CITY OF DOVER

DOVER PLANNING BOARD – AGENDA

REVISED

Meeting Type: Regular Meeting
Meeting Location: Council Chambers, City Hall, 288 Central Avenue, Dover, NH 03820
Meeting Date: **Tuesday, January 23, 2024**
Meeting Time: **7:00 pm**

1. **CITIZENS' FORUM**
2. **APPROVAL OF THE PRIOR MINUTES**
   January 9, 2024 Regular Meeting Minutes and January 9, 2024 Workshop Minutes
3. **OLD BUSINESS**
   A. Discussion of Impact Fees.*
4. **NEW BUSINESS**
   A. Consideration and acceptance of an Extension Request for a conditionally approved Site Plan for VC Dover Investment, LLC, Assessor's Map H, Lot 4-3-2, zoned C and RCM Overlay, located at 30 Grapevine Drive. (Proposal is for the Planning Board to extend the period of time for conditions to be met prior to plan signing). *(WAIV-2023-0013)
   B. Consideration and acceptance of a Transfer of Development Rights for Altus Engineering (Owners: Paul Seaver), Assessor's Map H, Lot 6-4, zoned R-20, located at 105 Durham Road. (Proposal is purchase 9 HUD restricted units). *(TRAN-2023-0006)
   C. Consideration and acceptance of Transfer of Development Rights for Brian Slovenski, Assessor's Map L, Lot 111, zoned R-20, located at 306 Dover Point Road. (Proposal is to purchase five (5) additional living units, within three (3) buildings). *(TRAN-2023-0005)
   D. Consideration and acceptance of Site Review for TF Moran (Owners 256-264 Central Avenue, LLC), Assessor's Map 9, Lots 111 & 112, zoned CBD-G located at 256 & 264 Central Avenue. (Proposal is to replace gravel parking with 10,595 s.f. of paved parking related to their renovation of the buildings). *(SITE-2023-0013)
   E. Consideration and acceptance of a Conditional Use Permit for Gove Environmental Services, Inc., (Owners: David R. Lemieux), Assessor's Map 8, Lot 19, zoned R-20, located at 14 Leighton Road. (Proposal is for a residential redevelopment of the property with 2,887 s.f. of temporary impact and 8,362 s.f of permanent impact to the Conservation District). *(COND-2023-0060)
   F. Consideration and acceptance of a Conditional Use Permit for Gove Environmental Services, Inc., (Owners: David R. Lemieux), Assessor's Map 8, Lot 19, zoned R-20, located at 14 Leighton Road. (Proposal construct a new single-family house and cottage further inland creating 1,908 s.f. of temporary impact and 2,067 s.f. of permanent impact to the 50-foot wetlands buffer). *(COND-2023-0061)
   G. Consideration and acceptance of a Conditional Use Permit for Robert Baldwin, Assessor's Map 39, Lot 103, zoned Gateway, located at 34 New Rochester Road. (Proposal is to allow the site to have a frontage build-out of 47.4%, where 60% is required). *(COND-2024-0002)
   H. Consideration and acceptance of a Conditional Use Permit for Robert Baldwin, Assessor's Map 39, Lot 103, zoned Gateway, located at 34 New Rochester Road. (Proposal is to allow the current single-family residence to remain while not meeting the front build-to line of 5-20'). *(COND-2024-0003)
   I. Consideration and acceptance of a Site Review for Knox Marsh Development, LLC, (Owner: Robert Baldwin), Assessor's Map 39, Lot 103, zoned Gateway, located at 34 New Rochester Road. (Proposal is to construct 6 duplex structures (12 units) with the existing dwelling to remain and be renovated into a duplex). *(SITE-2023-0007)
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 and find us on Facebook at https://www.facebook.com/DoverNHPlanning. The public is encouraged to leave comments in advance by emailing Dover-

CITY OF DOVER

DOVER PLANNING BOARD – AGENDA

REVISED

Meeting Type:	Regular Meeting
Meeting Location:	Council Chambers, City Hall, 288 Central Avenue, Dover, NH 03820
Meeting Date:	**Tuesday, January 23, 2024**
Meeting Time:	**7:00 pm**

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:	McConnell Center Room 306, 61 Locust St. Dover, NH.
Meeting Date:	**Tuesday, January 9, 2024**
Meeting Time:	**7:00 pm**

Members Present: Mark Speidel, Fergus Cullen (Councilor), Tom Clark, Kyle Pimental, Ken Mavrogeorge, Erinn Kaspari, Jon Elliard, Melina Gambino (Alternate), Jeff Sanborn (Alternate) and George DeBoer (Alternate),
Members Not Present (excused): Gina Cruikshank (Chair)
Members Not Present (un-excused): None
Staff Present: Donna Benton, Director of Planning and Community Development, Dave Carpenter, Community Development Planner

M. Speidel called the meeting to order at 7p.m, welcomed new Alternate Jeff Sanborn, noted M. Speidel is Chairing, G. DeBoer will sit in for the vacant seat, and M. Gambino will sit in for G. Cruikshank's absence and explained the citizens' forum process.

1. CITIZENS' FORUM

Citizens Forum Open
No one spoke
Citizens Forum Closed

2. APPROVAL OF THE PRIOR MINUTES

- December 12, 2023 Regular Meeting Minutes

Motion T. Clark moved to approve the December 12, 2023 minutes as submitted. Seconded by: G. DeBoer. Vote: U/A

3. OLD BUSINESS

None

4. NEW BUSINESS

A. Election of Officers

At the first meeting of the year Chair and Vice Chair positions are voted on.
T. Clark nominated G. Cruikshank for Chair. Seconded by: E. Kaspari. Vote: U/A
F. Cullen nominated M. Speidel for Vice Chair. Seconded by T. Clark. Vote: 8 in favor, 1 abstain.

B. Consideration and acceptance of Transfer of Development Rights for Brian Slovenski, Assessor's Map L, Lot 111, zoned R-20, located at 306 Dover Point Road. (Proposal is to purchase two (2) additional living units, for a total of 6 living units, within three (3) buildings). *(TRAN-2023-0005)

The Chair announced the need to continue this item.

Motion: F. Cullen moved to continue the item to the January 23, 2024. Seconded by: J. Elliard. Vote: U/A.

DRAFT

C. Discussion of Impact Fees.

D. Benton explained that every 5 years or so the City has a consultant look at impact fee methodology. The previous consultant has retired so a different consultant was hired this year who had a different methodology. The findings still called for collecting impact fees and staff doesn't disagree with the study and findings but is still wrapping our heads around the impacts of altering the impact fees and the impact of changing impact fees. So staff will certainly keep all entities apprised of any updates but something for the Board to be aware of.

T. Clark noted the Board has heard from many that the fees are high and can be a barrier. We've seen projects such as Cataract (former McIntosh College) and 47 Chestnut get approved years ago but not break ground. Now would be a great time to pause, figure out fees, and see if there is an impact on housing costs.

D. Benton explained the new Housing Committee is meeting next Tuesday and may have some thoughts on this and we can discuss further at our next meeting.

Motion: G. DeBoer moved to continue the item to the January 23, 2024 meeting. T. Clark Seconded. Vote: U/A

D. Public Hearing of the draft FY25 CDBG Annual Action Plan. All persons wishing to speak on the Plan are urged to attend. *

Dave Carpenter, Community Development Planner provided an overview. D. Carpenter explained to the Board that Dover receives federal funds within the CDBG program which annually distributes funds to projects that achieve certain objectives the community is trying to achieve. The objectives/ goals are listed in the consolidated plan which is a five-year plan. Tonight's hearing fulfills the requirement to bring it before a public hearing before it is brought to a review board.

K. Pimental asked some clarifying questions regarding particular allotted funds. D. Carpenter clarified which funds he recommends are altered/ moved around within the report.

D. Carpenter explained how the program receives income and the process for reallocating funds.

Motion: T. Clark moved to accept the FY25 CDBG Annual Action Plan. E. Kaspari Seconded. Vote: U/A

Public hearing opened.
Jenny Shehann, CASA Program Director (Court Appointed Special Advocates) explained the program and its education and training programs for the volunteers who work the program.

Betsey Andrew Parker and Hope Akman, CAP explained their request for weatherization funds.

Julie Reynolds, CEO Cornerstone VNA explained what they do and who they serve.

Ryan Crosby, Executive Director Dover Housing Authority thanked the board and D. Carpenter for his advocacy and agrees the other three groups who have spoken are great resources and should be funded.

Heather Bloomingfeld, Executive Director Triangle Club explained the program and how the space is used to hold recovery meetings. She described the two projects on the property that they are requesting funds for.
Public Hearing closed.

D. Carpenter answered questions for board members.
To help answer questions of the board, Betsey Parker, CAP gave examples of how they use the funds.

Motion: T. Clark moved to forward to the Council the CDBG Annual Action Plan with the amendment that Housing Authority receive $5,000 in public facilities and $8,695 in economic development. Seconded by G. DeBoer. Vote: U/A

E. Discussion of Land Use Amendments/Goal Setting

D. Benton noted that each January staff begins a list of potential amendments either they have found or others including Board members have brought up for discussion. A list was passed out at the meeting and asked for initial thoughts on the list provided, if they were worth staff drafting the language for, or if there were any other requests they would like staff to work on.

The board discussed/ asked clarifying questions about the proposed changes listed and gave input for other topics to review.

5. STAFF COMMENTS

- TRCs since last meeting:
  - Major Subdivision for Diamond Capital, LLC, located at 42 Long Hill Road. (Proposal is for a 34 lot subdivision. Six (6) of the 34 units were previously approved via Transfer of Development Rights (4 at 1,400 sf and 2 at full TDR rate). A related Conditional Use Permit will also appear before the Planning Board)
  - Site Review for CESO (Owners: 914 Central Avenue, LLC), located at 914 Central Avenue. (Proposal is for Hang Ten Car Wash development that will consist of a 4,400-sf building, sixteen (16) vacuum spaces, and two (2) employee parking spaces.
- TRCs coming up:
  - CUPs for Eversource pole replacement
  - Chair will sign: Dover Point Rd. LLA, PCA CUP

6. MEMBER COMMENTS

- F. Cullen noted a couple of major developments that were approved have not started construction, yet other projects approved much more recently have made good progress.

7. ADJOURNMENT

Motion: G. DeBoer moved to adjourn at 8:44 pm. Seconded by E. Kaspari. Vote: U/A

CITY OF DOVER

PLANNING BOARD – IMPACT FEE MEMO

Meeting Date: January 23, 2024

To: Planning Board
From: Donna Benton, AICP
Cc: Staff
Date: January 18, 2024
Re: Impact Fee Discussion

INTENT:
This memo is to provide additional information on the Impact Fee Discussion and Public Hearing.

GOALS:
Provide background of the balancing development costs with impact fees and meeting state statute.

To help the Planning Board better understand the current scenario and what might be achieved with a change to the impact fee provisions, I wanted to pass along the following information.

Routinely, staff hears from the development community that fees are not absorbed in the price of the final rent or sales figure. For a single-family home, the current impact fee totals to approximately $8,900, a multi is $4,600 each and ADUs are $3,000. There are many other categories, but these are ones we see the most interest in.

Housing starts have dipped in the City over the past year. In fact we have over 1,200 units approved, but unbuilt out of just over 1,700 approved. This includes over 150 attainable units. One way to incentivize the creation of the units is through adjusting fees, so the thinking may be that if an approved unit has a building permit begin and is active for 6 months, the impact fee would be forgone.

This would allow staff to measure the true impact of impact fees. Similarly, staff would be able to monitor those units approved with this carve out and note if there is a reduction in rental rate or long-term cost since we have the added capacity having a grant funded Housing Navigator as part of the team. If there is a program in place for this purpose we could revisit it yearly and the Planning Board, which has sole jurisdiction over the application and rate of impact fees, can review and make new determinations as needed.

Staff would recommend that any collected fees continue to be in place and utilized as outlined within the Capital Improvements Program. Annually, planning and finance staff propose project allocations to ensure that there is proper accounting for the fees. What follows is a short breakdown of the past 5 years of each categories fees and how they have been allocated, for the City fees – Police, Fire and Recreation. The School Fees are all allocated towards Middle School and High School debt, though the high school may no longer qualify as enrollment of Dover students has trended down each of the past 5 years and the high school was not designed to add capacity.

Police:
FY19 Income $29,005
FY20 Income $55,309
FY21 Income $75,448
FY22 Income $48,823
FY23 Income $49,722
These funds went towards upgrades to the dispatch system and communication equipment upgrades (security cameras and relays). The recently adopted Capital Improvements Program recommended that future funds be used on the Communication equipment.

Fire:
FY19 Income $36,604
FY20 Income $59,220
FY21 Income $119,634
FY22 Income $98,083
FY23 Income $96,668

These funds were allocated towards building improvements at the three stations. The recently adopted Capital Improvements Program recommended that future funds be used on a potential traffic light at Glenwood and Sixth Street to reduce traffic conflict when apparatus leave the North End station during an emergency response.

Recreation:
FY19 Income $88,541
FY20 Income $152,594
FY21 Income $174,955
FY22 Income $145,170
FY23 Income $76,261
The funds were used for the expanded skate park, and towards Community Trail expansion and rehabilitation and expansion at Garrison Hill Tower.

All funds have been encumbered.

The recently adopted Capital Improvements Program recommended that future funds be used on the Community Trail.

Impact fees cannot be used for maintenance or for replacement of infrastructure, nor for studies or evaluations. They must be used for capital infrastructure where growth, because of development can be documented.

The Board had asked what other communities are charging for impact fees. Below is a table staff created from information available online (numbers are rounded for simplicity and not all categories have been included):

	Single Family	**Multi**	**ADU**
Amherst (2023)	$4.93/sf	$5.46/sf	N/A
Bedford (2022)	~$11,000	~$4,763	~$1,159
Chester (2016)	~$6,900	~$5,169	N/A but Apt in MU is $7,198
Dover	~$8,900	~$4,600	~$3,000
Lebanon (2021)	$3.24/sf	$2.79/sf	$2.79/sf
Nashua (2007)	$1/sf	$0.50/sf	$0.50/sf
Nottingham (2017)	~$5,365	~$3,280	~$1,030
Portsmouth	Considered in 2020 but didn't enact		
Rochester	Just created and redacted recently		

CITY OF DOVER

PLANNING BOARD – IMPACT FEE MEMO

Meeting Date: January 23, 2024

Since the City adopted Impact fees in 2003, it has retained a consultant every five years or so, to review our Impact Fee ordinance, methodology, expenses, and items paid for by impact fees. The first three reviews were completed by the consultant who worked on the initial methodology, enabling legislation and understanding of the fees. This consultant was widely viewed as the expert in the State of NH on Impact Fees, until he retired. As a result of his retirement, in 2023 the City contracted with a different consultant who uses a different methodology. The consultant provided a draft report to staff in late December 2023. Included in this draft are recommendations on the various fees, including which should be collected and at what rate the impact fees should be. Due to the change in methodology, staff is analyzing the recommendations, researching the findings, and talking with other communities to better understand the implications of the new methodology.

While this analysis is underway, staff believes there is value in pausing the impact fee collection for 3 main reasons:

- It will provide data about the impact the fees have on pricing of housing.
- It will incentivize commencement of construct on recently approved projects.
- Staff will have time to review and understand the new methodology and provide time for Dover to see how other communities around the state alter their impact fee ordinances, if at all, or have other findings from other consultants.

Finally, attached to this memo is the summary of the current impact fees and the minutes from the latest Ad-Hoc Housing Committee meeting where they discussed impact fees as they relate to housing affordability and building of approved units.

CITY OF DOVER

AD-HOC COMMITTEE TO ADDRESS COMMUNITY HOUSING NEEDS – DRAFT MINUTES

Meeting Type:	Regular Meeting
Meeting Location:	City Hall, Council Conference Room
Meeting Date:	Tuesday, January 16, 2024
Meeting Time:	5:00 p.m.

Regular Members: 9
Mayor Robert Carrier, City Council, Chair
George DeBoer, Planning Board
Ryan Crosby, Dover Housing Authority
Betsey Andrews Parker, CAPSC, Vice-Chair
Robert Baldwin
Mark O'Dell
Dorothy Wagner
Ernie Clark
Krysta Gingue

Alternate Members: 3
Mark Speidel, Planning Board
Pam Lessard, Secretary
Leslie Michaud

1. CALL TO ORDER AND ROLL CALL

Mayor Carrier called the meeting to order at 5pm.

2. ROLL CALL

Ryan Pope conducted roll call:
Absent: Betsey Andrews Parker, Mark O'Dell, Pam Lessard, Mark Speidel, & Leslie Michaud
Additional Attendees: Staff Liaison – Housing Navigator Ryan Pope

3. CITIZEN'S FORUM

Mayor Carrier opened the Citizen's Forum. Citizen's Forum closed with no public comment.

4. APPROVAL OF REGULAR MEETING MINUTES OF DECEMBER 19, 2023

Motion by Dorothy Wagner to accept meeting minutes as presented. Second by Krysta Gingue. 7-0 motion passed.

5. HOUSING NAVIGATOR UPDATES & ANNOUNCEMENTS

Ryan Pope reported that the City's Land Use Board Meet & Greet held on January 9th included a presentation highlighting Dover's current Housing needs and the Committee's work to address them. The Committee was also informed of the progress made in identifying a contractor to assist with the completion of the Regulatory Audit and Development work outlined in the Housing Opportunity Planning (HOP) grant awarded to the City from the InvestNH program. The City received three bids and is in the process of finalizing the selection process. It is anticipated that the contractor will provide much of the technical assistance required to assist the Committee in the review and revision of ordinances and procedures to better support diverse housing options. Ryan also shared that he was interviewed for last week's Dover Download Podcast to speak to the City's housing efforts.

6. IMPACT FEE DISCUSSION – BY REQUEST OF THE PLANNING BOARD

George DeBoer shared that the Planning Board is in the process of reviewing the City's Impact Fees following a recently conducted analysis currently under review by City Staff. At their meeting on January 9th, the Planning Board requested that the Housing Needs Committee discuss the issue to provide some insight and help inform the review process.

DRAFT

The Committee briefly discussed the City's current Impact Fee methodology in comparison to neighboring communities. Ryan Crosby spoke to the Housing Authority's efforts to expand attainable housing options, indicating that a waiver or moratorium of Impact Fee collection would have a positive impact on encouraging new development, especially in light of recent increases to other development costs like insurance and materials. Rob Baldwin spoke to the relationship between development costs and the rent or sales price required to recoup them, especially for projects with measures of attainability. He also raised questions regarding the current fee structure's variability by architectural type as opposed to square footage or bedroom count.

The Committee discussed the means by which the City currently collects, accounts for, and expends Impact Fees in accordance with provisions of the State's Land Use Regulations governing them. The group agreed that additional information, including the most recent Impact Fee accounting report created by Finance, would be helpful to fully understand the manner in which these fees are leveraged.

The Committee discussed a number of projects that have been approved by the Planning Board over the past several years that have yet to begin construction, and the need to better comprehend the reasons for a lack of progress. Rob Baldwin cited significant cost increases over the past few years as a major contributor, and recommended that the Committee also consider looking into recently adopted surety requirements as a potential barrier to new development. The group agreed that there should be targeted outreach to the local developer community to better understand development barriers and costs to inform the solutions within Committee's report to Council. Krysta Gingue raised a concern about transportation infrastructure and the potential of leveraging these fees to help offset the cost of busses and new stops, a solution that, while appearing incongruous with the statutes governing impact fees, was worth exploring by other means. This segued into a conversation about the need to balance proposed solutions with what is allowable by statute coupled with targeted community engagement to land owners, developers, pertinent city staff, and other stakeholders.

7. GOAL SETTING & WORK GROUP DISCUSSION

Krysta Gingue facilitated the discussion, beginning with a review of the Housing Needs Survey analysis she conducted using ChatGPT, focusing on five proposed areas of focus that could become working groups of the Committee. After some discussion the Committee identified three primary focus areas and work groups:

- ***Community Engagement, Partnerships & Collaboration***
- ***Zoning Regulation & Financial Incentives***
- ***Affordable & Inclusive Housing Models***

The Committee agreed to spend some time prior to the February meeting identifying their preferred work group/area of focus, potential gaps that are missing from the survey results (Krysta mentioned addressing homelessness as a potential example of such a gap), and give some thought to the appearance and makeup of the Committee's report to Council.

8. ADJOURN

Motion to adjourn by Ryan Crosby, seconded by Krysta Gingue. Vote 7-0.

CITY OF DOVER

DOVER PLANNING BOARD

Meeting Type:	Regular Meeting
Meeting Location:	Council Chambers, City Hall, 288 Central Avenue, Dover, NH 03820
Meeting Date:	**Tuesday, January 23, 2024**
Meeting Time:	**7:00 pm**

3. OLD BUSINESS

A. Discussion of Impact Fees.*

Impact Fees- 22.pdf (nh.gov)

CITY OF DOVER

PLANNING BOARD - STAFF MEMO FILE # WAIV-2023-0013

Application Type:	Extension Request
Applicant(s):	VC Dover Investment, LLC
Owner(s):	VC Dover Investment, LLC
Location:	30 Grapevine (Assessor's Map H, Lot 4-3-2)
Meeting Date:	January 23, 2024

INTENT: The Board previously approved a Conditional Use Permit and Site Plan to construct a 4-story mixed-use building, consisting of forty-nine (49) apartment units, 4,030 sq. ft. fitness area, and a 1,320 sq. ft. coffee shop. Some of the conditions of approval require approval by different state entities and therefore the applicant needs additional time to meet the conditions. The applicant is requesting an extension to meet the conditions of approval.

UNITS PROPOSED: Mixed Use

AGENDA ITEM #: 4-A

ACREAGE:
Site: 10.848± ac. / 472,539± sq. ft.
Parent: 21.19± ac. / 923,185± sq. ft.

ZONING DISTRICT: Commercial, RCM (Original parcel) Secondary Groundwater Protection District

EXISTING USE: Mixed Use: Grocery Store, Age-Restricted Housing

PROPOSED USE: Addition of Mixed-use building to include residential, fitness facility, and coffee shop

SURROUNDING USES:
Commercial/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 for this meeting.

PERMITS REQUIRED:
CUP, AOT, NHDOT Driveway Permit, NHDES Sewer Connection Permit

WAIVERS REQUIRED:
Parking lot location and paper plan size.

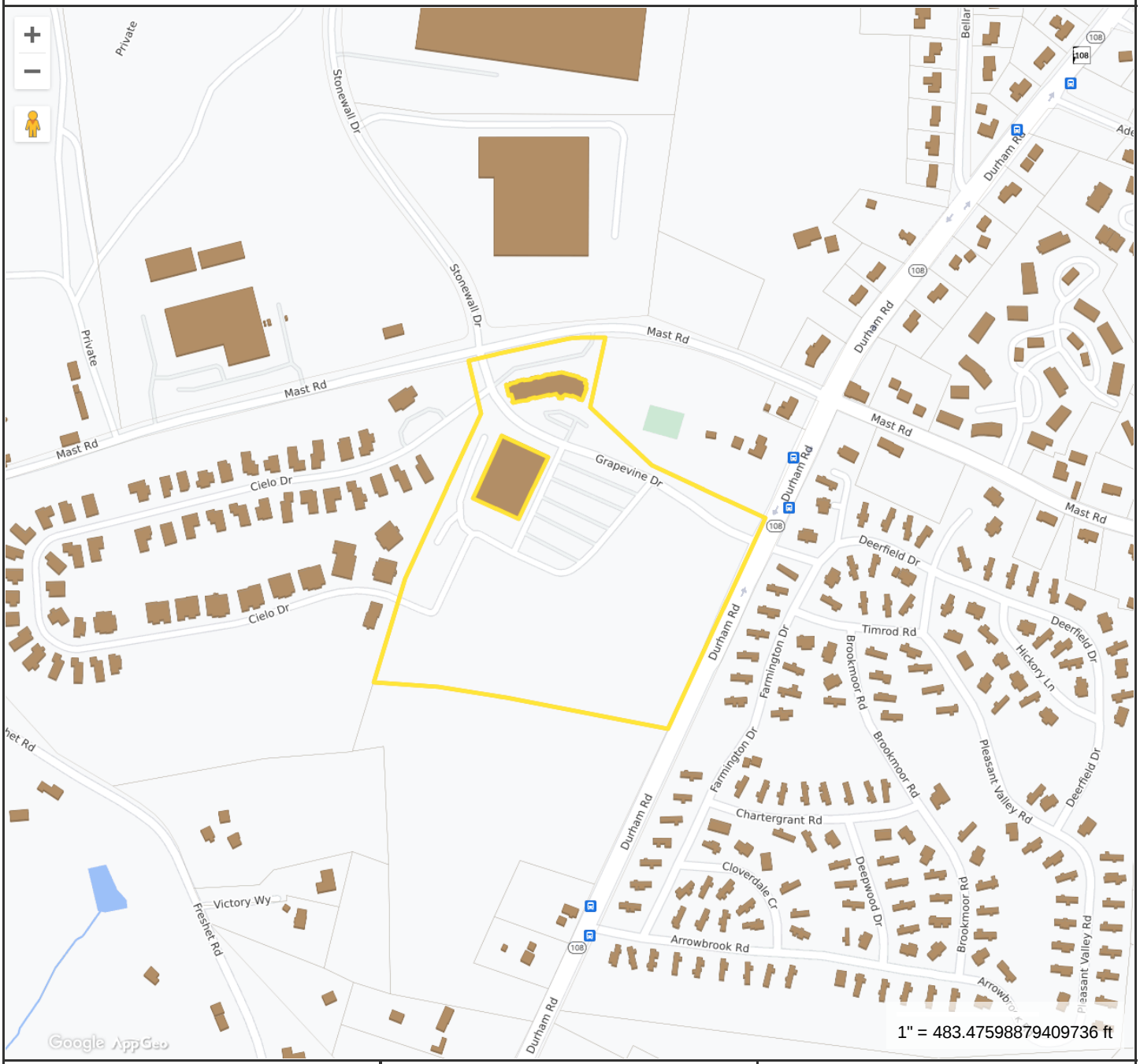
Summary of Request and Background
Chapter 153 allows the Planning Director to extend the 90 days that is typically required for the applicant to submit revised plans and meet the conditions of approval that the Board sets when conditionally approving requests. Any further extension request, must be granted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

The applicant is now requesting additional time to meet the conditions of approval for both the previously conditionally approved site plan. The applicant has been in communication with NHDOT about their driveway permit.

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 some of the conditions of approval require approval from state entities which takes significant time which is beyond the control of the applicant, therefore staff recommends the Board grant the extension to July 31, 2024.

STAFF RECOMMENDATION:
The Planning Department recommends the Planning Board vote to grant the Extension Request for the Site Plan (SITE-2022-0017) with the same conditions of approval as outlined in the original Notice of Decision.

WAIV-2023-0013 30 GRAPEVINE DRIVE



Property Information

Property ID	H0004-003000
Location	GRAPEVINE DR/250 MAST RD
Owner	DOVER FIELDS CONDOMINIUM
Land Use	
Zoning Code	C*

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-2023-0013
FOR CITY OF DOVER, N.H.

Plan Type:	Waiver / Extension / Amendment	**Project:**		**App Date:**	12/12/2023
Work Class:	Plan	**District:**	None	**Exp Date:**	02/15/2024
Status:	In Review	**Square Feet:**	0.00	**Completed:**	NOT COMPLETED
Valuation:	$0.00	**Assigned To:**	Blonigen, Rachel	**Approval Expire Date:**	

Description: Planning Board Extension for Conditions of Approval for P22-72/SITE-2022-0017/CUP COND-2022-0031

Parcel:	H0004-003000 Main	**Address:**	30 Grapevine Dr Main Dover, NH	**Zone:**

Engineer	Owner	Applicant	Owner
Jim Robinson	Dylan Cruess	Jonathan Devine	Alex Vailas
48 Constitution Drive	Home: (603) 472-4488	48 Constitution Dr	Home: (603) 472-4488
Bedford, NH 03110		Bedford, NH 03110	
Business: (603) 472-4488		Business: (603) 472-4488	

Plan Custom Fields

Project Location	30 GRAPEVINE DR, Dover NH	Waiver Request Type	Extension	Project Name	Dover Investments, LLC
Owner Phone	603-472-4488	Owner Name	Dover Investments, LLC c/o Alex Vailas	Original Plan Approval Date	Jun 28 2023 12:00AM
Owner Address	48 Constitution Drive, Bedford, NH 03110	Owner EMail	alexvailasllc@aol.com	Original Plan End Date	Sep 26 2023 12:00AM
Plan ID Number	H0004-003000	Plan Type	Site Plan	# Extensions Previously Granted	1
Current Plan End Date	Dec 26 2023 12:00AM	Extension Type Requested	Sec. 153-9.B	Extension Request Detail	The project does not yet have the NH DOT Driveway Permit and the NH DES Sewer Connection Permit in hand. Those permit numbers are a condition of approval.
Condition / Portion of Plan to be Amended	n/a	Amendment Request Detail	n/a	Site / Subdivision Portion of Plan to be Waived	n/a
Waiver Request Detail	n/a				

Attachment File Name	Added On	Added By	Attachment Group	Notes
Signature_Jonathan_Devine_12/12/2023.jpg	12/12/2023 14:10	Devine, Jonathan		Uploaded via CSS

Invoice No.	Fee	Fee Amount	Amount Paid
INV-00006157	Planning Waiver / Extension /Amend Application Fee	$200.00	$200.00
	Total for Invoice INV-00006157	$200.00	$200.00
	Grand Total for Plan	**$200.00**	**$200.00**

Workflow Step / Action Name	Action Type	Start Date	End Date
Review v.1		12/29/2023 13:36	12/29/2023 13:37
Confirm application complete v.1	Generic Action		12/29/2023 13:37
Technical Review Committee Meeting Agenda v.1	Task		12/29/2023 13:36
Land Use Plan Technical Review v.1	Receive Submittal		12/29/2023 13:36
Technical Review Committee Meeting v.1	Hold Meeting		12/29/2023 13:37
Planning Board v.1		12/29/2023 13:37	
Planning Board Agenda v.1	Task	12/29/2023 13:37	
Invoice for Notices v.1	Task		

Send Notices v.1	Task
Planner Creates Staff Recommendations v.1	Plan Activity
Distribute Planning Board Materials v.1	Task
Planning Board Hearing v.1	Hold Hearing
Planning Board Decision v.1	Plan Activity
NOD Sent to Applicant v.1	Create Report
Final Plan v.1	
Land Use Plan Stamped and Signed v.1	Generic Action
Recording v.1	Task
Document Archival v.1	Generic Action
Property Info Group v.1	Generic Action
Building Official Notifies Address v.1	Generic Action
Pre-Con Meeting v.1	Hold Meeting
Create/Link to Records v.1	
Create / Link to Permit - Building Major v.1	Create Sub Permit
Create / Link to Permit - Site Work, Construction v.1	Create Sub Permit

CITY OF DOVER, NEW HAMPSHIRE
PLANNING APPLICATION OWNER AUTHORIZATION

OWNER AUTHORIZATION

I/We hereby submit this application to the City of Dover / 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.

Property Owner Name: VC Dover Investments LLC

Signature(s) of Property Owner(s): _____ Date: 2023-12-08

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

AUTHORIZATION TO ENTER SUBJECT PROPERTY

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..

Property Owner Name: VC Dover Investments LLC

Signature(s) of Property Owner(s): _____ Date: 2023-12-08

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

IF SIGN PERMIT, SIGN PERMIT APPLICATION INFORMATION

If the sign permit applicant is not the property owner, this form must be completed and included as part of application submission.

I have read this application and state that, to the best of my knowledge, the information provided is true and that the proposed sign(s) will comply with all applicable regulations in Section 170-32 of the Zoning Ordinance of the City of Dover and shall conform to the submitted materials and designs. Furthermore, after 90 days, any application still waiting information will be denied.

Address of Sign Location: _____

Sign Permit Application Type:
(check one)

- ☐ Permanent Sign
- ☐ Temporary Sign
- ☐ Community Sign

WAIV-2023-0013 **30 GRAPEVINE DRIVE**

Property ID	Location	Owner 1	Owner 2	Owner Address 1	City	State	Zip	State Class
	275 DURHAM RD	CITY OF DOVER		288 CENTRAL AVENUE	DOVER	NH	03820	
	CIELO DR	HERON BAY PARTNERS LLC		242 CENTRAL AV	DOVER	NH	03820	
	1 CIELO DR	HERON BAY PARTNERS LLC		242 CENTRAL AV	DOVER	NH	03820	
	2 CIELO DR	KOTLUS ANNE		2 CIELO DR	DOVER	NH	03820	
	4 CIELO DR	COMEAU ESTHER M TRUSTEE	COMEAU ESTHER M TRUST	4 CIELO DR	DOVER	NH	03820	
	6 CIELO DR	EDWARDS JUDITH A TRUSTEE	EDWARDS JUDITH A REVOCABLE TRUST	6 CIELO DR	DOVER	NH	03820	
	70 CIELO DR	VASSALLO DIANE		70 CIELO DR	DOVER	NH	03820	
	72 CIELO DR	BOOTHBY L.A & HEDBERG P.M & HALL M.C TTS	BOOTHBY LOUISE ANNE TRUST 2023	72 CIELO DRIVE	DOVER	NH	03820	
	74 CIELO DR	LINDSAY TIMOTHY & CHERYL TRUSTEES	LINDSAY TIMOTHY AND CHERYL REVOCABLE TRU	4 BAYVIEW RD	DOVER	NH	03820	
	76 CIELO DR	LARSON ROLAND E		76 CIELO DR	DOVER	NH	03820	
	78 CIELO DR	MENEZ JOAN E TRUSTEE	JOAN E MENEZ IRREVOCABLE TRUST	78 CIELO DR	DOVER	NH	03820	
	80 CIELO DR	HERON BAY PARTNERS LLC		242 CENTRAL AV	DOVER	NH	03820	
	81 CIELO DR	HERON BAY PARTNERS LLC		242 CENTRAL AV	DOVER	NH	03820	
	82 CIELO DR	MERRILL LISSA A		82 CIELO DR	DOVER	NH	03820	
	83 CIELO DR	HERON BAY PARTNERS LLC		242 CENTRAL AV	DOVER	NH	03820	
	85 CIELO DR	HERON BAY PARTNERS LLC		242 CENTRAL AV	DOVER	NH	03820	
	87 CIELO DR	HERON BAY PARTNERS LLC		242 CENTRAL AV	DOVER	NH	03820	
	217 DURHAM RD	TORR SCOTT A & RENEE L TRUSTEES	TORR SCOTT AND RENNE REVOCABLE LIVING TR	217 DURHAM RD	DOVER	NH	03820	
	30 GRAPEVINE DR	VC DOVER INVESTMENTS LLC		48 CONSTITUTION DR	BEDFORD	NH	03110	
	250 MAST RD	HINEC DOVER LLC		264 US RTE 1 BUILDING 300 STE 2A	SCARBOROUGH	ME	04074	
	250 MAST RD	HINEC DOVER LLC		264 US RTE 1 BUILDING 300 STE 2A	SCARBOROUGH	ME	04074	
	250 MAST RD	HINEC DOVER LLC		264 US RTE 1 BUILDING 300 STE 2A	SCARBOROUGH	ME	04074	
	MAST RD	TORR SCOTT A & RENEE L TTS	TORR SCOTT A & RENEE L REV LIV TRUST	217 DURHAM RD	DOVER	NH	03820	
	15 STONEWALL DR	MAST ROAD DOVER LLC	C/O RAND-WHITNEY CONTAINER LLC	207 GREENWOOD ST	WORCESTER	MA	01607	
	271 275 MAST RD	CITY OF DOVER		288 CENTRAL AVE	DOVER	NH	03820	
	273 MAST RD	OMNIPOINT HOLDINGS INC	ATTN PROPERTY MANAGEMENT	4 SYLVAN WAY	PARSIPPANY	NJ	07054	
	13 BROOKMOOR RD	SUN JENSEN LLC		27777 FRANKLIN RD #200	SOUTHFIELD	MI	48034	
	GRAPEVINE DR/250 MAST RD	DOVER FIELDS CONDOMINIUM	C/O VC DOVER INVESTMENTS LLC	48 CONSTITUTION DR	BEDFORD	NH	03110	
		TF MORAN	JIM ROBINSON	48 CONSTITUTION DR	BEDFORD	NH		3110

GENERAL INFORMATION

OWNER/APPLICANT
MAP H LOT 4-3
VC DOVER INVESTMENTS, LLC
48 CONSTITUTION DRIVE
BEDFORD, NH 03110
SCRD BK.#3496 PG.#733

RESOURCE LIST
PLANNING M DEPARTMENT
288 CENTRAL AVENUE
DOVER, NH 03820
603-516-6008
DONNA BENTON, PLANNING DIRECTOR

BUILDING DEPARTMENT
262 SIXTH STREET
DOVER, NH 03820
603-516-6038
JAMES MAXFIELD, BUILDING OFFICIAL

PUBLIC WORKS
271 MAST ROAD
DOVER, NH 03820
603-516-6450
JOHN STORER, COMMUNITY SERVICES DIRECTOR

POLICE DEPARTMENT
46 CHESTNUT STREET
DOVER, NH 03820
603-742-4646
WILLIAM BREAULT, POLICE CHIEF

FIRE DEPARTMENT
262 SIXTH STREET
DOVER, NH 03820
603-516-6148
MICHAEL McSHANE, FIRE CHIEF

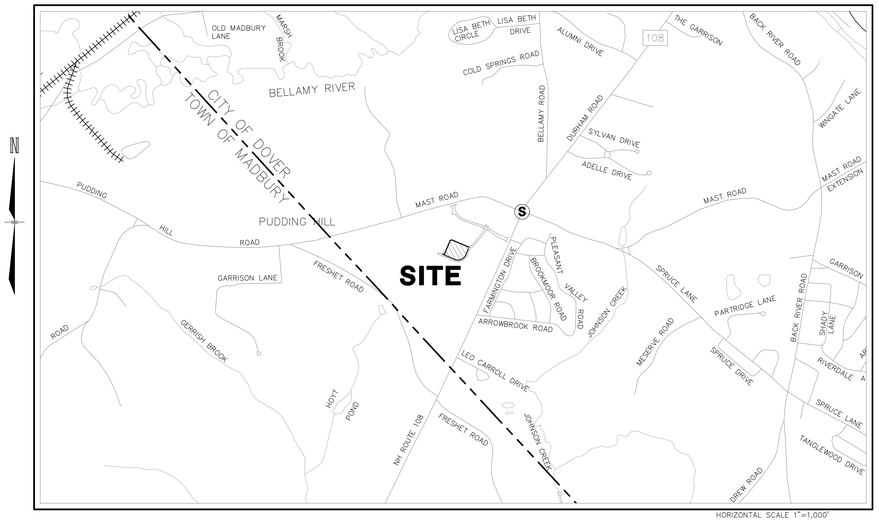
DIRECT ABUTTERS
MAP H LOT 2
N/F
CITY OF DOVER
288 CENTRAL AVENUE
DOVER, NH 03820
SCRD BK.#1966 PG.#647

MAP H LOT 4-1
N/F
TORR SCOTT AND RENNE
REVOCABLE LIVING TRUST
217 DURHAM ROAD
DOVER NH 03820
SCRD BK.#4928 PG.#824

MAP H LOT 4
N/F
HERON BAY PARTNERS, LLC
242 CENTRAL AVENUE
DOVER, NH 03820
SCRD BK.#3561 PG.#656

MIXED USE DEVELOPMENT
RESIDENTIAL PHASE
DOVER FIELDS

TAX MAP H, LOT 4-3
NH ROUTE 108 AND MAST ROAD
DOVER, NEW HAMPSHIRE
OCTOBER 18, 2022



HORIZONTAL SCALE 1"=1,000'
1,000 500 0 1,000

VICINITY PLAN

INDEX OF SHEETS

SHEET	SHEET TITLE
1	COVER
2	OVERALL SITE PLAN – PHASE 4C
3	EXISTING CONDITIONS PLAN
4	DEMOLITION AND EROSION CONTROL PLAN – PHASE 4C
5	SITE LAYOUT PLAN – PHASE 4C
6	GRADING AND DRAINAGE PLAN – PHASE 4C
7	UTILITY PLAN – PHASE 4C
8	LANDSCAPE PLAN – PHASE 4C
9	PHOTOMETRIC PLAN
10-11	DRAINAGE/SEWER PLANS & PROFILES – PHASE 4C
12-16	DETAILS
REFERENCE PLANS BY ASSOCIATED PROFESSIONALS	
17	WEST RENDERING
18	FIRST FLOOR PLAN
19	SECOND FLOOR PLAN
20	THIRD FLOOR PLAN
21	FOURTH FLOOR PLAN
22	WEST & NORTH ELEVATIONS
23	EAST & SOUTH ELEVATIONS

PERMITS/APPROVALS

	NUMBER	APPROVED	EXPIRES
DOVER PLANNING BOARD SITE PLAN REVIEW APPROVAL	–	–	–
DOVER CONDITIONAL USE PERMIT	–	–	–
NHDES AOT PERMIT	–	–	–
NHDES SEWER CONNECTION PERMIT	–	–	–
NHDES SUBSURFACE SYSTEMS ISDS APPROVAL	–	–	–
NHDES WETLAND PERMIT	–	–	–
NHDES SHORELAND PERMIT	–	–	–
NHDES OIL REMEDIATION & COMPLIANCE AST PERMIT	–	–	–
NHDOT DRIVEWAY	–	–	–
EPA NPDES ENOI CGP & SWPPP	–	–	–

Copyright 2022 ©TFMoran, Inc.
48 Constitution Drive, Bedford, N.H. 03110

All rights reserved. These plans and materials may not be copied, duplicated, replicated or otherwise reproduced in any form whatsoever without the prior written permission of TFMoran, Inc.

This plan is not effective unless signed by a duly authorized officer of TFMoran, Inc.

DIG SAFE
MA ME NH RI VT
CALL TOLL FREE DIG-SAFE TOLL FREE
UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM
CONTACT DIG SAFE 72 HOURS PRIOR TO CONSTRUCTION

2" X 2" DOVER SQUARE

STATE OF NEW HAMPSHIRE
JAMES M. KOSHEWOR
No. 10414
REGISTERED PROFESSIONAL ENGINEER
10-18-22

OWNER'S SIGNATURE
OWNER DATE

3	2/28/2023	REV. PER TRC COMMENTS	JD	JMR
2	1/31/2023	REV. PER TRC COMMENTS	JD	JMR
1	12/2/2022	REV. PER TRC COMMENTS	SRP	JMR
REV.	DATE	DESCRIPTION	DR	CK

TAX MAP H LOT 4-3
COVER SHEET
MIXED USE DEVELOPMENT
NH ROUTE 108 AND MAST ROAD
DOVER, NEW HAMPSHIRE

OWNER OF RECORD AND *APPLICANT/DEVELOPER*
VC DOVER INVESTMENTS, LLC
48 CONSTITUTION DRIVE
BEDFORD, NH 03110

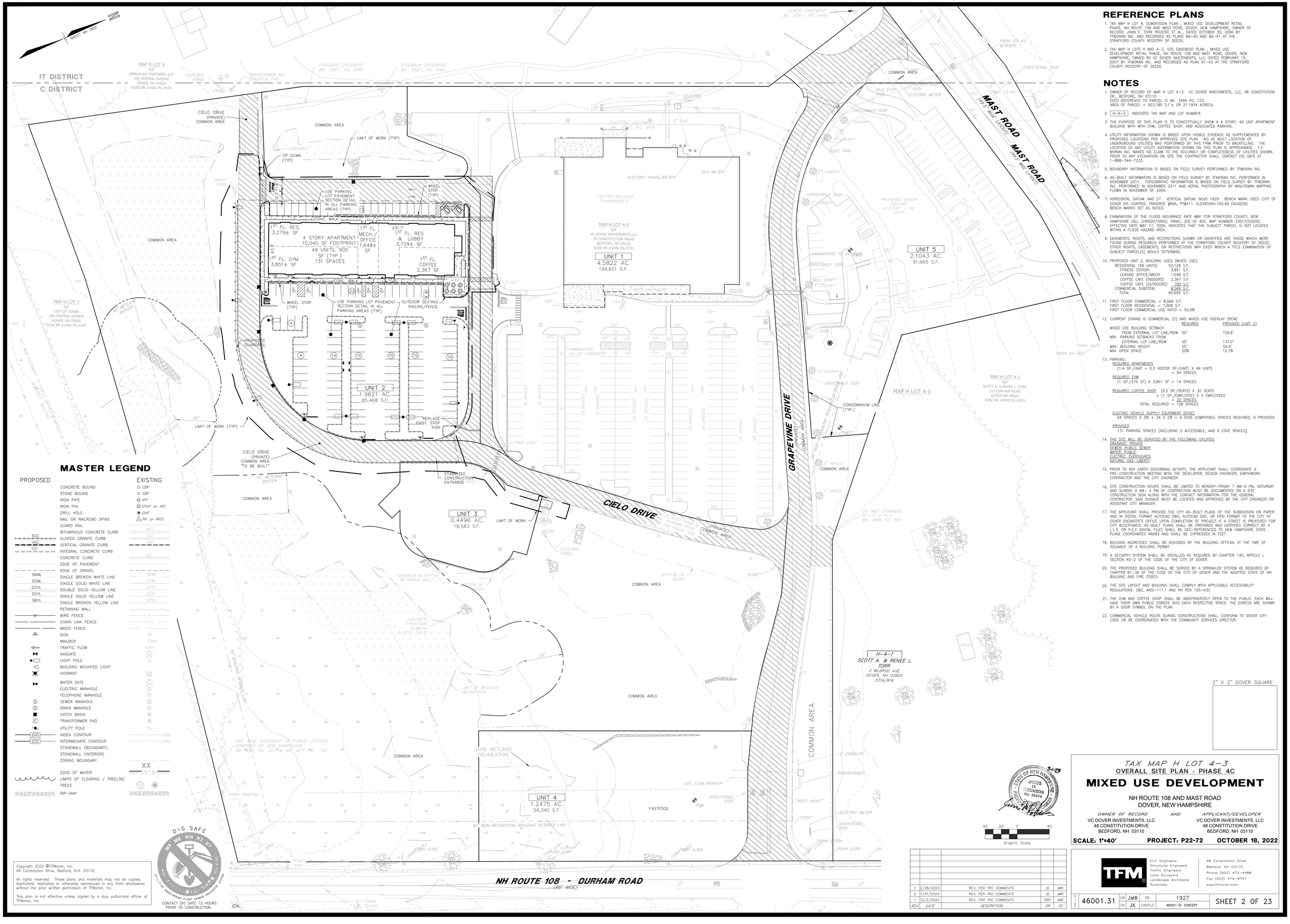
VC DOVER INVESTMENTS, LLC
48 CONSTITUTION DRIVE
BEDFORD, NH 03110

SCALE: AS SHOWN **PROJECT: P22-72** **OCTOBER 18, 2022**

TFM
Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

48 Constitution Drive
Bedford, NH 03110
Phone (603) 472-4488
Fax (603) 472-9747
www.tfmoran.com

FILE	DR	CK	FB	CADFILE	
46001.31	JMR	JK	1927	46001-31 CONCEPT	SHEET 1 OF 23



REFERENCE PLANS

1. TAX MAP H LOT 4, SUBDIVISION PLAN , MIXED USE DEVELOPMENT RETAIL PHASE, NH ROUTE 108 AND MAST ROAD, DOVER, NEW HAMPSHIRE, OWNER OF RECORD: JOHN F. TORR TRUSTEE ET AL., DATED OCTOBER 30, 2006 BY TFMORAN INC. AND RECORDED AS PLANS 89–40 AND 89–41 AT THE STRAFFORD COUNTY REGISTRY OF DEEDS.
2. TAX MAP H LOTS 4 AND 4–3, SITE EASEMENT PLAN , MIXED USE DEVELOPMENT RETAIL PHASE, NH ROUTE 108 AND MAST ROAD, DOVER, NEW HAMPSHIRE, OWNED BY VC DOVER INVESTMENTS, LLC, DATED FEBRUARY 15, 2007 BY TFMORAN INC. AND RECORDED AS PLAN 91–43 AT THE STRAFFORD COUNTY REGISTRY OF DEEDS.

NOTES

1. OWNER OF RECORD OF MAP H LOT 4–3: VC DOVER INVESTMENTS, LLC, 48 CONSTITUTION DR., BEDFORD, NH 03110
   DEED REFERENCE TO PARCEL IS BK. 3496 PG. 733.
   AREA OF PARCEL = 923,185 S.F.± OR 21.1934 ACRES±
2. H–4–3 INDICATES TAX MAP AND LOT NUMBER.
3. THE PURPOSE OF THIS PLAN IS TO CONCEPTUALLY SHOW A 4 STORY, 49 UNIT APARTMENT BUILDING WITH WITH GYM, COFFEE SHOP, AND ASSOCIATED PARKING.
4. UTILITY INFORMATION SHOWN IS BASED UPON VISIBLE EVIDENCE AS SUPPLEMENTED BY PROPOSED LOCATIONS PER APPROVED SITE PLAN. NO AS BUILT LOCATION OF UNDERGROUND UTILITIES WAS PERFORMED BY THIS FIRM PRIOR TO BACKFILLING. THE LOCATION OF ANY UTILITY INFORMATION SHOWN ON THIS PLAN IS APPROXIMATE. T.F. MORAN INC. MAKES NO CLAIM TO THE ACCURACY OR COMPLETENESS OF UTILITIES SHOWN. PRIOR TO ANY EXCAVATION ON SITE THE CONTRACTOR SHALL CONTACT DIG SAFE AT 1–888–344–7233.
5. BOUNDARY INFORMATION IS BASED ON FIELD SURVEY PERFORMED BY TFMORAN INC.
6. AS–BUILT INFORMATION IS BASED ON FIELD SURVEY BY TFMORAN INC. PERFORMED IN NOVEMBER 2011. TOPOGRAPHIC INFORMATION IS BASED ON FIELD SURVEY BY TFMORAN INC. PERFORMED IN NOVEMBER 2011 AND AERIAL PHOTOGRAPHY BY MINUTEMAN MAPPING FLOWN IN NOVEMBER OF 2004.
7. HORIZONTAL DATUM: NAD 27. VERTICAL DATUM: NGVD 1929. BENCH MARK USED: CITY OF DOVER GIS CONTROL TRAVERSE #69A, PT#411. ELEVATION=100.46 (NGVD29). BENCH MARKS SET AS NOTED.
8. EXAMINATION OF THE FLOOD INSURANCE RATE MAP FOR STRAFFORD COUNTY, NEW HAMPSHIRE (ALL JURISDICTIONS), PANEL 320 OF 405, MAP NUMBER 33017C0320D, EFFECTIVE DATE MAY 17, 2005, INDICATES THAT THE SUBJECT PARCEL IS NOT LOCATED WITHIN A FLOOD HAZARD AREA.
9. EASEMENTS, RIGHTS, AND RESTRICTIONS SHOWN OR IDENTIFIED ARE THOSE WHICH WERE FOUND DURING RESEARCH PERFORMED AT THE STRAFFORD COUNTY REGISTRY OF DEEDS. OTHER RIGHTS, EASEMENTS, OR RESTRICTIONS MAY EXIST WHICH A TITLE EXAMINATION OF SUBJECT PARCEL(S) WOULD DETERMINE.
10. PROPOSED UNIT 2, BUILDING USES (MIXED USE):

RESIDENTIAL (49 UNITS)	52,128 S.F.
FITNESS CENTER:	3,851 S.F.
LEASING OFFICE/MECH	1,648 S.F.
COFFEE CAFE (INDOORS)	2,367 S.F.
COFFEE CAFE (OUTDOORS)	700 S.F.
COMMERCIAL SUBTOTAL	8,566 S.F.
TOTAL	60,694 S.F.

11. FIRST FLOOR COMMERCIAL = 8,566 S.F.
    FIRST FLOOR RESIDENTIAL = 7,008 S.F.
    FIRST FLOOR COMMERCIAL USE RATIO = 55.0%
12. CURRENT ZONING IS COMMERCIAL (C) AND MIXED USE OVERLAY (RCM)

	REQUIRED	PROVIDED (UNIT 2)
MIXED USE BUILDING SETBACK FROM EXTERNAL LOT LINE/ROW	50'	159.8'
MIN. PARKING SETBACKS FROM EXTERNAL LOT LINE/ROW	50'	137.0'
MAX. BUILDING HEIGHT	55'	54.9'
MIN. OPEN SPACE	20%	12.1%

13. PARKING:
    REQUIRED APARTMENTS
    (1.4 SP./UNIT + 0.5 VISITOR SP./UNIT) X 49 UNITS = 94 SPACES
    REQUIRED GYM
    (1 SP./275 SF) X 3,851 SF = 14 SPACES
    REQUIRED COFFEE SHOP (0.5 SP./SEATS) X 30 SEATS + (1 SP./EMPLOYEE) X 5 EMPLOYEES = 20 SPACES
    TOTAL REQUIRED = 128 SPACES
    ELECTRIC VEHICLE SUPPLY EQUIPMENT (EVSE)
    94 SPACES X 5% + 34 X 2% = 6 EVSE COMPATIBLE SPACES REQUIRED, 6 PROVIDED
    PROVIDED
    131 PARKING SPACES (INCLUDING 5 ACCESSIBLE, AND 6 ESVE SPACES)
14. THE SITE WILL BE SERVICED BY THE FOLLOWING UTILITIES:
    DRAINAGE: PRIVATE
    SEWER: PUBLIC SEWER
    WATER: PUBLIC
    ELECTRIC: EVERSOURCE
    NATURAL GAS: LIBERTY
15. PRIOR TO ANY EARTH DISTURBING ACTIVITY, THE APPLICANT SHALL COORDINATE A PRE–CONSTRUCTION MEETING WITH THE DEVELOPER, DESIGN ENGINEER, EARTHWORK CONTRACTOR AND THE CITY ENGINEER.
16. SITE CONSTRUCTION HOURS SHALL BE LIMITED TO MONDAY–FRIDAY 7 AM–6 PM, SATURDAY AND SUNDAY 9 AM– 4 PM OF CONTRACTION MUST BE DOCUMENTED ON A SITE CONSTRUCTION SIGN ALONG WITH THE CONTACT INFORMATION FOR THE GENERAL CONTRACTOR. SAID SIGNAGE MUST BE LOCATED AND APPROVED BY THE CITY ENGINEER OR ASSISTANT CITY MANAGER.
17. THE APPLICANT SHALL PROVIDE THE CITY AS–BUILT PLANS OF THE SUBDIVISION ON PAPER AND IN DIGITAL FORMAT AUTOCAD DWG, AUTOCAD DXF, OR ERSI FORMAT TO THE CITY OF DOVER ENGINEER'S OFFICE UPON COMPLETION OF PROJECT IF A STREET IS PROPOSED FOR CITY ACCEPTANCE. AS–BUILT PLANS SHALL BE PREPARED AND CERTIFIED CORRECT BY A L.L.S. OR P.E.E DIGITAL FILES SHALL BE GEO–REFERENCED TO NEW HAMPSHIRE STATE PLANE COORDINATES NAD83 AND SHALL BE EXPRESSED IN FEET.
18. BUILDING ADDRESSES SHALL BE ASSIGNED BY THE BUILDING OFFICIAL AT THE TIME OF ISSUANCE OF A BUILDING PERMIT.
19. A SECURITY SYSTEM SHALL BE INSTALLED AS REQUIRED BY CHAPTER 145, ARTICLE I, SECTION 45–2 OF THE CODE OF THE CITY OF DOVER.
20. THE PROPOSED BUILDING SHALL BE SERVED BY A SPRINKLER SYSTEM AS REQUIRED BY CHAPTER 81–30 OF THE CODE OF THE CITY OF DOVER AND THE ADOPTED STATE OF NH BUILDING AND FIRE CODES.
20. THE SITE LAYOUT AND BUILDING SHALL COMPLY WITH APPLICABLE ACCESSIBILITY REGULATIONS. (IBC, ANSI–117.1 AND NH RSA 155–A:5)
21. THE GYM AND COFFEE SHOP SHALL BE INDEPENDENTLY OPEN TO THE PUBLIC. EACH WILL HAVE THEIR OWN PUBLIC EGRESS INTO EACH RESPECTIVE SPACE. THE EGRESS ARE SHOWN BY A DOOR SYMBOL ON THE PLAN.
22. COMMERCIAL VEHICLE ROUTE DURING CONSTRUCTIONS SHALL CONFORM TO DOVER CITY CODE OR BE COORDINATED WITH THE COMMUNITY SERVICES DIRECTOR.

MASTER LEGEND

PROPOSED	EXISTING
CONCRETE BOUND	CBF
STONE BOUND	SBF
IRON PIPE	IPF
IRON PIN	IPinF or IRF
DRILL HOLE	DHF
NAIL OR RAILROAD SPIKE	PK or RRS
GUARD RAIL	BCC
BITUMINOUS CONCRETE CURB	SGC
SLOPED GRANITE CURB	VGC
VERTICAL GRANITE CURB	ICC
INTEGRAL CONCRETE CURB	CC
CONCRETE CURB	
EDGE OF PAVEMENT	
EDGE OF GRAVEL	
SINGLE BROKEN WHITE LINE	SBWL
SINGLE SOLID WHITE LINE	SSWL
DOUBLE SOLID YELLOW LINE	DSYL
SINGLE SOLID YELLOW LINE	SSYL
SINGLE BROKEN YELLOW LINE	SBYL
RETAINING WALL	
WIRE FENCE	X
CHAIN LINK FENCE	
WOOD FENCE	
SIGN	
MAILBOX	MB
TRAFFIC FLOW	
GASGATE	GG
LIGHT POLE	
BUILDING MOUNTED LIGHT	
HYDRANT	
WATER GATE	WG
ELECTRIC MANHOLE	E
TELEPHONE MANHOLE	T
SEWER MANHOLE	S
DRAIN MANHOLE	D
CATCH BASIN	
TRANSFORMER PAD	
UTILITY POLE	
INDEX CONTOUR	200
INTERMEDIATE CONTOUR	202
STONEWALL (BOUNDARY)	
STONEWALL (INTERIOR)	
ZONING BOUNDARY	
EDGE OF WATER	
LIMITS OF CLEARING / TREELINE	
TREES	
RIP–RAP	

Copyright 2022 ©TFMoran, Inc.
48 Constitution Drive, Bedford, N.H. 03110

All rights reserved. These plans and materials may not be copied, duplicated, replicated or otherwise reproduced in any form whatsoever without the prior written permission of TFMoran, Inc.

This plan is not effective unless signed by a duly authorized officer of TFMoran, Inc.

DIG SAFE — NH ME NH RI VT — CALL TOLL FREE 1-888-DIG-SAFE — UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM

CONTACT DIG SAFE 72 HOURS PRIOR TO CONSTRUCTION

2" X 2" DOVER SQUARE

3-1-23
STATE OF NEW HAMPSHIRE — JAMES M. JOHNSON — No. 10414 — PROFESSIONAL ENGINEER

40 20 0 40
Graphic Scale

TAX MAP H LOT 4–3
OVERALL SITE PLAN - PHASE 4C

MIXED USE DEVELOPMENT

NH ROUTE 108 AND MAST ROAD
DOVER, NEW HAMPSHIRE

OWNER OF RECORD
VC DOVER INVESTMENTS, LLC
48 CONSTITUTION DRIVE
BEDFORD, NH 03110

AND

APPLICANT/DEVELOPER
VC DOVER INVESTMENTS, LLC
48 CONSTITUTION DRIVE
BEDFORD, NH 03110

SCALE: 1"=40' **PROJECT: P22-72** **OCTOBER 18, 2022**

REV.	DATE	DESCRIPTION	DR	CK
3	2/28/2023	REV. PER TRC COMMENTS	JD	JMR
2	1/31/2023	REV. PER TRC COMMENTS	JD	JMR
1	12/2/2022	REV. PER TRC COMMENTS	SRP	JMR

TFM — Civil Engineers, Structural Engineers, Traffic Engineers, Land Surveyors, Landscape Architects, Scientists
48 Constitution Drive
Bedford, NH 03110
Phone (603) 472–4488
Fax (603) 472–9747
www.tfmoran.com

FILE 46001.31 | DR JMR | CK JK | FB | CADFILE | 1927 | 46001-31 CONCEPT

IT DISTRICT
C DISTRICT

MAP H LOT 4
N/F
HERON BAY PARTNERS, LLC
242 CENTRAL AVENUE
DOVER, NH 03820
SCRD BK.#3561 PG.#656

MAP H LOT 2
N/F
CITY OF DOVER
288 CENTRAL AVENUE
DOVER, NH 03820
SCRD BK.#1966 PG.#647

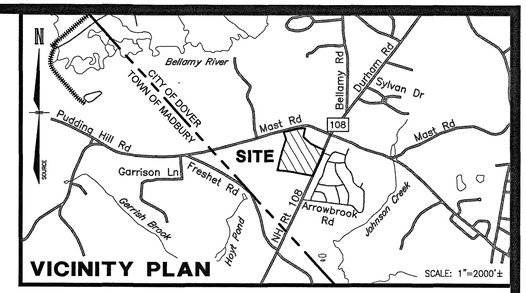
MAP H LOT 3-1
N/F
VC DOVER INVESTMENTS LLC
48 CONSTITUTION DRIVE
BEDFORD, NH 03110
SCRD BK.#3496 PG.#733

UNIT 1
4.5822 AC.
199,601 S.F.

UNIT 2
1.9621 AC.
85,468 S.F.

UNIT 3
0.4496 AC.
19,583 S.F.

MAP H LOT 4-3
923,185 S.F.
(21.1934 ACRES)



LINE TABLE

LINE	BEARING	DISTANCE
L1	N24°24'38"E	5.00'
L2	S65°35'22"E	14.78'
L3	S67°48'28"E	78.54'
L4	N65°40'40"W	61.43'
L5	N45°16'41"E	70.26'
L6	N24°19'21"E	223.69'
L7	N72°22'18"E	31.00'
L8	N65°40'39"W	310.19'
L9	S24°19'21"W	110.66'
L10	S65°35'22"E	204.03'
L11	N24°19'21"E	72.96'
L12	S41°14'24"W	46.40'
L13	S50°40'39"E	75.95'
L14	N39°19'21"E	17.20'
L15	S39°19'21"W	66.08'
L16	S65°40'39"E	19.82'
L17	S20°40'39"E	13.98'
L18	S69°19'21"W	24.00'
L19	S20°40'39"E	33.84'
L20	S65°40'39"E	22.21'
L21	S41°14'24"W	170.99'

CURVE TABLE

CURVE	RADIUS	ARC LENGTH	CHORD LENGTH	CHORD BEARING	DELTA ANGLE
C1	15.00'	30.66'	25.59'	S76°10'31"E	117°05'37"
C2	15.00'	10.98'	10.74'	N03°20'49"E	41°57'03"
C3	15.00'	23.58'	21.23'	S69°21'59"W	90°05'17"
C4	103.09'	27.67'	27.58'	S31°55'34"W	15°22'37"
C5	136.75'	214.81'	193.39'	S69°19'21"W	90°00'00"
C6	77.81'	69.00'	66.77'	S50°01'48"W	50°48'50"
C7	40.00'	58.83'	53.67'	S02°48'29"E	84°15'39"
C8	40.00'	52.36'	48.70'	N76°49'21"E	75°00'00"
C9	10.00'	7.85'	7.65'	S43°10'39"E	45°00'00"
C10	103.09'	40.18'	39.93'	S50°46'48"W	22°19'50"
C11	66.75'	28.67'	28.45'	N53°32'47"E	24°36'45"

DRAINAGE INVERT TABLE

TFM#	TYPE	RIM EL.	INVERT ID	DEBRIS TRAP	INVERT EL.	SIZE/TYPE
1025	CB	107.24'	A	YES	103.8'	12" RCP
1040	CB	106.06'	A	YES	102.1'	12" RCP
1601	CB	106.13'	A	NO	101.5'	15" RCP
			B	YES	102.1'	18" RCP
1762	CB	106.06'	A	YES	102.0'	15" HDPE
1602	CB	105.81'	A	NO	101.0'	15" HDPE
			B	YES	101.5'	15" HDPE

SEWER INVERT TABLE

1750	SMH	107.97'	A	N/A	98.9'	8" PVC
			B	N/A	99.0'	8" PVC
			C	N/A	98.8'	8" PVC
			D	N/A	101.3'	4" PVC
1749	SMH	108.45'	A	N/A	98.6'	8" PVC
1748	SMH	107.96'	A	N/A	101.9'	4" PVC
			B	N/A	101.8'	4" PVC
			C	N/A	101.8'	4" PVC
			D	N/A	99.1'	8" PVC
1774	SMH	112.03'	A	N/A	99.9'	8" PVC
			B	N/A	99.7'	8" PVC
			C	N/A	99.9'	8" PVC
			D	N/A	100.1'	8" PVC

*CATCH BASIN INVERTS COMPUTED TO THE CENTER OF THE HOOD ACCESS PORT (SEE NOTE 14)

NOTES:

1. THE PARCEL IS LOCATED IN THE COMMERCIAL (C) ZONE.
2. THE PARCEL IS SHOWN ON CITY OF DOVER ASSESSORS MAP H AS LOT 4–3.
3. THE PARCEL IS LOCATED IN FLOOD ZONE X (AREAS OF MINIMAL FLOODING) AS SHOWN ON NATIONAL FLOOD INSURANCE PROGRAM (NFIP), FLOOD INSURANCE RATE MAP (FIRM) STRAFFORD COUNTY, NEW HAMPSHIRE, PANEL 320 OF 405, MAP NUMBER 33017C0320E, WITH AN EFFECTIVE DATE OF 9/30/2015.
4. ZONING REQUIREMENTS:

	REQUIRED:
MINIMUM LOT SIZE:	20,000 S.F
MAXIMUM LOT COVERAGE:	50%
MINIMUM FRONTAGE:	125 FT
PRINCIPAL BUILDING	
FRONT SETBACK:	30 FT
ABUT A STREET SETBACK:	30 FT
SIDE SETBACK:	12 FT
REAR SETBACK:	15 FT
OUTBUILDING/ACCESSORY USE	
FRONT SETBACK:	50 FT
ABUT A STREET SETBACK:	50 FT
SIDE SETBACK:	10 FT
REAR SETBACK:	10 FT
BUILDING HEIGHT	
PRINCIPAL BUILDING:	40 FT MAX.
OUTBUILDING/ACCESSORY USE	40 FT MAX.

5. OWNER OF RECORD:
MAP H LOT 4–3:
DOVER FIELDS CONDOMINIUM
C/O VC DOVER INVESTMENTS LLC
48 CONSTITUTION DR
BEDFORD, NH 03110
SCRD BK.#3496 PG.#0733 SEE SCRD BK.#4094 PG.#317 & BK.#4979 PG.#349 FOR DECLARATION
6. TOTAL PARCEL AREA:
923,185 S.F.
(21.1934 ACRES)
7. THE INTENT OF THIS PLAN IS TO SHOW THE LOCATION OF BOUNDARIES IN ACCORDANCE WITH THE CURRENT LEGAL DESCRIPTIONS. IT IS NOT AN ATTEMPT TO DEFINE THE EXTENT OF OWNERSHIP OR DEFINE THE LIMITS OF TITLE.
8. THE PURPOSE OF THIS PLAN IS TO SHOW A PORTION OF THE EXISTING CONDITIONS OF UNIT 2 AND THE COMMON AREA OF MAP H LOT 4–3.
9. WETLANDS DEPICTED ON THIS PLAN WERE DELINEATED ON JUNE 13, 2022 BY JASON R. AUBE CWS #313. THE WETLANDS WERE DELINEATED ACCORDING TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL (JANUARY 1987) AND THE REGIONAL SUPPLEMENT TO THE U.S. CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION, VERSION 2.0 (JANUARY 2012).
10. FIELD SURVEY COMPLETED BY TCE & PID IN JUNE 2022 USING A LEICA TS–16 AND CARLSON SURVPC DATA COLLECTION SOFTWARE.
11. HORIZONTAL DATUM IS NAD27 PER STATIC GPS OBSERVATIONS AND THE VERTICAL DATUM IS NGVD29. THE CONTOUR INTERVAL IS 2 FEET.
12. EASEMENTS, RIGHTS, AND RESTRICTIONS SHOWN OR IDENTIFIED ARE THOSE WHICH WERE FOUND DURING RESEARCH PERFORMED AT THE ROCKINGHAM COUNTY REGISTRY OF DEEDS. OTHER RIGHTS, EASEMENTS, OR RESTRICTIONS MAY EXIST WHICH A TITLE EXAMINATION OF SUBJECT PARCEL(S) WOULD DETERMINE.
13. THE LOCATION OF ANY UNDERGROUND UTILITY INFORMATION SHOWN ON THIS PLAN IS APPROXIMATE. TFMORAN, INC. MAKES NO CLAIM TO THE ACCURACY OR COMPLETENESS OF UNDERGROUND UTILITIES SHOWN. PRIOR TO ANY EXCAVATION ON SITE THE CONTRACTOR SHALL CONTACT DIGSAFE @ 1–888–DIGSAFE TO VERIFY UTILITIES.
14. INVERTS OF CATCH BASIN OUTLET PIPES WITH DEBRIS TRAPS WERE INACCESSIBLE FOR DIRECT MEASUREMENT. INVERTS SHOWN WERE COMPUTED BASED ON MEASUREMENTS TO THE CENTER OF THE DEBRIS TRAP ACCESS PORT ASSUMING THIS CENTER POINT BEING LOCATED AT THE CENTERLINE OF THE OUTLET PIPE. HALF THE DIAMETER OF THE OUTLET PIPE LOCATED ON THE OPPOSING END WAS ADDED TO THE CENTERLINE MEASUREMENT TO DERIVE THE INVERT ELEVATION SHOWN.
15. SEDIMENTATION/DETENTION BASINS OR ROADSIDE DRAINAGE DITCHES DO NOT REQUIRE A BUFFER PER THE CITY OF DOVER ZONING ORDINANCE SECTION 170–27.1.G.(1)(a).

PLAN REFERENCES:

1. "TAX MAP H LOT 4, SUBDIVISION PLAN , MIXED USE DEVELOPMENT RETAIL PHASE, NH ROUTE 108 AND MAST ROAD, DOVER, NEW HAMPSHIRE, OWNER OF RECORD: JOHN F. TORR TRUSTEE ET AL," DATED OCTOBER 30, 2006 BY TFMORAN INC. AND RECORDED AS PLANS 89–40 AND 89–41 AT THE STRAFFORD COUNTY REGISTRY OF DEEDS.
2. "TAX MAP H LOTS 4 AND 4–3, SITE EASEMENT PLAN , MIXED USE DEVELOPMENT RETAIL PHASE, NH ROUTE 108 AND MAST ROAD, DOVER, NEW HAMPSHIRE, OWNED BY VC DOVER INVESTMENTS, LLC," DATED FEBRUARY 15, 2007 BY TFMORAN INC. AND RECORDED AS PLAN 91–43 AT THE STRAFFORD COUNTY REGISTRY OF DEEDS.
3. TAX MAP H LOT 4–3 SITE LAYOUT PLAN – RETAIL PHASE 4C MIXED USE DEVELOPMENT RETAIL PHASE NH ROUTE 108 AND MAST ROAD DOVER, NEW HAMPSHIRE" DATED DECEMBER 12, 2011 WITH REVISION 1DATED JANUARY 4, 2012 BY TFMORAN, INC. PLAN NOT RECORDED.

LEGEND:

MAP H LOT 2 — ASSESSOR'S MAP NUMBER/LOT NUMBER
BK./PG. — BOOK/PAGE
CB — CATCH BASIN
DYL — DOUBLE YELLOW LINE
EL. — ELEVATION
EM — ELECTRIC METER
EP — EDGE OF PAVEMENT
GV — GAS VALVE
HDPE — HIGH DENSITY POLYETHYLENE PIPE
INV. — INVERT
IRF — IRON ROD FOUND
N/F — NOW OR FORMERLY
PED — PEDESTRIAN
RCP — REINFORCED CONCRETE PIPE
SBC — SLOPED BITUMINOUS CURB
SCRD — STRAFFORD COUNTY REGISTRY OF DEEDS
SMH — SEWER MANHOLE
S.F. — SQUARE FEET
VCC — VERTICAL GRANITE CURB
WV — WATER VALVE
VENT PIPE
HYDRANT
LIGHT POST
ELECTRIC PANEL
CATCH BASIN
SIGN POST
SEWER MANHOLE
PROPERTY LINE
EDGE OF WETLAND
TREE LINE
102 — EXISTING CONTOUR
W — WATER LINE
D — DRAIN LINE
G — GAS LINE
S — SEWER LINE
FM — SEWER FORCE MAIN
WETLAND
RIPRAP

DIG SAFE
MA ME NH RI VT
CALL 811 TOLL FREE
UTILITIES UNDER GROUND PLANT DAMAGE PREVENTION SYSTEM
CONTACT DIG SAFE 72 BUSINESS HOURS PRIOR TO CONSTRUCTION

Copyright 2022 © TFMoran, Inc.
48 Constitution Drive, Bedford, NH 03110

All rights reserved. These plans and materials may not be copied, duplicated, replicated or otherwise reproduced in any form whatsoever without the prior written permission of TFMoran, Inc.

This plan is not effective unless signed by a duly authorized officer of TFMoran, Inc.

Graphic Scale in Feet
40 20 0 40

I CERTIFY THAT THIS SURVEY AND PLAN WERE PREPARED BY THOSE UNDER MY DIRECT SUPERVISION AND ARE THE RESULT OF A FIELD SURVEY CONDUCTED IN JUNE 2022. THIS SURVEY CONFORMS TO THE ACCURACY REQUIREMENTS OF AN URBAN SURVEY OF THE NEW HAMPSHIRE CODE OF ADMINISTRATIVE RULES OF THE BOARD OF LICENSURE FOR LAND SURVEYORS.
I FURTHER CERTIFY THAT THIS SURVEY IS CORRECT TO THE BEST OF MY PROFESSIONAL KNOWLEDGE, AND THE FIELD TRAVERSE SURVEY EXCEEDS A PRECISION OF 1:15,000.

STATE OF NEW HAMPSHIRE — JASON R. AUBE — No. 313 — WETLAND SCIENTIST — 12/6/22

STATE OF NEW HAMPSHIRE — No. 01037 — BRENDA M. KOLBOW — SIGNATURE — LICENSED LAND SURVEYOR

2022-12-02
DATE

REV.	DATE	DESCRIPTION		
1.	12/2/2022	ADDED TBM'S	BMK	JCC

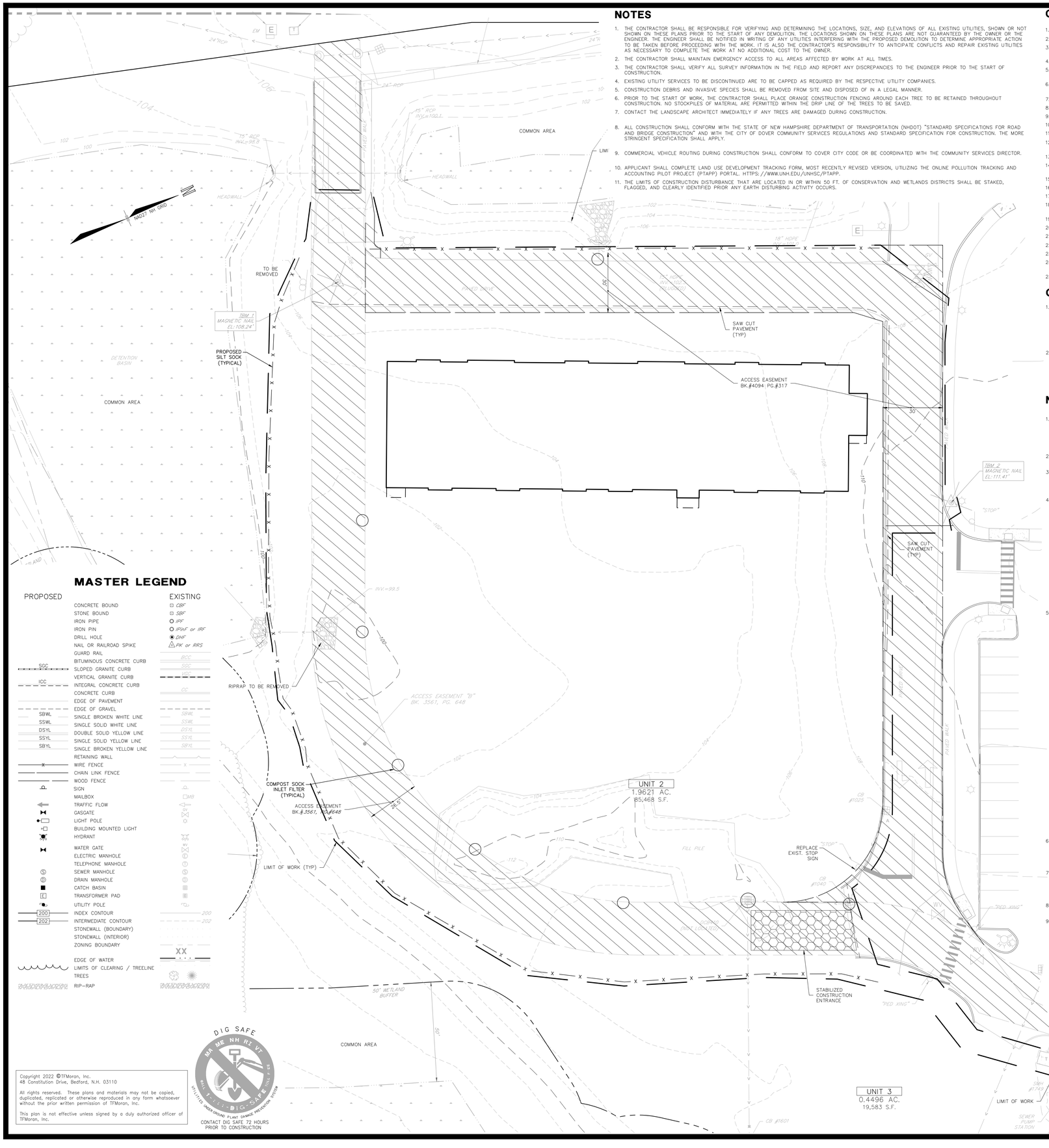
TAX MAP H LOT LOT 4-3
LIMITED EXISTING CONDITIONS PLAN
DOVER FIELDS CONDOMINIUMS
DURHAM ROAD / MAST ROAD / GRAPEVINE DRIVE
DOVER, NEW HAMPSHIRE
COUNTY OF STRAFFORD
OWNED BY
DOVER FIELDS CONDOMINIUM

SCALE: 1" = 40' (22x34)
1" = 80' (11x17)
JULY 20, 2022

TFM
Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists
48 Constitution Drive
Bedford, NH 03110
Phone (603) 472–4488
Fax (603) 472–9747
www.tfmoran.com

FILE	DR	IID	FB	558	
46001-31	CK	BMK	CADFILE	SEE MARGIN	S-1

Dec 02, 2022 - 8:48am
F:\TFM Projects\46001-Cane\46001-31 VC Dover - Grapevine DR & Durham RD Dover NH\Carlson Survey\Dwgs\46001-31 Survey_2022.dwg



MASTER LEGEND

PROPOSED	EXISTING
CONCRETE BOUND	⊡ CBF
STONE BOUND	⊡ SBF
IRON PIPE	○ IPF
IRON PIN	○ IPinF or IRF
DRILL HOLE	◉ DHF
NAIL OR RAILROAD SPIKE	△ PK or RRS
GUARD RAIL	
BITUMINOUS CONCRETE CURB	BCC
SLOPED GRANITE CURB (SGC)	SGC
VERTICAL GRANITE CURB	VGC
INTEGRAL CONCRETE CURB (ICC)	
CONCRETE CURB	CC
EDGE OF PAVEMENT	
EDGE OF GRAVEL	
SINGLE BROKEN WHITE LINE (SBWL)	SBWL
SINGLE SOLID WHITE LINE (SSWL)	SSWL
DOUBLE SOLID YELLOW LINE (DSYL)	DSYL
SINGLE SOLID YELLOW LINE (SSYL)	SSYL
SINGLE BROKEN YELLOW LINE (SBYL)	SBYL
RETAINING WALL	
WIRE FENCE	X
CHAIN LINK FENCE	
WOOD FENCE	
SIGN	
MAILBOX	MB
TRAFFIC FLOW	
GASGATE	GG
LIGHT POLE	
BUILDING MOUNTED LIGHT	
HYDRANT	
WATER GATE	WG
ELECTRIC MANHOLE	E
TELEPHONE MANHOLE	T
SEWER MANHOLE	S
DRAIN MANHOLE	D
CATCH BASIN	
TRANSFORMER PAD	
UTILITY POLE	
200 INDEX CONTOUR	200
202 INTERMEDIATE CONTOUR	202
STONEWALL (BOUNDARY)	
STONEWALL (INTERIOR)	
ZONING BOUNDARY	
EDGE OF WATER	
LIMITS OF CLEARING / TREELINE	
TREES	
RIP-RAP	

NOTES

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING AND DETERMINING THE LOCATIONS, SIZE, AND ELEVATIONS OF ALL EXISTING UTILITIES, SHOWN OR NOT SHOWN ON THESE PLANS PRIOR TO THE START OF ANY DEMOLITION. THE LOCATIONS SHOWN ON THESE PLANS ARE NOT GUARANTEED BY THE OWNER OR THE ENGINEER. THE ENGINEER SHALL BE NOTIFIED IN WRITING OF ANY UTILITIES INTERFERING WITH THE PROPOSED DEMOLITION TO DETERMINE APPROPRIATE ACTION TO BE TAKEN BEFORE PROCEEDING WITH THE WORK. IT IS ALSO THE CONTRACTOR'S RESPONSIBILITY TO ANTICIPATE CONFLICTS AND REPAIR EXISTING UTILITIES AS NECESSARY TO COMPLETE THE WORK AT NO ADDITIONAL COST TO THE OWNER.
2. THE CONTRACTOR SHALL MAINTAIN EMERGENCY ACCESS TO ALL AREAS AFFECTED BY WORK AT ALL TIMES.
3. THE CONTRACTOR SHALL VERIFY ALL SURVEY INFORMATION IN THE FIELD AND REPORT ANY DISCREPANCIES TO THE ENGINEER PRIOR TO THE START OF CONSTRUCTION.
4. EXISTING UTILITY SERVICES TO BE DISCONTINUED ARE TO BE CAPPED AS REQUIRED BY THE RESPECTIVE UTILITY COMPANIES.
5. CONSTRUCTION DEBRIS AND INVASIVE SPECIES SHALL BE REMOVED FROM SITE AND DISPOSED OF IN A LEGAL MANNER.
6. PRIOR TO THE START OF WORK, THE CONTRACTOR SHALL PLACE ORANGE CONSTRUCTION FENCING AROUND EACH TREE TO BE RETAINED THROUGHOUT CONSTRUCTION. NO STOCKPILES OF MATERIAL ARE PERMITTED WITHIN THE DRIP LINE OF THE TREES TO BE SAVED.
7. CONTACT THE LANDSCAPE ARCHITECT IMMEDIATELY IF ANY TREES ARE DAMAGED DURING CONSTRUCTION.
8. ALL CONSTRUCTION SHALL CONFORM WITH THE STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION (NHDOT) "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION" AND WITH THE CITY OF DOVER COMMUNITY SERVICES REGULATIONS AND STANDARD SPECIFICATION FOR CONSTRUCTION. THE MORE STRINGENT SPECIFICATION SHALL APPLY.
9. COMMERCIAL VEHICLE ROUTING DURING CONSTRUCTION SHALL CONFORM TO COVER CITY CODE OR BE COORDINATED WITH THE COMMUNITY SERVICES DIRECTOR.
10. APPLICANT SHALL COMPLETE LAND USE DEVELOPMENT TRACKING FORM, MOST RECENTLY REVISED VERSION, UTILIZING THE ONLINE POLLUTION TRACKING AND ACCOUNTING PILOT PROJECT (PTAPP) PORTAL. HTTPS: //WWW.UNH.EDU/UNHSC/PTAPP.
11. THE LIMITS OF CONSTRUCTION DISTURBANCE THAT ARE LOCATED IN OR WITHIN 50 FT. OF CONSERVATION AND WETLANDS DISTRICTS SHALL BE STAKED, FLAGGED, AND CLEARLY IDENTIFIED PRIOR ANY EARTH DISTURBING ACTIVITY OCCURS.

CONSTRUCTION SEQUENCE NOTES

1. TO MINIMIZE EROSION AND SEDIMENTATION DUE TO CONSTRUCTION, CONSTRUCTION SHALL FOLLOW THIS GENERAL CONSTRUCTION SEQUENCE.
2. MODIFICATIONS TO THE SEQUENCE NECESSARY DUE TO THE CONTRACTOR'S SCHEDULE SHALL INCLUDE APPROPRIATE TEMPORARY AND PERMANENT EROSION AND SEDIMENTATION CONTROL MEASURES.
3. THE CONTRACTOR SHALL SCHEDULE WORK SUCH THAT ANY CONSTRUCTION AREA IS STABILIZED WITHIN 45 DAYS OF INITIAL DISTURBANCE EXCEPT AS NOTED BELOW. NO MORE THAN 5 ACRES OF DISTURBED LAND SHALL BE UNSTABILIZED AT ANY ONE TIME.
4. THE PROJECT SHALL BE MANAGED SO THAT IT MEETS THE REQUIREMENTS AND INTENT OF RSA 430:53 AND CHAPTER ARG 3800 RELATIVE TO INVASIVE SPECIES.
5. DO NOT TRAFFIC EXPOSED SOIL SURFACE OF INFILTRATION SYSTEMS WITH CONSTRUCTION EQUIPMENT. IF FEASIBLE, PERFORM EXCAVATIONS WITH EQUIPMENT POSITIONED OUTSIDE THE LIMITS OF THE INFILTRATION COMPONENTS OF THE SYSTEM.
6. DO NOT DISCHARGE SEDIMENT-LADEN WATERS FROM CONSTRUCTION ACTIVITIES (RUNOFF, WATER FROM EXCAVATIONS) TO STORMWATER BMP'S. STORMWATER RUNOFF MUST BE DIRECTED TO TEMPORARY PRACTICES UNTIL STORMWATER BMP'S ARE STABILIZED.
7. DO NOT PLACE STORMWATER BMP'S INTO SERVICE UNTIL THE CONTRIBUTING AREAS HAVE BEEN FULLY STABILIZED.
8. NOTIFY EASEMENT OWNERS PRIOR TO COMMENCEMENT OF WORK.
9. INSTALL ALL PERIMETER EROSION PROTECTION MEASURES AS INDICATED ON THE PLANS PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.
10. STORMWATER TREATMENT PONDS AND SWALES SHALL BE INSTALLED BEFORE ROUGH GRADING THE SITE.
11. DURING CONSTRUCTION EVERY EFFORT SHALL BE MADE TO MANAGE SURFACE RUNOFF QUALITY.
12. DAILY, OR AS REQUIRED, CONSTRUCT TEMPORARY BERMS, DRAINS, DITCHES, SILT BARRIERS, SEDIMENT TRAPS, ETC. MULCH AND SEED AS REQUIRED. (TEMPORARY SEED MIXTURE OF WINTER RYE APPLIED AT A RATE OF 2.5 LBS/1000 SF SHALL BE USED).
13. CONDUCT MAJOR EARTHWORK, INCLUDING CLEARING AND GRUBBING, WITHIN THE LIMITS OF WORK. ALL CUT AND FILL SLOPES SHALL BE SEEDED WITHIN 72 HOURS AFTER GRADING.
14. ALL STRIPPED TOPSOIL AND OTHER EARTH MATERIALS SHALL BE STOCKPILED OUTSIDE THE IMMEDIATE WORK AND WETLAND AREAS. A SILT BARRIER SHALL BE CONSTRUCTED AROUND THESE PILES IN A MANNER TO PROVIDE ACCESS AND AVOID SEDIMENT OUTSIDE OF THE WORK AREA.
15. CONSTRUCT BUILDING PAD AND COMMENCE NEW BUILDING CONSTRUCTION.
16. CONSTRUCT TEMPORARY CULVERTS AND DIVERSIONS AS REQUIRED.
17. BEGIN PERMANENT AND TEMPORARY INSTALLATION OF SEED AND MULCH.
18. PERFORM EARTHWORK NECESSARY TO ESTABLISH ROUGH GRADING AROUND PARKING FIELDS AND ACCESS DRIVES. MANAGE EXPOSED SOIL SURFACES TO AVOID TRANSPORTING SEDIMENTS INTO WETLANDS. PARKING LOTS SHALL BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
19. INSTALL SUBSURFACE UTILITIES (WATER, SEWER, GAS, ELECTRIC, COMMUNICATIONS, DRAINAGE, DRAINAGE FACILITIES, ETC.).
20. CONSTRUCT PROPOSED ROADWAY, RAIN GARDENS, GRAVEL WETLANDS AND DRAINAGE SWALES. ALL DITCHES, SWALES, AND GRAVEL WETLANDS SHALL BE FULLY STABILIZED PRIOR TO DIRECTING FLOW TO THEM.
21. COMPLETE BUILDING AND ALL OFF-SITE IMPROVEMENTS.
22. COMPLETE SEEDING AND MULCHING. SEED TO BE APPLIED WITH BROADCAST SPREADER OR BY HYDRO-SEEDING, THEN ROLLED, RAKED, OR DRAGGED TO ASSURE SEED/SOIL CONTACT.
23. REMOVE TEMPORARY EROSION CONTROL MEASURES AFTER SEEDED AREAS HAVE BECOME FIRMLY ESTABLISHED AND SITE IMPROVEMENTS ARE COMPLETE.
24. DURING THE COURSE OF THE WORK AND UPON COMPLETION, THE CONTRACTOR SHALL REMOVE ALL SEDIMENT DEPOSITS, EITHER ON OR OFF SITE, INCLUDING CATCH BASINS, AND SUMPS, DRAIN PIPES AND DITCHES, CURB LINES, ALONG SILT BARRIERS, ETC. RESULTING FROM SOIL AND/OR CONSTRUCTION OPERATIONS.
25. SEE WINTER CONSTRUCTION SEQUENCE FOR WORK CONDUCTED AFTER OCTOBER 15TH.

CONSTRUCTION GENERAL PERMIT

1. THE OWNER, IN CONJUNCTION WITH THE CONTRACTOR (OPERATORS), MUST OBTAIN A CONSTRUCTION GENERAL PERMIT (CGP) FOR LARGE CONSTRUCTION ACTIVITIES (FIVE OR MORE ACRES) OR SMALL CONSTRUCTION ACTIVITIES (GREATER THAN ONE ACRE BUT LESS THAN FIVE ACRES) FROM THE ENVIRONMENTAL PROTECTION AGENCY (EPA). AS PART OF THE CGP, A STORMWATER NOTICE OF INTENT (NOI) MUST BE SUBMITTED TO THE EPA AT LEAST 7 DAYS PRIOR TO COMMENCING CONSTRUCTION. THE NOI MUST BE SUBMITTED TO STORM WATER NOTICE OF INTENT (4203M), USEPA, 1200 PENNSYLVANIA AVE. NW, WASHINGTON, DC 20460.
2. THE CGP OUTLINES A SET OF PROVISIONS MANDATING THE OWNER AND CONTRACTOR TO COMPLY WITH THE REQUIREMENTS OF THE NATIONAL POLLUTION DISCHARGE ELIMINATION SYSTEM (NPDES) STORM WATER REGULATIONS, INCLUDING, BUT NOT LIMITED TO, STORM WATER POLLUTION PREVENTION PLANS (SWPPP'S), IMPLEMENTATION OF EROSION AND SEDIMENTATION CONTROLS, EQUIPMENT MAINTENANCE GUIDELINES, ETC. PLEASE CONTACT USEPA OFFICE OF WASTEWATER MANAGEMENT AT 202-564-9545 OR AT WWW.EPA.GOV/NPDES/STORMWATER FOR ADDITIONAL INFORMATION. FOR FURTHER ASSISTANCE, CONTACT ABBY SWAINE OF NEW ENGLAND'S EPA REGION 1 AT 617-918-1841.

NOTES

1. TOTAL SITE AREA: 1.91 AC
   TOTAL AREA OF DISTURBANCE: 2.31 AC

   A LETTER OF CREDIT FOR THE COST OF REVEGATATING ALL DISCTURBER AREAS ON THE SITE SHALL BE SUBMITTED, AND THE APPROVED CONSTRUCTION SIGN INSTALLED PRIOR TO ANY EARTH DISTURBING ACTIVITY OCCURS.
2. SOILS SHOWN ARE FROM THE SOIL SURVEY OF HILLSBOROUGH COUNTY, NH, EASTERN PART, PREPARED BY USDA-SOIL CONSERVATION SERVICES.
3. STORM WATER DRAINAGE SYSTEM IS SHOWN ON THE PLAN. SEE GRADING & DRAINAGE PLAN FOR RIM, INVERT, PIPE LENGTH, AND SLOPE INFORMATION.
   POST-CONSTRUCTION RUNOFF COEFFICIENT: CN=55 (PARCEL)
   IMPERVIOUS SURFACE AREA: ± AC .23 (SITE)
4. STABILIZATION PRACTICES FOR EROSION AND SEDIMENTATION CONTROLS:

   TEMPORARY STABILIZATION – TOPSOIL STOCKPILES AND DISTURBED AREAS OF THE CONSTRUCTION SITE THAT WILL NOT BE REDISTURBED FOR 14 DAYS OR MORE MUST BE STABILIZED BY THE 14TH DAY AFTER THE LAST DISTURBANCE. THE TEMPORARY SEED SHALL BE ANNUAL RYE APPLIED AT THE RATE OF 1.1 LBS PER 1,000 SF. PRIOR TO SEEDING, A MINIMUM OF 2 TONS PER ACRE OF AGRICULTURAL LIMESTONE AND 500 LBS PER ACRE OF 10-20-20 FERTILIZER SHALL BE APPLIED. AFTER SEEDING, EACH AREA SHALL BE MULCHED WITH 1.5 TONS PER ACRE OF HAY MULCH. MULCH TO BE ANCHORED IN PLACE WHERE NECESSARY. AREAS OF THE SITE THAT WILL BE PAVED WILL BE TEMPORARILY STABILIZED BY APPLYING GEOTEXTILES AND A STONE SUB-BASE UNTIL BITUMINOUS PAVEMENT CAN BE APPLIED. CALCIUM CHLORIDE SHALL BE USED FOR DUST CONTROL IF NEEDED.

   PERMANENT STABILIZATION – DISTURBED PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITIES PERMANENTLY CEASES SHALL BE STABILIZED WITH PERMANENT SEED NO LATER THAN 3 DAYS AFTER THE LAST CONSTRUCTION ACTIVITY. THE PERMANENT SEED MIX SHALL BE AS SPECIFIED BY THE LANDSCAPE PLAN NOTES OR MAY OTHERWISE CONSIST OF 0.45 LBS/1,000 SF TALL FESCUE, 0.20 LBS/1,000 SF CREEPING RED FESCUE, AND 0.20 LBS/1,000 SF BIRDSFOOT TREFOIL PRIOR TO SEEDING, A MINIMUM OF 2 TONS PER ACRE OF AGRICULTURAL LIMESTONE AND 500 LBS PER ACRE IF 10-20-20 FERTILIZER SHALL BE APPLIED. AFTER SEEDING, EACH AREA SHALL BE MULCHED WITH 1.5 TONS PER ACRE OF HAY MULCH. MULCH TO BE ANCHORED IN PLACE WHERE NECESSARY.
5. STRUCTURAL PRACTICES FOR EROSION AND SEDIMENTATION CONTROL

   SILT SOCK – WILL BE CONSTRUCTED AROUND THE PERIMETER OF THE DISTURBED AREAS AND WILL DELINEATE THE LIMITS OF WORK FOR THE PROPOSED CONSTRUCTION. THE SILT SOCK WILL BE INSTALLED BY OTHERS. POSTS SHALL BE USED WITH AT LEAST 6" OF THE POST BURIED BELOW THE GROUND SURFACE TO PREVENT THE SILT SOCK FROM FORMING GAPS NEAR THE GROUND SURFACE. RUNOFF WILL FLOW THROUGH THE OPENINGS IN THE SILT SOCK WHILE RETAINING THE SEDIMENT WITHIN THE CONSTRUCTION AREA.

   SILT FENCE – WILL BE CONSTRUCTED AROUND THE PERIMETER OF THE DISTURBED AREAS AND WILL DELINEATE THE LIMITS OF WORK FOR THE PROPOSED CONSTRUCTION. THE SILT FENCE WILL BE INSTALLED BY STRETCHING REINFORCED FILTER FABRIC BETWEEN POSTS WITH AT LEAST 8" OF THE FABRIC BURIED BELOW THE GROUND SURFACE TO PREVENT GAPS FROM FORMING NEAR THE GROUND SURFACE. RUNOFF WILL FLOW THROUGH THE OPENINGS IN THE FILTER FABRIC WHILE RETAINING THE SEDIMENT WITHIN THE CONSTRUCTION AREA.

   STABILIZED CONSTRUCTION ENTRANCE – WILL BE INSTALLED IN ACCORDANCE WITH THE DETAIL AT THE ENTRANCE TO THE CONSTRUCTION SITE TO HELP REDUCE VEHICLE TRACKING OF SEDIMENTS OFF THE SITE. THE STABILIZED ENTRANCE WILL BE 20'-WIDE AND FLARE AT THE ENTRANCE TO THE PAVED ROAD AND HAVE A DEPTH OF 12" OF STONE. THE STABILIZED ENTRANCE SHALL BE MAINTAINED UNTIL THE REMAINDER OF THE CONSTRUCTION SITE HAS BEEN FULLY STABILIZED. THE PAVED STREET ADJACENT TO THE SITE SHALL BE SWEPT ON A WEEKLY BASIS TO REMOVE EXCESS MUD AND DIRT FROM BEING TRACKED FROM THE SITE. TRUCKS HAULING MATERIAL TO AND/OR FROM THE SITE SHALL BE COVERED WITH A TARPAULIN.

   CATCH BASINS – WILL BE CLEANED ON AN ANNUAL BASIS TO REMOVE ALL SEDIMENTS FROM THE CATCH BASIN SUMPS.

   CATCH BASIN PROTECTION – WILL BE INSTALLED AT ALL CATCH BASINS WITHIN THE CONSTRUCTION AREA. FILTER FABRIC WILL BE INSTALLED AROUND THE GRATES OF CATCH BASINS THAT ARE LOCATED IN THE TRAVEL WAY AND STONE/FILTER FABRIC PROTECTION WILL BE INSTALLED AT THE CATCH BASINS FOUND WITHIN THE PARKING AREA AND GRASS.

   BLANKET SLOPE PROTECTION – SHALL BE INSTALLED ON ALL 2:1 SLOPES OR STEEPER ON SITE. ANCHOR THE TOP OF THE BLANKET BY ANCHORING THE BLANKET IN A 6" DEEP TRENCH. BACKFILL AND COMPACT TRENCH AFTER STAPLING. ROLL THE BLANKET IN THE DIRECTION OF STORM WATER FLOW. WHERE 2 OR MORE STRIPS OF BLANKET ARE REQUIRED, A MINIMUM OF 4" OF OVERLAP SHALL BE PROVIDED.

   STONE CHECK DAMS – WILL BE INSTALLED IN EXISTING AND PROPOSED GRASS SWALES TO REDUCE THE VELOCITY OF CONCENTRATED STORM WATER FLOWS AND PREVENT EROSION OF THE SWALE.
6. STORM WATER MANAGEMENT

   STORM WATER DRAINAGE FOR DEVELOPED AREAS WILL BE COLLECTED BY A PIPE AND CATCH BASIN CLOSED DRAINAGE SYSTEM AND OPEN CONVEYANCE. APPROXIMATELY .23 ACRES OF THE 1.91 ACRE SITE WILL REMAIN UNTOUCHED AND IN ITS NATURAL STATE.
7. ALL CONSTRUCTION DEBRIS AND WASTE MATERIALS SHALL BE COLLECTED AND STORED IN SECURE DUMPSTERS OR APPROVED ENCLOSURE AND REMOVED FROM THE SITE ON A WEEKLY BASIS. NO CONSTRUCTION WASTE SHALL BE BURIED ON SITE. PORTABLE TOILET SANITARY WASTE FACILITIES WILL BE PROVIDED DURING CONSTRUCTION AND MAINTAINED/DISPOSED OF ON A REGULAR BASIS IN ACCORDANCE WITH TOWN AND STATE REGULATIONS.
8. THRUST BLOCK SHALL BE PROVIDED WHERE WATER LINE CHANGES DIRECTION OR TAPS INTO EXISTING WATER LINE.
9. A LIST OF CONSTRUCTION ITEMS AND OTHER PRODUCTS USED ON THIS PROJECT SHALL BE KEPT ON RECORD WITH THIS PLAN ONSITE. ALL CHEMICALS, PETROLEUM PRODUCTS AND OTHER MATERIALS USED DURING CONSTRUCTION SHALL BE STORED IN A SECURE AREA, AND PRECAUTIONS USED TO PREVENT POTENTIAL SOURCES OF CONTAMINATION OR POLLUTION. ANY SPILL OF THESE TYPES OF SUBSTANCES SHALL BE CLEANED UP AND DISPOSED OF IN A LEGAL MANNER AS SPECIFIED BY STATE REGULATIONS AND THE MANUFACTURER. ANY SPILL IN AMOUNTS EQUAL TO OR EXCEEDING REPORTABLE QUANTITY AS DEFINED BY THE EPA SHALL TAKE THE FOLLOWING STEPS:
   - NOTIFY THE NATIONAL RESPONSE CENTER IMMEDIATELY AT (888) 424-8802; IN WASHINGTON, D.C., CALL (202) 426-2675.
   - WITHIN 14 DAYS, SUBMIT A WRITTEN DESCRIPTION OF THE RELEASE TO THE EPA REGIONAL OFFICE PROVIDING THE DATE AND CIRCUMSTANCES OF THE RELEASE AND THE STEPS TO BE TAKEN TO PREVENT ANOTHER RELEASE.
   - MODIFY THE POLLUTION PREVENTION PLAN TO INCLUDE THE INFORMATION LISTED ABOVE.

   GOOD HOUSEKEEPING:
   THE FOLLOWING GOOD HOUSEKEEPING PRACTICES WILL BE FOLLOWED ONSITE DURING THE CONSTRUCTION PROJECT.
   - AN EFFORT WILL BE MADE TO STORE ONLY ENOUGH PRODUCT REQUIRED TO DO THE JOB;
   - ALL MATERIALS STORED ONSITE WILL BE STORED IN A NEAT, ORDERLY MANNER IN THEIR APPROPRIATE CONTAINERS AND, IF POSSIBLE, UNDER A ROOF OR OTHER ENCLOSURE;
   - PRODUCTS WILL BE KEPT IN THEIR ORIGINAL CONTAINERS WITH THE ORIGINAL MANUFACTURER'S LABEL;
   - SUBSTANCES WILL NOT BE MIXED WITH ONE ANOTHER UNLESS RECOMMENDED BY THE MANUFACTURER;
   - WHENEVER POSSIBLE, ALL OF A PRODUCT WILL BE USED UP BEFORE DISPOSING OF THE CONTAINER;
   - MANUFACTURERS' RECOMMENDATIONS FOR PROPER USE AND DISPOSAL WILL BE FOLLOWED;
   - TRASH DUMPSTERS SHALL BE GASKETED OR HAVE A SECURE WATERTIGHT LID AND BE PLACED AWAY FROM STORMWATER CONVEYANCES AND DRAINS.
   - THE SITE SUPERINTENDENT WILL INSPECT DAILY TO ENSURE PROPER USE AND DISPOSAL OF MATERIALS ONSITE.

   HAZARDOUS PRODUCTS:
   THESE PRACTICES ARE USED TO REDUCE THE RISKS ASSOCIATED WITH HAZARDOUS MATERIALS:
   - PRODUCTS WILL BE KEPT IN ORIGINAL CONTAINERS UNLESS THEY ARE NOT RESEALABLE;
   - ORIGINAL LABELS AND MATERIAL SAFETY DATA WILL BE RETAINED; THEY CONTAIN IMPORTANT PRODUCT INFORMATION;
   - IF SURPLUS PRODUCT MUST BE DISPOSED OF, MANUFACTURER'S OR LOCAL AND STATE RECOMMENDED METHODS FOR PROPER DISPOSAL WILL BE FOLLOWED.

   PRODUCT SPECIFIC PRACTICES:
   THE FOLLOWING PRODUCT SPECIFIC PRACTICES WILL BE FOLLOWED ON SITE:

   PETROLEUM PRODUCTS:
   ALL ONSITE VEHICLES WILL BE MONITORED FOR LEAKS AND RECEIVE REGULAR PREVENTATIVE MAINTENANCE TO REDUCE THE CHANCE OF LEAKAGE. PETROLEUM PRODUCTS WILL BE STORED IN TIGHTLY SEALED CONTAINERS WHICH ARE CLEARLY LABELED. ANY ASPHALT SUBSTANCES USED ONSITE WILL BE APPLIED ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS.

   FERTILIZERS:
   FERTILIZERS USED WILL BE APPLIED ONLY IN THE MINIMUM AMOUNTS RECOMMENDED BY THE MANUFACTURER. ONCE APPLIED, FERTILIZER WILL BE WORKED INTO THE SOIL TO LIMIT EXPOSURE TO STORM WATER. STORAGE WILL BE IN A COVERED SHED. THE CONTENTS OF ANY PARTIALLY USED BAGS OF FERTILIZER WILL BE TRANSFERRED TO A SEALABLE PLASTIC BIN TO AVOID SPILLS.

   PAINTS:
   ALL CONTAINERS WILL BE TIGHTLY SEALED AND STORED WHEN NOT REQUIRED FOR USE. EXCESS PAINT WILL NOT BE DISCHARGED TO THE STORM SEWER BUT WILL BE PROPERLY DISPOSED OF ACCORDING TO MANUFACTURER'S INSTRUCTIONS OR STATE AND LOCAL REGULATIONS.

   CONCRETE TRUCKS:
   EXCESS CONCRETE SHALL BE USED IN AREAS DESIGNATED BY THE SITE CONTRACTOR. WASH WATER SHALL BE DISPOSED OF USING BEST MANAGEMENT PRACTICES. BUILDING CONTRACTOR IS RESPONSIBLE FOR REMOVAL OF ALL DRUM WASH WATER ASSOCIATED WITH CONCRETE FOR THE BUILDING PAD. SITE CONTRACTOR TO COORDINATE AND PROVIDE BUILDING CONTRACTOR WITH AN AREA FOR DRUM WASH WATER.

   SPILL CONTROL PRACTICES:
   IN ADDITION TO THE GOOD HOUSEKEEPING AND MATERIAL MANAGEMENT PRACTICES DISCUSSED IN THE PREVIOUS SECTIONS OF THIS PLAN, THE FOLLOWING PRACTICES WILL BE FOLLOWED FOR SPILL PREVENTION AND CLEANUP:
   - MANUFACTURER'S RECOMMENDED METHODS FOR SPILL CLEANUP WILL BE CLEARLY POSTED AND SITE PERSONNEL WILL BE MADE AWARE OF THE PROCEDURES AND THE LOCATION OF THE INFORMATION AND CLEANUP SUPPLIES.
   - MATERIALS AND EQUIPMENT NECESSARY FOR SPILL CLEANUP WILL BE KEPT IN THE MATERIAL STORAGE AREA ONSITE. EQUIPMENT AND MATERIALS WILL INCLUDE BUT NOT BE LIMITED TO BROOMS, DUST PANS, MOPS, RAGS, GLOVES, GOGGLES, KITTY LITTER, SAND, SAWDUST, AND PLASTIC AND METAL TRASH CONTAINERS SPECIFICALLY FOR THIS PURPOSE.
   - ALL SPILLS WILL BE CLEANED UP IMMEDIATELY AFTER DISCOVERY.
   - THE SPILL AREA WILL BE KEPT WELL VENTILATED AND PERSONNEL WILL WEAR APPROPRIATE PROTECTIVE CLOTHING TO PREVENT INJURY FROM CONTACT WITH A HAZARDOUS SUBSTANCE.
   - SPILLS OF TOXIC OR HAZARDOUS MATERIAL WILL BE REPORTED TO THE APPROPRIATE STATE OR LOCAL GOVERNMENT AGENCY, REGARDLESS OF SIZE.
   - THE SPILL PREVENTION PLAN WILL BE ADJUSTED TO INCLUDE MEASURES TO PREVENT THIS TYPE OF SPILL FROM REOCCURRING AND HOW TO CLEAN UP THE SPILL IF THERE IS ANOTHER ONE. A DESCRIPTION OF THE SPILL, WHAT CAUSED IT, AND THE CLEANUP MEASURES WILL ALSO BE INCLUDED.
   - THE SITE SUPERINTENDENT RESPONSIBLE FOR THE DAY-TO-DAY SITE OPERATIONS, WILL BE THE SPILL PREVENTION AND CLEANUP COORDINATOR. THEY WILL DESIGNATE AT LEAST THREE OTHER SITE PERSONNEL WHO WILL EACH RECEIVE SPILL PREVENTION AND CLEANUP TRAINING. THESE INDIVIDUALS WILL EACH BECOME RESPONSIBLE FOR A PARTICULAR PHASE OF PREVENTION AND CLEANUP. THE NAMES OF RESPONSIBLE SPILL PERSONNEL WILL BE POSTED IN THE MATERIAL STORAGE AREA AND IN THE OFFICE TRAILER ONSITE.
11. THE CONTRACTOR IS RESPONSIBLE TO MAINTAIN RECORDS OF CONSTRUCTION ACTIVITIES, INCLUDING DATES OF MAJOR GRADING ACTIVITIES, DATES WHEN CONSTRUCTION ACTIVITIES HAVE TEMPORARILY CEASED ON A PORTION OF THE SITE, DATES WHEN WORK IS COMPLETED ON A PORTION OF THE SITE, AND DATES WHEN STABILIZATION MEASURES ARE INITIATED ONSITE.
12. THE CONTRACTOR SHALL PERFORM INSPECTIONS OR HAVE A CONSULTING ENGINEER PERFORM INSPECTIONS EVERY SEVEN (7) DAYS AND WITHIN 24 HOURS AFTER A STORM OF 0.5" OR GREATER. INSPECTIONS REPORTS ARE TO BE KEPT ON FILE AT THE SITE WITH THIS PLAN. MAINTENANCE OR MODIFICATION SHALL BE IMPLEMENTED AND ADDED TO THE PLAN AS RECOMMENDED BY THE QUALIFIED INSPECTOR.

2" X 2" DOVER SQUARE

Copyright 2022 ©TFMoran, Inc.
48 Constitution Drive, Bedford, N.H. 03110

All rights reserved. These plans and materials may not be copied, duplicated, replicated or otherwise reproduced in any form whatsoever without the prior written permission of TFMoran, Inc.

This plan is not effective unless signed by a duly authorized officer of TFMoran, Inc.

DIG SAFE
CALL TOLL FREE 1-888-DIG-SAFE
UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM
CONTACT DIG SAFE 72 HOURS PRIOR TO CONSTRUCTION

JAMES M. ROBINSON No. 10414 STATE OF NEW HAMPSHIRE 9-1-23

20 10 0 20
Graphic Scale

REV.	DATE	DESCRIPTION	DR	CK
3	2/28/2023	REV. PER TRC COMMENTS	JD	JMR
2	1/31/2023	REV. PER TRC COMMENTS	JD	JMR
1	12/2/2022	REV. PER TRC COMMENTS	SRP	JMR

TAX MAP H LOT 4-3

DEMOLITION AND EROSION CONTROL PLAN - PHASE 4C

MIXED USE DEVELOPMENT

NH ROUTE 108 AND MAST ROAD
DOVER, NEW HAMPSHIRE

OWNER OF RECORD
VC DOVER INVESTMENTS, LLC
48 CONSTITUTION DRIVE
BEDFORD, NH 03110

AND

APPLICANT/DEVELOPER
VC DOVER INVESTMENTS, LLC
48 CONSTITUTION DRIVE
BEDFORD, NH 03110

SCALE: 1"=20' **PROJECT: P22-72** **OCTOBER 18, 2022**

TFM
Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists
48 Constitution Drive
Bedford, NH 03110
Phone (603) 472-4488
Fax (603) 472-9747
www.tfmoran.com

FILE	DR	FB	
46001.31	JMR	1927	SHEET 4 OF 23
	CK JK	CADFILE 46001-31 CONCEPT	

MASTER LEGEND

PROPOSED		EXISTING
	CONCRETE BOUND	CBF
	STONE BOUND	SBF
	IRON PIPE	IPF
	IRON PIN	IPinF or IRF
	DRILL HOLE	DHF
	NAIL OR RAILROAD SPIKE	PK or RRS
	GUARD RAIL	
	BITUMINOUS CONCRETE CURB	BCC
SGC	SLOPED GRANITE CURB	SGC
VGC	VERTICAL GRANITE CURB	VGC
ICC	INTEGRAL CONCRETE CURB	
	CONCRETE CURB	CC
	EDGE OF PAVEMENT	
	EDGE OF GRAVEL	
SBWL	SINGLE BROKEN WHITE LINE	SBWL
SSWL	SINGLE SOLID WHITE LINE	SSWL
DSYL	DOUBLE SOLID YELLOW LINE	DSYL
SSYL	SINGLE SOLID YELLOW LINE	SSYL
SBYL	SINGLE BROKEN YELLOW LINE	SBYL
	RETAINING WALL	
	WIRE FENCE	
	CHAIN LINK FENCE	
	WOOD FENCE	
	SIGN	
	MAILBOX	MB
	TRAFFIC FLOW	
	GASGATE	
	LIGHT POLE	
	BUILDING MOUNTED LIGHT	
	HYDRANT	
	WATER GATE	
	ELECTRIC MANHOLE	
	TELEPHONE MANHOLE	
	SEWER MANHOLE	
	DRAIN MANHOLE	
	CATCH BASIN	
	TRANSFORMER PAD	
	UTILITY POLE	
200	INDEX CONTOUR	200
202	INTERMEDIATE CONTOUR	202
	STONEWALL (BOUNDARY)	
	STONEWALL (INTERIOR)	
	ZONING BOUNDARY	XX
	EDGE OF WATER	
	LIMITS OF CLEARING / TREELINE	
	TREES	
	RIP-RAP	

Copyright 2022 ©TFMoran, Inc.
48 Constitution Drive, Bedford, N.H. 03110

All rights reserved. These plans and materials may not be copied, duplicated, replicated or otherwise reproduced in any form whatsoever without the prior written permission of TFMoran, Inc.

This plan is not effective unless signed by a duly authorized officer of TFMoran, Inc.

DIG SAFE
MA ME NH RI VT
CALL TOLL FREE DIG SAFE UTILITIES UNDER-GROUND PLANT DAMAGE PREVENTION SYSTEM
CONTACT DIG SAFE 72 HOURS PRIOR TO CONSTRUCTION

UNIT 1
4.5822 AC.
199,601 S.F.

UNIT 2
1.9621 AC.
85,468 S.F.

UNIT 3
0.4496 AC.
19,583 S.F.

MAP H LOT 4-3
N/F
VC DOVER INVESTMENTS LLC
48 CONSTITUTION DRIVE
BEDFORD, NH 03110
SCRD BK.#3496 PG.#733

Graphic Scale 20 10 0 20

REV.	DATE	DESCRIPTION	DR	CK
3	2/28/2023	REV. PER TRC COMMENTS	JD	JMR
2	1/31/2023	REV. PER TRC COMMENTS	JD	JMR
1	12/2/2022	REV. PER TRC COMMENTS	SRP	JMR

TFM — Civil Engineers, Structural Engineers, Traffic Engineers, Land Surveyors, Landscape Architects, Scientists
48 Constitution Drive, Bedford, NH 03110
Phone (603) 472-4488
Fax (603) 472-9747
www.tfmoran.com

FILE 46001.31 | DR JMR | FB 1927 | CK JK | CADFILE 46001-31 CONCEPT

SHEET 5 OF 23

2" X 2" DOVER SQUARE

TAX MAP H LOT 4-3
SITE LAYOUT PLAN - PHASE 4C

MIXED USE DEVELOPMENT

NH ROUTE 108 AND MAST ROAD
DOVER, NEW HAMPSHIRE

OWNER OF RECORD
VC DOVER INVESTMENTS, LLC
48 CONSTITUTION DRIVE
BEDFORD, NH 03110

AND

APPLICANT/DEVELOPER
VC DOVER INVESTMENTS, LLC
48 CONSTITUTION DRIVE
BEDFORD, NH 03110

SCALE: 1"=20' **PROJECT: P22-72** **OCTOBER 18, 2022**

NOTES

1. ALL WORK SHALL CONFORM TO THE APPLICABLE REGULATIONS AND STANDARDS OF THE CITY OF DOVER, AND SHALL BE BUILT IN A WORKMANLIKE MANNER IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS.
2. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO FAMILIARIZE HIMSELF WITH THE SITE AND ALL SURROUNDING CONDITIONS.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING AND DETERMINING THE LOCATION, SIZE AND ELEVATION OF ALL EXISTING UTILITIES, SHOWN OR NOT SHOWN ON THESE PLANS, PRIOR TO THE START OF ANY CONSTRUCTION. THE ENGINEER SHALL BE NOTIFIED IN WRITING OF ANY UTILITIES FOUND INTERFERING WITH THE PROPOSED CONSTRUCTION AND APPROPRIATE REMEDIAL ACTION BE AGREED TO BY THE ENGINEER BEFORE PROCEEDING WITH THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE TO CONTACT "DIGSAFE" (811) AT LEAST 72 HOURS BEFORE DIGGING.
4. THE CONTRACTOR SHALL COORDINATE MATERIALS AND INSTALLATION SPECIFICATIONS WITH THE INDIVIDUAL UTILITY AGENCIES/COMPANIES, AND ARRANGE FOR ALL INSPECTIONS.
5. ROAD AND DRAINAGE CONSTRUCTION SHALL CONFORM TO THE TYPICAL SECTIONS AND DETAILS SHOWN ON THE PLANS, AND SHALL MEET LOCAL STANDARDS AND THE REQUIREMENTS OF THE LATEST NHDOT STANDARD SPECIFICATIONS FOR ROADS AND BRIDGE CONSTRUCTION AND THE NHDOT STANDARD STRUCTURE DRAWINGS UNLESS OTHERWISE NOTED.
6. STORM DRAINAGE SYSTEM SHALL BE CONSTRUCTED TO LINE AND GRADE AS SHOWN ON THE PLANS. CONSTRUCTION METHODS SHALL CONFORM TO NHDOT STANDARD SPECIFICATIONS, SECTION 603. CATCH BASINS AND DRAIN MANHOLES SHALL CONFORM TO SECTION 604. ALL CATCH BASIN GRATES SHALL BE TYPE B AND CONFORM TO NHDOT STANDARDS AND SPECIFICATIONS UNLESS OTHERWISE NOTED.
7. ALL MANHOLES IN PAVEMENT SHALL HAVE RIMS SET TO FINISH GRADE REGARDLESS OF ANY ELEVATIONS OTHERWISE SHOWN.
8. ALL ELEVATIONS SHOWN AT CURB ARE TO THE BOTTOM OF CURB UNLESS OTHERWISE NOTED. CURBS HAVE A 6" REVEAL UNLESS OTHERWISE NOTED.
9. ALL EXCAVATIONS SHALL BE THOROUGHLY SECURED ON A DAILY BASIS BY THE CONTRACTOR AT THE COMPLETION OF CONSTRUCTION OPERATIONS IN THE IMMEDIATE AREA.
10. THE SITE CONTRACTOR SHALL PREPARE, MAINTAIN, AND EXECUTE A S.W.P.P.P. IN ACCORDANCE WITH EPA REGULATIONS AND THE CONSTRUCTION GENERAL PERMIT.
11. THE SITE CONTRACTOR SHALL COORDINATE WITH THE OWNER TO SUBMIT AN eNOI AT LEAST 14 DAYS IN ADVANCE OF ANY EARTHWORK ACTIVITIES AT THE SITE.
12. THE EROSION CONTROL PRACTICES SHOWN ON THESE PLANS ARE ILLUSTRATIVE ONLY AND SHALL BE SUPPLEMENTED BY THE SITE CONTRACTOR AS NEEDED.
13. COORDINATE WITH ARCHITECTURAL PLANS FOR DETAILED GRADING AT BUILDING, AND SIZE AND LOCATION OF ALL BUILDING SERVICES.
14. LIMITS OF WORK ARE SHOWN AS APPROXIMATE. THE CONTRACTOR SHALL COORDINATE ALL WORK TO PROVIDE SMOOTH TRANSITIONS. THIS INCLUDES GRADING, PAVEMENT, CURBING, SIDEWALKS AND ALIGNMENTS.
15. THE CONTRACTOR IS RESPONSIBLE FOR THE MEANS AND METHODS OF CONSTRUCTION AND FOR THE CONDITIONS AT THE SITE. WRITTEN DIMENSIONS HAVE PRECEDENCE OVER SCALED DIMENSIONS. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND REPORT DISCREPANCIES TO THE ENGINEER.
16. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO CHECK THE ACCURACY OF THE TOPOGRAPHY AND REPORT ANY DISCREPANCIES TO THE ENGINEER PRIOR TO ANY EARTHWORK BEING PERFORMED ON THE SITE. NO CLAIM FOR EXTRA WORK WILL BE CONSIDERED FOR PAYMENT AFTER EARTHWORK HAS COMMENCED.
17. VERIFY TBM ELEVATIONS PRIOR TO CONSTRUCTION.
18. IN THE EVENT OF A CONFLICT BETWEEN PLANS, SPECIFICATIONS, AND DETAILS, THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY FOR CLARIFICATION.
19. IF CONDITIONS AT THE SITE ARE DIFFERENT THAN SHOWN THE ENGINEER SHALL BE NOTIFIED PRIOR TO PROCEEDING WITH THE AFFECTED WORK.
20. THESE PLANS WERE PREPARED UNDER THE SUPERVISION OF A LICENSED PROFESSIONAL ENGINEER. TFMORAN INC. ASSUMES NO LIABILITY AS A RESULT OF ANY CHANGES OR NON-CONFORMANCE WITH THESE PLANS EXCEPT UPON THE WRITTEN APPROVAL OF THE ENGINEER OF RECORD.
21. TFMORAN INC. ASSUMES NO LIABILITY FOR WORK PERFORMED WITHOUT AN ACCEPTABLE PROGRAM OF TESTING AND INSPECTION AS APPROVED BY THE ENGINEER OF RECORD.
22. THE SITE CONTRACTOR SHALL ENSURE THAT ALL WORK IS PERFORMED IN ACCORDANCE WITH THE REQUIREMENTS OF NHDES ENV-WQ 1500 AS APPLICABLE.
23. IF ANY DEVIATIONS FROM THE APPROVED PLANS AND SPECIFICATIONS HAVE BEEN MADE, THE SITE CONTRACTOR SHALL PROVIDE AS-BUILT DRAWINGS STAMPED BY A LICENSED SURVEYOR OR QUALIFIED ENGINEER ALONG WITH A LETTER STAMPED BY A QUALIFIED ENGINEER DESCRIBING ALL SUCH DEVIATIONS, AND BEAR ALL COSTS FOR PREPARING AND FILING ANY NEW PERMITS OR PERMIT AMENDMENTS THAT MAY BE REQUIRED.
24. ANY RETAINING WALL TALLER THAN FOUR FEET (4') REQUIRES ISSUANCE OF A BUILDING PERMIT FROM THE INSPECTION SERVICES.
27. A FENCE TALLER THAN SEVEN FEET (7') REQUIRES THE ISSUANCE OF A BUILDING PERMIT FROM THE INSPECTION SERVICES.

MASTER LEGEND

PROPOSED		EXISTING
	CONCRETE BOUND	CBF
	STONE BOUND	SBF
	IRON PIPE	IPF
	IRON PIN	IPinF or IRF
	DRILL HOLE	DHF
	NAIL OR RAILROAD SPIKE	PK or RRS
	GUARD RAIL	
	BITUMINOUS CONCRETE CURB	BCC
SGC	SLOPED GRANITE CURB	SGC
VGC	VERTICAL GRANITE CURB	VGC
ICC	INTEGRAL CONCRETE CURB	
	CONCRETE CURB	CC
	EDGE OF PAVEMENT	
	EDGE OF GRAVEL	
SBWL	SINGLE BROKEN WHITE LINE	SBWL
SSWL	SINGLE SOLID WHITE LINE	SSWL
DSYL	DOUBLE SOLID YELLOW LINE	DSYL
SSYL	SINGLE SOLID YELLOW LINE	SSYL
SBYL	SINGLE BROKEN YELLOW LINE	SBYL
	RETAINING WALL	
	WIRE FENCE	X
	CHAIN LINK FENCE	
	WOOD FENCE	
	SIGN	
	MAILBOX	MB
	TRAFFIC FLOW	
	GASGATE	
	LIGHT POLE	
	BUILDING MOUNTED LIGHT	
	HYDRANT	
	WATER GATE	
	ELECTRIC MANHOLE	
	TELEPHONE MANHOLE	
S	SEWER MANHOLE	S
D	DRAIN MANHOLE	D
	CATCH BASIN	
T	TRANSFORMER PAD	
	UTILITY POLE	
200	INDEX CONTOUR	200
202	INTERMEDIATE CONTOUR	202
	STONEWALL (BOUNDARY)	
	STONEWALL (INTERIOR)	
	ZONING BOUNDARY	XX
	EDGE OF WATER	
	LIMITS OF CLEARING / TREELINE	
	TREES	
	RIP-RAP	

Copyright 2022 ©TFMoran, Inc.
48 Constitution Drive, Bedford, N.H. 03110

All rights reserved. These plans and materials may not be copied, duplicated, replicated or otherwise reproduced in any form whatsoever without the prior written permission of TFMoran, Inc.

This plan is not effective unless signed by a duly authorized officer of TFMoran, Inc.

DIG SAFE
MA ME NH RI VT
CALL BEFORE YOU DIG
UTILITIES UNDERGROUND - PLANT DAMAGE PREVENTION SYSTEM
DIG SAFE TOLL FREE
CONTACT DIG SAFE 72 HOURS PRIOR TO CONSTRUCTION

UNIT 1
4.5822 AC.
199,601 S.F.

UNIT 2
1.9621 AC.
85,468 S.F.

UNIT 3
0.4496 AC.
19,583 S.F.

MAP H LOT 4-3
N/F
VC DOVER INVESTMENTS LLC
48 CONSTITUTION DRIVE
BEDFORD, NH 03110
SCRD BK.#3496 PG.#733

ACCESS EASEMENT BK.#4094 PG.#317

ACCESS EASEMENT BK.#3561, PG.#648

50' WETLAND BUFFER

Graphic Scale 20 10 0 20

2" X 2" DOVER SQUARE

STATE OF NEW HAMPSHIRE — JAMES M. ROBINSON No. 10414 — PROFESSIONAL ENGINEER — 4-13

3	2/28/2023	REV. PER TRC COMMENTS	JD	JMR
2	1/31/2023	REV. PER TRC COMMENTS	JD	JMR
1	12/2/2022	REV. PER TRC COMMENTS	SRP	JMR
REV.	DATE	DESCRIPTION	DR	CK

TAX MAP H LOT 4-3

GRADING AND DRAINAGE PLAN - PHASE 4C

MIXED USE DEVELOPMENT

NH ROUTE 108 AND MAST ROAD
DOVER, NEW HAMPSHIRE

OWNER OF RECORD
VC DOVER INVESTMENTS, LLC
48 CONSTITUTION DRIVE
BEDFORD, NH 03110

AND

APPLICANT/DEVELOPER
VC DOVER INVESTMENTS, LLC
48 CONSTITUTION DRIVE
BEDFORD, NH 03110

SCALE: 1"=20' **PROJECT: P22-72** **OCTOBER 18, 2022**

TFM
Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

48 Constitution Drive
Bedford, NH 03110
Phone (603) 472-4488
Fax (603) 472-9747
www.tfmoran.com

FILE	DR	CK	FB	CADFILE	
46001.31	JMR	JK	1927	46001-31 CONCEPT	SHEET 6 OF 23

NOTES

1. ALL WORK SHALL CONFORM TO THE APPLICABLE REGULATIONS AND STANDARDS OF THE CITY OF DOVER, AND SHALL BE BUILT IN A WORKMANLIKE MANNER IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS.
2. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO FAMILIARIZE HIMSELF WITH THE SITE AND ALL SURROUNDING CONDITIONS.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING AND DETERMINING THE LOCATION, SIZE AND ELEVATION OF ALL EXISTING UTILITIES, SHOWN OR NOT SHOWN ON THESE PLANS, PRIOR TO THE START OF ANY CONSTRUCTION. THE ENGINEER SHALL BE NOTIFIED IN WRITING OF ANY UTILITIES FOUND INTERFERING WITH THE PROPOSED CONSTRUCTION AND APPROPRIATE REMEDIAL ACTION BE AGREED TO BY THE ENGINEER BEFORE PROCEEDING WITH THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE TO CONTACT "DIGSAFE" (811) AT LEAST 72 HOURS BEFORE DIGGING.
4. THE CONTRACTOR SHALL CONTACT ALL UTILITY COMPANIES OWNING UTILITIES, EITHER OVERHEAD OR UNDERGROUND, WITHIN THE CONSTRUCTION AREA AND SHALL COORDINATE AS NECESSARY WITH THE UTILITY COMPANIES OF SAID UTILITIES. THE PROTECTION OR RELOCATION OF UTILITIES IS ULTIMATELY THE RESPONSIBILITY OF THE CONTRACTOR.
5. THE CONTRACTOR SHALL COORDINATE MATERIALS AND INSTALLATION SPECIFICATIONS WITH THE INDIVIDUAL UTILITY AGENCIES/COMPANIES, AND ARRANGE FOR ALL INSPECTIONS.
6. ALL MANHOLES IN PAVEMENT SHALL HAVE RIMS SET TO FINISH GRADE REGARDLESS OF ANY ELEVATIONS OTHERWISE SHOWN.
7. ON-SITE WATER DISTRIBUTION SHALL BE TO PENNICHUCK WATER WORKS STANDARDS AND SPECIFICATIONS. WATER MAINS SHALL HAVE A MINIMUM OF 5.5 FEET COVER. WHERE WATER PIPES CROSS SEWER LINES A MINIMUM OF 18" VERTICAL SEPARATION BETWEEN THE TWO OUTSIDE PIPE WALLS SHALL BE OBSERVED. HORIZONTAL SEPARATION BETWEEN WATER AND SEWER SHALL BE 10 FEET MINIMUM.
8. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR CONDUIT AND WIRING TO ALL SIGNS AND LIGHTS. CONDUIT TO BE A MINIMUM OF 24" BELOW FINISH GRADE.
9. VERIFY UTILITY CONNECTIONS TO BUILDING WITH ARCHITECTURAL DRAWINGS.
10. ALL EXCAVATIONS SHALL BE THOROUGHLY SECURED ON A DAILY BASIS BY THE CONTRACTOR AT THE COMPLETION OF CONSTRUCTION OPERATIONS IN THE IMMEDIATE AREA.
13. LIMITS OF WORK ARE SHOWN AS APPROXIMATE. THE CONTRACTOR SHALL COORDINATE ALL WORK TO PROVIDE SMOOTH TRANSITIONS. THIS INCLUDES GRADING, PAVEMENT, CURBING, SIDEWALKS AND ALIGNMENTS.
14. THE CONTRACTOR IS RESPONSIBLE FOR THE MEANS AND METHODS OF CONSTRUCTION AND FOR THE CONDITIONS AT THE SITE. WRITTEN DIMENSIONS HAVE PRECEDENCE OVER SCALED DIMENSIONS. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND REPORT DISCREPANCIES TO THE ENGINEER.
15. UNLESS OTHERWISE SPECIFIED, ALL UNDERGROUND STRUCTURES, PIPES, CHAMBERS, ETC. SHALL BE COVERED WITH A MINIMUM OF 18" OF COMPACTED SOIL BEFORE EXPOSURE TO VEHICLE LOADS.
16. THE INSTALLATION OF ELECTRIC POWER, CABLE TELEVISION AND TELEPHONE SHALL BE UNDERGROUND THROUGHOUT THE SITE FOR WHICH THE DEVELOPMENT IS PROPOSED.
17. SPRINKLER CONNECTIONS MUST BE FLUSHED IN ACCORDANCE WITH NFPA 24 AND A CONTRACTOR MATERIAL AND TEST CERTIFICATE FOR UNDERGROUND PIPING FORM MUST BE COMPLETED AND APPROVED BY INSPECTION SERVICES PRIOR TO CONNECTION OF THE BACKFLOW DEVICE.

MASTER LEGEND

PROPOSED		EXISTING
	CONCRETE BOUND	CBF
	STONE BOUND	SBF
	IRON PIPE	IPF
	IRON PIN	IPinF or IRF
	DRILL HOLE	DHF
	NAIL OR RAILROAD SPIKE	PK or RRS
	GUARD RAIL	
	BITUMINOUS CONCRETE CURB	BCC
SGC	SLOPED GRANITE CURB	SGC
VGC	VERTICAL GRANITE CURB	VGC
ICC	INTEGRAL CONCRETE CURB	
	CONCRETE CURB	CC
	EDGE OF PAVEMENT	
	EDGE OF GRAVEL	
SBWL	SINGLE BROKEN WHITE LINE	SBWL
SSWL	SINGLE SOLID WHITE LINE	SSWL
DSYL	DOUBLE SOLID YELLOW LINE	DSYL
SSYL	SINGLE SOLID YELLOW LINE	SSYL
SBYL	SINGLE BROKEN YELLOW LINE	SBYL
	RETAINING WALL	
	WIRE FENCE	X
	CHAIN LINK FENCE	
	WOOD FENCE	
	SIGN	
	MAILBOX	MB
	TRAFFIC FLOW	
	GASGATE	GV
	LIGHT POLE	
	BUILDING MOUNTED LIGHT	
	HYDRANT	HY
	WATER GATE	WV
	ELECTRIC MANHOLE	E
	TELEPHONE MANHOLE	T
S	SEWER MANHOLE	S
D	DRAIN MANHOLE	D
	CATCH BASIN	
E	TRANSFORMER PAD	
	UTILITY POLE	
200	INDEX CONTOUR	200
202	INTERMEDIATE CONTOUR	202
	STONEWALL (BOUNDARY)	
	STONEWALL (INTERIOR)	
	ZONING BOUNDARY	
	EDGE OF WATER	XX
	LIMITS OF CLEARING / TREELINE	
	TREES	
	RIP-RAP	

Copyright 2022 ©TFMoran, Inc.
48 Constitution Drive, Bedford, N.H. 03110

All rights reserved. These plans and materials may not be copied, duplicated, replicated or otherwise reproduced in any form whatsoever without the prior written permission of TFMoran, Inc.

This plan is not effective unless signed by a duly authorized officer of TFMoran, Inc.

DIG SAFE
NH ME NH RI VT
UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM
CALL BEFORE YOU DIG-SAFE TOLL FREE
CONTACT DIG SAFE 72 HOURS PRIOR TO CONSTRUCTION

UNIT 1
4.5822 AC.
199,601 S.F.

UNIT 2
1.9621 AC.
85,468 S.F.

UNIT 3
0.4496 AC.
19,583 S.F.

MAP H LOT 4-3
N/F
VC DOVER INVESTMENTS LLC
48 CONSTITUTION DRIVE
BEDFORD, NH 03110
SCRD BK.#3496 PG.#733

2" X 2" DOVER SQUARE

JAMES H. DICKINSON NO. 10414 STATE OF NEW HAMPSHIRE LICENSED LAND SURVEYOR
3-1-23

20 10 0 20
Graphic Scale

REV.	DATE	DESCRIPTION	DR	CK
3	2/28/2023	REV. PER TRC COMMENTS	JD	JMR
2	1/31/2023	REV. PER TRC COMMENTS	JD	JMR
1	12/2/2022	REV. PER TRC COMMENTS	SRP	JMR

TAX MAP H LOT 4-3
UTILITY PLAN - PHASE 4C

MIXED USE DEVELOPMENT

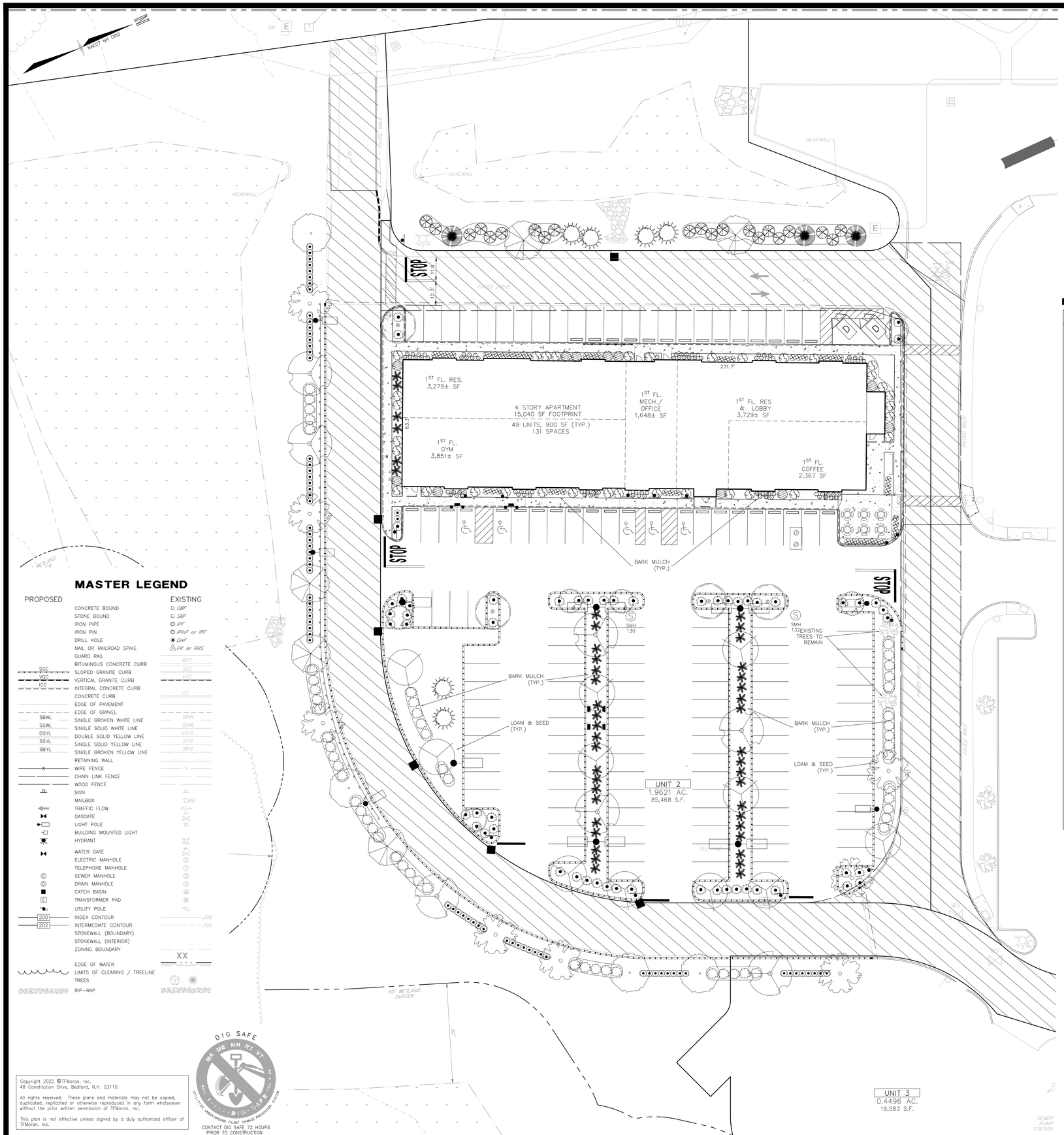
NH ROUTE 108 AND MAST ROAD
DOVER, NEW HAMPSHIRE

OWNER OF RECORD AND APPLICANT/DEVELOPER
VC DOVER INVESTMENTS, LLC
48 CONSTITUTION DRIVE
BEDFORD, NH 03110

SCALE: 1"=20' PROJECT: P22-72 OCTOBER 18, 2022

TFM
Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists
48 Constitution Drive
Bedford, NH 03110
Phone (603) 472-4488
Fax (603) 472-9747
www.tfmoran.com

FILE 46001.31 | DR JMR | CK JK | FB 1927 | CADFILE 46001-31 CONCEPT



MASTER LEGEND

PROPOSED		EXISTING
	CONCRETE BOUND	CBF
	STONE BOUND	SBF
	IRON PIPE	IPF
	IRON PIN	IPinF or IRF
	DRILL HOLE	DHF
	NAIL OR RAILROAD SPIKE	PK or RRS
	GUARD RAIL	
	BITUMINOUS CONCRETE CURB	BCC
SGC	SLOPED GRANITE CURB	SGC
VGC	VERTICAL GRANITE CURB	VGC
ICC	INTEGRAL CONCRETE CURB	
	CONCRETE CURB	CC
	EDGE OF PAVEMENT	
	EDGE OF GRAVEL	
SBWL	SINGLE BROKEN WHITE LINE	SBWL
SSWL	SINGLE SOLID WHITE LINE	SSWL
DSYL	DOUBLE SOLID YELLOW LINE	DSYL
SSYL	SINGLE SOLID YELLOW LINE	SSYL
SBYL	SINGLE BROKEN YELLOW LINE	SBYL
	RETAINING WALL	
X	WIRE FENCE	X
	CHAIN LINK FENCE	
	WOOD FENCE	
	SIGN	
	MAILBOX	MB
	TRAFFIC FLOW	
	GASGATE	GA
	LIGHT POLE	
	BUILDING MOUNTED LIGHT	
	HYDRANT	
	WATER GATE	W
	ELECTRIC MANHOLE	E
	TELEPHONE MANHOLE	T
S	SEWER MANHOLE	S
D	DRAIN MANHOLE	D
	CATCH BASIN	
T	TRANSFORMER PAD	
	UTILITY POLE	UP
200	INDEX CONTOUR	200
202	INTERMEDIATE CONTOUR	202
	STONEWALL (BOUNDARY)	
	STONEWALL (INTERIOR)	
	ZONING BOUNDARY	XX
	EDGE OF WATER	
	LIMITS OF CLEARING / TREELINE	
	TREES	
	RIP-RAP	

Copyright 2022 ©TFMoran, Inc.
48 Constitution Drive, Bedford, N.H. 03110

All rights reserved. These plans and materials may not be copied, duplicated, replicated or otherwise reproduced in any form whatsoever without the prior written permission of TFMoran, Inc.

This plan is not effective unless signed by a duly authorized officer of TFMoran, Inc.

DIG SAFE
NH ME NH RI VT
CALL - DIG-SAFE (811)
UTILITIES UNDER GROUND PLANT DAMAGE PREVENTION SYSTEM
CONTACT DIG SAFE 72 HOURS
PRIOR TO CONSTRUCTION

LANDSCAPE CALCULATIONS:

STREET TREE LANDSCAPE:(CIELO DRIVE) SECTION 149-14(1)(G)(f)
REQUIRED MIN. ONE TREE PER 35', NOT MORE THAN SIX (6) FEET APART FOR INDIVIDUAL SHRUBS, AND NOT MORE THAN THREE (3) FEET BETWEEN INDIVIDUAL PERENNIALS AND GROUNDCOVERS OR PORTION THEREOF.

PROVIDED TREES: 17 TREES AT 35' O.C.

PROVIDED SHRUBS: 35 SHRUBS AT 6' O.C. & 72 PERENNIALS (GRASS) AT 3' O.C..

INTERIOR LANDSCAPE: SECTION 149-14(2)(a)
MINIMUM INTERIOR PARKING LOT LANDSCAPING REQUIREMENTS:
NUMBER OF PARKING SPACES IN LOT MINIMUM PERCENT OF INTERIOR LANDSCAPING.
0 TO 20 SPACES = NOT REQUIRED
21 TO 50 SPACES = 5%
51 TO 200 SPACES = 8%
GREATER THAN 200 SPACES = 10%

PARKING = 131 SPACES
REQUIRED: 8% (4,052 SF)
PROVIDED: 12.3% (6,234 SF)

INTERIOR LANDSCAPE: SECTION 149-14(2)(b)
MINIMUM 10' WIDE PLANTING ISLAND REQUIRED FOR SEPARATING EVERY FOUR ROWS OF PARKING WITH TREES AT 40' O.C. AND SHRUBS AT 5' O.C. BETWEEN TREES. TREES SHALL BE A MINIMUM CALIPER OF THREE AND A HALF (3.5) INCHES (MEASURED AT FOUR FEET ABOVE GRADE LEVEL). SHRUBS SHALL BE A MINIMUM HEIGHT OF TWO (2) FEET.

PROVIDED TREES: 7 TREES AT 40' O.C.

PROVIDED SHRUBS: 39 SHRUBS AT 5' O.C.

PERIMETER LANDSCAPE: SECTION 149-14(3)(a)
ALONG THE PERIMETER OF PARKING LOTS WITH 10 OR MORE SPACES, DECIDUOUS AND/OR EVERGREEN SHADE TREES SHALL BE PLANTED AT 35 FEET ON CENTER WITHIN THE BUFFER AREA REQUIRED BY § 153-17C. TREES SHALL BE A MINIMUM CALIPER OF THREE AND A HALF (3.5) INCHES (MEASURED AT FOUR FEET ABOVE GRADE LEVEL). SHRUBS SHALL BE A MINIMUM HEIGHT OF TWO (2) FEET.

PROVIDED TREES: 15 TREES AT 35' O.C. (2 EXISTING, 13 PROPOSED)

PROVIDED SHRUBS: 46 SHRUBS AT 5' O.C.

LANDSCAPE LEGEND

SYMBOL	QTY	BOTANICAL NAME COMMON NAME	SIZE	REMARKS
	8	ACER RUBRUM 'OCTOBER GLORY' OCTOBER GLORY RED MAPLE	3 1/2" CAL. MIN.	B&B
	7	PLATANUS X ACREIFOLIA 'EXCLAMATION' EXCLAMATION PLANETREE	3 1/2" CAL. MIN.	B&B
	4	QUERCUS ALBA WHITE OAK	3 1/2" CAL. MIN.	B&B
	5	QUERCUS RUBRA RED OAK	3 1/2" CAL. MIN.	B&B
	4	TILIA TOMENTOSA 'STERLING' STERLING LINDEN	3 1/2" CAL. MIN.	B&B
	11	ULMUS A. 'VALLEY FORGE' VALLEY FORGE AMERICAN ELM	3 1/2" CAL. MIN.	B&B
	6	MALUS 'SNOWDRIFT' SNOWDRIFT FLOWERING CRABAPPLE	2 1/2" TO 3" CAL.	B&B
	6	PICEA ABIES NORWAY SPRUCE	6' TO 7'	B&B
	3	PINUS RESINOSA RED PINE	6' TO 7'	B&B
	48	CALAMAGRSTIS BRACHYTRICHA KOREAN FEATHER REED GRASS	2 GAL.	CONT.
	57	JUNIPERUS C. 'PFITZERIANA COMPACTA' COMPACT PFITZER JUNIPER	2' MIN.	CONT.
	56	JUNIPERUS H. 'BAR HARBOR' BAR HARBOR JUNIPER	3 GAL.	CONT.
	21	MYRICA PENSLYVANICA NORTHERN BATBERRY	2' TO 2 1/2'	CONT.
	74	MISCANTHUS S. 'VARIEGATA' VARIEGATED SILVER GRASS	3 GAL.	CONT.
	86	SPIRAEA JAPONICA 'LEMON PRINCESS' LEMON PRINCESS SPIREA	3 GAL.	CONT.
	45	SPIRAEA NIPPONICA 'SNOWMOUND' SNOWMOUND SPIREA	3' TO 3 1/2"	CONT.
	34	TAXUS C. 'GREENWAVE' GREENWAVE YEW	18" TO 24"	B&B
	11	TAXUS M. 'HICKSII' HICK'S YEW	2 1/2' TO 3'	B&B

LANDSCAPE NOTES

(SEE DETAILS FOR ADDITIONAL NOTES)

GENERAL

1. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE RULES, REGULATIONS, LAWS, AND ORDINANCES HAVING JURISDICTION OVER THIS PROJECT SITE.
2. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING ALL UNDERGROUND UTILITIES AND NOTIFY OWNER'S REPRESENTATIVE OF CONFLICTS.
3. THE LANDSCAPE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL QUANTITIES SHOWN ON PLANS BEFORE PRICING THE WORK. ANY DIFFERENCE IN QUANTITIES SHALL BE BROUGHT TO THE ATTENTION OF THE LANDSCAPE ARCHITECT FOR CLARIFICATION. LANDSCAPE QUANTITIES SHOWN ON THE PLAN SHALL SUPERCEDE QUANTITIES LISTED IN LANDSCAPE LEGEND.
4. THE CONTRACTOR SHALL CONTACT THE LANDSCAPE ARCHITECT PRIOR TO STARTING WORK AND VERIFY THAT THE PLANS IN THE CONTRACTOR'S POSSESSION ARE THE MOST CURRENT PLANS AVAILABLE AND ARE THE APPROVED PLAN SET FOR USE IN CONSTRUCTION.
5. ALL PLANT MATERIALS INSTALLED SHALL MEET OR EXCEED THE SPECIFICATIONS OF THE AMERICAN NURSERY AND LANDSCAPE ASSOCIATION (ANLA) [FORMERLY THE AMERICAN ASSOCIATION OF NURSERYMEN] IN THE AMERICAN STANDARD FOR NURSERY STOCK (AS AMENDED) [ANSI Z60.1-1996].
6. ALL PLANTS SHALL BE FIRST CLASS AND SHALL BE REPRESENTATIVE OF THEIR NORMAL SPECIES AND/OR VARIETIES. ALL PLANTS MUST HAVE GOOD, HEALTHY, WELL-FORMED UPPER GROWTH AND A LARGE, FIBEROUS, COMPACT ROOT SYSTEM.
7. ALL PLANTS SHALL BE FREE FROM DISEASE AND INSECT PESTS AND SHALL COMPLY WITH ALL APPLICABLE STATE AND FEDERAL LAWS PERTAINING TO PLANT DISEASES AND INFESTATIONS.
8. ALL TREES SHALL BE BALLED AND BURLAPPED (B & B) UNLESS OTHERWISE NOTED OR APPROVED BY LANDSCAPE ARCHITECT.
9. ALL LANDSCAPED AREAS INCLUDING LAWNS SHALL BE PROVIDED WITH UNDERGROUND IRRIGATION. SEE IRRIGATION NOTES.
10. IF APPLICABLE, THE CONTRACTOR SHALL HAVE ALL FALL TRANSPLANTING HAZARD PLANTS DUG IN THE SPRING AND STORED FOR FALL PLANTING.
11. ALL INVASIVE PLANT SPECIES IDENTIFIED IN CHAPTER AGR 3800, PURSUANT TO RSA 430:55 AND ALL NON-NATIVE PLANT SPECIES IDENTIFIED IN THE NEW HAMPSHIRE RESTRICTED INVASIVE PLANTS SPECIES/WATCH LIST ARE PROHIBITED.

GUARANTEE

THE LANDSCAPE CONTRACTOR SHALL GUARANTEE ALL LANDSCAPE WORK FOR A PERIOD OF ONE YEAR, BEGINNING AT THE START OF THE MAINTENANCE PERIOD.

IRRIGATION NOTES

1. THE IRRIGATION SYSTEM SHALL BE DESIGNED BY AN APPROVED IRRIGATION DESIGN/BUILD CONTRACTOR ACCEPTABLE TO THE OWNERS REPRESENATIVE.
2. THE CONTRACTOR IS RESPONSIBLE FOR SUBMITTING THE IRRIGATION SYSTEM DESIGN AND SHOP DRAWINGS TO THE OWNER 30 DAYS PRIOR TO THE START OF CONSTRUCTION.
3. THE CONTRACTOR SHALL VERIFY LOCATIONS OF ALL EXISTING AND PROPOSED UTILITIES AND NOTIFY THE OWNER'S REPRESENTATIVE OF CONFLICTS.
4. THE IRRIGATION CONTRACTOR IS RESPONSIBLE FOR A COMPLETE AND OPERABLE IRRIGATION SYSTEM AND SHALL FOLLOW ALL APPLICABLE CODES.
5. REFER TO ARCHITECTURAL PLANS FOR LOCATION OF THE IRRIGATION SYSTEM'S BUILDING CONNECTION AND CONTROLS.
6. FOLLOW ALL MANUFACTURER'S INSTRUCTIONS AND PRODUCT SPECIFICATIONS FOR INSTALLATION.

2" X 2" DOVER SQUARE

STATE OF NEW HAMPSHIRE
JAMES M. ROBINSON
No. 10414
REGISTERED LANDSCAPE ARCHITECT
5-1-23

20 10 0 20
Graphic Scale

REV.	DATE	DESCRIPTION	DR	CK
3	2/28/2023	REV. PER TRC COMMENTS	JD	JMR
2	1/31/2023	REV. PER TRC COMMENTS	JD	JMR
1	12/2/2022	REV. PER TRC COMMENTS	SRP	JMR

TAX MAP H LOT 4-3
LANDSCAPE PLAN - PHASE 4C

MIXED USE DEVELOPMENT

NH ROUTE 108 AND MAST ROAD
DOVER, NEW HAMPSHIRE

OWNER OF RECORD
VC DOVER INVESTMENTS, LLC
48 CONSTITUTION DRIVE
BEDFORD, NH 03110

AND

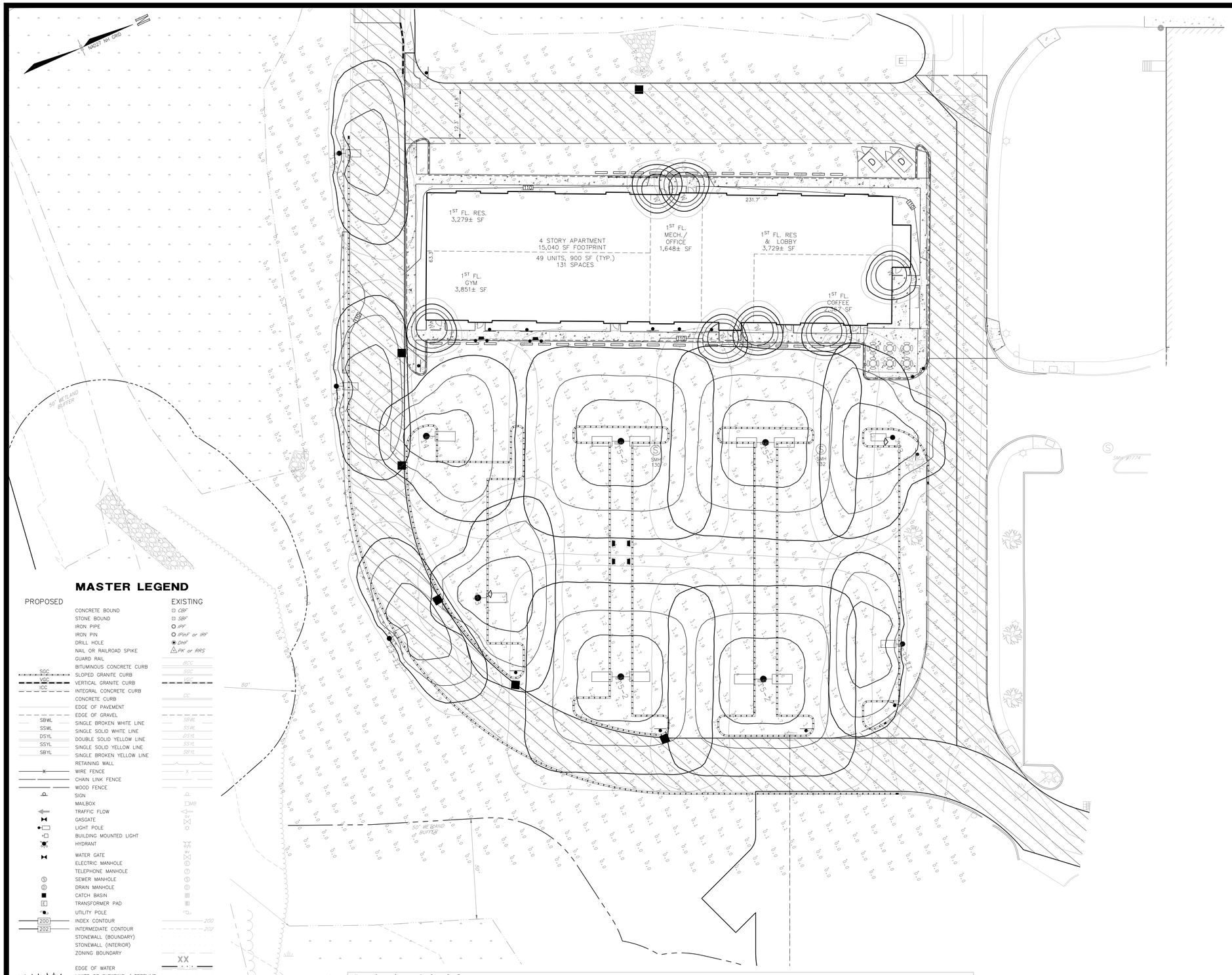
APPLICANT/DEVELOPER
VC DOVER INVESTMENTS, LLC
48 CONSTITUTION DRIVE
BEDFORD, NH 03110

SCALE: 1"=20' **PROJECT: P22-72** **OCTOBER 18, 2022**

TFM
Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists
48 Constitution Drive
Bedford, NH 03110
Phone (603) 472-4488
Fax (603) 472-9747
www.tfmoran.com

FILE 46001.31 | DR JMR | FB 1927 | CK JK | CADFILE 46001-31 CONCEPT

SHEET 8 OF 23



MASTER LEGEND

PROPOSED		EXISTING
	CONCRETE BOUND	CBF
	STONE BOUND	SBF
	IRON PIPE	IPF
	IRON PIN	IPinf or IRF
	DRILL HOLE	DHF
	NAIL OR RAILROAD SPIKE	PK or RRS
	GUARD RAIL	
	BITUMINOUS CONCRETE CURB	BCC
SGC	SLOPED GRANITE CURB	SGC
VGC	VERTICAL GRANITE CURB	VGC
IGC	INTEGRAL CONCRETE CURB	
	CONCRETE CURB	CC
	EDGE OF PAVEMENT	
	EDGE OF GRAVEL	
SBWL	SINGLE BROKEN WHITE LINE	SBWL
SSWL	SINGLE SOLID WHITE LINE	SSWL
DSYL	DOUBLE SOLID YELLOW LINE	DSYL
SSYL	SINGLE SOLID YELLOW LINE	SSYL
SBYL	SINGLE BROKEN YELLOW LINE	SBYL
	RETAINING WALL	
X	WIRE FENCE	X
	CHAIN LINK FENCE	
	WOOD FENCE	
	SIGN	
	MAILBOX	MB
	TRAFFIC FLOW	
	GASGATE	
	LIGHT POLE	
	BUILDING MOUNTED LIGHT	
	HYDRANT	
	WATER GATE	
	ELECTRIC MANHOLE	E
	TELEPHONE MANHOLE	T
S	SEWER MANHOLE	S
D	DRAIN MANHOLE	D
	CATCH BASIN	
E	TRANSFORMER PAD	
	UTILITY POLE	
200	INDEX CONTOUR	200
202	INTERMEDIATE CONTOUR	202
	STONEWALL (BOUNDARY)	
	STONEWALL (INTERIOR)	
	ZONING BOUNDARY	
		XX
	EDGE OF WATER	
	LIMITS OF CLEARING / TREELINE	
	TREES	
	RIP-RAP	

Luminaire Schedule				
Symbol	Qty	Label	Arrangement	Description
	2	T3	Single	MRM-LED-07L-SIL-3-UNV-DIM-40-70CRI / 4SQS11G16SCXX (16' POLE MTD ON 1.5' BASE)
	4	T3-IL	Single	MRM-LED-07L-SIL-3-UNV-DIM-40-70CRI-IL / 4SQS11G16SCXX (16' POLE MTD ON 1.5' BASE)
	1	T4	Single	MRM-LED-07L-SIL-FT-UNV-DIM-40-70CRI / 4SQS11G16SCXX (16' POLE MTD ON 1.5' BASE)
	4	T5-2	Back-Back	MRM-LED-07L-SIL-5W-UNV-DIM-40-70CRI / 4SQS11G16SCXX (16' POLE MTD ON 1.5' BASE)
	7	W	Single	WPSLS-01L-40 / WALL MTD 8' AFG

PARKING LOT
Illuminance (Fc)
Average = 1.75
Maximum = 4.5
Minimum = 0.5
Avg/Min Ratio = 3.50
Max/Min Ratio = 9.00

Mirada Medium (MRM)
Outdoor LED Area Light

IP66 IK08



OVERVIEW	
Lumen Package	7,000 - 48,000
Wattage Range	48 - 401
Efficacy Range (LPW)	117 - 160
Weight lbs(kg)	30 (13.6)

Slim Wall Pack (WPSLS)
Small LED Slim Wall Pack



OVERVIEW	
Lumen Range	1,000 - 4,000
Wattage Range	12 - 40
Efficacy Range (LPW)	98 - 122
Weight lbs(kg)	3.8 (1.7)

Steel Poles
Square Straight



NOTES

1. EXTERIOR LIGHTING SHALL BE CUT-OFF TYPE FIXTURES PER CHAPTER 153-14-E AND SHALL PROVIDE LIGHTING DIRECTED ON-SITE ONLY.

2" X 2" DOVER SQUARE

Copyright 2022 ©TFMoran, Inc.
48 Constitution Drive, Bedford, N.H. 03110

All rights reserved. These plans and materials may not be copied, duplicated, replicated or otherwise reproduced in any form whatsoever without the prior written permission of TFMoran, Inc.

This plan is not effective unless signed by a duly authorized officer of TFMoran, Inc.

DIG SAFE
NH ME NH RI VT
CALL 1-(888)-DIG-SAFE(R) FULL 4 EX
UTILITIES, UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM
CONTACT DIG SAFE 72 HOURS PRIOR TO CONSTRUCTION

STATE OF NEW HAMPSHIRE
JAMES M. ROBINSON
No. 10414
PROFESSIONAL ENGINEER
5-1-23

Graphic Scale: 20 10 0 20

REV.	DATE	DESCRIPTION	DR	CK
3	2/28/2023	REV. PER TRC COMMENTS	JD	JMR
2	1/31/2023	REV. PER TRC COMMENTS	JD	JMR
1	12/2/2022	REV. PER TRC COMMENTS	SRP	JMR

TAX MAP H LOT 4-3

PHOTOMETRIC PLAN

MIXED USE DEVELOPMENT

NH ROUTE 108 AND MAST ROAD
DOVER, NEW HAMPSHIRE

OWNER OF RECORD
VC DOVER INVESTMENTS, LLC
48 CONSTITUTION DRIVE
BEDFORD, NH 03110

AND

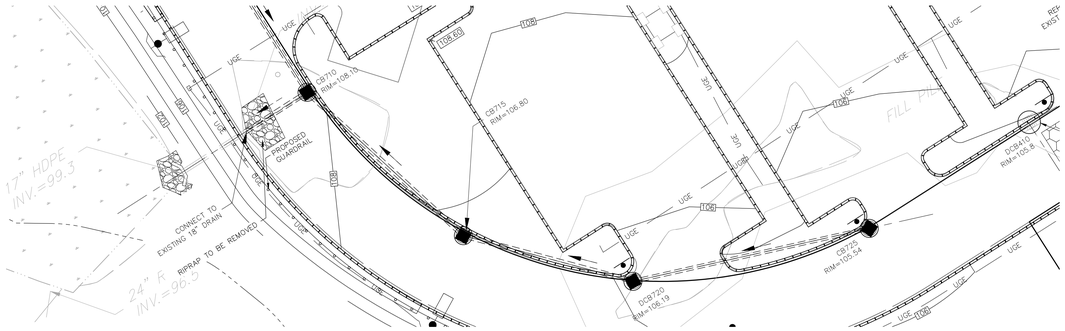
APPLICANT/DEVELOPER
VC DOVER INVESTMENTS, LLC
48 CONSTITUTION DRIVE
BEDFORD, NH 03110

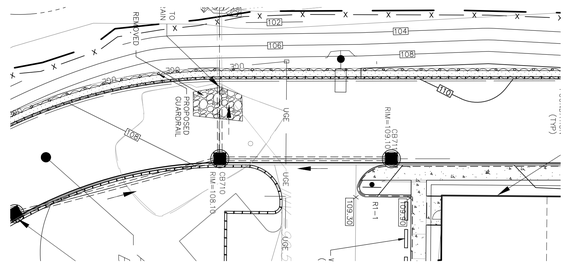
SCALE: 1"=20' **PROJECT: P22-72** **OCTOBER 18, 2022**

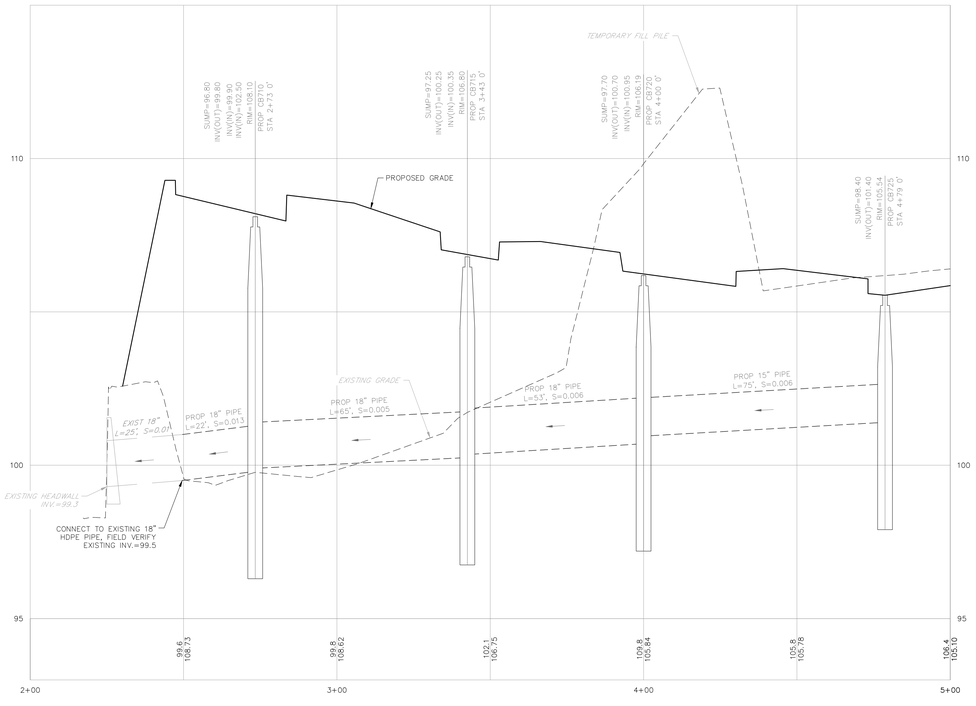
TFM
Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

48 Constitution Drive
Bedford, NH 03110
Phone (603) 472-4488
Fax (603) 472-9747
www.tfmoran.com

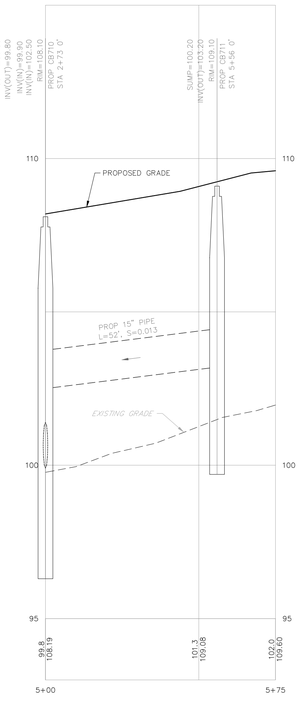
FILE	46001.31	DR	JMR	FB	1927	SHEET 9 OF 23
		CK	JK	CADFILE	46001-31 CONCEPT	







DRAINAGE PROFILE - SOUTH



DRAIN SYSTEM - CB 711

Copyright 2022 ©TFMoran, Inc.
48 Constitution Drive, Bedford, N.H. 03110

All rights reserved. These plans and materials may not be copied, duplicated, replicated or otherwise reproduced in any form whatsoever without the prior written permission of TFMoran, Inc.

This plan is not effective unless signed by a duly authorized officer of TFMoran, Inc.

DIG SAFE
NH ME NH RI VT
CALL 1-888-DIG SAFE (TOLL FREE)
UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM
CONTACT DIG SAFE 72 HOURS
PRIOR TO CONSTRUCTION

HORIZONTAL SCALE 1"=20'
20 10 0 20
VERTICAL SCALE 1"=2'
2 0 2

3-1-23
JAMES F. LOCKWOOD No. 10414
PROFESSIONAL ENGINEER
STATE OF NEW HAMPSHIRE

REV.	DATE	DESCRIPTION	DR	CK
3	2/28/2023	REV. PER TRC COMMENTS	JD	JMR
2	1/31/2023	REV. PER TRC COMMENTS	JD	JMR
1	12/2/2022	REV. PER TRC COMMENTS	SRP	JMR

TAX MAP H LOT 4-3

SEWER AND DRAINAGE PLAN & PROFILE

MIXED USE DEVELOPMENT

NH ROUTE 108 AND MAST ROAD
DOVER, NEW HAMPSHIRE

OWNER OF RECORD
VC DOVER INVESTMENTS, LLC
48 CONSTITUTION DRIVE
BEDFORD, NH 03110

AND

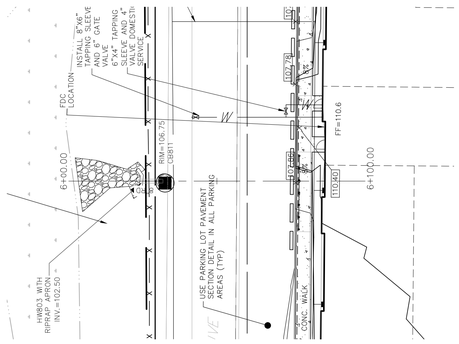
APPLICANT/DEVELOPER
VC DOVER INVESTMENTS, LLC
48 CONSTITUTION DRIVE
BEDFORD, NH 03110

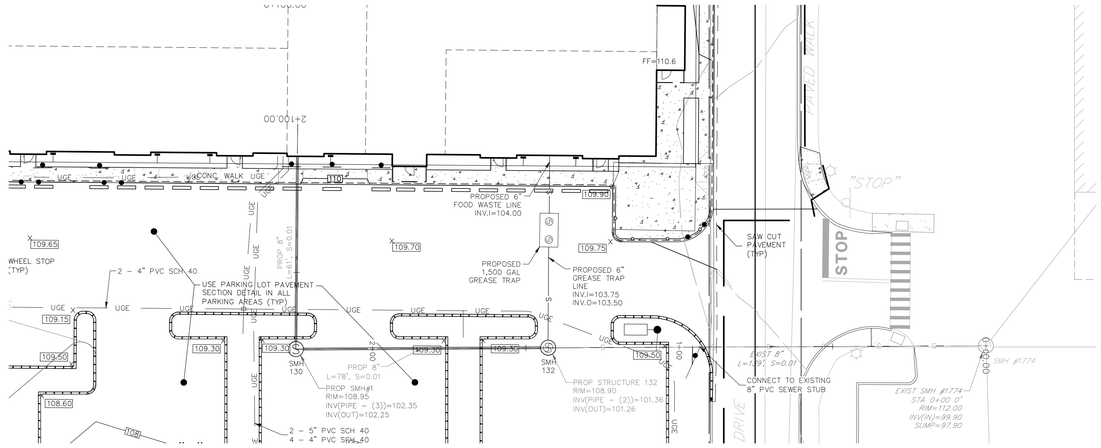
SCALE: 1"=20' **PROJECT: P22-72** **OCTOBER 18, 2022**

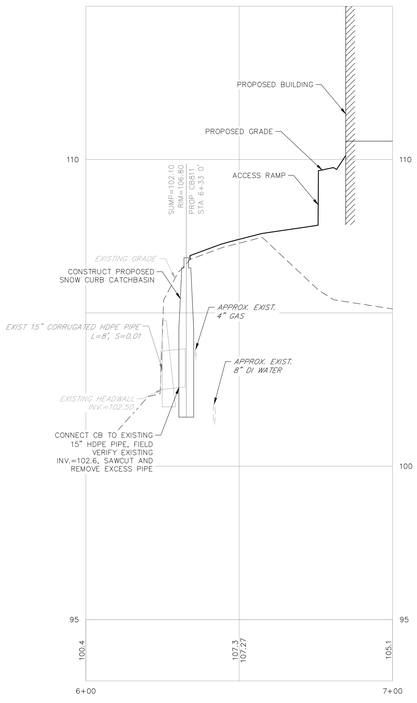
TFM
Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

48 Constitution Drive
Bedford, NH 03110
Phone (603) 472-4488
Fax (603) 472-9747
www.tfmoran.com

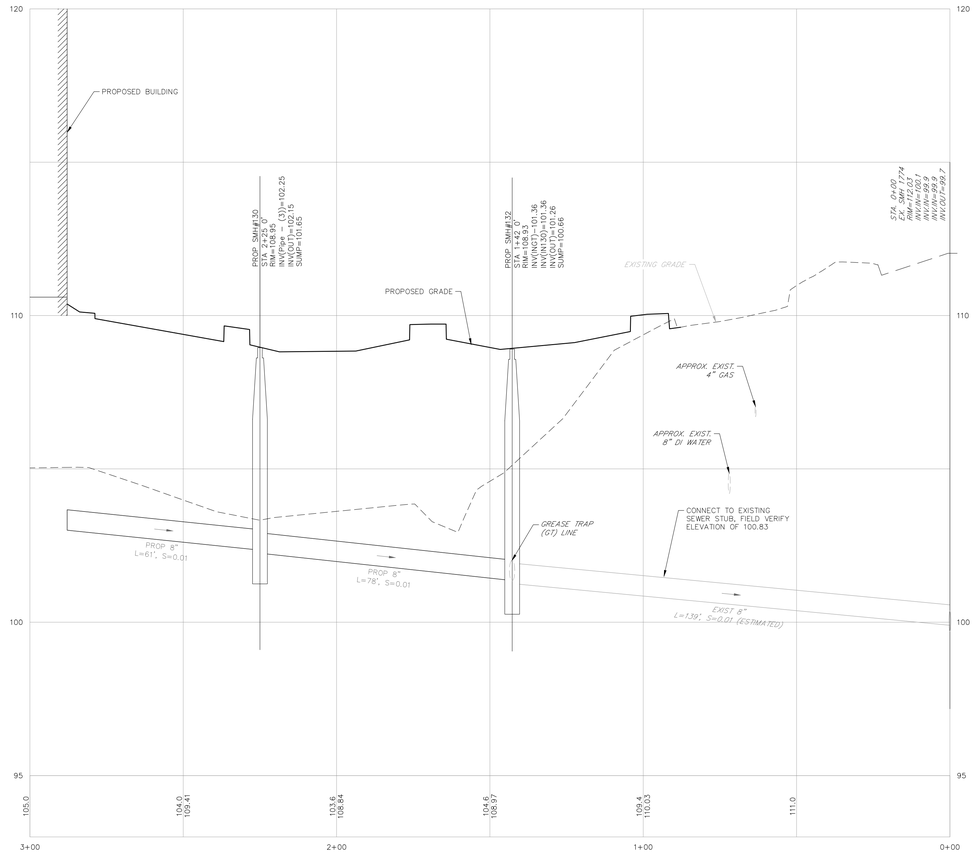
FILE	DR	FB		
46001.31	JMR	1927		SHEET 10 OF 16
	CK	CADFILE		
	JK	46001-31 CONCEPT		







DRAINAGE SYSTEM - LOT 2 REAR



BUILDING SEWER

Copyright 2022 ©TFMoran, Inc.
48 Constitution Drive, Bedford, N.H. 03110

All rights reserved. These plans and materials may not be copied, duplicated, replicated or otherwise reproduced in any form whatsoever without the prior written permission of TFMoran, Inc.

This plan is not effective unless signed by a duly authorized officer of TFMoran, Inc.

DIG SAFE
NH ME NH RI VT
811 OR 1-888-DIG-SAFE (TOLL FREE)
UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM
CONTACT DIG SAFE 72 HOURS PRIOR TO CONSTRUCTION

HORIZONTAL SCALE 1"=20'
20 10 0 20
VERTICAL SCALE 1"=2'
2 0 2

STATE OF NEW HAMPSHIRE
JAMES M. ROBINSON
No. 10414
2-1-23

REV.	DATE	DESCRIPTION	DR	CK
3	2/28/2023	REV. PER TRC COMMENTS	JD	JMR
2	1/31/2023	REV. PER TRC COMMENTS	JD	JMR
1	12/2/2022	REV. PER TRC COMMENTS	SRP	JMR

TAX MAP H LOT 4–3
SEWER AND DRAINAGE PLAN & PROFILE

MIXED USE DEVELOPMENT

NH ROUTE 108 AND MAST ROAD
DOVER, NEW HAMPSHIRE

OWNER OF RECORD
VC DOVER INVESTMENTS, LLC
48 CONSTITUTION DRIVE
BEDFORD, NH 03110

AND

APPLICANT/DEVELOPER
VC DOVER INVESTMENTS, LLC
48 CONSTITUTION DRIVE
BEDFORD, NH 03110

SCALE: 1"=20' PROJECT: P22-72 OCTOBER 18, 2022

TFM
Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists
48 Constitution Drive
Bedford, NH 03110
Phone (603) 472–4488
Fax (603) 472–9747
www.tfmoran.com

FILE	DR	FB	
46001.31	JMR	1927	SHEET 11 OF 16
	CK JK	CADFILE 46001-31 CONCEPT	

CONSTRUCTION NOTES

1. ALL WORK SHALL CONFORM TO THE APPLICABLE REGULATIONS AND STANDARDS OF THE CITY OF DOVER, AND SHALL BE BUILT IN A WORKMANLIKE MANNER IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS.
2. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO FAMILIARIZE HIMSELF WITH THE SITE AND ALL EXISTING CONDITIONS SURROUNDING IT AND THEREON. THE CONTRACTOR SHALL ADVISE THE APPROPRIATE AUTHORITY OF HIS INTENTION AT LEAST 48 HOURS IN ADVANCE.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING AND DETERMINING THE LOCATION, SIZE AND ELEVATION OF ALL EXISTING UTILITIES, SHOWN OR NOT SHOWN ON THESE PLANS, PRIOR TO THE START OF ANY CONSTRUCTION. THE ENGINEER SHALL BE NOTIFIED IN WRITING OF ANY UTILITIES FOUND INTERFERING WITH THE PROPOSED CONSTRUCTION AND APPROPRIATE REMEDIAL ACTION BE AGREED TO BY THE ENGINEER BEFORE PROCEEDING WITH THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE TO CONTACT "DIGSAFE" (800-344-7233) AT LEAST 72 HOURS BEFORE DIGGING.
4. ROAD AND DRAINAGE CONSTRUCTION SHALL CONFORM TO THE TYPICAL SECTIONS AND DETAILS SHOWN ON THE PLANS, AND SHALL MEET LOCAL STANDARDS AND THE REQUIREMENTS OF THE LATEST NHDOT STANDARD SPECIFICATIONS FOR ROADS AND BRIDGE CONSTRUCTION AND THE N.H.D.O.T. STANDARD STRUCTURE DRAWINGS UNLESS OTHERWISE NOTED.
5. ON-SITE WATER DISTRIBUTION SHALL BE TO CITY OF DOVER STANDARDS AND SPECIFICATIONS. WATER MAINS SHALL HAVE A MINIMUM OF 5.5 FEET COVER. WHERE WATER PIPES CROSS SEWER LINES A MINIMUM OF 18" VERTICAL SEPARATION BETWEEN THE TWO OUTSIDE PIPE WALLS SHALL BE OBSERVED. HORIZONTAL SEPARATION BETWEEN WATER AND SEWER SHALL BE 10 FEET MINIMUM.
6. SANITARY SEWER SHALL BE CONSTRUCTED TO THE STANDARDS AND SPECIFICATIONS AS SHOWN ON THESE PLANS. ALL SEWER MAINS AND FITTINGS SHALL BE PVC AND SHALL CONFORM TO ASTM F 679 (SDR 35 MINIMUM). SANITARY MANHOLES SHALL CONFORM TO N.H.D.E.S. WATER SUPPLY AND POLLUTION CONTROL DIVISION STANDARDS AND SPECIFICATIONS SHOWN HEREON. ALL STRUCTURES TO BE H-20 DESIGN.
7. STORM DRAINAGE SYSTEM SHALL BE CONSTRUCTED TO LINE AND GRADE AS SHOWN ON THE PLANS. ALL PIPE MATERIAL SHALL BE REINFORCED CONCRETE AND CONFORM TO AASHTO M170 CLASS IV REINFORCED CONCRETE PIPE. CONSTRUCTION METHODS SHALL CONFORM TO N.H.D.O.T. STANDARD SPECIFICATIONS, SECTION 603. CATCH BASINS AND DRAIN MANHOLES SHALL CONFORM TO SECTION 604. ALL CATCH BASIN GRATES SHALL BE TYPE B AND CONFORM TO N.H.D.O.T. STANDARDS AND SPECIFICATIONS UNLESS OTHERWISE NOTED. ALL STRUCTURES TO BE H-20 DESIGN.
8. THE CONTRACTOR SHALL COORDINATE MATERIALS AND INSTALLATION SPECIFICATIONS WITH THE INDIVIDUAL UTILITY AGENCIES/COMPANIES, AND ARRANGE FOR ALL INSPECTIONS.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL EROSION AND SEDIMENT CONTROL DEVICES AS SHOWN IN THE PLANS THROUGHOUT THE DURATION OF THE PROJECT. 10. THE CONTRACTOR IS RESPONSIBLE FOR THE MEANS AND METHODS OF CONSTRUCTION AND FOR CONDITIONS AT THE SITE. WRITTEN DIMENSIONS HAVE PRECEDENCE OVER SCALED DIMENSIONS. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND REPORT DISCREPANCIES TO THE ENGINEER.

CONSTRUCTION SEQUENCE NOTES

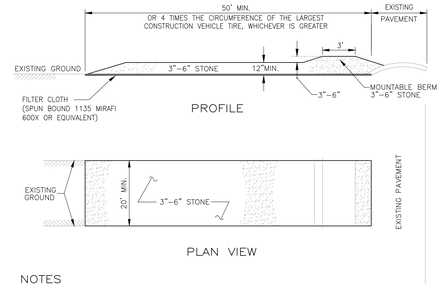
1. INSTALL STABILIZED CONSTRUCTION ENTRANCE.
2. CUT AND CLEAR TREES WITHIN AREA OF DISTURBANCE UNLESS OTHERWISE NOTED.
3. CONSTRUCT TEMPORARY AND PERMANENT EROSION CONTROL FACILITIES PRIOR TO ANY EARTH MOVING OPERATION.
4. ROUGH GRADE SITE OR PHASED WORK AREA. ALL SLOPES SHALL BE STABILIZED IMMEDIATELY AFTER GRADING. ALL DISTURBED AREAS SHALL BE STABILIZED NO LATER THAN 72 HOURS AFTER CONSTRUCTION ACTIVITY CEASES. IF EARTHWORK TEMPORARILY CEASES ON A PORTION OF OR THE ENTIRE SITE, AND WILL NOT RESUME WITHIN 21 DAYS, THE AREA SHALL BE STABILIZED.

   AN AREA SHALL BE CONSIDERED STABILIZED IF:
   A) BASE COURSE GRAVELS HAVE BEEN INSTALLED IN AREAS TO BE PAVED;
   B) A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED;
   C) A MINIMUM OF 3" OF NON-EROSIVE MATERIAL SUCH STONE OR RIPRAP HAS BEEN INSTALLED, OR
   D) EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.
5. CONSTRUCT CULVERTS, DETENTION BASINS AND TREATMENT SWALES. PLACE HEADWALLS, RIP-RAP AND OTHER DRAINAGE FACILITIES ACCORDING TO PLAN. THE CONTRACTOR SHALL STABILIZE ALL DITCHES, SWALES, AND PONDS/BASINS PRIOR TO DIRECTING FLOW TO THEM.
6. INSTALL ALL UNDERGROUND UTILITIES.
7. CONSTRUCT BUILDINGS.
8. CONSTRUCT PARKING AND FINISH GRADE SITE ACCORDING TO PLAN. ALL SLOPES SHALL BE STABILIZED IMMEDIATELY AFTER GRADING.
9. INSPECT AND MAINTAIN ALL EROSION AND SEDIMENTATION CONTROL MEASURES PERIODICALLY AND IMMEDIATELY AFTER STORM EVENTS.
10. COMPLETE PERMANENT SEEDING AND LANDSCAPING.
11. REMOVE TEMPORARY EROSION CONTROL MEASURES ONCE ALL AREAS ARE STABILIZED WITH A SUITABLE STAND OF GRASS, PAVEMENT OR COMPACTED GRAVELS.

* REFER TO THE STORM WATER MANAGEMENT PLAN FOR EROSION CONTROL MEASURES AND SPECIFIC INFORMATION.

GENERAL NOTES

1. ALL IN PAVEMENT MANHOLES SHALL HAVE RIMS SET TO FINISH GRADE REGARDLESS OF ANY ELEVATIONS OTHERWISE SHOWN.
2. WHERE DEPTH OF COVER IS LESS THAN 3 FEET CLASS V REINFORCED CONCRETE PIPE SHALL BE USED.
3. THE CONTRACTOR SHALL CONTACT ALL UTILITY COMPANIES OWNING UTILITIES, EITHER OVERHEAD OR UNDERGROUND, WITHIN THE CONSTRUCTION AREA AND SHALL COORDINATE AS NECESSARY WITH THE UTILITY COMPANIES OF SAID UTILITIES. THE PROTECTION OR RELOCATION OF UTILITIES IS ULTIMATELY THE RESPONSIBILITY OF THE CONTRACTOR.
4. THE CONTRACTOR SHALL MAINTAIN EMERGENCY ACCESS TO ALL AREAS AFFECTED BY HIS WORK AT ALL TIMES.
5. ALL EXCAVATIONS SHALL BE THOROUGHLY SECURED ON A DAILY BASIS BY THE CONTRACTOR AT THE COMPLETION OF CONSTRUCTION OPERATIONS IN THE IMMEDIATE AREA.
6. EROSION CONTROL SYSTEMS SHALL BE INSTALLED AND MAINTAINED FOR THE DURATION OF THE PROJECT IN ACCORDANCE WITH APPLICABLE NHDES STANDARDS. THESE DETAILS SERVE AS A GUIDE ONLY.
7. REFER TO THE TOWN STANDARD DETAILS, LATEST REVISION, FOR ADDITIONAL INFORMATION AND CRITERIA.
8. THE CONTRACTOR SHALL STABILIZE ALL DITCHES, SWALES, AND PONDS PRIOR TO DIRECTING FLOW TO THEM.
9. THE SMALLEST PRACTICAL AREA SHALL BE DISTURBED DURING CONSTRUCTION, BUT IN NO CASE SHALL EXCEED 5 ACRES AT ANY ONE TIME BEFORE DISTURBED AREAS ARE STABILIZED.

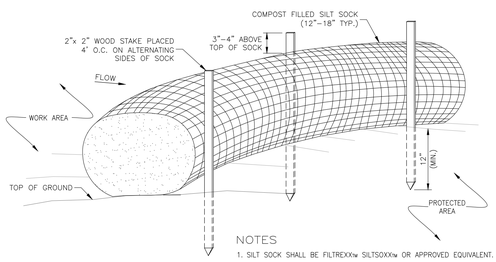


NOTES

1. FILTER CLOTH – WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE SURFACE.
2. NO SURFACE WATER SHALL BE DIRECTED TOWARD CONSTRUCTION ENTRANCES.
3. MAINTENANCE – THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH 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 CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
4. WASHING – WHEELS SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC RIGHTS-OF-WAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
5. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN STORM EVENT.

STABILIZED CONSTRUCTION ENTRANCE

SEE PLAN FOR PROPOSED LOCATION — NOT TO SCALE

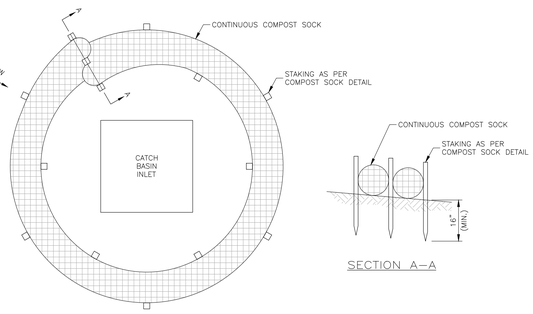


NOTES

1. SILT SOCK SHALL BE FILTREXX® SILTSOXX® OR APPROVED EQUIVALENT.
2. SEE SPECIFICATIONS FOR SOCK SIZE AND COMPOST FILL REQUIREMENTS.
3. SILT SOCK SHALL BE INSPECTED PERIODICALLY AND AFTER ALL STORM EVENTS, AND REPAIR OR REPLACEMENT SHALL BE PERFORMED AS NEEDED.
4. COMPOST MATERIAL SHALL BE DISPERSED ON SITE, AS DETERMINED BY THE ENGINEER.

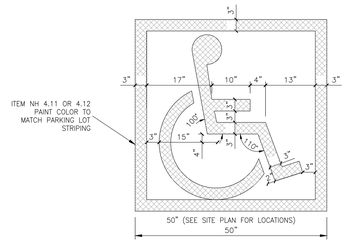
SILT SOCK

NOT TO SCALE



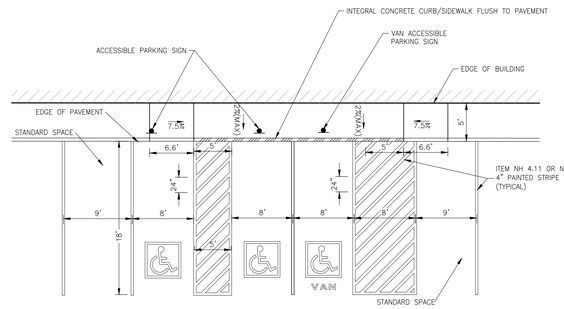
COMPOST SOCK INLET PROTECTION

AT CATCH BASIN — NOT TO SCALE



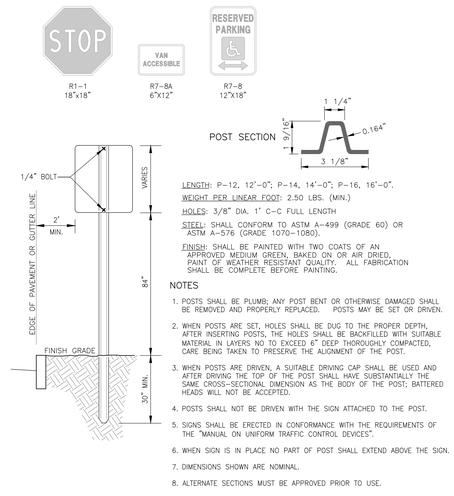
PAINTED ACCESSIBLE PARKING SYMBOL

NOT TO SCALE



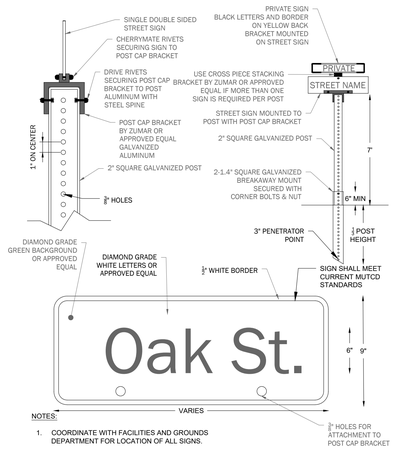
ACCESSIBLE STRIPING AND RAMP ALONG WALK

NOT TO SCALE



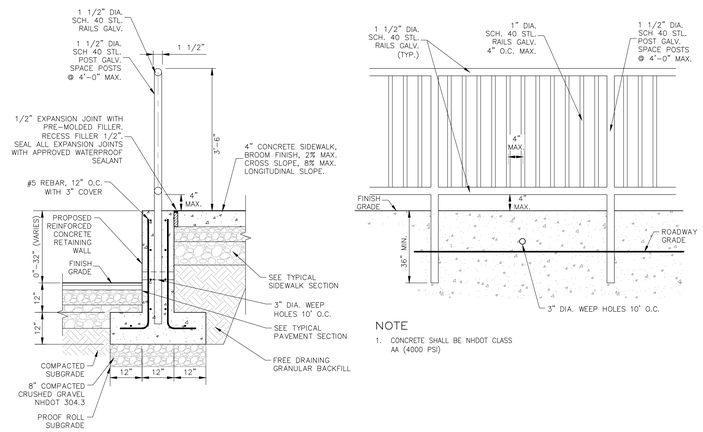
TRAFFIC SIGN POST IN GRADE

NOT TO SCALE



D-1 STREET SIGN

CITY OF DOVER STANDARD DETAIL — NOT TO SCALE



NOTE

1. CONCRETE SHALL BE NHDOT CLASS AA (4000 PSI)

CONCRETE RET. WALL WITH HAND RAIL

AT ADA RAMP — NOT TO SCALE

2" X 2" DOVER SQUARE

DETAILS

MIXED USE DEVELOPMENT

NH ROUTE 108 AND MAST ROAD
DOVER, NEW HAMPSHIRE

OWNER OF RECORD	AND	APPLICANT/DEVELOPER
VC DOVER INVESTMENTS, LLC 48 CONSTITUTION DRIVE BEDFORD, NH 03110		VC DOVER INVESTMENTS, LLC 48 CONSTITUTION DRIVE BEDFORD, NH 03110

AS SHOWN — **PROJECT: P22-72** — **OCTOBER 18, 2022**

Copyright 2022 ©TFMoran, Inc.
48 Constitution Drive, Bedford, N.H. 03110

All rights reserved. These plans and materials may not be copied, duplicated, replicated or otherwise reproduced in any form whatsoever without the prior written permission of TFMoran, Inc.

This plan is not effective unless signed by a duly authorized officer of TFMoran, Inc.

DIG SAFE NH ME RI VT — CALL TOLL FREE 811 — DIG-SAFE — UTILITIES UNDER GROUND - PLANT DAMAGE PREVENTION SYSTEM

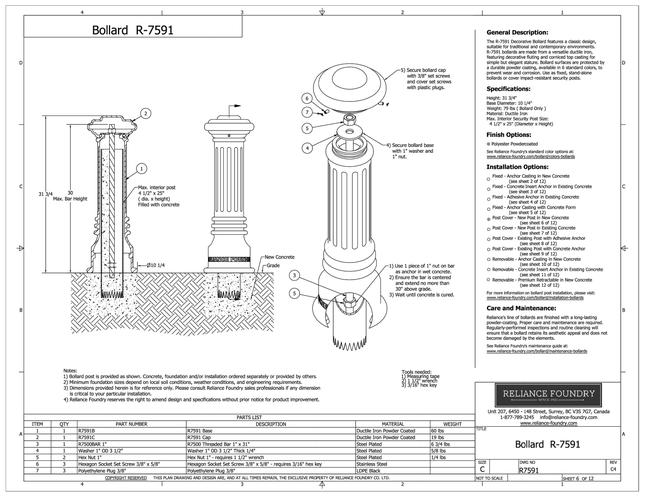
CONTACT DIG SAFE 72 HOURS PRIOR TO CONSTRUCTION

STATE OF NEW HAMPSHIRE — JAMES M. ROBINSON No. 10414 — 2-1-23

REV.	DATE	DESCRIPTION	DR	CK
3	2/28/2023	REV. PER TRC COMMENTS	JD	JMR
2	1/31/2023	REV. PER TRC COMMENTS	JD	JMR
1	12/2/2022	REV. PER TRC COMMENTS	SRP	JMR

TFM
Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists
48 Constitution Drive
Bedford, NH 03110
Phone (603) 472-4488
Fax (603) 472-9747
www.tfmoran.com

FILE	46001.31	DR	JMR	FB	1927	SHEET 12 OF 23
		CK	JK	CADFILE	46001-31 CONCEPT	



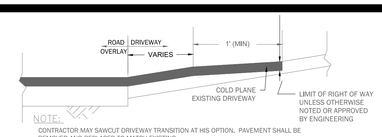
DECORATIVE BOLLARD

RELIANCE FOUNDRY R7591 NOT TO SCALE

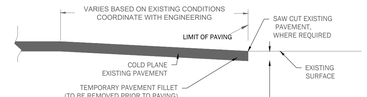
NOTES:
1. BOLLARDS TO CONFORM TO NHDOT SPECIFICATIONS.
2. BOLLARDS TO BE SLEEVED WITH IDEAL SHIELD ORIGINAL BUMPER POST SLEEVES COMPLYING WITH THE FOLLOWING REQUIREMENTS, UNLESS OTHERWISE NOTED:
   A. DOME TOP LOW DENSITY POLYETHYLENE THERMOPLASTIC NOMINAL THICKNESS 0.250 INCH.
   B. SLEEVE TO SHIELD PIPE DIAMETER (3, 3-1/2, 4, 5, 6, 7, 8 INCH)
   C. SLEEVE HEIGHT: 42"
   D. SLEEVE COLOR: ARCHITECTURAL BROWN: PART #BPD-BN-06-042-S.
   E. SURFACE OF SLEEVE TO BE SMOOTH WITH ROUND TOP, NO RIBBED OR TWO PIECE SYSTEMS ACCEPTED.
   E. SECURE WITH MANUFACTURERS NEOPRENE ADHESIVE TAPE. NO SCREWS, GLUE OR CLAMPING WILL BE ACCEPTABLE.
   F. IDEAL SHIELD, LLC DENNIS KNITTEL (313) 842-7290
3. PAINT BOLLARDS ONLY AT TRASH ENCLOSURE TRAFFIC YELLOW, IN LIEU OF SLEEVES.

BOLLARD

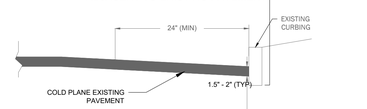
(WITH PLASTIC SLEEVE) NOT TO SCALE



ADJACENT TO EXISTING DRIVEWAY



ADJACENT TO EXISTING PAVEMENT

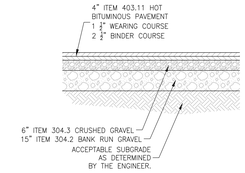


ADJACENT TO EXISTING CURB

NOTES:
1. THE LENGTH OF THE TAPER MAY BE ADJUSTED AS ORDERED TO PROVIDE FOR VARYING FIELD CONDITIONS OR CHANGES IN SINGLE COURSE DEPTH.

D-12 PAVEMENT OVERLAY DETAILS

CITY OF DOVER STANDARD DETAIL NOT TO SCALE

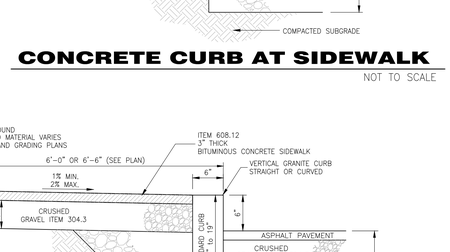


NOTES:
REMOVE ALL LOAM, CLAY, MUCK, STUMPS, AND OTHER IMPROPER PAVEMENT FOUNDATION MATERIAL WITHIN 2' OF SUBGRADE. REPLACE WITH COMPACTED GRANULAR FILL MATERIAL ACCEPTABLE TO APPROVING AGENCY. COMPACTION TO BE AT LEAST 95% OF STANDARD PROCTOR.

ALL PAVEMENT, BASE MATERIALS AND WORKMANSHIP TO BE IN COMPLIANCE WITH N.H.D.O.T. "STANDARDS FOR ROAD AND BRIDGE CONSTRUCTION" LATEST EDITION.

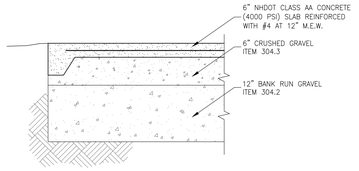
PARKING PAVEMENT SECTION

USE IN ALL PARKING AREAS NOT TO SCALE



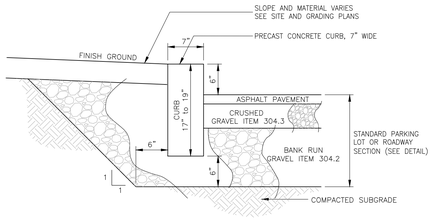
HEAVY DUTY PAVEMENT SECTION

USE IN CIELO DRIVE ONLY NOT TO SCALE



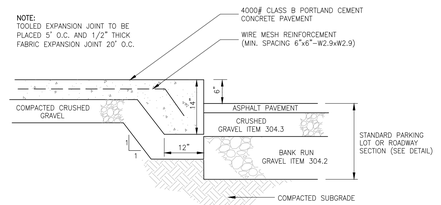
CONCRETE PAD

NOT TO SCALE



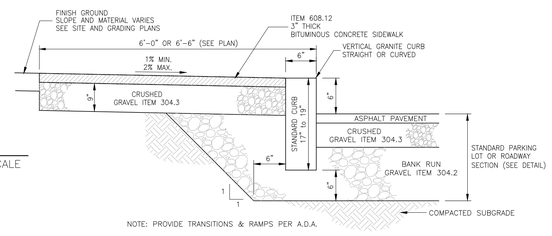
PRECAST CONCRETE CURB

NOT TO SCALE



CONCRETE CURB AT SIDEWALK

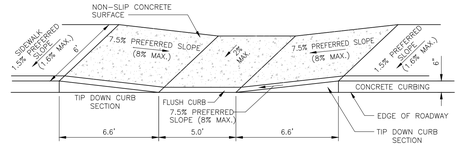
NOT TO SCALE

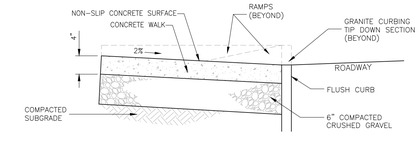


NOTE: PROVIDE TRANSITIONS & RAMPS PER A.D.A.

BITUMINOUS SIDEWALK

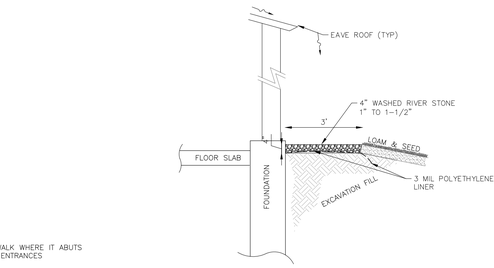
AT VERTICAL GRANITE CURB NOT TO SCALE





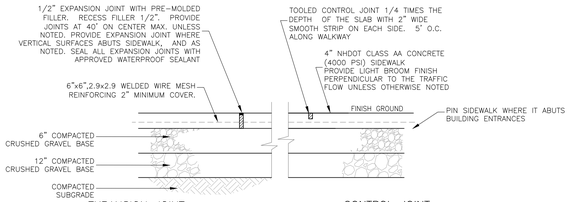
ACCESSIBLE RAMP RECESSED IN WALK

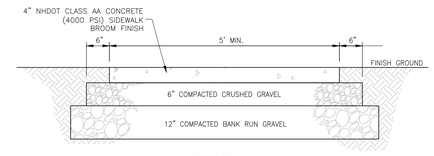
NOT TO SCALE



ROOF DRIP EDGE

NOT TO SCALE

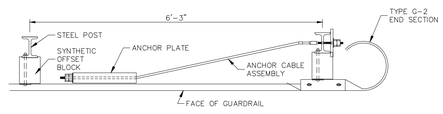




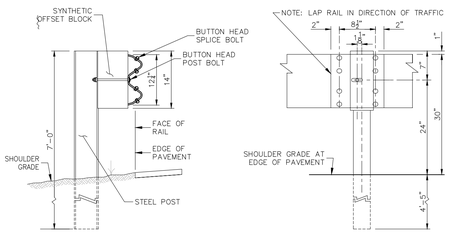
SECTION

CONCRETE SIDEWALK

NOT TO SCALE



PLAN VIEW FOR TERMINAL UNIT TYPE G-2



TYPICAL SIDE VIEW (SHOWN WITH FASTENERS)

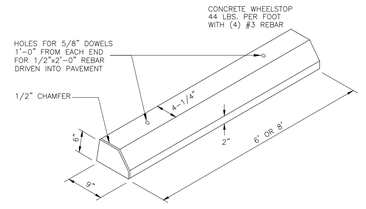
LINE POST ELEVATION VIEW AT BEAM SPLICE

GENERAL NOTES

1. ALL PARTS; POSTS, OFFSET BLOCKS, RAILS, & HARDWARE SHALL CONFORM TO STANDARD NO. GR-2 OF THE N.H.D.O.T. STANDARD PLANS FOR ROAD CONSTRUCTION WITH THE EXCEPTION THAT THE TERMINAL UNIT TYPE G-2 SHALL CONFORM TO STANDARD NO. GR-10 OF THE N.H.D.O.T. STANDARD PLANS FOR ROAD CONSTRUCTION.
2. ANCHORS, PLATES AND ALL FITTINGS TO BE GALVANIZED.
3. ALL DIMENSIONS SUBJECT TO MANUFACTURERS TOLERANCES.
4. RAIL PANELS AND END SECTIONS TO BE 12 GAUGE STEEL.
5. WHEN GUARDRAIL IS CONSTRUCTED AT UP TO FOUR FEET FROM EDGE OF PAVEMENT, THE GUARD RAIL HEIGHT WILL BE SET FROM THE GRADE AT THE EDGE OF PAVEMENT. WHEN THE GUARDRAIL IS CONSTRUCTED MORE THAN FOUR FEET FROM THE EDGE OF PAVEMENT, THE GUARDRAIL WILL BE SET FROM THE GRADE AT FACE OF RAIL.

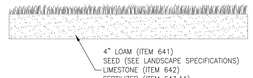
"W" BEAM METAL GUARDRAIL

WITH STEEL POST NOT TO SCALE



CONCRETE WHEELSTOP

NOT TO SCALE



LOAM & SEED

NOT TO SCALE

2" X 2" DOVER SQUARE



DETAILS

MIXED USE DEVELOPMENT

NH ROUTE 108 AND MAST ROAD
DOVER, NEW HAMPSHIRE

OWNER OF RECORD	AND	APPLICANT/DEVELOPER
VC DOVER INVESTMENTS, LLC 48 CONSTITUTION DRIVE BEDFORD, NH 03110		VC DOVER INVESTMENTS, LLC 48 CONSTITUTION DRIVE BEDFORD, NH 03110

AS SHOWN **PROJECT: P22-72** **OCTOBER 18, 2022**

REV.	DATE	DESCRIPTION	DR	CK
3	2/28/2023	REV. PER TRC COMMENTS	JD	JMR
2	1/31/2023	REV. PER TRC COMMENTS	JD	JMR
1	12/2/2022	REV. PER TRC COMMENTS	SRP	JMR

TFM Civil Engineers, Structural Engineers, Traffic Engineers, Land Surveyors, Landscape Architects, Scientists
48 Constitution Drive
Bedford, NH 03110
Phone (603) 472-4488
Fax (603) 472-9747
www.tfmoran.com

FILE 46001.31 | DR JMR | FB 1927 | CK JK | CADFILE 46001-31 CONCEPT | SHEET 13 OF 23

Copyright 2022 ©TFMoran, Inc.
48 Constitution Drive, Bedford, N.H. 03110

All rights reserved. These plans and materials may not be copied, duplicated, replicated or otherwise reproduced in any form whatsoever without the prior written permission of TFMoran, Inc.

This plan is not effective unless signed by a duly authorized officer of TFMoran, Inc.

DIG SAFE MA ME NH RI VT
CALL TOLL FREE DIG-SAFE SYSTEM
UTILITIES, UNDERGROUND PLANT, DAMAGE PREVENTION SYSTEM
CONTACT DIG SAFE 72 HOURS PRIOR TO CONSTRUCTION

GENERAL NOTES

1. IT IS THE INTENTION THAT THE MANHOLE, INCLUDING ALL COMPONENT PARTS, HAVE ADEQUATE SPACE, STRENGTH AND LEAKPROOF QUALITIES CONSIDERED NECESSARY FOR THE INTENDED SERVICE. SPACE REQUIREMENTS AND CONFIGURATIONS, SHALL BE AS SHOWN ON THE DRAWING. MANHOLES SHALL BE AN ASSEMBLY OF PRECAST SECTIONS, WITH STEEL REINFORCEMENT, WITH ADEQUATE JOINTING, OR CONCRETE CAST MONOLITHICALLY IN PLACE WITH REINFORCEMENT. IN ANY APPROVED MANHOLE, THE COMPLETE STRUCTURE SHALL BE OF SUCH MATERIAL AND QUALITY AS TO WITHSTAND LOADS OF 8 TONS (H-20 LOADING) WITHOUT FAILURE AND PREVENT LEAKAGE IN EXCESS OF ONE GALLON PER DAY PER VERTICAL FOOT OF MANHOLE, CONTINUOUSLY FOR THE LIFE OF THE STRUCTURE. A PERIOD GENERALLY IN EXCESS OF 25 YEARS IS TO BE UNDERSTOOD IN BOTH CASES.
2. BARRELS, CONE SECTIONS AND CONCRETE GRADE RINGS SHALL BE PRECAST REINFORCED CONCRETE AND SHALL CONFORM ENV-WQ 704.12 & 704.13.
3. PRECAST CONCRETE BARREL SECTIONS, CONES AND BASES SHALL CONFORM TO ASTM C478-06.
4. BASE SECTIONS SHALL BE OF MONOLITHIC CONSTRUCTION TO A POINT AT LEAST 6 INCHES ABOVE THE CROWN OF THE INCOMING PIPE.
5. MANHOLE CONE SECTIONS SHALL BE ECCENTRIC IN SHAPE.
6. ALL PRECAST SECTIONS AND BASES SHALL HAVE THE DATE OF MANUFACTURE AND THE NAME OR TRADEMARK OF THE MANUFACTURER IMPRESSED OR INDELIBLY MARKED ON THE INSIDE WALL.
7. ALL PRECAST SECTIONS AND BASES SHALL BE COATED ON THE EXTERIOR WITH A BITUMINOUS DAMP-PROOFING COATING.
8. SHALLOW MANHOLE: IN LIEU OF A CONE SECTION, WHEN MANHOLE DEPTH IS LESS THAN 6 FEET, A REINFORCED CONCRETE SLAB COVER MAY BE USED HAVING AN ECCENTRIC ENTRANCE OPENING AND CAPABLE OF SUPPORTING H-20 LOADS.
9. HORIZONTAL JOINTS BETWEEN SECTIONS OF PRECAST CONCRETE BARRELS SHALL BE OF AN OVERLAPPING TYPE, SEALED FOR WATERTIGHTNESS USING A DOUBLE ROW OF AN ELASTOMERIC OR MASTIC-LIKE SEALANT. APPROVED ELASTOMERIC SEALANTS ARE:

   SIKAFLEX-12-SL

   SONNEBORN BUILING PRODUCTS-SONOLASTIC SL-1
10. THE MINIMUM INTERNAL DIAMETER OF MANHOLES SHALL BE 48 INCHES. FOR SEWERS LARGER THAN 24-INCH DIAMETER, MANHOLE DIAMETERS SHALL BE INCREASED SO AS TO PROVIDE AT LEAST 12-INCHES OF SHELF ON EACH SIDE OF THE SEWER.
11. LEAKAGE TEST SHALL BE PERFORMED IN ACCORDANCE TO ENV-WQ 704.17.
    (a) ALL MANHOLES SHALL BE TESTED FOR LEAKAGE USING A VACUUM TEST IN ACCORDANCE WITH THE ASTM C1244 STARNDARD IN EFFECT WHEN THE TESTING IS PERFORMED.
    (b) THE MANHOLE VACUUM TEST SHALL CONFORM TO THE FOLLOWING:
        1. THE INITIAL VACUUM GUAGE TEST PRESSURE SHALL BE 10 INCHES Hg.
        2. THE MINIMUM ACCEPTABLE TEST HOLD TIME FOR 1-INCH Hg PRESSURE DROP TO 9 INCHES SHALL BE:
           A. NOT LESS THAN 2 MINUTES FOR MANHOLES LESS THAN 10 FEET DEEP.
           B. NOT LESS THAN 2.5 MINUTES FOR MANHOLES 10 TO 15 FEET DEEP.
           C. NOT LESS THAN 3 MINUTES FOR MANHOLES MORE THAN 15 FEET DEEP.
    (c) THE MANHOLE SHALL BE REPAIRED AND RETESTED IF THE TEST HOLD TIMES FAIL TO ACHIEVE THE ACCEPTANCE LIMITS SPECIFIED IN (b) ABOVE.
    (d) INVERTS AND SHELVES SHALL NOT BE INSTALLED UNTIL AFTER SUCCESSFUL TESTING IS COMPLETE.
    (e) FOLLOWING COMPLETION OF THE LEAKAGE TEST, THE FRAME AND COVER SHALL BE PLACED ON TOP OF THE MANHOLE OR SOME OTHER MEANS USED TO PREVENT ACCIDENTAL ENTRY BY UNAUTHORIZED PERSONS, CHILDREN OR ANIMALS, UNTIL THE CONTRACTOR IS READY TO MAKE FINAL ADJUSTMENT TO GRADE.
12. BRICK MASONRY FOR SHELF, INVERT AND GRADE ADJUSTMENT SHALL COMPLY WITH ASTM C32-05, CLAY OR SHALE, FOR GRADE SS HARD BRICK.
13. MORTAR SHALL BE COMPOSED OF PORTLAND CEMENT AND SAND WITH OR WITHOUT HYDRATED LIME ADDITION. PROPORTIONS IN MORTAR OF PARTS BY VOLUMES SHALL BE:
    (a) 4.5 PARTS SAND AND 1.5 PARTS CEMENT; OR
    (b) 4.5 PARTS SAND, 1 PART CEMENT AND 0.5 PART HYDRATED LIME

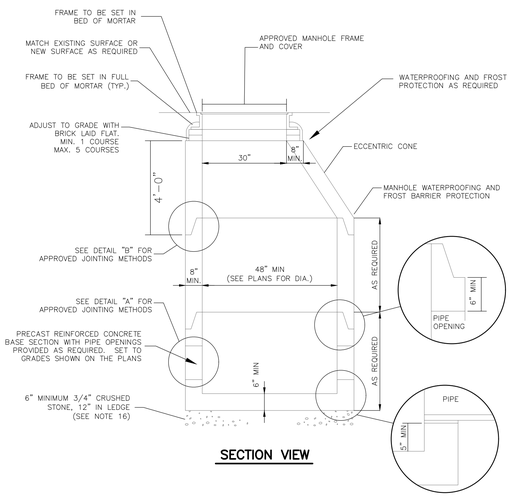
    CEMENT SHALL BE TYPE II PORTLAND CEMENT CONFORMING TO ASTM C150-05. HYDRATED LIME SHALL BE TYPE S CONFORMING TO ASTM C207-06 "STANDARD SPECIFICATIONS FOR HYDRATED LIME FOR MASONRY PURPOSES". SAND SHALL CONSIST OF INERT NATURAL SAND CONFORMING TO ASTM C33-03 "STANDARD SPECIFICATIONS FOR CONCRETE, FINE AGGREGATES".
14. INVERTS AND SHELVES: MANHOLES SHALL HAVE A BRICK PAVED OR PRECAST CONCRETE SHELF AND INVERT, CONSTRUCTED TO CONFORM TO THE SIZE OF THE PIPE AND FLOW. AT CHANGES IN DIRECTIONS, THE INVERTS SHALL BE LAID OUT IN CURVES OF THE LONGEST RADIUS POSSIBLE TANGENT TO THE CENTER LINE OF THE SEWER PIPES. SHELVES SHALL BE CONSTRUCTED TO THE ELEVATION OF THE HIGHEST PIPE CROWN AND SLOPE TO DRAIN TOWARD THE FLOWING THROUGH CHANNEL. UNDERLAYMENT OF INVERT AND SHELF SHALL CONSIST OF BRICK MASONRY.
15. FRAMES AND COVERS: MANHOLES FRAMES AND COVERS SHALL BE OF HEAVY DUTY DESIGN, CLASS 30, CONFORMING TO ASTM A48/48M AND PROVIDE A 30-INCH CLEAR OPENING. 3-INCH WORD (MINIMUM HEIGHT) LETTERS "SEWER" SHALL BE PLAINLY CAST INTO THE TOP SURFACE. THE CASTING SHALL BE OF EVEN GRAINED CAST IRON, SMOOTH, AND FREE FROM SCALE, LUMPS, BLISTERS, SAND HOLES AND DEFECTS. CONTACT SURFACES OF COVERS AND FRAMES SHALL BE MACHINED AT THE FOUNDRY TO PREVENT ROCKING OF COVERS IN ANY ORIENTATION.
16. BEDDING: PRECAST BASES SHALL BE PLACED ON A 6-INCH LAYER OF COMPACTED BEDDING MATERIAL THAT CONFORMS TO ASTM C33-03 NO. 67 STONE AND FREE FROM CLAY, LOAM AND ORGANNIC MATTER. THE EXCAVATION SHALL BE PROPERLY DEWATERED WHILE PLACING BEDDING MATERIAL AND SETTING OF THE BASE OR POURING CONCRETE. WATER-STOPS SHALL BE USED AT THE HORIZONTAL JOINT OF THE CAST-IN-PLACE MANHOLES.

100% PASSING	1" SCREEN
90-100% PASSING	3/4" SCREEN
20-55% PASSING	3/8" SCREEN
0-10% PASSING	#4 SIEVE
0-5% PASSING	#8 SIEVE

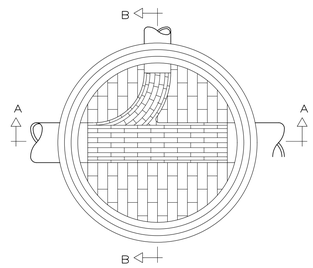
17. FLEXIBLE JOINT: A FLEXIBLE JOINT SHALL BE PROVIDED WIbHIN THE FOLLOWING DISTANCES FROM ANY MANHOLE CONNECTION: (a) WITHIN 48 INCHES FOR REINFORCED CONCRETE PIPE (RCP), (b) WITHIN 60 INCHES FOR PVC PIPE LARGER THAN 15" DIAMETER.
18. NO FLEXIBLE JOINT SHALL BE REQUIRED FOR DUCTILE IRON PIPE OR PVC PIPE UP THROUGH 15-INCH DIAMETER.
19. PIPE TO MANHOLE JOINTS SHALL BE ONLY AS FOLLOWS:
    A. ELASTOMERIC, RUBBER SLEEVE WITH WATERTIGHT JOINTS AT THE MANHOLE OPENING AND PIPE SURFACES.
    B. CAST INTO WALL OR SECUREED WITH STAINLESS STEEL CLAMPS.
    C. ELASTOMERIC SEALING RING CAST IN THE MANHOLE OPENING WITH THE SEAL FORMED ON THE SURFACE OF THE PIPE BY COMPRESSION OF THE RING.
    D. NON-SHRINK GROUTED JOINTS WHERE WATERTIGHT BONDING TO THE MANHOLE AND PIPE CAN BE OBTAINED.
20. THE INVERT OF THE INCOMING PIPE SHALL BE NO MORE THAN 6 INCHES ABOVE THE OUTGOING PIPE UNLESS A DROP ENTRY IS USED.

CITY NOTES

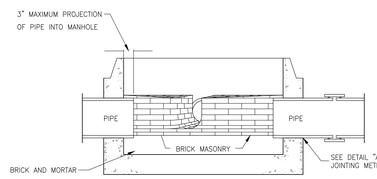
1. IT IS THE INTENTION THAT THE MANHOLE, INCLUDING ALL COMPONENT PARTS, HAVE ADEQUIATE SPACE, STRENGTH AND LEAKPROOF QUALITIES CONSIDERED NECESSARY FOR THE INTENDED SERVICE.
2. SEWER MANHOLE DIAMETER SHALL BE AS INDICATED ON THE PLANS.
3. LEAKAGE TEST SHALL BE PERFORMEND IN ACCORDANCE WITH THE CITY OF DOVER AND NHDES REQUIREMENTS. INVERT AND SHELF TO BE PLACED AFTER PASSING THE LEAKAGE TEST.
4. CARE SHOULD BE TAKEN TO ENSURE THAT THE BRICK INVERT IS A SMOOTH CONTINUATION OF THE SEWER INVERT. INVERT BRICKS SHALL BE LAID ON EDGE. BASE SECTION TO BE FULL.
5. MANHOLE CHANNELS REQUIRING CHANGE IN ALIGNMENT ARE TO BE BUILT ON A SMOOTH RADIUS.
6. IN CROSS COUNTRY AREAS BEYOND ROADWAY RIGHT-OF-WAYS, THE MANHOLE FRAME ELEVATION SHALL BE A MINIMUM OF 6" ABOVE FINISHED GRADE. GRADE TO PROVIDE POSITIVE DRAINAGE AWAY FROM THE MANHOLE.
7. FRAMES AND COVERS: MANHOLE FRAMES AND COVERS SHALL BE AO HEAVY DUTY DESIGN AND PROVIDE A 30-INCH CLEAR OPENING. 3-INCH (MINIMUM HEIGHT) LETTERS WITH THE WORD "SEWER" SHALL BE PLAINLY CAST INTO THE CENTER OF EACH MANHOLE COVER.



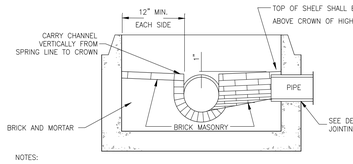
SECTION VIEW



TYPICAL MANHOLE – PLAN VIEW

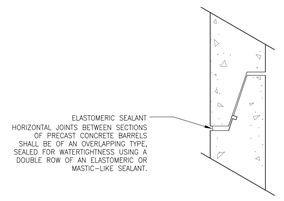


SECTION "A-A"



NOTES:
1. INVERT AND SHELF TO BE PLACED AFTER LEAKAGE TEST.
2. CARE SHALL BE TAKEN TO INSURE THAT THE BRICK INVERT IS A SMOOTH CONTINUATION OF THE SEWER INVERT. INVERT BRICKS SHALL BE LAID ON EDGE.
3. BASE SECTION TO BE FULL WALL THICKNESS AND MONOLITHIC TO A POINT 6" ABOVE THE PIPE CROWN.

SECTION "B-B"

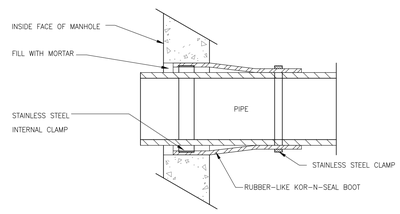


ELASTOMERIC SEALANT

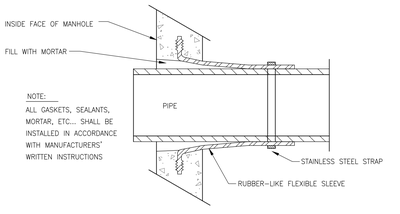
NOTES:
ALL GASKETS AND SEALANTS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS' WRITTEN INSTRUCTIONS.

STATE OF NEW HAMPSHIRE APPROVED PRODUCTS
A) SIKAFLEX-12-SL
B) SONNEBORN BUILDING PRODUCTS SONOLASTIC SL-1

DETAIL "B" – HORIZONTAL JOINTS

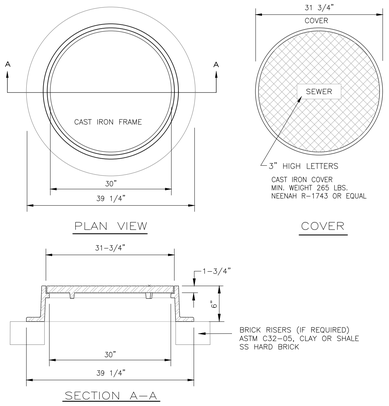


KOR-N-SEAL JOINT SLEEVE
(OR ACCEPTABLE SUBSTITUTE)



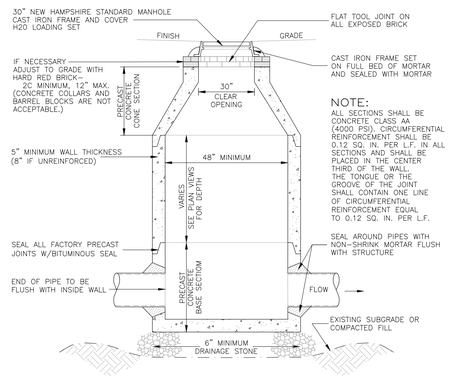
LOCK-JOINT FLEXIBLE MANHOLE SLEEVE
(OR ACCEPTABLE SUBSTITUTE)

DETAIL "A" – PIPE TO MANHOLE JOINTS



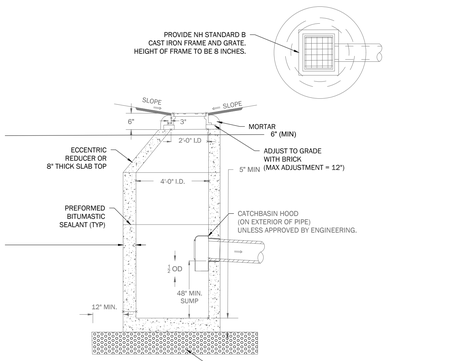
MANHOLE FRAME & COVER
HEAVY DUTY

TYPICAL SEWER MANHOLE
(NOT TO SCALE)



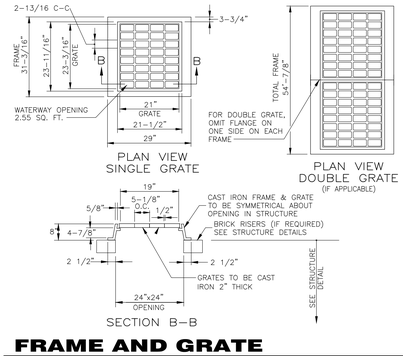
NOTE: ALL PRECAST SECTIONS SHALL CONFORM TO ASTM C-478

DRAIN MANHOLE
CONCENTRIC CONE — NOT TO SCALE

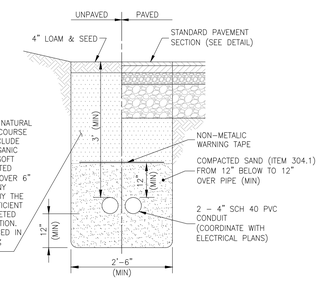


NOTES:
1. ENTIRE STRUCTURE SHALL BE H-20 LOAD RATED. PROVIDE MANUFACTURER REINFORCEMENT DETAILS TO THE CITY ENGINEER UPON REQUEST.

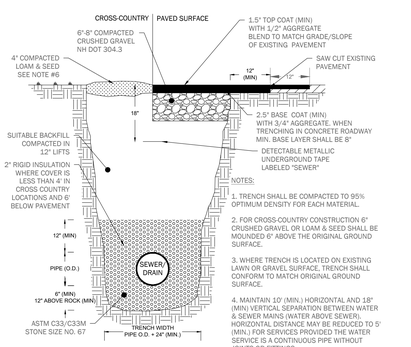
D-19 CATCH BASIN
CITY OF DOVER STANDARD DETAIL — NOT TO SCALE



FRAME AND GRATE
NHDOT TYPE B ALT 1 — NOT TO SCALE

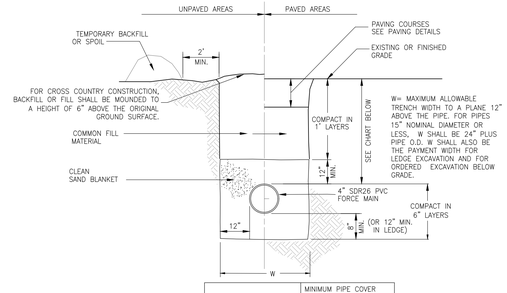


UTILITY TRENCH
FOR FUTURE ELECTRICAL CAR CHARGING STATIONS — NOT TO SCALE



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

D-3 SEWER /DRAIN TRENCH
CITY OF DOVER STANDARD DETAIL — NOT TO SCALE



	MINIMUM PIPE COVER PAVED AREAS
SEWER FORCE MAIN	6'*

* THE 6-FOOT REQUIREMENT MUST BE MET IN ALL ROADWAY LOCATIONS, WHICH INCLUDE TRAVELED WAYS, ROADWAY SHOULDERS, PARKING LOTS, DRIVEWAYS (PAVED OR UNPAVED) IN WHICH SNOW IS REMOVED.

TRENCH
FOR SEWER FORCE MAIN — NOT TO SCALE

2" X 2" DOVER SQUARE

Copyright 2022 ©TFMoran, Inc.
48 Constitution Drive, Bedford, N.H. 03110

All rights reserved. These plans and materials may not be copied, duplicated, replicated or otherwise reproduced in any form whatsoever without the prior written permission of TFMoran, Inc.

This plan is not effective unless signed by a duly authorized officer of TFMoran, Inc.

DIG SAFE
NH ME NH RI VT
CALL TOLL FREE 1-888-DIG-SAFE
UTILITIES UNDER GROUND PLANT DAMAGE PREVENTION SYSTEM
CONTACT DIG SAFE 72 HOURS PRIOR TO CONSTRUCTION

STATE OF NEW HAMPSHIRE — JAMES M. DONDERO No. 10414 — 9-1-23

DETAILS

MIXED USE DEVELOPMENT

NH ROUTE 108 AND MAST ROAD
DOVER, NEW HAMPSHIRE

OWNER OF RECORD	AND	APPLICANT/DEVELOPER
VC DOVER INVESTMENTS, LLC 48 CONSTITUTION DRIVE BEDFORD, NH 03110		VC DOVER INVESTMENTS, LLC 48 CONSTITUTION DRIVE BEDFORD, NH 03110

AS SHOWN — **PROJECT: P22-72** — **OCTOBER 18, 2022**

REV.	DATE	DESCRIPTION	DR	CK
3	2/28/2023	REV. PER TRC COMMENTS	JD	JMR
2	1/31/2023	REV. PER TRC COMMENTS	JD	JMR
1	12/2/2022	REV. PER TRC COMMENTS	SRP	JMR

TFM
Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists
48 Constitution Drive
Bedford, NH 03110
Phone (603) 472-4488
Fax (603) 472-9747
www.tfmoran.com

PROJECT	46001.31	DR	JMR	FB	1927	SHEET 14 OF 23
		CK	JK	CADFILE	46001-31 CONCEPT	

GENERAL NOTES

1. MINIMUM SIZE PIPE FOR SEWER SERVICE, PER CITY OF DOVER PUBLIC WORKS AND ENGINEERING DEPARTMENT, SHALL BE SIX INCHES.

2. PIPE AND JOINT MATERIALS:
   A. PLASTIC SEWER PIPE
      1. PIPE AND FITTINGS UNLESS OTHERWISE NOTED SHALL CONFORM TO THE FOLLOWING ASTM STANDARDS:

ASTM STANDARDS	GENERIC PIPE MATERIAL	SIZES APPROVED
D3034	*PVC (SOLID WALL)	8" THROUGH 15" (SDR 35)
F679	PVC (SOLID WALL)	18" THROUGH 27" (T-1 & T-2)
F789	PVC (SOLID WALL)	4" THROUGH 18" (T-1 TO T-3)
F794	PVC (RIBBED WALL)	8" THROUGH 36"
D2680	*ABS (COMPOSITES WALL)	8" THROUGH 15"

      *PVC: POLY VINYL CHLORIDE
      *ABS: ACRYLONITRILE-BUTADIENE-STYRENE

      2. JOINTS SEALS FOR PVC PIPE SHALL BE OIL RESISTANT COMPRESSION RINGS OF ELASTOMERIC MATERIAL CONFORMING TO ASTM D-3212 AND SHALL BE PUSH-ON, BELL AND SPIGOT TYPE.

      ABS TRUSS PIPE AND FITTINGS SHALL CONFORM TO ASTM D-2680, POLYMER COMPOUNDING SHALL BE TO ASTM D-1788 (CLASS 322).

      JOINTS FOR ABS TRUSS PIPE SHALL BE CHEMICAL WELDED COUPLINGS TYPE SC IN ACCORDANCE WITH ASTM D-2680, FORMING A CHEMICAL WELDED JOINT.

   B. DUCTILE-IRON PIPE, FITTINGS AND JOINTS.
      1. DUCTILE IRON PIPE AND FITTINGS SHALL CONFORM TO THE FOLLOWING STANDARDS OF THE UNITED STATES OF AMERICA STANDARDS INSTITUTE:
         A21.50 THICKNESS DESIGN OF DUCTILE IRON PIPE AND WITH ASTM A-536 DUCTILE IRON CASTINGS.
         A21.51 DUCTILE IRON PIPE, CENTRIFUGALLY CAST IN METAL MOLDS OR SAND-LINED MOLDS FOR WATER OR OTHER LIQUIDS.
      2. JOINTS SHALL BE OF THE MECHANICAL OR PUSH-ON TYPE. JOINTS AND GASKETS SHALL CONFORM TO:
         A21.11 RUBBER GASKETS JOINTS FOR CAST IRON PRESSURE PIPE & FITTINGS

3. DAMAGED PIPE SHALL BE REJECTED AND REMOVED FROM THE JOB SITE.

4. JOINTS SHALL BE DEPENDENT UPON A NEOPRENE OR ELASTOMERIC GASKET FOR WATER-TIGHTNESS. ALL JOINTS SHALL BE PROPERLY MATCHED WITH THE PIPE MATERIALS USED. WHERE DIFFERING MATERIALS ARE TO BE CONNECTED, AS AT THE STREET SEWER WYE OR AT THE FOUNDATION WALL, APPROPRIATE MANUFACTURED ADAPTERS SHALL BE USED.

5. TEES AND WYES: WHERE A TEE OR WYE IS NOT AVAILABLE IN THE EXISTING STREET SEWER, AN APPROPRIATE CONNECTION SHALL BE MADE, FOLLOWING MANUFACTURERS' INSTRUCTIONS USING A BOLTED, CLAMPED OR EPOXY-CEMENTED SADDLE TAPPED INTO A SMOOTHLY DRILLED OR SAWN OPENING IN THE SEWER. THE PRACTICE OF BREAKING AN OPENING WITH A SLEDGE HAMMER, STUFFING CLOTH OR OTHER SUCH MATERIAL AROUND THE JOINT, OR APPLYING MORTAR TO HOLD THE CONNECTION, AND ANY OTHER SIMILAR CRUDE PRACTICES OR INEPT OR HASTY IMPROVISATIONS WILL NOT BE PERMITTED. THE CONNECTION SHALL BE CONCRETE ENCASED AS SHOWN IN THE DETAIL UP TO AND INCLUDING 15" DIAMETER.

6. SEWER SERVICE INSTALLATION: THE PIPE SHALL BE HANDLED, PLACED AND JOINTED IN ACCORDANCE WITH INSTALLATION GUIDES OF THE APPROPRIATE MANUFACTURER. IT SHALL BE CAREFULLY BEDDED ON A 6 INCH LAYER OF CRUSHED STONE AND/OR GRAVEL AS SPECIFIED IN NOTE 10. BEDDING AND RE-FILL FOR DEPTH OF 12 INCHES ABOVE THE TOP OF THE PIPE SHALL BE CAREFULLY AND THOROUGHLY TAMPED BY HAND OR WITH APPROPRIATE MECHANICAL DEVICES.

   THE PIPE SHALL BE LAID AT A CONTINUOUS AND CONSTANT GRADE FROM THE STREET SEWER CONNECTION TO THE FOUNDATION AT A GRADE OF NOT LESS THAN 1/4" INCH PER FOOT. PIPE JOINTS MUST BE MADE UNDER DRY CONDITIONS. IF WATER IS PRESENT, ALL NECESSARY STEPS SHALL BE TAKEN TO DEWATER THE TRENCH.

7. TESTING: THE COMPLETED SEWER SERVICE SHALL BE SUBJECTED TO A THIRD-PARTY LEAKAGE TEST IN ANY OF THE FOLLOWING MANNERS (PRIOR TO BACKFILLING):

   A. AN OBSERVATION TEE SHALL BE INSTALLED AS SHOWN AND WHEN READY FOR TESTING, AN INFLATABLE BLADDER OR PLUG SHALL BE INSERTED JUST UPSTREAM FROM THE OPENING IN THE TEE. AFTER INFLATION, WATER SHALL BE INTRODUCED INTO THE SYSTEM ABOVE THE PLUG TO A HEIGHT OF 5 FEET ABOVE THE LEVEL OF THE PLUG.

   B. THE PIPE SHALL BE LEFT EXPOSED AND LIBERALLY HOSED WITH WATER, TO SIMULATE, AS NEARLY AS POSSIBLE, WET TRENCH CONDITIONS OR, IF TRENCH IS WET, THE GROUND WATER SHALL BE PERMITTED TO RISE IN THE TRENCH OVER THE PIPE. INSPECTIONS FOR LEAKS SHALL BE MADE THROUGH THE CLEANOUT WITH A FLASHLIGHT.

   C. DRY FLUORESCENE DYE SHALL BE SPRINKLED INTO THE TRENCH OVER THE PIPE. IF THE TRENCH IS DRY, THE PIPE SHALL BE LIBERALLY HOSED WITH WATER, OR IF THE TRENCH IS WET, GROUND WATER SHALL BE PERMITTED TO RISE IN THE TRENCH OVER THE PIPE. OBSERVATION FOR LEAKS SHALL BE MADE IN THE FIRST DOWN-STREAM MANHOLE.

   LEAKAGE OBSERVED IN ANY ONE OF THE ABOVE ALTERNATE TESTS SHALL BE CAUSE FOR NON-ACCEPTANCE AND THE PIPE SHALL BE DUG-UP IF NECESSARY AND RE-LAID SO AS TO ASSURE WATER TIGHTNESS.

8. ILLEGAL CONNECTIONS: NOTHING BUT SANITARY WASTE FLOW FROM TOILETS, SINKS, LAUNDRY, ETC. SHALL BE PERMITTED. ROOF LEADERS, FOOTING DRAINS, SUMP PUMPS OR OTHER SIMILAR CONNECTIONS CARRYING RAIN WATER, DRAINAGE OR GROUND WATER SHALL NOT BE PERMITTED.

9. WATER SERVICE SHALL NOT BE LAID IN SAME TRENCH AS SEWER SERVICE.

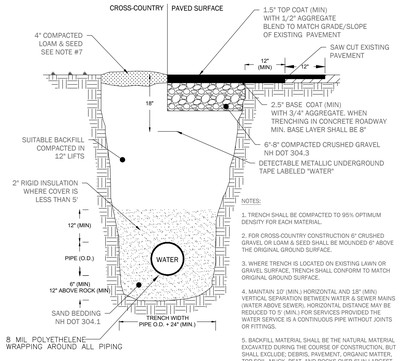
10. BEDDING: CRUSHED STONE, FREE FROM CLAY, LOAM, ORGANIC MATERIAL, MEETING ASTM C33-67.

100% PASSING	1 INCH SCREEN
90%-100% PASSING	3/4 INCH SCREEN
20%-55% PASSING	3/8 INCH SCREEN
0%-10% PASSING	#4 SIEVE
0%-5% PASSING	#8 SIEVE

    WHERE ORDERED BY THE ENGINEER TO STABILIZE THE TRENCH BASE, SCREENED GRAVEL OR CRUSHED STONE 1/2 INCH TO 1-1/2 INCH SHALL BE USED.

11. LOCATION: THE LOCATION OF THE TEE OR WYE SHALL BE RECORDED AND FILED IN THE MUNICIPAL RECORDS. IN ADDITION, A FERROUS METAL ROD OR PIPE SHALL BE PLACED OVER THE TEE OR WYE AS DESCRIBED IN THE TYPICAL "CHIMNEY" DETAIL, TO AID IN LOCATING THE BURIED PIPE WITH A DIP NEEDLE OR PIPEFINDER.

12. CHIMNEYS: IF VERTICAL DROP INTO SEWER IS GREATER THAN 4 FEET, A CHIMNEY SHALL BE CONSTRUCTED FOR THE SEWER CONNECTION. CHIMNEY INSTALLATION AS RECOMMENDED BY THE PIPE MANUFACTURER MAY BE USED IF APPROVED BY THE ENGINEER.

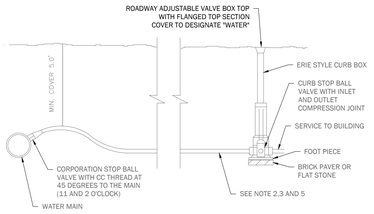


NOTES:

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

D-4 WATER TRENCH

CITY OF DOVER STANDARD DETAIL NOT TO SCALE

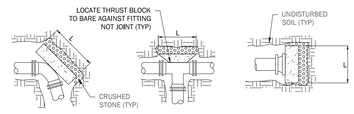


NOTES:

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

D-13 WATER SERVICE CONNECTION

CITY OF DOVER STANDARD DETAIL NOT TO SCALE



THRUST BLOCK SCHEDULE
MINIMUM BEARING AREA (SQUARE FEET)

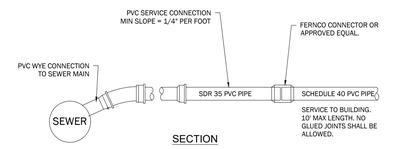
	PIPE SIZE					
Nominal Dia. (in)	4	6	8	10	12	16
Pipe Fittings	"	"	5.18	7.96	11.43	20.29
90 Degree Bends	"	4.11	7.33	11.26	16.17	28.69
45 Degree Bends	"	"	"	6.10	8.75	15.53
22-1/2 Degree Bends	"	"	"	"	4.46	7.92
11-1/4 Degree Bends	"	"	"	"	"	"
*SEE NOTE 2	System Pressure: 125 psi Safety Factor: 1.5 Soil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

NOTES:

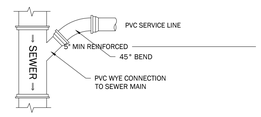
1. ALL THRUST BLOCKS SHALL BE PRE-CAST CONCRETE UNLESS APPROVED BY THE CITY ENGINEER.
2. 2'X2'X2" MINIMUM THRUST BLOCK REQUIRED, ANY BEARING AREA OVER 4SF REQUIRES THRUST BLOCKS, RESTRAINED JOINTS AND CALCULATIONS ASSOCIATED WITH THE JOINT.
3. THE MINIMUM BEARING AREAS SHOWN IN THE THRUST BLOCK SCHEDULE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

D-15 THRUST BLOCK

CITY OF DOVER STANDARD DETAIL



SECTION



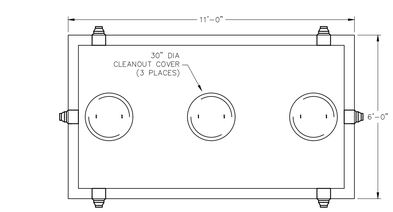
PLAN

D-17 SEWER SERVICE

CITY OF DOVER STANDARD DETAIL NOT TO SCALE

NOTES:

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

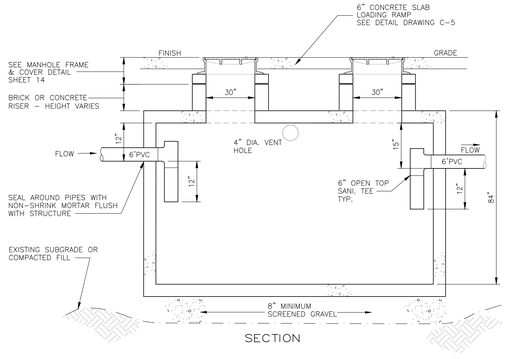


1500 GALLON GREASE TRAP

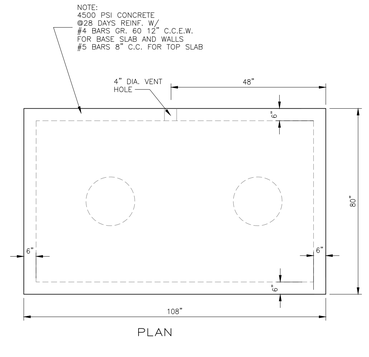
NOT TO SCALE

NOTES:

1. CONCRETE: 5,000 PSI MINIMUM AFTER 28 DAYS.
2. ALL REINFORCEMENT PER ASTM C1227.
3. DESIGNED FOR AASHTO HS-20 LOADING, 1 TO 5 FT COVER.
4. TONGUE & GROOVE JOINT SEALED WITH BUTYL RESIN
5. OPTIONAL BAFFLE WALL AVAILABLE.
6. GREASE TRAPS SHALL HAVE A MINIMUM DEPTH OF 4 FEET AND MINIMUM CAPACITY OF 1,000 GALLONS, AND SHALL HAVE SUFFICIENT CAPACITY TO PROVIDE AT LEAST A 36 HOUR DETENTION PERIOD FOR THE KITCHEN FLOW. KITCHEN FLOW SHALL BE CALCULATED IN ACCORDANCE WITH 310 CMR 15.203.
7. THE INLET TEE SHALL EXTEND TO THE MID DEPTH OF THE TANK. THE OUTLET TEE SHALL EXTEND TO WITHIN 12 INCHES OF THE BOTTOM OF THE TANK. TEES SHALL BE SCHEDULE 40 PVC AND PROPERLY SUPPORTED BY A HANGER, STRAP, OR OTHER DEVICE.
8. GREASE TRAPS SHALL BE PROVIDED WITH THREE (3) 20 INCH DIAMETER MANHOLE FRAMES AND COVERS TO GRADE.



SECTION



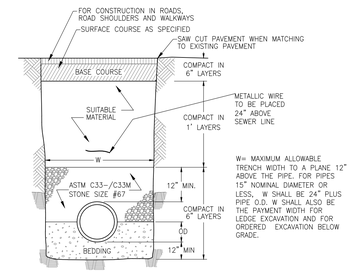
PLAN

EMERGENCY SEWER STORAGE TANK

SINGLE TANK - 1500 GALLONS MIN. NOT TO SCALE

EARTH CONSTRUCTION

NOT TO SCALE



LEDGE CONSTRUCTION

NOT TO SCALE

GRAVITY SEWER NOTES

1. MINIMUM SIZE PIPE FOR GRAVITY SEWER SHALL BE 8-INCHES.
2. PIPE AND JOINT MATERIALS FOR PLASTIC SEWER PIPE SHALL CONFORM TO THE FOLLOWING ASTM STANDARDS:

ASTM STANDARDS	GENERIC PIPE MATERIAL	SIZES APPROVED
D3034-04e	* PVC (SOLID WALL)	8" THROUGH 15" (SDR 35)
F679-03	PVC (SOLID WALL)	18" THROUGH 27" (T-1 & T-2)
F794-03	PVC (RIBBED WALL)	8" THROUGH 36"
F1760-01(2005)e1	PVC, RECYCLED	ALL DIAMETERS

   *PVC: POLY VINYL CHLORIDE

3. PLASTIC SEWER PIPE SHALL HAVE A PIPE STIFFNESS RATING OF AT LEAST 46 POUNDS PER SQUARE INCH AT 5 PERCENT PIPE DIAMETER DEFLECTION, AS MEASURED IN ACCORDANCE WITH ASTM D2412-02 DURING MANUFACTURE.
4. JOINTS SEALS FOR PVC PIPE SHALL BE OIL RESISTANT COMPRESSION RINGS OF ELASTOMERIC MATERIAL CONFORMING TO ASTM D-3212-96(a)(2003)e1 AND SHALL BE PUSH-ON, BELL AND SPIGOT TYPE.
5. DUCTILE-IRON PIPE, FITTINGS AND JOINTS SHALL CONFORM TO THE FOLLOWING STANDARDS OF THE AMERICAN WATER WORKS ASSOCIATION (AWWA).

   AWWA C151/A21.51-02 THICKNESS DESIGN OF DUCTILE IRON PIPE AND WITH ASTM A-536-84 (2004) DUCTILE IRON CASTINGS.

   AWWA C151/A21.51-02 DUCTILE IRON PIPE, CENTRIFUGALLY CAST IN METAL MOLDS OR SAND-LINED MOLDS FOR WATER OR OTHER LIQUIDS.

   JOINTS SHALL BE OF THE MECHANICAL OR PUSH-ON TYPE. JOINTS AND GASKETS SHALL CONFORM TO AWWA C151/A21.11 RUBBER GASKETS JOINTS FOR CAST IRON PRESSURE PIPE & FITTINGS.
6. CONCRETE PIPE SHALL CONFORM TO AWWA C302-04.
7. PRESTRESSED CONCRETE CYLINDER PIPE AND FITTINGS SHALL CONFORM TO AWWA C301-99.

   JOINTS SEALS FOR CONCRETE CYLINDER PIPE SHALL BE OIL RESISTANT ELASTOMERIC MATERIAL CONFORMING TO ASWWA C301-99 SPECIFICATIONS.
8. DAMAGED PIPE SHALL BE REJECTED AND REMOVED FROM THE JOB SITE.
9. GRAVITY SEWER PIPE TESTING SHALL BE AS FOLLOWS:

   ALL NEW GRAVITY SEWERS SHALL BE TESTED FOR WATER TIGHTNESS BY THE USE OF LOW-PRESSURE AIR TESTS.

   LOW PRESSURE AIR TESTING SHALL BE IN CONFORMANCE WITH:

   ASTM F1417-92(2005) "STANDARD TEST METHOD FOR INSTALLATION ACCEPTANCE OF PLASTIC GRAVITY SEWER LINES USING LOW PRESSURE AIR".

   UNI-BELL PVC PIPE ASSOCIATION UNI-B-6, "LOW PRESSURE AIR TESTING OF INSTALLED SEWER PIPE".
10. ALL NEW GRAVITY SEWERS SHALL BE CLEANED AND VISUALLY INSPECTED AND SHALL BE TRUE TO LINE AND GRADE FOLLOWING INSTALATION AND PRIOR TO USE.
11. ALL PLASTIC SEWER PIPE SHALL BE DEFLECTION TESTED NOT LESS THAN 30 DAYS FOLLOWING INSTALLATION.
12. THE MAXIMUM ALLOWABLE DEFLECTION OF FLEXIBLE SEWER PIPE SHALL BE 5 PERCENT OF THE AVERAGE INSIDE DIAMETER.
13. TRENCH CONSTUCTION SHALL CONFORM TO THE FOLLOWING:

   TRENCH DIMENSIONS FOR SEWER PIPE LESS THAN 15 INCHES IN DIAMETER, THE ALLOWABLE TRENCH WIDTH AT A PLANE 12 INCHES ABOVE THE PIPE SHALL BE NO MORE THAN 36 INCHES AND FOR PIPE 15 INCHES AND LARGER, THE ALLOWABLE WIDTH SHALL BE EQUAL TO THE PIPES OUTSIDE DIAMETER PLUS 24 INCHES.

   PIPE TRENCH BEDDING MATERIAL AND FILL MATERIAL FOR EXCAVATION BELOW GRADE SHALL BE SCREENED GRAVEL OR CRUSHED STONE TO ASTM C33-03 STONE SIZE NO. 67. THE PIPE SAND BLANKET MATERIAL SHALL BE GRADED SAND FREE FROM ANY ORGANIC MATERIALS, GRADED SUCH THAT 100 PERCENT PASSED THE 1/2-INCH SIEVE AND A MAXIMUM OF 15 PERCENT PASSES A #200 SIEVE. IN LIEU OF A SAND BLANKET, A STONE ENVELOPE 6 INCHES THICK COMPLETELY AROUND THE PIPE USING 3/4-INCH STONE MAY BE USED.

   PIPE BEDDING MATERIAL SHALL EXTEND FROM A HORIZONTAL PLANE THROUGH THE PIPE AXIS TO 6-INCHES BELOW THE BOTTOM OF THE OUTSIDE SURFACE OF THE PIPE.

   PIPE SAND BLANKET MATERIAL SHALL COVER THE PIPE A MINIMUM OF 12 INCHES ABOVE THE CROWN OF THE OUTSIDE SURFACE.

   COMPACTION SHALL BE IN 12-INCH LAYERS FOR BEDDING AND BLANKET MATERIALS.

   BACKFILL MATERIAL SHALL BE IN 3-FOOT LAYERS TO THE GROUND SURFACE EXCEPT FOR ROAD CONSTRUCTION WHERE THE FINAL 3-FEET SHALL BE COMPACTED IN 12-INCH LAYERS TO THE ROAD BASE SURFACE.

   TRENCH BACKFILL MATERIAL IN ROADWAY LOCATIONS SHALL BE NATURAL MATERIALS EXCAVATED FROM THE TRENCH DURING CONSTRUCTION, EXCLUDING DEBRIS, PAVEMENT PIECES, ORGANIC MATTER, TOP SOIL, WET OR SOFT MUCK, PEAT, CLAY, EXCAVATED LEDGE, ROCKS OVER 6 INCHES IN THE LARGEST DIMENSION, OR ANY OTHER UNSUITABLE MATERIAL NOT APPROVED BY THE ENGINEER.

   TRENCH BACKFILL AT CROSS-COUNTRY LOCATIONS SHALL BE AS DESCRIBED ABOVE EXCEPT THAT THE ENGINEER MAY PERMIT THE USE OF TOP SOIL, LOAM, MUCK OR PEAT, IF HE IS SATISFIED THAT THE COMPLETED CONSTRUCTION WILL BE PERMANENTLY STABLE AND PROVIDED THAT EASY ACCESS TO THE SEWER FOR MAINTENANCE AND POSSIBLE RECONSTRUCTION, WHEN NECESSARY WILL BE PRESERVED. BACKFILL SHALL BE MOUNDED 6-INCHES ABOVE ORIGINAL GROUND.

   BASE COURSE MATERIALS FOR TRENCH REPAIRS SHALL MEET THE REQUIREMENTS OF DIVISION 300 OF THE "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION" OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION.

   WHERE SHEETING IS PLACED ALONG SIDE OF THE PIPE AND EXTENDS BELOW MID-DIAMETER, THE SHEETING SHALL BE CUT OFF AND LEFT IN PLACE TO AN ELEVATION NOT LESS THAN ONE FOOT ABOVE THE TOP OF THE PIPE AND AT LEAST 3 FEET BELOW FINISH GRADE.

   TRENCHES FOR SEWER PIPES WITH SLOPES OVER 0.08 FEET PER FOOT AND TRENCHES FOR SEWER PIPES BELOW THE SEASONAL HIGH GROUND WATER LEVEL SHALL HAVE IMPERVIOUS TRENCH DAMS CONSTRUCTED EVERY 300 FEET TO PREVENT POTENTIAL DISTURBANCE TO PIPE BEDDING AND BLANKET MATERIALS.

2" X 2" DOVER SQUARE

DETAILS

MIXED USE DEVELOPMENT

NH ROUTE 108 AND MAST ROAD
DOVER, NEW HAMPSHIRE

OWNER OF RECORD	AND	APPLICANT/DEVELOPER
VC DOVER INVESTMENTS, LLC 48 CONSTITUTION DRIVE BEDFORD, NH 03110		VC DOVER INVESTMENTS, LLC 48 CONSTITUTION DRIVE BEDFORD, NH 03110

AS SHOWN **PROJECT: P22-72** **OCTOBER 18, 2022**

Copyright 2022 ©TFMoran, Inc.
48 Constitution Drive, Bedford, N.H. 03110

All rights reserved. These plans and materials may not be copied, duplicated, replicated or otherwise reproduced in any form whatsoever without the prior written permission of TFMoran, Inc.

This plan is not effective unless signed by a duly authorized officer of TFMoran, Inc.

DIG SAFE
MR ME NH RI VT
CALL TOLL FREE DIG-SAFE TOLL FREE
811 UTILITY UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM
CONTACT DIG SAFE 72 HOURS PRIOR TO CONSTRUCTION

STATE OF NEW HAMPSHIRE JAMES M. ROBINSON No. 10414 LICENSED LAND SURVEYOR

REV.	DATE	DESCRIPTION	DR	CK
3	2/28/2023	REV. PER TRC COMMENTS	JD	JMR
2	1/31/2023	REV. PER TRC COMMENTS	JD	JMR
1	12/2/2022	REV. PER TRC COMMENTS	SRP	JMR

TFM Civil Engineers, Structural Engineers, Traffic Engineers, Land Surveyors, Landscape Architects, Scientists
48 Constitution Drive
Bedford, NH 03110
Phone (603) 472-4488
Fax (603) 472-9747
www.tfmoran.com

PROJ.	46001.31	DR	JMR	FB	1927	SHEET 15 OF 23
		CK	JK	CADFILE	46001-31 CONCEPT	

LANDSCAPE NOTES

SITE AND SOIL PREPARATION

1. WHEN CONDITIONS DETRIMENTAL TO PLANT GROWTH ARE ENCOUNTERED, SUCH AS RUBBLE FILL, ADVERSE DRAINAGE CONDITIONS, OR LEDGE, NOTIFY LANDSCAPE ARCHITECT/ENGINEER BEFORE PLANTING.

2. ALL DISTURBED AREAS & PLANTING AREAS, INCLUDING AREAS TO BE SODDED, SHALL RECEIVE THE FOLLOWING SOIL PREPARATION PRIOR TO PLANTING: A MINIMUM OF 6 INCHES OF LIGHTLY COMPACTED TOPSOIL SHALL BE INSTALLED OVER THE SUBSOIL IF TOPSOIL HAS BEEN REMOVED OR IS NOT PRESENT.

3. LOAM SHALL CONSIST OF LOOSE FRIABLE TOPSOIL WITH NO ADMIXTURE OF REFUSE OR MATERIAL TOXIC TO PLANT GROWTH. LOAM SHALL BE FREE FROM STONES, LUMPS, STUMPS, OR SIMILAR OBJECTS LARGER THAN TWO INCHES (2") IN GREATEST DIAMETER, SUBSOIL, ROOTS, AND WEEDS. THE MINIMUM AND MAXIMUM PH VALUE SHALL BE FROM 5.5 TO 7.0. LOAM SHALL CONTAIN A MINIMUM OF TWO PERCENT (2%) AND A MAXIMUM OF FIVE PERCENT (5%) ORGANIC MATTER AS DETERMINED BY LOSS BY IGNITION. SOIL TEXTURE SHALL BE SANDY CLAY LOAM OR SANDY LOAM WITH CLAY CONTENT BETWEEN 15 AND 25%, AND A COMBINED CLAY/SILT CONTENT OF NO MORE THAN 55%. NOT MORE THAN SIXTY-FIVE PERCENT (65%) SHALL PASS A NO. 200 SIEVE AS DETERMINED BY THE WASH TEST IN ACCORDANCE WITH ASTM D1140. IN NO INSTANCE SHALL MORE THAN 20% OF THAT MATERIAL PASSING THE #4 SIEVE CONSIST OF CLAY SIZE PARTICLES.

4. NATURAL TOPSOIL NOT CONFORMING TO THE PARAGRAPH ABOVE OR CONTAINING EXCESSIVE AMOUNTS OF CLAY OR SAND SHALL BE TREATED BY THE CONTRACTOR TO MEET THOSE REQUIREMENTS.

5. SUBMIT TEST RESULTS OBTAINED FROM SOURCE TO ENGINEER/LANDSCAPE ARCHITECT FOR REVIEW AND APPROVAL, PRIOR TO SPREADING OPERATIONS.

6. APPROVAL BY THE ENGINEER/LANDSCAPE ARCHITECT TO USE THE TOPSOIL WILL DEPEND UPON THE RESULTS OF THE SOIL TESTS.

7. THE BURDEN OF PROOF OF SOIL AMENDMENT INSTALLATION RESTS WITH THE CONTRACTOR. SOIL TESTS MAY BE REQUIRED AT THE CONTRACTOR'S EXPENSE IN ORDER TO CONFIRM AMENDMENT INSTALLATION.

SEEDING

1. ROUGH GRADING SHALL BE COMPLETED PRIOR TO THE START OF PLANTING IN ANY GIVEN AREA OF THE PROJECT SITE.

2. SEEDING SHALL BE DONE BETWEEN APRIL 1 TO JUNE 15 OR AUGUST 15 TO OCTOBER 15, EXCEPT FOR RESEEDING OF BARE SPOTS AND MAINTENANCE. ALL DISTURBED AREAS NOT COVERED BY BUILDINGS, PAVING OR AREAS THAT HAVE NOT BEEN OTHERWISE DEVELOPED SHALL BE SEEDED OR SODDED. SLOPES GREATER THAN 3:1 SHALL BE PROTECTED WITH AN EROSION CONTROL BLANKET. AFTER OCTOBER 15 DISTURBED SOILS SHALL BE PROTECTED IN ACCORDANCE WITH THE WINTER CONSTRUCTION NOTES.

ACCEPTABLE SEED MIXES ARE AS FOLLOWS:

PARK SEED MIX (NHDOT TYPE 15) MIN. 120 LBS/ACRE:

33% CREEPING RED FESCUE	(MIN. 40 LBS/ACRE)
42% PERENNIAL RYEGRASS	(MIN. 50 LBS/ACRE)
21% KENTUCKY BLUEGRASS	(MIN. 25 LBS/ACRE)
4% REDTOP	(MIN. 5 LBS/ACRE)

TEMPORARY LAWN MIX: (MIN. 47 LBS/ACRE)
100% ANNUAL RYE

SLOPE SEED (WF) (NHDOT TYPE 45) MIX 3:1 OR GREATER SLOPES (MIN. 95 LBS/ACRE):

38% CREEPING RED FESCUE	(MIN. 35 LBS/ACRE)
32% PERENNIAL RYEGRASS	(MIN. 30 LBS/ACRE)
5% REDTOP	(MIN. 5 LBS/ACRE)
5% ALSIKE CLOVER	(MIN. 5 LBS/ACRE)
5% BIRDSFOOT TREFOIL	(MIN. 5 LBS/ACRE)
3% LANCE-LEAF COREOPSIS	(MIN. 4 LBS/ACRE)
3% OXEYE DAISY	(MIN. 3 LBS/ACRE)
3% BLACKEYED SUSAN	(MIN. 4 LBS/ACRE)
3% WILD LUPINE	(MIN. 4 LBS/ACRE)

SLOPE SEED (NHDOT TYPE 44) MIX 3:1 OR GREATER SLOPES (MIN. 80 LBS/ACRE):

44% CREEPING RED FESCUE	(MIN. 35 LBS/ACRE)
38% PERENNIAL RYEGRASS	(MIN. 30 LBS/ACRE)
6% REDTOP	(MIN. 5 LBS/ACRE)
6% ALSIKE CLOVER	(MIN. 5 LBS/ACRE)
6% BIRDSFOOT TREFOIL	(MIN. 5 LBS/ACRE)

PLANTING

1. EXCAVATE PITS, PLANTERS, BEDS AND TRENCHES WITH VERTICAL SIDES AND WITH BOTTOM OF EXCAVATION SLIGHTLY RAISED AT CENTER TO PROVIDE PROPER DRAINAGE. LOOSEN HARD SUBSOIL IN BOTTOM OF EXCAVATION.

2. ANY LEDGE OR RUBBLE MATERIAL SHALL BE FRACTURED TO A DEPTH OF 3 FEET AND EXCAVATED TO A DEPTH OF 30 INCHES FOR TREE POCKETS AND 18 INCHES FOR SHRUB BEDS. THIS PROCEDURE SHALL BE HANDLED BY THE SITE CONTRACTOR. SITE TOPSOIL SHALL BE DEPOSITED IN ALL EXCAVATED POCKETS.

3. DISPOSE OF SUBSOIL REMOVED FROM PLANTING EXCAVATIONS. DO NOT MIX WITH PLANTING SOIL OR USE AS BACKFILL.

4. FILL EXCAVATIONS FOR TREES AND SHRUBS WITH WATER AND ALLOW TO PERCOLATE OUT BEFORE PLANTING.

5. DISH TOP OF BACKFILL TO ALLOW FOR MULCH – PLANT SAUCERS SHALL BE AS SHOWN ON DETAIL SHEETS; 6' DIAMETER FOR ALL DECIDUOUS TREES, AND FOR EVERGREEN TREES A RADIUS 2' BEYOND THE OUTER MOST BRANCHES.

6. MULCH TREES, SHRUBS, PLANTERS AND BEDS. PROVIDE NOT LESS THAN 3" THICKNESS OF BARK MULCH, 3/8"–2" OF WIDTH, AND WORK INTO TOP OF BACKFILL. FINISH LEVEL WITH ADJACENT FINISH GRADES AS DIRECTED IN THE FIELD.

7. TREEGATOR WATERING SYSTEM OR APPROVED EQUAL SHALL BE INSTALLED FOR ALL DECIDUOUS TREES AT TIME OF PLANTING AND REMOVED BEFORE FROST. WATERING RATE TO BE APPLIED PER MANUFACTURER'S SPECIFICATIONS.

8. ALL PLANT MATERIALS SHALL HAVE DEAD OR DAMAGED BRANCHES REMOVED AT TIME OF PLANTING. ALL TAGS AND RIBBONS SHALL BE REMOVED AT THIS TIME.

9. THE CONTRACTOR SHALL REQUEST A FINAL OBSERVATION BY THE OWNER'S REPRESENTATIVE UPON COMPLETION OF INSTALLATION.

LANDSCAPE MAINTENANCE

LAWN

1. BEGIN MAINTENANCE IMMEDIATELY AFTER EACH AREA IS PLANTED AND CONTINUE UNTIL ACCEPTABLE LAWN IS ESTABLISHED, BUT NOT LESS THAN THE FOLLOWING PERIODS:

   A. SEEDED LAWNS: 60 DAYS FROM DATE OF SUBSTANTIAL COMPLETION.

      1. WHEN FULL MAINTENANCE PERIOD HAS NOT ELAPSED BEFORE END OF PLANTING SEASON, OR IF LAWN IS NOT FULLY ESTABLISHED, CONTINUE MAINTENANCE DURING NEXT PLANTING SEASON.

   B. SODDED LAWNS: 30 DAYS FROM DATE OF SUBSTANTIAL COMPLETION.
   C. PLUGGED LAWNS: 30 DAYS FROM DATE OF SUBSTANTIAL COMPLETION.
   D. SPRIGGED LAWNS: 30 DAYS FROM DATE OF SUBSTANTIAL COMPLETION.

2. MAINTAIN AND ESTABLISH LAWN BY WATERING, FERTILIZING, WEEDING, MOWING, TRIMMING, REPLANTING, AND OTHER OPERATIONS. ROLL, REGRADE, AND REPLANT BARE OR ERODED AREAS AND REMULCH TO PRODUCE A UNIFORMLY SMOOTH LAWN.

   A. IN AREAS WHERE MULCH HAS BEEN DISTURBED BY WIND OR MAINTENANCE OPERATIONS, ADD NEW MULCH. ANCHOR AS REQUIRED TO PREVENT DISPLACEMENT.

3. WATERING: PROVIDE AND MAINTAIN TEMPORARY PIPING, HOSES, AND LAWN-WATERING EQUIPMENT TO CONVEY WATER FROM SOURCES AND KEEP LAWN UNIFORMLY MOIST TO A DEPTH OF FOUR INCHES (100 mm).

   A. SCHEDULE WATERING TO PREVENT WILTING, PUDDLING, EROSION, AND DISPLACEMENT OF SEED OR MULCH. LAY OUT TEMPORARY WATERING SYSTEM TO AVOID WALKING OVER MUDDY OR NEWLY PLANTED AREAS.
   B. WATER LAWN AT A MINIMUM RATE OF ONE INCH (25 mm) PER WEEK.

4. MOW LAWN AS SOON AS TOP GROWTH IS TALL ENOUGH TO CUT. REPEAT MOWING TO MAINTAIN SPECIFIC HEIGHT WITHOUT CUTTING MORE THAN 40 PERCENT OF GRASS HEIGHT. REMOVE NO MORE THAN 40 PERCENT OF GRASS-LEAF GROWTH IN INITAL OR SUBSEQUENT MOWINGS. DO NOT DELAY MOWING UNTIL GRASS BLADES BEND OVER AND BECOME MATTED. DO NOT MOW WHEN GRASS IS WET. SCHEDULE INITIAL AND SUBSEQUENT MOWINGS TO MAINTAIN THE FOLLOWING GRASS HEIGHT.

5. LAWN POSTFERTILIZATION: APPLY FERTILIZER AFTER INITIAL MOWING AND WHEN GRASS IS DRY.

   BEST PRACTICES TO MINIMIZE ENVIRONMENTAL IMPACTS SUCH AS THE USE OF LOW PHOSPHOROUS FERTILIZER AND SLOW RELEASE NITROGEN, SHALL BE USED.

6. LIME AND FERTILIZATION RATE SHALL BE 25LBS/ACRE.

MEADOW

1. BEGIN MAINTENANCE IMMEDIATELY AFTER EACH AREA IS PLANTED AND CONTINUE UNTIL ACCEPTABLE MEADOW IS ESTABLISHED, BUT FOR NOT LESS THAN 40 DAYS FROM DATE OF SUBSTANTIAL COMPLETION.

2. MAINTAIN AND ESTABLISH MEADOW BY WATERING, WEEDING, MOWING, TRIMMING, REPLANTING, AND OTHER OPERATIONS. ROLL, REGRADE, AND REPLANT BARE OR ERODED AREAS AND REMULCH.

3. WATERING: PROVIDE AND MAINTAIN TEMPORARY PIPING, HOSES, AND LAWN-WATERING EQUIPMENT TO CONVEY WATER FROM SOURCES AND KEEP MEADOW UNIFORMLY MOIST.

   A. SCHEDULE WATERING TO PREVENT WILTING, PUDDLING, EROSION, AND DISPLACEMENT OF SEED OR MULCH. LAY OUT TEMPORARY WATERING SYSTEM TO AVOID WALKING OVER MUDDY OR NEWLY PLANTED AREAS.
   B. WATER LAWN AT A MINIMUM RATE OF 1/2 INCH (13 mm) PER WEEK FOR 4 WEEKS.

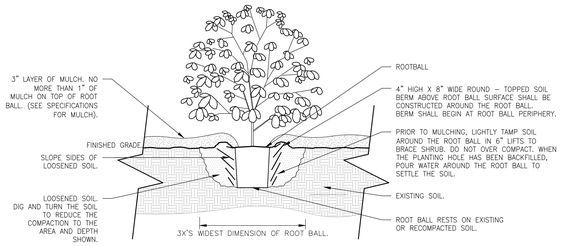
TREES AND SHRUBS:

1. PRUNING SHOULD BE STARTED EARLY AND KEPT UP AT REGULAR INTERVALS. TREES SHOULD BE PRUNED AND SHAPED TO AVOID SPLITTING LATER IN LIFE. BROKEN TOPS AND BRANCHES SHOULD BE REMOVED AS SOON AS POSSIBLE AFTER INJURY. BROKEN, WEAK OR DISEASED BRANCHES SHOULD BE REMOVED FIRST, DEAD BRANCHES SECOND AND HEALTHY BRANCHES LAST.

2. TREES AND SHRUBS SHOULD BE PROTECTED AGAINST DAMAGE INCURRED WITH LAWN MOWERS AND GARDEN EQUIPMENT. KEEPING GRASS AWAY FROM TREE TRUNKS WITH THE USE OF MULCH IS RECOMMENDED.

3. THE USE OF ROAD SALT AROUND TREES AND SHRUBS SHOULD BE AVOIDED OR MINIMIZED.

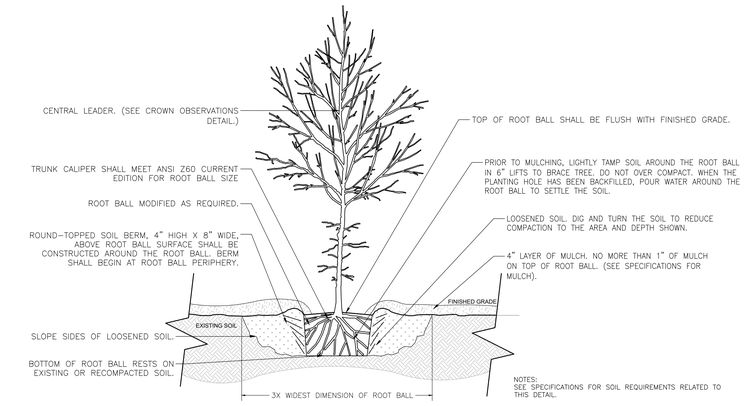
4. LANDSCAPED AREAS SHALL BE ROUTINELY MAINTAINED FREE OF DEBRIS AND LITTER. SPRAY AS REQUIRED TO KEEP TREES AND SHRUBS FREE OF INSECTS AND DISEASE. MAINTAINENCE SHALL INCLUDE THE REPLACEMENT OF ALL DEAD PLANT MATERIAL WITHIN THE GUARANTEED CONTRACT PERIOD.



SECTION VIEW

SHRUB PLANTING

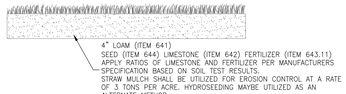
NOT TO SCALE



SECTION VIEW

TREE WITH BERM

NOT TO SCALE



LOAM & SEED

NOT TO SCALE

2" X 2" DOVER SQUARE

DETAILS

MIXED USE DEVELOPMENT

NH ROUTE 108 AND MAST ROAD
DOVER, NEW HAMPSHIRE

OWNER OF RECORD
VC DOVER INVESTMENTS, LLC
48 CONSTITUTION DRIVE
BEDFORD, NH 03110

AND

APPLICANT/DEVELOPER
VC DOVER INVESTMENTS, LLC
48 CONSTITUTION DRIVE
BEDFORD, NH 03110

AS SHOWN

PROJECT: P22-72 **OCTOBER 18, 2022**

REV.	DATE	DESCRIPTION	DR	CK
3	2/28/2023	REV. PER TRC COMMENTS	JD	JMR
2	1/31/2023	REV. PER TRC COMMENTS	JD	JMR
1	12/2/2022	REV. PER TRC COMMENTS	SRP	JMR

TFM Civil Engineers, Structural Engineers, Traffic Engineers, Land Surveyors, Landscape Architects, Scientists
48 Constitution Drive
Bedford, NH 03110
Phone (603) 472-4488
Fax (603) 472-9747
www.tfmoran.com

FILE 46001.31 | DR JMR | CK JK | FB 1927 | CADFILE 46001-31 CONCEPT

SHEET 16 OF 23

Copyright 2022 ©TFMoran, Inc.
48 Constitution Drive, Bedford, N.H. 03110

All rights reserved. These plans and materials may not be copied, duplicated, replicated or otherwise reproduced in any form whatsoever without the prior written permission of TFMoran, Inc.

This plan is not effective unless signed by a duly authorized officer of TFMoran, Inc.

DIG SAFE
ME NH RI VT
DIG-SAFE
UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM
CONTACT DIG SAFE 72 HOURS PRIOR TO CONSTRUCTION

STATE OF NEW HAMPSHIRE
JAMES M. JOHNSON
No. 10414
PROFESSIONAL ENGINEER
2-13



Rendering from North West

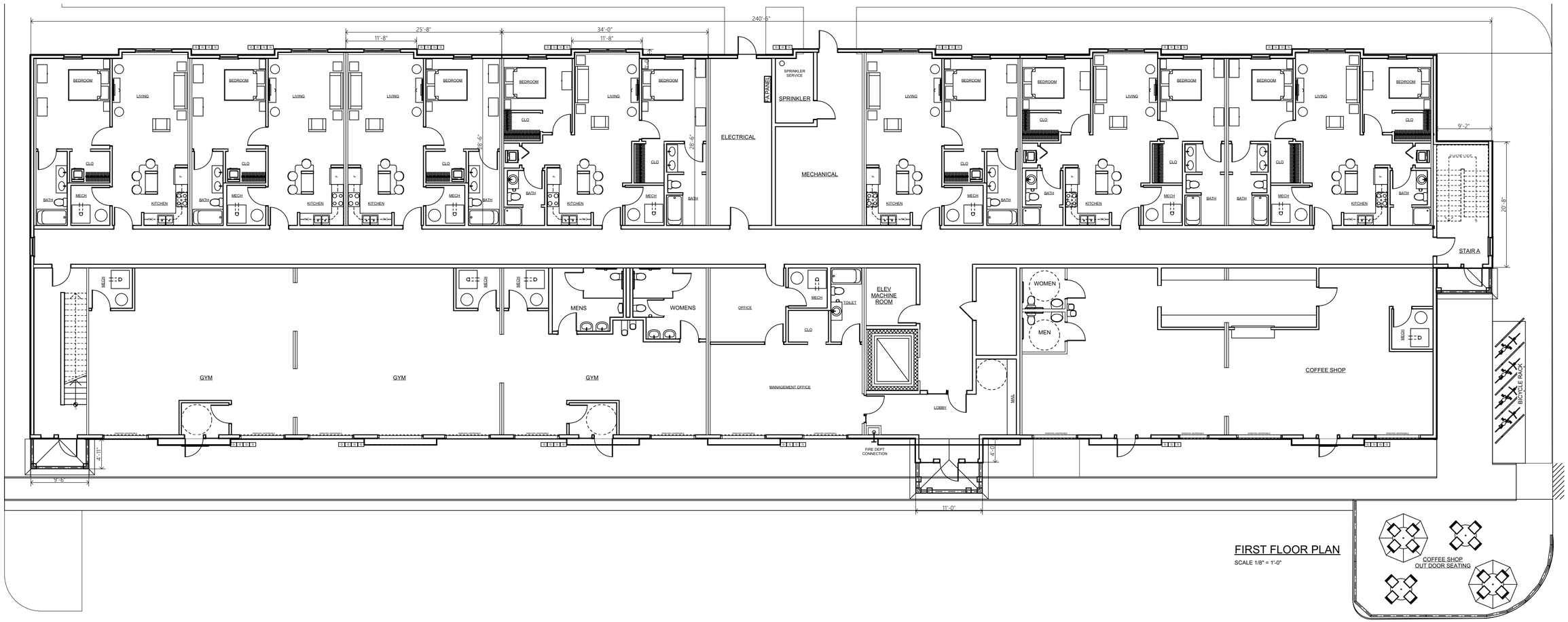
BURNELL JOHNSON
ARCHITECTS
80 STARK STREET
(603) 625-5098
(603) 625-5167 FAX
MANCHESTER, N.H.
03101

VC Dover Investments LLC

DOVER, NEW HAMPSHIRE

Planning File P22-72

JANUARY 27, 2023



FIRST FLOOR PLAN

SCALE 1/8" = 1'-0"

UNIT COUNTS

4 - One Bedrooms
3- Two Bedrooms

Issue Dates	
3/10/2022	Preliminary
1/27/2023	Revised Preliminary
11/21/2022	ELEVATION NOTES ADDED
2/8/2023	Revised Commercial Layout
2/8/2023	REVISED TRIM DETAILS, WINDOWS
2/27/2023	REVISED SIDING, WINDOWS

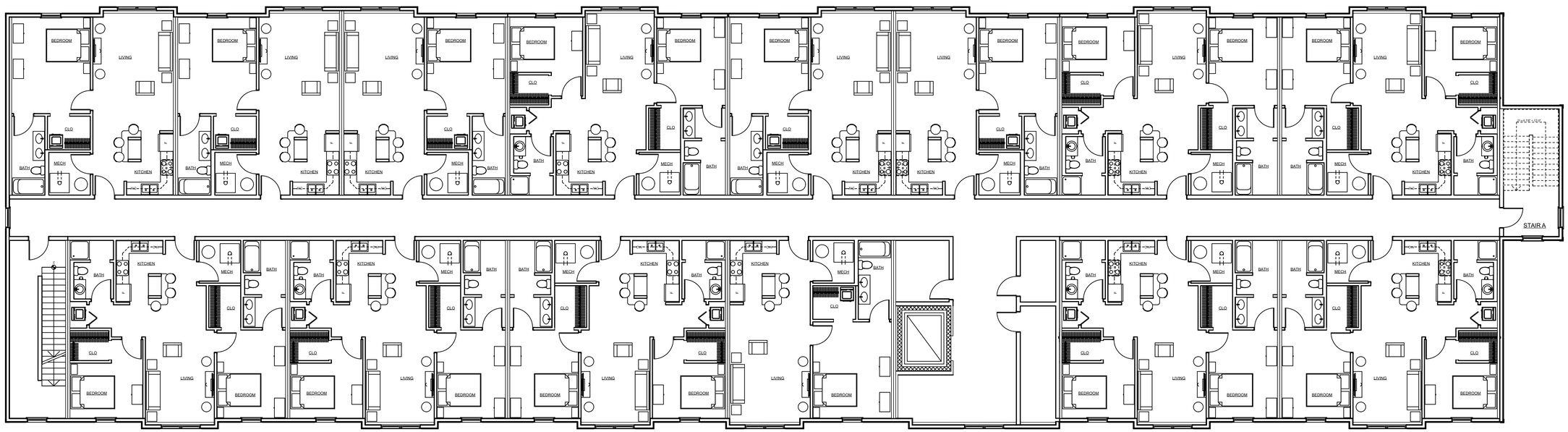
BURNELL ▲ JOHNSON
A R C H I T E C T S
80 STARK STREET
(603) 625-5098
(603) 625-5167 FAX
MANCHESTER, N.H.
03101

VC Dover Investments LLC

DOVER, NEW HAMPSHIRE

Planning File P22-72

JANUARY 27, 2023



SECOND FLOOR PLAN

SCALE 1/8" = 1'-0"

UNIT COUNTS

6 - One Bedrooms
8 - Two Bedrooms

Issue Dates	
3/10/2022	Preliminary
1/27/2023	Revised Preliminary

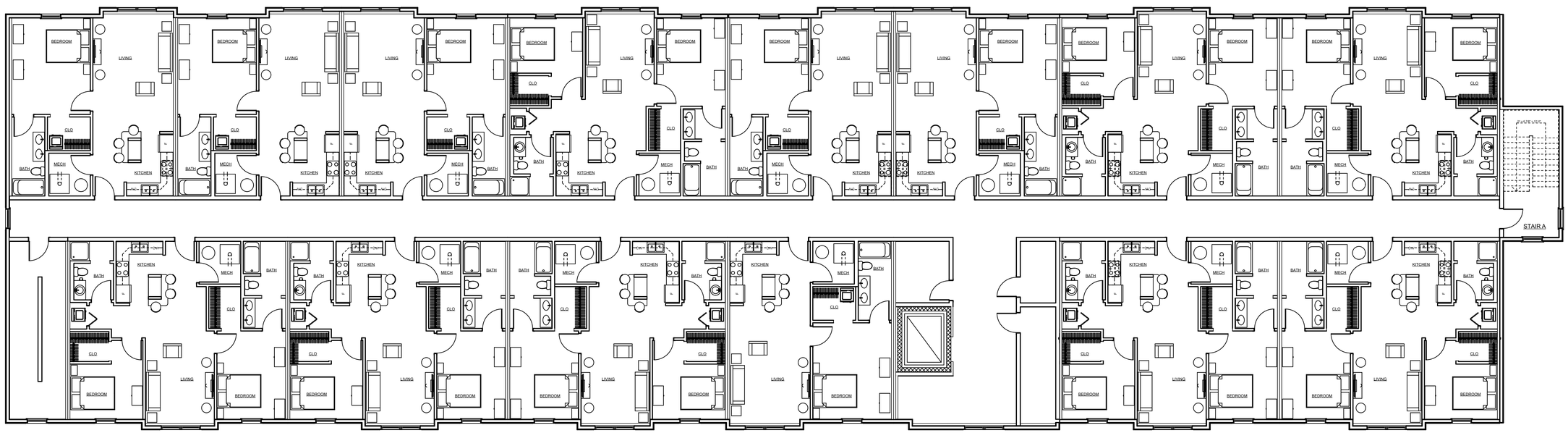
BURNELL ▲ JOHNSON
A R C H I T E C T S
80 STARK STREET MANCHESTER, N.H.
(603) 625-5098 03101
(603) 625-5167 FAX

VC Dover Investments LLC

DOVER, NEW HAMPSHIRE

Planning File P22-72

JANUARY 27, 2023



THIRD FLOOR PLAN

SCALE 1/8" = 1'-0"

UNIT COUNTS

6 - One Bedrooms
8 - Two Bedrooms

Issue Dates	
3/10/2022	Preliminary
1/27/2023	Revised Preliminary

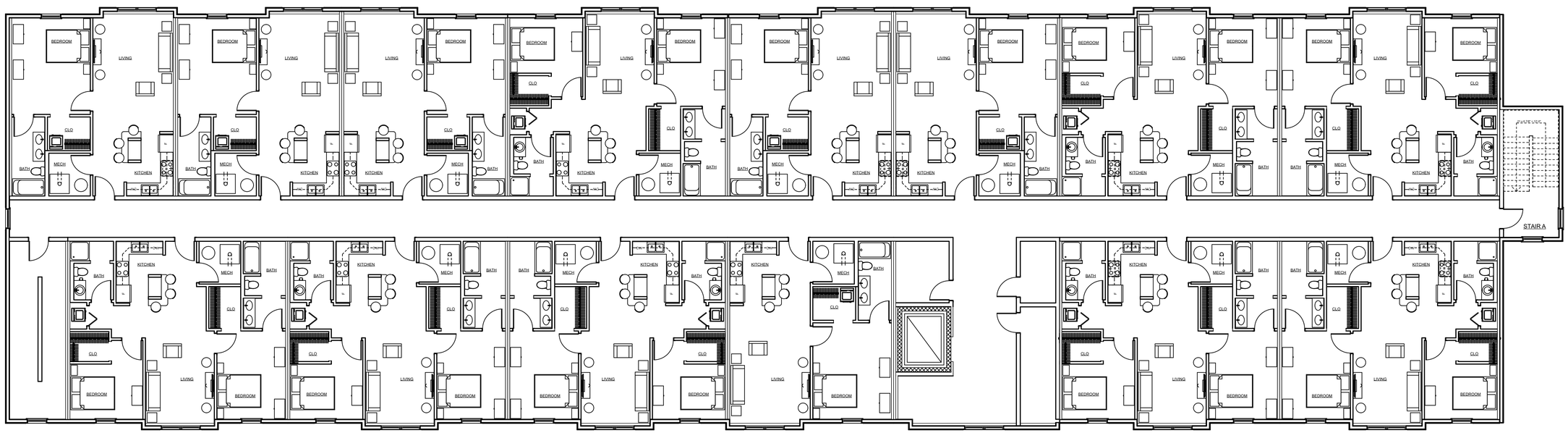
BURNELL ▲ JOHNSON
A R C H I T E C T S
80 STARK STREET MANCHESTER, N.H.
(603) 625-5098 03101
(603) 625-5167 FAX

VC Dover Investments LLC

DOVER, NEW HAMPSHIRE

Planning File P22-72

JANUARY 27, 2023



FOURTH FLOOR PLAN

SCALE 1/8" = 1'-0"

UNIT COUNTS

6 - One Bedrooms
8 - Two Bedrooms

Issue Dates	
3/10/2022	Preliminary
1/27/2023	Revised Preliminary

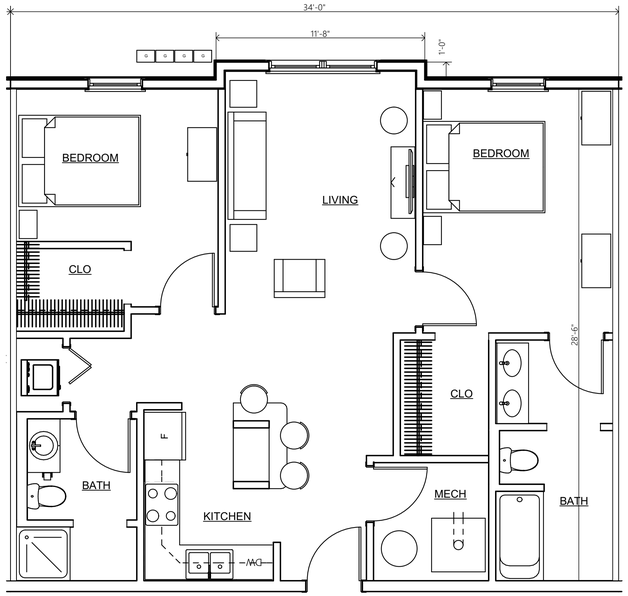
BURNELL ▲ JOHNSON
A R C H I T E C T S
80 STARK STREET MANCHESTER, N.H. 03101
(603) 625-5098
(603) 625-5167 FAX

VC Dover Investments LLC

DOVER, NEW HAMPSHIRE

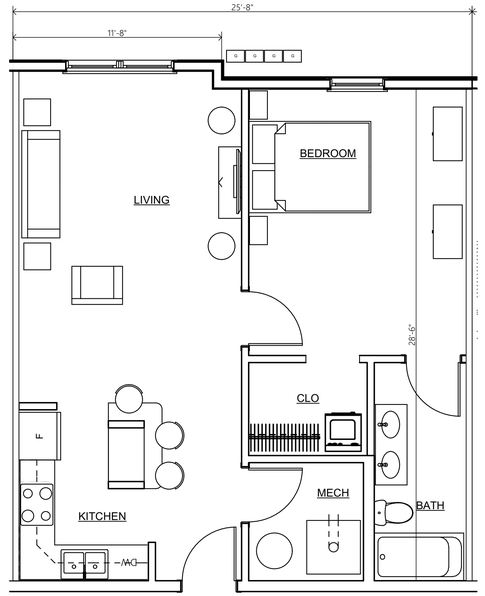
Planning File P22-72

JANUARY 27, 2023



981 Sq Ft TWO BEDROOM UNIT PLAN

SCALE 1/4" = 1'-0"



743 Sq Ft ONE BEDROOM UNIT PLAN

SCALE 1/4" = 1'-0"

Issue Dates	
3/10/2022	Preliminary
1/27/2023	Revised Preliminary

BURNELL ▲ JOHNSON
A R C H I T E C T S
80 STARK STREET MANCHESTER, N.H.
(603) 625-5098 03101
(603) 625-5167 FAX

VC Dover Investments LLC

DOVER, NEW HAMPSHIRE

Planning File P22-72

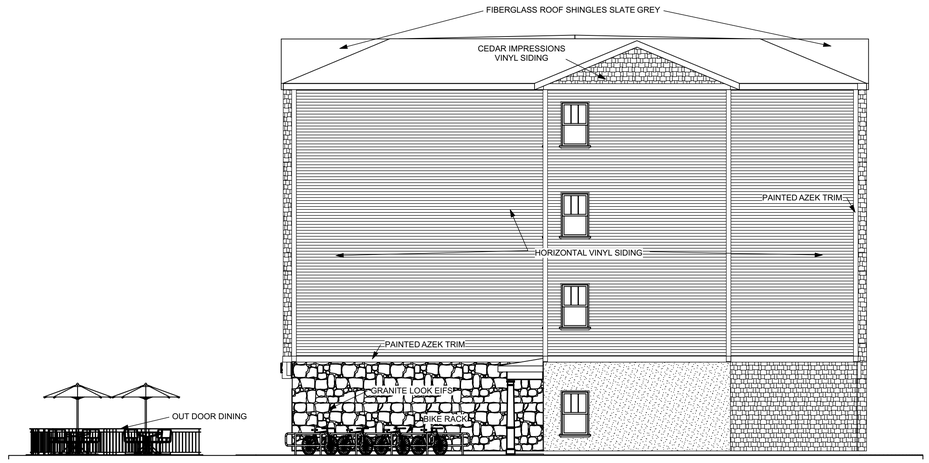
JANUARY 27, 2023

21A



WEST ELEVATION

SCALE 1/8" = 1'-0"



NORTH ELEVATION

SCALE 1/8" = 1'-0"

Issue Dates	
3/10/2022	Preliminary
1/27/2023	Revised Preliminary
11/21/2022	ELEVATION NOTES ADDED
1/27/2023	REVISED MATERIALS ADDED SOLAR PANELS
2/8/2023	REVISED TRIM DETAILS, WINDOWS
2/27/2023	REVISED SIDING, WINDOWS

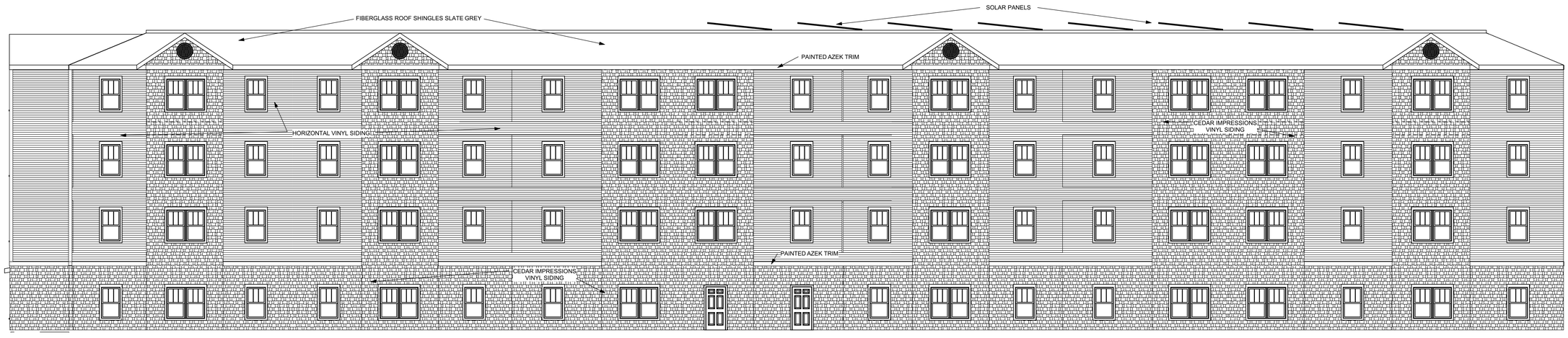
BURNELL ▲ JOHNSON
A R C H I T E C T S
80 STARK STREET MANCHESTER, N.H.
(603) 625-5098 03101
(603) 625-5167 FAX

VC Dover Investments LLC

DOVER, NEW HAMPSHIRE

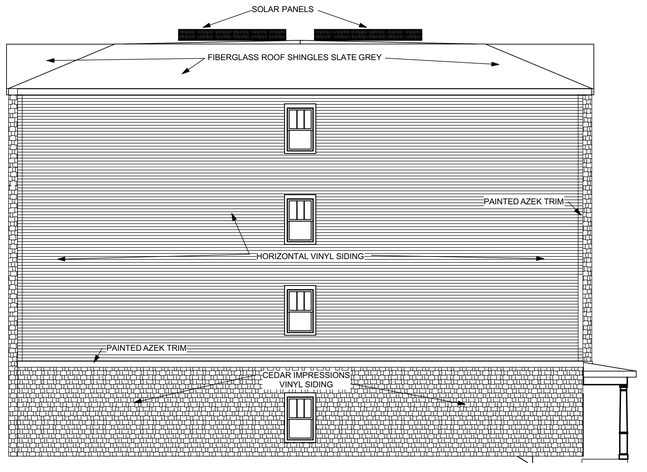
Planning File P22-72

JANUARY 27, 2023



EAST ELEVATION

SCALE 1/8" = 1'-0"



SOUTH ELEVATION

SCALE 1/8" = 1'-0"

Issue Dates	
3/10/2022	Preliminary
1/27/2023	Revised Preliminary
1/27/2023	REVISED MATERIALS ADDED SOLAR PANELS
2/8/2023	REVISED TRIM DETAILS, WINDOWS
2/27/2023	REVISED SIDING, WINDOWS

BURNELL JOHNSON
A R C H I T E C T S
80 STARK STREET MANCHESTER, N.H.
(603) 625-5098 03101
(603) 625-5167 FAX

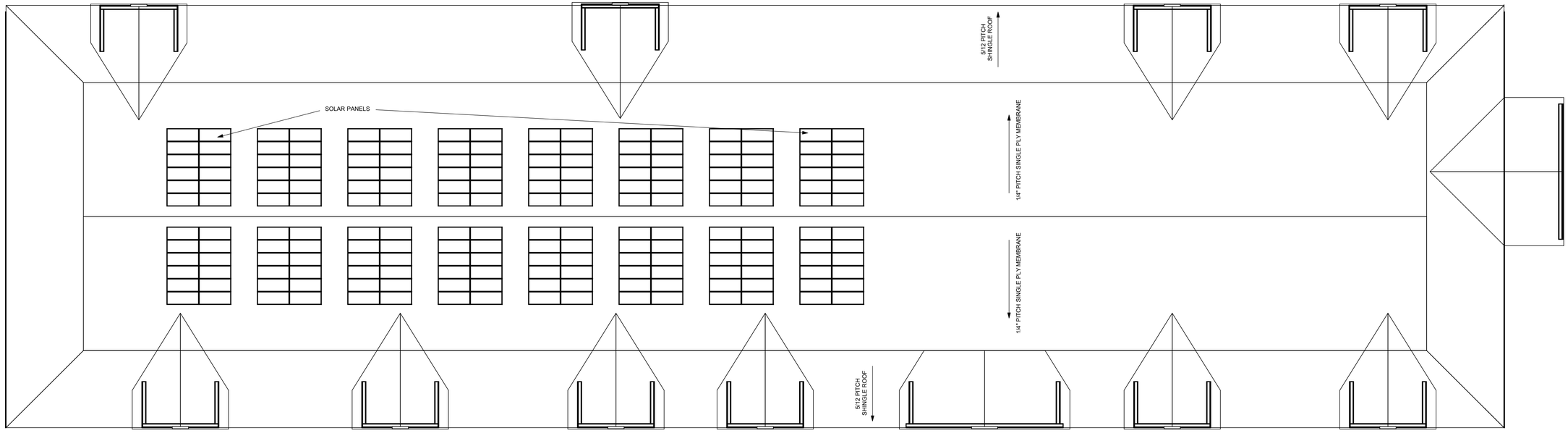
VC Dover Investments LLC

DOVER, NEW HAMPSHIRE

Planning File P22-72

JANUARY 27, 2023

22A



ROOF PLAN

SCALE 1/8" = 1'-0"

Issue Dates	
3/10/2022	Preliminary
1/27/2023	Revised Preliminary

BURNELL ▲ JOHNSON
A R C H I T E C T S
80 STARK STREET MANCHESTER, N.H.
(603) 625-5098 03101
(603) 625-5167 FAX

VC Dover Investments LLC

DOVER, NEW HAMPSHIRE

Planning File P22-72

JANUARY 27, 2023

CITY OF DOVER

PLANNING BOARD - STAFF MEMO FILE #TRAN-2023-0006

Application Type:	Transfer of Development Rights
Applicant(s):	Altus Engineering (on behalf of Our Place, LLC)
Owner(s):	Paul Seaver
Location:	105 Durham Rd. (Assessor's Map H, Lot 6-4)
Meeting Date:	January 23, 2024

INTENT: To request the purchase of six (6) additional units through the Transfer of Development Rights ordinance.

UNITS PROPOSED: 9 total

AGENDA ITEM #: 4-B

ACREAGE: 2.19± acres

ZONING DISTRICT: R-20

LATEST USE: Residential/daycare/office

PROPOSED USE: Residential

SURROUNDING USE: Residential, High School

ZBA ACTION: ZONE-2023-005 Variance reviewed 1/18/24 for multi-family use

ATTACHMENTS: Application materials including site plan

APP. COMPLETE: No

REGIONAL IMPACT: No

NOTICES SENT: Abutter notices were sent by certified mail to all abutters for this meeting

PERMITS REQUIRED: TBD during site plan review

TRC: N/A at this time

Summary of Request and Background

The applicant is proposing to renovate an existing building and add additional space to accommodate a total of nine (9) units at 105 Durham Road utilizing the Transfer of Development Rights Ordinance by requesting to purchase six units. The TDR ordinance provides an opportunity to come to the Planning Board for TDR review prior to doing a full engineered plan for Technical Review. The applicant is requesting TDR review and conditional approval and then would need to go through Technical Review Committee process and come back before the Planning Board.

For this type of request, the calculation is used to create a density base rather than underlying density. The calculation yielded 3 units thus the applicant is requesting to purchase six units. At this time, the request is for the units to be restricted to HUD Fair Market rental rates which has a $0 TDR fee. The lot would be serviced by public water and sewer.

If the Planning Board votes to conditionally grant the TDR approval, the Planning Board has the right to lower the maximum after seeing fully engineered plans during the site review process.

Consistency with Land Use Regulations - TDR

§170-27.2 provides for additional density to be purchased through Transfer of Development Rights. This application meets the ordinance.

Section 170.27.2.G(8) states:

> "Regardless of the method utilized, any other provision in this Chapter to the contrary, the density or intensity of development of a receiving parcel may be increased by the TRANSFER OF DEVELOPMENT RIGHTS so long as the increase in density or intensity meets the following criteria and a narrative is submitted indicating how those criteria are met:
>
> (a) Is consistent with the Master Plan
>
> (b) Is compatible with the land uses on neighboring LOTs (eg a multifamily building fits in with in a single family neighborhood). The applicant shall provide in their narrative an explanation of their neighborhood analysis.
>
> (c) Is created on property served by public water and sanitary sewer.
>
> (d) Any relief sought should not be caused by the additional density."

STAFF RECOMMENDATION - TDR:

The Planning Department recommends that the Planning Board accept the application as complete, note it is not of regional impact, hold a public hearing, make the necessary and supporting findings of fact, and vote to find the criteria of the TDR ordinance has been met with the following subsequent conditions:

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

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

TRAN-2023-0006 105 DURHAM ROAD



Property Information

Property ID	H0006-004000
Location	105 DURHAM RD
Owner	SEAVER PAUL J
Land Use	
Zoning Code	R-20

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.

To: Cory Belden
From: Donna Benton, AICP
Cc: Staff
Date: January 18, 2024
Re: TDR 105 Durham

ISSUE:
In February of 2020 the Board recommended amendments to the Transfer of Development Rights (TDR) Ordinance. In June 2020 the Planning Board approved the amendments and on July 22, 2020, the City Council ratified them. One element is the requirement for staff to draft a review statement on determine the need for a sketch plan. Since then the criteria for TDR has also been amended.

INTENT:
This memo will serve as part of the staff report

GOALS:
Provide background of the balancing development vs. conservation needs and current housing shortage, and describe the TDR applications in Dover.

Background

On behalf of your client, you submitted a plan and narrative to obtain 9 units by purchasing 6 through TDR for a project located at 105 Durham Road. On January 18, 2024 your applicant team will be before the Zoning Board asking for a Variance to allow the multi-family use (above 4 units) to be allowed. In addition to that Variance, you are seeking to use the Transfer of Developments Rights Ordinance to purchase the extra density of 6 units for a total of 9 units.

Staff performed this review based upon the information below, and is now providing the required staff report {170-27.2 E) 4) a}.

Project Information

Project:	Our Place 105 Durham Road TDR Project
Where:	105 Durham Road
What:	9 unit TDR plan with 6 TDR units. Current proposal is for all of the units to be deed restricted to be rented at the HUD Fair Market rate. The density calculation per Chapter 170-27.2.G(3)(a) was used to determine base calculation.
Acres:	2.19
Zone:	R-20
Public Water:	Yes
Public Sewer:	Yes
Units:	3 by using the TDR formula, plus 6 TDR to total 9 units
CUP:	No

Staff Comment

When reviewing projects, review the context, discuss options with the applicant and advises if it makes sense to request the purchase or exchange before or after designing a fully laid out plan.

In reviewing this project we note:

- Traffic
  - Durham Road is a major arterial road and this site is located near the High School.
- Existing layout/topography
  - There is currently an existing building onsite that was previously residential/daycare/office.
- Environmental
  - There are some wetland and wetland buffers onsite for the applicant to consider during the design/engineering process.

The applicant is looking to renovate the existing building into 8 residential apartments for individuals with intellectual and developmental disabilities (IDD) and one apartment for a staff member.

Currently, the unit cost is $15,000 per unit, which is lessened if either size restricted or HUD rental restricted. The applicant is proposing for all of the units to be restricted to the HUD Fair Market rental rates.

Staff Recommendation

Staff recommends that this application and consider the TDR criteria and vote to grant the TDR request with recommendations outlined in the staff memo.

PLAN SNAPSHOT REPORT TRAN-2023-0006
FOR CITY OF DOVER, N.H.

Plan Type:	Transfer	**Project:**		**App Date:**	12/23/2023
Work Class:	Transfer of Development Rights	**District:**	None	**Exp Date:**	NOT AVAILABLE
Status:	In Review	**Square Feet:**	0.00	**Completed:**	NOT COMPLETED
Valuation:	$0.00	**Assigned To:**	Blonigen, Rachel	**Approval Expire Date:**	

Description: Our Place, Inc. proposes a 9 Unit Adult Group Housing building for adults with intellectual developmental disabilities (IDD). There will be eight units for the adult assisted living (up to 11 residents) and one unit for an on-site staff member. It is not anticipated that any of IDD residents will drive, however, 15 total parking spaces are proposed for staff and visitors. The site was formerly a child day care facility with approximately 32 parking spaces for 80-100 children.

Parcel:	**Address:**	**Zone:**
H0006-004000 Main	105 Durham Rd Main Dover, NH	

Applicant
Cory Belden
133 Court St.
Portsmouth, NH, NH 03801
Business: (603) 433-2335

Applicant
Anna Boudreau
Business: (603) 697-1011

Applicant
Ron Walton
Business: (603) 617-6900

Plan Custom Fields

Parcel Map/Lot	H/6-4	Parcel Zoning Overlay		Parcel Zoning	R-20
trandevdetail	The proposed use is an adult group living facility for intellectual developmentally disabled (IDD) adults. The proposed group housing facility will have eight apartments for IDD residents and one apartment for an on-site staff member. There are no known impacts that would require mitigation. A City of Dover Site Plan application will be required.	Deed Book	4847	Deed Page	620
Property Address	105 Durham Road	Deed Date	12/21/2020	Owner Name	Paul Seaver
Existing Parcel Size (Ac)	2.19	Owner Address		Owner Phone	
Existing Parcel Size (sqft)	95396.4	Owner EMail		Parcel Feedback	
Reference Plan ID Number:		Request Type	Residential	trandevpermits	No State permits are required.
Project Zone	Residential	New Change in Impervious/Paved Area (sq ft)	0	Quantity of Non-Restricted Units	0
Quantity of 1,400 sq ft Units	0	Relief Sought	Unit increase	Quantity of HUD Restricted Units	9
Quantity of 1,000 sq ft Units	0	Quantity of Village Theme Units	0		

Attachment File Name	Added On	Added By	Attachment Group	Notes
5496-Project Desription.pdf	12/23/2023 14:13	Belden, Cory		Uploaded via Civic Access
5496-TDR Plans.pdf	12/23/2023 14:13	Belden, Cory		Uploaded via Civic Access
Exhibit 1 1.pdf	12/23/2023 14:13	Belden, Cory		Uploaded via Civic Access
Signature_Cory_Belden_12/23/2023.jpg	12/23/2023 14:14	Belden, Cory		Uploaded via CSS

PLAN SNAPSHOT REPORT (TRAN-2023-0006)

Invoice No.	Fee		Fee Amount	Amount Paid
INV-00006276	Planning Transfer of Dev Rights Application Fee		$200.00	$200.00
		Total for Invoice INV-00006276	$200.00	$200.00
		Grand Total for Plan	$200.00	$200.00

Workflow Step / Action Name	Action Type	Start Date	End Date
Review v.1		12/29/2023 13:41	12/29/2023 13:42
Confirm application complete v.1	Generic Action		12/29/2023 13:42
Technical Review Committee Meeting Agenda v.1	Task		12/29/2023 13:41
Land Use Plan Technical Review v.1	Receive Submittal		12/29/2023 13:41
Technical Review Committee Meeting v.1	Hold Meeting		12/29/2023 13:41
Planning Board v.1		12/29/2023 13:42	
Planning Board Agenda v.1	Task	12/29/2023 13:42	
Invoice for Notices v.1	Task		
Send Notices v.1	Task		
Planner Creates Staff Recommendations v.1	Plan Activity		
Distribute Planning Board Materials v.1	Task		
Planning Board Hearing v.1	Hold Hearing		
Planning Board Decision v.1	Plan Activity		
NOD Sent to Applicant v.1	Create Report		
Final Plan v.1			
Land Use Plan Stamped and Signed v.1	Generic Action		
Recording v.1	Task		
Document Archival v.1	Generic Action		
Internal Notification of Plan Completion v.1	Generic Action		
Building Official Notifies Address v.1	Generic Action		
Pre-Con Meeting v.1	Hold Meeting		
Create/Link to Records v.1			
Create / Link to Permit - Building Major v.1	Create Sub Permit		
Create / Link to Permit - Site Work, Construction v.1	Create Sub Permit		

ALTUS ENGINEERING

Civil
Site Planning
Environmental
Engineering

133 Court Street
Portsmouth, NH
03801-4413

PROJECT DESCRIPTION

Transfer of Development Rights (TDR) Application

For Our Place, LLC
105 Durham Road, Dover, NH 03820
(Tax Map H, Lot 6-4)

Overview

The Applicant, Our Place. Inc. is proposing to provide a 9-unit adult group housing facility for adults with Intellectual Developmental Disabilities (IDD). The proposed facility is located at 105 Durham Road, which is located in the Low Density Residential (R-20) District of Dover. The proposed project will construct a new building addition of approximately 2,700 square feet in size and renovate the existing building to provide nine (9) living units, with associated office and community gathering room. Eight of the units will be for adults with IDD and one unit will be for the on-site support staff.

Existing Site Conditions

The existing site consists of an approximately 4,700 square foot building that was previously home to child day care that supported 80 – 100 children. There is an existing paved driveway and parking area, as well as a gravel parking area that provide approximately 32 parking spaces. The site is primarily surrounded by wooded areas and an intermittent stream. Wetlands were mapped by Mark West, Certified Wetlands Scientist, and have been field measured to be shown at the approximate locations on the plans. No wetlands impacts are anticipated for this project.

Site Layout

The attached Preliminary Site Plan illustrates the proposed building addition and parking layout. The new building addition will be approximately 2,700 sf in size and be located within the existing gravel parking lot area to the north of the existing building. There will be four new residential units in the building addition and the existing building will be renovated to provide four additional IDD units, an on-site staff unit, office, and community room. The site is located approximately 470 feet from Durham road and is well screened from the public. Compared to the previously Day Care use on site, the traffic impact will be a significant reduction, as the residents of the facility do not drive their own vehicles. On-site staff will transport the residents to jobs, run errands, and social activities, often in group vans. The proposed facility will reduce the current on-site parking of approximately 32 parking space to approximately 15 parking stalls. Site Plan approval will be required, which may alter the site layout from the currently proposed design.

dotloop signature verification: dtlp.us/gJSu-ZvJz-Yeid'ni

EXHIBIT A

AUTHORIZATION OF PROPERTY OWNER

Paul J. Seaver, as the owner of a certain parcel of property located at 105 Durham Road, Dover, New Hampshire 03820, being Parcel H0006-004000 in the City of Dover's records (the "Property"), hereby authorizes Our Place, Inc. ("Our Place") and its officers, directors, board members, agents, attorneys, surveyors, engineers, and assigns, to apply (and sign applications) for and receive any and all zoning, planning and other federal, state and local permits, variances, and approvals necessary or desirable in connection with Our Place's proposed use of the Property as a residential facility for persons with developmental disabilities.

OWNER:

6/24/23
Date

Paul J. Seaver
dotloop verified
06/24/23 11:49 AM EDT
ZUJA-JL8C-D3KF-QWVC
Paul J. Seaver

4891-2971-1722, v. 6

ALTUS ENGINEERING

Civil
Site Planning
Environmental
Engineering

133 Court Street
Portsmouth, NH
03801-4413

Transfer of Development Rights (TDR)
Purchase Formula Calculations

Our Place, Inc.
105 Durham Road
Dover, NH

Our Place. Inc. is proposing to provide a 9-unit adult group housing facility for adults with Intellectual Developmental Disabilities (IDD). The proposed facility is located at 105 Durham Road, located in the Low Density Residential (R-20) District of Dover. The proposed project will renovate and add to the existing building to provide nine (9) living units, with associated office and community gathering space. Eight of the units will be for adults with IDD and one unit will be for the on-site support staff.

The following calculations present the TDR calculation for the baseline yield for the lot based on the City of Dover Zoning Ordinance, Chapter 170-27.2-G.3.a.

Description		
Lot Size	95,400	sf
Wetlands	6,200	sf
% Wetlands =	6.5%	
Base Lot Size (Lot Area – Wetlands) =	89,200	sf
Subtract 15% for roadways	75,820	sf
Apply 0.85 Factor	64,447	sf
	64,447	**SF DEVELOPABLE AREA**
Minimum Lot Size (R-20)	20,000	sf
Baseline Lots Allowed (Developable Area/ Min Lot Size)	**3.2**	**Units**

The above calculations indicate that the baseline yield for the lot is three (3) units. The application proposed for a total of nine (9) units on the site, therefore the TDR request is to purchase six (6) additional units for the site.

The additional units requested comply with Chapter 1170-27.2-G.8 criteria.
(a) the proposed us is consistent with the City of Dover Master Plan, particularly #4 of the Vision Statement, which states:

> *" We have affordable and attainable housing and support services that are accessible to, and utilized by, individuals, families, and households of diverse backgrounds and needs."*

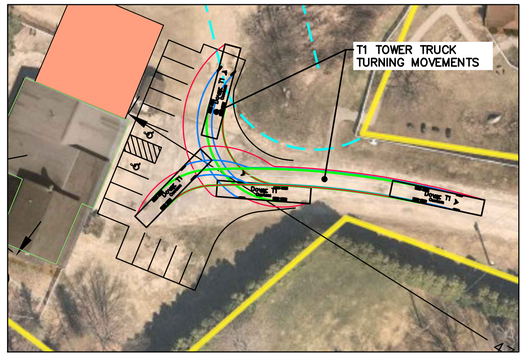
(b) The project is a residential use in a residential district, which is compatible with the zoning district and surrounding use. Similar uses, such as Adult Day Care and varying Assisted Living facilities are permitted uses or allowed by Special Exception. The project site is buffered and and not visible from the roadway so it does not change the character of the neighborhood.

The site is serviced by City of Dover Sewer and Water and no zoning relief (aside from the 9-unit building) will be sought for this project as a result of the increased density.

TRAN-2023-0006 **105 DURHAM ROAD**

Property ID	Location	Owner 1	Owner 2	Owner Address 1	City	State	Zip	State Class
	113 DURHAM RD	WHITE HEIDI B		113 DURHAM RD	DOVER	NH	03820	
	103 DURHAM RD	YORKSHIRE PROPERTIES LLC		36 DOVER RD	DURHAM	NH	03824	
	145 DURHAM RD	WEEDEN JUANITA & JAMES & LYNDES K TRUSTE	145 DURHAM ROAD REVOCABLE TRUST	145 DURHAM RD	DOVER	NH	03820	
	123 DURHAM RD	BERGGREN ALVAR III &	BERGGREN JAIME	123 DURHAM RD	DOVER	NH	03820	
	129 DURHAM RD	HANSCOM LESLIE C		129 DURHAM ROAD	DOVER	NH	03820	
	119 DURHAM RD	MORENZ LUKE		119 DURHAM RD	DOVER	NH	03820	
	25 ALUMNI DR	CITY OF DOVER		288 CENTRAL AVE	DOVER	NH	03820	
	86 DURHAM RD	KNOX RICHARD &	KNOX KATHLEEN	86 DURHAM RD	DOVER	NH	03820	
	96 DURHAM RD	SPYRIDAKIS LEE K TRUSTEE	SPYRIDAKIS LEE K REVOCABLE TRUST OF 2018	40 GOVERNOR SAWYER LANE	DOVER	NH	03820	
	102 DURHAM RD	SPACK PAUL E &	SPACK JOANN	102 DURHAM ROAD	DOVER	NH	03820	
	110 DURHAM RD	DOMINGUEZ FRANKIE &	NORELLI DANIEL THOMPSON	110 DURHAM ROAD	DOVER	NH	03820	
	105 DURHAM RD	SEAVER PAUL J		105 DURHAM RD	DOVER	NH	03820	
		ALTUS ENGINEERING	CORY BELDEN	133 COURT STREET	PORTSM(	NH	03801	

PER REFERENCE PLAN 1



DOVER (T1) FIRE TOWER TRUCK TURNING MOVEMENT

NOTES

1. BASE PLAN IS FROM TOWN GIS AND AERIAL IMAGERY. DIMENSIONS SHOWN ON PLAN MAY VARY BASED ON ACTUAL FIELD SURVEYS.
2. PROJECT PARCEL:
   TAX MAP H, LOT 6–4
   95,400± S.F. (2.19 AC.) – BASED ON TOWN TAX RECORDS
3. ZONE: R–20 (LOW DENSITY RESIDENTIAL)
4. DIMENSIONAL REQUIREMENTS:

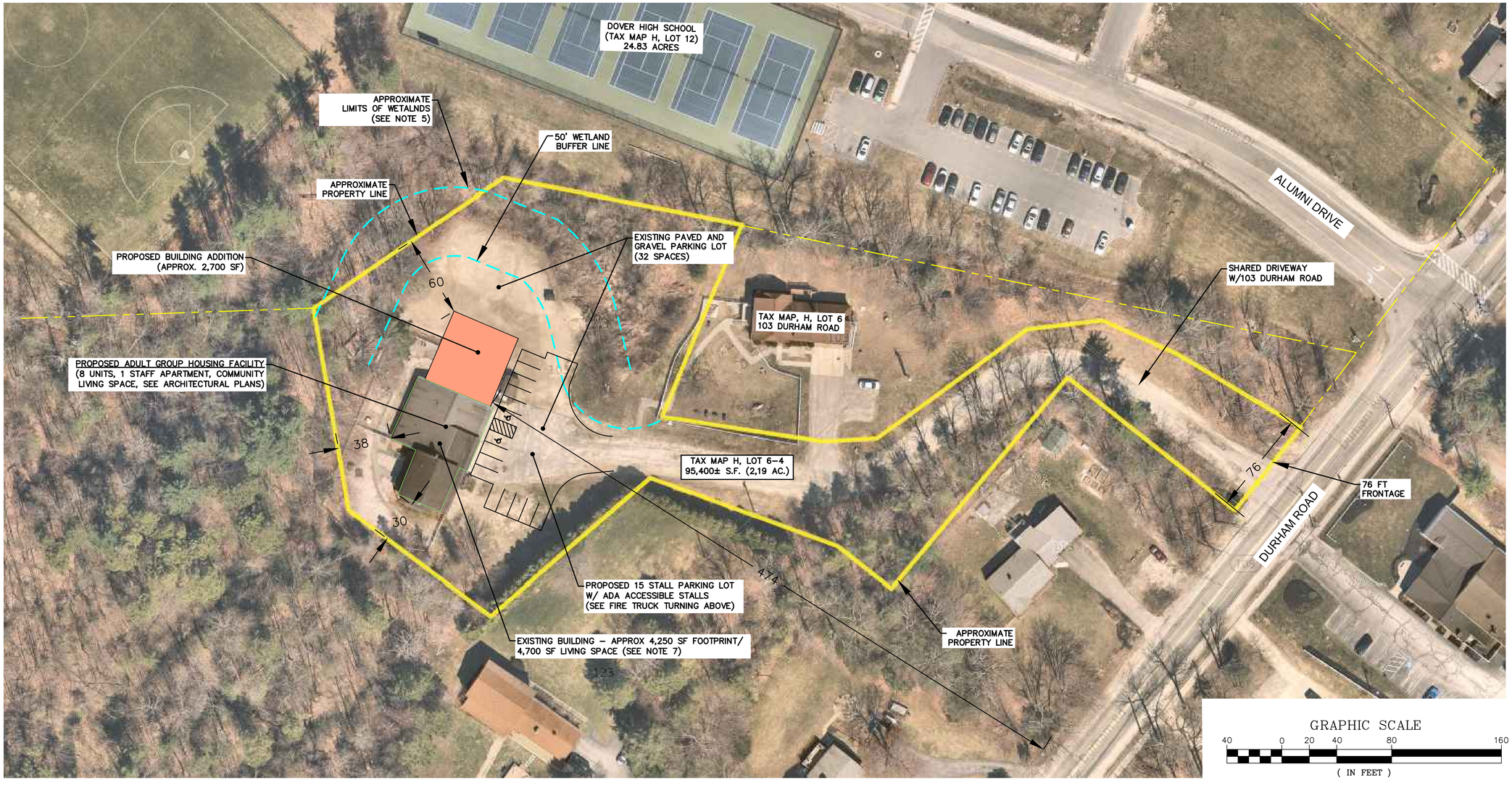
	REQUIREMENT	PROVIDED
MINIMUM LOT SIZE	20,000 SF	95,400 SF
MAXIMUM LOT COVERAGE	30%	25%±
MINIMUM FRONTAGE	125 FT	75 FT*
* EXISTING NON–CONFORMING LOT		
BUILDING		
FRONT BUILD TO LINE	20 FT MIN 35 FT MAX	470± FT
SIDE SETBACK	20 FT	30± FT
REAR SETBACK	30 FT	38± FT
HEIGHT OF BUILDING	35 FT	< 35 FT

   NOTE: DIMENSIONS ARE BASED ON GIS DATA. ACTUAL DIMENSIONS WILL BE VERIFIED BASED ON NEW FIELD SURVEY. THE PROPOSED PROJECT WILL NOT INCREASE THE EXISTING NON–CONFORMING CONDITIONS.
5. WETLANDS:
   WETLANDS WERE MAPPED BY MARK WEST, CERTIFIED NH WETLANDS SCIENTIST. THE WETLAND LINES AND BUFFER ARE BASED ON FIELD MEASUREMENTS AND WILL BE VERIFIED WITH FIELD SURVEYS FOR SITE PLAN REVIEW.
6. USE:

   CURRENT: CHILD DAY CARE
   PROPOSED: ADULT GROUP HOUSING **

   THE PROPOSED PROJECT WILL CONSTRUCT A BUILDING ADDITION AND CONVERT THE EXISTING APARTMENTS AND DAY CARE TO PROVIDE EIGHT (8) DWELLING UNITS IN A GROUP HOUSING FACILITY, WITH COMMUNITY SPACES, AND AN APARTMENT FOR A AN ON–SITE CARE STAFF MEMBER.

   ** GROUP HOUSING FACILITIES FOR ADULTS UNDER AGE 62 YEARS OF AGE ARE NOT DEFINED AS AB ALLOWED USE IN THE R–20 DISTRICT AND A VARIANCE IS REQUESTED TO ALLOW THE PROPOSED USE.
7. BUILDING DIMENSIONS ARE BASED CITY TAX RECORDS AND FIELD MEASUREMENTS AND WILL BE VERIFIED WITH FIELD SURVEYS FOR THE SITE PLAN APPLICATION.
8. PARKING:
   EXISTING = 32 SPACES
   PROPOSED = 15 SPACES
9. CITY OF DOVER SITE PLAN APPROVAL IS REQUIRED IN ADDITION TO THE APPROVAL OF THE TRANSFER OF DEVELOPMENT RIGHTS (TDR) AND ZONING APPROVAL.



GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)

P5496

ENGINEER:
ALTUS ENGINEERING, INC.
133 COURT STREET PORTSMOUTH, NH 03801
(603) 433–2335 www.ALTUS–ENG.com

CORY D. BELDEN No. 14239 LICENSED PROFESSIONAL ENGINEER – STATE OF NEW HAMPSHIRE
12/22/23

NOT FOR CONSTRUCTION

ISSUED FOR:
TDR Application

ISSUE DATE:
December 22, 2023

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	ZBA SUBMITTAL	CDB	12/22/23

DRAWN BY: CDB
APPROVED BY: EDW
DRAWING FILE: 4952–SITE.DWG

SCALE:
22"x34" 1" = 40'
11"x17" 1" = 80'

OWNER:
Paul J. Seaver
105 Durham Road
Dover, NH 03820

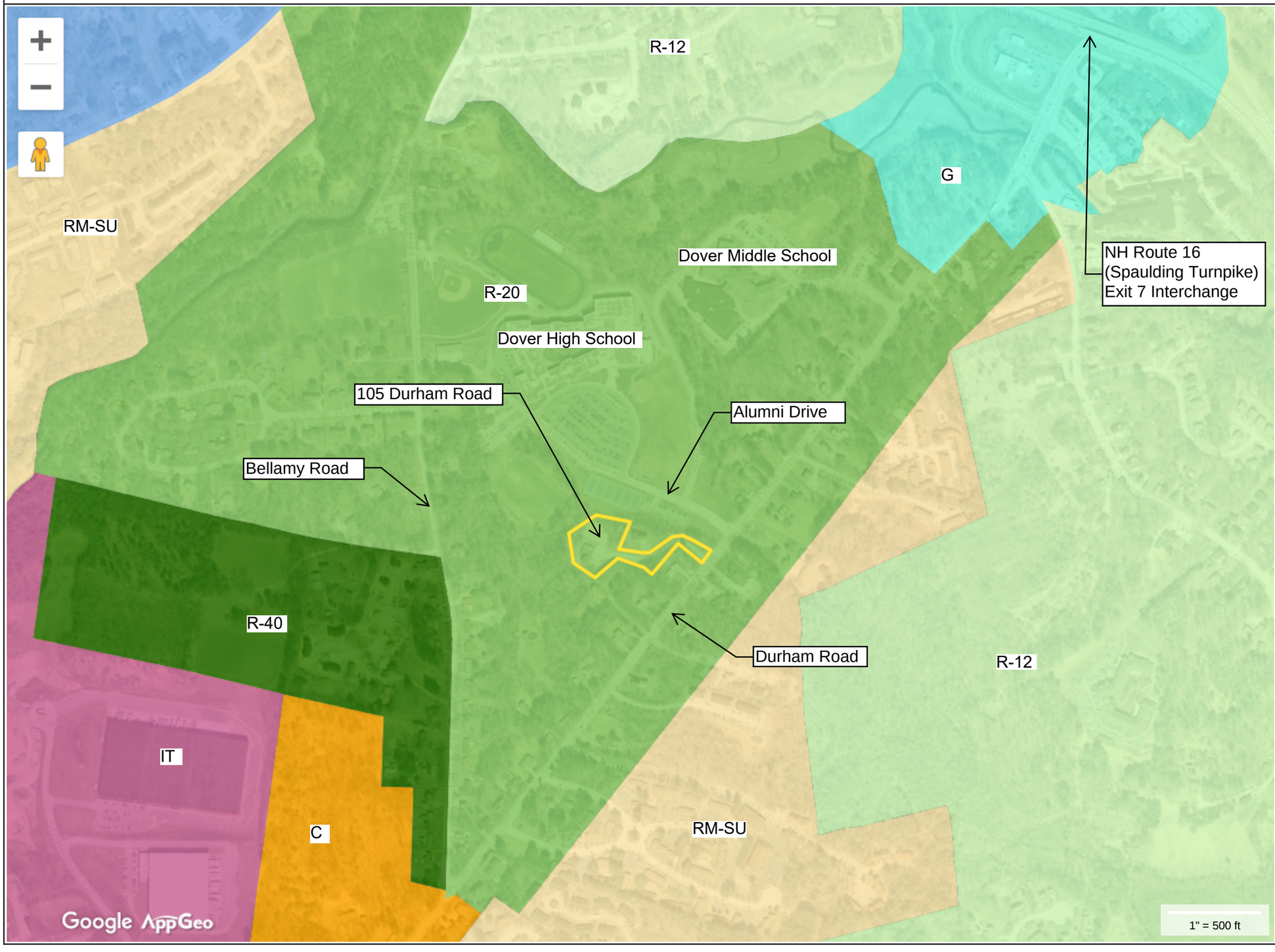
APPLICANT:
Our Place, Inc.
P.O. Box 65
Dover, NH 03821–0065

PROJECT:
OUR PLACE
SITE DEVELOPMENT
TAX MAP H, LOT 6–4
105 DURHAM ROAD
DOVER, NH 03820

TITLE:
SITE PLAN

SHEET NUMBER:
C-1

Neighborhood Plan / Zoning Districts



Property Information

Property ID	H0006-004000
Location	105 DURHAM RD
Owner	SEAVER PAUL J
Land Use	140
Zoning Code	R-20

MAP FOR REFERENCE ONLY
NOT A LEGAL DOCUMENT

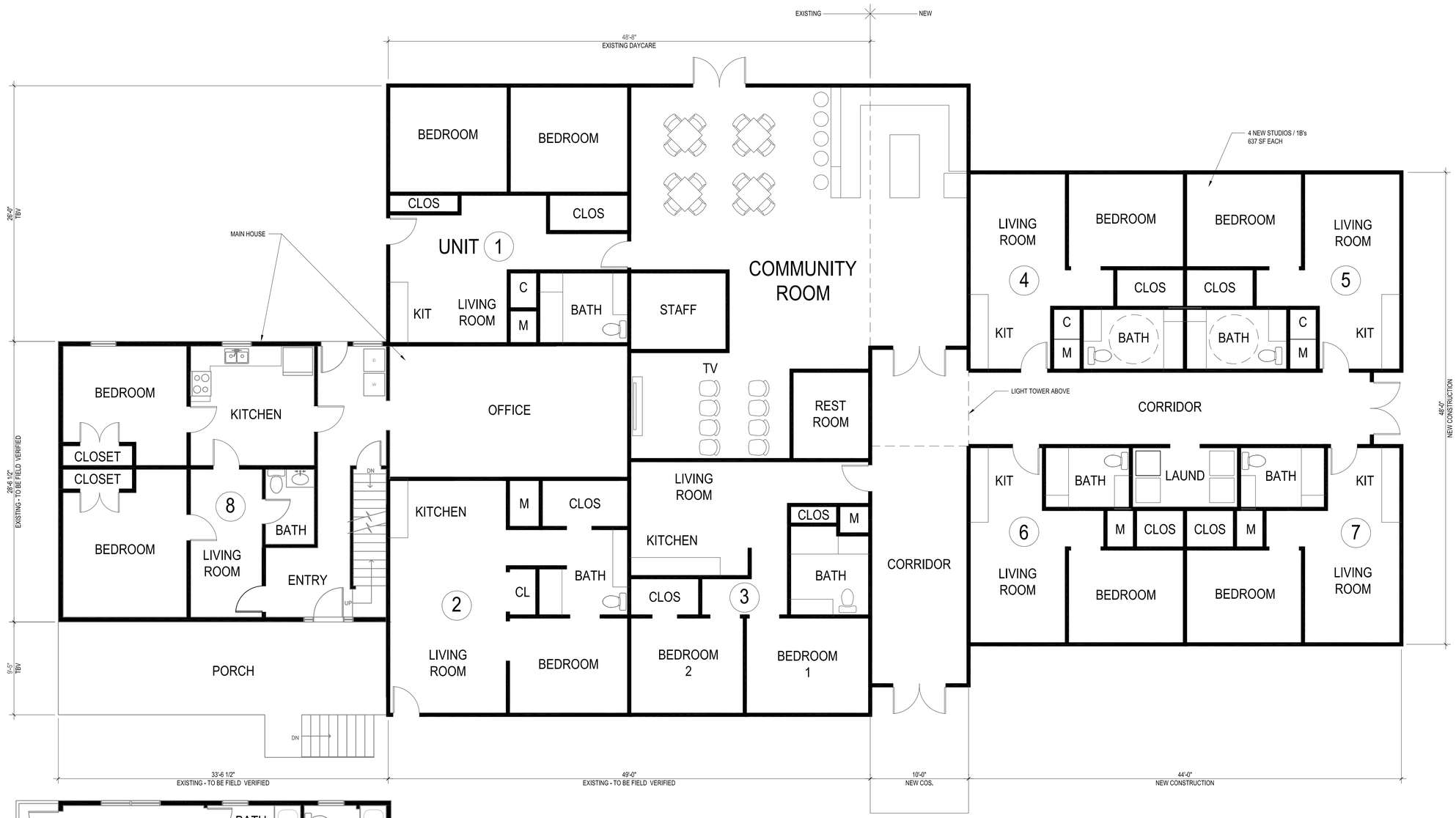
City of Dover, NH makes no claims and no warranties, expressed or implied, concerning the validity or accuracy of the GIS data presented on this map.

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.

Zoning Districts

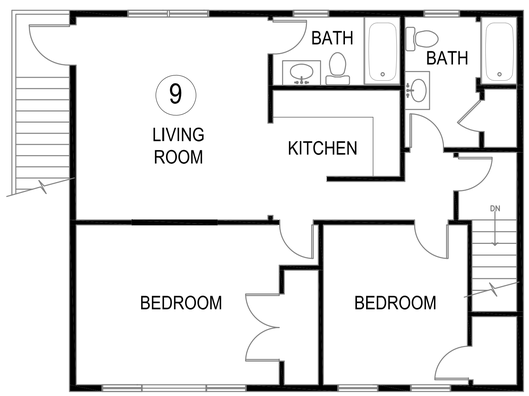
- R-40 Rural Residential
- R-20 Low-Density Residential
- R-12 Medium-Density Residential
- HR Heritage Residential
- RM-SU Suburban Density Residential
- RM-U Urban Density Residential
- C Commercial
- IT Innovative Technology
- CM Commercial Manufacturing
- CBD Central Business District
- G Gateway



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

0 1 2 3

REF N



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

MAIN HOUSE - 2 UNITS PLUS STAFF OFFICE
DAYCARE BLOCK (2) 2 BR & (1) 1 BR
TOTAL EXISTING CONSTRUCTION = 4,250 SF
ADDITION - 4 STUDIOS / 1 BR
TOTAL ADDITION NEW CONSTRUCTION = 2,700 SF

ArchitecturalConsultingServices, LLC
4 Washington Rd, Rye, NH 03870 Jay R. Mason, AIA, LEED AP
Ph: 978.459.2004 Fax: 775.254.5097 Email: jay@ACSLOWELL.COM

OUR PLACE
ADULT GROUP HOUSING FACILITY
105 DURHAM ROAD
DOVER, NH 03820

SCHEMATIC PROGRESS DRAWINGS

ISSUE DATE
12–12–23

REVISION

DRAWN LAST
12–12–23

DRAWN BY
MK

CHECKED BY
JM

JOB NO.
2330

A1.1



ArchitecturalConsulting Services

Design Renovation Planning

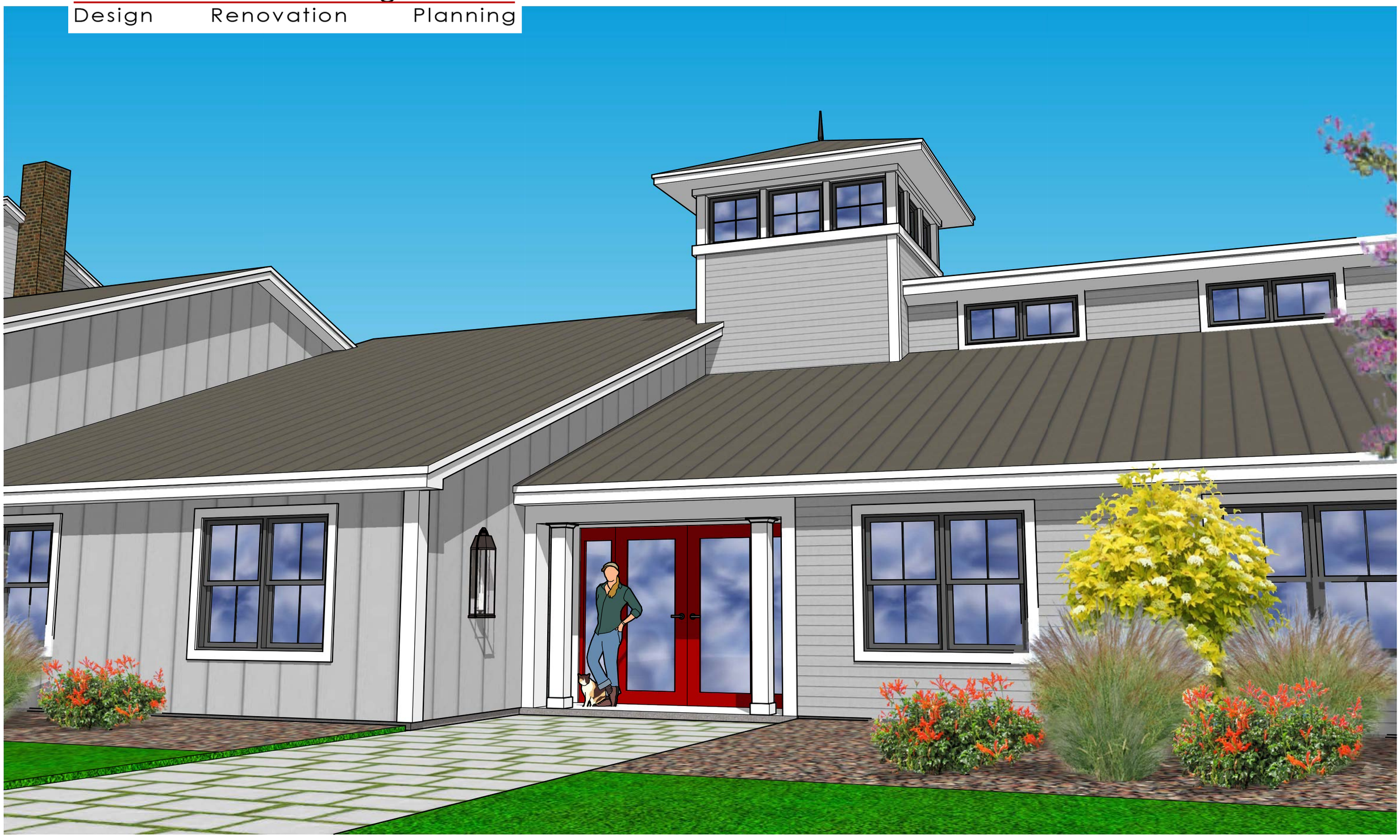


ArchitecturalConsulting Services

Design Renovation Planning

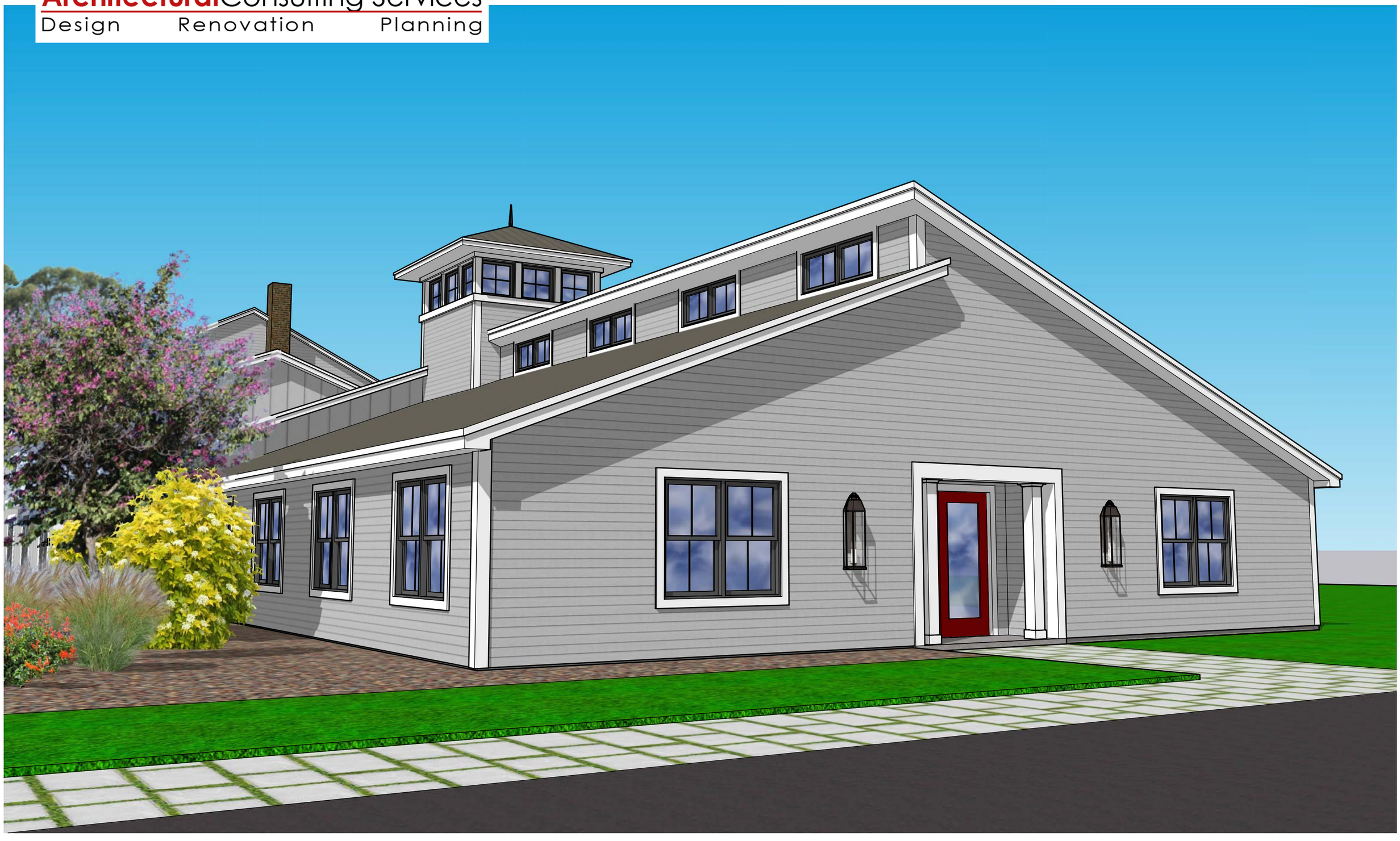
ArchitecturalConsulting Services

Design Renovation Planning



ArchitecturalConsulting Services

Design Renovation Planning



CITY OF DOVER

PLANNING BOARD - STAFF MEMO FILE #TRAN-2023-0005

Application Type:	Transfer of Development Rights
Applicant(s):	Brian Slovenski
Owner(s):	Brian Slovenski
Location:	306 Dover Point Road (Assessor's Map L, Lot 111)
Meeting Date:	January 23, 2024

INTENT: To request the purchase of four (4) additional units through the Transfer of Development Rights ordinance.

UNITS PROPOSED: 5 total

AGENDA ITEM #: 4-C

ACREAGE: 1.64± acres

ZONING DISTRICT: R-20

EXISTING USE: Residential

PROPOSED USE: Residential

SURROUNDING USE: Commercial/Residential

ZBA ACTION: N/A

ATTACHMENTS: Application materials including site plan were part of the December meeting packet

APP. COMPLETE: No

REGIONAL IMPACT: No

NOTICES SENT: Abutter notices were sent by certified mail to all abutters for the previous meeting

PERMITS REQUIRED: TBD during site plan review NHDES Shoreland

TRC: N/A

Summary of Request and Background

The applicant is proposing to construct five units at 306 Dover Point Road utilizing the Transfer of Development Rights Ordinance by requesting to purchase four units. The TDR ordinance provides an opportunity to come to the Planning Board for TDR review prior to doing a full engineered plan for Technical Review. The applicant is requesting TDR review and conditional approval and then would need to go through Technical Review Committee process and come back before the Planning Board.

For this type of request, the calculation is used to create a density base rather than underlying density. About half of this lot is also in the Riverfront Overlay, which requires a minimum of three times the minimum lot size (in this case requiring 60,000 s.f) which the lot complies with. The calculation yielded 1 unit thus the applicant is requesting to purchase four units. At this time, the request is for unrestricted units to be purchased. The units would be broken up in to two two-family dwellings, and a single-family dwelling. The lot would be serviced by public water and sewer and has frontage on the Piscataqua River.

If the Planning Board votes to conditionally grant the TDR approval, the Planning Board has the right to lower the maximum after seeing fully engineered plans during the site review process.

Consistency with Land Use Regulations - TDR

§170-27.2 provides for additional density to be purchased through Transfer of Development Rights. This application meets the ordinance.

Section 170.27.2.G(8) states:

> "Regardless of the method utilized, any other provision in this Chapter to the contrary, the density or intensity of development of a receiving parcel may be increased by the TRANSFER OF DEVELOPMENT RIGHTS so long as the increase in density or intensity meets the following criteria and a narrative is submitted indicating how those criteria are met:
>
> (a) Is consistent with the Master Plan
>
> (b) Is compatible with the land uses on neighboring LOTs (eg a multifamily building fits in with in a single family neighborhood). The applicant shall provide in their narrative an explanation of their neighborhood analysis.
>
> (c) Is created on property served by public water and sanitary sewer.
>
> (d) Any relief sought should not be caused by the additional density."

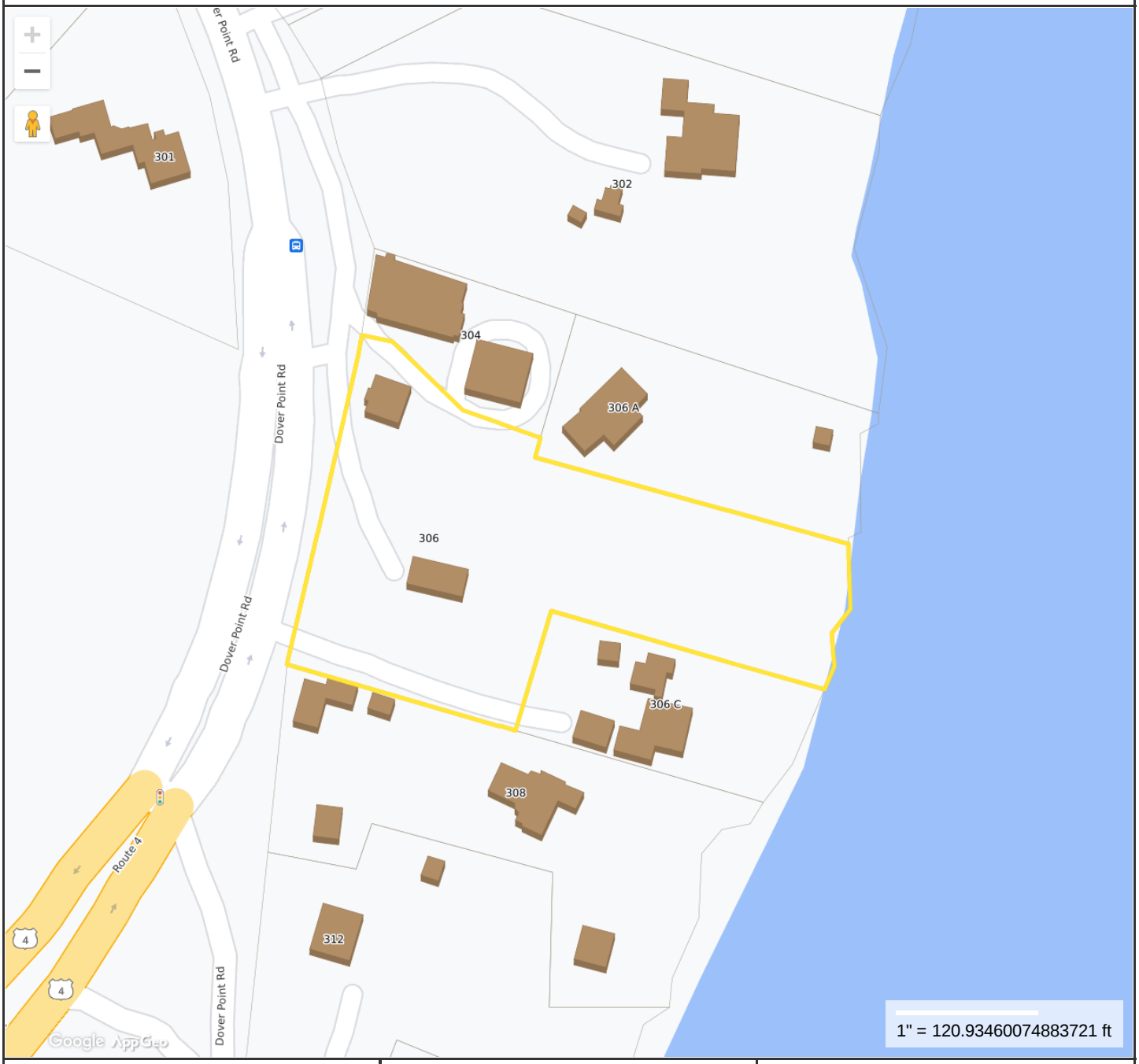
STAFF RECOMMENDATION - TDR:

The Planning Department recommends that the Planning Board accept the application as complete, note it is not of regional impact, hold a public hearing, make the necessary and supporting findings of fact, and vote to find the criteria of the TDR ordinance has been met with the following subsequent conditions:

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

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

TRAN-2023-0005 306 DOVER POINT ROAD



Property Information

Property ID	L0111-000000
Location	306 DOVER POINT RD
Owner	SLOVENSKI BRIAN
Land Use	
Zoning Code	R-20

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.

To: Josh Lanzetta, Esq
From: Donna Benton, AICP
Cc: Staff
Date: January 18, 2024
Re: TDR 306 Dover Point

ISSUE:
In February of 2020 the Board recommended amendments to the Transfer of Development Rights (TDR) Ordinance. In June 2020 the Planning Board approved the amendments and on July 22, 2020, the City Council ratified them. One element is the requirement for staff to draft a review statement on determine the need for a sketch plan. Since then the criteria for TDR has also been amended.

INTENT:
This memo will serve as part of the staff report

GOALS:
Provide background of the balancing development vs. conservation needs and current housing shortage, and describe the TDR applications in Dover.

Background

On November 21, 2023, on behalf of your client, you submitted a plan and narrative to obtain 6 units by purchasing 2 through TDR for a project located at 306 Dover Point Road. You then resubmitted a revised calculation on January 11, 2024 indicating the base density of 1 unit and the need to purchase the rest. Surveyor Kevin McEneaney then sent a revised plan on January 17, 2024 showing the previously proposed 3-unit building becoming a 2-unit building, bringing the project proposal from 6 units to 5 and the TDR ask to 4-units being purchased.

Staff performed this review based upon the information below, and is now providing the required staff report {170-27.2 E) 4) a}.

Project Information

Project:	Brian Slovenski's 306 Dover Point Rd. TDR Project
Where:	306 Dover Point Road
What:	5 unit residential TDR site plan with 4 TDR units. Current proposal is 4 of the TDR lots would be purchased at the full rate. The density calculation per Chapter 170-27.2.G(3)(a) was used determine base calculation.
Acres:	1.64
Zone:	R-20 (Riverfront Overlay)
Public Water:	Yes
Public Sewer:	Yes
Units:	1 by using the TDR formula, plus 4 TDR to total 5 units
CUP:	No

Staff Comment

When reviewing projects, review the context, discuss options with the applicant and advises if it makes sense to request the purchase or exchange before or after designing a fully laid out plan.

In reviewing this project we note:

- Traffic
  - Dover Point Road is a major arterial road and this site is not far from the Rt. 16 off-ramp. Any new or change in curb cut would need a NHDOT permit.
- Existing layout/topography
  - There are two existing buildings on this lot including one residential dwelling.
- Environmental
  - This site includes frontage on the Piscataqua River including Conservation District area

The applicant is looking to raze the two structures and build three buildings. Two buildings would be have two units, and one would have one unit.

Currently, the unit cost is $15,000 per unit, which is lessened if either size restricted or HUD rental restricted, which the applicant is not proposing.

Staff Recommendation

Staff recommends that this application and consider the TDR criteria and vote to grant the TDR request with recommendations outlined in the staff memo.

PLAN SNAPSHOT REPORT TRAN-2023-0005
FOR CITY OF DOVER, N.H.

Plan Type:	Transfer	**Project:**		**App Date:**	11/21/2023
Work Class:	Transfer of Development Rights	**District:**	None	**Exp Date:**	01/25/2024
Status:	Fees Due	**Square Feet:**	0.00	**Completed:**	NOT COMPLETED
Valuation:	$0.00	**Assigned To:**	Blonigen, Rachel	**Approval Expire Date:**	

Description: To purchase 5 additional TDR units, within three buildings

Parcel:	L0111-000000 Main	**Address:**	306 Dover Point Rd Main Dover, NH	**Zone:**	R-20(Residential - Low Density)

Owner
Brian Slovenski
124 Turtle Pond Road
Lee, NH 03861
Mobile: (603) 777-0579

Plan Preparer
McEneaney Survey Associates
24 CHESTNUT ST
DOVER, 03820
Business: (603) 742-0911

Applicant
Josh Lanzetta
601 Central Avenue
Dover, NH 03820
Business: (603) 777-0579
Mobile: (603) 777-0579

Plan Custom Fields

Parcel Map/Lot	L-111	Parcel Zoning Overlay	Riverfront Residential	Parcel Zoning	R-20
trandevdetail	To purchase 5 additional living units, within three buildings	Deed Book	4753	Deed Page	261
Property Address	306 Dover Point Road, Dover, NH 03820	Deed Date	04/22/2020	Owner Name	Brian Slovenski
Existing Parcel Size (Ac)	1.64	Owner Address	601 Central Avenue, Dover NH 03820	Owner Phone	603-777-0579
Existing Parcel Size (sqft)	71438.4	Owner EMail	josh@brutonlaw.com	Parcel Feedback	
Reference Plan ID Number:		Request Type	Residential	trandevpermits	NHDOT Construction (i.e., "driveway") permit. Pending.
Project Zone	Residential	Quantity of 1,400 sq ft Units	5	Relief Sought	Unit increase

Attachment File Name	Added On	Added By	Attachment Group	Notes
Signature_Josh_Lanzetta_11/21/2023.jpg	11/21/2023 8:22	Lanzetta, Josh		Uploaded via CSS
2023.12.12_PlanningBoard.Agenda.pdf	11/28/2023 13:00	Blonigen, Rachel		
4. TRAN-2023-0005 Abutters List.pdf	11/28/2023 13:00	Blonigen, Rachel		
PB12-12-23 TRAN-2023-0005 STAFF MEMO.pdf	12/11/2023 16:26	Blonigen, Rachel		Staff Memo
2024.01.09_PlanningBoard.Agenda.pdf	12/19/2023 14:04	Blonigen, Rachel		
abutterTRAN-2023-0005.3.pdf	01/12/2024 8:57	Blonigen, Rachel		Abutter Notice
2024.01.23_PlanningBoard.AgendaRevised.pdf	01/12/2024 8:58	Blonigen, Rachel		

Note	Created By	Date and Time Created
1. Emailed applicant for physical copies - RLB	Rachel Blonigen	11/22/2023 14:11
2. Emailed applicant agenda, all invoices, and abutter list	Rachel Blonigen	11/28/2023 14:06

Invoice No.	Fee	Fee Amount	Amount Paid
INV-00005894	Planning Transfer of Dev Rights Application Fee	$200.00	$200.00
	Total for Invoice INV-00005894	$200.00	$200.00
INV-00006020	Planning Certified Mailing to Application Contacts	$30.00	$30.00
	Planning Creation / Printing of Abutter Labels	$10.00	$10.00

PLAN SNAPSHOT REPORT (TRAN-2023-0005)

	Planning Certified Mailing to Abutters		$70.00	$70.00
	Planning Public Notice in Newspaper		$120.00	$120.00
		Total for Invoice INV-00006020	**$230.00**	**$230.00**
INV-00006451	Planning Certified Mailing to Application Contacts		$30.00	$0.00
	Planning Creation / Printing of Abutter Labels		$10.00	$0.00
	Planning Public Notice in Newspaper		$120.00	$0.00
	Transfer of Dev Rights Fee - 1,400 sq ft		$55,000.00	$0.00
	Planning Certified Mailing to Abutters		$70.00	$0.00
		Total for Invoice INV-00006451	**$55,230.00**	**$0.00**
		Grand Total for Plan	**$55,660.00**	**$430.00**

Activity Type	Activity Number	Name	Workflow Action Name	User	Created On
Recommendation to Planning Board	RCMND-000106-2023		Planner Creates Staff Recommendations v.1.00	Rachel Blonigen	12/13/2023

Hearing Type	Location	Scheduled Date	Status	Subject
Planning Board Hearing v.1	Council Chambers	12/12/2023	Continued	Transfer of Development Rights
Planning Board Hearing v.1	Council Chambers	01/23/2024	Scheduled	Transfer of Development Rights

Workflow Step / Action Name	Action Type	Start Date	End Date
Review v.1		11/21/2023 10:47	11/21/2023 10:48
Confirm application complete v.1	Generic Action		11/21/2023 10:47
Technical Review Committee Meeting Agenda v.1	Task		11/21/2023 10:47
Land Use Plan Technical Review v.1	Receive Submittal		11/21/2023 10:47
Technical Review Committee Meeting v.1	Hold Meeting		11/21/2023 10:48
Planning Board v.1		11/21/2023 10:48	
Planning Board Agenda v.1	Task	11/21/2023 10:48	11/28/2023 13:02
Invoice for Notices v.1	Task	11/28/2023 13:01	11/28/2023 13:02
Send Notices v.1	Task	11/28/2023 13:01	12/04/2023 17:18
Planner Creates Staff Recommendations v.1	Plan Activity	12/13/2023 16:59	12/13/2023 17:00
Distribute Planning Board Materials v.1	Task	12/13/2023 16:59	12/13/2023 17:00
Planning Board Hearing v.1	Hold Hearing	12/13/2023 16:59	12/13/2023 17:02
Planning Board Hearing v.1	Hold Hearing	12/13/2023 17:02	
Planning Board Decision v.1	Plan Activity		
NOD Sent to Applicant v.1	Create Report		
Final Plan v.1			
Land Use Plan Stamped and Signed v.1	Generic Action		
Recording v.1	Task		
Document Archival v.1	Generic Action		
Property Info Group v.1	Generic Action		
Building Official Notifies Address v.1	Generic Action		
Pre-Con Meeting v.1	Hold Meeting		
Create/Link to Records v.1			
Create / Link to Permit - Building Major v.1	Create Sub Permit		
Create / Link to Permit - Site Work, Construction v.1	Create Sub Permit		

City of Dover, New Hampshire
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: Brian Slovenski c/o Bruton & Berube, PLLC Telephone # 603-777-0579

Address of Applicant: 601 Central Road, Dover, NH 03820

E-Mail Address: josh@brutonlaw.com

Name of Property Owner (if different from applicant): Brian Slovenski Telephone # 603-777-0579

Address of Property Owner: 124 Turtle Pond Road, Lee, NH 03861

PROPERTY INFORMATION

Assessor's Map # L Lot(s) # 11

Address of Property: 306 Dover Point Road, Dover, NH 03820

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

Existing Use of Property: Residential

New impervious area (in s.f.): _____

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 2 units

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

*Please see attached.

List Any Associated State or Federal Permits That Have Been or Will Be Applied For and Indicate Their Status: Pending NHDOT Construction (i.e., "Driveway") Permit.

Name of Professional That Prepared TDR Plans: McEneaney Survey Associates of New England

Address PO Box 681, Dover, NH 03820 Telephone #: 603-742-0911

Professional License #: 681 E-mail address: kevin@surveynh.com

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: /s/ Josh Lanzetta, Esq. Date: 11/21/20223

Signature of Applicant (if different from owner): /s/ Josh Lanzetta, Esq. Date: 11/21/2023

Signature of Agent: /s/ Josh Lanzetta, Esq. Date: 11/21/2023

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: Josh Lanzetta, Esq. Date: 11/21/2023

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: Brian Slovenski c/o Bruton & Berube, PLLC File Number: _____

PROJECT TITLE: TDR Plan

PROPERTY LOCATION: 306 Dover Point Road Tax Map: L Lot: 11

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

REVIEWED BY: _____ DATE_____ TRC DATE_____

ABUTTERS LIST
11/21/2023

Re:	**Transfer of Development Rights Application**
Applicant:	**Brian Slovenski c/o Bruton & Berube, PLLC**
Owner:	**Brian Slovenski**
MBLU:	**L/11**
Address:	**306 Dover Point Road, Dover, New Hampshire 03820**
Zone:	**R-20**

APPLICANT:
Brian Slovenski
124 Turtle Pond Road
Lee, NH 03861

ABUTTERS:
L-12
Kuziomko Henry C Tts
Kuziomko 2023 Family Trust
310 Dover Point Road
Dover, NH 03820

L-11-A
Underwood Dover LLC
Po Box 99
Greenland, NH 03840-0099

L-11-B
Gagnon Realty Trust LLC
306 C Dover Point Road
Dover, NH 03820

L-11-C
Robert & Joanne Gifford
306a Dover Point Road
Dover, NH 03820

L-63
Charles Constance & sylvia Fosco
301 Dover Point Road
Dover, NH 03820

PROFESSIONALS:
Bruton & Berube, PLLC
Attn: Josh Lanzetta, Esq.
601 Central Avenue
Dover, NH 03820

McEneaney Survey Associates of New England
Attn: Kevin McEneaney
PO Box 681
Dover, NH 03820

BRUTON & BERUBE, PLLC
ATTORNEYS AT LAW

FRANCIS X. BRUTON, III
CATHERINE A. BERUBE
JOSHUA P. LANZETTA

Of Counsel
JAMES H. SCHULTE

601 Central Avenue
Dover, NH 03820
Office - 603.749.4529

Cell - 603.777.0579
josh@brutonlaw.com

November 21, 2023

City of Dover, New Hampshire
Planning Board
288 Central Avenue
Dover, NH 03820

Re:	**Transfer of Development Rights Application**
Applicant:	**Brian Slovenski c/o Bruton & Berube, PLLC**
Owner:	**Brian Slovenski**
MBLU:	**L/11**
Address:	**306 Dover Point Road, Dover, New Hampshire 03820**
Zone:	**R-20**

Dear Planning Board:

The purpose of this letter is to submit the enclosed Transfer of Development Rights Application (the "Application") on behalf of Brian Slovenski (the "Applicant") to construct 6-dwelling units[1] (the "Project") on real property located at MBLU L/11, otherwise identified as 306 Dover Point Road in Dover, New Hampshire (the "Property").

Pursuant to RSA 674:21[2], and Zoning Ordinance of the City of Dover, New Hampshire,[3] the Applicant seeks to transfer development rights ("TDR") under section 170-27.2[4], and respectfully requests the Planning Board (the "Board") review and grant the Application at its meeting on December 12, 2023.

I. ENCLOSED DOCUMENTS

Enclosed please find the following documents:

[1] Dwelling is defined as "[] one or more rooms, designed, occupied, or intended for occupancy as separate living quarters, with cooking, sleeping and sanitary facilities provided within the Dwelling Unit for exclusive use of a single family maintaining a household. Ordinance, Art. II § 170-6.
[2] NH RSA 674:21 (2017) (the "Statute").
[3] Zoning Ordinance, City of Dover, N.H., Chapt. 157 (2023) (the "Ordinance").
[4] Ordinance § 170-27.2, 170-110.

1. Application dated November 20, 2023;

2. Density Calculations drafted by McEneaney Survey Associates of New England dated October 21, 2023; and

3. TDR Plan prepared by McEneaney Survey Associates of New England dated October 20, 2023.

II. PROJECT NARRATIVE

The Applicant, Brian Slovenski, owns approximately 1.64 acres of real property located at Map L, Lot 11 (also identified as 306 Dover Point Road) in Dover, New Hampshire. The Property is in Dover's Low Density Residential (R-20) District, and the immediate neighborhood includes a mix of single family, multi-family, and commercial uses. The Applicant proposes constructing 6-dwelling units on the Property, allocated between 3-structures (illustrated on the Plans) connected to city water and sewer.

Based on the enclosed Density Calculations, the Applicant may apply for 3-TDR credits, however, seeks only 2-TDR credits to complete the Project. Here, the Project is consistent with the master plan, meets all dimensional regulations provided in the City's R-20 regulations, requires no special-permits, and the proposed use is consistent with the surrounding uses found throughout the neighborhood.

IV. RELIEF REQUESTED

For the reasons stated herein the Applicant respectfully requests the ZBA:

1. Approve the Application.

2. Grant all relief necessary to affect the request.

Please do not hesitate to contact me with questions or concerns at josh@brutonlaw.com or 603-749-4529.

Sincerely,

/s/ Josh Lanzetta

Joshua P. Lanzetta, *Esq.*

TRAN-2023-0005 **306 DOVER POINT ROAD**

Property ID	Location	Owner 1	Owner 2	Owner Address 1	City	State	Zip
L0049-D00000	302 DOVER POINT RD	WELT ANDREW &	WELT KIMBERLY	302 DOVER POINT RD	DOVER	NH	03820-4666
L0063-000000	301 DOVER POINT RD	CONSTANCE CHARLES G &	FOSCO SYLVIA C	301 DOVER POINT RD	DOVER	NH	03820
L0111-A00000	304 DOVER POINT RD	UNDERWOOD DOVER LLC		PO BOX 99	GREENLAND	NH	03840-0099
L0111-B00000	306 C DOVER POINT RD	GAGNON REALTY TRUST LLC		306 C DOVER POINT RD	DOVER	NH	03820
L0111-C00000	306 A DOVER POINT RD	GIFFORD ROBERT L &	GIFFORD JOANNE A	306A DOVER POINT RD	DOVER	NH	03820
L0112-000000	308 310 DOVER POINT RD	KUZIOMKO HENRY C TTS	KUZIOMKO 2023 FAMILY TRUST	310 DOVER POINT RD	DOVER	NH	03820
L0112-A00000	312 DOVER POINT RD	CROTHERS EDGAR R	CROTHERS ANNE S	312 DOVER POINT RD	DOVER	NH	03820
L0111-000000	306 DOVER POINT RD	SLOVENSKI BRIAN		124 TURTLE POND ROAD	LEE	NH	03861
		BRUTON & BERUBE, PLLC	JOSH LANZETTA	601 CENTRAL AVENUE	DOVER	NH	03820
		MCENEANEY SURVEY ASSOCIATES OF NEW ENGLAND		PO BOX 681	DOVER	NH	03820

MCENEANEY SURVEY ASSOCIATES OF NEW ENGLAND
P.O. BOX 1166 DOVER, NH 03821
603-742-0911

DENSITY CALCULATIONS

306 DOVER POINT ROAD – DOVER, NH
January 18 , 2024

BASE LOT DENSITY

LOT SIZE	MINIMUM LOT SIZE WATERFRONT OVERLAY DISTRICT (3 x MINIMUM LOT AREA IN OVERLAY DISTRICT)
71,299 SF	3 x 20,000 SF = 60,000 SF

IF CONSIDERING MULTI-FAMILY DENSITY

LOT AREA REQUIRED PER UNIT
(PER FOOT NOTE 7 ON R-20 ZONING TABLE)

71,299 SF ÷ 15,000 SF = (4.75) 4 UNITS (if all were duplexes that look look like single family)

TRANSFER OF DEVELOPMENT RIGHTS CALCULATIONS

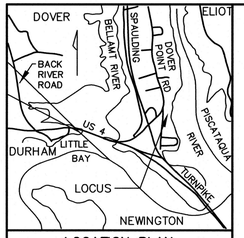
AREA WITHIN RIVERFRONT OVERLAY DISTRICT

AREA SIZE	39,506 SF	(GROSS LAND AREA)
	- 3,130 SF	(FLOOD ZONE HOTL TO 8' CONTOUR)
	- 10,077 SF	(> 20% SLOPES, 8' TO 26' CONTOUR)*
	26,299 SF	* *Some of this area within the 8'-26' contours are less than 20 %. To be conservative, we included all of the slopes within that area in this calculation.*
(x .85 ROADS, ETC.)	x .85	
	22,354 SF	
(WETLAND <10% x .85)	x .85	
	19,001 SF	(NET DEVELOPABLE AREA)
(3x MIN LOT SIZE)	÷ 60,000 SF	
	0.32 UNITS	

AREA OUTSIDE RIVERFRONT OVERLAY DISTRICT

AREA SIZE	31,793 SF	(GROSS LAND AREA)
(x .85 ROADS, ETC.)	x .85	
	27,024 SF	
(WETLAND <10% x .85)	x .85	
	22,970 SF	(NET DEVELOPABLE AREA)
(÷ MIN LOT SIZE)	÷ 20,000 SF	
	1.15 UNITS	

TOTAL BASE (0.32 + 1.15 = 1.47 UNITS) 1 UNIT



LOCATION PLAN
(NO SCALE)

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

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

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

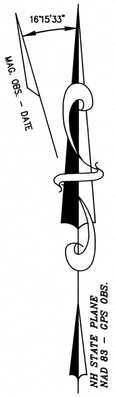
L / 111C
ROBERT L. GIFFORD
JOANNE A. GIFFORD
306A DOVER POINT ROAD
DOVER, NH 03820
3074 / 430

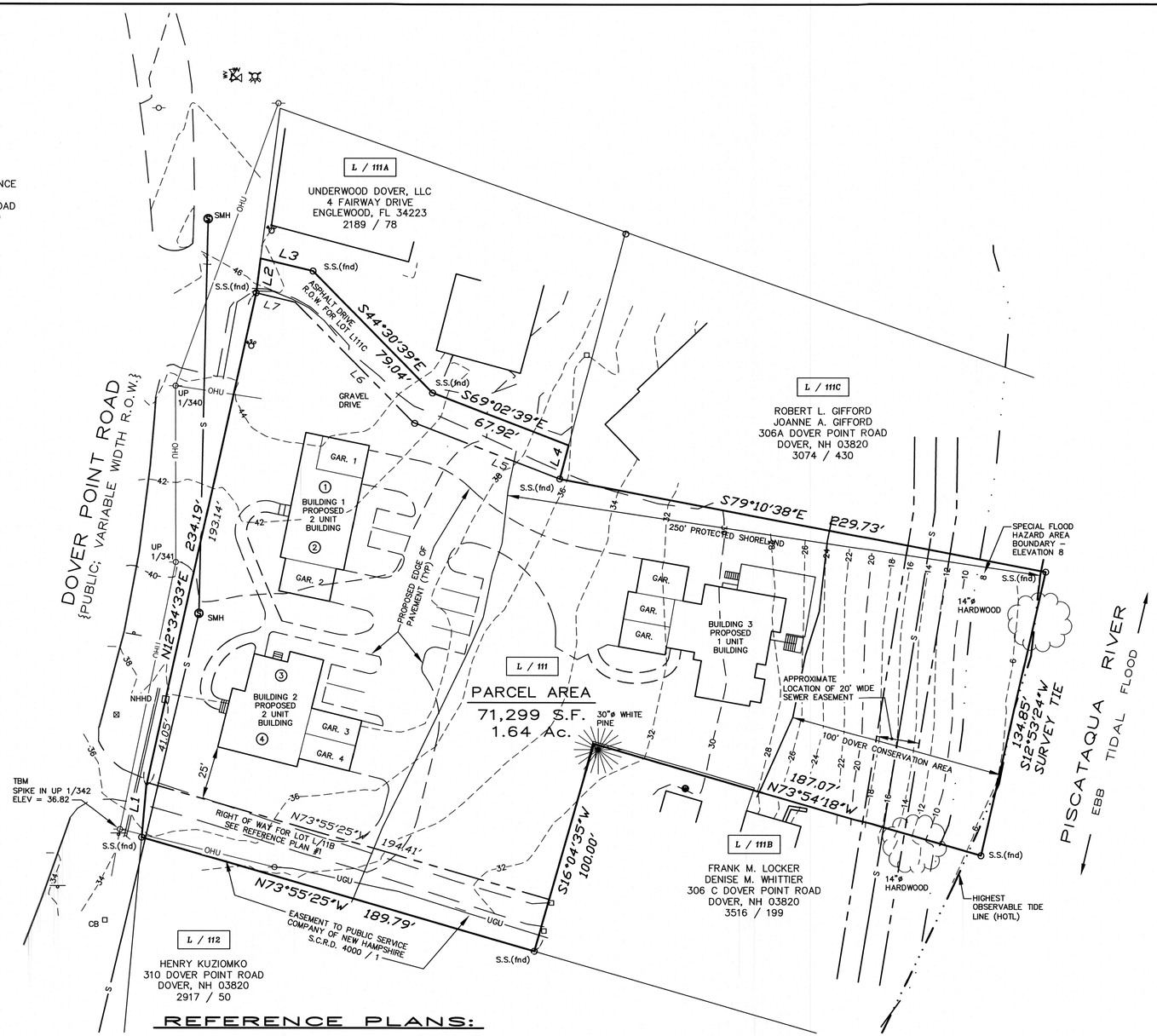
L / 111B
FRANK M. LOCKER
DENISE M. WHITTIER
306 C DOVER POINT ROAD
DOVER, NH 03820
3516 / 199

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

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

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





LEGEND

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

NO.	DATE	DESCRIPTION	BY	CHK
		REVISIONS		

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

REFERENCE PLANS:

1.) PROPOSED DEVELOPMENT – LESTER BATES – DOVER, NEW HAMPSHIRE, PROPERTY LINES – TOPOGRAPHY. SCALE: 1" = 20'; DATED: SEPTEMBER 1965, BY: G.L. DAVIS & ASSOCIATES. RECORDED S.C.R.D. POCKET 11, FOLDER 2, PLAN 17A.

2.) LOT LINE REVISION – DOVER POINT ROAD, DOVER, N.H. FOR MAISE PEARSON 1989 TRUST & FREDERICK III AND PAMELA PEARSON AND FREDERICK PEARSON III AND EDGAR R. & ANNE S. CROTHERS. SCALE: 1" = 20'; DATED: DECEMBER 1999, REVISED THROUGH 2/12/90; BY: NORWAY PLAINS ASSOCIATES, INC. RECORDED S.C.R.D. PLAN 58–21.

3.) STATE OF NEW HAMPSHIRE – STATE HIGHWAY DEPARTMENT – PLAN AND PROFILE OF PROPOSED U.S. PUBLIC WORKS PROJECT NRM 262 EAST SIDE ROAD – FISCAL YEAR 1933. PLANS ON FILE WITH NH D.O.T. FILE: 50966.ROW.MARKUPS AND FILE: P1852.POP.

4.) PLAN OF EASEMENT – BATES – WEED – CITY OF DOVER ENGINEERING DIV. SCALE: 1" = 100'; DATED: NOVEMBER 1976; BY: DOVER ENGINEERING DEPARTMENT. RECORDED S.C.R.D. VOLUME 1011, PAGE 252.

5.) PLAN OF LAND – ESTATE OF MARGARET M. COLEMAN, DOVER, NEW HAMPSHIRE. SCALE: 1" = 20'; DATED: OCTOBER 15, 1958; BY: G.L. DAVIS & ASSOCIATES. RECORDED S.C.R.D. POCKET 8, FOLDER 2, PLAN 27.

NOTES:

1.) OWNER OF RECORD:
BRIAN SLOVENSKI
124 TURTLE POND ROAD
LEE, NEW HAMPSHIRE 03861
S.C.R.D. VOLUME 4753, PAGE 261

2.) L / 111 – DENOTES TAX MAP AND PARCEL NUMBER.

3.) PARCEL AREA = 71,299 S.F. / 1.64 Ac.

4.) THE INTENT OF THIS PLAN IS TO DEPICT A 3 BUILDING, 5 UNIT TDR PLAN.

5.) ZONING DISTRICT IS LOW DENSITY RESIDENTIAL (R–20) DISTRICT

DIMENSIONAL REQUIREMENTS:

MINIMUM LOT SIZE	= 20,000 S.F.
MINIMUM LOT COVERAGE	= 30 PERCENT
MINIMUM FRONTAGE	= 125 FEET
BUILDING SETBACK REQUIREMENTS:	
FRONT BUILD TO LINE	= 20 FEET MINIMUM
	= 35 FEET MAXIMUM
SIDE SETBACK	= 20 FEET
REAR SETBACK	= 30 FEET
MAXIMUM BUILDING HEIGHT	= 35 FEET MAXIMUM

RIVERFRONT RESIDENTIAL OVERLAY DISTRICT:
FOR AREAS WITHIN 250 FEET OF THE REFERENCE LINE OF ANY TIDAL WATER.

MINIMUM LOT SIZE	= 3 TIMES STANDARD LOT SIZE
WATER FRONTAGE	= 100 FEET

6.) A PORTION OF THE SUBJECT PARCEL IS LOCATED WITHIN THE SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1 PERCENT ANNUAL CHANCE FLOOD, ZONE AE (BASE FLOOD ELEVATIONS DETERMINED, ELEVATION 8); AND AREAS DETERMINED TO BE INSIDE THE 0.2 PERCENT ANNUAL CHANCE FLOODPLAIN, AS SHOWN ON FLOOD INSURANCE RATE MAP, COMMUNITY NUMBER 330145; PANEL 0340; SUFFIX E; MAP NUMBER 33017C0340E; EFFECTIVE DATE SEPTEMBER 30, 2015.

7.) BASIS OF BEARING IS NH STATE PLANE (NAD83) BASED ON GPS OBSERVATION DATED MARCH 28, 2022.
VERTICAL DATUM IS NAVD88 BASED ON GPS OBSERVATION DATED MARCH 28, 2022.
CONTOUR INTERVAL IS TWO (2) FEET.

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

9.) THIS PLAN SHOWS ONLY THOSE FEATURES THAT WERE VISUALLY APPARENT ON THE DATE OF THE SURVEY. THE ABSENCE OF SUBSURFACE STRUCTURES, UTILITIES, ETC. FROM THIS PLAN, BUT IN EXISTENCE, IS NOT INTENDED OR IMPLIED.

10.) THE SOIL TYPES ON THE SITE ARE:
BzB – BUXTON SILT LOAM, 3 TO 8 PERCENT SLOPES
WdC – WINDSOR LOAMY SAND, 8 TO 15 PERCENT SLOPES
THE SOURCE FOR THE SOIL TYPE DATA IS USDA NRCS WEB SOIL SURVEY
http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx

11.) PORTIONS OF THE PARCEL ARE SUBJECT TO THE STATE OF NEW HAMPSHIRE SHORELINE WATER QUALITY PROTECTION ACT (SWQPA). THOSE AREAS WITHIN 250 FEET OF THE PISCATAQUA RIVER REFERENCE LINE.

12.) THE PARCEL IS SUBJECT TO A TWENTY (20) FOOT WIDE EASEMENT GRANTED TO THE CITY OF DOVER FOR SEWER PURPOSES AS DESCRIBED IN S.C.R.D. VOLUME 1011, PAGE 250.

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

TDR PLAN
PREPARED FOR
BRIAN SLOVENSKI
TAX MAP L, LOT No. 11
306 DOVER POINT ROAD
CITY of DOVER
COUNTY of STRAFFORD
STATE of NEW HAMPSHIRE

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

30 15 0 15 30 60 90 120

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

McEneaney Survey Associates
of NEW ENGLAND
P.O. Box 681 – 24 CHESTNUT STREET
DOVER, NH 03820 (603) 742–0911

SURVEYING – PLANNING – CONSULTING

1/16/2024 13:56:05 File: N:\2410\Drawings\2410 CONCEPT 4.dwg Layout: BOUNDARY PLAN



Wyskiel,
Boc,
Tillinghast
& Bolduc, P.A.
Attorneys at Law

*Michael J. Bolduc
**Thomas G. Ferrini
*William R. Phipps
***D. Lance Tillinghast
*Christopher A. Wyskiel

William E. Boc - Retired

* also admitted in Maine
**also admitted in MA & VT
***also admitted in MA, ME & VT

January 9, 2024

Dover Planning Board
c/o Donna Benton, Director of
Planning & Community Development
Dover City Hall
288 Central Avenue
Dover, NH 03820
Sent by email only: d.benton@dover.nh.gov

RE: Transfer of Development Rights Application for Brian Slovenski
306 Dover Point Road (Assessors Map L, Lot 111)
Planning Board Case No. TRAN-2023-0005

Objection to Application by Direct Abutters Robert L. Gifford and Joanne A. Gifford 306A Dover Point Road, Dover, NH, (Tax Map L, Lot 111-C)

Dear Planning Board Members (and Donna):

My firm's representation of the Giffords has been made known to Donna by past letters, emails and phone calls. A copy of the Giffords' signed Representation Authorization is attached.

The Planning Board should deny Mr. Slovenski's request to purchase increased development rights. The density calculations submitted with the application inaccurately demonstrate qualification for the purchase of density units. Furthermore, the Applicant fails to meet the general criteria of Dover Code Section 170.27.2.G (8).

Density Calculations

The Applicant's density calculations dated October 6, 2023 are inaccurate. The planning staff's January 9, 2024 memo points out the Applicant's failure to account for "unsuitable development areas" in following the density calculation formula of Dover Code Section 170.27.2.G (3)(a).

The most recently published version of the Dover Zoning Code (on-line) does not define "unsuitable development areas." Planning Director Benton advises that the term is intended to include wetlands, water bodies and slopes exceeding a grade of twenty percent (20%) totaling more than 2,000 square feet, land area use for septic systems, floodways and floodway fringe within the 100-year flood plain as shown on the latest FDMA maps accepted by the City, and public utility

easements. Applicant's October 6, 2023 density calculations take none of the above into account. Applicant's land as it slopes to the river has a steep grade that needs to be quantified. Public utility areas are shown on Applicant's survey which need to be quantified and subtracted from current lot size.

Additionally, Applicant's survey shows two rights of way included within the parent parcel's square footage, which by deeded easement provide access only to direct abutters, one being to the Giffords. Because of these deeded easement restrictions, the land cannot be developed nor used for access to development on the subject parcel. They are, therefore, as unsuitable for development as the intended definition Donna Benton provided to the undersigned. Both easement areas should likewise be quantified and subtracted from the parent parcel's square footage.

Applicant does reduce the parent parcel's 71,299 square foot size by fifteen (15%) percent to account for roads, etc., then an additional fifteen (15%) percent to account for wetlands pursuant to the table requirement of Section 170.27.2 (G)(3)(a). Applicant's two (but not three) deductions yield a net developable area of 51,513 square feet.

If the 71,299 square foot parent parcel were first reduced by unsuitable development areas, the net developable area would be significantly less than the 51,513 square feet.

To determine potential development units to be purchased, Section 170.27.2 (G)(4) then requires net developable areas to be divided by minimum lot size. The whole value number resulting is the base number of potential purchasable units, with no rounding.

Applicant's parcel resides in the Riverfront Residential Overlay District which requires a minimum of three times the Section 170-12 Table of Dimensional Regulations minimum lot size. Pursuant to the Table of Dimensional Regulations, 20,000 square feet is the minimum lot size for the R12 Zone in which the subject parcel is located, but because of the Riverfront Residential Overlay District, the minimum lot size for this particular parcel is 60,000 square feet. Dividing a corrected "net developable area" number which necessarily must be less than Applicant's 51,513 square feet (per October 6 calculations) by 60,000 square feet, results in a number less than one, resulting in a base number which with no rounding results in zero, which means no purchasable development units.

Applicant otherwise fails to meet the criteria for purchasing TDR units.

Applicant divides its inaccurately calculated net developable area by a 20,000 square foot minimum lot size instead of the 60,000 square feet required for the riverfront overlay district. The planning staff's memo points this out, but states "the TDR ordinance is silent on."

The TDR ordinance requires net developable area to be divided by the property's minimum lot size. Applicant divides by the R-20 Zone's 20,000 square foot lot size. That's in error. The distinction is made to benefit Applicant by ignoring the more strict Riverfront Residential Overlay District's 60,000 square foot requirement. The general purposes of the TDR ordinance warrant application of the 60,000 square foot minimum lot size.

The Applicant's property enjoys a beautiful "scenic viewshed" of the Piscataqua River. The purpose and intent of the TDR ordinance is to preserve among other things, such scenic viewsheds. "See Section 170-27.2.B." The purpose of the ordinance is further declared to promote intensive development on land possessing "the least conservation value." Applicant's requested density and proposed intense development is contrary to these purposes and intent.

Without evidence or any supporting explanation, Applicant asserts (by his attorney's November 21, 2023 applicant transmission letter) that the proposed development is, among other things, "consistent with the master plan … and the proposed use is consistent with the surrounding uses found throughout the neighborhood." The TDR ordinance requires a finding of consistency with the master plan, and that the proposed use "is not incompatible with the land uses on neighboring lots" Section 170-27.2.G (8)(a)(b).

Consistency with the master plan isn't demonstrated. The intense development proposed is contrary to the purpose and intent of the TDR ordinance. See above. The proposed development's intensity is inconsistent with the preservation of larger lots as required Riverfront Residential Overlay District.

The proposed intensity of the development is incompatible with neighboring lots. A comparison of the neighborhood's tax map to City assessment cards indicating type of property, evidences the neighborhood is predominantly single family dwellings. See highlighted tax map attached, highlighting in yellow single family residences in neighborhood. Admittedly the Cote Drive neighborhood is detached and not visibly seen from the site or Dover Point Road as a part of the subject property's immediate neighborhood. Similarly, the four multi unit properties along the river (highlighted in pink on attached map) are duplex units, developed over time, or multi unit condominiums developed on grandfathered properties. All four cannot be seen as one drives along Dover Point Road. All are located closer to the river on a down sloping topography. Most are hidden by tree line vegetation from the road; many even from the subject property.

The property immediately across the street is a single family home with a detached barn with a studio apartment. The two further down Dover Point Road (on the corner of Pine View Drive) appears as single family residences. See copies of City Tax Assessment Cards also attached. Admittedly many of the single family homes on Homestead Lane are a lower topography and away from view as one drives along Dover Point Road, but demonstrate that the general neighborhood is not a smattering of multi-family buildings as Applicant would suggest.

Applicant's TDR application should be denied.

Respectfully Submitted

Christopher A. Wyskiel
Attorney for Robert L. Gifford
And Joanne A. Gifford

City of Dover
Zoning Board of Adjustment
Planning Board
Planning Department
288 Central Avenue
Dover, NH 03820

LETTER OF AUTHORIZATION

Re: 306A Dover Point Road, Dover, NH
Owners: Robert L. Gifford and Joanne A. Gifford

Dear Sir/Madam:

We, Robert L. Gifford and Joanne A. Gifford, authorize our attorney, Christopher A. Wyskiel of Wyskiel, Boc, Tillinghast & Bolduc, P.A. to represent us, and speak on our behalf to representatives of the Dover Planning Department, and/or members of the Dover Planning Board and/or Zoning Board of Adjustment regarding any matters effecting properties abutting ours referenced above.

Sincerely,

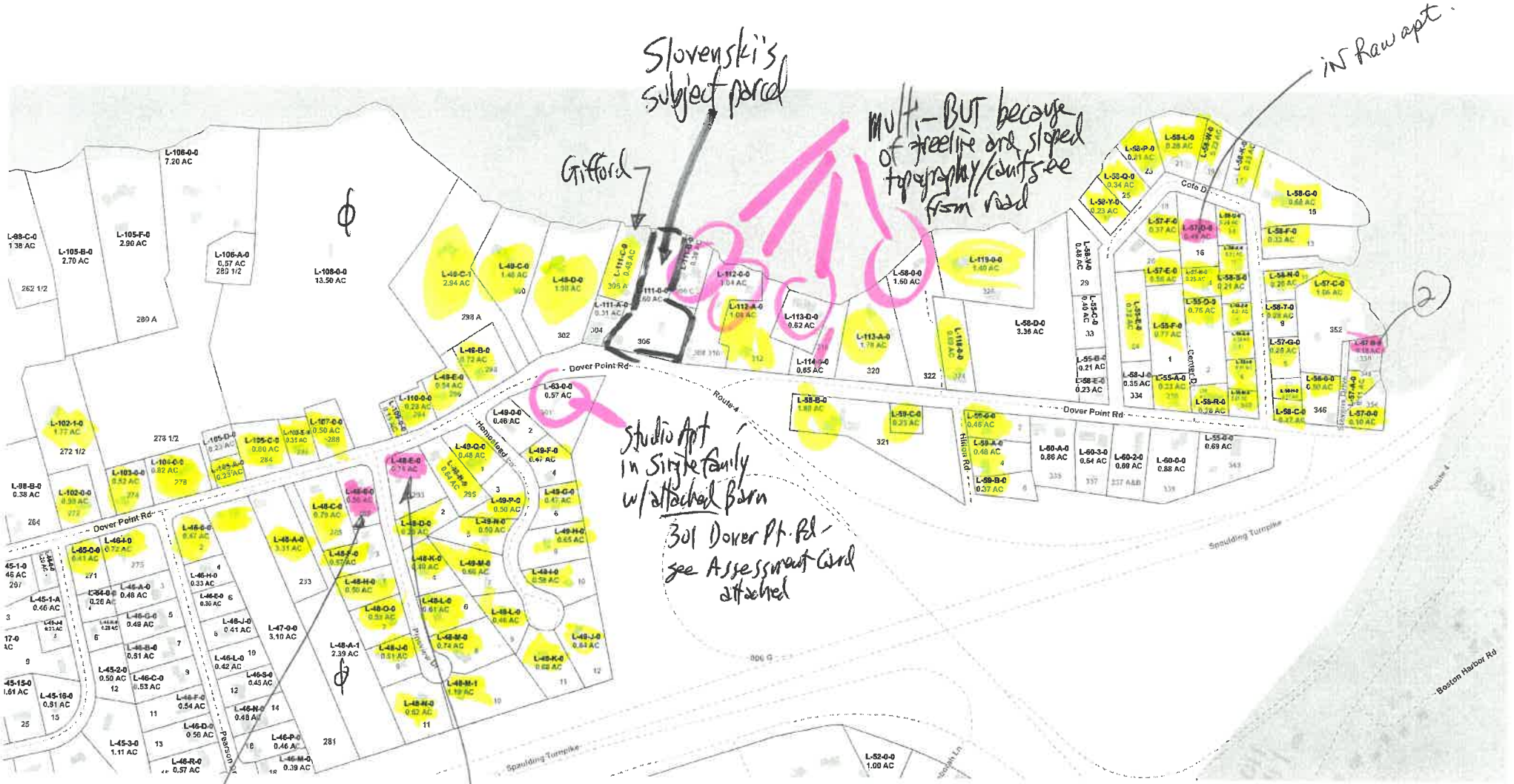
Dated: November 2, 2023

Robert L. Gifford

Dated: November 2, 2023

Joanne A. Gifford

H:\RE & BUS\Gifford. Robert & Joanne\Authorization.docx



289 Dover Pt. Rd. Ranch w/ in law Apt. see Assessment Card Attached

single family appearing over/under duplex see 293 Dover Pt. Rd - Assessment Card attached

Property Location:
289 Dover Point Rd

Residential Property Record Card - Dover, New Hampshire

Parcel ID: L0048-000000 **Map Block No.** L-48-0-0 **Class:** R **Use:** 101 **Card 1 of 1**

Current Owner
Lull Gregory &
Lull Suzanne A
289 Dover Point Rd
Dover Nh 03820

Previous Owner History		
Name	**Deed**	**Date**
Garabedian Charles & Joan Et Al	3790/816	11/13/2009
Garabedian Charles J	1588/533	12/31/1991
Mayrand Eleanor	01487/0089	

Miscellaneous	
Deed Info:	4294/862-05/22/2015
Zoning:	R-20
Neighborhd:	100
Living Units:	2
Street/Road:	Public
Estimates	
MRA:	
Weighted:	
Market:	

Assessment Information		
Assessed Value:	*	**Prior**
Land:	146,500	146,500
Building:	311,800	287,800
Total:	458,300	434,300
Assessed Information: Value:		458,300
Effective DOV:	4/1/2023	
Value Flag:	COST VALUE	

Notes
Dover Pt Rd = Eco
In-Law Apt, Brick Trim

Entrance Information

Date	Time	ID	Actv	Entrance Code	Source
12/21/2015	S	BL		Entry Gained	Owner
08/11/2016	P	SH		Ext. Insp.	
01/24/2007	C	RC		Ext. Insp.	

Sales History

Book/Page	Date	Price	Type	Validity
4294/863	05/22/2015	315,000	2	00
4293/132	05/13/2015	315,000	2	99

Permit Information

Date	Permit #	Price	Purpose	% Comp.
09/08/2015	15-323	30,000	Inst Ingrd Pool	100
04/22/2015	15-93		Legalize Adu	100

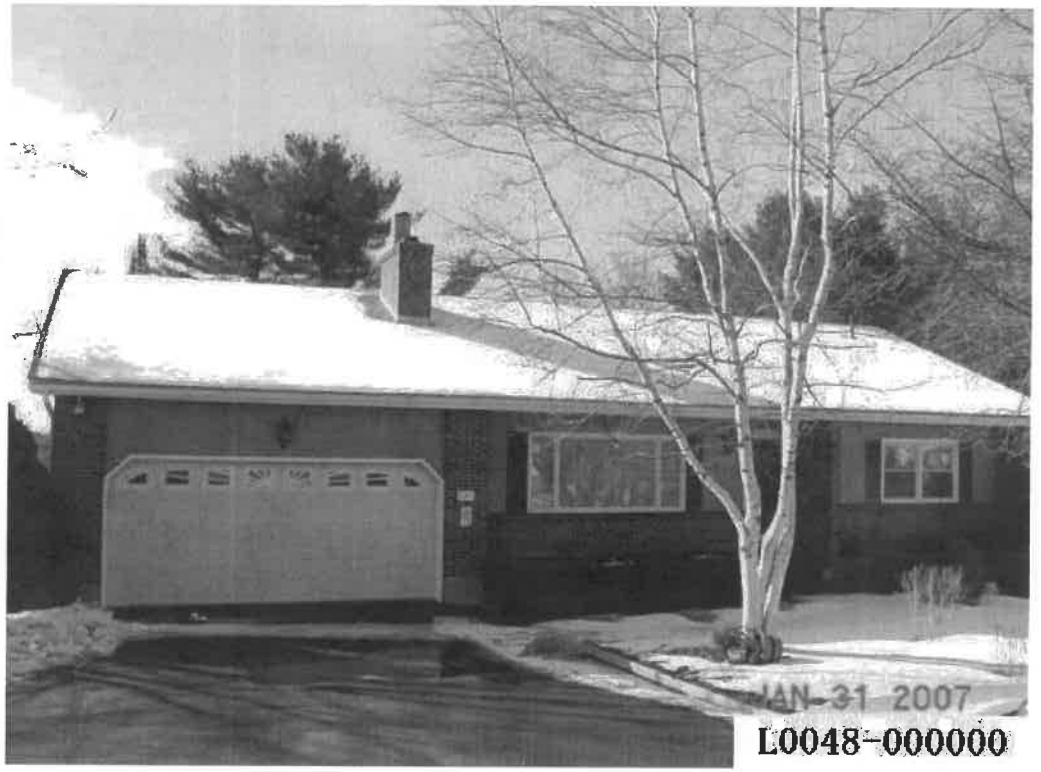
Land Information

Type		Size	Grade	Influence	Factor 1, 2 and %		Value
Primary	A	0.555	0	Economic	Topography	-15	143,530
Views	L	1x1	0			0	3,000

Total Acres for this Parcel 0.555 **Total Land Value** 146,500

Out Building Information

Type	Qty	Year	Size1	Size2	Grade	Cond	%Good	Value
Shed-Frame	1	1990	8	14	C	A	20%	750
Pool-Gunite	1	2015	1	450	C	A	39%	20,020
	0	0	0	0			0%	0
	0	0	0	0			0%	0
	0	0	0	0			0%	0
	0	0	0	0			0%	0
	0	0	0	0			0%	0
								0
								0
							Total OBY for this card	20,770



Inspection witness by: _____

univers (7.5.2.4)

Printed Wed, Oct 25, 2023

April 1, 2023 Assessment

Property Location:
293 Dover Point Rd

Residential Property Record Card - Dover, New Hampshire

Parcel ID: L0048-E00000 **Map Block No.** L-48-E-0 **Class:** R **Use:** 104 **Card 1 of 1**

Current Owner

Sideris Michael G
293 Dover Point Rd Unit A
Dover Nh 03820

Previous Owner History

Name	Deed	Date
Donohue Sean &	4357/825	02/09/2016
Donohue Sean Francis	3607/823	01/10/2008
Credit Suisse First Boston Heat	3331/822	02/15/2006

Miscellaneous

Deed Info: 4686/598·09/06/2019
Zoning: R-20
Neighborhd: 100
Living Units: 2
Street/Road: Public

Estimates
MRA:
Weighted:
Market:

Assessment Information

	*	Prior
Land:	166,100	166,100
Building:	350,800	325,800
Total:	516,900	491,900

Assessed Information Value: 516,900

Effective DOV: 4/1/2023
Value Flag: COST VALUE

Notes

Dover Pt Rd = Eco, Corner Lot
Concrete Stoop= Nv, Size
Bdrm Count/Cond Per Mls 2020

Entrance Information

Date	Time	ID	Actv	Entrance Code	Source
05/11/2007	C	RC		Entry Gained	Tenant
12/16/2019	S	JF		Ext. Insp. Entry & Sign	

Sales History

Book/Page	Date	Price	Type	Validity
4686/598	09/06/2019	370,000	2	08
3607/823	07/14/2006	285,000	2	37

Permit Information

Date	Permit #	Price	Purpose	% Comp.
				0
				0

Land Information

Type		Size	Grade	Influence Factor 1, 2 and %		Value
Primary	A	0.744	0	Economic	-10	160,060
Views	L	2x1	0		0	6,000

Total Acres for this Parcel 0.744 **Total Land Value** 166,100

Out Building Information

Type	Qty	Year	Size1	Size2	Grade	Cond	%Good	Value
Garage-Wd/Cb	1	1965	22	22	C	F	30%	9,430
	0	0	0	0			0%	0
	0	0	0	0			0%	0
	0	0	0	0			0%	0
	0	0	0	0			0%	0
	0	0	0	0			0%	0
	0	0	0	0			0%	0
								0
								0
							Total OBY for this card	9,430



Inspection witness by: _____

univers (7.5.2.4)

Printed Wed, Oct 25, 2023

April 1, 2023 Assessment

Property Location: 301 Dover Point Rd

Residential Property Record Card - Dover, New Hampshire

Parcel ID: L0063-000000 **Map Block No.** L-63-0-0 **Class:** R **Use:** 104 **Card 1 of 1**

Current Owner

Constance Charles G &
Fosco Sylvia C
301 Dover Point Rd
Dover Nh 03820

Previous Owner History

Name	Deed	Date
Constance Charles G &	1998-/540	10/10/2003
Constance William	776/490	12/20/1995
Constance Claire & William	00776/0490	

Miscellaneous

Deed Info: 3360/943·04/21/2006
Zoning: R-20
Neighborhd: 100
Living Units: 2
Street/Road: Public

Estimates
MRA:
Weighted:
Market:

Assessment Information

Assessed Value: *		Prior
Land:	171,000	171,000
Building:	298,000	277,100
Total:	469,000	448,100

Assessed Information: Value: 469,000

Effective DOV: 4/1/2023
Value Flag: COST VALUE

Notes

Studio Aptmnt W/Full Bath
4x4 Ofp & 3x6 Wdk= Nv
Eco/Loc=-5

Entrance Information

Date	Time	ID	Actv	Entrance Code	Source
07/15/2015	P	CB		Entry Gained	Owner
07/01/2004	P	RC		Entry Gained	Owner
09/02/2020	R	RD		Est-See Note	

Sales History

Book/Page	Date	Price	Type	Validity
3360/943	04/20/2006		2	81
776/490	12/20/1995		2	4

Permit Information

Date	Permit #	Price	Purpose	% Comp.
04/29/2014	14-97	24,000	Roof Over Wdk	100
01/15/2004	03-671	58,000	Chng=2 Family	100

Land Information

Type		Size	Grade	Influence Factor 1, 2 and %		Value
Primary	A	0.567	0	Economic	-15	144,020
Views	L	9x1	0		0	27,000

Total Acres for this Parcel 0.567 **Total Land Value** 171,000

Out Building Information

Type	Qty	Year	Size1	Size2	Grade	Cond	%Good	Value
	0	0	0	0			0%	0
	0	0	0	0			0%	0
	0	0	0	0			0%	0
	0	0	0	0			0%	0
	0	0	0	0			0%	0
	0	0	0	0			0%	0
	0	0	0	0			0%	0
								0
								0

Total OBY for this card 0



Inspection witness by: _____



Wyskiel,
Boc,
Tillinghast
& Bolduc, P.A.
Attorneys at Law

*Michael J. Bolduc
**Thomas G. Ferrini
*William R. Phipps
***D. Lance Tillinghast
*Christopher A. Wyskiel

William E. Boc - Retired

* also admitted in Maine
**also admitted in MA & VT
***also admitted in MA, ME & VT

January 18, 2024

Dover Planning Board
c/o Donna Benton, Director of
Planning & Community Development
Dover City Hall
288 Central Avenue
Dover, NH 03820
Sent by email only: d.benton@dover.nh.gov

RE: Transfer of Development Rights Application for Brian Slovenski
306 Dover Point Road (Assessors Map L, Lot 111)
Planning Board Case No. TRAN-2023-0005

Supplemental Objection to Application by Direct Abutters
Robert L. Gifford and Joanne A. Gifford
306A Dover Point Road, Dover, NH, (Tax Map L, Lot 111-C)

Dear Planning Board Members (and Donna):

This letter supplements my January 9, 2024 letter with attachments objecting to the above captioned application. Please read both. As of this day, two proposed development plans are posted online for the Planning Board's January 23 meeting materials. The first plan shows a proposed five unit development in three buildings (2 duplexes and 1 single family). The second (last page of this matter's meeting materials) shows a development proposal for six units (1 duplex, 1 triplex, and 1 single family). The TDR density calculations, together with Applicant's original application, refer to the proposed six unit development.

My January 9, 2024 letter on behalf of abutters Joanne and Bob Gifford specifically address the six unit proposal and originally submitted TDR density calculations.

By email dated yesterday and received after 6:00 p.m., Planning Director Donna Benton forwarded to me the attached color markup of the revised five unit development plan (attached as Exh. A) and revised TDR density calculations (attached as Exh. B). This letter specifically addresses that revised submission presuming that is what the Applicant will be presenting at the January 23 hearing. The Giffords' Abutter Notice received this week for the January 23 hearing included the original proposed plan for six units (1 duplex, 1 triplex, and single family) with new driveway cut to Dover Point Road. See two page Exh. C.

The revised density calculations continue to inaccurately demonstrate qualification for the purchase of an additional density unit. And as demonstrated by my January 9 letter, the Applicant fails to meet the general criteria of Dover Code Section 170.27.2.G (8).

Revised Density Calculations

My January 9 letter pointed out Applicant's failure to first reduce the parent parcel's 71,299 square foot size to account for "unsuitable development areas." The revised calculations reduced the lot under the heading "Area within Riverfront Overlap District" by 3,310 square feet (for flood zone area) and 10,077 square feet (for steep slopes, etc.). No reduction is made for either of the two rights of way providing access to Lots L111C (Gifford) and L111B (Locker/Whittier).

Even without any further reduction in lot size for rights of way as "unsuitable development areas," Applicant's density calculations have been manipulated to justify the TDR purchase of an additional unit.

As pointed out in my January 9, 2024 objection, the minimum lot size for Applicant's lot is 60,000 square feet. The TDR ordinance requires three reductions to the parent parcel's square foot size to result in a number to be divided by this 60,000 square foot minimum lot size, which if resulting in a whole number, is rounded down to equate to purchasable TDR unit(s). Nothing in the ordinance calls for the distinction of part of the lot to be divided by the 60,000 square foot minimum lot size, and part of the lot being divided by 20,000 square foot lot size. The lot is the lot. The ordinance does not speak to portions of the lot. If any portion of the lot (in this case more than half the land area) lies within the Riverfront Overlay District, then the lot is in the Riverfront Overlay District, and the minimum lot size is 60,000 square feet.

Applicant manipulates his calculations in an attempt to demonstrate qualification for the purchase of one additional TDR density unit. The ordinance cannot and should not be read to allow such manipulation. More accurately, Applicant's revised density application (most favorable to Applicant without reduction for any right of way land areas – see below) would be as follows:

71,299 SF	Gross Land Area
- 3,130 SF	(Flood Zone "unsuitable development area")
- 10,077 SF	(Steep Slope "unsuitable development area")
- 58,092 SF	
x .85	(Roads, etc. – as required by ordinance)
49,378 SF	
x .85	(wetlands – as required by ordinance)
41,971 SR	
÷ 60,000 SF	(minimum lot size for the lot)
.699	**(which cannot be rounded to a whole number purchasable/TDR unit)**

Rights of Way Encumbering Applicant's Lot

Applicant's original development plan (for 6 units) shows a new driveway cut in the middle of Applicant's lot directly onto Dover Point Road. Staff's progress memorandum indicates a DOT driveway permit pending. Twice since Applicant has filed the above referenced application, Bob Gifford has called and spoken with engineer Jim Hewitt, D.O.T.'s Durham Division 6 office. Mr. Hewitt confirms no driveway permit has ever been filed. Today, Mr. Hewitt forwarded to Bob Gifford his email exchange (with attachments) with Applicant's engineer. A copy is attached as Exh. D.

Applicant's revised five unit application (Exh.A) abandons any new driveway cut directly to Dover Point Road. Instead it depicts driveways serving the proposed five units connected to approximately 25 foot wide "RIGHT OF WAY FOR LOT L111B" along the southerly boundary of Applicant's land.

The right of way depicted on Applicant's plan as "ASPHALT DRIVE R.O.W. FOR LOT L111C" was originally laid out and approved for access to the Gifford lot by the Dover Planning Board in May, 1970 by plan recorded at the Strafford Registry of Deeds as Plan 17A, Pocket 11, Folder 2, which plan included two referenced letters. Copies of all three attached as Exh. E. The Applicant's vesting deed recorded at Strafford County Registry of Deeds at Book 4753, Page 261 describes the lot with reference to the Exh. E plan and by metes and bounds description pursuant to the plan. The Giffords' vesting deed recorded at Strafford Registry of Deeds at Book 3074, Page 430 describes their lot and their 16.09 foot wide right of way to it with specific reference to the plan and by metes and bounds description pursuant to the plan.

City Attorney McManus' May 18, 1970 letter, made an attachment of the Exh. E plan, together with the handwritten note on the plan itself, makes clear that a condition of the 1970 "Bates subdivision plan" approval precludes use of the Gifford deeded right of way as access for additional lots. Similarly, it should not be used for intense multi unit development as an alternative to lot subdivision. Its land area (approximately 2730 square feet) should also be part of the "unsuitable development area" reduction in calculating TDR density qualification. As demonstrated above however, application of the appropriate 60,000 square foot minimum lot size makes such a calculation adjustment moot.

Applicant Otherwise Fails to Meet The Criteria for Purchasing an Additional TDR Unit

The arguments under the same heading in my January 9, 2024 letter, with supporting attachments, remain applicable to the Giffords' objection. The Applicant's TDR application should be denied.

The Giffords reserve the right to further object to the density of any proposed multi unit development on the lot in any subsequent Planning Board site plan review application.

Respectfully Submitted

Christopher A. Wyskiel
Attorney for Robert L. Gifford
And Joanne A. Gifford



LOCATION PLAN
(NO SCALE)

No.	Bearing	Distance
L1	N03°08'32"E	23.85'
L2	N07°25'21"E	16.09'
L3	S76°34'39"E	25.00'
L4	S14°52'21"W	16.09'
L5	N69°08'39"W	73.10'
L6	N44°30'39"W	77.98'
L7	N76°34'39"W	18.78'

L / 68
CHARLES G. CONSTANCE
SYLVIA C. FOSCO
301 DOVER POINT ROAD
DOVER, NH 03820
3360 / 843

L / 111a
UNDERWOOD DOVER, LLC
4 FAIRWAY DRIVE
ENGLEWOOD, FL 34223
2188 / 78

L / 111c
ROBERT L. GIFFORD
JOANNE A. GIFFORD
308A DOVER POINT ROAD
DOVER, NH 03820
3076 / 430

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

L / 111b
FRANK M. LOCKER
DENISE M. WHITTIER
306 C DOVER POINT ROAD
DOVER, NH 03820
3516 / 196

DOVER POINT ROAD
(PUBLIC; VARIABLE WIDTH R.O.W.)

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

3,793 SF
0.73 Ac

3,506 SF
0.91 Ac

PISCATAQUA RIVER
TIDAL FLOOD

- AREA OUTSIDE RIVER FRONT OVERLAY DISTRICT
- AREA WITHIN RIVERFRONT OVERLAY DISTRICT
- >20% SLOPES
- FLOOD ZONE

NOTES:

1.) OWNER OF RECORD:
BRIAN SLOVENSKI
124 TURTLE POND ROAD
LEE, NEW HAMPSHIRE 03861
S.C.R.D. VOLUME 4753, PAGE 261

2.) L / 111 – DENOTES TAX MAP AND PARCEL NUMBER.

3.) PARCEL AREA:
= 71,299 S.F. / 1.64 Ac.

4.) THE INTENT OF THIS PLAN IS TO DEPICT THE PARCELS BOUNDARIES AND EXISTING SITE CONDITIONS AS OF

5.) ZONING DISTRICT IS LOW DENSITY RESIDENTIAL (R-20) DISTRICT

DIMENSIONAL REQUIREMENTS:

MINIMUM LOT SIZE	= 20,000 S.F.
MINIMUM LOT COVERAGE	= 30 PERCENT
MINIMUM FRONTAGE	= 125 FEET
BUILDING SETBACK REQUIREMENTS:	
FRONT BUILD TO LINE	= 20 FEET MINIMUM = 35 FEET MAXIMUM
SIDE SETBACK	= 20 FEET
REAR SETBACK	= 30 FEET
MAXIMUM BUILDING HEIGHT	= 35 FEET MAXIMUM

RIVERFRONT RESIDENTIAL OVERLAY DISTRICT:
FOR AREAS WITHIN 250 FEET OF THE REFERENCE LINE OF ANY TIDAL WATER.

MINIMUM LOT SIZE	= 3 TIMES STANDARD LOT SIZE
WATER FRONTAGE	= 100 FEET

6.) A PORTION OF THE SUBJECT PARCEL IS LOCATED WITHIN THE SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1 PERCENT ANNUAL CHANCE FLOOD, ZONE AE (BASE FLOOD ELEVATIONS DETERMINED, ELEVATION 8); AND AREAS DETERMINED TO BE INSIDE THE 0.2 PERCENT ANNUAL CHANCE FLOODPLAIN, AS SHOWN ON FLOOD INSURANCE RATE MAP, COMMUNITY NUMBER 330145; PANEL 0340; SUFFIX E; MAP NUMBER 33017C0340E; EFFECTIVE DATE SEPTEMBER 30, 2015.

7.) BASIS OF BEARING IS NH STATE PLANE (NAD83) BASED ON GPS OBSERVATION DATED MARCH 28, 2022.
VERTICAL DATUM IS NAVD88 BASED ON GPS OBSERVATION DATED MARCH 28, 2022.
CONTOUR INTERVAL IS TWO (2) FEET.

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

9.) THIS PLAN SHOWS ONLY THOSE FEATURES THAT WERE VISUALLY APPARENT ON THE DATE OF THE SURVEY. THE ABSENCE OF SUBSURFACE STRUCTURES, UTILITIES, ETC. FROM THIS PLAN, BUT IN EXISTENCE, IS NOT INTENDED OR IMPLIED.

10.) THE SOIL TYPES ON THE SITE ARE:
BzB – BUXTON SILT LOAM, 3 TO 8 PERCENT SLOPES
WdC – WINDSOR LOAMY SAND, 8 TO 15 PERCENT SLOPES
THE SOURCE FOR THE SOIL TYPE DATA IS USDA NRCS WCD SOIL SURVEY
http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx

11.) PORTIONS OF THE PARCEL ARE SUBJECT TO THE STATE OF NEW HAMPSHIRE SHORELINE WATER QUALITY PROTECTION ACT (SWQPA). THOSE AREAS WITHIN 250 FEET OF THE PISCATAQUA RIVER REFERENCE LINE.

12.) THE PARCEL IS SUBJECT TO A TWENTY (20) FOOT WIDE EASEMENT GRANTED TO THE CITY OF DOVER FOR SEWER PURPOSES AS DESCRIBED IN S.C.R.D. VOLUME 1011, PAGE 250.

LEGEND

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

REFERENCE PLANS:

1.) PROPOSED DEVELOPMENT – LESTER BATES – DOVER, NEW HAMPSHIRE, PROPERTY LINES – TOPOGRAPHY, SCALE: 1" = 20'; DATED: SEPTEMBER 1985, BY: G.L. DAVIS & ASSOCIATES. RECORDED S.C.R.D. POCKET 11, FOLDER 2, PLAN 17A.

2.) LOT LINE REVISION – DOVER POINT ROAD, DOVER, N.H. FOR MAISE PEARSON 1959 TRUST & FREDERICK III AND PAMELA PEARSON AND FREDERICK PEARSON III AND EDGAR R. & ANNE S. CROTHERS. SCALE: 1" = 20'; DATED: DECEMBER 1989, REVISED THROUGH 2/12/90; BY: NORWAY PLAINS ASSOCIATES, INC. RECORDED S.C.R.D. PLAN 58-21.

3.) STATE OF NEW HAMPSHIRE – STATE HIGHWAY DEPARTMENT – PLAN AND PROFILE OF PROPOSED U.S. PUBLIC WORKS PROJECT NRM 282 EAST SIDE ROAD – FISCAL YEAR 1933. PLANS ON FILE WITH NH D.O.T. FILE: 50868.ROWMARKUPS AND FILE: P1852.POP

4.) PLAN OF EASEMENT – BATES – WEED – CITY OF DOVER ENGINEERING DIV. SCALE: 1" = 100'; DATED: NOVEMBER 1978; BY: DOVER ENGINEERING DEPARTMENT. RECORDED S.C.R.D. VOLUME 1011, PAGE 252.

5.) PLAN OF LAND – ESTATE OF MARGARET M. COLEMAN, DOVER, NEW HAMPSHIRE. SCALE: 1" = 20'; DATED: OCTOBER 15, 1956; BY: G.L. DAVIS & ASSOCIATES. RECORDED S.C.R.D. POCKET 8, FOLDER 2, PLAN 27.

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

NO.	DATE	DESCRIPTION	BY	CHK
		REVISIONS		

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

EXISTING CONDITIONS PLAN
PREPARED FOR
BRIAN SLOVENSKI
TAX MAP L, LOT No. 11
306 DOVER POINT ROAD
CITY of DOVER
COUNTY of STRAFFORD
STATE of NEW HAMPSHIRE

DRAWN BY: KJF | FILE: 2410.DWG'S 21-2410.dwg
SCALE: 1 = 30' | DATE: APRIL 26, 2022

30 15 0 15 30 60 90 120

STATE OF NEW HAMPSHIRE No. 841 KEVIN M. McENEANEY LAND SURVEYOR

McEneaney Survey Associates of NEW ENGLAND
P.O. Box 681 – 24 CHESTNUT STREET
DOVER, NH 03820 (603) 742-0911

SURVEYING – PLANNING – CONSULTING

MCENEANEY SURVEY ASSOCIATES OF NEW ENGLAND
P.O. BOX 1166 DOVER, NH 03821
603-742-0911

DENSITY CALCULATIONS

306 DOVER POINT ROAD – DOVER, NH
January 11 , 2024

BASE LOT DENSITY

LOT SIZE	MINIMUM LOT SIZE WATERFRONT OVERLAY DISTRICT (3 x MINIMUM LOT AREA IN OVERLAY DISTRICT)
71,299 SF	3 x 20,000 SF = 60,000 SF

MULTI-FAMILY DENSITY

LOT AREA REQUIRED PER UNIT
(PER FOOT NOTE 7 ON R-20 ZONING TABLE)

71,299 SF ÷ 15,000 SF = (4.75) 4 UNITS

TRANSFER OF DEVELOPMENT RIGHTS CALCULATIONS

AREA WITHIN RIVERFRONT OVERLAY DISTRICT

AREA SIZE	39,506 SF	(GROSS LAND AREA)
	- 3,130 SF	(FLOOD ZONE HOTL TO 8' CONTOUR)
	- 10,077 SF	(> 20% SLOPES, 8' TO 26' CONTOUR)*
	26,299 SF	* *Some of this area within the 8'-26' contours are less than 20 %. To be conservative, we included all of the slopes within that area in this calculation.*
(x .85 ROADS, ETC.)	x .85	
	22,354 SF	
(WETLAND <10% x .85)	x .85	
	19,001 SF	(NET DEVELOPABLE AREA)
(3x MIN LOT SIZE)	÷ 60,000 SF	
	0.32 UNITS	

AREA OUTSIDE RIVERFRONT OVERLAY DISTRICT

AREA SIZE	31,793 SF	(GROSS LAND AREA)
(x .85 ROADS, ETC.)	x .85	
	27,024 SF	
(WETLAND <10% x .85)	x .85	
	22,970 SF	(NET DEVELOPABLE AREA)
(÷ MIN LOT SIZE)	÷ 20,000 SF	
	1.15 UNITS	

TOTAL TDR UNITS (0.32 + 1.15 = 1.47 UNITS) 1 UNIT

Exh. B

CITY OF DOVER

PLANNING BOARD – ABUTTER NOTICE

Meeting Type: Regular Meeting
Meeting Location: Council Chambers, City Hall, 288 Central Ave, Dover, NH
Meeting Date: **Tuesday, January 23, 2024**
Meeting Time: **7:00 pm**

Dear Property Owner: You are an abutter to the project listed in **bold** on the agenda. We invite you to review and comment on the proposal at the hearing, by letter, or by email (Dover-Planning@dover.nh.gov).

INTENT: To request the purchase of five (5) additional units through the Transfer of Development Rights ordinance for a total of six units onsite.

AGENDA ITEM #: 4-C

FILE: TRAN-2023-0005

LOTS/UNITS PROPOSED: Five (5) additional units for a total of six (6) units within three (3) buildings.

APPLICANT: Bruton & Berube

OWNER: Brian Slovenski

LOCATION: 306 Dover Point Rd. (Assessor's Map L, Lot 111)

ACREAGE: 1.64± acres

ZONING DISTRICT: R-20

EXISTING USE: Residential

PROPOSED USE: Residential

SURROUNDING USE: Commercial/Residential

WAIVERS REQUESTED: None.

ZBA ACTION: None

PERMITS REQUIRED: Conditional Use Permit, NHDOT Construction Permit

ATTACHMENTS: Site Plan

A partial agenda follows:

1. **CITIZENS' FORUM**
2. **APPROVAL OF THE PRIOR MINUTES**
   January 9, 2024 Regular Meeting Minutes and January 9, 2024 Workshop Minutes
3. **OLD BUSINESS**
   A. Discussion of Impact Fees.*
4. **NEW BUSINESS**
   A. Consideration and acceptance of an Extension Request for a conditionally approved Site Plan for VC Dover Investment, LLC, Assessor's Map H, Lot 4-3-2, zoned C and RCM Overlay, located at 30 Grapevine Drive. (Proposal is for the Planning Board to extend the period of time for conditions to be met prior to plan signing). *(WAIV-2023-0013)
   B. Consideration and acceptance of a Transfer of Development Rights for Altus Engineering (Owners: Paul Seaver), Assessor's Map H, Lot 6-4, zoned R-20, located at 105 Durham Road. (Proposal is purchase 9 HUD restricted units). *(TRAN-2023-0006)
   C. **Consideration and acceptance of Transfer of Development Rights for Brian Slovenski, Assessor's Map L, Lot 111, zoned R-20, located at 306 Dover Point Road. (Proposal is to purchase five (5) additional living units, within three (3) buildings). *(TRAN-2023-0005)**

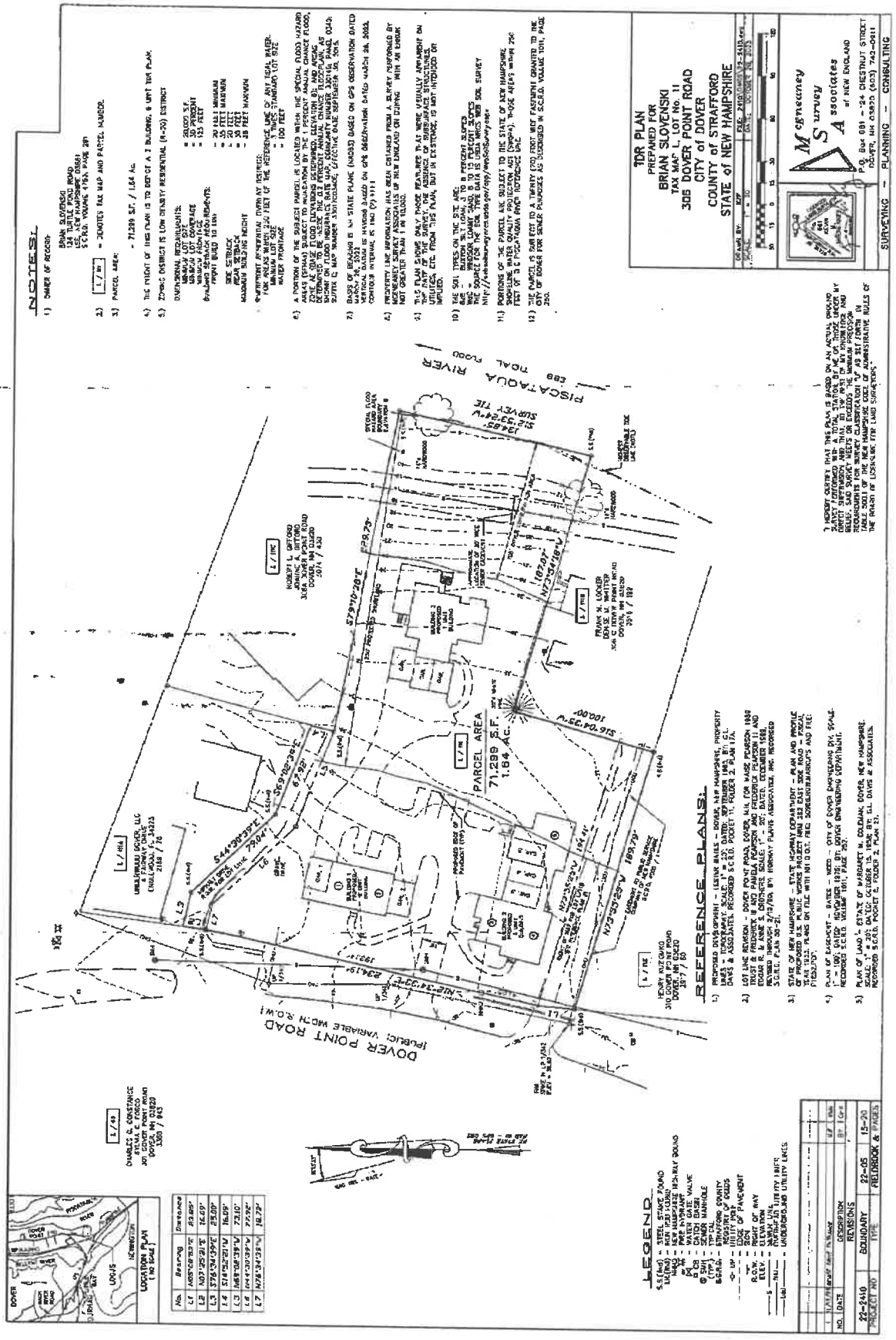
*Indicates that if the application is accepted for discussion, the public hearing will be held the same evening. Note that some hearings will be continued from one meeting to another and some may be postponed.

MORE INFORMATION AVAILABLE TO YOU:
Since this is only a partial description of the proposal and it 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. You may view the rest of the agenda and materials at www.dover.nh.gov or contact the Planning and Community Development Department at City Hall or 603-516-6008.
We invite you to review and comment on the proposal:

- In person at the hearing,
- Phone: 603-516-6008
- Email: Dover-Planning@dover.nh.gov
- Mail: Planning Board, Dover City Hall, 288 Central Ave., Dover, NH 03820.

Messages regarding applications 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.

Exh. C


NOTES:
1) OWNER OF RECORD:
BRIAN SLOVENSKI
134 TURTLE POND ROAD
STRAFFORD, NEW HAMPSHIRE 03884
SOURCE: BOOK 4784, PAGE 289
1/ 49 - DENOTES TAX MAP AND PARCEL NUMBER.
3) PARCEL AREA:
- 71,289 S.F. / 1.64 Ac.
4) THE INTENT OF THIS PLAN IS TO DEPICT A 7 BUILDING, 8 UNIT TDR PLAN.
5) ZONING DISTRICT IS LOW DENSITY RESIDENTIAL (R-20) DISTRICT
DIMENSIONAL REQUIREMENTS:
MINIMUM LOT AREA = 20,000 S.F.
MINIMUM LOT COVERAGE = 30 PERCENT
MINIMUM FRONTAGE = 125 FEET
BUILDING SETBACK REQUIREMENTS:
FRONT SETBACK = 30 FEET MINIMUM
SIDE SETBACK = 15 FEET
REAR SETBACK = 20 FEET
MAXIMUM BUILDING HEIGHT = 35 FEET MAXIMUM
* DEPARTMENT RESIDENTIAL OVERLAY DISTRICT:
FOR AREAS WITHIN 250 FEET OF THE REFERENCE LINE OF ANY TIDAL WATER:
MINIMUM LOT SIZE = 1.5 TIMES STANDARD LOT SIZE
WATER FRONTAGE = 150 FEET
6) A PORTION OF THE SUBJECT PARCEL IS LOCATED WITHIN THE SPECIAL FLOOD HAZARD AREAS (SFHA) SUBJECT TO INUNDATION BY THE 1 PERCENT ANNUAL CHANCE FLOOD, AS SHOWN ON FLOOD INSURANCE RATE MAP, COMMUNITY NUMBER 330116, PANEL 0249, SUFFIX G, MAP NUMBER 33017C0249G, EFFECTIVE DATE SEPTEMBER 30, 2015.
7) BASIS OF BEARINGS IS NH STATE PLANE (NAD83) BASED ON GPS OBSERVATION DATED MARCH 26, 2022.
VERTICAL DATUM IS NAVD88 BASED ON GPS OBSERVATION DATED MARCH 26, 2022.
CONTOUR INTERVAL IS TWO (2) FEET.
8) PROPERTY LINE INFORMATION HAS BEEN OBTAINED FROM A SURVEY PERFORMED BY MCSWEENEY SURVEY ASSOCIATES OF NEW ENGLAND WITH AN ERROR NOT GREATER THAN 1 IN 10,000.
9) THIS PLAN SHOWS ONLY THOSE FEATURES THAT WERE VISUALLY APPARENT ON THE DATE OF THE SURVEY, THE ABSENCE OF SUBSURFACE STRUCTURES, UTILITIES, ETC. FROM THIS PLAN, BUT IN EXISTENCE, IS NOT INTENDED OR IMPLIED.
10) THE SOIL TYPES ON THE SITE ARE:
BuC - BUXTON SILT LOAM, 8 TO 15 PERCENT SLOPES
WgC - WINDSOR LOAMY SAND, 8 TO 15 PERCENT SLOPES
THE SOURCE FOR THE SOIL TYPE DATA IS USDA NRCS WEB SOIL SURVEY
http://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx
11) PORTIONS OF THE PARCEL ARE SUBJECT TO THE STATE OF NEW HAMPSHIRE SHORELAND WATER QUALITY PROTECTION ACT (SWQPA), IN-USE AREAS WITHIN 250 FEET OF THE PICATAQUA AND PISCATAQUA RIVER REFERENCE LINE.
12) THE PARCEL IS SUBJECT TO A TWENTY (20) FOOT WIDE EASEMENT GRANTED TO THE CITY OF DOVER FOR SEWER PURPOSES AS RECORDED IN SCRD, VOLUME 1011, PAGE 255.
TDR PLAN
PREPARED FOR
BRIAN SLOVENSKI
TAX MAP L, LOT No. 11
305 DOVER POINT ROAD
CITY of DOVER
COUNTY of STRAFFORD
STATE of NEW HAMPSHIRE
SCALE: 1" = 30' PROJ: 22-2410 (REVISED 15-20)
DATE: OCTOBER 26, 2022
McSweeney Survey Associates of NEW ENGLAND
P.O. Box 681 - 24 CHESTNUT STREET
DOVER, NH 03820 (603) 742-0411
SURVEYING - PLANNING - CONSULTING
PISCATAQUA RIVER
100 YEAR FLOOD
DOVER POINT ROAD
Public Variable Width R.O.W.
PARCEL AREA
71,289 S.F.
1.64 AC.
L/ 49 CHARLES G. CONSTANCE
SYLVIA E. FORCIO
301 DOVER POINT ROAD
DOVER, NH 03820
1330 / 0430
L/ 49A UMBLEHAU DOVER, LLC
& RAILWAY DALE
(UMBLEHAU & RAILWAY DALE)
2158 / 76
L/ 49C ROBERT L. GIFFORD
JEANNE A. DITORO
309 DOVER POINT ROAD
DOVER, NH 03820
2074 / 433
L/ 49D FRANK N. LOCKER
DENISE M. WHITTIER
304 DOVER POINT ROAD
DOVER, NH 03820
2915 / 189
L/ 49E HENRY KITOWYG
310 DOVER POINT ROAD
DOVER, NH 03820
2975 / 60
L/ 49B
REFERENCE PLANS:
1) PROPOSED DEVELOPMENT - LESTIVE BARLS - DOVER, NEW HAMPSHIRE, PROPERTY OF BARLS & ASSOCIATES, RECORDED S.C.R.D. POCKET 12, PLAN 81, FILE 12,814.
2) LOT LINE REVISION - DOVER POINT ROAD, DOVER, NH, FOR MARIE PEARSON 1989 TRUST & FREDERICK M. AND PAMELA PEARSON, TRUSTEES OF THE FREDERICK M. AND EDGAR R. & ANNE S. BROWNER, SCALE: 1" = 20', DATED: DECEMBER 1989, REVISED THROUGH 2/16/90, BY NORWAY PLAINS ASSOCIATES, INC. RECORDED S.C.R.D. PLAN 30-21.
3) STATE OF NEW HAMPSHIRE - STATE HIGHWAY DEPARTMENT - PLAN AND PROFILE OF PROPOSED FEDERAL AID PROJECT NO. 0-1-(12) 13, DOVER - DOVER POINT ROAD - FROM JUNCTION TEXAS 1935, PLANS ON FILE WITH NH D.O.T. FILE: 30DOVER\PROJECT\PROJECT.DGN AND FILE: 21152.701.
4) PLAN OF EASEMENT - RATES - WEED - CITY OF DOVER ENGINEERING DIV. SCALE: 1" = 100', DATED: NOVEMBER 1976, BY: DOVER ENGINEERING DEPARTMENT, RECORDED S.C.R.D. VOLUME 1011, PAGE 252.
5) PLAN OF LAND - ESTATE OF MARGARET M. COLEMAN, DOVER, NEW HAMPSHIRE, SCALE: 1" = 20', DATED: OCTOBER 13, 1936, BY: G.L. DAVIS & ASSOCIATES, RECORDED S.C.R.D. POCKET E, FOLDER 2, PLAN 21.
7) I HEREBY CERTIFY THAT THIS PLAN IS BASED ON AN ACTUAL GROUND SURVEY PERFORMED BY A TOTAL STATION OF ME OR THOSE UNDER MY DIRECT SUPERVISION; THAT ALL MONUMENTS SHOWN EXIST AS DESCRIBED; AND BEARS, SAID SURVEY MEETS OR EXCEEDS THE MINIMUM PRECISION REQUIREMENTS FOR SURVEY CLASSIFICATION "U" AS SET FORTH IN TABLE 4.01 OF THE NEW HAMPSHIRE CODE OF ADMINISTRATIVE RULES OF THE BOARD OF LICENSURE FOR LAND SURVEYORS.
LEGEND
S.I.P.(No) - STEEL PIPE FOUND
M.B.(No) - MASONRY BOUND FOUND
NHHB - NEW HAMPSHIRE HIGHWAY BOUND
PK - PARK NAIL SET
WV - WATER VALVE
CB - CATCH BASIN
SMH - SEWER MANHOLE
UP - UTILITY POLE
S.C.R.D. - STRAFFORD COUNTY REGISTRY OF DEEDS
-o- UP - UTILITY POLE WITH GUYS
EOP - EDGE OF PAVEMENT
ROW - RIGHT OF WAY
ELEV. - ELEVATION
S - SEWER LINE
W - WATER LINE
OHU - OVERHEAD UTILITY LINES
UGU - UNDERGROUND UTILITY LINES
LOCATION PLAN
(1 INCH = 1000 FEET)
DOVER
DURHAM
NEWINGTON
LOCUS
No. Bearing Distance
L1 N65°08'53"E 23.69'
L2 N01°25'21"E 16.69'
L3 S76°34'39"E 25.00'
L4 S16°25'21"W 16.69'
L5 N65°08'53"E 73.10'
L6 N44°39'39"W 27.52'
L7 N76°34'39"E 18.74'
1 11/17/22 Revised Per Planning Board
NO. DATE DESCRIPTION BY CHK
REVISIONS
22-2410 BOUNDARY 22-05 15-20
PROJECT NO. TYPE FIELDBOOK & PAGES

Exh. C

Christopher A. Wyskiel

From: Robert Gifford <bjgifford@comcast.net>
Sent: Thursday, January 18, 2024 12:56 PM
To: Christopher A. Wyskiel
Subject: Fwd: Dover, 306 Dover Point Road, Slovenski, , Map L lot 11
Attachments: Slovenski Revised 1-4-24.pdf; Slovenski EC Plan.pdf

Atty Chris Wyskiel,
Bob Gifford here and I received a call back from Engineer Jim Hewitt, Div 6.

He said he would Email the info he had received about the property at 306 Dover Pt.Road owned by Brian Slovenski and here it is below,
Sent from my iPhone
Bob Gifford
Begin forwarded message:

> **From:** "Hewitt, James" <James.A.Hewitt@dot.nh.gov>
> **Date:** January 18, 2024 at 12:37:52 PM EST
> **To:** bjgifford@comcast.net
> **Cc:** "Appleton, Roger" <Roger.L.Appleton@dot.nh.gov>
> **Subject: FW: Dover, 306 Dover Point Road, Slovenski, , Map L lot 11**
>
> Bob:
>
> As discussed, see below and attached.
>
> Regards,
>
> Jim Hewitt
>
> James A. Hewitt, P.E.
> NHDOT District 6
> 271 Main Street, P.O. Box 740
> Durham, NH 03824
> 603-868-1133

From: Appleton, Roger <Roger.L.Appleton@dot.nh.gov>
Sent: Friday, January 12, 2024 6:22 AM
To: Hewitt, James <James.A.Hewitt@dot.nh.gov>; 'Steve Haight' <shaight@civilworksne.com>
Cc: Kevin McEneaney <kevin@surveynh.com>
Subject: RE: Dover, 306 Dover Point Road, Slovenski, , Map L lot 11

Steve,

Exh. D

I think there was a typo in Jim's email, per RSA the lot of record needs **500** feet to possibly get a 3rd driveway.

Thanks,

Roger Appleton, P.E.
Assistant District Six Engineer
(603) 868-1133

From: Hewitt, James <James.A.Hewitt@dot.nh.gov>
Sent: Thursday, January 11, 2024 4:25 PM
To: 'Steve Haight' <shaight@civilworksne.com>; Appleton, Roger <Roger.L.Appleton@dot.nh.gov>
Cc: Kevin McEneaney <kevin@surveynh.com>
Subject: RE: Dover, 306 Dover Point Road, Slovenski, , Map L lot 11

Hi Steve:

At this point in the process, it would be best to have you submit a driveway permit application and all the recorded plan and deed information back to 1971 needed to establish the NHDOT lot of record. We note the current lot has approximately 274 feet of frontage on Dover Point Road. A lot of record needs at least 300 feet to have the third proposed drive.

As per attached , it's a rather complicated section of Dover Point Road so all access points from Dover Point Road / parallel right of way / easements should be shown on the plans.

Regards,

Jim Hewitt

James A. Hewitt, P.E.
NHDOT District 6
271 Main Street, P.O. Box 740
Durham, NH 03824
603-868-1133

From: Steve Haight <shaight@civilworksne.com>
Sent: Wednesday, January 10, 2024 4:55 PM
To: Appleton, Roger <Roger.L.Appleton@dot.nh.gov>; Hewitt, James <James.A.Hewitt@dot.nh.gov>
Cc: Kevin McEneaney <kevin@surveynh.com>
Subject: Slovenski 306 Dover Point Dover NH Map L lot 11

EXTERNAL: Do not open attachments or click on links unless you recognize and trust the sender.

Good afternoon Roger

Attached are the existing conditions plan and a concept plan for a proposed development off the east side of Dover Point Road (Dover). The parcel is currently occupied by a single family residence and a detached garage.

Exh. D

I would like to come meet with you to review access to the parcel. There is access to 2 back lots along the side line of the parcel. I am not able to find any NHDOT driveway permits or access limitations for the subject lot.

Let me know when you would be available to meet

Thank you

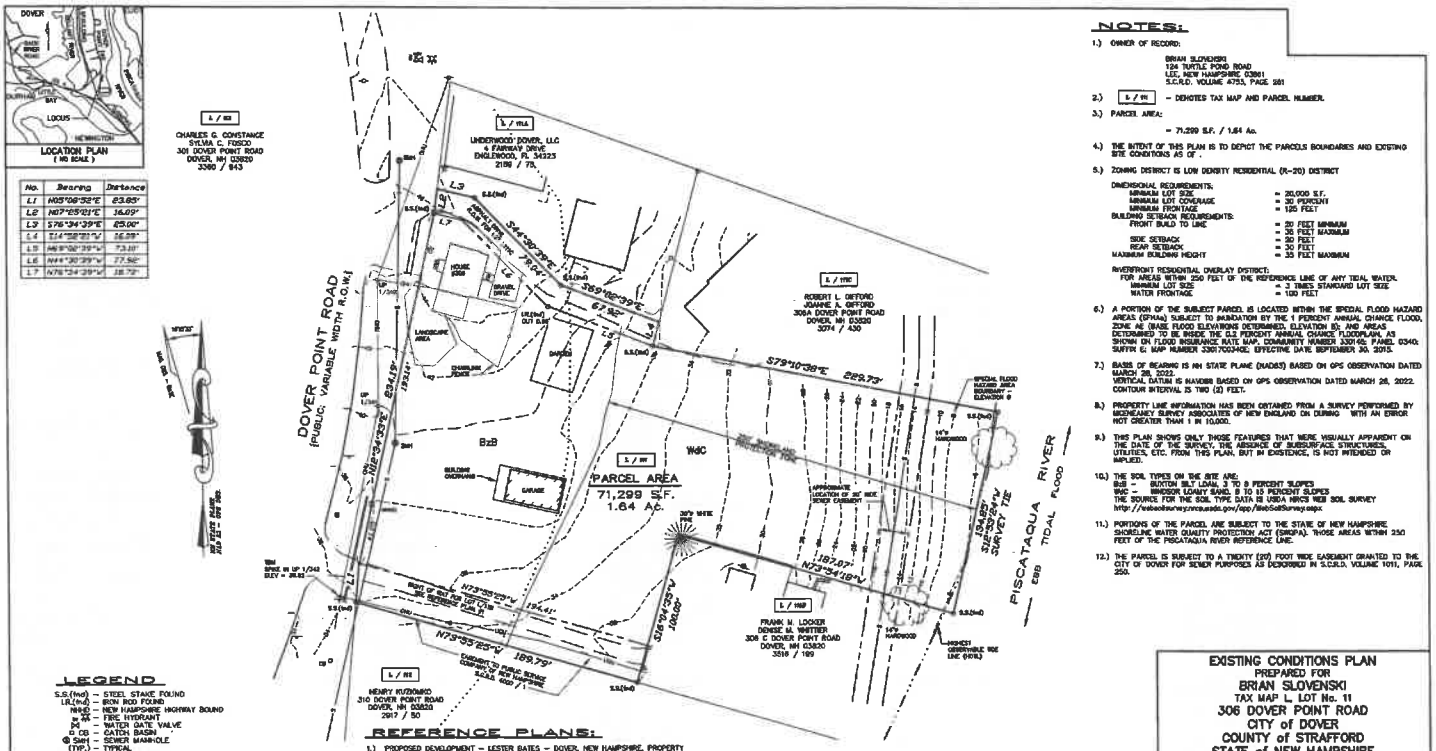
Steve

Stephen J. Haight, P.E.
President
Civilworks New England/Haight Engineering, PLLC
181 Watson Road
P.O. Box 1166
Dover, New Hampshire 03821
O: 603.749-0443
C: 603.817.6651
F: 603.749.7348
shaight@civilworksne.com
www.civilworksne.com

Exh. D


Untitled Map
Write a description for your map.
306 Dover Point Rd
Google Earth

Exh. D



No.	Bearing	Distance
L1	N05°08'32"E	23.85'
L2	N07°25'21"E	14.69'
L3	S76°34'29"E	25.00'
L4	S14°58'21"W	16.28'
L5	N69°00'39"W	73.10'
L6	N44°30'29"W	77.56'
L7	N76°34'29"W	18.72'

NOTES:

1.) OWNER OF RECORD:
BRIAN SLOVENSKI
124 TURTLE POND ROAD
LEE, NEW HAMPSHIRE 03861
S.C.R.D. VOLUME 4753, PAGE 281

2.) L / 11 – DENOTES TAX MAP AND PARCEL NUMBER.

3.) PARCEL AREA:
= 71,299 S.F. / 1.64 Ac.

4.) THE INTENT OF THIS PLAN IS TO DEPICT THE PARCELS BOUNDARIES AND EXISTING SITE CONDITIONS AS OF ; .

5.) ZONING DISTRICT IS LOW DENSITY RESIDENTIAL (R-20) DISTRICT

DIMENSIONAL REQUIREMENTS:

MINIMUM LOT SIZE	= 20,000 S.F.
MINIMUM LOT COVERAGE	= 30 PERCENT
MINIMUM FRONTAGE	= 125 FEET
BUILDING SETBACK REQUIREMENTS:	
FRONT BUILD TO LINE	= 20 FEET MINIMUM
	= 30 FEET MAXIMUM
SIDE SETBACK	= 30 FEET
REAR SETBACK	= 30 FEET
MAXIMUM BUILDING HEIGHT	= 35 FEET MAXIMUM

RIVERFRONT RESIDENTIAL OVERLAY DISTRICT:
FOR AREAS WITHIN 250 FEET OF THE REFERENCE LINE OF ANY TIDAL WATER.

MINIMUM LOT SIZE	= 3 TIMES STANDARD LOT SIZE
WATER FRONTAGE	= 100 FEET

6.) A PORTION OF THE SUBJECT PARCEL IS LOCATED WITHIN THE SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1 PERCENT ANNUAL CHANCE FLOOD, ZONE AE (BASE FLOOD ELEVATIONS DETERMINED, ELEVATION 8); AND AREAS DETERMINED TO BE INSIDE THE 0.2 PERCENT ANNUAL CHANCE FLOODPLAIN, AS SHOWN ON FLOOD INSURANCE RATE MAP, COMMUNITY NUMBER 330160; PANEL 0340; SUFFIX G; MAP NUMBER 33017C0340G, EFFECTIVE DATE SEPTEMBER 30, 2015.

7.) BASIS OF BEARING IS NH STATE PLANE (NAD83) BASED ON GPS OBSERVATION DATED MARCH 28, 2022.
VERTICAL DATUM IS NAVD88 BASED ON GPS OBSERVATION DATED MARCH 28, 2022.
CONTOUR INTERVAL IS TWO (2) FEET.

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

9.) THIS PLAN SHOWS ONLY THOSE FEATURES THAT WERE VISUALLY APPARENT ON THE DATE OF THE SURVEY. THE ABSENCE OF SUBSURFACE STRUCTURES, UTILITIES, ETC. FROM THIS PLAN, BUT IN EXISTENCE, IS NOT INTENDED OR IMPLIED.

10.) THE SOIL TYPES ON THE SITE ARE;
BzB – BUXTON SILT LOAM, 3 TO 8 PERCENT SLOPES
WgC – WINDSOR LOAMY SAND, 8 TO 15 PERCENT SLOPES
THE SOURCE FOR THE SOIL TYPE DATA IS USDA NRCS WEB SOIL SURVEY
http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx

11.) PORTIONS OF THE PARCEL ARE SUBJECT TO THE STATE OF NEW HAMPSHIRE SHORELINE WATER QUALITY PROTECTION ACT (SWQPA). THOSE AREAS WITHIN 250 FEET OF THE PISCATAQUA RIVER REFERENCE LINE.

12.) THE PARCEL IS SUBJECT TO A TWENTY (20) FOOT WIDE EASEMENT GRANTED TO THE CITY OF DOVER FOR SEWER PURPOSES AS DESCRIBED IN S.C.R.D. VOLUME 1011, PAGE 250.

LEGEND

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

REFERENCE PLANS:

1.) PROPOSED DEVELOPMENT – LESTER BATES – DOVER, NEW HAMPSHIRE, PROPERTY LINES – TOPOGRAPHY, SCALE: 1" = 20'; DATED: SEPTEMBER 1963, BY: G.L. DAVIS & ASSOCIATES. RECORDED S.C.R.D. POCKET 11, FOLDER 2, PLAN 17A.

2.) LOT LINE REVISION – DOVER POINT ROAD, DOVER, N.H. FOR MARIE PEARSON 1989 TRUST & FREDERICK W AND PAMELA PEARSON AND FREDERICK PEARSON III AND EDGAR R. & ANNE S. CROTHERS. SCALE: 1" = 20'; DATED: DECEMBER 1999, REVISED THROUGH: 2/12/00; BY: NORWAY PLAINS ASSOCIATES, INC. RECORDED S.C.R.D. PLAN 58-21.

3.) STATE OF NEW HAMPSHIRE – STATE HIGHWAY DEPARTMENT – PLAN AND PROFILE OF PROPOSED U.S. PUBLIC WORKS PROJECT NHH 202 EAST SIDE ROAD – FISCAL YEAR 1933. PLANS ON FILE WITH NH D.O.T. FILE: 50968.ROWLAWRUPS AND FILE: P1852.PDF.

4.) PLAN OF EASEMENT – BATES – MEED – CITY OF DOVER ENGINEERING DIV. SCALE: 1" = 100'; DATED: NOVEMBER 1976; BY: DOVER ENGINEERING DEPARTMENT. RECORDED S.C.R.D. VOLUME 1011, PAGE 252.

5.) PLAN OF LAND – ESTATE OF MARGARET M. COLEMAN, DOVER, NEW HAMPSHIRE. SCALE: 1" = 30'; DATED: OCTOBER 13, 1950; BY: G.L. DAVIS & ASSOCIATES. RECORDED S.C.R.D. POCKET 6, FOLDER 2, PLAN 27.

NO.	DATE	DESCRIPTION	BY	CHK
		REVISIONS		
22-2410		BOUNDARY	22-05	15-30
PROJECT NO		TYPE	FIELDBOOK & PAGES	

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

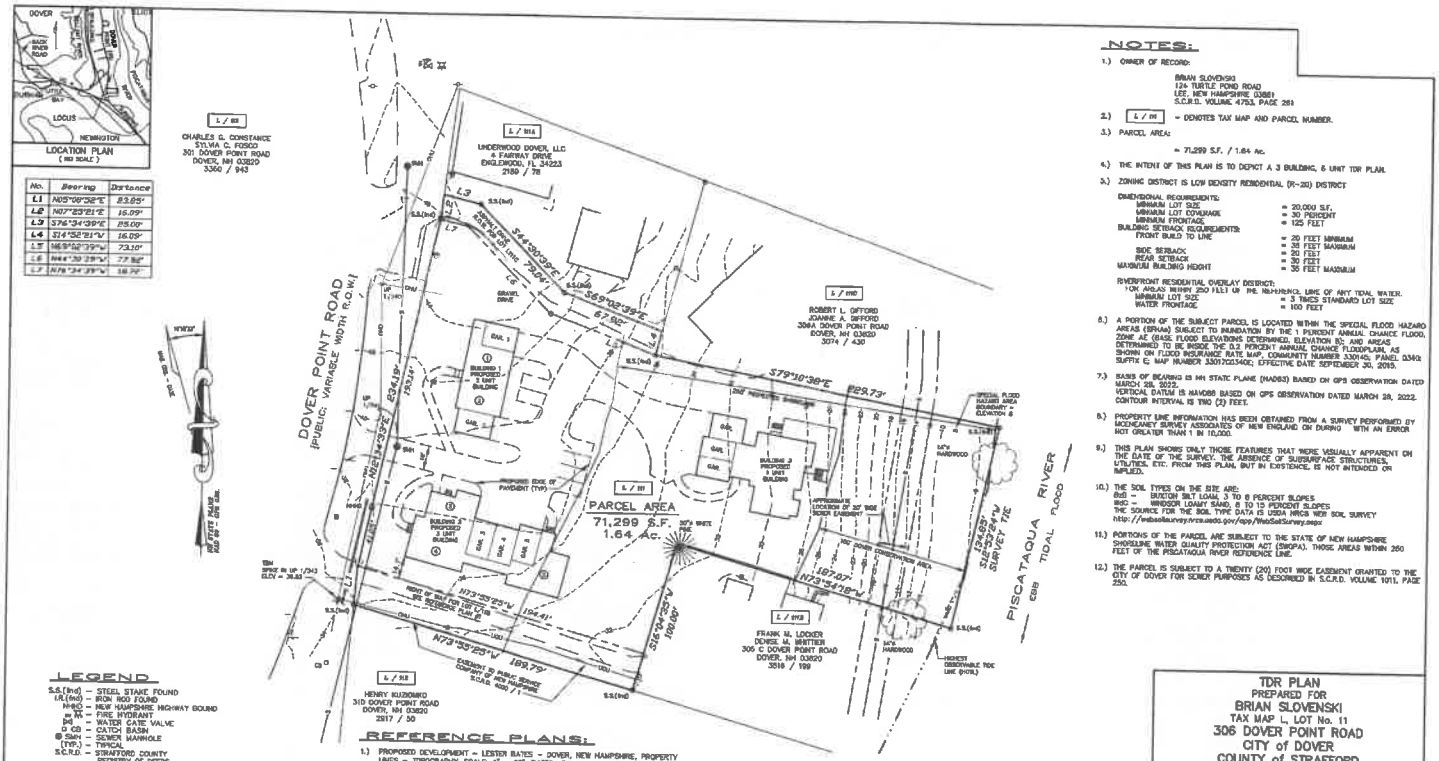
EXISTING CONDITIONS PLAN
PREPARED FOR
BRIAN SLOVENSKI
TAX MAP L, LOT No. 11
306 DOVER POINT ROAD
CITY of DOVER
COUNTY of STRAFFORD
STATE of NEW HAMPSHIRE

PLANS BY: MSA — FILE: 7481 [PROJECTS] – 2410.dwg
SCALE: 1" = 30' — DATES: APRIL 2022

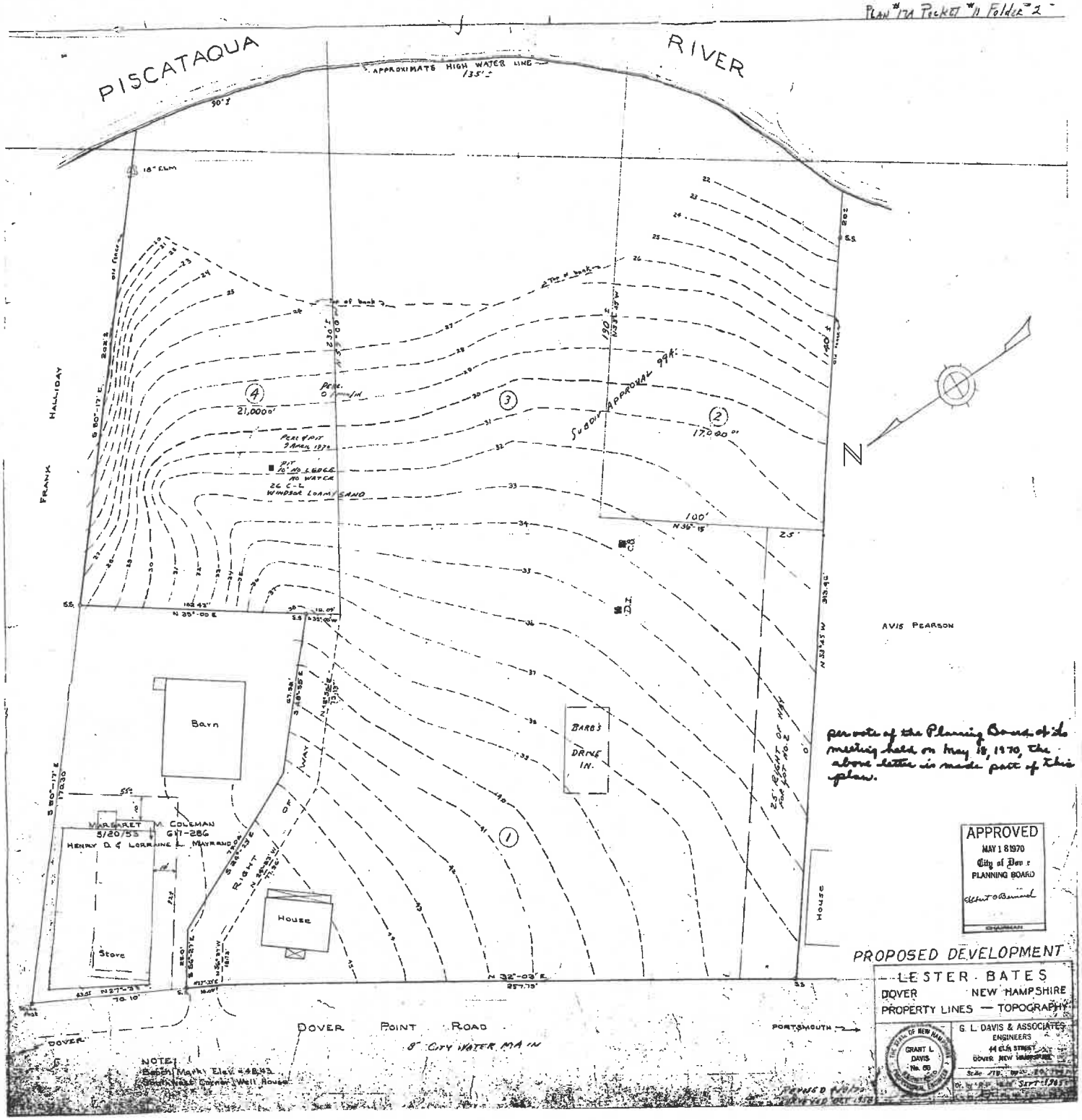
30 15 0 15 30 60 90 120

McEneaney Survey Associates
of NEW ENGLAND
P.O. Box 881 – 24 CHESTNUT STREET
DOVER, NH 03820 (603) 742-0911
SURVEYING – PLANNING – CONSULTING

Exh. D


DOVER
LOCUS
NEWINGTON
LOCATION PLAN
(NO SCALE)
L / 88
CHARLES G. CONSTANCE
SYLVIA C. FOSCO
301 DOVER POINT ROAD
DOVER, NH 03820
3360 / 943
L / 114
UNDERWOOD DOVER, LLC
4 FAIRWAY DRIVE
ENGLEWOOD, FL 34223
2180 / 78
L / 110
ROBERT L. GIFFORD
JOANNE A. GIFFORD
306A DOVER POINT ROAD
DOVER, NH 03820
3074 / 430
L / 113
FRANK M. LOCKER
DENISE M. WHITTIER
305 C DOVER POINT ROAD
DOVER, NH 03820
3516 / 199
L / 115
HENRY KUZIOWICZ
310 DOVER POINT ROAD
DOVER, NH 03820
2917 / 50
DOVER POINT ROAD
(PUBLIC, VARIABLE WIDTH R.O.W.)
PARCEL AREA
71,299 S.F.
1.64 Ac.
PISCATAQUA RIVER
— EBB TIDAL FLOOD
L3
L7
L8
S44°30'09"E
788.41'
S69°02'39"E
67.50'
S79°10'38"E
229.73'
S25°53'57"W
134.69'
SURVEY TIE
N73°41'18"W
187.07'
S16°04'25"W
108.66'
N73°35'23"W
193.79'
N61°39'39"E
824.19'
N73°25'23"W
104.41'
N73°35'23"W
193.79'
N/F HARDWOOD
N/F HARDWOOD
HIGHEST OBSERVABLE TIDE LINE (HOTL)
SPECIAL FLOOD HAZARD AREA BOUNDARY = ELEVATION 8
BUILDING 1 PROPOSED = 2 UNIT BUILDING
BUILDING 2 PROPOSED 3 UNIT BUILDING
BUILDING 3 PROPOSED 3 UNIT BUILDING
BUILDING 3 PROPOSED 3 UNIT BUILDING
BUILDING 4 PROPOSED 3 UNIT BUILDING
BUILDING 5 PROPOSED 3 UNIT BUILDING
GAR. 1
GAR. 2
GAR. 3
GAR. 4
GAR. 5
GAR. 6
PROPOSED EDGE OF PAVEMENT (TYP)
GRAVEL DRIVE
APPROXIMATE LOCATION OF 20' WIDE SEWER EASEMENT
SEWER EASEMENT CONSERVATION AREA
EASEMENT TO PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE
S.C.R.D. BOOK 1111, PAGE 1
EDGE OF PAVEMENT VARIES
TBM SPIKE IN UP. 12"Ø ELEV = 38.83
SSMH
DHW
S.S.(Inv)
W
OHU
N/F
SET PK NAIL AT EDGE OF ROAD
SET REBAR AND CAP AT ROW BEND
SET REBAR AND CAP AT ROW BEND
SET REBAR AND CAP AT ROW BEND

PLAN #17A PACKET #1 FOLDER #2



per vote of the Planning Board at its meeting held on May 18, 1970, the above letter is made part of this plan.

APPROVED
MAY 18 1970
City of Dover
PLANNING BOARD
Albert O Bernard
CHAIRMAN

PROPOSED DEVELOPMENT
LESTER BATES
DOVER NEW HAMPSHIRE
PROPERTY LINES — TOPOGRAPHY

THE SEAL OF NEW HAMPSHIRE
GRANT L. DAVIS
No. 65
PROFESSIONAL ENGINEER

G. L. DAVIS & ASSOCIATES
ENGINEERS
44 CLAY STREET
DOVER NEW HAMPSHIRE
Scale 1"=[illegible]
Sept. 1969

CITY OF DOVER, NEW HAMPSHIRE 03820

ANTHONY A. McMANUS
CITY ATTORNEY

TEL. 742-7916

May 18, 1970

Planning Board
City of Dover

Dear Sirs,

This is in answer to your recent inquiry relative to the proposed Bates subdivision at Dover Point.

It is my opinion that Mr. Bates may be granted approval of his proposed plan subject to the Board's acceptance of the width of the proposed right-of-way. The Board may deny the application if it feels that the 16-foot width is not consistent with the intent and requirements of the subdivision ordinance.

Mr. Bates should perhaps be made aware that what he is doing, in effect, is creating two driveways which may not be used at any later time to serve additional lots. They could not be accepted as City Streets in their present condition and no City services will be available beyond the Dover Point Road sideline. In addition, it would appear that the right-of-way to Lot #4, as proposed, could never be deeded or used as a street in any case without a variance.

If you have any further questions about this please let me know.

Yours truly,
Anthony McManus
City Attorney

A TRUE COPY ATTEST:
Charles A. Crooco, City Clerk

WITH PLAN #17A PACKET #1 FOLDER #2

CITY OF DOVER, NEW HAMPSHIRE 03820

PLANNING DEPARTMENT
MUNICIPAL BUILDING

TEL. 603-742-5258

May 26, 1970

Mrs. Marjorie Holmes
Register of Deeds
Strafford County Court House
Second Street
Dover, New Hampshire

Dear Mrs. Holmes: Re: Subdivision of Mr. Lester Bates

This is to certify that the Planning Board has approved for final approval Lots 2 and 4 of the attached plan on May 18/70 at a Special Meeting of the Board:

Respectfully submitted,
Albert O Bernard
Albert O. Bernard
Chairman

AOB:c

Exhibit

WITH PLAN #17A POCKET #11 FOLDER #2



CITY OF DOVER, NEW HAMPSHIRE 03820

ANTHONY A. McMANUS
CITY ATTORNEY

TEL. 742-7916

May 18, 1970

Planning Board
City of Dover

Dear Sirs,

This is in answer to your recent inquiry relative to the proposed Bates subdivision at Dover Point.

It is my opinion that Mr. Bates may be granted approval of his proposed plan subject to the Board's acceptance of the width of the proposed right-of-way. The Board may deny the application if it feels that the 16-foot width is not consistent with the intent and requirements of the subdivision ordinance.

Mr. Bates should perhaps be made aware that what he is doing, in effect, is creating two driveways which may not be used at any later time to serve additional lots. They could not be accepted as City Streets in their present condition and no City services will be available beyond the Dover Point Road sideline. In addition, it would appear that the right-of-way to Lot #4, as proposed, could never be deeded or used as a street in any case without a variance.

If you have any further questions about this please let me know.

Yours truly,

Anthony McManus
City Attorney

A TRUE COPY ATTEST:
Charles A. Crocco, City Clerk

Exh. E

WITH PLAN # 17A PACKET #11 FOLDER #2



CITY OF DOVER, NEW HAMPSHIRE 03820

PLANNING DEPARTMENT
MUNICIPAL BUILDING

TEL. 603-742-5259

May 26, 1970

Mrs. Marjorie Holmes
Register of Deeds
Strafford County Court House
Second Street
Dover, New Hampshire

Dear Mrs. Holmes: Re: Subdivision of Mr. Lester Bates

This is to certify that the Planning Board has approved for final approval Lots 2 and 4 of the attached plan on May 18/70 at a Special Meeting of the Board.

Respectfully submitted,

Albert C Bernard.

Albert C. Bernard
Chairman

ACB:c

Exh. E

CITY OF DOVER

PLANNING BOARD - STAFF MEMO FILE #SITE-2023-0013

Application Type:	Site Review
Applicant(s):	TF Moran
Owner(s):	256-264 Central Avenue, LLC
Location:	256-264 Central Ave, LLC/Kirkland Street (Assessor's Map 9, Lots 111 & 112)
Meeting Date:	January 23, 2024

INTENT: Proposal is to replace gravel parking with ~10,595 square feet of paved parking related to their renovation of the buildings.

UNITS PROPOSED: N/A

AGENDA ITEM #: 4-D

ACREAGE:
Lot 111= 0.522± ac. / 22,747± sq. ft.
Lot 112= 0.167± ac. / 7,287± sq. ft.

ZONING DISTRICT:
CBD-G

EXISTING USE: Previously a Restaurant/Mixed Use/Vacant building

PROPOSED USE: Commercial with Paved Parking; Phase I: Paved parking (Planned for future is Phase II: Renovation of the existing structures)

SURROUNDING USE:
Commercial/Residential

ZBA ACTION: N/A

ATTACHMENTS: Application materials including site plan

APPLICATION IS COMPLETE:
Yes

REGIONAL IMPACT: No

NOTICES SENT: Abutter notices were sent by certified mail to all abutters for this meeting

PERMITS REQUIRED:
N/A

TRC: 9/21/2023 & 11/30/2023

Summary of Request and Background
The applicant is proposing to create a parking lot behind 256-264 Central Ave off of Kirkland Street for a private parking lot in relation to the renovation of the buildings at 256-264 Central Ave. The renovations do not cross the threshold of needing site plan review but the parking area is large enough to require TRC and Planning Board review.

This application was most recently before the Technical Review Committee on September 21, 2023 and November 30, 2023 (minutes attached).

Being a project in the Central Business District-General Sub-District, streetscape requirements such as waste bins, benches, and street trees are required and provided except for the street trees. The applicant is proposing other landscaping instead of a street tree due to sight distance concerns brought up at TRC and is requesting a waiver as described below.

Summary of Waiver Requests:
A waiver of §153-14-G.(1)(f) (street tree every 35') is being requested by the applicant due to sight line concerns if trees were placed in this location to comply.

Consistency with Land Use Regulations –Waivers/Relief
Section 153-21 of the Site Plan Review Regulations state 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 believes the applicant's rational for the waiver and additional landscaping meets criterion #2.

Consistency with Land Use Regulations – Site Plan
§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 - Waivers/Relief:
The Planning Department recommends that the Planning Board accept the application as complete, note it is not of regional impact, hold a public hearing, make the necessary and supporting findings of fact, and vote to grant the waivers with the following subsequent condition:

Subsequent Condition to be Met Prior to the Signing of the Plans:
1. Add a note that the Planning Board approved waiver for street trees every 35' §153-14-G.(1)(f) and found that the criteria of Chapter 153-21.A have been met.

CITY OF DOVER

PLANNING BOARD - STAFF MEMO FILE #SITE-2023-0013

Application Type:	Site Review
Applicant(s):	TF Moran
Owner(s):	256-264 Central Avenue, LLC
Location:	256-264 Central Ave, LLC/Kirkland Street (Assessor's Map 9, Lots 111 & 112)
Meeting Date:	January 23, 2024

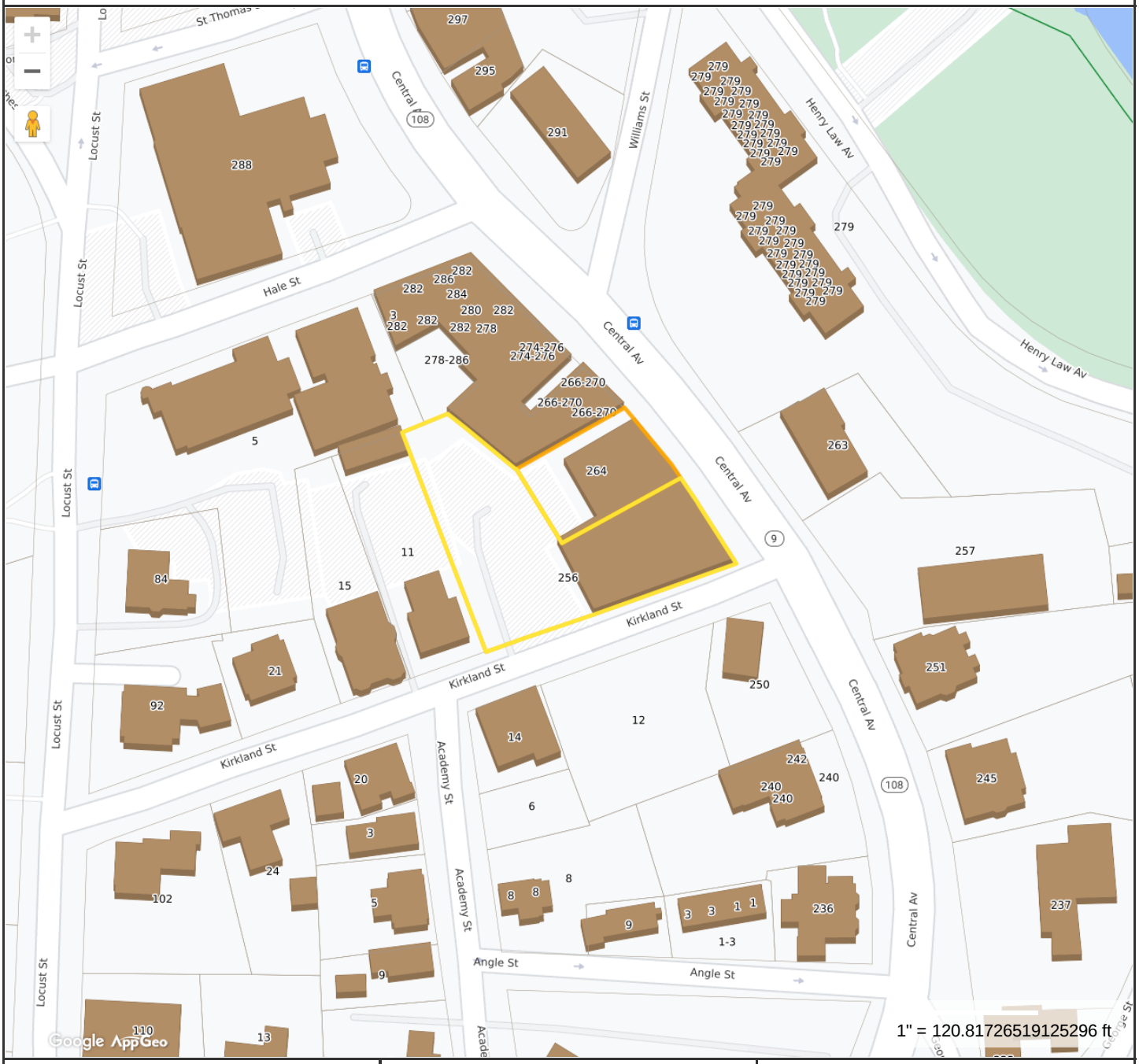
STAFF RECOMMENDATION – Site Plan:
The Planning Department recommends that the Planning Board make the necessary and supporting findings of fact, and vote to approve the Site Plan with the following subsequent conditions:

Subsequent Conditions to Be Met Prior to Signing of the Plans:
1. Planning Board acknowledge merger and applicant records at SCRD.
2. Provide letter to serve from Eversource.
3. Revise plan and resubmit for Final Planning Board signature with the following revisions:
   3.1. Add owner's signature;
   3.2. Add professional stamps and signatures
   3.3. Label bench and waste bins on plan view
   3.4. Add detail of bench and waste bins that meet City standard.
   3.5. Add lighting detail that meets City standard.
   3.6. Revise tree caliper to a minimum of 3"
   3.7. Add public parking meter for Kirkland with coordination with Parking Manager.
   3.8. Revise parking calculation to account for employees only rather than area.
   3.9. Revise file number to read "SITE-2023-0013"

Subsequent Condition to Be Met Prior to Construction:
4. A site construction sign with the contact information for the general contractor must be displayed in a location approved by the City Engineer or Planning Director; and

Subsequent Conditions to Be Met Prior to Completion:
5. Issuance of Certificate of Completion.
6. Payment of Impact Fees as noted in the invoice.
7. Surety or other form of security acceptable to the City is provide for any unfinished work.

SITE-2023-0013 264 & 256 CENTRAL AVENUE



Property Information

Property ID	09111-000000
Location	256 CENTRAL AV
Owner	256-264 CENTRAL LLC
Land Use	
Zoning Code	CBD-G

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 SITE-2023-0013
FOR CITY OF DOVER, N.H.

Plan Type:	Site Plan - Major	**Project:**		**App Date:**	09/05/2023
Work Class:	Alteration / Addition	**District:**	None	**Exp Date:**	NOT AVAILABLE
Status:	In Review	**Square Feet:**	0.00	**Completed:**	NOT COMPLETED
Valuation:	$0.00	**Assigned To:**	Blonigen, Rachel	**Approval Expire Date:**	

Description: The project includes the redevelopment of an existing parking lot associated with 256 Central Avenue which is accessed via Kirkland Street and the addition of a walkway and greenspace at 264 Central Avenue.

Parcel:		**Address:**		**Zone:**	
09112-000000		264 Central Av Dover, NH		CBD-G(Central Business District - Genera	
09111-000000	Main	256 Central Av Dover, NH	Main		

Engineer
Chris Rice
Home: (603) 431-2222

Applicant
Jason Cook
170 Commerce Way Suite 102
Suite 102
Portsmouth, NH 03801
Business: (603) 431-2222

Plan Custom Fields

Total	0	Total2	0	Total3	10595
Total4	0	Total5	0	Total6	0
Total7	0	Total8	0	Total9	0
Street Classification Type	Municipal	Net Change in # Parking Spaces (+/-)	25	Water Service	Municipal
Recording Number		Sewer Service	Municipal	Total Acres (GIS)	0.689
Deed Book	5117	Total SQFT	30012.8	Deed Page	240
Deed Date		Proposed Property Use	The proposed use includes the redevelopment of of gravel parking lot to a paved parking lot with walkway access to the lot from Central Avenue. The existing building on-site is planned to be renovated.	Area of Parcel to be Developed (SQFT)	17766
Number of Parking Spaces Existing	0	Number of Parking Spaces Proposed	25	Type of Building to be Built	Existing Building to remain
Estimated Construction Value	150000.00	Refuse Removal	Private	Is there an existing Conservation Easement?	No
Existing Conservation Easement Details		TotalImpactFeeSDTOD	0.00	TotalImpactFeeTHTOD	0.00
TotalImpactFee23FTOD	0.00	TotalImpactFeeA4TOD	0.00	TotalImpactFeeMHTOD	0.00
TotalImpactFeeADUTOD	0.00	TotalImpactFeeAONRTOD	0.00	TotalImpactFeeAR55TOD	0.00
TotalImpactFeeAR62TOD	0.00	Sub Total Residential	0.00	TotalImpactFeeRIRCTOD	0.00
TotalImpactFeeOCSTOD	0.00	TotalImpactFeeITWCTOD	0.00	TotalImpactFeeNHALTOD	0.00
TotalImpactFeeOIUTOD	0.00	TotalImpactFeeAFAOTOD	0.00	Sub Total Non-Residential	0.00
Total of Impact Fees to be Assessed	0.00				

PLAN SNAPSHOT REPORT (SITE-2023-0013)

Attachment File Name	Added On	Added By	Attachment Group	Notes
Signature_Jason_Cook_9/5/2023.jpg	09/05/2023 14:35	Cook, Jason		Uploaded via CSS
2023.11.30_PlanningTechnicalReviewCommittee.Agenda.pdf	11/09/2023 10:32	Blonigen, Rachel		
2023.09.21_PlanningTechnicalReviewCommittee.256_264_CentralAve_SITE-2023-0013.pdf	01/10/2024 11:08	Blonigen, Rachel		Approved TRC Minutes
2023.11.30_PlanningTechnicalReviewCommittee.256_264_CentralAve_SITE-2023-0013.pdf	01/10/2024 11:08	Blonigen, Rachel		Approved TRC Minutes

Note	Created By	Date and Time Created
1. Requires 2nd TRC submittal- RLB	Rachel Blonigen	10/12/2023 15:37

Invoice No.	Fee		Fee Amount	Amount Paid
INV-00004936	Planning General Application Fee		$200.00	$200.00
		Total for Invoice INV-00004936	$200.00	$200.00
INV-00004967	Planning Creation / Printing of Abutter Labels		$30.00	$30.00
	Planning First Class Mailing		$16.00	$16.00
	Planning Public Notice in Newspaper		$120.00	$120.00
	Planning Certified Mailing to Abutters		$200.00	$200.00
	Planning Certified Mailing to Application Contacts		$20.00	$20.00
		Total for Invoice INV-00004967	$386.00	$386.00
INV-00004968	Planning Impervious Paved Area Fee		$741.65	$741.65
		Total for Invoice INV-00004968	$741.65	$741.65
		Grand Total for Plan	**$1,327.65**	**$1,327.65**

Meeting Type	Location	Scheduled Date	Subject
Technical Review Committee Meeting v.1	City Hall, Second Floor Conference Room	11/30/2023	Technical Review Committee Meeting

Meeting Custom Fields

TRC Meeting Next Steps	Resubmit for 2nd TRC

Submittal Name	Status	Received Date	Due Date	Complete Date	Resubmit	Completed
Land Use Plan Technical Review v.1	Requires Re-submit	09/07/2023	10/05/2023	10/12/2023	Yes	Yes

Item Review Name	Department	Assigned User	Status	Assigned Date	Due Date	Completed Date
Business Development	Business Development	Burdin, James	Requires Re-submit	09/07/2023	10/05/2023	10/12/2023

Comments: • The proposed landscape and hardscape design appears to be an improvement to this site and seem to make it a more attractive and manageable location for operating a business.
• The applicant is encouraged to communicate proactively with nearby businesses if site work or construction have the potential to temporarily impact business operations. The Office of Business Development is happy to assist with this outreach if necessary.

Item Review Name	Department	Assigned User	Status	Assigned Date	Due Date	Completed Date
City Engineer	Community Services - Engineering	Mavrogeorge, Kenneth	Requires Re-submit	09/07/2023	10/05/2023	10/12/2023

Comments: • General Comment:
o Applicant and Contractor shall review the Dover Construction Guidelines prior to scheduling a Preconstruction meeting with City staff. The guidelines can be found on the City of Dover Website on the Engineering page. https://www.dover.nh.gov/Assets/government/city-operations/1form/community-services/engineering/engineering-documents/Construction%20Guidelines.pdf
o Coordinate with Community Services (Engineering Department) for latest City Standard Details (drainage trench, etc.).
o Add note that Design Engineer shall provide signed letter to City Engineer certifying that the stormwater management system has been installed in accordance with approved plans.
o Recommend providing 1 sf of snow storage per 10 sf of pavement to be cleared. Verify snow storage meets or exceeds this recommendation or provide note to remove excess snow when storage areas are filled.
o Snow storage areas conflict with landscaping. Recommend storing snow in areas where landscaping won't get in the way.
o Manhole covers shall be Liftmate R-1743-LM or approved equal with 90 deg hinge
o The City recommends that the applicant source out ductile iron piping, which is the City preferred material, in advance commencing construction.
o Change "handicap" references to "accessible" where applicable throughout documents.
o Engineering requests a letter certifying the tie in locations or discharge points for all sump pumps and roof leaders for existing structures on the property.
o Provide construction sign detail per City standards.
o Are EV spaces being provided?
o Provide details for new Sewer Structure proposed in Kirkland.
o Since the proposed improvements cross property lines, are easements required or needed?
o A sewer connection permit from the NHDES will be required if a new SMH is proposed.
• Sheet S-1:
o 256 Central's existing 6 inch water service should be shown extending from Central Ave.
o 264 and 256 also have two water services
• Sheet C-02:
o Call out all curb radii
o Call out the start and end of curb and the types.
o Provide granite curbing in City right of way.
o Please review City curb ramp detail. Flush curb not provided across ramp.
o Please provide additional detail on the proposed sewer service including pipe material, size and slope.
• Sheet C-03:
o Catch basins have very little cover over pipes. Clarify if basins can be relocated to provide additional cover.
o Minimum 12" pipes are typical and called out in a note. It is assumed that the small diameter pipes are provided due to cover issues and not to control flow within the system. Recommend increasing the minimum pipe size if additional cover can be obtained.
o The internal weirs in DMH05 and DMH03 appear to direct flow to the ADS chambers prior to going to Isolator Row. Please clarify if this is intentional or revise configuration of weir.
o There is a dark line to the west of the underground infiltration system that appears to tie into the outlet structure but does not appear on the outlet structure detail. Please identify what this is and provide a detail for how it is installed.
o What is the method of pretreatment for the underground infiltration basin?
o If infiltration is the proposed method of treatment for the site, provide confirmation that the proper separation from ESHWT is provided per NHDES regs.
o Given that the Tree Box Filter and other stormwater components have limited cover, are there other methods of treatment that could be proposed to better work with the site?
• Sheet C-04:
o Lighting appears to spill over the Property Lines. Confirm that the standards of the Dover Code are met.
• Sheet C-06:
o Recommend providing a minimum of 12 inch slab for dumpster pad.
o Trench detail does not meet City standards for backfill and bedding.
o Will dumpster encloser include slats to obscure the dumpster?
• Sheet C-07:
o It is recommended that Catch Basins have oil separator hoods.
o Provide detail for weir structures that include elevation of weirs and
• Sheet C-08:
o Plan shows a Tree Box Filter but this sheet shows a filter media bow without a tree. Which is proposed?
o Recommend adding a note to coordinate with UNH Stormwater Center on installation if their detail is being proposed.
o This detail does not show the proposed pipes entering or exiting the structure.
• Drainage Analysis:
o Recommend providing a flood elevation for the proposed structures in the calculations.
o CB-04 is shown to have an 8 inch pipe in the calculations and 6 inch outlet on the plans. Please clarify which is correct.
o Are there tailwater concerns with the existing infrastructure being tied into? How would the system operate if the downstream existing infrastructure is flowing at capacity?
o Outlet structure for stormtech system shows a 12 inch outlet with a 8" orifice prior to outlet while the detail on Sheet C-07 shows an 18 inch outlet with 2 five inch orifices. Please confirm which is correct.
o Applicant shall review the section 153-14 of the Dover Code and clarify how the design meets or exceeds the City's requirements.

Item Review Name	Department	Assigned User	Status	Assigned Date	Due Date	Completed Date
IS Building Official	Fire / Inspection Services	Maxfield, Jim	Requires Re-submit	09/07/2023	10/05/2023	10/12/2023

Comments: • Clarify the two addresses on the application. Clarify 1 or 2 bldgs.
- Discuss the pad mount transformer and number of electrical services to the structure.
- Site accessibility- dumpster access for future apartments, notes and hardware detail should be provided on plan
- Provide the standard accessibility note indicating design compliance in accordance with applicable accessibility requirements.
- Provide note referencing compliance with NH RSA 155-A :5
- Indicate requirement for pre con meeting within plan set.
- Submitted plans appear to indicate two water lines- please clarify function, gate locations, size and type.
- Discuss the water suppression line, size and FDC location

Item Review Name	Department	Assigned User	Status	Assigned Date	Due Date	Completed Date
Planning	Planning	Benton, Donna	Requires Re-submit	09/07/2023	10/05/2023	10/12/2023

Comments: No comments

Item Review Name	Department	Assigned User	Status	Assigned Date	Due Date	Completed Date
Zoning Administrator	Planning	Kypfer, Natasha	In Review	09/07/2023	10/05/2023	

Item Review Name	Department	Assigned User	Status	Assigned Date	Due Date	Completed Date
Traffic Bureau	Police	Speidel, Marn	Requires Re-submit	09/07/2023	10/05/2023	10/12/2023

Comments: • Reduced travel aisle further and add walkway?
- Add controlling signage
- Paid parking option or permitted area?

Submittal Name	Status	Received Date	Due Date	Complete Date	Resubmit	Completed
Land Use Plan Technical Review v.2	Requires Re-submit	11/07/2023	11/23/2023	01/03/2024	Yes	Yes

Item Review Name	Department	Assigned User	Status	Assigned Date	Due Date	Completed Date
Business Development	Business Development	Burdin, James	Requires Re-submit	11/07/2023	12/05/2023	12/27/2023

Item Review Name	Department	Assigned User	Status	Assigned Date	Due Date	Completed Date
City Engineer	Community Services - Engineering	Mavrogeorge, Kenneth	Requires Re-submit	11/07/2023	11/23/2023	12/27/2023

Comments: Project: SITE-2023-0013
TRC Meeting: Technical Review Committee - Meeting #2 – November 30, 2023
Reviewer: Kenneth A. Mavrogeorge, PE
Checked by: Engineering Staff
Comments:
- Sheet C-02:
o Coordinate with IS on the location of the charger and whether it is ADA accessible. Suggest moving the ADA space to the northern space adjacent to the aisle. Grading to meet ADA slope requirements would likely be required.
o Recommend increasing the space behind the wheel stops to allow for accessible access to the charger.
o Call out all curb radii (see connection to sidewalk).
o Please show location of proposed utility changes (water).
o Provide City standard water and drainage trench details or revise provided trench detail to show requirements for each type of service including bedding and backfill, cover, materials, etc.
- Sheet C-03:
o Test Pit and infiltration Test chart references stormtech chambers. Please revise.
o Add notes to call out the roof leaders, dimensions, and slopes.
- Sheet C-06:
o Recommend providing a minimum of 12-inch slab for dumpster pad. Please identify location of concrete pad detail.
- Sheet C-09:
o Check elevations on the outlet structure. The bottom of the pond does not appear correct.
- Drainage Analysis:
o Recommend providing a flood elevation for the proposed structures in the calculations.
o Applicant shall review the section 153-14 of the Dover Code and clarify how the design meets or exceeds the City's requirements. More specifically applicant shall speak to how the proposed design meets the redevelopment criteria under 153-14(A)(3)(c), 153-14(A)(3)(f).

PLAN SNAPSHOT REPORT (SITE-2023-0013)

Item Review Name	Department	Assigned User	Status	Assigned Date	Due Date	Completed Date
IS Building Official	Fire / Inspection Services	Maxfield, Jim	Requires Re-submit	11/07/2023	11/23/2023	12/27/2023

Item Review Name	Department	Assigned User	Status	Assigned Date	Due Date	Completed Date
Zoning Administrator	Planning	Benton, Donna	Requires Re-submit	11/07/2023	11/23/2023	12/27/2023

Item Review Name	Department	Assigned User	Status	Assigned Date	Due Date	Completed Date
Traffic Bureau	Police	Speidel, Marn	Requires Re-submit	11/07/2023	11/23/2023	12/27/2023

Workflow Step / Action Name	Action Type	Start Date	End Date
Review v.1		09/05/2023 14:48	01/03/2024 14:00
Confirm application complete v.1	Generic Action		09/05/2023 14:48
Technical Review Committee Meeting Agenda v.1	Task	09/05/2023 14:48	09/07/2023 11:49
Land Use Plan Technical Review v.1	Receive Submittal	09/07/2023 0:00	10/12/2023 15:37
Land Use Plan Technical Review v.2	Receive Submittal	11/07/2023 0:00	01/03/2024 13:59
~~Land Use Plan Technical Review v.3~~	Receive Submittal	01/03/2024 0:00	01/03/2024 14:00
Technical Review Committee Meeting v.1	Hold Meeting	10/12/2023 15:36	10/12/2023 15:37
Planning Board v.1		01/03/2024 14:00	
Planning Board Agenda v.1	Task	01/03/2024 14:00	01/11/2024 13:23
Invoice for Notices v.1	Task	01/11/2024 13:22	01/11/2024 13:23
Send Notices v.1	Task	01/11/2024 13:23	
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 Final Review v.1	Receive Submittal		
Land Use Plan Stamped and Signed v.1	Generic Action		
Plans uploaded to Treeno v.1	Generic Action		
Recording v.1	Task		
Property Info Group 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 Complex v.1	Create Sub Permit		
Create / Link to Permit - Site Work, Construction v.1	Create Sub Permit		

Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

NEW HAMPSHIRE 200

December 22, 2023

Gina Cruikshank, Chairperson
Dover Planning Board
288 Central Avenue
Dover, New Hampshire 03820

RE: Minor Site Plan Review
256 & 264 Central Avenue – 256-264 Central Avenue, LLC – Tax Map 9 Lots 111 & 112
Project #47262.01

Dear Chairperson Cruikshank:

On behalf of our client, 256-264 Central Avenue, LLC, please find a Minor Site Plan Application submission relative to the above-referenced project. The following materials are included in this submission:

- **Site Review Application (including Affirmation & Checklist) (8 copies);**
- **Response to November 30th TRC Comments (8 copies)**
- **Aerial Photo Plan (8 copies);**
- **Site Photos and Locus Plan (8 copies);**
- **Drainage Analysis Report (1 copy);**
- **Abutter's List (1 copy); and**
- **Site Development Plans entitled "Site Development Plans, Tax Map 9 Lots 111 & 112, Site Improvement Plans, 256 & 264 Central Avenue, Dover, New Hampshire", prepared by TFMoran, Inc., dated August 31, 2023, last revised December 22, 2023 (8 copies at 22"x34").**

Project Description

The project includes the re-development of an existing parking lot associated with 256 Central Avenue which is accessed via Kirkland Street and the addition of a walkway and greenspace at 264 Central Avenue. The proposed project takes place on two different lots. The existing Tax Map 9 Lot 111 is approximately 0.522 acres and currently contains a restaurant and gravel parking lot. The existing Tax Map 9 Lot 112 is approximately 0.167 acres and currently contains a vacant building and alleyway. The site is within the Commercial Business District Zone and is adjacent to the intersection of Central Avenue and Kirkland Street. The proposed development is proposed on what are currently two adjacent lots. The owner intends to merge the two lots and that process is currently in progress.

Minor Site Plan Review **August 31, 2023**
256 & 264 Central Avenue – 256-264 Central Avenue, LLC – Tax Map 9 Lots 111 & 112
Project #47262.01

The proposed project involves two separate phases. Phase one is to replace the existing compacted gravel parking lot with a paved parking lot. Associated improvements include but are not limited to access, grading, utilities, stormwater management system, lighting, and landscaping. The project proposes a total parking lot footprint of 9,003 s.f. and approximately 17,766 s.f. of disturbance to facilitate the development.

The second phase of the project involves the renovation of the existing buildings on site. The renovations will result in commercial space on the first floor of both 256 & 264 Central Ave, office space on the second floor of 264 Central Ave, and residential space, totaling 9 units, on the third and fourth floor of 264 Central Ave. There will be access to the commercial space from the parking lot through a paver walkway.

Waiver Request #1
Requirement: Dover Site Review Regulations Article IV Site Design and Development Criteria G.(1)(f): Landscaping shall be used to establish and/or maintain an attractive streetscape adjacent to roadways. A minimum of one tree per 35 linear feet, not more than six feet apart for individual shrubs, and not more than three feet between individual perennials and ground covers or portion thereof shall be provided.

Reason for Waiver: The regulation calls for a minimum of one tree per 35 linear feet within a streetscape. Following discussions with the city, and several members of the Dover TRC at the November meeting, it was determined that a tree should not be proposed along Kirkland Street to preserve the sight line in both directions at the parking lot entrance/exit.

We appreciate your consideration of these matters and look forward to presenting this project to you in the near future.

This project previously appeared in front of the Technical Review Committee on September 21st and November 30th.

We appreciate your consideration of these matters and look forward to presenting this project to you in the near future.

We respectfully request that we be placed on the upcoming agenda for the Planning Board Meeting.

If you have any questions or concerns, please do not hesitate to contact us.

Respectfully,
TFMoran, Inc.

Christopher Rice,
Senior Project Manager

CRR/jkc

City of Dover, New Hampshire
SITE REVIEW APPLICATION

[Revision Date: July 1, 2021]

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

APPLICANT AND OWNER INFORMATION

Name of Applicant: 256-264 Central Avenue, LLC Telephone #_____

Address of Applicant: 96 Main Street, Newmarket, NH 03857

E-Mail Address: _____

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

Address of Property Owner: _____

PROPERTY INFORMATION

Address of Property: 256 & 264 Central Avenue, Dover, NH 03839

Assessor's Map # 9 Lot(s) # 111 & 112

Zoning District(s) Central Business District Overlay District(s) General Sub-District

Size of Parcel: 111: 22,747 112: 7,287 sq. ft. 111: 0.522 112: 0.167 ac. Property Deed: Book 5117 Page: 240

Existing Use of Property: Commercial with Gravel Parking

SITE PLAN INFORMATION

Describe Proposed Use: Commercial with Paved Parking

Area of Parcel to be Developed: 17,766 sq. ft.

If Multi-family Residential: Number of Units _____ & Buildings Proposed _____

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

Number of Parking Spaces: Existing Not defined Proposed 25

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

Number of Employees Total: _____ In Maximum Shift: _____

Disposition of Parcel:

Building Footprint _____ sq. ft.

Total Building Area _____ sq. ft.

Paved Area _____ sq. ft.

Building Setbacks:

Front Yard _____ ft.

Rear Yard _____ ft.

Side Yard: Right____ ft. Left_____ ft.

City Water? ✓ Yes ___ No How far is city water from the property? On-site

City Sewer? ✓ Yes ___ No How far is city sewer from the property? On-site

TRANSFER OF DEVELOPMENT RIGHTS INFORMATION

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

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

Relief sought (Check All That Apply):

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

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

_____

_____

_____

BUILDING INFORMATION

Type of Building to be Built: N/A

Height of Building: _____ Finished Floor Elevation: _____

Number of Seats (where applicable) _____

Estimated value of construction: _____Refuse removal: Public/Private (circle one)

WAIVER REQUESTS

Site Review Regulations section(s) to be waived: Article IV Site Design and Development Criteria G.(1)(f)

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

This regulation calls for a minimum of 1 tree per 35 linear feet within a streetscape. Following discussions with several members of the Dover TRC at the November meeting, it was determined that a tree should not be proposed along Kirkland Street to preserve the sight line in both directions at the parking lot entrance/exit.

SURVEYOR INFORMATION

Name of Surveyor and Company (Licensed in N.H.) Brenda Kolbow, TFMoran Inc.

Address 170 Commerce Way, Suite 102, Portsmouth, NH 03801 Telephone #: (603) 431-2222

Professional License #: _____ E-mail address: bkolbow@tfmoran.com

ENGINEER INFORMATION

Name of Engineer and Company (Licensed in N.H.) Jack McTigue, TFMoran Inc.

Address 170 Commerce Way, Suite 102, Portsmouth, NH 03801 Telephone #: (603) 431-2222

Professional License #: _____ E-mail address: jmctigue@tfmoran.com

ARCHITECT INFORMATION

Name of Architect and Company (Licensed in N.H.) N/A

Address _____Telephone #: _____

Professional License #: _____ E-mail address: _____

LANDSCAPE ARCHITECT INFORMATION

Name of Landscape Architect and Company (Licensed in N.H.) N/A

Address _____Telephone #: _____

Professional License #: _____ E-mail address: _____

SOIL SCIENTIST INFORMATION

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

Address _____Telephone #: _____

Professional License #: _____ E-mail address: _____

CONSERVATION EASEMENT HOLDER

Name of Easement Holder: N/A Telephone #_____

Address Easement Holder: _____

SIGNATURES

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

Signature of Property Owner: _____ Date: 9/5/23

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

Signature of Agent: _____ Date: _____

AUTHORIZATION TO ENTER SUBJECT PROPERTY

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

Signature of Property Owner: _____ Date: 9/5/23

AUTHORIZATION TO COMPLETE THE PROJECT ON SUBJECT PROPERTY

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

Signature of Property Owner: _____ Date: 9/5/23

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

CERTIFICATION OF FEES

I, and my successors, hereby certify that I understand that the City of Dover collects impact fees, utility investment fees and inspection fees for projects developed in Dover. Said fees must be paid before a Certificate of Occupancy can be obtained for a structure, unless a different payment schedule is agreed to by the applicant and the City prior to approvals being issued by the Dover Planning Board. Additionally, should the property be in "Current Use" it will be subject to the Land Use Change Tax.

Signature of Property Owner: _____ Date: 9/5/23

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

TFM Since 1968
Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

Abutters List

FISHER
256 & 264 Central Ave, Dover, NH
August 16, 2023
47262.01

Assessors Map		Abutter Name	Mailing Address
Map	Lot		
LOCUS 9	111	ROBBINS SIDNEY FAMILY TRUST	PO BOX 1535 DOVER, NH 03821
LOCUS 9	112	ROBBINS SIDNEY FAMILY TRUST	PO BOX 1535 DOVER, NH 03821
2	1	CITY OF DOVER	288 CENTRAL AVE DOVER, NH 03820
2	22	LOS GATOS LLC	62 LITTLE BAY RD NEWINGTON, NH 03801
9	93	CHRISTIAN E & ANJA W PAULSEN TRUSTEES PAULSEN FAMILY REVOCABLE TRUST OF 2017	55 THORNTON ST PORTSMOUTH, NH 03801-3678
9	94	SHAUN M & SIMONE V FLYNN	85 WISHWALL RD DURHAM, NH 03824-4420
9	95	JASON ZHENG	20 KIRKLAND ST DOVER, NH 03820
9	99	TOLWOOD REALTY GROUP LLC	242 CENTRAL AVE DOVER, NH 03820
9	99-A	FELICITA INC	300 CENTRAL AVE DOVER, NH 03820
9	103	TOLWOOD REALTY GROUP LLC	242 CENTRAL AVE DOVER, NH 03820-4130
9	104	DOVERDOM LLC	100 CONIFER HILL DR #402 DANVERS, MA 01923
9	105	FELICITA INC	300 CENTRAL AVE DOVER, NH 03820
9	106	FELICITA INC	300 CENTRAL AVE DOVER, NH 03820
9	108	KIMBERLY L WADE	21 KIRKLAND ST DOVER, NH 03820
9	109	THE DAVID K BAMFORD REVOCABLE TRUST DAVID K & DEBORAH J BAMFORD CO-TRUSTEES	466 CENTRAL AVE, SUITE 12 DOVER, NH 03820
9	110	THE DAVID K BAMFORD REVOCABLE TRUST DAVID K & DEBORAH J BAMFORD CO-TRUSTEES	466 CENTRAL AVE, SUITE 12 DOVER, NH 03820
9	113A	274-276 CENTRAL LLC	96 MAIN STREET NEWMARKET, NH 03857
9	114	WOODMAN CONDOMINIUMS ASSOCIATION	282 CENTRAL AVENUE DOVER, NH 03820
9	116	ST THOMAS EPISCOPAL CHURCH C/O PARISH ADMINISTRATOR	5 HALE STREET DOVER, NH 03820

9	117	84 86 LOCUST STREET LLC	61 AIRPORT DR #4 ROCHESTER, NH 03867
23	16	DOVER HOUSING AUTHORITY	62 WHITTIER STREET DOVER, NH 03820
23	21	KOSTIS ENTERPRISES LLC	263 CENTRAL AVENUE DOVER, NH 03820
23	22	WILLIAM P MCQUADE & PATRICIA M PALMER MCQUADE FAMILY REVOCABLE TRUST	PO BOX 1409 DOVER, NH 03820
23	23	KOSTIS ENTERPRISES LLC	263 CENTRAL AVENUE DOVER, NH 03820

Civil Engineers / Surveyor	TFMoran, Inc.	170 Commerce Way - Suite 102 Portsmouth, NH 03801
Environmental / Wetlands Scientist		
Architect		

SITE-2023-0013 **256 & 264 CENTRAL AVENUE**

Property ID	Location	Owner 1	Owner 2	Owner Address 1	City	State	Zip	State Class
	288 CENTRAL AV	CITY OF DOVER		288 CENTRAL AVE	DOVER	NH	03820	
	291 CENTRAL AV	LOS GATOS LLC		62 LITTLE BAY RD	NEWINGTON	NH	03801	
	5 7 ACADEMY ST	PAULSEN CHRISTIAN E & ANJA W TRUSTEES	PAULSEN FAMILY REVOCABLE TRUST OF 2017	55 THORNTON ST	PORTSMOUTH	NH	03801-3678	
	3 ACADEMY ST	FLYNN SHAUN M &	FLYNN SIMONE V	85 WISWALL RD	DURHAM	NH	03824-4420	
	20 22 KIRKLAND ST	ZHENG JASON		6036 GERMAN RD	PIPERSVILLE	PA	18947	
	24 KIRKLAND ST	RICHARD PAUL &	GLIDDEN BOBBIE J	24 KIRKLAND ST	DOVER	NH	03820	
	8 ACADEMY ST	TOLWOOD REALTY GROUP LLC		242 CENTRAL AVE	DOVER	NH	03820	
	6 ACADEMY ST	FELICITA INC		300 CENTRAL AVE	DOVER	NH	03820	
	240 CENTRAL AV	TOLWOOD REALTY GROUP LLC		242 CENTRAL AVE	DOVER	NH	03820-4130	
	250 CENTRAL AV	DOVERDOM LLC		100 CONIFER HILL DR #402	DANVERS	MA	01923	
	12 KIRKLAND ST	FELICITA INC		300 CENTRAL AVE	DOVER	NH	03820	
	KIRKLAND ST	FELICITA INC		300 CENTRAL AVE	DOVER	NH	03820	
	92 90 LOCUST ST	FLOROS PETER N TRUSTEE	THE PNF TRUST OF 2013	282 MIDDLE STREET	PORTSMOUTH	NH	03801	
	21 KIRKLAND ST	WADE KIMBERLY L		21 KIRKLAND ST	DOVER	NH	03820	
	15 17 KIRKLAND ST	BAMFORD DAVID K & J DEBORAH CO-TRUSTEES	THE DAVID K BAMFORD REVOCABLE TRUST	466 CENTRAL AVE SUITE 12	DOVER	NH	03820	
	11 13 KIRKLAND ST	BAMFORD DAVID K & J DEBORAH CO-TRUSTEES	THE DAVID K BAMFORD REVOCABLE TRUST	466 CENTRAL AVE SUITE 12	DOVER	NH	03820	
	274 276 CENTRAL AV	274-276 CENTRAL LLC		96 MAIN ST	NEWMARKET	NH	03857	
	266 270 CENTRAL AV	266-270 CENTRAL AVENUE LLC		PO BOX 278	DOVER	NH	03821	
	278 286 CENTRAL AV	WOODMAN CONDOMINIUMS ASSOCIATION		282 CENTRAL AVE	DOVER	NH	03820	
	282 1 CENTRAL AV	STODDART MARY E &	STODDART WILLIAM D IV	4752 PINNACLE DR	BRADENTON	FL	34208-8497	102
	282 2 CENTRAL AV	HOOD PHILIP G		6 WINCHESTER ST	PORTSMOUTH	NH	03801	102
	282 3 CENTRAL AV	NAQSHBANDI SYED MUDASSAR	AFZAL ASRA	21 OLIVE MEADOW LANE	DOVER	NH	03820	102
	282 4 CENTRAL AV	WAJDA EVAN DAVID		282 4 CENTRAL AV	DOVER	NH	03820	102
	282 5 CENTRAL AV	JONES REBECCA ANN		282 CENTRAL AV UNIT 5	DOVER	NH	03820	102
	282 6 CENTRAL AV	DE BOER SASKER L		8 BEAR PATH	HAMPTON	NH	03842-1300	102
	282 7 CENTRAL AV	REILLY MICHAEL &	REILLY SHARON	282 CENTRAL AVE UNIT 7	DOVER	NH	03820	102
	282 8 CENTRAL AV	HALLOWELL MARIAN		282 CENTRAL AVE #8	DOVER	NH	03820	102
	282 9 CENTRAL AV	KENNY BRIAN P		282 9 CENTRAL AV	DOVER	NH	03820	102
	282 10 CENTRAL AV	NOLIN APRIL E		282 CENTRAL AVE UNIT 10	DOVER	NH	03820	102
	282 11 CENTRAL AV	WOODRUFF ZACHARY		282 CENTRAL AVE #11	DOVER	NH	03820	102
	282 12 CENTRAL AV	REED CAROL A		282 CENTRAL AVE UNIT 12	DOVER	NH	03820	102
	3 HALE ST	3 HALE STREET REALTY LLC	C/O ADAM CLARK	32 EDGEWATER DR	BARRINGTON	NH	03825	396
	286 CENTRAL AV	FISHER PROPERTIES LLC		12 LORRAINE DR	LONDONDERRY	NH	03053	396
	284 CENTRAL AV	PATH RE LLC		280 CENTRAL AV	DOVER	NH	03820	396
	280 CENTRAL AV	PATH RE LLC		84 BOXWOOD LN	DOVER	NH	03820	396
	278 CENTRAL AV	CHEMISTRY HAIR STUDIO LLC		278 CENTRAL AVE	DOVER	NH	03820	396
	5 HALE ST	ST THOMAS EPISCOPAL CHURCH	C/O PARISH ADMINISTRATOR	5 HALE ST	DOVER	NH	03820	
	84 86 LOCUST ST	84 86 LOCUST STREET LLC		61 AIRPORT DR #4	ROCHESTER	NH	03867	
	279 CENTRAL AV	DOVER HOUSING AUTHORITY		62 WHITTIER STREET	DOVER	NH	03820	
	263 CENTRAL AV	KOSTIS ENTERPRISES LLC		263 CENTRAL AVENUE	DOVER	NH	03820	
	257 CENTRAL AV	MCQUADE WILLIAM P & PALMER PATRICIA M	MCQUADE FAMILY REVOCABLE TRUST	PO BOX 1409	DOVER	NH	03820	
	251 CENTRAL AV	KOSTIS ENTERPRISES LLC		263 CENTRAL AVENUE	DOVER	NH	03820	
	256 CENTRAL AV	256-264 CENTRAL LLC		96 MAIN ST	NEWMARKET	NH	03857	
	264 CENTRAL AV	256-264 CENTRAL LLC		96 MAIN ST	NEWMARKET	NH	03857	
		TF MORAN	JASON COOK	170 COMMERCE WAY SUITE	PORTSMOUTH	NH	03801	

City of Dover, New Hampshire
SITE PLAN REVIEW SUBMISSION CHECKLIST

[Revision Date: June 4, 2019]

This site plan review checklist, as required by Chapter 153-6-B(2), should be completed by the applicant. It is intended to assist the applicant in the planning process of preparing a Site Plan Review application for Planning Board action. The size of the project will determine the types of information required for review, therefore, a **pre-application conference** with the Planning Department to determine the list of items that must be completed is strongly encouraged.

The first step would be to appear before the Technical Review Committee, to apply, eight (8) folded copies of the site plan with scale of not less than 1"=50' or 1" =100' for larger site plans, need to be provided, along with payment of plan review fees.

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

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

APPLICANT: 256-264 Central Avenue, LLC File Number: _____

PROJECT TITLE: 256 & 264 Central Avenue Site Improvements

PROPERTY LOCATION: 256 & 264 Central Avenue Tax Map: 9 Lot: 111 & 112

	Where/How Provided	Reviewed
1. Completed and signed Application form	Attached Site Review Application	
2. Plan Review Fees are provided	Attached Check	
3. Electronic copy of the engineered/surveyed plan layout	Via email	
4. Electronic copy of supplementary materials and application	Via email	
5. Traffic Impact Assessment and Analysis (Standard or Advanced)	N/A	
6. Waiver requests to the Site Plan Review Regulations, with written justification	N/A	
7. Conditional Use Permit applications	N/A	
8. A colored rendering of the streetscape that will be created along the existing public right-of-way	N/A	
9. A colored architectural plan showing all sides of buildings	N/A	
10. Folded copies of site plan w/scale of not less than 1"=50' or 1"=100' for larger site plans, for TRC. Plans shall contain the following items as appropriate:	Attached Site Development Plans	
Location map at appropriate scale	Sheet S-01	
Proposed Project name and title and Planning File #	Sheet C-00	
Date, north arrow and scale	All sheets	
Names of all abutting property owners	Attached Abutters List	
Name and address of owners and/or applicants	Attached Site Review Application	
Signature & stamp of NH licensed land surveyor and/or engineer	N/A	
Zoning District boundaries, including any special or overlay districts	Sheet S-01	
Location of Conservation District areas	N/A	
Location, names and widths of existing and proposed streets, including pavement widths, grades, curbs and crosswalks	Sheet S-01	
Location and widths of existing & proposed easements & right of ways	Sheet S-01	
Location and width of existing and proposed access/egress ways	Sheet S-01	

	Explain How Provided	Reviewed
Depict pedestrian walkways and accessible access	Sheet C-02	
Existing and proposed property lines with dimensions and bearings tied into Dover's Geographic Information System coordinate system	Sheet S-01	
Existing and proposed topographic information at two foot intervals	Sheet S-01	
Existing and proposed buildings and structure locations	Sheet S-01	
Minimum building setbacks or build to lines on all lots	Sheet C-02	
Location and size of existing and proposed electric, telephone, gas cable and other underground utilities	Sheet S-01 & C-02	
Existing and proposed water lines and fire hydrants, including materials and capacity needed	Sheet S-01 & C-02	
Location and materials of sanitary sewage facilities within project site and projected additional peak hour sewer load	N/A	
Existing and proposed stormwater lines and facilities	Sheet S-01 & C-03	
Lighting plan depicting all existing and proposed exterior light fixtures and a lighting level analysis for parking lots	Sheet C-04	
Location of Flood Hazard Zone	N/A	
Location of all bodies of water and watercourses	N/A	
Location of wetlands and buffers	N/A	
Neighborhood plan with aerial underlay showing how project relates to abutting uses within the plan set	Attached Aerial Plan	
Existing natural features and/or significant vegetation on property	N/A	
Depict existing contours up to 100 ft. beyond project limits	Sheet S-01	
Landscape plan depicting existing and proposed landscaping, prepared by a licensed Professional Landscape Architect	Sheet C-05	
Location of parking layout delineating spaces and arrangement; note addressing maximum required spaces	Sheet C-02	
Location, material and size of existing and proposed pavement area	Sheet S-01 & C-02	
Location of proposed fire lanes	N/A	
Specify finished floor elevations of buildings	N/A	
Location of solid waste disposal facilities (dumpster, pad and screening, etc.), including required screening	Sheet C-02	
Depict all service, storage, loading bays and utility areas	N/A	
All applicable Dover Common Site Plan notes	Sheet C-02	
11. Additional Information if appropriate		
Stormwater Management Plan depicting the existing & proposed storm drainage system and engineered drainage analysis	Sheet C-03	
Stormwater Management System Operation and Maintenance Plan	Attached Drainage Analysis	
Letter to Serve from Public and Private Utilities	N/A	
Erosion and Sedimentation Control Plan	Sheet C-03	
Landscape Operation and Maintenance Plan	Sheet C-05	
Proposed restrictive covenants or homeowners association documents	N/A	
Dates and permit numbers of all required state and federal permits	N/A	
If wetland buffer, indicate placards locations, as applicable	N/A	
Depict test boring locations, groundwater elevations and soil profiles and/or soils types call-outs	Sheet C-03	
Location of proposed drive-in facilities	N/A	
Provide additional exhibits/technical data determined appropriate by the Planning Board or its staff as required	N/A	

REVIEWED BY: _____ DATE_____ TRC DATE_____

CITY OF DOVER

TECHNICAL REVIEW COMMITTEE MINUTES – SITE-2023-0013

Application Type:	Site Review
Applicant(s):	TF Moran
Owner(s):	256-264 Central Avenue, LLC
Location:	256 & 264 Central Avenue (Tax Map 9, Lot 111 & 112)
Date:	November 30, 2023

INTENT: Proposal is to replace gravel parking with 10,595 square feet of paved parking related to their renovation of the buildings. This is Phase I of a two phase project.

UNITS PROPOSED: n/a

AGENDA ITEM #: 2

ACREAGE:
Lot 111= 0.522± ac. / 22,747± sq. ft.
Lot 112= 0.167± ac. / 7,287± sq. ft.

ZONING DISTRICT: CBD-G

EXISTING LAND USE: Previously a Restaurant, Vacant building

PROPOSED LAND USE: Commercial with Paved Parking; Phase I: Paved parking (Planned for future is Phase II: Renovation of the existing structures)

SURROUNDING LAND USE: Commercial, Residential

ZBA ACTION: None

PERMITS REQUIRED:

WAIVERS REQUESTED: N/A

ATTENDANCE:
Members:
Donna Benton, Planning
Paul Crouser, Zoning
Marn Speidel, Police
Jim Maxfield, Fire/Inspection Services
Ken Mavrogeorge, Engineering
James Burdin, Business Development
Others:
Erin Bassegio, Planning
Derek Fisher, Owner
Chris Rice, TFMoran
Jason Cook, TFMoran

PLAN REVIEW:
Planning:

- *71% lot coverage existing?*
- *Revise plans:*
  - *Owner's signatures on the final plans*
  - *Add file number to plan set, SITE-2023-0013 to all sheets*
  - *Professional stamps and signatures*
  - *Add bench and waste bin (city standard)*
  - Discuss parking meter location with Parking Manager
  - Add landscaping in lieu of street trees with waiver request
  - Replace vinyl fence with stockade
  - Confirm light fixtures meet downtown standard
  -
- Waiver request if applicable on final landscape design
- Letter to Serve (including EV readiness)
- Lot merger documentation to be submitted

Engineering:

- Sheet C-02:
  - Coordinate with IS on the location of the charger and whether it is ADA accessible. Suggest moving the ADA space to the northern space adjacent to the aisle. Grading to meet ADA slope requirements would likely be required.
  - Recommend increasing the space behind the wheel stops to allow for accessible access to the charger.
  - Call out all curb radii (see connection to sidewalk).
  - Please show location of proposed utility changes (water).
  - Provide City standard water and drainage trench details or revise provided trench detail to show requirements for each type of service including bedding and backfill, cover, materials, etc.
- Sheet C-03:
  - Test Pit and infiltration Test chart references stormtech chambers. Please revise.
  - Add notes to call out the roof leaders, dimensions, and slopes.
- Sheet C-06:
  - Recommend providing a minimum of 12-inch slab for dumpster pad. Please identify location of concrete pad detail.
- Sheet C-09:
  - Check elevations on the outlet structure. The bottom of the pond does not appear correct.
- Drainage Analysis:

- Recommend providing a flood elevation for the proposed structures in the calculations.
- Applicant shall review the section 153-14 of the Dover Code and clarify how the design meets or exceeds the City's requirements. More specifically applicant shall speak to how the proposed design meets the redevelopment criteria under 153-14(A)(3)(c), 153-14(A)(3(f).

Police:

- Dumpster truck movement plan looks tight
- Private property sign shown on plan-confirm location/intent

Fire/Inspection Services:

- Provide stamped set of plans
- Accessibility of EV charger-including minimum width access aisle, curb appears to be obstruction.
- Sheet C-02 Provide EV charger sign in sign legend. Also add sign detail to plan set
- Clarify the lot merger and sequence/phasing of project.
- Sheet C-05 appears to have vegetation which may impede line of site, also appears to encroach on minimum distances from pad mount transformers

Business Development:

- Previous comments addressed.

Planning Board: N/A

Next Steps: Review EV readiness with City staff and resubmit for Planning Board (January 23, 2024).

Pause TRC at: 12:05 p.m.

Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

NEW HAMPSHIRE 200

December 22, 2023

Gina Cruikshank, Chairperson
Dover Planning Board
288 Central Avenue
Dover, NH 03820

RE: Minor Site Plan Review Response to Comments & Rev 2 Submission
256 & 264 Central Avenue – 256-264 Central Avenue, LLC – Tax Map 9 Lots 111 & 112
TFM Project #47262.01
Dover File #2023-0013

Dear Chairperson Cruikshank:

On behalf of our client, 256-264 Central Avenue, LLC, TF Moran, Inc. (TFM) respectfully submits the following letter in response to the comments made by the City of Dover, in the letter titled "Technical Review Committee Minutes – Site-2023-0013". To facilitate your review, we have provided your comments along with our responses, which are shown in ***bold italics***.

REVIEW COMMENTS:

Planning:

- *71% lot coverage existing?*
  - ***The project proposes 75% impervious coverage. The existing coverage is approximately 83%.***
- *Revise plans:*
  - *Owner's signatures on the final plans*
    - ***The owner's signature will be added to the final plans.***
  - *Add file number to plan set, SITE-2023-0013 to all sheets.*
    - ***The file number has been added in the bottom right.***
  - *Professional stamps and signatures*
    - ***Professional stamps will be added when the final plans are submitted.***
  - *Add bench and waste bin (city standard)*
    - ***Three benches are proposed and two wastebaskets are proposes (one along Central Avenue and one along Kirkland Street).***
  - Discuss parking meter location with Parking Manager
    - ***The location of the parking meter will be coordinated by the owner with the Parking Manager.***
  - Add landscaping in lieu of street trees with waiver request.
    - ***A waiver will be requested for limited street trees to ensure sight distance at driveway entrance/exit.***

- Replace vinyl fence with stockade.
  - ***The fence surrounding the dumpster will be a stockade fence.***
- Confirm light fixtures meet downtown standard.
  - ***Light mounting heights have been reduced to eliminate off-site light spill and designed to meet Downtown Dover standards including dark-sky and energy efficiency.***

- Waiver request if applicable on final landscape design
  - ***A waiver request will be submitted relating to final landscape design to ensure sight distance along Kirkland Street.***
- Letter to Serve (including EV readiness)
  - ***The owner is currently coordinating with Eversource relating to service to building and eliminating the tension cable over the building near the intersection of Central Avenue and Kirkland Street. A letter to serve will be submitted to the City once coordination had completed.***
- Lot merger documentation to be submitted.
  - ***Lot merger documentation is in progress. Once the process is complete, the Lot Merger documentation will be submitted.***

Engineering:

- Sheet C-02:
  - Coordinate with IS on the location of the charger and whether it is ADA accessible. Suggest moving the ADA space to the northern space adjacent to the aisle. Grading to meet ADA slope requirements would likely be required.
    - ***The proposed ADA space has been adjusted to the single space to the north of the striped area. Grading throughout the parking area is approximately 1.5% providing ADA access throughout the site, including the two future EV charging stations.***
  - Recommend increasing the space behind the wheel stops to allow for accessible access to the charger.
    - ***The space behind the wheel stops has been increased to 4' (see Sheet C-02).***
  - Call out all curb radii (see connection to sidewalk).
    - ***Curb radii has been called out on Sheet C-02.***
  - Please show location of proposed utility changes (water).
    - ***Proposed utility changes have been shown on Sheet C-02. Location and structures for water service has been coordinated with City Services.***
  - Provide City standard water and drainage trench details or revise provided trench detail to show requirements for each type of service including bedding and backfill, cover, materials, etc.
    - ***The Water Trench Detail and Sewer/Drain Trench Detail have been added to Sheet C-09.***
- Sheet C-03:
  - Test Pit and infiltration Test chart references stormtech chambers. Please revise.

        - ***The "Test Pit & Infiltration Test" chart has been revised to reflect the proposed Bioretention System.***
    - Add notes to call out the roof leaders, dimensions, and slopes.
        - ***Callouts have been added to Sheet C-03 detailing the proposed roof drain slopes, lengths, and material.***
- Sheet C-06:
    - Recommend providing a minimum of 12-inch slab for dumpster pad. Please identify location of concrete pad detail.
        - ***Sheet C-08 includes a Light Duty Concrete Pad detail. 6" of NHDOT Class AA Concrete with a 12" compacted crushed gravel base is proposed.***
- Sheet C-09:
    - Check elevations on the outlet structure. The bottom of the pond does not appear correct.
        - ***Elevations on the outlet structure detail have been revised to reflect the proposed bioretention basin.***
- Drainage Analysis:
    - Recommend providing a flood elevation for the proposed structures in the calculations.
        - ***A flood elevation has been added to the proposed outlet structure and proposed drain manhole.***
    - Applicant shall review the section 153-14 of the Dover Code and clarify how the design meets or exceeds the City's requirements. More specifically applicant shall speak to how the proposed design meets the redevelopment criteria under 153-14(A)(3)(c), 153-14(A)(3(f).
        - ***The proposed stormwater management system is designed to exceed the Stormwater Management Standards. This project is considered redevelopment and 51.7% of the site runoff flows to the proposed bioretention basin. Further detail is provided in Section 6.0 of the drainage analysis report.***

Police:

- Dumpster truck movement plan looks tight.
    - ***As discussed at the TRC Meeting, it is likely the garbage truck would drive in, empty dumpster, and back out of the site.***
- Private property sign shown on plan-confirm location/intent.
    - ***Four signs have been proposed throughout the site. The description of the sign is included in the Sign Legend on Sheet C-02***

Fire/Inspection Services:

- Provide stamped set of plans.
    - ***A professional stamp will be provided on the final plans.***
- Accessibility of EV charger-including minimum width access aisle, curb appears to be obstruction.
    - ***The width of pavement between the wheel stop and EV charger has been increased to 4'.***
- Sheet C-02 Provide EV charger sign in sign legend. Also add sign detail to plan set.

- ***Sign for future EV Charging stations has been added to Sheet C-02 "Sign Legend".***

- Clarify the lot merger and sequence/phasing of project.
  - ***The process to merge subject lots is in progress. Lot Merger information will be submitted to the City when available.***
- Sheet C-05 appears to have vegetation which may impede line of sight, also appears to encroach on minimum distances from pad mount transformers.
  - ***The proposed tree along Kirkland Street has been removed. A waiver is being requested for reduced street trees to ensure sight distance from parking lot driveway.***

Business Development:

- Previous comments addressed.

We trust that the above responses satisfy the concerns expressed in the City of Dover's comments. Should you wish to further discuss any of the above please contact us so that we may meet and resolve any outstanding concerns.

Respectfully,
TFMoran, Inc.

Jason Cook
Civil Project Engineer

JKC/crr

Project #47262.01

DRAINAGE ANALYSIS REPORT

F O R

256 & 264 Central Avenue

Dover, New Hampshire
Strafford County

Tax Map 9, Lots 111 & 112

Owned by and Prepared for
256-264 Central Avenue, LLC

August 31, 2023
Last Revised December 22, 2023

Prepared By:

TFM Since 1968

Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

(This Page Is Intentionally Blank)

Contents

1.0 - SUMMARY & PROJECT DESCRIPTION 1

2.0 - CALCULATION METHODS 1

3.0 – EXISTING SITE CONDITIONS 2

4.0 - PRE-DEVELOPMENT CONDITIONS 2

5.0 - POST-DEVELOPMENT CONDITIONS 2

6.0 – REGULATORY COMPLIANCE 4

7.0 – BEST MANAGEMENT PRACTICES 4

7.1 – TEMPORARY PRACTICES 4

7.2 – PERMANENT PRACTICES 5

8.0 – CONCLUSION 5

APPENDIX A – EXTREME PRECIPITATION RATES

APPENDIX B – SITE-SPECIFIC SOIL SURVEY & NRCS WEB SOIL REPORT

APPENDIX C – TEST PIT LOGS & INFILTRATION TEST DATA

APPENDIX D – PRE-DEVELOPMENT CALCULATIONS

APPENDIX E – PRE-DEVELOPMENT CALCULATIONS (10-YEAR STORM EVENT)

APPENDIX F – POST-DEVELOPMENT CALCULATIONS

APPENDIX G – POST-DEVELOPMENT CALCULATIONS (10-YEAR STORM EVENT)

APPENDIX H – DRAINAGE MAPS

APPENDIX I – INSPECTION AND MAINTENANCE MANUAL

Table of Figures

Table 1 – 24-Hour Rainfall Rates 1
Table 2 - Pre and Post- Development Peak Runoff Rate Comparison 3
Table 3 - Pre and Post- Development Peak Runoff Volume Comparison 3

(This Page Is Intentionally Blank)

1.0 - SUMMARY & PROJECT DESCRIPTION

The project includes the re-development of an existing gravel parking lot and alleyway into a paved parking lot with a brick walkway at 256 & 264 Central Avenue in Dover, NH. The existing Tax Map 9 Lots 111 & 112 is approximately 0.689 acres and currently contains a gravel parking lot. The site is within the Central Business District Zone and General Sub-District and is adjacent to the intersection of Central Avenue and Kirkland Street.

The proposed project is to construct a parking lot with 25 parking stalls. Associated improvements include and are not limited to access, grading, utilities, stormwater management system, lighting, and landscaping. The project proposes a total of 22,510 SF of impervious area within the property lines and approximately 17,766 SF of disturbance to facilitate the development.

This analysis has been completed to verify the project will not pose adverse stormwater effects on-site and off-site. Compared to the pre-development conditions, the post-development stormwater management system has been designed to reduce peak runoff rates, increases within regulatory limits the runoff volume, reduces the risk of erosion and sedimentation, and improves stormwater runoff quality. In addition, Best Management Practices are employed to formulate a plan that assures stormwater quality both during and after construction. The following summarizes the findings from the study.

2.0 - CALCULATION METHODS

The design storms analyzed in this study are the 2-year, 10-year, 25-year, and 50-year 24-hour storm events. The software program, HydroCAD version 10.00[1] was utilized to calculate the peak runoff rates from these storm events. The program estimates the peak rates using the TR-20 method. A Type III storm pattern was used in the model. Rainfall frequencies for the analyzed region were also incorporated into the model. Rainfall frequencies from the higher of the Extreme Precipitation Rates from Cornell University's Northeast Regional Climate Center (see Appendix A) were used to determine the storm-event intensities, see Table 1. Design standards were taken from the New Hampshire Stormwater Manual, December 2008[2].

	24-HOUR RAINFALL RATES
Storm-Event (year)	Northeast Regional Climate Center Extreme Precipitation (in)
2	3.15
10	4.75
25	6.01
50	7.18

Table 1 – 24-Hour Rainfall Rates

Time of Concentration is the time it takes for water to flow from the hydraulically most remote point in the watershed (with the longest travel time) to the watershed outlet. This time is determined by calculating the time it takes runoff to travel this route under one of three

[1] HydroCAD version 10.00, HydroCAD Software Solutions LLC, Chocorua, NH, 2013.
[2] New Hampshire Stormwater Manual: Volume One - Stormwater and Antidegradation, December 2008; Volume Two - Post-Construction Best Management Practices Selection and Design, December 2008; Volume Three - Erosion and Sediment Controls During Construction, December 2008.

hydrologic conditions: sheet flow, shallow concentrated flow, or channel flow. Because the Intensity-Duration-Frequency (IDF) curve is steep with short TC's, estimating the actual intensity is subject to error and overestimates actual runoff. Due to this, the TC's are adjusted to a minimum of 6 minutes.

3.0 – EXISTING SITE CONDITIONS

The soils within the proposed area of disturbance are identified in accordance with the NRCS Web Soil Survey (see Appendix B for details and soil locations). The Site-Specific Soil Survey identifies the soils within the disturbed project area as primarily Buxton silt loam. This soil is classified as moderately well drained.

Three test pits and infiltration tests were conducted. In nearly all test pit locations, fill material was discovered. Infiltration tests were determined per Ksat testing using a Compact Constant Head Permeameter (Amoozemeter) per Env-Wq 1504.14(d). The highest Estimated Seasonal High-Water Table (ESWT) observed were: unobserved at Test Pit #1 (dug to 52"), elevation 53.60' at Test Pit 2, and elevation 54.05 at Test Pit #3.

4.0 - PRE-DEVELOPMENT CONDITIONS

The pre-development condition is characterized by four subcatchments composing one watershed, which flows towards the municipal stormwater system, which ultimately discharges to the Piscataqua River. Pre-development subcatchment areas are depicted on the attached plan entitled "Pre-Development Drainage Map," Sheet D-01 in Appendix H.

Stormwater runoff from the site primarily flows over the compacted gravel, across abutting properties and to the existing municipal stormwater drainage system (POI-1, POI-2, & POI-3) and to the municipal sewer system (POI-4).

In the pre-development condition, the total impervious area is 26,056 SF over a total drainage analysis area of 30,031 SF.

5.0 - POST-DEVELOPMENT CONDITIONS

The post-development condition is characterized by one watershed divided into four subcatchment areas. Post-development subcatchment areas are depicted on the attached plan entitled "Post-Development Drainage Map," sheet D-02 in Appendix H.

In the post-development condition, the total impervious area is 22,510 SF over a total drainage analysis area of 30,031 SF. Impervious area from the project consists of a 10,072 SF footprint parking lot and walkway, a 12,270 SF footprint building and associated improvements. One BMP is proposed to treat and mitigate the stormwater runoff from the impact of the new impervious area from the proposed development.

Three test pits and infiltration tests were conducted. In nearly all test pit locations, fill material was discovered. Infiltration tests were determined per default published Ksat values for the design infiltration rates per Env-Wq 1504.14(c) and/or Ksat testing using a Compact Constant Head Permeameter (Amoozemeter) per Env-Wq 1504.14(d).

Table 2 summarizes the pre- and post-development peak runoff rates for the 2-year, 10-year, 25-year, and 50-year 24-hour Type III storm events for all discharge. Table 3 summarizes the

pre- and post-development peak runoff volumes for the 2-year 24-hour Type III storm events for all discharge.

TABLE 2 – SURFACE WATER PEAK RUNOFF RATE COMPARISON (CF)					
POINT OF INTEREST		DESIGN STORM			
		2-year	10-year	25-year	50-year
POI-1	Pre	0.3	0.4	0.6	0.7
	Post	0.1	0.1	0.1	0.2
POI-2	Pre	0.4	0.6	0.8	0.9
	Post	0.0	0.0	0.1	0.1
POI-3	Pre	0.4	0.7	0.9	1.0
	Post	0.7	1.2	1.6	1.9
POI-4	Pre	0.8	1.3	1.6	1.9
	Post	0.8	1.3	1.6	1.9

Table 2 - Pre and Post- Development Peak Runoff Rate Comparison

TABLE 3 – SURFACE WATER PEAK RUNOFF VOLUME COMPARISON (CF)		
POINT OF INTEREST		DESIGN STORM
		2-year
POI-1	Pre	818
	Post	115
POI-2	Pre	1,309
	Post	66
POI-3	Pre	1,477
	Post	1,987
POI-4	Pre	2,981
	Post	2,981

Table 3 - Pre and Post- Development Peak Runoff Volume Comparison

The proposed project reduces peak rates of runoff compared to existing conditions to all abutting properties for all storm events, in accordance Dover stormwater regulations. Additionally, per NHDES, the 2-year 24-hour storm does not result in an increased peak flow rate and reduces or increases volume within the limits of Env-Wq 1507.05(b)(1) from the pre-development to post-development condition. There will be no adverse effects on the abutting properties from the proposed stormwater management system.

Appendices D and F summarizes all 24-hour storm events for pre- and post-development drainage calculations using HydroCAD analysis. Appendices E and G provide a full summary of the 10-year, 24-hour storm for the pre- and post-development drainage calculations using HydroCAD analysis.

There is one warning messages for the 10-year storm event related to the proposed BMP's:

- *[90] Warning: Pond SF Qout>Qin may require smaller dt or Finer Routing*

6.0 – REGULATORY COMPLIANCE

The project meets the stricter of the stormwater standards identified in the New Hampshire Department of Environmental Services (DES) Env-Wq 1500 Alteration of Terrain Regulations and Dover stormwater management regulations.

The project meets the Stormwater Management Standards as described in Article 153-14(A.) – Site Development Design Criteria. Based on the proposed work, this development falls under the distinction of redevelopment. The project has an existing impervious coverage greater than 40% with a proposed decrease in impervious area from 82.9% to 75.2% of the site. The proposed bio-retention area is designed to detain, treat, and infiltrate 51.7% of the total site (greater than the required 50%). The area treated includes all on-site impervious except the roof runoff. The roof runoff, considered clean runoff, is being redirected from its current connection to the municipal sewer system to the stormwater system.

7.0 – BEST MANAGEMENT PRACTICES

Best Management Practices will be developed in accordance with the New Hampshire Stormwater Manual, Volumes Two and Three, December 2008[3] to formulate a plan that assures stormwater quality both during and after construction. The intent of the outlined measures is to minimize erosion and sedimentation during construction, stabilize and protect the site from erosion after construction is complete and mitigate any adverse impacts to stormwater quality resulting from development. Best Management Practices for this project include:

- Temporary practices to be implemented during construction.

- Permanent practices to be implemented after construction.

7.1 – TEMPORARY PRACTICES

1. Erosion, sediment, and stormwater detention measures must be installed as directed by the engineer.
2. All disturbed areas, as well as loam stockpiles, shall be seeded and contained by a silt barrier.
3. Silt barriers must be installed prior to any construction commencing. All erosion control devices including silt barriers and storm drain inlet filters shall be inspected at least once per week and following any rainfall. All necessary maintenance shall be completed within twenty-four (24) hours.
4. Any silt barriers found to be failing must be replaced immediately. Sediment is to be removed from behind the silt fence if found to be one-third the height of the silt barrier or greater.
5. Any area of the site, which has been disturbed and where construction activity will not occur for more than twenty-one (21) days, shall be temporarily stabilized by mulching and seeding.
6. No construction materials shall be buried on-site.

[3] New Hampshire Stormwater Manual: Volume One - Stormwater and Antidegradation, December 2008; Volume Two - Post-Construction Best Management Practices Selection and Design, December 2008; Volume Three - Erosion and Sediment Controls During Construction, December 2008.

7. After all areas have been stabilized, temporary practices are to be removed, and the area they are removed from must be smoothed and revegetated.
8. Areas must be temporarily stabilized within 14 days of disturbance or seeded and mulched within 3 days of final stabilization.
9. After November 15th, incomplete driveways or parking areas must be protected with a minimum of 3" of crushed gravel, meeting the standards of NHDOT item 304.3.
10. An area shall be considered stable if one of the following has occurred:
    a) Base course gravels are installed in areas to be paved.
    b) A minimum of 85% vegetated growth has been established.
    c) A minimum of 3" of non-erosive material such as stone or rip rap has been installed.
    d) Erosion control blankets have been properly installed.

7.2 – PERMANENT PRACTICES

The objectives for developing permanent Best Management Practices for this site include the following:

1. Maintain existing runoff flow characteristics.
    a) Drainage is structured to minimize any offsite increase in runoff
2. Treatment BMP's are established to ensure the water quality.
3. Maintenance schedules are set to safeguard the long term working of the stormwater BMP's.

8.0 – CONCLUSION

The proposed stormwater management system will treat, infiltrate, and mitigate the runoff generated from the proposed development and provide protection of groundwater and surface waters as required through the Alteration of Terrain Bureau and Dover stormwater management regulations. The project has been designed in accordance with NHDES and Dover regulations. There is little change in the flow characteristics of the site. The proposed project has been designed to pose no adverse effects on surrounding properties.

Respectfully,
TFMoran, Inc. Seacoast Division

Christopher Rice
Senior Project Manager

(This Page Is Intentionally Blank)

APPENDIX A – EXTREME PRECIPITATION RATES

(This Page Is Intentionally Blank)

Extreme Precipitation Tables

Northeast Regional Climate Center

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

Metadata for Point

Smoothing	Yes
State	
Location	
Latitude	43.193 degrees North
Longitude	70.874 degrees West
Elevation	10 feet
Date/Time	Mon Jun 26 2023 16:44:43 GMT-0400 (Eastern Daylight Time)

Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.26	0.40	0.50	0.65	0.81	1.03	**1yr**	0.70	0.98	1.20	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	1.92	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	0.64	0.80	1.09	1.42	1.85	**10yr**	1.23	1.69	2.18	2.83	3.66	4.75	5.43	**10yr**	4.21	5.22	5.96	6.94	7.81	**10yr**
25yr	0.46	0.74	0.94	1.30	1.72	2.27	**25yr**	1.49	2.09	2.70	3.53	4.61	6.01	6.96	**25yr**	5.32	6.70	7.63	8.78	9.80	**25yr**
50yr	0.52	0.83	1.06	1.49	2.00	2.67	**50yr**	1.73	2.46	3.18	4.19	5.49	7.18	8.41	**50yr**	6.35	8.09	9.21	10.49	11.65	**50yr**
100yr	0.58	0.94	1.21	1.71	2.33	3.13	**100yr**	2.01	2.89	3.75	4.96	6.53	8.58	10.16	**100yr**	7.59	9.77	11.11	12.54	13.86	**100yr**
200yr	0.64	1.05	1.36	1.96	2.71	3.68	**200yr**	2.34	3.40	4.44	5.90	7.80	10.26	12.28	**200yr**	9.08	11.81	13.40	14.99	16.48	**200yr**
500yr	0.76	1.25	1.63	2.36	3.31	4.55	**500yr**	2.86	4.22	5.51	7.38	9.82	12.99	15.78	**500yr**	11.50	15.18	17.19	19.00	20.75	**500yr**

Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.24	0.37	0.45	0.60	0.74	0.90	**1yr**	0.64	0.88	0.92	1.26	1.58	2.14	2.45	**1yr**	1.90	2.36	2.88	3.36	4.03	**1yr**
2yr	0.31	0.49	0.60	0.81	1.00	1.18	**2yr**	0.86	1.16	1.36	1.83	2.35	3.04	3.40	**2yr**	2.69	3.27	3.75	4.47	5.05	**2yr**
5yr	0.35	0.54	0.67	0.91	1.16	1.40	**5yr**	1.00	1.37	1.61	2.15	2.77	3.71	4.13	**5yr**	3.29	3.97	4.62	5.41	6.11	**5yr**
10yr	0.38	0.59	0.73	1.02	1.32	1.60	**10yr**	1.14	1.56	1.81	2.44	3.12	4.27	4.78	**10yr**	3.78	4.60	5.32	6.24	7.01	**10yr**
25yr	0.44	0.66	0.83	1.18	1.55	1.91	**25yr**	1.34	1.87	2.11	2.83	3.64	4.92	5.78	**25yr**	4.36	5.56	6.49	7.54	8.41	**25yr**
50yr	0.48	0.73	0.91	1.31	1.76	2.19	**50yr**	1.52	2.14	2.35	3.19	4.09	5.61	6.67	**50yr**	4.97	6.41	7.53	8.69	9.64	**50yr**
100yr	0.54	0.81	1.01	1.47	2.01	2.51	**100yr**	1.73	2.45	2.63	3.56	4.56	6.38	7.68	**100yr**	5.65	7.38	8.73	10.03	11.04	**100yr**
200yr	0.59	0.89	1.13	1.64	2.29	2.87	**200yr**	1.97	2.80	2.93	3.99	5.09	7.26	8.84	**200yr**	6.42	8.50	10.12	11.57	12.66	**200yr**
500yr	0.69	1.03	1.33	1.93	2.74	3.45	**500yr**	2.36	3.37	3.40	4.61	5.89	8.57	10.64	**500yr**	7.58	10.23	12.29	13.99	15.12	**500yr**

Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.28	0.43	0.53	0.71	0.87	1.08	**1yr**	0.75	1.05	1.24	1.74	2.21	2.88	3.10	**1yr**	2.55	2.98	3.44	4.23	4.82	**1yr**
2yr	0.33	0.51	0.62	0.85	1.04	1.25	**2yr**	0.90	1.22	1.47	1.95	2.51	3.30	3.64	**2yr**	2.92	3.50	4.01	4.76	5.46	**2yr**
5yr	0.39	0.61	0.75	1.03	1.31	1.58	**5yr**	1.13	1.55	1.86	2.50	3.20	4.25	4.87	**5yr**	3.76	4.68	5.29	6.25	7.01	**5yr**
10yr	0.46	0.70	0.87	1.22	1.57	1.92	**10yr**	1.36	1.88	2.24	3.05	3.86	5.22	6.08	**10yr**	4.62	5.85	6.69	7.67	8.55	**10yr**
25yr	0.56	0.85	1.05	1.50	1.98	2.48	**25yr**	1.71	2.43	2.88	3.97	4.97	7.09	8.18	**25yr**	6.28	7.86	8.97	10.10	11.15	**25yr**
50yr	0.64	0.98	1.22	1.75	2.36	3.00	**50yr**	2.04	2.93	3.50	4.83	6.03	8.76	10.25	**50yr**	7.75	9.86	11.22	12.42	13.63	**50yr**
100yr	0.75	1.13	1.42	2.05	2.81	3.63	**100yr**	2.43	3.54	4.24	5.92	7.34	10.83	12.86	**100yr**	9.58	12.36	14.02	15.31	16.68	**100yr**
200yr	0.87	1.31	1.66	2.40	3.35	4.40	**200yr**	2.89	4.30	5.16	7.24	8.92	13.42	16.14	**200yr**	11.88	15.52	17.55	18.85	20.43	**200yr**
500yr	1.07	1.58	2.04	2.96	4.21	5.65	**500yr**	3.64	5.52	6.67	9.47	11.57	17.84	21.80	**500yr**	15.79	20.96	23.63	24.86	26.74	**500yr**

Powered by ACIS
Northeast Regional Climate Center

(This Page Is Intentionally Blank)

APPENDIX B – SITE-SPECIFIC SOIL SURVEY & NRCS WEB SOIL REPORT

(This Page Is Intentionally Blank)

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

256 & 264 Central Avenue Dover, NH



August 14, 2023

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.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

Contents

Preface.....2
How Soil Surveys Are Made.....5
Soil Map.....8
Soil Map.....9
Legend.....10
Map Unit Legend.....11
Map Unit Descriptions.....11
Strafford County, New Hampshire.....13
BzB—Buxton silt loam, 3 to 8 percent slopes.....13
SfC—Suffield silt loam, 8 to 15 percent slopes.....14
References.....16

How Soil Surveys Are Made

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

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

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

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

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

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

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

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

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

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

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

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

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

Soil Map

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

Custom Soil Resource Report
Soil Map



Map Scale: 1:790 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 10 20 40 60

Feet
0 35 70 140 210

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

MAP LEGEND

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

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

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

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

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

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

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

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

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

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

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

Soil Survey Area: Strafford County, New Hampshire
Survey Area Data: Version 23, Sep 9, 2022

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

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

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BzB	Buxton silt loam, 3 to 8 percent slopes	2.2	99.5%
SfC	Suffield silt loam, 8 to 15 percent slopes	0.0	0.5%
Totals for Area of Interest		**2.2**	**100.0%**

Map Unit Descriptions

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

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

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

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however,

onsite investigation is needed to define and locate the soils and miscellaneous areas.

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

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

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

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

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

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

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

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

Strafford County, New Hampshire

BzB—Buxton silt loam, 3 to 8 percent slopes

Map Unit Setting

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

Map Unit Composition

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

Description of Buxton

Setting

Parent material: Glaciomarine

Typical profile

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

Properties and qualities

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

Interpretive groups

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

Minor Components

Elmwood

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

Not named

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

SfC—Suffield silt loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 9d8v
Elevation: 0 to 250 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

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

Description of Suffield

Typical profile

H1 - 0 to 19 inches: silt loam
H2 - 19 to 28 inches: silt loam
H3 - 28 to 41 inches: silty clay

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 7.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Ecological site: F144AY017NH - Well Drained Lake Plain
Hydric soil rating: No

Minor Components

Not named

Percent of map unit: 9 percent
Hydric soil rating: No

Buxton

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

Rock outcrop

Percent of map unit: 1 percent
Hydric soil rating: No

References

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

National Research Council. 1995. Wetlands: Characteristics and boundaries.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_054262

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053577

Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053580

Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.

United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.

United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2_053374

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=stelprdb1043084

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

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624

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

(This Page Is Intentionally Blank)

APPENDIX C – TEST PIT LOGS & INFILTRATION TEST DATA

(This Page Is Intentionally Blank)

Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

TFM Since 1968

Test Pit Logs

PROJECT NAME:	256 & 264 Central Avenue, Dover NH	ENGINEER:	Corey Colwell
PROJECT NUMBER:	47262.01	DATE OF TESTING:	6/14/2023
PROJECT LOCATION:	264 Central Avenue, Dover NH	EXCAVATOR:	Sea Glass Property Maintenance

TEST PIT 1

DEPTH	SOIL CONDITIONS	Data
0-8"	Silty Gravel - Blocky	ESHWT
8-10"	Asphalt	Not observed
10-52"	Fill, Dark Silty Sand	Bottom of Pit
		52"
		Redox
		Not observed

TEST PIT 2

DEPTH	SOIL CONDITIONS	Data
0-3"	Silty Gravel - Blocky	ESHWT
3-6"	Sandy Gravel - compacted/firm	42"
6-10"	Crushed Asphalt	Bottom of Pit
10-42"	Fill - Sandy gravel	56"
42-56"	Dark Sandy Silt/Clay	Redox
		42"

TEST PIT 3

DEPTH	SOIL CONDITIONS	Data
0-3"	Silty Gravel - Blocky	ESHWT
3-13"	Sandy Gravel - Compacted - Firm	42"
13-33"	Dark Sand Fill with Ash	Bottom of Pit
33-63"	Dark Sandy Silty Fill with Coal and Ash	63"
		Redox
		Not Observed

TFM Since 1968

Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

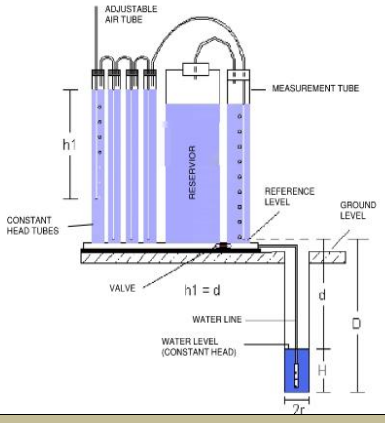
PROJECT NAME:	256 & 264 Central Avenue, Dover NH	ENGINEER:	Jason Cook
PROJECT NUMBER:	47262.01	DATE OF TESTING:	6/14/2023
PROJECT LOCATION:	264 Central Avenue, Dover NH		

Amoozemeter Field Data Sheet

Test Pit 1

Ksat (Average) = 0.402

SETUP CALCULATIONS			Test 1	Test 2	Test 3
D- REF LINE OF A-METER TO HOLE BOTTOM (cm)			94.0	92.7	95.3
H - DEPTH OF H20 IN HOLE (cm)			20.3	19.1	21.6
d - TOP OF WATER TO OUTFLOW LENGTH (cm)			73.7	73.7	73.7
AUGER DIAMETER (cm)			5.0	5.0	5.0
AREA OF AUGER HOLE (cm^2)			19.6	19.6	19.6
DEPTH TO IMPERVIOUS LAYER/SHWT, "s" (cm)			132.08	132.08	132.08
GLOVER SOLUTION A OR B			A	A	A
SOIL DESCRIPTION AT TEST 1 DEPTH:	Fill, Dark Silty Sand				
SOIL HORIZON AT TEST 1 DEPTH:					
SOIL DESCRIPTION AT TEST 2 DEPTH:	Fill, Dark Silty Sand				
SOIL HORIZON AT TEST 2 DEPTH:					
SOIL DESCRIPTION AT TEST 3 DEPTH:	Fill, Dark Silty Sand				
SOIL HORIZON AT TEST 3 DEPTH:					
ONE OR BOTH CHAMBERS USED:			1	1	1



TEST #1

READING (Δ)	TIME INTERVAL (sec)	COEFFICIENT A or B	COEFFICIENT A or B 1/cm	CONVERSION FACTOR cm^3	OUTFLOW cm^3/s	SATURATED HYDRAULIC CONDUCTIVITY (Ksat) cm/sec	SATURATED HYDRAULIC CONDUCTIVITY (Ksat) in/hr	COMMENTS
0.1	40	A	0.000754	20.0	0.05	3.77E-05	0.05340596	
0.1	40	A	0.000754	20.0	0.05	3.77E-05	0.05340596	
0.1	40	A	0.000754	20.0	0.05	3.77E-05	0.05340596	
0.1	40	A	0.000754	20.0	0.05	3.77E-05	0.05340596	
0.2	40	A	0.000754	20.0	0.1	7.54E-05	0.10681193	

Average Ksat (3 consecutive readings w/same outflow per time): 0.053406

TEST #2

READING (Δ)	TIME INTERVAL (sec)	COEFFICIENT A or B	COEFFICIENT A or B 1/cm	CONVERSION FACTOR cm^3	OUTFLOW cm^3/s	SATURATED HYDRAULIC CONDUCTIVITY (Ksat) cm/sec	SATURATED HYDRAULIC CONDUCTIVITY (Ksat) in/hr	COMMENTS
0.2	40	A	0.000815	20.0	0.1	8.15E-05	0.11553036	
0.6	40	A	0.000815	20.0	0.3	0.000245	0.34659108	
0.5	40	A	0.000815	20.0	0.25	0.000204	0.2888259	
0.5	40	A	0.000815	20.0	0.25	0.000204	0.2888259	
0.7	40	A	0.000815	20.0	0.35	0.000285	0.40435626	
0.7	40	A	0.000815	20.0	0.35	0.000285	0.40435626	
0.7	40	A	0.000815	20.0	0.35	0.000285	0.40435626	

Average Ksat (3 consecutive readings w/same outflow per time): 0.404356

TEST #3

READING (Δ)	TIME INTERVAL (sec)	COEFFICIENT A or B	COEFFICIENT A or B 1/cm	CONVERSION FACTOR cm^3	OUTFLOW cm^3/s	SATURATED HYDRAULIC CONDUCTIVITY (Ksat) cm/sec	SATURATED HYDRAULIC CONDUCTIVITY (Ksat) in/hr	COMMENTS
1.5	40	A	0.000674	20.0	0.75	0.000506	0.71668219	
2.2	40	A	0.000674	20.0	1.1	0.000742	1.05113388	
0.7	40	A	0.000674	20.0	0.35	0.000236	0.33445169	
1.5	40	A	0.000674	20.0	0.75	0.000506	0.71668219	
1.5	40	A	0.000674	20.0	0.75	0.000506	0.71668219	
1.7	40	A	0.000674	20.0	0.85	0.000573	0.81223981	

Average Ksat (3 consecutive readings w/same outflow per time): 0.748535

TFM Since 1968

Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

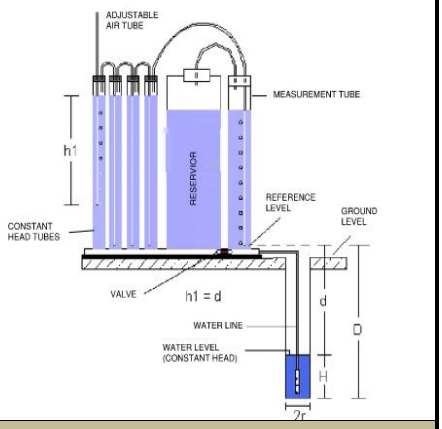
PROJECT NAME:	256 & 264 Central Avenue, Dover NH	ENGINEER:	Jason Cook
PROJECT NUMBER:	47262.01	DATE OF TESTING:	6/14/2023
PROJECT LOCATION:	264 Central Avenue, Dover NH		

Amoozemeter Field Data Sheet

Test Pit 2

Ksat (Average) = 3.50

SETUP CALCULATIONS			Test 1	Test 2	Test 3
D- REF LINE OF A-METER TO HOLE BOTTOM (cm)			94.0	95.3	95.3
H - DEPTH OF H20 IN HOLE (cm)			20.3	21.6	21.6
d - TOP OF WATER TO OUTFLOW LENGTH (cm)			73.7	73.7	73.7
AUGER DIAMETER (cm)			5.0	5.0	5.0
AREA OF AUGER HOLE (cm^2)			19.6	19.6	19.6
DEPTH TO IMPERVIOUS LAYER/SHWT, "s" (cm)			106.68	106.68	106.68
GLOVER SOLUTION A OR B			A	A	A
SOIL DESCRIPTION AT TEST 1 DEPTH:	Fill, Sandy gravel				
SOIL HORIZON AT TEST 1 DEPTH:					
SOIL DESCRIPTION AT TEST 2 DEPTH:	Fill, Sandy gravel				
SOIL HORIZON AT TEST 2 DEPTH:					
SOIL DESCRIPTION AT TEST 3 DEPTH:	Fill, Sandy gravel				
SOIL HORIZON AT TEST 3 DEPTH:					
ONE OR BOTH CHAMBERS USED:			1	1	1



TEST #1

READING (Δ)	TIME INTERVAL (sec)	COEFFICIENT A or B	COEFFICIENT A or B 1/cm	CONVERSION FACTOR cm^3	OUTFLOW cm^3/s	SATURATED HYDRAULIC CONDUCTIVITY (Ksat) cm/sec	SATURATED HYDRAULIC CONDUCTIVITY (Ksat) in/hr	COMMENTS
5.4	40	A	0.000754	20.0	2.7	0.002035	2.8839221	
0.7	40	A	0.000754	20.0	0.35	0.000264	0.37384175	
1.4	40	A	0.000754	20.0	0.7	0.000528	0.74768351	
0.4	40	A	0.000754	20.0	0.2	0.000151	0.21362386	
0.4	40	A	0.000754	20.0	0.2	0.000151	0.21362386	
0.4	40	A	0.000754	20.0	0.2	0.000151	0.21362386	

Average Ksat (3 consecutive readings w/same outflow per time: 0.213624

TEST #2

READING (Δ)	TIME INTERVAL (sec)	COEFFICIENT A or B	COEFFICIENT A or B 1/cm	CONVERSION FACTOR cm^3	OUTFLOW cm^3/s	SATURATED HYDRAULIC CONDUCTIVITY (Ksat) cm/sec	SATURATED HYDRAULIC CONDUCTIVITY (Ksat) in/hr	COMMENTS
7	20	A	0.000674	20.0	7	0.004719	6.68903376	
4.7	20	A	0.000674	20.0	4.7	0.003169	4.49120838	
4.9	20	A	0.000674	20.0	4.9	0.003304	4.68232363	
4.8	20	A	0.000674	20.0	4.8	0.003236	4.586766	

Average Ksat (3 consecutive readings w/same outflow per time: 4.586766

TEST #3

READING (Δ)	TIME INTERVAL (sec)	COEFFICIENT A or B	COEFFICIENT A or B 1/cm	CONVERSION FACTOR cm^3	OUTFLOW cm^3/s	SATURATED HYDRAULIC CONDUCTIVITY (Ksat) cm/sec	SATURATED HYDRAULIC CONDUCTIVITY (Ksat) in/hr	COMMENTS
6.5	20	A	0.000674	20.0	6.5	0.004382	6.21124563	
2.5	10	A	0.000674	20.0	5	0.003371	4.77788126	
3.2	10	A	0.000674	20.0	6.4	0.004315	6.11568801	
1.8	10	A	0.000674	20.0	3.6	0.002427	3.4400745	

Average Ksat (3 consecutive readings w/same outflow per time: 5.701605

TFM Since 1968

Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

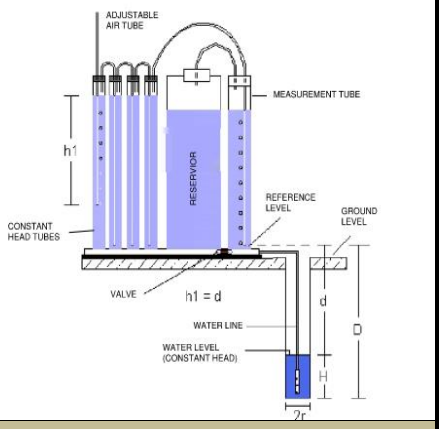
PROJECT NAME:	256 & 264 Central Avenue, Dover NH	ENGINEER:	Jason Cook
PROJECT NUMBER:	47262.01	DATE OF TESTING:	6/14/2023
PROJECT LOCATION:	264 Central Avenue, Dover NH		

Amoozemeter Field Data Sheet

Test Pit 3

Ksat (Average) = 1.91

SETUP CALCULATIONS			Test 1	Test 2	Test 3
D- REF LINE OF A-METER TO HOLE BOTTOM (cm)			67.3	66.0	66.0
H - DEPTH OF H20 IN HOLE (cm)			19.1	17.8	17.8
d - TOP OF WATER TO OUTFLOW LENGTH (cm)			48.3	48.3	48.3
AUGER DIAMETER (cm)			5.0	5.0	5.0
AREA OF AUGER HOLE (cm^2)			19.6	19.6	19.6
DEPTH TO IMPERVIOUS LAYER/SHWT, "s" (cm)			106.68	106.68	106.68
GLOVER SOLUTION A OR B			A	A	A
SOIL DESCRIPTION AT TEST 1 DEPTH:	Dark Sand Fill w/ Ash				
SOIL HORIZON AT TEST 1 DEPTH:					
SOIL DESCRIPTION AT TEST 2 DEPTH:	Dark Sand Fill w/ Ash				
SOIL HORIZON AT TEST 2 DEPTH:					
SOIL DESCRIPTION AT TEST 3 DEPTH:	Dark Sand Fill w/ Ash				
SOIL HORIZON AT TEST 3 DEPTH:					
ONE OR BOTH CHAMBERS USED:			1	1	1



TEST #1

READING (Δ)	TIME INTERVAL (sec)	COEFFICIENT A or B	COEFFICIENT A or B 1/cm	CONVERSION FACTOR cm^3	OUTFLOW cm^3/s	SATURATED HYDRAULIC CONDUCTIVITY (Ksat) cm/sec	SATURATED HYDRAULIC CONDUCTIVITY (Ksat) in/hr	COMMENTS
1.1	20	A	0.000815	20.0	1.1	0.000897	1.27083397	
1.1	20	A	0.000815	20.0	1.1	0.000897	1.27083397	
1.3	20	A	0.000815	20.0	1.3	0.00106	1.50189469	
1.3	20	A	0.000815	20.0	1.3	0.00106	1.50189469	
1.3	20	A	0.000815	20.0	1.3	0.00106	1.50189469	
1.4	20	A	0.000815	20.0	1.4	0.001141	1.61742505	
1.2	20	A	0.000815	20.0	1.2	0.000978	1.38636433	

Average Ksat (3 consecutive readings w/same outflow per time: 1.501895

TEST #2

READING (Δ)	TIME INTERVAL (sec)	COEFFICIENT A or B	COEFFICIENT A or B 1/cm	CONVERSION FACTOR cm^3	OUTFLOW cm^3/s	SATURATED HYDRAULIC CONDUCTIVITY (Ksat) cm/sec	SATURATED HYDRAULIC CONDUCTIVITY (Ksat) in/hr	COMMENTS
1.9	20	A	0.000924	20.0	1.9	0.001755	2.48709915	
1.1	20	A	0.000924	20.0	1.1	0.001016	1.43989951	
1.4	20	A	0.000924	20.0	1.4	0.001293	1.83259938	
1.4	20	A	0.000924	20.0	1.4	0.001293	1.83259938	
1.5	20	A	0.000924	20.0	1.5	0.001385	1.96349933	
1.5	20	A	0.000924	20.0	1.5	0.001385	1.96349933	
1.5	20	A	0.000924	20.0	1.5	0.001385	1.96349933	

Average Ksat (3 consecutive readings w/same outflow per time: 1.963499

TEST #3

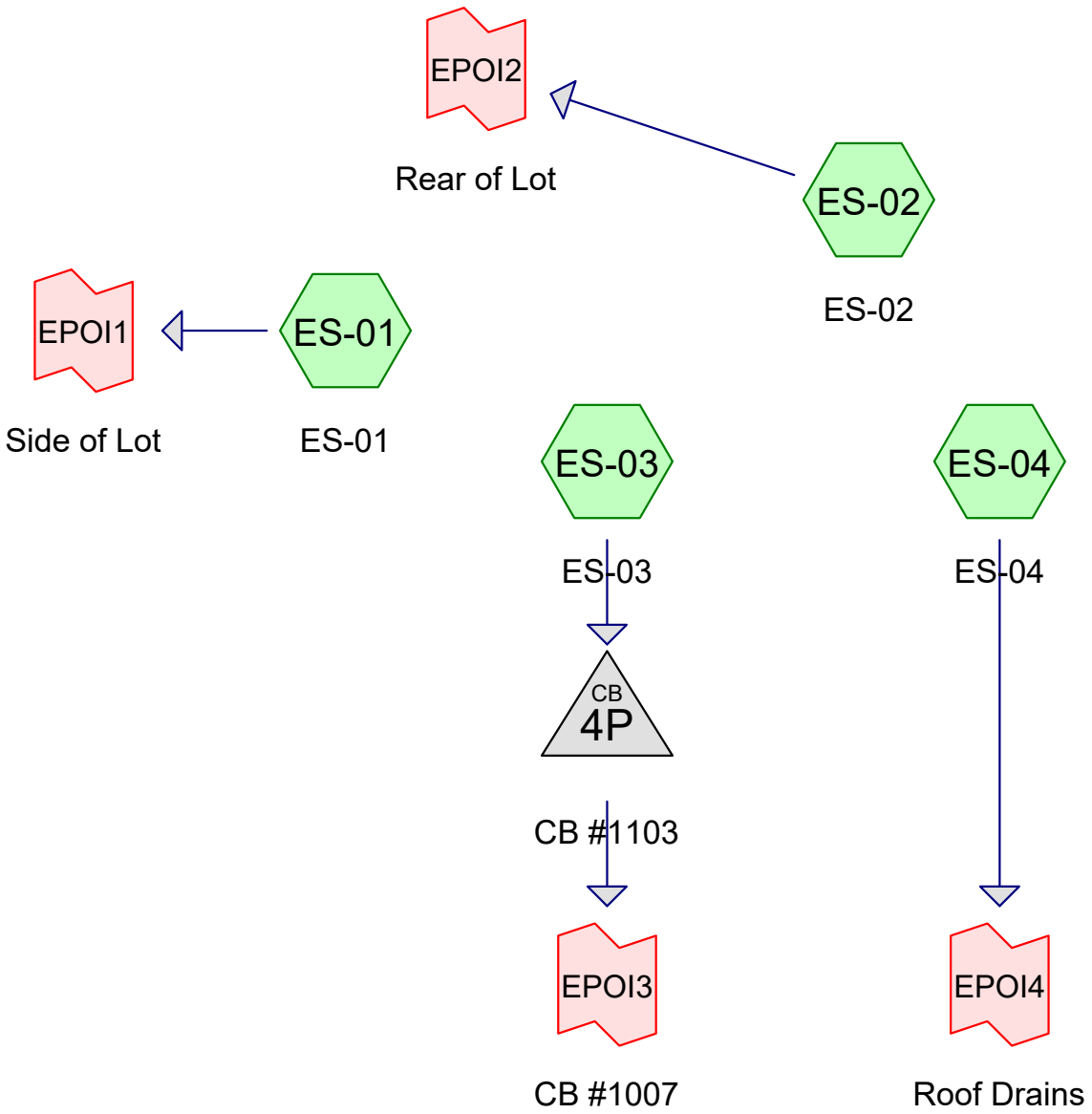
READING (Δ)	TIME INTERVAL (sec)	COEFFICIENT A or B	COEFFICIENT A or B 1/cm	CONVERSION FACTOR cm^3	OUTFLOW cm^3/s	SATURATED HYDRAULIC CONDUCTIVITY (Ksat) cm/sec	SATURATED HYDRAULIC CONDUCTIVITY (Ksat) in/hr	COMMENTS
1.4	20	A	0.000924	20.0	1.4	0.001293	1.83259938	
1.5	20	A	0.000924	20.0	1.5	0.001385	1.96349933	
1.7	20	A	0.000924	20.0	1.7	0.00157	2.22529924	
1.8	20	A	0.000924	20.0	1.8	0.001662	2.3561992	
1.7	20	A	0.000924	20.0	1.7	0.00157	2.22529924	
1	20	A	0.000924	20.0	1	0.000924	1.30899955	
1.5	20	A	0.000924	20.0	1.5	0.001385	1.96349933	

Average Ksat (3 consecutive readings w/same outflow per time: 2.268933

APPENDIX D – PRE-DEVELOPMENT CALCULATIONS

(This Page Is Intentionally Blank)

Pre-development



Subcat Reach Pond Link

Routing Diagram for 47262-00 Site Drainage
Prepared by {enter your company name here}, Printed 11/3/2023
HydroCAD® 10.10-7a s/n 00866 © 2021 HydroCAD Software Solutions LLC

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-yr	Type III 24-hr		Default	24.00	1	3.15	2
2	25-yr	Type III 24-hr		Default	24.00	1	6.01	2
3	50-yr	Type III 24-hr		Default	24.00	1	7.18	2

Area Listing (selected nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
3,367	86	<50% Grass cover, Poor, HSG C (ES-01, ES-02, ES-03)
11,812	96	Gravel surface, HSG C (ES-01, ES-02, ES-03)
1,452	98	Paved parking, HSG C (ES-03)
12,270	98	Roofs, HSG C (ES-04)
528	98	Unconnected pavement, HSG B (ES-02)
602	70	Woods, Good, HSG C (ES-01, ES-03)
30,031	**95**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
528	HSG B	ES-02
29,503	HSG C	ES-01, ES-02, ES-03, ES-04
0	HSG D	
0	Other	
30,031		**TOTAL AREA**

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points x 3
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 ES-01: ES-01 Runoff Area=4,630 sf 0.00% Impervious Runoff Depth>2.12"
Flow Length=143' Tc=6.2 min CN=90 Runoff=0.26 cfs 818 cf

Subcatchment ES-02: ES-02 Runoff Area=6,560 sf 8.05% Impervious Runoff Depth>2.40"
Flow Length=202' Tc=8.3 min UI Adjusted CN=93 Runoff=0.37 cfs 1,309 cf

Subcatchment ES-03: ES-03 Runoff Area=6,571 sf 22.10% Impervious Runoff Depth>2.70"
Flow Length=81' Slope=0.0430 '/' Tc=6.0 min CN=96 Runoff=0.43 cfs 1,477 cf

Subcatchment ES-04: ES-04 Runoff Area=12,270 sf 100.00% Impervious Runoff Depth>2.92"
Tc=6.0 min CN=98 Runoff=0.84 cfs 2,981 cf

Pond 4P: CB #1103 Peak Elev=55.99' Inflow=0.43 cfs 1,477 cf
6.0" Round Culvert n=0.013 L=54.0' S=0.0150 '/' Outflow=0.43 cfs 1,477 cf

Link EPOI1: Side of Lot Inflow=0.26 cfs 818 cf
Primary=0.26 cfs 818 cf

Link EPOI2: Rear of Lot Inflow=0.37 cfs 1,309 cf
Primary=0.37 cfs 1,309 cf

Link EPOI3: CB #1007 Inflow=0.43 cfs 1,477 cf
Primary=0.43 cfs 1,477 cf

Link EPOI4: Roof Drains Inflow=0.84 cfs 2,981 cf
Primary=0.84 cfs 2,981 cf

Total Runoff Area = 30,031 sf Runoff Volume = 6,586 cf Average Runoff Depth = 2.63"
52.55% Pervious = 15,781 sf 47.45% Impervious = 14,250 sf

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points x 3
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 ES-01: ES-01 Runoff Area=4,630 sf 0.00% Impervious Runoff Depth>4.85"
Flow Length=143' Tc=6.2 min CN=90 Runoff=0.56 cfs 1,872 cf

Subcatchment ES-02: ES-02 Runoff Area=6,560 sf 8.05% Impervious Runoff Depth>5.19"
Flow Length=202' Tc=8.3 min UI Adjusted CN=93 Runoff=0.78 cfs 2,836 cf

Subcatchment ES-03: ES-03 Runoff Area=6,571 sf 22.10% Impervious Runoff Depth>5.53"
Flow Length=81' Slope=0.0430 '/' Tc=6.0 min CN=96 Runoff=0.86 cfs 3,030 cf

Subcatchment ES-04: ES-04 Runoff Area=12,270 sf 100.00% Impervious Runoff Depth>5.77"
Tc=6.0 min CN=98 Runoff=1.62 cfs 5,898 cf

Pond 4P: CB #1103 Peak Elev=56.92' Inflow=0.86 cfs 3,030 cf
6.0" Round Culvert n=0.013 L=54.0' S=0.0150 '/' Outflow=0.86 cfs 3,030 cf

Link EPOI1: Side of Lot Inflow=0.56 cfs 1,872 cf
Primary=0.56 cfs 1,872 cf

Link EPOI2: Rear of Lot Inflow=0.78 cfs 2,836 cf
Primary=0.78 cfs 2,836 cf

Link EPOI3: CB #1007 Inflow=0.86 cfs 3,030 cf
Primary=0.86 cfs 3,030 cf

Link EPOI4: Roof Drains Inflow=1.62 cfs 5,898 cf
Primary=1.62 cfs 5,898 cf

Total Runoff Area = 30,031 sf Runoff Volume = 13,636 cf Average Runoff Depth = 5.45"
52.55% Pervious = 15,781 sf 47.45% Impervious = 14,250 sf

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points x 3
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 ES-01: ES-01 Runoff Area=4,630 sf 0.00% Impervious Runoff Depth>6.00"
Flow Length=143' Tc=6.2 min CN=90 Runoff=0.68 cfs 2,313 cf

Subcatchment ES-02: ES-02 Runoff Area=6,560 sf 8.05% Impervious Runoff Depth>6.34"
Flow Length=202' Tc=8.3 min UI Adjusted CN=93 Runoff=0.94 cfs 3,468 cf

Subcatchment ES-03: ES-03 Runoff Area=6,571 sf 22.10% Impervious Runoff Depth>6.70"
Flow Length=81' Slope=0.0430 '/' Tc=6.0 min CN=96 Runoff=1.03 cfs 3,668 cf

Subcatchment ES-04: ES-04 Runoff Area=12,270 sf 100.00% Impervious Runoff Depth>6.94"
Tc=6.0 min CN=98 Runoff=1.94 cfs 7,093 cf

Pond 4P: CB #1103 Peak Elev=57.67' Inflow=1.03 cfs 3,668 cf
6.0" Round Culvert n=0.013 L=54.0' S=0.0150 '/' Outflow=1.03 cfs 3,668 cf

Link EPOI1: Side of Lot Inflow=0.68 cfs 2,313 cf
Primary=0.68 cfs 2,313 cf

Link EPOI2: Rear of Lot Inflow=0.94 cfs 3,468 cf
Primary=0.94 cfs 3,468 cf

Link EPOI3: CB #1007 Inflow=1.03 cfs 3,668 cf
Primary=1.03 cfs 3,668 cf

Link EPOI4: Roof Drains Inflow=1.94 cfs 7,093 cf
Primary=1.94 cfs 7,093 cf

Total Runoff Area = 30,031 sf Runoff Volume = 16,542 cf Average Runoff Depth = 6.61"
52.55% Pervious = 15,781 sf 47.45% Impervious = 14,250 sf

(This Page Is Intentionally Blank)

APPENDIX E – PRE-DEVELOPMENT CALCULATIONS (10-YEAR STORM EVENT)

(This Page Is Intentionally Blank)

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	10-yr	Type III 24-hr		Default	24.00	1	4.75	2

Summary for Subcatchment ES-01: ES-01

Runoff = 0.43 cfs @ 12.09 hrs, Volume= 1,402 cf, Depth> 3.63"
Routed to Link EPOI1 : Side of Lot

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 10-yr Rainfall=4.75"

Area (sf)	CN	Description
0	98	Paved parking, HSG C
459	70	Woods, Good, HSG C
2,649	96	Gravel surface, HSG C
1,522	86	<50% Grass cover, Poor, HSG C
4,630	90	Weighted Average
4,630		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0	6	0.0100	0.03		**Sheet Flow, Sheet Flow 1** Woods: Light underbrush n= 0.400 P2= 3.15"
1.4	6	0.0100	0.07		**Sheet Flow, Sheet Flow 2** Grass: Short n= 0.150 P2= 3.15"
1.3	88	0.0140	1.15		**Sheet Flow, Sheet Flow 3** Smooth surfaces n= 0.011 P2= 3.15"
0.4	33	0.0060	1.25		**Shallow Concentrated Flow, Shallow Concentrated Flow 1** Unpaved Kv= 16.1 fps
0.1	10	0.0150	1.22		**Shallow Concentrated Flow, Shallow Concentrated Flow 2** Nearly Bare & Untilled Kv= 10.0 fps
6.2	143	Total			

Summary for Subcatchment ES-02: ES-02

Runoff = 0.60 cfs @ 12.11 hrs, Volume= 2,159 cf, Depth> 3.95"
Routed to Link EPOI2 : Rear of Lot

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 10-yr Rainfall=4.75"

Area (sf)	CN	Adj	Description
4,308	96		Gravel surface, HSG C
1,724	86		<50% Grass cover, Poor, HSG C
528	98		Unconnected pavement, HSG B
6,560	94	93	Weighted Average, UI Adjusted
6,032			91.95% Pervious Area
528			8.05% Impervious Area
528			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	20	0.0200	0.99		**Sheet Flow, Sheet Flow 1** Smooth surfaces n= 0.011 P2= 3.15"
6.9	80	0.0312	0.19		**Sheet Flow, Sheet Flow 2** Grass: Short n= 0.150 P2= 3.15"
0.8	75	0.0106	1.66		**Shallow Concentrated Flow, Shallow Concentrated Flow 1** Unpaved Kv= 16.1 fps
0.3	27	0.0278	1.67		**Shallow Concentrated Flow, Shallow Concentrated Flow 2** Nearly Bare & Untilled Kv= 10.0 fps
8.3	202	Total			

Summary for Subcatchment ES-03: ES-03

Runoff = 0.67 cfs @ 12.09 hrs, Volume= 2,344 cf, Depth> 4.28"
Routed to Pond 4P : CB #1103

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 10-yr Rainfall=4.75"

Area (sf)	CN	Description
1,452	98	Paved parking, HSG C
143	70	Woods, Good, HSG C
4,855	96	Gravel surface, HSG C
121	86	<50% Grass cover, Poor, HSG C
6,571	96	Weighted Average
5,119		77.90% Pervious Area
1,452		22.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	81	0.0430	1.78		**Sheet Flow, Sheet Flow 1** Smooth surfaces n= 0.011 P2= 3.15"
5.2					**Direct Entry, Direct Entry**
6.0	81	Total			

Summary for Subcatchment ES-04: ES-04

Runoff = 1.28 cfs @ 12.09 hrs, Volume= 4,612 cf, Depth> 4.51"
Routed to Link EPOI4 : Roof Drains

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 10-yr Rainfall=4.75"

Area (sf)	CN	Description
12,270	98	Roofs, HSG C
0	98	Paved parking, HSG C
12,270	98	Weighted Average
12,270		100.00% Impervious Area

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

Summary for Pond 4P: CB #1103

Inflow Area = 6,571 sf, 22.10% Impervious, Inflow Depth > 4.28" for 10-yr event
Inflow = 0.67 cfs @ 12.09 hrs, Volume= 2,344 cf
Outflow = 0.67 cfs @ 12.09 hrs, Volume= 2,344 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.67 cfs @ 12.09 hrs, Volume= 2,344 cf
Routed to Link EPOI3 : CB #1007

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 56.28' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	55.53'	**6.0" Round Culvert** L= 54.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 55.53' / 54.72' S= 0.0150 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.65 cfs @ 12.09 hrs HW=56.26' TW=0.00' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 0.65 cfs @ 3.33 fps)

Summary for Link EPOI1: Side of Lot

Inflow Area = 4,630 sf, 0.00% Impervious, Inflow Depth > 3.63" for 10-yr event
Inflow = 0.43 cfs @ 12.09 hrs, Volume= 1,402 cf
Primary = 0.43 cfs @ 12.09 hrs, Volume= 1,402 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link EPOI2: Rear of Lot

Inflow Area = 6,560 sf, 8.05% Impervious, Inflow Depth > 3.95" for 10-yr event
Inflow = 0.60 cfs @ 12.11 hrs, Volume= 2,159 cf
Primary = 0.60 cfs @ 12.11 hrs, Volume= 2,159 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link EPOI3: CB #1007

Inflow Area = 6,571 sf, 22.10% Impervious, Inflow Depth > 4.28" for 10-yr event
Inflow = 0.67 cfs @ 12.09 hrs, Volume= 2,344 cf
Primary = 0.67 cfs @ 12.09 hrs, Volume= 2,344 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link EPOI4: Roof Drains

Inflow Area = 12,270 sf,100.00% Impervious, Inflow Depth > 4.51" for 10-yr event
Inflow = 1.28 cfs @ 12.09 hrs, Volume= 4,612 cf
Primary = 1.28 cfs @ 12.09 hrs, Volume= 4,612 cf, Atten= 0%, Lag= 0.0 min

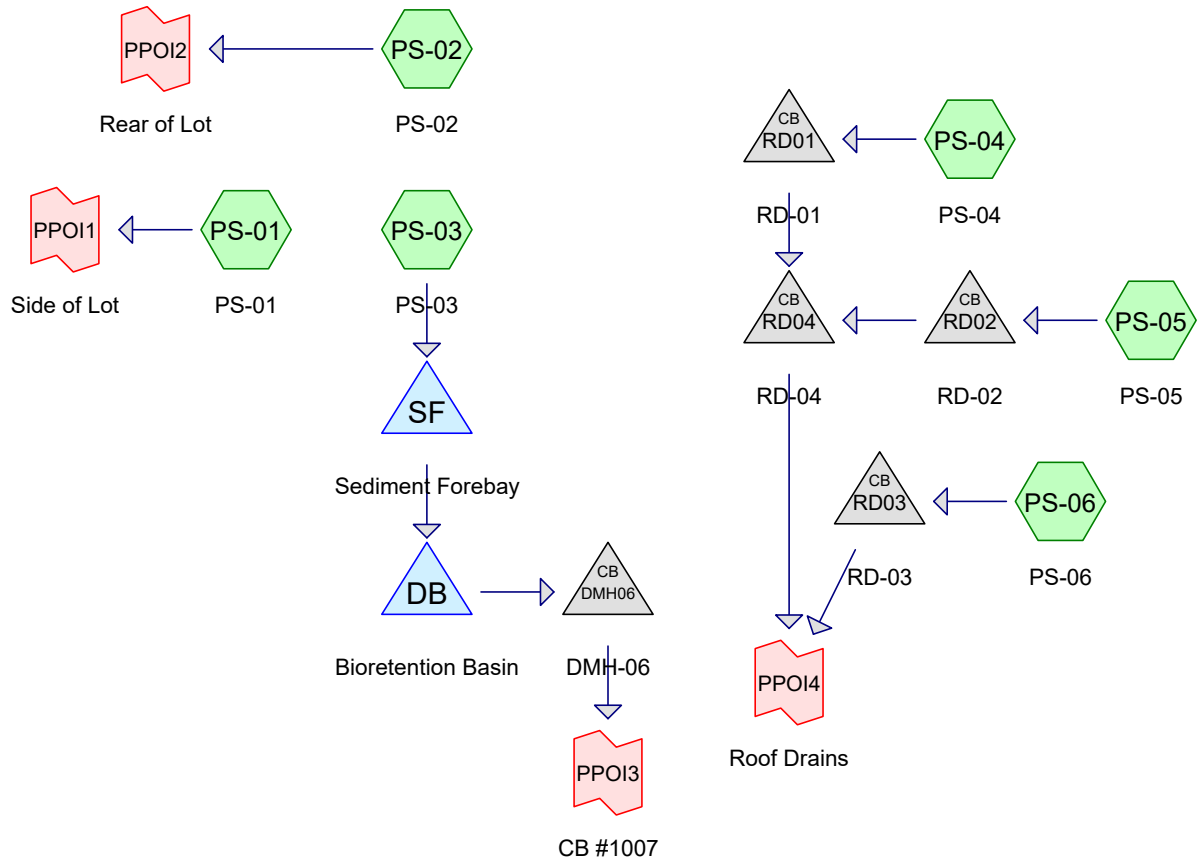
Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

(This Page Is Intentionally Blank)

APPENDIX F – POST-DEVELOPMENT CALCULATIONS

(This Page Is Intentionally Blank)

Post-development



Subcat Reach Pond Link

Routing Diagram for 47262-00 Site Drainage
Prepared by {enter your company name here}, Printed 12/18/2023
HydroCAD® 10.10-7a s/n 00866 © 2021 HydroCAD Software Solutions LLC

Area Listing (selected nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
6,993	74	>75% Grass cover, Good, HSG C (PS-01, PS-02, PS-03)
10,168	98	Paved parking, HSG C (PS-03)
12,270	98	Roofs, HSG C (PS-04, PS-05, PS-06)
397	73	Woods, Fair, HSG C (PS-03)
203	70	Woods, Good, HSG C (PS-01)

Soil Listing (selected nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
0	HSG B	
30,031	HSG C	PS-01, PS-02, PS-03, PS-04, PS-05, PS-06
0	HSG D	
0	Other	

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points x 3
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 PS-01: PS-01 Runoff Area=1,455 sf 0.00% Impervious Runoff Depth>0.95"
Flow Length=28' Slope=0.0500 '/' Tc=6.0 min CN=73 Runoff=0.03 cfs 115 cf

Subcatchment PS-02: PS-02 Runoff Area=785 sf 0.00% Impervious Runoff Depth>1.00"
Flow Length=30' Slope=0.0500 '/' Tc=6.0 min CN=74 Runoff=0.02 cfs 66 cf

Subcatchment PS-03: PS-03 Runoff Area=15,521 sf 65.51% Impervious Runoff Depth>2.12"
Flow Length=174' Tc=6.0 min CN=90 Runoff=0.86 cfs 2,743 cf

Subcatchment PS-04: PS-04 Runoff Area=1,505 sf 100.00% Impervious Runoff Depth>2.92"
Tc=6.0 min CN=98 Runoff=0.10 cfs 366 cf

Subcatchment PS-05: PS-05 Runoff Area=2,575 sf 100.00% Impervious Runoff Depth>2.92"
Flow Length=26' Slope=0.0100 '/' Tc=6.0 min CN=98 Runoff=0.18 cfs 626 cf

Subcatchment PS-06: PS-06 Runoff Area=8,190 sf 100.00% Impervious Runoff Depth>2.92"
Tc=6.0 min CN=98 Runoff=0.56 cfs 1,990 cf

Pond DB: Bioretention Basin Peak Elev=56.11' Storage=467 cf Inflow=0.86 cfs 2,554 cf
Discarded=0.01 cfs 263 cf Primary=0.74 cfs 1,987 cf Outflow=0.74 cfs 2,250 cf

Pond DMH06: DMH-06 Peak Elev=55.29' Inflow=0.74 cfs 1,987 cf
18.0" Round Culvert n=0.013 L=25.0' S=0.0048 '/' Outflow=0.74 cfs 1,987 cf

Pond RD01: RD-01 Peak Elev=55.90' Inflow=0.10 cfs 366 cf
6.0" Round Culvert n=0.013 L=79.0' S=0.0051 '/' Outflow=0.10 cfs 366 cf

Pond RD02: RD-02 Peak Elev=55.70' Inflow=0.18 cfs 626 cf
6.0" Round Culvert n=0.013 L=17.0' S=0.0053 '/' Outflow=0.18 cfs 626 cf

Pond RD03: RD-03 Peak Elev=55.57' Inflow=0.56 cfs 1,990 cf
8.0" Round Culvert n=0.013 L=20.0' S=0.0050 '/' Outflow=0.56 cfs 1,990 cf

Pond RD04: RD-04 Peak Elev=55.60' Inflow=0.28 cfs 991 cf
8.0" Round Culvert n=0.013 L=54.0' S=0.0050 '/' Outflow=0.28 cfs 991 cf

Pond SF: Sediment Forebay Peak Elev=56.48' Storage=146 cf Inflow=0.86 cfs 2,743 cf
Discarded=0.00 cfs 72 cf Primary=0.86 cfs 2,554 cf Outflow=0.86 cfs 2,626 cf

Link PPOI1: Side of Lot Inflow=0.03 cfs 115 cf
Primary=0.03 cfs 115 cf

Link PPOI2: Rear of Lot Inflow=0.02 cfs 66 cf
Primary=0.02 cfs 66 cf

Link PPOI3: CB #1007 Inflow=0.74 cfs 1,987 cf
Primary=0.74 cfs 1,987 cf

Link PPOI4: Roof Drains

Inflow=0.84 cfs 2,981 cf
Primary=0.84 cfs 2,981 cf

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points x 3
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 PS-01: PS-01 Runoff Area=1,455 sf 0.00% Impervious Runoff Depth>3.09"
Flow Length=28' Slope=0.0500 '/' Tc=6.0 min CN=73 Runoff=0.12 cfs 375 cf

Subcatchment PS-02: PS-02 Runoff Area=785 sf 0.00% Impervious Runoff Depth>3.19"
Flow Length=30' Slope=0.0500 '/' Tc=6.0 min CN=74 Runoff=0.07 cfs 209 cf

Subcatchment PS-03: PS-03 Runoff Area=15,521 sf 65.51% Impervious Runoff Depth>4.85"
Flow Length=174' Tc=6.0 min CN=90 Runoff=1.89 cfs 6,276 cf

Subcatchment PS-04: PS-04 Runoff Area=1,505 sf 100.00% Impervious Runoff Depth>5.77"
Tc=6.0 min CN=98 Runoff=0.20 cfs 723 cf

Subcatchment PS-05: PS-05 Runoff Area=2,575 sf 100.00% Impervious Runoff Depth>5.77"
Flow Length=26' Slope=0.0100 '/' Tc=6.0 min CN=98 Runoff=0.34 cfs 1,238 cf

Subcatchment PS-06: PS-06 Runoff Area=8,190 sf 100.00% Impervious Runoff Depth>5.77"
Tc=6.0 min CN=98 Runoff=1.08 cfs 3,937 cf

Pond DB: Bioretention Basin Peak Elev=56.45' Storage=670 cf Inflow=1.88 cfs 6,074 cf
Discarded=0.01 cfs 313 cf Primary=1.59 cfs 5,449 cf Outflow=1.60 cfs 5,762 cf

Pond DMH06: DMH-06 Peak Elev=55.53' Inflow=1.59 cfs 5,449 cf
18.0" Round Culvert n=0.013 L=25.0' S=0.0048 '/' Outflow=1.59 cfs 5,449 cf

Pond RD01: RD-01 Peak Elev=56.04' Inflow=0.20 cfs 723 cf
6.0" Round Culvert n=0.013 L=79.0' S=0.0051 '/' Outflow=0.20 cfs 723 cf

Pond RD02: RD-02 Peak Elev=55.90' Inflow=0.34 cfs 1,238 cf
6.0" Round Culvert n=0.013 L=17.0' S=0.0053 '/' Outflow=0.34 cfs 1,238 cf

Pond RD03: RD-03 Peak Elev=55.99' Inflow=1.08 cfs 3,937 cf
8.0" Round Culvert n=0.013 L=20.0' S=0.0050 '/' Outflow=1.08 cfs 3,937 cf

Pond RD04: RD-04 Peak Elev=55.76' Inflow=0.54 cfs 1,961 cf
8.0" Round Culvert n=0.013 L=54.0' S=0.0050 '/' Outflow=0.54 cfs 1,961 cf

Pond SF: Sediment Forebay Peak Elev=56.56' Storage=171 cf Inflow=1.89 cfs 6,276 cf
Discarded=0.00 cfs 84 cf Primary=1.88 cfs 6,074 cf Outflow=1.88 cfs 6,158 cf

Link PPOI1: Side of Lot Inflow=0.12 cfs 375 cf
Primary=0.12 cfs 375 cf

Link PPOI2: Rear of Lot Inflow=0.07 cfs 209 cf
Primary=0.07 cfs 209 cf

Link PPOI3: CB #1007 Inflow=1.59 cfs 5,449 cf
Primary=1.59 cfs 5,449 cf

Link PPOI4: Roof Drains

Inflow=1.62 cfs 5,898 cf
Primary=1.62 cfs 5,898 cf

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points x 3
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 PS-01: PS-01 Runoff Area=1,455 sf 0.00% Impervious Runoff Depth>4.09"
Flow Length=28' Slope=0.0500 '/' Tc=6.0 min CN=73 Runoff=0.16 cfs 496 cf

Subcatchment PS-02: PS-02 Runoff Area=785 sf 0.00% Impervious Runoff Depth>4.20"
Flow Length=30' Slope=0.0500 '/' Tc=6.0 min CN=74 Runoff=0.09 cfs 274 cf

Subcatchment PS-03: PS-03 Runoff Area=15,521 sf 65.51% Impervious Runoff Depth>6.00"
Flow Length=174' Tc=6.0 min CN=90 Runoff=2.31 cfs 7,755 cf

Subcatchment PS-04: PS-04 Runoff Area=1,505 sf 100.00% Impervious Runoff Depth>6.94"
Tc=6.0 min CN=98 Runoff=0.24 cfs 870 cf

Subcatchment PS-05: PS-05 Runoff Area=2,575 sf 100.00% Impervious Runoff Depth>6.94"
Flow Length=26' Slope=0.0100 '/' Tc=6.0 min CN=98 Runoff=0.41 cfs 1,488 cf

Subcatchment PS-06: PS-06 Runoff Area=8,190 sf 100.00% Impervious Runoff Depth>6.94"
Tc=6.0 min CN=98 Runoff=1.29 cfs 4,734 cf

Pond DB: Bioretention Basin Peak Elev=56.59' Storage=759 cf Inflow=2.20 cfs 7,549 cf
Discarded=0.01 cfs 329 cf Primary=1.85 cfs 6,906 cf Outflow=1.86 cfs 7,235 cf

Pond DMH06: DMH-06 Peak Elev=55.59' Inflow=1.85 cfs 6,906 cf
18.0" Round Culvert n=0.013 L=25.0' S=0.0048 '/' Outflow=1.85 cfs 6,906 cf

Pond RD01: RD-01 Peak Elev=56.10' Inflow=0.24 cfs 870 cf
6.0" Round Culvert n=0.013 L=79.0' S=0.0051 '/' Outflow=0.24 cfs 870 cf

Pond RD02: RD-02 Peak Elev=56.01' Inflow=0.41 cfs 1,488 cf
6.0" Round Culvert n=0.013 L=17.0' S=0.0053 '/' Outflow=0.41 cfs 1,488 cf

Pond RD03: RD-03 Peak Elev=56.14' Inflow=1.29 cfs 4,734 cf
8.0" Round Culvert n=0.013 L=20.0' S=0.0050 '/' Outflow=1.29 cfs 4,734 cf

Pond RD04: RD-04 Peak Elev=55.83' Inflow=0.64 cfs 2,358 cf
8.0" Round Culvert n=0.013 L=54.0' S=0.0050 '/' Outflow=0.64 cfs 2,358 cf

Pond SF: Sediment Forebay Peak Elev=56.63' Storage=194 cf Inflow=2.31 cfs 7,755 cf
Discarded=0.00 cfs 88 cf Primary=2.20 cfs 7,549 cf Outflow=2.20 cfs 7,637 cf

Link PPOI1: Side of Lot Inflow=0.16 cfs 496 cf
Primary=0.16 cfs 496 cf

Link PPOI2: Rear of Lot Inflow=0.09 cfs 274 cf
Primary=0.09 cfs 274 cf

Link PPOI3: CB #1007 Inflow=1.85 cfs 6,906 cf
Primary=1.85 cfs 6,906 cf

Link PPOI4: Roof Drains

Inflow=1.94 cfs 7,093 cf
Primary=1.94 cfs 7,093 cf

(This Page Is Intentionally Blank)

APPENDIX G – POST-DEVELOPMENT CALCULATIONS (10-YEAR STORM EVENT)

(This Page Is Intentionally Blank)

Summary for Subcatchment PS-01: PS-01

Runoff = 0.08 cfs @ 12.10 hrs, Volume= 253 cf, Depth> 2.08"
Routed to Link PPOI1 : Side of Lot

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 10-yr Rainfall=4.75"

Area (sf)	CN	Description
203	70	Woods, Good, HSG C
1,252	74	>75% Grass cover, Good, HSG C
1,455	73	Weighted Average
1,455		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.5	28	0.0500	0.19		**Sheet Flow, Sheet Flow 1** Grass: Short n= 0.150 P2= 3.15"
3.5					**Direct Entry, Direct Entry**
6.0	28	Total			

Summary for Subcatchment PS-02: PS-02

Runoff = 0.04 cfs @ 12.10 hrs, Volume= 142 cf, Depth> 2.16"
Routed to Link PPOI2 : Rear of Lot

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 10-yr Rainfall=4.75"

Area (sf)	CN	Description
785	74	>75% Grass cover, Good, HSG C
785		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.6	30	0.0500	0.19		**Sheet Flow, Sheet Flow 1** Grass: Short n= 0.150 P2= 3.15"
3.4					**Direct Entry, Direct Entry**
6.0	30	Total			

Summary for Subcatchment PS-03: PS-03

Runoff = 1.44 cfs @ 12.09 hrs, Volume= 4,699 cf, Depth> 3.63"
Routed to Pond SF : Sediment Forebay

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 10-yr Rainfall=4.75"

Area (sf)	CN	Description
10,168	98	Paved parking, HSG C
4,956	74	>75% Grass cover, Good, HSG C
397	73	Woods, Fair, HSG C
15,521	90	Weighted Average
5,353		34.49% Pervious Area
10,168		65.51% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	100	0.0350	1.71		**Sheet Flow, Sheet Flow 1** Smooth surfaces n= 0.011 P2= 3.15"
0.5	70	0.0150	2.49		**Shallow Concentrated Flow, Shallow Concentrated Flow 1** Paved Kv= 20.3 fps
0.1	4	0.0150	0.86		**Shallow Concentrated Flow, Shallow Concentrated 2** Short Grass Pasture Kv= 7.0 fps
4.4					**Direct Entry, Direct Entry**
6.0	174	Total			

Summary for Subcatchment PS-04: PS-04

Runoff = 0.16 cfs @ 12.09 hrs, Volume= 566 cf, Depth> 4.51"
Routed to Pond RD01 : RD-01

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 10-yr Rainfall=4.75"

Area (sf)	CN	Description
1,505	98	Roofs, HSG C
1,505		100.00% Impervious Area

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

Summary for Subcatchment PS-05: PS-05

Runoff = 0.27 cfs @ 12.09 hrs, Volume= 968 cf, Depth> 4.51"
Routed to Pond RD02 : RD-02

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 10-yr Rainfall=4.75"

Area (sf)	CN	Description
2,575	98	Roofs, HSG C
2,575		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.4	26	0.0100	0.10		**Sheet Flow, Sheet Flow 1**
					Grass: Short n= 0.150 P2= 3.15"
1.6					**Direct Entry, Direct Entry**
6.0	26	Total			

Summary for Subcatchment PS-06: PS-06

Runoff = 0.85 cfs @ 12.09 hrs, Volume= 3,079 cf, Depth> 4.51"
Routed to Pond RD03 : RD-03

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 10-yr Rainfall=4.75"

Area (sf)	CN	Description
8,190	98	Roofs, HSG C
8,190		100.00% Impervious Area

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

Summary for Pond DB: Bioretention Basin

Inflow Area = 15,521 sf, 65.51% Impervious, Inflow Depth > 3.48" for 10-yr event
Inflow = 1.44 cfs @ 12.10 hrs, Volume= 4,502 cf
Outflow = 1.24 cfs @ 12.15 hrs, Volume= 4,193 cf, Atten= 14%, Lag= 3.1 min
Discarded = 0.01 cfs @ 12.15 hrs, Volume= 293 cf
Primary = 1.24 cfs @ 12.15 hrs, Volume= 3,899 cf
Routed to Pond DMH06 : DMH-06

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 56.31' @ 12.15 hrs Surf.Area= 1,392 sf Storage= 581 cf
Flood Elev= 57.00' Surf.Area= 1,522 sf Storage= 840 cf

Plug-Flow detention time= 55.0 min calculated for 4,193 cf (93% of inflow)
Center-of-Mass det. time= 19.6 min (819.4 - 799.8)

Volume	Invert	Avail.Storage	Storage Description
#1	55.70'	563 cf	**Pond Storage (Prismatic)**Listed below (Recalc)
#2	54.20'	119 cf	**Filter Media (Prismatic)**Listed below (Recalc)
			594 cf Overall x 20.0% Voids
#3	53.20'	158 cf	**Stone Storage (Prismatic)**Listed below (Recalc)
			396 cf Overall x 40.0% Voids
		840 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
55.70	396	0	0
56.70	730	563	563

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
54.20	396	0	0
55.70	396	594	594

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
53.20	396	0	0
54.20	396	396	396

Device	Routing	Invert	Outlet Devices
#1	Discarded	53.20'	**0.200 in/hr Exfiltration over Surface area**
#2	Primary	55.06'	**12.0" Round Culvert** L= 45.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 55.06' / 54.84' S= 0.0049 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#3	Device 2	55.75'	**4.0" Vert. Orifice X 4.00** C= 0.600 Limited to weir flow at low heads
#4	Device 2	56.69'	**24.0" x 24.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 2	56.10'	**4.0" Vert. Orifice X 2.00** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.01 cfs @ 12.15 hrs HW=56.31' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

Primary OutFlow Max=1.23 cfs @ 12.15 hrs HW=56.31' TW=55.44' (Dynamic Tailwater)
└**2=Culvert** (Passes 1.23 cfs of 2.75 cfs potential flow)
  ├**3=Orifice** (Orifice Controls 1.05 cfs @ 3.01 fps)
  ├**4=Grate** (Controls 0.00 cfs)
  └**5=Orifice** (Orifice Controls 0.18 cfs @ 1.55 fps)

Summary for Pond DMH06: DMH-06

Inflow Area = 15,521 sf, 65.51% Impervious, Inflow Depth > 3.01" for 10-yr event
Inflow = 1.24 cfs @ 12.15 hrs, Volume= 3,899 cf
Outflow = 1.24 cfs @ 12.15 hrs, Volume= 3,899 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.24 cfs @ 12.15 hrs, Volume= 3,899 cf
Routed to Link PPOI3 : CB #1007

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 55.44' @ 12.15 hrs
Flood Elev= 58.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	54.84'	**18.0" Round Culvert** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 54.84' / 54.72' S= 0.0048 '/' Cc= 0.900

n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=1.23 cfs @ 12.15 hrs HW=55.44' TW=0.00' (Dynamic Tailwater)
└**1=Culvert** (Barrel Controls 1.23 cfs @ 2.77 fps)

Summary for Pond RD01: RD-01

Inflow Area = 1,505 sf,100.00% Impervious, Inflow Depth > 4.51" for 10-yr event
Inflow = 0.16 cfs @ 12.09 hrs, Volume= 566 cf
Outflow = 0.16 cfs @ 12.09 hrs, Volume= 566 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.16 cfs @ 12.09 hrs, Volume= 566 cf
Routed to Pond RD04 : RD-04

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 55.98' @ 12.09 hrs
Flood Elev= 58.75'

Device	Routing	Invert	Outlet Devices
#1	Primary	55.64'	**6.0" Round Culvert** L= 79.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 55.64' / 55.24' S= 0.0051 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.15 cfs @ 12.09 hrs HW=55.97' TW=55.69' (Dynamic Tailwater)
└**1=Culvert** (Outlet Controls 0.15 cfs @ 1.55 fps)

Summary for Pond RD02: RD-02

Inflow Area = 2,575 sf,100.00% Impervious, Inflow Depth > 4.51" for 10-yr event
Inflow = 0.27 cfs @ 12.09 hrs, Volume= 968 cf
Outflow = 0.27 cfs @ 12.09 hrs, Volume= 968 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.27 cfs @ 12.09 hrs, Volume= 968 cf
Routed to Pond RD04 : RD-04

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 55.81' @ 12.09 hrs
Flood Elev= 58.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	55.33'	**6.0" Round Culvert** L= 17.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 55.33' / 55.24' S= 0.0053 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.26 cfs @ 12.09 hrs HW=55.81' TW=55.69' (Dynamic Tailwater)
└**1=Culvert** (Outlet Controls 0.26 cfs @ 1.74 fps)

Summary for Pond RD03: RD-03

Inflow Area = 8,190 sf,100.00% Impervious, Inflow Depth > 4.51" for 10-yr event
Inflow = 0.85 cfs @ 12.09 hrs, Volume= 3,079 cf
Outflow = 0.85 cfs @ 12.09 hrs, Volume= 3,079 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.85 cfs @ 12.09 hrs, Volume= 3,079 cf
Routed to Link PPOI4 : Roof Drains

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 55.76' @ 12.09 hrs
Flood Elev= 58.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	55.03'	**8.0" Round Culvert** L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 55.03' / 54.93' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=0.83 cfs @ 12.09 hrs HW=55.74' TW=0.00' (Dynamic Tailwater)
1=Culvert (Barrel Controls 0.83 cfs @ 2.77 fps)

Summary for Pond RD04: RD-04

Inflow Area = 4,080 sf,100.00% Impervious, Inflow Depth > 4.51" for 10-yr event
Inflow = 0.42 cfs @ 12.09 hrs, Volume= 1,534 cf
Outflow = 0.42 cfs @ 12.09 hrs, Volume= 1,534 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.42 cfs @ 12.09 hrs, Volume= 1,534 cf
Routed to Link PPOI4 : Roof Drains

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 55.69' @ 12.09 hrs
Flood Elev= 58.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	55.24'	**8.0" Round Culvert** L= 54.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 55.24' / 54.97' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=0.41 cfs @ 12.09 hrs HW=55.69' TW=0.00' (Dynamic Tailwater)
1=Culvert (Barrel Controls 0.41 cfs @ 2.36 fps)

Summary for Pond SF: Sediment Forebay

Inflow Area = 15,521 sf, 65.51% Impervious, Inflow Depth > 3.63" for 10-yr event
Inflow = 1.44 cfs @ 12.09 hrs, Volume= 4,699 cf
Outflow = 1.44 cfs @ 12.10 hrs, Volume= 4,581 cf, Atten= 0%, Lag= 0.4 min
Discarded = 0.00 cfs @ 12.10 hrs, Volume= 80 cf
Primary = 1.44 cfs @ 12.10 hrs, Volume= 4,502 cf
Routed to Pond DB : Bioretention Basin

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 56.52' @ 12.10 hrs Surf.Area= 308 sf Storage= 160 cf
Flood Elev= 56.70' Surf.Area= 357 sf Storage= 219 cf

Plug-Flow detention time= 24.6 min calculated for 4,581 cf (97% of inflow)
Center-of-Mass det. time= 9.6 min (801.6 - 792.0)

Volume	Invert	Avail.Storage	Storage Description
#1	55.70'	219 cf	**Pond Storage (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
55.70	80	0	0
56.70	357	219	219

Device	Routing	Invert	Outlet Devices
#1	Primary	56.37'	**10.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32
#2	Discarded	55.70'	**0.200 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.00 cfs @ 12.10 hrs HW=56.52' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=1.42 cfs @ 12.10 hrs HW=56.52' TW=56.27' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 1.42 cfs @ 0.93 fps)

Summary for Link PPOI1: Side of Lot

Inflow Area = 1,455 sf, 0.00% Impervious, Inflow Depth > 2.08" for 10-yr event
Inflow = 0.08 cfs @ 12.10 hrs, Volume= 253 cf
Primary = 0.08 cfs @ 12.10 hrs, Volume= 253 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link PPOI2: Rear of Lot

Inflow Area = 785 sf, 0.00% Impervious, Inflow Depth > 2.16" for 10-yr event
Inflow = 0.04 cfs @ 12.10 hrs, Volume= 142 cf
Primary = 0.04 cfs @ 12.10 hrs, Volume= 142 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link PPOI3: CB #1007

Inflow Area = 15,521 sf, 65.51% Impervious, Inflow Depth > 3.01" for 10-yr event
Inflow = 1.24 cfs @ 12.15 hrs, Volume= 3,899 cf
Primary = 1.24 cfs @ 12.15 hrs, Volume= 3,899 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

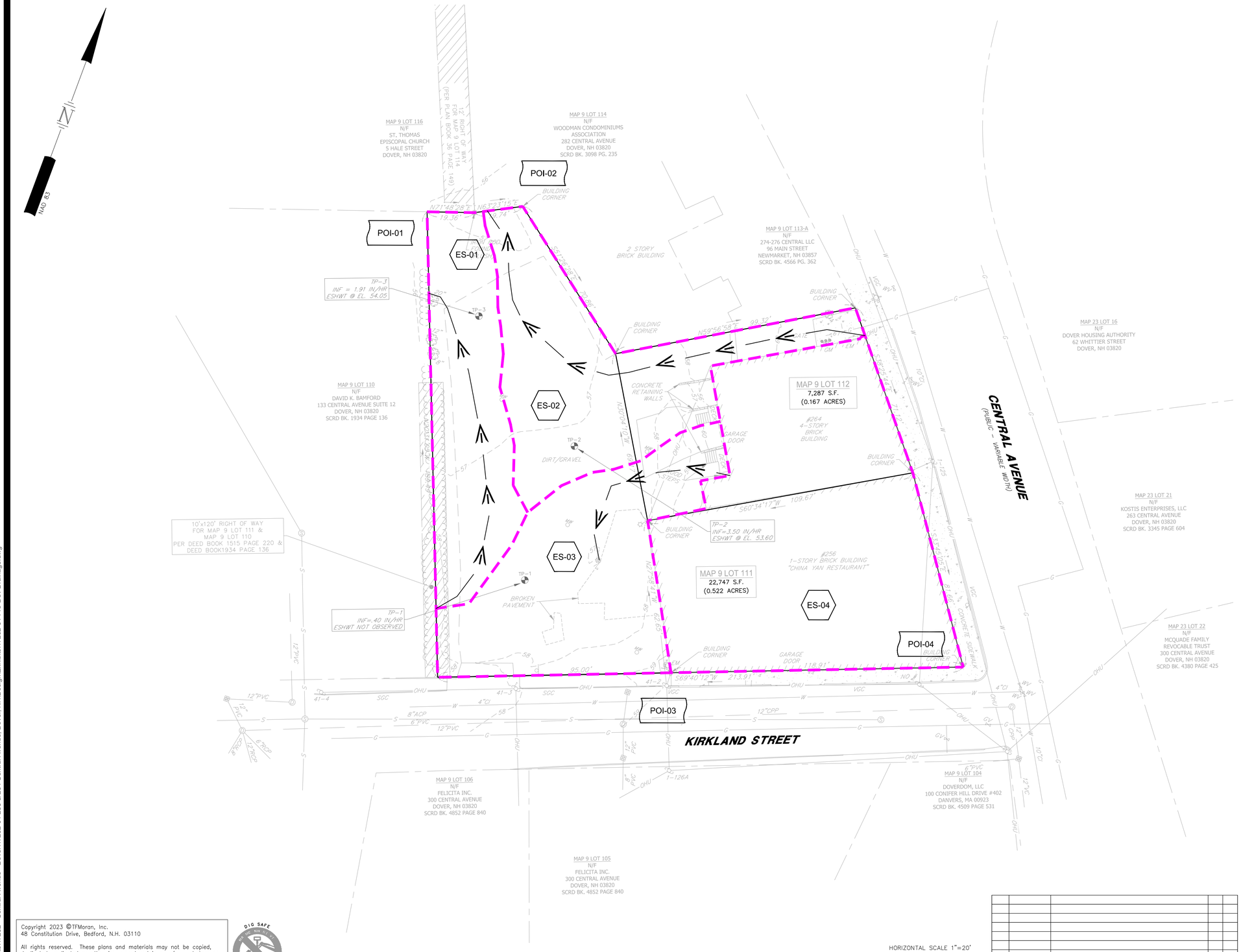
Summary for Link PPOI4: Roof Drains

Inflow Area = 12,270 sf,100.00% Impervious, Inflow Depth > 4.51" for 10-yr event
Inflow = 1.28 cfs @ 12.09 hrs, Volume= 4,612 cf
Primary = 1.28 cfs @ 12.09 hrs, Volume= 4,612 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

APPENDIX H – DRAINAGE MAPS

(This Page Is Intentionally Blank)



LEGEND

- PROPERTY LINE
- LIMITS OF DRAINAGE SUBCATCHMENT
- SOIL GROUP BREAKLINE
- FLOW PATH (Tc LINE)
- REACH
- POI-1 — POINT OF INTEREST
- ES-1 — SUBCATCHMENT AREA
- EP-1 — POND, CULVERT, OR CATCH BASIN
- ER-1 — REACH

SOIL PHASE LEGEND (PERCENT)

A	B	C	D	E	F
0–3	3–8	8–15	15–25	25–50	50+

SOIL LEGEND (PER USDA NRCS WEB SOIL SURVEY)

SYMBOL	DESCRIPTION	HYDROLOGIC SOIL GROUP	DRAINAGE CLASS
BzB	BUXTON SILT LOAM, 3% – 8% SLOPES	NONE	MODERATELY WELL DRAINED

HORIZONTAL SCALE 1"=20'
20 10 0 20

REV	DATE	DESCRIPTION	DR	CK

SITE DEVELOPMENT PLANS

TAX MAP 9 LOT 111 & 112

PRE-DEVELOPMENT DRAINAGE MAP

256 & 264 CENTRAL AVE

DOVER, NH

OWNED BY & PREPARED FOR

256-264 CENTRAL AVENUE, LLC

1"=20' (11"X17")

SCALE: 1"=20' (22"X34") **AUGUST 18, 2023**

Copyright 2023 ©TFMoran, Inc.
48 Constitution Drive, Bedford, N.H. 03110

All rights reserved. These plans and materials may not be copied, duplicated, replicated or otherwise reproduced in any form whatsoever without the prior written permission of TFMoran, Inc.

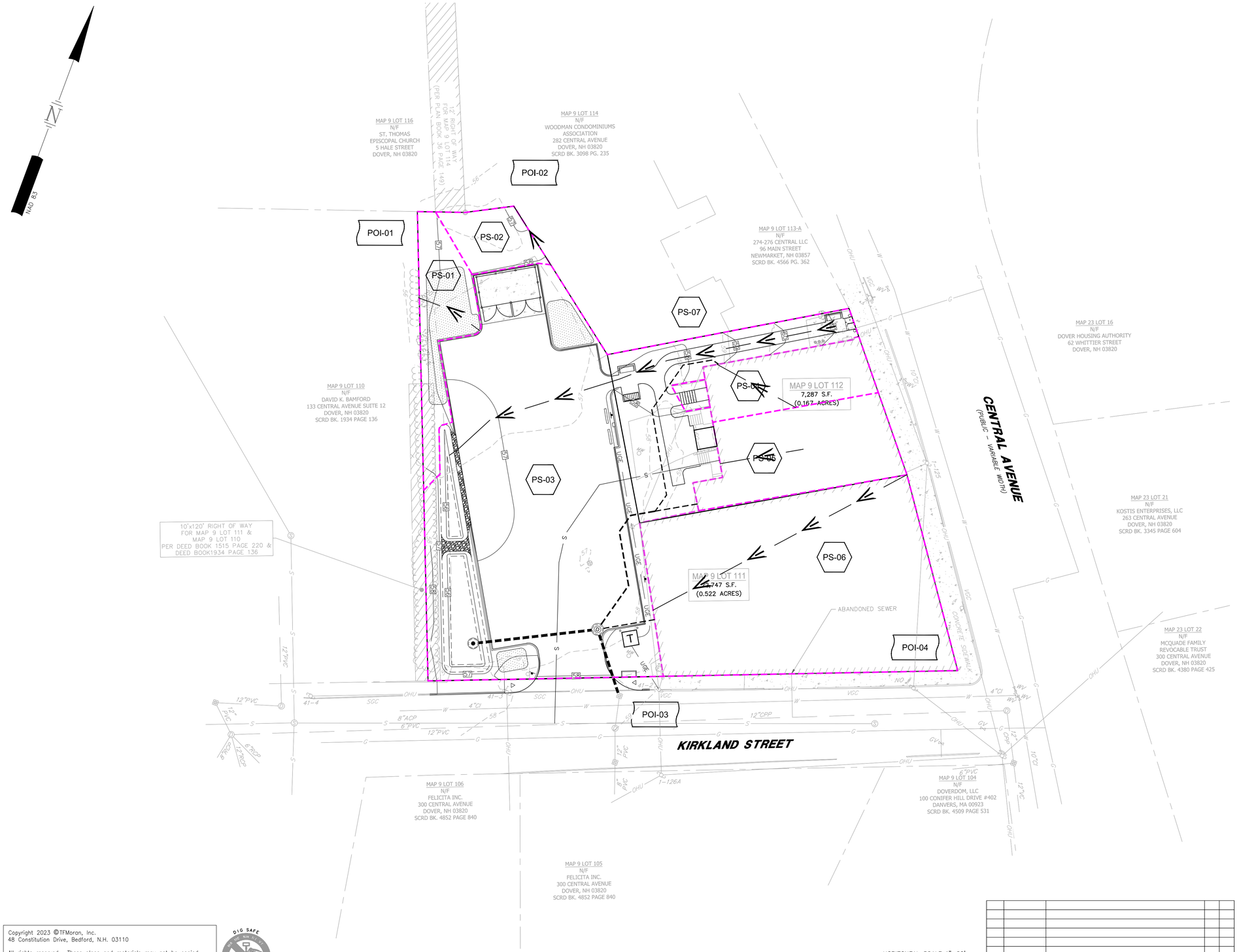
This plan is not effective unless signed by a duly authorized officer of TFMoran, Inc.

DIG SAFE — CALL BEFORE YOU DIG — CONTACT DIG SAFE 72 BUSINESS HOURS PRIOR TO CONSTRUCTION

Seacoast Division
TFM
Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists
170 Commerce Way, Suite 102
Portsmouth, NH 03801
Phone (603) 431-2222
Fax (603) 431-0910
www.tfmoran.com

FILE	DR	FB	–	
47262.01	CK	RR	CADFILE: 47262-01 PRE-DEV DRAINAGE	D-01

Aug 30, 2023 - 11:03am
F:\MSC Projects\47262 - Central Avenue - Dover\47262-01 256 & 264 Central Avenue, Dover, NH\Design\Exhibits\47262-01 Pre-Dev Drainage.dwg



LEGEND

- PROPERTY LINE
- LIMITS OF DRAINAGE SUBCATCHMENT
- SOIL GROUP BREAKLINE
- FLOW PATH (Tc LINE)
- REACH
- POI-1 — POINT OF INTEREST
- PS-1 — SUBCATCHMENT AREA
- PP-1 — POND, CULVERT, OR CATCH BASIN
- PR-1 — REACH

SOIL PHASE LEGEND (PERCENT)

A	B	C	D	E	F
0–3	3–8	8–15	15–25	25–50	50+

SOIL LEGEND (PER USDA NRCS WEB SOIL SURVEY)

SYMBOL	DESCRIPTION	HYDROLOGIC SOIL GROUP	DRAINAGE CLASS
BzB	BUXTON SILT LOAM, 3% – 8% SLOPES	NONE	MODERATELY WELL DRAINED

SITE DEVELOPMENT PLANS

TAX MAP 9 LOT 111 & 112

POST-DEVELOPMENT DRAINAGE MAP

256 & 264 CENTRAL AVE

DOVER, NH

OWNED BY & PREPARED FOR

256-264 CENTRAL AVENUE, LLC

1"=20' (11"X17")

SCALE: 1"=20' (22"X34")

AUGUST 31, 2023

REV	DATE	DESCRIPTION	DR	CK
1	10/24/2023	REVISED PER TRC COMMENTS	JKC	CRR

Seacoast Division

TFM

Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

170 Commerce Way, Suite 102
Portsmouth, NH 03801
Phone (603) 431-2222
Fax (603) 431-0910
www.tfmoran.com

FILE					
47262.01	DR: JKC	FB: –			D–02
	CK: CRR	CADFILE: 47262-01 POST-DEV DRAINAGE			

Copyright 2023 ©TFMoran, Inc.
48 Constitution Drive, Bedford, N.H. 03110

All rights reserved. These plans and materials may not be copied, duplicated, replicated or otherwise reproduced in any form whatsoever without the prior written permission of TFMoran, Inc.

This plan is not effective unless signed by a duly authorized officer of TFMoran, Inc.

DIG SAFE
CONTACT DIG SAFE 72 BUSINESS HOURS PRIOR TO CONSTRUCTION

Nov 03, 2023 - 10:43am
F:\MSC Projects\47262 - Central Avenue - Dover\47262-01 256 & 264 Central Avenue, Dover, NH\Design\Exhibits\47262-01 Post-Dev Drainage.dwg

APPENDIX I – INSPECTION AND MAINTENANCE MANUAL

(This Page Is Intentionally Blank)

Project #47262.01

STORMWATER MANAGEMENT SYSTEM INSPECTION & MAINENANCE MANUAL

F O R

256 & 264 Central Avenue

Dover, New Hampshire
Strafford County

Tax Map 9, Lots 111 & 112

Owned by and Prepared for
256-264 Central Avenue, LLC

December 1, 2023

Prepared By:

TFM Since 1968

Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

Table of Contents

Maintenance of Property	1
Plans	1
Owner Responsibility	1
General Inspection and Maintenance Requirements	2
Inspection and Maintenance Checklist Requirements	3-6
Inspection and Maintenance Records	7
Owner's Certification	8

Attachment 1 – Inspection and Maintenance Log

Attachment 2 – Deicing Log

Appendix A – Stormwater Inspection & Maintenance Plan

Appendix B – UNHSC Regular Inspection and Maintenance Guidelines & UNHSC Checklist for Inspection

Maintenance of Property

TFMoran, Inc., has prepared the following Stormwater Management System Inspection & Maintenance Plan for 256-264 Central Avenue, LLC at 256 & 264 Central Avenue, Dover, New Hampshire. The intent of this plan is to provide the owner, and future property managers/owners of the site with a list of procedures that document the inspection and maintenance requirements of the Stormwater Management System for this development. This includes all temporary and permanent stormwater and erosion control measure during and post construction.

Plans

Refer to the Site Development Plans prepared by MSC a divisions TFMoran, Inc. for Tax Map 9 Lots 111 & 112, 256 & 264 Central Avenue, Dover, New Hampshire, dated August 31, 2023, and last revised on December 20, 2023. See Appendix A for the "Stormwater Inspection and Maintenance Plan" identifying locations of stormwater practices described hereon.

Owner Responsibility

The owner shall be responsible for the following inspection and maintenance program which is necessary to keep the Stormwater Management System functioning properly. These measures will help greatly to reduce potential environmental impacts. By following the enclosed procedures, 256-264 Central Avenue, LLC and its successors will be able to maintain the functional design of the Stormwater Management System and maximize its ability to remove sediment and other contaminants from site-generated stormwater runoff.

The owner and future owners are the responsible party for the following record keeping activities further identified in this Inspection & Maintenance Manual:

- Conduct reporting, inspection, and maintenance activities in accordance with the "Inspection and Maintenance Checklist Requirements" and if applicable "Regular Inspection and Maintenance Guidance" provided by University of New Hampshire Stormwater Center (UNHSC);
- Document each inspection and maintenance activity with the "Inspection and Maintenance Log" and if applicable "Checklist for Inspection" provided by University of New Hampshire Stormwater Center (UNHSC);
- Photograph each practice that is subject to the "Inspection and Maintenance Checklist Requirements" at each inspection of that stormwater practice;
- Document actions taken if invasive species begin to grow in the stormwater management system; and
- Document each application of deicing material applied to the site with the "Deicing Log"

All record keeping required by the Inspection & Maintenance Manual shall be maintained by the responsible party and be made available to the applicable regulatory agencies (City of Dover) upon request. Logs and reports required by this Inspection & Maintenance Manual should be prepared by a qualified inspector with working knowledge of the site.

This manual and associated records shall be transferred to any future owners. All current and future owners must comply with RSA 485-A:17, Env-Wq 1500, the permit, and all conditions contained in the permit.

The following inspection and maintenance program is necessary in order to keep the Stormwater Management System functioning properly. These measures will greatly help to reduce potential environmental impacts. By following the enclosed procedures, 256-264 Central Avenue, LLC and its successors will be able to maintain the functional design of the Stormwater Management System and maximize its ability to remove sediment and other contaminants from site-generated stormwater runoff.

General Inspection and Maintenance Requirements

Temporary stormwater, sediment and erosion control measures that require maintenance on the site during construction include, but are not limited, to the following:

- Stabilized construction entrance;
- Litter/trash removal;
- Construction dumpster area;
- Silt sock barriers;
- Inlet protection;
- Gravel.

Permanent stormwater, sediment and erosion control measures that require maintenance on the site include, but are not limited, to the following:

- Litter/trash removal;
- Dumpster area maintenance;
- Landscaping and hardscaping;
- Conventional pavement;
- Bioretention system;
- Forebays;
- Drainage Inlets (i.e. catch basins, drop inlets, etc.);
- Drainage Structures (i.e. drain manholes, drainage cleanouts, yard drains, etc.)
- Roof gutters and downspouts;
- Culvert pipes;
- Outlet Contrel Structure
- Surface maintenance related to deicing/plowing.

Inspection and Maintenance Checklist Requirements

By implementing the following procedures, current owners will be able to maintain the functional design of the Stormwater Management System and maximize the systems ability to remove sediment and other contaminants from site-generated stormwater runoff. The owner shall conduct inspection and maintenance activities in accordance with the following checklist:

	Frequency	***Inspect***	***Action***
Temporary Controls			
Stabilized Construction Entrance	Weekly	• Inspect adjacent roadway for sediment tracking • Inspect stone for sediment accumulation	• Sweep adjacent roadways as soon as sediment is tracked • Top dress with additional stone when necessary to prevent tracking
Litter/Trash Removal	Routinely	• Inspect site especially construction areas	• Remove debris and clean areas as necessary
Construction Dumpster Area	Routinely	• Dumpster Areas	• Remove any accumulated debris and dispose of properly
Silt Sock Barrier	Weekly and after measurable rainfall	• Inspect accumulated sediment level, rips and tears	• Repair or replace damaged lengths • Remove and dispose accumulated sediment once level reaches 1/3 of barrier
Inlet Protection	During construction and after measurable rainfall	• Inspect for accumulated sediment	• Empty sediment bag if more than ½ filled with sediment or debris. Replace bag if torn or punctured to ½" diameter or greater on the lower half of the bag
Gravel	Spring and Fall	• Inspect gravel for ruts and depth	• Replace gravel as necessary, regrade as necessary to maintain design grades, remove any accumulated gravel washed from roadway

	Frequency	***Inspect***	***Action***
Permanent Controls			
Litter/Trash Removal	Routinely	• Inspect site	• Remove debris and clean areas as necessary
Dumpster Area Maintenance	Routinely	• Dumpster Areas	• Remove any accumulated debris and dispose of properly
Landscaping and hardscaping (not including Bioretention Systems)	Spring	• Mulch/stone: Inspect mulch areas for trash and debris and thickness of mulch	• Remove weeds, invasive species, and debris. Top dress with new mulch or stone when necessary
	Spring	• Trees and Shrubs: Inspect for broken, weak or diseased branches and debris	• Prune to maintain shape to avoid splitting, remove broken, weak or diseased branches, replace as necessary
	As necessary	• Lawn	• Mow as required
	Spring and Fall	• Inspect landscaped areas for debris and litter	• Remove debris and litter as necessary
Conventional Pavement	Spring and Fall	• Inspect pavement for debris	• Sweeping as required
Bioretention System	1st few months when rainfall exceeds 2.5” in a 24 hr period	• Inspect drawdown time: required to drawdown in 72 hrs or the standing water covers more than 15% of the surface after 48 hrs	• Remove the top few inches of discolored material and rake or till the remaining material as needed

	Frequency	***Inspect***	***Action***
Permanent Controls			
	4 times for 1st yr, then Spring and Fall	• Inspect for animal burrows and short circuits in the system	• Repair soil erosion from and fill holes and lightly compact
		• Inspect inlet and outlet for debris and leaves	• Remove material with rakes where possible rather than heavy construction equipment to avoid compaction of the gravel wetland surface
		• Inspect the filter bed	• Remove sediment as necessary. If more than 2" of filter material is removed, replace with the design filter media specified
		• Inspect vegetation for distress during extended periods without rain	• Water as necessary
	Spring and Fall	• Inspect Drawdown time: required to drawdown in 72 hrs or the standing water covers more than 15% of the surface after 48 hrs	• Remove the top few inches of discolored material and rake or till the remaining material as needed
		• Inspect vegetative cover	• Mow embankments and remove woody vegetation.
	Annually	• Inspect inlet and outlet for erosion	• Repair or replace as necessary
		• Inspect vegetative cover	• Reinforcement plantings should be performed if 50% cover is not established in 2 yrs.

	Frequency	***Inspect***	***Action***
Permanent Controls			
	Additionally, refer to the most currently available documents from UNHSC (attached for reference): "Regular Inspection Maintenance Guidance" and "Checklist for Inspection". If there are discrepancies between the UNHSC documents and this Manual's checklist requirements, the stricter requirements shall override.		
Forebay	Annually	• Inspect for debris and accumulated sediment • Inspect for damage or displaced stones	• Remove debris and accumulated sediment as necessary • Repair and replace stones as needed
Drainage Structures (Drain Manholes, Drain Cleanouts, Yard Drains, etc.)	Spring and Fall	• Inspect for accumulated sediment and debris	• Clean any material upon inspection and deposit of properly
Roof Gutters and Downspouts	Spring and Fall	• Inspect for accumulated sediment and debris	• Clean any material upon inspection and deposit of properly
Culvert Pipe	Spring and Fall	• Inspect for obstructions	• Remove and dispose of debris properly, Remove upstream debris to prevent future clogging • Repair/replace if pipe becomes crushed or deteriorated
Outlet Control Structure	Annually	• Inspection for debris or sediment buildup • Inspect structure	• Remove sediment and debris as necessary • Remove debris covering orifice or v-notch • Repair as necessary

Inspection and Maintenance Records

A detailed, written record of all logs, reports, photographs required by this Inspection & Maintenance Manual must be kept by the owner.

The attached forms are provided to assist the property manager with the inspection and maintenance of the Stormwater Management System. The “Inspection and Maintenance Log” (Attachment 1) and “Deicing Log” (Attachment 2) on the following pages are a blank copy to aid in record keeping required by this Inspection & Maintenance Manual.

Supplement the “Inspection and Maintenance Log” with the most currently available “Checklist for Inspections” from UNHSC (attached to this Manual for reference). Each inspection or maintenance activity shall include photographs of each practice that is subject to the “Inspection and Maintenance Checklist Requirements” at each inspection of that stormwater practice. Log actions taken if invasive species begin to grow in the stormwater management system as required per the attached “Control of Invasive Plants”.

For all surface maintenance related activities related to deicing/plowing, complete the “Deicing Log” to track the amount and type of deicing materials applied to the site. No winter sanding of is permitted on permeable pavements or porous asphalt. Minimization of salt application for ice control is recommended on or where runoff may discharge to these areas. Snow shall be stored in designated snow storage areas which have been designed to drain on-site and receive treatment via the stormwater management system prior to infiltration or discharge. The subject property is subject to chloride impairment; maintenance related to snow and ice shall adhere to the Chloride Management Plan (attached to this Manual for reference).

Owner's Certification

Contact Information

Owner:	256-264 Central Avenue, LLC
Contact Person	Derek Fisher
	96 Main Street Newmarket, NH

I have reviewed this document and understand the responsibilities contained. I agree to perform the required maintenance on the stormwater management system.

Owner's Signature (future owner's and successors, if applicable)

Print Name

Title

Date

Any inquiries in regards to the design, function, and/or maintenance of any one of the above mentioned facilities or tasks shall be directed to the project engineer:

TFMoran, Inc. Seacoast Division
170 Commerce Way, Suite 102
Portsmouth, NH 03801
603-431-2222

ATTACHMENT 1

Inspection and Maintenance Log

Attachment 1

Inspection and Maintenance Log

BMP/System Component	Date Inspected	Inspector	Cleaning/Repair Needed (list items/comments)	Date of Cleaning/Repair	Performed By

ATTACHMENT 2

Deicing Log

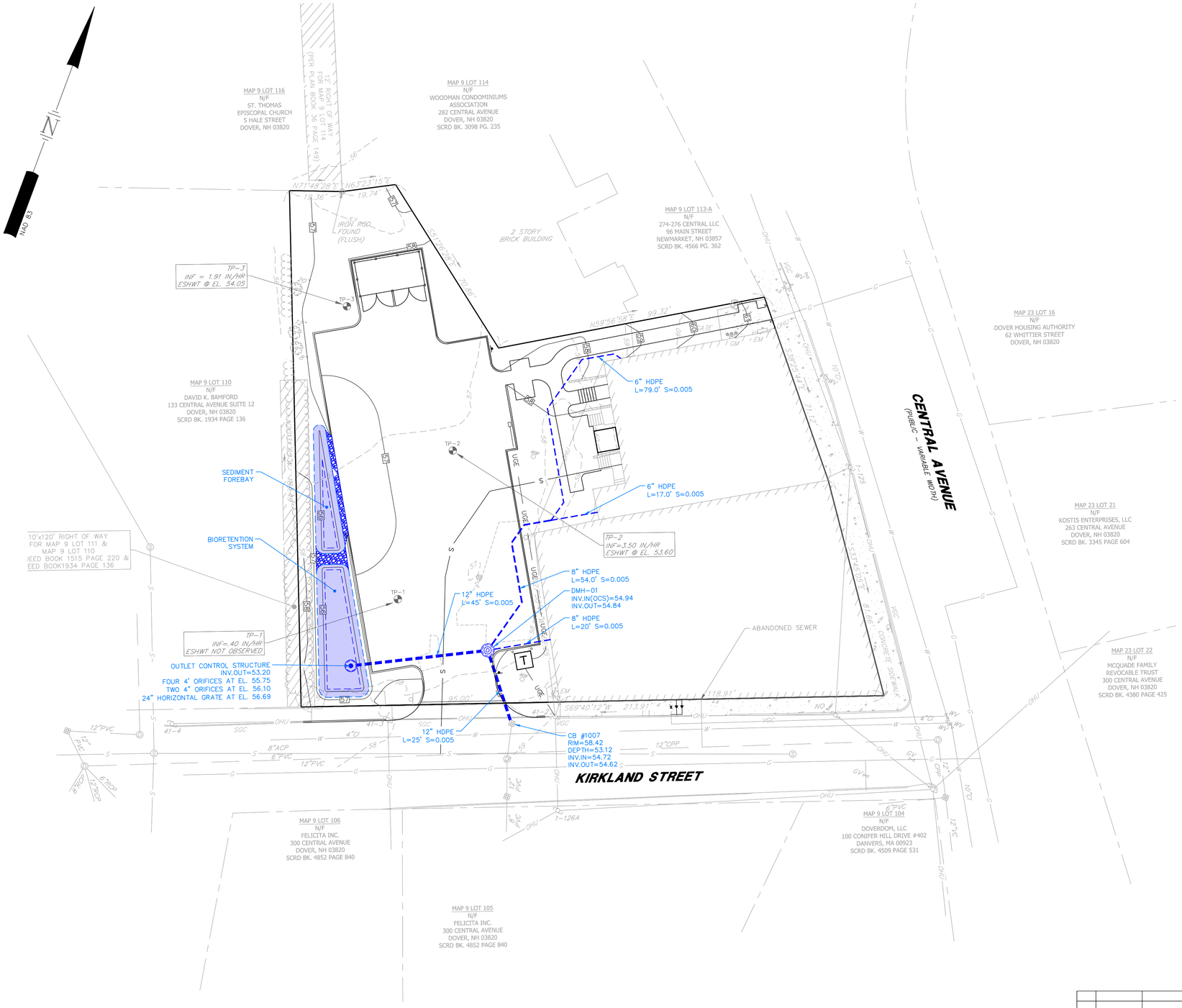
Attachment 2

Deicing Log

Deicing Material Used	Amount of Deicing Material Applied	Date of Application	Logged By

APPENDIX A

Stormwater Inspection & Maintenance Plan



SITE DEVELOPMENT PLANS

TAX MAP 9 LOT 111 & 112

STORMWATER INSPECTION AND MANAGEMENT PLAN

256 & 264 CENTRAL AVE

DOVER, NH

OWNED BY & PREPARED FOR

256-264 CENTRAL AVENUE, LLC

1"=40' (11"X17")
SCALE: 1"=20' (22"X34")

DECEMBER 1, 2023

Copyright 2023 ©TFMoran, Inc.
48 Constitution Drive, Bedford, N.H. 03110

All rights reserved. These plans and materials may not be copied, duplicated, replicated or otherwise reproduced in any form whatsoever without the prior written permission of TFMoran, Inc.

This plan is not effective unless signed by a duly authorized officer of TFMoran, Inc.

DIG SAFE
811 OR 1-888-DIG-SAFE
CONTACT DIG SAFE 72 BUSINESS HOURS PRIOR TO CONSTRUCTION

REV	DATE	DESCRIPTION	DR	CK

Seacoast Division
TFM
Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists
170 Commerce Way, Suite 102
Portsmouth, NH 03801
Phone (603) 431-2222
Fax (603) 431-0910
www.tfmoran.com

FILE					
47262.01	DR JKC	FB –			APPX-A
	CK CRR	CADFILE 47262-01 I&M			

Dec 01, 2023 - 3:20pm
F:\MSC Projects\47262 - Central Avenue - Dover\47262-01 256 & 264 Central Avenue, Dover, NH\Design\Exhibits\47262-01 I&M.dwg

APPENDIX B

UNHSC Regular Inspection and Maintenance Guidelines &
UNHSC Checklist for Inspection

Regular Inspection and Maintenance Guidance for Bioretention Systems / Tree Filters

Maintenance of bioretention systems and tree filters can typically be performed as part of standard landscaping. Regular inspection and maintenance is critical to the effective operation of bioretention systems and tree filters to insure they remain clear of leaves and debris and free draining. This page provides guidance on maintenance activities that are typically required for these systems, along with the suggested frequency for each activity. Individual systems may have more, or less frequent maintenance needs depending on a variety of factors including but not limited to: the occurrence of large storm events, overly wet or dry periods, regional hydrologic conditions, and the upstream land use.

ACTIVITIES

The most common maintenance activity is the removal of sediment and organic debris from the system and bypass structures. Visual inspections are routine for system maintenance. This includes looking for standing water, accumulated leaves, holes in the soil media, signs of plant distress, and debris and sediment accumulation in the system. Vegetation coverage is integral to the performance of the system, including infiltration rate and nutrient uptake. Vegetation care is important to system productivity and health.

ACTIVITY	FREQUENCY
CLOGGING AND SYSTEM PERFORMANCE	
A record should be kept of the time to drain for the system completely after a storm event. The system should drain completely within 72 hours.	After every major storm in the first few months, then annually at minimum.
Check to insure the filter surface remains well draining after storm events. **Remedy**: If filter bed is clogged, draining poorly, or standing water covers more than 50% of the surface 48 hours after a precipitation event, then remove top few inches of discolored material. Till, or rake remaining material as needed.	
Check inlets and outlets for leaves and debris. **Remedy**: Rake in and around the system to clear it of debris. Also, clear the inlet and overflow if obstructed.	Quarterly initially, annually as a minimum thereafter.
Check for animal burrows and short-circuiting in the system. **Remedy:** Soil erosion from short circuiting or animal boroughs should be repaired when they occur. The holes should be filled and lightly compacted	
Inspect inlets and outlets to ensure good condition and no evidence of deterioration. Check to see if high-flow bypass is functioning. **Remedy:** Repair or replace any damaged structural parts, inlets, outlets, sidewalls.	
VEGETATION	
Check for robust vegetation coverage throughout the system and dead or dying plants. **Remedy:** Vegetation should cover > 75% of the system and should be cared for as needed.	Annually or as needed

CHECKLIST FOR INSPECTION OF BIORETENTION SYSTEM / TREE FILTERS

Location:
Inspector:
Date:
Time:
Site Conditions:
Days Since Last Rain Event:

Inspection Items	Satisfactory (S) or Unsatisfactory (U)	Comments/Corrective Action
1. Initial Inspection After Planting		
Plants are stable, roots not exposed	**S** **U**	
Surface is at design level, no evidence of preferential flow/shoving	**S** **U**	
Inlet and outlet/bypass are functional	**S** **U**	
2. Debris Cleanup (1 time/year minimum, Spring/Fall)		
Litter, leaves, and dead vegetation removed from the system	**S** **U**	
Prune/mow vegetation	**S** **U**	
3. Standing Water (1 time/year and/or after large storm events)		
No evidence of standing water after 24-48 hours since rainfall	**S** **U**	
4. Vegetation Condition and Coverage		
Vegetation condition good with good coverage (typically > 75%)	**S** **U**	
5. Other Issues		
Note any additional issues not previously covered.	**S** **U**	

Corrective Action Needed	Due Date
1.	
2.	
3.	
Inspector Signature	**Date**



SITE DEVELOPMENT PLANS

TAX MAP 9 LOT 111 & 112

AERIAL IMAGE

256 & 264 CENTRAL AVE

DOVER, NH

OWNED BY & PREPARED FOR

256-264 CENTRAL AVENUE, LLC

1"=100' (11"x17")

SCALE: 1"=50' (22"x34")

AUGUST 31, 2023

Copyright 2023 ©TFMoran, Inc.
48 Constitution Drive, Bedford, N.H. 03110

All rights reserved. These plans and materials may not be copied, duplicated, replicated or otherwise reproduced in any form whatsoever without the prior written permission of TFMoran, Inc.

This plan is not effective unless signed by a duly authorized officer of TFMoran, Inc.

DIG SAFE
CONTACT DIG SAFE 72 BUSINESS HOURS PRIOR TO CONSTRUCTION

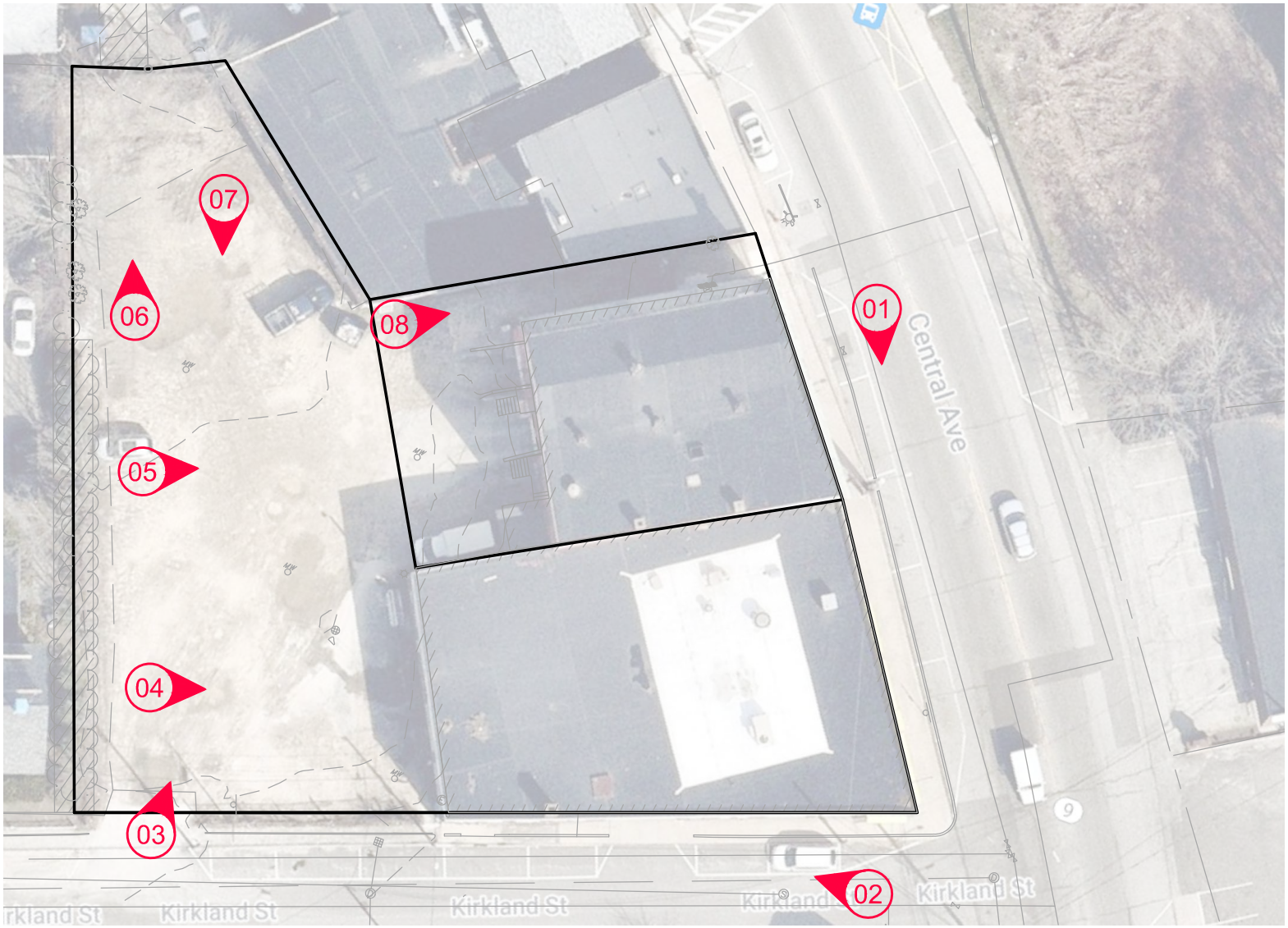
HORIZONTAL SCALE 1"=50'
50 25 0 50

REV	DATE	DESCRIPTION	DR	CK

Seacoast Division
TFM
Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists
170 Commerce Way, Suite 102
Portsmouth, NH 03801
Phone (603) 431-2222
Fax (603) 431-0910
www.tfmoran.com

FILE		DR	JKC	FB	–	
	47262.01	CK	CRR	CADFILE	47262-01 AERIAL	EX-01

Aug 31, 2023 - 1:01pm
P:\MSC Projects\47262 - Central Avenue - Dover\47262-01 256 & 264 Central Avenue, Dover, NH\Design\Exhibits\47262-01 Aerial.dwg



EXHIBIT

TAX MAP 9 LOTS 111 & 112

SITE PHOTO LOCUS PLAN

256 & 264 CENTRAL AVENUE

DOVER, NH

OWNED BY & PREPARED FOR

256-264 CENTRAL AVENUE, LLC

SCALE: 1"=40'

AUGUST 31, 2023

REV	DATE	DESCRIPTION	DR	CK

TFM

FILE 47262.01

DR	JKC	FB	
CK	CRR	CADFILE	47262-01 PHOTO LOCUS.DWG

EX-02

Aug 31, 2023 - 2:21pm
F:\MSC Projects\47262 - Central Avenue - Dover\47262-01 256 & 264 Central Avenue, Dover, NH\Design\Exhibits\47262-01 Photo Locus.dwg

Project #47262.01

Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

Site Photos

256 & 264 Central Avenue

Dover, NH 03839

Taken on
March 30, 2023

See attached Site Photo Locus Plan for location of each photo.

Photo #1:



Photo #2:



Photo #3:



Photo #4:



Photo #5:



Photo #6:



Photo #7:



Photo #8:



PROPOSED SITE IMPROVEMENTS

256 & 264 CENTRAL AVENUE
DOVER, NEW HAMPSHIRE

AUGUST 31, 2023
(LAST REVISED DECEMBER 22, 2023)

GENERAL INFORMATION

OWNER
MAP 9 LOT 111
256-264 CENTRAL AVENUE, LLC
96 MAIN STREET
NEWMARKET, NH 03857

MAP 9 LOT 112
256-264 CENTRAL AVENUE, LLC
96 MAIN STREET
NEWMARKET, NH 03857

APPLICANT/PREPARED FOR
256-264 CENTRAL AVENUE, LLC
96 MAIN STREET
NEWMARKET, NH 03857

RESOURCE LIST

PLANNING/ZONING DEPARTMENT
288 CENTRAL AVENUE
DOVER, NH 03820
(603) 516-6008
DONNA BENTON, AICP, DIRECTOR OF PLANNING AND COMMUNITY DEVELOPMENT

PUBLIC WORKS
271 MAST ROAD
DOVER, NH 03820
(603) 516-6450

ASSOCIATED PROFESSIONALS

LIGHTING DESIGN
EXPOSURE LIGHTING
501 ISLINGTON STREET, UNIT 1A
PORTSMOUTH, NH 03801
(603) 601-8080
KEN SWEENEY, APPLICATIONS ENGINEER

VICINITY PLAN



INDEX OF SHEETS

SHEET	SHEET TITLE
C-00	COVER
C-01	NOTES & LEGEND
S-01	EXISTING CONDITIONS PLAN
C-02	SITE LAYOUT PLAN
C-03	GRADING AND DRAINAGE PLAN
C-04	LIGHTING PLAN
C-05	LANDSCAPE PLAN
C-06	VEHICLE MOVEMENT PLAN
C-07 TO C-09	DETAILS

PERMITS/APPROVALS

	NUMBER	APPROVED	EXPIRES
DOVER PLANNING BOARD MINOR SITE PLAN REVIEW APPROVAL	SITE-2023-0013	-	-

OWNER'S SIGNATURE

THE PROPERTY WILL BE DEVELOPED IN ACCORDANCE WITH THIS PLAN AND THE ORDINANCES OF THE CITY OF DOVER, NEW HAMPSHIRE.

OWNER OR AUTHORIZED AGENT *DATE*

SITE DEVELOPMENT PLANS

TAX MAP 9 LOT 111 & 112

COVER

256 & 264 CENTRAL AVE

DOVER, NH

OWNED BY & PREPARED FOR

256-264 CENTRAL AVENUE, LLC

SCALE: NTS **AUGUST 31, 2023**

Copyright 2023 ©TFMoran, Inc.
48 Constitution Drive, Bedford, N.H. 03110

All rights reserved. These plans and materials may not be copied, duplicated, replicated or otherwise reproduced in any form whatsoever without the prior written permission of TFMoran, Inc.

This plan is not effective unless signed by a duly authorized officer of TFMoran, Inc.

DIG SAFE
CONTACT DIG SAFE 72 BUSINESS HOURS PRIOR TO CONSTRUCTION

THESE PLANS ARE PERMIT DRAWINGS ONLY AND HAVE NOT BEEN DETAILED FOR CONSTRUCTION OR BIDDING.

REV	DATE	DESCRIPTION	DR	CK
2	12/22/2023	REVISED PER TRC COMMENTS	JKC	CRR
1	10/24/2023	REVISED PER TRC COMMENTS	JKC	CRR

Seacoast Division
TFM
Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists
170 Commerce Way, Suite 102
Portsmouth, NH 03801
Phone (603) 431-2222
Fax (603) 431-0910
www.tfmoran.com

FILE					
47262.01	DR JKC	DOVER FILE NUMBER -2023-0013	C-00
	CK CRR	CADFILE 47262-01 COVER	

Dec 18, 2023 - 1:09pm
P:\MSC Projects\47262 - Central Avenue - Dover\47262-01 256 & 264 Central Avenue, Dover, NH\Design\PRODUCTION DRAWINGS\47262-01 Cover.dwg

LEGEND

PROPOSED

- PROPERTY LINE
- ZONING LINE
- EASEMENT
- BASELINE
- FLOODPLAIN
- EDGE OF WATERBODY
- EDGE OF WETLAND
- SETBACK (WETLAND)
- SETBACK (STRUCTURE)
- SETBACK (PARKING)
- SETBACK (LANDSCAPE)
- GRAVEL ROAD
- EOP — EDGE OF PAVEMENT
- VGC — VERTICAL GRANITE CURB
- SGC — SLOPED GRANITE CURB
- CC — CONCRETE CURB
- ICC — INTEGRATED CONCRETE CURB
- BIT — BITUMINOUS ASPHALT CURB
- CCB — CAPE COD BERM
- SAWCUT
- BUILDING
- BUILDING ROOF OVERHANG
- BUILDING FOUNDATION
- BUILDING ENTRANCE
- OVERHEAD DOOR
- TREE LINE
- FENCE (CHAIN LINK)
- FENCE (WIRE)
- FENCE (STOCKADE)
- GUARDRAIL
- STONE WALL
- RETAINING WALL
- SILT FENCE
- SILT SOCK
- SOIL BOUNDARY
- LIMIT OF GRADING
- 100 — CONTOUR
- TC100.50 / BC100.00 OR 100.00 — SPOT GRADE
- (##) — PARKING COUNT
- DSLY — YELLOW DOUBLE SOLID LINE
- SSLY — YELLOW SINGLE SOLID LINE
- SSLW — WHITE SINGLE SOLID LINE
- SBLW — WHITE SINGLE BROKEN LINE
- STOP — STOP BAR
- CROSSWALK
- ACCESSIBLE PARKING SYMBOL
- PAVEMENT ARROW
- TRAFFIC FLOW ARROW (NOT PAINTED)
- SIGN (SINGLE POST)
- SIGN (DOUBLE POST)
- SIGN (PYLON)
- SIGN (MONUMENT)
- BOLLARD
- D — DUMPSTER PAD

PROPOSED

- CONCRETE
- GRAVEL
- HEAVY DUTY PAVEMENT
- CONSTRUCTION ENTRANCE
- SNOW STORAGE
- RIPRAP
- INLET PROTECTION
- FLOW ARROW
- RIDGE — GRADE BREAK RIDGE
- DRAIN LINE
- DRAINAGE SWALE
- STORMWATER BMP
- S — SEWER LINE
- FM — SEWER FORCE MAIN LINE
- W — WATER LINE
- G — GAS LINE
- OHE — OVERHEAD UTILITY LINE
- UGE — UNDERGROUND UTILITY LINE
- CATCH BASIN
- DRAIN INLET
- OUTLET CONTROL STRUCTURE
- ROOF DRAIN
- DRAIN CLEANOUT
- DRAIN MANHOLE
- FARED END SECTION
- SEWER CLEAN OUT
- SEWER MANHOLE
- SEWER VENT
- DRAIN/SEWER/WATER PLUG OR CAP
- HYDRANT
- FIRE DEPARTMENT CONNECTION
- WATER GATE VALVE
- WATER SHUTOFF
- THRUST BLOCK
- WATER METER
- WATER MANHOLE
- WELL
- GAS GATE VALVE
- GAS SHUT OFF
- GAS METER
- TELEPHONE MANHOLE
- ELECTRIC MANHOLE
- TRAFFIC CONTROL CABINET
- ELECTRIC HANDHOLE
- ELECTRIC PULL BOX
- ELECTRIC METER
- FLOOD LIGHT
- LIGHT POLE
- UTILITY POLE
- GUY POLE
- T — TRANSFORMER PAD
- B-# — BORING LOCATION
- TP-# — TEST PIT LOCATION
- IT-# — INFILTRATION TEST LOCATION
- MW-# — MONITORING WELL

ABBREVIATIONS

GENERAL

ABAN	ABANDON
AC	ACRES
ADJ	ADJUST
APPROX	APPROXIMATE
BC	BOTTOM OF CURB
BIT	BITUMINOUS
BK/PG	BOOK & PAGE
BLDG	BUILDING
BMP	BEST MANAGEMENT PRACTICE
BS	BOTTOM OF SLOPE
BW	BOTTOM OF WALL
CONC	CONCRETE
COORD	COORDINATE
DIA	DIAMETER
ELEV	ELEVATION
EP	EDGE OF PAVEMENT
ESHWT	ESTIMATED SEASONAL HIGH WATER TABLE
EXIST	EXISTING
FFE	FINISHED FLOOR ELEVATION
FND	FOUNDATION
HP	HIGH POINT
INV	INVERT ELEVATION
INF	INFILTRATION TEST
L	LENGTH
LF	LINEAR FEET
LSA	LANDSCAPE AREA
MAX	MAXIMUM
MIN	MINIMUM
N/F	NOW OR FORMERLY
NHFG	NEW HAMPSHIRE FISH & GAME
NTS	NOT TO SCALE
OC	ON CENTER
PAVE	PAVEMENT
PERF	PERFORATED
PROP	PROPOSED
R	RADIUS
R&D	REMOVE AND DISPOSE
R&R	REMOVE AND RESET
REM	REMOVE
RET	RETAIN
RIM	RIM ELEVATION
ROW	RIGHT OF WAY
S	SLOPE
SF	SQUARE FEET
SW	SIDEWALK
TBM	TEMPORARY BENCHMARK
TC	TOP OF CURB
TP	TEST PIT
TW	TOP OF WALL
TYP	TYPICAL
UG	UNDERGROUND
WCR	ACCESSIBLE WHEELCHAIR RAMP
W/	WITH

UTILITIES

CB	CATCH BASIN
CIP	CAST IRON PIPE
CMP	CORRUGATED METAL PIPE
CO	CLEANOUT
COND	CONDUIT
DCB	DOUBLE CATCH BASIN
DIP	DUCTILE IRON PIPE
DMH	DRAIN MANHOLE
F&C	FRAME AND COVER
F&G	FRAME AND GRATE
FES	FLARED END SECTION
GT	GREASE TRAP
HDPE	HIGH DENSITY POLYETHYLENE PIPE
HH	HANDHOLE
HW	HEADWALL
HYD	HYDRANT
LP	LIGHT POLE
OCS	OUTLET CONTROL STRUCTURE
PVC	POLYVINYL CHLORIDE PIPE
RCP	REINFORCED CONCRETE PIPE
RD	ROOF DRAIN
SMH	SEWER MANHOLE
SOS	SEDIMENT OIL SEPARATOR
TSV	TAPPING SLEEVE, VALVE, AND BOX
UP	UTILITY POLE

Copyright 2023 ©TFMoran, Inc.
48 Constitution Drive, Bedford, N.H. 03110

All rights reserved. These plans and materials may not be copied, duplicated, replicated or otherwise reproduced in any form whatsoever without the prior written permission of TFMoran, Inc.

This plan is not effective unless signed by a duly authorized officer of TFMoran, Inc.

DIG SAFE — CALL NH 811 — CONTACT DIG SAFE 72 BUSINESS HOURS PRIOR TO CONSTRUCTION

GENERAL NOTES

1. THESE PLANS ARE PERMIT DRAWINGS ONLY AND HAVE NOT BEEN DETAILED FOR CONSTRUCTION OR BIDDING.
2. A PRE-CONSTRUCTION MEETING WITH THE DEVELOPER, THE DESIGN ENGINEER, THE EARTHWORK CONTRACTOR AND THE CITY ENGINEER SHALL OCCUR PRIOR TO ANY EARTH DISTURBING ACTIVITY. THE APPLICANT AND CONTRACTOR SHALL REVIEW THE DOVER CONSTRUCTION GUIDELINES PRIOR TO SCHEDULING THIS MEETING.
3. THESE PLANS WERE PREPARED UNDER THE SUPERVISION OF A LICENSED PROFESSIONAL ENGINEER. TFMORAN, INC. ASSUMES NO LIABILITY AS A RESULT OF ANY CHANGES OR NON-CONFORMANCE WITH THESE PLANS EXCEPT UPON THE WRITTEN APPROVAL OF THE ENGINEER OF RECORD.
4. ALL IMPROVEMENTS SHOWN ON THE SITE PLAN SHALL BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH THE PLAN BY THE PROPERTY OWNER AND ALL FUTURE PROPERTY OWNERS. NO CHANGES SHALL BE MADE TO THIS SITE PLAN WITHOUT THE EXPRESS APPROVAL OF THE DOVER PLANNING BOARD.
5. ALL WORK SHALL CONFORM TO THE APPLICABLE REGULATIONS AND STANDARDS OF THE CITY OF DOVER, AND SHALL BE BUILT IN A WORKMANLIKE MANNER IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS. ALL WORK TO CONFORM TO CITY OF DOVER DEPARTMENT OF PUBLIC WORKS STANDARD SPECIFICATIONS. ALL WORK WITHIN THE RIGHT-OF-WAY OF THE CITY AND/OR STATE SHALL COMPLY WITH APPLICABLE STANDARDS. COORDINATE ALL WORK WITHIN THE RIGHT-OF-WAY WITH APPROPRIATE CITY, COUNTY, AND/OR STATE AGENCY.
6. THE SITE CONTRACTOR SHALL ENSURE THAT ALL WORK IS PERFORMED IN ACCORDANCE WITH APPLICABLE SECTIONS OF ENV-WQ 1500. THE SITE CONTRACTOR SHALL NOTIFY THE ENGINEER IN ADVANCE OF CONSTRUCTION OF EACH STORMWATER FACILITY TO COORDINATE REQUIRED INSPECTIONS. THE CONTRACTOR SHALL TAKE PROGRESS PHOTOS DURING CONSTRUCTION OF ALL STORMWATER DRAINAGE COMPONENTS AND SEND TO THE ENGINEER.
7. THE OWNER OF RECORD SHALL RECORD AT THE REGISTRY OF DEEDS DOCUMENTATION SUFFICIENT TO PROVIDE NOTICE TO ALL PERSONS/ENTITIES THAT MAY ACQUIRE AND PROPERTY SUBJECT TO THE REQUIREMENTS AND RESPONSIBILITIES DESCRIBED IN THE APPROVED STORMWATER MANAGEMENT PLAN. THE NOTICE SHALL COMPLY WITH THE APPLICABLE REQUIREMENTS FOR RECORDING CONTAINED IN RSE 477 AND 478. THE NOTICE NEED NOT SET FORTH REQUIREMENTS AT LENGTH, SO LONG AS IT IS SUFFICIENT TO PROVIDE NOTICE TO PROSPECTIVE PURCHASERS TO THE REQUIREMENTS FOR MAINTENANCE AND REPORTING.
8. SEE EXISTING CONDITIONS PLAN FOR THE HORIZONTAL AND VERTICAL DATUM.
9. SEE EXISTING CONDITIONS PLAN FOR BENCHMARK INFORMATION. VERIFY TBM ELEVATIONS PRIOR TO CONSTRUCTION.
10. CONTACT EASEMENT OWNERS PRIOR TO COMMENCING ANY WORK WITHIN THE EASEMENTS.
11. PRIOR TO COMMENCING ANY SITE WORK, ALL LIMITS OF WORK SHALL BE CLEARLY MARKED IN THE FIELD.
12. SITE WORK SHALL BE CONSTRUCTED FROM A COMPLETE SET OF PLANS, NOT ALL FEATURES ARE DETAILED ON EVERY PLAN. THE ENGINEER IS TO BE NOTIFIED OF ANY CONFLICT WITHIN THIS PLAN SET.
13. TFMORAN, INC. ASSUMES NO LIABILITY FOR WORK PERFORMED WITHOUT AN ACCEPTABLE PROGRAM OF TESTING AND INSPECTION AS APPROVED BY THE ENGINEER OF RECORD.
14. TEMPORARY FENCING SHALL BE PROVIDED AND COVERED WITH A FABRIC MATERIAL TO CONTROL DUST MITIGATION.
15. ALL DEMOLITION SHALL INSURE MINIMUM INTERFERENCE WITH ROADS, STREETS, WALKWAYS, AND ANY OTHER ADJACENT OPERATING FACILITIES. PRIOR WRITTEN PERMISSION FROM THE OWNER/DEVELOPER AND LOCAL PERMITTING AUTHORITY IS REQUIRED IF CLOSURE/OBSTRUCTIONS TO ROADS, STREET, WALKWAYS, AND OTHERS IS DEEMED NECESSARY. CONTRACTOR TO PROVIDE ALTERNATE ROUTES AROUND CLOSURES/OBSTRUCTIONS PER LOCAL/STATE/FEDERAL REGULATIONS.
16. REFER TO ARCHITECTURAL PLANS FOR LAYOUT OF BUILDING FOUNDATIONS AND CONCRETE ELEMENTS WHICH ABUT THE BUILDING SUCH AS STAIRS, SIDEWALKS, LOADING DOCK RAMPS, PADS, AND COMPACTOR PADS. DO NOT USE SITE PLANS FOR LAYOUT OF FOUNDATIONS.
17. IN THE EVENT OF A CONFLICT BETWEEN PLANS, SPECIFICATIONS, AND DETAILS, THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY FOR CLARIFICATION.
18. IF CONDITIONS AT THE SITE ARE DIFFERENT THAN SHOWN ON THE PLANS, THE ENGINEER SHALL BE NOTIFIED PRIOR TO PROCEEDING WITH THE AFFECTED WORK.
19. CONTRACTOR'S GENERAL RESPONSIBILITIES:
    - A. BID AND PERFORM THE WORK IN ACCORDANCE WITH ALL LOCAL, STATE, AND NATIONAL CODES, SPECIFICATIONS, REGULATIONS, AND STANDARDS AND CONDITIONS OF ALL PROJECT-SPECIFIC PERMITS AND APPROVALS AS LISTED ON THE COVER SHEET TO THESE PLANS OR OTHERWISE REQUIRED.
    - B. NOTIFY ENGINEER IN WRITING OF ANY DISCREPANCIES OF PROPOSED LAYOUT AND/OR EXISTING FEATURES.
    - C. EMPLOY A LICENSED SURVEYOR TO DETERMINE ALL LINES AND GRADES AND LAYOUT OF SITE ELEMENTS AND BUILDINGS.
    - D. THE CONTRACTOR SHALL BE RESPONSIBLE TO BECOME FAMILIAR WITH THE SITE AND ALL SURROUNDING CONDITIONS. THE CONTRACTOR SHALL ADVISE THE APPROPRIATE AUTHORITY OF INTENTIONS AT LEAST 48 HOURS IN ADVANCE.
    - E. TAKE APPROPRIATE MEASURES TO REDUCE, TO THE FULLEST EXTENT POSSIBLE, NOISE, DUST, AND UNSIGHTLY DEBRIS. CONSTRUCTION ACTIVITIES SHALL BE CARRIED OUT ON MONDAY-FRIDAY FROM 7AM TO 6PM AND SATURDAY-SUNDAY FROM 9AM TO 4PM IN ACCORDANCE WITH THE APPLICABLE MUNICIPAL ORDINANCES AND REGULATIONS OF THE CITY OF DOVER, NEW HAMPSHIRE. HOURS OF CONSTRUCTION MUST BE LOCATED ON SITE AND APPROVED BY THE CITY ENGINEER OR PLANNING DIRECTOR.
    - F. MAINTAIN EMERGENCY ACCESS TO ALL AREAS AFFECTED BY WORK AT ALL TIMES.
    - G. IN ACCORDANCE WITH RSA 430:53 AND AGR 3800, THE CONTRACTOR SHALL NOT TRANSPORT INVASIVE SPECIES OFF THE PROPERTY, AND SHALL DISPOSE OF INVASIVE SPECIES ON-SITE IN A LEGAL MANNER.
    - H. COORDINATE WITH ALL UTILITY COMPANIES AND CONTACT DIGSAFE (811 OR 888-344-7233) AT LEAST 72 HOURS PRIOR TO ANY EXCAVATION.
    - I. PROTECT NEW AND EXISTING BURIED UTILITIES DURING INSTALLATION OF ALL SITE ELEMENTS. DAMAGED UTILITIES SHALL BE REPAIRED OR REPLACED AT NO ADDITIONAL COST TO THE OWNER.
    - J. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE MEANS AND METHODS OF CONSTRUCTION AND FOR CONDITIONS AT THE SITE. THESE PLANS, PREPARED BY TFMORAN, INC., DO NOT EXTEND TO OR INCLUDE SYSTEMS PERTAINING TO THE SAFETY OF THE CONSTRUCTION CONTRACTOR OR THEIR EMPLOYEES, AGENTS, OR REPRESENTATIVES IN THE PERFORMANCE OF THE WORK. THE SEAL OF THE SURVEYOR OR ENGINEER HEREON DOES NOT EXTEND TO ANY SUCH SAFETY SYSTEMS THAT MAY NOW OR HEREAFTER BE INCORPORATED INTO THESE PLANS. THE CONSTRUCTION CONTRACTOR SHALL PREPARE OR OBTAIN THE APPROPRIATE SAFETY SYSTEMS WHICH MAY BE REQUIRED BY THE US OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) AND/OR LOCAL REGULATIONS.
    - K. WRITTEN DIMENSIONS HAVE PRECEDENCE OVER SCALED DIMENSIONS. THE CONTRACTOR SHALL USE CAUTION WHEN SCALING REPRODUCED PLANS. IN CASE OF CONFLICT BETWEEN THIS PLAN SET AND ANY OTHER DRAWING AND/OR SPECIFICATION, THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY FOR CLARIFICATIONS.
    - L. IF ANY DEVIATIONS FROM THE APPROVED PLANS AND SPECIFICATIONS HAVE BEEN MADE, THE SITE CONTRACTOR SHALL PROVIDE AS-BUILT DRAWINGS STAMPED BY A LICENSED SURVEYOR OR QUALIFIED ENGINEER ALONG WITH A LETTER STAMPED BY A QUALIFIED ENGINEER DESCRIBING ALL SUCH DEVIATIONS, AND BEAR ALL COSTS FOR PREPARING AND FILING ANY NEW PERMITS OR PERMIT AMENDMENTS THAT MAY BE REQUIRED.
    - M. AT COMPLETION OF CONSTRUCTION, THE SITE CONTRACTOR SHALL PROVIDE A LETTER CERTIFYING THAT THE PROJECT WAS COMPLETED IN ACCORDANCE WITH THE APPROVED PLANS AND SPECIFICATIONS, AND A LETTER STAMPED BY A QUALIFIED ENGINEER THAT THEY HAVE OBSERVED ALL UNDERGROUND DETENTION SYSTEMS, INFILTRATION SYSTEMS, OR FILTERING SYSTEMS PRIOR TO BACKFILL, AND THAT SUCH SYSTEMS CONFORM TO THE APPROVED PLANS AND SPECIFICATIONS.
    - N. COMMERCIAL VEHICLE ROUTE DURING CONSTRUCTION SHALL CONFORM TO DOVER CITY CODE OR BE COORDINATED WITH THE COMMUNITY SERVICES DIRECTOR.

GRADING & DRAINAGE NOTES

1. THE CONTRACTOR SHALL ENSURE THAT ALL WORK IS PERFORMED IN ACCORDANCE WITH THE REQUIREMENTS OF NHDES ENV-WQ 1500 AS APPLICABLE.
2. APPLICANT SHALL COMPLETE LAND USE DEVELOPMENT TRACKING FORM, MOST RECENTLY REVISED VERSION, UTILIZING THE ONLINE POLLUTION TRACKING AND ACCOUNTING PILOT PROJECT (PTAPP) PORTAL.
3. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO CHECK THE ACCURACY OF THE TOPOGRAPHY AND REPORT ANY DISCREPANCIES TO THE ENGINEER PRIOR TO ANY EARTHWORK BEING PERFORMED ON THE SITE. NO CLAIM FOR EXTRA WORK WILL BE CONSIDERED FOR PAYMENT AFTER EARTHWORK HAS COMMENCED.
4. COORDINATE WITH ARCHITECTURAL PLANS FOR DETAILED GRADING AT BUILDING, AND SIZE AND LOCATION OF ALL BUILDING SERVICES.
5. COORDINATE WITH MECHANICAL AND PLUMBING PLANS FOR ROOF DRAIN INFORMATION.
6. LIMITS OF WORK ARE SHOWN AS APPROXIMATE. THE CONTRACTOR SHALL COORDINATE ALL WORK TO PROVIDE SMOOTH TRANSITIONS. THIS INCLUDES GRADING, PAVEMENT, CURBING, SIDEWALKS, AND ALIGNMENTS.
7. THE CONTRACTOR SHALL PROVIDE A FINISH PAVEMENT SURFACE FREE OF LOW SPOTS AND PONDING AREAS. CRITICAL AREAS INCLUDE BUILDING ENTRANCE, RAMPS, AND LOADING AREAS.
8. THE SITE SHALL BE GRADED SO ALL FINISHED PAVEMENT HAS POSITIVE DRAINAGE AND SHALL NOT POND WATER DEEPER THAN 1/4" FOR A PERIOD OF MORE THAN 15 MINUTES AFTER FLOODING.
9. ALL ELEVATIONS SHOWN AT CURB ARE TO THE BOTTOM OF CURB UNLESS OTHERWISE NOTED. CURBS HAVE A 6" REVEAL UNLESS OTHERWISE NOTED.
10. ALL SIDEWALK AND OTHER CURB REVEALS SHALL BE 6" WITH A TOLERANCE OF PLUS OR MINUS 3/8". WHERE SIDEWALK IS TO BE FLUSH, THE PAVEMENT REVEAL SHALL BE 1/4" WITH A TOLERANCE OF 1/8".
11. THE FINISHED GRADE AT BOTTOM OF ALL ACCESSIBLE RAMPS SHALL BE FLUSH WITH PAVEMENT WITH A TOLERANCE OF PLUS OR MINUS 1/4".
12. ADJUST ALL MANHOLES, CATCH BASINS, CURB BOXES, ETC. WITHIN LIMITS OF WORK TO FINISH GRADE PRIOR TO INSTALLATION OF FINISHED PAVEMENT.
13. ROAD AND DRAINAGE CONSTRUCTION SHALL CONFORM TO THE TYPICAL SECTIONS AND DETAILS SHOWN ON THE PLANS AND SHALL MEET LOCAL STANDARDS AND THE REQUIREMENTS OF THE LATEST NHDOT STANDARD SPECIFICATIONS FOR ROADS AND BRIDGE CONSTRUCTION AND THE NHDOT STANDARD STRUCTURE DRAWINGS UNLESS OTHERWISE NOTED.
14. STORMWATER DRAINAGE SYSTEM SHALL BE CONSTRUCTED TO LINE AND GRADE AS SHOWN ON THE PLANS. CONSTRUCTION METHODS SHALL CONFORM TO NHDOT STANDARD SPECIFICATIONS, SECTION 603. CATCH BASINS AND DRAIN MANHOLES SHALL CONFORM TO SECTION 604. ALL CATCH BASIN GRATES SHALL BE TYPE B AND CONFORM TO NHDOT STANDARDS AND SPECIFICATIONS UNLESS OTHERWISE NOTED.
15. ALL EXCAVATIONS SHALL BE THOROUGHLY SECURED ON A DAILY BASIS BY THE CONTRACTOR AT THE COMPLETION OF CONSTRUCTION OPERATIONS IN THE IMMEDIATE AREA.
16. ALL DISTURBED AREAS NOT TO BE PAVED OR OTHERWISE TREATED SHALL RECEIVE 6" LOAM, SEED, FERTILIZER, AND MULCH.
17. DENSITY REQUIREMENTS:

MINIMUM DENSITY*	LOCATION
95%	BELOW PAVED OR CONCRETE AREAS
95%	TRENCH BEDDING MATERIAL AND SAND BLANKET BACKFILL
90%	BELOW LOAM AND SEED AREAS

*ALL PERCENTAGES OF COMPACTION SHALL BE OF THE MAXIMUM DRY DENSITY AT THE OPTIMUM MOISTURE CONTENT AS DETERMINED AND CONTROLLED IN ACCORDANCE WITH ASTM D-1557, METHOD C. FIELD DENSITY TESTS SHALL BE MADE IN ACCORDANCE WITH ASTM D-1556 OR ASTM D-6938.

UTILITY NOTES

1. LENGTH OF PIPE IS FOR CONVENIENCE ONLY. ACTUAL PIPE LENGTH SHALL BE DETERMINED IN THE FIELD.
2. ALL PROPOSED UTILITY WORK, INCLUDING MATERIAL, INSTALLATION, TERMINATION, EXCAVATION, BEDDING, BACKFILL, COMPACTION, TESTING, CONNECTIONS, AND CONSTRUCTION SHALL BE COORDINATED WITH AND COMPLETED IN ACCORDANCE WITH THE APPROPRIATE REQUIREMENTS, CODES, AND STANDARDS OF ALL CORRESPONDING UTILITY ENTITIES AND SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING AND DETERMINING THE LOCATION, SIZE, AND ELEVATION OF ALL EXISTING UTILITIES, SHOWN OR NOT SHOWN ON THESE PLANS, PRIOR TO THE START OF ANY CONSTRUCTION. THE ENGINEER SHALL BE NOTIFIED IN WRITING OF ANY UTILITIES FOUND INTERFERING WITH THE PROPOSED CONSTRUCTION AND APPROPRIATE REMEDIAL ACTION BE AGREED TO BY THE ENGINEER BEFORE PROCEEDING WITH THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE TO CONTACT "DIGSAFE" (811) AT LEAST 72 HOURS BEFORE DIGGING.
4. COORDINATE ALL WORK ADJACENT TO PROPOSED BUILDINGS WITH ARCHITECTURAL BUILDING DRAWINGS. CONFIRM UTILITY PENETRATIONS AND INVERT ELEVATIONS ARE COORDINATED PRIOR TO INSTALLATION.
5. THE CONTRACTOR SHALL CONTACT ALL UTILITY COMPANIES OWNING UTILITIES, EITHER OVERHEAD OR UNDERGROUND, WITHIN THE CONSTRUCTION AREA AND SHALL COORDINATE AS NECESSARY WITH THE UTILITY COMPANIES OF SAID UTILITIES. THE PROTECTION OR RELOCATION OF UTILITIES IS ULTIMATELY THE RESPONSIBILITY OF THE CONTRACTOR.
6. THE EXACT LOCATION OF NEW UTILITY CONNECTIONS SHALL BE DETERMINED BY THE CONTRACTOR IN COORDINATION WITH UTILITY COMPANY, COUNTY AGENCY, AND/OR PRIVATE UTILITY COMPANY.
7. THE CONTRACTOR SHALL PROVIDE AND INSTALL ALL MANHOLES, BOXES, FITTINGS, CONNECTORS, COVER PLATES, AND OTHER MISCELLANEOUS ITEMS NOT NECESSARILY DETAILED ON THESE DRAWINGS TO RENDER THE UTILITY INSTALLATION COMPLETE AND OPERATIONAL.
8. ALL UTILITY COMPANIES REQUIRE INDIVIDUAL CONDUITS. CONTRACTOR TO COORDINATE WITH TELEPHONE, CABLE, AND ELECTRIC COMPANIES REGARDING NUMBER, SIZE, AND TYPE OF CONDUITS REQUIRED PRIOR TO INSTALLATION OF ANY CONDUIT.
9. SANITARY SEWER SHALL BE CONSTRUCTED TO THE STANDARDS AND SPECIFICATIONS AS SHOWN ON THESE PLANS. ALL SEWER MAINS AND FITTINGS SHALL BE PVC AND SHALL CONFORM TO ASTM F 679 (SDR 35 MINIMUM). FORCE MAINS AND FITTINGS SHALL CONFORM TO NH CODE OF ADMINISTRATIVE RULES ENV-WQ 700. ALL SEWER CONSTRUCTION SHALL BE IN ACCORDANCE WITH NH CODE OF ADMINISTRATIVE RULES ENV-WQ 700. SANITARY MANHOLES SHALL CONFORM TO NHDES WATER DIVISION WASTEWATER ENGINEERING BUREAU STANDARDS AND SPECIFICATIONS SHOWN HEREON.
10. ON-SITE WATER DISTRIBUTION SHALL BE TO CITY OF DOVER STANDARDS AND SPECIFICATIONS. WATER MAINS SHALL HAVE A MINIMUM OF 5.5' COVER. WHERE WATER PIPES CROSS SEWER LINES A MINIMUM OF 18" VERTICAL SEPARATION BETWEEN THE TWO OUTSIDE PIPE WALLS SHALL BE OBSERVED. HORIZONTAL SEPARATION BETWEEN WATER AND SEWER SHALL BE 10' MINIMUM. WHERE A SANITARY LINE CROSSES A WATER LINE, SEWER LINE MUST BE CONSTRUCTED OF FORCE MAIN MATERIALS (PER ENV-WQ 704.08) FROM BUILDING OR MANHOLE TO MANHOLE, OR SUBSTITUTE RUBBER-GASKETED PRESSURE PIPE FOR THE SAME DISTANCE. WHEN SANITARY LINES PASS BELOW WATER LINES, LAY PIPE SO THAT NO JOINT IN THE SANITARY LINE WILL BE CLOSER THAN 6' HORIZONTALLY TO THE WATER LINE.
11. THRUST BLOCKS SHALL BE PROVIDED AT ALL LOCATIONS WHERE WATER LINE CHANGES DIRECTIONS OR CONNECTS TO ANOTHER WATER LINE.
12. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR CONDUIT AND WIRING TO ALL SIGNS AND LIGHTS. CONDUIT TO BE A MINIMUM OF 24" BELOW FINISH GRADE.
13. ALL PROPOSED UTILITIES SHALL BE UNDERGROUND. ALL UNDERGROUND CONDUITS SHALL HAVE NYLON PULL ROPES.
14. THE CONTRACTOR SHALL ARRANGE AND PAY FOR ALL INSPECTIONS, TESTING, AND RELATED SERVICES AND SUBMIT COPIES OF ACCEPTANCE TO THE OWNER, UNLESS OTHERWISE INDICATED.
15. PROVIDE PERMANENT PAVEMENT REPAIR FOR ALL UTILITY TRENCHES IN EXISTING ROAD OR PAVEMENT TO REMAIN. SAW CUT TRENCH, PAVEMENT, AND GRANULAR BASE THICKNESS TO MATCH EXISTING PAVEMENT. OBTAIN ALL PERMITS REQUIRED FOR TRENCHING.
16. UNLESS OTHERWISE SPECIFIED, ALL UNDERGROUND STRUCTURES, PIPES, CHAMBERS, ETC. SHALL BE COVERED WITH A MINIMUM OF 18" OF COMPACTED SOIL BEFORE EXPOSURE TO VEHICLE LOADS.
17. APPROVED BACKFLOW PREVENTERS SHALL BE PROVIDED FOR BOTH FIRE AND DOMESTIC WATER LINES.
18. THE STRUCTURE SHALL BE SERVED BY A SPRINKLER SYSTEM AS REQUIRED BY CHAPTER 81-30 OF THE CODE OF THE CITY OF DOVER AND THE ADOPTED STATE OF NH BUILDING AND FIRE CODES.
19. SPRINKLER CONNECTIONS MUST BE FLUSHED IN ACCORDANCE WITH NFPA 24 AND A CONTRACTOR'S MATERIAL AND TEST CERTIFICATE FOR UNDERGROUND PIPING FORM MUST BE COMPLETED AND APPROVED BY INSPECTION SERVICES PRIOR TO CONNECTION OF THE BACKFLOW DEVICE.
20. FIRE DEPARTMENT CONNECTION(S) SHALL BE LOCATED ON THE STREET SIDE OF THE BUILDING PER NFPA 13. ACCESS TO THE FDC SHALL MAINTAIN A CLEAR AND UNOBSTRUCTED PATH AT ALL TIMES.
21. THE PROPERTY WILL BE SERVICED BY THE FOLLOWING:

DRAINAGE	MUNICIPAL
SEWER	MUNICIPAL
WATER	MUNICIPAL
GAS	NOT AVAILABLE
ELECTRIC	EVERSOURCE
TELEPHONE	CONSOLIDATED COMMUNICATIONS
CABLE	COMCAST XFINITY

SITE DEVELOPMENT PLANS

TAX MAP 9 LOT 111 & 112

NOTES & LEGEND

256 & 264 CENTRAL AVE

DOVER, NH

OWNED BY & PREPARED FOR

256-264 CENTRAL AVENUE, LLC

1"=40' (11"X17")

SCALE: 1"=20' (22"X34")

AUGUST 31, 2023

REV	DATE	DESCRIPTION	DR	CK
2	12/22/2023	REVISED PER TRC COMMENTS	JKC	CRR
1	10/24/2023	REVISED PER TRC COMMENTS	JKC	CRR

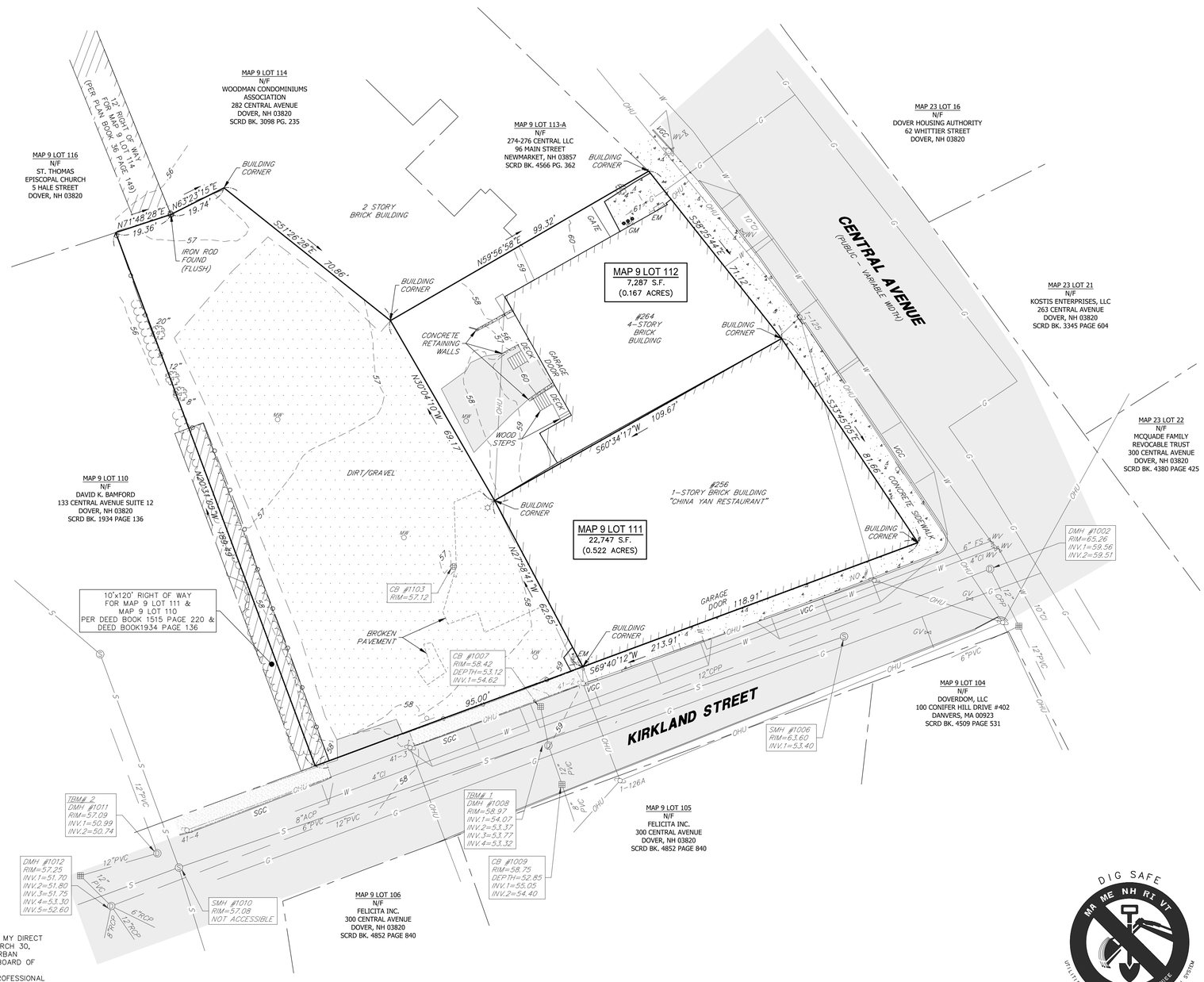
Seacoast Division
TFM
Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists
170 Commerce Way, Suite 102
Portsmouth, NH 03801
Phone (603) 431-2222
Fax (603) 431-0910
www.tfmoran.com

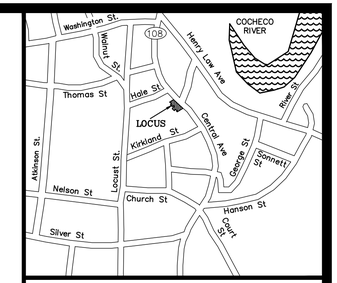
FILE		DR	JKC	DOVER FILE NUMBER -2023-0013	
	47262.01	CK	CRR	CADFILE: 47262-01 LEGEND	C-01

Dec 18, 2023 - 1:09pm
F:\M&C Projects\47262 - Central Avenue - Dover\47262-01 256 & 264 Central Avenue, Dover, NH\Design\PRODUCTION DRAWINGS\47262-01 Legend.dwg

LEGEND:

MAP 9 LOT 111 & 112	ASSESSORS MAP/ LOT NUMBER
ACP	ASBESTOS CONCRETE PIPE
A.G.	ABOVE GRADE
BK. PG.	BOOK/PAGE
CPP	CORRUGATED PLASTIC PIPE
DMH	DRAIN MANHOLE
EP	EDGE OF PAVEMENT
FF	FINISHED FLOOR
FS	FIRE SERVICE
GREG	GAS REGULATOR
INVERT	
N/F	NOW OR FORMERLY
PVC	POLYVINYL CHLORIDE
SCRD	STRAFFORD COUNTY REGISTRY OF DEEDS
RCP	REINFORCED CONCRETE PIPE
S.F.	SQUARE FEET
SMH	SEWER MANHOLE
TBM	TEMPORARY BENCHMARK
UP	UTILITY POLE
VGC	VERTICAL GRANITE CURB
	GM (GAS METER)
	IRON PIPE/ROD FOUND
	BOLLARD
	EM (ELECTRIC METER)
	LIGHT POLE
	UTILITY POLE
	ELECTRIC MANHOLE
	CATCH BASIN
	CB (CATCH BASIN ROUND)
	DECIDUOUS TREE
	SEWER MANHOLE
	HYDRANT
MW	MONITORING WELL
WV	WATER GATE VALVE
	SIGN
	CHAIN LINK FENCE
OHU	OVERHEAD UTILITIES
	APPROXIMATE ABUTTER LINE
	BOUNDARY LINE
	SETBACK LINE
	TREE LINE
D	DRAIN LINE
S	SEWER LINE
G	GAS LINE
W	WATER LINE
60	EXISTING CONTOUR
	ASPHALT
	CONCRETE
	GRAVEL
	EASEMENT
	PAVEMENT





LOCATION PLAN

NOTES:

1. THE PARCELS ARE LOCATED IN THE GENERAL CENTRAL BUSINESS (CBD) ZONING DISTRICT.
2. THE PARCELS ARE SHOWN ON THE CITY OF DOVER ASSESSOR'S MAP 9 AS LOTS 111 & 112.
3. THE PARCELS ARE LOCATED IN ZONE X, AS SHOWN ON NATIONAL FLOOD INSURANCE PROGRAM (NFIP), FLOOD INSURANCE RATE MAP (FIRM) STRAFFORD COUNTY, NEW HAMPSHIRE, PANEL 330 OF 405, MAP NUMBER 33017C0330E, MAP REVISED SEPTEMBER 30, 2015.
4. DIMENSIONAL REQUIREMENTS:

	REQUIRED:
LOT SIZE:	N/A
FRONTAGE BUILD-OUT:	70% MIN.
MINIMUM YARD DIMENSIONS:	
FRONT:	XXX'
SIDE:	0' MIN.-24' MAX.
REAR:	10' MIN.
MAXIMUM STRUCTURE DIMENSIONS:	
PRINCIPAL BUILDING HEIGHT:	5 STORY MAX., 2 STORY MIN.
LOT COVERAGE:	75%

5. OWNER OF RECORD:
   MAP 9 LOTS 111 & 112:
   256-264 CENTRAL, LLC
   96 MAIN STREET
   NEWMARKET, NH 03857
   SCRD BK#5117 PG#240
6. PARCEL AREA:

MAP 9 LOT 111:	MAP 9 LOT 112:
22,747 S.F.	7,287 S.F.
(0.522 ACRES)	(0.167 ACRES)

7. THE INTENT OF THIS PLAN IS TO SHOW THE LOCATION OF BOUNDARIES IN ACCORDANCE WITH THE CURRENT LEGAL DESCRIPTIONS. IT IS NOT AN ATTEMPT TO DEFINE THE EXTENT OF OWNERSHIP OR DEFINE THE LIMITS OF TITLE.
8. THE PURPOSE OF THIS PLAN IS TO SHOW THE BOUNDARY LINES, LIMITED TOPOGRAPHY AND CURRENT SITE FEATURES OF MAP 9 LOTS 111 & 112.
9. FIELD SURVEY COMPLETED BY TCE IN MARCH, 2023 USING A LIECA TS-16 AND CARLSON SURVPC DATA COLLECTION SOFTWARE.
10. HORIZONTAL DATUM IS NAD83 (2011) PER STATIC GPS OBSERVATIONS. THE VERTICAL DATUM IS NAVD88 PER STATIC GPS OBSERVATIONS. THE CONTOUR INTERVAL IS 1 FOOT.
11. EASEMENTS, RIGHTS, AND RESTRICTIONS SHOWN OR IDENTIFIED ARE THOSE WHICH WERE FOUND DURING RESEARCH PERFORMED AT THE STRAFFORD COUNTY REGISTRY OF DEEDS. OTHER RIGHTS, EASEMENTS, OR RESTRICTIONS MAY EXIST WHICH A TITLE EXAMINATION OF SUBJECT PARCEL(S) WOULD DETERMINE.
12. THE LOCATION OF ANY UNDERGROUND UTILITY INFORMATION SHOWN ON THIS PLAN IS APPROXIMATE. TFMORAN, INC. MAKES NO CLAIM TO THE ACCURACY OR COMPLETENESS OF UNDERGROUND UTILITIES SHOWN. PRIOR TO ANY EXCAVATION ON SITE THE CONTRACTOR SHALL CONTACT DIG SAFE.

Copyright 2023 © TFMoran, Inc.
48 Constitution Drive, Bedford, N.H. 03110

All rights reserved. These plans and materials may not be copied, duplicated, replicated or otherwise reproduced in any form whatsoever without the prior written permission of TFMoran, Inc.

This plan is not effective unless signed by a duly authorized officer of TFMoran, Inc.

I CERTIFY THAT THIS SURVEY AND PLAN WERE PREPARED BY THOSE UNDER MY DIRECT SUPERVISION AND ARE THE RESULT OF A FIELD SURVEY CONDUCTED ON MARCH 30, 2023. THIS SURVEY CONFORMS TO THE ACCURACY REQUIREMENTS OF AN URBAN SURVEY OF THE NEW HAMPSHIRE CODE OF ADMINISTRATIVE RULES OF THE BOARD OF LICENSURE FOR LAND SURVEYORS.
I FURTHER CERTIFY THAT THIS SURVEY IS CORRECT TO THE BEST OF MY PROFESSIONAL KNOWLEDGE, AND THE FIELD TRAVERSE SURVEY EXCEEDS A PRECISION OF 1:15,000.

STATE OF NEW HAMPSHIRE — No. 01037 — BRENDA M. KOLBOW — LICENSED LAND SURVEYOR
Brenda M. Kolbow
SIGNATURE

LICENSED LAND SURVEYOR

2023-10-24
DATE

DIG SAFE
MA ME NH RI VT
UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM
CALL 811 TOLL FREE

CONTACT DIG SAFE 72 BUSINESS HOURS PRIOR TO CONSTRUCTION

20 10 0 20
Graphic Scale in Feet

REV.	DATE	DESCRIPTION	DR	CK
1	10/24/2023	ADDED WATER LINES	RJB	BMK

TAX MAP 9 LOTS 111 & 112

EXISTING CONDITIONS PLAN

256-264 CENTRAL, LLC

256 & 264 CENTRAL AVENUE

DOVER, NEW HAMPSHIRE

COUNTY OF STRAFFORD

OWNED BY

256-264 CENTRAL, LLC

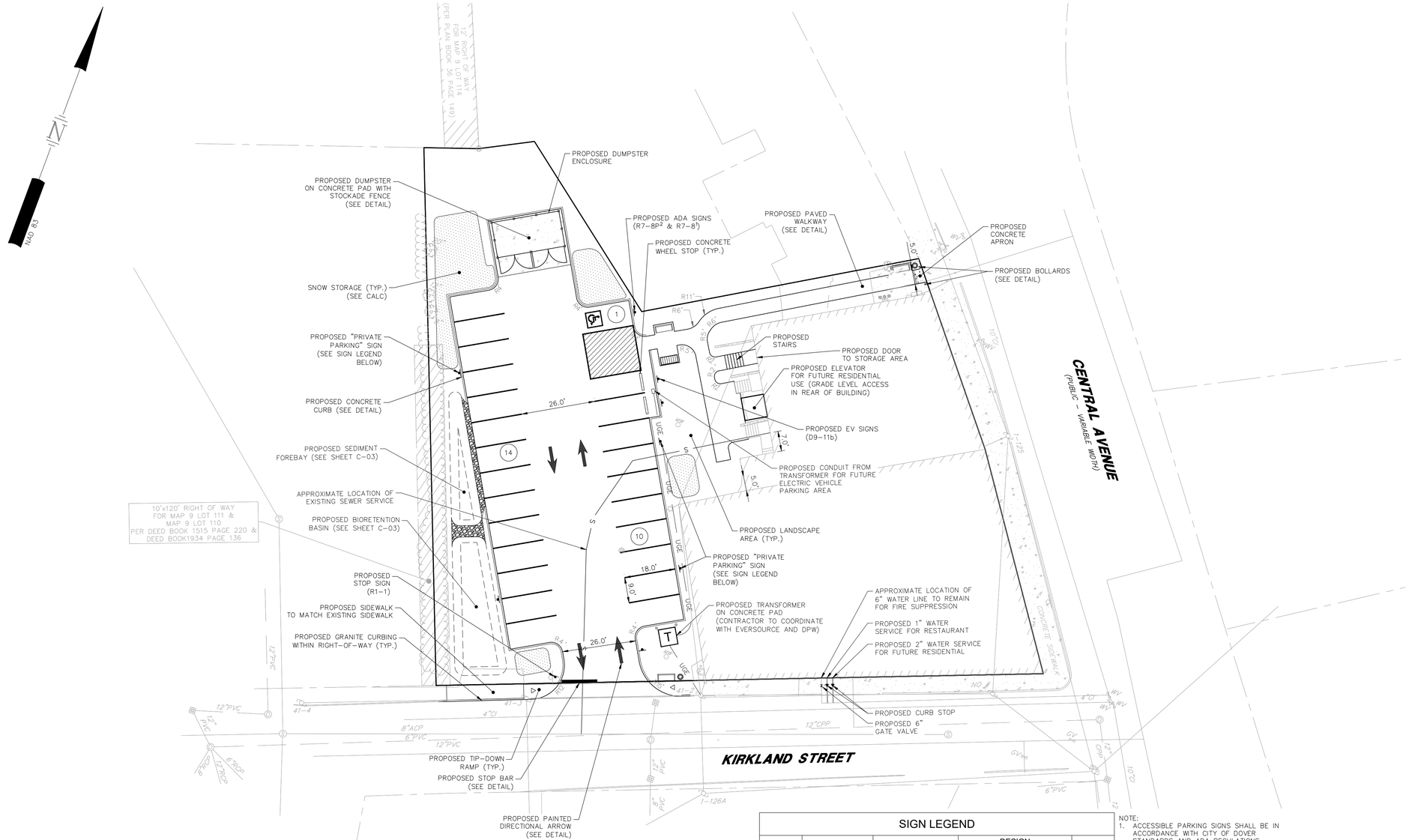
SCALE: 1" = 20' (22x34)
1" = 40' (11x17)

SEPTEMBER 1, 2023

Seacoast Division
TFM
Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists
170 Commerce Way, Suite 102
Portsmouth, NH 03801
Phone (603) 431-2222
Fax (603) 431-0910
www.tfmoran.com

FILE	DR	CK	FB	CADFILE	
47262-01	BMK	JCC	558		S-1

Oct 24, 2023 - 8:25am
F:\MSC Projects\47262 - Central Avenue - Dover\47262-01 256 & 264 Central Avenue, Dover, NH\Carlson Survey\Dwgs\47262-01 Survey.dwg



SITE DATA

OWNER OF RECORD OF MAP 09 LOTS 111 & 112: 256-264 CENTRAL AVENUE, LLC
DEED REFERENCE TO PARCEL IS BK 5117 PG 240
AREA OF PARCELS = 30,034± SF OR 0.689± ACRES

ZONED: CBD-G
EXISTING USE: COMMERCIAL
PROPOSED USE: COMMERCIAL

THE PURPOSE OF THIS PLAN IS TO DEPICT PROPOSED WORK TO PAVE AND STRIPE THE EXISTING PARKING LOT. ASSOCIATED IMPROVEMENTS INCLUDE AND ARE NOT LIMITED TO ACCESS, GRADING, STORMWATER MANAGEMENT, LIGHTING, LANDSCAPING, AND UTILITIES.

DIMENSIONAL REQUIREMENTS (CURRENT ZONING)

	REQUIRED:	PROVIDED:
MINIMUM LOT DIMENSIONS:		
LOT AREA	N/A SF	30,034 SF (0.689± AC)
LOT FRONTAGE	N/A FT	213.9 FT (MAP 9 LOT 111) 71 FT (MAP 9 LOT 112)
DEPTH	N/A FT	214 FT (MAP 9 LOT 111) 99 FT (MAP 9 LOT 112)
MAXIMUM STRUCTURE DIMENSIONS:		
STRUCTURE HEIGHT	2-5 STORIES	2-5 STORIES
LOT COVERAGE	75%	75% (~83% EXISTING)
SETBACKS/BUFFER:		
BUILDING FRONT	BUILD TO LINE	0 FT
BUILDING SIDE (MAX)	24 FT	0 FT
BUILDING REAR (MIN)	10 FT	95 FT (MAP 9 LOT 111) 24 FT (MAP 9 LOT 112)

PARKING REQUIREMENTS

PARKING SPACES (SEE CALCULATION)	25 SPACES	25 SPACES
ACCESSIBLE SPACES (REQ'D BY ADA)	1 SPACE	1 SPACE
PARKING SPACE SIZE	9 FT X 18 FT	9 FT X 18 FT
AISLE WIDTH	22 FT	30 FT

PARKING CALCULATIONS

REQUIRED PARKING RATIO:
RETAIL/SERVICE*: 1 SPACE PER 275 S.F. OF GROSS LEASABLE AREA
OFFICE: 1 SPACE PER 300 S.F. OF GROSS LEASABLE AREA
RESIDENTIAL: 1.25 SPACES PER UNIT AND 0.4 VISITOR SPACES PER UNIT
*WHERE COMMERCIAL AND RESIDENTIAL USES ARE CO-LOCATED, ONLY THE RESIDENTIAL PARKING SHALL BE REQUIRED.

TOTAL REQUIRED =

3,112 S.F. * 1 SPACE/300 S.F.	= 10	SPACES +
9 UNITS * 1.25 SPACES/UNIT+0.4 VISITOR SPACED PER UNIT	= 15	SPACES
TOTAL	= 25	SPACES

SNOW STORAGE

TOTAL SNOW STORAGE REQUIRED:
1 SF OF STORAGE AREA / 10 SF OF PAVED CLEARING AREA
10,072 SF OF CLEARING AREA X 1SF / 10 SF = 1,007 SF REQUIRED

TOTAL SNOW STORAGE PROVIDED: 1,166 SF

NOTES

1. ALL DIMENSIONS ARE TO THE FACE OF CURB UNLESS NOTED OTHERWISE.
2. LIGHTING, SIGNAGE, LANDSCAPING, AND SCREENING SHALL MEET THE REQUIREMENTS OF THE DOVER ZONING ORDINANCE AND SITE PLAN REGULATIONS.
3. SNOW SHALL NOT BE STOCKPILED IN STORMWATER BMP'S. SEE SNOW STORAGE LOCATIONS. IN THE EVENT THAT THE SNOW STORAGE AREAS PROVIDED ON THE SITE ARE COMPLETELY UTILIZED, EXCESS SNOW SHALL BE TRANSPORTED OFF SITE FOR DISPOSAL IN ACCORDANCE WITH NHDES REGULATION. IF SNOW IS STORED WITHIN PARKING AREA, KEEP CATCH BASINS CLEAR.
4. THE PARKING LOT AND ASSOCIATED IMPROVEMENTS CONSIST OF PHASE ONE OF THE PROJECT. PHASE TWO INVOLVES RENOVATION OF THE EXISTING BUILDINGS LOCATED AT BOTH 256 & 264 CENTRAL AVENUE. THE FUTURE BUILDING WILL CONSIST OF COMMERCIAL ON THE FIRST FLOOR, OFFICE SPACE ON THE SECOND FLOOR, AND RESIDENTIAL UNITS ON THE THIRD AND FOURTH FLOORS.
5. ANY FENCE TALLER THAN SEVEN FEET (7') REQUIRES THE ISSUANCE OF A BUILDING PERMIT FROM INSPECTION SERVICES.
6. A SECURITY SYSTEM SHALL BE INSTALLED AS REQUIRED BY CHAPTER 45, ARTICLE I, SECTION 45-2 OF THE CODE OF THE CITY OF DOVER.
7. THE SITE LAYOUT IS DESIGNED IN COMPLIANCE WITH APPLICABLE ACCESSIBILITY REGULATIONS. THE PROPOSED STRUCTURE RENOVATIONS WILL ALSO BE DESIGNED IN ACCORDANCE WITH APPLICABLE ACCESSIBILITY REGULATIONS. (I.E. IBC, ANSI-117.1) AND NH RSA 155-A:5.

SIGN LEGEND

ID	SIGN	SIZE (INCHES) WIDTH	SIZE (INCHES) HEIGHT	DESIGN (COLORING, TEXT SIZE, SPACING, SHAPE, RETROFLECTIVITY, ETC.)	NO. OF SIGNS
R1-1	STOP	30	30	REFER TO THE 2009 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) FOR STREETS AND HIGHWAYS	1
R7-8[1]	RESERVED PARKING	12	18		1
R7-8P[2]	VAN ACCESSIBLE	18	9		1
	PRIVATE PARKING VIOLATORS WILL BE TOWED AT OWNERS EXPENSE	12	18		4
D9-11b	EV	24	24		2

NOTE:
1. ACCESSIBLE PARKING SIGNS SHALL BE IN ACCORDANCE WITH CITY OF DOVER STANDARDS AND ADA REGULATIONS.
2. PER ADA STANDARDS, A "VAN ACCESSIBLE" PLAQUE DOES NOT RESTRICT USE OF ACCESSIBLE SPACES TO VAN USERS ONLY.

HORIZONTAL SCALE 1"=20'
20 10 0 20

REV	DATE	DESCRIPTION	DR	CK
2	12/22/2023	REVISED PER TRC COMMENTS	JKC	CRR
1	10/24/2023	REVISED PER TRC COMMENTS	JKC	CRR

SITE DEVELOPMENT PLANS

TAX MAP 9 LOT 111 & 112

SITE LAYOUT PLAN

256 & 264 CENTRAL AVE

DOVER, NH

OWNED BY & PREPARED FOR

256-264 CENTRAL AVENUE, LLC

1"=40' (11"X17")
SCALE: 1"=20' (22"X34")
AUGUST 31, 2023

Copyright 2023 ©TFMoran, Inc.
48 Constitution Drive, Bedford, N.H. 03110

All rights reserved. These plans and materials may not be copied, duplicated, replicated or otherwise reproduced in any form whatsoever without the prior written permission of TFMoran, Inc.

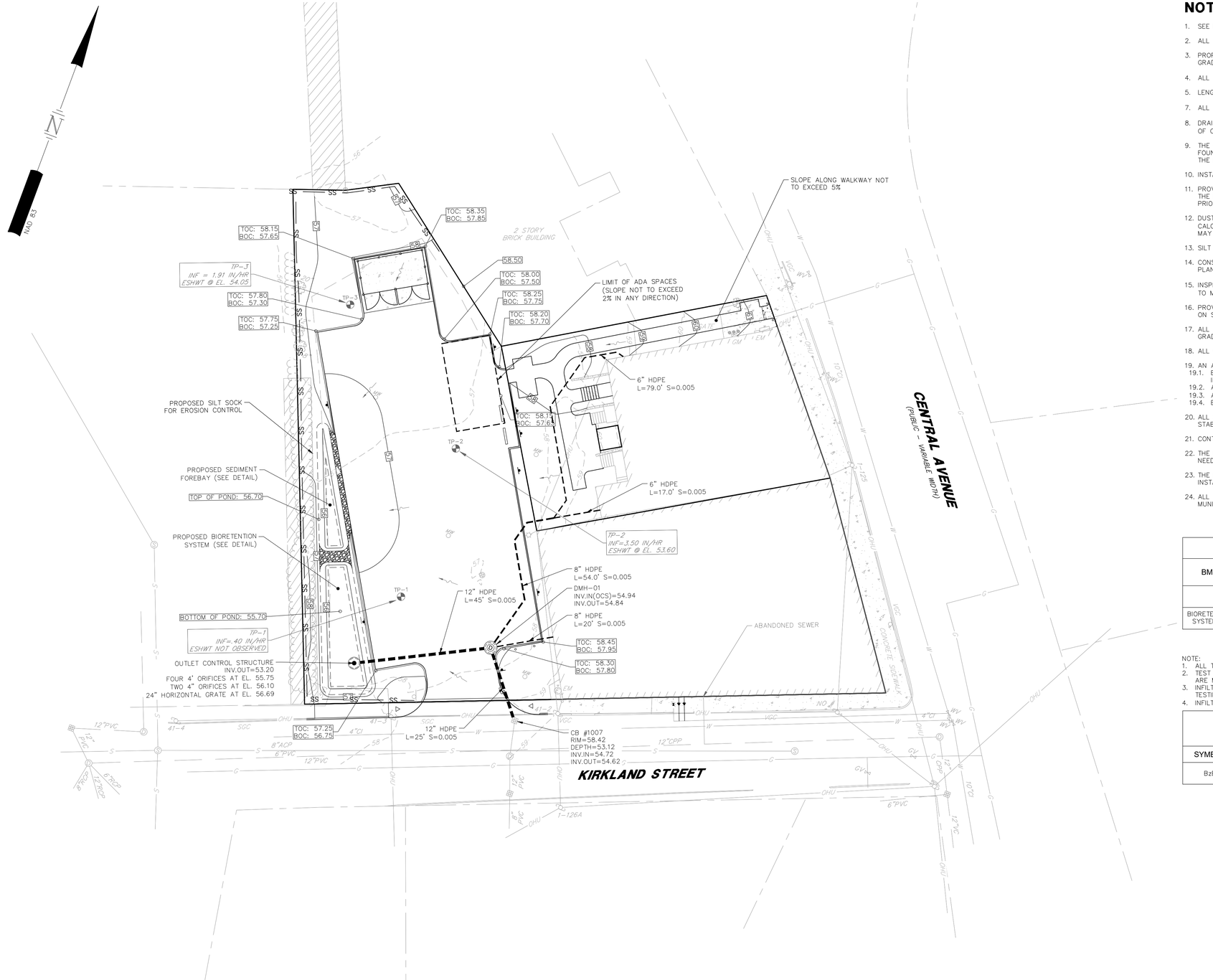
This plan is not effective unless signed by a duly authorized officer of TFMoran, Inc.

DIG SAFE
CONTACT DIG SAFE 72 BUSINESS HOURS PRIOR TO CONSTRUCTION

Seacoast Division
TFM
Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists
170 Commerce Way, Suite 102
Portsmouth, NH 03801
Phone (603) 431-2222
Fax (603) 431-0910
www.tfmoran.com

FILE					
47262.01	DR	JKC	DOVER FILE NUMBER-2023-0013		C-02
	CK	CRR	CADFILE	47262-01 SITE LAYOUT (DESIGN 2)	

Dec 18, 2023 - 1:10pm
F:\MSC Projects\47262 - Central Avenue - Dover\47262-01 256 & 264 Central Avenue, Dover, NH\Design\PRODUCTION DRAWINGS\47262-01 Site Layout (Design 2).dwg



NOTES

1. SEE NOTES ON SHEET C-01.
2. ALL DOORS AND GARAGE ENTRANCES SHALL BE AT FINISHED FLOOR ELEVATION UNLESS OTHERWISE NOTED.
3. PROPOSED SPOT GRADES ARE PROVIDED TO THE NEAREST 0.05. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE FINISHED GRADES MEET ADA STANDARDS FOR WHEEL CHAIR RAMPS, HANDICAP SPACES AND ACCESS AISLES, CROSSWALKS, SIDEWALKS, ETC.
4. ALL ELEVATIONS SHOWN AT CURB ARE TO THE BOTTOM OF CURB UNLESS OTHERWISE NOTED. CURBS HAVE A 6" REVEAL UNLESS OTHERWISE NOTED.
5. LENGTH OF PIPE IS FOR CONVENIENCE ONLY. ACTUAL PIPE LENGTH SHALL BE DETERMINED IN THE FIELD.
7. ALL PROPOSED DRAINAGE PIPES SHALL BE 12" AND HDPE, UNLESS OTHERWISE NOTED ON THE PLAN.
8. DRAINAGE PIPES WITH LESS THAN 3' COVER SHALL BE INSULATED (SEE UTILITY TRENCH DETAIL) AND DRAINAGE CATCH BASINS WITH LESS THAN 3.5' OF COVER OVER INVERTS SHALL USE SLAB TOP CATCH BASIN (SEE DETAILS).
9. THE CONTRACTOR SHALL REFER TO THE GEOTECHNICAL REPORT AND ARCHITECTURAL PLANS FOR SUBDRAINAGE SYSTEMS FOR THE BUILDING FOUNDATION. SUBDRAINAGE MUST DAYLIGHT OR TIE INTO THE STORMWATER MANAGEMENT SYSTEM. COORDINATE SUBDRAINAGE SYSMTEM DESIGN WITH THE ENGINEER OF RECORD.
10. INSTALL SILT BARRIER ALONG THE PERIMETER OF THE AREA TO BE DISTURBED AS FIRST ORDER OF WORK.
11. PROVIDE INLET PROTECTION BARRIERS AROUND ALL EXISTING AND PROPOSED STORM DRAINAGE INLETS WITHIN THE WORK LIMITS AND MAINTAIN FOR THE DURATION OF THE PROJECT UNTIL PAVEMENT HAS BEEN INSTALLED. INLET PROTECTION BARRIERS SHALL BE IN PLACE AT ALL CATCH BASINS PRIOR TO THE DISTURBANCE OF SOIL.
12. DUST CONTROL SHALL BE MAINTAINED THROUGHOUT THE CONSTRUCTION PERIOD. IT SHALL BE ACCOMPLISHED BY THE UNIFORM APPLICATION OF CALCIUM CHLORIDE AT THE RATE OF 1-1/2 POUNDS PER SQUARE YARD BY MEANS OF A LIME SPREADER OR OTHER APPROVED METHOD. WATER MAY ALSO BE USED FOR DUST CONTROL, AND APPLIED BY SPRINKLING WITH WATER TRUCK DISTRIBUTORS, AS REQUIRED.
13. SILT PROTECTION MEASURES SHALL BE INSTALLED IN ACCORDANCE WITH THE DETAILS CONTAINED IN THIS PLAN SET.
14. CONSTRUCT JUTE MATTING ON ALL SLOPES STEEPER THAN 3:1, DISTURBED AREAS SLOPING TOWARDS WETLANDS AND ALL LOCATIONS SHOWN ON PLAN.
15. INSPECT EROSION CONTROL MEASURES WEEKLY AND AFTER EACH RAIN STORM OF 0.10" OR GREATER. REPAIR/MODIFY SILT BARRIER AS NECESSARY TO MAXIMIZE FILTER EFFICIENCY. REMOVE SEDIMENT WHEN SEDIMENT IS 1/3 THE STRUCTURE HEIGHT.
16. PROVIDE SILT BARRIERS AT THE BASE OF CUT AND FILL SLOPES UNTIL COMPLETION OF THE PROJECT OR UNTIL VEGETATION BECOMES ESTABLISHED ON SLOPES. EROSION PROTECTION BELOW FILL SLOPES SHALL BE PLACED IMMEDIATELY AFTER CLEARING, PRIOR TO EMBANKMENT CONSTRUCTION.
17. ALL DISTURBED AREAS SHALL BE REVEGETATED AS QUICKLY AS POSSIBLE. ALL CUT AND FILL SLOPES SHALL BE SEEDED WITHIN 72 HOURS AFTER GRADING.
18. ALL WORK AREAS TO BE STABILIZED AT THE END OF EACH WORK DAY AND PRIOR TO ANY PREDICTED SIGNIFICANT RAIN EVENT.
19. AN AREA SHALL BE CONSIDERED STABLE IF ONE OF THE FOLLOWING HAS OCCURRED:
    - 19.1. BASE COURSE GRAVELS, WHICH MEET THE REQUIREMENTS OF NHDOT STANDARD FOR ROAD AND BRIDGE CONSTRUCTION, 2016, ITEM 304.2, ARE INSTALLED IN AREAS TO BE PAVED
    - 19.2. A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED
    - 19.3. A MINIMUM OF 3" OF NON-EROSIVE MATERIAL SUCH AS STONE OR RIP RAP HAS BEEN INSTALLED
    - 19.4. EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED
20. ALL CATCH BASINS, MANHOLES, AND DRAIN LINES SHALL BE THOROUGHLY CLEANED OF ALL SEDIMENT AND DEBRIS AFTER ALL AREAS HAVE BEEN STABILIZED.
21. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING SLOPE STABILITY DURING CONSTRUCTION.
22. THE EROSION CONTROL PRACTICES SHOWN ON THESE PLANS ARE ILLUSTRATIVE ONLY AND SHALL BE SUPPLEMENTED BY THE SITE CONTRACTOR AS NEEDED.
23. THE DESIGN ENGINEER SHALL PROVIDE A SIGNED LETTER TO THE CITY ENGINEER CERTIFYING THAT THE STORMWATER MANAGEMENT SYSTEM HAS BEEN INSTALLED IN ACCORDANCE WITH APPROVED PLANS.
24. ALL PROPOSED ROOF DRAINS AND SUMP PUMPS SHALL TIE INTO THE MUNICIPAL DRAINAGE SYSTEM. ALL EXISTING STORMWATER CONNECTIONS TO MUNICIPAL SEWER MUST BE REMOVED.

TEST PIT & INFILTRATION TEST

BMP	TEST PIT #	APPROX GROUND	BOTTOM OF POND	INFILTRATION TEST		TEST PIT	
		ELEV	ELEV	ELEV	DEPTH	ELEV	DEPTH (MIN)
BIORETENTION SYSTEM #1	1	56.75	55.70	54.25	3.0'	52.91	4.33'

NOTE:
1. ALL TEST PITS ARE TO BE TESTED FOR INFILTRATION RATES AT THE GIVEN INFILTRATION ELEVATIONS.
2. TEST PITS ARE TO BE EXCAVATED UNTIL SEASONAL HIGH WATER TABLE OR THE LOCATION OF LEDGE IS ENCOUNTERED. TEST PIT DEPTHS LISTED ARE MINIMUM DEPTHS. IF SEASONAL HIGH WATER OR LEDGE ARE ENCOUNTERED, THE TEST PIT CAN BE STOPPED.
3. INFILTRATION TESTS ARE FOR INFILTRATION ONLY. THEY CAN BE DISCONTINUED IF SEASONAL HIGH WATER OR LEDGE IS ENCOUNTERED WITHIN THE TESTING RANGE FOR THE INFILTRATION.
4. INFILTRATION TESTS SHALL BE PERFORMED ACCORDING TO ENV-WQ 1504.14 (e) [AoT STANDARDS].

SOIL LEGEND
(PER NRCS WEB SOIL SURVEY)

SYMBOL	DESCRIPTION	HYDROLOGIC SOIL GROUP
BzB	BUXTON SILT LOAM, 3 TO 8 PERCENT SLOPES	C/D

SITE DEVELOPMENT PLANS

TAX MAP 9 LOT 111 & 112

GRADING & DRAINAGE PLAN

256 & 264 CENTRAL AVE

DOVER, NH

OWNED BY & PREPARED FOR

256-264 CENTRAL AVENUE, LLC

HORIZONTAL SCALE 1"=20'
20 10 0 20

1"=40' (11"X17")
SCALE: 1"=20' (22"X34")

AUGUST 31, 2023

REV	DATE	DESCRIPTION	DR	CK
2	12/22/2023	REVISED PER TRC COMMENTS	JKC	CRR
1	10/24/2023	REVISED PER TRC COMMENTS	JKC	CRR

Seacoast Division
TFM
Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists
170 Commerce Way, Suite 102
Portsmouth, NH 03801
Phone (603) 431-2222
Fax (603) 431-0910
www.tfmoran.com

FILE		DR	JKC	DOVER FILE NUMBER -2023-0013		
	47262.01	CK	CRR	CADFILE	47262-01 GRADING	C-03

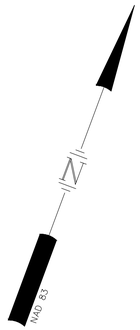
Copyright 2023 ©TFMoran, Inc.
48 Constitution Drive, Bedford, N.H. 03110

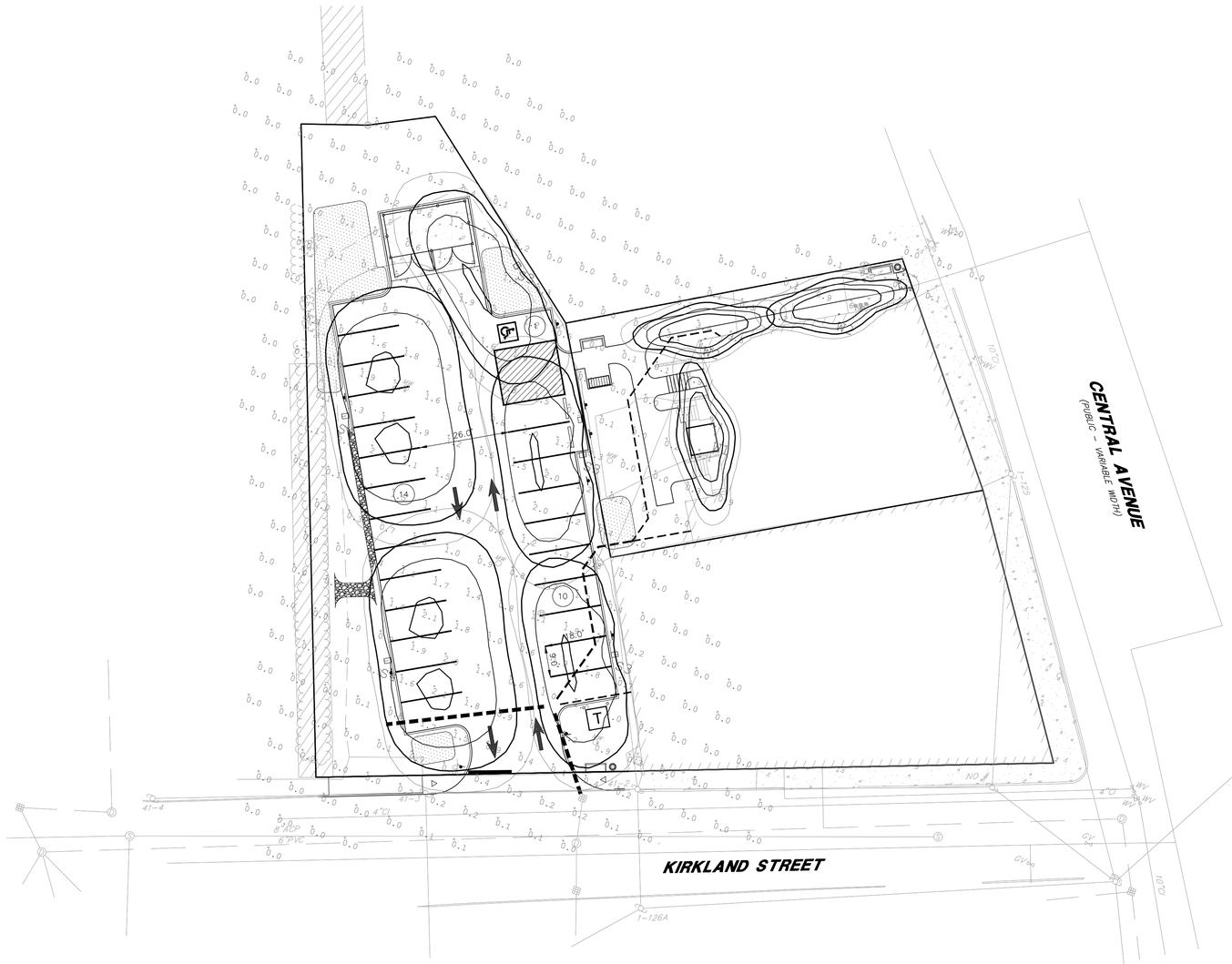
All rights reserved. These plans and materials may not be copied, duplicated, replicated or otherwise reproduced in any form whatsoever without the prior written permission of TFMoran, Inc.

This plan is not effective unless signed by a duly authorized officer of TFMoran, Inc.

DIG SAFE
CONTACT DIG SAFE 72 BUSINESS HOURS PRIOR TO CONSTRUCTION

Dec 18, 2023 - 1:10pm
F:\MSC Projects\47262 - Central Avenue - Dover\47262-01 256 & 264 Central Avenue, Dover, NH\Design\PRODUCTION DRAWINGS\47262-01 Grading.dwg





Mirada Small Area (MRS)
Outdoor LED Area Light



Steel Poles
Square Straight



AWL
All-Weather Wallpack - Low Profile



PARKING LOT

Illuminance (Fc)
Average = 1.29
Maximum = 2.1
Minimum = 0.4
Avg/Min Ratio = 3.23
Max/Min Ratio = 5.25

Luminaire Schedule

Symbol	Qty	Label	Arrangement	Description	[MANUFAC]
⊟	3	S3	Single	MRS-LED-03L-SIL-3-UNV-DIM-30-70CRI-IL-CXX / 4SQ B3 S11G15 S GA 4BC (15' AFG)	LSI INDUSTRIES, INC.
⊟	2	S4	Single	MRS-LED-06L-SIL-FT-UNV-DIM-30-70CRI-IL-CXX / 4SQ B3 S11G 20 S GA 4BC (20' AFG)	LSI INDUSTRIES, INC.
⊞	1	W1	Single	AWL CXX - 3000K / WALL MTD 9' AFG	LSI INDUSTRIES, INC.
⊞	2	W2	Single	AWL CXX - 3000K / WALL MTD 8' AFG	LSI INDUSTRIES, INC.

HORIZONTAL SCALE 1"=20'
20 10 0 20

SITE DEVELOPMENT PLANS

TAX MAP 9 LOT 111 & 112

LIGHTING PLAN

256 & 264 CENTRAL AVE

DOVER, NH

OWNED BY & PREPARED FOR

256-264 CENTRAL AVENUE, LLC

1"=40' (11"X17")
SCALE: 1"=20' (22"X34")

AUGUST 31, 2023

REV	DATE	DESCRIPTION	DR	CK
2	12/22/2023	REVISED PER TRC COMMENTS	JKC	CRR
1	10/24/2023	REVISED PER TRC COMMENTS	JKC	CRR

Seacoast Division
TFM
Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists
170 Commerce Way, Suite 102
Portsmouth, NH 03801
Phone (603) 431-2222
Fax (603) 431-0910
www.tfmoran.com

FILE	DR	JKC	DOVER FILE NUMBER -2023-0013	
47262.01	CK	CRR	CADFILE: 47262-01 LIGHTING	C-04

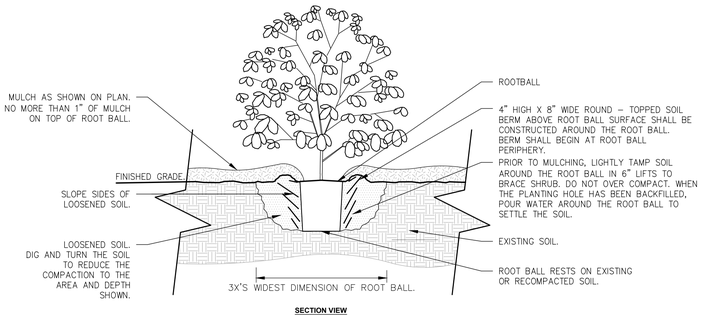
Copyright 2023 ©TFMoran, Inc.
48 Constitution Drive, Bedford, N.H. 03110

All rights reserved. These plans and materials may not be copied, duplicated, replicated or otherwise reproduced in any form whatsoever without the prior written permission of TFMoran, Inc.

This plan is not effective unless signed by a duly authorized officer of TFMoran, Inc.

DIG SAFE
CONTACT DIG SAFE 72 BUSINESS HOURS PRIOR TO CONSTRUCTION

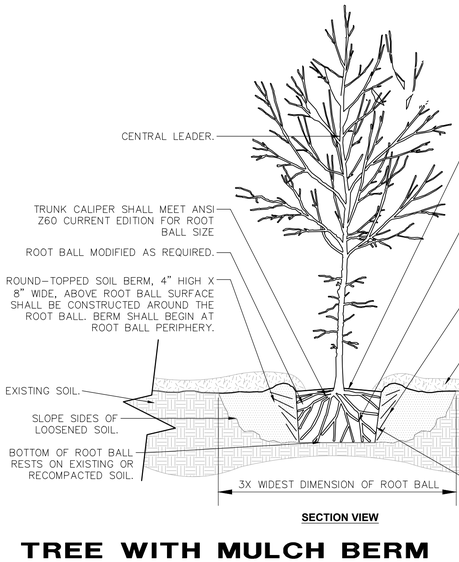
Dec 18, 2023 - 1:10pm
F:\MSC Projects\47262 - Central Avenue - Dover\47262-01 256 & 264 Central Avenue, Dover, NH\Design\PRODUCTION DRAWINGS\47262-01 Lighting.dwg



SECTION VIEW

SHRUB PLANTING

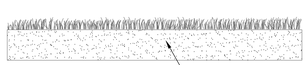
NOT TO SCALE



SECTION VIEW

TREE WITH MULCH BERM

NOT TO SCALE



LOAM & SEED

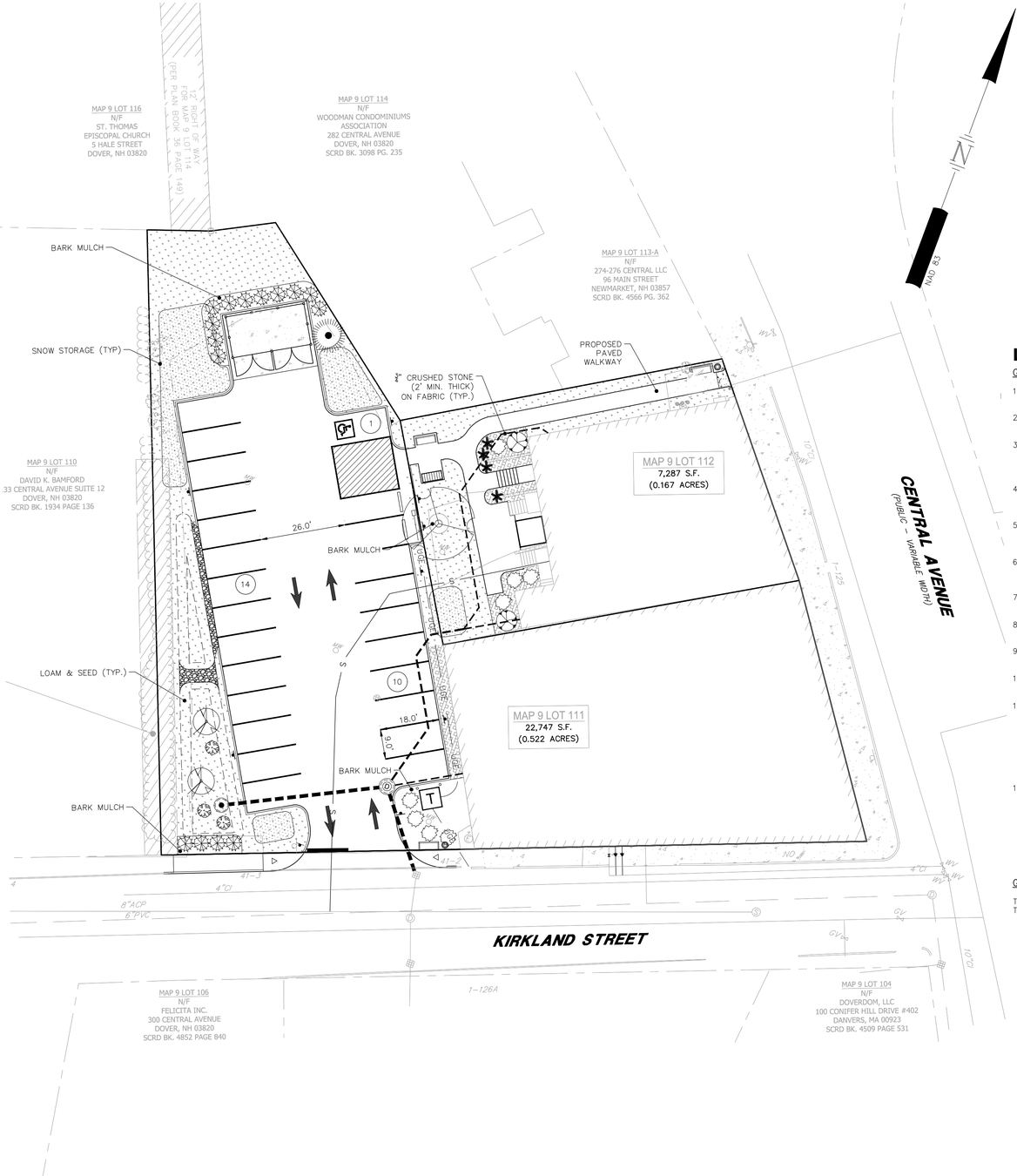
NOT TO SCALE

Copyright 2023 ©TFMoran, Inc.
48 Constitution Drive, Bedford, N.H. 03110

All rights reserved. These plans and materials may not be copied, duplicated, replicated or otherwise reproduced in any form whatsoever without the prior written permission of TFMoran, Inc.

This plan is not effective unless signed by a duly authorized officer of TFMoran, Inc.

DIG SAFE
CONTACT DIG SAFE 72 BUSINESS HOURS PRIOR TO CONSTRUCTION



HORIZONTAL SCALE 1"=20'
20 10 0 20

LANDSCAPE LEGEND

SYMBOL	QTY	BOTANICAL NAME COMMON NAME	SIZE	REMARKS
	1	PLATANUS X ACREIFOLIA 'BLOODGOOD' BLOODGOOD LONDON PLANETREE	2 1/2" TO 3" CAL.	B&B
	1	PICEA PUNGENS BLUE SPRUCE	6' TO 7'	B&B
	3	CORNUS SERICEA 'ARCTIC FIRE' ARCTIC FIRE RED–OSIER DOGWOOD	3 GAL.	CONT.
	2	HAMAMELIS VIRGINIANA 'HARVEST MOON' HARVEST MOON WITCHHAZEL	4' TO 5'	B&B
	8	JUNIPERUS C. 'SEAGREEN' SEAGREEN JUNIPER	3 GAL.	CONT.
	4	SPIRAEA X B. 'ANTHONY WATERER' ANTHONY WATERER SPIREA	3 GAL.	CONT.
	15	THUJA O. 'TECHNY' MISSION ARBORVITAE	4' TO 5'	B&B
	2	VIBURNUM DENTATUM ARROWWOOD VIBURNUM	3' TO 4'	B&B

LANDSCAPE NOTES

GENERAL

1. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE RULES, REGULATIONS, LAWS, AND ORDINANCES HAVING JURISDICTION OVER THIS PROJECT SITE.
2. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING ALL UNDERGROUND UTILITIES AND NOTIFY OWNER'S REPRESENTATIVE OF CONFLICTS.
3. THE LANDSCAPE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL QUANTITIES SHOWN ON PLANS BEFORE PRICING THE WORK. ANY DIFFERENCE IN QUANTITIES SHALL BE BROUGHT TO THE ATTENTION OF THE LANDSCAPE ARCHITECT FOR CLARIFICATION. LANDSCAPE QUANTITIES SHOWN ON THE PLAN SHALL SUPERCEDE QUANTITIES LISTED IN LANDSCAPE LEGEND.
4. THE CONTRACTOR SHALL CONTACT THE LANDSCAPE ARCHITECT PRIOR TO STARTING WORK AND VERIFY THAT THE PLANS IN THE CONTRACTOR'S POSSESSION ARE THE MOST CURRENT PLANS AVAILABLE AND ARE THE APPROVED PLAN SET FOR USE IN CONSTRUCTION.
5. ALL PLANT MATERIALS INSTALLED SHALL MEET OR EXCEED THE SPECIFICATIONS OF THE AMERICAN NURSERY AND LANDSCAPE ASSOCIATION (ANLA) [FORMERLY THE AMERICAN ASSOCIATION OF NURSERYMEN] IN THE AMERICAN STANDARD FOR NURSERY STOCK (AS AMENDED) [ANSI Z60.1–1996],
6. ALL PLANTS SHALL BE FIRST CLASS AND SHALL BE REPRESENTATIVE OF THEIR NORMAL SPECIES AND/OR VARIETIES. ALL PLANTS MUST HAVE GOOD, HEALTHY, WELL–FORMED UPPER GROWTH AND A LARGE, FIBEROUS, COMPACT ROOT SYSTEM.
7. ALL PLANTS SHALL BE FREE FROM DISEASE AND INSECT PESTS AND SHALL COMPLY WITH ALL APPLICABLE STATE AND FEDERAL LAWS PERTAINING TO PLANT DISEASES AND INFESTATIONS.
8. ALL TREES SHALL BE BALLED AND BURLAPPED (B&B) UNLESS OTHERWISE NOTED OR APPROVED BY LANDSCAPE ARCHITECT.
9. IF APPLICABLE, THE CONTRACTOR SHALL HAVE ALL FALL TRANSPLANTING HAZARD PLANTS DUG IN THE SPRING AND STORED FOR FALL PLANTING.
10. ALL INVASIVE PLANT SPECIES FROM THE "NEW HAMPSHIRE PROHIBITED INVASIVE PLANT SPECIES LIST", TO BE REMOVED SHALL BE DONE SO IN ACCORDANCE WITH THE "INVASIVE SPECIES ACT, HB 1258–FN."
11. LOAM SHALL CONSIST OF LOOSE FRIABLE TOPSOIL WITH NO ADMIXTURE OF REFUSE OR MATERIAL TOXIC TO PLANT GROWTH. LOAM SHALL BE FREE FROM STONES, LUMPS, STUMPS, OR SIMILAR OBJECTS LARGER THAN 2" IN GREATEST DIAMETER, SUBSOIL, ROOTS, AND WEEDS. THE MINIMUM AND MAXIMUM PH VALUE SHALL BE FROM 5.5 TO 7.0. LOAM SHALL CONTAIN A MINIMUM OF 2% AND A MAXIMUM OF 5% ORGANIC MATTER AS DETERMINED BY LOSS BY IGNITION. SOIL TEXTURE SHALL BE SANDY CLAY LOAM OR SANDY LOAM WITH CLAY CONTENT BETWEEN 15 AND 25%, AND A COMBINED CLAY/SILT CONTENT OF NO MORE THAN 55%. NOT MORE THAN 65% SHALL PASS A NO. 200 SIEVE AS DETERMINED BY THE WASH TEST IN ACCORDANCE WITH ASTM D1140. IN NO INSTANCE SHALL MORE THAN 20% OF THAT MATERIAL PASSING THE #4 SIEVE CONSIST OF CLAY SIZE PARTICLES.
12. ACCEPTABLE SEED MIXES ARE AS FOLLOWS:

PARK SEED MIX (NHDOT TYPE 15) MIN. 120 LBS/ACRE:

33% CREEPING RED FESCUE	(MIN. 40 LBS/ACRE)
42% PERENNIAL RYEGRASS	(MIN. 50 LBS/ACRE)
21% KENTUCKY BLUEGRASS	(MIN. 25 LBS/ACRE)
4% REDTOP	(MIN. 5 LBS/ACRE)

TEMPORARY LAWN MIX: (MIN. 47 LBS/ACRE)
100% ANNUAL RYE

GUARANTEE

THE LANDSCAPE CONTRACTOR SHALL GUARANTEE ALL LANDSCAPE WORK FOR A PERIOD OF ONE YEAR, BEGINNING AT THE START OF THE MAINTENANCE PERIOD.

SITE DEVELOPMENT PLANS

TAX MAP 9 LOT 111 & 112

LANDSCAPE PLAN

256 & 264 CENTRAL AVE

DOVER, NH

OWNED BY & PREPARED FOR

256-264 CENTRAL AVENUE, LLC

1"=40' (11"X17")
SCALE: 1"=20' (22"X34")

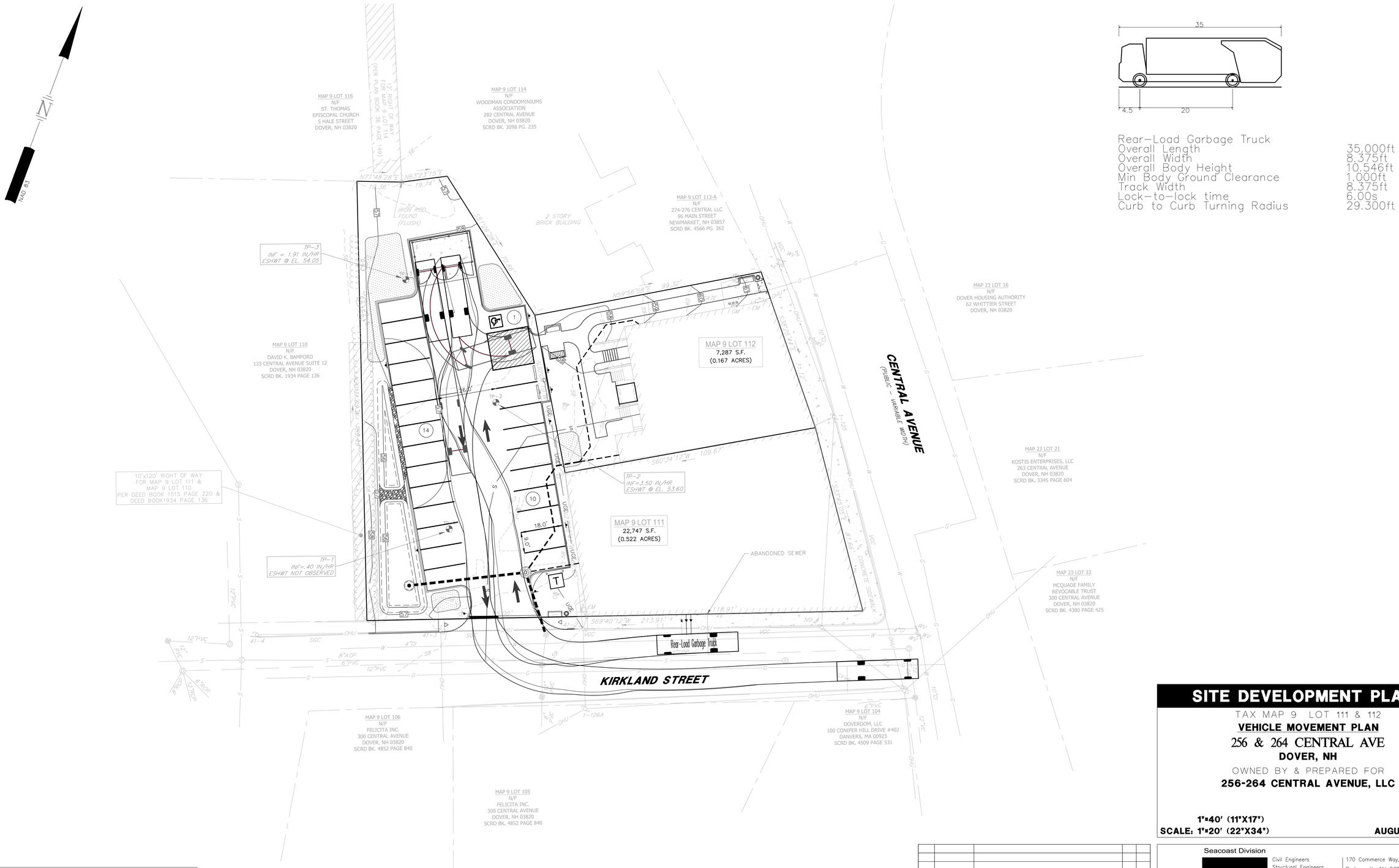
AUGUST 31, 2023

REV	DATE	DESCRIPTION	DR	CK
2	12/22/2023	REVISED PER TRC COMMENTS	JKC	CRR
1	10/24/2023	REVISED PER TRC COMMENTS	JKC	CRR

Seacoast Division
TFM
Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists
170 Commerce Way, Suite 102
Portsmouth, NH 03801
Phone (603) 431–2222
Fax (603) 431–0910
www.tfmoran.com

FILE	DR	JKC	DOVER FILE NUMBER -2023–0013	
47262.01	CK	CRR	CADFILE 47262–01 LANDSCAPE	C–05

Dec 18, 2023 - 1:10pm
F:\MSC Projects\47262 - Central Avenue - Dover\47262-01 256 & 264 Central Avenue, Dover, NH\Design\PRODUCTION DRAWINGS\47262-01 Landscape.dwg



Rear-Load Garbage Truck	
Overall Length	35.000ft
Overall Width	8.375ft
Overall Body Height	10.546ft
Min Body Ground Clearance	1.000ft
Track Width	8.375ft
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	29.300ft

HORIZONTAL SCALE 1"=20'
20 10 0 20

SITE DEVELOPMENT PLANS

TAX MAP 9 LOT 111 & 112

VEHICLE MOVEMENT PLAN

256 & 264 CENTRAL AVE

DOVER, NH

OWNED BY & PREPARED FOR

256-264 CENTRAL AVENUE, LLC

1"=40' (11"X17")
SCALE: 1"=20' (22"X34")

AUGUST 31, 2023

REV	DATE	DESCRIPTION	DR	CK
2	12/22/2023	REVISED PER TRC COMMENTS	JKC	CRR
1	10/24/2023	REVISED PER TRC COMMENTS	JKC	CRR

Seacoast Division
TFM
Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists
170 Commerce Way, Suite 102
Portsmouth, NH 03801
Phone (603) 431-2222
Fax (603) 431-0910
www.tfmoran.com

FILE	47262.01	DR	JKC	DOVER FILE NUMBER -2023-0013		C-06
		CK	CRR	CADFILE	47262-01 VEHICLE	

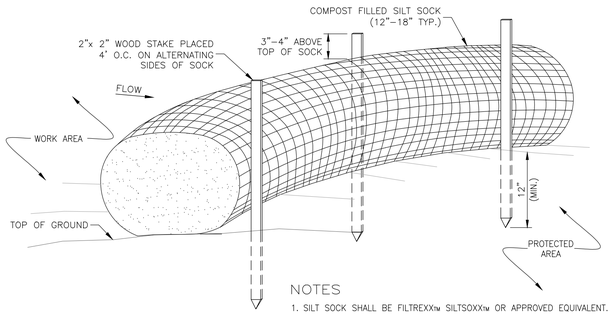
Copyright 2023 ©TFMoran, Inc.
48 Constitution Drive, Bedford, N.H. 03110

All rights reserved. These plans and materials may not be copied, duplicated, replicated or otherwise reproduced in any form whatsoever without the prior written permission of TFMoran, Inc.

This plan is not effective unless signed by a duly authorized officer of TFMoran, Inc.

DIG SAFE
811 OR 1-888-DIG-SAFE
CONTACT DIG SAFE 72 BUSINESS HOURS PRIOR TO CONSTRUCTION

Dec 18, 2023 - 1:11pm
F:\MSC Projects\47262 - Central Avenue - Dover\47262-01 256 & 264 Central Avenue, Dover, NH\Design\PRODUCTION DRAWINGS\47262-01 Vehicle.dwg

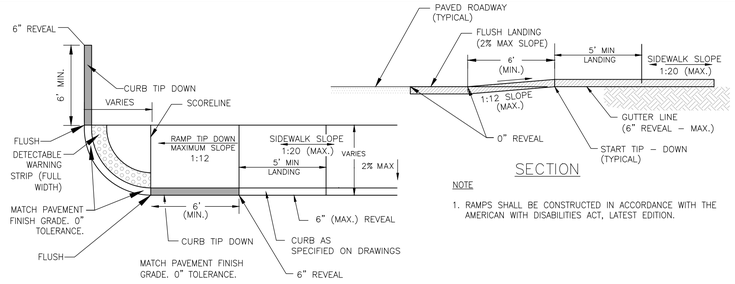


NOTES

1. SILT SOCK SHALL BE FILTREXX™ SILTSOXX™ OR APPROVED EQUIVALENT.
2. SEE SPECIFICATIONS FOR SOCK SIZE AND COMPOST FILL REQUIREMENTS.
3. SILT SOCK SHALL BE INSPECTED PERIODICALLY AND AFTER ALL STORM EVENTS, AND REPAIR OR REPLACEMENT SHALL BE PERFORMED AS NEEDED.
4. COMPOST MATERIAL SHALL BE DISPERSED ON SITE, AS DETERMINED BY THE ENGINEER.

SILT SOCK

NOT TO SCALE



NOTE

1. RAMPS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE AMERICAN WITH DISABILITIES ACT, LATEST EDITION.

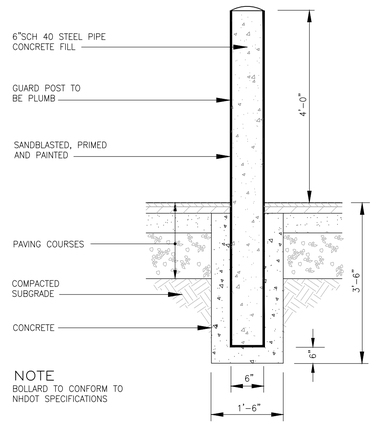
SIDEWALK TIP DOWN RAMP

NOT TO SCALE



STOP BAR

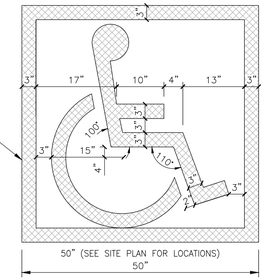
NOT TO SCALE



NOTE
BOLLARD TO CONFORM TO NHDOT SPECIFICATIONS

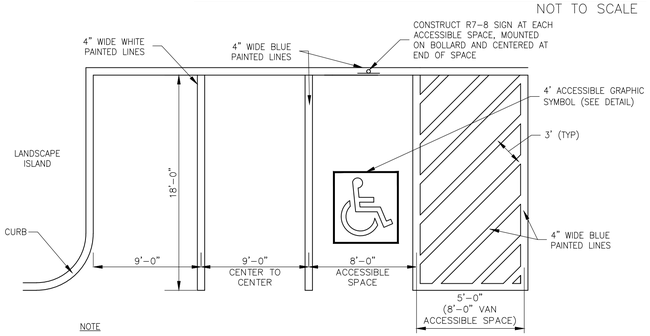
BOLLARD

NOT TO SCALE



PAINTED ACCESSIBLE SYMBOL

NOT TO SCALE

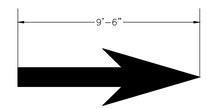


NOTE

1. TRAFFIC PAINT SHALL BE APPLIED AS SPECIFIED BY THE MANUFACTURER AND SHALL MEET THE REQUIREMENTS OF AASHTO M248 TYPE "F". APPLY TWO COATS.
2. SYMBOLS & PARKING STALLS SHALL CONFORM TO THE REQUIREMENTS OF THE AMERICANS WITH DISABILITIES ACT, LATEST EDITION.
3. ALL PAINTED ISLANDS SHALL BE 4" WIDE DIAGONAL LINES AT 3'-0" OC BORDERED BY 4" WIDE LINES.
4. 2% MAXIMUM CROSS SLOPE ALLOWED IN ACCESSIBLE PARKING SPACES AND ACCESS AISLES.

TYPICAL PARKING LAYOUT

NOT TO SCALE

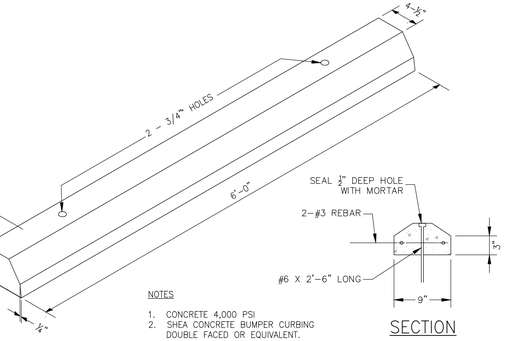


NOTES

1. TRAFFIC PAINT SHALL BE APPLIED AS SPECIFIED BY THE MANUFACTURER AND SHALL MEET THE REQUIREMENTS OF AASHTO M248 TYPE "F". APPLY TWO COATS.
2. SYMBOLS AND PARKING STALLS SHALL CONFORM TO THE REQUIREMENTS OF THE AMERICANS WITH DISABILITIES ACT, LATEST EDITION.

PAINTED ARROW

NOT TO SCALE



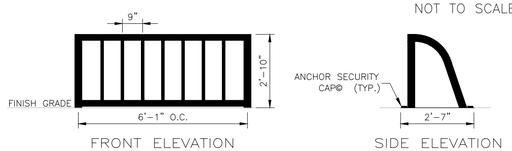
NOTES

1. CONCRETE 4,000 PSI
2. SHEA CONCRETE BUMPER CURBING DOUBLE FACED OR EQUIVALENT.

SECTION

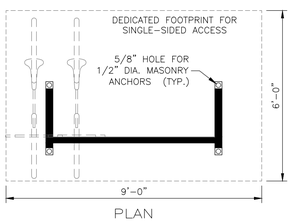
PRECAST CONCRETE WHEEL STOP

NOT TO SCALE



FRONT ELEVATION

SIDE ELEVATION



PLAN

BIKE-RAIL® : VERSION 9 MODERATE SECURITY BIKE RACKS			
MODEL #	LENGTH (O.C.)	BIKE CAPACITY 1 SIDE	2 SIDES
BR- 4.9	3'-1"	3	6
BR- 4.9	6'-1"	5	10
BR- 4.9	9'-1"	7	14
BR- 4.9	12'-1"	9	18
BR- 4.9	15'-1"	11	22
BR- 4.9	18'-1"	13	26

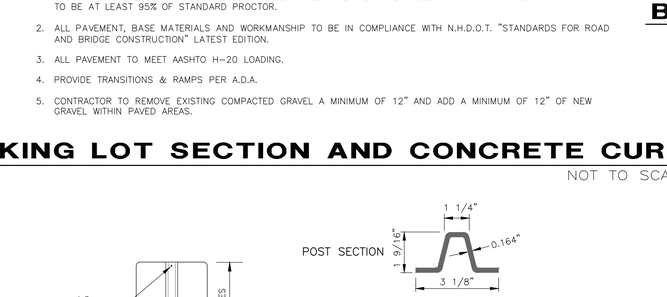
MANUFACTURER

BIKE SECURITY RACKS CO., INC.
12 SAWYER LOOP
WENTWORTH, NH 03282
(800) 545-2757

BICYCLE RACK

BIKE RAIL™ OR APPROVED EQUAL

NOT TO SCALE



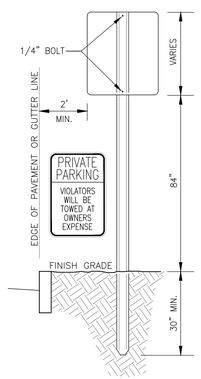
LAYER	
TOP	1-1/2"
BINDER	1-1/2"
CRUSHED GRAVEL	6"
BANK RUN GRAVEL	12"

CONSTRUCTION NOTES

1. REMOVE ALL LOAM, CLAY, MUCK, STUMPS, AND OTHER IMPROPER PAVEMENT FOUNDATION MATERIAL WITHIN 2' OF SUBGRADE. REPLACE WITH COMPACTED GRANULAR FILL MATERIAL ACCEPTABLE TO APPROVING AGENCY. COMPACTION TO BE AT LEAST 95% OF STANDARD PROCTOR.
2. ALL PAVEMENT, BASE MATERIALS AND WORKMANSHIP TO BE IN COMPLIANCE WITH N.H.D.O.T. "STANDARDS FOR ROAD AND BRIDGE CONSTRUCTION" LATEST EDITION.
3. ALL PAVEMENT TO MEET AASHTO H-20 LOADING.
4. PROVIDE TRANSITIONS & RAMPS PER A.D.A.
5. CONTRACTOR TO REMOVE EXISTING COMPACTED GRAVEL A MINIMUM OF 12" AND ADD A MINIMUM OF 12" OF NEW GRAVEL WITHIN PAVED AREAS.

PARKING LOT SECTION AND CONCRETE CURB

NOT TO SCALE



POST SECTION

LENGTH: P-12, 12'-0"; P-14, 14'-0"; P-16, 16'-0".

WEIGHT PER LINEAR FOOT: 2.50 LBS. (MIN.)

HOLES: 3/8" DIA. 1' C-C FULL LENGTH

STEEL: SHALL CONFORM TO ASTM A-499 (GRADE 60) OR ASTM A-576 (GRADE 1070-1080).

FINISH: SHALL BE PAINTED WITH TWO COATS OF AN APPROVED MEDIUM GREEN, BAKED ON OR AIR DRIED, PAINT OF WEATHER RESISTANT QUALITY. ALL FABRICATION SHALL BE COMPLETE BEFORE PAINTING.

NOTES

1. POSTS SHALL BE PLUMB; ANY POST BENT OR OTHERWISE DAMAGED SHALL BE REMOVED AND PROPERLY REPLACED. POSTS MAY BE SET OR DRIVEN.
2. WHEN POSTS ARE SET, HOLES SHALL BE DUG TO THE PROPER DEPTH, AFTER INSERTING POSTS, THE HOLES SHALL BE BACKFILLED WITH SUITABLE MATERIAL IN LAYERS NO TO EXCEED 6" DEEP THOROUGHLY COMPACTED, CARE BEING TAKEN TO PRESERVE THE ALIGNMENT OF THE POST.
3. WHEN POSTS ARE DRIVEN, A SUITABLE DRIVING CAP SHALL BE USED AND AFTER DRIVING THE TOP OF THE POST SHALL HAVE SUBSTANTIALLY THE SAME CROSS-SECTIONAL DIMENSION AS THE BODY OF THE POST; BATTERED HEADS WILL NOT BE ACCEPTED.
4. POSTS SHALL NOT BE DRIVEN WITH THE SIGN ATTACHED TO THE POST.
5. SIGNS SHALL BE ERECTED IN CONFORMANCE WITH THE REQUIREMENTS OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES".
6. WHEN SIGN IS IN PLACE NO PART OF POST SHALL EXTEND ABOVE THE SIGN.
7. DIMENSIONS SHOWN ARE NOMINAL.
8. ALTERNATE SECTIONS MUST BE APPROVED PRIOR TO USE.

TRAFFIC SIGN POST IN GRADE

NOT TO SCALE

Copyright 2023 ©TFMoran, Inc.
48 Constitution Drive, Bedford, N.H. 03110

All rights reserved. These plans and materials may not be copied, duplicated, replicated or otherwise reproduced in any form whatsoever without the prior written permission of TFMoran, Inc.

This plan is not effective unless signed by a duly authorized officer of TFMoran, Inc.

REV	DATE	DESCRIPTION	DR	CK
2	12/22/2023	REVISED PER TRC COMMENTS	JKC	CRR
1	10/24/2023	REVISED PER TRC COMMENTS	JKC	CRR

SITE DEVELOPMENT PLANS

TAX MAP 9 LOT 111 & 112

DETAILS

256 & 264 CENTRAL AVE

DOVER, NH

OWNED BY & PREPARED FOR

256-264 CENTRAL AVENUE, LLC

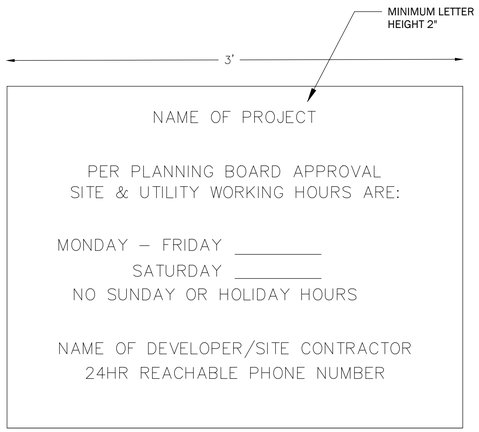
SCALE: NTS **AUGUST 31, 2023**

Seacoast Division
TFM
Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists
170 Commerce Way, Suite 102
Portsmouth, NH 03801
Phone (603) 431-2222
Fax (603) 431-0910
www.tfmoran.com

FILE	DR	CK		
47262.01	JKC	CRR	DOVER FILE NUMBER -2023-0013	CADFILE: 47262-01 DETAILS

C-07

Dec 18, 2023 - 1:11pm
F:\MSC Projects\47262 - Central Avenue - Dover\47262-01 256 & 264 Central Avenue, Dover, NH\Design\PRODUCTION DRAWINGS\47262-01 Details.dwg

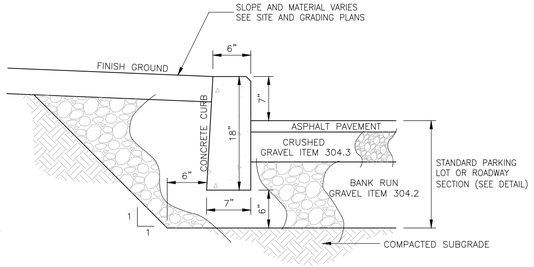


NOTES:

1. SIGN SHALL HAVE BLACK LETTERS ON A WHITE BACKGROUND
2. SIGN SHALL BE WEATHER RESISTANT AND SECURED TO THE GROUND

CONSTRUCTION SIGN

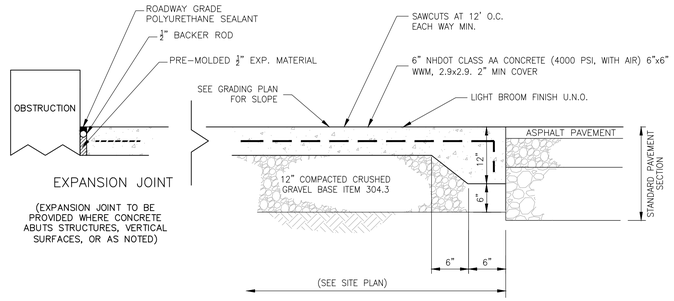
DOVER CITY STANDARD DETAIL — NOT TO SCALE



NOTE: PROVIDE TRANSITIONS & RAMPS PER A.D.A.

CONCRETE CURB

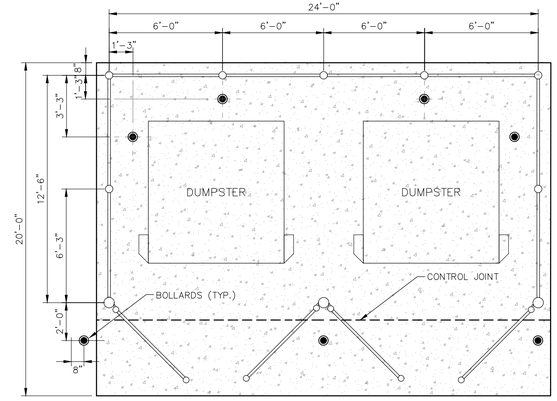
NOT TO SCALE

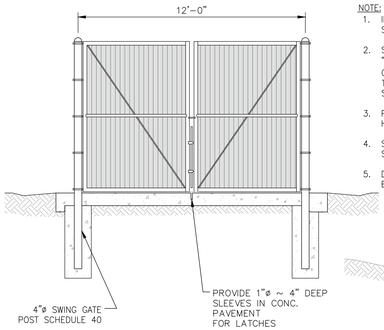


LIGHT DUTY CONCRETE PAD

NOT TO SCALE

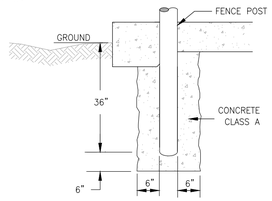
NOTE:
EXPANSION JOINTS TO BE PROVIDED AT ALL BUILDINGS AND OBSTRUCTIONS



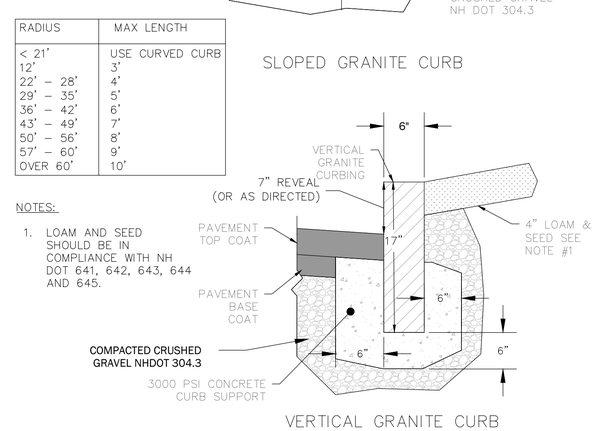


GATE DETAIL

NOTE:
1. INSTALL PER MANUFACTURER'S SPECIFICATIONS.
2. STOCKADE FENCE TO BE COMMERCIAL "BEST" GRADE. 2" MESH MADE OF 8 GAUGE OR 6 GAUGE WIRE. 1-5/8" O.D. TOP AND BOTTOM RAILS, SCHEDULE 40. SEE DETAIL FOR POST SIZES.
3. POSTS, GATES, WIRE MESH AND HARDWARE TO BE VINYL COATED.
4. SEE CONCRETE PAD DETAIL FOR SPECIFICATION ON THE PAD.
5. DUMPSTER PAD AND HANDLES SHALL BE CONSTRUCTED TO BE ACCESSIBLE.



FENCE POST FOOTING DETAIL



RADIUS	MAX LENGTH
< 21'	USE CURVED CURB
12'	3'
22' – 28'	4'
29' – 35'	5'
36' – 42'	6'
43' – 49'	7'
50' – 56'	8'
57' – 60'	9'
OVER 60'	10'

SLOPED GRANITE CURB

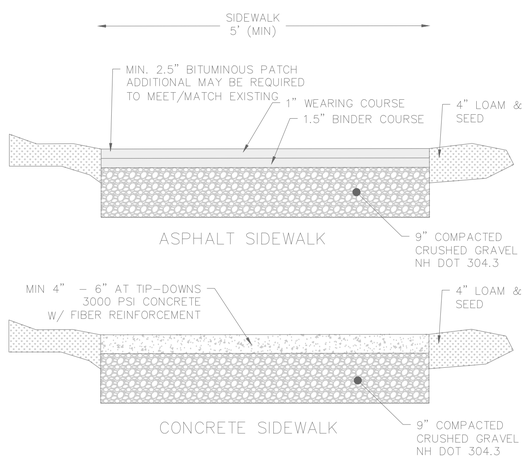
NOTES:

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

VERTICAL GRANITE CURB

GRANITE CURB

DOVER CITY STANDARD DETAIL — NOT TO SCALE

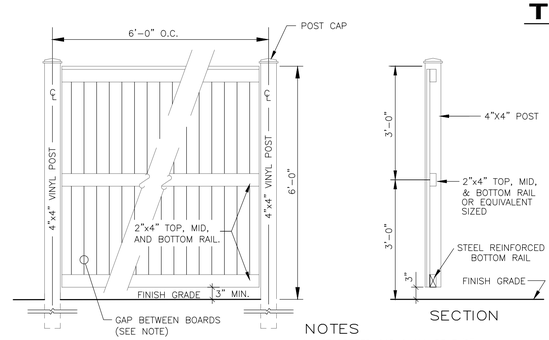


NOTES:

1. MATERIALS SHALL BE IN ACCORDANCE WITH THE CITY OF DOVER STANDARDS SPECIFICATIONS.
2. SIDEWALK AND DRIVEWAY WIDTHS SHALL BE EQUAL TO EXISTING WIDTHS OR AS APPROVED AND SHALL SLOPE TO MATCH EXISTING ELEVATIONS.
3. BASE FOR THE SIDEWALKS AND DRIVEWAYS SHALL BE 9-INCHES OF CRUSHED GRAVEL.

ASPHALT/CONCRETE SIDEWALK

DOVER CITY STANDARD DETAIL — NOT TO SCALE

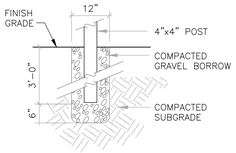


SECTION

NOTES
1. STAGGERED GAP SHALL BE 7/8".
2. TOP, MIDDLE & BOTTOM RAILS SHALL FACE THE OUTSIDE OF STRUCTURE.
3. COLOR TO BE WHITE.

STAGGERED PICKET VINYL FENCE SECTION

NOT TO SCALE



FOOTING

TRASH ENCLOSURE

NOT TO SCALE

SITE DEVELOPMENT PLANS

TAX MAP 9 LOT 111 & 112

DETAILS

256 & 264 CENTRAL AVE

DOVER, NH

OWNED BY & PREPARED FOR

256-264 CENTRAL AVENUE, LLC

SCALE: NTS — **AUGUST 31, 2023**

REV	DATE	DESCRIPTION	DR	CK
2	12/22/2023	REVISED PER TRC COMMENTS	JKC	CRR
1	10/24/2023	REVISED PER TRC COMMENTS	JKC	CRR

Seacoast Division
TFM
Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists
170 Commerce Way, Suite 102
Portsmouth, NH 03801
Phone (603) 431-2222
Fax (603) 431-0910
www.tfmoran.com

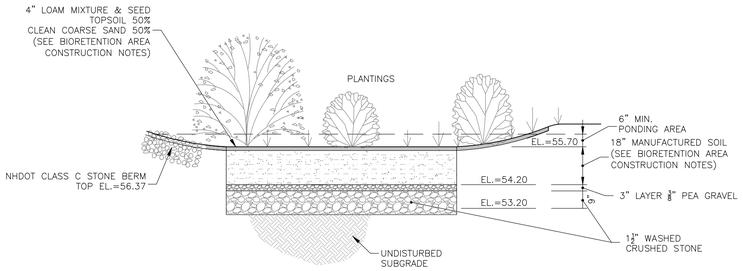
FILE	47262.01	DR	JKC	DOVER FILE NUMBER -2023-0013		C-08
		CK	CRR	CADFILE	47262-01 DETAILS	

Copyright 2023 ©TFMoran, Inc.
48 Constitution Drive, Bedford, N.H. 03110

All rights reserved. These plans and materials may not be copied, duplicated, replicated or otherwise reproduced in any form whatsoever without the prior written permission of TFMoran, Inc.

This plan is not effective unless signed by a duly authorized officer of TFMoran, Inc.

Dec 18, 2023 - 1:11pm
F:\MISC Projects\47262 - Central Avenue - Dover\47262-01 256 & 264 Central Avenue, Dover, NH\Design\PRODUCTION DRAWINGS\47262-01 Details.dwg



BIORETENTION NOTES

– DO NOT PLACE THE BIORETENTION SYSTEM INTO SERVICE UNTIL THE BMP HAS BEEN PLANTED AND ITS CONTRIBUTING AREAS HAVE BEEN FULLY STABILIZED.

–DO NOT DISCHARGE SEDIMENT–LADEN WATERS FROM CONSTRUCTION ACTIVITIES (RUNOFF, WATER FROM EXCAVATIONS) TO THE BIORETENTION AREA DURING ANY STAGE OF CONSTRUCTION.

– DO NOT TRAFFIC EXPOSED SOIL SURFACE WITH CONSTRUCTION EQUIPMENT. IF FEASIBLE, PERFORM EXCAVATIONS WITH EQUIPMENT POSITIONED OUTSIDE THE LIMITS OF THE INFILTRATION COMPONENTS OF THE SYSTEM.

– DO NOT STORE CONSTRUCTION MATERIALS OR EQUIPMENT IN AREA OF PROPOSED BIORETENTION BASIN

BIORETENTION AREA SECTION

NOT TO SCALE

BIORETENTION AREA CONSTRUCTION

1. CLEAR AND GRUB THE AREA WHERE THE BIORETENTION AREAS ARE TO BE LOCATED. STOCKPILE LOAM FOR REUSE ON SLOPES.

2. GRADE BIORETENTION AREAS ACCORDING TO PLAN AND DETAILS. SIDE SLOPES SHALL HAVE 4" LOAM AND SEED. BOTTOM OF BIORETENTION AREAS TO BE CONSTRUCTED WITH MULCH, MANUFACTURED SOIL, PEA STONE AND CRUSHED STONE (SEE BIORETENTION AREA DETAIL). SPECIFIC PLANTINGS SHALL BE FIELD LOCATED BY LANDSCAPE ARCHITECT AT TIME OF INSTALLATION.

3. BIORETENTION MANUFACTURED SOIL MIXTURE SHALL BE A UNIFORM MIX, FREE OF STONES, STUMPS, ROOTS OR OTHER SIMILAR OBJECTS LARGER THAN TWO INCHES EXCLUDING MULCH. NO OTHER MATERIALS OR SUBSTANCES SHALL BE MIXED OR DUMPED WITHIN THE BIORETENTION AREA THAT MAY BE HARMFUL TO PLANT GROWTH, OR PROVIDE A HINDRANCE TO THE PLANTING OR MAINTENANCE OPERATION. THE MANUFACTURED SOIL MIX SHALL CONSIST OF THE FOLLOWING BY VOLUME:
   - ASTM C–33 CONCRETE SAND (50–55% BY VOLUME)
   - LOAMY SAND TOPSOIL (20–30% BY VOLUME) WITH 15–25% FINES PASSING THE NO. 200 SIEVE
   - MODERATELY FINE SHREDDED BARK OR WOOD FIBER MULCH (20–30% BY VOLUME) WITH LESS THAN 5% PASSING THE NO. 200 SIEVE

4. TOPSOIL/LOAM SHALL CONSIST OF LOOSE FRIABLE TOPSOIL WITH NO ADMIXTURE OF REFUSE OR MATERIAL TOXIC TO PLANT GROWTH. LOAM SHALL BE FREE FROM STONES, LUMPS, STUMPS, OR SIMILAR OBJECTS LARGER THAN ONE INCH (1") IN GREATEST DIAMETER, SUBSOIL, ROOTS, AND WEEDS. THE MINIMUM AND MAXIMUM PH VALUE SHALL BE FROM 5.5 TO 7.2. LOAM SHALL CONTAIN A MINIMUM OF FOUR PERCENT (4%) AND A MAXIMUM OF FIVE AND A HALF PERCENT (5.5%) ORGANIC MATTER AS DETERMINED BY WEIGHT. NOT MORE THAN TWENTY–FIVE PERCENT (25%) SHALL PASS A NO. 200 SIEVE. IN NO INSTANCE SHALL MORE THAN 20% OF THAT MATERIAL PASSING THE #4 SIEVE CONSIST OF CLAY SIZE PARTICLES. THE RATIO OF THE PARTICLE SIZE FOR 80% PASSING (D80) TO THE PARTICLE SIZE FOR 30% PASSING (D30) SHALL BE 6.0 OR LESS (D80/D30 ≤ 6.0). SATURATED HYDRAULIC CONDUCTIVITY OF TOPSOIL/LOAM SHALL BE BETWEEN 3 INCHES/HOUR AND 10 INCHES/HOUR ACCORDING TO ASTM D5856–95 WHEN COMPACTED TO A MINIMUM OF 88% STANDARD PROCTOR, ASTM 698.

5. CLEAN COARSE SAND SHALL MEET THE FOLLOWING SPECIFICATION:

US STANDARD SIEVE SIZE	PERCENT FINER
3/8 INCH	100
#4	65–90
#10	40–75
#40	5–40
#100	0
#200	0

6. SEEDING FOR BIORETENTION AREA SIDE SLOPES SHALL HAVE A MINIMUM OF 4" LOAM MIXTURE INSTALLED WITH TYPICAL LAWN MIX (MIN. 200 LBS/ACRE):
   - 33% CREEPING RED FESCUE (MIN. 66 LBS/ACRE)
   - 42% PERENNIAL RYEGRASS (MIN. 84 LBS/ACRE)
   - 21% KENTUCKY BLUEGRASS (MIN. 42 LBS/ACRE)
   - 4% REDTOP (MIN. 8 LBS/ACRE)

7. SEEDING FOR BIORETENTION AREA BASIN SHALL BE NEW ENGLAND WETLAND PLANTS, INC. NEW ENGLAND EROSION CONTROL/RESTORATION MIX FOR DETENTION BASINS AND MOIST SITES (MIN. 35 LBS/ACRE).

8. THE DRAINAGE LAYER MATERIAL SHALL BE PLACED WITH ONLY NOMINAL COMPACTION APPLIED BY A DOZER OR GRADER. FORMAL COMPACTION USING A VIBRATORY STEEL DRUM ROLLER SHALL NOT BE USED AS DENSIFICATION WILL REDUCE THE PERMEABILITY AND ABILITY FOR THE MANUFACTURED SOIL TO PROPERLY DRAIN. THE CONTRACTOR SHALL TAKE MEASURES TO PREVENT EQUIPMENT & VEHICLE TRAFFIC FROM DRIVING IN THE AREA OF THE PROPOSED BIORETENTION AREA DURING CONSTRUCTION. THE CONTRACTOR SHALL TAKE MEASURES TO PREVENT SMEARING OF THE SUBGRADE DURING CONSTRUCTION.

BIORETENTION AREA INSPECTION & MAINTENANCE

INSPECTION & MAINTENANCE SCHEDULE TO BEGIN AFTER CONSTRUCTION SITE IS STABILIZED AND FLOW DIRECTED TO BASIN.

1. BIORETENTION AREA SHALL BE INSPECTED TWICE A YEAR AND MAINTENANCE PERFORMED AS REQUIRED PER INSPECTION. AT LEASE ONCE ANNUALLY THE BASIN SHALL BE INSPECTED FOR DRAWDOWN TIME. IF THE BASIN DOES NOT DRAIN WITHIN 72 HOURS, THEN A QUALIFIED PROFESSIONAL SHOULD ASSESS THE CONDITION AND DETERMINE MEASURES REQURIED TO RESTORE FUNCTION.

2. VEGETATION – SHALL BE INSPECTED AND MAINTAINED IN A HEALTHY CONDITION BY REMOVING/REPLACING DEAD OR DESEASED VEGETATION AND REMOVING INVASIVE SPECIES. THE VEGETATED AREAS SHALL BE PROTECTED FROM DAMAGE BY TRAFFIC AND DENSE WEED GROWTH. VEGETATION MAINTENANCE A MINIMUM OF 2 TONS PER ACRE OF AGRICULTURAL LIMESTONE AND 500 LBS. PER ACRE OF 10–20–20 FERTILIZER SHALL BE APPLIED.

3. BOTTOM OF BASIN – BOTTOM OF BASIN SHALL BE INSPECTED FOR EROSION, SEDIMENT ACCUMULATION, TRASH & DEBRIS. REPAIR ANY ERODED AREA OF THE BIORETENTION AREA WITH APPROPRIATE GRASS COVER AFTER REPLACING ANY LOST FILL MATERIAL AND LOAM. REMOVED SEDIMENT, TRASH & DEBRIS SHALL BE REMOVED AND DISPOSED OF PROPERLY.

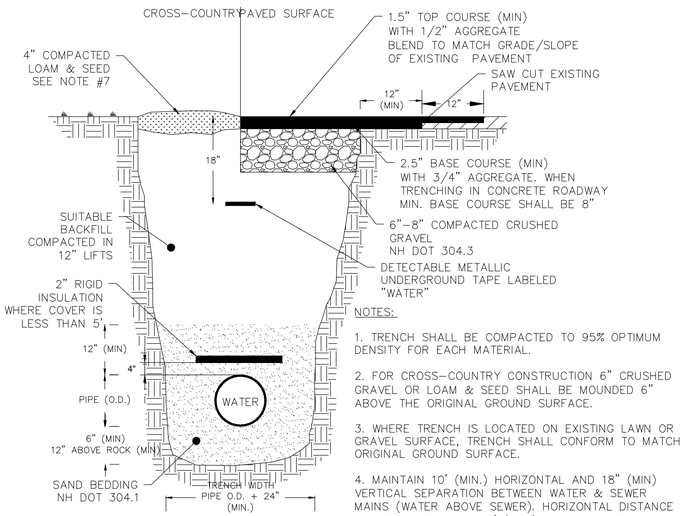
4. INLET/OUTLET – CONDITIONS OF PIPES/RIPRAP SHALL BE NOTED AND REPAIRS MADE IF NEEDED. ACCUMULATED SEDIMENT & DEBRIS SHALL BE REMOVED AND DISPOSED OF PROPERLY. IF EROSION HAS OCCURED, THEN MEASURES SHALL BE TAKEN TO STABILZE AND PROTECT THE AREAS.

DIG SAFE
811 OR 1-888-DIG-SAFE
CONTACT DIG SAFE 72 BUSINESS HOURS PRIOR TO CONSTRUCTION

Copyright 2023 ©TFMoran, Inc.
48 Constitution Drive, Bedford, N.H. 03110

All rights reserved. These plans and materials may not be copied, duplicated, replicated or otherwise reproduced in any form whatsoever without the prior written permission of TFMoran, Inc.

This plan is not effective unless signed by a duly authorized officer of TFMoran, Inc.



NOTES:

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

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

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

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

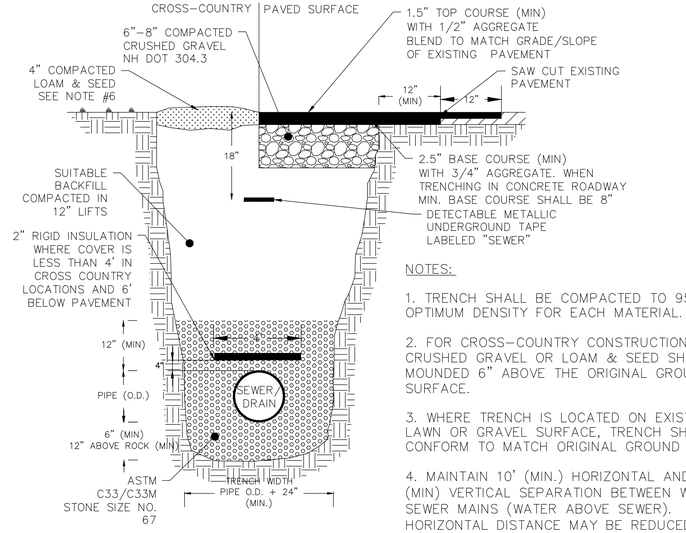
5. BACKFILL MATERIAL SHALL BE THE NATURAL MATERIAL EXCAVATED DURING THE COURSE OF CONSTRUCTION, BUT SHALL EXCLUDE; DEBRIS, PAVEMENT, ORGANIC MATTER, TOP SOIL, MUCK, PEAT, AND ROCKS OVER 6" IN LARGEST DIMENSION

6. PROVIDE MINIMUM 5' OF COVER. ENGINEERING APPROVAL REQUIRED FOR LESS THAN 5' OF COVER.

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

WATER TRENCH DETAIL

DOVER CITY STANDARD DETAIL NOT TO SCALE



NOTES:

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

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

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

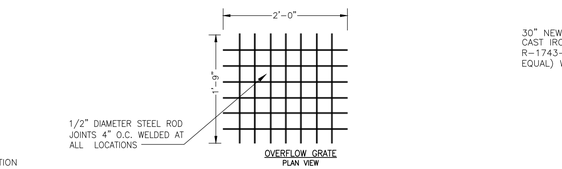
4. MAINTAIN 10' (MIN.) HORIZONTAL AND 18" (MIN) VERTICAL SEPARATION BETWEEN WATER & SEWER MAINS (WATER ABOVE SEWER). HORIZONTAL DISTANCE MAY BE REDUCED TO 5' (MIN.) FOR SERVICES PROVIDED THE WATER SERVICE IS A CONTINUOUS PIPE WITHOUT JOINTS OR FITTINGS.

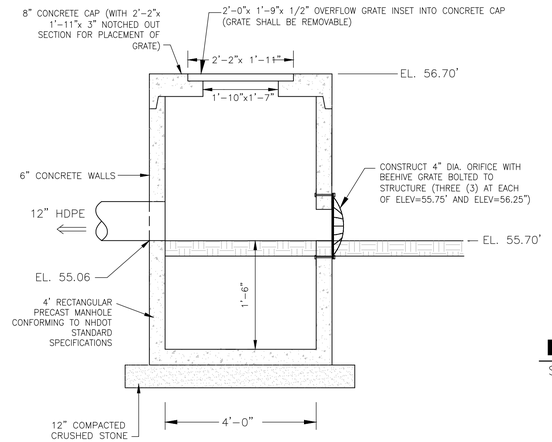
5. BACKFILL MATERIAL SHALL BE THE NATURAL MATERIAL EXCAVATED DURING THE COURSE OF CONSTRUCTION, BUT SHALL EXCLUDE; DEBRIS, PAVEMENT, ORGANIC MATTER, TOP SOIL, MUCK, PEAT AND ROCKS OVER 6" IN LARGEST DIMENSION

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

SEWER/DRAIN TRENCH DETAIL

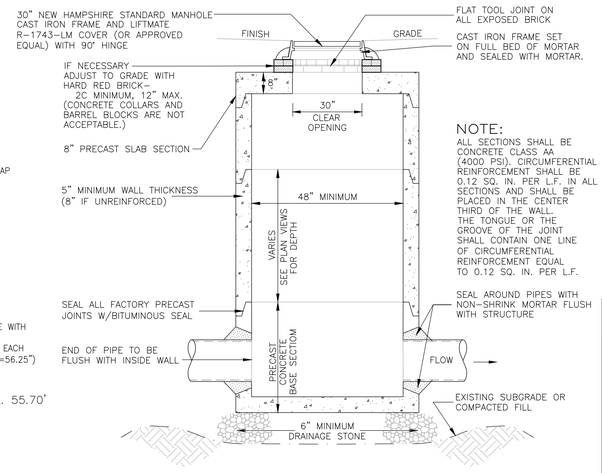
DOVER CITY STANDARD DETAIL NOT TO SCALE





OUTLET STRUCTURE

SLAB TOP (FOR USE IN DETENTION BASINS) NOT TO SCALE

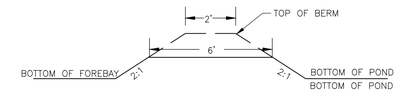


NOTE:
ALL SECTIONS SHALL BE CONCRETE CLASS AA (4000 PSI). CIRCUMFERENTIAL REINFORCEMENT SHALL BE 0.12 SQ. IN. PER L.F. IN ALL SECTIONS AND SHALL BE PLACED IN THE CENTER THIRD OF THE WALL. THE TONGUE OR THE GROOVE OF THE JOINT SHALL CONTAIN ONE LINE OF CIRCUMFERENTIAL REINFORCEMENT EQUAL TO 0.12 SQ. IN. PER L.F.

NOTE: ALL PRECAST SECTIONS SHALL CONFORM TO ASTM C–478

DRAIN MANHOLE

SLAB TOP NOT TO SCALE



RIPRAP SEDIMENT FOREBAY SPILLWAY PROFILE

NOT TO SCALE

SITE DEVELOPMENT PLANS

TAX MAP 9 LOT 111 & 112

DETAILS

256 & 264 CENTRAL AVE

DOVER, NH

OWNED BY & PREPARED FOR

256-264 CENTRAL AVENUE, LLC

SCALE: NTS **AUGUST 31, 2023**

REV	DATE	DESCRIPTION	DR	CK
2	12/22/2023	REVISED PER TRC COMMENTS	JKC	CRR
1	10/24/2023	REVISED PER TRC COMMENTS	JKC	CRR

Seacoast Division
TFM
Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists
170 Commerce Way, Suite 102
Portsmouth, NH 03801
Phone (603) 431–2222
Fax (603) 431–0910
www.tfmoran.com

FILE	47262.01	DR	JKC	DOVER FILE NUMBER -2023–0013	C–09
		CK	CRR	CADFILE: 47262–01 DETAILS	

Dec 18, 2023 - 1:11pm
F:\MSC Projects\47262 - Central Avenue - Dover\47262-01 256 & 264 Central Avenue, Dover, NH\Design\PRODUCTION DRAWINGS\47262-01 Details.dwg

THE APPLICANT HAS REQUESTED THAT THE CONDITIONAL USE PERMITS LISTED BELOW BE CONTINUED TO THE FEBRUARY 27, 2024 REGULAR PLANNING BOARD MEETING

E. Consideration and acceptance of a Conditional Use Permit for Gove Environmental Services, Inc., (Owners: David R. Lemieux), Assessor's Map 8, Lot 19, zoned R-20, located at 14 Leighton Road. (Proposal is for a residential redevelopment of the property with 2,887 s.f. of temporary impact and 8,362 s.f of permanent impact to the Conservation District). *(COND-2023-0060)

F. Consideration and acceptance of a Conditional Use Permit for Gove Environmental Services, Inc., (Owners: David R. Lemieux), Assessor's Map 8, Lot 19, zoned R-20, located at 14 Leighton Road. (Proposal construct a new single-family house and cottage further inland creating 1,908 s.f. of temporary impact and 2,067 s.f. of permanent impact to the 50-foot wetlands buffer). *(COND-2023-0061)

CITY OF DOVER

PLANNING BOARD - STAFF MEMO FILE #COND-2024-0002

Application Type:	Conditional Use Permit
Applicant(s):	Knox Marsh Development, LLC
Owner(s):	Robert Baldwin
Location:	34 New Rochester Road (Assessor's Map 39, Lots 103)
Meeting Date:	January 23, 2024

INTENT: To obtain a Conditional Use Permit to a frontage build-out of about 47.4% where 60% is required.

UNITS PROPOSED: 14

AGENDA ITEM #: 4-G

ACREAGE: 0.47 acres pre-merger

ZONING DISTRICT: Gateway

EXISTING USE: Residential

PROPOSED USE: Residential

SURROUNDING USE: Commercial/Residential

ZBA ACTION: None

ATTACHMENTS: Application materials including site plan

APPLICATION IS COMPLETE: Yes

REGIONAL IMPACT: No

NOTICES SENT: Abutter notices were sent by certified mail to all abutters for this meeting

PERMITS REQUIRED: Conditional Use Permits, NHDES Sewer Discharge Permit, EPA NOI, DHR

WAIVERS REQUESTED: N/A for this case

TRC: 8/10/2023 & 10/12/2023 & 11/30/2023

Summary of Request and Background

To create six new duplex structures to total twelve units, plus converting the existing single-family residence into a duplex. The applicant also seeks a CUP for frontage buildout and front-build-to-line for the existing dwelling. This request is for a frontage build out of about 47.4% where as 60% is required. Considering the reasoning in narrative provided by the applicant, staff supports the Conditional Use Permit request as the applicant describes in their narrative.

This application was most recently before the Technical Review Committee on August 10, 2023, October 12, 2023, and November 30, 2023. (minutes attached).

Consistency with Land Use Regulations – CUP 170-19.B(1)

§170-19.B(1) Zoning Ordinance allows for Conditional use approval for relief from the standards herein may be granted by the PLANNING BOARD (RSA §674:21 II) after proper public notice and public hearing provided that the proposed project complies with the following standards:

(a) That both public and private BUILDINGs and landscaping shall contribute to the physical definition of RIGHTs OF WAY as CIVIC SPACEs.
(b) That development shall adequately accommodate automobiles, while respecting the pedestrian and the spatial form of public areas.
(c) That the design of STREETs and BUILDINGs shall reinforce safe environments, but not at the expense of accessibility.
(d) That architecture and landscape design shall grow from local climate, topography, history, and BUILDING practice.
(e) That BUILDINGs shall provide their inhabitants with a clear sense of geography and climate through energy efficient methods.
(f) That CIVIC BUILDINGs and public gathering places shall be provided as locations that reinforce community identity and activity.
(g) That CIVIC BUILDINGs shall be distinctive and appropriate to a role more important than the other BUILDINGs that constitute the fabric of the city.
(h) That the preservation and renewal of historic BUILDINGs shall be facilitated.
(i) That the harmonious and orderly evolution of urban areas shall be advanced by the proposed BUILDING and/or use.

This plan is consistent with the criteria as described in the applicant's narrative.

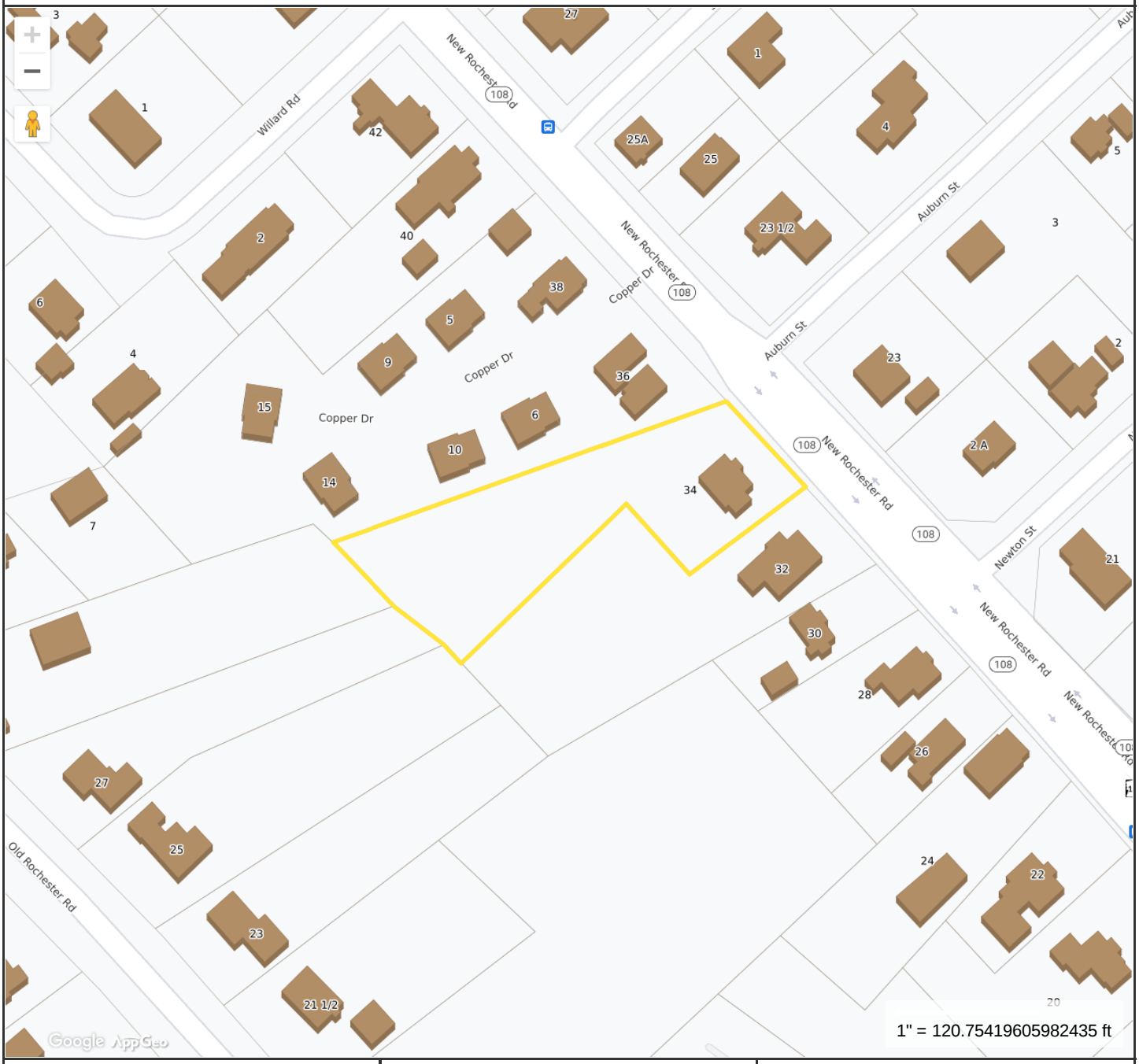
STAFF RECOMMENDATION:

The Planning Department recommends that the Planning Board accept the application as complete, note it is not of regional impact, hold a public hearing, make the necessary and supporting findings of fact, and vote to approve the Conditional Use Permit with the following subsequent conditions:

Subsequent Conditions to Be Met Prior to Signing of the Plans:

1. Approval of Site Plan (SITE-2023-0007);
2. Approval of COND-2024-0003
3. A Development Agreement be entered between the applicant and the Planning Board and recording at the SCRD per Chapter 170-19.B(3).

COND-2024-0002 34 NEW ROCHESTER ROAD



Property Information

Property ID	39103-000000
Location	34 NEW ROCHESTER RD
Owner	BALDWIN ROBERT
Land Use	
Zoning Code	G

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.

PERMIT SNAPSHOT REPORT COND-2024-0002
FOR CITY OF DOVER, N.H.

Permit Type	Conditional Use	**Project:**		**App Date:**	01/02/2024
Work Class:	Non-Environmental	**District:**	None	**Exp Date:**	NOT AVAILABLE
Status:	In Review	**Square Feet:**	0.00	**Completed:**	NOT COMPLETED
Valuation:	$0.00	**Assigned To:**	Blonigen, Rachel	**Approval Expire Date:**	
Description:	Frontage Build-out of 47.4% where 60% is required				

Parcel:	39103-000000 Main	**Address:**	34 New Rochester Rd Main Dover, NH	**Zone:**	G(Gateway District) R-12(Residential - Medium Density)

Plan Preparer	Applicant	Owner
Kenneth Berry	Berry Surveying & Engineering	Baldwin Robert
Home: (603) 332-2863	335 Second Crown Point Road	Home: (603) 742-2121
Business: (603) 332-2863	Barrington, NH 03825	Mobile: (603) 986-2373
Mobile: (603) 332-2863	Business: (603) 332-2863	
	Mobile: (603) 781-3403	

Permit Custom Fields

Select Permit Type	Gateway District	General Purpose	New Construction	Project Zone	Residential
What is the parcel zoned?	G	Work	Frontage build-out of 47.4% where 60% is required. Please find attached narrative.	permitstatefed	NHDES Sewer Discharge Permit (Not Yet Submitted)

Attachment File Name	Added On	Added By	Attachment Group	Notes
Signature_Chris_Berry_1/2/2024.jpg	01/02/2024 10:40	Berry, Chris		Uploaded via CSS
Permit Snapshot Report.pdf	01/02/2024 10:40	Service, EnerGov		Attached by IO - ATTACH: Initial Permit Snapshot

Invoice No.	Fee	Fee Amount	Amount Paid
INV-00006361	Planning General Application Fee	$200.00	$0.00
	Total for Invoice INV-00006361	$200.00	$0.00
	Grand Total for Permit	**$200.00**	**$0.00**

Workflow Step / Action Name	Action Type	Start Date	End Date
Review v.1		01/03/2024 12:31	01/03/2024 12:31
Confirm application complete v.1	Generic Action		01/03/2024 12:31
Conditional Use Review v.1	Receive Submittal		01/03/2024 12:31
Planning Board v.1		01/03/2024 12:31	
Planning Board Agenda v.1	Task	01/03/2024 12:31	
Invoice for Notices v.1	Task		
Send Notices v.1	Task		
Planner Creates Staff Recommendations v.1	Permit Activity		
Distribute Planning Board Materials v.1	Task		
Planning Board Hearing v.1	Hold Hearing		
Planning Board Decision v.1	Permit Activity		
NOD Sent to Applicant v.1	Create Report		
Issue Permit v.1			
Verify Fees Prior to Permit v.1	Generic Action		
Issue and Review Permit v.1	Generic Action		
Print and Email Permit v.1	Generic Action		
Plans uploaded to Treeno v.1	Generic Action		

City of Dover, New Hampshire
CONDITIONAL USE PERMIT APPLICATION

[Revision Date: October 19, 2020]

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

APPLICANT AND OWNER INFORMATION

Name of Applicant: Knox Marsh Development LLC Telephone # 603-742-2121

Address of Applicant: 242 Central Ave. Dover, NH 03820

E-Mail Address: Robert@centralfallsrealty.com

Name of Property Owner (if different from applicant): Robert Baldwin Telephone # 603-986-2373

Address of Property Owner: 242 Central Ave. Dover, NH 03820

PROPERTY INFORMATION

Assessor's Map # 39 Lot(s) # 103

Address of Property: 34 New Rochester Road

Zoning District(s) Gateway & R-12 Overlay District(s) Secondary Groundwater Recharge

Existing Use of Property: Single family home

CONDITIONAL USE PERMIT INFORMATION

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

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

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

Frontage Build-Out of 47.4% where 60% is required.

Please see attached narrative.

List Any Associated State or Federal Permits That Have Been or Will Be Applied For and Indicate Their Status: EPA NOI/SWPPP, NHDES Sewer Discharge Permit

Name of Professional That Prepared Plans: Kenneth A. Berry PE, LLS
Berry Surveying & Engineering
Christopher R. Berry Project Manager

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

Professional License #: 805 & 14243 E-mail address: 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: 7-21-23

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

Signature of Agent: _____ Date: 7-21-23

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: 7-21-23

CITY OF DOVER CONDITIONAL USE
LIST OF ABUTTERS

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

Owner:

TAX MAP	LOT #	PROPERTY OWNER	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

COND-2024-0002 **34 NEW ROCHESTER ROAD**

Property ID	Location	Owner 1	Owner 2	Owner Address 1	City	State	Zip	State Class
	21 NEW ROCHESTER RD	LIN JINGYING		21 NEW ROCHESTER RD	DOVER	NH	03820	
	3 AUBURN ST	MELVILLE AKIKO		3 AUBURN ST	DOVER	NH	03820	
	23 NEW ROCHESTER RD	MCKEAGNEY ROBERT B &	MCKEAGNEY WENDI E	23 NEW ROCHESTER ROAD	DOVER	NH	03820	
	2 A NEWTON ST	FRATUS GARY A &	FRATUS TERESA G	2A NEWTON ST	DOVER	NH	03820	
	2 NEWTON ST	GOULD LAURENCE J		2 NEWTON STREET	DOVER	NH	03820	
	25 NEW ROCHESTER RD	KNOX MARSH DEVELOPMENT LLC		242 CENTRAL AVE	DOVER	NH	03820	
	25 A NEW ROCHESTER RD	COCHRAN DONALD ANDREW JR	COCHRAN STEPHANIE AIMEE	451 CENTRAL AVE STE B	DOVER	NH	03820	
	23 1/2 NEW ROCHESTER RD	HARKINS SEAN		23 1/2 NEW ROCHESTER RD	DOVER	NH	03820	
	4 AUBURN ST	ROSS BENJAMIN C &	JOHNSON SARAH K	4 AUBURN ST	DOVER	NH	03820-2104	
	2 WILLARD RD	TAYLOR BERNARD C SR		2 WILLARD ROAD	DOVER	NH	03820	
	4 WILLARD RD	LEMCKE MARY D &	STAMPONE DANIEL P	4 WILLARD RD	DOVER	NH	03820	
	7 OX BOW LN	MOUSETTE JONATHAN M	MOUSETTE NICOLE E	7 OX BOW LANE	DOVER	NH	03820	
	29 OLD ROCHESTER RD	BRAY JAMES TRUSTEE	SCHATVET LEE REVOCABLE TRUST OF 2013	29 OLD ROCHESTER RD	DOVER	NH	03820	
	27 OLD ROCHESTER RD	SHAW TODD A		27 OLD ROCHESTER RD	DOVER	NH	03820	
	25 OLD ROCHESTER RD	CILLEY KENNETH F	CILLEY VICKI	25 OLD ROCHESTER ROAD	DOVER	NH	03820	
	23 OLD ROCHESTER RD	BODOH JACOB &	MARCOUX ELIZABETH	23 OLD ROCHESTER RD	DOVER	NH	03820	
	21 OLD ROCHESTER RD	DEMERS LYNDA S		21 OLD ROCHESTER ROAD	DOVER	NH	03820-2009	
	21 1/2 OLD ROCHESTER RD	POMERLEAU JEAN		21 1/2 OLD ROCHESTER RD	DOVER	NH	03820	
	26 NEW ROCHESTER RD	LACHANCE OLIVA V	LACHANCE CLAUDETTE	26 NEW ROCHESTER ROAD	DOVER	NH	03820	
	28 NEW ROCHESTER RD	MERCIER CHRISTOPHER M		28 NEW ROCHESTER RD	DOVER	NH	03820	
	30 NEW ROCHESTER RD	WEEDEN RONALD J	WEEDEN JUANITA A	145 DURHAM RD	DOVER	NH	03820-4396	
	32 NEW ROCHESTER RD	CAMERON MANDY L &	RIORDAN TIMOTHY M	527 SALMON FALLS RD	ROCHESTER	NH	03868	
	36 NEW ROCHESTER RD	KNOX MARSH DEVELOPMENT LLC		242 CENTRAL AVENUE	DOVER	NH	03820	
	6 COPPER DR	KNOX MARSH DEVELOPMENT LLC		242 CENTRAL AVENUE	DOVER	NH	03820	
	10 COPPER DR	KNOX MARSH DEVELOPMENT LLC		242 CENTRAL AVENUE	DOVER	NH	03820	
	14 COPPER DR	KNOX MARSH DEVELOPMENT LLC		242 CENTRAL AVENUE	DOVER	NH	03820	
	15 COPPER DR	KNOX MARSH DEVELOPMENT LLC		242 CENTRAL AVENUE	DOVER	NH	03820	
	9 COPPER DR	KNOX MARSH DEVELOPMENT LLC		242 CENTRAL AVENUE	DOVER	NH	03820	
	5 COPPER DR	KNOX MARSH DEVELOPMENT LLC		242 CENTRAL AVENUE	DOVER	NH	03820	
	38 NEW ROCHESTER RD	KNOX MARSH DEVELOPMENT LLC		242 CENTRAL AVENUE	DOVER	NH	03820	
	40 NEW ROCHESTER RD	BOUCHER SHARON O &	BOUCHER RONALD A	40 NEW ROCHESTER RD	DOVER	NH	03820	
	34 NEW ROCHESTER RD	BALDWIN ROBERT		242 CENTRAL AV	DOVER	NH	03820	
		BERRY SURVEYING & ENGINNERIN	BERRY CHRIS	335 SECOND CROWN POINT	BARRINGTON	NH	03825	

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

July 6, 2023/Rev: December 1, 2023

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

Re: Residential Site Plan & Lot Merger
Conditional Use Permit Request (Non- Environmental – One of Three total)
Knox Marsh Development, LLC
34 New Rochester Rd, Tax Map 39, Lot 103 (Site Plan & Lot Merger)
36 New Rochester Rd/Copper Dr, Tax Map 39, Lot 104 (Lot Merger) (P22-027)

Chairperson & Members of the Dover Planning Board:

Pursuant to Zoning Regulations (Chapter 170) and Site Plan Regulations (Chapter 153) Berry Surveying & Engineering (BS&E), on behalf of Knox Marsh Development, LLC, respectfully requests the City of Dover Planning Board approve the following Conditional Use Permit:

2) Minimum Frontage Build-Out of less than 60%

Background:

Knox Marsh Development is looking to re-develop the site at 34 New Rochester Road and is proposing a lot merger with Tax Map 39, Lot 104. All percentages provided are a function of the lot merger, for a total lot area of 103,666 Sq. Ft. (2.38 Ac.). Conditional Use Permit (CUP) Request utilizes the Central Business District Regulations (Chapter 170-20-B) for the Conditional Use Permit Request, as there are no specific standards listed for the request. This narrative will provide justifications for CUPs based upon the applicable standards.

There is an existing single-family home at 34 New Rochester Road, proposed to remain. The proposal is to create a road (Ember Drive) off of New Rochester Road and to extend Copper Drive 94 linear feet (LF). In addition to the single-family home at 34 New Rochester Road to remain, six previously approved home single family homes on Copper Drive, and the conversion of two single family homes (36 & 38 New Rochester Road) to 2-family dwellings, the applicant is proposing to construct six additional 2-family dwelling buildings (twelve units) on Tax Map 39, Lot 103. This brings the total yield for the subject parcel post lot merger to twenty-three (23) units (sixteen 2-family dwelling units and seven single family units within the Gateway Zone).

1. **Identification of Conditional Use Permit Request (Chapter 170-20-B)**
   2.) Minimum Frontage Build-Out of less than 60%

CUP #2): A CUP requesting the reduction of the frontage build-out on New Rochester Road from 60% to 47.4%. While the applicant is proposing additional construction along New Rochester Road to approach the required number of 60%, reaching this number is not practical given the curb cuts for Copper Drive/Ember Drive along with the applicable side building setbacks.

Below we show the project's compliance with the standards required to grant a Conditional Use Permit, and we provide justification for its approval.

2. Compliance with the following standards

a) That both public and private buildings and landscaping shall contribute to the physical definition of rights of way as civic spaces.
   - **A landscaping plan including street trees, shrubs, and grasses is proposed along Copper Drive and Ember Drive. The project balances the pedestrian and livability needs of the site with the infrastructure required through the use of landscaping, hardscaping, and small amenities. The right of way is clearly defined by these features for Copper Drive.**

b) That development shall adequately accommodate automobiles, while respecting the pedestrian and the spatial form of public areas.
   - **The site is designed with a hammerhead turnaround and the required road cross section (24' wide) for the proposed volume of trips of Copper Drive. Ember Drive is less than 150 feet long and has the required cross section (24' wide). A 5' raised sidewalk along New Rochester Road has been added to improve walkability and the civic nature of the urban core.**

c) That the design of streets and buildings shall reinforce safe environments.
   - **The design of buildings and street reinforce safe environments by pedestrian access and a low (15 MPH) posted speed limit. Copper Drive and Ember Drive is proposed to be a private roadway, reducing the potential for outside traffic to enter the neighborhood, keeping volume low (>150 vehicles per day Copper Drive and**

approximately 50 Vehicles per day for Ember Drive). Curb tip downs are proposed at sidewalk and driveway crossings. A sidewalk is proposed at the parking lots of Copper Drive and Ember Drive with sidewalk connectivity to the 2-family dwelling units.

d) That architecture and landscape design shall grow from local climate, topography, history, and building practice.

- **The architecture of the new duplex structures are similar in size to surrounding single family homes (975 Sq. Ft. foot print). The relatively flat topography of the site allows for a harmonious streetscape with finished floors of homes and driveways to be within a vertical foot +/- of each other. The preservation of the existing single-family home at the front of the site allows the New Rochester Road corridor to consist of structures of similar age, while new construction is set back from the corridor. Larger building footprints would cause non-compliance with building setbacks and internal building separation requirements.**

e) That buildings shall provide their inhabitants with a clear sense of geography and climate through energy efficient methods.

- **The new structures will be built to the current building codes keeping energy efficiency in mind through the use of heat pumps and other fossil fuel reducing devices.**

f) That civic buildings and public gathering places shall be provided as locations that reinforce community identity and activity.

- **While the homes are not Civic in nature or use, the potential for gatherings by residents is encouraged by proposed benches, sidewalk, and landscaping. By having six 2-family dwelling structures within 175 feet +/- of each other, the proposed landscaping provides a visually appealing element, encouraging pedestrian activity within the development via sidewalks and passive recreation amenities.**

g) That civic buildings shall be distinctive and appropriate to a role more important than the other buildings that constitute the fabric of the city.

- **Though the homes are not Civic in nature or use, the proposed street scape, unit density, and pedestrian amenities help to provide a community feeling, an essential element in the fabric of the city.**

h) That the preservation and renewal of historic buildings shall be facilitated.
- **The existing single-family homes on Lot 103 was built in 1943. The existing structures have undergone substantial renovation within the last ten years in an attempt to preserve and enhance this structure.**

i) That the harmonious and orderly evolution of urban areas shall be secured through the adoption of these regulations.
- **The harmonious and orderly evolution of the urban area is secured in the redevelopment of the project site in the manner in which it is presented. Proposed duplex units shown are limited in footprint by lot dimensions and limited in height by zoning restrictions. This results in similar home styles and a harmonious streetscape.**

3. Justification for approval of Conditional Use Permit

Given the limited residential development options due to restrictions within 300' of the center of New Rochester Road, it is incumbent on the applicant to maximize the development density allowed in the Gateway District within these parameters. Approved homes on Copper Drive meet the 5-20' front build-to line to the pavement, are close to the rear 15' setbacks, and provide a minimum of 25' between units, maximizing the building footprint within each LCA. The proposed duplex units are subject to the same front build-to, side, and rear setbacks. The proposed separation of twelve feet between duplex structures at the closest point maximizes the building footprints, while providing space on site for passive recreation uses and parking.

With the rear of Lot 104 located within R-12 zone, the development area within the Gateway District has been maximized utilizing the 50' zone line adjustment. In terms of frontage build-out, the applicant is unable to increase the existing frontage build-out to 60% without the complete demolition and reconstruction of larger homes along New Rochester Road. While the applicant is proposing additional construction along New Rochester Road to approach the required number of 60%, reaching this number is not practical given the curb cuts for Copper Drive/Ember Drive along with the applicable side building setbacks.

Thank you for your time and attention to this matter, and we hope you look favorably upon the request.

Respectfully Submitted,

BERRY SURVEYING & ENGINEERING

Kevin R. Poulin, PE
Project Engineer

Christopher R. Berry, SIT
Principal, President

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

CITY OF DOVER, NEW HAMPSHIRE
PLANNING APPLICATION OWNER AUTHORIZATION

OWNER AUTHORIZATION

I/We hereby submit this application to the City of Dover / 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.

Property Owner Name: _____

Signature(s) of Property Owner(s): _____ Date: 7-25-23

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

AUTHORIZATION TO ENTER SUBJECT PROPERTY

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..

Property Owner Name: _____

Signature(s) of Property Owner(s): _____ Date: 7-25-23

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

IF SIGN PERMIT, SIGN PERMIT APPLICATION INFORMATION

If the sign permit applicant is not the property owner, this form must be completed and included as part of application submission.

I have read this application and state that, to the best of my knowledge, the information provided is true and that the proposed sign(s) will comply with all applicable regulations in Section 170-32 of the Zoning Ordinance of the City of Dover and shall conform to the submitted materials and designs. Furthermore, after 90 days, any application still waiting information will be denied.

Address of Sign Location: _____

Sign Permit Application Type:
(check one)

- ☐ Permanent Sign
- ☐ Temporary Sign
- ☐ Community Sign

CITY OF DOVER

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

Application Type:	Conditional Use Permit
Applicant(s):	Knox Marsh Development, LLC
Owner(s):	Robert Baldwin
Location:	34 New Rochester Road (Assessor's Map 39, Lots 103)
Meeting Date:	January 23, 2024

INTENT: To obtain a Conditional Use Permit to a build to line that does not meet the 5' to 10' requirement.

UNITS PROPOSED: 14

AGENDA ITEM #: 4-H

ACREAGE: 0.47 acres pre-merger

ZONING DISTRICT: Gateway

EXISTING USE: Residential

PROPOSED USE: Residential

SURROUNDING USE: Commercial/Residential

ZBA ACTION: None

ATTACHMENTS: Application materials including site plan

APPLICATION IS COMPLETE: Yes

REGIONAL IMPACT: No

NOTICES SENT: Abutter notices were sent by certified mail to all abutters for this meeting

PERMITS REQUIRED: Conditional Use Permits, NHDES Sewer Discharge Permit, EPA NOI, DHR

WAIVERS REQUESTED: N/A for this case

TRC: 8/10/2023 & 10/12/2023 & 11/30/2023

Summary of Request and Background

To create six new duplex structures to total twelve units, plus converting the existing single-family residence into a duplex. The applicant also seeks a CUP for frontage buildout and front-build-to-line for the existing dwelling. This request is for a build to line to not meet the 5' to 10' requirement. The existing single family home is 5.1' from the 20' build to line which is consistent with other homes in the surrounding area. Considering the reasoning in narrative provided by the applicant, staff supports the Conditional Use Permit request as the applicant describes in their narrative.

This application was most recently before the Technical Review Committee on August 10, 2023, October 12, 2023, and November 30, 2023. (minutes attached).

Consistency with Land Use Regulations – CUP 170-19.B(1)

§170-19.B(1) Zoning Ordinance allows for Conditional use approval for relief from the standards herein may be granted by the PLANNING BOARD (RSA §674:21 II) after proper public notice and public hearing provided that the proposed project complies with the following standards:

(a) That both public and private BUILDINGs and landscaping shall contribute to the physical definition of RIGHTs OF WAY as CIVIC SPACEs.
(b) That development shall adequately accommodate automobiles, while respecting the pedestrian and the spatial form of public areas.
(c) That the design of STREETs and BUILDINGs shall reinforce safe environments, but not at the expense of accessibility.
(d) That architecture and landscape design shall grow from local climate, topography, history, and BUILDING practice.
(e) That BUILDINGs shall provide their inhabitants with a clear sense of geography and climate through energy efficient methods.
(f) That CIVIC BUILDINGs and public gathering places shall be provided as locations that reinforce community identity and activity.
(g) That CIVIC BUILDINGs shall be distinctive and appropriate to a role more important than the other BUILDINGs that constitute the fabric of the city.
(h) That the preservation and renewal of historic BUILDINGs shall be facilitated.
(i) That the harmonious and orderly evolution of urban areas shall be advanced by the proposed BUILDING and/or use.

This plan is consistent with the criteria as described in the applicant's narrative.

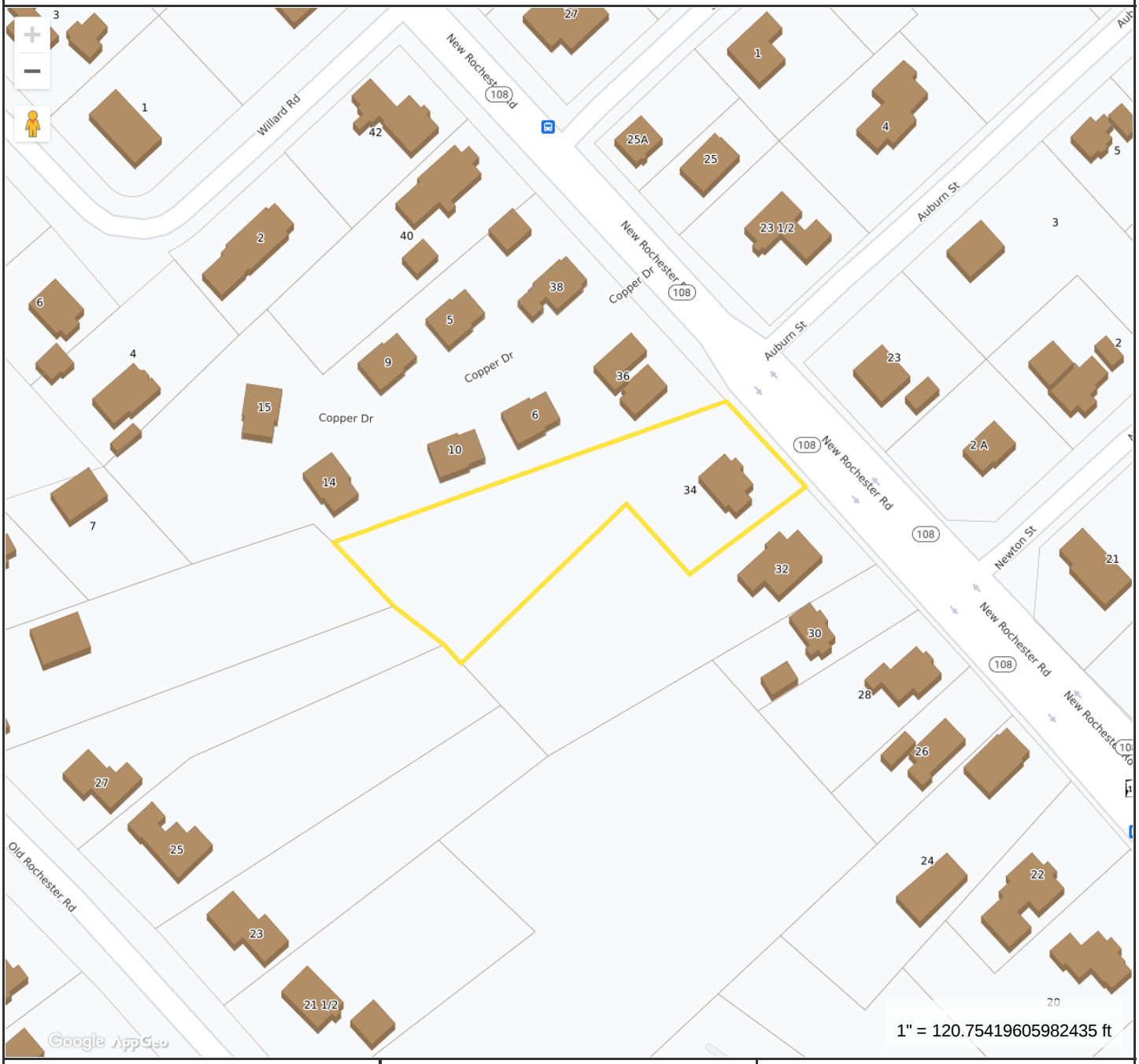
STAFF RECOMMENDATION:

The Planning Department recommends that the Planning Board accept the application as complete, note it is not of regional impact, hold a public hearing, make the necessary and supporting findings of fact, and vote to approve the Conditional Use Permit with the following subsequent conditions:

Subsequent Conditions to Be Met Prior to Signing of the Plans:

1. Approval of Site Plan (SITE-2023-0007)
2. Approval of COND-2024-0002
3. A Development Agreement be entered between the applicant and the Planning Board and recording at the SCRD per Chapter 170-19.B(3).

COND-2024-0003 34 NEW ROCHESTER ROAD



Property Information

Property ID	39103-000000
Location	34 NEW ROCHESTER RD
Owner	BALDWIN ROBERT
Land Use	
Zoning Code	G

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.

PERMIT SNAPSHOT REPORT COND-2024-0003
FOR CITY OF DOVER, N.H.

Permit Type	Conditional Use	**Project:**		**App Date:**	01/02/2024
Work Class:	Non-Environmental	**District:**	None	**Exp Date:**	NOT AVAILABLE
Status:	In Review	**Square Feet:**	0.00	**Completed:**	NOT COMPLETED
Valuation:	$0.00	**Assigned To:**	Blonigen, Rachel	**Approval Expire Date:**	

Description: Not meeting front 5'-20' build-to line for the existing house at 34 New Rochester Road.

Parcel:	39103-000000 Main	**Address:**	34 New Rochester Rd Main Dover, NH	**Zone:**	R-12(Residential - Medium Density) G(Gateway District)

Plan Preparer	Applicant	Owner
Kenneth Berry	Berry Surveying & Engineering	Baldwin Robert
Home: (603) 332-2863	335 Second Crown Point Road	Home: (603) 742-2121
Business: (603) 332-2863	Barrington, NH 03825	Mobile: (603) 986-2373
Mobile: (603) 332-2863	Business: (603) 332-2863	
	Mobile: (603) 781-3403	

Permit Custom Fields

Select Permit Type	Gateway District	General Purpose	New Construction	Project Zone	Residential
What is the parcel zoned?	G	New Change in Impervious/Paved Area (sq ft)	13575	Work	Not meeting front 5'-20' build-to line for the existing house at 34 New Rochester Road. Please find attached Narrative.
permitstatefed	NHDES Sewer Discharge Permit (Not Yet Applied For)				

Attachment File Name	Added On	Added By	Attachment Group	Notes
Signature_Chris_Berry_1/2/2024.jpg	01/02/2024 10:45	Berry, Chris		Uploaded via CSS
Permit Snapshot Report.pdf	01/02/2024 10:45	Service, EnerGov		Attached by IO - ATTACH: Initial Permit Snapshot

Invoice No.	Fee	Fee Amount	Amount Paid
INV-00006362	Planning General Application Fee	$200.00	$0.00
	Total for Invoice INV-00006362	$200.00	$0.00
	Grand Total for Permit	**$200.00**	**$0.00**

Workflow Step / Action Name	Action Type	Start Date	End Date
Review v.1		01/03/2024 12:35	01/03/2024 12:36
Confirm application complete v.1	Generic Action		01/03/2024 12:36
Conditional Use Review v.1	Receive Submittal		01/03/2024 12:36
Planning Board v.1		01/03/2024 12:37	
Planning Board Agenda v.1	Task	01/03/2024 12:37	
Invoice for Notices v.1	Task		
Send Notices v.1	Task		
Planner Creates Staff Recommendations v.1	Permit Activity		
Distribute Planning Board Materials v.1	Task		
Planning Board Hearing v.1	Hold Hearing		
Planning Board Decision v.1	Permit Activity		
NOD Sent to Applicant v.1	Create Report		
Issue Permit v.1			
Verify Fees Prior to Permit v.1	Generic Action		

City of Dover, New Hampshire
CONDITIONAL USE PERMIT APPLICATION

[Revision Date: October 19, 2020]

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

APPLICANT AND OWNER INFORMATION

Name of Applicant: Knox Marsh Development LLC Telephone # 603-742-2121

Address of Applicant: 242 Central Ave. Dover, NH 03820

E-Mail Address: Robert@centralfallsrealty.com

Name of Property Owner (if different from applicant): Robert Baldwin Telephone # 603-986-2373

Address of Property Owner: 242 Central Ave. Dover, NH 03820

PROPERTY INFORMATION

Assessor's Map # 39 Lot(s) # 103

Address of Property: 34 New Rochester Road

Zoning District(s) Gateway & R-12 Overlay District(s) Secondary Groundwater Recharge

Existing Use of Property: Single family home

CONDITIONAL USE PERMIT INFORMATION

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

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

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

Not meeting front build-to line on New Rochester Road

Please see attached narrative.

List Any Associated State or Federal Permits That Have Been or Will Be Applied For and Indicate Their Status: EPA NOI/SWPPP, NHDES Sewer Discharge Permit

Name of Professional That Prepared Plans: Kenneth A. Berry PE, LLS
Berry Surveying & Engineering
Christopher R. Berry Project Manager

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

Professional License #: 805 & 14243 E-mail address: 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: 7-21-23

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

Signature of Agent: _____ Date: 7-21-23

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: 7-21-23

PLANNING BOARD FEE SCHEDULE/INVOICE

(Revised July 1, 2021)

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

A. Plan Review Fees

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

- ☐ SUBDIVISION Application fee $200.00 + $150.00 x # _____ new lots created = $_____
- ☐ LOT LINE ADJUSTMENT Application fee $200.00 + $100.00 X # ___ of lots involved = $_____
- ☐ TRANSFER OF DEVELOPMENT RIGHTS Application fee $200.00 = $_____
- ☐ SITE REVIEW – RESIDENTIAL Application fee $200.00+ $100.00 x # __ per dwelling unit =$_____
- ☐ SITE REVIEW – NON-RESIDENTIAL Application fee $200.00 + (not to exceed $10,000)
  - New construction $.15 sq. ft. x # _____ sq. ft.= $_____
  - Additions (new floor space) $.10 per sq. ft. x # _____sq. ft.= $_____
- ☐ MOTEL/HOTEL $35.00 x # ___ per lodging unit= $_____
- ☐ CHANGE OF USE Application fee $200.00 + (not to exceed $5,000)
  - Existing floor spaces $.10 per sq. ft. x # _____ sq. ft. = $_____
- ☐ CONDITIONAL USE PERMIT Application fee $200.00 x # _____ per Application = $_____
- ☐ GRAVEL PIT/ EXCAVATIONS
  - Application fee $50.00= $_____
  - Permit fee $75.00= $_____
- ☐ EXTENSIONS/AMENDMENTS/WAIVERS FOR AN APPROVED PLAN Application fee $200.00 = $_____
- ☐ REQUEST FOR REZONING Application fee $200.00 = $_____
- ☐ DRIVEWAY WAIVER Application fee $200.00 = $_____

2. TOTAL IMPERVIOUS PAVED AREA (for new development, roadways or additions to existing parking lots, (not to exceed $10,000)) Application fee of $200.00 is N/A if it is part of a Site Review or Subdivision Plan. $200.00 + $.07 per sq. ft. x # _____ sq. ft. = $_____

SUBTOTAL PLAN REVIEW FEE (A) = $_____

AND

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

- ☐ Applicant & Owner, engineer, architect, LLS, LLA and/or soil scientist
  - Certified letters fee # _____ of x $8.00= $_____
- ☐ Certified letters fee: # of abutters _____ X $8.00= $_____
- ☐ First Class Mail fee (for individual owner of units within a condominium or other collective form of ownership): # of abutters _____ X $1.00= $_____
- ☐ Creating/Printing Abutter Labels in triplicate per sheet _____ x $10.00= $_____

C. Foster's newspaper public notice fee $100.00 x # _____ applications = $_____

SUBTOTAL NOTICE FEE (B & C) = $_____

TOTAL INVOICE AMOUNT (A, B & C) = $_____

PLAN REVIEW FEE COLLECTED/PAID = $ _____

Included on Site Plan APP **BALANCE DUE = $ _____**

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

COND-2024-0003 **34 NEW ROCHESTER ROAD**

Property ID	Location	Owner 1	Owner 2	Owner Address 1	City	State	Zip	State Class
	21 NEW ROCHESTER RD	LIN JINGYING		21 NEW ROCHESTER RD	DOVER	NH	03820	
	3 AUBURN ST	MELVILLE AKIKO		3 AUBURN ST	DOVER	NH	03820	
	23 NEW ROCHESTER RD	MCKEAGNEY ROBERT B &	MCKEAGNEY WENDI E	23 NEW ROCHESTER ROAD	DOVER	NH	03820	
	2 A NEWTON ST	FRATUS GARY A &	FRATUS TERESA G	2A NEWTON ST	DOVER	NH	03820	
	2 NEWTON ST	GOULD LAURENCE J		2 NEWTON STREET	DOVER	NH	03820	
	25 NEW ROCHESTER RD	KNOX MARSH DEVELOPMENT LLC		242 CENTRAL AVE	DOVER	NH	03820	
	25 A NEW ROCHESTER RD	COCHRAN DONALD ANDREW JR	COCHRAN STEPHANIE AIMEE	451 CENTRAL AVE STE B	DOVER	NH	03820	
	23 1/2 NEW ROCHESTER RD	HARKINS SEAN		23 1/2 NEW ROCHESTER RD	DOVER	NH	03820	
	4 AUBURN ST	ROSS BENJAMIN C &	JOHNSON SARAH K	4 AUBURN ST	DOVER	NH	03820-2104	
	2 WILLARD RD	TAYLOR BERNARD C SR		2 WILLARD ROAD	DOVER	NH	03820	
	4 WILLARD RD	LEMCKE MARY D &	STAMPONE DANIEL P	4 WILLARD RD	DOVER	NH	03820	
	7 OX BOW LN	MOUSETTE JONATHAN M	MOUSETTE NICOLE E	7 OX BOW LANE	DOVER	NH	03820	
	29 OLD ROCHESTER RD	BRAY JAMES TRUSTEE	SCHATVET LEE REVOCABLE TRUST OF 2013	29 OLD ROCHESTER RD	DOVER	NH	03820	
	27 OLD ROCHESTER RD	SHAW TODD A		27 OLD ROCHESTER RD	DOVER	NH	03820	
	25 OLD ROCHESTER RD	CILLEY KENNETH F	CILLEY VICKI	25 OLD ROCHESTER ROAD	DOVER	NH	03820	
	23 OLD ROCHESTER RD	BODOH JACOB &	MARCOUX ELIZABETH	23 OLD ROCHESTER RD	DOVER	NH	03820	
	21 OLD ROCHESTER RD	DEMERS LYNDA S		21 OLD ROCHESTER ROAD	DOVER	NH	03820-2009	
	21 1/2 OLD ROCHESTER RD	POMERLEAU JEAN		21 1/2 OLD ROCHESTER RD	DOVER	NH	03820	
	26 NEW ROCHESTER RD	LACHANCE OLIVA V	LACHANCE CLAUDETTE	26 NEW ROCHESTER ROAD	DOVER	NH	03820	
	28 NEW ROCHESTER RD	MERCIER CHRISTOPHER M		28 NEW ROCHESTER RD	DOVER	NH	03820	
	30 NEW ROCHESTER RD	WEEDEN RONALD J	WEEDEN JUANITA A	145 DURHAM RD	DOVER	NH	03820-4396	
	32 NEW ROCHESTER RD	CAMERON MANDY L &	RIORDAN TIMOTHY M	527 SALMON FALLS RD	ROCHESTER	NH	03868	
	36 NEW ROCHESTER RD	KNOX MARSH DEVELOPMENT LLC		242 CENTRAL AVENUE	DOVER	NH	03820	
	6 COPPER DR	KNOX MARSH DEVELOPMENT LLC		242 CENTRAL AVENUE	DOVER	NH	03820	
	10 COPPER DR	KNOX MARSH DEVELOPMENT LLC		242 CENTRAL AVENUE	DOVER	NH	03820	
	14 COPPER DR	KNOX MARSH DEVELOPMENT LLC		242 CENTRAL AVENUE	DOVER	NH	03820	
	15 COPPER DR	KNOX MARSH DEVELOPMENT LLC		242 CENTRAL AVENUE	DOVER	NH	03820	
	9 COPPER DR	KNOX MARSH DEVELOPMENT LLC		242 CENTRAL AVENUE	DOVER	NH	03820	
	5 COPPER DR	KNOX MARSH DEVELOPMENT LLC		242 CENTRAL AVENUE	DOVER	NH	03820	
	38 NEW ROCHESTER RD	KNOX MARSH DEVELOPMENT LLC		242 CENTRAL AVENUE	DOVER	NH	03820	
	40 NEW ROCHESTER RD	BOUCHER SHARON O &	BOUCHER RONALD A	40 NEW ROCHESTER RD	DOVER	NH	03820	
	34 NEW ROCHESTER RD	BALDWIN ROBERT		242 CENTRAL AV	DOVER	NH	03820	
		BERRY SURVEYING & ENGINNERIN	BERRY CHRIS	335 SECOND CROWN POINT	BARRINGTON	NH	03825	

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

July 6, 2023/Rev: December 1, 2023

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

Re: Residential Site Plan & Lot Merger
Conditional Use Permit Request (Non- Environmental – One of Three total)
Knox Marsh Development, LLC
34 New Rochester Rd, Tax Map 39, Lot 103 (Site Plan & Lot Merger)
36 New Rochester Rd/Copper Dr, Tax Map 39, Lot 104 (Lot Merger) (P22-027)

Chairperson & Members of the Dover Planning Board:

Pursuant to Zoning Regulations (Chapter 170) and Site Plan Regulations (Chapter 153) Berry Surveying & Engineering (BS&E), on behalf of Knox Marsh Development, LLC, respectfully requests the City of Dover Planning Board approve the following Conditional Use Permits:

3) Not Meeting front build-to line on 5-20' on New Rochester Road

Background:

Knox Marsh Development is looking to re-develop the site at 34 New Rochester Road and is proposing a lot merger with Tax Map 39, Lot 104. All percentages provided are a function of the lot merger, for a total lot area of 103,666 Sq. Ft. (2.38 Ac.). Conditional Use Permit (CUP) Request utilizes the Central Business District Regulations (Chapter 170-20-B) for the Conditional Use Permit Request, as there are no specific standards listed for the request. This narrative will provide justifications based upon the applicable standards.

There is an existing single-family home at 34 New Rochester Road, proposed to remain. The proposal is to create a road (Ember Drive) off of New Rochester Road and to extend Copper Drive 94 linear feet (LF). In addition to the single-family home at 34 New Rochester Road to remain, six previously approved home single family homes on Copper Drive, and the conversion of two single family homes (36 & 38 New Rochester Road) to 2-family dwellings, the applicant is proposing to construct six additional 2-family dwelling buildings (twelve units) on Tax Map 39, Lot 103. This brings the total yield for the subject parcel post lot merger to twenty-three (23) units (sixteen 2-family dwelling units and seven single family units within the Gateway Zone).

1. **Identification of Conditional Use Permit Request (Chapter 170-20-B)**

3.) Not Meeting front build-to line on 5-20' on New Rochester Road

CUP #3): A CUP requesting the existing single-family home on Tax Map 39, Lot 103 to not meet the front build-to line of New Rochester Road (5-20'). Without modification of the existing single-family structure, the front of the house is 5.1' from the 20' build-to line. As the structure is proposed to remain and be remodeled, the distance off of New Rochester Road is consistent with surrounding single-family homes.

Below we show the project's compliance with the standards required to grant a Conditional Use Permit, and we provide justification for its approval.

2. **Compliance with the following standards**

a) That both public and private buildings and landscaping shall contribute to the physical definition of rights of way as civic spaces.

- **A landscaping plan including street trees, shrubs, and grasses is proposed along Copper Drive and Ember Drive. The project balances the pedestrian and livability needs of the site with the infrastructure required through the use of landscaping, hardscaping, and small amenities. The right of way is clearly defined by these features for Copper Drive.**

b) That development shall adequately accommodate automobiles, while respecting the pedestrian and the spatial form of public areas.

- **The site is designed with a hammerhead turnaround and the required road cross section (24' wide) for the proposed volume of trips of Copper Drive. Ember Drive is less than 150 feet long and has the required cross section (24' wide). A 5' raised sidewalk along New Rochester Road has been added to improve walkability and the civic nature of the urban core.**

c) That the design of streets and buildings shall reinforce safe environments.

- **The design of buildings and street reinforce safe environments by pedestrian access and a low (15 MPH) posted speed limit. Copper Drive and Ember Drive is proposed to be a private roadway, reducing the potential for outside traffic to enter the neighborhood, keeping volume low (>150 vehicles per day Copper Drive and**

approximately 50 Vehicles per day for Ember Drive). Curb tip downs are proposed at sidewalk and driveway crossings. A sidewalk is proposed at the parking lots of Copper Drive and Ember Drive with sidewalk connectivity to the 2-family dwelling units.

d) That architecture and landscape design shall grow from local climate, topography, history, and building practice.

- **The architecture of the new duplex structures are similar in size to surrounding single family homes (975 Sq. Ft. foot print). The relatively flat topography of the site allows for a harmonious streetscape with finished floors of homes and driveways to be within a vertical foot +/- of each other. The preservation of the existing single-family home at the front of the site allows the New Rochester Road corridor to consist of structures of similar age, while new construction is set back from the corridor. Larger building footprints would cause non-compliance with building setbacks and internal building separation requirements.**

e) That buildings shall provide their inhabitants with a clear sense of geography and climate through energy efficient methods.

- **The new structures will be built to the current building codes keeping energy efficiency in mind through the use of heat pumps and other fossil fuel reducing devices.**

f) That civic buildings and public gathering places shall be provided as locations that reinforce community identity and activity.

- **While the homes are not Civic in nature or use, the potential for gatherings by residents is encouraged by proposed benches, sidewalk, and landscaping. By having six 2-family dwelling structures within 175 feet +/- of each other, the proposed landscaping provides a visually appealing element, encouraging pedestrian activity within the development via sidewalks and passive recreation amenities.**

g) That civic buildings shall be distinctive and appropriate to a role more important than the other buildings that constitute the fabric of the city.

- **Though the homes are not Civic in nature or use, the proposed street scape, unit density, and pedestrian amenities help to provide a community feeling, an essential element in the fabric of the city.**

h) That the preservation and renewal of historic buildings shall be facilitated.
- **The existing single-family homes on Lot 103 was built in 1943. The existing structures have undergone substantial renovation within the last ten years in an attempt to preserve and enhance this structure.**

i) That the harmonious and orderly evolution of urban areas shall be secured through the adoption of these regulations.
- **The harmonious and orderly evolution of the urban area is secured in the redevelopment of the project site in the manner in which it is presented. Proposed duplex units shown are limited in footprint by lot dimensions and limited in height by zoning restrictions. This results in similar home styles and a harmonious streetscape.**

3. Justification for approval of Conditional Use Permit

Given the limited residential development options due to restrictions within 300' of the center of New Rochester Road, it is incumbent on the applicant to maximize the development density allowed in the Gateway District within these parameters. Approved homes on Copper Drive meet the 5-20' front build-to line to the pavement, are close to the rear 15' setbacks, and provide a minimum of 25' between units, maximizing the building footprint within each LCA. The proposed duplex units are subject to the same front build-to, side, and rear setbacks. The proposed separation of twelve feet between duplex structures at the closest point maximizes the building footprints, while providing space on site for passive recreation uses and parking.

With the rear of Lot 104 located within R-12 zone, the development area within the Gateway District has been maximized utilizing the 50' zone line adjustment. In terms of the front build-to line, the applicant is unable to meet the existing front build-to line without the modification of the existing structure or construction of larger homes along New Rochester Road to meet this.

Thank you for your time and attention to this matter, and we hope you look favorably upon the request.

Respectfully Submitted,

BERRY SURVEYING & ENGINEERING

Kevin R. Poulin, PE
Project Engineer

Christopher R. Berry, SIT
Principal, President

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

CITY OF DOVER

PLANNING BOARD - STAFF MEMO FILE #SITE-2023-0007

Application Type:	Site Plan Review
Applicant(s):	Knox Marsh Development, LLC
Owner(s):	Robert Baldwin
Location:	34 New Rochester Road (Assessor's Map 39, Lots 103)
Meeting Date:	January 23, 2024

INTENT: To develop a site adjacent to Copper Drive to add 6 new duplex buildings or 12 units, plus convert the existing single-family home to a duplex.

UNITS PROPOSED: 14

AGENDA ITEM #: 4-I

ACREAGE: 0.47 acres pre-merger

ZONING DISTRICT: Gateway

EXISTING USE: Residential

PROPOSED USE: Residential

SURROUNDING USE: Commercial/Residential

ZBA ACTION: None

ATTACHMENTS: Application materials including site plan

APPLICATION IS COMPLETE: Yes

REGIONAL IMPACT: No

NOTICES SENT: Abutter notices were sent by certified mail to all abutters for this meeting

PERMITS REQUIRED: Conditional Use Permits, NHDES Sewer Discharge Permit, EPA NOI, DHR

WAIVERS REQUESTED:
-157-40.B(5) for cover over drainage pipe
-157-31-F for Proposed block length of 409' where as 500' is the minimum.

TRC: 8/10/2023 & 10/12/2023 & 11/30/2023

Summary of Request and Background
To create six new duplex structures to total twelve units, plus converting the existing single-family residence into a duplex. The applicant also seeks a CUP for frontage buildout and front-build-to-line for the existing dwelling.

This application was most recently before the Technical Review Committee on August 10, 2023, October 12, 2023, and November 30, 2023. (minutes attached).

Summary of Waiver Requests:
The applicant seeks a waiver of the minimum roadway length of 500' (they are proposing 409') per Subdivision Regulation §157-32.J. The applicant is also requesting a waiver for the amount of cover over a drainage pipe from §157-40.B(5).

Consistency with Land Use Regulations –Waivers/Relief
§153-21 of the Site Plan Review Regulations state 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 believes the applicant's rational for the waivers meets criterion (1) and waiving such standards and requirements is not contrary to the spirit or intent of the ordinance.

Consistency with Land Use Regulations – Site Plan
§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.

Planning staff believes the proposed development meets the intent and spirit of the Gateway District and provides a residential development that meets the required density of the district. The proposed development is an infill style development that utilizes excess back yard areas to accommodate the six (6) duplexes or 12 units plus conversion of an existing single-family to a duplex.

STAFF RECOMMENDATION - Waivers/Relief:
The Planning Department recommends that the Planning Board accept the application as complete, note it is not of regional impact, hold a public hearing, make the necessary and supporting findings of fact, and vote to grant the waivers with the following subsequent condition:

Subsequent Condition to be Met Prior to the Signing of the Plans:
1. Add a note that the Planning Board approved waivers for §157-31-F to allow a roadway of 409' in length where 500' is required and from 157-40.B(5) for cover over drainage pipe and found that the criteria of Chapter 153-21.A have been met.

CITY OF DOVER

PLANNING BOARD - STAFF MEMO FILE #SITE-2023-0007

Application Type:	Site Plan Review
Applicant(s):	Knox Marsh Development, LLC
Owner(s):	Robert Baldwin
Location:	34 New Rochester Road (Assessor's Map 39, Lots 103)
Meeting Date:	January 23, 2024

STAFF RECOMMENDATION – Site Plan:
The Planning Department recommends that the Planning Board accept the application as complete, note it is not of regional impact, hold a public hearing, make the necessary and supporting findings of fact, and vote to approve the Site Plan with the following subsequent conditions:

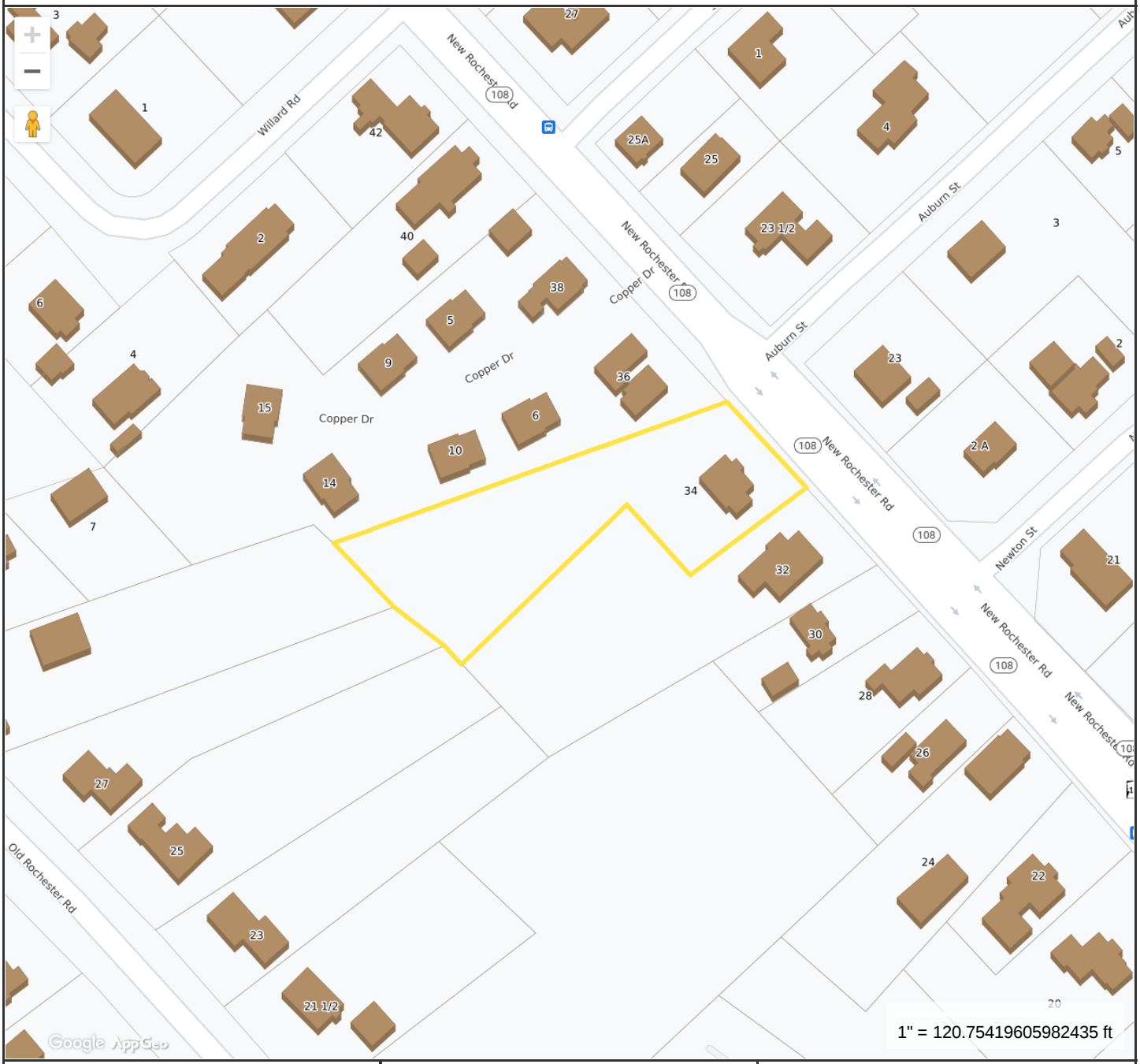
Subsequent Conditions to Be Met Prior to Signing of the Plans:
1. Approval of CUPs (COND-2024-0002 and COND-2024-0003);
2. Planning Board acknowledge lot merger;
3. Submission of Home Owners Association documents that include the operation and maintenance for stormwater, landscaping, porous pavement, and private trash pick-up; and calculation for the reserve that will be recorded at SCRD;
4. Revise plan and resubmit for Final Planning Board signature and then recording at the SCRD with the following revisions:
   4.1. Add owner's signature;
   4.2. Add all professional stamp and signatures
   4.3. Remove references to 50% lot coverage minimum requirement, as it is a 50% maximum requirement;

Subsequent Conditions to Be Met Prior to Construction:
4. A site construction sign with the contact information for the general contractor must be displayed in a location approved by the City Engineer or Planning Director; and

Subsequent Conditions to Be Met Prior to Building Permit:
5. Payment of the water/sewer investment fees at time or request of service.
6. Payment of the active recreation fee.
7. Payment toward sewer modeling contribution.

Subsequent Conditions to Be Met Prior to Occupancy:
8. Issuance of Certificate of Occupancy;
9. Payment of Impact Fees as noted in the invoice attached to the Decision Letter; and
10. Surety or other form of security acceptable to the City is provide for any unfinished work.
11. The Engineer of Record meet with the HOA to explain any future maintenance requirements.

SITE-2023-0007 34 NEW ROCHESTER ROAD



Property Information

Property ID	39103-000000
Location	34 NEW ROCHESTER RD
Owner	BALDWIN ROBERT
Land Use	
Zoning Code	G

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.

CITY OF DOVER, NEW HAMPSHIRE
PLANNING APPLICATION OWNER AUTHORIZATION

OWNER AUTHORIZATION

I/We hereby submit this application to the City of Dover / 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.

Property Owner Name: _____

Signature(s) of Property Owner(s): _____ Date: 7-25-23

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

AUTHORIZATION TO ENTER SUBJECT PROPERTY

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..

Property Owner Name: _____

Signature(s) of Property Owner(s): _____ Date: 7-25-23

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

IF SIGN PERMIT, SIGN PERMIT APPLICATION INFORMATION

If the sign permit applicant is not the property owner, this form must be completed and included as part of application submission.

I have read this application and state that, to the best of my knowledge, the information provided is true and that the proposed sign(s) will comply with all applicable regulations in Section 170-32 of the Zoning Ordinance of the City of Dover and shall conform to the submitted materials and designs. Furthermore, after 90 days, any application still waiting information will be denied.

Address of Sign Location: _____

Sign Permit Application Type:
(check one)

- ☐ Permanent Sign
- ☐ Temporary Sign
- ☐ Community Sign

PLAN SNAPSHOT REPORT SITE-2023-0007
FOR CITY OF DOVER, N.H.

Plan Type:	Site Plan - Major	**Project:**		**App Date:**	07/21/2023
Work Class:	New Construction	**District:**	None	**Exp Date:**	NOT AVAILABLE
Status:	Fees Due	**Square Feet:**	0.00	**Completed:**	NOT COMPLETED
Valuation:	$0.00	**Assigned To:**	Blonigen, Rachel	**Approval Expire Date:**	

Description: Construction of 6 duplex structures (12 units total) with single family home at front of site to remain. Proposed driveway called Ember Drive and extension of Copper Drive

Parcel:	39103-000000	Main	**Address:**	34 New Rochester Rd Dover, NH	Main

Zone: G(Gateway District)

Developer	Applicant	Owner
Baldwin Robert Home: (603) 742-2121 Mobile: (603) 986-2373	Berry Surveying & Engineering 335 Second Crown Point Road Barrington, NH 03825 Business: (603) 332-2863 Mobile: (603) 781-3403	Baldwin Robert Home: (603) 742-2121 Mobile: (603) 986-2373

Plan Custom Fields

Total	0	Total2	0	Total3	0
Total4	0	Total5	0	Total6	12
Total7	0	Total8	0	Total9	0
Street Classification Type	Municipal	Net Change in # Parking Spaces (+/-)	22	Water Service	Municipal
Recording Number		Sewer Service	Municipal	Total Acres (GIS)	0.82
Deed Book	5116	Total SQFT	35719.2	Deed Page	655
Deed Date	June 12, 2023	Proposed Property Use	Duplex residential with single family home	Area of Parcel to be Developed (SQFT)	35555
Number of Parking Spaces Existing	0	Number of Parking Spaces Proposed	22	Number of Employees Total	0
Number of Employees in Max Shift	0	Distance to City Water	0	Distance to City Sewer	0
Type of Building to be Built	Six duplex structures	Estimated Construction Value	3000000.00	Refuse Removal	Private
Is there an existing Conservation Easement?	No	Existing Conservation Easement Details		TotalImpactFeeSDTOD	0.00
TotalImpactFeeTHTOD	0.00	TotalImpactFee23FTOD	0.00	TotalImpactFeeA4TOD	0.00
TotalImpactFeeMHTOD	0.00	TotalImpactFeeADUTOD	0.00	TotalImpactFeeAONRTOD	0.00
TotalImpactFeeAR55TOD	0.00	TotalImpactFeeAR62TOD	0.00	Sub Total Residential	0.00
TotalImpactFeeRIRCTOD	0.00	TotalImpactFeeOCSTOD	0.00	TotalImpactFeeITWCTOD	0.00
TotalImpactFeeNHALTOD	0.00	TotalImpactFeeOIUTOD	0.00	TotalImpactFeeAFAOTOD	0.00
Sub Total Non-Residential	0.00	Total of Impact Fees to be Assessed	0.00		

Attachment File Name	Added On	Added By	Attachment Group	Notes
Signature_Chris_Berry_7/21/2023.jpg	07/21/2023 9:20	Berry, Chris		Uploaded via CSS
SITE-2023-0007 Snapshot Report.pdf	07/25/2023 9:35	Blonigen, Rachel		
2023.08.10_PlanningTechnicalReviewCommittee.Agenda.pdf	07/26/2023 12:30	Blonigen, Rachel		TRC Agenda
2023.08.10_PlanningTechnicalReviewCommittee.34NewRochRd_SITE-2023-00	08/16/2023 14:00	Blonigen, Rachel		Draft TRC Minutes

07.pdf			
2023.10.12_PlanningTechnicalReviewCommittee.34NewRochRd_SITE-2023-0007.pdf	10/12/2023 13:54	Blonigen, Rachel	DRAFT TRC Minutes
2023.12.12_PlanningBoard.Agenda.pdf	11/29/2023 10:48	Blonigen, Rachel	
SITE-2023-0007 Abutters List.pdf	11/29/2023 10:48	Blonigen, Rachel	

Note	Created By	Date and Time Created
1. Waiting for submittal for 2nd TRC - RLB	Rachel Blonigen	08/10/2023 14:15
2. Waiting on submittal for informal 3rd TRC meeting. RLB	Rachel Blonigen	10/12/2023 13:55

Invoice No.	Fee		Fee Amount	Amount Paid
INV-00004362	Planning General Application Fee		$200.00	$0.00
		Total for Invoice INV-00004362	$200.00	$0.00
INV-00005750	Planning Residential Fee		$1,200.00	$0.00
		Total for Invoice INV-00005750	$1,200.00	$0.00
INV-00006031	Planning Certified Mailing to Application Contacts		$20.00	$0.00
	Planning Public Notice in Newspaper		$120.00	$0.00
	Planning Creation / Printing of Abutter Labels		$30.00	$0.00
	Planning Certified Mailing to Abutters		$240.00	$0.00
		Total for Invoice INV-00006031	$410.00	$0.00
		Grand Total for Plan	**$1,810.00**	**$0.00**

Meeting Type	Location	Scheduled Date	Subject
Technical Review Committee Meeting v.1	City Hall, Second Floor Conference Room	10/12/2023	Technical Review Committee Meeting

TRC Meeting Agenda Item	#1	TRC Meeting Motion	Resubmit for 2nf full TRC
TRC Meeting Next Steps	Revise and submit for 2nd full TRC	TRC Meeting Next Steps	Resubmit for 3 informal TRC.

Submittal Name	Status	Received Date	Due Date	Complete Date	Resubmit	Completed
Land Use Plan Technical Review v.1	Requires Re-submit	10/04/2023	11/01/2023	10/12/2023	Yes	Yes

Item Review Name	Department	Assigned User	Status	Assigned Date	Due Date	Completed Date
Business Development	Business Development	Burdin, James	Requires Re-submit	10/04/2023	11/01/2023	10/12/2023

Comments: No comments

Submittal Name	Status	Received Date	Due Date	Complete Date	Resubmit	Completed
Land Use Plan Technical Review v.1	Approved	09/28/2023	12/27/2023	11/29/2023	No	Yes

Item Review Name	Department	Assigned User	Status	Assigned Date	Due Date	Completed Date
Business Development	Business Development	Burdin, James	Approved	11/29/2023	12/27/2023	10/12/2023
City Engineer	Community Services - Engineering	Mavrogeorge, Kenneth	Approved	11/29/2023	12/27/2023	10/12/2023

Submittal Name	Status	Received Date	Due Date	Complete Date	Resubmit	Completed
Land Use Plan Technical Review v.1	Requires Re-submit	10/04/2023	11/01/2023	10/12/2023	Yes	Yes

PLAN SNAPSHOT REPORT (SITE-2023-0007)

Item Review Name	Department	Assigned User	Status	Assigned Date	Due Date	Completed Date
City Engineer	Community Services - Engineering	Mavrogeorge, Kenneth	Requires Re-submit	10/04/2023	11/01/2023	10/12/2023

Comments: Project: 34 New Rochester Road (Meeting #2)
TRC Meeting: October 12, 2023
Reviewer: Kenneth A. Mavrogeorge, PE

- General Comment:
o Provide a commitment to maintain stormwater and specifically the porous pavement, that can be recorded at the registry of deeds. Confirm that the language in the Owner Certification is sufficient for recording with the City Attorney's Office.
o It is strongly recommended that the Applicant submit a detailed breakdown of proposed HOA costs for annual maintenance and replacement of private infrastructure including backup as to how the fees are estimated. Engineering supports this as a condition of approval.
- Sheet 6 of 27:
o Check leader calling out the porous sign. It looks like it's pointing to the wrong spot.
o Provide accessible charging station
- Sheet 21 of 27:
o Detail C15 has a note referencing detail C15. Please revise reference to C14 (?).
o Provide detail showing the porous pavement sign.
- Sheet 24 of 27: Detail U18 should read "less than 6' cover sewer (pavement)"
- General Comment:
o Community Services received a proposal from a City prequalified consultant to expand the City's sewer model into this area of the City. The City requests that the Applicant either provide a fee of $500 per proposed unit to offset a small portion of the fees for the sewer assessment. If the assessment shows that there is a capacity issue, the Applicant would need to contribute to the recommended capacity upgrades.

Item Review Name	Department	Assigned User	Status	Assigned Date	Due Date	Completed Date
IS Building Official	Fire / Inspection Services	Maxfield, Jim	Requires Re-submit	10/04/2023	11/01/2023	10/12/2023

Comments: • Clarify site access compliance with NFPA 1 Chapter 18 for Copper Drive.
• Sheet 6 - Elevation plans do not appear to provide accessibility to EV charging stations
• Discuss additional snow storage areas
• Clarify site access compliance with NFPA 1 Chapter 18 for Copper Drive.
• Sheet 6 - Elevation plans do not appear to provide accessibility to EV charging stations
• Discuss additional snow storage areas

Submittal Name	Status	Received Date	Due Date	Complete Date	Resubmit	Completed
Land Use Plan Technical Review v.1	Approved	09/28/2023	12/27/2023	11/29/2023	No	Yes

Item Review Name	Department	Assigned User	Status	Assigned Date	Due Date	Completed Date
IS Building Official	Fire / Inspection Services	Maxfield, Jim	Approved	11/29/2023	12/27/2023	10/12/2023

Item Review Name	Department	Assigned User	Status	Assigned Date	Due Date	Completed Date
Planning	Planning	Benton, Donna	Approved	11/29/2023	12/27/2023	11/29/2023

Submittal Name	Status	Received Date	Due Date	Complete Date	Resubmit	Completed
Land Use Plan Technical Review v.1	Requires Re-submit	10/04/2023	11/01/2023	10/12/2023	Yes	Yes

Item Review Name	Department	Assigned User	Status	Assigned Date	Due Date	Completed Date
Planning	Planning	Benton, Donna	Requires Re-submit	10/04/2023	11/01/2023	10/12/2023

Comments: • CUPs for lot coverage, frontage build out, front build to line, impervious area in secondary groundwater district. Thanks for narratives/applications
- Reminder: Impact fees, Water & Sewer investment fees
- Provide updated HOA documents as a COA
- Lot merger as a COA
- Revise road name on all sheets (See sheet 9 possibly others)
- Active and passive rec fee as a COA
- Contribute towards sewer modeling
- Sidewalk contribution
- Revise plans:
  - Owner's signatures on the final plans
  - Professional stamps on the final plans
  - Lighting seems very bright?
  - No chain link fence or vinyl fence in Gateway
  - Porous pavement maintenance plan?
  - Add street trees
  - Add egress/curbcut dimensions
  - Confirm and label toter locations

Submittal Name	Status	Received Date	Due Date	Complete Date	Resubmit	Completed
Land Use Plan Technical Review v.1	Approved	09/28/2023	12/27/2023	11/29/2023	No	Yes

Item Review Name	Department	Assigned User	Status	Assigned Date	Due Date	Completed Date
Zoning Administrator	Planning	Benton, Donna	Approved	11/29/2023	12/27/2023	10/12/2023

Submittal Name	Status	Received Date	Due Date	Complete Date	Resubmit	Completed
Land Use Plan Technical Review v.1	Requires Re-submit	10/04/2023	11/01/2023	10/12/2023	Yes	Yes

Item Review Name	Department	Assigned User	Status	Assigned Date	Due Date	Completed Date
Zoning Administrator	Planning	Kypfer, Natasha	In Review	10/04/2023	11/01/2023	

Submittal Name	Status	Received Date	Due Date	Complete Date	Resubmit	Completed
Land Use Plan Technical Review v.1	Approved	09/28/2023	12/27/2023	11/29/2023	No	Yes

Item Review Name	Department	Assigned User	Status	Assigned Date	Due Date	Completed Date
Traffic Bureau	Police	Speidel, Marn	Approved	11/29/2023	12/27/2023	10/12/2023

Submittal Name	Status	Received Date	Due Date	Complete Date	Resubmit	Completed
Land Use Plan Technical Review v.1	Requires Re-submit	10/04/2023	11/01/2023	10/12/2023	Yes	Yes

Item Review Name	Department	Assigned User	Status	Assigned Date	Due Date	Completed Date
Traffic Bureau	Police	Speidel, Marn	Requires Re-submit	10/04/2023	11/01/2023	10/12/2023

Comments: • Sheet 6, note 48: amend this note to ensure the HOA isn't limited by this language to replace the fence with a different suitable type in the future if it so chooses.
- Lamps at rear of Copper Drive parking area appear to impede snow removal and may be apt for damage depending on size of pole and base. No detail was provided for these fixtures.
- White vinyl perimeter fence detail shows 17.5" open slats extending down from the top of the 6' fence. This may be inconsistent with Sheet 14, lighting plan, which shows an adjacent 5'5" lamp not shedding any light beyond the fence.

Submittal Name	Status	Received Date	Due Date	Complete Date	Resubmit	Completed
Land Use Plan Technical Review v.2	In Review	11/08/2023	11/21/2023		No	No

Item Review Name	Department	Assigned User	Status	Assigned Date	Due Date	Completed Date
Business Development	Business Development	Burdin, James	In Review	11/08/2023	12/06/2023	

Item Review Name	Department	Assigned User	Status	Assigned Date	Due Date	Completed Date
City Engineer	Community Services - Engineering	Mavrogeorge, Kenneth	In Review	11/08/2023	11/21/2023	

PLAN SNAPSHOT REPORT (SITE-2023-0007)

Item Review Name	Department	Assigned User	Status	Assigned Date	Due Date	Completed Date
IS Building Official	Fire / Inspection Services	Maxfield, Jim	In Review	11/08/2023	11/21/2023	

Item Review Name	Department	Assigned User	Status	Assigned Date	Due Date	Completed Date
Planning	Planning	Kaspari, Jackson	In Review	11/08/2023	12/06/2023	

Item Review Name	Department	Assigned User	Status	Assigned Date	Due Date	Completed Date
Zoning Administrator	Planning	Benton, Donna	In Review	11/08/2023	11/21/2023	

Item Review Name	Department	Assigned User	Status	Assigned Date	Due Date	Completed Date
Traffic Bureau	Police	Speidel, Marn	In Review	11/08/2023	11/21/2023	

Workflow Step / Action Name	Action Type	Start Date	End Date
Review v.1		08/16/2023 14:00	08/16/2023 14:08
Confirm application complete v.1	Generic Action		08/16/2023 14:01
Confirm application complete v.1	Generic Action		08/16/2023 14:10
Confirm application complete v.1	Generic Action		11/08/2023 12:14
Technical Review Committee Meeting Agenda v.1	Task	11/08/2023 12:14	11/29/2023 11:40
Technical Review Committee Meeting Agenda v.1	Task	08/16/2023 14:10	10/04/2023 11:36
Technical Review Committee Meeting Agenda v.1	Task	08/16/2023 14:00	08/16/2023 14:01
Land Use Plan Technical Review v.1	Receive Submittal	10/04/2023 0:00	10/12/2023 14:08
Land Use Plan Technical Review v.1	Receive Submittal		08/16/2023 14:01
Land Use Plan Technical Review v.1	Receive Submittal	11/29/2023 0:00	11/29/2023 11:41
Land Use Plan Technical Review v.2	Receive Submittal	11/08/2023 0:00	
Technical Review Committee Meeting v.1	Hold Meeting	10/04/2023 11:35	10/12/2023 14:09
Technical Review Committee Meeting v.1	Hold Meeting	11/29/2023 11:40	11/29/2023 11:41
Technical Review Committee Meeting v.1	Hold Meeting	08/16/2023 14:01	08/16/2023 14:08
Planning Board v.1			
Planning Board Agenda v.1	Task		
Invoice for Notices v.1	Task		
Send Notices v.1	Task		
Planner Creates Staff Recommendations v.1	Plan Activity		
Distribute Planning Board Materials v.1	Task		
Planning Board Hearing v.1	Hold Hearing		
Planning Board Decision v.1	Plan Activity		
NOD Sent to Applicant v.1	Create Report		
Final Plan v.1			
Land Use Plan Final Review v.1	Receive Submittal		
Land Use Plan Stamped and Signed v.1	Generic Action		
Plans uploaded to Treeno v.1	Generic Action		
Recording v.1	Task		
Property Info Group 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 Complex v.1	Create Sub Permit		
Create / Link to Permit - Site Work, Construction v.1	Create Sub Permit		

City of Dover, New Hampshire
SITE REVIEW APPLICATION

[Revision Date: July 1, 2021]

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

APPLICANT AND OWNER INFORMATION

Name of Applicant: Knox Marsh Development LLC Telephone # 603-742-2121

Address of Applicant: 242 Central Ave, Dover, NH 03820

E-Mail Address: robert@centralfallsrealty.com

Name of Property Owner (*if different from applicant*): Robert Baldwin Telephone # 603-986-2373

Address of Property Owner: 242 Central Ave, Dover, NH 03820

PROPERTY INFORMATION

Address of Property: 34 New Rochester Road

Assessor's Map # 39 Lot(s) # 103

Zoning District(s) Gateway, R-12 Overlay District(s) Secondary Groundwater Recharge

Size of Parcel: 35,555 sq. ft. 0.82 ac. Property Deed: Book 5116 Page: 655

Existing Use of Property: Existing single family home

SITE PLAN INFORMATION

Describe Proposed Use: 2-family dwelling Site Plan w/ one ex single family to remain, lot merger w/ Copper Drive LCA (P22-27)

Area of Parcel to be Developed: 35,555 SF sq. ft.

If Multi-family Residential: Number of Units 12 & Buildings Proposed 6

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

Number of Parking Spaces: Existing N/A Proposed 28 spaces

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

Number of Employees Total: 0 In Maximum Shift: 0

Disposition of Parcel:

Building Footprint _____ sq. ft.

Total Building Area _____ sq. ft.

Paved Area _____ sq. ft.

Building Setbacks:

Front Yard 5-20 ft.

Rear Yard 15 ft.

Side Yard: Right 10 ft. Left 10 ft.

City Water? X Yes ___ No How far is city water from the property? New Rochester Road

City Sewer? X Yes ___ No How far is city sewer from the property? New Rochester Road

TRANSFER OF DEVELOPMENT RIGHTS INFORMATION

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

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

Relief sought (Check All That Apply):

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

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

BUILDING INFORMATION

Type of Building to be Built: 6 2-family dwellings, existing single family home to remain

Height of Building: 30' +/- Finished Floor Elevation: See plans

Number of Seats (where applicable) N/A

Estimated value of construction: 3,000,000 Refuse removal: Public/Private (circle one)

WAIVER REQUESTS

Site Review Regulations section(s) to be waived: 157-40-B(5), 157-31-F

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

Please find attached narrative.

SURVEYOR INFORMATION

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

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

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

ENGINEER INFORMATION

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

Address _____ Telephone #: 603-332-2863

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

ARCHITECT INFORMATION

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

Address _____ Telephone #: _____

Professional License #: _____ E-mail address: _____

LANDSCAPE ARCHITECT INFORMATION

Name of Landscape Architect and Company (Licensed in N.H.) Terrain Planting & Design LLC
Eric Buck

Address 311 Kast Hill Road, Hopkinton NH 03229 Telephone #: 603-491-2322

Professional License #: 78 E-mail address: _____

SOIL SCIENTIST INFORMATION

Name of Soil Scientist and Company (Licensed in N.H.) John P. Hayes III

Address 7 Limestone Way, North Hampton NH 03862 Telephone #: 603-205-4396

Professional License #: 87 E-mail address: johnphayes@comcast.net

CONSERVATION EASEMENT HOLDER

Name of Easement Holder: _____ Telephone #_____

Address Easement Holder: _____

SIGNATURES

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

Signature of Property Owner: _____ Date: 7-21-23

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

Signature of Agent: _____ Date: 7-21-23

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: 7-21-23

AUTHORIZATION TO COMPLETE THE PROJECT ON SUBJECT PROPERTY

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

Signature of Property Owner: _____ Date: 7-21-23

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

CERTIFICATION OF FEES

I, and my successors, hereby certify that I understand that the City of Dover collects impact fees, utility investment fees and inspection fees for projects developed in Dover. Said fees must be paid before a Certificate of Occupancy can be obtained for a structure, unless a different payment schedule is agreed to by the applicant and the City prior to approvals being issued by the Dover Planning Board. Additionally, should the property be in "Current Use" it will be subject to the Land Use Change Tax.

Signature of Property Owner: _____ Date: 7-21-23

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

CITY OF DOVER SITE REVIEW
LIST OF ABUTTERS

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

Owner:

TAX MAP	LOT #	PROPERTY OWNER	MAILING ADDRESS

Applicant (if different from owner):

APPLICANT NAME	APPLICANT COMPANY	MAILING ADDRESS

Surveyor and/or Engineer/Professional Agent:

NAME	COMPANY	MAILING ADDRESS

Conservation Easement Holder:

TAX MAP	LOT #	NAME OF EASEMENT HOLDER	MAILING ADDRESS

PLANNING BOARD FEE SCHEDULE/INVOICE

(Revised July 1, 2021)

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

A. Plan Review Fees

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

- ☐ SUBDIVISION Application fee $200.00 + $150.00 x # _____ new lots created = $_____
- ☐ LOT LINE ADJUSTMENT Application fee $200.00 + $100.00 X # 2 of lots involved = $400
- ☐ TRANSFER OF DEVELOPMENT RIGHTS Application fee $200.00 = $_____
- ☐ SITE REVIEW – RESIDENTIAL Application fee $200.00+ $100.00 x # 12 per dwelling unit = $1,400.00
- ☐ SITE REVIEW – NON-RESIDENTIAL Application fee $200.00 + (not to exceed $10,000)
  - New construction $.15 sq. ft. x # _____ sq. ft.= $_____
  - Additions (new floor space) $.10 per sq. ft. x # _____sq. ft.= $_____
- ☐ MOTEL/HOTEL $35.00 x # ___ per lodging unit= $_____
- ☐ CHANGE OF USE Application fee $200.00 + (not to exceed $5,000)
  - Existing floor spaces $.10 per sq. ft. x # _____ sq. ft. = $_____
- ☐ CONDITIONAL USE PERMIT Application fee $200.00 x # 3 per Application = $600.00
- ☐ GRAVEL PIT/ EXCAVATIONS
  - Application fee $50.00= $_____
  - Permit fee $75.00= $_____
- ☐ EXTENSIONS/AMENDMENTS/WAIVERS FOR AN APPROVED PLAN Application fee $200.00 = $_____
- ☐ REQUEST FOR REZONING Application fee $200.00 = $_____
- ☐ DRIVEWAY WAIVER Application fee $200.00 = $_____

2. TOTAL IMPERVIOUS PAVED AREA (for new development, roadways or additions to existing parking lots, (not to exceed $10,000)) Application fee of $200.00 is N/A if it is part of a Site Review or Subdivision Plan. $200.00 + $.07 per sq. ft. x # _____ sq. ft. = $_____
0(All porous pavement)

SUBTOTAL PLAN REVIEW FEE (A) = $ 2,400

AND

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

- ☐ Applicant & Owner, engineer, architect, LLS, LLA and/or soil scientist
  - Certified letters fee # _____ of x $8.00= $_____
- ☐ Certified letters fee: # of abutters _____ X $8.00= $_____
- ☐ First Class Mail fee (for individual owner of units within a condominium or other collective form of ownership): # of abutters _____ X $1.00= $_____
- ☐ Creating/Printing Abutter Labels in triplicate per sheet _____ x $10.00= $_____

C. Foster's newspaper public notice fee $100.00 x # _____ applications = $_____

SUBTOTAL NOTICE FEE (B & C) = $_____

TOTAL INVOICE AMOUNT (A, B & C) = $_____

PLAN REVIEW FEE COLLECTED/PAID = $ _____

BALANCE DUE = $ _____

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

City of Dover, New Hampshire
SITE PLAN REVIEW SUBMISSION CHECKLIST

[Revision Date: June 4, 2019]

This site plan review checklist, as required by Chapter 153-6-B(2), should be completed by the applicant. It is intended to assist the applicant in the planning process of preparing a Site Plan Review application for Planning Board action. The size of the project will determine the types of information required for review, therefore, a **pre-application conference** with the Planning Department to determine the list of items that must be completed is strongly encouraged.

The first step would be to appear before the Technical Review Committee, to apply, eight (8) folded copies of the site plan with scale of not less than 1"=50' or 1" =100' for larger site plans, need to be provided, along with payment of plan review fees.

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

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

APPLICANT: Knox Marsh Development, LLC File Number: _____

PROJECT TITLE: Copper Drive & Ember Drive

PROPERTY LOCATION: 34 New Rochester RD Tax Map: 39 Lot: 103

	Where/How Provided	Reviewed
1. Completed and signed Application form	x	
2. Plan Review Fees are provided	x	
3. Electronic copy of the engineered/surveyed plan layout	x	
4. Electronic copy of supplementary materials and application	x	
5. Traffic Impact Assessment and Analysis (Standard or Advanced)	x	
6. Waiver requests to the Site Plan Review Regulations, with written justification	X	
7. Conditional Use Permit applications	X	
8. A colored rendering of the streetscape that will be created along the existing public right-of-way	x	
9. A colored architectural plan showing all sides of buildings	x	
10. Folded copies of site plan w/scale of not less than 1"=50' or 1"=100' for larger site plans, for TRC. Plans shall contain the following items as appropriate:	x	
Location map at appropriate scale	x	
Proposed Project name and title and Planning File #	x	
Date, north arrow and scale	x	
Names of all abutting property owners	x	
Name and address of owners and/or applicants	x	
Signature & stamp of NH licensed land surveyor and/or engineer	x	
Zoning District boundaries, including any special or overlay districts	x	
Location of Conservation District areas	x	
Location, names and widths of existing and proposed streets, including pavement widths, grades, curbs and crosswalks	x	
Location and widths of existing & proposed easements & right of ways	x	
Location and width of existing and proposed access/egress ways	x	

	Explain How Provided	Reviewed
Depict pedestrian walkways and accessible access	x	
Existing and proposed property lines with dimensions and bearings tied into Dover's Geographic Information System coordinate system	x	
Existing and proposed topographic information at two foot intervals	x	
Existing and proposed buildings and structure locations	x	
Minimum building setbacks or build to lines on all lots	x	
Location and size of existing and proposed electric, telephone, gas cable and other underground utilities	x	
Existing and proposed water lines and fire hydrants, including materials and capacity needed	x	
Location and materials of sanitary sewage facilities within project site and projected additional peak hour sewer load	x	
Existing and proposed stormwater lines and facilities	x	
Lighting plan depicting all existing and proposed exterior light fixtures and a lighting level analysis for parking lots	x	
Location of Flood Hazard Zone	N/A Noted on plan	
Location of all bodies of water and watercourses	N/A None	
Location of wetlands and buffers	N/A None	
Neighborhood plan with aerial underlay showing how project relates to abutting uses within the plan set	x	
Existing natural features and/or significant vegetation on property	x	
Depict existing contours up to 100 ft. beyond project limits	x	
Landscape plan depicting existing and proposed landscaping, prepared by a licensed Professional Landscape Architect	x	
Location of parking layout delineating spaces and arrangement; note addressing maximum required spaces	x	
Location, material and size of existing and proposed pavement area	x	
Location of proposed fire lanes	x	
Specify finished floor elevations of buildings	x	
Location of solid waste disposal facilities (dumpster, pad and screening, etc.), including required screening	x	
Depict all service, storage, loading bays and utility areas	x	
All applicable Dover Common Site Plan notes	x	
11. Additional Information if appropriate		
Stormwater Management Plan depicting the existing & proposed storm drainage system and engineered drainage analysis	x	
Stormwater Management System Operation and Maintenance Plan	x	
Letter to Serve from Public and Private Utilities	x	
Erosion and Sedimentation Control Plan	x	
Landscape Operation and Maintenance Plan	x	
Proposed restrictive covenants or homeowners association documents	Will provide	
Dates and permit numbers of all required state and federal permits	Will provide	
If wetland buffer, indicate placards locations, as applicable	N/A	
Depict test boring locations, groundwater elevations and soil profiles and/or soils types call-outs	x	
Location of proposed drive-in facilities	N/A	
Provide additional exhibits/technical data determined appropriate by the Planning Board or its staff as required	Will provide as needed	

REVIEWED BY: _____ DATE_____ TRC DATE_____

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

July 6, 2023/Rev: December 1, 2023

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

Re: Waiver Requests
Residential Site Plan
Knox Marsh Development, LLC
34 New Rochester Road
Tax Map 39, Lot 103

Chairperson & Members of the Dover Planning Board:

In accordance with Subdivision Regulations Article 157-40-B(5), the following waiver is hereby requested:

1. Identification of Waiver Request: Minimum pipe cover per Subdivision Regulation 157-40-B(5)

- Proposed 12" Reinforced Concrete (RCP) drainage pipe with 1.6' minimum cover where 3' is required.

2. Explanation:

The applicant proposes to utilize infiltration sumps in two areas of the project to protect abutting properties from stormwater runoff leaving the subject parcel. As part of the Copper Drive, a 12" RCP is proposed as a high-flow by-pass (100YR 24-HR storm event only) for the infiltration sump (Pond 4P) that receives roof runoff from Copper Drive homes and grassed area. The intention of this pipe invert at the proposed elevation is for this infiltration sump (Pond 4P) to infiltrate the 50YR-24HR storm event without overflow. In the case of overflow, this infiltration sump (Pond 4P) flows to a second, smaller infiltration sump (Pond 1P) adjacent to the parking lot that receives off-site stormwater from Tax Map 39, Lot 102 and grassed area of Tax Map 39, Lot 103. If the invert of the 12" RCP was lower, a reduced volume of stormwater would be infiltrated in Pond 4P, increasing the volume of water that would leave Pond 1P and cross the property line of Tax Map 39, Lots 71, 72, & 73 on the larger storm events (25, 50, 100YR-24HR storm events).

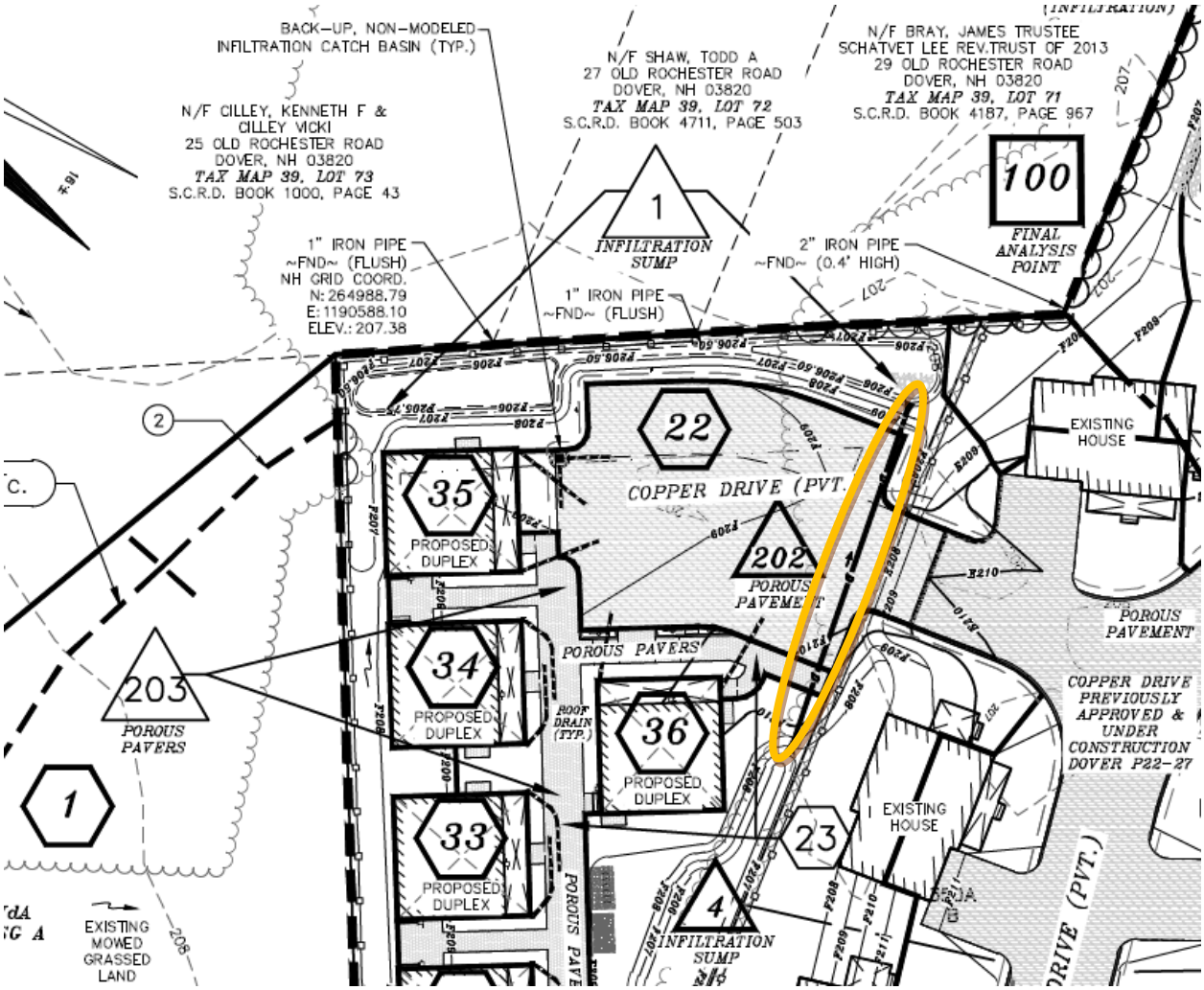


Image from W2-Proposed Watershed Plan showing the locations of Infiltration Sumps, Pond 4P and Pond 1P, in relation to the abutting property line.

3. Waiver Justification:

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

The purpose and intent of this regulation is to provide long term pavement and pipe durability. The proposed design is to provide a level of safety of protection for abutting properties from stormwater runoff of an urbanized area such as this. With porous pavement proposed, a thicker cross-section (32" total) is proposed as opposed to a conventional pavement section (22" total). The proposed pipe type is Reinforced Concrete (RCP), which is designed to withstand lower cover applications. With sandy soils, there are fewer concerns for floating or heaving of the pipe.

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

Requiring the applicant to provide 3' of cover would pose an unnecessary hardship on the applicant. To provide the required cover, the applicant could take two separate routes, with the design intent for Pond 1P, adjacent to the parking area, not to overflow until the 100YR 24-HR storm event. The first option would be to keep the proposed grade of Copper Drive the same, while lowering the 12" RCP invert 1.6'+ to meet the three feet of cover requirement. As previously mentioned, this would reduce the volume of stormwater infiltrated on site in Pond 4P and increase the amount of overflow onto abutting properties from the proposed design. The bottom of the infiltration sumps (Pond 4P & Pond 1P) cannot be lowered, as they are greater than one foot above seasonal high-water table. This would require the removal or parking spaces to provide additional ponding volume in Pond 1P to infiltrate the 50YR-24HR storm event.

The second option would be to keep the invert of the 12" RCP in Pond 4P the same, but raise the profile of Copper Drive 1.4'+ to meet cover requirements. This would result in the fill slope of the parking lot of Copper Drive to be closer to the boundary line, removing the infiltration capacity of Pond 1P, adjacent to the parking lot. This would also result in the removal of parking spaces to provide additional ponding volume in Pond 1P, to meet the design intent of this pond infiltrating the 50YR, 24HR storm event.

1. Identification of Waiver Request: Minimum block length of 500' per Regulation 157-31-F

- Proposed private road length of 409' (Copper Drive) and 141' Ember Drive.

2. Explanation:

The applicant is utilizing the Gateway District zoning to construct six (6) 2-family dwelling structures for twelve (12) units behind the existing single-family home to remain at 34 New Rochester Road. The applicant is also proposing to convert the existing single-family homes at 36 & 38 New Rochester Road into 2-family dwelling units, in addition to the previously approved and constructed six (6) single family homes on Copper Drive. This brings the total project yield post lot merger to twenty-three (23) total units. The primary roadway will be 409 feet long and known as Copper Drive. The secondary roadway is 141 feet long and is known as Ember Drive.

3. Waiver Justification:

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

The previously approved waiver for Road Length (157-32.J) of Copper Drive, approved a 300' long roadway with a hammerhead termination. The left side of the Hammerhead has been extended by 94', to create a road with a total length of 409 feet, that is compliant with NFPA 1, Chapter 18. The second roadway is known as Ember Drive. Ember Drive is proposed to 141 feet in length and provides fourteen (14) parking spaces for the development, which consist of the majority of the 141 foot length. This roadway is compliant with NFPA 1, Chapter 18. Chapter 157-32.J discusses provisions to provide an easement through the block for pedestrian access. The applicant has provided a 10' wide porous paver walkway is provided from Copper Drive to Ember Drive for pedestrian access and connectivity. Minimum road length regulations are directly related to municipal efficiencies, where it is not efficient to maintain smaller roadways. These are private roads with no municipal responsibility.

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

Requiring the applicant to lengthen the road would pose an unnecessary hardship on the applicant. The subject parcels are approximately 400 feet deep from New Rochester Road, a 500-foot length road is not possible due to the geometry of the site. The applicant has made Copper Drive as long as possible, given the geometry constraints of the subject parcels and need for compliance with NFPA 1, Chapter 18. Creating a loop road between Copper Drive and Ember Drive to meet the required block length would result in a large portion of the parcel to be occupied by roadway; therefore, detracting from the walkable community the applicant is attempting to create.

Respectfully Submitted,
BERRY SURVEYING & ENGINEERING

Kevin R. Poulin, PE
Project Engineer

Christopher R. Berry
Principal, President

BERRY SURVEYING & ENGINEERING
335 Second Crown Point Road
Barrington, NH 03825
Phone: (603) 332-2863
Fax: (603) 335-4623
www.BerrySurveying.Com
crberry@metrocast.net
July 6, 2023/Rev: December 1, 2023

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

Re: Residential Site Plan & Lot Merger
Project Narrative
Knox Marsh Development, LLC
34 New Rochester Rd, Tax Map 39, Lot 103 (Site Plan & Lot Merger)
36 New Rochester Rd/Copper Dr, Tax Map 39, Lot 104 (Lot Merger) (P22-027)

Dear Mrs. Benton,

On behalf of our client, Knox Marsh Development, LLC, Berry Surveying & Engineering (BS&E) is submitting a proposed Residential Site Plan at 34 New Rochester Road (NH Route 108) (Tax Map 39, Lot 103) and a lot merger between Tax Map 39, Lot 103 & 104. Tax Map 39, Lot 103 is being merged into Lot 104, consisting of Copper Drive, known as Limited Common Area Tax Map 39, Lot 104-7 (P22-027). Site Plan and Conditional Use Permit applications are listed as Tax Map 39, Lot 103 as the subject parcel. A full list of revision items since TRC #3 is included at the end of the project narrative.

Background and General Narrative:

Knox Marsh Development, LLC, owns the parcels known as 34 and 36 New Rochester Road in Dover, NH (Tax Map 39, Lots 103 & 104). These parcels contain 35,555 Sq. Ft. (0.82 Ac.) and 68,111 Sq. Ft. (1.56 Ac.), respectively. Tax Map 39, Lot 104 is included in this narrative for reference to a proposed lot merger (included in plan set & application) and extension of Copper Drive to Tax Map 39, Lot 103. Site Plan activity in this narrative is referring to construction on parcel Tax Map 39, Lot 103. Percentages provided in documents and plans are based upon the combined lot merger area of 103,666 Sq. Ft. (2.38 Ac.).

Berry Surveying & Engineering has conducted an on-site survey of the parcels which includes a topographic analysis and wetlands analysis. No wetlands were found on site as determined by John P. Hayes III, CWS, CSS. Tax Map 39, Lot 103 contains a single-family home built in 1943 located at the front of the property along New

Rochester Road. The site is located across the street from the intersections of New Rochester Road and Sherman Street, and New Rochester Road and Auburn Street, approximately 0.3 miles from the intersection of New Rochester Road, Central Avenue, and Indian Brook Drive. Tax Map 39, Lot 103 is open and grassed at the front and partially wooded at the rear.

Topographic conditions on site are relatively flat, gradually sloping from New Rochester Road to the rear of the site. The site consists of sandy, well drained soils as shown on the Site Specific Soils Map by John P Hayes, III, CSS. The site is located in the Gateway District, within 300' of the center of New Rochester Road, and the R-12 zone at the rear. The Gateway District zone line has been adjusted by 50' to include the entire area of development within this district. This site is also located with the Secondary Groundwater Recharge Overlay. The maximum 20% impervious threshold is not triggered by this application post lot merger.

The Proposal:

The Gateway District, within 300' of the center of New Rochester Road, allows for single family and two-family dwelling unit residential development restricted to two stories in height. Utilizing the 50' Zone Line Adjustment, the subject parcel post lot merger, has 93,953 Sq. Ft. located within the Gateway District and 9,713 Sq. Ft. within the R-12 Zone. Gateway District residential density is 4,000 Sq. Ft. per unit, resulting in a yield of twenty-three (23) units within the subject parcels by right. Previously approved Copper Drive (P22-027) consisted of eight total single-family homes, with two pre-existing and six under construction. The proposal is to construct six (6) 2-family dwelling structures for twelve (12) units behind the existing single-family home to remain at 34 New Rochester Road. The applicant is also proposing to convert the existing single-family homes at 36 & 38 New Rochester Road into 2-family dwelling units. This brings the total project yield post lot merger to twenty-three (23) total units. As previously mentioned, Tax Map 39, Lot 103 will be merged into Lot 104 and become Limited Common Area Tax Map 39, Lot 104-7. This Limited Common Area, not including Copper Drive, is subject to the 5-20' build-to front setback line to pavement, 10' side setback, and a rear/external boundary line 15' building setback.

The proposed 2-family dwelling structures will be accessed from two locations; Copper Drive or Ember Drive. Copper Drive is proposed to be extended by 94 linear feet (LF), including a fourteen (14) space parking lot that provides parking for a portion of the units. The parking is proposed as twelve-foot travel lanes and 9'x18' parking spaces constructed from porous pavement. This parking is located at the rear of the subject parcel.

Ember Drive is a new accessway/parking proposed off of New Rochester Road, 141 LF in length, consisting of twelve-foot travel lanes and fourteen (14) 9'x18' parking spaces constructed from porous pavement. Ember Drive is located between the single-family homes located at 34 and 36 New Rochester Road. This parking lot provides the remaining parking for the remaining 2-family dwelling units.

With the exception of the five foot (5) raised concrete sidewalk along New Rochester Road to improve the walkability and the civic nature of the urban core, all pavement and sidewalk surfaces are porous pavement or porous pavers. This is done to infiltrate stormwater runoff generated by the site. Proposed 2-family dwelling roofs are routed via gutter and downspout to the porous pavement or pavers for infiltration. This is to account for the 20% maximum impervious requirement of the Secondary Groundwater Recharge Overlay district. The use of porous products across the site allows the project to not require a Conditional Use Permit is required for greater than 20% impervious in this overlay district (19.3% provided). The design includes two infiltration sumps in addition to the porous pavement and porous pavers. The design intent of these infiltration sumps is to infiltrate "clean" water including grassed area from off site and roofs areas to protect abutting properties from stormwater runoff.

The proposed 2-family dwellings are similar in footprint to surrounding single family homes (975 Sq. Ft. footprint) and is restricted to two stories, as the surrounding single family homes. This footprint is an attempt to create a streetscape that is harmonious with the surrounding architecture. Streetscape is enhanced through the use of landscaping, hardscaping and typical urban amenities such as benches. Street trees, shrubs, and ornamental grasses are used throughout Copper Drive and Ember Drive create an inviting entrance and streetscape. Ornamental grasses and shrubs are proposed around 2-family dwellings and a mix of shrubs hardwoods/evergreens are proposed throughout the interior and perimeter of the site. Infiltration sumps are planted with shrubs and plants.

Water and sewer mains are proposed to be connected from Copper Drive, with water looping back out to New Rochester Road. Electric/cable utilities will be taken from a relocated utility pole (PSNH 7/15s) located at the entrance of Ember Drive and underground to a transformer and boxes on site. Water is proposed to be an 8" C.L.D.I. line which runs to a fire hydrant on Ember Drive. Each proposed 2-family dwelling will have two 1" SDR 9 domestic water services and one 1" SDR fire suppression line with individual curb stops. Sewer is proposed to be an 8" SDR 35 gravity line with a 6" SDR 35 service to each building. Heating and cooling will be done via mini-splits. The existing single-family home will retain existing utility services. The single-family homes

at 36 & 38 New Rochester Road to be converted to 2-family dwellings will utilize existing services, with new internal utilities to be plumbed to support.

The applicant is applying for three non-environmental Conditional Use Permits (CUPs); 1) Lot building coverage of 17.1% where 50% is required, 2) Frontage build-out of 47.4% where 60% (New Rochester Road) is required, 3) Not meeting front build-to line on New Rochester Road. Please find attached CUP application and narrative for justification and criteria. The applicant is applying for two waivers; 1) Drainage pipe cover of less than 3' (1.6' proposed) (157-40-B(5)), 2) Minimum block length of 500' (157-31-F). Please find attached waiver request narrative for justification and criteria.

The project requires the following approvals:

- Planning Board acceptance of the Voluntary Lot Merger
- CUP for lot coverage, frontage build-out, & front build-to line
- Waiver for drainage pipe cover & minimum block length
- Site Plan Approval
- EPA Notice of Intent (NOI)
- NHDES Sewer Discharge Permit

Since TRC #3, the following revisions have been made and are discussed more in depth within the TRC response letter:

- The second fire suppression line has been removed from each sprinkled 2-family dwelling structure. Plan view callouts and profile callouts have been adjusted accordingly.

- The Unit Conversation Utility note shown on the Site Plan, sheet #6 as note #51, and Utility Plan, sheet #13 has been modified to discuss submetering of water service.

- Porous pavement signage has been added to the Site Plan in the area of the new single-family driveways along existing Copper Drive.

- Snow storage hatch and calculation has been revised from the requested change in the Copper Drive parking lot.

- The Inspection, Operations, and Maintenance Plan has been modified to include existing Copper Drive in addition to the new construction, with a note added that this plan supersedes the original.

- The driveway cut for units #16 & #17 has been reduced and moved away from Copper Drive to the maximum extent practical.

- A wavier request has been added for minimum block length.

Respectfully Submitted,
BERRY SURVEYING & ENGINEERING

Kevin R. Poulin, PE
Project Engineer

Christopher R. Berry, SIT
Principal, President

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

SITE-2023-0007 **34 NEW ROCHESTER ROAD**

Property ID	Location	Owner 1	Owner 2	Owner Address 1	City	State	Zip	State Class
	21 NEW ROCHESTER RD	LIN JINGYING		21 NEW ROCHESTER RD	DOVER	NH	03820	
	3 AUBURN ST	MELVILLE AKIKO		3 AUBURN ST	DOVER	NH	03820	
	23 NEW ROCHESTER RD	MCKEAGNEY ROBERT B &	MCKEAGNEY WENDI E	23 NEW ROCHESTER ROAD	DOVER	NH	03820	
	2 A NEWTON ST	FRATUS GARY A &	FRATUS TERESA G	2A NEWTON ST	DOVER	NH	03820	
	2 NEWTON ST	GOULD LAURENCE J		2 NEWTON STREET	DOVER	NH	03820	
	25 NEW ROCHESTER RD	KNOX MARSH DEVELOPMENT LLC		242 CENTRAL AVE	DOVER	NH	03820	
	25 A NEW ROCHESTER RD	COCHRAN DONALD ANDREW JR	COCHRAN STEPHANIE AIMEE	451 CENTRAL AVE STE B	DOVER	NH	03820	
	23 1/2 NEW ROCHESTER RD	HARKINS SEAN		23 1/2 NEW ROCHESTER RD	DOVER	NH	03820	
	4 AUBURN ST	ROSS BENJAMIN C &	JOHNSON SARAH K	4 AUBURN ST	DOVER	NH	03820-2104	
	2 WILLARD RD	TAYLOR BERNARD C SR		2 WILLARD ROAD	DOVER	NH	03820	
	4 WILLARD RD	LEMCKE MARY D &	STAMPONE DANIEL P	4 WILLARD RD	DOVER	NH	03820	
	7 OX BOW LN	MOUSETTE JONATHAN M	MOUSETTE NICOLE E	7 OX BOW LANE	DOVER	NH	03820	
	29 OLD ROCHESTER RD	BRAY JAMES TRUSTEE	SCHATVET LEE REVOCABLE TRUST OF 2013	29 OLD ROCHESTER RD	DOVER	NH	03820	
	27 OLD ROCHESTER RD	SHAW TODD A		27 OLD ROCHESTER RD	DOVER	NH	03820	
	25 OLD ROCHESTER RD	CILLEY KENNETH F	CILLEY VICKI	25 OLD ROCHESTER ROAD	DOVER	NH	03820	
	23 OLD ROCHESTER RD	BODOH JACOB &	MARCOUX ELIZABETH	23 OLD ROCHESTER RD	DOVER	NH	03820	
	21 OLD ROCHESTER RD	DEMERS LYNDA S		21 OLD ROCHESTER ROAD	DOVER	NH	03820-2009	
	21 1/2 OLD ROCHESTER RD	POMERLEAU JEAN		21 1/2 OLD ROCHESTER RD	DOVER	NH	03820	
	26 NEW ROCHESTER RD	LACHANCE OLIVA V	LACHANCE CLAUDETTE	26 NEW ROCHESTER ROAD	DOVER	NH	03820	
	28 NEW ROCHESTER RD	MERCIER CHRISTOPHER M		28 NEW ROCHESTER RD	DOVER	NH	03820	
	30 NEW ROCHESTER RD	WEEDEN RONALD J	WEEDEN JUANITA A	145 DURHAM RD	DOVER	NH	03820-4396	
	32 NEW ROCHESTER RD	CAMERON MANDY L &	RIORDAN TIMOTHY M	527 SALMON FALLS RD	ROCHESTER	NH	03868	
	36 NEW ROCHESTER RD	KNOX MARSH DEVELOPMENT LLC		242 CENTRAL AVENUE	DOVER	NH	03820	
	6 COPPER DR	KNOX MARSH DEVELOPMENT LLC		242 CENTRAL AVENUE	DOVER	NH	03820	
	10 COPPER DR	KNOX MARSH DEVELOPMENT LLC		242 CENTRAL AVENUE	DOVER	NH	03820	
	14 COPPER DR	KNOX MARSH DEVELOPMENT LLC		242 CENTRAL AVENUE	DOVER	NH	03820	
	15 COPPER DR	KNOX MARSH DEVELOPMENT LLC		242 CENTRAL AVENUE	DOVER	NH	03820	
	9 COPPER DR	KNOX MARSH DEVELOPMENT LLC		242 CENTRAL AVENUE	DOVER	NH	03820	
	5 COPPER DR	KNOX MARSH DEVELOPMENT LLC		242 CENTRAL AVENUE	DOVER	NH	03820	
	38 NEW ROCHESTER RD	KNOX MARSH DEVELOPMENT LLC		242 CENTRAL AVENUE	DOVER	NH	03820	
	40 NEW ROCHESTER RD	BOUCHER SHARON O &	BOUCHER RONALD A	40 NEW ROCHESTER RD	DOVER	NH	03820	
	34 NEW ROCHESTER RD	BALDWIN ROBERT		242 CENTRAL AV	DOVER	NH	03820	
		BERRY SURVEYING & ENGINNERIN	BERRY CHRIS	335 SECOND CROWN POINT	BARRINGTON	NH	03825	

CITY OF DOVER

TECHNICAL REVIEW COMMITTEE MINUTES – SITE-2023-0007

Application Type:	Site Review
Applicant(s):	Knox Marsh Development, LLC
Owner(s):	Robert Baldwin
Location:	34 New Rochester Road (Tax Map 39, Lot 103)
Date:	November 30, 2023

INTENT: To construct 6 two-family structures (12 units in total) with the single-family dwelling to remain on the property. In addition to the Copper Drive Project under construction.

UNITS PROPOSED: 12, plus existing (13 in total)

AGENDA ITEM #: 3

ACREAGE:
Existing = 0.47± ac.
Post Lot Merger = 103,666± sq. ft.

ZONING DISTRICT: G

EXISTING LAND USE: Single-family residence

PROPOSED LAND USE: Add 12 residential units

SURROUNDING LAND USE: Residential, Willand Pond

ZBA ACTION: None

PERMITS REQUIRED:
- EPA NOI
- NHDES Sewer Discharge Permit
- CUPs for lot coverage, frontage build out, front build to line.

WAIVERS REQUESTED:
- Drainage pipe

ATTENDANCE:
Donna Benton, Planning
Paul Crouser, Zoning
Marn Speidel, Police
Jim Maxfield, Fire/Inspection Services
Ken Mavrogeorge, Engineering
James Burdin, Business Development
Others: Kevin Poulin
Robert Baldwin
Erin Bassegio, Planning

PLAN REVIEW:
Planning:
- *Impact fees*
- *Water and sewer investment fees*
- *CUPs for lot coverage, frontage build out, front build to line. Only 3 non-enviro CUPs needed*
- *Sidewalk contribution*
- *Revise plans:*
  - *Owner's signatures on the final plans*
  - *Professional stamps on the final plans*
  - *Confirm lighting meets regulations*
- *Lot merger as a COA*
- *Active and passive rec fee as a COA*
- *Contribute towards sewer modeling*
- HOA documents to be reviewed
- Development Agreement needed
- Section 157-31.F. Block size requires no less than 500'

Engineering:
- General Comment:
  - It is strongly recommended that the Applicant submit a detailed breakdown of proposed HOA costs for annual maintenance and replacement of private infrastructure including backup as to how the fees are estimated. Engineering supports this as a condition of approval.
  - Remove ADA detectable warnings at driveway crossings on New Rochester Rd.
  - Coordinate painting of crosswalks in New Rochester Rd with CS.
- Sheet 6 of 28:
  - Recommend removing or reducing the curb cut for units 16 & 17 on New Rochester Rd.
  - Will an underdrain be provided to ensure stormwater does not exceed the reservoir course?
- Sheet 7 of 28:
  - Applicant may want to consider providing one fire service to the building in lieu of the proposed two.
  - Applicant to clarify why the water main is shown as bold. Does this imply it is insulated?
- Drainage Analysis:
  - Total Areas analyzed do not match. Please correct.
  - Alteration of Terrain Permit does not appear on the Cover sheet of the plan set or mentioned in the Drainage analysis. Please confirm that an application is required for

DRAFT

Copper and Ember Dr given that the disturbance collectively exceeds the 100,000 sf threshold.

Police:

- Previous comments addressed.
- 14' lamp near rear of property.

Fire/Inspection Services:

- Sheet 6 note 36 revise Chapter 81 to reference the City of Dover Code.
- Applicant to cite to NH Building/Fire code, when applicable, due to state legislative amendments.

Business Development:

- Previous comments addressed. No new comments.

Planning Board:

- N/A

Next Steps: Applicant to revise and resubmit for January 23, 2024 Planning Board.

Adjournment:
J.Maxfield moved to adjourn at 12:37 pm. Seconded by: M. Speidel. Vote: U/A.

DRAFT

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

December 1, 2023

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

Re: Site Plan Review
TRC #3 Response Letter
Berry Surveying & Engineering
Knox Marsh Development, LLC
34 New Rochester Rd
Tax Map 39, Lot 103
Dover File #SITE-2023-0007

Based on comments from the Technical Review Committee Minutes from November 30, 2023, we respectfully submit the following comments and revisions. Our comments are in **bold**. Items highlighted in **magenta** are requested to be a condition of approval.

PLANNING COMMENTS

1. Impact fees
   Applicant will pay fees when due.

2. Water and sewer investment fees.
   Applicant will pay fees when due.

3. CUPs for lot coverage, frontage-build out, front build to line. Only 3 non-enviro CUP's needed.
   Comment acknowledged.

4. Sidewalk contribution.
   Applicant acknowledges comment, sidewalk costing takeoff provided in previous submission.

5. Revise Plans:
   a. Owner's signatures on the final plans.
      Owner's signatures will be provided on the final plans.

   b. Professional stamps on the final plans.
      All required professional stamps will be provided on the final plans.

c. Confirm lighting meets regulations.
With the revisions to the parking Copper Drive parking lot footprint, compliance with Dover regulations is reached with an illumination ratio of 5:1, with the lowest level of illuminance within the calculation zone no less than 0.2 fc in all four statistical zones.

6. Lot merger as a COA.
The Lot merger Application is included within the Planning Board package. It is the intention of the applicant for this to be acted upon at time of Site Plan Approval.

7. Active and passive rec fee as a COA.
Applicant requests this is a Condition of Approval.

8. Contribute towards sewer modeling.
Applicant acknowledges sewer modeling contribution is required and will pay this fee when due.

9. HOA documents to be reviewed.
HOA documents have been provided to Planning via email from Client for City review.

10. Development Agreement needed.
Applicant requests this is a Condition of Approval.

11. Section 157-31.F. Block size requires no less than 500'.
A waiver request has been added to the Site Plan for this regulation.

ENGINEERING COMMENTS
General Comment:

1. It is strongly recommended that the Applicant submit a detailed breakdown of proposed HOA costs for annual maintenance and replacement of private infrastructure including backup as to how the fees are estimated. Engineering supports this as a condition of approval.
Applicant requests this is a Condition of Approval.

2. Remove ADA detectable warning at driveway crossings on New Rochester Rd.

ADA detectable warning has been removed from the driveway crossing on New Rochester Road. Please find Site Plan, sheet #6.

3. Coordinate painting of crosswalks in New Rochester Rd with CS.
   This has been added as note #53 to the Site Plan, sheet #6.

Sheet 6 of 28:

1. Recommend removing the curb cut for Units 16 & 17 on New Rochester Rd.
   Per conversation at TRC, there is not enough remaining room for additional parking for LCA Tax Map 39, Lot 105 and the parking lots for Copper and Ember Drive do not have additional space for parking. It was discussed adding a bituminous rounded lip to the driveway to prevent New Rochester Road water from sheeting off into the driveway. The driveway cut has been reduced down along New Rochester Road and moved a few feet further away from the Copper Drive roadway cut. Please find driveway revisions shown on sheet #6 and sheet #9. The bituminous rounded lip detail is shown on sheet

2. Will an underdrain be provided to ensure stormwater does not exceed the reservoir course?
   The porous pavement design provided catch basins at the low points of the parking areas with underdrain to help disperse stormwater to infiltrate in the case of pavement clogging.

Sheet 7 of 28:

1. Applicant may want to consider providing one fire service to the building in lieu of the proposed two.
   This has been revised. Please find Utility Plans, sheets #12 & #13.

2. Applicant to clarify why the water main is shown as bold. Does this imply it is insulated?
   These bolded lines indicate the waterline sleeve locations. The color has been changed to match the remaining waterline. Please find sheets #12 & #13.

Drainage Analysis:

1. Total areas analyzed do not match. Please correct.
   Please find revised Drainage Analysis.

2. Alteration of Terrain Permit does not appear on the Cover sheet of the plan set or mentioned in the Drainage analysis. Please confirm that an application is required for Copper and Ember Dr. given that the disturbance collectively exceeds the 100,000 sf threshold.
   The total disturbance of the two projects is 81,000 SF, this is shown on the Site Plan as note #45, sheet #6.

POLICE DEPARTMENT COMMENTS

1. Previous comments addressed.
   Comment acknowledged.

2. 14' Lamp at the rear of the property.
   Per discussion at TRC, this lamp was positioned far enough away from the property line, in combination with the 6' stockage fence, to prevent light from being over the property line.

FIRE /INSPECTION SERVICES COMMENTS

1. Sheet 6 note 36 revise Chapter 81 to reference the City of Dover Code
   This note has been modified, please find note #36, sheet #6.

2. Applicant to cite to NH Building/Fire Code, when applicable, due to state legislative amendments.
   See comment above.

Respectfully,
BERRY SURVEYING & ENGINEERING

Kevin R. Poulin, PE
Design Engineer

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

Christopher R. Berry, SIT
Principal, President

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

City of Dover, New Hampshire
CONDITIONAL USE PERMIT APPLICATION

[Revision Date: October 19, 2020]

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

APPLICANT AND OWNER INFORMATION

Name of Applicant: Knox Marsh Development LLC Telephone # 603-742-2121

Address of Applicant: 242 Central Ave. Dover, NH 03820

E-Mail Address: Robert@centralfallsrealty.com

Name of Property Owner (if different from applicant): Robert Baldwin Telephone # 603-986-2373

Address of Property Owner: 242 Central Ave. Dover, NH 03820

PROPERTY INFORMATION

Assessor's Map # 39 Lot(s) # 103

Address of Property: 34 New Rochester Road

Zoning District(s) Gateway & R-12 Overlay District(s) Secondary Groundwater Recharge

Existing Use of Property: Single family home

CONDITIONAL USE PERMIT INFORMATION

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

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

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

Not meeting front build-to line on New Rochester Road

Please see attached narrative.

List Any Associated State or Federal Permits That Have Been or Will Be Applied For and Indicate Their Status: EPA NOI/SWPPP, NHDES Sewer Discharge Permit

Name of Professional That Prepared Plans: Kenneth A. Berry PE, LLS
Berry Surveying & Engineering
Christopher R. Berry Project Manager

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

Professional License #: 805 & 14243 E-mail address: 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: 7-21-23

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

Signature of Agent: _____ Date: 7-21-23

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: 7-21-23

CITY OF DOVER CONDITIONAL USE
LIST OF ABUTTERS

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

Owner:

TAX MAP	LOT #	PROPERTY OWNER	MAILING ADDRESS

Applicant (if different from owner):

APPLICANT NAME	APPLICANT COMPANY	MAILING ADDRESS

Surveyor and/or Engineer/Professional Agent:

NAME	COMPANY	MAILING ADDRESS

Conservation Easement Holder:

TAX MAP	LOT #	NAME OF EASEMENT HOLDER	MAILING ADDRESS

PLANNING BOARD FEE SCHEDULE/INVOICE

(Revised July 1, 2021)

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

A. Plan Review Fees

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

- ☐ SUBDIVISION Application fee $200.00 + $150.00 x # _____ new lots created = $_____
- ☐ LOT LINE ADJUSTMENT Application fee $200.00 + $100.00 X # ___ of lots involved = $_____
- ☐ TRANSFER OF DEVELOPMENT RIGHTS Application fee $200.00 = $_____
- ☐ SITE REVIEW – RESIDENTIAL Application fee $200.00+ $100.00 x # __ per dwelling unit =$_____
- ☐ SITE REVIEW – NON-RESIDENTIAL Application fee $200.00 + (not to exceed $10,000)
  - New construction $.15 sq. ft. x # _____ sq. ft.= $_____
  - Additions (new floor space) $.10 per sq. ft. x # _____sq. ft.= $_____
- ☐ MOTEL/HOTEL $35.00 x # ___ per lodging unit= $_____
- ☐ CHANGE OF USE Application fee $200.00 + (not to exceed $5,000)
  - Existing floor spaces $.10 per sq. ft. x # _____ sq. ft. = $_____
- ☐ CONDITIONAL USE PERMIT Application fee $200.00 x # _____ per Application = $_____
- ☐ GRAVEL PIT/ EXCAVATIONS
  - Application fee $50.00= $_____
  - Permit fee $75.00= $_____
- ☐ EXTENSIONS/AMENDMENTS/WAIVERS FOR AN APPROVED PLAN Application fee $200.00 = $_____
- ☐ REQUEST FOR REZONING Application fee $200.00 = $_____
- ☐ DRIVEWAY WAIVER Application fee $200.00 = $_____

2. TOTAL IMPERVIOUS PAVED AREA (for new development, roadways or additions to existing parking lots, (not to exceed $10,000)) Application fee of $200.00 is N/A if it is part of a Site Review or Subdivision Plan. $200.00 + $.07 per sq. ft. x # _____ sq. ft. = $_____

SUBTOTAL PLAN REVIEW FEE (A) = $_____

AND

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

- ☐ Applicant & Owner, engineer, architect, LLS, LLA and/or soil scientist
  - Certified letters fee # _____ of x $8.00= $_____
- ☐ Certified letters fee: # of abutters _____ X $8.00= $_____
- ☐ First Class Mail fee (for individual owner of units within a condominium or other collective form of ownership): # of abutters _____ X $1.00= $_____
- ☐ Creating/Printing Abutter Labels in triplicate per sheet _____ x $10.00= $_____

C. Foster's newspaper public notice fee $100.00 x # _____ applications = $_____

SUBTOTAL NOTICE FEE (B & C) = $_____

TOTAL INVOICE AMOUNT (A, B & C) = $_____

PLAN REVIEW FEE COLLECTED/PAID = $ _____

Included on Site Plan APP **BALANCE DUE = $ _____**

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

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

July 6, 2023/Rev: December 1, 2023

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

Re: Residential Site Plan & Lot Merger
Conditional Use Permit Request (Non- Environmental – One of Three total)
Knox Marsh Development, LLC
34 New Rochester Rd, Tax Map 39, Lot 103 (Site Plan & Lot Merger)
36 New Rochester Rd/Copper Dr, Tax Map 39, Lot 104 (Lot Merger) (P22-027)

Chairperson & Members of the Dover Planning Board:

Pursuant to Zoning Regulations (Chapter 170) and Site Plan Regulations (Chapter 153) Berry Surveying & Engineering (BS&E), on behalf of Knox Marsh Development, LLC, respectfully requests the City of Dover Planning Board approve the following Conditional Use Permits:

3) Not Meeting front build-to line on 5-20' on New Rochester Road

Background:

Knox Marsh Development is looking to re-develop the site at 34 New Rochester Road and is proposing a lot merger with Tax Map 39, Lot 104. All percentages provided are a function of the lot merger, for a total lot area of 103,666 Sq. Ft. (2.38 Ac.). Conditional Use Permit (CUP) Request utilizes the Central Business District Regulations (Chapter 170-20-B) for the Conditional Use Permit Request, as there are no specific standards listed for the request. This narrative will provide justifications based upon the applicable standards.

There is an existing single-family home at 34 New Rochester Road, proposed to remain. The proposal is to create a road (Ember Drive) off of New Rochester Road and to extend Copper Drive 94 linear feet (LF). In addition to the single-family home at 34 New Rochester Road to remain, six previously approved home single family homes on Copper Drive, and the conversion of two single family homes (36 & 38 New Rochester Road) to 2-family dwellings, the applicant is proposing to construct six additional 2-family dwelling buildings (twelve units) on Tax Map 39, Lot 103. This brings the total yield for the subject parcel post lot merger to twenty-three (23) units (sixteen 2-family dwelling units and seven single family units within the Gateway Zone).

1. **Identification of Conditional Use Permit Request (Chapter 170-20-B)**

3.) Not Meeting front build-to line on 5-20' on New Rochester Road

CUP #3): A CUP requesting the existing single-family home on Tax Map 39, Lot 103 to not meet the front build-to line of New Rochester Road (5-20'). Without modification of the existing single-family structure, the front of the house is 5.1' from the 20' build-to line. As the structure is proposed to remain and be remodeled, the distance off of New Rochester Road is consistent with surrounding single-family homes.

Below we show the project's compliance with the standards required to grant a Conditional Use Permit, and we provide justification for its approval.

2. **Compliance with the following standards**

a) That both public and private buildings and landscaping shall contribute to the physical definition of rights of way as civic spaces.

- **A landscaping plan including street trees, shrubs, and grasses is proposed along Copper Drive and Ember Drive. The project balances the pedestrian and livability needs of the site with the infrastructure required through the use of landscaping, hardscaping, and small amenities. The right of way is clearly defined by these features for Copper Drive.**

b) That development shall adequately accommodate automobiles, while respecting the pedestrian and the spatial form of public areas.

- **The site is designed with a hammerhead turnaround and the required road cross section (24' wide) for the proposed volume of trips of Copper Drive. Ember Drive is less than 150 feet long and has the required cross section (24' wide). A 5' raised sidewalk along New Rochester Road has been added to improve walkability and the civic nature of the urban core.**

c) That the design of streets and buildings shall reinforce safe environments.

- **The design of buildings and street reinforce safe environments by pedestrian access and a low (15 MPH) posted speed limit. Copper Drive and Ember Drive is proposed to be a private roadway, reducing the potential for outside traffic to enter the neighborhood, keeping volume low (>150 vehicles per day Copper Drive and**

approximately 50 Vehicles per day for Ember Drive). Curb tip downs are proposed at sidewalk and driveway crossings. A sidewalk is proposed at the parking lots of Copper Drive and Ember Drive with sidewalk connectivity to the 2-family dwelling units.

d) That architecture and landscape design shall grow from local climate, topography, history, and building practice.

- **The architecture of the new duplex structures are similar in size to surrounding single family homes (975 Sq. Ft. foot print). The relatively flat topography of the site allows for a harmonious streetscape with finished floors of homes and driveways to be within a vertical foot +/- of each other. The preservation of the existing single-family home at the front of the site allows the New Rochester Road corridor to consist of structures of similar age, while new construction is set back from the corridor. Larger building footprints would cause non-compliance with building setbacks and internal building separation requirements.**

e) That buildings shall provide their inhabitants with a clear sense of geography and climate through energy efficient methods.

- **The new structures will be built to the current building codes keeping energy efficiency in mind through the use of heat pumps and other fossil fuel reducing devices.**

f) That civic buildings and public gathering places shall be provided as locations that reinforce community identity and activity.

- **While the homes are not Civic in nature or use, the potential for gatherings by residents is encouraged by proposed benches, sidewalk, and landscaping. By having six 2-family dwelling structures within 175 feet +/- of each other, the proposed landscaping provides a visually appealing element, encouraging pedestrian activity within the development via sidewalks and passive recreation amenities.**

g) That civic buildings shall be distinctive and appropriate to a role more important than the other buildings that constitute the fabric of the city.

- **Though the homes are not Civic in nature or use, the proposed street scape, unit density, and pedestrian amenities help to provide a community feeling, an essential element in the fabric of the city.**

h) That the preservation and renewal of historic buildings shall be facilitated.
- **The existing single-family homes on Lot 103 was built in 1943. The existing structures have undergone substantial renovation within the last ten years in an attempt to preserve and enhance this structure.**

i) That the harmonious and orderly evolution of urban areas shall be secured through the adoption of these regulations.
- **The harmonious and orderly evolution of the urban area is secured in the redevelopment of the project site in the manner in which it is presented. Proposed duplex units shown are limited in footprint by lot dimensions and limited in height by zoning restrictions. This results in similar home styles and a harmonious streetscape.**

3. Justification for approval of Conditional Use Permit

Given the limited residential development options due to restrictions within 300' of the center of New Rochester Road, it is incumbent on the applicant to maximize the development density allowed in the Gateway District within these parameters. Approved homes on Copper Drive meet the 5-20' front build-to line to the pavement, are close to the rear 15' setbacks, and provide a minimum of 25' between units, maximizing the building footprint within each LCA. The proposed duplex units are subject to the same front build-to, side, and rear setbacks. The proposed separation of twelve feet between duplex structures at the closest point maximizes the building footprints, while providing space on site for passive recreation uses and parking.

With the rear of Lot 104 located within R-12 zone, the development area within the Gateway District has been maximized utilizing the 50' zone line adjustment. In terms of the front build-to line, the applicant is unable to meet the existing front build-to line without the modification of the existing structure or construction of larger homes along New Rochester Road to meet this.

Thank you for your time and attention to this matter, and we hope you look favorably upon the request.

Respectfully Submitted,

BERRY SURVEYING & ENGINEERING

Kevin R. Poulin, PE
Project Engineer

Christopher R. Berry, SIT
Principal, President

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

City of Dover, New Hampshire
CONDITIONAL USE PERMIT APPLICATION

[Revision Date: October 19, 2020]

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

APPLICANT AND OWNER INFORMATION

Name of Applicant: Knox Marsh Development LLC Telephone # 603-742-2121

Address of Applicant: 242 Central Ave. Dover, NH 03820

E-Mail Address: Robert@centralfallsrealty.com

Name of Property Owner (if different from applicant): Robert Baldwin Telephone # 603-986-2373

Address of Property Owner: 242 Central Ave. Dover, NH 03820

PROPERTY INFORMATION

Assessor's Map # 39 Lot(s) # 103

Address of Property: 34 New Rochester Road

Zoning District(s) Gateway & R-12 Overlay District(s) Secondary Groundwater Recharge

Existing Use of Property: Single family home

CONDITIONAL USE PERMIT INFORMATION

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

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

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

Frontage Build-Out of 47.4% where 60% is required.

Please see attached narrative.

List Any Associated State or Federal Permits That Have Been or Will Be Applied For and Indicate Their Status: EPA NOI/SWPPP, NHDES Sewer Discharge Permit

Name of Professional That Prepared Plans: Kenneth A. Berry PE, LLS
Berry Surveying & Engineering
Christopher R. Berry Project Manager

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

Professional License #: 805 & 14243 E-mail address: 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: 7-21-23

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

Signature of Agent: _____ Date: 7-21-23

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: 7-21-23

CITY OF DOVER CONDITIONAL USE
LIST OF ABUTTERS

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

Owner:

TAX MAP	LOT #	PROPERTY OWNER	MAILING ADDRESS

Applicant (if different from owner):

APPLICANT NAME	APPLICANT COMPANY	MAILING ADDRESS

Surveyor and/or Engineer/Professional Agent:

NAME	COMPANY	MAILING ADDRESS

Conservation Easement Holder:

TAX MAP	LOT #	NAME OF EASEMENT HOLDER	MAILING ADDRESS

PLANNING BOARD FEE SCHEDULE/INVOICE

(Revised July 1, 2021)

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

A. Plan Review Fees

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

- ☐ SUBDIVISION Application fee $200.00 + $150.00 x # _____ new lots created = $_____
- ☐ LOT LINE ADJUSTMENT Application fee $200.00 + $100.00 X # ___ of lots involved = $_____
- ☐ TRANSFER OF DEVELOPMENT RIGHTS Application fee $200.00 = $_____
- ☐ SITE REVIEW – RESIDENTIAL Application fee $200.00+ $100.00 x # __ per dwelling unit =$_____
- ☐ SITE REVIEW – NON-RESIDENTIAL Application fee $200.00 + (not to exceed $10,000)
  - New construction $.15 sq. ft. x # _____ sq. ft.= $_____
  - Additions (new floor space) $.10 per sq. ft. x # _____sq. ft.= $_____
- ☐ MOTEL/HOTEL $35.00 x # ___ per lodging unit= $_____
- ☐ CHANGE OF USE Application fee $200.00 + (not to exceed $5,000)
  - Existing floor spaces $.10 per sq. ft. x # _____ sq. ft. = $_____
- ☐ CONDITIONAL USE PERMIT Application fee $200.00 x # _____ per Application = $_____
- ☐ GRAVEL PIT/ EXCAVATIONS
  - Application fee $50.00= $_____
  - Permit fee $75.00= $_____
- ☐ EXTENSIONS/AMENDMENTS/WAIVERS FOR AN APPROVED PLAN Application fee $200.00 = $_____
- ☐ REQUEST FOR REZONING Application fee $200.00 = $_____
- ☐ DRIVEWAY WAIVER Application fee $200.00 = $_____

2. TOTAL IMPERVIOUS PAVED AREA (for new development, roadways or additions to existing parking lots, (not to exceed $10,000)) Application fee of $200.00 is N/A if it is part of a Site Review or Subdivision Plan. $200.00 + $.07 per sq. ft. x # _____ sq. ft. = $_____

SUBTOTAL PLAN REVIEW FEE (A) = $_____

AND

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

- ☐ Applicant & Owner, engineer, architect, LLS, LLA and/or soil scientist
  - Certified letters fee # _____ of x $8.00= $_____
- ☐ Certified letters fee: # of abutters _____ X $8.00= $_____
- ☐ First Class Mail fee (for individual owner of units within a condominium or other collective form of ownership): # of abutters _____ X $1.00= $_____
- ☐ Creating/Printing Abutter Labels in triplicate per sheet _____ x $10.00= $_____

C. Foster's newspaper public notice fee $100.00 x # _____ applications = $_____

SUBTOTAL NOTICE FEE (B & C) = $_____

TOTAL INVOICE AMOUNT (A, B & C) = $_____

PLAN REVIEW FEE COLLECTED/PAID = $ _____

Included on Site Plan APP **BALANCE DUE = $ _____**

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

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

July 6, 2023/Rev: December 1, 2023

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

Re: Residential Site Plan & Lot Merger
Conditional Use Permit Request (Non- Environmental – One of Three total)
Knox Marsh Development, LLC
34 New Rochester Rd, Tax Map 39, Lot 103 (Site Plan & Lot Merger)
36 New Rochester Rd/Copper Dr, Tax Map 39, Lot 104 (Lot Merger) (P22-027)

Chairperson & Members of the Dover Planning Board:

Pursuant to Zoning Regulations (Chapter 170) and Site Plan Regulations (Chapter 153) Berry Surveying & Engineering (BS&E), on behalf of Knox Marsh Development, LLC, respectfully requests the City of Dover Planning Board approve the following Conditional Use Permit:

2) Minimum Frontage Build-Out of less than 60%

Background:

Knox Marsh Development is looking to re-develop the site at 34 New Rochester Road and is proposing a lot merger with Tax Map 39, Lot 104. All percentages provided are a function of the lot merger, for a total lot area of 103,666 Sq. Ft. (2.38 Ac.). Conditional Use Permit (CUP) Request utilizes the Central Business District Regulations (Chapter 170-20-B) for the Conditional Use Permit Request, as there are no specific standards listed for the request. This narrative will provide justifications for CUPs based upon the applicable standards.

There is an existing single-family home at 34 New Rochester Road, proposed to remain. The proposal is to create a road (Ember Drive) off of New Rochester Road and to extend Copper Drive 94 linear feet (LF). In addition to the single-family home at 34 New Rochester Road to remain, six previously approved home single family homes on Copper Drive, and the conversion of two single family homes (36 & 38 New Rochester Road) to 2-family dwellings, the applicant is proposing to construct six additional 2-family dwelling buildings (twelve units) on Tax Map 39, Lot 103. This brings the total yield for the subject parcel post lot merger to twenty-three (23) units (sixteen 2-family dwelling units and seven single family units within the Gateway Zone).

1. **Identification of Conditional Use Permit Request (Chapter 170-20-B)**
   2.) Minimum Frontage Build-Out of less than 60%

CUP #2): A CUP requesting the reduction of the frontage build-out on New Rochester Road from 60% to 47.4%. While the applicant is proposing additional construction along New Rochester Road to approach the required number of 60%, reaching this number is not practical given the curb cuts for Copper Drive/Ember Drive along with the applicable side building setbacks.

Below we show the project's compliance with the standards required to grant a Conditional Use Permit, and we provide justification for its approval.

2. Compliance with the following standards

a) That both public and private buildings and landscaping shall contribute to the physical definition of rights of way as civic spaces.
   - **A landscaping plan including street trees, shrubs, and grasses is proposed along Copper Drive and Ember Drive. The project balances the pedestrian and livability needs of the site with the infrastructure required through the use of landscaping, hardscaping, and small amenities. The right of way is clearly defined by these features for Copper Drive.**

b) That development shall adequately accommodate automobiles, while respecting the pedestrian and the spatial form of public areas.
   - **The site is designed with a hammerhead turnaround and the required road cross section (24' wide) for the proposed volume of trips of Copper Drive. Ember Drive is less than 150 feet long and has the required cross section (24' wide). A 5' raised sidewalk along New Rochester Road has been added to improve walkability and the civic nature of the urban core.**

c) That the design of streets and buildings shall reinforce safe environments.
   - **The design of buildings and street reinforce safe environments by pedestrian access and a low (15 MPH) posted speed limit. Copper Drive and Ember Drive is proposed to be a private roadway, reducing the potential for outside traffic to enter the neighborhood, keeping volume low (>150 vehicles per day Copper Drive and**

approximately 50 Vehicles per day for Ember Drive). Curb tip downs are proposed at sidewalk and driveway crossings. A sidewalk is proposed at the parking lots of Copper Drive and Ember Drive with sidewalk connectivity to the 2-family dwelling units.

d) That architecture and landscape design shall grow from local climate, topography, history, and building practice.

- **The architecture of the new duplex structures are similar in size to surrounding single family homes (975 Sq. Ft. foot print). The relatively flat topography of the site allows for a harmonious streetscape with finished floors of homes and driveways to be within a vertical foot +/- of each other. The preservation of the existing single-family home at the front of the site allows the New Rochester Road corridor to consist of structures of similar age, while new construction is set back from the corridor. Larger building footprints would cause non-compliance with building setbacks and internal building separation requirements.**

e) That buildings shall provide their inhabitants with a clear sense of geography and climate through energy efficient methods.

- **The new structures will be built to the current building codes keeping energy efficiency in mind through the use of heat pumps and other fossil fuel reducing devices.**

f) That civic buildings and public gathering places shall be provided as locations that reinforce community identity and activity.

- **While the homes are not Civic in nature or use, the potential for gatherings by residents is encouraged by proposed benches, sidewalk, and landscaping. By having six 2-family dwelling structures within 175 feet +/- of each other, the proposed landscaping provides a visually appealing element, encouraging pedestrian activity within the development via sidewalks and passive recreation amenities.**

g) That civic buildings shall be distinctive and appropriate to a role more important than the other buildings that constitute the fabric of the city.

- **Though the homes are not Civic in nature or use, the proposed street scape, unit density, and pedestrian amenities help to provide a community feeling, an essential element in the fabric of the city.**

h) That the preservation and renewal of historic buildings shall be facilitated.
- **The existing single-family homes on Lot 103 was built in 1943. The existing structures have undergone substantial renovation within the last ten years in an attempt to preserve and enhance this structure.**

i) That the harmonious and orderly evolution of urban areas shall be secured through the adoption of these regulations.
- **The harmonious and orderly evolution of the urban area is secured in the redevelopment of the project site in the manner in which it is presented. Proposed duplex units shown are limited in footprint by lot dimensions and limited in height by zoning restrictions. This results in similar home styles and a harmonious streetscape.**

3. Justification for approval of Conditional Use Permit

Given the limited residential development options due to restrictions within 300' of the center of New Rochester Road, it is incumbent on the applicant to maximize the development density allowed in the Gateway District within these parameters. Approved homes on Copper Drive meet the 5-20' front build-to line to the pavement, are close to the rear 15' setbacks, and provide a minimum of 25' between units, maximizing the building footprint within each LCA. The proposed duplex units are subject to the same front build-to, side, and rear setbacks. The proposed separation of twelve feet between duplex structures at the closest point maximizes the building footprints, while providing space on site for passive recreation uses and parking.

With the rear of Lot 104 located within R-12 zone, the development area within the Gateway District has been maximized utilizing the 50' zone line adjustment. In terms of frontage build-out, the applicant is unable to increase the existing frontage build-out to 60% without the complete demolition and reconstruction of larger homes along New Rochester Road. While the applicant is proposing additional construction along New Rochester Road to approach the required number of 60%, reaching this number is not practical given the curb cuts for Copper Drive/Ember Drive along with the applicable side building setbacks.

Thank you for your time and attention to this matter, and we hope you look favorably upon the request.

Respectfully Submitted,

BERRY SURVEYING & ENGINEERING

Kevin R. Poulin, PE
Project Engineer

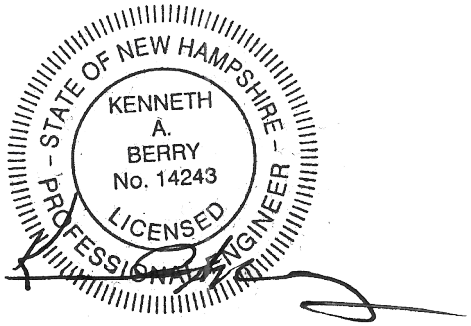
Christopher R. Berry, SIT
Principal, President

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

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

July 6, 2023/Rev: November 6, 2023

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



RE: Traffic Impact Analysis & Distribution
Copper Drive & Ember Drive
Knox Marsh Development, LLC
Tax Map 39, Lot 103 & 104
34-36 New Rochester Road (NH Route 108)
Dover, NH 03820

Mrs. Benton,

Pursuant to the City of Dover Site Review Regulations, Berry Surveying & Engineering (BS&E), on behalf of Knox Marsh Development, LLC, has prepared a Standard Traffic Impact Analysis for the following: six previously approved single-family homes, two pre-existing homes on Lot 104 to be converted to 2-family dwellings, one pre-existing home on Lot 103, and six 2-family dwellings (twelve units) on Tax Map 39, Lots 103 & 104, for a total of twenty-three (23) units. Tax Map 39, Lot 104 & 105 have been previously merged, with a Limited Common Area (LCA) Subdivision approved. This subdivision is known as Copper Drive (Dover Approved Project #P22-027). A Lot Merger is proposed as part of the application for Tax Map 39, Lot 103 and 104, combining the lots as Limited Common Areas under Tax Map 39, Lot 104. There are two points of analysis; the existing intersection of Copper Drive and New Rochester Road (NH Route 108) and the proposed intersection of Ember Drive and New Rochester Road. The existing single-family driveway (converted to 2-family dwelling) on LCA Tax Map 39, Lot 105 is included with Copper Drive as a single analysis point in the proposed condition.

The following conclusions were reached as a result of the Traffic Impact Analysis:

- A total of 9 vehicle trips (2 enter/7 exit) are predicted to occur at the weekday AM peak hour and 12 vehicle trips (7 enter/5 exit) at the PM peak hour for Copper Drive.

- A total of 4 vehicle trips (1 enter/3 exit) are predicted to occur at the weekday AM peak hour and 4 vehicle trips (3 enter/1 exit) at the PM peak hour for Ember Drive.

- The 2024 and 2034 build traffic volumes DO NOT satisfy the NCHRP 457 guidelines for the implementation of a left-turn lane for all peak hours for Copper Drive.

- The 2024 and 2034 build traffic volumes DO NOT satisfy the NCHRP 457 guidelines for the implementation of a left-turn lane for all peak hours for Copper Drive.

- This is an increase from the existing/approved condition of 96 weekday vehicle trips, 7 weekday AM peak hour vehicle trips, and 8 weekday PM peak hour vehicle trips for the entire project.

- It is recommended that the surrounding infrastructure will be sufficient to handle the projected increase in vehicle trips and peak hour and all other hours.

- The number of driveway cuts along New Rochester Road is being reduced in this proposal.

Table of Contents

Table of Contents 3
List of Tables 4
List of Figures 5
Proposed Development & Introduction 7
Existing Conditions 8
Existing Site Description 8
New Rochester Road Roadway Description 8
Existing Traffic Volumes 9
Existing Vehicle Speeds 12
Surrounding Roadways & Signalized Intersections 12
Proximity to Public Transportation/Pedestrian Access 13
Existing Trip Generation 13
Proposed Trip Generation 14
Build Traffic Projections and Turning Analysis 16
Left-Turn Warrants Analysis 18
Right-Turn Warrants Analysis 20
Sight Distance and Safety Analysis 21
Conclusions and Recommendations 22
Appendix A 23
Traffic Counts 23
Appendix B 30
Data Used in Left-Turn Bay Warrants Analysis 30
Left-Turn Bay Warrants Analysis 31
Data Used in Right-Turn Bay Warrants Analysis 33
Right-Turn Bay Warrants Analysis 34
Appendix C 36
Miscellaneous 36
Appendix D 38
Trip Generation Derivation 38

List of Tables

Table 1: Directional breakdown of trips occurring on New Rochester Road (NH Route 108) 10
Table 2: (Single Family Detached Housing) Peak hr of adjacent street traffic AM, PM, & weekday total 14
Table 3: Existing trip generation from the project site during AM, PM, & weekday total 14
Table 4: (Copper Drive) Peak hr of adjacent street traffic AM, PM, & weekday total 14
Table 5: (Copper Drive) Peak hr of adjacent street traffic AM, PM, & weekday total 15
Table 6: (Copper Drive) Peak hr of adjacent street traffic AM, PM, & weekday total 15
Table 7: (Ember Drive) Peak hr of adjacent street traffic AM, PM, & weekday total 15
Table 8: (Ember Drive) Peak hr of adjacent street traffic AM, PM, & weekday total 15
Table 9: (Copper Drive) Peak hr of adjacent street traffic AM, PM, & weekday total 16
Table 10: Proposed trip generation from the project site during AM, PM, & weekday total 16
Table 11: Increase from existing trip generation 16
Table 12: Weekday AM peak hour build turning movements to and from Copper Drive 17
Table 13: Weekday PM peak hour build turning movements to and from Copper Drive 18
Table 14: Weekday AM peak hour build turning movements to and from Ember Drive 18
Table 15: Weekday PM peak hour build turning movements to and from Ember Drive. 18
Table 16: Weekday AM peak hour NCHRP 457 left-turn bay analysis (Copper) 19
Table 17: Weekday PM peak hour NCHRP 457 left-turn bay analysis (Copper) 19
Table 18: Weekday AM peak hour NCHRP 457 right-turn bay analysis (Copper)..... 20
Table 19: Weekday PM peak hour NCHRP 457 right-turn bay analysis (Copper)..... 20
Table 20: Derivation of the seasonal peaking factor 36

List of Figures

Figure 1: New Rochester Road with surrounding roadways (NHDOT) 9
Figure 2: New Rochester Road 2022 two-way hourly variation 11
Figure 3: New Rochester Road 2022 northbound hourly variation 11
Figure 4: New Rochester Road 2022 southbound hourly variation with peak values 12
Figure 5: 2024 & 2034 build projected traffic volumes & turn movement weekday AM peak 17
Figure 6: 2024 & 2034 build projected traffic volumes & turn movement weekday PM peak 17
Figure 7: History of AADT values and classification for New Rochester Road 23
Figure 8: Tuesday August 30, 2022 NH Rt 108 northbound traffic count 24
Figure 9: Tuesday August 30, 2022 NH Rt 108 southbound traffic count 25
Figure 10: Wednesday August 31, 2022 NH Rt 108 northbound traffic count 26
Figure 11: Wednesday August 21, 2022 NH Rt 108 southbound traffic count 27
Figure 12: Thursday September 1, 2022 NH Rt 108 northbound traffic count 28
Figure 13: Thursday September 1, 2022 NH Rt 108 southbound traffic count 29
Figure 14: Data used for Weekday AM peak hour left-turn warrant analyses Copper Drive 30
Figure 15: Data used for Weekday PM peak hour left-turn warrant analyses Copper Drive 30
Figure 16: 2024 Weekday AM peak hour NCHRP 457 left-turn bay warrant analysis Copper Dr 31
Figure 17: 2034 Weekday AM peak hour NCHRP 457 left-turn bay warrant analysis Copper Dr 31
Figure 18: 2024 Weekday PM peak hour NCHRP 457 left-turn bay warrant analysis Copper Dr 32
Figure 19: 2034 Weekday PM peak hour NCHRP 457 left-turn bay warrant analysis Copper Dr 32
Figure 20: Data used for Weekday AM peak hour right-turn warrant analyses Copper Drive 33
Figure 21: Data used for Weekday PM peak hour right-turn warrant analyses Copper Drive 33
Figure 22: 2024 Weekday AM peak hour NCHRP 457 right-turn bay warrant analysis Copper Dr 34
Figure 23: 2034 Weekday AM peak hour NCHRP 457 right-turn bay warrant analysis Copper Dr 34
Figure 24: 2024 Weekday PM peak hour NCHRP 457 right-turn bay warrant analysis Copper Dr 35

Figure 25: 2034 Weekday PM peak hour NCHRP 457 right-turn bay warrant analysis Copper Dr 35
Figure 26: Derivation of stopping sight distance requirements 37
Figure 27: ITE Trip Generation, 11th Edition 38
Figure 28: ITE Trip Generation, 11th Edition Copper Drive Detached 39
Figure 29: ITE Trip Generation, 11th Edition Copper Drive Detached 40
Figure 30: ITE Trip Generation, 11th Edition Copper Drive Detached 41
Figure 31: ITE Trip Generation, 11th Edition Ember Drive Detached 42
Figure 32: ITE Trip Generation, 11th Edition Ember Drive Detached 43
Figure 33: ITE Trip Generation, 11th Edition Ember Drive Detached 44
Figure 34: ITE Trip Generation, 11th Edition 45
Figure 35: ITE Trip Generation, 11th Edition Copper Attached 46
Figure 36: ITE Trip Generation, 11th Edition Copper Attached 47
Figure 37: ITE Trip Generation, 11th Edition Copper Attached 48
Figure 38: ITE Trip Generation, 11th Edition Ember Attached 49
Figure 39: ITE Trip Generation, 11th Edition Ember Attached 50
Figure 40: ITE Trip Generation, 11th Edition Ember Attached 51

Proposed Development & Introduction

The proposal is to develop Tax Map 39, Lot 103 to contain six new 2-family dwelling units, in addition to a single-family home on site to remain, for a total of thirteen units within the original subject parcel limits. Tax Map 39, Lot 103 is proposed to be merged with Tax Map 39, Lot 104/Copper Drive (Dover project #P22-027) (6 single-family approved homes and two pre-existing single-family homes). The two pre-existing single-family homes are being converted to two-family dwellings. A lot merger has been previously completed between Tax Map 39, Lot 104 & 105 for Copper Drive. This project will be referred to as being located on Tax Map 39, Lot 104 for the duration of this analysis. The total unit count on the parcel will become twenty-three (23), with trip generation divided between two access points based upon parking/access location. The eight (8) 2-family dwelling structures (sixteen units) are considered single family-attached housing and the seven (7) single family units are considered single family-detached housing.

The existing access to the site (located on existing Tax Map 39, Lot 104) is a 24-foot-wide roadway, known as Copper Drive, with 25-foot pavement entrance radii for vehicle turning. Copper Drive is 409 LF in length (new parking) with a hammerhead turn around provided. The proposed access to the site (located on existing Tax Map 39, Lot 103) is a 24-foot-wide roadway, known as Ember Drive, with 25-foot pavement entrance radii for vehicle turning. Ember Drive is proposed to be 141 LF in length. Ember Drive is proposed to be aligned with Auburn Street to create a two-way stop-controlled intersection. In order to construct Ember Drive, the applicant is proposing to remove two existing single family home driveway cuts (Lot 103 & Lot 104) from New Rochester Road. The centerline of Ember Drive will be located 115 feet from the centerline of Copper Drive. This is due to the characteristics of the properties/existing single family home locations along New Rochester Road.

The purpose of this analysis is to determine the maximum number of trips coming to and leaving the proposed project site during certain peak periods of the day. This information is then used in determining the impact on safety as it relates to the existing roadway infrastructure. The following components of the analysis are typical for a project of this size pursuant to the Institute of Traffic Engineers (ITE) manual.

Existing Conditions

Existing Site Description

The subject parcels are known as Tax Map 39, Lots 103 & 104 containing 35,555 Sq. Ft. (0.82 Ac.) and 68,111 Sq. Ft. (1.56 Ac.) of land, respectively. Tax Map 39, Lot 103 currently contains a single-family home (proposed to remain), with grass yard and wooded area in the rear. Tax Map 39, Lot 104 contains Copper Lane (under construction at time of application), with two pre-existing single-family homes and six single-family homes under construction. The subject parcels are located in the Gateway District and contains lot frontage on New Rochester Road (NH Route 108). There are several driveways and local roads surrounding the subject parcels, which are discussed later in the analysis.

New Rochester Road Roadway Description

New Rochester Road (NH Route 108) is a two lane minor arterial road at the subject parcel, according to the NHDOT MS2 Transportation Management System (NHDOT). This portion of New Rochester Road is in the Urban Compact Zone, and therefore not under NHDOT jurisdiction. New Rochester Road runs north to south parallel with N.H. Route 16 and provides access to Somersworth and Rochester to the north and N.H. Routes 9 & 16 to the south (Indian Brook Drive, Central Avenue, Dover, Somersworth, Portsmouth). It has an Average Annual Daily Traffic (AADT) of approximately 16,262 (2022) divided between north and south in the data provided by the NHDOT.

New Rochester Road in the area of the project is composed of a thirty-two foot wide paved surface (edge of pavement to edge of pavement) with a twelve foot southbound lane and a fourteen foot northbound lane. There is a variable width paved and gravel shoulder on the west side of the road and vertical granite curbing with a sidewalk on the east side. There is centerline delineation and fog / edge lines provided. The posted speed limit of the roadway is 35 miles per hour (MPH). The geometry of New Rochester Road is relatively flat and straight in the project location. There are public transit opportunities within a ¼ mile of Copper Drive & Ember Drive that will be discussed later in the analysis.

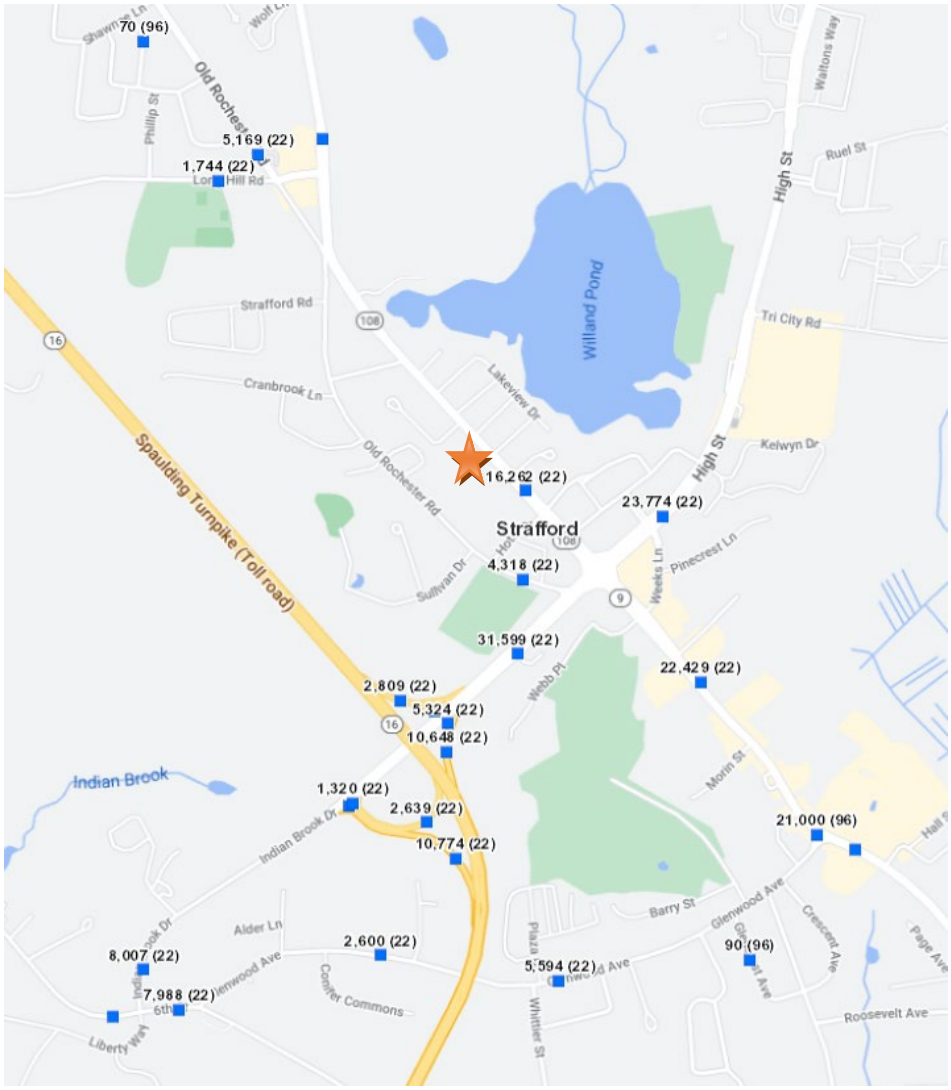


Figure 1: New Rochester Road with surrounding roadways (NHDOT)

Existing Traffic Volumes

According to traffic counts recorded by the NHDOT for August 30th - September 1st 2022, the New Rochester Road AM and PM weekday two-way peaks were 1,318 trips and 1,583 trips, respectively. It is shown by the NHDOT that this portion of New Rochester Road has an AADT 16,262 (2022) divided between north and south in the data provided by the NHDOT.

The highest weekday peak hour traffic volume on this section of New Rochester Road northbound occurred from 7:30-8:30 AM with 683 vehicles and from 4-5 PM with 887

vehicles. Southbound highest weekday peak hour traffic volume occurred from 7:15-8:15 AM with 656 vehicles and from 4:15-5:15 PM with 714 vehicles. Table #1 shows the traffic direction breakdown of New Rochester Road and Figures #1-3 are graphical representations of the traffic variations occurring throughout the day. It can be seen from the directional percent distribution that the primary direction of travel during the Weekday AM peak hour is split evenly between northbound and southbound. The primary direction of travel during the PM peak hour is northbound towards Somersworth and Rochester. Traffic counts of New Rochester Road provided by the NHDOT are included in Appendix A as Figures 7-13.

Traffic Distribution New Rochester Road						
Date	Northbound		Southbound		Two-Way	
Tuesday 8/30/22	AM Peak	612	AM Peak	651	AM Peak	1260
	PM Peak	886	PM Peak	685	PM Peak	1571
Wednesday 8/31/22	AM Peak	652	AM Peak	631	AM Peak	1283
	PM Peak	887	PM Peak	714	PM Peak	1583
Thursday 9/1/22	AM Peak	683	AM Peak	656	AM Peak	1318
	PM Peak	839	PM Peak	688	PM Peak	1527
Average Peak Hour Traffic	AM Peak	649	AM Peak	646	AM Peak	1287
	PM Peak	871	PM Peak	696	PM Peak	1560
% Distribution	AM Peak	50.1	AM Peak	49.9		
	PM Peak	55.6	PM Peak	44.4		

Table 1: Directional breakdown of trips occurring on New Rochester Road (NH Route 108)

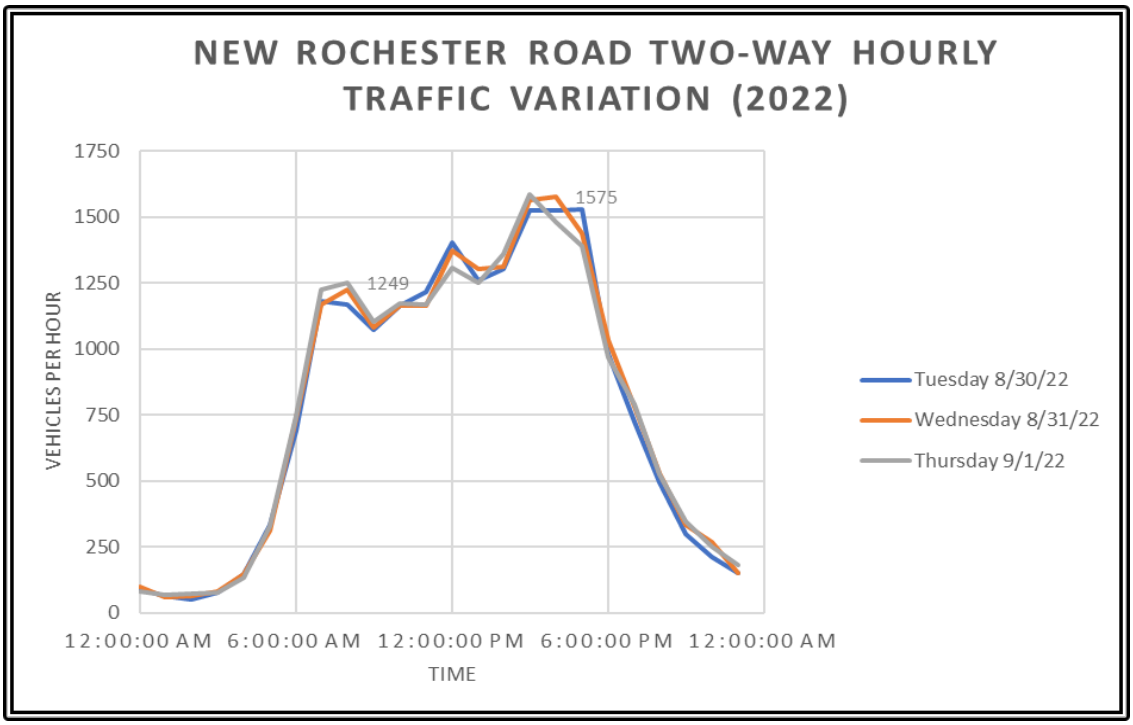


Figure 2: New Rochester Road 2022 two-way hourly variation

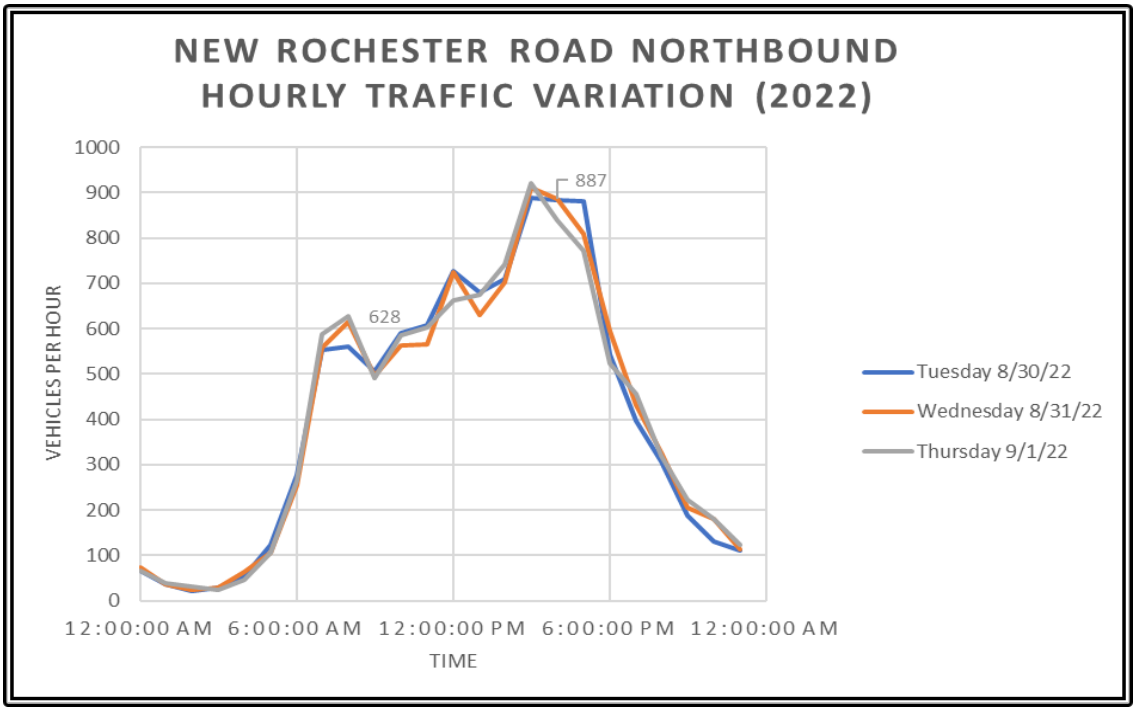


Figure 3: New Rochester Road 2022 northbound hourly variation

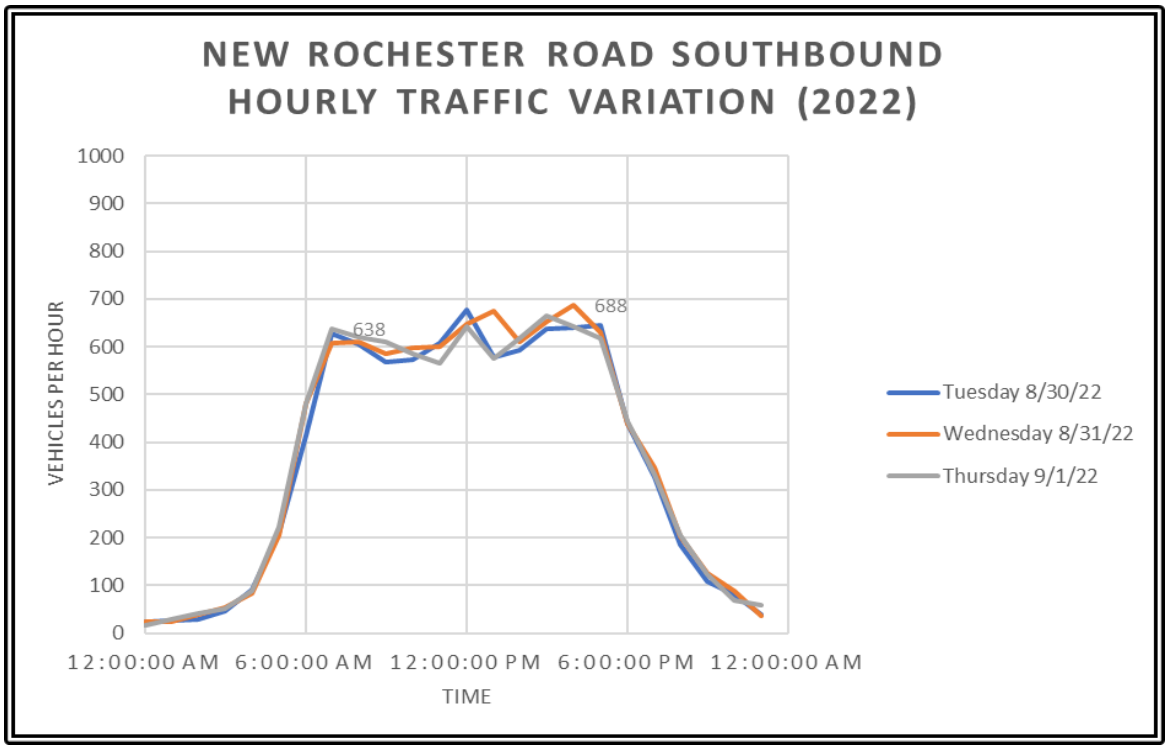


Figure 4: New Rochester Road 2022 southbound hourly variation with peak values

Existing Vehicle Speeds

As previously mentioned, the posted speed limit of New Rochester Road is 35 MPH. For the purposes of the safety analysis below, the 85th percentile of speed is required. This particular section of New Rochester Road was observed by Berry Surveying & Engineering to analyze the pass by traffic, reviewing speed. Excessive speeds were rare, and most operators obeyed the posted speed limits within a deviation of 10 MPH. This is consistent with speeds found on urban roads. The 85th percentile derived by observation and consistency with general practice is 45 MPH. Proposed Ember Drive will be located approximately 400 feet from the beginning of the southbound deceleration/turn lanes of the intersection of New Rochester Road/Willand Pond Road/Hotel Drive. The proximity to this intersection reduces corridor speed from the 85th percentile when a stop is required.

Surrounding Roadways & Signalized Intersections

There are several local roadways within a quarter mile of proposed Ember Drive and existing Copper Drive. On the eastern side of New Rochester Road local roads include: Earle St, Gage St, Lake St, Sherman St, Auburn St, and Newton St. The western side

includes Willard St and Willand Ave. These local roads serve fifteen or less single-family homes.

Further to the south, approximately 0.2 miles is the signalized intersection of Willand Pond Road, Hotel Drive, and New Rochester Road. Willand Pond Road is the commercial driveway for Dover Marine and other commercial businesses in the park. Hotel Drive provides access to Hampton Inn and Comfort Inn & Suites. Approximately 0.3 miles to the south of Copper Drive is the signalized intersection of Indian Brook Drive (NH Route 9), Central Avenue (NH Route 9 & 108), and New Rochester Road. Indian Brook Drive to the east and west of the signalized intersections is considered Other Principal Arterial by the NHDOT with an AADT east of the intersection of 23,774 (2022) and west of the intersection (towards NH Route 16) AADT of 31,599 (2022). Central Avenue is considered a Minor Arterial Road by the NHDOT with an AADT of 22,429.

Proximity to Public Transportation/Pedestrian Access

The proposed build out presents an excellent opportunity for the utilization of public transportation for residents and guests alike. Approximately 100 feet to the north is a Coast bus stop, Route 12N, New Rochester Road & Sherman Street). Additionally, approximately 0.1 miles to the south is a Coast bus stop, Route 12S (New Rochester Road & Hotel Drive). There is an existing sidewalk on the subject parcel side of New Rochester Road (ends at 32 New Rochester Road) that will be connected to Copper and Ember Drive across the subject parcel frontage, along with a sidewalk across the road. This connectivity to sidewalks and bus stop proximity has a potential for a reduction in vehicle trip generation.

Existing Trip Generation

The 11th Edition ITE Trip Generation Manual was used to determine the existing volume of trips from Copper Drive and the three single family driveways of the subject parcel. Included is the percentage of entrance-to-exit traffic experienced during the weekday AM & PM peak hours between 7 and 9 AM and 4 and 6 PM, and total weekday volume. Land Use Code Single Family Detached Housing (210) was used in deriving the existing trip generation from the project site. Tables 2 & 3 provides average trip rate, total trips generated, enter to exit ratio, and the enter to exit distribution. This calculation includes the eight single-family homes on Copper Drive and the existing single-family home on Tax Map 39, Lot 103.

Single Family Detached Housing:

Time Method	Weekday Total Dwelling Units			Time Method	AM Peak Adj. Street Traffic Dwelling Units			Time Method	PM Peak Adj. Street Traffic Dwelling Units		
# Units	9			# Units	9			# Units	9		
Avg. Rate	9.43			Avg. Rate	0.70			Avg. Rate	0.94		
Total Trips	85			Total Trips	6			Total Trips	8		
% Enter	50	Total Enter	42	% Enter	25	Total Enter	2	% Enter	63	Total Enter	5
% Exit	50	Total Exit	43	% Exit	75	Total Exit	4	% Exit	37	Total Exit	3

Table 2: (Single Family Detached Housing) Peak hr of adjacent street traffic AM, PM, & weekday total

Total Existing Trip Generation:

Time Method	Weekday Total Dwelling Units			Time Method	AM Peak Adj. Street Traffic Dwelling Units			Time Method	PM Peak Adj. Street Traffic Dwelling Units		
Total Trips	85			Total Trips	6			Total Trips	8		
% Enter	50	Total Enter	42	% Enter	25	Total Enter	2	% Enter	63	Total Enter	5
% Exit	50	Total Exit	43	% Exit	75	Total Exit	4	% Exit	37	Total Exit	3

Table 3: Existing trip generation from the project site during AM, PM, & weekday total

Proposed Trip Generation

The 11th Edition ITE Trip Generation Manual was used to determine the proposed volume of trips. Included is the percentage of entrance-to-exit traffic experienced during the weekday AM & PM peak hours between 7 and 9 AM and 4 and 6 PM, and total weekday volume. Land Use Code Single Family Detached Housing (210) and Single Family Attached Housing (215) was used in deriving the proposed trip generation from the project site. Tables 4-9 provides average trip rate, total trips generated, enter to exit ratio, and the enter to exit distribution for the proposed trips at Copper Drive and Ember Drive. Table 10 includes the total trip generation between the two roadways for the entire project. The single-family driveway on LCA Tax Map 39, Lot 105 is included in the Copper Drive analysis.

Single Family Detached Housing Copper Drive:

Time Method	Weekday Total Dwelling Units			Time Method	AM Peak Adj. Street Traffic Dwelling Units			Time Method	PM Peak Adj. Street Traffic Dwelling Units		
# Units	6			# Units	6			# Units	6		
Avg. Rate	9.43			Avg. Rate	0.70			Avg. Rate	0.94		
Total Trips	57			Total Trips	4			Total Trips	6		
% Enter	50	Total Enter	28	% Enter	25	Total Enter	1	% Enter	63	Total Enter	4
% Exit	50	Total Exit	29	% Exit	75	Total Exit	3	% Exit	37	Total Exit	2

Table 4: (Copper Drive) Peak hr of adjacent street traffic AM, PM, & weekday total

Single Family Attached Housing Copper Drive:

Time Method	Weekday Total Dwelling Units			Time Method	AM Peak Adj. Street Traffic Dwelling Units			Time Method	PM Peak Adj. Street Traffic Dwelling Units		
# Units	10			# Units	10			# Units	10		
Avg. Rate	7.20			Avg. Rate	0.48			Avg. Rate	0.57		
Total Trips	72			Total Trips	5			Total Trips	6		
% Enter	50	Total Enter	36	% Enter	25	Total Enter	1	% Enter	59	Total Enter	3
% Exit	50	Total Exit	36	% Exit	75	Total Exit	4	% Exit	41	Total Exit	3

Table 5: (Copper Drive) Peak hr of adjacent street traffic AM, PM, & weekday total

Total Trip Generation Copper Drive:

Time Method	Weekday Total Dwelling Units			Time Method	AM Peak Adj. Street Traffic Dwelling Units			Time Method	PM Peak Adj. Street Traffic Dwelling Units		
Total Trips	129			Total Trips	9			Total Trips	12		
% Enter	50	Total Enter	64	% Enter	22	Total Enter	2	% Enter	58	Total Enter	7
% Exit	50	Total Exit	65	% Exit	78	Total Exit	7	% Exit	42	Total Exit	5

Table 6: (Copper Drive) Peak hr of adjacent street traffic AM, PM, & weekday total

Single Family Detached Housing Ember Drive:

Time Method	Weekday Total Dwelling Units			Time Method	AM Peak Adj. Street Traffic Dwelling Units			Time Method	PM Peak Adj. Street Traffic Dwelling Units		
# Units	1			# Units	1			# Units	1		
Avg. Rate	9.43			Avg. Rate	0.70			Avg. Rate	0.94		
Total Trips	9			Total Trips	1			Total Trips	1		
% Enter	50	Total Enter	5	% Enter	25	Total Enter	0	% Enter	63	Total Enter	1
% Exit	50	Total Exit	4	% Exit	75	Total Exit	1	% Exit	37	Total Exit	0

Table 7: (Ember Drive) Peak hr of adjacent street traffic AM, PM, & weekday total

Single Family Attached Housing Ember Drive:

Time Method	Weekday Total Dwelling Units			Time Method	AM Peak Adj. Street Traffic Dwelling Units			Time Method	PM Peak Adj. Street Traffic Dwelling Units		
# Units	6			# Units	6			# Units	6		
Avg. Rate	7.20			Avg. Rate	0.48			Avg. Rate	0.57		
Total Trips	43			Total Trips	3			Total Trips	3		
% Enter	50	Total Enter	22	% Enter	25	Total Enter	1	% Enter	59	Total Enter	2
% Exit	50	Total Exit	21	% Exit	75	Total Exit	2	% Exit	41	Total Exit	1

Table 8: (Ember Drive) Peak hr of adjacent street traffic AM, PM, & weekday total

Total Trip Generation Ember Drive:

Time Method	Weekday Total Dwelling Units			Time Method	AM Peak Adj. Street Traffic Dwelling Units			Time Method	PM Peak Adj. Street Traffic Dwelling Units		
Total Trips	52			Total Trips	4			Total Trips	4		
% Enter	50	Total Enter	27	% Enter	25	Total Enter	1	% Enter	75	Total Enter	3
% Exit	50	Total Exit	25	% Exit	75	Total Exit	3	% Exit	25	Total Exit	1

Table 9: (Copper Drive) Peak hr of adjacent street traffic AM, PM, & weekday total

Total Project Trip Generation:

Time Method	Weekday Total Dwelling Units			Time Method	AM Peak Adj. Street Traffic Dwelling Units			Time Method	PM Peak Adj. Street Traffic Dwelling Units		
Total Trips	181			Total Trips	13			Total Trips	16		
% Enter	50	Total Enter	91	% Enter	23	Total Enter	3	% Enter	63	Total Enter	10
% Exit	50	Total Exit	90	% Exit	77	Total Exit	10	% Exit	38	Total Exit	6

Table 10: Proposed trip generation from the project site during AM, PM, & weekday total

Increase from Existing Trip Generation

Changes in Trip Generation	
Time	Change in Trips Generated
Weekday Total	96
Weekday AM Peak Hour	7
Weekday PM Peak Hour	8

Table 11: Increase from existing trip generation

Build Traffic Projections and Turning Analysis

Traffic data obtained from the NHDOT in 2022 has been projected to 2024 and ten years further to 2034. This has been done using an August peak seasonal adjustment factor of 1.00 (Urban Highways Group 4, AM & PM) and using an annual growth rate of 1%, compounded annually. The derivation of the peak seasonal adjustment factor comes from an average series of values from other urban highways from across New Hampshire, which can be found as Table 20 in Appendix C. Figures 5 and 6 show the build turning movements to and from Copper & Ember Drive during weekday AM and PM peak hours. These figures also show the projected volume of traffic northbound and southbound on New Rochester Road for 2024 and 2034. This data is then used to preform NCHRP 457 left-turn and right-turn bay warrant analyses. Appendix B contains the data that was used to conduct the analyses as Figures 14 & 15 and 20 & 21. A visual of these turning movements is shown in the following figures.

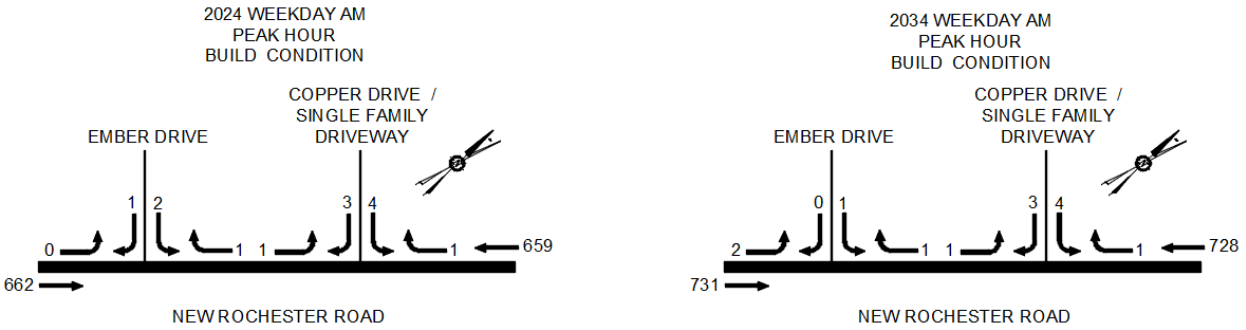


Figure 5: 2024 & 2034 build projected traffic volumes & turn movement weekday AM peak

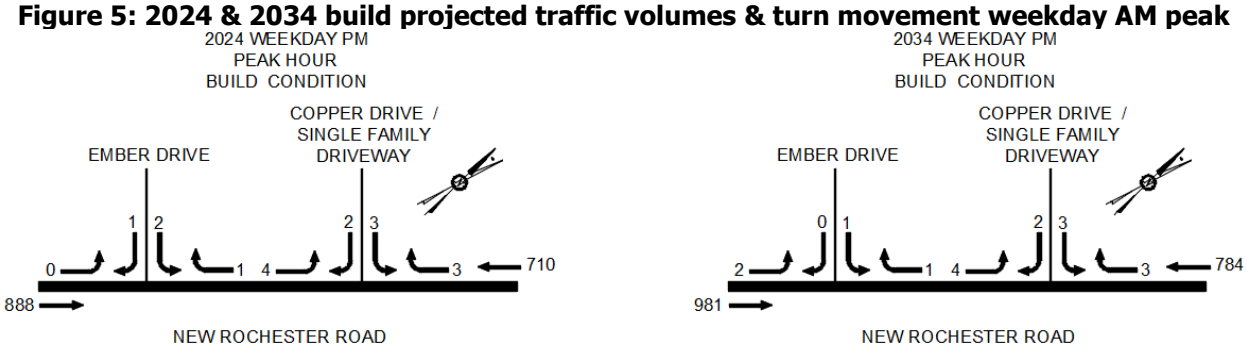


Figure 6: 2024 & 2034 build projected traffic volumes & turn movement weekday PM peak

Tables 12-15 show in a tabular format the total trips that are calculated to occur to and from Copper Drive & Ember Drive are shown at the weekday peak hours analyzed in a build situation. These trips are further broken down into enter and exit to and from the site as well as percentage of left and right turns.

Time	AM Peak Hour	# Trips	Turn Type	% Distribution
Total Trips	9			
Trips Enter from NH Rt 108 Northbound		1.0	Left	11.1
Trips Enter from NH Rt 108 Southbound		1.0	Right	11.1
Trips Exit to NH Rt 108 Northbound		3.5	Left	39.0
Trips Exit to NH Rt 108 Southbound		3.5	Right	38.8

Table 12: Weekday AM peak hour build turning movements to and from Copper Drive

Time	PM Peak Hour	# Trips	Turn Type	% Distribution
Total Trips	12			
Trips Enter from NH Rt 108 Northbound		3.9	Left	32.4
Trips Enter from NH Rt 108 Southbound		3.1	Right	25.9
Trips Exit to NH Rt 108 Northbound		2.8	Left	23.2
Trips Exit to NH Rt 108 Southbound		2.2	Right	18.5

Table 13: Weekday PM peak hour build turning movements to and from Copper Drive

Time	AM Peak Hour	# Trips	Turn Type	% Distribution
Total Trips	4			
Trips Enter from NH Rt 108 Northbound		0.5	Left	12.5
Trips Enter from NH Rt 108 Southbound		0.5	Right	12.5
Trips Exit to NH Rt 108 Northbound		1.5	Left	37.6
Trips Exit to NH Rt 108 Southbound		1.5	Right	37.4

Table 14: Weekday AM peak hour build turning movements to and from Ember Drive

Time	PM Peak Hour	# Trips	Turn Type	% Distribution
Total Trips	4			
Trips Enter from NH Rt 108 Northbound		1.7	Left	41.7
Trips Enter from NH Rt 108 Southbound		1.3	Right	33.3
Trips Exit to NH Rt 108 Northbound		0.6	Left	13.9
Trips Exit to NH Rt 108 Southbound		0.4	Right	11.1

Table 15: Weekday PM peak hour build turning movements to and from Ember Drive

Left-Turn Warrants Analysis

Depending on vehicle speed, advancing vehicular volumes, opposing vehicular volumes, and the percent of left turns that vehicles are predicted to make, certain roadways may require special treatment for vehicles making left turning maneuvers. The determination of this special treatment is determined by the NCHRP 457 left-turn bay guidelines. Calibration constants of 3.0 seconds are used for average left turn time, 5.0 seconds for critical headway, and 1.9 seconds for vehicles to clear the advancing lane. If warranted, the left turn bay would allow for deceleration of vehicles and storage in the queue to wait safely for advancing traffic to pass.

The traffic volumes obtained from the NHDOT from 2022 projected to 2024 and 2034 were used to determine if a left-turn bay is warranted to safely enter the site. It has been calculated that approximately 1 trip is to occur turning left into the site during the weekday AM peak hour and 4 trips during the PM peak hour for Copper Drive. It has been calculated that approximately 0-1 trips are to occur turning left into the site during the weekday AM peak hour and 2 trips during the PM peak hour for Ember Drive. Ember Drive AM & PM peak hour calculations are not provided as the generated traffic is less than the Copper Drive generation, which does not trigger a turn warrant. The projection of the traffic volumes and data used to conduct the left-turn bay warrant analyses are included in Appendix B as Figures 14 & 15. The full warrant analyses can be found in Appendix B as Figures 16-19. Tables 16 & 17 are summaries of the left-turn bay warrant analyses for the proposed site entrance. Using the 85th percentile speed of 45 MPH, it was determined that a left-turn bay IS NOT warranted to safely enter Copper Drive or Ember Drive.

Left-Turn Lane Warrants Analysis New Rochester Road (NH Route 108)		
Factors	2024 Weekday AM Build Volume	2034 Weekday AM Build Volume
Left-Turn Volume (NB)	1	1
Advancing Volume (NB) (L+TR+R)	664	733
Opposing Volume (SB) (TR+R)	660	729
Percent Lefts	0.15%	0.14%
85th Percentile Speed (MPH)	45	45
Limiting Adv. Volume (veh/hr)	2,035	1,997
Left-Turn Bay Warranted	NO	NO

Table 16: Weekday AM peak hour NCHRP 457 left-turn bay analysis (Copper)

Left-Turn Lane Warrants Analysis New Rochester Road (NH Route 108)		
Factors	2024 Weekday PM Build Volume	2034 Weekday PM Build Volume
Left-Turn Volume (NB)	4	4
Advancing Volume (NB) (L+TR+R)	895	988
Opposing Volume (SB) (TR+R)	713	787
Percent Lefts	0.43%	0.39%
85th Percentile Speed (MPH)	45	45
Limiting Adv. Volume (veh/hr)	1,139	1,112
Left-Turn Bay Warranted	NO	NO

Table 17: Weekday PM peak hour NCHRP 457 left-turn bay analysis (Copper)

Right-Turn Warrants Analysis

Depending on vehicle speed, advancing vehicular volumes, and the percent of right turns that vehicles are predicted to make, certain roadways may require special treatment for vehicles making right turning maneuvers. The determination of this special treatment is determined by the NCHRP 457 right turn bay guidelines. If warranted, the right-turn bay would allow for deceleration of vehicles and storage in the queue to wait safely for right turning traffic to clear.

The traffic volumes obtained from the NHDOT from 2022 projected to 2024 and 2034 were used to determine if a right-turn bay is warranted to safely enter the site. It has been calculated that approximately 1 trip is to occur turning right into the site during the weekday AM peak hour and 3 trips during the PM peak hour for Copper Drive. It has been calculated that approximately 1 trip is to occur turning right into the site during the weekday AM peak hour and 1 trip during the PM peak hour for Ember Drive. Ember Drive AM & PM peak hour calculations are not provided as the generated traffic is less than the Copper Drive generation, which does not trigger a turn warrant. The projection of the traffic volumes and data used to conduct the right-turn bay warrant analyses are included in Appendix B as Figures 20 & 21. The full warrant analyses can be found in Appendix B as Figures 22-25. Tables 18 & 19 are summaries of the right-turn bay warrant analyses for the proposed site entrance. Using the 85th percentile speed of 45 MPH, it was determined that a right-turn bay IS NOT warranted to safely enter Copper Drive or Ember Drive.

Right-Turn Lane Warrants Analysis New Rochester Road (NH Route 108)		
Factors	2024 Weekday AM Build Volume	2034 Weekday AM Build Volume
Right-Turn Volume (SB)	1	1
Advancing Volume (SB) (L+TR+R)	661	730
85th Percentile Speed (MPH)	45	45
Limiting Right-Turn Volume (veh/hr)	26	22
Right-Turn Bay Warranted	NO	NO

Table 18: Weekday AM peak hour NCHRP 457 right-turn bay analysis (Copper)

Right-Turn Lane Warrants Analysis New Rochester Road (NH Route 108)		
Factors	2024 Weekday PM Build Volume	2034 Weekday PM Build Volume
Right-Turn Volume (SB)	3	3
Advancing Volume (SB) (L+TR+R)	717	791
85th Percentile Speed (MPH)	45	45
Limiting Right-Turn Volume (veh/hr)	22	19
Right-Turn Bay Warranted	NO	NO

Table 19: Weekday PM peak hour NCHRP 457 right-turn bay analysis (Copper)

Sight Distance and Safety Analysis

Sight distance on New Rochester Road to the north and south, as well as roadway alignment are the two determining factors of safety. Copper Drive and Ember Drive, sight distance to the north un-obstructed for well over 400 feet (measured), while sight distance to the south is un-obstructed for well over 400 feet (measured). The standard sight distance that would be required by NHDOT in this situation is 400 feet. In this instance both the northerly and southerly sight distances exceed the standard AASHTO 45 MPH standard practice of 360 feet. There are no improvements required to obtain this sight distance.

With respect to general safety of New Rochester Road in relation to the peak hour trip generation and AADT, it is our assessment that the cross section of pavement and shoulder widths are appropriate.

*AASHTO Geometric Design of Highways and Streets (2011)

Conclusions and Recommendations

1) A total of 9 vehicle trips (2 enter/7 exit) are predicted to occur at the weekday AM peak hour and 12 vehicle trips (7 enter/5 exit) at the PM peak hour for Copper Drive.

2) A total of 4 vehicle trips (1 enter/3 exit) are predicted to occur at the weekday AM peak hour and 4 vehicle trips (3 enter/1 exit) at the PM peak hour for Ember Drive.

3) The 2024 and 2034 build traffic volumes DO NOT satisfy the NCHRP 457 guidelines for the implementation of a left-turn lane for all peak hours for Copper Drive.

4) The 2024 and 2034 build traffic volumes DO NOT satisfy the NCHRP 457 guidelines for the implementation of a left-turn lane for all peak hours for Copper Drive.

5) This is an increase from the existing/approved condition of 96 weekday vehicle trips, 7 weekday AM peak hour vehicle trips, and 8 weekday PM peak hour vehicle trips.

6) It is recommended that the surrounding infrastructure will be sufficient to handle the projected increase in vehicle trips and peak hour and all other hours.

7) The number of driveway cuts along New Rochester Road is being reduced in this proposal.

Respectfully Submitted,
BERRY SURVEYING & ENGINEERING

Christopher R. Berry, SIT
Principal, President

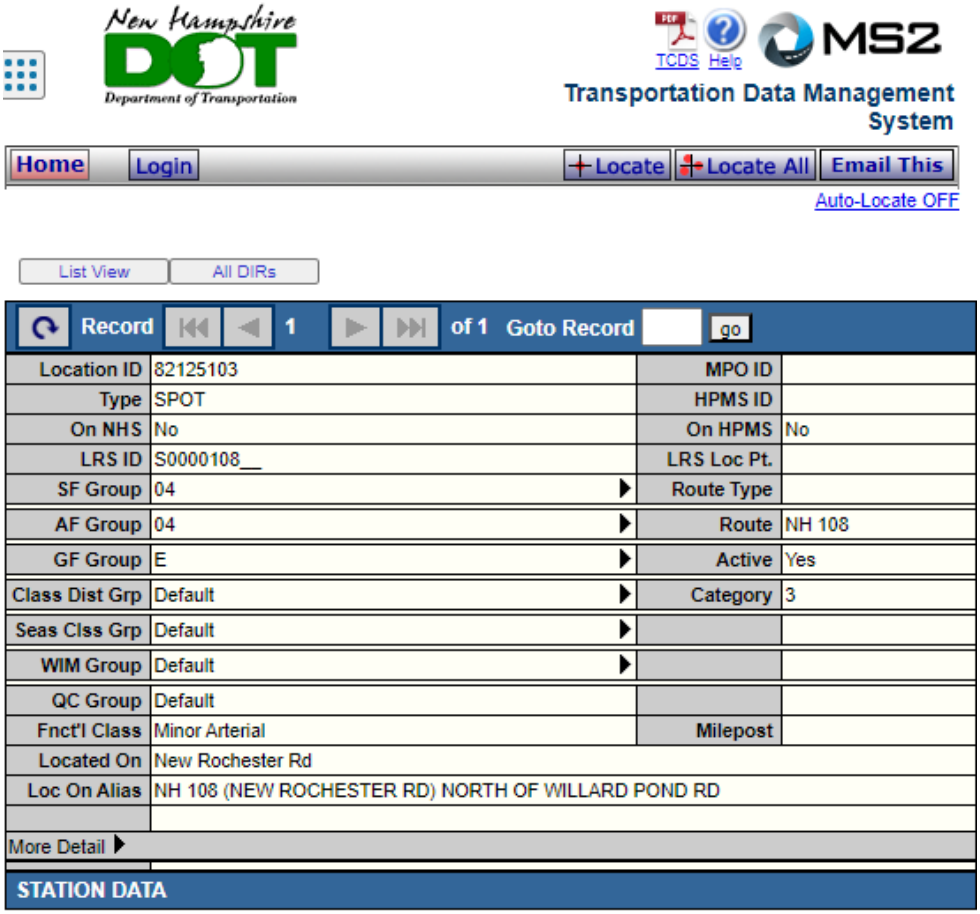
Kenneth A. Berry, PE, LLS,
CPSWQ, CPESC, CESSWI
Principal, VP-Technical Operations
Engineer of Record

Kevin R. Poulin, PE
Project Engineer

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

Appendix A

Traffic Counts



New Hampshire DOT — Department of Transportation

TCDS Help MS2 — Transportation Data Management System

Home | Login | Locate | Locate All | Email This

Auto-Locate OFF

List View | All DIRs

Record 1 of 1 Goto Record go

Location ID	82125103	MPO ID	
Type	SPOT	HPMS ID	
On NHS	No	On HPMS	No
LRS ID	S0000108__	LRS Loc Pt.	
SF Group	04	Route Type	
AF Group	04	Route	NH 108
GF Group	E	Active	Yes
Class Dist Grp	Default	Category	3
Seas Clss Grp	Default		
WIM Group	Default		
QC Group	Default		
Fnct'l Class	Minor Arterial	Milepost	
Located On	New Rochester Rd		
Loc On Alias	NH 108 (NEW ROCHESTER RD) NORTH OF WILLARD POND RD		

More Detail

STATION DATA

Directions: 2-WAY | NB | SB

AADT

Year	AADT	DHV-30	K %	D %	PA	BC	Src
2022	16,262	1,552	10	58	15,236 (94%)	1,026 (6%)	
2021	13,844[3]		10	56	12,584 (91%)	1,260 (9%)	Grown from 2020
2020	12,483[3]		10	56	11,359 (91%)	1,124 (9%)	Grown from 2019
2019	14,790	1,469	10	56	13,546 (92%)	1,244 (8%)	
2018	18,159[3]		9	58	16,743 (92%)	1,416 (8%)	Grown from 2017

Figure 7: History of AADT values and classification for New Rochester Road

New Hampshire DOT Department of Transportation

TCDS Help MS2

Transportation Data Management System

Home Back Login Locate Locate All

Auto-Locate OFF

Volume Count Report

LOCATION INFO	
Location ID	82125103_NB
Type	SPOT
Fnct'l Class	4
Located On	New Rochester Rd
Loc On Alias	NH 108 (NEW ROCHESTER RD) NORTH OF WILLARD POND RD
Direction	NB
County	STRAFFORD
Community	DOVER
MPO ID	
HPMS ID	
Agency	New Hampshire DOT

COUNT DATA INFO	
Count Status	Accepted
Holiday	No
Start Date	Tue 8/30/2022
End Date	Wed 8/31/2022
Start Time	12:00:00 AM
End Time	12:00:00 AM
Direction	
Notes	nhdot
Station	821251035010
Study	
Speed Limit	
Description	
Sensor Type	Axle/Tube
Source	
Latitude,Longitude	

INTERVAL:15-MIN

Time	15-min Interval 1st	2nd	3rd	4th	Hourly Count
0:00-1:00	15	25	14	13	67
1:00-2:00	7	8	13	8	36
2:00-3:00	6	3	3	9	21
3:00-4:00	10	9	4	6	29
4:00-5:00	3	9	22	21	55
5:00-6:00	15	22	45	42	124
6:00-7:00	25	66	90	96	277
7:00-8:00	94	126	158	175	553
8:00-9:00	150	129	133	148	560
9:00-10:00	121	114	152	120	507
10:00-11:00	144	160	122	165	591
11:00-12:00	157	161	136	154	608
12:00-13:00	150	178	182	217	727
13:00-14:00	176	172	172	160	680
14:00-15:00	170	182	160	197	709
15:00-16:00	246	214	210	219	889
16:00-17:00	219	212	217	236	884
17:00-18:00	198	235	201	177	811
18:00-19:00	145	143	126	129	543
19:00-20:00	97	119	101	79	396
20:00-21:00	89	91	70	56	306
21:00-22:00	77	30	39	42	188
22:00-23:00	30	36	40	24	130
23:00-24:00	33	39	20	20	112
Total					9,803
AM Peak					11:45-12:45 664
PM Peak					15:00-16:00 889

Count Navigation: |<< < > >> Count Type: VOLUME

Directions: 2-WAY NB SB

Figure 8: Tuesday August 30, 2022 NH Rt 108 northbound traffic count

New Hampshire DOT Department of Transportation

TCDS Help MS2

Transportation Data Management System

Home Back Login Locate Locate All

Auto-Locate OFF

Volume Count Report

LOCATION INFO	
Location ID	82125103_SB
Type	SPOT
Fnct'l Class	4
Located On	New Rochester Rd
Loc On Alias	NH 108 (NEW ROCHESTER RD) NORTH OF WILLARD POND RD
Direction	SB
County	STRAFFORD
Community	DOVER
MPO ID	
HPMS ID	
Agency	New Hampshire DOT

COUNT DATA INFO	
Count Status	Accepted
Holiday	No
Start Date	Tue 8/30/2022
End Date	Wed 8/31/2022
Start Time	12:00:00 AM
End Time	12:00:00 AM
Direction	
Notes	nhdot
Station	821251035010
Study	
Speed Limit	
Description	
Sensor Type	Axle/Tube
Source	
Latitude,Longitude	

INTERVAL:15-MIN

Time	15-min Interval 1st	2nd	3rd	4th	Hourly Count
0:00-1:00	7	6	7	3	23
1:00-2:00	9	8	3	7	27
2:00-3:00	5	12	6	7	30
3:00-4:00	9	9	15	14	47
4:00-5:00	14	11	23	42	90
5:00-6:00	28	46	59	78	211
6:00-7:00	87	98	110	118	413
7:00-8:00	150	152	179	146	627
8:00-9:00	174	137	151	144	606
9:00-10:00	138	120	145	164	567
10:00-11:00	134	157	146	135	572
11:00-12:00	151	148	151	157	607
12:00-13:00	158	175	163	181	677
13:00-14:00	138	151	143	147	579
14:00-15:00	144	155	140	154	593
15:00-16:00	172	148	133	184	637
16:00-17:00	162	152	161	166	641
17:00-18:00	189	169	155	133	646
18:00-19:00	131	90	130	89	440
19:00-20:00	91	80	77	80	328
20:00-21:00	61	47	46	32	186
21:00-22:00	43	25	20	21	109
22:00-23:00	22	25	16	18	81
23:00-24:00	17	11	7	4	39
Total					8,776
AM Peak					11:45-12:45 653
PM Peak					16:30-17:30 685

Count Navigation: |<< < > >> Count Type: VOLUME

Directions: 2-WAY NB SB

Figure 9: Tuesday August 30, 2022 NH Rt 108 southbound traffic count

New Hampshire DOT Department of Transportation

TCDS Help MS2

Transportation Data Management System

Home Back Login Locate Locate All

Auto-Locate OFF

Volume Count Report

LOCATION INFO	
Location ID	82125103_NB
Type	SPOT
Fnct'l Class	4
Located On	New Rochester Rd
Loc On Alias	NH 108 (NEW ROCHESTER RD) NORTH OF WILLARD POND RD
Direction	NB
County	STRAFFORD
Community	DOVER
MPO ID	
HPMS ID	
Agency	New Hampshire DOT

COUNT DATA INFO	
Count Status	Accepted
Holiday	No
Start Date	Wed 8/31/2022
End Date	Thu 9/1/2022
Start Time	12:00:00 AM
End Time	12:00:00 AM
Direction	
Notes	nhdot
Station	821251035010
Study	
Speed Limit	
Description	
Sensor Type	Axle/Tube
Source	
Latitude,Longitude	

INTERVAL:15-MIN

Time	15-min Interval 1st	2nd	3rd	4th	Hourly Count
0:00-1:00	29	17	17	11	74
1:00-2:00	10	9	11	7	37
2:00-3:00	9	4	5	5	23
3:00-4:00	6	10	5	7	28
4:00-5:00	6	11	13	34	64
5:00-6:00	13	30	29	34	106
6:00-7:00	41	58	64	93	256
7:00-8:00	77	129	172	180	558
8:00-9:00	151	149	158	156	614
9:00-10:00	102	131	119	143	495
10:00-11:00	157	135	129	143	564
11:00-12:00	142	131	138	155	566
12:00-13:00	158	184	186	196	724
13:00-14:00	133	173	157	166	629
14:00-15:00	184	170	190	157	701
15:00-16:00	223	204	246	237	910
16:00-17:00	243	229	203	212	887
17:00-18:00	225	213	187	183	808
18:00-19:00	157	169	140	129	595
19:00-20:00	116	121	108	87	432
20:00-21:00	96	84	84	62	326
21:00-22:00	63	47	54	41	205
22:00-23:00	47	50	46	37	180
23:00-24:00	25	43	27	18	113
Total					9,895
AM Peak					11:45-12:45 683
PM Peak					15:30-16:30 955

Count Navigation: |<< < > >> Count Type: VOLUME

Directions: 2-WAY NB SB

Figure 10: Wednesday August 31, 2022 NH Rt 108 northbound traffic count

New Hampshire DOT Department of Transportation

TCDS Help MS2

Transportation Data Management System

Home Back Login Locate Locate All

Auto-Locate OFF

Volume Count Report

LOCATION INFO	
Location ID	82125103_SB
Type	SPOT
Fnct'l Class	4
Located On	New Rochester Rd
Loc On Alias	NH 108 (NEW ROCHESTER RD) NORTH OF WILLARD POND RD
Direction	SB
County	STRAFFORD
Community	DOVER
MPO ID	
HPMS ID	
Agency	New Hampshire DOT

COUNT DATA INFO	
Count Status	Accepted
Holiday	No
Start Date	Wed 8/31/2022
End Date	Thu 9/1/2022
Start Time	12:00:00 AM
End Time	12:00:00 AM
Direction	
Notes	nhdot
Station	821251035010
Study	
Speed Limit	
Description	
Sensor Type	Axle/Tube
Source	
Latitude,Longitude	

INTERVAL:15-MIN

Time	15-min Interval 1st	2nd	3rd	4th	Hourly Count
0:00-1:00	14	4	5	2	25
1:00-2:00	13	4	3	4	24
2:00-3:00	9	9	15	6	39
3:00-4:00	9	11	20	15	55
4:00-5:00	15	10	26	32	83
5:00-6:00	30	47	59	69	205
6:00-7:00	82	122	149	128	481
7:00-8:00	145	148	169	146	608
8:00-9:00	185	131	142	153	611
9:00-10:00	140	137	154	155	586
10:00-11:00	153	150	148	147	598
11:00-12:00	118	166	145	170	599
12:00-13:00	187	157	163	140	647
13:00-14:00	159	174	177	165	675
14:00-15:00	158	154	155	144	611
15:00-16:00	154	183	138	178	653
16:00-17:00	158	180	183	167	688
17:00-18:00	184	171	141	134	630
18:00-19:00	141	112	90	97	440
19:00-20:00	112	76	87	72	347
20:00-21:00	72	55	44	31	202
21:00-22:00	54	29	20	24	127
22:00-23:00	30	27	17	14	88
23:00-24:00	14	11	7	4	36
Total					9,058
AM Peak					11:45-12:45 677
PM Peak					16:15-17:15 714

Count Navigation: |<< < > >> Count Type: VOLUME

Directions: 2-WAY NB SB

Figure 11: Wednesday August 21, 2022 NH Rt 108 southbound traffic count

New Hampshire DOT Department of Transportation

TCDS Help MS2

Transportation Data Management System

Home Back Login Locate Locate All

Auto-Locate OFF

Volume Count Report

LOCATION INFO	
Location ID	82125103_NB
Type	SPOT
Fnct'l Class	4
Located On	New Rochester Rd
Loc On Alias	NH 108 (NEW ROCHESTER RD) NORTH OF WILLARD POND RD
Direction	NB
County	STRAFFORD
Community	DOVER
MPO ID	
HPMS ID	
Agency	New Hampshire DOT

COUNT DATA INFO	
Count Status	Accepted
Holiday	No
Start Date	Thu 9/1/2022
End Date	Fri 9/2/2022
Start Time	12:00:00 AM
End Time	12:00:00 AM
Direction	
Notes	nhdot
Station	821251035010
Study	
Speed Limit	
Description	
Sensor Type	Axle/Tube
Source	
Latitude,Longitude	

INTERVAL:15-MIN

Time	15-min Interval 1st	2nd	3rd	4th	Hourly Count
0:00-1:00	14	26	13	14	67
1:00-2:00	11	14	6	7	38
2:00-3:00	7	8	8	8	31
3:00-4:00	5	6	8	5	24
4:00-5:00	3	6	9	28	46
5:00-6:00	12	24	32	37	105
6:00-7:00	39	48	74	105	266
7:00-8:00	105	137	160	186	588
8:00-9:00	175	162	138	153	628
9:00-10:00	117	117	129	128	491
10:00-11:00	138	127	166	154	585
11:00-12:00	130	148	139	186	603
12:00-13:00	161	162	182	157	662
13:00-14:00	157	178	150	190	675
14:00-15:00	168	183	199	193	743
15:00-16:00	227	211	248	235	921
16:00-17:00	193	236	213	197	839
17:00-18:00	193	231	188	159	771
18:00-19:00	152	158	132	81	523
19:00-20:00	105	134	107	111	457
20:00-21:00	84	82	82	71	319
21:00-22:00	77	55	44	47	223
22:00-23:00	39	53	55	33	180
23:00-24:00	33	45	25	20	123
Total					9,908
AM Peak					11:45-12:45 691
PM Peak					15:00-16:00 921

Count Navigation: |<< < > >> Count Type: VOLUME

Directions: 2-WAY NB SB

Figure 12: Thursday September 1, 2022 NH Rt 108 northbound traffic count

New Hampshire DOT Department of Transportation

TCDS Help MS2

Transportation Data Management System

Home Back Login Locate Locate All

Auto-Locate OFF

Volume Count Report

LOCATION INFO	
Location ID	82125103_SB
Type	SPOT
Fnct'l Class	4
Located On	New Rochester Rd
Loc On Alias	NH 108 (NEW ROCHESTER RD) NORTH OF WILLARD POND RD
Direction	SB
County	STRAFFORD
Community	DOVER
MPO ID	
HPMS ID	
Agency	New Hampshire DOT

COUNT DATA INFO	
Count Status	Accepted
Holiday	No
Start Date	Thu 9/1/2022
End Date	Fri 9/2/2022
Start Time	12:00:00 AM
End Time	12:00:00 AM
Direction	
Notes	nhdot
Station	821251035010
Study	
Speed Limit	
Description	
Sensor Type	Axle/Tube
Source	
Latitude,Longitude	

INTERVAL:15-MIN

Time	15-min Interval 1st	2nd	3rd	4th	Hourly Count
0:00-1:00	7	6	3	0	16
1:00-2:00	12	8	6	4	30
2:00-3:00	8	17	3	14	42
3:00-4:00	6	10	16	19	51
4:00-5:00	10	21	22	35	88
5:00-6:00	42	44	57	79	222
6:00-7:00	71	127	153	131	482
7:00-8:00	152	148	182	156	638
8:00-9:00	170	127	161	163	621
9:00-10:00	148	136	177	150	611
10:00-11:00	135	158	157	135	585
11:00-12:00	126	141	148	150	565
12:00-13:00	166	172	136	169	643
13:00-14:00	150	134	151	141	576
14:00-15:00	171	127	174	145	617
15:00-16:00	173	165	153	174	665
16:00-17:00	144	173	159	166	642
17:00-18:00	190	154	150	124	618
18:00-19:00	124	124	108	88	444
19:00-20:00	94	74	83	81	332
20:00-21:00	71	52	47	35	205
21:00-22:00	46	33	29	16	124
22:00-23:00	13	20	21	15	69
23:00-24:00	22	18	11	7	58
Total					8,944
AM Peak					07:15-08:15 656
PM Peak					16:15-17:15 688

Count Navigation: |<< < > >> Count Type: VOLUME

Directions: 2-WAY NB SB

Figure 13: Thursday September 1, 2022 NH Rt 108 southbound traffic count

Appendix B

Data Used in Left-Turn Bay Warrants Analysis

Year	Advancing Volume	Advancing Volume Peaked (TR)	Left Turns (L)	Right Turns (R)	Total Advancing Volume (L+TR+R)	% of Left Turn
2022	649	649.0	1.0	1.0	651.0	0.15
2023	655	655.5	1.0	1.0	657.5	0.15
2024	662	662.0	1.0	1.0	664.0	0.15
2025	669	668.7	1.0	1.0	670.7	0.15
2026	675	675.4	1.0	1.0	677.4	0.15
2027	682	682.1	1.0	1.0	684.1	0.15
2028	689	688.9	1.0	1.0	690.9	0.15
2029	696	695.8	1.0	1.0	697.8	0.14
2030	703	702.8	1.0	1.0	704.8	0.14
2031	710	709.8	1.0	1.0	711.8	0.14
2032	717	716.9	1.0	1.0	718.9	0.14
2033	724	724.1	1.0	1.0	726.1	0.14
2034	731	731.3	1.0	1.0	733.3	0.14
Year	Opposing Volume	Opposing Volume Peaked (TR)	Right Turns (R)		Total Opposing Volume (TR+R)	
2022	646	646.0	1.0		647.0	
2023	652	652.5	1.0		653.5	
2024	659	659.0	1.0		660.0	
2025	666	665.6	1.0		666.6	
2026	672	672.2	1.0		673.2	
2027	679	679.0	1.0		680.0	
2028	686	685.7	1.0		686.7	
2029	693	692.6	1.0		693.6	
2030	700	699.5	1.0		700.5	
2031	707	706.5	1.0		707.5	
2032	714	713.6	1.0		714.6	
2033	721	720.7	1.0		721.7	
2034	728	727.9	1.0		728.9	
Seasonal Peaking Factor (August)		1.00				

Figure 14: Data used for Weekday AM peak hour left-turn warrant analyses Copper Drive

Year	Advancing Volume	Advancing Volume Peaked (TR)	Left Turns (L)	Right Turns (R)	Total Advancing Volume (L+TR+R)	% of Left Turn
2022	871	870.7	3.9	3.1	877.7	0.44
2023	879	879.4	3.9	3.1	886.4	0.44
2024	888	888.2	3.9	3.1	895.2	0.43
2025	897	897.0	3.9	3.1	904.0	0.43
2026	906	906.0	3.9	3.1	913.0	0.43
2027	915	915.1	3.9	3.1	922.1	0.42
2028	924	924.2	3.9	3.1	931.2	0.42
2029	933	933.5	3.9	3.1	940.5	0.41
2030	943	942.8	3.9	3.1	949.8	0.41
2031	952	952.2	3.9	3.1	959.2	0.41
2032	962	961.8	3.9	3.1	968.8	0.40
2033	971	971.4	3.9	3.1	978.4	0.40
2034	981	981.1	3.9	3.1	988.1	0.39
Year	Opposing Volume	Opposing Volume Peaked (TR)	Right Turns (R)		Total Opposing Volume (TR+R)	
2022	696	695.7	3.1		698.8	
2023	703	702.6	3.1		705.7	
2024	710	709.6	3.1		712.8	
2025	717	716.7	3.1		719.9	
2026	724	723.9	3.1		727.0	
2027	731	731.2	3.1		734.3	
2028	738	738.5	3.1		741.6	
2029	746	745.8	3.1		749.0	
2030	753	753.3	3.1		756.4	
2031	761	760.8	3.1		763.9	
2032	768	768.4	3.1		771.6	
2033	776	776.1	3.1		779.2	
2034	784	783.9	3.1		787.0	
Seasonal Peaking Factor (August)		1.00				

Figure 15: Data used for Weekday PM peak hour left-turn warrant analyses Copper Drive

Left-Turn Bay Warrants Analysis

Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

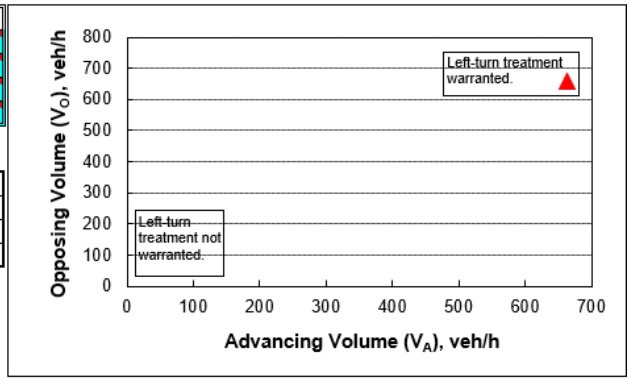
2-lane roadway (English)

INPUT

Variable	Value
85th percentile speed, mph:	45
Percent of left-turns in advancing volume (V_A), %:	0%
Advancing volume (V_A), veh/h:	664
Opposing volume (V_O), veh/h:	660

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	2035
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Figure 16: 2024 Weekday AM peak hour NCHRP 457 left-turn bay warrant analysis Copper Dr

Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

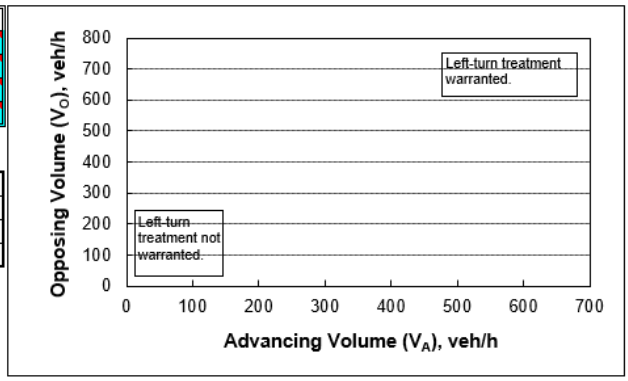
2-lane roadway (English)

INPUT

Variable	Value
85th percentile speed, mph:	45
Percent of left-turns in advancing volume (V_A), %:	0%
Advancing volume (V_A), veh/h:	733
Opposing volume (V_O), veh/h:	729

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	1997
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Figure 17: 2034 Weekday AM peak hour NCHRP 457 left-turn bay warrant analysis Copper Dr

Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

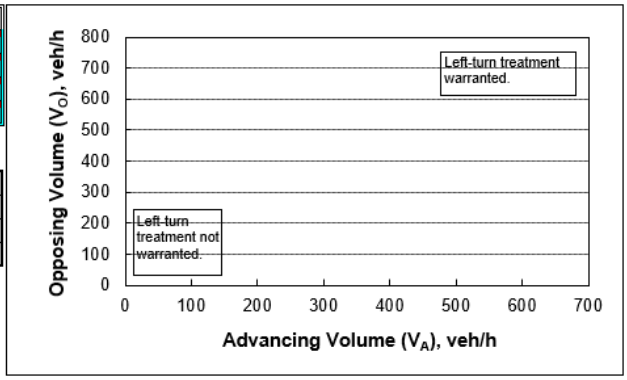
2-lane roadway (English)

INPUT

Variable	Value
85th percentile speed, mph:	45
Percent of left-turns in advancing volume (V_A), %:	0%
Advancing volume (V_A), veh/h:	895
Opposing volume (V_O), veh/h:	713

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	1139
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Figure 18: 2024 Weekday PM peak hour NCHRP 457 left-turn bay warrant analysis Copper Dr

Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

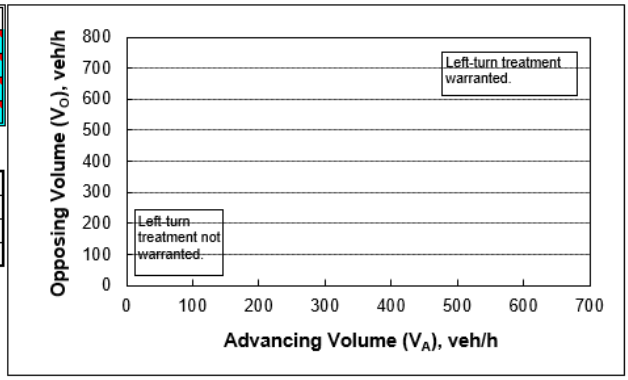
2-lane roadway (English)

INPUT

Variable	Value
85th percentile speed, mph:	45
Percent of left-turns in advancing volume (V_A), %:	0%
Advancing volume (V_A), veh/h:	988
Opposing volume (V_O), veh/h:	787

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	1112
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Figure 19: 2034 Weekday PM peak hour NCHRP 457 left-turn bay warrant analysis Copper Dr

Data Used in Right-Turn Bay Warrants Analysis

Year	Advancing Volume	Advancing Volume Peaked (TR)	Left Turns (L)	Right Turns (R)	Total Advancing Volume (L+TR+R)
2022	646	646.0	1.0	1.0	648.0
2023	652	652.5	1.0	1.0	654.5
2024	659	659.0	1.0	1.0	661.0
2025	666	665.6	1.0	1.0	667.6
2026	672	672.2	1.0	1.0	674.2
2027	679	679.0	1.0	1.0	681.0
2028	686	685.7	1.0	1.0	687.7
2029	693	692.6	1.0	1.0	694.6
2030	700	699.5	1.0	1.0	701.5
2031	707	706.5	1.0	1.0	708.5
2032	714	713.6	1.0	1.0	715.6
2033	721	720.7	1.0	1.0	722.7
2034	728	727.9	1.0	1.0	729.9
Seasonal Peaking Factor (August)		1.00			

Figure 20: Data used for Weekday AM peak hour right-turn warrant analyses Copper Drive

Year	Advancing Volume	Advancing Volume Peaked (TR)	Left Turns (L)	Right Turns (R)	Total Advancing Volume (L+TR+R)
2022	696	695.7	3.9	3.1	702.7
2023	703	702.6	3.9	3.1	709.6
2024	710	709.6	3.9	3.1	716.6
2025	717	716.7	3.9	3.1	723.7
2026	724	723.9	3.9	3.1	730.9
2027	731	731.2	3.9	3.1	738.2
2028	738	738.5	3.9	3.1	745.5
2029	746	745.8	3.9	3.1	752.8
2030	753	753.3	3.9	3.1	760.3
2031	761	760.8	3.9	3.1	767.8
2032	768	768.4	3.9	3.1	775.4
2033	776	776.1	3.9	3.1	783.1
2034	784	783.9	3.9	3.1	790.9
Seasonal Peaking Factor (August)		1.00			

Figure 21: Data used for Weekday PM peak hour right-turn warrant analyses Copper Drive

Right-Turn Bay Warrants Analysis

Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.

INPUT

Roadway geometry:	2-lane roadway
Variable	Value
Major-road speed, mph:	45
Major-road volume (one direction), veh/h:	661
Right-turn volume, veh/h:	1

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	26
Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:	
Do NOT add right-turn bay.	

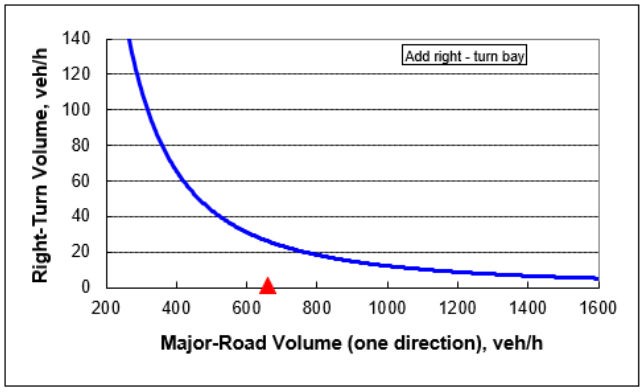


Figure 22: 2024 Weekday AM peak hour NCHRP 457 right-turn bay warrant analysis Copper Dr

Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.

INPUT

Roadway geometry:	2-lane roadway
Variable	Value
Major-road speed, mph:	45
Major-road volume (one direction), veh/h:	730
Right-turn volume, veh/h:	1

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	22
Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:	
Do NOT add right-turn bay.	

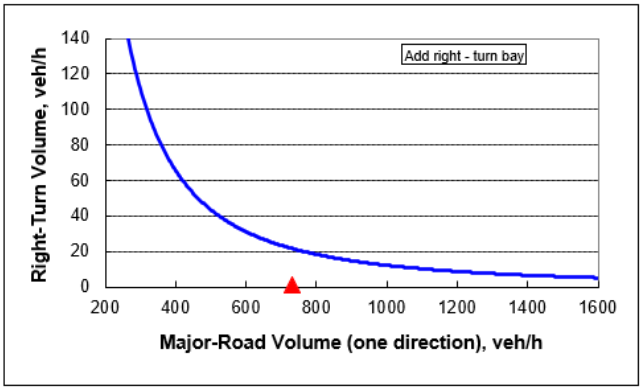


Figure 23: 2034 Weekday AM peak hour NCHRP 457 right-turn bay warrant analysis Copper Dr

Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.

INPUT

Roadway geometry:	2-lane roadway
Variable	Value
Major-road speed, mph:	45
Major-road volume (one direction), veh/h:	717
Right-turn volume, veh/h:	3

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	22
Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:	
Do NOT add right-turn bay.	

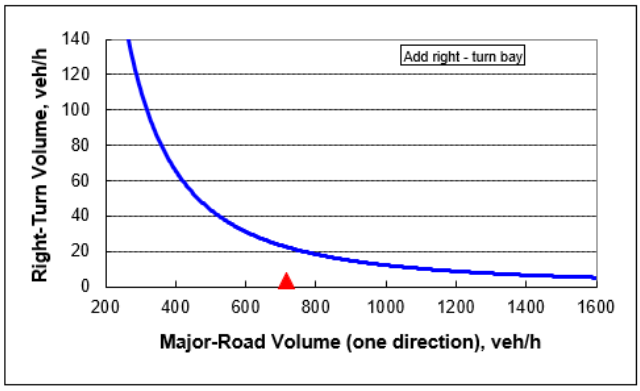


Figure 24: 2024 Weekday PM peak hour NCHRP 457 right-turn bay warrant analysis Copper Dr

Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.

INPUT

Roadway geometry:	2-lane roadway
Variable	Value
Major-road speed, mph:	45
Major-road volume (one direction), veh/h:	791
Right-turn volume, veh/h:	3

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	19
Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:	
Do NOT add right-turn bay.	

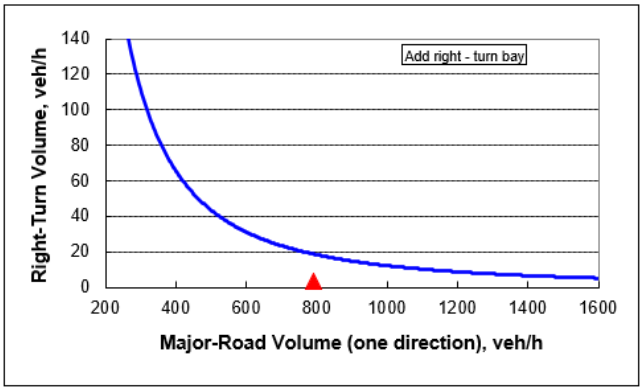


Figure 25: 2034 Weekday PM peak hour NCHRP 457 right-turn bay warrant analysis Copper Dr

Appendix C

Miscellaneous

Group 4 Averages:		Year 2019 Monthly Data Urban Highways	
		Adjustment to	
Month	ADT	Average	Peak
January	11,431	1.12	1.23
February	11,848	1.08	1.18
March	12,141	1.06	1.15
April	12,860	1.00	1.09
May	13,551	0.95	1.03
June	13,785	0.93	1.02
July	13,942	0.92	1.01
August	14,016	0.92	1.00
September	13,379	0.96	1.05
October	13,339	0.96	1.05
November	12,265	1.05	1.14
December	11,496	1.12	1.22
Average ADT:	12,838		
Peak ADT:	14,016		

Table 20: Derivation of the seasonal peaking factor

Table 3-1. Stopping Sight Distance on Level Roadways

U.S. Customary					Metric				
Design Speed (mph)	Brake Reaction Distance (ft)	Braking Distance on Level (ft)	Stopping Sight Distance		Design Speed (km/h)	Brake Reaction Distance (m)	Braking Distance on Level (m)	Stopping Sight Distance	
			Calculated (ft)	Design (ft)				Calculated (m)	Design (m)
15	55.1	21.6	76.7	80	20	13.9	4.6	18.5	20
20	73.5	38.4	111.9	115	30	20.9	10.3	31.2	35
25	91.9	60.0	151.9	155	40	27.8	18.4	46.2	50
30	110.3	86.4	196.7	200	50	34.8	28.7	63.5	65
35	128.6	117.6	246.2	250	60	41.7	41.3	83.0	85
40	147.0	153.6	300.6	305	70	48.7	56.2	104.9	105
45	165.4	194.4	359.8	360	80	55.6	73.4	129.0	130
50	183.8	240.0	423.8	425	90	62.6	92.9	155.5	160
55	202.1	290.3	492.4	495	100	69.5	114.7	184.2	185
60	220.5	345.5	566.0	570	110	76.5	138.8	215.3	220
65	238.9	405.5	644.4	645	120	83.4	165.2	248.6	250
70	257.3	470.3	727.6	730	130	90.4	193.8	284.2	285
75	275.6	539.9	815.5	820	140	97.3	224.8	322.1	325
80	294.0	614.3	908.3	910					
85	313.5	693.5	1007.0	1010					

Note: Brake reaction distance predicated on a time of 2.5 s; deceleration rate of 11.2 ft/s² [3.4 m/s²] used to determine calculated sight distance.

Figure 26: Derivation of stopping sight distance requirements

Appendix D

Trip Generation Derivation

Land Use: 210
Single-Family Detached Housing

Description

A single-family detached housing site includes any single-family detached home on an individual lot. A typical site surveyed is a suburban subdivision.

Specialized Land Use

Data have been submitted for several single-family detached housing developments with homes that are commonly referred to as patio homes. A patio home is a detached housing unit that is located on a small lot with little (or no) front or back yard. In some subdivisions, communal maintenance of outside grounds is provided for the patio homes. The three patio home sites total 299 dwelling units with overall weighted average trip generation rates of 5.35 vehicle trips per dwelling unit for weekday, 0.26 for the AM adjacent street peak hour, and 0.47 for the PM adjacent street peak hour. These patio home rates based on a small sample of sites are lower than those for single-family detached housing (Land Use 210), lower than those for single-family attached housing (Land Use 251), and higher than those for senior adult housing -- single-family (Land Use 251). Further analysis of this housing type will be conducted in a future edition of *Trip Generation Manual*.

Additional Data

The technical appendices provide supporting information on time-of-day distributions for this land use. The appendices can be accessed through either the ITETripGen web app or the trip generation resource page on the ITE website (https://www.ite.org/technical-resources/topics/trip-and-parking-generation/).

For 30 of the study sites, data on the number of residents and number of household vehicles are available. The overall averages for the 30 sites are 3.6 residents per dwelling unit and 1.5 vehicles per dwelling unit.

The sites were surveyed in the 1980s, the 1990s, the 2000s, and the 2010s in Arizona, California, Connecticut, Delaware, Illinois, Indiana, Kentucky, Maryland, Massachusetts, Minnesota, Montana, New Jersey, North Carolina, Ohio, Ontario (CAN), Oregon, Pennsylvania, South Carolina, South Dakota, Tennessee, Vermont, Virginia, and West Virginia.

Source Numbers

100, 105, 114, 126, 157, 167, 177, 197, 207, 211, 217, 267, 275, 293, 300, 319, 320, 356, 357, 367, 384, 387, 407, 435, 522, 550, 552, 579, 598, 601, 603, 614, 637, 711, 716, 720, 728, 735, 868, 869, 903, 925, 936, 1005, 1007, 1008, 1010, 1033, 1066, 1077,1078, 1079

Figure 27: ITE Trip Generation, 11th Edition

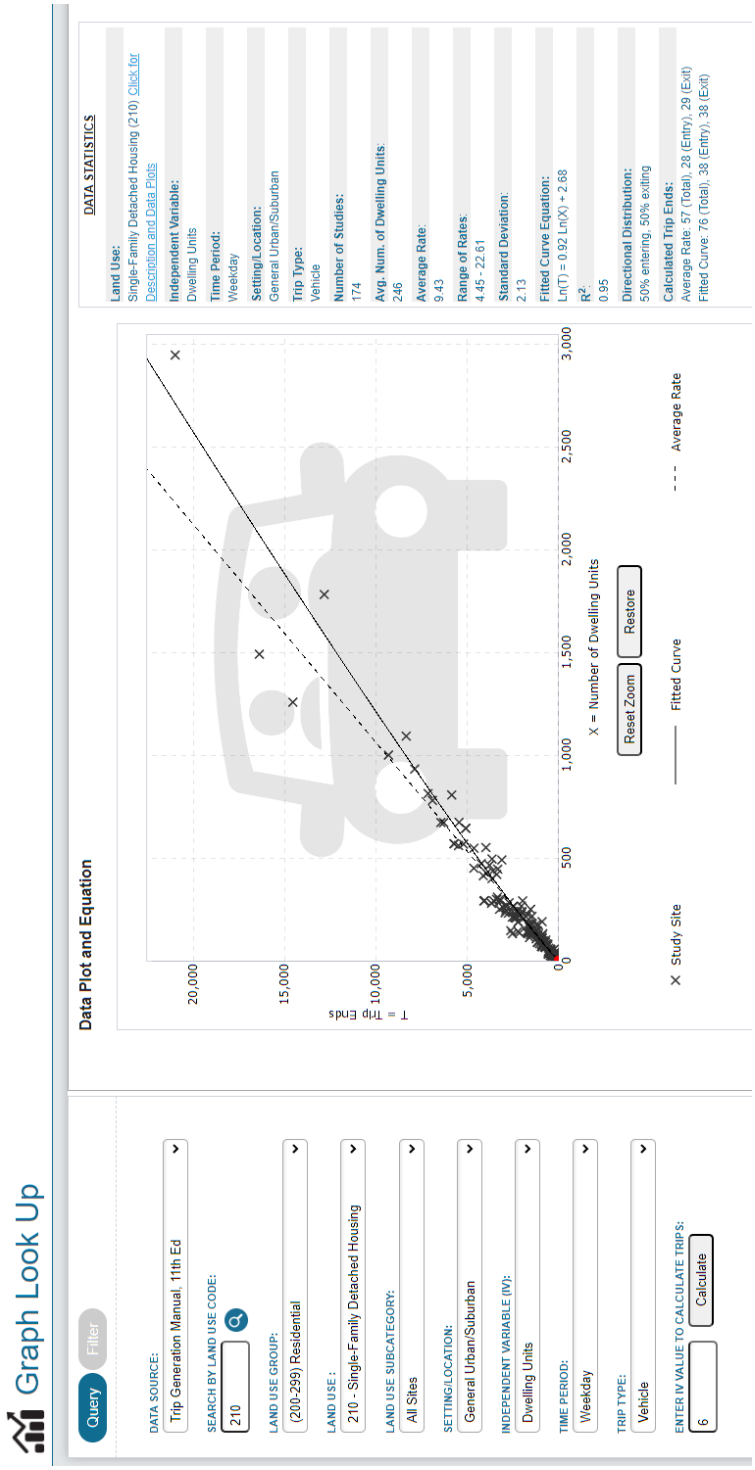


Figure 28: ITE Trip Generation, 11th Edition Copper Drive Detached

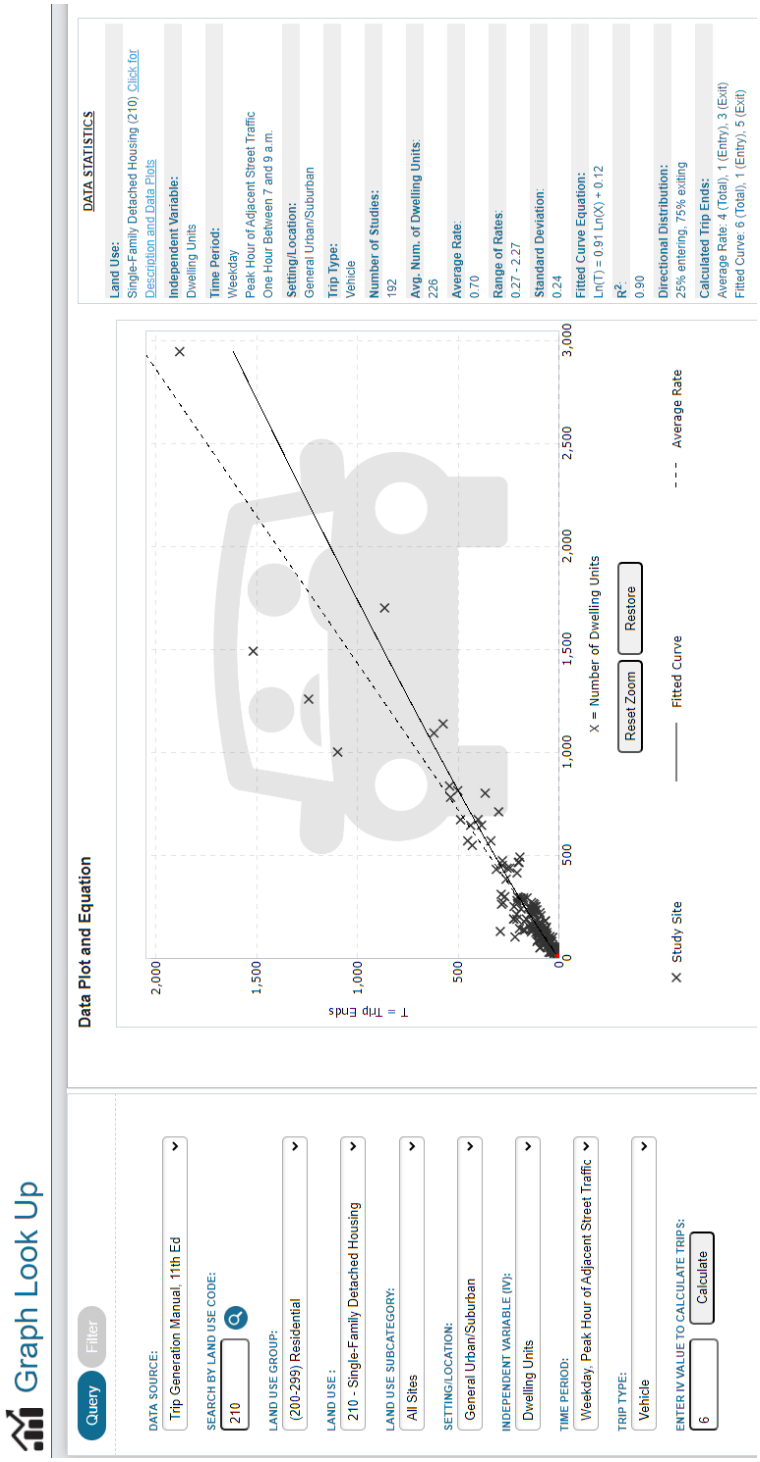


Figure 29: ITE Trip Generation, 11th Edition Copper Drive Detached

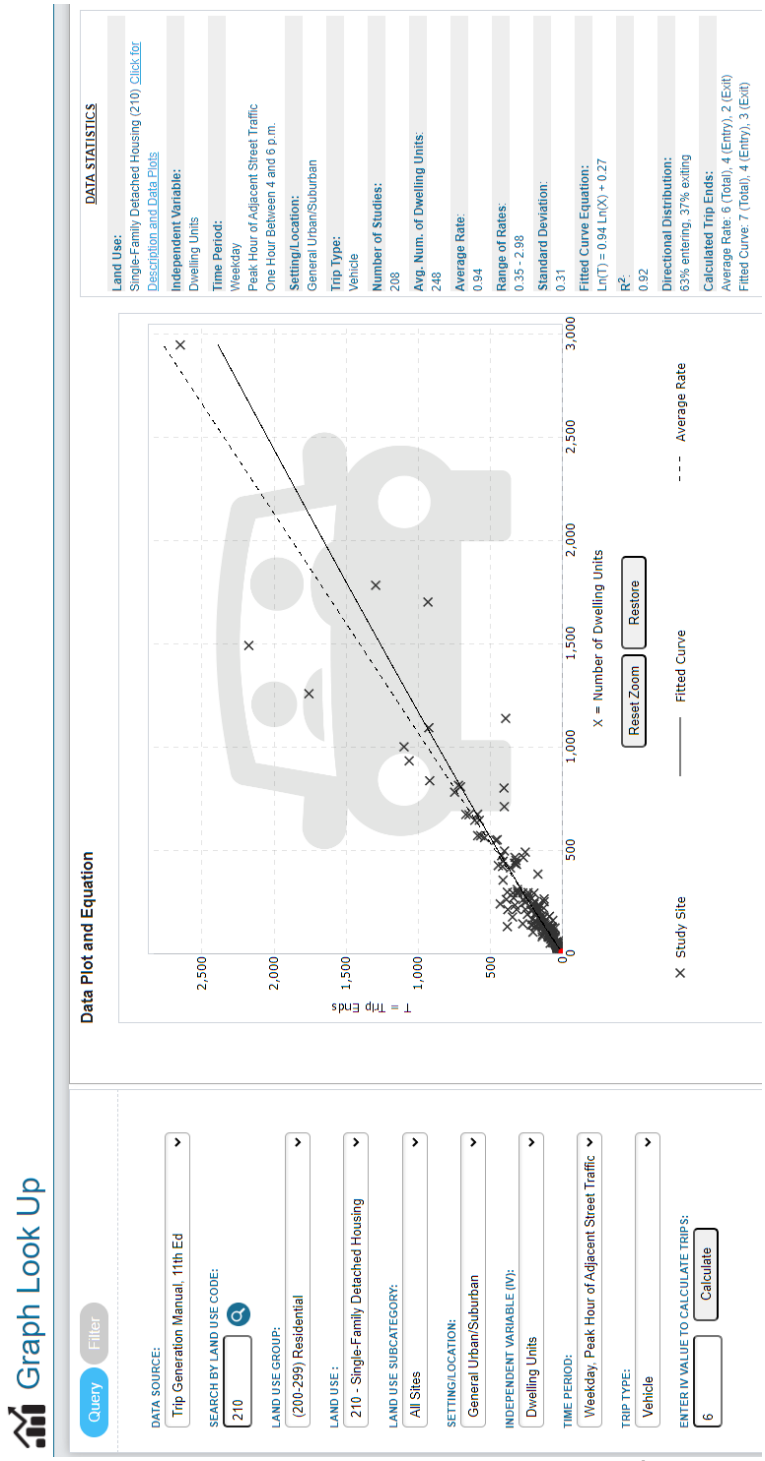


Figure 30: ITE Trip Generation, 11th Edition Copper Drive Detached

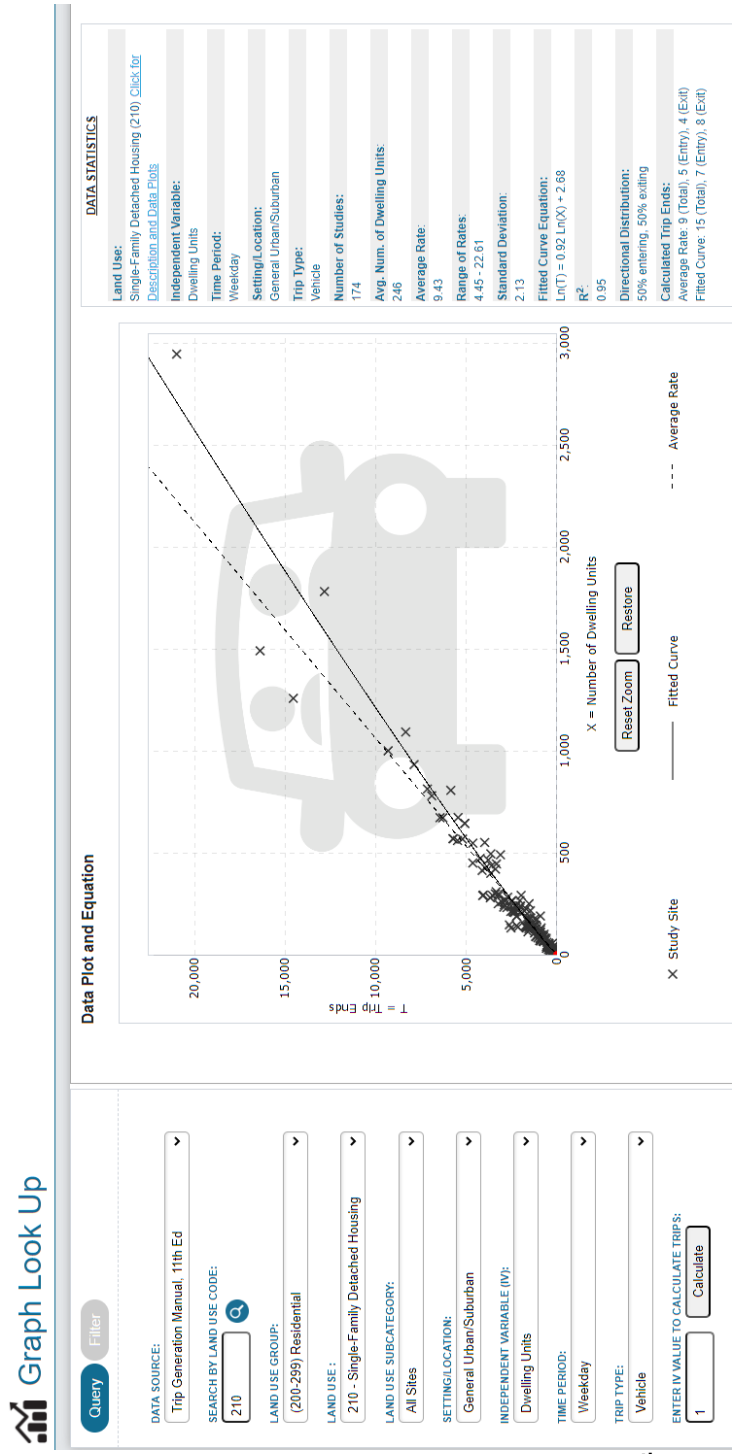


Figure 31: ITE Trip Generation, 11th Edition Ember Drive Detached

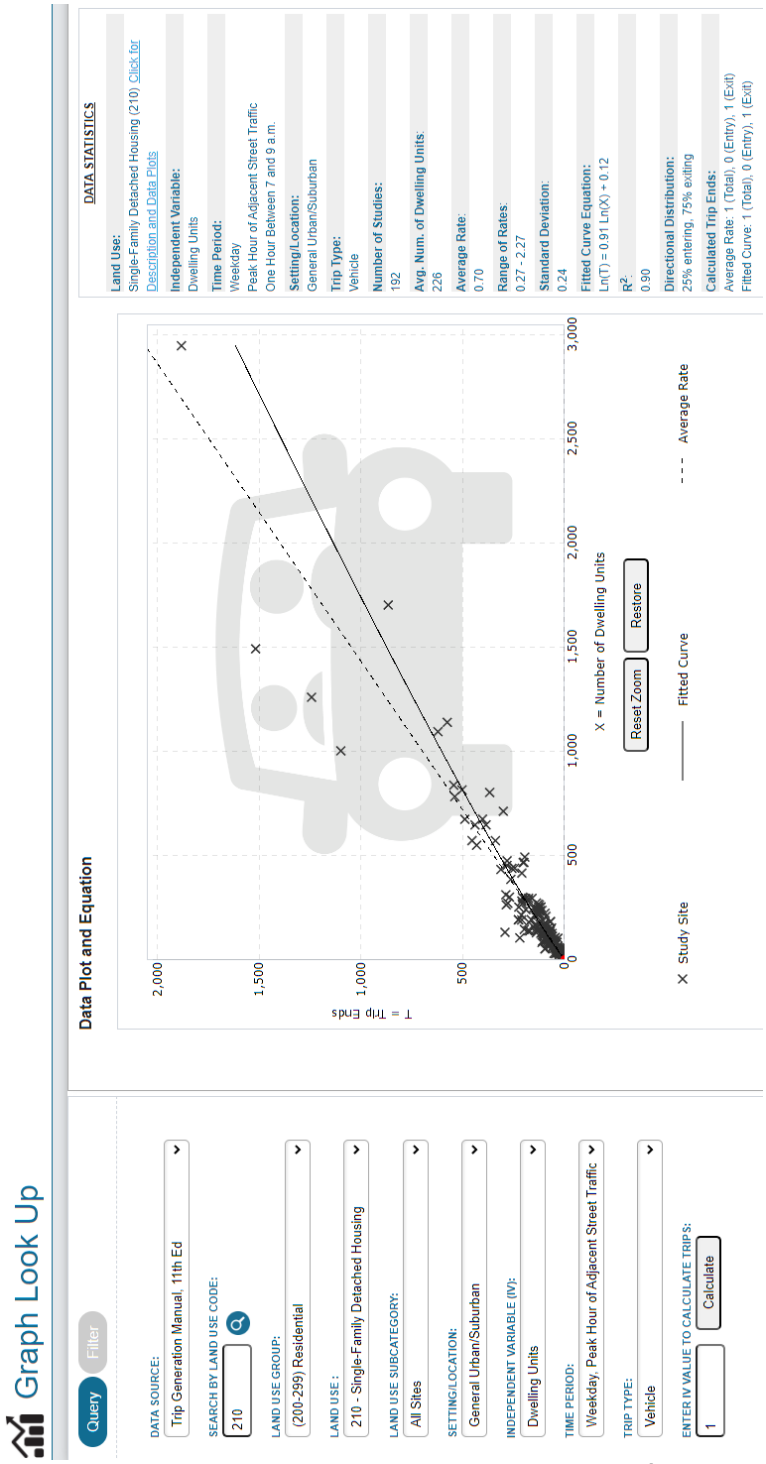


Figure 32: ITE Trip Generation, 11th Edition Ember Drive Detached

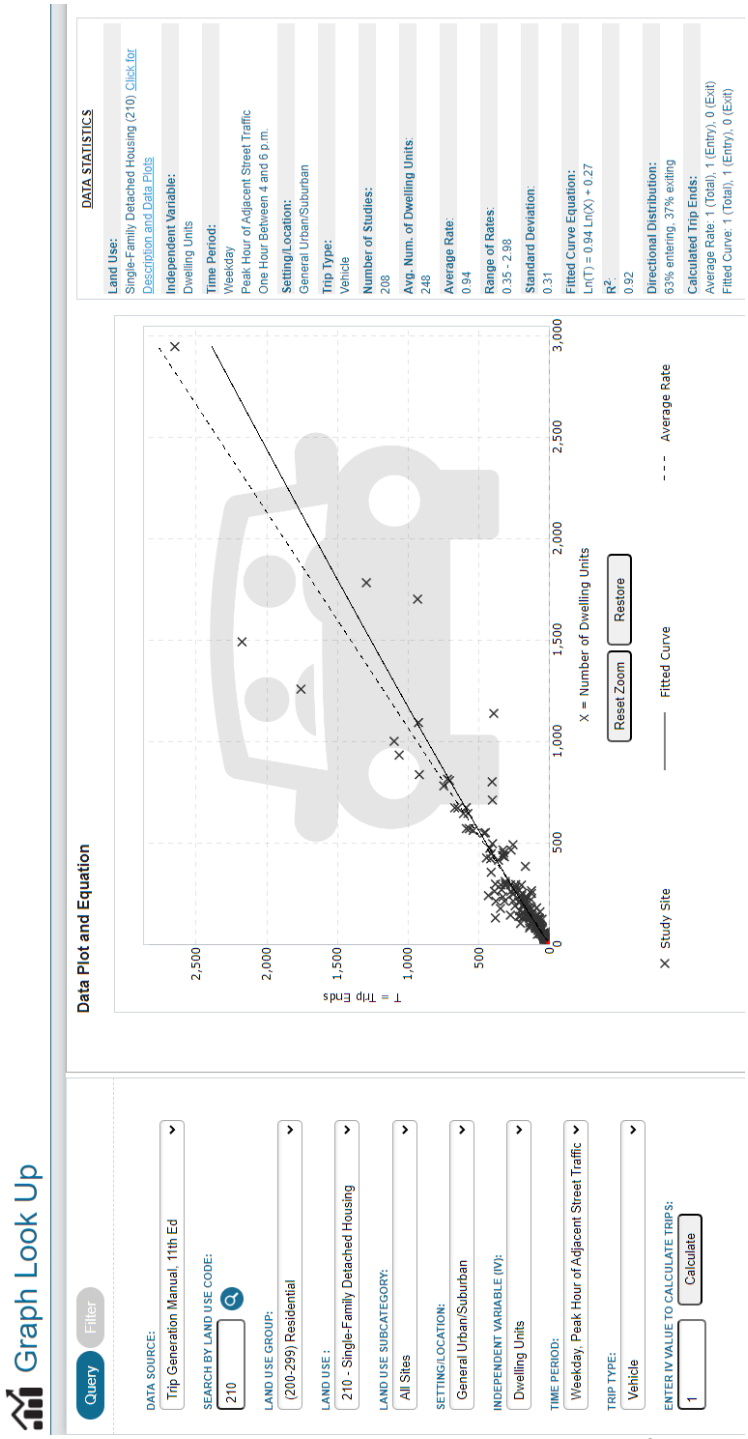


Figure 33: ITE Trip Generation, 11th Edition Ember Drive Detached

Land Use: 215
Single-Family Attached Housing

Description

Single-family attached housing includes any single-family housing unit that shares a wall with an adjoining dwelling unit, whether the walls are for living space, a vehicle garage, or storage space.

Additional Data

The database for this land use includes duplexes (defined as a single structure with two distinct dwelling units, typically joined side-by-side and each with at least one outside entrance) and townhouses/rowhouses (defined as a single structure with three or more distinct dwelling units, joined side-by-side in a row and each with an outside entrance).

The technical appendices provide supporting information on time-of-day distributions for this land use. The appendices can be accessed through either the ITETripGen web app or the trip generation resource page on the ITE website (https://www.ite.org/technical-resources/topics/trip-and-parking-generation/).

The sites were surveyed in the 1980s, the 1990s, the 2000s, and the 2010s in British Columbia (CAN), California, Georgia, Illinois, Maryland, Massachusetts, Minnesota, New Jersey, Ontario (CAN), Oregon, Pennsylvania, South Dakota, Utah, Virginia, and Wisconsin.

Source Numbers

168, 204, 211, 237, 305, 306, 319, 321, 357, 390, 418, 525, 571, 583, 638, 735, 868, 869, 870, 896, 912, 959, 1009, 1046, 1056, 1058, 1077

Figure 34: ITE Trip Generation, 11th Edition

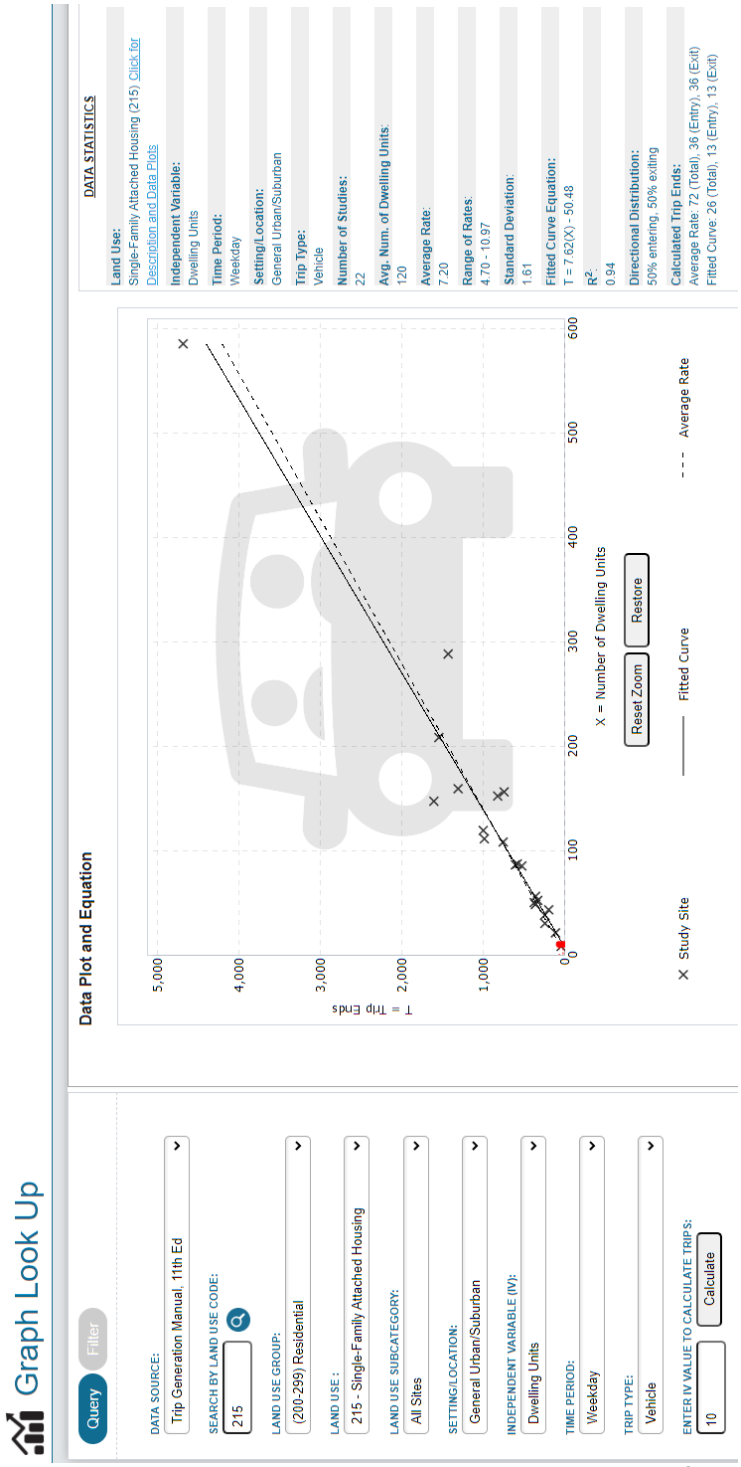


Figure 35: ITE Trip Generation, 11th Edition Copper Attached

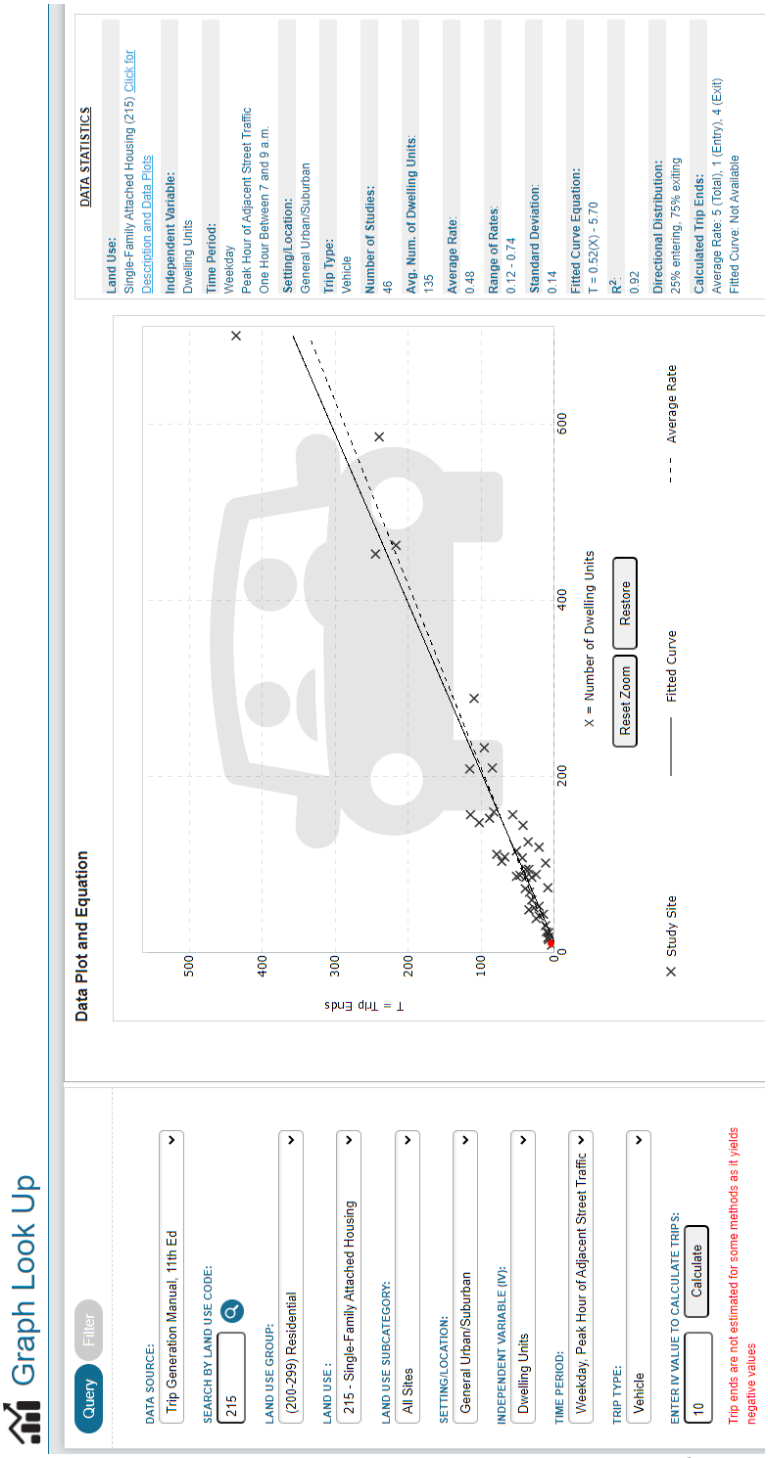


Figure 36: ITE Trip Generation, 11th Edition Copper Attached

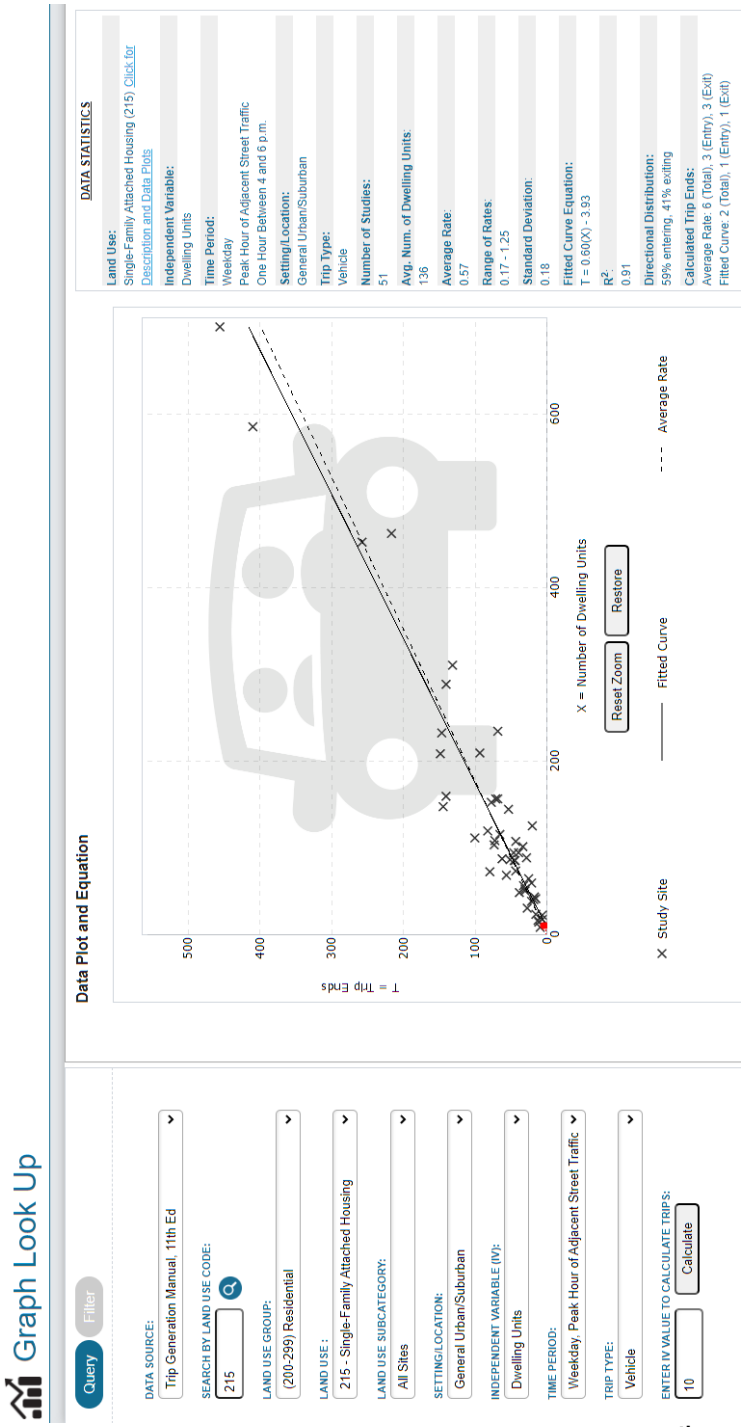


Figure 37: ITE Trip Generation, 11th Edition Copper Attached

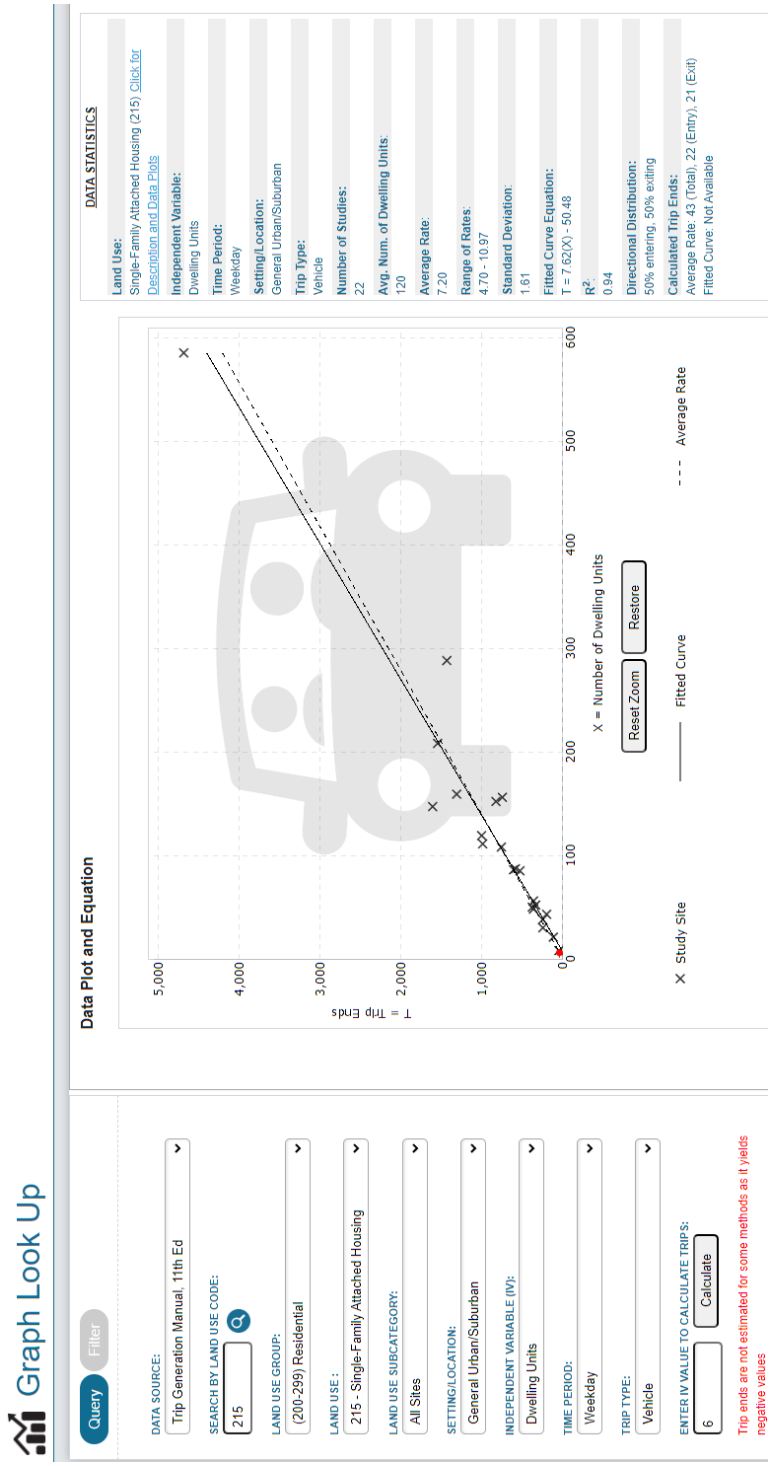


Figure 38: ITE Trip Generation, 11th Edition Ember Attached

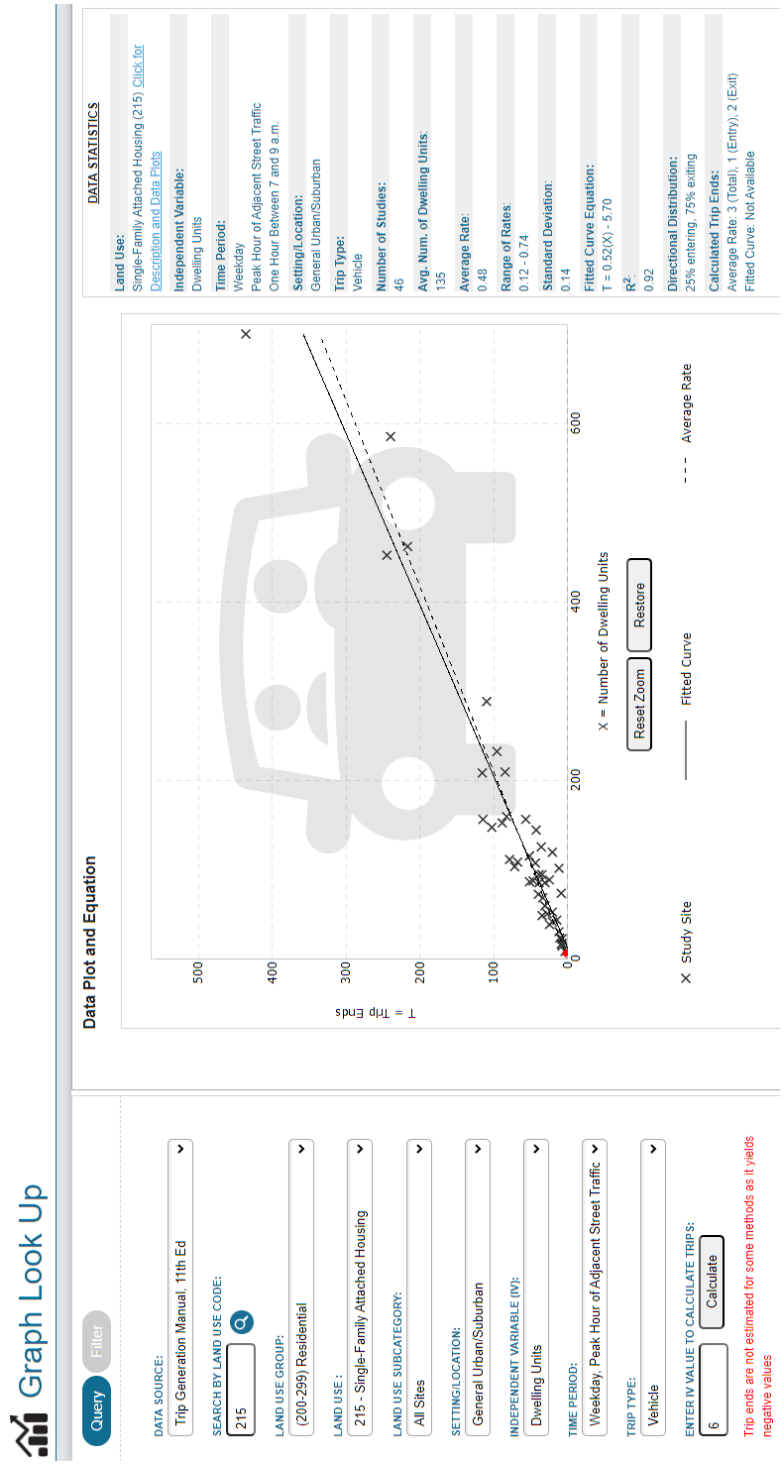


Figure 39: ITE Trip Generation, 11th Edition Ember Attached

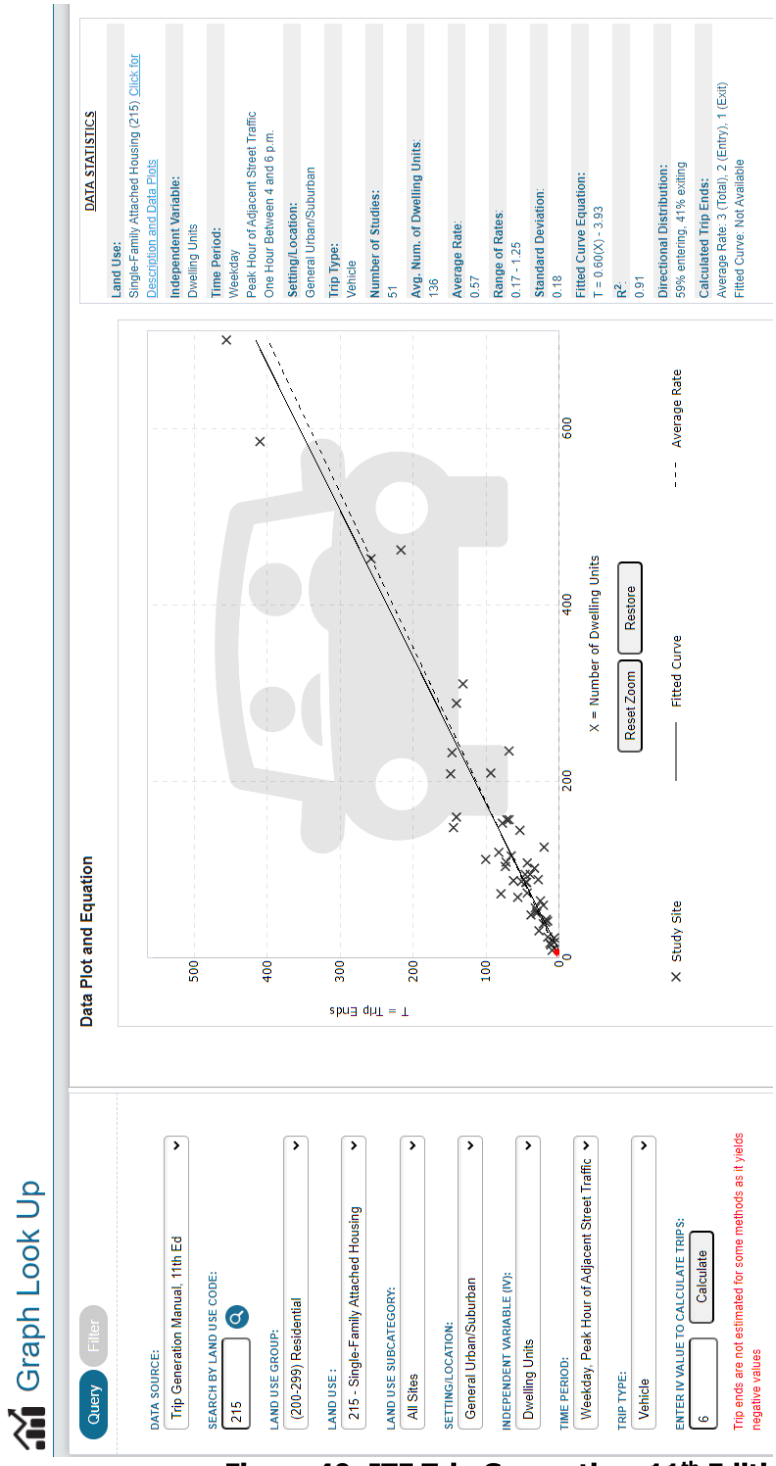


Figure 40: ITE Trip Generation, 11th Edition Ember Attached

DRAINAGE ANALYSIS
&
EROSION AND SEDIMENT CONTROL PLAN

Prepared for:

Knox Marsh Development LLC
242 Central Avenue
DOVER, NH 03820

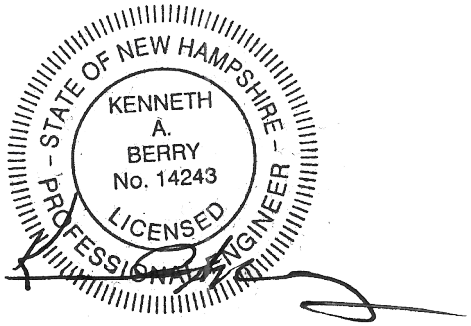
Land of

Robert Baldwin
242 Central Avenue
DOVER, NH 03820

COPPER DRIVE & EMBER DRIVE
34 NEW ROCHESTER ROAD, DOVER, NH
TAX MAP 39, LOT 103

Prepared by:

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



Project Number:
DB 2023-053

July 6, 2023
Rev: December 1, 2023

Table of Contents

USGS Quadrangle Location Map

Design Method Objectives Page 2

1.0 Existing Conditions Analysis Page 2

2.0 Proposed Subdivision Analysis Page 4

3.0 Full Comparative Analysis Page 5

4.0 Erosion & Sediment Control, BMP's Page 6

5.0 Demonstration of Compliance with Dover Chapter 153-14 Page 15

6.0 Conclusion Page 29

Appendix I - Existing Conditions Analysis
25 Yr-24 Hr. Full Summary
2 Yr- 24 Hr Node Listing
10 Yr -24 Hr. Node Listing
50 Yr-24 Hr. Node Listing
100 Yr-24 Hr. Node Listing

Appendix II - Proposed Conditions Analysis
25 Yr-24 Hr. Full Summary
2 Yr-24 Hr. Node Listing
10 Yr-24 Hr. Node Listing
50 Yr-24 Hr. Node Listing
100 Yr-24 Hr. Node Listing

Appendix III - Calculations, Charts, & Graphs
Extreme Precipitation Tables
NCRS USDA Web-soil Map
Site Specific Soils Survey Report & Plan
Pond #201-204 Treatment Sheets
Stormwater System Management: Inspection & Maintenance Manual & Plan
Infiltration Feasibility Study & Report
Watershed Report Card, 303(d) List, & ORW List
Filtrexx Construction Specifications

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

Map by NH GRANIT



Legend

- Parcels
- State
- County
- City/Town

Map Scale

1: 24,000

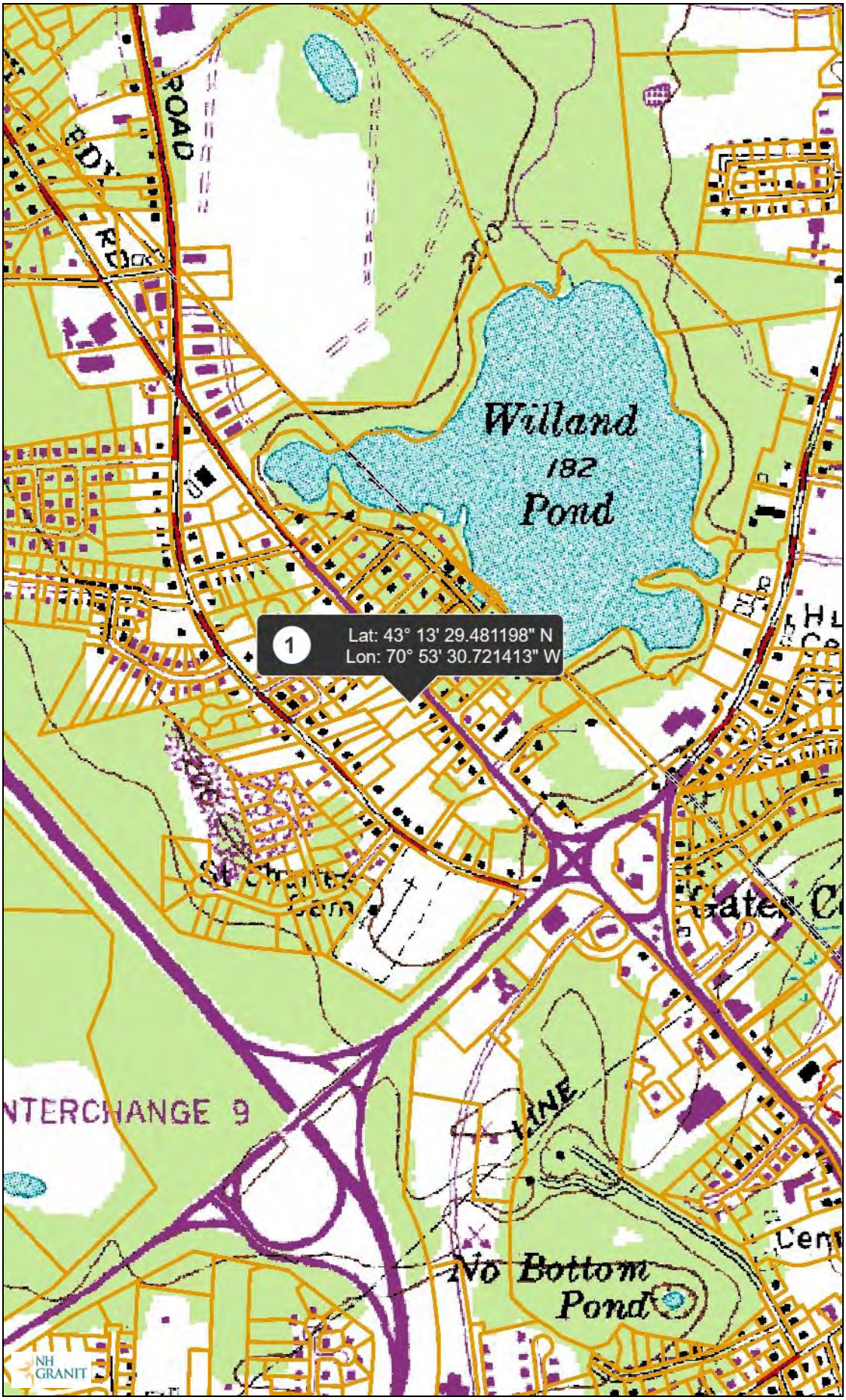
© NH GRANIT, www.granit.unh.edu

Map Generated: 7/13/2023

Notes



Map by NH GRANIT



Legend

- Parcels
- State
- County
- City/Town

Map Scale

1: 10,000

© NH GRANIT, www.granit.unh.edu

Map Generated: 7/13/2023

Notes



DESIGN METHOD OBJECTIVES

Knox Marsh Development, LLC is proposing to develop six new duplex structures in addition to the existing single-family home on Tax Map 39, Lot 103 and the conversion of two single family homes to duplex structures on Tax Map 39, Lot 104 (lot merger proposed). The majority of the lot is grassed in the existing condition. This Drainage Analysis includes the original approved and constructed Copper Drive project (Dover #P22-27). The developed roadway at the southwest side of the subject parcel will be referred to as Copper Drive, as it is an extension of the existing Copper Drive and the roadway to the northeast side of the subject parcel located off of New Rochester Road will be referred to as Ember Drive.

An Existing and Proposed Conditions analysis was conducted for the purpose of estimating the peak rate of stormwater run-off from the property and subsequently designing adequate mitigation of drainage. There is a single existing drainage discharge point which is identified in the existing analysis and duplicated in the proposed conditions analysis. Designing two watershed models we have compared the differences in these rates of peak run-off and surface water volume. Sheet W1, Existing Conditions Watershed Plan, outlines the characteristics of the site in its existing or pre-construction conditions for Tax Map 39, Lot 103. While Sheet W1, Existing Conditions and outlines the characteristics of post-construction conditions for Tax Map 39, Lot 104 (Copper Drive and house construction). The post-construction conditions of Tax Map 39, Lot 104 was chosen as opposed to the pre-construction conditions, due to the reduction in peak rate of runoff and surface water volume from the constructed condition (See approved Drainage Analysis for Dover #P22-27 & Sheet W1). The second analysis displays the proposed (post-construction) conditions for Tax Map 39, Lot 103 (See Sheet W2.) The analysis was conducted using data for; 2 Yr-24 Hr (3.61”), 10 Yr-24 Hr (5.44”), 25 Yr-24 Hr (6.87”), 50 Yr-24 Hr (8.20”), and 100 Yr-24 Hr (9.79”) storm events. Storm event analysis was accomplished using the USDA SCS TR-20 method within the HydroCAD Stormwater Modeling System environment and rainfall quantities are based on the Extreme Precipitation Table for this location from the Northeast Regional Climate Center / Cornell University (http://precip.eas.cornell.edu). As Dover is considered a Seacoast Community by NHDES, the Extreme Precipitation quantities have been adjusted to be 115% of the documented rainfalls for the 24-hour events.

1.0 Existing Conditions Analysis:

Reference: Sheet W1 - Existing Conditions Watershed Plan (Enclosed)
Existing Conditions Plan
Site Specific Soils Map Plan

The existing property consists of several residential parcels or limited common areas, each with an existing house and attached or detached garage. There are three subcatchments flowing to off-site nonpoint final reaches. The combined area of the property is 2.38 acres and the area of the analysis is 3.59 acres. There were no wetlands identified on the site. The current use is supported by municipal water and sewer. On-

site soils were mapped by John P. Hayes III, CSS #87 and shown on the Site Specific Soils Map and included report.

The soils are made up of WdA - Windsor, which is classified as Hydrologic Soil Group (HSG) A and 350 - Udipsaments which is classified as HSG B. Off-site soils consist of WdA – Windsor loamy sand, which is classified as Hydrologic Soil Group A, based on the USDA, NRCS Websoil. Land covers include pavement, grass, roofs, gravel, woods, water (pool).

Water drains overland flow into the City of Dover MS4 System and into Willand Pond (NHLAK600030405-03). The impairment of the watershed are as follows:

Willand Pond (NHLAK600030405-03),
Mercury, NE Regional Mercury TMDL, December 20, 2008, TMDL #33883
Escherichia coli, 58 NH Bacteria Impaired Waters, August 29, 2011, TMDL #40665
Non-Native Aquatic Plans
Other flow regime alterations
Oxygen, Dissolved
Dissolved oxygen saturation
pH, Low Priority

Final Reach #100:

*The existing conditions analysis is based upon Copper Drive being completed and designed as approved. It is still under construction at the time of application. *

Subcatchment #1 consists of land not interrupted/disturbed by the development of Copper Drive. This includes off-site land from Tax Map 39, Lot 69-E and Tax Map 39, Lot 102. The remainder of the area includes the subject parcel of Tax Map 39, Lot 103 and the Limited Common Area land remaining from the Copper Drive development. Runoff flows south over the property line to a nonpoint discharge reach analyzed as **Final Reach #100**. Land is made up of roofs, paved roadway and driveway, residential lawn, and woods.

Subcatchment #2 is remaining area of the Existing Conditions that is disrupted by the proposed development and routed through an inlet sump to a Rain Garden w/ Infiltration. As the stormwater routed through this inlet sump is generated primarily from offsite (Tax Map 39, Lot 69-E), a sediment forebay provides adequate pre-treatment, but the system does not treat the entire offsite water quality volume. This Rain Garden functions as a level spreader once the infiltration cell is full and is only proposed to provide compliance with the 2-Yr peak rate of runoff at **Final Reach #100** as part of the original Copper Drive design. Land is made up of roofs, paved roadway and driveway, residential lawn, and a pool.

Subcatchments #11 and #12 are the direct contributing areas to **Porous Pavement w/ Infiltration #101 (Pond 101P)** and **Rain Garden w/ Infiltration #102 (Pond 102P)** respectively. Porous Pavement w/ Infiltration (Pond 101P) is not routed to the final reach because the pond is able to infiltrate the 100-Yr storm event. The body of porous pavement is modeled in a conservative manner, only the primary roadway (301 LF, 24' wide) storage volume is modeled. In the constructed condition the driveways will provide additional infiltration and storage capabilities beyond what is modeled. Rain Garden w/ Infiltration #102 is routed as a point discharge to the analysis point at **Final Reach 100.**

2.0 Proposed Conditions Analysis:

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

The proposed conditions analysis consists of sixteen (16) subcatchments. The final analysis point from the existing analysis is preserved. Stormwater BMPs with pond numbers in the 100's have been previously approved and constructed, while stormwater BMPs in the 200's are proposed as part of this project. Land covers include pavement, grass, roofs, gravel, woods, water (pool).

Final Reach #100:

Subcatchment #1 is the remaining, mostly off-site (Tax Map 39, Lot 102) area that drains to an Infiltration Sump (**Pond #1)** and flows to the northwest to **Final Reach #100** for the 100YR-24 HR storm event only. Land is made up of roofs, paved roadway and driveway, residential lawn, and woods. **Pond #1** exists for the purpose of being a sediment pond during construction, protection of abutting properties during extreme precipitations times, and snow storage purposes.

Subcatchment #3 is the remaining area (mostly wooded) of the Existing Conditions subcatchment from the north that is not diverted by the proposed development (not draining to **Pond #1**) and is a non-point discharge. **Subcatchment #2** is remaining area of the Existing Conditions that is disrupted by the proposed development and routed through an inlet sump to a Rain Garden w/ Infiltration. As the stormwater routed through this inlet sump is generated primarily from offsite, a sediment forebay provides adequate pre-treatment, but the system does not treat the entire offsite water quality volume. This Rain Garden functions as a level spreader once the infiltration cell is full and is only proposed to provide compliance with the 2-Yr peak rate of runoff at **Final Reach #100** as part of the original Copper Drive design. Land is made up of roofs, paved roadway and driveway, residential lawn, and a pool.

Subcatchment #4 is the area that drains to an infiltration sump **(Pond #4).** This area includes the grassed area and rear roof line of the houses along the southern

edge of Copper Drive and adjacent to the porous walkway between the proposed duplex units. **Pond #4's** primary outlet (12" RCP) does not function until the 100YR-24HR storm event, which then overflows to **Pond #1** and to **Final Reach #100**. Land is made up of roofs and residential lawn. **Pond #4** exists for the purpose of being a sediment pond during construction, protection of abutting properties during extreme precipitations times, and snow storage purposes.

Subcatchments #11 and #12 are the contributing areas to **Porous Pavement w/ Infiltration #101 (Pond 101P)** and **Rain Garden w/ Infiltration #102 (Pond 102P)**. Porous Pavement w/ Infiltration (Pond 101P) is not routed to the final reach because the pond is able to infiltrate the 100-Yr storm event. The body of porous pavement is modeled in a conservative manner, only the primary parking area (301 LF, 24' wide) storage volume is modeled. In the constructed condition the driveways will provide additional infiltration and storage capabilities beyond what is modeled. Rain Garden w/ Infiltration #102 is routed as a point discharge to the analysis point at **Final Reach 100.** Land is made up of roofs, paved roadway, and residential lawn.

Subcatchments #21 and #22 are the contributing areas to **Porous Pavement w/ Infiltration #201 (Pond 201P)** and **Porous Pavement w/ Infiltration #202 (Pond 202)**. Both porous pavement ponds are not routed to the final reach because the ponds are able to infiltrate the 100-Yr storm event. Land is made up of roofs, paved roadway, and residential lawn

Subcatchments #31, #32, #33, #34, #35, #36 are the proposed roofs of the duplex structures that are captured via gutter and downspout and routed to a porous pavement or pavers system for infiltration. **Subcatchment #31,** is routed to **Porous Pavement w/ Infiltration #201 (Pond 201P). Subcatchments #32, #33, #34** are routed to **Porous Pavers w/ Infiltration #203 (Pond 203P). Subcatchments #35 & #36** are routed to **Porous Pavement w/ Infiltration #202 (Pond 202P).**

Summary

Porous Pavement w/ Infiltration #201, Porous Pavement w/ Infiltration #202, Porous Pavers w/ Infiltration #203, & Porous Pavers w/ Infiltration #204 captures all of the runoff from the proposed roadways and roofs, in addition to some proposed roof area for Lot 103. This runoff is infiltrated after treatment through the filter course of the pavement. The peak rate of runoff from the proposal is reduced in the five storm events, at both final reaches, analyzed comparing pre-conditions to post-conditions. The design provides overflow areas in case of porous pavement failure (Infiltration Sumps #1P & 4P). The two catch basins provided on the project are not intended to infiltrate stormwater during regular use. These are provided as back up incase of porous pavement failure, or in snow conditions where the infiltration sumps are filled with snow to assist with infiltration.

3.0a Stormwater Treatment:

Surface water runoff from the development area is being treated by porous pavers w/ infiltration. Time of Concentration for porous pavement practices is a standard 800

minutes direct entry when using a 41 inch base course according to UNH Stormwater Center. In our practice we are using a 24 inch base course, resulting in a scaling of the Tc. in proportion to the course thickness of 468 minutes, then apply a factor of safety of two (2). We have determined a 234 minute time of concentration is proportionately appropriate. Using this same process, porous pavers with a 9" stone base results in a Tc. of 176 minutes. Applying a factor of safety of two (2), results in a Tc. of 88 minutes. 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.

3.0b Stormwater Infiltration:

Groundwater recharge volume requirements are satisfied by Porous Pavement w/ Infiltration #201, Porous Pavement w/ Infiltration #202, Porous Pavers w/ Infiltration #203, & Porous Pavers w/ Infiltration #204 (Ponds #201, #202, #203, & #204). (Sheets P-201, P-202, P-203, & P-204). See Infiltration Feasibility Study also prepared by Berry Surveying & Engineering and published on the same day.

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	0.62	2.54	4.46	6.43	8.91
	Proposed	0.35	1.48	2.51	3.52	4.75

ANALYSIS COMPONENT: VOLUME (Acre Feet)

		2 Yr	10 Yr	25 Yr	50 Yr	100 Yr
Final Reach #100	Existing	0.101	0.330	0.556	0.790	1.093
	Proposed	0.040	0.148	0.253	0.363	0.534

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

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

The proposed site development is protected from erosion and the abutting properties are protected from sediment by the use of Best Management Practices as outlined in the New Hampshire Stormwater Manual, Volume 2, Post-Construction Best Management Practices Selection & Design (December 2008, NHDES & US EPA); and City of Dover Chapter 153-14 A, Stormwater Management, Erosion Control, and Flood Hazards. **Temporary stabilization measures should be in place within seven calendar**

days for exposed soils areas that are within one hundred feet of a surface water body or a wetland and no more than 14 calendar days for all other areas. Permanent stabilization should be in place within three calendar days following completion of final grading of exposed soil areas. Erosion and sediment control measures shall be installed prior to any soil land disturbance and must be reviewed and approved by the City of Dover Community Services Department. All swales and drainage structures will be constructed and stabilized prior to having run-off directed to them. Abutting properties will not be adversely affected by this development. Reference is also made to the Inspection, Operation & Maintenance Manual which has been written specifically for this project and available to the owner.

As this proposed site redevelopment disturbs greater than one acre of land, for the project on Tax Map 39, Lot 103 & 104 combined, a Notice of Intent is required to be submitted to the US EPA. This project will be covered by the Construction General Permit. As this project proposes less than 100,000 square feet of impact it does not require an issued permit by NHDES AoT, however construction is governed by a General Permit by Rule under NH RSA 485-A:17. Either a Stormwater Pollution Prevention Plan (SWPPP) or a Stormwater Management Plan (SWMP) as required by the City of Dover will be required. In either case, the requirements of Chapter 153-14 A will be included in the plan.

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

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

Porous Asphalt Pavement/Pavers & Infiltration Bed

Description: The Permeable Pavement system consists of a porous pavement surface and permeable sub-base materials that is going to allow infiltration of surface water runoff into the native subsoil. 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.

In-Ground Infiltration Basin (Sumps)

Description: Infiltration basins are impoundments designed to temporarily store runoff, allowing all or a portion of the water to infiltrate into the ground. An infiltration basin is designed to completely drain between storm events. An infiltration basin is specifically designed to retain and infiltrate the entire Water Quality Volume. Some infiltration basins may infiltrate additional volumes during larger storm events, but many will be designed to release stormwater exceeding the water quality volume from the larger storms. In a properly sited and designed infiltration basin, water quality treatment is provided by runoff pollutants binding to soil particles beneath the basin as water percolates into the subsurface. Biological and chemical processes occurring in the soil also contribute to the breakdown of pollutants. Infiltrated water is used by plants to support growth or it is recharged to the underlying groundwater. As with all impoundment BMPs, surface infiltration basins should be designed with an outlet structure to pass peak flows during a range of storm events, as well as with an emergency spillway to pass peak flows around the embankment during extreme storm events that exceed the combined infiltration capacity and outlet structure capacity of the facility. See SWM Volume 2, 4-3.3b, Treatment Practices, In-Ground Infiltration Basin, page 88.

Maintenance Considerations: Removal of debris from inlet and outlet structures. Removal of accumulated sediment. Inspection and repair of outlet structures and appurtenances. Inspection of infiltration components at least twice annually, and following any rainfall event exceeding 2.5 inches in a 24 hour period, with maintenance or rehabilitation conducted as warranted by such inspection. Inspection and removal of accumulated sediment as warranted by inspection, but no less than once annually. Periodic mowing of embankments. Removal of woody vegetation from embankments. Inspection and repair of embankments and spillways. If an infiltration system does not drain within 72-hours following a rainfall event, then a qualified professional should assess the condition of the facility to determine measures required to restore infiltration function, including but not limited to removal of accumulated sediments or reconstruction of the infiltration trench.

Culvert Inlet Sumps & Cross Culvert w/ Flared End Sections

Description: In one location, to capture the surface water runoff that is trapped within the inside of the residential roadway and residential runoff from back yards, there is a Residential Inlet Sump. This culvert pipe, flared end sections, and constructed sump will collect the runoff that is directed to that location during and after the residential development. The culvert will allow the runoff to discharge and not allow water to pond to the house elevations in the back yards. The location of the Residential Inlet Sump will be marked and identified with headwall and bollards.

Maintenance Considerations: Vegetation and debris will need to be removed from the culvert inlet several times a year, especially late fall after the majority of the leaves have fallen and in the spring. In addition to the sump and culverts themselves, the

drainage channel will need to be inspected to ensure that the runoff intended to get to the inlets is making it to the sump. The identification fence post will be inspected for structural condition and painted condition.

Deep Sump Catch Basin

Description: A deep sump catch basin consists of a manhole-type structure with an inlet grate, an outlet pipe connected to the piped drainage system, and a sump with a depth several times the diameter of the outlet pipe. The inlet grate is located at the surface, and is sometimes combined with a vertical inlet integrated with a street or parking area curb. The sump's purpose is to capture coarse sediments and debris from the runoff intercepted by the structure. The outlet pipe can be fitted with a "hood" consisting of a cast metal or formed plastic fitting, designed to prevent floating materials from exiting the structure. Deep sump catch basins used as pretreatment are most effective if sited "off-line" since flow-through basins are more susceptible to sediment re-suspension. 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. During construction the catch basins will be protected by inlet protection per the approved construction plans. Hoods are to be installed during initial construction. See SWM Volume 2, 4-4.5 Pre-treatment Practices, 5. Pre-treatment Swales, page 144.

Maintenance Considerations:
Catch basins may require frequent maintenance. Depending on location, this may require several cleanings of the sumps each year. At a minimum, it is recommended that catch basins be inspected at least twice annually, once following snow-melt and once following leaf drop, and cleaned as indicated by inspection. Sediment should be removed when it approaches half the sump depth. If floating hydrocarbons are observed during an inspection, the material should be removed immediately by skimming, absorbent materials, or other method and disposed in conformance with applicable state and federal regulations. Cleaning may require Vacuum-truck instead of "clam-shell" to avoid damage to hood. Damaged hoods should be replaced when noted by inspection.

Conveyance Swales

Description: "Swales are stabilized channels designed to convey runoff at non-erosive velocities." (NHDES SWM) They will be trapezoidal or parabolic in section view. 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. See SWM Volume 2, 4.3 Treatment Practices, 5. Treatment Swales, page 123.
Project Intent: The swales are individually designed in the drainage analysis and specified on the design plans. The designed swales must have greater than 85%

vegetated growth prior to receiving runoff. The bottom of a treatment swale must be above the seasonal high water table.

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.

Rip Rap Outlet Protection

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

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

Stabilization for Long Term Cover

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

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

Conservation Mix

Mixture	Pounds per Acre	Pounds per 1,000 Sq. Ft.
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**

Conservation Mix will used to stabilize all 2:1 slopes and all land area disturbed within the wetland buffer. As the site is to be stabilized with erosion control mix as a mulch, the vegetation should be established with a high percentage of white clover for growth to be established. Conservation Mix will also be used to plant and stabilize the erosion control mix mulch. Seed will originally be applied by hydroseeding which includes a tackifier. Due to the shade factor of the solar panels, special care must be taken to establish growth.

Environmental Dust Control

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

Inlet Protection / Storm Drain Inlets

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

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

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

Sediment Track-Out / Stabilized Construction Entrance / Exit

A temporary gravel construction entrance provides an area where mud can be dislodged from tires before the vehicle leaves the construction site to reduce the amount of mud and sediment transported onto paved municipal and state roads. The stone size for the pad should be between 1 and 2-inch coarse aggregate, and the pad itself

constructed to a minimum length of 50' for the full width of the access road. The aggregate should be placed at least six inches thick. A plan view and profile are shown on Construction Details Plan. The Construction Exit will be maintained in a condition that will prevent tracking of sediment onto the public highway. When the control pad becomes ineffective, the stone should be removed along with the collected soil material, regraded on site, and stabilized. A plan view and profile are shown on the Construction Details Plan in E-101 Erosion & Sediment Control Details.

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

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

Stockpiled Sediment or Soil

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

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

Dewatering Practices

Dewatering practices are not known to be required on this site. If during construction this becomes required, an addendum will be published specific for the

requirements. As a general rule, ground water that needs to be removed from an excavation will be pumped to a sediment basin or a storm drain inlet prior to discharge from the site.

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

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

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

Construction Sequence

1. Cut and remove trees in construction area only as required.

2. Construct and/or install temporary and permanent sediment erosion and detention control facilities as required.

3. Erosion, sediment and detention control facility shall be installed & stabilized prior to any earth moving operation & or directing runoff to them.

4. Clear, cut and dispose of debris in approved facility.

5. Construct temporary culverts as required, or directed.

6. Construct roadways for access to desired construction areas. All roads shall be stabilized immediately.

7. Install pipe and construction associated appurtenances as required or directed. Install rain gardens. All disturbed areas shall stabilized immediately after grading.

8. Begin permanent and temporary seeding and mulching. All cut and fill slopes and disturbed areas shall be seeded or mulched as required, or directed. No area is allowed to be disturbed for a length of time that exceeds 60 days before being stabilized. Daily, or as required. All roadways and parking areas shall be stabilized within 72 hours of achieving finished grades. All cut and fill slopes shall be stabilized within 72 hours of achieving finished grades.

9. Construct temporary berms, drains ditches, silt fences, sediment traps, etc. mulch and seed as required.

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

11. Complete permanent seeding and landscaping.

12. Remove temporary erosion control measures after seeding areas have established themselves and site improvements are complete.

13. Smooth and revegetate all disturbed areas.

14. Finish paving all roadways.

Temporary Erosion Control Measures

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

2. Erosion, sediment 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 3 days of final grading, or temporarily stabilized within 14 days of initial disturbance of soil.

Inspection and Maintenance Schedule

Sediment control measures will be inspected during and after storm events to ensure that the practice still has integrity and is not allowing sediment to pass. Depending on SWPPP criteria, all controls will be inspected either once every 7 days and after storm

events. Inspection reports must be submitted to City of Dover Engineering Department. Sediment build-up in swales and level spreaders will be removed if it is deeper than six inches. See also Stormwater System Operation: Inspection & Maintenance Manual published separately also by Berry Surveying & Engineering. See also Storm Water Pollution Prevention Plan (SWPPP) and / or Stormwater Management Plan (SWMP) developed in accordance with EPA NPDES or City of Dover requirements.

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

5.0 Demonstration of Compliance with Dover Chapter 153-14

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

(3) Design standards.

(a) Minimum protections and management standards.

[1] Where applicable, all development must comply with the EPA Phase II Stormwater Rules and the City's MS4 permit, as amended.

Acknowledgement of project compliance with the EPA Phase II stormwater rules is shown on the Grading Plan, sheet #7, note #11.

[2] Existing surface waters, including ponds, rivers, perennial and intermittent streams (natural or channelized), and wetlands (including vernal pools), shall be protected by the minimum buffer setback as specified in Chapter **170**, Zoning, § 170-27.1. Stormwater and erosion and sediment control best management practices (BMPs) shall be located outside the specified buffer zone unless otherwise approved by the Planning Board.

There are no wetlands/wetland buffers located on the subject parcel.

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

Please find Porous Pavement w/ Infiltration & Porous Pavers w/ Infiltration design, sheet #8. These LIDs are proposed across the project due to infiltration capacity of the existing soil. A reduction in stormwater runoff volume will occur from the implementation of the LIDs. See comparative analysis in section 3.1.

[4] All proposed stormwater practices and measures shall be installed and maintained in accordance with manufacturers' specifications and performance specifications outlined in the New Hampshire Stormwater Management Manual Volume 2 (December 2008 or current revision) a copy of which can be found on the NHDES website.

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

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

Please find note #13 on the Erosion & Sediment Control Plans. Prior to construction, a stormwater pollution prevention plan will be developed in accordance with US EPA CGP 2022.

[6] Salt and other deicing materials shall be stored under cover or located such that no direct discharges to receiving waters are possible. Snow storage areas shall be located such that no direct discharges to receiving waters are possible. See the NHDES guidance fact sheet on road salt and snow disposal.

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

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

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

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

Parking surfaces and roads are provided porous pavement and walkways within the project are provided as porous pavers. The extent of these surfaces has been minimized to the extent practical.

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

Stormwater runoff is conveyed to a series of porous pavement or porous pavers and infiltrated. Two additional infiltration areas are proposed that receive offsite flow or grassed/roof area to control stormwater existing the subject parcel.

(b) Stormwater management for new development.

[1] Runoff of impervious surfaces shall be treated to provide 80% removal of total suspended solids (TSS) and 50% removal of both total nitrogen and phosphorus. Removal rates shall be determined using approved manufacturer's pollutant removal efficiency analysis or the pollutant removal efficiencies outlined in the New Hampshire Stormwater Management Manual Volume 1, Appendix E (December 2008 or current revision), a copy of which is available from the NHDES website.

Utilizing this standard and guidance from the Pollutant Removal Efficiencies for the NH Stormwater Manual, Volume 2, the design can expect to see the following annual performance standards for a ***Permeable Pavement that infiltrates WQV >75' from water***

- *Total Suspended Solids (TSS) reduction of 90%*
- *Total Nitrogen (TN) reduction of 60%*
- *Total Phosphorous (TP) reduction of 65%*

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

Extreme Precipitation Tables are included in the drainage binder and have been used for analysis.

[3] Measures shall be taken to control the post-development peak rate runoff so that it does not exceed predevelopment runoff for the two-, ten-, twenty-five- and fifty-year, twenty-four-hour storm events.

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

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

Please find comparative analysis in Section 3. 1 for the demonstration of a reduction in volume at the final reach

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

Infiltration rates for designing groundwater recharge practices have been determined in accordance with Section Env-Wq 1501.14. Soil type 350A & B (Deerfield derivation) is able to infiltration at a rate of 3in/hr after a factor of safety of two applied.

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

All Practices have been sized within these parameters. Infiltration Sump #1P provides 0.92' of freeboard and Infiltration Sump #4P provides 0.69' of freeboard at the 10YR-24HR event.

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

This standard is not applicable for this project.

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

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

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

The seasonal high-water table elevations are shown in the Porous Pavement/Porous Paver Plan, sheet #8.

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

All practices have been designed to be maintained and located within the open site.

[11] Plantings in treatment areas shall be native grasses, shrubs and/or other native plants in sufficient numbers and density to prevent soil erosion and to achieve water-quality treatment.

See section 4.0 of this narrative for BMP plantings and stabilization seeding descriptions. The applicant is following USDA NRCS seeding recommendations.

(c) Stormwater management for redevelopment. In order to determine the stormwater requirements for redevelopment projects, the percentage of the site covered by existing impervious areas must be calculated. Stormwater requirements for redevelopment will vary based upon the amount of site surface area that is covered by existing impervious surfaces.

These standards are not applicable for this project.

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

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

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

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

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

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

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

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

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

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

(d) Erosion control standards during construction. The following standards shall be applied in project planning and shall be implemented prior to and during construction activity:

[1] All proposed measures shall meet, at a minimum, the design standards for best management practices set forth in the New Hampshire Stormwater Management Manual Volume 3 (December 2008 or current revision), a copy of which is available from the NHDES website.

See Inspection & Maintenance Manual and Erosion & Sediment Control Plans, sheet #10.

[2] When a project requires a stormwater permit from the EPA Construction General Permit (CGP) Program, copies of the stormwater pollution prevention plan (SWPPP) inspections shall be provided to the Community Services Department.

Copies will be provided when developed and published prior to NOI submittal and construction included with the Stormwater Pollution Prevention Plan (SWPPP)

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

There is to be no disturbance outside of the limit of construction. Erosion & sediment control measures are to be in place prior to the start of land grubbing. See Erosion & Sediment Control Plans, sheet #10.

[4] The area of land disturbance shall be kept to a minimum and be limited to an area only large enough to accommodate construction activities for a particular construction phase.

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

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

Please find Erosion & Sediment Control Plan, sheet #10.

[6] Appropriate erosion and sediment control measures shall be installed prior to any soil land disturbance and must be reviewed and approved by the Community Services Department.

Please find Erosion & Sediment Control Plan, sheet #10.

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

There are no wetland areas, stream channels, or wetland buffers within 50' of the subject parcel.

[8] Disturbed soil areas shall be either temporarily or permanently stabilized. In areas where final grading has not occurred, temporary stabilization measures should be in place within seven calendar days for exposed soil areas that are within 100 feet of a surface water body or a wetland and no more than 14 calendar days for all other areas. Permanent stabilization should be in place within three calendar days following completion of final grading of exposed soil areas.

Please find Erosion & Sediment Control Plan (sheet #10), Inspection & Maintenance Manual, and Construction Detail Sheets E-101 & E-102.

[9] All temporary erosion and sediment control measures shall be maintained in functioning condition until final site stabilization is accomplished. A proposed BMP inspection schedule shall be included in the submittal.

Please find Erosion & Sediment Control Plan (sheet #10), Inspection & Maintenance Manual.

[10] Additional temporary stabilization for the winter season consistent with NHDES guidelines shall be in place for disturbed areas that are not permanently stabilized by October 1, or at the discretion of the Community Services Department.

Please find winter stabilization note E22, sheet E-102.

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

Please find Rolled Erosion Control Blanket (RECB) Slope Stabilization Detail E21, sheet E-102.

[12] All temporary erosion and sediment control measures shall be removed after final site stabilization. Trapped sediment and other disturbed soil areas resulting from the removal of temporary measures shall be permanently stabilized within 30 calendar days unless conditions dictate otherwise.

Please find Inspection & Maintenance Manual containing this statement.

[13] For projects proposing to disturb and expose soils in areas of 10 acres or more at one time, a temporary (or permanent) sediment basin must be provided with storage for a calculated volume of runoff from a drainage area from a two-year, twenty-four-hour storm, or equivalent control measures, where attainable, until final stabilization of the site. Alternatively, the sediment basin can be sized to provide 3,600 cubic feet of storage per acre of drainage area until final stabilization of the site. In determining appropriate locations and number of sediment basins needed, the operators may consider such factors as erodibility of site soils, slope lengths, available area on site, construction period and other unique site considerations.

This standard is not applicable for this project.

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

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

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

[1] The Community Services Department or its designated agent shall have access to the site to complete routine inspections.

The applicant acknowledges this standard. This is shown as note #14 on the Erosion & Sediment Control Plan.

[2] The Community Services Department shall be notified 24 hours prior to installation of a stormwater BMP in order to schedule an inspection. These inspections shall be completed during normal working hours.

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

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

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

[4] All SWPPP inspections must be conducted by a qualified professional such as a professional engineer (PE), a certified professional in erosion and sediment control (CPESC), a certified erosion sediment and stormwater inspector (CESSWI), or a certified professional in stormwater quality (CPSWQ). Inspection reports shall be submitted to the Community Services Department.

The applicant acknowledges this standard.

[5] The owner is ultimately responsible for the installation, construction, inspection, and disposition of all stormwater management and erosion control measures required by the provisions of these regulations.

The applicant acknowledges this standard.

(f) Stormwater management plan (SWMP) submittal requirements. At the discretion of the Planning Board or Community Services Department, a technical review by an independent third party may be required of any SWMP prepared under these regulations. Such a review shall be performed by a qualified professional consultant and the expense of which shall be the full responsibility of the owner/applicant.

The applicant acknowledges this standard.

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

[a] Description of erosion and sediment control measures as well as sequence for final stabilization of the project site.

Please find Erosion & Sediment Control Plans, sheet #10.

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

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

[c] Description of LID proposed measures.

Please see section 4.0 of this drainage narrative. Low impact development measures include the implementation of two porous pavement bed w/infiltration and two porous paver beds w/infiltration.

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

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

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

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

Please find Existing Conditions Plans, sheet #2. There are no steep slopes, wetlands, or flood zones within the subject parcel.

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

Please find Site Specific Soils Survey (sheet #3) and W-1 Existing Watershed Plan.

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

Please find W-1 Existing Watershed Plan, Site Specific Soils Survey (sheet #3).

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

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

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

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

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

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

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

Utilizing this standard and guidance from the Pollutant Removal Efficiencies for the NH Stormwater Manual, Volume 2, the design can expect to see the following annual performance standards for a ***Permeable Pavement that infiltrates WQV >75' from water***

- *Total Suspended Solids (TSS) reduction of 90%*
- *Total Nitrogen (TN) reduction of 60%*
- *Total Phosphorous (TP) reduction of 65%*

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

Please see section 4.0 of this drainage narrative. Low impact development measures include the implementation of two porous

pavement bed w/infiltration and two porous paver beds w/infiltration.

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

Porous Pavement & Porous Pavers are proposed on site and qualify as low impact development.

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

Please find comparative analysis demonstrating compliance with the 2-100YR 24Hr storm events.

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

Please find Infiltration Feasibility Study in Drainage Binder.

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

There is no increase in post-development runoff volume due to the infiltration proposed to occur due to the implementation of LID devices including porous pavement w/ infiltration & porous pavers w/infiltration.

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

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

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

There is no disturbance proposed within any flood zones.

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

Please find Inspection & Maintenance Manual. EPA and NHDES will require an inspection every 7 days and after a storm event greater than 0.25".

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

Please find Inspection & Maintenance Manual.

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

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

[s] Describe procedures to limit and/or optimize the use of deicing materials and minimize off-site increases in chloride levels in adjacent surface water and groundwater.

Please find Inspection & Maintenance Manual.

[t] Provide a maintenance and inspection plan for post-construction monitoring of stormwater BMPs to ensure long-term performance and functionality, including details of who will be responsible for inspections and maintenance, proposed schedule, documentation, submittal procedures and contingency plans if future maintenance is required.

Please find Inspection & Maintenance Manual and plans.

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

Copies of all state and federal permits will be provided when received.

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

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

[a] The names of the responsible qualified professionals who will implement the required reporting, inspections, and maintenance activities.

Please find Inspection & Maintenance Manual.

[b] An inspection checklist, identifying item or BMP, inspection frequency, and components to be inspected. The list shall clearly outline performance thresholds and triggers for maintenance.

Please find Inspection & Maintenance Manual.

[c] Snow and ice removal shall be performed by a contractor certified by the "Green SnoPro" Program, or approved equivalent, following best management practices for the application of deicing materials.

Please find Inspection & Maintenance Manual.

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

Please find Inspection & Maintenance Manual.

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

Please find Inspection & Maintenance Plans within the drainage binder.

[f] Inspection and maintenance log to be submitted to the City of Dover Community Services Department on an annual basis. Documents shall be submitted no later than December 15 of each year.

Please find Inspection & Maintenance Manual.

[2] The owner of record shall record at the Registry of Deeds documentation sufficient to provide notice to all persons that may acquire any property subject to the requirements and responsibilities described in the approved stormwater management plan. The notice shall comply with the applicable requirements for recording contained in RSA 477 and 478. The notice need not set forth the requirements at length, so long as it is sufficient to provide notice to prospective purchasers of the requirements for maintenance and reporting.

Please find note #29 of the Site Plan, sheet #6.

6.0 CONCLUSION

Peak rates of runoff flow are reduced in the post-construction analysis / condition, as compared to the pre-construction peak rates of runoff flow at **Final Reach #100.** This reduction occurs during the 2 Yr, 10 Yr, 25 Yr, 50 Yr, and 100 Yr/24 Hour extreme storm events due to the infiltration of the porous pavement treatment, as well as lot specific storm water mitigation as shown on the development plans and details. Per Env-Wq 1507.05(b)(1)(a) the channel protection volume is satisfied by the 2-year, 24-hour post-development peak flow rate generated from the proposed disturbance being less than the 2-year, 24-hour pre-development peak flow rate and the 2-100 year, 24-hour post-development storm volumes has not increased over the pre-development volume at the final reach.

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 and the site will operate as a General Permit by Rule under this rule. Because the site impact is greater than one acre between the two projects, a Notice of Intent with the EPA is required and the site will operation in accordance with the City of Dover Chapter 153-14 A Stormwater Management, Erosion Control, and Flood Hazards and the approved Stormwater Management Plan.

Respectfully Submitted,
BERRY SURVEYING & ENGINEERING

Christopher R. Berry, SIT
Principal, President

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

Kevin R. Poulin, PE
Project Engineer

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

JOHN P. HAYES III, CSS #87

JOHN P. HAYES III, CWS #18

WETLAND NOTES:

WETLANDS WERE DELINEATED BY JOHN P. HAYES IN NOVEMBER OF 2021

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

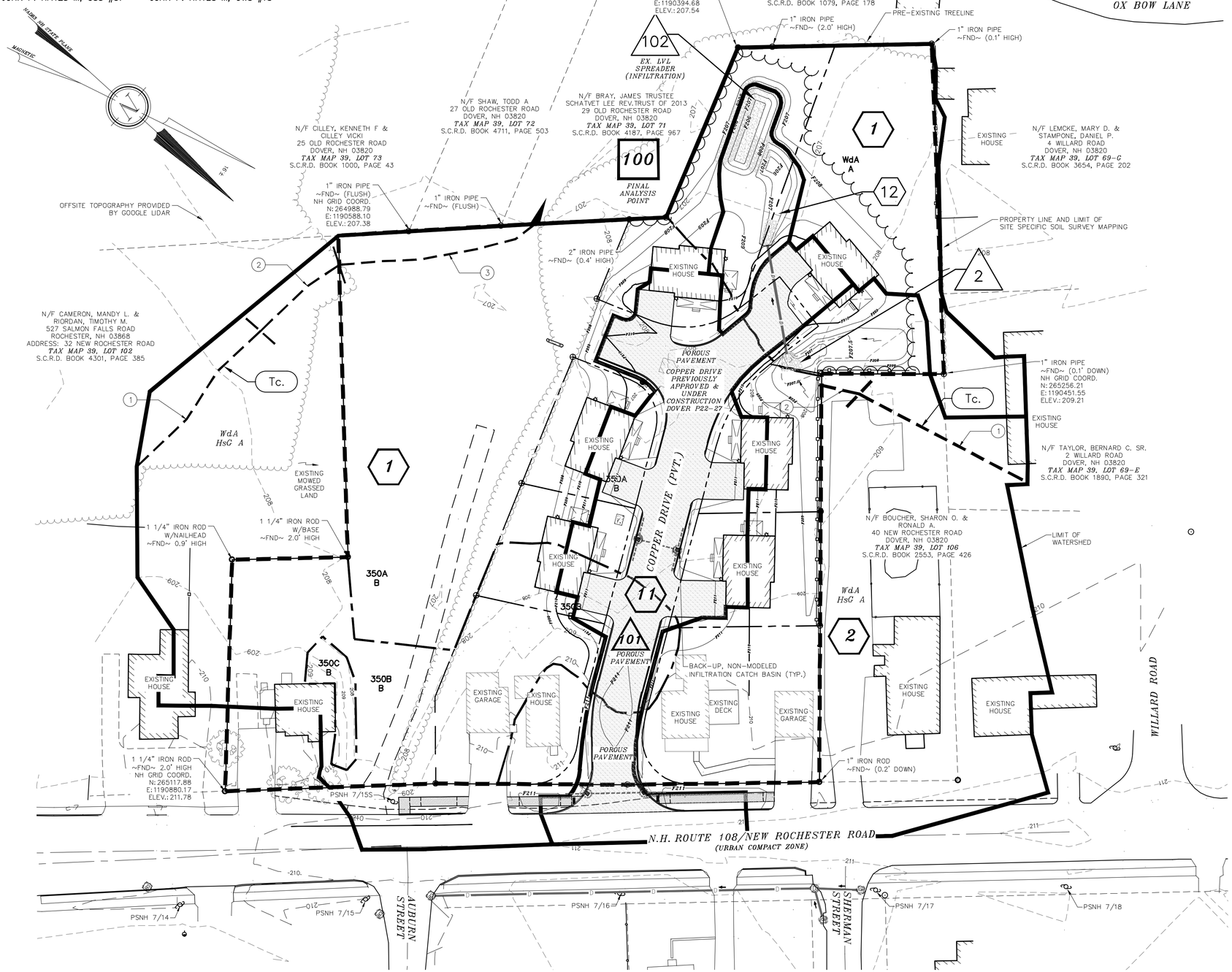
NO WETLANDS WERE FOUND ON SITE.

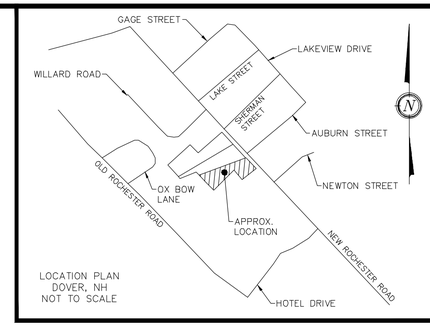
GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)

1 inch = 30 ft.





LOCATION PLAN
DOVER, NH
NOT TO SCALE

NOTES:

1.) OWNER: ROBERT BALDWIN
242 CENTRAL AVE
DOVER, NH 03820

2.) TAX MAP 39, LOT 103

3.) S.C.R.D. BOOK 5116, PAGE 655

4.) LOT AREA: 35,555 Sq. Ft., 0.82 Ac.

5.) THE INTENT OF THIS PLAN IS TO SHOW THE EXISTING WATERSHED CONDITIONS OF TAX MAP 39, LOTS 103 LOCATED IN DOVER, N.H., AS OF THE FIELD SURVEY IN NOVEMBER 2021.

6.) VERTICAL DATUM BASED ON NAVD88 ELEVATIONS. HORIZONTAL DATUM BASED ON NAD83 STATE PLANE. COORDINATES GATHERED USING CARLSON BRX7 SURVEY GRADE GPS RECEIVERS.

7.) TOPOGRAPHY PROVIDED IS DEMARCATED AT 1' INTERVALS, AND IS THE RESULT OF A FIELD SURVEY PERFORMED IN NOVEMBER 2021.

8.) WETLANDS WERE DELINEATED BY JOHN P. HAYES, CERTIFIED WETLANDS SCIENTIST, IN ACCORDANCE WITH CHAPTER 170-27.1 OF THE ZONING ORDINANCE, IN MAY OF 2023. NO WETLANDS WERE FOUND ON SITE.

9.) ANY SURFACE WATER RUNOFF THAT LEAVES THIS SITE WILL ENTER THE DOVER MS4 AND ENTER WILLAND POND (SEE DRAINAGE ANALYSIS).

SOILS LEGEND

Site Specific Soils

Symbol	K	Slopes	Taxonomic Soil Name	Hydrologic Soil Group
Wd		A	Windsor	A
350		A,B	Udipsaments (Wet Substratum)	B

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

Denominators: /P = Poorly Drained /VP = Very Poorly Drained /Rk = Rocky

NRCS Soils

Symbol	K	Slopes	Taxonomic Soil Name	Hydrologic Soil Group
Wd		A	Windsor Loamy Sand	A

NRCS SOIL DATA:

WdA ~ WINDSOR LOAMY SAND 0 TO 3% SLOPES

SEE NRCS WEBSOIL

LEGEND:

299 — EXISTING CONTOUR MINOR
200 — EXISTING CONTOUR MAJOR
LIMIT OF SITE SPECIFIC SOILS MAP
448A — SOIL LINE
SOIL SERIES
NRCS SOIL LINE
HYD — NRCS SOIL LABEL
LIMIT OF WATERSHED
TIME OF CONCENTRATION PATH
FLOW REACH
S.C.R.D. — STRAFFORD COUNTY REGISTRY OF DEEDS
TYP. — TYPICAL
FND — FOUND
TBR — TO BE REMOVED

SYMBOLS LEGEND:

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

DOVER PLANNING FILE #SITE-2023-0007

#	REVISION	DATE	DESCRIPTION
#2		11-06-23	REVISED PER TRC #2 & ADDITIONAL UNITS ADDED
#1		9-25-23	REVISED PER DOVER TRC COMMENT

EPA GCP SWPPP SITE MAP (EXISTING)

W-1 EXISTING WATERSHED

LAND OF: ROBERT BALDWIN

FOR: KNOX MARSH DEVELOPMENT LLC
34 NEW ROCHESTER ROAD
DOVER, N.H.
TAX MAP 39, LOT 103

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

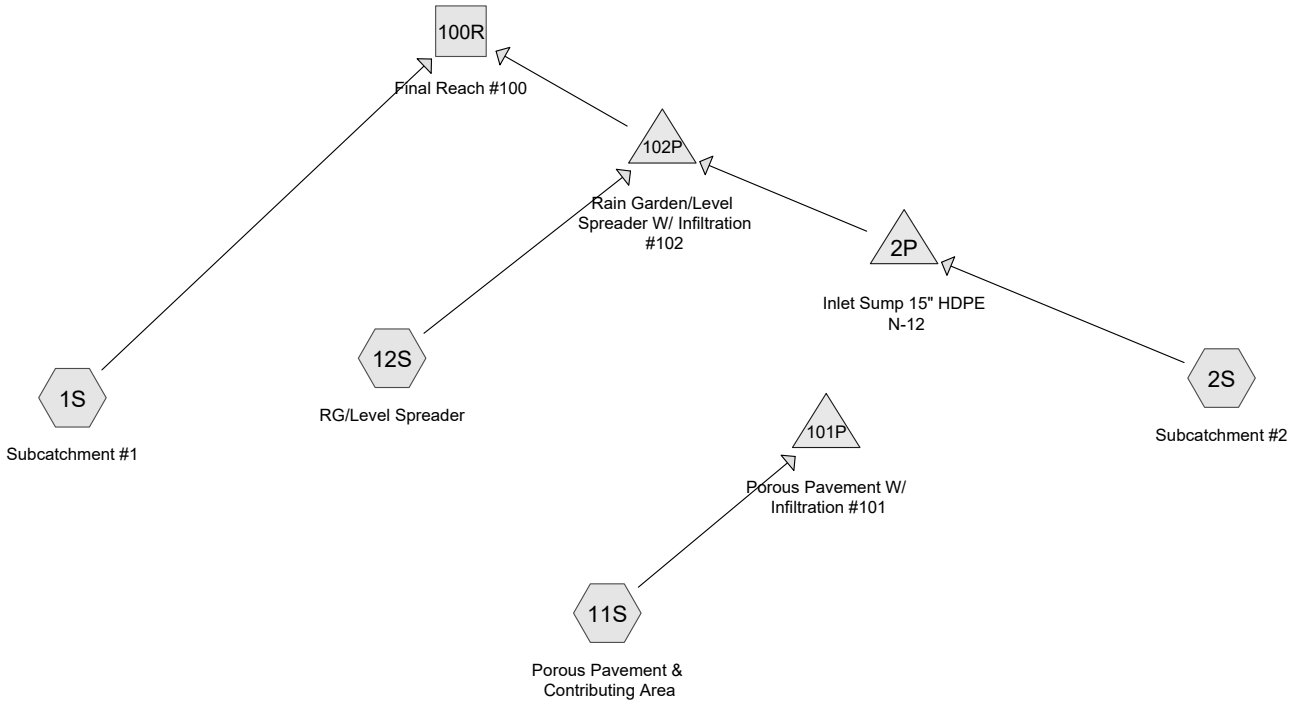
SCALE : 1 IN. EQUALS 30 FT.

DATE : JULY 6, 2023

FILE NO. : DB 2023 - 053

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

NOT FOR CONSTRUCTION



Subcat Reach Pond Link

Routing Diagram for 23-053 Existing Analysis
Prepared by Berry Surveying & Engineering, Printed 7/19/2023
HydroCAD® 10.00-25 s/n 07605 © 2019 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.965	39	>75% Grass cover, Good, HSG A (1S, 2S, 11S, 12S)
1.181	61	>75% Grass cover, Good, HSG B (1S, 2S, 11S, 12S)
0.011	96	Gravel surface, HSG A (1S, 2S, 12S)
0.055	96	Gravel surface, HSG B (1S, 2S, 12S)
0.324	98	Paved parking, HSG A (1S, 2S, 11S)
0.268	98	Paved parking, HSG B (1S, 2S, 11S)
0.124	98	Roofs, HSG A (1S, 2S, 11S, 12S)
0.215	98	Roofs, HSG B (1S, 2S, 11S, 12S)
0.013	98	Water Surface, HSG A (2S)
0.323	30	Woods, Good, HSG A (1S, 2S)
0.114	55	Woods, Good, HSG B (1S)
3.593	**62**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
1.760	HSG A	1S, 2S, 11S, 12S
1.833	HSG B	1S, 2S, 11S, 12S
0.000	HSG C	
0.000	HSG D	
0.000	Other	
3.593		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.965	1.181	0.000	0.000	0.000	2.146	>75% Grass cover, Good	1S, 2S, 11S, 12S
0.011	0.055	0.000	0.000	0.000	0.065	Gravel surface	1S, 2S, 12S
0.324	0.268	0.000	0.000	0.000	0.592	Paved parking	1S, 2S, 11S
0.124	0.215	0.000	0.000	0.000	0.340	Roofs	1S, 2S, 11S, 12S
0.013	0.000	0.000	0.000	0.000	0.013	Water Surface	2S
0.323	0.114	0.000	0.000	0.000	0.437	Woods, Good	1S, 2S
1.760	**1.833**	**0.000**	**0.000**	**0.000**	**3.593**	**TOTAL AREA**	

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	2P	206.70	206.40	60.0	0.0050	0.012	15.0	0.0	0.0

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

Subcatchment 1S: Subcatchment #1 Runoff Area=85,152 sf 9.48% Impervious Runoff Depth>2.02"
Flow Length=266' Tc=31.0 min CN=55 Runoff=2.42 cfs 0.330 af

Subcatchment 2S: Subcatchment #2 Runoff Area=44,731 sf 33.54% Impervious Runoff Depth>2.89"
Flow Length=122' Tc=14.0 min CN=64 Runoff=2.65 cfs 0.248 af

Subcatchment 11S: Porous Pavement & Runoff Area=22,746 sf 78.97% Impervious Runoff Depth>5.42"
Tc=234.0 min CN=90 Runoff=0.53 cfs 0.236 af

Subcatchment 12S: RG/Level Spreader Runoff Area=3,884 sf 2.83% Impervious Runoff Depth>0.94"
Tc=6.0 min CN=42 Runoff=0.06 cfs 0.007 af

Reach 100R: Final Reach #100 Inflow=4.46 cfs 0.556 af
Outflow=4.46 cfs 0.556 af

Pond 2P: Inlet Sump 15" HDPE N-12 Peak Elev=207.69' Storage=298 cf Inflow=2.65 cfs 0.248 af
15.0" Round Culvert n=0.012 L=60.0' S=0.0050 '/' Outflow=2.45 cfs 0.247 af

Pond 101P: Porous Pavement W/ Infiltration Peak Elev=207.39' Storage=91 cf Inflow=0.53 cfs 0.236 af
Outflow=0.50 cfs 0.236 af

Pond 102P: Rain Garden/Level Spreader W/ Peak Elev=207.33' Storage=1,014 cf Inflow=2.49 cfs 0.254 af
Discarded=0.01 cfs 0.017 af Primary=2.38 cfs 0.226 af Outflow=2.40 cfs 0.243 af

Total Runoff Area = 3.593 ac Runoff Volume = 0.820 af Average Runoff Depth = 2.74"
73.71% Pervious = 2.648 ac 26.29% Impervious = 0.945 ac

Summary for Subcatchment 1S: Subcatchment #1

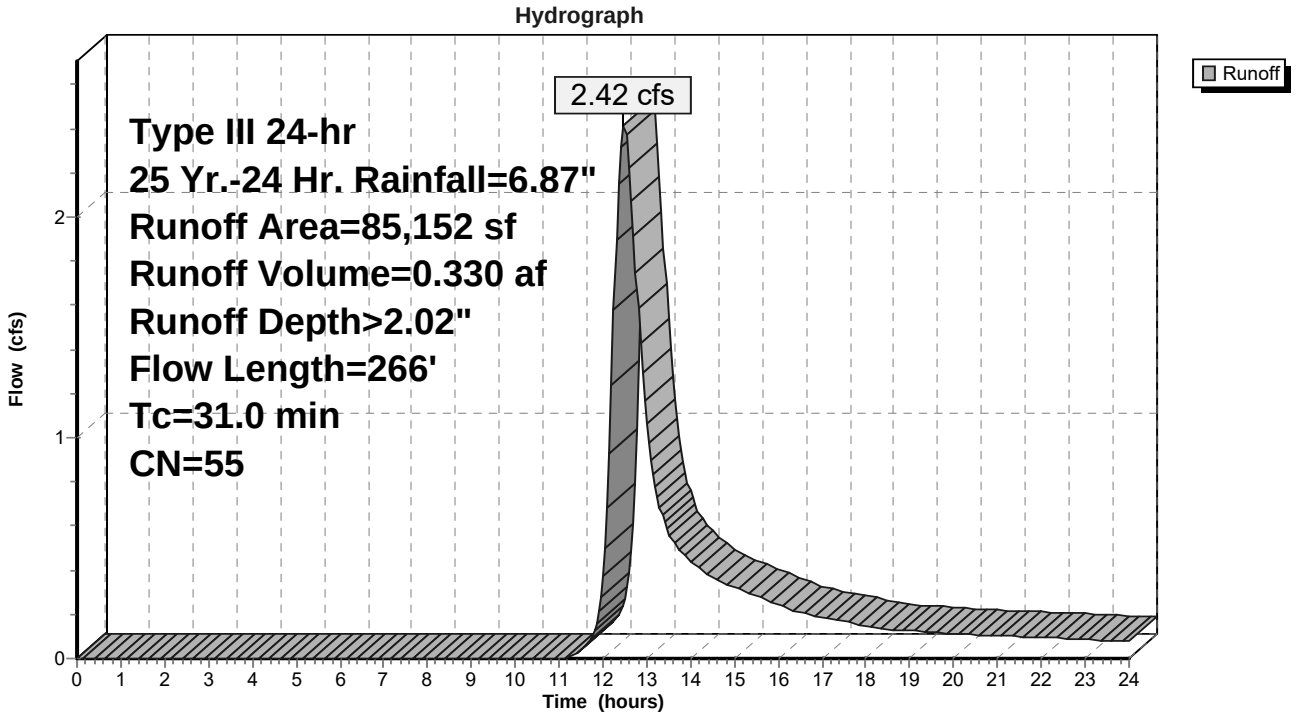
Runoff = 2.42 cfs @ 12.48 hrs, Volume= 0.330 af, Depth> 2.02"

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

Area (sf)	CN	Description
1,390	98	Roofs, HSG A
18,707	39	>75% Grass cover, Good, HSG A
2,533	98	Paved parking, HSG A
13,788	30	Woods, Good, HSG A
358	96	Gravel surface, HSG A
3,561	98	Roofs, HSG B
36,988	61	>75% Grass cover, Good, HSG B
590	98	Paved parking, HSG B
4,977	55	Woods, Good, HSG B
2,260	96	Gravel surface, HSG B
85,152	55	Weighted Average
77,078		90.52% Pervious Area
8,074		9.48% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.7	100	0.0150	0.07		**Sheet Flow, Segment #1** Woods: Light underbrush n= 0.400 P2= 3.61"
2.8	56	0.0045	0.34		**Shallow Concentrated Flow, Segment #2** Woodland Kv= 5.0 fps
5.5	110	0.0023	0.34		**Shallow Concentrated Flow, Segment #3** Short Grass Pasture Kv= 7.0 fps
31.0	266	Total			

Subcatchment 1S: Subcatchment #1



Summary for Subcatchment 2S: Subcatchment #2

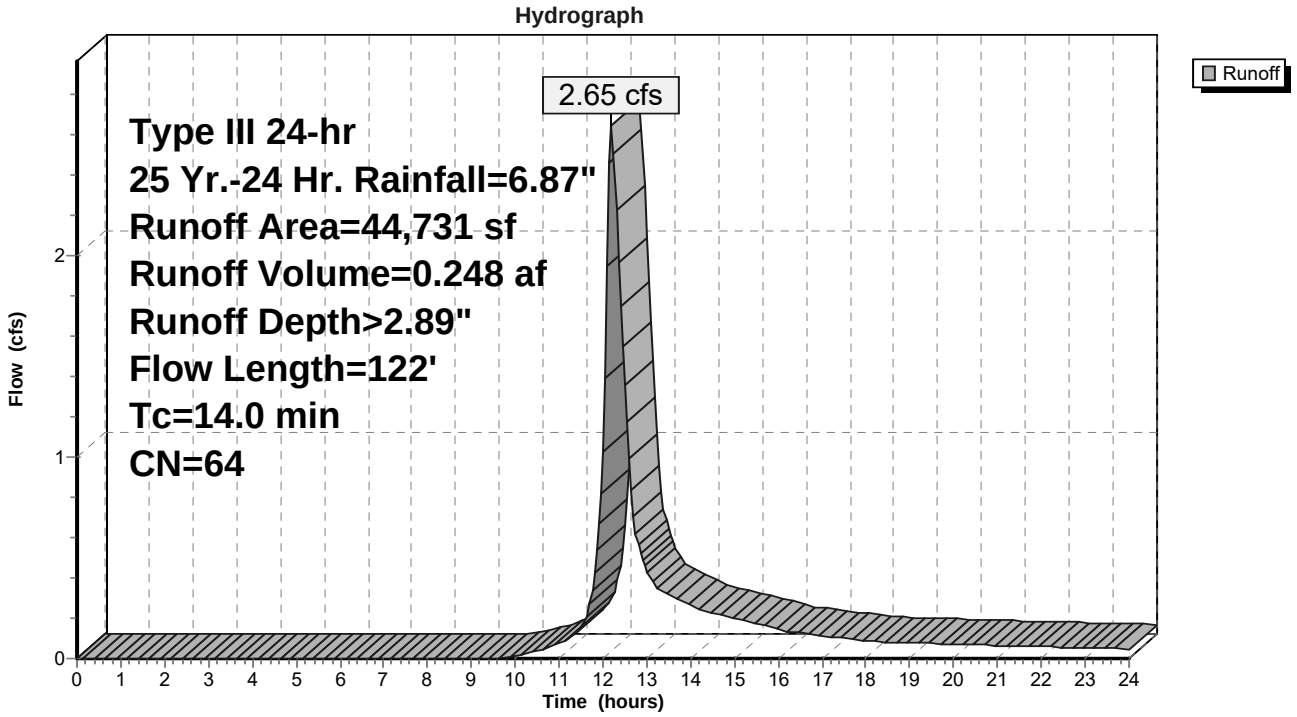
Runoff = 2.65 cfs @ 12.20 hrs, Volume= 0.248 af, Depth> 2.89"

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

Area (sf)	CN	Description
19,403	39	>75% Grass cover, Good, HSG A
9,879	61	>75% Grass cover, Good, HSG B
7,656	98	Paved parking, HSG A
675	98	Paved parking, HSG B
3,401	98	Roofs, HSG A
2,695	98	Roofs, HSG B
84	96	Gravel surface, HSG A
84	96	Gravel surface, HSG B
574	98	Water Surface, HSG A
280	30	Woods, Good, HSG A
44,731	64	Weighted Average
29,730		66.46% Pervious Area
15,001		33.54% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7	100	0.0075	0.12		**Sheet Flow, Segment #1** Grass: Short n= 0.150 P2= 3.61"
0.3	22	0.0340	1.29		**Shallow Concentrated Flow, Segment #2** Short Grass Pasture Kv= 7.0 fps
14.0	122	Total			

Subcatchment 2S: Subcatchment #2



Summary for Subcatchment 11S: Porous Pavement & Contributing Area

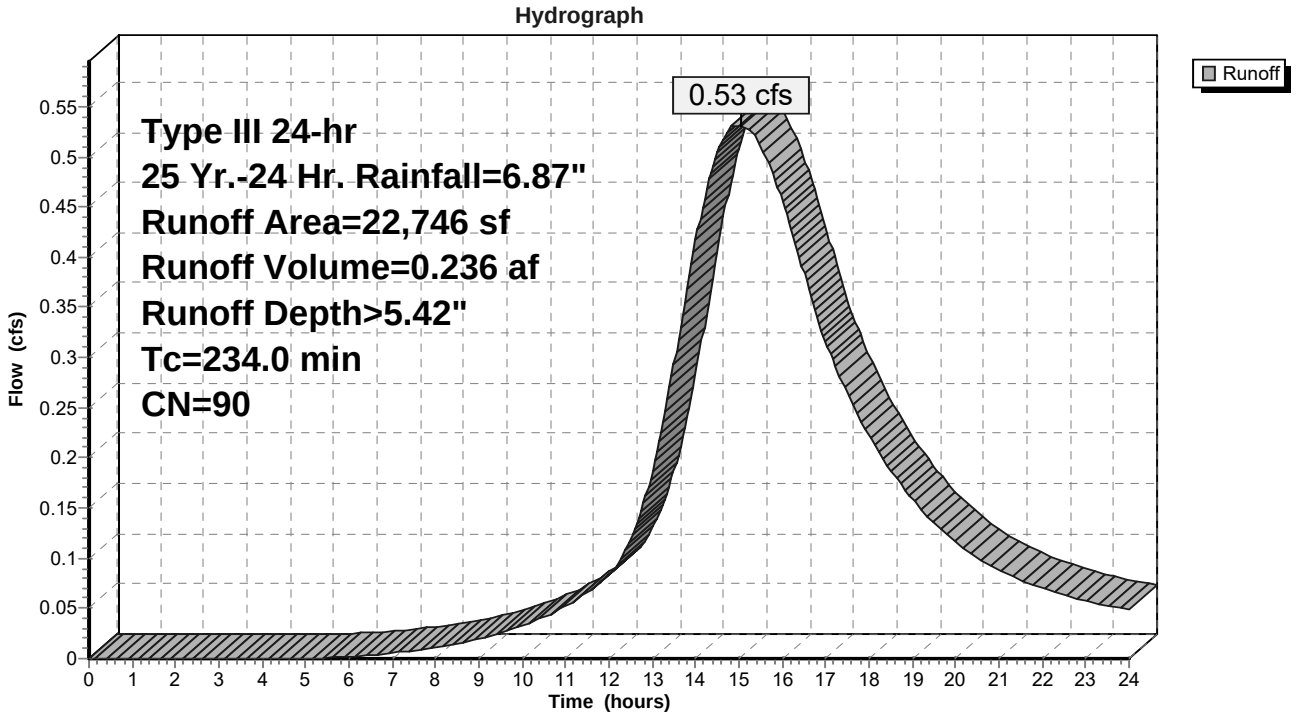
Runoff = 0.53 cfs @ 15.03 hrs, Volume= 0.236 af, Depth> 5.42"

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

Area (sf)	CN	Description
542	98	Roofs, HSG A
3,106	98	Roofs, HSG B
358	39	>75% Grass cover, Good, HSG A
4,426	61	>75% Grass cover, Good, HSG B
3,921	98	Paved parking, HSG A
10,393	98	Paved parking, HSG B
22,746	90	Weighted Average
4,784		21.03% Pervious Area
17,962		78.97% Impervious Area

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

Subcatchment 11S: Porous Pavement & Contributing Area



Summary for Subcatchment 12S: RG/Level Spreader

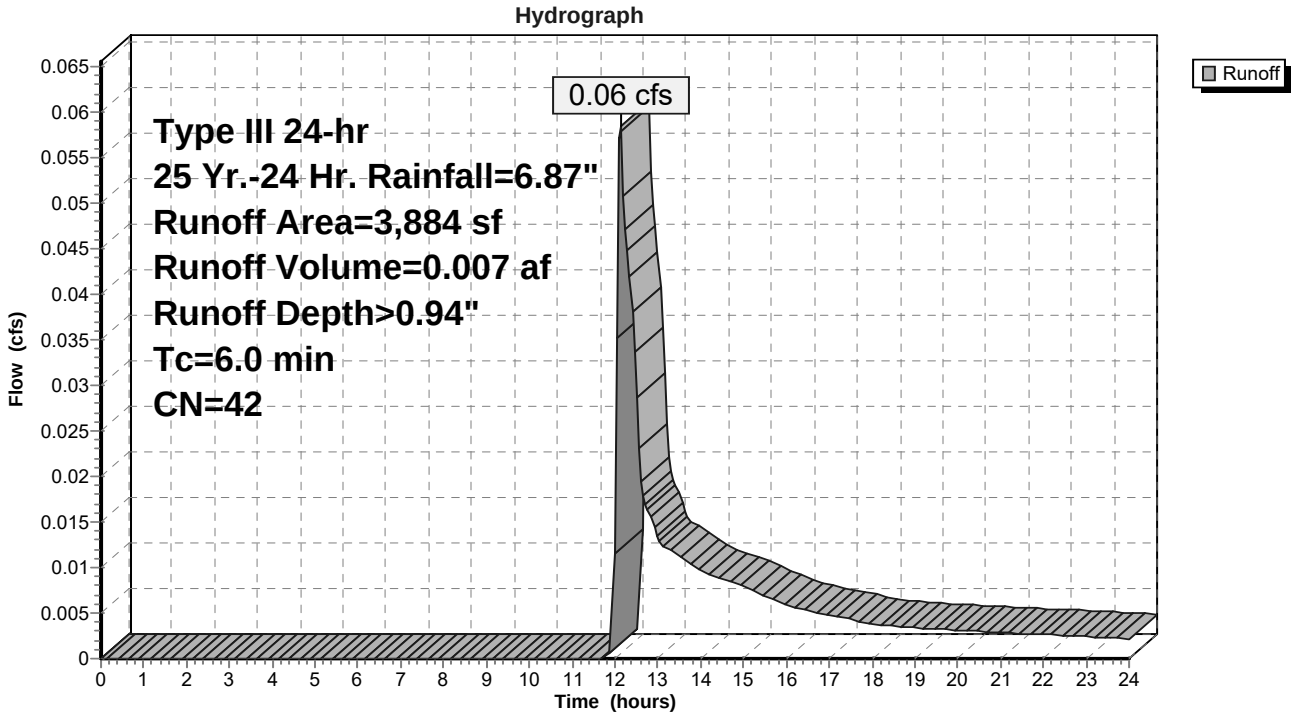
Runoff = 0.06 cfs @ 12.13 hrs, Volume= 0.007 af, Depth> 0.94"

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

Area (sf)	CN	Description
87	98	Roofs, HSG A
23	98	Roofs, HSG B
3,567	39	>75% Grass cover, Good, HSG A
147	61	>75% Grass cover, Good, HSG B
18	96	Gravel surface, HSG A
42	96	Gravel surface, HSG B
3,884	42	Weighted Average
3,774		97.17% Pervious Area
110		2.83% Impervious Area

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

Subcatchment 12S: RG/Level Spreader



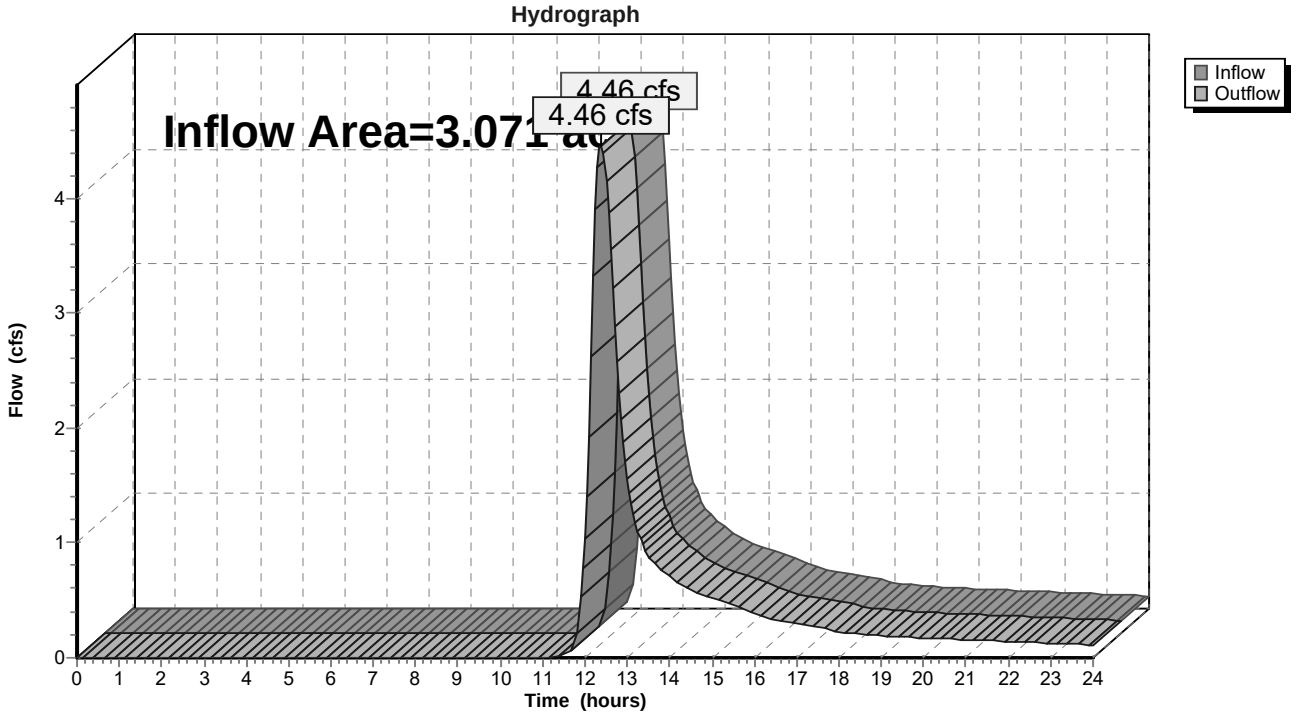
Summary for Reach 100R: Final Reach #100

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

Inflow Area = 3.071 ac, 17.33% Impervious, Inflow Depth > 2.17" for 25 Yr.-24 Hr. event
Inflow = 4.46 cfs @ 12.38 hrs, Volume= 0.556 af
Outflow = 4.46 cfs @ 12.38 hrs, Volume= 0.556 af, Atten= 0%, Lag= 0.0 min

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

Reach 100R: Final Reach #100



Summary for Pond 2P: Inlet Sump 15" HDPE N-12

Inflow Area = 1.027 ac, 33.54% Impervious, Inflow Depth > 2.89" for 25 Yr.-24 Hr. event
Inflow = 2.65 cfs @ 12.20 hrs, Volume= 0.248 af
Outflow = 2.45 cfs @ 12.24 hrs, Volume= 0.247 af, Atten= 8%, Lag= 1.9 min
Primary = 2.45 cfs @ 12.24 hrs, Volume= 0.247 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 207.69' @ 12.27 hrs Surf.Area= 793 sf Storage= 298 cf
Flood Elev= 208.15' Surf.Area= 1,621 sf Storage= 870 cf

Plug-Flow detention time= 2.1 min calculated for 0.247 af (100% of inflow)
Center-of-Mass det. time= 1.6 min (852.5 - 850.9)

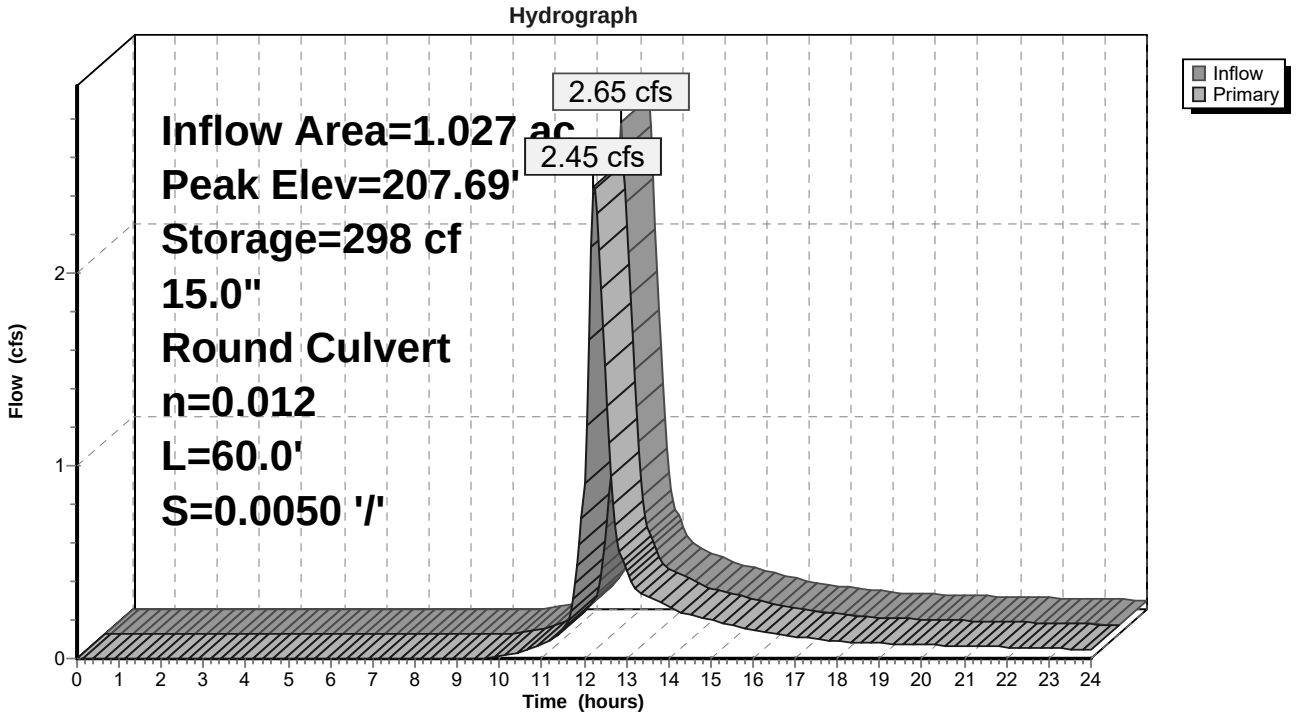
Volume	Invert	Avail.Storage	Storage Description
#1	206.69'	870 cf	**Ponding Area (Irregular)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
206.69	25	19.0	0	0	25
207.00	159	59.4	26	26	277
207.50	472	101.9	151	176	824
208.00	1,468	197.8	462	638	3,113
208.15	1,621	243.7	232	870	4,726

Device	Routing	Invert	Outlet Devices
#1	Primary	206.70'	**15.0" Round 15" HDPE N-12** L= 60.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 206.70' / 206.40' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=2.28 cfs @ 12.24 hrs HW=207.68' TW=207.31' (Dynamic Tailwater)
↑**1=15" HDPE N-12** (Outlet Controls 2.28 cfs @ 3.05 fps)

Pond 2P: Inlet Sump 15" HDPE N-12



Summary for Pond 101P: Porous Pavement W/ Infiltration #101

Inflow Area = 0.522 ac, 78.97% Impervious, Inflow Depth > 5.42" for 25 Yr.-24 Hr. event
Inflow = 0.53 cfs @ 15.03 hrs, Volume= 0.236 af
Outflow = 0.50 cfs @ 15.25 hrs, Volume= 0.236 af, Atten= 6%, Lag= 13.2 min
Discarded = 0.50 cfs @ 15.25 hrs, Volume= 0.236 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 207.39' @ 15.62 hrs Surf.Area= 7,208 sf Storage= 91 cf
Flood Elev= 209.69' Surf.Area= 7,208 sf Storage= 5,276 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.6 min (963.9 - 963.3)

Volume	Invert	Avail.Storage	Storage Description
#1	207.36'	2,883 cf	**Stone (Irregular)** Listed below (Recalc) 7,208 cf Overall x 40.0% Voids
#2	208.36'	1,442 cf	**Filter Media (Irregular)** Listed below (Recalc) -Impervious 7,208 cf Overall x 20.0% Voids
#3	209.36'	951 cf	**Choker Course (Irregular)** Listed below (Recalc) -Impervious 2,379 cf Overall x 40.0% Voids
		5,276 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
207.36	7,208	648.0	0	0	7,208
208.36	7,208	648.0	7,208	7,208	7,856

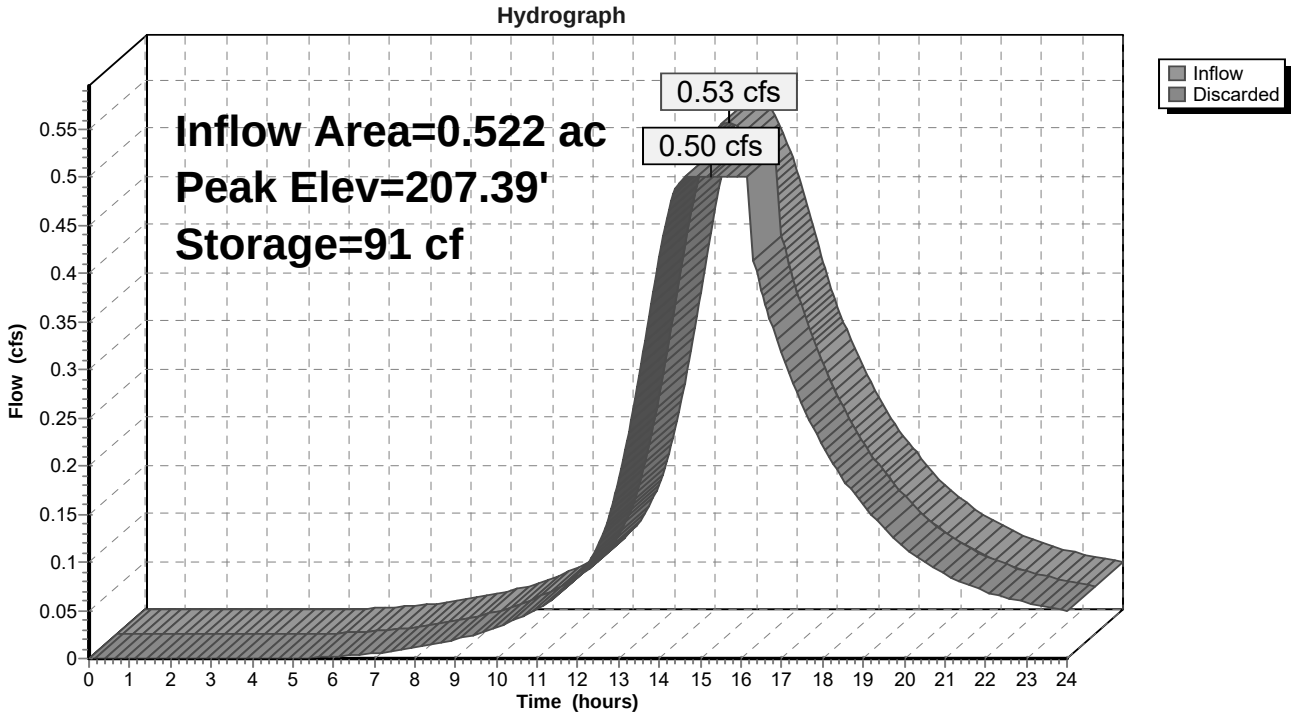
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
208.36	7,208	648.0	0	0	7,208
209.36	7,208	648.0	7,208	7,208	7,856

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
209.36	7,208	648.0	0	0	7,208
209.69	7,208	648.0	2,379	2,379	7,422

Device	Routing	Invert	Outlet Devices
#1	Discarded	207.36'	**3.000 in/hr Infiltration 3in/hr over Surface area**

Discarded OutFlow Max=0.50 cfs @ 15.25 hrs HW=207.38' (Free Discharge)
↑**1=Infiltration 3in/hr** (Exfiltration Controls 0.50 cfs)

Pond 101P: Porous Pavement W/ Infiltration #101



Summary for Pond 102P: Rain Garden/Level Spreader W/ Infiltration #102

Inflow Area = 1.116 ac, 31.08% Impervious, Inflow Depth > 2.74" for 25 Yr.-24 Hr. event
Inflow = 2.49 cfs @ 12.23 hrs, Volume= 0.254 af
Outflow = 2.40 cfs @ 12.29 hrs, Volume= 0.243 af, Atten= 4%, Lag= 3.4 min
Discarded = 0.01 cfs @ 11.05 hrs, Volume= 0.017 af
Primary = 2.38 cfs @ 12.29 hrs, Volume= 0.226 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 207.33' @ 12.29 hrs Surf.Area= 209 sf Storage= 1,014 cf
Flood Elev= 208.00' Surf.Area= 209 sf Storage= 1,898 cf

Plug-Flow detention time= 36.4 min calculated for 0.243 af (95% of inflow)
Center-of-Mass det. time= 11.9 min (866.0 - 854.2)

Volume	Invert	Avail.Storage	Storage Description
#1	203.50'	84 cf	**Stone (Irregular)** Listed below (Recalc) 209 cf Overall x 40.0% Voids
#2	204.50'	63 cf	**Bio-Media (Irregular)** Listed below (Recalc) -Impervious 314 cf Overall x 20.0% Voids
#3	206.00'	976 cf	**Infiltration Cell (Irregular)** Listed below (Recalc) -Impervious
#4	206.00'	776 cf	**Sediment Forebay (Irregular)** Listed below (Recalc) -Impervious
		1,898 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
203.50	209	81.6	0	0	209
204.50	209	81.6	209	209	291

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
204.50	209	81.6	0	0	209
206.00	209	84.6	314	314	340

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
206.00	209	81.6	0	0	209
207.00	482	100.5	336	336	498
208.00	811	119.4	639	976	846

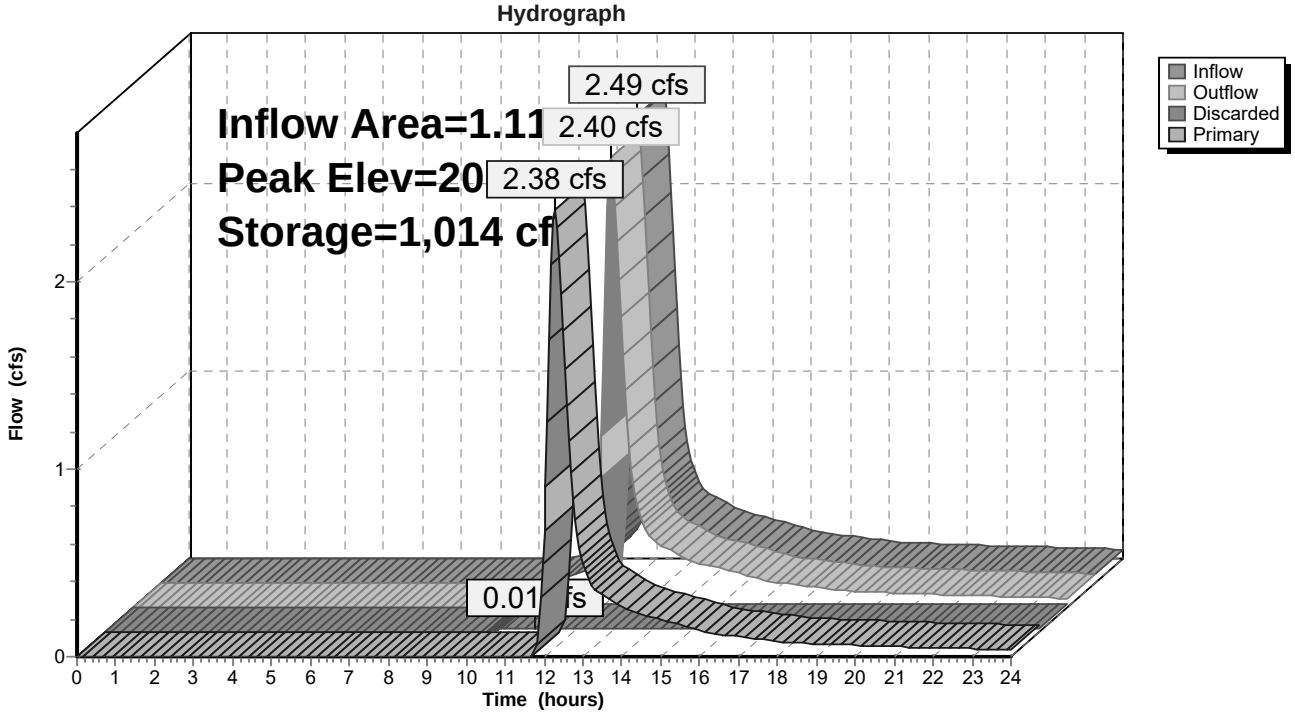
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
206.00	43	25.0	0	0	43
207.00	424	118.2	201	201	1,107
208.00	742	130.6	576	776	1,383

Device	Routing	Invert	Outlet Devices
#1	Discarded	203.50'	**3.000 in/hr 3IN/HR Infiltration over Surface area**
#2	Primary	206.75'	**2.0' long x 45.0' breadth 45' Level Spreader** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Discarded OutFlow Max=0.01 cfs @ 11.05 hrs HW=204.74' (Free Discharge)
└**1=3IN/HR Infiltration** (Exfiltration Controls 0.01 cfs)

Primary OutFlow Max=2.38 cfs @ 12.29 hrs HW=207.33' TW=0.00' (Dynamic Tailwater)
└**2=45' Level Spreader** (Weir Controls 2.38 cfs @ 2.05 fps)

Pond 102P: Rain Garden/Level Spreader W/ Infiltration #102



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=85,152 sf 9.48% Impervious Runoff Depth>0.38"
Flow Length=266' Tc=31.0 min CN=55 Runoff=0.28 cfs 0.062 af

Subcatchment 2S: Subcatchment #2 Runoff Area=44,731 sf 33.54% Impervious Runoff Depth>0.76"
Flow Length=122' Tc=14.0 min CN=64 Runoff=0.58 cfs 0.065 af

Subcatchment 11S: Porous Pavement & Runoff Area=22,746 sf 78.97% Impervious Runoff Depth>2.41"
Tc=234.0 min CN=90 Runoff=0.24 cfs 0.105 af

Subcatchment 12S: RG/Level Spreader Runoff Area=3,884 sf 2.83% Impervious Runoff Depth>0.05"
Tc=6.0 min CN=42 Runoff=0.00 cfs 0.000 af

Reach 100R: Final Reach #100 Inflow=0.62 cfs 0.101 af
Outflow=0.62 cfs 0.101 af

Pond 2P: Inlet Sump 15" HDPE N-12 Peak Elev=207.10' Storage=44 cf Inflow=0.58 cfs 0.065 af
15.0" Round Culvert n=0.012 L=60.0' S=0.0050 '/' Outflow=0.57 cfs 0.065 af

Pond 101P: Porous Pavement W/ Infiltration #101 Peak Elev=207.36' Storage=0 cf Inflow=0.24 cfs 0.105 af
Outflow=0.24 cfs 0.105 af

Pond 102P: Rain Garden/Level Spreader W/ Peak Elev=206.91' Storage=607 cf Inflow=0.57 cfs 0.065 af
Discarded=0.01 cfs 0.015 af Primary=0.35 cfs 0.039 af Outflow=0.36 cfs 0.054 af

Total Runoff Area = 3.593 ac Runoff Volume = 0.232 af Average Runoff Depth = 0.77"
73.71% Pervious = 2.648 ac 26.29% Impervious = 0.945 ac

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

Subcatchment 1S: Subcatchment #1 Runoff Area=85,152 sf 9.48% Impervious Runoff Depth>1.20"
Flow Length=266' Tc=31.0 min CN=55 Runoff=1.31 cfs 0.195 af

Subcatchment 2S: Subcatchment #2 Runoff Area=44,731 sf 33.54% Impervious Runoff Depth>1.87"
Flow Length=122' Tc=14.0 min CN=64 Runoff=1.66 cfs 0.160 af

Subcatchment 11S: Porous Pavement & Runoff Area=22,746 sf 78.97% Impervious Runoff Depth>4.09"
Tc=234.0 min CN=90 Runoff=0.40 cfs 0.178 af

Subcatchment 12S: RG/Level Spreader Runoff Area=3,884 sf 2.83% Impervious Runoff Depth>0.43"
Tc=6.0 min CN=42 Runoff=0.02 cfs 0.003 af

Reach 100R: Final Reach #100 Inflow=2.54 cfs 0.330 af
Outflow=2.54 cfs 0.330 af

Pond 2P: Inlet Sump 15" HDPE N-12 Peak Elev=207.46' Storage=160 cf Inflow=1.66 cfs 0.160 af
15.0" Round Culvert n=0.012 L=60.0' S=0.0050 '/' Outflow=1.55 cfs 0.160 af

Pond 101P: Porous Pavement W/ Infiltration #101 Peak Elev=207.36' Storage=0 cf Inflow=0.40 cfs 0.178 af
Outflow=0.40 cfs 0.178 af

Pond 102P: Rain Garden/Level Spreader W/ Peak Elev=207.17' Storage=845 cf Inflow=1.57 cfs 0.163 af
Discarded=0.01 cfs 0.016 af Primary=1.47 cfs 0.135 af Outflow=1.48 cfs 0.151 af

Total Runoff Area = 3.593 ac Runoff Volume = 0.536 af Average Runoff Depth = 1.79"
73.71% Pervious = 2.648 ac 26.29% Impervious = 0.945 ac

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

Subcatchment 1S: Subcatchment #1 Runoff Area=85,152 sf 9.48% Impervious Runoff Depth>2.02"
Flow Length=266' Tc=31.0 min CN=55 Runoff=2.42 cfs 0.330 af

Subcatchment 2S: Subcatchment #2 Runoff Area=44,731 sf 33.54% Impervious Runoff Depth>2.89"
Flow Length=122' Tc=14.0 min CN=64 Runoff=2.65 cfs 0.248 af

Subcatchment 11S: Porous Pavement & Runoff Area=22,746 sf 78.97% Impervious Runoff Depth>5.42"
Tc=234.0 min CN=90 Runoff=0.53 cfs 0.236 af

Subcatchment 12S: RG/Level Spreader Runoff Area=3,884 sf 2.83% Impervious Runoff Depth>0.94"
Tc=6.0 min CN=42 Runoff=0.06 cfs 0.007 af

Reach 100R: Final Reach #100 Inflow=4.46 cfs 0.556 af
Outflow=4.46 cfs 0.556 af

Pond 2P: Inlet Sump 15" HDPE N-12 Peak Elev=207.69' Storage=298 cf Inflow=2.65 cfs 0.248 af
15.0" Round Culvert n=0.012 L=60.0' S=0.0050 '/' Outflow=2.45 cfs 0.247 af

Pond 101P: Porous Pavement W/ Infiltration Peak Elev=207.39' Storage=91 cf Inflow=0.53 cfs 0.236 af
Outflow=0.50 cfs 0.236 af

Pond 102P: Rain Garden/Level Spreader W/ Peak Elev=207.33' Storage=1,014 cf Inflow=2.49 cfs 0.254 af
Discarded=0.01 cfs 0.017 af Primary=2.38 cfs 0.226 af Outflow=2.40 cfs 0.243 af

Total Runoff Area = 3.593 ac Runoff Volume = 0.820 af Average Runoff Depth = 2.74"
73.71% Pervious = 2.648 ac 26.29% Impervious = 0.945 ac

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

Subcatchment 1S: Subcatchment #1 Runoff Area=85,152 sf 9.48% Impervious Runoff Depth>2.90"
Flow Length=266' Tc=31.0 min CN=55 Runoff=3.58 cfs 0.472 af

Subcatchment 2S: Subcatchment #2 Runoff Area=44,731 sf 33.54% Impervious Runoff Depth>3.93"
Flow Length=122' Tc=14.0 min CN=64 Runoff=3.64 cfs 0.336 af

Subcatchment 11S: Porous Pavement & Runoff Area=22,746 sf 78.97% Impervious Runoff Depth>6.67"
Tc=234.0 min CN=90 Runoff=0.65 cfs 0.290 af

Subcatchment 12S: RG/Level Spreader Runoff Area=3,884 sf 2.83% Impervious Runoff Depth>1.53"
Tc=6.0 min CN=42 Runoff=0.12 cfs 0.011 af

Reach 100R: Final Reach #100 Inflow=6.43 cfs 0.790 af
Outflow=6.43 cfs 0.790 af

Pond 2P: Inlet Sump 15" HDPE N-12 Peak Elev=207.88' Storage=485 cf Inflow=3.64 cfs 0.336 af
15.0" Round Culvert n=0.012 L=60.0' S=0.0050 '/' Outflow=3.26 cfs 0.336 af

Pond 101P: Porous Pavement W/ Infiltration Peak Elev=207.65' Storage=828 cf Inflow=0.65 cfs 0.290 af
Outflow=0.50 cfs 0.290 af

Pond 102P: Rain Garden/Level Spreader W/ Peak Elev=207.46' Storage=1,167 cf Inflow=3.35 cfs 0.348 af
Discarded=0.01 cfs 0.018 af Primary=3.22 cfs 0.318 af Outflow=3.24 cfs 0.336 af

Total Runoff Area = 3.593 ac Runoff Volume = 1.110 af Average Runoff Depth = 3.71"
73.71% Pervious = 2.648 ac 26.29% Impervious = 0.945 ac

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

Subcatchment 1S: Subcatchment #1 Runoff Area=85,152 sf 9.48% Impervious Runoff Depth>4.04"
Flow Length=266' Tc=31.0 min CN=55 Runoff=5.10 cfs 0.658 af

Subcatchment 2S: Subcatchment #2 Runoff Area=44,731 sf 33.54% Impervious Runoff Depth>5.24"
Flow Length=122' Tc=14.0 min CN=64 Runoff=4.88 cfs 0.448 af

Subcatchment 11S: Porous Pavement & Runoff Area=22,746 sf 78.97% Impervious Runoff Depth>8.18"
Tc=234.0 min CN=90 Runoff=0.79 cfs 0.356 af

Subcatchment 12S: RG/Level Spreader Runoff Area=3,884 sf 2.83% Impervious Runoff Depth>2.37"
Tc=6.0 min CN=42 Runoff=0.21 cfs 0.018 af

Reach 100R: Final Reach #100 Inflow=8.91 cfs 1.093 af
Outflow=8.91 cfs 1.093 af

Pond 2P: Inlet Sump 15" HDPE N-12 Peak Elev=208.11' Storage=803 cf Inflow=4.88 cfs 0.448 af
15.0" Round Culvert n=0.012 L=60.0' S=0.0050 '/' Outflow=4.20 cfs 0.448 af

Pond 101P: Porous Pavement W/ Infiltration Peak Elev=208.08' Storage=2,073 cf Inflow=0.79 cfs 0.356 af
Outflow=0.50 cfs 0.356 af

Pond 102P: Rain Garden/Level Spreader W/ Peak Elev=207.61' Storage=1,346 cf Inflow=4.33 cfs 0.466 af
Discarded=0.01 cfs 0.019 af Primary=4.20 cfs 0.435 af Outflow=4.21 cfs 0.454 af

Total Runoff Area = 3.593 ac Runoff Volume = 1.480 af Average Runoff Depth = 4.94"
73.71% Pervious = 2.648 ac 26.29% Impervious = 0.945 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

JOHN P. HAYES III, CSS #87

JOHN P. HAYES III, CWS #18

WETLAND NOTES:

1. WETLANDS WERE DELINEATED BY JOHN P. HAYES IN NOVEMBER OF 2021
2. REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION, (VERSION 2.0) JANUARY 2012, U.S. ARMY CORPS OF ENGINEERS.
3. FIELD INDICATORS OF HYDRIC SOILS IN THE UNITED STATES, A GUIDE FOR IDENTIFYING AND DELINEATING HYDRIC SOILS, VERSION 8.0. UNITED STATES DEPARTMENT OF AGRICULTURE (2016).
4. NATIONAL WETLAND PLANT LIST (CURRENT VERSION).

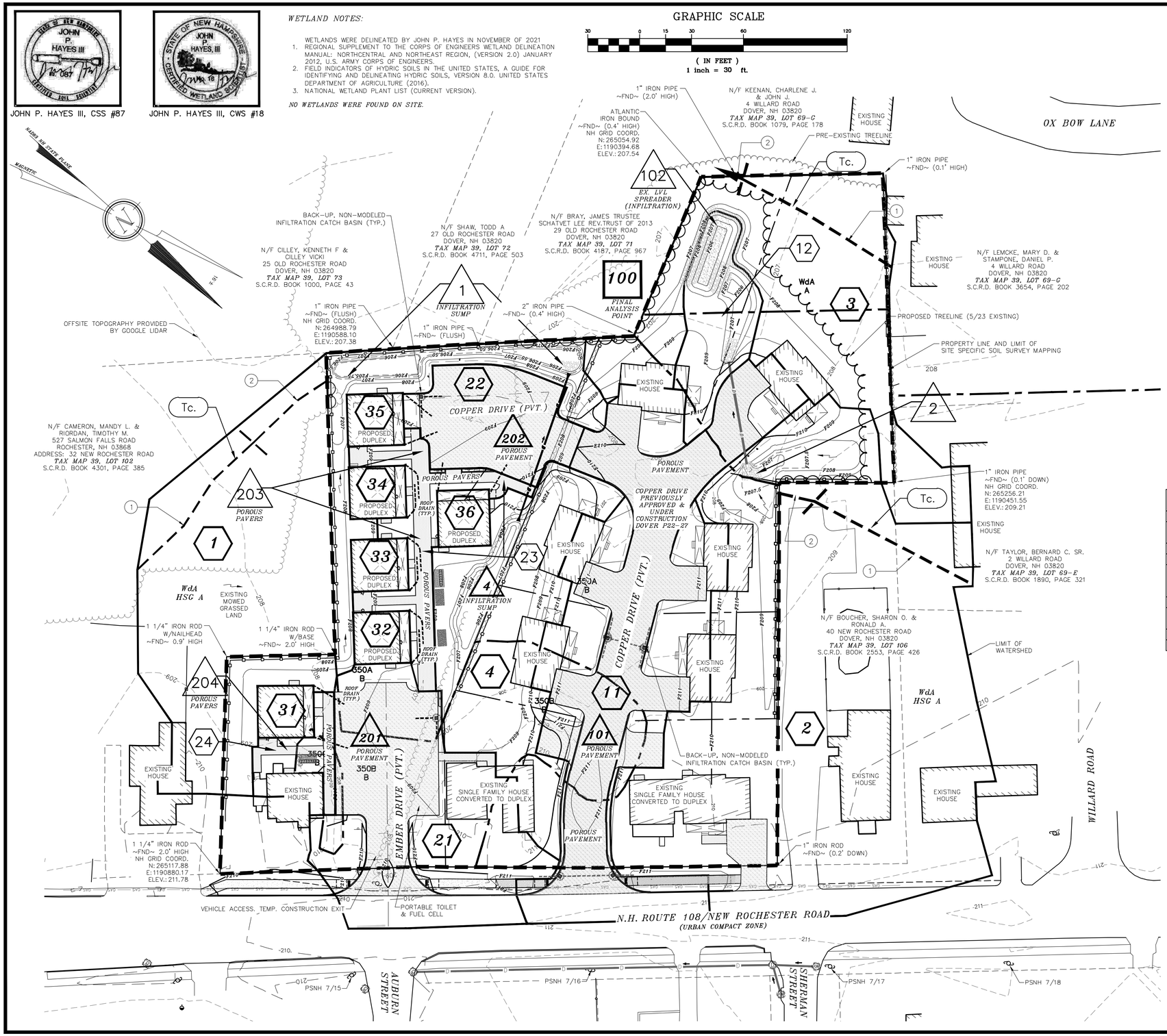
NO WETLANDS WERE FOUND ON SITE.

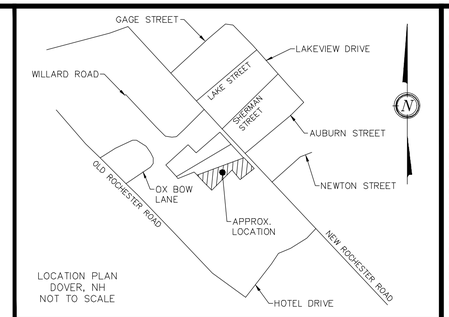
GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)

1 inch = 30 ft.





LOCATION PLAN
DOVER, NH
NOT TO SCALE

NOTES:

1.) OWNER: ROBERT BALDWIN
242 CENTRAL AVE
DOVER, NH 03820

2.) TAX MAP 39, LOT 103

3.) S.C.R.D. BOOK 5116, PAGE 655

4.) LOT AREA: 35,555 Sq. Ft., 0.82 Ac.

5.) THE INTENT OF THIS PLAN IS TO SHOW THE PROPOSED WATERSHED CONDITIONS OF TAX MAP 39, LOTS 103 LOCATED IN DOVER, N.H..

6.) VERTICAL DATUM BASED ON NAVD88 ELEVATIONS. HORIZONTAL DATUM BASED ON NAD83 STATE PLANE. COORDINATES GATHERED USING CARLSON BRX7 SURVEY GRADE GPS RECEIVERS.

7.) TOPOGRAPHY PROVIDED IS DEMARCATED AT 1' INTERVALS, AND IS THE RESULT OF A FIELD SURVEY PERFORMED IN NOVEMBER 2021.

8.) WETLANDS WERE DELINEATED BY JOHN P. HAYES, CERTIFIED WETLANDS SCIENTIST, IN ACCORDANCE WITH CHAPTER 170-27.1 OF THE ZONING ORDINANCE, IN MAY OF 2023. NO WETLANDS WERE FOUND ON SITE.

9.) ANY SURFACE WATER RUNOFF THAT LEAVES THIS SITE WILL ENTER THE DOVER MS4 AND ENTER WILLAND POND (SEE DRAINAGE ANALYSIS).

SEE PLAN SET FOR ADDITIONAL DETAILS:
GRADING PLANS
POROUS PAVEMENT PLANS
EROSION & SEDIMENT CONTROL PLANS

SOILS LEGEND

Site Specific Soils

Symbol	K	Slopes	Taxonomic Soil Name	Hydrologic Soil Group
Wd		A	Windsor	A
350		A,B	Udipsaments (Wet Substratum)	B

Slopes: A = 0-3% B = 3-8% C = 8-15% D = 15-25% E = 25- 50% F = 50%+
Denominators: /P = Poorly Drained /VP = Very Poorly Drained /Rk = Rocky

NRCS Soils

Symbol	K	Slopes	Taxonomic Soil Name	Hydrologic Soil Group
Wd		A	Windsor Loamy Sand	A

NRCS SOIL DATA:

WdA ~ WINDSOR LOAMY SAND 0 TO 3% SLOPES

SEE NRCS WEBSOIL

LEGEND:

EXISTING CONTOUR, MINOR
EXISTING CONTOUR, MAJOR
PROPOSED CONTOUR, MINOR
PROPOSED CONTOUR, MAJOR
LIMIT OF SITE SPECIFIC SOIL SURVEY
SOIL LINE
448A SOIL SERIES
NRCS SOIL LINE
NRCS SOIL LABEL
LIMIT OF WATERSHED
HJB TIME OF CONCENTRATION PATH
FLOW REACH
S.C.R.D. STRAFFORD COUNTY REGISTRY OF DEEDS
TYP. TYPICAL
FND FOUND
TBR TO BE REMOVED
EPA C.G.P. ENVIRONMENTAL PROTECTION AGENCY CONSTRUCTION GENERAL PERMIT
S.W.P.P.P. STORMWATER POLLUTION PREVENTION PLAN

SYMBOLS LEGEND:

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

DOVER PLANNING FILE #SITE-2023-0007

REVISION	DATE	DESCRIPTION
#4	11-30-23	REVISED PER TRC #3 COMMENT
#3	11-09-23	REVISED PER INFORMAL TRC
#2	11-06-23	REVISED PER TRC #2 & ADDITIONAL UNITS ADDED
#1	9-25-23	REVISED PER DOVER TRC COMMENT

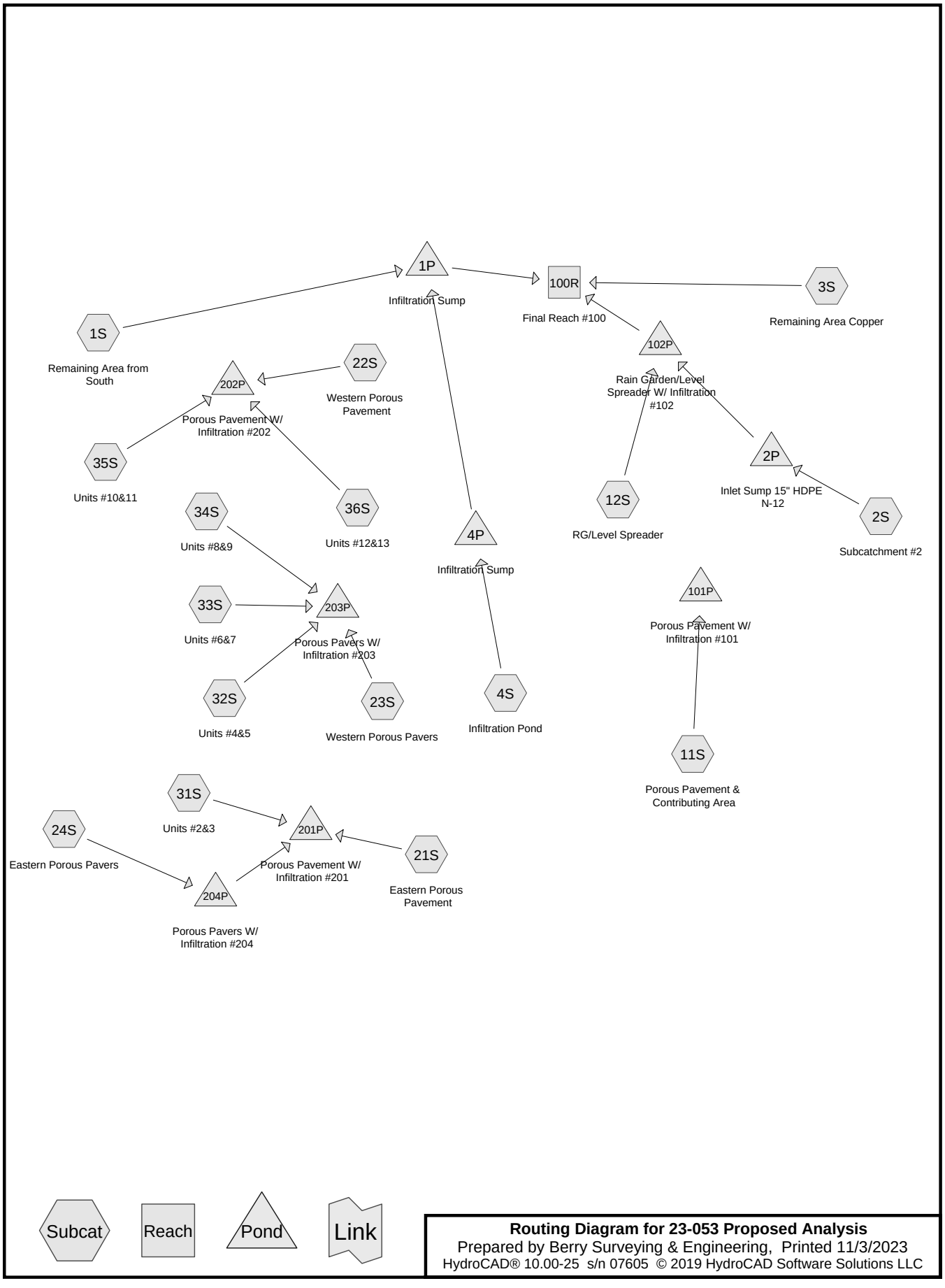
EPA GCP SWPPP SITE MAP (PROPOSED)
W-2 PROPOSED WATERSHED
LAND OF: ROBERT BALDWIN
FOR: KNOX MARSH DEVELOPMENT LLC
34 NEW ROCHESTER ROAD
DOVER, N.H.
TAX MAP 39, LOT 103

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

SCALE : 1 IN. EQUALS 30 FT.
DATE : JULY 6, 2023
FILE NO. : DB 2023 - 053

KENNETH A. BERRY No. 14241 LICENSED PROFESSIONAL ENGINEER

NOT FOR CONSTRUCTION



Routing Diagram for 23-053 Proposed Analysis

Prepared by Berry Surveying & Engineering, Printed 11/3/2023

HydroCAD® 10.00-25 s/n 07605 © 2019 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.967	39	>75% Grass cover, Good, HSG A (1S, 2S, 3S, 11S, 12S, 21S)
0.850	61	>75% Grass cover, Good, HSG B (1S, 2S, 3S, 4S, 11S, 12S, 21S, 22S, 23S, 24S)
0.005	96	Gravel surface, HSG A (2S, 11S, 12S, 21S)
0.039	96	Gravel surface, HSG B (1S, 2S, 4S, 11S, 12S, 21S, 22S)
0.334	98	Paved parking, HSG A (2S, 11S, 21S)
0.591	98	Paved parking, HSG B (1S, 2S, 4S, 11S, 21S, 22S, 23S, 24S)
0.124	98	Roofs, HSG A (1S, 2S, 3S, 11S, 12S)
0.353	98	Roofs, HSG B (2S, 3S, 4S, 11S, 12S, 21S, 23S, 24S, 31S, 32S, 33S, 34S, 35S, 36S)
0.013	98	Water Surface, HSG A (2S)
0.316	30	Woods, Good, HSG A (1S, 2S, 3S)
3.593	**67**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
1.760	HSG A	1S, 2S, 3S, 11S, 12S, 21S
1.833	HSG B	1S, 2S, 3S, 4S, 11S, 12S, 21S, 22S, 23S, 24S, 31S, 32S, 33S, 34S, 35S, 36S
0.000	HSG C	
0.000	HSG D	
0.000	Other	
3.593		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.967	0.850	0.000	0.000	0.000	1.817	>75% Grass cover, Good	1S, 2S, 3S, 4S, 11S, 12S, 21S, 22S, 23S, 24S
0.005	0.039	0.000	0.000	0.000	0.044	Gravel surface	1S, 2S, 4S, 11S, 12S, 21S, 22S
0.334	0.591	0.000	0.000	0.000	0.925	Paved parking	1S, 2S, 4S, 11S, 21S, 22S, 23S, 24S
0.124	0.353	0.000	0.000	0.000	0.478	Roofs	1S, 2S, 3S, 4S, 11S, 12S, 21S, 23S, 24S, 31S, 32S, 33S, 34S, 35S, 36S
0.013	0.000	0.000	0.000	0.000	0.013	Water Surface	2S
0.316	0.000	0.000	0.000	0.000	0.316	Woods, Good	1S, 2S, 3S
1.760	**1.833**	**0.000**	**0.000**	**0.000**	**3.593**	**TOTAL AREA**	

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	2P	206.70	206.40	60.0	0.0050	0.012	15.0	0.0	0.0
2	4P	207.50	206.50	86.0	0.0116	0.012	12.0	0.0	0.0

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

Subcatchment 1S: Remaining Area from Runoff Area=25,413 sf 2.07% Impervious Runoff Depth>1.17"
Flow Length=156' Tc=25.5 min CN=45 Runoff=0.37 cfs 0.057 af

Subcatchment 2S: Subcatchment #2 Runoff Area=44,696 sf 34.70% Impervious Runoff Depth>2.89"
Flow Length=122' Tc=14.0 min CN=64 Runoff=2.65 cfs 0.247 af

Subcatchment 3S: Remaining Area Copper Runoff Area=16,731 sf 7.61% Impervious Runoff Depth>0.86"
Flow Length=106' Tc=21.5 min CN=41 Runoff=0.16 cfs 0.028 af

Subcatchment 4S: Infiltration Pond Runoff Area=11,757 sf 14.48% Impervious Runoff Depth>3.20"
Flow Length=69' Slope=0.0430 '/' Tc=6.0 min CN=67 Runoff=0.99 cfs 0.072 af

Subcatchment 11S: Porous Pavement & Runoff Area=23,638 sf 80.49% Impervious Runoff Depth>5.53"
Tc=234.0 min CN=91 Runoff=0.56 cfs 0.250 af

Subcatchment 12S: RG/Level Spreader Runoff Area=3,884 sf 2.83% Impervious Runoff Depth>0.94"
Tc=6.0 min CN=42 Runoff=0.06 cfs 0.007 af

Subcatchment 21S: Eastern Porous Runoff Area=13,526 sf 64.01% Impervious Runoff Depth>4.86"
Tc=234.0 min CN=85 Runoff=0.29 cfs 0.126 af

Subcatchment 22S: Western Porous Runoff Area=5,079 sf 96.26% Impervious Runoff Depth>6.23"
Tc=234.0 min CN=97 Runoff=0.13 cfs 0.061 af

Subcatchment 23S: Western Porous Pavers Runoff Area=3,868 sf 68.25% Impervious Runoff Depth>5.16"
Tc=88.0 min CN=86 Runoff=0.17 cfs 0.038 af

Subcatchment 24S: Eastern Porous Pavers Runoff Area=2,071 sf 70.88% Impervious Runoff Depth>5.27"
Tc=88.0 min CN=87 Runoff=0.09 cfs 0.021 af

Subcatchment 31S: Units #2&3 Runoff Area=975 sf 100.00% Impervious Runoff Depth>6.35"
Tc=234.0 min CN=98 Runoff=0.03 cfs 0.012 af

Subcatchment 32S: Units #4&5 Runoff Area=975 sf 100.00% Impervious Runoff Depth>6.54"
Tc=88.0 min CN=98 Runoff=0.05 cfs 0.012 af

Subcatchment 33S: Units #6&7 Runoff Area=975 sf 100.00% Impervious Runoff Depth>6.54"
Tc=88.0 min CN=98 Runoff=0.05 cfs 0.012 af

Subcatchment 34S: Units #8&9 Runoff Area=975 sf 100.00% Impervious Runoff Depth>6.54"
Tc=88.0 min CN=98 Runoff=0.05 cfs 0.012 af

Subcatchment 35S: Units #10&11 Runoff Area=975 sf 100.00% Impervious Runoff Depth>6.35"
Tc=234.0 min CN=98 Runoff=0.03 cfs 0.012 af

Subcatchment 36S: Units #12&13 Runoff Area=975 sf 100.00% Impervious Runoff Depth>6.35"
Tc=234.0 min CN=98 Runoff=0.03 cfs 0.012 af

Reach 100R: Final Reach #100 Inflow=2.51 cfs 0.253 af
Outflow=2.51 cfs 0.253 af

Pond 1P: Infiltration Sump Peak Elev=206.51' Storage=616 cf Inflow=0.37 cfs 0.057 af
Discarded=0.16 cfs 0.057 af Primary=0.00 cfs 0.000 af Outflow=0.16 cfs 0.057 af

Pond 2P: Inlet Sump 15" HDPE N-12 Peak Elev=207.69' Storage=297 cf Inflow=2.65 cfs 0.247 af
15.0" Round Culvert n=0.012 L=60.0' S=0.0050 '/' Outflow=2.44 cfs 0.247 af

Pond 4P: Infiltration Sump Peak Elev=207.32' Storage=1,231 cf Inflow=0.99 cfs 0.072 af
Discarded=0.12 cfs 0.072 af Primary=0.00 cfs 0.000 af Outflow=0.12 cfs 0.072 af

Pond 101P: Porous Pavement W/ Infiltration Peak Elev=207.44' Storage=233 cf Inflow=0.56 cfs 0.250 af
Outflow=0.50 cfs 0.250 af

Pond 102P: Rain Garden/Level Spreader W/ Peak Elev=207.33' Storage=1,013 cf Inflow=2.49 cfs 0.254 af
Discarded=0.01 cfs 0.017 af Primary=2.38 cfs 0.226 af Outflow=2.40 cfs 0.243 af

Pond 201P: Porous Pavement W/ Infiltration #201 Peak Elev=205.51' Storage=0 cf Inflow=0.31 cfs 0.138 af
Outflow=0.31 cfs 0.138 af

Pond 202P: Porous Pavement W/ Infiltration #202 Peak Elev=205.56' Storage=0 cf Inflow=0.18 cfs 0.084 af
Outflow=0.18 cfs 0.084 af

Pond 203P: Porous Pavers W/ Infiltration #203 Peak Elev=207.00' Storage=452 cf Inflow=0.31 cfs 0.075 af
Outflow=0.17 cfs 0.075 af

Pond 204P: Porous Pavers W/ Infiltration #204 Peak Elev=208.30' Storage=101 cf Inflow=0.09 cfs 0.021 af
Discarded=0.06 cfs 0.021 af Primary=0.00 cfs 0.000 af Outflow=0.06 cfs 0.021 af

Total Runoff Area = 3.593 ac Runoff Volume = 0.978 af Average Runoff Depth = 3.27"
60.61% Pervious = 2.178 ac 39.39% Impervious = 1.415 ac

Summary for Subcatchment 1S: Remaining Area from South

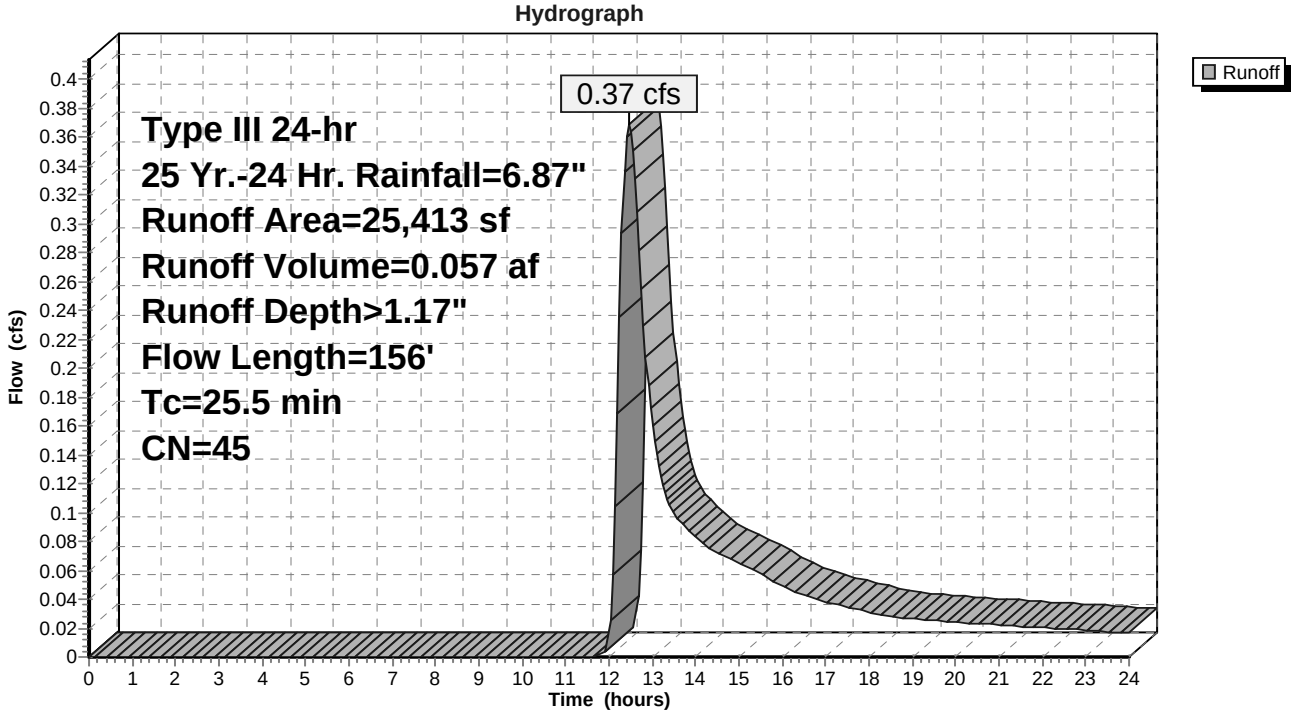
Runoff = 0.37 cfs @ 12.46 hrs, Volume= 0.057 af, Depth> 1.17"

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

Area (sf)	CN	Description
10,176	39	>75% Grass cover, Good, HSG A
490	98	Roofs, HSG A
6,885	30	Woods, Good, HSG A
7,532	61	>75% Grass cover, Good, HSG B
294	96	Gravel surface, HSG B
36	98	Paved parking, HSG B
25,413	45	Weighted Average
24,887		97.93% Pervious Area
526		2.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.7	100	0.0150	0.07		**Sheet Flow, Segment #1** Woods: Light underbrush n= 0.400 P2= 3.61"
2.8	56	0.0045	0.34		**Shallow Concentrated Flow, Segment #2** Woodland Kv= 5.0 fps
25.5	156	Total			

Subcatchment 1S: Remaining Area from South



Summary for Subcatchment 2S: Subcatchment #2

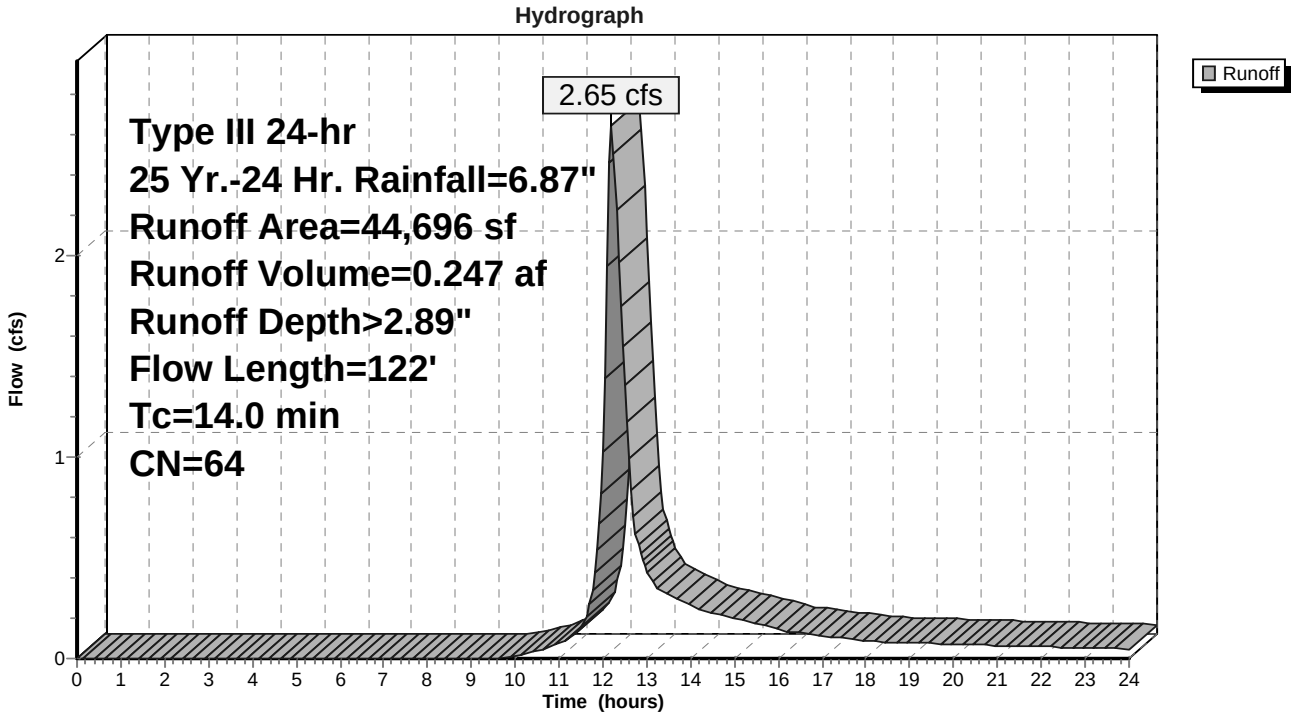
Runoff = 2.65 cfs @ 12.20 hrs, Volume= 0.247 af, Depth> 2.89"

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

Area (sf)	CN	Description
19,126	39	>75% Grass cover, Good, HSG A
9,611	61	>75% Grass cover, Good, HSG B
7,656	98	Paved parking, HSG A
587	98	Paved parking, HSG B
3,401	98	Roofs, HSG A
3,293	98	Roofs, HSG B
84	96	Gravel surface, HSG A
84	96	Gravel surface, HSG B
574	98	Water Surface, HSG A
280	30	Woods, Good, HSG A
44,696	64	Weighted Average
29,185		65.30% Pervious Area
15,511		34.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7	100	0.0075	0.12		**Sheet Flow, Segment #1** Grass: Short n= 0.150 P2= 3.61"
0.3	22	0.0340	1.29		**Shallow Concentrated Flow, Segment #2** Short Grass Pasture Kv= 7.0 fps
14.0	122	Total			

Subcatchment 2S: Subcatchment #2



Summary for Subcatchment 3S: Remaining Area Copper

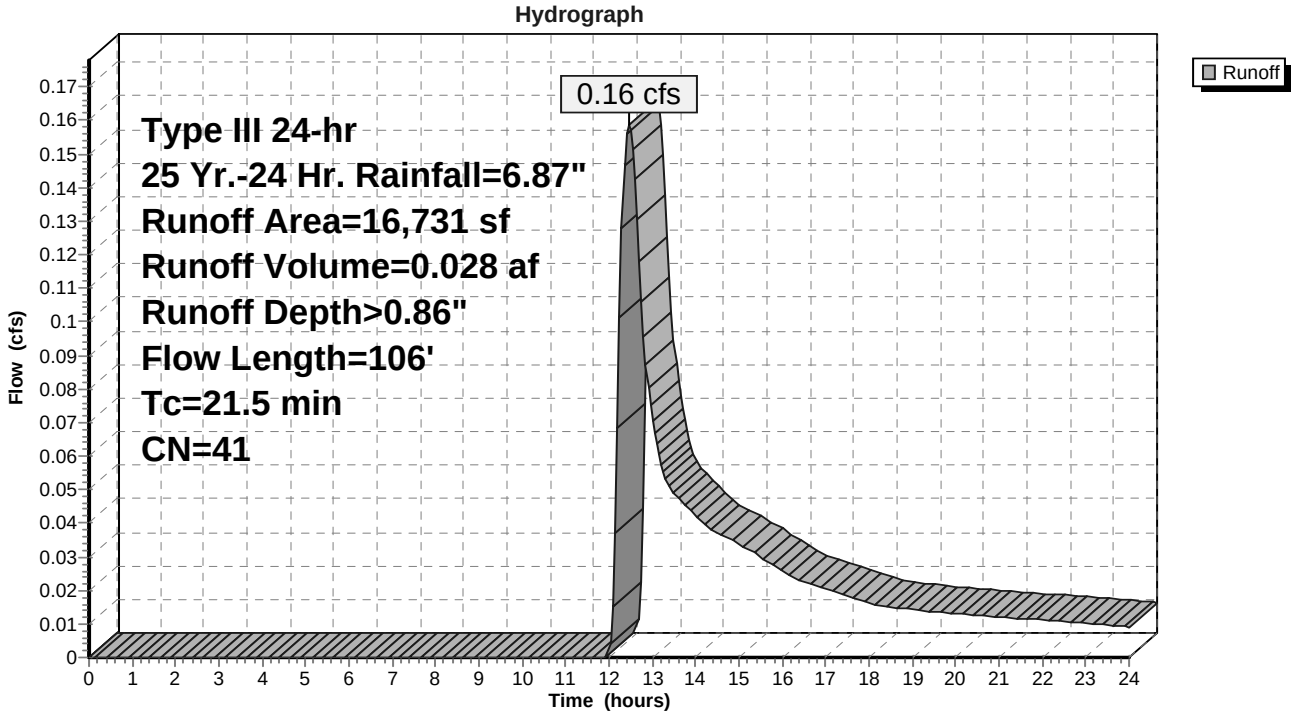
Runoff = 0.16 cfs @ 12.45 hrs, Volume= 0.028 af, Depth> 0.86"

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

Area (sf)	CN	Description
7,962	39	>75% Grass cover, Good, HSG A
884	61	>75% Grass cover, Good, HSG B
900	98	Roofs, HSG A
374	98	Roofs, HSG B
6,611	30	Woods, Good, HSG A
16,731	41	Weighted Average
15,457		92.39% Pervious Area
1,274		7.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.3	100	0.0175	0.08		**Sheet Flow, Segment #1** Woods: Light underbrush n= 0.400 P2= 3.61"
0.2	6	0.0080	0.45		**Shallow Concentrated Flow, Segment #2** Woodland Kv= 5.0 fps
21.5	106	Total			

Subcatchment 3S: Remaining Area Copper



Summary for Subcatchment 4S: Infiltration Pond

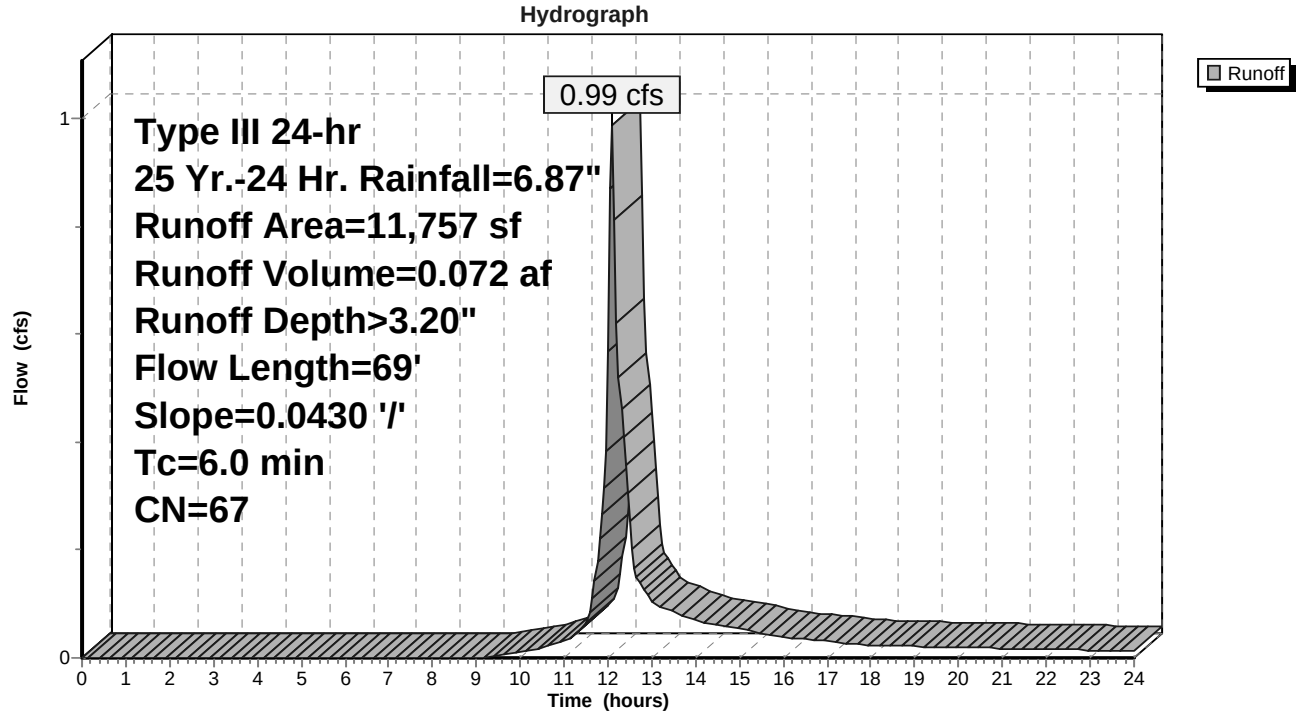
Runoff = 0.99 cfs @ 12.10 hrs, Volume= 0.072 af, Depth> 3.20"

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 25 Yr.-24 Hr. Rainfall=6.87"

Area (sf)	CN	Description
9,920	61	>75% Grass cover, Good, HSG B
1,649	98	Roofs, HSG B
134	96	Gravel surface, HSG B
54	98	Paved parking, HSG B
11,757	67	Weighted Average
10,054		85.52% Pervious Area
1,703		14.48% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	69	0.0430	0.23		**Sheet Flow, Segment #1** Grass: Short n= 0.150 P2= 3.61"
5.0	69	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 4S: Infiltration Pond



Summary for Subcatchment 11S: Porous Pavement & Contributing Area

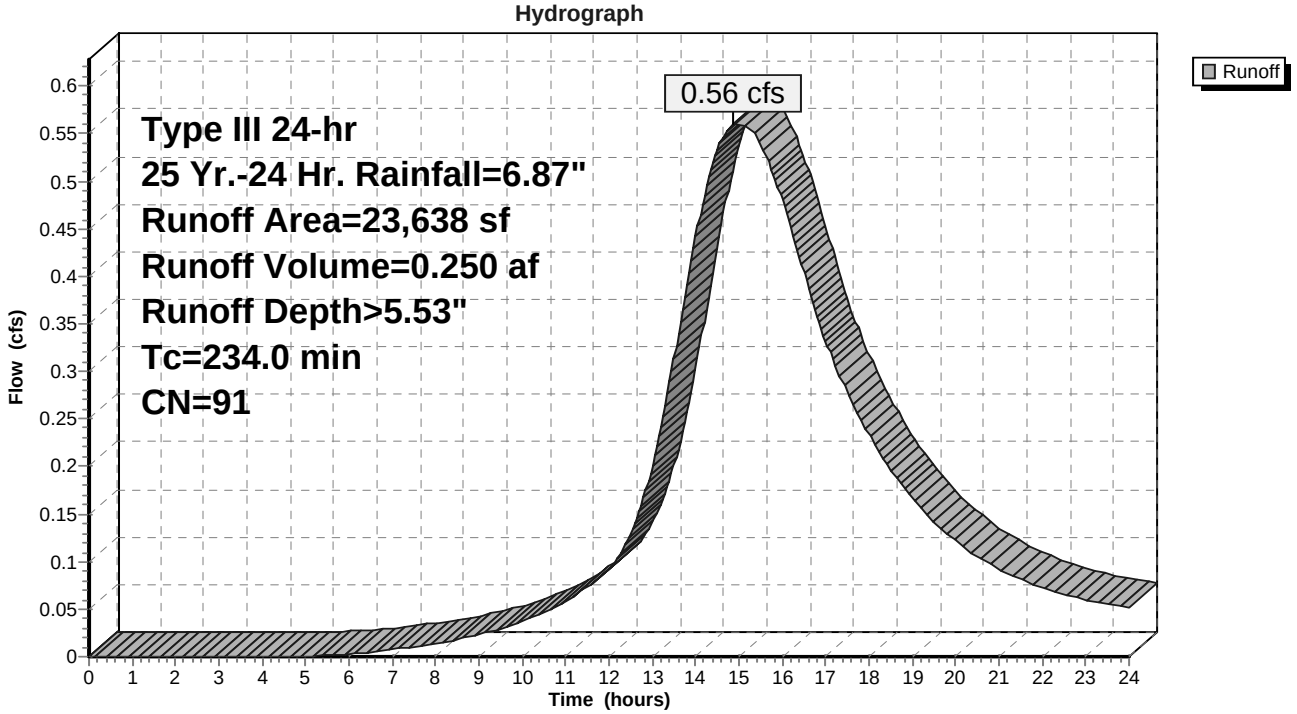
Runoff = 0.56 cfs @ 14.85 hrs, Volume= 0.250 af, Depth> 5.53"

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

Area (sf)	CN	Description
542	98	Roofs, HSG A
3,167	98	Roofs, HSG B
460	39	>75% Grass cover, Good, HSG A
3,404	61	>75% Grass cover, Good, HSG B
3,973	98	Paved parking, HSG A
11,345	98	Paved parking, HSG B
92	96	Gravel surface, HSG A
655	96	Gravel surface, HSG B
23,638	91	Weighted Average
4,611		19.51% Pervious Area
19,027		80.49% Impervious Area

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

Subcatchment 11S: Porous Pavement & Contributing Area



Summary for Subcatchment 12S: RG/Level Spreader

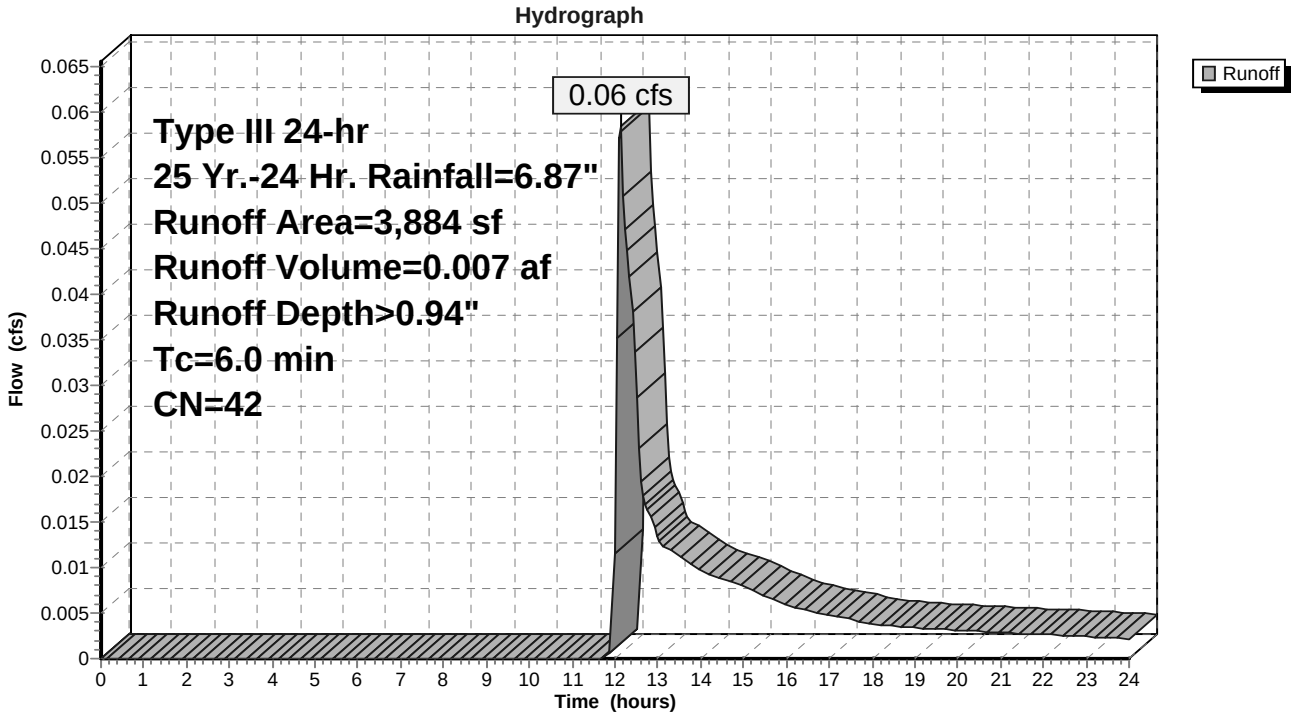
Runoff = 0.06 cfs @ 12.13 hrs, Volume= 0.007 af, Depth> 0.94"

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

Area (sf)	CN	Description
87	98	Roofs, HSG A
23	98	Roofs, HSG B
3,567	39	>75% Grass cover, Good, HSG A
147	61	>75% Grass cover, Good, HSG B
18	96	Gravel surface, HSG A
42	96	Gravel surface, HSG B
3,884	42	Weighted Average
3,774		97.17% Pervious Area
110		2.83% Impervious Area

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

Subcatchment 12S: RG/Level Spreader



Summary for Subcatchment 21S: Eastern Porous Pavement

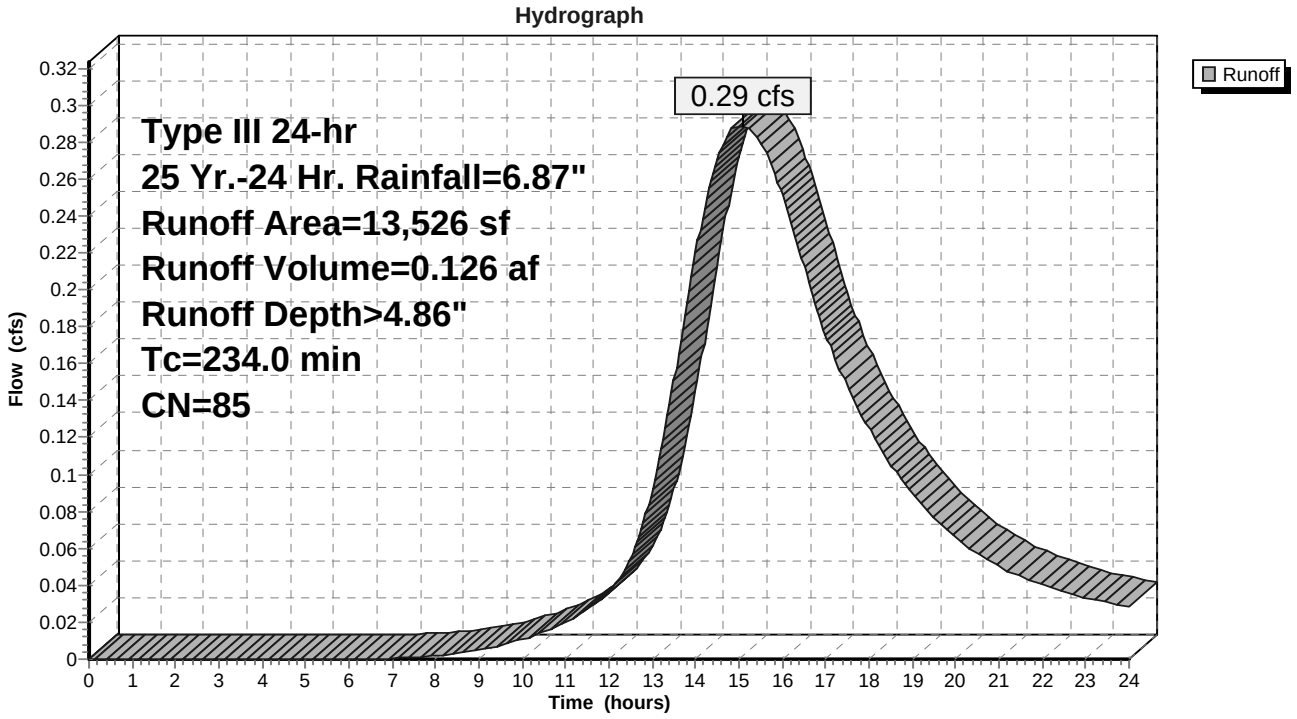
Runoff = 0.29 cfs @ 15.07 hrs, Volume= 0.126 af, Depth> 4.86"

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

Area (sf)	CN	Description
3,544	61	>75% Grass cover, Good, HSG B
5,406	98	Paved parking, HSG B
351	98	Roofs, HSG B
853	39	>75% Grass cover, Good, HSG A
2,901	98	Paved parking, HSG A
31	96	Gravel surface, HSG A
440	96	Gravel surface, HSG B
13,526	85	Weighted Average
4,868		35.99% Pervious Area
8,658		64.01% Impervious Area

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

Subcatchment 21S: Eastern Porous Pavement



Summary for Subcatchment 22S: Western Porous Pavement

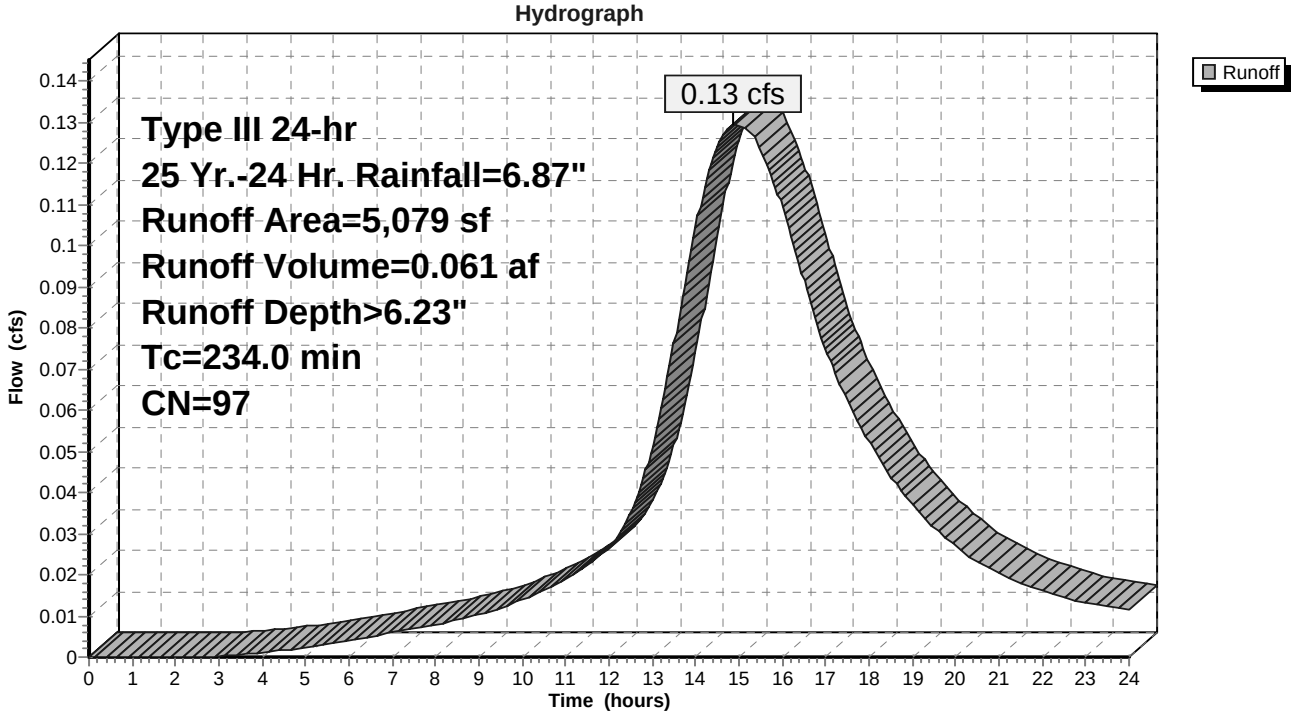
Runoff = 0.13 cfs @ 14.86 hrs, Volume= 0.061 af, Depth> 6.23"

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

Area (sf)	CN	Description
150	61	>75% Grass cover, Good, HSG B
4,889	98	Paved parking, HSG B
40	96	Gravel surface, HSG B
5,079	97	Weighted Average
190		3.74% Pervious Area
4,889		96.26% Impervious Area

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

Subcatchment 22S: Western Porous Pavement



Summary for Subcatchment 23S: Western Porous Pavers

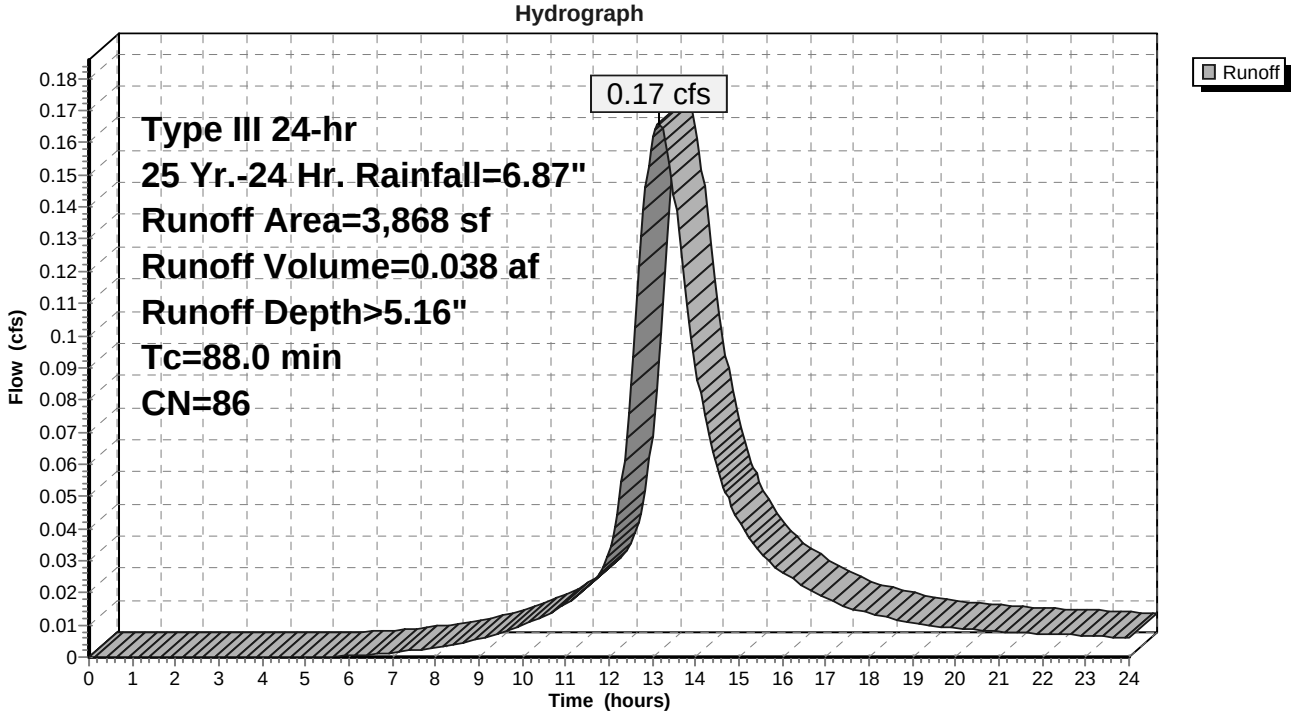
Runoff = 0.17 cfs @ 13.16 hrs, Volume= 0.038 af, Depth> 5.16"

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

Area (sf)	CN	Description
1,228	61	>75% Grass cover, Good, HSG B
2,618	98	Paved parking, HSG B
22	98	Roofs, HSG B
3,868	86	Weighted Average
1,228		31.75% Pervious Area
2,640		68.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
88.0					**Direct Entry, Direct Entry Porous Pavers**

Subcatchment 23S: Western Porous Pavers



Summary for Subcatchment 24S: Eastern Porous Pavers

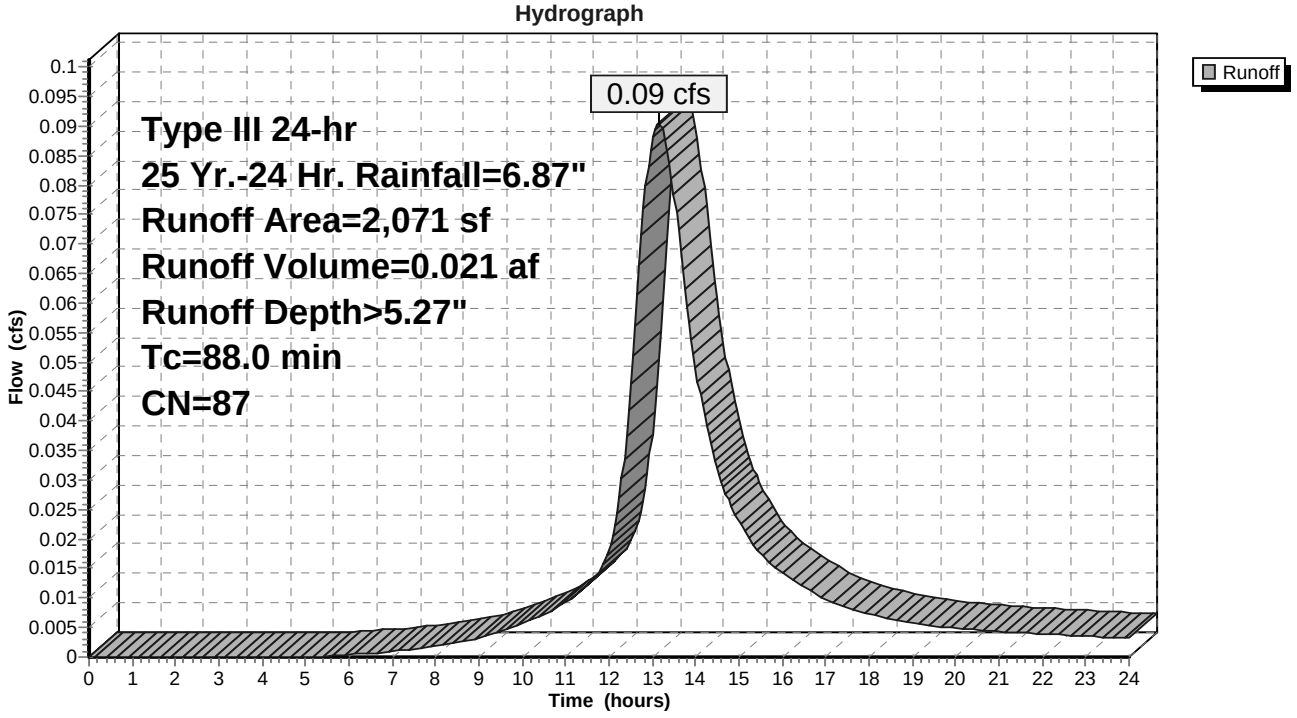
Runoff = 0.09 cfs @ 13.16 hrs, Volume= 0.021 af, Depth> 5.27"

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

Area (sf)	CN	Description
603	61	>75% Grass cover, Good, HSG B
815	98	Paved parking, HSG B
653	98	Roofs, HSG B
2,071	87	Weighted Average
603		29.12% Pervious Area
1,468		70.88% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
88.0					**Direct Entry, Direct Entry Porous Pavers**

Subcatchment 24S: Eastern Porous Pavers



Summary for Subcatchment 31S: Units #2&3

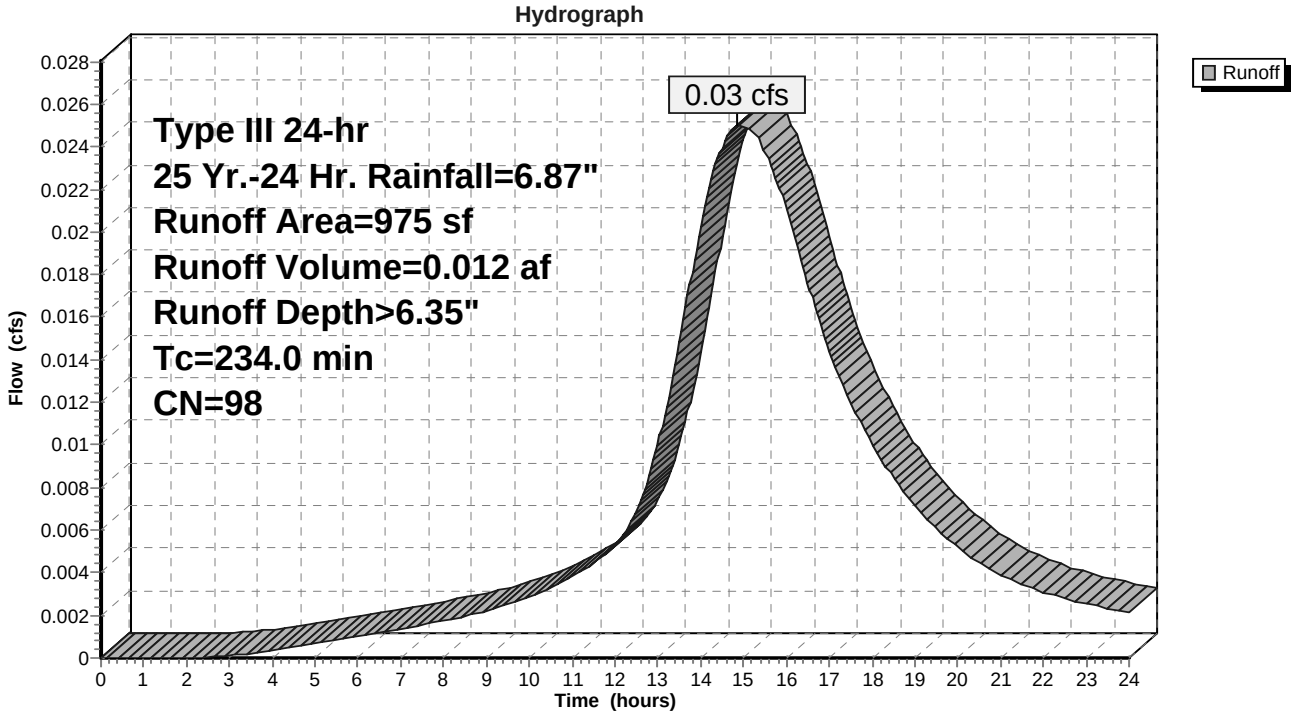
Runoff = 0.03 cfs @ 14.86 hrs, Volume= 0.012 af, Depth> 6.35"

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

Area (sf)	CN	Description
975	98	Roofs, HSG B
975		100.00% Impervious Area

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

Subcatchment 31S: Units #2&3



Summary for Subcatchment 32S: Units #4&5

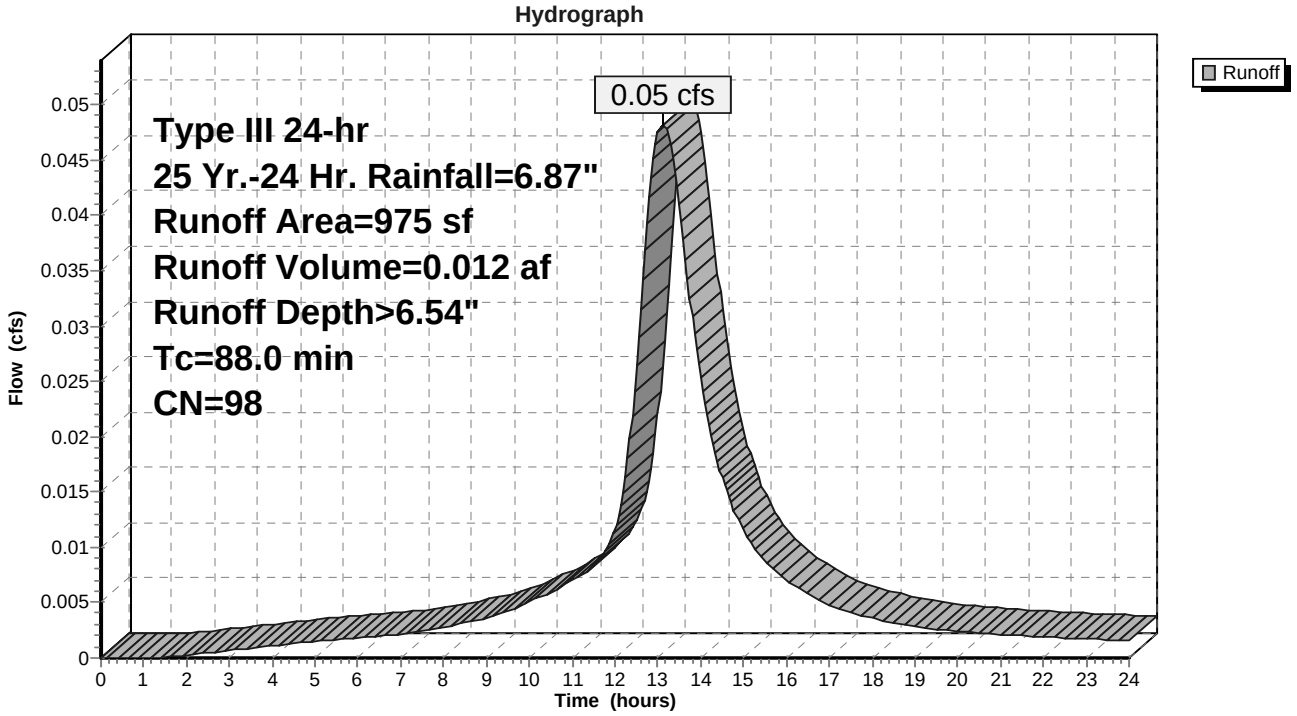
Runoff = 0.05 cfs @ 13.12 hrs, Volume= 0.012 af, Depth> 6.54"

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

Area (sf)	CN	Description
975	98	Roofs, HSG B
975		100.00% Impervious Area

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

Subcatchment 32S: Units #4&5



Summary for Subcatchment 33S: Units #6&7

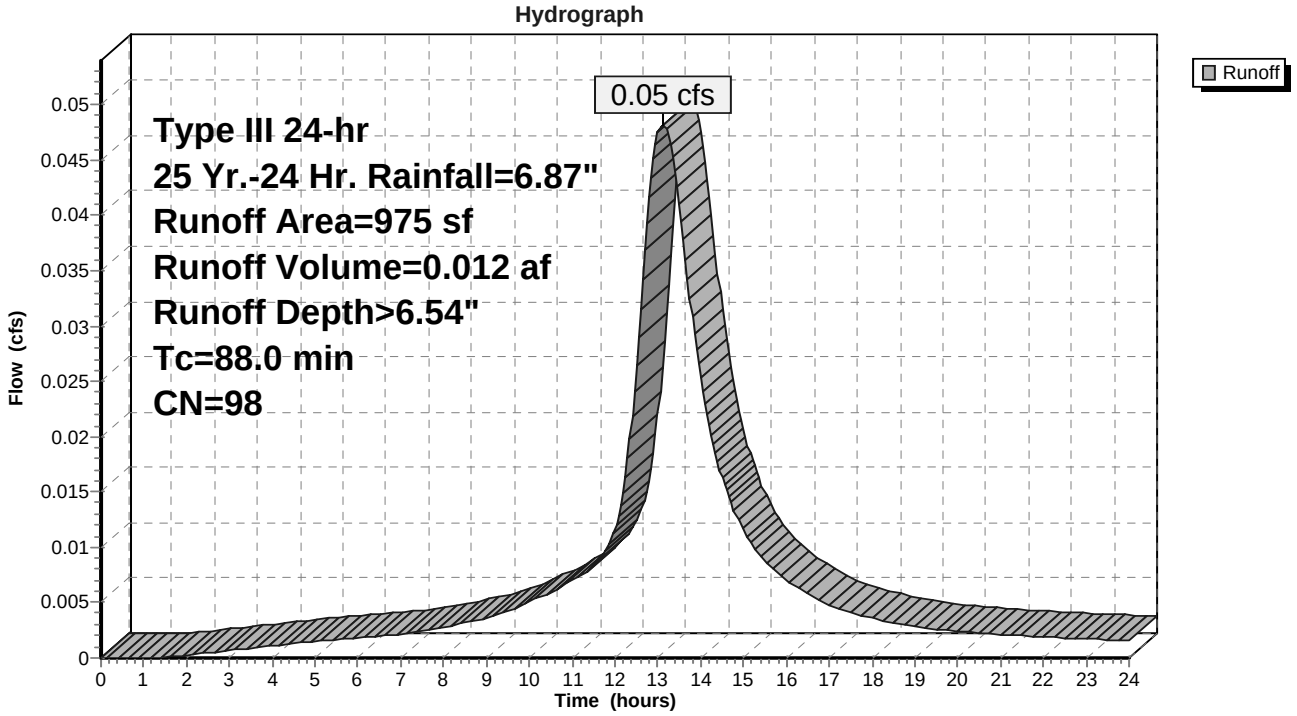
Runoff = 0.05 cfs @ 13.12 hrs, Volume= 0.012 af, Depth> 6.54"

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

Area (sf)	CN	Description
975	98	Roofs, HSG B
975		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
88.0					**Direct Entry, Direct Entry Porous Pavers**

Subcatchment 33S: Units #6&7



Summary for Subcatchment 34S: Units #8&9

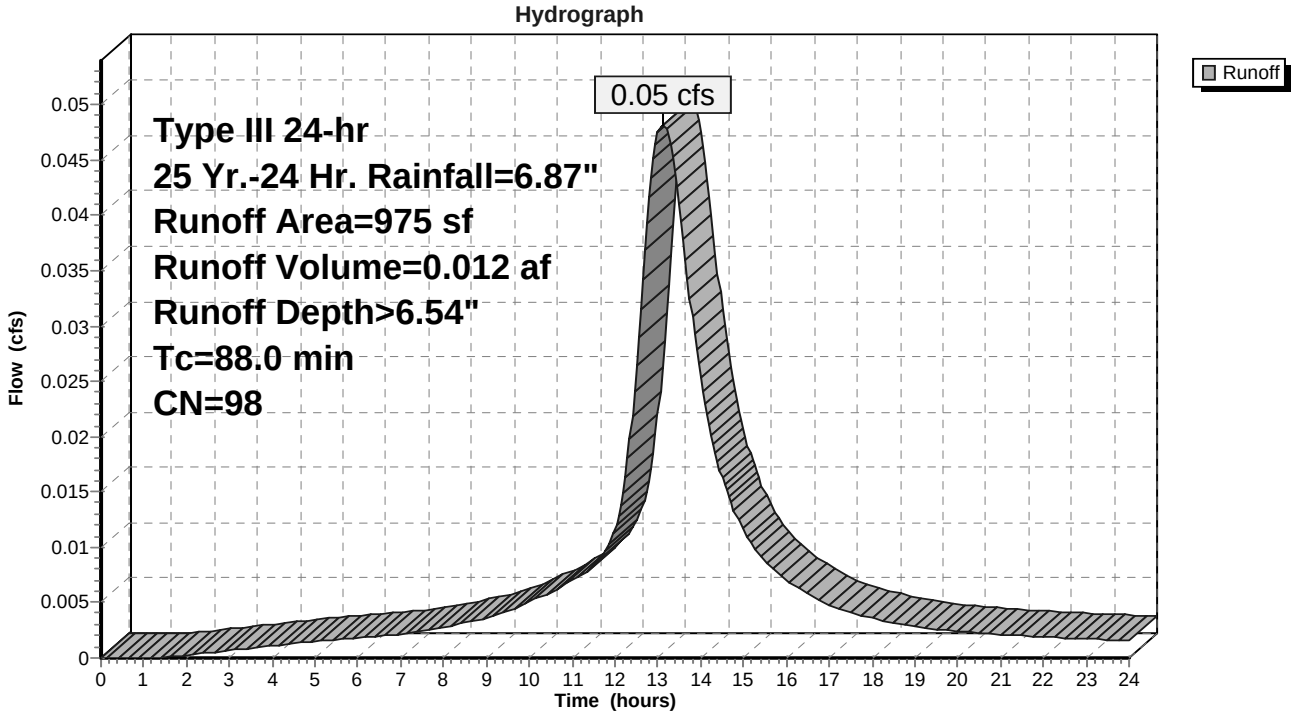
Runoff = 0.05 cfs @ 13.12 hrs, Volume= 0.012 af, Depth> 6.54"

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

Area (sf)	CN	Description
975	98	Roofs, HSG B
975		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
88.0					**Direct Entry, Direct Entry Porous Pavers**

Subcatchment 34S: Units #8&9



Summary for Subcatchment 35S: Units #10&11

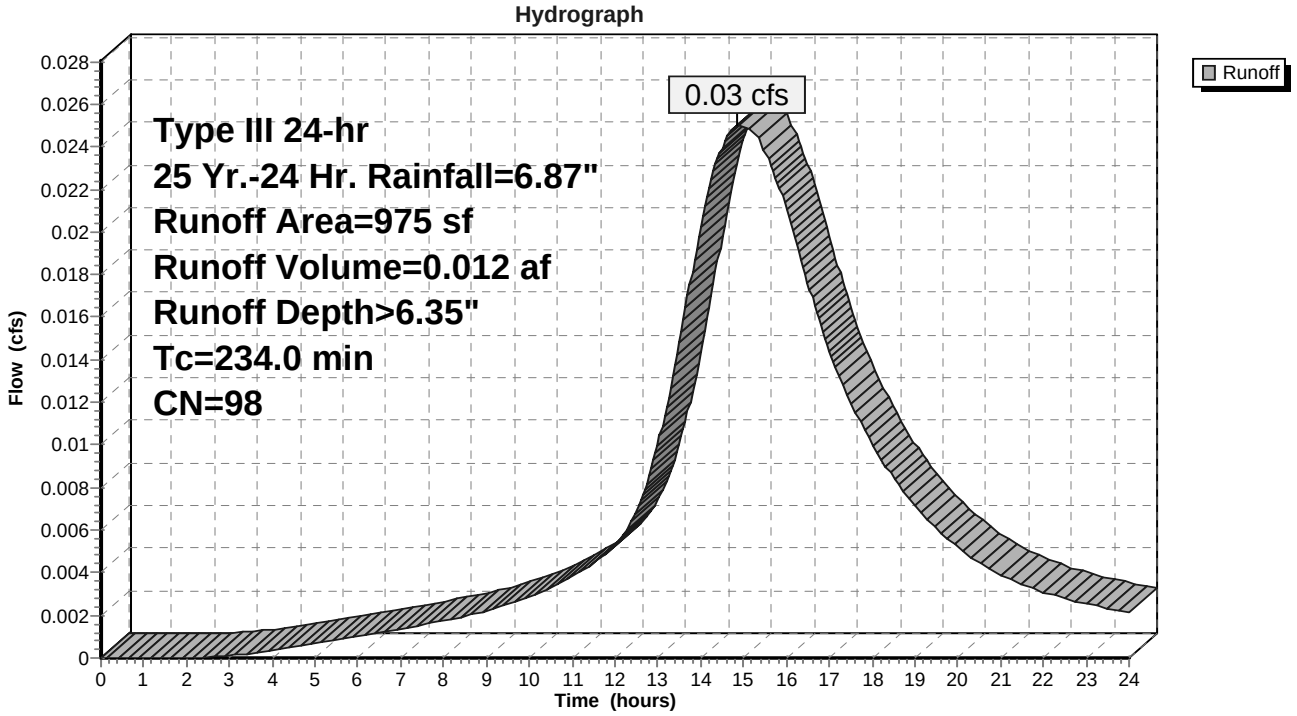
Runoff = 0.03 cfs @ 14.86 hrs, Volume= 0.012 af, Depth> 6.35"

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

Area (sf)	CN	Description
975	98	Roofs, HSG B
975		100.00% Impervious Area

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

Subcatchment 35S: Units #10&11



Summary for Subcatchment 36S: Units #12&13

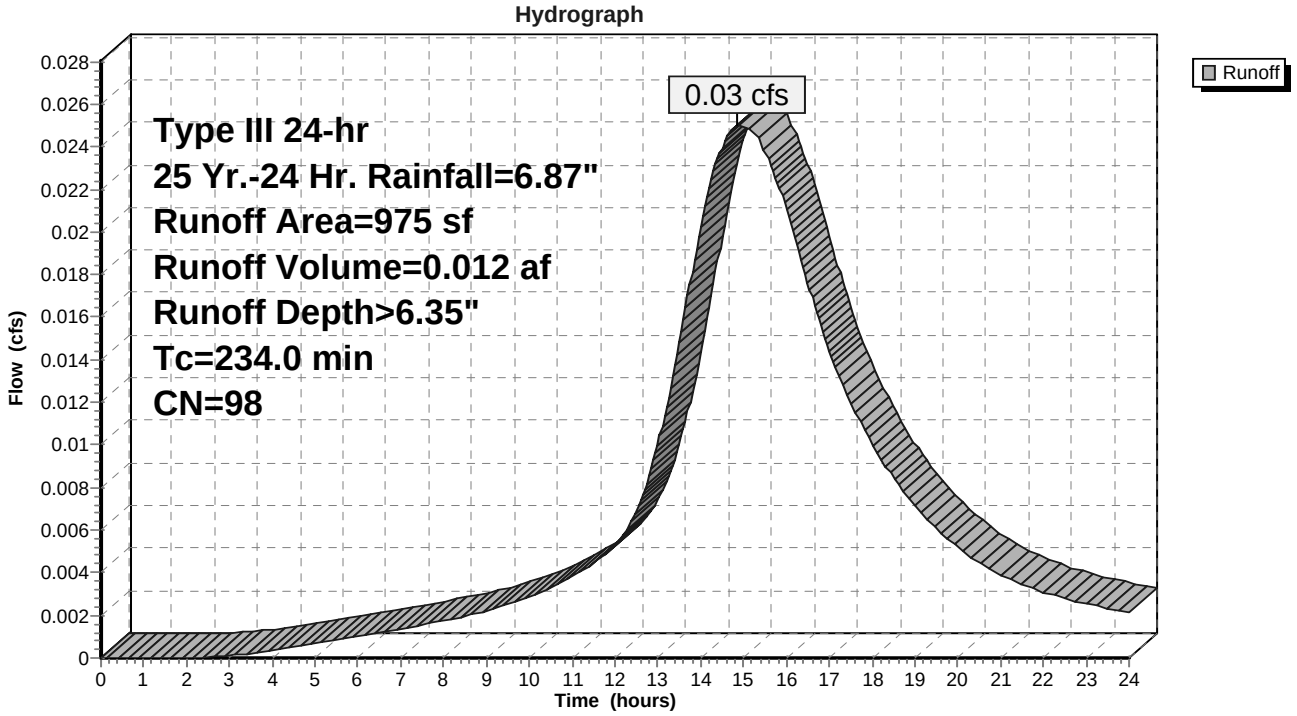
Runoff = 0.03 cfs @ 14.86 hrs, Volume= 0.012 af, Depth> 6.35"

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

Area (sf)	CN	Description
975	98	Roofs, HSG B
975		100.00% Impervious Area

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

Subcatchment 36S: Units #12&13



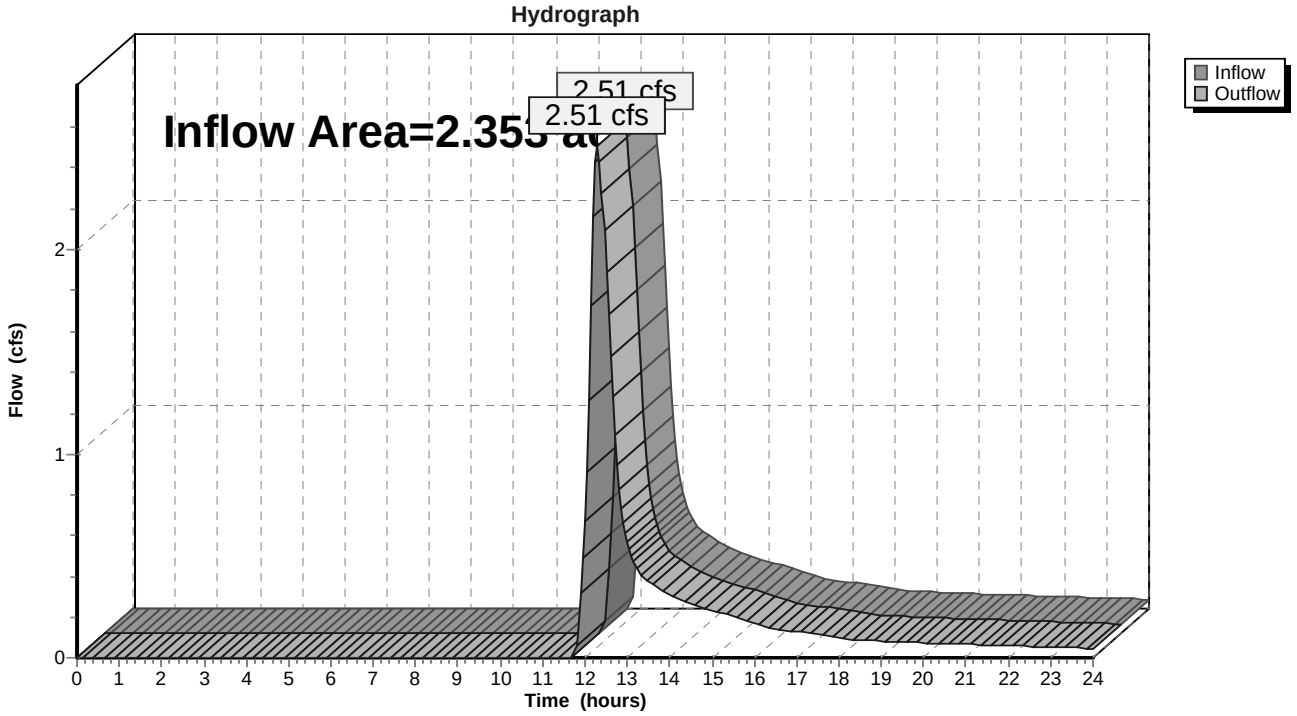
Summary for Reach 100R: Final Reach #100

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

Inflow Area = 2.353 ac, 18.66% Impervious, Inflow Depth > 1.29" for 25 Yr.-24 Hr. event
Inflow = 2.51 cfs @ 12.30 hrs, Volume= 0.253 af
Outflow = 2.51 cfs @ 12.30 hrs, Volume= 0.253 af, Atten= 0%, Lag= 0.0 min

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

Reach 100R: Final Reach #100



Summary for Pond 1P: Infiltration Sump

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=20)

Inflow Area = 0.853 ac, 6.00% Impervious, Inflow Depth > 0.80" for 25 Yr.-24 Hr. event
Inflow = 0.37 cfs @ 12.46 hrs, Volume= 0.057 af
Outflow = 0.16 cfs @ 13.00 hrs, Volume= 0.057 af, Atten= 57%, Lag= 32.6 min
Discarded = 0.16 cfs @ 13.00 hrs, Volume= 0.057 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 206.51' @ 13.01 hrs Surf.Area= 2,288 sf Storage= 616 cf
Flood Elev= 207.00' Surf.Area= 2,914 sf Storage= 1,332 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 81.3 min (995.8 - 914.5)

Volume	Invert	Avail.Storage	Storage Description
#1	205.75'	406 cf	**Ponding Area South (Irregular)**Listed below (Recalc)
#2	206.00'	199 cf	**Ponding Area North (Irregular)**Listed below (Recalc)
#3	206.50'	1,172 cf	**Open Water (Irregular)**Listed below (Recalc)
		1,778 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
205.75	443	111.7	0	0	443
206.00	499	114.8	118	118	506
206.50	660	162.3	289	406	1,555

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
206.00	330	102.4	0	0	330
206.50	472	138.1	199	199	1,016

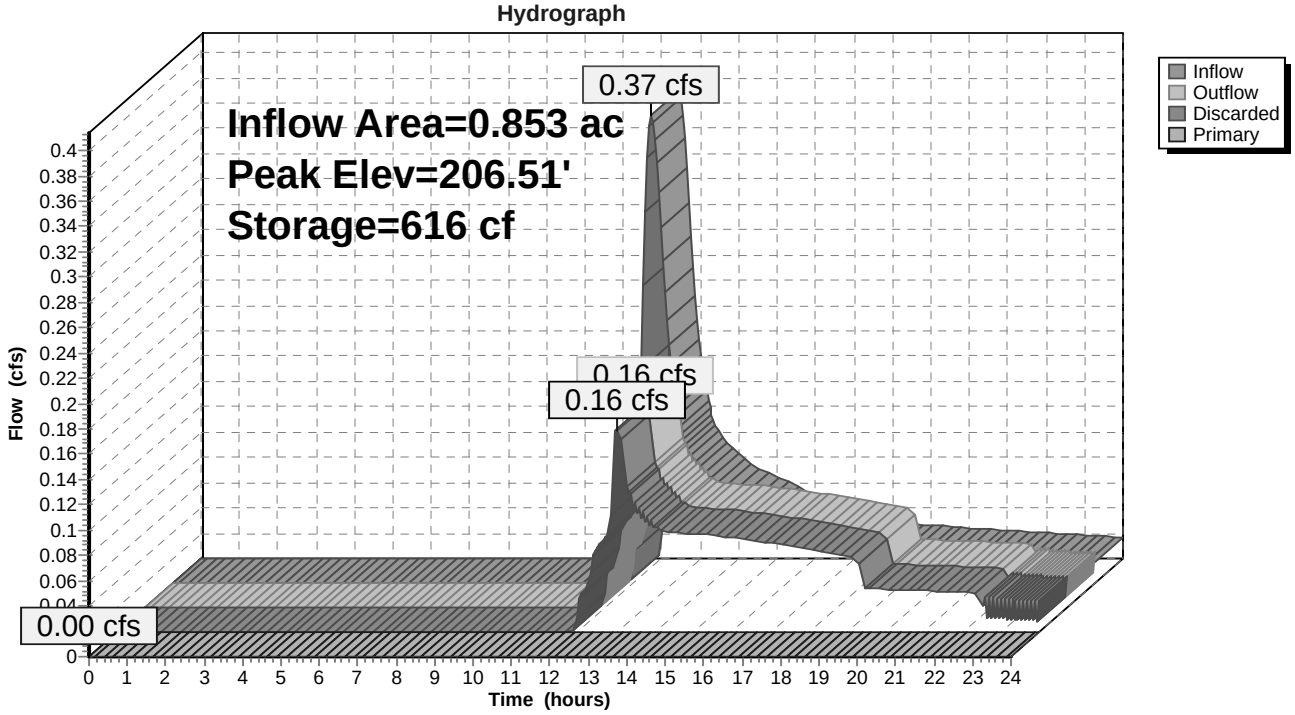
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
206.50	1,146	316.5	0	0	1,146
207.00	1,782	412.8	726	726	6,738
207.25	1,782	412.8	446	1,172	6,841

Device	Routing	Invert	Outlet Devices
#1	Discarded	205.75'	**3.000 in/hr Infiltration over Surface area**
#2	Primary	207.00'	**135.0' long x 2.0' breadth Overflow**
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50
			Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Discarded OutFlow Max=0.16 cfs @ 13.00 hrs HW=206.51' (Free Discharge)
└**1=Infiltration** (Exfiltration Controls 0.16 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=205.75' TW=0.00' (Dynamic Tailwater)
└**2=Overflow** (Controls 0.00 cfs)

Pond 1P: Infiltration Sump



Summary for Pond 2P: Inlet Sump 15" HDPE N-12

Inflow Area = 1.026 ac, 34.70% Impervious, Inflow Depth > 2.89" for 25 Yr.-24 Hr. event
Inflow = 2.65 cfs @ 12.20 hrs, Volume= 0.247 af
Outflow = 2.44 cfs @ 12.24 hrs, Volume= 0.247 af, Atten= 8%, Lag= 1.9 min
Primary = 2.44 cfs @ 12.24 hrs, Volume= 0.247 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 207.69' @ 12.27 hrs Surf.Area= 792 sf Storage= 297 cf
Flood Elev= 208.15' Surf.Area= 1,621 sf Storage= 870 cf

Plug-Flow detention time= 2.1 min calculated for 0.247 af (100% of inflow)
Center-of-Mass det. time= 1.6 min (852.5 - 850.9)

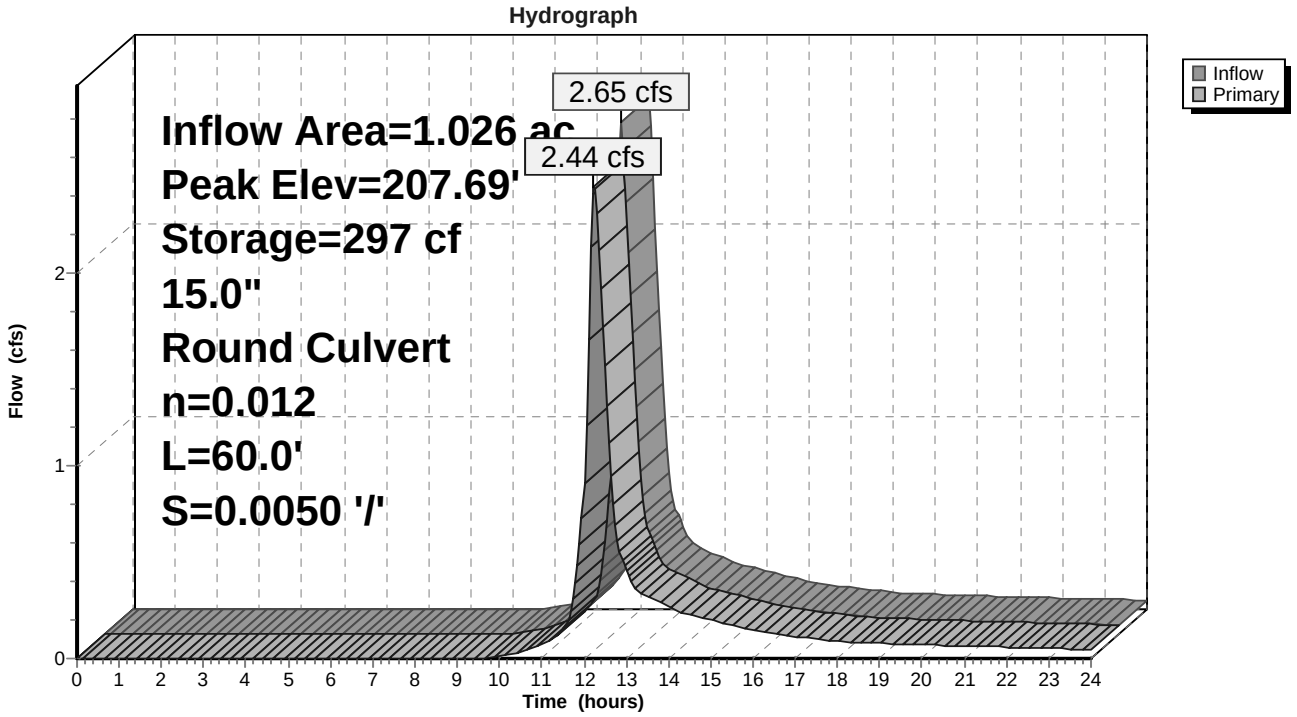
Volume	Invert	Avail.Storage	Storage Description
#1	206.69'	870 cf	**Ponding Area (Irregular)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
206.69	25	19.0	0	0	25
207.00	159	59.4	26	26	277
207.50	472	101.9	151	176	824
208.00	1,468	197.8	462	638	3,113
208.15	1,621	243.7	232	870	4,726

Device	Routing	Invert	Outlet Devices
#1	Primary	206.70'	**15.0" Round 15" HDPE N-12** L= 60.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 206.70' / 206.40' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=2.28 cfs @ 12.24 hrs HW=207.68' TW=207.31' (Dynamic Tailwater)
↑**1=15" HDPE N-12** (Outlet Controls 2.28 cfs @ 3.05 fps)

Pond 2P: Inlet Sump 15" HDPE N-12



Summary for Pond 4P: Infiltration Sump

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=10)

Inflow Area = 0.270 ac, 14.48% Impervious, Inflow Depth > 3.20" for 25 Yr.-24 Hr. event
Inflow = 0.99 cfs @ 12.10 hrs, Volume= 0.072 af
Outflow = 0.12 cfs @ 12.87 hrs, Volume= 0.072 af, Atten= 88%, Lag= 46.2 min
Discarded = 0.12 cfs @ 12.87 hrs, Volume= 0.072 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 207.32' @ 12.87 hrs Surf.Area= 1,765 sf Storage= 1,231 cf
Flood Elev= 207.75' Surf.Area= 3,142 sf Storage= 2,276 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 132.3 min (970.1 - 837.8)

Volume	Invert	Avail.Storage	Storage Description
#1	206.00'	3,181 cf	**Ponding Area (Irregular)**Listed below (Recalc)

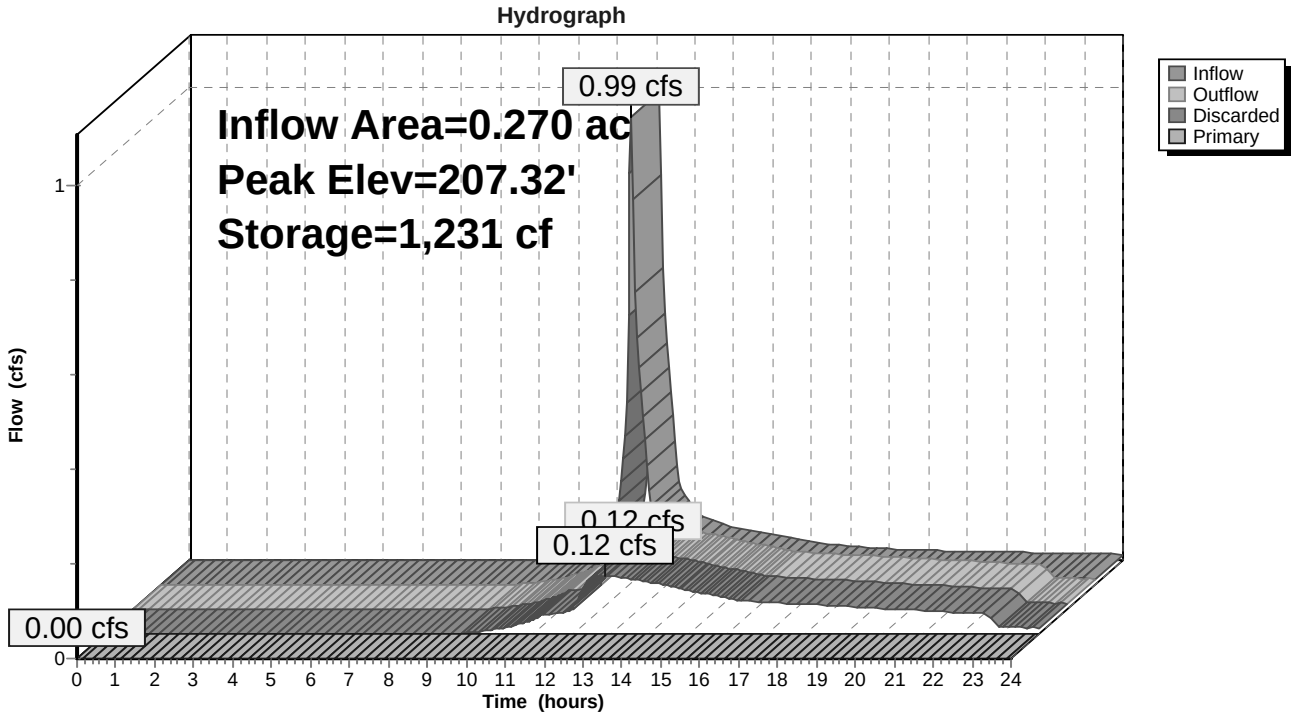
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
206.00	608	163.3	0	0	608
207.00	1,002	195.9	797	797	1,557
208.00	4,120	359.3	2,385	3,181	8,782

Device	Routing	Invert	Outlet Devices
#1	Discarded	206.00'	**3.000 in/hr Infiltration over Surface area**
#2	Primary	207.50'	**12.0" Round 12" RCP** L= 86.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 207.50' / 206.50' S= 0.0116 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Discarded OutFlow Max=0.12 cfs @ 12.87 hrs HW=207.32' (Free Discharge)
↑**1=Infiltration** (Exfiltration Controls 0.12 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=206.00' TW=205.75' (Dynamic Tailwater)
↑**2=12" RCP** (Controls 0.00 cfs)

Pond 4P: Infiltration Sump



Summary for Pond 101P: Porous Pavement W/ Infiltration #101

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=69)

Inflow Area = 0.543 ac, 80.49% Impervious, Inflow Depth > 5.53" for 25 Yr.-24 Hr. event
Inflow = 0.56 cfs @ 14.85 hrs, Volume= 0.250 af
Outflow = 0.50 cfs @ 14.80 hrs, Volume= 0.250 af, Atten= 11%, Lag= 0.0 min
Discarded = 0.50 cfs @ 14.80 hrs, Volume= 0.250 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 207.44' @ 15.85 hrs Surf.Area= 7,208 sf Storage= 233 cf
Flood Elev= 209.69' Surf.Area= 7,208 sf Storage= 5,276 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 2.1 min (962.2 - 960.1)

Volume	Invert	Avail.Storage	Storage Description
#1	207.36'	2,883 cf	**Stone (Irregular)** Listed below (Recalc) 7,208 cf Overall x 40.0% Voids
#2	208.36'	1,442 cf	**Filter Media (Irregular)** Listed below (Recalc) -Impervious 7,208 cf Overall x 20.0% Voids
#3	209.36'	951 cf	**Choker Course (Irregular)** Listed below (Recalc) -Impervious 2,379 cf Overall x 40.0% Voids
		5,276 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
207.36	7,208	648.0	0	0	7,208
208.36	7,208	648.0	7,208	7,208	7,856

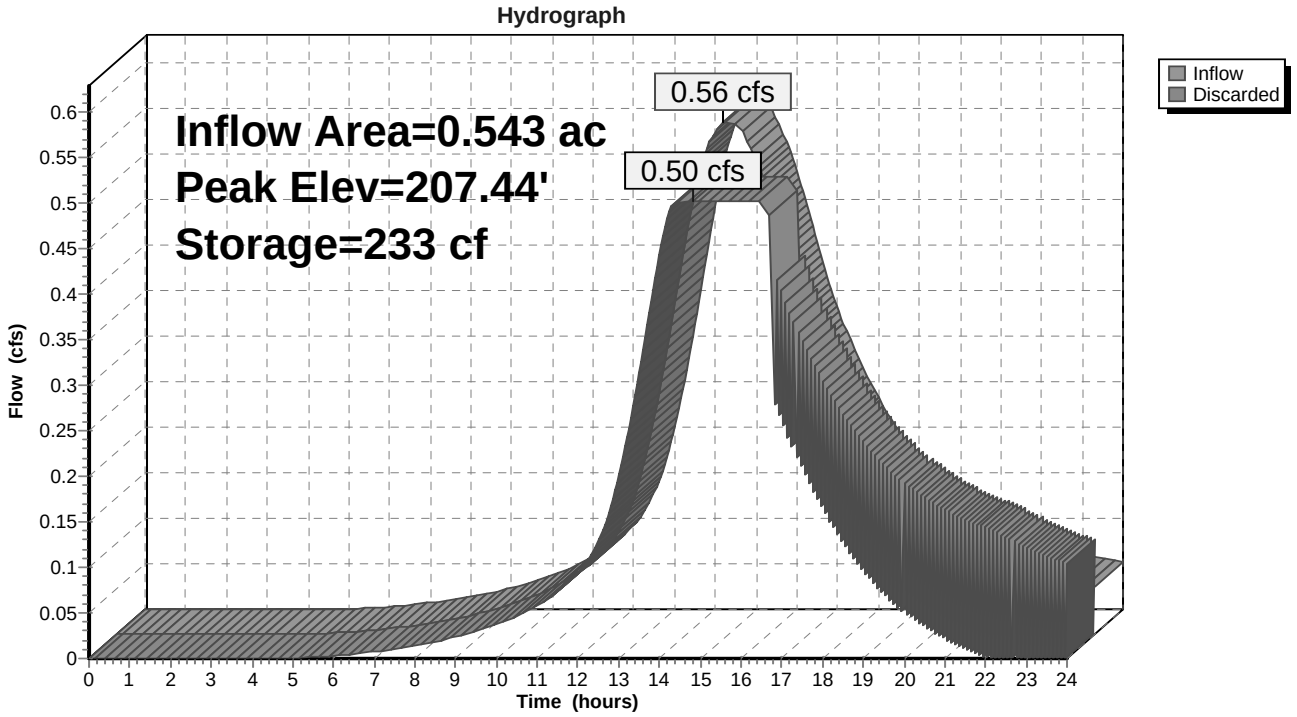
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
208.36	7,208	648.0	0	0	7,208
209.36	7,208	648.0	7,208	7,208	7,856

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
209.36	7,208	648.0	0	0	7,208
209.69	7,208	648.0	2,379	2,379	7,422

Device	Routing	Invert	Outlet Devices
#1	Discarded	207.36'	**3.000 in/hr Infiltration 3in/hr over Surface area**

Discarded OutFlow Max=0.50 cfs @ 14.80 hrs HW=207.38' (Free Discharge)
1=Infiltration 3in/hr (Exfiltration Controls 0.50 cfs)

Pond 101P: Porous Pavement W/ Infiltration #101



Summary for Pond 102P: Rain Garden/Level Spreader W/ Infiltration #102

Inflow Area = 1.115 ac, 32.16% Impervious, Inflow Depth > 2.74" for 25 Yr.-24 Hr. event
Inflow = 2.49 cfs @ 12.23 hrs, Volume= 0.254 af
Outflow = 2.40 cfs @ 12.29 hrs, Volume= 0.243 af, Atten= 4%, Lag= 3.4 min
Discarded = 0.01 cfs @ 11.05 hrs, Volume= 0.017 af
Primary = 2.38 cfs @ 12.29 hrs, Volume= 0.226 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 207.33' @ 12.29 hrs Surf.Area= 209 sf Storage= 1,013 cf
Flood Elev= 208.00' Surf.Area= 209 sf Storage= 1,898 cf

Plug-Flow detention time= 36.4 min calculated for 0.243 af (95% of inflow)
Center-of-Mass det. time= 11.9 min (866.0 - 854.2)

Volume	Invert	Avail.Storage	Storage Description
#1	203.50'	84 cf	**Stone (Irregular)** Listed below (Recalc) 209 cf Overall x 40.0% Voids
#2	204.50'	63 cf	**Bio-Media (Irregular)** Listed below (Recalc) -Impervious 314 cf Overall x 20.0% Voids
#3	206.00'	976 cf	**Infiltration Cell (Irregular)** Listed below (Recalc) -Impervious
#4	206.00'	776 cf	**Sediment Forebay (Irregular)** Listed below (Recalc) -Impervious
		1,898 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
203.50	209	81.6	0	0	209
204.50	209	81.6	209	209	291

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
204.50	209	81.6	0	0	209
206.00	209	84.6	314	314	340

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
206.00	209	81.6	0	0	209
207.00	482	100.5	336	336	498
208.00	811	119.4	639	976	846

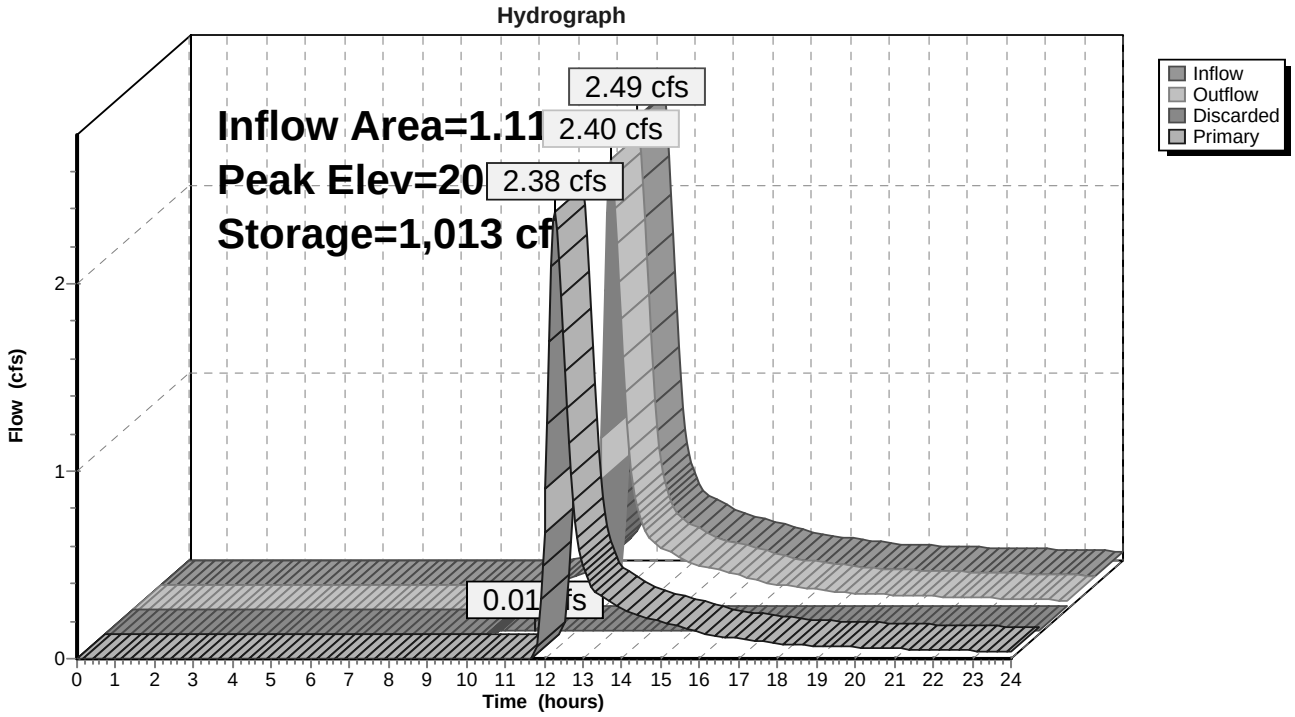
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
206.00	43	25.0	0	0	43
207.00	424	118.2	201	201	1,107
208.00	742	130.6	576	776	1,383

Device	Routing	Invert	Outlet Devices
#1	Discarded	203.50'	**3.000 in/hr 3IN/HR Infiltration over Surface area**
#2	Primary	206.75'	**2.0' long x 45.0' breadth 45' Level Spreader** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Discarded OutFlow Max=0.01 cfs @ 11.05 hrs HW=204.74' (Free Discharge)
└**1=3IN/HR Infiltration** (Exfiltration Controls 0.01 cfs)

Primary OutFlow Max=2.37 cfs @ 12.29 hrs HW=207.33' TW=0.00' (Dynamic Tailwater)
└**2=45' Level Spreader** (Weir Controls 2.37 cfs @ 2.05 fps)

Pond 102P: Rain Garden/Level Spreader W/ Infiltration #102



Summary for Pond 201P: Porous Pavement W/ Infiltration #201

Inflow Area = 0.380 ac, 66.99% Impervious, Inflow Depth > 4.34" for 25 Yr.-24 Hr. event
Inflow = 0.31 cfs @ 15.06 hrs, Volume= 0.138 af
Outflow = 0.31 cfs @ 15.06 hrs, Volume= 0.138 af, Atten= 0%, Lag= 0.0 min
Discarded = 0.31 cfs @ 15.06 hrs, Volume= 0.138 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 205.51' @ 15.06 hrs Surf.Area= 5,821 sf Storage= 0 cf
Flood Elev= 207.84' Surf.Area= 5,821 sf Storage= 4,261 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.0 min (972.8 - 972.8)

Volume	Invert	Avail.Storage	Storage Description
#1	205.51'	2,328 cf	**Stone (Irregular)** Listed below (Recalc) 5,821 cf Overall x 40.0% Voids
#2	206.51'	1,164 cf	**Filter Media (Irregular)** Listed below (Recalc) -Impervious 5,821 cf Overall x 20.0% Voids
#3	207.51'	768 cf	**Choker Course (Irregular)** Listed below (Recalc) -Impervious 1,921 cf Overall x 40.0% Voids
		4,261 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
205.51	5,821	436.4	0	0	5,821
206.51	5,821	436.4	5,821	5,821	6,257

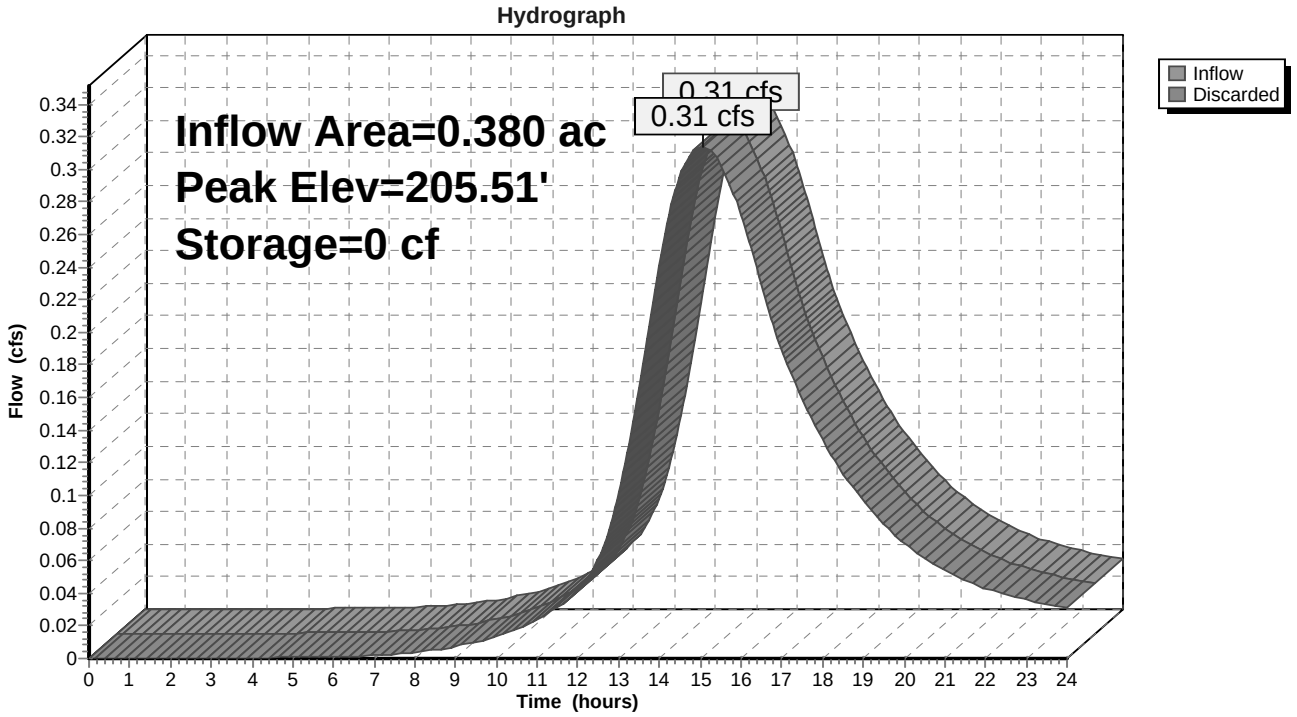
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
206.51	5,821	436.4	0	0	5,821
207.51	5,821	436.4	5,821	5,821	6,257

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
207.51	5,821	436.5	0	0	5,821
207.84	5,821	436.4	1,921	1,921	5,965

Device	Routing	Invert	Outlet Devices
#1	Discarded	205.51'	**3.000 in/hr Infiltration 3in/hr over Surface area**

Discarded OutFlow Max=0.40 cfs @ 15.06 hrs HW=205.51' (Free Discharge)
1=Infiltration 3in/hr (Exfiltration Controls 0.40 cfs)

Pond 201P: Porous Pavement W/ Infiltration #201



Summary for Pond 202P: Porous Pavement W/ Infiltration #202

Inflow Area = 0.161 ac, 97.30% Impervious, Inflow Depth > 6.26" for 25 Yr.-24 Hr. event
Inflow = 0.18 cfs @ 14.86 hrs, Volume= 0.084 af
Outflow = 0.18 cfs @ 14.86 hrs, Volume= 0.084 af, Atten= 0%, Lag= 0.0 min
Discarded = 0.18 cfs @ 14.86 hrs, Volume= 0.084 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 205.56' @ 14.86 hrs Surf.Area= 4,889 sf Storage= 0 cf
Flood Elev= 207.89' Surf.Area= 4,889 sf Storage= 3,579 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.0 min (932.6 - 932.6)

Volume	Invert	Avail.Storage	Storage Description
#1	205.56'	1,956 cf	**Stone (Irregular)** Listed below (Recalc) 4,889 cf Overall x 40.0% Voids
#2	206.56'	978 cf	**Filter Media (Irregular)** Listed below (Recalc) -Impervious 4,889 cf Overall x 20.0% Voids
#3	207.56'	645 cf	**Choker Course (Irregular)** Listed below (Recalc) -Impervious 1,613 cf Overall x 40.0% Voids
		3,579 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
205.56	4,889	300.0	0	0	4,889
206.56	4,889	300.0	4,889	4,889	5,189

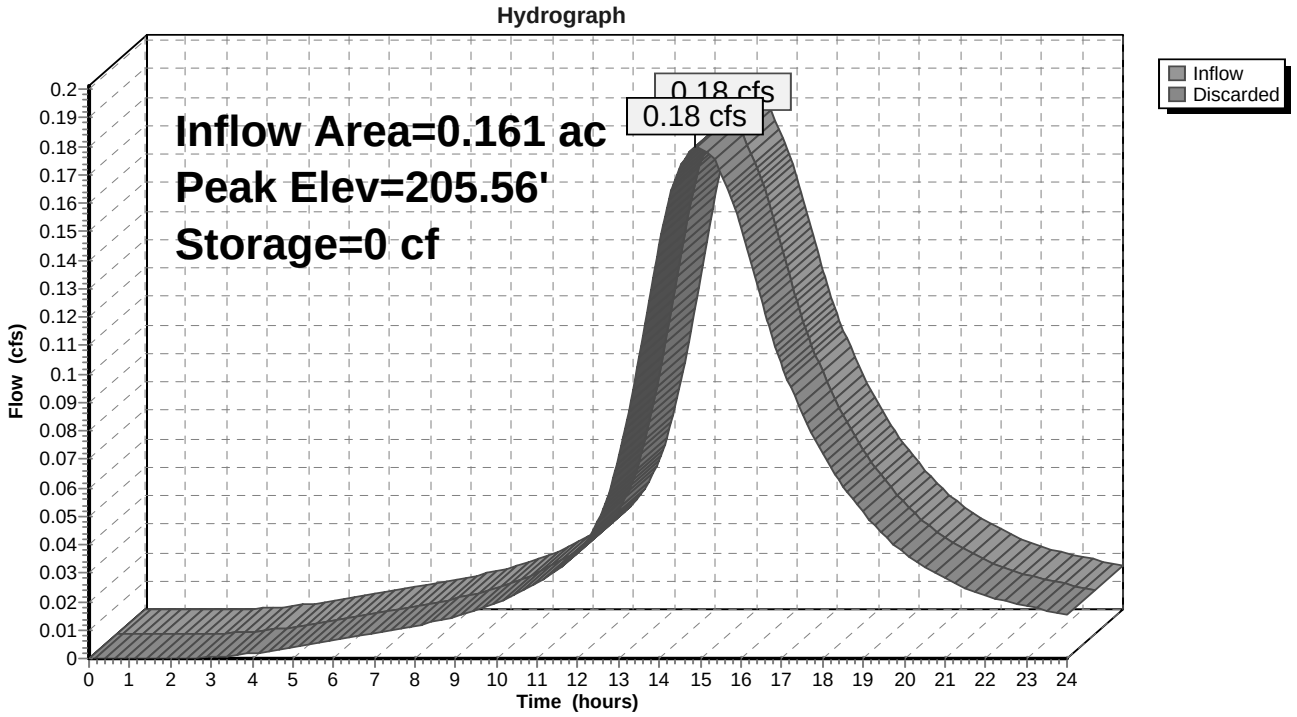
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
206.56	4,889	300.0	0	0	4,889
207.56	4,889	300.0	4,889	4,889	5,189

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
207.56	4,889	300.0	0	0	4,889
207.89	4,889	300.0	1,613	1,613	4,988

Device	Routing	Invert	Outlet Devices
#1	Discarded	205.56'	**3.000 in/hr Infiltration 3in/hr over Surface area**

Discarded OutFlow Max=0.34 cfs @ 14.86 hrs HW=205.56' (Free Discharge)
1=Infiltration 3in/hr (Exfiltration Controls 0.34 cfs)

Pond 202P: Porous Pavement W/ Infiltration #202



Summary for Pond 203P: Porous Pavers W/ Infiltration #203

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=81)

Inflow Area = 0.156 ac, 81.92% Impervious, Inflow Depth > 5.75" for 25 Yr.-24 Hr. event
Inflow = 0.31 cfs @ 13.14 hrs, Volume= 0.075 af
Outflow = 0.17 cfs @ 12.70 hrs, Volume= 0.075 af, Atten= 46%, Lag= 0.0 min
Discarded = 0.17 cfs @ 12.70 hrs, Volume= 0.075 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 207.00' @ 13.99 hrs Surf.Area= 2,427 sf Storage= 452 cf
Flood Elev= 208.28' Surf.Area= 2,427 sf Storage= 1,563 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 15.3 min (850.5 - 835.3)

Volume	Invert	Avail.Storage	Storage Description
#1	206.53'	1,456 cf	**Stone (Irregular)** Listed below (Recalc) 3,641 cf Overall x 40.0% Voids
#2	208.03'	107 cf	**Pavers (Irregular)** Listed below (Recalc) -Impervious 534 cf Overall x 20.0% Voids
		1,563 cf	Total Available Storage

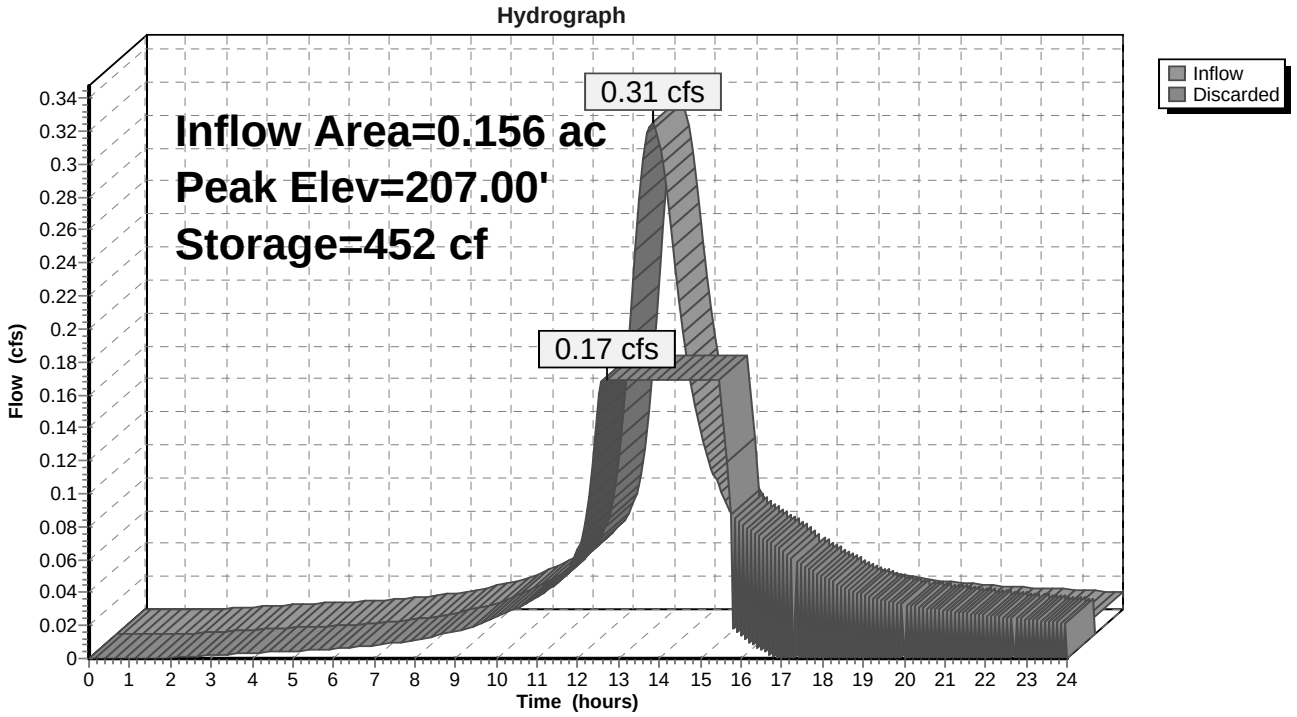
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
206.53	2,427	645.5	0	0	2,427
208.03	2,427	645.5	3,641	3,641	3,395

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
208.03	2,427	645.5	0	0	2,427
208.25	2,427	645.5	534	534	2,569

Device	Routing	Invert	Outlet Devices
#1	Discarded	206.53'	**3.000 in/hr Infiltration 3in/hr over Surface area**

Discarded OutFlow Max=0.17 cfs @ 12.70 hrs HW=206.55' (Free Discharge)
1=Infiltration 3in/hr (Exfiltration Controls 0.17 cfs)

Pond 203P: Porous Pavers W/ Infiltration #203



Summary for Pond 204P: Porous Pavers W/ Infiltration #204

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=85)

Inflow Area = 0.048 ac, 70.88% Impervious, Inflow Depth > 5.27" for 25 Yr.-24 Hr. event
Inflow = 0.09 cfs @ 13.16 hrs, Volume= 0.021 af
Outflow = 0.06 cfs @ 12.75 hrs, Volume= 0.021 af, Atten= 39%, Lag= 0.0 min
Discarded = 0.06 cfs @ 12.75 hrs, Volume= 0.021 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 208.30' @ 13.88 hrs Surf.Area= 794 sf Storage= 101 cf
Flood Elev= 209.23' Surf.Area= 794 sf Storage= 357 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 10.3 min (866.5 - 856.2)

Volume	Invert	Avail.Storage	Storage Description
#1	207.98'	318 cf	**Stone (Irregular)** Listed below (Recalc) 794 cf Overall x 40.0% Voids
#2	208.98'	79 cf	**Pavers (Irregular)** Listed below (Recalc) -Impervious 397 cf Overall x 20.0% Voids
		397 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
207.98	794	278.8	0	0	794
208.98	794	278.8	794	794	1,073

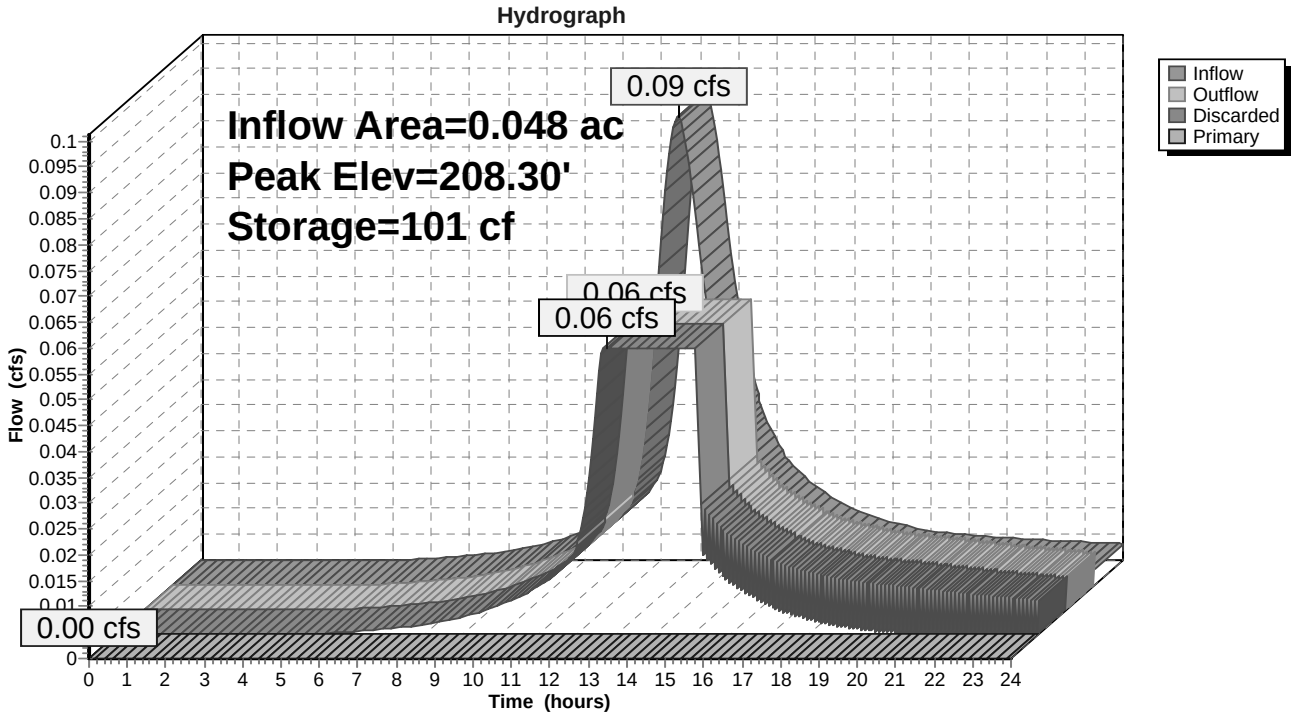
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
208.98	794	278.8	0	0	794
209.23	794	278.8	199	199	864
209.48	794	278.8	199	397	933

Device	Routing	Invert	Outlet Devices
#1	Discarded	207.98'	**3.000 in/hr Infiltration 3in/hr over Surface area**
#2	Primary	209.23'	**52.0' long x 2.0' breadth Overflow** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Discarded OutFlow Max=0.06 cfs @ 12.75 hrs HW=208.00' (Free Discharge)
1=Infiltration 3in/hr (Exfiltration Controls 0.06 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=207.98' TW=205.51' (Dynamic Tailwater)
2=Overflow (Controls 0.00 cfs)

Pond 204P: Porous Pavers W/ Infiltration #204



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: Remaining Area from Runoff Area=25,413 sf 2.07% Impervious Runoff Depth>0.10"
Flow Length=156' Tc=25.5 min CN=45 Runoff=0.01 cfs 0.005 af

Subcatchment 2S: Subcatchment #2 Runoff Area=44,696 sf 34.70% Impervious Runoff Depth>0.76"
Flow Length=122' Tc=14.0 min CN=64 Runoff=0.58 cfs 0.065 af

Subcatchment 3S: Remaining Area Copper Runoff Area=16,731 sf 7.61% Impervious Runoff Depth>0.03"
Flow Length=106' Tc=21.5 min CN=41 Runoff=0.00 cfs 0.001 af

Subcatchment 4S: Infiltration Pond Runoff Area=11,757 sf 14.48% Impervious Runoff Depth>0.91"
Flow Length=69' Slope=0.0430 '/' Tc=6.0 min CN=67 Runoff=0.25 cfs 0.020 af

Subcatchment 11S: Porous Pavement & Runoff Area=23,638 sf 80.49% Impervious Runoff Depth>2.51"
Tc=234.0 min CN=91 Runoff=0.26 cfs 0.113 af

Subcatchment 12S: RG/Level Spreader Runoff Area=3,884 sf 2.83% Impervious Runoff Depth>0.05"
Tc=6.0 min CN=42 Runoff=0.00 cfs 0.000 af

Subcatchment 21S: Eastern Porous Runoff Area=13,526 sf 64.01% Impervious Runoff Depth>1.98"
Tc=234.0 min CN=85 Runoff=0.12 cfs 0.051 af

Subcatchment 22S: Western Porous Runoff Area=5,079 sf 96.26% Impervious Runoff Depth>3.12"
Tc=234.0 min CN=97 Runoff=0.07 cfs 0.030 af

Subcatchment 23S: Western Porous Pavers Runoff Area=3,868 sf 68.25% Impervious Runoff Depth>2.16"
Tc=88.0 min CN=86 Runoff=0.07 cfs 0.016 af

Subcatchment 24S: Eastern Porous Pavers Runoff Area=2,071 sf 70.88% Impervious Runoff Depth>2.24"
Tc=88.0 min CN=87 Runoff=0.04 cfs 0.009 af

Subcatchment 31S: Units #2&3 Runoff Area=975 sf 100.00% Impervious Runoff Depth>3.23"
Tc=234.0 min CN=98 Runoff=0.01 cfs 0.006 af

Subcatchment 32S: Units #4&5 Runoff Area=975 sf 100.00% Impervious Runoff Depth>3.33"
Tc=88.0 min CN=98 Runoff=0.03 cfs 0.006 af

Subcatchment 33S: Units #6&7 Runoff Area=975 sf 100.00% Impervious Runoff Depth>3.33"
Tc=88.0 min CN=98 Runoff=0.03 cfs 0.006 af

Subcatchment 34S: Units #8&9 Runoff Area=975 sf 100.00% Impervious Runoff Depth>3.33"
Tc=88.0 min CN=98 Runoff=0.03 cfs 0.006 af

Subcatchment 35S: Units #10&11 Runoff Area=975 sf 100.00% Impervious Runoff Depth>3.23"
Tc=234.0 min CN=98 Runoff=0.01 cfs 0.006 af

Subcatchment 36S: Units #12&13 Runoff Area=975 sf 100.00% Impervious Runoff Depth>3.23"
Tc=234.0 min CN=98 Runoff=0.01 cfs 0.006 af

Reach 100R: Final Reach #100 Inflow=0.35 cfs 0.040 af
Outflow=0.35 cfs 0.040 af

Pond 1P: Infiltration Sump Peak Elev=205.75' Storage=0 cf Inflow=0.01 cfs 0.005 af
Discarded=0.01 cfs 0.005 af Primary=0.00 cfs 0.000 af Outflow=0.01 cfs 0.005 af

Pond 2P: Inlet Sump 15" HDPE N-12 Peak Elev=207.10' Storage=44 cf Inflow=0.58 cfs 0.065 af
15.0" Round Culvert n=0.012 L=60.0' S=0.0050 '/' Outflow=0.57 cfs 0.065 af

Pond 4P: Infiltration Sump Peak Elev=206.33' Storage=219 cf Inflow=0.25 cfs 0.020 af
Discarded=0.05 cfs 0.021 af Primary=0.00 cfs 0.000 af Outflow=0.05 cfs 0.021 af

Pond 101P: Porous Pavement W/ Infiltration #101 Peak Elev=207.36' Storage=0 cf Inflow=0.26 cfs 0.113 af
Outflow=0.26 cfs 0.113 af

Pond 102P: Rain Garden/Level Spreader W/ Peak Elev=206.91' Storage=607 cf Inflow=0.57 cfs 0.065 af
Discarded=0.01 cfs 0.015 af Primary=0.35 cfs 0.039 af Outflow=0.36 cfs 0.054 af

Pond 201P: Porous Pavement W/ Infiltration #201 Peak Elev=205.51' Storage=0 cf Inflow=0.13 cfs 0.057 af
Outflow=0.13 cfs 0.057 af

Pond 202P: Porous Pavement W/ Infiltration #202 Peak Elev=205.56' Storage=0 cf Inflow=0.09 cfs 0.042 af
Outflow=0.09 cfs 0.042 af

Pond 203P: Porous Pavers W/ Infiltration #203 Peak Elev=206.53' Storage=0 cf Inflow=0.15 cfs 0.035 af
Outflow=0.15 cfs 0.035 af

Pond 204P: Porous Pavers W/ Infiltration #204 Peak Elev=207.98' Storage=0 cf Inflow=0.04 cfs 0.009 af
Discarded=0.04 cfs 0.009 af Primary=0.00 cfs 0.000 af Outflow=0.04 cfs 0.009 af

Total Runoff Area = 3.593 ac Runoff Volume = 0.348 af Average Runoff Depth = 1.16"
60.61% Pervious = 2.178 ac 39.39% Impervious = 1.415 ac

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

Subcatchment 1S: Remaining Area from Runoff Area=25,413 sf 2.07% Impervious Runoff Depth>0.58"
Flow Length=156' Tc=25.5 min CN=45 Runoff=0.14 cfs 0.028 af

Subcatchment 2S: Subcatchment #2 Runoff Area=44,696 sf 34.70% Impervious Runoff Depth>1.87"
Flow Length=122' Tc=14.0 min CN=64 Runoff=1.66 cfs 0.160 af

Subcatchment 3S: Remaining Area Copper Runoff Area=16,731 sf 7.61% Impervious Runoff Depth>0.38"
Flow Length=106' Tc=21.5 min CN=41 Runoff=0.05 cfs 0.012 af

Subcatchment 4S: Infiltration Pond Runoff Area=11,757 sf 14.48% Impervious Runoff Depth>2.11"
Flow Length=69' Slope=0.0430 '/' Tc=6.0 min CN=67 Runoff=0.64 cfs 0.048 af

Subcatchment 11S: Porous Pavement & Runoff Area=23,638 sf 80.49% Impervious Runoff Depth>4.19"
Tc=234.0 min CN=91 Runoff=0.43 cfs 0.190 af

Subcatchment 12S: RG/Level Spreader Runoff Area=3,884 sf 2.83% Impervious Runoff Depth>0.43"
Tc=6.0 min CN=42 Runoff=0.02 cfs 0.003 af

Subcatchment 21S: Eastern Porous Runoff Area=13,526 sf 64.01% Impervious Runoff Depth>3.57"
Tc=234.0 min CN=85 Runoff=0.21 cfs 0.092 af

Subcatchment 22S: Western Porous Runoff Area=5,079 sf 96.26% Impervious Runoff Depth>4.86"
Tc=234.0 min CN=97 Runoff=0.10 cfs 0.047 af

Subcatchment 23S: Western Porous Pavers Runoff Area=3,868 sf 68.25% Impervious Runoff Depth>3.82"
Tc=88.0 min CN=86 Runoff=0.12 cfs 0.028 af

Subcatchment 24S: Eastern Porous Pavers Runoff Area=2,071 sf 70.88% Impervious Runoff Depth>3.92"
Tc=88.0 min CN=87 Runoff=0.07 cfs 0.016 af

Subcatchment 31S: Units #2&3 Runoff Area=975 sf 100.00% Impervious Runoff Depth>4.98"
Tc=234.0 min CN=98 Runoff=0.02 cfs 0.009 af

Subcatchment 32S: Units #4&5 Runoff Area=975 sf 100.00% Impervious Runoff Depth>5.13"
Tc=88.0 min CN=98 Runoff=0.04 cfs 0.010 af

Subcatchment 33S: Units #6&7 Runoff Area=975 sf 100.00% Impervious Runoff Depth>5.13"
Tc=88.0 min CN=98 Runoff=0.04 cfs 0.010 af

Subcatchment 34S: Units #8&9 Runoff Area=975 sf 100.00% Impervious Runoff Depth>5.13"
Tc=88.0 min CN=98 Runoff=0.04 cfs 0.010 af

Subcatchment 35S: Units #10&11 Runoff Area=975 sf 100.00% Impervious Runoff Depth>4.98"
Tc=234.0 min CN=98 Runoff=0.02 cfs 0.009 af

Subcatchment 36S: Units #12&13 Runoff Area=975 sf 100.00% Impervious Runoff Depth>4.98"
Tc=234.0 min CN=98 Runoff=0.02 cfs 0.009 af

Reach 100R: Final Reach #100 Inflow=1.48 cfs 0.148 af
Outflow=1.48 cfs 0.148 af

Pond 1P: Infiltration Sump Peak Elev=206.08' Storage=186 cf Inflow=0.14 cfs 0.028 af
Discarded=0.06 cfs 0.028 af Primary=0.00 cfs 0.000 af Outflow=0.06 cfs 0.028 af

Pond 2P: Inlet Sump 15" HDPE N-12 Peak Elev=207.46' Storage=160 cf Inflow=1.66 cfs 0.160 af
15.0" Round Culvert n=0.012 L=60.0' S=0.0050 '/' Outflow=1.55 cfs 0.159 af

Pond 4P: Infiltration Sump Peak Elev=206.98' Storage=780 cf Inflow=0.64 cfs 0.048 af
Discarded=0.07 cfs 0.048 af Primary=0.00 cfs 0.000 af Outflow=0.07 cfs 0.048 af

Pond 101P: Porous Pavement W/ Infiltration #101 Peak Elev=207.36' Storage=0 cf Inflow=0.43 cfs 0.190 af
Outflow=0.43 cfs 0.190 af

Pond 102P: Rain Garden/Level Spreader W/ Peak Elev=207.17' Storage=845 cf Inflow=1.56 cfs 0.163 af
Discarded=0.01 cfs 0.016 af Primary=1.47 cfs 0.135 af Outflow=1.48 cfs 0.151 af

Pond 201P: Porous Pavement W/ Infiltration #201 Peak Elev=205.51' Storage=0 cf Inflow=0.23 cfs 0.102 af
Outflow=0.23 cfs 0.102 af

Pond 202P: Porous Pavement W/ Infiltration #202 Peak Elev=205.56' Storage=0 cf Inflow=0.14 cfs 0.066 af
Outflow=0.14 cfs 0.066 af

Pond 203P: Porous Pavers W/ Infiltration #203 Peak Elev=206.70' Storage=169 cf Inflow=0.24 cfs 0.057 af
Outflow=0.17 cfs 0.057 af

Pond 204P: Porous Pavers W/ Infiltration #204 Peak Elev=208.06' Storage=25 cf Inflow=0.07 cfs 0.016 af
Discarded=0.06 cfs 0.016 af Primary=0.00 cfs 0.000 af Outflow=0.06 cfs 0.016 af

Total Runoff Area = 3.593 ac Runoff Volume = 0.681 af Average Runoff Depth = 2.27"
60.61% Pervious = 2.178 ac 39.39% Impervious = 1.415 ac

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

Subcatchment 1S: Remaining Area from Runoff Area=25,413 sf 2.07% Impervious Runoff Depth>1.17"
Flow Length=156' Tc=25.5 min CN=45 Runoff=0.37 cfs 0.057 af

Subcatchment 2S: Subcatchment #2 Runoff Area=44,696 sf 34.70% Impervious Runoff Depth>2.89"
Flow Length=122' Tc=14.0 min CN=64 Runoff=2.65 cfs 0.247 af

Subcatchment 3S: Remaining Area Copper Runoff Area=16,731 sf 7.61% Impervious Runoff Depth>0.86"
Flow Length=106' Tc=21.5 min CN=41 Runoff=0.16 cfs 0.028 af

Subcatchment 4S: Infiltration Pond Runoff Area=11,757 sf 14.48% Impervious Runoff Depth>3.20"
Flow Length=69' Slope=0.0430 '/' Tc=6.0 min CN=67 Runoff=0.99 cfs 0.072 af

Subcatchment 11S: Porous Pavement & Runoff Area=23,638 sf 80.49% Impervious Runoff Depth>5.53"
Tc=234.0 min CN=91 Runoff=0.56 cfs 0.250 af

Subcatchment 12S: RG/Level Spreader Runoff Area=3,884 sf 2.83% Impervious Runoff Depth>0.94"
Tc=6.0 min CN=42 Runoff=0.06 cfs 0.007 af

Subcatchment 21S: Eastern Porous Runoff Area=13,526 sf 64.01% Impervious Runoff Depth>4.86"
Tc=234.0 min CN=85 Runoff=0.29 cfs 0.126 af

Subcatchment 22S: Western Porous Runoff Area=5,079 sf 96.26% Impervious Runoff Depth>6.23"
Tc=234.0 min CN=97 Runoff=0.13 cfs 0.061 af

Subcatchment 23S: Western Porous Pavers Runoff Area=3,868 sf 68.25% Impervious Runoff Depth>5.16"
Tc=88.0 min CN=86 Runoff=0.17 cfs 0.038 af

Subcatchment 24S: Eastern Porous Pavers Runoff Area=2,071 sf 70.88% Impervious Runoff Depth>5.27"
Tc=88.0 min CN=87 Runoff=0.09 cfs 0.021 af

Subcatchment 31S: Units #2&3 Runoff Area=975 sf 100.00% Impervious Runoff Depth>6.35"
Tc=234.0 min CN=98 Runoff=0.03 cfs 0.012 af

Subcatchment 32S: Units #4&5 Runoff Area=975 sf 100.00% Impervious Runoff Depth>6.54"
Tc=88.0 min CN=98 Runoff=0.05 cfs 0.012 af

Subcatchment 33S: Units #6&7 Runoff Area=975 sf 100.00% Impervious Runoff Depth>6.54"
Tc=88.0 min CN=98 Runoff=0.05 cfs 0.012 af

Subcatchment 34S: Units #8&9 Runoff Area=975 sf 100.00% Impervious Runoff Depth>6.54"
Tc=88.0 min CN=98 Runoff=0.05 cfs 0.012 af

Subcatchment 35S: Units #10&11 Runoff Area=975 sf 100.00% Impervious Runoff Depth>6.35"
Tc=234.0 min CN=98 Runoff=0.03 cfs 0.012 af

Subcatchment 36S: Units #12&13 Runoff Area=975 sf 100.00% Impervious Runoff Depth>6.35"
Tc=234.0 min CN=98 Runoff=0.03 cfs 0.012 af

Reach 100R: Final Reach #100 Inflow=2.51 cfs 0.253 af
Outflow=2.51 cfs 0.253 af

Pond 1P: Infiltration Sump Peak Elev=206.51' Storage=616 cf Inflow=0.37 cfs 0.057 af
Discarded=0.16 cfs 0.057 af Primary=0.00 cfs 0.000 af Outflow=0.16 cfs 0.057 af

Pond 2P: Inlet Sump 15" HDPE N-12 Peak Elev=207.69' Storage=297 cf Inflow=2.65 cfs 0.247 af
15.0" Round Culvert n=0.012 L=60.0' S=0.0050 '/' Outflow=2.44 cfs 0.247 af

Pond 4P: Infiltration Sump Peak Elev=207.32' Storage=1,231 cf Inflow=0.99 cfs 0.072 af
Discarded=0.12 cfs 0.072 af Primary=0.00 cfs 0.000 af Outflow=0.12 cfs 0.072 af

Pond 101P: Porous Pavement W/ Infiltration Peak Elev=207.44' Storage=233 cf Inflow=0.56 cfs 0.250 af
Outflow=0.50 cfs 0.250 af

Pond 102P: Rain Garden/Level Spreader W/ Peak Elev=207.33' Storage=1,013 cf Inflow=2.49 cfs 0.254 af
Discarded=0.01 cfs 0.017 af Primary=2.38 cfs 0.226 af Outflow=2.40 cfs 0.243 af

Pond 201P: Porous Pavement W/ Infiltration #201 Peak Elev=205.51' Storage=0 cf Inflow=0.31 cfs 0.138 af
Outflow=0.31 cfs 0.138 af

Pond 202P: Porous Pavement W/ Infiltration #202 Peak Elev=205.56' Storage=0 cf Inflow=0.18 cfs 0.084 af
Outflow=0.18 cfs 0.084 af

Pond 203P: Porous Pavers W/ Infiltration #203 Peak Elev=207.00' Storage=452 cf Inflow=0.31 cfs 0.075 af
Outflow=0.17 cfs 0.075 af

Pond 204P: Porous Pavers W/ Infiltration #204 Peak Elev=208.30' Storage=101 cf Inflow=0.09 cfs 0.021 af
Discarded=0.06 cfs 0.021 af Primary=0.00 cfs 0.000 af Outflow=0.06 cfs 0.021 af

Total Runoff Area = 3.593 ac Runoff Volume = 0.978 af Average Runoff Depth = 3.27"
60.61% Pervious = 2.178 ac 39.39% Impervious = 1.415 ac

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

Subcatchment 1S: Remaining Area from Runoff Area=25,413 sf 2.07% Impervious Runoff Depth>1.83"
Flow Length=156' Tc=25.5 min CN=45 Runoff=0.65 cfs 0.089 af

Subcatchment 2S: Subcatchment #2 Runoff Area=44,696 sf 34.70% Impervious Runoff Depth>3.93"
Flow Length=122' Tc=14.0 min CN=64 Runoff=3.64 cfs 0.336 af

Subcatchment 3S: Remaining Area Copper Runoff Area=16,731 sf 7.61% Impervious Runoff Depth>1.43"
Flow Length=106' Tc=21.5 min CN=41 Runoff=0.32 cfs 0.046 af

Subcatchment 4S: Infiltration Pond Runoff Area=11,757 sf 14.48% Impervious Runoff Depth>4.28"
Flow Length=69' Slope=0.0430 '/' Tc=6.0 min CN=67 Runoff=1.33 cfs 0.096 af

Subcatchment 11S: Porous Pavement & Runoff Area=23,638 sf 80.49% Impervious Runoff Depth>6.79"
Tc=234.0 min CN=91 Runoff=0.68 cfs 0.307 af

Subcatchment 12S: RG/Level Spreader Runoff Area=3,884 sf 2.83% Impervious Runoff Depth>1.53"
Tc=6.0 min CN=42 Runoff=0.12 cfs 0.011 af

Subcatchment 21S: Eastern Porous Runoff Area=13,526 sf 64.01% Impervious Runoff Depth>6.08"
Tc=234.0 min CN=85 Runoff=0.36 cfs 0.157 af

Subcatchment 22S: Western Porous Runoff Area=5,079 sf 96.26% Impervious Runoff Depth>7.50"
Tc=234.0 min CN=97 Runoff=0.16 cfs 0.073 af

Subcatchment 23S: Western Porous Pavers Runoff Area=3,868 sf 68.25% Impervious Runoff Depth>6.43"
Tc=88.0 min CN=86 Runoff=0.20 cfs 0.048 af

Subcatchment 24S: Eastern Porous Pavers Runoff Area=2,071 sf 70.88% Impervious Runoff Depth>6.54"
Tc=88.0 min CN=87 Runoff=0.11 cfs 0.026 af

Subcatchment 31S: Units #2&3 Runoff Area=975 sf 100.00% Impervious Runoff Depth>7.62"
Tc=234.0 min CN=98 Runoff=0.03 cfs 0.014 af

Subcatchment 32S: Units #4&5 Runoff Area=975 sf 100.00% Impervious Runoff Depth>7.86"
Tc=88.0 min CN=98 Runoff=0.06 cfs 0.015 af

Subcatchment 33S: Units #6&7 Runoff Area=975 sf 100.00% Impervious Runoff Depth>7.86"
Tc=88.0 min CN=98 Runoff=0.06 cfs 0.015 af

Subcatchment 34S: Units #8&9 Runoff Area=975 sf 100.00% Impervious Runoff Depth>7.86"
Tc=88.0 min CN=98 Runoff=0.06 cfs 0.015 af

Subcatchment 35S: Units #10&11 Runoff Area=975 sf 100.00% Impervious Runoff Depth>7.62"
Tc=234.0 min CN=98 Runoff=0.03 cfs 0.014 af

Subcatchment 36S: Units #12&13 Runoff Area=975 sf 100.00% Impervious Runoff Depth>7.62"
Tc=234.0 min CN=98 Runoff=0.03 cfs 0.014 af

Reach 100R: Final Reach #100 Inflow=3.52 cfs 0.363 af
Outflow=3.52 cfs 0.363 af

Pond 1P: Infiltration Sump Peak Elev=206.88' Storage=1,122 cf Inflow=0.65 cfs 0.089 af
Discarded=0.19 cfs 0.088 af Primary=0.00 cfs 0.000 af Outflow=0.19 cfs 0.088 af

Pond 2P: Inlet Sump 15" HDPE N-12 Peak Elev=207.88' Storage=484 cf Inflow=3.64 cfs 0.336 af
15.0" Round Culvert n=0.012 L=60.0' S=0.0050 '/' Outflow=3.26 cfs 0.336 af

Pond 4P: Infiltration Sump Peak Elev=207.54' Storage=1,696 cf Inflow=1.33 cfs 0.096 af
Discarded=0.17 cfs 0.095 af Primary=0.01 cfs 0.000 af Outflow=0.17 cfs 0.096 af

Pond 101P: Porous Pavement W/ Infiltration Peak Elev=207.74' Storage=1,102 cf Inflow=0.68 cfs 0.307 af
Outflow=0.50 cfs 0.307 af

Pond 102P: Rain Garden/Level Spreader W/ Peak Elev=207.46' Storage=1,167 cf Inflow=3.35 cfs 0.347 af
Discarded=0.01 cfs 0.018 af Primary=3.22 cfs 0.318 af Outflow=3.23 cfs 0.335 af

Pond 201P: Porous Pavement W/ Infiltration #201 Peak Elev=205.51' Storage=1 cf Inflow=0.39 cfs 0.172 af
Outflow=0.39 cfs 0.172 af

Pond 202P: Porous Pavement W/ Infiltration #202 Peak Elev=205.56' Storage=0 cf Inflow=0.22 cfs 0.101 af
Outflow=0.22 cfs 0.101 af

Pond 203P: Porous Pavers W/ Infiltration #203 Peak Elev=207.31' Storage=762 cf Inflow=0.38 cfs 0.092 af
Outflow=0.17 cfs 0.092 af

Pond 204P: Porous Pavers W/ Infiltration #204 Peak Elev=208.58' Storage=191 cf Inflow=0.11 cfs 0.026 af
Discarded=0.06 cfs 0.026 af Primary=0.00 cfs 0.000 af Outflow=0.06 cfs 0.026 af

Total Runoff Area = 3.593 ac Runoff Volume = 1.276 af Average Runoff Depth = 4.26"
60.61% Pervious = 2.178 ac 39.39% Impervious = 1.415 ac

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

Subcatchment 1S: Remaining Area from Runoff Area=25,413 sf 2.07% Impervious Runoff Depth>2.74"
Flow Length=156' Tc=25.5 min CN=45 Runoff=1.05 cfs 0.133 af

Subcatchment 2S: Subcatchment #2 Runoff Area=44,696 sf 34.70% Impervious Runoff Depth>5.24"
Flow Length=122' Tc=14.0 min CN=64 Runoff=4.88 cfs 0.448 af

Subcatchment 3S: Remaining Area Copper Runoff Area=16,731 sf 7.61% Impervious Runoff Depth>2.23"
Flow Length=106' Tc=21.5 min CN=41 Runoff=0.56 cfs 0.071 af

Subcatchment 4S: Infiltration Pond Runoff Area=11,757 sf 14.48% Impervious Runoff Depth>5.64"
Flow Length=69' Slope=0.0430 '/' Tc=6.0 min CN=67 Runoff=1.75 cfs 0.127 af

Subcatchment 11S: Porous Pavement & Runoff Area=23,638 sf 80.49% Impervious Runoff Depth>8.30"
Tc=234.0 min CN=91 Runoff=0.83 cfs 0.375 af

Subcatchment 12S: RG/Level Spreader Runoff Area=3,884 sf 2.83% Impervious Runoff Depth>2.37"
Tc=6.0 min CN=42 Runoff=0.21 cfs 0.018 af

Subcatchment 21S: Eastern Porous Runoff Area=13,526 sf 64.01% Impervious Runoff Depth>7.56"
Tc=234.0 min CN=85 Runoff=0.44 cfs 0.196 af

Subcatchment 22S: Western Porous Runoff Area=5,079 sf 96.26% Impervious Runoff Depth>9.03"
Tc=234.0 min CN=97 Runoff=0.19 cfs 0.088 af

Subcatchment 23S: Western Porous Pavers Runoff Area=3,868 sf 68.25% Impervious Runoff Depth>7.95"
Tc=88.0 min CN=86 Runoff=0.25 cfs 0.059 af

Subcatchment 24S: Eastern Porous Pavers Runoff Area=2,071 sf 70.88% Impervious Runoff Depth>8.08"
Tc=88.0 min CN=87 Runoff=0.14 cfs 0.032 af

Subcatchment 31S: Units #2&3 Runoff Area=975 sf 100.00% Impervious Runoff Depth>9.15"
Tc=234.0 min CN=98 Runoff=0.04 cfs 0.017 af

Subcatchment 32S: Units #4&5 Runoff Area=975 sf 100.00% Impervious Runoff Depth>9.43"
Tc=88.0 min CN=98 Runoff=0.07 cfs 0.018 af

Subcatchment 33S: Units #6&7 Runoff Area=975 sf 100.00% Impervious Runoff Depth>9.43"
Tc=88.0 min CN=98 Runoff=0.07 cfs 0.018 af

Subcatchment 34S: Units #8&9 Runoff Area=975 sf 100.00% Impervious Runoff Depth>9.43"
Tc=88.0 min CN=98 Runoff=0.07 cfs 0.018 af

Subcatchment 35S: Units #10&11 Runoff Area=975 sf 100.00% Impervious Runoff Depth>9.15"
Tc=234.0 min CN=98 Runoff=0.04 cfs 0.017 af

Subcatchment 36S: Units #12&13 Runoff Area=975 sf 100.00% Impervious Runoff Depth>9.15"
Tc=234.0 min CN=98 Runoff=0.04 cfs 0.017 af

Reach 100R: Final Reach #100 Inflow=4.75 cfs 0.534 af
Outflow=4.75 cfs 0.534 af

Pond 1P: Infiltration Sump Peak Elev=207.02' Storage=1,372 cf Inflow=1.21 cfs 0.144 af
Discarded=0.20 cfs 0.114 af Primary=1.20 cfs 0.028 af Outflow=1.40 cfs 0.142 af

Pond 2P: Inlet Sump 15" HDPE N-12 Peak Elev=208.11' Storage=802 cf Inflow=4.88 cfs 0.448 af
15.0" Round Culvert n=0.012 L=60.0' S=0.0050 '/' Outflow=4.20 cfs 0.448 af

Pond 4P: Infiltration Sump Peak Elev=207.71' Storage=2,148 cf Inflow=1.75 cfs 0.127 af
Discarded=0.21 cfs 0.112 af Primary=0.18 cfs 0.011 af Outflow=0.39 cfs 0.123 af

Pond 101P: Porous Pavement W/ Infiltration Peak Elev=208.21' Storage=2,463 cf Inflow=0.83 cfs 0.375 af
Outflow=0.50 cfs 0.376 af

Pond 102P: Rain Garden/Level Spreader W/ Peak Elev=207.61' Storage=1,345 cf Inflow=4.33 cfs 0.465 af
Discarded=0.01 cfs 0.019 af Primary=4.20 cfs 0.435 af Outflow=4.21 cfs 0.453 af

Pond 201P: Porous Pavement W/ Infiltration Peak Elev=205.66' Storage=341 cf Inflow=0.48 cfs 0.213 af
Outflow=0.40 cfs 0.213 af

Pond 202P: Porous Pavement W/ Infiltration #202 Peak Elev=205.56' Storage=0 cf Inflow=0.26 cfs 0.122 af
Outflow=0.26 cfs 0.122 af

Pond 203P: Porous Pavers W/ Infiltration Peak Elev=207.74' Storage=1,172 cf Inflow=0.46 cfs 0.112 af
Outflow=0.17 cfs 0.112 af

Pond 204P: Porous Pavers W/ Infiltration #204 Peak Elev=208.96' Storage=311 cf Inflow=0.14 cfs 0.032 af
Discarded=0.06 cfs 0.032 af Primary=0.00 cfs 0.000 af Outflow=0.06 cfs 0.032 af

Total Runoff Area = 3.593 ac Runoff Volume = 1.650 af Average Runoff Depth = 5.51"
60.61% Pervious = 2.178 ac 39.39% Impervious = 1.415 ac

Appendix III - Calculations, Charts, & Graphs

Extreme Precipitation Tables
Rip Rap Calculations
NHDES AoT Spreadsheets
USDA / NRCS Websoil
NRCS Soil Survey Report
Stormwater System Operation & Maintenance Plan
& Inspection and Maintenance Manual
Infiltration Feasibility Report
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	70.892 degrees West
Latitude	43.225 degrees North
Elevation	0 feet
Date/Time	Tue, 23 Nov 2021 13:01:50 -0500

Extreme Precipitation Estimates

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

Lower Confidence Limits

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

Upper Confidence Limits

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

Powered by ACIS

RIP RAP CALCULATIONS

23-053 34 New Rochester Road
Copper Drive & Ember Drive
Dover, NH

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

7/6/2023/ Rev 11/6/23

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

TAILWATER < HALF THE Do

La = (1.8 x Q) / Do 3/2 + (7 x Do) Q = Peak Flow & Do is Pipe Diameter

W = La + 3*Do or defined channel width

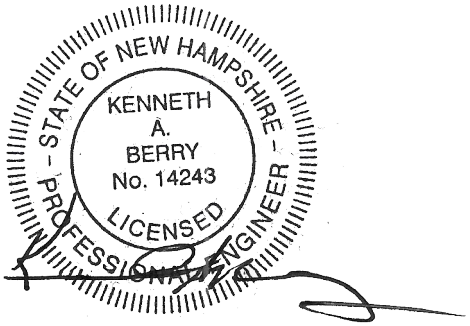
d50 = (0.02 x Q4/3) / (Tw x Do) Tw = Tailwater Depth

T = Largest Stone Size x 1.5

Culvert or Catch Basin	Tailwater (Feet) Tw	Discharge (C.F.S.) Q	Diameter of Pipe Do	Length of Rip Rap La (feet)	Width of Rip Rap W (feet)	d50-Stone Rip Rap d50(ft.)	Actual Size	Thickness
12" RCP (Pond #4P)	0.20	0.25	1.00	7.5	10.5	0.02	0.50	1.20

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

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



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

0.01	ac	Area of HSG A soil that was replaced by impervious cover	0.40"
0.48	ac	Area of HSG B soil that was replaced by impervious cover	0.25"
-	ac	Area of HSG C soil that was replaced by impervious cover	0.10"
-	ac	Area of HSG D soil or impervious cover that was replaced by impervious cover	0.0"
0.25	inches	Rd = Weighted groundwater recharge depth	
0.1225	ac-in	GRV = AI * Rd	
444	cf	GRV conversion (ac-in x 43,560 sf/ac x 1ft/12”)	

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

GRV Satisified with Porous Pavement #201 (P201), Porous Pavement #202 (P202),
Porous Pavers #203 (P203), & Porous Pavers #204 (P204)

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

FILTRATION PRACTICE DESIGN CRITERIA (Env-Wq 1508.07)

Type/Node Name: **Porous Pavement W/ Infiltration #201**

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).	
0.38	ac	A = Area draining to the practice	
0.25	ac	A_I = Impervious area draining to the practice	
0.67	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.65	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
0.25	ac-in	WQV= 1" x Rv x A	
901	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
225	cf	25% x WQV (check calc for sediment forebay volume)	
675	cf	75% x WQV (check calc for surface sand filter volume)	
N/A		Method of Pretreatment? (not required for clean or roof runoff)	
N/A	cf	V_{SED} = Sediment forebay volume, if used for pretreatment	**≥ 25%WQV**
Calculate time to drain if system IS NOT underdrained:			
5,821	sf	A_{SA} = Surface area of the practice	
3.00	iph	$Ksat_{DESIGN}$ = Design infiltration rate[1]	
		If Ksat (prior to factor of safety) is < 0.50 iph, has an underdrain been provided?	
No	Yes/No	(Use the calculations below)	
0.6	hours	T_{DRAIN} = Drain time = V / (A_{SA} * I_{DESIGN})	**≤ 72-hrs**
Calculate time to drain if system IS underdrained:			
	ft	E_{WQV} = Elevation of WQV (attach stage-storage table)	
	cfs	Q_{WQV} = Discharge at the E_{WQV} (attach stage-discharge table)	
-	hours	T_{DRAIN} = Drain time = 2WQV/Q_{WQV}	**≤ 72-hrs**
206.51	feet	E_{FC} = Elevation of the bottom of the filter course material[2]	
-	feet	E_{UD} = Invert elevation of the underdrain (UD), if applicable	
204.58	feet	E_{SHWT} = Elevation of SHWT (if none found, enter the lowest elevation of the test pit)	
204.58	feet	E_{ROCK} = Elevation of bedrock (if none found, enter the lowest elevation of the test pit)	
206.51	feet	$D_{FC\ to\ UD}$ = Depth to UD from the bottom of the filter course	**≥ 1'**
1.93	feet	$D_{FC\ to\ ROCK}$ = Depth to bedrock from the bottom of the filter course	**≥ 1'**
1.93	feet	$D_{FC\ to\ SHWT}$ = Depth to SHWT from the bottom of the filter course	**≥ 1'**
205.51	ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
207.84	ft	Elevation of the top of the practice	
YES		50 peak elevation ≤ Elevation of the top of the practice	**← yes**
If a surface sand filter or underground sand filter is proposed:			
YES	ac	Drainage Area check.	**< 10 ac**
	cf	V = Volume of storage[3] (attach a stage-storage table)	**≥ 75%WQV**
	inches	D_{FC} = Filter course thickness	**18", or 24" if within GPA**
Sheet		Note what sheet in the plan set contains the filter course specification.	
	Yes/No	Access grate provided?	**← yes**

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

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

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

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

Designer's Notes:

Summary for Pond 201P: Porous Pavement W/ Infiltration #201

Inflow Area = 0.380 ac, 66.99% Impervious, Inflow Depth > 5.41" for 50 Yr.-24 Hr. event
Inflow = 0.39 cfs @ 15.05 hrs, Volume= 0.172 af
Outflow = 0.39 cfs @ 15.06 hrs, Volume= 0.172 af, Atten= 0%, Lag= 1.0 min
Discarded = 0.39 cfs @ 15.06 hrs, Volume= 0.172 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 205.51' @ 15.06 hrs Surf.Area= 5,821 sf Storage= 1 cf
Flood Elev= 207.84' Surf.Area= 5,821 sf Storage= 4,261 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.0 min (967.8 - 967.8)

Volume	Invert	Avail.Storage	Storage Description
#1	205.51'	2,328 cf	**Stone (Irregular)** Listed below (Recalc) 5,821 cf Overall x 40.0% Voids
#2	206.51'	1,164 cf	**Filter Media (Irregular)** Listed below (Recalc) -Impervious 5,821 cf Overall x 20.0% Voids
#3	207.51'	768 cf	**Choker Course (Irregular)** Listed below (Recalc) -Impervious 1,921 cf Overall x 40.0% Voids
		4,261 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
205.51	5,821	436.4	0	0	5,821
206.51	5,821	436.4	5,821	5,821	6,257

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
206.51	5,821	436.4	0	0	5,821
207.51	5,821	436.4	5,821	5,821	6,257

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
207.51	5,821	436.5	0	0	5,821
207.84	5,821	436.4	1,921	1,921	5,965

Device	Routing	Invert	Outlet Devices
#1	Discarded	205.51'	**3.000 in/hr Infiltration 3in/hr over Surface area**

Discarded OutFlow Max=0.40 cfs @ 15.06 hrs HW=205.51' (Free Discharge)
1=Infiltration 3in/hr (Exfiltration Controls 0.40 cfs)

FILTRATION PRACTICE DESIGN CRITERIA
(Env-Wq 1508.07)

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

Type/Node Name: **Porous Pavement W/ Infiltration #202**

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).	
0.16	ac	A = Area draining to the practice	
0.16	ac	A_I = Impervious area draining to the practice	
0.97	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.93	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
0.15	ac-in	WQV= 1" x Rv x A	
541	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
135	cf	25% x WQV (check calc for sediment forebay volume)	
406	cf	75% x WQV (check calc for surface sand filter volume)	
N/A		Method of Pretreatment? (not required for clean or roof runoff)	
N/A	cf	V_{SED} = Sediment forebay volume, if used for pretreatment	**≥ 25%WQV**
Calculate time to drain if system IS NOT underdrained:			
4,889	sf	A_{SA} = Surface area of the practice	
3.00	iph	$Ksat_{DESIGN}$ = Design infiltration rate[1]	
		If Ksat (prior to factor of safety) is < 0.50 iph, has an underdrain been provided?	
No	Yes/No	(Use the calculations below)	
0.4	hours	T_{DRAIN} = Drain time = V / (A_{SA} * I_{DESIGN})	**≤ 72-hrs**
Calculate time to drain if system IS underdrained:			
	ft	E_{WQV} = Elevation of WQV (attach stage-storage table)	
	cfs	Q_{WQV} = Discharge at the E_{WQV} (attach stage-discharge table)	
-	hours	T_{DRAIN} = Drain time = 2WQV/Q_{WQV}	**≤ 72-hrs**
206.56	feet	E_{FC} = Elevation of the bottom of the filter course material[2]	
-	feet	E_{UD} = Invert elevation of the underdrain (UD), if applicable	
204.68	feet	E_{SHWT} = Elevation of SHWT (if none found, enter the lowest elevation of the test pit)	
204.68	feet	E_{ROCK} = Elevation of bedrock (if none found, enter the lowest elevation of the test pit)	
206.56	feet	$D_{FC\ to\ UD}$ = Depth to UD from the bottom of the filter course	**≥ 1'**
1.88	feet	$D_{FC\ to\ ROCK}$ = Depth to bedrock from the bottom of the filter course	**≥ 1'**
1.88	feet	$D_{FC\ to\ SHWT}$ = Depth to SHWT from the bottom of the filter course	**≥ 1'**
205.56	ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
207.89	ft	Elevation of the top of the practice	
YES		50 peak elevation ≤ Elevation of the top of the practice	**← yes**
If a surface sand filter or underground sand filter is proposed:			
YES	ac	Drainage Area check.	**< 10 ac**
	cf	V = Volume of storage[3] (attach a stage-storage table)	**≥ 75%WQV**
	inches	D_{FC} = Filter course thickness	**18", or 24" if within GPA**
Sheet		Note what sheet in the plan set contains the filter course specification.	
	Yes/No	Access grate provided?	**← yes**

If a bioretention area is proposed:			
YES	ac	Drainage Area no larger than 5 ac?	**← yes**
	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	
1.4	: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 mod. 304.1 (see spec)**
Sheet		Note what sheet in the plan set contains the filter course spec.	

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

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

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

Designer's Notes:

Summary for Pond 202P: Porous Pavement W/ Infiltration #202

Inflow Area = 0.161 ac, 97.30% Impervious, Inflow Depth > 7.54" for 50 Yr.-24 Hr. event
Inflow = 0.22 cfs @ 14.86 hrs, Volume= 0.101 af
Outflow = 0.22 cfs @ 14.86 hrs, Volume= 0.101 af, Atten= 0%, Lag= 0.0 min
Discarded = 0.22 cfs @ 14.86 hrs, Volume= 0.101 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 205.56' @ 14.86 hrs Surf.Area= 4,889 sf Storage= 0 cf
Flood Elev= 207.89' Surf.Area= 4,889 sf Storage= 3,579 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.0 min (929.9 - 929.9)

Volume	Invert	Avail.Storage	Storage Description
#1	205.56'	1,956 cf	**Stone (Irregular)** Listed below (Recalc) 4,889 cf Overall x 40.0% Voids
#2	206.56'	978 cf	**Filter Media (Irregular)** Listed below (Recalc) -Impervious 4,889 cf Overall x 20.0% Voids
#3	207.56'	645 cf	**Choker Course (Irregular)** Listed below (Recalc) -Impervious 1,613 cf Overall x 40.0% Voids
		3,579 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
205.56	4,889	300.0	0	0	4,889
206.56	4,889	300.0	4,889	4,889	5,189

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
206.56	4,889	300.0	0	0	4,889
207.56	4,889	300.0	4,889	4,889	5,189

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
207.56	4,889	300.0	0	0	4,889
207.89	4,889	300.0	1,613	1,613	4,988

Device	Routing	Invert	Outlet Devices
#1	Discarded	205.56'	**3.000 in/hr Infiltration 3in/hr over Surface area**

Discarded OutFlow Max=0.34 cfs @ 14.86 hrs HW=205.56' (Free Discharge)
1=Infiltration 3in/hr (Exfiltration Controls 0.34 cfs)

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

FILTRATION PRACTICE DESIGN CRITERIA (Env-Wq 1508.07)

Type/Node Name: **Porous Pavers W/ Infiltration #203**

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).	
0.16	ac	A = Area draining to the practice	
0.13	ac	A_I = Impervious area draining to the practice	
0.82	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.79	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
0.12	ac-in	WQV= 1" x Rv x A	
446	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
111	cf	25% x WQV (check calc for sediment forebay volume)	
334	cf	75% x WQV (check calc for surface sand filter volume)	
N/A		Method of Pretreatment? (not required for clean or roof runoff)	
N/A	cf	V_{SED} = Sediment forebay volume, if used for pretreatment	**≥ 25%WQV**
Calculate time to drain if system IS NOT underdrained:			
2,427	sf	A_{SA} = Surface area of the practice	
3.00	iph	$Ksat_{DESIGN}$ = Design infiltration rate[1]	
		If Ksat (prior to factor of safety) is < 0.50 iph, has an underdrain been provided?	
No	Yes/No	(Use the calculations below)	
0.7	hours	T_{DRAIN} = Drain time = V / (A_{SA} * I_{DESIGN})	**≤ 72-hrs**
Calculate time to drain if system IS underdrained:			
	ft	E_{WQV} = Elevation of WQV (attach stage-storage table)	
	cfs	Q_{WQV} = Discharge at the E_{WQV} (attach stage-discharge table)	
-	hours	T_{DRAIN} = Drain time = 2WQV/Q_{WQV}	**≤ 72-hrs**
206.53	feet	E_{FC} = Elevation of the bottom of the filter course material[2]	
-	feet	E_{UD} = Invert elevation of the underdrain (UD), if applicable	
204.73	feet	E_{SHWT} = Elevation of SHWT (if none found, enter the lowest elevation of the test pit)	
204.73	feet	E_{ROCK} = Elevation of bedrock (if none found, enter the lowest elevation of the test pit)	
206.53	feet	$D_{FC\ to\ UD}$ = Depth to UD from the bottom of the filter course	**≥ 1'**
1.80	feet	$D_{FC\ to\ ROCK}$ = Depth to bedrock from the bottom of the filter course	**≥ 1'**
1.80	feet	$D_{FC\ to\ SHWT}$ = Depth to SHWT from the bottom of the filter course	**≥ 1'**
207.31	ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
208.28	ft	Elevation of the top of the practice	
YES		50 peak elevation ≤ Elevation of the top of the practice	**← yes**
If a surface sand filter or underground sand filter is proposed:			
YES	ac	Drainage Area check.	**< 10 ac**
	cf	V = Volume of storage[3] (attach a stage-storage table)	**≥ 75%WQV**
	inches	D_{FC} = Filter course thickness	**18", or 24" if within GPA**
Sheet		Note what sheet in the plan set contains the filter course specification.	
	Yes/No	Access grate provided?	**← yes**

If a bioretention area is proposed:			
YES	ac	Drainage Area no larger than 5 ac?	**← yes**
	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:			
Pavers		Type of pavement proposed (Concrete? Asphalt? Pavers? Etc.)	
0.1	acres	A_{SA} = Surface area of the pervious pavement	
2.8	:1	Ratio of the contributing area to the pervious surface area	**≤ 5:1**
15.0	inches	D_{FC} = Filter course thickness	**12", or 18" if within GPA mod. 304.1 (see spec)**
Sheet		Note what sheet in the plan set contains the filter course spec.	

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

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

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

Designer's Notes:

15" Stone Base for the Pavers, grassed area, & porous paver area

Summary for Pond 203P: Porous Pavers W/ Infiltration #203

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=70)

Inflow Area = 0.156 ac, 81.92% Impervious, Inflow Depth > 7.04" for 50 Yr.-24 Hr. event
Inflow = 0.38 cfs @ 13.13 hrs, Volume= 0.092 af
Outflow = 0.17 cfs @ 12.60 hrs, Volume= 0.092 af, Atten= 55%, Lag= 0.0 min
Discarded = 0.17 cfs @ 12.60 hrs, Volume= 0.092 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 207.31' @ 14.19 hrs Surf.Area= 2,427 sf Storage= 762 cf
Flood Elev= 208.28' Surf.Area= 2,427 sf Storage= 1,563 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 28.7 min (860.3 - 831.6)

Volume	Invert	Avail.Storage	Storage Description
#1	206.53'	1,456 cf	**Stone (Irregular)** Listed below (Recalc) 3,641 cf Overall x 40.0% Voids
#2	208.03'	107 cf	**Pavers (Irregular)** Listed below (Recalc) -Impervious 534 cf Overall x 20.0% Voids
		1,563 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
206.53	2,427	645.5	0	0	2,427
208.03	2,427	645.5	3,641	3,641	3,395

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
208.03	2,427	645.5	0	0	2,427
208.25	2,427	645.5	534	534	2,569

Device	Routing	Invert	Outlet Devices
#1	Discarded	206.53'	**3.000 in/hr Infiltration 3in/hr over Surface area**

Discarded OutFlow Max=0.17 cfs @ 12.60 hrs HW=206.56' (Free Discharge)
1=Infiltration 3in/hr (Exfiltration Controls 0.17 cfs)

FILTRATION PRACTICE DESIGN CRITERIA
(Env-Wq 1508.07)

Type/Node Name: **Porous Pavers W/ Infiltration #204**

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).	
0.05	ac	A = Area draining to the practice	
0.34	ac	A_I = Impervious area draining to the practice	
7.09	decimal	I = Percent impervious area draining to the practice, in decimal form	
6.43	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
0.31	ac-in	WQV= 1" x Rv x A	
1,120	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
280	cf	25% x WQV (check calc for sediment forebay volume)	
840	cf	75% x WQV (check calc for surface sand filter volume)	
N/A		Method of Pretreatment? (not required for clean or roof runoff)	
N/A	cf	V_{SED} = Sediment forebay volume, if used for pretreatment	**≥ 25%WQV**
Calculate time to drain if system IS NOT underdrained:			
794	sf	A_{SA} = Surface area of the practice	
3.00	iph	$Ksat_{DESIGN}$ = Design infiltration rate[1]	
		If Ksat (prior to factor of safety) is < 0.50 iph, has an underdrain been provided?	
No	Yes/No	(Use the calculations below)	
5.6	hours	T_{DRAIN} = Drain time = V / (A_{SA} * I_{DESIGN})	**≤ 72-hrs**
Calculate time to drain if system IS underdrained:			
	ft	E_{WQV} = Elevation of WQV (attach stage-storage table)	
	cfs	Q_{WQV} = Discharge at the E_{WQV} (attach stage-discharge table)	
-	hours	T_{DRAIN} = Drain time = 2WQV/Q_{WQV}	**≤ 72-hrs**
207.98	feet	E_{FC} = Elevation of the bottom of the filter course material[2]	
	feet	E_{UD} = Invert elevation of the underdrain (UD), if applicable	
204.58	feet	E_{SHWT} = Elevation of SHWT (if none found, enter the lowest elevation of the test pit)	
204.58	feet	E_{ROCK} = Elevation of bedrock (if none found, enter the lowest elevation of the test pit)	
207.98	feet	$D_{FC\ to\ UD}$ = Depth to UD from the bottom of the filter course	**≥ 1'**
3.40	feet	$D_{FC\ to\ ROCK}$ = Depth to bedrock from the bottom of the filter course	**≥ 1'**
3.40	feet	$D_{FC\ to\ SHWT}$ = Depth to SHWT from the bottom of the filter course	**≥ 1'**
208.58	ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
209.23	ft	Elevation of the top of the practice	
YES		50 peak elevation ≤ Elevation of the top of the practice	**← yes**
If a surface sand filter or underground sand filter is proposed:			
YES	ac	Drainage Area check.	**< 10 ac**
	cf	V = Volume of storage[3] (attach a stage-storage table)	**≥ 75%WQV**
	inches	D_{FC} = Filter course thickness	**18", or 24" if within GPA**
Sheet		Note what sheet in the plan set contains the filter course specification.	
	Yes/No	Access grate provided?	**← yes**

If a bioretention area is proposed:			
YES	ac	Drainage Area no larger than 5 ac?	**← yes**
	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:			
Pavers		Type of pavement proposed (Concrete? Asphalt? Pavers? Etc.)	
0.0	acres	A_{SA} = Surface area of the pervious pavement	
2.6	:1	Ratio of the contributing area to the pervious surface area	**≤ 5:1**
9.0	inches	D_{FC} = Filter course thickness	**12", or 18" if within GPA mod. 304.1 (see spec)**
Sheet		Note what sheet in the plan set contains the filter course spec.	

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

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

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

Designer's Notes:

9" Stone Base for the Pavers, only receiving roof runoff, grassed area, & porous paver area

Summary for Pond 204P: Porous Pavers W/ Infiltration #204

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=75)

Inflow Area = 0.048 ac, 70.88% Impervious, Inflow Depth > 6.54" for 50 Yr.-24 Hr. event
Inflow = 0.11 cfs @ 13.15 hrs, Volume= 0.026 af
Outflow = 0.06 cfs @ 12.65 hrs, Volume= 0.026 af, Atten= 50%, Lag= 0.0 min
Discarded = 0.06 cfs @ 12.65 hrs, Volume= 0.026 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 208.58' @ 14.09 hrs Surf.Area= 794 sf Storage= 191 cf
Flood Elev= 209.23' Surf.Area= 794 sf Storage= 357 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 21.5 min (872.2 - 850.6)

Volume	Invert	Avail.Storage	Storage Description
#1	207.98'	318 cf	**Stone (Irregular)** Listed below (Recalc) 794 cf Overall x 40.0% Voids
#2	208.98'	79 cf	**Pavers (Irregular)** Listed below (Recalc) -Impervious 397 cf Overall x 20.0% Voids
		397 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
207.98	794	278.8	0	0	794
208.98	794	278.8	794	794	1,073

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
208.98	794	278.8	0	0	794
209.23	794	278.8	199	199	864
209.48	794	278.8	199	397	933

Device	Routing	Invert	Outlet Devices
#1	Discarded	207.98'	**3.000 in/hr Infiltration 3in/hr over Surface area**
#2	Primary	209.23'	**52.0' long x 2.0' breadth Overflow** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Discarded OutFlow Max=0.06 cfs @ 12.65 hrs HW=208.00' (Free Discharge)
1=Infiltration 3in/hr (Exfiltration Controls 0.06 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=207.98' TW=205.51' (Dynamic Tailwater)
2=Overflow (Controls 0.00 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



November 23, 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.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

Contents

Preface.....2
How Soil Surveys Are Made.....5
Soil Map.....8
Soil Map.....9
Legend.....10
Map Unit Legend.....11
Map Unit Descriptions.....11
Strafford County, New Hampshire.....13
HbE—Hinckley loamy sand, 15 to 60 percent slopes.....13
WdA—Windsor loamy sand, 0 to 3 percent slopes.....14
References.....16

How Soil Surveys Are Made

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

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

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

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

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

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

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

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

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

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

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

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

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

Soil Map

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

Custom Soil Resource Report
Soil Map



Map Scale: 1:2,130 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 30 60 120 180

Feet: 0 100 200 400 600

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

MAP LEGEND

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

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

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

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

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

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

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

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

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

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

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

Soil Survey Area: Strafford County, New Hampshire
Survey Area Data: Version 22, Aug 31, 2021

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
HbE	Hinckley loamy sand, 15 to 60 percent slopes	0.0	0.2%
WdA	Windsor loamy sand, 0 to 3 percent slopes	19.1	99.8%
Totals for Area of Interest		**19.2**	**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

HbE—Hinckley loamy sand, 15 to 60 percent slopes

Map Unit Setting

National map unit symbol: 2svmh
Elevation: 0 to 890 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

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

Description of Hinckley

Setting

Landform: Outwash deltas, outwash terraces, moraines, eskers, kames, outwash plains, kame terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Crest, nose slope, side slope, head slope, riser
Down-slope shape: Concave, convex, linear
Across-slope shape: Convex, linear, concave
Parent material: Sandy and gravelly glaciofluvial deposits derived from gneiss and/or granite and/or schist

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material
A - 1 to 8 inches: loamy sand
Bw1 - 8 to 11 inches: gravelly loamy sand
Bw2 - 11 to 16 inches: gravelly loamy sand
BC - 16 to 19 inches: very gravelly loamy sand
C - 19 to 65 inches: very gravelly sand

Properties and qualities

Slope: 15 to 60 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 99.90 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 3.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: A

Ecological site: F144AY022MA - Dry Outwash
Hydric soil rating: No

Minor Components

Windsor

Percent of map unit: 10 percent
Landform: Outwash terraces, moraines, eskers, kames, kame terraces, outwash deltas, outwash plains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Crest, nose slope, side slope, head slope, riser
Down-slope shape: Concave, convex, linear
Across-slope shape: Convex, linear, concave
Hydric soil rating: No

Merrimac

Percent of map unit: 5 percent
Landform: Outwash plains, outwash terraces, moraines, eskers, kames
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Crest, side slope, head slope, nose slope, riser
Down-slope shape: Concave, convex, linear
Across-slope shape: Convex, linear, concave
Hydric soil rating: No

WdA—Windsor loamy sand, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2svkg
Elevation: 0 to 990 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Farmland of local importance

Map Unit Composition

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

Description of Windsor, Loamy Sand

Setting

Landform: Outwash plains, outwash terraces, deltas, dunes
Landform position (three-dimensional): Tread, riser
Down-slope shape: Linear, convex
Across-slope shape: Linear, convex

Parent material: Loose sandy glaciofluvial deposits derived from granite and/or loose sandy glaciofluvial deposits derived from schist and/or loose sandy glaciofluvial deposits derived from gneiss

Typical profile

O - 0 to 1 inches: moderately decomposed plant material
A - 1 to 3 inches: loamy sand
Bw - 3 to 25 inches: loamy sand
C - 25 to 65 inches: sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 99.90 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: A
Ecological site: F144AY022MA - Dry Outwash
Hydric soil rating: No

Minor Components

Deerfield, loamy sand

Percent of map unit: 10 percent
Landform: Deltas, terraces, outwash plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Hinckley, loamy sand

Percent of map unit: 5 percent
Landform: Deltas, kames, eskers, outwash plains
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Crest, head slope, nose slope, side slope, rise
Down-slope shape: Convex
Across-slope shape: Convex, linear
Hydric soil rating: No

References

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

National Research Council. 1995. Wetlands: Characteristics and boundaries.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_054262

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053577

Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053580

Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.

United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.

United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2_053374

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=stelprdb1043084

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

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624

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
0–12" 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
12–25" 10YR 5/4 YELLOWISH BROWN, GRAVELLY LOAMY SAND, GRANULAR, FRIABLE
25–32" 10YR 5/6 YELLOWISH BROWN, GRAVELLY LOAMY SAND, GRANULAR, FRIABLE
32–72" 10YR 6/2 LIGHT BROWNISH GRAY, GRAVELLY SAND W/REDOX. FEAT. PRESENT, SINGLE GRAIN, LOOSE
E.S.H.W.T. @ 32"
RESTRICTIVE LAYER @ N/A
GROUND WATER @ N/A
TERMINATED @ 72"
REFUSAL @ N/A

TEST PIT #2
0–10" 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
10–24" 10YR 5/4 YELLOWISH BROWN, GRAVELLY LOAMY SAND, GRANULAR, FRIABLE
24–32" 10YR 5/6 YELLOWISH BROWN, GRAVELLY LOAMY SAND, GRANULAR, FRIABLE
32–74" 10YR 6/2 LIGHT BROWNISH GRAY, GRAVELLY SAND W/REDOX. FEAT. PRESENT, SINGLE GRAIN, LOOSE
E.S.H.W.T. @ 32"
RESTRICTIVE LAYER @ N/A
GROUND WATER @ N/A
TERMINATED @ 74"
REFUSAL @ N/A

TEST PIT #3
0–10" 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
10–22" 10YR 5/4 YELLOWISH BROWN, GRAVELLY LOAMY SAND, GRANULAR, FRIABLE
22–32" 10YR 5/6 YELLOWISH BROWN, GRAVELLY LOAMY SAND, GRANULAR, FRIABLE
32–76" 10YR 6/2 LIGHT BROWNISH GRAY, GRAVELLY SAND W/REDOX. FEAT. PRESENT, SINGLE GRAIN, LOOSE
E.S.H.W.T. @ 32"
RESTRICTIVE LAYER @ N/A
GROUND WATER @ N/A
TERMINATED @ 76"
REFUSAL @ N/A

TEST PIT #4
0–8" 10YR 3/2 VERY DARK GRAYISH BROWN, LOAM FINE SAND, GRANULAR, FRIABLE
8–12" 7.5YR 5/6 STRONG BROWN, LOAMY SAND, GRANULAR, FRIABLE
12–22" 10YR 5/6 YELLOWISH BROWN, LOAMY SAND, GRANULAR, FRIABLE
22–38" 10YR 5/4 YELLOWISH BROWN, LOAMY SAND, GRANULAR, FRIABLE
38–78" 10YR 6/2 LIGHT BROWNISH GRAY, SAND WITH REDOX. FEAT. PRESENT, LOOSE, SINGLE GRAIN
E.S.H.W.T. @ 38"
RESTRICTIVE LAYER @ N/A
GROUND WATER @ 54"
TERMINATED @ 78"
REFUSAL @ N/A

TEST PIT #5
0–10" 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
10–30" 10YR 5/4 YELLOWISH BROWN, GRAVELLY LOAMY SAND, GRANULAR, FRIABLE
30–36" 10YR 5/6 YELLOWISH BROWN, GRAVELLY LOAMY SAND, GRANULAR, FRIABLE
36–76" 10YR 6/2 LIGHT BROWNISH GRAY, GRAVELLY SAND W/REDOX. FEAT. PRESENT, SINGLE GRAIN, LOOSE
E.S.H.W.T. @ 36"
RESTRICTIVE LAYER @ N/A
GROUND WATER @ N/A
TERMINATED @ 76"
REFUSAL @ N/A

TEST PIT #6
0–8" 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
8–20" 7.5 YR 5/6 STRONG BROWN, LOAMY SAND, GRANULAR, FRIABLE
20–30" 10YR 5/6 YELLOWISH BROWN, LOAMY SAND, GRANULAR, FRIABLE
30–42" 10YR 4/6 YELLOWISH BROWN, GRAVELLY SAND, GRANULAR, FRIABLE
42–78" 10YR 6/2 LIGHT BROWNISH GRAY, GRAVELLY SAND W/REDOX. FEAT. PRESENT, SINGLE GRAIN, LOOSE
E.S.H.W.T. @ 42"
RESTRICTIVE LAYER @ N/A
GROUND WATER @ N/A
TERMINATED @ 78"
REFUSAL @ N/A

TEST PIT #7
0–8" 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
8–18" 7.5 YR 5/6 STRONG BROWN, LOAMY SAND, GRANULAR, FRIABLE
18–30" 10YR 5/6 YELLOWISH BROWN, LOAMY SAND, GRANULAR, FRIABLE
30–42" 10YR 4/6 YELLOWISH BROWN, GRAVELLY SAND, GRANULAR, FRIABLE
42–78" 10YR 6/2 LIGHT BROWNISH GRAY, GRAVELLY SAND W/REDOX. FEAT. PRESENT, SINGLE GRAIN, LOOSE
E.S.H.W.T. @ 42"
RESTRICTIVE LAYER @ N/A
GROUND WATER @ N/A
TERMINATED @ 78"
REFUSAL @ N/A

TEST PIT #8
0–8" 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
8–20" 7.5 YR 5/6 STRONG BROWN, LOAMY SAND, GRANULAR, FRIABLE
20–34" 10YR 5/6 YELLOWISH BROWN, LOAMY SAND, GRANULAR, FRIABLE
34–44" 10YR 4/6 YELLOWISH BROWN, GRAVELLY SAND, GRANULAR, FRIABLE
44–78" 10YR 6/2 LIGHT BROWNISH GRAY, GRAVELLY SAND W/REDOX. FEAT. PRESENT, SINGLE GRAIN, LOOSE
E.S.H.W.T. @ 44"
RESTRICTIVE LAYER @ N/A
GROUND WATER @ N/A
TERMINATED @ 78"
REFUSAL @ N/A

TEST PIT #9
0–12" 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
12–28" 10YR 5/4 YELLOWISH BROWN, GRAVELLY LOAMY SAND, GRANULAR, FRIABLE
28–41" 10YR 5/6 YELLOWISH BROWN, GRAVELLY LOAMY SAND, GRANULAR, FRIABLE
41–72" 10YR 6/2 LIGHT BROWNISH GRAY, GRAVELLY SAND W/REDOX. FEAT. PRESENT, SINGLE GRAIN, LOOSE
E.S.H.W.T. @ 41"
RESTRICTIVE LAYER @ N/A
GROUND WATER @ N/A
TERMINATED @ 72"
REFUSAL @ N/A

TEST PIT #10
0–12" 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
12–25" 10YR 5/4 YELLOWISH BROWN, GRAVELLY LOAMY SAND, GRANULAR, FRIABLE
25–32" 10YR 5/6 YELLOWISH BROWN, GRAVELLY LOAMY SAND, GRANULAR, FRIABLE
E.S.H.W.T. @ 32"
RESTRICTIVE LAYER @ N/A
GROUND WATER @ N/A
TERMINATED @ 32"
REFUSAL @ N/A

TEST PIT #11
0–12" 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
12–25" 10YR 5/4 YELLOWISH BROWN, GRAVELLY LOAMY SAND, GRANULAR, FRIABLE
25–32" 10YR 5/6 YELLOWISH BROWN, GRAVELLY LOAMY SAND, GRANULAR, FRIABLE
E.S.H.W.T. @ 32"
RESTRICTIVE LAYER @ N/A
GROUND WATER @ N/A
TERMINATED @ 32"
REFUSAL @ N/A

TEST PIT #12
0–12" 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
12–25" 10YR 5/4 YELLOWISH BROWN, GRAVELLY LOAMY SAND, GRANULAR, FRIABLE
25–32" 10YR 5/6 YELLOWISH BROWN, GRAVELLY LOAMY SAND, GRANULAR, FRIABLE
E.S.H.W.T. @ 32"
RESTRICTIVE LAYER @ N/A
GROUND WATER @ N/A
TERMINATED @ 32"
REFUSAL @ N/A

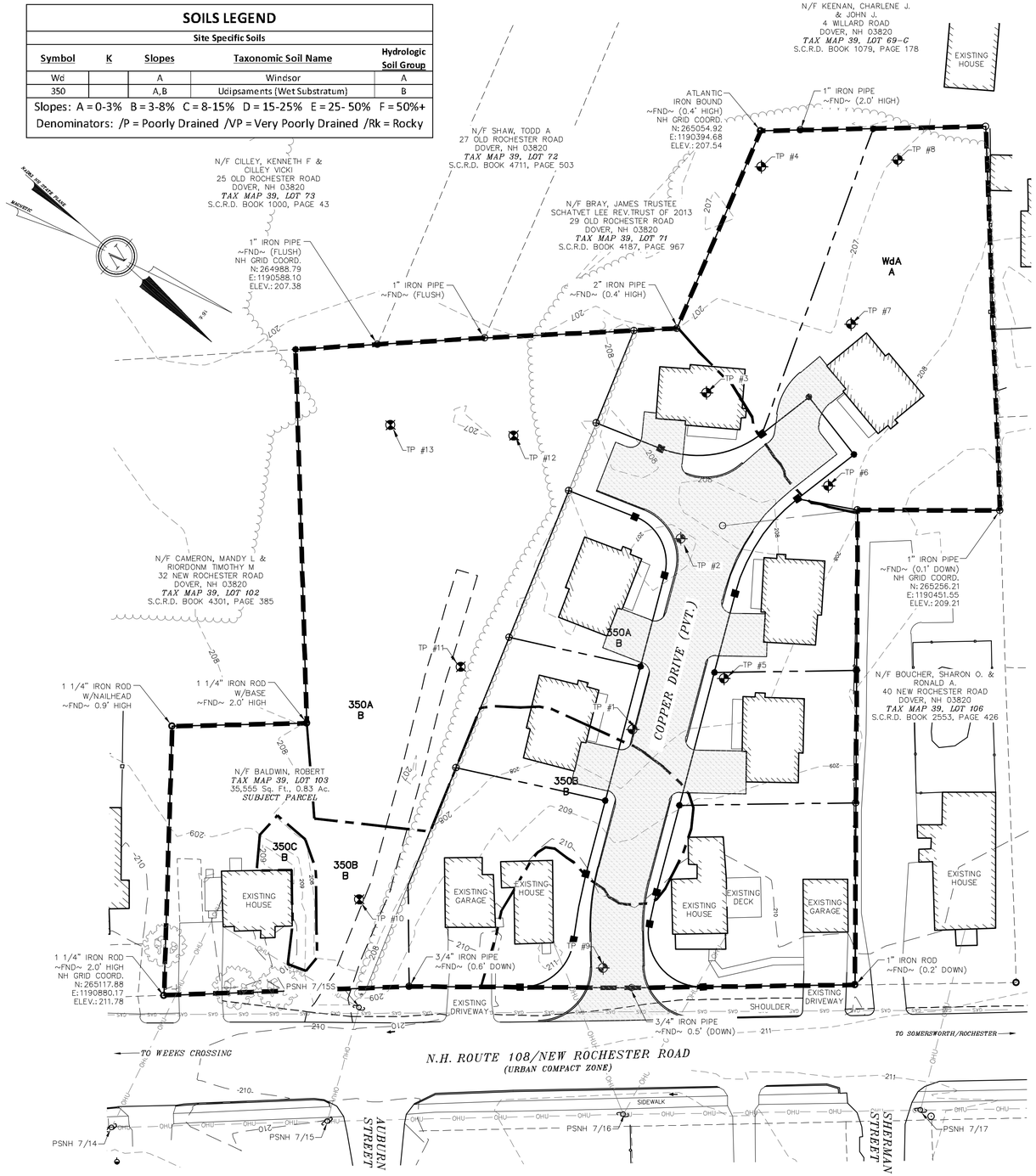
TEST PIT #13
0–12" 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
12–25" 10YR 5/4 YELLOWISH BROWN, GRAVELLY LOAMY SAND, GRANULAR, FRIABLE
25–32" 10YR 5/6 YELLOWISH BROWN, GRAVELLY LOAMY SAND, GRANULAR, FRIABLE
E.S.H.W.T. @ 32"
RESTRICTIVE LAYER @ N/A
GROUND WATER @ N/A
TERMINATED @ 32"
REFUSAL @ N/A

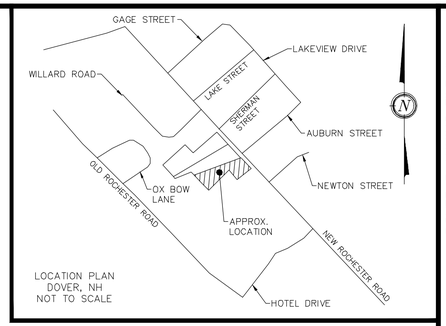
SOILS LEGEND

Site Specific Soils

Symbol	K	Slopes	Taxonomic Soil Name	Hydrologic Soil Group
Wd		A	Windsor	A
350		A,B	Ucipsaments (Wet Substratum)	B

Slopes: A = 0-3% B = 3-8% C = 8-15% D = 15-25% E = 25- 50% F = 50%+
Denominators: /P = Poorly Drained /VP = Very Poorly Drained /Rk = Rocky





NOTES:

1A.) OWNER: ROBERT BALDWIN
242 CENTRAL AVE
DOVER, NH 03820

1B.) APPLICANT: KNOX MARSH DEVELOPMENT LLC
242 CENTRAL AVE
DOVER, NH 03820

2.) TAX MAP 39, LOT 103

3.) S.C.R.D. BOOK 5116, PAGE 655

4.) LOT AREA: 35,555 Sq. Ft., 0.82 Ac.

5.) VERTICAL DATUM BASED ON NAVD88 ELEVATIONS. HORIZONTAL DATUM BASED ON NAD83 STATE PLANE. COORDINATES GATHERED USING CARLSON BRX7 SURVEY GRADE GPS RECEIVERS.

6.) THE INTENT OF THIS PLAN IS TO SHOW THE EXISTING SOIL CONDITIONS OF TAX MAP 39, LOTS 103 & 104 LOCATED IN DOVER, N.H.

WETLAND NOTES:

1. WETLANDS WERE DELINEATED BY JOHN P. HAYES IN MAY OF 2023. REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION, (VERSION 2.0) JANUARY 2012, U.S. ARMY CORPS OF ENGINEERS.
2. FIELD INDICATORS OF HYDRIC SOILS IN THE UNITED STATES, A GUIDE FOR IDENTIFYING AND DELINEATING HYDRIC SOILS, VERSION 8.0. UNITED STATES DEPARTMENT OF AGRICULTURE (2016).
3. NATIONAL WETLAND PLANT LIST (CURRENT VERSION).

NO WETLANDS WERE FOUND ON SITE.

JOHN P. HAYES III, CWS #18

JOHN P. HAYES III, CSS #87

CHRISTOPHER R. BERRY
NH PERMITTED DESIGNER #1886

LEGEND:

- IRON BOUND/IRON ROD (FND)
- IRON PIPE (FND)
- UTILITY POLE
- TEST PIT
- OHU — OHU — OHU — OVERHEAD UTILITIES LINE
- 276 — EXISTING CONTOUR MINOR
- 275 — EXISTING CONTOUR MAJOR
- SOIL LINE
- LIMIT OF SOIL SURVEY
- WdA — SOIL SERIES
- S.C.R.D. — STRAFFORD COUNTY REGISTRY OF DEEDS
- TYP. — TYPICAL
- FND — FOUND

GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.

DOVER PLANNING FILE #

REVISION	DATE	DESCRIPTION

SITE SPECIFIC SOILS MAP
LAND OF: ROBERT BALDWIN
FOR: KNOX MARSH DEVELOPMENT LLC
34 NEW ROCHESTER ROAD
DOVER, N.H.
TAX MAP 39, LOT 103

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

SCALE : 1 IN. EQUALS 30 FT.
DATE : JULY 6, 2023
FILE NO. : DB 2023 – 053

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

NOT FOR CONSTRUCTION

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

2/22/22

Christopher Berry **Job # 22-003**
Berry Surveying and Engineering
335 Second Crown Point Road
Barrington NH 03825

2/15/22
Site Specific Soil Survey
Map 39 Lots 104 & 105
36 & 38 New Rochester Road Dover , NH

Dear Chris,

This letter report presents the findings of a Site Specific Soil Survey conducted on the referenced properties by John P. Hayes III on February 15, 2022. 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 properties that are subject of the soil survey is located on the southwest side of of New Rochester road, and southeast of Willard Drive in Dover, NH. The mapped area of the two pacels is 1.6 acres in size. The plans used for these soil maps are a 30 scale plan, where 1 inch equals 30 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 pits, 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. Any limiting enclusions on the site, do not exceed 15 percent of any of the soil map units. Dissimilar inclusions, if any, will be noted in the report. Limits of the Site Specific mapping units are highlighted on the plan. The Hydrological Soil Groups for each of the soil series was determined using SSSNNE Publication No. 5 Ksat Values for New Hampshire Soils September 2009. Limits of the Site Specific mapping units are highlighted on the plan.

Portions of the soil map with the map unit 350, contain disturbed soils that have been excavated and/or regraded, that are moderately well drained, and 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	SLOPES	HYDROLOGIC SOIL GROUP	DESCRIPTION
Wd (State No. 26)	**Windsor**	**A**	**A**	The Windsor series consists of very deep, excessively drained soils formed in sandy outwash or eolian deposits. They are nearly level through very steep soils on glaciofluvial landforms. These soils are found in the southwest portion of the property. These soils are deep to bedrock. Saturated hydraulic conductivity is high or very high. Some inclusions of Deerfield soils may be present, but are less than 10 percent of the mapped areas.Estimated seasonal high water tables in these soils range from 38 to 44 inches.
350 (dbadb)	**Udipsamments Wet Substratum**	**A B**	**B**	Udipsamments are disturbed soils that have been excavated and/or regraded and are sandy in texture. These disturbed soils are located on the northeast portion of the mapped area, near the road and around the present structures. These disturbed soils are mostly derrived from the Deerfield soil series. They have a sandy substratum overlain with a layer of gravelly loamy sand fill material and topsoil. These soils are moderately well drained, and are deep to bedrock. Saturated hydraulic conductivity is high or very high. Estimated seasonal high water tables in these soils range from 30 to 36 inches.

Slope Phases

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

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

Sincerely:

John P. Hayes III CSS, CWS

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

NOTES:

1.) OWNER: ROBERT BALDWIN
242 CENTRAL AVE
DOVER, NH 03820

2.) 2.) TAX MAP 39, LOT 103

3.) S.C.R.D. BOOK 5116, PAGE 655

4.) LOT AREA: 35,555 Sq. Ft., 0.82 Ac.

5.) EXISTING CONDITIONS INFORMATION IS BASED ON A SURVEY PERFORMED BY BERRY SURVEYING & ENGINEERING, FOR DETAILS SEE EXISTING CONDITIONS PLAN AND PLAN SET COMPLETED.

6.) THE INTENT OF THIS PLAN IS TO DEMONSTRATE THE DRAINAGE INFRASTRUCTURE THAT REQUIRES PERIODIC INSPECTION AND MAINTENANCE. IT IS TO ACCOMPANY A DOCUMENT ENTITLES "INSPECTION AND MAINTENANCE MANUAL, STORMWATER SYSTEM MANAGEMENT PUBLISHED BY BERRY SURVEYING & ENGINEERING ON THE SAME DATE.

7.) THIS PLAN IS TO SUPERCEDE THE INSPECTION, OPERATIONS, & MAINTENANCE PLAN FOR EXISTING COPPER DRIVE FOR COMPLETE SITE OPERATIONS.

NOTE: HALF SCALE PLANS, (11-INCHES X 17-INCHES) WILL HAVE A SCALE THAT IS TWICE THE PUBLISHED SCALE.

POROUS PAVERS W/ INFILTRATION #204 SEE P-204 FOR DETAILS

POROUS PAVERS W/ INFILTRATION #203 SEE P-203 FOR DETAILS

CONVEYANCE SWALE

INFILTRATION SUMP

DEEP SUMP CATCH BASIN W/ UNDER DRAINS

POROUS PAVEMENT W/ INFILTRATION #201 SEE P-201 FOR DETAILS (EMBER DRIVE)

POROUS PAVEMENT W/ INFILTRATION #202 SEE P-202 FOR DETAILS (COPPER DRIVE)

PERMANENT E.C.M. BERM (60')

RAIN GARDEN W/ INFILTRATION #102 SEE P-102 FOR DETAILS

RIP RAP LEVEL PREADER

CROSS CULVERT W/ FLARED END SECTIONS

CROSS CULVERT W/ HEADWALLS

SEDIMENT FOREBAY

POROUS PAVEMENT DRIVEWAY

INLET SUMP

POROUS PAVEMENT W/ INFILTRATION #101 SEE P-101 FOR DETAILS (COPPER DRIVE)

UNIT #1 SINGLE FAMILY HOME

UNITS #2 & 3 DUPLEX

UNITS #4 & 5 DUPLEX

UNITS #6 & 7 DUPLEX

UNITS #6 & 9 DUPLEX

UNITS #10 & 11 DUPLEX

UNITS #12 & 13 DUPLEX

LCA TAX MAP 39, LOT 104-7

LCA TAX MAP 39, LOT 104

LCA TAX MAP 39, LOT 104-1

LCA TAX MAP 39, LOT 104-2

LCA TAX MAP 39, LOT 104-3

LCA TAX MAP 39, LOT 104-4

LCA TAX MAP 39, LOT 104-5

LCA TAX MAP 39, LOT 104-6

LCA TAX MAP 39, LOT 105

ROOF GUTTER W/DOWNSPOUT (TYP.) W/ CLEANOUT & LEAF GUARD

EMBER DRIVE (PVT.)

COPPER DRIVE (PVT.)

N.H. ROUTE 108/NEW ROCHESTER ROAD

NOT FOR CONSTRUCTION

DOVER PLANNING FILE #SITE-2023-0007

REVISION	DATE	DESCRIPTION
#4	11-30-23	REVISED PER TRC #3 COMMENT
#3	11-09-23	REVISED PER INFORMAL TRC
#2	11-06-23	REVISED PER TRC #2 & ADDITIONAL UNITS ADDED
#1	9-25-23	REVISED PER DOVER TRC COMMENT

INSPECTION, OPERATIONS, AND MAINTENANCE PLAN
LAND OF: ROBERT BALDWIN
FOR: KNOX MARSH DEVELOPMENT LLC
34 NEW ROCHESTER ROAD
DOVER, N.H.
TAX MAP 39, LOT 103

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

SCALE : 1 IN. EQUALS 20 FT.
DATE : JULY 6, 2023
FILE NO. : DB 2023 - 053

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14240
LICENSED PROFESSIONAL ENGINEER

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

Copper Drive & Ember Drive
Dover, NH 03820

Prepared for:

Knox Marsh Development LLC
242 Central Avenue
Dover, NH 03820

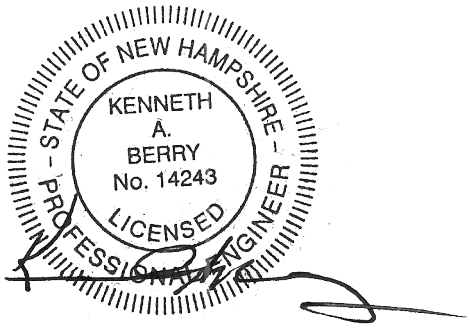
Land of

Robert Baldwin
242 Central Avenue
Dover, NH 03820

34 New Rochester Road, Dover, NH
Tax Map 39, Lot 103

Prepared By

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



Project Number:
DB2023-053

July 6, 2023
Rev: November 6, 2023

Stormwater System Management:

Inspection and Maintenance Manual

Table of Contents

Introduction..... Page 2

Porous Pavement/Pavers W/ Infiltration Bed..... Page 4

Infiltration Sump..... Page 4

Inlet Sump & Cross Culvert w/ Flared End Sections..... Page 5

Deep Sump Catch Basins..... Page 5

Conveyance Swale ..... Page 6

Outlet Protection..... Page 6

Stabilization for Long-Term Cover ..... Page 7

Snow Storage Areas & Winter Maintenance ..... Page 8

Control of Invasive Species..... Page 8

Annual Report.....Page 10

Inspection & Maintenance Manual Checklist.....Page 11

Inspection & Maintenance Log Sheet..... Page 14

Deicing Log Sheet.....Page 15

Owner Certification .....Page 16

Site Plans Attached – 1 Page

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

Introduction

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

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

For details regarding the design of the Storm Water System see also Drainage Analysis & Sediment and Erosion Control Plan also published by Berry Surveying & Engineering dated July 6, 2023. See also plan set completed for Knox Marsh Development, LLC dated July 6, 2023, as revised.

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

Knox Marsh Development, LLC is proposing to develop six new duplex structures in addition to the existing single-family home on Tax Map 39, Lot 103 and the conversion of two single family homes to duplex structures on Tax Map 39, Lot 104 (lot merger proposed).

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

Porous Pavement w/ Infiltration #201

Porous Pavement w/ Infiltration #202

Porous Pavers w/ Infiltration #203

Porous Pavers w/ Infiltration #204

Infiltration Sump

Inlet Sump & Cross Culvert W/ Flared End Sections

Deep Sump Catch Basins

Conveyance Swale

Outlet Protection

Stabilization for Long Term Cover

Porous Asphalt Pavement/Pavers & Infiltration Bed

Description: The Permeable Pavement system consists of a porous pavement surface and permeable sub-base materials that is going to allow infiltration of surface water runoff into the native subsoil. 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.

In-Ground Infiltration Basin

Description: Infiltration basins are impoundments designed to temporarily store runoff, allowing all or a portion of the water to infiltrate into the ground. An infiltration basin is designed to completely drain between storm events. An infiltration basin is specifically designed to retain and infiltrate the entire Water Quality Volume. Some infiltration basins may infiltrate additional volumes during larger storm events, but many will be designed to release stormwater exceeding the water quality volume from the larger storms. In a properly sited and designed infiltration basin, water quality treatment is provided by runoff pollutants binding to soil particles beneath the basin as water percolates into the subsurface. Biological and chemical processes occurring in the soil also contribute to the breakdown of pollutants. Infiltrated water is used by plants to support growth or it is recharged to the underlying groundwater. As with all impoundment BMPs, surface infiltration basins should be designed with an outlet structure to pass peak flows during a range of storm events, as well as with an emergency spillway to pass peak flows around the embankment during extreme storm events that exceed the combined infiltration capacity and outlet structure capacity of the facility. See SWM Volume 2, 4-3.3b, Treatment Practices, In-Ground Infiltration Basin, page 88.

Maintenance Considerations: Removal of debris from inlet and outlet structures. Removal of accumulated sediment. Inspection and repair of outlet structures and appurtenances. Inspection of infiltration components at least twice annually, and following any rainfall event exceeding 2.5 inches in a 24 hour period, with maintenance or rehabilitation conducted as warranted by such inspection. Inspection and removal of

accumulated sediment as warranted by inspection, but no less than once annually. Periodic mowing of embankments. Removal of woody vegetation from embankments. Inspection and repair of embankments and spillways. If an infiltration system does not drain within 72-hours following a rainfall event, then a qualified professional should assess the condition of the facility to determine measures required to restore infiltration function, including but not limited to removal of accumulated sediments or reconstruction of the infiltration trench.

Culvert Inlet Sumps & Cross Culvert w/ Flared End Sections

Description: In one location, to capture the surface water runoff that is trapped within the inside of the residential roadway and residential runoff from back yards, there is a Residential Inlet Sump. This culvert pipe, flared end sections, and constructed sump will collect the runoff that is directed to that location during and after the residential development. The culvert will allow the runoff to discharge and not allow water to pond to the house elevations in the back yards. The location of the Residential Inlet Sump will be marked and identified with headwall and bollards.

Maintenance Considerations: Vegetation and debris will need to be removed from the culvert inlet several times a year, especially late fall after the majority of the leaves have fallen and in the spring. In addition to the sump and culverts themselves, the drainage channel will need to be inspected to ensure that the runoff intended to get to the inlets is making it to the sump. The identification fence post will be inspected for structural condition and painted condition.

Deep Sump Catch Basin

Description: A deep sump catch basin consists of a manhole-type structure with an inlet grate, an outlet pipe connected to the piped drainage system, and a sump with a depth several times the diameter of the outlet pipe. The inlet grate is located at the surface, and is sometimes combined with a vertical inlet integrated with a street or parking area curb. The sump's purpose is to capture coarse sediments and debris from the runoff intercepted by the structure. The outlet pipe can be fitted with a "hood" consisting of a cast metal or formed plastic fitting, designed to prevent floating materials from exiting the structure. Deep sump catch basins used as pretreatment are most effective if sited "off-line" since flow-through basins are more susceptible to sediment re-suspension. 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. During construction the catch basins will be protected by inlet protection per the approved construction plans. Hoods are to be installed during initial construction. See SWM Volume 2, 4-4.5 Pre-treatment Practices, 5. Pre-treatment Swales, page 144.

Maintenance Considerations:

Catch basins may require frequent maintenance. Depending on location, this may require several cleanings of the sumps each year. At a minimum, it is recommended that catch basins be inspected at least twice annually, once following snow-melt and once following leaf drop, and cleaned as indicated by inspection. Sediment should be removed when it approaches half the sump depth. If floating hydrocarbons are observed during an inspection, the material should be removed immediately by skimming, absorbent materials, or other method and disposed in conformance with applicable state and federal regulations. Cleaning may require Vacuum-truck instead of "clam-shell" to avoid damage to hood. Damaged hoods should be replaced when noted by inspection.

Conveyance Swales

Description: "Swales are stabilized channels designed to convey runoff at non-erosive velocities." (NHDES SWM) They will be trapezoidal or parabolic in section view. 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. See SWM Volume 2, 4.3 Treatment Practices, 5. Treatment Swales, page 123.

Project Intent: The swales are individually designed in the drainage analysis and specified on the design plans. The designed swales must have greater than 85% vegetated growth prior to receiving runoff. The bottom of a treatment swale must be above the seasonal high water table.

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.

Rip Rap Outlet Protection

Description: Outlet Protection consists of a riprap apron or preformed scour hole that is designed to provide velocity reduction of the surface water run-off that is leaving a culvert. The design is dependent on the culvert size, soil conditions, velocity, and quantity of the run-off. There are to be no bend or curves at the intersection of the

conduit and apron. Ref.: NHDES SWM Volume 2, Section 4-6 Conveyance Practices, 6. Outlet Protection and 1. Detention Ponds, Note 3, Page 158.

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

Stabilization for Long Term Cover

Vegetated Stabilization – Original Planting

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

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

Conservation Mix

Mixture	Pounds per Acre	Pounds per 1,000 Sq. Ft.
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**

Conservation Mix will used to stabilize all 2:1 slopes and all land area disturbed within the wetland buffer. As the site is to be stabilized with erosion control mix as a mulch, the vegetation should be established with a high percentage of white clover for growth to be established. Conservation Mix will also be used to plant and stabilize the erosion control mix mulch. Seed will originally be applied by hydroseeding which includes a tackifier. Due to the shade factor of the solar panels, special care must be taken to establish growth.

Snow Storage Areas & Winter Maintenance

Description: The effective use of salt and sand for winter maintenance is both a cost and an environmental consideration. In accordance with City of Dover Chapter 153-14 A, Snow and ice removal shall be performed by a contractor certified by the "Green SnoPro" program, or approved equivalent, following the Best Management Practices for the application of deicing materials. The use of salt for deicing will be minimized. De-icing logs will be maintained for the development.

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

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

CONTROL OF INVASIVE PLANTS

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

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

- becoming weedy and overgrown;
- killing established shade trees;
- obstructing pipes and drainage systems;

- forming dense beds in water;
- lowering water levels in lakes, streams, and wetlands;
- destroying natural communities;
- promoting erosion on stream banks and hillsides; and
- resisting control except by hazardous chemical.

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

Annual Report

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

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

Respectfully
BERRY SURVEYING & ENGINEERING

Kevin R. Poulin, PE
Design Engineer &
Project Manager

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

STORMWATER SYSTEM OPERATION AND MAINTENANCE PLAN

Inspection & Maintenance Manual Checklist

Residential Development

Knox Marsh Development
Copper Drive & Ember Drive
(34 New Rochester Road)
Dover, NH

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

☑	Date	BMP / System	Minimum Inspection Frequency	Minimum Inspection Requirements	Maintenance / Cleanout Threshold
		Winter Maintenance	Ongoing	Remove snow as directed.	Ongoing
		Infiltration Sumps	Annually	72-Hour drawdown time evaluation and vegetation evaluation.	Remove dead & diseased vegetation along with all debris, take corrective measures of filtration surface if required.
		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 Department and kept on file by the owner.	Report to be submitted on or before December 15th each year.

Inspection Checklist: Page 3

Porous Pavement w/ Infiltration #201

Porous Pavement w/ Infiltration #202

Porous Pavers w/ Infiltration #203

Porous Pavers w/ Infiltration #204

Infiltration Sump

Inlet Sump & Cross Culvert W/ Flared End Sections

Deep Sump Catch Basins

Conveyance Swale

Outlet Protection

Stabilization for Long Term Cover

Inspection Notes:

STORMWATER SYSTEM OPERATION AND MAINTENANCE PLAN

Inspection & Maintenance Manual Log Form

Residential Development
Knox Marsh Development
Copper Drive & Ember Drive
(34 New Rochester Road)
Dover, NH

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

STORMWATER SYSTEM OPERATION AND MAINTENANCE PLAN

Deicing Log Form

Residential Development
Knox Marsh Development
Copper Drive & Ember Drive
(34 New Rochester Road)
Dover, NH

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

STORMWATER SYSTEM OPERATION & MAINTENANCE PLAN CERTIFICATION

Owner	Responsibility
Name: ROBERT BALDWIN, MANAGING MEMBER Address: 242 Central Avenue DOVER, NH 03820 Telephone: 603-986-2373 E-Mail Address: Robert@centralfallsrealty.com	The owner is responsible for the conduct of all construction activities, and ultimate compliance with all the provisions of the Stormwater System Operation & Maintenance Plan and the implementation of the Inspection and Maintenance Manual.

OWNER CERTIFICATION

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

Signed: _____ Date: _____

Printed Name:

Representing:

Control of Invasive Plants

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

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

INVASIVE TREES

NORWAY MAPLE (*Acer platanoides*) has large leaves similar to sugar maple. To easily confirm that the plant is Norway maple, break off a leaf and if it's truly Norway maple it will exude milky white sap. Fall foliage is yellow. (Exception: cultivars such as 'Crimson King,' which have red leaves in spring or summer, may have red autumn leaves.) The leaves turn color late, usually in late October after native trees have dropped their foliage. This tree suppresses growth of grass, garden plants, and forest understory beneath it, at least as far as the drip-line. Its wind-borne seeds can germinate and grow in deep shade. The presence of young Norway maples in our woodlands is increasing.
Control: (1); (7), (8), (9), or (10); (11) in mid-October to early November, before the leaves turn color.

TREE OF HEAVEN (*Ailanthus altissima*), is incredibly tough and can grow in the poorest conditions. It produces huge quantities of wind-borne seeds, grows rapidly, and secretes a toxin that kills other plants. Its long compound leaves, with 11-25 lance-shaped leaflets, smell like peanut butter or burnt coffee when crushed. Once established, this tree cannot be removed by mechanical means alone.
Control: (1) - seedlings only. Herbicide - use Garlon 3a (9) with no more than a 1" gap between cuts, or (10); plus (11) on re-growth. Or paint bottom 12" of bark with Garlon 4 Ultra (in February or March to protect surrounding plants). USE MAXIMUM STRENGTH SPECIFIED ON LABEL for all herbicide applications on Ailanthus. Glyphosate is not effective against Ailanthus.

INVASIVE SHRUBS

AUTUMN OLIVE (*Eleagnus umbellata*): Formerly recommended for erosion control and wildlife value, these have proved highly invasive and diminish the overall quality of wildlife habitat.
Control: (1) - up to 4" diameter trunks; (7) or (10) or bury stump. Do not mow.
MULTIFLORA ROSE (*Rosa multiflora*), formerly recommended for erosion control, hedges, and wildlife habitat, becomes a huge shrub that chokes out all other vegetation and is too dense for many species of birds to nest in, though a few favor it. In shade, it grows up trees like a vine. It is covered with white flowers in June. (Our native roses have fewer flowers, mostly pink.) Distinguish multiflora by its size, and by the presence of very hard, curved thorns, and a fringed edge to the leaf stalk.
Control: (1) - pull seedlings, dig out larger plants at least 6" from the crown and 6" down; (4) on extensive infestations; (10) or (11). It may remain green in winter, so herbicide may *applied when other plants are dormant. For foliar application, mix Rodeo with extra sticker-spreader, or use Roundup Sure Shot Foam on small plants.*

BUSH HONEYSUCKLES (*Lonicera spp.*), including Belle, Amur, Morrow's, and Tatarian honeysuckle. (In our region, assume that any honeysuckle is exotic unless it is a scarlet-flowered vine). Bush honeysuckles create denser shade than native shrubs, reducing plant diversity and eliminating nest sites for many forest interior species.
Control: (2) on ornamentals; (1); on shady sites only, brush cut in early spring and again in early fall (3); (4) during the growing season; (7); or (10) late in the growing season.

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

BURNING BUSH, WINGED EUONYMUS (*Euonymus alatus*), identified by wide, corky wings on the branches.
Control: (1); (7) or (10); or trim off all flowers.

JAPANESE BARBERRY (*Berberis thunbergii*), and all cultivars and varieties.
Control: (1); (7) or (10); or trim off all flowers.

INVASIVE WOODY VINES

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

JAPANESE HONEYSUCKLE (*Lonicera japonica*), including Hall's honeysuckle, has gold-and-white flowers with a heavenly scent and sweet nectar in June. This is probably the familiar honeysuckle of your childhood. It is a rampant grower that spirals around trees, often strangling them.
Control: (1); (3); (10); (11) in fall or early spring when native vegetation is dormant. Plan to re-treat repeatedly.

ORIENTAL BITTERSWEET (*Celastrus orbiculatus*) has almost completely displaced American bittersweet (*C. scandens*). The Asian plant has its flowers and bright orange seed capsules in clusters all along the stem, while the native species bears them only at the branch tips.
Control: (1); keep ornamental plants cut back, remove all fruits as soon as they open, and bag or burn fruits; to eradicate use Garlon 3a (10).

JAPANESE KNOTWEED, MEXICAN BAMBOO (*Polygonum cuspidatum*) can grow in shade. The stems have knotty joints, reminiscent of bamboo. It grows 6-10' tall and has large pointed oval or triangular leaves.
Control: Cut at least 3 times each growing season and/or treat with Rodeo (10) or (11). In gardens, heavy mulch or dense shade may kill it.

INVASIVE HERBACEOUS PLANTS

GARLIC MUSTARD (*Alliaria petiolata*, *A. officinalis*), a white-flowered biennial with rough, scalloped leaves (kidney-, heart- or arrow-shaped), recognizable by the smell of garlic and taste of mustard when its leaves are crushed. (The odor fades by fall.)
Control: Pull before it flowers in spring (1), removing crown and roots. Tamp down soil afterwards. Once it has flowered, cut (2), being careful not to scatter seed, then bag and burn or send to the landfill. (11) may be appropriate in some settings.

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

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

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

SPOTTED KNAPWEED (*Centaurea maculosa*), a biennial with thistle-like flowers.
Control: Do NOT pull (1) unless the plant is young and the ground is very soft - the tap root will break off and produce several new plants. Wear sturdy gloves. (2); (6); (10) or (11).

CONTROL MEASURES

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

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

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

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

Table 19. Application Rates for Deicing

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

Infiltration Feasibility Report

Copper Drive & Ember Drive
Dover, NH 03820

Prepared for:

Knox Marsh Development LLC
242 Central Avenue
DOVER, NH 03820

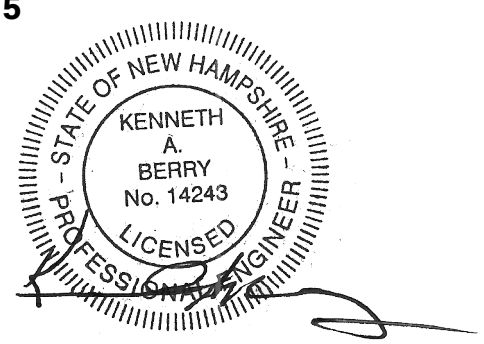
Land of

Robert Baldwin
242 Central Avenue
DOVER, NH 03820

34 NEW ROCHESTER ROAD, DOVER, NH
TAX MAP 39, LOT 103

Prepared by:

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



Project Number:
DB 2023-053

July 6, 2023
Revised: November 6, 2023

Table of Contents

1.0	Location of Practice	Page 2
2.0	Existing Topography at Location of Practice	Page 2
3.0	Test Pit Location	Page 3
4.0	Seasonal High Water Table and Bedrock Elevations	Page 5
5.0	Profile Descriptions	Page 13
6.0	Soil Plan	Page 14
7.0	Summary of Infiltration Rates	Page 18

1.0 Location of Practices:

The project proposes four locations of infiltration for ground water recharge as well as channel flow protection purposes. The following is a list by Pond number designation in the HydroCAD report (Pond #X). This Infiltration Feasibility Report is supplemental to the original Copper Drive Infiltration Feasibility Report that has been approved (Dover Project #P22-27).

Porous Pavement w/ Infiltration #201 (201P) is considered as Ember Drive. Flow is received from the porous pavement area itself, several roofs via gutters and downspouts, grassed area and pavement from New Rochester Road. The contributing area to the porous pavement is less than 5:1.

Porous Pavement w/ Infiltration #202 (202P) is considered the extension of Copper Drive paved roadway and parking area. Flow is received from the porous pavement area itself, several roofs via gutters and downspouts, and a small grassed area. The contributing area to the porous pavement is less than 5:1.

Porous Pavers w/ Infiltration #203 (203P) is considered as the porous paver walkway adjacent to duplex units #4-13. Flow is received from the porous paver area itself and adjacent grassed area. The contributing area to the porous pavers is less than 5:1.

Porous Pavers w/ Infiltration #204 (204P) is considered as the porous paver walkway adjacent to duplex units #2-3. Flow is received from the porous paver area itself, roof runoff from the existing single family home, and adjacent grassed area. The contributing area to the porous pavers is less than 5:1.

2.0 Existing topography at the location of the practices

Porous Pavement #201 (201P) is proposed across an area of roughly 5% or less slope that is currently residential lawn.

Porous Pavement #202 (202P) is proposed across an area of roughly 3% or less slope that is currently residential lawn and a portion of wooded area.

Porous Pavers #203 (203P) is proposed across an area of roughly 3% or less slope that is currently residential lawn.

Porous Pavers #204 (204P) is proposed across an area of roughly 5-8% or less slope that is currently residential lawn.

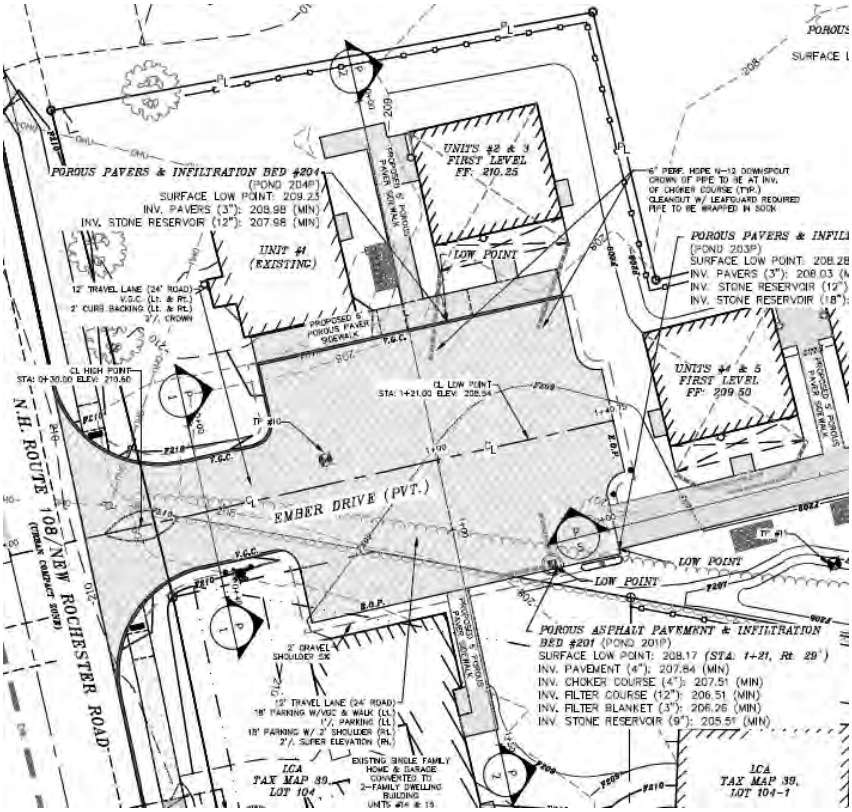
3.0 Test Pit Locations

Porous Pavement #201 (Pond 201) – This practice has a modeled surface area of 5,821 square feet (SF) and is proposed to be constructed over approximately test pit #10. See test pit profiles below. See test pit locations on Porous Pavement w/ Infiltration#201, sheet #9. These test pits were completed in July of 2023 by Christopher R. Berry, NH Licensed Septic Designer. There is one soil type in the vicinity of the practice. Udipsamments, derived from the Deerfield Series, considered to be a HSG B soil where the most restrictive published Ksat is 6.0 inches per hour. The rate of 3.0 inches per hour is used for the design.

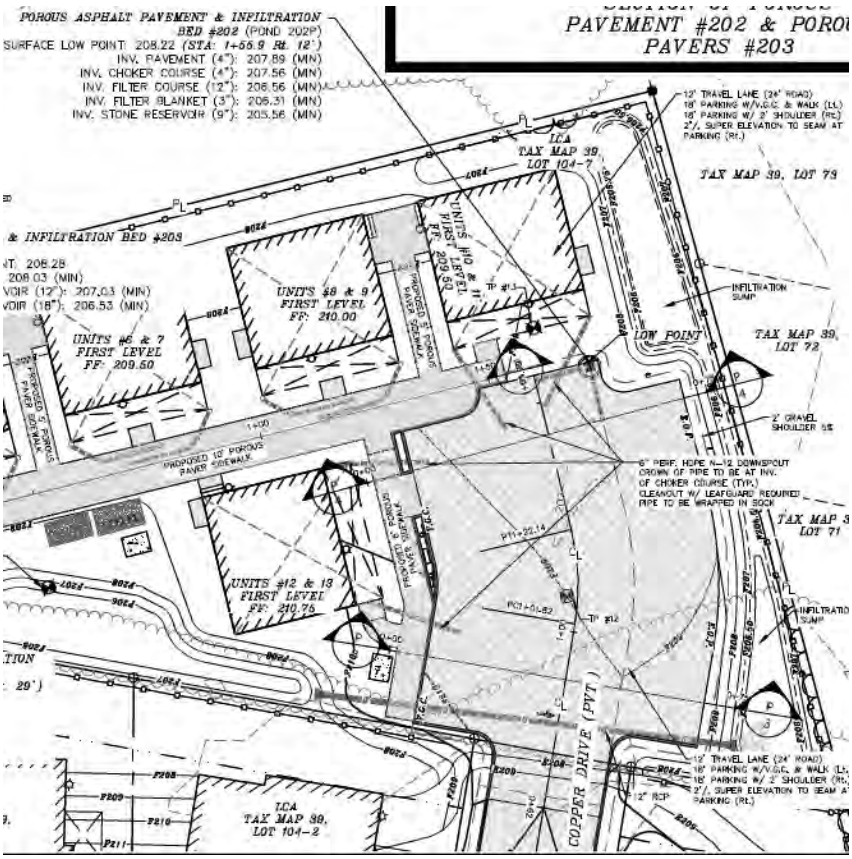
Porous Pavement #202 (Pond 202) – This practice has a modeled surface area of 4,889 square feet (SF) and is proposed to be constructed over approximately test pits #12 & 13. See test pit profiles below. See test pit locations on Porous Pavement w/ Infiltration#202, sheet #9. These test pits were completed in July of 2023 by Christopher R. Berry, NH Licensed Septic Designer. There is one soil type in the vicinity of the practice. Udipsamments, derived from the Deerfield Series, considered to be a HSG B soil where the most restrictive published Ksat is 6.0 inches per hour. The rate of 3.0 inches per hour is used for the design.

Porous Pavers #203 (Pond 203) – This practice has a modeled surface area of 2,427 square feet (SF) and is proposed to be constructed over approximately test pit #11. See test pit profiles below. See test pit locations on Porous Pavers w/ Infiltration#203, sheet #9. These test pits were completed in July of 2023 by Christopher R. Berry, NH Licensed Septic Designer. There is one soil type in the vicinity of the practice. Udipsamments, derived from the Deerfield Series, considered to be a HSG B soil where the most restrictive published Ksat is 6.0 inches per hour. The rate of 3.0 inches per hour is used for the design.

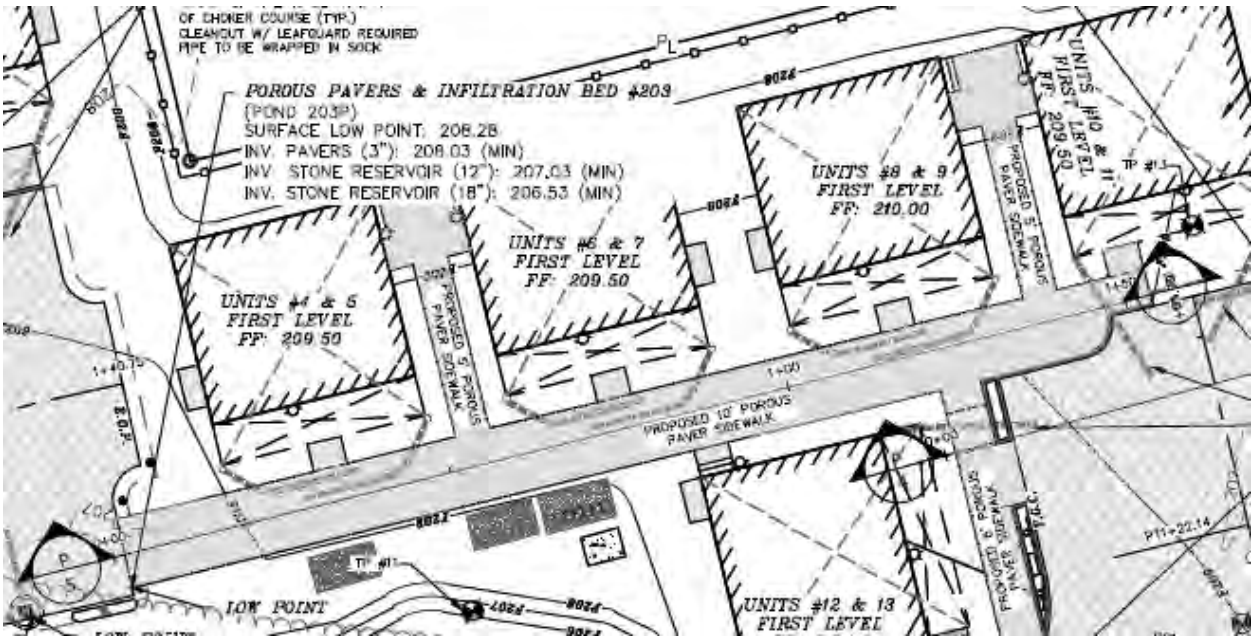
Porous Pavers #204 (Pond 204) – This practice has a modeled surface area of 794 square feet (SF) and is proposed to be constructed over approximately test pit #10. See test pit profiles below. See test pit locations on Porous Pavers w/ Infiltration #204, sheet #9. These test pits were completed in July of 2023 by Christopher R. Berry, NH Licensed Septic Designer. There is one soil type in the vicinity of the practice. Udipsamments, derived from the Deerfield Series, considered to be a HSG B soil where the most restrictive published Ksat is 6.0 inches per hour. The rate of 3.0 inches per hour is used for the design.



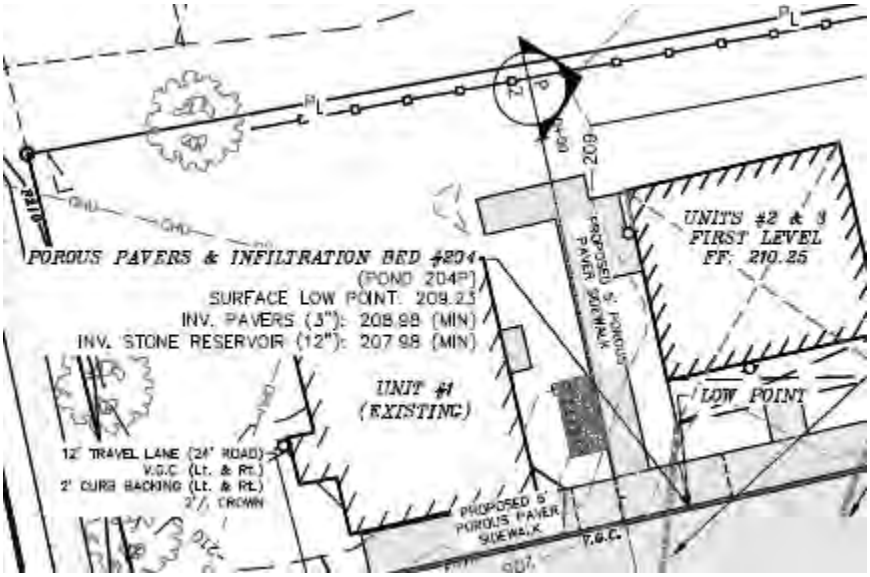
Porous Pavement w/ Infiltration #201 (Pond 201)



Porous Pavement w/ Infiltration #202 (Pond 202)



Porous Pavers w/ Infiltration #203 (Pond 203)



Porous Pavers w/ Infiltration #204 (Pond 204)

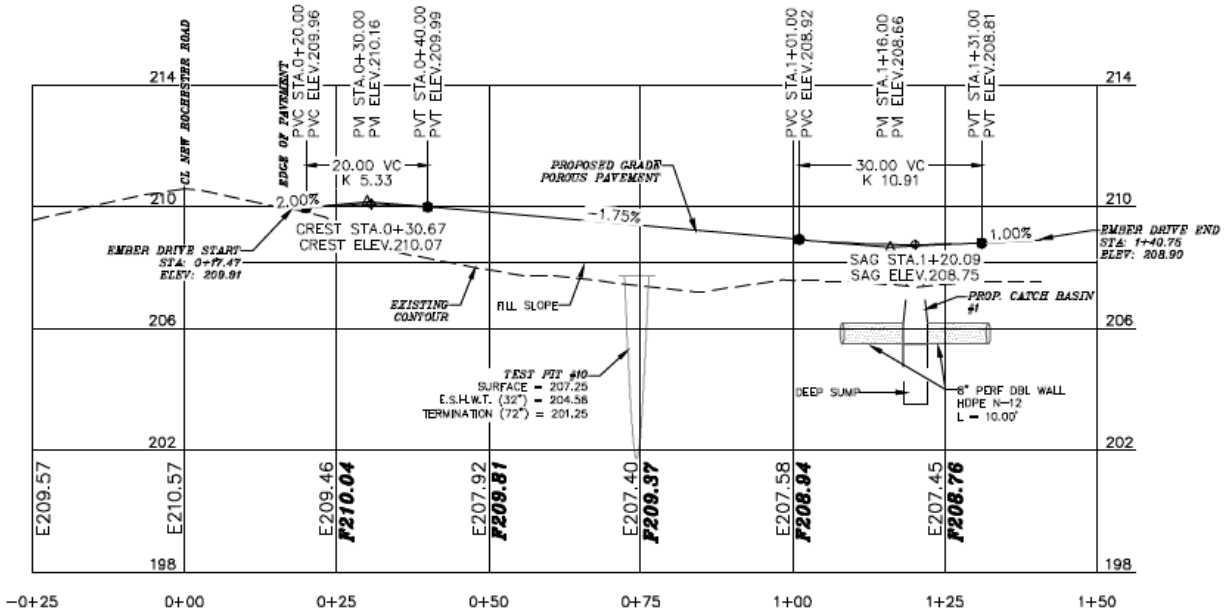
4.0 Seasonal High Water Table (SHWT) and bedrock elevations

Porous Pavement w/ Infiltration #201 (Pond 201)

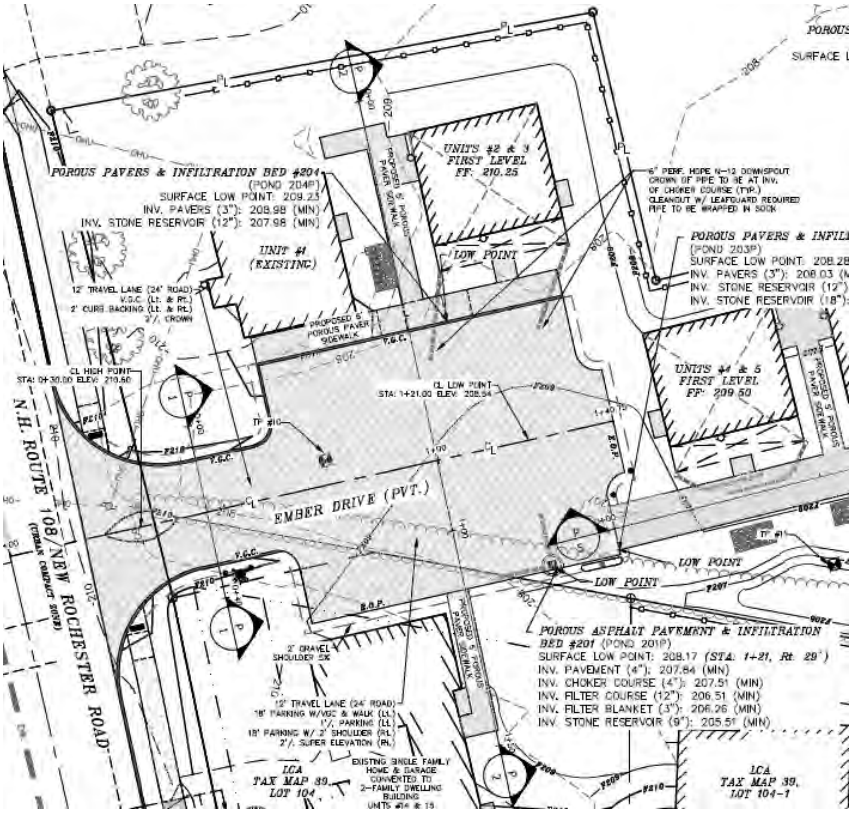
TP#10:	Existing Surface Elevation of TP =	207.25’
	SHWT = 32 – Inches	>204.58’
	Bedrock = > 72 – Inches	>201.25’
	Ground Water = N/A	
	Deepest Elevation of TP =	201.25’

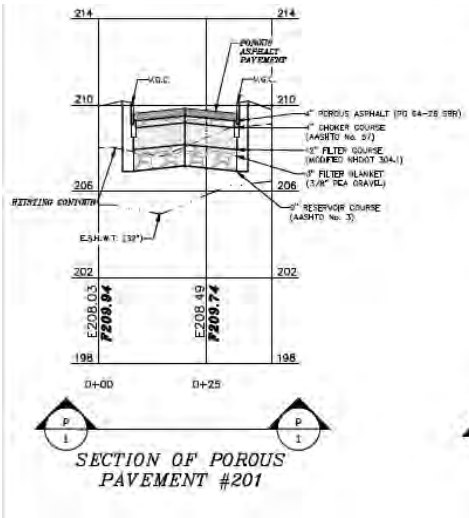
Porous Pavement #101 (Pond 101) Lowest Point: 208.17’

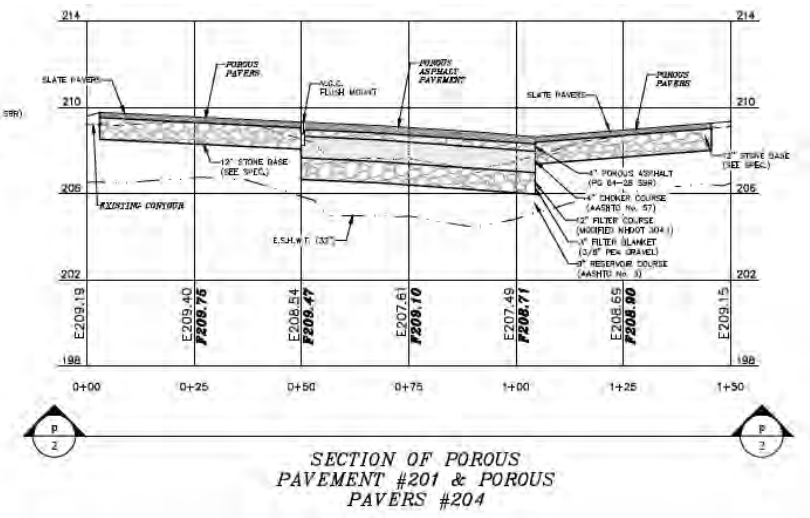
Profile Porous Pavement w/ Infiltration #201



Cross Sections Porous Pavement w/ Infiltration #201







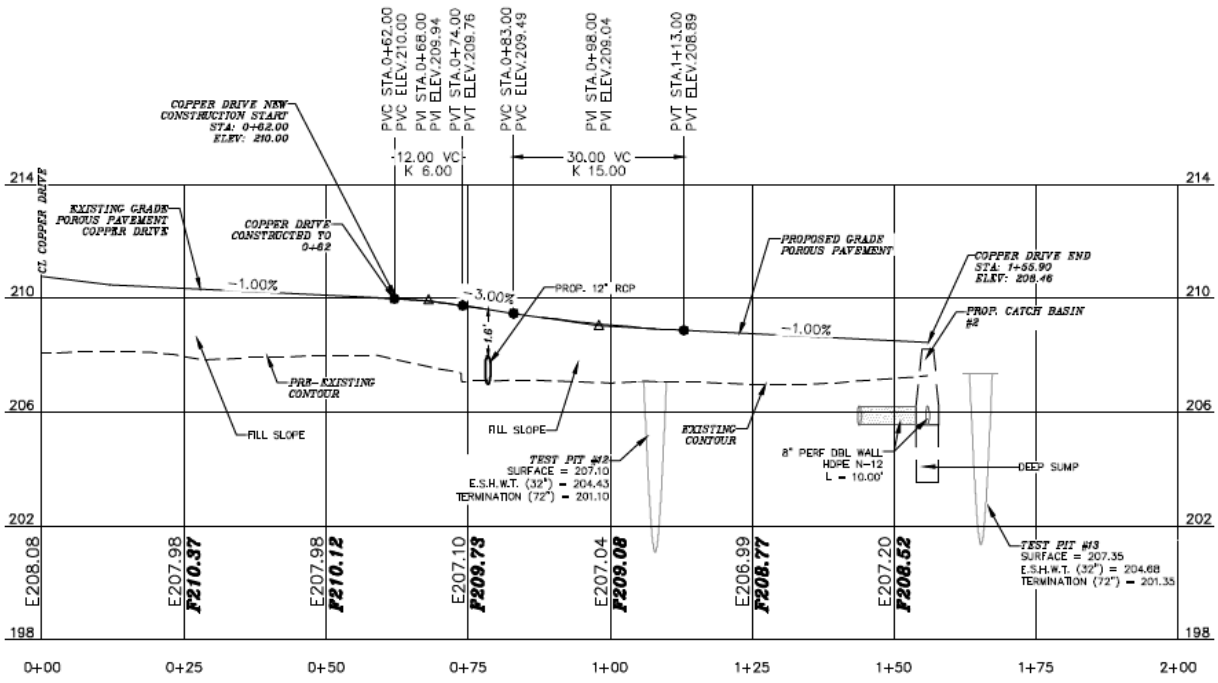
Porous Pavement w/ Infiltration #202 (Pond 202)

TP#12:	Existing Surface Elevation of TP =	207.10’
	SHWT = 32 – Inches	>204.43’
	Bedrock = > 72 – Inches	>201.10’
	Ground Water = N/A	
	Deepest Elevation of TP =	201.10’

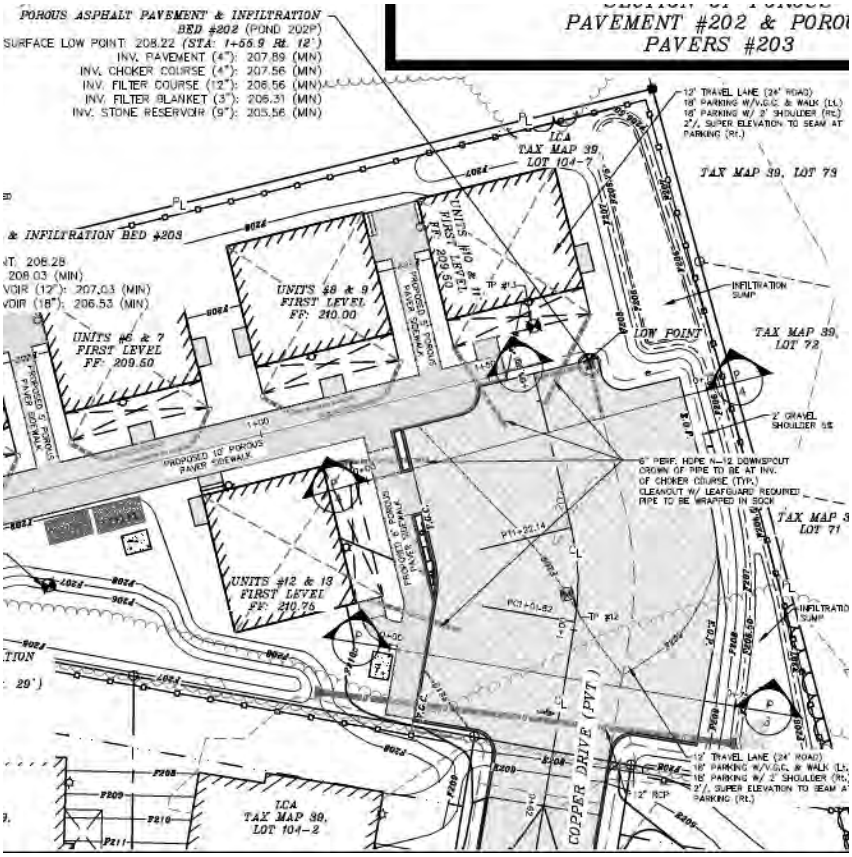
TP#13:	Existing Surface Elevation of TP =	207.35’
	SHWT = 32 – Inches	>204.68’
	Bedrock = > 72 – Inches	>201.35’
	Ground Water = N/A	
	Deepest Elevation of TP =	201.35’

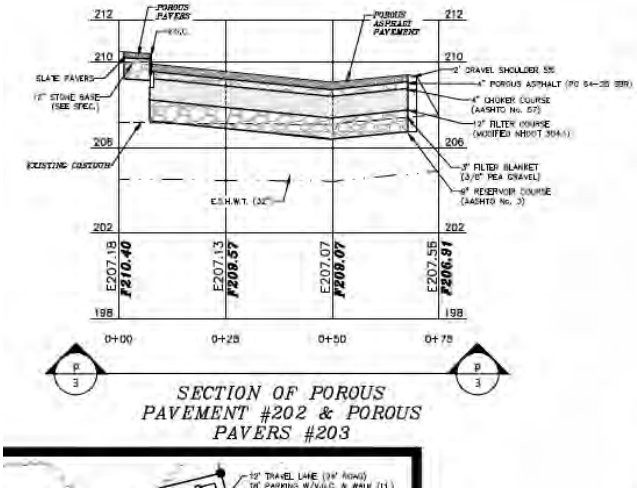
Porous Pavement #202 (Pond 202) Lowest Point: 208.22’

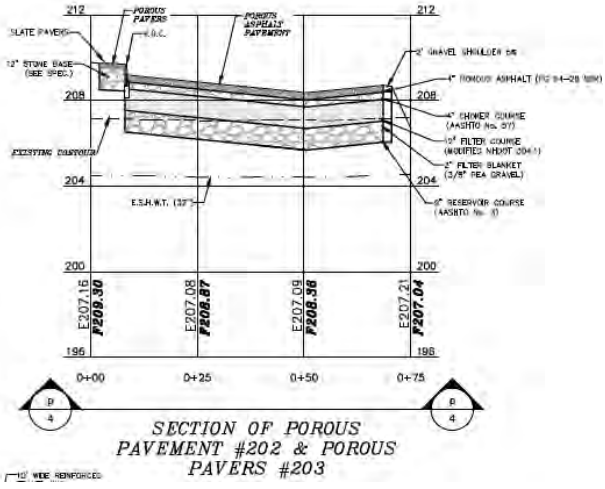
Profile Porous Pavement w/ Infiltration #202



Cross Sections Porous Pavement w/ Infiltration #202





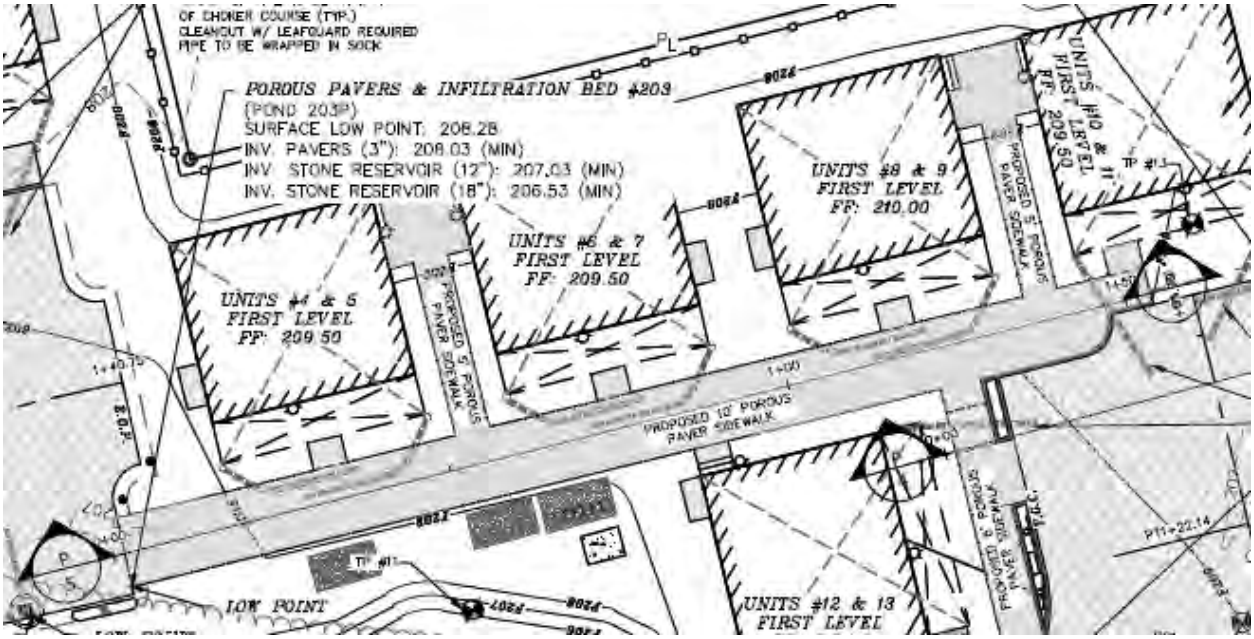


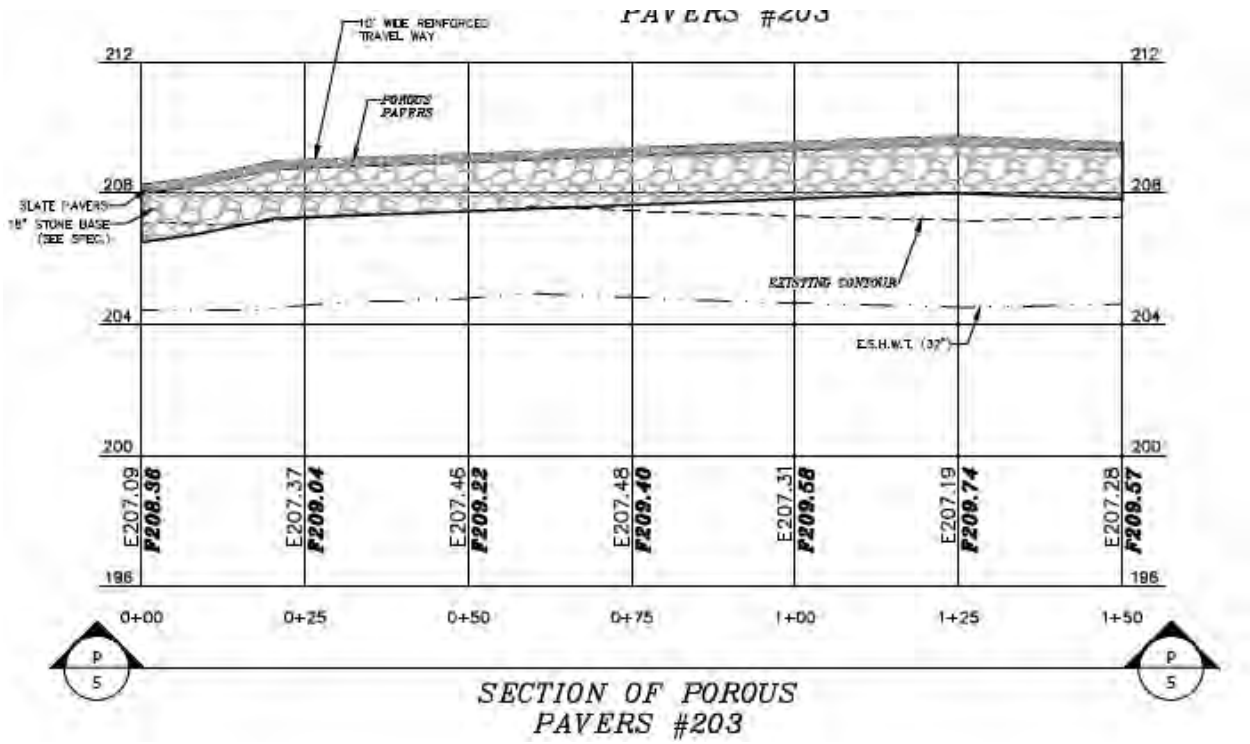
Porous Pavers w/ Infiltration #203 (Pond 203)

TP#11:	Existing Surface Elevation of TP =	207.40’
	SHWT = 32 – Inches	>204.73’
	Bedrock = > 72 – Inches	>201.40’
	Ground Water = N/A	
	Deepest Elevation of TP =	201.40’

Porous Pavers #203 (Pond 203) Lowest Point: 208.28’

Cross Sections Porous Pavers w/ Infiltration #203



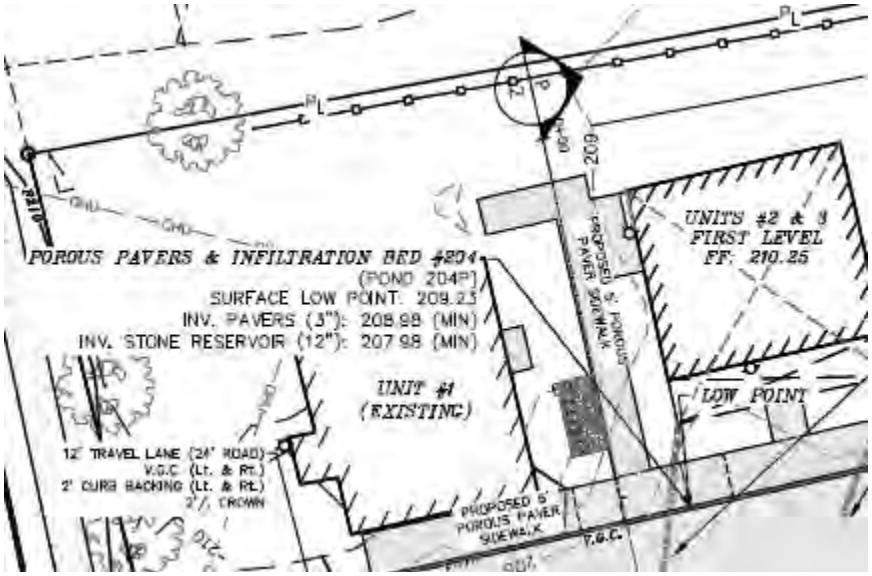


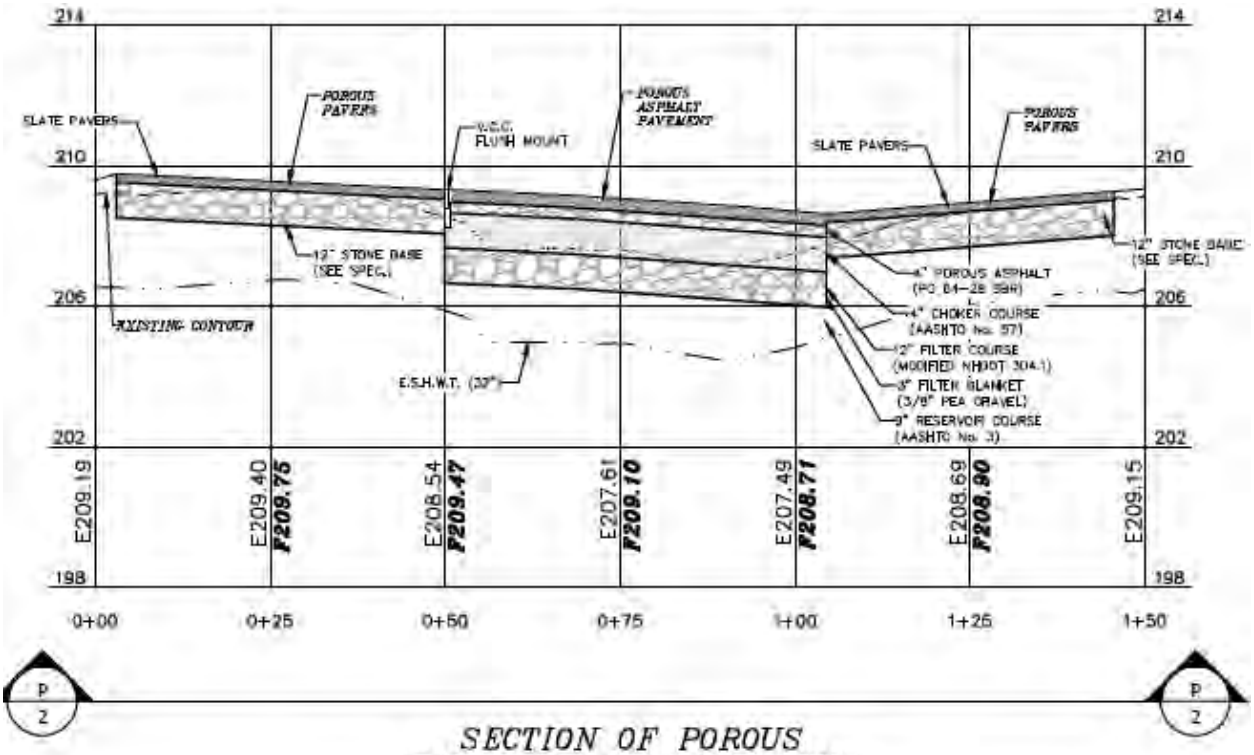
Porous Pavers w/ Infiltration #204 (Pond 204)

TP#10:	Existing Surface Elevation of TP =	207.25’
	SHWT = 32 – Inches	>204.58’
	Bedrock = > 72 – Inches	>201.25’
	Ground Water = N/A	
	Deepest Elevation of TP =	201.25’

Porous Pavers #204 (Pond 204) Lowest Point: 209.23’

Cross Sections Porous Pavers w/ Infiltration #204





SECTION OF POROUS PAVEMENT #201 & POROUS PAVERS #204

5.0 Profile descriptions

The following test pit data was collected in July, 2023 see profile below.

TEST PIT #10
0-12” 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
12-25” 10YR 5/4 YELLOWISH BROWN, GRAVELLY LOAMY SAND, GRANULAR, FRIABLE
25-32” 10YR 5/6 YELLOWISH BROWN, GRAVELLY LOAMY SAND, GRANULAR, FRIABLE
32-72” 10YR 6/2 LIGHT BROWNISH GRAY, GRAVELLY SAND W/REDOX. FEAT. PRESENT, SINGLE GRAIN, LOOSE
E.S.H.W.T. @ 32"
RESTRICTIVE LAYER @ N/A
GROUND WATER @ N/A
TERMINATED @ 72"
REFUSAL @ N/A

TEST PIT #11
0-12” 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
12-25” 10YR 5/4 YELLOWISH BROWN, GRAVELLY LOAMY SAND, GRANULAR, FRIABLE
25-32” 10YR 5/6 YELLOWISH BROWN, GRAVELLY LOAMY SAND, GRANULAR, FRIABLE
32-72” 10YR 6/2 LIGHT BROWNISH GRAY, GRAVELLY SAND W/REDOX. FEAT. PRESENT, SINGLE GRAIN, LOOSE
E.S.H.W.T. @ 32"
RESTRICTIVE LAYER @ N/A
GROUND WATER @ N/A
TERMINATED @ 72"
REFUSAL @ N/A

TEST PIT #12
0-12” 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
12-25” 10YR 5/4 YELLOWISH BROWN, GRAVELLY LOAMY SAND, GRANULAR, FRIABLE
25-32” 10YR 5/6 YELLOWISH BROWN, GRAVELLY LOAMY SAND, GRANULAR, FRIABLE
32-72” 10YR 6/2 LIGHT BROWNISH GRAY, GRAVELLY SAND W/REDOX. FEAT. PRESENT, SINGLE GRAIN, LOOSE
E.S.H.W.T. @ 32"
RESTRICTIVE LAYER @ N/A
GROUND WATER @ N/A
TERMINATED @ 72"
REFUSAL @ N/A

TEST PIT #13

0-12” 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE

12-25” 10YR 5/4 YELLOWISH BROWN, GRAVELLY LOAMY SAND, GRANULAR, FRIABLE

25-32” 10YR 5/6 YELLOWISH BROWN, GRAVELLY LOAMY SAND, GRANULAR, FRIABLE

32-72” 10YR 6/2 LIGHT BROWNISH GRAY, GRAVELLY SAND W/REDOX. FEAT. PRESENT, SINGLE GRAIN, LOOSE

E.S.H.W.T. @ 32"

RESTRICTIVE LAYER @ N/A

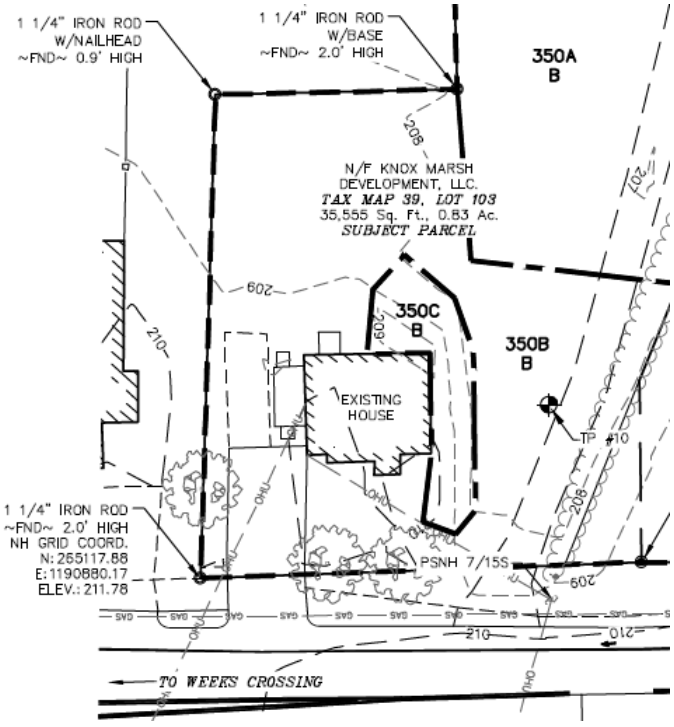
GROUND WATER @ N/A

TERMINATED @ 72"

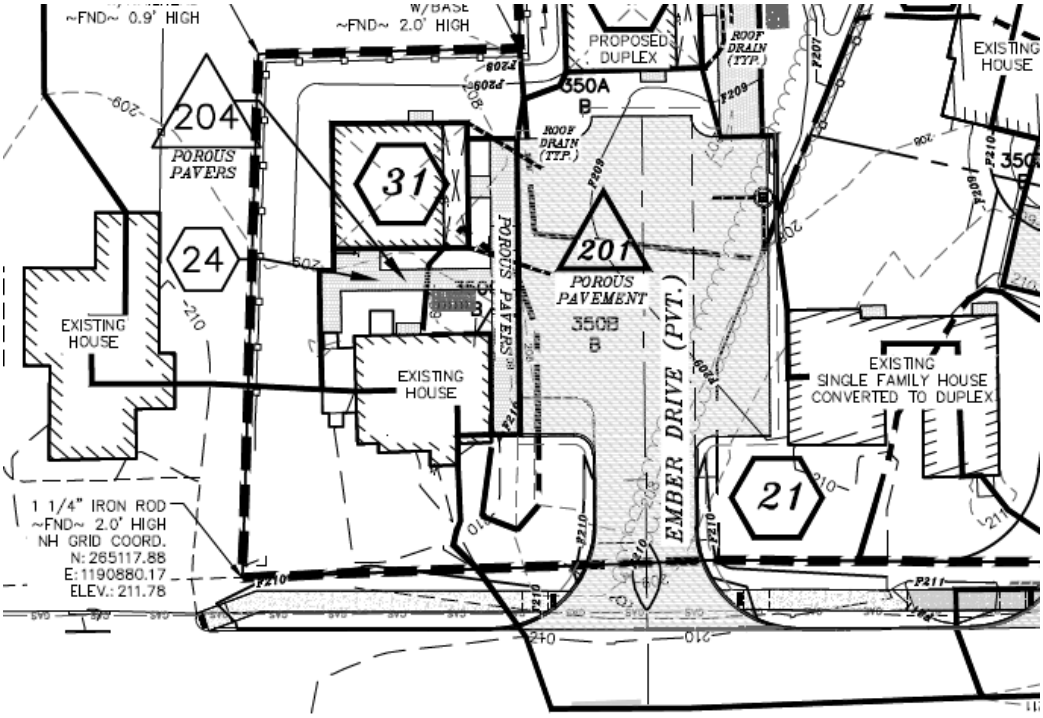
REFUSAL @ N/A

6.0 Soil plan in the area of the proposed practices

Porous Pavement w/ Infiltration #201 is located over Udipsamments (derived from Deerfield Series). (Pond #201) See Test Pits #10.

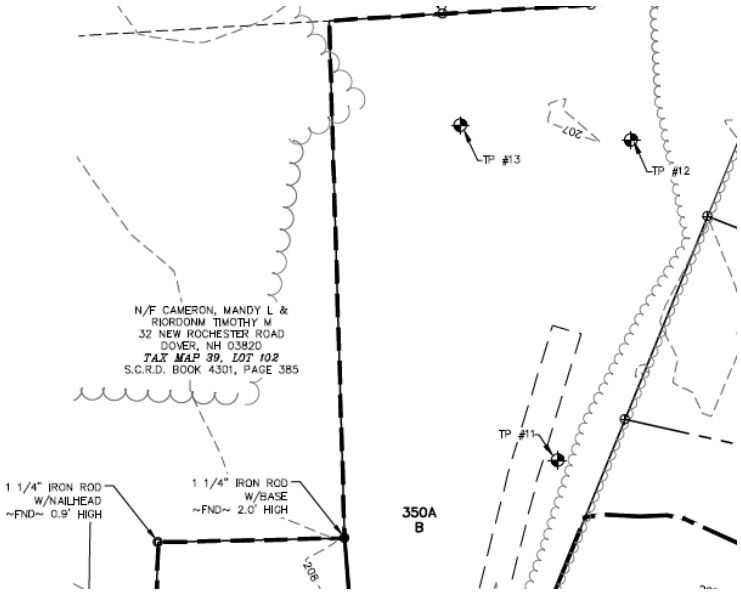


Existing

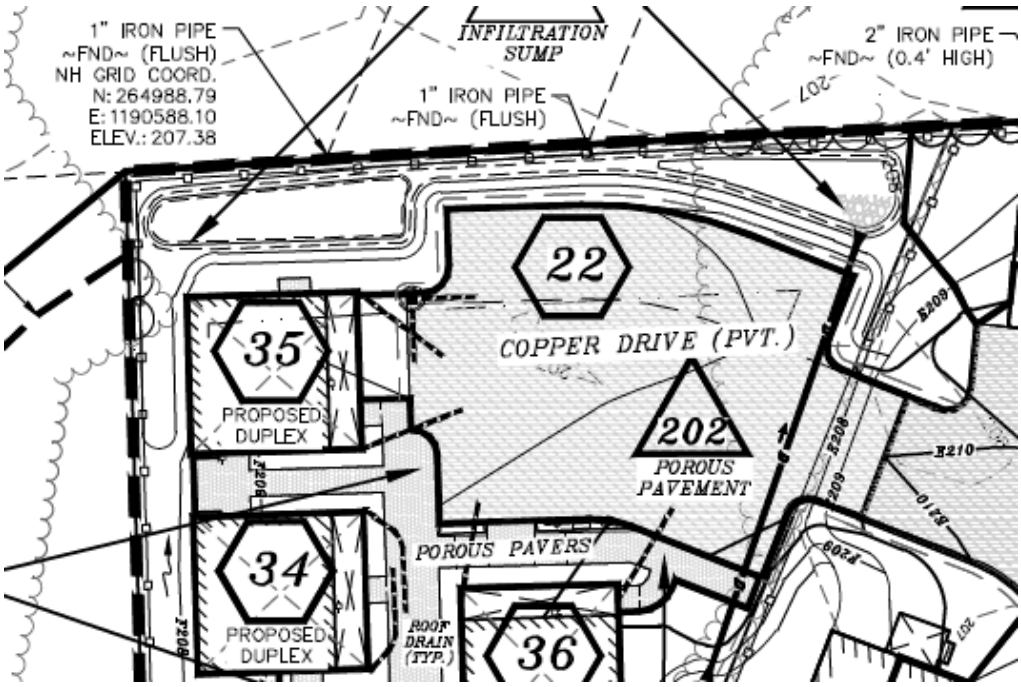


Proposed

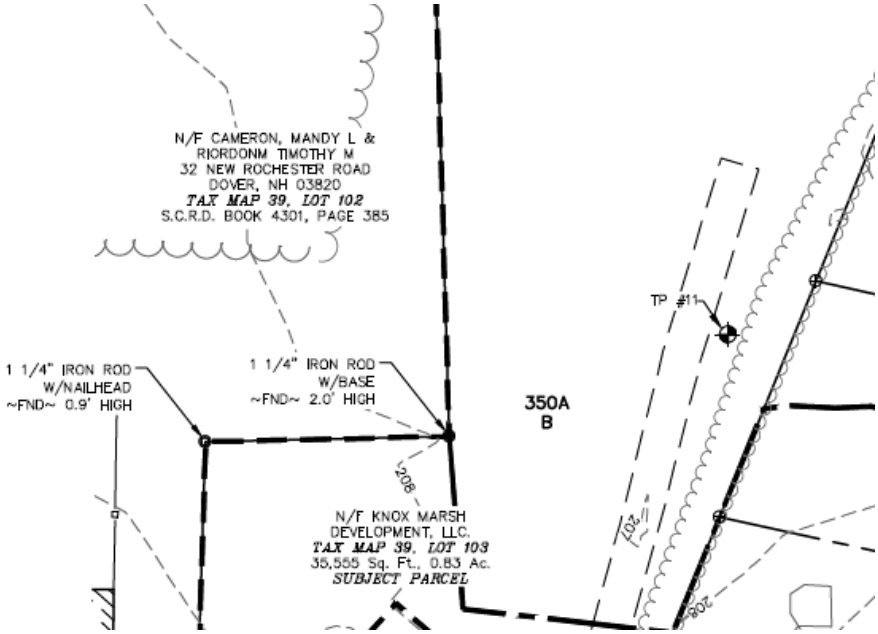
Porous Pavement w/ Infiltration #202 is located over Udipsamments (derived from Deerfield Series). (Pond #202) See Test Pits #12 & 13.



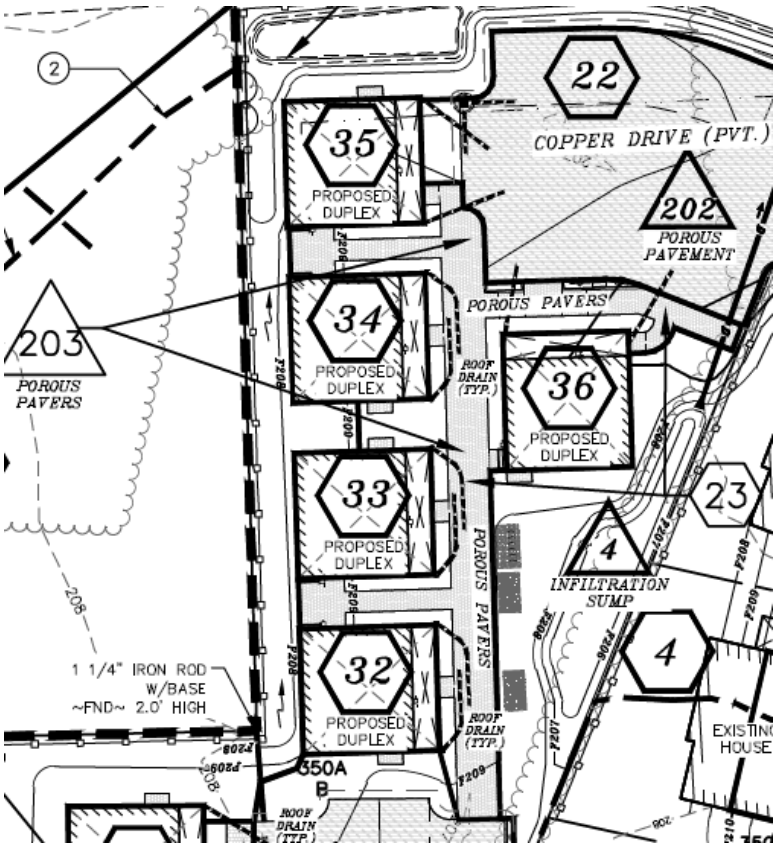
Existing



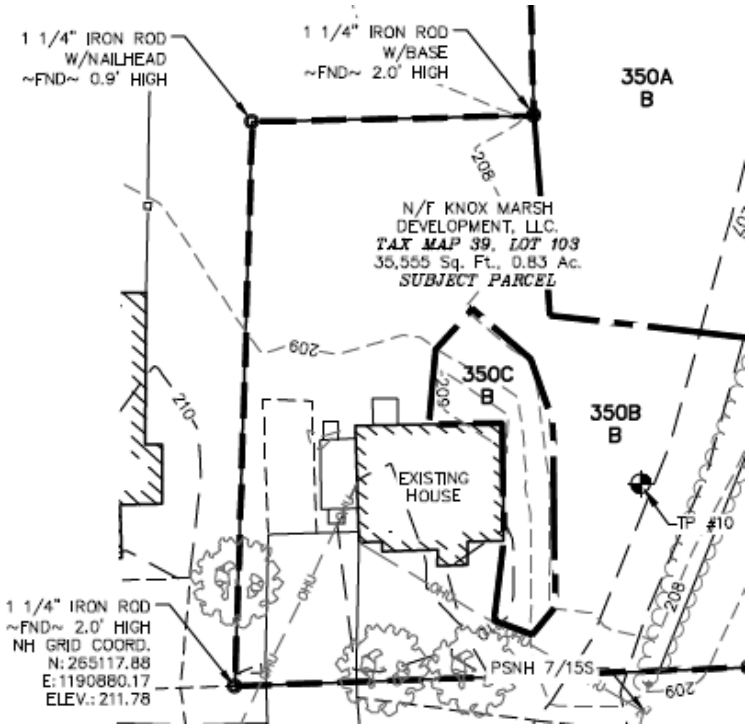
Proposed Porous Pavers w/ Infiltration #203 is located over Udipsamments (derived from Deerfield Series). (Pond #203) See Test Pit #11.



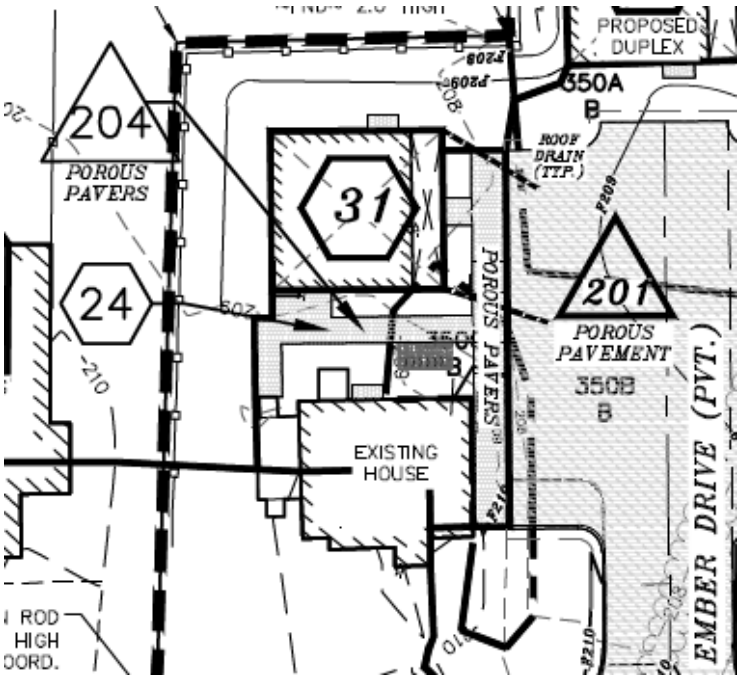
Existing



Proposed Porous Pavers w/ Infiltration #204 is located over Udipsamments (derived from Deerfield Series). (Pond #204) See Test Pit #10.



Existing



Proposed

7.0 Summary of Infiltration Rate

Porous Pavement w/ Infiltration #201, Porous Pavement w/ Infiltration #202, Porous Pavers w/ Infiltration #203, and Porous Pavers w/ Infiltration #204 are located within Udipsaments, derived from the Deerfield Series, considered to be a HSG B soil where the most restrictive published Ksat is also 6.0 inches per hour. The rate of 3.0 inches per hour is used for the design.

Amoozemeter testing was not conducted on site and the alternate method of using the USDA / NRCS published values was employed. Reference is made to KSat Values for New Hampshire Soils (Including Hydrologic and DES Soil Lot Sizing Groups, sponsored by the Society of Soil Scientists of Norther New England, Publication #5 dated September 2009.

Respectfully submitted:

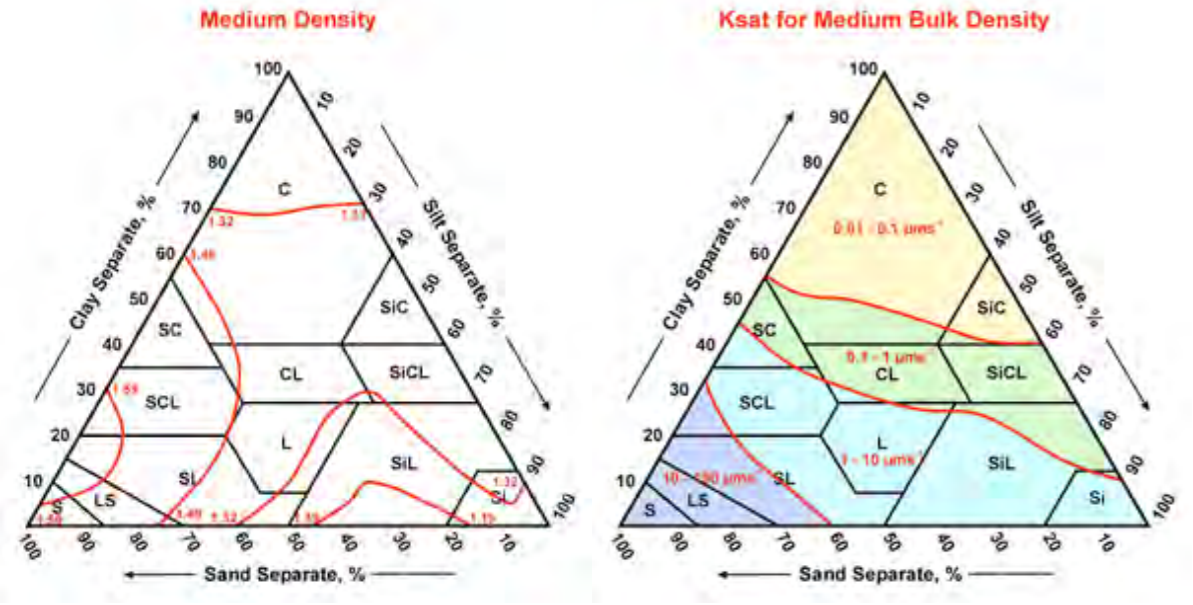
BERRY SURVEYING & ENGINEERING

Kevin R. Poulin, PE
Project Engineer

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

Attached: KSat NH Document

K_{sat} VALUES
FOR
NEW HAMPSHIRE SOILS
(Including Hydrologic and DES Soil Lot Sizing Groups)



From: **Guide for Estimating Ksat from Soil Properties** (**Exhibit 618-9**). (http://soils.usda.gov/technical/handbook/contents/part618ex.html)

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

K_{sat} VALUES FOR NEW HAMPSHIRE SOILS

ABOUT THE SOCIETY OF SOIL SCIENTISTS OF NORTHERN NEW ENGLAND

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

INTRODUCTION

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

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

Table A-Sorted by Numerical Legend
Table B-Sorted by Soil Series Name
Table C-Sorted by NHDES Soil Group for Establishing Lot Size

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

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

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

SATURATED HYDRAULIC CONDUCTIVITY (K_{SAT})

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

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

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

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

References:

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

Soil Data Mart. *http://soildatamart.nrcs.usda.gov/.*

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

HYDROLOGIC SOIL GROUPS

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

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

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

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

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

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

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

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

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

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

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

References:

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

Soil Data Mart. *http://soildatamart.nrcs.usda.gov/*.

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

TABLE A

NUMERICAL LEGEND

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

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

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

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

no longer recognized

organic materials

TABLE B

SOIL SERIES

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

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

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

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

no longer recognized
organic materials

TABLE C

NHDES SOIL GROUPINGS

SSSNNE
Special Publilcation No. 5
September, 2009

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

Soil Series	number	NHDES Soil Group	Ksat low - B in/hr	Ksat high - B in/hr	Ksat low - C in/hr	Ksat high - C in/hr	Hyd. Grp.	Land Form	Temp.	Soil Textures	Spodosol ?	Other
Buckland	237	3	0.6	2.0	0.06	0.2	C	Firm, platy, loamy till	frigid	loamy	no	loam in Cd
Buxton	232	3	0.1	0.6	0.00	0.2	C	Silt and Clay Deposits	frigid	fine	no	silty clay
Canterbury	166	3	0.6	2.0	0.06	0.6	C	Firm, platy, loamy till	frigid	loamy	no	loam in Cd
Chatfield Var.	289	3	0.6	6.0	0.60	6.0	B	Loose till, bedrock	mesic	loamy	no	mwd to swpd
Chesuncook	126	3	0.6	2.0	0.02	0.2	C	Firm, platy, silty till, schist & phyllite	frigid	loamy	yes	channery silt loam in Cd
Colonel	927	3	0.6	2.0	0.06	0.6	C	Firm, platy, loamy till	frigid	loamy	yes	loam in Cd
Croghan	613	3	20.0	100.0	20.00	100.0	B	Outwash and Stream Terraces	frigid	sandy	yes	single grain in C
Dartmouth	132	3	0.6	2.0	0.06	0.6	B	Terraces and glacial lake plains	mesic	silty	no	thin strata silty clay loam
Deerfield	313	3	6.0	20.0	20.00	100.0	B	Outwash and Stream Terraces	mesic	sandy	no	single grain in C
Dixfield	378	3	0.6	2.0	0.06	0.6	C	Firm, platy, loamy till	frigid	loamy	yes	fine sandy loam in Cd
Dixmont	578	3	0.6	2.0	0.60	2.0	C	Friable till, silty, schist & phyllite	frigid	loamy	yes	silt loam, platy in C
Duane	413	3	6.0	20.0	6.00	20.0	B	Outwash and Stream Terraces	frigid	sandy-skeletal	yes	cemented (ortstein)
Eldridge	38	3	6.0	20.0	0.06	0.6	C	Sandy/loamy over silt/clay	mesic	sandy over loamy	no	
Elmridge	238	3	2.0	6.0	0.00	0.2	C	Sandy/loamy over silt/clay	mesic	loamy over clayey	no	
Elmwood	338	3	2.0	6.0	0.00	0.2	C	Sandy/loamy over silt/clay	frigid	loamy over clayey	no	
Finch	116	3					C	Outwash and Stream Terraces	frigid	sandy	yes	cemented (ortstein)
Gilmanton	478	3	0.6	2.0	0.06	0.6	C	Firm, platy, loamy till	frigid	loamy	no	fine sandy loam in Cd
Henniker	46	3	0.6	2.0	0.06	0.6	C	Firm, platy, sandy till	frigid	loamy	no	loamy sand in Cd
Hitchcock	130	3	0.6	2.0	0.06	0.6	B	Terraces and glacial lake plains	mesic	silty	no	silt loam to silt in C
Howland	566	3	0.6	2.0	0.06	0.2	C	Firm, platy, silty till, schist & phyllite	frigid	loamy	yes	silt loam, platy in Cd
Lanesboro	228	3	0.6	2.0	0.06	0.2	C	Firm, platy, silty till, schist & phyllite	frigid	loamy	no	channery silt loam in Cd
Lovewell	307	3	0.6	2.0	0.60	2.0	B	Flood Plain (Bottom Land)	frigid	silty	no	very fine sandy loam
Machias	520	3	2.0	6.0	6.00	20.0	B	Outwash and Stream Terraces	frigid	sandy or sandy-skeletal	yes	strata sand/gravel in C
Madawaska	28	3	0.6	2.0	6.00	20.0	B	Outwash and Stream Terraces	frigid	loamy over sandy	yes	sandy or sandy-skeletal
Madawaska, aquer	48	3	0.6	2.0	6.00	20.0	B	Outwash and Stream Terraces	frigid	loamy over sandy	yes	sandy or sandy-skeletal
Marlow	76	3	0.6	2.0	0.06	0.6	C	Firm, platy, loamy till	frigid	loamy	yes	fine sandy loam in Cd
Melrose	37	3	2.0	6.0	0.00	0.2	C	Sandy/loamy over silt/clay	frigid	loamy over clayey	no	silty clay loam in C
Metacomet	458	3	0.6	2.0	0.06	0.6	C	Firm, platy, sandy till	frigid	loamy	no	loamy sand in Cd
Metallak	404	3	6.0	100.0	6.00	100.0	B	Flood Plain (Bottom Land)	frigid	loamy over sandy	no	sandy or sandy-skeletal
Millis	39	3					C	Firm, platy, sandy till	frigid	loamy	yes	loamy sand in Cd
Montauk	44	3	0.6	6.0	0.06	0.6	C	Firm, platy, sandy till	mesic	loamy	no	loamy sand in Cd
Mundal	610	3	0.6	2.0	0.06	0.6	C	Firm, platy, loamy till	frigid	loamy	yes	gravelly sandy loam in Cd
Newfields	444	3	0.6	2.0	0.60	2.0	B	Loose till, sandy textures	mesic	loamy over sandy	no	sandy or sandy-skeletal
Nicholville	632	3	0.6	2.0	0.60	2.0	C	Terraces and glacial lake plains	frigid	silty	yes	very fine sandy loam
Ninigret	513	3	0.6	6.0	6.00	20.0	B	Outwash and Stream Terraces	mesic	loamy over sandy	no	sandy or sandy-skeletal
Paxton	66	3	0.6	2.0	0.00	0.2	C	Firm, platy, loamy till	mesic	loamy	no	
Peru	78	3	0.6	2.0	0.06	0.6	C	Firm, platy, loamy till	frigid	loamy	yes	
Pittstown	334	3	0.6	2.0	0.06	0.2	C	Firm, platy, silty till, schist & phyllite	mesic	loamy	no	channery silt loam in Cd
Plaisted	563	3	0.6	2.0	0.06	0.6	C	Firm, platy, silty till, schist & phyllite	frigid	loamy	yes	channery silt loam in Cd
Podunk	104	3	0.6	6.0	6.00	20.0	B	Flood Plain (Bottom Land)	frigid	loamy	no	loamy to coarse sand in C
Poocham	230	3	0.6	2.0	0.20	2.0	B	Terraces and glacial lake plains	mesic	silty	no	silt loam in C
Pootatuck	4	3	0.6	6.0	6.00	20.0	B	Flood Plain (Bottom Land)	mesic	loamy	no	single grain in C
Scio	531	3	0.6	2.0	0.60	2.0	B	Terraces and glacial lake plains	mesic	silty	no	gravelly sand in 2C
Scituate	448	3	0.6	2.0	0.06	0.2	C	Firm, platy, sandy till	mesic	loamy	no	loamy sand in Cd
Sheepscot	14	3	6.0	20.0	6.00	20.0	B	Outwash and Stream Terraces	frigid	sandy-skeletal	yes	gravelly coarse sand
Sisk	667	3	0.6	2.0	0.00	0.6	C	Firm, platy, loamy till	cryic	loamy	yes	sandy loam in Cd
Skerry	558	3	0.6	2.0	0.06	0.6	C	Firm, platy, sandy till	frigid	loamy	yes	loamy sand in Cd
Sudbury	118	3	2.0	6.0	2.00	20.0	B	Outwash and Stream Terraces	mesic	sandy	no	loam over gravelly sand
Suffield	536	3	0.6	2.0	0.00	0.2	C	Sandy/loamy over silt/clay	mesic	silty over clayey	no	deep to clay C
Sunapee	168	3	0.6	2.0	0.60	6.0	B	Loose till, loamy textures	frigid	loamy	yes	
Sunapee var	269	3	0.6	2.0	0.60	6.0	B	Loose till, loamy textures	frigid	loamy	yes	frigid dystrudept
Surplus	669	3	0.6	2.0	0.00	0.6	C	Firm, platy, loamy till	cryic	loamy	yes	mwd, sandy loam in Cd
Sutton	68	3	0.6	6.0	0.60	6.0	B	Loose till, loamy textures	mesic	loamy	no	
Telos	123	3	0.6	2.0	0.02	0.2	C	Firm, platy, silty till, schist & phyllite	frigid	loamy	yes	channery silt loam in Cd

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

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

no longer recognized

organic materials

denotes break betweenSoil Group

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

ORDER FORM

Ksat VALUES
FOR
NEW HAMPSHIRE SOILS
(Including Hydrologic and Soil Lot Sizing Groups)

SSSNNE Publication #5

DATE_____

Mail Copy of Publication #5 to:

Name_____
Address_____
City_____State_____Zip_____

Quantity of Publications_____ @ $8.00 = Total Order: $_____

Amount Enclosed: $_____

Enclose check or money order for the full amount payable to:

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

Please allow 4 weeks for delivery.

Welcome to New Hampshire's Watershed Report Cards built from the 2020/2022, 305(b)/303(d)

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

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

How are the Surface Water Quality Assessment determinations made?

All readily available data with reliable Quality Assurance/Quality Control is used in the biennial surface water quality assessments. For a full understanding of how the Surface Water Quality Standards (Env-Wq 1700) are translated into surface water quality assessments we urge the reader to review the 2020/2022 Consolidated Assessment and Listing Methodology (CALM).

Where can I find more advanced mapping resources?

GIS files are available by assessment cycle at the NHDES FTP site.

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

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

How are assessments coded in the report card?

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

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

* TMDL stands for Total Maximum Daily Load studies

Watershed 305(b) Assessment Summary Report:

Assessment Cycle: 2020/2022

HUC 12: 010600030405

HUC 12 Name: Middle Salmon Falls River

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

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

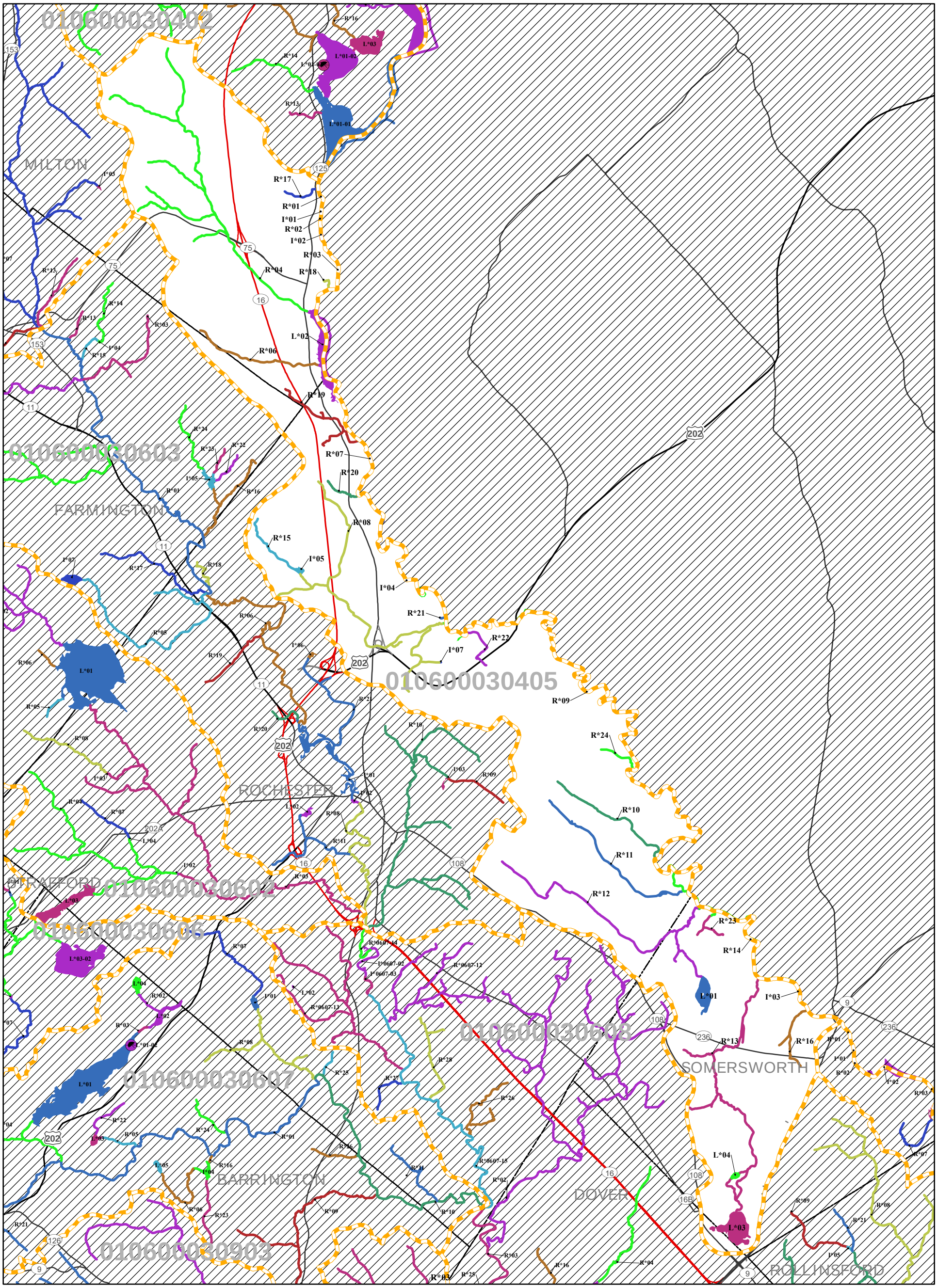





Assessment Unit ID	Map Label	Assessment Unit Name	Aquatic Life	Fish Consump.	Swimming	Boating
NHIMP600030405-01	I*01	Salmon Falls River - Milton Leather Board Dam		4A-M	3-ND	3-ND
NHIMP600030405-02	I*02	Salmon Falls River - Salmon Falls River Ii	3-PAS	4A-M	3-PAS	3-ND
NHIMP600030405-03	I*03	Salmon Falls River - Great Falls Upper Dam	5-M	4A-M	3-ND	3-ND
NHIMP600030405-04	I*04	Salmon Falls River - Baxter Mill Dam Pond	5-M	4A-M	4A-M	4A-M
NHIMP600030405-05	I*05	Unnamed Brook - Pulitzer Dam	3-ND	4A-M	3-ND	3-ND
NHIMP600030405-07	I*07	Unnamed Brook - Woodland Green Detention Pond	3-ND	4A-M	3-ND	3-ND
NHLAK600030405-01	L*01	Lily Pond	3-ND	4A-M	3-ND	3-ND
NHLAK600030405-02	L*02	Spaulding Pond	4C-P	4A-M	3-ND	3-ND
NHLAK600030405-03	L*03	Willand Pond	5-P	4A-M	4A-P	3-ND
NHLAK600030405-04	L*04	Unnamed Pond	3-ND	4A-M	3-ND	3-ND
NHRIV600030405-01	R*01	Salmon Falls River	3-ND	4A-M	3-ND	3-ND
NHRIV600030405-02	R*02	Salmon Falls River	3-ND	4A-M	3-ND	3-ND

NHRIV600030405-03	R*03	Salmon Falls River	3-PAS	4A-M	3-PAS	3-ND
NHRIV600030405-04	R*04	Lyman Brook	3-ND	4A-M	3-ND	3-ND
NHRIV600030405-06	R*06	Unnamed Brook - To Salmon Falls River	3-ND	4A-M	3-ND	3-ND
NHRIV600030405-07	R*07	Salmon Falls River	3-ND	4A-M	3-ND	3-ND
NHRIV600030405-08	R*08	Heath Brook	3-ND	4A-M	3-ND	3-ND
NHRIV600030405-09	R*09	Salmon Falls River	5-P	4A-M	3-PAS	3-ND
NHRIV600030405-10	R*10	Unnamed Brook - To Salmon Falls River	3-ND	4A-M	3-ND	3-ND
NHRIV600030405-11	R*11	Unnamed Brook - To Salmon Falls River	3-ND	4A-M	3-ND	3-ND
NHRIV600030405-12	R*12	Unnamed Brook - From Lily Pond To Salmon Falls River	3-ND	4A-M	3-ND	3-ND
NHRIV600030405-13	R*13	Tates Brook	3-ND	4A-M	3-ND	3-ND
NHRIV600030405-14	R*14	Salmon Falls River - Unnamed Brook	5-M	4A-M	4A-M	3-ND
NHRIV600030405-15	R*15	Heath Brook	3-ND	4A-M	3-ND	3-ND
NHRIV600030405-16	R*16	Unnamed Brook	3-ND	4A-M	3-ND	3-ND
NHRIV600030405-17	R*17	Unnamed Brook	3-ND	4A-M	3-ND	3-ND
NHRIV600030405-18	R*18	Unnamed Brook	3-ND	4A-M	3-ND	3-ND
NHRIV600030405-19	R*19	Unnamed Brook	3-ND	4A-M	3-ND	3-ND
NHRIV600030405-20	R*20	Unnamed Brook	3-ND	4A-M	3-ND	3-ND
NHRIV600030405-21	R*21	Unnamed Brook	3-ND	4A-M	3-ND	3-ND
NHRIV600030405-22	R*22	Unnamed Brook	3-ND	4A-M	3-ND	3-ND
NHRIV600030405-23	R*23	Unnamed Brook	3-ND	4A-M	3-ND	3-ND
NHRIV600030405-24	R*24	Unnamed Brook	3-ND	4A-M	3-ND	3-ND

AUIDs For HUC12: 010600030405 - Middle Salmon Falls River



HUC12 Boundaries
Town Boundaries
Major Roads
Interstate Highway
US Highway
State Highway

Assessment Unit Coloring AUs Ending with:

0 =
1 =
2 =
3 =
4 =
5 =
6 =
7 =
8 =
9 =

N
W E
S

Abbrv. Label	HUC 12
L*03	010700060201

AUID = NHLAK700060201-03

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

0 0.7 1.4 2.1 2.8 Miles

Scale:1:71,650

S:\WD-Watershed\WQ_Planning\305b_303d\2020\Report_Cards\HUC12_maps

Assessment Unit ID: NHLAK600030405-03
Assessment Unit Name: Willand Pond
Town(s) Primary Town is Listed First: Dover, Somersworth

Size: 65.6710 ACRES
Assessment Unit Category: 5-P
Beach: N

2020/2022, 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-P	CHLORIDE	N	2017	N/A	3-PAS	
		CHLOROPHYLL-A		2017	NLV	2-M	LOW
		DISSOLVED OXYGEN SATURATION		2017	2017	5-M	LOW
		Non-Native Aquatic Plants	N			4C-M	
		OXYGEN, DISSOLVED		2017	2017	5-P	LOW
		Other flow regime alterations	N			4C-P	
		PH		2017	2017	5-M	LOW
		PHOSPHORUS (TOTAL)	N	2017	NLV	2-M	LOW
		TURBIDITY	N	2017	2015	3-PAS	
Fish Consumption	4A-M	MERCURY - FISH CONSUMPTION ADVISORY	N			4A-M	
Potential Drinking Water Supply	2-G	ESCHERICHIA COLI	N	2010	2010	3-PNS	
Primary Contact Recreation	4A-P	CHLOROPHYLL-A	N	2017	2011	2-M	
		Cyanobacteria hepatotoxic microcystins	N	2019	2019	3-PNS	
		ESCHERICHIA COLI	N	2010	2009	4A-P	
Secondary Contact Recreation	3-ND	ESCHERICHIA COLI	N	2010	2009	3-ND	
Wildlife	3-ND						

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

2020/2022	NHLAK600020803-06	PURITY LAKE	EATON, MADISON	95.510	ACRES	Aquatic Life Integrity	pH	5-M					Non-ORW
2020/2022	NHLAK600020803-08	SHAW POND	FREEDOM	12.577	ACRES	Aquatic Life Integrity	pH	4A-M	9/20/2007	158 ACID PONDS	33878		Non-ORW
2020/2022	NHLAK600020803-08-02	SHAW POND - CAMP WAKUTA BEACH	FREEDOM	1.380	ACRES	Aquatic Life Integrity	pH	3-ND	11/21/2007	114 ACID PONDS	33879		Non-ORW
2020/2022	NHLAK600020803-09	TROUT POND	FREEDOM	20.691	ACRES	Aquatic Life Integrity	pH	5-P					Non-ORW
2020/2022	NHLAK600020804-01-01	BERRY BAY	FREEDOM, EFFINGHAM	152.240	ACRES	Aquatic Life Integrity	pH	4A-M	9/20/2007	158 ACID PONDS	33878		Non-ORW
2020/2022	NHLAK600020804-01-02	LEAVITT BAY	OSSIPEE, EFFINGHAM, FREEDOM	190.095	ACRES	Aquatic Life Integrity	Non-Native Aquatic Plants	4C-M					Non-ORW
2020/2022	NHLAK600020804-01-02	LEAVITT BAY	OSSIPEE, EFFINGHAM, FREEDOM	190.095	ACRES	Aquatic Life Integrity	pH	4A-M	9/20/2007	158 ACID PONDS	33878		Non-ORW
2020/2022	NHLAK600020804-01-03	BROAD BAY	FREEDOM, OSSIPEE	430.048	ACRES	Aquatic Life Integrity	Non-Native Aquatic Plants	4C-M					Non-ORW
2020/2022	NHLAK600020804-01-03	BROAD BAY	FREEDOM, OSSIPEE	430.048	ACRES	Aquatic Life Integrity	pH	4A-M	9/20/2007	158 ACID PONDS	33878		Non-ORW
2020/2022	NHLAK600020804-01-04	LEAVITT BAY - CAMP MARIST BEACH	EFFINGHAM	1.380	ACRES	Aquatic Life Integrity	pH	3-ND	11/21/2007	114 ACID PONDS	33879		Non-ORW
2020/2022	NHLAK600020804-01-05	BROAD BAY - CAMP HUCKINS BEACH	FREEDOM	1.380	ACRES	Aquatic Life Integrity	pH	3-ND	11/21/2007	114 ACID PONDS	33879		Non-ORW
2020/2022	NHLAK600020804-01-06	BROAD BAY - CAMP ROBIN HOOD BEACH	FREEDOM	1.380	ACRES	Aquatic Life Integrity	pH	3-ND	11/21/2007	114 ACID PONDS	33879		Non-ORW
2020/2022	NHLAK600020804-03	DUCK POND	FREEDOM	34.032	ACRES	Aquatic Life Integrity	pH	5-M					Non-ORW
2020/2022	NHLAK600020902-01	PROVINCE LAKE	EFFINGHAM, WAKEFIELD	965.649	ACRES	Aquatic Life Integrity	Chlorophyll-a	5-M					Non-ORW
2020/2022	NHLAK600020902-01	PROVINCE LAKE	EFFINGHAM, WAKEFIELD	965.649	ACRES	Aquatic Life Integrity	pH	4A-M	9/20/2007	158 ACID PONDS	33878		Non-ORW
2020/2022	NHLAK600020902-01	PROVINCE LAKE	EFFINGHAM, WAKEFIELD	965.649	ACRES	Aquatic Life Integrity	Phosphorus (Total)	5-M					Non-ORW
2020/2022	NHLAK600020902-01	PROVINCE LAKE	EFFINGHAM, WAKEFIELD	965.649	ACRES	Primary Contact Recreation	Cyanobacteria hepatotoxic microcystins	5-M					Non-ORW
2020/2022	NHLAK600021001-01	BALCH POND	WAKEFIELD	295.040	ACRES	Aquatic Life Integrity	Non-Native Aquatic Plants	4C-M					Non-ORW
2020/2022	NHLAK600021001-01	BALCH POND	WAKEFIELD	295.040	ACRES	Aquatic Life Integrity	pH	4A-M	9/20/2007	158 ACID PONDS	33878		Non-ORW
2020/2022	NHLAK600021001-03	BELLEAU LAKE	WAKEFIELD	187.174	ACRES	Aquatic Life Integrity	Non-Native Aquatic Plants	4C-M					Non-ORW
2020/2022	NHLAK600030401-01-01	LOVELL LAKE	WAKEFIELD	552.403	ACRES	Aquatic Life Integrity	pH	5-M					Non-ORW
2020/2022	NHLAK600030401-01-02	LOVELL POND - TOWN BEACH	WAKEFIELD	0.436	ACRES	Primary Contact Recreation	Escherichia coli	2-M	9/21/2010	NEW HAMPSHIRE STATEWIDE BACTERIA	39276		Non-ORW
2020/2022	NHLAK600030401-02	MOUNTAIN LAKE	BROOKFIELD	11.867	ACRES	Aquatic Life Integrity	Non-Native Aquatic Plants	4C-P					Non-ORW
2020/2022	NHLAK600030401-03	COOKS POND	BROOKFIELD	245.934	ACRES	Aquatic Life Integrity	pH	5-M					Non-ORW
2020/2022	NHLAK600030403-02	HORN POND	WAKEFIELD	118.234	ACRES	Aquatic Life Integrity	pH	4A-M	9/20/2007	158 ACID PONDS	33878		Non-ORW
2020/2022	NHLAK600030403-03	LAKE IVANHOE	WAKEFIELD	68.239	ACRES	Aquatic Life Integrity	pH	4A-M	9/24/2004	IVANHOE LAKE	11492		Non-ORW
2020/2022	NHLAK600030404-01-01	MILTON POND	MILTON	163.895	ACRES	Aquatic Life Integrity	pH	5-M					Non-ORW
2020/2022	NHLAK600030404-01-02	TOWNHOUSE POND	MILTON	125.646	ACRES	Aquatic Life Integrity	pH	5-M					Non-ORW
2020/2022	NHLAK600030404-01-03	MILTON THREE PONDS - MILTON POND REC AREA BEACH	MILTON	1.382	ACRES	Primary Contact Recreation	Escherichia coli	4A-P	9/21/2010	NEW HAMPSHIRE STATEWIDE BACTERIA	39275		Non-ORW
2020/2022	NHLAK600030404-02	NORTHEAST POND	MILTON	285.041	ACRES	Aquatic Life Integrity	pH	5-M					Non-ORW
2020/2022	NHLAK600030405-02	SPAULDING POND	MILTON, ROCHESTER	49.724	ACRES	Aquatic Life Integrity	Non-Native Aquatic Plants	4C-P					Non-ORW
2020/2022	NHLAK600030405-03	WILLAND POND	SOMERSWORTH, DOVER	65.671	ACRES	Aquatic Life Integrity	Dissolved oxygen saturation	5-M					Non-ORW
2020/2022	NHLAK600030405-03	WILLAND POND	SOMERSWORTH, DOVER	65.671	ACRES	Aquatic Life Integrity	Non-Native Aquatic Plants	4C-M					Non-ORW
2020/2022	NHLAK600030405-03	WILLAND POND	SOMERSWORTH, DOVER	65.671	ACRES	Aquatic Life Integrity	Other flow regime alterations	4C-P					Non-ORW
2020/2022	NHLAK600030405-03	WILLAND POND	SOMERSWORTH, DOVER	65.671	ACRES	Aquatic Life Integrity	Oxygen, Dissolved	5-P					Non-ORW
2020/2022	NHLAK600030405-03	WILLAND POND	SOMERSWORTH, DOVER	65.671	ACRES	Aquatic Life Integrity	pH	5-M					Non-ORW
2020/2022	NHLAK600030405-03	WILLAND POND	SOMERSWORTH, DOVER	65.671	ACRES	Primary Contact Recreation	Escherichia coli	4A-P	8/29/2011	58 NH BACTERIA IMPAIRED WATERS	40665		Non-ORW
2020/2022	NHLAK600030601-01	CHALK POND	NEW DURHAM	52.787	ACRES								ORW
2020/2022	NHLAK600030601-04	MARCHS POND	NEW DURHAM	73.998	ACRES								ORW
2020/2022	NHLAK600030601-04-02	MARCHS POND - BIRCH HILL SUMMER CAMP BEACH	NEW DURHAM	1.380	ACRES								ORW
2020/2022	NHLAK600030601-05-01	SUNRISE LAKE	MIDDLETON	246.308	ACRES	Aquatic Life Integrity	Chlorophyll-a	5-M					Non-ORW
2020/2022	NHLAK600030601-05-01	SUNRISE LAKE	MIDDLETON	246.308	ACRES	Aquatic Life Integrity	Non-Native Aquatic Plants	4C-M					Non-ORW
2020/2022	NHLAK600030601-05-01	SUNRISE LAKE	MIDDLETON	246.308	ACRES	Aquatic Life Integrity	pH	4A-M	9/20/2007	158 ACID PONDS	33878		Non-ORW
2020/2022	NHLAK600030601-05-01	SUNRISE LAKE	MIDDLETON	246.308	ACRES	Aquatic Life Integrity	Phosphorus (Total)	5-M					Non-ORW
2020/2022	NHLAK600030601-05-01	SUNRISE LAKE	MIDDLETON	246.308	ACRES	Primary Contact Recreation	Cyanobacteria hepatotoxic microcystins	5-M					Non-ORW
2020/2022	NHLAK600030601-05-02	SUNRISE LAKE - TOWN BEACH	MIDDLETON	0.533	ACRES	Aquatic Life Integrity	pH	4A-M	11/21/2007	114 ACID PONDS	33879		Non-ORW
2020/2022	NHLAK600030601-05-02	SUNRISE LAKE - TOWN BEACH	MIDDLETON	0.533	ACRES	Primary Contact Recreation	Escherichia coli	4A-P	9/21/2010	NEW HAMPSHIRE STATEWIDE BACTERIA	39276		Non-ORW
2020/2022	NHLAK600030601-08	TAUSSIG WILDLIFE POND DAM	NEW DURHAM	2.600	ACRES								ORW
2020/2022	NHLAK600030602-01	BAXTER LAKE	FARMINGTON, ROCHESTER	301.390	ACRES	Aquatic Life Integrity	Dissolved oxygen saturation	5-M					Non-ORW
2020/2022	NHLAK600030602-01	BAXTER LAKE	FARMINGTON, ROCHESTER	301.390	ACRES	Aquatic Life Integrity	Oxygen, Dissolved	5-M					Non-ORW
2020/2022	NHLAK600030602-01	BAXTER LAKE	FARMINGTON, ROCHESTER	301.390	ACRES	Aquatic Life Integrity	pH	5-M					Non-ORW
2020/2022	NHLAK600030602-03	ROCHESTER RESERVOIR	ROCHESTER, BARRINGTON	53.032	ACRES	Aquatic Life Integrity	pH	4A-M	9/20/2007	158 ACID PONDS	33878		Non-ORW
2020/2022	NHLAK600030604-01-01	BOW LAKE	STRAFFORD, NORTHWOOD	1145.795	ACRES	Aquatic Life Integrity	pH	4A-M	9/24/2004	BOW LAKE	11466		ORW
2020/2022	NHLAK600030604-01-02	BOW LAKE - TOWN BEACH	STRAFFORD	0.970	ACRES	Aquatic Life Integrity	pH	3-ND	9/14/2006	BOW LAKE	32408		ORW
2020/2022	NHLAK600030604-01-02	BOW LAKE - TOWN BEACH	STRAFFORD	0.970	ACRES	Primary Contact Recreation	Escherichia coli	2-G	9/21/2010	NEW HAMPSHIRE STATEWIDE BACTERIA	39276		ORW
2020/2022	NHLAK600030604-01-03	BOW LAKE - MARY WALDRON BEACH	NORTHWOOD	0.315	ACRES	Aquatic Life Integrity	pH	3-ND	9/14/2006	BOW LAKE	32409		ORW
2020/2022	NHLAK600030604-01-04	BOW LAKE - BENNETT BRIDGE BEACH	NORTHWOOD	0.436	ACRES	Aquatic Life Integrity	pH	3-ND	9/14/2006	BOW LAKE	32410		ORW
2020/2022	NHLAK600030604-02	UNNAMED POND	STRAFFORD	6.343	ACRES								ORW
2020/2022	NHLAK600030604-03	UNNAMED POND	STRAFFORD	10.547	ACRES								ORW
2020/2022	NHLAK600030605-01	NIPPO POND	BARRINGTON	85.116	ACRES	Aquatic Life Integrity	pH	4A-P	9/20/2007	158 ACID PONDS	33878		ORW
2020/2022	NHLAK600030605-02	STONEHOUSE POND	BARRINGTON	13.337	ACRES								ORW
2020/2022	NHLAK600030605-03	HUCKINS MILL POND	STRAFFORD	17.268	ACRES								ORW
2020/2022	NHLAK600030605-04	UNNAMED POND	STRAFFORD	13.726	ACRES								ORW
2020/2022	NHLAK600030606-01	LONG POND	BARRINGTON	54.885	ACRES	Aquatic Life Integrity	Chlorophyll-a	4A-M	5/12/2011	LONG POND	40291		Non-ORW
2020/2022	NHLAK600030606-01	LONG POND	BARRINGTON	54.885	ACRES	Aquatic Life Integrity	Phosphorus (Total)	4A-M	5/12/2011	LONG POND	40291		Non-ORW
2020/2022	NHLAK600030606-01	LONG POND	BARRINGTON	54.885	ACRES	Primary Contact Recreation	Chlorophyll-a	4A-M	5/12/2011	LONG POND	40291		Non-ORW
2020/2022	NHLAK600030607-01	AYERS POND	BARRINGTON	235.137	ACRES	Aquatic Life Integrity	pH	4A-M	9/24/2004	AYERS POND	11462		Non-ORW
2020/2022	NHLAK600030608-01	FRESH CREEK POND	DOVER, ROLLINSFORD	19.795	ACRES	Aquatic Life Integrity	Dissolved oxygen saturation	5-M					Non-ORW
2020/2022	NHLAK600030608-01	FRESH CREEK POND	DOVER, ROLLINSFORD	19.795	ACRES	Aquatic Life Integrity	pH	5-M					Non-ORW
2020/2022	NHLAK600030608-01	FRESH CREEK POND	DOVER, ROLLINSFORD	19.795	ACRES	Primary Contact Recreation	Escherichia coli	4A-P	9/21/2010	NEW HAMPSHIRE STATEWIDE BACTERIA	39272		Non-ORW
2020/2022	NHLAK600030701-02	LOWER FREESES POND	DEERFIELD	25.093	ACRES	Aquatic Life Integrity	pH	5-M					Non-ORW
2020/2022	NHLAK600030701-03	UPPER FREESES POND	DEERFIELD	30.154	ACRES	Aquatic Life Integrity	pH	5-M					Non-ORW
2020/2022	NHLAK600030702-01	UNNAMED POND	CANDIA	5.249	ACRES								ORW
2020/2022	NHLAK600030702-02-01	SPRUCE POND	DEERFIELD	21.692	ACRES								ORW
2020/2022	NHLAK600030702-02-02	SPRUCE POND - SPRUCE POND BEACH	DEERING	1.380	ACRES								ORW
2020/2022	NHLAK600030702-03	UNNAMED POND	DEERFIELD	8.959	ACRES								ORW
2020/2022	NHLAK600030703-01	GOVERNORS LAKE	RAYMOND	60.331	ACRES	Aquatic Life Integrity	Chlorophyll-a	4A-M	5/12/2011	GOVERNORS LAKE	40284		Non-ORW
2020/2022	NHLAK600030703-01	GOVERNORS LAKE	RAYMOND	60.331	ACRES	Aquatic Life Integrity	pH	5-M					Non-ORW
2020/2022	NHLAK600030703-01	GOVERNORS LAKE	RAYMOND	60.331	ACRES	Aquatic Life Integrity	Phosphorus (Total)	4A-M	5/12/2011	GOVERNORS LAKE	40284		Non-ORW
2020/2022	NHLAK600030703-01	GOVERNORS LAKE	RAYMOND	60.331	ACRES	Primary Contact Recreation	Chlorophyll-a	2-G	5/12/2011	GOVERNORS LAKE	40284		Non-ORW
2020/2022	NHLAK600030703-03-01	ONWAY LAKE	RAYMOND	178.248	ACRES	Aquatic Life Integrity	Dissolved oxygen saturation	5-M					Non-ORW
2020/2022	NHLAK600030703-03-01	ONWAY LAKE	RAYMOND	178.248	ACRES	Aquatic Life Integrity	pH	5-M					Non-ORW
2020/2022	NHLAK600030704-02-01	PAWTUCKAWAY LAKE	NOTTINGHAM	781.628	ACRES	Aquatic Life Integrity	Chlorophyll-a	4A-M	5/12/2011	PAWTUCKAWAY LAKE	40293		Non-ORW
2020/2022	NHLAK600030704-02-01	PAWTUCKAWAY LAKE	NOTTINGHAM	781.628	ACRES	Aquatic Life Integrity	Dissolved oxygen saturation	4A-M	5/12/2011	PAWTUCKAWAY LAKE	40293		Non-ORW
2020/2022	NHLAK600030704-02-01	PAWTUCKAWAY LAKE	NOTTINGHAM	781.628	ACRES	Aquatic Life Integrity	pH	4A-P	9/20/2007	158 ACID PONDS	33878		Non-ORW
2020/2022	NHLAK600030704-02-01	PAWTUCKAWAY LAKE	NOTTINGHAM	781.628	ACRES	Aquatic Life Integrity	Phosphorus (Total)	4A-M	5/12/2011	PAWTUCKAWAY LAKE	40293		Non-ORW
2020/2022	NHLAK600030704-02-01	PAWTUCKAWAY LAKE	NOTTINGHAM	781.628	ACRES	Primary Contact Recreation	Chlorophyll-a	2-M	5/12/2011	PAWTUCKAWAY LAKE	40293		Non-ORW

SWPPP Cut Sheet:

Filtrexx® Inlet Protection

Sediment & Perimeter Control Technology

PURPOSE & DESCRIPTION

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

APPLICATION

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

Curb inlets are generally located on paved surfaces and are designed to rapidly drain storm runoff from roadways to prevent flooding that poses a hazard to vehicular traffic. Inlet protection devices should be placed in a manner which intercepts runoff prior to entering the inlet, but does not block or divert runoff from the inlet. To prevent diversion of runoff, Inlet protection used around curbs (or *Curb* Inlet protection) should be used in low points, or sumps, and minor slopes or grades. Inlet protection should never be placed in or on the curb inlet drain, or placed in a manner than obstructs vehicular traffic. Inlet protection height should be at least 1 in (25 mm) lower than top of curb inlet to allow for overflow into the drain and not over the curb. Maximum sediment removal efficiency occurs when minor ponding exists behind Inlet protection but should never lead to flooding.

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

INSTALLATION

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

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

INSPECTION AND MAINTENANCE

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

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

Table 2.4 Spacing for Curb Sediment Containment Systems.

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

Source: Fifield, 2001.

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

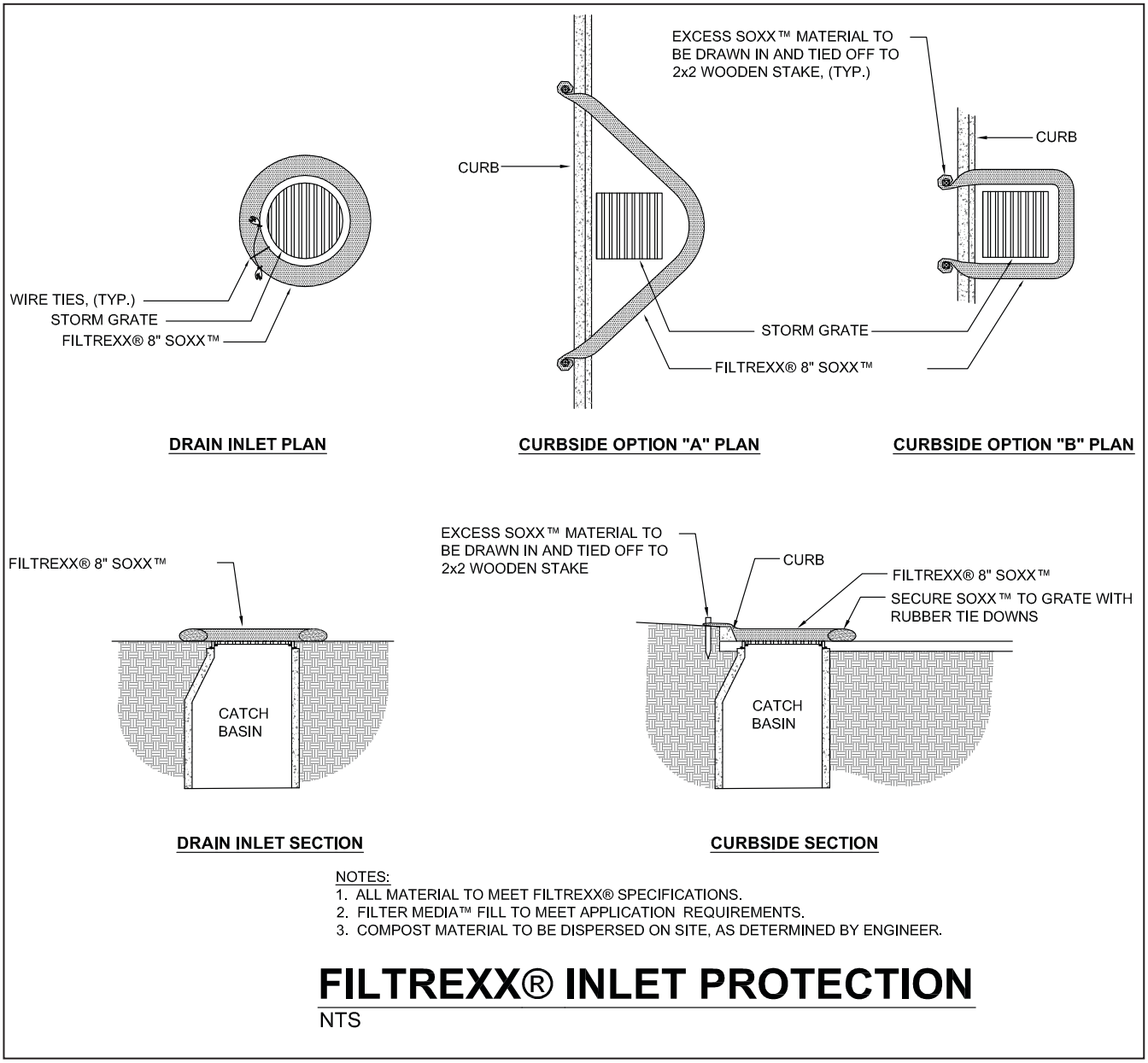
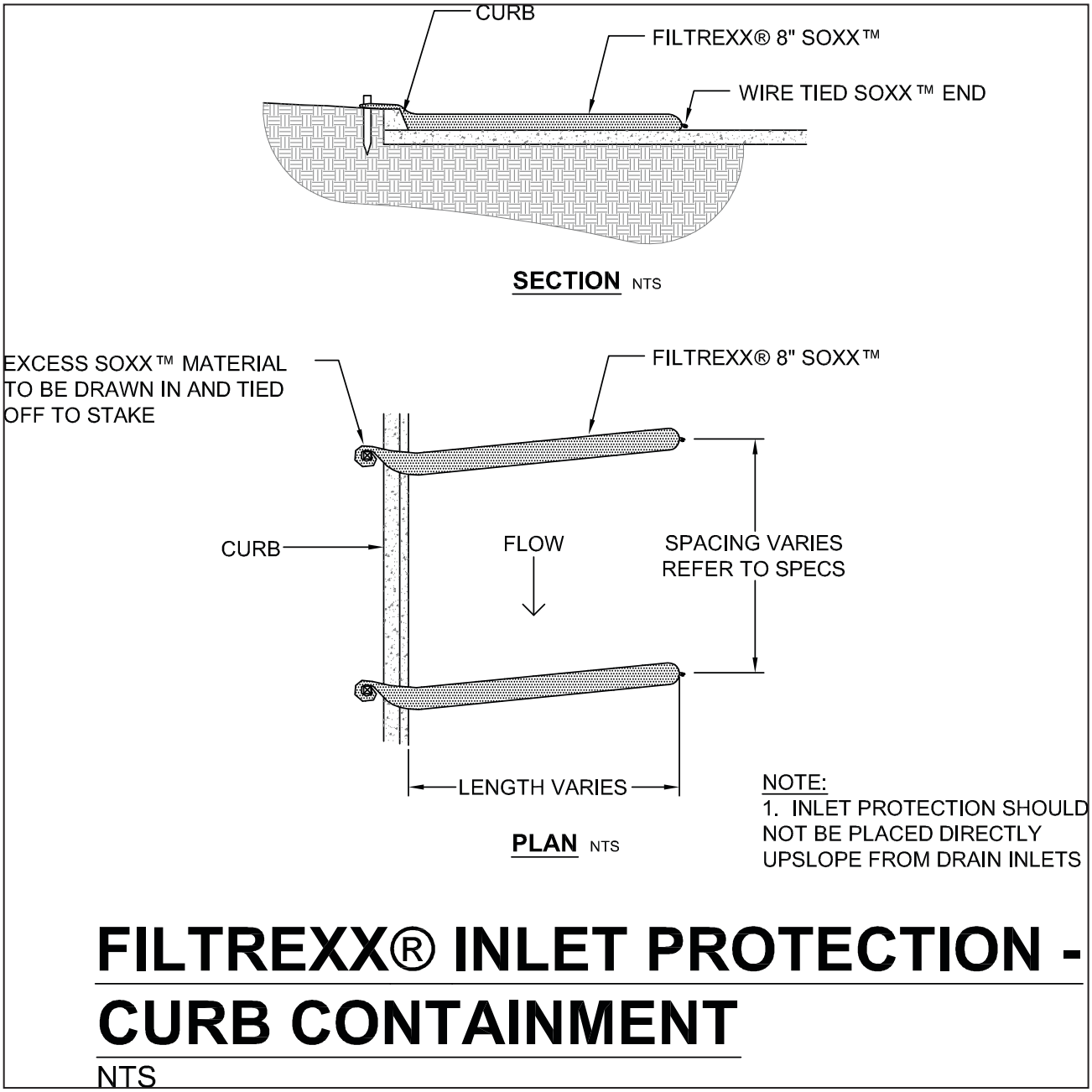


Figure 2.2. Engineering Design Drawing for Curb Sediment Containment Inlet Protection



SWPPP Cut Sheet:

Filtrexx® Sediment Control

Sediment & Perimeter Control Technology

PURPOSE & DESCRIPTION

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

APPLICATION

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

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

INSTALLATION

1. Sediment control used for perimeter control of sediment and soluble pollutants in storm runoff shall meet Filtrexx® Soxx™ Material Specifications and use Certified Filtrexx® FilterMedia™.
2. Contractor is required to be Filtrexx® Certified™, or use pre-filled Filtrexx® Sediment control products manufactured by a Filtrexx® Certified Manufacturer™ as determined by Filtrexx® International, LLC (440-926-2607 or visit www.filtrexx.com). Certification shall be considered current if appropriate identification is shown during time of bid or at time of application. Look for the Filtrexx® Certified™ Seal.
3. Sediment control will be placed at locations indicated on plans as directed by the Engineer.
4. Sediment control should be installed parallel to the base of the slope or other disturbed area. In extreme conditions (i.e., 2:1 slopes), a second Sediment control shall be constructed at the top of the slope.
5. Effective Soxx™ height in the field should be as follows: 8" Diameter Sediment control = 6.5" high, 12" Diameter Sediment control = 9.5" high, 18" Diameter SiltSoxx™ = 14.5" high, 24" Diameter Sediment control = 19" high.
6. Stakes shall be installed through the middle of the Sediment control on 10 ft (3m) centers, using 2 in (50mm) by 2 in (50mm) by 3 ft (1m) hard wood stakes. In the event staking is not possible, i.e., when Sediment control is used on pavement, heavy concrete blocks shall be used behind the Sediment control to help stabilize during rainfall/runoff events.
7. Staking depth for sand and silt loam soils shall be 12 in (300mm), and 8 in (200mm) for clay soils.
8. Loose compost may be backfilled along the upslope side of the Sediment control, filling the seam between the soil surface and the device, improving filtration and sediment retention.
9. If the Sediment control is to be left as a permanent filter or part of the natural landscape, it may be seeded at time of installation for

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

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

See design drawing schematic for correct Filtrexx® Sediment control installation (Figure 1.1).

INSPECTION AND MAINTENANCE

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

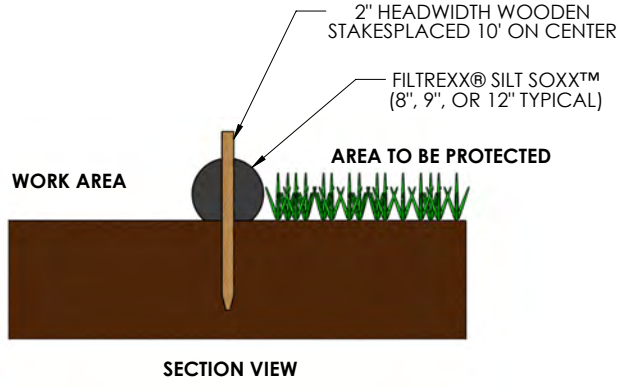
1. The Contractor shall maintain the Sediment control in a functional condition at all times and it shall be routinely inspected.
2. If the Sediment control has been damaged, it shall be repaired, or replaced if beyond repair.
3. The Contractor shall remove sediment at the base of the upslope side of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

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

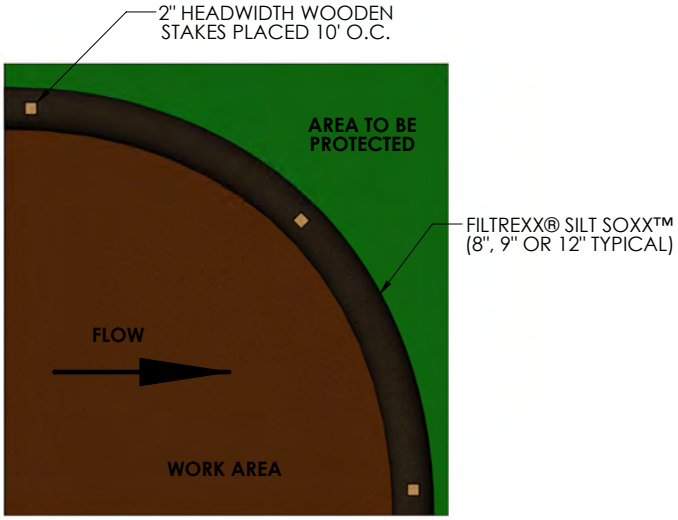
* Based on a failure point of 36 in (0.9 m) super silt fence (wire reinforced) at 1000 ft (303 m) of slope, watershed width equivalent to receiving length of sediment control device, 1 in/ 24 hr (25 mm/24 hr) rain event.

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

FILTREXX® SILT SOXX™

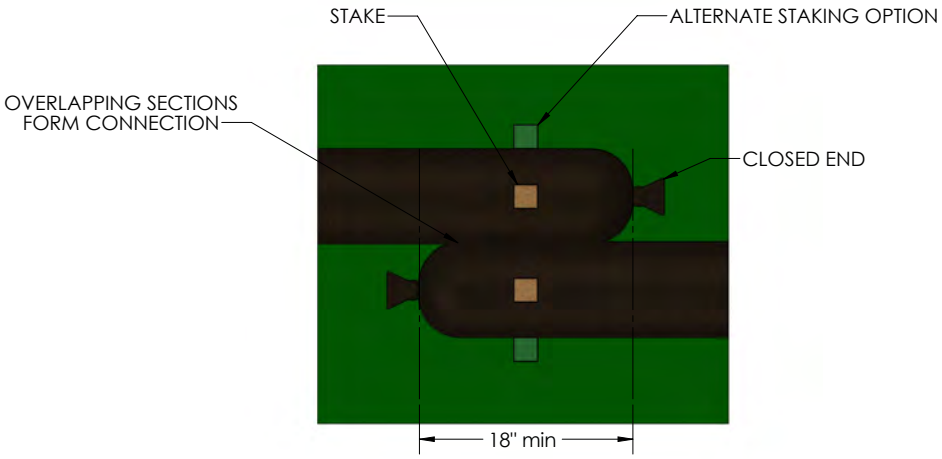


SECTION VIEW

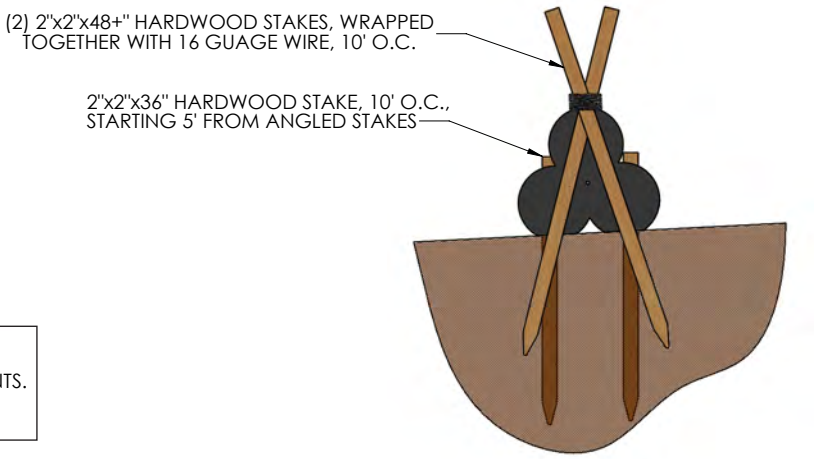


TOP VIEW

COMPOST SOCK CONNECTION/ATTACHMENT DETAIL



FILTREXX® PYRAMID STAKING DETAIL



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

SOILS & DEWATERING:

WdA	*WINDSOR*	*LOAMY SAND*	*K= 0.17*
DeA	*DEEREFIELD*	*LOAMY SAND*	*K= 0.17*
(350A&B)			

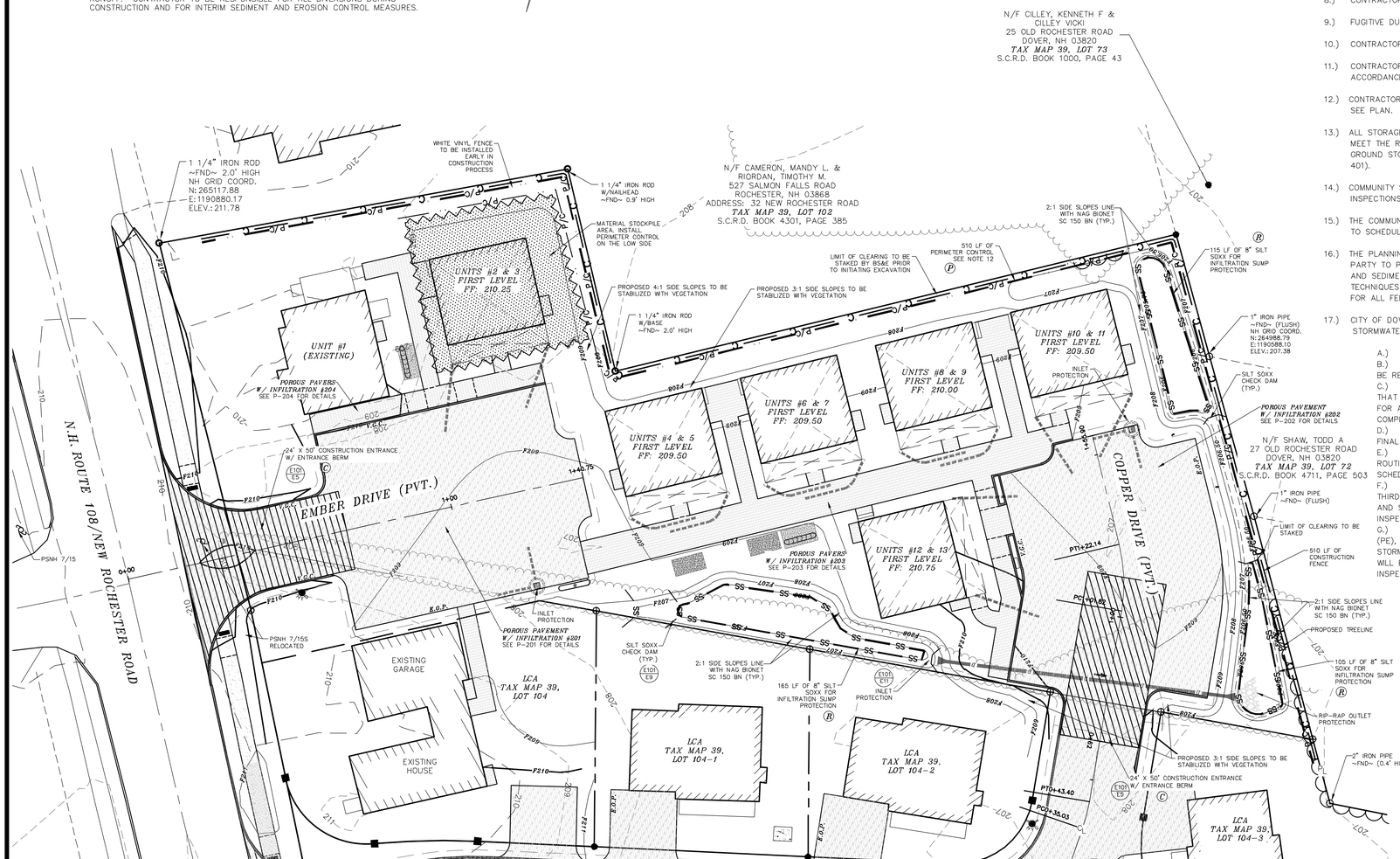
SEE WEBSOIL USDA–NRCS
ERODIBILITY FACTOR – K, CPESC MANUAL, ENVIROCERT INTERNATIONAL INC. & ROCKINGHAM COUNTY SOIL SURVEY, ROCKWEB SOIL ATTRIBUTES.

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.





STABILIZATION NOTE:
SEE NOTE #6, SHEET E-102, DETAIL E-18
SIDE SLOPES ARE TO BE STABILIZED WITHIN THREE WORKING DAY UPON COMPLETION OF FINAL GRADE.

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

NOTES:

1A.) OWNER: ROBERT BALDWIN
242 CENTRAL AVE
DOVER, NH 03820

1B.) APPLICANT: KNOX MARSH DEVELOPMENT LLC
242 CENTRAL AVE
DOVER, NH 03820

2.) TAX MAP 39, LOT 103

3.) S.C.R.D. BOOK 5116, PAGE 655

4.) LOT AREA: 35,555 Sq. Ft., 0.83 Ac.

5.) THE INTENT OF THIS PLAN IS SHOW THE PROPOSED EROSION AND SEDIMENT CONTROL MEASURES.

6.) CONTRACTOR IS TO INSTALL A CONSTRUCTION ENTRANCE PRIOR TO EARTH DISTURBING ACTIVITIES.

7.) CONTRACTOR IS RESPONSIBLE FOR SWEEPING THE PARKING LOT, SIDEWALKS AND ANYTHING DISTURBED, TO ENSURE THAT NO SEDIMENT IS BEING TRACKED ONTO NEW ROCHESTER ROAD OR THE EXISTING DRIVEWAYS.

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

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

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

11.) 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.

12.) CONTRACTOR AY USE SILT FENCE, SILT SOXX OR MULCH BERM FOR PERIMETER CONTROL. SPECIFIC PRACTICES MAY BE SPECIFIED, SEE PLAN.

13.) ALL STORAGE FACILITIES FOR FUEL, CHEMICALS, CHEMICAL OR INDUSTRIAL WASTES, AND BIODEGRADABLE RAW MATERIALS SHALL MEET THE REGULATIONS OF THE NHDES, INCLUDING BUT NOT LIMITED TO THOSE INVOLVING UNDERGROUND STORAGE TANKS, ABOVE GROUND STORAGE TANKS, HAZARDOUS WASTE AND BEST MANAGEMENT PRACTICES FOR GROUND WATER PROTECTION (PART ENV–WQ 401).

14.) COMMUNITY SERVICES DEPARTMENT OR ITS DESIGNATED AGENT SHALL HAVE ACCESS TO THE SITE TO COMPLETE ROUTINE INSPECTIONS.

15.) THE COMMUNITY SERVICES DEPARTMENT SHALL BE NOTIFIED 24 HOURS PRIOR TO INSTALLATION OF A STORMWATER BMP IN ORDER TO SCHEDULE AN INSPECTION. THESE INSPECTIONS SHALL BE COMPLETED DURING NORMAL WORK HOURS.

16.) THE PLANNING BOARD OR COMMUNITY SERVICES DEPARTMENT MAY REQUIRE THE DESIGN ENGINEER AND/OR AN INDEPENDENT THIRD PARTY TO PROVIDE INSPECTION AND OVERSIGHT OF THE CONSTRUCTION OF THE STORMWATER MANAGEMENT FACILITIES AND EROSION AND SEDIMENT CONTROL MEASURES AT ITS DISCRETION. SUCH OVERSIGH MAY BE ESPECIALLY IMPORTANT FOR IMPLEMENTING TECHNIQUES SUCH AS POROUS PAVEMENT OR SUSURFACE INFILTRATION SYSTEMS. THE OWNER/APPLICANT SHALL BE RESPONSIBLE FOR ALL FEES ASSOCIATED WITH THIRD–PARTY INSPECTIONS.

17.) CITY OF DOVER: IN ACCORDANCE WITH SITE PLAN REVIEW REGULATIONS (153–14) THE FOLLOWING STORMWATER MEASURES ARE REQUIRED.

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 (PESC), 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. U.S. EPA, CGP 2022 REQUIRES A QUALIFIED AND CERTIFIED INSPECTOR (SEE SWPPP).

LEGEND:

- (R) POND PROTECTION
- (P) PERIMETER CONTROL
- (C) RESIDENTIAL/ROADWAY CONSTRUCTION
- REBAR (FND)
- IRON BOUND (FND)
- IRON PIPE (FND)
- UTILITY POLE
- BENCHMARK
- PERIMETER CONTROL
- FILTREXX SILTSOXX
- CONSTRUCTION FENCE
- TREE LINE

DOVER PLANNING FILE #SITE–2023–0007

REVISION	DATE	DESCRIPTION
#4	11–30–23	REVISED PER TRC #3 COMMENT
#3	11–09–23	REVISED PER INFORMAL TRC
#2	11–06–23	REVISED PER TRC #2 & ADDITIONAL UNITS ADDED
#1	9–25–23	REVISED PER DOVER TRC COMMENT

EROSION AND SEDIMENT CONTROL PLAN
LAND OF: ROBERT BALDWIN
FOR: KNOX MARSH DEVELOPMENT LLC
34 NEW ROCHESTER ROAD
DOVER, N.H.
TAX MAP 39, LOT 103

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

SCALE : 1 IN. EQUALS 20 FT.
DATE : JULY 6, 2023
FILE NO. : DB 2023 – 053

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14247
LICENSED PROFESSIONAL ENGINEER

NOT FOR CONSTRUCTION

NHDES-W-09-008

APPLICATION FOR SEWER CONNECTION PERMIT
Water Division/Wastewater
Engineering Bureau Design Review Section

RSA/Rule: RSA 485-A:37 / Env-Wq 703.07

TYPE OR PRINT CLEARLY

Use this application for Sewer Connection Permit to request NHDES review/approval for any proposed sewerage design. Under RSAs 485 and 485-A, design plans for new sewerage facilities – whether publicly or privately owned, and regardless of design flow – must be submitted to NHDES for review/approval action at least 30 days prior to construction. Pursuant to Env-Wq 703, design submittals must include 1 set of engineering plans/specifications, pertinent design calculations, the required fee, and a Municipal Certification (signed by an authorized municipal official, see page 2).

1. Engineer of Record - Contact Information		
Engineer / Contact: Kenneth A. Berry	*Company: Berry Surveying & Engineering*	
Mailing Address: 335 Second Crown Point Road		
Town/City: Barrington	*State:* NH	*ZIP:* 03825
Phone Number: 603-332-2863	*Email: k.berry@berrysurveying.com*	

2. Description of Proposed Work (check all that apply)	
☒	An extension of a collector or interceptor; Extension of SDP D2022-1107
☐	A sewage pumping station greater than 50 gpm or serving more than one building;
☒	A proposed sewer that serves more than one building or that requires a manhole at the connection.

Project Name or Description: Copper Drive & Ember Drive		
Project Location - Street Address: 34 New Rochester Road		
Project Location - Town / City: Dover		
Name Of Receiving WWTF: Dover		
Average Design Flow (ADF, gal/day): 3,600		
Proposed Sewer Length (Linear ft)	Pipe Diameter (inches)	Pipe Material
220.50	8"	SDR 35

3. Required Fee	
☒	Sewer connection design submittals must be accompanied by a review fee payment based on the project's average design flow - $0.10 per gal/day ("a dime a gallon") for design flows up to 10,000 gal/day, plus $0.05 per gal/day for any flows in excess thereof.
☐	A fee of $200 per plan sheet shall be paid for review of modifications to privately owned pump stations, force mains, interceptors, and wastewater treatment facilities which are not associated with an increase in wastewater flow.
☐	Fees are not required of municipalities for municipal projects.
Fee Enclosed: $360	Please make checks payable to "Treasurer State of NH".

Italics indicate items are optional.

RSA/Rule: RSA 485-A:37 / Env-Wq 703.07

4. Municipal Certification	
On behalf of Copper Drive & Ember Drive,the City of Dover hereby provides the following municipal certification.	
The municipal sewage collection system and wastewater treatment facilities have been demonstrated, pursuant to Env-Wq 703.07(d), to have adequate processing capability for the proposed added hydraulic flow and organic flow at the time of connection. The proposed sewer connection and/or sewerage design meet with the approval of the local jurisdictional authority.	
Name Of Municipal Official (Project Location):	Title:
Signature:	Date:
Email Address:	
When the Receiving WWTF is in a different Municipality from that of the Project Location, the following additional certification is required.	
Name Of WWTF Official (Host Community):	Title:
Signature:	Date:
Email Address:	

Submit completed application package to:

NHDES Wastewater Engineering Bureau
Design Review Section
29 Hazen Drive
P.O. Box 95
Concord, NH 03302-0095

NOTE: A Separate INDUSTRIAL WASTEWATER INDIRECT DISCHARGE REQUEST (IDR) May be Required For Industrial Waste Contributions, Depending On Quantity And Quality. For Further Information, Contact The Industrial Pretreatment Supervisor Of The Wastewater Engineering Bureau At (603)-271-2052.

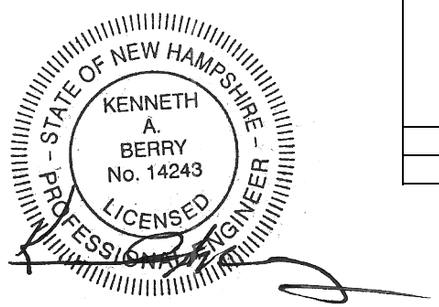
# 2br Units	12
# Bedrooms	24
Flow Received from Units (gpm)	
GPM=(150GPD * #BR * 6)/1440min/day	
15.00	
Flow Received from Infiltration (gpm)	
Inf. Rate = ((300 GPD*8IN*LF)/5280 LF)/1440 min/day	
0.038	
Cumulative Infiltration (gpm)	
0.038	
Total Flow Received (BR Flow + INF) (gpm)	
15.04	
Prop. SMH #12	
Rim Elev	209.75
Inv In (Units #8 & 9)	204.17
Inv In (Units #10 & 11)	204.17
Inv Out (Prop. SMH #2)	204.00
Depth SMH	5.75

Full Velocity (Manning Equation)	
V=(1.486/n)*(R^2/3)*(S^1/2)	
n	0.011
R	0.167
Pipe Dia (in)	8
Area (ft^2)	0.349
8" SDR 35	
Inv In (Prop. SMH #12)	204.00
Inv Out (Prop. SMH #11)	202.87
Length (ft)	119.50
Slope	0.009
Full Velocity (ft/s)	3.98
Discharge Rate (gpm)	622.99

# 2br Units	12
# Bedrooms	24
Flow Received from Units (gpm)	
GPM=(150GPD * #BR * 6)/1440min/day	
15.00	
Flow Received from Infiltration (gpm)	
Inf. Rate = ((300 GPD*8IN*LF)/5280 LF)/1440 min/day	
0.032	
Cumulative Infiltration (gpm)	
0.070	
Total Flow Received (BR Flow + INF) (gpm)	
15.07	
Prop. SMH #11	
Rim Elev	208.27
Inv In (Prop. SMH #12)	202.87
Inv Out (Prop. SMH #10)	202.77
Depth SMH	5.50

Full Velocity (Manning Equation)	
V=(1.486/n)*(R^2/3)*(S^1/2)	
n	0.011
R	0.167
Pipe Dia (in)	8
Area (ft^2)	0.349
8" SDR 35	
Inv In (Prop. SMH #11)	202.77
Inv Out (Prop. SMH #10)	202.32
Length (ft)	101.00
Slope	0.004
Full Velocity (ft/s)	2.73
Discharge Rate (gpm)	427.63

# 2br Units	12
# Bedrooms	24
Flow Received from Units (gpm)	
GPM=(150GPD * #BR * 6)/1440min/day	
15.00	
Cumulative Infiltration (gpm)	
0.070	
Total Flow Received (BR Flow + INF) (gpm)	
15.07	
Prop. SMH #10 (Only flow from 34 New Rochester Rd)	
Rim Elev	210.81
Inv In (Prop. SMH #11)	202.32
Inv In (Ex. SMH #3)	202.23
Inv Out (Ex. SMH #2)	202.22
Depth SMH	8.59



23-053 Sewer Calculations		
Peaking Factor		6
Flow/Bedroom (gpd)		150
Units are two (2) bedrooms		
Total 8" SDR 35 Length (Ft):	Total Rate (Design Flow)(GPD):	Total Rate (Design Flow)(GPM):
220.50	3,600	15.00
	Total Rate (Infiltration)(GPD):	Total Rate (Infiltration)(GPM):
	100	0.07
	Total Flow Received (GPD):	Total Flow Received (GPM):
	3,700	15.07
It is not anticipated that the pipes will ever flow full		
Project is connecting to gravity sewer in Copper Drive, Sewer Discharge Permit D2022-1107		

MAJOR RESIDENTIAL SITE PLAN & LOT MERGER PLAN FOR KNOX MARSH DEVELOPMENT, LLC 34 NEW ROCHESTER ROAD DOVER, N.H. TAX MAP 39, LOT 103

TABLE OF CONTENTS:

SHEET 1 ~ NEIGHBORHOOD PLAN
SHEET 2 ~ EXISTING CONDITIONS PLAN & DEMOLITION PLAN
SHEET 3 ~ SITE SPECIFIC SOILS MAP
SHEET 4 ~ LOT MERGER PLAN*
SHEET 5 ~ LIMITED COMMON AREA REVISION PLAN*
SHEET 6 ~ SITE PLAN
SHEET 7 ~ GRADING PLAN & PROFILE COPPER DRIVE
SHEET 8 ~ GRADING PLAN & PROFILE EMBER DRIVE
SHEET 9 ~ COPPER DRIVE POROUS PAVEMENT DRIVEWAY ADDITIONS
SHEET 10 ~ P201-204-POROUS PAVEMENT/PAVERS PLANS
SHEET 11 ~ EROSION & SEDIMENT CONTROL PLAN
SHEET 12 ~ UTILITY PLAN & PROFILE COPPER DRIVE
SHEET 13 ~ UTILITY PLAN & PROFILE SEWER/WATER LINES
SHEET 14 ~ CROSS SECTIONS COPPER DRIVE & EMBER DRIVE
SHEET 15 ~ LIGHTING PLAN
SHEET 16 ~ LANDSCAPING PLAN
SHEET 17 ~ SIGHT DISTANCE SOUTHBOUND
SHEET 18 ~ SIGHT DISTANCE NORTHBOUND
SHEET 19 ~ E101-EROSION & SEDIMENT CONTROL DETAILS
SHEET 20 ~ E102-EROSION & SEDIMENT CONTROL DETAILS
SHEET 21 ~ C101-CONSTRUCTION DETAILS
SHEET 22 ~ C102-CONSTRUCTION DETAILS
SHEET 23 ~ C103-CONSTRUCTION DETAILS
SHEET 24 ~ U101-UTILITY DETAILS
SHEET 25 ~ U102-UTILITY DETAILS
SHEET 26 ~ L101-LANDSCAPING DETAILS
SHEET 27 ~ DOVER FIRE TRUCK TURN TEMPLATE
SHEET 28 ~ DOVER FIRE TRUCK TURN TEMPLATE

* INDICATES PLAN IS TO BE RECORDED AT S.C.R.D.

OWNER: ROBERT BALDWIN
242 CENTRAL AVE
DOVER, NH 03820

APPLICANT: KNOX MARSH DEVELOPMENT, LLC
242 CENTRAL AVE
DOVER, NH 03820

_____
ROBERT BALDWIN

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

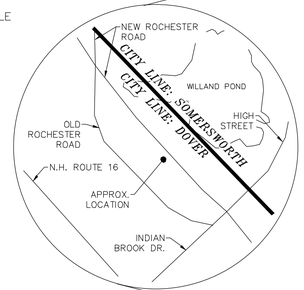
WETLAND SCIENTIST: JOHN P. HAYES III, CSS, CWS
7 LIMESTONE WAY
NORTH HAMPTON, NH 03862
(603) 205-4396

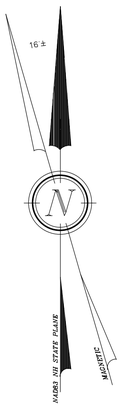
SOILS SCIENTIST: JOHN P. HAYES III, CSS, CWS
7 LIMESTONE WAY
NORTH HAMPTON, NH 03862
(603) 205-4396

NOTE:

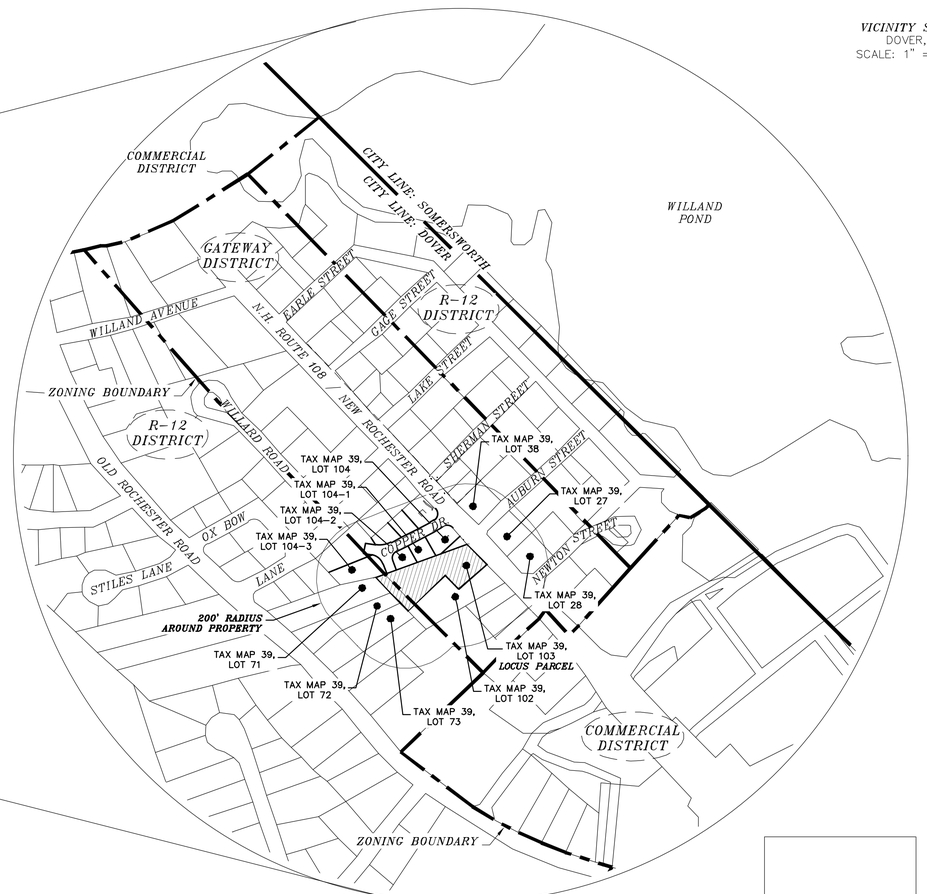
BERRY SURVEYING & ENGINEERING HAS PREPARED AN INSPECTION & MAINTENANCE MANUAL AS PART OF THIS PROJECTS DOCUMENTATION. ALL USERS ARE BOUND TO THIS DOCUMENT AS PART OF THE APPROVAL OF THE PLANNING BOARD. COPIES OF THE YEARLY INSPECTIONS ARE TO BE DELIVERED TO THE CITY OF DOVER COMMUNITY SERVICES DEPARTMENT.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

LOCATION PLAN
DOVER, NH
NOT TO SCALE





VICINITY SKETCH
DOVER, NH
SCALE: 1" = 250' ±



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/SUBDIVIDER/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.

REQUIRED PERMITS:

1.) NHDES SEWER DISCHARGE PERMIT: D2022-1107 (NEEDS AMENDMENT)
2.) EPA NOTICE OF INTENT/SWPPP (NOI): NHR10010C (SWPPP/SWMP NEEDS AMENDMENT)
3.) DIVISION OF HISTORICAL RESOURCES: 15390
4.) EVERSOURCE WORK ORDER NUMBER: PENDING

APPROVED DOVER

STATE OF NEW HAMPSHIRE – NO. 865 – KENNETH A. BERRY – LAND SURVEYOR – SIGNATURE

STATE OF NEW HAMPSHIRE – KENNETH A. BERRY No. 13240 – LICENSED PROFESSIONAL ENGINEER

DOVER PLANNING FILE #SITE-2023-0007

REVISION	DATE	DESCRIPTION
#4	12-01-23	REVISED PER TRC #3 COMMENT
#3	11-09-23	REVISED PER INFORMAL TRC
#2	11-06-23	REVISED PER TRC #2 & ADDITIONAL UNITS ADDED
#1	9-25-23	REVISED PER DOVER TRC COMMENT

MAJOR RESIDENTIAL SITE PLAN & LOT MERGER PLAN
LAND OF: ROBERT BALDWIN
FOR: KNOX MARSH DEVELOPMENT LLC
34 NEW ROCHESTER ROAD
DOVER, N.H.
TAX MAP 39, LOT 103

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

SCALE : AS SHOWN
DATE : JULY 6, 2023
FILE NO. : DB 2023 – 053

NOT FOR CONSTRUCTION

ABBREVIATION LEGEND:

E.O.P.	EDGE OF PAVEMENT
V.G.C.	VERTICAL GRANITE CURB
B.C.C.	BITUMINOUS CONCRETE CURB
BITUM.	BITUMINOUS
E.S.H.W.T	ESTIMATE SEASONAL HIGH WATER TABLE
TYP.	TYPICAL
O.H.U.	OVERHEAD ELECTRIC / UTILITY
U.G.E.	UNDER GROUND ELECTRIC / UTILITY
C.L.D.I.	CONCRETE LINED DUCTILE IRON
INV.	INVERT
ELEV.	ELEVATION
F.E.S.	FLARED END SECTION
HDPE	HIGH DENSITY POLYETHYLENE
RECB	ROLLED EROSION CONTROL BLANKET
F.G.	FINISHED GRADE
E.G.	EXISTING GRADE
E.T.W.	EDGE OF TRAVELED WAY
T.B.C.	TO BE REMOVED
PL	PROPERTY LINE
EL	EASEMENT LINE
CL	CENTER LINE
CF	CUBIC FEET
P.C.	POINT OF CURVATURE
P.T.	POINT OF TANGENCY
P.V.C.	POINT OF VERTICAL CURVE
P.V.I.	POINT OF VERTICAL INTERSECTION
P.V.T.	POINT OF VERTICAL TANGENCY
EX.	EXISTING
PROP.	PROPOSED
STA.	STATION
BMP	BEST MANAGEMENT PRACTICE
'/,	FEET / FEET
TP	TEST PIT
RCP	REINFORCED CONCRETE PIPE
FDC	FIRE DEPARTMENT CONNECTION
TBS	TO BE SET

{ } 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:

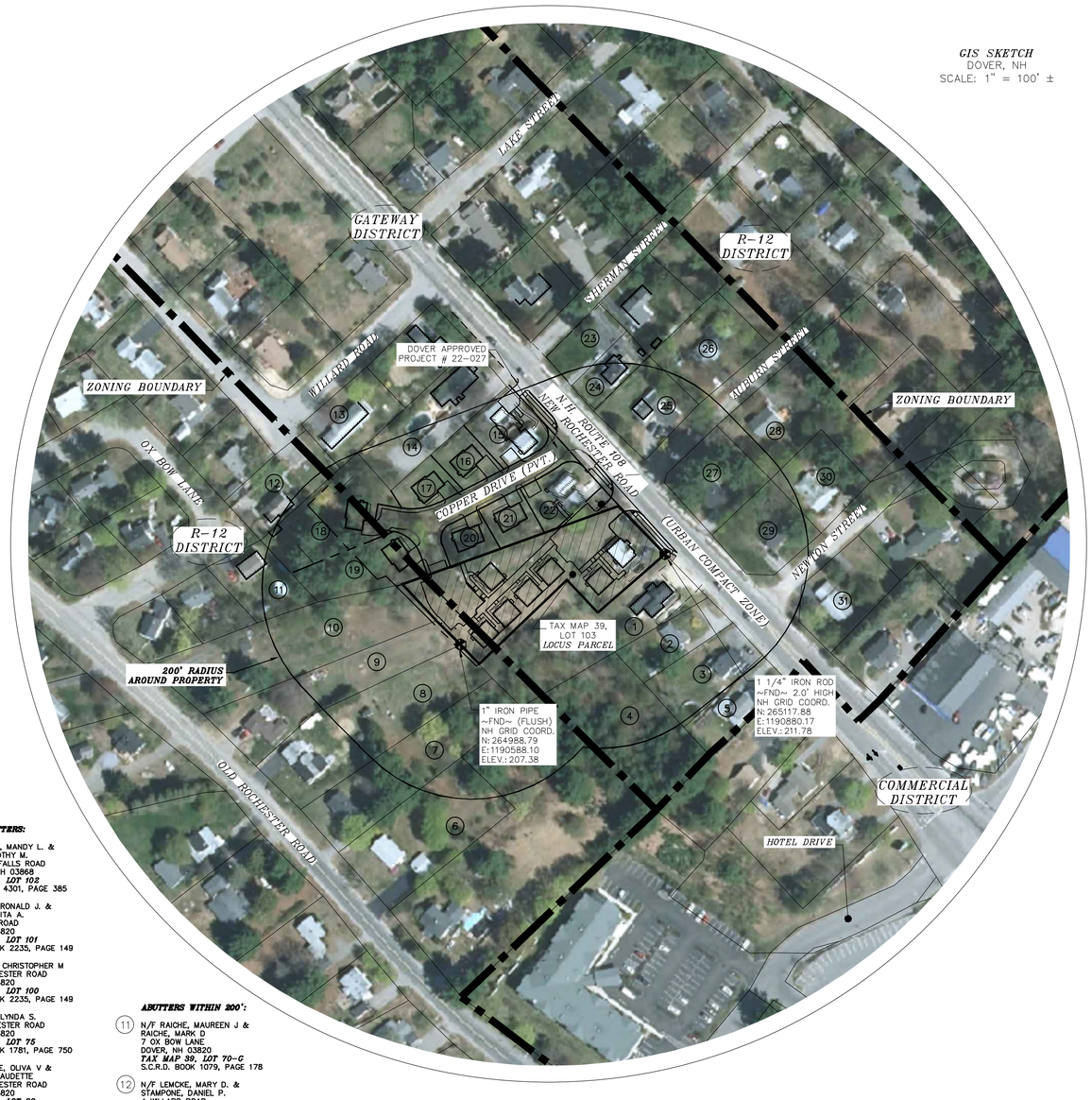
- IRON PIPE ~FND~
- IRON BOUND ~FND~
- 3/4" REBAR W/ID CAP ~SET~
- UTILITY POLE
- SIGNAGE
- DRAINAGE CULVERT
- DRAIN MANHOLE W/ STRUCTURE
- SEWER MANHOLE W/ STRUCTURE
- CATCH BASIN W/ STRUCTURE
- WATER GATE VALVE
- WATER SHUT OFF
- FIRE HYDRANT
- GAS VALVE
- SEWER LINE
- WATER LINE
- OVERHEAD UTILITIES
- UNDERGROUND UTILITIES
- BUILDING SETBACK LINE
- TREELINE
- CONTOUR LINE, MINOR
- CONTOUR LINE, MAJOR
- ZONING DISTRICT LINE
- GAS LINE
- 200x00 EXISTING SPOT ELEVATION

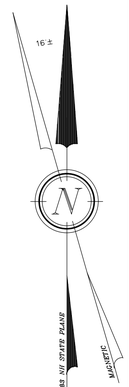
PROPOSED LEGEND:

- 3/4" REBAR W/ ID CAP ~TBS~
- GRANITE BOUND ~TBS~
- UTILITY POLE
- LIGHT TYPE "A" MOUNTED ON BUILDING
- LIGHT TYPE "B" MOUNTED ON POLE
- LIGHT TYPE "C" MOUNTED ON POST
- SEWER MANHOLE W/ STRUCTURE
- CATCH BASIN W/ STRUCTURE
- SIGNAGE
- CHECK DAM-MATERIAL AS SPECIFIED
- FLOW ARROW
- 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
- PERIMETER CONTROL
- WdA NRCS SOIL DELINEATION
- SOIL TYPE
- RIP RAP
- STORMWATER BEST MANAGEMENT PRACTICE (BMP)
- BERM
- SNOW STORAGE
- PASSIVE RECREATION SPACE
- POROUS PAVEMENT
- POROUS PAVERS
- GATE VALVE
- CURB STOP
- FIRE HYDRANT
- THRUST BLOCKS
- F230.31 PROPOSED SPOT ELEVATION
- PROPOSED WATER LINE
- PROPOSED WATER SERVICE
- PROPOSED SEWER LINE
- PROPOSED SEWER SERVICE
- PROPOSED TREE LINE
- PROPOSED GRAVEL SHOULDER PAVEMENT INLAY

SIGN ID NUMBER	SIGN SIZE (WIDTH x HEIGHT)	SIGN	TEXT DIMENSIONS	NO. OF SIGNS	BACKGROUND	LEGEND	BORDER	POST SIZE & QUANTITY
R1-1	30"x30"	STOP	SEE STANDARD HIGHWAY SIGNS 2004 EDITION PUBLISHED BY USDOT - FHWA	1	RED	WHITE	WHITE	SQUARE (1)
R7-8	12"x18"	RESERVED PARKING	SEE STANDARD HIGHWAY SIGNS 2004 EDITION PUBLISHED BY USDOT - FHWA	2	WHITE	GREEN W/ WHITE SYMBOL ON BLUE	RED	SQUARE (2)
R7-8a	12"x6"	VAN ACCESSIBLE	SEE STANDARD HIGHWAY SIGNS 2004 EDITION PUBLISHED BY USDOT - FHWA	2	WHITE	GREEN	GREEN	SQUARE (0)
D9-11b	24"x24"		SEE STANDARD HIGHWAY SIGNS 2004 EDITION PUBLISHED BY USDOT - FHWA	1	BLUE	WHITE	WHITE	U-CHANNEL (1)
D9-11b	12"x18"	ACCESSIBLE PARKING MAY BE USED BY DISABLED PERSONS WITH DISABLED VEHICLE PLATES OR DISABLED PARKING PERMITS	SEE STANDARD HIGHWAY SIGNS 2004 EDITION PUBLISHED BY USDOT - FHWA	1	BLUE	WHITE	WHITE	U-CHANNEL (1)
W14-2	12"X6"	NO OUTLET	SEE STANDARD HIGHWAY SIGNS 2004 EDITION PUBLISHED BY USDOT - FHWA	1	YELLOW	BLACK	BLACK	U-CHANNEL (0)

GIS SKETCH
DOVER, NH
SCALE: 1" = 100' ±





DIRECT ABUTTERS:

1. N/F CAMERON, MANDY L. & RIORDAN, TIMOTHY M. 527 SALMON FALLS ROAD ROCHESTER, NH 03868 ***TAX MAP 39, LOT 102*** S.C.R.D. BOOK 4301, PAGE 385
2. N/F WEEDEN, RONALD J. & WEEDEN, JUANITA A. 145 DURHAM ROAD DOVER, NH 03820 ***TAX MAP 39, LOT 101*** S.C.R.D. BOOK 2235, PAGE 149
3. N/F MERCIER, CHRISTOPHER M 28 NEW ROCHESTER ROAD DOVER, NH 03820 ***TAX MAP 39, LOT 100*** S.C.R.D. BOOK 2235, PAGE 149
4. N/F DEMERS, LYNDA S. 21 OLD ROCHESTER ROAD DOVER, NH 03820 ***TAX MAP 39, LOT 75*** S.C.R.D. BOOK 1781, PAGE 750
5. N/F LACHANCE, OLIVA V & LACHANCE, CLAUDETTE 28 NEW ROCHESTER ROAD DOVER, NH 03820 ***TAX MAP 39, LOT 99*** S.C.R.D. BOOK 1017, PAGE 117
6. N/F POMERLEAU, JEAN. 21-1/2 OLD ROCHESTER ROAD DOVER, NH 03820 ***TAX MAP 39, LOT 75-A*** S.C.R.D. BOOK 2704, PAGE 286
7. N/F BODOH, JACOB & MARCOUX, ELIZABETH 23 OLD ROCHESTER ROAD DOVER, NH 03820 ***TAX MAP 39, LOT 74*** S.C.R.D. BOOK 4387, PAGE 503
8. N/F CILLEY, KENNETH F. & CILLEY, VICKI 25 OLD ROCHESTER ROAD DOVER, NH 03820 ***TAX MAP 39, LOT 73*** S.C.R.D. BOOK 1000, PAGE 43
9. N/F SHAW, TODD A. 27 OLD ROCHESTER ROAD DOVER, NH 03820 ***TAX MAP 39, LOT 72*** S.C.R.D. BOOK 4711, PAGE 503
10. N/F BRAY, JAMES TRUSTEE SCHATVET LEE REV. TRUST OF 2013 29 OLD ROCHESTER ROAD DOVER, NH 03820 ***TAX MAP 39, LOT 71*** S.C.R.D. BOOK 4187, PAGE 967

ABUTTERS WITHIN 200':

11. N/F RAICHE, MAUREEN J & RAICHE, MARK D 7 OX BOW LANE DOVER, NH 03820 ***TAX MAP 39, LOT 70-G*** S.C.R.D. BOOK 1079, PAGE 178
12. N/F LEMCKE, MARY D. & STAMPONE, DANIEL P. 4 WILLARD ROAD DOVER, NH 03820 ***TAX MAP 39, LOT 69-G*** S.C.R.D. BOOK 3654, PAGE 202
13. N/F TAYLOR, BERNARD C. SR. 2 WILLARD ROAD DOVER, NH 03820 ***TAX MAP 39, LOT 69-E*** S.C.R.D. BOOK 1890, PAGE 321
14. N/F BOUCHER, SHARON O. & BOUCHER, RONALD A. 40 NEW ROCHESTER ROAD DOVER, NH 03820 ***TAX MAP 39, LOT 106*** S.C.R.D. BOOK 2553, PAGE 426
15. N/F KNOX MARSH DEVELOPMENT, LLC 242 CENTRAL AVE DOVER, NH 03820 ***TAX MAP 39, LOT 105*** S.C.R.D. BOOK 4920, PAGE 284
16. N/F KNOX MARSH DEVELOPMENT, LLC 242 CENTRAL AVE DOVER, NH 03820 ***TAX MAP 39, LOT 104-6*** S.C.R.D. BOOK 4920, PAGE 284
17. N/F KNOX MARSH DEVELOPMENT, LLC 242 CENTRAL AVE DOVER, NH 03820 ***TAX MAP 39, LOT 104-5*** S.C.R.D. BOOK 4920, PAGE 284

ABUTTERS WITHIN 200' CONT.:

18. N/F KNOX MARSH DEVELOPMENT, LLC 242 CENTRAL AVE DOVER, NH 03820 ***TAX MAP 39, LOT 104-4*** S.C.R.D. BOOK 4920, PAGE 284
19. N/F KNOX MARSH DEVELOPMENT, LLC 242 CENTRAL AVE DOVER, NH 03820 ***TAX MAP 39, LOT 104-3*** S.C.R.D. BOOK 4920, PAGE 284
20. N/F KNOX MARSH DEVELOPMENT, LLC 242 CENTRAL AVE DOVER, NH 03820 ***TAX MAP 39, LOT 104-2*** S.C.R.D. BOOK 4920, PAGE 284
21. N/F KNOX MARSH DEVELOPMENT, LLC 242 CENTRAL AVE DOVER, NH 03820 ***TAX MAP 39, LOT 104-1*** S.C.R.D. BOOK 4920, PAGE 284
22. N/F KNOX MARSH DEVELOPMENT, LLC 242 CENTRAL AVE DOVER, NH 03820 ***TAX MAP 39, LOT 104*** BOOK 4920, PAGE 284

ABUTTERS WITHIN 200' CONT.:

23. N/F KNOX MARSH DEVELOPMENT, LLC. 242 CENTRAL AVE. DOVER, NH 03820 ***TAX MAP 39, LOT 37-1*** S.C.R.D. BOOK 4894, PAGE 781
24. N/F KNOX MARSH DEVELOPMENT, LLC. 242 CENTRAL AVE DOVER, NH 03820 ***TAX MAP 39, LOT 37*** S.C.R.D. BOOK 4894, PAGE 781
25. N/F HARKINS, SEAN 23 1/2 NEW ROCHESTER ROAD DOVER, NH 03820 ***TAX MAP 39, LOT 38*** S.C.R.D. BOOK 4427, PAGE 545
26. N/F ROSS, BENJAMIN C. & JOHNSON, SARAH K. 4 AUBURN STREET DOVER, NH 03820 ***TAX MAP 39, LOT 39*** S.C.R.D. BOOK 4717, PAGE 566
27. N/F MCKEAGNEY, ROBERT B & MCKEAGNEY, WENDI E. 23 NEW ROCHESTER ROAD DOVER, NH 03820 ***TAX MAP 39, LOT 27*** S.C.R.D. BOOK 2886, PAGE 330

ABUTTERS WITHIN 200' CONT.:

28. N/F MELVILLE, WILLIAM & MELVILLE, AKIKO 3 AUBURN STREET DOVER, NH 03820 ***TAX MAP 39, LOT 26*** S.C.R.D. BOOK 2560, PAGE 131
29. N/F FRATUS, GARY A. & FRATUS, TERESA G. 2A NEWTON STREET DOVER, NH 03820 ***TAX MAP 39, LOT 28*** S.C.R.D. BOOK 2120, PAGE 312
30. N/F GOULD, LAURENCE J. 2 NEWTON STREET DOVER, NH 03820 ***TAX MAP 39, LOT 29***
31. N/F LIN, JINGYING 21 NEW ROCHESTER ROAD DOVER, NH 03820 ***TAX MAP 39, LOT 18*** S.C.R.D. BOOK 4598, PAGE 885

DOVER PLANNING FILE #SITE-2023-0007

REVISION	DATE	DESCRIPTION
#4	12-01-23	REVISED PER TRC #3 COMMENT
#3	11-09-23	REVISED PER INFORMAL TRC
#2	11-06-23	REVISED PER TRC #2 & ADDITIONAL UNITS ADDED
#1	9-25-23	REVISED PER DOVER TRC COMMENT

NEIGHBORHOOD PLAN
LAND OF: ROBERT BALDWIN
FOR: KNOX MARSH DEVELOPMENT LLC
34 NEW ROCHESTER ROAD
DOVER, N.H.
TAX MAP 39, LOT 103

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

SCALE : AS SHOWN
DATE : JULY 6, 2023
FILE NO. : DB 2023 - 053

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

STATE OF NEW HAMPSHIRE — KENNETH A. BERRY No. 14244 — LICENSED PROFESSIONAL ENGINEER

SHEET 1 OF 28

NOT FOR CONSTRUCTION

WETLAND NOTES:

1.) WETLANDS WERE DELINEATED BY JOHN P. HAYES IN MAY OF 2023. REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION, (VERSION 2.0) JANUARY 2012, U.S. ARMY CORPS OF ENGINEERS.

2.) FIELD INDICATORS OF HYDRIC SOILS IN THE UNITED STATES, A GUIDE FOR IDENTIFYING AND DELINEATING HYDRIC SOILS, VERSION 8.0. UNITED STATES DEPARTMENT OF AGRICULTURE (2016).

3.) NATIONAL WETLAND PLANT LIST (CURRENT VERSION).

NO WETLANDS WERE FOUND ON SITE.

JOHN P. HAYES III, CWS #18

SOIL DATA:

WdA ~ WINDSOR LOAMY SAND 0 TO 3% SLOPES

SEE: USDA/NRCS WEBSOIL

PLAN REFERENCES:

1.) "PARTIAL PLAN OF LOTS LAND OF MRS. F.C. WHIPP"
BY: GERARD A. CRAWFORD
DATED: MAY 1955
S.C.R.D. PLAN #288, POCKET #1, FOLDER #2

2.) "FISCHER HOMES INC. DAME DEVELOPMENT DOVER N.H."
BY: GRANT L. DAVIS
DATED: FEBRUARY 8, 1956
S.C.R.D. PLAN #65, POCKET #2, FOLDER #15

3.) "PLAN OF LOTS AT LAKEVIEW PARK, DOVER N.H.
OWNED BY M.C. MEAGHER, TRUSTEE"
BY: WM. A. GROVER CIVIL ENGINEER
DATED: JUNE 1904
S.C.R.D. PLAN #8, POCKET #7, FOLDER #2

4.) "WHIPP DEVELOPMENT REVISED SUBDIVISION, LAND OF MRS. FRED C. WHIPP DOVER, NH"
BY: GERARD A. CRAWFORD
DATED: MAY, 1955
S.C.R.D. PLAN #16, POCKET #7, FOLDER #2

5.) "PLAN OF SUBDIVISION BERNARD J. JR. & SALLY B. MALLON"
BY: K.E. MOORE & B.G. STAPLES, LAND SURVEYORS
DATED: JULY, 1976
S.C.R.D. PLAN #17A-61

6.) "PLAN OF SUBDIVISION FOR DONALD & MORNA MESSIER OLD ROCHESTER ROAD DOVER, NEW HAMPSHIRE"
BY: K.E. MOORE & B.G. STAPLES LAND SURVEYORS
DATED: MAY 1980
S.C.R.D. PLAN #22A-40

7.) "FEDERAL PROJECT NO. STP-M-5125(005)
STP-F-027-1(34)" SHEET 28
BY: CARON ENGINEERING
S.C.R.D. PLAN #56-85

8.) "FEDERAL PROJECT NO. STP-M-5125(005)
STP-F-027-1(34)" SHEET 30
BY: CARON ENGINEERING
S.C.R.D. PLAN #56-89

9.) "CARRIER TO ZERBINOPOULOS DEED SKETCH"
DATED: APRIL 10, 1964
S.C.R.D. BOOK 781, PAGE 424

10.) "PLAN OF LAND PREPARED FOR CHARLENE ZERBINOPOULOS"
BY: ATLANTIC SURVEY CO. INC.
DATED: NOVEMBER 2005
PLAN #05156

11.) "SUBDIVISION PLAN LAND OF ROBERT S. BALDWIN,
25 NEW ROCHESTER ROAD, DOVER, NH"
BY: BERRY SURVEYING & ENGINEERING
DATED: NOVEMBER 23, 2020
S.C.R.D. PLAN #12386

12.) "CONDOMINIUM SUBDIVISION PLAN, LAND OF KNOX MARSH DEVELOPMENT LLC, 36 & 38 NEW ROCHESTER ROAD, DOVER, N.H., TAX MAP 39, LOTS 104 & 105."
BY: BERRY SURVEYING & ENGINEERING
DATED: APRIL 14, 2022
S.C.R.D. PLAN # 12837, DB 2021-135

13.) "EASEMENT PLAN, LAND OF KNOX MARSH DEVELOPMENT LLC, 36 & 38 NEW ROCHESTER ROAD, DOVER, N.H., TAX MAP 39, LOTS 104 & 105."
BY: BERRY SURVEYING & ENGINEERING
DATED: APRIL 14, 2022
S.C.R.D. PLAN # 12838, DB 2021-135

14.) "LOT MERGER PLAN, LAND OF KNOX MARSH DEVELOPMENT LLC, 36 & 38 NEW ROCHESTER ROAD, DOVER, N.H., TAX MAP 39, LOTS 104 & 105."
BY: BERRY SURVEYING & ENGINEERING
DATED: APRIL 14, 2022
S.C.R.D. PLAN # 12839, DB 2021-135

ABUTTERS ACROSS NEW ROCHESTER ROAD:

(A) N/F HARKINS, SEAN.
23 ½ NEW ROCHESTER ROAD
DOVER, NH 03820
TAX MAP 39, LOT 38
S.C.R.D. BOOK 4427, PAGE 545

(B) N/F MCKEAGNEY, ROBERT B. & WENDI E.
23 NEW ROCHESTER ROAD
DOVER, NH 03820
TAX MAP 39, LOT 27
S.C.R.D. BOOK 2686, PAGE 330

(C) N/F FRATUS, GARY A. & TERESA G.
2A NEWTON STREET
DOVER, NH 03820
TAX MAP 39, LOT 28
S.C.R.D. BOOK 2120, PAGE 312

(D) N/F LIN, JINGYING
21 NEW ROCHESTER ROAD
DOVER, NH 03820
TAX MAP 39, LOT 18
BOOK 4598, PAGE 885

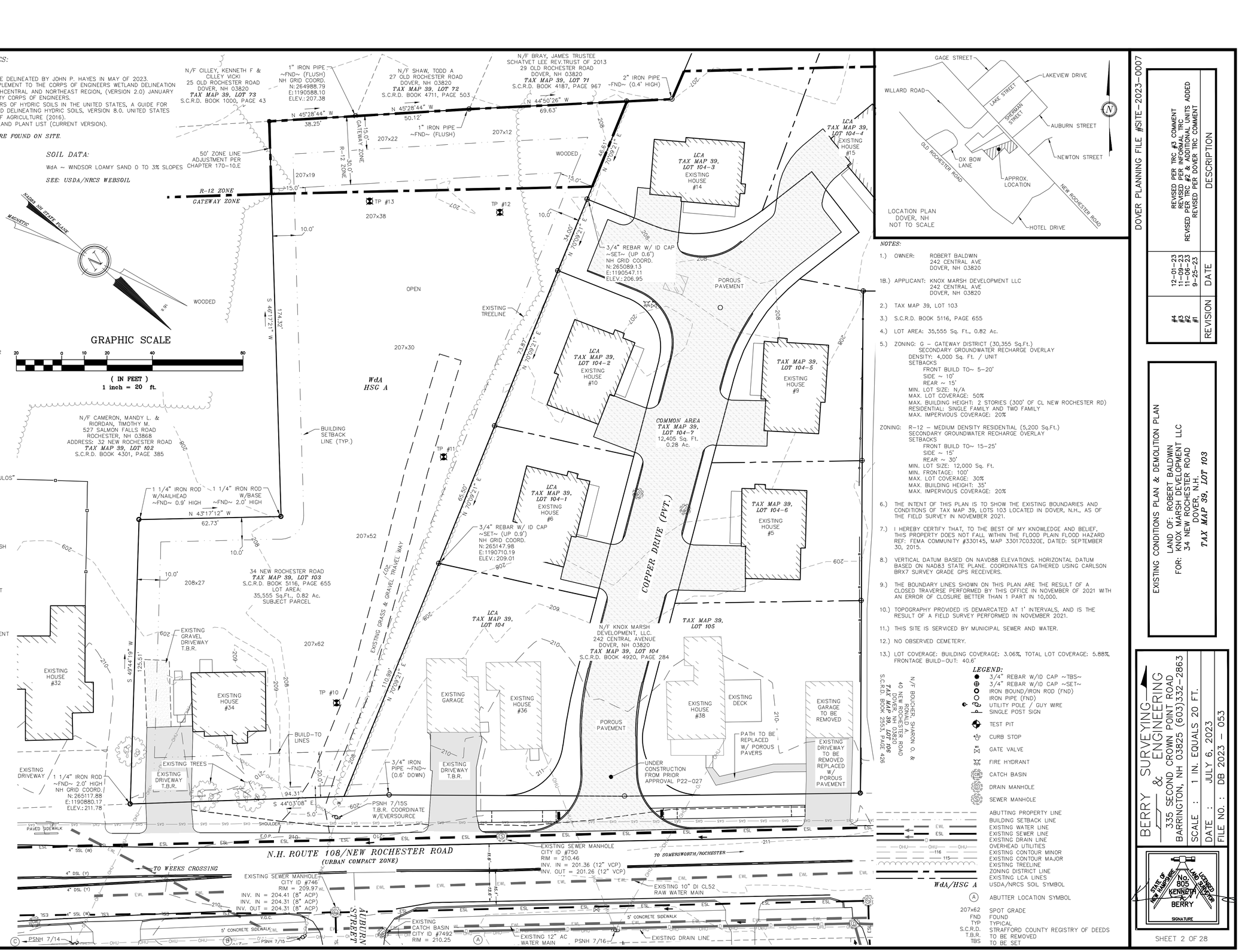
I CERTIFY THAT THIS SURVEY PLAT IS NOT A SUBDIVISION PURSUANT TO THIS TITLE AND THAT THE LINES OF STREETS AND WAYS SHOWN ARE THOSE OF PUBLIC OR PRIVATE STREETS OR WAYS ALREADY ESTABLISHED AND THAT NO NEW WAYS ARE SHOWN.

KENNETH A. BERRY L.L.S. 805 DATE

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.



LOCATION PLAN
DOVER, NH
NOT TO SCALE

NOTES:

1.) OWNER: ROBERT BALDWIN
242 CENTRAL AVE
DOVER, NH 03820

1B.) APPLICANT: KNOX MARSH DEVELOPMENT LLC
242 CENTRAL AVE
DOVER, NH 03820

2.) TAX MAP 39, LOT 103

3.) S.C.R.D. BOOK 5116, PAGE 655

4.) LOT AREA: 35,555 Sq. Ft., 0.82 Ac.

5.) ZONING: G - GATEWAY DISTRICT (30,355 Sq.Ft.)
SECONDARY GROUNDWATER RECHARGE OVERLAY
DENSITY: 4,000 Sq. Ft. / UNIT
SETBACKS
FRONT BUILD TO~ 5-20'
SIDE ~ 10'
REAR ~ 15'
MIN. LOT SIZE: N/A
MAX. LOT COVERAGE: 50%
MAX. BUILDING HEIGHT: 2 STORIES (300' OF CL NEW ROCHESTER RD)
RESIDENTIAL: SINGLE FAMILY AND TWO FAMILY
MAX. IMPERVIOUS COVERAGE: 20%

ZONING: R-12 - MEDIUM DENSITY RESIDENTIAL (5,200 Sq.Ft.)
SECONDARY GROUNDWATER RECHARGE OVERLAY
SETBACKS
FRONT BUILD TO~ 15-25'
SIDE ~ 15'
REAR ~ 30'
MIN. LOT SIZE: 12,000 Sq. Ft.
MIN. FRONTAGE: 100'
MAX. LOT COVERAGE: 30%
MAX. BUILDING HEIGHT: 35'
MAX. IMPERVIOUS COVERAGE: 20%

6.) THE INTENT OF THIS PLAN IS TO SHOW THE EXISTING BOUNDARIES AND CONDITIONS OF TAX MAP 39, LOTS 103 LOCATED IN DOVER, N.H., AS OF THE FIELD SURVEY IN NOVEMBER 2021.

7.) 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 #330145, MAP 33017C0320E, DATED: SEPTEMBER 30, 2015.

8.) VERTICAL DATUM BASED ON NAVD88 ELEVATIONS. HORIZONTAL DATUM BASED ON NAD83 STATE PLANE COORDINATES GATHERED USING CARLSON BRX7 SURVEY GRADE GPS RECEIVERS.

9.) THE BOUNDARY LINES SHOWN ON THIS PLAN ARE THE RESULT OF A CLOSED TRAVERSE PERFORMED BY THIS OFFICE IN NOVEMBER OF 2021 WITH AN ERROR OF CLOSURE BETTER THAN 1 PART IN 10,000.

10.) TOPOGRAPHY PROVIDED IS DEMARCATED AT 1' INTERVALS, AND IS THE RESULT OF A FIELD SURVEY PERFORMED IN NOVEMBER 2021.

11.) THIS SITE IS SERVICED BY MUNICIPAL SEWER AND WATER.

12.) NO OBSERVED CEMETERY.

13.) LOT COVERAGE: BUILDING COVERAGE: 3.06%, TOTAL LOT COVERAGE: 5.88%, FRONTAGE BUILD-OUT: 40.6'

LEGEND:

- 3/4" REBAR W/ID CAP ~TBS~
- 3/4" REBAR W/ID CAP ~SET~
- IRON BOUND/IRON ROD (FND)
- IRON PIPE (FND)
- UTILITY POLE / GUY WIRE
- SINGLE POST SIGN
- TEST PIT
- CURB STOP
- GATE VALVE
- FIRE HYDRANT
- CATCH BASIN
- DRAIN MANHOLE
- SEWER MANHOLE
- ABUTTING PROPERTY LINE
- BUILDING SETBACK LINE
- EXISTING WATER LINE
- EXISTING SEWER LINE
- EXISTING DRAIN LINE
- OVERHEAD UTILITIES
- EXISTING CONTOUR MINOR
- EXISTING CONTOUR MAJOR
- EXISTING TREELINE
- ZONING DISTRICT LINE
- EXISTING LCA LINES
- WdA/HSG A USDA/NRCS SOIL SYMBOL
- (A) ABUTTER LOCATION SYMBOL
- 207x62 SPOT GRADE
- FND FOUND
- TYP TYPICAL
- S.C.R.D. STRAFFORD COUNTY REGISTRY OF DEEDS
- T.B.R. TO BE REMOVED
- TBS TO BE SET

DOVER PLANNING FILE #SITE-2023-0007

REVISION	DATE	DESCRIPTION
#4	12-01-23	REVISED PER TRC #3 COMMENT
#3	11-09-23	REVISED PER INFORMAL TRC
#2	11-06-23	REVISED PER TRC #2 & ADDITIONAL UNITS ADDED
#1	9-25-23	REVISED PER DOVER TRC COMMENT

EXISTING CONDITIONS PLAN & DEMOLITION PLAN
LAND OF: ROBERT BALDWIN
FOR: KNOX MARSH DEVELOPMENT LLC
34 NEW ROCHESTER ROAD
DOVER, N.H.
TAX MAP 39, LOT 103

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

SCALE : 1 IN. EQUALS 20 FT.
DATE : JULY 6, 2023
FILE NO. : DB 2023 - 053

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

NOT FOR CONSTRUCTION

TEST PIT DATA:

TEST PIT #1
0–12" 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
12–25" 10YR 5/4 YELLOWISH BROWN, GRAVELLY LOAMY SAND, GRANULAR, FRIABLE
25–32" 10YR 5/6 YELLOWISH BROWN, GRAVELLY LOAMY SAND, GRANULAR, FRIABLE
32–72" 10YR 6/2 LIGHT BROWNISH GRAY, GRAVELLY SAND W/REDOX. FEAT. PRESENT, SINGLE GRAIN, LOOSE
E.S.H.W.T. @ 32"
RESTRICTIVE LAYER @ N/A
GROUND WATER @ N/A
TERMINATED @ 72"
REFUSAL @ N/A

TEST PIT #2
0–10" 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
10–24" 10YR 5/4 YELLOWISH BROWN, GRAVELLY LOAMY SAND, GRANULAR, FRIABLE
24–32" 10YR 5/6 YELLOWISH BROWN, GRAVELLY LOAMY SAND, GRANULAR, FRIABLE
32–74" 10YR 6/2 LIGHT BROWNISH GRAY, GRAVELLY SAND W/REDOX. FEAT. PRESENT, SINGLE GRAIN, LOOSE
E.S.H.W.T. @ 32"
RESTRICTIVE LAYER @ N/A
GROUND WATER @ N/A
TERMINATED @ 74"
REFUSAL @ N/A

TEST PIT #3
0–10" 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
10–22" 10YR 5/4 YELLOWISH BROWN, GRAVELLY LOAMY SAND, GRANULAR, FRIABLE
22–32" 10YR 5/6 YELLOWISH BROWN, GRAVELLY LOAMY SAND, GRANULAR, FRIABLE
32–76" 10YR 6/2 LIGHT BROWNISH GRAY, GRAVELLY SAND W/REDOX. FEAT. PRESENT, SINGLE GRAIN, LOOSE
E.S.H.W.T. @ 32"
RESTRICTIVE LAYER @ N/A
GROUND WATER @ N/A
TERMINATED @ 76"
REFUSAL @ N/A

TEST PIT #4
0–8" 10YR 3/2 VERY DARK GRAYISH BROWN, LOAM FINE SAND, GRANULAR, FRIABLE
8–12" 7.5YR 5/6 STRONG BROWN, LOAMY SAND, GRANULAR, FRIABLE
12–22" 10YR 5/6 YELLOWISH BROWN, LOAMY SAND, GRANULAR, FRIABLE
22–38" 10YR 5/4 YELLOWISH BROWN, LOAMY SAND, GRANULAR, FRIABLE
38–78" 10YR 6/2 LIGHT BROWNISH GRAY, SAND WTH REDOX. FEAT. PRESENT, LOOSE. SINGLE GRAIN
E.S.H.W.T. @ 38"
RESTRICTIVE LAYER @ N/A
GROUND WATER @ 54"
TERMINATED @ 78"
REFUSAL @ N/A

TEST PIT #5
0–10" 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
10–30" 10YR 5/4 YELLOWISH BROWN, GRAVELLY LOAMY SAND, GRANULAR, FRIABLE
30–36" 10YR 5/6 YELLOWISH BROWN, GRAVELLY LOAMY SAND, GRANULAR, FRIABLE
36–76" 10YR 6/2 LIGHT BROWNISH GRAY, GRAVELLY SAND W/REDOX. FEAT. PRESENT, SINGLE GRAIN, LOOSE
E.S.H.W.T. @ 36"
RESTRICTIVE LAYER @ N/A
GROUND WATER @ N/A
TERMINATED @ 76"
REFUSAL @ N/A

TEST PIT #6
0–8" 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
8–20" 7.5 YR 5/6 STRONG BROWN, LOAMY SAND, GRANULAR, FRIABLE
20–30" 10YR 5/6 YELLOWISH BROWN, LOAMY SAND, GRANULAR, FRIABLE
30–42" 10YR 4/6 YELLOWISH BROWN, GRAVELLY SAND, GRANULAR, FRIABLE
42–78" 10YR 6/2 LIGHT BROWNISH GRAY, GRAVELLY SAND W/REDOX. FEAT. PRESENT, SINGLE GRAIN, LOOSE
E.S.H.W.T. @ 42"
RESTRICTIVE LAYER @ N/A
GROUND WATER @ N/A
TERMINATED @ 78"
REFUSAL @ N/A

TEST PIT #7
0–8" 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
8–18" 7.5 YR 5/6 STRONG BROWN, LOAMY SAND, GRANULAR, FRIABLE
18–30" 10YR 5/6 YELLOWISH BROWN, LOAMY SAND, GRANULAR, FRIABLE
30–42" 10YR 4/6 YELLOWISH BROWN, GRAVELLY SAND, GRANULAR, FRIABLE
42–78" 10YR 6/2 LIGHT BROWNISH GRAY, GRAVELLY SAND W/REDOX. FEAT. PRESENT, SINGLE GRAIN, LOOSE
E.S.H.W.T. @ 42"
RESTRICTIVE LAYER @ N/A
GROUND WATER @ N/A
TERMINATED @ 78"
REFUSAL @ N/A

TEST PIT #8
0–8" 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
8–20" 7.5 YR 5/6 STRONG BROWN, LOAMY SAND, GRANULAR, FRIABLE
20–34" 10YR 5/6 YELLOWISH BROWN, LOAMY SAND, GRANULAR, FRIABLE
34–44" 10YR 4/6 YELLOWISH BROWN, GRAVELLY SAND, GRANULAR, FRIABLE
44–78" 10YR 6/2 LIGHT BROWNISH GRAY, GRAVELLY SAND W/REDOX. FEAT. PRESENT, SINGLE GRAIN, LOOSE
E.S.H.W.T. @ 44"
RESTRICTIVE LAYER @ N/A
GROUND WATER @ N/A
TERMINATED @ 78"
REFUSAL @ N/A

TEST PIT #9
0–12" 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
12–28" 10YR 5/4 YELLOWISH BROWN, GRAVELLY LOAMY SAND, GRANULAR, FRIABLE
28–41" 10YR 5/6 YELLOWISH BROWN, GRAVELLY LOAMY SAND, GRANULAR, FRIABLE
41–72" 10YR 6/2 LIGHT BROWNISH GRAY, GRAVELLY SAND W/REDOX. FEAT. PRESENT, SINGLE GRAIN, LOOSE
E.S.H.W.T. @ 41"
RESTRICTIVE LAYER @ N/A
GROUND WATER @ N/A
TERMINATED @ 72"
REFUSAL @ N/A

TEST PIT #10
0–12" 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
12–25" 10YR 5/4 YELLOWISH BROWN, GRAVELLY LOAMY SAND, GRANULAR, FRIABLE
25–32" 10YR 5/6 YELLOWISH BROWN, GRAVELLY LOAMY SAND, GRANULAR, FRIABLE
32–72" 10YR 6/2 LIGHT BROWNISH GRAY, GRAVELLY SAND W/REDOX. FEAT. PRESENT, SINGLE GRAIN, LOOSE
E.S.H.W.T. @ 32"
RESTRICTIVE LAYER @ N/A
GROUND WATER @ N/A
TERMINATED @ 72"
REFUSAL @ N/A

TEST PIT #11
0–12" 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
12–25" 10YR 5/4 YELLOWISH BROWN, GRAVELLY LOAMY SAND, GRANULAR, FRIABLE
25–32" 10YR 5/6 YELLOWISH BROWN, GRAVELLY LOAMY SAND, GRANULAR, FRIABLE
32–72" 10YR 6/2 LIGHT BROWNISH GRAY, GRAVELLY SAND W/REDOX. FEAT. PRESENT, SINGLE GRAIN, LOOSE
E.S.H.W.T. @ 32"
RESTRICTIVE LAYER @ N/A
GROUND WATER @ N/A
TERMINATED @ 72"
REFUSAL @ N/A

TEST PIT #12
0–12" 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
12–25" 10YR 5/4 YELLOWISH BROWN, GRAVELLY LOAMY SAND, GRANULAR, FRIABLE
25–32" 10YR 5/6 YELLOWISH BROWN, GRAVELLY LOAMY SAND, GRANULAR, FRIABLE
32–72" 10YR 6/2 LIGHT BROWNISH GRAY, GRAVELLY SAND W/REDOX. FEAT. PRESENT, SINGLE GRAIN, LOOSE
E.S.H.W.T. @ 32"
RESTRICTIVE LAYER @ N/A
GROUND WATER @ N/A
TERMINATED @ 72"
REFUSAL @ N/A

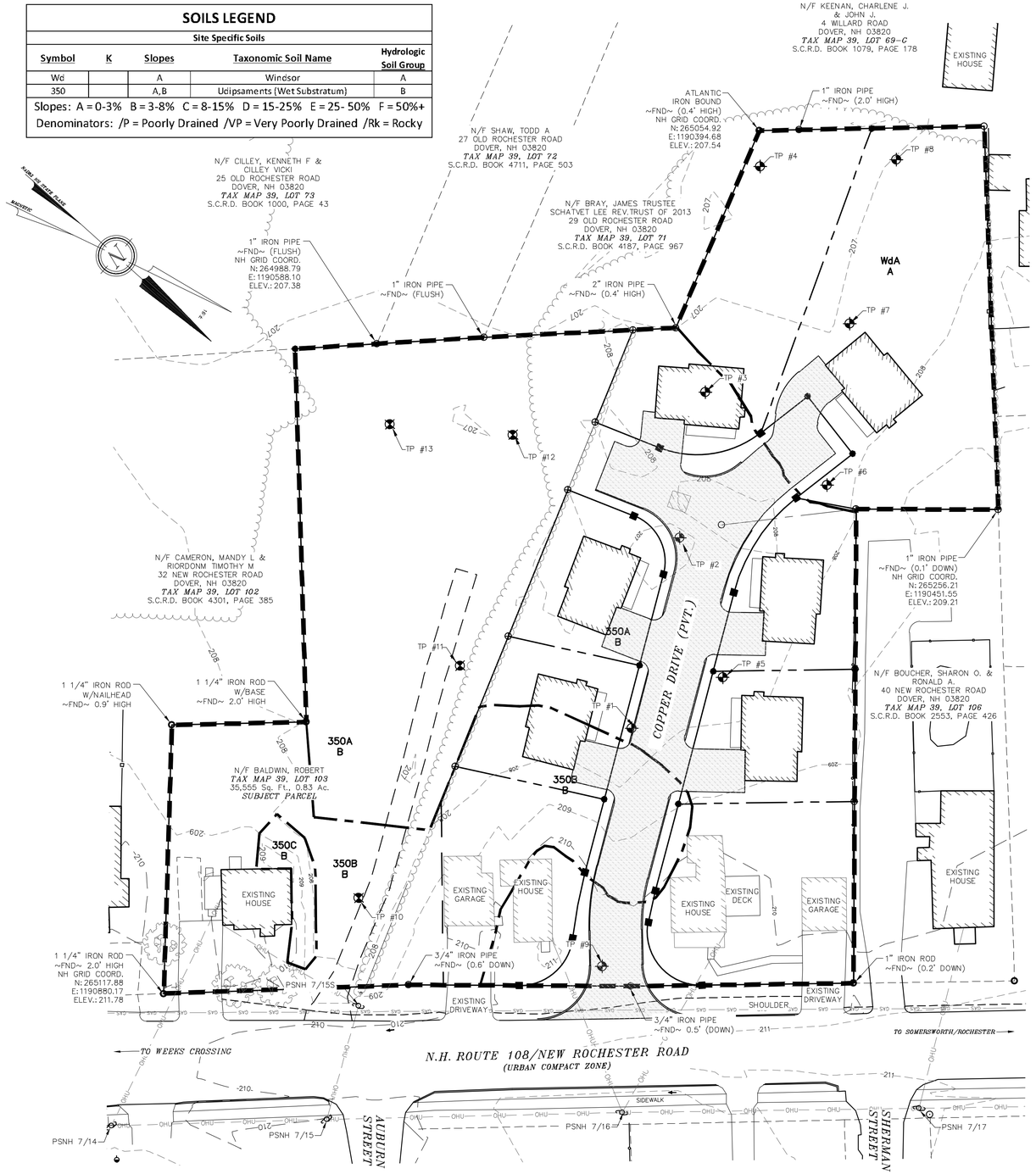
TEST PIT #13
0–12" 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
12–25" 10YR 5/4 YELLOWISH BROWN, GRAVELLY LOAMY SAND, GRANULAR, FRIABLE
25–32" 10YR 5/6 YELLOWISH BROWN, GRAVELLY LOAMY SAND, GRANULAR, FRIABLE
32–72" 10YR 6/2 LIGHT BROWNISH GRAY, GRAVELLY SAND W/REDOX. FEAT. PRESENT, SINGLE GRAIN, LOOSE
E.S.H.W.T. @ 32"
RESTRICTIVE LAYER @ N/A
GROUND WATER @ N/A
TERMINATED @ 72"
REFUSAL @ N/A

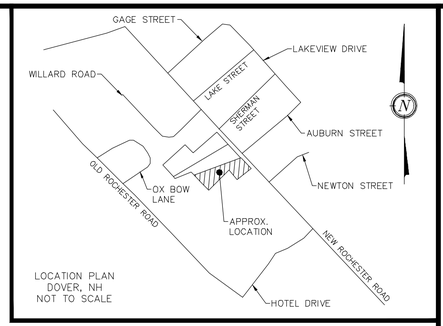
SOILS LEGEND

Site Specific Soils

Symbol	K	Slopes	Taxonomic Soil Name	Hydrologic Soil Group
Wd		A	Windsor	A
350		A,B	Ucipsaments (Wet Substratum)	B

Slopes: A = 0-3% B = 3-8% C = 8-15% D = 15-25% E = 25- 50% F = 50%+
Denominators: /P = Poorly Drained /VP = Very Poorly Drained /Rk = Rocky





LOCATION PLAN
DOVER, NH
NOT TO SCALE

NOTES:

1A.) OWNER: ROBERT BALDWIN
242 CENTRAL AVE
DOVER, NH 03820

1B.) APPLICANT: KNOX MARSH DEVELOPMENT LLC
242 CENTRAL AVE
DOVER, NH 03820

2.) TAX MAP 39, LOT 103

3.) S.C.R.D. BOOK 5116, PAGE 655

4.) LOT AREA: 35,555 Sq. Ft., 0.82 Ac.

5.) VERTICAL DATUM BASED ON NAVD88 ELEVATIONS. HORIZONTAL DATUM BASED ON NAD83 STATE PLANE. COORDINATES GATHERED USING CARLSON BRX7 SURVEY GRADE GPS RECEIVERS.

6.) THE INTENT OF THIS PLAN IS TO SHOW THE EXISTING SOIL CONDITIONS OF TAX MAP 39, LOTS 103 & 104 LOCATED IN DOVER, N.H.

WETLAND NOTES:

1. WETLANDS WERE DELINEATED BY JOHN P. HAYES IN MAY OF 2023. REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION, (VERSION 2.0) JANUARY 2012, U.S. ARMY CORPS OF ENGINEERS.
2. FIELD INDICATORS OF HYDRIC SOILS IN THE UNITED STATES, A GUIDE FOR IDENTIFYING AND DELINEATING HYDRIC SOILS, VERSION 8.0. UNITED STATES DEPARTMENT OF AGRICULTURE (2016).
3. NATIONAL WETLAND PLANT LIST (CURRENT VERSION).

NO WETLANDS WERE FOUND ON SITE.

JOHN P. HAYES III, CWS #18

JOHN P. HAYES III, CSS #87

CHRISTOPHER R. BERRY
NH PERMITTED DESIGNER #1886

LEGEND:

- IRON BOUND/IRON ROD (FND)
- IRON PIPE (FND)
- UTILITY POLE
- TEST PIT
- OHU — OHU — OHU — OVERHEAD UTILITIES LINE
- 276 — EXISTING CONTOUR MINOR
- 275 — EXISTING CONTOUR MAJOR
- SOIL LINE
- LIMIT OF SOIL SURVEY
- WdA — SOIL SERIES
- S.C.R.D. — STRAFFORD COUNTY REGISTRY OF DEEDS
- TYP. — TYPICAL
- FND — FOUND

GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.

DOVER PLANNING FILE #SITE–2023–0007

REVISION	DATE	DESCRIPTION
#4	12–01–23	REVISED PER TRC #3 COMMENT
#3	11–09–23	REVISED PER INFORMAL TRC
#2	11–06–23	REVISED PER TRC #2 & ADDITIONAL UNITS ADDED
#1	9–25–23	REVISED PER DOVER TRC COMMENT

SITE SPECIFIC SOILS MAP
LAND OF: ROBERT BALDWIN
FOR: KNOX MARSH DEVELOPMENT LLC
34 NEW ROCHESTER ROAD
DOVER, N.H.
TAX MAP 39, LOT 103

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

SCALE : 1 IN. EQUALS 30 FT.
DATE : JULY 6, 2023
FILE NO. : DB 2023 – 053

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

NOT FOR CONSTRUCTION

PLAN REFERENCES:

1.) "PARTIAL PLAN OF LOTS LAND OF MRS. F.C. WHIPP"
BY: GERARD A. CRAWFORD
DATED: MAY 1955
S.C.R.D. PLAN #28B, POCKET #1, FOLDER #2

2.) "FISCHER HOMES INC. DAME DEVELOPMENT DOVER N.H."
BY: GRANT L. DAVIS
DATED: FEBRUARY 8, 1956
S.C.R.D. PLAN #65, POCKET #2, FOLDER #15

3.) "PLAN OF LOTS AT LAKEVIEW PARK, DOVER N.H.
OWNED BY M.C. MEAGHER, TRUSTEE"
BY: WM. A. GROVER CIVIL ENGINEER
DATED: JUNE 1904
S.C.R.D. PLAN #8, POCKET #7, FOLDER #2

4.) "WHIPP DEVELOPMENT REVISED SUBDIVISION, LAND OF MRS. FRED C. WHIPP DOVER, NH"
BY: GERARD A. CRAWFORD
DATED: MAY, 1955
S.C.R.D. PLAN #16, POCKET #7, FOLDER #2

5.) "PLAN OF SUBDIVISION FOR DONALD & MORNA MESSIER OLD ROCHESTER ROAD DOVER, NEW HAMPSHIRE"
BY: K.E. MOORE & B.G. STAPLES LAND SURVEYORS
DATED: MAY 1980
S.C.R.D. PLAN #22A-40

6.) "PLAN OF SUBDIVISION BERNARD J. JR. & SALLY B. MALLON"
BY: K.E. MOORE & B.G. STAPLES, LAND SURVEYORS
DATED: JULY, 1976
S.C.R.D. PLAN #17A-61

7.) "FEDERAL PROJECT NO. STP-M-5125(005)
STP-F-027-1(34)" SHEET 28
BY: CARON ENGINEERING
S.C.R.D. PLAN #56-85

8.) "FEDERAL PROJECT NO. STP-M-5125(005)
STP-F-027-1(34)" SHEET 30
BY: CARON ENGINEERING
S.C.R.D. PLAN #56-89

9.) "CARRIER TO ZERBINOPOULOS DEED SKETCH"
DATED: APRIL 10, 1964
S.C.R.D. BOOK 781, PAGE 424

10.) "PLAN OF LAND PREPARED FOR CHARLENE ZERBINOPOULOS"
BY: ATLANTIC SURVEY CO. INC.
DATED: NOVEMBER 2005
PLAN #05156

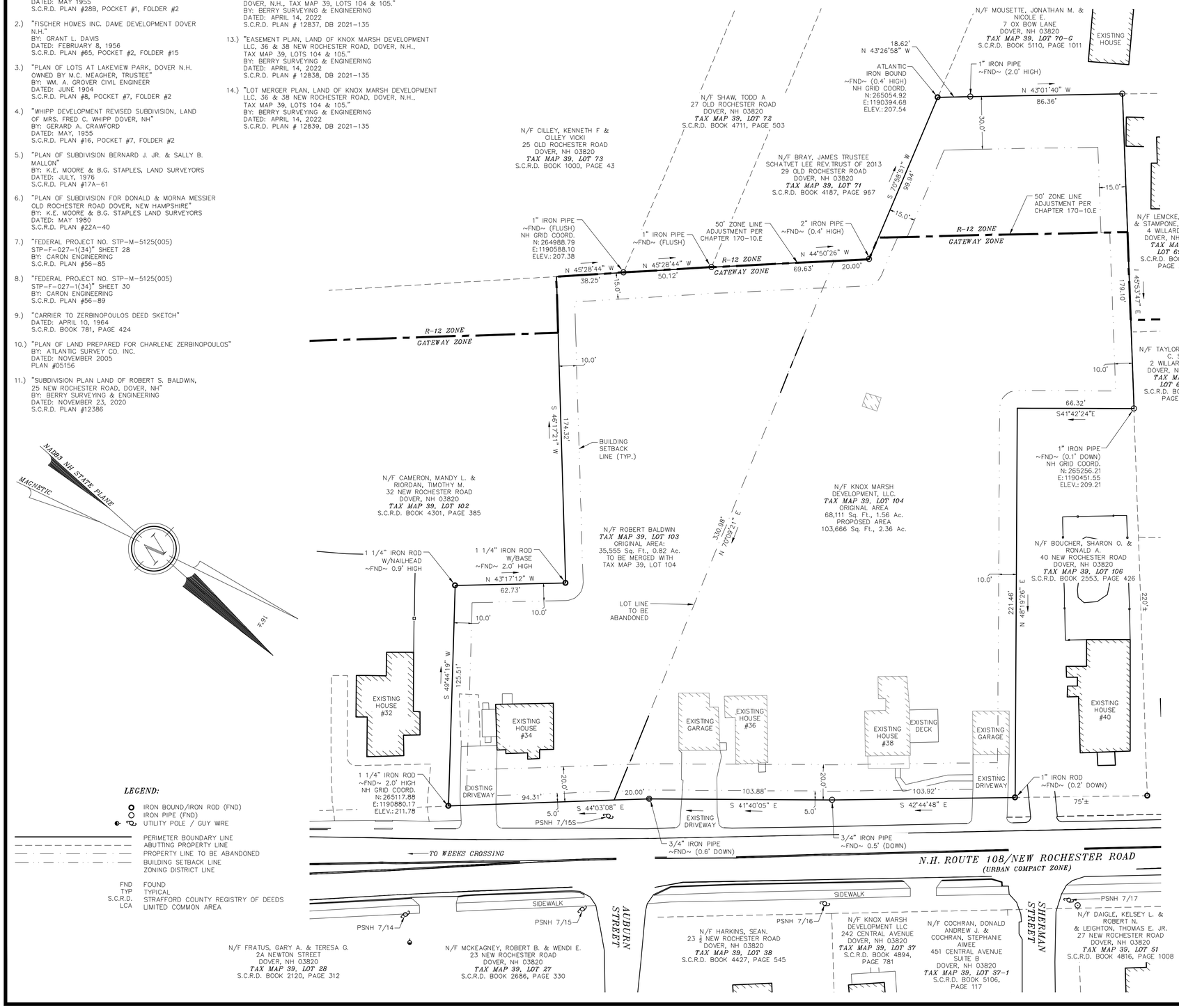
11.) "SUBDIVISION PLAN LAND OF ROBERT S. BALDWIN, 25 NEW ROCHESTER ROAD, DOVER, NH"
BY: BERRY SURVEYING & ENGINEERING
DATED: NOVEMBER 23, 2020
S.C.R.D. PLAN #12386

PLAN REFERENCES (CONT'D):

12.) "CONDOMINIUM SUBDIVISION PLAN, LAND OF KNOX MARSH DEVELOPMENT LLC, 36 & 38 NEW ROCHESTER ROAD, DOVER, N.H., TAX MAP 39, LOTS 104 & 105."
BY: BERRY SURVEYING & ENGINEERING
DATED: APRIL 14, 2022
S.C.R.D. PLAN # 12837, DB 2021-135

13.) "EASEMENT PLAN, LAND OF KNOX MARSH DEVELOPMENT LLC, 36 & 38 NEW ROCHESTER ROAD, DOVER, N.H., TAX MAP 39, LOTS 104 & 105."
BY: BERRY SURVEYING & ENGINEERING
DATED: APRIL 14, 2022
S.C.R.D. PLAN # 12838, DB 2021-135

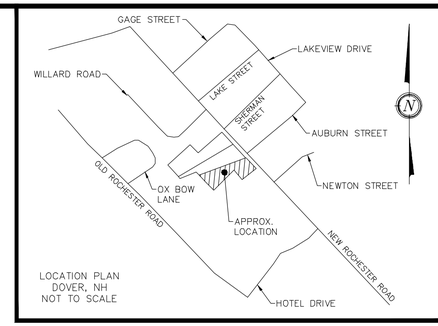
14.) "LOT MERGER PLAN, LAND OF KNOX MARSH DEVELOPMENT LLC, 36 & 38 NEW ROCHESTER ROAD, DOVER, N.H., TAX MAP 39, LOTS 104 & 105."
BY: BERRY SURVEYING & ENGINEERING
DATED: APRIL 14, 2022
S.C.R.D. PLAN # 12839, DB 2021-135



LEGEND:

- IRON BOUND/IRON ROD (FND)
- IRON PIPE (FND)
- UTILITY POLE / GUY WIRE
- PERIMETER BOUNDARY LINE
- ABUTTING PROPERTY LINE
- PROPERTY LINE TO BE ABANDONED
- BUILDING SETBACK LINE
- ZONING DISTRICT LINE

FND FOUND
TYP TYPICAL
S.C.R.D. STRAFFORD COUNTY REGISTRY OF DEEDS
LCA LIMITED COMMON AREA



LOCATION PLAN
DOVER, NH
NOT TO SCALE

NOTES:

1.) OWNER: ROBERT BALDWIN
242 CENTRAL AVE
DOVER, NH 03820
_____ OWNER SIGNATURE

2.) TAX MAP 39, LOT 103

3.) S.C.R.D. BOOK 5116, PAGE 655

4.) LOT AREA: 35,555 Sq.Ft., 0.82 Ac.

5.) OWNER: KNOX MARSH DEVELOPMENT LLC
242 CENTRAL AVE
DOVER, NH 03820
_____ OWNER SIGNATURE

6.) TAX MAP 39, LOT 104

7.) S.C.R.D. BOOK 4920, PAGE 284
S.C.R.D. BOOK 4920, PAGE 308

8.) LOT AREA: 68,111 Sq. Ft., 1.56 Ac.

9.) LOT 104 WAS PART OF A MERGER WITH LOT 105, DATED DECEMBER 21, 2022 AND RECORDED AT S.C.R.D. BOOK 5092, PAGE 613. SEE PLAN REFERENCE #14 FOR FURTHER DETAILS.

10.) ZONING: G – GATEWAY DISTRICT (93,953 Sq.Ft.)
SECONDARY GROUNDWATER RECHARGE OVERLAY
DENSITY: 4,000 Sq. Ft. / UNIT
SETBACKS
FRONT BUILD TO~ 5–20'
SIDE ~ 10'
REAR ~ 15'
MIN. LOT SIZE: N/A
MAX. LOT COVERAGE: 50%
MAX. BUILDING HEIGHT: 2 STORIES (300' OF CL NEW ROCHESTER RD)
RESIDENTIAL: SINGLE FAMILY AND TWO FAMILY
MAX. IMPERVIOUS COVERAGE: 20%

ZONING: R-12 – MEDIUM DENSITY RESIDENTIAL (9,713 Sq.Ft.)
SECONDARY GROUNDWATER RECHARGE OVERLAY
SETBACKS
FRONT BUILD TO~ 15–25'
SIDE ~ 15'
REAR ~ 30'
MIN. LOT SIZE: 12,000 Sq. Ft.
MIN. FRONTAGE: 100'
MAX. LOT COVERAGE: 30%
MAX. BUILDING HEIGHT: 35'
MAX IMPERVIOUS COVERAGE: 20%

11.) THE INTENT OF THIS PLAN IS TO SHOW THE LOT MERGER PLAN OF TAX MAP 39, LOTS 103 & 104 LOCATED IN DOVER, N.H.

12.) 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 #330145, MAP 33017C0320E, DATED: SEPTEMBER 30, 2015.

13.) VERTICAL DATUM BASED ON NAVD88 ELEVATIONS. HORIZONTAL DATUM BASED ON NAD83 STATE PLANE. COORDINATES GATHERED USING CARLSON BRX7 SURVEY GRADE GPS RECEIVERS.

14.) THE BOUNDARY LINES SHOWN ON THIS PLAN ARE THE RESULT OF A CLOSED TRAVERSE PERFORMED BY THIS OFFICE IN NOVEMBER OF 2021 WITH AN ERROR OF CLOSURE BETTER THAN 1 PART IN 10,000.

15.) TOPOGRAPHY PROVIDED IS DEMARCATED AT 1' INTERVALS, AND IS THE RESULT OF A FIELD SURVEY PERFORMED IN NOVEMBER 2021.

16.) THIS SITE IS SERVICED BY MUNICIPAL SEWER AND WATER.

17.) WETLANDS WERE DELINEATED BY JOHN P. HAYES, CERTIFIED WETLANDS SCIENTIST, IN ACCORDANCE WITH CHAPTER 170-27.1 OF THE ZONING ORDINANCE, IN MAY OF 2023. NO WETLANDS WERE FOUND ON SITE.

18.) THIS LOT MERGER WAS ADDRESSED BY THE DOVER PLANNING BOARD ON XXXXX XX, 2023. SEE LOT MERGER FORM TO BE RECORDED AT STRAFFORD COUNTY REGISTRY OF DEEDS.

I CERTIFY THAT THIS SURVEY PLAT IS NOT A SUBDIVISION PURSUANT TO THIS TITLE AND THAT THE LINES OF STREETS AND WAYS SHOWN ARE THOSE OF PUBLIC OR PRIVATE STREETS OR WAYS ALREADY ESTABLISHED AND THAT NO NEW WAYS ARE SHOWN.

KENNETH A. BERRY L.L.S. 805 DATE

GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.

DOVER PLANNING FILE #SITE-2023-0007

#	REVISION	DATE	DESCRIPTION
#4		12-01-23	REVISED PER TRC #3 COMMENT
#3		11-09-23	REVISED PER INFORMAL TRC
#2		11-06-23	REVISED PER TRC #2 & ADDITIONAL UNITS ADDED
#1		9-25-23	REVISED PER DOVER TRC COMMENT

LOT MERGER PLAN
LAND OF: ROBERT BALDWIN
FOR: KNOX MARSH DEVELOPMENT LLC
34 NEW ROCHESTER ROAD
DOVER, N.H.
TAX MAP 39, LOT 103

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

SCALE : 1 IN. EQUALS 30 FT.
DATE : JULY 6, 2023
FILE NO. : DB 2023 – 053

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

NOT FOR CONSTRUCTION

PLAN REFERENCES:

1.) "PARTIAL PLAN OF LOTS LAND OF MRS. F.C. WHIPP"
BY: GERARD A. CRAWFORD
DATED: MAY 1955
S.C.R.D. PLAN #28B, POCKET #1, FOLDER #2

2.) "FISCHER HOMES INC. DAME DEVELOPMENT DOVER N.H."
BY: GRANT L. DAVIS
DATED: FEBRUARY 8, 1956
S.C.R.D. PLAN #65, POCKET #2, FOLDER #15

3.) "PLAN OF LOTS AT LAKEVIEW PARK, DOVER N.H.
OWNED BY M.C. MEAGHER, TRUSTEE"
BY: WM. A. GROVER CIVIL ENGINEER
DATED: JUNE 1904
S.C.R.D. PLAN #8, POCKET #7, FOLDER #2

4.) "WHIPP DEVELOPMENT REVISED SUBDIVISION, LAND OF MRS. FRED C. WHIPP DOVER, NH"
BY: GERARD A. CRAWFORD
DATED: MAY, 1955
S.C.R.D. PLAN #16, POCKET #7, FOLDER #2

5.) "PLAN OF SUBDIVISION BERNARD J. JR. & SALLY B. MALLON"
BY: K.E. MOORE & B.G. STAPLES, LAND SURVEYORS
DATED: JULY, 1976
S.C.R.D. PLAN #17A-61

6.) "PLAN OF SUBDIVISION FOR DONALD & MORNA MESSIER OLD ROCHESTER ROAD DOVER, NEW HAMPSHIRE"
BY: K.E. MOORE & B.G. STAPLES LAND SURVEYORS
DATED: MAY 1980
S.C.R.D. PLAN #22A-40

7.) "FEDERAL PROJECT NO. STP-M-5125(005)
STP-F-027-1(34)" SHEET 28
BY: CARON ENGINEERING
S.C.R.D. PLAN #56-85

8.) "FEDERAL PROJECT NO. STP-M-5125(005)
STP-F-027-1(34)" SHEET 30
BY: CARON ENGINEERING
S.C.R.D. PLAN #56-89

9.) "CARRIER TO ZERBINOPOULOS DEED SKETCH"
DATED: APRIL 10, 1964
S.C.R.D. BOOK 781, PAGE 424

10.) "PLAN OF LAND PREPARED FOR CHARLENE ZERBINOPOULOS"
BY: ATLANTIC SURVEY CO. INC.
DATED: NOVEMBER 2005
PLAN #05156

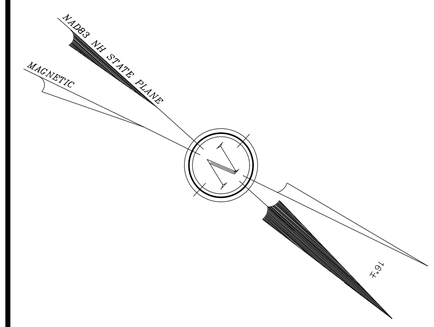
11.) "SUBDIVISION PLAN LAND OF ROBERT S. BALDWIN, 25 NEW ROCHESTER ROAD, DOVER, NH"
BY: BERRY SURVEYING & ENGINEERING
DATED: NOVEMBER 23, 2020
S.C.R.D. PLAN #12386

PLAN REFERENCES (CONT'D):

12.) "CONDOMINIUM SUBDIVISION PLAN, LAND OF KNOX MARSH DEVELOPMENT LLC, 36 & 38 NEW ROCHESTER ROAD, DOVER, N.H., TAX MAP 39, LOTS 104 & 105."
BY: BERRY SURVEYING & ENGINEERING
DATED: APRIL 14, 2022
S.C.R.D. PLAN # 12837, DB 2021-135

13.) "EASEMENT PLAN, LAND OF KNOX MARSH DEVELOPMENT LLC, 36 & 38 NEW ROCHESTER ROAD, DOVER, N.H., TAX MAP 39, LOTS 104 & 105."
BY: BERRY SURVEYING & ENGINEERING
DATED: APRIL 14, 2022
S.C.R.D. PLAN # 12838, DB 2021-135

14.) "LOT MERGER PLAN, LAND OF KNOX MARSH DEVELOPMENT LLC, 36 & 38 NEW ROCHESTER ROAD, DOVER, N.H., TAX MAP 39, LOTS 104 & 105."
BY: BERRY SURVEYING & ENGINEERING
DATED: APRIL 14, 2022
S.C.R.D. PLAN # 12839, DB 2021-135

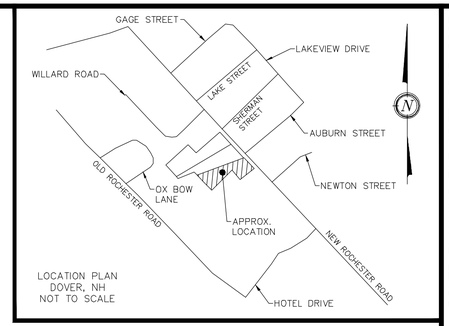


LEGEND:

- ● 3/4" REBAR W/ID CAP ~TBS~
- ■ GRANITE BOUND ~TBS~
- ⊕ 3/4" REBAR W/ID CAP ~SET~
- ○ IRON BOUND/IRON ROD (FND)
- ○ IRON PIPE (FND)
- UTILITY POLE / GUY WIRE

- PERIMETER BOUNDARY LINE
- ABUTTING PROPERTY LINE
- BUILDING SETBACK LINE
- ZONING DISTRICT LINE
- EXISTING LCA LINE
- LCA LINE TO BE REVISED
- PROPOSED LCA LINE
- EXISTING EASEMENT

FND FOUND
TYP TYPICAL
S.C.R.D. STRAFFORD COUNTY REGISTRY OF DEEDS
LCA LIMITED COMMON AREA
TBS TO BE SET



LOCATION PLAN
DOVER, NH
NOT TO SCALE

NOTES:

1A.) OWNER: ROBERT BALDWIN
242 CENTRAL AVE
DOVER, NH 03820

OWNER SIGNATURE

1B.) APPLICANT: KNOX MARSH DEVELOPMENT LLC
242 CENTRAL AVE
DOVER, NH 03820

2.) TAX MAP 39, LOT 104-7

3.) S.C.R.D. BOOK 4920, PAGE 284
S.C.R.D. BOOK 4920, PAGE 308
S.C.R.D. BOOK 5116, PAGE 655

4.) EXISTING COMMON AREA: 47,959 Sq. Ft., 1.10 Ac.
PROPOSED COMMON AREA: 49,508 Sq.Ft., 1.14 Ac.

9.) ZONING: G – GATEWAY DISTRICT (93,953 Sq.Ft.)
SECONDARY GROUNDWATER RECHARGE OVERLAY
DENSITY: 4,000 Sq. Ft. / UNIT
SETBACKS
FRONT BUILD TO~ 5–20'
SIDE ~ 10'
REAR ~ 15'
MIN. LOT SIZE: N/A
MAX. LOT COVERAGE: 50%
MAX. BUILDING HEIGHT: 2 STORIES (300' OF CL NEW ROCHESTER RD)
RESIDENTIAL: SINGLE FAMILY AND TWO FAMILY
MAX. IMPERVIOUS COVERAGE: 20%

ZONING: R-12 – MEDIUM DENSITY RESIDENTIAL (9,713 Sq.Ft.)
SECONDARY GROUNDWATER RECHARGE OVERLAY
SETBACKS
FRONT BUILD TO~ 15–25'
SIDE ~ 15'
REAR ~ 30'
MIN. LOT SIZE: 12,000 Sq. Ft.
MIN. FRONTAGE: 100'
MAX. LOT COVERAGE: 30%
MAX. BUILDING HEIGHT: 35'
MAX IMPERVIOUS COVERAGE: 20%

10.) THE INTENT OF THIS PLAN IS TO SHOW THE REVISION OF THE LCA LINE BETWEEN LCA LOT TAX MAP 39, LOTS 104 & 104-7 LOCATED IN DOVER, N.H.

11.) 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 #330145, MAP 33017C0320E, DATED: SEPTEMBER 30, 2015.

12.) VERTICAL DATUM BASED ON NAVD88 ELEVATIONS. HORIZONTAL DATUM BASED ON NAD83 STATE PLANE. COORDINATES GATHERED USING CARLSON BRX7 SURVEY GRADE GPS RECEIVERS.

13.) THE BOUNDARY LINES SHOWN ON THIS PLAN ARE THE RESULT OF A CLOSED TRAVERSE PERFORMED BY THIS OFFICE IN NOVEMBER OF 2021 WITH AN ERROR OF CLOSURE BETTER THAN 1 PART IN 10,000.

14.) TOPOGRAPHY PROVIDED IS DEMARCATED AT 1' INTERVALS, AND IS THE RESULT OF A FIELD SURVEY PERFORMED IN NOVEMBER 2021.

15.) THIS SITE IS SERVICED BY MUNICIPAL SEWER AND WATER.

16.) WETLANDS WERE DELINEATED BY JOHN P. HAYES, CERTIFIED WETLANDS SCIENTIST, IN ACCORDANCE WITH CHAPTER 170-27.1 OF THE ZONING ORDINANCE, IN MAY OF 2023. NO WETLANDS WERE FOUND ON SITE.

17.) A BLANKET UTILITY EASEMENT IS PROVIDED TO THE CITY OF DOVER IN COPPER DRIVE AND EMBER DRIVE TO MAINTAIN THE POTABLE DRINKING WATER QUALITY THROUGH THE HYDRANT FLUSHING PROGRAM AND ACCESS TO INDIVIDUAL UNIT CURB BOXES.

I CERTIFY THAT THIS SURVEY PLAT IS NOT A SUBDIVISION PURSUANT TO THIS TITLE AND THAT THE LINES OF STREETS AND WAYS SHOWN ARE THOSE OF PUBLIC OR PRIVATE STREETS OR WAYS ALREADY ESTABLISHED AND THAT NO NEW WAYS ARE SHOWN.

KENNETH A. BERRY L.L.S. 805 DATE

GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.

DOVER PLANNING FILE #SITE-2023-0007

#	REVISION	DATE	DESCRIPTION
#4		12-01-23	REVISED PER TRC #3 COMMENT
#3		11-09-23	REVISED PER INFORMAL TRC
#2		11-06-23	REVISED PER TRC #2 & ADDITIONAL UNITS ADDED
#1		9-25-23	REVISED PER DOVER TRC COMMENT

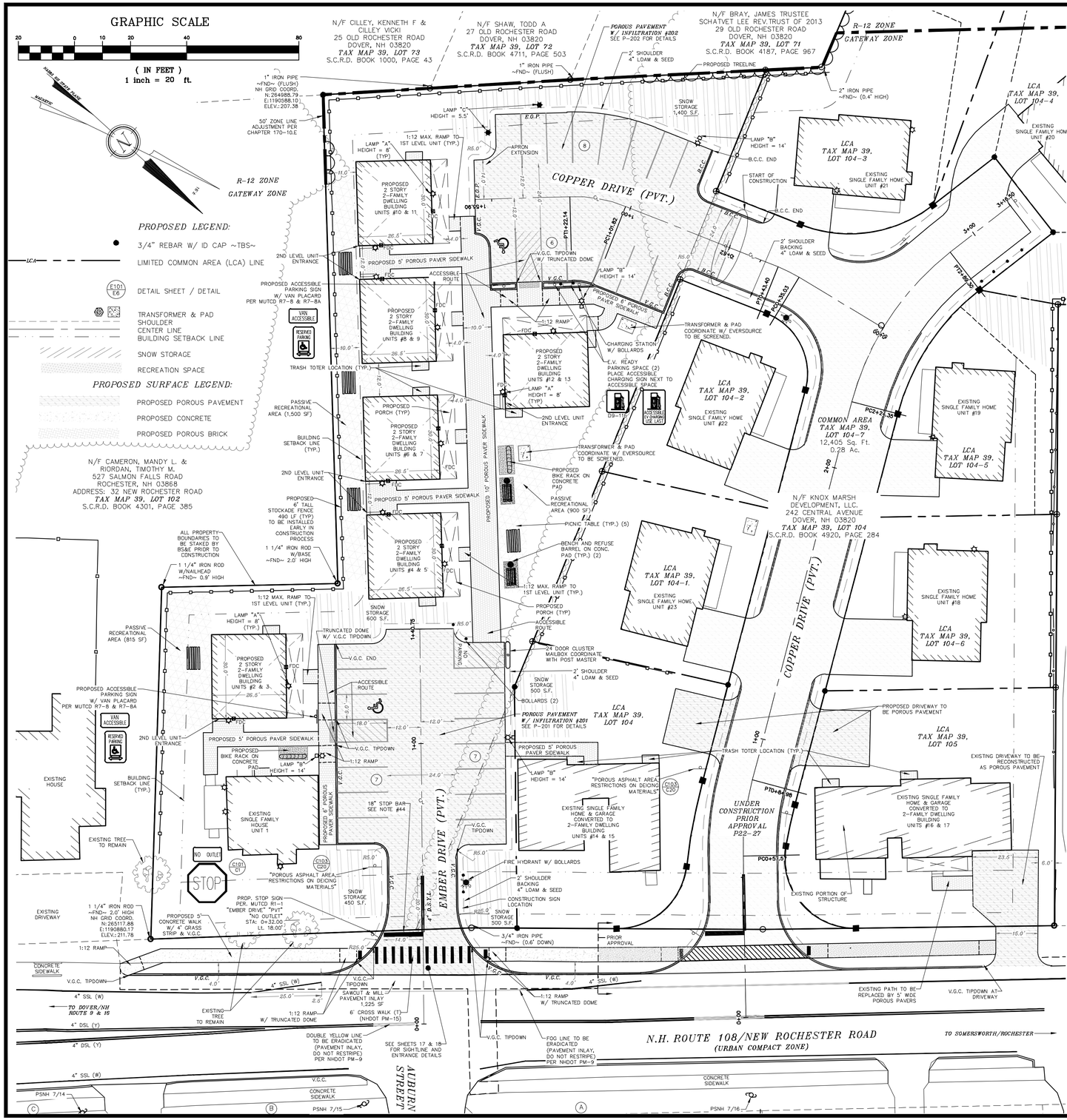
LIMITED COMMON AREA REVISION PLAN
LAND OF: ROBERT BALDWIN
FOR: KNOX MARSH DEVELOPMENT LLC
34 NEW ROCHESTER ROAD
DOVER, N.H.
TAX MAP 39, LOT 103

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

SCALE : 1 IN. EQUALS 30 FT.
DATE : JULY 6, 2023
FILE NO. : DB 2023 – 053

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

NOT FOR CONSTRUCTION



NOTES:

1A.) OWNER: ROBERT BALDWIN, 242 CENTRAL AVE, DOVER, NH 03820 — ROBERT BALDWIN

1B.) APPLICANT: KNOX MARSH DEVELOPMENT LLC, 242 CENTRAL AVE, DOVER, NH 03820

2.) TAX MAP 39, LOT 103

3.) S.C.R.D. BOOK 5116, PAGE 655

4.) LOT AREA: 35,555 Sq. Ft., 0.82 Ac.

5.) ZONING: G – GATEWAY DISTRICT
SECONDARY GROUNDWATER RECHARGE OVERLAY
DENSITY: 4,000 Sq. Ft. / UNIT
SETBACKS

	PROVIDED SETBACKS:
FRONT BUILD TO ~ 5–20'	5–20' PROVIDED
SIDE ~ 10'	10' MIN PROVIDED
REAR ~ 15'	15' PROVIDED
SECONDARY BUILD TO ~ 5–20'	5–20' PROVIDED

MIN. LOT SIZE: N/A
LOT COVERAGE: 50% (FUNCTION OF LOT MERGER) 17.1% PROVIDED (SEE CUP)
FRONTAGE BUILD–OUT: 50% (FUNCTION OF LOT MERGER) 47.4% PROVIDED (SEE CUP)
MAX. BUILDING HEIGHT: 2 STORIES (300' OF CL NEW ROCHESTER RD)
RESIDENTIAL: SINGLE FAMILY AND TWO FAMILY
MAX. IMPERVIOUS COVERAGE: 20% (FUNCTION OF LOT MERGER) 19.3% PROVIDED

6.) THE INTENT OF THIS PLAN IS TO SHOW THE SITE DEVELOPMENT PLAN OF TAX MAP 39, LOT 103 & REFERENCES APPROVED SITE PLAN DOVER #P22–27 (ORIGINAL COPPER DRIVE).

7.) 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 #330145, MAP: 33017C0310E, DATED: SEPTEMBER 30, 2015.

8.) VERTICAL DATUM BASED ON NAVD88 ELEVATIONS. HORIZONTAL DATUM BASED ON NAD83 STATE PLANE. COORDINATES GATHERED USING CARLSON BRX7 SURVEY GRADE GPS RECEIVERS.

9.) THE BOUNDARY LINES SHOWN ON THIS PLAN ARE THE RESULT OF A CLOSED TRAVERSE PERFORMED BY THIS OFFICE IN NOVEMBER OF 2021 WITH AN ERROR OF CLOSURE BETTER THAN 1 PART IN 10,000.

10.) TOPOGRAPHY PROVIDED IS DEMARCATED AT 1' INTERVALS, AND IS THE RESULT OF A FIELD SURVEY PERFORMED IN NOVEMBER 2021.

11.) THIS SITE IS SERVICED BY MUNICIPAL SEWER AND WATER.

12.) WETLANDS WERE DELINEATED BY JOHN P. HAYES, CERTIFIED WETLANDS SCIENTIST, IN ACCORDANCE WITH CHAPTER 170–27.1 OF THE ZONING ORDINANCE, IN MAY OF 2023. NO WETLANDS WERE FOUND ON SITE.

13.) LIST ANY VARIANCES OR SPECIAL EXCEPTIONS GRANTED BY THE ZONING BOARD OF ADJUSTMENT OR CONDITIONAL USE PERMITS GRANTED BY THE PLANNING BOARD FOR THE PROPOSED USE OR STRUCTURE, INCLUDING THE CASE NUMBER AND DATE OF DECISION AND ANY CONDITIONS: NONE

14.) AS–BUILT PLANS OF THE SUBDIVISION SHALL BE SUBMITTED ON PAPER AND IN DIGITAL FORMAT AUTOCAD DWG, AUTOCAD DXF OR ESRI FORMAT TO THE CITY OF DOVER ENGINEER'S OFFICE UPON COMPLETION OF PROJECT. AS–BUILT PLANS SHALL BE PREPARED AND CERTIFIED CORRECT BY A L.L.S. OR P.E. DIGITAL FILES SHALL BE GEO–REFERENCED TO NEW HAMPSHIRE STATE PLANE COORDINATES NAD83 AND SHALL BE EXPRESSED IN FEET.

15.) THE INSTALLATION OF ELECTRIC POWER, CABLE TELEVISION AND TELEPHONE LINES SHALL BE UNDERGROUND THROUGHOUT THE SITE PROPOSED.

16.) ALL CONSTRUCTION SHALL CONFORM WITH THE STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION (NHDOT) "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION 2016" AND WITH THE CITY OF DOVER COMMUNITY SERVICES REGULATIONS AND STANDARD SPECIFICATION FOR CONSTRUCTION. THE MORE STRINGENT SPECIFICATION SHALL APPLY.

17.) ALL EROSION CONTROL NOTES SHALL INCLUDE PROVISIONS FOR CONSTRUCTION SEQUENCING, TEMPORARY EROSION CONTROL MEASURES, AND PERMANENT STANDARDS SUCH AS LOAM SPREAD RATE FOR DISTURBED AREAS, RATES OF LIME, TYPE AND RATES FOR FERTILIZER, AND SEED AND MULCH MIXTURE WITH RATES OF APPLICATION.

18.) THE LIMITS OF CONSTRUCTION DISTURBANCE THAT ARE LOCATED IN OR WITHIN THE 50 FT. OF CONSERVATION AND WETLAND DISTRICTS SHALL BE STAKED, FLAGGED AND CLEARLY IDENTIFIED PRIOR TO ANY EARTH DISTURBING ACTIVITY OCCURS. NO 50' BUFFERS ON SITE SO NOT APPLICABLE FOR THIS PROJECT.

19.) ALL TREATMENT SWALES TO BE CONSTRUCTED SHALL HAVE SOD BOTTOMS. (NOT APPLICABLE)

20.) A LETTER OF CREDIT FOR THE COST OF REVEGETATING ALL DISTURBED AREAS ON THE SITE SHALL BE SUBMITTED, AND THE APPROVED CONSTRUCTION SIGN INSTALLED PRIOR TO ANY EARTH DISTURBING ACTIVITY OCCURS. THE PROPOSED PROJECT WILL CONSIST OF ONE PHASE AND WILL DISTURB 36,000 Sq.Ft. 0.83 Ac. (SEE NOTE #45)

21.) A PRE–CONSTRUCTION CONFERENCE WITH THE DEVELOPER, THE DESIGN ENGINEER, THE EARTHWORK CONTRACTOR AND THE CITY ENGINEER SHALL OCCUR PRIOR TO ANY EARTH DISTURBING ACTIVITY.

22.) THE SITE CONSTRUCTION HOURS SHALL BE LIMITED TO MONDAY–FRIDAY 7AM–6PM, NO SATURDAY & NO SUNDAY, OR FEDERAL HOLIDAY HOURS. HOURS OF CONSTRUCTION SHALL BE DOCUMENTED ON A SITE CONSTRUCTION SIGN ALONG WITH THE CONTACT INFORMATION FOR THE GENERAL CONTRACTOR. THE PROJECT SIGN SHALL INDICATE THE ROAD IS PROPOSED TO BE PRIVATE AND SHALL RECEIVE NO CITY SERVICES.

23.) BUILDING ADDRESSES SHALL BE ASSIGNED BY THE BUILDING OFFICIAL AT THE TIME OF ISSUANCE OF A BUILDING PERMIT.

24.) THE PROPOSED USE FOR THE SITE IS SIX NEW 2–FAMILY DWELLINGS IN ADDITION TO ONE EXISTING SINGLE FAMILY HOME FOR A TOTAL OF ELEVEN UNITS. COPPER DRIVE HAS 8 UNITS APPROVED, WITH TWO PRE–EXISTING SINGLE FAMILY HOMES TO BE CONVERTED TO 2–FAMILY DWELLINGS, BRINGING THE TOTAL UNIT COUNT POST LOT MERGER TO 23 UNITS.

25.) THE FOLLOWING FEDERAL AND STATE PERMITS HAVE BEEN ISSUED FOR THE SUBJECT PROPERTY:
NHDES SEWER DISCHARGE PERMIT: D2022–1107 (NEEDS AMENDMENT)
EPA NOTICE OF INTENT/SWPPP (NOI): NHR10010C (SWPPP/SWMP NEEDS AMENDMENT)
DIVISION OF HISTORICAL RESOURCES: 15390

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

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

28.) ANY FENCE TALLER THAN SEVEN FEET (7') REQUIRES THE ISSUANCE OF A BUILDING PERMIT FROM INSPECTION SERVICES.

29.) THE OWNER OF RECORD SHALL RECORD AT THE REGISTRY OF DEEDS DOCUMENTATION SUFFICIENT TO PROVIDE NOTICE TO ALL PERSONS/ENTITIES THAT MAY ACQUIRE ANY PROPERTY SUBJECT TO THE REQUIREMENTS AND RESPONSIBILITIES DESCRIBED IN THE APPROVED STORMWATER MANAGEMENT PLAN. THE NOTICE SHALL COMPLY WITH THE APPLICABLE REQUIREMENTS FOR RECORDING CONTAINED IN RSA 477 AND 478. THE NOTICE NEED NOT SET FORTH THE REQUIREMENTS AT LENGTH, SO LONG AS IT IS SUFFICIENT TO PROVIDE NOTICE TO PROSPECTIVE PURCHASERS TO THE REQUIREMENTS FOR MAINTENANCE AND REPORTING.

30.) FIRE DEPARTMENT ACCESS ROADS SHALL BE INSTALLED AND MAINTAINED TO SUPPORT THE IMPOSED LOADS OF FIRE APPARATUS IN ALL WEATHER CONDITIONS AT ALL TIMES.

31.) EXTERIOR LIGHTING SHALL BE CUT–OFF TYPE FIXTURES PER CHAPTER 153–14–E AND SHALL PROVIDE LIGHTING DIRECTED ON–SITE ONLY.

32.) APPROVED BACKFLOW PREVENTERS SHALL BE PROVIDED FOR DOMESTIC WATER LINES.

33.) SITE IS TO COMPLY WITH NFPA 1 CHAPTER 18.

34.) COPPER DRIVE & EMBER DRIVE ARE PROPOSED TO BE PRIVATE. REFER TO THE HOA DOCUMENTS FOR ROAD & DRAINAGE RESPONSIBILITIES. COPPER DRIVE AND EMBER DRIVE ARE PROPOSED TO BE POROUS ASPHALT PAVEMENT. COPPER DRIVE AND EMBER DRIVE WILL ALWAYS BE PRIVATE AND WILL NEVER BE ACCEPTED BY THE CITY OF DOVER.

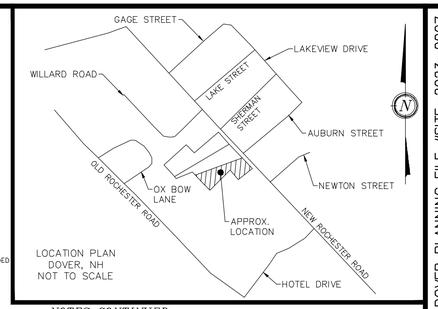
35.) APPLICANT SHALL COMPLETE LAND USE DEVELOPMENT TRACKING FORM, MOST RECENTLY REVISED VERSION, UTILIZING THE ONLINE POLLUTION TRACKING AND ACCOUNTING PILOT PROJECT (PTAPP) PORTAL. **HTTPS://WWW.UNH.EDU/UNHSC/PTAPP**

36.) THE PROPOSED 2–FAMILY DWELLING STRUCTURES SHALL BE SERVED BY A SPRINKLER SYSTEM AS APPLICABLE TO DOVER CHAPTER 81–30 AND THE NH BUILDING AND FIRE CODES.

37.) SPRINKLER CONNECTIONS MUST BE FLUSHED IN ACCORDANCE WITH NFPA 24 AND A CONTRACTOR'S MATERIAL AND TEST CERTIFICATE FOR UNDERGROUND PIPING FORM MUST BE COMPLETED AND APPROVED BY INSPECTION SERVICES PRIOR TO CONNECTION OF THE BACKFLOW DEVICE.

38.) FIRE DEPARTMENT CONNECTION(S), IF REQUIRED BY THE SPECIFIC SYSTEM, SHALL BE LOCATED ON THE STREET SIDE OF THE BUILDING PER NFPA 13. ACCESS TO THE FDC SHALL MAINTAIN A CLEAR AND UNOBSTRUCTED PATH AT ALL TIMES.

39.) THE SITE LAYOUT IS DESIGNED IN COMPLIANCE WITH APPLICABLE ACCESSIBILITY REGULATIONS. THE PROPOSED STRUCTURE WILL ALSO BE DESIGNED IN ACCORDANCE WITH APPLICABLE ACCESSIBILITY REGULATIONS (I.E. IBC, ANSI–117.1) AND NH RSA



LOCATION PLAN
DOVER, NH
NOT TO SCALE

NOTES CONTINUED:

40.) THE EXISTING SINGLE FAMILY HOME ON TAX MAP 39, LOT 103 WILL CONTINUE TO USE EXISTING UTILITY SERVICES.

41.) PRIVATE TRASH PICKUP WILL BE DONE THROUGH THE USE OF TOTERS PADS PLACED ADJACENT TO EACH UNIT AND WILL BE COLLECTED INDIVIDUALLY THROUGH THE PRIVATE WASTE PICK UP COMPANY.

42.) HEATING & COOLING FOR PROPOSED UNITS IS TO BE DONE VIA MINI–SPLITS.

43.) DUE TO PROXIMITY TO SEASONAL HIGH WATER TABLES IN SANDY SOILS, FULL FOUNDATIONS ARE NOT ADVISABLE.

44.) THE FRONT OF THE STOP BAR IS TO BE 4' FROM THE EXTENSION OF THE V.G.C. TIPDOWN, WHERE THE CROSS WALK WOULD BE LOCATED.

45.) PROJECT DISTURBANCE: TOTAL 81,000 Sq. Ft. (1.86 Ac.) (45,000 Sq. Ft. (1.03 Ac.) ORIGINAL COPPER DRIVE (P22–027), 36,000 Sq. Ft. (0.83 Ac.) COPPER DRIVE EXTENSION & EMBER DRIVE)
NOTE THAT THE PROJECT IS SUBJECT TO THE EPA NPDES PHASE II. THE NOTICE OF INTENT (NOI) MUST BE FILED ALONG WITH A STORMWATER POLLUTION PREVENTION PLAN (SWPPP). 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.

46.) EXISTING IMPERVIOUS AREA/LOT COVERAGE IS A FUNCTION OF LOT MERGER (103,666 Sq. Ft.)
PROPOSED IMPERVIOUS AREA/LOT COVERAGE IS A FUNCTION OF TOTAL PROJECT
POROUS PAVEMENT & PAVERS NOT INCLUDED IN CALCULATION OF IMPERVIOUS AREA
PRE–EXISTING BUILDING COVERAGE AREA: 4,552 Sq. Ft. (4.4%)
PRE–EXISTING PAVED IMPERVIOUS AREA: 1,917 Sq. Ft. (1.8%)
TOTAL EXISTING IMPERVIOUS COVER IS 6,469 Sq. Ft. (6.2%)
PROPOSED EX. & PROP. BUILDING IMPERVIOUS AREA: 17,830 Sq. Ft. (17.1%)
PROPOSED IMPERVIOUS AREA (CURB & GRAVEL) & EX PAVED: 2,214 Sq. Ft. (2.1%)
TOTAL PROPOSED IMPERVIOUS COVER IS 20,044 Sq. Ft. (19.3%)

47.) TWO (2) EV PARKING SPACES ARE PROVIDED AT THE COPPER DRIVE PARKING LOT.

48.) THE HOA IS RESPONSIBLE FOR THE LIFETIME MAINTENANCE OF THE 6' PERIMETER FENCE AND ALL OTHER COMMON AREA ITEMS.

49.) THE PERIMETER BOUNDARY WILL BE STAKED OUT BY BERRY SURVEYING & ENGINEERING PRIOR TO THE START OF CONSTRUCTION.

50.) PARKING SPACES WILL BE ASSIGNED TO UNITS.

51.) UNITS #14 & #15 ALONG WITH UNITS #16 & #17 ARE THE CONVERSION OF SINGLE FAMILY HOMES TO 2–FAMILY DWELLINGS. WATER & SEWER UTILITIES FOR THE PROPOSED UNITS ARE TO BE PLUMBED THROUGH THE EXISTING UNITS AND UTILIZE EXISTING SERVICES FROM NEW ROCHESTER ROAD. WATER SERVICES WILL BE SUBMETERED. OVERHEAD ELECTRIC TO BE CONFIGURED/UPGRADED TO SUPPORT BOTH DWELLINGS.

52.) SITE PLAN AMMENDMENT NEEDED FOR THE MODIFICATIONS TO THE PRE–EXISTING SINGLE FAMILY HOMES ON COPPER DRIVE (36 & 38 NEW ROCHESTER ROAD, DOVER P22–27).

53.) COORDINATE PAINTING OF CROSSWALKS IN NEW ROCHESTER ROAD WITH COMMUNITY SERVICES.

54.) THE APPLICANT IS TO PROVIDE SURETY WITHIN THE CONFINES OF NH RSA 674:36.

WAIVER REQUESTS:

SUBDIVISION REGULATION ARTICLE 157–40–B(5): MINIMUM PIPE COVER
SUBDIVISION REGULATION ARTICLE 157–31–F: MINIMUM BLOCK LENGTH OF 500'

CONDITIONAL USE PERMITS: (% ARE FUNCTIONS OF LOT MERGER)

FRONTAGE BUILD–OUT OF 47.4% WHERE 60% IS REQ. (NEW ROCHESTER ROAD)
LOT COVERAGE OF 17.1% WHERE 50% IS REQ.
NOT MEETING FRONT BUILT–TO LINE ON NEW ROCHESTER ROAD

RECREATION SPACE REQUIREMENTS (DOVER CODE ARTICLE V , 170–15.)

PROPOSED NUMBER OF BEDROOMS: 26 (13 2BR)
RECREATION SPACE REQUIREMENT (100 SF PER BEDROOM): 2,600 SF
½ RECREATION SPACE FOR PASSIVE USE: 1,300 SF
3,215 SF PROVIDED (SATISFIED ON SITE)
½ RECREATION SPACE FOR ACTIVE USE: 1,300 SF
(SATISFIED OFF SITE) (RECREATION FEE REQUIRED)

UNIT DENSITY CALCULATION:

- TOTAL AREA GATEWAY ZONE (FUNCTION OF LOT MERGER W/ TAX MAP 39, LOT 104): 93,953 Sq. Ft.
  - DENSITY OF 4,000 Sq. Ft. / UNIT
  - 93,953 Sq. Ft. / 4,000 Sq. Ft. / UNIT = 23.5 UNITS
  - 23 UNITS ALLOWED BY RIGHT, 23 UNITS ON PROJECT
  - 1 EXISTING SINGLE FAMILY HOME ON SITE (ORIGINAL TAX MAP 39, LOTS 103)
  - 6 ADDITIONAL SINGLE FAMILY HOMES CONSTRUCTED (PRIOR APPROVAL)
  - 6 ADDITIONAL 2–FAMILY DWELLING (12 UNITS) PROPOSED
  - 2 SINGLE FAMILY HOMES/GARAGE CONVERTED TO 2–FAMILY–DWELLINGS

PARKING REQUIREMENTS:

CHAPTER 153–14D PARKING TABLE

- RESIDENTIAL (UNITS USING THE PARKING LOTS)
  - RESIDENTIAL (GATEWAY) 1.9 SPACES PER UNIT:
    - 14 UNITS UTILIZING PARKING LOT x 1.9 SPACES/UNIT = 26.6 SPACES

TOTAL MAXIMUM = 27 SPACES
TOTAL PROPOSED = 28 SPACES, DETERMINED BY PLANNING DIRECTOR TO NOT NEEDED CUP FOR ONE PARKING SPACE OVER THE MAXIMUM.

5% EV REQUIREMENT = 1.40 SPACES, 2 PROPOSED ON COPPER DRIVE PARKING LOT
5% BIKE PARKING = 1.40 SPACES, 14 PROVIDED

SNOW STORAGE CALCULATION:

- STORAGE CALCULATION (6:1 RATIO USED) (POROUS PAVEMENT)
  - PAVED AREA = 10,676 Sq.Ft. / 6 = 1,780 Sq.Ft.
  - >3,450 Sq.Ft. PROVIDED
  - SNOW SHALL BE REMOVED FROM THE PROPERTY AND DISPOSED OF IN ACCORDANCE WITH ALL LOCAL, STATE, AND FEDERAL REGULATIONS ONCE IDENTIFIED AREAS ARE FULL. WHEN SNOW BANKS ALONG THE ROAD ARE GREATER THAN 2' TALL, A WING PLOW IS TO COME THROUGH AND KNOCK THE SNOW BANK HEIGHTS DOWN TO ENSURE ALL SEASON SIGHT DISTANCE.

APPROVED DOVER

DOVER PLANNING FILE #SITE–2023–0007

REVISION	DATE	DESCRIPTION
#4	12–01–23	REVISED PER TRC #3 COMMENT
#3	11–09–23	REVISED PER INFORMAL TRC
#2	11–06–23	REVISED PER TRC #2 & ADDITIONAL UNITS ADDED
#1	9–25–23	REVISED PER DOVER TRC COMMENT

SITE PLAN
LAND OF: ROBERT BALDWIN
KNOX MARSH DEVELOPMENT LLC
FOR: 34 NEW ROCHESTER ROAD
DOVER, N.H.
TAX MAP 39, LOT 103

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

SCALE : 1 IN. EQUALS 20 FT.
DATE : JULY 6, 2023
FILE NO. : DB 2023 – 053

STATE OF NEW HAMPSHIRE — KENNETH A. BERRY No. 14284 — LICENSED PROFESSIONAL ENGINEER

NOT FOR CONSTRUCTION

PROJECT NOTES:

1A.) OWNER: ROBERT BALDWIN
242 CENTRAL AVE
DOVER, NH 03820

1A.) APPLICANT: KNOX MARSH DEVELOPMENT LLC
242 CENTRAL AVE
DOVER, NH 03820

2.) TAX MAP 39, LOT 103

3.) S.C.R.D. BOOK 5116, PAGE 655

4.) LOT AREA: 35,555 Sq. Ft., 0.82 Ac.

5.) THE INTENT OF THIS PLAN IS TO PROVIDE GRADING & ENGINEERING DETAILS OF COPPER DRIVE AND TAX MAP 39, LOT 103.

6.) SEE EROSION & SEDIMENT CONTROL PLANS FOR DETAILS ON PERIMETER CONTROL (MULCH BERM / FENCE / SILT SOXX).

7.) BS&E IS TO PROVIDE ADDITIONAL BENCHMARKS PRIOR TO CONSTRUCTION.

8.) EXISTING AND PROPOSED CONTOURS ARE PROVIDED AT 1' INTERVALS WITH DRAINAGE FEATURES AT MORE PRECISE INTERVALS.

PROPOSED LEGEND:

- FLOW ARROW
- TEMPORARY BENCHMARK (T.B.M.)
- E101 / E6 — DETAIL SHEET / DETAIL
- F211 / F210 / D — CONTOUR MINOR, PROPOSED; CONTOUR MAJOR, PROPOSED; DRAINAGE CULVERT
- SHOULDER
- CENTER LINE
- BUILDING SETBACK LINE
- RIP RAP
- STORMWATER BEST MANAGEMENT PRACTICE (BMP)
- BERM
- F109.31 — PROPOSED SPOT ELEVATION

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

PROPOSED SURFACE LEGEND:

- PROPOSED POROUS PAVEMENT
- PROPOSED CONCRETE
- PROPOSED POROUS PAVERS

GRADING NOTES:

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

2.) CONTRACTOR SHALL TAKE SPECIAL CARE IN NOT DISTURBING EXISTING MONUMENTS BOUNDS, AND OR BENCHMARKS WITHOUT FIRST MAKING PROVISIONS FOR RELOCATION

3.) THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO LOCATE EXACTLY AND TO PRESERVE ANY AND ALL UNDERGROUND UTILITIES CALL "DIG-SAFE" 1-888-DIGSAFE (344-7233) AT LEAST 72 HOURS BEFORE COMMENCING CONSTRUCTION

4.) WHERE AN EXISTING UNDERGROUND UTILITY IS FOUND TO CONFLICT WITH THE PROPOSED WORK, THE LOCATION, ELEVATION AND SIZE OF THE UTILITY SHALL BE ACCURATELY DETERMINED WITHOUT DELAY BY THE CONTRACTOR, AND THE INFORMATION FURNISHED TO THE ENGINEER FOR RESOLUTION OF THE CONFLICT.

5.) THE CONTRACTOR SHALL MAKE ALL ARRANGEMENTS FOR THE ALTERATION AND ADJUSTMENT OF GAS, ELECTRIC, TELEPHONE AND ANY OTHER PRIVATE UTILITIES BY THE UTILITY COMPANIES.

6.) AREAS OUTSIDE THE LIMITS OF PROPOSED WORK DISTURBED BY THE CONTRACTOR'S OPERATIONS SHALL BE RESTORED BY THE CONTRACTOR TO THEIR ORIGINAL CONDITION AT THE CONTRACTOR'S EXPENSE. LIMIT OF GRADING SHOULD NOT BE EXPANDED WITHOUT CONSULTING THE DESIGN ENGINEER. SEE ALSO E&SC PLAN.

7.) THE TERM "PROPOSED" (PROP.) MEANS WORK TO BE CONSTRUCTED USING NEW MATERIALS, OR, WHERE APPLICABLE, RE-USING EXISTING MATERIALS IDENTIFIED AS "REMOVE & RESET" (R & R).

8.) ALL SYMBOLS, WORDS, TRANSVERSE MARKINGS (STOP BARS, CROSSWALK LINES, AND RAILROAD SYMBOLS), LANE LINES, AND ALL OTHER MARKINGS NOTED WITH {T} SHALL BE THERMOPLASTIC.

9.) ALL DISTURBED AREAS NOT DESIGNATED TO BE PAVED SHALL HAVE LOAM PLACED AND SEEDED. THE LOAM SHALL HAVE A MINIMUM DEPTH OF 4 INCHES AND SHALL BE PLACED FLUSH WITH THE TOP OF THE ADJACENT CURB, EDGING, BERM OR PAVEMENT SURFACE.

10.) 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.

11.) PROJECT DISTURBANCE: TOTAL 81,000 Sq. Ft. (1.86 Ac.) (45,000 Sq. Ft. (1.03 Ac.) ORIGINAL COPPER DRIVE (P22-027), 36,000 Sq. Ft. (0.83 Ac.) COPPER DRIVE PHASE 2 & EMBER DRIVE). NOTE THAT THE PROJECT IS SUBJECT TO THE EPA NPDES PHASE II. THE NOTICE OF INTENT (NOI) MUST BE FILED ALONG WITH A STORMWATER POLLUTION PREVENTION PLAN (SWPPP). 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 CSP 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.

12.) ALL TREATMENT SWALES TO BE CONSTRUCTED SHALL HAVE SOD BOTTOMS UNLESS OTHERWISE INSTRUCTED BY THE DESIGN ENGINEER DURING CONSTRUCTION.

13.) A LETTER OF CREDIT FOR THE COST OF RE-VEGETATING ALL DISTURBED AREAS ON THE SITE SHALL BE SUBMITTED PRIOR TO ANY EARTH DISTURBING ACTIVITY OCCURS, AS MAY BE APPLICABLE.

14.) A PRE-CONSTRUCTION CONFERENCE WITH THE DEVELOPER, THE DESIGN ENGINEER, THE EARTHWORK CONTRACTOR AND DOVER CITY STAFF SHALL OCCUR PRIOR TO ANY EARTH DISTURBING ACTIVITY.

15.) BUILDING ADDRESSES SHALL BE DETERMINED BY THE BUILDING OFFICIAL.

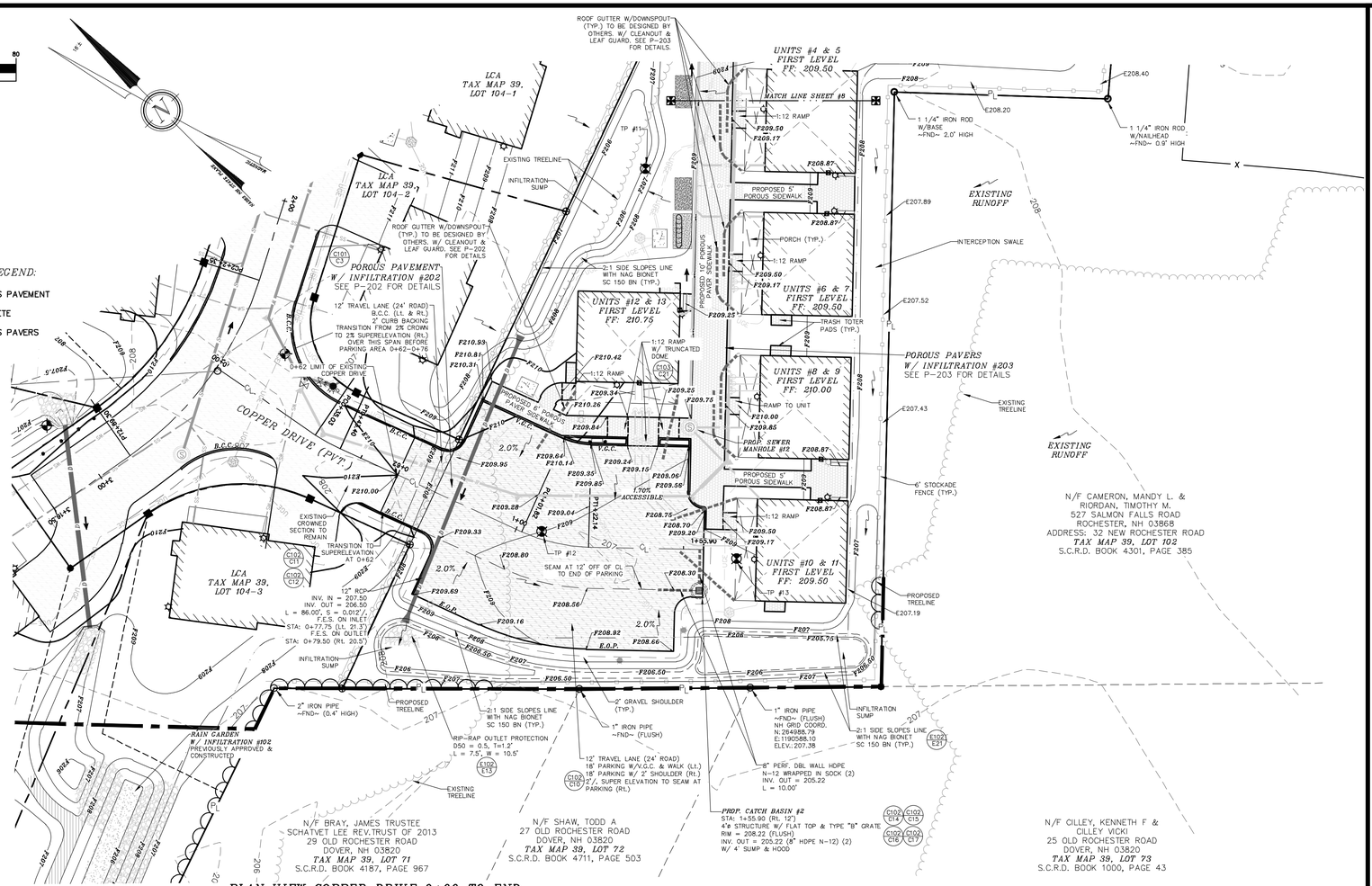
16.) WRITTEN DIMENSION ON THIS PLAN TAKE PRECEDENCE OVER SCALED DIMENSIONS. THE CONTRACTOR SHALL USE CAUTION WHEN SCALING REPRODUCED PLANS. IN THE EVENT OF A CONFLICT BETWEEN THIS PLAN SET AND ANY OTHER DRAWINGS AND/OR SPECIFICATIONS, THE ENGINEER SHALL BE NOTIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. CONTRACTOR IS TO CONFIRM ALL ELEVATIONS. CONFLICTS WILL BE REPORTED TO THE DESIGN ENGINEER PRIOR TO CONSTRUCTION.

17.) COMMERCIAL VEHICLE ROUTE DURING CONSTRUCTION SHALL CONFORM WITH CITY OF DOVER CODE OR BE COORDINATED WITH THE COMMUNITY SERVICES DIRECTOR.

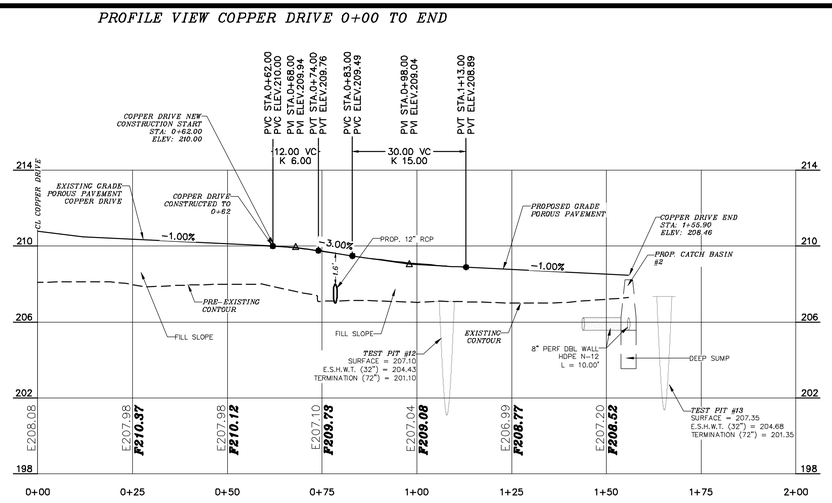
18.) THE CONTRACTOR SHALL CALL AND COORDINATE WITH DIGSAFE AT 1-888-344-7233 AT LEAST 72 HOURS PRIOR TO COMMENCING ANY EXCAVATION ON PUBLIC OR PRIVATE PROPERTY.

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

20.) DESIGN ENGINEER OF RECORD SHALL PROVIDE SIGNED LETTER TO CITY ENGINEER CERTIFYING THAT THE STORMWATER MANAGEMENT SYSTEM HAS BEEN INSTALLED IN ACCORDANCE WITH APPROVED PLANS. DESIGN ENGINEER OR DESIGN ENGINEERS REPRESENTATIVE IS TO BE PERIODICALLY ON SITE AND INSPECT DURING CONSTRUCTION PROCESS. CONTRACTOR IS TO PROVIDE 24-48 HOURS NOTICES PRIOR TO INSPECTION REQUESTS.



PLAN VIEW COPPER DRIVE 0+00 TO END



PROFILE VIEW COPPER DRIVE 0+00 TO END

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.
VERTICAL SCALE: 1" = 4'

DOVER PLANNING FILE #SITE-2023-0007

REVISION	DATE	DESCRIPTION
#4	12-01-23	REVISED PER TRC #3 COMMENT
#3	11-09-23	REVISED PER INFORMAL TRC
#2	11-06-23	REVISED PER TRC #2 & ADDITIONAL UNITS ADDED
#1	9-25-23	REVISED PER DOVER TRC COMMENT

PLAN & PROFILE COPPER DRIVE 0+00 TO END
LAND OF: ROBERT BALDWIN
FOR: KNOX MARSH DEVELOPMENT LLC
34 NEW ROCHESTER ROAD
DOVER, N.H.
TAX MAP 39, LOT 103

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

SCALE : 1 IN. EQUALS 20 FT.
DATE : JULY 6, 2023
FILE NO. : DB 2023 - 053

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

NOT FOR CONSTRUCTION

PROJECT NOTES:

1A.) OWNER: ROBERT BALDWIN
242 CENTRAL AVE
DOVER, NH 03820

1A.) APPLICANT: KNOX MARSH DEVELOPMENT LLC
242 CENTRAL AVE
DOVER, NH 03820

2.) TAX MAP 39, LOT 103

3.) S.C.R.D. BOOK 5116, PAGE 655

4.) LOT AREA: 35,555 Sq. Ft., 0.82 Ac.

5.) THE INTENT OF THIS PLAN IS TO PROVIDE GRADING & ENGINEERING DETAILS OF EMBER DRIVE AND TAX MAP 39, LOT 103.

6.) SEE EROSION & SEDIMENT CONTROL PLANS FOR DETAILS ON PERIMETER CONTROL (MULCH BERM / FENCE / SILT SOXX).

7.) BS&E IS TO PROVIDE ADDITIONAL BENCHMARKS PRIOR TO CONSTRUCTION.

8.) EXISTING AND PROPOSED CONTOURS ARE PROVIDED AT 1' INTERVALS WITH DRAINAGE FEATURES AT MORE PRECISE INTERVALS.

GRAPHIC SCALE

20 0 10 20 40 80

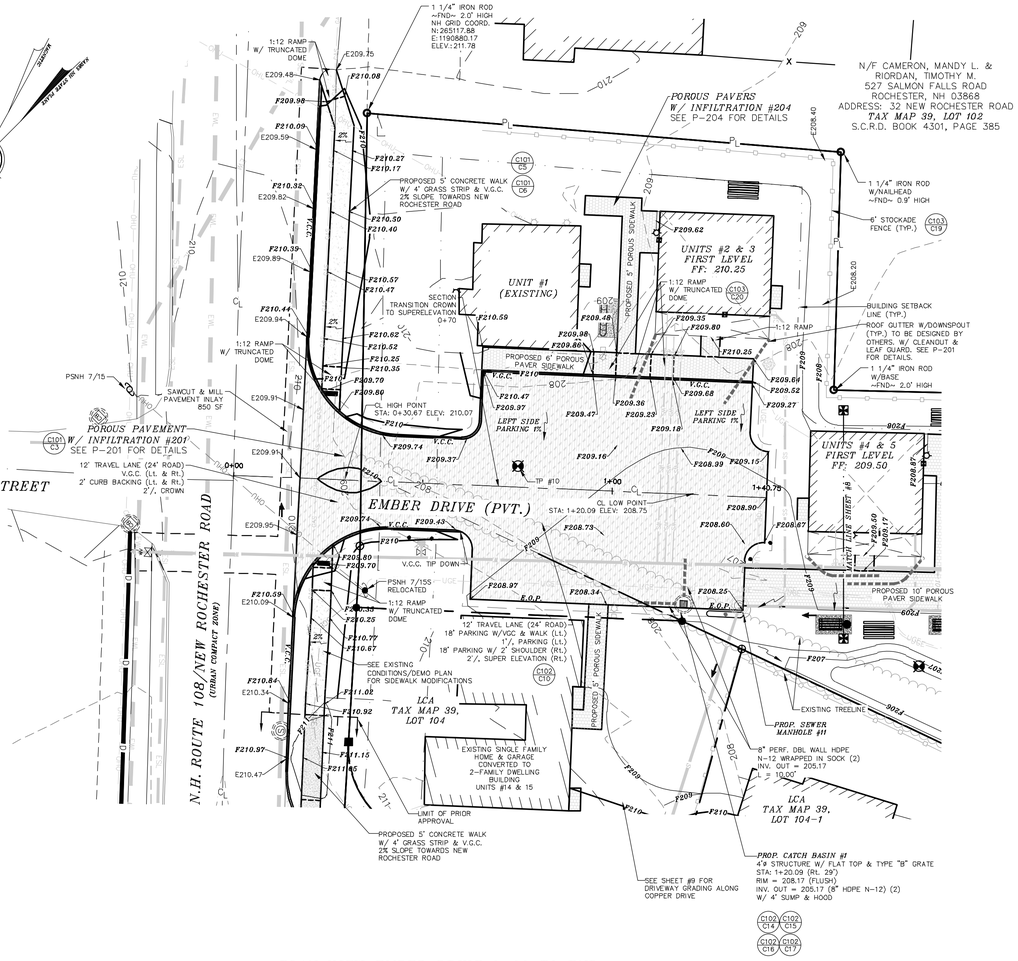
(IN FEET)
1 inch = 20 ft.

PROPOSED LEGEND:

- FLOW ARROW
- TEMPORARY BENCHMARK (T.B.M.)
- E101 / E6 — DETAIL SHEET / DETAIL
- F211 / F210 / D — CONTOUR MINOR, PROPOSED; CONTOUR MAJOR, PROPOSED; DRAINAGE CULVERT
- SHOULDER
- CENTER LINE
- BUILDING SETBACK LINE
- RIP RAP
- STORMWATER BEST MANAGEMENT PRACTICE (BMP)
- BERM
- F109.31 — PROPOSED SPOT ELEVATION

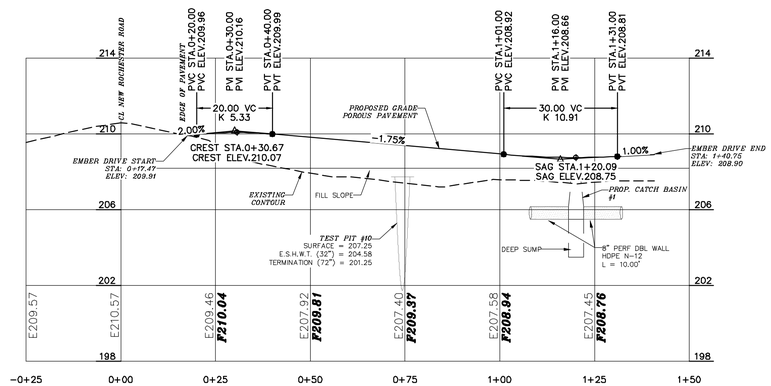
PROPOSED SURFACE LEGEND:

- PROPOSED POROUS PAVEMENT
- PROPOSED CONCRETE
- PROPOSED POROUS PAVERS



PLAN VIEW EMBER DRIVE 0+00 TO END

PROFILE VIEW EMBER DRIVE 0+00 TO END



GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.
VERTICAL SCALE: 1" = 4'

DOVER PLANNING FILE #SITE-2023-0007

#	DATE	REVISION
#4	12-01-23	REVISED PER TRC #3 COMMENT
#3	11-09-23	REVISED PER INFORMAL TRC
#2	11-06-23	REVISED PER TRC #2 & ADDITIONAL UNITS ADDED
#1	9-25-23	REVISED PER DOVER TRC COMMENT

PLAN & PROFILE EMBER DRIVE 0+00 TO END
LAND OF: ROBERT BALDWIN
FOR: KNOX MARSH DEVELOPMENT LLC
34 NEW ROCHESTER ROAD
DOVER, N.H.
TAX MAP 39, LOT 103

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

SCALE : 1 IN. EQUALS 20 FT.
DATE : JULY 6, 2023
FILE NO. : DB 2023 - 053

STATE OF NEW HAMPSHIRE - KENNETH A. BERRY No. 14245 LICENSED PROFESSIONAL ENGINEER

NOT FOR CONSTRUCTION

PROJECT NOTES:

1A.) OWNER: ROBERT BALDWIN
242 CENTRAL AVE
DOVER, NH 03820

1A.) APPLICANT: KNOX MARSH DEVELOPMENT LLC
242 CENTRAL AVE
DOVER, NH 03820

2.) TAX MAP 39, LOT 103

3.) S.C.R.D. BOOK 5116, PAGE 655

4.) LOT AREA: 35,555 Sq. Ft., 0.82 Ac.

5.) THE INTENT OF THIS PLAN IS TO PROVIDE GRADING & ENGINEERING DETAILS OF DRIVEWAYS LOCATED OFF OF COPPER DRIVE AND TAX MAP 39, LOT 103.

6.) SEE EROSION & SEDIMENT CONTROL PLANS FOR DETAILS ON PERIMETER CONTROL (MULCH BERM / FENCE / SILT SOXX).

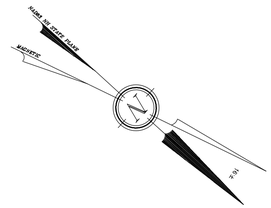
7.) BS&E IS TO PROVIDE ADDITIONAL BENCHMARKS PRIOR TO CONSTRUCTION.

8.) EXISTING AND PROPOSED CONTOURS ARE PROVIDED AT 1' INTERVALS WITH DRAINAGE FEATURES AT MORE PRECISE INTERVALS.

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

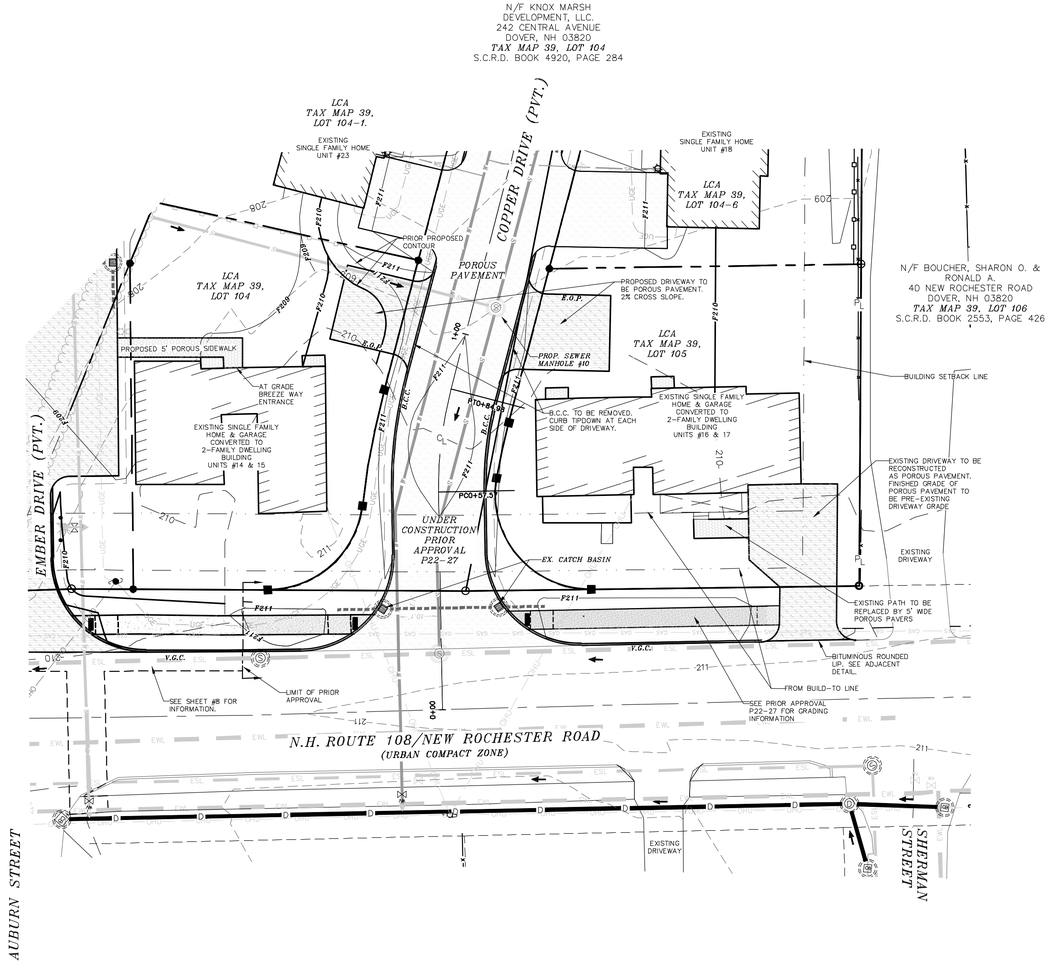


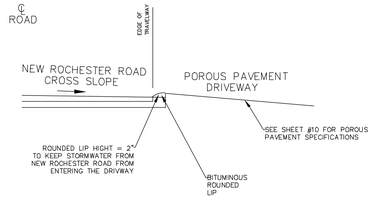
PROPOSED LEGEND:

- FLOW ARROW
- TEMPORARY BENCHMARK (T.B.M.)
- E101 / E6 — DETAIL SHEET / DETAIL
- F211 — CONTOUR MINOR, PROPOSED
- F210 — CONTOUR MAJOR, PROPOSED
- D — DRAINAGE CULVERT
- SHOULDER
- CENTER LINE
- BUILDING SETBACK LINE
- RIP RAP
- STORMWATER BEST MANAGEMENT PRACTICE (BMP)
- BERM
- F109.31 — PROPOSED SPOT ELEVATION

PROPOSED SURFACE LEGEND:

- PROPOSED POROUS PAVEMENT
- PROPOSED CONCRETE
- PROPOSED POROUS PAVERS





BITUMINOUS ROUNDED LIP
NOT TO SCALE

DOVER PLANNING FILE #SITE-2023-0007

REVISION	DATE	DESCRIPTION
#4	12-01-23	REVISED PER TRC #3 COMMENT
#3	11-09-23	REVISED PER INFORMAL TRC
#2	11-06-23	REVISED PER TRC #2 & ADDITIONAL UNITS ADDED
#1	9-25-23	REVISED PER DOVER TRC COMMENT

COPPER DRIVE POROUS PAVEMENT DRIVEWAY ADDITIONS
LAND OF: ROBERT BALDWIN
FOR: KNOX MARSH DEVELOPMENT LLC
34 NEW ROCHESTER ROAD
DOVER, N.H.
TAX MAP 39, LOT 103

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

SCALE : 1 IN. EQUALS 20 FT.
DATE : JULY 6, 2023
FILE NO. : DB 2023 - 053

STATE OF NEW HAMPSHIRE - KENNETH A. BERRY No. 10245 LICENSED PROFESSIONAL ENGINEER

NOT FOR CONSTRUCTION

DESIGN NOTES:

1.) POROUS ASPHALT PAVEMENT WILL CONFORM TO UNHSC (2007b) SPECIFICATIONS AS UPDATED BY UNHSC DESIGN SPECIFICATIONS FOR POROUS ASPHALT PAVEMENT AND INFILTRATION BEDS (DATED: SEPTEMBER 2016).

2.) THE FILTER COURSE WILL BE INSTALLED AT A MINIMUM DEPTH OF 12 INCHES AND CONSIST OF NHDOT (2016) SAND, ITEM 304.1 PER THE NH STORMWATER MANUAL.

3.) SEE CROSS SECTIONS FOR DETAILS.

4.) SEE STORMWATER SYSTEM MANAGEMENT: INSPECTION AND MAINTENANCE MANUAL AND PLAN, DATED JULY 7, 2023 FOR MAINTENANCE REQUIREMENTS.

REFERENCE:

1.) NH STORMWATER MANUAL: VOLUME 2, SECTION 4E PERMEABLE PAVEMENT.

2.) UNHSC DESIGN SPECIFICATIONS FOR POROUS ASPHALT PAVEMENT AND INFILTRATION BEDS, FEBRUARY 2014, REVISED SEPTEMBER 2016, UNIVERSITY OF NEW HAMPSHIRE STORWATER CENTER, DURHAM, NH 03824-3534.

3.) POROUS ASPHALT PAVEMENT FOR STORMWATER MANAGEMENT, THE UNH STORMWATER CENTER.

CHOKER COURSE *

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

* EQUIVALENT TO STANDARD STONE SIZE #57 – AASHTO

FILTER COURSE *

SIEVE SIZE	% PASSING BY WEIGHT
6"	100
# 4	70 – 100
# 200	0 – 6**

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

** LESS THAN 4% FINES

POROUS ASPHALT MIX DESIGN CRITERIA

SIEVE SIZE	% PASSING BY WEIGHT
3/4"	100
1/2"	85 – 100
3/8"	55 – 75
# 4	10 – 25
# 8	5 – 12
# 200	2 – 4

BINDER CONTENT (AASHTO T164)	5.8 – 6.5%
AIR VOID CONTENT (AASHTO D6752)	16 – 22%
DRAINDOWN (AASHTO D6390)	≤ 0.3%
RETAINED TENSILE STRENGTH (AASHTO D6390)	≥ 80%
CANTABRO ABRASION TEST (UNAGED)	≤ 20%
CANTABRO ABRASION TEST (7 DAYS)	≤ 30%

FILTER BLANKET COURSE *

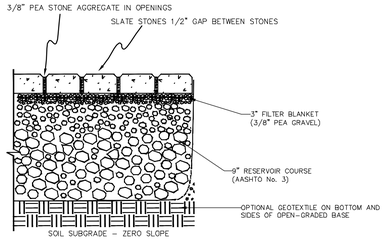
SIEVE SIZE	% PASSING BY WEIGHT
1/2"	100
3/8"	95 – 100
# 4	22 – 55
# 8	0 – 10

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

RESERVOIR COURSE *

SIEVE SIZE	% PASSING BY WEIGHT
2 1/2"	100
2"	90 – 100
1 1/2"	35 – 70
1"	0 – 15
1/2"	0 – 5

* EQUIVALENT TO STANDARD STONE SIZE #3 – AASHTO

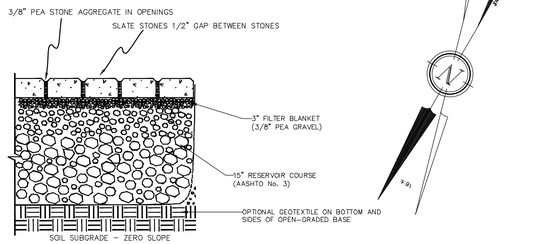


5-6' WIDE POROUS PAVERS DETAIL

NOT TO SCALE

POROUS ASPHALT PAVEMENT

NOT TO SCALE



10' WIDE POROUS PAVERS DETAIL

NOT TO SCALE

PROPOSED SURFACE LEGEND:

PROPOSED POROUS PAVEMENT

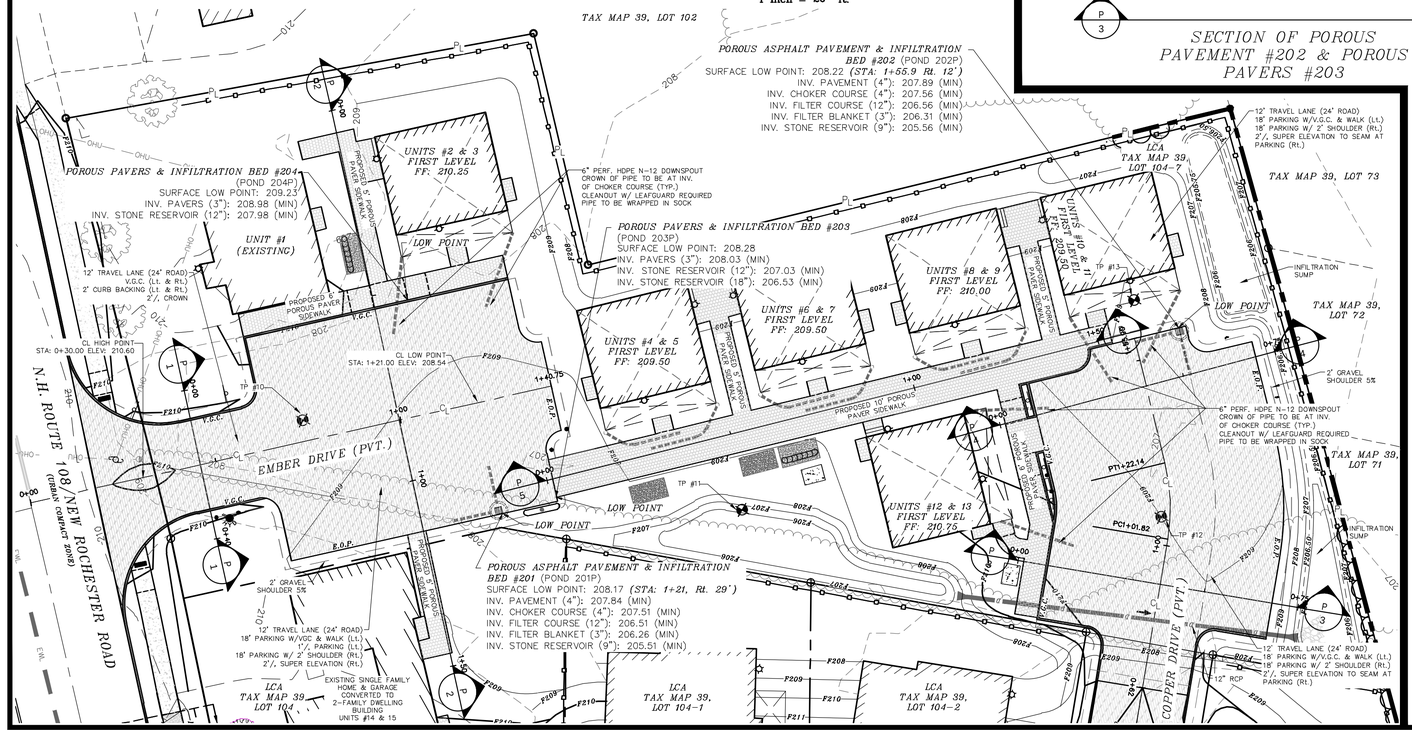
PROPOSED CONCRETE

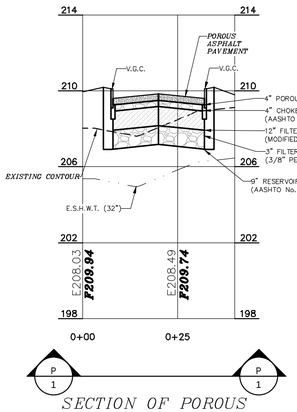
PROPOSED POROUS PAVERS

GRAPHIC SCALE

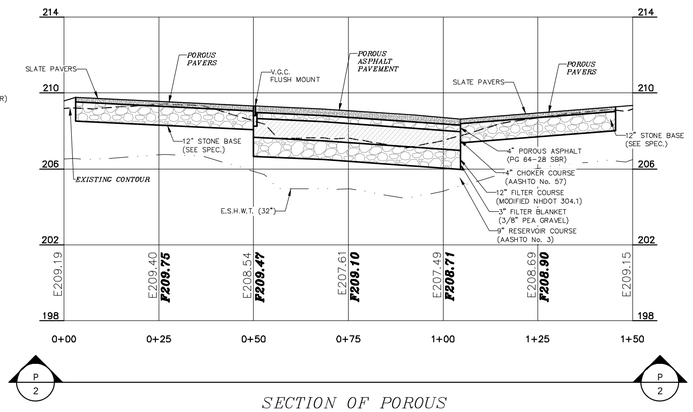
20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

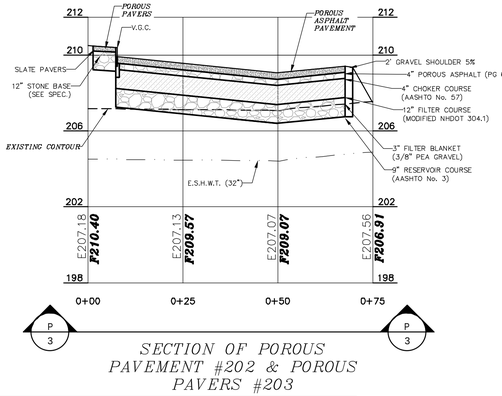




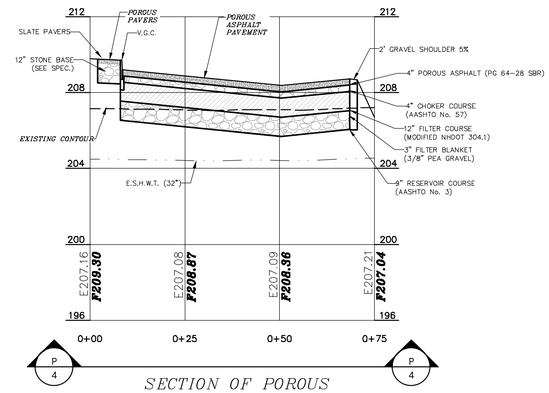
SECTION OF POROUS PAVEMENT #201



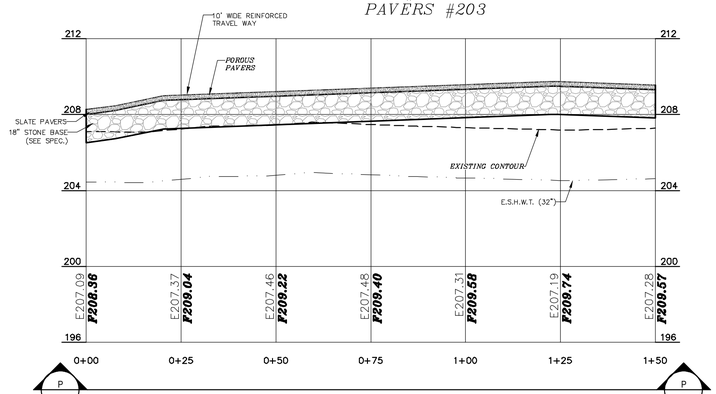
SECTION OF POROUS PAVEMENT #201 & POROUS PAVERS #204



SECTION OF POROUS PAVEMENT #203 & POROUS PAVERS #204



SECTION OF POROUS PAVEMENT #202 & POROUS PAVERS #203



SECTION OF POROUS PAVERS #203

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

POROUS PAVEMENT
E.S.H.W.T. = 2.67' (32")
GREATER THAN 1' FROM FILTER COURSE TO E.S.H.W.T. PROVIDED FOR ENTIRE INFILTRATION BED

SEE GRADING PLANS & PROFILES FOR SPOT ELEVATIONS

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.
VERTICAL SCALE: 1" = 4'

P-201-P204

DOVER PLANNING FILE #SITE-2023-0007

REVISION	DATE	DESCRIPTION
#4	12-01-23	REVISED PER TRC #3 COMMENT
#3	11-09-23	REVISED PER INFORMAL TRC
#2	11-06-23	REVISED PER TRC #2 & ADDITIONAL UNITS ADDED
#1	9-25-23	REVISED PER DOVER TRC COMMENT

POROUS ASPHALT PAVEMENT W/ INFILTRATION #201 & #202
& POROUS PAVERS W/ INFILTRATION #203 & #204
LAND OF: ROBERT BALDWIN
FOR: KNOX MARSH DEVELOPMENT LLC
34 NEW ROCHESTER ROAD
DOVER, N.H.
TAX MAP 39, LOT 103

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

SCALE : 1 IN. EQUALS 20 FT.
DATE : JULY 6, 2023
FILE NO. : DB 2023 – 053

STATE OF NEW HAMPSHIRE – KENNETH A. BERRY No. 10245 – LICENSED PROFESSIONAL ENGINEER

NOT FOR CONSTRUCTION

SOILS & DEWATERING:

WdA	*WINDSOR*	*LOAMY SAND*	*K= 0.17*
DeA	*DEEREFIELD*	*LOAMY SAND*	*K= 0.17*
(350A&B)			

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.





NOTES:

1A.) OWNER: ROBERT BALDWIN
242 CENTRAL AVE
DOVER, NH 03820

1B.) APPLICANT: KNOX MARSH DEVELOPMENT LLC
242 CENTRAL AVE
DOVER, NH 03820

2.) TAX MAP 39, LOT 103

3.) S.C.R.D. BOOK 5116, PAGE 655

4.) LOT AREA: 35,555 Sq. Ft., 0.83 Ac.

5.) THE INTENT OF THIS PLAN IS SHOW THE PROPOSED EROSION AND SEDIMENT CONTROL MEASURES.

6.) CONTRACTOR IS TO INSTALL A CONSTRUCTION ENTRANCE PRIOR TO EARTH DISTURBING ACTIVITIES.

7.) CONTRACTOR IS RESPONSIBLE FOR SWEEPING THE PARKING LOT, SIDEWALKS AND ANYTHING DISTURBED, TO ENSURE THAT NO SEDIMENT IS BEING TRACKED ONTO NEW ROCHESTER ROAD OR THE EXISTING DRIVEWAYS.

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

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

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

11.) 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.

12.) CONTRACTOR AY USE SILT FENCE, SILT SOXX OR MULCH BERM FOR PERIMETER CONTROL. SPECIFIC PRACTICES MAY BE SPECIFIED, SEE PLAN.

13.) ALL STORAGE FACILITIES FOR FUEL, CHEMICALS, CHEMICAL OR INDUSTRIAL WASTES, AND BIODEGRADABLE RAW MATERIALS SHALL MEET THE REGULATIONS OF THE NHDES, INCLUDING BUT NOT LIMITED TO THOSE INVOLVING UNDERGROUND STORAGE TANKS, ABOVE GROUND STORAGE TANKS, HAZARDOUS WASTE AND BEST MANAGEMENT PRACTICES FOR GROUND WATER PROTECTION (PART ENV–WQ 401).

14.) COMMUNITY SERVICES DEPARTMENT OR ITS DESIGNATED AGENT SHALL HAVE ACCESS TO THE SITE TO COMPLETE ROUTINE INSPECTIONS.

15.) THE COMMUNITY SERVICES DEPARTMENT SHALL BE NOTIFIED 24 HOURS PRIOR TO INSTALLATION OF A STORMWATER BMP IN ORDER TO SCHEDULE AN INSPECTION. THESE INSPECTIONS SHALL BE COMPLETED DURING NORMAL WORK HOURS.

16.) THE PLANNING BOARD OR COMMUNITY SERVICES DEPARTMENT MAY REQUIRE THE DESIGN ENGINEER AND/OR AN INDEPENDENT THIRD PARTY TO PROVIDE INSPECTION AND OVERSIGHT OF THE CONSTRUCTION OF THE STORMWATER MANAGEMENT FACILITIES AND EROSION AND SEDIMENT CONTROL MEASURES AT ITS DISCRETION. SUCH OVERSIGH MAY BE ESPECIALLY IMPORTANT FOR IMPLEMENTING TECHNIQUES SUCH AS POROUS PAVEMENT OR SUSURFACE INFILTRATION SYSTEMS. THE OWNER/APPLICANT SHALL BE RESPONSIBLE FOR ALL FEES ASSOCIATED WITH THIRD–PARTY INSPECTIONS.

17.) CITY OF DOVER: IN ACCORDANCE WITH SITE PLAN REVIEW REGULATIONS (153–14) THE FOLLOWING STORMWATER MEASURES ARE REQUIRED.

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. U.S. EPA, CGP 2022 REQUIRES A QUALIFIED AND CERTIFIED INSPECTOR (SEE SWPPP).

LEGEND:

- (R) POND PROTECTION
- (P) PERIMETER CONTROL
- (C) RESIDENTIAL/ROADWAY CONSTRUCTION
- REBAR (FND)
- IRON BOUND (FND)
- IRON PIPE (FND)
- UTILITY POLE
- BENCHMARK
- PERIMETER CONTROL
- FILTREXX SILTSOXX
- CONSTRUCTION FENCE
- TREE LINE

STABILIZATION NOTE:
SEE NOTE #6, SHEET E–102, DETAIL E–18
SIDE SLOPES ARE TO BE STABILIZED WITHIN THREE WORKING DAY UPON COMPLETION OF FINAL GRADE.

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

DOVER PLANNING FILE #SITE–2023–0007

REVISION	DATE	DESCRIPTION
#4	12–01–23	REVISED PER TRC #3 COMMENT
#3	11–09–23	REVISED PER INFORMAL TRC
#2	11–06–23	REVISED PER TRC #2 & ADDITIONAL UNITS ADDED
#1	9–25–23	REVISED PER DOVER TRC COMMENT

EROSION AND SEDIMENT CONTROL PLAN
LAND OF: ROBERT BALDWIN
FOR: KNOX MARSH DEVELOPMENT LLC
34 NEW ROCHESTER ROAD
DOVER, N.H.
TAX MAP 39, LOT 103

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

SCALE : 1 IN. EQUALS 20 FT.
DATE : JULY 6, 2023
FILE NO. : DB 2023 – 053

STATE OF NEW HAMPSHIRE – KENNETH A. BERRY No. 12445 LICENSED PROFESSIONAL ENGINEER

NOT FOR CONSTRUCTION

PROJECT NOTES:

1A.) OWNER: ROBERT BALDWIN
242 CENTRAL AVE
DOVER, NH 03820

1B.) APPLICANT: KNOX MARSH DEVELOPMENT LLC
242 CENTRAL AVE
DOVER, NH 03820

2.) TAX MAP 39, LOT 103

3.) S.C.R.D. BOOK 5116, PAGE 655

4.) LOT AREA: 35,555 Sq. Ft., 0.83 Ac.

5.) THE INTENT OF THIS PLAN IS TO PROVIDE UTILITY & ENGINEERING DETAILS OF COPPER DRIVE AND TAX MAP 39, LOT 103.

6.) SEE EROSION & SEDIMENT CONTROL PLANS FOR DETAILS ON PERIMETER CONTROL (MULCH BERM / FENCE / SILT SOXX).

7.) BS&E IS TO PROVIDE ADDITIONAL BENCHMARKS PRIOR TO CONSTRUCTION.

8.) EXISTING AND PROPOSED CONTOURS ARE PROVIDED AT 1' INTERVALS WITH DRAINAGE FEATURES AT MORE PRECISE INTERVALS.

PROPOSED LEGEND:

- LIGHT TYPE "A" MOUNTED ON UNIT
- LIGHT TYPE "B" MOUNTED 14' HIGH
- LIGHT TYPE "C" MOUNTED 5.5' HIGH
- SEWER MANHOLE W/ STRUCTURE
- DETAIL SHEET / DETAIL (E101 / E6)
- CONTOUR MINOR, PROPOSED (F101)
- CONTOUR MAJOR, PROPOSED (F100)
- DRAINAGE CULVERT (D)
- SHOULDER
- CENTER LINE
- PROPOSED UTILITY POLE
- TRANSFORMER / JBOX
- UNDERGROUND UTILITY (UGE)
- GATE VALVE (WV)
- CURB STOP
- FIRE HYDRANT
- THRUST BLOCKS
- PROPOSED WATER MAIN (W)
- PROPOSED WATER SERVICE (WS)
- PROPOSED SEWER LINE (S)
- PROPOSED SEWER SERVICE (SS)

PROPOSED SURFACE LEGEND:

- PROPOSED POROUS PAVEMENT
- PROPOSED CONCRETE
- PROPOSED POROUS PAVERS

NOTES:

1.) UNDERGROUND UTILITY LOCATIONS ARE BASED UPON BEST AVAILABLE EVIDENCE AND ARE NOT FIELD VERIFIED. LOCATING AND PROTECTING ANY ABOVE AND BELOW GROUND UTILITIES IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR. ANY UTILITY CONFLICTS SHOULD BE REPORTED IMMEDIATELY TO THE DESIGN ENGINEER.

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

3.) PROTECTION OF SUBGRADE: THE CONTRACTOR SHALL BE REQUIRED TO MAINTAIN STABLE, DEWATERED SUBGRADES, TRENCHES, AND OTHER AREAS DURING CONSTRUCTION. SUBGRADE DISTURBANCE MAY BE INFLUENCED BY EXCAVATION METHODS, MOISTURE, PRECIPITATION, GROUNDWATER CONTROL, AND CONSTRUCTION ACTIVITIES. THE CONTRACTOR SHALL TAKE PRECAUTIONS TO PREVENT SUBGRADE DISTURBANCE. SUCH PRECAUTIONS MAY INCLUDE DIVERTING STORMWATER RUNOFF AWAY FROM CONSTRUCTION AREAS, REDUCING TRAFFIC IN SENSITIVE AREAS, AND MAINTAINING AN EFFECTIVE DEWATERING PROGRAM. SOILS EXHIBITING HEAVING OR INSTABILITY SHALL BE OVER EXCAVATED TO MORE COMPETENT BEARING SOIL AND REPLACED WITH FREE DRAINING STRUCTURAL FILL MEETING THE ENGINEERS SPECIFIC RECOMMENDED CRITERIA.

4.) IF THE EARTHWORK IS PERFORMED DURING FREEZING WEATHER (NOT ALLOWED IN CITY R.O.W.), EXPOSED SUBGRADES ARE SUSCEPTIBLE TO FROST. NO FILL OR UTILITIES SHALL BE PLACED ON FROZEN GROUND. THIS WILL LIKELY REQUIRE REMOVAL OF A FROZEN SOIL CRUST AT THE COMMENCEMENT OF EACH DAY'S OPERATION. THE FINAL SUBGRADE ELEVATION WOULD ALSO REQUIRE AN APPROPRIATE DEGREE OF INSULATION AGAINST FREEZING.

5.) PLACEMENT OF BORROW MATERIALS SHALL BE PERFORMED IN A MANNER THAT PREVENTS LONG TERM DIFFERENTIAL SETTLEMENT. EXCESSIVELY WET MATERIALS SHALL BE STOCKPILED AND ALLOWED TO DRAIN BEFORE PLACEMENT. FROZEN MATERIAL SHALL NOT BE USED FOR CONSTRUCTION. VOIDS BETWEEN STONES AND CLUMPS OF MATERIAL SHALL BE FILLED WITH FINE MATERIALS.

6.) FINAL UTILITY LOCATIONS TO BE COORDINATED BETWEEN THE CONTRACTOR, ALL APPROPRIATE UTILITY COMPANIES AND THE DOVER DPW.

7.) CONTRACTOR TO CONTACT DOVER DPW A MINIMUM OF TWO WEEKS PRIOR TO ANY CONSTRUCTION TO COORDINATE ALL WORK CONCERNING INSTALLATION OF ANY PROPOSED WATER LINE IMPROVEMENTS.

8.) ALL WATER MAIN AND SERVICE INSTALLATIONS SHALL CONFORM TO CITY OF DOVER STANDARDS. ALL HIGHWAY CONSTRUCTION WILL MEET THE CITY OF DOVER STANDARDS.

9.) CONTRACTOR SHALL COORDINATE ALL ELECTRICAL INSTALLATIONS WITH EVERSOURCE AT (800) 662-7764. ALL ELECTRIC CONDUIT INSTALLATION SHALL BE INSPECTED BY EVERSOURCE PRIOR TO BACKFILL. A 48-HOUR MINIMUM NOTICE IS REQUIRED.

10.) CONTRACTOR SHALL COORDINATE ALL TELECOMMUNICATIONS INSTALLATIONS WITH FAIRPOINT COMMUNICATIONS AT (603) 427-5525.

11.) CONTRACTOR SHALL COORDINATE ALL CABLE INSTALLATIONS WITH COMCAST.

12.) ALL SEWER MANHOLE RIMS & COVERS ARE TO BE LIFTMATE R-1743-LM.

13.) ALL WATER SERVICES ARE TO BE WITNESSED WITH A 2"X4" PAINTED BLUE. ALL SEWER SERVICES ARE TO BE WITNESSED WITH A 2"X4" PAINTED YELLOW, IS STUBBED PRIOR TO BUILDING CONSTRUCTION. DETECTABLE METALLIC UNDERGROUND TAPE SHALL BE LABELED APPROPRIATELY.

14.) CURB BOXES SHOULD BE PLACED IN THE LAWN AREA, OR IF PLACED IN PAVEMENT, A ROAD BOX IS REQUIRED.

15.) SEE EXISTING CONDTIONS PLAN FOR DATUM. VERTICAL DATUM BASED ON NAVD88 ELEVATIONS. HORIZONTAL DATUM BASED ON NAD83 STATE PLANE COORDINATES GATHERED USING TOPCON HIPER SR SURVEY GRADE GPS.

16.) MINIMUM SLOPE FOR ALL SEWER SERVICE CONNECTIONS IS TO BE NO LESS THAN 0.02 FT/FT.

17.) ALL SEWER INSTALLATIONS SHALL CONFORM TO THE REQUIREMENTS OF NHDES & DOVER DPW SEWER DIVISION STANDARDS. ALL PVC SEWER PIPE IS TO CONFORM WITH ENV-WQ 704.05 (c)-(e) FOR SDR 35 GRAVITY SEWER PIPE.

18.) CONTRACTOR TO TRANSFER TEMPORARY BENCHMARK TO A SUITABLE BENCHMARK TO CONTROL CONSTRUCTION. ANY ELEVATION DISCREPANCIES ARE TO BE REPORTED TO THE THE DESIGN ENGINEER IMMEDIATELY.

19.) ALL SEWER AND WATER CROSSINGS ARE TO MAINTAIN A 1.5' OF SEPARATION.

20.) THE SINGLE FAMILY HOME WILL CONTINUE TO UTILIZE THEIR EXISTING SERVICES

21.) HEATING AND COOLING FOR PROPOSED UNITS WILL BE DONE VIA MINI-SPLIT.

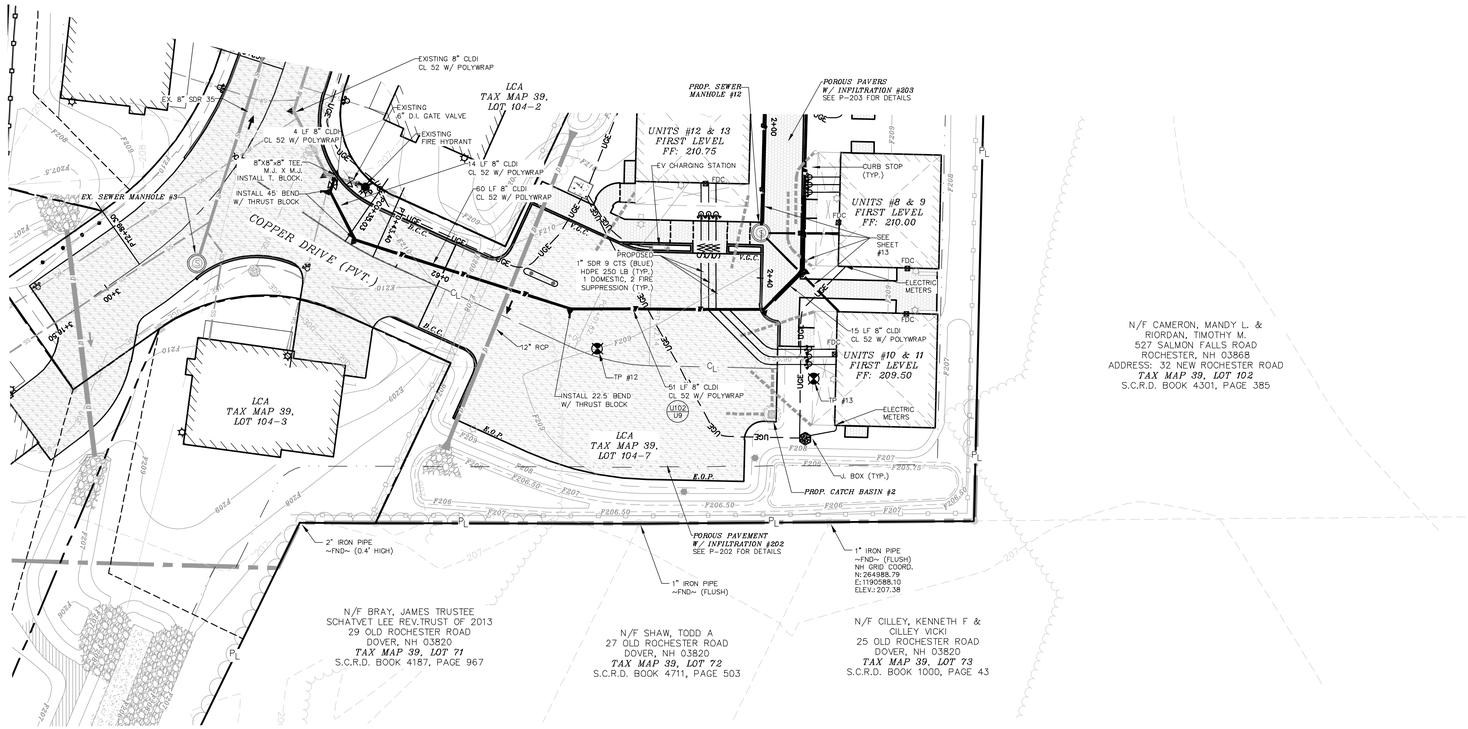
22.) C900 WATERLINE MAY BE SUBSTITUTED FOR C.L.D.I. WATERLINE WITH THE APPROVAL OF THE CITY ENGINEER.

GRAPHIC SCALE

20 0 10 20 40 80

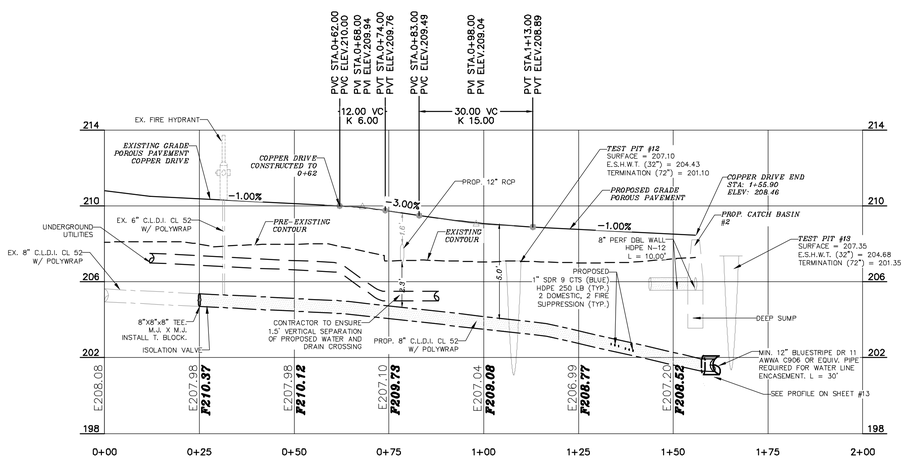
(IN FEET)
1 inch = 20 ft.





UTILITY PLAN VIEW COPPER DRIVE 0+00 TO END

UTILITY PROFILE VIEW COPPER DRIVE 0+00 TO END



GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.
VERTICAL SCALE: 1" = 4'

DOVER PLANNING FILE #SITE-2023-0007

REVISION	DATE	DESCRIPTION
#4	12-01-23	REVISED PER TRC #3 COMMENT
#3	11-09-23	REVISED PER INFORMAL TRC
#2	11-06-23	REVISED PER TRC #2 & ADDITIONAL UNITS ADDED
#1	9-25-23	REVISED PER DOVER TRC COMMENT

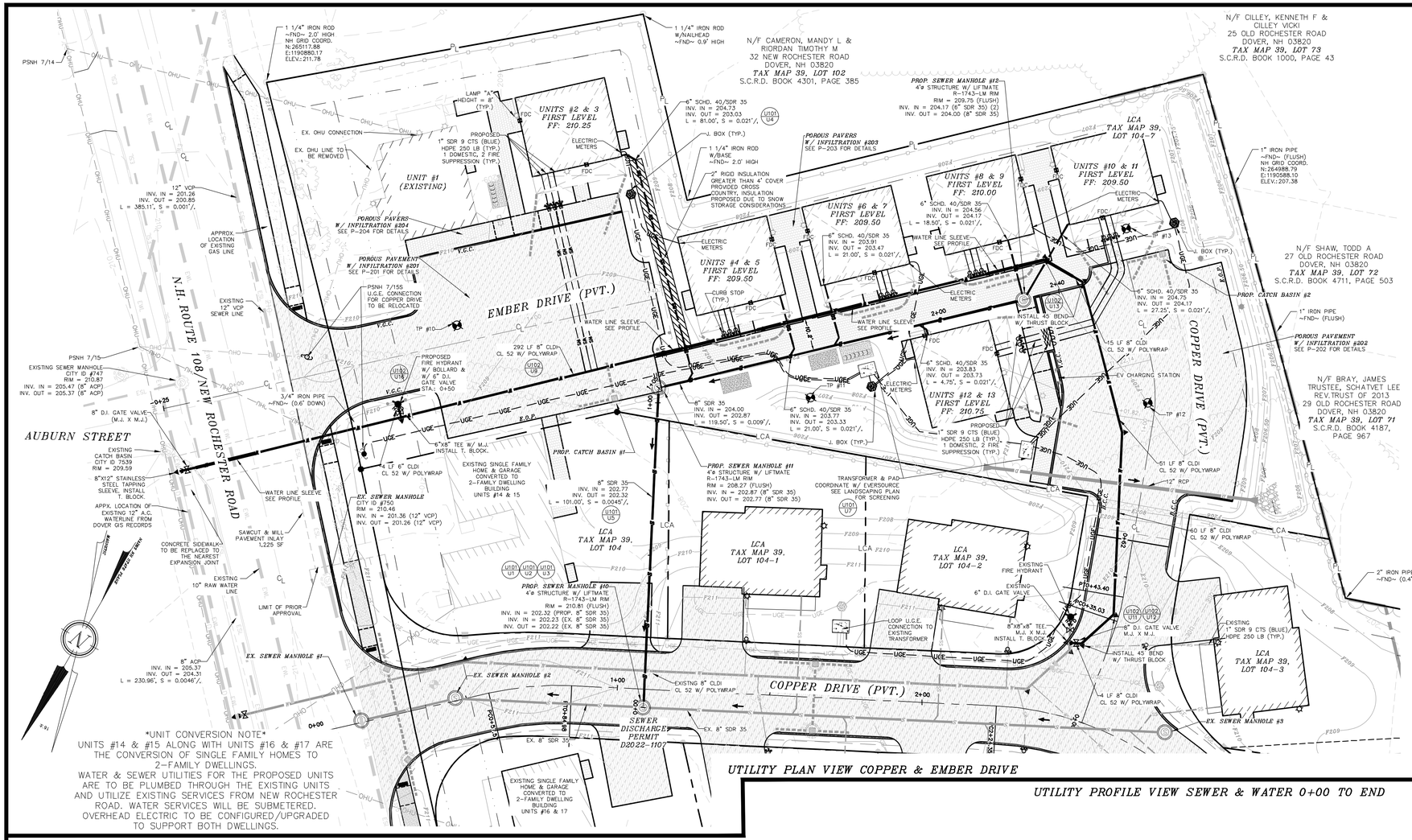
UTILITY PLAN & PROFILE COPPER DRIVE 0+00 TO END
LAND OF: ROBERT BALDWIN
FOR: KNOX MARSH DEVELOPMENT LLC
34 NEW ROCHESTER ROAD
DOVER, N.H.
TAX MAP 39, LOT 103

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

SCALE : 1 IN. EQUALS 20 FT.
DATE : JULY 6, 2023
FILE NO. : DB 2023 - 053

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 12048
LICENSED PROFESSIONAL ENGINEER

NOT FOR CONSTRUCTION



PROJECT NOTES:

1A.) OWNER: ROBERT BALDWIN
242 CENTRAL AVE
DOVER, NH 03820

1B.) APPLICANT: KNOX MARSH DEVELOPMENT LLC
242 CENTRAL AVE
DOVER, NH 03820

2.) TAX MAP 39, LOT 103

3.) S.C.R.D. BOOK 5116, PAGE 655

4.) LOT AREA: 35,555 Sq. Ft., 0.83 Ac.

5.) THE INTENT OF THIS PLAN IS TO PROVIDE UTILITY & ENGINEERING DETAILS OF COPPER DRIVE, EMBER DRIVE, AND TAX MAP 39, LOT 103.

6.) SEE EROSION & SEDIMENT CONTROL PLANS FOR DETAILS ON PERIMETER CONTROL (MULCH BERM / FENCE / SILT SOXX).

7.) BS&E IS TO PROVIDE ADDITIONAL BENCHMARKS PRIOR TO CONSTRUCTION.

8.) EXISTING AND PROPOSED CONTOURS ARE PROVIDED AT 1' INTERVALS WITH DRAINAGE FEATURES AT MORE PRECISE INTERVALS.

9.) FOOTING ELEVATION ASSUMED BETWEEN 204.0 AND 205.0.

PROPOSED LEGEND:

- LIGHT TYPE "A" MOUNTED ON UNIT
- LIGHT TYPE "B" MOUNTED 14' HIGH
- LIGHT TYPE "C" MOUNTED 5.5' HIGH
- SEWER MANHOLE W/ STRUCTURE
- DETAIL SHEET / DETAIL
- CONTOUR MINOR, PROPOSED
- CONTOUR MAJOR, PROPOSED
- DRAINAGE CULVERT
- SHOULDER
- CENTER LINE
- PROPOSED UTILITY POLE
- TRANSFORMER / J.BOX
- UNDERGROUND UTILITY
- GATE VALVE
- CURB STOP
- FIRE HYDRANT
- THRUST BLOCKS
- PROPOSED WATER MAIN
- PROPOSED WATER SERVICE
- PROPOSED SEWER LINE
- PROPOSED SEWER SERVICE

PROPOSED SURFACE LEGEND:

- PROPOSED POROUS PAVEMENT
- PROPOSED CONCRETE
- PROPOSED POROUS PAVERS

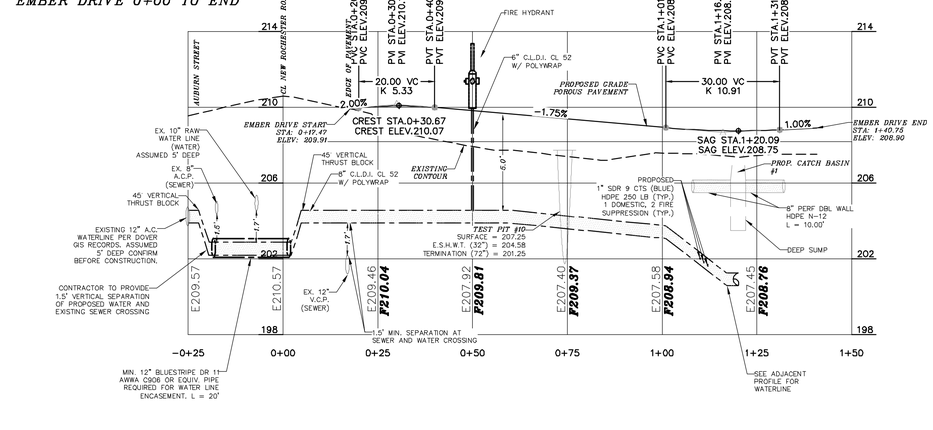
GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

UTILITY PLAN VIEW COPPER & EMBER DRIVE

UTILITY PROFILE VIEW EMBER DRIVE 0+00 TO END

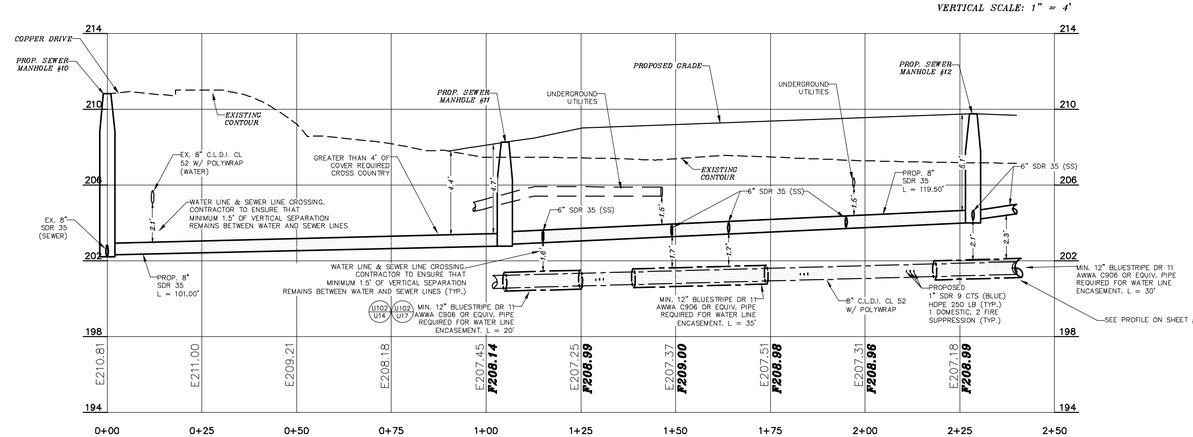


UTILITY PROFILE VIEW SEWER & WATER 0+00 TO END

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.
VERTICAL SCALE: 1" = 4'



NOT FOR CONSTRUCTION

DOVER PLANNING FILE #SITE-2023-0007

REVISION	DATE	DESCRIPTION
#4	12-01-23	REVISED PER TRC #3 COMMENT
#3	11-09-23	REVISED PER INFORMAL TRC
#2	11-06-23	REVISED PER TRC #2 & ADDITIONAL UNITS ADDED
#1	9-25-23	REVISED PER DOVER TRC COMMENT

UTILITY PLAN COPPER DRIVE & EMBER DRIVE
LAND OF: ROBERT BALDWIN
FOR: KNOX MARSH DEVELOPMENT LLC
34 NEW ROCHESTER ROAD
DOVER, N.H.
TAX MAP 39, LOT 103

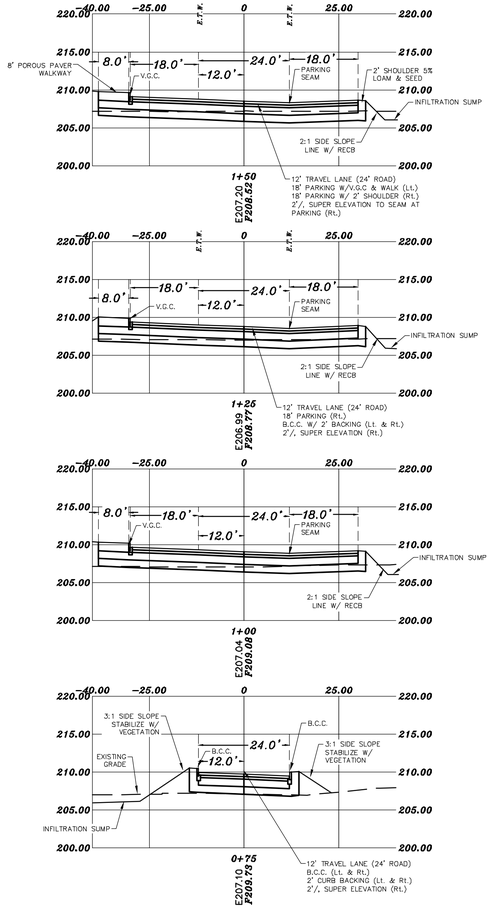
BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 20 FT.
DATE : JULY 6, 2023
FILE NO. : DB 2023 - 053

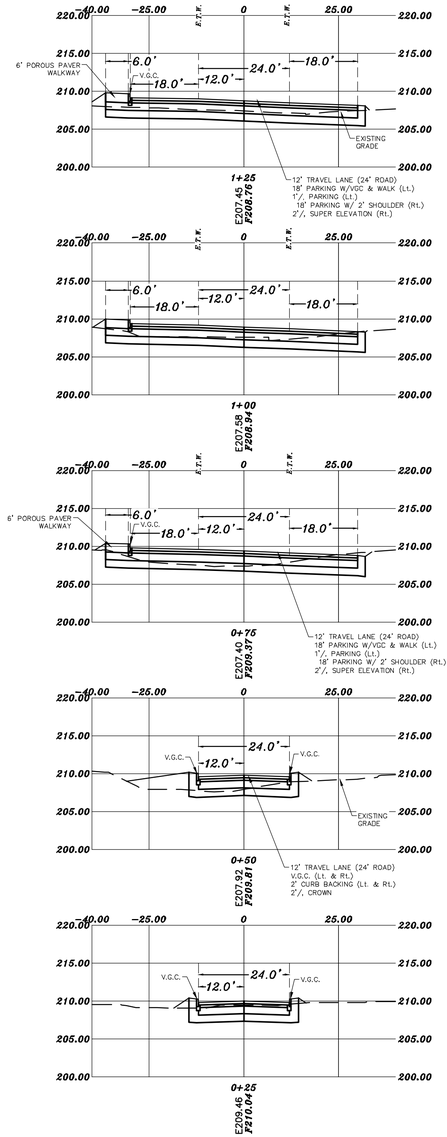
STATE OF NEW HAMPSHIRE
KENNETH A. BERRY No. 14040
LICENSED PROFESSIONAL ENGINEER

NOTE
SEE C-101
FOR TYPICAL
POROUS
PAVEMENT
SECTION

COPPER DRIVE



EMBER DRIVE



GRAPHIC SCALE

20 0 10 20 40 80

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

DOVER PLANNING FILE #SITE-2023-0007

REVISION	DATE	DESCRIPTION
#4	12-01-23	REVISED PER TRC #3 COMMENT
#3	11-09-23	REVISED PER INFORMAL TRC
#2	11-06-23	REVISED PER TRC #2 & ADDITIONAL UNITS ADDED
#1	9-25-23	REVISED PER DOVER TRC COMMENT

CROSS SECTIONS COPPER DRIVE & EMBER DRIVE
LAND OF: ROBERT BALDWIN
FOR: KNOX MARSH DEVELOPMENT LLC
34 NEW ROCHESTER ROAD
DOVER, N.H.
TAX MAP 39, LOT 103

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

SCALE : 1 IN. EQUALS 20 FT.
DATE : JULY 6, 2023
FILE NO. : DB 2023 - 053

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14040
LICENSED PROFESSIONAL ENGINEER

NOT FOR CONSTRUCTION



NOTES:

1A.) OWNER: ROBERT BALDWIN
242 CENTRAL AVE
DOVER, NH 03820

1B.) APPLICANT: KNOX MARSH DEVELOPMENT LLC
242 CENTRAL AVE
DOVER, NH 03820

2.) TAX MAP 39, LOT 103

3.) S.C.R.D. BOOK 5116, PAGE 655

4.) LOT AREA: 35,555 Sq. Ft., 0.82 Ac.

5.) THE INTENT OF THIS PLAN IS TO SHOW THE PROPOSED LIGHTING DESIGN FOR THE RESIDENTIAL SITE PLAN FOR A SINGLE FAMILY HOME AND 6 TWO FAMILY RESIDENCES.

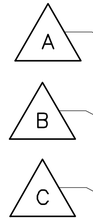
6.) SEE CONSTRUCTION DETAILS FOR LIGHT PRODUCT CUT SHEETS.

7.) LAMP "A" IS A TYPICAL RESIDENTIAL LAMP MOUNTED ON THE BUILDINGS THAT IS MOUNTED APPROXIMATELY 6-8' OFF THE GROUND.

8.) LAMP "B" IS A TYPICAL POLE MOUNTED RESIDENTIAL LAMP THAT IS MOUNTED APPROXIMATELY 14' OFF THE GROUND.

9.) LAMP "C" IS A BOLLARD TOP TYPE LIGHT THAT IS MOUNTED APPROXIMATELY 5.5' OFF THE GROUND.

10.) EXTERIOR LIGHTING SHALL BE CUT-OFF TYPE FIXTURES PER CHAPTER 153-14-E AND SHALL PROVIDE LIGHTING DIRECTED ON-SITE ONLY.

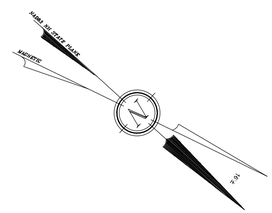


Schedule

Symbol	Label	Image	Quantity	Manufacturer	Catalog Number	Description	Number Lamps	Lumens Per Lamp	Light Loss Factor	Wattage
	A		15	Lithonia Lighting	ODSL10 SRC	CRAFTSTON WALL MOUNTED SMALL DECORATIVE LANTERN, ONE LAMP 13W SPIRAL COMPACT FLUORESCENT, WHITE GLASS DIFFUSER 4.25" DIA. X 6.65" HIGH, ELECTRONIC BALLAST	1	900	1	12.6
	B		4	Lithonia Lighting	DSX1 LED P1 30K T3M MVOLT	DSX1 LED P1 30K T3M MVOLT	1	8279	1	54
	C		2	Lithonia Lighting	KBR8 LED 12C 350 30K ASY MVOLT	KBR8 WITH 3 LIGHT BOARDS (12 LEDs) 350mA DRIVER, 3000K COLOR TEMP AND ASYMMETRIC OPTIC	1	641	1	16

Statistics

Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
Stat Zone # 1	+	2.0 fc	4.5 fc	0.4 fc	11.3:1	5.0:1
Stat Zone # 2	+	2.0 fc	4.6 fc	0.4 fc	11.5:1	5.0:1
Stat Zone # 3	+	2.0 fc	4.9 fc	0.4 fc	12.3:1	5.0:1
Stat Zone # 4	+	2.0 fc	4.7 fc	0.4 fc	11.8:1	5.0:1



GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

DOVER PLANNING FILE #SITE-2023-0007

REVISION	DATE	DESCRIPTION
#4	12-01-23	REVISED PER TRC #3 COMMENT
#3	11-09-23	REVISED PER INFORMAL TRC
#2	11-06-23	REVISED PER TRC #2 & ADDITIONAL UNITS ADDED
#1	9-25-23	REVISED PER DOVER TRC COMMENT

LIGHTING PLAN
LAND OF: ROBERT BALDWIN
FOR: KNOX MARSH DEVELOPMENT LLC
34 NEW ROCHESTER ROAD
DOVER, N.H.
TAX MAP 39, LOT 103

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

SCALE : 1 IN. EQUALS 20 FT.
DATE : JULY 6, 2023
FILE NO. : DB 2023 - 053

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 15045
LICENSED PROFESSIONAL ENGINEER

NOT FOR CONSTRUCTION



GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

NOTES:

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

PLANTING NOTES

1. CONTRACTOR SHALL OBTAIN APPROVAL FROM L.A. PRIOR TO PURCHASING &/OR INSTALLING SUBSTITUTE PLANT MATERIAL PRIOR TO PURCHASE OF ANY SUBSTITUTE MATERIALS.
2. CONSTRUCTION ACCESS WILL BE AS DIRECTED BY L.A. CONTRACTOR IS RESPONSIBLE FOR RESTORATION OF ACCESS ROUTE AND ALL AREAS DISTURBED BY PLANTING OPERATIONS UPON COMPLETION OF CONSTRUCTION OPERATIONS, AT NO ADDITIONAL COST TO THE OWNER.
3. LAYOUT OF ALL PLANTING BEDS AND LOCATION OF PLANTS TO BE APPROVED BY L.A. ON SITE PRIOR TO CONSTRUCTION AND INSTALLATION.
4. CONTRACTOR TO REMOVE ALL DEBRIS GENERATED BY PLANT INSTALLATION. DEBRIS TO BE DISPOSED OF IN A LEGAL MANNER.
5. ALL PLANT MATERIAL SHALL BE GUARANTEED TO BE IN GOOD, HEALTHY & FLOURISHING CONDITION FOR ONE YEAR FROM THE DATE OF FINAL INSTALLATION APPROVAL BY L.A. CONTRACTOR SHALL REPLACE, WITHOUT COST TO OWNER, AND AS SOON AS WEATHER CONDITIONS PERMIT, ALL DEAD AND NON-FLOURISHING PLANTS AS DETERMINED BY THE L.A. REPLACEMENT PLANTS SHALL BE BE GUARANTEED IDENTICALLY TO ORIGINAL PLANTS, TIME PERIOD COMMENCING FROM DATE OF REPLACEMENT PLANTING APPROVAL BY L.A.
6. ALL BEDS TO BE MULCHED WITH 3" DEPTH SHREDDED BARK MULCH UNLESS NOTED OTHERWISE.
7. CONTRACTOR TO PROVIDE NECESSARY TEMPORARY IRRIGATION IF NEEDED BASED ON TIME OF YEAR THE PROJECT IS IMPLEMENTED.
8. ALL PLANT MATERIAL TO COMPLY WITH THE CITY OF DOVER'S SITE REVIEW REGULATIONS, 149-14(G), SUCH THAT THERE SHALL BE DECIDUOUS SHADE TREES PLANTED 40 FEET O.C. ALONG THE PERIMTERE OF THE PARKING LOTS AND SHRUBS PLANTED 5 FEET O.C. WITHIN THE PERIMETER BUFFER. SEE PLANT LIST FOR SPECIES AND SIZE OF PLANTS.

TEMPORARY WATERING NOTES

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

PLANTING SCHEDULE
Copper Drive/Nickel Drive
Botanical Name/ Common Name

	Size	Qty	Label
Trees			
Acer rubrum / Red Maple	4" Cal.	13	AR
Pseudotsuga menziesii / Douglas Fir	4" Cal.	20	PM
Shrubs			
Buxus / Boxwood	3 Gal.	21	BW
Grasses			
Calamagrostis acutifolia 'Karl Foerster' / Feather Reed Grass	#2	92	KF
Perennials			
Hydrangea macrophylla/ Hydrangea	#1	159	HM

terrain
planning & design llc

General Plant Maintenance Guide

General Plant Bed Maintenance:

- All plant maintenance should be performed by a qualified horticulturalist or licensed arborist. Cleaning the dead material out of the planting bed in the fall helps keep litter from building up around the plants and in some cases killing the plants. Watering the first year during dry periods will help get the plants established. Mulching every year is not necessary. Raking the old mulch and turning it over is all that is needed. When necessary only install one inch of mulch and do not place the mulch closer than 3" to the trunks or stems of woody plants.

Trees

- The first year watering during dry periods will be necessary.
- 3" inches of mulch maybe used. The mulch should be kept 3 inches from the trunk.
- Fertilizing is not necessary for the first year. Fertilizing in subsequent years only when and if the foliage is looking weak.
- Fertilization should occur prior to Mat 31st or after trees have dropped their leaves for the year.
- Prune dead wood once a year.
- Depending on the amount of compaction the bed area receives, deep root aeration may be needed over time

Woody Shrubs

- The first year watering during dry periods will be necessary.
- 3" inches of mulch maybe used. The mulch should be kept 3 inches from the stems.
- Fertilizing is not necessary for the first year. Fertilizing in subsequent years only when and if the foliage is looking weak.
- Fertilization should occur prior to Mat 31st or after shrubs have dropped their leaves or gone dormant for the year.
- Prune dead wood once a year.

Grasses

- Grasses only need to be clipped back at the end of the growing season and all the clippings removed from the area.
- Do not over mulch. Too much mulch will prohibit the grass from developing into a strong clump.

Perennials

- All perennials need to be pruned back after the first or second hard frost. A two-step method; first dead head all the flower heads and let drop to the ground for re-seeding. Second cut the stems back to 3" above the ground and remove the stem and leaf litter and place in compost. Do not over mulch. Too much mulch will prohibit the growth and development
- Fertilizing perennials once in the spring with a low phosphate fertilizer will help the plants to get started in the spring.

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

EMBER Drive & Copper Drive

Site Location:
34 New Rochester Road
Dover, NH
Tax Map: 39
Lots: 103

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

LANDSCAPE PLAN

DATE:

SCALE: 1" = 20'

PROJECT #:

Drawn By: ID

Checked By: ERB

REVISIONS: DATE:
Issued for Client Review

This plan is the property of Terrain Planning & Design LLC. Use or reproduction of this plan by any means without permission or purchase from Terrain Planning & Design LLC is prohibited.

L - 01

NOT FOR CONSTRUCTION

NOTES:

1A.) OWNER: ROBERT BALDWIN
242 CENTRAL AVE
DOVER, NH 03820

1B.) APPLICANT: KNOX MARSH DEVELOPMENT LLC
242 CENTRAL AVE
DOVER, NH 03820

2.) TAX MAP 39, LOT 103

3.) S.C.R.D. BOOK 5116, PAGE 655

4.) LOT AREA: 35,555 Sq. Ft., 0.83 Ac.

5.) THIS IS A RESIDENTIAL SITE PLAN.

6.) THE INTENT OF THIS PLAN IS TO DEMONSTRATE THE AVAILABLE SIGHT DISTANCE FROM THE PROPOSED ROADWAY KNOWN AS EMBER DRIVE.

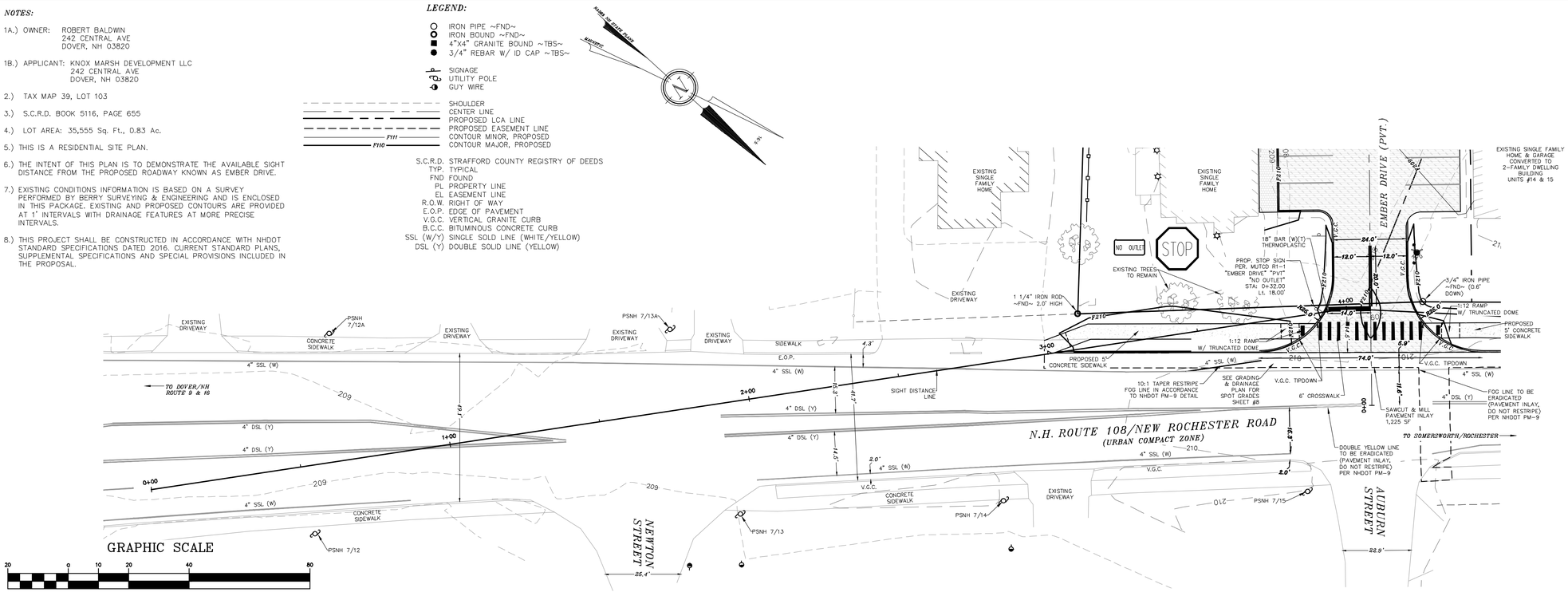
7.) EXISTING CONDITIONS INFORMATION IS BASED ON A SURVEY PERFORMED BY BERRY SURVEYING & ENGINEERING AND IS ENCLOSED IN THIS PACKAGE. EXISTING AND PROPOSED CONTOURS ARE PROVIDED AT 1' INTERVALS WITH DRAINAGE FEATURES AT MORE PRECISE INTERVALS.

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

LEGEND:

- IRON PIPE ~FND~
- IRON BOUND ~FND~
- 4"x4" GRANITE BOUND ~TBS~
- 3/4" REBAR W/ ID CAP ~TBS~
- SIGNAGE
- UTILITY POLE
- GUY WIRE
- SHOULDER
- CENTER LINE
- PROPOSED LCA LINE
- PROPOSED EASEMENT LINE
- P111 CONTOUR MINOR, PROPOSED
- P110 CONTOUR MAJOR, PROPOSED

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

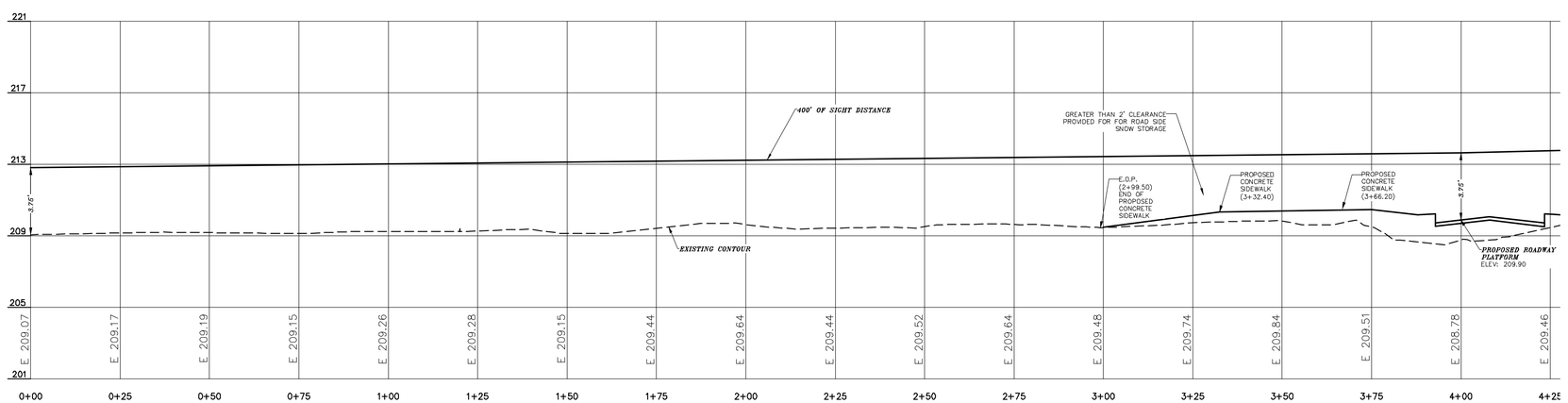


GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

PLAN VIEW N.H. ROUTE 108/NEW ROCHESTER ROAD & EMBER DRIVE

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.
VERTICAL SCALE: 1" = 4'

PROFILE VIEW SIGHT LINE



SIGHT DISTANCE REQUIREMENT:

DESIGN SPEED: 35 MPH / 85TH ASSUMED 45 MPH

NORTHBOUND: DOWNGRADE <3%, 360 FEET REQUIRED (400 FEET PROVIDED)
SOUTHBOUND: UPGRADE <3%, 360 FEET REQUIRED (400 FEET PROVIDED)

FROM AASHTO GEOMETRIC DESIGN OF HIGHWAYS AND STREETS (2011) EXHIBIT 3.1

DOVER PLANNING FILE #SITE-2023-0007

REVISION	DATE	DESCRIPTION
#4	12-01-23	REVISED PER TRC #3 COMMENT
#3	11-09-23	REVISED PER INFORMAL TRC
#2	11-06-23	REVISED PER TRC #2 & ADDITIONAL UNITS ADDED
#1	9-25-23	REVISED PER DOVER TRC COMMENT

SIGHT DISTANCE NEW ROCHESTER ROAD NORTHBOUND
LAND OF: ROBERT BALDWIN
FOR: KNOX MARSH DEVELOPMENT LLC
34 NEW ROCHESTER ROAD
DOVER, N.H.
TAX MAP 39, LOT 103

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

SCALE : 1 IN. EQUALS 20 FT.
DATE : JULY 6, 2023
FILE NO. : DB 2023 - 053

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

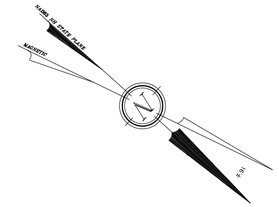
SD-1

NOT FOR CONSTRUCTION

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.



LEGEND:

- IRON PIPE ~FND~
- IRON BOUND ~FND~
- 4"X4" GRANITE BOUND ~TBS~
- 3/4" REBAR W/ ID CAP ~TBS~
- SIGNAGE
- UTILITY POLE
- GUY WIRE
- SHOULDER
- CENTER LINE
- PROPOSED LCA LINE
- PROPOSED EASEMENT LINE
- P111 CONTOUR MINOR, PROPOSED
- P110 CONTOUR MAJOR, PROPOSED

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

NOTES:

1A.) OWNER: ROBERT BALDWIN
242 CENTRAL AVE
DOVER, NH 03820

1B.) APPLICANT: KNOX MARSH DEVELOPMENT LLC
242 CENTRAL AVE
DOVER, NH 03820

2.) TAX MAP 39, LOT 103

3.) S.C.R.D. BOOK 5116, PAGE 655

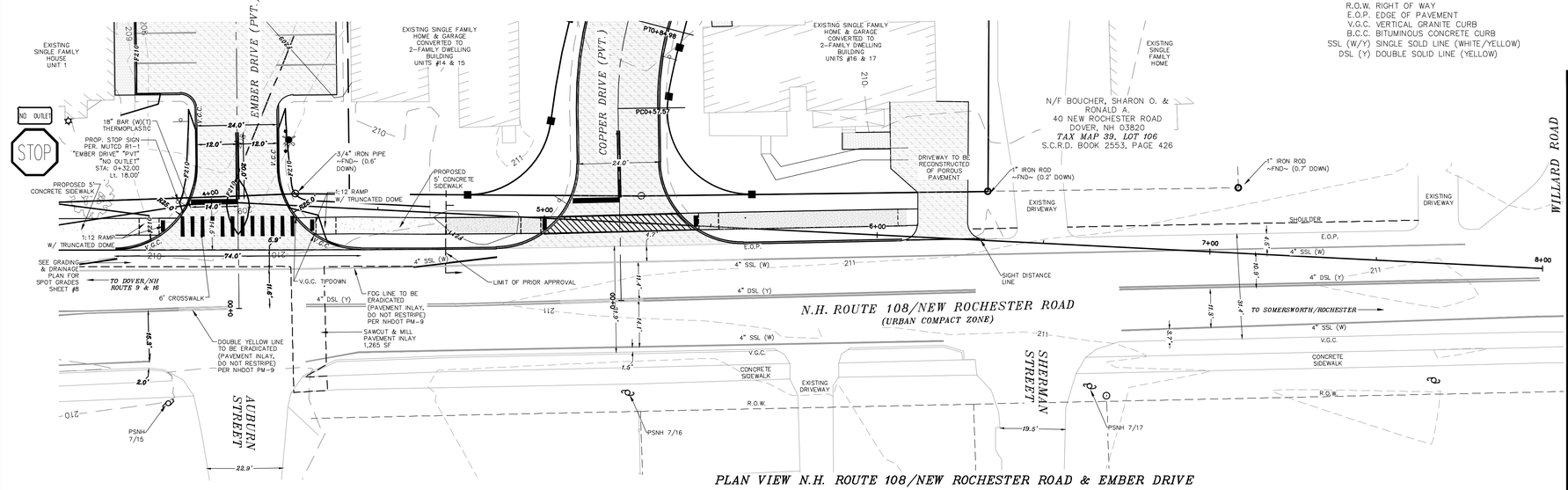
4.) LOT AREA: 35,555 Sq. Ft., 0.83 Ac.

5.) THIS IS A RESIDENTIAL SITE PLAN.

6.) THE INTENT OF THIS PLAN IS TO DEMONSTRATE THE AVAILABLE SIGHT DISTANCE FROM THE PROPOSED ROADWAY KNOWN AS EMBER DRIVE.

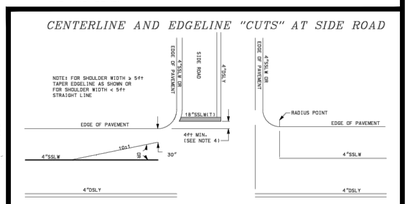
7.) EXISTING CONDITIONS INFORMATION IS BASED ON A SURVEY PERFORMED BY BERRY SURVEYING & ENGINEERING AND IS ENCLOSED IN THIS PACKAGE. EXISTING AND PROPOSED CONTOURS ARE PROVIDED AT 1' INTERVALS WITH DRAINAGE FEATURES AT MORE PRECISE INTERVALS.

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



PLAN VIEW N.H. ROUTE 108/NEW ROCHESTER ROAD & EMBER DRIVE

CENTERLINE AND EDGELINE "CUTS" AT SIDE ROAD



PM-9 GENERAL NOTES

1.) EDGELINE DETAILS ARE SHOWN FOR MAINLINE ROADWAYS WITHOUT TURN LANE. THE PRESENCE OF TURN LANES MAY REQUIRE DIFFERENT EDGELINE TREATMENTS,

2.) EDGELINES ON THE SIDE ROADS, WHEN CALLED FOR, SHALL FOLLOW THE ABOVE MAINLINE TYPICALS. EDGELINES SHALL NOT BE CONTINUOUS AROUND THE MAINLINE/SIDE ROAD RADIUS. EDGELINES SHALL END AT STOP BARS.

3.) CENTERLINE AND EDGELINE SHALL BE CONTINUOUS PAST RESIDENTIAL DRIVEWAYS. CENTERLINE AND EDGELINE SHALL BREAK FOR COMMERCIAL DRIVES W/TRAFFIC CONTROLS, MINOR SIDE ROADS, OR PRIVATE INTERSECTIONS.

4.) LOCATION OF THE STOP LINE MAY VARY DUE TO INTERSECTION SIGHT DISTANCE AND VEHICLE TURNING RADIUS AND MAY NOT ALWAYS COINCIDE WITH THE LOCATION OF THE STOP SIGN.

5.) IF THERE IS NO EDGELINE, END STOP BAR 12" FROM EDGE OF PAVEMENT.

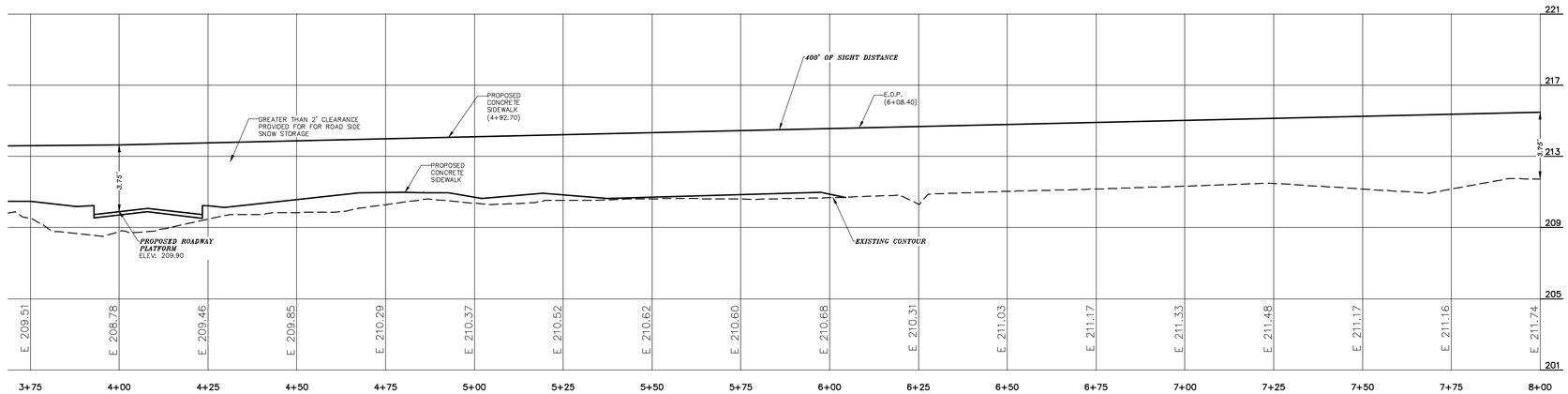
6.) STOP BARS, WORDS, LANE LINES, SYMBOLS AND ARROWS SHALL BE THERMOPLASTIC (T).

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.
VERTICAL SCALE: 1" = 4'

PROFILE VIEW SIGHT LINE



SD-2

DOVER PLANNING FILE #SITE-2023-0007

#	REVISION	DATE	DESCRIPTION
#4			REVISED PER TRC #3 COMMENT
#3		12-01-23	REVISED PER INFORMAL TRC
#2		11-09-23	REVISED PER TRC #2 & ADDITIONAL UNITS ADDED
#1		11-06-23	REVISED PER DOVER TRC COMMENT
		9-25-23	

SIGHT DISTANCE NEW ROCHESTER ROAD NORTHBOUND
LAND OF: ROBERT BALDWIN
FOR: KNOX MARSH DEVELOPMENT LLC
34 NEW ROCHESTER ROAD
DOVER, N.H.
TAX MAP 39, LOT 103

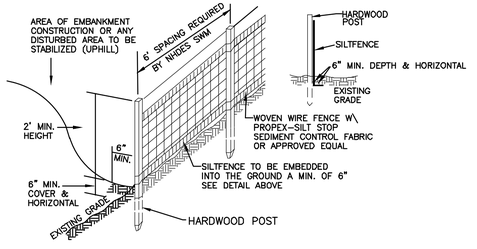
BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 20 FT.
DATE : JULY 6, 2023
FILE NO. : DB 2023 – 053

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY No. 14048 LICENSED PROFESSIONAL ENGINEER

NOT FOR CONSTRUCTION

E1



SILT FENCE CONSTRUCTION SPECIFICATIONS

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

SILT FENCE MAINTENANCE

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

SILT FENCE DETAIL
NOT TO SCALE

E2

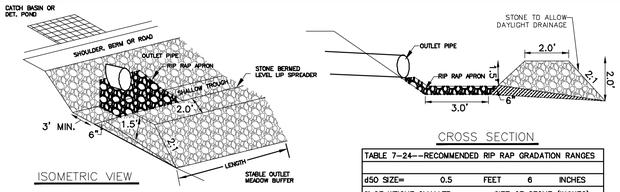
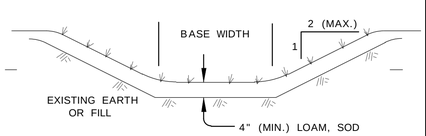


TABLE 7-24--RECOMMENDED RIP RAP GRADATION RANGES			
d50 SIZE=	0.5	FEET	6 INCHES
% OF WEIGHT SMALLER THAN THE GIVEN d50 SIZE	SIZE OF STONE (INCHES) FROM		TO
100%	9		12
85%	8		11
50%	6		9
15%	2		3

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

STONE BERM LEVEL SPREADER
NOT TO SCALE

E3



GRASS TREATMENT SWALE
NOT TO SCALE

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

MOW GRASS ANNUALLY TO A DEPTH OF 4".

INSTALL STABILIZATION MATTING DURING CONSTRUCATION

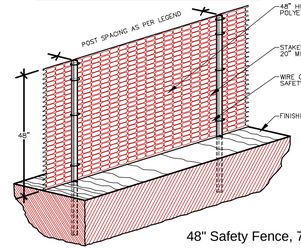
TO BE CONSTRUCTED IAW NH SWM #2 CHAPTER 4, #5 TREATMENT SWALES, PAGE 123.

E4

CONSTRUCTION SAFETY FENCE
NOT TO SCALE

LEGEND

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



48" Safety Fence, 72" T-Posts

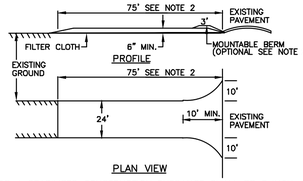
1. ALL SENSITIVE AREAS SHALL BE PROTECTED AS PER PLAN.
2. ALL TREES IN THE CONSTRUCTION AREA NOT SPECIFICALLY DESIGNATED FOR REMOVAL SHALL BE PRESERVED AND PROTECTED WITH HIGH VISIBILITY FENCE AS PER PLAN.
3. WHEN PRACTICABLE, INSTALL HIGH VISIBILITY 3 FEET OUTSIDE OF THE DRIP LINE OF THE TREE.
4. SAFETY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

DOVER PLANNING FILE #SITE-2023-0007

REVISION	DATE	DESCRIPTION
#4	12-01-23	REVISED PER TRC #3 COMMENT
#3	11-09-23	REVISED PER INFORMAL TRC
#2	11-06-23	REVISED PER TRC #2 & ADDITIONAL UNITS ADDED
#1	9-25-23	REVISED PER DOVER TRC COMMENT

E5

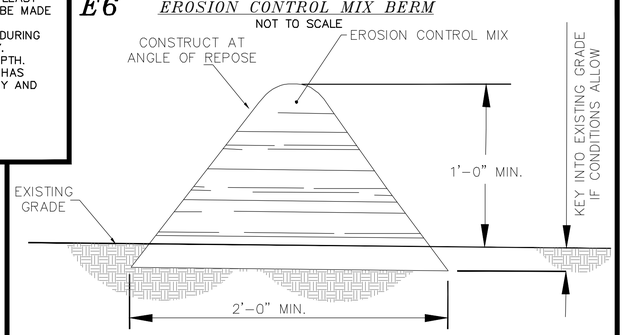
STABILIZED CONSTRUCTION ENTRANCE
NOT TO SCALE



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

E6

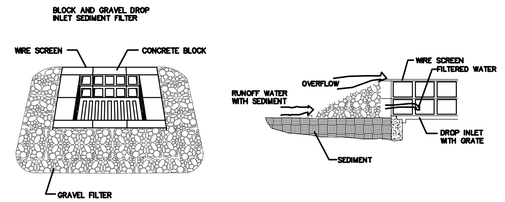
EROSION CONTROL MIX BERM
NOT TO SCALE



EROSION CONTROL MIX BERMS SHALL BE USED ONLY AS FOLLOWS:

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

E7



MAINTENANCE

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

BLOCK & GRAVEL DROP INLET SEDIMENT FILTER
NOT TO SCALE

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

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

E8

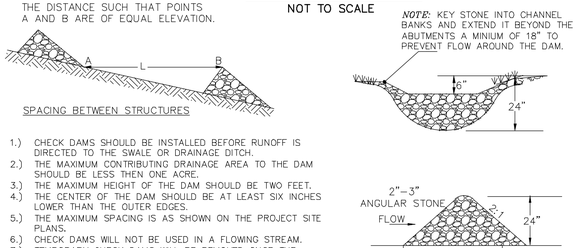
TEMPORARY EROSION CONTROL MEASURES

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

EROSION & SEDIMENT CONTROL DETAILS
LAND OF: ROBERT BALDWIN
FOR: KNOX MARSH DEVELOPMENT LLC
34 NEW ROCHESTER ROAD
DOVER, N.H.
TAX MAP 39, LOT 103

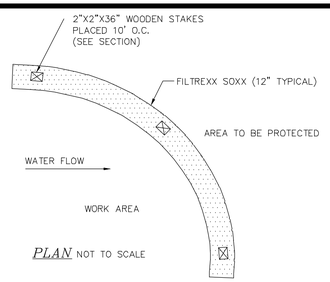
E9

STONE CHECK DAM
NOT TO SCALE



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

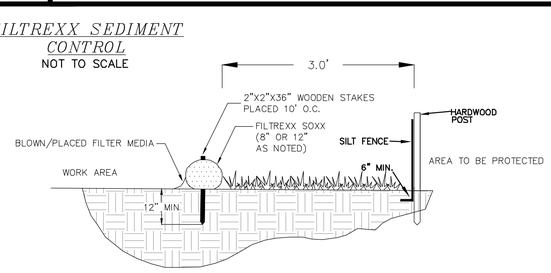
E10



NOTES

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

FILTREXX SEDIMENT CONTROL
NOT TO SCALE

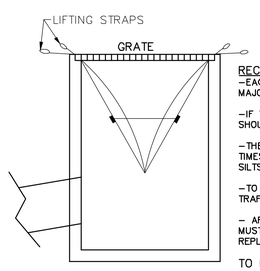


Filtrexx International, LLC
35481 Grafton Eastern Rd | Grafton, Oh 44044
440-926-2607 | fax: 440-926-4021
WWW.FILTREXX.COM
OR APPROVED EQUAL

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

SECTION NOT TO SCALE

E11



RECOMMENDED MAINTENANCE SCHEDULE

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

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

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

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

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

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

SILTSACK DETAIL
NOT TO SCALE

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

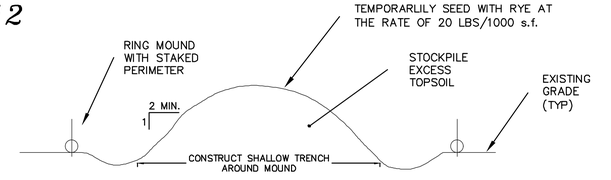
SCALE : AS SHOWN
DATE : JULY 6, 2023
FILE NO. : DB 2023 - 053

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14240
LICENSED PROFESSIONAL ENGINEER

E-101

NOT FOR CONSTRUCTION

E12



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

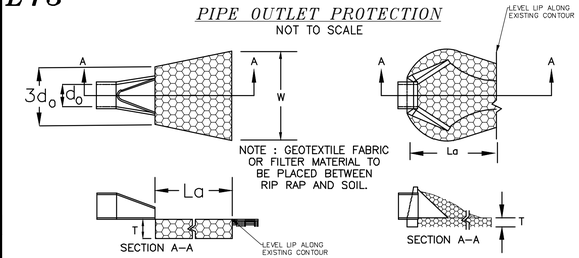
TOPSOIL STOCKPILE MOUND

NOT TO SCALE

E13

PIPE OUTLET PROTECTION

NOT TO SCALE



PIPE OUTLET TO FLAT AREA WITH NO DEFINED CHANNEL

PIPE OUTLET TO WELL–DEFINED CHANNEL

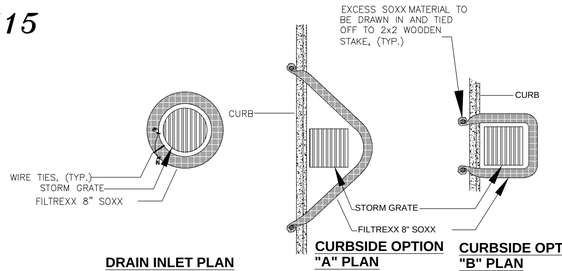
PIPE OUTLET PROTECTION CONSTRUCTION SPECIFICATIONS

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

E14

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

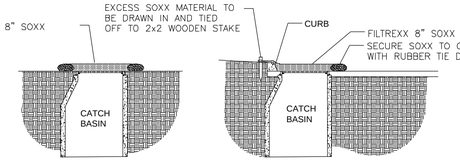
E15



DRAIN INLET PLAN

CURBSIDE OPTION "A" PLAN

CURBSIDE OPTION "B" PLAN



DRAIN INLET SECTION

CURBSIDE SECTION

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

FILTREXX INLET PROTECTION

NOT TO SCALE

E16

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

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

SEEDING GUIDE

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

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

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

RECOMMENDED *

SEEDING RATES

MIXTURE	POUNDS PER ACRE	POUNDS PER 1,000 Sq. Ft.
A. TALL FESCUE	20	0.45
CREEPING RED FESCUE	20	0.45
RED TOP	2	0.05
TOTAL	42	0.95
B. TALL FESCUE	15	0.35
CREEPING RED FESCUE	10	0.25
CROWN VETCH	15	0.35
OR		
FLAT PEA	30	0.70
TOTAL	40 OR 55	0.95 OR 1.35
C. TALL FESCUE	24	0.55
CREEPING RED FESCUE	24	0.55
BIRDS FOOT TREFOIL	REMOVED	REMOVED
TOTAL	48	1.10
D. TALL FESCUE	30	0.45
FLAT PEA	20	0.75
TOTAL	50	1.20
E. CREEPING RED FESCUE 1/	50	1.15
KENTUCKY BLUEGRASS 1/	50	1.15
TOTAL	100	2.30
F. TALL FESCUE 1	150	3.60

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

SEEDING SPECIFICATIONS

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

E17

CONSTRUCTION SEQUENCE:

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

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

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

4.) CLEAR, CUT AND DISPOSE OF DEBRIS IN APPROVED FACILITY

5.) CONSTRUCT TEMPORARY CULVERTS AS REQUIRED, OR DIRECTED

6.) CONSTRUCT ROADWAYS FOR ACCESS TO DESIRED CONSTRUCTION AREAS. ALL ROADS SHALL BE STABILIZED IMMEDIATELY

7.) START BUILDING CONSTRUCTION AND INSTALL VINYL FENCE AROUND PERIMETER OF PROJECT.

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

9.) BEGIN PERMANENT AND TEMPORARY SEEDING AND MULCHING. ALL CUT AND FILL SLOPES AND DISTURBED AREAS SHALL BE SEEDED OR MULCHED AS REQUIRED, OR DIRECTED. NO AREA IS ALLOWED TO BE DISTURBED FOR A LENGTH OF TIME THAT EXCEEDS 60 DAYS BEFORE BEING STABILIZED. DAILY, OR AS REQUIRED. ALL ROADWAYS AND PARKING AREAS SHALL BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADES. ALL CUT AND FILL SLOPES SHALL BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADES.

10.) CONSTRUCT TEMPORARY BERMS, DRAINS DITCHES, SILT FENCES, SEDIMENT TRAPS, ETC. MULCH AND SEED AS REQUIRED.

11.) INSPECT AND MAINTAIN ALL EROSION AND SEDIMENT CONTROL MEASURES DURING CONSTRUCTION. ALL SWPPP INSPECTIONS MUST BE CONDUCTED BY A QUALIFIED PROFESSIONAL SUCH AS A PROFESSIONAL ENGINEER (PE), A CERTIFIED PROFESSIONAL IN EROSION AND SEDIMENT CONTROL (CPESC), A CERTIFIED EROSION SEDIMENT AND STORM WATER INSPECTOR (CESSW), OR A CERTIFIED PROFESSIONAL IN STORM WATER QUALITY (CPSWQ). INSPECTION REPORTS SHALL BE SUBMITTED TO THE COMMUNITY SERVICES DEPARTMENT.

12.) COMPLETE PERMANENT SEEDING AND LANDSCAPING.

13.) REMOVE TEMPORARY EROSION CONTROL MEASURES AFTER SEEDING AREAS HAVE ESTABLISHED THEMSELVES AND SITE IMPROVEMENTS ARE COMPLETE.

14.) SMOOTH AND REVEGETATE ALL DISTURBED AREAS.

15.) FINISH PAVING ALL ROADWAYS.

E18

DEFINITION OF STABLE:

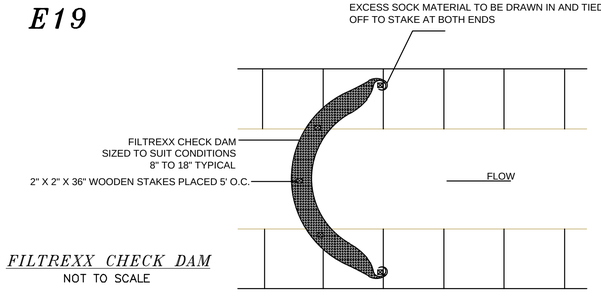
PER ENV–WQ 1500 ALTERATION OF TERRAIN

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

ADDITION STABILIZATION NOTES:

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

E19

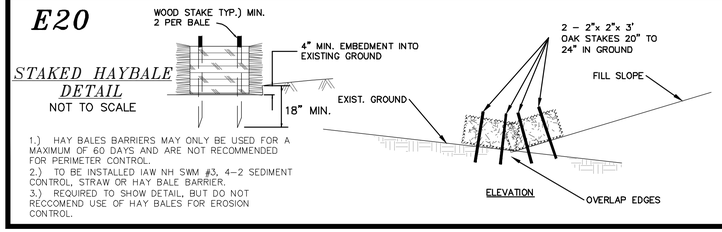


FILTREXX CHECK DAM

NOT TO SCALE

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

E20

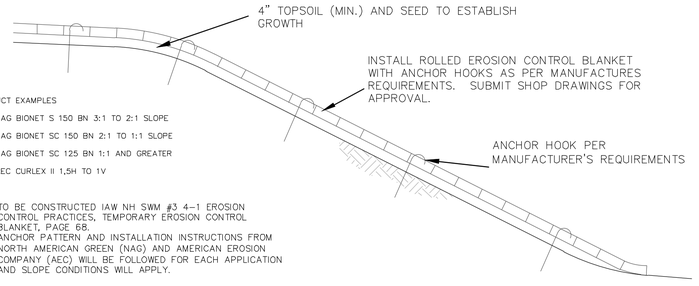


STAKED HAYBALE DETAIL

NOT TO SCALE

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

E21



PRODUCT EXAMPLES

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

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

ROLLED EROSION CONTROL BLANKET (RECB) SLOPE STABILIZATION DETAIL

NOT TO SCALE

E22

WINTER STABILIZATION NOTES

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

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

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

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

E–102

DOVER PLANNING FILE #SITE–2023–0007

REVISION	DATE	DESCRIPTION
#4	12–01–23	REVISED PER TRC #3 COMMENT
#3	11–09–23	REVISED PER INFORMAL TRC
#2	11–06–23	REVISED PER TRC #2 & ADDITIONAL UNITS ADDED
#1	9–25–23	REVISED PER DOVER TRC COMMENT

EROSION & SEDIMENT CONTROL DETAILS
LAND OF: ROBERT BALDWIN
FOR: KNOX MARSH DEVELOPMENT LLC
34 NEW ROCHESTER ROAD
DOVER, N.H.
TAX MAP 39, LOT 103

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

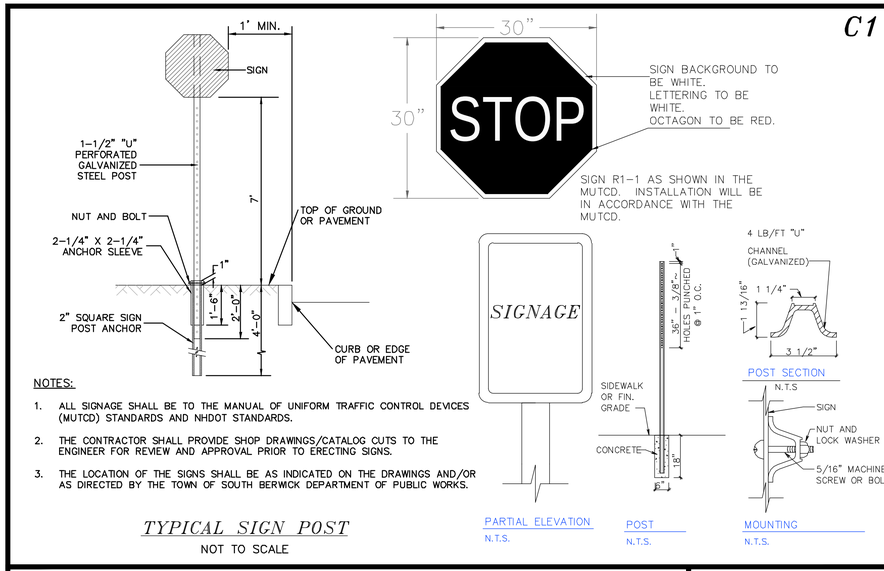
SCALE : AS SHOWN
DATE : JULY 6, 2023
FILE NO. : DB 2023 – 053

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14249
LICENSED PROFESSIONAL ENGINEER

SHEET 20 OF 28

NOT FOR CONSTRUCTION

C1



NOTES:

1. ALL SIGNAGE SHALL BE TO THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) STANDARDS AND NHDOT STANDARDS.
2. THE CONTRACTOR SHALL PROVIDE SHOP DRAWINGS/CATALOG CUTS TO THE ENGINEER FOR REVIEW AND APPROVAL PRIOR TO ERECTING SIGNS.
3. THE LOCATION OF THE SIGNS SHALL BE AS INDICATED ON THE DRAWINGS AND/OR AS DIRECTED BY THE TOWN OF SOUTH BERWICK DEPARTMENT OF PUBLIC WORKS.

TYPICAL SIGN POST
NOT TO SCALE

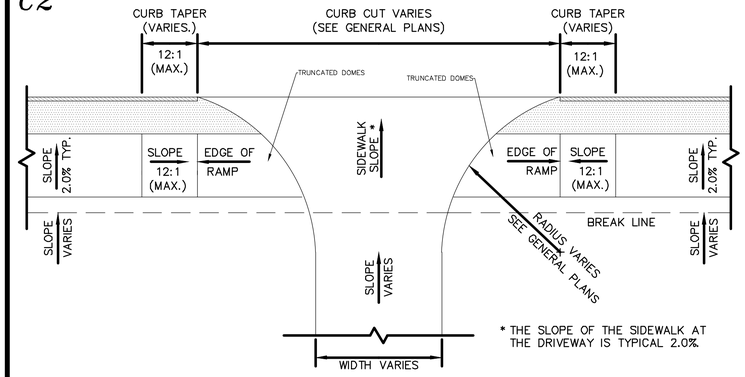
PARTIAL ELEVATION
N.T.S.

POST
N.T.S.

POST SECTION
N.T.S

MOUNTING
N.T.S.

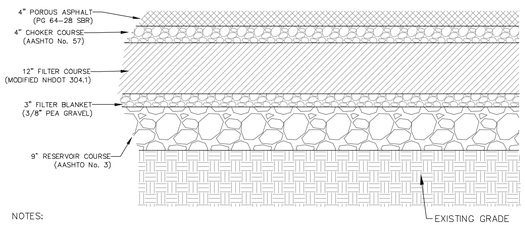
C2



* THE SLOPE OF THE SIDEWALK AT THE DRIVEWAY IS TYPICAL 2.0%

PLAN VIEW (SIDEWALK WITH GRASS PANEL)
NOT TO SCALE

C3

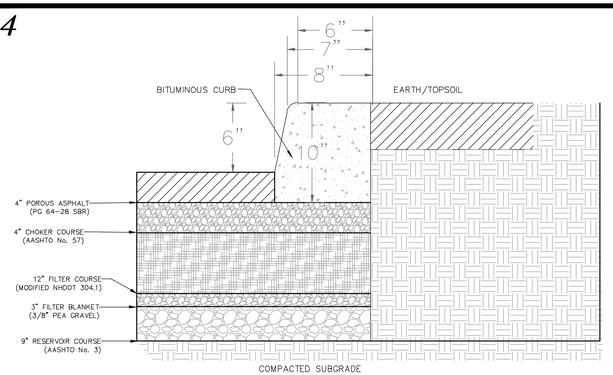


NOTES:

1.) SEE SPECIFICATIONS, GRADATIONS, AND DESIGN REFERENCES ON SHEET P-201&202.

POROUS ASPHALT PAVEMENT SECTION
NOT TO SCALE

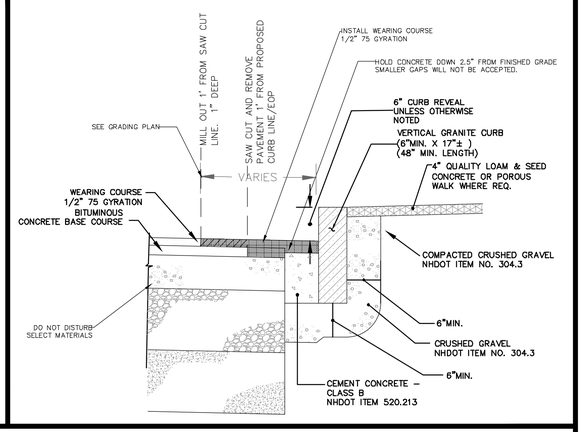
C4



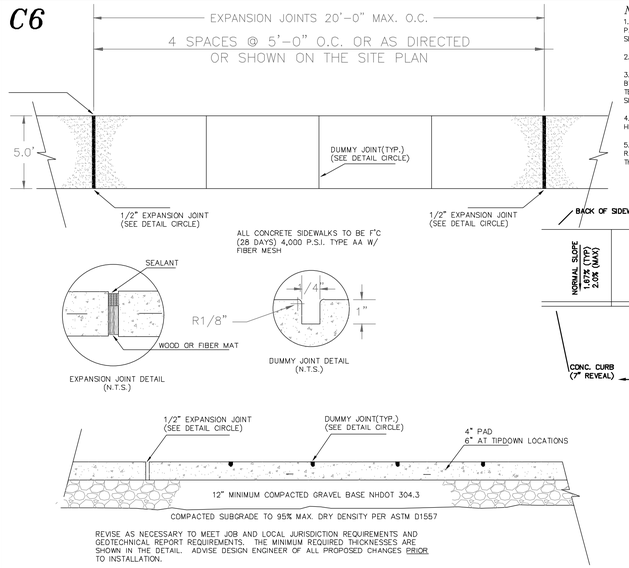
BITUMINOUS CONCRETE CURB
NOT TO SCALE

C5

VERTICAL GRANITE CURB DETAIL
NOT TO SCALE



C6



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

CONCRETE SIDEWALK
NOT TO SCALE

NOTES:

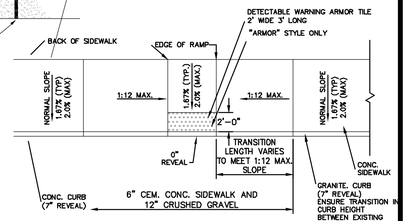
1.) PROVIDE EXPANSION JOINT MATERIAL WHERE CURB RAMP ADJOINS ANY RIGID PAVEMENT, SIDEWALK OR STRUCTURE WITH THE TOP OF JOINT FILLER PLUS SEALANT FLUSH WITH ADJACENT CONCRETE SURFACE.

2.) SEAL JOINTS WITH AN APPROVED SEALING MATERIAL.

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

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

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

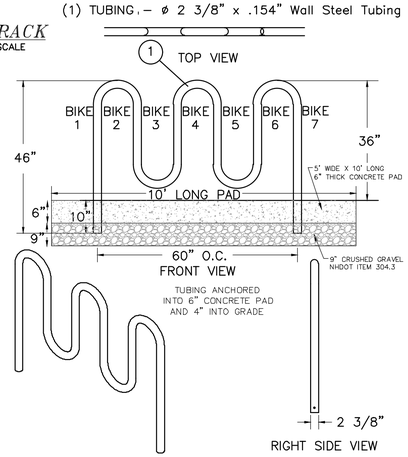


PLAN

C7

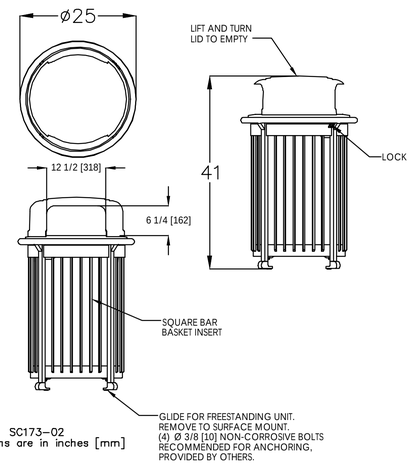
MATERIALS LIST
(1) TUBING, – ø 2 3/8" x .154" Wall Steel Tubing

BIKE RACK
NOT TO SCALE



C8

BIN DETAIL
(NOT TO SCALE)



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

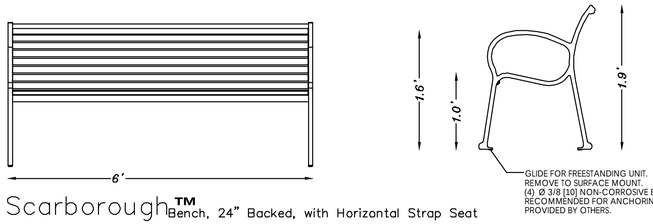
C9

BENCH DETAIL
(NOT TO SCALE)

Scarborough™ Bench, 24" Backed, with Horizontal Strap Seat
Product Drawing

Scarborough™ Bench, 24" Backed, with Horizontal Strap Seat

www.landscapeforms.com Date: 5/19/2010 Ph: 800.521.2546



Scarborough™ Bench, 24" Backed, with Horizontal Strap Seat

DOVER PLANNING FILE #SITE-2023-0007

REVISION	DATE	DESCRIPTION
#4	12-01-23	REVISED PER TRC #3 COMMENT
#3	11-09-23	REVISED PER INFORMAL TRC
#2	11-06-23	REVISED PER TRC #2 & ADDITIONAL UNITS ADDED
#1	9-25-23	REVISED PER DOVER TRC COMMENT

CONSTRUCTION DETAILS
LAND OF: ROBERT BALDWIN
FOR: KNOX MARSH DEVELOPMENT LLC
34 NEW ROCHESTER ROAD
DOVER, N.H.
TAX MAP 39, LOT 103

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

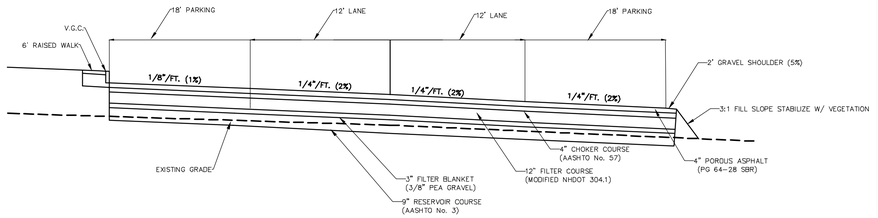
SCALE : AS SHOWN
DATE : JULY 6, 2023
FILE NO. : DB 2023 - 053

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY No. 14240
LICENSED PROFESSIONAL ENGINEER

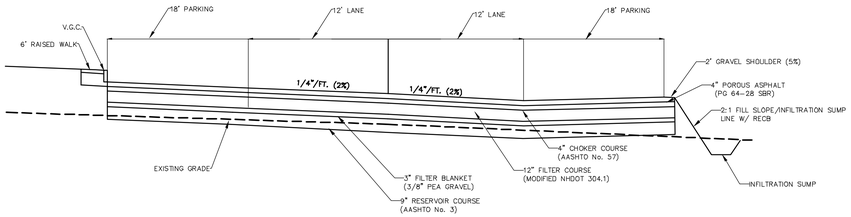
C-101

NOT FOR CONSTRUCTION

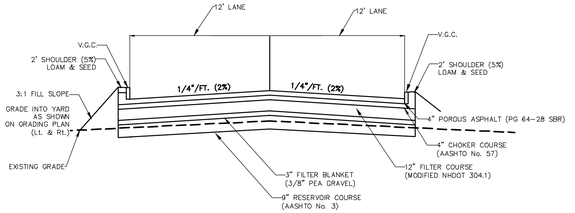
C10



TYPICAL ROADWAY SECTION EMBER DRIVE
0+63–END (POROUS PAVEMENT)
NOT TO SCALE

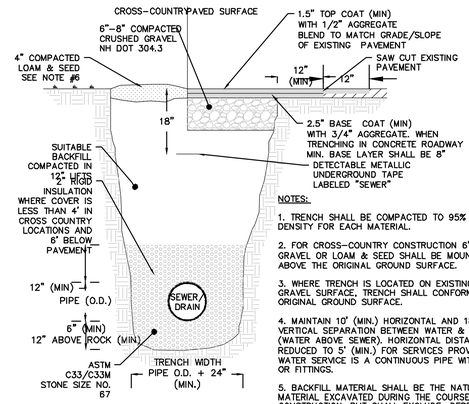


TYPICAL ROADWAY SECTION COPPER DRIVE
0+76–END (POROUS PAVEMENT)
NOT TO SCALE



TYPICAL ROADWAY SECTION EMBER DRIVE
0+00–0+63 (POROUS PAVEMENT)
NOT TO SCALE

C11



NOTES:

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

TYPICAL DRAIN PIPE TRENCH
NOT TO SCALE

DOVER PLANNING FILE #SITE–2023–0007

REVISION	DATE	DESCRIPTION
#4	12–01–23	REVISED PER TRC #3 COMMENT
#3	11–09–23	REVISED PER INFORMAL TRC
#2	11–06–23	REVISED PER TRC #2 & ADDITIONAL UNITS ADDED
#1	9–25–23	REVISED PER DOVER TRC COMMENT

CONSTRUCTION DETAILS
LAND OF: ROBERT BALDWIN
FOR: KNOX MARSH DEVELOPMENT LLC
34 NEW ROCHESTER ROAD
DOVER, N.H.
TAX MAP 39, LOT 103

TYPICAL ROADWAY SECTION COPPER DRIVE
0+62–0+76 (POROUS PAVEMENT)
NOT TO SCALE

C12

CONCRETE FLARED END SECTION
NOT TO SCALE

DIA.	A	B	C	D	E	G	R	T
12"	4"	24"	48 7/8"	72 7/8"	24"	2"	1 1/2"	2"
15"	6"	27"	46"	73"	30"	2 1/4"	1 1/2"	2 1/4"
18"	9"	27"	46"	73"	36"	2 1/2"	1 1/2"	2 1/2"
24"	9 1/2"	43 1/2"	30"	73 1/2"	48"	3"	1 1/2"	3"
30"	12"	54"	19 3/4"	73 3/4"	60"	3 1/2"	1 1/2"	3 1/2"
36"	15"	63"	34 3/4"	97 3/4"	72"	4"	2"	4"
42"	21"	63"	35"	98"	78"	4 1/2"	2"	4 1/2"
48"	24"	72"	26"	98"	84"	5"	2"	5"

C13

CONCRETE WASHOUT
NOT TO SCALE

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.

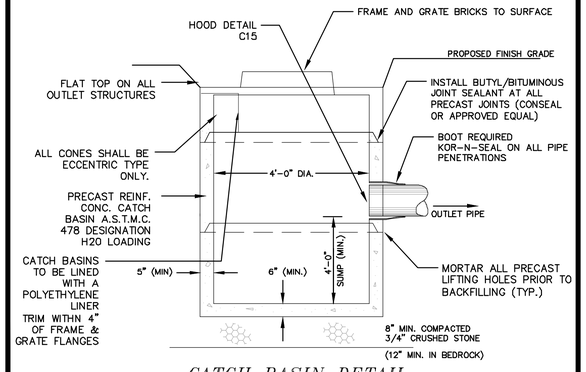
3.) CONTRACTOR IS RESPONSIBLE TO MAINTAIN AND REPLACE WASHOUT AREA AS NEEDED.

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.

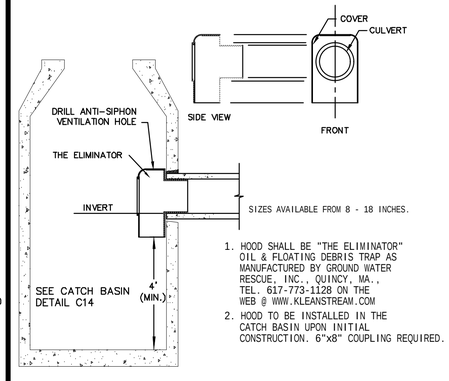
6.) WASHOUT AREA SHALL BE PLACED AWAY FROM DRAINAGE FEATURES AND OUTSIDE AND WETLAND BUFFERS.

C14



CATCH BASIN DETAIL
NOT TO SCALE

C15



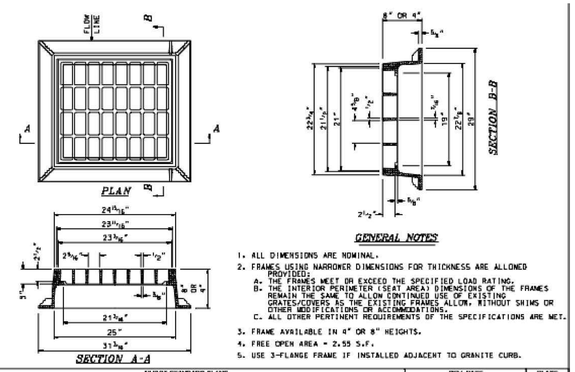
SIZES AVAILABLE FROM 8 - 18 INCHES.

1. HOOD SHALL BE "THE ELIMINATOR" OIL & FLOATING DEBRIS TRAP AS MANUFACTURED BY GROUND WATER RESCUE, INC., QUINCY, MA., TEL. 617-773-1128 ON THE WEB @ WWW.KLEANSTREAM.COM
2. HOOD TO BE INSTALLED IN THE CATCH BASIN UPON INITIAL CONSTRUCTION. 6"x8" COUPLING REQUIRED.

CATCH BASIN HOOD DETAIL
NOT TO SCALE

C16

CATCH BASIN GRATE (TYPE "B")
NOT TO SCALE



GENERAL NOTES

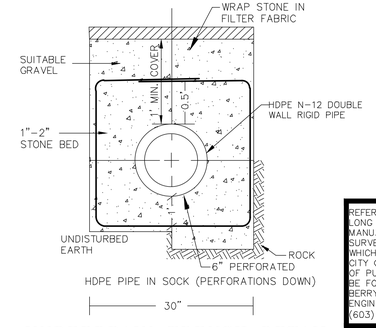
1. ALL DIMENSIONS ARE NOMINAL.
2. FRAMES USING NARROWER DIMENSIONS FOR THICKNESS ARE ALLOWED PROVIDED:
   A. THE FRAMES MEET OR EXCEED THE SPECIFIED LOAD RATING.
   B. THE INTERIOR PERIMETER (SEAT AREA) DIMENSIONS OF THE FRAMES REMAIN THE SAME TO ALLOW CONTINUED USE OF EXISTING GRATES/COVERS AS THE EXISTING FRAMES ALLOW, WITHOUT SHIMS OR OTHER MODIFICATIONS OR ACCOMMODATIONS.
   C. ALL OTHER PERTINENT REQUIREMENTS OF THE SPECIFICATIONS ARE MET.
3. FRAME AVAILABLE IN 4" OR 8" HEIGHTS.
4. FREE OPEN AREA = 2.55 S.F.
5. USE 3-FLANGE FRAME IF INSTALLED ADJACENT TO GRANITE CURB.

NHDOT STANDARD PLANS

REV. DATE	PLATE
06-16-2010	2
08-14-2015	STANDARD DR-1

TYPE "B" GRATE & FRAME

C17



UNDERDRAIN TRENCH DETAIL
NOT TO SCALE

REFERENCE IS MADE TO A LONG TERM MAINTENANCE MANUAL PREPARED BY BERRY SURVEYING & ENGINEERING, WHICH IS ON FILE AT THE CITY OF DOVER DEPARTMENT OF PUBLIC WORKS, AND CAN BE FOUND AT THE OFFICE OF BERRY SURVEYING & ENGINEERING. (603) 332–2863

C–102

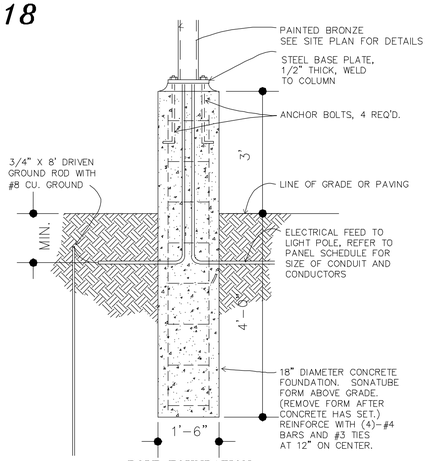
BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332–2863

SCALE : AS SHOWN
DATE : JULY 6, 2023
FILE NO. : DB 2023 – 053

STATE OF NEW HAMPSHIRE – KENNETH A. BERRY No. 7603 – LICENSED PROFESSIONAL ENGINEER

NOT FOR CONSTRUCTION

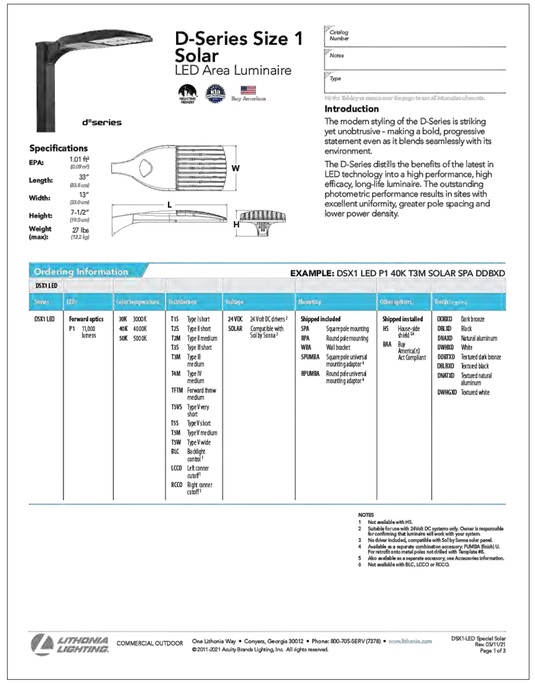
C18



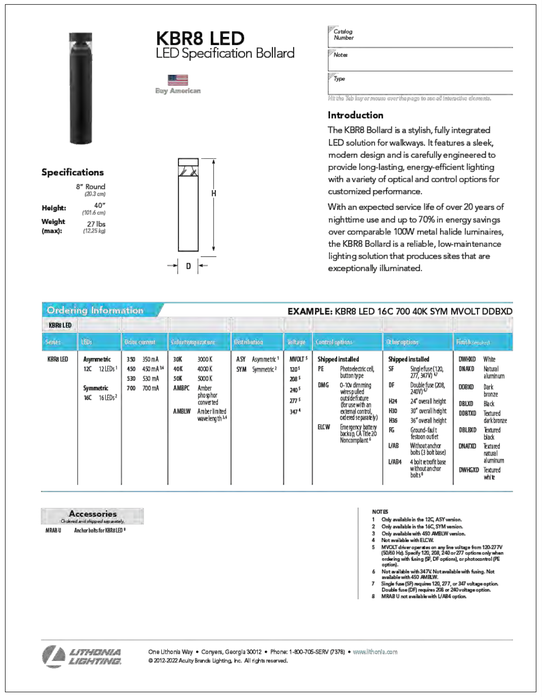
LIGHT BASE DETAIL
NOT TO SCALE



TYPICAL RESIDENTIAL LAMP MOUNTED AT 6-8' +/- AS SHOWN
NOT TO SCALE



TYPICAL POLE LAMP MOUNTED AT 14' +/- AS SHOWN
NOT TO SCALE

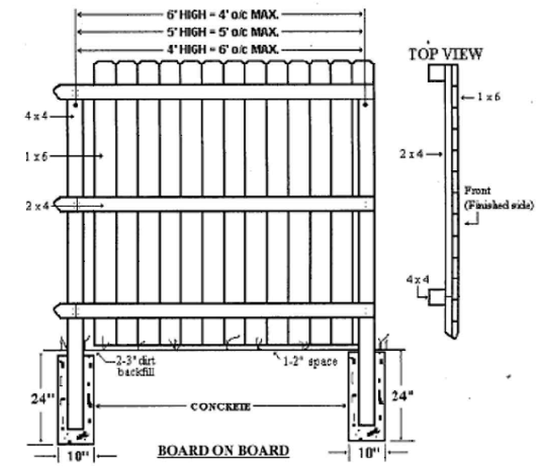


LAMP "C" MOUNTED 5.5'
NOT TO SCALE

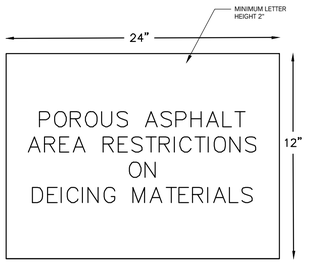
STANDARD 3.5' HEIGHT, 2' PEDISTAL REQUIRED FOR MOUNTING HEIGHT

C19

STOCKADE FENCE DETAIL
NOT TO SCALE



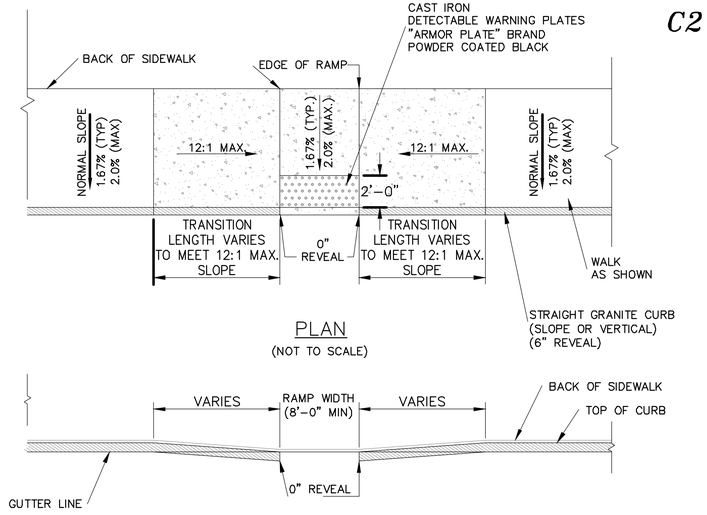
C20



POROUS PAVEMENT SIGN
NOT TO SCALE

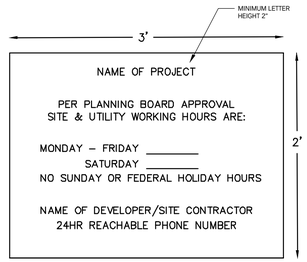
NOTES:
1. SIGN SHALL HAVE BLACK LETTERS ON A WHITE BACKGROUND
2. SIGN SHALL BE WEATHER RESISTANT AND SECURED TO THE GROUND
3. TO BE MOUNTED AT A HEIGHT OF 3'

C21



TYPICAL DETAIL FOR ACCESSIBLE RAMP
NOT TO SCALE

C22



REQUIRED PROJECT INFORMATION 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 TOLEND RD/THEODORE DR & SUN HAWK LANE/ATINA WAY

C-103

DOVER PLANNING FILE #SITE-2023-0007

REVISION	DATE	DESCRIPTION
#4	12-01-23	REVISED PER TRC #3 COMMENT
#3	11-09-23	REVISED PER INFORMAL TRC
#2	11-06-23	REVISED PER TRC #2 & ADDITIONAL UNITS ADDED
#1	9-25-23	REVISED PER DOVER TRC COMMENT

CONSTRUCTION DETAILS
LAND OF: ROBERT BALDWIN
FOR: KNOX MARSH DEVELOPMENT LLC
34 NEW ROCHESTER ROAD
DOVER, N.H.
TAX MAP 39, LOT 103

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

SCALE : AS SHOWN
DATE : JULY 6, 2023
FILE NO. : DB 2023 - 053

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

NOT FOR CONSTRUCTION

NOTES ON MANHOLE AND SEWER CONSTRUCTION:

1) IT IS THE INTENTION THAT THE MANHOLE, INCLUDING ALL COMPONENT PARTS, HAVE ADEQUATE SPACE, STRENGTH AND LEAKPROOF QUALITIES CONSIDERED NECESSARY FOR THE INTENDED SERVICE. SPACE REQUIREMENTS AND CONFIGURATIONS, SHALL BE AS SHOWN ON THE DRAWING. MANHOLES SHALL BE AN ASSEMBLY OF PRECAST SECTIONS, WITH STEEL REINFORCEMENT AND ADEQUATE JOINTING. THE COMPLETE STRUCTURE SHALL BE OF SUCH MATERIAL AND QUALITY AS TO WITHSTAND HS-20-44 LOADING, INCLUDING THE COVER. ALL SMH CONSTRUCTION AND MATERIALS WILL BE IAW ENV.-WQ 704.13 ADOPTED OCTOBER 15, 2014

2) BARRELS AND CONE SECTIONS SHALL BE PRECAST REINFORCED CONCRETE. (IAW ENV.-WQ 704.12 (d))

3) SEWER MANHOLE DIAMETER SHALL BE AS INDICATED ON THE PLANS.

4) PRECAST CONCRETE BARREL SECTIONS, CONES AND BASES SHALL CONFORM TO ASTM C478.

5) GRAVITY SEWER PIPE TESTING WILL BE IN ACCORDANCE WITH ENV.-WQ 704.06 AND MAN HOLE TESTING IAW ENV.-WQ 704.17 DATED OCTOBER 15, 2014.

6) INVERTS AND SHELVES: MANHOLES SHALL HAVE A BRICK PAVED SHELF AND INVERT, CONSTRUCTED TO CONFORM TO THE SIZE OF THE PIPE AND FLOW. INVERT BRICKS SHALL BE LAID ON EDGE AND THE BASE SECTION SHALL BE FULL. AT CHANGES IN DIRECTIONS, THE INVERTS SHALL BE LAID OUT IN CURVES OF THE LONGEST RADIUS POSSIBLE TANGENT TO THE CENTER LINE OF THE SEWER PIPES. CARE SHALL BE TAKEN TO ENSURE THAT THE BRICK INVERT IS A SMOOTH CONTINUATION OF THE SEWER INVERT. SHELVES SHALL BE CONSTRUCTED TO THE ELEVATION OF THE HIGHEST PIPE CROWN AND SLOPE TO DRAIN TOWARD THE FLOWING THROUGH CHANNEL. UNDERLAYMENT OF INVERT AND SHELF SHALL CONSIST OF BRICK MASONRY. (IAW ENV.-WQ 704.13 (a) (9)), MORTAR SHALL CONFORM WITH REQUIREMENTS OF IAW ENV.-WQ 704.13 (c).

   FRAMES AND COVERS: MANHOLES FRAMES AND COVERS SHALL BE OF HEAVY DUTY DESIGN AND PROVIDE A 30-INCH CLEAR OPENING. 3-INCH (MINIMUM HEIGHT) LETTERS WITH THE WORD "SEWER" SHALL BE PLAINLY CAST INTO THE CENTER OF EACH MANHOLE COVER. (IAW ENV.-WQ 704.13 (a) (4-6)) SEWER MAN HOLE COVERS ARE TO BE LIFTMATE R-1743-LM.

7) SHALLOW MANHOLE: IN LIEU OF A CONE SECTION, WHEN MANHOLE DEPTH IS LESS THAN 8 FEET, A REINFORCED CONCRETE SLAB COVER MAY BE USED HAVING AN ECCENTRIC ENTRANCE OPENING AND CAPABLE OF SUPPORTING H-20 LOADS.

8) HORIZONTAL JOINTS BETWEEN SECTIONS OF PRECAST CONCRETE BARRELS SHALL BE OF A TYPE APPROVED BY THE DOVER DPW, WHICH TYPE SHALL, IN GENERAL, DEPEND FOR WATERTIGHTNESS UPON A DOUBLE ROW OF AN OVERLAPPING TYPE ELASTOMERIC OR MASTIC-LIKE GASKET. APPROVED ELASTOMERIC SEALANTS ARE: RAM-NEK, KENT SEAL NO. 2, EZ, OR EQUAL.

9) IN CROSS COUNTRY AREAS OUTSIDE OF THE PAVED ROADWAY SURFACE, THE MANHOLE FRAME ELEVATION SHALL BE A MINIMUM OF 6" ABOVE FINISHED GRADE. GRADE TO PROVIDE POSITIVE DRAINAGE AWAY FROM THE MANHOLE. SEE TYPICAL TRENCH DETAIL ON SHEET D-102.

11.) ALL FRAMES AND GRATES ARE TO BE U.S.A. MADE. MANHOLE STEPS ARE REQUIRED IN THIS MUNICIPALITY AND MUST CONFORM TO THE REQUIREMENTS OF ENV-WQ 704.14.

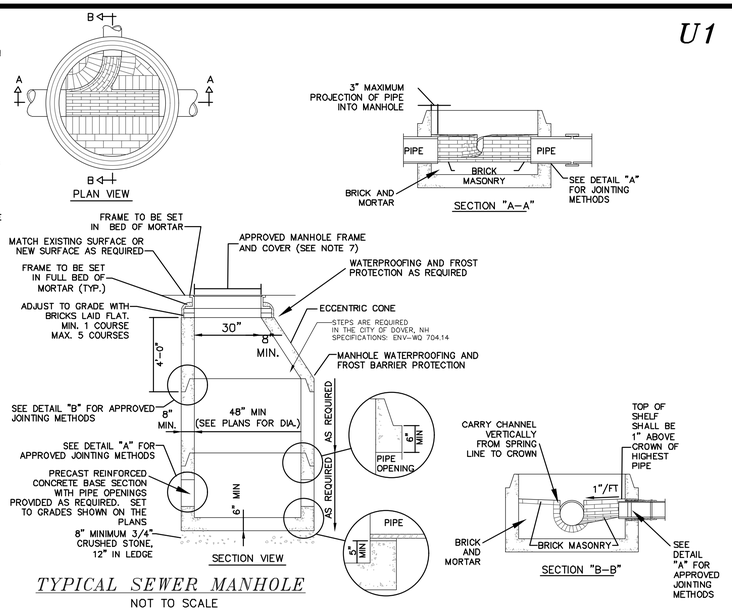
12.) THE CONTRACTOR TO WORK WITH CITY OF DOVER REVIEW ENGINEER AND SEWER DEPARTMENT ON THE MEANS AND METHODS USED TO INSTALL ALL SEWER STRUCTURES.

13.) ANY WORK INVOLVING THE CUTTING INTO THE EXISTING A.C. PIPE SHALL MEET THE REQUIREMENTS OF ENV-A 1800.

14.) THE "CITY OF DOVER, NEW HAMPSHIRE, DEPARTMENT OF COMMUNITY SERVICES, CONSTRUCTION GUIDELINES, PERMITS, RULES, AND REGULATIONS" (DATED MARCH 13, 2018) ARE A PART OF THE CONSTRUCTION DETAILS AND TO BE FOLLOWED.

15.) MANHOLES SHALL BE TESTED FOR LEAKAGE USING A VACUUM TEST IN ACCORDANCE WITH THE ASTM C1244 STANDARD AND ENV-WQ 704.17.

U1



TYPICAL SEWER MANHOLE
NOT TO SCALE

U2

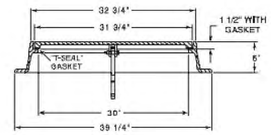
R-1743-LM
LiftMate Frame, Solid Gasketed Lid

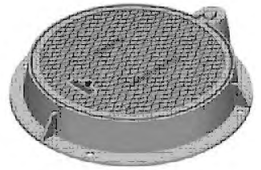
Heavy Duty

Furnished with four 1" anchor holes on 36-7/8" diameter bolt circle.

Hinge plug available for self-seal application.

See p. 13 for LiftMate information.

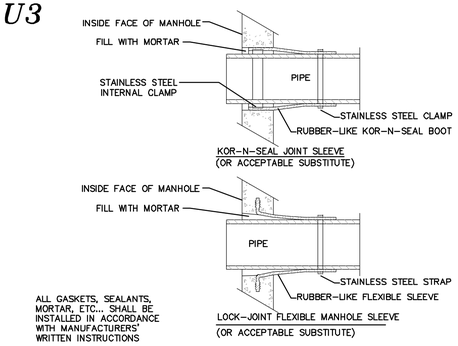




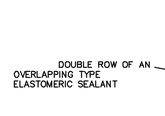
SEWER MANHOLE FRAME AND GRATE WILL BE LIFTMATE R-1743-LM, OR APPROVED EQUAL, 32 INCH OPENING, CAST IRON, H20 LOADING.

SEWER MANHOLE COVER DETAIL
NOT TO SCALE

U3



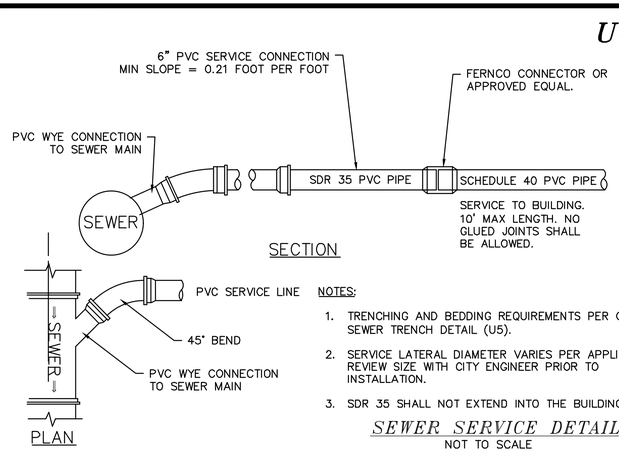
DETAIL "A" - PIPE TO MANHOLE JOINTS
NOT TO SCALE



NOTE:
ALL GASKETS AND SEALANTS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS' WRITTEN INSTRUCTIONS.

DETAIL "B" HORIZONTAL JOINTS
NOT TO SCALE

U4

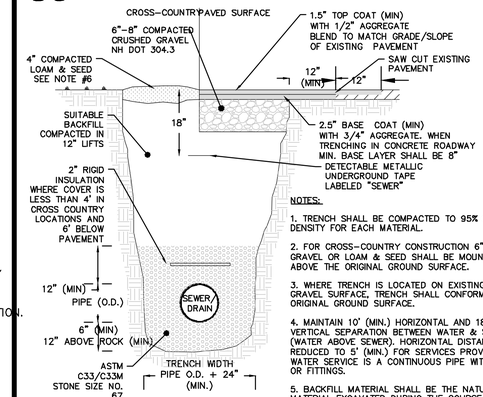


NOTES:

1. TRENCHING AND BEDDING REQUIREMENTS PER CITY SEWER TRENCH DETAIL (U5).
2. SERVICE LATERAL DIAMETER VARIES PER APPLICATION. REVIEW SIZE WITH CITY ENGINEER PRIOR TO INSTALLATION.
3. SDR 35 SHALL NOT EXTEND INTO THE BUILDING

SEWER SERVICE DETAIL
NOT TO SCALE

U5

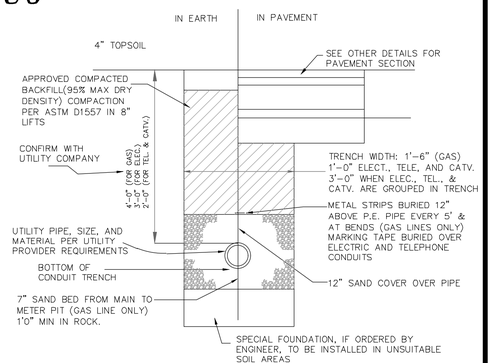


NOTES:

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

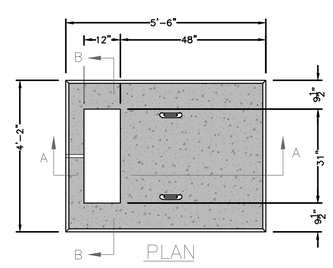
TYPICAL SEWER PIPE TRENCH
NOT TO SCALE

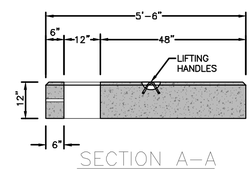
U6

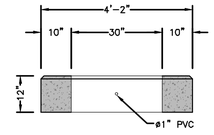


ELECTRICAL, TELEPHONE, AND GAS TRENCH
NOT TO SCALE

U7



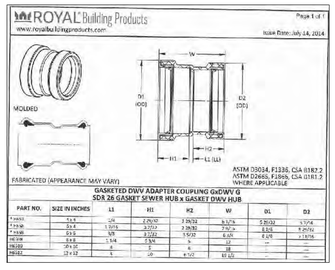




NOTES:
1. CONCRETE MINIMUM STRENGTH 4,000 PSI AFTER 28 DAYS
2. REINFORCEMENT STEEL CONFORMS TO ASTM A615 GRADE 60 #6 REBAR.
3. MEETS OR EXCEEDS EVERSOURCE SPECIFICATIONS.
4. MUST BE A SHEA CONCRETE PRODUCT OR EQUAL.

TRANSFORMER AND PAD DETAIL
NOT TO SCALE

U8



PART NO.	SIZE IN INCHES	L1	H1	W2	W	D1	D2
* 4X4G	4 x 4	4	2.75/32	3 11/16	4 3/16	5.39/32	5 1/16
* 6X6G	6 x 6	1 13/16	3.27/32	5 19/32	6 1/16	8.9/32	8 11/16
* 8X8G	8 x 8	1 7/8	4.7/32	7 9/32	8 1/16	11 3/32	11 13/16
10X10G	10 x 10	1 1/4	5 3/8	9	10	13	13
12X12G	12 x 12	1	6	10	12	—	—
15X15G	15 x 15	1	7	12	15	—	—
18X18G	18 x 18	1	8	14	18	—	—
21X21G	21 x 21	1	9	16	21	—	—
24X24G	24 x 24	1	10	18	24	—	—
27X27G	27 x 27	1	11	20	27	—	—
30X30G	30 x 30	1	12	22	30	—	—
36X36G	36 x 36	1	14	26	36	—	—

COUPLING DETAIL
NOT TO SCALE

DOVER PLANNING FILE #SITE-2023-0007

REVISION	DATE	DESCRIPTION
#4	12-01-23	REVISED PER TRC #3 COMMENT
#3	11-09-23	REVISED PER INFORMAL TRC
#2	11-06-23	REVISED #2 & ADDITIONAL UNITS ADDED
#1	9-25-23	REVISED PER DOVER TRC COMMENT

UTILITY CONSTRUCTION DETAILS
LAND OF: ROBERT BALDWIN
FOR: KNOX MARSH DEVELOPMENT LLC
34 NEW ROCHESTER ROAD
DOVER, N.H.
TAX MAP 39, LOT 103

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

SCALE : AS SHOWN
DATE : JULY 6, 2023
FILE NO. : DB 2023 - 053

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 13243
LICENSED PROFESSIONAL ENGINEER

U-101

NOT FOR CONSTRUCTION

U9

NOTES:

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

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

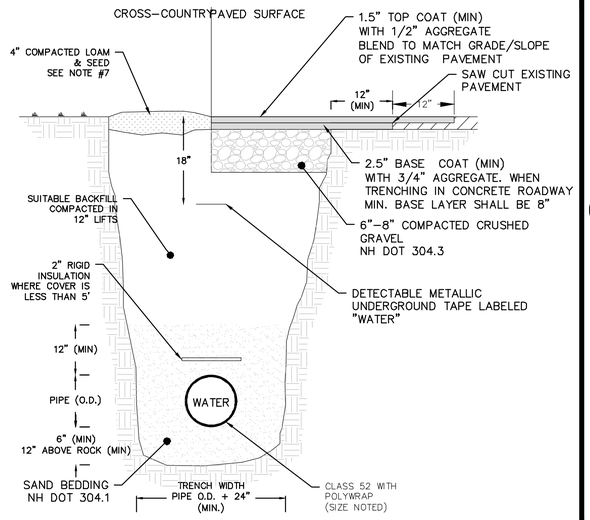
3. WHERE TRENCH IS LOCATED ON EXISTING LAWN OR GRAVEL SURFACE, TRENCH SHALL CONFORM TO MATCH ORIGINAL GROUND SURFACE.

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

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

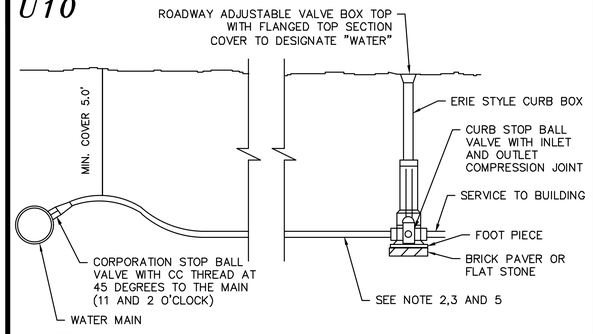
6. PROVIDE MINIMUM 5' OF COVER. ENGINEERING APPROVAL REQUIRED FOR LESS THAN 5' OF COVER.

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



WATER PIPE TRENCH
NOT TO SCALE

U10



NOTES:

1. ALL WATER LINES 4" OR GREATER SHALL BE DUCTILE IRON WITH AN 8 MIL POLYETHYLENE WRAP, INCLUDING TEE AND OTHER CONNECTIONS.

2. WATER SERVICE LINES SHALL BE COPPER TUBING (TYPE K) BETWEEN MAIN AND CURB STOP.

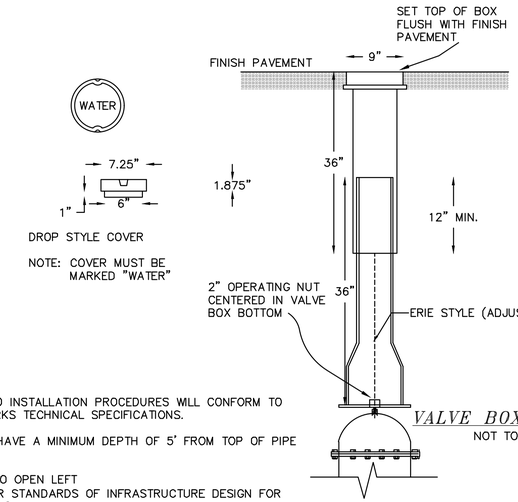
3. SERVICE BETWEEN CURB STOP AND BUILDING MAY BE (BLUE OR BLACK) CTS SDR 9 PLASTIC POLYETHYLENE RATED FOR 250 psi.

4. CAM-LOCK REQUIRED FOR CTS OR IPS, MJ ADAPTER REQUIRED FOR HDPE

5. ¾"- COPPER, CTS
   1"- COPPER, CTS
   2"- CTS, HDPE, IPS

WATER SERVICE CONNECTION
NOT TO SCALE

U11



NOTES:

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

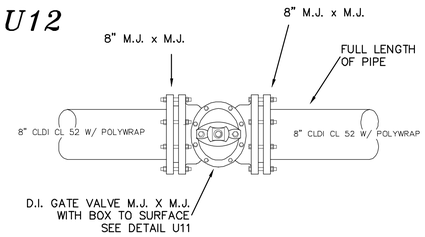
2.) ALL PIPE SHOULD HAVE A MINIMUM DEPTH OF 5' FROM TOP OF PIPE TO FINISH GRADE.

3.) ALL VALVES ARE TO OPEN LEFT

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

VALVE BOX DETAIL
NOT TO SCALE

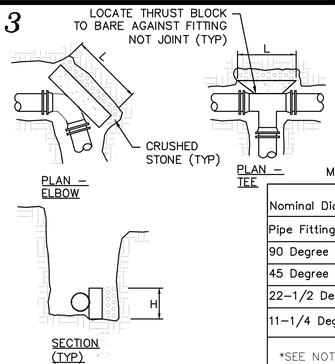
U12



SHUTOFF VALVE DETAIL
NOT TO SCALE

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

U13



THRUST BLOCK SCHEDULE
MINIMUM BEARING AREA (SQUARE FEET)

	PIPE SIZE					
Nominal Dia. (in)	4	6	8	10	12	16
Pipe Fittings	*	*	5.18	7.96	11.43	20.29
90 Degree Bends	*	4.11	7.33	11.26	16.17	28.69
45 Degree Bends	*	*	*	6.10	8.75	15.53
22-1/2 Degree Bends	*	*	*	*	4.46	7.92
11-1/4 Degree Bends	*	*	*	*	*	*

*SEE NOTE 2

System Pressure: 125 psi
Safety Factor: 1.5
Soil Bearing Capacity: 2,000 psf

NOTES:

1. ALL THRUST BLOCKS SHALL BE PRE-CAST CONCRETE UNLESS APPROVED BY THE CITY ENGINEER.

2. 2'X2'X2' MINIMUM THRUST BLOCK REQUIRED, ANY BEARING AREA OVER 4SF REQUIRES THRUST BLOCKS, RESTRAINED JOINTS AND CALCULATIONS ASSOCIATED WITH THE JOINT.

3. THE MINIMUM BEARING AREAS SHOWN IN THE THRUST BLOCK SCHEDULE ARE BASED ON A SYSTEM PRESSURE OF 125 PSI. IF THE SYSTEM PRESSURE IS ABOVE 125 PSI, INCREASE THE NOTED AREAS PROPORTIONALLY TO THE ACTUAL SYSTEM PRESSURE.

4. FOR MINIMUM BEARING AREAS OVER 4 SF, THE LENGTH (L) OF THE BLOCK IS APPROXIMATELY TWICE AS LONG AS THE HEIGHT (H).

5. PLACE CRUSHED STONE BEHIND THRUST BLOCK AGAINST UNDISTURBED SOIL.

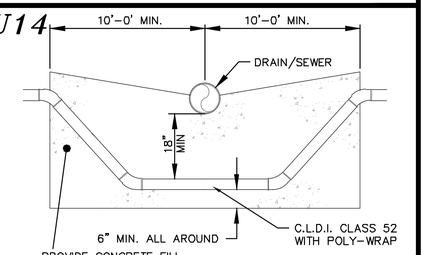
6. PLACE THRUST BLOCK ALONG MAXIMUM LENGTH OF THE FITTING TO MAXIMIZE BEARING AREA.

7. CONCRETE COMPRESSIVE STRENGTH: 2,000 PSI MINIMUM.

8. USE OF THRUST BLOCKS DOES NOT ELIMINATE THE REQUIREMENT OF OTHER RESTRAINTS OR VICE VERSA.

THRUST BLOCKS
NOT TO SCALE

U14

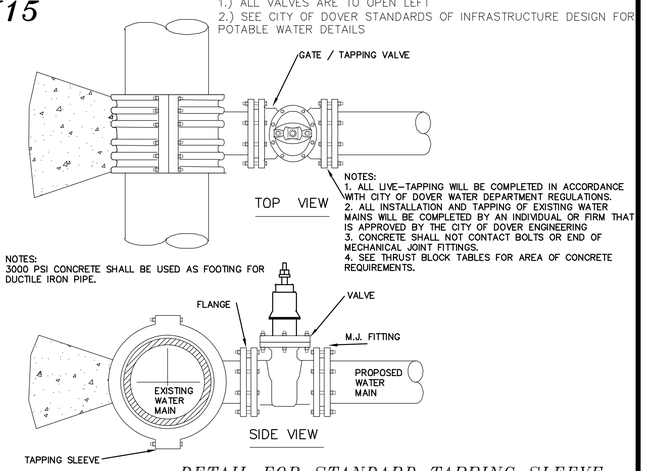


1.) SEE CITY OF DOVER STANDARDS OF INFRASTRUCTURE DESIGN FOR POTABLE WATER DETAILS

WATER MAIN INSTALLATION – BELOW DRAIN & SEWER
NOT TO SCALE

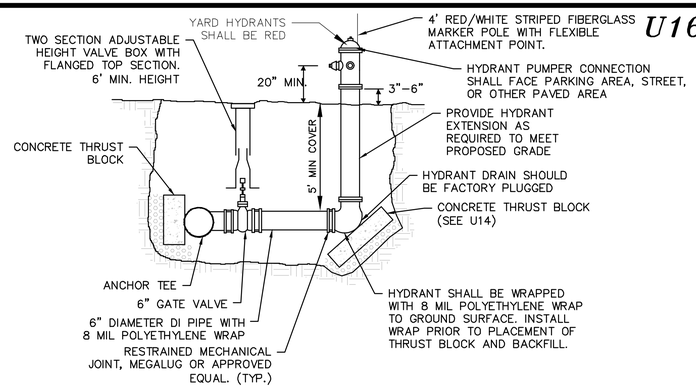
U15

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



DETAIL FOR STANDARD TAPPING SLEEVE AND VALVE ASSEMBLY
NOT TO SCALE

U16



NOTES:

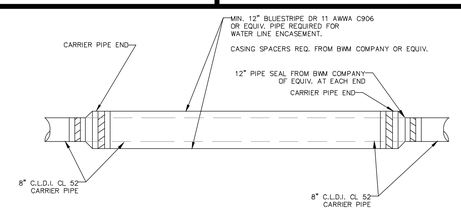
1. FIRE HYDRANTS SHALL BE FACTORY SEALED EDDY STYLE 2641.

2. HYDRANT SHALL BE PAINTED RED WITH EPOXY PAINT AS RECOMMENDED BY THE HYDRANT MANUFACTURER.

3. HYDRANT SHALL OPEN LEFT.

FIRE HYDRANT
NOT TO SCALE

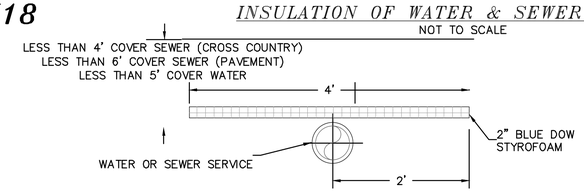
U17



WATERLINE SLEEVE DETAIL
NOT TO SCALE

U18

INSULATION OF WATER & SEWER SERVICES
NOT TO SCALE



U-102

DOVER PLANNING FILE #SITE-2023-0007

REVISION	DATE	DESCRIPTION
#4	12-01-23	REVISED PER TRC #3 COMMENT
#3	11-09-23	REVISED PER INFORMAL TRC
#2	11-06-23	REVISED PER TRC #2 & ADDITIONAL UNITS ADDED
#1	9-25-23	REVISED PER DOVER TRC COMMENT

UTILITY CONSTRUCTION DETAILS
LAND OF: ROBERT BALDWIN
FOR: KNOX MARSH DEVELOPMENT LLC
34 NEW ROCHESTER ROAD
DOVER, N.H.
TAX MAP 39, LOT 103

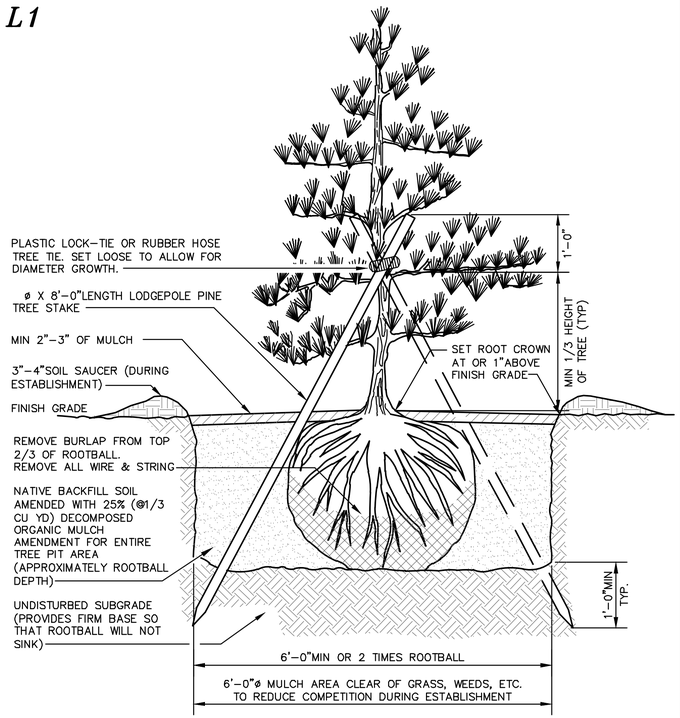
BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : AS SHOWN
DATE : JULY 6, 2023
FILE NO. : DB 2023 – 053

STATE OF NEW HAMPSHIRE – KENNETH A. BERRY No. 7943 – LICENSED PROFESSIONAL ENGINEER

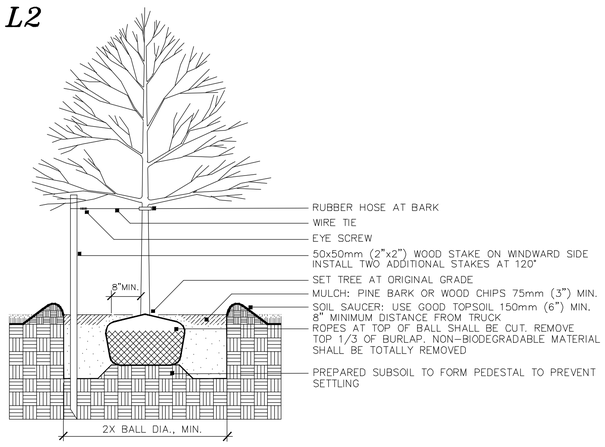
NOT FOR CONSTRUCTION

L1



CONIFEROUS TREE PLANTING

L2



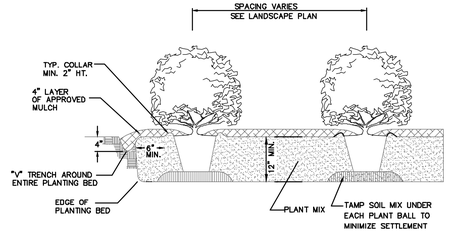
DECIDUOUS TREE PLANTING

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

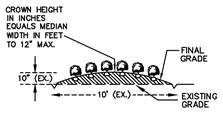
L3

NOTES:

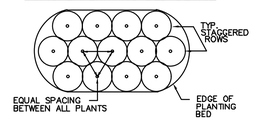
1. SCARIFY ROOT MASS OF CONTAINERIZED PLANT MATERIAL.
2. INSTALL CONTAINERIZED PLANTS AT FINSHED GRADE
3. TAMP PLANTING MIX FIRMLY AS PIT IS FILLED AROUND EACH PLANT BALL.
4. OMIT COLLAR AROUND EACH SHRUB WHEN IRRIGATION SYSTEM IS PRESENT.
5. SOAK EACH PLANT BALL AND PIT IMMEDIATELY AFTER INSTALLATION.



TYPICAL PLANTING BED DETAIL



TYPICAL BED CROWNING

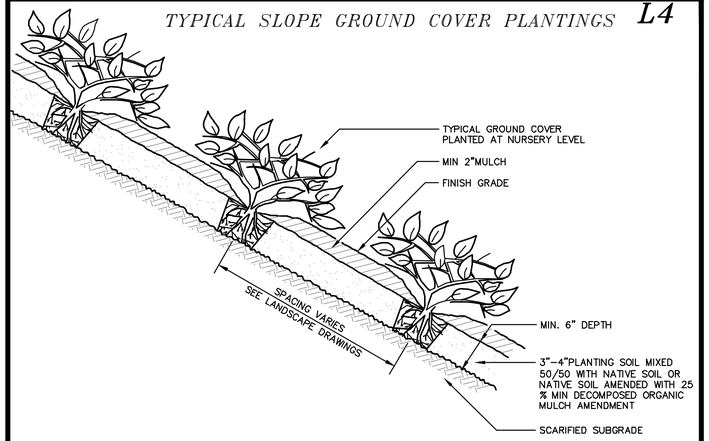


TYPICAL PLANTING BED PLAN

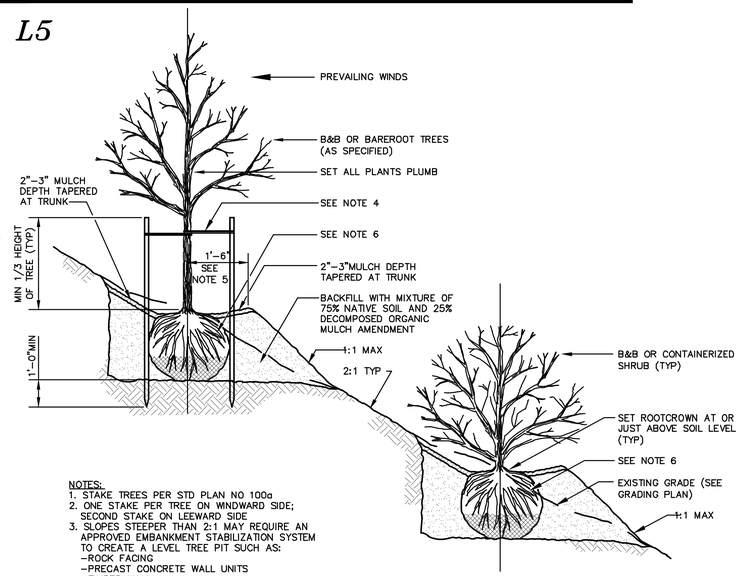
SHRUB & HEDGE PLANTING

L4

TYPICAL SLOPE GROUND COVER PLANTINGS



L5



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

TREE PLANTING ON SLOPES

L6

NOTES:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

19.) TREES ARE TO BE 3" CALIPER 6" OFF THE ROOT BALL.

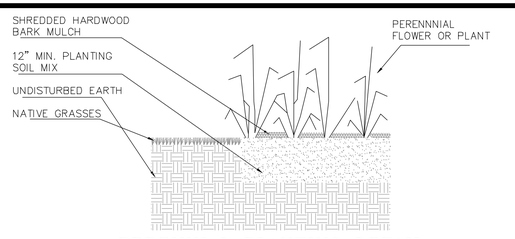
20.) ALL PLANT STOCK SHALL CONFORM TO ANSI Z260.1 – NURSERY STOCK, LATEST EDITIONS (AMERICAN ASSOCIATION OF NURSERYMEN, INC.)

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

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

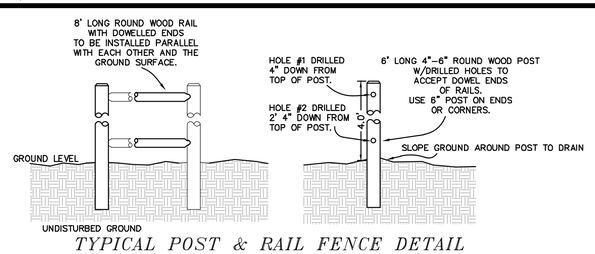
23.) ALL LANDSCAPED AREAS NOT PLANTED WITH TREES, SHRUBS OR GROUNDCOVER SHALL BE RESTORED WITH SEED OR SOD AS INDICATED ON PLANS.

L8



PERENNIAL PLANTING DETAIL

L7



TYPICAL POST & RAIL FENCE DETAIL

N.T.S.

L-101

DOVER PLANNING FILE #SITE-2023-0007

REVISION	DATE	DESCRIPTION
#4	12-01-23	REVISED PER TRC #3 COMMENT
#3	11-09-23	REVISED PER INFORMAL TRC
#2	11-06-23	REVISED PER TRC #2 & ADDITIONAL UNITS ADDED
#1	9-25-23	REVISED PER DOVER TRC COMMENT

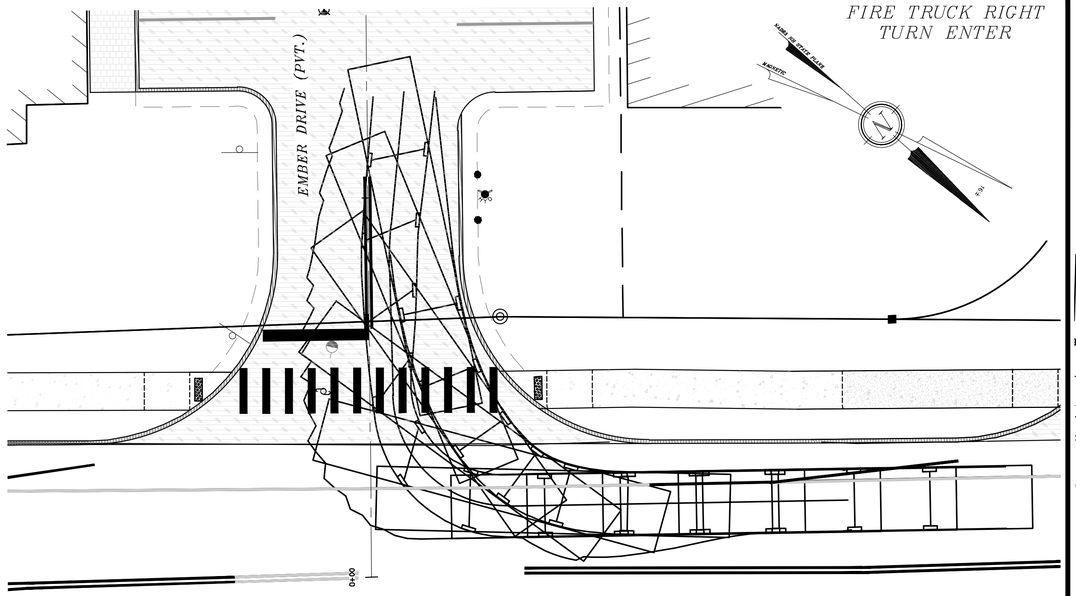
LANDSCAPING CONSTRUCTION DETAILS
LAND OF: ROBERT BALDWIN
FOR: KNOX MARSH DEVELOPMENT LLC
34 NEW ROCHESTER ROAD
DOVER, N.H.
TAX MAP 39, LOT 103

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

SCALE : AS SHOWN
DATE : JULY 6, 2023
FILE NO. : DB 2023 - 053

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

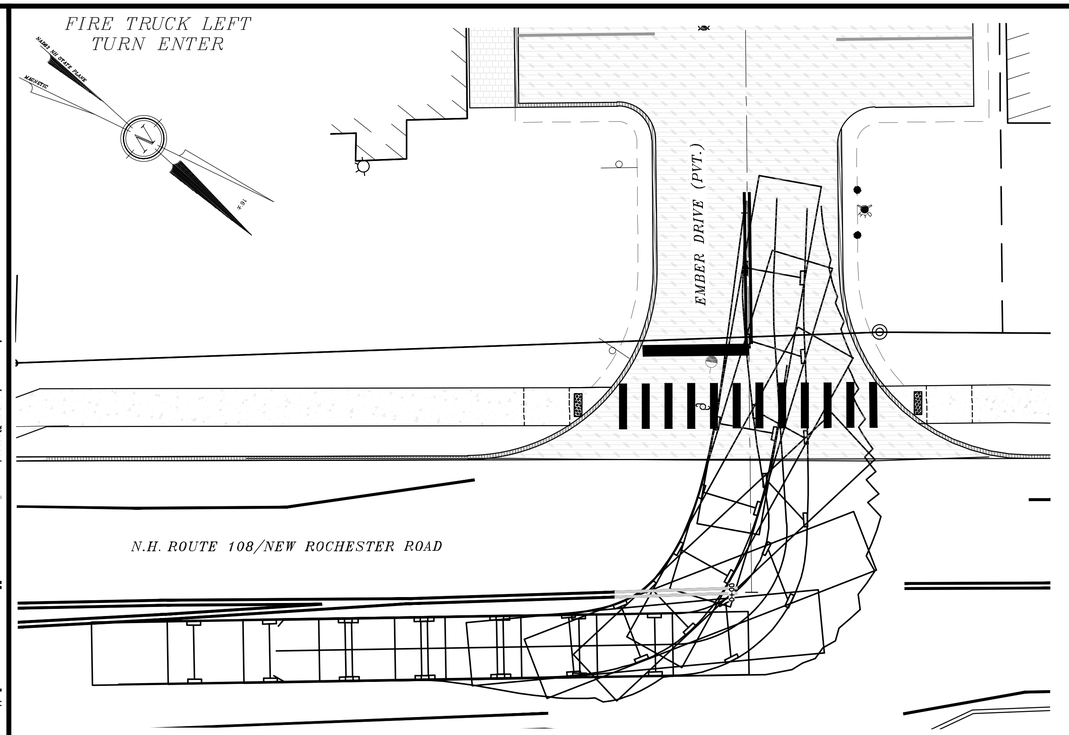
NOT FOR CONSTRUCTION

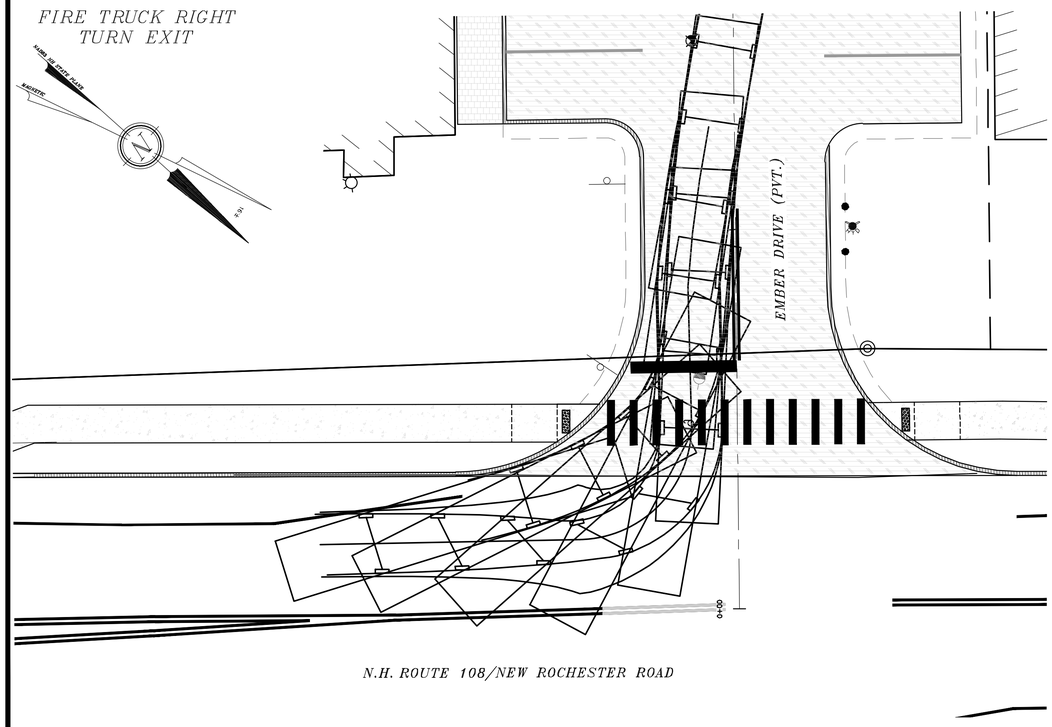


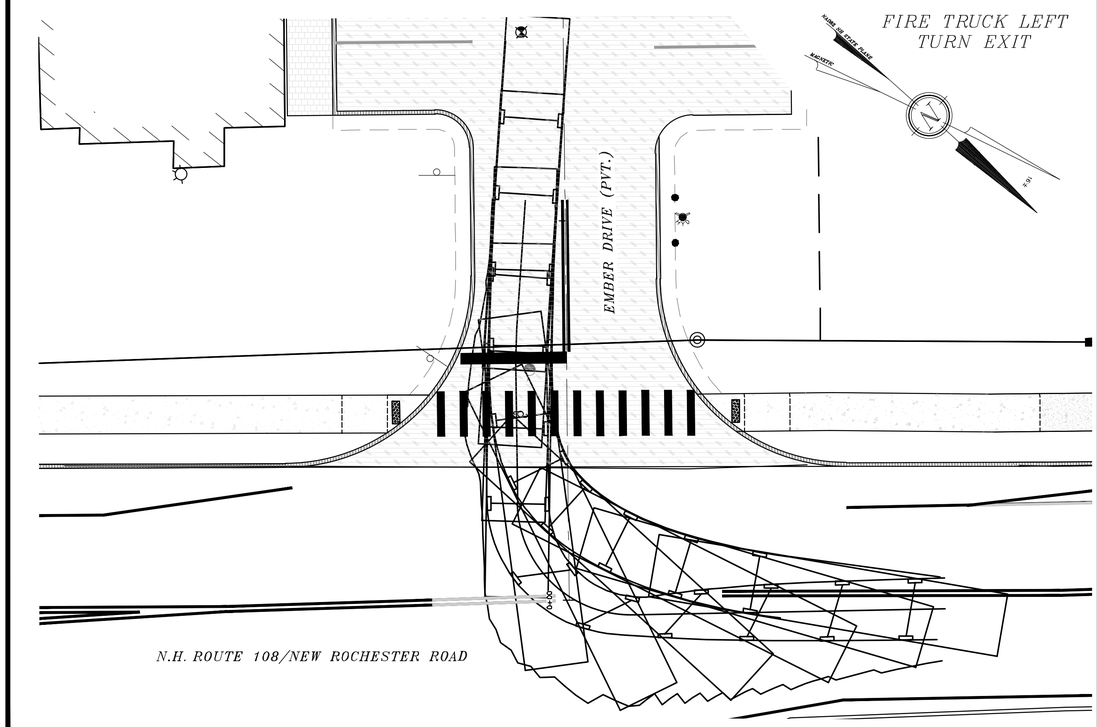
GRAPHIC SCALE

10 0 5 10 20 40

(IN FEET)
1 inch = 10 ft.







DOVER PLANNING FILE #SITE-2023-0007

REVISION	DATE	DESCRIPTION
#4	12-01-23	REVISED PER TRC #3 COMMENT
#3	11-09-23	REVISED PER INFORMAL TRC
#2	11-06-23	REVISED PER TRC #2 & ADDITIONAL UNITS ADDED
#1	9-25-23	REVISED PER DOVER TRC COMMENT

DOVER FIRE TRUCK TURN MOVEMENTS INTERSECTION
LAND OF: ROBERT BALDWIN
FOR: KNOX MARSH DEVELOPMENT LLC
34 NEW ROCHESTER ROAD
DOVER, N.H.
TAX MAP 39, LOT 103

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

SCALE : 1 IN. EQUALS 10 FT.
DATE : JULY 6, 2023
FILE NO. : DB 2023 - 053

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 15145
LICENSED PROFESSIONAL ENGINEER

SHEET 27 OF 28

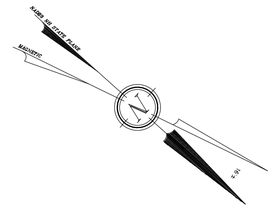
NOT FOR CONSTRUCTION



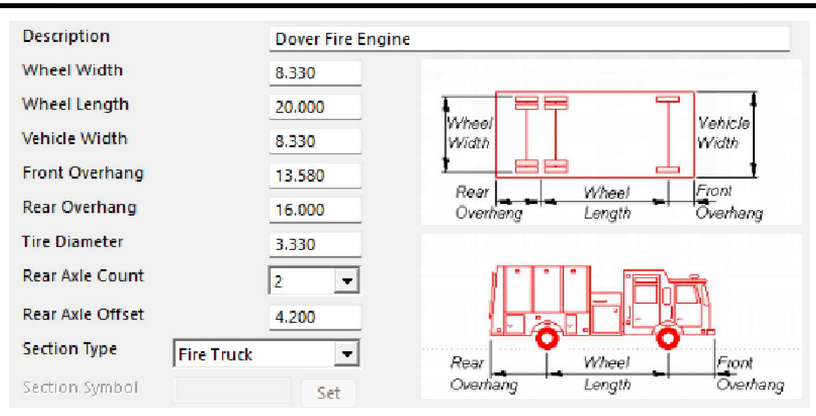
GRAPHIC SCALE

10 0 5 10 20 40

(IN FEET)
1 inch = 10 ft.



FIRE TRUCK
HAMMERHEAD



DOVER PLANNING FILE #SITE-2023-0007

REVISION	DATE	DESCRIPTION
#4	12-01-23	REVISED PER TRC #3 COMMENT
#3	11-09-23	REVISED PER INFORMAL TRC
#2	11-06-23	REVISED PER TRC #2 & ADDITIONAL UNITS ADDED
#1	9-25-23	REVISED PER DOVER TRC COMMENT

DOVER FIRE TRUCK TURN TEMPLATE
LAND OF: ROBERT BALDWIN
FOR: KNOX MARSH DEVELOPMENT LLC
34 NEW ROCHESTER ROAD
DOVER, N.H.
TAX MAP 39, LOT 103

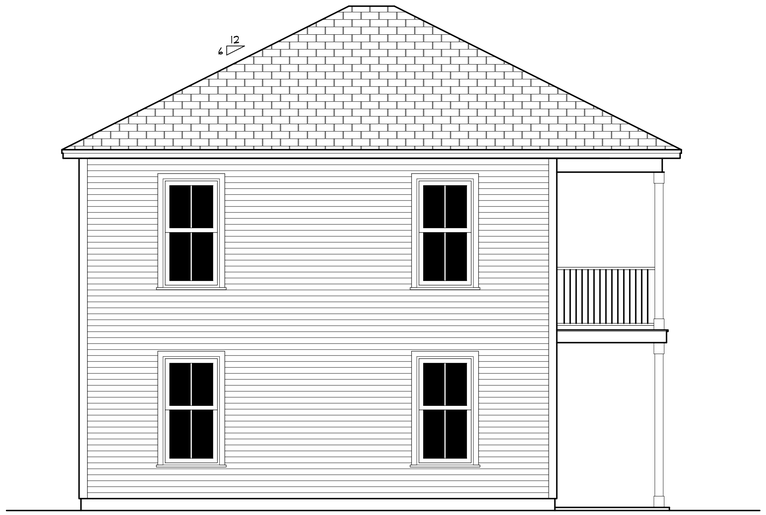
BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 10 FT.
DATE : JULY 6, 2023
FILE NO. : DB 2023 - 053

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14234
LICENSED PROFESSIONAL ENGINEER

NOT FOR CONSTRUCTION

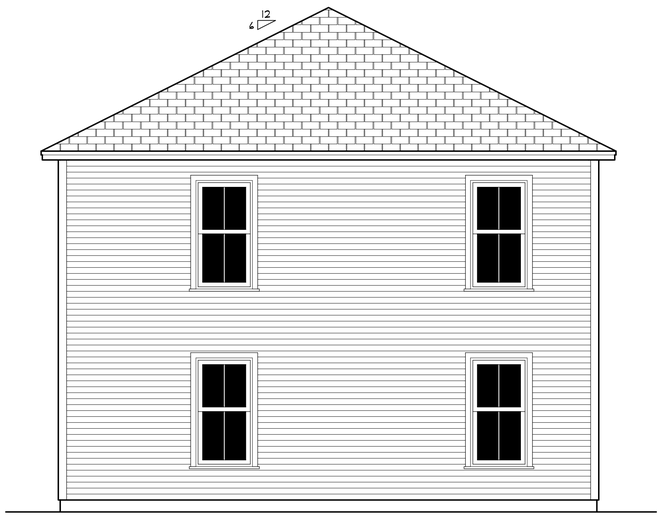
THESE PLANS WERE NOT DRAWN BY A LICENSED ARCHITECT OR ENGINEER
M. MORELAND CONSTRUCTION TAKES NO RESPONSIBILITY IN THE STRUCTURAL OR LIFE SAFETY DETAILING IN THESE PLANS.
ALL WORK SHALL COMPLY TO ALL LOCAL, STATE, & NATIONAL BUILDING CODES



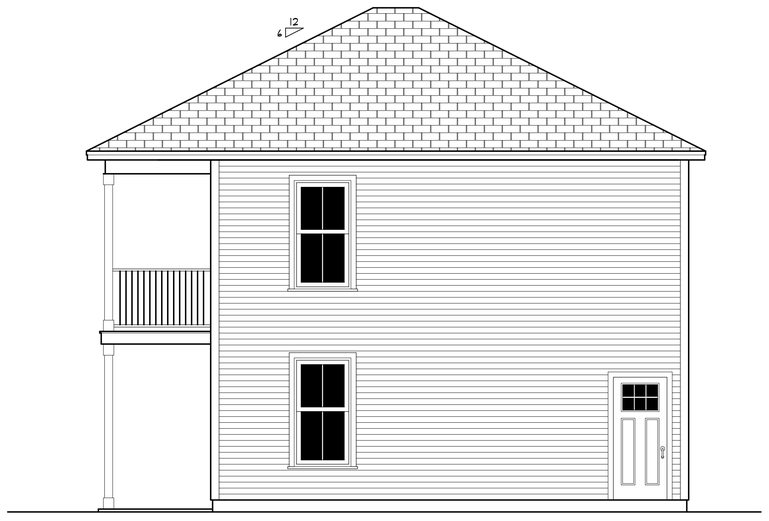
2 SIDE ELEVATION
SCALE 1/4"=1'0"



1 FRONT ELEVATION
SCALE 1/4"=1'0"



3 REAR ELEVATION
SCALE 1/4"=1'0"



4 SIDE ELEVATION
SCALE 1/4"=1'0"

M. MORELAND CONSTRUCTION
ARCHITECTURAL DESIGNER

S. BERWICK ME
03908 PH.207-752-2498

NOTES:
V.I.F. ALL DIMENSIONS

CONTRACTOR IS RESPONSIBLE FOR ALL FINISHED DIMENSIONS

CONTRACTOR IS RESPONSIBLE FOR MEETING ALL STATE & NATIONAL BUILDING CODES

LOCATION

DRAWN BY

SIGNATURE | DATE

DRAWING LIST

A-1	FLOOR PLANS
A-2	FOUNDATION PLAN
A-3	ELEVATIONS
A-4	FIRST FLOOR FRAMING
A-5	ROOF FRAMING
A-6	SECTION & DETAILS

OWNER

PROJECT:
NEW ROCHESTER RD
DOVER NH

PROJECT NUMBER:

ISSUE	DATE
DESIGN	6-30-23

SCALE
1/4"=1'-0"
0 5 10

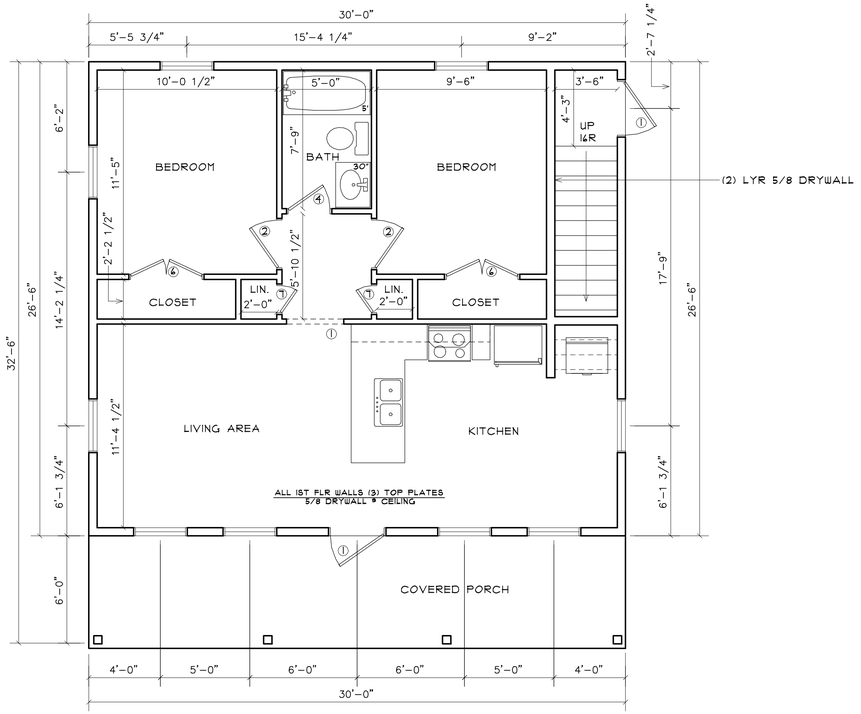
STAMP

ELEVATIONS

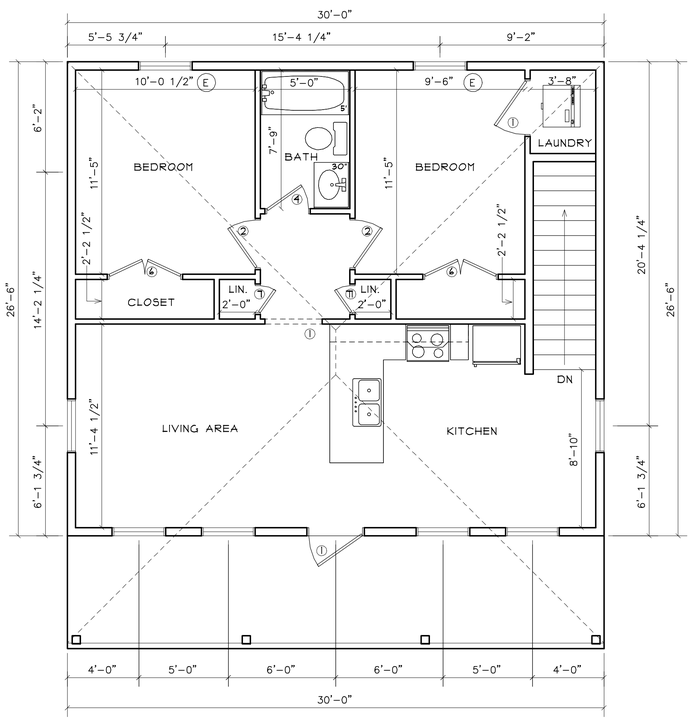
A-2

THESE PLANS WERE NOT DRAWN BY A LICENSED ARCHITECT OR ENGINEER
M. MORELAND CONSTRUCTION TAKES NO RESPONSIBILITY IN THE STRUCTURAL OR LIFE SAFETY DETAILING IN THESE PLANS.
ALL WORK SHALL COMPLY TO ALL LOCAL, STATE, & NATIONAL BUILDING CODES

(E) WINDOWS WILL MEET OR EXCEED A CLEAR OPENABLE AREA OF 5.7 SQ. FT. & A CLEAR OPENABLE WIDTH OF 20" & A CLEAR OPENABLE HEIGHT OF 24"

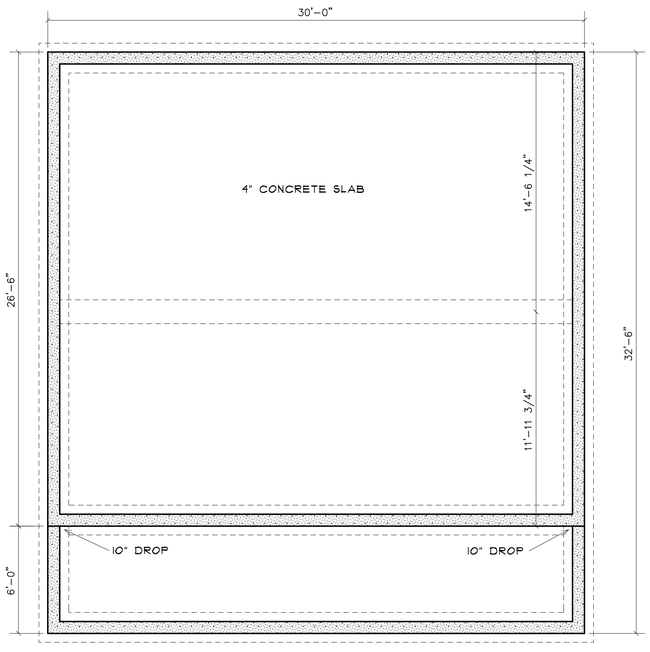


1 FIRST FLOOR PLAN
SCALE 1/4"=1'0"

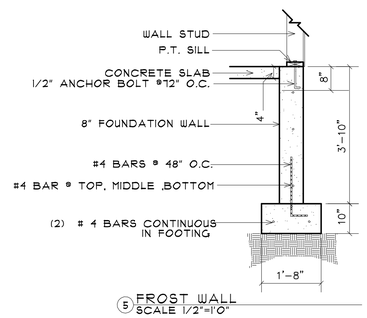


2 SECOND FLOOR PLAN
SCALE 1/4"=1'0"

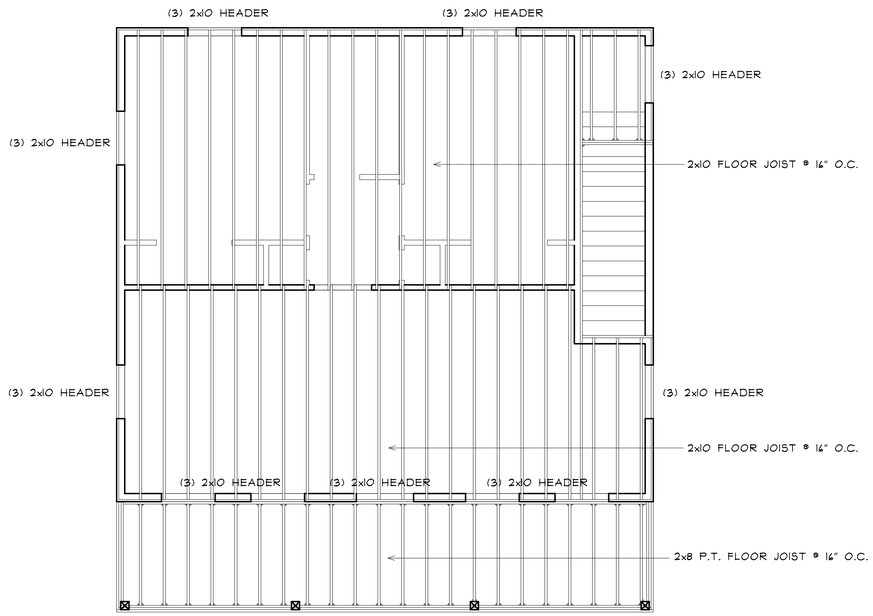
DOOR SCHEDULE			
1	3'-0" x 6'-8"	7	1'-6" x 6'-8"
2	2'-8" x 6'-8"		
3	2'-6" x 6'-8"		
4	2'-4" x 6'-8"		
5	5'-0" x 6'-8"		
6	4'-0" x 6'-8"		



3 FOUNDATION PLAN
SCALE 1/4"=1'0"



5 FROST WALL
SCALE 1/2"=1'0"



4 SECOND FLOOR FRAME
SCALE 1/4"=1'0"

M. MORELAND CONSTRUCTION
ARCHITECTURAL DESIGNER
S. BERWICK ME
03908
PH.207-752-2498

NOTES:
V.I.F. ALL DIMENSIONS
CONTRACTOR IS RESPONSIBLE FOR ALL FINISHED DIMENSIONS
CONTRACTOR IS RESPONSIBLE FOR MEETING ALL STATE & NATIONAL BUILDING CODES

LOCATION

DRAWN BY

SIGNATURE | DATE

DRAWING LIST

A-1	FLOOR PLANS
A-2	FOUNDATION PLAN
A-3	ELEVATIONS
A-4	FIRST FLOOR FRAMING
A-5	ROOF FRAMING
A-6	SECTION & DETAILS

OWNER

PROJECT:
NEW ROCHESTER RD
DOVER NH

PROJECT NUMBER:

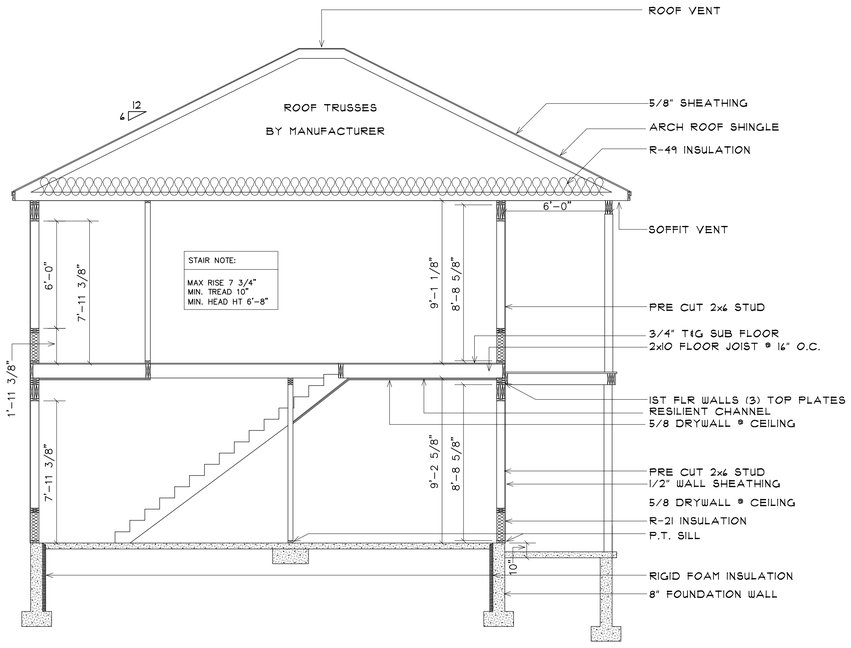
ISSUE	DATE
DESIGN	6-30-23

SCALE
1/4"=1'-0"
0 5 10

STAMP

FLOOR PLANS

THESE PLANS WERE NOT DRAWN BY A LICENSED ARCHITECT OR ENGINEER
M. MORELAND CONSTRUCTION TAKES NO RESPONSIBILITY IN THE STRUCTURAL OR LIFE SAFETY DETAILING IN THESE PLANS.
ALL WORK SHALL COMPLY TO ALL LOCAL, STATE, & NATIONAL BUILDING CODES



M. MORELAND CONSTRUCTION
ARCHITECTURAL DESIGNER

S. BERWICK ME
03908 PH.207-752-2498

NOTES:

V.I.F. ALL DIMENSIONS

CONTRACTOR IS RESPONSIBLE FOR ALL FINISHED DIMENSIONS

CONTRACTOR IS RESPONSIBLE FOR MEETING ALL STATE & NATIONAL BUILDING CODES

LOCATION

DRAWN BY

SIGNATURE | DATE

DRAWING LIST

A-1	FLOOR PLANS
A-2	FOUNDATION PLAN
A-3	ELEVATIONS
A-4	FIRST FLOOR FRAMING
A-5	ROOF FRAMING
A-6	SECTION & DETAILS

OWNER

PROJECT:

NEW ROCHESTER RD
DOVER NH

PROJECT NUMBER:

ISSUE	DATE
DESIGN	6-30-23

SCALE
1/4"=1'-0"
0 5 10

STAMP

FLOOR PLAN

A-1