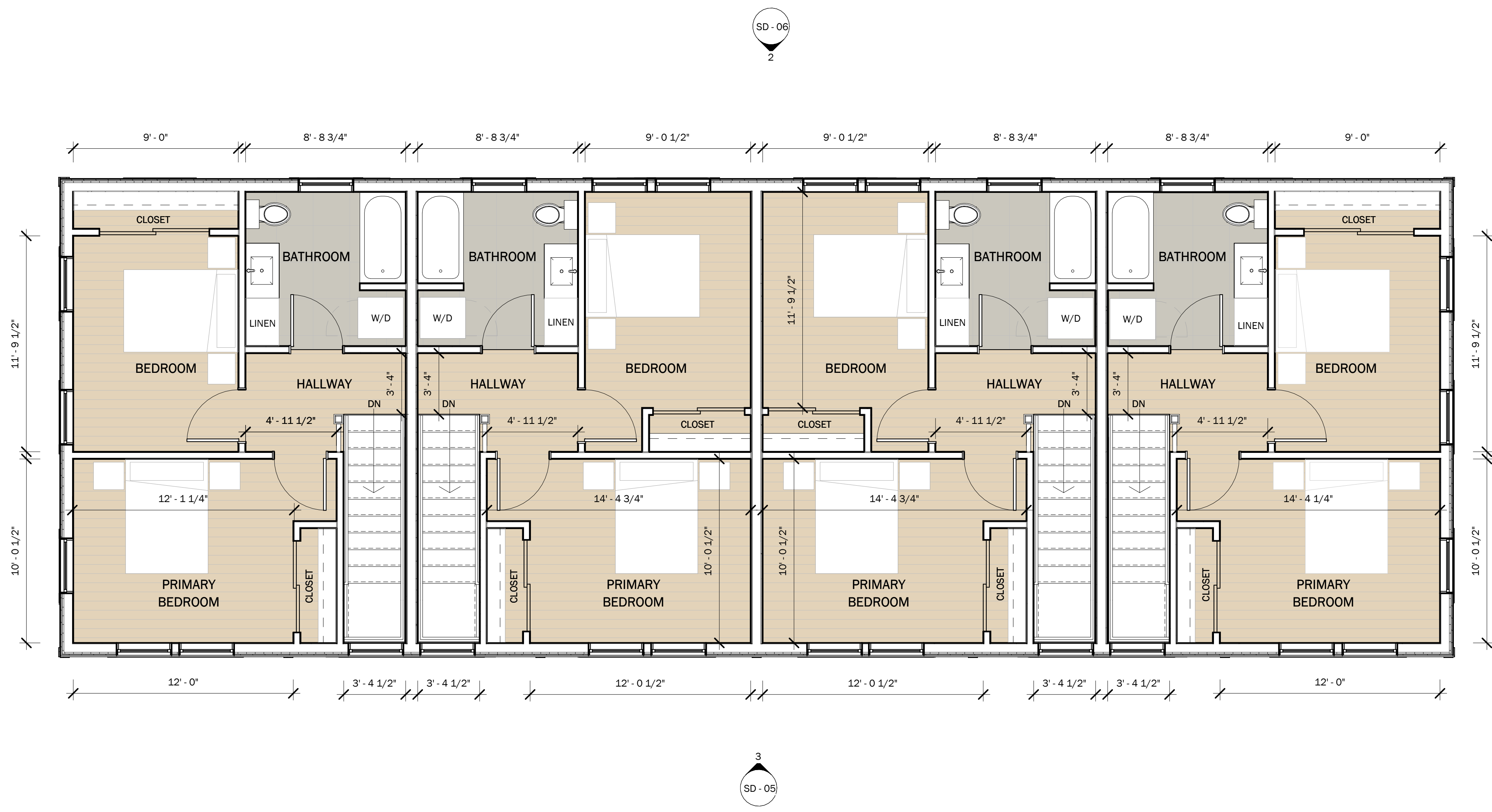
DRAWING NUMBER:

SD - 02



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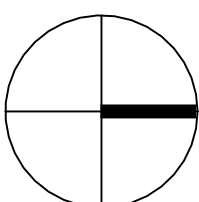


① THIRD FLOOR PLAN
1/4" = 1'-0"

CLIENT:
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AUTHORITY

WHITTIER STREET APARTMENTS

PROJECT NUMBER: 24.02
DATE: MAR 2024
SCALE: AS NOTED
REVISION:



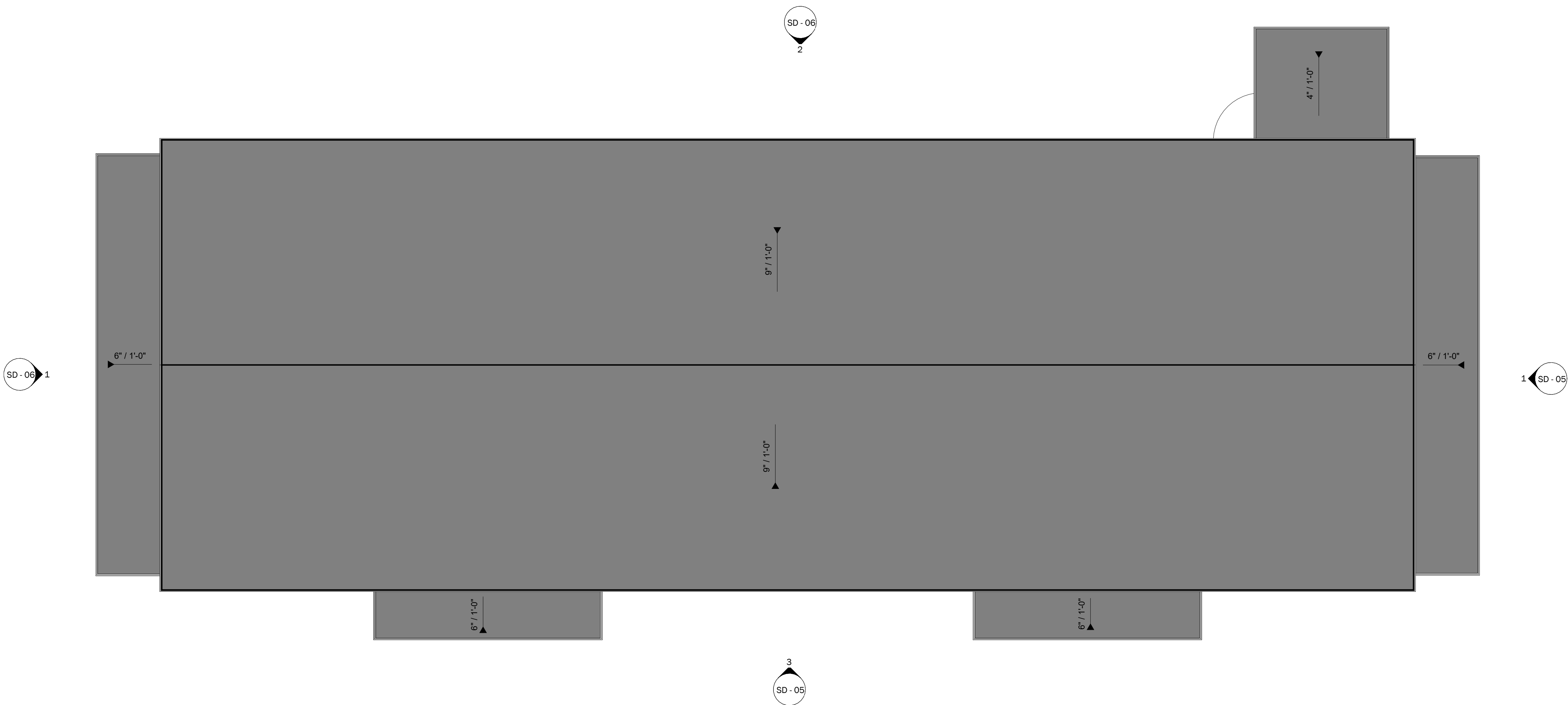
DRAWING NAME:
THIRD FLOOR PLAN
DRAWING NUMBER:

SD - 03



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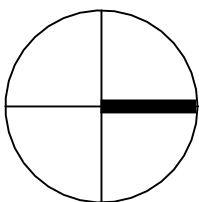


① ROOF PLAN
1/4" = 1'-0"

CLIENT:
DOVER HOUSING
AUTHORITY

PROJECT:
WHITTIER STREET APARTMENTS

PROJECT NUMBER: 24.02
DATE: MAR 2024
SCALE: AS NOTED
REVISION:



DRAWING NAME:
ROOF PLAN
DRAWING NUMBER:

SD - 04

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3/15/2024 11:08:05 AM: \\FILES CURRENT\24.02 Dover Housing_48 Whittier St\8. DRAWINGS\8.2 REVIT\48 Whittier St_CD_REV04.rvt



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PROJECT:
WHITTIER STREET APARTMENTS

PROJECT NUMBER:
24.02
DATE:
MAR 2024
SCALE:
AS NOTED
REVISION:

DRAWING NAME:
EXTERIOR ELEVATIONS
DRAWING NUMBER:

SD - 05



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PROJECT:
WHITTIER STREET APARTMENTS

PROJECT NUMBER:
24.02
DATE:
MAR 2024
SCALE:
AS NOTED
REVISION:

DRAWING NAME:
EXTERIOR ELEVATIONS
DRAWING NUMBER:

SD - 06



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① PERSPECTIVE VIEW 1



② PERSPECTIVE VIEW 2

CLIENT:
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PROJECT:

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PROJECT NUMBER: 24.02
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SCALE: AS NOTED
REVISION:

DRAWING NAME:
PERSPECTIVE VIEWS
DRAWING NUMBER:

SD - 07



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PROJECT NUMBER:
24.02
DATE:
MAR 2024
SCALE:
AS NOTED
REVISION:

DRAWING NAME:
RENDERED VIEW 1

DRAWING NUMBER:

SD - 08



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PROJECT:
WHITTIER STREET APARTMENTS

PROJECT NUMBER:
24.02
DATE:
MAR 2024
SCALE:
AS NOTED
REVISION:

DRAWING NAME:
RENDERED VIEW 2

DRAWING NUMBER:

SD - 09



CITY OF DOVER

PLANNING BOARD - STAFF MEMO

Meeting Type: Public Hearing
Purpose: Public Input for FY26-30 Consolidated Plan
Meeting Date: April 9, 2024

To: Planning Board
From: Dave Carpenter
Date: April 2, 2024
Re: CDBG Public Hearing

ISSUE:

Public input regarding the FY26-30 Consolidated Plan.

INTENT:

This memo will provide an overview of why the Public Hearing is being held.

GOAL:

Receive public input regarding issues to be considered for inclusion in the FY26-30 Consolidated Plan.

BACKGROUND – Consolidated Plan

The primary objective of the Housing and Urban Development (HUD) Community Development Block Grant (CDBG) program is the development of viable communities by expanding economic opportunities, providing decent housing and supporting suitable living environments principally for persons of low and moderate income. To implement the CDBG program, the City of Dover must create and adopt a five-year Consolidated Plan. The Plan identifies the community's affordable housing needs, community development needs and market conditions. This information is used to develop priority goals and objectives that are to be addressed over the course of the next five years through the annual allocation of funds to programs & initiatives.

CONSOLIDATED PLAN – Issue Identification

This public hearing will serve as the kick-off of the FY26-30 Consolidated Plan process and is the first opportunity for the public to provide input. There will be other opportunities for the general public to comment including a series of listening sessions, an online survey, Q&A at the Apple Harvest Festival and so on.

STAFF RECOMMENDATION

- Conduct a Public Hearing to receive input from the public regarding the CDBG program and community issues, needs and opportunities that they believe should be considered for inclusion in the FY26-30 Consolidated Plan.
- After the Public Hearing is closed, staff asks that the members of the Planning Board provide any thoughts they may have regarding community issues, needs and opportunities that they believe should be considered for inclusion in the FY26-30 Consolidated Plan.