CITY OF DOVER

PLANNING TECHNICAL REVIEW COMMITTEE –AGENDA

Meeting Type: Regular Meeting
Meeting Location: Council Conference Room, City Hall, 288 Central Ave, Dover NH 03820
Meeting Date: **Thursday, April 17, 2025**
Meeting Time: **10:30 AM**

1. TDR Site Review for 5 Sherman Street, LLC, Assessor's Map H, Lot 47-A, zoned R-40, located at 1 Cold Springs Road. (Proposal is to construct seven (7) single-family homes, and maintain an existing single-family home for a total of eight (8) units. The project includes a TDR request to purchase the six (6) single-family units.) (SITE-2024-0015)

PLAN SNAPSHOT REPORT SITE-2024-0015
FOR CITY OF DOVER, N.H.

Plan Type: Site Plan - Major
Project:
App Date: 10/24/2024

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:
Approval Expire Date:

Description: Request to propose 6 additional single-family homes above the base project density of 2 units using the TDR ordinance, for a total of 8 single family homes on the parcel, including single family home on-site to remain. Request reduce the 30' buffer to the standard TDR building setbacks. Please find project narrative for complete TDR request description & justification. Project contains 1 Non-Environmental CUP, 2 Environmental CUPs and no waiver requests.

Parcel: H0047-A00000 Main
Address: 1 Cold Springs Rd Main
Dover, NH
Zone: R-40(Residential - Rural)

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

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

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

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

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

Owner
Robert Baldwin
242 CENTRAL AV
DOVER, 03820
Home: (603) 986-2373
Business: (603) 986-2373
Mobile: (603) 986-2373

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

Applicant
Baldwin Robert
Home: (603) 742-2121
Mobile: (603) 986-2373

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

Plan Custom Fields

Total	0	Total2	0	Total3	27446
Total4	1550	Total5	0	Total6	7
Total7	0	Total8	0	Total9	0
Street Classification Type	Municipal	Net Change in # Parking Spaces (+/-)	6	Water Service	Municipal
Recording Number		Sewer Service	Municipal	Total Acres (GIS)	2.71
Deed Book	5190	Total SQFT	118048	Deed Page	597
Deed Date		Proposed Property Use	Request to propose 4 multi-family units restricted to HUD rates. Request to propose 7, 1,400 Sq. Ft. single family units. Request reduce the 30' buffer to the standard TDR building setbacks. Please find project narrative for complete TDR request description & justification. 13 Total units on site with existing single-family home and one additional single-family home allowed by right using the TDR Density calculation.		Lot Merger with the rest of Sophie Drive proposed.

PLAN SNAPSHOT REPORT (SITE-2024-0015)

Area of Parcel to be Developed (SQFT)	101150	Number of Parking Spaces Existing	2	Number of Parking Spaces Proposed	8
Distance to City Water	0	Distance to City Sewer	0	Type of Building to be Built	7 single family homes, 1 single family to remain
Estimated Construction Value	4800000.00	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_10/24/2024.jpg	10/24/2024 10:01	Berry, Chris		Uploaded via CSS
2024.11.14_PlanningTechnicalReviewCommittee.Agenda.pdf	10/29/2024 10:13	Blonigen, Rachel		TRC Agenda
2024.11.14_PlanningTechnicalReviewCommittee.Agenda1.pdf	11/18/2024 11:09	Blonigen, Rachel		Revised Agenda
2024.11.21_PlanningTechnicalReviewCommittee.Agenda.revised.pdf	11/18/2024 12:37	Blonigen, Rachel		TRC Agenda
2024.11.21_PlanningTechnicalReviewCommittee.1ColdSprings_SITE-2024-0015.pdf	12/09/2024 12:39	Blonigen, Rachel		Final TRC minutes
2025.04.17_PlanningTechnicalReviewCommittee..pdf	03/31/2025 15:52	Glidden, Jean		TRC Agenda

Note	Created By	Date and Time Created
1. Impervious Paved Area to be found in COND-2024-0029	Rachel Blonigen	11/07/2024 10:08
2. Resubmit for 2nd TRC	Rachel Blonigen	03/03/2025 13:59

Invoice No.	Fee		Fee Amount	Amount Paid
INV-00009747	Planning General Application Fee		$200.00	$0.00
		Total for Invoice INV-00009747	$200.00	$0.00
NOT INVOICED	Planning Residential Fee		$700.00	$0.00
	Planning Impervious Paved Area Fee		$1,921.22	$0.00
	Planning Non-Residential - Lodging		$54,250.00	$0.00
		Total for Invoice NOT INVOICED	$56,871.22	$0.00
		Grand Total for Plan	**$57,071.22**	**$0.00**

Meeting Type	Location	Scheduled Date	Subject
Technical Review Committee Meeting v.1	City Hall, Second Floor Conference Room	11/21/2024	Technical Review Committee Meeting

Submittal Name	Status	Received Date	Due Date	Complete Date	Resubmit	Completed
Land Use Plan Technical Review v.1	Requires Re-submit	10/29/2024	11/13/2024	11/22/2024	Yes	Yes

Item Review Name	Department	Assigned User	Status	Assigned Date	Due Date	Completed Date
Business Development	Business Development	Burdin, James	Requires Re-submit	10/29/2024	11/26/2024	11/13/2024

Comments: Project narrative does not appear to address TDR criteria. Please provide TDR narrative.

PLAN SNAPSHOT REPORT (SITE-2024-0015)

Item Review Name	Department	Assigned User	Status	Assigned Date	Due Date	Completed Date
City Engineer	Community Services - Engineering	Mavrogeorge, Kenneth	Requires Re-submit	10/29/2024	11/13/2024	11/22/2024

Item Review Name	Department	Assigned User	Status	Assigned Date	Due Date	Completed Date
Planning	Planning	Bassegio, Erin	Requires Re-submit	10/29/2024	11/26/2024	11/22/2024

Item Review Name	Department	Assigned User	Status	Assigned Date	Due Date	Completed Date
Zoning Administrator	Planning	Crouser, Paul	Requires Re-submit	10/29/2024	11/13/2024	11/22/2024

Item Review Name	Department	Assigned User	Status	Assigned Date	Due Date	Completed Date
IS Building Official	Planning / Inspection Services	Maxfield, Jim	Approved	10/29/2024	11/13/2024	11/05/2024

Item Review Name	Department	Assigned User	Status	Assigned Date	Due Date	Completed Date
Traffic Coordinator	Police	Speidel, Marn	Requires Re-submit	10/29/2024	11/13/2024	11/22/2024

Submittal Name	Status	Received Date	Due Date	Complete Date	Resubmit	Completed
Land Use Plan Technical Review v.2	In Review	04/01/2025	04/14/2025		No	No

Item Review Name	Department	Assigned User	Status	Assigned Date	Due Date	Completed Date
Business Development	Business Development	Burdin, James	In Review	04/01/2025	04/29/2025	

Item Review Name	Department	Assigned User	Status	Assigned Date	Due Date	Completed Date
City Engineer	Community Services - Engineering	Mavrogeorge, Kenneth	In Review	04/01/2025	04/14/2025	

Item Review Name	Department	Assigned User	Status	Assigned Date	Due Date	Completed Date
Planning	Planning	Edgecomb, Makayla	In Review	04/01/2025	04/29/2025	

Item Review Name	Department	Assigned User	Status	Assigned Date	Due Date	Completed Date
Zoning Administrator	Planning	Crouser, Paul	In Review	04/01/2025	04/14/2025	

Item Review Name	Department	Assigned User	Status	Assigned Date	Due Date	Completed Date
IS Building Official	Planning / Inspection Services	Maxfield, Jim	In Review	04/01/2025	04/14/2025	

Item Review Name	Department	Assigned User	Status	Assigned Date	Due Date	Completed Date
Traffic Coordinator	Police	Speidel, Marn	In Review	04/01/2025	04/14/2025	

Workflow Step / Action Name	Action Type	Start Date	End Date
Review v.1		10/29/2024 10:34	
Confirm application complete v.1	Generic Action		10/29/2024 10:35
Technical Review Committee Meeting Agenda v.1	Task	10/29/2024 10:34	10/29/2024 10:35
Land Use Plan Technical Review v.1	Receive Submittal	10/29/2024 0:00	11/22/2024 14:33
Land Use Plan Technical Review v.2	Receive Submittal	04/01/2025 0:00	
Technical Review Committee Meeting v.1	Hold Meeting	11/22/2024 14:29	11/22/2024 14:31
Planning Board v.1			
Planning Board Agenda v.1	Task		
Invoice for Notices v.1	Task		
Send Notices v.1	Task		

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

City of Dover, New Hampshire
SITE REVIEW APPLICATION

[Revision Date: July 1, 2021]

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

APPLICANT AND OWNER INFORMATION

Name of Applicant: 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*): 5 Sherman Street LLC Telephone # 603-986-2373

Address of Property Owner: 242 Central Ave. Dover, NH 03820

PROPERTY INFORMATION

Address of Property: 1 Cold Springs Road

Assessor's Map # H Lot(s) # 47-A

Zoning District(s) R-40 Overlay District(s) Conservation, Steep Slope

Size of Parcel: 117,854 sq. ft. 2.71 ac. Property Deed: Book 5190 Page: 597

Existing Use of Property: Single Family Home

SITE PLAN INFORMATION

Describe Proposed Use: Residential, 7 new single family (6 TDR), 1 single family to remain for a total of 8 units on the parcel.

Area of Parcel to be Developed: 104,000 sq. ft.

If Multi-family Residential: Number of Units _____ & Buildings Proposed _____

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

Number of Parking Spaces: Existing _____ Proposed 8 + garages & driveways + ex single family dw

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

Number of Employees Total: _____ In Maximum Shift: _____

Disposition of Parcel:

Building Footprint 1,550 sq. ft.

Total Building Area +/- 2,910 sq. ft.

Paved Area 20,155 NEW PAVE IMP sq. ft. Function of Lot Merger)

Building Setbacks: TDR Request

Front Yard 20' abut a street ft.

Rear Yard 30 ft.

Side Yard: Right 10 ft. Left 10 ft.

City Water? X Yes ___ No How far is city water from the property? Ex. Sophie Drive

City Sewer? X Yes ___ No How far is city sewer from the property? Ex. Sophie Drive

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 6 units

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

Request to propose 6, greater than 1,400 Sq. Ft. single family units (2 units are allowed by right, for a total of 8 units on the parcel. Request to use the TDR setbacks in the zone, as opposed to the R-40 setbacks. Please find project narrative for complete TDR request description & justification.

BUILDING INFORMATION

Type of Building to be Built: 7 single family homes

Height of Building: 28' Finished Floor Elevation: See plans

Number of Seats (where applicable) N/A

Estimated value of construction: 4,500,000 Refuse removal: Public/Private (circle one)

WAIVER REQUESTS

Site Review Regulations section(s) to be waived: None

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

SURVEYOR INFORMATION

Name of Surveyor and Company (Licensed in N.H.) Kenneth A. Berry, PE, LLS

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

Professional License #: 805 E-mail address: K.berry@berrysurveying.com

ENGINEER INFORMATION

crberry@metrocast.net

Name of Engineer and Company (Licensed in N.H.) Kenneth A. Berry, PE, LLS

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

Professional License #: 14243 E-mail address: K.berry@berrysurveying.com

ARCHITECT INFORMATION

crberry@metrocast.net

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, CSS, CWS

Address 7 Limestone Way, North Hampton NH 03862 Telephone #: 603-205-4396

Professional License #: _____ 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: 9-20-24

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

Signature of Agent: _____ Date: 9-20-24

AUTHORIZATION TO ENTER SUBJECT PROPERTY

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

Signature of Property Owner: _____ Date: 9-20-24

AUTHORIZATION TO COMPLETE THE PROJECT ON SUBJECT PROPERTY

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

Signature of Property Owner: _____ Date: 9-20-24

Signature of Applicant (*if different from owner*): _____ Date: 9-20-24

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: 9-20-24

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

CITY OF DOVER SITE REVIEW
LIST OF ABUTTERS

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

Owner:

TAX MAP	LOT #	PROPERTY OWNER	MAILING ADDRESS

Applicant (if different from owner):

APPLICANT NAME	APPLICANT COMPANY	MAILING ADDRESS

Surveyor and/or Engineer/Professional Agent:

NAME	COMPANY	MAILING ADDRESS

Conservation Easement Holder:

TAX MAP	LOT #	NAME OF EASEMENT HOLDER	MAILING ADDRESS

City of Dover, New Hampshire
SITE PLAN REVIEW SUBMISSION CHECKLIST

[Revision Date: June 4, 2019]

This site plan review checklist, as required by Chapter 153-6-B(2), should be completed by the applicant. It is intended to assist the applicant in the planning process of preparing a Site Plan Review application for Planning Board action. The size of the project will determine the types of information required for review, therefore, a **pre-application conference** with the Planning Department to determine the list of items that must be completed is strongly encouraged.

The first step would be to appear before the Technical Review Committee, to apply, eight (8) folded copies of the site plan with scale of not less than 1"=50' or 1" =100' for larger site plans, need to be provided, along with payment of plan review fees.

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

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

APPLICANT: Knox Marsh Development, LLC File Number: _____

PROJECT TITLE: Sophie Drive

PROPERTY LOCATION: 1 Cold Spring Road Tax Map: H Lot: 47-A

	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	N/A	
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	
Location of all bodies of water and watercourses	N/A	
Location of wetlands and buffers	N/A	
Neighborhood plan with aerial underlay showing how project relates to abutting uses within the plan set	X	
Existing natural features and/or significant vegetation on property	X	
Depict existing contours up to 100 ft. beyond project limits	X	
Landscape plan depicting existing and proposed landscaping, prepared by a licensed Professional Landscape Architect	X	
Location of parking layout delineating spaces and arrangement; note addressing maximum required spaces	X	
Location, material and size of existing and proposed pavement area	X	
Location of proposed fire lanes	X	
Specify finished floor elevations of buildings	X	
Location of solid waste disposal facilities (dumpster, pad and screening, etc.), including required screening	X	
Depict all service, storage, loading bays and utility areas	N/A	
All applicable Dover Common Site Plan notes	X	
11. Additional Information if appropriate		
Stormwater Management Plan depicting the existing & proposed storm drainage system and engineered drainage analysis	X	
Stormwater Management System Operation and Maintenance Plan	X	
Letter to Serve from Public and Private Utilities	Will Provide	
Erosion and Sedimentation Control Plan	X	
Landscape Operation and Maintenance Plan	X	
Proposed restrictive covenants or homeowners association documents	X	
Dates and permit numbers of all required state and federal permits	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_____

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: 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): 5 Sherman Street LLC Telephone # 603-986-2373

Address of Property Owner: 242 Central Ave. Dover, NH 03820

PROPERTY INFORMATION

Assessor's Map # H Lot(s) # 47-A

Address of Property: 1 Cold Springs Road

Zoning District(s) R-40 Overlay District(s) Conservation, Steep Slope

Existing Use of Property: Single Family Home

New impervious area (in s.f.): 27,446

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 6 units

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

Request to propose 6, greater than 1,400 Sq. Ft. single family units. (2 units are allowed by right). Request to use the TDR setbacks in the zone, as opposed to the R-40 setbacks. Please find project TDR narrative for complete TDR request description & justification.

List Any Associated State or Federal Permits That Have Been or Will Be Applied For and Indicate Their Status: NHDES Alteration of Terrain, NHDES Sewer Discharge, EPA NOI (Not yet Submitted)

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

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

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

SIGNATURES

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

Signature of Property Owner: _____ Date: 9-20-24

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

Signature of Agent: _____ Date: 9-20-24

AUTHORIZATION TO ENTER SUBJECT PROPERTY

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

Signature of Property Owner: _____ Date: 9-20-24

CITY OF DOVER TRANSFER OF DEVELOPMENT RIGHTS
LIST OF ABUTTERS

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

Owner:

TAX MAP	LOT #	PROPERTY OWNER	MAILING ADDRESS

Applicant (if different from owner):

APPLICANT NAME	APPLICANT COMPANY	MAILING ADDRESS

Surveyor and/or Engineer/Professional Agent:

NAME	COMPANY	MAILING ADDRESS

Conservation Easement Holder:

TAX MAP	LOT #	NAME OF EASEMENT HOLDER	MAILING ADDRESS

City of Dover, New Hampshire
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: Knox Marsh Development, LLC File Number: _____

PROJECT TITLE: Sophie Drive

PROPERTY LOCATION: 1 Cold Spring Road Tax Map: H Lot: 47-A

	Where/How Provided	Reviewed
1. Completed and signed Application form	X	
2. Plan Review Fees are provided	X	
3. Electronic copy of the engineered/surveyed plan layout	X	
4. Electronic copy of supplementary materials and application	X	
5. Folded copies of site plan w/scale of not less than 1"=50' or 1"=100' for larger site plans, for TRC. Plans shall contain the following items as appropriate:	X	
Location map at appropriate scale	X	
Proposed Project name and title and Planning File #	X	
Date and scale	X	
Name and address of owners and/or applicants	X	
Location and widths of existing & proposed easements & right of ways	X	
Location and width of existing and proposed access/egress ways	X	
Existing and proposed buildings and structure locations and access	X	
Minimum building setbacks or build to lines on all lots	X	
Existing and proposed stormwater infrastructure/direction	X	
Neighborhood plan with unit counts	X	
Proposed landscaping	X	
Location of parking layout delineating spaces and arrangement; note addressing maximum required spaces	X	
Location, material and size of existing and proposed pavement area	X	
Location of solid waste disposal facilities (dumpster, pad and screening, etc.), including required screening	X	
All applicable Dover Common Site Plan/Subdivision notes	X	
Provide additional exhibits/technical data determined appropriate by the Planning Board or its staff as required	X	

REVIEWED BY: _____ DATE_____ TRC DATE_____

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): 5 Sherman Street LLC, Dove Development Group, LLC Telephone # 603-986-2373

Address of Property Owner: 242 Central Ave. Dover, NH 03820 (Both Owners)

PROPERTY INFORMATION

Assessor's Map # H Lot(s) # 47-A & 50-6

Address of Property: 1 Cold Springs Road & Banner Drive

Zoning District(s) R-40 Overlay District(s) Conservation, Steep Slope

Existing Use of Property: Single Family Home 47-A, Multi-family residential 50-6

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:

Please find attached narrative. Application for eight additional parking spaces along Sophie Drive outside of the provided driveways and garages.

List Any Associated State or Federal Permits That Have Been or Will Be Applied For and Indicate Their Status: NHDES Alteration of Terrain, NHDES Sewer Discharge, EPA NOI (Not yet Submitted)

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

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

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

SIGNATURES

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

Signature of Property Owner: _____ Date: 9-20-24

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

Signature of Agent: _____ Date: 9-20-24

AUTHORIZATION TO ENTER SUBJECT PROPERTY

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

Signature of Property Owner: _____ Date: 9-20-24

CITY OF DOVER CONDITIONAL USE
LIST OF ABUTTERS

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

Owner:

TAX MAP	LOT #	PROPERTY OWNER	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

BERRY SURVEYING & ENGINEERING
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Barrington, NH 03825
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City of Dover Planning Board
288 Central Ave
Dover, NH 03820

September 1, 2024/Rev: March 4, 2025

RE: Sophie Drive Extension
Knox Marsh Development, LLC
5 Sherman Street, LLC
TDR Site Plan – Non-Environmental CUP Request
1 Cold Springs Road
Tax Map H, Lot 47-A

Chairperson & Members of the Dover Planning Board:

Pursuant to 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:

- CUP Request: Greater than maximum allowable parking spaces.

Background:

Knox Marsh Development is looking to re-develop the site at 1 Cold Springs Road to construct seven (7) single family homes in addition to the existing single-family home on site for a total of eight (8 units) within the R-40 zone. Access to the parcel will be obtained via the extension of Sophie Drive and the existing single-family home will continue to use the existing driveway off of Cold Springs Road. The first +/- 320 LF of Sophie Drive has been constructed as part of Dover Site Plan P21-66. The extension of Sophie Drive will be +/- 878 LF through the cul-de-sac. Each house is proposed with two car garages and 22' long by 18' wide driveways (assumed 4 parking spaces per unit). Including the existing driveway on Cold Springs Road that can park a minimum of 6 vehicles, this would result in 34 parking spaces between garages and driveways. Eight guest parking spaces are proposed along the western side of Sophie Drive to provide one roadside guest parking space per unit. Landscaping screening is provided along the guest parking array. Snow storage is provided on site at a ratio better than 6:1.

1. *Identification of Conditional Use Permit*

- Proposing 8 additional guest parking spaces along Sophie Drive for a single-family home development in the R-40 Zone.

The Site Plan regulations require for residential uses in the non-CBD-G district a

maximum number of 1.4 spaces per unit plus 0.5 guest spaces per unit, for a ratio of 1.9 parking spaces per unit. Eight units multiplied by 1.9 spaces/unit results in 16 parking spaces maximum. The applicant is proposing eight additional guest parking spaces outside of the confines of the garages and driveways.

Below we show the project's compliance with the standards required to grant a Conditional Use Permit, and we provide justification for its approval.

1. Compliance with the following standards

1) The applicant shall submit an analysis justifying a request for increased parking requirements.
   - **The proposal requests an increase of eight (8) additional parking spaces beyond what is provided in the garages and driveways. Many people utilize at least one, if not both house garage spaces for storage or other various uses. If this is the case, this situation results with the driveway providing two parking spaces per unit, which would more than likely both be utilized by the residents. Allowing for 8 parking spaces (includes one accessible space) along Sophie Drive ensures that each unit on Sophie Drive has a guest parking space provided. With the subject parcel being located in the R-40 zone, outside of the urban core, BS&E feels the number of parking spaces proposed is adequate to support the needs for the proposed use.**

2) The conditional use permit application shall describe why increased parking is essential to each use.
   - **These parking spaces will help to ensure the development is properly supported for the anticipated parking demand for a site occupied by four-bedroom homes within the R-40 zone. Given the lack of on-street parking avail in the cul-de-sac area and the geometry of Sophie Drive (see fire truck turning movement sheet), additional parking spaces are essential to support the use.**

3) The applicant must show that the use(s) cannot be adequately served by a combination of on-and off-street parking.
   - **The land use cannot be adequately served by a**

combination of on and off-street parking. On street parking within Sophie Drive does not provide opportunities to park on the street within the cul-de-sac area or neck of the roadway (see fire truck turning movement sheet). On Street Parking on Bellamy Road is not feasible due to lack of shoulder and Bellamy Road is further away from the proposed units.

4) The applicant shall design and construct the additional vehicle storage areas, for additional parking requested, using pervious materials. The design of the area shall meet or exceed the standards developed and outlines in the New Hampshire Stormwater Manual. The applicant shall also be required to retain the design engineer as an inspector for the duration of the construction of the parking area.

- **The applicant is proposing a robust drainage system that includes an Infiltration Rain Garden, that contains an additional 0.5' of bio-media as a consideration of the wellhead protection zone the parcel is in. The Infiltration Rain Garden fully infiltrates the 25YR storm event and results in peak rate of runoff and volumetric decreases at the northern property line that receives runoff from the developed area. The stormwater BMP proposed provides an open water storage component for flooding that is not necessarily provided by porous pavement. The applicant is a managing member of Dove Development Group, LLC, which owns the abutting Banner Drive development to the south. It is very likely the same snow plowing crew would provide snow services for both developments. Given the abutting development is conventional pavement and Sophie Drive is proposed as conventional pavement, porous pavement is likely to be damaged if it was used in this application.**

5) The applicant shall contribute to improving electric vehicle infrastructure by using one of the following methods:
   a) For uses that typically result in at least two (2) hours or longer of parking which may include but is not limited to gathering places (restaurants and bars), retail/service, lodging, office, educational,

medical, and outdoor recreation, the applicant shall provide one Level II commercial electric vehicle charging station for every 10 parking spaces requested over the parking maximum. Electric vehicle charging station spaces shall comply with § 153-14D(3) unless determined otherwise by the Planning Board.

- **Dover Site Plan regulations require 5% of residential parking be ready for electric vehicle charging. With 16 required parking spaces, this results in 0.8 EV ready parking spaces to be required. The additional 8 parking spaces would require a second EV charging location. The site plan notes require that two houses are to have wiring for electric vehicle charging to meet this standard.**

b) For uses that do not typically result in at least two (2) hours or longer of activity, the applicant shall provide two (2) additional parking spaces that meet electric vehicle readiness requirements for every 10 parking spaces requested over the parking maximum.

- **See response for 5a above, as this land use results in parking times of greater than two hours.**

6) Additional level 1 commercial electric vehicle charging stations designated for employees, and not for public use, are encouraged.

- **This standard is not applicable for the proposed land use.**

7) There shall be no detrimental effect on surrounding properties by any proposal.

- **There will not be detrimental effect on surrounding properties with the addition of the extra parking spaces. The parking areas are contained within Sophie Drive. The robust stormwater management system provided fully infiltrates the 25YR storm event, with peak rate of runoff and volumetric reductions provided at the drainage point of analysis receiving runoff from the parking areas.**

2. Justification for approval of Conditional Use Permits

Given the project location within the R-40 zone, outside of the urban core, additional parking spaces are warranted to support the proposed use. As people often utilize their garage for storage or other uses, an additional 8 parking spaces (including one accessible), will ensure that the proposed four-bedroom homes have a guest parking space outside of the two-car driveway. The geometry of Sophie Drive restricts the ability of on-street parking as shown in the fire truck turning movement plan. A robust drainage system will ensure that there is no offsite drainage impact to abutting properties or surface water quality from the additional 8 parking spaces.

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
Principal, President

BERRY SURVEYING & ENGINEERING
335 Second Crown Pt. Rd., Barrington, NH 03825
(603) 332-2863 / (603) 335-4623 FAX
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City of Dover, New Hampshire
CONDITIONAL USE PERMIT APPLICATION

[Revision Date: October 19, 2020]

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

APPLICANT AND OWNER INFORMATION

Name of Applicant: 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): 5 Sherman Street LLC, Dove Development Group, LLC Telephone # 603-986-2373

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PROPERTY INFORMATION

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Existing Use of Property: Single Family Home 47-A, Multi-family residential 50-6

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:

Please find attached narrative. Application for >20% slope disturbance and for greater than 20% impervious in the Secondary Groundwater Recharge Overlay.

List Any Associated State or Federal Permits That Have Been or Will Be Applied For and Indicate Their Status: NHDES Alteration of Terrain, NHDES Sewer Discharge, EPA NOI (Not yet Submitted)

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

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

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

SIGNATURES

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

Signature of Property Owner: _____ Date: 9-20-24

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

Signature of Agent: _____ Date: 9-20-24

AUTHORIZATION TO ENTER SUBJECT PROPERTY

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

Signature of Property Owner: _____ Date: 9-20-24

CITY OF DOVER CONDITIONAL USE
LIST OF ABUTTERS

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

Owner:

TAX MAP	LOT #	PROPERTY OWNER	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

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

September 1, 2024/Rev: March 4, 2025

RE: Sophie Drive Extension
Knox Marsh Development, LLC
Dove Development Group, LLC
5 Sherman Street, LLC
TDR Site Plan – Environmental CUP Request (Steep Slopes)
1 Cold Springs Road
Tax Map H, Lot 47-A (Subject Parcel)
Tax Map H, Lot 50-6

Mr. Hunt and the Dover Conservation Commission

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

- CUP Request: Disturbance within area of greater than 20% slope for 2,000 Sq. Ft. The disturbance area is broken down by parcel, but is all part of the same cut slope. A total of 3,743 Sq. Ft. of 20% steep slopes is proposed to be disturbed on Tax Map H, Lot 47-1 and 3,402 Sq. Ft. of 20% steep slopes is proposed to be disturbed on Tax Map H, Lot 50-6. This cut slope is man-made and the result of previous excavation activity on the subject parcels.

1. *Identification of Conditional Use Permit*

- Disturbance within the conservation district areas of slope greater than 20% for greater than 2,000 Sq. Ft. (2 locations within the same cut slope, permanent).

Regulations in the zoning ordinance do not allow for earth disturbance within the conservation district. However, Section 170-27.C states that a conditional use permit may be granted by the planning board, given the following standards, as shown below, are met. Below we show the project's compliance with the standards required to grant a Conditional Use Permit, and we provide justification for its approval.

2. *Compliance with the following standards*

a) The APPLICANT shall demonstrate that the proposed use is essential to the productive use of land not in the district; is located and constructed to minimize any detrimental impact of such use upon the surface waters or other

environmentally sensitive areas, where it is physically impossible to locate such use on land not in the district; and economic advantage alone shall not be deemed a sufficient reason for such proposed use.

- **With respect to the Impact Areas, this impact is proposed to create a properly stabilized cut slope adjacent to residential development. The site soils consist primarily of disturbed Windsor sandy soil, according to the Site Specific Soils Map provided by John P. Hayes, CWS, CSS. The subject parcel has seen incremental excavation of material over the years, leaving behind steep back cuts in the southern portion of the subject parcel. A retaining wall was contemplated along the southern boundary line. Given the required height of the wall adjacent to residential development, excavating the slope and properly stabilizing is viewed by BS&E to be the safer and more visually appealing option. There have been no wetlands on site identified by John P. Hayes, CWS, CSS. Proper Erosion & Sediment Control (E&SC) measures provided in the E&SC Plan will ensure offsite surface waters are not adversely affected by sediment from the development.**

b) A soil erosion and sedimentation control plan is submitted and followed to verify the planned avoidance of sediment pollutant runoff to bodies of water.

A full erosion and sediment control plan has been submitted as part of this design. The excavation of this slope is proposed at 2:1 stabilized with North American Green SC 150BN natural fiber rolled erosion control blanket, loam, and conservation mix seed. Erosion Control Mulch berm is proposed at the toe of slope, with check dams in the conveyance swale, stabilized with rolled erosion control blanket at the toe of slope. All necessary precautions will be taken to ensure that no sediment leaves the subject parcel as shown in the provided plans.

c) Necessary state and federal approvals have been applied for. Said permits shall be received prior to the issuance of the Conditional Use Permit by the Planning Department.

- **As part of this design, the applicant will be filing for a NHDES Alteration of Terrain Permit, among other state permits. Copies of the permits will be provided to the City when acquired.**

d) A written review by the Conservation Commission of the environmental effects of the proposed use upon the area in question has been submitted. The Commission's review shall address the following, but is not limited to:

(i) attempted avoidance of the impact;

- **In respect to the attempted avoidance of the impact area, a retaining wall was contemplated along the southern boundary line of Tax Map H, Lot 47-A. The height of this retaining wall would be approximately 8-12' tall, depending on the location. It is the feeling of BS&E that a retaining wall of this height directly adjacent to single family homes is not the best development solution. Considering these steep slopes are from excavation and not adjacent to surface waters or other natural resources, a cut slope disturbing these slopes is viewed by BS&E as the safest and most visually appealing development option.**

(ii) minimization of the impact;

- **In respect to the Impact Area, no additional steep slope area, other than what is necessary to property grade and stabilize the proposed slope, is proposed as part of this development. The steep slope area continuing to the south east of the subject parcel is not proposed to be disturbed.**

(iii) planned mitigation of the effects of the impact; and

- **Upon completion of the construction the disturbed areas will stabilized with rolled erosion control mix conservation seed mix. Proper erosion & sediment control measures are to be installed during construction.**

(iv) efficacy of the soil erosion and sedimentation control plan.
A full erosion and sediment control plan has been submitted as part of this design. The excavation of this slope is proposed at 2:1 stabilized with North American Green SC 150BN rolled erosion control blanket, loam, and conservation mix seed. Erosion Control Mulch berm is proposed at the toe of slope, with check dams in the conveyance swale at the toe of slope.

3. *Justification for approval of Conditional Use Permits*
The Impact Area is necessary to provide a properly stabilized cut slope adjacent to residential development. BS&E feels that the excavation of

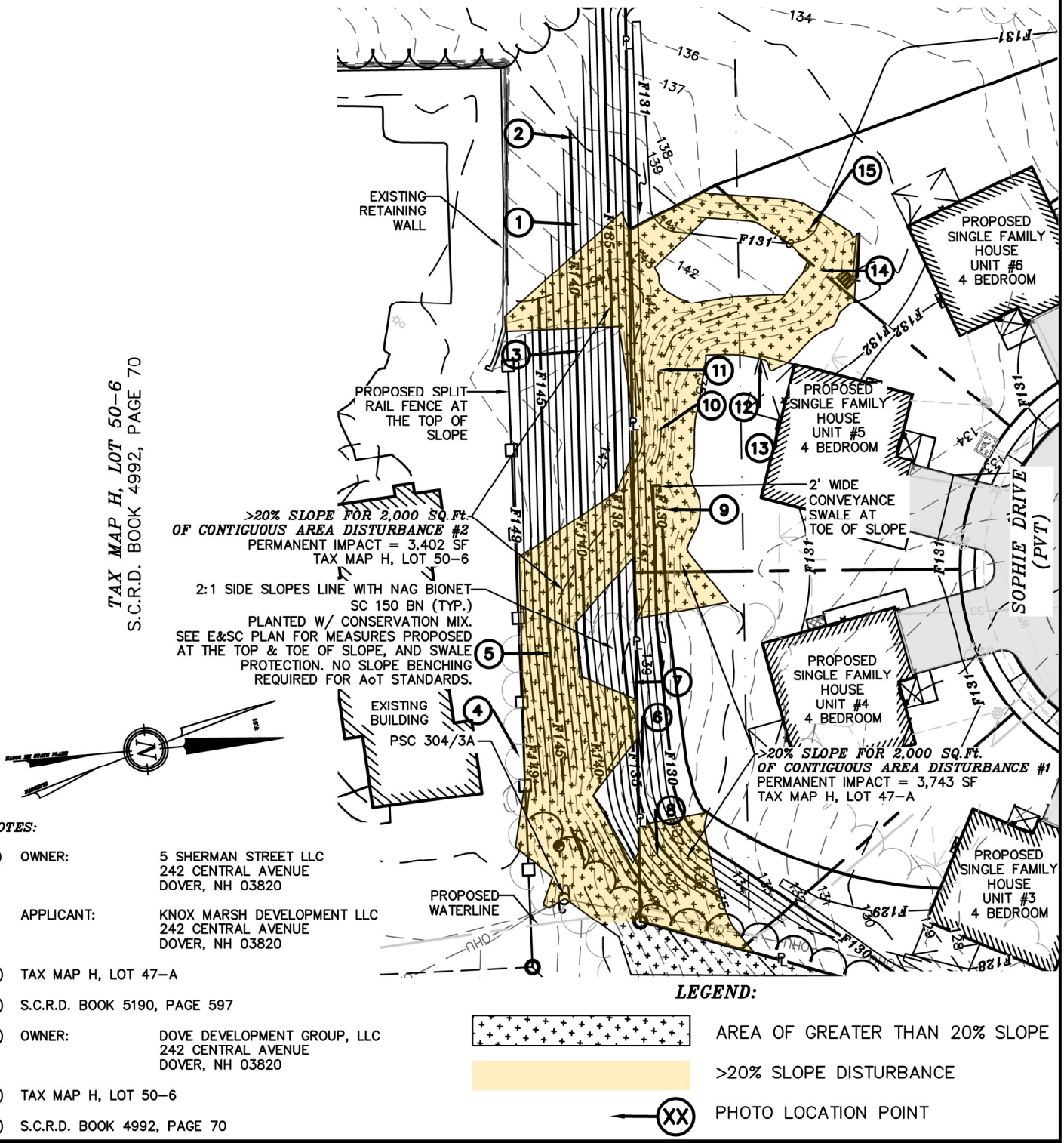
these steep slopes will provide a safer and more visually appealing option than a retaining wall. As these steep slopes are from excavation and not adjacent to any surface water, no other adverse environmental impacts will occur from this activity.

BERRY SURVEYING & ENGINEERING

Kevin R. Poulin, PE
Project Engineer

Christopher R. Berry
Principal, President

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



NOTES:

1.) OWNER: 5 SHERMAN STREET LLC
242 CENTRAL AVENUE
DOVER, NH 03820

APPLICANT: KNOX MARSH DEVELOPMENT LLC
242 CENTRAL AVENUE
DOVER, NH 03820

2.) TAX MAP H, LOT 47-A

3.) S.C.R.D. BOOK 5190, PAGE 597

4.) OWNER: DOVE DEVELOPMENT GROUP, LLC
242 CENTRAL AVENUE
DOVER, NH 03820

5.) TAX MAP H, LOT 50-6

6.) S.C.R.D. BOOK 4992, PAGE 70

LEGEND:

AREA OF GREATER THAN 20% SLOPE

>20% SLOPE DISTURBANCE

PHOTO LOCATION POINT

CONDITIONAL USE IMPACT AREA
STEEP SLOPE CONSERVATION DISTRICT
5 SHERMAN STREET, LLC
KNOX MARSH DEVELOPMENT, LLC
DOVE DEVELOPMENT GROUP, LLC
1 COLD SPRINGS ROAD
DOVER, N.H.
TAX MAP H, LOT 47-A
TAX MAP H, LOT 50-6

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

SCALE : 1 IN. EQUALS 40 FT.

DATE : MARCH 4, 2025

FILE NO. : DB 2023-126

BERRY SURVEYING & ENGINEERING
335 Second Crown Point Road
Barrington, NH 03825
Phone: (603) 332-2863
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1 Cold Springs Rd, Dover
Tax Map H, Lot 47-A



1



2

1 Cold Springs Rd, Dover
Tax Map H, Lot 47-A



3



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1 Cold Springs Rd, Dover
Tax Map H, Lot 47-A



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1 Cold Springs Rd, Dover
Tax Map H, Lot 47-A



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1 Cold Springs Rd, Dover
Tax Map H, Lot 47-A



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1 Cold Springs Rd, Dover
Tax Map H, Lot 47-A



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1 Cold Springs Rd, Dover
Tax Map H, Lot 47-A



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1 Cold Springs Rd, Dover
Tax Map H, Lot 47-A



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NOTICE OF MERGER

This notice of Merger is made this _____ day of _____, 202___. Be it known that Robert Baldwin, Managing Member of Both Parcels of Knox Marsh Development,LLC & 5 Sherman Street, LLC being the owner(s) of Tax Map H, Lot 46-DRV, a parcel described in deed Book 4844, Page 417 recorded at the Strafford County Registry of Deeds and Tax Map H, Lot 47-A, a parcel described in deed book 5190, page 597 recorded at the Strafford County Registry of Deeds has/have requested that said parcels be merged. The landowner(s) certify (ies) that the above described lots have at least one common boundary and are located in the City of Dover, NH, in the County of Strafford.

The above described lots shall not be conveyed as individual lots, but shall be conveyed as one. The intent is that any common boundaries between or among the lots shall be abandoned. The resulting merged lot may only be subdivided upon approval by the Planning Board based on the regulations existing at the time of application for the subdivision.

It is further understood that the above described lots shall be assessed as one lot for property tax evaluation purposes.

The owner(s) of the above described parcels has/have notified all mortgage holders for the above described parcels that said parcels are being merged and the owner(s) accepts full liability for this merger.

The Planning Board of the City of Dover, New Hampshire has signed this Notice of Merger as required by RSA 674:39-a and accepts no liability for this merger.

_____ _____
Owner Signature Witness

_____
(Print owner name)

_____ _____
Owner Signature Witness

_____
(Print owner name)

_____ _____
Owner Signature Witness

_____
(Print owner name)

_____ _____
Gina Cruikshank - Planning Board Chair Witness

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: Kit Bla

Signature(s) of Property Owner(s): _____ Date: 9-20-24

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: Kit Bla

Signature(s) of Property Owner(s): _____ Date: 9-20-24

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

TECHNICAL REVIEW COMMITTEE MINUTES – SITE-2024-0015

Application Type:	Site Review
Applicant(s):	Knox Marsh Development LLC
Owner(s):	5 Sherman Street, LLC
Location:	1 Cold Springs Rd. (Assessor's Map H, Lot 47-A)
Date:	November 21, 2024

INTENT: Proposal is to construct eight (8) single-family homes, a four-unit residential building, and maintain an existing single-family home for a total of 13 units. The project includes a TDR request to purchase the four (4) multi-family units with HUD-restricted rental rates and the eight (8), 1,400 s.f. single family homes and a request for relief from TDR setbacks.

UNITS PROPOSED: 13 units including 11 TDR units

AGENDA ITEM #: 2

ACREAGE:.
Existing acreage:
Tax Map H, Lot 47-A: 2.71± ac.
Tax Map H, Lot 46-DRV: 0.42± ac.
Acreage following proposed merger of Lots 47-A and 46-DRV: 3.12± ac.

ZONING DISTRICT: R-40, Conservation District

EXISTING LAND USE: Residential

PROPOSED LAND USE: Residential

SURROUNDING LAND USE: Residential

ZBA ACTION: None.

PERMITS REQUIRED:
City of Dover CUP §170-27C, Disturbance within the Conservation District, areas of slope greater than 20% for greater than 2,000 s.f.
City of Dover CUP §153-14D(1), 30 parking spaces where 25 are allowed
NHDES Alteration of Terrain, NHDES Sewer Discharge, EPA NOI

WAIVERS REQUESTED: None.

ATTENDANCE:
Donna Benton, Planning
Erin Bassegio, Zoning
Jim Maxfield, Inspection Services
Ken Mavrogeorge, Engineering
Marn Speidel, Police Department
James Burdin, Business Development
Tom Clark, Planning Board

Others:
Rob Baldwin, Applicant/Owner
Chris Berry, Berry Surveying & Engineering

PLAN REVIEW:
Planning:

- Reminder: Water and sewer investment fees
- The subject property is within the Secondary Groundwater Protection District, please confirm all regulations have been reviewed and met and add note to plan.
- Would like to see distances from homes to parent boundary lines
    - Significant impact to TDR 30' buffer to the East. Minor impacts to South (>20% slope area seems to be predominantly in buffer). Please elaborate on how that can or cannot be avoided.
- Clarification of septic vs. sewer
- Have individual driveways been considered for parking?
- 4-unit structure seems a bit excessive or out of place but also appreciate the HUD-restriction.
- Thank you for providing lot merger request (which will be a CoA) as lot would need to be merged with Sophie/Banner lot since subject lot has zero frontage – PB can waive down to 40', not 0.
- Thanks for providing HOA documents, staff will review with Legal team.
- Include calculation of open space provided on subject lot (pre-merger).
- Discussion to continue with staff regarding pedestrian crossing of Bellamy.

Engineering:

- General Comments:
    - Applicant and Contractor shall review the Dover Construction Guidelines prior to scheduling a Preconstruction meeting with City staff. The guidelines can be found on the City of Dover Website on the Engineering page. https://www.dover.nh.gov/Assets/government/cit

y-operations/1form/community-services/engineering/engineering-documents/Construction%20Guidelines.pdf

- Have you discussed with the owner(s) of Cold Springs Dr. a connection at the rear of the property to provide access to the ballfields?
- Applicant shall provide an easement to the City along the private drives within the property to allow for access and operation of the water infrastructure (hydrants and shut offs) to maintain water quality.
- Since only one water main is proposed into the building, the City will provide only one billable water meter for the entire building.
- Applicant shall provide an operation and maintenance plan for the pump stations.
- Applicant will need to obtain a sewer connection permit from NHDES.
- Applicant must provide either standby power or confirmation that each pump station meets requirements of the NHDES.
- The City recommends that the applicant source out ductile iron piping, which is the City preferred material, in advance commencing construction.
- ***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.***

- Sheet 1 of 36:
  - Can Sophie Dr be extended to connect into Cold Springs Rd?
  - Would recommend paving the remainder of Cold Springs Rd to the ball fields.
- Sheet 2 of 36:
  - Note indicates that a municipal sewer and water will be provided as well as septic and a well. Recommended extending sewer and water to the existing buildings.
  - Note 36 should be revised to include backflow preventers on Fire Lines.
  - Revise note 41 to show that the backflow preventer must be tested prior to Certificate of Occupancy.
  - Revise note 46 to indicate that sump pumps must not be tied to the sewer.
  - Recommend modifying Sophie Drive to connect into Cold Springs Dr and formalizing a plowing agreement to keep Cold Springs Rd clear.
  - Utility note 3. Check spelling of "runoff".
- Sheet 3 of 36:
  - Note 12 indicates no wetlands are present on site. The topography shows shallow depressions where the pool and skating rink are. Please provide existing spot grades and comment on the evaluation of these areas.
  - There is a gate at the end of Cold Springs Road that should be identified.
- Sheet 10 of 36:
  - Extend proposed pavement to the end of Sophie Dr.
  - The grading looks like Sophie Dr may be able to connect to Cold Springs Rd so that the area of the pond overflow can be restored back to natural conditions?
  - Recommend paving to the end of the parcel across Cold Springs Rd for emergency access to the ballfields.
- Sheet 12 of 36:
  - Grading appears to cross over the property line. Does temporary easement for construction and slope
- Sheet 14 of 26
  - Rather than installing pump stations, can you run gravity sewer to Sophie Dr?
  - Provide hydrant at the end of the water main near the existing barn and provide 6 inch CLDI main rather than 4 inch.
  - Recommend looping the water line back out to Sophie Dr.

  - Are easements required for the force mains across lots?
  - Recommend SMH where the 2 inch FM transitions to 3 inch for maintenance.
- Sheet 21 of 36:
  - Recommend additional street light on Sophie Dr.
- Sheet 31 of 36:
  - Hydrant shall be factory plugged.
- Sheet 32 of 36:
  - Provide check valve assembly inside the pump station chamber.
  - Saddles should be stainless steel.
  - Pump Station alarm panel should be inside each private residence.
  - Can the pump stations vent back to the structures rather than to the yards?
  - Provide a Sch40 to SDR35 PVC rubber ring type coupling on exterior of the pipe.
- Sheet 33 of 36:
  - Recommend standardizing size of septic tanks, pumps and force mains.

Police:

- Streetscape renderings do not appear to show the curbs and sidewalks as raised, but the plan set labels these as raised granite curbs. Confirm that the project uses granite curbs, not bituminous.
- Evaluate whether a crosswalk at Bellamy Road and Sophie Drive is warranted, in light of traffic volumes of Bellamy, pedestrian accessibility to the sidewalk on the opposite side of Bellamy, and the combination of this proposed project and that of Banner Drive.

Inspection Services:

- Existing road width of Cold Springs?
- Pump stations Class I?

Fire Department:

- N/A

Business Development:

- Project narrative does not appear to address TDR criteria. Please provide TDR narrative.

Planning Board:

- No comments.

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

Adjournment: J. Maxfield moved to adjourn the meeting at 11:21a.m. Seconded by K. Mavrogeorge. Vote: U/A

BERRY SURVEYING & ENGINEERING
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Barrington, NH 03825
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crberry@metrocast.net
September 1, 2024/March 4, 2025

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

Re: Residential Transfer of Development (TDR) Site Plan & Lot Merger
Sophie Drive Extension
Project Narrative
5 Sherman Street, LLC (Owner)
Knox Marsh Development, LLC (Applicant)
1 Cold Springs Road, Tax Map H, Lot 47-A
Tax Map H, Lot 46-DRV (Sophie Drive)

Dear Mrs. Benton,

On behalf of our client, Knox Marsh Development, LLC, Berry Surveying & Engineering (BS&E) is submitting a proposed Residential TDR Site Plan and Lot Merger at 1 Cold Springs Road. The submission contains a Lot Merger Application, two TDR requests, two Environmental CUP requests, and one Non-Environmental CUP request. There are no waivers requested as part of this application.

Background and General Narrative:

5 Sherman Street, LLC, owns the parcel known as 1 Cold Springs Road (Tax Map H, Lot 47-A). This parcel contains 117,574 Sq. Ft. (2.71 Ac.) within the R-40 zone, located off of Belamy Road. 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 H, Lot 47-A contains a single-family home built in 1973 located in the central/western portion of the property. The site is accessed via Cold Springs Road, which is partially located on the subject parcel. The existing single-family home is accompanied by a large garage, patio, and shed on site.

The site is located adjacent to Sophie Drive, which will be the proposed access to the subject parcel. The first +/- 320LF of Sophie Drive was constructed as a part of Dover Site Plan P21-66 and will be extended as part of this Site Plan. Reference to this Site Plan approval is referenced throughout the documents provided. The parcel is

located approximately 0.3 miles from the intersection of Bellamy Road and NH Route 108 to the south and approximately 0.7 miles from the intersection of Bellamy Road and NH Route 155 to the north.

Topographic conditions on site are sloping from the south to the north. Slopes greater than 20% exist in the southern portion of the site, and are man made from excavation over the life of the subject parcel. The site consists of sandy, excessively drained soils as shown on the Site Specific Soils Map by John P Hayes, III, CSS. The site is located within the R-40 Zone, located adjacent to another TDR project in Sophie/Banner Drive (P21-66). The site is subject to the steep slope conservation district for the steep slopes at the southern portion of the property.

A Lot merger is proposed between Tax Map H, Lot 47-A and Tax Map H, Lot 46-DRV (18,096 Sq. Ft., 0.42 Ac.) for the project. This creates a combined area between the parcels of 135,950 Sq. Ft. (3.12 Ac.). The area of Sophie Drive is not included within the unit density calculation, as this area was used in the density calculation for the Original Sophie Drive/Banner Drive project, Dover Planning File #P21-66.

The Proposal:

Utilizing the TDR density calculation, this subject parcel can support two (2) units by right. The proposal is to construct seven (7) new four-bedroom single-family homes greater than 1,400 Sq. Ft. on the parcel with the two-bedroom single-family home to remain for a total of eight (8) units. The applicant is requesting to reduce the 30' TDR buffer and utilize the TDR setbacks of 20' abut a street, 10' side, and 30' rear. A separate TDR narrative is provided along with the submission to support the request. The abutting TDR project on Banner Drive provides a 30' TDR buffer as part of the perimeter, shown as Tax Map H, Lot 50-6. The single-family home architecture will be similar to the houses seen in the adjacent TDR Plan for Banner Drive (P21-66).

The proposed units will be accessed from an extension of Sophie Drive, terminating in a cul-de-sac. Individual driveways, typically 22' long by 18' wide, are provided for access to the two car garages. The total length of Sophie Drive will be +/- 878 LF and 12' traveled lanes with curbing and raised sidewalk, which does not require a waiver for block length. Six-foot-wide sidewalks are proposed in areas adjacent to parking spaces along Sophie Drive, with five-foot-wide sidewalks in other locations around Sophie Drive. The existing single-family home will continue to utilize their driveway access from Cold Springs Road. The site proposes an additional eight (8) parking spaces intended for guests along Sophie Drive. Please find Non-Environmental CUP package with full narrative and further explanation. Of the seven proposed homes,

two are to have wiring for the charging of EV's within the garage to meet Dover requirements.

In the southern portion of the subject parcel, excavated areas of greater than 20% slope exist. In order to provide back yards for Units #4, 5 & 6, a 2:1 cut slope extending into Tax Map H, Lot 50-6 is proposed. This parcel is owned by the applicant, Knox Marsh development, LLC. The applicant evaluated a retaining wall along the southern boundary line as an alternative. It is the feeling of BS&E that a 2:1 cut slope with proper stabilization will provide a safer and more visually appealing construction feature than an 8-12' tall retaining wall along the southern property line. Please find Environmental CUP package with full narrative and further explanation/justification. Due to the elevation change between units #4, 5, & 6 and the top of slope on Tax Map H, Lot 50-6, this essentially acts as a visual buffer between the two projects.

A robust stormwater management system is provided to support the Site Plan. Deep sump catch basins with hoods are used to capture stormwater from the roadway area and pretreatment before discharge to a Rain Garden w/ Infiltration. This infiltration rain garden is able to fully infiltrate the 25YR-25Hr storm event, as shown in the proposed drainage analysis. On the 50YR-24HR storm event, stormwater runoff crests the pond spillway by 0.03', and is conveyed to a level lip for distribution across Cold Springs Road. The comparative analysis found in the Drainage Narrative demonstrates a reduction in the peak rate and volume of runoff discharged to the northern property line at all design events, including the 100Yr-24HR storm event, which is not a requirement of the City of Dover.

Water main is proposed to be connected from Banner Drive, with an Easement proposed over a portion of Tax Map H, Lot 50-6 to allow for the connection and future maintenance of the main. The 8" CLDI main is looped through the project and connects back into the existing portion of Sophie Drive. A 6" CLDI waterline is tapped from the 8" line to provide a fire hydrant in the vicinity of the cul-de-sac. All domestic services are 1" SDR 9. Sewer is proposed via 8" SDR 35 gravity line to run down the new Sophie Drive construction and connect into an existing sewer manhole in the intersection of the existing portion of Sophie Drive and Banner Drive. All services are proposed as 6" SDR 35.

Underground utilities are proposed on site, with transformers and junction boxes located on site. The connection will be taken from an existing utility pole PSNH304/3xa at the rear of Unit #1. Heating and cooling will be done via mini-splits. The Lighting Plan is able to provide in a calculation zone with a minimum of 0.3 footcandles, a maximum of 1.2 footcandles, and a uniformity ratio of 4:1 in the area of 8 parking spaces along Sophie Drive. An additional pole lamp is proposed in the middle of the cul-

de-sac. Plantings around the site include Red Maples, Douglas Firs, Boxwoods, Feather Reed Grasses, and Hydrangeas. Plantings are shown along portions of Sophie Drive, the parking array, cul-de-sac, along retaining walls, along the stormwater BMP, and in between units.

The project requires the following approvals:

- Site Plan Approval
- Lot Merger Approval
- TDR Approval for increased unit density
- TDR Approval to use the TDR setbacks as opposed to the underlying R-40
- Non-Environmental CUP for parking spaces along Sophie Drive
- Environmental CUP for steep slope disturbance
- Environmental CUP for greater than 20% impervious in the Secondary Groundwater Protection Zone
- EPA Notice of Intent (NOI)
- NHDES Alteration of Terrain Permit
- NHDES Sewer Discharge Permit

Respectfully Submitted,
BERRY SURVEYING & ENGINEERING

Kevin R. Poulin, PE
Project Engineer

Christopher R. Berry, SIT
Principal, President

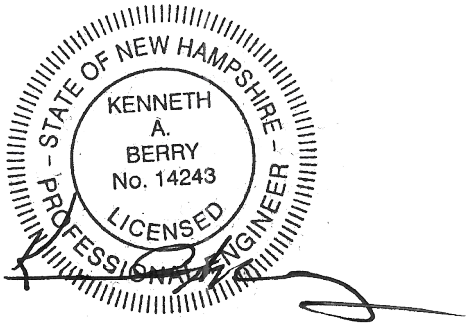
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September 1, 2024/Rev: March 4, 2025

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
Knox Marsh Development, LLC
5 Sherman Street, LLC
Tax Map H, Lot 47-A
1 Cold Springs Road/Sophie Drive
Dover, NH 03820



Ms. Benton,

Pursuant to the City of Dover Site Review Regulations, Berry Surveying & Engineering (BS&E), on behalf of Knox Marsh Development, LLC and 5 Sherman Street, LLC, has prepared a Standard Traffic Impact Analysis for the development of seven (7) new single-family homes in addition to one on site to remain on Tax Map H, Lot 47-A. The home on site will continue to use the existing Cold Springs Cold Road driveway, with the remaining seven (7) units utilizing Sophie Drive. The point of analysis is the intersection of the existing site entrance, Sophie Drive, and Bellamy Road to determine the increase in trips proposed at Sophie Drive. This Traffic Impact Analysis (TIA) references data from the original Sophie Drive/Banner Drive TIA performed by BS&E in 2021, Dover Planning File #21-66.

The following conclusions were reached as a result Traffic Impact Analysis:

- A total of 5 vehicle trips (1 enter/4 exit) are predicted to occur at the weekday AM peak hour and 6 vehicle trips (4 enter/2 exit) at the PM peak hour from the extension of Sophie Drive only.
- A total of 22 vehicle trips (5 enter/17 exit) are predicted to occur at the weekday AM peak hour and 28 vehicle trips (18 enter/10 exit) at the PM peak hour from all of Sophie Drive.
- This is an increase of 5 weekday AM peak hour trips and 6 weekday PM peak hour trips.
- 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.

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Proposed Development & Introduction

The proposal is to redevelop Tax Map H Lot 47A to contain a total of eight units. This includes the development of seven (7) new single-family homes, in addition to one on site to remain. The proposed access to the site is a 24-foot-wide roadway, known as Sophie Drive, which will be extended. The first +/- 320 feet of Sophie Drive was constructed as part of P21-66. Sophie Drive is 878 LF in length, including the proposed cul-de-sac. The existing single-family home on Lot 47-A, utilizes Cold Springs Road for egress, and will continue to do so in this Site Plan. 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

Tax Map H, Lot 47A contains 2.71 Ac. of land and is occupied by a single-family home, large garage (to be removed), with gravel driveway and Cold Springs Road. The lot is largely grassed, with perimeter portions of the lot wooded. The site is located in the R-40 zone, and is surrounded by single family homes, with some multi-family units to the south. Located 0.2 miles to the north is Alumni Drive, with NH Route 16 accessed from the north and NH Route 108 accessed to the south. There are several residential driveways surrounding the site. The right-of-way for Sophie Drive abuts the subject parcel, where the proposed road extension will be made. Banner Drive, located off of Sophie Drive, was previously approved along with Sophie Drive as part of P21-66 and provides access to the remaining units off of Sophie Drive.

Bellamy Road Roadway Description

Bellamy Road is a two-lane minor arterial roadway, according to the NHDOT MS2 Transportation Management System (NHDOT). This portion of Bellamy Road runs north to south, directly connecting to NH Route 155, NH Route 9, and NH Route 16 to the north and NH Route 108 to the south. It has an Annual Average Daily Traffic (AADT) of approximately 6,497 (2023) divided between north and south in the data provided by the NHDOT.

Bellamy Road in the area of the project is composed of a twenty-four-foot-wide paved surface with ten-foot travel lanes, variable width paved shoulders and curbing on the east and west sides of the road with a sidewalk on the eastern side of the roadway. There is centerline delineation and fog / edge lines provided. The posted speed limit of

the roadway is 30 miles per hour (MPH). The subject parcel is located next to the beginning of a school zone, which reduces the speed limit to 20 MPH during school times. The geometry of Bellamy Road is relatively flat and straight in the project location. There is a Coast bus stop at the intersection of NH 108 and Bellamy Road which is ¼ of a mile south from the subject parcel.

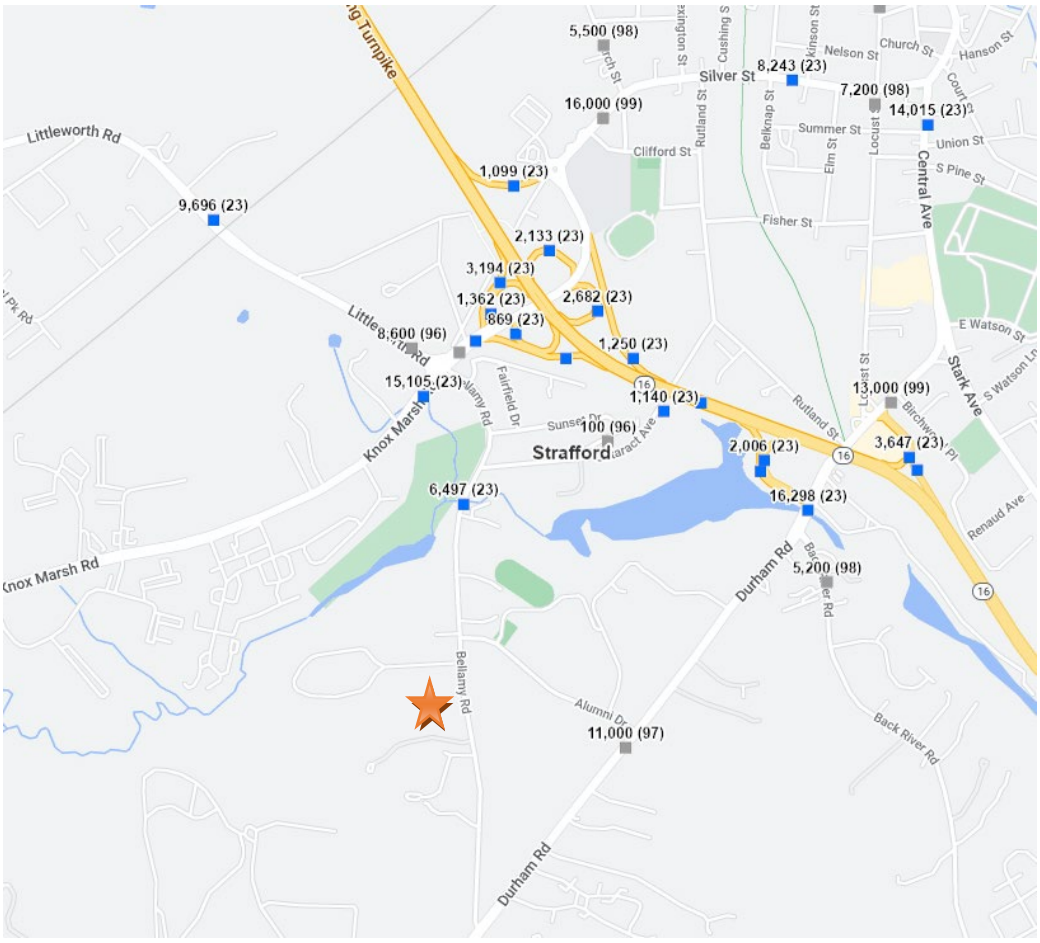


Figure 1: Bellamy Road with surrounding roadways (NHDOT)

Existing Traffic Volumes

It is important to note that this traffic analysis utilizes original traffic data from the P21-66 TIA to preserve assumptions and for consistency. The 2023 AADT shown by the NHDOT of 6,497 vehicle trips per day is less than the 2019 discussed below. According to traffic counts recorded the NHDOT for June 11th - 13th 2019, the Bellamy Road AM and PM weekday two-way peaks were 1,153 trips and 761 trips, respectively. It is shown by the NHDOT that this portion of Bellamy Road has an AADT of 6,952 vehicles (2019). Traffic counts provided by NHDOT only show two-way traffic volumes for these

recent dates. Without this directional data, an assumption has been made that 75% of traffic in the AM weekday peak hour travels to the north towards NH Route 16 and 25% travels south towards NH Route 108. It has also been assumed that during the PM weekday peak hour that 75% of traffic travels south from NH Route 16 and 25% travels north towards NH Route 16. NHDOT traffic counts from 2016 and 2013 were not used in determining a directional distribution because of the August traffic count time not coinciding with school generated traffic seen in the month of June. Using this 25/75 assumption results in the highest weekday peak hour traffic volume on this section of Bellamy Road northbound occurred from 7-8 AM with 865 vehicles and from 5-6 PM with 190 vehicles. Southbound highest weekday peak hour traffic volume occurred from 7-8 AM with 288 vehicles and from 5-6 PM with 571 vehicles. Traffic counts of Bellamy Road provided by the NHDOT are included in Appendix A as Figures 11-13.

Traffic Distribution Bellamy Road						
Date	Northbound		Southbound		Two-Way	
Tuesday 6/11/19	AM Peak	865	AM Peak	288	AM Peak	1153
	PM Peak	162	PM Peak	485	PM Peak	646
Wednesday 6/12/19	AM Peak	730	AM Peak	243	AM Peak	973
	PM Peak	190	PM Peak	571	PM Peak	761
Thursday 6/13/19	AM Peak	728	AM Peak	243	AM Peak	971
	PM Peak	147	PM Peak	441	PM Peak	588
Average Peak Hour Traffic	AM Peak	774	AM Peak	258	AM Peak	1063
	PM Peak	166	PM Peak	499	PM Peak	704
% Distribution	AM Peak	75.0	AM Peak	25.0		
	PM Peak	25.0	PM Peak	75.0		

Table 1: Assumed directional breakdown of trips occurring on Bellamy Road

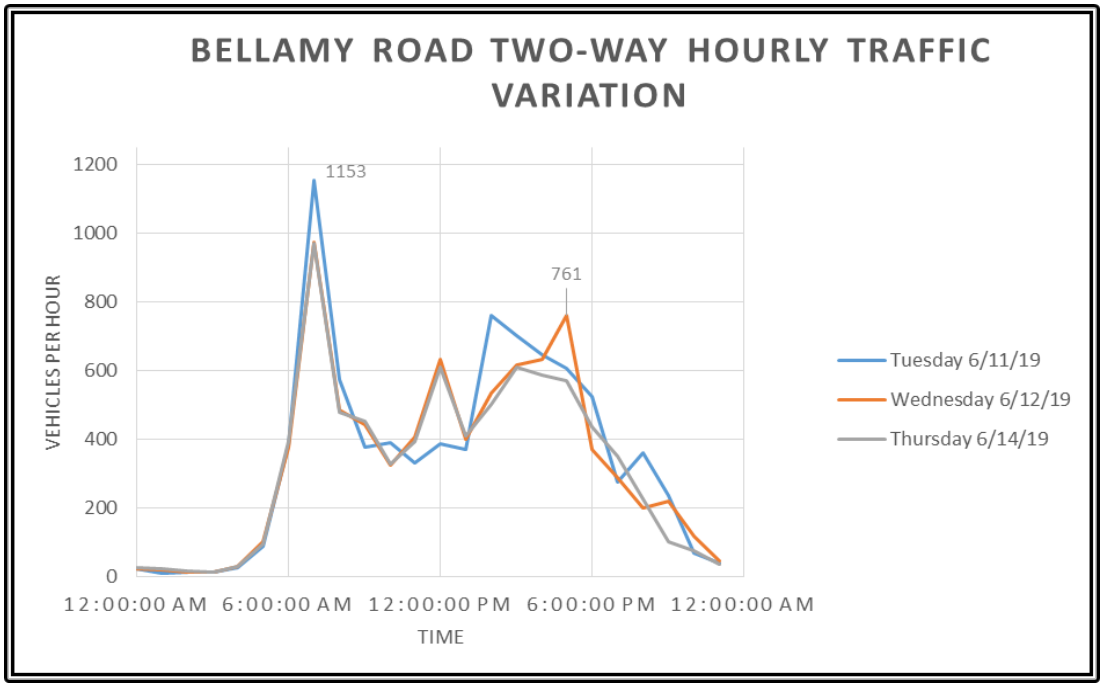


Figure 2: Graph of Bellamy Road two-way hourly variation

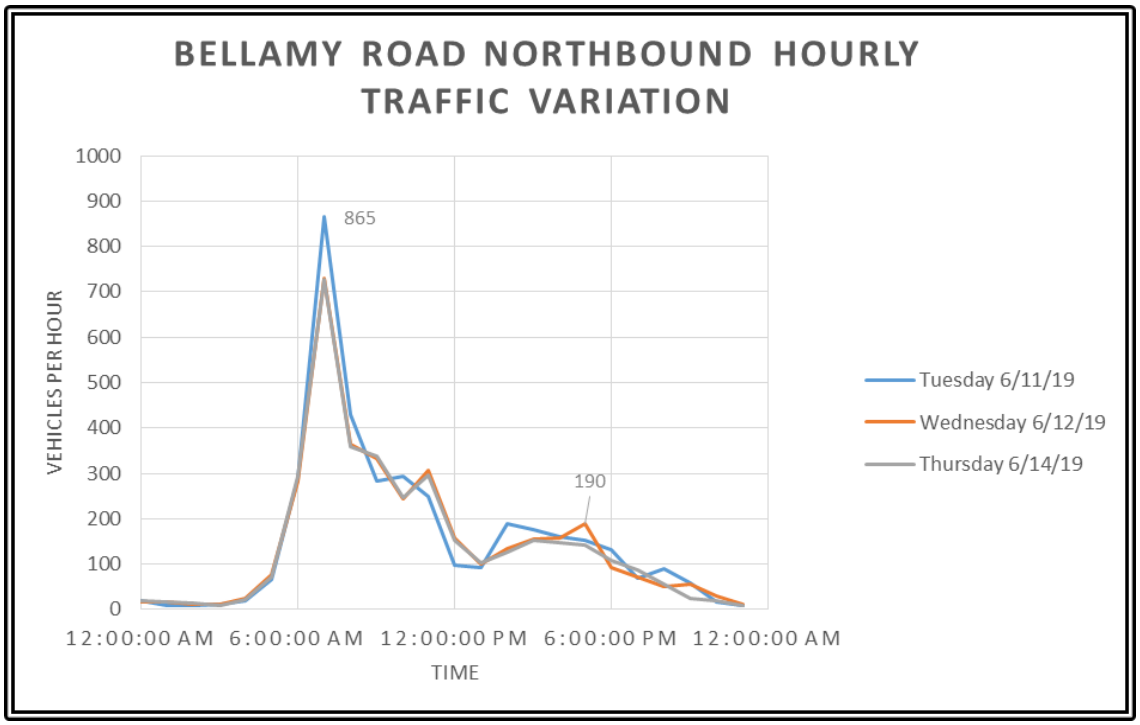


Figure 3: Graph of Bellamy Road northbound hourly variation with peak values

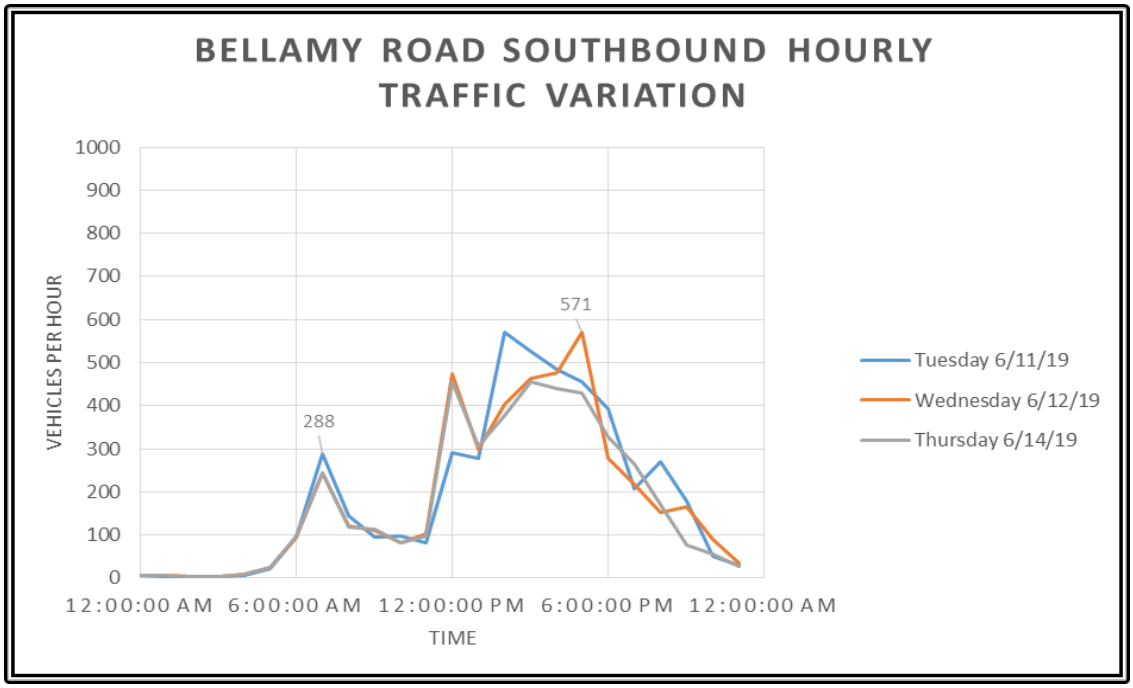


Figure 4: Graph of Bellamy Road southbound hourly variation with peak values

Traffic counts obtained from NHDOT in 2019 have been compared to 2021 traffic counts obtained by Pernaw & Company, Inc for a residential project proposed on Cataract Avenue that includes four apartment buildings (156 new dwelling units). Traffic counts were performed on June 10, 2021 and can be found in Appendix E under Supplemental Traffic Counts and Data[1]. The recently performed traffic counts have been adjusted with the proposed 156 dwelling units generation, generation from 10 single family lots on the recently approved Porch Light Drive project, and an estimate of student drivers from the Dover High School Senior class that may have been out of classes when the June 10th, 2021 traffic counts were performed. Table #2 shows the 2021 recorded traffic counts and the adjustment made from the previously mentioned factors.

	Northbound Vehicle Count Thursday 6/10/21		Southbound Vehicle Count Thursday 6/10/21		Two-Way Vehicle Count Thursday 6/10/21	
No-Build Condition Bellamy Road 2021 Count Pernaw	AM Peak	425	AM Peak	513	AM Peak	938
	PM Peak	403	PM Peak	286	PM Peak	689
Macintosh Commons Build Condition	AM Peak	434	AM Peak	522	AM Peak	956
	PM Peak	439	PM Peak	322	PM Peak	761
Porch Light Drive Build Condition	AM Peak	2	AM Peak	2	AM Peak	4
	PM Peak	3	PM Peak	2	PM Peak	5
Dover HS Senior Class Adjustment	AM Peak	120	AM Peak	120	AM Peak	240
	PM Peak	120	PM Peak	120	PM Peak	240
Peak Hour Adjusted Volumes Used in Analysis	AM Peak	556	AM Peak	644	AM Peak	1200
	PM Peak	562	PM Peak	444	PM Peak	1006
% Distribution	AM Peak	46.3	AM Peak	53.7		
	PM Peak	55.9	PM Peak	44.1		

Table 2: Adjustment of Pernaw & Company, Inc. 2021 Traffic Volumes Bellamy Road

The following table demonstrates the derivation of the Dover High School Senior class driving adjustment. In 2021, Dover High School has 1,319 students according to Publicschoolreview.com[2]. The assumption is made that approximately 25% of this population is Senior Students and assumed that 75% of Senior Students drive to school. Based upon this assumption, the ratio of AADT between NH Route 155 and Central Avenue is analyzed to determine a directional distribution volume. Using data from NHDOT, the Central Avenue and NH Route 155 AADTs are shown and a distribution of student direction is determined.

			Estimated Driving High School Seniors: 245	
Central Avenue AADT (2019):	18,047			
NH Route 155 AADT (2019):	17,366			
Combined AADT	35,413		Percentage	Value
Percent enter generated from Central Avenue			51.0	125
Percent enter generated from NH Route 155			49.0	120
Percent exit generated to Central Avenue			51.0	125
Percent exit generated to NH Route 155			49.0	120

Table 3: Dover Senior Student Volume Adjustment

Accouting for the three different peak hour adjustments of Macintosh Commons growth, Porch Light Drive growth, and potential Dover High School Senior Students, 2021 AM and PM Peak hour northbound traffic volumes utilized are 556 and 562, respectively. Southbound 2021 AM and PM traffic volumes utilized are 664 and 444, respectively. The data obtained from Stephew G. Pernaw & Company, Inc. is also the perfered data set due to the availibility of a directional distrubution as opposed to utilizing the assumed distribution. While considering this factor, a comparison of the 2021 recorded traffic volumes compared to the data obtained from the NHDOT still shows the varibility of traffic volumes that are experienced in this roadway.

[1] Stephen G. Pernaw & Company, Inc., *Traffic Impact Assessment Proposed Residential Development, Dover, NH*, Prepared for Baker Properties, LLC. July 2021.

[2] Dover Senior High School (2021-22 Ranking): Dover, NH. (n.d.). Retrieved from https://www.publicschoolreview.com/dover-senior-high-school-profile

Existing Vehicle Speeds

As previously mentioned, the posted speed limit of Bellamy Road is 30 MPH. For the purposes of the safety analysis below, the 85th percentile of speed is required. This particular section of Bellamy Road was observed by Berry Surveying & Engineering to analyze the pass by traffic, reviewing speed. 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 40 MPH. As a conservative estimate, this 85th percentile speed of 40 MPH is used during school time and the AM weekday peak hour.

Existing Trip Generation (Sophie & Banner Drive)

Utilizing the data from the TIA provided in P21-66, the 10th Edition ITE Trip Generation Manual was used to determine the existing volume of trips, as well as the percentage of entrance-to-exit traffic experienced during the AM & PM peak hours between 7 and 9 AM and 4 and 6 PM. Land Use Codes Single Family Detached Housing (210) and Multifamily Housing (Low-Rise) (220) was used in deriving the trip generation for the existing site. Tables 4 - 7 provide average trip rate, total trips generated, enter to exit ratio, and the enter to exit distribution of the original approval. The 11th Edition of the ITE manual has not been utilized for the existing trip generation to preserve the assumptions made in the original TIA.

<u>Single Family Detached Housing:</u>

Time Method	Weekday Total (Page 2) Dwelling Units			Time Method	AM Peak Adj. Street (Page 3) Dwelling Units			Time Method	PM Peak Adj. Street (Page 4) Dwelling Units		
# Units	12			# Units	12			# Units	12		
Avg. Rate	9.44			Avg. Rate	0.74			Avg. Rate	0.99		
Total Trips	113.3			Total Trips	8.9			Total Trips	11.9		
% Enter	50.0	Total Enter	56.6	% Enter	25.0	Total Enter	2.2	% Enter	63.0	Total Enter	7.5
% Exit	50.0	Total Exit	56.6	% Exit	75.0	Total Exit	6.7	% Exit	37.0	Total Exit	4.4

Table 4: (Single Family Detached) Peak hr of adjacent street traffic AM, PM, & weekday total

Multi-Family Housing (Low-Rise):

Time Method	Weekday Total (Page 2) Dwelling Units			Time Method	AM Peak Adj. Street (Page 3) Dwelling Units			Time Method	PM Peak Adj. Street (Page 4) Dwelling Units		
# Units	16			# Units	16			# Units	16		
Avg. Rate	7.32			Avg. Rate	0.46			Avg. Rate	0.56		
Total Trips	117.1			Total Trips	7.4			Total Trips	9.0		
% Enter	50.0	Total Enter	58.6	% Enter	23.0	Total Enter	1.7	% Enter	63.0	Total Enter	5.6
% Exit	50.0	Total Exit	58.6	% Exit	77.0	Total Exit	5.7	% Exit	37.0	Total Exit	3.3

Table 5: (Single Family Detached) Peak hr of adjacent street traffic AM, PM, & weekday total

Originally Proposed Trip Generation:

Time Method	Weekday Total (Page 2) Dwelling Units			Time Method	AM Peak Adj. Street (Page 3) Dwelling Units			Time Method	PM Peak Adj. Street (Page 4) Dwelling Units		
Total Trips	230.4			Total Trips	16.2			Total Trips	20.8		
% Enter	50.0	Total Enter	115.2	% Enter	24.1	Total Enter	3.9	% Enter	63.0	Total Enter	13.1
% Exit	50.0	Total Exit	115.2	% Exit	75.9	Total Exit	12.3	% Exit	37.0	Total Exit	7.7

Table 6: Additional proposed trip generation from the project site during AM, PM, & weekday total

Originally Approved Trip Generation (Included ex single family home on site):

Time	Weekday Total Sophie Drive			Time	AM Peak Hour Sophie Drive			Time	PM Peak Hour Sophie Drive		
Total Trips	239.8			Total Trips	17.0			Total Trips	21.8		
% Enter	50	Total Enter	119.9	% Enter	24.1	Total Enter	4.1	% Enter	63.0	Total Enter	13.8
% Exit	50	Total Exit	119.9	% Exit	75.9	Total Exit	12.9	% Exit	37.0	Total Exit	8.1

Table 7: Proposed trip generation from the project site Saturday & Sunday peak hour

Proposed Trip Generation (Sophie Drive)

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, 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 additional proposed trip generation from the project site. Tables 8-9 provide average trip rate, total trips generated, enter to exit ratio, and the enter to exit distribution. Table 10 provides the difference in trip generation for Sophie Drive from the constructed condition to the proposed condition. The existing single-family home on Cold Springs Road will continue to utilize the existing driveway and will not utilize Sophie Drive.

Single Family Detached Housing Proposed:

Time Method	Weekday Total Dwelling Units			Time Method	AM Peak Adj. Street Dwelling Units			Time Method	PM Peak Adj. Street Dwelling Units		
# Units	7			# Units	7			# Units	7		
Avg. Rate	9.43			Avg. Rate	0.70			Avg. Rate	0.94		
Total Trips	66.0			Total Trips	4.9			Total Trips	6.6		
% Enter	50.0	Total Enter	33.0	% Enter	26.0	Total Enter	1.3	% Enter	63.0	Total Enter	4.1
% Exit	50.0	Total Exit	33.0	% Exit	74.0	Total Exit	3.6	% Exit	37.0	Total Exit	2.4

Table 8: (Single Family Detached) Peak hr of adjacent street traffic AM, PM, & weekday total

Total Existing & Proposed Trip Generation:

Time	Weekday Total Sophie Drive			Time	AM Peak Hour Sophie Drive			Time	PM Peak Hour Sophie Drive		
Total Trips	305.9			Total Trips	21.9			Total Trips	28.4		
% Enter	50	Total Enter	152.9	% Enter	24.6	Total Enter	5.4	% Enter	63.0	Total Enter	17.9
% Exit	50	Total Exit	152.9	% Exit	75.4	Total Exit	16.5	% Exit	37.0	Total Exit	10.5

Table 9: Proposed trip generation from the project site AM, PM, & weekday total

Changes in Trip Generation:

Changes in Trip Generation	
Time	# Trips Increased
Weekday AM Peak	4.9
Weekday PM Peak	6.6

Table 10: Changes in trip generation on Sophie Drive

Build Traffic Projections and Turning Analysis

Traffic data obtained from Pernaw & Company, Inc in 2021 has been projected to 2025 and ten years further to 2035. This has been done using a June peak seasonal adjustment factor of 1.02 (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 13 in Appendix B. Figures 5 and 6 show the build turning movements to and from the proposed site during weekday AM and PM peak hours. These figures also show the projected volume of traffic northbound and southbound on Bellamy Road for 2025 and 2035. This is included as Table 14 & Table 15 in Appendix B. A visual of these turning movements is shown in the following figures.

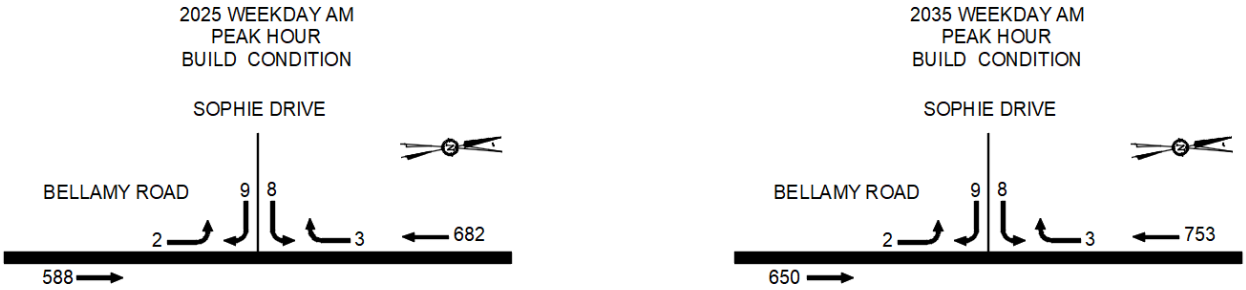


Figure 5: 2025 & 2035 build projected traffic volumes & turn movement weekday AM peak

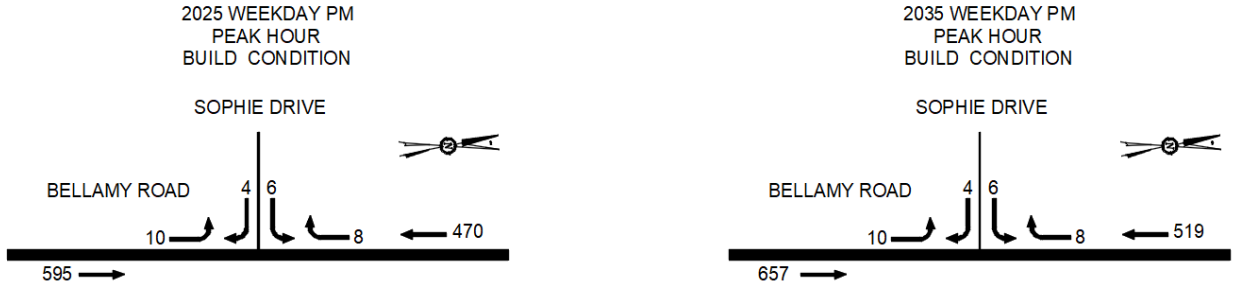


Figure 6: 2025 & 2035 build projected traffic volumes & turn movement weekday PM peak

Tables 11 & 12 show in a tabular format the total trips that are calculated to occur to and from the proposed site entrance 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. It can be seen that the extension of Sophie Drive accounts for approximately 1/4 of the total trip generation. Minor rounding modifications have been made to make the number of trips equals the total of trips.

Time	AM Peak Hour	# Trips	Turn Type	% Distribution
Total Trips	21.9			
Trips Enter from Bellamy Road Northbound		2.5	Left	11.4
Trips Enter from Bellamy Road Southbound		2.9	Right	13.2
Trips Exit to Bellamy Road Northbound		7.6	Left	35.0
Trips Exit to Bellamy Road Southbound		8.9	Right	40.5

Table 11: Weekday AM peak hour total build turning movements to and from Sophie Drive

Time	PM Peak Hour	# Trips	Turn Type	% Distribution
Total Trips	28.4			
Trips Enter from Bellamy Road Northbound		10.0	Left	35.2
Trips Enter from Bellamy Road Southbound		7.9	Right	27.8
Trips Exit to Bellamy Road Northbound		5.9	Left	20.7
Trips Exit to Bellamy Road Southbound		4.6	Right	16.3

Table 12: Weekday PM peak hour total build turning movements to and from Sophie Drive

Sight Distance and Safety Analysis

Sight distance on Bellamy Road to the north and south, as well as roadway alignment are the two determining factors of safety. For the proposed entrance, sight distance to the north un-obstructed for well over 305 feet (measured), while sight distance to the south is un-obstructed for well over 305 feet (measured). In this instance both the northerly and southerly sight distances meet and exceed the standard AASHTO 40MPH standard practice of 305 feet. There are no improvements required to obtain this sight distance. This Sight Distance Plan for Sophie Drive is provided as part of the original P21-66 plan set.

With respect to general safety of Bellamy 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 (2018)

Conclusions and Recommendations

1.) A total of 5 vehicle trips (1 enter/4 exit) are predicted to occur at the weekday AM peak hour and 6 vehicle trips (4 enter/2 exit) at the PM peak hour from the extension of Sophie Drive only.

2.) A total of 22 vehicle trips (5 enter/17 exit) are predicted to occur at the weekday AM peak hour and 28 vehicle trips (18 enter/10 exit) at the PM peak hour from all of Sophie Drive.

3.) This is an increase of 5 weekday AM peak hour trips and 6 weekday PM peak hour trips.

4.) 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.

Respectfully Submitted,

BERRY SURVEYING & ENGINEERING

Christopher R. Berry, SIT
Principal, President

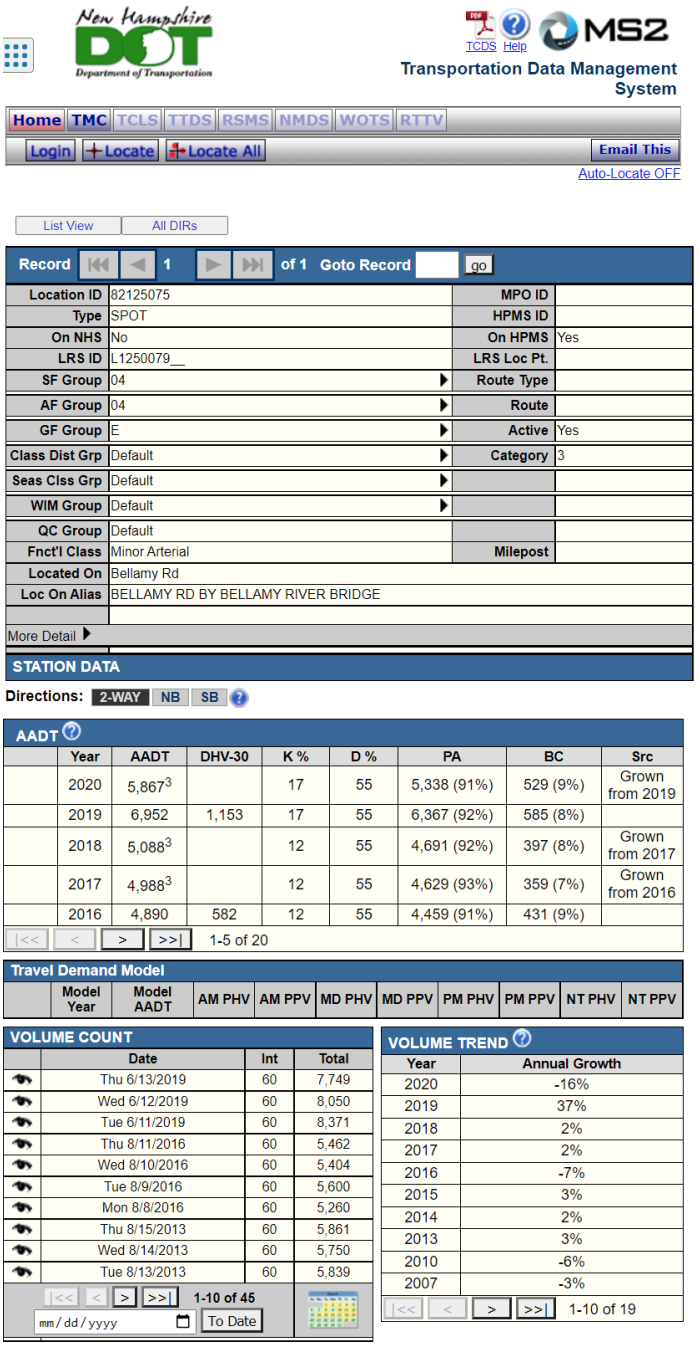
Kenneth A. Berry, PE, LLS,
CPSWQ, CPESC, CESSWI
Principal, VP-Technical Operations

KRP/krp

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



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Login | Locate | Locate All | Email This

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List View | All DIRs

Record 1 of 1 Goto Record go

Location ID	82125075	MPO ID	
Type	SPOT	HPMS ID	
On NHS	No	On HPMS	Yes
LRS ID	L1250079__	LRS Loc Pt.	
SF Group	04	Route Type	
AF Group	04	Route	
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	Bellamy Rd		
Loc On Alias	BELLAMY RD BY BELLAMY RIVER BRIDGE		

More Detail

STATION DATA

Directions: 2-WAY | NB | SB

AADT

Year	AADT	DHV-30	K %	D %	PA	BC	Src
2020	5,867[3]		17	55	5,338 (91%)	529 (9%)	Grown from 2019
2019	6,952	1,153	17	55	6,367 (92%)	585 (8%)	
2018	5,088[3]		12	55	4,691 (92%)	397 (8%)	Grown from 2017
2017	4,988[3]		12	55	4,629 (93%)	359 (7%)	Grown from 2016
2016	4,890	582	12	55	4,459 (91%)	431 (9%)	

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Travel Demand Model

Model Year	Model AADT	AM PHV	AM PPV	MD PHV	MD PPV	PM PHV	PM PPV	NT PHV	NT PPV

VOLUME COUNT

Date	Int	Total
Thu 6/13/2019	60	7,749
Wed 6/12/2019	60	8,050
Tue 6/11/2019	60	8,371
Thu 8/11/2016	60	5,462
Wed 8/10/2016	60	5,404
Tue 8/9/2016	60	5,600
Mon 8/8/2016	60	5,260
Thu 8/15/2013	60	5,861
Wed 8/14/2013	60	5,750
Tue 8/13/2013	60	5,839

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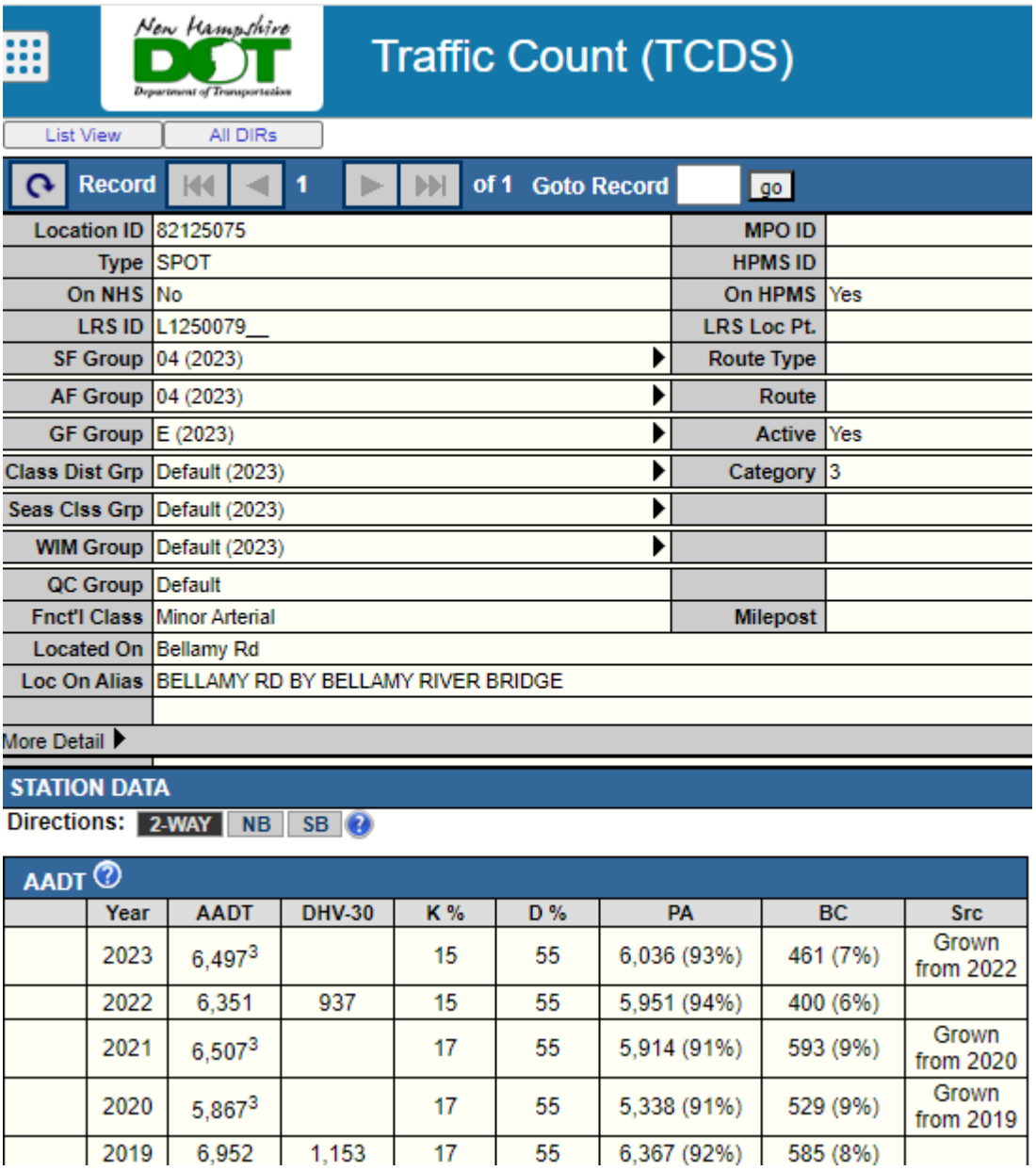
mm/dd/yyyy To Date

VOLUME TREND

Year	Annual Growth
2020	-16%
2019	37%
2018	2%
2017	2%
2016	-7%
2015	3%
2014	2%
2013	3%
2010	-6%
2007	-3%

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Figure 7: History of AADT values and classification for Bellamy Road (2020)



New Hampshire DOT — Department of Transportation

Traffic Count (TCDS)

List View | All DIRs

Record 1 of 1 Goto Record go

Location ID	82125075	MPO ID	
Type	SPOT	HPMS ID	
On NHS	No	On HPMS	Yes
LRS ID	L1250079__	LRS Loc Pt.	
SF Group	04 (2023)	Route Type	
AF Group	04 (2023)	Route	
GF Group	E (2023)	Active	Yes
Class Dist Grp	Default (2023)	Category	3
Seas Clss Grp	Default (2023)		
WIM Group	Default (2023)		
QC Group	Default		
Fnct'l Class	Minor Arterial	Milepost	
Located On	Bellamy Rd		
Loc On Alias	BELLAMY RD BY BELLAMY RIVER BRIDGE		

More Detail

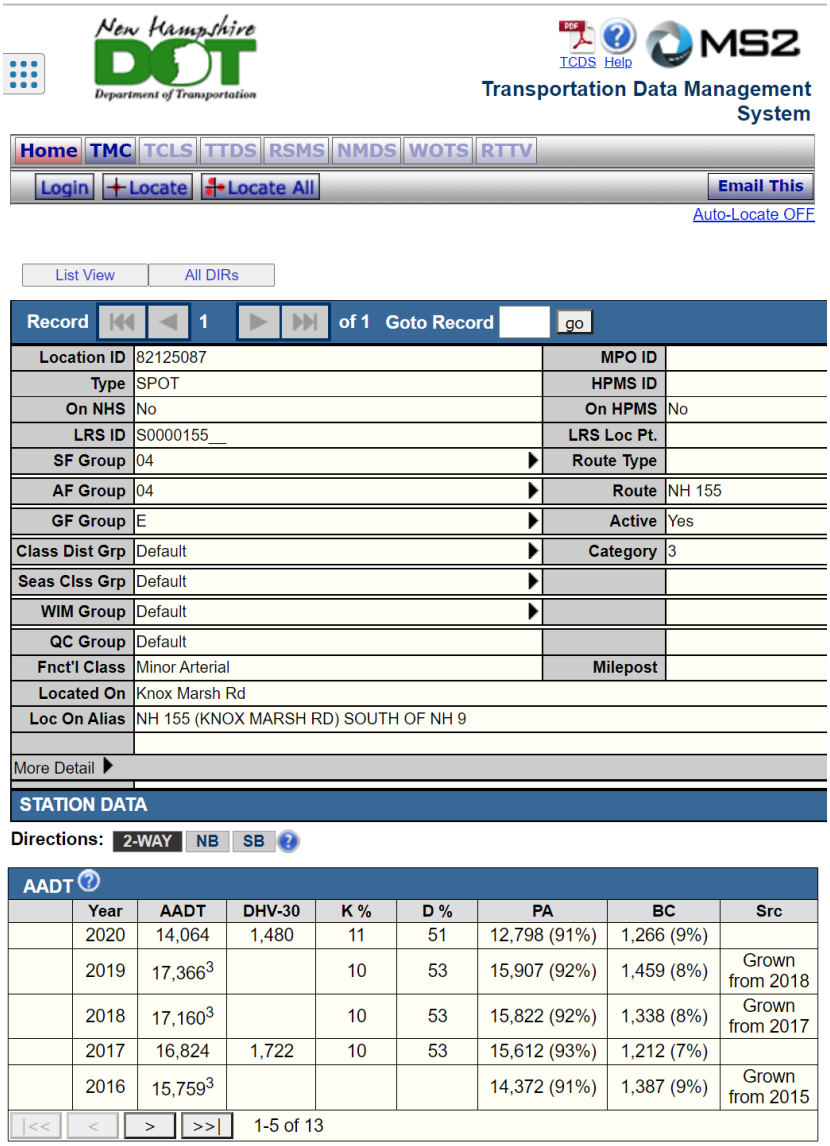
STATION DATA

Directions: 2-WAY | NB | SB

AADT

Year	AADT	DHV-30	K %	D %	PA	BC	Src
2023	6,497[3]		15	55	6,036 (93%)	461 (7%)	Grown from 2022
2022	6,351	937	15	55	5,951 (94%)	400 (6%)	
2021	6,507[3]		17	55	5,914 (91%)	593 (9%)	Grown from 2020
2020	5,867[3]		17	55	5,338 (91%)	529 (9%)	Grown from 2019
2019	6,952	1,153	17	55	6,367 (92%)	585 (8%)	

Figure 8: History of AADT values and classification for Bellamy Road (2023)



New Hampshire DOT Department of Transportation

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List View | All DIRs

Record 1 of 1 Goto Record go

Location ID	82125087	MPO ID	
Type	SPOT	HPMS ID	
On NHS	No	On HPMS	No
LRS ID	S0000155__	LRS Loc Pt.	
SF Group	04	Route Type	
AF Group	04	Route	NH 155
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	Knox Marsh Rd		
Loc On Alias	NH 155 (KNOX MARSH RD) SOUTH OF NH 9		

More Detail

STATION DATA

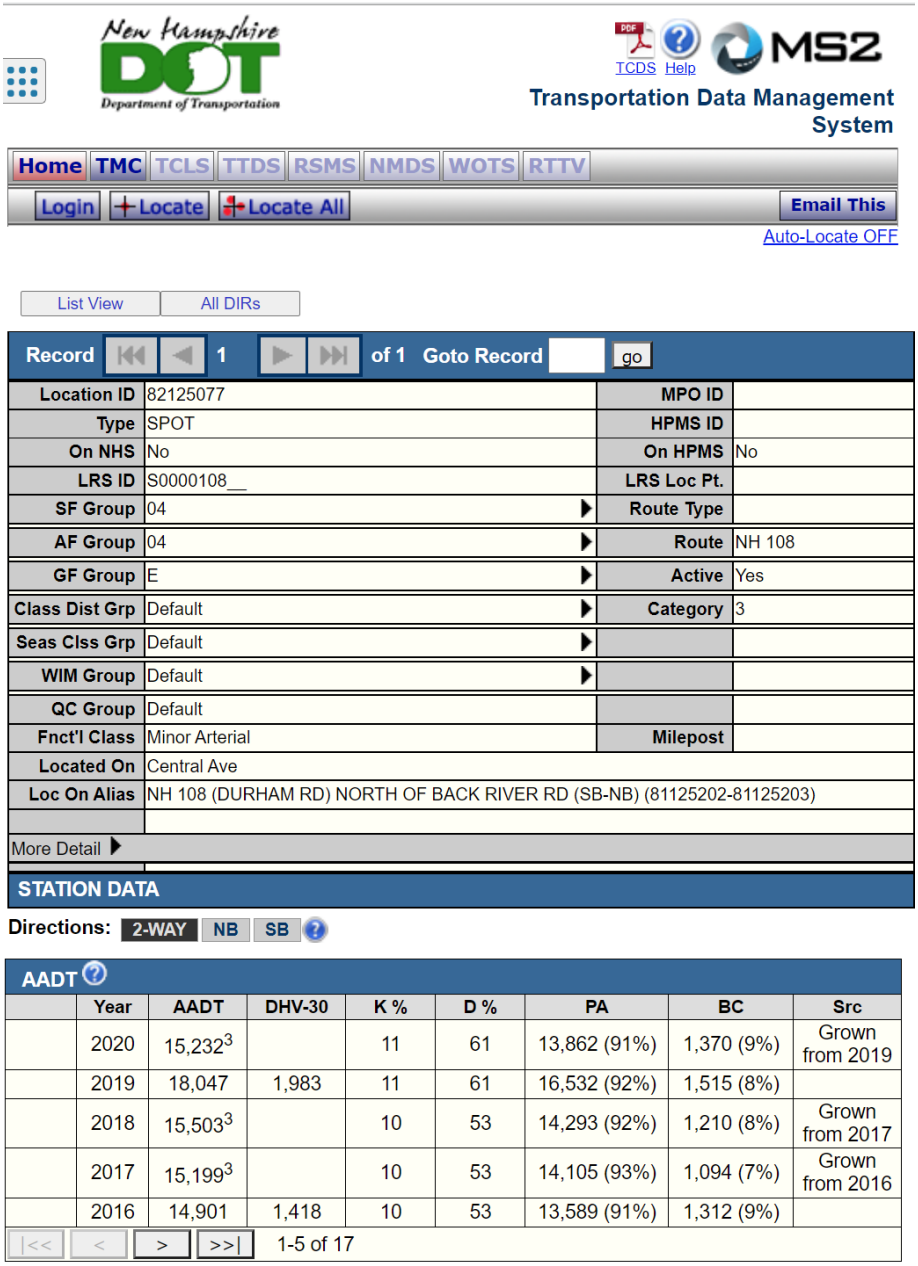
Directions: 2-WAY | NB | SB

AADT

	Year	AADT	DHV-30	K %	D %	PA	BC	Src
	2020	14,064	1,480	11	51	12,798 (91%)	1,266 (9%)	
	2019	17,366[3]		10	53	15,907 (92%)	1,459 (8%)	Grown from 2018
	2018	17,160[3]		10	53	15,822 (92%)	1,338 (8%)	Grown from 2017
	2017	16,824	1,722	10	53	15,612 (93%)	1,212 (7%)	
	2016	15,759[3]				14,372 (91%)	1,387 (9%)	Grown from 2015

|<< < > >>| 1-5 of 13

Figure 9: History of AADT values and classification for NH Route 155



New Hampshire DOT Department of Transportation

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List View | All DIRs

Record 1 of 1 Goto Record go

Location ID	82125077	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	Central Ave		
Loc On Alias	NH 108 (DURHAM RD) NORTH OF BACK RIVER RD (SB-NB) (81125202-81125203)		

More Detail

STATION DATA

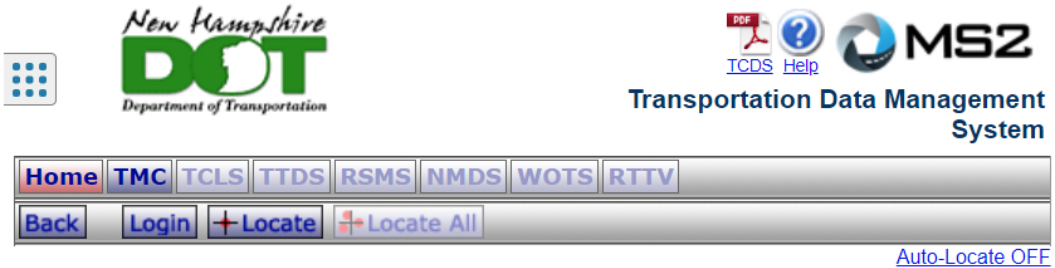
Directions: 2-WAY | NB | SB

AADT

	Year	AADT	DHV-30	K %	D %	PA	BC	Src
	2020	15,232[3]		11	61	13,862 (91%)	1,370 (9%)	Grown from 2019
	2019	18,047	1,983	11	61	16,532 (92%)	1,515 (8%)	
	2018	15,503[3]		10	53	14,293 (92%)	1,210 (8%)	Grown from 2017
	2017	15,199[3]		10	53	14,105 (93%)	1,094 (7%)	Grown from 2016
	2016	14,901	1,418	10	53	13,589 (91%)	1,312 (9%)	

|<< < > >>| 1-5 of 17

Figure 10: History of AADT values and classification for Central Ave



New Hampshire DOT Department of Transportation

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Transportation Data Management System

Home | TMC | TCLS | TTDS | RSMS | NMDS | WOTS | RTTV

Back | Login | +Locate | Locate All

Auto-Locate OFF

Volume Count Report

LOCATION INFO	
Location ID	82125075
Type	SPOT
Fnct'l Class	4
Located On	Bellamy Rd
Loc On Alias	BELLAMY RD BY BELLAMY RIVER BRIDGE
Direction	2-WAY
County	STRAFFORD
Community	DOVER
MPO ID	
HPMS ID	
Agency	New Hampshire DOT

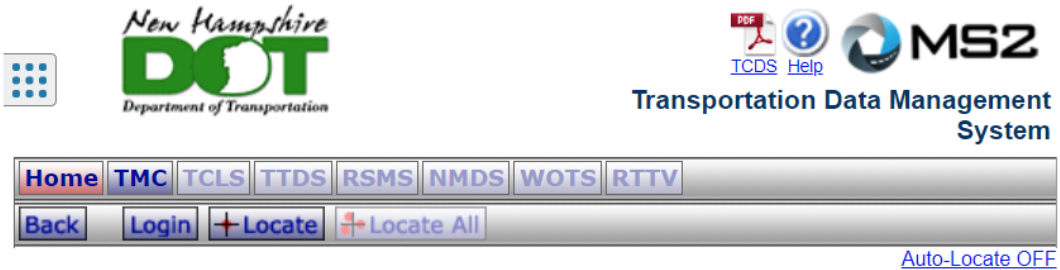
COUNT DATA INFO	
Count Status	Accepted
Start Date	Tue 6/11/2019
End Date	Wed 6/12/2019
Start Time	12:00:00 AM
End Time	12:00:00 AM
Direction	
Notes	nhdot
Station	821250750000
Study	
Speed Limit	
Description	
Sensor Type	Axle/Tube
Source	
Latitude,Longitude	

INTERVAL:60-MIN	
Time	Hourly Count
0:00-1:00	25
1:00-2:00	10
2:00-3:00	13
3:00-4:00	14
4:00-5:00	26
5:00-6:00	88
6:00-7:00	385
7:00-8:00	1,153
8:00-9:00	574
9:00-10:00	379
10:00-11:00	390
11:00-12:00	331
12:00-13:00	389
13:00-14:00	371
14:00-15:00	760
15:00-16:00	702
16:00-17:00	646
17:00-18:00	606
18:00-19:00	525
19:00-20:00	276
20:00-21:00	361
21:00-22:00	238
22:00-23:00	69
23:00-24:00	40
Total	8,371
AADT	7,359
AM Peak	07:00-08:00 1,153
PM Peak	14:00-15:00 760

Count Navigation: |<< < > >>| Count Type: VOLUME

Directions: 2-WAY NB SB

Figure 11: Tuesday June 11th, 2019 Bellamy Road two-way traffic count



New Hampshire DOT Department of Transportation

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Transportation Data Management System

Home | TMC | TCLS | TTDS | RSMS | NMDS | WOTS | RTTV

Back | Login | Locate | Locate All

Auto-Locate OFF

Volume Count Report

LOCATION INFO	
Location ID	82125075
Type	SPOT
Fnct'l Class	4
Located On	Bellamy Rd
Loc On Alias	BELLAMY RD BY BELLAMY RIVER BRIDGE
Direction	2-WAY
County	STRAFFORD
Community	DOVER
MPO ID	
HPMS ID	
Agency	New Hampshire DOT

COUNT DATA INFO	
Count Status	Accepted
Start Date	Wed 6/12/2019
End Date	Thu 6/13/2019
Start Time	12:00:00 AM
End Time	12:00:00 AM
Direction	
Notes	nhdot
Station	821250750000
Study	
Speed Limit	
Description	
Sensor Type	Axle/Tube
Source	
Latitude,Longitude	

INTERVAL:60-MIN	
Time	Hourly Count
0:00-1:00	23
1:00-2:00	21
2:00-3:00	15
3:00-4:00	15
4:00-5:00	32
5:00-6:00	103
6:00-7:00	378
7:00-8:00	973
8:00-9:00	485
9:00-10:00	444
10:00-11:00	324
11:00-12:00	408
12:00-13:00	633
13:00-14:00	399
14:00-15:00	536
15:00-16:00	617
16:00-17:00	634
17:00-18:00	761
18:00-19:00	371
19:00-20:00	290
20:00-21:00	202
21:00-22:00	220
22:00-23:00	120
23:00-24:00	46
Total	8,050
AADT	6,856
AM Peak	07:00-08:00 973
PM Peak	17:00-18:00 761

Count Navigation: |<< < > >>| Count Type: VOLUME

Directions: 2-WAY NB SB

Figure 12: Wednesday June 12th, 2019 Bellamy Road two-way traffic count

New Hampshire DOT Department of Transportation

TCDS Help MS2

Transportation Data Management System

Home | TMC | TCLS | TTDS | RSMS | NMDS | WOTS | RTTV

Back | Login | Locate | Locate All

Auto-Locate OFF

Volume Count Report

LOCATION INFO	
Location ID	82125075
Type	SPOT
Fnct'l Class	4
Located On	Bellamy Rd
Loc On Alias	BELLAMY RD BY BELLAMY RIVER BRIDGE
Direction	2-WAY
County	STRAFFORD
Community	DOVER
MPO ID	
HPMS ID	
Agency	New Hampshire DOT

COUNT DATA INFO	
Count Status	Accepted
Start Date	Thu 6/13/2019
End Date	Fri 6/14/2019
Start Time	12:00:00 AM
End Time	12:00:00 AM
Direction	
Notes	nhdot
Station	821250750000
Study	
Speed Limit	
Description	
Sensor Type	Axle/Tube
Source	
Latitude,Longitude	

INTERVAL:60-MIN	
Time	Hourly Count
0:00-1:00	26
1:00-2:00	23
2:00-3:00	18
3:00-4:00	13
4:00-5:00	30
5:00-6:00	96
6:00-7:00	393
7:00-8:00	971
8:00-9:00	479
9:00-10:00	452
10:00-11:00	330
11:00-12:00	395
12:00-13:00	609
13:00-14:00	410
14:00-15:00	503
15:00-16:00	609
16:00-17:00	588
17:00-18:00	572
18:00-19:00	436
19:00-20:00	353
20:00-21:00	228
21:00-22:00	103
22:00-23:00	76
23:00-24:00	36
Total	7,749
AADT	6,637
AM Peak	07:00-08:00 971
PM Peak	12:00-13:00 609

Count Navigation: |<< | < | > | >>| Count Type: VOLUME

Directions: 2-WAY | NB | SB

Figure 13: Thursday June 13th, 2019 Bellamy Road two-way traffic count

Appendix B

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 13: Derivation of the seasonal peaking factor

Year	Advancing Volume	Advancing Volume Peaked (TR)
2021	556	565.5
2022	562	571.1
2023	567	576.8
2024	573	582.6
2025	579	588.4
2026	585	594.3
2027	590	600.3
2028	596	606.3
2029	602	612.3
2030	608	618.4
2031	614	624.6
2032	620	630.9
2033	627	637.2
2034	633	643.6
2035	639	650.0
Year	Opposing Volume	Opposing Volume Peaked (TR)
2021	644	654.9
2022	651	661.5
2023	657	668.1
2024	664	674.8
2025	670	681.5
2026	677	688.4
2027	684	695.2
2028	691	702.2
2029	698	709.2
2030	704	716.3
2031	712	723.5
2032	719	730.7
2033	726	738.0
2034	733	745.4
2035	740	752.8
Seasonal Peaking Factor (June)		1.02

Table 14: AM Traffic Count Projections

Year	Advancing Volume	Advancing Volume Peaked (TR)
2021	556	565.5
2022	562	571.1
2023	567	576.8
2024	573	582.6
2025	579	588.4
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2028	596	606.3
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2035	639	650.0
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2028	691	702.2
2029	698	709.2
2030	704	716.3
2031	712	723.5
2032	719	730.7
2033	726	738.0
2034	733	745.4
2035	740	752.8
Seasonal Peaking Factor (June)		1.02

Table 15: PM Traffic Count Projections

Table 3-1. Stopping Sight Distance on Level Roadways

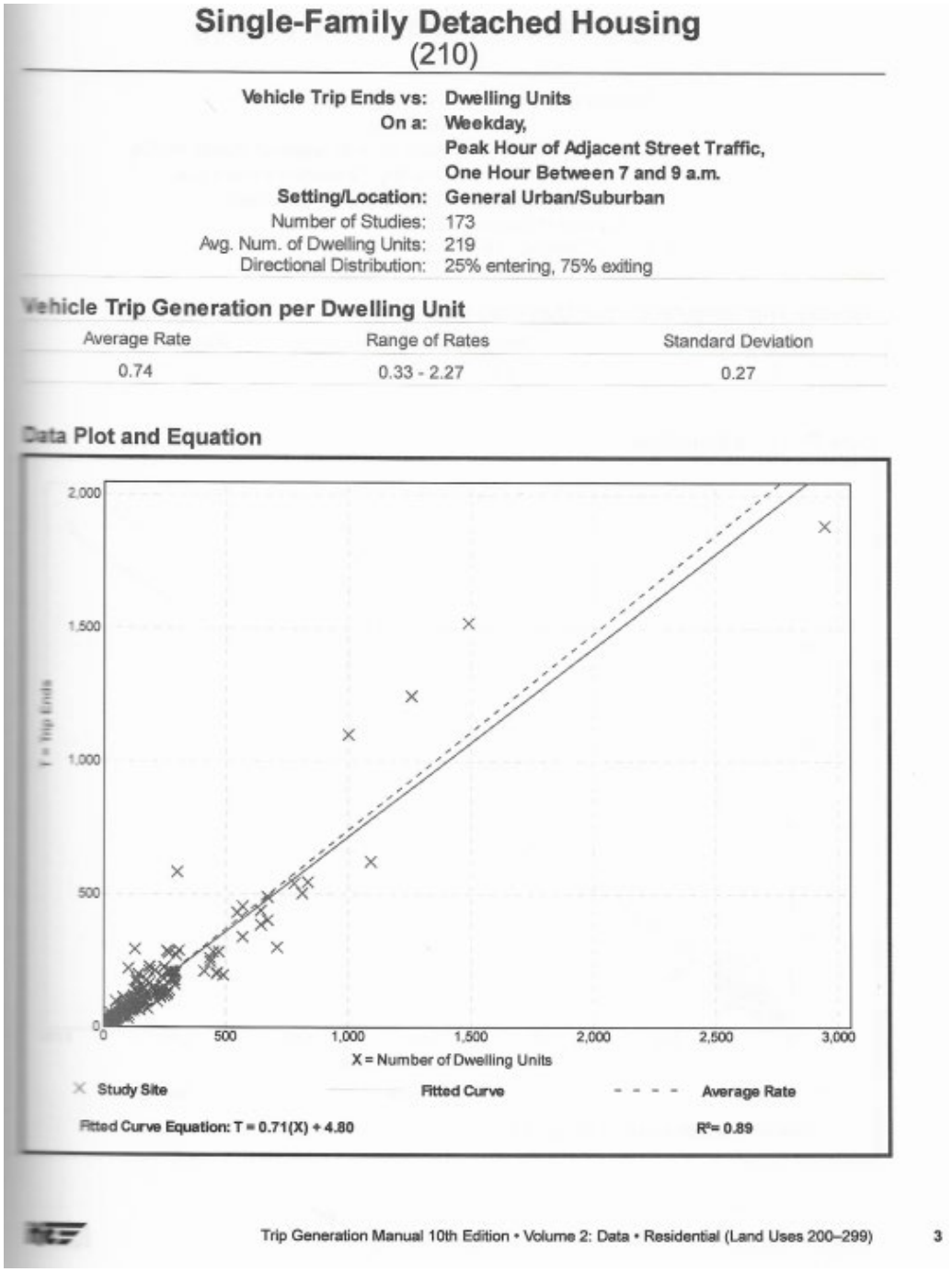
U.S. Customary					Metric				
Design Speed (mph)	Brake Reaction Distance (ft)	Braking Distance on Level (ft)	Stopping Sight Distance		Design Speed (km/h)	Brake Reaction Distance (m)	Braking Distance on Level (m)	Stopping Sight Distance	
			Calculated (ft)	Design (ft)				Calculated (m)	Design (m)
15	55.1	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 14: Derivation of stopping sight distance requirements

Appendix C

Trip Generation Derivation



Single-Family Detached Housing
(210)

Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 173
Avg. Num. of Dwelling Units: 219
Directional Distribution: 25% entering, 75% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.74	0.33 - 2.27	0.27

Data Plot and Equation

Trip Generation Manual 10th Edition • Volume 2: Data • Residential (Land Uses 200–299) 3

Figure 15: ITE Trip Generation, 10th Edition

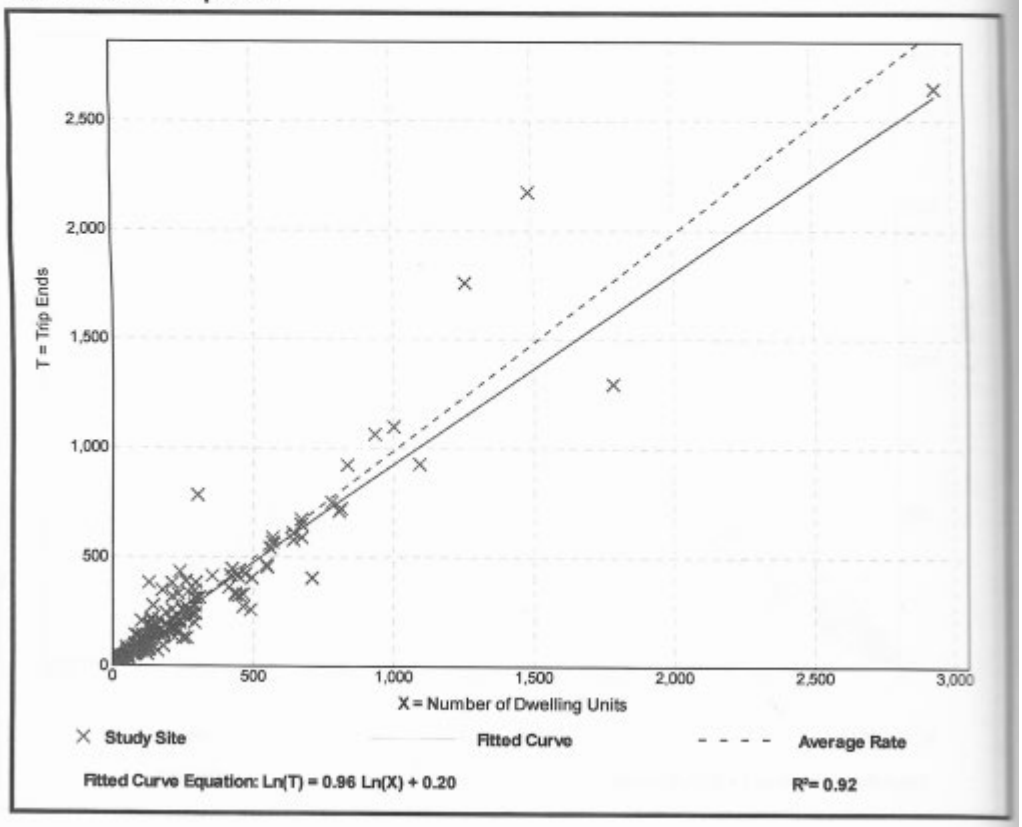
Single-Family Detached Housing
(210)

Vehicle Trip Ends vs:	**Dwelling Units**
On a:	**Weekday,**
	Peak Hour of Adjacent Street Traffic,
	One Hour Between 4 and 6 p.m.
Setting/Location:	**General Urban/Suburban**
Number of Studies:	190
Avg. Num. of Dwelling Units:	242
Directional Distribution:	63% entering, 37% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.99	0.44 - 2.98	0.31

Data Plot and Equation



4 Trip Generation Manual 10th Edition • Volume 2: Data • Residential (Land Uses 200–299)

Figure 16: ITE Trip Generation, 10th Edition

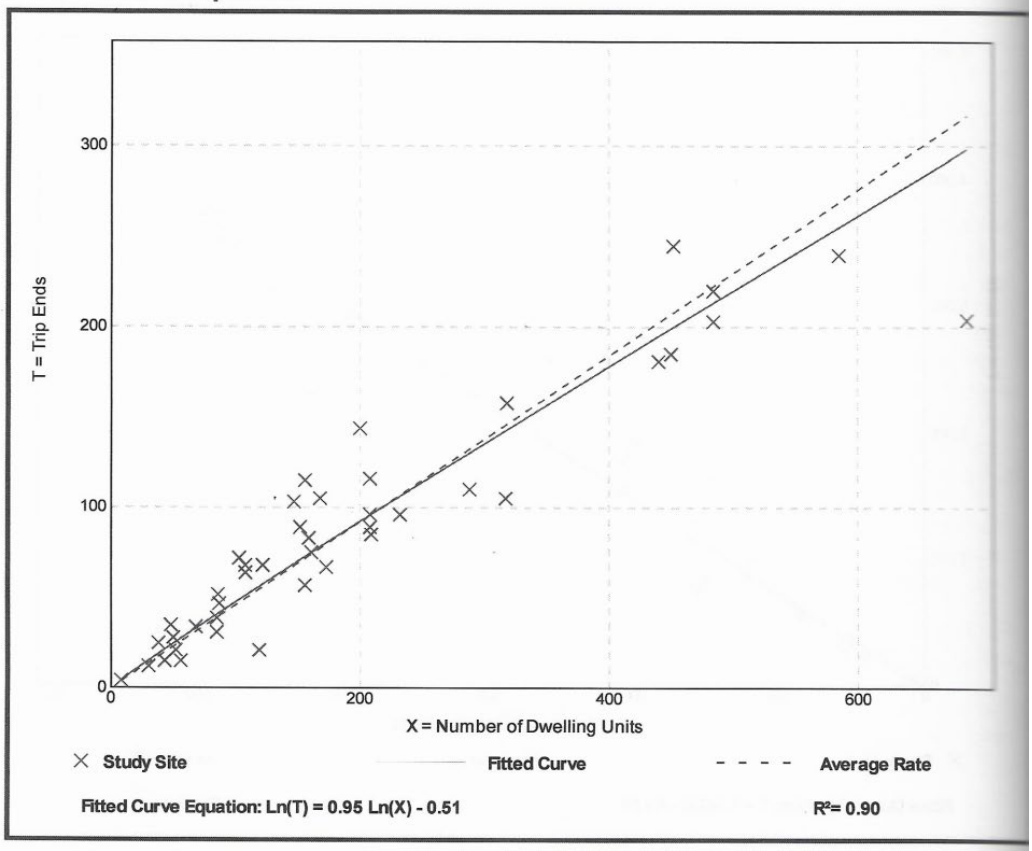
Multifamily Housing (Low-Rise)
(220)

Vehicle Trip Ends vs:	**Dwelling Units**
On a:	**Weekday,**
	Peak Hour of Adjacent Street Traffic,
	One Hour Between 7 and 9 a.m.
Setting/Location:	**General Urban/Suburban**
Number of Studies:	42
Avg. Num. of Dwelling Units:	199
Directional Distribution:	23% entering, 77% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.46	0.18 - 0.74	0.12

Data Plot and Equation



32 Trip Generation Manual 10th Edition • Volume 2: Data • Residential (Land Uses 200–299)

Figure 17: ITE Trip Generation, 10th Edition

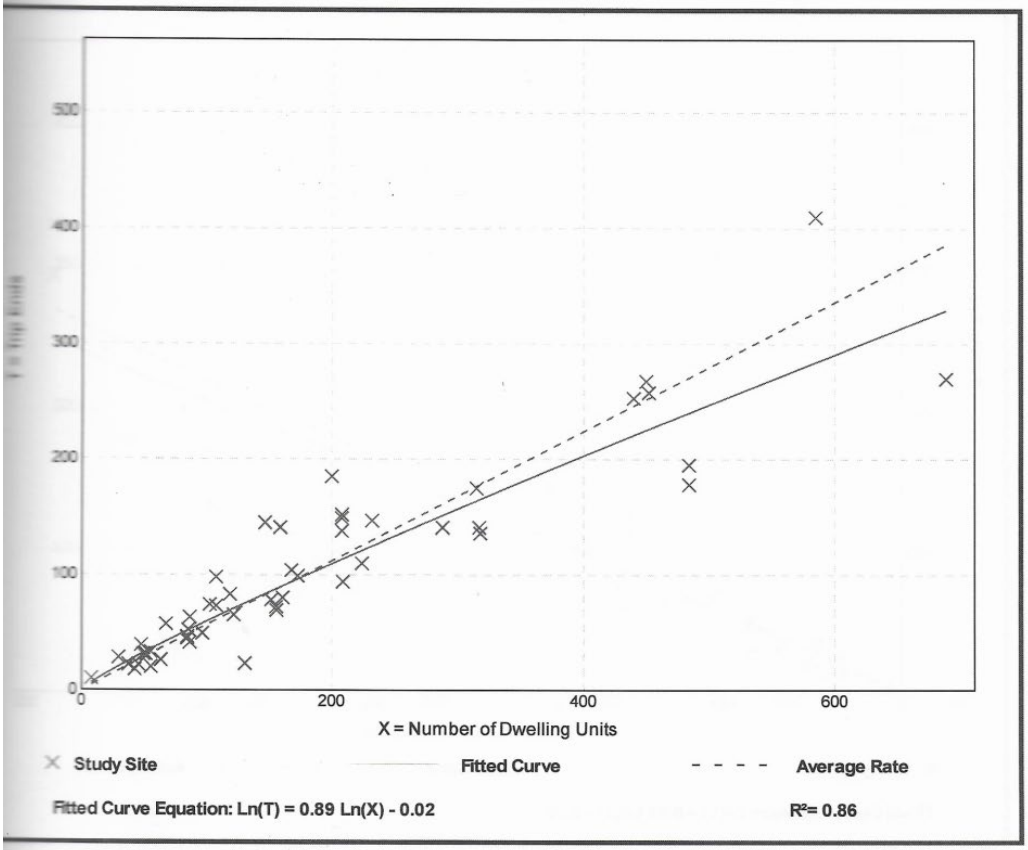
Multifamily Housing (Low-Rise)
(220)

Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 50
Avg. Num. of Dwelling Units: 187
Directional Distribution: 63% entering, 37% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.56	0.18 - 1.25	0.16

Data Plot and Equation



Trip Generation Manual 10th Edition • Volume 2: Data • Residential (Land Uses 200–299) 33

Figure 18: ITE Trip Generation, 10th Edition

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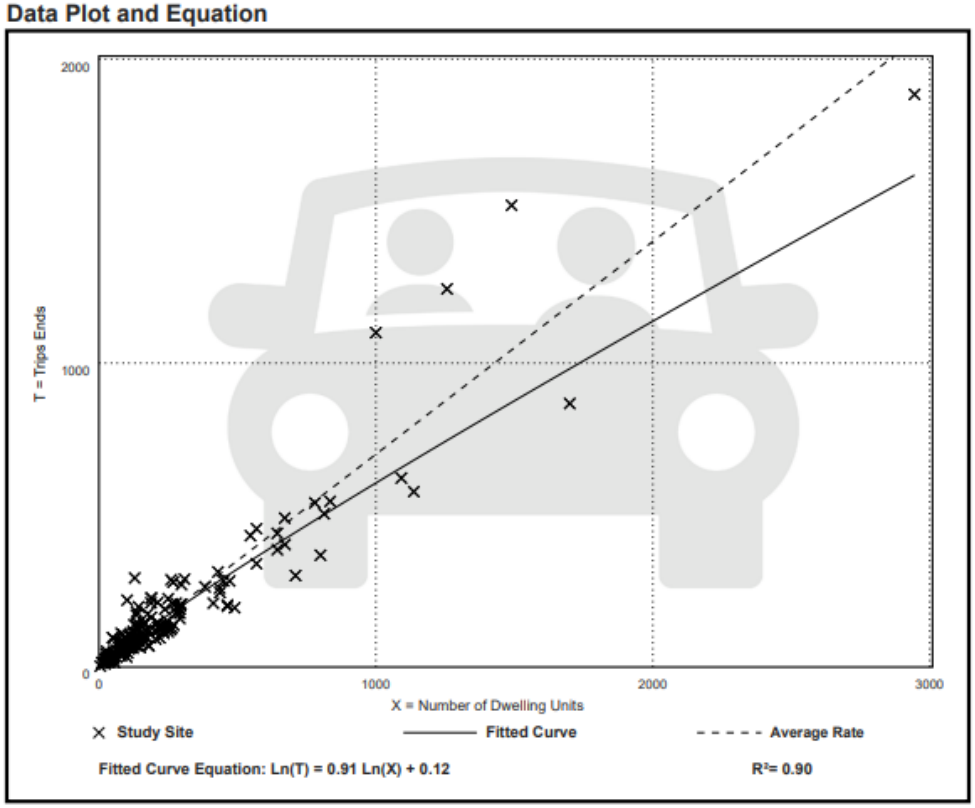
Single-Family Detached Housing
(210)

Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: General Urban/Suburban
Number of Studies: 192
Avg. Num. of Dwelling Units: 226
Directional Distribution: 26% entering, 74% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.70	0.27 - 2.27	0.24

Data Plot and Equation



220 Trip Generation Manual 11th Edition • Volume 3

Figure 19: ITE Trip Generation, 11th Edition

Single-Family Detached Housing
(210)

Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: General Urban/Suburban
Number of Studies: 208
Avg. Num. of Dwelling Units: 248
Directional Distribution: 63% entering, 37% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.94	0.35 - 2.98	0.31

Data Plot and Equation

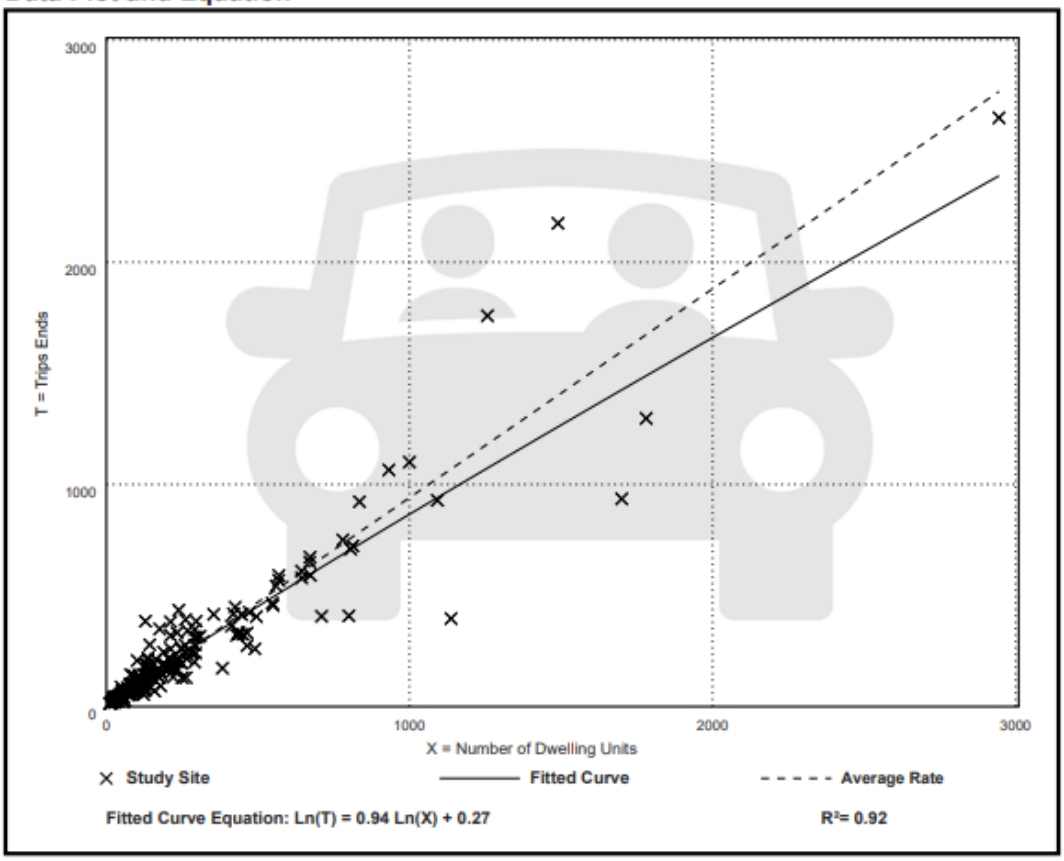


Figure 20: ITE Trip Generation, 11th Edition

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Appendix D

Supplemental Traffic Counts & Data

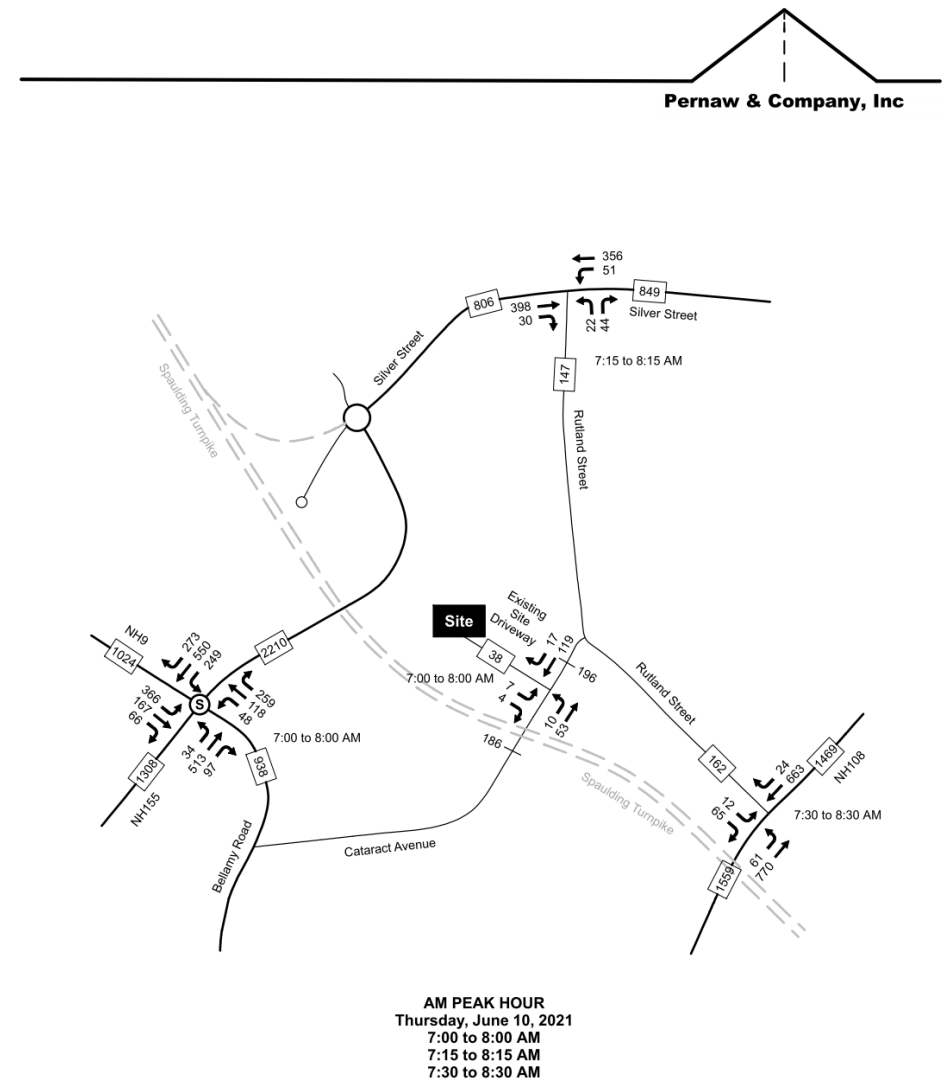


Figure 21: Pernaw & Company, Inc 2021 AM traffic Counts

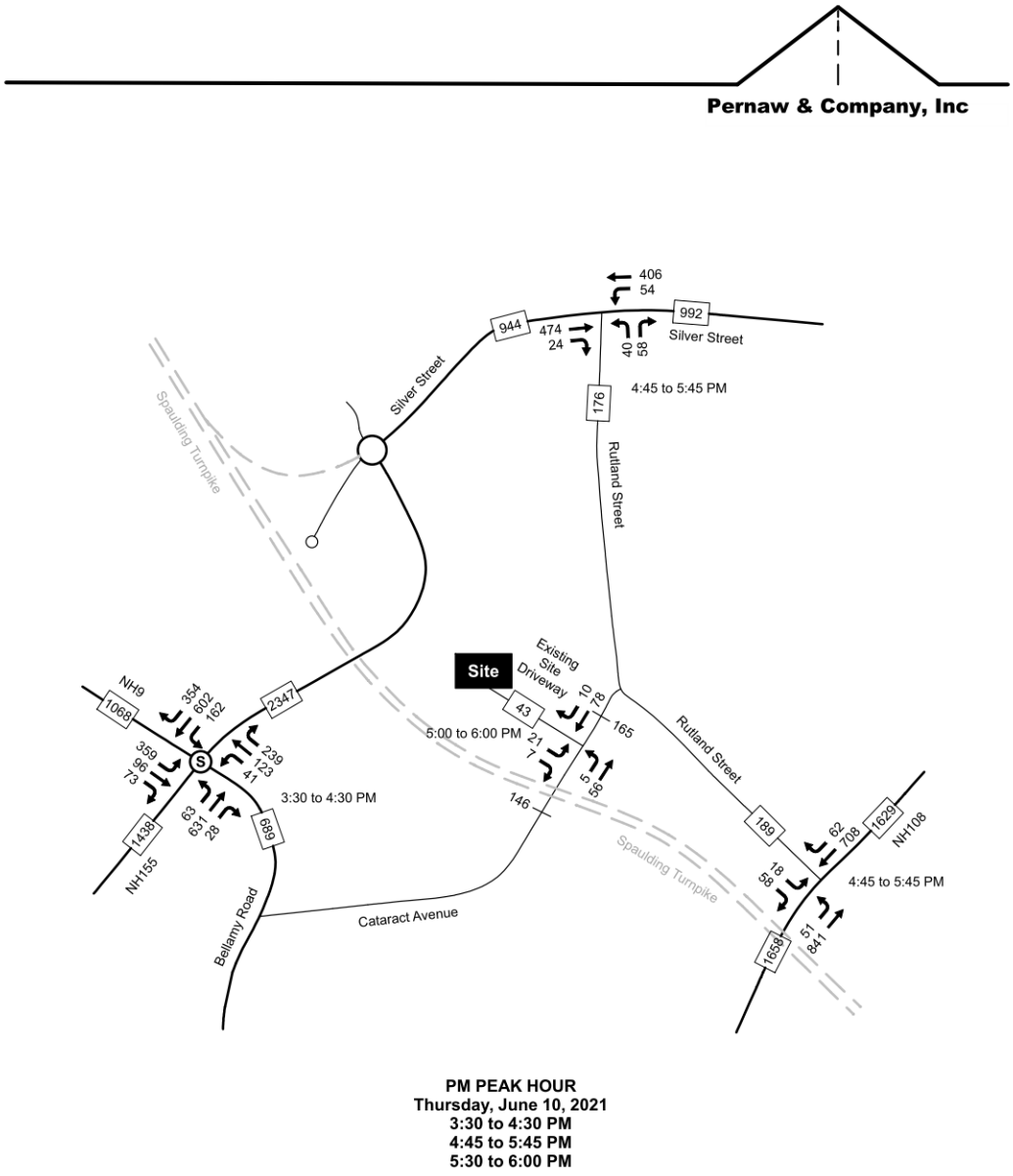
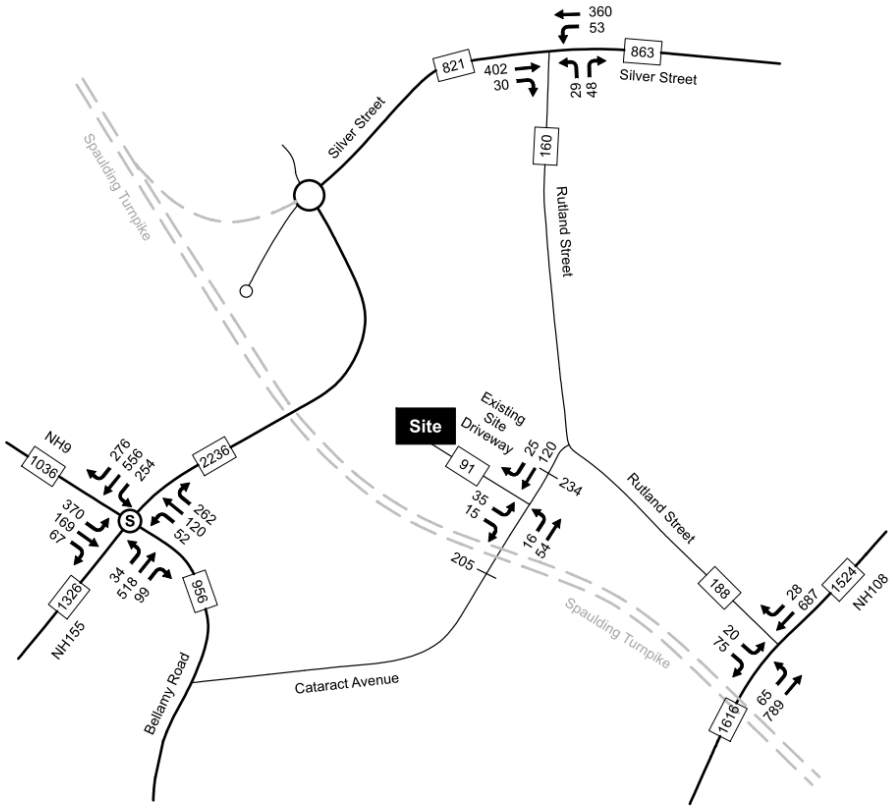


Figure 22: Pernaw & Company, Inc 2021 PM traffic Counts

Pernaw & Company, Inc



NORTH

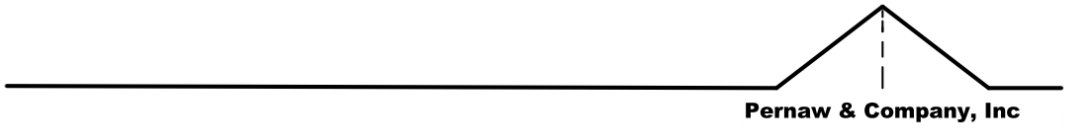
2098A

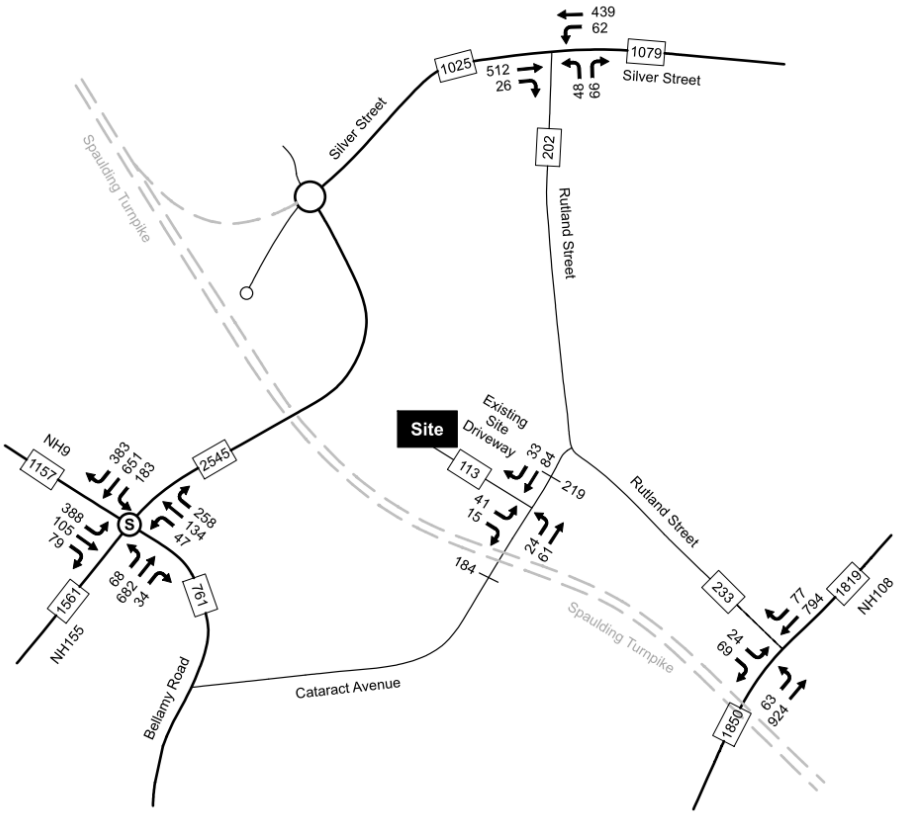
Figure 5A

2022 Build Traffic Volumes - AM Peak Hour

Traffic Impact Assessment, Proposed Residential Development, Dover, New Hampshire

Figure 23: Pernaw & Company, Inc 2022 AM traffic Counts Macintosh adjusted





PM PEAK HOUR

NORTH

2098A

Figure 5B

2022 Build Traffic Volumes - PM Peak Hour

Traffic Impact Assessment, Proposed Residential Development, Dover, New Hampshire

Figure 24: Pernaw & Company, Inc 2022 PM traffic Counts Macintosh adjusted

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Time	AM Peak Hour Porch Light Drive	# Trips	Turn Type	% Distribution
Total Trips	7.4			
Trips Enter from Cataract Ave Eastbound		1.0	Right	13.7
Trips Enter from Cataract Ave Westbound		0.8	Left	11.3
Trips Exit to Cataract Ave Eastbound		3.1	Right	41.2
Trips Exit to Cataract Ave Westbound		2.5	Left	33.8

Time	PM Peak Hour Porch Light Drive	# Trips	Turn Type	% Distribution
Total Trips	9.9			
Trips Enter from Cataract Ave Eastbound		3.3	Right	33.7
Trips Enter from Cataract Ave Westbound		2.9	Left	29.3
Trips Exit to Cataract Ave Eastbound		2.0	Right	19.8
Trips Exit to Cataract Ave Westbound		1.7	Left	17.2

Figure 25: Porch Light Drive Trip Generation

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DRAINAGE ANALYSIS

&

EROSION & SEDIMENT CONTROL PLAN

Prepared for:

Knox Marsh Development LLC
242 Central Avenue
Dover, NH 03820

Land of:

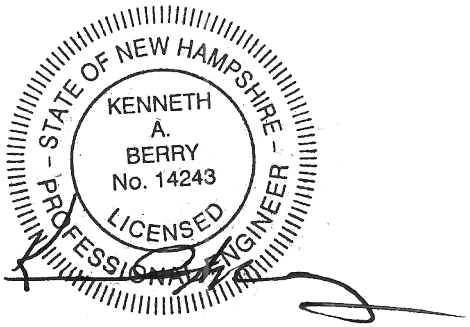
5 Sherman Street LLC
242 Central Avenue
Dover, NH 03820

1 Cold Springs Road, Dover, NH
Tax Map H, Lot 47-A

Prepared By:

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

Project Number:
DB 2023-126



September 1, 2024
Revised: October 17, 2024
Revised: March 4, 2025

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USGS Quadrangle Location Map

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2.0 Proposed Subdivision Analysis Page 4

3.1 Full Comparative Analysis Page 7

4.0 Erosion & Sediment Control, BMP's Page 8

5.0 Demonstration of Compliance with Dover Chapter 153-14 Page 16

6.0 Conclusion Page 31

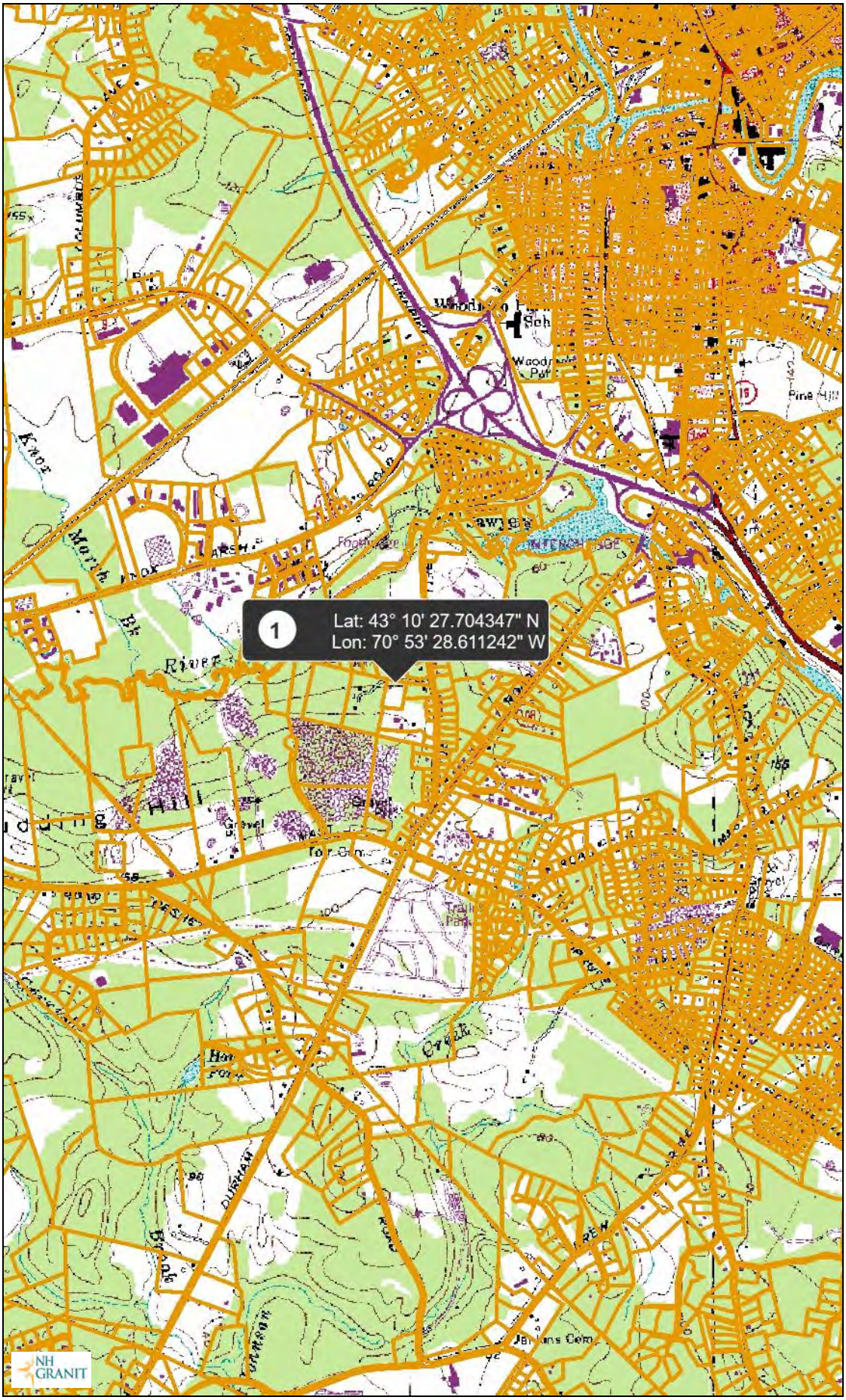
Appendix I - Existing Conditions Analysis
25 Yr-24 Hr. Full Summary
2 Yr-24 Hr. Node Listing
10 Yr-24 Hr. Node Listing
25 Yr-24 Hr. Node Listing
50 Yr-24 Hr. Node Listing
100 Yr-24 Hr. Node Listing

Appendix II - Proposed Conditions Analysis
25 Yr-24 Hr. Full Summary
2 Yr-24 Hr. Node Listing
10 Yr-24 Hr. Node Listing
25 Yr-24 Hr. Node Listing
50 Yr-24 Hr. Node Listing
100 Yr-24 Hr. Node Listing

Appendix III - Calculations, Charts, & Graphs
Extreme Precipitation Tables
Rip Rap Calculations
AoT Stormwater Treatment Spreadsheets
NRCS USDA Web-soil Map
Site Specific Soil Survey Report & Plan
Stormwater System Management: Inspection & Maintenance Manual & Plan
Watershed Report Card, 303(d) List, & ORW List
Infiltration Feasibility Study & Report
Ksat New Hampshire Manual
Filtrexx Specifications Sheets

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

Map by NH GRANIT



Legend

- Parcels
- State
- County
- City/Town

Map Scale

1: 24,000

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Map Generated: 1/11/2024

Notes



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Legend

- Parcels
- State
- County
- City/Town

Map Scale

1: 10,000

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Map Generated: 1/11/2024

Notes



DESIGN METHOD OBJECTIVES

The proposal is to develop the parcel as an extension of Sophie Drive (Alteration of Terrain Permit #AoT-2127) with seven new single-family homes while preserving the existing house. An 878' long private road, measured around the cul-de-sac, will be constructed off Sophie Drive to provide access to the development. The development will be supported by an Infiltration Rain Garden, municipal water and municipal sewer.

Existing and Proposed Conditions analyses were conducted for the purpose of estimating the peak rate of stormwater run-off and to subsequently design adequate mitigation of drainage. The site was analyzed in seven subcatchments, from the Sophie Drive development to Cold Springs Road with three Final Analysis Points. Designing two watershed models we have compared the differences in these rates of peak run-off and surface water volume. Sheet W-1 outlines the characteristics of the site in its existing or pre-construction conditions. The second analysis displays the proposed (post-construction) conditions (See Sheet W-2). The analysis was conducted using data for; 2 Yr - 24 Hr (3.62"), 10 Yr - 24 Hr (5.46"), 25 Yr -24 Hr (6.91"), 50 Yr - 24 Hr (8.27"), and 100 YR - 24 Hr (9.89") 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). A 15% increase factor was applied to the rainfall totals (Reflected in the totals listed above) due to Dover being a coastal community

1.0 Existing Conditions Analysis:

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

The existing property area is 2.71 acres, with a single-family home, barn, adjacent paved parking areas and a mixture of lawn and wooded area. There are seven subcatchments that total 4.26 acres of land which include the areas that will be affected by the proposed development and off-site contributing subcatchment area. USDA / NRCS websoil data was used to determine the offsite soil type. On-site soils were determined by Site Specific Soil Survey conducted by John P. Hayes, III, CSS #87. On-site soils are made up of Hydrologic Soil Groups A & C and off-site soils are all HSG A. On-site soils are made up of Windsor (HSG A) and its clay subsoil variant (HSG C), however, the majority of the site is considered disturbed soil. Disturbed soil is delineated as udorthents (HSG A) or endoaquents (HSG C).

Runoff from the parcel is within the Bellamy River Watershed which has impaired waters of Mercury, NE Regional Mercury TMDL, December 20, 2008, TMDL #33883, Escherichia coli (NH Statewide Bacteria TMDL # 39269), Aluminum, pH, Benthic-Macroinvertebrate Bioassessment, and Habitat Assessment (Streams). This is a Non-Outstanding Resource Water based on the NHDES evaluation. Bacteria is the only established New Hampshire TMDL with the exception of Mercury which is covered by the NE Regional Mercury TMDL # 33883.

Final Reach #200:

Subcatchment #1 consists of land on the abutting parcel to the east of the locus parcel. The limits of this subcatchment extend west from the roof lines of the three buildings closest to the locus parcel to the limits of a constructed stone swale. Runoff flows generally north to this swale where it is directed toward **Final Reach #200** (a non-point discharge final analysis point) through a pair of subsequent overland reaches through **Subcatchment #2 (Reaches #1a & #1b)**.

Subcatchment #2 is made up of land area west of the stone swale and extends west to the edge of the existing driveway on the locus parcel and south to the rear of the nearest multi-family building off Sophie Drive. The runoff from this area drains north to **Final Reach #200**.

Subcatchment #8 is comprised solely of the northeastern quarter of the roof of an abutting building on Banner Drive. Runoff is collected in a gutter and outlets to **Final Reach #200** through a series of overland reaches **(Reaches #8a-#8d)**.

Final Reach #500:

Subcatchment #3 is located in the southern portion of the locus parcel extending south to the rear of the nearest multi-family building off of Sophie Drive. Runoff flows north to a small manmade pond within the existing driveway loop **(Pond #3)**. This pond detains runoff and outlets through a 6" pipe to a series of overland reaches **(Reaches #3a, #3b, & #4b)** to **Final Reach #500**, a non-point discharge final analysis point.

Subcatchment #4 encompasses a large portion of the central area of the locus parcel. The limits of this subcatchment are defined by the residential buildings on the parcel as well as the natural topography through the middle of the driveway loop and a small depression to the north. This depression is evaluated as a pond device **(Pond #4)** with a natural berm and a weir where excess runoff outlets toward **Final Reach #500** through a pair of overland reaches **(Reaches #4a & #4b)**.

Subcatchment #5 consists of the majority of the northern side of the locus parcel extending from the property line south to two high points, one to the east and one to the west. The interior limits of the subcatchment are defined by the driveway on the parcel and the roof lines of the residential house and barn as well as the natural topography extending to the backside of **Pond #4**. Runoff naturally flows in a northerly direction to **Final Reach #500**.

Subcatchment #7 is made up solely of the northwestern quarter of the roof of an abutting building on Banner Drive. Runoff is collected in a gutter and outlets to **Pond #3** through a series of overland reaches **(Reaches #7a-#7c)**.

Final Reach #600:

Subcatchment #6 is located in the southwestern corner of the locus parcel extending south to a retaining wall in the rear corner of the development off of Sophie Drive. Runoff flows northwest to the property line which is being analyzed as **Final Reach #600**, a non-point discharge final analysis point.

Final Reach #1000:

Subcatchment #1a is a small area of land between **Subcatchments #1 & #2** which represents the portion of Sophie Drive that contributes runoff to the existing Banner Drive project. Runoff flows east to **Final Reach #1000** which is a non-point discharge analysis point.

2.0 Proposed Conditions Analysis:

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

The proposed conditions analysis consists of fourteen subcatchments. The runoff from the proposed development is collected and treated in a single Infiltration Rain Gardens where the Water Quality Volume is treated by the bio-media and from the five storms evaluated runoff does not leave the rain garden until the 50 Year storm event where runoff flows over the spillway at a depth of 0.03'.

Final Reach #200:

Subcatchment #2 is decreased in size due to the location of Infiltration **Rain Garden #106 (Pond #106)** and the proposed road extension. Runoff still flows north to **Final Reach #200**.

Final Reach #500:

Subcatchment #1 remains unchanged except for a small area where the proposed road extension is being constructed. Runoff has been redirected to **Final Reach #500** as a result of the proposed extension of Sophie Drive. Runoff now flows to the edge of Sophie Drive and into Pond #106 via **Catch Basin #5 (Pond #C05)** and **Drain Manhole #2 (Pond #D02)**.

Subcatchments #5 is considerably reduced in size due to the location of the proposed roadway and development. Runoff still flows generally north to **Final Reach #500**.

Subcatchments #7 & #8 are both unchanged in area and cover. However, the reaches utilized are changed with both subcatchments collected in their respective gutters and outletting into the conveyance swale in **Subcatchment #30** directed at the inlet sump

(Pond #30). **Subcatchment #7** is now conveyed through Reaches **#7a-#7e**, and **Subcatchment #8** now utilizes **Reach #8 & Reaches #7c-#7e**.

Subcatchment #30 encompasses the land along the south and east property lines of the parcel. The limits of this subcatchment are defined by the proposed roof lines to the north and west of the property lines as well as by the existing conditions of the development to the south and east. Runoff primarily flows east and north via a conveyance swale along the property line directing runoff to an inlet sump **(Pond #30)** which is directed to **Infiltration Rain Garden #106 (Pond #106)**.

Runoff from the majority of the developed area including the entirety of the Sophie Drive extension and the related paved parking is routed through a closed drainage system outletting to **Infiltration Rain Garden #106 (Pond #106)**. This closed drainage system is made up of three primary branches (**Pond #C01** to the south & **Ponds #C02 #C03 & #C04** to the north). All deep sump catch basins outlet into **Drain Manhole #1 (Pond #D01)** and flows into **Infiltration Rain Garden #106**.

Subcatchment #31 is made up of the majority of the cul-de-sac and the surrounding land. The limits of this subcatchment are defined by the edge of the cut in the open space area and along the southern portion of the cul-de-sac and the high point near the mouth of the cul-de-sac. Runoff flows inward toward the detention area within the cul-de-sac and into **Catch Basin #1 (Pond #C01)** where it enters the closed drainage system.

Subcatchment #32 is comprised of the western half of the entrance of the cul-de-sac and the related half of the parking area before the entrance of the cul-de-sac. Runoff enters the closed drainage system via **Catch Basin #2 (Pond #C02)**.

Subcatchment #33 encompasses the majority of the southern side of Sophie Drive. The limits of this subcatchment extend from the crown of Sophie Drive to the outer edge of the sidewalk on the southern side of the road including a small grassed area east of the sidewalk leading and along the eastern half of the parking area and cul-de-sac. Runoff flows west to **Catch Basin #3 (Pond #C03)** where it enters the closed drainage system.

Subcatchment #34 consists solely of the northern side of the Sophie Drive extension with **Pond #106** directly north of the majority of the subcatchment. Runoff flows west entering the closed drainage system via **Catch Basin #4 (Pond #C04)**.

Subcatchment #106 is made up of the land area contributing runoff directly to **Infiltration Rain Garden #106 (Pond #106)**. The limits of this subcatchment are defined by the berm of the pond and the grading of the retaining wall to the south. Runoff that is not infiltrated into the soil outlets to **Final Reach #500** through an emergency spillway.

Final Reach #600:

Subcatchment #6 is considerably reduced in size as a result of the construction of the residential buildings, the related parking, and site grading. Runoff still flows northwest to the property line being analyzed as **Final Reach #600**.

Final Reach #1000:

Subcatchment #1a is increased in size due to the location of the high point of Sophie Drive and the proposed curbing of the roadway. Runoff still flows east to **Final Reach #1000**. (See Comparative Analysis For analysis explanation.)

3.0a Stormwater Treatment:

Treatment takes place within the rain garden w/ infiltration designed to support the development on site. Pre-treatment will be provided in the deep sump catch basins. Subcatchment #30 does not require pre-treatment due to the residential roof and grass coverage. The project treats stormwater beyond the water quality volume, as the spillway is not active until the 50YR storm event.

3.0b Stormwater Infiltration:

Groundwater recharge volume requirements are satisfied by Infiltration Rain Garden #106 (Pond #106) (Sheet P-106). See "Infiltration Feasibility Study" also prepared by Berry Surveying & Engineering and published on the same day, attached.

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 #200	Existing	0.04	0.20	0.66	1.39	2.44
	Proposed	0.00	0.01	0.04	0.10	0.23
Final Reach #500	Existing	0.09	0.84	2.15	3.91	7.16
	Proposed	0.05	0.52	1.18	1.93	5.46
Final Reach #600	Existing	0.00	0.02	0.11	0.30	0.67
	Proposed	0.00	0.00	0.01	0.04	0.12
Final Reach #1000*	Existing	0.06	0.11	0.16	0.20	0.25
	Proposed	0.16	0.25	0.32	0.38	0.46

ANALYSIS COMPONENT: VOLUME (Acre Feet)

		2 Yr	10 Yr	25 Yr	50 Yr	100 Yr
Final Reach #200	Existing	0.008	0.046	0.098	0.160	0.248
	Proposed	0.000	0.003	0.007	0.013	0.021
Final Reach #500	Existing	0.031	0.151	0.304	0.472	0.697
	Proposed	0.018	0.074	0.138	0.260	0.572
Final Reach #600	Existing	0.000	0.008	0.021	0.038	0.063
	Proposed	0.000	0.001	0.004	0.009	0.016
Final Reach #1000*	Existing	0.004	0.008	0.011	0.015	0.019
	Proposed	0.012	0.019	0.025	0.031	0.037

***Final Reach #1000** ultimately contributes runoff to **Infiltration Rain Garden #104** through a closed drainage system within Sophie Drive prior to the analysis area. This rain garden was constructed as a part of the original Sophie Drive construction (AoT-2127). Infiltration Rain Garden #104 constructed as part of AoT-2127, has the water quality capability to treat this additional 2,178 Sq. Ft. of area. **Subcatchment #1** is also part of the prior project area and contributed runoff to **Infiltration Rain Garden #102 (Pond #102),** constructed as part of AoT-2127. As a result of the extension of Sophie Drive, that runoff from **Subcatchment #1** is now being routed to **Infiltration Rain Garden #106 (Pond #106)**, therefore decreasing the impact on **Pond #102 from the original approval.**

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, a Notice of Intent is required to be submitted to the US EPA. This project will be covered by the Construction General Permit. 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, and that wood chips are not an allowed component of the erosion control mulch berm mix.

Culvert Inlet Sumps & Cross Culvert w/ Flared End Sections

Description: In one location, to capture the surface water runoff that is trapped within the grading of residential lot development, 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 with a flared end section and fence post.

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/Drain Manhole

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. 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 intention is to for the swale to be a minimum of 1' deep.

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.

Infiltration Rain Garden (Bio-Retention System)

Design Intent: An infiltration rain garden (P-106) is designed and located to mitigate and infiltrate runoff from paved, grassed, roofs, and gravel surfaces conveyed to the practice via deep sump catch basin/drain manhole or inlet sump.

Description: A bioretention system (sometimes referred to as a "rain garden") is a type of filtration BMP designed to collect and filter moderate amounts of stormwater runoff using conditioned planting soil beds, gravel beds and vegetation within shallow depressions. The bioretention system may be designed with an underdrain, to collect treated water and convey it to discharge, or it may be designed to infiltrate the treated water directly to the subsoil. (In this case it is designed to infiltrate.) Bioretention cells are capable of reducing sediment, nutrients, oil and grease, and trace metals. Bioretention systems should be sited in close proximity to the origin of the stormwater runoff to be treated. The major difference between bioretention systems and other filtration systems is the use of vegetation. A typical surface sand filter is designed to be maintained with no vegetation, whereas a bioretention cell is planted with a variety of grass, shrubs, and perennials whose roots assist with pollutant uptake. The use of vegetation allows these systems to blend in with other landscaping features. See SWM Volume 2, 4-3.4c, Treatment Practices, Bio-Retention System, page 110. Qualified Professionals such as Berry Surveying & Engineering, as retained, or another qualified professional as retained shall be retained for drainage and invasive species inspections.

Construction Considerations: After the stone and bio-media has been installed, Filtrexx Silt Soxx, or approved equal, will be installed at the toe of slope, at the intersection between the berm and bio-media. This will remain until the slopes of the berm are stable. This specification is intended to protect the bio-media. Slopes will be stabilized within 3 working days of achieving final grade.

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. Or scarification of the surface will probably be required. This is to be inspected by the design engineer per plan.

See Erosion and Sediment Control Plan. It is recommended that the contractor take measures to protect the infiltration surface from sedimentation caused by erosion on the side slopes tracking is not permitted on the infiltration surface. Excavations should take place on the outside limits of the infiltration system where feasible. If tracking does take place, scarification is required prior to be backfill of loam and seed.

After the infiltration system area is excavated to the final design elevation, the floor should be deeply tilled with a rotary tiller or disc harrow to restore infiltration rates, followed by a pass with a leveling drag. Do not place infiltration systems into service until the contributing areas have been fully stabilized.

BS&E to inspect the bottom of excavation prior to the installation of select materials. Remove all organic material prior to select materials. Grade to be returned with granular materials.

Maintenance Considerations: Systems should be inspected 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. Pretreatment measures should be inspected at least twice annually, and cleaned of accumulated sediment as warranted by inspection, but no less than once annually. Trash and debris should be removed at each inspection. At least once annually, system should be inspected for drawdown time. If bioretention system does not drain within 72-hours following a rainfall event, then a qualified professional should assess the condition of the facility to determine measures required to restore filtration function or infiltration function (as applicable), including but not limited to removal of accumulated sediments or reconstruction of the filter media. Vegetation should be inspected at least annually, and maintained in healthy condition, including pruning, removal and replacement of dead or diseased vegetation, and removal of invasive species. All 2:1 side slopes within the BMP will be maintained via weedwhacker.

Rip Rap Outlet Protection

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

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

Vegetated Stabilization

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

Virginia Wild Rye	Native	FACW-
Little Bluestem	Native	FACU
Big Bluestem	Native	FAC
Red Fescue	Native	FACU
Switch Grass	Native	FAC
Partridge Pea	Native	FACU
Showy Tick Trefoil	Native	FAC
Butterfly Milkweed	Native	NI
Beggar Ticks	Native	FACW
Purple Joe Pye Weed	Native	FAC
Black Eyed Susan	Native	FACU-
Total	**25**	**0.57**

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

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

Rain Garden Mix: The grass that is planted within an infiltration rain garden will be a mix designed for both inundation and dry conditions such as Ernst Seeds, Rain Garden Mix ERNMX-180-1.

Stabilized Construction Entrance

A temporary gravel construction entrance provides an area where mud can be dislodged from tires before the vehicle leaves the construction site to reduce the amount of mud

and sediment transported onto paved municipal and state roads. The stone size for the pad should be 3" coarse aggregate, and the pad itself constructed to a minimum length of 75' for the full width of the access road. The aggregate should be placed at least six inches thick. A plan view and profile are shown on Sheet E-101- Erosion & Sediment Control Detail Plan. (If applicable).

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.

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. Start building construction. (See Plan).

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 45 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.

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.

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. Roadways, driveways and cut and fill slopes must be stabilized within 72 hours of achieving final grade.

11. Stabilization means:

11.1. A minimum of 85% of vegetative cover has been established.

11.2. A minimum of 3 inches of non-erosive material such as stone or rip rap has been installed, or

11.3. Erosion control blankets have been installed.

12. This project is to be managed in a manner that meets the requirements and intent of RSA 430:53 and chapter AGR 3800 relative to invasive species.

13. The NHDES stormwater manual, in three volumes, dated December 2008, is a part of this plan set and the more restrictive will govern. (NH SWM)

Inspection and Maintenance Schedule

Sediment control measures will be inspected during and after storm events to ensure that the practice still has integrity and is not allowing sediment to pass. Depending on SWPPP criteria, all controls will be inspected once every 7 days and after storm events. Inspection reports must be submitted to City of Dover Engineering Department and in conformance with the NHDES Alteration of Terrain Permit if required. 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 Erosion and Sediment Control Notes on the General Notes (sheet #2) as referenced by the E&SC Plan (sheet #18).

[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 Rain Garden W/ Infiltration, sheet #13. This LID is proposed for the project due to infiltration capacity of the existing soil. A reduction in stormwater runoff volume will occur from the implementation of the LID. 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 #10 on the Erosion & Sediment Control Notes on the General Notes Plan sheet. 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 and road surfaces have been minimized to the extent practical. Landscaping has been proposed throughout with no additional pavement other than the parking and traveled ways

[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 Rain Garden W/ Infiltration #106 and infiltrated. Landscaped areas provide incremental infiltration throughout the site.

(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 an ***Bioretention System***

- *Total Suspended Solids (TSS) reduction of 90%*

- *Total Nitrogen (TN) reduction of 65%*
- *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. 15% coastal escalation has been provided.

[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 reaches.

[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 reaches

[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 26 C,D & E (Windsor 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. Inlet Sump #30P provides 1.28' of freeboard at the 10YR-24HR event. Rain Garden W/ Infiltration #106 provides 3.43' 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 Rain Garden W/ Infiltration #106 Plan, sheet #13.

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

The practice is accessible via Cold Springs Road.

[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 #18. See also E&SC Notes on the General Notes (sheet #2)

[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). Inspection reports will normally be forwarded within 24 hours to the Community Services, Engineering Department.

[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 Plan (sheet #18) and E&SC Notes on the General Notes Plan (sheet #2).

[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.

[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 #18.

[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 #18.

[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 #18) and E&SC Notes on the General Notes Plan (sheet #2), 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 #18) and E&SC Notes on the General Notes Plan (sheet #2), 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 Erosion & Sediment Control note #10 E on the General Notes Plan (sheet #2).

[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 Erosion & Sediment Control note #10 E on the General Notes Plan (sheet #2).

[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 Erosion & Sediment Control note #10 F on the Erosion & Sediment Control Notes on sheet #2 as referenced from the E&SC Plan (sheet #18).

[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 #18.

[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 Rain Garden w/ Infiltration #106.

[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 and sheet E-102.

[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 #3. There are no wetlands, or flood zones within the subject parcel. Likely man-made steep sandy cut slopes exist on site

[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 #4) 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 #4).

[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 within the drainage binder.

[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 ***Bioretention System (also known as a rain garden)***

- *Total Suspended Solids (TSS) reduction of 90%*
- *Total Nitrogen (TN) reduction of 65%*
- *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 a Rain Garden W/ Infiltration.

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

A Rain Garden W/ Infiltration is being utilized.

[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 within the 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 an LID device being an infiltration rain garden. See Final Reach #1000 explanation Section 3.1 herein.

[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 document provided called "Stormwater System Management: Inspection and Maintenance Manual" is provided within the Drainage Binder. Qualified Professionals such as Berry Surveying & Engineering, as retained, or another qualified professional as retained shall be retained for drainage and invasive species inspections.

[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 #33 of the General Notes, sheet #2, which documents this requirement.

6.0 CONCLUSION

Peak rates of runoff are reduced in the post-construction analysis / condition, as compared to the pre-construction peak rates of runoff flow at **Final Reaches #200, #500, & #600.** This reduction occurs during the 2 Yr, 10 Yr, 25 Yr, 50 Yr, and 100 Yr-24 Hr extreme storm events due to the infiltration capabilities of **Rain Garden W/ Infiltration #106**. 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 being less than the 2-year, 24-hour pre-development peak flow rate. The 2-100 year, 24-hour post-development storm volumes have likewise decreased compared to the pre-development volumes at the final reaches.

A Site Specific, Terrain Alteration Permit (RSA 485: A-17) is required for this site plan due to the area of disturbance being 104,000 SF. A Notice of Intent with the EPA is required and the site will operate 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

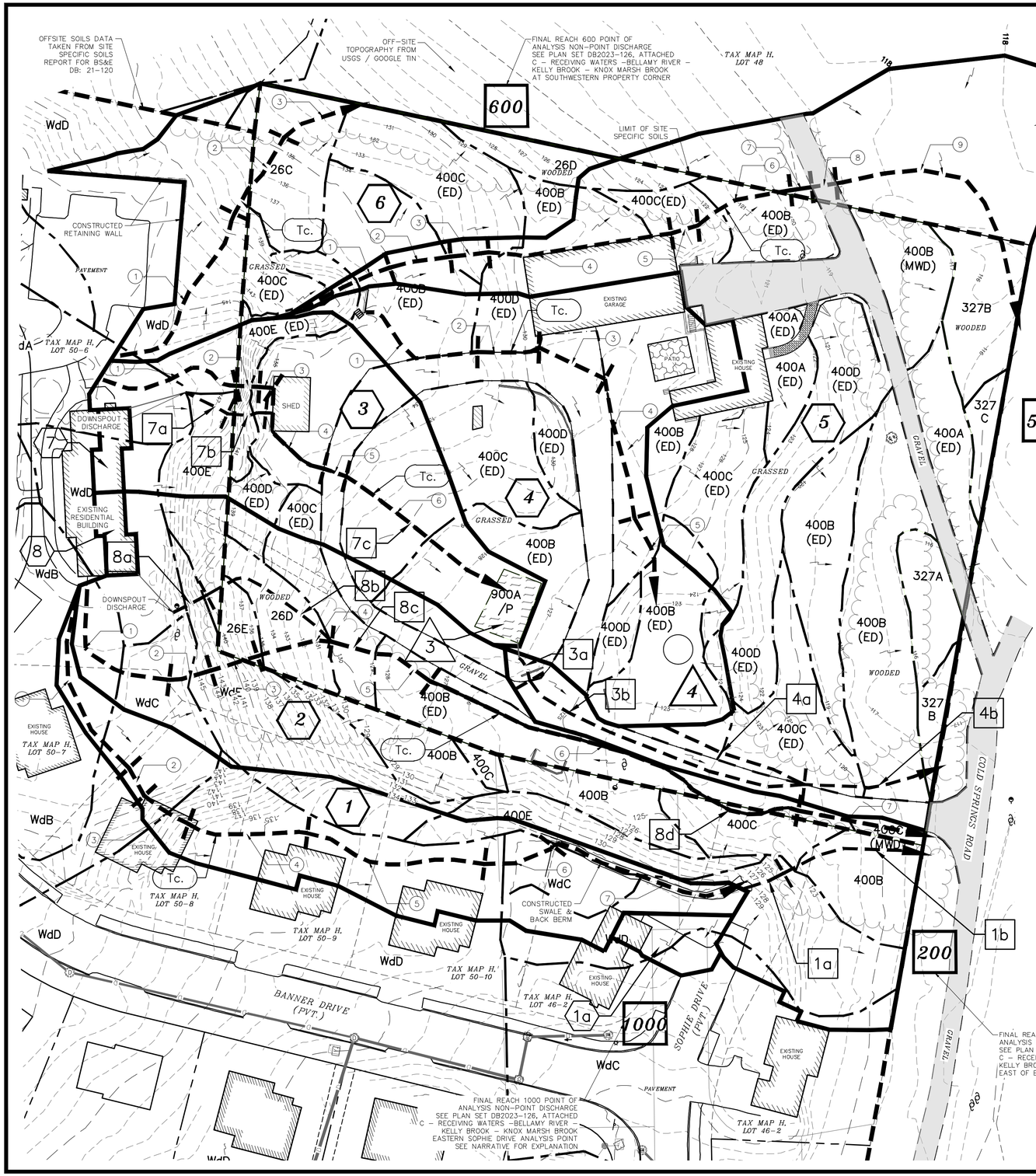
Christopher R. Berry, SIT
Principal, President

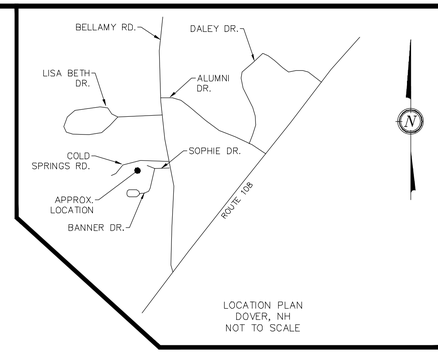
Kenneth A. Berry PE, LLS,
CPSWQ, CPESC, CESSWI
Principal, VP - Technical Operations

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





LOCATION PLAN
DOVER, NH
NOT TO SCALE

NOTES:

1.) OWNER: 5 SHERMAN STREET LLC
242 CENTRAL AVE
DOVER, NH 03820

APPLICANT: KNOX MARSH DEVELOPMENT LLC
242 CENTRAL AVE
DOVER, NH 03820

2.) TAX MAP H, LOT 47-A

3.) S.C.R.D. BOOK 5190, PAGE 597

4.) LOT AREA: 117,854 Sq. Ft., 2.71 Ac.

5.) THE INTENT OF THIS PLAN IS TO SHOW THE EXISTING WATERSHED CONDITIONS OF TAX MAP H, LOT 47-A.

6.) I HEREBY CERTIFY THAT, TO THE BEST OF MY KNOWLEDGE AND BELIEF, THIS PROPERTY DOES NOT FALL WITHIN THE FLOOD PLAIN. FLOOD HAZARD REF: FEMA COMMUNITY #330145, MAP 33017C0320E, DATED: SEPTEMBER 30, 2015.

7.) VERTICAL DATUM BASED ON NAVD88 ELEVATIONS. HORIZONTAL DATUM BASED ON NAD83 STATE PLANE. COORDINATES GATHERED USING CARLSON BRX7 SURVEY GRADE GPS RECEIVERS.

8.) SEE EXISTING CONDITIONS PLAN FOR EXPLANATION OF CONTOURS. SEE SITE SPECIFIC SOIL SURVEY FOR SOILS EXPLANATION.

9.) HYDROCAD USES A SERIES OF NODE SUFFIXES FOR NUMBERING PURPOSES (S=SUBCATCHMENT, P=POND DEVICE, R=REACH), TO SIMPLIFY ANNOTATION THESE SUFFIXES ARE LEFT OFF THE WATERSHED PLANS AND NODE TYPE IS DENOTED BY THE SYMBOL SHAPE ACCORDING TO THE DISPLAYED LEGEND WHICH COINCIDES WITH HYDROCAD GRAPHICS.

10.) REFERENCES WORK FROM ALTERATION OF TERRAIN PERMIT #AoT-2127 (BS&E DB2021-120) FOR BANNER DRIVE AND SOPHIE DRIVE CONSTRUCTION. CONDITIONS SHOWN ARE AS OF THE DATE OF THE AS-BUILT SURVEY. SITE SPECIFIC SOIL CONDITIONS FOR BANNER DRIVE AND SOPHIE DRIVE REFLECT THOSE SHOWN FOR PERMIT #AoT-2127. SEE COLOR WATERSHED SHEETS FOR IMPERVIOUS COVER CLARIFICATION.

SOILS LEGEND

Site Specific Soils			
Symbol	Slopes	Taxonomic Soil Name	Hydrologic Soil Group
26	C,D,E	Windsor	A
327	A,B,C	Windsor Variant (Clay Subsoil)	C
400 (ED)	A,B,C,D,E	Udorthents (Sandy or Gravelly) (Excessively Drained)	A
400 (MWD)	A,B	Udorthents (Sandy or Gravelly Over Silt Loam) (Moderately Well Drained)	A
900	A	Endoaquents (Sandy or Gravelly)	C
Additional Site Specific Soils From Banner Drive			
Wd	C,D,E	Windsor	A
Slopes: A = 0-3% B = 3-8% C = 8-15% D = 15-25% E = 25- 50% F = 50%+ Denominators: /SPD = Somewhat Poorly Drained /P = Poorly Drained /VP = Very Poorly Drained /Rk = Rocky			
NRCS Soils			
Wf	B	Windsor Loamy Fine Sand, Clay Subsoil Variant	A
Ha	B	Hinckley Loamy Fine Sand, Clay Subsoil Variant	A

SYMBOLS LEGEND:

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

LEGEND:

- SOIL BOUNDARY
- LIMIT OF SITE SPECIFIC SOIL SURVEY
- 448A / CtB — NRCS SOIL LABEL
- LIMIT OF SUBCATCHMENT
- TIME OF CONCENTRATION
- DRAINAGE REACH
- S.C.R.D. — STRAFFORD COUNTY REGISTRY OF DEEDS
- TYP. — TYPICAL
- FND — FOUND
- P.O.A. — POINT OF ANALYSIS
- PAVEMENT

WETLAND NOTES:

1. WETLANDS WERE DELINEATED BY JOHN P. HAYES FEBRUARY 19, 2024 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.

STATE OF NEW HAMPSHIRE — JOHN P. HAYES III — CERTIFIED SOIL SCIENTIST
JOHN P. HAYES, III CSS #87

STATE OF NEW HAMPSHIRE — JOHN P. HAYES, III — CERTIFIED WETLAND SCIENTIST
JOHN P. HAYES, III CWS #18

CITY OF DOVER PLANNING FILE #

REVISION	DATE	DESCRIPTION
#1	10-17-24	REVISED UNIT COUNT AND ASSOCIATED MODIFICATIONS

SWPPP EPA SITE MAP (EXISTING)
W-1 EXISTING WATERSHED PLAN
FOR
KNOX MARSH DEVELOPMENT LLC
LAND OF
5 SHERMAN STREET LLC
1 COLD SPRINGS ROAD
DOVER, N.H.
TAX MAP H, LOT 47-A

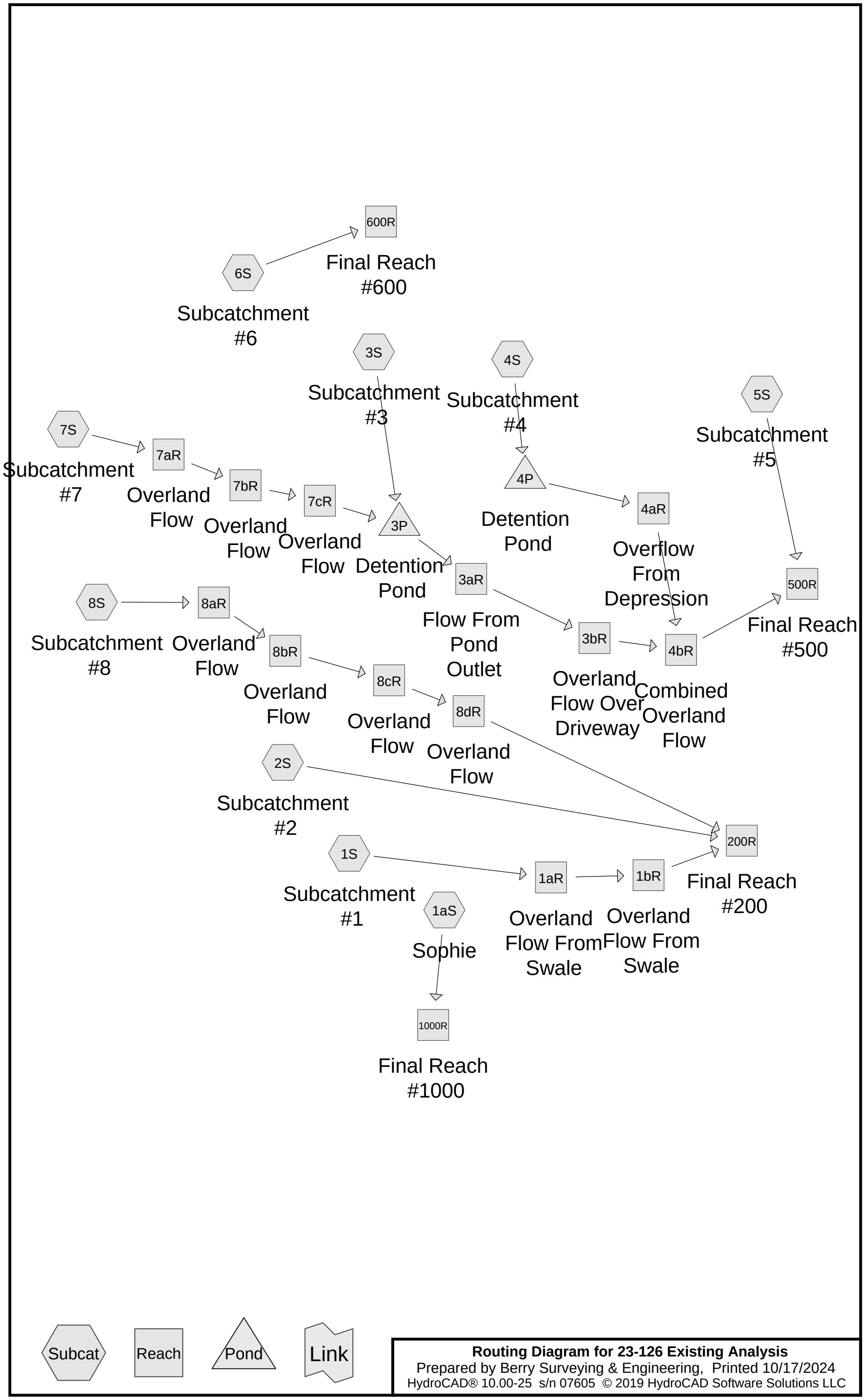
BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 30 FT.
DATE : SEPTEMBER 1, 2024
FILE NO. : DB 2023 - 126

STATE OF NEW HAMPSHIRE — KENNETH A. BERRY No. 14241 — PROFESSIONAL ENGINEER

SHEET 1 OF 2

NOT FOR CONSTRUCTION



Routing Diagram for 23-126 Existing Analysis

Prepared by Berry Surveying & Engineering, Printed 10/17/2024

HydroCAD® 10.00-25 s/n 07605 © 2019 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
2.689	39	>75% Grass cover, Good, HSG A (1aS, 1S, 2S, 3S, 4S, 5S, 6S)
0.030	74	>75% Grass cover, Good, HSG C (5S)
0.060	96	Gravel surface, HSG A (5S)
0.319	98	Paved parking, HSG A (1aS, 2S, 3S, 4S, 5S)
0.191	98	Roofs, HSG A (1aS, 1S, 3S, 4S, 5S, 7S, 8S)
0.017	98	Water Surface, HSG C (3S)
0.850	30	Woods, Good, HSG A (2S, 3S, 5S, 6S)
0.107	70	Woods, Good, HSG C (5S)
4.262	**46**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
4.108	HSG A	1aS, 1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S
0.000	HSG B	
0.154	HSG C	3S, 5S
0.000	HSG D	
0.000	Other	
4.262		**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
2.689	0.000	0.030	0.000	0.000	2.719	>75% Grass cover, Good	1aS, 1S, 2S, 3S, 4S, 5S, 6S
0.060	0.000	0.000	0.000	0.000	0.060	Gravel surface	5S
0.319	0.000	0.000	0.000	0.000	0.319	Paved parking	1aS, 2S, 3S, 4S, 5S
0.191	0.000	0.000	0.000	0.000	0.191	Roofs	1aS, 1S, 3S, 4S, 5S, 7S, 8S
0.000	0.000	0.017	0.000	0.000	0.017	Water Surface	3S
0.850	0.000	0.107	0.000	0.000	0.957	Woods, Good	2S, 3S, 5S, 6S
4.108	**0.000**	**0.154**	**0.000**	**0.000**	**4.262**	**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	3P	127.28	126.95	9.2	0.0359	0.012	6.0	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

Subcatchment1aS: Sophie Runoff Area=1,332 sf 67.57% Impervious Runoff Depth>4.50"
Tc=6.0 min CN=79 Runoff=0.16 cfs 0.011 af

Subcatchment1S: Subcatchment#1 Runoff Area=16,029 sf 9.26% Impervious Runoff Depth>1.11"
Flow Length=436' Tc=10.7 min CN=44 Runoff=0.28 cfs 0.034 af

Subcatchment2S: Subcatchment#2 Runoff Area=39,494 sf 4.03% Impervious Runoff Depth>0.73"
Flow Length=486' Tc=11.5 min CN=39 Runoff=0.32 cfs 0.055 af

Subcatchment3S: Subcatchment#3 Runoff Area=18,098 sf 15.23% Impervious Runoff Depth>1.44"
Flow Length=254' Tc=6.7 min CN=48 Runoff=0.56 cfs 0.050 af

Subcatchment4S: Subcatchment#4 Runoff Area=26,233 sf 28.17% Impervious Runoff Depth>2.15"
Flow Length=250' Tc=9.9 min CN=56 Runoff=1.24 cfs 0.108 af

Subcatchment5S: Subcatchment#5 Runoff Area=64,765 sf 11.53% Impervious Runoff Depth>1.44"
Flow Length=428' Tc=12.0 min CN=48 Runoff=1.67 cfs 0.178 af

Subcatchment6S: Subcatchment#6 Runoff Area=18,362 sf 0.00% Impervious Runoff Depth>0.60"
Flow Length=186' Tc=6.0 min CN=37 Runoff=0.11 cfs 0.021 af

Subcatchment7S: Subcatchment#7 Runoff Area=660 sf 100.00% Impervious Runoff Depth>6.67"
Tc=6.0 min CN=98 Runoff=0.10 cfs 0.008 af

Subcatchment8S: Subcatchment#8 Runoff Area=660 sf 100.00% Impervious Runoff Depth>6.67"
Tc=6.0 min CN=98 Runoff=0.10 cfs 0.008 af

Reach 1aR: Overland Flow From Swale Avg. Flow Depth=0.06' Max Vel=2.17 fps Inflow=0.28 cfs 0.034 af
n=0.035 L=22.4' S=0.2009 '/' Capacity=30.36 cfs Outflow=0.28 cfs 0.034 af

Reach 1bR: Overland Flow From Swale Avg. Flow Depth=0.11' Max Vel=0.88 fps Inflow=0.28 cfs 0.034 af
n=0.080 L=73.2' S=0.0786 '/' Capacity=8.31 cfs Outflow=0.29 cfs 0.034 af

Reach 3aR: Flow From Pond Outlet Avg. Flow Depth=0.13' Max Vel=2.91 fps Inflow=0.64 cfs 0.057 af
n=0.030 L=13.0' S=0.0923 '/' Capacity=11.85 cfs Outflow=0.63 cfs 0.057 af

Reach 3bR: Overland Flow Over Avg. Flow Depth=0.08' Max Vel=1.62 fps Inflow=0.63 cfs 0.057 af
n=0.022 L=153.2' S=0.0294 '/' Capacity=27.77 cfs Outflow=0.53 cfs 0.057 af

Reach 4aR: Overflow From Depression Avg. Flow Depth=0.12' Max Vel=1.31 fps Inflow=1.05 cfs 0.068 af
n=0.035 L=78.7' S=0.0286 '/' Capacity=17.22 cfs Outflow=0.76 cfs 0.068 af

Reach 4bR: Combined Overland Flow Avg. Flow Depth=0.12' Max Vel=1.48 fps Inflow=0.98 cfs 0.126 af
n=0.035 L=68.5' S=0.0365 '/' Capacity=19.46 cfs Outflow=0.89 cfs 0.126 af

Reach 7aR: Overland Flow Avg. Flow Depth=0.03' Max Vel=1.28 fps Inflow=0.10 cfs 0.008 af
n=0.030 L=24.0' S=0.1150 '/' Capacity=40.30 cfs Outflow=0.10 cfs 0.008 af

Reach 7bR: Overland Flow Avg. Flow Depth=0.02' Max Vel=2.22 fps Inflow=0.10 cfs 0.008 af
n=0.030 L=19.7' S=0.5584 '/' Capacity=88.80 cfs Outflow=0.10 cfs 0.008 af

Reach 7cR: Overland Flow Avg. Flow Depth=0.04' Max Vel=0.92 fps Inflow=0.10 cfs 0.008 af
n=0.030 L=152.5' S=0.0475 '/' Capacity=25.91 cfs Outflow=0.09 cfs 0.008 af

Reach 8aR: Overland Flow Avg. Flow Depth=0.02' Max Vel=1.84 fps Inflow=0.10 cfs 0.008 af
n=0.030 L=19.2' S=0.3313 '/' Capacity=68.39 cfs Outflow=0.10 cfs 0.008 af

Reach 8bR: Overland Flow Avg. Flow Depth=0.03' Max Vel=1.20 fps Inflow=0.10 cfs 0.008 af
n=0.035 L=77.0' S=0.1299 '/' Capacity=36.71 cfs Outflow=0.10 cfs 0.008 af

Reach 8cR: Overland Flow Avg. Flow Depth=0.04' Max Vel=0.85 fps Inflow=0.10 cfs 0.008 af
n=0.035 L=55.2' S=0.0498 '/' Capacity=22.73 cfs Outflow=0.10 cfs 0.008 af

Reach 8dR: Overland Flow Avg. Flow Depth=0.04' Max Vel=0.78 fps Inflow=0.10 cfs 0.008 af
n=0.030 L=267.2' S=0.0327 '/' Capacity=21.50 cfs Outflow=0.08 cfs 0.008 af

Reach 200R: Final Reach #200 Inflow=0.66 cfs 0.098 af
Outflow=0.66 cfs 0.098 af

Reach 500R: Final Reach #500 Inflow=2.15 cfs 0.304 af
Outflow=2.15 cfs 0.304 af

Reach 600R: Final Reach #600 Inflow=0.11 cfs 0.021 af
Outflow=0.11 cfs 0.021 af

Reach 1000R: Final Reach #1000 Inflow=0.16 cfs 0.011 af
Outflow=0.16 cfs 0.011 af

Pond 3P: Detention Pond Peak Elev=128.26' Storage=292 cf Inflow=0.65 cfs 0.058 af
6.0" Round Culvert n=0.012 L=9.2' S=0.0359 '/' Outflow=0.64 cfs 0.057 af

Pond 4P: Detention Pond Peak Elev=123.58' Storage=1,920 cf Inflow=1.24 cfs 0.108 af
Outflow=1.05 cfs 0.068 af

Total Runoff Area = 4.262 ac Runoff Volume = 0.475 af Average Runoff Depth = 1.34"
87.66% Pervious = 3.736 ac 12.34% Impervious = 0.526 ac

Summary for Subcatchment 1aS: Sophie

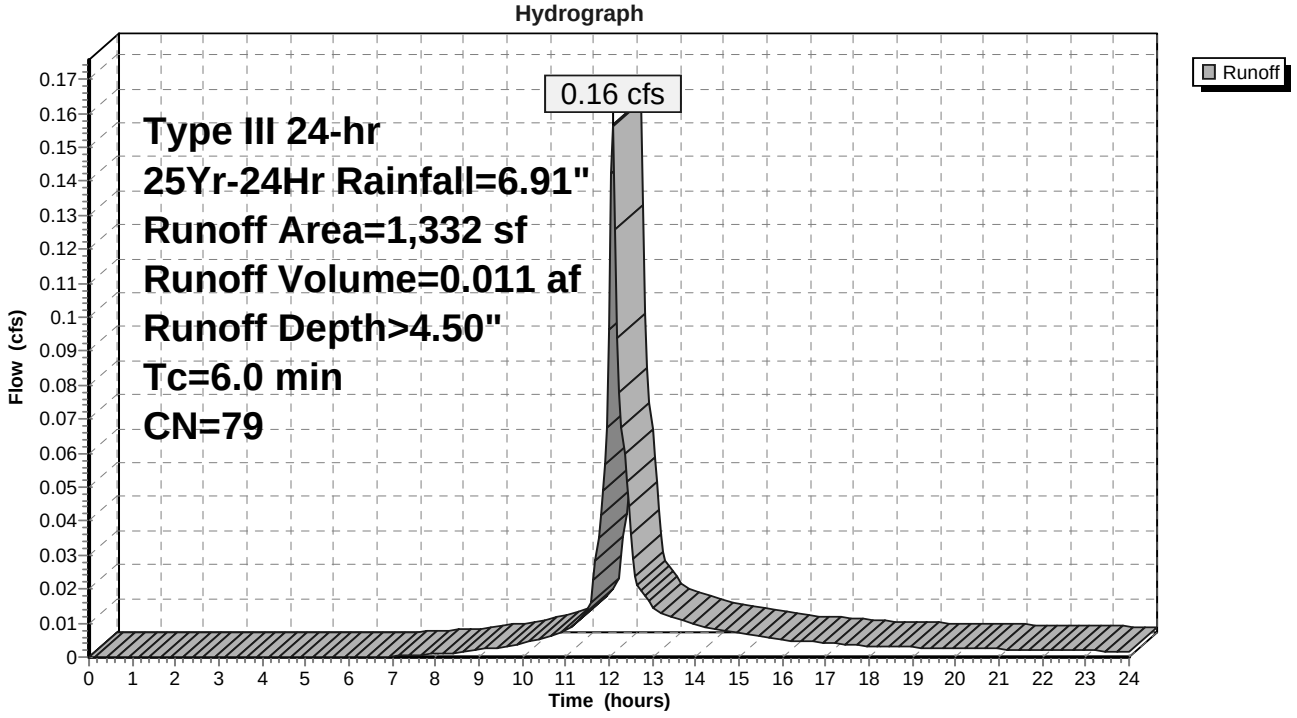
Runoff = 0.16 cfs @ 12.09 hrs, Volume= 0.011 af, Depth> 4.50"

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

Area (sf)	CN	Description
225	98	Roofs, HSG A
432	39	>75% Grass cover, Good, HSG A
675	98	Paved parking, HSG A
1,332	79	Weighted Average
432		32.43% Pervious Area
900		67.57% Impervious Area

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

Subcatchment 1aS: Sophie



Summary for Subcatchment 1S: Subcatchment #1

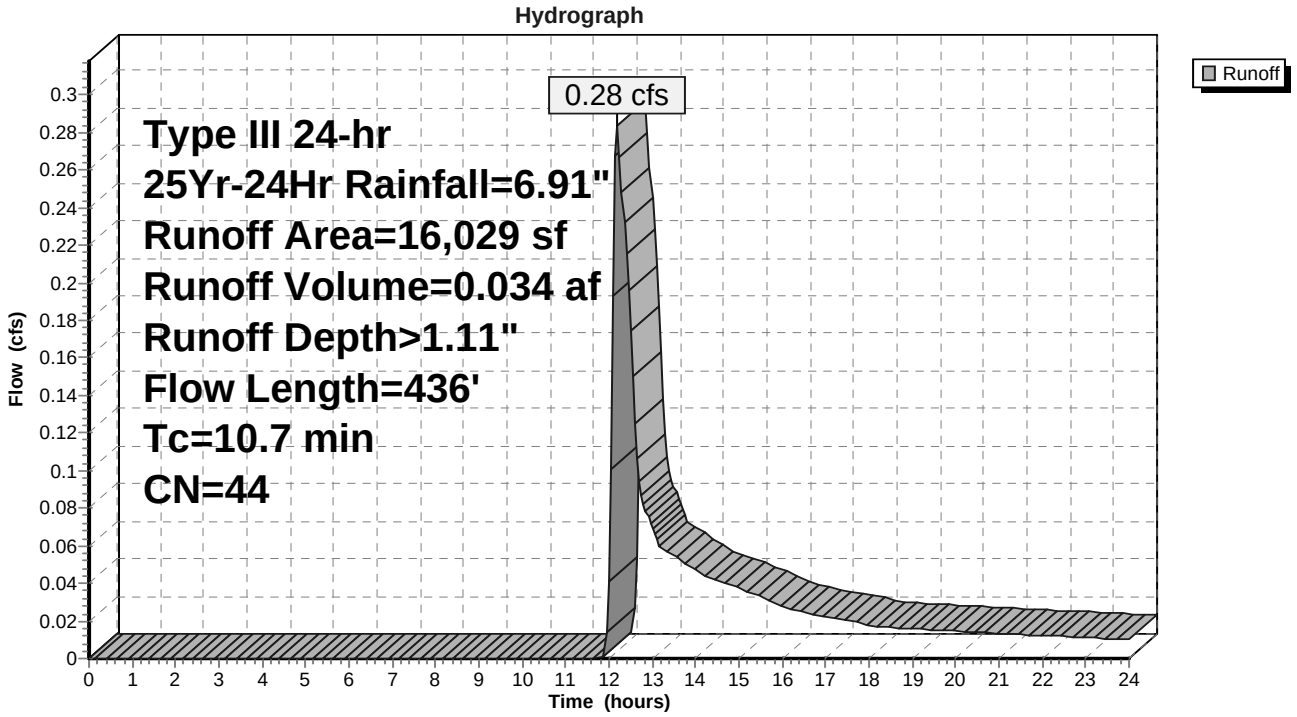
Runoff = 0.28 cfs @ 12.20 hrs, Volume= 0.034 af, Depth> 1.11"

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

Area (sf)	CN	Description
1,484	98	Roofs, HSG A
14,545	39	>75% Grass cover, Good, HSG A
16,029	44	Weighted Average
14,545		90.74% Pervious Area
1,484		9.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	100	0.0325	0.22		**Sheet Flow, Segment #1** Grass: Short n= 0.150 P2= 3.62"
0.2	16	0.0621	1.74		**Shallow Concentrated Flow, Segment #2** Short Grass Pasture Kv= 7.0 fps
0.1	27	0.2991	3.83		**Shallow Concentrated Flow, Segment #3** Short Grass Pasture Kv= 7.0 fps
0.6	62	0.0647	1.78		**Shallow Concentrated Flow, Segment #4** Short Grass Pasture Kv= 7.0 fps
1.3	94	0.0318	1.25		**Shallow Concentrated Flow, Segment #5** Short Grass Pasture Kv= 7.0 fps
0.4	37	0.0402	1.40		**Shallow Concentrated Flow, Segment #6** Short Grass Pasture Kv= 7.0 fps
0.5	100	0.0150	3.67	23.86	**Trap/Vee/Rect Channel Flow, Segment #7** Bot.W=4.50' D=1.00' Z= 2.0 '/' Top.W=8.50' n= 0.040 Earth, cobble bottom, clean sides
10.7	436	Total			

Subcatchment 1S: Subcatchment #1



Summary for Subcatchment 2S: Subcatchment #2

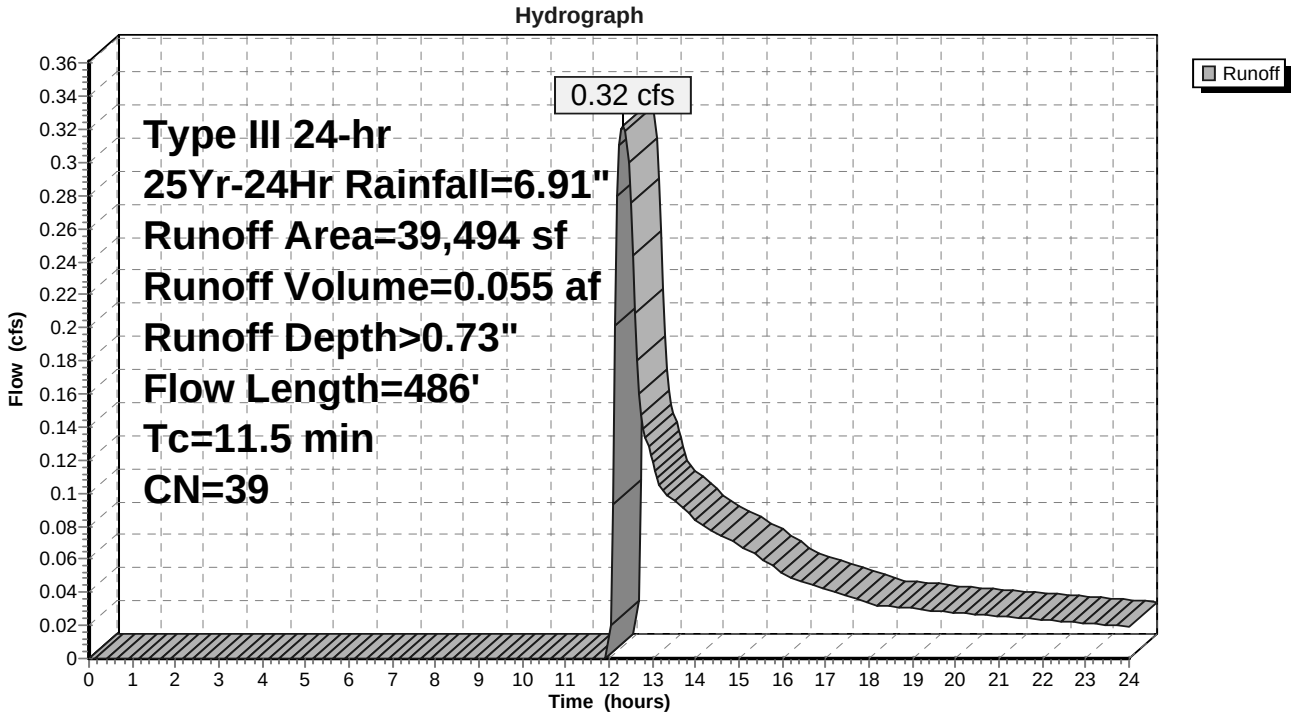
Runoff = 0.32 cfs @ 12.34 hrs, Volume= 0.055 af, Depth> 0.73"

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

Area (sf)	CN	Description
26,833	39	>75% Grass cover, Good, HSG A
1,591	98	Paved parking, HSG A
11,070	30	Woods, Good, HSG A
39,494	39	Weighted Average
37,903		95.97% Pervious Area
1,591		4.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.4	77	0.0455	0.24		**Sheet Flow, Segment #1** Grass: Short n= 0.150 P2= 3.62"
1.3	22	0.1366	0.29		**Sheet Flow, Segment #2** Grass: Short n= 0.150 P2= 3.62"
0.1	25	0.3227	2.84		**Shallow Concentrated Flow, Segment #3** Woodland Kv= 5.0 fps
0.3	39	0.1540	1.96		**Shallow Concentrated Flow, Segment #4** Woodland Kv= 5.0 fps
0.8	55	0.0498	1.12		**Shallow Concentrated Flow, Segment #5** Woodland Kv= 5.0 fps
2.9	204	0.0282	1.18		**Shallow Concentrated Flow, Segment #6** Short Grass Pasture Kv= 7.0 fps
0.7	64	0.0469	1.52		**Shallow Concentrated Flow, Segment #7** Short Grass Pasture Kv= 7.0 fps
11.5	486	Total			

Subcatchment 2S: Subcatchment #2



Summary for Subcatchment 3S: Subcatchment #3

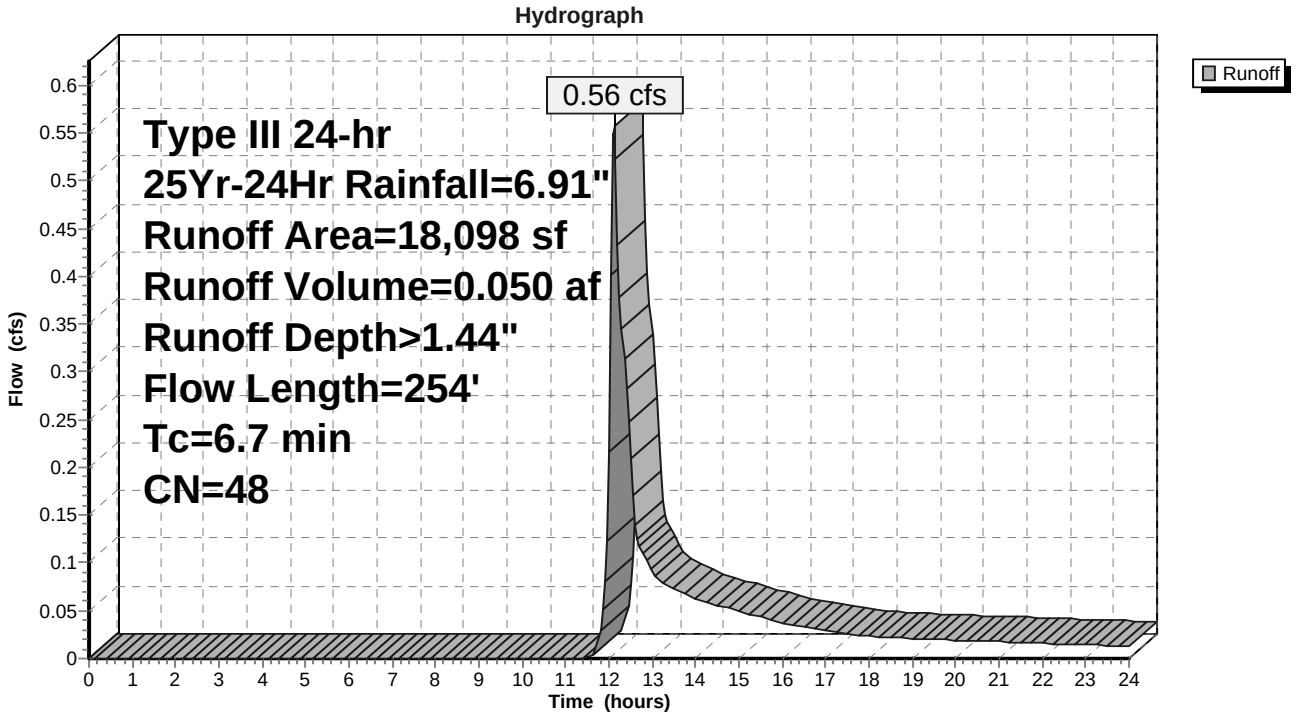
Runoff = 0.56 cfs @ 12.12 hrs, Volume= 0.050 af, Depth> 1.44"

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

Area (sf)	CN	Description
517	98	Roofs, HSG A
14,827	39	>75% Grass cover, Good, HSG A
1,513	98	Paved parking, HSG A
515	30	Woods, Good, HSG A
726	98	Water Surface, HSG C
18,098	48	Weighted Average
15,342		84.77% Pervious Area
2,756		15.23% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9	74	0.0541	0.25		**Sheet Flow, Segment #1** Grass: Short n= 0.150 P2= 3.62"
0.0	12	0.8694	6.53		**Shallow Concentrated Flow, Segment #2** Short Grass Pasture Kv= 7.0 fps
0.0	7	0.1731	2.91		**Shallow Concentrated Flow, Segment #3** Short Grass Pasture Kv= 7.0 fps
0.9	55	0.0226	1.05		**Shallow Concentrated Flow, Segment #4** Short Grass Pasture Kv= 7.0 fps
0.0	12	0.0414	4.13		**Shallow Concentrated Flow, Segment #5** Paved Kv= 20.3 fps
0.9	94	0.0556	1.65		**Shallow Concentrated Flow, Segment #6** Short Grass Pasture Kv= 7.0 fps
6.7	254	Total			

Subcatchment 3S: Subcatchment #3



Summary for Subcatchment 4S: Subcatchment #4

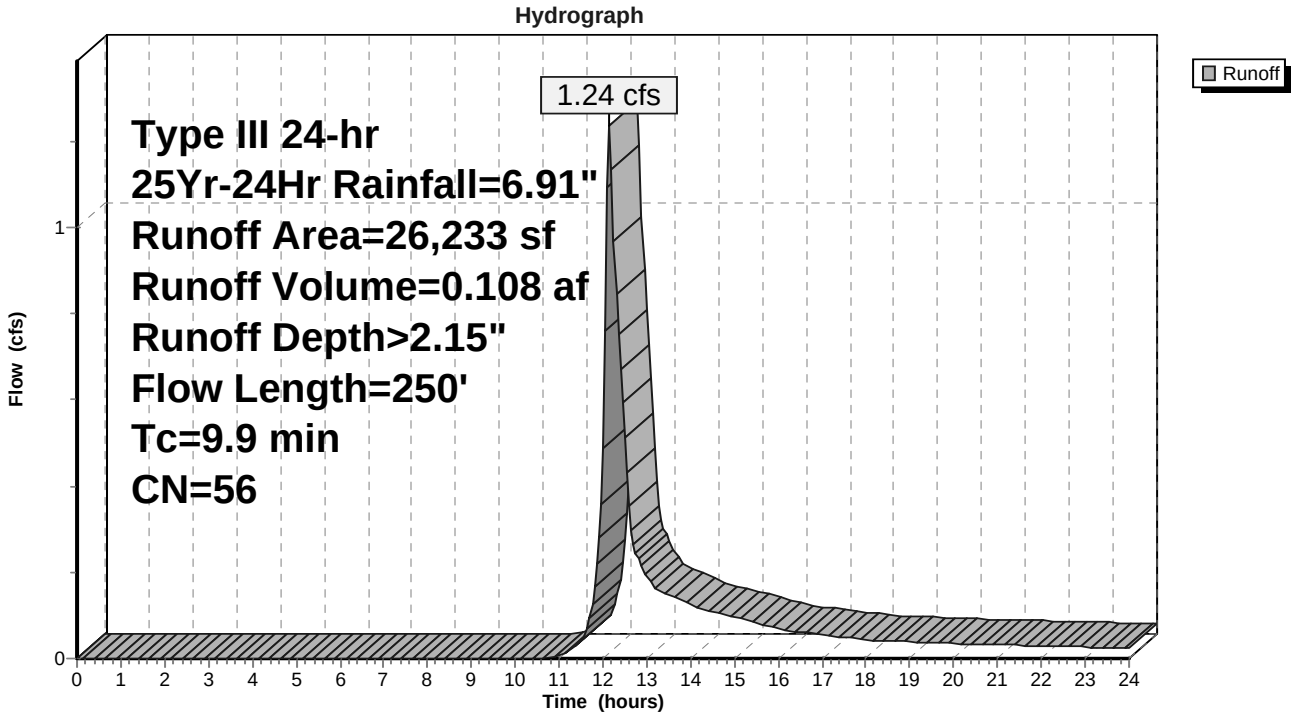
Runoff = 1.24 cfs @ 12.15 hrs, Volume= 0.108 af, Depth> 2.15"

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

Area (sf)	CN	Description
2,338	98	Roofs, HSG A
18,843	39	>75% Grass cover, Good, HSG A
5,052	98	Paved parking, HSG A
26,233	56	Weighted Average
18,843		71.83% Pervious Area
7,390		28.17% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.8	68	0.0293	0.20		**Sheet Flow, Segment #1** Grass: Short n= 0.150 P2= 3.62"
1.8	32	0.1259	0.30		**Sheet Flow, Segment #2** Grass: Short n= 0.150 P2= 3.62"
0.2	37	0.0335	3.72		**Shallow Concentrated Flow, Segment #3** Paved Kv= 20.3 fps
1.7	72	0.0104	0.71		**Shallow Concentrated Flow, Segment #4** Short Grass Pasture Kv= 7.0 fps
0.4	41	0.0730	1.89		**Shallow Concentrated Flow, Segment #5** Short Grass Pasture Kv= 7.0 fps
9.9	250	Total			

Subcatchment 4S: Subcatchment #4



Summary for Subcatchment 5S: Subcatchment #5

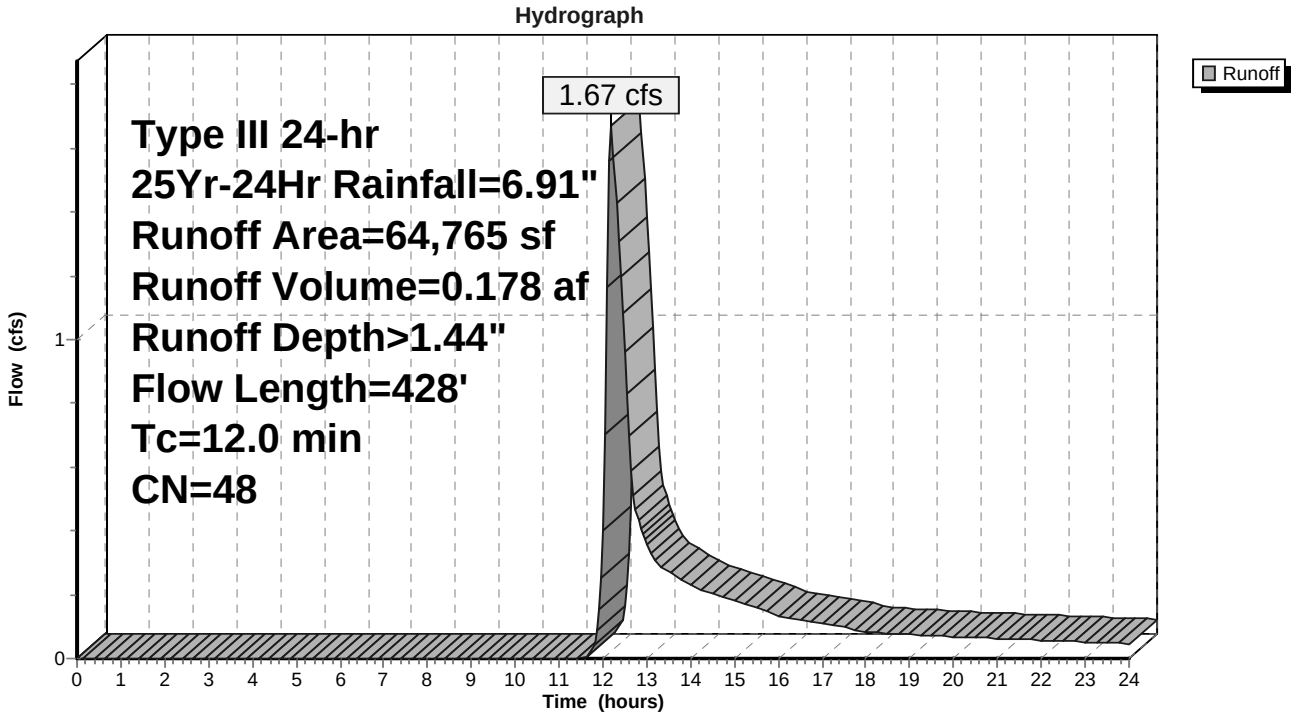
Runoff = 1.67 cfs @ 12.20 hrs, Volume= 0.178 af, Depth> 1.44"

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

Area (sf)	CN	Description
2,421	98	Roofs, HSG A
27,661	39	>75% Grass cover, Good, HSG A
5,049	98	Paved parking, HSG A
21,042	30	Woods, Good, HSG A
2,629	96	Gravel surface, HSG A
1,298	74	>75% Grass cover, Good, HSG C
4,665	70	Woods, Good, HSG C
64,765	48	Weighted Average
57,295		88.47% Pervious Area
7,470		11.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.5	49	0.1277	0.33		**Sheet Flow, Segment #1** Grass: Short n= 0.150 P2= 3.62"
3.1	32	0.0317	0.17		**Sheet Flow, Segment #2** Grass: Short n= 0.150 P2= 3.62"
1.2	20	0.1281	0.28		**Sheet Flow, Segment #3** Grass: Short n= 0.150 P2= 3.62"
0.9	94	0.0586	1.69		**Shallow Concentrated Flow, Segment #4** Short Grass Pasture Kv= 7.0 fps
0.1	14	0.1396	2.62		**Shallow Concentrated Flow, Segment #5** Short Grass Pasture Kv= 7.0 fps
0.6	52	0.0824	1.44		**Shallow Concentrated Flow, Segment #6** Woodland Kv= 5.0 fps
0.2	11	0.0229	1.06		**Shallow Concentrated Flow, Segment #7** Short Grass Pasture Kv= 7.0 fps
0.1	13	0.0395	4.03		**Shallow Concentrated Flow, Segment #8** Paved Kv= 20.3 fps
3.3	143	0.0209	0.72		**Shallow Concentrated Flow, Segment #9** Woodland Kv= 5.0 fps
12.0	428	Total			

Subcatchment 5S: Subcatchment #5



Summary for Subcatchment 6S: Subcatchment #6

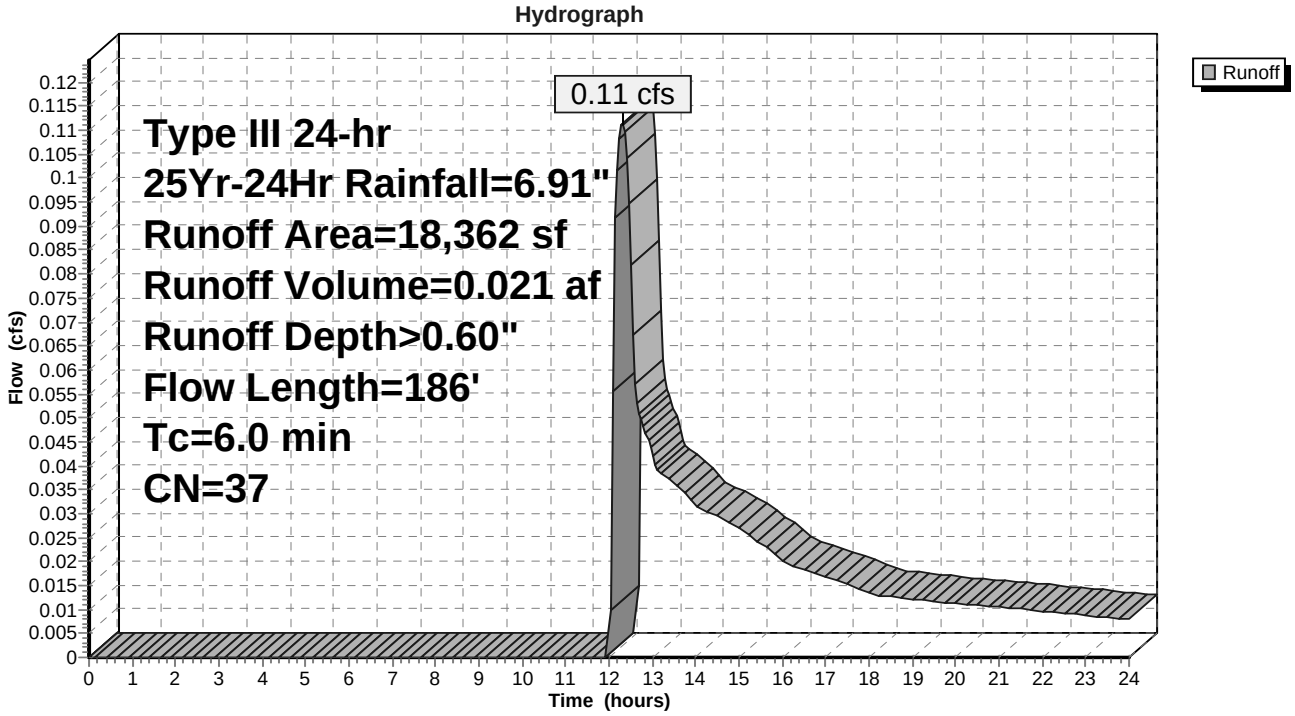
Runoff = 0.11 cfs @ 12.31 hrs, Volume= 0.021 af, Depth> 0.60"

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

Area (sf)	CN	Description
13,981	39	>75% Grass cover, Good, HSG A
4,381	30	Woods, Good, HSG A
18,362	37	Weighted Average
18,362		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.5	100	0.1200	0.37		**Sheet Flow, Segment #1** Grass: Short n= 0.150 P2= 3.62"
0.4	46	0.0916	2.12		**Shallow Concentrated Flow, Segment #2** Short Grass Pasture Kv= 7.0 fps
0.4	40	0.1000	1.58		**Shallow Concentrated Flow, Segment #3** Woodland Kv= 5.0 fps
5.3	186	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 6S: Subcatchment #6



Summary for Subcatchment 7S: Subcatchment #7

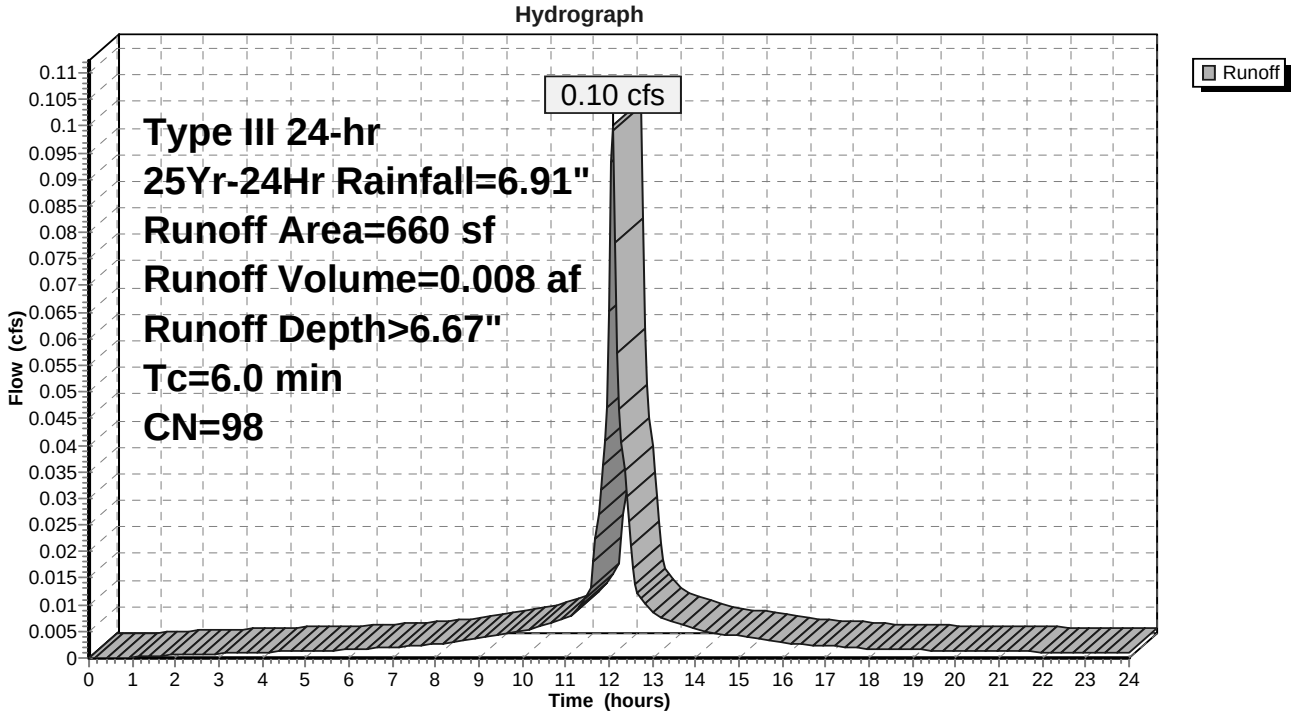
Runoff = 0.10 cfs @ 12.09 hrs, Volume= 0.008 af, Depth> 6.67"

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

Area (sf)	CN	Description
660	98	Roofs, HSG A
660		100.00% Impervious Area

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

Subcatchment 7S: Subcatchment #7



Summary for Subcatchment 8S: Subcatchment #8

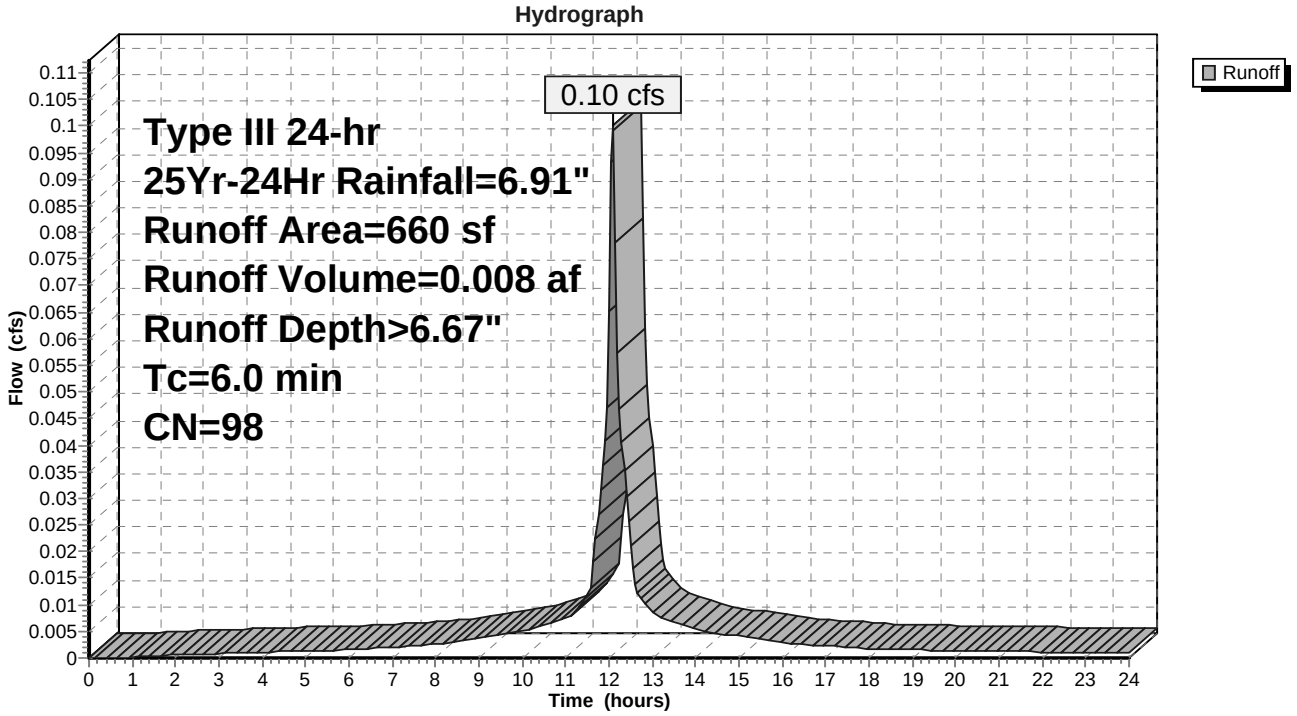
Runoff = 0.10 cfs @ 12.09 hrs, Volume= 0.008 af, Depth> 6.67"

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

Area (sf)	CN	Description
660	98	Roofs, HSG A
660		100.00% Impervious Area

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

Subcatchment 8S: Subcatchment #8



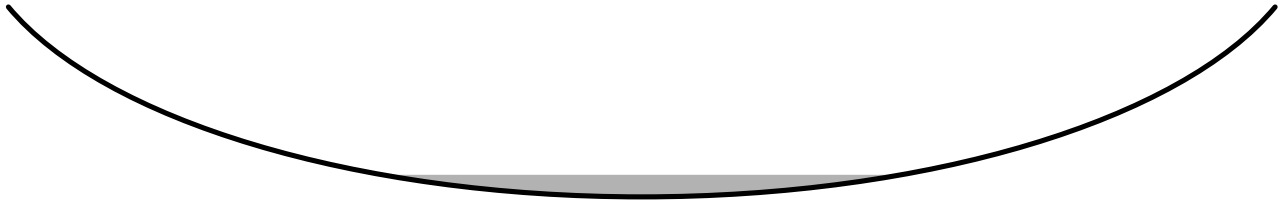
Summary for Reach 1aR: Overland Flow From Swale

Inflow Area = 0.368 ac, 9.26% Impervious, Inflow Depth > 1.11" for 25Yr-24Hr event
Inflow = 0.28 cfs @ 12.20 hrs, Volume= 0.034 af
Outflow = 0.28 cfs @ 12.20 hrs, Volume= 0.034 af, Atten= 0%, Lag= 0.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.17 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.04 fps, Avg. Travel Time= 0.4 min

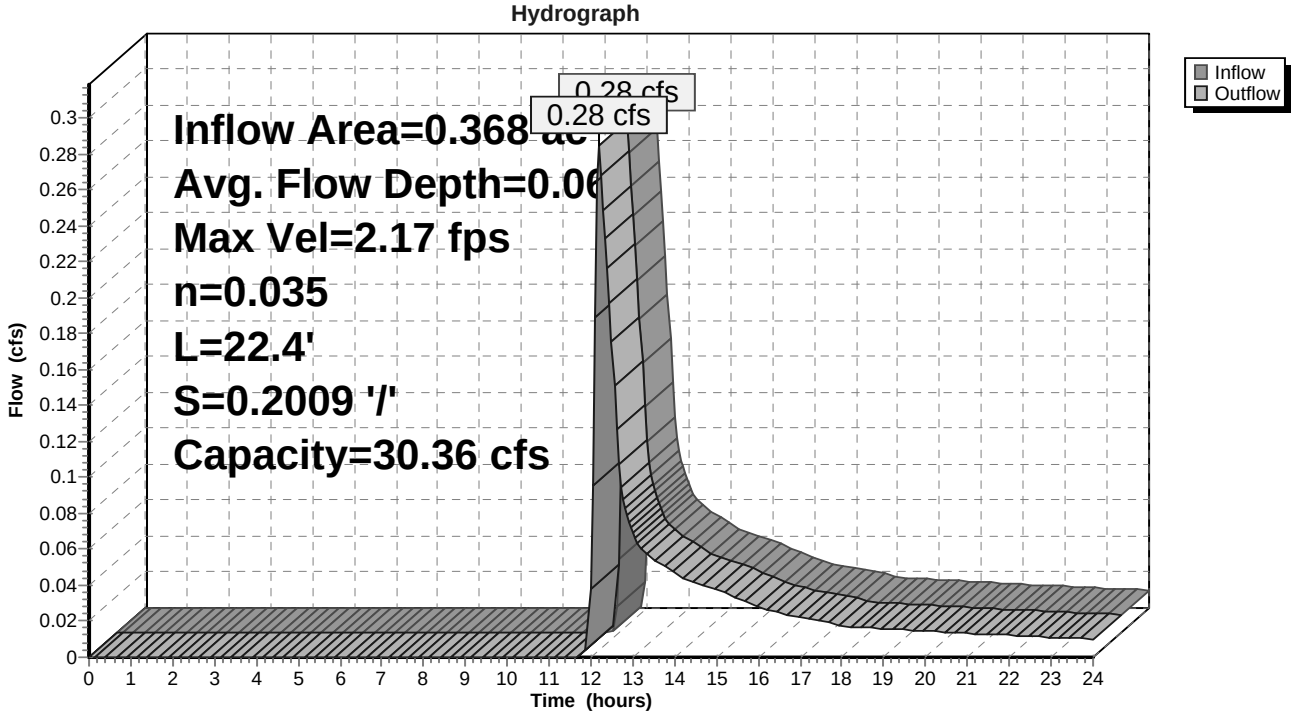
Peak Storage= 3 cf @ 12.20 hrs
Average Depth at Peak Storage= 0.06'
Bank-Full Depth= 0.50' Flow Area= 3.3 sf, Capacity= 30.36 cfs

10.00' x 0.50' deep Parabolic Channel, n= 0.035 Earth, dense weeds
Length= 22.4' Slope= 0.2009 '/'
Inlet Invert= 128.50', Outlet Invert= 124.00'



‡

Reach 1aR: Overland Flow From Swale



Summary for Reach 1bR: Overland Flow From Swale

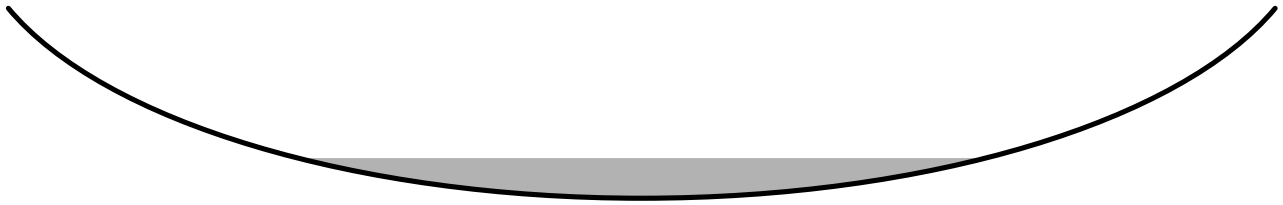
[62] Hint: Exceeded Reach 1aR OUTLET depth by 0.05' @ 12.25 hrs

Inflow Area = 0.368 ac, 9.26% Impervious, Inflow Depth > 1.11" for 25Yr-24Hr event
Inflow = 0.28 cfs @ 12.20 hrs, Volume= 0.034 af
Outflow = 0.29 cfs @ 12.22 hrs, Volume= 0.034 af, Atten= 0%, Lag= 1.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.88 fps, Min. Travel Time= 1.4 min
Avg. Velocity = 0.42 fps, Avg. Travel Time= 2.9 min

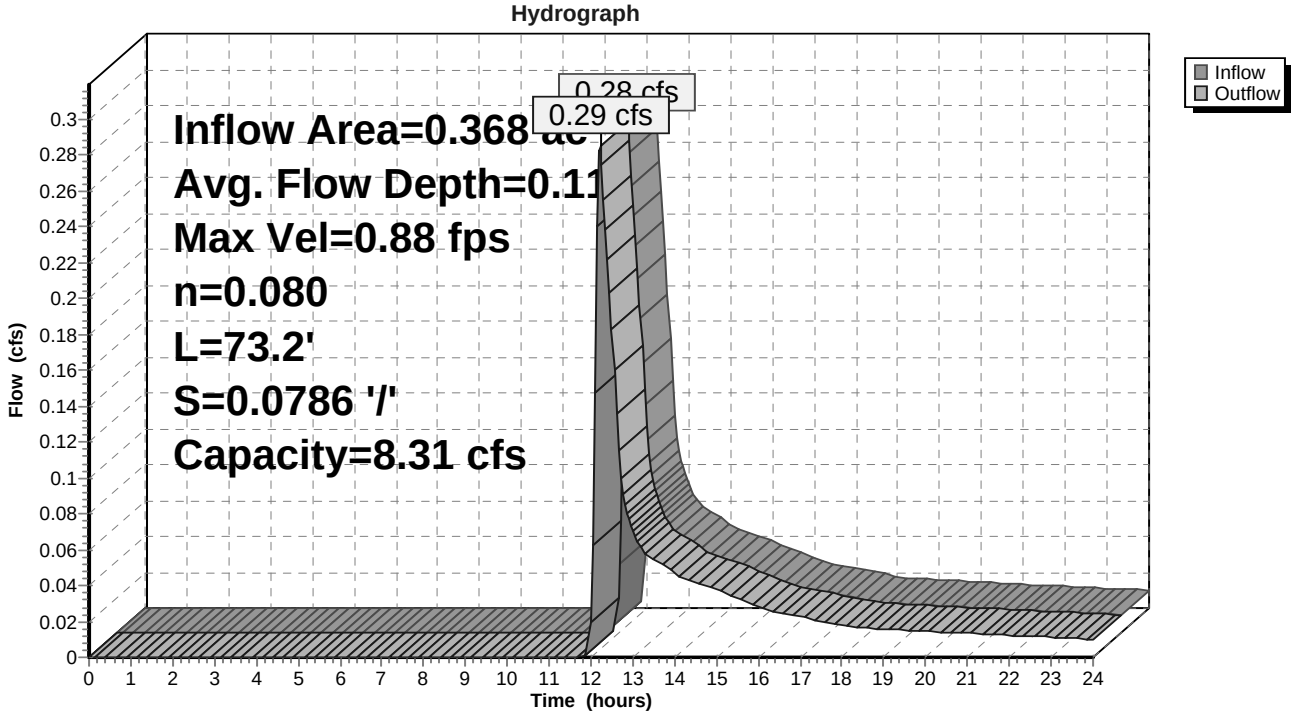
Peak Storage= 24 cf @ 12.22 hrs
Average Depth at Peak Storage= 0.11'
Bank-Full Depth= 0.50' Flow Area= 3.3 sf, Capacity= 8.31 cfs

10.00' x 0.50' deep Parabolic Channel, n= 0.080 Earth, long dense weeds
Length= 73.2' Slope= 0.0786 '/'
Inlet Invert= 124.00', Outlet Invert= 118.25'



‡

Reach 1bR: Overland Flow From Swale



Summary for Reach 3aR: Flow From Pond Outlet

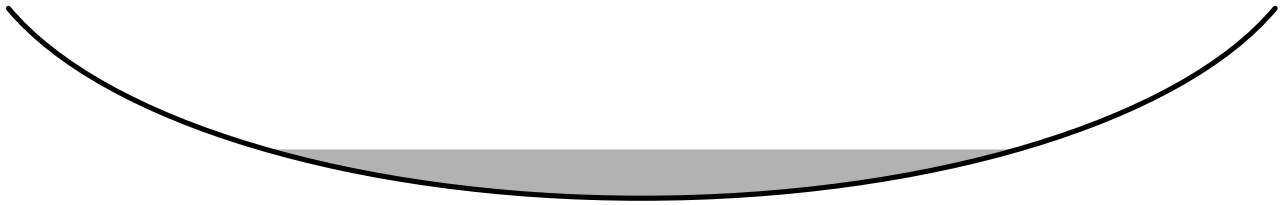
[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=8)

Inflow Area = 0.431 ac, 18.21% Impervious, Inflow Depth > 1.60" for 25Yr-24Hr event
Inflow = 0.64 cfs @ 12.20 hrs, Volume= 0.057 af
Outflow = 0.63 cfs @ 12.20 hrs, Volume= 0.057 af, Atten= 1%, Lag= 0.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.91 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 0.92 fps, Avg. Travel Time= 0.2 min

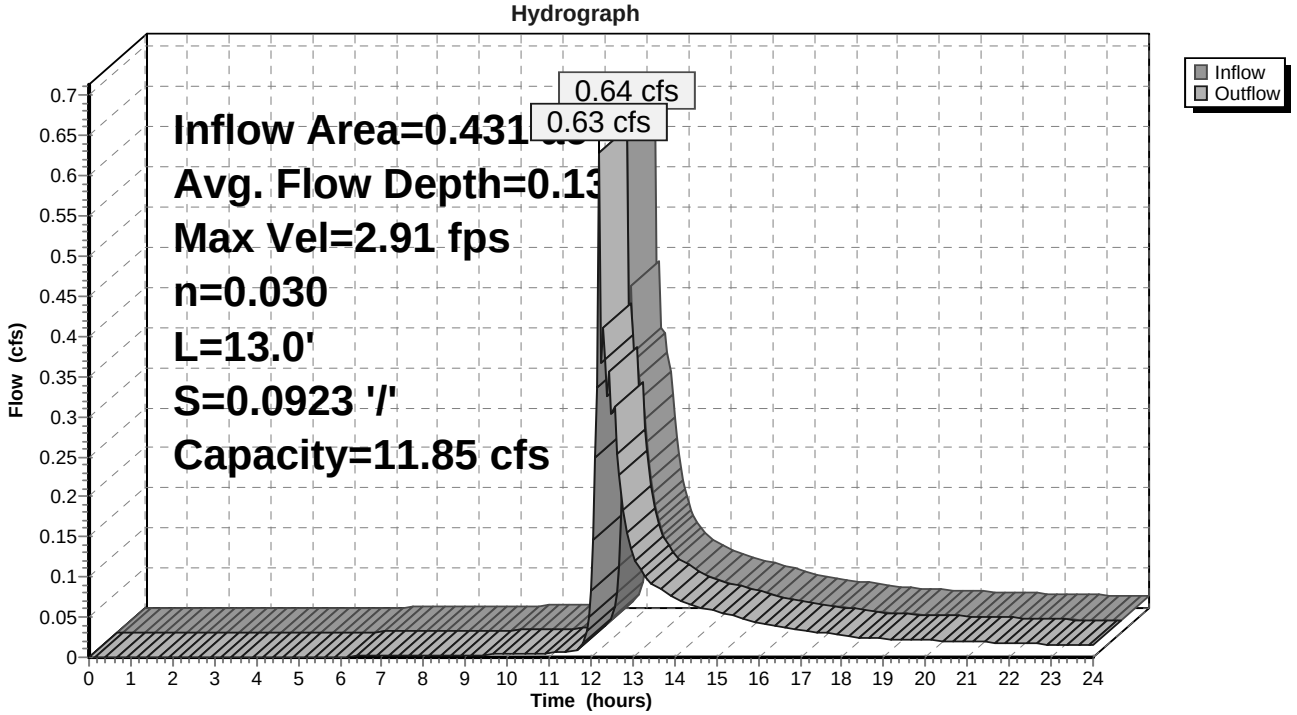
Peak Storage= 3 cf @ 12.20 hrs
Average Depth at Peak Storage= 0.13'
Bank-Full Depth= 0.50' Flow Area= 1.7 sf, Capacity= 11.85 cfs

5.00' x 0.50' deep Parabolic Channel, n= 0.030 Earth, grassed & winding
Length= 13.0' Slope= 0.0923 '/'
Inlet Invert= 126.95', Outlet Invert= 125.75'



‡

Reach 3aR: Flow From Pond Outlet



Summary for Reach 3bR: Overland Flow Over Driveway

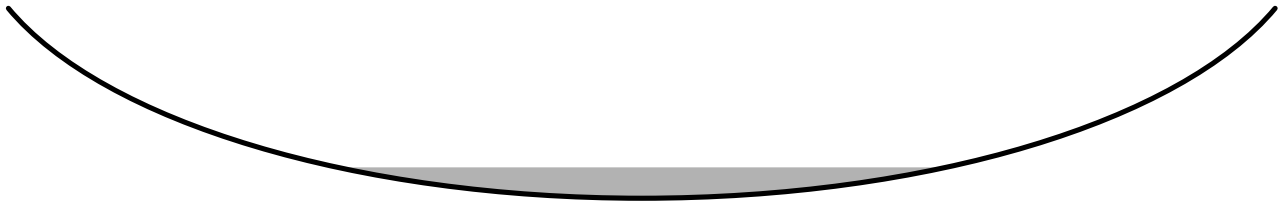
[61] Hint: Exceeded Reach 3aR outlet invert by 0.08' @ 12.20 hrs

Inflow Area = 0.431 ac, 18.21% Impervious, Inflow Depth > 1.60" for 25Yr-24Hr event
Inflow = 0.63 cfs @ 12.20 hrs, Volume= 0.057 af
Outflow = 0.53 cfs @ 12.22 hrs, Volume= 0.057 af, Atten= 16%, Lag= 1.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.62 fps, Min. Travel Time= 1.6 min
Avg. Velocity = 0.56 fps, Avg. Travel Time= 4.6 min

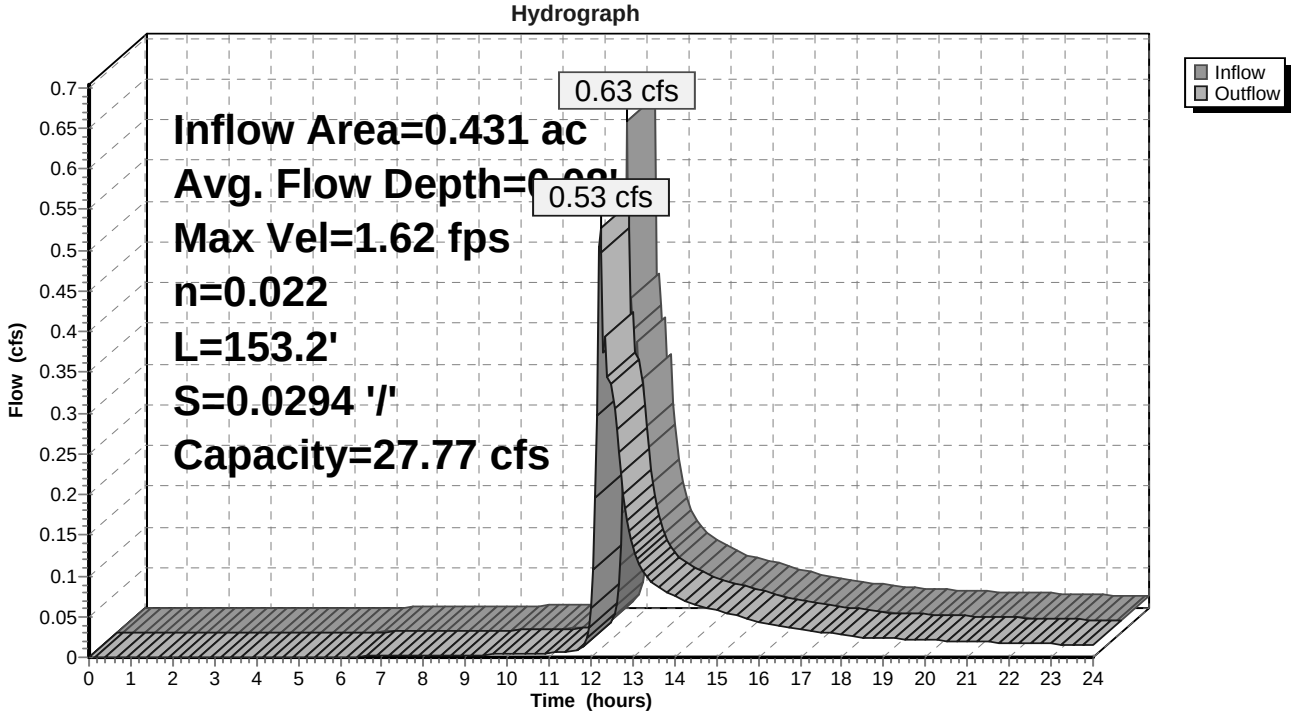
Peak Storage= 49 cf @ 12.22 hrs
Average Depth at Peak Storage= 0.08'
Bank-Full Depth= 0.50' Flow Area= 5.0 sf, Capacity= 27.77 cfs

15.00' x 0.50' deep Parabolic Channel, n= 0.022 Earth, clean & straight
Length= 153.2' Slope= 0.0294 '/'
Inlet Invert= 125.75', Outlet Invert= 121.25'



‡

Reach 3bR: Overland Flow Over Driveway



Summary for Reach 4aR: Overflow From Depression

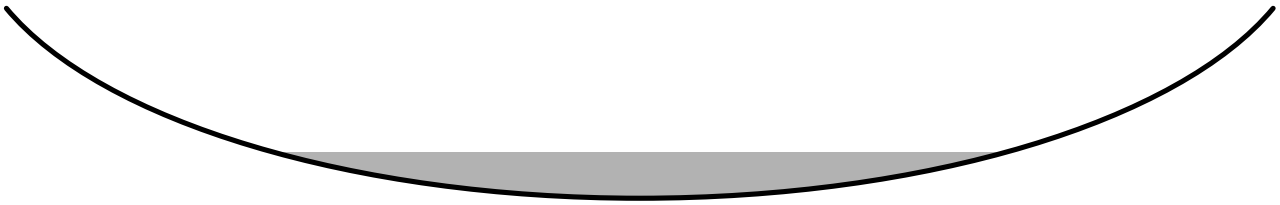
[80] Warning: Exceeded Pond 4P by 0.06' @ 12.70 hrs (3.27 cfs 0.517 af)

Inflow Area = 0.602 ac, 28.17% Impervious, Inflow Depth > 1.35" for 25Yr-24Hr event
Inflow = 1.05 cfs @ 12.70 hrs, Volume= 0.068 af
Outflow = 0.76 cfs @ 12.71 hrs, Volume= 0.068 af, Atten= 28%, Lag= 0.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.31 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 0.56 fps, Avg. Travel Time= 2.3 min

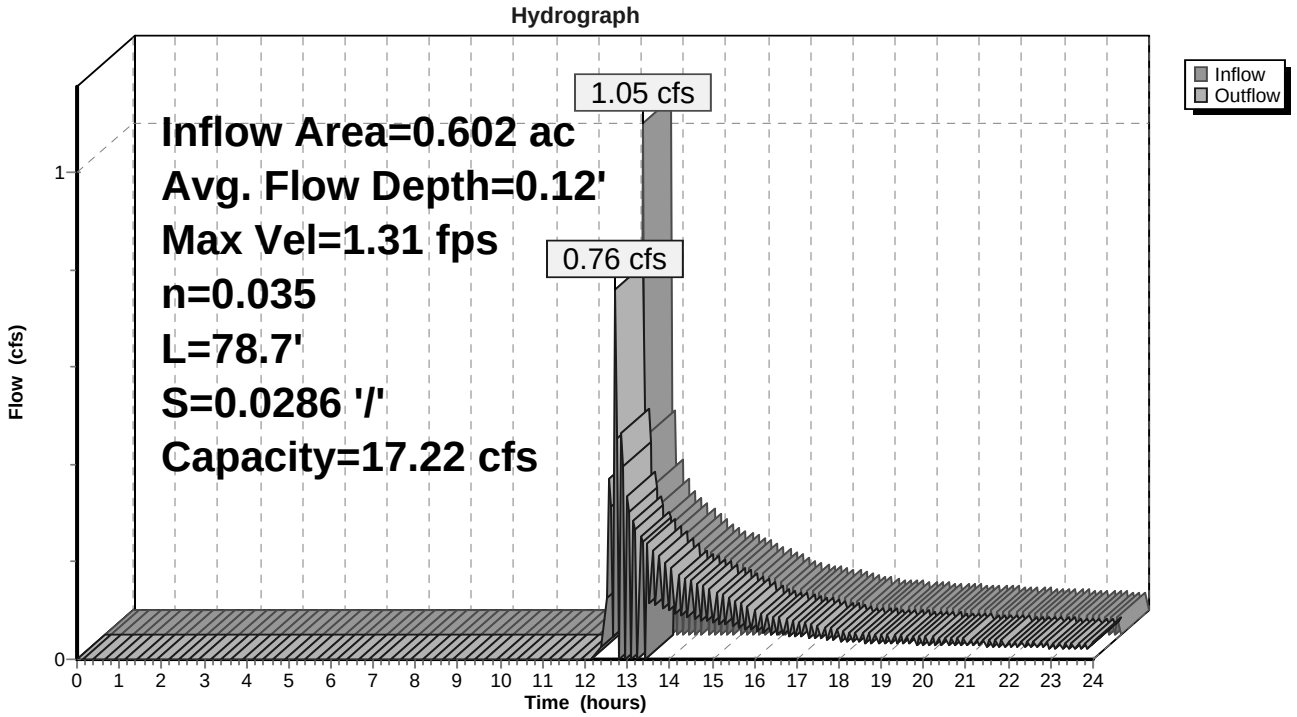
Peak Storage= 46 cf @ 12.71 hrs
Average Depth at Peak Storage= 0.12'
Bank-Full Depth= 0.50' Flow Area= 5.0 sf, Capacity= 17.22 cfs

15.00' x 0.50' deep Parabolic Channel, n= 0.035 Earth, dense weeds
Length= 78.7' Slope= 0.0286 '/'
Inlet Invert= 123.50', Outlet Invert= 121.25'



‡

Reach 4aR: Overflow From Depression



Summary for Reach 4bR: Combined Overland Flow

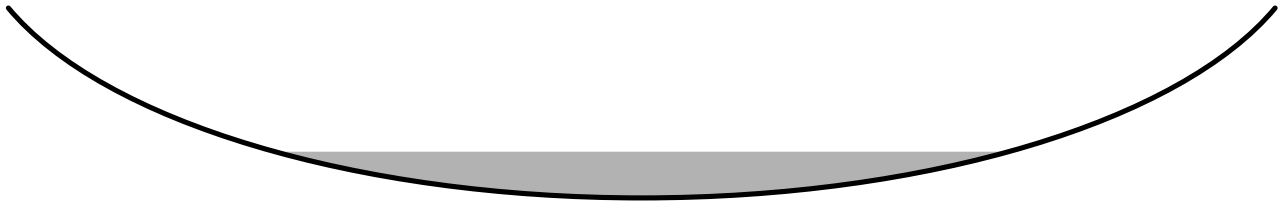
[62] Hint: Exceeded Reach 3bR OUTLET depth by 0.07' @ 12.75 hrs
[62] Hint: Exceeded Reach 4aR OUTLET depth by 0.09' @ 12.25 hrs

Inflow Area = 1.033 ac, 24.02% Impervious, Inflow Depth > 1.46" for 25Yr-24Hr event
Inflow = 0.98 cfs @ 12.71 hrs, Volume= 0.126 af
Outflow = 0.89 cfs @ 12.73 hrs, Volume= 0.126 af, Atten= 10%, Lag= 1.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.48 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 0.53 fps, Avg. Travel Time= 2.2 min

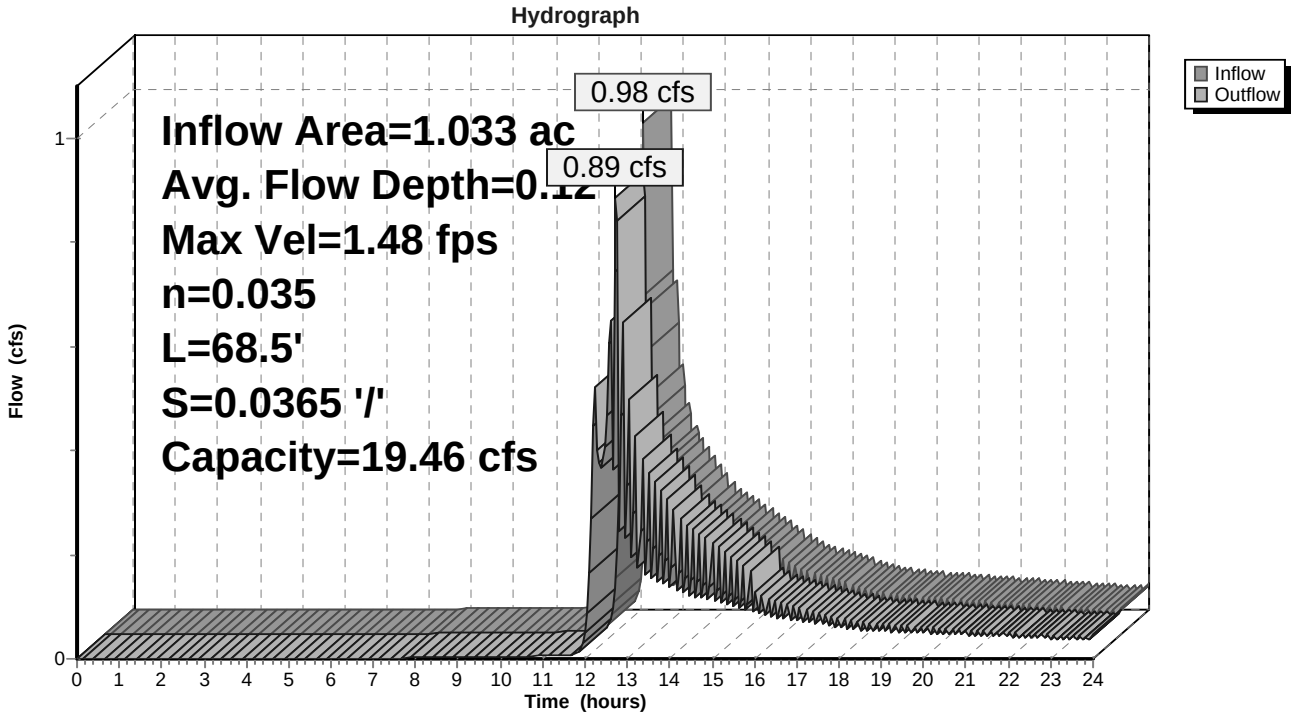
Peak Storage= 41 cf @ 12.73 hrs
Average Depth at Peak Storage= 0.12'
Bank-Full Depth= 0.50' Flow Area= 5.0 sf, Capacity= 19.46 cfs

15.00' x 0.50' deep Parabolic Channel, n= 0.035 Earth, dense weeds
Length= 68.5' Slope= 0.0365 '/'
Inlet Invert= 121.25', Outlet Invert= 118.75'



‡

Reach 4bR: Combined Overland Flow



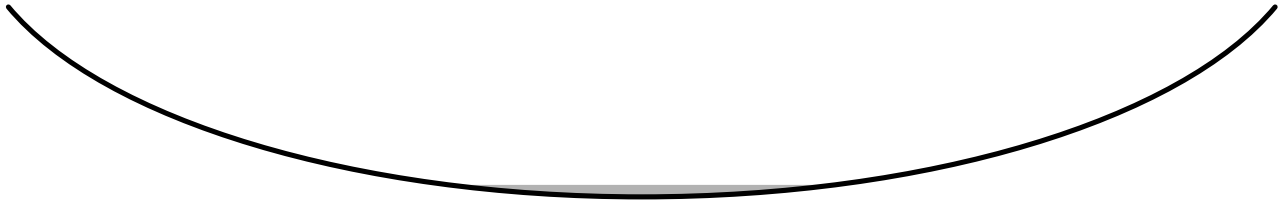
Summary for Reach 7aR: Overland Flow

Inflow Area = 0.015 ac,100.00% Impervious, Inflow Depth > 6.67" for 25Yr-24Hr event
Inflow = 0.10 cfs @ 12.09 hrs, Volume= 0.008 af
Outflow = 0.10 cfs @ 12.09 hrs, Volume= 0.008 af, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.28 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 0.45 fps, Avg. Travel Time= 0.9 min

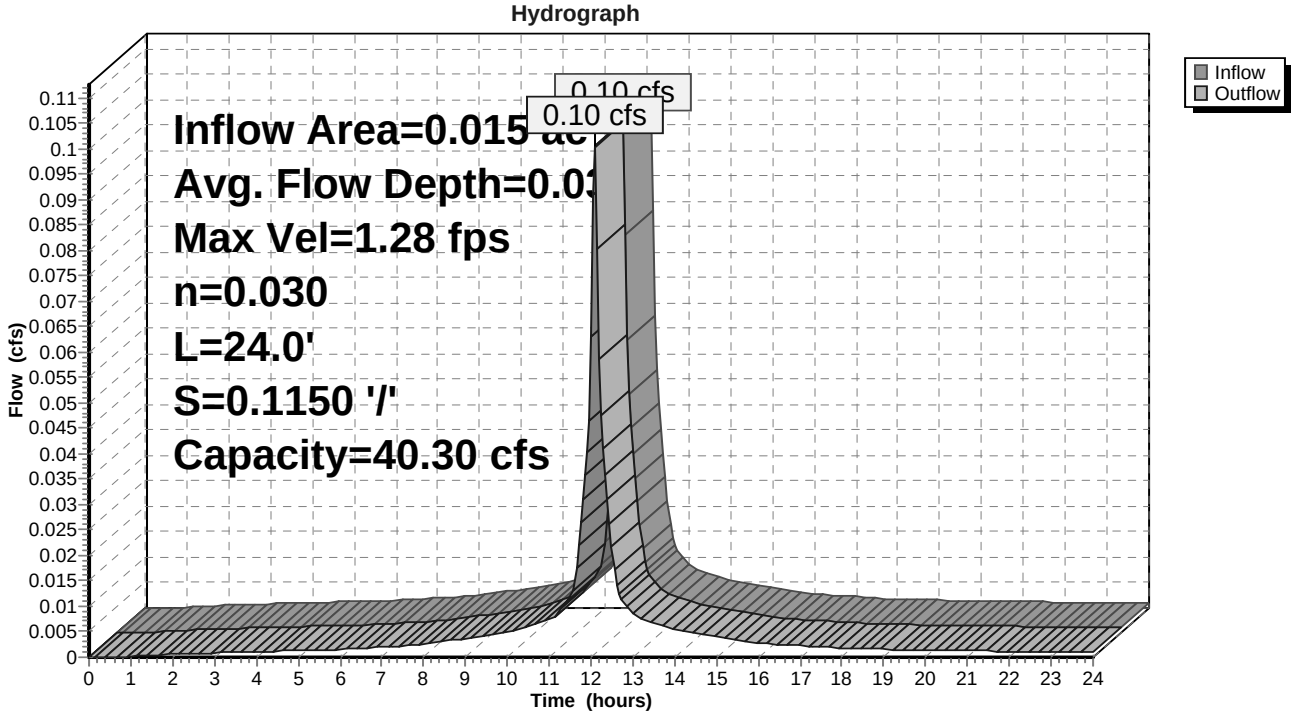
Peak Storage= 2 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.03'
Bank-Full Depth= 0.50' Flow Area= 5.0 sf, Capacity= 40.30 cfs

15.00' x 0.50' deep Parabolic Channel, n= 0.030 Earth, grassed & winding
Length= 24.0' Slope= 0.1150 '/'
Inlet Invert= 148.76', Outlet Invert= 146.00'



‡

Reach 7aR: Overland Flow



Summary for Reach 7bR: Overland Flow

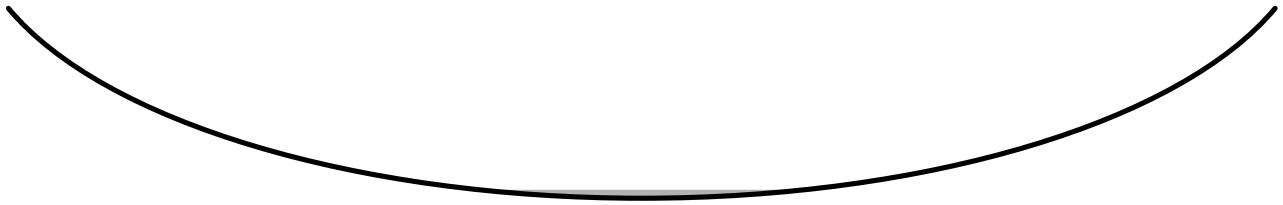
[61] Hint: Exceeded Reach 7aR outlet invert by 0.02' @ 12.10 hrs

Inflow Area = 0.015 ac,100.00% Impervious, Inflow Depth > 6.67" for 25Yr-24Hr event
Inflow = 0.10 cfs @ 12.09 hrs, Volume= 0.008 af
Outflow = 0.10 cfs @ 12.09 hrs, Volume= 0.008 af, Atten= 0%, Lag= 0.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.22 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 0.89 fps, Avg. Travel Time= 0.4 min

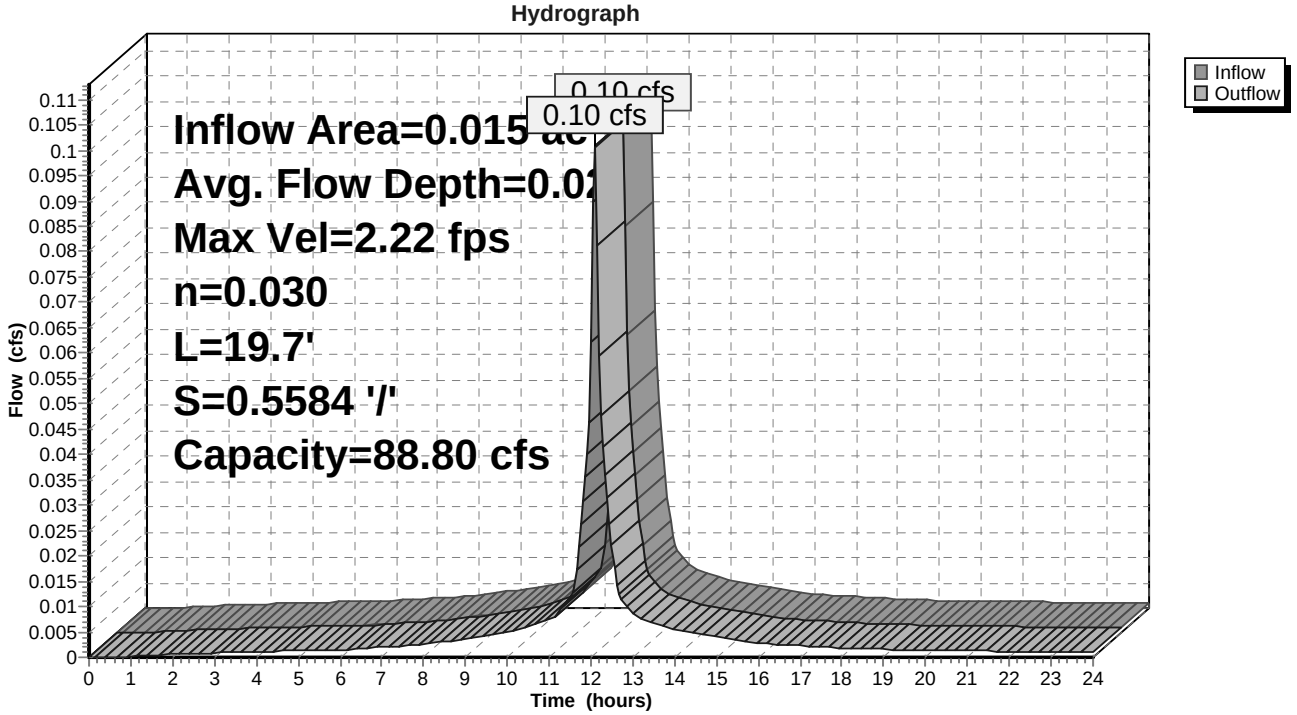
Peak Storage= 1 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.02'
Bank-Full Depth= 0.50' Flow Area= 5.0 sf, Capacity= 88.80 cfs

15.00' x 0.50' deep Parabolic Channel, n= 0.030 Earth, grassed & winding
Length= 19.7' Slope= 0.5584 '/'
Inlet Invert= 146.00', Outlet Invert= 135.00'



‡

Reach 7bR: Overland Flow



Summary for Reach 7cR: Overland Flow

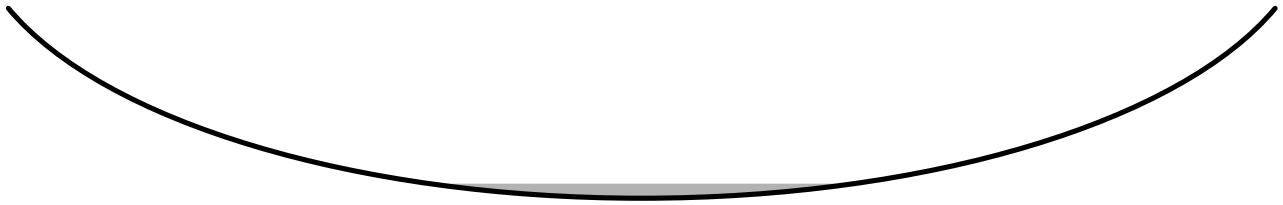
[62] Hint: Exceeded Reach 7bR OUTLET depth by 0.02' @ 12.15 hrs

Inflow Area = 0.015 ac,100.00% Impervious, Inflow Depth > 6.67" for 25Yr-24Hr event
Inflow = 0.10 cfs @ 12.09 hrs, Volume= 0.008 af
Outflow = 0.09 cfs @ 12.12 hrs, Volume= 0.008 af, Atten= 7%, Lag= 1.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.92 fps, Min. Travel Time= 2.8 min
Avg. Velocity = 0.32 fps, Avg. Travel Time= 8.0 min

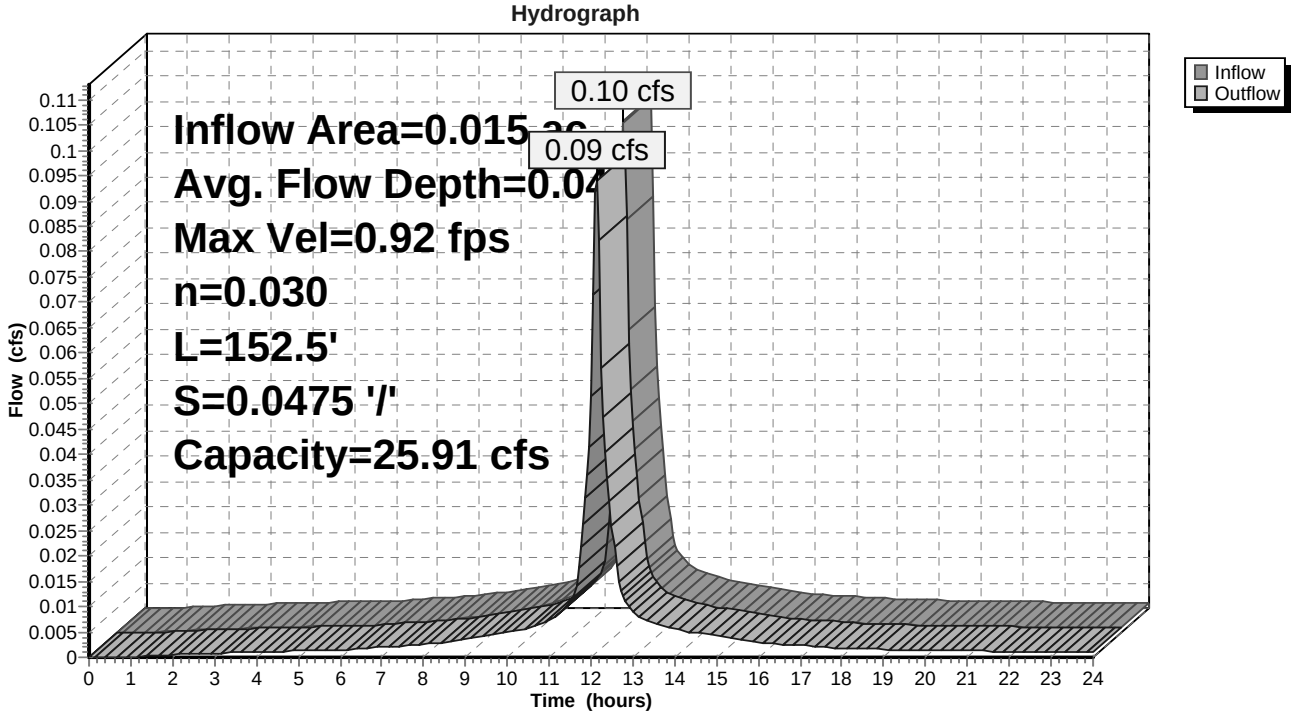
Peak Storage= 16 cf @ 12.12 hrs
Average Depth at Peak Storage= 0.04'
Bank-Full Depth= 0.50' Flow Area= 5.0 sf, Capacity= 25.91 cfs

15.00' x 0.50' deep Parabolic Channel, n= 0.030 Earth, grassed & winding
Length= 152.5' Slope= 0.0475 '/'
Inlet Invert= 135.00', Outlet Invert= 127.75'



‡

Reach 7cR: Overland Flow



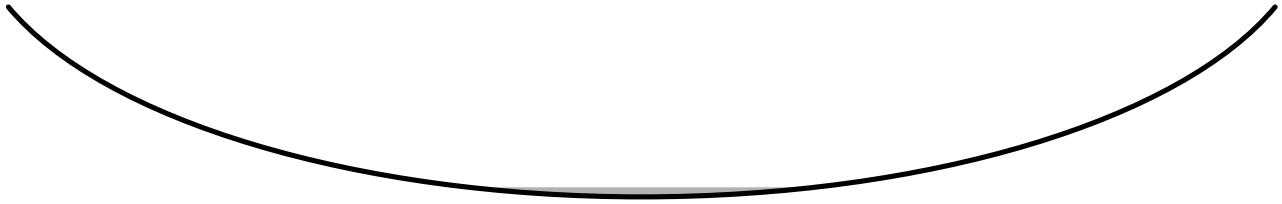
Summary for Reach 8aR: Overland Flow

Inflow Area = 0.015 ac,100.00% Impervious, Inflow Depth > 6.67" for 25Yr-24Hr event
Inflow = 0.10 cfs @ 12.09 hrs, Volume= 0.008 af
Outflow = 0.10 cfs @ 12.09 hrs, Volume= 0.008 af, Atten= 0%, Lag= 0.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.84 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 0.71 fps, Avg. Travel Time= 0.5 min

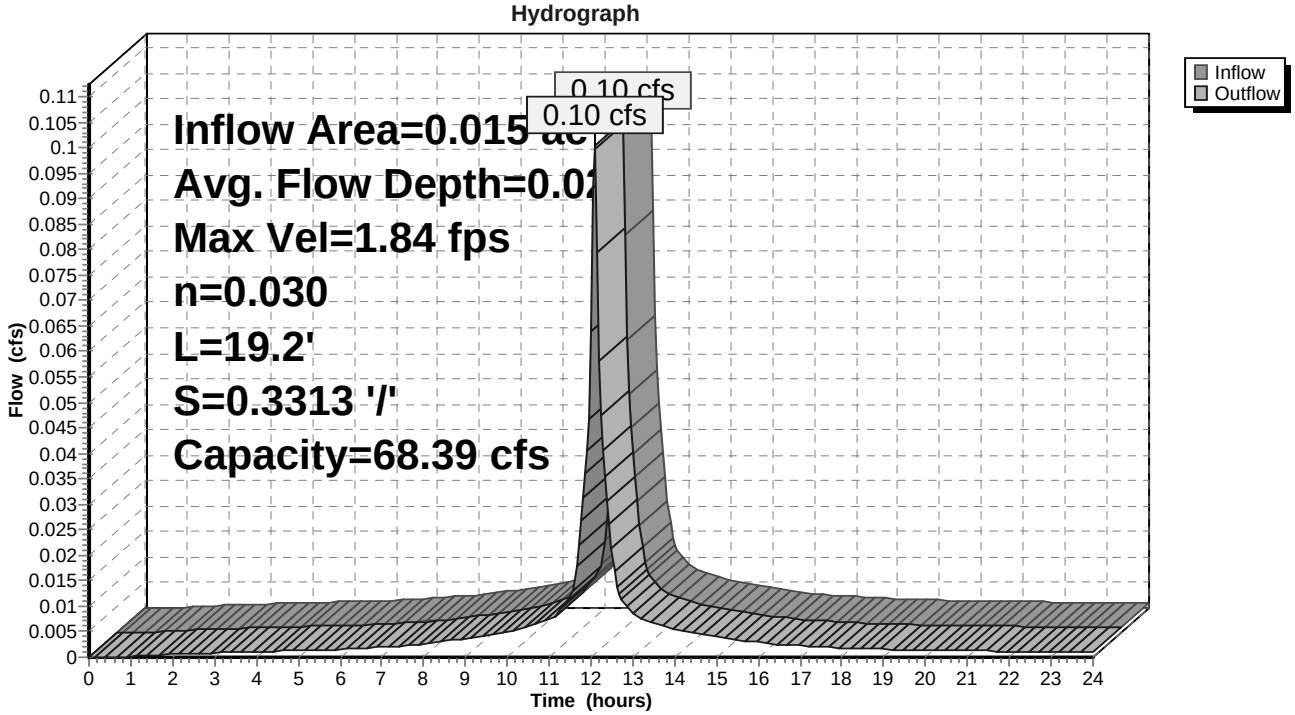
Peak Storage= 1 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.02'
Bank-Full Depth= 0.50' Flow Area= 5.0 sf, Capacity= 68.39 cfs

15.00' x 0.50' deep Parabolic Channel, n= 0.030 Earth, grassed & winding
Length= 19.2' Slope= 0.3313 '/'
Inlet Invert= 146.36', Outlet Invert= 140.00'



‡

Reach 8aR: Overland Flow



Summary for Reach 8bR: Overland Flow

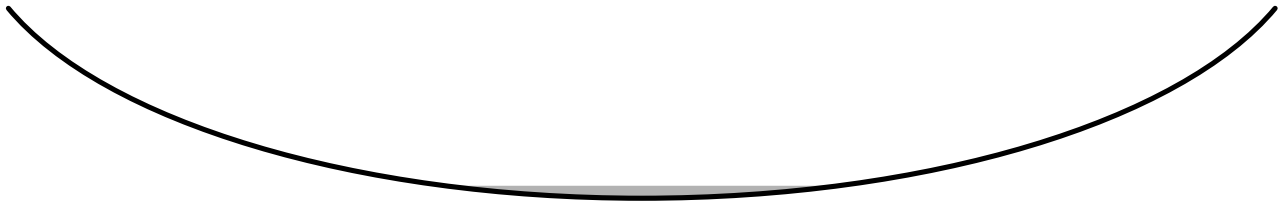
[62] Hint: Exceeded Reach 8aR OUTLET depth by 0.01' @ 12.15 hrs

Inflow Area = 0.015 ac,100.00% Impervious, Inflow Depth > 6.67" for 25Yr-24Hr event
Inflow = 0.10 cfs @ 12.09 hrs, Volume= 0.008 af
Outflow = 0.10 cfs @ 12.10 hrs, Volume= 0.008 af, Atten= 0%, Lag= 0.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.20 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 0.42 fps, Avg. Travel Time= 3.1 min

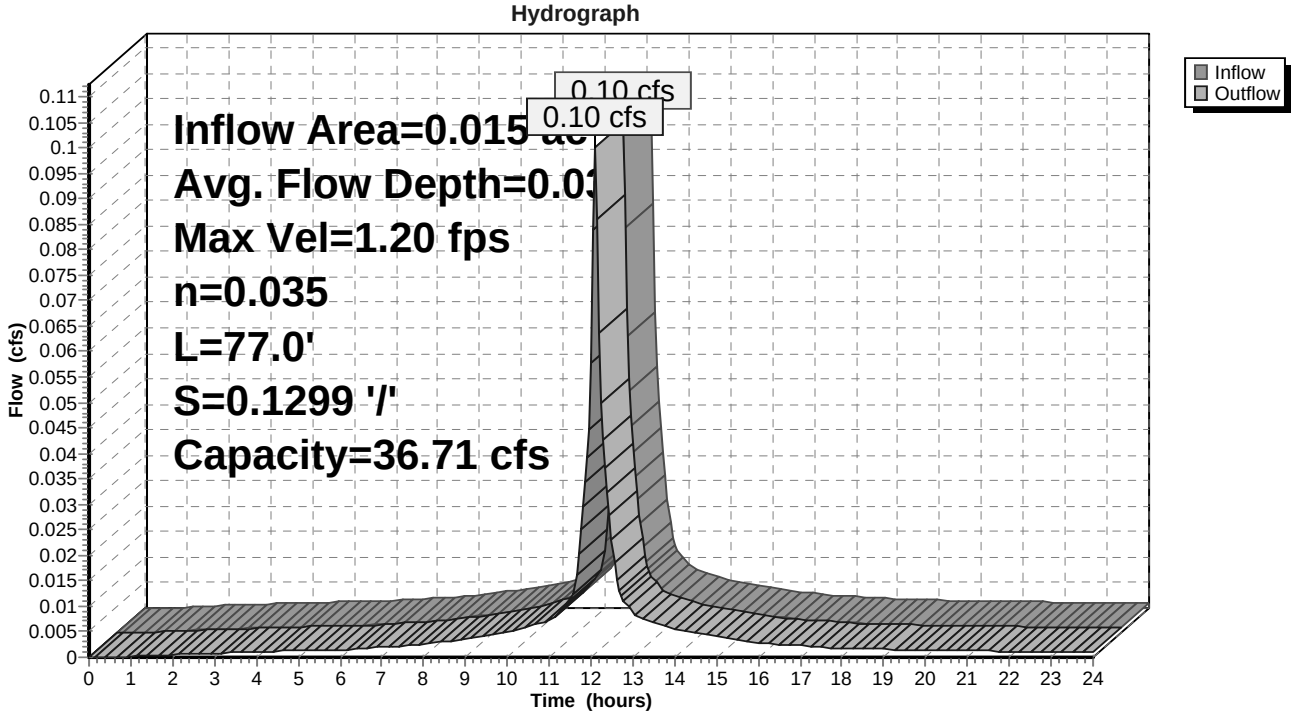
Peak Storage= 6 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.03'
Bank-Full Depth= 0.50' Flow Area= 5.0 sf, Capacity= 36.71 cfs

15.00' x 0.50' deep Parabolic Channel, n= 0.035 Earth, dense weeds
Length= 77.0' Slope= 0.1299 '/'
Inlet Invert= 140.00', Outlet Invert= 130.00'



‡

Reach 8bR: Overland Flow



Summary for Reach 8cR: Overland Flow

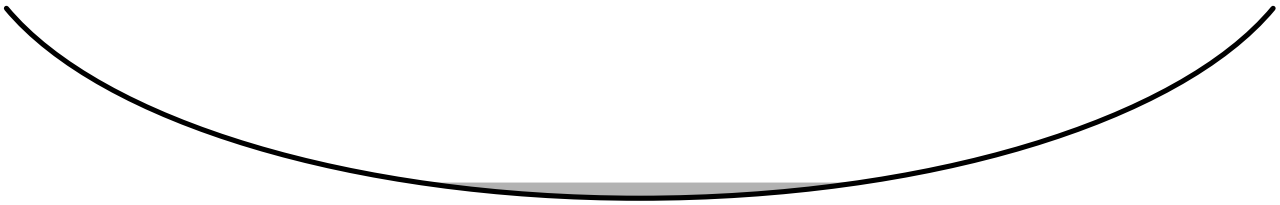
[62] Hint: Exceeded Reach 8bR OUTLET depth by 0.01' @ 12.15 hrs

Inflow Area = 0.015 ac,100.00% Impervious, Inflow Depth > 6.66" for 25Yr-24Hr event
Inflow = 0.10 cfs @ 12.10 hrs, Volume= 0.008 af
Outflow = 0.10 cfs @ 12.12 hrs, Volume= 0.008 af, Atten= 2%, Lag= 0.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.85 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 0.29 fps, Avg. Travel Time= 3.2 min

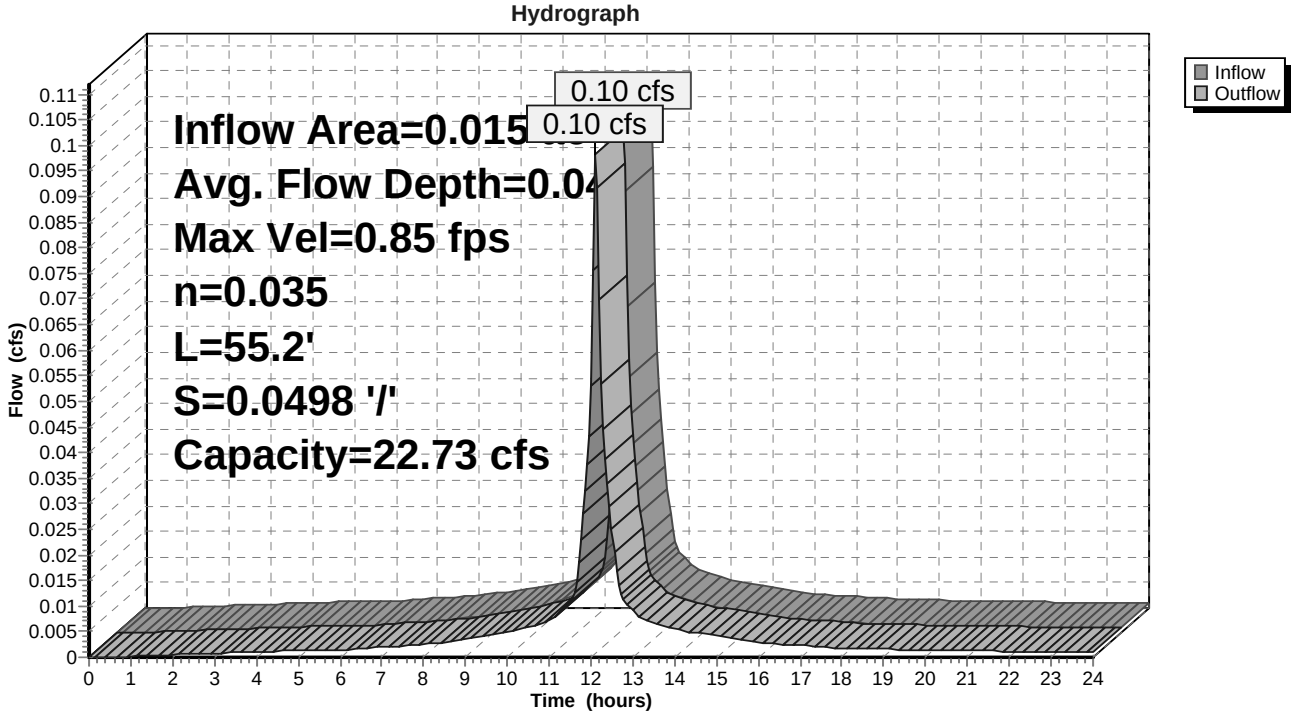
Peak Storage= 6 cf @ 12.12 hrs
Average Depth at Peak Storage= 0.04'
Bank-Full Depth= 0.50' Flow Area= 5.0 sf, Capacity= 22.73 cfs

15.00' x 0.50' deep Parabolic Channel, n= 0.035 Earth, dense weeds
Length= 55.2' Slope= 0.0498 '/'
Inlet Invert= 130.00', Outlet Invert= 127.25'



‡

Reach 8cR: Overland Flow



Summary for Reach 8dR: Overland Flow

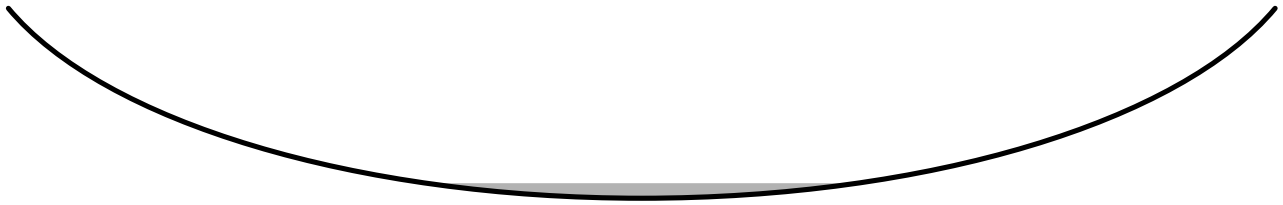
[62] Hint: Exceeded Reach 8cR OUTLET depth by 0.01' @ 12.25 hrs

Inflow Area = 0.015 ac,100.00% Impervious, Inflow Depth > 6.66" for 25Yr-24Hr event
Inflow = 0.10 cfs @ 12.12 hrs, Volume= 0.008 af
Outflow = 0.08 cfs @ 12.17 hrs, Volume= 0.008 af, Atten= 14%, Lag= 3.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.78 fps, Min. Travel Time= 5.7 min
Avg. Velocity = 0.28 fps, Avg. Travel Time= 15.9 min

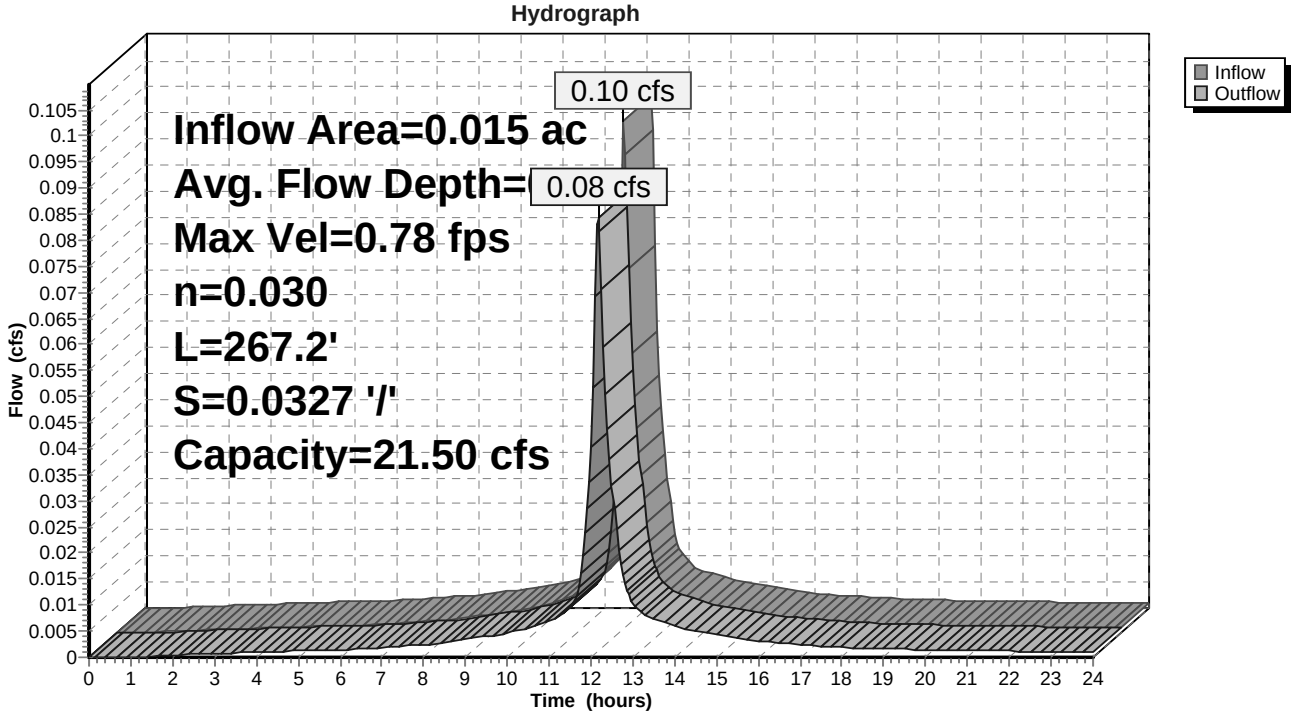
Peak Storage= 29 cf @ 12.17 hrs
Average Depth at Peak Storage= 0.04'
Bank-Full Depth= 0.50' Flow Area= 5.0 sf, Capacity= 21.50 cfs

15.00' x 0.50' deep Parabolic Channel, n= 0.030 Earth, grassed & winding
Length= 267.2' Slope= 0.0327 '/'
Inlet Invert= 127.25', Outlet Invert= 118.50'



‡

Reach 8dR: Overland Flow



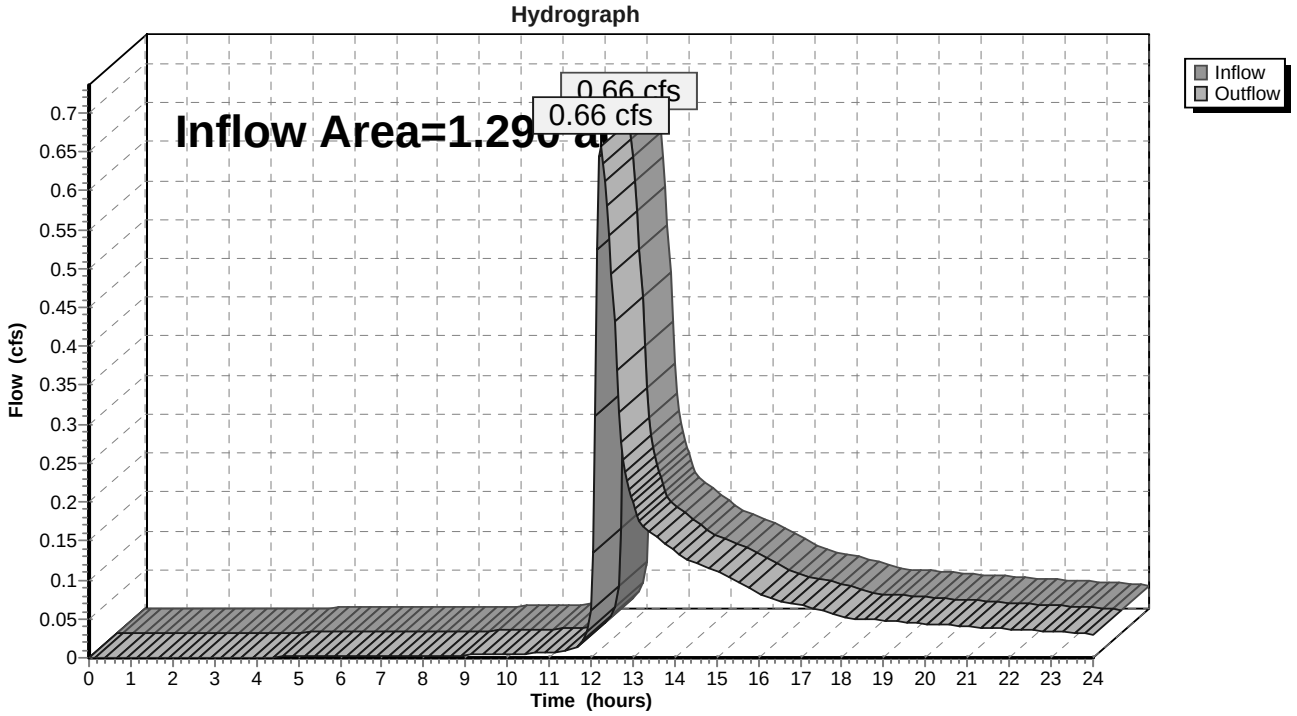
Summary for Reach 200R: Final Reach #200

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

Inflow Area = 1.290 ac, 6.65% Impervious, Inflow Depth > 0.91" for 25Yr-24Hr event
Inflow = 0.66 cfs @ 12.24 hrs, Volume= 0.098 af
Outflow = 0.66 cfs @ 12.24 hrs, Volume= 0.098 af, Atten= 0%, Lag= 0.0 min

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

Reach 200R: Final Reach #200



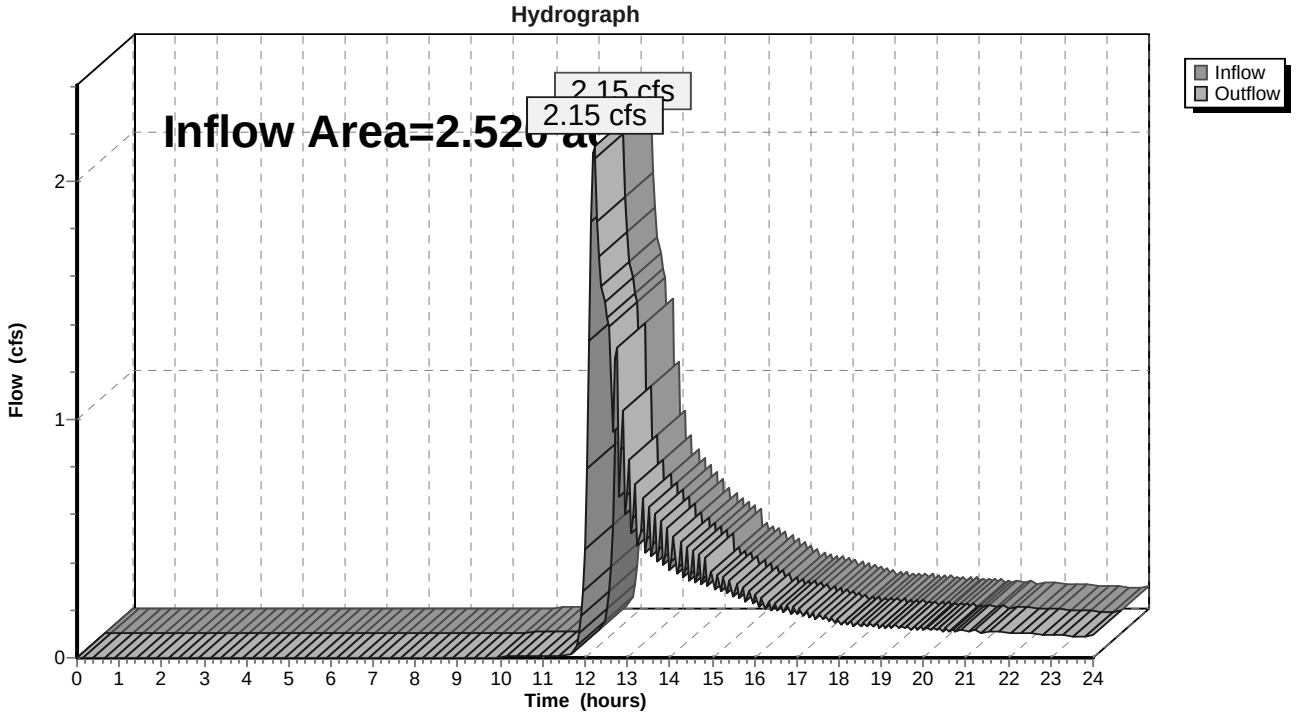
Summary for Reach 500R: Final Reach #500

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

Inflow Area = 2.520 ac, 16.65% Impervious, Inflow Depth > 1.45" for 25Yr-24Hr event
Inflow = 2.15 cfs @ 12.22 hrs, Volume= 0.304 af
Outflow = 2.15 cfs @ 12.22 hrs, Volume= 0.304 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 500R: Final Reach #500



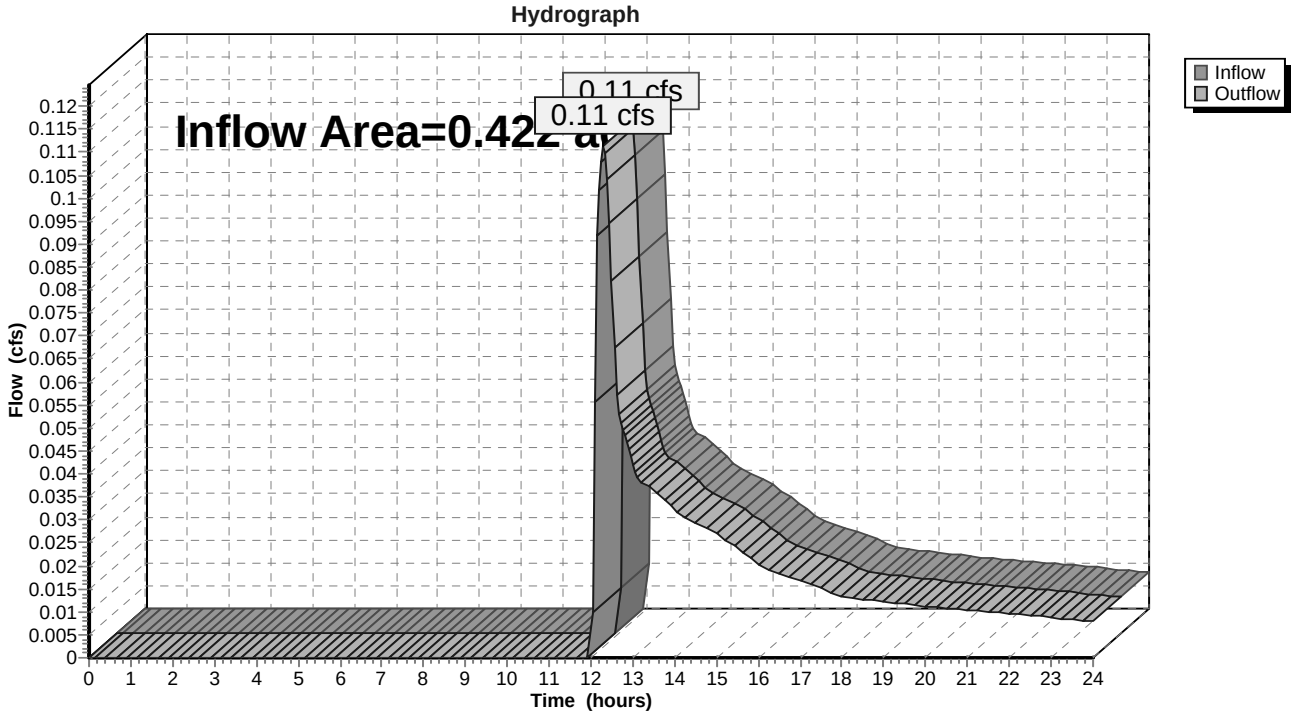
Summary for Reach 600R: Final Reach #600

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

Inflow Area = 0.422 ac, 0.00% Impervious, Inflow Depth > 0.60" for 25Yr-24Hr event
Inflow = 0.11 cfs @ 12.31 hrs, Volume= 0.021 af
Outflow = 0.11 cfs @ 12.31 hrs, Volume= 0.021 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 600R: Final Reach #600



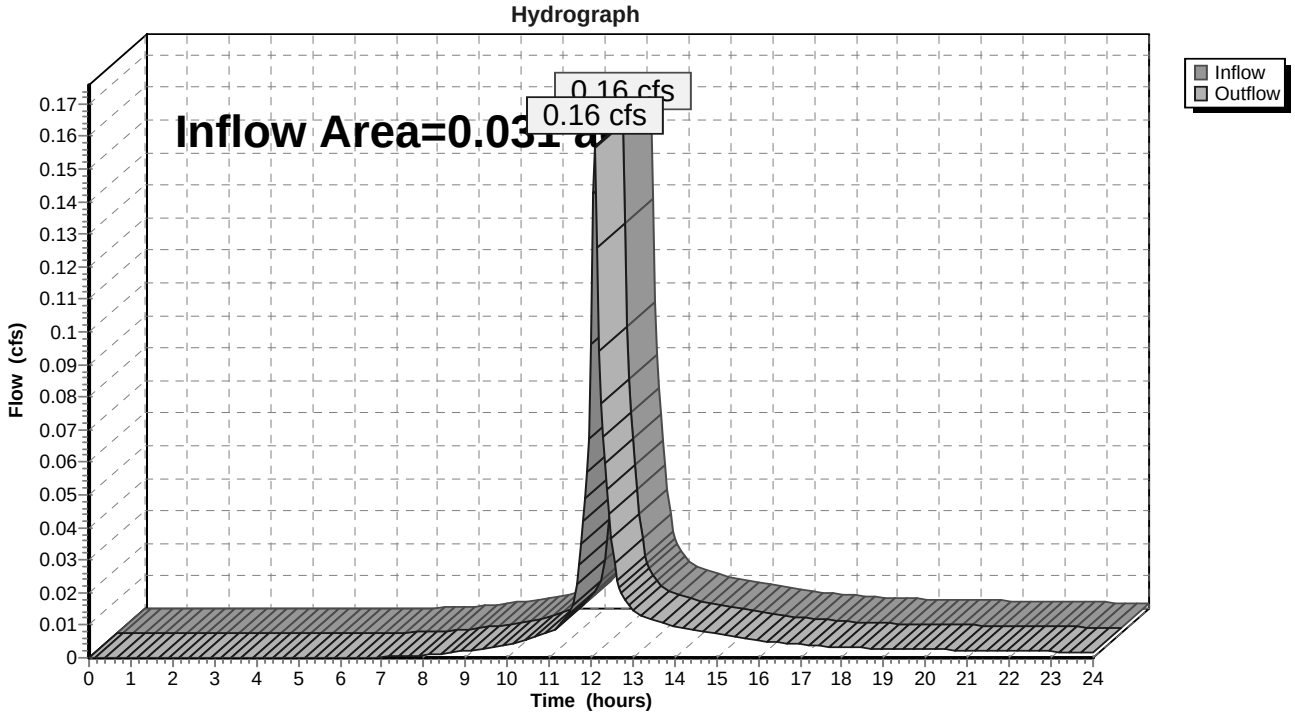
Summary for Reach 1000R: Final Reach #1000

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

Inflow Area = 0.031 ac, 67.57% Impervious, Inflow Depth > 4.50" for 25Yr-24Hr event
Inflow = 0.16 cfs @ 12.09 hrs, Volume= 0.011 af
Outflow = 0.16 cfs @ 12.09 hrs, Volume= 0.011 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 1000R: Final Reach #1000



Summary for Pond 3P: Detention Pond

[93] Warning: Storage range exceeded by 0.51'
[62] Hint: Exceeded Reach 7cR OUTLET depth by 0.48' @ 12.20 hrs

Inflow Area = 0.431 ac, 18.21% Impervious, Inflow Depth > 1.63" for 25Yr-24Hr event
Inflow = 0.65 cfs @ 12.12 hrs, Volume= 0.058 af
Outflow = 0.64 cfs @ 12.20 hrs, Volume= 0.057 af, Atten= 2%, Lag= 4.9 min
Primary = 0.64 cfs @ 12.20 hrs, Volume= 0.057 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 128.26' @ 12.20 hrs Surf.Area= 726 sf Storage= 292 cf

Plug-Flow detention time= 25.4 min calculated for 0.057 af (98% of inflow)
Center-of-Mass det. time= 16.5 min (884.7 - 868.2)

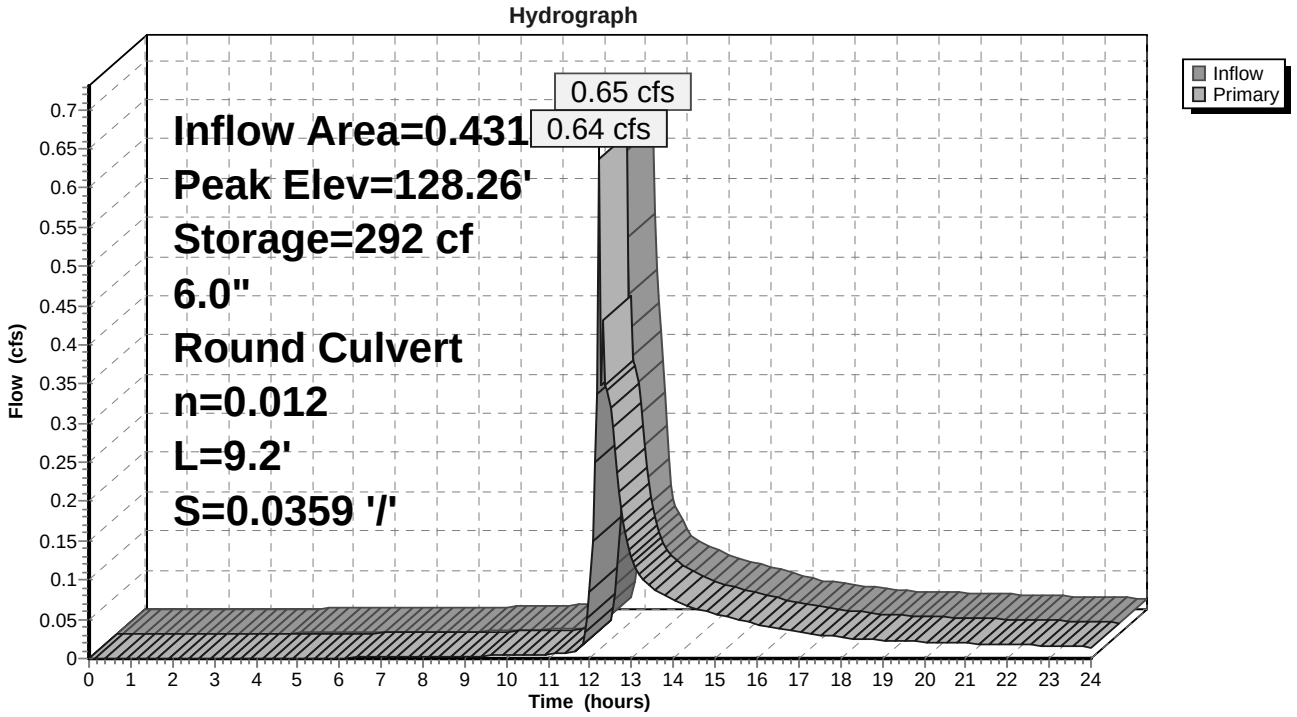
Volume	Invert	Avail.Storage	Storage Description
#1	127.28'	292 cf	**Open Water Storage (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
127.28	522	93.9	0	0	522
127.75	726	110.0	292	292	788

Device	Routing	Invert	Outlet Devices
#1	Primary	127.28'	**6.0" Round 6" HDPE N-12?** L= 9.2' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 127.28' / 126.95' S= 0.0359 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf

Primary OutFlow Max=0.64 cfs @ 12.20 hrs HW=128.25' TW=127.08' (Dynamic Tailwater)
1=6" HDPE N-12? (Inlet Controls 0.64 cfs @ 3.24 fps)

Pond 3P: Detention Pond



Summary for Pond 4P: Detention Pond

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=75)

Inflow Area = 0.602 ac, 28.17% Impervious, Inflow Depth > 2.15" for 25Yr-24Hr event
Inflow = 1.24 cfs @ 12.15 hrs, Volume= 0.108 af
Outflow = 1.05 cfs @ 12.70 hrs, Volume= 0.068 af, Atten= 15%, Lag= 32.6 min
Primary = 1.05 cfs @ 12.70 hrs, Volume= 0.068 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 123.58' @ 12.65 hrs Surf.Area= 2,680 sf Storage= 1,920 cf

Plug-Flow detention time= 201.5 min calculated for 0.068 af (63% of inflow)
Center-of-Mass det. time= 85.6 min (952.2 - 866.6)

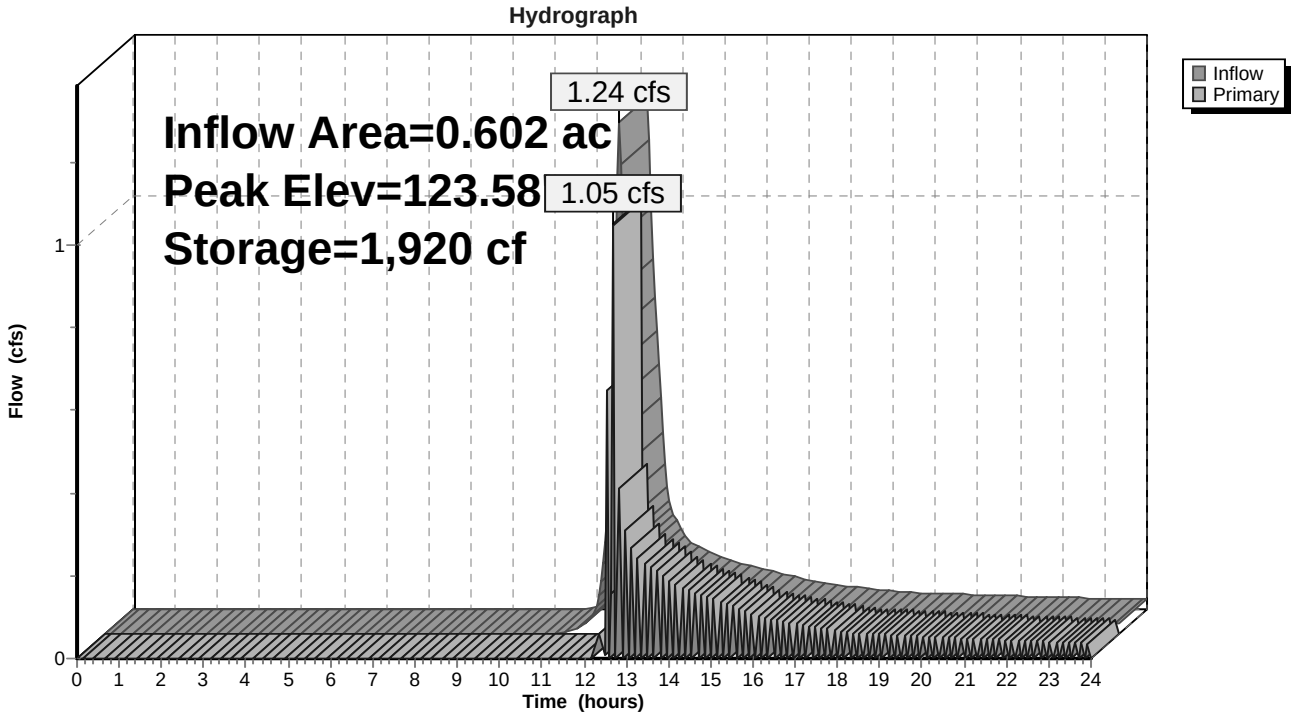
Volume	Invert	Avail.Storage	Storage Description
#1	122.25'	3,184 cf	**Open Water Storage (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
122.25	92	42.6	0	0	92
123.00	1,897	175.8	602	602	2,408
124.00	3,335	225.4	2,582	3,184	4,005

Device	Routing	Invert	Outlet Devices
#1	Primary	123.50'	**40.0' long x 7.0' 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) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78

Primary OutFlow Max=0.00 cfs @ 12.70 hrs HW=123.56' TW=123.61' (Dynamic Tailwater)
1=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 4P: Detention Pond



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

Subcatchment1aS: Sophie Runoff Area=1,332 sf 67.57% Impervious Runoff Depth>1.66"
Tc=6.0 min CN=79 Runoff=0.06 cfs 0.004 af

Subcatchment1S: Subcatchment#1 Runoff Area=16,029 sf 9.26% Impervious Runoff Depth>0.08"
Flow Length=436' Tc=10.7 min CN=44 Runoff=0.00 cfs 0.003 af

Subcatchment2S: Subcatchment#2 Runoff Area=39,494 sf 4.03% Impervious Runoff Depth>0.01"
Flow Length=486' Tc=11.5 min CN=39 Runoff=0.00 cfs 0.001 af

Subcatchment3S: Subcatchment#3 Runoff Area=18,098 sf 15.23% Impervious Runoff Depth>0.17"
Flow Length=254' Tc=6.7 min CN=48 Runoff=0.02 cfs 0.006 af

Subcatchment4S: Subcatchment#4 Runoff Area=26,233 sf 28.17% Impervious Runoff Depth>0.42"
Flow Length=250' Tc=9.9 min CN=56 Runoff=0.14 cfs 0.021 af

Subcatchment5S: Subcatchment#5 Runoff Area=64,765 sf 11.53% Impervious Runoff Depth>0.17"
Flow Length=428' Tc=12.0 min CN=48 Runoff=0.06 cfs 0.021 af

Subcatchment6S: Subcatchment#6 Runoff Area=18,362 sf 0.00% Impervious Runoff Depth>0.00"
Flow Length=186' Tc=6.0 min CN=37 Runoff=0.00 cfs 0.000 af

Subcatchment7S: Subcatchment#7 Runoff Area=660 sf 100.00% Impervious Runoff Depth>3.38"
Tc=6.0 min CN=98 Runoff=0.05 cfs 0.004 af

Subcatchment8S: Subcatchment#8 Runoff Area=660 sf 100.00% Impervious Runoff Depth>3.38"
Tc=6.0 min CN=98 Runoff=0.05 cfs 0.004 af

Reach 1aR: Overland Flow From Swale Avg. Flow Depth=0.01' Max Vel=0.62 fps Inflow=0.00 cfs 0.003 af
n=0.035 L=22.4' S=0.2009 '/' Capacity=30.36 cfs Outflow=0.00 cfs 0.003 af

Reach 1bR: Overland Flow From Swale Avg. Flow Depth=0.01' Max Vel=0.24 fps Inflow=0.00 cfs 0.003 af
n=0.080 L=73.2' S=0.0786 '/' Capacity=8.31 cfs Outflow=0.00 cfs 0.003 af

Reach 3aR: Flow From Pond Outlet Avg. Flow Depth=0.03' Max Vel=1.14 fps Inflow=0.03 cfs 0.010 af
n=0.030 L=13.0' S=0.0923 '/' Capacity=11.85 cfs Outflow=0.03 cfs 0.010 af

Reach 3bR: Overland Flow Over Avg. Flow Depth=0.02' Max Vel=0.68 fps Inflow=0.03 cfs 0.010 af
n=0.022 L=153.2' S=0.0294 '/' Capacity=27.77 cfs Outflow=0.03 cfs 0.010 af

Reach 4aR: Overflow From Depression Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.035 L=78.7' S=0.0286 '/' Capacity=17.22 cfs Outflow=0.00 cfs 0.000 af

Reach 4bR: Combined Overland Flow Avg. Flow Depth=0.02' Max Vel=0.53 fps Inflow=0.03 cfs 0.010 af
n=0.035 L=68.5' S=0.0365 '/' Capacity=19.46 cfs Outflow=0.03 cfs 0.010 af

Reach 7aR: Overland Flow Avg. Flow Depth=0.02' Max Vel=1.05 fps Inflow=0.05 cfs 0.004 af
n=0.030 L=24.0' S=0.1150 '/' Capacity=40.30 cfs Outflow=0.05 cfs 0.004 af

Reach 7bR: Overland Flow Avg. Flow Depth=0.02' Max Vel=1.82 fps Inflow=0.05 cfs 0.004 af
n=0.030 L=19.7' S=0.5584 '/' Capacity=88.80 cfs Outflow=0.05 cfs 0.004 af

Reach 7cR: Overland Flow Avg. Flow Depth=0.03' Max Vel=0.75 fps Inflow=0.05 cfs 0.004 af
n=0.030 L=152.5' S=0.0475 '/' Capacity=25.91 cfs Outflow=0.05 cfs 0.004 af

Reach 8aR: Overland Flow Avg. Flow Depth=0.02' Max Vel=1.52 fps Inflow=0.05 cfs 0.004 af
n=0.030 L=19.2' S=0.3313 '/' Capacity=68.39 cfs Outflow=0.05 cfs 0.004 af

Reach 8bR: Overland Flow Avg. Flow Depth=0.02' Max Vel=0.98 fps Inflow=0.05 cfs 0.004 af
n=0.035 L=77.0' S=0.1299 '/' Capacity=36.71 cfs Outflow=0.05 cfs 0.004 af

Reach 8cR: Overland Flow Avg. Flow Depth=0.03' Max Vel=0.69 fps Inflow=0.05 cfs 0.004 af
n=0.035 L=55.2' S=0.0498 '/' Capacity=22.73 cfs Outflow=0.05 cfs 0.004 af

Reach 8dR: Overland Flow Avg. Flow Depth=0.03' Max Vel=0.63 fps Inflow=0.05 cfs 0.004 af
n=0.030 L=267.2' S=0.0327 '/' Capacity=21.50 cfs Outflow=0.04 cfs 0.004 af

Reach 200R: Final Reach #200 Inflow=0.04 cfs 0.008 af
Outflow=0.04 cfs 0.008 af

Reach 500R: Final Reach #500 Inflow=0.09 cfs 0.031 af
Outflow=0.09 cfs 0.031 af

Reach 600R: Final Reach #600 Inflow=0.00 cfs 0.000 af
Outflow=0.00 cfs 0.000 af

Reach 1000R: Final Reach #1000 Inflow=0.06 cfs 0.004 af
Outflow=0.06 cfs 0.004 af

Pond 3P: Detention Pond Peak Elev=127.39' Storage=61 cf Inflow=0.05 cfs 0.010 af
6.0" Round Culvert n=0.012 L=9.2' S=0.0359 '/' Outflow=0.03 cfs 0.010 af

Pond 4P: Detention Pond Peak Elev=123.16' Storage=922 cf Inflow=0.14 cfs 0.021 af
Outflow=0.00 cfs 0.000 af

Total Runoff Area = 4.262 ac Runoff Volume = 0.065 af Average Runoff Depth = 0.18"
87.66% Pervious = 3.736 ac 12.34% Impervious = 0.526 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

Subcatchment1aS: Sophie Runoff Area=1,332 sf 67.57% Impervious Runoff Depth>3.20"
Tc=6.0 min CN=79 Runoff=0.11 cfs 0.008 af

Subcatchment1S: Subcatchment#1 Runoff Area=16,029 sf 9.26% Impervious Runoff Depth>0.54"
Flow Length=436' Tc=10.7 min CN=44 Runoff=0.09 cfs 0.017 af

Subcatchment2S: Subcatchment#2 Runoff Area=39,494 sf 4.03% Impervious Runoff Depth>0.30"
Flow Length=486' Tc=11.5 min CN=39 Runoff=0.08 cfs 0.023 af

Subcatchment3S: Subcatchment#3 Runoff Area=18,098 sf 15.23% Impervious Runoff Depth>0.77"
Flow Length=254' Tc=6.7 min CN=48 Runoff=0.22 cfs 0.027 af

Subcatchment4S: Subcatchment#4 Runoff Area=26,233 sf 28.17% Impervious Runoff Depth>1.28"
Flow Length=250' Tc=9.9 min CN=56 Runoff=0.68 cfs 0.064 af

Subcatchment5S: Subcatchment#5 Runoff Area=64,765 sf 11.53% Impervious Runoff Depth>0.76"
Flow Length=428' Tc=12.0 min CN=48 Runoff=0.68 cfs 0.095 af

Subcatchment6S: Subcatchment#6 Runoff Area=18,362 sf 0.00% Impervious Runoff Depth>0.22"
Flow Length=186' Tc=6.0 min CN=37 Runoff=0.02 cfs 0.008 af

Subcatchment7S: Subcatchment#7 Runoff Area=660 sf 100.00% Impervious Runoff Depth>5.22"
Tc=6.0 min CN=98 Runoff=0.08 cfs 0.007 af

Subcatchment8S: Subcatchment#8 Runoff Area=660 sf 100.00% Impervious Runoff Depth>5.22"
Tc=6.0 min CN=98 Runoff=0.08 cfs 0.007 af

Reach 1aR: Overland Flow From Swale Avg. Flow Depth=0.03' Max Vel=1.54 fps Inflow=0.09 cfs 0.017 af
n=0.035 L=22.4' S=0.2009 '/' Capacity=30.36 cfs Outflow=0.09 cfs 0.017 af

Reach 1bR: Overland Flow From Swale Avg. Flow Depth=0.06' Max Vel=0.63 fps Inflow=0.09 cfs 0.017 af
n=0.080 L=73.2' S=0.0786 '/' Capacity=8.31 cfs Outflow=0.09 cfs 0.017 af

Reach 3aR: Flow From Pond Outlet Avg. Flow Depth=0.07' Max Vel=2.02 fps Inflow=0.19 cfs 0.032 af
n=0.030 L=13.0' S=0.0923 '/' Capacity=11.85 cfs Outflow=0.19 cfs 0.032 af

Reach 3bR: Overland Flow Over Avg. Flow Depth=0.05' Max Vel=1.20 fps Inflow=0.19 cfs 0.032 af
n=0.022 L=153.2' S=0.0294 '/' Capacity=27.77 cfs Outflow=0.19 cfs 0.032 af

Reach 4aR: Overflow From Depression Avg. Flow Depth=0.05' Max Vel=0.71 fps Inflow=0.20 cfs 0.024 af
n=0.035 L=78.7' S=0.0286 '/' Capacity=17.22 cfs Outflow=0.11 cfs 0.024 af

Reach 4bR: Combined Overland Flow Avg. Flow Depth=0.06' Max Vel=0.94 fps Inflow=0.19 cfs 0.057 af
n=0.035 L=68.5' S=0.0365 '/' Capacity=19.46 cfs Outflow=0.19 cfs 0.056 af

Reach 7aR: Overland Flow Avg. Flow Depth=0.03' Max Vel=1.19 fps Inflow=0.08 cfs 0.007 af
n=0.030 L=24.0' S=0.1150 '/' Capacity=40.30 cfs Outflow=0.08 cfs 0.007 af

Reach 7bR: Overland Flow Avg. Flow Depth=0.02' Max Vel=2.06 fps Inflow=0.08 cfs 0.007 af
n=0.030 L=19.7' S=0.5584 '/' Capacity=88.80 cfs Outflow=0.08 cfs 0.007 af

Reach 7cR: Overland Flow Avg. Flow Depth=0.03' Max Vel=0.85 fps Inflow=0.08 cfs 0.007 af
n=0.030 L=152.5' S=0.0475 '/' Capacity=25.91 cfs Outflow=0.07 cfs 0.007 af

Reach 8aR: Overland Flow Avg. Flow Depth=0.02' Max Vel=1.72 fps Inflow=0.08 cfs 0.007 af
n=0.030 L=19.2' S=0.3313 '/' Capacity=68.39 cfs Outflow=0.08 cfs 0.007 af

Reach 8bR: Overland Flow Avg. Flow Depth=0.03' Max Vel=1.11 fps Inflow=0.08 cfs 0.007 af
n=0.035 L=77.0' S=0.1299 '/' Capacity=36.71 cfs Outflow=0.08 cfs 0.007 af

Reach 8cR: Overland Flow Avg. Flow Depth=0.04' Max Vel=0.79 fps Inflow=0.08 cfs 0.007 af
n=0.035 L=55.2' S=0.0498 '/' Capacity=22.73 cfs Outflow=0.08 cfs 0.007 af

Reach 8dR: Overland Flow Avg. Flow Depth=0.03' Max Vel=0.72 fps Inflow=0.08 cfs 0.007 af
n=0.030 L=267.2' S=0.0327 '/' Capacity=21.50 cfs Outflow=0.06 cfs 0.007 af

Reach 200R: Final Reach #200 Inflow=0.20 cfs 0.046 af
Outflow=0.20 cfs 0.046 af

Reach 500R: Final Reach #500 Inflow=0.84 cfs 0.151 af
Outflow=0.84 cfs 0.151 af

Reach 600R: Final Reach #600 Inflow=0.02 cfs 0.008 af
Outflow=0.02 cfs 0.008 af

Reach 1000R: Final Reach #1000 Inflow=0.11 cfs 0.008 af
Outflow=0.11 cfs 0.008 af

Pond 3P: Detention Pond Peak Elev=127.59' Storage=182 cf Inflow=0.30 cfs 0.033 af
6.0" Round Culvert n=0.012 L=9.2' S=0.0359 '/' Outflow=0.19 cfs 0.032 af

Pond 4P: Detention Pond Peak Elev=123.52' Storage=1,770 cf Inflow=0.68 cfs 0.064 af
Outflow=0.20 cfs 0.024 af

Total Runoff Area = 4.262 ac Runoff Volume = 0.254 af Average Runoff Depth = 0.72"
87.66% Pervious = 3.736 ac 12.34% Impervious = 0.526 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

Subcatchment1aS: Sophie Runoff Area=1,332 sf 67.57% Impervious Runoff Depth>4.50"
Tc=6.0 min CN=79 Runoff=0.16 cfs 0.011 af

Subcatchment1S: Subcatchment#1 Runoff Area=16,029 sf 9.26% Impervious Runoff Depth>1.11"
Flow Length=436' Tc=10.7 min CN=44 Runoff=0.28 cfs 0.034 af

Subcatchment2S: Subcatchment#2 Runoff Area=39,494 sf 4.03% Impervious Runoff Depth>0.73"
Flow Length=486' Tc=11.5 min CN=39 Runoff=0.32 cfs 0.055 af

Subcatchment3S: Subcatchment#3 Runoff Area=18,098 sf 15.23% Impervious Runoff Depth>1.44"
Flow Length=254' Tc=6.7 min CN=48 Runoff=0.56 cfs 0.050 af

Subcatchment4S: Subcatchment#4 Runoff Area=26,233 sf 28.17% Impervious Runoff Depth>2.15"
Flow Length=250' Tc=9.9 min CN=56 Runoff=1.24 cfs 0.108 af

Subcatchment5S: Subcatchment#5 Runoff Area=64,765 sf 11.53% Impervious Runoff Depth>1.44"
Flow Length=428' Tc=12.0 min CN=48 Runoff=1.67 cfs 0.178 af

Subcatchment6S: Subcatchment#6 Runoff Area=18,362 sf 0.00% Impervious Runoff Depth>0.60"
Flow Length=186' Tc=6.0 min CN=37 Runoff=0.11 cfs 0.021 af

Subcatchment7S: Subcatchment#7 Runoff Area=660 sf 100.00% Impervious Runoff Depth>6.67"
Tc=6.0 min CN=98 Runoff=0.10 cfs 0.008 af

Subcatchment8S: Subcatchment#8 Runoff Area=660 sf 100.00% Impervious Runoff Depth>6.67"
Tc=6.0 min CN=98 Runoff=0.10 cfs 0.008 af

Reach 1aR: Overland Flow From Swale Avg. Flow Depth=0.06' Max Vel=2.17 fps Inflow=0.28 cfs 0.034 af
n=0.035 L=22.4' S=0.2009 '/' Capacity=30.36 cfs Outflow=0.28 cfs 0.034 af

Reach 1bR: Overland Flow From Swale Avg. Flow Depth=0.11' Max Vel=0.88 fps Inflow=0.28 cfs 0.034 af
n=0.080 L=73.2' S=0.0786 '/' Capacity=8.31 cfs Outflow=0.29 cfs 0.034 af

Reach 3aR: Flow From Pond Outlet Avg. Flow Depth=0.13' Max Vel=2.91 fps Inflow=0.64 cfs 0.057 af
n=0.030 L=13.0' S=0.0923 '/' Capacity=11.85 cfs Outflow=0.63 cfs 0.057 af

Reach 3bR: Overland Flow Over Avg. Flow Depth=0.08' Max Vel=1.62 fps Inflow=0.63 cfs 0.057 af
n=0.022 L=153.2' S=0.0294 '/' Capacity=27.77 cfs Outflow=0.53 cfs 0.057 af

Reach 4aR: Overflow From Depression Avg. Flow Depth=0.12' Max Vel=1.31 fps Inflow=1.05 cfs 0.068 af
n=0.035 L=78.7' S=0.0286 '/' Capacity=17.22 cfs Outflow=0.76 cfs 0.068 af

Reach 4bR: Combined Overland Flow Avg. Flow Depth=0.12' Max Vel=1.48 fps Inflow=0.98 cfs 0.126 af
n=0.035 L=68.5' S=0.0365 '/' Capacity=19.46 cfs Outflow=0.89 cfs 0.126 af

Reach 7aR: Overland Flow Avg. Flow Depth=0.03' Max Vel=1.28 fps Inflow=0.10 cfs 0.008 af
n=0.030 L=24.0' S=0.1150 '/' Capacity=40.30 cfs Outflow=0.10 cfs 0.008 af

Reach 7bR: Overland Flow Avg. Flow Depth=0.02' Max Vel=2.22 fps Inflow=0.10 cfs 0.008 af
n=0.030 L=19.7' S=0.5584 '/' Capacity=88.80 cfs Outflow=0.10 cfs 0.008 af

Reach 7cR: Overland Flow Avg. Flow Depth=0.04' Max Vel=0.92 fps Inflow=0.10 cfs 0.008 af
n=0.030 L=152.5' S=0.0475 '/' Capacity=25.91 cfs Outflow=0.09 cfs 0.008 af

Reach 8aR: Overland Flow Avg. Flow Depth=0.02' Max Vel=1.84 fps Inflow=0.10 cfs 0.008 af
n=0.030 L=19.2' S=0.3313 '/' Capacity=68.39 cfs Outflow=0.10 cfs 0.008 af

Reach 8bR: Overland Flow Avg. Flow Depth=0.03' Max Vel=1.20 fps Inflow=0.10 cfs 0.008 af
n=0.035 L=77.0' S=0.1299 '/' Capacity=36.71 cfs Outflow=0.10 cfs 0.008 af

Reach 8cR: Overland Flow Avg. Flow Depth=0.04' Max Vel=0.85 fps Inflow=0.10 cfs 0.008 af
n=0.035 L=55.2' S=0.0498 '/' Capacity=22.73 cfs Outflow=0.10 cfs 0.008 af

Reach 8dR: Overland Flow Avg. Flow Depth=0.04' Max Vel=0.78 fps Inflow=0.10 cfs 0.008 af
n=0.030 L=267.2' S=0.0327 '/' Capacity=21.50 cfs Outflow=0.08 cfs 0.008 af

Reach 200R: Final Reach #200 Inflow=0.66 cfs 0.098 af
Outflow=0.66 cfs 0.098 af

Reach 500R: Final Reach #500 Inflow=2.15 cfs 0.304 af
Outflow=2.15 cfs 0.304 af

Reach 600R: Final Reach #600 Inflow=0.11 cfs 0.021 af
Outflow=0.11 cfs 0.021 af

Reach 1000R: Final Reach #1000 Inflow=0.16 cfs 0.011 af
Outflow=0.16 cfs 0.011 af

Pond 3P: Detention Pond Peak Elev=128.26' Storage=292 cf Inflow=0.65 cfs 0.058 af
6.0" Round Culvert n=0.012 L=9.2' S=0.0359 '/' Outflow=0.64 cfs 0.057 af

Pond 4P: Detention Pond Peak Elev=123.58' Storage=1,920 cf Inflow=1.24 cfs 0.108 af
Outflow=1.05 cfs 0.068 af

Total Runoff Area = 4.262 ac Runoff Volume = 0.475 af Average Runoff Depth = 1.34"
87.66% Pervious = 3.736 ac 12.34% Impervious = 0.526 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

Subcatchment1aS: Sophie Runoff Area=1,332 sf 67.57% Impervious Runoff Depth>5.76"
Tc=6.0 min CN=79 Runoff=0.20 cfs 0.015 af

Subcatchment1S: Subcatchment#1 Runoff Area=16,029 sf 9.26% Impervious Runoff Depth>1.77"
Flow Length=436' Tc=10.7 min CN=44 Runoff=0.54 cfs 0.054 af

Subcatchment2S: Subcatchment#2 Runoff Area=39,494 sf 4.03% Impervious Runoff Depth>1.27"
Flow Length=486' Tc=11.5 min CN=39 Runoff=0.76 cfs 0.096 af

Subcatchment3S: Subcatchment#3 Runoff Area=18,098 sf 15.23% Impervious Runoff Depth>2.20"
Flow Length=254' Tc=6.7 min CN=48 Runoff=0.93 cfs 0.076 af

Subcatchment4S: Subcatchment#4 Runoff Area=26,233 sf 28.17% Impervious Runoff Depth>3.08"
Flow Length=250' Tc=9.9 min CN=56 Runoff=1.83 cfs 0.154 af

Subcatchment5S: Subcatchment#5 Runoff Area=64,765 sf 11.53% Impervious Runoff Depth>2.19"
Flow Length=428' Tc=12.0 min CN=48 Runoff=2.78 cfs 0.272 af

Subcatchment6S: Subcatchment#6 Runoff Area=18,362 sf 0.00% Impervious Runoff Depth>1.08"
Flow Length=186' Tc=6.0 min CN=37 Runoff=0.30 cfs 0.038 af

Subcatchment7S: Subcatchment#7 Runoff Area=660 sf 100.00% Impervious Runoff Depth>8.03"
Tc=6.0 min CN=98 Runoff=0.12 cfs 0.010 af

Subcatchment8S: Subcatchment#8 Runoff Area=660 sf 100.00% Impervious Runoff Depth>8.03"
Tc=6.0 min CN=98 Runoff=0.12 cfs 0.010 af

Reach 1aR: Overland Flow From Swale Avg. Flow Depth=0.08' Max Vel=2.62 fps Inflow=0.54 cfs 0.054 af
n=0.035 L=22.4' S=0.2009 '/' Capacity=30.36 cfs Outflow=0.53 cfs 0.054 af

Reach 1bR: Overland Flow From Swale Avg. Flow Depth=0.14' Max Vel=1.07 fps Inflow=0.53 cfs 0.054 af
n=0.080 L=73.2' S=0.0786 '/' Capacity=8.31 cfs Outflow=0.53 cfs 0.054 af

Reach 3aR: Flow From Pond Outlet Avg. Flow Depth=0.17' Max Vel=3.50 fps Inflow=1.21 cfs 0.085 af
n=0.030 L=13.0' S=0.0923 '/' Capacity=11.85 cfs Outflow=1.19 cfs 0.085 af

Reach 3bR: Overland Flow Over Avg. Flow Depth=0.11' Max Vel=2.03 fps Inflow=1.19 cfs 0.085 af
n=0.022 L=153.2' S=0.0294 '/' Capacity=27.77 cfs Outflow=1.05 cfs 0.085 af

Reach 4aR: Overflow From Depression Avg. Flow Depth=0.16' Max Vel=1.63 fps Inflow=1.79 cfs 0.114 af
n=0.035 L=78.7' S=0.0286 '/' Capacity=17.22 cfs Outflow=1.51 cfs 0.116 af

Reach 4bR: Combined Overland Flow Avg. Flow Depth=0.15' Max Vel=1.76 fps Inflow=1.85 cfs 0.201 af
n=0.035 L=68.5' S=0.0365 '/' Capacity=19.46 cfs Outflow=1.49 cfs 0.200 af

Reach 7aR: Overland Flow Avg. Flow Depth=0.03' Max Vel=1.35 fps Inflow=0.12 cfs 0.010 af
n=0.030 L=24.0' S=0.1150 '/' Capacity=40.30 cfs Outflow=0.12 cfs 0.010 af

Reach 7bR: Overland Flow Avg. Flow Depth=0.02' Max Vel=2.34 fps Inflow=0.12 cfs 0.010 af
n=0.030 L=19.7' S=0.5584 '/' Capacity=88.80 cfs Outflow=0.12 cfs 0.010 af

Reach 7cR: Overland Flow Avg. Flow Depth=0.04' Max Vel=0.97 fps Inflow=0.12 cfs 0.010 af
n=0.030 L=152.5' S=0.0475 '/' Capacity=25.91 cfs Outflow=0.11 cfs 0.010 af

Reach 8aR: Overland Flow Avg. Flow Depth=0.03' Max Vel=1.95 fps Inflow=0.12 cfs 0.010 af
n=0.030 L=19.2' S=0.3313 '/' Capacity=68.39 cfs Outflow=0.12 cfs 0.010 af

Reach 8bR: Overland Flow Avg. Flow Depth=0.04' Max Vel=1.26 fps Inflow=0.12 cfs 0.010 af
n=0.035 L=77.0' S=0.1299 '/' Capacity=36.71 cfs Outflow=0.12 cfs 0.010 af

Reach 8cR: Overland Flow Avg. Flow Depth=0.04' Max Vel=0.90 fps Inflow=0.12 cfs 0.010 af
n=0.035 L=55.2' S=0.0498 '/' Capacity=22.73 cfs Outflow=0.12 cfs 0.010 af

Reach 8dR: Overland Flow Avg. Flow Depth=0.04' Max Vel=0.83 fps Inflow=0.12 cfs 0.010 af
n=0.030 L=267.2' S=0.0327 '/' Capacity=21.50 cfs Outflow=0.10 cfs 0.010 af

Reach 200R: Final Reach #200 Inflow=1.39 cfs 0.160 af
Outflow=1.39 cfs 0.160 af

Reach 500R: Final Reach #500 Inflow=3.91 cfs 0.472 af
Outflow=3.91 cfs 0.472 af

Reach 600R: Final Reach #600 Inflow=0.30 cfs 0.038 af
Outflow=0.30 cfs 0.038 af

Reach 1000R: Final Reach #1000 Inflow=0.20 cfs 0.015 af
Outflow=0.20 cfs 0.015 af

Pond 3P: Detention Pond Peak Elev=130.08' Storage=292 cf Inflow=1.04 cfs 0.086 af
6.0" Round Culvert n=0.012 L=9.2' S=0.0359 '/' Outflow=1.21 cfs 0.085 af

Pond 4P: Detention Pond Peak Elev=123.63' Storage=2,070 cf Inflow=1.83 cfs 0.154 af
Outflow=1.79 cfs 0.114 af

Total Runoff Area = 4.262 ac Runoff Volume = 0.725 af Average Runoff Depth = 2.04"
87.66% Pervious = 3.736 ac 12.34% Impervious = 0.526 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

Subcatchment1aS: Sophie Runoff Area=1,332 sf 67.57% Impervious Runoff Depth>7.28"
Tc=6.0 min CN=79 Runoff=0.25 cfs 0.019 af

Subcatchment1S: Subcatchment#1 Runoff Area=16,029 sf 9.26% Impervious Runoff Depth>2.68"
Flow Length=436' Tc=10.7 min CN=44 Runoff=0.89 cfs 0.082 af

Subcatchment2S: Subcatchment#2 Runoff Area=39,494 sf 4.03% Impervious Runoff Depth>2.03"
Flow Length=486' Tc=11.5 min CN=39 Runoff=1.45 cfs 0.154 af

Subcatchment3S: Subcatchment#3 Runoff Area=18,098 sf 15.23% Impervious Runoff Depth>3.21"
Flow Length=254' Tc=6.7 min CN=48 Runoff=1.43 cfs 0.111 af

Subcatchment4S: Subcatchment#4 Runoff Area=26,233 sf 28.17% Impervious Runoff Depth>4.27"
Flow Length=250' Tc=9.9 min CN=56 Runoff=2.58 cfs 0.214 af

Subcatchment5S: Subcatchment#5 Runoff Area=64,765 sf 11.53% Impervious Runoff Depth>3.21"
Flow Length=428' Tc=12.0 min CN=48 Runoff=4.28 cfs 0.397 af

Subcatchment6S: Subcatchment#6 Runoff Area=18,362 sf 0.00% Impervious Runoff Depth>1.79"
Flow Length=186' Tc=6.0 min CN=37 Runoff=0.67 cfs 0.063 af

Subcatchment7S: Subcatchment#7 Runoff Area=660 sf 100.00% Impervious Runoff Depth>9.64"
Tc=6.0 min CN=98 Runoff=0.14 cfs 0.012 af

Subcatchment8S: Subcatchment#8 Runoff Area=660 sf 100.00% Impervious Runoff Depth>9.64"
Tc=6.0 min CN=98 Runoff=0.14 cfs 0.012 af

Reach 1aR: Overland Flow From Swale Avg. Flow Depth=0.10' Max Vel=3.07 fps Inflow=0.89 cfs 0.082 af
n=0.035 L=22.4' S=0.2009 '/' Capacity=30.36 cfs Outflow=0.89 cfs 0.082 af

Reach 1bR: Overland Flow From Swale Avg. Flow Depth=0.18' Max Vel=1.25 fps Inflow=0.89 cfs 0.082 af
n=0.080 L=73.2' S=0.0786 '/' Capacity=8.31 cfs Outflow=0.88 cfs 0.082 af

Reach 3aR: Flow From Pond Outlet Avg. Flow Depth=0.20' Max Vel=3.93 fps Inflow=1.74 cfs 0.122 af
n=0.030 L=13.0' S=0.0923 '/' Capacity=11.85 cfs Outflow=1.70 cfs 0.122 af

Reach 3bR: Overland Flow Over Avg. Flow Depth=0.13' Max Vel=2.26 fps Inflow=1.70 cfs 0.122 af
n=0.022 L=153.2' S=0.0294 '/' Capacity=27.77 cfs Outflow=1.53 cfs 0.122 af

Reach 4aR: Overflow From Depression Avg. Flow Depth=0.22' Max Vel=1.97 fps Inflow=4.21 cfs 0.174 af
n=0.035 L=78.7' S=0.0286 '/' Capacity=17.22 cfs Outflow=2.81 cfs 0.178 af

Reach 4bR: Combined Overland Flow Avg. Flow Depth=0.22' Max Vel=2.24 fps Inflow=3.76 cfs 0.300 af
n=0.035 L=68.5' S=0.0365 '/' Capacity=19.46 cfs Outflow=3.28 cfs 0.300 af

Reach 7aR: Overland Flow Avg. Flow Depth=0.04' Max Vel=1.43 fps Inflow=0.14 cfs 0.012 af
n=0.030 L=24.0' S=0.1150 '/' Capacity=40.30 cfs Outflow=0.14 cfs 0.012 af

Reach 7bR: Overland Flow Avg. Flow Depth=0.03' Max Vel=2.47 fps Inflow=0.14 cfs 0.012 af
n=0.030 L=19.7' S=0.5584 '/' Capacity=88.80 cfs Outflow=0.14 cfs 0.012 af

Reach 7cR: Overland Flow Avg. Flow Depth=0.04' Max Vel=1.03 fps Inflow=0.14 cfs 0.012 af
n=0.030 L=152.5' S=0.0475 '/' Capacity=25.91 cfs Outflow=0.14 cfs 0.012 af

Reach 8aR: Overland Flow Avg. Flow Depth=0.03' Max Vel=2.06 fps Inflow=0.14 cfs 0.012 af
n=0.030 L=19.2' S=0.3313 '/' Capacity=68.39 cfs Outflow=0.14 cfs 0.012 af

Reach 8bR: Overland Flow Avg. Flow Depth=0.04' Max Vel=1.34 fps Inflow=0.14 cfs 0.012 af
n=0.035 L=77.0' S=0.1299 '/' Capacity=36.71 cfs Outflow=0.14 cfs 0.012 af

Reach 8cR: Overland Flow Avg. Flow Depth=0.05' Max Vel=0.95 fps Inflow=0.14 cfs 0.012 af
n=0.035 L=55.2' S=0.0498 '/' Capacity=22.73 cfs Outflow=0.14 cfs 0.012 af

Reach 8dR: Overland Flow Avg. Flow Depth=0.05' Max Vel=0.88 fps Inflow=0.14 cfs 0.012 af
n=0.030 L=267.2' S=0.0327 '/' Capacity=21.50 cfs Outflow=0.12 cfs 0.012 af

Reach 200R: Final Reach #200 Inflow=2.44 cfs 0.248 af
Outflow=2.44 cfs 0.248 af

Reach 500R: Final Reach #500 Inflow=7.16 cfs 0.697 af
Outflow=7.16 cfs 0.697 af

Reach 600R: Final Reach #600 Inflow=0.67 cfs 0.063 af
Outflow=0.67 cfs 0.063 af

Reach 1000R: Final Reach #1000 Inflow=0.25 cfs 0.019 af
Outflow=0.25 cfs 0.019 af

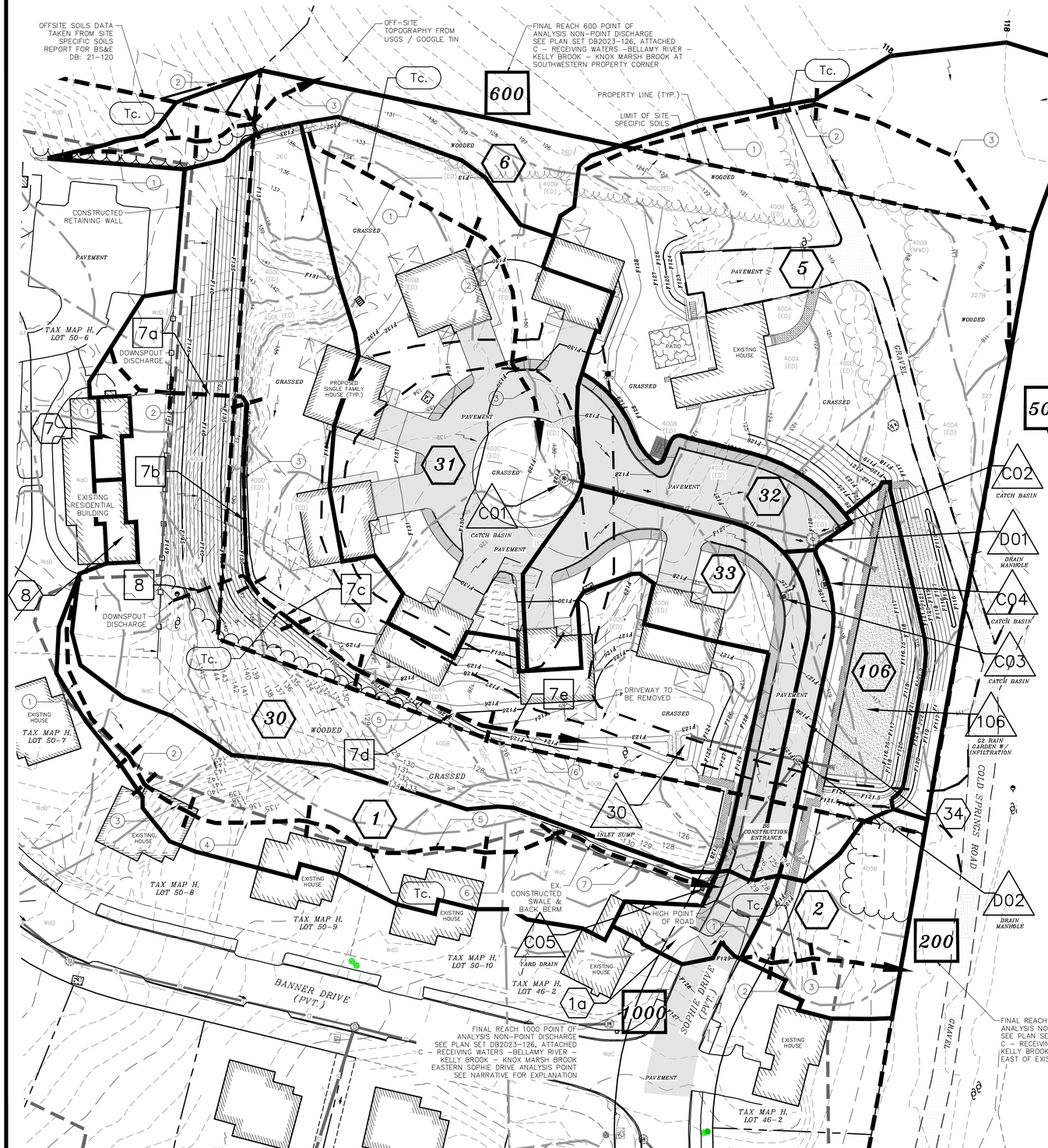
Pond 3P: Detention Pond Peak Elev=132.91' Storage=292 cf Inflow=1.57 cfs 0.123 af
6.0" Round Culvert n=0.012 L=9.2' S=0.0359 '/' Outflow=1.74 cfs 0.122 af

Pond 4P: Detention Pond Peak Elev=123.68' Storage=2,200 cf Inflow=2.58 cfs 0.214 af
Outflow=4.21 cfs 0.174 af

Total Runoff Area = 4.262 ac Runoff Volume = 1.064 af Average Runoff Depth = 3.00"
87.66% Pervious = 3.736 ac 12.34% Impervious = 0.526 ac

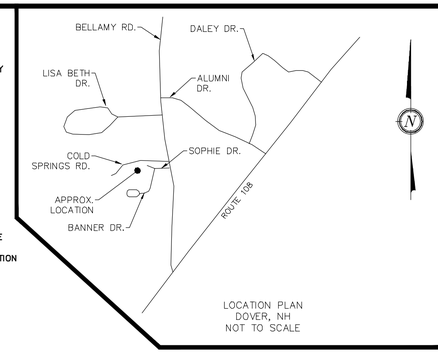
Appendix II - Proposed Conditions Analysis

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



LEGEND:

448A / C/B	SOIL BOUNDARY LIMIT OF SITE SPECIFIC SOIL SURVEY NRCS SOIL LABEL
	LIMIT OF SUBCATCHMENT
	TIME OF CONCENTRATION
	DRAINAGE REACH
S.C.R.D.	STRAFFORD COUNTY REGISTRY OF DEEDS
TYP.	TYPICAL
FND	FOUND
P.O.A.	POINT OF ANALYSIS
PVMT	PAVEMENT
	DRAIN MANHOLE W/STRUCTURE
	CATCH BASIN W/ STRUCTURE
	STORMWATER BMP OUTLET STRUCTURE
D	DRAIN CULVERT W/ FLARED END SECTION (F.E.S.)
	RIP RAP
	STORMWATER BEST MANAGEMENT PRACTICE (BMP) BERM
	RETAINING WALL
	PAVED TRAVEL WAY



LOCATION PLAN
DOVER, NH
NOT TO SCALE

NOTES:

1.) OWNER: 5 SHERMAN STREET LLC
242 CENTRAL AVE
DOVER, NH 03820

APPLICANT: KNOX MARSH DEVELOPMENT LLC
242 CENTRAL AVE
DOVER, NH 03820

2.) TAX MAP H, LOT 47-A

3.) S.C.R.D. BOOK 5190, PAGE 597

4.) LOT AREA: 117,854 Sq. Ft., 2.71 Ac.

5.) THE INTENT OF THIS PLAN IS TO SHOW THE PROPOSED WATERSHED CONDITIONS OF TAX MAP H, LOT 47-A.

6.) I HEREBY CERTIFY THAT, TO THE BEST OF MY KNOWLEDGE AND BELIEF, THIS PROPERTY DOES NOT FALL WITHIN THE FLOOD PLAIN FLOOD HAZARD REF: FEMA COMMUNITY #330145, MAP 33017C0320E, DATED: SEPTEMBER 30, 2015.

7.) VERTICAL DATUM BASED ON NAVD88 ELEVATIONS. HORIZONTAL DATUM BASED ON NAD83 STATE PLANE. COORDINATES GATHERED USING CARLSON BRX7 SURVEY GRADE GPS RECEIVERS.

8.) SEE EXISTING CONDITIONS PLAN FOR EXPLANATION OF CONTOURS. SEE SITE SPECIFIC SOIL SURVEY FOR SOILS EXPLANATION.

9.) HYDROCAD USES A SERIES OF NODE SUFFIXES FOR NUMBERING PURPOSES (S=SUBCATCHMENT, P=POND DEVICE, R=REACH), TO SIMPLIFY ANNOTATION THESE SUFFIXES ARE LEFT OFF THE WATERSHED PLANS AND NODE TYPE IS DENOTED BY THE SYMBOL SHAPE ACCORDING TO THE DISPLAYED LEGEND WHICH COINCIDES WITH HYDROCAD GRAPHICS.

10.) REFERENCES WORK FROM ALTERATION OF TERRAIN PERMIT #AoT-2127 (BS&E DB2021-120) FOR BANNER DRIVE AND SOPHIE DRIVE CONSTRUCTION. CONDITIONS SHOWN ARE AS OF THE DATE OF THE AS-BUILT SURVEY. SITE SPECIFIC SOIL CONDITIONS FOR BANNER DRIVE AND SOPHIE DRIVE REFLECT THOSE SHOWN FOR PERMIT #AoT-2127. SEE COLOR WATERSHED SHEETS FOR IMPERVIOUS COVER CLARIFICATION.

11.) EPA CGP 7.2.4 SITE MAP LEGEND

B5 VEHICLE EXIT
C RECEIVING WATERS
G2 STORMWATER BEST MANAGEMENT PRACTICE

SEE ALSO:

GRADING & DRAINAGE PLAN
EROSION & SEDIMENT CONTROL PLAN
DRAINAGE ANALYSIS & EROSION AND SEDIMENT CONTROL MANUAL
DRAINAGE OPERATION: INSPECTION & MAINTENANCE MANUAL

SOILS LEGEND

Site Specific Soils

Symbol	Slopes	Taxonomic Soil Name	Hydrologic Soil Group
26	C,D,E	Windsor	A
327	A,B,C	Windsor Variant (Clay Subsoil)	C
400 (ED)	A,B,C,D,E	Udorthents (Sandy or Gravelly) (Excessively Drained)	A
400 (MWD)	A,B	Udorthents (Sandy or Gravelly Over Silt Loam) (Moderately Well Drained)	A
900	A	Endoaquents (Sandy or Gravelly)	C
Additional Site Specific Soils From Banner Drive			
Wd	C,D,E	Windsor	A
Slopes: A = 0-3% B = 3-8% C = 8-15% D = 15-25% E = 25- 50% F = 50%+ Denominators: /SPD = Somewhat Poorly Drained /P = Poorly Drained /VP = Very Poorly Drained /Rk = Rocky			
NRCS Soils			
Wf	B	Windsor Loamy Fine Sand, Clay Subsoil Variant	A
Ha	B	Hinckley Loamy Fine Sand, Clay Subsoil Variant	A

SYMBOLS LEGEND:

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

GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.

WETLAND NOTES:

WETLANDS WERE DELINEATED BY JOHN P. HAYES FEBRUARY 19, 2024
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.

STATE OF NEW HAMPSHIRE — JOHN P. HAYES III — 87 — CERTIFIED WETLAND SCIENTIST
JOHN P. HAYES, III CSS #87

STATE OF NEW HAMPSHIRE — JOHN P. HAYES, III — CERTIFIED WETLAND SCIENTIST #18
JOHN P. HAYES, III CWS #18

CITY OF DOVER PLANNING FILE #

REVISION	DATE	DESCRIPTION
#2	03-04-25	REVISED UNIT COUNT AND ASSOCIATED MODIFICATIONS
#1	10-17-24	REVISED UNIT COUNT AND ASSOCIATED MODIFICATIONS

SWPPP EPA SITE MAP (PROPOSED)
W-2 PROPOSED WATERSHED PLAN

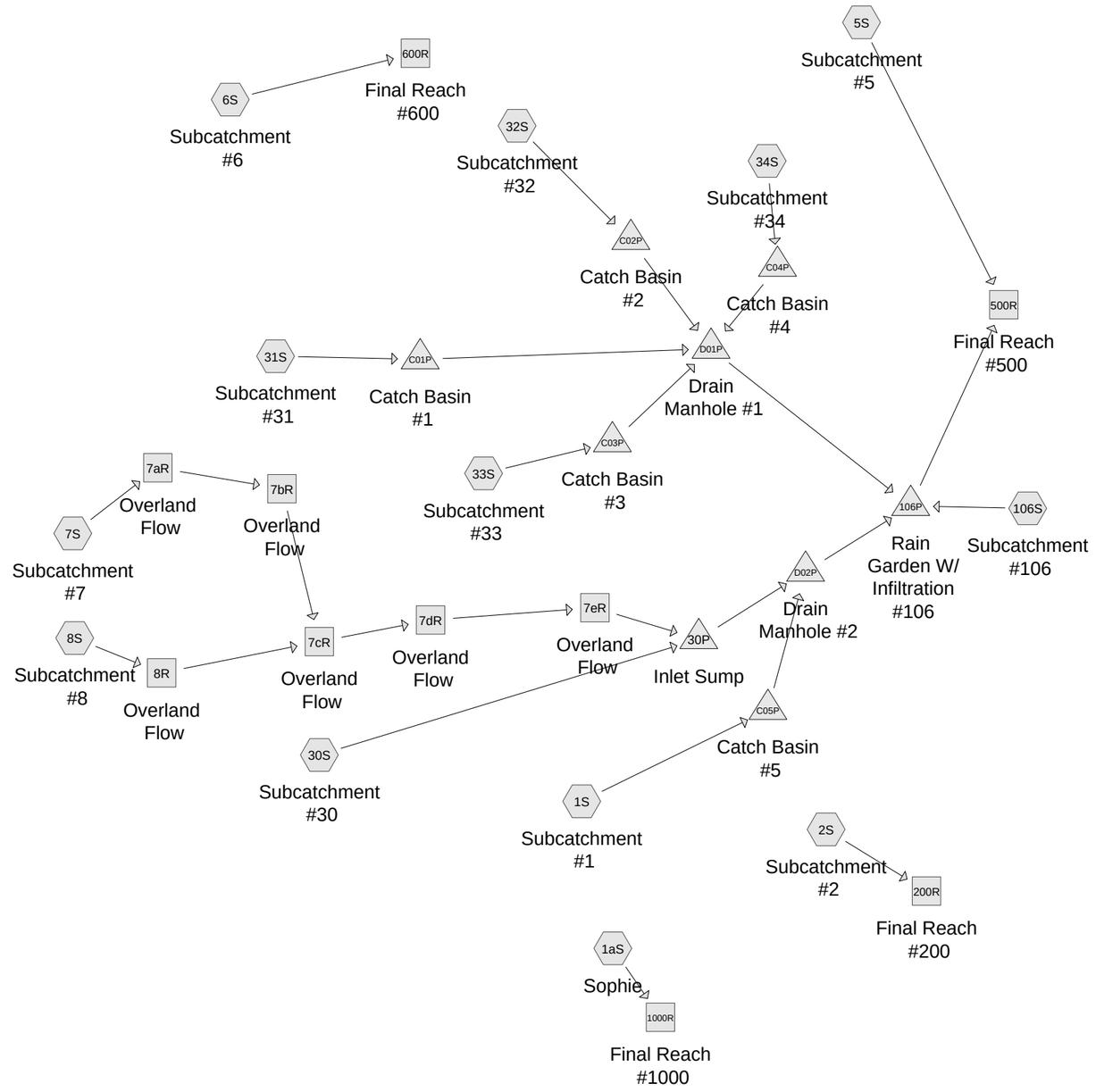
FOR
KNOX MARSH DEVELOPMENT LLC
LAND OF
5 SHERMAN STREET LLC
1 COLD SPRINGS ROAD
DOVER, N.H.
TAX MAP H, LOT 47-A

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

SCALE : 1 IN. EQUALS 30 FT.
DATE : SEPTEMBER 1, 2024
FILE NO. : DB 2023 - 126

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

NOT FOR CONSTRUCTION



Routing Diagram for 23-126 Proposed Analysis, Revised 03/04/25

Prepared by Berry Surveying & Engineering, Printed 3/10/2025

HydroCAD® 10.00-25 s/n 07605 © 2019 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
2.403	39	>75% Grass cover, Good, HSG A (1aS, 1S, 2S, 5S, 6S, 30S, 31S, 33S, 106S)
0.063	74	>75% Grass cover, Good, HSG C (5S, 31S, 106S)
0.074	96	Gravel surface, HSG A (5S, 31S)
0.578	98	Paved parking, HSG A (1aS, 5S, 30S, 31S, 32S, 33S, 34S)
0.009	98	Paved parking, HSG C (31S, 33S)
0.358	98	Roofs, HSG A (1aS, 1S, 5S, 7S, 8S, 30S, 31S, 33S)
0.696	30	Woods, Good, HSG A (2S, 5S, 6S, 30S)
0.082	70	Woods, Good, HSG C (5S)
4.262	**53**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
4.108	HSG A	1aS, 1S, 2S, 5S, 6S, 7S, 8S, 30S, 31S, 32S, 33S, 34S, 106S
0.000	HSG B	
0.154	HSG C	5S, 31S, 33S, 106S
0.000	HSG D	
0.000	Other	
4.262		**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
2.403	0.000	0.063	0.000	0.000	2.466	>75% Grass cover, Good	1aS, 1S, 2S, 5S, 6S, 30S, 31S, 33S, 106S
0.074	0.000	0.000	0.000	0.000	0.074	Gravel surface	5S, 31S
0.578	0.000	0.009	0.000	0.000	0.587	Paved parking	1aS, 5S, 30S, 31S, 32S, 33S, 34S
0.358	0.000	0.000	0.000	0.000	0.358	Roofs	1aS, 1S, 5S, 7S, 8S, 30S, 31S, 33S
0.696	0.000	0.082	0.000	0.000	0.778	Woods, Good	2S, 5S, 6S, 30S
4.108	**0.000**	**0.154**	**0.000**	**0.000**	**4.262**	**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	30P	121.50	121.00	51.0	0.0098	0.012	15.0	0.0	0.0
2	C01P	123.10	121.35	125.2	0.0140	0.012	12.0	0.0	0.0
3	C02P	121.45	121.35	8.5	0.0118	0.012	12.0	0.0	0.0
4	C03P	121.68	121.35	28.0	0.0118	0.012	12.0	0.0	0.0
5	C04P	121.68	121.35	19.0	0.0174	0.012	12.0	0.0	0.0
6	C05P	124.75	124.25	79.0	0.0063	0.012	12.0	0.0	0.0
7	D01P	118.75	117.25	30.0	0.0500	0.012	15.0	0.0	0.0
8	D02P	118.30	117.50	14.0	0.0571	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 1aS: Sophie Runoff Area=2,157 sf 91.56% Impervious Runoff Depth>6.08"
Tc=6.0 min CN=93 Runoff=0.32 cfs 0.025 af

Subcatchment 1S: Subcatchment #1 Runoff Area=15,796 sf 9.39% Impervious Runoff Depth>1.19"
Flow Length=420' Tc=10.6 min CN=45 Runoff=0.31 cfs 0.036 af

Subcatchment 2S: Subcatchment #2 Runoff Area=6,181 sf 0.00% Impervious Runoff Depth>0.60"
Flow Length=83' Tc=6.0 min CN=37 Runoff=0.04 cfs 0.007 af

Subcatchment 5S: Subcatchment #5 Runoff Area=47,233 sf 9.99% Impervious Runoff Depth>1.52"
Flow Length=306' Tc=16.6 min CN=49 Runoff=1.18 cfs 0.138 af

Subcatchment 6S: Subcatchment #6 Runoff Area=6,985 sf 0.00% Impervious Runoff Depth>0.30"
Flow Length=139' Tc=6.0 min CN=32 Runoff=0.01 cfs 0.004 af

Subcatchment 7S: Subcatchment #7 Runoff Area=660 sf 100.00% Impervious Runoff Depth>6.67"
Tc=6.0 min CN=98 Runoff=0.10 cfs 0.008 af

Subcatchment 8S: Subcatchment #8 Runoff Area=660 sf 100.00% Impervious Runoff Depth>6.67"
Tc=6.0 min CN=98 Runoff=0.10 cfs 0.008 af

Subcatchment 30S: Subcatchment #30 Runoff Area=53,172 sf 8.09% Impervious Runoff Depth>1.03"
Flow Length=363' Tc=9.1 min CN=43 Runoff=0.88 cfs 0.105 af

Subcatchment 31S: Subcatchment #31 Runoff Area=27,152 sf 45.16% Impervious Runoff Depth>3.23"
Flow Length=209' Tc=10.9 min CN=67 Runoff=1.98 cfs 0.168 af

Subcatchment 32S: Subcatchment #32 Runoff Area=4,997 sf 100.00% Impervious Runoff Depth>6.67"
Tc=6.0 min CN=98 Runoff=0.76 cfs 0.064 af

Subcatchment 33S: Subcatchment #33 Runoff Area=10,233 sf 77.54% Impervious Runoff Depth>5.16"
Tc=6.0 min CN=85 Runoff=1.35 cfs 0.101 af

Subcatchment 34S: Subcatchment #34 Runoff Area=2,154 sf 100.00% Impervious Runoff Depth>6.67"
Tc=6.0 min CN=98 Runoff=0.33 cfs 0.027 af

Subcatchment 106S: Subcatchment #106 Runoff Area=8,254 sf 0.00% Impervious Runoff Depth>0.81"
Tc=6.0 min CN=40 Runoff=0.09 cfs 0.013 af

Reach 7aR: Overland Flow Avg. Flow Depth=0.03' Max Vel=1.78 fps Inflow=0.10 cfs 0.008 af
n=0.030 L=62.3' S=0.3011 '/' Capacity=65.21 cfs Outflow=0.10 cfs 0.008 af

Reach 7bR: Overland Flow Avg. Flow Depth=0.08' Max Vel=0.41 fps Inflow=0.10 cfs 0.008 af
n=0.030 L=92.5' S=0.0027 '/' Capacity=18.04 cfs Outflow=0.09 cfs 0.008 af

Reach 7cR: Overland Flow Avg. Flow Depth=0.07' Max Vel=1.01 fps Inflow=0.19 cfs 0.017 af
n=0.030 L=90.3' S=0.0194 '/' Capacity=48.30 cfs Outflow=0.18 cfs 0.017 af

Reach 7dR: Overland Flow Avg. Flow Depth=0.05' Max Vel=1.44 fps Inflow=0.18 cfs 0.017 af
n=0.030 L=72.7' S=0.0550 '/' Capacity=81.39 cfs Outflow=0.18 cfs 0.017 af

Reach 7eR: Overland Flow Avg. Flow Depth=0.07' Max Vel=1.07 fps Inflow=0.18 cfs 0.017 af
n=0.030 L=44.4' S=0.0225 '/' Capacity=52.07 cfs Outflow=0.18 cfs 0.017 af

Reach 8R: Overland Flow Avg. Flow Depth=0.02' Max Vel=1.93 fps Inflow=0.10 cfs 0.008 af
n=0.030 L=44.2' S=0.3758 '/' Capacity=72.85 cfs Outflow=0.10 cfs 0.008 af

Reach 200R: Final Reach #200 Inflow=0.04 cfs 0.007 af
Outflow=0.04 cfs 0.007 af

Reach 500R: Final Reach #500 Inflow=1.18 cfs 0.138 af
Outflow=1.18 cfs 0.138 af

Reach 600R: Final Reach #600 Inflow=0.01 cfs 0.004 af
Outflow=0.01 cfs 0.004 af

Reach 1000R: Final Reach #1000 Inflow=0.32 cfs 0.025 af
Outflow=0.32 cfs 0.025 af

Pond 30P: Inlet Sump Peak Elev=121.99' Storage=19 cf Inflow=1.06 cfs 0.122 af
15.0" Round Culvert n=0.012 L=51.0' S=0.0098 '/' Outflow=1.06 cfs 0.122 af

Pond 106P: Rain Garden W/ Infiltration #106 Peak Elev=119.71' Storage=11,590 cf Inflow=5.40 cfs 0.530 af
Discarded=0.28 cfs 0.344 af Primary=0.00 cfs 0.000 af Outflow=0.28 cfs 0.344 af

Pond C01P: Catch Basin #1 Peak Elev=123.88' Storage=10 cf Inflow=1.98 cfs 0.168 af
12.0" Round Culvert n=0.012 L=125.2' S=0.0140 '/' Outflow=1.98 cfs 0.168 af

Pond C02P: Catch Basin #2 Peak Elev=121.95' Storage=6 cf Inflow=0.76 cfs 0.064 af
12.0" Round Culvert n=0.012 L=8.5' S=0.0118 '/' Outflow=0.76 cfs 0.064 af

Pond C03P: Catch Basin #3 Peak Elev=122.31' Storage=8 cf Inflow=1.35 cfs 0.101 af
12.0" Round Culvert n=0.012 L=28.0' S=0.0118 '/' Outflow=1.36 cfs 0.101 af

Pond C04P: Catch Basin #4 Peak Elev=121.96' Storage=4 cf Inflow=0.33 cfs 0.027 af
12.0" Round Culvert n=0.012 L=19.0' S=0.0174 '/' Outflow=0.33 cfs 0.027 af

Pond C05P: Catch Basin #5 Peak Elev=125.05' Storage=1 cf Inflow=0.31 cfs 0.036 af
12.0" Round Culvert n=0.012 L=79.0' S=0.0063 '/' Outflow=0.31 cfs 0.036 af

Pond D01P: Drain Manhole #1 Peak Elev=119.87' Storage=14 cf Inflow=4.18 cfs 0.360 af
15.0" Round Culvert n=0.012 L=30.0' S=0.0500 '/' Outflow=4.17 cfs 0.360 af

Pond D02P: Drain Manhole #2 Peak Elev=119.71' Storage=18 cf Inflow=1.38 cfs 0.158 af
15.0" Round Culvert n=0.012 L=14.0' S=0.0571 '/' Outflow=1.38 cfs 0.158 af

Total Runoff Area = 4.262 ac Runoff Volume = 0.704 af Average Runoff Depth = 1.98"
77.84% Pervious = 3.317 ac 22.16% Impervious = 0.945 ac

Summary for Subcatchment 1aS: Sophie

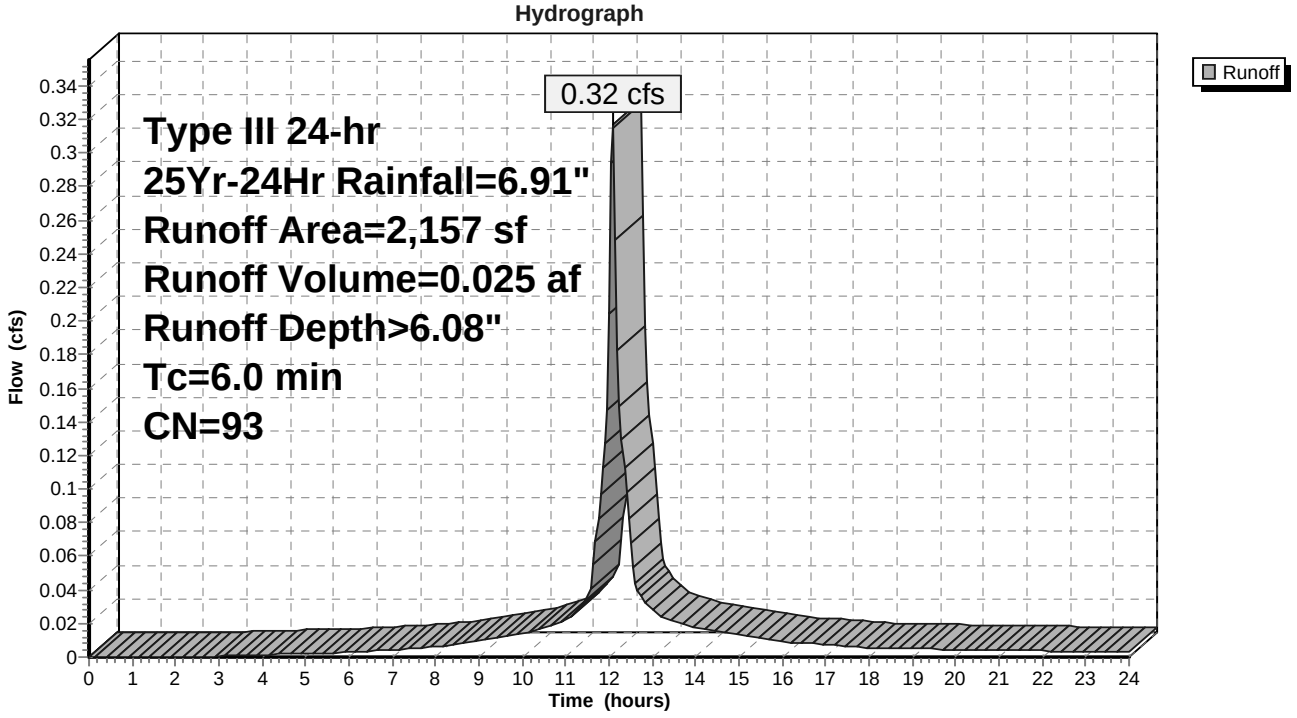
Runoff = 0.32 cfs @ 12.09 hrs, Volume= 0.025 af, Depth> 6.08"

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

Area (sf)	CN	Description
225	98	Roofs, HSG A
182	39	>75% Grass cover, Good, HSG A
1,750	98	Paved parking, HSG A
2,157	93	Weighted Average
182		8.44% Pervious Area
1,975		91.56% Impervious Area

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

Subcatchment 1aS: Sophie



Summary for Subcatchment 1S: Subcatchment #1

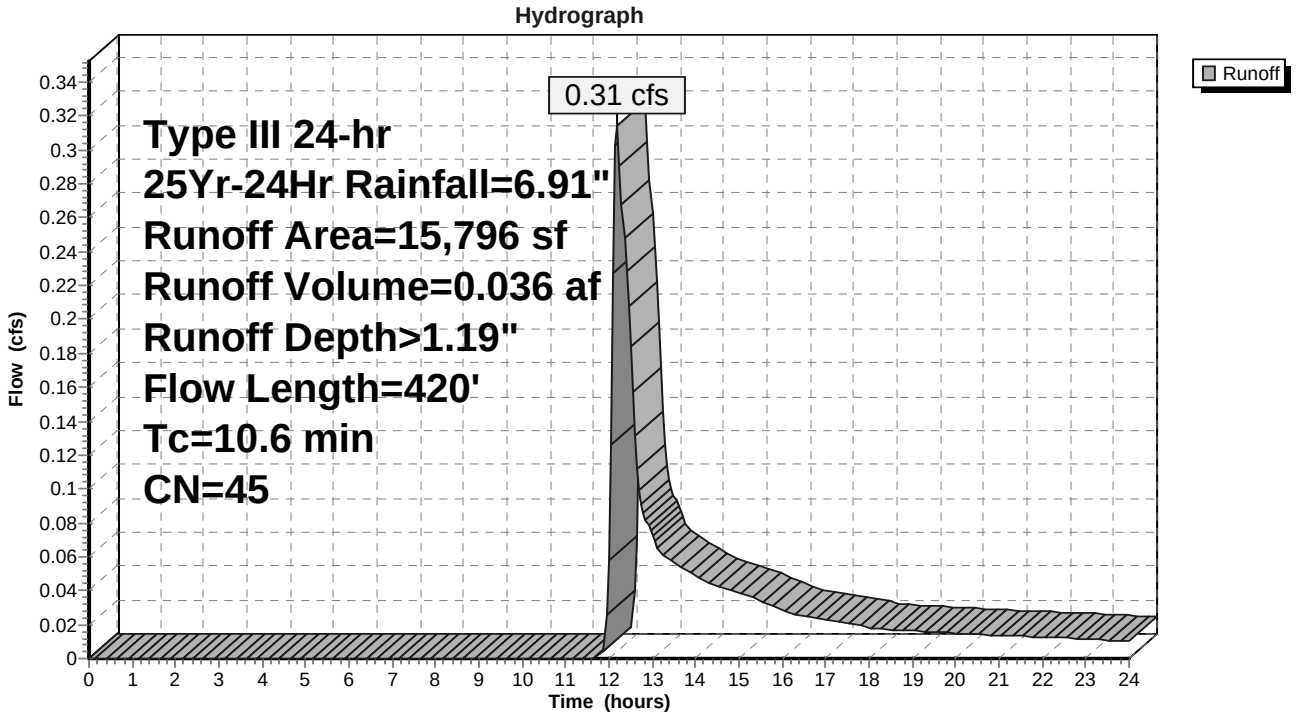
Runoff = 0.31 cfs @ 12.19 hrs, Volume= 0.036 af, Depth> 1.19"

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

Area (sf)	CN	Description
1,484	98	Roofs, HSG A
14,312	39	>75% Grass cover, Good, HSG A
15,796	45	Weighted Average
14,312		90.61% Pervious Area
1,484		9.39% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	100	0.0325	0.22		**Sheet Flow, Segment #1** Grass: Short n= 0.150 P2= 3.62"
0.2	16	0.0621	1.74		**Shallow Concentrated Flow, Segment #2** Short Grass Pasture Kv= 7.0 fps
0.1	27	0.2991	3.83		**Shallow Concentrated Flow, Segment #3** Short Grass Pasture Kv= 7.0 fps
0.6	62	0.0647	1.78		**Shallow Concentrated Flow, Segment #4** Short Grass Pasture Kv= 7.0 fps
1.3	94	0.0318	1.25		**Shallow Concentrated Flow, Segment #5** Short Grass Pasture Kv= 7.0 fps
0.4	37	0.0402	1.40		**Shallow Concentrated Flow, Segment #6** Short Grass Pasture Kv= 7.0 fps
0.4	84	0.0150	3.67	23.86	**Trap/Vee/Rect Channel Flow, Segment #7** Bot.W=4.50' D=1.00' Z= 2.0 '/' Top.W=8.50' n= 0.040 Earth, cobble bottom, clean sides
10.6	420	Total			

Subcatchment 1S: Subcatchment #1



Summary for Subcatchment 2S: Subcatchment #2

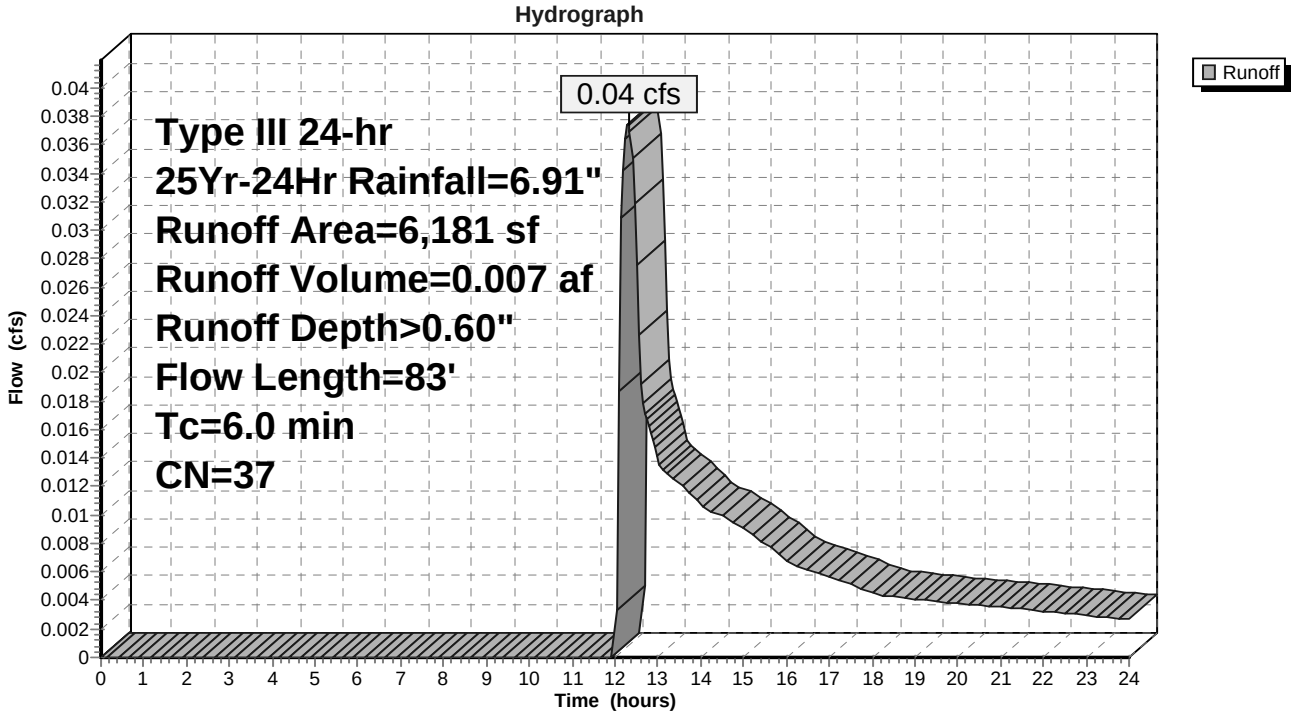
Runoff = 0.04 cfs @ 12.31 hrs, Volume= 0.007 af, Depth> 0.60"

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

Area (sf)	CN	Description
4,871	39	>75% Grass cover, Good, HSG A
1,310	30	Woods, Good, HSG A
6,181	37	Weighted Average
6,181		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	17	0.0297	0.15		**Sheet Flow, Segment #1** Grass: Short n= 0.150 P2= 3.62"
0.9	21	0.2849	0.38		**Sheet Flow, Segment #2** Grass: Short n= 0.150 P2= 3.62"
0.5	45	0.0886	1.49		**Shallow Concentrated Flow, Segment #3** Woodland Kv= 5.0 fps
3.3	83	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 2S: Subcatchment #2



Summary for Subcatchment 5S: Subcatchment #5

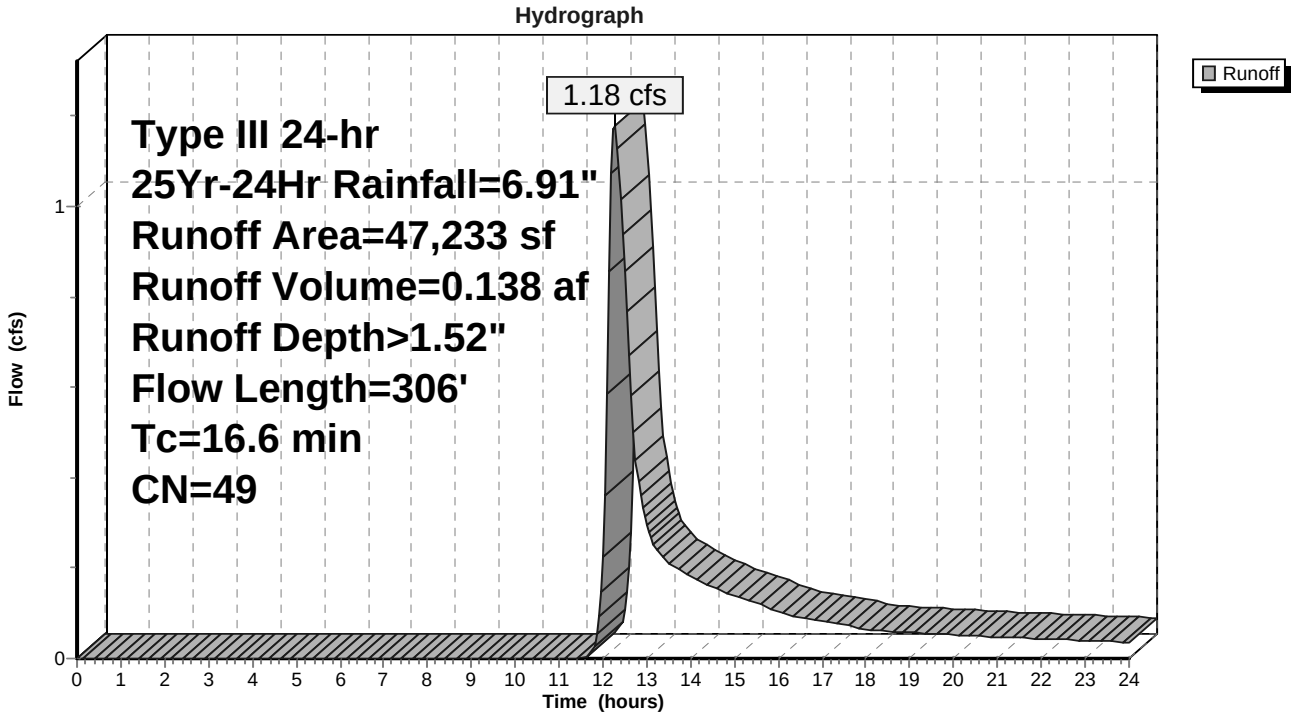
Runoff = 1.18 cfs @ 12.27 hrs, Volume= 0.138 af, Depth> 1.52"

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

Area (sf)	CN	Description
2,400	98	Roofs, HSG A
17,552	39	>75% Grass cover, Good, HSG A
2,317	98	Paved parking, HSG A
16,632	30	Woods, Good, HSG A
2,629	96	Gravel surface, HSG A
2,136	74	>75% Grass cover, Good, HSG C
3,567	70	Woods, Good, HSG C
47,233	49	Weighted Average
42,516		90.01% Pervious Area
4,717		9.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.2	100	0.0700	0.14		**Sheet Flow, Segment #1** Woods: Light underbrush n= 0.400 P2= 3.62"
0.2	22	0.0449	1.48		**Shallow Concentrated Flow, Segment #4** Short Grass Pasture Kv= 7.0 fps
4.2	184	0.0218	0.74		**Shallow Concentrated Flow, Segment #5** Woodland Kv= 5.0 fps
16.6	306	Total			

Subcatchment 5S: Subcatchment #5



Summary for Subcatchment 6S: Subcatchment #6

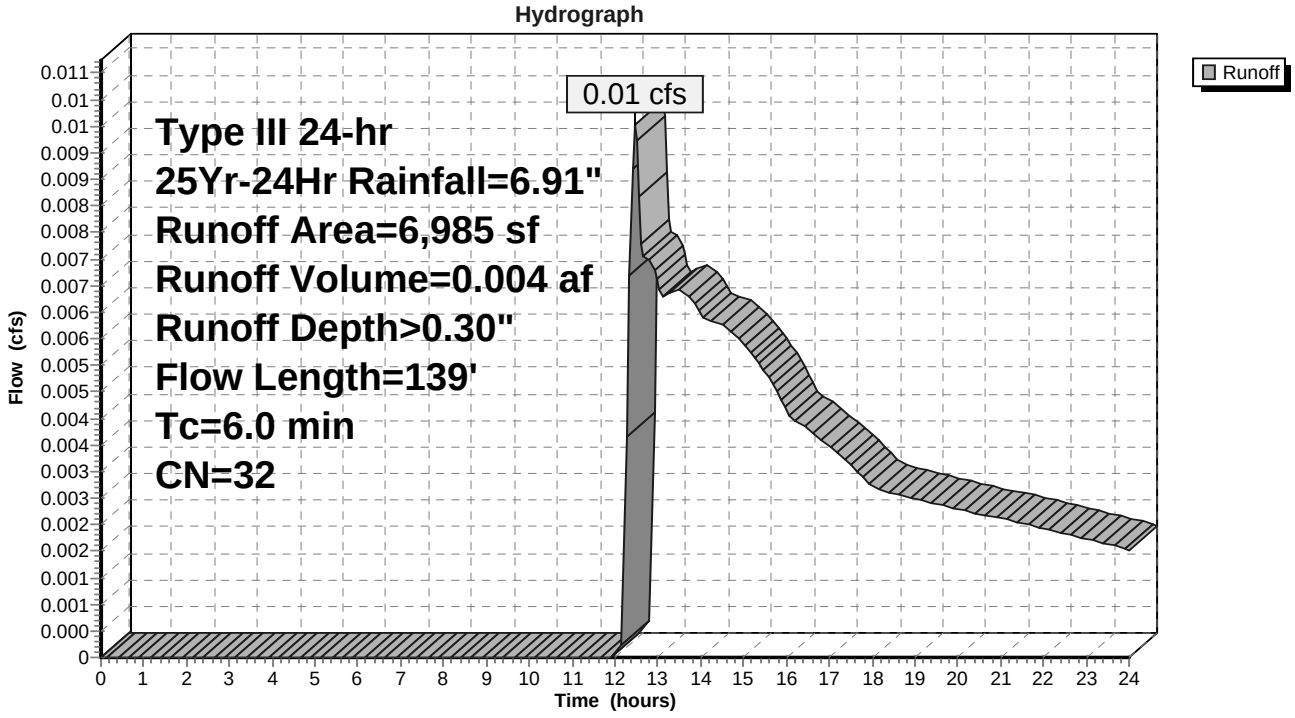
Runoff = 0.01 cfs @ 12.46 hrs, Volume= 0.004 af, Depth> 0.30"

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

Area (sf)	CN	Description
1,693	39	>75% Grass cover, Good, HSG A
5,292	30	Woods, Good, HSG A
6,985	32	Weighted Average
6,985		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	69	0.1157	0.34		**Sheet Flow, Segment #1** Grass: Short n= 0.150 P2= 3.62"
1.7	31	0.1297	0.30		**Sheet Flow, Segment #2** Grass: Short n= 0.150 P2= 3.62"
0.5	39	0.0777	1.39		**Shallow Concentrated Flow, Segment #3** Woodland Kv= 5.0 fps
5.6	139	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 6S: Subcatchment #6



Summary for Subcatchment 7S: Subcatchment #7

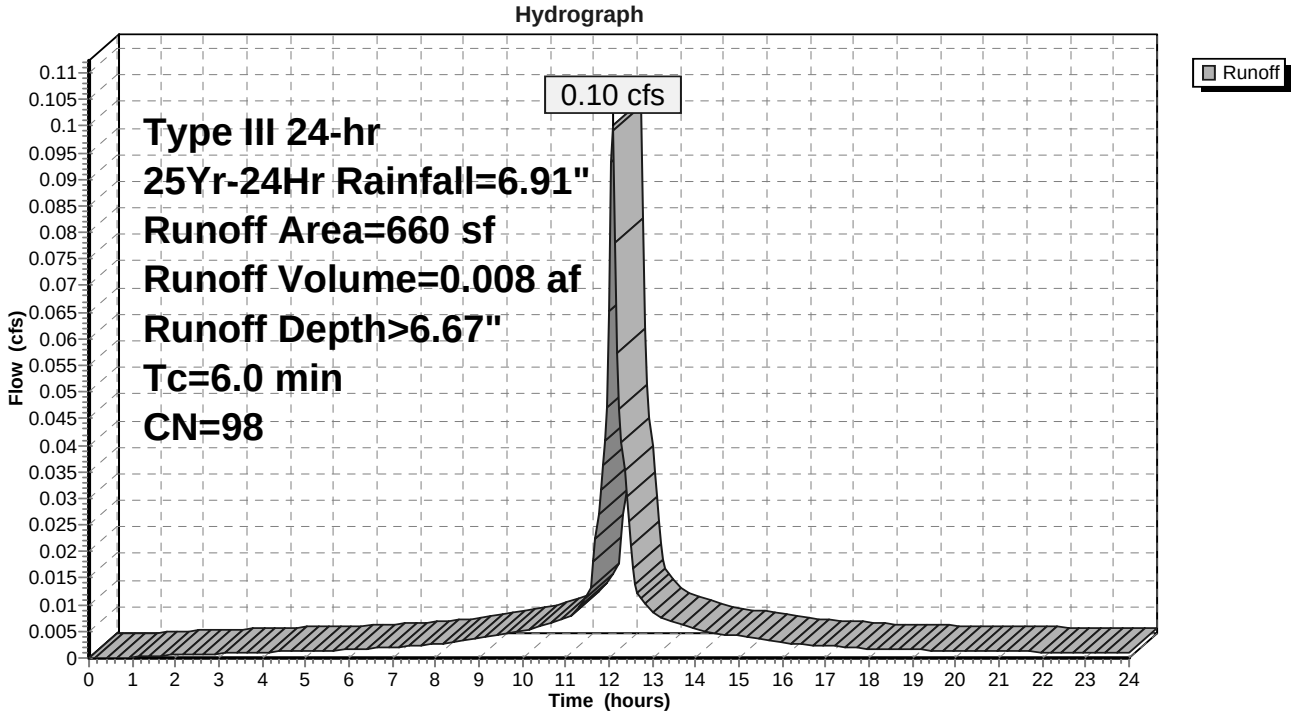
Runoff = 0.10 cfs @ 12.09 hrs, Volume= 0.008 af, Depth> 6.67"

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

Area (sf)	CN	Description
660	98	Roofs, HSG A
660		100.00% Impervious Area

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

Subcatchment 7S: Subcatchment #7



Summary for Subcatchment 8S: Subcatchment #8

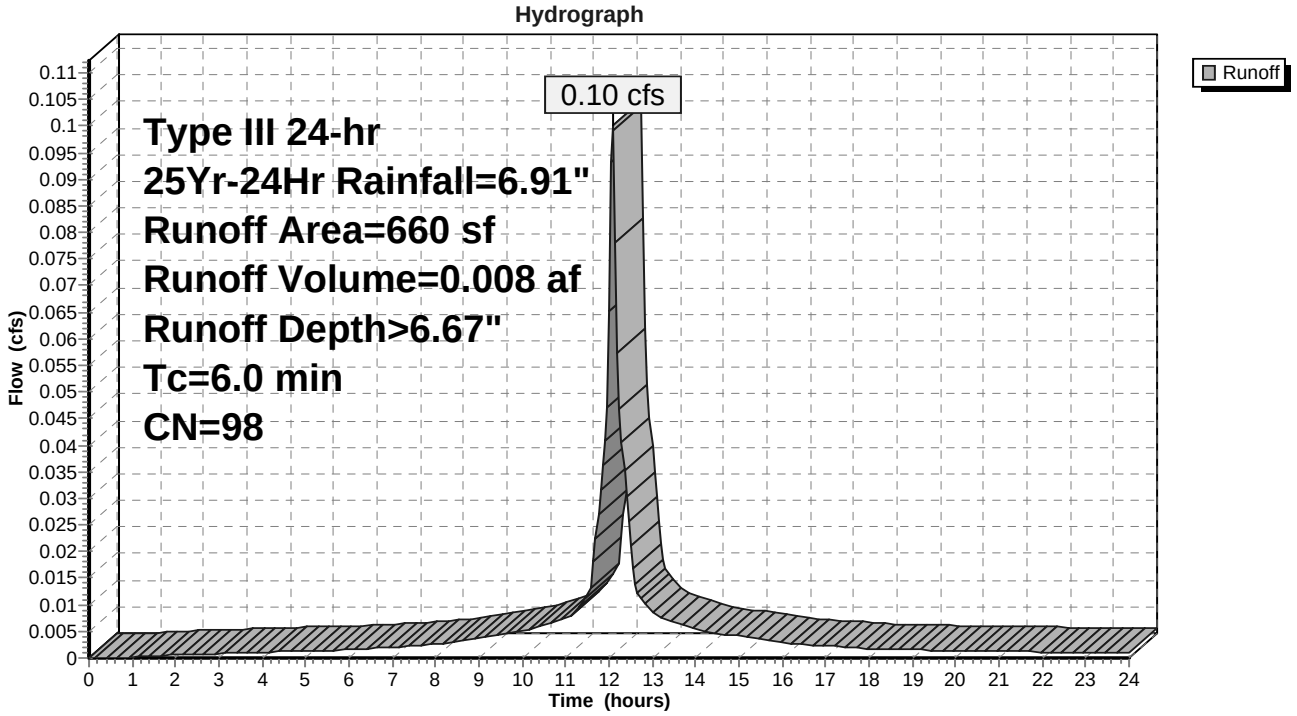
Runoff = 0.10 cfs @ 12.09 hrs, Volume= 0.008 af, Depth> 6.67"

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

Area (sf)	CN	Description
660	98	Roofs, HSG A
660		100.00% Impervious Area

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

Subcatchment 8S: Subcatchment #8



Summary for Subcatchment 30S: Subcatchment #30

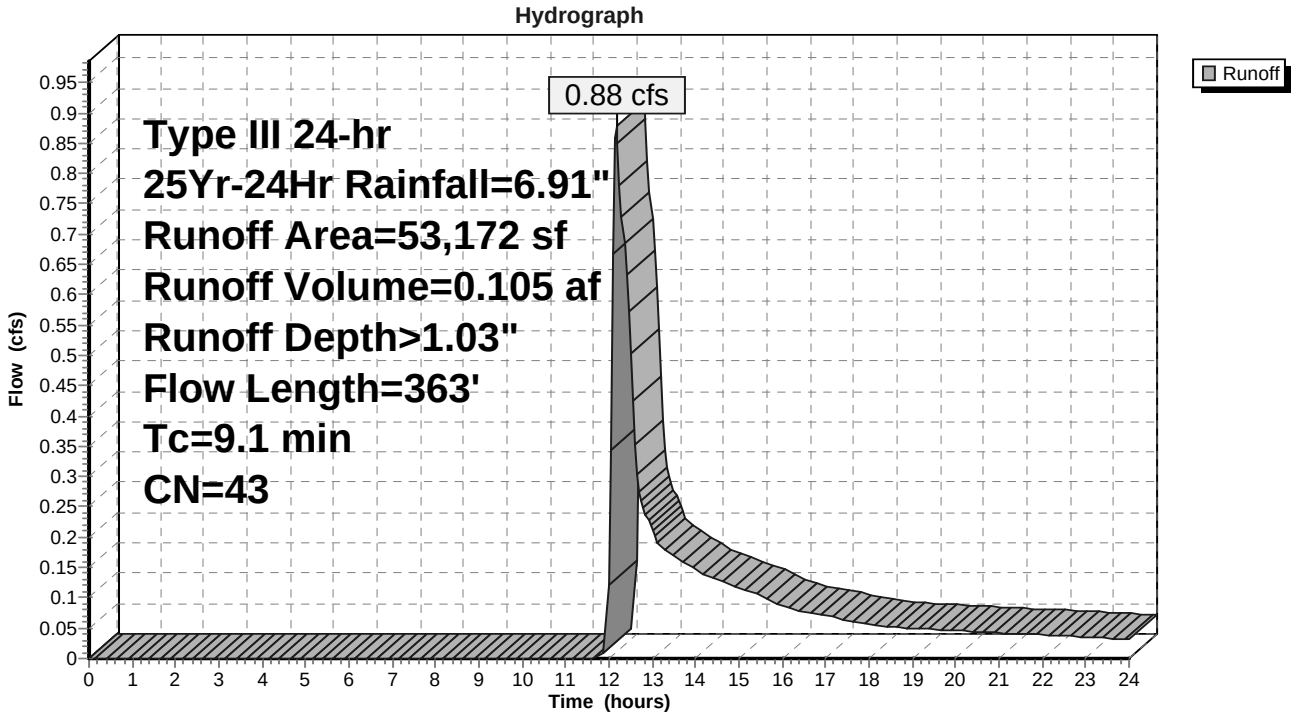
Runoff = 0.88 cfs @ 12.17 hrs, Volume= 0.105 af, Depth> 1.03"

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 25Yr-24Hr Rainfall=6.91"

Area (sf)	CN	Description
4,094	98	Roofs, HSG A
41,804	39	>75% Grass cover, Good, HSG A
7,068	30	Woods, Good, HSG A
206	98	Paved parking, HSG A
53,172	43	Weighted Average
48,872		91.91% Pervious Area
4,300		8.09% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	42	0.0295	0.18		**Sheet Flow, Segment #1** Grass: Short n= 0.150 P2= 3.62"
0.1	41	0.4676	4.79		**Shallow Concentrated Flow, Segment #2** Short Grass Pasture Kv= 7.0 fps
3.3	123	0.0081	0.63		**Shallow Concentrated Flow, Segment #3** Short Grass Pasture Kv= 7.0 fps
0.4	40	0.0502	1.57		**Shallow Concentrated Flow, Segment #4** Short Grass Pasture Kv= 7.0 fps
0.7	73	0.0550	1.64		**Shallow Concentrated Flow, Segment #5** Short Grass Pasture Kv= 7.0 fps
0.7	44	0.0225	1.05		**Shallow Concentrated Flow, Segment #6** Short Grass Pasture Kv= 7.0 fps
9.1	363	Total			

Subcatchment 30S: Subcatchment #30



Summary for Subcatchment 31S: Subcatchment #31

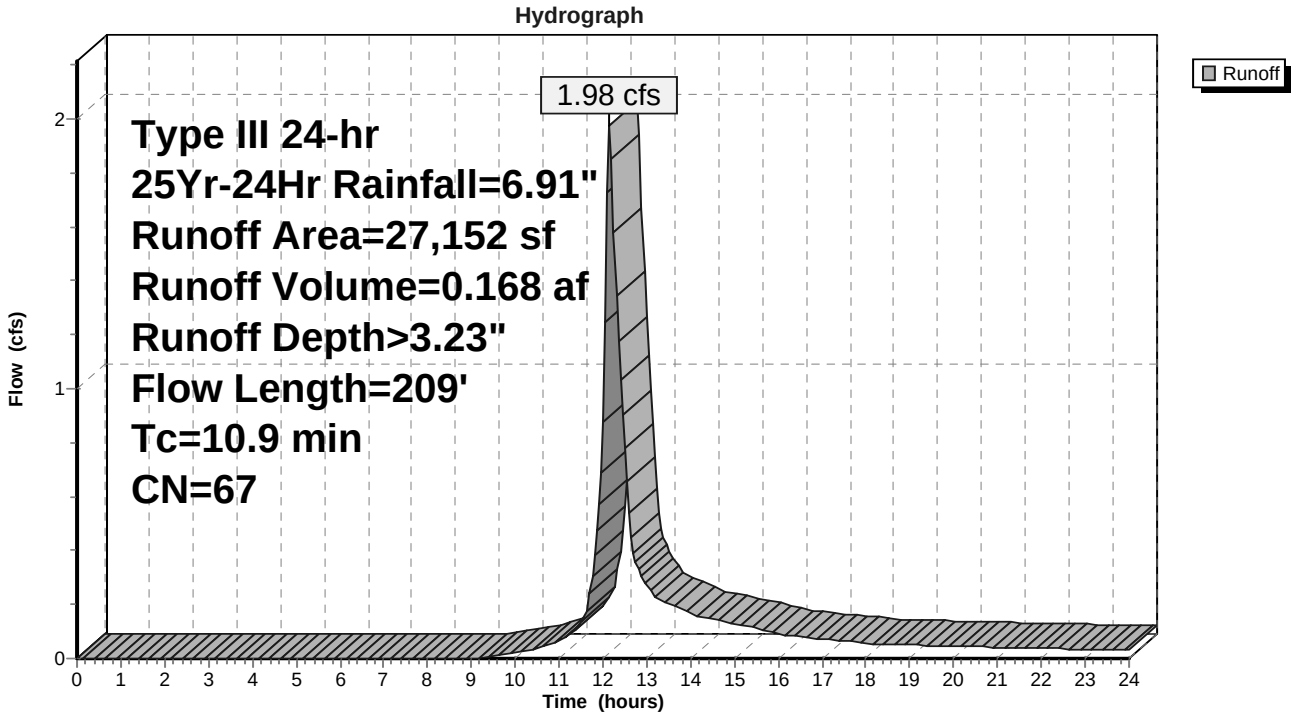
Runoff = 1.98 cfs @ 12.16 hrs, Volume= 0.168 af, Depth> 3.23"

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 25Yr-24Hr Rainfall=6.91"

Area (sf)	CN	Description
4,725	98	Roofs, HSG A
13,965	39	>75% Grass cover, Good, HSG A
7,292	98	Paved parking, HSG A
245	98	Paved parking, HSG C
576	96	Gravel surface, HSG A
349	74	>75% Grass cover, Good, HSG C
27,152	67	Weighted Average
14,890		54.84% Pervious Area
12,262		45.16% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	100	0.0200	0.18		**Sheet Flow, Segment #1** Grass: Short n= 0.150 P2= 3.62"
1.5	75	0.0147	0.85		**Shallow Concentrated Flow, Segment #2** Short Grass Pasture Kv= 7.0 fps
0.2	34	0.0200	2.87		**Shallow Concentrated Flow, Segment #3** Paved Kv= 20.3 fps
10.9	209	Total			

Subcatchment 31S: Subcatchment #31



Summary for Subcatchment 32S: Subcatchment #32

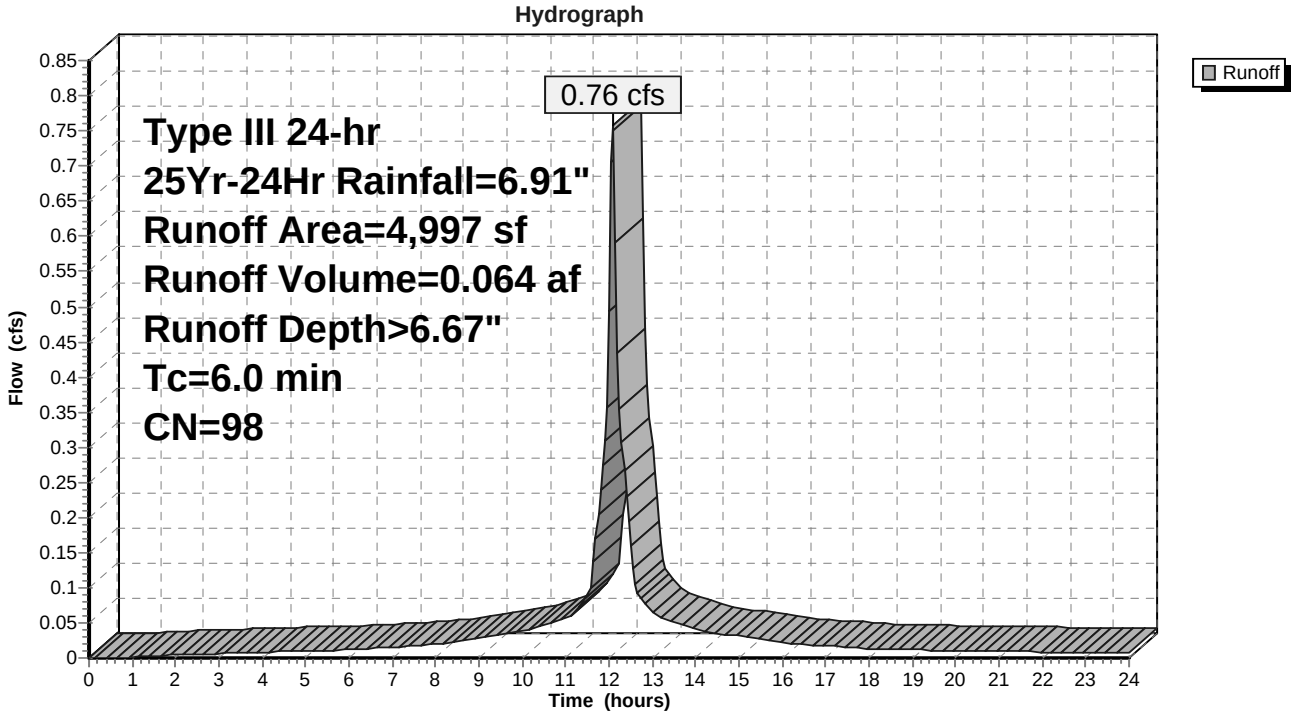
Runoff = 0.76 cfs @ 12.09 hrs, Volume= 0.064 af, Depth> 6.67"

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

Area (sf)	CN	Description
4,997	98	Paved parking, HSG A
4,997		100.00% Impervious Area

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

Subcatchment 32S: Subcatchment #32



Summary for Subcatchment 33S: Subcatchment #33

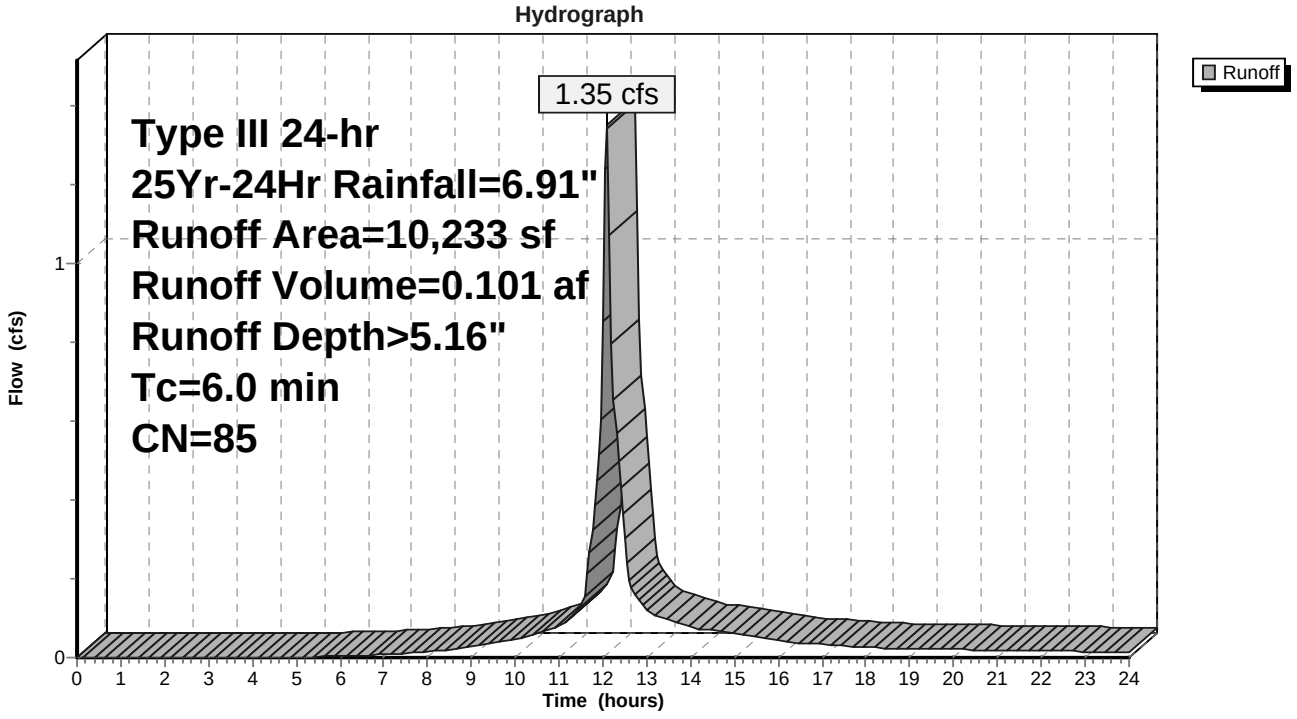
Runoff = 1.35 cfs @ 12.09 hrs, Volume= 0.101 af, Depth> 5.16"

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 25Yr-24Hr Rainfall=6.91"

Area (sf)	CN	Description
6,458	98	Paved parking, HSG A
2,298	39	>75% Grass cover, Good, HSG A
1,344	98	Roofs, HSG A
133	98	Paved parking, HSG C
10,233	85	Weighted Average
2,298		22.46% Pervious Area
7,935		77.54% Impervious Area

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

Subcatchment 33S: Subcatchment #33



Summary for Subcatchment 34S: Subcatchment #34

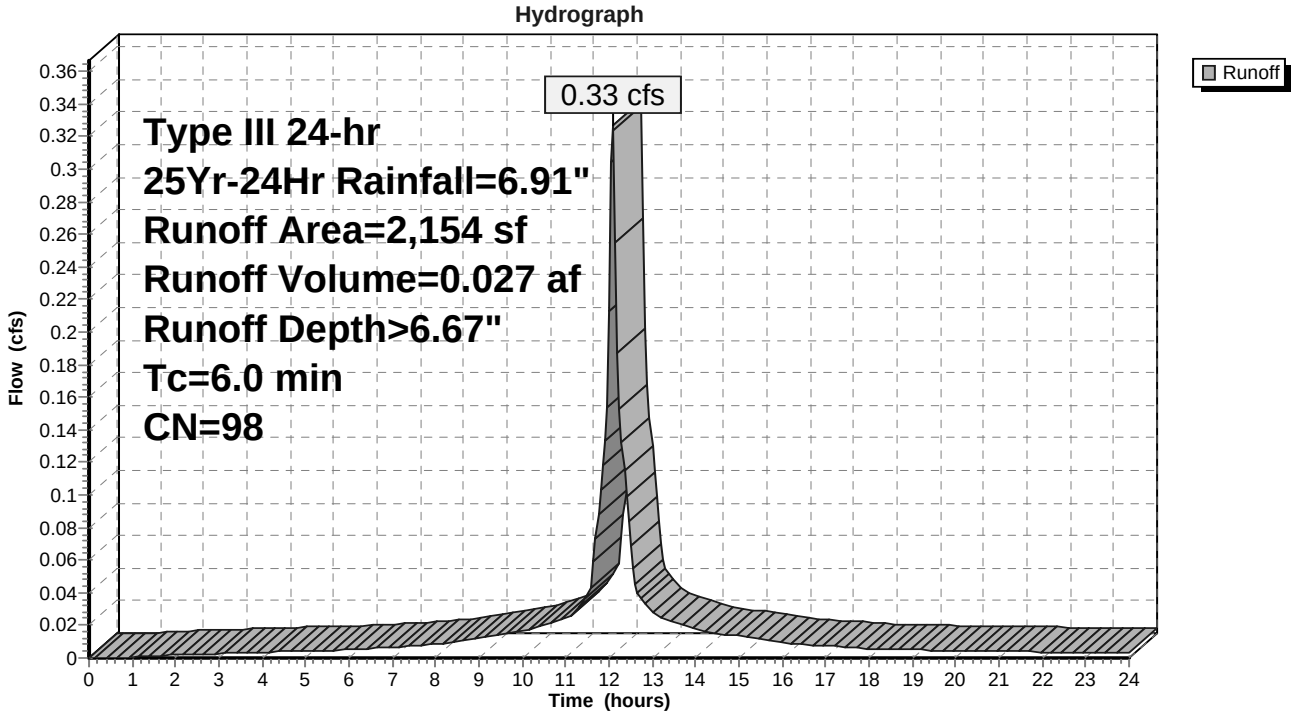
Runoff = 0.33 cfs @ 12.09 hrs, Volume= 0.027 af, Depth> 6.67"

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

Area (sf)	CN	Description
2,154	98	Paved parking, HSG A
2,154		100.00% Impervious Area

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

Subcatchment 34S: Subcatchment #34



Summary for Subcatchment 106S: Subcatchment #106

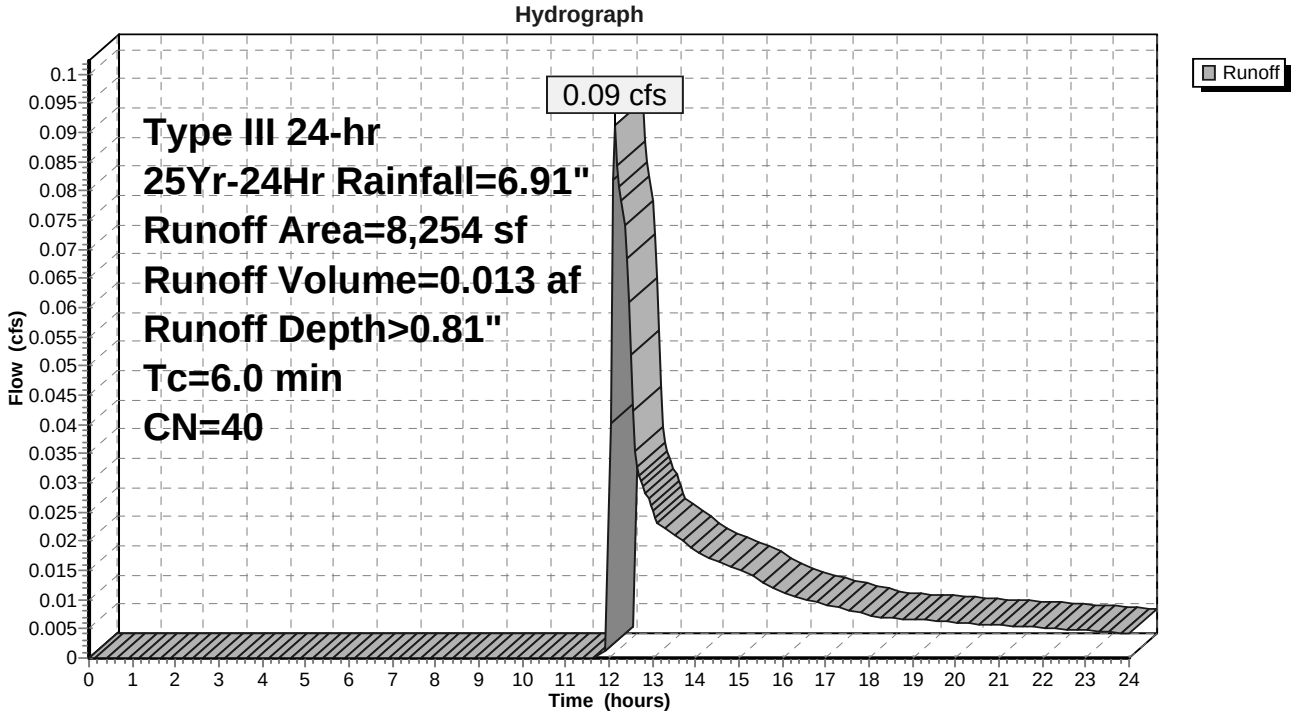
Runoff = 0.09 cfs @ 12.15 hrs, Volume= 0.013 af, Depth> 0.81"

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

Area (sf)	CN	Description
7,994	39	>75% Grass cover, Good, HSG A
260	74	>75% Grass cover, Good, HSG C
8,254	40	Weighted Average
8,254		100.00% Pervious Area

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

Subcatchment 106S: Subcatchment #106



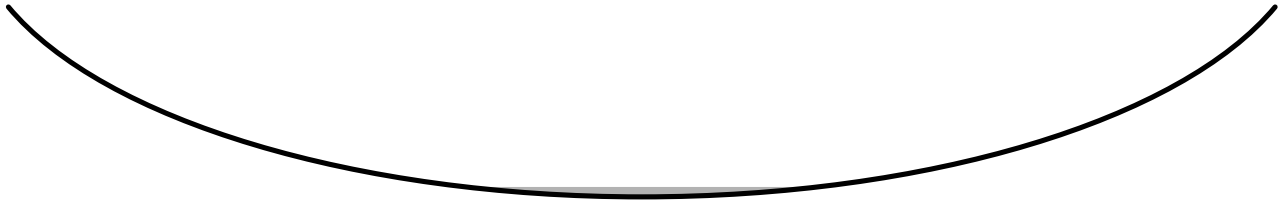
Summary for Reach 7aR: Overland Flow

Inflow Area = 0.015 ac,100.00% Impervious, Inflow Depth > 6.67" for 25Yr-24Hr event
Inflow = 0.10 cfs @ 12.09 hrs, Volume= 0.008 af
Outflow = 0.10 cfs @ 12.09 hrs, Volume= 0.008 af, Atten= 0%, Lag= 0.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.78 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 0.68 fps, Avg. Travel Time= 1.5 min

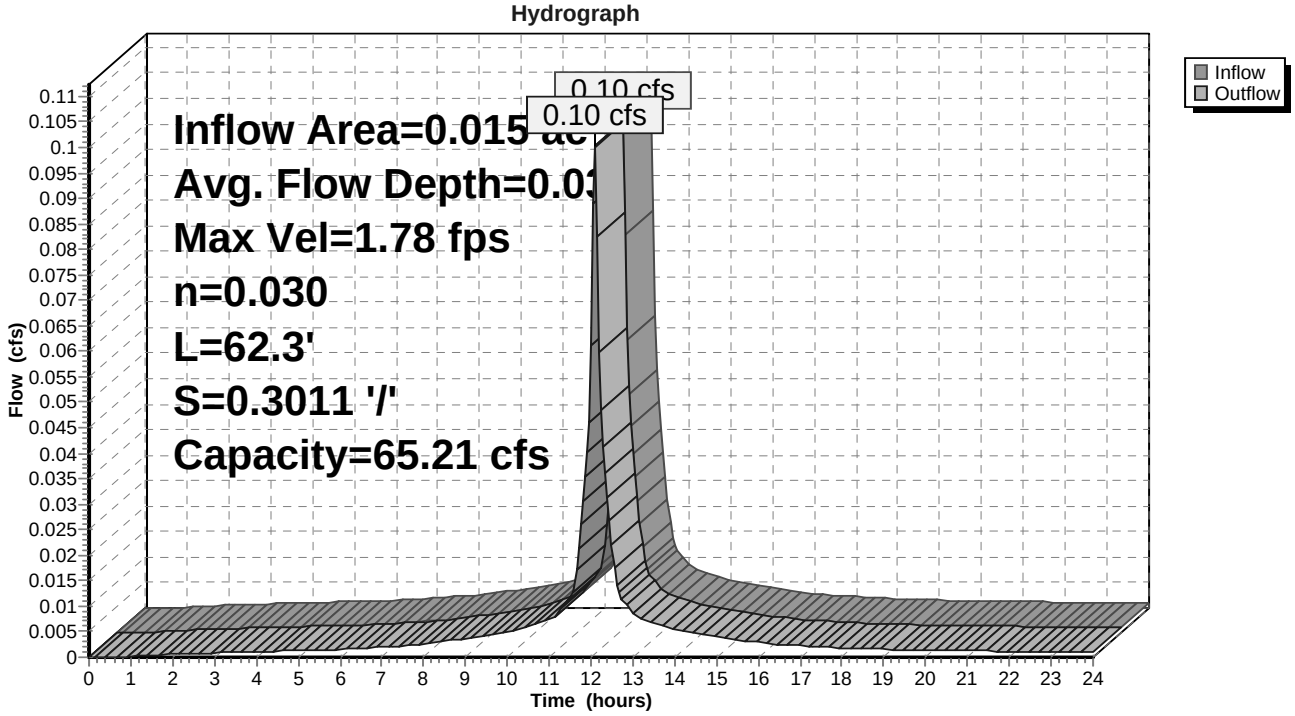
Peak Storage= 4 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.03'
Bank-Full Depth= 0.50' Flow Area= 5.0 sf, Capacity= 65.21 cfs

15.00' x 0.50' deep Parabolic Channel, n= 0.030 Earth, grassed & winding
Length= 62.3' Slope= 0.3011 '/'
Inlet Invert= 148.76', Outlet Invert= 130.00'



‡

Reach 7aR: Overland Flow



Summary for Reach 7bR: Overland Flow

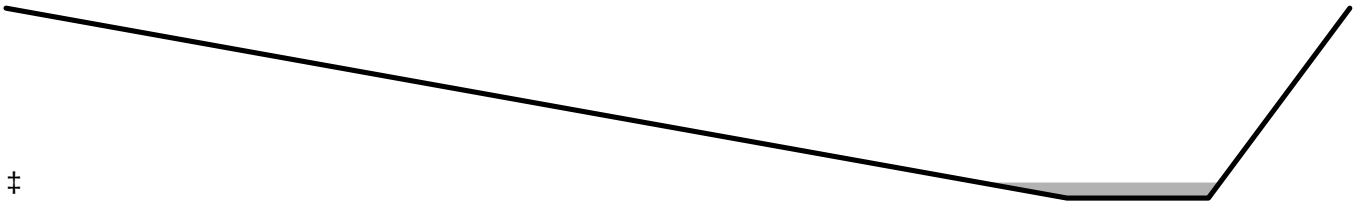
[62] Hint: Exceeded Reach 7aR OUTLET depth by 0.06' @ 12.15 hrs

Inflow Area = 0.015 ac,100.00% Impervious, Inflow Depth > 6.67" for 25Yr-24Hr event
Inflow = 0.10 cfs @ 12.09 hrs, Volume= 0.008 af
Outflow = 0.09 cfs @ 12.14 hrs, Volume= 0.008 af, Atten= 10%, Lag= 2.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.41 fps, Min. Travel Time= 3.7 min
Avg. Velocity = 0.14 fps, Avg. Travel Time= 11.2 min

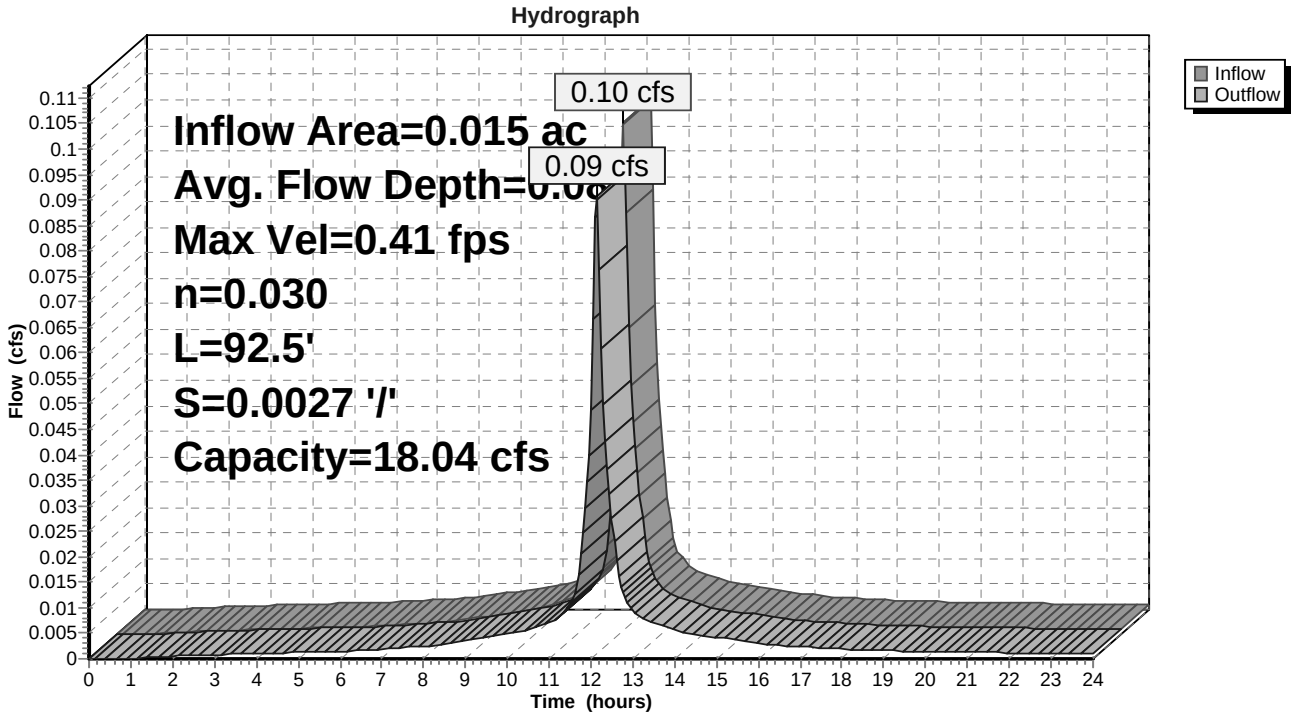
Peak Storage= 20 cf @ 12.13 hrs
Average Depth at Peak Storage= 0.08'
Bank-Full Depth= 1.00' Flow Area= 10.5 sf, Capacity= 18.04 cfs

2.00' x 1.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 15.0 2.0 '/' Top Width= 19.00'
Length= 92.5' Slope= 0.0027 '/'
Inlet Invert= 130.00', Outlet Invert= 129.75'



‡

Reach 7bR: Overland Flow



Summary for Reach 7cR: Overland Flow

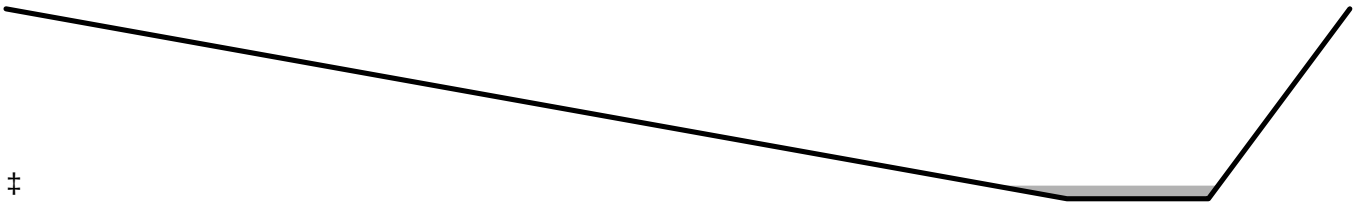
[61] Hint: Exceeded Reach 7bR outlet invert by 0.07' @ 12.15 hrs
[62] Hint: Exceeded Reach 8R OUTLET depth by 0.05' @ 12.15 hrs

Inflow Area = 0.030 ac,100.00% Impervious, Inflow Depth > 6.66" for 25Yr-24Hr event
Inflow = 0.19 cfs @ 12.11 hrs, Volume= 0.017 af
Outflow = 0.18 cfs @ 12.13 hrs, Volume= 0.017 af, Atten= 3%, Lag= 1.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.01 fps, Min. Travel Time= 1.5 min
Avg. Velocity = 0.35 fps, Avg. Travel Time= 4.3 min

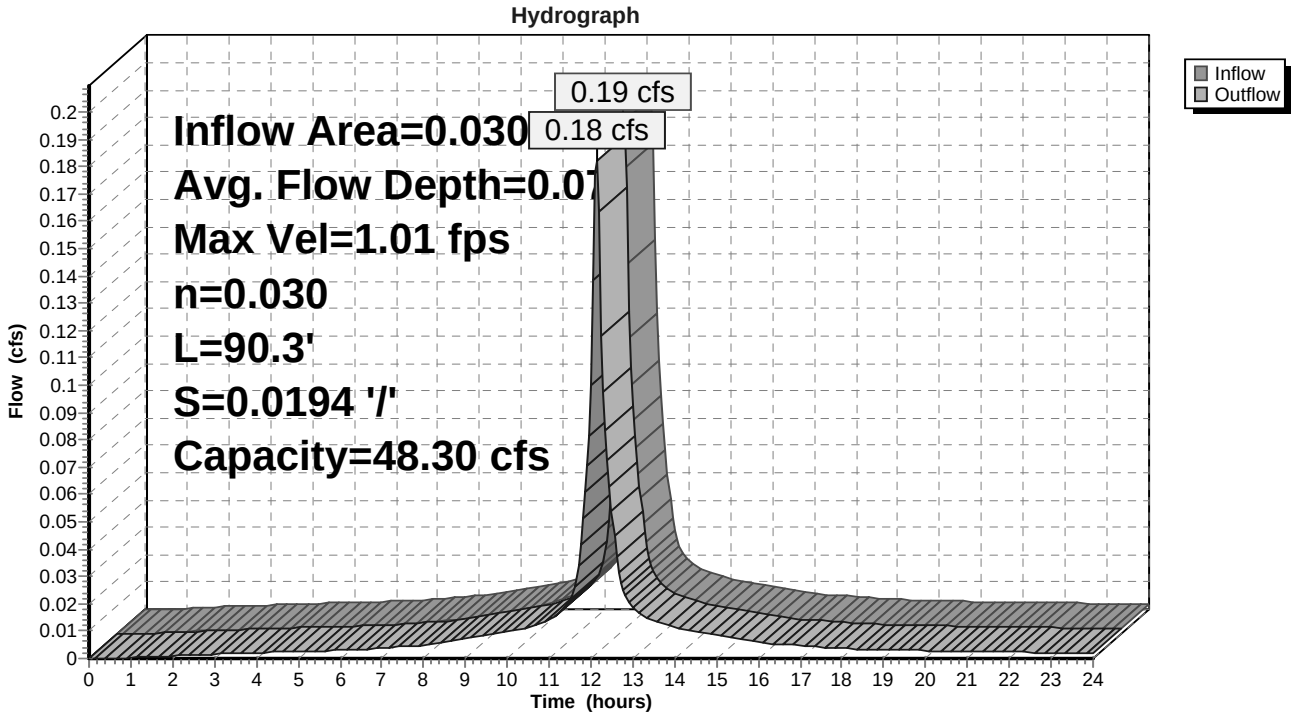
Peak Storage= 16 cf @ 12.13 hrs
Average Depth at Peak Storage= 0.07'
Bank-Full Depth= 1.00' Flow Area= 10.5 sf, Capacity= 48.30 cfs

2.00' x 1.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 15.0 2.0 '/' Top Width= 19.00'
Length= 90.3' Slope= 0.0194 '/'
Inlet Invert= 129.75', Outlet Invert= 128.00'



‡

Reach 7cR: Overland Flow



Summary for Reach 7dR: Overland Flow

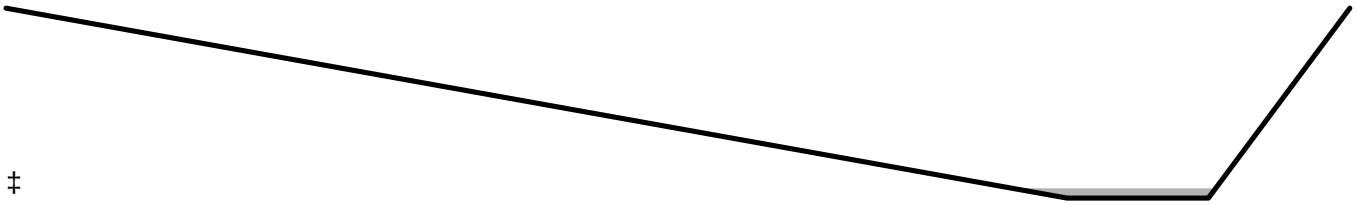
[61] Hint: Exceeded Reach 7cR outlet invert by 0.05' @ 12.15 hrs

Inflow Area = 0.030 ac,100.00% Impervious, Inflow Depth > 6.65" for 25Yr-24Hr event
Inflow = 0.18 cfs @ 12.13 hrs, Volume= 0.017 af
Outflow = 0.18 cfs @ 12.14 hrs, Volume= 0.017 af, Atten= 0%, Lag= 0.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.44 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 0.56 fps, Avg. Travel Time= 2.2 min

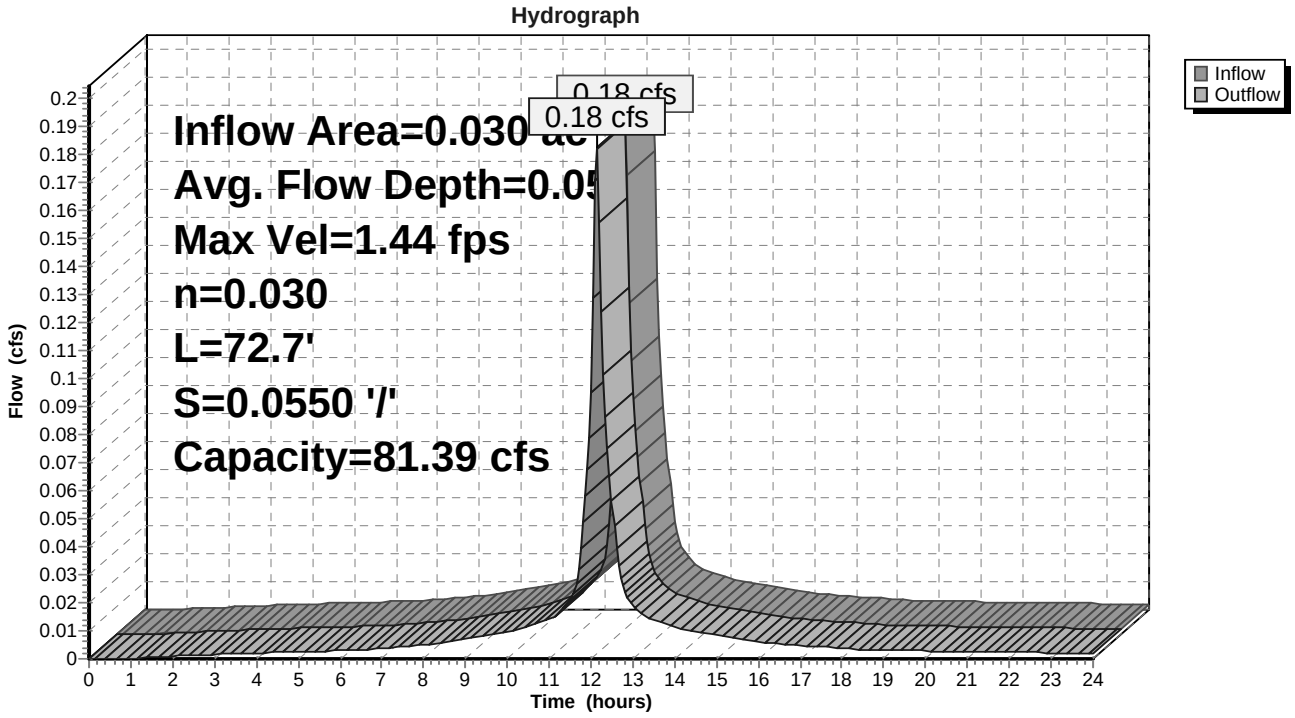
Peak Storage= 9 cf @ 12.14 hrs
Average Depth at Peak Storage= 0.05'
Bank-Full Depth= 1.00' Flow Area= 10.5 sf, Capacity= 81.39 cfs

2.00' x 1.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 15.0 2.0 '/' Top Width= 19.00'
Length= 72.7' Slope= 0.0550 '/'
Inlet Invert= 128.00', Outlet Invert= 124.00'



‡

Reach 7dR: Overland Flow



Summary for Reach 7eR: Overland Flow

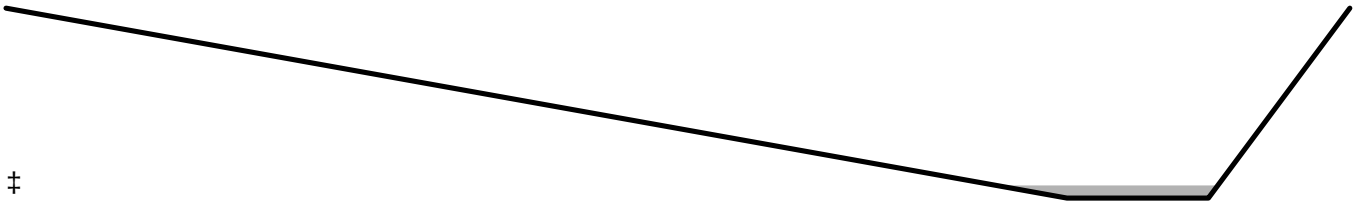
[62] Hint: Exceeded Reach 7dR OUTLET depth by 0.01' @ 12.20 hrs

Inflow Area = 0.030 ac,100.00% Impervious, Inflow Depth > 6.65" for 25Yr-24Hr event
Inflow = 0.18 cfs @ 12.14 hrs, Volume= 0.017 af
Outflow = 0.18 cfs @ 12.15 hrs, Volume= 0.017 af, Atten= 0%, Lag= 0.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.07 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 0.38 fps, Avg. Travel Time= 2.0 min

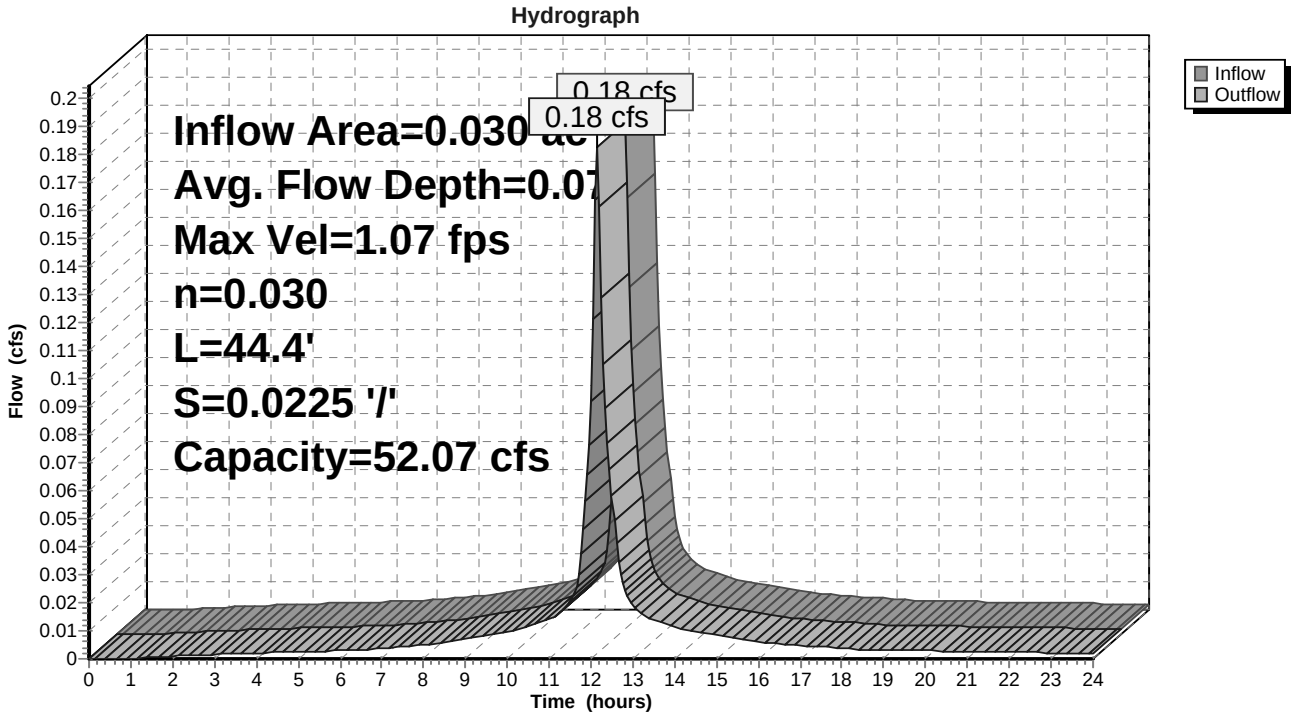
Peak Storage= 8 cf @ 12.15 hrs
Average Depth at Peak Storage= 0.07'
Bank-Full Depth= 1.00' Flow Area= 10.5 sf, Capacity= 52.07 cfs

2.00' x 1.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 15.0 2.0 '/' Top Width= 19.00'
Length= 44.4' Slope= 0.0225 '/'
Inlet Invert= 124.00', Outlet Invert= 123.00'



‡

Reach 7eR: Overland Flow



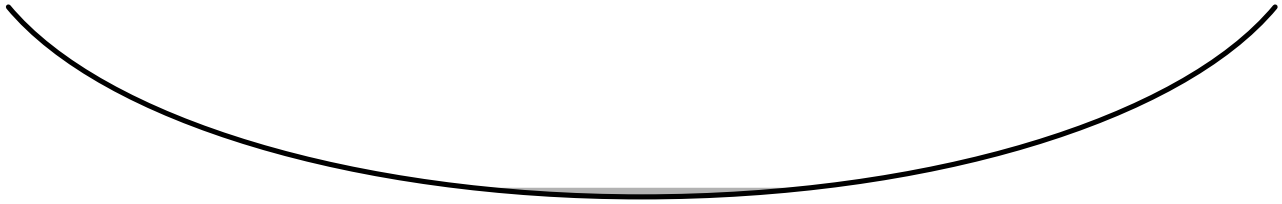
Summary for Reach 8R: Overland Flow

Inflow Area = 0.015 ac,100.00% Impervious, Inflow Depth > 6.67" for 25Yr-24Hr event
Inflow = 0.10 cfs @ 12.09 hrs, Volume= 0.008 af
Outflow = 0.10 cfs @ 12.09 hrs, Volume= 0.008 af, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.93 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 0.75 fps, Avg. Travel Time= 1.0 min

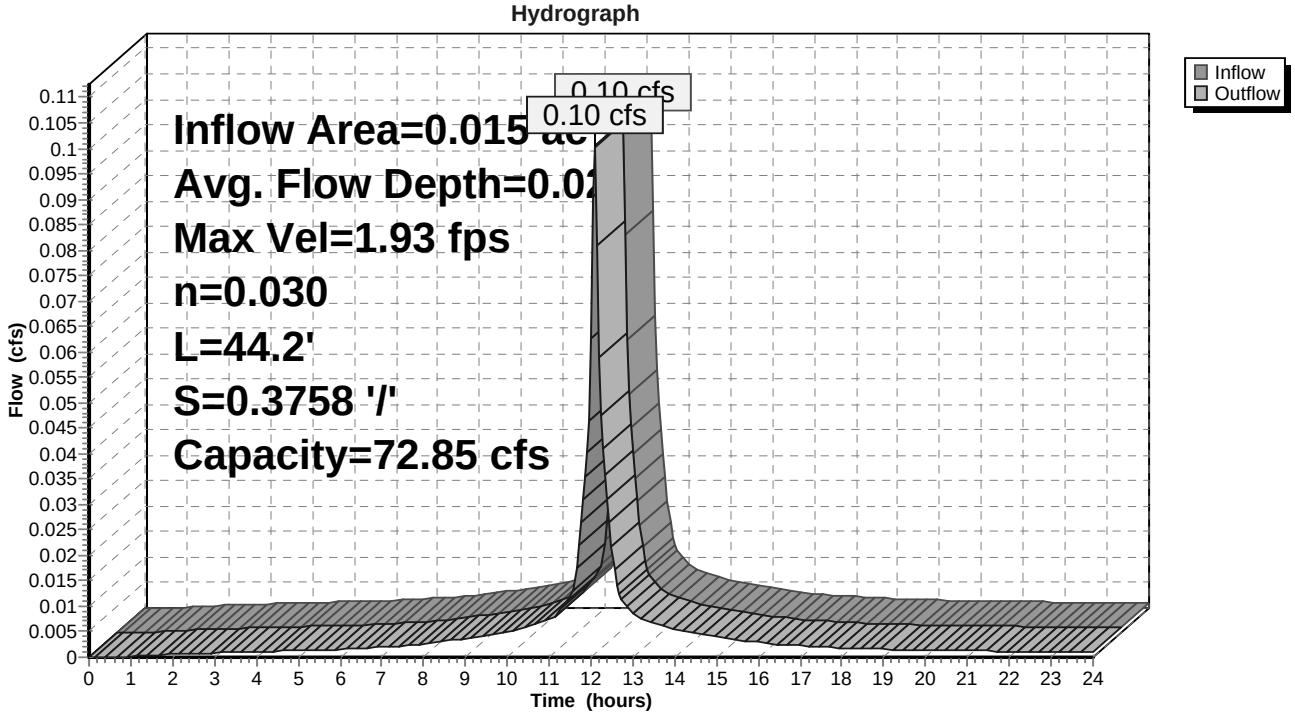
Peak Storage= 2 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.02'
Bank-Full Depth= 0.50' Flow Area= 5.0 sf, Capacity= 72.85 cfs

15.00' x 0.50' deep Parabolic Channel, n= 0.030 Earth, grassed & winding
Length= 44.2' Slope= 0.3758 '/'
Inlet Invert= 146.36', Outlet Invert= 129.75'



‡

Reach 8R: Overland Flow



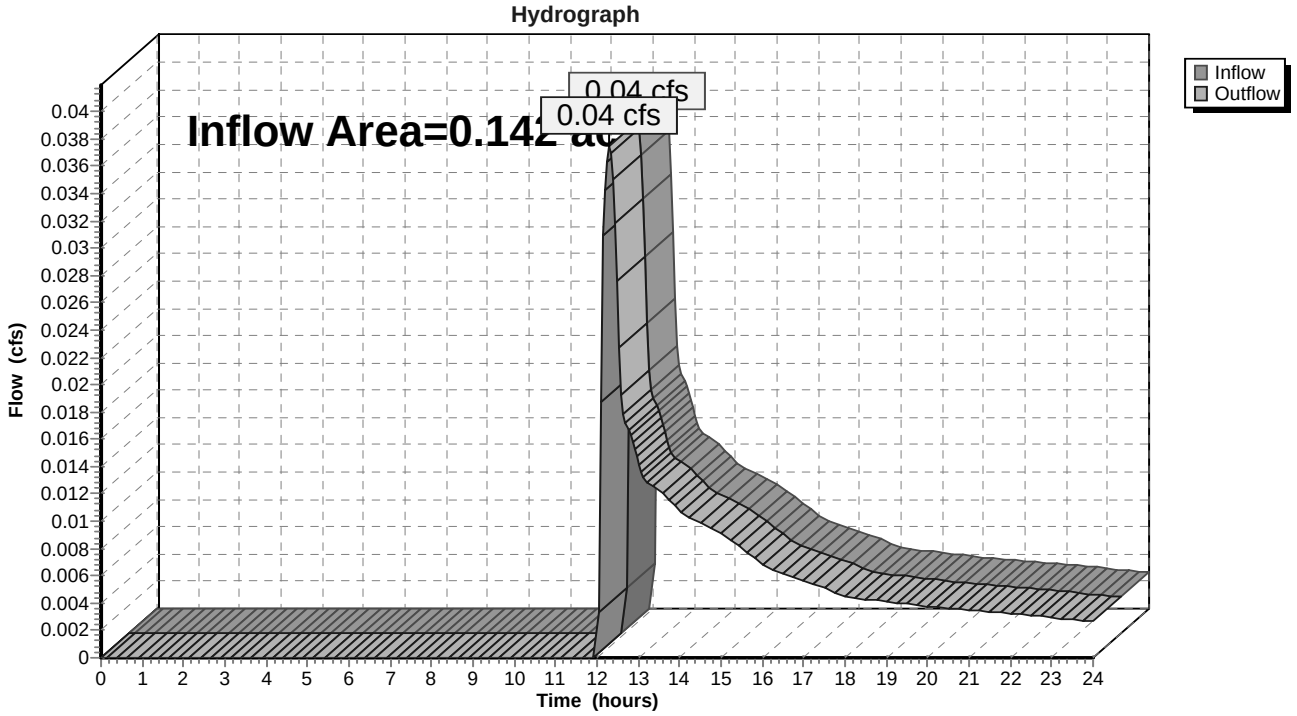
Summary for Reach 200R: Final Reach #200

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

Inflow Area = 0.142 ac, 0.00% Impervious, Inflow Depth > 0.60" for 25Yr-24Hr event
Inflow = 0.04 cfs @ 12.31 hrs, Volume= 0.007 af
Outflow = 0.04 cfs @ 12.31 hrs, Volume= 0.007 af, Atten= 0%, Lag= 0.0 min

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

Reach 200R: Final Reach #200



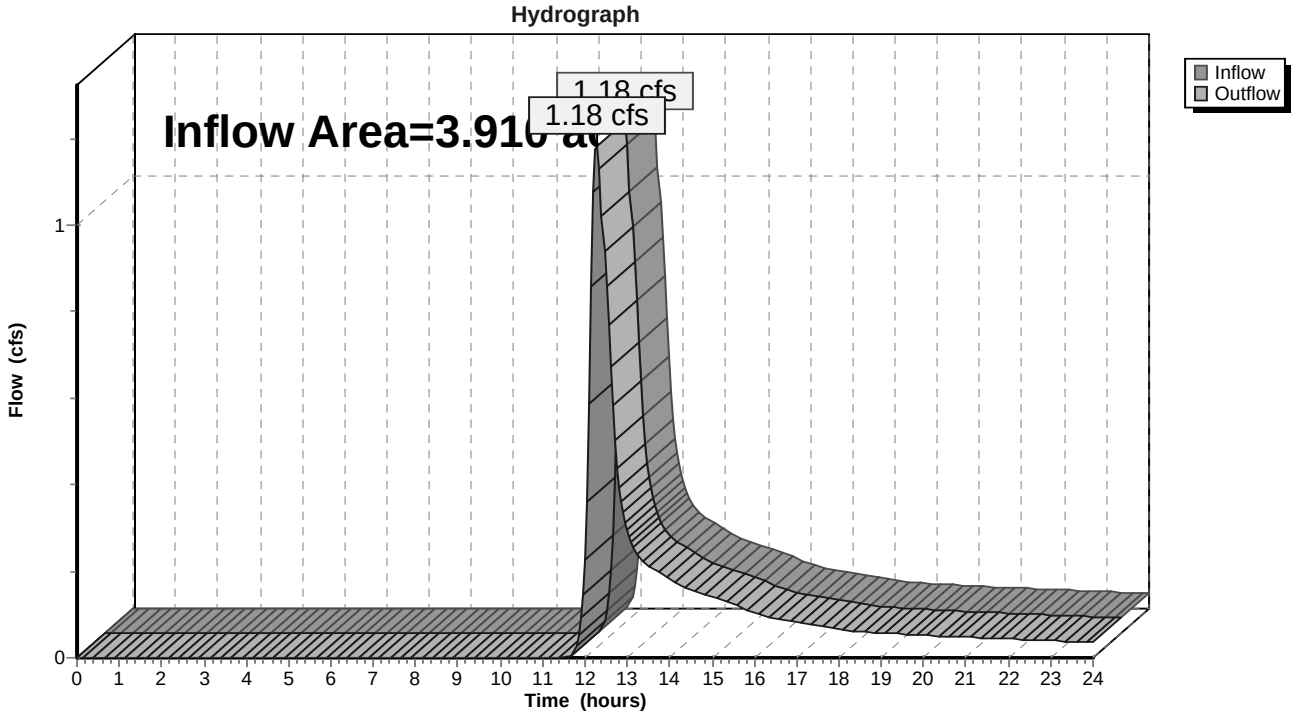
Summary for Reach 500R: Final Reach #500

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

Inflow Area = 3.910 ac, 23.00% Impervious, Inflow Depth > 0.42" for 25Yr-24Hr event
Inflow = 1.18 cfs @ 12.27 hrs, Volume= 0.138 af
Outflow = 1.18 cfs @ 12.27 hrs, Volume= 0.138 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 500R: Final Reach #500



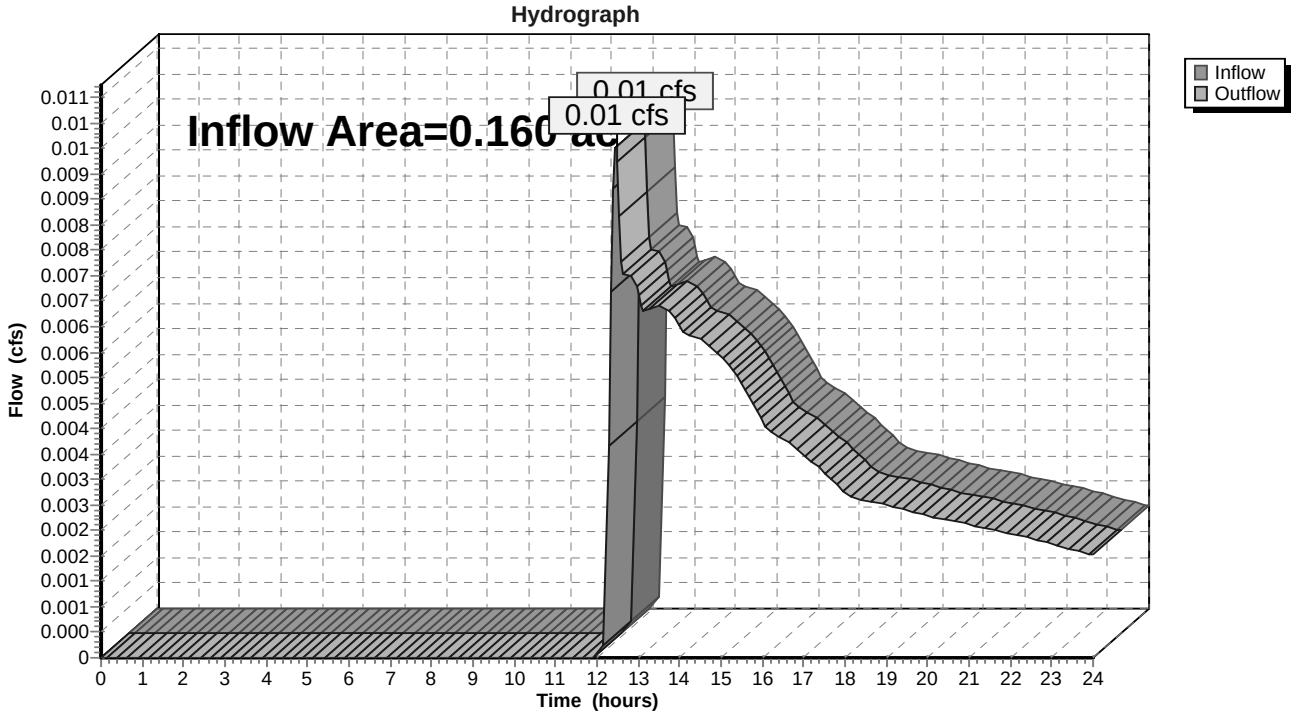
Summary for Reach 600R: Final Reach #600

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

Inflow Area = 0.160 ac, 0.00% Impervious, Inflow Depth > 0.30" for 25Yr-24Hr event
Inflow = 0.01 cfs @ 12.46 hrs, Volume= 0.004 af
Outflow = 0.01 cfs @ 12.46 hrs, Volume= 0.004 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 600R: Final Reach #600



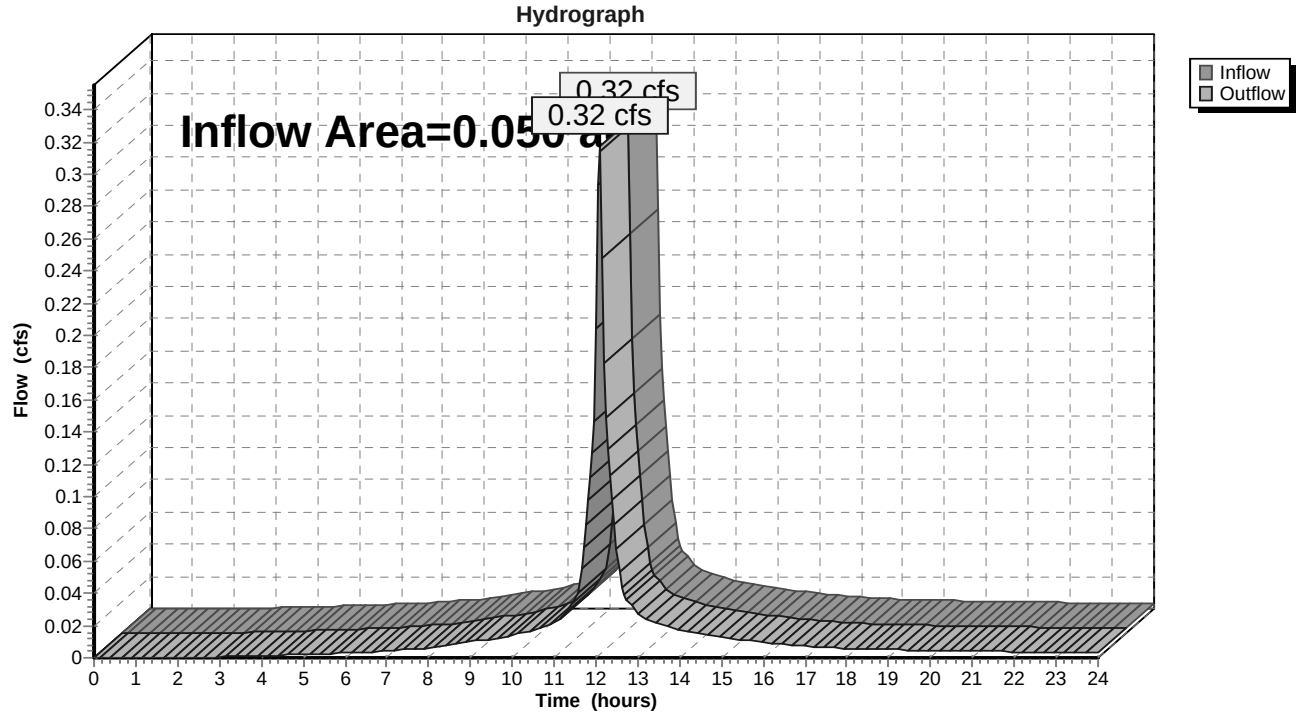
Summary for Reach 1000R: Final Reach #1000

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

Inflow Area = 0.050 ac, 91.56% Impervious, Inflow Depth > 6.08" for 25Yr-24Hr event
Inflow = 0.32 cfs @ 12.09 hrs, Volume= 0.025 af
Outflow = 0.32 cfs @ 12.09 hrs, Volume= 0.025 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 1000R: Final Reach #1000



Summary for Pond 30P: Inlet Sump

Inflow Area = 1.251 ac, 10.31% Impervious, Inflow Depth > 1.17" for 25Yr-24Hr event
Inflow = 1.06 cfs @ 12.17 hrs, Volume= 0.122 af
Outflow = 1.06 cfs @ 12.17 hrs, Volume= 0.122 af, Atten= 0%, Lag= 0.2 min
Primary = 1.06 cfs @ 12.17 hrs, Volume= 0.122 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 121.99' @ 12.17 hrs Surf.Area= 55 sf Storage= 19 cf
Flood Elev= 123.00' Surf.Area= 491 sf Storage= 305 cf

Plug-Flow detention time= 0.7 min calculated for 0.122 af (100% of inflow)
Center-of-Mass det. time= 0.4 min (889.6 - 889.2)

Volume	Invert	Avail.Storage	Storage Description
#1	121.50'	134 cf	**Open Storage (Irregular)**Listed below (Recalc)
#2	122.00'	172 cf	**Sediment Forebay (Irregular)**Listed below (Recalc)
		305 cf	Total Available Storage

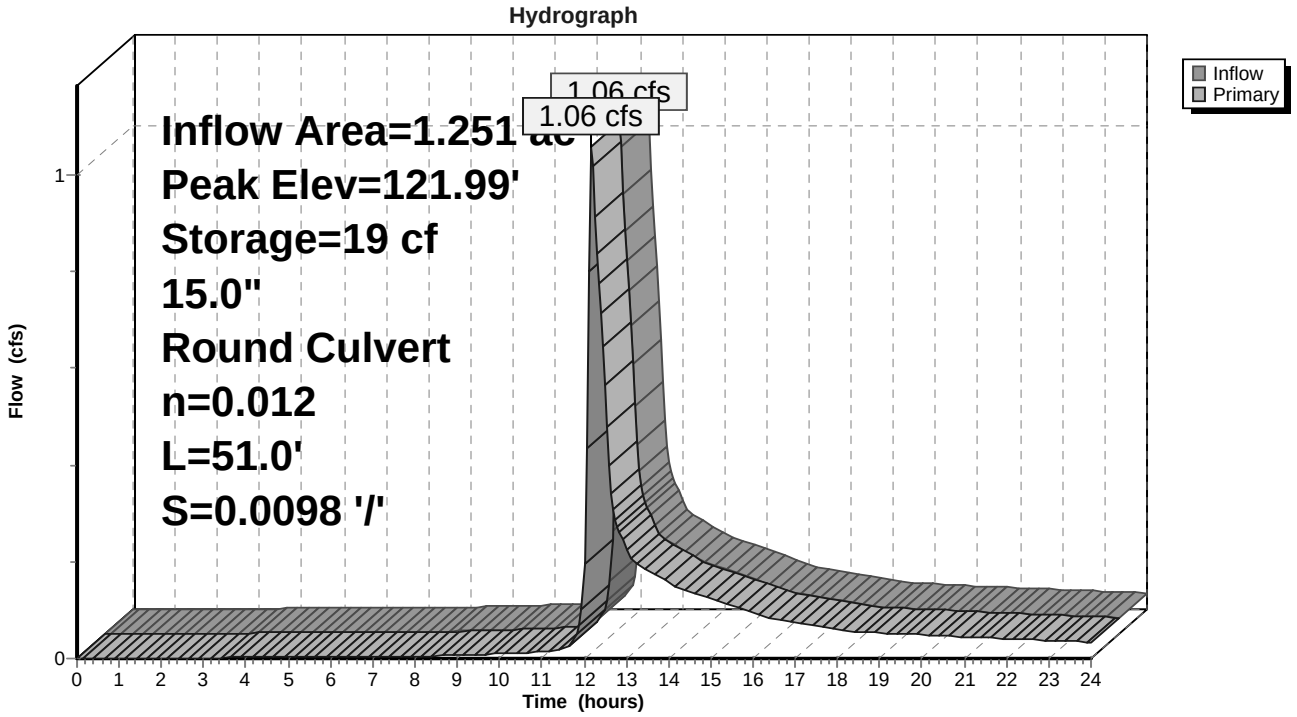
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
121.50	25	20.0	0	0	25
122.00	56	33.4	20	20	83
123.00	184	56.0	114	134	250

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
122.00	66	37.0	0	0	66
123.00	307	114.5	172	172	1,003

Device	Routing	Invert	Outlet Devices
#1	Primary	121.50'	**15.0" Round 15" HDPE N-12** L= 51.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 121.50' / 121.00' S= 0.0098 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=1.03 cfs @ 12.17 hrs HW=121.98' TW=118.86' (Dynamic Tailwater)
↑**1=15" HDPE N-12** (Inlet Controls 1.03 cfs @ 2.36 fps)

Pond 30P: Inlet Sump



Summary for Pond 106P: Rain Garden W/ Infiltration #106

[80] Warning: Exceeded Pond D02P by 0.02' @ 12.95 hrs (0.46 cfs 0.128 af)

Inflow Area = 2.825 ac, 27.99% Impervious, Inflow Depth > 2.25" for 25Yr-24Hr event
Inflow = 5.40 cfs @ 12.13 hrs, Volume= 0.530 af
Outflow = 0.28 cfs @ 11.65 hrs, Volume= 0.344 af, Atten= 95%, Lag= 0.0 min
Discarded = 0.28 cfs @ 11.65 hrs, Volume= 0.344 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= 119.71' @ 16.14 hrs Surf.Area= 4,088 sf Storage= 11,590 cf
Flood Elev= 121.50' Surf.Area= 4,088 sf Storage= 18,500 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 158.9 min (992.5 - 833.6)

Volume	Invert	Avail.Storage	Storage Description
#1	113.50'	1,635 cf	**Stone (Irregular)** Listed below (Recalc) 4,088 cf Overall x 40.0% Voids
#2	114.50'	993 cf	**BioMedia (Irregular)** Listed below (Recalc) -Impervious 4,966 cf Overall x 20.0% Voids
#3	116.50'	124 cf	**Loam (Irregular)** Listed below (Recalc) -Impervious 621 cf Overall x 20.0% Voids
#4	116.75'	15,747 cf	**Open Water Storage (Irregular)** Listed below (Recalc) -Impervious
		18,500 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
113.50	4,088	340.3	0	0	4,088
114.50	4,088	340.3	4,088	4,088	4,428

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
114.50	2,483	276.9	0	0	2,483
116.50	2,483	276.9	4,966	4,966	3,037

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
116.50	2,483	276.9	0	0	2,483
116.75	2,483	276.9	621	621	2,552

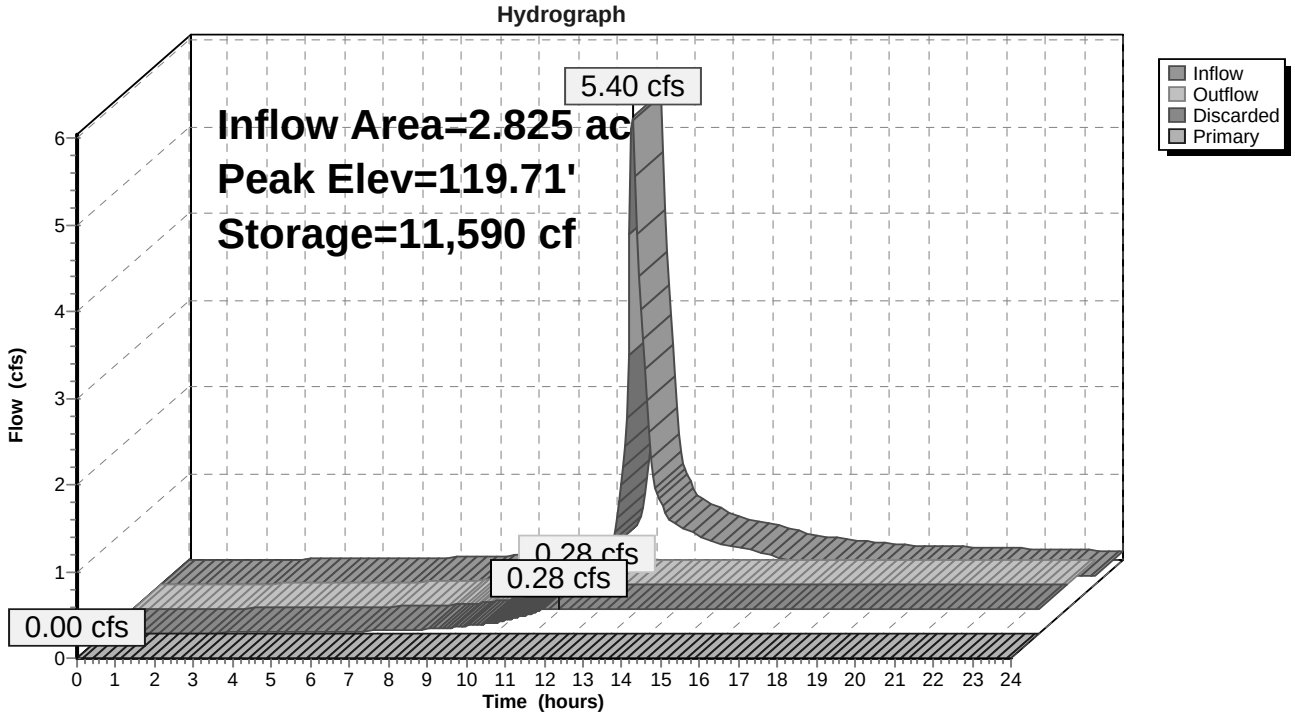
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
116.75	2,483	276.9	0	0	2,483
117.00	2,569	281.1	631	631	2,682
118.00	2,902	296.6	2,734	3,365	3,451
119.00	3,253	312.2	3,076	6,441	4,266
120.00	3,622	327.7	3,436	9,877	5,117
121.00	4,009	343.3	3,814	13,691	6,015
121.50	4,217	352.3	2,056	15,747	6,543

Device	Routing	Invert	Outlet Devices
#1	Primary	120.90'	**25.0' long x 7.0' breadth 25' Spillway** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78
#2	Discarded	113.50'	**3.000 in/hr Infiltration over Surface area**

Discarded OutFlow Max=0.28 cfs @ 11.65 hrs HW=113.61' (Free Discharge)
└**2=Infiltration** (Exfiltration Controls 0.28 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=113.50' TW=0.00' (Dynamic Tailwater)
└**1=25' Spillway** (Controls 0.00 cfs)

Pond 106P: Rain Garden W/ Infiltration #106



Summary for Pond C01P: Catch Basin #1

Inflow Area = 0.623 ac, 45.16% Impervious, Inflow Depth > 3.23" for 25Yr-24Hr event
Inflow = 1.98 cfs @ 12.16 hrs, Volume= 0.168 af
Outflow = 1.98 cfs @ 12.16 hrs, Volume= 0.168 af, Atten= 0%, Lag= 0.1 min
Primary = 1.98 cfs @ 12.16 hrs, Volume= 0.168 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 123.88' @ 12.16 hrs Surf.Area= 13 sf Storage= 10 cf
Flood Elev= 127.60' Surf.Area= 13 sf Storage= 53 cf

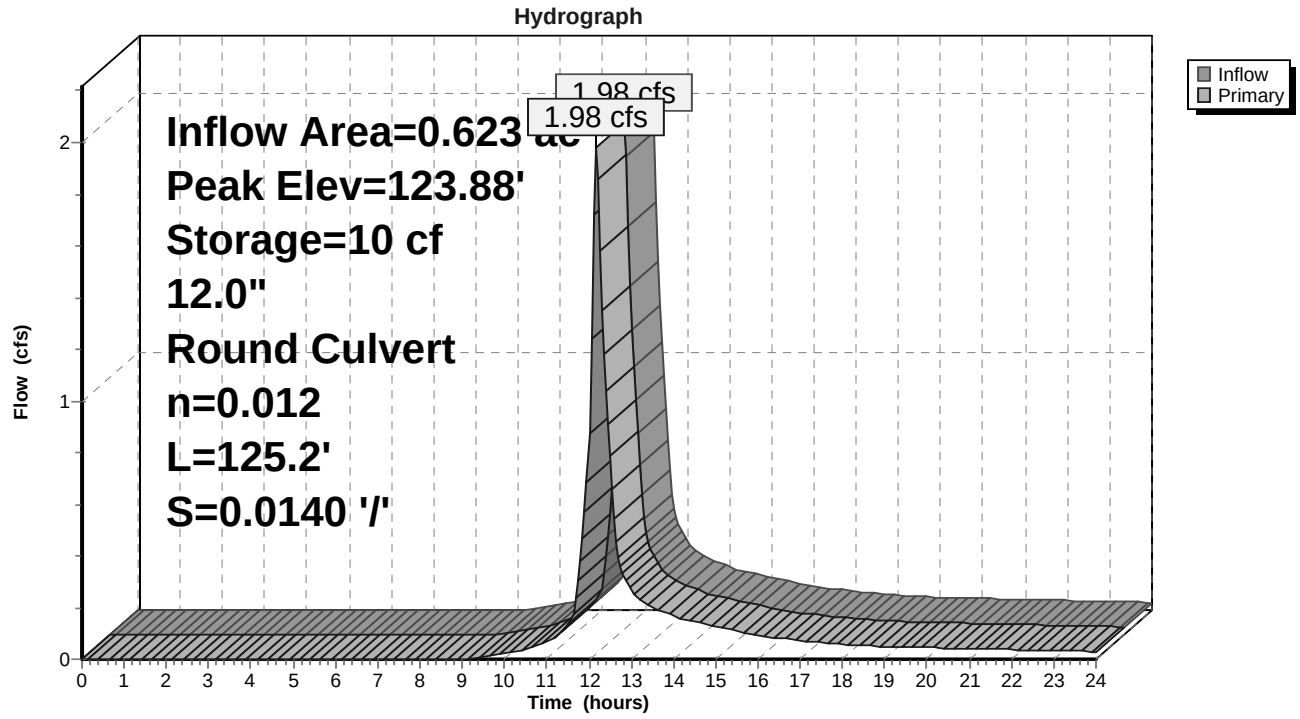
Plug-Flow detention time= 0.2 min calculated for 0.168 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (841.6 - 841.4)

Volume	Invert	Avail.Storage	Storage Description
#1	123.10'	53 cf	**4.00'D x 4.25'H 4' Structure**

Device	Routing	Invert	Outlet Devices
#1	Primary	123.10'	**12.0" Round 12" HDPE N-12** L= 125.2' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 123.10' / 121.35' S= 0.0140 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=1.95 cfs @ 12.16 hrs HW=123.87' TW=119.79' (Dynamic Tailwater)
└**1=12" HDPE N-12** (Inlet Controls 1.95 cfs @ 2.99 fps)

Pond C01P: Catch Basin #1



Summary for Pond C02P: Catch Basin #2

Inflow Area = 0.115 ac,100.00% Impervious, Inflow Depth > 6.67" for 25Yr-24Hr event
Inflow = 0.76 cfs @ 12.09 hrs, Volume= 0.064 af
Outflow = 0.76 cfs @ 12.09 hrs, Volume= 0.064 af, Atten= 0%, Lag= 0.1 min
Primary = 0.76 cfs @ 12.09 hrs, Volume= 0.064 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 121.95' @ 12.09 hrs Surf.Area= 13 sf Storage= 6 cf
Flood Elev= 125.70' Surf.Area= 13 sf Storage= 53 cf

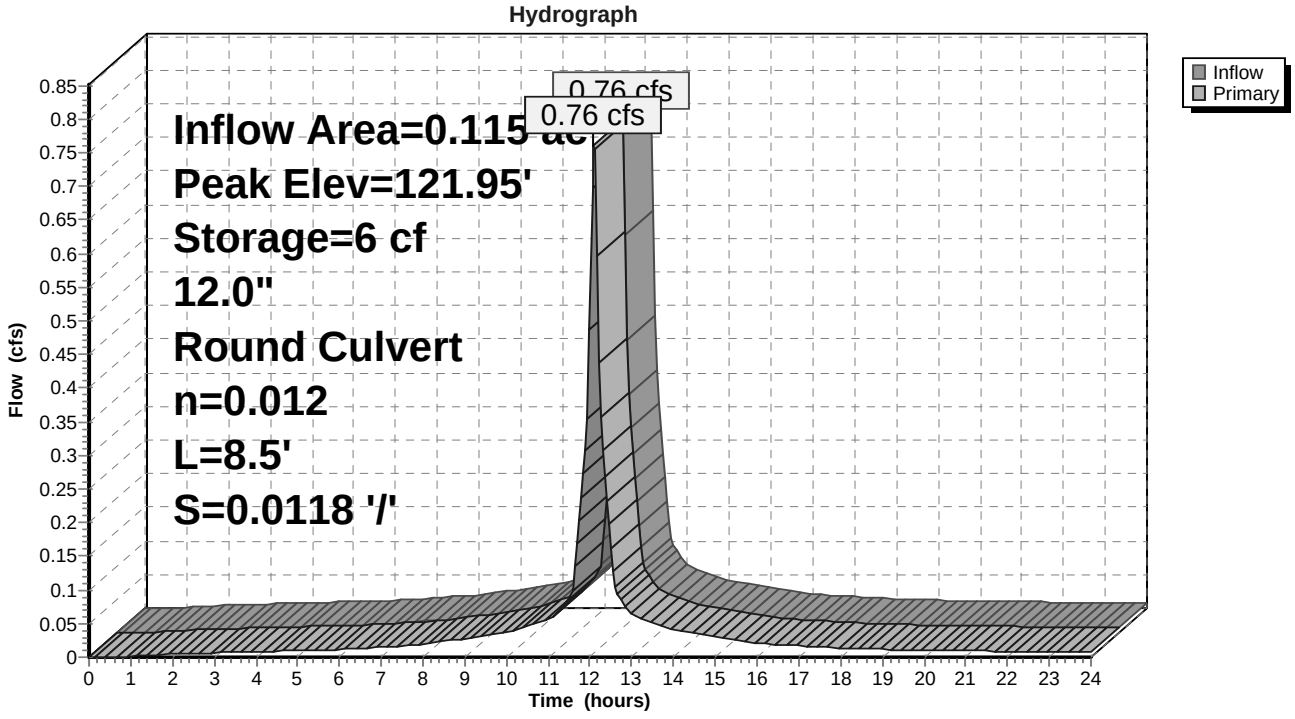
Plug-Flow detention time= 0.5 min calculated for 0.064 af (100% of inflow)
Center-of-Mass det. time= 0.3 min (743.0 - 742.7)

Volume	Invert	Avail.Storage	Storage Description
#1	121.45'	53 cf	**4.00'D x 4.25'H 4' Structure**

Device	Routing	Invert	Outlet Devices
#1	Primary	121.45'	**12.0" Round 12" HDPE N-12** L= 8.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 121.45' / 121.35' S= 0.0118 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.74 cfs @ 12.09 hrs HW=121.94' TW=119.83' (Dynamic Tailwater)
↑—**1=12" HDPE N-12** (Barrel Controls 0.74 cfs @ 2.82 fps)

Pond C02P: Catch Basin #2



Summary for Pond C03P: Catch Basin #3

Inflow Area = 0.235 ac, 77.54% Impervious, Inflow Depth > 5.16" for 25Yr-24Hr event
Inflow = 1.35 cfs @ 12.09 hrs, Volume= 0.101 af
Outflow = 1.36 cfs @ 12.09 hrs, Volume= 0.101 af, Atten= 0%, Lag= 0.1 min
Primary = 1.36 cfs @ 12.09 hrs, Volume= 0.101 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 122.31' @ 12.09 hrs Surf.Area= 13 sf Storage= 8 cf
Flood Elev= 125.93' Surf.Area= 13 sf Storage= 53 cf

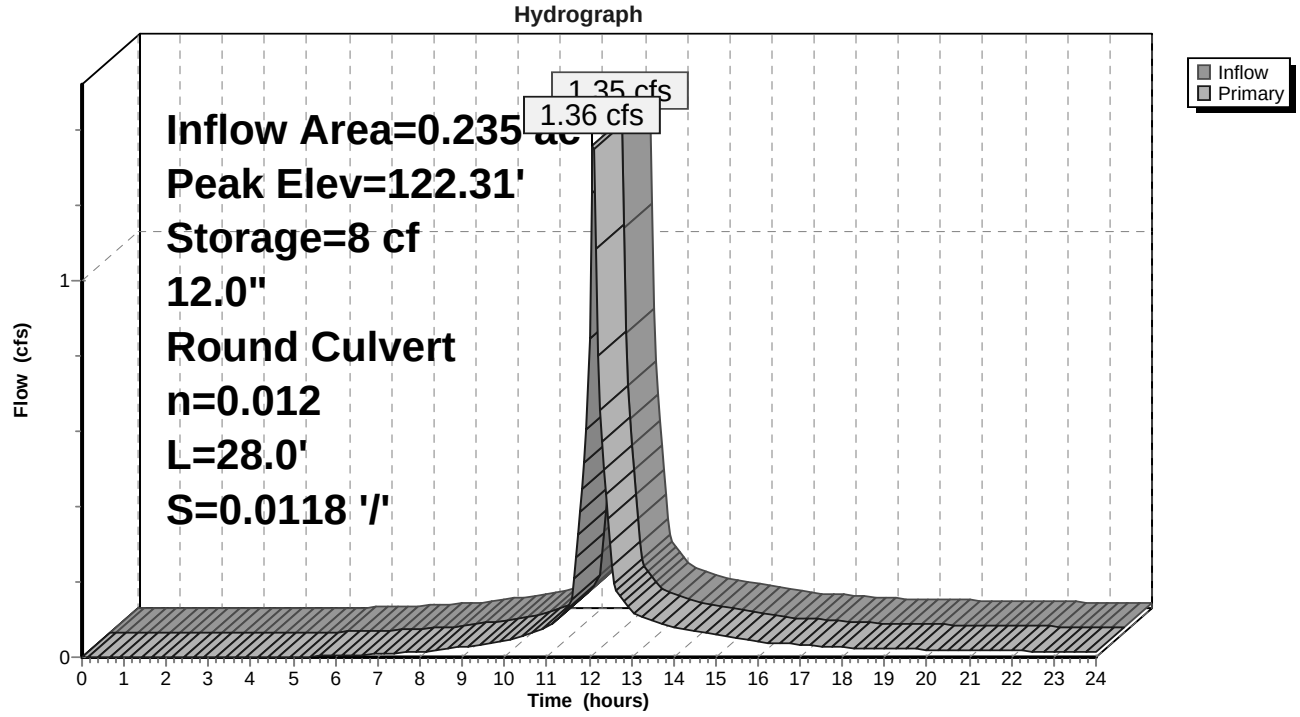
Plug-Flow detention time= 0.3 min calculated for 0.101 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (795.3 - 795.1)

Volume	Invert	Avail.Storage	Storage Description
#1	121.68'	53 cf	**4.00'D x 4.25'H 4' Structure**

Device	Routing	Invert	Outlet Devices
#1	Primary	121.68'	**12.0" Round 12" HDPE N-12** L= 28.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 121.68' / 121.35' S= 0.0118 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=1.32 cfs @ 12.09 hrs HW=122.30' TW=119.84' (Dynamic Tailwater)
↑—**1=12" HDPE N-12** (Barrel Controls 1.32 cfs @ 3.69 fps)

Pond C03P: Catch Basin #3



Summary for Pond C04P: Catch Basin #4

Inflow Area = 0.049 ac,100.00% Impervious, Inflow Depth > 6.67" for 25Yr-24Hr event
Inflow = 0.33 cfs @ 12.09 hrs, Volume= 0.027 af
Outflow = 0.33 cfs @ 12.09 hrs, Volume= 0.027 af, Atten= 0%, Lag= 0.1 min
Primary = 0.33 cfs @ 12.09 hrs, Volume= 0.027 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 121.96' @ 12.09 hrs Surf.Area= 13 sf Storage= 4 cf
Flood Elev= 125.93' Surf.Area= 13 sf Storage= 53 cf

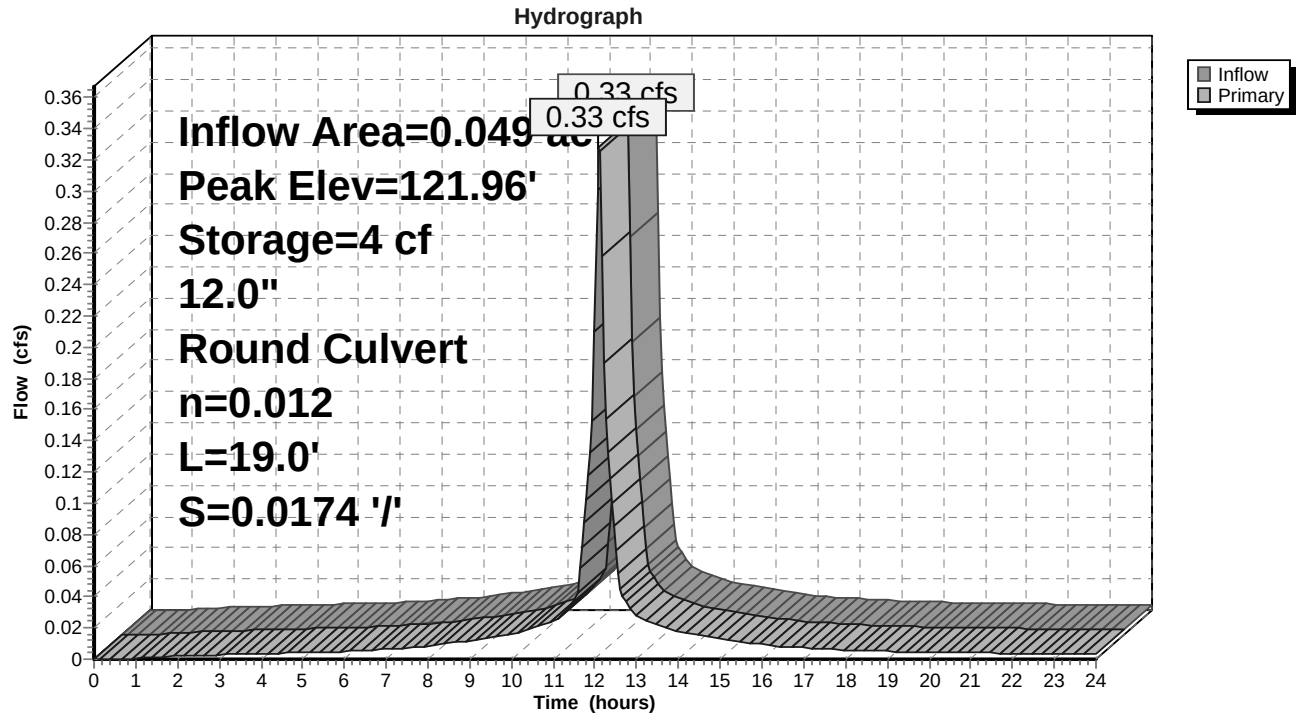
Plug-Flow detention time= 0.7 min calculated for 0.027 af (100% of inflow)
Center-of-Mass det. time= 0.5 min (743.2 - 742.7)

Volume	Invert	Avail.Storage	Storage Description
#1	121.68'	53 cf	**4.00'D x 4.25'H 4' Structure**

Device	Routing	Invert	Outlet Devices
#1	Primary	121.68'	**12.0" Round 12" HDPE N-12** L= 19.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 121.68' / 121.35' S= 0.0174 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.32 cfs @ 12.09 hrs HW=121.96' TW=119.83' (Dynamic Tailwater)
└**1=12" HDPE N-12** (Inlet Controls 0.32 cfs @ 1.79 fps)

Pond C04P: Catch Basin #4



Summary for Pond C05P: Catch Basin #5

Inflow Area = 0.363 ac, 9.39% Impervious, Inflow Depth > 1.19" for 25Yr-24Hr event
Inflow = 0.31 cfs @ 12.19 hrs, Volume= 0.036 af
Outflow = 0.31 cfs @ 12.19 hrs, Volume= 0.036 af, Atten= 0%, Lag= 0.0 min
Primary = 0.31 cfs @ 12.19 hrs, Volume= 0.036 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 125.05' @ 12.19 hrs Surf.Area= 3 sf Storage= 1 cf

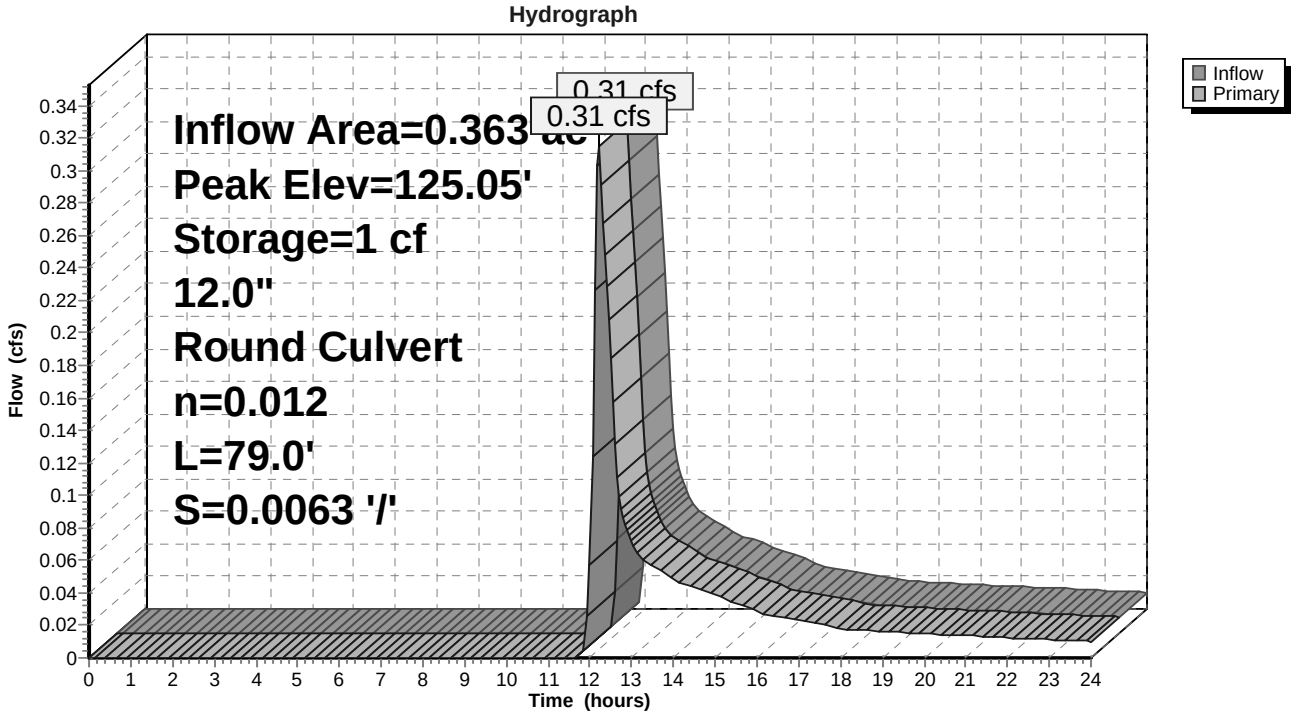
Plug-Flow detention time= 0.1 min calculated for 0.036 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (903.1 - 903.0)

Volume	Invert	Avail.Storage	Storage Description
#1	124.75'	13 cf	**2.00'D x 4.25'H 2' Nyloplast Structure**

Device	Routing	Invert	Outlet Devices
#1	Primary	124.75'	**12.0" Round 12" HDPE N-12** L= 79.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 124.75' / 124.25' S= 0.0063 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.31 cfs @ 12.19 hrs HW=125.05' TW=118.86' (Dynamic Tailwater)
↑—**1=12" HDPE N-12** (Barrel Controls 0.31 cfs @ 2.40 fps)

Pond C05P: Catch Basin #5



Summary for Pond D01P: Drain Manhole #1

Inflow Area = 1.022 ac, 61.41% Impervious, Inflow Depth > 4.22" for 25Yr-24Hr event
Inflow = 4.18 cfs @ 12.11 hrs, Volume= 0.360 af
Outflow = 4.17 cfs @ 12.11 hrs, Volume= 0.360 af, Atten= 0%, Lag= 0.0 min
Primary = 4.17 cfs @ 12.11 hrs, Volume= 0.360 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 119.87' @ 12.11 hrs Surf.Area= 13 sf Storage= 14 cf
Flood Elev= 126.10' Surf.Area= 13 sf Storage= 92 cf

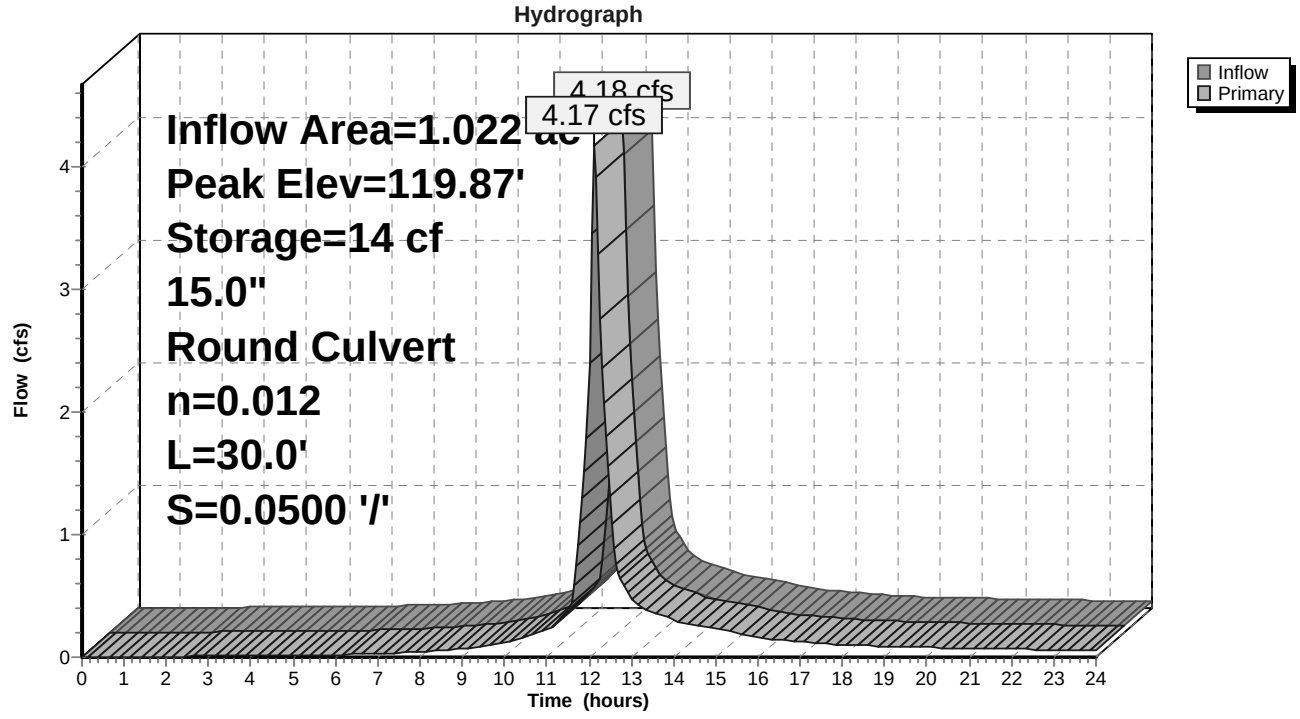
Plug-Flow detention time= 0.4 min calculated for 0.359 af (100% of inflow)
Center-of-Mass det. time= 0.4 min (804.0 - 803.6)

Volume	Invert	Avail.Storage	Storage Description
#1	118.75'	99 cf	**4.00'D x 7.90'H 6' Structure**

Device	Routing	Invert	Outlet Devices
#1	Primary	118.75'	**15.0" Round 15" HDPE N-12** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 118.75' / 117.25' S= 0.0500 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=4.09 cfs @ 12.11 hrs HW=119.85' TW=116.88' (Dynamic Tailwater)
└**1=15" HDPE N-12** (Inlet Controls 4.09 cfs @ 3.57 fps)

Pond D01P: Drain Manhole #1



Summary for Pond D02P: Drain Manhole #2

Inflow Area = 1.614 ac, 10.11% Impervious, Inflow Depth > 1.17" for 25Yr-24Hr event
Inflow = 1.38 cfs @ 12.17 hrs, Volume= 0.158 af
Outflow = 1.38 cfs @ 12.17 hrs, Volume= 0.158 af, Atten= 0%, Lag= 0.0 min
Primary = 1.38 cfs @ 12.17 hrs, Volume= 0.158 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 119.71' @ 16.19 hrs Surf.Area= 13 sf Storage= 18 cf

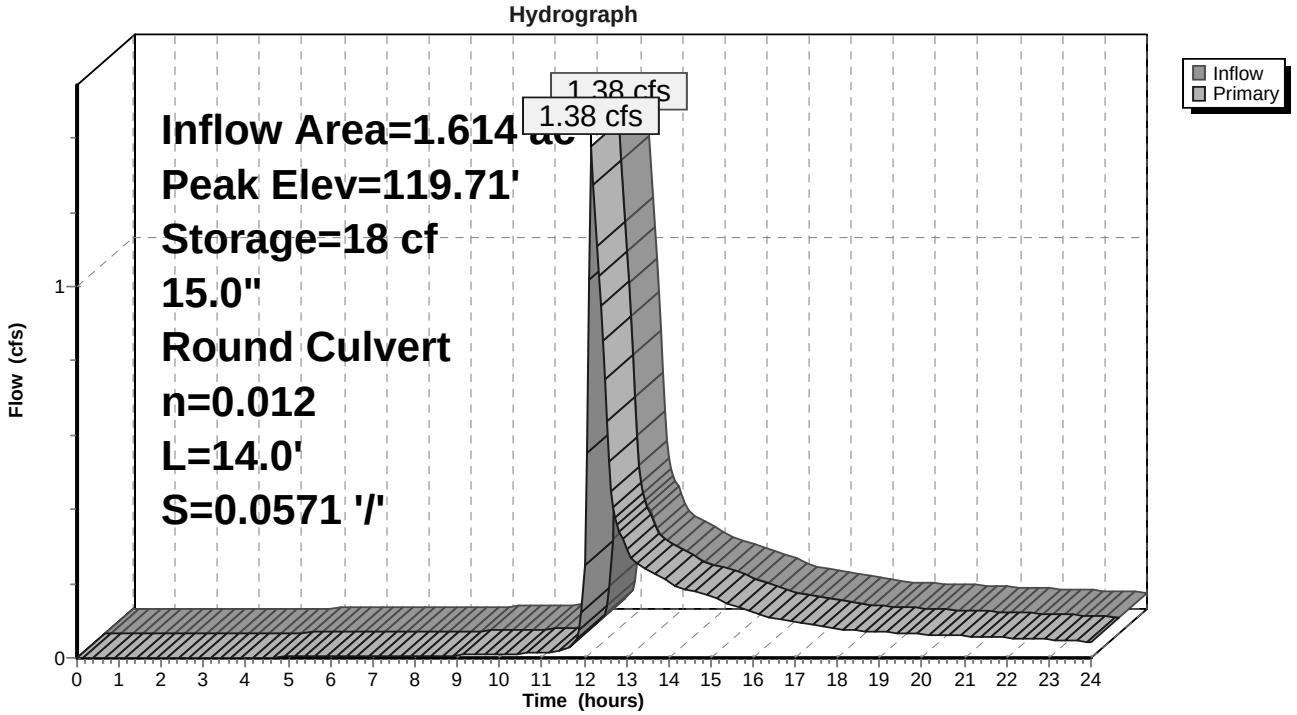
Plug-Flow detention time= 1.4 min calculated for 0.158 af (100% of inflow)
Center-of-Mass det. time= 1.0 min (893.7 - 892.7)

Volume	Invert	Avail.Storage	Storage Description
#1	118.30'	140 cf	**4.00'D x 11.15'H 4' Structure**

Device	Routing	Invert	Outlet Devices
#1	Primary	118.30'	**15.0" Round 15" HDPE N-12** L= 14.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 118.30' / 117.50' S= 0.0571 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=1.34 cfs @ 12.17 hrs HW=118.86' TW=117.30' (Dynamic Tailwater)
1=15" HDPE N-12 (Inlet Controls 1.34 cfs @ 2.54 fps)

Pond D02P: Drain Manhole #2



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

Subcatchment 1aS: Sophie Runoff Area=2,157 sf 91.56% Impervious Runoff Depth>2.85"
Tc=6.0 min CN=93 Runoff=0.16 cfs 0.012 af

Subcatchment 1S: Subcatchment #1 Runoff Area=15,796 sf 9.39% Impervious Runoff Depth>0.10"
Flow Length=420' Tc=10.6 min CN=45 Runoff=0.01 cfs 0.003 af

Subcatchment 2S: Subcatchment #2 Runoff Area=6,181 sf 0.00% Impervious Runoff Depth>0.00"
Flow Length=83' Tc=6.0 min CN=37 Runoff=0.00 cfs 0.000 af

Subcatchment 5S: Subcatchment #5 Runoff Area=47,233 sf 9.99% Impervious Runoff Depth>0.20"
Flow Length=306' Tc=16.6 min CN=49 Runoff=0.05 cfs 0.018 af

Subcatchment 6S: Subcatchment #6 Runoff Area=6,985 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=139' Tc=6.0 min CN=32 Runoff=0.00 cfs 0.000 af

Subcatchment 7S: Subcatchment #7 Runoff Area=660 sf 100.00% Impervious Runoff Depth>3.38"
Tc=6.0 min CN=98 Runoff=0.05 cfs 0.004 af

Subcatchment 8S: Subcatchment #8 Runoff Area=660 sf 100.00% Impervious Runoff Depth>3.38"
Tc=6.0 min CN=98 Runoff=0.05 cfs 0.004 af

Subcatchment 30S: Subcatchment #30 Runoff Area=53,172 sf 8.09% Impervious Runoff Depth>0.07"
Flow Length=363' Tc=9.1 min CN=43 Runoff=0.01 cfs 0.007 af

Subcatchment 31S: Subcatchment #31 Runoff Area=27,152 sf 45.16% Impervious Runoff Depth>0.92"
Flow Length=209' Tc=10.9 min CN=67 Runoff=0.50 cfs 0.048 af

Subcatchment 32S: Subcatchment #32 Runoff Area=4,997 sf 100.00% Impervious Runoff Depth>3.38"
Tc=6.0 min CN=98 Runoff=0.39 cfs 0.032 af

Subcatchment 33S: Subcatchment #33 Runoff Area=10,233 sf 77.54% Impervious Runoff Depth>2.12"
Tc=6.0 min CN=85 Runoff=0.57 cfs 0.041 af

Subcatchment 34S: Subcatchment #34 Runoff Area=2,154 sf 100.00% Impervious Runoff Depth>3.38"
Tc=6.0 min CN=98 Runoff=0.17 cfs 0.014 af

Subcatchment 106S: Subcatchment #106 Runoff Area=8,254 sf 0.00% Impervious Runoff Depth>0.02"
Tc=6.0 min CN=40 Runoff=0.00 cfs 0.000 af

Reach 7aR: Overland Flow Avg. Flow Depth=0.02' Max Vel=1.47 fps Inflow=0.05 cfs 0.004 af
n=0.030 L=62.3' S=0.3011 '/' Capacity=65.21 cfs Outflow=0.05 cfs 0.004 af

Reach 7bR: Overland Flow Avg. Flow Depth=0.06' Max Vel=0.33 fps Inflow=0.05 cfs 0.004 af
n=0.030 L=92.5' S=0.0027 '/' Capacity=18.04 cfs Outflow=0.05 cfs 0.004 af

Reach 7cR: Overland Flow Avg. Flow Depth=0.05' Max Vel=0.81 fps Inflow=0.10 cfs 0.009 af
n=0.030 L=90.3' S=0.0194 '/' Capacity=48.30 cfs Outflow=0.09 cfs 0.009 af

Reach 7dR: Overland Flow Avg. Flow Depth=0.03' Max Vel=1.15 fps Inflow=0.09 cfs 0.009 af
n=0.030 L=72.7' S=0.0550 '/' Capacity=81.39 cfs Outflow=0.09 cfs 0.009 af

Reach 7eR: Overland Flow Avg. Flow Depth=0.05' Max Vel=0.86 fps Inflow=0.09 cfs 0.009 af
n=0.030 L=44.4' S=0.0225 '/' Capacity=52.07 cfs Outflow=0.09 cfs 0.009 af

Reach 8R: Overland Flow Avg. Flow Depth=0.02' Max Vel=1.59 fps Inflow=0.05 cfs 0.004 af
n=0.030 L=44.2' S=0.3758 '/' Capacity=72.85 cfs Outflow=0.05 cfs 0.004 af

Reach 200R: Final Reach #200 Inflow=0.00 cfs 0.000 af
Outflow=0.00 cfs 0.000 af

Reach 500R: Final Reach #500 Inflow=0.05 cfs 0.018 af
Outflow=0.05 cfs 0.018 af

Reach 600R: Final Reach #600 Inflow=0.00 cfs 0.000 af
Outflow=0.00 cfs 0.000 af

Reach 1000R: Final Reach #1000 Inflow=0.16 cfs 0.012 af
Outflow=0.16 cfs 0.012 af

Pond 30P: Inlet Sump Peak Elev=121.64' Storage=4 cf Inflow=0.09 cfs 0.015 af
15.0" Round Culvert n=0.012 L=51.0' S=0.0098 '/' Outflow=0.09 cfs 0.015 af

Pond 106P: Rain Garden W/ Infiltration #106 Peak Elev=114.60' Storage=1,685 cf Inflow=1.61 cfs 0.154 af
Discarded=0.28 cfs 0.154 af Primary=0.00 cfs 0.000 af Outflow=0.28 cfs 0.154 af

Pond C01P: Catch Basin #1 Peak Elev=123.45' Storage=4 cf Inflow=0.50 cfs 0.048 af
12.0" Round Culvert n=0.012 L=125.2' S=0.0140 '/' Outflow=0.50 cfs 0.048 af

Pond C02P: Catch Basin #2 Peak Elev=121.79' Storage=4 cf Inflow=0.39 cfs 0.032 af
12.0" Round Culvert n=0.012 L=8.5' S=0.0118 '/' Outflow=0.40 cfs 0.032 af

Pond C03P: Catch Basin #3 Peak Elev=122.06' Storage=5 cf Inflow=0.57 cfs 0.041 af
12.0" Round Culvert n=0.012 L=28.0' S=0.0118 '/' Outflow=0.57 cfs 0.041 af

Pond C04P: Catch Basin #4 Peak Elev=121.88' Storage=3 cf Inflow=0.17 cfs 0.014 af
12.0" Round Culvert n=0.012 L=19.0' S=0.0174 '/' Outflow=0.17 cfs 0.014 af

Pond C05P: Catch Basin #5 Peak Elev=124.79' Storage=0 cf Inflow=0.01 cfs 0.003 af
12.0" Round Culvert n=0.012 L=79.0' S=0.0063 '/' Outflow=0.01 cfs 0.003 af

Pond D01P: Drain Manhole #1 Peak Elev=119.35' Storage=8 cf Inflow=1.53 cfs 0.135 af
15.0" Round Culvert n=0.012 L=30.0' S=0.0500 '/' Outflow=1.53 cfs 0.135 af

Pond D02P: Drain Manhole #2 Peak Elev=118.44' Storage=2 cf Inflow=0.09 cfs 0.018 af
15.0" Round Culvert n=0.012 L=14.0' S=0.0571 '/' Outflow=0.09 cfs 0.018 af

Total Runoff Area = 4.262 ac Runoff Volume = 0.184 af Average Runoff Depth = 0.52"
77.84% Pervious = 3.317 ac 22.16% 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 1aS: Sophie Runoff Area=2,157 sf 91.56% Impervious Runoff Depth>4.65"
Tc=6.0 min CN=93 Runoff=0.25 cfs 0.019 af

Subcatchment 1S: Subcatchment #1 Runoff Area=15,796 sf 9.39% Impervious Runoff Depth>0.59"
Flow Length=420' Tc=10.6 min CN=45 Runoff=0.11 cfs 0.018 af

Subcatchment 2S: Subcatchment #2 Runoff Area=6,181 sf 0.00% Impervious Runoff Depth>0.22"
Flow Length=83' Tc=6.0 min CN=37 Runoff=0.01 cfs 0.003 af

Subcatchment 5S: Subcatchment #5 Runoff Area=47,233 sf 9.99% Impervious Runoff Depth>0.82"
Flow Length=306' Tc=16.6 min CN=49 Runoff=0.52 cfs 0.074 af

Subcatchment 6S: Subcatchment #6 Runoff Area=6,985 sf 0.00% Impervious Runoff Depth>0.06"
Flow Length=139' Tc=6.0 min CN=32 Runoff=0.00 cfs 0.001 af

Subcatchment 7S: Subcatchment #7 Runoff Area=660 sf 100.00% Impervious Runoff Depth>5.22"
Tc=6.0 min CN=98 Runoff=0.08 cfs 0.007 af

Subcatchment 8S: Subcatchment #8 Runoff Area=660 sf 100.00% Impervious Runoff Depth>5.22"
Tc=6.0 min CN=98 Runoff=0.08 cfs 0.007 af

Subcatchment 30S: Subcatchment #30 Runoff Area=53,172 sf 8.09% Impervious Runoff Depth>0.49"
Flow Length=363' Tc=9.1 min CN=43 Runoff=0.27 cfs 0.050 af

Subcatchment 31S: Subcatchment #31 Runoff Area=27,152 sf 45.16% Impervious Runoff Depth>2.13"
Flow Length=209' Tc=10.9 min CN=67 Runoff=1.28 cfs 0.110 af

Subcatchment 32S: Subcatchment #32 Runoff Area=4,997 sf 100.00% Impervious Runoff Depth>5.22"
Tc=6.0 min CN=98 Runoff=0.60 cfs 0.050 af

Subcatchment 33S: Subcatchment #33 Runoff Area=10,233 sf 77.54% Impervious Runoff Depth>3.79"
Tc=6.0 min CN=85 Runoff=1.01 cfs 0.074 af

Subcatchment 34S: Subcatchment #34 Runoff Area=2,154 sf 100.00% Impervious Runoff Depth>5.22"
Tc=6.0 min CN=98 Runoff=0.26 cfs 0.022 af

Subcatchment 106S: Subcatchment #106 Runoff Area=8,254 sf 0.00% Impervious Runoff Depth>0.35"
Tc=6.0 min CN=40 Runoff=0.02 cfs 0.005 af

Reach 7aR: Overland Flow Avg. Flow Depth=0.02' Max Vel=1.67 fps Inflow=0.08 cfs 0.007 af
n=0.030 L=62.3' S=0.3011 '/' Capacity=65.21 cfs Outflow=0.08 cfs 0.007 af

Reach 7bR: Overland Flow Avg. Flow Depth=0.07' Max Vel=0.38 fps Inflow=0.08 cfs 0.007 af
n=0.030 L=92.5' S=0.0027 '/' Capacity=18.04 cfs Outflow=0.07 cfs 0.007 af

Reach 7cR: Overland Flow Avg. Flow Depth=0.06' Max Vel=0.93 fps Inflow=0.15 cfs 0.013 af
n=0.030 L=90.3' S=0.0194 '/' Capacity=48.30 cfs Outflow=0.14 cfs 0.013 af

Reach 7dR: Overland Flow Avg. Flow Depth=0.04' Max Vel=1.33 fps Inflow=0.14 cfs 0.013 af
n=0.030 L=72.7' S=0.0550 '/' Capacity=81.39 cfs Outflow=0.14 cfs 0.013 af

Reach 7eR: Overland Flow Avg. Flow Depth=0.06' Max Vel=0.99 fps Inflow=0.14 cfs 0.013 af
n=0.030 L=44.4' S=0.0225 '/' Capacity=52.07 cfs Outflow=0.14 cfs 0.013 af

Reach 8R: Overland Flow Avg. Flow Depth=0.02' Max Vel=1.80 fps Inflow=0.08 cfs 0.007 af
n=0.030 L=44.2' S=0.3758 '/' Capacity=72.85 cfs Outflow=0.08 cfs 0.007 af

Reach 200R: Final Reach #200 Inflow=0.01 cfs 0.003 af
Outflow=0.01 cfs 0.003 af

Reach 500R: Final Reach #500 Inflow=0.52 cfs 0.074 af
Outflow=0.52 cfs 0.074 af

Reach 600R: Final Reach #600 Inflow=0.00 cfs 0.001 af
Outflow=0.00 cfs 0.001 af

Reach 1000R: Final Reach #1000 Inflow=0.25 cfs 0.019 af
Outflow=0.25 cfs 0.019 af

Pond 30P: Inlet Sump Peak Elev=121.77' Storage=9 cf Inflow=0.35 cfs 0.063 af
15.0" Round Culvert n=0.012 L=51.0' S=0.0098 '/' Outflow=0.35 cfs 0.063 af

Pond 106P: Rain Garden W/ Infiltration #106 Peak Elev=117.90' Storage=5,839 cf Inflow=3.23 cfs 0.342 af
Discarded=0.28 cfs 0.328 af Primary=0.00 cfs 0.000 af Outflow=0.28 cfs 0.328 af

Pond C01P: Catch Basin #1 Peak Elev=123.69' Storage=7 cf Inflow=1.28 cfs 0.110 af
12.0" Round Culvert n=0.012 L=125.2' S=0.0140 '/' Outflow=1.28 cfs 0.110 af

Pond C02P: Catch Basin #2 Peak Elev=121.88' Storage=5 cf Inflow=0.60 cfs 0.050 af
12.0" Round Culvert n=0.012 L=8.5' S=0.0118 '/' Outflow=0.60 cfs 0.050 af

Pond C03P: Catch Basin #3 Peak Elev=122.21' Storage=7 cf Inflow=1.01 cfs 0.074 af
12.0" Round Culvert n=0.012 L=28.0' S=0.0118 '/' Outflow=1.01 cfs 0.074 af

Pond C04P: Catch Basin #4 Peak Elev=121.93' Storage=3 cf Inflow=0.26 cfs 0.022 af
12.0" Round Culvert n=0.012 L=19.0' S=0.0174 '/' Outflow=0.26 cfs 0.022 af

Pond C05P: Catch Basin #5 Peak Elev=124.92' Storage=1 cf Inflow=0.11 cfs 0.018 af
12.0" Round Culvert n=0.012 L=79.0' S=0.0063 '/' Outflow=0.11 cfs 0.018 af

Pond D01P: Drain Manhole #1 Peak Elev=119.63' Storage=11 cf Inflow=2.96 cfs 0.256 af
15.0" Round Culvert n=0.012 L=30.0' S=0.0500 '/' Outflow=2.96 cfs 0.256 af

Pond D02P: Drain Manhole #2 Peak Elev=118.61' Storage=4 cf Inflow=0.46 cfs 0.081 af
15.0" Round Culvert n=0.012 L=14.0' S=0.0571 '/' Outflow=0.46 cfs 0.081 af

Total Runoff Area = 4.262 ac Runoff Volume = 0.439 af Average Runoff Depth = 1.24"
77.84% Pervious = 3.317 ac 22.16% 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 1aS: Sophie Runoff Area=2,157 sf 91.56% Impervious Runoff Depth>6.08"
Tc=6.0 min CN=93 Runoff=0.32 cfs 0.025 af

Subcatchment 1S: Subcatchment #1 Runoff Area=15,796 sf 9.39% Impervious Runoff Depth>1.19"
Flow Length=420' Tc=10.6 min CN=45 Runoff=0.31 cfs 0.036 af

Subcatchment 2S: Subcatchment #2 Runoff Area=6,181 sf 0.00% Impervious Runoff Depth>0.60"
Flow Length=83' Tc=6.0 min CN=37 Runoff=0.04 cfs 0.007 af

Subcatchment 5S: Subcatchment #5 Runoff Area=47,233 sf 9.99% Impervious Runoff Depth>1.52"
Flow Length=306' Tc=16.6 min CN=49 Runoff=1.18 cfs 0.138 af

Subcatchment 6S: Subcatchment #6 Runoff Area=6,985 sf 0.00% Impervious Runoff Depth>0.30"
Flow Length=139' Tc=6.0 min CN=32 Runoff=0.01 cfs 0.004 af

Subcatchment 7S: Subcatchment #7 Runoff Area=660 sf 100.00% Impervious Runoff Depth>6.67"
Tc=6.0 min CN=98 Runoff=0.10 cfs 0.008 af

Subcatchment 8S: Subcatchment #8 Runoff Area=660 sf 100.00% Impervious Runoff Depth>6.67"
Tc=6.0 min CN=98 Runoff=0.10 cfs 0.008 af

Subcatchment 30S: Subcatchment #30 Runoff Area=53,172 sf 8.09% Impervious Runoff Depth>1.03"
Flow Length=363' Tc=9.1 min CN=43 Runoff=0.88 cfs 0.105 af

Subcatchment 31S: Subcatchment #31 Runoff Area=27,152 sf 45.16% Impervious Runoff Depth>3.23"
Flow Length=209' Tc=10.9 min CN=67 Runoff=1.98 cfs 0.168 af

Subcatchment 32S: Subcatchment #32 Runoff Area=4,997 sf 100.00% Impervious Runoff Depth>6.67"
Tc=6.0 min CN=98 Runoff=0.76 cfs 0.064 af

Subcatchment 33S: Subcatchment #33 Runoff Area=10,233 sf 77.54% Impervious Runoff Depth>5.16"
Tc=6.0 min CN=85 Runoff=1.35 cfs 0.101 af

Subcatchment 34S: Subcatchment #34 Runoff Area=2,154 sf 100.00% Impervious Runoff Depth>6.67"
Tc=6.0 min CN=98 Runoff=0.33 cfs 0.027 af

Subcatchment 106S: Subcatchment #106 Runoff Area=8,254 sf 0.00% Impervious Runoff Depth>0.81"
Tc=6.0 min CN=40 Runoff=0.09 cfs 0.013 af

Reach 7aR: Overland Flow Avg. Flow Depth=0.03' Max Vel=1.78 fps Inflow=0.10 cfs 0.008 af
n=0.030 L=62.3' S=0.3011 '/' Capacity=65.21 cfs Outflow=0.10 cfs 0.008 af

Reach 7bR: Overland Flow Avg. Flow Depth=0.08' Max Vel=0.41 fps Inflow=0.10 cfs 0.008 af
n=0.030 L=92.5' S=0.0027 '/' Capacity=18.04 cfs Outflow=0.09 cfs 0.008 af

Reach 7cR: Overland Flow Avg. Flow Depth=0.07' Max Vel=1.01 fps Inflow=0.19 cfs 0.017 af
n=0.030 L=90.3' S=0.0194 '/' Capacity=48.30 cfs Outflow=0.18 cfs 0.017 af

Reach 7dR: Overland Flow Avg. Flow Depth=0.05' Max Vel=1.44 fps Inflow=0.18 cfs 0.017 af
n=0.030 L=72.7' S=0.0550 '/' Capacity=81.39 cfs Outflow=0.18 cfs 0.017 af

Reach 7eR: Overland Flow Avg. Flow Depth=0.07' Max Vel=1.07 fps Inflow=0.18 cfs 0.017 af
n=0.030 L=44.4' S=0.0225 '/' Capacity=52.07 cfs Outflow=0.18 cfs 0.017 af

Reach 8R: Overland Flow Avg. Flow Depth=0.02' Max Vel=1.93 fps Inflow=0.10 cfs 0.008 af
n=0.030 L=44.2' S=0.3758 '/' Capacity=72.85 cfs Outflow=0.10 cfs 0.008 af

Reach 200R: Final Reach #200 Inflow=0.04 cfs 0.007 af
Outflow=0.04 cfs 0.007 af

Reach 500R: Final Reach #500 Inflow=1.18 cfs 0.138 af
Outflow=1.18 cfs 0.138 af

Reach 600R: Final Reach #600 Inflow=0.01 cfs 0.004 af
Outflow=0.01 cfs 0.004 af

Reach 1000R: Final Reach #1000 Inflow=0.32 cfs 0.025 af
Outflow=0.32 cfs 0.025 af

Pond 30P: Inlet Sump Peak Elev=121.99' Storage=19 cf Inflow=1.06 cfs 0.122 af
15.0" Round Culvert n=0.012 L=51.0' S=0.0098 '/' Outflow=1.06 cfs 0.122 af

Pond 106P: Rain Garden W/ Infiltration #106 Peak Elev=119.71' Storage=11,590 cf Inflow=5.40 cfs 0.530 af
Discarded=0.28 cfs 0.344 af Primary=0.00 cfs 0.000 af Outflow=0.28 cfs 0.344 af

Pond C01P: Catch Basin #1 Peak Elev=123.88' Storage=10 cf Inflow=1.98 cfs 0.168 af
12.0" Round Culvert n=0.012 L=125.2' S=0.0140 '/' Outflow=1.98 cfs 0.168 af

Pond C02P: Catch Basin #2 Peak Elev=121.95' Storage=6 cf Inflow=0.76 cfs 0.064 af
12.0" Round Culvert n=0.012 L=8.5' S=0.0118 '/' Outflow=0.76 cfs 0.064 af

Pond C03P: Catch Basin #3 Peak Elev=122.31' Storage=8 cf Inflow=1.35 cfs 0.101 af
12.0" Round Culvert n=0.012 L=28.0' S=0.0118 '/' Outflow=1.36 cfs 0.101 af

Pond C04P: Catch Basin #4 Peak Elev=121.96' Storage=4 cf Inflow=0.33 cfs 0.027 af
12.0" Round Culvert n=0.012 L=19.0' S=0.0174 '/' Outflow=0.33 cfs 0.027 af

Pond C05P: Catch Basin #5 Peak Elev=125.05' Storage=1 cf Inflow=0.31 cfs 0.036 af
12.0" Round Culvert n=0.012 L=79.0' S=0.0063 '/' Outflow=0.31 cfs 0.036 af

Pond D01P: Drain Manhole #1 Peak Elev=119.87' Storage=14 cf Inflow=4.18 cfs 0.360 af
15.0" Round Culvert n=0.012 L=30.0' S=0.0500 '/' Outflow=4.17 cfs 0.360 af

Pond D02P: Drain Manhole #2 Peak Elev=119.71' Storage=18 cf Inflow=1.38 cfs 0.158 af
15.0" Round Culvert n=0.012 L=14.0' S=0.0571 '/' Outflow=1.38 cfs 0.158 af

Total Runoff Area = 4.262 ac Runoff Volume = 0.704 af Average Runoff Depth = 1.98"
77.84% Pervious = 3.317 ac 22.16% 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 1aS: Sophie Runoff Area=2,157 sf 91.56% Impervious Runoff Depth>7.43"
Tc=6.0 min CN=93 Runoff=0.38 cfs 0.031 af

Subcatchment 1S: Subcatchment #1 Runoff Area=15,796 sf 9.39% Impervious Runoff Depth>1.88"
Flow Length=420' Tc=10.6 min CN=45 Runoff=0.58 cfs 0.057 af

Subcatchment 2S: Subcatchment #2 Runoff Area=6,181 sf 0.00% Impervious Runoff Depth>1.08"
Flow Length=83' Tc=6.0 min CN=37 Runoff=0.10 cfs 0.013 af

Subcatchment 5S: Subcatchment #5 Runoff Area=47,233 sf 9.99% Impervious Runoff Depth>2.30"
Flow Length=306' Tc=16.6 min CN=49 Runoff=1.93 cfs 0.208 af

Subcatchment 6S: Subcatchment #6 Runoff Area=6,985 sf 0.00% Impervious Runoff Depth>0.64"
Flow Length=139' Tc=6.0 min CN=32 Runoff=0.04 cfs 0.009 af

Subcatchment 7S: Subcatchment #7 Runoff Area=660 sf 100.00% Impervious Runoff Depth>8.03"
Tc=6.0 min CN=98 Runoff=0.12 cfs 0.010 af

Subcatchment 8S: Subcatchment #8 Runoff Area=660 sf 100.00% Impervious Runoff Depth>8.03"
Tc=6.0 min CN=98 Runoff=0.12 cfs 0.010 af

Subcatchment 30S: Subcatchment #30 Runoff Area=53,172 sf 8.09% Impervious Runoff Depth>1.67"
Flow Length=363' Tc=9.1 min CN=43 Runoff=1.72 cfs 0.170 af

Subcatchment 31S: Subcatchment #31 Runoff Area=27,152 sf 45.16% Impervious Runoff Depth>4.34"
Flow Length=209' Tc=10.9 min CN=67 Runoff=2.68 cfs 0.225 af

Subcatchment 32S: Subcatchment #32 Runoff Area=4,997 sf 100.00% Impervious Runoff Depth>8.03"
Tc=6.0 min CN=98 Runoff=0.91 cfs 0.077 af

Subcatchment 33S: Subcatchment #33 Runoff Area=10,233 sf 77.54% Impervious Runoff Depth>6.47"
Tc=6.0 min CN=85 Runoff=1.68 cfs 0.127 af

Subcatchment 34S: Subcatchment #34 Runoff Area=2,154 sf 100.00% Impervious Runoff Depth>8.03"
Tc=6.0 min CN=98 Runoff=0.39 cfs 0.033 af

Subcatchment 106S: Subcatchment #106 Runoff Area=8,254 sf 0.00% Impervious Runoff Depth>1.37"
Tc=6.0 min CN=40 Runoff=0.22 cfs 0.022 af

Reach 7aR: Overland Flow Avg. Flow Depth=0.03' Max Vel=1.89 fps Inflow=0.12 cfs 0.010 af
n=0.030 L=62.3' S=0.3011 '/' Capacity=65.21 cfs Outflow=0.12 cfs 0.010 af

Reach 7bR: Overland Flow Avg. Flow Depth=0.09' Max Vel=0.44 fps Inflow=0.12 cfs 0.010 af
n=0.030 L=92.5' S=0.0027 '/' Capacity=18.04 cfs Outflow=0.11 cfs 0.010 af

Reach 7cR: Overland Flow Avg. Flow Depth=0.08' Max Vel=1.07 fps Inflow=0.23 cfs 0.020 af
n=0.030 L=90.3' S=0.0194 '/' Capacity=48.30 cfs Outflow=0.22 cfs 0.020 af

Reach 7dR: Overland Flow Avg. Flow Depth=0.06' Max Vel=1.53 fps Inflow=0.22 cfs 0.020 af
n=0.030 L=72.7' S=0.0550 '/' Capacity=81.39 cfs Outflow=0.22 cfs 0.020 af

Reach 7eR: Overland Flow Avg. Flow Depth=0.07' Max Vel=1.13 fps Inflow=0.22 cfs 0.020 af
n=0.030 L=44.4' S=0.0225 '/' Capacity=52.07 cfs Outflow=0.22 cfs 0.020 af

Reach 8R: Overland Flow Avg. Flow Depth=0.03' Max Vel=2.04 fps Inflow=0.12 cfs 0.010 af
n=0.030 L=44.2' S=0.3758 '/' Capacity=72.85 cfs Outflow=0.12 cfs 0.010 af

Reach 200R: Final Reach #200 Inflow=0.10 cfs 0.013 af
Outflow=0.10 cfs 0.013 af

Reach 500R: Final Reach #500 Inflow=1.93 cfs 0.260 af
Outflow=1.93 cfs 0.260 af

Reach 600R: Final Reach #600 Inflow=0.04 cfs 0.009 af
Outflow=0.04 cfs 0.009 af

Reach 1000R: Final Reach #1000 Inflow=0.38 cfs 0.031 af
Outflow=0.38 cfs 0.031 af

Pond 30P: Inlet Sump Peak Elev=122.19' Storage=48 cf Inflow=1.94 cfs 0.190 af
15.0" Round Culvert n=0.012 L=51.0' S=0.0098 '/' Outflow=1.94 cfs 0.190 af

Pond 106P: Rain Garden W/ Infiltration #106 Peak Elev=120.93' Storage=16,181 cf Inflow=7.78 cfs 0.729 af
Discarded=0.28 cfs 0.358 af Primary=0.38 cfs 0.053 af Outflow=0.67 cfs 0.411 af

Pond C01P: Catch Basin #1 Peak Elev=124.10' Storage=13 cf Inflow=2.68 cfs 0.225 af
12.0" Round Culvert n=0.012 L=125.2' S=0.0140 '/' Outflow=2.67 cfs 0.225 af

Pond C02P: Catch Basin #2 Peak Elev=122.00' Storage=7 cf Inflow=0.91 cfs 0.077 af
12.0" Round Culvert n=0.012 L=8.5' S=0.0118 '/' Outflow=0.91 cfs 0.077 af

Pond C03P: Catch Basin #3 Peak Elev=122.40' Storage=9 cf Inflow=1.68 cfs 0.127 af
12.0" Round Culvert n=0.012 L=28.0' S=0.0118 '/' Outflow=1.68 cfs 0.127 af

Pond C04P: Catch Basin #4 Peak Elev=121.99' Storage=4 cf Inflow=0.39 cfs 0.033 af
12.0" Round Culvert n=0.012 L=19.0' S=0.0174 '/' Outflow=0.39 cfs 0.033 af

Pond C05P: Catch Basin #5 Peak Elev=125.16' Storage=1 cf Inflow=0.58 cfs 0.057 af
12.0" Round Culvert n=0.012 L=79.0' S=0.0063 '/' Outflow=0.58 cfs 0.057 af

Pond D01P: Drain Manhole #1 Peak Elev=120.94' Storage=27 cf Inflow=5.35 cfs 0.462 af
15.0" Round Culvert n=0.012 L=30.0' S=0.0500 '/' Outflow=5.34 cfs 0.461 af

Pond D02P: Drain Manhole #2 Peak Elev=120.94' Storage=33 cf Inflow=2.51 cfs 0.247 af
15.0" Round Culvert n=0.012 L=14.0' S=0.0571 '/' Outflow=2.51 cfs 0.246 af

Total Runoff Area = 4.262 ac Runoff Volume = 0.990 af Average Runoff Depth = 2.79"
77.84% Pervious = 3.317 ac 22.16% 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 1aS: Sophie Runoff Area=2,157 sf 91.56% Impervious Runoff Depth>9.04"
Tc=6.0 min CN=93 Runoff=0.46 cfs 0.037 af

Subcatchment 1S: Subcatchment #1 Runoff Area=15,796 sf 9.39% Impervious Runoff Depth>2.81"
Flow Length=420' Tc=10.6 min CN=45 Runoff=0.93 cfs 0.085 af

Subcatchment 2S: Subcatchment #2 Runoff Area=6,181 sf 0.00% Impervious Runoff Depth>1.79"
Flow Length=83' Tc=6.0 min CN=37 Runoff=0.23 cfs 0.021 af

Subcatchment 5S: Subcatchment #5 Runoff Area=47,233 sf 9.99% Impervious Runoff Depth>3.33"
Flow Length=306' Tc=16.6 min CN=49 Runoff=2.92 cfs 0.301 af

Subcatchment 6S: Subcatchment #6 Runoff Area=6,985 sf 0.00% Impervious Runoff Depth>1.18"
Flow Length=139' Tc=6.0 min CN=32 Runoff=0.12 cfs 0.016 af

Subcatchment 7S: Subcatchment #7 Runoff Area=660 sf 100.00% Impervious Runoff Depth>9.64"
Tc=6.0 min CN=98 Runoff=0.14 cfs 0.012 af

Subcatchment 8S: Subcatchment #8 Runoff Area=660 sf 100.00% Impervious Runoff Depth>9.64"
Tc=6.0 min CN=98 Runoff=0.14 cfs 0.012 af

Subcatchment 30S: Subcatchment #30 Runoff Area=53,172 sf 8.09% Impervious Runoff Depth>2.55"
Flow Length=363' Tc=9.1 min CN=43 Runoff=2.89 cfs 0.260 af

Subcatchment 31S: Subcatchment #31 Runoff Area=27,152 sf 45.16% Impervious Runoff Depth>5.72"
Flow Length=209' Tc=10.9 min CN=67 Runoff=3.53 cfs 0.297 af

Subcatchment 32S: Subcatchment #32 Runoff Area=4,997 sf 100.00% Impervious Runoff Depth>9.64"
Tc=6.0 min CN=98 Runoff=1.09 cfs 0.092 af

Subcatchment 33S: Subcatchment #33 Runoff Area=10,233 sf 77.54% Impervious Runoff Depth>8.04"
Tc=6.0 min CN=85 Runoff=2.06 cfs 0.157 af

Subcatchment 34S: Subcatchment #34 Runoff Area=2,154 sf 100.00% Impervious Runoff Depth>9.64"
Tc=6.0 min CN=98 Runoff=0.47 cfs 0.040 af

Subcatchment 106S: Subcatchment #106 Runoff Area=8,254 sf 0.00% Impervious Runoff Depth>2.17"
Tc=6.0 min CN=40 Runoff=0.40 cfs 0.034 af

Reach 7aR: Overland Flow Avg. Flow Depth=0.03' Max Vel=1.99 fps Inflow=0.14 cfs 0.012 af
n=0.030 L=62.3' S=0.3011 '/' Capacity=65.21 cfs Outflow=0.14 cfs 0.012 af

Reach 7bR: Overland Flow Avg. Flow Depth=0.10' Max Vel=0.46 fps Inflow=0.14 cfs 0.012 af
n=0.030 L=92.5' S=0.0027 '/' Capacity=18.04 cfs Outflow=0.13 cfs 0.012 af

Reach 7cR: Overland Flow Avg. Flow Depth=0.09' Max Vel=1.13 fps Inflow=0.27 cfs 0.024 af
n=0.030 L=90.3' S=0.0194 '/' Capacity=48.30 cfs Outflow=0.27 cfs 0.024 af

Reach 7dR: Overland Flow Avg. Flow Depth=0.06' Max Vel=1.62 fps Inflow=0.27 cfs 0.024 af
n=0.030 L=72.7' S=0.0550 '/' Capacity=81.39 cfs Outflow=0.26 cfs 0.024 af

Reach 7eR: Overland Flow Avg. Flow Depth=0.08' Max Vel=1.20 fps Inflow=0.26 cfs 0.024 af
n=0.030 L=44.4' S=0.0225 '/' Capacity=52.07 cfs Outflow=0.26 cfs 0.024 af

Reach 8R: Overland Flow Avg. Flow Depth=0.03' Max Vel=2.15 fps Inflow=0.14 cfs 0.012 af
n=0.030 L=44.2' S=0.3758 '/' Capacity=72.85 cfs Outflow=0.14 cfs 0.012 af

Reach 200R: Final Reach #200 Inflow=0.23 cfs 0.021 af
Outflow=0.23 cfs 0.021 af

Reach 500R: Final Reach #500 Inflow=5.46 cfs 0.572 af
Outflow=5.46 cfs 0.572 af

Reach 600R: Final Reach #600 Inflow=0.12 cfs 0.016 af
Outflow=0.12 cfs 0.016 af

Reach 1000R: Final Reach #1000 Inflow=0.46 cfs 0.037 af
Outflow=0.46 cfs 0.037 af

Pond 30P: Inlet Sump Peak Elev=122.44' Storage=100 cf Inflow=3.15 cfs 0.284 af
15.0" Round Culvert n=0.012 L=51.0' S=0.0098 '/' Outflow=3.13 cfs 0.284 af

Pond 106P: Rain Garden W/ Infiltration Peak Elev=121.06' Storage=16,674 cf Inflow=10.89 cfs 0.988 af
Discarded=0.28 cfs 0.373 af Primary=3.68 cfs 0.270 af Outflow=3.97 cfs 0.643 af

Pond C01P: Catch Basin #1 Peak Elev=124.47' Storage=17 cf Inflow=3.53 cfs 0.297 af
12.0" Round Culvert n=0.012 L=125.2' S=0.0140 '/' Outflow=3.53 cfs 0.297 af

Pond C02P: Catch Basin #2 Peak Elev=122.07' Storage=8 cf Inflow=1.09 cfs 0.092 af
12.0" Round Culvert n=0.012 L=8.5' S=0.0118 '/' Outflow=1.09 cfs 0.092 af

Pond C03P: Catch Basin #3 Peak Elev=122.51' Storage=10 cf Inflow=2.06 cfs 0.157 af
12.0" Round Culvert n=0.012 L=28.0' S=0.0118 '/' Outflow=2.06 cfs 0.157 af

Pond C04P: Catch Basin #4 Peak Elev=122.02' Storage=4 cf Inflow=0.47 cfs 0.040 af
12.0" Round Culvert n=0.012 L=19.0' S=0.0174 '/' Outflow=0.47 cfs 0.040 af

Pond C05P: Catch Basin #5 Peak Elev=125.29' Storage=2 cf Inflow=0.93 cfs 0.085 af
12.0" Round Culvert n=0.012 L=79.0' S=0.0063 '/' Outflow=0.93 cfs 0.085 af

Pond D01P: Drain Manhole #1 Peak Elev=121.13' Storage=30 cf Inflow=6.76 cfs 0.587 af
15.0" Round Culvert n=0.012 L=30.0' S=0.0500 '/' Outflow=6.76 cfs 0.586 af

Pond D02P: Drain Manhole #2 Peak Elev=121.11' Storage=35 cf Inflow=4.07 cfs 0.369 af
15.0" Round Culvert n=0.012 L=14.0' S=0.0571 '/' Outflow=4.07 cfs 0.368 af

Total Runoff Area = 4.262 ac Runoff Volume = 1.365 af Average Runoff Depth = 3.84"
77.84% Pervious = 3.317 ac 22.16% Impervious = 0.945 ac

Appendix III - Calculations, Charts, & Graphs

Extreme Precipitation Tables
Rip Rap Calculations
AoT Stormwater Treatment Spreadsheets
NCRS USDA Web-soil Map
Site Specific Soil Survey Report & Plan
Infiltration Feasibility Study & Report
Ksat Values for New Hampshire Soils, SSSNNE Special Publication #5, 2009
Stormwater System Management: Inspection & Maintenance Manual, Plan,
Invasive Species & NHDES Green SnoPro Utilization Chart
Watershed Report Card, 303(d) List, & ORW List
Filtrexx Specifications Sheets

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	43.174 degrees North
Longitude	70.889 degrees West
Elevation	30 feet
Date/Time	Wed Jan 10 2024 14:46:56 GMT-0500 (Eastern Standard Time)

Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.26	0.40	0.50	0.65	0.81	1.03	**1yr**	0.70	0.98	1.20	1.55	2.00	2.61	2.86	**1yr**	2.31	2.75	3.15	3.87	4.45	**1yr**
2yr	0.32	0.49	0.61	0.81	1.01	1.29	**2yr**	0.88	1.17	1.50	1.91	2.45	3.15	3.49	**2yr**	2.78	3.36	3.86	4.59	5.22	**2yr**
5yr	0.37	0.57	0.72	0.96	1.23	1.58	**5yr**	1.06	1.44	1.85	2.38	3.08	3.98	4.48	**5yr**	3.52	4.31	4.92	5.80	6.56	**5yr**
10yr	0.40	0.63	0.80	1.09	1.42	1.85	**10yr**	1.22	1.69	2.18	2.82	3.66	4.75	5.40	**10yr**	4.20	5.20	5.93	6.93	7.80	**10yr**
25yr	0.46	0.74	0.94	1.29	1.72	2.27	**25yr**	1.48	2.09	2.69	3.53	4.61	6.01	6.93	**25yr**	5.32	6.67	7.58	8.77	9.80	**25yr**
50yr	0.51	0.83	1.06	1.48	2.00	2.66	**50yr**	1.72	2.46	3.18	4.18	5.49	7.19	8.38	**50yr**	6.36	8.06	9.13	10.48	11.66	**50yr**
100yr	0.58	0.94	1.20	1.70	2.32	3.12	**100yr**	2.00	2.89	3.74	4.96	6.54	8.60	10.12	**100yr**	7.61	9.74	11.00	12.53	13.88	**100yr**
200yr	0.64	1.04	1.36	1.95	2.69	3.66	**200yr**	2.32	3.40	4.42	5.89	7.80	10.29	12.24	**200yr**	9.11	11.77	13.26	15.00	16.53	**200yr**
500yr	0.75	1.24	1.62	2.35	3.29	4.52	**500yr**	2.84	4.21	5.49	7.37	9.83	13.05	15.73	**500yr**	11.55	15.13	16.99	19.02	20.84	**500yr**

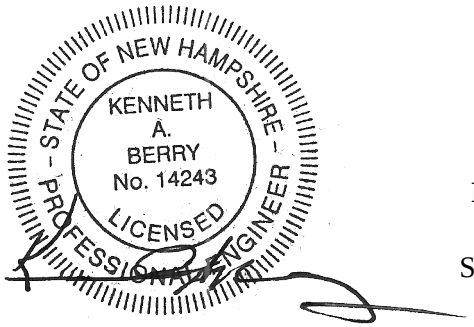
Lower Confidence Limits

	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	0.91	1.26	1.58	2.10	2.47	**1yr**	1.86	2.38	2.89	3.32	4.01	**1yr**
2yr	0.31	0.49	0.60	0.81	1.00	1.18	**2yr**	0.86	1.16	1.36	1.83	2.36	3.04	3.39	**2yr**	2.69	3.26	3.74	4.46	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	2.78	3.71	4.12	**5yr**	3.29	3.96	4.60	5.41	6.12	**5yr**
10yr	0.38	0.59	0.73	1.02	1.31	1.60	**10yr**	1.13	1.56	1.82	2.44	3.13	4.28	4.79	**10yr**	3.78	4.60	5.32	6.25	7.03	**10yr**
25yr	0.44	0.66	0.82	1.18	1.55	1.91	**25yr**	1.34	1.87	2.11	2.84	3.65	4.95	5.80	**25yr**	4.38	5.58	6.49	7.58	8.45	**25yr**
50yr	0.48	0.73	0.91	1.31	1.76	2.18	**50yr**	1.52	2.14	2.35	3.20	4.10	5.66	6.70	**50yr**	5.01	6.44	7.54	8.76	9.71	**50yr**
100yr	0.54	0.81	1.01	1.46	2.01	2.50	**100yr**	1.73	2.45	2.63	3.58	4.58	6.45	7.73	**100yr**	5.71	7.43	8.76	10.12	11.14	**100yr**
200yr	0.59	0.89	1.13	1.64	2.28	2.86	**200yr**	1.97	2.80	2.94	4.01	5.11	7.34	8.92	**200yr**	6.50	8.58	10.17	11.70	12.80	**200yr**
500yr	0.69	1.03	1.32	1.92	2.74	3.44	**500yr**	2.36	3.36	3.40	4.64	5.93	8.70	10.77	**500yr**	7.70	10.36	12.40	14.20	15.32	**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	2.22	2.87	3.07	**1yr**	2.54	2.95	3.42	4.21	4.81	**1yr**
2yr	0.33	0.51	0.62	0.85	1.04	1.25	**2yr**	0.90	1.22	1.47	1.96	2.51	3.28	3.61	**2yr**	2.91	3.47	3.98	4.73	5.43	**2yr**
5yr	0.39	0.60	0.75	1.03	1.31	1.58	**5yr**	1.13	1.55	1.86	2.50	3.20	4.24	4.83	**5yr**	3.75	4.64	5.26	6.21	6.98	**5yr**
10yr	0.46	0.70	0.87	1.21	1.57	1.92	**10yr**	1.35	1.88	2.23	3.05	3.86	5.21	6.02	**10yr**	4.61	5.79	6.60	7.62	8.51	**10yr**
25yr	0.55	0.84	1.05	1.50	1.97	2.48	**25yr**	1.70	2.42	2.88	3.97	4.96	7.08	8.08	**25yr**	6.27	7.77	8.82	10.03	11.09	**25yr**
50yr	0.64	0.97	1.21	1.74	2.35	2.99	**50yr**	2.03	2.93	3.49	4.84	6.03	8.76	10.12	**50yr**	7.75	9.73	10.99	12.33	13.56	**50yr**
100yr	0.75	1.13	1.41	2.04	2.80	3.62	**100yr**	2.41	3.54	4.24	5.93	7.33	10.84	12.67	**100yr**	9.59	12.19	13.69	15.19	16.59	**100yr**
200yr	0.86	1.30	1.65	2.38	3.33	4.39	**200yr**	2.87	4.29	5.16	7.25	8.90	13.44	15.89	**200yr**	11.90	15.28	17.07	18.69	20.33	**200yr**
500yr	1.06	1.57	2.02	2.94	4.18	5.64	**500yr**	3.60	5.51	6.66	9.50	11.53	17.90	21.42	**500yr**	15.84	20.59	22.87	24.63	26.61	**500yr**

Powered by ACIS
Northeast Regional Climate Center



RIP RAP CALCULATIONS

23-126 Sophie Drive
Knox Marsh Development, LLC
Dover, NH

Berry Surveying & Engineering
335 Second Crown Point Road
Sophie Drive Extension, Dover, NH
9/1/2024/Rev: 03/04/25

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 = (3.0 x Q) / Do 3/2 + (7 x Do) Q = Peak Flow & Do is Pipe Diameter

W = 0.4La + 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
15" HDPE (Pond #D01P)	2.46	4.17	1.25	15.4	9.9	0.04	0.50	1.20
15" HDPE (Pond #D02P)	2.21	1.38	1.25	11.0	8.1	0.01	0.50	1.20

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

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

GROUNDWATER RECHARGE VOLULME (GRV) CALCULATION (Env-Wq 1507.04)

0.44	ac	Area of HSG A soil that was replaced by impervious cover	0.40"
	ac	Area of HSG B soil that was replaced by impervious cover	0.25"
(0.01)	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"
0.41	inches	Rd = Weighted groundwater recharge depth	
0.1752	ac-in	GRV = AI * Rd	
636	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):

At the 2Yr-24Hr event the practice infiltrates 0.154 AF = 6,708 CF

The marginal decrease in impervious surface within HSG C is due to the removal of a seasonal ice skating rink and revegetation of a portion of that area.

Summary for Pond 106P: Rain Garden W/ Infiltration #106

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=77)

Inflow Area = 2.825 ac, 27.99% Impervious, Inflow Depth > 0.65" for 2Yr-24Hr event
Inflow = 1.61 cfs @ 12.11 hrs, Volume= 0.154 af
Outflow = 0.28 cfs @ 12.00 hrs, Volume= 0.154 af, Atten= 82%, Lag= 0.0 min
Discarded = 0.28 cfs @ 12.00 hrs, Volume= 0.154 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= 114.60' @ 12.72 hrs Surf.Area= 4,088 sf Storage= 1,685 cf
Flood Elev= 121.50' Surf.Area= 4,088 sf Storage= 18,500 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 37.4 min (870.2 - 832.8)

Volume	Invert	Avail.Storage	Storage Description
#1	113.50'	1,635 cf	**Stone (Irregular)** Listed below (Recalc) 4,088 cf Overall x 40.0% Voids
#2	114.50'	993 cf	**BioMedia (Irregular)** Listed below (Recalc) -Impervious 4,966 cf Overall x 20.0% Voids
#3	116.50'	124 cf	**Loam (Irregular)** Listed below (Recalc) -Impervious 621 cf Overall x 20.0% Voids
#4	116.75'	15,747 cf	**Open Water Storage (Irregular)** Listed below (Recalc) -Impervious
		18,500 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
113.50	4,088	340.3	0	0	4,088
114.50	4,088	340.3	4,088	4,088	4,428

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
114.50	2,483	276.9	0	0	2,483
116.50	2,483	276.9	4,966	4,966	3,037

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
116.50	2,483	276.9	0	0	2,483
116.75	2,483	276.9	621	621	2,552

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
116.75	2,483	276.9	0	0	2,483
117.00	2,569	281.1	631	631	2,682
118.00	2,902	296.6	2,734	3,365	3,451
119.00	3,253	312.2	3,076	6,441	4,266
120.00	3,622	327.7	3,436	9,877	5,117
121.00	4,009	343.3	3,814	13,691	6,015
121.50	4,217	352.3	2,056	15,747	6,543

Device	Routing	Invert	Outlet Devices
#1	Primary	120.90'	**25.0' long x 7.0' breadth 25' Spillway** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78
#2	Discarded	113.50'	**3.000 in/hr Infiltration over Surface area**

Discarded OutFlow Max=0.28 cfs @ 12.00 hrs HW=113.63' (Free Discharge)
└**2=Infiltration** (Exfiltration Controls 0.28 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=113.50' TW=0.00' (Dynamic Tailwater)
└**1=25' Spillway** (Controls 0.00 cfs)

FILTRATION PRACTICE DESIGN CRITERIA
(Env-Wq 1508.07)

Type/Node Name: **Infiltration Rain Garden #106**

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).	
2.83	ac	A = Area draining to the practice	
0.79	ac	A_I = Impervious area draining to the practice	
0.28	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.30	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
0.85	ac-in	WQV= 1" x Rv x A	
3,094	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
774	cf	25% x WQV (check calc for sediment forebay volume)	
2,321	cf	75% x WQV (check calc for surface sand filter volume)	
Deep Sump		Method of Pretreatment? (not required for clean or roof runoff)	
See Note	cf	V_{SED} = Sediment forebay volume, if used for pretreatment	**≥ 25%WQV**
Calculate time to drain if system IS NOT underdrained:			
4,088	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?	
	Yes/No	(Use the calculations below)	
3.0	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**
114.50	feet	E_{FC} = Elevation of the bottom of the filter course material[2]	
	feet	E_{UD} = Invert elevation of the underdrain (UD), if applicable	
112.08	feet	E_{SHWT} = Elevation of SHWT (if none found, enter the lowest elevation of the test pit)	
112.08	feet	E_{ROCK} = Elevation of bedrock (if none found, enter the lowest elevation of the test pit)	
114.50	feet	$D_{FC\ to\ UD}$ = Depth to UD from the bottom of the filter course	**≥ 1'**
2.42	feet	$D_{FC\ to\ ROCK}$ = Depth to bedrock from the bottom of the filter course	**≥ 1'**
2.42	feet	$D_{FC\ to\ SHWT}$ = Depth to SHWT from the bottom of the filter course	**≥ 1'**
120.93	ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
121.50	ft	Elevation of the top of the practice	
YES		50 peak elevation ≤ Elevation of the top of the practice	**← yes**
If a surface sand filter or underground sand filter is proposed:			
YES	ac	Drainage Area check.	**< 10 ac**
	cf	V = Volume of storage[3] (attach a stage-storage table)	**≥ 75%WQV**
	inches	D_{FC} = Filter course thickness	**18", or 24" if within GPA**
Sheet		Note what sheet in the plan set contains the filter course specification.	
	Yes/No	Access grate provided?	**← yes**

If a bioretention area is proposed:			
YES	ac	Drainage Area no larger than 5 ac?	**← yes**
14,679	cf	V = Volume of storage[3] (attach a stage-storage table)	**≥ WQV**
2.0	inches	D_{FC} = Filter course thickness	**18", or 24" if within GPA**
Sheet	P-106	Note what sheet in the plan set contains the filter course specification	
2.0	:1	Pond side slopes	**≥ 3:1**
Sheet	P-106	Note what sheet in the plan set contains the planting plans and surface cover	
If porous pavement is proposed:			
		Type of pavement proposed (Concrete? Asphalt? Pavers? Etc.)	
	acres	A_{SA} = Surface area of the pervious pavement	
	:1	Ratio of the contributing area to the pervious surface area	**≤ 5:1**
	inches	D_{FC} = Filter course thickness	**12", or 18" if within GPA mod. 304.1 (see spec)**
Sheet		Note what sheet in the plan set contains the filter course spec.	

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

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

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

Designer's Notes: Deep sump catch basins provide pre-treatment for the project.

Catch Basin #1 (C01P) receives 7,537 Sq. Ft. (0.17 Ac.) of sanded/salted impervious area. Remaining imp. is roof.

Inlet Sump #30 only recieves runoff from grassed, wooded, and roof areas and therefore does not require a sediment forebay.

Summary for Pond 106P: Rain Garden W/ Infiltration #106

[80] Warning: Exceeded Pond D01P by 0.05' @ 12.60 hrs (1.22 cfs 0.117 af)
[80] Warning: Exceeded Pond D02P by 0.12' @ 12.45 hrs (2.06 cfs 0.159 af)

Inflow Area = 2.825 ac, 27.99% Impervious, Inflow Depth > 3.10" for 50Yr-24Hr event
Inflow = 7.78 cfs @ 12.13 hrs, Volume= 0.729 af
Outflow = 0.67 cfs @ 14.20 hrs, Volume= 0.411 af, Atten= 91%, Lag= 124.0 min
Discarded = 0.28 cfs @ 11.35 hrs, Volume= 0.358 af
Primary = 0.38 cfs @ 14.20 hrs, Volume= 0.053 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 120.93' @ 14.20 hrs Surf.Area= 4,088 sf Storage= 16,181 cf
Flood Elev= 121.50' Surf.Area= 4,088 sf Storage= 18,500 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 135.5 min (965.2 - 829.6)

Volume	Invert	Avail.Storage	Storage Description
#1	113.50'	1,635 cf	**Stone (Irregular)** Listed below (Recalc) 4,088 cf Overall x 40.0% Voids
#2	114.50'	993 cf	**BioMedia (Irregular)** Listed below (Recalc) -Impervious 4,966 cf Overall x 20.0% Voids
#3	116.50'	124 cf	**Loam (Irregular)** Listed below (Recalc) -Impervious 621 cf Overall x 20.0% Voids
#4	116.75'	15,747 cf	**Open Water Storage (Irregular)** Listed below (Recalc) -Impervious
		18,500 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
113.50	4,088	340.3	0	0	4,088
114.50	4,088	340.3	4,088	4,088	4,428

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
114.50	2,483	276.9	0	0	2,483
116.50	2,483	276.9	4,966	4,966	3,037

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
116.50	2,483	276.9	0	0	2,483
116.75	2,483	276.9	621	621	2,552

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
116.75	2,483	276.9	0	0	2,483
117.00	2,569	281.1	631	631	2,682
118.00	2,902	296.6	2,734	3,365	3,451
119.00	3,253	312.2	3,076	6,441	4,266
120.00	3,622	327.7	3,436	9,877	5,117
121.00	4,009	343.3	3,814	13,691	6,015
121.50	4,217	352.3	2,056	15,747	6,543

Device	Routing	Invert	Outlet Devices
#1	Primary	120.90'	**25.0' long x 7.0' breadth 25' Spillway** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78
#2	Discarded	113.50'	**3.000 in/hr Infiltration over Surface area**

Discarded OutFlow Max=0.28 cfs @ 11.35 hrs HW=113.59' (Free Discharge)
↑—**2=Infiltration** (Exfiltration Controls 0.28 cfs)

Primary OutFlow Max=0.38 cfs @ 14.20 hrs HW=120.93' TW=0.00' (Dynamic Tailwater)
↑—**1=25' Spillway** (Weir Controls 0.38 cfs @ 0.45 fps)

Stage-Area-Storage for Pond 106P: Rain Garden W/ Infiltration #106

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
113.50	**4,088**	0
113.60	4,088	164
113.70	4,088	327
113.80	4,088	491
113.90	4,088	654
114.00	4,088	818
114.10	4,088	981
114.20	4,088	1,145
114.30	4,088	1,308
114.40	4,088	1,472
114.50	4,088	1,635
114.60	4,088	1,685
114.70	4,088	1,735
114.80	4,088	1,784
114.90	4,088	1,834
115.00	4,088	1,884
115.10	4,088	1,933
115.20	4,088	1,983
115.30	4,088	2,032
115.40	4,088	2,082
115.50	4,088	2,132
115.60	4,088	2,181
115.70	4,088	2,231
115.80	4,088	2,281
115.90	4,088	2,330
116.00	4,088	2,380
116.10	4,088	2,430
116.20	4,088	2,479
116.30	4,088	2,529
116.40	4,088	2,579
116.50	4,088	2,628
116.60	4,088	2,678
116.70	4,088	2,728
116.80	4,088	2,877
116.90	4,088	3,129
117.00	4,088	3,384
117.10	4,088	3,643
117.20	4,088	3,904
117.30	4,088	4,169
117.40	4,088	4,438
117.50	4,088	4,709
117.60	4,088	4,984
117.70	4,088	5,263
117.80	4,088	5,544
117.90	4,088	5,829
118.00	4,088	6,118
118.10	4,088	6,410
118.20	4,088	6,705
118.30	4,088	7,004
118.40	4,088	7,306
118.50	4,088	7,612
118.60	4,088	7,921
118.70	4,088	8,234
118.80	4,088	8,550
118.90	4,088	8,870
119.00	4,088	9,194
119.10	4,088	9,521
119.20	4,088	9,851
119.30	4,088	10,186
119.40	4,088	10,524
119.50	4,088	10,865
119.60	4,088	11,211
119.70	4,088	11,560
119.80	4,088	11,913
119.90	4,088	12,269
120.00	4,088	12,630
120.10	4,088	12,994
120.20	4,088	13,361
120.30	4,088	13,733
120.40	4,088	14,109
120.50	4,088	14,488
120.60	4,088	14,871
120.70	4,088	15,258
120.80	4,088	15,649
120.90	4,088	16,044
121.00	4,088	16,443
121.10	4,088	16,846
121.20	4,088	17,253
121.30	4,088	17,665
121.40	4,088	18,080
121.50	4,088	**18,500**

Spillway = 120.90
Inv. Bio Media = 114.50

16,044 CF - 1,365 CF = 14,679 CF

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



January 10, 2024

Preface

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

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

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

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

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

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

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How Soil Surveys Are Made

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

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

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

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

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

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

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

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

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

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

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

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

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

Soil Map

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

Custom Soil Resource Report
Soil Map



Map Scale: 1:5,530 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 250 500 1000 1500

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 24, Aug 22, 2023

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

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

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BzB	Buxton silt loam, 3 to 8 percent slopes	18.0	13.9%
DeB	Deerfield loamy fine sand, 3 to 8 percent slopes	2.2	1.7%
Gv	Gravel and borrow pits	6.0	4.6%
HaB	Hinckley loamy sand, 3 to 8 percent slopes	22.2	17.2%
HaC	Hinckley loamy sand, 8 to 15 percent slopes	13.2	10.2%
HbE	Hinckley loamy sand, 15 to 60 percent slopes	7.3	5.7%
HcB	Hollis-Charlton fine sandy loams, 3 to 8 percent slopes	1.5	1.1%
HcD	Hollis-Charlton fine sandy loams, 15 to 25 percent slopes	0.2	0.2%
Sb	Saugatuck loamy sand	19.5	15.1%
ScA	Scantic silt loam, 0 to 3 percent slopes	11.1	8.6%
SfC	Suffield silt loam, 8 to 15 percent slopes	1.5	1.2%
WdA	Windsor loamy sand, 0 to 3 percent slopes	0.5	0.4%
WfB	Windsor loamy fine sand, clay subsoil variant, 0 to 8 percent slopes	26.1	20.2%
Totals for Area of Interest		**129.4**	**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

DeB—Deerfield loamy fine sand, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2xfg9
Elevation: 0 to 1,190 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: Farmland of local importance

Map Unit Composition

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

Description of Deerfield

Setting

Landform: Kame terraces, outwash plains, outwash terraces, outwash deltas
Landform position (three-dimensional): Tread
Down-slope shape: Concave, convex, linear
Across-slope shape: Convex, linear, concave
Parent material: Sandy outwash derived from granite, gneiss, and/or quartzite

Typical profile

Ap - 0 to 9 inches: loamy fine sand
Bw - 9 to 25 inches: loamy fine sand
BC - 25 to 33 inches: fine sand
Cg - 33 to 60 inches: sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Very 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: About 15 to 37 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Sodium adsorption ratio, maximum: 11.0
Available water supply, 0 to 60 inches: Moderate (about 6.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: A
Ecological site: F144AY027MA - Moist Sandy Outwash
Hydric soil rating: No

Minor Components

Windsor

Percent of map unit: 7 percent
Landform: Outwash deltas, kame terraces, outwash plains, outwash terraces
Landform position (three-dimensional): Tread
Down-slope shape: Concave, convex, linear
Across-slope shape: Convex, linear, concave
Hydric soil rating: No

Wareham

Percent of map unit: 5 percent
Landform: Depressions, drainageways
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Sudbury

Percent of map unit: 2 percent
Landform: Outwash plains, outwash terraces, outwash deltas, kame terraces
Landform position (three-dimensional): Tread
Down-slope shape: Concave, convex, linear
Across-slope shape: Convex, linear, concave
Hydric soil rating: No

Ninigret

Percent of map unit: 1 percent
Landform: Kame terraces, outwash terraces, outwash plains
Landform position (three-dimensional): Tread
Down-slope shape: Convex, linear
Across-slope shape: Convex, concave
Hydric soil rating: No

Gv—Gravel and borrow pits

Map Unit Setting

National map unit symbol: 9d7c
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Gravel and borrow pits: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Gravel And Borrow Pits

Typical profile

H1 - 0 to 6 inches: extremely gravelly sand

H2 - 6 to 60 inches: extremely gravelly sand

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8s
Hydric soil rating: Unranked

HaB—Hinckley loamy sand, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2svm8
Elevation: 0 to 1,430 feet
Mean annual precipitation: 36 to 53 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 250 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 plains, eskers, moraines, kame terraces, kames, outwash terraces, outwash deltas
Landform position (two-dimensional): Summit, shoulder, backslope, footslope
Landform position (three-dimensional): Nose slope, side slope, base slope, crest, riser, tread
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: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Very 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: Very low (about 3.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: A
Ecological site: F144AY022MA - Dry Outwash
Hydric soil rating: No

Minor Components

Windsor

Percent of map unit: 8 percent
Landform: Kame terraces, outwash plains, kames, eskers, moraines, outwash terraces, outwash deltas
Landform position (two-dimensional): Summit, shoulder, backslope, footslope
Landform position (three-dimensional): Nose slope, side slope, base slope, crest, riser, tread
Down-slope shape: Concave, convex, linear
Across-slope shape: Convex, linear, concave
Hydric soil rating: No

Sudbury

Percent of map unit: 5 percent
Landform: Kame terraces, outwash plains, moraines, outwash terraces, outwash deltas
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Head slope, side slope, base slope, tread
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Hydric soil rating: No

Agawam

Percent of map unit: 2 percent
Landform: Kame terraces, outwash plains, kames, eskers, moraines, outwash terraces, outwash deltas
Landform position (two-dimensional): Summit, shoulder, backslope, footslope
Landform position (three-dimensional): Nose slope, side slope, base slope, crest, riser, tread
Down-slope shape: Concave, convex, linear
Across-slope shape: Convex, linear, concave
Hydric soil rating: No

HaC—Hinckley loamy sand, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2svm9
Elevation: 0 to 1,480 feet
Mean annual precipitation: 36 to 71 inches

Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

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: Kame terraces, outwash plains, kames, eskers, moraines, outwash terraces, outwash deltas
Landform position (two-dimensional): Shoulder, backslope, footslope, toeslope
Landform position (three-dimensional): Head slope, nose slope, side slope, crest, 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: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Very 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): 4e
Hydrologic Soil Group: A
Ecological site: F144AY022MA - Dry Outwash
Hydric soil rating: No

Minor Components

Merrimac

Percent of map unit: 5 percent
Landform: Eskers, moraines, outwash terraces, outwash plains, kames
Landform position (two-dimensional): Shoulder, backslope, footslope, toeslope

Landform position (three-dimensional): Head slope, nose slope, side slope, crest, riser
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Sudbury

Percent of map unit: 5 percent
Landform: Outwash terraces, kame terraces, outwash plains, moraines, outwash deltas
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Base slope, tread
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Hydric soil rating: No

Windsor

Percent of map unit: 5 percent
Landform: Kame terraces, outwash plains, outwash terraces, outwash deltas, kames, eskers, moraines
Landform position (two-dimensional): Shoulder, backslope, footslope, toeslope
Landform position (three-dimensional): Head slope, nose slope, side slope, crest, riser
Down-slope shape: Concave, convex, linear
Across-slope shape: Convex, linear, concave
Hydric soil rating: No

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: Kame terraces, outwash plains, kames, eskers, moraines, outwash terraces, outwash deltas
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Head slope, nose slope, side slope, crest, 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 plains, outwash deltas, kame terraces, kames, eskers, moraines, outwash terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Head slope, nose slope, side slope, crest, 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: Kames, eskers, moraines, outwash terraces, outwash plains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Head slope, nose slope, side slope, crest, riser
Down-slope shape: Concave, convex, linear
Across-slope shape: Convex, linear, concave
Hydric soil rating: No

HcB—Hollis-Charlton fine sandy loams, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 9d7j
Elevation: 0 to 1,020 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 120 to 240 days
Farmland classification: Farmland of local importance

Map Unit Composition

Hollis and similar soils: 55 percent
Charlton and similar soils: 35 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hollis

Setting

Parent material: Till

Typical profile

H1 - 0 to 14 inches: fine sandy loam
H2 - 14 to 18 inches: bedrock

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: D
Ecological site: F144AY033MA - Shallow Dry Till Uplands
Hydric soil rating: No

Description of Charlton

Setting

Parent material: Till

Typical profile

H1 - 0 to 13 inches: fine sandy loam

H2 - 13 to 36 inches: fine sandy loam
H3 - 36 to 40 inches: gravelly loamy sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 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: Low (about 5.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: A
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Minor Components

Not named

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

Buxton

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

HcD—Hollis-Charlton fine sandy loams, 15 to 25 percent slopes

Map Unit Setting

National map unit symbol: 9d7l
Elevation: 0 to 1,000 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 120 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Hollis and similar soils: 55 percent
Charlton and similar soils: 35 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hollis

Setting

Parent material: Till

Typical profile

H1 - 0 to 14 inches: fine sandy loam
H2 - 14 to 18 inches: bedrock

Properties and qualities

Slope: 15 to 25 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: D
Ecological site: F144AY033MA - Shallow Dry Till Uplands
Hydric soil rating: No

Description of Charlton

Setting

Parent material: Till

Typical profile

H1 - 0 to 13 inches: fine sandy loam
H2 - 13 to 36 inches: fine sandy loam
H3 - 36 to 40 inches: gravelly loamy sand

Properties and qualities

Slope: 15 to 25 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 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: Low (about 5.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: A
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Minor Components

Not named

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

Sb—Saugatuck loamy sand

Map Unit Setting

National map unit symbol: 9d8r
Elevation: 300 to 1,000 feet
Mean annual precipitation: 27 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 125 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

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

Description of Saugatuck

Setting

Landform: Outwash terraces
Parent material: Outwash

Typical profile

H1 - 0 to 4 inches: loamy sand
H2 - 4 to 7 inches: sand
H3 - 7 to 26 inches: loamy sand
H4 - 26 to 42 inches: sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: 10 to 16 inches to undefined
Drainage class: Poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 1.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: B/D

Ecological site: F144AY028MA - Wet Outwash
Hydric soil rating: Yes

Minor Components

Not named wet
Percent of map unit: 15 percent
Landform: Outwash terraces
Hydric soil rating: Yes

ScA—Scantic silt loam, 0 to 3 percent slopes

Map Unit Setting
National map unit symbol: 9d8s
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: Farmland of local importance

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

Description of Scantic

Setting
Landform: Marine terraces

Typical profile
H1 - 0 to 13 inches: silt loam
H2 - 13 to 23 inches: silty clay loam
H3 - 23 to 40 inches: silty clay

Properties and qualities
Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Medium
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: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 6.4 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: C/D

Ecological site: F144AY019NH - Wet Lake Plain
Hydric soil rating: Yes

Minor Components

Swanton
Percent of map unit: 5 percent
Landform: Marine terraces
Hydric soil rating: Yes

Not named wet
Percent of map unit: 5 percent
Landform: Marine terraces
Hydric soil rating: Yes

Biddeford
Percent of map unit: 5 percent
Landform: Marine terraces
Hydric soil rating: Yes

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

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: Dunes, deltas, outwash terraces, outwash plains
Landform position (three-dimensional): Tread, riser
Down-slope shape: Convex, linear
Across-slope shape: Convex, linear
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: Outwash plains, terraces, deltas
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: Outwash plains, eskers, kames, deltas
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Head slope, nose slope, side slope, crest, rise
Down-slope shape: Convex
Across-slope shape: Linear, convex
Hydric soil rating: No

WfB—Windsor loamy fine sand, clay subsoil variant, 0 to 8 percent slopes

Map Unit Setting

National map unit symbol: 9d9b
Elevation: 0 to 280 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

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

Description of Windsor Variant

Typical profile

H1 - 0 to 26 inches: loamy fine sand
H2 - 26 to 30 inches: loamy sand
H3 - 30 to 42 inches: silt loam

Properties and qualities

Slope: 0 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: About 24 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: A
Ecological site: F144AY022MA - Dry Outwash
Hydric soil rating: No

Minor Components

Not named

Percent of map unit: 15 percent
Hydric soil rating: No

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Job # 24-008

Site Specific Soil Survey 2/16/24
Map H Lot 47-A
Cold Springs 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 16, 2024. The soil survey was conducted in accordance with the New Hampshire Supplement of the Site-Specific Soil Mapping Standard For New Hampshire and Vermont, Special Publication # 3, Version 7.0 July 2021, published by the Society of Soil Scientist of Northern New England. Soil series information was also taken from the Soil Survey of Strafford County New Hampshire issued March 1973.

The property that is the subject of the soil survey is located on the southeast side of Cold Springs Road, east of Bellamy Road, and south of Lisa Beth Drive, in Dover NH. The Lot is approximately 2.7 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 inclusions 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 denominator of P contain poorly drained soils. Portions of the soil map with the map unit 400 (ED), contain disturbed soils that have been excavated and/or regraded. These soils are excessively drained, and sandy in texture. Portions of the soil map with the map unit 400 (MWD), contain disturbed soils that have been excavated and/or regraded. These soils are moderately well drained, and are sandy in texture. Portions of the soil map with the map unit 900/P, contain disturbed soils that have been excavated down to, or near the water table, and are poorly drained, and are sandy in texture. A Disturbed Soil Mapping Unit Supplement for New Hampshire DES AoT Site Specific Soil Maps is also included. This supplement explains the additional information given about each disturbed soil map units that are present on the site.

MAP UNIT #	SOIL TAXANOMIC NAME	SLOPES	HYDRO LOGIC SOIL GROUP	DESCRIPTION
26	**Windsor**	**C D E**	**A**	The Windsor series consists of very deep, excessively drained soils formed in sandy outwash or eolian deposits. These soils are located in the undisturbed areas, on the southwestern portion, and in the southeastern corner of the property. A typical soil profile of these soils onsite would be: 0-10 inches 10YR 3/2 loamy sand granular, friable. 10-16 inches 7.5YR 5/6 loamy sand granular, friable. 16-30 inches 10YR 5/6 loamy sand granular friable 30-40 inches 10 YR 5/4 sand single grain loose. These soils are deep to bedrock. Saturated hydraulic conductivity is high or very high. Some inclusions of moderately werll drained Windsor Variant soils may be present, but are less than 10 percent of the mapped area. Estimated seasonal high water tables in these soils are greater than 40 inches.
327	**Windsor Variant (clay subsoil)**	**A B C**	**C**	The Windsor Variant (clay subsoil) consists of very deep, moderately well drained soils that have sandy soils that are underlain by silt and clay deposits. These soils are located on the northern end of the property. A typical soil profile of these soils onsite would be: 0-10 inches 10YR 3/2 loamy sand granular, friable. 10-16 inches 10YR 5/6 loamy sand granular friable 16-30 inches 2.5Y 5/4 loamy sand granular friable. 30-40 inches 5Y 5/3 silt loam with redoximorphic features present blocky firm These soils are deep to bedrock. Pearmeability of this soil is moderately slow. Some inclusions of excessively drained Windsor soils may be present, but are less than 10 percent of the mapped area. Estimated seasonal high water tables in these soils range from 24 to 40 inches.
400 (ED) (abada)	**Udorthents (sandy or gravelly) (excessively drained)**	**A B C D E**	**A**	This soil mapping unit represents Udorthents that are disturbed soils that have been excavated and/or regraded. They are excessively drained and are sandy in texture. These soils are located throughout the majority of the property. These disturbed soils are mostly derived from the surrounding Windsor soil series. A typical soil profile of these soils onsite would be: 0-4 inches 10YR 3/3 loamy sand granular, friable. 4-24 inches 10 YR 5/6 loamy sand granular, friable. 24-34 inches 10YR 5/4 loamy sand granular friable

MAP UNIT #	SOIL TAXANOMIC NAME	SLOPES	HYDRO LOGIC SOIL GROUP	DESCRIPTION
400 (ED) (abada)	**Udorthents (sandy or gravelly) (excessively drained)**	**A B C D E**	**A**	34-40 10 YR 6/3 sand with redoximorphic features present granular friable. These soils are deep to bedrock. Saturated hydraulic conductivity is high or very high. Some inclusions of the moderately werll drained Windsor Variant soils may be present, but are less than 10 percent of the mapped area.Estimated seasonal high water tables in these soils is greater than 40 inches.
400 (MWD) (decdc)	**Udorthents (sandy or gravelly over silt loam moderately well drained)**	**A B**	**A**	This soil mapping unit represents Udorthents are disturbed soils that have been excavated and/or regraded, and have a sandy horizon overlaying a subsurface layer of silt loam. in texture. These soils are located on the northern end of the property. These disturbed soils are mostly derived from the surrounding Windsor Variant soil series. A typical soil profile of these soils onsite would be: 0-4 inches 10YR 3/3 loamy sand granular, friable 4-16 inches 10YR 5/6 loamy sand granular friable 16-30 inches 2.5Y 5/4 loamy sand granular friable. 30-40 inches 5Y 5/3 silt loam with redoximorphic features present blocky firm These soils are moderately werll drained, and are deep to bedrock. Pearmeability of this soil is moderately slow. Some inclusions of excessively drained Windsor soils may be present, but are less than 10 percent of the mapped area. Estimated seasonal high water tables in these soils range from 24 to 40 inches.
900 P (fbadh)	**Endoaquents (sandy or gravelly)**	**A**	**C**	Endoaquents represents areas of disturbed soils where the soil material was excavated down to, or near, the water table, and are sandy or gravelly in texture. This disturbed soil mapping unit is located in the eastern, central portion of the property. This area appears to be a manmade detention pond that may have a restrictive bottom. The soil texture is loamy sand over sand.. These soil is poorly drained, and are deep to bedrock. Saturated hydraulic conductivity is high or very high. Estimated seasonal high water tables in these soils range from 0 to 10 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



John P. Hayes III CSS, CWS

Disturbed Map Units

This edition of the New Hampshire State-Wide Numerical Soil Legend contains eleven distinct map units used for identifying areas of soils altered or disturbed by human influence and the addition of one naturally formed map unit. These map units were designed for the Order 2 and Order 3 levels of mapping intensity, but can be used in Order 1 mapping if appropriate.

The definition of disturbed map units is intentionally brief and vague. Classification at the Great Group level allows for a wide range in soil properties and behavioral characteristics. The variability in soil properties typically requires on-site investigations before any interpretation can be developed. The map unit descriptions are intended to provide guidance in differentiating map units. The author of the soil map is expected to provide additional information to reflect the nature of the disturbed areas within the survey area.

I. Excavated land

300 Udipsamments

This map unit is characterized by soil textures of loamy fine sand to sand and gravel throughout the entire particle-size class control section (25 - 100 cm or 10 - 40 inches). Saturated hydraulic conductivity (K_{sat}) is high or very high. Drainage class ranges from excessively drained to well drained. The Hydrologic Soil Group (HSG) is A. Typical sand pit.

350 Udipsamments, wet substratum

This map unit is characterized by soil textures of loamy fine sand to sand and gravel throughout the entire particle-size class control section (25 - 100 cm or 10 - 40 inches). Saturated hydraulic conductivity (K_{sat}) is high or very high. Drainage class ranges from moderately well drained to somewhat poorly drained.

400 Udorthents, sandy or gravelly

This map unit typically includes the following concepts: 1) very gravelly (> 35%) sand or very gravelly loamy sand; Or 2) sand or loamy sand textures that may have lenses of loamy very fine sand or finer somewhere in the particle-size class control section (25 - 100 cm or 10 - 40"). Saturated hydraulic conductivity (K_{sat}) is high or very high. Drainage class ranges from excessively drained to somewhat poorly drained. Typical gravel pit.

Disturbed Map Units (continued)

500 Udorthents, loamy

This map unit is characterized typically by soil textures that are sandy loam, loam, or silt loam within the particle size control section (25 – 100cm or 10 – 40"). Saturated hydraulic conductivity (K_{sat}) is low through high. Drainage class ranges from well drained to somewhat poorly drained. These areas typically represent excavated glacial till or perhaps areas where sand and gravel was excavated down to the loamy underlying material.

550 Udorthents, Bedrock substratum

This map unit is characterized by soil textures of sandy loam, loam, or silt loam within the particle-size class control section (25 - 100 cm or 10 - 40 inches). These areas typically represent excavated soil materials where the range in depth to bedrock is 10 - 60 inches (25 - 152 cm). Saturated hydraulic conductivity (K_{sat}) is low through high. Drainage class ranges from somewhat excessively drained to somewhat poorly drained.

600 Endoaquents, loamy

This map unit represents areas where soil material was excavated down to, or near the water table. Soil material is typically sandy loam, loam or silt loam within the particle-size class control section (25 - 100 cm or 10 - 40 inches). Saturated hydraulic conductivity (K_{sat}) is low through high. Drainage class is poorly or very poorly drained. The Hydrologic Soil Group (HSG) is D.

900 Endoaquents, sandy or gravelly

This map unit represents areas where soil material was excavated down to / near the water table. This map unit is characterized typically by soil textures of: 1) very gravelly (> 35% gravel) sand or very gravelly loamy sand or; 2) sand or loamy sand textures that may have lenses of loamy very fine sand or finer somewhere in the particle-size class control section (25 - 100 cm or 10 - 40"). Saturated hydraulic conductivity (K_{sat}) is high or very high. Drainage class is poorly or very poorly drained. The Hydrologic Soil Group (HSG) is D. Typical gravel pit dug down to or close to the water table.

Disturbed Map Units (continued)

II. Filled land

100 Udorthents, wet substratum

This map unit represents areas that have been filled and leveled over what were originally hydric soils.

199 Dumps, bark chips, and organic material

This map unit consists of man-made deposits of bark, wood chips, sawdust, paper mill sludge, cinders, waste paper, ashes, and other similar refuse from the operation of paper mills and sawmills.

200 Udorthents, refuse substratum

This map unit represents alternating layers of soil and refuse such as in sanitary landfills. Closed landfills typically have 2 feet of loamy material capping the area.

299 Udorthents, smoothed

This map unit represents areas that have been cut and filled to create a large level or nearly level area. Soil material making up the map units typically came from the immediate area. School athletic fields are an example (unless they were created on hydric soils – see Map Unit 100).

III. Bottom Land

7 Fluvaquents

This map unit represents areas of various kinds of soil materials on the bottom lands of streams and rivers. The soil material ranges in texture from silt loam to sand and gravel within the particle-size class control section (25 - 100 cm or 10 - 40 inches). Drainage class is poorly or very poorly drained. The Hydrologic Soil Group (HSG) is D.

Disturbed Soil Mapping Unit Supplement
for New Hampshire
DES AoT Site Specific Soil Maps

Introduction

The NRCS NH State-Wide Legend, as amended, contains a number of distinct map units used for identifying areas of soils altered or disturbed by human influence. However, in preparing the required Site Specific Soils Maps for compliance with NH Department of Environmental Services Alteration of Terrain (AoT) rules, additional information is often needed and desired. This supplement provides a means to supply the user a more detailed soil mapping unit description to meet this need.

Purpose

To provide soil scientists with additional soil mapping tools for disturbed sites and miscellaneous areas to enhance site specific soil maps and interpretations to reflect new requirements under the revised NH Alteration of Terrain regulations. This supplement is intended to allow the creation of soil maps with mapping units that can be expanded beyond those of the NRCS NH State-Wide Numerical Legend and the standards of the National Cooperative Soil Survey for disturbed units in order to provide specific information useful in preparation of site specific soils maps and reports to comply with NHDES Env-Wq 1500-Alteration of Terrain.

Note that the disturbed soil supplement has been created by SSSNNE and is not a product of the NRCS or the National Cooperative Soil Survey. Additionally, the supplemental legend can only be used in conjunction with the Site Specific Soil Mapping standards and cannot be used to create a stand-alone soils map.

For the purposes of this supplement, the definition of disturbed land, including excavate and fill, is as defined by RSA 485-A: 6, VIII; RSA 485-A: 17, and NHDES Env-Wq 1500.

Map Notation

Notation on the Site Specific Soil Map completed to comply with the NH AoT rules should include the following disclaimer:

Site-Specific Soil Map

1. This detailed Site-Specific Soil Map conforms to the standards of SSSNNE Publication No. 3, as amended, "Site-Specific Soil Mapping Standards for NH and VT".

2. This map has been prepared to comply with soil mapping requirements of RSA 485 A: 17and NHDES Env-Wq 1500, Alteration of Terrain.

3. See accompanying narrative report for methodology, map symbol legend, and interpretations.

Map Symbol Denominators for Disturbed Unit Supplements

The map symbols for Site-Specific Soil Mapping of disturbed soils in New Hampshire is a two part symbol with parts separated by a forward slash (/).

The first part consists of the USDA-NRCS Disturbed Map Unit symbol from the NH State-Wide Numerical Soil Legend. The map symbol is composed of 1 to 3 digits followed by a capital letter designating slope.

The second part consists of symbols of the SSSNNE NH Disturbed Soil Supplement to the Site Specific Soil Survey Standards, as detailed below. The disturbed map symbol is composed of 5 lower case letters.

Thus a Site Specific map symbol for a map prepared for an AoT application would be formatted as follows:

400A/aaaaa

These SSSNNE NH Disturbed Soil Supplemental symbols can only be used in conjunction with the USDA-NRCS Disturbed Map Unit symbols for the NH Statewide Numerical Soil Legend.

Supplemental Symbols

The five components of the Disturbed Soil Mapping Unit Supplement are as follows:

Symbol 1: Drainage Class
a-Excessively Drained
b-Somewhat Excessively Drained
c-Well Drained
d-Moderately Well Drained
e-Somewhat Poorly Drained
f-Poorly Drained
g-Very Poorly Drained
h-Not Determined

Symbol 2: Parent Material (of naturally formed soil only, if present)
a-No natural soil within 60"
b-Glaciofluvial Deposits (outwash/terraces of sand or sand and gravel)
c-Glacial Till Material (active ice)
d-Glaciolacustrine very fine sand and silt deposits (glacial lakes)
e-Loamy/sandy over Silt/Clay deposits
f-Marine Silt and Clay deposits (ocean waters)
g-Alluvial Deposits (floodplains)
h-Organic Materials-Fresh water Bogs, etc
i- Organic Materials-Tidal Marsh

Symbol 3: Restrictive/Impervious Layers
a-None
b-Bouldery surface with more than 15% of the surface covered with boulders
c-Mineral restrictive layer(s) are present in the soil profile less than 40 inches below the soil surface such as hard pan, platy structure or clayey texture with consistence of at least firm (i.e. more than 20 newtons). For other examples of soil characteristics that qualify for restrictive layers, see "Soil Manual for Site evaluations in NH" 2nd Ed., (page 3-17, figure 3-14)
d-Bedrock in the soil profile; 0-20 inches
e-Bedrock in the soil profile; 20-60 inches
f-Areas where depth to bedrock is so variable that a single soil type cannot be applied, will be mapped as a complex of soil types
g-Subject to Flooding
h–Man-made impervious surface including pavement, concrete, or built-up surfaces (i.e. buildings) with no morphological restrictive layer within control section

Symbol 4: Estimated Ksat* (most limiting layer excluding symbol 3h above).
a- High.
b-Moderate
c-Low
d-Not determined
*See "Guidelines for Ksat Class Placement" in Chapter 3 of the Soil Survey Manual, USDA

Symbol 5: Hydrologic Soil Group*
a-Group A
b-Group B
c-Group C
d-Group D
e-Not determined

*excluding man-made surface impervious/restrictive layers

LOCATION WINDSOR CT+MA NH NY RI VT

Established Series
Rev. MFF-SMF-DCP
03/2014

WINDSOR SERIES

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. Slope ranges from 0 through 60 percent. Saturated hydraulic conductivity is high or very high. Mean annual temperature is about 10 degrees C and mean annual precipitation is about 1092 mm.

TAXONOMIC CLASS: Mixed, mesic Typic Udipsamments

TYPICAL PEDON: Windsor loamy sand - forested, 3 percent slope, at an elevation of about 24 meters. (Colors are for moist soil.)

Oe--0 to 3 cm; black (10YR 2/1) moderately decomposed forest plant material; many very fine and fine roots; very strongly acid; abrupt smooth boundary. (0 to 8 cm thick.)

A--3 to 8 cm; very dark grayish brown (10YR 3/2) loamy sand; weak medium granular structure; very friable; many very fine and fine roots; strongly acid; abrupt wavy boundary. (3 to 25 cm thick.)

Bw1--8 to 23 cm; strong brown (7.5YR 5/6) loamy sand; very weak fine granular structure; very friable; many fine and medium roots; strongly acid; gradual wavy boundary.

Bw2--23 to 53 cm; yellowish brown (10YR 5/6) loamy sand; very weak fine granular structure; very friable; common fine and medium roots; strongly acid; gradual wavy boundary.

Bw3--53 to 64 cm; light yellowish brown (10YR 6/4) sand; single grain; loose; few coarse roots; strongly acid; clear wavy boundary. (Combined thickness of the Bw horizons is 23 to 86 cm.)

C--64 to 165 cm; pale brown (10YR 6/3) and light brownish gray (10YR 6/2) sand; single grain; loose; few coarse roots; strongly acid.

TYPE LOCATION: Hartford County, Connecticut; town of South Windsor, 1100 feet northwest along Chapel Road from the intersection of Chapel Road and Ellington Road and 100 feet due south of Chapel Road. USGS Manchester, CT topographic quadrangle, Latitude 41 degrees, 48 minutes, 35 seconds N., Longitude 72 degrees, 36 minutes, 22 seconds W., NAD 1983

RANGE IN CHARACTERISTICS: Thickness of the solum ranges from 25 to 92 cm. Rock fragments, dominantly fine gravel, range from 0 through 10 percent by volume in the solum and from 0 to 15 percent in the substratum. Thin strata of gravel or thin subhorizons of coarse sand or loamy coarse sand are present in some pedons. Unless limed, reaction in the solum commonly is extremely acid to moderately acid, but the range includes slightly acid. Unless limed, reaction in the substratum commonly is very strongly acid to slightly acid, but the range includes neutral.

O horizons are present in some pedons.

The A horizon has hue of 7.5YR or 10YR, value of 2 or 3, and chroma of 1 to 3. Many pedons have an Ap horizon up to 12 inches thick with value of 3 or 4 and chroma of 2 to 4. The A or Ap horizon is loamy fine sand, loamy sand, fine sand, or sand. It has weak or moderate granular structure and is very friable, friable, or loose.

Some pedons have a thin E horizon with hue 7.5YR or 10YR, value of 4 to 6, and chroma of 1 or 2.

The upper part of the Bw horizon has hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 4 to 8. The lower part of Bw horizon has hue of 7.5YR to 5Y, value of 4 to 7, and chroma of 3 to 6. The Bw horizon is loamy sand or loamy fine sand in the upper part and loamy fine sand, loamy sand, fine sand, or sand in the lower part. The Bw horizon has weak granular or weak subangular blocky structure, or it is massive or single grain. Consistence is very friable or loose.

Some pedons have a BC horizon similar to the lower part of the Bw horizon.

The C horizon has hue of 5YR to 5Y, value of 4 to 7, and chroma of 1 to 6. It is fine sand, sand, coarse sand, loamy fine sand, or loamy sand. The horizon is massive or single grain and consistence is very friable or loose.

COMPETING SERIES: These are the Acquango, Aldo, Bigapple, Biltmore, Boplain, Breeze, Caesar, Chute, Dabney, Hodge, Oakville, Osolo, Pahuk, Penwood, Perks, Pinegrove, Plainfield, Poquonock, Ronda, Samoa, Sardak, Sarpy, Scotah, Spessard, Suncook, Tyner, and Wapanucket series. Aquango, Aldo, Biltmore, Boplain, Chute, Dabney, Hodge, Osolo, Pahuk, Perks, Ronda, Samoa, Sardak, Spessard, and Tyner soils are from outside of LRRs L, R, and S. Acquango soils are very slightly to moderately saline within the soil profile. Aldo soils have a water table and saturation within the series control section for as much as one month per year in 6 out of 10 years. Bigapple soils formed in human transported soil material from dredging activities. Biltmore and Spessard soils are well drained. Breeze soils formed in human transported sandy soil materials intermingled with construction debris. Caesar soils contain more coarse sand. Chute, Hodge, and Sarpy soils contain free carbonates and do not have a B horizon. Dabney soils do not have a B horizon and receive more than 152 cm of precipitation annually. Oakville soils typically average 50 percent or more fine sand in the subsoil. Osolo soils have a solum thicker than 1.5 m. Penwood soils have hue of 5YR or redder in the B horizon. Pahuk, Perks, Samoa, and Suncook soils do not have a B horizon. Plainfield soils are less moist in all parts of the control section for the 120 days following the summer solstice. Poquonock soils have a densic contact with in 1 m. Ronda soils formed in alluvium from residuum sources. Sardak soils formed in alluvium and are calcareous. Tyner soils have a thicker solum. Wapanucket soils are underlain by glaciolacustrine deposits with in the series control section.

GEOGRAPHIC SETTING: Windsor soils are nearly level through very steep soils typically on glaciofluvial landforms but include late-Wisconsin-aged dunes. The steeper slopes are typically on terrace escarpments. Slope ranges from 0 to 60 percent. The soils formed in outwash or eolian deposits of poorly graded sands and loamy sands derived mainly from crystalline rocks. Mean annual temperature ranges from 7 to 12 degrees C, and the mean annual precipitation typically ranges from 965 to 1270 mm, but the range includes as low as 660 mm in some places east of Adirondack Mountains in the Champlain Valley of New York. The growing season ranges from 120 to 190 days.

GEOGRAPHICALLY ASSOCIATED SOILS: These are the Deerfield, Hinckley, Merrimac, Quonset, Suncook, Agawam, Hadley, Haven, Occum, Pootatuck, Scarboro, Sudbury, Walpole, Wareham, and Winooski soils on nearby landscapes. The moderately well drained Deerfield and Sudbury, the somewhat poorly drained and poorly drained Walpole and Wareham, and the very poorly drained Scarboro soils are common drainage associates. Agawam and Haven soils are coarse-loamy over sandy or sandy-skeletal or coarse-loamy terrace associates, respectively. Hadley, Occum, Pootatuck, and Winooski soils are on nearby flood plains.

DRAINAGE AND SATURATED HYDRAULIC CONDUCTIVITY: Excessively drained. Surface runoff is negligible to medium. Saturated hydraulic conductivity is high or very high.

USE AND VEGETATION: Most areas are forested or in low growing brushy vegetation. Some areas are used

for silage corn, hay, and pasture. Small areas, mostly irrigated, are used for shade tobacco, vegetables and nursery stock. Some areas are in community development. Common trees are white, black, and northern red oak, eastern white pine, pitch pine, gray birch, poplar, red maple, and sugar maple.

DISTRIBUTION AND EXTENT: Late Wisconsin glaciofluvial or eolian landforms in Connecticut, Massachusetts, New Hampshire, New York, Rhode Island, and Vermont; MLRAs 101, 142, 144A, and 145. The series is of large extent.

MLRA SOIL SURVEY REGIONAL OFFICE (MO) RESPONSIBLE: Amherst, Massachusetts.

SERIES ESTABLISHED: Connecticut Valley Area, 1899.

REMARKS: The use of the Windsor series in Maine, and in MLRAs 141, 144B, and 143 is relict to before temperature classes in soil taxoonomy. These have been removed from the SC file.

Diagnostic horizons and features recognized in this pedon include:
1. Ochric epipedon - the zone from 0 to 8 cm (Oe and A horizons).
2. Particle-size class - averages sandy in the control section from 25 to 100 cm.
3. No cambic horizon and development of color - the zone from 8 to 64 cm demonstrates development of color with no illuvial accumulation of material (Bw horizons).

ADDITIONAL DATA: Reference samples from pedons 54MA023005, 63VT011001, 63VT011002, 64NH017003, 64NH017004, 70CT003003, 70MA011003, 70VT017002, 73MA005003, 73MA005004, 91MA023006, 95NH013001, 96NH013004, 98NY045002, 98NY085002, S07VT011004.

National Cooperative Soil Survey
U.S.A.

development costs may be greater than on less sloping Windsor soils. (Capability unit IVs–26)

Windsor loamy sand, 15 to 60 percent slopes (WdE).—This soil typically lies on terrace breaks beside major streams in the county. The profile of this soil is similar to that described as representative for the series, but part of the original surface layer has been lost through erosion.

Included in mapping are small areas of gravelly Hinckley soils.

Steepness and droughtiness are major limitations to most uses of this soil. The hazard of erosion is severe where protective vegetation is removed.

This soil is not suitable for row or hay crop production. It is mainly forested, but timber management is limited by the short, steep slopes. A good cover of sod or forest vegetation is needed to control erosion. This soil is a potential source of sand for borrow material. (Capability unit VIIs–26)

Windsor Series, Clay Subsoil Variant

The Windsor series, clay subsoil variant, consists of well-drained, stone-free soils that formed in more than 18 inches and less than 30 inches of sandy material and the thick underlying silt and clay deposits, mostly of marine origin. These nearly level to sloping soils are on marine terraces, mostly in the southeastern part of the county.

A representative profile of a Windsor soil, clay subsoil variant, in a cultivated area has a very dark grayish-brown loamy fine sand surface layer 10 inches thick. The next layer extends to a depth of 24 inches and is yellowish-brown loamy fine sand in the upper part and light olive-brown fine sand in the lower part. The next series of layers extends to a depth of about 42 inches. In sequence from the top, the upper 2 inches is olive, firm very fine sandy loam, the next 4 inches is olive silt loam, and the lower 12 inches is very firm, olive-gray silty clay loam.

Soils of the Windsor series, clay subsoil variant, have moderately slow permeability and moderate available water capacity. Septic tank filter fields do not function well, because the subsoil has moderately slow permeability.

Representative profile of a Windsor loamy fine sand, clay subsoil variant (slope of 5 percent) in a hayfield about four-tenths mile southeast of the Grange Hall on Lee Hook Road in the town of Lee:

Ap—0 to 10 inches, very dark grayish-brown (10YR 3/2) loamy fine sand; weak, fine, granular structure; very friable; many roots; slightly acid; abrupt, smooth boundary.

B21—10 to 16 inches, yellowish-brown (10YR 5/6) loamy fine sand; single grain; loose; common roots; medium acid; clear, wavy boundary.

B22—16 to 24 inches, light olive-brown (2.5Y 5/4) fine sand; single grain; loose; few roots; medium acid; abrupt, smooth boundary.

IIA'2—24 to 26 inches, olive (5Y 4/3) very fine sandy loam; weak, thin, platy structure; firm; few roots; medium acid; clear, wavy boundary.

IIC1—26 to 30 inches, olive (5Y 5/3) silt loam; moderate, fine and medium, angular blocky structure; firm; few roots; medium acid; clear, wavy boundary.

IIC2—30 to 42 inches, olive-gray (5Y 5/2) silty clay loam; gray (5Y 5/1) clay coatings on peds; moderate, coarse, prismatic structure; very firm; many fine, dark manganeselike stains along channels; many fine pores; medium acid.

The A horizon texture is loamy sand or loamy fine sand. Hue is 10YR, value is 3 or 4, and chroma is 2 to 4. The B horizon ranges from loamy sand to sand. The upper part of the B horizon has a hue of 7.5YR to 2.5Y; a value of 3 to 5; and a chroma of 3 to 6. The lower part of the B horizon has a hue of 10YR or 2.5Y. The IIC horizon ranges from silt loam to silty clay. Hue is 2.5Y or 5Y, and value is 4 to 6. Reaction of the sandy upper horizons is strongly acid to medium acid. In the underlying material, reaction ranges from strongly acid to slightly acid.

Soils of the Windsor series, clay subsoil variant, are near Elmwood, Buxton, and Windsor soils. They are better drained and have coarser textures in the upper part of the profile than Elmwood or Buxton soils. They resemble sandy Windsor soils, except for the presence of silt and clay deposits at a depth of about 2 feet.

Windsor loamy fine sand, clay subsoil variant, 0 to 8 percent slopes (WfB).—This gently rolling soil occupies small areas on marine or lacustrine terraces. It has the profile described as representative of the series.

Included in mapping are areas of moderately well drained soils that formed in the same soil material as this soil.

Because of the sandy nature of the surface layer and the upper part of the subsoil, row crops and grasses suffer in some places from lack of moisture during dry periods; however, this soil retains more moisture available to crops than the droughty Windsor loamy sands. Erosion is a hazard in the more sloping areas. The moderately slowly permeable subsoil is a limitation to use of this soil for residential and industrial development.

The soil is easily cultivated and generally produces satisfactory growth of corn, truck crops, small grain, grasses, and legumes. Erosion control practices include diversions, contour farming, and stripcropping. Cropping systems generally include row crops, cover crops, and grasses and legumes in the rotation. Adding manure and returning crop residue to the soil help to maintain soil tilth, provide additional organic matter, and conserve moisture.

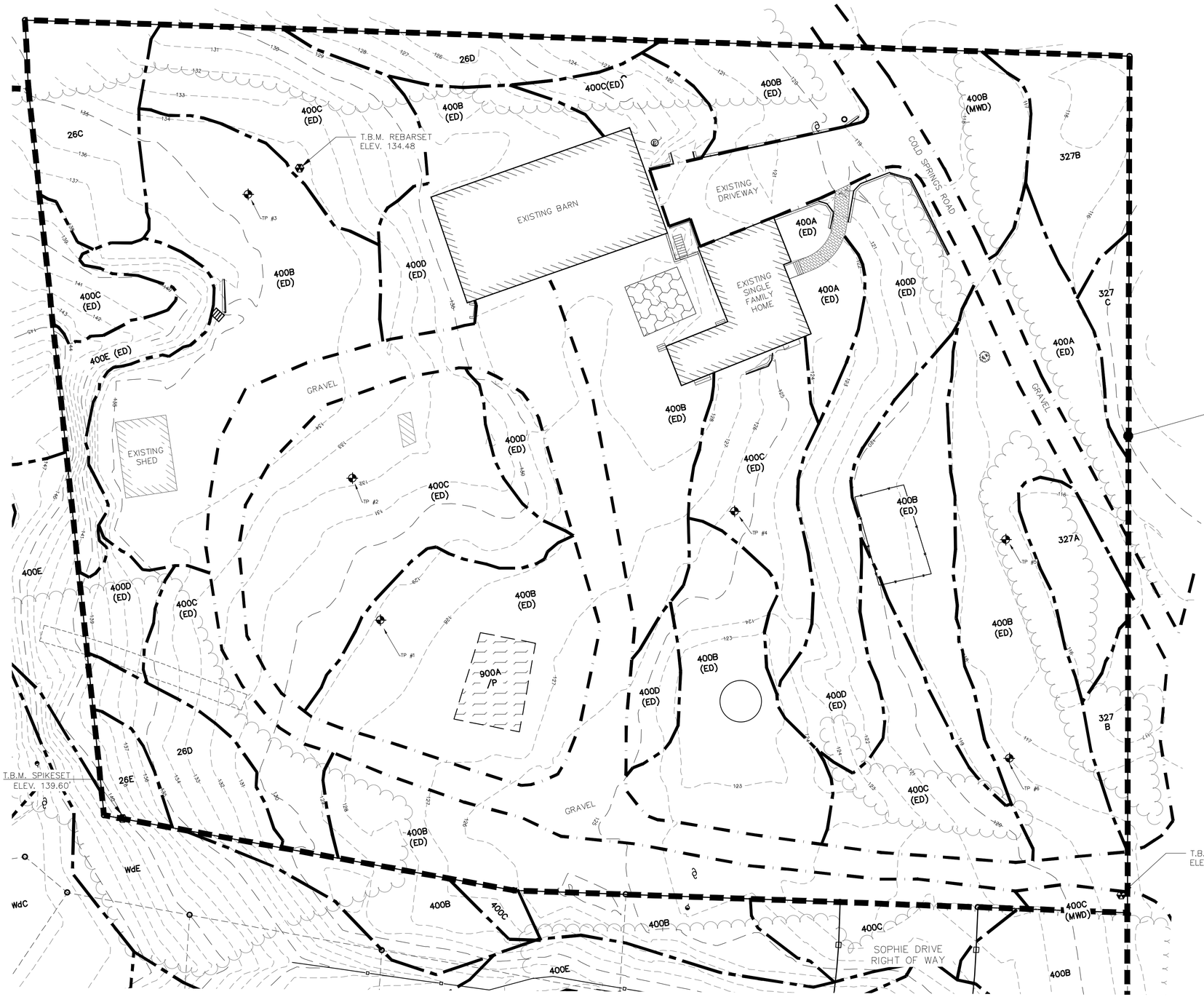
About half the acreage of this soil is forested. The rest is used for truck crops, hay, and pasture. The potential for developing open-land and woodland wildlife habitat is good. (Capability unit IIs–4)

Windsor loamy fine sand, clay subsoil variant, 8 to 15 percent slopes (WfC).—This soil is in rolling areas on marine or lacustrine terraces. It consists of about 2 to 2½ feet of loamy fine sand and fine sand over silty clay loam and silty clay.

Included in mapping are some areas of soils where depth to silt and clay deposits is greater than 40 inches.

Erosion is a hazard if the surface layer is disturbed during cultivation or construction work. Droughtiness is also a limitation to crop production. Slope and the moderately slowly permeable subsoil are limitations to use for residential and industrial development.

This soil is suited to most general crops, but its use is limited by slope and the hazard of erosion. Diversions, contour farming, and stripcropping are needed to control erosion if it is used for row or truck crops (fig. 14). These practices are also needed in cropping systems that include cover crops and grasses and legumes in the



GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

NOTES:

1.) OWNER: 5 SHERMAN ST.
242 CENTRAL AVE.
DOVER, NH 03820

APPLICANT: KNOX MARSH DEVELOPMENT LLC
242 CENTRAL AVE
DOVER, NH 03820

2.) TAX MAP H, LOT 47-A

3.) S.C.R.D. BOOK 5190, PAGE 597

4.) LOT AREA: 117,854 Sq.Ft., 2.71 Ac.

5.) THE INTENT OF THIS PLAN IS TO SHOW THE SITE SPECIFIC SOILS ON TAX MAP H, LOT 47-A.

6.) I HEREBY CERTIFY THAT, TO THE BEST OF MY KNOWLEDGE AND BELIEF, THIS PROPERTY DOES NOT FALL WITHIN THE FLOOD PLAIN FLOOD HAZARD REF: FEMA COMMUNITY #330145, MAP 33017C0320E, DATED: MAY 17, 2005.

7.) VERTICAL DATUM BASED ON NAVD88 ELEVATIONS. HORIZONTAL DATUM BASED ON NAD83 STATE PLANE. COORDINATES GATHERED USING CARLSON BRX7 SURVEY GRADE GPS RECEIVERS.

STATE OF NEW HAMPSHIRE
JOHN P. HAYES, III
No. 18
CERTIFIED WETLAND SCIENTIST

JOHN P. HAYES III, CWS #18

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

JOHN P. HAYES III, CSS #87

NAD83 NH STATE PLANE
MAGNETIC

LEGEND:

- IRON BOUND ~FND~
- IRON PIPE ~FND~
- GRANITE BOUND ~FND~
- UTILITY POLE/GUY WIRE
- BENCHMARK (T.B.M.)
- TEST PIT
- >20% SLOPES
- 32 EXISTING CONTOUR MINOR
- 35 EXISTING CONTOUR MAJOR
- OFF SITE NRCS SOIL LINE
- SITE SPECIFIC SOIL DELINEATION
- LIMIT OF SOIL SURVEY
- AREAS OF IMPERVIOUS SURFACE PRESUMED TO BE THE SAME SURROUNDING SOIL TYPE

448A SOIL SERIES
BzA SOIL LABEL
S.C.R.D. STRAFFORD COUNTY REGISTRY OF DEEDS
TYP. TYPICAL
FND FOUND
TBA TO BE ABANDONED
PVMT PAVEMENT

WETLAND NOTES:

WETLANDS WERE DELINEATED BY JOHN P. HAYES FEBRUARY 19, 2024

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.

SOILS LEGEND

Site Specific Soils

Symbol	Slopes	Taxonomic Soil Name	Hydrologic Soil Group
26	C,D,E	Windsor	A
327	A,B,C	Windsor Variant (Clay Subsoil)	C
400 (ED)	A,B,C,D,E	Udorthents (Sandy or Gravelly) (Excessively Drained)	A
400 (MWD)	A,B	Udorthents (Sandy or Gravelly Over Silt Loam) (Moderately Well Drained)	A
900	A	Endoaquents (Sandy or Gravelly)	C

Slopes: A = 0-3% B = 3-8% C = 8-15% D = 15-25% E = 25- 50% F = 50%+
Denominators: /SPD = Somewhat Poorly Drained /P = Poorly Drained
/VP = Very Poorly Drained /Rk = Rocky

CITY OF DOVER PLANNING FILE #

REVISION	DATE	DESCRIPTION
#2	03-04-25	REVISED UNIT COUNT AND ASSOCIATED MODIFICATIONS
#1	10-17-24	REVISED UNIT COUNT AND ASSOCIATED MODIFICATIONS

SITE SPECIFIC SOILS MAP
FOR
KNOX MARSH DEVELOPMENT LLC
LAND OF
5 SHERMAN STREET LLC
1 COLD SPRINGS ROAD
DOVER, N.H.
TAX MAP H, LOT 47-A

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

SCALE : 1 IN. EQUALS 20 FT.
DATE : SEPTEMBER 1, 2024
FILE NO. : DB 2023 - 126

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

NOT FOR CONSTRUCTION

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

1 Cold Springs Road
Dover, NH 03820

Prepared for:

Knox Marsh Development LLC
242 Central Avenue
Dover, NH 03820

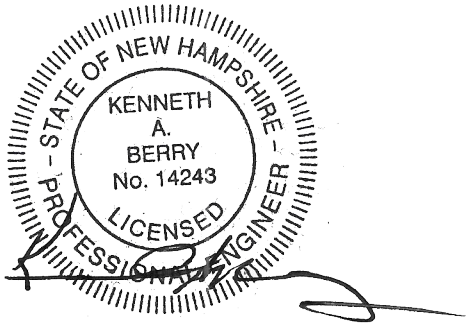
Land of:

5 Sherman Street LLC
242 Central Avenue
Dover, NH 03820

1 Cold Springs Road, Dover, NH
Tax Map H, Lot 47-A

Prepared By:

Berry Surveying & Engineering
335 Second Crown Point Road
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603-332-2863



Project Number:
DB2023-126

September 1, 2024
Revised: October 17, 2024
Revised: March 4, 2025

Inspection and Maintenance Manual

Stormwater System Management

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

NHDES Green SnoPro Utilization Chart

Introduction

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

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

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 September 1, 2024, as revised. See also plan set completed for 5 Sherman Street, LLC, originally dated September 1, 2024, as revised.

Robert Baldwin, Managing Member, Knox Marsh Development, LLC, is responsible for the Stormwater System Operation and Maintenance until such time as the proposed streets are turned over to the homeowners association and the drainage infrastructure is the responsibility of a homeowners association. A significant step in this responsibility is the Inspection and Maintenance of each component of the system. Ongoing, semi-annual, and annual inspection and maintenance requirement are documented below and must be taken seriously. Failure of any component of the system can result in surface water run-off ponding and/or freezing in the roadway and parking lots, leaving the developed site untreated, and/or causing violations to issued permits. The owner must maintain, and have available, plans of the Stormwater System in order properly inspect and maintain the system. (Reduced copies attached.) 5 Sherman Street, LLC is the majority owner and responsible to develop a Homeowners Association of the residential development. The homeowners association 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, Community Services,

DPW, Engineering Department, with the Annual Report no later than December 15 of each year. Qualified Professionals such as Berry Surveying & Engineering, as retained, or another qualified professional as retained shall be retained for drainage and invasive species inspections.

The owners of Tax Map H, Lot 47-A are proposing to subdivide the existing parcel, into 8 residential lots (seven new single-family homes, the existing single-family home). An 878' long private road, measured around the cul-de-sac, will be constructed extending Sophie Drive to provide access to the development. The development will be supported by an Infiltration Rain Gardens, municipal water and municipal sewer.

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

Conveyance Swale

Inlet Sump

Retaining wall underdrain w/ cleanout

Deep Sump Catch Basins & Drain Manholes

Rain Garden W/ Infiltration #106 with emergency spillway & level lip

Conveyance, Diversion, & Treatment Swales

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

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

Culvert Inlet Sumps & Cross Culvert w/ Flared End Sections

Description: In one location, to convey the surface water runoff that is trapped within the roadway and 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 painted metal fence posts.

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.

Retaining Wall Underdrains w/ Cleanouts

Description: The retaining wall on-site is provided with an underdrain at the back of the wall, with a cleanout on the uphill end, that discharges to daylight. This underdrain will be provided with its own headwall or be connected to a larger headwall (See I&M Plan).

Maintenance Considerations: The exit of the culvert pipes should be cleaned of any trash and sediment build-up. Riprap outlet protection shall not prevent the outlet from being free flowing, as applicable. The culvert should be clear to let collected water pass through the culvert unobstructed. Flared end sections and headwalls should be

inspected for erosion and destabilization, with repairs made as required. The underdrains will require yearly jetting to ensure full operation.

Deep Sump Catch Basin/Drain Manhole

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.

Rain Garden W/ Infiltration (Bio-Retention System)

Design Intent: A rain garden w/ infiltration (P-106) is designed and located to intercept surface water runoff from compacted gravel surfaces discharging from roadside swales and conveyance swales.

Description: A bioretention system (sometimes referred to as a "rain garden") is a type of filtration BMP designed to collect and filter moderate amounts of stormwater runoff using conditioned planting soil beds, gravel beds and vegetation within shallow depressions. The bioretention system may be designed with an underdrain, to collect treated water and convey it to discharge, or it may be designed to infiltrate the treated water directly to the subsoil. (In this case it is designed to infiltrate.) Bioretention cells

are capable of reducing sediment, nutrients, oil and grease, and trace metals. Bioretention systems should be sited in close proximity to the origin of the stormwater runoff to be treated. The major difference between bioretention systems and other filtration systems is the use of vegetation. A typical surface sand filter is designed to be maintained with no vegetation, whereas a bioretention cell is planted with a variety of shrubs and perennials whose roots assist with pollutant uptake. The use of vegetation allows these systems to blend in with other landscaping features. See SWM Volume 2, 4-3.4c, Treatment Practices, Bio-Retention System, page 110. Qualified Professionals such as Berry Surveying & Engineering, as retained, or another qualified professional as retained shall be retained for drainage and invasive species inspections.

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

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.

See Erosion and Sediment Control Plan. It is recommended that the contractor take measures to protect the infiltration surface from sedimentation caused by erosion on the side slopes tracking is not permitted on the infiltration surface. Excavations should take place on the outside limits of the infiltration system where feasible. If tracking does take place, scarification is required prior to be backfill of loam and seed.

After the infiltration system area is excavated to the final design elevation, the floor should be deeply tilled with a rotary tiller or disc harrow to restore infiltration rates, followed by a pass with a leveling drag. Do not place infiltration systems into service until the contributing areas have been fully stabilized.

BS&E to inspect the bottom of excavation prior to the installation of select materials. Remove all organic material prior to select materials. Grade to be returned with granular materials.

Maintenance Considerations: Systems should be inspected 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. Pretreatment measures should be inspected at least twice annually, and cleaned of accumulated sediment as warranted by inspection, but no less than once annually. Trash and debris should be

removed at each inspection. At least once annually, system should be inspected for drawdown time. If bioretention system does not drain within 72-hours following a rainfall event, then a qualified professional should assess the condition of the facility to determine measures required to restore filtration function or infiltration function (as applicable), including but not limited to removal of accumulated sediments or reconstruction of the filter media. Vegetation should be inspected at least annually, and maintained in healthy condition, including pruning, removal and replacement of dead or diseased vegetation, and removal of invasive species. All 2:1 side slopes within the BMP will be maintained via weedwhacker.

Emergency Spillway

Description: A rip rap trapezoidal open water outlet to a Best Management Practice pond or basin. The elevation of the spillway is normally set six-inches below the top of the embankment or berm set so that the 25-year 24-hour storm event does not overtop the embankment. The spillway rolled erosion control blanket will be designed to prevent erosion of the spillway.

Maintenance Considerations: The spillway will be inspected to ensure that the matting has not been relocated by runoff, that it is clear of vegetation, and clear of all trash and gross solids.

Integral Level Lip

Description: An integral level lip is an outlet structure constructed at zero percent grade across a slope used to convert concentrated flow to "sheet flow." It disperses or "spreads" flow thinly over a receiving area, usually consisting of undisturbed, vegetated ground. The conversion of concentrated flow to shallow, sheet flow allows runoff to be discharged at non-erosive velocities onto natural ground. To stabilize the outlet, a stone berm is provided to dissipate flow energy, and help disperse flows along the length of the outlet. Level lips are not designed to remove pollutants from stormwater; however, some suspended sediment and associated phosphorous, nitrogen, metals and hydrocarbons will settle out of the runoff through settlement, filtration, infiltration, absorption, decomposition and volatilization. See SWM Volume 2, 4-6.6 Conveyance Practices, Stone Berm Level Spreader, page 162.

Maintenance Considerations: Inspect at least once annually for accumulation of sediment and debris and for signs of erosion within approach channel, spreader channel or down-slope of the spreader. Remove debris whenever observed during inspection. Remove sediment when accumulation exceeds 25% of spreader channel depth. Mow as required by landscaping design. At a minimum, mow annually to control woody vegetation within the spreader. Snow should not be stored within or down-slope of the level spreader or its approach channel. Repair any erosion and re-grade or replace stone berm material, as warranted by inspection. Reconstruct the spreader if down-

slope channelization indicates that the spreader is not level or that discharge has become concentrated, and corrections cannot be made through minor re-grading.

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. Qualified Professionals such as Berry Surveying & Engineering, as retained, or another qualified professional as retained shall be retained for drainage and invasive species inspections.

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.

Snow Removal & Winter Maintenance

Description: Drainage and stormwater systems need to be maintained during the winter months so that surface water runoff from a rain storm does not become a impounding and icing problem. Catch basins must remain viable and where sheet flow is a design factor, the edge of pavement and should need to be maintained so that runoff can leave the pavement area. Sand and salt should be used at the rate that prevents sedimentation problems or excess salt deposited but yet enough to allow for protection for pedestrians and vehicles.
Maintenance Considerations: Catch basins are required to be kept viable by removing snow that is block surface water runoff from entering the structure. The edge of pavement where surface water sheet flow is designed to leave the paved area, the edge of pavement and shoulder need to be plowed to allow runoff to leave the pavement. Snow is to piled in designated areas and removed from the site when the on-site storage locations have been exceeded. At the end of the winter season, sediment is to be swept from the paved surfaces and removed from the drainage system. (Sumps if provided, sediment forebays, swale lines.) (See catch basin and drainage pipe maintenance.) NHDES offers training (Green SnowPro Certification) for

contractors and owners. https://www.des.nh.gov/land/roads/road-salt-reduction/green-snowpro-certification Please find attached NHDES Green SnoPro Utilization Chart which is required to be used.

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 and photo documentation. This includes any owner association for potential condominium conversion of the property. The Annual Report will be prepared and submitted to the City of Dover, Community Services, Engineering Department with copies of both logs and check lists no later than December 15th of each year and made available to NHDES upon request. Upon an ownership change, the Annual Report will include the Transfer of Ownership Responsibility Forms duplicated from the form found below.
The plans that accompany this manual includes a one sheet, "Drainage Operation & Maintenance Plan". The homeowners association will also maintain a complete set of the approved original design plans.

It is requirement of the contractors to pump and clean all Catch Basins and Drain Manholes. Prior to the final release of bonding from the City of Dover, the applicant will have the initial I & M Inspection and Report completed. This and a letter documenting the completeness of the drainage design construction will be turned into Community Services.

Respectfully,
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

STORMWATER SYSTEM OPERATION AND MAINTENANCE PLAN

Inspection & Maintenance Manual Checklist

Sophie Drive

Knox Marsh Development, LLC
242 Central Avenue
DOVER, NH 03820

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

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

Inspection Check List: Page 3

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

Conveyance Swale

Inlet Sump

Retaining wall underdrain w/ cleanout

Deep Sump Catch Basins & Drain Manholes

Rain Garden W/ Infiltration #106 with emergency spillway & level lip

Inspection Notes:

STORMWATER SYSTEM OPERATION AND MAINTENANCE PLAN

Inspection & Maintenance Manual Log Form

Sophie Drive

Knox Marsh Development, LLC
242 Central Avenue
DOVER, NH 03820

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

STORMWATER SYSTEM OPERATION AND MAINTENANCE PLAN

Deicing Log Form

Sophie Drive

Knox Marsh Development, LLC
242 Central Avenue
DOVER, NH 03820

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

STORMWATER SYSTEM OPERATION & MAINTENANCE PLAN CERTIFICATION

Owner	Responsibility
Name: Robert Baldwin, Managing Member Knox Marsh Development, LLC Address: 242 Central Avenue Dover, NH 03820 Telephone: 603-742-2121	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:

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.

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.

NOTES:

1.) OWNER: 5 SHERMAN STREET LLC
242 CENTRAL AVE
DOVER, NH 03820

APPLICANT: KNOX MARSH DEVELOPMENT LLC
242 CENTRAL AVE
DOVER, NH 03820

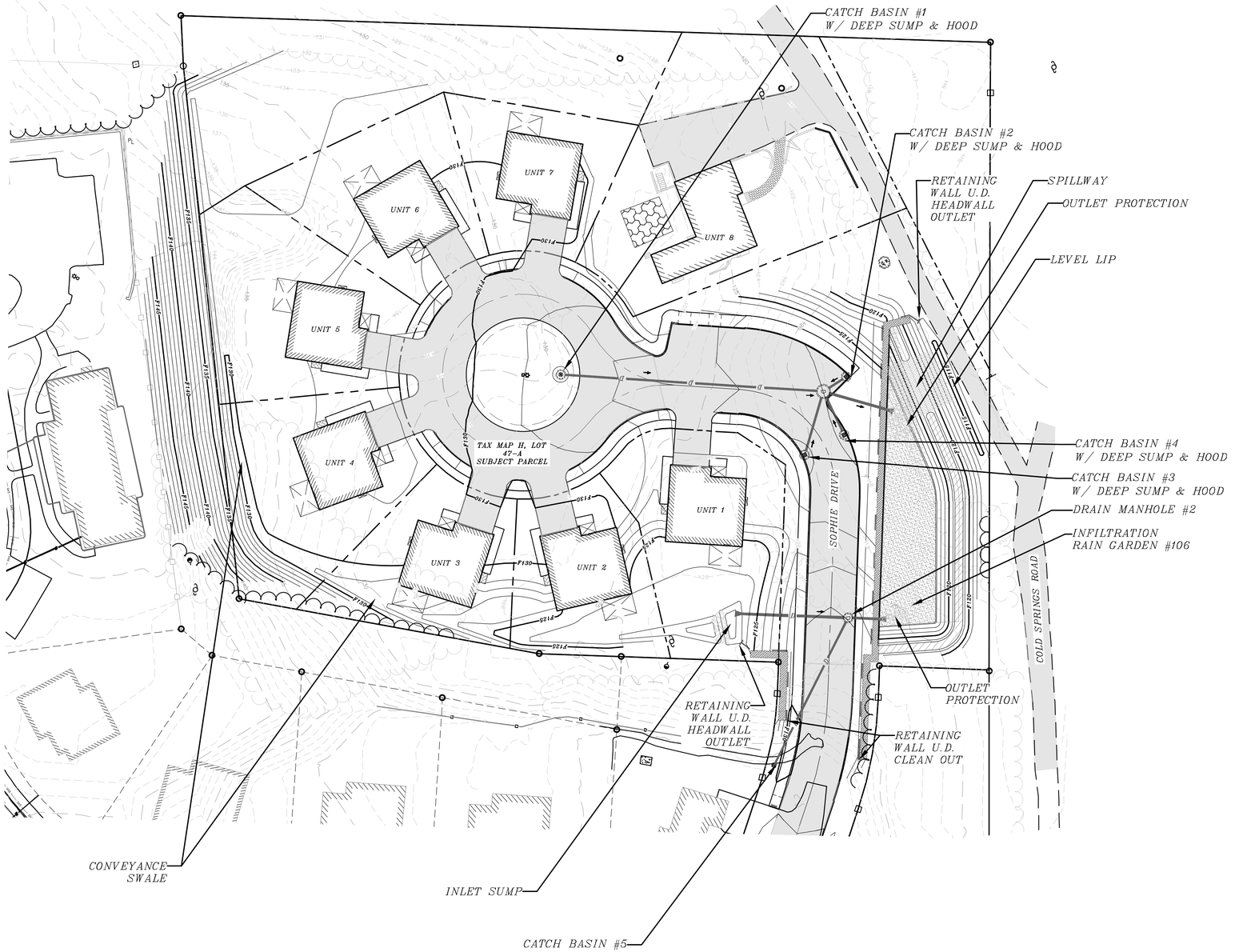
2.) TAX MAP H, LOT 47–A

3.) S.C.R.D. BOOK 5190, PAGE 597

4.) LOT AREA: 117,854 Sq. Ft., 2.71 Ac.

5.) THE INTENT OF THIS PLAN IS TO DEMONSTRATE THE DRAINAGE INFRASTRUCTURE THAT REQUIRES PERIODIC INSPECTION AND MAINTENANCE. IT IS TO ACCOMPANY A DOCUMENT ENTITLED "STORMWATER SYSTEM MANAGEMENT: INSPECTION AND MAINTENANCE MANUAL" PUBLISHED BY BERRY SURVEYING & ENGINEERING ON THE SAME DATE.

6.) 11x17" PLANS ARE TWICE THE PUBLISHED SCALE.



LEGEND:

- PROPOSED DRAIN MANHOLE W/ STRUCTURE
- PROPOSED CATCH BASIN W/ STRUCTURE
- CONTOUR MINOR, EXISTING
- CONTOUR MAJOR, EXISTING
- CONTOUR MINOR, PROPOSED
- CONTOUR MAJOR, PROPOSED
- EXISTING DRAINAGE LINE
- PROPOSED DRAINAGE LINE
- RIP RAP
- STORMWATER BEST MANAGEMENT PRACTICE (BMP)
- BERM
- RETAINING WALL

NADB3 NH STATE PLANE

MAGNETIC

GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.

CITY OF DOVER PLANNING FILE #

REVISION	DATE	DESCRIPTION
#2	03–04–25	REVISED UNIT COUNT AND ASSOCIATED MODIFICATIONS
#1	10–17–24	REVISED UNIT COUNT AND ASSOCIATED MODIFICATIONS

STORMWATER INSPECTION & MAINTENANCE PLAN
FOR
KNOX MARSH DEVELOPMENT LLC
LAND OF
5 SHERMAN STREET LLC
1 COLD SPRINGS ROAD
DOVER, N.H.
TAX MAP H, LOT 47–A

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

SCALE : 1 IN. EQUALS 30 FT.
DATE : SEPTEMBER 1, 2024
FILE NO. : DB 2023 – 126

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14241
LICENSED PROFESSIONAL ENGINEER

NOT FOR CONSTRUCTION

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

3/8" WASHED CRUSHED STONE*

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

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

1-1/2" WASHED CRUSHED STONE*

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

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

NOTES

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

MAINTENANCE REQUIREMENTS

1 SYSTEMS SHOULD BE INSPECTED AT LEAST TWICE ANNUALLY, AND FOLLOWING ANY RAINFALL EXCEEDING 0.25 INCHES IN A 24-HOUR PERIOD, WITH MAINTENANCE OR REHABILITATION CONDUCTED AS A WARRANTED BY SUCH INSPECTION.

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

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

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

DESIGN REFERENCES

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

CONSTRUCTION SEQUENCE NOTE:

EROSION, SEDIMENT AND DETENTION CONTROL FACILITIES 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. RUNOFF MUST BE DIRECTED TO TEMPORARY PRACTICES UNTIL STORMWATER BMPs ARE STABILIZED. SWALES CONVEYING RUNOFF TO STORMWATER BMPs WILL BE CONSTRUCTED AND PUT INTO SERVICE ONCE THE RECEIVING STORMWATER BMP IS STABILIZED. SEE DETAIL E17, SHEET E-102 FOR FULL CONSTRUCTION SEQUENCE.

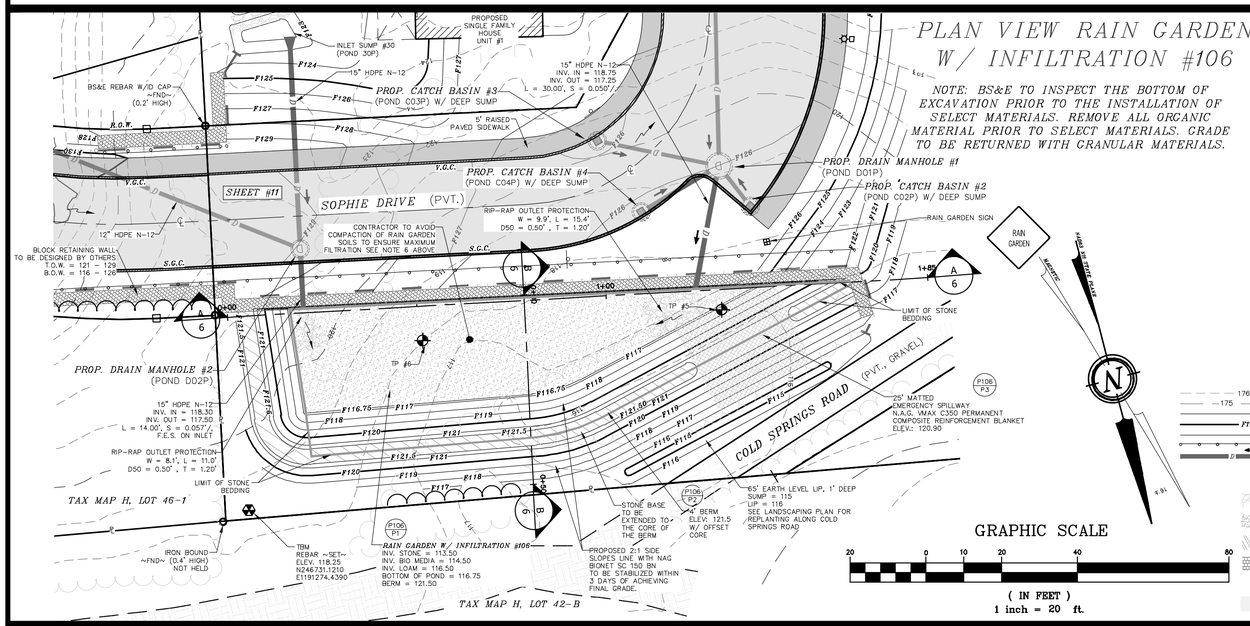
RAIN GARDEN MIX

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

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.

P1


PROPOSED SINGLE FAMILY HOUSE UNIT #1
INLET SUMP #30 (POND 30P)
15" HDPE N-12
PROP. CATCH BASIN #3 (POND C03P) W/ DEEP SUMP
BS&E REBAR W/ID CAP ~FND~ (0.2' HIGH)
5' RAISED PAVED SIDEWALK
PROP. CATCH BASIN #4 (POND C04P) W/ DEEP SUMP
PROP. DRAIN MANHOLE #1 (POND D01P)
PROP. CATCH BASIN #2 (POND C02P) W/ DEEP SUMP
SHEET #11
SOPHIE DRIVE (PVT.)
RIP-RAP OUTLET PROTECTION W = 9.9', L = 15.4' D50 = 0.50' , T = 1.20'
RAIN_GARDEN SIGN
CONTRACTOR TO AVOID COMPACTION OF RAIN GARDEN SOILS TO ENSURE MAXIMUM FILTRATION SEE NOTE 6 ABOVE
12" HDPE N-12
BLOCK RETAINING WALL TO BE DESIGNED BY OTHERS T.O.W. = 121 – 129 B.O.W. = 116 – 126
LIMIT OF STONE BEDDING
PROP. DRAIN MANHOLE #2 (POND D02P)
15" HDPE N-12 INV. IN = 118.30 INV. OUT = 117.50 L = 14.00', S = 0.057/ F.E.S. ON INLET
RIP-RAP OUTLET PROTECTION W = 8.1', L = 11.0' D50 = 0.50' , T = 1.20'
TAX MAP H, LOT 46-1
TBM REBAR ~SET~ ELEV. 118.25 N246731.1210 E1191274.4390
IRON BOUND ~FND~ (0.4" HIGH) NOT HELD
RAIN GARDEN # / INFILTRATION #106 INV. STONE = 113.50 INV. BIO MEDIA = 114.50 INV. LOAM = 116.50 BOTTOM OF POND = 116.75 BERM = 121.50
15" HDPE N-12 INV. IN = 118.75 INV. OUT = 117.25 L = 30.00', S = 0.050'/
STONE BASE TO BE EXTENDED TO THE CORE OF THE BERM
4' BERM ELEV: 121.5 W/ OFFSET CORE
65' EARTH LEVEL LIP, 1' DEEP SUMP = 115 LIP = 116 SEE LANDSCAPING PLAN FOR REPLANTING ALONG COLD SPRINGS ROAD
PROPOSED 2:1 SIDE SLOPES LINE WITH NAG BIONET SC 150 BN TO BE STABILIZED WITHIN 3 DAYS OF ACHIEVING FINAL GRADE.
COLD SPRINGS ROAD (PVT., GRAVEL)
25' MATTED EMERGENCY SPILLWAY N.A.G. VMAX C350 PERMANENT COMPOSITE REINFORCEMENT BLANKET ELEV.: 120.90
LIMIT OF STONE BEDDING
TAX MAP H, LOT 42-B
TP #5
TP #6
TP #7
TP #8
TP #9
TP #10
TP #11
TP #12
TP #13
TP #14
TP #15
TP #16
TP #17
TP #18
TP #19
TP #20
TP #21
TP #22
TP #23
TP #24
TP

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: 010600030903

HUC 12 Name: Bellamy 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.

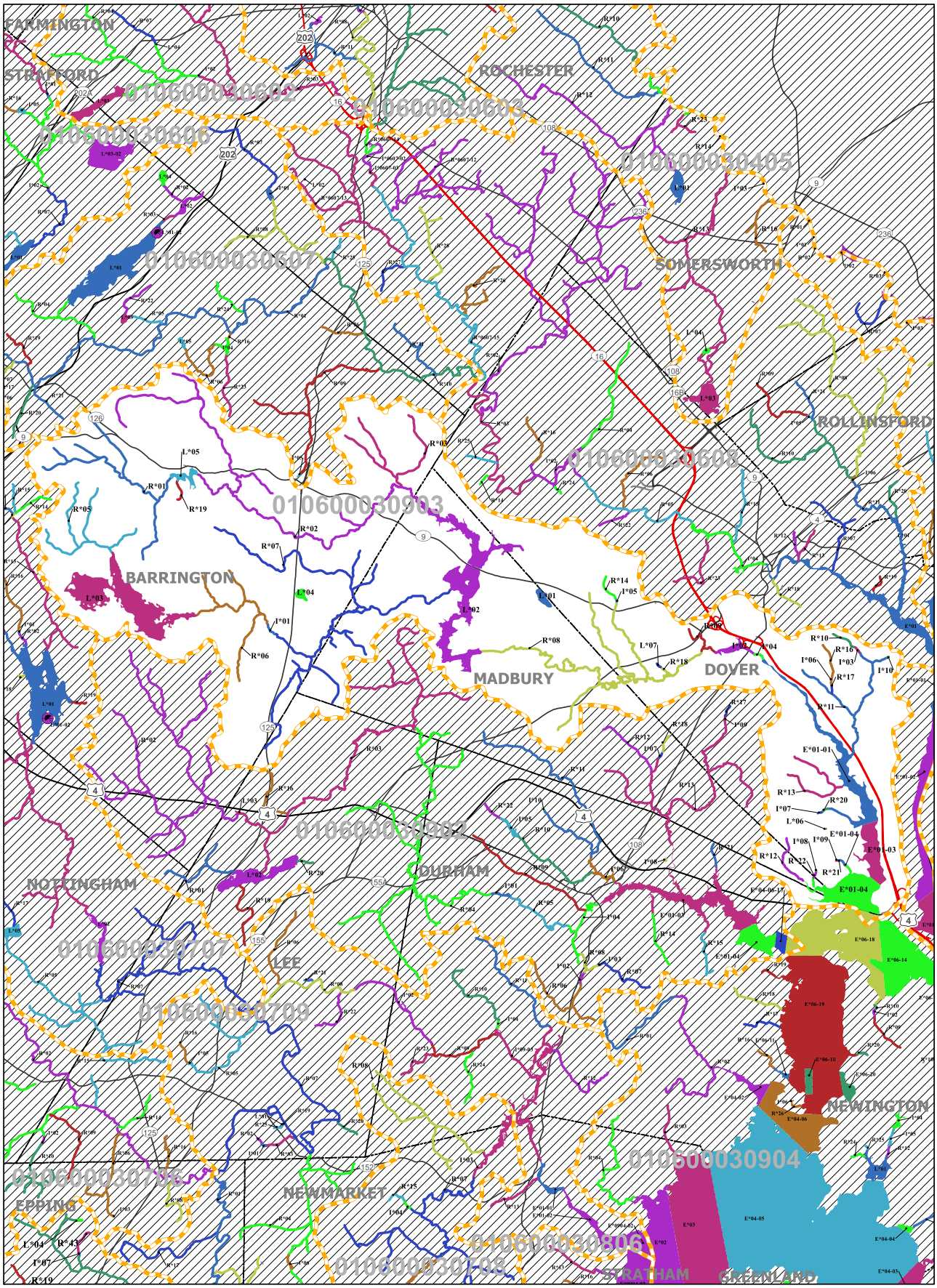





Assessment Unit ID	Map Label	Assessment Unit Name	Aquatic Life	Fish Consump.	Swimming	Boating
NHEST600030903-01-01	E*01-01	Bellamy River North		5-M	2-G	2-G
NHEST600030903-01-03	E*01-03	Bellamy River South Clement Point	5-P	5-M	2-G	2-G
NHEST600030903-01-04	E*01-04	Bellamy River South	5-P	5-M	2-G	2-G
NHIMP600030903-01	I*01	Bellamy River	3-ND	4A-M	3-ND	3-ND
NHIMP600030903-02	I*02	Bellamy River - Sawyers Mill Dam Pond	5-M	4A-M	5-M	3-ND
NHIMP600030903-03	I*03	Canney Brook - Wildlife Pond	3-ND	4A-M	3-ND	3-ND
NHIMP600030903-04	I*04	Bellamy River Iv Dam	3-ND	4A-M	3-ND	3-ND
NHIMP600030903-05	I*05	Knox Marsh Brook	3-ND	4A-M	3-ND	3-ND
NHIMP600030903-06	I*06	Unnamed Brook - Thornwood Commons Pond	3-ND	4A-M	3-ND	3-ND
NHIMP600030903-07	I*07	Unnamed Brook - Bellamy River Wildlife Pond	3-ND	4A-M	3-ND	3-ND
NHIMP600030903-08	I*08	Unnamed Brook - Farm Pond	3-ND	4A-M	3-ND	3-ND
NHIMP600030903-09	I*09	Unnamed Brook - Webster Brook Dam	3-ND	4A-M	3-ND	3-ND

NHIMP600030903-10	I*10	Unnamed Brook - Farm Pond	3-ND	4A-M	3-ND	3-ND
NHLAK600030903-01	L*01	Barbadoes Pond	3-ND	4A-M	3-ND	3-ND
NHLAK600030903-02	L*02	Bellamy Reservoir	5-M	4A-M	3-ND	3-ND
NHLAK600030903-03	L*03	Swains Lake	5-P	4A-M	3-PAS	3-ND
NHLAK600030903-04	L*04	Winkley Pond	5-P	4A-M	3-ND	3-ND
NHLAK600030903-05	L*05	Branch Mallego Brook Pond	3-ND	4A-M	3-ND	3-ND
NHLAK600030903-06	L*06	Farm Pond	3-ND	4A-M	3-ND	3-ND
NHLAK600030903-07	L*07	Unnamed Pond	3-ND	4A-M	3-ND	3-ND
NHRIV600030903-01	R*01	Madla Brook	5-M	4A-M	3-ND	3-ND
NHRIV600030903-02	R*02	Mallego Brook	5-P	4A-M	3-ND	3-ND
NHRIV600030903-03	R*03	Calef Brook	3-ND	4A-M	3-ND	3-ND
NHRIV600030903-05	R*05	Unnamed Brook - To Swains Lake	3-ND	4A-M	3-ND	3-ND
NHRIV600030903-06	R*06	Bellamy River - Unnamed Brook	5-M	4A-M	3-ND	3-ND
NHRIV600030903-07	R*07	Bellamy River	5-P	4A-M	4A-P	4A-P
NHRIV600030903-08	R*08	Bellamy River - Kelly Brook - Knox Marsh Brook	5-P	4A-M	4A-P	3-PAS
NHRIV600030903-09	R*09	Bellamy River - Unnamed Brook	5-M	4A-M	4A-P	3-ND
NHRIV600030903-10	R*10	Canney Brook	3-ND	4A-M	3-ND	3-ND
NHRIV600030903-11	R*11	Varney Brook - Canney Brook	3-ND	4A-M	4A-P	4A-M
NHRIV600030903-12	R*12	Unnamed Brook - To Bellamy River Royalls Cove	3-ND	4A-M	3-ND	3-ND
NHRIV600030903-13	R*13	Garrison Brook	3-ND	4A-M	4A-P	3-ND
NHRIV600030903-14	R*14	Knox Marsh Brook	3-ND	4A-M	3-ND	3-ND
NHRIV600030903-16	R*16	Unnamed Brook	3-ND	4A-M	3-ND	3-ND
NHRIV600030903-17	R*17	Varney Brook	3-ND	4A-M	3-ND	3-ND
NHRIV600030903-18	R*18	Unnamed Brook	3-ND	4A-M	3-ND	3-ND
NHRIV600030903-19	R*19	Unnamed Brook	3-ND	4A-M	3-ND	3-ND
NHRIV600030903-20	R*20	Unnamed Brook	3-ND	4A-M	3-ND	3-ND
NHRIV600030903-21	R*21	Unnamed Brook	3-ND	4A-M	3-ND	3-ND
NHRIV600030903-22	R*22	Unnamed Brook	3-ND	4A-M	3-ND	3-ND

AUIDs For HUC12: 010600030903 - Bellamy 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 0.8 1.6 2.4 3.2 Miles

Scale:1:78,820

S:\WD-Watershed\WQ_Planning\305b_303d\2020\Report_Cards\HUC12_maps

Assessment Unit ID: NHRIV600030903-08
Assessment Unit Name: Bellamy River - Kelly Brook - Knox Marsh Brook
Town(s) Primary Town is Listed First: Dover, Madbury

Size: 9.4540 MILES
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	ALKALINITY, CARBONATE AS CACO3	N	1990	1990	3-ND	
		ALUMINUM	N	2019	2017	5-M	LOW
		AMMONIA (TOTAL)	N	1997	N/A	3-ND	
		ARSENIC	N	1990	N/A	3-ND	
		Benthic-Macroinvertebrate Bioassessments (Streams)	N	2000	2000	5-P	LOW
		CADMIUM	N	1990	N/A	3-ND	
		CHLORIDE	N	2019	N/A	2-G	
		COPPER	N	2016	2016	3-PNS	
		DISSOLVED OXYGEN SATURATION	N	2019	2007	2-G	
		Fishes Bioassessments (Streams)	N			3-PAS	
		Habitat Assessment (Streams)	N	2000	2000	4C-P	
		IRON	N	1997	N/A	3-ND	
		LEAD	N	2000	2000	3-ND	
		NICKEL	N	1990	N/A	3-ND	
		OXYGEN, DISSOLVED	N	2019	2016	2-M	

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.

Aquatic Life Integrity	5-P	PH	N	2019	2019	5-M	LOW
		PHOSPHORUS (TOTAL)	N	2019	NLV	3-PNS	
		SELENIUM	N	1990	N/A	3-ND	
		TURBIDITY	N	2019	2008	3-PAS	
		ZINC	N	2016	1998	3-PAS	
Fish Consumption	4A-M	ARSENIC	N	1990	1990	3-ND	
		COPPER	N	2016	N/A	3-PAS	
		MANGANESE	N	1990	N/A	3-ND	
		MERCURY - FISH CONSUMPTION ADVISORY	N			4A-M	
		NICKEL	N	1990	N/A	3-ND	
		SELENIUM	N	1990	N/A	3-ND	
		ZINC	N	2016	N/A	3-PAS	
Potential Drinking Water Supply	2-G	ARSENIC	N	1990	1990	3-ND	
		COPPER	N	2016	N/A	3-PAS	
		ESCHERICHIA COLI	N	2019	2019	3-PNS	
		FECAL COLIFORM	N	1990	1990	3-ND	
		FLUORIDE	N	1997	N/A	3-ND	
		IRON	N	1997	1997	3-ND	
		MANGANESE	N	1990	N/A	3-ND	
		NICKEL	N	1990	N/A	3-ND	
		SELENIUM	N	1990	N/A	3-ND	
		SULFATES	N	2016	N/A	3-PAS	

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.

Potential Drinking Water Supply	2-G	ZINC	N	2016	N/A	3-PAS	
Primary Contact Recreation	4A-P	CHLOROPHYLL-A	N	1990	N/A	3-ND	
		ESCHERICHIA COLI	N	2019	2018	4A-P	
Secondary Contact Recreation	3-PAS	ESCHERICHIA COLI	N	2019	2016	3-PAS	
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.

BERRY SURVEYING & ENGINEERING
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Infiltration Feasibility Report

Cold Springs Road
Dover, NH 03820

Prepared for:

Knox Marsh Development LLC
242 Central Avenue
Dover, NH 03820

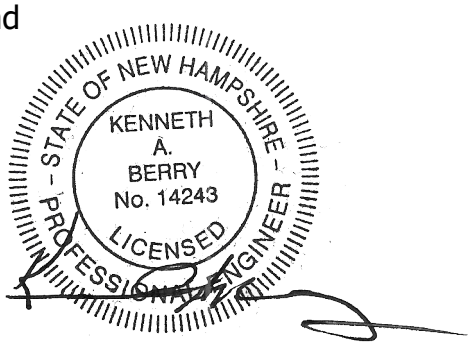
Land of:

5 Sherman Street LLC
242 Central Avenue
Dover, NH 03820

Cold Springs Road, Dover, NH
Tax Map H, Lot 47-A

Prepared By:

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



Project Number:
DB 2023-126

September 1, 2024
Revised: October 17, 2024
Revised: March 4, 2025

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1.0 Location of Practice:

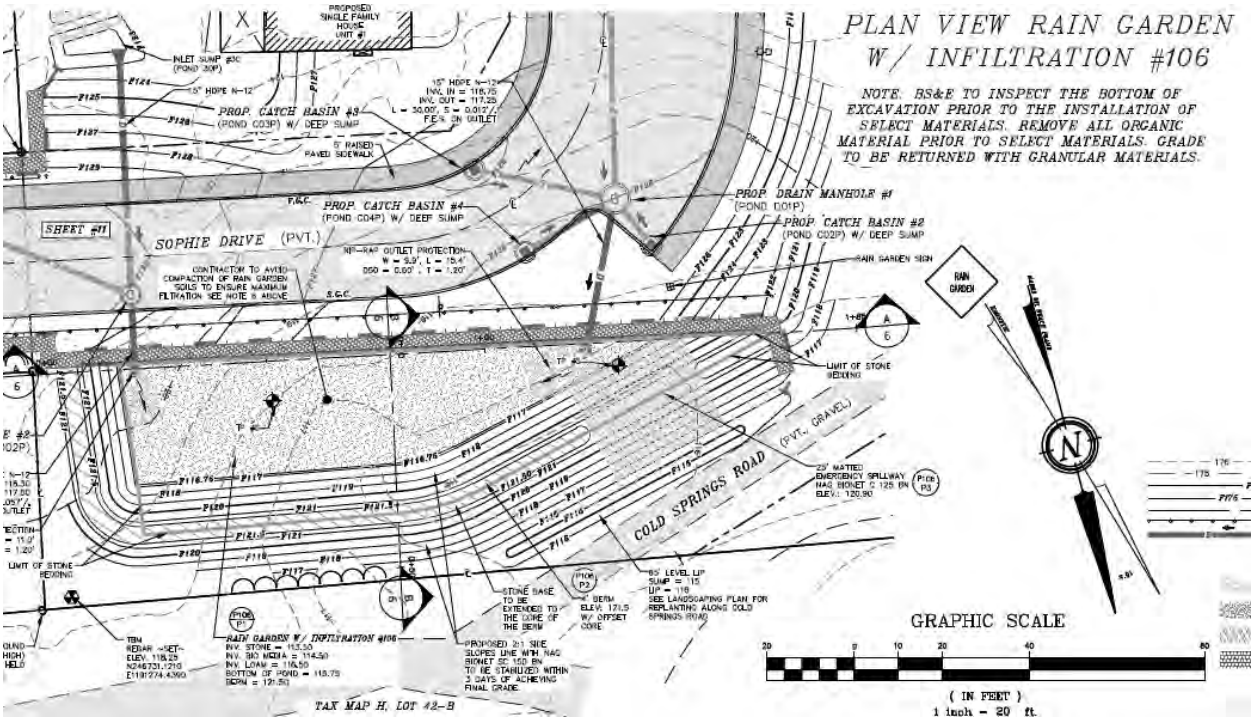
Rain Garden W/ Infiltration #106 (Pond #106) is located at the northeastern corner of the subject parcel and is the primary treatment practice for the project. This practice provides treatment for much of Sophie Drive and pre-treatment is provided by a water quality inlet.

2.0 Existing topography at the location of the practice

Infiltration Rain Garden #106 (Pond #106) is proposed in an area that is currently residential lawn with 0-15% slopes.

3.0 Test Pit Locations

Rain Garden W/ Infiltration #106 (Pond #106) – This practice has a surface area of 4,088 square feet (SF) and is proposed to be constructed over test pits #5 & #6. See test pit profiles below. See test pit locations on Rain Garden #106 Plan, sheet #13. These test pits were completed in September of 2024 by Berry Surveying & Engineering. The soil in the vicinity of this practice is Udorthents Excessively Drained, surrounded by Windsor Excessively Drained, considered to be a HSG A 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.

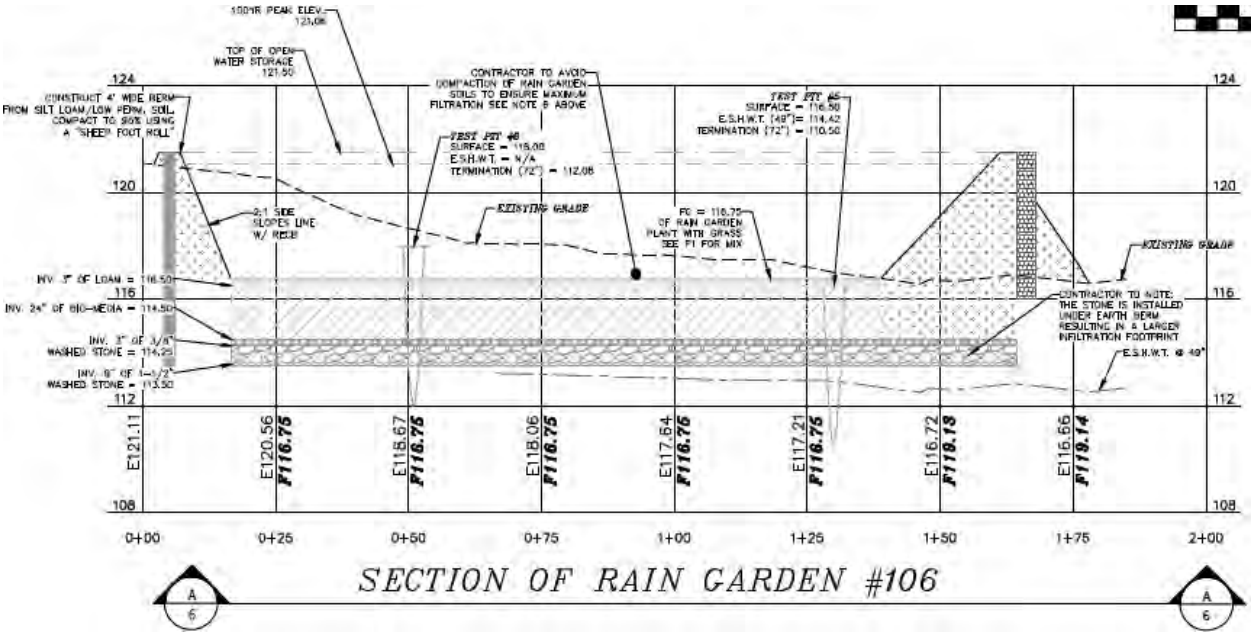


4.0 Seasonal high water table (SHWT) and bedrock elevations

Rain Garden W/ Infiltration #106 (Pond #106)

TP#5:	Existing Surface Elevation of TP =	116.50′
	SHWT = 50 Inches	112.40′
	Bedrock > 72 Inches	<110.50′
	Ground Water = N/A	
	Deepest Elevation of TP = 72 Inches	110.50′
TP#6:	Existing Surface Elevation of TP =	118.08′
	SHWT > 72 Inches	<112.08′
	Bedrock > 72 Inches	<112.08′
	Ground Water = N/A	
	Deepest Elevation of TP = 72 Inches	112.08′

Rain Garden W/ Infiltration #106 (Pond #106) Bottom: 113.50′



Cross Section Rain Garden W/ Infiltration #106 (See sheet #13, P-106)

5.0 Profile descriptions

The following test pit data was collected on two dates, see profile below.

TEST PIT #5

0-3.6'	10YR 6/4 FINE LOAMY SAND, GRANULAR, MEDIUM FIRM IN HOLE-FRIABLE IN HAND
3.6'-6.0'	2.5Y 7/4 FINE SAND, SINGLE GRAIN, LOOSE, REDOX. CONCENTRATIONS & DEPLETIONS @ 4.1'

TERMINATED: 6.0'
E.S.H.W.T.: 4.1'
ROOTS FEW AND FINE TO 2.9'
GROUND WATER OBSERVED: N/A
P= 4 MIN./IN.

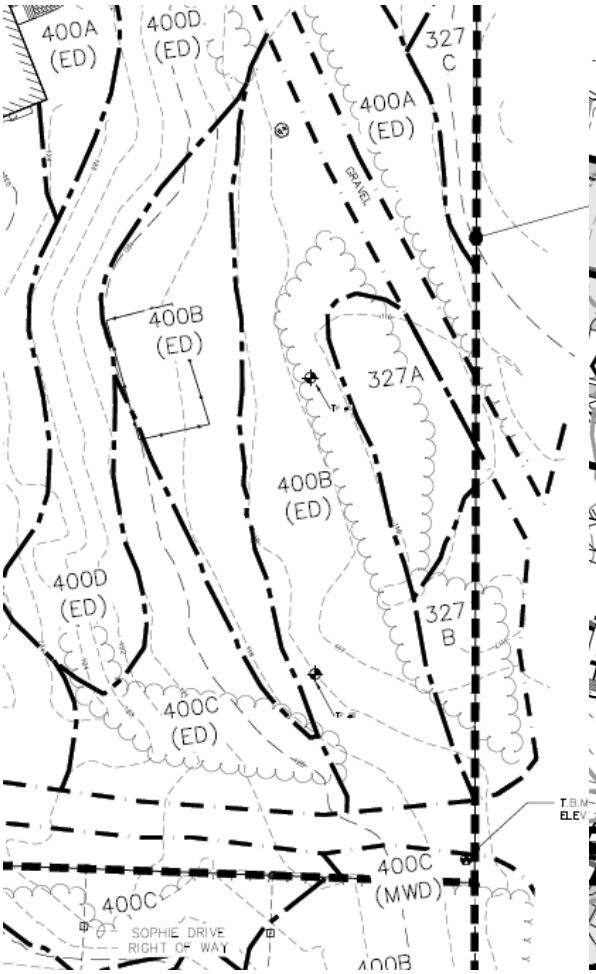
TEST PIT #6

0-1.4'	10YR 6/4 FINE LOAMY SAND, GRANULAR, FRIABLE
1.4'-6.0'	2.5Y 6/3 COARSE SAND, SINGLE GRAIN, LOOSE, COBBLES THROUGHOUT

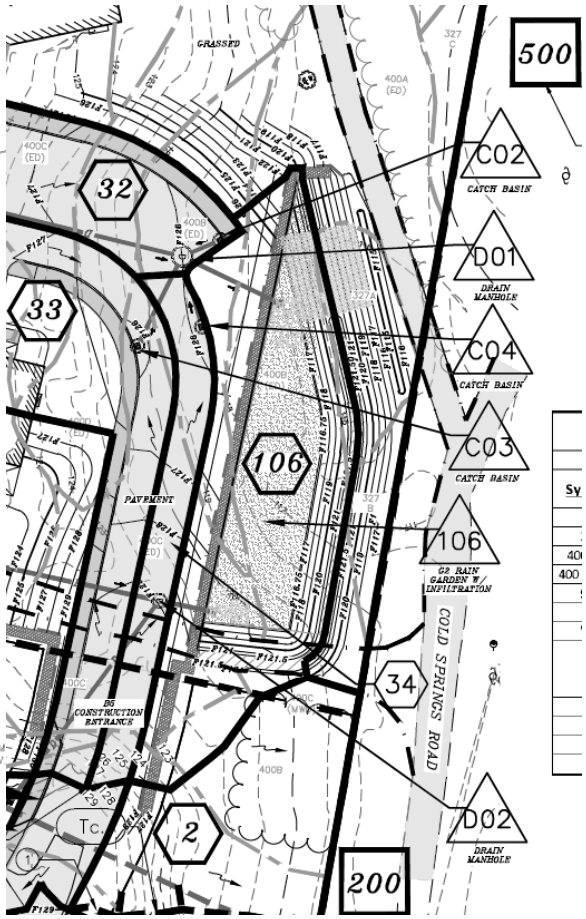
TERMINATED: 6.0'
E.S.H.W.T.: N/A
ROOTS FEW AND FINE TO 1.4'
GROUND WATER OBSERVED: N/A
P= 4 MIN./IN.

6.0 Soil plan in the area of the proposed practices

Rain Garden W/ Infiltration #106 (Pond #106) is located over Udorthents Excessively Drained Soil. See Test Pit #5 & #6.



See Sheet #4



See W2 Proposed Watershed Plan

7.0 Summary of Infiltration Rate

Rain Garden W/ Infiltration #106 is located within Udorthents Excessively Drained Soils, HSG A mapped by Site Specific Soil Survey by John P. Hayes III, CSS, with a documented Ksat of 6.0 inches per hour. The design exfiltration rate for the rain garden is 3.0 inches per hour.

Amoozemeter testing was not conducted on site and the alternate method of using the USDA / NRCS published values was employed. Reference is made to K Sat 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.

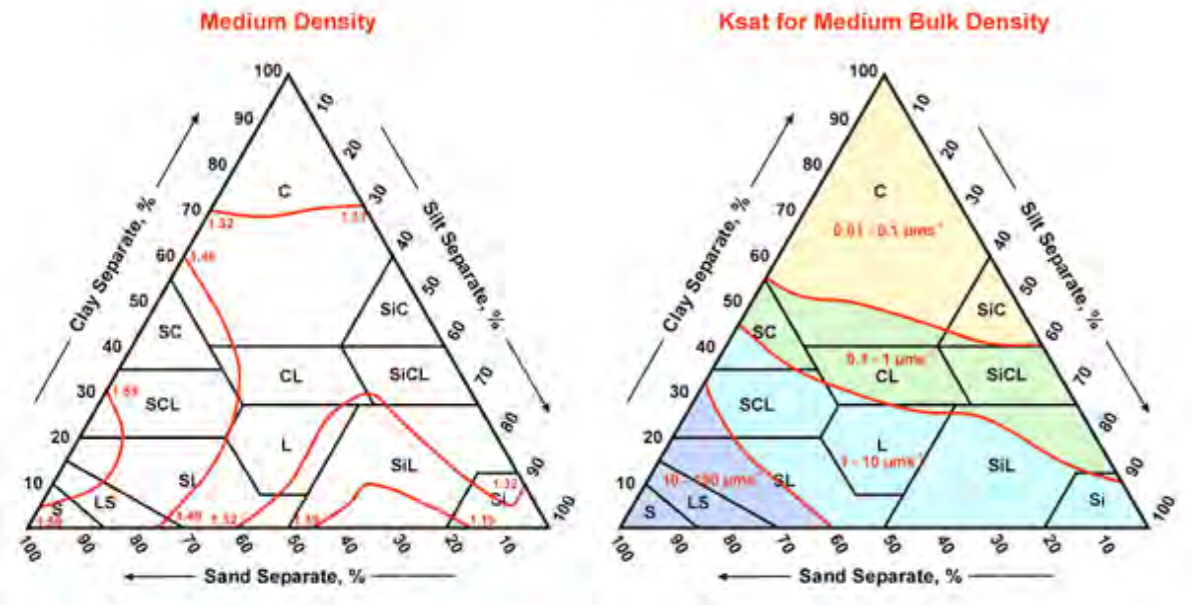
Respectfully submitted:

BERRY SURVEYING & ENGINEERING

Kevin R. Poulin, PE
Design Engineer

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

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

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
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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

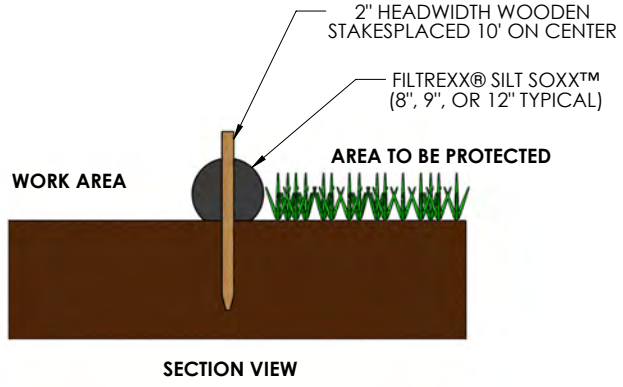
1. The Contractor shall maintain the Sediment control in a functional condition at all times and it shall be routinely inspected.
2. If the Sediment control has been damaged, it shall be repaired, or replaced if beyond repair.
3. The Contractor shall remove sediment at the base of the upslope side of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

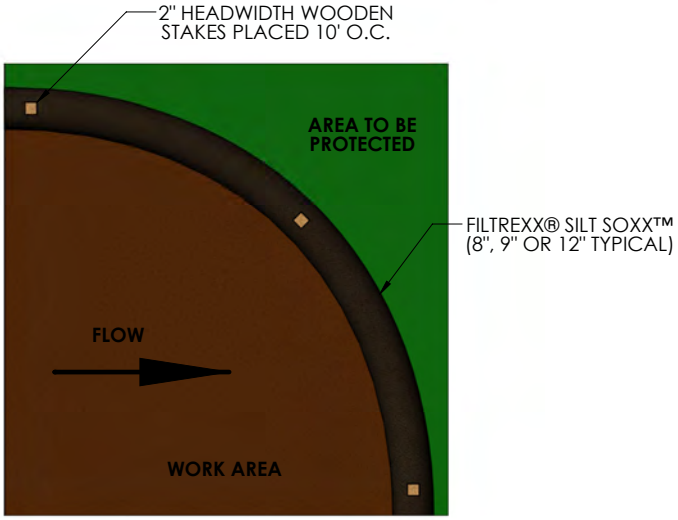
* Based on a failure point of 36 in (0.9 m) super silt fence (wire reinforced) at 1000 ft (303 m) of slope, watershed width equivalent to receiving length of sediment control device, 1 in/ 24 hr (25 mm/24 hr) rain event.

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

FILTREXX® SILT SOXX™

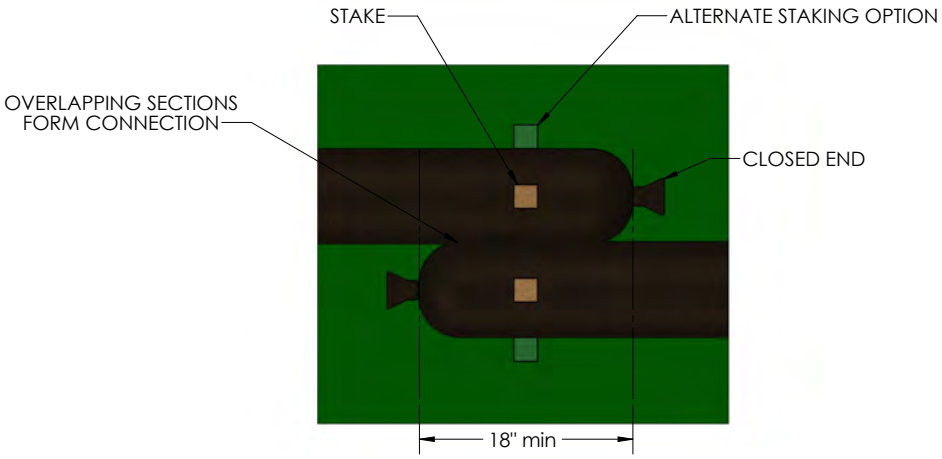


SECTION VIEW

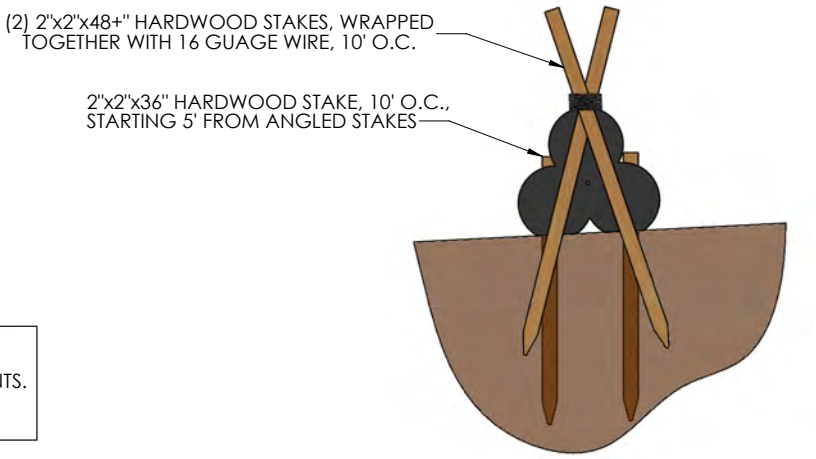


TOP VIEW

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.

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

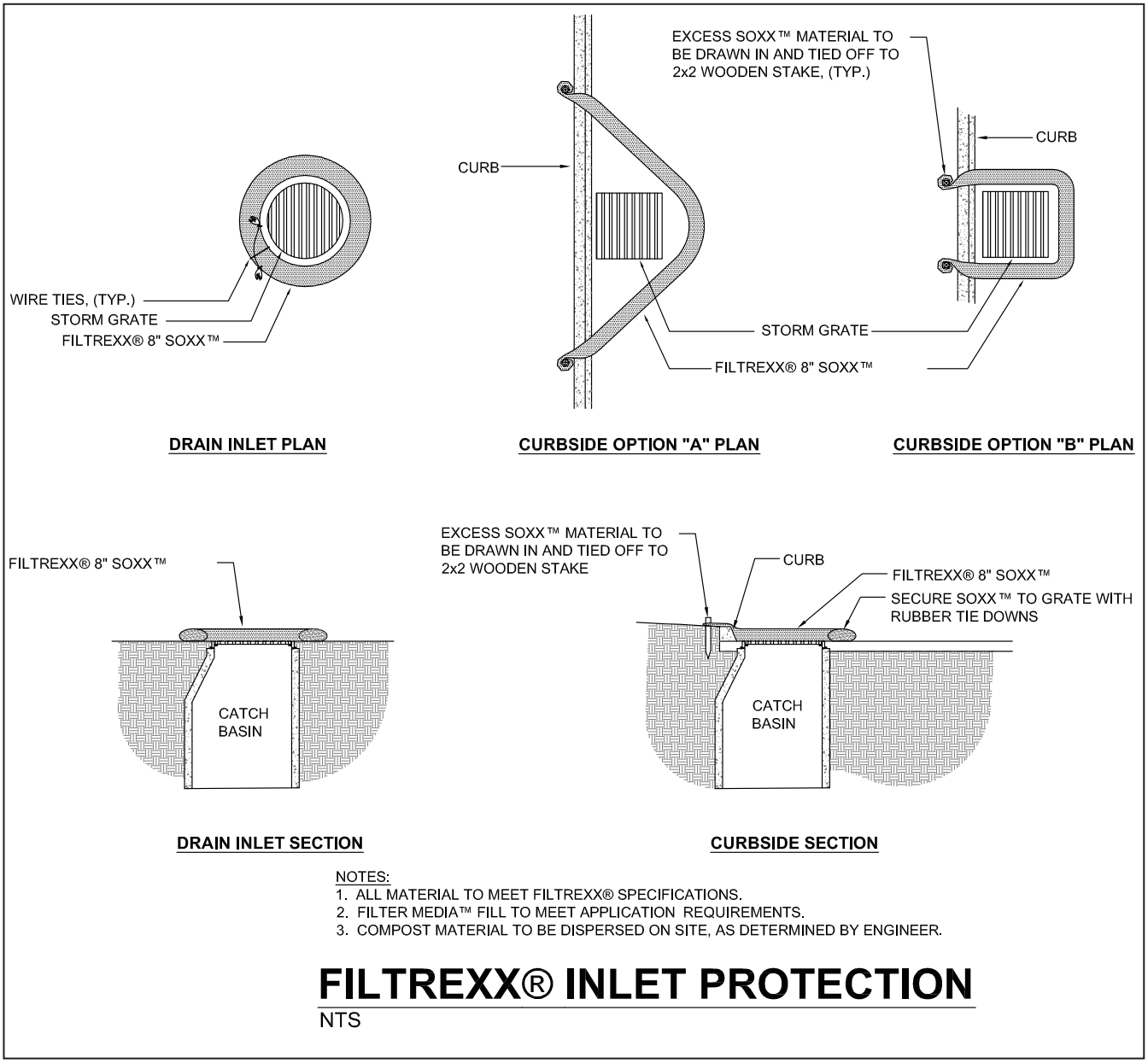
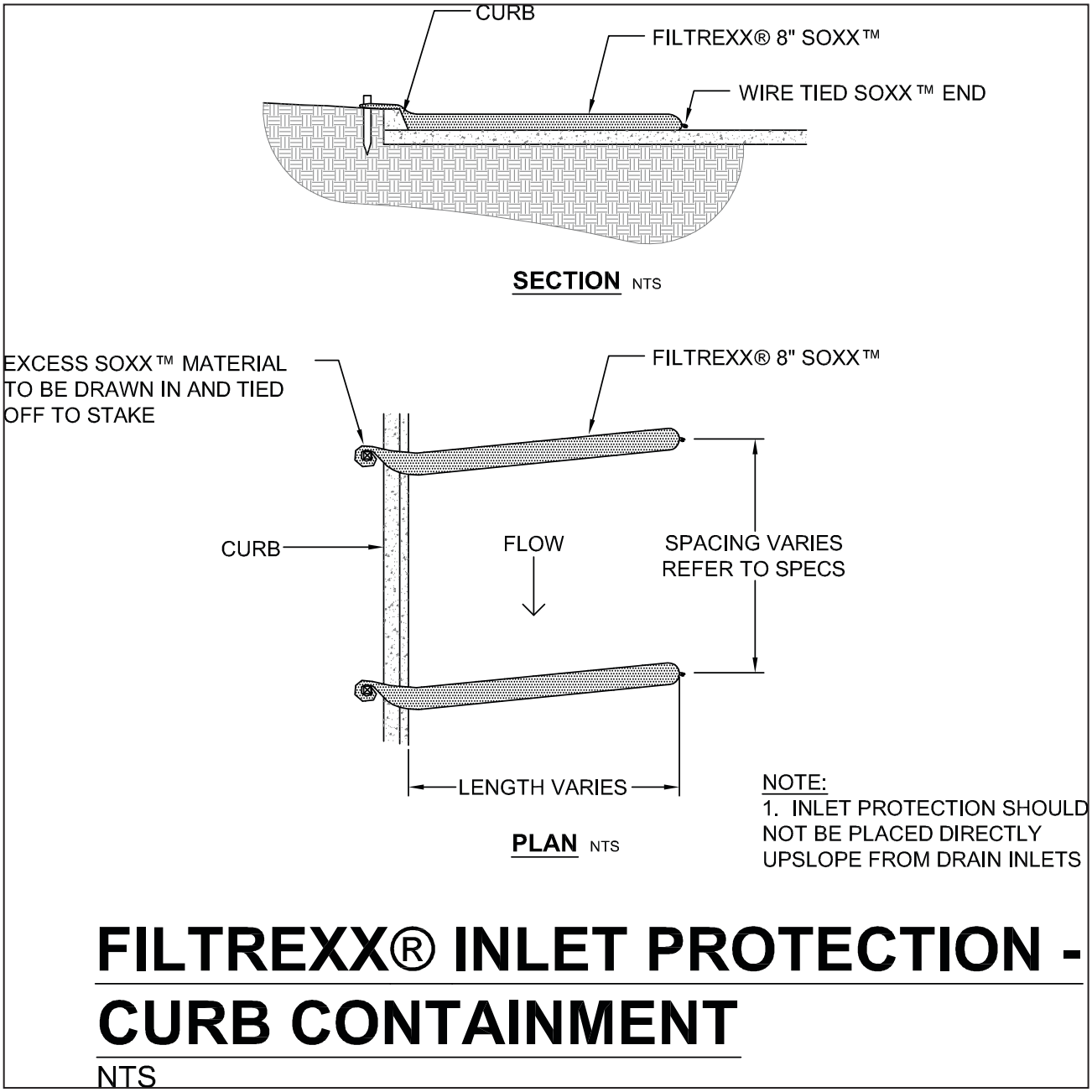


Figure 2.2. Engineering Design Drawing for Curb Sediment Containment Inlet Protection





NOTES:

1.) OWNER: 5 SHERMAN STREET LLC
242 CENTRAL AVE
DOVER, NH 03820

APPLICANT: KNOX MARSH DEVELOPMENT LLC
242 CENTRAL AVE
DOVER, NH 03820

2.) TAX MAP H, LOT 47-A

3.) S.C.R.D. BOOK 5190, PAGE 597

4.) LOT AREA: 117,854 Sq. Ft., 2.71 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 SOPHIE DRIVE.

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 RUNOFF DURING THE CONSTRUCTION PROCESS, IN ACCORDANCE WITH ENV-WQ 1507, IN ORDER TO PREVENT VIOLATIONS OF THE STORM WATER QUALITY STANDARDS.

12.) CATCH BASIN RIM IS TO BE RAISED WITH FINAL GRADE SO THAT STORMWATER RUNOFF CAN DRAIN PROPERLY THROUGHOUT CONSTRUCTION.

13.) SEE SHEET #2 FOR REMAINING EROSION & SEDIMENT CONTROL NOTES AND REQUIREMENTS OF THE CITY OF DOVER.

LEGEND:

- IRON BOUND ~FND~
- GRANITE BOUND ~FND~
- IRON PIPE ~FND~
- EXISTING/PROPOSED CATCH BASIN W/ STRUCTURE
- PROPOSED STORMWATER BMP OUTLET STRUCTURE
- TEMPORARY BENCHMARK (T.B.M.)
- E101 / E6 — DETAIL SHEET / DETAIL
- CONTOUR MINOR, EXISTING
- CONTOUR MAJOR, EXISTING
- CONTOUR MINOR, PROPOSED
- CONTOUR MAJOR, PROPOSED
- CENTER LINE
- EXISTING DRAINAGE LINE
- PROPOSED DRAINAGE LINE
- RIP RAP
- STORMWATER BEST MANAGEMENT PRACTICE (BMP)
- BERM
- RETAINING WALL
- SILT FENCE / EROSION MIX BERM
- FILTREXX 8" – 12" SILT SOXX AS SPECIFIED
- ORANGE CONSTRUCTION PERIMETER FENCE
- PERIMETER CONTROL
- LIMIT OF PROJECT DISTURBANCE (104,000 Sq. Ft.)
- STORMWATER BMP PROTECTION PERIMETER CONTROL ROADWAY CONSTRUCTION

NADB3 NH STATE PLANE
MAGNETIC
16.8

SOILS & DEWATERING:

26	*WINDSOR*	*LOAMY SAND*	*K= 0.17*

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

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

COVER MANAGEMENT DURING CONSTRUCTION FOR EXPOSED SOIL WILL INCLUDE HAY / STRAW APPLIED AT A RATE OF 2.0 TONS PER AGRE, 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. SEE E&SC NOTES SHEET E-102.

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

CITY OF DOVER PLANNING FILE #

REVISION	DATE	DESCRIPTION
#2	03-04-25	REVISED UNIT COUNT AND ASSOCIATED MODIFICATIONS
#1	10-17-24	REVISED UNIT COUNT AND ASSOCIATED MODIFICATIONS

EROSION AND SEDIMENT CONTROL PLAN
FOR
KNOX MARSH DEVELOPMENT LLC
LAND OF
5 SHERMAN STREET LLC
1 COLD SPRINGS ROAD
DOVER, N.H.
TAX MAP H, LOT 47-A

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

SCALE : 1 IN. EQUALS 20 FT.
DATE : SEPTEMBER 1, 2024
FILE NO. : DB 2023 – 126

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14347
LICENSED PROFESSIONAL ENGINEER

NOT FOR CONSTRUCTION

23-126 Sophie Drive

#Units	3
# Bedrooms	12
Flow Received from Units (gpm)	
GPM=(150GPD * #BR * 6)/1440min/day	
7.50	
Flow Received from Infiltration (gpm)	
Inf. Rate = ((300 GPD*8IN*LF)/5280 LF)/1440 min/day	
0.016	
Cumulative Infiltration (gpm)	
0.016	
Total Flow Received (BR Flow + INF) (gpm)	
7.52	
Prop. SMH #105	
Rim Elev	130.10
Inv Out (SMH #2)	122.10
Station	6+90.50
Offset	Lt. 7.9'
Depth SMH	8.00

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 (SMH #105)	122.10
Inv Out (SMH #104)	121.00
Length (ft)	50.00
Slope	0.022
Full Velocity (ft/s)	6.07
Discharge Rate (gpm)	950.25

#Units	8
# Bedrooms	30
Flow Received from Units (gpm)	
GPM=(150GPD * #BR * 6)/1440min/day	
18.75	
Flow Received from Infiltration (gpm)	
Inf. Rate = ((300 GPD*8IN*LF)/5280 LF)/1440 min/day	
0.048	
Cumulative Infiltration (gpm)	
0.064	
Total Flow Received (BR Flow + INF) (gpm)	
18.81	
Prop. SMH #104	
Rim Elev	130.10
Inv In (Unit #4)	121.07
Inv In (SMH #105)	121.00
Inv Out (SMH #103)	120.90
Station	7+47.25
Offset	Lt. 7.65'
Depth SMH	9.20

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 (SMH #104)	120.90
Inv Out (SMH #103)	119.35
Length (ft)	152.25
Slope	0.010
Full Velocity (ft/s)	4.13
Discharge Rate (gpm)	646.42

#Units	8
# Bedrooms	30
Flow Received from Units (gpm)	
GPM=(150GPD * #BR * 6)/1440min/day	
18.75	
Flow Received from Infiltration (gpm)	
Inf. Rate = ((300 GPD*8IN*LF)/5280 LF)/1440 min/day	
0.014	
Cumulative Infiltration (gpm)	
0.078	
Total Flow Received (BR Flow + INF) (gpm)	
18.83	
Prop. SMH #103	
Rim Elev	126.25
Inv In (SMH #104)	119.35
Inv Out (SMH #102)	119.25
Station	22+06.90
Offset	Rt. 5.60'
Depth SMH	7.00

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 (SMH #103)	119.25
Inv Out (SMH #102)	119.00
Length (ft)	44.75
Slope	0.006
Full Velocity (ft/s)	3.06
Discharge Rate (gpm)	478.85

#Units	8
# Bedrooms	30
Flow Received from Units (gpm)	
GPM=(150GPD * #BR * 6)/1440min/day	
18.75	
Flow Received from Infiltration (gpm)	
Inf. Rate = ((300 GPD*8IN*LF)/5280 LF)/1440 min/day	
0.040	
Cumulative Infiltration (gpm)	
0.118	
Total Flow Received (BR Flow + INF) (gpm)	
18.87	
Prop. SMH #102	
Rim Elev	126.60
Inv In (SMH #102)	119.00
Inv Out (SMH #101)	118.90
Station	4+55.10
Offset	Lt. 10'
Depth SMH	7.70

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 (SMH #102)	118.90
Inv Out (SMH #101)	118.25
Length (ft)	127.00
Slope	0.005
Full Velocity (ft/s)	2.93
Discharge Rate (gpm)	458.33

#Units	8
# Bedrooms	30
Flow Received from Units (gpm)	
GPM=(150GPD * #BR * 6)/1440min/day	
18.75	
Flow Received from Infiltration (gpm)	
Inf. Rate = ((300 GPD*8IN*LF)/5280 LF)/1440 min/day	
0.030	
Cumulative Infiltration (gpm)	
0.030	
Total Flow Received (BR Flow + INF) (gpm)	
18.78	
Prop. SMH #101	
Rim Elev	129.55
Inv In (SMH #102)	118.25
Inv Out (Ex SMH #3)	118.15
Station	3+21.60
Offset	Lt. 8.50'
Depth SMH	11.40

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 (SMH #101)	118.15
Inv Out (EX. SMH #3)	116.75
Length (ft)	94.50
Slope	0.015
Full Velocity (ft/s)	4.98
Discharge Rate (gpm)	779.79

#Units	8
# Bedrooms	30
Flow Received from Units (gpm)	
GPM=(150GPD * #BR * 6)/1440min/day	
18.75	
Cumulative Infiltration (gpm)	
0.148	
Total Flow Received (BR Flow + INF) (gpm)	
18.90	
Ex. SMH #3 Banner Dr. Sewer Discharge Permit D2022-0201	
Rim	124.83
Inv In (Prop. SMH #101)	116.75
Inv In (EX. SMH #4) (AS-Built)	116.55
Inv Out (EX. SMH #2)(AS-Built)	116.64

23-126 Sewer Calculations Summary		
Peaking Factor		6
Flow/Bedroom (gpd)		150
Proposed Units are Four (4) bedrooms with existing house being 2 bedrooms		
Total 8" SDR 35 Length (Ft) To EX SMH #3	Total Rate (Design Flow)(GPD):	Total Rate (Design Flow)(GPM):
	4,500	18.90
468.50	Total Rate (Infiltration)(GPD):	Total Rate (Infiltration)(GPM):
Berry Surveying & Engineering	213	0.15
Sophie Drive	Total Flow Received (GPD):	Total Flow Received (GPM):
4-Mar-25	4,713	19.05

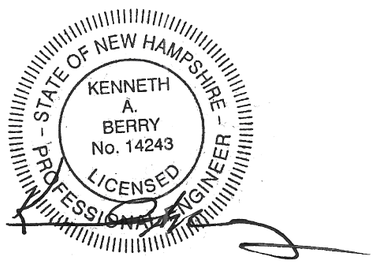


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SHEET 6	~ LOT MERGER PLAN*
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* INDICATES PLANS ARE TO BE RECORDED AT S.C.R.D.

"SOPHIE DRIVE"
TRANSFER OF DEVELOPMENT RIGHTS
SITE PLAN & LOT MERGER
FOR: KNOX MARSH DEVELOPMENT LLC
LAND OF
5 SHERMAN STREET, LLC
1 COLD SPRINGS ROAD
DOVER, N.H.
TAX MAP H, LOT 47-A

NOTE:

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

REQUIRED PERMITS:

~ NHDES ALTERATION OF TERRAIN PERMIT	(PENDING)
~ US EPA NOI & SWPPP	(PENDING)
~ NATURAL HERITAGE BUREAU	NHB24-2782
~ NH DIVISION OF HISTORICAL RESOURCES	R&C16560
~ NHDES SEWER DISCHARGE PERMIT	(PENDING)
~ EVERSOURCE WORK ORDER	(PENDING)

OWNER: 5 SHERMAN STREET LLC
242 CENTRAL AVENUE
DOVER, NH 03820

APPLICANT: KNOX MARSH DEVELOPMENT LLC
242 CENTRAL AVENUE
DOVER, NH 03820

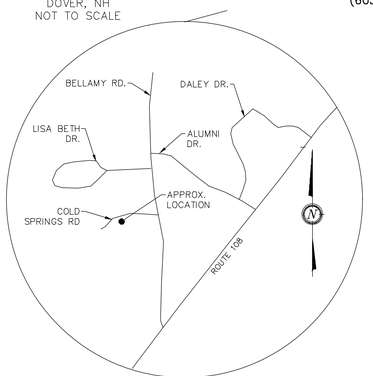
OWNER'S SIGNATURE DATE

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

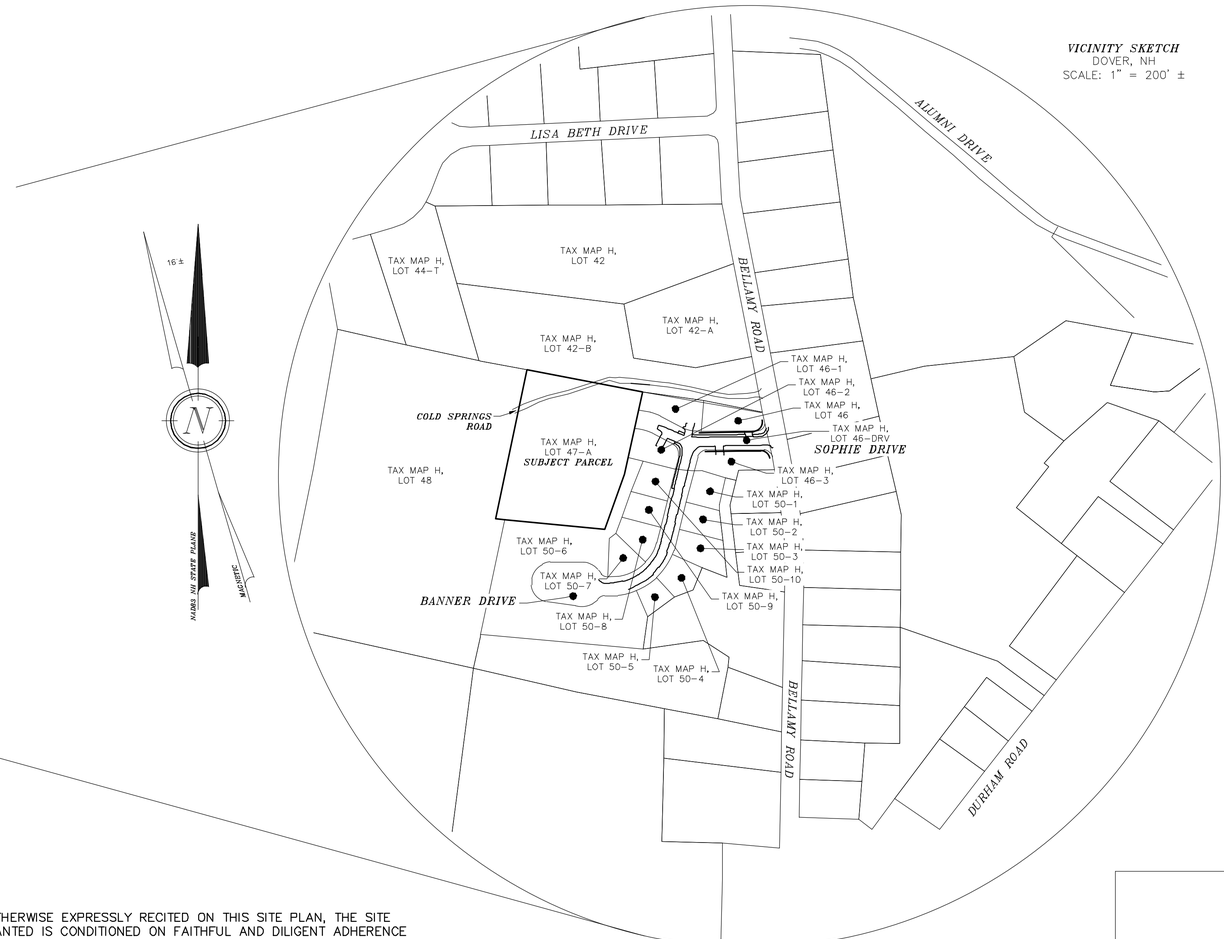
ENGINEER OF RECORD: KENNETH A. BERRY, PE, LLS
CPSWQ, CPESC, CESSWI
BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825
(603) 332-2863

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

LOCATION PLAN
DOVER, NH
NOT TO SCALE



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





JOHN P. HAYES, III CSS #87



JOHN P. HAYES, III CWS #18

WILDLIFE PROTECTION NOTES (ENV-WQ 1504.17(a)):

1.) ALL OBSERVATIONS OF THREATENED OR ENDANGERED SPECIES SHALL BE REPORTED IMMEDIATELY TO THE NEW HAMPSHIRE FISH AND GAME DEPARTMENT NONGAME AND ENDANGERED WILDLIFE ENVIRONMENTAL REVIEW PROGRAM BY PHONE AT 603-271-2461 AND BY EMAIL AT NHFGREVIEW@WILDLIFE.NH.GOV. EMAIL SUBJECT LINE: NHB24-2782, SOPHIE DRIVE, WILDLIFE SPECIES OBSERVATION.

2.) PHOTOGRAPHS OF THE OBSERVED SPECIES AND NEARBY ELEMENTS OF HABITAT OR AREAS OF LAND DISTURBANCE SHALL BE PROVIDED TO NHF&G IN DIGITAL FORMAT AT THE ABOVE EMAIL ADDRESS FOR VERIFICATION AS FEASIBLE.

3.) IN THE EVENT A THREATENED OR ENDANGERED SPECIES IS OBSERVED ON THE PROJECT SITE DURING THE TERM OF THE PERMIT, THE SPECIES SHALL NOT BE DISTURBED, HANDLED, OR HARMED IN ANY WAY PRIOR TO CONSULTATION WITH NHF&G AND IMPLEMENTATION OF CORRECTIVE ACTIONS RECOMMENDED BY NHF&G, IF ANY, TO ASSURE THE PROJECT DOES NOT APPRECIABLY JEOPARDIZE THE CONTINUED EXISTENCE OF THREATENED AND ENDANGERED SPECIES AS DEFINED IN FIS 1002.04

4.) THE NHF&G, INCLUDING ITS EMPLOYEES AND AUTHORIZED AGENTS, SHALL HAVE ACCESS TO THE PROPERTY DURING THE TERM OF THE PERMIT.

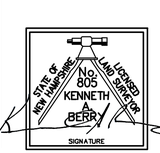
WHETHER OR NOT OTHERWISE EXPRESSLY RECITED ON THIS SITE PLAN, THE SITE PLAN APPROVAL GRANTED IS CONDITIONED ON FAITHFUL AND DILIGENT ADHERENCE BY THE OWNER/SUBDIVIDER/DEVELOPER OF ALL TERMS, CONDITIONS, PROVISIONS AND SPECIFICATIONS OF THE CITY OF DOVER LAND SITE PLAN REGULATIONS AS AMENDED OR AS MAY 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.

APPROVED DOVER



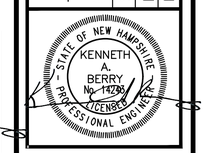
CITY OF DOVER PLANNING FILE #

REVISION	DATE	DESCRIPTION
#2	03-04-25	REVISED UNIT COUNT AND ASSOCIATED MODIFICATIONS
#1	10-17-24	REVISED UNIT COUNT AND ASSOCIATED MODIFICATIONS

TDR SITE PLAN & LOT MERGER
FOR
KNOX MARSH DEVELOPMENT LLC
LAND OF
5 SHERMAN STREET LLC
1 COLD SPRINGS ROAD
DOVER, N.H.
TAX MAP H, LOT 47-A

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

SCALE : AS NOTED
DATE : SEPTEMBER 1, 2024
FILE NO. : DB 2023 - 126

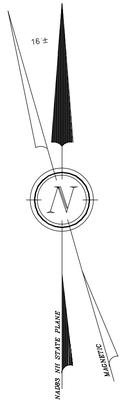


NOT FOR CONSTRUCTION

ABBREVIATION LEGEND:

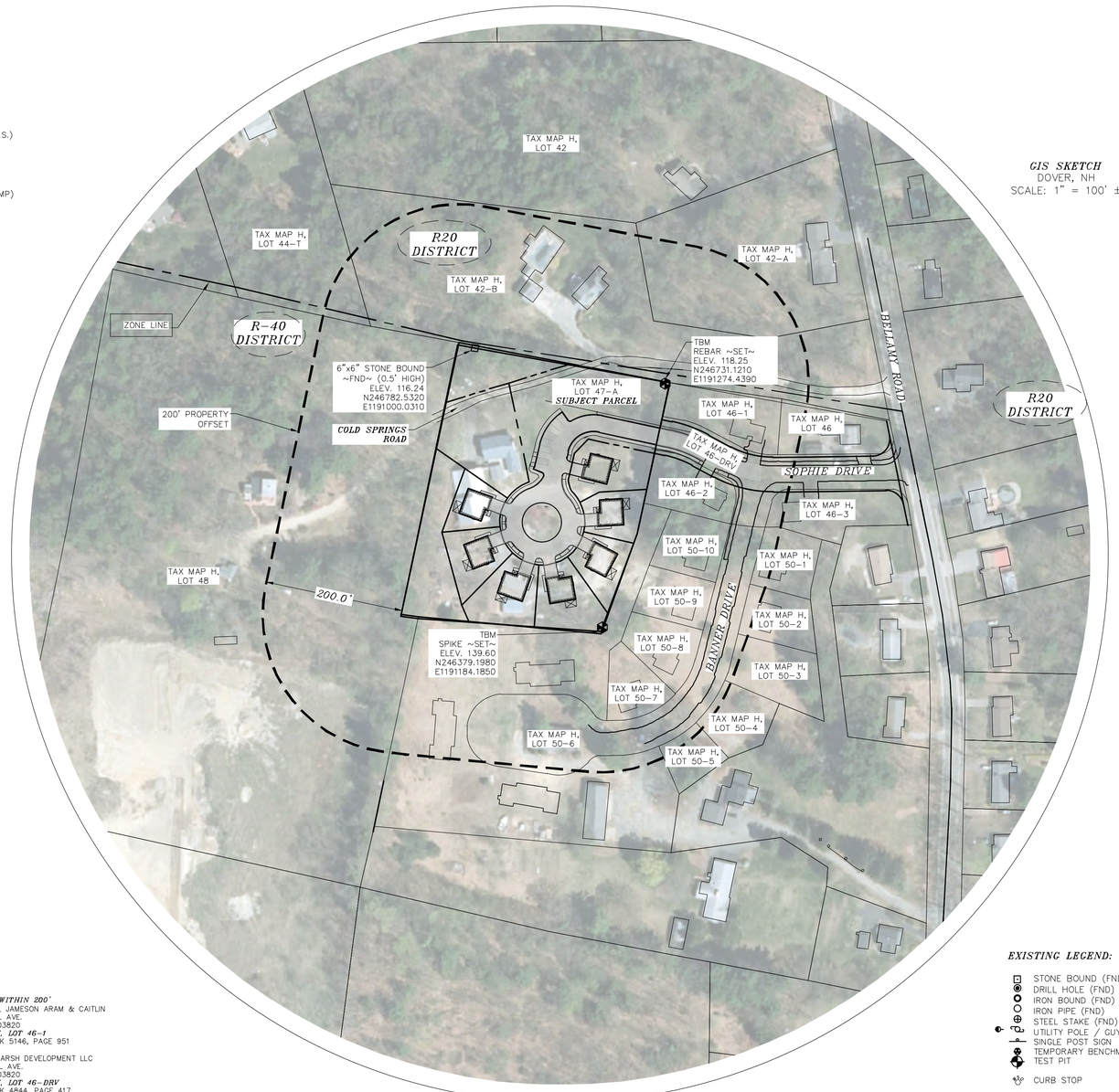
E.O.P.	EDGE OF PAVEMENT
V.G.C.	VERTICAL GRANITE CURB
S.G.C.	SLOPED GRANITE CURB
BITUM.	BITUMINOUS
E.O.P.	EDGE OF PAVEMENT
E.S.H.W.T	ESTIMATE SEASONAL HIGH WATER TABLE
TYP.	TYPICAL
U.G.E.	UNDER GROUND ELECTRIC / UTILITY
U.D.	UNDER DRAIN
INV.	INVERT
ELEV.	ELEVATION
F.E.S.	FLARED END SECTION
HDPE	HIGH DENSITY POLYETHYLENE
RECB	ROLLED EROSION CONTROL BLANKET
F.G.	FINISHED GRADE
E.G.	EXISTING GRADE
E.T.W.	EDGE OF TRAVELED WAY
T.B.R.	TO BE REMOVED
PL	PROPERTY LINE
EL	EASEMENT LINE
CL	CENTER LINE
CF	CUBIC FEET
P.C.	POINT OF CURVATURE
P.T.	POINT OF TANGENCY
P.V.C.	POINT OF VERTICAL CURVE
P.V.I.	POINT OF VERTICAL INTERSECTION
P.V.T.	POINT OF VERTICAL TANGENCY
EX.	EXISTING
PROP.	PROPOSED
STA.	STATION
'/,	FEET / FEET

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



PROPOSED LEGEND:

- 3/4" REBAR W/ ID CAP ~TBS~
- 1/2" REBAR W/EASEMENT CAP ~TBS~
- E101 / E6 — DETAIL SHEET / DETAIL
- P176 / P175 — CONTOUR MINOR, PROPOSED; CONTOUR MAJOR, PROPOSED
- ROAD CENTERLINE
- SHOULDER
- D — DRAIN CULVERT W/ FLARED END SECTION (F.E.S.)
- GUARD RAIL
- RIP RAP
- STORMWATER BEST MANAGEMENT PRACTICE (BMP)
- BERM
- RETAINING WALL
- DRAIN MANHOLE W/STRUCTURE
- CATCH BASIN W/ STRUCTURE
- TRANSFORMER / J.BOX
- UGE — UGE — UGE — UNDERGROUND UTILITY
- GATE VALVE
- CURB STOP
- FIRE HYDRANT
- THRUST BLOCKS
- LAMP "A" POLE MOUNTED 17' HIGH
- LAMP "B" POLE MOUNTED 16' HIGH
- LAMP "C" BUILDING MOUNTED 8' HIGH
- SEWER MANHOLE W/ STRUCTURE
- PROPOSED WATER MAIN LINE
- WS — WS — PROPOSED WATER SERVICE
- PROPOSED SEWER LINE
- SS — SS — PROPOSED GRAVITY SEWER SERVICE
- E175.31 / F175.31 — EXISTING SPOT GRADE; PROPOSED SPOT GRADE
- FLOW ARROW
- SAW CUT & MILL
- SF — SILT FENCE / EROSION MIX BERM
- SS SS SS — P/C P/C — C C C — FILTREXX 8" – 12" SILT SOXX AS SPECIFIED; PERIMETER CONTROL (SEE E-101); CONSTRUCTION FENCE
- SNOW STORAGE
- BITUMINOUS CONCRETE
- BRICK WALKWAY
- EXISTING GRAVEL



SIGN ID NUMBER	SIGN SIZE (WIDTH x HEIGHT)	SIGN	TEXT DIMENSIONS	NO. OF SIGNS	BACKGROUND	LEGEND	BORDER	POST SIZE & QUANTITY
R2-1	24"x30"	SPEED LIMIT 10	SEE STANDARD HIGHWAY SIGNS 2004 EDITION PUBLISHED BY USDOT – FHWA	1	WHITE	GREEN	GREEN	U-CHANNEL (1)
R6-1R	36"x12"	ONE WAY	SEE STANDARD HIGHWAY SIGNS 2004 EDITION PUBLISHED BY USDOT – FHWA	1	BLACK W/ WHITE ARROW	BLACK	WHITE	U-CHANNEL (1)
	24"x30"	NO PARKING EXCEPT THIS SIDE OF STREET		1	WHITE	BLACK	BLACK	U-CHANNEL (1)
R7-8	12"x18"	RESERVED PARKING	SEE STANDARD HIGHWAY SIGNS 2004 EDITION PUBLISHED BY USDOT – FHWA	1	WHITE	GREEN W/ WHITE SYMBOL ON BLUE	RED	U-CHANNEL (1)
R7-8a	12"x6"	VAN ACCESSIBLE	SEE STANDARD HIGHWAY SIGNS 2004 EDITION PUBLISHED BY USDOT – FHWA	1	WHITE	GREEN	GREEN	U-CHANNEL (0)
	4"x4"	BIORETENTION SYSTEM	SEE STANDARD HIGHWAY SIGNS 2004 EDITION PUBLISHED BY USDOT – FHWA	1	GREEN	WHITE	WHITE	U-CHANNEL (1)

ABUTTERS WITHIN 200'
N/F LASSOR, JAMESON ARAM & CAITLIN
100 CENTRAL AVE.
DOVER, NH 03820
TAX MAP H, LOT 46-1
S.C.R.D. BOOK 5146, PAGE 951

N/F KNOX MARSH DEVELOPMENT LLC
242 CENTRAL AVE.
DOVER, NH 03820
TAX MAP H, LOT 46-DRV
S.C.R.D. BOOK 4844, PAGE 417

N/F GALLANT, TUCKER & SETFFANY
10 SOPHIE DRIVE
DOVER, NH 03820
TAX MAP H, LOT 46-2
S.C.R.D. BOOK 5147, PAGE 297

N/F DOVE DEVELOPMENT GROUP LLC
242 CENTRAL AVE.
DOVER, NH 03820
TAX MAP H, LOT 50-6
S.C.R.D. BOOK 4992, PAGE 70

N/F INVICTUS HOLDINGS LLC
C/O SUMMIT LAND DEVELOPMENT LLC
340 CENTRAL AVE. STE. 202
DOVER, NH 03820
TAX MAP H, LOT 48
S.C.R.D. BOOK 4475, PAGE 717

N/F WEIDMANN, FREDDY R. & ELIZABETH A.
47 BELLAMY ROAD
DOVER, NH 03820
TAX MAP H, LOT 42-B
S.C.R.D. BOOK 2780, PAGE 846

N/F LOUGHLIN, RYAN M. & CATHERINE
43 LISA BETH CIRCLE
DOVER, NH 03820
TAX MAP H, LOT 44-T
S.C.R.D. BOOK 5096, PAGE 508

ABUTTERS WITHIN 200' CONT.:
N/F HOWARD, KEITH M. & TOWLE, DIENNE M.
43 BELLAMY ROAD
DOVER, NH 03820
TAX MAP H, LOT 42
S.C.R.D. BOOK 3156, PAGE 519

N/F HOWARD, KAREN M, TRUSTEE
THE KAREN M. HOWARD REV LIVING TRUST
45 BELLAMY ROAD
DOVER, NH 03820
TAX MAP H, LOT 42-A
S.C.R.D. BOOK 5010, PAGE 317

N/F KNOX MARSH DEVELOPMENT LLC
242 CENTRAL AVE.
DOVER, NH 03820
TAX MAP H, LOT 46
S.C.R.D. BOOK 4844, PAGE 417

N/F ROSSI, CHRISTOPHER T. &
BAU, CHRISTIANA
6 SOPHIE DRIVE
JDOVER, NH 03820
TAX MAP H, LOT 46-3
S.C.R.D. BOOK 5149, PAGE 322

ABUTTERS WITHIN 200' CONT.:
N/F STAHRE, VICTORIA L.
12 SULLIVAN FALLS ROAD
DURHAM, NH 03824
TAX MAP H, LOT 50-10
S.C.R.D. BOOK 5201, PAGE 889

N/F 5 SHERMAN STREET LLC
242 CENTRAL AVE.
DOVER, NH 03820
TAX MAP H, LOT 50-1, 50-2, 50-3 50-4, 50-5, 50-7, 50-8 & 50-9
S.C.R.D. BOOK 5178, PAGE 407

EXISTING LEGEND:

- STONE BOUND (FND)
- DRILL HOLE (FND)
- IRON BOUND (FND)
- IRON PIPE (FND)
- STEEL STAKE (FND)
- UTILITY POLE / GUY WIRE
- SINGLE POST SIGN
- TEMPORARY BENCHMARK
- TEST PIT
- CURB STOP
- GATE VALVE
- FIRE HYDRANT
- CB — CATCH BASIN
- S — SEWER MANHOLE
- >20% SLOPES
- STONE WALL
- ABUTTING PROPERTY LINE
- BUILDING SETBACK LINE
- EWL — EWL — EXISTING WATER LINE
- S — S — EXISTING SEWER LINE
- D — EXISTING DRAIN LINE
- OHU — OHU — OHU — OHU — OVERHEAD UTILITIES
- 116 — EXISTING CONTOUR MINOR
- 115 — EXISTING CONTOUR MAJOR
- EXISTING TREELINE
- NRCS SOIL LINE/LABEL
- FND — FOUND
- TYP — TYPICAL
- S.C.R.D. — STRAFFORD COUNTY REGISTRY OF DEEDS
- S.G.C — SLOPED GRANITE CURB

CITY OF DOVER PLANNING FILE #

REVISION	DATE	DESCRIPTION
#2	03-04-25	REVISED UNIT COUNT AND ASSOCIATED MODIFICATIONS
#1	10-17-24	REVISED UNIT COUNT AND ASSOCIATED MODIFICATIONS

NEIGHBORHOOD PLAN
FOR
KNOX MARSH DEVELOPMENT LLC
LAND OF
5 SHERMAN STREET LLC
1 COLD SPRINGS ROAD
DOVER, N.H.
TAX MAP H, LOT 47-A

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

SCALE : AS SHOWN
DATE : SEPTEMBER 1, 2024
FILE NO. : DB 2023 – 126

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14248
LICENSED PROFESSIONAL ENGINEER

SHEET 1 OF 33

NOT FOR CONSTRUCTION

NOTES:

1.) OWNER: 5 SHERMAN STREET LLC
242 CENTRAL AVE.
DOVER, NH 03820
ROBERT BALDWIN MANAGING MEMBER

APPLICANT: KNOX MARSH DEVELOPMENT LLC
242 CENTRAL AVE
DOVER, NH 03820
ROBERT BALDWIN MANAGING MEMBER

2.) TAX MAP H, LOT 47-A

3.) S.C.R.D. BOOK 5190, PAGE 597

4.) LOT AREA: 117,854 Sq. Ft., 2.71 Ac.

5.) OWNER: KNOX MARSH DEVELOPMENT LLC (LOT MERGER ONLY)
242 CENTRAL AVE
DOVER, NH 03820
ROBERT BALDWIN MANAGING MEMBER

6.) TAX MAP H, LOT 46-DRV

7.) S.C.R.D. BOOK 4844, PAGE 417

8.) LOT AREA: 18,096 Sq. Ft., 0.42 Ac.

9.) ZONING R-40 (RURAL RESIDENTIAL)
SECONDARY GROUNDWATER RECHARGE (SGR)
SETBACKS:
FRONT ~ 40'
SIDE ~ 25'
REAR ~ 30'
MIN. LOT SIZE: 40,000 Sq. Ft.
MIN. FRONTAGE: 150'
MAX. LOT COVERAGE: 10% (20% MAX IN SGR)
MAX. BUILDING HEIGHT: 35'

ZONING: TRANSFER OF DEVELOPMENT RIGHTS (TDR) (% FUNCTION OF LOT MERGER)

REQUIRED:	PROVIDED:
LOT SIZE: N/A Sq. Ft.	(135,950 Sq.Ft.)
MAX. LOT COVERAGE: N/A	(36.56%) (SEE CUP REQUEST)
MINIMUM FRONTAGE: 40'	(101.78' BELLAMY ROAD)
ABUT A STREET SETBACK: 20'	(+20')
ABUT A SIDE LOT LINE: 10'	(+10')
ABUT A REAR LOT LINE: 30'	(+30')
30' EXTERIOR BUFFER	(TDR RELIEF SOUGHT TO USE TDR SETBACKS)

10.) THE INTENT OF THIS PLAN SET IS TO REDEVELOP THE EXISTING PARCEL, WHICH CONTAINS 1 SINGLE FAMILY HOME TO REMAIN, USING CHAPTER 170-27.2 (TRANSFER OF DEVELOPMENT RIGHTS), TO CREATE A NEIGHBORHOOD WITH 7 NEW SINGLE FAMILY HOMES FOR A TOTAL OF 8 UNITS.

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 33017C0310E, 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 DECEMBER 2023 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 DECEMBER 2023 UNDER NO SNOW CONDITIONS.

15.) THIS SITE IS SERVICED BY MUNICIPAL SEWER AND WATER, HOWEVER CURRENTLY CONTAINS AND UTILIZES AN EXISTING EFFLUENT DISPOSAL SYSTEM AND WELL.

16.) WETLANDS WERE DELINEATED BY JOHN P. HAYES, CERTIFIED WETLANDS SCIENTIST, IN ACCORDANCE WITH CHAPTER 170-27.1 OF THE ZONING ORDINANCE, IN FEBRUARY OF 2024. NO WETLANDS WERE FOUND ON SITE.

17.) 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 KNOWN TO THE APPLICANT OR PUBLISHED ON THE CITY OF DOVER PUBLIC INFORMATION GIS.

18.) 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.

19.) THE INSTALLATION OF ELECTRIC POWER, CABLE TELEVISION AND TELEPHONE LINES SHALL BE UNDERGROUND THROUGHOUT THE SITE PROPOSED. OVERHEAD POWER WILL BE PROVIDED TO A POTENTIAL DROP POLE.

20.) 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.

21.) 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.

22.) THE LIMITS OF CONSTRUCTION DISTURBANCE THAT ARE LOCATED IN OR WITHIN THE 50 FT. OF CONSERVATION AND WETLAND DISTRICTS SHALL BE STAKED, FLAGGED AND CLEARLY IDENTIFIED PRIOR ANY EARTH DISTURBING ACTIVITY OCCURS: (NO 50' BUFFERS ON SITE SO NOT APPLICABLE FOR THIS PROJECT.)

23.) ALL TREATMENT SWALES TO BE CONSTRUCTED SHALL HAVE SOD BOTTOMS. (NOT APPLICABLE)

24.) A LETTER OF CREDIT FOR THE COST OF RE-VEGETATING ALL DISTURBED AREAS ON THE SITE SHALL BE SUBMITTED, AND THE APPROVED CONSTRUCTION SIGN INSTALLED PRIOR TO ANY EARTH DISTURBING ACTIVITY OCCURS. THE PROPOSED PROJECT WILL CONSIST OF ONE PHASE AND WILL DISTURB 104,000 Sq.Ft. 2.39 Ac..

25.) 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.

26.) 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.

27.) BUILDING ADDRESSES SHALL BE ASSIGNED BY THE BUILDING OFFICIAL AT THE TIME OF ISSUANCE OF A BUILDING PERMIT.

28.) THE PROPOSED USE FOR THE SITE IS FOR THE 1 EXISTING SINGLE HOME TO REMAIN AND 7 NEW SINGLE FAMILY HOMES TO BE CONSTRUCTED.

29.) THE FOLLOWING FEDERAL AND STATE PERMITS HAVE BEEN ISSUED FOR THE SUBJECT PROPERTY:
NHDES ALTERATION OF TERRAIN PERMIT: (PENDING)
NHDES SEWER DISCHARGE PERMIT: (PENDING)
EPA NOTICE OF INTENT/SWPPP (NOI): (PENDING)
DIVISION OF HISTORICAL RESOURCES: R&C16560
NATURAL HERITAGE BUREAU: NHB24-2782

30.) COMMERCIAL VEHICLE ROUTE DURING CONSTRUCTION SHALL CONFORM TO DOVER CITY CODE OR BE COORDINATED WITH THE COMMUNITY SERVICES DIRECTOR.

31.) ANY RETAINING WALL TALLER THAN FOUR FEET (4') REQUIRES ISSUANCE OF A BUILDING PERMIT FROM INSPECTION SERVICES.

32.) ANY FENCE TALLER THAN SEVEN FEET (7') REQUIRES THE ISSUANCE OF A BUILDING PERMIT FROM INSPECTION SERVICES.

33.) 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.

34.) FIRE DEPARTMENT ACCESS ROADS SHALL BE INSTALLED AND MAINTAINED TO SUPPORT THE IMPOSED LOADS OF FIRE APPARATUS IN ALL WEATHER CONDITIONS AT ALL TIMES.

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

36.) APPROVED BACKFLOW PREVENTERS SHALL BE PROVIDED FOR DOMESTIC WATER LINES.

37.) SITE IS TO COMPLY WITH NFPA 1 CHAPTER 18.

NOTES CONTINUED:

38.) SOPHIE DRIVE WAS INITIALLY PROPOSED AND CONTINUES TO BE PROPOSED TO BE PRIVATE. REFER TO THE DEVELOPMENT AGREEMENT FOR ROAD & DRAINAGE RESPONSIBILITIES. SOPHIE DRIVE WILL ALWAYS BE PRIVATE AND WILL NEVER BE ACCEPTED BY THE CITY OF DOVER.

39.) 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**

40.) THE SITE LAYOUT IS DESIGNED IN COMPLIANCE WITH APPLICABLE ACCESSIBILITY REGULATIONS. THE PROPOSED STRUCTURE WILL ALSO BE DESIGNED IN ACCORDANCE WITH APPLICABLE ACCESSIBILITY REGULATIONS (I.E. IBC, ANSI-117.1) AND NH RSA 155-A:5.

41.) PRIVATE TRASH PICKUP WILL BE DONE THROUGH THE USE OF TOTTERS ON PADS, WITH SCREENING, AND WILL BE COLLECTED THROUGH A PRIVATE WASTE PICK UP COMPANY.

42.) HEATING & COOLING FOR PROPOSED UNITS IS TO BE DONE VIA MINI-SPLITS WITH PAD MOUNTED HEAT PUMPS.

43.) FULL FOUNDATIONS ARE ASSUMED FOR THE SINGLE FAMILY HOMES. SUMP PUMPS ARE REQUIRED DUE TO LACK OF PROPER ELEVATION FOR DAYLIGHT DRAINAGE. THE SUMP PUMPS MUST NOT BE TIED TO THE SEWER SYSTEM.

44.) PROJECT DISTURBANCE: TOTAL 104,000 Sq. Ft. (2.39 Ac.) 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.

45.) EXISTING BUILDING COVERAGE AREA: 5,364 Sq.Ft., (3.95%) (PERCENTAGES ARE FUNCTION OF LOT MERGER, 135,950 Sq. Ft., 3.12 Ac.)
EXISTING IMPERVIOUS AREA: 16,886 Sq. Ft. (12.41%) (INCLUDES SOPHIE DRIVE)
EXISTING IMPERVIOUS AREA/LOT COVERAGE 22,250 Sq.Ft., (16.37%)

PROPOSED BUILDING IMPERVIOUS AREA: 12,655 Sq. Ft. (9.31%)
PROPOSED IMPERVIOUS AREA (ROAD EXPANSION, DRIVEWAYS, CURB, SIDEWALKS, BIKE RACK, PATIO, EX. GRAVEL DRIVEWAY, COLD SPRINGS ROAD & EX. SOPHIE DRIVE & SIDEWALKS): 37,041 Sq. Ft. (27.25%)
TOTAL PROPOSED IMPERVIOUS COVER: 49,696 Sq. Ft. (36.56%)

46.) TWO (2) HOUSES SHALL HAVE WIRING FOR ELECTRIC VEHICLE CHARGING IN THE GARAGE. TWO (2) ARE REQUIRED, TWO (2) ARE PROPOSED.

47.) THE OWNERS AND THEIR SUCCESSORS ARE RESPONSIBLE FOR THE LIFETIME MAINTENANCE OF ALL BUFFERING AND INTERNAL LANDSCAPING.

48.) THE PERIMETER BOUNDARY WILL BE STAKED OUT BY BERRY SURVEYING & ENGINEERING PRIOR TO THE START OF CONSTRUCTION.

49) THE APPLICANT IS TO PROVIDE SURETY WITHIN THE CONFINES OF NH RSA 674:36.

50.) DURING PERIODS OF HEAVY SNOW AND WHEN TEMPORARY PILES ARE USED ON SITE, SNOW IS TO BE LOADED INTO TRUCKS AND REMOVED FROM THE SITE. SNOW IS TO BE DISPOSED OF ON AN APPROVED SNOW DUMP.

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.) 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.

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

13.) UPON FINAL COMPLETION AND 85% STABILIZATION THE DRAINAGE SYSTEM IS TO BE CLEANED OF ALL DEBRIS TO INCLUDE THE PUMPING OF THE BASIN SUMPS. SEE SHEET E102, DETAIL E18 FOR DEFINITION OF STABLE. ALSO TO BE DONE ONCE A YEAR DURING THE CONSTRUCTION PROCESS.

14.) ALL DRAINAGE PIPE IS TO BE HDPE N-12. INDIVIDUAL PIPE SIZES ARE SPECIFIED, RECYCLED PIPE IS APPROVED FOR PROJECT SITE. RECYCLED HDPE PIPE "GREEN PIPE" IS ACCEPTABLE FOR THIS PROJECT SITE.

15.) CATCH BASINS WITHIN ANY GRASS LINED AREAS OUTSIDE THE ROADWAY WILL HAVE "BEE HIVE" GRATES TO NOT ALLOW FOR ENTRAPMENT OF ANIMALS IN THE STRUCTURE. BASINS ARE TO HAVE NH STANDARD FRAMES AND GRATES MADE IN NORTH AMERICA. GRATES ARE TO BE INSTALLED BINDER FLUSH PRIOR TO BASE PAVE. UPON PROJECT COMPLETION FRAMES AND GRATES ARE TO BE CUT AND RIM RAISED TO FINAL PAVEMENT SURFACE. THIS IS TO ENSURE STORMWATER ENTERS THE SYSTEM AS DESIGN DURING THE INTERIM CONSTRUCTION PERIOD.

16.) DESIGN ENGINEER OF RECORD SHALL PROVIDE SIGNED LETTER TO CITY ENGINEER CERTIFYING THAT THE STORMWATER MANAGEMENT SYSTEM AND UTILITY INFRASTRUCTURE HAVE BEEN INSTALLED IN ACCORDANCE WITH APPROVED PLANS. DESIGN ENGNEER 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.

EROSION & SEDIMENT CONTROL NOTES:

1.) CONTRACTOR IS TO INSTALL A CONSTRUCTION ENTRANCE PRIOR TO EARTH DISTURBING ACTIVITIES, UTILIZING 3" ANGULAR STONE UNDERLAID WITH ENGINEER FABRIC.
2.) CONTRACTOR IS RESPONSIBLE FOR SWEEPING THE PARKING LOT, SIDEWALKS AND ROADWAY, TO ENSURE THAT NO SEDIMENT IS BEING TRACKED ONTO BELLAMY ROAD OR THE SURROUNDING ROADWAYS.
3.) CONTRACTOR IS RESPONSIBLE FOR CLEANING AND MAINTAINING THE INLET PROTECTION ONCE INSTALLED.
4.) FUGITIVE DUST IS TO BE CONTROLLED THROUGHOUT THE CONSTRUCTION PROCESS IN ACCORDANCE WITH ENV-A 1000.
5.) CONTRACTOR IS TO MEET THE REQUIREMENTS SPECIFIED IN RSA 430:51-57 AND AGR 3800, RELATING TO INVASIVE SPECIES.
6.) 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.
7.) CONTRACTOR AY USE SILT FENCE, SILT SOXX OR MULCH BERM FOR PERIMETER CONTROL. SPECIFIC PRACTICES MAY BE SPECIFIED, SEE PLAN. THE CONTRACTOR IS NOT TO EXPAND CONSTRUCTION BEYOND THE STAKED OUT LIMITS.
8.) 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).
9.) ALL DEVELOPMENT MUST COMPLY WITH THE EPA PHASE II STORMWATER RULES AND THE CITY'S MS4 PERMIT, AS AMENDED. PRIOR TO CONSTRUCTION, A STORMWATER POLLUTION PREVENTION PLAN (SWPPP) WILL BE DEVELOPED IN ACCORDANCE WITH THE US EPA CGP 2022.
10.) CITY OF DOVER: IN ACCORDANCE WITH SITE PLAN REVIEW REGULATIONS (153-14) THE FOLLOWING STORMWATER MEASURES ARE REQUIRED.

A.) ALL PROPOSED BMPs WLL 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. 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.
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/SWMP 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. THE EPA CGP ALSO REQUIRES PROFESSIONAL CERTIFICATIONS.
H.) 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.
I.) 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.

UTILITY NOTES:

1.) UNDERGROUND UTILITY LOCATIONS ARE BASED UPON BEST AVAILABLE EVIDENCE AND ARE NOT FIELD VERIFIED. LOCATING AND PROTECTING ANY ABOVE AND BELOW GROUND UTILITIES IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR. ANY UTILITY CONFLICTS SHOULD BE REPORTED IMMEDIATELY TO THE DESIGN ENGINEER.

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

3.) PROTECTION OF SUBGRADE: THE CONTRACTOR SHALL BE REQUIRED TO MAINTAIN STABLE, DEWATERED SUBGRADES, TRENCHES, AND OTHER AREAS DURING CONSTRUCTION. SUBGRADE DISTURBANCE MAY BE INFLUENCED BY EXCAVATION METHODS, MOISTURE, PRECIPITATION, GROUNDWATER CONTROL, AND CONSTRUCTION ACTIVITIES. THE CONTRACTOR SHALL TAKE PRECAUTIONS TO PREVENT SUBGRADE DISTURBANCE. SUCH PRECAUTIONS MAY INCLUDE DIVERTING STORMWATER RUNOFF AWAY FROM CONSTRUCTION AREAS, REDUCING TRAFFIC IN SENSITIVE AREAS, AND MAINTAINING AN EFFECTIVE DEWATERING PROGRAM. SOILS EXHIBITING HEAVING OR INSTABILITY SHALL BE OVER EXCAVATED TO MORE COMPETENT BEARING SOIL AND REPLACED WITH FREE DRAINING STRUCTURAL FILL MEETING THE ENGINEERS SPECIFIC RECOMMENDED CRITERIA.

4.) IF THE EARTHWORK IS PERFORMED DURING FREEZING WEATHER (NOT ALLOWED IN CITY R.O.W.), EXPOSED SUBGRADES ARE SUSCEPTIBLE TO FROST. NO FILL OR UTILITIES SHALL BE PLACED ON FROZEN GROUND. THIS WILL LIKELY REQUIRE REMOVAL OF A FROZEN SOIL CRUST AT THE COMMENCEMENT OF EACH DAY'S OPERATION. THE FINAL SUBGRADE ELEVATION WOULD ALSO REQUIRE AN APPROPRIATE DEGREE OF INSULATION AGAINST FREEZING.

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 COMMUNITY SERVICES SEWER DIVISION STANDARDS. ALL PVC SEWER PIPE IS TO CONFORM WITH ENV-WQ 704.05 (c)-(e) FOR SDR 35 GRAVITY SEWER PIPE, CONFORM WITH ENV-WQ 704.08 FOR SDR 11 FORCE MAIN PRESSURE PIPE, AND CONFORM WITH ASTM D3034. PVC JOINT SEALS SHALL CONFORM WITH ASTM D3121. THE FORCE MAIN SHALL BE TESTED IN ACCORDANCE WITH ENV-WQ 704.09.

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 EXISTING SINGLE FAMILY HOME WILL NO LONGER UTILIZE THEIR EXISTING WELL WATER AND SEPTIC 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.

23.) THE EXISTING HOUSE IS PROPOSED TO REMAIN TWO BEDROOMS, WHILE THE SEVEN PROPOSED HOUSES ARE FOUR BEDROOMS. TOTAL DESIGN FLOW FROM SOPHIE DRIVE EXTENSION: 4,500 GPD

UNIT DENSITY CALCULATION:

- TOTAL AREA R-40 ZONE: 117,854 Sq. Ft.
- CALCULATION DOES NOT INCLUDE SOPHIE DRIVE LOT MERGER, AREA USED FOR DENSITY IN DO

PLAN REFERENCES:

1.) "PLAN OF LAND ERNEST I. & LOIS B. ESTES DOVER, NEW HAMPSHIRE"
BY: K.E. MOORE & B.G. STAPLES LAND SURVEYORS
DATED: OCTOBER 1972
S.C.R.D. PLAN #60, POCKET #2, FOLDER #19

2.) "PLAN OF LAND ALBERT P. & SYLVIA P. MARCOTTE DOVER NEW HAMPSHIRE"
BY: K.E. MOORE & B.G. STAPLES LAND SURVEYORS
DATED: JANUARY, 1974
S.C.R.D. PLAN #49, POCKET #11, FOLDER #1

3.) "MINOR SUBDIVISION OF LAND PREPARED FOR THERESA GAGNE 45 BELLAMY ROAD DOVER NEW HAMPSHIRE"
BY: MCENEANEY SURVEY ASSOCIATES INC.
DATED: JULY 5, 1995
S.C.R.D. PLAN # 46-65

PLAN REFERENCES CONTINUED:

4.) "PLAN OF LOT LINE ADJUSTMENTS PREPARED FOR MAST ROAD SAND AND GRAVEL AND FRANCES E. AND GEORGE E. DOWALIBY MAST ROAD & COLD SPRINGS ROAD DOVER, NEW HAMPSHIRE"
BY: MCENEANEY SURVEY ASSOCIATES INC.
DATED: MARCH 11, 1997
S.C.R.D. PLAN # 49-95

5.) "PLAN OF LOT LINE ADJUSTMENTS FOR FRANCES E. AND GEORGE E. DOWALIBY AND LOIS B. AND ERNEST I. ESTES TAX MAP H, LOTS 47A & 50, COLD SPRING ROAD AND BELLAMY ROAD DOVER, STRAFFORD COUNTY, NEW HAMPSHIRE"
BY: K E M LAND SURVEY, INC.
DATED: AUGUST 30, 1999
S.C.R.D PLAN # 57-42

6.) "PLAN OF LAND FOR CHRISTOPHER T. OGDEN & KATHLEEN M. HICKEY, 1 MARLBORO STREET, NEWBURYPORT, MA OF LAND AT 51 BELLAMY ROAD DOVER, NH"
BY: K E M LAND SURVEY, INC.
DATED: DECEMBER, 2000
S.C.R.D PLAN # 61-17

PLAN REFERENCES CONTINUED:

7.) "LOT LINE ADJUSTMENT PLAN FOR FRANCES E. AND GEORGE E, DOWALIBY AND KEVIN TULLY AND SHARON LEGERE, TAX MAP H, LOTS 47A & 48, COLD SPRINGS ROAD AND BELLAMY ROAD DOVER, STRAFFORD COUNTY, NEW HAMPSHIRE"
BY: K E M LAND SURVEY INC.
DATED: JUNE 3, 2001
S.C.R.D. PLAN # 63-17

8.) "LOT LINE ADJUSTMENT PLAN PREPARED FOR H53 MAST ROAD LLC TAX MAP H, LOT NOS. 48 & 53 COLD SPRINGS ROAD & STONEWALL DRIVE CITY OF DOVER COUNTY OF STRAFFORD STATE OF NEW HAMPSHIRE" BY: MCENEANEY SURVEY ASSOCIATES, INC. DATED: APRIL 1, 2019
S.C.R.D. PLAN # 12016

9.) "PLAN OF LOT A FOR GEORGE T. MCKENNA DOVER NEW HAMPSHIRE APRIL 1971"
BY: ROBERT W. MCCRONE
DATED: APRIL, 1971
S.C.R.D. PLAN #59, POCKET 2, FOLDER #21

PLAN REFERENCES CONTINUED:

10.) "TDR SUBDIVISION PLAN, LAND OF KNOX MARSH DEVELOPMENT LLC, 51 BELLAMY ROAD, DOVER, N.H. TAX MAP H, LOT 46"
BY: BERRY SURVEYING & ENGINEERING
DATED: FEBRUARY 16, 2021
S.C.R.D. PLAN # 12408

11.) "LOT LINE REVISION, LAND OF KNOX MARSH DEVELOPMENT, LLC, 51 BELLAMY ROAD, GARY V. & KIM T. BATES, 65 BELLAMY ROAD, DOVER, N.H., TAX MAP H, LOTS 46 & 50"
BY: BERRY SURVEYING & ENGINEERING
DATED: AUGUST 5, 2021
S.C.R.D. PLAN # 12740

12.) "TDR SUBDIVISION & RE-SUBDIVISION PLAN, LAND OF KNOX MARSH DEVELOPMENT, LLC, 51 BELLAMY ROAD, GARY V. & KIM T. BATES, 65 BELLAMY ROAD, DOVER, N.H., TAX MAP H, LOTS 46 & 50"
BY: BERRY SURVEYING & ENGINEERING
DATED: AUGUST 5, 2021
S.C.R.D. PLAN # 12741

UTILITY NOTE:

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

SOIL DATA:

HaB ~ HINCKLEY LOAMY FINE SAND, CLAY SUBSOIL VARIANT, 3 TO 8% SLOPES
HbE ~ HINCKLEY LOAMY FINE SAND, CLAY SUBSOIL VARIANT, 15 TO 60% SLOPES
WfB ~ WINDSOR LOAMY FINE SAND, CLAY SUBSOIL VARIANT, 0 TO 8% SLOPES

SEE: USDA/NRCS WEBSOIL

WETLAND NOTES:

1. WETLANDS WERE DELINEATED BY JOHN P. HAYES FEBRUARY 19, 2024
2. REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION, (VERSION 2.0) JANUARY 2012, U.S. ARMY CORPS OF ENGINEERS.
3. FIELD INDICATORS OF HYDRIC SOILS IN THE UNITED STATES, A GUIDE FOR IDENTIFYING AND DELINEATING HYDRIC SOILS. VERSION 8.0. UNITED STATES DEPARTMENT OF AGRICULTURE (2016).
4. NATIONAL WETLAND PLANT LIST (CURRENT VERSION).

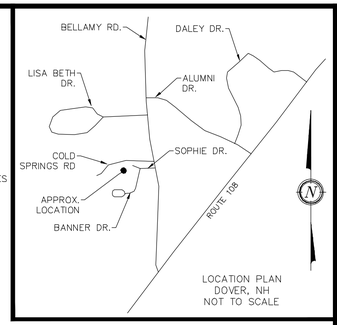
NO WETLANDS WERE FOUND ON SITE.

STATE OF NEW HAMPSHIRE · JOHN P. HAYES, III · 16 · CERTIFIED WETLAND SCIENTIST

JOHN P. HAYES, III CWS #18

LOT COVERAGE:

EXISTING BUILDINGS, DECKS & STAIRS: 5,364 Sq.Ft., 4.55%
EXISTING DRIVEWAYS, COLD SPRINGS ROAD, COVERED PATIO & WALKWAY: 14,982 Sq.Ft., 12.71 %



LOCATION PLAN
DOVER, NH
NOT TO SCALE

NOTES:

1.) OWNER: 5 SHERMAN STREET LLC
242 CENTRAL AVENUE
DOVER, NH 03820

APPLICANT: KNOX MARSH DEVELOPMENT LLC
242 CENTRAL AVENUE
DOVER, NH 03820

2.) TAX MAP H, LOT 47-A

3.) S.C.R.D. BOOK 5190, PAGE 597

4.) LOT AREA: 117,854 Sq.Ft., 2.71 Ac.

5.) ZONING R-40 (RURAL RESIDENTIAL)
SECONDARY GROUNDWATER RECHARGE (SGR)
SETBACKS:
FRONT ~ 40'
SIDE ~ 25'
REAR ~ 30'
MIN. LOT SIZE: 40,000 Sq. Ft.
MIN. FRONTAGE: 150'
MAX. LOT COVERAGE: 10%
MAX. BUILDING HEIGHT: 35'

6.) THE INTENT OF THIS PLAN IS TO SHOW THE EXISTING BOUNDARIES AND CONDITIONS OF TAX MAP H, LOT 47-A, LOCATED IN DOVER, N.H., AS OF THE FIELD SURVEY IN DECEMBER 2023.

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 DECEMBER OF 2023 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 DECEMBER 2023.

11.) THIS SITE IS SERVICED BY ONSITE SEWER AND WATER.

12.) NO WETLANDS WERE FOUND ON SITE, SEE WETLAND NOTE ON SITE SPECIFIC SOILS MAP.

13.) NO CEMETERIES WERE FOUND ON THE SITE AS OF THE DATE OF THE FIELD SURVEY.

LEGEND:

- STONE/GRANITE BOUND (FND)
- IRON BOUND (FND)
- IRON PIPE (FND)
- UTILITY POLE / GUY WIRE
- SINGLE POST SIGN
- TEMPORARY BENCHMARK
- TEST PIT
- CURB STOP
- GATE VALVE
- FIRE HYDRANT
- CATCH BASIN
- SEWER MANHOLE
- WELL
- MANHOLE WITH ELECTRIC WIRES
- ABUTTING PROPERTY LINE
- BUILDING SETBACK LINE
- EWL — EXISTING WATER LINE
- S — EXISTING SEWER LINE
- D — EXISTING DRAIN LINE
- OHU — OHU — OVERHEAD UTILITIES
- 116 — EXISTING CONTOUR MINOR
- 115 — EXISTING CONTOUR MAJOR
- EXISTING TREELINE
- WfB — NRCS SOIL LINE/LABEL
- ZONING BOUNDARY
- 20% SLOPES OR GREATER

FND FOUND
TYP TYPICAL
S.C.R.D. STRAFFORD COUNTY REGISTRY OF DEEDS
T.B.R. TO BE REMOVED

GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.

CITY OF DOVER PLANNING FILE #

REVISION	DATE	DESCRIPTION
#2	03-04-25	REVISED UNIT COUNT AND ASSOCIATED MODIFICATIONS
#1	10-17-24	REVISED UNIT COUNT AND ASSOCIATED MODIFICATIONS

EXISTING CONDITIONS PLAN
FOR
KNOX MARSH DEVELOPMENT LLC
LAND OF
5 SHERMAN STREET LLC
1 COLD SPRINGS ROAD
DOVER, N.H.
TAX MAP H, LOT 47-A

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

SCALE : 1 IN. EQUALS 30 FT.
DATE : SEPTEMBER 1, 2024
FILE NO. : DB 2023 - 126

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

NOT FOR CONSTRUCTION

NOTES:

1.) OWNER: 5 SHERMAN ST.
242 CENTRAL AVE.
DOVER, NH 03820

APPLICANT: KNOX MARSH DEVELOPMENT LLC
242 CENTRAL AVE
DOVER, NH 03820

2.) TAX MAP H, LOT 47-A

3.) S.C.R.D. BOOK 5190, PAGE 597

4.) LOT AREA: 117,854 Sq.Ft., 2.71 Ac.

5.) THE INTENT OF THIS PLAN IS TO SHOW THE SITE SPECIFIC SOILS ON TAX MAP H, LOT 47-A.

6.) I HEREBY CERTIFY THAT, TO THE BEST OF MY KNOWLEDGE AND BELIEF, THIS PROPERTY DOES NOT FALL WITHIN THE FLOOD PLAIN FLOOD HAZARD REF: FEMA COMMUNITY #330145, MAP 33017C0320E, DATED: MAY 17, 2005.

7.) VERTICAL DATUM BASED ON NAVD88 ELEVATIONS. HORIZONTAL DATUM BASED ON NAD83 STATE PLANE. COORDINATES GATHERED USING CARLSON BRX7 SURVEY GRADE GPS RECEIVERS.

JOHN P. HAYES III, CWS #18

JOHN P. HAYES III, CSS #87

LIMITS OF SITE SPECIFIC SOILS SURVEY

NAD83 NH STATE PLANE

MAGNETIC

LEGEND:

- IRON BOUND ~FND~
- IRON PIPE ~FND~
- GRANITE BOUND ~FND~
- UTILITY POLE/GUY WIRE
- BENCHMARK (T.B.M.)
- TEST PIT
- >20% SLOPES
- EXISTING CONTOUR MINOR
- EXISTING CONTOUR MAJOR
- OFF SITE NRCS SOIL LINE
- SITE SPECIFIC SOIL DELINEATION
- LIMIT OF SOIL SURVEY
- AREAS OF IMPERVIOUS SURFACE PRESUMED TO BE THE SAME SURROUNDING SOIL TYPE

448A SOIL SERIES
BzA SOIL LABEL
S.C.R.D. STRAFFORD COUNTY REGISTRY OF DEEDS
TYP. TYPICAL
FND FOUND
TBA TO BE ABANDONED
PVMT PAVEMENT

WETLAND NOTES:

WETLANDS WERE DELINEATED BY JOHN P. HAYES FEBRUARY 19, 2024

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.

SOILS LEGEND

Site Specific Soils

Symbol	Slopes	Taxonomic Soil Name	Hydrologic Soil Group
26	C,D,E	Windsor	A
327	A,B,C	Windsor Variant (Clay Subsoil)	C
400 (ED)	A,B,C,D,E	Udorthents (Sandy or Gravelly) (Excessively Drained)	A
400 (MWD)	A,B	Udorthents (Sandy or Gravelly Over Silt Loam) (Moderately Well Drained)	A
900	A	Endoaquents (Sandy or Gravelly)	C

Slopes: A = 0-3% B = 3-8% C = 8-15% D = 15-25% E = 25- 50% F = 50%+
Denominators: /SPD = Somewhat Poorly Drained /P = Poorly Drained
/VP = Very Poorly Drained /Rk = Rocky

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

CITY OF DOVER PLANNING FILE #

REVISION	DATE	DESCRIPTION
#2	03-04-25	REVISED UNIT COUNT AND ASSOCIATED MODIFICATIONS
#1	10-17-24	REVISED UNIT COUNT AND ASSOCIATED MODIFICATIONS

SITE SPECIFIC SOILS MAP
FOR
KNOX MARSH DEVELOPMENT LLC
LAND OF
5 SHERMAN STREET LLC
1 COLD SPRINGS ROAD
DOVER, N.H.
TAX MAP H, LOT 47-A

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

SCALE : 1 IN. EQUALS 20 FT.
DATE : SEPTEMBER 1, 2024
FILE NO. : DB 2023 - 126

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

NOT FOR CONSTRUCTION

TEST PIT CONDUCTED 9-13-24 BY APPLICANT WITH A TRACKED MINI

TEST PIT #1

0-0.2'	10YR 2/2 FINE SANDY LOAM, GRANULAR, FRIABLE
0.2'-2.6'	10YR 5/3 FINE LOAMY SAND, GRANULAR, FRIABLE, GENERAL FILL
2.6'-6.5'	2.5Y 6/4 FINE SAND, SINGLE GRAIN, LOOSE REDOX AND DEPL @ 3.3'

TERMINATED: 6.5'
E.S.H.W.T.: 3.3'
ROOTS FEW AND FINE TO 3.3'
GROUND WATER OBSERVED: N/A
P= 4 MIN./IN.

TEST PIT #2

0-0.2'	10YR 2/2 FINE SANDY LOAM, GRANULAR, FRIABLE
0.2'-1.8'	10YR 6/4 FINE SANDY LOAM, GRANULAR, FRIABLE, GENERAL FILL
1.8'-4.6'	10YR 5/3 FINE SANDY LOAM, MEDIUM BLOCKY, FRIABLE
4.6'-6.0'	GENERAL FILL (BRICK & BACKED FILL)

TERMINATED: 6.0'
E.S.H.W.T.: 1.8'
ROOTS FEW AND FINE TO 1.8'
ROCKY THROUGHOUT
GROUND WATER OBSERVED: N/A
P= 4 MIN./IN.

TEST PIT #3

0-5.0'	2-4" COBBLES THROUGHOUT

TERMINATED: 5.0'
E.S.H.W.T.: N/A
RESTRICTIVE LAYER: N/A
ROOTS: N/A
GROUND WATER OBSERVED: N/A
P= 2 MIN./IN.

TEST PIT #4

0-0.4'	10YR 2/2 FINE SANDY LOAM, GRANULAR, FRIABLE
0.4'-4.0'	10YR 4/3 FINE SANDY LOAM, GRANULAR, FRIABLE,
4.0'-6.0'	2.5Y 6/4 FINE SAND, SINGLE GRAIN, LOOSE REDOX. CONCENTRATIONS WITH NO DEPLETIONS

TERMINATED: 6.0'
E.S.H.W.T.: N/A
ROOTS FEW AND FINE TO 4.0'
GROUND WATER OBSERVED: N/A
P= 4 MIN./IN.

TEST PIT #5

0-3.6'	10YR 6/4 FINE LOAMY SAND, GRANULAR, MEDIUM FIRM IN HOLE-FRIABLE IN HAND
3.6'-6.0'	2.5Y 7/4 FINE SAND, SINGLE GRAIN, LOOSE, REDOX. CONCENTRATIONS & DEPLETIONS @ 4.1'

TERMINATED: 6.0'
E.S.H.W.T.: 4.1'
ROOTS FEW AND FINE TO 2.9'
GROUND WATER OBSERVED: N/A
P= 4 MIN./IN.

TEST PIT #6

0-1.4'	10YR 6/4 FINE LOAMY SAND, GRANULAR, FRIABLE
1.4'-6.0'	2.5Y 6/3 COARSE SAND, SINGLE GRAIN, LOOSE, COBBLES THROUGHOUT

TERMINATED: 6.0'
E.S.H.W.T.: N/A
ROOTS FEW AND FINE TO 1.4'
GROUND WATER OBSERVED: N/A
P= 4 MIN./IN.

CITY OF DOVER PLANNING FILE #

REVISION	DATE	DESCRIPTION
#2	03-04-25	REVISED UNIT COUNT AND ASSOCIATED MODIFICATIONS
#1	10-17-24	REVISED UNIT COUNT AND ASSOCIATED MODIFICATIONS

TEST PITS
FOR
KNOX MARSH DEVELOPMENT LLC
LAND OF
5 SHERMAN STREET LLC
1 COLD SPRINGS ROAD
DOVER, N.H.
TAX MAP H, LOT 47-A

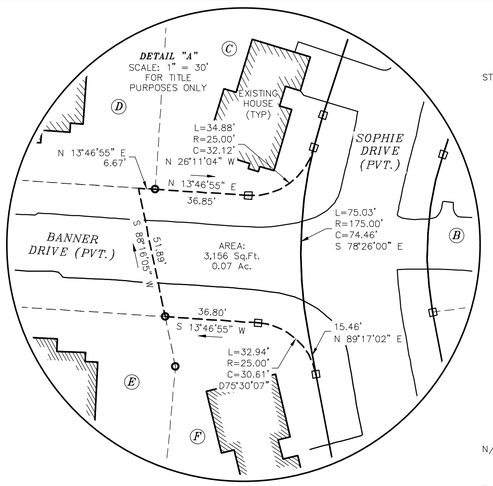
BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

DATE : SEPTEMBER 1, 2024
FILE NO. : DB 2023 - 126

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14246
LICENSED PROFESSIONAL ENGINEER

SHEET 5 OF 33

NOT FOR CONSTRUCTION



ABUTTERS:

(A) N/F KNOX MARSH DEVELOPMENT, LLC
242 CENTRAL AVE.
DOVER, NH 03820
TAX MAP H, LOT 46
S.C.R.D. BOOK 4844, PAGE 417

(B) N/F LASSOR, JAMESON ARAM & CAITLIN
100 CENTRAL AVE
DOVER, NH 03820
TAX MAP H, LOT 46-1
S.C.R.D. BOOK 5146, PAGE 951

(C) N/F GALLANT, TUCKER & STEFFANY
10 SOPHIE DRIVE
DOVER, NH 03820
TAX MAP H, LOT 46-2
S.C.R.D. BOOK 5147, PAGE 297

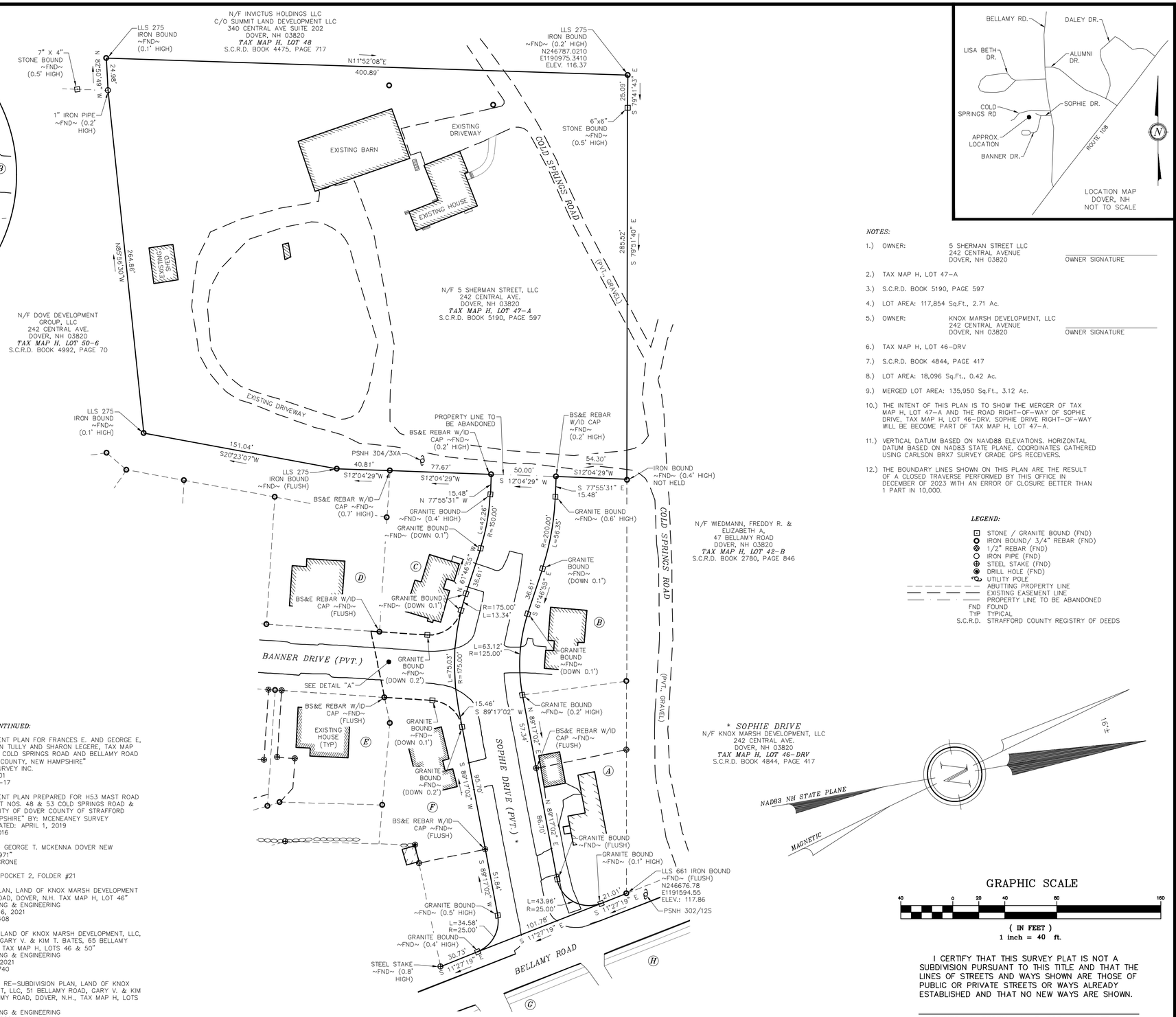
(D) N/F STAHRE, VICTORIA L.
12 SULLIVAN FALLS ROAD
DURHAM, NH 03824
TAX MAP H, LOT 50-10
S.C.R.D. BOOK 5201, PAGE 889

(E) N/F 5 SHERMAN STREET, LLC
242 CENTRAL AVE.
DOVER, NH 03820
TAX MAP H, LOT 50-1
S.C.R.D. BOOK 5190, PAGE 597

(F) N/F ROSSI, CHRISTOPHER T. & BAU, CHRISTINA
6 SOPHIE DRIVE
DOVER, NH 03820
TAX MAP H, LOT 46-3
S.C.R.D. BOOK 5149, PAGE 322

(G) N/F KALWAY, STEVEN & KARYANN
54 BELLAMY ROAD
DOVER, NH 03820
TAX MAP H, LOT 4-K
S.C.R.D. BOOK 2188, PAGE 594

(H) N/F FELICIANO, JOSE
50 BELLAMY ROAD
DOVER, NH 03820
TAX MAP H, LOT 6-K
S.C.R.D. BOOK 4326, PAGE 196



NOTES:

1.) OWNER: 5 SHERMAN STREET LLC
242 CENTRAL AVENUE
DOVER, NH 03820
OWNER SIGNATURE

2.) TAX MAP H, LOT 47-A

3.) S.C.R.D. BOOK 5190, PAGE 597

4.) LOT AREA: 117,854 Sq.Ft., 2.71 Ac.

5.) OWNER: KNOX MARSH DEVELOPMENT, LLC
242 CENTRAL AVENUE
DOVER, NH 03820
OWNER SIGNATURE

6.) TAX MAP H, LOT 46-DRV

7.) S.C.R.D. BOOK 4844, PAGE 417

8.) LOT AREA: 18,096 Sq.Ft., 0.42 Ac.

9.) MERGED LOT AREA: 135,950 Sq.Ft., 3.12 Ac.

10.) THE INTENT OF THIS PLAN IS TO SHOW THE MERGER OF TAX MAP H, LOT 47-A AND THE ROAD RIGHT-OF-WAY OF SOPHIE DRIVE, TAX MAP H, LOT 46-DRV. SOPHIE DRIVE RIGHT-OF-WAY WILL BE BECOME PART OF TAX MAP H, LOT 47-A.

11.) VERTICAL DATUM BASED ON NAVD88 ELEVATIONS. HORIZONTAL DATUM BASED ON NAD83 STATE PLANE. COORDINATES GATHERED USING CARLSON BRX7 SURVEY GRADE GPS RECEIVERS.

12.) THE BOUNDARY LINES SHOWN ON THIS PLAN ARE THE RESULT OF A CLOSED TRAVERSE PERFORMED BY THIS OFFICE IN DECEMBER OF 2023 WITH AN ERROR OF CLOSURE BETTER THAN 1 PART IN 10,000.

LEGEND:

- STONE / GRANITE BOUND (FND)
- IRON BOUND/ 3/4" REBAR (FND)
- 1/2" REBAR (FND)
- IRON PIPE (FND)
- STEEL STAKE (FND)
- DRILL HOLE (FND)
- UTILITY POLE
- ABUTTING PROPERTY LINE
- EXISTING EASEMENT LINE
- PROPERTY LINE TO BE ABANDONED
- FND FOUND
- TYP TYPICAL
- S.C.R.D. STRAFFORD COUNTY REGISTRY OF DEEDS

PLAN REFERENCES:

1.) "PLAN OF LAND ERNEST I. & LOIS B. ESTES DOVER, NEW HAMPSHIRE"
BY: K.E. MOORE & B.G. STAPLES LAND SURVEYORS
DATED: OCTOBER 1972
S.C.R.D. PLAN #60, POCKET #2, FOLDER #19

2.) "PLAN OF LAND ALBERT P. & SYLVIA P. MARCOTTE DOVER NEW HAMPSHIRE"
BY: K.E. MOORE & B.G. STAPLES LAND SURVEYORS
DATED: JANUARY, 1974
S.C.R.D. PLAN #49, POCKET #11, FOLDER #1

3.) "MINOR SUBDIVISION OF LAND PREPARED FOR THERESA GAGNE 45 BELLAMY ROAD DOVER NEW HAMPSHIRE"
BY: MCENEANEY SURVEY ASSOCIATES INC.
DATED: JULY 5, 1995
S.C.R.D. PLAN # 46-65

4.) "PLAN OF LOT LINE ADJUSTMENTS PREPARED FOR MAST ROAD SAND AND GRAVEL AND FRANCES E. AND GEORGE E. DOWALIBY MAST ROAD & COLD SPRINGS ROAD DOVER, NEW HAMPSHIRE"
BY:MCENEANEY SURVEY ASSOCIATES INC.
DATED: MARCH 11, 1997
S.C.R.D. PLAN # 49-95

5.) "PLAN OF LOT LINE ADJUSTMENTS FOR FRANCES E. AND GEORGE E. DOWALIBY AND LOIS B. AND ERNEST I. ESTES TAX MAP H, LOTS 47A & 50, COLD SPRING ROAD AND BELLAMY ROAD DOVER, STRAFFORD COUNTY, NEW HAMPSHIRE"
BY: K E M LAND SURVEY, INC.
DATED: AUGUST 30, 1999
S.C.R.D PLAN # 57-42

6.) "PLAN OF LAND FOR CHRISTOPHER T. OGDEN & KATHLEEN M. HICKEY, 1 MARLBORO STREET, NEWBURYPORT, MA OF LAND AT 51 BELLAMY ROAD DOVER, NH"
BY: K E M LAND SURVEY, INC.
DATED: DECEMBER, 2000
S.C.R.D PLAN # 61-17

PLAN REFERENCES CONTINUED:

7.) "LOT LINE ADJUSTMENT PLAN FOR FRANCES E. AND GEORGE E, DOWALIBY AND KEVIN TULLY AND SHARON LEGERE, TAX MAP H, LOTS 47A & 48, COLD SPRINGS ROAD AND BELLAMY ROAD DOVER, STRAFFORD COUNTY, NEW HAMPSHIRE"
BY: K E M LAND SURVEY INC.
DATED: JUNE 3, 2001
S.C.R.D. PLAN # 63-17

8.) "LOT LINE ADJUSTMENT PLAN PREPARED FOR H53 MAST ROAD LLC TAX MAP H, LOT NOS. 48 & 53 COLD SPRINGS ROAD & STONEWALL DRIVE CITY OF DOVER COUNTY OF STRAFFORD STATE OF NEW HAMPSHIRE" BY: MCENEANEY SURVEY ASSOCIATES, INC. DATED: APRIL 1, 2019
S.C.R.D. PLAN # 12016

9.) "PLAN OF LOT A FOR GEORGE T. MCKENNA DOVER NEW HAMPSHIRE APRIL 1971"
BY: ROBERT W. MCCRONE
DATED: APRIL, 1971
S.C.R.D. PLAN #59, POCKET 2, FOLDER #21

10.) "TDR SUBDIVISION PLAN, LAND OF KNOX MARSH DEVELOPMENT LLC, 51 BELLAMY ROAD, DOVER, N.H. TAX MAP H, LOT 46"
BY: BERRY SURVEYING & ENGINEERING
DATED: FEBRUARY 16, 2021
S.C.R.D. PLAN # 12408

11.) "LOT LINE REVISION, LAND OF KNOX MARSH DEVELOPMENT, LLC, 51 BELLAMY ROAD, GARY V. & KIM T. BATES, 65 BELLAMY ROAD, DOVER, N.H., TAX MAP H, LOTS 46 & 50"
BY: BERRY SURVEYING & ENGINEERING
DATED: AUGUST 5, 2021
S.C.R.D. PLAN # 12740

12.) "TDR SUBDIVISION & RE-SUBDIVISION PLAN, LAND OF KNOX MARSH DEVELOPMENT, LLC, 51 BELLAMY ROAD, GARY V. & KIM T. BATES, 65 BELLAMY ROAD, DOVER, N.H., TAX MAP H, LOTS 46 & 50"
BY: BERRY SURVEYING & ENGINEERING
DATED: AUGUST 5, 2021
S.C.R.D. PLAN # 12741

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

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

CITY OF DOVER PLANNING FILE #

REVISION	DATE	DESCRIPTION
#2	03-04-25	REVISED UNIT COUNT AND ASSOCIATED MODIFICATIONS
#1	10-17-24	REVISED UNIT COUNT AND ASSOCIATED MODIFICATIONS

LOT MERGER PLAN
FOR
KNOX MARSH DEVELOPMENT LLC
LAND OF
5 SHERMAN STREET LLC
1 COLD SPRINGS ROAD
DOVER, N.H.
TAX MAP H, LOT 47-A

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

SCALE : 1 IN. EQUALS 40 FT.
DATE : SEPTEMBER 1, 2024
FILE NO. : DB 2023 - 126

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

NOT FOR CONSTRUCTION

PLAN REFERENCES:

1.) "PLAN OF LAND ERNEST I. & LOIS B. ESTES DOVER, NEW HAMPSHIRE"
BY: K.E. MOORE & B.G. STAPLES LAND SURVEYORS
DATED: OCTOBER 1972
S.C.R.D. PLAN #60, POCKET #2, FOLDER #19

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BY: K.E. MOORE & B.G. STAPLES LAND SURVEYORS
DATED: JANUARY, 1974
S.C.R.D. PLAN #49, POCKET #11, FOLDER #1

3.) "MINOR SUBDIVISION OF LAND PREPARED FOR THERESA GAGNE 45 BELLAMY ROAD DOVER NEW HAMPSHIRE"
BY: MCENEANEY SURVEY ASSOCIATES INC.
DATED: JULY 5, 1995
S.C.R.D. PLAN # 46-65

PLAN REFERENCES CONTINUED:

4.) "PLAN OF LOT LINE ADJUSTMENTS PREPARED FOR MAST ROAD SAND AND GRAVEL AND FRANCES E. AND GEORGE E. DOWALIBY MAST ROAD & COLD SPRINGS ROAD DOVER, NEW HAMPSHIRE"
BY: MCENEANEY SURVEY ASSOCIATES INC.
DATED: MARCH 11, 1997
S.C.R.D. PLAN # 49-95

5.) "PLAN OF LOT LINE ADJUSTMENTS FOR FRANCES E. AND GEORGE E. DOWALIBY AND LOIS B. AND ERNEST I. ESTES TAX MAP H, LOTS 47A & 50, COLD SPRING ROAD AND BELLAMY ROAD DOVER, STRAFFORD COUNTY, NEW HAMPSHIRE"
BY: K E M LAND SURVEY, INC.
DATED: AUGUST 30, 1999
S.C.R.D PLAN # 57-42

6.) "PLAN OF LAND FOR CHRISTOPHER T. OGDEN & KATHLEEN M. HICKEY, 1 MARLBORO STREET, NEWBURYPORT, MA OF LAND AT 51 BELLAMY ROAD DOVER, NH"
BY: K E M LAND SURVEY, INC.
DATED: DECEMBER, 2000
S.C.R.D PLAN # 61-17

PLAN REFERENCES CONTINUED:

7.) "LOT LINE ADJUSTMENT PLAN FOR FRANCES E. AND GEORGE E, DOWALIBY AND KEVIN TULLY AND SHARON LEGERE, TAX MAP H, LOTS 47A & 48, COLD SPRINGS ROAD AND BELLAMY ROAD DOVER, STRAFFORD COUNTY, NEW HAMPSHIRE"
BY: K E M LAND SURVEY INC.
DATED: JUNE 3, 2001
S.C.R.D. PLAN # 63-17

8.) "LOT LINE ADJUSTMENT PLAN PREPARED FOR 453 MAST ROAD LLC TAX MAP H, LOT NOS. 48 & 53 COLD SPRINGS ROAD & STONEWALL DRIVE CITY OF DOVER COUNTY OF STRAFFORD STATE OF NEW HAMPSHIRE" BY: MCENEANEY SURVEY ASSOCIATES, INC. DATED: APRIL 1, 2019
S.C.R.D. PLAN # 12016

9.) "PLAN OF LOT A FOR GEORGE T. MCKENNA DOVER NEW HAMPSHIRE APRIL 1971"
BY: ROBERT W. MCCRONE
DATED: APRIL, 1971
S.C.R.D. PLAN #59, POCKET 2, FOLDER #21

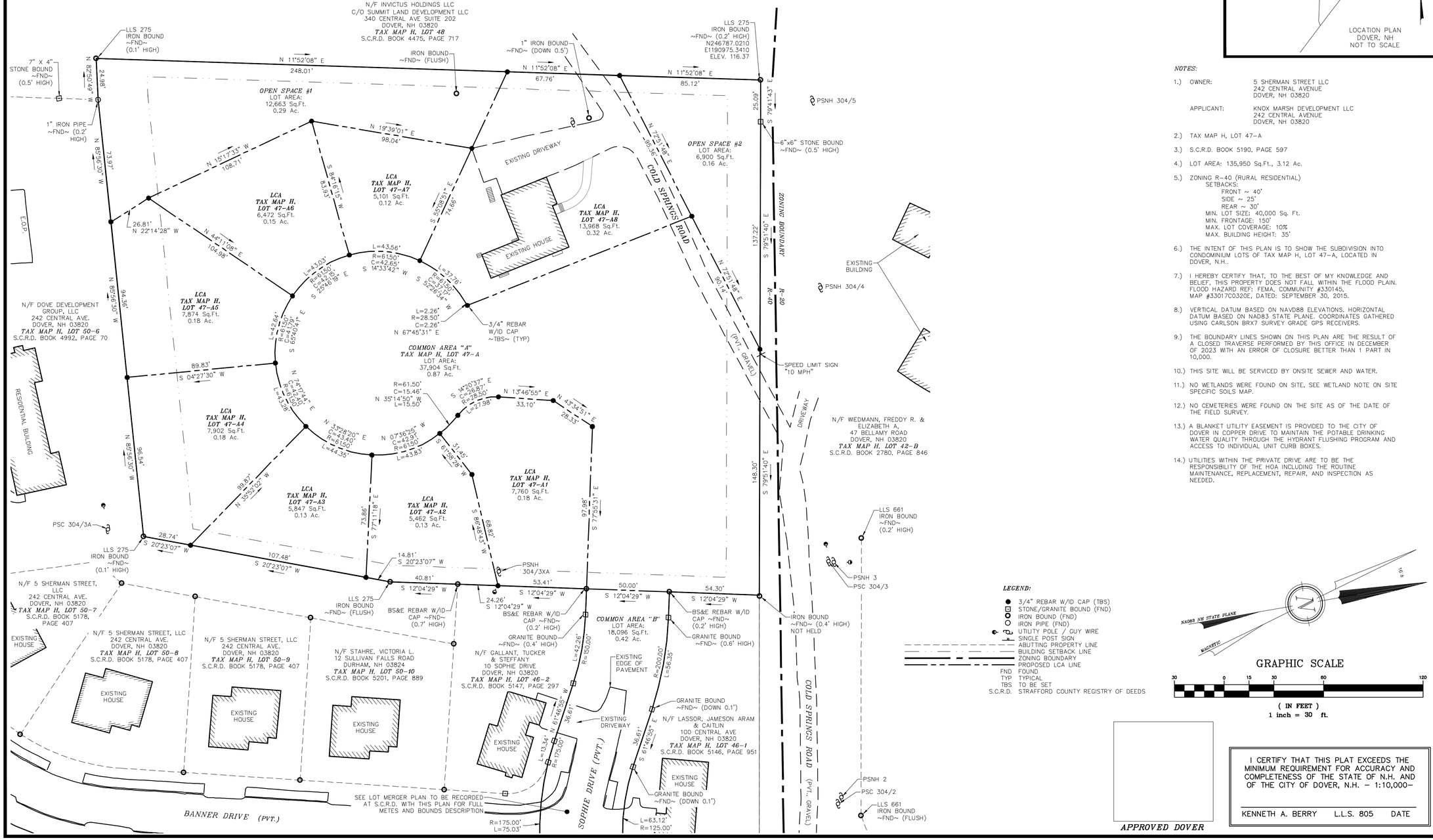
PLAN REFERENCES CONTINUED:

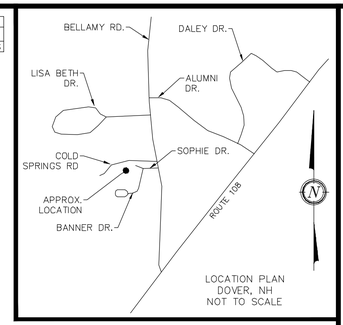
10.) "TDR SUBDIVISION PLAN, LAND OF KNOX MARSH DEVELOPMENT LLC, 51 BELLAMY ROAD, DOVER, N.H. TAX MAP H, LOT 46"
BY: BERRY SURVEYING & ENGINEERING
DATED: FEBRUARY 16, 2021
S.C.R.D. PLAN # 12408

11.) "LOT LINE REVISION, LAND OF KNOX MARSH DEVELOPMENT, LLC, 51 BELLAMY ROAD, GARY V. & KIM T. BATES, 65 BELLAMY ROAD, DOVER, N.H., TAX MAP H, LOTS 46 & 50"
BY: BERRY SURVEYING & ENGINEERING
DATED: AUGUST 5, 2021
S.C.R.D. PLAN # 12740

12.) "TDR SUBDIVISION & RE-SUBDIVISION PLAN, LAND OF KNOX MARSH DEVELOPMENT, LLC, 51 BELLAMY ROAD, GARY V. & KIM T. BATES, 65 BELLAMY ROAD, DOVER, N.H., TAX MAP H, LOTS 46 & 50"
BY: BERRY SURVEYING & ENGINEERING
DATED: AUGUST 5, 2021
S.C.R.D. PLAN # 12741

TRANSFER OF DEVELOPMENT RIGHTS (TDR): PENDING
PURCHASE OF 6 UNITS GREATER THAN 1,400 Sq. Ft.
REDUCTION OF THE 30' BUFFER TO THE STANDARD TDR BUILDING SETBACKS





NOTES:

1.) OWNER: 5 SHERMAN STREET LLC
242 CENTRAL AVENUE
DOVER, NH 03820

APPLICANT: KNOX MARSH DEVELOPMENT LLC
242 CENTRAL AVENUE
DOVER, NH 03820

2.) TAX MAP H, LOT 47-A

3.) S.C.R.D. BOOK 5190, PAGE 597

4.) LOT AREA: 135,950 Sq.Ft., 3.12 Ac.

5.) ZONING R-40 (RURAL RESIDENTIAL)
SETBACKS:
FRONT ~ 40'
SIDE ~ 25'
REAR ~ 30'
MIN. LOT SIZE: 40,000 Sq. Ft.
MIN. FRONTAGE: 150'
MAX. LOT COVERAGE: 10%
MAX. BUILDING HEIGHT: 35'

6.) THE INTENT OF THIS PLAN IS TO SHOW THE SUBDIVISION INTO CONDOMINIUM LOTS OF TAX MAP H, LOT 47-A, LOCATED IN DOVER, N.H..

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 DECEMBER OF 2023 WITH AN ERROR OF CLOSURE BETTER THAN 1 PART IN 10,000.

10.) THIS SITE WILL BE SERVICED BY ONSITE SEWER AND WATER.

11.) NO WETLANDS WERE FOUND ON SITE, SEE WETLAND NOTE ON SITE SPECIFIC SOILS MAP.

12.) NO CEMETERIES WERE FOUND ON THE SITE AS OF THE DATE OF THE FIELD SURVEY.

13.) A BLANKET UTILITY EASEMENT IS PROVIDED TO THE CITY OF DOVER IN COPPER DRIVE TO MAINTAIN THE POTABLE DRINKING WATER QUALITY THROUGH THE HYDRANT FLUSHING PROGRAM AND ACCESS TO INDIVIDUAL UNIT CURB BOXES.

14.) UTILITIES WITHIN THE PRIVATE DRIVE ARE TO BE THE RESPONSIBILITY OF THE HOA INCLUDING THE ROUTINE MAINTENANCE, REPLACEMENT, REPAIR, AND INSPECTION AS NEEDED.

LEGEND:

- 3/4" REBAR W/ID CAP (TBS)
- STONE/GRANITE BOUND (FND)
- IRON BOUND (FND)
- IRON PIPE (FND)
- UTILITY POLE / GUY WIRE
- SINGLE POST SIGN
- ABUTTING PROPERTY LINE
- BUILDING SETBACK LINE
- ZONING BOUNDARY
- PROPOSED LCA LINE
- FND FOUND
- TYP TYPICAL
- TBS TO BE SET
- S.C.R.D. STRAFFORD COUNTY REGISTRY OF DEEDS

NADB3 NH STATE PLANE
MAGNETIC
16°

GRAPHIC SCALE
30 0 15 30 60 120
(IN FEET)
1 inch = 30 ft.

APPROVED DOVER

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

KENNETH A. BERRY L.L.S. 805 DATE

CITY OF DOVER PLANNING FILE #

REVISION	DATE	DESCRIPTION
#2	03-04-25	REVISED UNIT COUNT AND ASSOCIATED MODIFICATIONS
#1	10-17-24	REVISED UNIT COUNT AND ASSOCIATED MODIFICATIONS

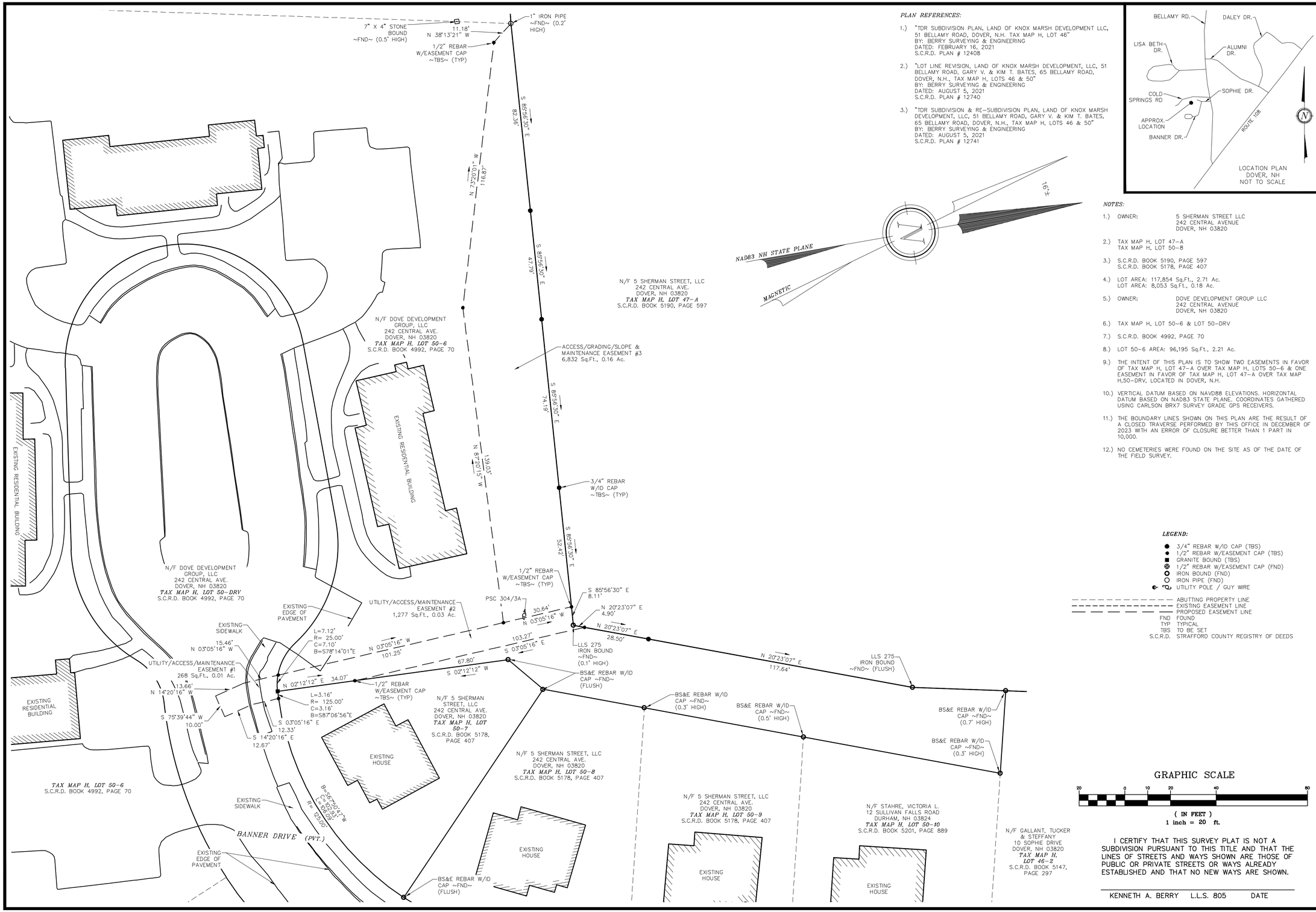
CONDOMINIUM SUBDIVISION PLAN
FOR
KNOX MARSH DEVELOPMENT LLC
LAND OF
5 SHERMAN STREET LLC
1 COLD SPRINGS ROAD
DOVER, N.H.
TAX MAP H, LOT 47-A

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

SCALE : 1 IN. EQUALS 30 FT.
DATE : SEPTEMBER 1, 2024
FILE NO. : DB 2023 – 126

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

NOT FOR CONSTRUCTION



PLAN REFERENCES:

1.) "TDR SUBDIVISION PLAN, LAND OF KNOX MARSH DEVELOPMENT LLC, 51 BELLAMY ROAD, DOVER, N.H. TAX MAP H, LOT 46" BY: BERRY SURVEYING & ENGINEERING DATED: FEBRUARY 16, 2021 S.C.R.D. PLAN # 12408

2.) "LOT LINE REVISION, LAND OF KNOX MARSH DEVELOPMENT, LLC, 51 BELLAMY ROAD, GARY V. & KIM T. BATES, 65 BELLAMY ROAD, DOVER, N.H., TAX MAP H, LOTS 46 & 50" BY: BERRY SURVEYING & ENGINEERING DATED: AUGUST 5, 2021 S.C.R.D. PLAN # 12740

3.) "TDR SUBDIVISION & RE-SUBDIVISION PLAN, LAND OF KNOX MARSH DEVELOPMENT, LLC, 51 BELLAMY ROAD, GARY V. & KIM T. BATES, 65 BELLAMY ROAD, DOVER, N.H., TAX MAP H, LOTS 46 & 50" BY: BERRY SURVEYING & ENGINEERING DATED: AUGUST 5, 2021 S.C.R.D. PLAN # 12741

NOTES:

1.) OWNER: 5 SHERMAN STREET LLC
242 CENTRAL AVENUE
DOVER, NH 03820

2.) TAX MAP H, LOT 47-A
TAX MAP H, LOT 50-8

3.) S.C.R.D. BOOK 5190, PAGE 597
S.C.R.D. BOOK 5178, PAGE 407

4.) LOT AREA: 117,854 Sq.Ft., 2.71 Ac.
LOT AREA: 8,053 Sq.Ft., 0.18 Ac.

5.) OWNER: DOVE DEVELOPMENT GROUP LLC
242 CENTRAL AVENUE
DOVER, NH 03820

6.) TAX MAP H, LOT 50-6 & LOT 50-DRV

7.) S.C.R.D. BOOK 4992, PAGE 70

8.) LOT 50-6 AREA: 96,195 Sq.Ft., 2.21 Ac.

9.) THE INTENT OF THIS PLAN IS TO SHOW TWO EASEMENTS IN FAVOR OF TAX MAP H, LOT 47-A OVER TAX MAP H, LOTS 50-6 & ONE EASEMENT IN FAVOR OF TAX MAP H, LOT 47-A OVER TAX MAP H,50-DRV, LOCATED IN DOVER, N.H.

10.) VERTICAL DATUM BASED ON NAVD88 ELEVATIONS. HORIZONTAL DATUM BASED ON NAD83 STATE PLANE. COORDINATES GATHERED USING CARLSON BRX7 SURVEY GRADE GPS RECEIVERS.

11.) THE BOUNDARY LINES SHOWN ON THIS PLAN ARE THE RESULT OF A CLOSED TRAVERSE PERFORMED BY THIS OFFICE IN DECEMBER OF 2023 WITH AN ERROR OF CLOSURE BETTER THAN 1 PART IN 10,000.

12.) NO CEMETERIES WERE FOUND ON THE SITE AS OF THE DATE OF THE FIELD SURVEY.

LEGEND:

- ● 3/4" REBAR W/ID CAP (TBS)
- ● 1/2" REBAR W/EASEMENT CAP (TBS)
- ■ GRANITE BOUND (TBS)
- ⊗ 1/2" REBAR W/EASEMENT CAP (FND)
- ○ IRON BOUND (FND)
- ○ IRON PIPE (FND)
- ⊕ UTILITY POLE / GUY WIRE
- ABUTTING PROPERTY LINE
- EXISTING EASEMENT LINE
- PROPOSED EASEMENT LINE
- FND FOUND
- TYP TYPICAL
- TBS TO BE SET
- S.C.R.D. 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

CITY OF DOVER PLANNING FILE #

REVISION	DATE	DESCRIPTION
#2	03-04-25	REVISED UNIT COUNT AND ASSOCIATED MODIFICATIONS
#1	10-17-24	REVISED UNIT COUNT AND ASSOCIATED MODIFICATIONS

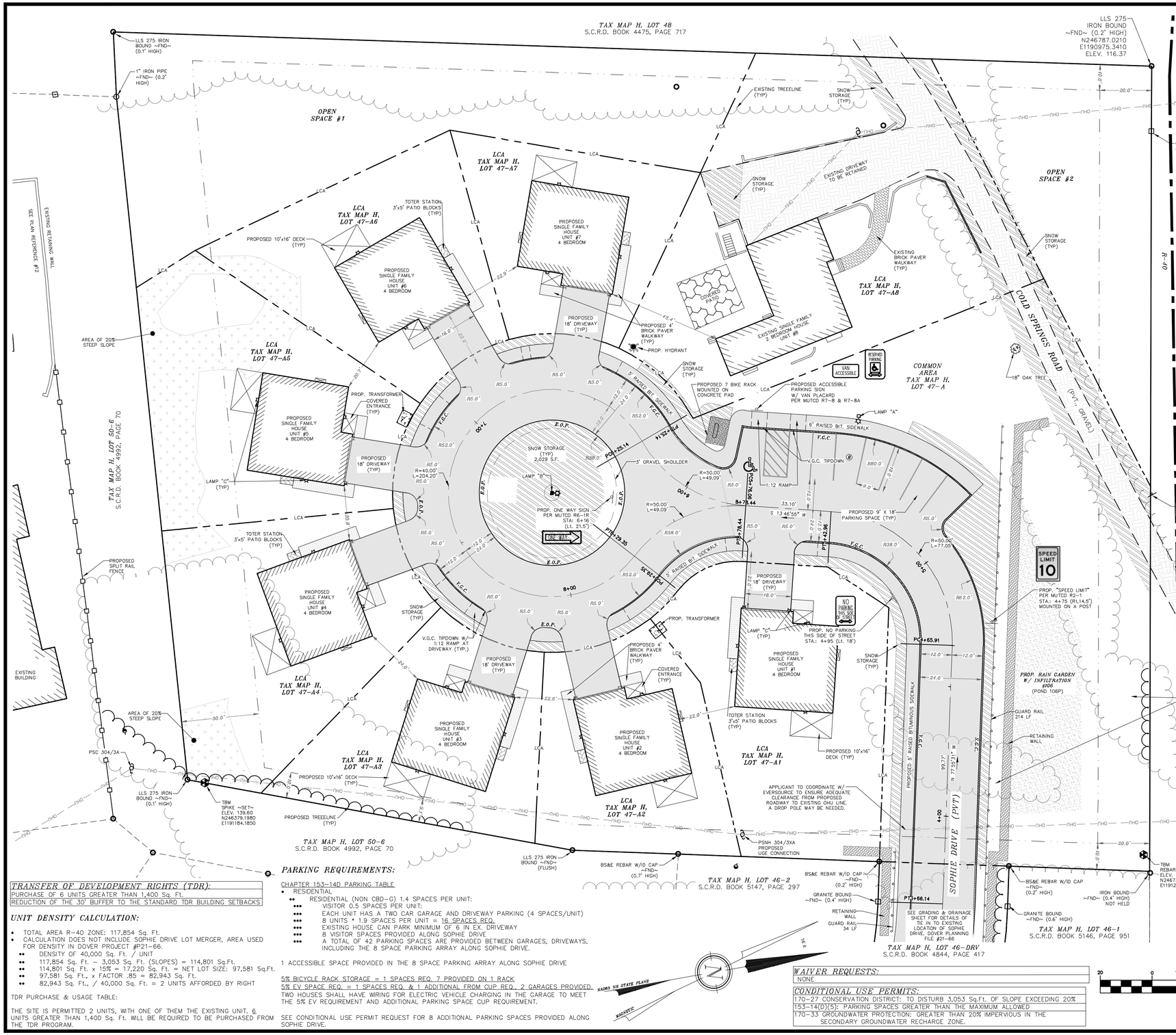
EASEMENT PLAN
FOR
KNOX MARSH DEVELOPMENT LLC
LAND OF
5 SHERMAN STREET LLC
1 COLD SPRINGS ROAD
DOVER, N.H.
TAX MAP H, LOT 47-A

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

SCALE : 1 IN. EQUALS 20 FT.
DATE : SEPTEMBER 1, 2024
FILE NO. : DB 2023 - 126

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

NOT FOR CONSTRUCTION



NOTES:

1.) OWNER: 5 SHERMAN STREET LLC
242 CENTRAL AVE
DOVER, NH 03820

APPLICANT: KNOX MARSH DEVELOPMENT LLC
242 CENTRAL AVE
DOVER, NH 03820

2.) TAX MAP H, LOT 47-A

3.) S.C.R.D. BOOK 5190, PAGE 597

4.) LOT AREA: 117,854 Sq. Ft., 2.71 Ac.

5.) ZONING R-40 (RURAL RESIDENTIAL)
SECONDARY GROUNDWATER RECHARGE (SGR)
SETBACKS:
FRONT ~ 40'
SIDE ~ 25'
REAR ~ 30'
MIN. LOT SIZE: 40,000 Sq. Ft.
MIN. FRONTAGE: 150'
MAX. LOT COVERAGE: 10% (20% MAX IN SGR)(SEE CUP REQ.)
MAX. BUILDING HEIGHT: 35'

ZONING: TRANSFER OF DEVELOPMENT RIGHTS (TDR)
LOT SIZE: N/A Sq. Ft.
MAX. LOT COVERAGE: N/A
MINIMUM FRONTAGE: 40'
ABUT A STREET SETBACK: 20'
ABUT A SIDE LOT LINE: 10'
ABUT A REAR LOT LINE: 30'
30' EXTERIOR BUFFER
SEE PROJECT NOTES FOR THE PROVIDED TABLE ON SATISFYING THE ABOVE REQUIREMENT.

6.) THE INTENT OF THIS PLAN IS TO SHOW A SITE PLAN FOR TAX MAP H, LOT 47-A. THIS PLAN REFERENCES THE ORIGINAL SOPHIE DRIVE & BANNER DRIVE APPROVAL, DOVER PLANNING FILE #P21-66.

7.) SEE THE EXISTING CONDITIONS, PAGE 3, FOR COMPLETE ABUTTERS LISTING AND PROJECT NOTES NOTES, PAGE 2, FOR COMPLETE LIST OF SITE PLAN NOTES.

8.) EXISTING BUILDING COVERAGE AREA: 5,364 Sq.Ft., (3.95%) (PERCENTAGES ARE FUNCTION OF LOT MERGER, 135,950 Sq. Ft., 3.12 Ac.)
EXISTING IMPERVIOUS AREA: 16,886 Sq. Ft. (12.41%) (INCLUDES SOPHIE DRIVE)
EXISTING IMPERVIOUS AREA/LOT COVERAGE 22,250 Sq.Ft., (16.37%)

PROPOSED BUILDING IMPERVIOUS AREA: 12,655 Sq. Ft. (9.31%)
PROPOSED IMPERVIOUS AREA (ROAD EXPANSION, DRIVEWAYS, CURB, SIDEWALKS, BIKE RACK, PATIO, EX. GRAVEL DRIVEWAY, COLD SPRINGS ROAD & EX. SOPHIE DRIVE & SIDEWALKS): 37,041 Sq. Ft. (27.25%)
TOTAL PROPOSED IMPERVIOUS COVER: 49,696 Sq. Ft. (36.56%)

LEGEND:

- STONE/GRANITE BOUND (FND)
- IRON BOUND (FND)
- IRON PIPE (FND)
- UTILITY POLE / GUY WIRE
- SINGLE POST SIGN
- TEMPORARY BENCHMARK
- ABUTTING PROPERTY LINE
- BUILDING SETBACK LINE
- OVERHEAD UTILITIES
- PROPOSED LCA LINE
- ZONING BOUNDARY
- CENTER LINE
- GUARD RAIL
- GRAVEL SHOULDER
- FND FOUND
- TYP TYPICAL
- S.C.R.D. STRAFFORD COUNTY REGISTRY OF DEEDS
- LAMP "A" POLE MOUNTED 17' HIGH
- LAMP "B" POLE MOUNTED 16' HIGH
- LAMP "C" BUILDING MOUNTED 8' HIGH
- SNOW STORAGE
- TRANSFORMER/CONCRETE PAD
- STORMWATER BMP
- RETAINING WALL
- BITUMINOUS CONCRETE
- BRICK WALKWAY
- EXISTING GRAVEL

OPEN SPACE CALCULATION:

OPEN SPACE #1 – 12,663 Sq.Ft., 0.29 Ac.
OPEN SPACE #2 – 6,900 Sq.Ft., 0.16 Ac.

TOTAL OPEN SPACE – 19,563 Sq.Ft., 0.45 Ac.

SNOW STORAGE CALCULATION:

- STORAGE CALCULATION (6:1 RATIO USED)
  - •• PAVED AREA, CURBS, SIDEWALKS, EX. GRAVEL DRIVEWAY & COLD SPRINGS RD. = 25,420 Sq.Ft. / 6 = 4,237 Sq.Ft.
  - •• >7,0676 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, SNOW SHOULD BE REMOVED OR PUSHED BACK TO ENSURE ALL SEASON SIGHT DISTANCE.

PARKING REQUIREMENTS:

CHAPTER 153-14D PARKING TABLE
- RESIDENTIAL
  - •• RESIDENTIAL (NON CBD-G) 1.4 SPACES PER UNIT:
  - ••• VISITOR 0.5 SPACES PER UNIT:
  - ••• EACH UNIT HAS A TWO CAR GARAGE AND DRIVEWAY PARKING (4 SPACES/UNIT)
  - ••• 8 UNITS * 1.9 SPACES PER UNIT = 16 SPACES REQ.
  - ••• EXISTING HOUSE CAN PARK MINIMUM OF 6 IN EX. DRIVEWAY
  - ••• 8 VISITOR SPACES PROVIDED ALONG SOPHIE DRIVE
  - ••• A TOTAL OF 42 PARKING SPACES ARE PROVIDED BETWEEN GARAGES, DRIVEWAYS, INCLUDING THE 8 SPACE PARKING ARRAY ALONG SOPHIE DRIVE.

1 ACCESSIBLE SPACE PROVIDED IN THE 8 SPACE PARKING ARRAY ALONG SOPHIE DRIVE

5% BICYCLE RACK STORAGE = 1 SPACES REQ. 7 PROVIDED ON 1 RACK

5% EV SPACE REQ. = 1 SPACES REQ. & 1 ADDITIONAL FROM CUP REQ. 2 GARAGES PROVIDED. TWO HOUSES SHALL HAVE WIRING FOR ELECTRIC VEHICLE CHARGING IN THE GARAGE TO MEET THE 5% EV REQUIREMENT AND ADDITIONAL PARKING SPACE CUP REQUIREMENT.

SEE CONDITIONAL USE PERMIT REQUEST FOR 8 ADDITIONAL PARKING SPACES PROVIDED ALONG SOPHIE DRIVE.

TRANSFER OF DEVELOPMENT RIGHTS (TDR):

PURCHASE OF 6 UNITS GREATER THAN 1,400 Sq. Ft.
REDUCTION OF THE 30' BUFFER TO THE STANDARD TDR BUILDING SETBACKS.

UNIT DENSITY CALCULATION:

- TOTAL AREA R-40 ZONE: 117,854 Sq. Ft.
- CALCULATION DOES NOT INCLUDE SOPHIE DRIVE LOT MERGER, AREA USED FOR DENSITY IN DOVER PROJECT #P21-66.
  - •• DENSITY OF 40,000 Sq. Ft. / UNIT
  - •• 117,854 Sq. Ft. – 3,053 Sq. Ft. (SLOPES) = 114,801 Sq.Ft.
  - •• 114,801 Sq. Ft. x 15% = 17,220 Sq. Ft. = NET LOT SIZE: 97,581 Sq.Ft.
  - •• 97,581 Sq. Ft., x FACTOR .85 = 82,943 Sq. Ft.
  - •• 82,943 Sq. Ft., / 40,000 Sq. Ft. = 2 UNITS AFFORDED BY RIGHT

TDR PURCHASE & USAGE TABLE:

THE SITE IS PERMITTED 2 UNITS, WITH ONE OF THEM THE EXISTING UNIT. 6 UNITS GREATER THAN 1,400 Sq. Ft. WILL BE REQUIRED TO BE PURCHASED FROM THE TDR PROGRAM.

WAIVER REQUESTS:

NONE

CONDITIONAL USE PERMITS:

170-27 CONSERVATION DISTRICT: TO DISTURB 3,053 Sq.Ft. OF SLOPE EXCEEDING 20%
153-14(D)(5): PARKING SPACES GREATER THAN THE MAXIMUM ALLOWED
170-33 GROUNDWATER PROTECTION: GREATER THAN 20% IMPERVIOUS IN THE SECONDARY GROUNDWATER RECHARGE ZONE.

APPROVED DOVER

CITY OF DOVER PLANNING FILE #

REVISION	DATE	DESCRIPTION
#2	03-04-25	REVISED UNIT COUNT AND ASSOCIATED MODIFICATIONS
#1	10-17-24	REVISED UNIT COUNT AND ASSOCIATED MODIFICATIONS

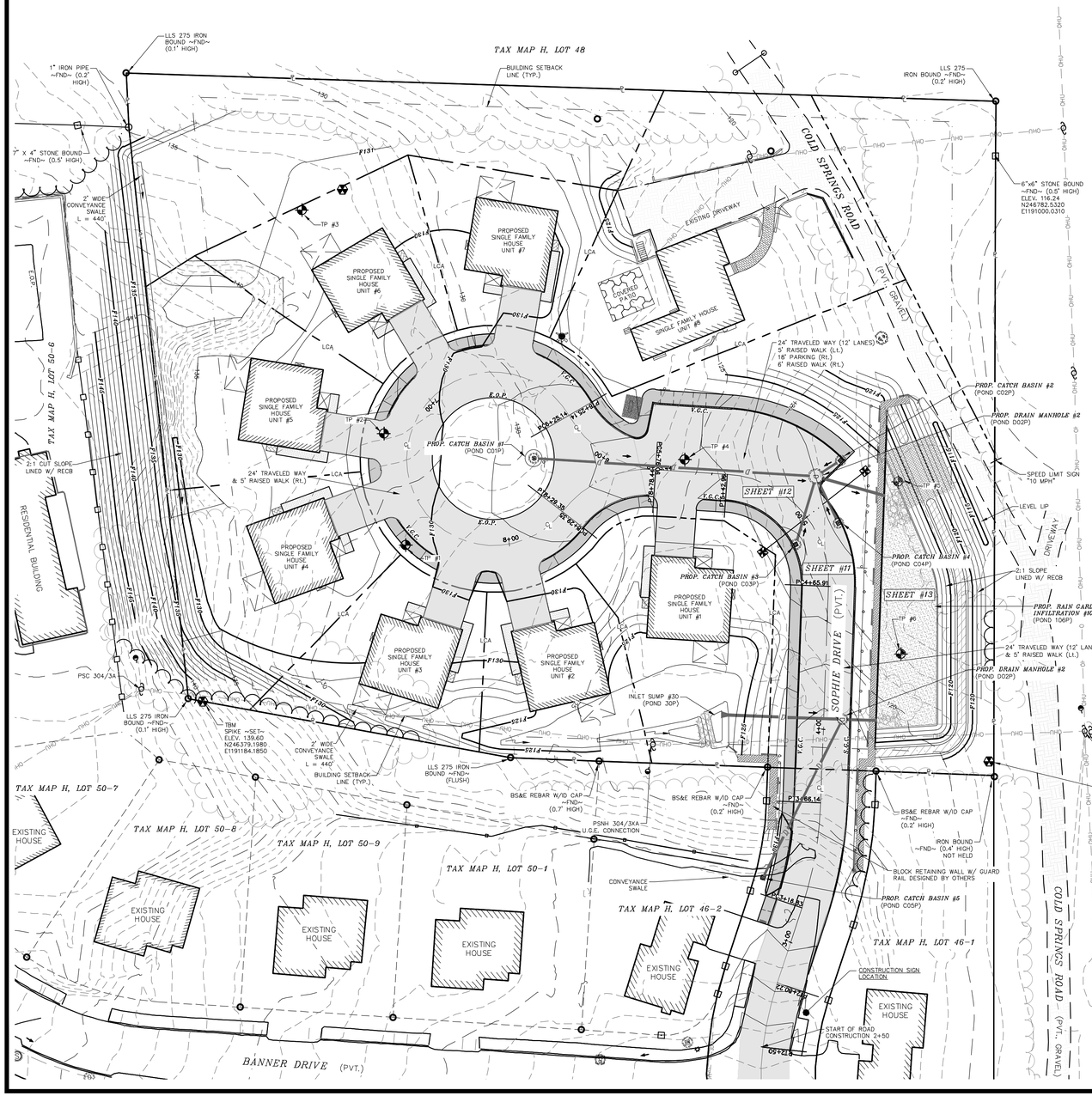
SITE PLAN
FOR
KNOX MARSH DEVELOPMENT LLC
LAND OF
5 SHERMAN STREET LLC
1 COLD SPRINGS ROAD
DOVER, N.H.
TAX MAP H, LOT 47-A

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

SCALE : 1 IN. EQUALS 20 FT.
DATE : SEPTEMBER 1, 2024
FILE NO. : DB 2023 – 126

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14294
LICENSED PROFESSIONAL ENGINEER

NOT FOR CONSTRUCTION



LEGEND:

- PROPOSED SEWER MANHOLE W/ STRUCTURE
- PROPOSED CATCH BASIN W/ STRUCTURE
- PROPOSED DRAIN MANHOLE W/ STRUCTURE
- TEMPORARY BENCHMARK (T.B.M.)
- E101 / E6 — DETAIL SHEET / DETAIL
- CONTOUR MINOR, EXISTING
- CONTOUR MAJOR, EXISTING
- CONTOUR MINOR, PROPOSED
- CONTOUR MAJOR, PROPOSED
- CENTER LINE
- GUARD RAIL
- EXISTING WATER MAIN
- EXISTING SEWER LINE
- EXISTING DRAINAGE LINE
- EXISTING OVERHEAD UTILITY
- PROPOSED WATER MAIN
- PROPOSED FIRE PROTECTION
- PROPOSED WATER SERVICE
- PROPOSED SEWER LINE
- PROPOSED DRAINAGE LINE
- PROPOSED UNDERDRAIN
- UNDERGROUND UTILITY
- EXISTING SPOT GRADE
- PROPOSED SPOT GRADE
- FLOW ARROW
- RIP RAP
- STORMWATER BEST MANAGEMENT PRACTICE (BMP)
- BERM
- RETAINING WALL
- TEST PIT
- PROPOSED BITUMINOUS CONCRETE

PROJECT NOTES:

1.) OWNER: 5 SHERMAN STREET LLC
242 CENTRAL AVE
DOVER, NH 03820

APPLICANT: KNOX MARSH DEVELOPMENT LLC
242 CENTRAL AVE
DOVER, NH 03820

2.) TAX MAP H, LOT 47–A

3.) S.C.R.D. BOOK 5190, PAGE 597

4.) LOT AREA: 117,854 Sq. Ft., 2.71 Ac.

5.) THE INTENT OF THIS PLAN IS TO PROVIDE AN OVERVIEW OF GRADING & ENGINEERING DETAILS FOR SOPHIE DRIVE AND TAX MAP H, LOT 47–A.

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.) SEE PROJECT NOTES SHEET FOR REMAINING GRADING NOTES. SEE EROSION & SEDIMENT CONTROL PLAN FOR LIMIT OF PROJECT DISTURBANCE.

10.) CATCH BASINS WITHIN ANY GRASS LINED AREAS OUTSIDE THE ROADWAY WILL HAVE "BEE HIVE" GRATES TO NOT ALLOW FOR ENTRAPMENT OF ANIMALS IN THE STRUCTURE. BASINS ARE TO HAVE NH STANDARD FRAMES AND GRATES MADE IN NORTH AMERICA. GRATES ARE TO BE INSTALLED BINDER FLUSH PRIOR TO BASE PAVE. UPON PROJECT COMPLETION FRAMES AND GRATES ARE TO BE CUT AND RIM RAISED TO FINAL PAVEMENT SURFACE. THIS IS TO ENSURE STORMWATER ENTERS THE SYSTEM AS DESIGN DURING THE INTERIM CONSTRUCTION PERIOD.

CITY OF DOVER PLANNING FILE #

REVISION	DATE	DESCRIPTION
#2	03-04-25	REVISED UNIT COUNT AND ASSOCIATED MODIFICATIONS
#1	10-17-24	REVISED UNIT COUNT AND ASSOCIATED MODIFICATIONS

OVERVIEW GRADING PLAN
FOR
KNOX MARSH DEVELOPMENT LLC
LAND OF
5 SHERMAN STREET LLC
1 COLD SPRINGS ROAD
DOVER, N.H.
TAX MAP H, LOT 47-A

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

SCALE : 1 IN. EQUALS 30 FT.
DATE : SEPTEMBER 1, 2024
FILE NO. : DB 2023 – 126

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14240
LICENSED PROFESSIONAL ENGINEER

NOT FOR CONSTRUCTION

PROJECT NOTES:

1.) OWNER: 5 SHERMAN STREET LLC
242 CENTRAL AVE
DOVER, NH 03820

APPLICANT: KNOX MARSH DEVELOPMENT LLC
242 CENTRAL AVE
DOVER, NH 03820

2.) TAX MAP H, LOT 47-A

3.) S.C.R.D. BOOK 5190, PAGE 597

4.) LOT AREA: 117,854 Sq. Ft., 2.71 Ac.

5.) THE INTENT OF THIS PLAN IS TO PROVIDE DETAIL OF GRADING & ENGINEERING DETAILS FOR SOPHIE DRIVE AND TAX MAP H, LOT 47-A.

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.) SEE PROJECT NOTES SHEET FOR REMAINING GRADING NOTES.

10.)CATCH BASINS WITHIN ANY GRASS LINED AREAS OUTSIDE THE ROADWAY WILL HAVE "BEE HIVE" GRATES TO NOT ALLOW FOR ENTRAPMENT OF ANIMALS IN THE STRUCTURE. BASINS ARE TO HAVE NH STANDARD FRAMES AND GRATES MADE IN NORTH AMERICA. GRATES ARE TO BE INSTALLED BINDER FLUSH PRIOR TO BASE PAVE. UPON PROJECT COMPLETION FRAMES AND GRATES ARE TO BE CUT AND RIM RAISED TO FINAL PAVEMENT SURFACE. THIS IS TO ENSURE STORMWATER ENTERS THE SYSTEM AS DESIGN DURING THE INTERIM CONSTRUCTION PERIOD.

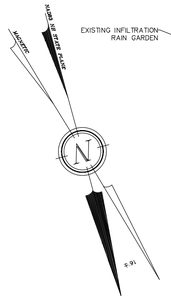
STRUCTURES TABLE:

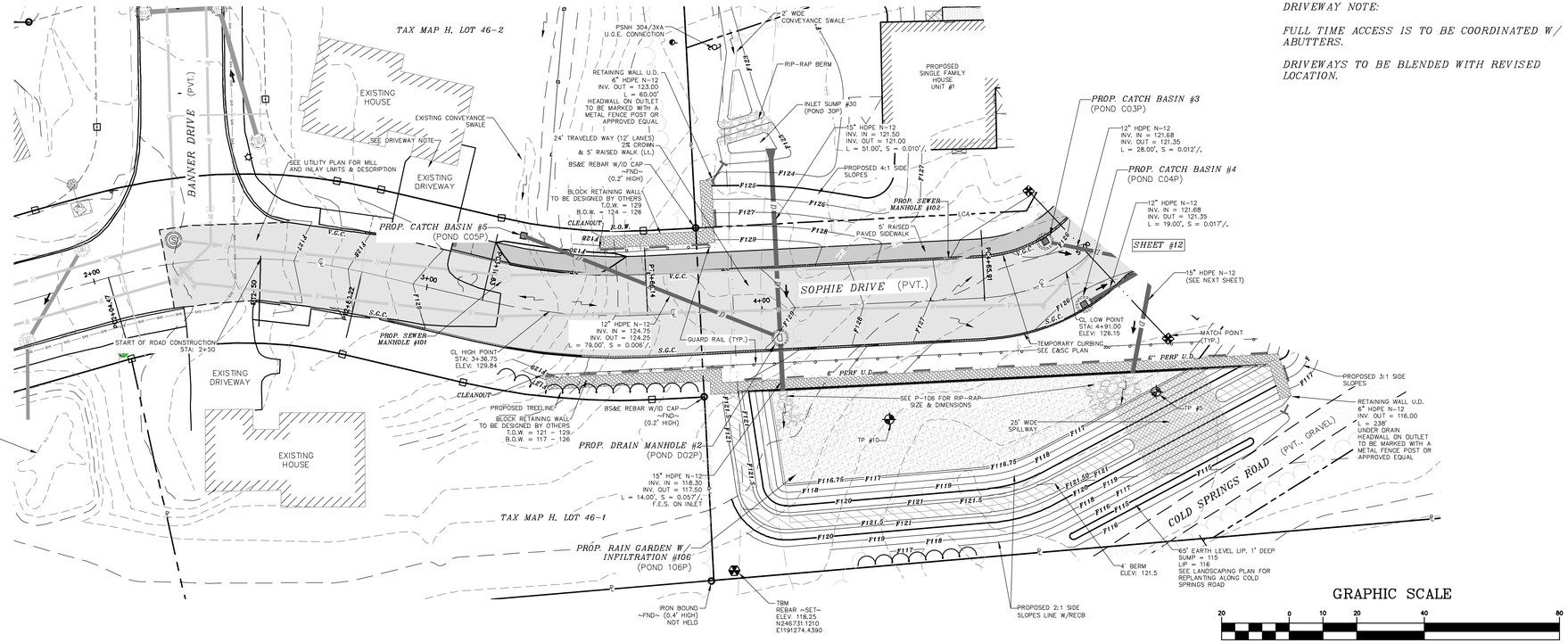
PROP. CATCH BASIN #3 (POND C03P)
4'ø STRUCTURE W/ TYPE "B" GRATE
STA: 4+91.00 (Lt. 11.00')
RIM = 125.93 (FLUSH)
INV. OUT = 121.68 (12" HDPE N-12) (DMH #1)
W/ 4' SUMP & HOOD

PROP. CATCH BASIN #4 (POND C04P)
4'ø STRUCTURE W/ TYPE "B" GRATE
STA: 4+91.00 (Rt. 11.00')
RIM = 125.93 (FLUSH)
INV. OUT = 121.68 (12" HDPE N-12) (DMH #1)
W/ 4' SUMP & HOOD

PROP. DRAIN MANHOLE #2 (POND D02P)
4'ø STRUCTURE W/
LIFTMATE R-1743-LM COVER AND FRAME
STA: 4+04.90 (Rt. 8.65')
RIM = 128.95 (FLUSH)
INV. IN = 124.25 (12" HDPE N-12) (CB #5)
INV. IN = 118.40 (15" HDPE N-12) (INLET SUMP 30P)
INV. OUT = 118.30 (15" HDPE N-12) (RG #106)

PROP. CATCH BASIN #5 (POND C05P)
24"ø NYLOPLAST BASIN W/ DOMED GRATE
STA: 3+25.40 (Lt. 21.15')
RIM = 129.00 (FLUSH)
INV. OUT = 124.75 (12" HDPE N-12) (DMH #2)





PLAN VIEW SOPHIE DRIVE 2+50 TO 5+00

DRIVEWAY NOTE:

FULL TIME ACCESS IS TO BE COORDINATED W/ ABUTTERS.

DRIVEWAYS TO BE BLENDED WITH REVISED LOCATION.

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

ROAD NOTE:

GRANULAR FILL REQUIRED WITHIN 12" OF SELECT MATERIALS. COMPACT ALL ROAD FILL MATERIALS IN 6" LIFTS. UNDER THE UNIFIED SOIL CLASSIFICATION SYSTEM, THE GRANULAR FILL BE GRAVELLY OR SANDY SOIL AND WILL NOT BE ANY FINE GRAINED SOIL.

PROFILE VIEW SOPHIE DRIVE 2+50 TO 5+00

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.
VERTICAL SCALE: 1" = 4'

LEGEND:

- PROPOSED SEWER MANHOLE W/ STRUCTURE
- PROPOSED CATCH BASIN W/ STRUCTURE
- PROPOSED DRAIN MANHOLE W/ STRUCTURE
- TEMPORARY BENCHMARK (T.B.M.)
- E101 / E6 — DETAIL SHEET / DETAIL
- 176 / 175 / F176 / F176 — CONTOUR MINOR, EXISTING; CONTOUR MAJOR, EXISTING; CONTOUR MINOR, PROPOSED; CONTOUR MAJOR, PROPOSED; CENTER LINE; GUARD RAIL
- EWL / ESL / EDL / OHU — EXISTING WATER MAIN; EXISTING SEWER LINE; EXISTING DRAINAGE LINE; EXISTING OVERHEAD UTILITY
- W / FP / WS / S / D / U.D. / UGE — PROPOSED WATER MAIN; PROPOSED FIRE PROTECTION; PROPOSED WATER SERVICE; PROPOSED SEWER LINE; PROPOSED DRAINAGE LINE; PROPOSED UNDERDRAIN; UNDERGROUND UTILITY
- E175.31 / F175.31 — EXISTING SPOT GRADE; PROPOSED SPOT GRADE
- FLOW ARROW
- RIP RAP
- STORMWATER BEST MANAGEMENT PRACTICE (BMP)
- BERM
- RETAINING WALL
- TEST PIT
- PROPOSED BITUMINOUS CONCRETE

NOT FOR CONSTRUCTION

CITY OF DOVER PLANNING FILE #

#	REVISION	DATE	DESCRIPTION
#2			REVISED UNIT COUNT AND ASSOCIATED MODIFICATIONS
#1		03-04-25 10-17-24	REVISED UNIT COUNT AND ASSOCIATED MODIFICATIONS

PLAN AND PROFILE SOPHIE DRIVE 2+50 TO 5+00
FOR
KNOX MARSH DEVELOPMENT LLC
LAND OF
5 SHERMAN STREET LLC
1 COLD SPRINGS ROAD
DOVER, N.H.
TAX MAP H, LOT 47-A

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

SCALE : 1 IN. EQUALS 20 FT.
DATE : SEPTEMBER 1, 2024
FILE NO. : DB 2023 - 126

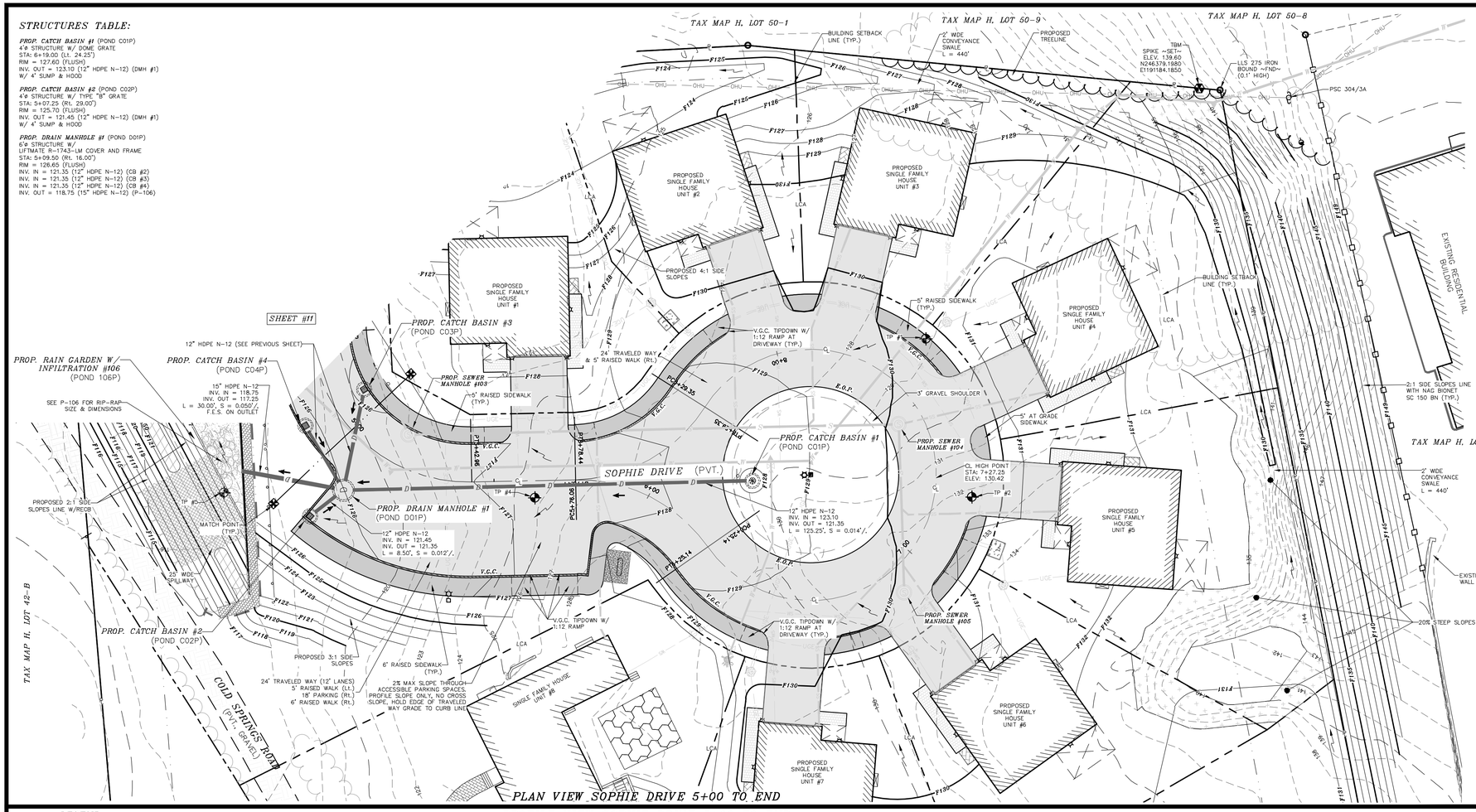
KENNETH A. BERRY No. 14249 LICENSED PROFESSIONAL ENGINEER - STATE OF NEW HAMPSHIRE

STRUCTURES TABLE:

PROP. CATCH BASIN #1 (POND C01P)
4'ø STRUCTURE W/ DOME GRATE
STA: 6+19.00 (Lt. 24.25')
RIM = 127.60 (FLUSH)
INV. OUT = 123.10 (12" HDPE N-12) (DMH #1)
W/ 4' SUMP & HOOD

PROP. CATCH BASIN #2 (POND C02P)
4'ø STRUCTURE W/ TYPE "S" GRATE
STA: 5+07.25 (Rt. 29.00')
RIM = 125.70 (FLUSH)
INV. OUT = 121.45 (12" HDPE N-12) (DMH #1)
W/ 4' SUMP & HOOD

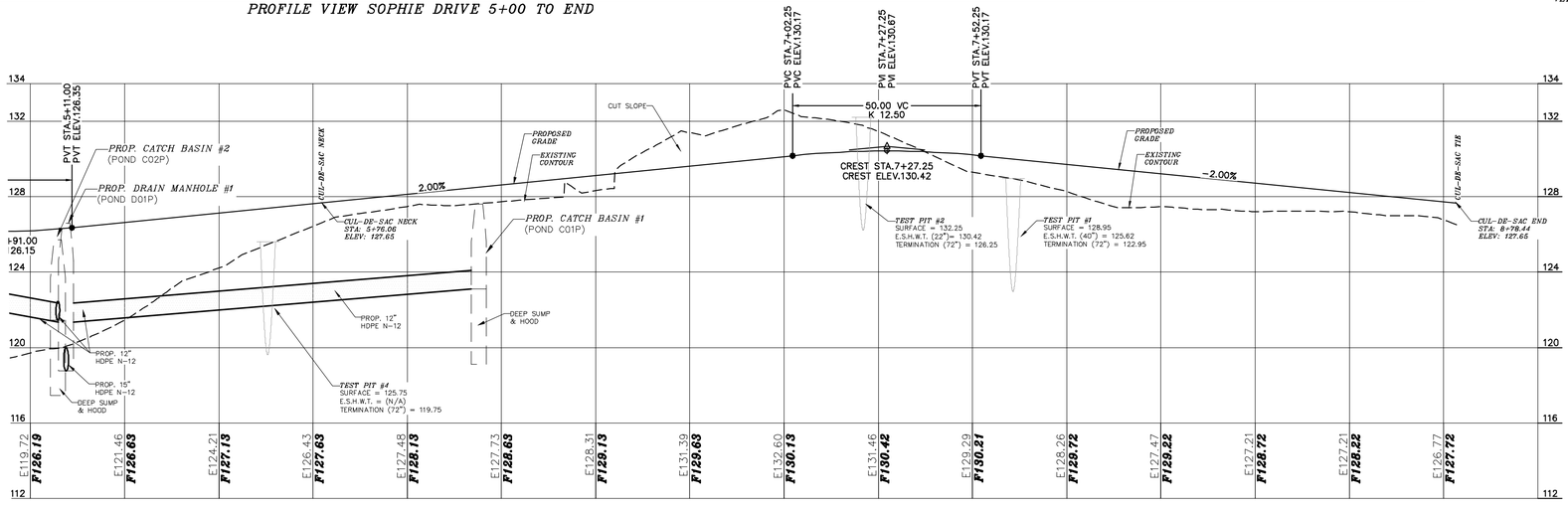
PROP. DRAIN MANHOLE #1 (POND D01P)
6'ø STRUCTURE W/
LIFTMATE R-1743-LM COVER AND FRAME
STA: 5+09.50 (Rt. 16.00')
RIM = 126.65 (FLUSH)
INV. IN = 121.35 (12" HDPE N-12) (CB #2)
INV. IN = 121.35 (12" HDPE N-12) (CB #3)
INV. IN = 121.35 (12" HDPE N-12) (CB #4)
INV. OUT = 118.75 (15" HDPE N-12) (P-106)



PLAN VIEW SOPHIE DRIVE 5+00 TO END

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.
VERTICAL SCALE: 1" = 4'

PROFILE VIEW SOPHIE DRIVE 5+00 TO END



LEGEND:

- PROPOSED SEWER MANHOLE W/ STRUCTURE
- PROPOSED CATCH BASIN W/ STRUCTURE
- PROPOSED DRAIN MANHOLE W/ STRUCTURE
- TEMPORARY BENCHMARK (T.B.M.)
- E101 / E6 — DETAIL SHEET / DETAIL
- CONTOUR MINOR, EXISTING
- CONTOUR MAJOR, EXISTING
- CONTOUR MINOR, PROPOSED
- CONTOUR MAJOR, PROPOSED
- CENTER LINE
- GUARD RAIL
- EXISTING WATER MAIN
- EXISTING SEWER LINE
- EXISTING DRAINAGE LINE
- EXISTING OVERHEAD UTILITY
- PROPOSED WATER MAIN
- PROPOSED FIRE PROTECTION
- PROPOSED WATER SERVICE
- PROPOSED SEWER LINE
- PROPOSED DRAINAGE LINE
- PROPOSED UNDERDRAIN
- UNDERGROUND UTILITY
- E175.31 — EXISTING SPOT GRADE
- F175.31 — PROPOSED SPOT GRADE
- FLOW ARROW
- RIP RAP
- STORMWATER BEST MANAGEMENT PRACTICE
- BERM
- RETAINING WALL
- TEST PIT
- PROPOSED BITUMINOUS CONCRETE

PROJECT NOTES:

1.) OWNER: 5 SHERMAN STREET LLC
242 CENTRAL AVE
DOVER, NH 03820

APPLICANT: KNOX MARSH DEVELOPMENT LLC
242 CENTRAL AVE
DOVER, NH 03820

2.) TAX MAP H, LOT 47-A

3.) S.C.R.D. BOOK 5190, PAGE 597

4.) LOT AREA: 117,854 Sq. Ft., 2.71 Ac.

5.) THE INTENT OF THIS PLAN IS TO PROVIDE DETAIL OF GRADING & ENGINEERING DETAILS FOR SOPHIE DRIVE AND TAX MAP H, LOT 47-A.

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.) SEE PROJECT NOTES SHEET FOR REMAINING GRADING NOTES.

10.) CATCH BASINS WITHIN ANY GRASS LINED AREAS OUTSIDE THE ROADWAY WILL HAVE "BEE HIVE" GRATES TO NOT ALLOW FOR ENTRAPMENT OF ANIMALS IN THE STRUCTURE. BASINS ARE TO HAVE NH STANDARD FRAMES AND GRATES MADE IN NORTH AMERICA. GRATES ARE TO BE INSTALLED BINDER FLUSH PRIOR TO BASE PAVE. UPON PROJECT COMPLETION FRAMES AND GRATES ARE TO BE CUT AND RIM RAISED TO FINAL PAVEMENT SURFACE. THIS IS TO ENSURE STORMWATER ENTERS THE SYSTEM AS DESIGN DURING THE INTERIM CONSTRUCTION PERIOD.

ROAD NOTE:

GRANULAR FILL REQUIRED WITHIN 12" OF SELECT MATERIALS. COMPACT ALL ROAD FILL MATERIALS IN 6" LIFTS. UNDER THE UNIFIED SOIL CLASSIFICATION SYSTEM, THE GRANULAR FILL BE GRAVELLY OR SANDY SOIL AND WILL NOT BE ANY FINE GRAINED SOIL.

CITY OF DOVER PLANNING FILE #

REVISION	DATE	DESCRIPTION
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	10-17-24	

PLAN AND PROFILE SOPHIE DRIVE 5+00 TO END
FOR
KNOX MARSH DEVELOPMENT LLC
LAND OF
5 SHERMAN STREET LLC
1 COLD SPRINGS ROAD
DOVER, N.H.
TAX MAP H, LOT 47-A

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

SCALE : 1 IN. EQUALS 20 FT.
DATE : SEPTEMBER 1, 2024
FILE NO. : DB 2023 - 126

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY No. 14248 LICENSED PROFESSIONAL ENGINEER

NOT FOR CONSTRUCTION

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

3/8" WASHED CRUSHED STONE*

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

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

1-1/2" WASHED CRUSHED STONE*

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

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

NOTES

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

MAINTENANCE REQUIREMENTS

1 SYSTEMS SHOULD BE INSPECTED AT LEAST TWICE ANNUALLY, AND FOLLOWING ANY RAINFALL EXCEEDING 0.25 INCHES IN A 24-HOUR PERIOD, WITH MAINTENANCE OR REHABILITATION CONDUCTED AS A WARRANTED BY SUCH INSPECTION.

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

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

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

DESIGN REFERENCES

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

CONSTRUCTION SEQUENCE NOTE:

EROSION, SEDIMENT AND DETENTION CONTROL FACILITIES 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. RUNOFF MUST BE DIRECTED TO TEMPORARY PRACTICES UNTIL STORMWATER BMPs ARE STABILIZED. SWALES CONVEYING RUNOFF TO STORMWATER BMPs WILL BE CONSTRUCTED AND PUT INTO SERVICE ONCE THE RECEIVING STORMWATER BMP IS STABILIZED. SEE DETAIL E17, SHEET E-102 FOR FULL CONSTRUCTION SEQUENCE.

RAIN GARDEN MIX

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

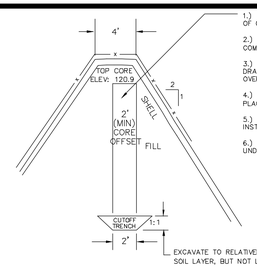
STABILIZATION NOTE:

SEE NOTE #6, SHEET E-102, DETAIL E-18
SIDE SLOPES ARE TO BE STABILIZED WITHIN THREE WORKING DAY UPON COMPLETION OF FINAL GRADE.

P1

P2

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



1.) 2" CORE IS TO BE CONSTRUCTED OF COMPACTED LOAM MATERIAL.

2.) CORE IS TO BE INSTALLED & COMPACTED IN 12" LIFTS.

3.) INSTALLATION OF ENTIRE DRAINAGE STRUCTURE IS TO BE OVERSEEN BY DESIGN ENGINEER.

4.) GENERAL FILL MATERIALS ARE TO PLACED & COMPACTED IN 12" LIFTS.

5.) GENERAL FILL MATERIAL MAY BE INSTALLED USING ONSITE MATERIALS.

6.) CORE IS TO BE CONSTRUCTED UNDERNEATH THE PROPOSED SPILLWAY.

EXCAVATE TO RELATIVELY IMPERVIOUS SOIL LAYER, BUT NOT LESS THAN 3'

INFILTRATION SURFACE PROTECTION NOTE:

SEE EROSION AND SEDIMENT CONTROL PLAN
IT IS RECOMMENDED THAT THE CONTRACTOR TAKE MEASURES TO PROTECT THE INFILTRATION SURFACE FROM SEDIMENTATION CAUSED BY EROSION ON THE SIDE SLOPES TRACKING IS NOT PERMITTED ON THE INFILTRATION SURFACE. EXCAVATIONS SHOULD TAKE PLACE ON THE OUTSIDE LIMITS OF THE INFILTRATION SYSTEM WHERE FEASIBLE. IF TRACKING DOES TAKE PLACE, SCARIFICATION IS REQUIRED PRIOR TO BE BACKFILL OF LOAM AND SEED.

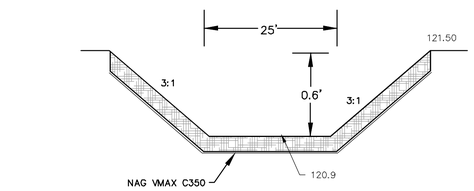
AFTER THE INFILTRATION SYSTEM AREA IS EXCAVATED TO THE FINAL DESIGN ELEVATION, THE FLOOR SHOULD BE DEEPLY TILLED WITH A ROTARY TILLER OR DISC HARROW TO RESTORE INFILTRATION RATES, FOLLOWED BY A PASS WITH A LEVELING DRAG.

DO NOT PLACE INFILTRATION SYSTEMS INTO SERVICE UNTIL THE CONTRIBUTING AREAS HAVE BEEN FULLY STABILIZED.

P3

SPILLWAY DETAILS

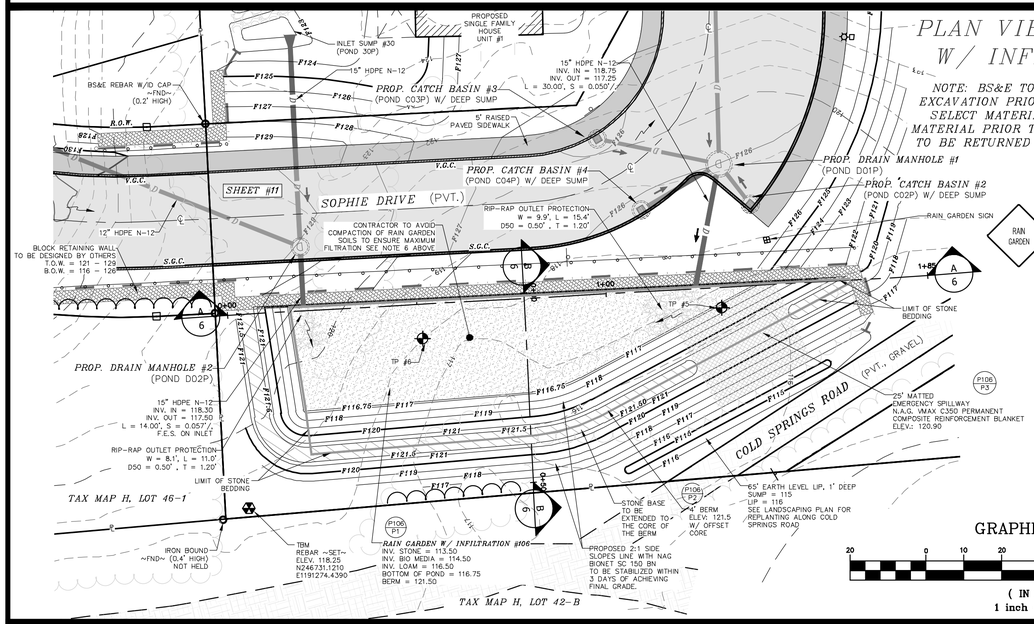
NOT TO SCALE



EMERGENCY SPILLWAY PROFILE

PLAN VIEW RAIN GARDEN W/ INFILTRATION #106

NOTE: BS&E TO INSPECT THE BOTTOM OF EXCAVATION PRIOR TO THE INSTALLATION OF SELECT MATERIALS. REMOVE ALL ORGANIC MATERIAL PRIOR TO SELECT MATERIALS. GRADE TO BE RETURNED WITH GRANULAR MATERIALS.



LEGEND:

- PROPOSED CATCH BASIN W/ STRUCTURE
- PROPOSED DRAIN MANHOLE W/ STRUCTURE
- TEMPORARY BENCHMARK (T.B.M.)
- E101 / E6 — DETAIL SHEET / DETAIL
- 176 / 175 — CONTOUR MINOR, EXISTING
- CONTOUR MAJOR, EXISTING
- F176 — CONTOUR MINOR, PROPOSED
- F175 — CONTOUR MAJOR, PROPOSED
- CENTER LINE
- GUARD RAIL
- PROPOSED DRAINAGE LINE
- FLOW ARROW
- RIP RAP
- STORMWATER BEST MANAGEMENT PRACTICE (BMP)
- BERM
- RETAINING WALL
- TEST PIT
- PROPOSED BITUMINOUS CONCRETE

GRAPHIC SCALE

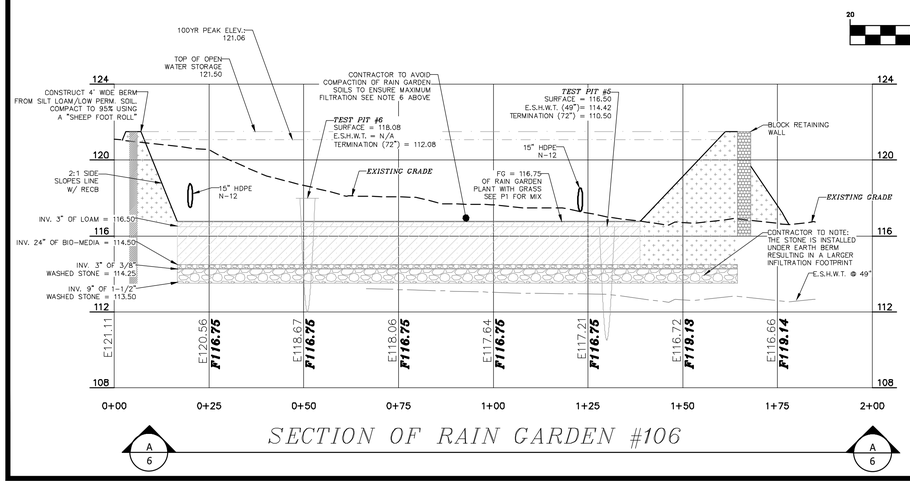
20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

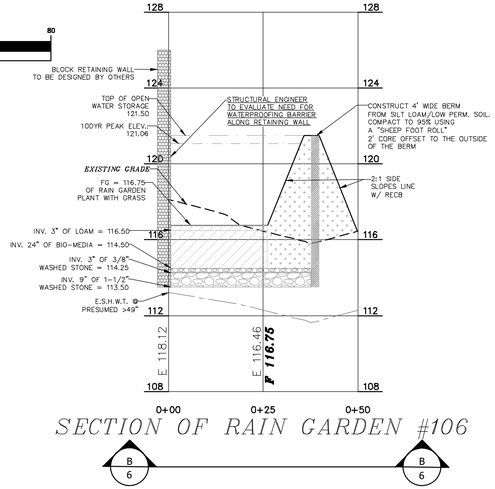
GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.
VERTICAL SCALE: 1" = 4'



SECTION OF RAIN GARDEN #106



SECTION OF RAIN GARDEN #106

ASTM C-33 FINE AGGREGATE	
SIEVE SIZE	% PASSING BY WEIGHT
3/8"	100
# 4	95 – 100
# 8	80 – 100
# 16	50 – 85
# 30	25 – 60
# 50	5 – 30
# 100	0 – 10
# 200	0 – 3

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

P-106

CITY OF DOVER PLANNING FILE #

#	REVISION	DATE	DESCRIPTION
#2		03-04-25	REVISED UNIT COUNT AND ASSOCIATED MODIFICATIONS
#1		10-17-24	REVISED UNIT COUNT AND ASSOCIATED MODIFICATIONS

RAIN GARDEN W/ INFILTRATION #106
FOR
KNOX MARSH DEVELOPMENT LLC
LAND OF
5 SHERMAN STREET LLC
1 COLD SPRINGS ROAD
DOVER, N.H.
TAX MAP H, LOT 47-A
LOT 47-A

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

SCALE : 1 IN. EQUALS 20 FT.
DATE : SEPTEMBER 1, 2024
FILE NO. : DB 2023 – 126

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY No. 14244 LICENSED PROFESSIONAL ENGINEER

SHEET 13 OF 33

NOT FOR CONSTRUCTION

PROJECT NOTES:

1.) OWNER: 5 SHERMAN STREET LLC
242 CENTRAL AVE
DOVER, NH 03820

APPLICANT: KNOX MARSH DEVELOPMENT LLC
242 CENTRAL AVE
DOVER, NH 03820

2.) TAX MAP H, LOT 47-A

3.) S.C.R.D. BOOK 5190, PAGE 597

4.) LOT AREA: 117,854 Sq. Ft., 2.71 Ac.

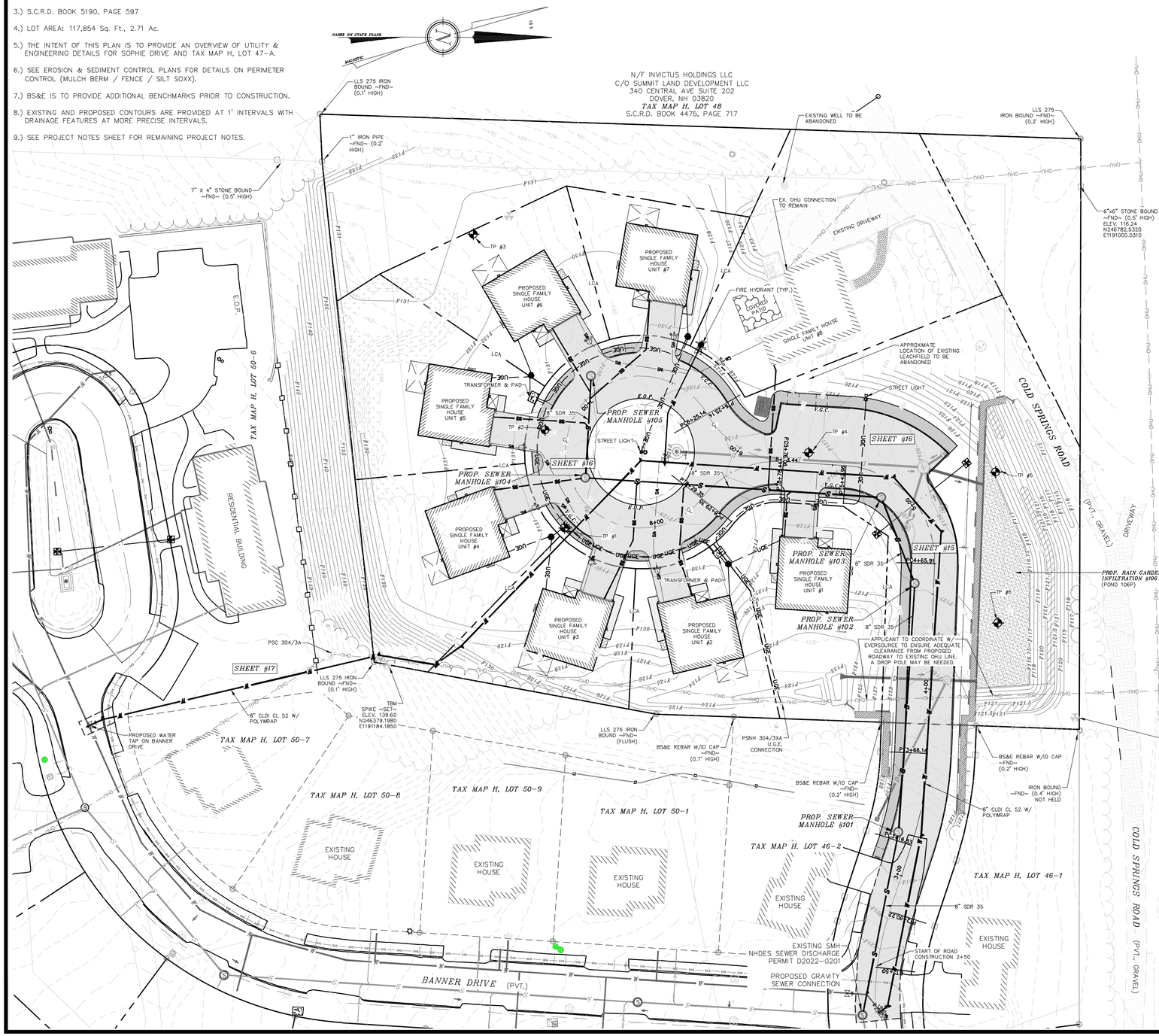
5.) THE INTENT OF THIS PLAN IS TO PROVIDE AN OVERVIEW OF UTILITY & ENGINEERING DETAILS FOR SOPHIE DRIVE AND TAX MAP H, LOT 47-A.

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.) SEE PROJECT NOTES SHEET FOR REMAINING PROJECT NOTES.



LEGEND:

- PROPOSED SEWER MANHOLE W/ STRUCTURE
- PROPOSED DRAIN MANHOLE W/ STRUCTURE
- PROPOSED CATCH BASIN W/ STRUCTURE
- TEMPORARY BENCHMARK (T.B.M.)
- E101 / E6 — DETAIL SHEET / DETAIL
- CONTOUR MINOR, EXISTING
- CONTOUR MAJOR, EXISTING
- CONTOUR MINOR, PROPOSED
- CONTOUR MAJOR, PROPOSED
- CENTER LINE
- EXISTING WATER MAIN
- EXISTING SEWER LINE
- EXISTING DRAINAGE LINE
- EXISTING OVERHEAD UTILITY
- PROPOSED WATER MAIN
- PROPOSED FIRE PROTECTION
- PROPOSED WATER SERVICE
- PROPOSED SEWER LINE
- PROPOSED DRAINAGE LINE
- UNDERGROUND UTILITY
- STORMWATER BEST MANAGEMENT PRACTICE (BMP)
- TEST PIT
- PROPOSED BITUMINOUS CONCRETE
- TRANSFORMER
- GATE VALVE
- CURB STOP
- FIRE HYDRANT
- THRUST BLOCKS
- LAMP "A" POLE MOUNTED 20' HIGH
- LAMP "B" POLE MOUNTED 16.5' HIGH
- LAMP "C" BUILDING MOUNTED 7' HIGH

UTILITY NOTES:

EXISTING BUILDING

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 EGFECTIVE 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 COMMUNITY SERVICES SEWER DIVISION STANDARDS. ALL PVC SEWER PIPE IS TO CONFORM WITH ENV-WQ 704.05 (c)-(e) FOR SDR 35 GRAVITY SEWER PIPE, CONFORM WITH ENV-WQ 704.08 FOR SDR 11 FORCE MAIN PRESSURE PIPE, AND CONFORM WITH ASTM D3034. PVC JOINT SEALS SHALL CONFORM WITH ASTM D3121.

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 EXISTING SINGLE FAMILY HOME WILL NO LONGER UTILIZE THEIR EXISTING WELL WATER AND SEPTIC 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.

23.) THE EXISTING HOUSE IS PROPOSED TO REMAIN TWO BEDROOMS, WHILE THE SEVEN PROPOSED HOUSES ARE FOUR BEDROOMS. TOTAL DESIGN FLOW FROM SOPHIE DRIVE EXTENSION: 4,500 GPD

CITY OF DOVER PLANNING FILE #

REVISION	DATE	DESCRIPTION
#2	03-04-25	REVISED UNIT COUNT AND ASSOCIATED MODIFICATIONS
#1	10-17-24	REVISED UNIT COUNT AND ASSOCIATED MODIFICATIONS

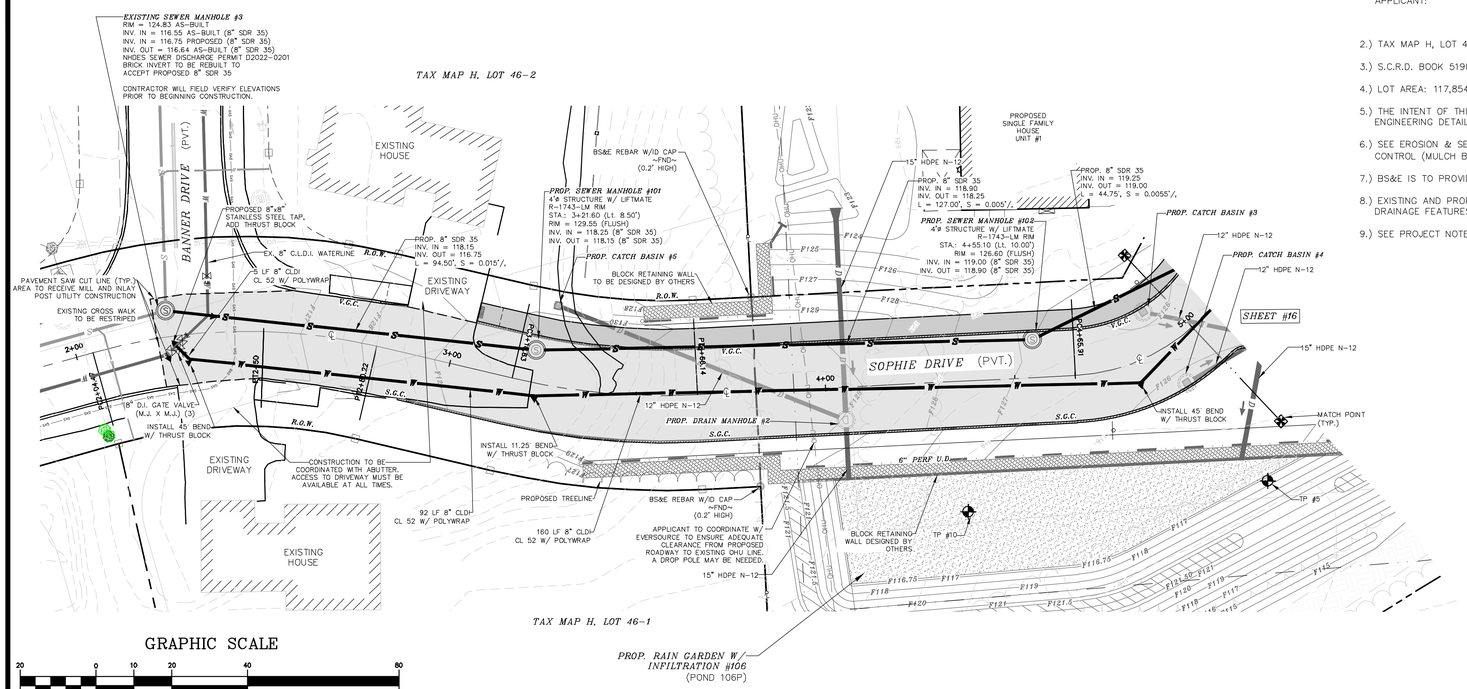
OVERVIEW UTILITY PLAN
FOR
KNOX MARSH DEVELOPMENT LLC
LAND OF
5 SHERMAN STREET LLC
1 COLD SPRINGS ROAD
DOVER, N.H.
TAX MAP H, LOT 47-A

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

SCALE : 1 IN. EQUALS 30 FT.
DATE : SEPTEMBER 1, 2024
FILE NO. : DB 2023 - 126

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY No. 17424 LICENSED PROFESSIONAL ENGINEER

NOT FOR CONSTRUCTION



GRAPHIC SCALE

20 0 10 20 40 60

(IN FEET)
1 inch = 20 ft.

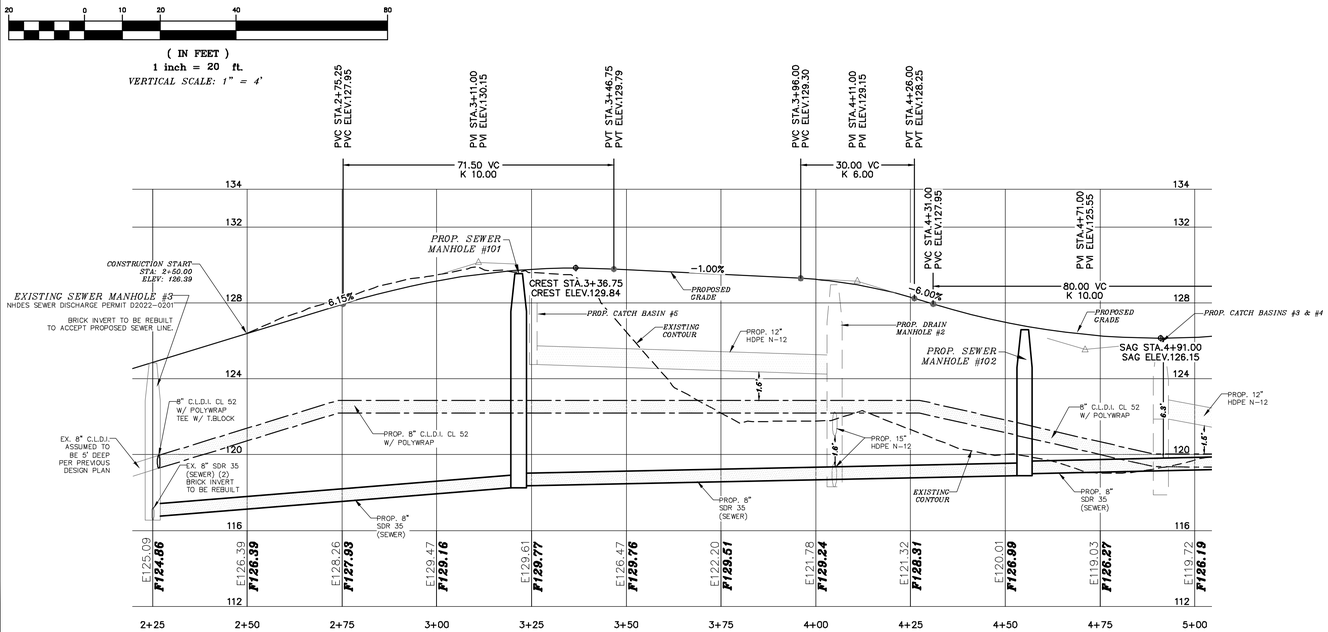
PLAN VIEW SOPHIE DRIVE EXTENSION CUL-DE-SAC

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.
VERTICAL SCALE: 1" = 4'

PROFILE VIEW SOPHIE DRIVE EXTENSION CUL-DE-SAC



PROJECT NOTES:

1.) OWNER: 5 SHERMAN STREET LLC
242 CENTRAL AVE
DOVER, NH 03820

APPLICANT: KNOX MARSH DEVELOPMENT LLC
242 CENTRAL AVE
DOVER, NH 03820

2.) TAX MAP H, LOT 47-A

3.) S.C.R.D. BOOK 5190, PAGE 597

4.) LOT AREA: 117,854 Sq. Ft., 2.71 Ac.

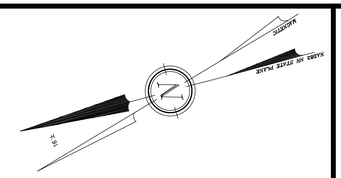
5.) THE INTENT OF THIS PLAN IS TO PROVIDE A DETAIL OF UTILITY & ENGINEERING DETAILS FOR SOPHIE DRIVE AND TAX MAP H, LOT 47-A.

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.) SEE PROJECT NOTES SHEET FOR REMAINING PROJECT NOTES.



LEGEND:

- PROPOSED SEWER MANHOLE W/ STRUCTURE
- PROPOSED DRAIN MANHOLE W/ STRUCTURE
- PROPOSED CATCH BASIN W/ STRUCTURE
- TEMPORARY BENCHMARK (T.B.M.)
- E101 / E6 — DETAIL SHEET / DETAIL
- CONTOUR MINOR, EXISTING
- CONTOUR MAJOR, EXISTING
- CONTOUR MINOR, PROPOSED
- CONTOUR MAJOR, PROPOSED
- CENTER LINE
- EXISTING WATER MAIN
- EXISTING SEWER LINE
- EXISTING DRAINAGE LINE
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- PROPOSED SEWER LINE
- PROPOSED DRAINAGE LINE
- UNDERGROUND UTILITY
- STORMWATER BEST MANAGEMENT PRACTICE (BMP)
- TEST PIT
- PROPOSED BITUMINOUS CONCRETE
- TRANSFORMER
- GATE VALVE
- CURB STOP
- FIRE HYDRANT
- THRUST BLOCKS
- LAMP "A" POLE MOUNTED 20' HIGH
- LAMP "B" POLE MOUNTED 16.5' HIGH
- LAMP "C" BUILDING MOUNTED 7' HIGH

UTILITY NOTE:

CONTRACTOR IS TO PROVIDE A MINIMUM OF 1.5' OF VERTICAL SEPARATION BETWEEN WATER, SEWER, AND DRAIN UTILITIES.

A MINIMUM OF 10' HORIZONTAL IS REQUIRED FOR SEPARATION OF WATER & SEWER LINES.

CITY OF DOVER PLANNING FILE #

REVISION	DATE	DESCRIPTION
#2	03-04-25	REVISED UNIT COUNT AND ASSOCIATED MODIFICATIONS
#1	10-17-24	REVISED UNIT COUNT AND ASSOCIATED MODIFICATIONS

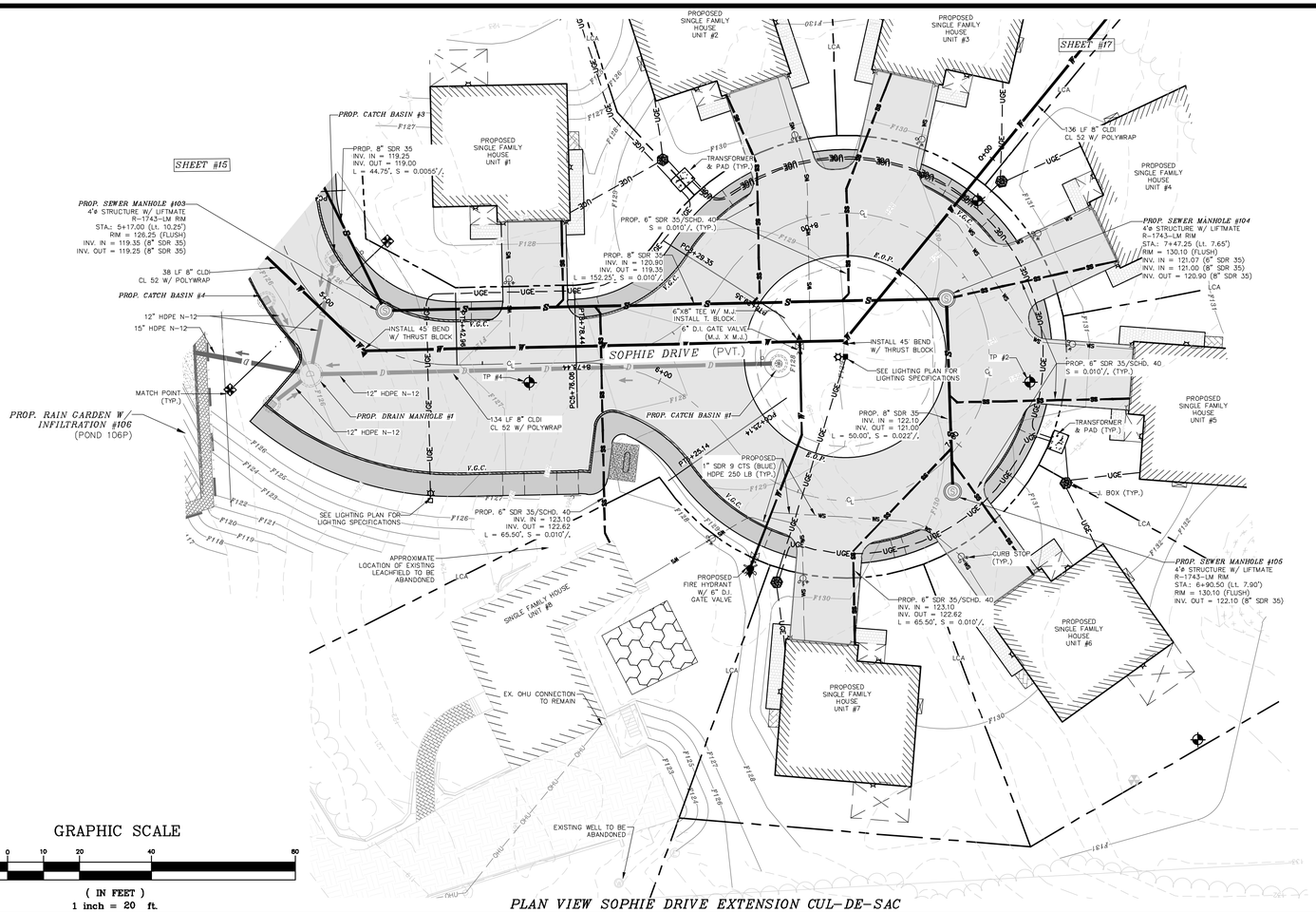
UTILITY PLAN AND PROFILE SOPHIE DRIVE 2+50 TO 5+00
FOR
KNOX MARSH DEVELOPMENT LLC
LAND OF
5 SHERMAN STREET LLC
1 COLD SPRINGS ROAD
DOVER, N.H.
TAX MAP H, LOT 47-A

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

SCALE : 1 IN. EQUALS 20 FT.
DATE : SEPTEMBER 1, 2024
FILE NO. : DB 2023 - 126

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
NH 14249
LICENSED PROFESSIONAL ENGINEER

NOT FOR CONSTRUCTION



GRAPHIC SCALE

20 0 10 20 40 60

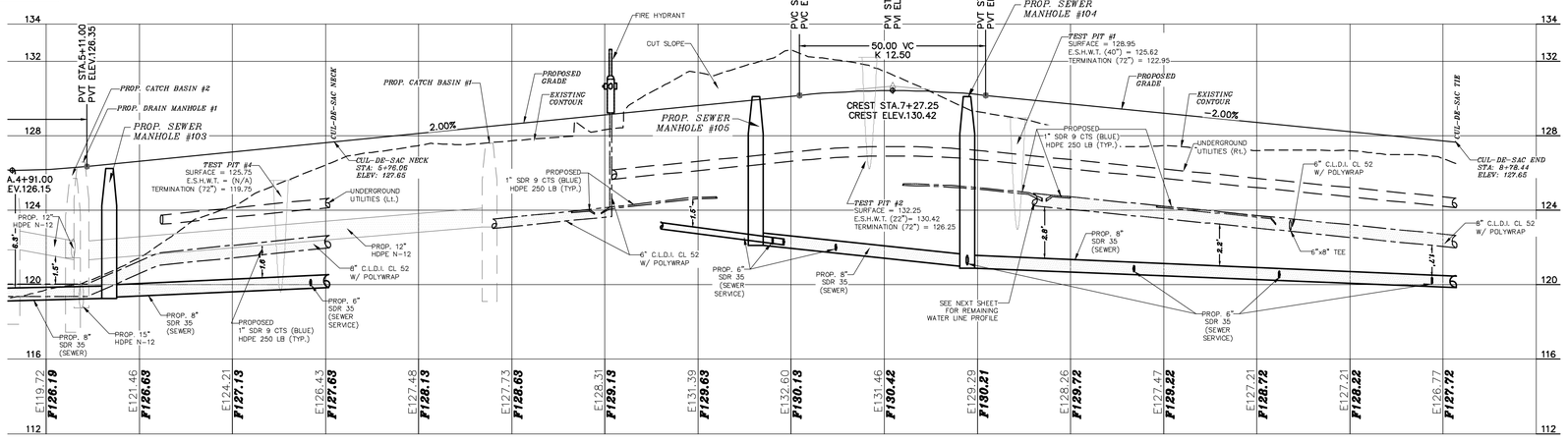
(IN FEET)
1 inch = 20 ft.

PLAN VIEW SOPHIE DRIVE EXTENSION CUL-DE-SAC

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.
VERTICAL SCALE: 1" = 4'



UTILITY NOTE:

CONTRACTOR IS TO PROVIDE A MINIMUM OF 1.5' OF VERTICAL SEPARATION BETWEEN WATER, SEWER, AND DRAIN UTILITIES.

A MINIMUM OF 10' HORIZONTAL IS REQUIRED FOR SEPARATION OF WATER & SEWER LINES.

PROJECT NOTES:

1.) OWNER: 5 SHERMAN STREET LLC
242 CENTRAL AVE
DOVER, NH 03820

APPLICANT: KNOX MARSH DEVELOPMENT LLC
242 CENTRAL AVE
DOVER, NH 03820

2.) TAX MAP H, LOT 47-A

3.) S.C.R.D. BOOK 5190, PAGE 597

4.) LOT AREA: 117,854 Sq. Ft., 2.71 Ac.

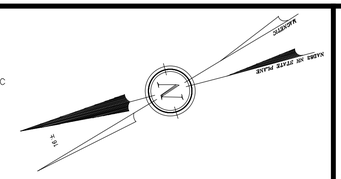
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6.) SEE EROSION & SEDIMENT CONTROL PLANS FOR DETAILS ON PERIMETER CONTROL (MULCH BERM / FENCE / SILT SOXX).

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.) SEE PROJECT NOTES SHEET FOR REMAINING PROJECT NOTES.



LEGEND:

- PROPOSED SEWER MANHOLE W/ STRUCTURE
- PROPOSED DRAIN MANHOLE W/ STRUCTURE
- PROPOSED CATCH BASIN W/ STRUCTURE
- TEMPORARY BENCHMARK (T.B.M.)
- E101 / E6 — DETAIL SHEET / DETAIL
- CONTOUR MINOR, EXISTING
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- LAMP "A" POLE MOUNTED 20' HIGH
- LAMP "B" POLE MOUNTED 16.5' HIGH
- LAMP "C" BUILDING MOUNTED 7' HIGH

CITY OF DOVER PLANNING FILE #

REVISION	DATE	DESCRIPTION
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#1	10-17-24	REVISED UNIT COUNT AND ASSOCIATED MODIFICATIONS

UTILITY PLAN AND PROFILE SOPHIE DRIVE 5+00 TO END
FOR
KNOX MARSH DEVELOPMENT LLC
LAND OF
5 SHERMAN STREET LLC
1 COLD SPRINGS ROAD
DOVER, N.H.
TAX MAP H, LOT 47-A

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

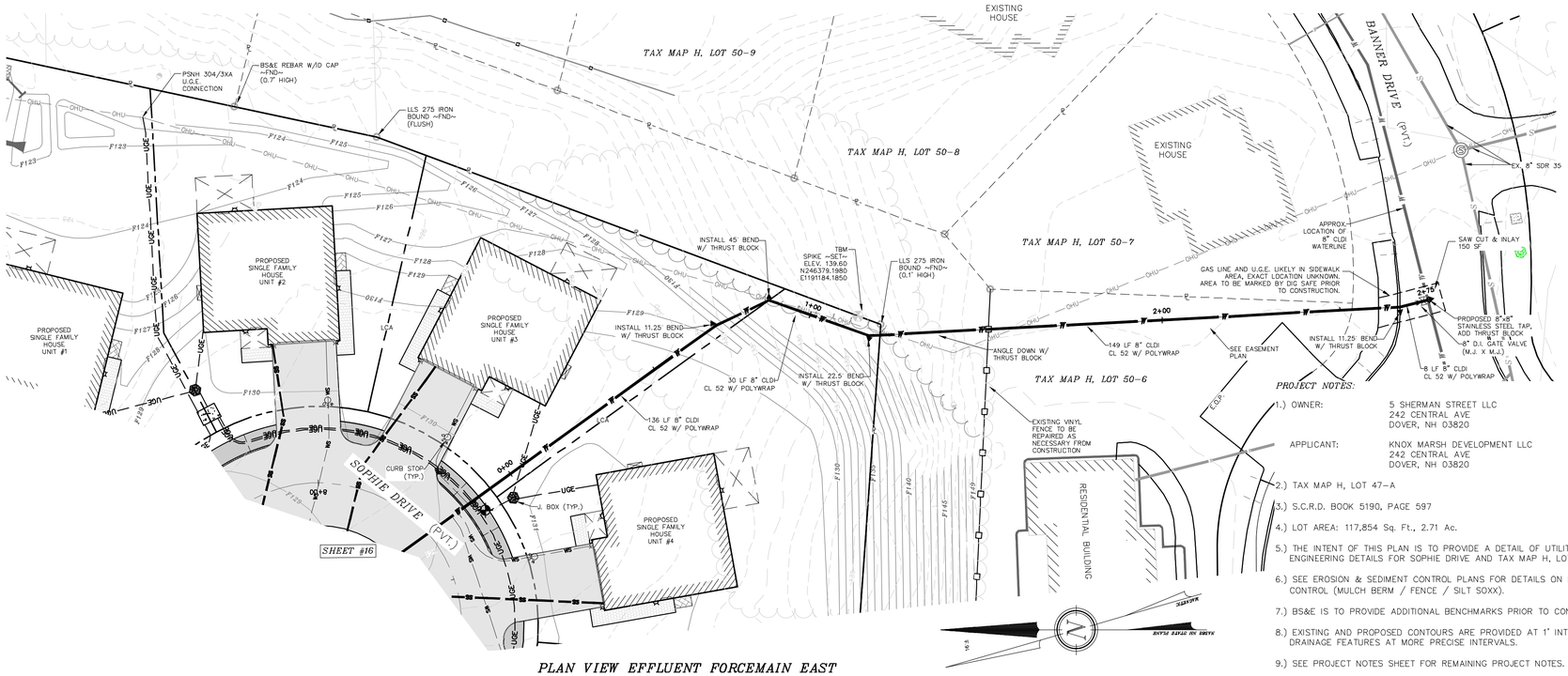
SCALE : 1 IN. EQUALS 20 FT.
DATE : SEPTEMBER 1, 2024
FILE NO. : DB 2023 - 126

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14249
LICENSED PROFESSIONAL ENGINEER

NOT FOR CONSTRUCTION

LEGEND:

- PROPOSED SEWER MANHOLE W/ STRUCTURE
- PROPOSED DRAIN MANHOLE W/ STRUCTURE
- PROPOSED CATCH BASIN W/ STRUCTURE
- TEMPORARY BENCHMARK (T.B.M.)
- E101 / E6 — DETAIL SHEET / DETAIL
- 176 / 175 / F176 / F175 — CONTOUR MINOR, EXISTING; CONTOUR MAJOR, EXISTING; CONTOUR MINOR, PROPOSED; CONTOUR MAJOR, PROPOSED
- CENTER LINE
- EWL / ESL — EXISTING WATER MAIN; EXISTING SEWER LINE
- EXISTING DRAINAGE LINE
- OHU — EXISTING OVERHEAD UTILITY
- W / FP / WS / SL / UGE — PROPOSED WATER MAIN; PROPOSED FIRE PROTECTION; PROPOSED WATER SERVICE; PROPOSED SEWER LINE; PROPOSED DRAINAGE LINE; UNDERGROUND UTILITY
- STORMWATER BEST MANAGEMENT PRACTICE (BMP)
- TEST PIT
- PROPOSED BITUMINOUS CONCRETE
- TRANSFORMER
- GV — GATE VALVE; CURB STOP; FIRE HYDRANT; THRUST BLOCKS
- LAMP "A" POLE MOUNTED 20' HIGH; LAMP "B" POLE MOUNTED 16.5' HIGH; LAMP "C" BUILDING MOUNTED 7' HIGH



PLAN VIEW EFFLUENT FORCEMAIN EAST

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

PROJECT NOTES:

1.) OWNER: 5 SHERMAN STREET LLC
242 CENTRAL AVE
DOVER, NH 03820

APPLICANT: KNOX MARSH DEVELOPMENT LLC
242 CENTRAL AVE
DOVER, NH 03820

2.) TAX MAP H, LOT 47-A

3.) S.C.R.D. BOOK 5190, PAGE 597

4.) LOT AREA: 117,854 Sq. Ft., 2.71 Ac.

5.) THE INTENT OF THIS PLAN IS TO PROVIDE A DETAIL OF UTILITY & ENGINEERING DETAILS FOR SOPHIE DRIVE AND TAX MAP H, LOT 47-A.

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.

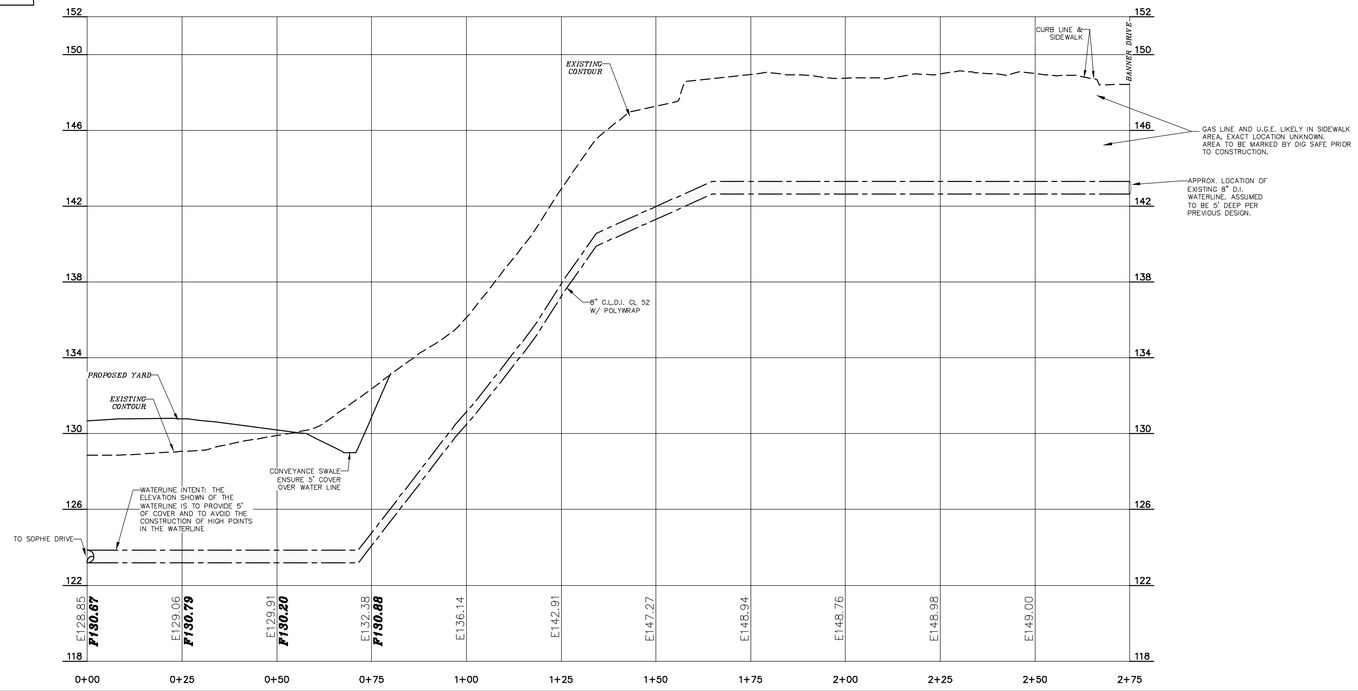
9.) SEE PROJECT NOTES SHEET FOR REMAINING PROJECT NOTES.

PROFILE VIEW EFFLUENT FORCEMAIN EAST

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.
VERTICAL SCALE: 1" = 4'



CITY OF DOVER PLANNING FILE #

#	REVISION	DATE	DESCRIPTION
#2			REVISED UNIT COUNT AND ASSOCIATED MODIFICATIONS
#1		03-04-25 10-17-24	REVISED UNIT COUNT AND ASSOCIATED MODIFICATIONS

UTILITY PLAN AND PROFILE WATER LINE CONNECTION
FOR
KNOX MARSH DEVELOPMENT LLC
LAND OF
5 SHERMAN STREET LLC
1 COLD SPRINGS ROAD
DOVER, N.H.
TAX MAP H, LOT 47-A

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

SCALE : 1 IN. EQUALS 20 FT.
DATE : SEPTEMBER 1, 2024
FILE NO. : DB 2023 – 126

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14249
LICENSED PROFESSIONAL ENGINEER

NOT FOR CONSTRUCTION



NOTES:

1.) OWNER: 5 SHERMAN STREET LLC
242 CENTRAL AVE
DOVER, NH 03820

APPLICANT: KNOX MARSH DEVELOPMENT LLC
242 CENTRAL AVE
DOVER, NH 03820

2.) TAX MAP H, LOT 47-A

3.) S.C.R.D. BOOK 5190, PAGE 597

4.) LOT AREA: 117,854 Sq. Ft., 2.71 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 SOPHIE DRIVE.

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 RUNOFF DURING THE CONSTRUCTION PROCESS, IN ACCORDANCE WITH ENV-WQ 1507, IN ORDER TO PREVENT VIOLATIONS OF THE STORM WATER QUALITY STANDARDS.

12.) CATCH BASIN RIM IS TO BE RAISED WITH FINAL GRADE SO THAT STORMWATER RUNOFF CAN DRAIN PROPERLY THROUGHOUT CONSTRUCTION.

13.) SEE SHEET #2 FOR REMAINING EROSION & SEDIMENT CONTROL NOTES AND REQUIREMENTS OF THE CITY OF DOVER.

LEGEND:

- IRON BOUND ~FND~
- GRANITE BOUND ~FND~
- IRON PIPE ~FND~
- EXISTING/PROPOSED CATCH BASIN W/ STRUCTURE
- PROPOSED STORMWATER BMP OUTLET STRUCTURE
- TEMPORARY BENCHMARK (T.B.M.)
- E101 / E6 — DETAIL SHEET / DETAIL
- CONTOUR MINOR, EXISTING
- CONTOUR MAJOR, EXISTING
- CONTOUR MINOR, PROPOSED
- CONTOUR MAJOR, PROPOSED
- CENTER LINE
- EXISTING DRAINAGE LINE
- PROPOSED DRAINAGE LINE
- RIP RAP
- STORMWATER BEST MANAGEMENT PRACTICE (BMP)
- BERM
- RETAINING WALL
- SILT FENCE / EROSION MIX BERM
- FILTREXX 8" – 12" SILT SOXX AS SPECIFIED
- ORANGE CONSTRUCTION PERIMETER FENCE
- PERIMETER CONTROL
- LIMIT OF PROJECT DISTURBANCE (104,000 Sq. Ft.)
- STORMWATER BMP PROTECTION
- PERIMETER CONTROL
- ROADWAY CONSTRUCTION

NADB3 NH STATE PLANE
MAGNETIC
15.8

SOILS & DEWATERING:

26	*WINDSOR*	*LOAMY SAND*	*K= 0.17*

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

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

COVER MANAGEMENT DURING CONSTRUCTION FOR EXPOSED SOIL WILL INCLUDE HAY / STRAW APPLIED AT A RATE OF 2.0 TONS PER AGRE, 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. SEE E&SC NOTES SHEET E-102.

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

CITY OF DOVER PLANNING FILE #

#	REVISION	DATE	DESCRIPTION
#2			REVISED UNIT COUNT AND ASSOCIATED MODIFICATIONS
#1		03-04-25 10-17-24	REVISED UNIT COUNT AND ASSOCIATED MODIFICATIONS

EROSION AND SEDIMENT CONTROL PLAN
FOR
KNOX MARSH DEVELOPMENT LLC
LAND OF
5 SHERMAN STREET LLC
1 COLD SPRINGS ROAD
DOVER, N.H.
TAX MAP H, LOT 47-A

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

SCALE : 1 IN. EQUALS 20 FT.
DATE : SEPTEMBER 1, 2024
FILE NO. : DB 2023 – 126

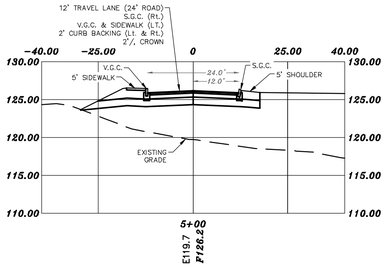
STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 7426
LICENSED PROFESSIONAL ENGINEER

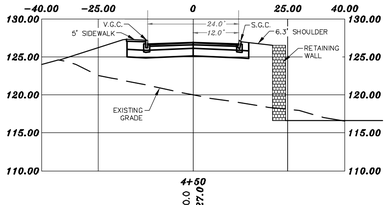
NOT FOR CONSTRUCTION

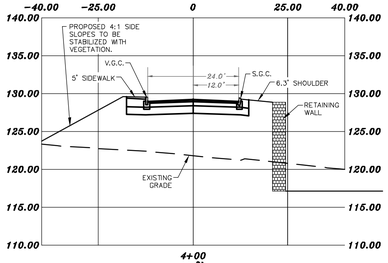
GRAPHIC SCALE

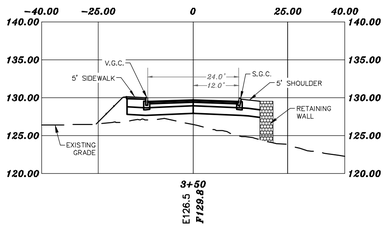
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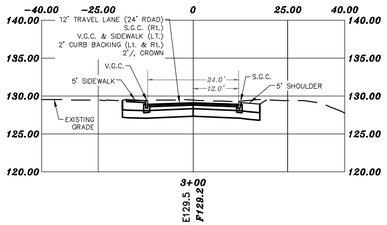
(IN FEET)
1 inch = 20 ft.
Vertical Scale 10

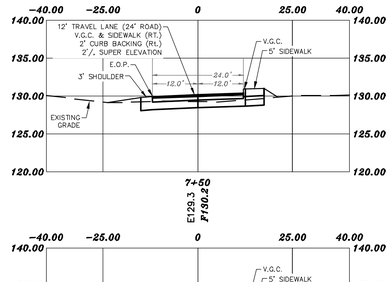


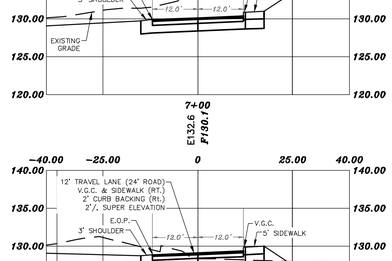


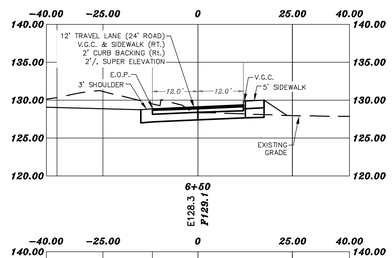


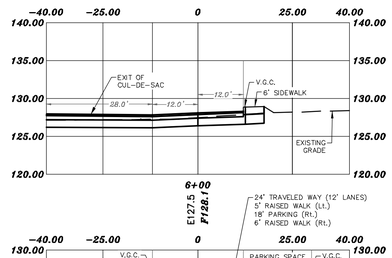


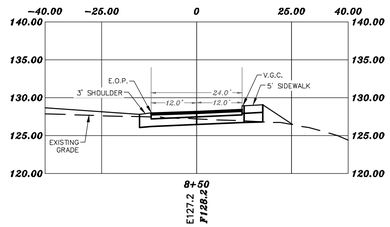


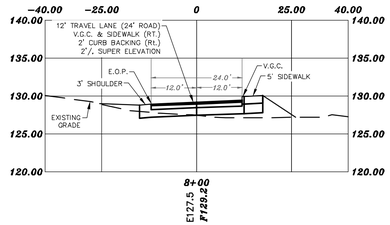












CITY OF DOVER PLANNING FILE #

REVISION	DATE	DESCRIPTION
#2	03-04-25	REVISED UNIT COUNT AND ASSOCIATED MODIFICATIONS
#1	10-17-24	REVISED UNIT COUNT AND ASSOCIATED MODIFICATIONS

CROSS SECTIONS
FOR
KNOX MARSH DEVELOPMENT LLC
LAND OF
5 SHERMAN STREET LLC
1 COLD SPRINGS ROAD
DOVER, N.H.
TAX MAP H, LOT 47-A

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

SCALE : 1 IN. EQUALS 20 FT.
DATE : SEPTEMBER 1, 2024
FILE NO. : DB 2023 - 126

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

NOT FOR CONSTRUCTION

NOTES:

1.) OWNER: 5 SHERMAN STREET LLC
242 CENTRAL AVE
DOVER, NH 03820

APPLICANT: KNOX MARSH DEVELOPMENT LLC
242 CENTRAL AVE
DOVER, NH 03820

2.) TAX MAP H, LOT 47-A

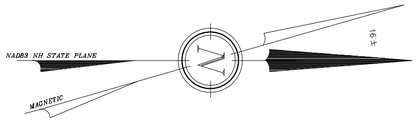
3.) S.C.R.D. BOOK 5190, PAGE 597

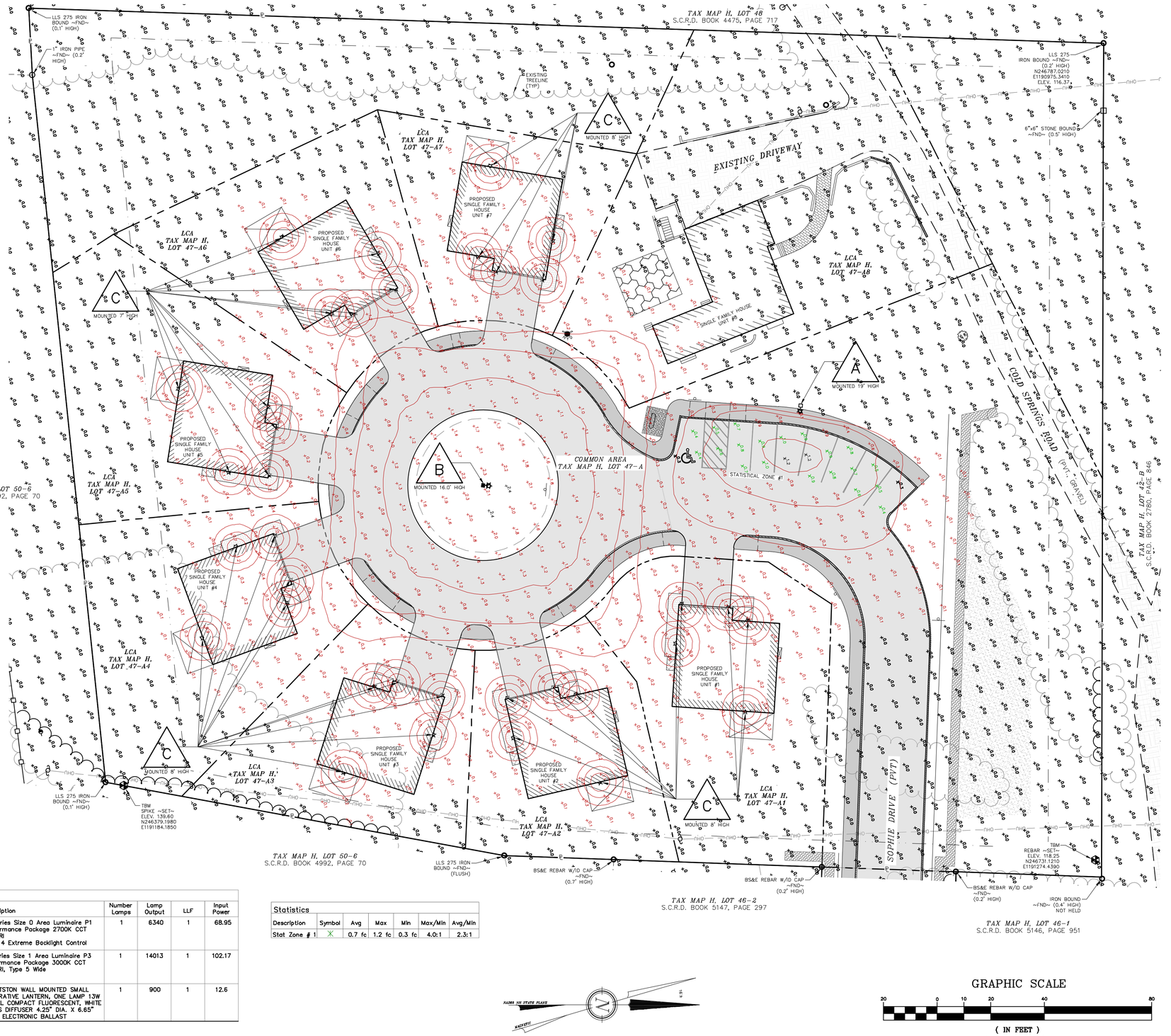
4.) LOT AREA: 117,854 Sq. Ft., 2.71 Ac.

5.) THE INTENT OF THIS PLAN IS SHOW THE PROPOSED LIGHTING DESIGN.

6.) SEE CONSTRUCTION DETAILS FOR LAMP CUT SHEETS.

7.) SEE PROJECT NOTES SHEET FOR SITE PLAN NOTES.





LEGEND:

- UTILITY POLE / GUY WIRE
- SINGLE POST SIGN
- TEMPORARY BENCHMARK
- ABUTTING PROPERTY LINE
- BUILDING SETBACK LINE
- OHU — OHU — OHU — OVERHEAD UTILITIES
- PROPOSED LCA LINE
- PERIMETER BOUNDARY
- FND FOUND
- TYP TYPICAL
- S.C.R.D. STRAFFORD COUNTY REGISTRY OF DEEDS
- LAMP "A" POLE MOUNTED 17' HIGH
- LAMP "B" POLE MOUNTED 16' HIGH
- LAMP "C" BUILDING MOUNTED 8' HIGH

Schedule									
Symbol	Label	QTY	Manufacturer	Catalog	Description	Number Lamps	Lamp Output	LLF	Input Power
	A	1	Lithonia Lighting	DSX0 LED P1 27K 80 CRI, BLC4	D-Series Size 0 Area Luminaire P1 Performance Package 2700K CCT 80 CRI Type 4 Extreme Backlight Control	1	6340	1	68.95
	B	1	Lithonia Lighting	DSX1 LED P3 30K 70 CRI, T5W	D-Series Size 1 Area Luminaire P3 Performance Package 3000K CCT 70 CRI, Type 5 Wide	1	14013	1	102.17
	C	35		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

Statistics						
Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
Stat Zone # 1	X	0.7 fc	1.2 fc	0.3 fc	4.0:1	2.3:1

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

CITY OF DOVER PLANNING FILE #

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#2	03-04-25	REVISED UNIT COUNT AND ASSOCIATED MODIFICATIONS
#1	10-17-24	REVISED UNIT COUNT AND ASSOCIATED MODIFICATIONS

LIGHTING PLAN
FOR
KNOX MARSH DEVELOPMENT LLC
LAND OF
5 SHERMAN STREET LLC
1 COLD SPRINGS ROAD
DOVER, N.H.
TAX MAP H, LOT 47-A

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

SCALE : 1 IN. EQUALS 20 FT.
DATE : SEPTEMBER 1, 2024
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STATE OF NEW HAMPSHIRE
KENNETH A. BERRY No. 14249 LICENSED PROFESSIONAL ENGINEER

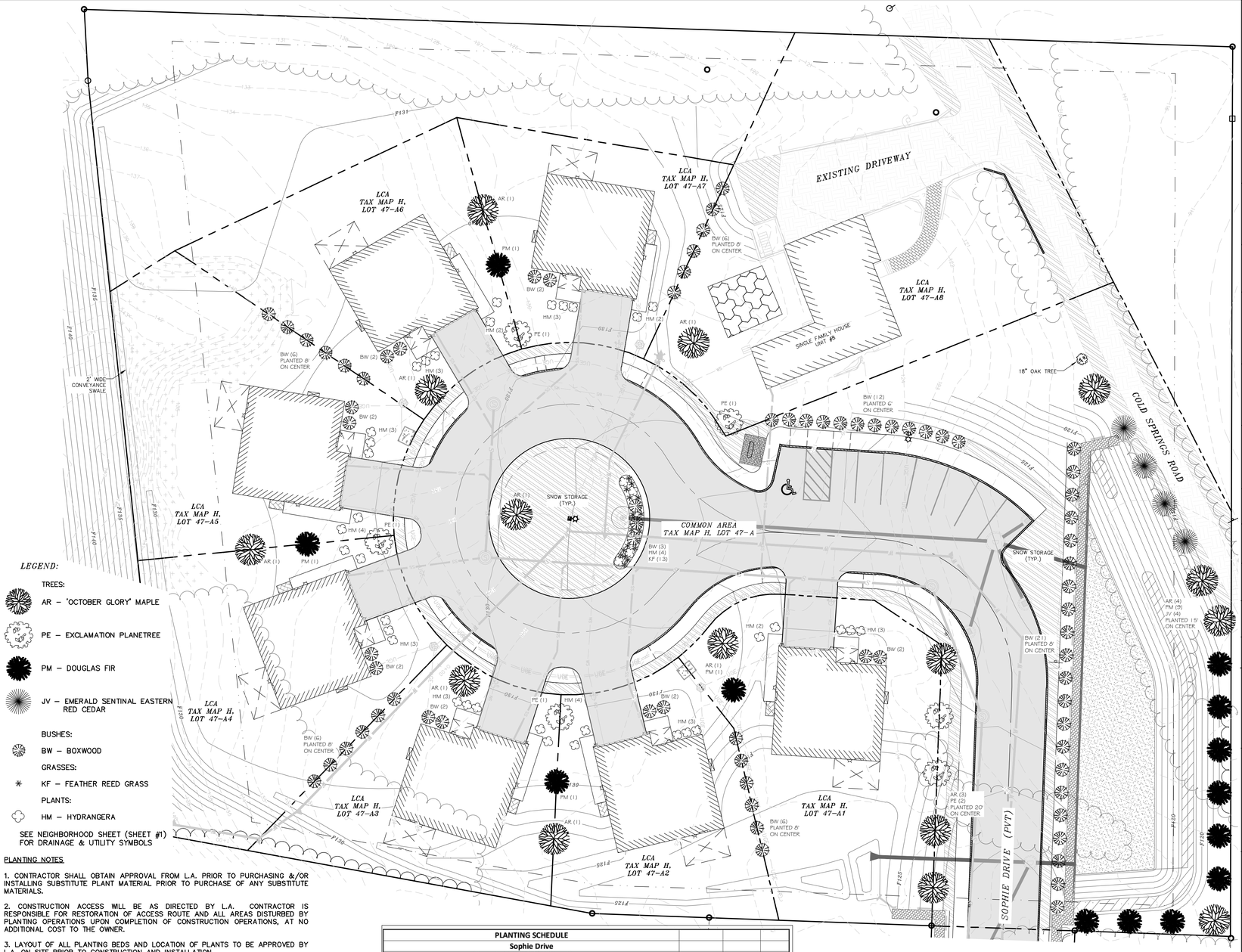
NOT FOR CONSTRUCTION

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,RUNING 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 GROWNG 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.

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.



LEGEND:

TREES:

AR – "OCTOBER GLORY" MAPLE

PE – EXCLAMATION PLANETREE

PM – DOUGLAS FIR

JV – EMERALD SENTINAL EASTERN RED CEDAR

BUSHES:

BW – BOXWOOD

GRASSES:

KF – FEATHER REED GRASS

PLANTS:

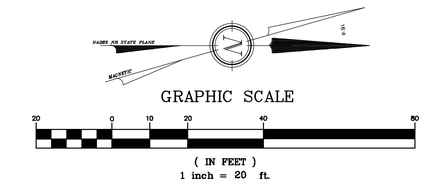
HM – HYDRANGERA

SEE NEIGHBORHOOD SHEET (SHEET #1) FOR DRAINAGE & UTILITY SYMBOLS

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.

PLANTING SCHEDULE			
Sophie Drive			
Botanical Name/ Common Name			
Trees	**Size**	**Qty**	**Label**
Acer rubrum 'October Glory' / October Glory Maple	4" Cal.	15	AR
Platnus x acenfloia 'Exclamation' / Exclamation Planetree	4" Cal.	6	PE
Pseudotsuga menziesii / Douglas Fir	4" Cal.	13	PM
Juniperus virginiana 'Emerald Sentinel' / Emerald Sentinal Eastern Red Cedar	45 Gal.	4	JV
Shrubs			
Buxus / Boxwood	3 Gal.	72	BW
Grasses			
Calamagrostis acutifolia 'Karl Foerster' / Feather Reed Grass	#2	16	KF
Perennials			
Hydrangea macrophylla/ Hydrangea	#1	39	HM



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

SOPHIE DRIVE

Site Location:
1 COLD SPRINGS ROAD
Dover, NH
Tax Map: H, Lot 47-A

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

LANDSCAPE PLAN

DATE: September 1, 2024
REVISED: March 4, 2025

SCALE: 1" = 20'

PROJECT #: 23-126

Drawn By: JB

Checked By: ERB

REVISIONS: DATE:

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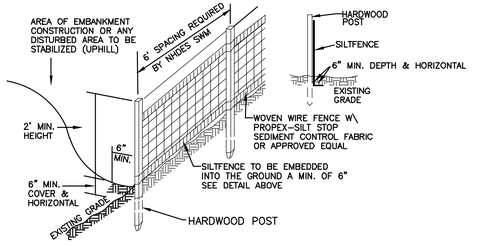
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SHEET 21 OF 33

LICENSED LANDSCAPE ARCHITECT
ERIC R BUCK
078
STATE OF NEW HAMPSHIRE

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

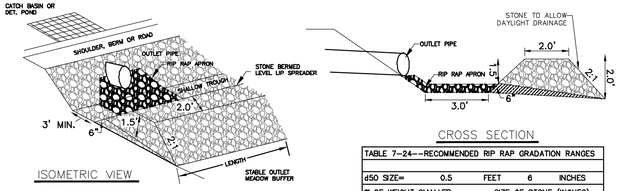
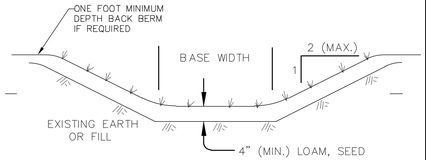


TABLE 7-24--RECOMMENDED RIP RAP GRADATION RANGES			
d50 SIZE=	0.5	FEET	6 INCHES
% OF WEIGHT SMALLER THAN THE GIVEN d50 SIZE	SIZE OF STONE (INCHES) FROM		TO
100%	9		12
85%	8		11
50%	6		9
15%	2		3

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 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

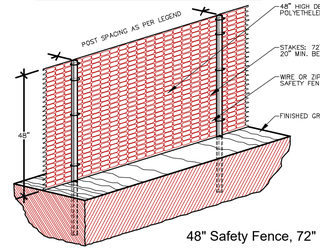
TO BE CONSTRUCTED IAW NH SWM #2 CHAPTER 4, #5 TREATMENT SWALES, PAGE 123.

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

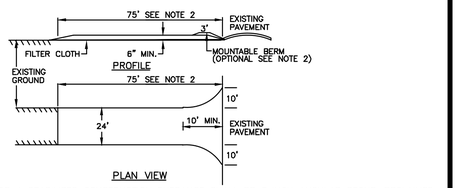
1. ALL SENSITIVE AREAS SHALL BE PROTECTED AS PER PLAN.
2. ALL TREES IN THE CONSTRUCTION AREA NOT SPECIFICALLY DESIGNATED FOR REMOVAL SHALL BE PRESERVED AND PROTECTED WITH HIGH VISIBILITY FENCE AS PER PLAN.
3. WHEN PRACTICABLE, INSTALL HIGH VISIBILITY 3 FEET OUTSIDE OF THE DRIP LINE OF THE TREE.
4. SAFETY 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.

CITY OF DOVER PLANNING FILE #

REVISION	DATE	DESCRIPTION
#2	03-04-25	REVISED UNIT COUNT AND ASSOCIATED MODIFICATIONS
#1	10-17-24	REVISED UNIT COUNT AND ASSOCIATED MODIFICATIONS

E5

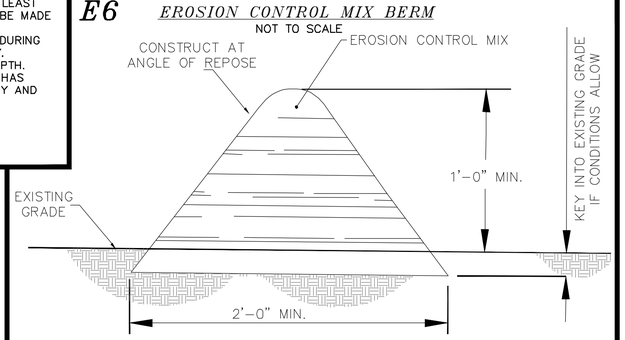
STABILIZED CONSTRUCTION ENTRANCE
NOT TO SCALE



1. STONE FOR A STABILIZED CONSTRUCTION ENTRANCE SHALL BE 3 INCH ANGULAR STONE, RECLAIMED STONE, OR RECYCLED CONCRETE EQUIVALENT WITH ENGINEERED FABRIC.
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

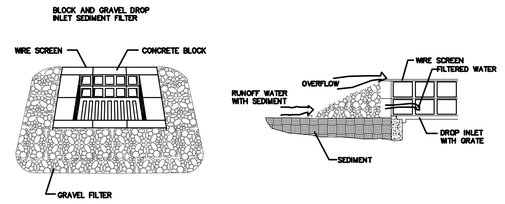
EROSION CONTROL MIX BERM
NOT TO SCALE



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 CLOSELY 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
FOR
KNOX MARSH DEVELOPMENT LLC
LAND OF
5 SHERMAN STREET LLC
1 COLD SPRINGS ROAD
DOVER, N.H.
TAX MAP H, LOT 47-A

E9

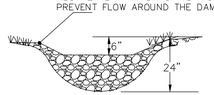
STONE CHECK DAM
NOT TO SCALE

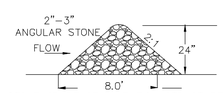


SPACING BETWEEN STRUCTURES

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.

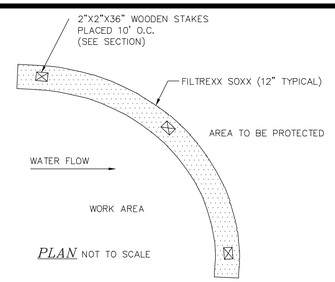
NOTE: KEY STONE INTO CHANNEL BANKS AND EXTEND IT BEYOND THE ABUTMENTS A MINIUM OF 18" TO PREVENT FLOW AROUND THE DAM.





STONE GRADE STABILIZATION STRUCTURE

E10

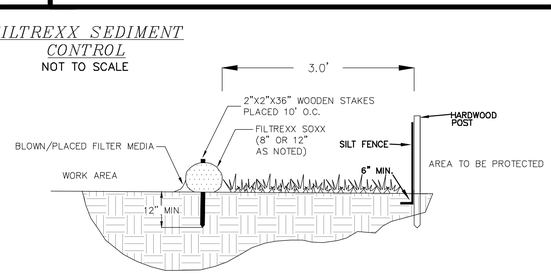


PLAN NOT TO SCALE

NOTES

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

FILTREXX SEDIMENT CONTROL
NOT TO SCALE



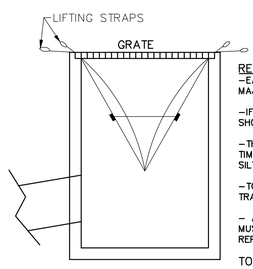
Filtrexx International, LLC
35481 Grafton Eastern Rd | Grafton, Oh 44044
440-926-2607 | fax: 440-926-4021
WWW.FILTREXX.COM
OR APPROVED EQUAL

NOTE: FOR AREAS REQUIRING DOUBLE PERIMETER CONTROL WITHIN 50' OF JURISDICTIONAL WETLANDS AND NOT FOR ALL SILT SOXX APPLICATIONS.

DOUBLE PERIMETER PROTECTION CAN BE ANY COMBINATION OF THE PRACTICES OF SILT FENCE, SILT SOXX, OR EROSION CONTROL MULCH BERM.

SECTION NOT TO SCALE

E11



RECOMMENDED MAINTENANCE SCHEDULE

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

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

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

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

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

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

SILTSACK DETAIL
NOT TO SCALE

E-101

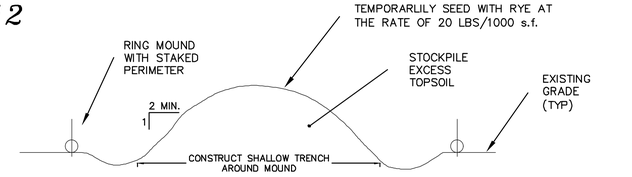
BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : AS SHOWN
DATE : SEPTEMBER 1, 2024
FILE NO. : DB 2023 - 126

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

NOT FOR CONSTRUCTION

E12



TOPSOIL STOCKPILE MOUND

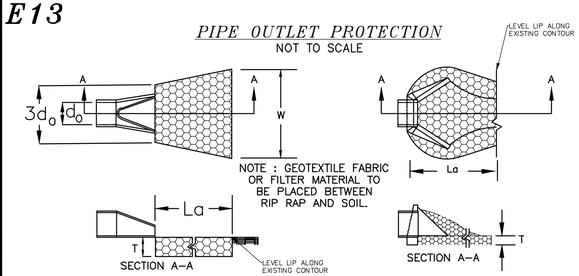
NOT TO SCALE

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

E13

PIPE OUTLET PROTECTION

NOT TO SCALE



PIPE OUTLET TO FLAT AREA WITH NO DEFINED CHANNEL

PIPE OUTLET TO WELL–DEFINED CHANNEL

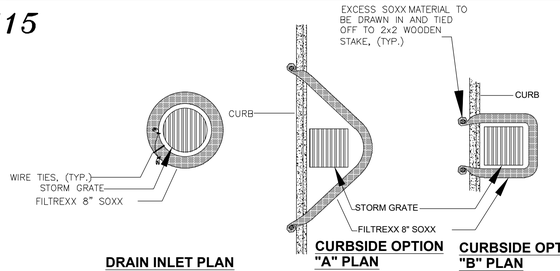
PIPE OUTLET PROTECTION CONSTRUCTION SPECIFICATIONS

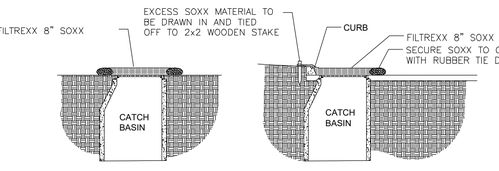
1. THE SUB GRADE FOR THE FILTER MATERIAL, GEOTEXTILE FABRIC, AND RIP RAP SHALL BE PREPARED TO THE LINES AND GRADES SHOWN ON THE PLANS. SPECIFIED GRADATION.
2. THE ROCK OR GRAVEL USED FOR FILTER OF RIP RAP SHALL CONFORM TO NHDOT SECTION 583.
3. GEOTEXTILE FABRICS SHALL BE PROTECTED FROM PUNCTURE OR TEARING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

E14

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

E15





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 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.

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	1.35
OR		
FLAT PEA	30	0.75
TOTAL	40 OR 55	0.95 OR 1.35
C. TALL FESCUE	24	0.55
CREEPING RED FESCUE	24	0.55
BIRDS FOOT TREFOIL	REMOVED	REMOVED
TOTAL	48	1.10
D. TALL FESCUE	20	0.45
FLAT PEA	30	0.75
TOTAL	50	1.20
E. CREEPING RED FESCUE 1/	30	1.15
KENTUCKY BLUEGRASS 1/	70	1.15
TOTAL	100	2.30
F. TALL FESCUE 1	150	3.60

*

New England Conservation/Wildlife Mix		
Botanical Name	Common Name	Indicator
Elymus virginicus	Virgina Wild Rye	FACW-
Schizachyrium scoparium	Little Bluestem	FACU
Andropogon gerardii	Big Bluestem	FAC
Festuca rubra	Red Fescue	FACU
Sorghastrum nutans	Indian Grass	UPL
Panicum virgatum	Switch Grass	FAC
Chamaecrista fasciculata	Partridge Pea	FACU
Desmodium canadense	Shown Tick Trefoil	FAC
Asclepias tuberosa	Butterfly Milkweed	NI
Bidens frondosa	Beggas Ticks	FACW
Eupatorium purpureum (Eutrochium maculatum)	Purple Joe Pye Weed	FAC
Rudbeckia hirta	Black Eyed Susan	FACU-
Aster pilosus (Symphyotrichum pilosum)	Heath (or Hairy) Aster	UPL
Solidago juncea	Early Goldenrod	

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. DO NOT PLACE POROUS PAVEMENT WEARING COURSE INTO SERVICE UNTIL EXTERIOR BUILDING CONSTRUCTION IN COMPLETE. REMOVE ANY DIRT FROM CONVENTIONAL PAVEMENT BASE COURSE AND POROUS PAVEMENT BASE COURSE BEFORE APPLICATION OF POROUS PAVEMENT WEARING COURSE. DUMPSTERS SHALL NOT BE LOCATED ON POROUS PAVEMENT. REMOVE ANY EXCESS OVERFLOW PAVEMENT FROM THE PAVING OF THE CONVENTION PAVEMENT AND BITUMINOUS SIDEWALKS FROM THE POROUS SURFACE IF OVERFLOW OCCURS.

7.) START BUILDING CONSTRUCTION AND INSTALL PERIMETER FENCE WHERE SHOWN.

8.) INSTALL PIPE AND CONSTRUCTION ASSOCIATED APPURTENANCES AS REQUIRED OR DIRECTED. 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 45 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:*

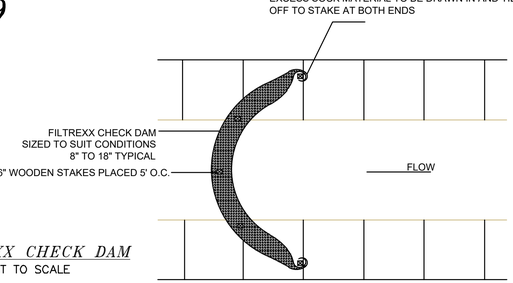
PER ENV–WQ 1500 ALTERATION OF TERRAIN

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

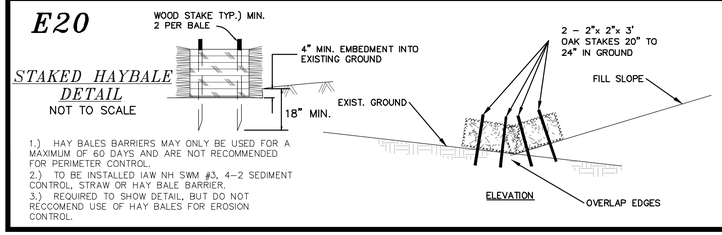


FILTREXX CHECK DAM

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

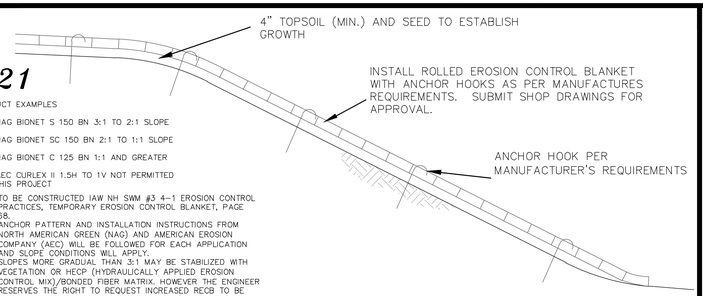


STAKED HAYBALE DETAIL

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 C 125 BN 1:1 AND GREATER

4.) AEC CURLEX II 1.5H TO 1V NOT PERMITTED FOR THIS PROJECT

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.
3. SLOPES MORE GRADUAL THAN 3:1 MAY BE STABILIZED WITH VEGETATION OR HECP (HYDRAULICALLY APPLIED EROSION CONTROL MIX)/BONDED FIBER MATRIX. HOWEVER THE ENGINEER RESERVES THE RIGHT TO REQUEST INCREASED RECB TO BE INSTALLED ON ANY SLOPE.
4. ALL RECB IS TO CONSIST OF ALL NATURAL MATERIAL WITH NO SYNTHETIC COMPONENTS (NO PHOTO BIODEGRADABLE NETTING)

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. 1st 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 1st, ANY ACCUMULATED SNOW SHALL BE REMOVED FROM ALL ROADWAY AND PARKING AREAS.

4. AFTER OCTOBER 1st, 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.

5. NO GREATER THAN 1 ACRE OF UNSTABILIZED LAND IS ALLOWED AFTER OCTOBER 15TH.

CITY OF DOVER PLANNING FILE #

REVISION	DATE	DESCRIPTION
#2	03–04–25	REVISED UNIT COUNT AND ASSOCIATED MODIFICATIONS
#1	10–17–24	REVISED UNIT COUNT AND ASSOCIATED MODIFICATIONS

EROSION & SEDIMENT CONTROL DETAILS
FOR
KNOX MARSH DEVELOPMENT LLC
LAND OF
5 SHERMAN STREET LLC
1 COLD SPRINGS ROAD
DOVER, N.H.
TAX MAP H, LOT 47–A
LOT 47–A

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

SCALE : AS SHOWN
DATE : SEPTEMBER 1, 2024
FILE NO. : DB 2023 – 126

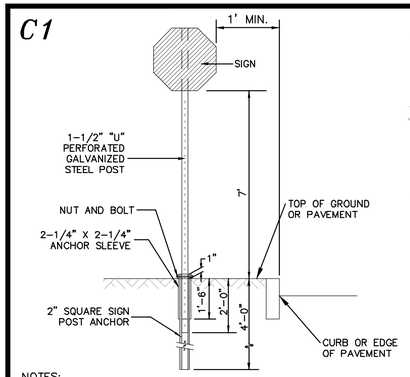
STATE OF NEW HAMPSHIRE
KENNETH A. BERRY No. 14749 LICENSED PROFESSIONAL ENGINEER

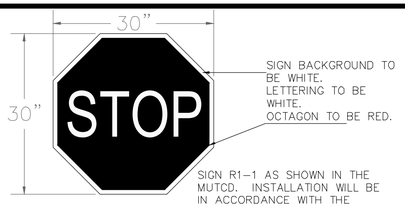
E–102

SHEET 23 OF 33

NOT FOR CONSTRUCTION

C1

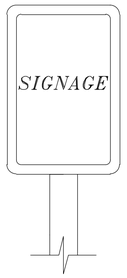




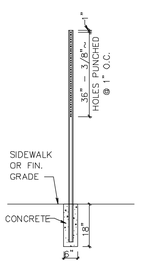
NOTES:

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 CITY OF DOVER COMMUNITY SERVICES.

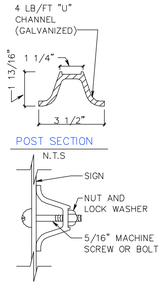
TYPICAL SIGN POST
(NOT TO SCALE)



PARTIAL ELEVATION
N.T.S.



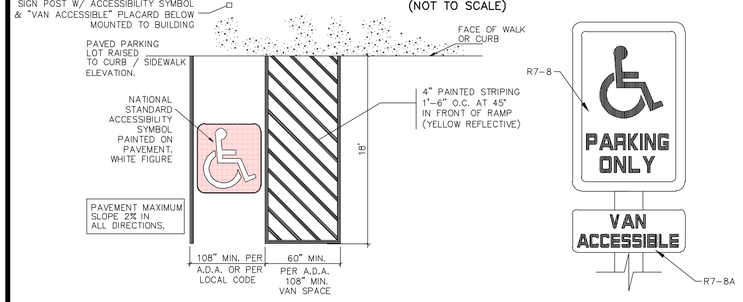
POST
N.T.S.



MOUNTING
N.T.S.

C2

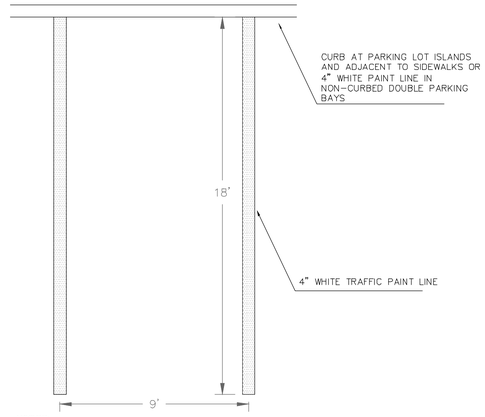
ACCESSIBLE PARKING STALL SIGNAGE
(NOT TO SCALE)



PARTIAL ELEVATION
N.T.S.

C3

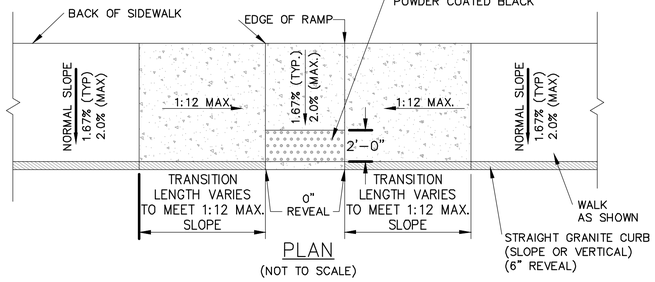
PARKING SPACE DETAIL
NOT TO SCALE



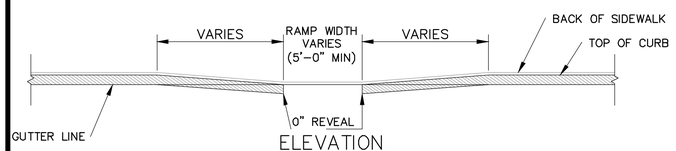
NOTES:

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

C4



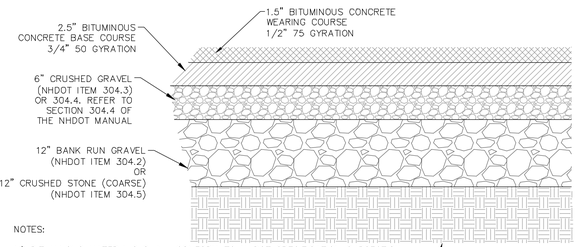
PLAN
(NOT TO SCALE)



ELEVATION

TYPICAL DETAIL FOR WHEELCHAIR RAMP
NOT TO SCALE

C5



NOTES:

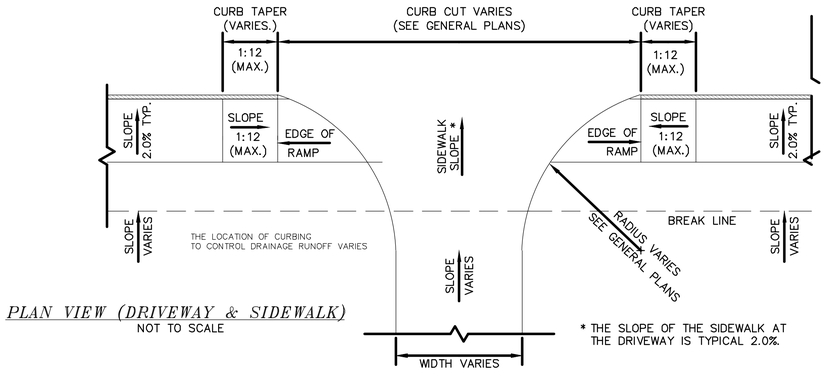
1.) BITUMINOUS MATERIALS SHALL CONFORM TO NHDOT SPECIFICATION SUBSECTION 401.3.6.

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

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

BITUMINOUS CONCRETE PAVEMENT SECTION
NOT TO SCALE

C6



PLAN VIEW (DRIVEWAY & SIDEWALK)
NOT TO SCALE

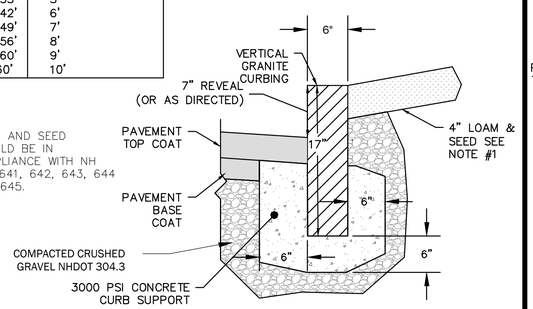
* THE SLOPE OF THE SIDEWALK AT THE DRIVEWAY IS TYPICAL 2.0%.

C7

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'

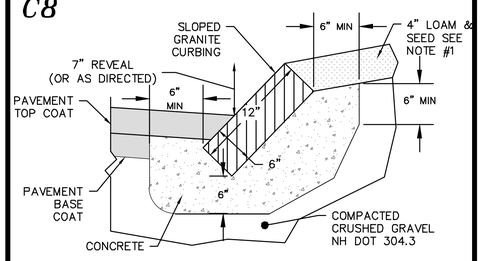
NOTES:

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



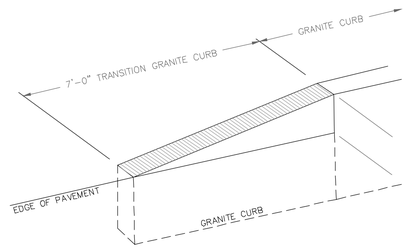
VERTICAL GRANITE CURB DETAIL
NOT TO SCALE

C8



SLOPE GRANITE CURB DETAIL
NOT TO SCALE

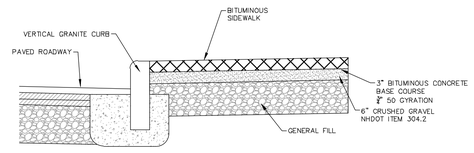
C9



CURB TRANSITION DETAIL
NOT TO SCALE

TO BE USED FOR TRANSITION FROM GRANITE CURB TO EDGE OF PAVEMENT

C10



BITUMINOUS SIDEWALK RAISED
NOT TO SCALE

C-101

CITY OF DOVER PLANNING FILE #

REVISION	DATE	DESCRIPTION
#2	03-04-25	REVISED UNIT COUNT AND ASSOCIATED MODIFICATIONS
#1	10-17-24	REVISED UNIT COUNT AND ASSOCIATED MODIFICATIONS

CONSTRUCTION DETAILS FOR
KNOX MARSH DEVELOPMENT LLC
LAND OF
5 SHERMAN STREET LLC
1 COLD SPRINGS ROAD
DOVER, N.H.
TAX MAP H, LOT 47-A

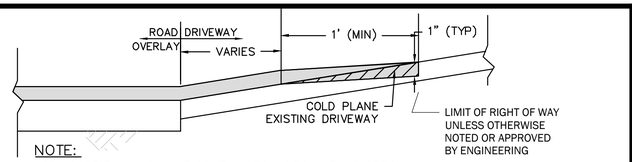
BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : AS SHOWN
DATE : SEPTEMBER 1, 2024
FILE NO. : DB 2023 – 126

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

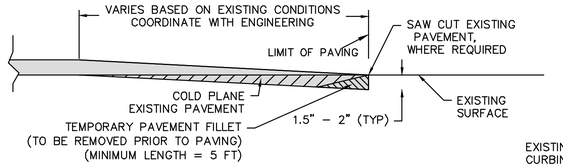
NOT FOR CONSTRUCTION

C11



NOTE:
CONTRACTOR MAY SAWCUT DRIVEWAY TRANSITION AT HIS OPTION. PAVEMENT SHALL BE REMOVED AND REPLACED TO MATCH EXISTING.

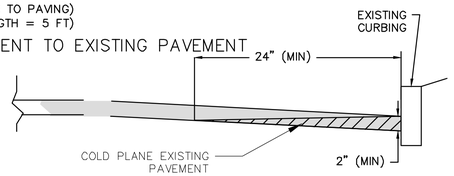
ADJACENT TO EXISTING DRIVEWAY



ADJACENT TO EXISTING PAVEMENT

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

PAVEMENT OVERLAY
NOT TO SCALE



ADJACENT TO EXISTING CURB

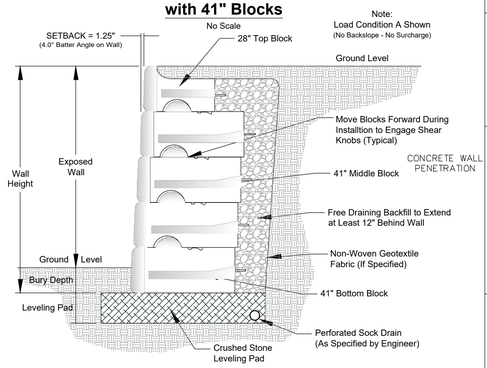
C12

See Redi-Rock.com for Detailed Section Drawings of Each Condition Shown in the Design Charts

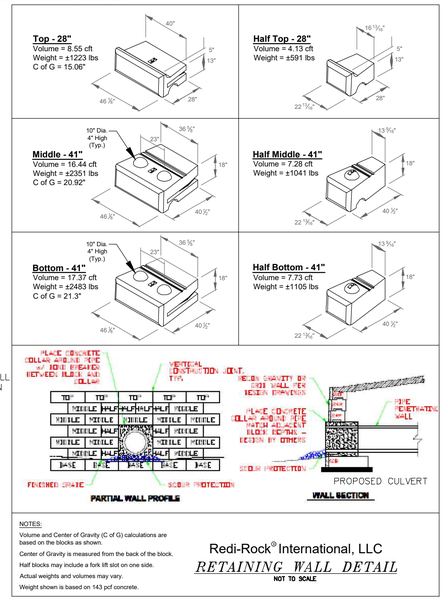
NOTE: RETAINING WALL TO BE DESIGNED BY A LICENSED PROFESSIONAL GEOTECHNICAL/STRUCTURAL ENGINEER.

NOTES:
1.) USE THE 41" BOTTOM BLOCK TO INSTALL THE FIRST COURSE. NOTE EMBEDMENT REQUIREMENT. COURSE DEPTH IS 1.5'
3.) USE 41" MIDDLE BLOCK FOR MIDDLE ROWS, APPROXIMATELY 7 COURSES DEPENDING ON WALL HEIGHT.
4.) USE 41" TOP BLOCK ALONG TOP OF WALL. NOTE WALL DROPS ARE TO BE FULL BLOCK DEPTHS.
5.) USE 41" HALF BLOCKS FOR RADIAL TURNS AND END SECTIONS.
6.) THE WALL MANUFACTURER TYPICALLY PROVIDES WALL PROFILE AND BLOCK COUNT TO THE CONTRACTOR AS REQUIRED FOR CONSTRUCTION. THIS IS TO BE REVIEWED BY BOTH DPW AND DESIGN ENGINEER FOR CORRELATION WITH PROJECT SITE PLANS AND IS TO BE DESIGNED AND STAMPED BY A STRUCTURAL ENGINEER (OTHERS).

Typical Gravity Wall with 41" Blocks



41" SERIES BLOCKS

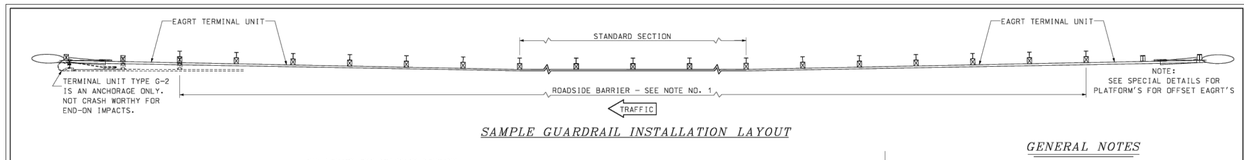


NOTES:
Volume and Center of Gravity (C of G) calculations are based on the blocks as shown.
Center of Gravity is measured from the back of the block.
Half blocks may include a fork lift slot on one side.
Actual weights and volumes may vary.
Weight shown is based on 143 pcf concrete.

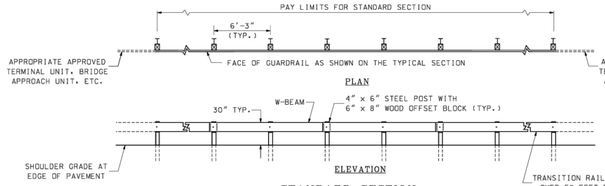
Redi-Rock® International, LLC
RETAINING WALL DETAIL
NOT TO SCALE

C13

GUARD RAIL
(NOT TO SCALE)

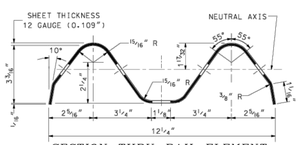


SAMPLE GUARDRAIL INSTALLATION LAYOUT

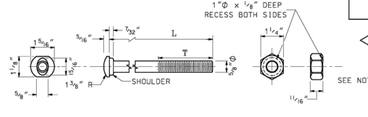


STANDARD SECTION

ITEM 606.120 – BEAM GUARDRAIL (STANDARD SECTION-STEEL POSTS)
PAID: LINEAR FOOT
USE: STRONG STEEL POST W-BEAM WITH SPLICE ON POST IS APPROPRIATE FOR REPAIRS OF EXISTING STRONG POST W-BEAM SPLICE ON POST GUARDRAIL RUNS OF LIMITED LENGTH OR SPECIFIC LOCATIONS WHERE USE OF 31" MID-SPLICE STEEL POST W-BEAM GUARDRAIL WOULD NOT BE PRACTICAL. OTHERWISE, 31" MID-SPLICE STEEL POST W-BEAM GUARDRAIL IS TO BE USED

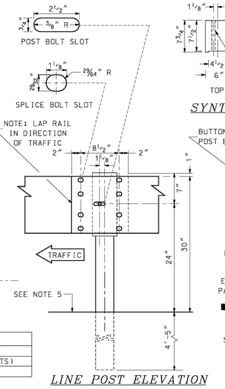


SECTION THRU RAIL ELEMENT
(4 SPACE W-BEAM GUARDRAIL DESIGNATED RWM04a (NOMINALLY 12'-6"))
(8 SPACE W-BEAM GUARDRAIL UNDESIGNATED AT THIS TIME (NOMINALLY 25'-0"))

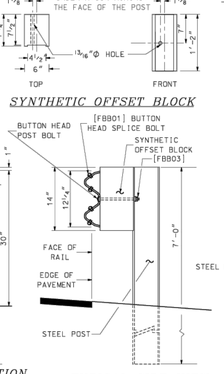


DESIGNATOR	L	T	INTENDED USE
FBB01	1 1/4"	FULL LENGTH THREAD	RAIL SPLICE BOLTS
FBB02	2"	1 3/4" MIN. THREAD LENGTH	POST BOLT (STEEL POSTS)
FBB03	9 1/2"	4" MIN. THREAD LENGTH	POST BOLT

5/8" BUTTON HEAD BOLT AND RECESSED NUT
(FBB01-03)

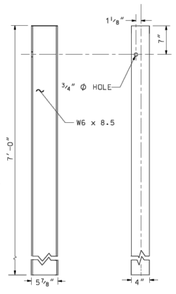


LINE POST ELEVATION VIEW AT BEAM SPLICE

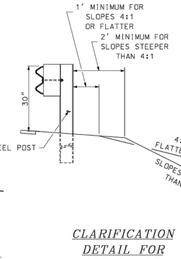


SYNTHETIC OFFSET BLOCK

TYPICAL SIDE VIEW
(SHOWN WITH FASTENERS)



STRUCTURAL SHAPE STEEL POST



CLARIFICATION DETAIL FOR GENERAL NOTE 6

GENERAL NOTES

1. THE DEFINITION OF ROADSIDE BARRIER IS PER THE LATEST ADOPTED EDITION OF THE AASHTO ROADSIDE DESIGN GUIDE. EXCLUDED FROM THIS IS THE GATING PORTION OF A GUARDRAIL TERMINAL UNIT OR CRASH CUSHION AS WELL AS THE ENTIRE G-2 TERMINAL UNIT.
2. ITEMS IN BRACKETS [ ] ARE *STANDARD ELEMENTS* DESCRIBED IN AASHTO'S "A GUIDE TO STANDARDIZED HIGHWAY BARRIER HARDWARE".
3. ONLY USE RECTANGULAR PLATE WASHERS [FWR03] WHERE SHOWN ON THE OTHER STANDARD SHEETS OR AS REQUIRED BY THE MANUFACTURERS FOR THEIR PROPRIETARY PRODUCTS.
4. USE 12'-6" LENGTH RAIL ELEMENTS IN RAIL CURVES OF LESS THAN 100' RADIUS.
5. ESTABLISH RAIL HEIGHT AS FOLLOWS:
   A) SET THE HEIGHT OF RAIL FROM THE EDGE OF THE PAVEMENT (EP) WHEN THE FACE OF RAIL IS AT THE EDGE OF PAVEMENT.
   B) SET THE HEIGHT OF RAIL FROM THE GROUND AT THE FACE OF RAIL WHEN:
      I) THE FACE OF RAIL IS OFFSET FROM THE EP AND THE CROSS SLOPE FROM THE EP TO THE FACE OF RAIL IS 10:1 OR FLATTER OR
      II) THE FACE OF RAIL IS AT THE BACK OF A CURBED SIDEWALK AND THE CURB IS AT THE EDGE OF PAVEMENT
   C) WHEN SITUATIONS OTHER THAN THOSE DESCRIBED IN A OR B ABOVE ARE ENCOUNTERED. ESTABLISH RAIL HEIGHT THROUGH AN ENGINEERING REVIEW TO ENSURE APPROPRIATE SYSTEM PERFORMANCE.
6. USE OF POSTS SHORTER THAN 7', BUT NOT LESS THAN 6'-0" LONG, IS ONLY ALLOWED UNDER THE FOLLOWING CONDITIONS:
   A) WHERE THERE IS A MINIMUM DISTANCE OF 1' FROM THE BACK OF THE GUARDRAIL POST ALONG A 10:1 OR FLATTER SLOPE TO THE SLOPE BREAK OF A 4:1 OR FLATTER SLOPE OR
   B) WHERE THERE IS A MINIMUM DISTANCE OF 2' FROM THE BACK OF THE GUARDRAIL POST ALONG A 10:1 OR FLATTER SLOPE TO THE SLOPE BREAK OF A STEEPER THAN 4:1 STABLE SOIL OR STONE LINED SLOPE. THE TERM STABLE INCLUDES NOT SHOWING SIGNS OF SLOPE MOVEMENT (SUCH AS DEPRESSIONS, CRACKS PARALLEL TO THE ROADWAY, ETC.) OR ACTIVE EROSION.
7. THE FHWA HAS LISTED OFFSET BLOCKS ON THEIR WEBSITE THAT ARE ELIGIBLE FOR FEDERAL PARTICIPATION PER NCHRP 350 TEST LEVEL 3 CRITERIA. OTHERS MAY BE ADDED UNDER NASH AT TEST LEVEL 3 OR HIGHER IN THE FUTURE. SOME OF THESE OFFSET BLOCKS HAVE OR MAY HAVE DIMENSIONS THAT VARY MORE THAN WOULD BE CONSIDERED WITHIN THE NORMAL CONTEXT OF NOMINAL DIMENSIONS. IN ORDER TO USE ANY OFFSET BLOCKS THAT HAVE OTHER THAN THE NOMINAL DIMENSIONS AS SHOWN ON THE PLANS, THE FOLLOWING APPLIES:
   A) THE FACE OF RAIL SHALL REMAIN AT THE EDGE OF PAVEMENT OR AT THE INDICATED LOCATION AS SHOWN ON THE PLANS, AND
   B) THE DISTANCE FROM THE BACK OF THE POST TO THE BREAK IN THE SLOPE SHALL NOT BE LESS THAN WHAT IS SHOWN ON THE PLANS BUT IT MAY BE MORE.
   C) ALL OTHER REQUIREMENTS OF THE PERTINENT SPECIFICATIONS AND DETAILS REMAIN IN FORCE.

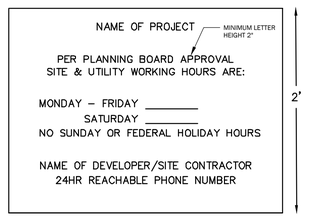
GUARDRAIL STANDARD
BEAM GUARDRAIL STANDARD SECTION-STEEL POSTS & HARDWARE DETAILS

STANDARD NO. GR-2
REVISION DATE
07-13-2001
06-16-2010
05-03-2011
08-19-2015
*.DGN FILE NAME: GR-2

STANDARD PLANS
New Hampshire DOT Department of Transportation
STANDARD NO. GR-2

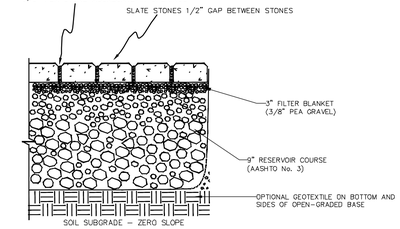
C14

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 OLD ROCHESTER ROAD/BLAZER DRIVE.

C15

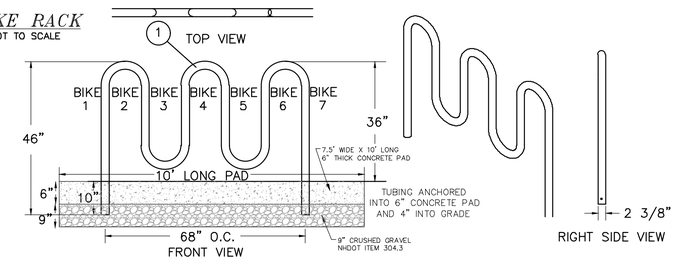


BRICK PAVER WALKWAY DETAIL
NOT TO SCALE

C16

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

BIKE RACK
NOT TO SCALE



C-102

CITY OF DOVER PLANNING FILE #

REVISION	DATE	DESCRIPTION
#2	03-04-25	REVISED UNIT COUNT AND ASSOCIATED MODIFICATIONS
#1	10-17-24	REVISED UNIT COUNT AND ASSOCIATED MODIFICATIONS

CONSTRUCTION DETAILS
FOR
KNOX MARSH DEVELOPMENT LLC
LAND OF
5 SHERMAN STREET LLC
1 COLD SPRINGS ROAD
DOVER, N.H.
TAX MAP H, LOT 47-A

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

SCALE : AS SHOWN
DATE : SEPTEMBER 1, 2024
FILE NO. : DB 2023 – 126

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 17479
LICENSED PROFESSIONAL ENGINEER

NOT FOR CONSTRUCTION

C17



D-Series Size 0
LED Area Luminaire

d-series

Catalog Number

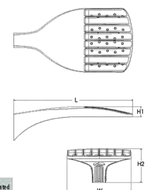
Notes

Type

Hit the Tab key or mouse over the page to see all interactive elements.

Specifications

EPA: 0.44 ft² (0.04 m²)
Length: 26.18" (66.5 cm)
Width: 14.06" (35.7 cm)
Height H1: 2.26" (5.7 cm)
Height H2: 7.46" (18.9 cm)
Weight: 23 lbs (10.4 kg)



Design Select options indicated by this color background.

Introduction

The modern styling of the D-Series features a highly refined aesthetic that blends seamlessly with its environment. The D-Series offers the benefits of the latest in LED technology into a high performance, high efficacy, long-life luminaire.

The photometric performance results in sites with excellent uniformity, greater pole spacing and lower power density. D-Series outstanding photometry aids in reducing the number of poles required in area lighting applications, with typical energy savings of 70% and expected service life of over 100,000 hours.

design select

Items marked by a shaded background qualify for the Design Select program and ship in 15 days or less. To learn more about Design Select, visit www.acuitybrands.com/designselect.
*See ordering tree for details

Ordering Information

EXAMPLE: DSX0 LED P6 40K 70CRI T3M MVOLT SPA NLTAIR2 PIRHN DDBXD

DSX0 LED

Series	LEDs	Color temperature[2]	Color Rendering Index[3]	Distribution[4]		Voltage	Mounting
DSX0 LED	**Forward optics** P1 P5 P2 P6 P3 P7 P4 **Rotated optics** P10[1] P12[1] P11[1] P13[1]	(this section 70CRI only) 30K 3000K 40K 4000K 50K 5000K (this section 80CRI only, extended lead times apply) 27K 2700K 30K 3000K 35K 3500K 40K 4000K 50K 5000K	70CRI 70CRI 70CRI 80CRI 80CRI 80CRI 80CRI	AFR Automotive front row T1S Type I short T2M Type II medium T3M Type III medium T3LG Type III low glare[3] T4M Type IV medium T4LG Type IV low glare[3] FTFM Forward throw medium	T5M Type V medium T5LG Type V low glare T5W Type V wide BLC3 Type III backlight control[3] BLC4 Type IV backlight control[3] LCCO Left corner cutoff[5] RCCO Right corner cutoff[5]	MVOLT (120V-277V)[6] HVOLT (347V-480V)[7,8] XVOLT (277V-480V)[7,9] 120 [9,10] 208 [9,10] 240 [9,10] 277 [9,10] 347 [9,10] 480 [9,10]	**Shipped included** SPA Square pole mounting (4ft drilling, 3.5" min. SQ pole) RPA Round pole mounting (4ft drilling, 3" min. RND pole) SPA5 Square pole mounting (5ft drilling, 3" min. SQ pole)[3] RPA5 Round pole mounting (5ft drilling, 3" min. RND pole)[3] SPA8N Square narrow pole mounting (8ft drilling, 3" min. SQ pole) WBA Wall bracket[11] MA Mast arm adapter (mounts on 2 3/8" OD horizontal tenon)

Control options		Other options		Finish (required)	
Shipped installed NLTAIR2 PIRHN nLight AIR gen 2 enabled with bi-level motion / ambient sensor, 8–40' mounting height, ambient sensor enabled at 2fc.[12,13,14,15] PIR High/low, motion/ambient sensor, 8–40' mounting height, ambient sensor enabled at 2fc.[13,14,15] PER NEMA twist-lock receptacle only (controls ordered separately)[16] PERS Five-pin receptacle only (controls ordered separately)[16,17]	PER7 Seven-pin receptacle only (controls ordered separately)[16,17] FAO Field adjustable output[13,19] BL30 Bi-level switched dimming, 30%[16,21] BL50 Bi-level switched dimming, 50%[16,21] DMG 0–10V dimming wires pulled outside fixture (for use with an external control, ordered separately)[17]	**Shipped installed** HS Houseside shield (black finish standard)[22] L90 Left rotated optics[1] R90 Right rotated optics[1] CCE Coastal Construction[23] HA 50°C ambient operation[23] BAA Buy America(n) Act and/or Build America Buy America Qualified SF Single fuse (120, 277, 347V)[24] DF Double fuse (208, 240, 480V)[24] **Shipped separately** EGSR External Glare Shield (reversible, field install required, matches housing finish) BSDB Bird Spikes (field install required)	DDBXD Dark Bronze DBLXD Black DNAXD Natural Aluminum DWHXD White DDBTXD Textured dark bronze DBLBXD Textured black DNATXD Textured natural aluminum DWHGXD Textured white		

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LAMP "A" POLE MOUNTED AT 19'



D-Series Size 1
LED Area Luminaire

d-series

Catalog Number

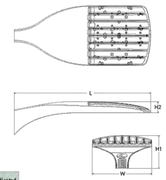
Notes

Type

Hit the Tab key or mouse over the page to see all interactive elements.

Specifications

EPA: 0.69 ft² (0.06 m²)
Length: 32.71" (83.1 cm)
Width: 14.26" (36.2 cm)
Height H1: 7.88" (20.0 cm)
Height H2: 2.73" (6.9 cm)
Weight: 34 lbs (15.4 kg)



Design Select options indicated by this color background.

Introduction

The modern styling of the D-Series features a highly refined aesthetic that blends seamlessly with its environment. The D-Series offers the benefits of the latest in LED technology into a high performance, high efficacy, long-life luminaire.

The photometric performance results in sites with excellent uniformity, greater pole spacing and lower power density. D-Series outstanding photometry aids in reducing the number of poles required in area lighting applications with typical energy savings of 65% and expected service life of over 100,000 hours.

design select

Items marked by a shaded background qualify for the Design Select program and ship in 15 days or less. To learn more about Design Select, visit www.acuitybrands.com/designselect.
*See ordering tree for details

Ordering Information

EXAMPLE: DSX1 LED P7 40K 70CRI T3M MVOLT SPA NLTAIR2 PIRHN DDBXD

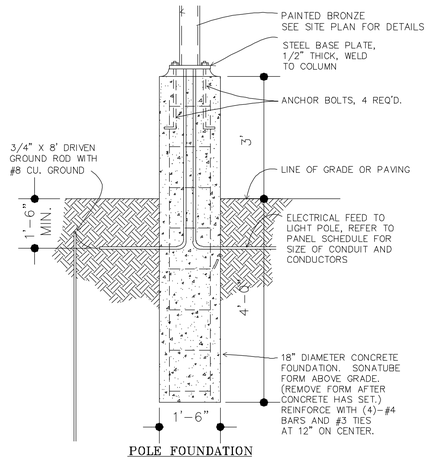
DSX1 LED

Series	LEDs	Color temperature[2]	Color Rendering Index[3]	Distribution[4]		Voltage	Mounting
DSX1 LED	**Forward optics** P1 P6 P2 P7 P3 P8 P4 P9 P5 **Rotated optics** P10[1] P12[1] P11[1] P13[1]	(this section 70CRI only) 30K 3000K 40K 4000K 50K 5000K (this section 80CRI only, extended lead times apply) 27K 2700K 30K 3000K 35K 3500K 40K 4000K 50K 5000K	70CRI 70CRI 70CRI 80CRI 80CRI 80CRI 80CRI	AFR Automotive front row T1S Type I short T2M Type II medium T3M Type III medium T3LG Type III low glare[3] T4M Type IV medium T4LG Type IV low glare[3] FTFM Forward throw medium	T5M Type V medium T5LG Type V low glare T5W Type V wide BLC3 Type III backlight control[3] BLC4 Type IV backlight control[3] LCCO Left corner cutoff[5] RCCO Right corner cutoff[5]	MVOLT (120V-277V)[6] HVOLT (347V-480V)[7,8] XVOLT (277V-480V)[7,9] 120 [9,10] 208 [9,10] 240 [9,10] 277 [9,10] 347 [9,10] 480 [9,10]	**Shipped included** SPA Square pole mounting (4ft drilling) RPA Round pole mounting (4ft drilling) SPA5 Square pole mounting #5 drilling[3] RPA5 Round pole mounting #5 drilling[3] SPA8N Square narrow pole mounting #8 drilling WBA Wall bracket[11] MA Mast arm adapter (mounts on 2 3/8" OD horizontal tenon)

Control options		Other options		Finish (required)	
Shipped installed NLTAIR2 PIRHN nLight AIR gen 2 enabled with bi-level motion / ambient sensor, 8–40' mounting height, ambient sensor enabled at 2fc.[12,13,14,15] PIR High/low, motion/ambient sensor, 8–40' mounting height, ambient sensor enabled at 2fc.[13,14,15] PER NEMA twist-lock receptacle only (controls ordered separate)[16] PERS Five-pin receptacle only (controls ordered separate)[16,17]	PER7 Seven-pin receptacle only (controls ordered separate)[16,17] FAO Field adjustable output[13,19] BL30 Bi-level switched dimming, 30%[16,21] BL50 Bi-level switched dimming, 50%[16,21] DMG 0–10V dimming wires pulled outside fixture (for use with an external control, ordered separately)[17] DS Dual switching[18,19,21]	**Shipped installed** SPD20KV 20KV surge protection HS Houseside shield (black finish standard)[22] L90 Left rotated optics[1] R90 Right rotated optics[1] CCE Coastal Construction[23] HA 50°C ambient operation[24] BAA Buy America(n) Act and/or Build America Buy America Qualified SF Single fuse (120, 277, 347V)[24] DF Double fuse (208, 240, 480V)[24] **Shipped separately** EGSR External Glare Shield (reversible, field install required, matches housing finish) BSDB Bird Spikes (field install required)	DDBXD Dark Bronze DBLXD Black DNAXD Natural Aluminum DWHXD White DDBTXD Textured dark bronze DBLBXD Textured black DNATXD Textured natural aluminum DWHGXD Textured white		

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LAMP "B" POLE MOUNTED AT 16'



LIGHT BASE DETAIL
NOT TO SCALE



LAMP "C" BUILDING MOUNTED AT 8'
NOT TO SCALE

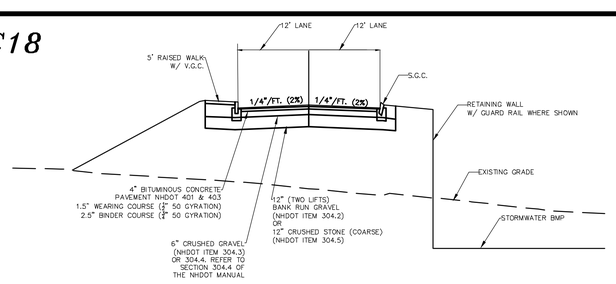
PROJECT LIGHTING DETAILS
NOT TO SCALE

CROSS SECTION NOTES

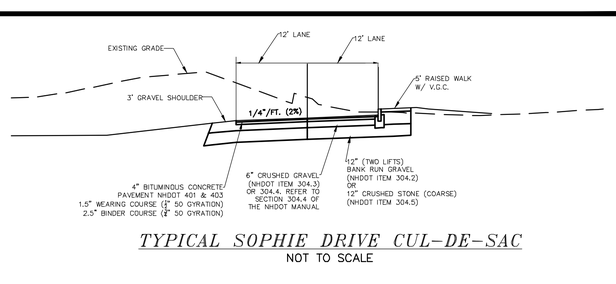
1. ALL ROADWAY FILL TO BRING ROAD TO SUBGRADE SHALL BE INSTALLED IN LIFTS NO GREATER THAN 12".
2. ALL FILL SHALL BE COMPACTED TO 95% MINIMUM. COMPACTION TESTS TO BE CONDUCTED AT THE START OF THE PROJECT AND NO FURTHER THAN 100 FEET APART.
3. GUARD RAIL REQUIRED AS NOTED ON PLAN & PROFILE SHEETS.
4. TEST PITTING WAS DONE WITHIN THE ROADWAY ALIGNMENT BY JOHN P. HAYES III.

COMPACTED SUBGRADE – CONTRACTOR SHALL SCARIFY SUBGRADE TO A DEPTH OF 30 INCHES BELOW F-GRADE. ALL STONES GREATER THAN 6" IN DIAMETER SHALL BE REMOVED FROM THE SCARIFIED LAYER. ANY IMPORTED FILL SHALL BE FREE OF ORGANICS AND FROST AND SHALL HAVE NO ROCKS LARGER THAN 6" IN DIAMETER. FILL MATERIAL SHALL BE APPROVED BY THE TOWNS AGENT AND/OR THE TOWNS ENGINEER.

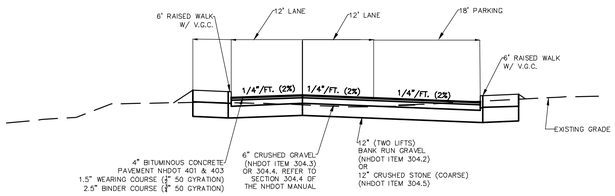
C18



TYPICAL SOPHIE DRIVE 2+50–5+06
NOT TO SCALE



TYPICAL SOPHIE DRIVE CUL-DE-SAC
NOT TO SCALE



TYPICAL SOPHIE DRIVE 5+06–5+76
NOT TO SCALE

CITY OF DOVER PLANNING FILE #

REVISION	DATE	DESCRIPTION
#2	03-04-25	REVISED UNIT COUNT AND ASSOCIATED MODIFICATIONS
#1	10-17-24	REVISED UNIT COUNT AND ASSOCIATED MODIFICATIONS

CONSTRUCTION DETAILS
TAX MAP 11, LOT 47-4
KNOX MARSH DEVELOPMENT LLC
LAND OF
5 SHERMAN STREET LLC
1 COLD SPRINGS ROAD
DOVER, N.H.

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

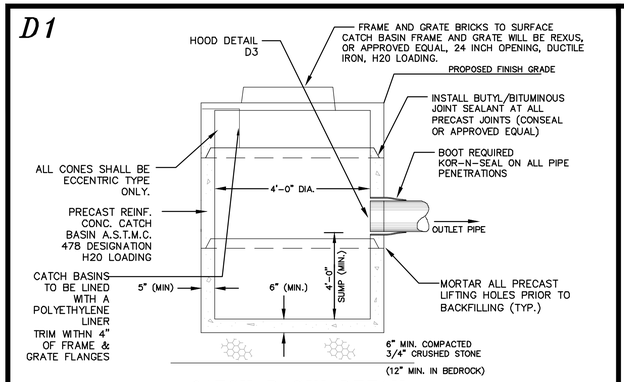
SCALE : AS SHOWN
DATE : SEPTEMBER 1, 2024
FILE NO. : DB 2023 – 126

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY No. 14047
LICENSED PROFESSIONAL ENGINEER

C-103

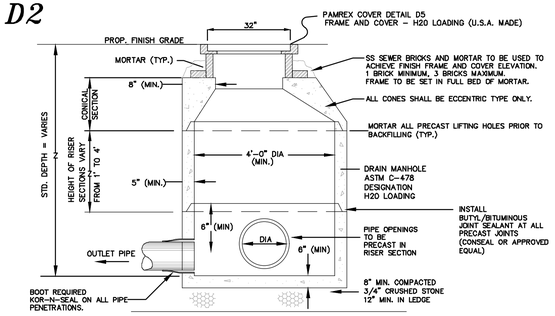
NOT FOR CONSTRUCTION

D1



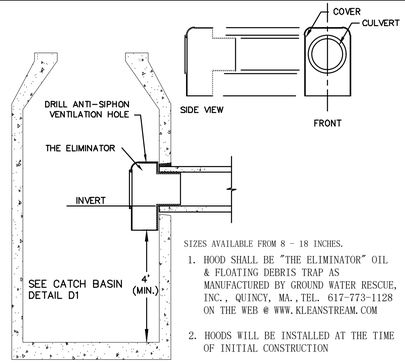
CATCH BASIN DETAIL
NOT TO SCALE

D2



PRECAST DRAIN MANHOLE DETAIL
NOT TO SCALE

D3



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. HOODS WILL BE INSTALLED AT THE TIME OF INITIAL CONSTRUCTION

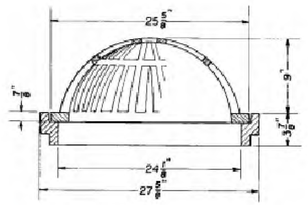
CATCH BASIN HOOD DETAIL
NOT TO SCALE

D4

R-4353
Beehive Grate, Frame

Light Duty

CATALOG NUMBER	GRATE TYPE	SQ. FT. OPEN	WEIR PERIMETER LINEAL FEET
R-4353	Beehive	1.8	6.7

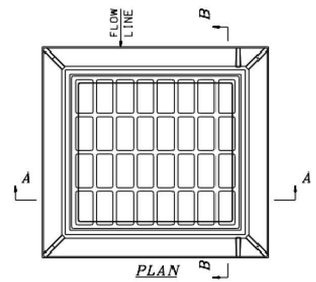


Also available with 2 - 7/8" tall frame, if requested.

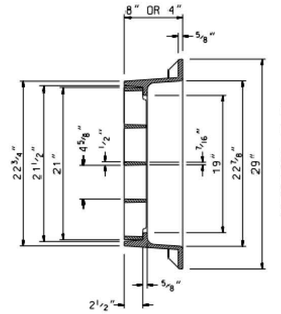


CATCH BASIN IN GRASSED AREA
FRAME & GRATE DETAIL
NOT TO SCALE

D5



SECTION A-A



SECTION B-B

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

TYPE "B" GRATE & FRAME

REV. DATE		PLATE
06-16-2010		2
08-14-2015		STANDARD
		DR-1

CATCH BASIN GRATE (TYPE "B")
NOT TO SCALE

D6

DRAIN MANHOLE FRAME AND GRATE WILL BE LIFTMATE R-1743-LM, OR APPROVED EQUAL, 32 INCH OPENING, CAST IRON, H20 LOADING.

DRAIN MANHOLE COVER DETAIL
NOT TO SCALE

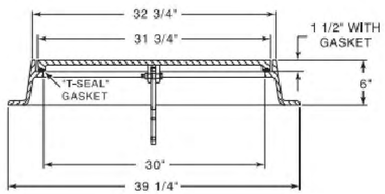
R-1743-LM
LiftMate Frame, Solid Gasketed Lid

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.





D7

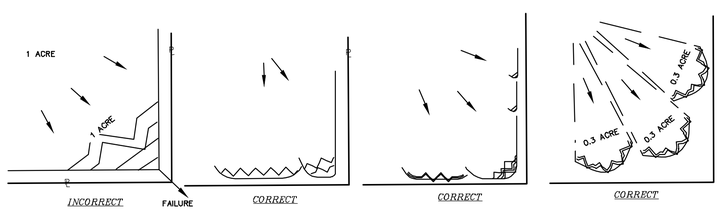
PERIMETER CONTROL
NOT TO SCALE

DESIGN CONSITERATIONS:

1. THE MAXIMUM LENGTH OF SLOPE ABOVE PERIMETER CONTROL IS 100 FEET.
2. SILT FENCE OR SILT SOXX REQUIRED WHEN UPGRADIENT DISTURBED SOIL IS GREATER THAN 5% (50% SLOPE MAX). MULCH BERM CAN BE USED WHEN THE UPGRADIENT DISTURBED SOIL IS 5% OR LESS.
3. THE MAXIMUM CONTRIBUTING DRAINAGE AREA OF ONE-QUARTER ACRE PER 100-FEET OF PRACTICE LENGTH.
4. PERIMETER CONTROL IS TO BE INSTALLED PRIOR TO EARTH MOVING ACTIVITIES, INCLUDING GRUBBING AND CLEARING.

NOTES

1. DO NOT LAYOUT PERIMETER CONTROL ALONG SLOPING PROPERTY PERIMETER WITHOUT INSTALLING "J HOOKS" AT HIGH CONCENTRATION AREAS. RUNOFF WILL CONCENTRATE AND CAUSE FAILURES ALONG THE PERIMETER.
2. "J HOOKS" CAN BE USED TO HELP LIMIT THE CONCENTRATION OF RUNOFF AND PROVIDE MORE STABILITY TO THE PERIMETER.
3. SILT FENCE AND EROSION CONTROL MULCH BERM MAY BE USED INTERCHANGEABLY. IN SPECIFIED AREA, SILT FENCE MAY NOT BE SUBSTITUTED FOR FILTREXX SILT SOXX OR APPROVED ALTERNATIVE.
4. SEE HAMPSHIRE STORM WATER MANUAL: VOLUME 3, PAGE 99 FOR FURTHER DETAILS AND SPECIFICATIONS



CITY OF DOVER PLANNING FILE #

REVISION	DATE	DESCRIPTION
#2	03-04-25	REVISED UNIT COUNT AND ASSOCIATED MODIFICATIONS
#1	10-17-24	REVISED UNIT COUNT AND ASSOCIATED MODIFICATIONS

DRAINAGE DETAILS
FOR
KNOX MARSH DEVELOPMENT LLC
LAND OF
5 SHERMAN STREET LLC
1 COLD SPRINGS ROAD
DOVER, N.H.
TAX MAP H, LOT 47-A

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

SCALE : AS SHOWN
DATE : SEPTEMBER 1, 2024
FILE NO. : DB 2023 - 126

REFERENCE IS MADE TO A LONG TERM MAINTENANCE MANUAL PREPARED BY BERRY SURVEYING & ENGINEERING, WHICH IS ON FILE AT THE CITY OF ROCHESTER PLANNING DEPARTMENT, AND CAN BE FOUND AT THE OFFICE OF BERRY SURVEYING & ENGINEERING. (603) 332-2863

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

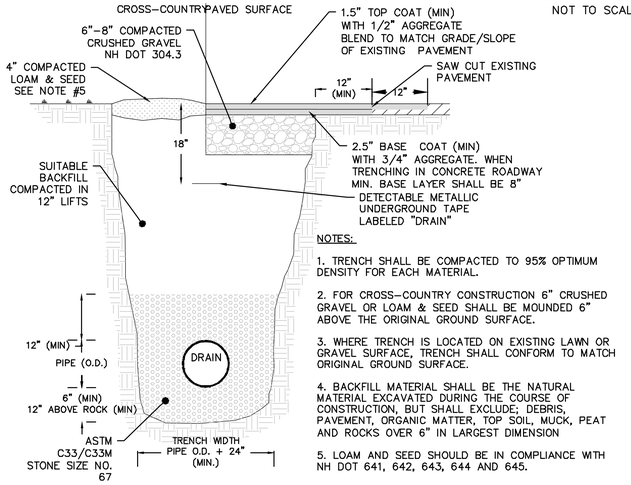
D-101

NOT FOR CONSTRUCTION

D8

TYPICAL DRAIN PIPE TRENCH

NOT TO SCALE



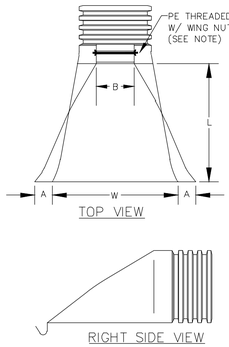
NOTES:

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

D9

ADS N-12 FLARED END SECTIONS

NOT TO SCALE (ALL DIMENSIONS ARE NOMINAL)

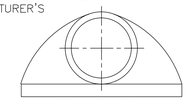


TOP VIEW

RIGHT SIDE VIEW

PART No.	PIPE SIZE	A	B(MAX)	H	L	W
1510-NP	15" 375 mm	6.5" 165 mm	10" 254 mm	6.5" 165 mm	25" 635 mm	29" 735 mm
1810-NP	18" 450 mm	7.5" 190 mm	15" 380 mm	6.5" 165 mm	32" 812 mm	35" 890 mm
2410-NP	24" 600 mm	7.5" 190 mm	18" 450 mm	6.5" 165 mm	36" 900 mm	45" 1140 mm
3010-NP	30" 750 mm	10.5" 266 mm	N/A	7.0" 178 mm	53" 1345 mm	68" 1725 mm
3610-NP	36" 900 mm	10.5" 266 mm	N/A	7.0" 178 mm	53" 1345 mm	68" 1725 mm

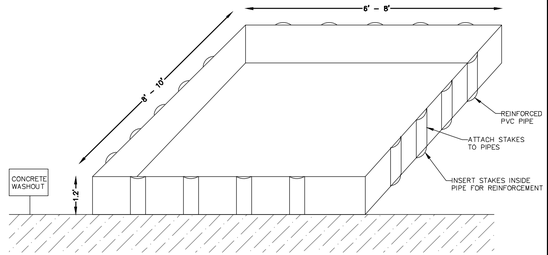
NOTE: PE THREADED ROD W/ WING NUTS PROVIDED FOR END SECTIONS 15"-24". 30" & 36" END SECTIONS TO BE WELDED PER MANUFACTURER'S RECOMMENDATIONS.



FRONT VIEW

NOTE: FLARED END SECTION IS REQUIRED TO BE ANCHORED TO PREVENT FLOTATION.

D10



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.

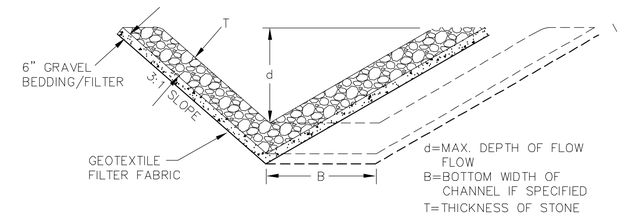
5.) DO NOT WASH CONCRETE TRUCKS OUT INTO DRAINAGE AREAS, SWALES, STREETS OR UNDISTURBED AREAS.

6.) WASHOUT AREA SHALL BE PLACED AWAY FROM DRAINAGE FEATURES AND OUTSIDE AND WETLAND BUFFERS.

CONCRETE WASHOUT

NOT TO SCALE

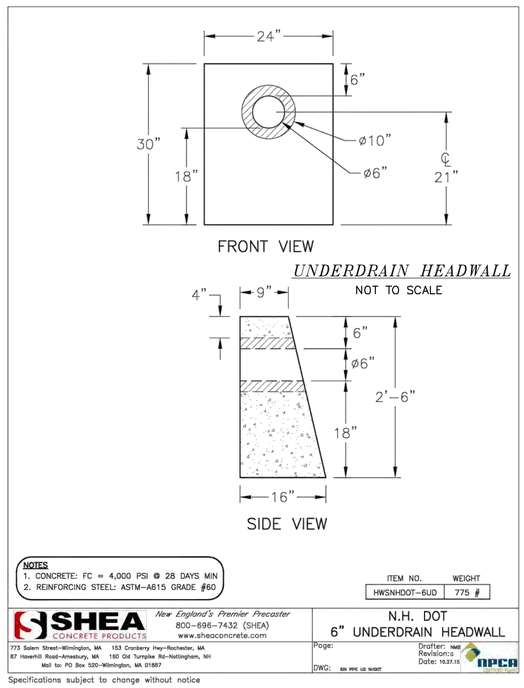
D11



TYPICAL SECTION FOR A RIPRAP LINED CHANNEL

NOT TO SCALE

D12



FRONT VIEW

UNDERDRAIN HEADWALL

NOT TO SCALE

SIDE VIEW

NOTES
1. CONCRETE: FC = 4,000 PSI @ 28 DAYS MIN
2. REINFORCING STEEL: ASTM-A615 GRADE #60

ITEM NO.	WEIGHT
HWSNHDOT-6UD	775 #

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

N.H. DOT
6" UNDERDRAIN HEADWALL

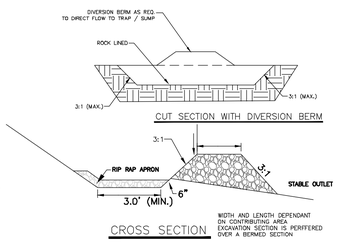
Page: Drafter: NMB
Revision:0
Date: 10.27.15
DWG: 6IN PIPE UD W-HDT

Specifications subject to change without notice

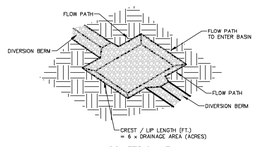
D13

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

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



CROSS SECTION



ISOMETRIC VIEW

STONE LINED SEDIMENT TRAP

NOT TO SCALE

CITY OF DOVER PLANNING FILE #

REVISION	DATE	DESCRIPTION
#2	03-04-25	REVISED UNIT COUNT AND ASSOCIATED MODIFICATIONS
#1	10-17-24	REVISED UNIT COUNT AND ASSOCIATED MODIFICATIONS

DRAINAGE DETAILS
FOR
KNOX MARSH DEVELOPMENT LLC
LAND OF
5 SHERMAN STREET LLC
1 COLD SPRINGS ROAD
DOVER, N.H.
TAX MAP H, LOT 47-A

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

SCALE : AS SHOWN
DATE : SEPTEMBER 1, 2024
FILE NO. : DB 2023 - 126

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

D-102

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) PER ENV-WQ 704.12(M), MANHOLES MUST BE CAPABLE OF SUPPORTING HS-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 U10S.

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. STEPS ARE TO BE PLASTIC.

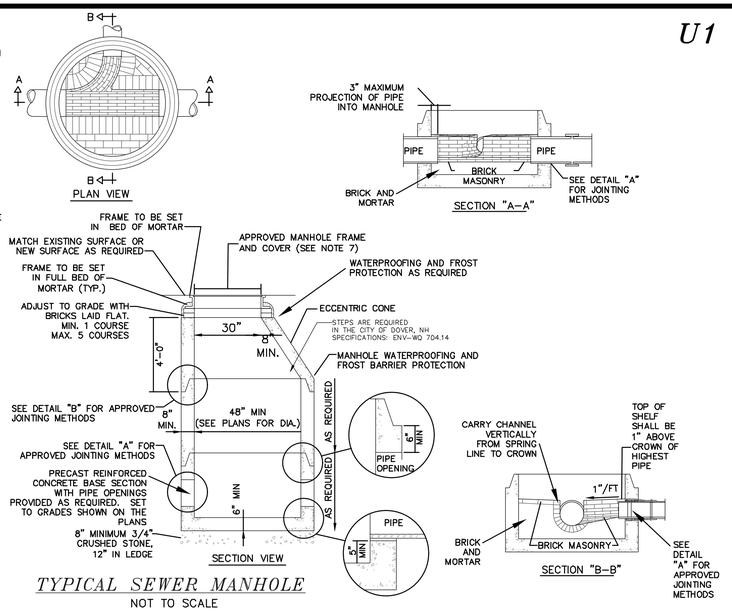
12.) THE CONTRACTOR TO WORK WITH CITY OF DOVER REVIEW ENGINEER AND SEWER DEPARTMENT ON THE MEANS AND METHODS USED TO INSTALL ALL SEWER STRUCTURES.

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

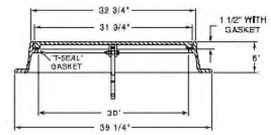
R-1743-LM
LiftMate Frame, Solid Gasketed Lid

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.

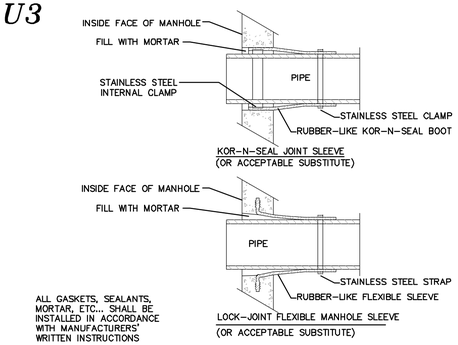




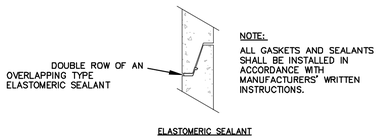
SEWER MANHOLE FRAME AND GRATE WILL BE LIFTMATE R-1743-LM, OR APPROVED EQUAL, 32 INCH OPENING, CAST IRON, H20 LOADING.

SEWER MANHOLE COVER DETAIL
NOT TO SCALE

U3

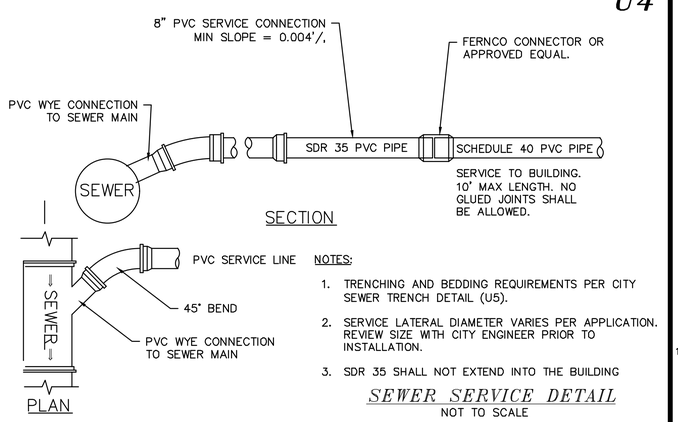


DETAIL "A" - PIPE TO MANHOLE JOINTS
NOT TO SCALE



DETAIL "B" HORIZONTAL JOINTS
NOT TO SCALE

U4

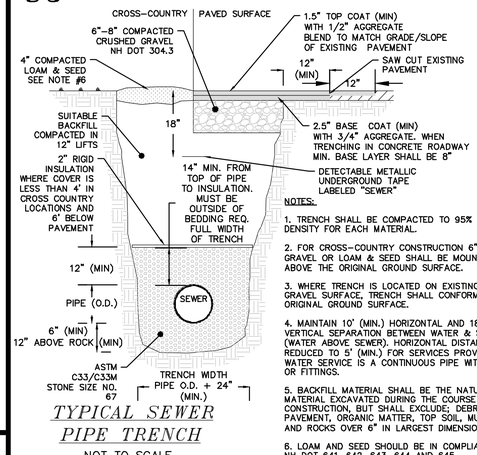


NOTES:

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

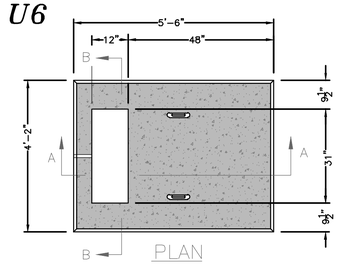


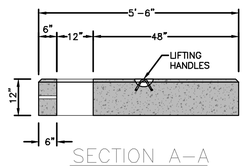
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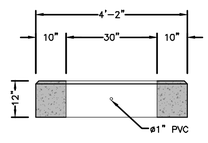
1. TRENCH SHALL BE COMPACTED TO 95% OPTIMUM DENSITY FOR EACH MATERIAL.
2. FOR CROSS-COUNTRY CONSTRUCTION 6" CRUSHED GRAVEL OR LOAM & SEED SHALL BE MOUNDED 6" ABOVE THE ORIGINAL GROUND SURFACE.
3. WHERE TRENCH IS LOCATED ON EXISTING LAWN OR GRAVEL SURFACE, TRENCH SHALL CONFORM TO MATCH ORIGINAL GROUND 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.
7. SEWER TRENCH INSULATION SHALL NOT BE PLACED WITHIN LIMITS OF BEDDING/BLANKET REQUIREMENT.

TYPICAL SEWER PIPE TRENCH
NOT TO SCALE

U6



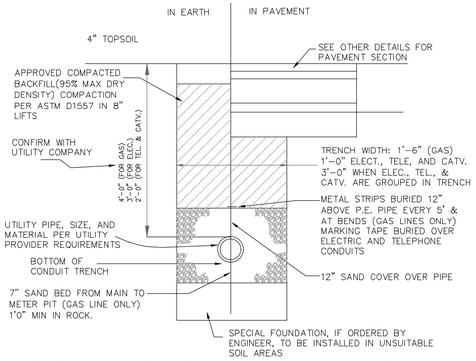




NOTES:
1. CONCRETE MINIMUM STRENGTH 4,000 PSI AFTER 28 DAYS
2. REINFORCEMENT STEEL CONFORMS TO ASTM A615 GRADE 60 #6 REBAR.
3. MEETS OR EXCEEDS EVERSOURCE SPECIFICATIONS.
4. MUST BE A SHEA CONCRETE PRODUCT OR EQUAL.

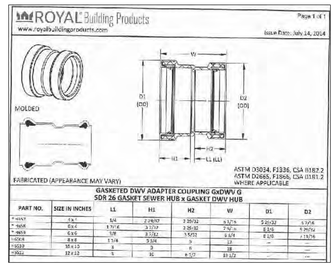
TRANSFORMER AND PAD DETAIL
NOT TO SCALE

U7



ELECTRICAL, TELEPHONE, AND GAS TRENCH
NOT TO SCALE

U8



PART NO.	SIZE IN INCHES	L1	H1	H2	W	D1	D2
* 6DCC	6x6	6/6	2.69/69	2.59/66	4.5/114	5.85/148	6.13/156
* 8DCC	8x8	8.5/7.6	3.37/86	3.28/83	5.75/146	8.3/211	8.59/218
* 10DCC	10x10	9/8	4.13/105	4.03/102	6.63/168	10.4/264	10.74/273
* 12DCC	12x12	11/9.6	5/126	5/126	7.5/190	12.5/317	12.9/328
* 15DCC	15x15	13/11.3	6	6	9	15.5/394	16/406
* 18DCC	18x18	15/13	7	7	10.5/266	18.5/470	19.1/485

COUPLING DETAIL
NOT TO SCALE

NOT FOR CONSTRUCTION

CITY OF DOVER PLANNING FILE #

REVISION	DATE	DESCRIPTION
#2	03-04-25	REVISED UNIT COUNT AND ASSOCIATED MODIFICATIONS
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UTILITY CONSTRUCTION DETAILS
FOR
KNOX MARSH DEVELOPMENT LLC
LAND OF
5 SHERMAN STREET LLC
1 COLD SPRINGS ROAD
DOVER, N.H.
TAX MAP H, LOT 47-A

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

SCALE : AS SHOWN
DATE : SEPTEMBER 1, 2024
FILE NO. : DB 2023 - 126

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

U-101

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.

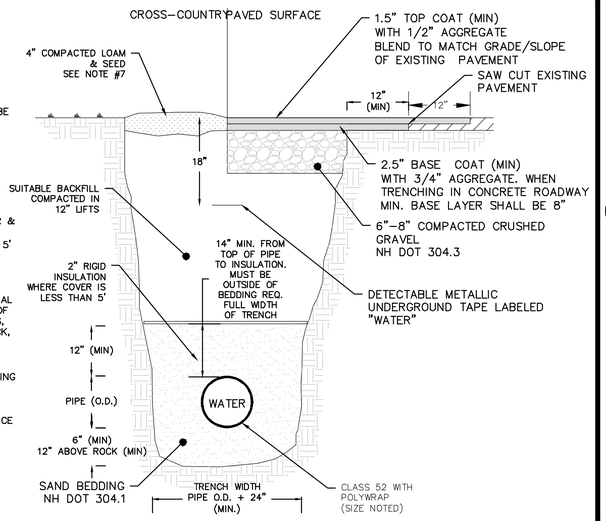
3. WHERE TRENCH IS LOCATED ON EXISTING LAWN OR GRAVEL SURFACE, TRENCH SHALL CONFORM TO MATCH ORIGINAL GROUND SURFACE.

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

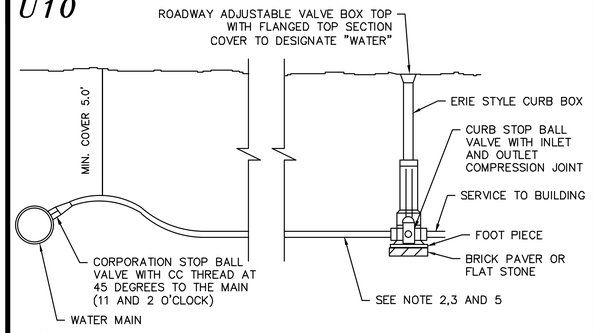
6. PROVIDE MINIMUM 5' OF COVER. ENGINEERING APPROVAL REQUIRED FOR LESS THAN 5' OF COVER.

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.

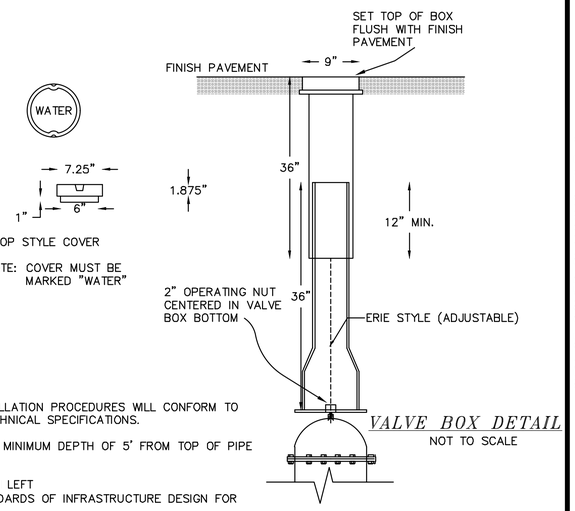
3. SERVICE BETWEEN CURB STOP AND BUILDING MAY BE (BLUE OR BLACK) CTS SDR 9 PLASTIC POLYETHYLENE RATED FOR 250 psi.

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.

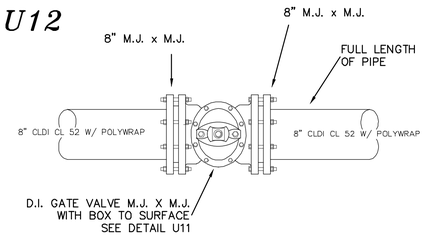
2.) ALL PIPE SHOULD HAVE A MINIMUM DEPTH OF 5' FROM TOP OF PIPE TO FINISH GRADE.

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

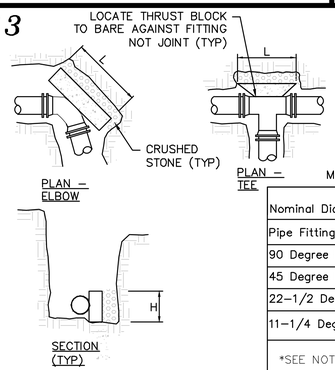
U12



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

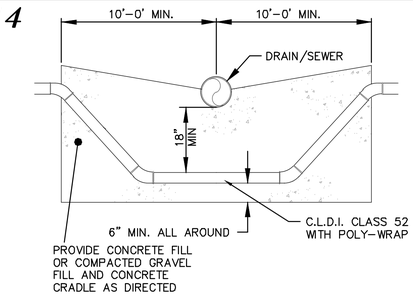
System Pressure: 125 psi
Safety Factor: 1.5
Soil Bearing Capacity: 2,000 psf

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

U14

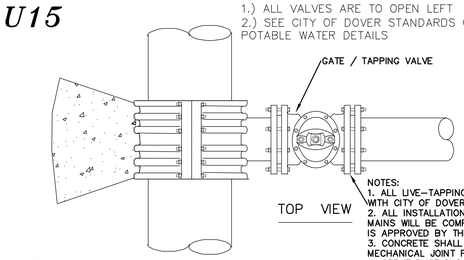


1.) SEE CITY OF DOVER STANDARDS OF INFRASTRUCTURE DESIGN FOR POTABLE WATER DETAILS

WATER MAIN INSTALLATION - BELOW DRAIN & SEWER
NOT TO SCALE

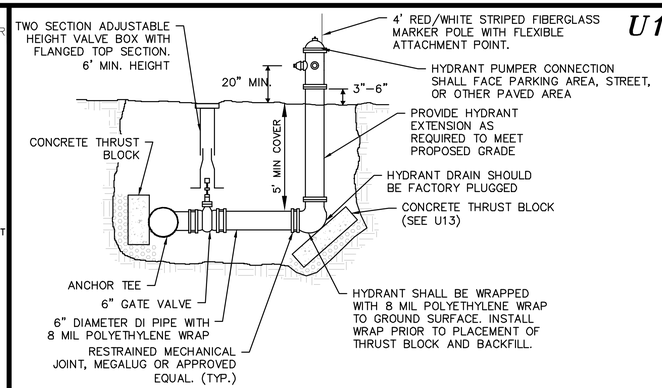
U15

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



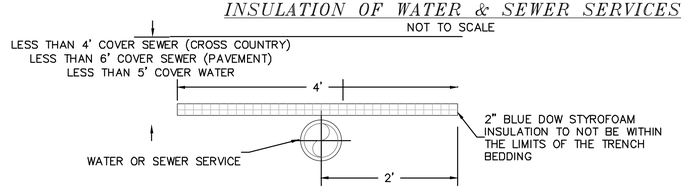
NOTES:

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

INSULATION OF WATER & SEWER SERVICES
NOT TO SCALE



U-102

CITY OF DOVER PLANNING FILE #

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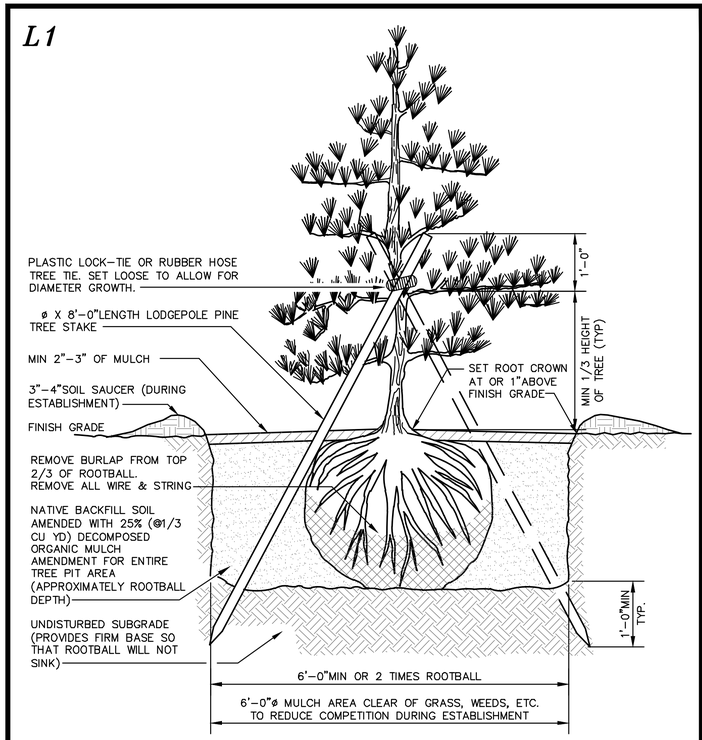
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KENNETH A. BERRY No. 14243
LICENSED PROFESSIONAL ENGINEER

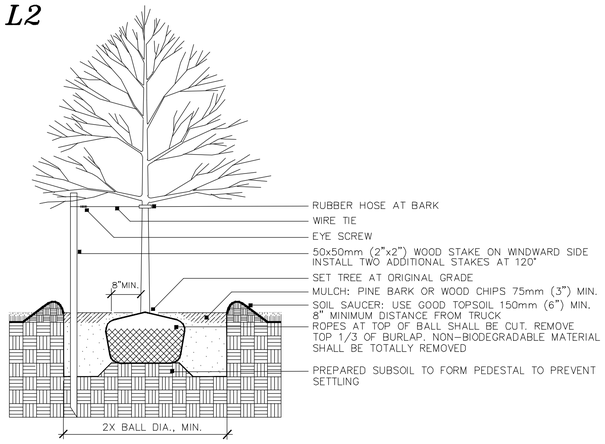
NOT FOR CONSTRUCTION

L1



CONIFEROUS TREE PLANTING

L2



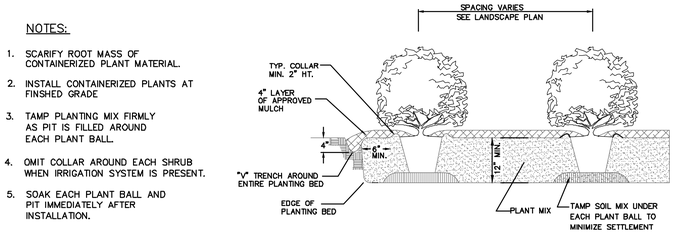
DECIDUOUS TREE PLANTING

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

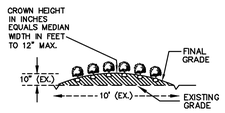
L3

NOTES:

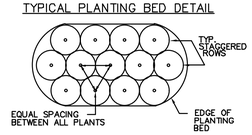
1. SCARIFY ROOT MASS OF CONTAINERIZED PLANT MATERIAL.
2. INSTALL CONTAINERIZED PLANTS AT FINSHED GRADE
3. TAMP PLANTING MIX FIRMLY AS PIT IS FILLED AROUND EACH PLANT BALL.
4. OMIT COLLAR AROUND EACH SHRUB WHEN IRRIGATION SYSTEM IS PRESENT.
5. SOAK EACH PLANT BALL AND PIT IMMEDIATELY AFTER INSTALLATION.



TYPICAL PLANTING BED DETAIL



TYPICAL BED CROWNING

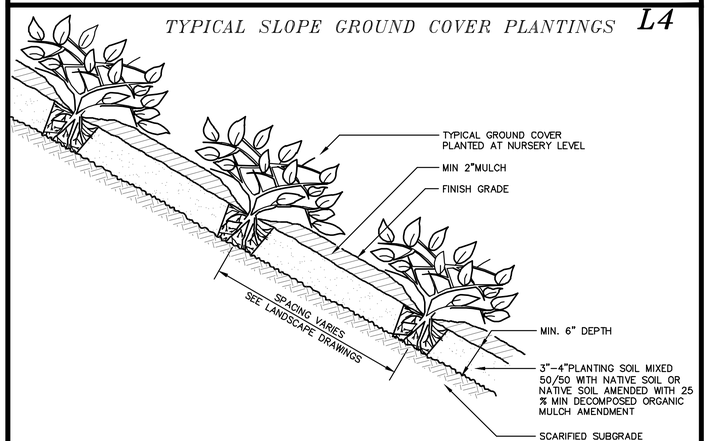


TYPICAL PLANTING BED PLAN

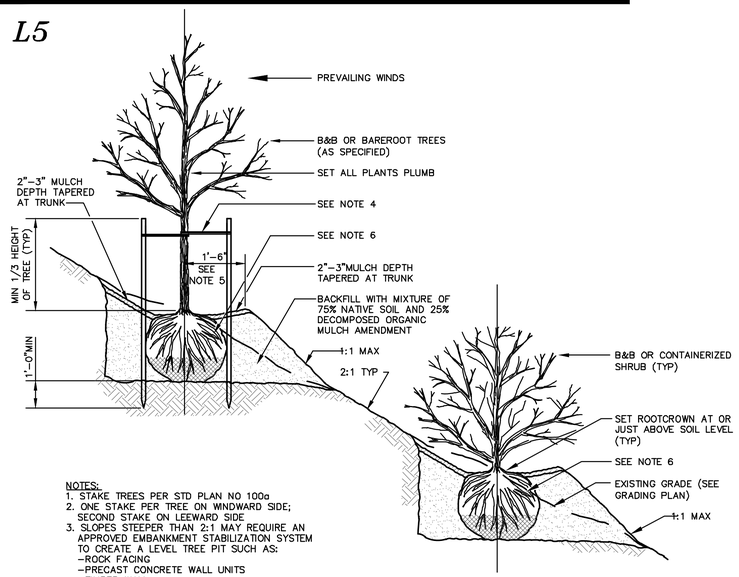
SHRUB & HEDGE PLANTING

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.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

19.) TREES ARE TO BE 3.5" CALIPER 6" OFF THE ROOT BALL.

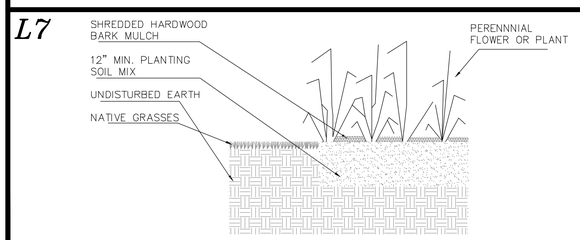
20.) ALL PLANT STOCK SHALL CONFORM TO ANSI Z260.1 – NURSERY STOCK, LATEST EDITIONS (AMERICAN ASSOCIATION OF NURSERYMEN, INC.)

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

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

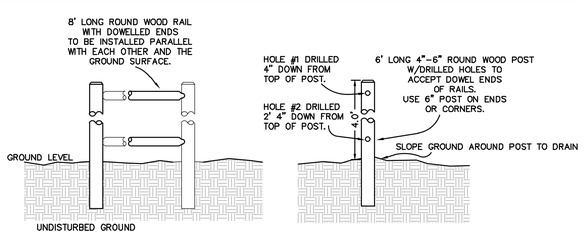
23.) ALL LANDSCAPED AREAS NOT PLANTED WITH TREES, SHRUBS OR GROUNDCOVER SHALL BE RESTORED WITH SEED OR SOD AS INDICATED ON PLANS.

L7



PERENNIAL PLANTING DETAIL

L8



TYPICAL POST & RAIL FENCE DETAIL

CITY OF DOVER PLANNING FILE #

REVISION	DATE	DESCRIPTION
#2	03–04–25	REVISED UNIT COUNT AND ASSOCIATED MODIFICATIONS
#1	10–17–24	REVISED UNIT COUNT AND ASSOCIATED MODIFICATIONS

LANDSCAPING DETAILS
FOR
KNOX MARSH DEVELOPMENT LLC
LAND OF
5 SHERMAN STREET LLC
1 COLD SPRINGS ROAD
DOVER, N.H.
TAX MAP H, LOT 47–A

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

SCALE : AS SHOWN
DATE : SEPTEMBER 1, 2024
FILE NO. : DB 2023 – 126

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

L–101

NOT FOR CONSTRUCTION



AMERICAN BUMBLE BEE

IDENTIFICATION/DESCRIPTION:

BOMBUS PENSYLVANICUS IS A LARGE BUMBLE BEE WITH THE QUEEN MEASURING 1 IN, THE WORKER FROM 0.5 IN, AND THE MALE FROM 0.75 IN IN LENGTH. THE QUEEN IS MOSTLY BLACK, INCLUDING THE LEGS, SPURS AND TEGULAE (BASE OF WING). TERGITE 1, OR THE MOST ANTERIOR BACK PORTION OF THE QUEEN IS OFTEN YELLOW ESPECIALLY IN THE MIDDLE. WORKER BEES' MIDDLE TERGITES ARE YELLOW, THE TAIL BLACK, AND FACE LONG. THEIR CHEEKS ARE SLIGHTLY LONGER THAN BROAD, AND THE CLYPEUS (NOSE) HAS LARGE PUNCTURES EXCEPT ON THE MID LINE. THE HAIR ON THE TOP OF THE HEAD IS BLACK, SHORT AND EVEN. MALES HAVE A YELLOW ABDOMEN WITH A BLACK HEAD AND BLACK STRIPING IN THE LOWER THORAX.



SPOTTED TURTLE

IDENTIFICATION/DESCRIPTION:

A SMALL 3–5 INCH TURTLE RECOGNIZED BY NUMEROUS YELLOW SPOTS COVERING A DARK CARAPACE. THE NUMBER OF SPOTS IS VARIABLE. SPOTS CAN ALSO BE FOUND ON THE HEAD AND LIMBS.



NORTHERN BLACK RACER

IDENTIFICATION/DESCRIPTION:

A SLENDER BLACK SNAKE MEASURING 36–60 INCHES. BLACK RACERS ARE GLOSSY BLACK ON THE TOP AND BOTTOM WITH A WHITE THROAT AND CHIN. YOUNG RACERS ARE PATTERNED WITH BROWN OR REDDISH PATCHES ON A LIGHTER BASE OF GRAY.



SMOOTH GREEN SNAKE

IDENTIFICATION/DESCRIPTION:

A THIN, SLENDER BRIGHT–GREEN SNAKE MEASURING 10–20 INCHES. THE UNDERSIDE IS WHITE OR A PALE YELLOW.



LITTLE BROWN BAT

IDENTIFICATION/DESCRIPTION:

THE LITTLE BROWN BAT IS A SMALL MAMMAL WITH A BODY LENGTH OF 2 1/2 – 4" AND WEIGHING APPROXIMATELY 1/8 TO 1/2 AN OUNCE. THE WINGSPAN OF LITTLE BROWN BATS RANGE FROM 9 – 11". BATS ARE THE ONLY MAMMALS THAT ENGAGE IN TRULY ACTIVE FLIGHT. AS THEIR NAME SUGGESTS THEY ARE GLOSSY BROWN ABOVE WITH A LIGHTER GRAY COLOR BELOW. THESE BATS CAN LIVE 20 TO 30 YEARS.



NORTHERN LONG–EARED BAT

IDENTIFICATION/DESCRIPTION:

THE NORTHERN LONG–EARED BAT IS A MEDIUM–SIZED BAT WITH A BODY LENGTH OF 3 TO 3.7 INCHES BUT A WINGSPAN OF 9 TO 10 INCHES. THEIR FUR COLOR CAN BE MEDIUM TO DARK BROWN ON THE BACK AND TAWNY TO PALE–BROWN ON THE UNDERSIDE. AS ITS NAME SUGGESTS, THIS BAT IS DISTINGUISHED BY ITS LONG EARS, PARTICULARLY AS COMPARED TO OTHER BATS IN ITS GENUS, MYOTIS



TRI–COLORED BAT

IDENTIFICATION/DESCRIPTION:

THE TRICOLORED BAT, FORMERLY KNOWN AS THE EASTERN PIPISTRELLE (PIPISTRELLUS SUBFLAVUS), IS A SMALL BAT WEIGHING 0.2 TO 0.3 OUNCES (5 TO 8 GR) AND HAS A WINGSPAN OF 8 TO 10 INCHES. THE TERM "TRICOLORED" REFERS TO THE BATS YELLOWISHBROWN COAT THAT IS DARK AT THE BASE, YELLOWISH–BROWN IN THE MIDDLE, AND DARK AT THE TIPS. THE WING MEMBRANES ARE BLACKISH, BUT THE FACE AND EARS HAVE A PINKISH COLOR. AN OBVIOUS IDENTIFYING CHARACTERISTIC OF THIS SPECIES IS THE PINK COLOR OF THE SKIN ON THE RADIUS BONE. THE FEET ARE ALSO RELATIVELY LARGE COMPARED TO ITS BODY SIZE.



EASTERN SMALL–FOOTED BAT

IDENTIFICATION/DESCRIPTION:

THE EASTERN SMALL–FOOTED BAT HAS BROWNISH FUR, OFTEN WITH A GOLDEN SHEEN, THAT CONTRASTS WITH ITS BLACKISH FACE AND EARS, AND BLACKISH–BROWN WINGS AND TAIL MEMBRANE. IT CAN BE DISTINGUISHED FROM OTHER MYOTIS SPECIES BY ITS BLACK MASK AND SMALL SIZE. THE BODY IS LITTLE MORE THAN 3½ INCHES LONG, INCLUDING A 1½–INCH TAIL. ITS SMALL FEET, WHICH PROVIDE THE COMMON NAME, ARE LESS THAN A HALF–INCH AND ITS WINGSPAN RANGES FROM 8¾ TO 9¾INCHES. THIS SPECIES FLIES SLOWLY AND ERRATICALLY, USUALLY ABOUT ONE TO THREE YARDS ABOVE THE GROUND.

PLEASE REPORT OBSERVATIONS OF RARE TURTLES

The NH Fish & Game Department is requesting observations of the following turtle species

Turtles may be attracted to disturbed ground during nesting season (May 15th – June 30th)

Turtles are most active from April 15th - October 15th



Blanding's turtle
(State Endangered)

Large, dark/black domed shell with lighter speckles.

Distinct yellow throat/chin.

Aquatic but often moves on land.



Spotted turtle
(State Threatened)

Small, mostly aquatic with black or dark brown with yellow spots.

Fairly flat shell compared to Blanding's turtle.

Spots vary in color and number.

Fis 1401.03 (a) No person shall take or possess a spotted turtle (*Clemmys guttata*)...Blanding's turtle (*Emydoidea blandingii*)...or any egg or part thereof.

Report sightings immediately to NHFG Wildlife Division at 603-271-2461 (M-F 8-4) or to NHFG Wildlife Biologist Melissa Winters 603-479-1129 (cell) anytime.

Please report promptly, noting specific location and date – Photographs strongly encouraged

Wood Turtle

(New Hampshire Species of Special Concern)

Turtles may be attracted to disturbed ground during nesting season (**May 15th – June 30th**)

Turtles are most active from **April 15th - October 15th**



Identifying traits

- Neck and forelimbs are orange.
- Characterized by its highly sculpted shell with each large scute taking on an irregular pyramidal shape.
- Adults can be 5-8 inches long.

Habitat Use

- wooded areas near streams
- uplands surrounding streams





NOTE: It is illegal to remove a wood turtle from the wild.

Observations shall be reported to NH Fish & Game at NHFGReview@wildlife.nh.gov or at 603-271-2461
Photo documentation, location and date/time of observation is helpful.

State laws pertaining to this species RSA 207:1, FIS 804.02, Fis 1401.03 (a)

PLANNING FILE #

REVISION	DATE	DESCRIPTION
#01	03-18-25	REVISED PER TRC COMMENT

WILDLIFE IDENTIFICATION PLAN
LAND OF
DOVER DEVELOPMENT, LLC
52 OLD ROCHESTER ROAD
DOVER, N.H.
TAX MAP 40, LOT 25

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

SCALE : N/A
DATE : JULY 1, 2024
FILE NO. : DB 2022 – 075

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

W–101

SHEET 32 OF 33

NOT FOR CONSTRUCTION

NOTES:

1.) OWNER: 5 SHERMAN STREET LLC
242 CENTRAL AVE
DOVER, NH 03820

APPLICANT: KNOX MARSH DEVELOPMENT LLC
242 CENTRAL AVE
DOVER, NH 03820

2.) TAX MAP H, LOT 47-A

3.) THE INTENT OF THIS PLAN IS TO PROVIDE DOVER FIRE TRUCK TURNING MOVEMENT AROUND THE PROPOSED ROADWAY.

PROPOSED SINGLE FAMILY HOUSE UNIT #6

PROPOSED SINGLE FAMILY HOUSE UNIT #7

SINGLE FAMILY HOUSE UNIT #8

PROPOSED SINGLE FAMILY HOUSE UNIT #5

PROPOSED SINGLE FAMILY HOUSE UNIT #4

PROPOSED SINGLE FAMILY HOUSE UNIT #3

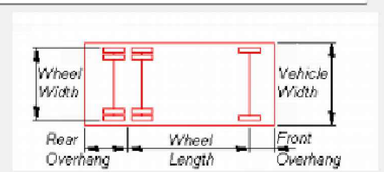
PROPOSED SINGLE FAMILY HOUSE UNIT #2

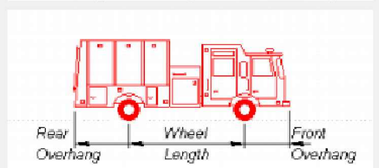
PROPOSED SINGLE FAMILY HOUSE UNIT #1

COLD SPRINGS ROAD

SOPHIE DRIVE

Description	Dover Fire Engine
Wheel Width	8.330
Wheel Length	20.000
Vehicle Width	8.330
Front Overhang	13.580
Rear Overhang	16.000
Tire Diameter	3.330
Rear Axle Count	2
Rear Axle Offset	4.200
Section Type	Fire Truck
Section Symbol	Set





NAD83 NH STATE PLANE

MAGNETIC

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

CITY OF DOVER PLANNING FILE #

REVISION	DATE	DESCRIPTION
#2	03-04-25	REVISED UNIT COUNT AND ASSOCIATED MODIFICATIONS
#1	10-17-24	REVISED UNIT COUNT AND ASSOCIATED MODIFICATIONS

FIRE TRUCK TURNING SOPHIE DRIVE
FOR
KNOX MARSH DEVELOPMENT LLC
LAND OF
5 SHERMAN STREET LLC
1 COLD SPRINGS ROAD
DOVER, N.H.
TAX MAP H, LOT 47-A

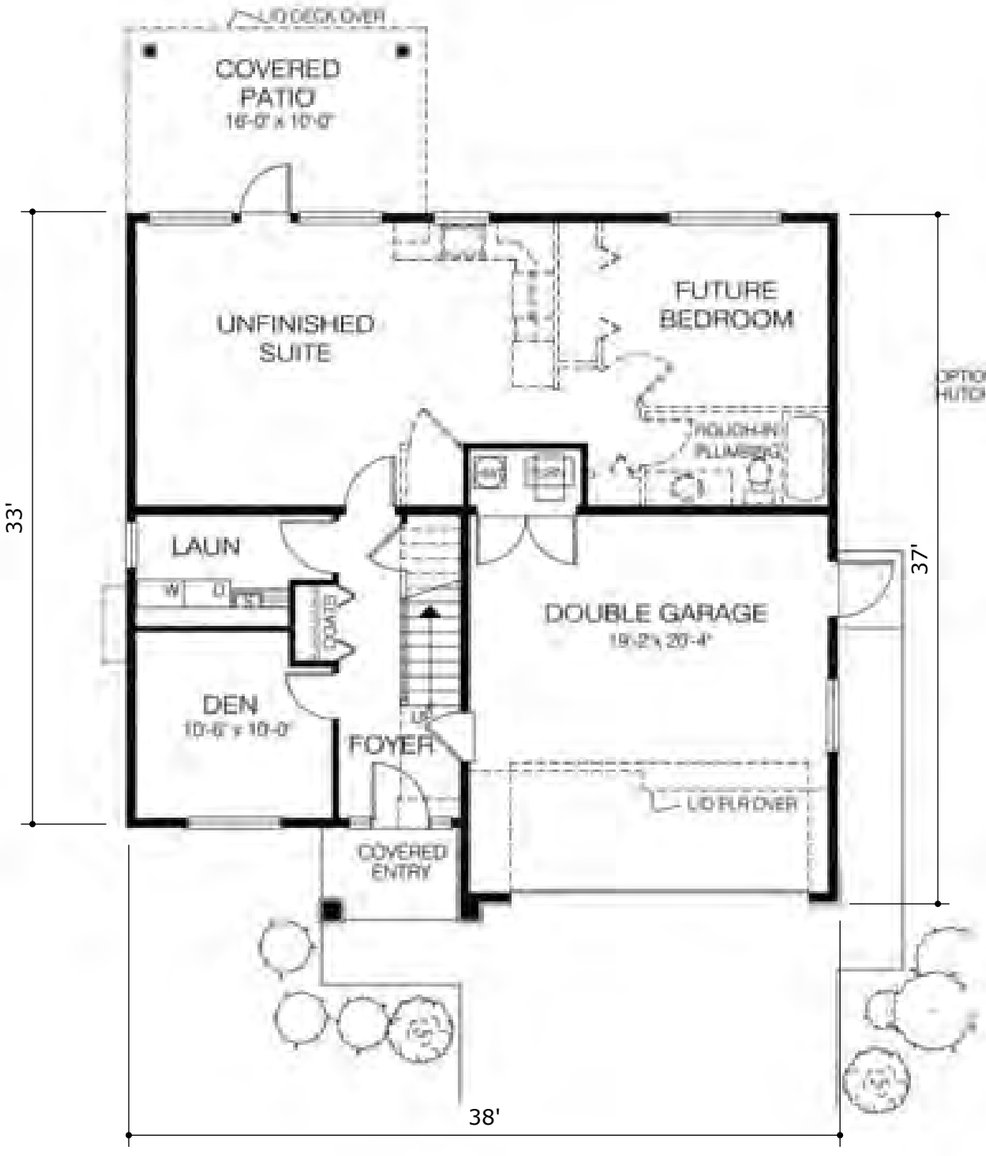
BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 20 FT.
DATE : SEPTEMBER 1, 2024
FILE NO. : DB 2023 - 126

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 19243
LICENSED PROFESSIONAL ENGINEER

NOT FOR CONSTRUCTION

1ST FLOOR



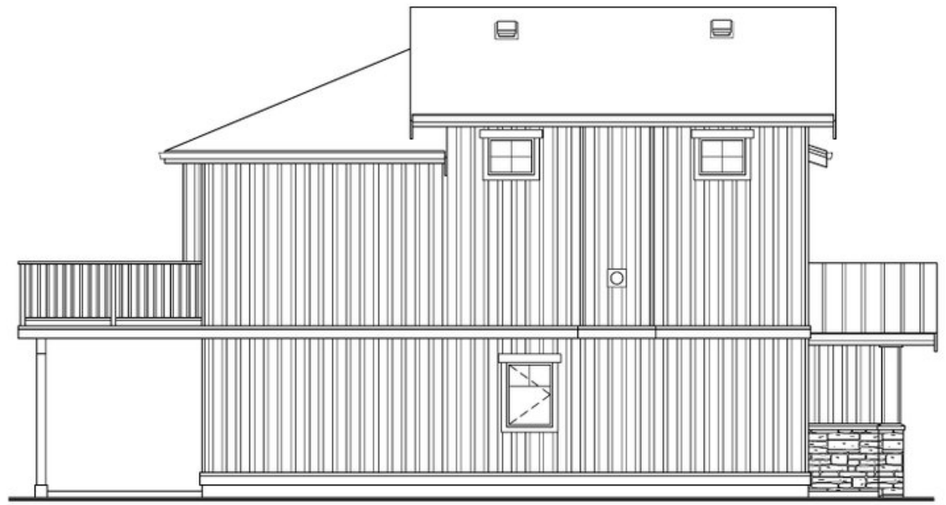
2ND FLOOR



5 SHERMAN STREET LLC



FRONT ELEVATION



LEFT ELEVATION



REAR ELEVATION



RIGHT ELEVATION

5 SHERMAN STREET LLC



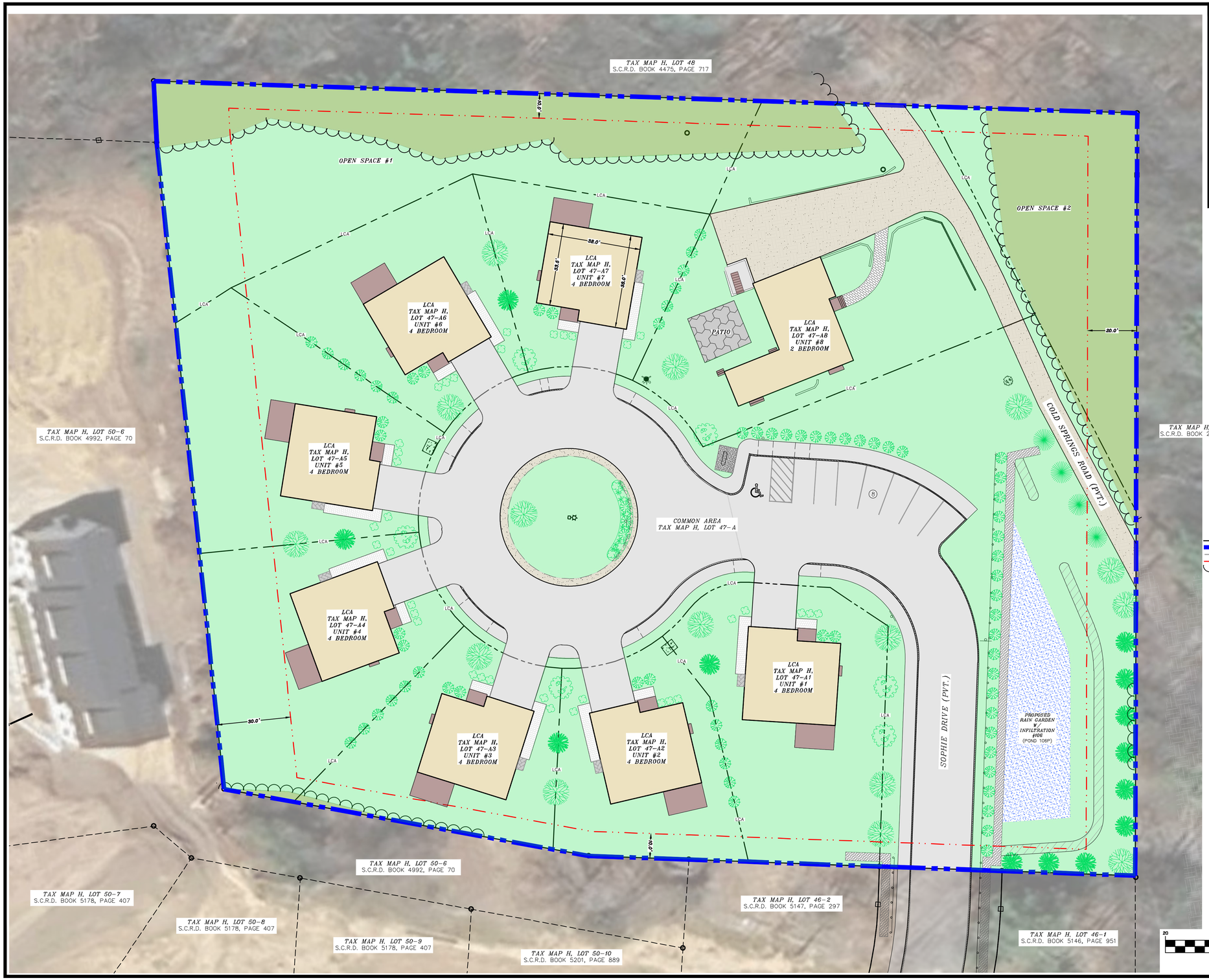
ARCHITECTURAL MATERIALS

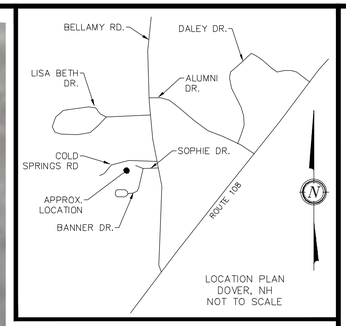
- VINYL BOARD AND BATTEN IMPRESSIONS
- PVC CORNER BOARDS
- ENERGY STAR FLAT CASING WINDOWS
- 30YR ARCHITECTURAL SHINGLES
- COMPOSITE PVC COLUMNS
- INSULATED CARRIAGE STYLE GARAGE DOOR
- TUMBLED PERVIOUS PAVERS
- DECORATIVE SCONCE LIGHTS











NOTES:

1.) OWNER: 5 SHERMAN STREET LLC
242 CENTRAL AVENUE
DOVER, NH 03820

APPLICANT: KNOX MARSH DEVELOPMENT LLC
242 CENTRAL AVENUE
DOVER, NH 03820

2.) TAX MAP H, LOT 47-A

3.) S.C.R.D. BOOK 5190, PAGE 597

4.) LOT AREA: 117,854 Sq.Ft., 2.71 Ac.

5.) THE INTENT OF THIS PLAN IS TO SHOW A COLOR RENDERING OF THE PROPOSED TRANSFER OF DEVELOPMENT RIGHTS SITE PLAN OF TAX MAP H, LOT 47-A, LOCATED IN DOVER, N.H.

6.) SEE SITE PLAN FOR ALL UNIT DENSITY CALCULATIONS AND TRANSFER OF DEVELOPMENT RIGHTS REQUESTS.

LEGEND:

- IRON BOUND ~FND~
- GRANITE BOUND ~FND~
- PROPOSED LCA LINE
- PROPERTY LINE
- ABUTTING PROPERTY LINES
- TDR SETBACK LINES
- TREELINE
- RAIN GARDEN
- BERM
- RETAINING WALL
- WOODLAND AREA
- GRASS AREA
- PAVED AREA
- GRAVEL AREA
- BUILDING
- DECK/STAIRS
- TREES:
  - AR – RED MAPLE
  - PM – DOUGLAS FIR
- BUSHES:
  - BW – BOXWOOD
- GRASSES:
  - KF – FEATHER REED GRASS
- PLANTS:
  - HM – HYDRANGERA

NADB3 NH STATE PLANE
MAGNETIC
N

GRAPHIC SCALE

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

CITY OF DOVER PLANNING FILE #

REVISION	DATE	DESCRIPTION
#2	03-04-25	REVISED UNIT COUNT AND ASSOCIATED MODIFICATIONS
#1	10-17-24	REVISED UNIT COUNT AND ASSOCIATED MODIFICATIONS

COLOR RENDERING
FOR
KNOX MARSH DEVELOPMENT LLC
LAND OF
5 SHERMAN STREET LLC
1 COLD SPRINGS ROAD
DOVER, N.H.
TAX MAP H, LOT 47-A

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

SCALE : 1 IN. EQUALS 20 FT.
DATE : SEPTEMBER 1, 2024
FILE NO. : DB 2023 – 126

NOT FOR CONSTRUCTION



5 SHERMAN STREET LLC

242 CENTRAL AVENUE
DOVER, NH, 03820
ROBERT@CENTRALFALLSREALTY.COM

COLD SPRINGS ROAD DOVER











